Miscellaneous Docket No. ___

IN THE
United States Court of Appeals for the Federal Circuit

IN RE APPLE INC.,

Petitioner.

On Petition for Writ of Mandamus to the
United States District Court for the
Western District of Texas
No. 7:23-cv-00077-ADA, Hon. Alan D Albright

**APPLE INC.'S NON-CONFIDENTIAL
PETITION FOR WRIT OF MANDAMUS**

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CERTIFICATE OF INTEREST

Case Number __________

Short Case Caption In re Apple Inc.

Filing Party/Entity Apple Inc.

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Date: 05/29/2024

Signature: /s/ Melanie L. Bostwick

Name: Melanie L. Bostwick

1. Represented Entities. Fed. Cir. R. 47.4(a)(1).	**2. Real Party in Interest.** Fed. Cir. R. 47.4(a)(2).	**3. Parent Corporations and Stockholders.** Fed. Cir. R. 47.4(a)(3).
Provide the full names of all entities represented by undersigned counsel in this case.	Provide the full names of all real parties in interest for the entities. Do not list the real parties if they are the same as the entities. ☑ None/Not Applicable	Provide the full names of all parent corporations for the entities and all publicly held companies that own 10% or more stock in the entities. ☑ None/Not Applicable
Apple Inc.		

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CONFIDENTIAL MATERIAL OMITTED

The material redacted from page 11 of the petition names confidential third-party technology.

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INTRODUCTION

In its seminal en banc case, the Fifth Circuit cautioned against interpretations of § 1404(a) that would give "inordinate weight to the plaintiff['s] choice of venue." *In re Volkswagen of Am., Inc.*, 545 F.3d 304, 314-15 (5th Cir. 2008) (en banc). Here, at plaintiff Resonant's urging, the district court misread recent Fifth Circuit cases and effectively required a defendant to refute any hypothetical possibility of relevant connections to the transferor forum—even without the plaintiff having to provide any evidence of such connections. Such speculation is in fact forbidden by Fifth Circuit precedent, and the district court's heightened burden of proof resurrects the same kind of undue deference to a transferor forum that *Volkswagen* rejected. As in *Volkswagen*, the district court's "misconstruing [of] the weight of the plaintiff['s] choice of venue" constitutes "extraordinary error[]." *Id.* at 318.

Resonant filed this patent infringement case in the Western District of Texas, a forum with no connection to the litigation. Apple sought transfer to the Northern District of California, where the accused technology was developed, knowledgeable engineers and other employees reside, and five third-party suppliers of components implicated by Resonant's infringement contentions are located. Apple supported its motion with several detailed, sworn declarations, while Resonant pointed to a single Texas-based third-party that supplies a component with questionable connection to the alleged infringement.

Despite the lopsided record, the district court denied Apple's motion. Its decision rested on two legal errors. First, the district court improperly required Apple to prove a negative to show good cause for transfer. In its view, Apple had not done enough to *disprove* the possibility that relevant evidence or events may exist in Texas. The district court then repeatedly found that the possibility that hypothetical witnesses, sources of proof, or events giving rise to this litigation *might* exist in Texas weighed against transfer. That was legal error; the Fifth Circuit has explicitly held that a transfer analysis must be based on record evidence, not the kind of speculation the district court employed here.

Second, the district court ignored Apple's detailed declarations locating the weight of the evidence and relevant witness in California on the grounds that they were "vague" and "conclusory," simply because Apple's declarants testified that, to their knowledge, no relevant connection between this litigation and Texas exists. That too was legal error: Apple offered declarations from individuals who personally work on the subject matter of the litigation and know where relevant evidence is located. This Court has held repeatedly that declarations of a similar character must be given credence. *See, e.g.*, *In re Google LLC*, 58 F.4th 1379, 1384 (Fed. Cir. 2023); *In re Netflix, Inc.*, No. 2022-110, 2022 WL 167470, at *3 (Fed. Cir. Jan. 19, 2022).

The district court's transfer analysis was contrary to binding law, a clear abuse of discretion leading to a patently erroneous result. A transfer movant carries its burden by clearly demonstrating that evidence, witnesses, and relevant events are centered on the transferee venue. Apple's declarations established exactly that, and this Court has held repeatedly that it is error to refuse to credit such declarations. Apple had no obligation to go further by surveying every document and employee in Texas to prove that each is *not* connected to this case, as the district court's reasoning would require—particularly given Resonant's utter failure to proffer any record evidence suggesting that such connections exist there.

These legal errors drove the district court's denial of transfer. Without them, the district court would have had to conclude that the sources-of-proof, witness-convenience, and local-interest factors weighed firmly in favor of transfer, while none favored the Texas venue. This Court should grant mandamus to clarify the appropriate burden of proof on a § 1404(a) motion and should order the district court to grant Apple's transfer motion.

RELIEF SOUGHT

Apple respectfully requests that the Court grant this petition for a writ of mandamus, vacate the district court's decision to deny Apple's transfer motion, and remand the case with instructions to transfer this action to the United States District Court for the Northern District of California.

ISSUE PRESENTED

Whether the district court clearly abused its discretion in refusing to transfer this case to the Northern District of California, where the clear weight of the § 1404(a) convenience factors points, by imposing on Apple a heightened burden amounting to proof of a negative proposition, failing to credit undisputed record evidence establishing that the vast majority of witnesses and evidence are located in California, and simultaneously crediting plaintiff's speculation about the existence of hypothetical witnesses and evidence in Texas.

FACTUAL BACKGROUND AND PROCEDURAL HISTORY

Resonant sues Apple in the Western District of Texas, despite having no connection to that district.

Plaintiff Resonant Systems, Inc., d/b/a RevelHMI, is a patent-holding company headquartered in Seattle, Washington, that once sold vibrating actuators. Appx85-86; Appx247. Resonant claims no ties to Texas, aside from its litigation counsel in Dallas (in the Northern District). *See* Appx85-93.

Nevertheless, in June 2023, Resonant filed this patent lawsuit in the Midland-Odessa Division of the Western District of Texas. Appx39-47. Resonant alleged that various models of Apple's iPhone, MacBook, and Apple Watch products infringe four patents generally related to linear-resonant vibration modules—components that shake back-and-forth to vibrate a device. Appx87-91. Resonant's infringement theory targets Apple's Taptic Engine, a feature in the accused products that produces vibrations to provide haptic feedback to users. *See, e.g.*, Appx49-84; Appx272-754.

Apple's Taptic Engines were designed by a combination of Apple engineering teams including Input Devices, Haptics Hardware Engineering, Human Interface Devices, Core Audio and Core Haptics, and MacBook Product Design. Appx123-124. Across those teams, 85 engineers are in Northern California, 11 are in San Diego, and one is in China. Appx123-124. None are in Texas, nor do they work with anyone in Texas. Appx123-124. Apple's employees responsible for the relevant finance and licensing are also predominantly in Northern California, as are multiple relevant third parties. Appx123-125; Appx120; Appx117-118; Appx103.

Apple seeks transfer to the Northern District of California.

Because this case lacks any connection to the Western District of Texas, Apple moved to transfer the case to the Northern District of California. *See* Appx95-115. Apple demonstrated that relevant documents and likely witnesses are concentrated in the Northern District of California, where its engineering teams and third-party suppliers are centered, and emphasized Resonant's lack of connection to Texas or the Western District. Appx101-103. Apple supported its motion with evidence including sworn declarations from four employees.

One declaration came from Chang Zhang, a Senior Engineering Manager for the Input Devices team, based in Cupertino. Appx122-125. Mr. Zhang's declaration was based on his personal knowledge—including his decade of experience in "research, design, development, and implementation of the Taptic Engines for the accused MacBook Products"—corporate records, and discussions with other employees. Appx123. Mr. Zhang identified five engineering teams (including his own) involved in development of the accused Taptic Engines, recounted the number of engineers in each, and identified their work locations, with 85 of the 97 engineers located in the Northern District of California. Appx123-124. Mr. Zhang—who is well-situated to know the location of team members working on projects within his scope of responsibility—also attested that, to his knowledge, no Texas-based Apple employees work on the Taptic Engines. Appx124. Mr. Zhang further attested that each team stores physical documents and prototypes in California, with none in Texas. Appx124. And Mr. Zhang attested that access to each team's electronic documents is "restricted on a need-to-know basis," and that he was "not aware of anyone in Texas with access rights." Appx124. He also named five third-party component suppliers that supply the Taptic Engines for the accused products, each of which have offices in the Northern District of California. Appx125.

Apple also provided declarations from Catherine Spevak, a Finance Manager knowledgeable about financial information for the accused products; Brian Ankenbrandt, a Senior Manager on the IP Transactions team that handles patent licensing; and Robin Goldberg, a Discovery Manager who confirmed that Apple stores physical examples of prior art and the accused products in Northern California. Appx119; Appx116; Appx126. Each of these declarants works in the Northern District of California. Appx119; Appx116; Appx126. Ms. Spevak and Mr. Ankenbrandt also provided information about the other Apple employees in their areas of expertise and confirmed that most are in Northern California. Appx120; Appx117-118. Both also attested that document custodians, whose access is restricted "on a need-to-know basis," are chiefly in the Northern District of California and that, to their knowledge, none are in Texas. Appx120; Appx118.

Resonant opposes transfer without meaningfully investigating Apple's evidence.

The parties engaged in three months of venue discovery, extended from the usual 10-week maximum at Resonant's request. Appx756. During that period, Resonant sought identification of "all persons who live or work in Texas, in the United States east of the Mississippi River, and/or outside of the United States" that "may have relevant knowledge" of *any aspect* of the accused products—not merely the accused Taptic Engine technology—as well as "the complete methodology" used by each Apple declarant to investigate and support their declarations. Appx235; Appx243.

Apple objected to the overbroad nature of these requests, some of which sought privileged information. Among other things, Apple explained that it "is organized functionally and not based on specific products," meaning it "does not maintain a company-wide list of all products that each employee works on." Appx228. Nonetheless, Apple provided Resonant a detailed account of the responsibilities of its Texas-based employees and a lengthy list of active Apple employees in Austin.[1] Appx236-240; Appx154-221.

Apple also confirmed that "there is no specific relationship between any Apple … facility located in the Western District of Texas and the allegations in this case"; although some Apple employees in Texas are "involved in operations, finance, sales, and/or customer support for all Apple products, generally," and thus might have "general knowledge about the accused products," none were "involved in the design or development of the Taptic Engines in the accused products." Appx238. "[T]herefore," Apple explained, it had "not identified any relevant witnesses in this case who reside or work in Texas." Appx238. After receiving this information, Resonant did not seek to compel additional discovery. Nor did Resonant try to depose any Apple employee. Appx255.

Despite having access to this detailed information about Apple's Austin-based employees, Resonant's transfer opposition identified no allegedly relevant Apple employees, documents, or other evidence

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[1] By agreement, the list excluded retail, customer support, human resources, and corporate administration employees.

located in Texas. Appx133-151. Instead, Resonant leveled baseless criticisms at Apple's declarants, suggesting for example that an employee whose job focuses on the features Resonant accuses "would not know if relevant people work in Austin." Appx144. Resonant also speculated that Austin-based employees "likely" have relevant knowledge despite Apple's sworn confirmation to the contrary. *See* Appx142-149.

Apart from such speculation, Resonant alleged two connections to Texas: Cirrus Logic, an Austin-based supplier of Technology [redacted] components not expressly identified in Resonant's infringement contentions, and Resonant's own files that were transferred to its counsel in Dallas. Appx138-139; Appx145-149.

In reply, Apple emphasized that Resonant rested its opposition chiefly on unfounded speculation. Appx255. Apple also showed that Cirrus Logic's Technology [redacted] circuits have little to do with the accused features. Appx255-264. Regardless, Apple provided a sworn statement from Cirrus Logic identifying its primary contact with Apple (who is in California) and stating that it would not object to subpoenas in the Northern District of California. Appx258; Appx269-271. Finally, Apple demonstrated, contrary to Resonant's argument, why recent Fifth Circuit decisions did not create new law or an elevated burden for transfer movants. Appx263-264.

Resonant then filed a sur-reply that, among other things, speculated that Cirrus Logic was "working behind the scenes with Apple to hinder Resonant's case" and would, contrary to the sworn statement, likely require compulsory process to testify in Northern California. *See* Appx766.

The district court sua sponte reassigns the case to another judge, who denies transfer.

Throughout venue discovery and briefing, this case was assigned to the district judge in the Midland-Odessa Division. In late March 2024, that judge issued a sua sponte order transferring the case to the docket of the district judge in the Waco Division, while formally keeping it in Midland-Odessa. *See* Appx771. The order provided no reason for the transfer beyond "both judges having consented." Appx771. Three weeks later, the district court denied Apple's transfer motion. *See* Appx1-28.

The district court acknowledged Apple's demonstration of evidence and likely witnesses in Northern California. Appx7; Appx18-19. And it acknowledged that, but for third-party Cirrus Logic, Resonant had demonstrated no connection between this case and the Western District of Texas. Appx8; Appx20. But the district court nonetheless denied transfer by (1) faulting Apple for providing an allegedly insufficient showing of why its presence in Austin is *not* relevant to this case; (2) discounting sworn declarations Apple provided establishing the locations of evidence that *is* relevant to this case; and (3) drawing inferences against the record evidence and speculating about what documents and witnesses might exist in Austin, contrary to Apple's sworn evidence.

This approach drove the district court's analysis on the three factors that proved decisive: access to sources of proof, willing witnesses, and local interest. For example, after weighing Apple's evidence against Resonant's, the district court opined that the access to sources of proof factor would "[a]t a glance … seem to favor transfer." Appx8. But it then concluded that Apple "failed to provide the factual foundation necessary to evaluate the relative convenience of the present and proposed venues," for two reasons. Appx8. First, the district court characterized Apple's declarations as "vague and generalized." Appx8-

9. Second, the district court accused Apple of "choos[ing] declarants who lack personal knowledge" about witnesses and evidence in Austin as part of a continuing "stratagem" to "suppl[y] declarants" who are unaware of relevant witnesses and evidence "and who fail to investigate either when moving to transfer patent cases." Appx9-10.

The district court criticized Apple's declarants primarily for stating they were unaware of any relevant employees or documents in Texas. *See* Appx10-11. The declarants could not identify any such Texas-based material—because, as their declarations state, the relevant work is not performed in Texas—so the district court concluded that they "lack *personal knowledge* about Apple's WDTX potential for sources of proof." Appx12-13. The district court also faulted Apple's declarants for not "includ[ing] a description of the methodology used to find all relevant sources of proof in WDTX," while acknowledging that Resonant "did not seek the Court to compel discovery" on this or any other aspect of Apple's evidence. Appx12-13.

Ultimately, the district court concluded that the sources of proof factor is "neutral if not slightly disfavoring transfer" after "acknowledging Cirrus Logic's source of proof in WDTX." Appx14.

As to the convenience of willing witnesses, the district court considered only three of Apple's declarants themselves, refusing to credit, for example, the five teams of engineers who work on the accused Taptic Engines and were discussed in Mr. Zhang's declaration. Because Mr. Zhang did not name each one individually, the district court concluded it could not "consider them without being caused to speculate … [a]nd the same is true of any other unnamed Apple sales and patent licensing team members." Appx18-19. The district court instead speculated that "there may be more relevant witnesses in WDTX" whom neither Apple nor Resonant had identified. Appx22. Ultimately, the district court found the willing-witness factor to weigh "slightly against transfer" by comparing Apple's "three named witnesses"—that is, the declarants who might testify—and "five component suppliers" in Northern California against eleven individual employees that Resonant had identified from a single third-party, Cirrus Logic. Appx22.

The district court found the remaining factors neutral, including local interests, where it again faulted Apple for failing to provide enough evidence that the Western District of Texas does *not* have a connection to the events giving rise to suit. Appx22-27. The district court then denied Apple's motion after concluding that no factor favors transfer. Appx27.

REASONS FOR ISSUING THE WRIT

A petitioner seeking mandamus relief must (1) show a "clear and indisputable" right to the writ; (2) have "no other adequate means to attain the relief [it] desires"; and (3) demonstrate that "the writ is appropriate under the circumstances." *Volkswagen*, 545 F.3d at 311 (quoting *Cheney v. U.S. Dist. Ct.*, 542 U.S. 367, 380-81 (2004)). The second prong is necessarily satisfied where a district court improperly denies transfer under § 1404(a). *See id.* at 318-19. The first and third prongs are satisfied where a district court commits a "clear abuse of discretion" and reaches a "patently erroneous result." *Id.* at 310-12, 318-19.

This case meets that high standard. Apple's evidence established that the sources of proof, witnesses, and events giving rise to this litigation were heavily concentrated in Northern California. *Supra* 6-8. Yet the district court determined that Apple had not met its burden, on the grounds that Apple had failed to dispel the possibility that other, unidentified sources of proof, witnesses, and relevant events *might* be in Texas. Appx10-11; Appx13; Appx22; Appx26-27.

That was legal error. Establishing good cause for transfer under § 1404(a) does not require the moving party to prove a negative, particularly in the face of speculation (rather than evidence) offered by the non-moving party. Contrary to the district court's reasoning, recent Fifth Circuit caselaw does not condone such a heightened burden; it *reinforces* that transfer decisions must be "rooted in record evidence"—not "pure speculation" about gaps in the record. *In re TikTok, Inc.*, 85 F.4th 352, 360 (5th Cir. 2023). *Infra* I.A.

The district court's analysis is also clearly erroneous in view of the factual record. Apple's detailed declarations, each from someone knowledgeable about the locations of relevant information, establish that evidence, witnesses, and relevant events are overwhelmingly located in California, whereas Resonant neither offered counterbalancing evidence favoring Texas nor deposed Apple's declarants to test the basis for their declarations. The district court's decision to deem Apple's supporting evidence "vague" or "conclusory" contradicts the Fifth Circuit's and this Court's precedent. And the district court was wrong to assume that Apple submitted declarations from individuals with inadequate knowledge simply because those declarants did not know of anyone relevant in Texas. *Infra* I.B.

Absent these errors, the district court would have had to conclude that the § 1404(a) factors clearly favored transfer. *Infra* I.C. For that reason, Apple has a clear and indisputable right to the writ. Because mandamus is necessary to prevent the district court's flawed approach from proliferating, *infra* II, and is the only adequate means to secure relief, the Court should grant Apple's petition.

I. Apple Has A Clear And Indisputable Right To The Writ.

A. The district court's analysis turned on its imposition of a clearly erroneous, heightened burden of proof.

1. Section 1404(a) requires the moving party to "adduce evidence and arguments that clearly establish good cause for transfer." *In re Clarke*, 94 F.4th 502, 508 (5th Cir. 2024). This requirement is met "[w]hen the movant demonstrates that the transferee venue is clearly more convenient." *Volkswagen*, 545 F.3d at 315.

Both this Court and the Fifth Circuit have repeatedly held that the moving party can make that demonstration by showing—such as through sworn declarations—that relevant evidence, witnesses, and events giving rise to the litigation are in the transferee forum. *See, e.g.*, *TikTok*, 85 F.4th at 360 (burden met with declarations and deposition testimony); *Google*, 58 F.4th at 1384 (burden met with sworn declaration identifying location of knowledgeable employees and relevant evidence); *In re Juniper Networks, Inc.*, 14 F.4th 1313, 1321 (Fed. Cir. 2021) (same); *In re Apple Inc.*, No. 2022-128, 2022 WL 1196768, at *4 (Fed. Cir. Apr. 22, 2022) (same).

Apple provided the kind of evidentiary showing that has repeatedly been held to require transfer: detailed, sworn declarations from knowledgeable employees identifying the locations of the individuals who work on the accused technology and the third parties who supply relevant components, all of which are overwhelmingly concentrated in the transferee forum, with none in the plaintiff's chosen forum. *See supra* 6-8. As the district court recognized, Resonant provided no evidence showing the contrary, instead citing just one Texas-based third-party. Appx8. Nonetheless, the district court faulted *Apple* for failing to proffer evidence surveying all business that Apple conducts in the Western District of Texas to establish that *none* has any connection to this litigation. Appx8-11. Without such evidence, the district court reasoned, Apple had not provided "the factual foundation necessary to evaluate the relative convenience of the present and proposed venues." Appx8. The district court thus adopted plaintiff's novel argument that a transfer movant must not only establish where relevant evidence *is* located, it must also prove the negative: that relevant evidence *is not* in the plaintiff's chosen forum.

2. This is legal error amounting to a clear abuse of discretion. The obligation to show "good cause" for transfer means that "[w]here there is *no* demonstration by the movant … the court cannot weigh a factor against the non-movant and in favor of transfer." *Def. Distributed v. Bruck*, 30 F.4th 414, 434 (5th Cir. 2022). But it does not require a party seeking transfer to conclusively dispel *any* hypothetical possibility that might support litigation in the transferor forum, particularly when the non-moving party has failed to establish a connection.

Rather, this Court has favorably weighed transfer declarations that, just like Mr. Zhang's, identify relevant evidence or events in the movant's proposed venue while testifying the declarant is "unaware" of similarly relevant evidence in the present venue. *Compare* Appx10 (discounting Apple's declarations because they state declarant is "unaware" of proof in Texas), *with Google*, 58 F.4th at 1383-84 & n.2 (favorably weighing declaration identifying California witnesses and stating declarant was "not aware" of Texas witnesses); *accord, e.g.*, *In re Apple Inc.*, 979 F.3d 1332, 1340 (Fed. Cir. 2020); *Apple*, 2022 WL 1196768, at *4. None of these cases require the defendant to produce proof of detailed investigations into the *possibility* of evidence in the plaintiff's chosen venue, let alone disprove that possibility, particularly where no evidence rebuts the defendant's showing.

3. The district court adopted Resonant's view that a recent Fifth Circuit decision, *Clarke*, raised the § 1404(a) evidentiary standard. The district court relied on language from *Clarke* explaining that "[f]or each factor, the defendant's proffered venue is measured against the plaintiff's chosen venue." 94 F.4th at 510 & n.9; Appx9. And because the "transfer factors are *relative*," the district court reasoned that a movant cannot meet its burden solely by offering evidence on "one side." Appx9.

But *Clarke* marks no departure from the wealth of caselaw cited above (at 19, 20-21) establishing that the type of evidence Apple adduced here provides good cause for transfer. Transfer analyses have always turned on the "relative" conveniences of the competing forums. *Juniper*, 14 F.4th at 1321; *TikTok*, 85 F.4th at 359. That has never required transfer movants to address all potential sources of proof in the plaintiff's chosen forum and prove that none are relevant.

Nor did *Clarke* suggest any such thing. In relevant part, *Clarke* stands for the uncontroversial proposition that evidence of convenience does not favor transfer if it applies equally to any venue. The Fifth Circuit determined that a challenged regulatory action produced identical effects on individuals nationwide. 94 F.4th at 510. Such a "diffuse interest"—the "same in both the transferor and transferee venue"—"net[s] out to zero" in the transfer analysis. *Id.* That commonsense rule concerns only how the parties' evidence should be *weighed* on a motion to transfer; it says nothing about the movant's burden of production.

4. To the extent the Fifth Circuit touched on evidentiary standards at all in *Clarke*, its discussion supports transfer here. *Clarke* emphasized that a district court cannot base transfer decisions on bare "speculation." *Id.* at 513; *see TikTok*, 85 F.4th at 360, 361 & n.9; *In re*

Hulu, LLC, No. 2021-142, 2021 WL 3278194, at *3 (Fed. Cir. Aug. 2, 2021) (error to deny transfer based on nothing "other than speculation"). Yet the district court did so here: Against Apple's robust evidentiary showing regarding California, the district court weighed Resonant's speculation that Apple's Texas-based employees "*might* possess relevant sources of proof," that there "*may* be more relevant witnesses in [Texas]," and that Texas "*may* have a stronger local interest" in the litigation. Appx10; Appx22; Appx26 (emphases added).

The district court grounded its approach in a perceived "duty to 'draw all reasonable inferences and resolve factual conflicts in favor of the non-moving party'" on a transfer motion. Appx9 (quoting *Hammers v. Mayea-Chang*, No. 2:19-CV-00181-JRG, 2019 WL 6728446 (E.D. Tex. Dec. 11, 2019)). But no such evidentiary presumption applies here. The district court's supporting citations involve motions to dismiss for improper venue. *See* 5B Charles Alan Wright, Fed. Prac. & Proc. § 1352 (3d ed. 2013); *Trois v. Apple Tree Auction Ctr., Inc.*, 882 F.3d 485, 492-93 (5th Cir. 2018); *Ambraco, Inc v. Bossclip B.V.*, 570 F.3d 233, 237 (5th Cir. 2009). This Court has "question[ed] the propriety" of importing that standard into the § 1404(a) context. *In re Apple Inc.*, 818 F. App'x

1001, 1003 (Fed. Cir. 2020). For good reason: The § 1404(a) analysis is "based on the individualized facts on record"—not bare allegations. *In re Verizon Bus. Network Servs. Inc.*, 635 F.3d 559, 561 (Fed. Cir. 2011). And because "under § 1404(a) a court does not have authority to dismiss the case," it requires a "lesser showing of inconvenience." *Volkswagen*, 545 F.3d at 313.

The district court also drew adverse inferences from Apple's objections to Resonant's burdensome discovery requests. *See* Appx12-13; Appx21. For example, the district court noted Apple's refusal to search the email archives of every Texas-based Apple employee. Appx13. The district court acknowledged that the applicable standing order forbids email searches absent a good-cause showing, which Resonant did not attempt to make, and that Resonant "did not seek the Court to compel" this or any other discovery. Appx13; Appx21. Still, the district court accepted Resonant's contention that Apple, by adhering to the governing discovery order, "failed to investigate relevant witnesses in WDTX and blocked Resonant from identifying them during discovery." Appx20. The district court speculated that these investigations might turn up relevant witnesses or evidence.

Appx22. And it weighed those *possibilities* against Apple's record evidence. Appx21-22.

Fifth Circuit precedent precludes the district court's approach. A district court may credit "reasonable inferences" only where "rooted in record evidence"; departures from the record constitute a "clear abuse of discretion." *TikTok*, 85 F.4th at 359-60; *see also Clarke*, 94 F.4th at 513. Thus, a district court can neither draw inferences in favor of the plaintiff based on perceived record gaps nor draw adverse inferences from unchallenged discovery objections.

TikTok is directly on point. TikTok provided declarations and other evidence establishing that its source code—"the most important evidence in [the] case"—was accessible only to its employees in California and China. 85 F.4th at 359. The district court, however, noted many Texas-based TikTok employees and accordingly viewed it as "an extremely plausible and reasonable inference that [such] employees possess some relevant documents." *Id.* The Fifth Circuit deemed this analysis a "clear abuse of discretion." *Id.* at 360. Because neither the district court nor the plaintiff pointed to "any record evidence" tying TikTok's Texas-based employees to this case, the notion that those individuals might have access to relevant proof was "pure speculation." *Id.*

The same reasoning applies here. Neither the district court nor Resonant identified any record evidence tying Apple's presence in Texas to this litigation. Nevertheless, the district court inferred that witnesses or evidence *might* turn up there and used these speculative sources of proof to counterbalance Apple's detailed showing regarding the convenience of litigating in California. Such a transfer denial not "rooted in record evidence" constitutes "a clear abuse of discretion." *TikTok*, 85 F.4th at 360.

B. The district court legally erred in discounting Apple's declarations.

In addition to imposing an inappropriately heightened burden of proof, the district court improperly discounted the record Apple assembled in favor of transfer. Neither of the district court's criticisms of Apple's evidence stands up to scrutiny.

1. The district court criticized what it viewed as the limits of the declarants' personal knowledge. Appx9. For example, Mr. Zhang stated that, "to [his] knowledge," no Apple engineer in Texas works on the Taptic Engines, and he was "not aware" of physical evidence or employees in Texas with access rights to relevant electronic evidence. Appx124. Instead of taking such statements to establish that *no such evidence exists there*, as they plainly do, the district court faulted Apple for purportedly submitting declarations from individuals "wholly unaware … of the goings on of Apple's Texas campus." Appx10.

The district court had no basis to conclude that Apple had put forth declarants with "selectively fed knowledge." Appx10. A statement from Mr. Zhang that he is "not aware" of engineers in Texas working on the Taptic Engines does not mean that he is "wholly unaware" of what Apple does in Texas; it means that he knows where the people working on the Taptic Engines are, and none are in Texas. By taking an overly literal approach to the declarants' choice of words, the district court failed to credit statements clearly establishing the relative convenience of California.

Moreover, under Fifth Circuit precedent, the district court should have considered what it is "reasonably within [the] position" or "sphere of responsibility" for Apple's declarants to know. *DIRECTV, Inc. v. Budden*, 420 F.3d 521, 530 (5th Cir. 2005). An employee in Mr. Zhang's position—who has spent a decade working on the accused Taptic

Engines—would be "familiar" with which other engineers have worked on that technology. *Id.* Mr. Zhang stated he is not aware of anyone in Texas who did so, even after a review of Apple's corporate records and interviews with other Apple employees. Appx124. Particularly where Resonant presented no evidence to the contrary, and failed even to depose Apple's declarants to probe the limits of their investigations into Texas, the district court should at least have "reasonably inferred" that no such person exists. *DIRECTV*, 420 F.3d at 530.

In fact, discounting Apple's declarations would be erroneous *even if* Resonant had identified relevant Apple employees in Texas. For example, in *Google,* the plaintiff had provided evidence suggesting that "some of [Google's] Texas employees work on aspects of the accused products," which the district court took to undermine the declarant's testimony that she was "not aware" of any such employee. 58 F.4th at 1384 n.2. In this Court's view, such evidence revealed, "at most, a partial gap in [her] knowledge"—not a basis to deem the declaration unreliable, and *not* a basis to "substantially discount[] the imbalanced nature of where the potential Google witnesses are located." *Id.* This Court took that view notwithstanding the district court's criticism that the declarant did not provide "the basis of her knowledge or explain what she did to investigate," *Jawbone Innovations, LLC v. Google LLC*, No. 6:21-cv-00985-ADA, 2022 WL 12078627, at *3 n.2 (W.D. Tex. Oct. 20, 2022). Just as in *Google*, there is "no reason to doubt the adequacy of [the] investigation" performed by Apple's declarants, even without such a detailed explanation. 58 F.4th at 1384 n.2.

The district court not only discounted Apple's supporting declarations without proper basis, but further suggested that Apple had already been reprimanded for providing similarly "faulty" declarations as part of an ongoing "stratagem" to tilt the transfer analysis in favor of California. Appx9-10; Appx12. But any suggestion that Apple has a practice of filing misleading declarations is groundless. As authority for this supposed pattern, the district court cited its prior order granting Apple's transfer motion in *Scramoge Technologies Ltd. v. Apple Inc.*, No. 6:21-CV-00579-ADA, 2022 WL 1667561, at *2-3 (W.D. Tex. May 25, 2022). As Apple demonstrated in *Scramoge*, the district court was wrong there to fault its venue declarant for doing exactly what corporate witnesses frequently do: gathering information from individuals within Apple and relaying that information on behalf of the company. Appx772-782; Appx783-800. This Court later agreed with the substance of Apple's argument, deeming "unreasonable" the district court's decision to discount a similar declaration from a corporate witness. *See Google*, 58 F.4th at 1384 & n.2. Regardless, Apple here did not rely on a corporate declarant to investigate and assemble information from individuals with direct knowledge, but instead relied on the knowledgeable individuals themselves, whom even the district court acknowledged were personally involved in the subject matter of the dispute. *See* Appx18-19.

Whether using a corporate declarant or individuals with direct knowledge, Apple is not cherry-picking declarants or information to avoid revealing Texas-based connections. It is offering truthful, factual information about the location of the relevant conduct, which is not in Texas. While Apple had no burden to prove a negative, *see supra* § I.A, the district court should have determined from Apple's declarations that no relevant evidence exists in Texas, particularly in light of Resonant's failure to identify a single Apple employee with relevant and material information there.

2. The district court also incorrectly deemed Apple's declarations "vague and generalized." Appx8. But as already discussed, Mr. Zhang specifically identified relevant sources of proof—"prototypes," "papers," "electronic files," "source code" and potential witnesses—and located them in California. *See supra* 7-8. This Court has previously held that a district court was "unjustified" in deeming even less detailed declarations "vague" and "not … specific enough." *Juniper*, 14 F.4th at 1321 (addressing declaration stating that defendant "stores the majority of its [relevant] documentary evidence … at its Sunnyvale headquarters"). And it has found clear error in the failure to properly credit declarations with similar levels of detail. *See, e.g.*, *Netflix*, 2022 WL 167470, at *3; *Google*, 58 F.4th at 1384 ("unreasonable" to "steep[ly] discount[]" declaration "identif[ying] [defendant's] employees in the [transferee venue] … with technical knowledge of the accused functionality").

The district court did not attempt to square its reasoning with this precedent. Instead, it cited two recent Fifth Circuit cases for the idea that it could not credit "conclusory" assertions. Appx12. Neither case involved anything like the evidence at issue here. In each, the Fifth

Circuit faulted the district court for crediting attorney arguments lacking any underlying factual showings. Thus, it faulted one district court for accepting a party's bare assertion in briefing (not in a sworn declaration) that sources of proof would "obvious[ly]" be in New Jersey based on the "nature of the claims." *Def. Distributed v. Grewal*, No. 1:18-cv-637-RP, 2021 WL 1614328, at *7 (W.D. Tex. Apr. 19, 2021); *see Bruck*, 30 F.4th at 434 (citing "lack of proof" for this assertion). And it rejected another district court's reliance on a party's assertion that an Administrative Procedure Act case would not require an evidentiary hearing. *Clarke*, 94 F.4th at 514.

Here, by contrast, Apple provided sworn declarations from knowledgeable witnesses setting out "specific facts," which the Fifth Circuit has expressly distinguished from conclusory assertions. *Favela v. Collier*, 91 F.4th 1210, 1213 (5th Cir. 2024) (holding that district court erred in refusing to credit declaration).

C. Applying the correct legal standard, Apple's evidence clearly establishes good cause for transfer.

In evaluating whether a movant has shown good cause for transfer, the court weighs a familiar set of private- and public-interest factors. Here, the district court clearly erred in failing to weigh three key factors in favor of transfer: the "relative ease of access to sources of proof," "cost of attendance for willing witnesses," and "local interest." *Clarke*, 94 F.4th at 509. Apple adduced evidence showing that California is where "[t]he vast majority of potential witnesses with relevant and material information reside, where accused product features were researched, designed, and developed, and where [electronic and] physical evidence is located." *In re Microsoft Corp.*, No. 2023-128, 2023 WL 3861078, at *2 (Fed. Cir. June 7, 2023). Resonant failed to make a showing of counterbalancing connections to Texas. Had the district court's analysis been "rooted in record evidence" rather than conjecture, *TikTok*, 85 F.4th at 360, it would have found these three factors weigh strongly in favor of transfer.

1. Relative ease of access to sources of proof strongly favor transfer.

The district court correctly recognized that "a considerable amount of evidence exists in NDCA." Appx7. Apple engineers developed the accused Taptic Engines in Northern California; almost every engineer who works on the Taptic Engines now resides there; and electronic documents, including source code and specifications, relevant sales and finance information, and patent license agreements, are generated in California. Appx123-124; Appx117-118; Appx120. Access to these technical and business documents is restricted on a need-to-know basis, and the Apple employees with access rights reside almost exclusively in California. Appx124; Appx118; Appx120. Physical evidence such as prototypes and potential prior art products also is stored in California. Appx124; Appx127. Additionally, five third-party suppliers of the Taptic Engines and a named inventor of the asserted patents reside in California. Appx125; Appx129-132.

Resonant, meanwhile, presented no meaningful evidentiary connection to Texas. Resonant first relied on documents sent to its counsel's office in Dallas. Appx145. As the district court correctly determined, Appx8, this evidence is outside the Western District of Texas and, regardless, such a "construct for litigation" cannot weigh against transfer. *In re Samsung Elec. Co.,* 2 F.4th 1371, 1378 (Fed. Cir. 2021).

Resonant also relied on the presence of Cirrus Logic in Austin. Appx146. But Resonant neither mentioned Cirrus Logic in its complaint or infringement contentions nor articulated how it allegedly contributes to infringement—even in the face of Apple's repeated requests for explanation. Appx223-226; Appx230-232. Resonant instead argued that Apple should have "investigate[d]" whether Cirrus Logic is relevant because "venue transfer is … *Apple's* burden of proof"; differently put, Resonant rests on speculation that Cirrus Logic's components *might* be infringing. Appx137; Appx763.

On such a record, there can be little doubt that the sources-of-proof factor should have weighed strongly in favor of transfer. *See TikTok*, 85 F.4th at 360.

Even if it were proper for the district court to consider Cirrus Logic, the "*overwhelming* presence" of sources of proof in California would still point in favor of transfer. *In re Amazon.com, Inc.*, No. 2022-157, 2022 WL 17688072, at *4 (Fed. Cir. Dec. 15, 2022). That is particularly true where, as here, access to relevant Apple documents is restricted to employees who are overwhelmingly in California. *See, e.g.*, *TikTok*, 85 F.4th at 359; *In re DoDots Licensing Sols.*, No. 2024-100, 2023 WL 8642716, at *2 (Fed. Cir. Dec. 14, 2023).

The district court concluded otherwise only by crediting speculation that sources of proof *might* exist in Texas and improperly requiring Apple to disprove that supposition. Appx8-14; *see supra* 19-

26. Its refusal to weigh the sources-of-proof factor in favor of transfer was a clear abuse of discretion. *Netflix*, 2022 WL 167470, at *2-3.

2. Witness convenience strongly favors transfer.

The convenience of willing witnesses is the "single most important factor in transfer analysis." *Juniper*, 14 F.4th at 1318. It strongly favors transfer here. All but one of the engineers on teams responsible for developing the Taptic Engines reside in California—and none reside in Texas. Appx123-124. Relevant finance and licensing personnel are similarly concentrated in Northern California. Appx117-118; Appx120. Five component suppliers are likewise in Northern California. Appx125.

The district court nonetheless weighed this factor "slightly against transfer." Appx22. Its determination rested, again, on the legal errors discussed above. *Supra* §§ I.A, I.B. Rather than credit Apple's declarations detailing the locations of relevant witnesses, the district court weighed *against* transfer the possibility that unspecified Apple employees in Texas might be "potentially relevant." Appx20-22. Such speculation is improper. *Supra* § I.A. It is a "clear abuse of discretion" to weigh hypothetical witnesses against transfer where the "record is devoid of any evidence supporting an inference that [Apple's] Austin employees have any knowledge of or connection to this specific dispute." *TikTok*, 85 F.4th at 361 n.9. At a minimum, the district court had no reason to disbelieve the adequacy of the investigations performed by Apple's declarants. *Supra* § I.B.

The district court compounded these errors. To start, the district court did not consider any Apple employee in California beyond three declarants because Apple had not "named" any other witnesses. Appx18. In the district court's view, considering the dozens of other specifically identified but "unnamed" Apple employees would amount to illicit "speculat[ion]." Appx19. But nothing in the transfer analysis requires that a potential witness be identified by name. Employees who are members of the teams focused on "the design, development, [and] functioning" of the accused feature surely count as potential witnesses. *In re Honeywell Int'l Inc.*, No. 2023-152, 2024 WL 302397, at *2 (Fed. Cir. Jan. 26, 2024); *see also Netflix*, 2022 WL 167470, at *4 (weighing "21 employees … that were part of [the defendant's] product and engineering teams" in favor of transfer). Mr. Zhang enumerated the members of teams working on the Taptic Engines and provided the location of each. Appx124. The district court lacked any "sound basis to diminish the[] conveniences" of litigating in California for these engineers. *Samsung*, 2 F.4th at 1379.

Next, the district court patently erred in its accounting of potential witnesses from third-party suppliers.[2] The district court acknowledged that Apple had identified *five* undisputedly relevant component suppliers located within 100 miles of the California forum. Appx21. The district court weighed in favor of transfer *one* witness from each of those suppliers because Apple did not "name their Rule 30(b)(6) representatives, or any engineers or … sales or licensing [employees]." Appx21. Then, the district court weighed *against* transfer eleven Cirrus Logic employees, each located 310 miles away from the Midland courthouse, because their names appeared in discovery documents. Appx21-22.

That analysis was flawed in multiple respects. The district court ignored the California-based Cirrus Logic employee who actually interacts with Apple. Appx270. Furthermore, Resonant offered only

[2] The district court considered these witnesses under this factor, not compulsory process, because none were shown unwilling to appear. Appx21.

speculation that *any* Cirrus Logic employees (especially those in Texas) possess "relevant and material" knowledge. *Honeywell*, 2024 WL 302397, at *3 (declining to weigh convenience of individuals where "it was unclear what, if any, relevant and material information these individuals have"). In any event, the convenience of one non-party should not have weighed more heavily than the convenience of the five other non-parties, simply because the *names* of several individual Cirrus Logic employees were known. This Court has explained that there is "no basis to discount [corporate] entities just because individual employees were not identified." *In re HP Inc.*, 826 F. App'x 899, 903 (Fed. Cir. 2020); *accord In re Apple Inc.*, No. 2021-181, 2021 WL 5291804, at *3 (Fed. Cir. Nov. 15, 2021). But that is functionally what the district court did, penalizing Apple for not naming individual employees of its California-based suppliers. Appx21-22. Particularly without any record basis to conclude otherwise, each relevant third-party supplier should have weighed equally in the transfer analysis. At a minimum, it was implausible to assume that *eleven* employees from Cirrus Logic will testify at trial whereas only *three* will testify from Apple.

Given the plainly "imbalanced nature of where the potential … witnesses are located," this factor should have weighed "firmly" in favor of transfer. *Google*, 58 F.4th at 1384 & n.2.

3. Local interests strongly favor transfer.

To "identify localized interests," the court looks to "significant connections between a particular venue and the events that gave rise to a suit." *Clarke*, 94 F.4th at 511. In a patent infringement suit, the place where the allegedly infringing features in accused products were "researched, designed, and developed" has the most "legitimate interest in adjudicating the case[] 'at home.'" *Samsung*, 2 F.4th at 1380; *see also Apple*, 979 F.3d at 1345; *Juniper*, 14 F.4th at 1317. Apple's sworn declarations demonstrated that this design and development took place overwhelmingly in the transferee forum. Appx123-124.

Nevertheless, the district court incorrectly deemed this factor "neutral." Appx26. Its analysis reprised the errors discussed above, improperly discounting Apple's declarations and crediting speculation—not "rooted in record evidence"—that relevant events *might* have taken place in Texas. *TikTok*, 85 F.4th at 360; *supra* §§ I.A-B.

Absent these errors, the district court should have concluded that the Northern District of California has a strong local interest in this case. *Samsung*, 2 F.4th at 1380; *Juniper*, 14 F.4th at 1317. And the district court patently erred in suggesting that the presence of Cirrus Logic in Austin, by itself, could outweigh that strong local interest. Appx26. As noted above (at 34-35), nothing in the record shows—and Resonant has yet to explain—how Cirrus Logic's component contributes to any alleged infringement. By contrast, Apple demonstrated the relevance of *five* California suppliers of components actually included in Resonant's infringement contentions. *Supra* 7-8.

The district court's failure to recognize that the strongest local interests were in California was a clear abuse of discretion.

II. Mandamus Is Appropriate To Clarify The Movant's Burden Under § 1404(a).

"[W]rits of mandamus are supervisory in nature and are particularly appropriate when the issues also have an importance beyond the immediate case." *Volkswagen*, 545 F.3d at 319. The Fifth Circuit also recently encouraged grants of mandamus where doing so will "improve 'consistency of outcomes' by … instructing when transfer is—or, for that matter, is not—warranted in response to a § 1404(a) motion." *TikTok*, 85 F.4th at 367.

Mandamus is appropriate here. The district court's decision introduces an improperly heightened standard for the evidence a transfer movant must supply and furthermore requires the movant to prove a negative proposition to defeat ungrounded speculation about the convenience of the plaintiff's chosen forum. Absent guidance, defendants will be forced to undertake highly burdensome investigations simply to prove what they already know: that individuals and records within their companies that are relevant to a particular aspect of their business are *not* located in the transferor forum. And plaintiffs will secure favorable inferences purely by criticizing a defendant's showing of convenience while, like Resonant here, conducting no investigation of their own. None of this will further the purpose of § 1404(a), which is to "prevent … abus[e]" of the plaintiff's privilege to select venue. *Volkswagen*, 545 F.3d at 313.

The Supreme Court has cautioned that § 1404(a) should not be interpreted to "enable parties opposed to transfer, by means of their own acts or omissions, to prevent a transfer otherwise proper and warranted by convenience and justice." *Van Dusen v. Barrack*, 376 U.S. 612, 623 (1964). This Court should exercise its mandamus authority to ensure that district courts do not continue to reward speculation over evidence.

CONCLUSION

The Court should grant the petition, vacate the district court's decision denying Apple's motion to transfer, and direct the district court to transfer the case to the Northern District of California.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that I electronically filed the foregoing with the Clerk of the Court for the United States Court of Appeals for the Federal Circuit by using the appellate CM/ECF system on May 29, 2024.

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CERTIFICATE OF COMPLIANCE

The petition complies with the type-volume limitation of Fed. R. App. P. 21(d)(1) because this petition contains 7,782 words.

This petition complies with the typeface requirements of Fed. R. App. P. 32(a)(5) and the type style requirements of Fed. R. App. P. 32(a)(6) because this petition has been prepared in a proportionally spaced typeface using Microsoft Word for Microsoft 365 in Century Schoolbook 14-point font.

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CERTIFICATE OF CONFIDENTIAL MATERIAL

The petition contains 1 unique word and number marked as confidential.

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Miscellaneous Docket No. ___

IN THE
United States Court of Appeals for the Federal Circuit

IN RE APPLE INC.,

Petitioner.

On Petition for Writ of Mandamus to the
United States District Court for the
Western District of Texas
No. 7:23-cv-00077-ADA, Hon. Alan D Albright

NON-CONFIDENTIAL APPENDIX TO APPLE INC.'S PETITION FOR WRIT OF MANDAMUS

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<u>Statement Regarding Confidential Material Omitted</u>

Pursuant to Federal Circuit Rule 25.1(e)(1)(B) and the W.D. Tex. L.R. CV-5.2, material has been redacted from Appx7, Appx10-11, Appx13, Appx16-22, Appx26, Appx100-103, Appx106, Appx108-110, Appx116-120, Appx122-127, Appx138-147, Appx149-150, Appx154-221, Appx223-225, Appx228, Appx230-232, Appx235-243, Appx255-261, Appx263-264, Appx269-271, Appx761-762, and Appx764-768. The redacted materials contain the confidential business information of Apple, its employees, and third-parties.

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
MIDLAND/ODESSA DIVISION

RESONANT SYSTEMS, INC., d/b/a REVELHMI, *Plaintiff,*	§ § §	**PUBLIC REDACTED VERSION**
v.	§ §	**MO:23-CV-00077-ADA**
APPLE, INC., *Defendant.*	§ § §	

ORDER DENYING DEFENDANT'S MOTION TO TRANFER VENUE

This is a patent infringement case that Apple wishes to transfer to the Northern District of California. At one point in time, a Resonant entity made personal vibrators for consumer use. Now doing business as RevelHMI, Resonant has moved on to haptic motors, naming Apple as its only relevant competitor. Here, Resonant asserts four patents related to improvements in haptic feedback devices which it believes several generations of Apple watches, phones, and laptops infringe. Resonant also believes that amplifier components supplied to Apple by Cirrus Logic, Inc. of Austin contribute to Apple's infringement.

Ultimately, though the parties seem to agree that NDCA is proper, Apple fails to show that "the destination venue is clearly more convenient than the venue chosen by the plaintiff." *In re Planned Parenthood Fed'n of Am., Inc.*, 52 F.4th 625, 629 (5th Cir. 2022). Having considered the motion and the relevant briefing, the Court finds that the motion should be **DENIED**.[1] The Court also finds that Apple's motion to stay the case pending entry of this order is also **DENIED AS**

[1] ECF No. 36. Citations to the record will be to the unredacted versions filed under seal unless otherwise specified.

MOOT.[2] Resonant's pending motion to strike[3] is also **DENIED AS MOOT**; Resonant's sur-reply[4] addresses the same issues favoring striking Apple's late-coming declaration. Finally, Resonant's argument in the alternative to transfer this case to Austin should the Court find transfer is warranted is **DENIED**.[5]

Background

Resonant Systems, Inc. accuses Apple, Inc. of infringing U.S. Patent Nos. 8,093,767, 8,860,337, 9,941,830, and 11,152,882, which relate to improvements in haptic feedback devices.[6] The accused Apple products are (1) second generation iPhones (iPhone 6s, 6s Plus, 7, 7 Plus, 8, 8 Plus, X, XR, XS, XS Max, 11, 11 Pro, 11 Pro Max, and SE), (2) third generation iPhones (iPhone 14, 14 Plus, 14 Pro Max), (3) MacBooks (MacBook Pro from 2015 on, MacBooks and MacBook Air from 2018 on), and (4) first and second generation Apple watches (Series 1, 2, 3, 4, 5, SE, 6, 7, SE, 8 and Ultra). Resonant is a Washington corporation[7] and sole owner by assignment of all right, title, and interest in the asserted patents.[8] Apple is a California corporation with a principal place of business in Cupertino, California[9] and maintains and office in Austin.[10]

Apple filed this motion to transfer under the belief that the Northern District of California is a more convenient forum than the Western District of Texas.[11] Resonant believes this case

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[2] ECF No. 58.
[3] ECF No. 52.
[4] ECF No. 67.
[5] ECF No. 36.
[6] ECF No. 20 at 1.
[7] *Id* at 2.
[8] *Id.*
[9] *Id.*
[10] *Id.*
[11] ECF No. 36.

should remain in WDTX but proposes the Austin Division of the Western District of Texas as a more convenient forum, should the Court feel that transfer is appropriate.[12]

LEGAL STANDARD

Section 1404(a) permits transfers of civil cases for "the convenience of parties and witnesses, in the interest of justice . . . to any other district or division where it might have been brought."[13] That section intends to give discretion to the district court "to adjudicate motions for transfer according to 'an individualized, case-by-case consideration of convenience and fairness.'"[14] It also aims to prevent "waste of time, energy, and money and protect the litigants, witnesses and the public against unnecessary inconvenience and expense."[15] Regional circuit law governs Section 1404 motions in patent cases.[16]

The threshold inquiry is whether the civil action "might have been brought" in the destination venue.[17] Once that inquiry is met, the Court determines whether the moving party has "clearly establish[ed] good cause [for transfer] by clearly demonstrating that a transfer is for the convenience of parties and witnesses, in the interest of justice."[18] "It is the movant's burden—and the movant's alone—to adduce evidence and arguments that clearly establish good cause for transfer based on convenience and justice."[19]

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[12] ECF No. 43.
[13] 28 U.S.C. § 1404(a).
[14] *Stewart Org., Inc. v. Ricoh Corp.*, 487 U.S. 22, 29 (1988) (quoting *Van Dusen v. Barrack*, 376 U.S. 612, 622 (1964)).
[15] *Van Dusen*, 376 U.S. at 616 (quoting *Cont'l Grain Co. v. The FBL-585*, 364 U.S. 19, 27 (1960)) (cleaned up).
[16] *In re TS Tech U.S. Corp.*, 551 F.3d 1315, 1319 (Fed. Cir. 2008).
[17] *In re Volkswagen, Inc.*, 545 F.3d 304, 312 (5th Cir. 2008) ("*Volkswagen II*").
[18] *In re Clarke*, 94 F.4th 502, 508 (5th Cir. 2024) (quoting *Def. Distributed v. Bruck*, 30 F.4th 414, 433 (5th Cir. 2022) (cleaned up).
[19] *Id.* (cleaned up).

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Here, "good cause" requires the movant to show that its chosen venue is "clearly more convenient."[20] The burden is not that the alternate venue is more convenient; it must be "clearly more convenient."[21] "[T]he fact that litigating would be more convenient for the defendant elsewhere is not enough to justify transfer."[22] This "clearly more convenient" standard is something more than a mere preponderance.[23] The Fifth Circuit recently clarified that to meet its burden on "good cause" a movant must show "(1) that the marginal gain in convenience will be *significant*, and (2) that its evidence makes it plainly obvious—i.e., clearly demonstrated—that those marginal gains will *actually* materialize in the transferee venue."[24]

Ultimately, a proposed venue's convenience turns on eight factors through which "the defendant's proffered venue is measured against the plaintiff's chosen venue."[25] "No factor is of dispositive weight."[26] In a similar vein, a district court must not conduct a "raw counting of the factors in each side, weighing each the same and deciding transfer only on the resulting 'score.'"[27] And "[w]here there is no demonstration by the movant, let alone a clear one, the [district] court cannot weigh a factor against the non-movant and in favor of transfer."[28] These eight factors divide into four private interest factors and four private interest factors.

The private interest factors include: "(1) the relative ease of access to sources of proof; (2) the availability of compulsory process to secure the attendance of witnesses; (3) the cost of

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[20] *Id.*
[21] *Id.*; *In re TikTok, Inc.*, 85 F.4th 352, 358 (5th Cir. 2023).
[22] *Def. Distributed*, 30 F.4th at 433.
[23] *Id.* at 805 n. 3 (citing *Def. Distributed*, 30 F.4th at 433); *see also Quest NetTech Corp. v. Apple, Inc.*, No. 2:19-CV-00118-JRG, 2019 WL 6344267, at *7 (E.D. Tex. Nov. 27, 2019).
[24] *In re Clarke*, 94 F.4th at 508 (emphases in original).
[25] *In re Clarke*, 94 F.4th at 510 n.9.
[26] *In re TikTok, Inc.*, 85 F.4th 352, 358 (5th Cir. 2023).
[27] *In re Radmax, Ltd.*, 720 F.3d 285, 290 n.8 (5th Cir. 2013).
[28] *Def. Distributed*, 30 F.4th at 434.

attendance for willing witnesses; and (4) all other practical problems that make trial of a case easy, expeditious and inexpensive."[29] The public factors include: "(1) the administrative difficulties flowing from court congestion; (2) the local interest in having localized interests decided at home; (3) the familiarity of the forum with the law that will govern the case; and (4) the avoidance of unnecessary problems of conflict of laws of the application of foreign law."[30] Courts assess these factors as they were at the time of the filing rather than through knowledge of the defendant's forum preference gained in hindsight.[31]

Of course, "the district court has broad discretion in deciding whether to order a transfer."[32] But "a district court abuses its discretion by denying transfer when 'not a single relevant factor favors the [plaintiff's] chosen venue.'"[33] A district court likewise "abuses its discretion by denying a motion to transfer when 'virtually all of the events and witnesses regarding the case . . . are in the transferee forum.'"[34]

DISCUSSION

I. Motion to Transfer

Section 1404(a)'s threshold inquiry looks at whether this case could initially have been brought in the destination venue—the Northern District of California. Neither party disputes that venue could be proper in the Northern District of California. The Court therefore moves on to the

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[29] *In re Volkswagen AG*, 371 F.3d 201, 203 (5th Cir. 2004) ("*Volkswagen I*") (citing *Piper Aircraft Co. v. Reyno*, 454 U.S. 235, 241 n.6 (1981)).
[30] *Id.*
[31] *Hoffman v. Blaski*, 363 U.S. 335, 343 (1960).
[32] *Balawajder v. Scott*, 160 F.3d 1066, 1067 (5th Cir. 1998) (quoting *Caldwell v. Palmetto State Sav. Bank of S.C.*, 811 F.2d 916, 919 (5th Cir. 1987)).
[33] *In re TikTok*, 85 F.4th at 358 (quoting *Volkswagen II*, 545 F.3d at 318).
[34] *Id.* at 366 (quoting *In re Radmax, Ltd.*, 720 F.3d at 290.).

second part of the transfer inquiry: examination of the private and public interest factors to determine whether NDCA is a "clearly more convenient" forum than WDTX.

II. Private Interest Factors

The Court evaluates the private interest factors in turn: (1) the relative ease of access to sources of proof; (2) the availability of compulsory process to secure the attendance of witnesses; (3) the cost of attendance for willing witnesses; and (4) all other practical problems that make trial of a case easy, expeditious and inexpensive.[35]

A. The relative ease of access to sources of proof

This factor "focuses on the location of documents and physical evidence relating to the case."[36] "[T]he question is *relative* ease of access, not *absolute* ease of access."[37] "In patent infringement cases, the bulk of the relevant evidence usually comes from the accused infringer. Consequently, the place where the defendant's documents are kept weighs in favor of transfer to that location."[38] The same is true "where the current district lacks any evidence relating to the case."[39]

"[W]hen the vast majority of the evidence is electronic, and therefore equally accessible in either forum, this factor bears less strongly on the transfer analysis."[40] On the other hand, "[t]he location of evidence bears much more strongly on the transfer analysis when . . . the evidence is physical in nature."[41] "In the absence of physical evidence, this factor entails at least two discrete

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[35] *Volkswagen II*, 545 F.3d at 315.
[36] *In re TikTok*, 85 F.4th at 358 (cleaned up).
[37] *In re Radmax, Ltd.*, 720 F.3d at 288 (emphases in original).
[38] *In re Apple Inc.*, 979 F.3d at 1340 (citing *In re Genentech, Inc.*, 566 F.3d 1338, 1345 (Fed. Cir. 2009).
[39] *In re TikTok*, 85 F.4th at 358.
[40] *Id.* (quoting *In re Planned Parenthood*, 52 F.4th at 630 (cleaned up).
[41] *In re Planned Parenthood*, 52 F.4th at 630.

inquiries when addressing electronic documents: the locations where electronic documents are stored, and the locations of the creators and custodians of the electronic documents."[42]

Apple argues that virtually all research, design, development, and implementation of the features accused of infringement occur in NDCA at or near its Cupertino headquarters.[43] Apple engineers that work on the Taptic Engine, and other relevant teams, work and reside in NDCA.[44] Because of their positions, these individuals generate and store physical documents, electronic documents, physical prototypes and potential prior arts in NDCA, and access relevant source code in NDCA.[45] [redacted].[46] Apple likewise argues that its relevant sales documents and patent license agreements are predominantly generated in and accessed from NDCA,[47] some portion of which require access rights.[48] And [redacted] and a named inventor of the asserted patents exist or reside in NDCA.[49] As to WDTX, Apple argues that it is unaware of any relevant sources of proof uniquely in WDTX and that Apple employees performed no relevant work on the accused products in WDTX.[50] On briefing alone, it seems certain that a considerable amount of evidence exists in NDCA—physical and electronic sources of proof are accessed in NDCA and custodians with access rights are likewise in NDCA.

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[42] *Webroot, Inc. v. AO Kaspersky Lab*, No. 6:22-CV-00239-ADA-DTG, 2024 WL 171705, at *4 (W.D. Tex. Jan. 16, 2024) (citing *Volkswagen II*, 545 F.3d at 316; *Def. Distributed*, 30 F.4th at 434 & 433 n.25; *In re Google LLC*, No. 2021-178, 2021 WL 5292267, at *2 (Fed. Cir. Nov. 15, 2021); *In re Juniper Networks, Inc.*, 14 F.4th 1313, 1321 (Fed. Cir. 2021).
[43] ECF No. 36-1 at 12.
[44] *Id.*
[45] *Id.*
[46] *Id.* at 2, 3.
[47] *Id.* at 12.
[48] ECF No. 36-2, 36-3 and 35-4.
[49] ECF No. 36-1 at 12.
[50] ECF No. 36-1 at 12.

Resonant, on the other hand, points to three sources of evidence: (1) patent prosecution files, original handwritten notes, and physical samples of "vibrators, boards, or related equipment"[51] in counsel's possession in their Dallas offices, (2) electronic documents stored on Mr. Elenga's portable laptop,[52] and (3) "so much evidence that it would be unduly burdensome" for Austin-based third-party component supplier, Cirrus Logic, to investigate and quantify.[53] But of these three categories, only Cirrus Logic has access to sources of proof within WDTX. Resonant's Dallas counsel are, of course, in NDTX and the evidence in their possession are artifacts of litigation.[54] And Mr. Elenga lives in Seattle, Washington and would travel to Texas with the electronic files stored on his laptop.[55] His willingness that brings him to other litigation in Texas, however, still requires Elenga to "bring" evidence with him into WDTX.[56]

At a glance, this factor would seem to favor transfer.

The issue is that Apple has failed to provide the factual foundation necessary to evaluate the relative convenience of the present and proposed venues.[57] Apple's failure takes on two flavors. *First*, Apple supports its briefing with declarations that are too vague and generalized[58] that, to

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[51] ECF No. 43-12 at 13–14; ECF No. 43-13 at 13–14.
[52] ECF No. 43-12 at 14.
[53] *Id.*
[54] *RLI Ins. v. Allstate Cty. Mut. Ins.*, Civ. A. No. 3:07-CV-1256-M, 2008 WL 2201976, at *2 (N.D. Tex. May 28, 2008) (citing *Volkswagen I*, 371 F.3d at 206) ("Attorneys may not manipulate the transfer analysis simply by moving documents to their offices.").
[55] ECF No. 43-12 at 14; ECF No. 43-10 at 9.
[56] *In re TikTok*, 85 F.4th at 359 ("The only way it can be accessed there is if out-of-district individuals travel into the district, "bringing" the electronic evidence with them.").
[57] *See Hammers v. Mayea-Chang*, No. 2:19-CV-00181-JRG, 2019 WL 6728446 (E.D. Tex. Dec. 11, 2019), 2019 WL 6728446, at *5 ("When the movant fails to provide the factual foundation that is necessary to evaluate the relative convenience of the present and proposed venues, the Court lacks a basis to conclude that the proposed venue is "clearly more convenient" than the present venue. Put another way, if the facts governing convenience are not clearly set forth, the Court cannot conclude that the proposed venue is 'clearly more convenient.' Any such unsupported request to transfer to such proposed venue must be denied.") (citations omitted).
[58] *In re Apple Inc.*, 743 F.3d 1377, 1378–79 (Fed. Cir. 2014).

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find this factor favors transfer, the Court would have to speculate in its favor despite a duty to "draw all reasonable inferences and resolve factual conflicts in favor of the non-moving party."[59] "[F]ailure to identify with specificity as to the documents and the location of the documents is a failure of the moving party to meet its burden on transfer."[60] *Second*, and perhaps more irksome, Apple chose declarants who lack personal knowledge (1) as to employees located at Apple's Austin campus and (2) any access to relevant evidence those employees may possess. The Court therefore cannot meaningfully determine whether Apple's sources of proof are "relatively easier to access" in NDCA than WDTX. Because the standard is one of "relative"[61] ease of access—the burden of which is on the movant to show—Apple here must do more than thumb one side of the scales to meet its burden. As iterated recently by the Fifth Circuit, "[a]t bottom, the transfer factors are *relative.* For each factor, the defendant's proffered venue is measured against the plaintiff's chosen venue."[62]

Apple has pulled this latter stratagem before—as Resonant correctly points out[63]—and the Waco division has warned Apple against these sorts of limiting declarations:

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[59] *Id* at 4. ("When deciding a motion to transfer under § 1404(a), the court may consider undisputed facts outside of the pleadings, such as affidavits or declarations, but must draw all reasonable inferences and resolve factual conflicts in favor of the non-moving party.") (citing 5B CHARLES ALAN WRIGHT, ARTHUR R. MILLER & EDWARD H. COOPER, FEDERAL PRACTICE AND PROCEDURE § 1352 (3d ed. 2013) ("A district court may examine facts outside the complaint to determine whether its venue is proper. And . . . . the court must draw all reasonable inferences and resolve all factual conflicts in favor of the plaintiff."); *accord Trois v. Apple Tree Auction Ctr., Inc.*, 882 F.3d 485, 492–93 (5th Cir. 2018) ("Venue issues are generally reviewed for abuse of discretion . . . . '[V]iew[ing] all the facts in a light most favorable to the plaintiff,' *Ambraco, Inc. v. Bossclip B.V.*, 570 F.3d 233, 237 (5th Cir. 2009), 'the court is permitted to look at evidence in the record beyond simply those facts alleged in the complaint and its proper attachments.' *Id.* at 238.") (alterations in original).

[60] *Diem LLC v. BigCommerce, Inc.*, No. 6:17-CV-00186-JRG, 2017 WL 6729907, at *2 (E.D. Tex. Dec. 28, 2017).

[61] *In re TikTok*, 85 F.4th at 359 (citing *In re Radmax, Ltd.*, 720 F.3d at 288).

[62] *In re Clarke*, 94 F.4th at 510, n.8, n.9 (5th Cir. 2024) (footnotes omitted).

[63] ECF No. 58-1 at 3; ECF No. 67 at 6–7.

CONFIDENTIAL MATERIAL OMITTED

> Worst of all, the Rollins Declaration uses language that carefully limits the scope of declared facts to his personal, selectively fed knowledge. For example, the Mr. Rollins's supplemental declaration states, 'I am not aware of any Apple employees located in WDTX who worked on the research, design, or development of the Accused Features.' Then, his qualified statements are cited by Apple's attorneys in transfer motions as though they are authoritative truths. For example, 'Apple's sources of proof are located in or around NDCA. There are no sources of proof located in WDTX.' The only evidentiary value that paragraph three of the supplemental Rollins declaration offers is that one attorney-prepared, financial manager at Apple lacks personal knowledge about the thousands of Apple engineers who work in the WDTX—information that a financial manager at Apple has no reason to know without thorough investigation. Except for a vague statement that he reviewed unidentified corporate records and spoke to certain employees, the Rollins Declaration contains no description of the methodology he used to find all Apple engineers who work in WDTX and to then determine their relevance. So, [this] Court has no reason to rely on Mr. Rollins as an authoritative or knowledgeable declarant on this topic.[64]

Indeed, Apple time and time again supplies declarants who are unaware of sources of proof in WDTX, are unaware of any Texan counterparts who might possess them, and who fail to investigate either when moving to transfer patent cases back to NDCA.[65]

With these two issues in mind, Apple declarants Zhang,[66] Spevak,[67] and Ankenbrandt[68] essentially state that they are wholly unaware aware of the goings on of Apple's Texas campus and at the same time fail to support Apple's assertions that the bulk of Apple's sources of proof are in NDCA. By their own declarations, each Apple representative respectively knows nothing of:

> (1) Any Texas-based Apple employees who might possess relevant sources of proof. Doing so ignores the [redacted] employees in engineering, software, finance and marketing positions at Apple's Austin campus and whether any custodians might exist in WDTX.

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[64] *Scramoge Tech. Ltd. v. Apple Inc.*, No. 6:21-CV-00579-ADA, 2022 WL 1667561, at *2 (W.D. Tex. May 25, 2022) (citations to the record omitted).
[65] *Scramoge Tech. Ltd.*, 2022 WL 1667561, at *3. *Scramoge* collects more than twelve declarations from the same offending Apple declarant—not yet presented in this suit—who provided similar faulty declarations. Perhaps that case put an end to use of Apple's "professionally paid venue witness." *Id.* What matters here is Apple appears to be up to some of its old tricks nonetheless.
[66] ECF No. 36-4.
[67] ECF No. 36-3.
[68] ECF No. 36-2.

> (2) Any access rights those employees may hold to confidential electronic documents. In fact, Apple's declarants do not clearly describe which electronic documents require access rights and which do not, nor do they give the Court any idea as the relative proportion of each.
>
> (3) The existence of any working files or documents related to patent licensing in WDTX.
>
> (4) The existence of *physical* sales and financial reports in WDTX—or NDCA, for that matter. Apple's declarant speaks only to electronic data sets accessed in NDCA.
>
> (5) The existence of any "physical documents or things (including prototypes and papers)"[69] in WDTX related to the relevant Apple engineering and design teams—to name a few, [redacted] It is also unclear whether persons outside these teams have access or access rights to electronic documents.

Ankenbrandt, Apple's patent licensing representative, is also unaware of the physical location of the data centers that store "many" of his team's records.[70] Zhang can only state that the design and engineering teams "generate" electronic documents in California, "and mostly in NDCA," and are accessed in NDCA.[71] Spevak, on the other hand, knows that either some or all of Apple's sales and financial data are stored in data centers in [redacted] (but whether anyone outside her team holds the proper credentials to access these documents is wholly unstated).[72]

Perhaps most troubling, Zhang only declares as to his personal knowledge related to Taptic Engines.[73] It is therefore unclear to what extent his declaration limits the scope of the accused components. Resonant points out that his declaration ignores at least the A9–A17 chips, the M1 chip, or M2 chip—and other accused components—which Resonant contends are infringing.[74] It is further unclear whether Zhang can meaningfully speak for the other five design and engineering

[69] ECF No. 36-4 at 3.
[70] ECF No. 36-2 at 3.
[71] ECF No. 36-4 at 4.
[72] ECF No. 36-3 at 2.
[73] ECF No. 36-4 at 4.
[74] ECF No. 67 at 8.

teams, as Zhang spends no time whatsoever describing the interplay between teams or whether he has any oversight over them.[75]

Worse still, these qualified statements are then cited by Apple's attorneys "as though they are authoritative truths."[76] For example—"Importantly, Apple is not aware of any relevant sources of proof uniquely in WDTX or Texas."[77] And—"Here, there are no unique sources of proof relevant to this case in those offices."[78] And—"No unique electronic evidence is in WDTX."[79]

Of course, the Apple declarants' lack of awareness could be explained away by, for instance, description of how each reached their conclusions. But Apple's declarants do not include a description of the methodology used to find all relevant sources of proof in WDTX. Apparently Resonant sought such methodology via interrogatory, but Apple refused.[80] In any event, the Fifth Circuit in *In re Clarke* recently iterated that it is an error to uncritically accept a movant's conclusory assertions.[81] Ultimately, the Zhang, Spevak, and Ankenbrandt Declarations show that

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[75] *See* ECF No. 36-4.
[76] *See Scramoge Tech. Ltd.*, 2022 WL 1667561, at *3.
[77] ECF No. 36-1 at 12.
[78] *Id.* at 13.
[79] ECF No. 46-1 at 7.
[80] ECF No. 43-9 at 11. (Resonant Interrogatory No. 5: "Explain the complete methodology used by each of Apple's declarants to form the basis of their declarations supporting Apple's Motion to Transfer, including but not limited to the scope of any searching or investigation performed, documents and things reviewed to form the basis of their statements, assumptions made, and limits of investigation." Apple's Response to Interrogatory No. 5: "Apple objects to this Interrogatory to the extent it seeks information protected from discovery by the attorney-client privilege, work product doctrine or immunity, common legal interest privilege, joint defense privilege, and/or any other applicable privilege or protection. Apple further objects to this Request as vague, ambiguous, overbroad, unduly burdensome, and not proportional to the needs of the case with respect to phrases such as "the complete methodology" and "limits of investigation." Apple further objects to this Interrogatory to the extent it seeks information that is not relevant to the subject matter of this litigation and is not reasonably calculated to lead to the discovery of admissible evidence. Apple further objects to this Interrogatory to the extent it is not bounded by any relevant time period or geographic scope.").
[81] *In re Clarke*, 94 F.4th at 506 (citing *In re TitTok*, 85 F.4th at 360); *See also Def. Distributed*, 30 F.4th at 434 ("Here, however, the district court erred by uncritically accepting the NJAG's

each lack *personal knowledge* about Apple's WDTX potential for sources of proof. The limited nature of these declarations likewise do not allow the Court to understand which electronic documents are accessible in each district, which are limited by access rights, whether Apple employees in WDTX have those access rights, whether physical sources of proof also exist in WDTX, and where the data centers are located that store shared documents. The Apple declarations therefore prohibit the Court from meaningfully comparing NDCA's apples to WDTX's apples. Put another way, as briefed, the Court cannot weigh *relative ease* of access to Apple materials between the two districts.

To its credit, Resonant sought Apple's sources of proof located in WDTX during venue discovery, but Apple objected and declined to produce.[82] Apple likewise stated that it did not generate a list of Texas employees that have worked on the accused products when requested because "Apple does not maintain a company-wide list of all the products that each employee works on. This is because Apple [redacted]."[83] Resonant also sought hit counts on key phrases to determine potential custodians in Austin, but Apple refused, citing this Court's standing order and claiming Resonant failed to show good cause for doing so.[84] For whatever reason, Resonant did not seek the Court to compel discovery.

The Court also notes a lack of evidentiary support that there are any sources of proof in the hands of Apple's half a dozen third-party component suppliers in NDCA.[85] Apple instead made unsupported assertions in its briefing.[86]

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conclusory assertions that 'the sources of proof relevant to these issues (including any non-party witnesses) are all in New Jersey.'").

[82] ECF No. 43-12 at 9–10.

[83] ECF No. 43-12 at 8; ECF No. 43-8 at 3.

[84] ECF No. 43-9 at 11.

[85] ECF No. 36-4 at 4.

[86] ECF No. 36-1 at 9; ECF No. 36-1 at 12 (referring back to first cite).

For these reasons, the Court finds that Apple failed to "adduce evidence"[87] in support of transfer and likewise failed to make a comparative analysis between the current and proposed venues. This factor is therefore neutral if not slightly disfavoring transfer when acknowledging Cirrus Logic's sources of proof in WDTX.[88]

B. The availability of compulsory process to secure the attendance of witnesses

Rule 45 governs a court's subpoena power.[89] A court has subpoena power over witnesses that live or work within 100 miles of the courthouse[90] and over residents of the state in which the district court sits if the person is a party or party's officer—non-party residents may be compelled so long as their attendance would not cause them to incur "substantial expense."[91]

Ultimately, this factor considers the availability of compulsory process to secure the attendance of witnesses.[92] "This factor favors transfer where 'non-party witnesses . . . are outside th[is] District's subpoena power' and 'a proper venue that does enjoy absolute subpoena power for both depositions and trial' is available."[93] In a similar vein, the Federal Circuit has held that this factor "weigh[s] heavily in favor of transfer when more third-party witnesses reside within the transferee venue than reside in the transferor venue."[94]

The rub is what to do with the presumption of unwillingness. The Federal Circuit has "rejected the proposition that the compulsory witness factor is irrelevant unless the witnesses in

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[87] *In re Clarke,* 94 F.4th at 508 (quoting *Volkswagen II*, 545 F.3d at 315).
[88] *Def. Distributed*, 30 F.4th at 434.
[89] FED. R. CIV. P. 45.
[90] FED. R. CIV. P. 45(c)(1)(A).
[91] FED. R. CIV. P. 45(c)(1)(B)(i)-(ii)).
[92] *In re TikTok*, 85 F.4th at 360 (citing *Volkswagen II*, 545 F.3d at 315).
[93] *Id.* (citing *Volkswagen II*, 545 F.3d at 316).
[94] *In re Apple, Inc.*, 581 F. App'x 886, 889 (Fed. Cir. 2014) (citing *In re Genentech, Inc.*, 566 F.3d at 1345).

question have expressly indicated an unwillingness to testify voluntarily."[95] This same line of cases has spun off a presumption of unwillingness "when there is no indication that a non-party witness is willing," based in part on the Federal Circuit's observation in *In re HP Inc.* that EDTX practiced the presumption.[96] But these cases precede recent opinions handed down by the Fifth Circuit in *Planned Parenthood* and *In re TikTok* that held this factor "receives less weight when it has not been alleged or shown that any witness would be unwilling to testify."[97]

Apple argues that at least six potentially relevant third-party witnesses are in NDCA and none are in WDTX.[98] One is Brian Marc Pepin, a named inventor on all asserted patents, while the other five are third-party component suppliers for Apple's Taptic Engines.[99] As to Pepin, Resonant argues that he should be given less weight than coinventor Elenga because Pepin no longer works at Resonant and his knowledge will likely be a duplicative subset of Elenga's knowledge.[100] Even so, Apple does not allege or show that Pepin is unwilling.[101] The closest Apple comes is stating for the first time in its reply that it "intends to serve a subpoena on Mr. Pepin."[102]

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[95] *In re Atlassian Corp. PLC*, No. 2021-177, 2021 WL 5292268, at *2 (Fed. Cir. Nov. 15, 2021) (citing *In re Google LLC*, No. 2021-170, 2021 WL 4427899, at *7 (Fed. Cir. Sept. 27, 2021)); *In re HP Inc.*, No. 2018-149, 2018 WL 4692486, at *3 n.1 (Fed. Cir. Sept. 25, 2018); *In re Hulu, LLC*, No. 2021-142, 2021 WL 3278194, at *3 (Fed. Cir. Aug. 2, 2021).

[96] *In re HP Inc.*, 2018 WL 4692486, at *3 n.1 (noting that "even the Eastern District of Texas's own cases have held that, when there is no indication that a non-party witness is willing, the witness is presumed to be unwilling and considered under the compulsory process factor."); *In re Hulu, LLC*, 2021 WL 3278194, at *3 (speculating that "the Fifth Circuit would recognize that where, as here, the movant has identified multiple third-party witnesses and shown that they are overwhelmingly located within the subpoena power of only the transferee venue, this factor favors transfer even without a showing of unwillingness for each witness" and citing the presumption of unwillingness identified in Footnote One *In re HP Inc.*).

[97] *In re TikTok*, 85 F.4th at 360 (quoting *In re Planned Parenthood*, 52 F.4th at 630–31).

[98] ECF No. 36-1 at 9.

[99] ECF No. 36-1 at 15.

[100] ECF No. 43-12 at 15.

[101] *See In re TikTok*, 85 F.4th at 360.

[102] ECF No. 46-1 at 9.

As to Apple's component suppliers in NDCA, Resonant points out that Apple's NDCA-based third-party component suppliers "will likely work willingly with Apple because they are *Apple's suppliers* with aligned interests. They will likely *willingly* appear at Apple's request, regardless of venue."[103] Apple does not deny that point[104] and the Court agrees.

Resonant argues that [redacted] Cirrus Logic witnesses "knowledgeable about the operation, marketing, and/or accounting of the accused amplifiers can be compelled to testify in WDTX, but not NDCA." But neither party analyzes whether these Austin-based witnesses would incur "substantial expense" to travel the 315 miles to Midland, Texas[105]—more on that in a moment. For whatever reason, Apple argues for the first time in its reply that this factor tips in its favor because (1) one Cirrus Logic sales representative works in NDCA and is therefore under NDCA subpoena power, and (2) by way of a declaration from a Cirrus Logic project manager in Austin, Cirrus Logic [redacted]. The Court does not need to spend much time wondering over what 'not objecting' to compulsory process entails; Apple ultimately fails to allege or show that both the unnamed NDCA Cirrus Logic sales representative and Cirrus Logic as a whole are unwilling witnesses.[106]

Apple is also incorrect that the Cirrus Logic declaration renders Cirrus Logic's "Austin presence irrelevant to the transfer analysis."[107] In fact, just the opposite is true. Were Cirrus Logic unwilling, it would remain under compulsory power in WDTX [redacted]. And although Resonant does not argue it—by Cirrus Logic's own logic—if the six-hour flight from Austin to NDCA is not inconvenient then neither is the 315-mile

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[103] ECF No. 43-12 at 15.
[104] ECF No. 46-1 at 8–9.
[105] *See* FED. R. CIV. P. 45(c)(1)(B)(i)-(ii)).
[106] *See In re TikTok*, 85 F.4th at 360.
[107] ECF No. 46-1 at 8.

flight from Austin to Midland, Texas.[108] All that said, the [redacted] Cirrus Logic witnesses are still Apple's suppliers likely to appear willingly at Apple's request and are construed as willing in the same manner as Apple's third-party component suppliers in NDCA.

As briefed, Apple cannot point to any unwilling witnesses, only witnesses that would be subject to NDCA's compulsory process were they unwilling.

This factor is therefore neutral.

C. The cost of attendance for willing witnesses

Courts understand that this third factor proves the most important.[109] This factor focuses on "the cost for attendance for willing witnesses" assessed against the "100-mile thresh-old" rule.[110] Accordingly, "[w]hen the distance between an existing venue for trial . . . and a proposed venue under § 1404(a) is more than 100 miles, the factor of inconvenience to the witnesses increases in direct relationship to the additional distance to be traveled."[111] When applying the 100-mile rule, the Federal Circuit has held that it "should not be rigidly applied where witnesses . . . will be required to travel significant distance no matter where they testify."[112] More recently, the Fifth Circuit has noted that it is improper to ignore the rule—the implication being that it should always apply.[113]

In any event, "the inquiry should focus on the cost and inconvenience imposed on the witnesses by requiring them to travel to a distant forum and to be away from their homes and work

[108] *See e.g.* ECF No. 36-1 at 16 (Apple's comparison of the travel distances and time required between the two venues).
[109] *In re Genentech, Inc.*, 566 F.3d at 1342.
[110] *Volkswagen II*, 545 F.3d at 315; *In re TikTok, Inc.*, 85 F.4th at 361.
[111] *In re TikTok*, 85 F.4th at 361.
[112] *In re Apple*, 979 F.3d at 1342 (citing *Volkswagen II*, 545 F.3d at 317) (cleaned up).
[113] *In re TikTok*, 85 F.4th at 361–62.

for an extended period of time."[114] Such an inquiry considers all potential witnesses.[115] In doing so, "a district court should assess the relevance and materiality of the information the witness may provide. Requiring a defendant to show that the potential witness has more than relevant and material information at this point in the litigation or risk facing denial of transfer on that basis is unnecessary."[116]

Apple provides three witnesses by name that live in NDCA: (1) Chang Zhang, an Apple engineering [redacted], (2) Catherine Spevak, who is a Finance Manager for Apple, and (3) Brian Ankenbrandt, who is a Senior Manager in Apple's IP Transactions team.[117] The Court finds these three witnesses have potentially relevant and material testimony that should be considered. Even though Resonant argues that these three Apple declarants are of dubious value, as discussed above, the declarations are reliable to the extent that they speak to the declarants' personal experience. [redacted] I manage a team of [redacted] engineers, [redacted] of whom are responsible for the research, design, development, and implementation of Taptic Engines in the Accused MacBook Products."[118] Likewise, Spevak has sales and financial knowledge of the accused products—"I am knowledgeable about Apple's sales

[114] *In re Google LLC*, 2021 WL 4427899, at *4.
[115] *Alacritech Inc. v. CenturyLink, Inc.*, No. 2:16-CV-00693, 2017 WL 4155236, at *5 (E.D. Tex. Sept. 19, 2017).
[116] *In re Genentech*, 566 F.3d at 1343.
[117] ECF No. 36-1 at 8. Apple also attaches a declaration from a discovery manager named Robin Goldberg who would presumably testify for the sole purpose of confirming that "[s]amples of prior generations of [iPhone, MacBook, and Apple Watch products] are stored at Apple facilities in the NDCA" were that still a relevant question at trial.
[118] ECF No. 36-4 at 2.

and financial information concerning the Accused Products."[119] And Mr. Ankenbrandt has knowledge of patent licensing and transactions—"I am knowledgeable about Apple's patent licenses and patent transactions activities, including with respect to the Accused Products"[120] All three of these Apple witnesses are therefore relevant and possess the requisite material information for this stage of litigation. The Court agrees with Apple that NDCA would be a more convenient forum than WDTX for Apple's employees in Cupertino, California. The relevant consideration here is "the cost and inconvenience imposed on the witnesses by requiring them to travel to a distant forum and to be away from their homes and work for an extended period of time."[121]

But this consideration does not extend to Apple's unnamed employee witnesses. Apple also cites [redacted] responsible for and who "have knowledge of the research, design, and implementation of the Taptic Engines in the accused products."[122] Because this group comprises unnamed individuals, the Court cannot consider them without being caused to speculate.[123] And the same is true of any other unnamed Apple sales and patent licensing team members in NDCA. Apple seems to understand this issue. In its reply, Apple cites that witnesses

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[119] ECF No. 36-3 at 2.
[120] ECF No. 36-2 at 2.
[121] *In re Google, LLC*, 2021 WL 4427899, at * 4.
[122] ECF No. 36-1 at 8.
[123] *Freedom Pats. LLC v. DISH Network Corp.*, No. 4:23-CV-00303, 2024 WL 1147828, at *5 (E.D. Tex. Mar. 15, 2024) ("The Court cannot properly weigh the relevance and materiality of information known by witnesses who have yet to be identified.") (citing *In re Genentech, Inc.*, 566 F.3d at 1344); *Cont'l Airlines, Inc. v. Am. Airlines, Inc.*, 805 F. Supp. 1392, 1396 (S.D. Tex. 1992) ("Where, as here, the moving party has merely made a general allegation that certain witnesses are necessary, without identifying them or the substance of their testimony, the motion must be denied"); 15 CHARLES ALAN WRIGHT, ARTHUR R. MILLER, & EDWARD H. COOPER, § 3851 Standard in Considering Transfer—Convenience and Location of Witnesses, 15 Fed. Prac. & Proc. Juris. § 3851 (4th ed.) ("If the moving party merely has made a general allegation that necessary witnesses are located in the transferee forum, without identifying them and providing sufficient information to permit the district court to determine what and how important their testimony will be, the application for transferring the case should be denied.").

should be given no weight when a party "vaguely points to several witnesses . . . that have relevant information, but not with specificity."[124] Moreover, considering these [redacted] for their numerical value would shift the Court toward impermissible "tally[ing] the number of witnesses" available in each forum to check the score.[125]

Resonant, on the other hand, argues that Seattle-based Robin Elenga, its sole willing witness, will "find travel in Texas far less expensive than in San Fransico"[126] after assessing only the GSA per-diem rates in Midland against San Francisco[127] and taking into account his other travel plans travels to Texas for other pending litigation.[128] Importantly, Resonant does not analyze the respective travel distances or time between Seattle to Midland and Seattle to NDCA. So although Elenga offers something more than a bald assertion that travel to WDTX is less inconvenient than NDCA, the Court rejects Elenga's push to "weigh [this factor] against transfer simply because [Resonant] chose this venue"[129] based largely on his willingness to travel.

Resonant also highlights that Apple failed to investigate relevant witnesses in WDTX and blocked Resonant from identifying them during discovery. The best Resonant can do is note that of Apple's [redacted] potentially relevant employees in Texas, "[redacted] hold an engineering, software, finance, marketing, or similarly relevant position at its Austin campus."[130] Apple stipulated for venue purposes that some of these employees "[redacted]

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[124] ECF No. 46-1 at 10 (citing *Uniloc USA Inc. v. Box, Inc.*, No. 1:17-CV-754-LY, 2018 WL 2729202, at *2–5 (W.D. Tex. June 6, 2018).
[125] *Webroot, Inc.*, 2024 WL 171705, at *7 (citing *ESPN, Inc. v. Quiksilver, Inc.*, 581 F. Supp. 2d 542, 547 (S.D.N.Y. 2008)).
[126] ECF No. 43-12 at 15.
[127] ECF No. 44-20 at 3.
[128] ECF No. 43-12 at 15.
[129] *See AlmondNet, Inc. v. Samsung Elecs. Co.*, No. W-21-CV-00891-ADA, 2022 WL 17574082, at *5 (W.D. Tex. Nov. 28, 2022).
[130] ECF No. 43-12 at 7.

[redacted][131] How Apple could stipulate so is unclear. In Apple's own words, "Apple does not maintain a company-wide list of all the products that each employee works on. This is because Apple [redacted]."[132] To remedy Apple's organizational stumbling block, Resonant sought the methodology Apple's declarants used to identify WDTX witnesses.[133] Apple refused, citing that the methodology was privileged.[134] Apple also refused to search WDTX employee emails to determine whether relevant witnesses might exist in WDTX.[135] For whatever reason, Resonant did not seek the Court to compel Apple to produce discovery, nor did it petition the Court to compel ESI by showing good cause, as required by standing order.

Excluded so far are the willing third-party witnesses discussed above in the section analyzing compulsory process. Apple identified five third-party component suppliers in NDCA as compulsory witnesses but did not deny that they would appear willingly when Resonant pointed to their aligned interests. But though Apple names its third-party component suppliers, it does not name their Rule 30(b)(6) representatives, or any engineers or representatives from their sales or licensing teams. Accordingly, the Court considers only the suppliers themselves within this factor.[136] Resonant on the other hand identified through compelled discovery [redacted] Cirrus Logic potential witnesses knowledgeable about the operation, marketing, and accounting of the accused

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[131] ECF No. 43-7 at 2.
[132] ECF No. 43-12 at 8; ECF No. 43-8 at 3.
[133] ECF No. 43-6 at 3.
[134] *Id.*
[135] *Id* at 4.
[136] *Ax Wireless LLC v. Dell Inc.*, No. 2:22-CV-0277-RWS-RSP, 2023 WL 7490047, at *4 n.5 (E.D. Tex. Nov. 12, 2023).

amplifiers that work in and reside in WDTX.[137] Although these [redacted] Cirrus Logic witnesses will be required to travel more than 100 miles to testify in Midland, the trip is far less onerous than travel to NDCA.

The Court therefore finds that this factor weighs only slightly against transfer. Apple's three named witnesses and its five component suppliers would see a decrease in inconvenience if transfer was granted. But WDTX is a more convenient forum than NDCA for the [redacted] Cirrus Logic employees in Austin. Moreover, there may be more relevant witnesses in WDTX due to the lack of explanation of Apple's declarants as to how they discovered there were not relevant employees in WDTX.

On balance and as briefed, the bulk of named material and relevant witnesses are here in WDTX.

D. All other practical problems that make trial of a case easy, expeditious and inexpensive

Courts must also consider "all other practical problems that make trial of a case easy, expeditious and inexpensive."[138] "Particularly, the existence of duplicative suits involving the same or similar issues may create practical difficulties that will weigh heavily in favor or against transfer."[139] "[W]here there is a co-pending litigation . . . involving the same patent-in-suit, . . . pertaining to the same underlying technology and accusing similar services, . . . the Federal Circuit cannot say the trial court clearly abuses its discretion in denying transfer."[140]

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[137] ECF No. 43-12 at 6.
[138] *Volkswagen II*, 545 F.3d at 314.
[139] *PersonalWeb Technolgies, LLC v. NEC Corp. of Am., Inc.*, No. 6:11-CV-655, 2013 WL 9600333, at *5 (E.D. Tex. Mar. 21, 2013), *order clarified sub nom. Personalweb Technolgies, LLC v. Google, Inc.*, No. 6:11-CV-656, 2013 WL 12138549 (E.D. Tex. June 28, 2013).
[140] *In re Vistaprint Ltd.*, 628 F.3d 1342, 1347 n.3 (Fed. Cir. 2010).

Apple argues that this factor is neutral, based solely on its understanding that neither WDTX nor NDCA has any experience with the asserted patents and there are no related lawsuits pending in either district.[141] Resonant argues that this factor disfavors transfer, pointing to its own motion to compel venue discovery from third-party Cirrus Logic, filed in Waco as a compliance court.[142] But it is well-stated in this Circuit that plaintiffs cannot manufacture venue by filing related suits in the transferor district.[143] Resonant's motion to compel in a compliance court therefore does not tip this otherwise neutral factor in its favor.

This factor is therefore neutral.

III. Public Interest Factors

Next, the Court considers each public interest factor in turn: (1) the administrative difficulties flowing from court congestion; (2) the local interest in having localized interests decided at home; (3) the familiarity of the forum with the law that will govern the case; and (4) the avoidance of unnecessary problems of conflict of laws or in the application of foreign law.[144]

A. The administrative difficulties flowing from court congestion

This factor concerns "whether there is an appreciable difference in docket congestion between the two forums."[145] It considers the "[t]he speed with which a case can come to trial and be resolved."[146] When a "case appears to be timely proceeding to trial before the [transferor d]ivision[, t]hat fact [ ] counsels against transfer."[147]

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[141] ECF No. 36-1 at 17.
[142] *See* FED. R. CIV. P 37(a)(2).
[143] *In re Google Inc.*, 2017 WL 977038, at *3.
[144] *Volkswagen II*, 545 F.3d at 315.
[145] *Parsons v. Chesapeake & Ohio Ry. Co.*, 375 U.S. 71, 73 (1963); *In re Adobe Inc.*, 823 F. App'x 929, 932 (Fed. Cir. 2020).
[146] *In re Genentech, Inc.*, 566 F.3d at 1347.
[147] *In re Planned Parenthood*, 52 F.4th at 631.

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Court congestion is "the most speculative" factor.[148] And when "relevant factors weigh in favor of transfer and others are neutral, then the speed of the transferee district court should not alone outweigh all those other factors."[149] The Federal Circuit has held that this factor should not weigh against transfer when the plaintiff "is not engaged in product competition in the marketplace and is not threatened in the market in a way that, in other patent cases, might add urgency to case resolution."[150] But recent Fifth Circuit cases indicate that this factor disfavors transfer when the "case appears to be timely proceeding to trial before the transferee district."[151]

Apple argues that this factor is neutral or only slightly favors transfer. As to neutrality, Apple argues that the Federal Circuit has "noted that the Western District of Texas and the Northern District of California show no significant differences in caseload or time-to-trial statistics."[152] As to favoring transfer, Apple cites one WDTX case from 2018 that acknowledged that NDCA had a shorter time to trial for patent cases than WDTX.[153] Resonant argues that this factor weighs against transfer because the current statistics show that the average time to trial for patent cases is five months faster in WDTX than NDCA.[154]

These statistics are not particularly relevant.[155] The Fifth Circuit has twice rejected time-to-trial statistics in the last six months,[156] recognizing that *Planned Parenthood* foreclosed their

[148] *In re Genentech, Inc.*, 566 F.3d at 1347.
[149] *Id.*
[150] *In re Google LLC*, 58 F.4th 1379, 1383 (Fed. Cir. 2023).
[151] *In re TikTok, Inc.*, 85 F.4th at 363 (cleaned up).
[152] *In re Apple Inc.*, No. 2021-181, 2021 WL 5291804 at *4 (Fed. Cir. Nov. 15, 2021) (quoting *In re Juniper Networks, Inc.*, 14 F.4th at 1322) (cleaned up).
[153] *Uniloc USA Inc. v. Box, Inc.*, No. 1:17-CV-754-LY, 2018 WL 2729202, at *4 (W.D. Tex. June 6, 2018) ("Patent cases . . . move more quickly than other civil cases, and the average time to trial in Northern California is marginally faster than in Western Texas.").
[154] ECT No. 43-12 at 16
[155] *In re Clarke*, 94 F.4th at 510.
[156] *See id.*; *In re TikTok*, 85 F.4th at 363 n.12.

use because "the district court is better placed to evaluate its docket efficiency."[157] Review of this case's docket reveals that it is on track for a timely trial, which "normally weighs against transfer."[158]

But Apple also argues that this factor cannot disfavor transfer because Resonant is not a practicing entity.[159] Resonant disagrees because it considers Apple its only direct competitor.[160] Later, Resonant clarifies for the first time in its sur-reply that licensing with Apple could have allowed it to weather the pandemic and "keep its manufacturing operation running."[161] Resonant therefore lacks a position in the market under threat to accord this factor any weight.[162]

The Court therefore finds this factor neutral.

B. The local interest in having localized interests decided at home

This factor requires the Court to evaluate whether there is a local interest in deciding local interest at home.[163] Courts do not consider the parties' connection to the venue when analyzing this factor because "local interest analysis is a public interest factor."[164] Instead, courts look at "the interest of *non-party citizens* in adjudicating the case."[165] "Considerations such as 'the location of the injury, witnesses, and the [p]laintiff's residence,'[166] are useful proxies for determining what local interests exist in each venue. But proxies, no matter how useful in certain cases, can never

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[157] *Id.* (cleaned up).
[158] *In re TikTok*, 85 F.4th at 363 ; *see also In re Clarke*, 94 F.4th 502, 509 (5th Cir. 2024).
[159] ECF No. 36-1 at 17; *See In re Google LLC*, 58 F.4th at 1383 (holding it is "a clear abuse of discretion to accord this factor any weight" where the plaintiff "is not engaged in product competition in the marketplace").
[160] ECF No. 43-12 at 17.
[161] ECF No. 67 at 11.
[162] *See In re Google LLC*, 58 F.4th at 1383.
[163] *Volkswagen II*, 545 F.3d at 317.
[164] *In re Clarke*, 94 F.4th at 511.
[165] *Id.* (citations omitted) (emphasis in original).
[166] *Def. Distributed*, 30 F.4th at 435.

subsume the ultimate inquiry."[167] That is, a court must consider also the events that gave rise to the suit.[168]

Here, Apple largely points to proxies: Apple's headquarters (and most of its workforce) and relevant teams, witnesses, and evidence all exist in NDCA.[169] Apple does, however, assert that those teams design and develop the accused products in NDCA,[170] leading the Court to understand that Apple believes all events critical to this case occurred in NDCA. In support, however, Apple directs the Court back to its faulty declaration from Zhang, discussed above. It is therefore unclear whether the critical events that gave rise to the suit occurred solely in NDCA or in WDTX as well, and in what proportion.

Resonant argues that this factor strongly disfavors transfer. Resonant first points to a proxy: [redacted]'s strong financial interest in the outcome of the case.[171] But it also points to [redacted]'s actions designing and developing [redacted].[172] Resonant also argues that WDTX may have a stronger local interest but that the interest cannot be accurately determined because Apple yet again failed to properly investigate for relativity.

The Court finds that this factor is neutral. The parties each allege that development and design of the accused products has occurred in the district they favor. What is unclear is whether more development and design occurred in NDCA than WDTX. Resonant has more clearly indicated that it believes *some* infringement has occurred in Austin by Apple's third-party component supplier, Cirrus Logic. Apple on the other hand, briefs but does not support its

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[167] *In re Clarke*, 94 F.4th at 511.
[168] *Id.*
[169] ECF No. 36-1 at 18.
[170] ECF No. 36-1 at 18.
[171] ECF No. 43-12 at 17.
[172] *Id.*

argument that *all* critical events that gave rise to this suit were in NDCA and fails to address in what proportion if they did not.

C. The familiarity of the forum with the law that will govern the case and the avoidance of unnecessary problems of conflict of laws or in the application of foreign laws

Both parties agree that these latter two factors are neutral; both forums are familiar with the law that will govern this matter and there are no potential conflicts of law.[173] The Court agrees.

IV. Good cause

As the Fifth Circuit recently reminds, "The propriety of § 1404(a) transfer turns on [the movant] meeting its burden of 'adduc[ing] evidence and arguments that clearly establish good cause for transfer based on convenience and justice.'" [174]

Apple has failed to meet is burden to "clearly establish good cause."[175] Of the eight factors, none favor transfer as briefed. In light of these issues, the Court must not exercise discretion to grant Apple's transfer request.

CONCLUSION

Having considered the private and public interest factors, the Court finds that none warrant transfer. A decision to uproot litigation and transfer must be based on a moving party's showing that that the transferee forum is a clearly more convenient forum. Of the eight factors, none favor transfer. The willing witness factor slightly disfavors transfer while the sources of proof factor is neutral if not slightly disfavoring transfer. The remaining factors are neutral. The Court therefore finds that Apple has not met its burden of showing that NDCA is a clearly more convenient forum.

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[173] ECF No. 16-1 at 19; ECF No. 43-12 at 17.
[174] *In re Clarke*, 94 F.4th at 515 (citing *Def. Distributed*, 30 F.4th at 433; *and In re Planned Parenthood*, 52 F.4th at 629 ("The *ultimate inquiry* is whether the destination venue is clearly more convenient than the venue chosen by the plaintiff.") (cleaned up).
[175] *Def. Distributed*, 30 F.4th at 433.

IT IS THEREFORE ORDERED that Apple's motion to transfer venue to the Northern District of California is **DENIED**.[176]

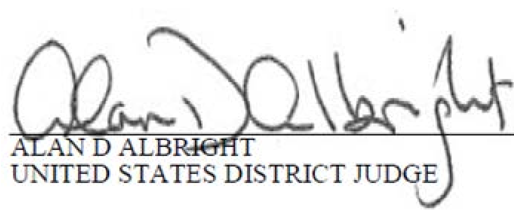
It is also **ORDERED** that Apple's motion to stay the case pending entry of this order is also **DENIED AS MOOT**.[177]

It is also **ORDERED** that Resonant's pending motion to strike[178] is also **DENIED AS MOOT**; Resonant's sur-reply[179] addresses the same issues favoring striking Apple's late-coming declaration.

It is also **ORDERED** that Resonant's argument in the alternative to transfer this case to Austin should the Court find transfer is warranted is **DENIED**.[180]

It is so **ORDERED**.

SIGNED this 18th day of April, 2024.



ALAN D ALBRIGHT
UNITED STATES DISTRICT JUDGE

[176] ECF No. 36.
[177] ECF No. 58.
[178] ECF No. 52.
[179] ECF No. 67.
[180] ECF No. 36.

PATENT

U.S. District Court [LIVE]
Western District of Texas (Midland)
CIVIL DOCKET FOR CASE #: 7:23−cv−00077−ADA

RESONANT SYSTEMS, INC., d/b/a RevelHMI v. Apple, Inc.
Assigned to: Judge Alan D Albright
Related Case: 6:23−mc−00870−ADA
Cause: 35:271 Patent Infringement

Date Filed: 06/01/2023
Jury Demand: Both
Nature of Suit: 830 Patent
Jurisdiction: Federal Question

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Date Filed	#	Docket Text
06/01/2023	1	COMPLAINT (Filing fee $ 402 receipt number ATXWDC−17508400), filed by RESONANT SYSTEMS, INC., d/b/a RevelHMI. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8, # 9 Civil Cover Sheet)(Mirzaie, Reza) (Entered: 06/01/2023)
06/01/2023	2	RULE 7 DISCLOSURE STATEMENT filed by RESONANT SYSTEMS, INC., d/b/a RevelHMI. (Mirzaie, Reza) (Entered: 06/01/2023)
06/01/2023	3	Notice of Filing of Patent/Trademark Form (AO 120). AO 120 forwarded to the Director of the U.S. Patent and Trademark Office. (Mirzaie, Reza) (Entered: 06/01/2023)
06/01/2023	4	REQUEST FOR ISSUANCE OF SUMMONS by RESONANT SYSTEMS, INC., d/b/a RevelHMI. (Mirzaie, Reza) (Entered: 06/01/2023)
06/01/2023		Case assigned to Judge David Counts and Judge Ronald C. Griffin. CM WILL NOW REFLECT THE JUDGE INITIALS AS PART OF THE CASE NUMBER. PLEASE APPEND THESE JUDGE INITIALS TO THE CASE NUMBER ON EACH DOCUMENT THAT YOU FILE IN THIS CASE. (slt) (Entered: 06/02/2023)
06/02/2023	5	NOTICE of Attorney Appearance by Paul A. Kroeger on behalf of RESONANT SYSTEMS, INC., d/b/a RevelHMI. Attorney Paul A. Kroeger added to party RESONANT SYSTEMS, INC., d/b/a RevelHMI(pty:pla) (Kroeger, Paul) (Entered: 06/02/2023)
06/02/2023	6	NOTICE of Attorney Appearance by Kristopher R. Davis on behalf of RESONANT SYSTEMS, INC., d/b/a RevelHMI. Attorney Kristopher R. Davis added to party RESONANT SYSTEMS, INC., d/b/a RevelHMI(pty:pla) (Davis, Kristopher) (Entered: 06/02/2023)
06/02/2023	7	NOTICE of Attorney Appearance by Qi (Peter) Tong on behalf of RESONANT SYSTEMS, INC., d/b/a RevelHMI. Attorney Qi (Peter) Tong added to party RESONANT SYSTEMS, INC., d/b/a RevelHMI(pty:pla) (Tong, Qi) (Entered: 06/02/2023)
06/02/2023	8	NOTICE of Attorney Appearance by Christian W. Conkle on behalf of RESONANT SYSTEMS, INC., d/b/a RevelHMI (Conkle, Christian) (Entered: 06/02/2023)
06/02/2023	9	NOTICE of Attorney Appearance by Jason M Wietholter on behalf of RESONANT SYSTEMS, INC., d/b/a RevelHMI (Wietholter, Jason) (Entered: 06/02/2023)
06/02/2023	10	DEFICIENCY NOTICE: re 1 Complaint, (slt) (Entered: 06/02/2023)
06/02/2023	11	DEFICIENCY NOTICE: re 2 Disclosure Statement (Rule 7) (slt) (Entered: 06/02/2023)
06/05/2023	12	ATTACHMENT *Corrected Complaint* to 1 Complaint, by RESONANT SYSTEMS, INC., d/b/a RevelHMI. (Mirzaie, Reza) (Entered: 06/05/2023)
06/05/2023	13	ATTACHMENT *Corrected Disclosure Statement* to 2 Disclosure Statement (Rule 7) by RESONANT SYSTEMS, INC., d/b/a RevelHMI. (Mirzaie, Reza) (Entered: 06/05/2023)

06/07/2023	14	Summons Issued as to Apple, Inc. (slt) (Entered: 06/07/2023)
06/08/2023	15	SUMMONS Returned Executed by RESONANT SYSTEMS, INC., d/b/a RevelHMI. Apple, Inc. served on 6/7/2023, answer due 6/28/2023. (Mirzaie, Reza) (Entered: 06/08/2023)
06/09/2023	16	ORDER AND ADVISORY. Case reassigned to Judge Derek T. Gilliland for all proceedings. Judge Ronald C. Griffin no longer assigned to case. Signed by Judge David Counts. (kg) (Entered: 06/09/2023)
06/12/2023	17	ORDER WITHDRAWING REFERRAL TO MAGISTRATE JUDGE. CASE NO LONGER REFERRED to Magistrate Judge Derek T. Gilliland. Signed by Judge David Counts. (slt) (Entered: 06/12/2023)
06/26/2023	18	NOTICE of Attorney Appearance by Steven J. Wingard on behalf of Apple, Inc.. Attorney Steven J. Wingard added to party Apple, Inc.(pty:dft) (Wingard, Steven) (Entered: 06/26/2023)
06/26/2023	19	Unopposed MOTION for Extension of Time to File Answer re 1 Complaint, by Apple, Inc.. (Attachments: # 1 Proposed Order)(Wingard, Steven) (Entered: 06/26/2023)
06/29/2023		Text Order GRANTING 19 Motion for Extension of Time to Answer entered by Judge David Counts. Apple Inc. shall file its Answer on or before August 14, 2023. (This is a text−only entry generated by the court. There is no document associated with this entry.) (NAK) (Entered: 06/29/2023)
06/29/2023		Set/Reset Deadlines: Apple, Inc. answer due **8/14/2023**. (kg) (Entered: 06/30/2023)
08/14/2023	20	AMENDED COMPLAINT against Apple, Inc. amending 1 Complaint,., filed by Resonant Systems, Inc.. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8)(Mirzaie, Reza) (Entered: 08/14/2023)
08/28/2023	21	NOTICE of Attorney Appearance by Roger Allen Denning on behalf of Apple, Inc.. Attorney Roger Allen Denning added to party Apple, Inc.(pty:dft) (Denning, Roger) (Entered: 08/28/2023)
08/28/2023	22	NOTICE of Attorney Appearance by Oliver J. Richards on behalf of Apple, Inc.. Attorney Oliver J. Richards added to party Apple, Inc.(pty:dft) (Richards, Oliver) (Entered: 08/28/2023)
08/28/2023	23	NOTICE of Attorney Appearance by Kathryn A. Quisenberry on behalf of Apple, Inc.. Attorney Kathryn A. Quisenberry added to party Apple, Inc.(pty:dft) (Quisenberry, Kathryn) (Entered: 08/28/2023)
08/28/2023	24	ANSWER to 20 Amended Complaint, with Jury Demand by Apple, Inc..(Denning, Roger) (Entered: 08/28/2023)
08/28/2023	25	RULE 7 DISCLOSURE STATEMENT filed by Apple, Inc.. (Denning, Roger) (Entered: 08/28/2023)
08/29/2023		DEFICIENCY NOTICE: re 22 Notice of Appearance, 23 Notice of Appearance, 25 Disclosure Statement (Rule 7), 24 Answer to Amended Complaint, 21 Notice of Appearance: Header states Midland Division. Please correct to state Midland−Odessa Division and refile pleadings. (kg) (Entered: 08/29/2023)
08/29/2023	26	NOTICE of Attorney Appearance by Roger Allen Denning on behalf of Apple, Inc. (Denning, Roger) (Entered: 08/29/2023)
08/29/2023	27	NOTICE of Attorney Appearance by Kathryn A. Quisenberry on behalf of Apple, Inc. (Quisenberry, Kathryn) (Entered: 08/29/2023)
08/29/2023	28	NOTICE of Attorney Appearance by Oliver J. Richards on behalf of Apple, Inc. (Richards, Oliver) (Entered: 08/29/2023)
08/29/2023	29	AMENDED ANSWER to 20 Amended Complaint, by Apple, Inc.. (Denning, Roger) (Entered: 08/29/2023)
08/29/2023	30	RULE 7 DISCLOSURE STATEMENT filed by Apple, Inc.. (Denning, Roger) (Entered: 08/29/2023)

08/30/2023	31	Order for Scheduling Recommendations/Proposed Scheduling Order. Scheduling recommendations/proposed scheduling order due to the Court the Court within thirty (30) days from the date of this order. Signed by Judge David Counts. (kg) (Entered: 08/30/2023)
09/20/2023	32	NOTICE of Attorney Appearance by Ruffin B. Cordell on behalf of Apple, Inc.. Attorney Ruffin B. Cordell added to party Apple, Inc.(pty:dft) (Cordell, Ruffin) (Entered: 09/20/2023)
09/21/2023	33	MOTION to Appear Pro Hac Vice by Kathryn A. Quisenberry *for Karrie Wheatley* (Filing fee $ 100 receipt number ATXWDC−17910256) by on behalf of Apple, Inc.. (Quisenberry, Kathryn) (Entered: 09/21/2023)
09/21/2023	34	Joint MOTION for Entry of Scheduling Order Deadlines by Resonant Systems, Inc.. (Attachments: # 1 Proposed Order)(Mirzaie, Reza) (Entered: 09/21/2023)
09/22/2023		Text Order GRANTING 33 Karrie Wheatley's Motion to Appear Pro Hac Vice. Pursuant to our Administrative Policies and Procedures for Electronic Filing, the attorney hereby granted to practice Pro Hac Vice in this case must register for electronic filing with our Court within 10 days of this Order. Registration is managed by the PACER Service Center. It is further ORDERED that if Ms. Wheatley has not already done so, shall immediately tender the amount of $100.00, made payable to: Clerk, U.S. District Court, in compliance, with Local Court Rule AT−1(f)(2). Entered by Judge David Counts. (This is a text−only entry generated by the court. There is no document associated with this entry.) (db) (Entered: 09/22/2023)
09/22/2023	35	SCHEDULING ORDER: Jury Selection/Jury Trial set for **8/4/2025 at 08:00 AM** in Midland before Judge David Counts; Amended Pleadings due by **8/1/2024**; Discovery due by **11/7/2024**; Joinder of Parties due by **5/23/2024**; Motions due by **2/6/2025**. Signed by Judge David Counts. (slt) (Entered: 09/22/2023)
10/10/2023	36	Unopposed Motion for leave to File Sealed Document (Attachments: # 1 Brief SEALED DOCUMENT, # 2 Affidavit SEALED DOCUMENT, # 3 Affidavit SEALED DOCUMENT, # 4 Affidavit SEALED DOCUMENT, # 5 Affidavit SEALED DOCUMENT, # 6 Proposed Order, # 7 Certificate of Service) (Wheatley, Karrie) (Entered: 10/10/2023)
10/10/2023	37	Opposed MOTION to Transfer Case by Apple, Inc.. (Attachments: # 1 Declaration of Karrie Wheatley, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Exhibit 9, # 11 Exhibit 10, # 12 Exhibit 11, # 13 Exhibit 12, # 14 Exhibit 13, # 15 Redacted Declaration Brian Ankenbrandt, # 16 Redacted Declaration of Catherine Spevak, # 17 Redacted Declaration of Chang Zhang, # 18 Redacted Declaration of Robin Goldberg, # 19 Proposed Order)(Wheatley, Karrie) (Entered: 10/10/2023)
10/11/2023		Text Order GRANTING 36 Defendant's Unopposed Motion for Leave to File Sealed Document. It is ORDERED that (1) the unredacted version of Apple's Motion to Transfer Venue to the Northern District of California and (2) the declarations of Catherine Spevak, Brian Ankenbrandt, Robin Goldberg, and Chang Zhang be FILED UNDER SEAL. It is so ORDERED. Entered by Judge Ronald C. Griffin. (This is a text−only entry generated by the court. There is no document associated with this entry.) (db) (Entered: 10/11/2023)
10/17/2023	38	NOTICE *of Venue Discovery* by Resonant Systems, Inc. (Mirzaie, Reza) (Entered: 10/17/2023)
12/19/2023	39	Joint MOTION to Amend/Correct 35 Scheduling Order, by Resonant Systems, Inc.. (Attachments: # 1 Proposed Order)(Mirzaie, Reza) (Entered: 12/19/2023)
12/20/2023	40	ORDER MODIFYING SCHEDULING ORDER:(Pretrial Conference set for **7/11/2025 01:30 PM** in Midland before Judge David Counts, Jury Selection/Trial set for **8/4/2025 08:00 AM** in Midland before Judge David Counts, Markman Hearing set for **5/16/2024 01:30 PM** before Judge David Counts, Amended Pleadings due by **8/1/2024**, Discovery due by **1/23/2025**, Joinder of Parties due by **5/23/2024**, Motions due by **2/6/2025**), Motions terminated: 39 Joint MOTION to Amend/Correct 35 Scheduling Order, filed by Resonant Systems, Inc. Signed by Judge David Counts. (kg) (Entered: 12/20/2023)

12/21/2023	41	MOTION to Appear Pro Hac Vice by Kathryn A. Quisenberry *for Ryan P. O'Connor* (Filing fee $ 100 receipt number BTXWDC−18239109) by on behalf of Apple, Inc.. (Quisenberry, Kathryn) (Entered: 12/21/2023)
12/21/2023	42	MOTION to Appear Pro Hac Vice by Kathryn A. Quisenberry *for Geuneul Yang* (Filing fee $ 100 receipt number ATXWDC−18239899) by on behalf of Apple, Inc.. (Quisenberry, Kathryn) (Entered: 12/21/2023)
12/27/2023		Text Order GRANTING 41 Ryan O'Connor's Motion to Appear Pro Hac Vice. Pursuant to our Administrative Policies and Procedures for Electronic Filing, the attorney hereby granted to practice Pro Hac Vice in this case must register for electronic filing with our Court within 10 days of this Order. Registration is managed by the PACER Service Center. It is further ORDERED that if Mr. O'Connor has not already done so, shall immediately tender the amount of $100.00, made payable to: Clerk, U.S. District Court, in compliance with Local Court Rule AT−1(f)(2). Entered by Judge David Counts. (This is a text−only entry generated by the court. There is no document associated with this entry.) (db) (Entered: 12/27/2023)
12/27/2023		Text Order GRANTING 42 Geuneul Yang's Motion to Appear Pro Hac Vice. Pursuant to our Administrative Policies and Procedures for Electronic Filing, the attorney hereby granted to practice Pro Hac Vice in this case must register for electronic filing with our Court within 10 days of this Order. Registration is managed by the PACER Service Center. It is further ORDERED that if Mr. Yang has not already done so, shall immediately tender the amount of $100.00, made payable to: Clerk, U.S. District Court, in compliance with Local Court Rule AT−1(f)(2). Entered by Judge David Counts. (This is a text−only entry generated by the court. There is no document associated with this entry.) (db) (Entered: 12/27/2023)
02/02/2024	43	Unopposed Motion for leave to File Sealed Document (Attachments: # 1 Exhibit 1, SEALED DOCUMENT, # 2 Exhibit 2, SEALED DOCUMENT, # 3 Exhibit 3, SEALED DOCUMENT, # 4 Exhibit 5, SEALED DOCUMENT, # 5 Exhibit 7, SEALED DOCUMENT, # 6 Exhibit 8, SEALED DOCUMENT, # 7 Exhibit 9, SEALED DOCUMENT, # 8 Exhibit 11, SEALED DOCUMENT, # 9 Exhibit 12, SEALED DOCUMENT, # 10 Exhibit 14, SEALED DOCUMENT, # 11 Exhibit 15, SEALED DOCUMENT, # 12 Opposition, SEALED DOCUMENT, # 13 Affidavit of Peter Tong, # 14 Proposed Order) (Mirzaie, Reza) (Entered: 02/02/2024)
02/02/2024	44	Response in Opposition to Motion, filed by Resonant Systems, Inc., re 37 Opposed MOTION to Transfer Case filed by Defendant Apple, Inc. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8, # 9 Exhibit 9, # 10 Exhibit 10, # 11 Exhibit 11, # 12 Exhibit 12, # 13 Exhibit 13, # 14 Exhibit 14, # 15 Exhibit 15, # 16 Exhibit 16, # 17 Exhibit 17, # 18 Exhibit 18, # 19 Affidavit of Peter Tong, # 20 Affidavit of Robin Elenga)(Mirzaie, Reza) (Entered: 02/02/2024)
02/13/2024		Text Order GRANTING 43 Plaintiff's Unopposed Motion for Leave to File Sealed Documents. It is ORDERED that the Clerk of the Court SEAL the documents attached to the instant motion: 1) RevelHMI's Opposition to Apple's Motion to Transfer with Revel's Confidential Exhibits, 2) Apple, Inc.'s confidential production and discovery responses, and 3) Cirrus Logic, Inc.'s confidential production and discovery responses. It is so ORDERED. Entered by Judge David Counts. (This is a text−only entry generated by the court. There is no document associated with this entry.) (db) (Entered: 02/13/2024)
02/16/2024	46	Unopposed Motion for leave to File Sealed Document (Attachments: # 1 Brief SEALED DOCUMENT, # 2 Exhibit SEALED DOCUMENT, # 3 Exhibit SEALED DOCUMENT, # 4 Exhibit SEALED DOCUMENT, # 5 Exhibit SEALED DOCUMENT, # 6 Exhibit SEALED DOCUMENT, # 7 Exhibit SEALED DOCUMENT, # 8 Proof of Service, # 9 Proposed Order) (Yang, Geuneul) (Entered: 02/16/2024)
02/16/2024	47	REPLY to Response to Motion, filed by Apple, Inc., re 37 Opposed MOTION to Transfer Case filed by Defendant Apple, Inc. (Attachments: # 1 Affidavit of James Yang, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5)(Denning, Roger) (Entered: 02/16/2024)

02/20/2024		Text Order GRANTING 46 Defendant's Unopposed Motion for Leave to File Sealed Document. It is ORDERED that the unredacted version of Defendant Apple Inc.'s Reply in Support of Its Opposed Motion to Transfer Venue to the Northern District of California and exhibits in support attached to the instant Motion, be FILED UNDER SEAL. entered by Judge David Counts. (This is a text−only entry generated by the court. There is no document associated with this entry.) (db) (Entered: 02/20/2024)
02/20/2024	48	Sealed Document filed (Attachments: # 1 Exhibit 6, # 2 Exhibit 7, # 3 Exhibit 8, # 4 Exhibit 9, # 5 Exhibit 10, # 6 Exhibit 11, # 7 Certificate of Service, # 8 Proposed Order) (kg) (Entered: 02/20/2024)
02/23/2024	49	Opposed MOTION to Stay Case *Pending Resolution of Apple's Motion to Transfer* by Apple, Inc.. (Attachments: # 1 Declaration of James Yang, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Proposed Order)(O'Connor, Ryan) (Entered: 02/23/2024)
03/01/2024	50	Motion for leave to File Sealed Document (Attachments: # 1 Motion for Leave to File Sur Reply, # 2 Sur Reply, # 3 Exhibit A to Sur Reply, # 4 Motion to Strike, # 5 Proposed Order) (Mirzaie, Reza) (Entered: 03/01/2024)
03/01/2024	51	Opposed MOTION for Leave to File Sur Reply by Resonant Systems, Inc.. (Attachments: # 1 Sur Reply, # 2 Affidavit of Peter Tong, # 3 Exhibit A, # 4 Proposed Order)(Mirzaie, Reza) (Entered: 03/01/2024)
03/01/2024	52	Opposed MOTION to Strike 48 Sealed Document by Resonant Systems, Inc.. (Attachments: # 1 Proposed Order)(Mirzaie, Reza) (Entered: 03/01/2024)
03/01/2024	53	Unopposed MOTION for Extension of Time to File *Response to Defendant Apple Inc.s Motion to Stay Pending Resolution of Apples Motion to Transfer (Dkt. No. 49)* by Resonant Systems, Inc.. (Attachments: # 1 Proposed Order)(Mirzaie, Reza) (Entered: 03/01/2024)
03/01/2024	54	Joint MOTION to Extend Scheduling Order Deadlines by Apple, Inc.. (Attachments: # 1 Proposed Order)(Denning, Roger) (Entered: 03/01/2024)
03/06/2024	55	Response in Opposition to Motion, filed by Resonant Systems, Inc., re 49 Opposed MOTION to Stay Case *Pending Resolution of Apple's Motion to Transfer* filed by Defendant Apple, Inc. (Attachments: # 1 Affidavit of Peter Tong, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E)(Mirzaie, Reza) (Entered: 03/06/2024)
03/06/2024	56	NOTICE *of WITHDRAWAL OF ITS MOTION FOR LEAVE TO FILE A SUR−REPLY AND NOTICE OF INTENT TO BRIEF SUPPLEMENTAL AUTHORITY* by Resonant Systems, Inc. re 51 Opposed MOTION for Leave to File Sur Reply (Mirzaie, Reza) (Entered: 03/06/2024)
03/06/2024	57	ORDER GRANTING 54 Motion to Extend Scheduling Order Deadlines Pretrial Conference set for 7/11/2025 01:30 PM in Midland before Judge David Counts, Jury Selection/Jury Trial set for **8/4/2025 08:00 AM** in Midland before Judge David Counts, Markman Hearing set for 5/30/2024 01:30 PM in Midland before Judge David Counts, Amended Pleadings due by 8/1/2024, Joinder of Parties due by 5/23/2024, Dispositive/Daubert Motions due by 2/6/2025. Signed by Judge David Counts. (je3) Modified on 3/7/2024 (je3). (Entered: 03/07/2024)
03/07/2024		Text Order GRANTING 50 Plaintiff's Unopposed Motion for Leave to File Sealed Documents. It is ORDERED that the 1) Motion for Leave to File a Sur−Reply, 2) Proposed Sur−Reply, 3) Cirrus Logic's confidential exhibit, and 4) RevelHMIs Motion to Strike be FILED UNDER SEAL It is so ORDERED. Entered by Judge David Counts. (This is a text−only entry generated by the court. There is no document associated with this entry.) (db) (Entered: 03/07/2024)
03/07/2024		Text Order GRANTING 53 Plaintiff's Unopposed Motion for Extension of Time to File Response. It is ORDERED that Plaintiff's Motion to Extend the Deadline for Responding to Defendant Apple's Motion to Stay is GRANTED. Plaintiff shall have until March 6, 2024, to respond to Defendant Apple's Motion to Stay. It is so ORDERED. Entered by Judge David Counts. (This is a text−only entry generated by the court. There is no document associated with this entry.) (db) (Entered: 03/07/2024)

03/07/2024	58	Sealed Motion filed (Attachments: # 1 Sealed Document, # 2 Exhibit A) (kg) (Entered: 03/08/2024)
03/07/2024	59	Sealed Motion filed (kg) (Entered: 03/08/2024)
03/08/2024	60	Unopposed Motion for leave to File Sealed Document (Attachments: # 1 Brief SEALED DOCUMENT, # 2 Certificate of Service, # 3 Proposed Order Proposed Order) (Yang, Geuneul) (Entered: 03/08/2024)
03/08/2024	61	Response in Opposition to Motion, filed by Apple, Inc., re 52 Opposed MOTION to Strike 48 Sealed Document filed by Plaintiff Resonant Systems, Inc. (Attachments: # 1 Affidavit of James Yang, # 2 Exhibit 1, # 3 Exhibit 2)(Denning, Roger) (Entered: 03/08/2024)
03/11/2024		Text Order GRANTING 60 Defendant's Unopposed Motion for Leave to File Sealed Document. It is ORDERED that the unredacted version of Defendant Apple Inc.'s Response in Opposition to Resonant's Motion to Strike Declaration of Cirrus Logic be FILED UNDER SEAL. It is so ORDERED Entered by Judge David Counts. (This is a text−only entry generated by the court. There is no document associated with this entry.) (db) (Entered: 03/11/2024)
03/11/2024	62	Sealed Document filed (kg) (Entered: 03/12/2024)
03/13/2024	63	Unopposed Motion for leave to File Sealed Document (Attachments: # 1 Amended Motion for Leave to File Sur Reply, # 2 Amended Sur Reply, # 3 Affidavit of Peter Tong, # 4 Exhibit A, # 5 Proposed Order) (Mirzaie, Reza) (Entered: 03/13/2024)
03/13/2024	64	Opposed MOTION for Leave to File SUR−REPLY AND SUPPLEMENTAL BRIEFING TO APPLES MOTION TO TRANSFER VENUE by Resonant Systems, Inc.. (Attachments: # 1 Sur Reply, # 2 Affidavit of Peter Tong, # 3 Exhibit A, # 4 Proposed Order)(Mirzaie, Reza) (Entered: 03/13/2024)
03/13/2024	65	REPLY to Response to Motion, filed by Apple, Inc., re 49 Opposed MOTION to Stay Case *Pending Resolution of Apple's Motion to Transfer* filed by Defendant Apple, Inc. (Attachments: # 1 Affidavit of Kathryn Quisenberry, # 2 Exhibit 1)(Quisenberry, Kathryn) (Entered: 03/13/2024)
03/14/2024		Text Order GRANTING 63 Unopposed Motion for Leave to File Sealed Document. It is ORDERED that the 1) Amended Motion for Leave to File a Sur−Reply, 2) Proposed Amended Sur−Reply, and 3) Cirrus Logic's confidential exhibit attached to the instant Motion be FILED UNDER. It is so ORDERED. SEAL entered by Judge David Counts. (This is a text−only entry generated by the court. There is no document associated with this entry.) (db) (Entered: 03/14/2024)
03/14/2024	66	Sealed Document filed: Plaintiff Resonant Systems, Inc's Opposed Replacement Motion for Leave to File a Sur−Reply (je3) (Entered: 03/14/2024)
03/14/2024	67	Sealed Document filed: Plaintiff Resonant's Sur−Reply and Supplemental Briefing to Apple's Motion to Transfer Venue (je3) (Additional attachment(s) added on 3/14/2024: # 1 Exhibit Exhibit A) (je3). (Entered: 03/14/2024)
03/14/2024	68	ATTACHMENT *Corrected Sur Reply* to 64 Opposed MOTION for Leave to File SUR−REPLY AND SUPPLEMENTAL BRIEFING TO APPLES MOTION TO TRANSFER VENUE by Resonant Systems, Inc.. (Mirzaie, Reza) (Entered: 03/14/2024)
03/15/2024	69	Unopposed Motion for leave to File Sealed Document (Attachments: # 1 Reply in Support of Motion to Strike, # 2 Proposed Order) (Mirzaie, Reza) (Entered: 03/15/2024)
03/15/2024	70	REPLY to Response to Motion, filed by Resonant Systems, Inc., re 52 Opposed MOTION to Strike 48 Sealed Document filed by Plaintiff Resonant Systems, Inc. (Mirzaie, Reza) (Entered: 03/15/2024)
03/18/2024		Text Order GRANTING 69 Plaintiff's Unopposed Motion for Leave to File Sealed Document. It is ORDERED RevelHMI's Reply in Support of its Motion to Strike be FILED UNDER SEAL. It is so ORDERED. Entered by Judge David Counts. (This is a text−only entry generated by the court. There is no document associated with this entry.) (db) (Entered: 03/18/2024)

03/18/2024	71	Sealed Document filed: Plaintiff Resonant's Reply in Support of Its Motion to Strike the Declaration of Cirrus Logic (je3) (Entered: 03/19/2024)
03/20/2024	72	Unopposed Motion for leave to File Sealed Document (Attachments: # 1 Brief SEALED DOCUMENT, # 2 Exhibit SEALED DOCUMENT, # 3 Exhibit SEALED DOCUMENT, # 4 Certificate of Service, # 5 Proposed Order) (Denning, Roger) Contacted by office and the wrong login was used; this was to be filed by attorney Geuneul Yang and not Roger Denning (kc). (Entered: 03/20/2024)
03/20/2024	73	Response in Opposition to Motion, filed by Apple, Inc., re 64 Opposed MOTION for Leave to File SUR−REPLY AND SUPPLEMENTAL BRIEFING TO APPLES MOTION TO TRANSFER VENUE filed by Plaintiff Resonant Systems, Inc. (Attachments: # 1 Affidavit of James Yang)(Denning, Roger) (Entered: 03/20/2024)
03/20/2024	74	Sealed Document filed: DEFENDANT APPLE INC.S RESPONSE IN OPPOSITION TO RESONANTS REPLACEMENT MOTION FOR LEAVE TO FILE A SUR−REPLY (Attachments: # 1 Exhibit 1, # 2 Exhibit 2) (kg) Modified on 4/1/2024 to add title of order(je3). (Entered: 03/21/2024)
03/21/2024		Text Order GRANTING 72 Motion for Leave to File Sealed Document. It is ORDERED that the unredacted version of Defendant Apple Inc.'s Response in Opposition to Resonant's "Replacement" Motion for Leave to File a Sur−Reply and Exhibits 12 in support attached to the instant Motion be FILED UNDER SEAL. It is so ORDERED. Entered by Judge David Counts. (This is a text−only entry generated by the court. There is no document associated with this entry.) (db) (Entered: 03/21/2024)
03/21/2024	75	Opening Claim Construction Brief by Apple, Inc.. (Attachments: # 1 Affidavit of James Yang, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5)(Denning, Roger) (Entered: 03/21/2024)
03/27/2024	76	REPLY to Response to Motion, filed by Resonant Systems, Inc., re 64 Opposed MOTION for Leave to File SUR−REPLY AND SUPPLEMENTAL BRIEFING TO APPLES MOTION TO TRANSFER VENUE filed by Plaintiff Resonant Systems, Inc. (Mirzaie, Reza) (Entered: 03/27/2024)
03/28/2024	77	ORDER TO TRANSFER. Case reassigned to Judge Alan D Albright for all proceedings. Judge David Counts no longer assigned to case. Signed by Judge David Counts. (je3) (Entered: 03/28/2024)
03/28/2024		Text Order GRANTING 64 Motion for Leave to File entered by Judge Alan D Albright. BEFORE THE COURT is Plaintiff Resonant Systems, Inc. d/b/a RevelHMIs Opposed Amended Motion for Leave to File a Sur−Reply to Apples Reply in Support of Its Motion to Transfer. The Court, having considered the Amended Motion, finds that it is meritorious and should be granted.IT IS HEREBY ORDERED that Plaintiffs Amended Motion for Leave to File a Sur−Reply is GRANTED IN ITS ENTIRETY. IT IS FURTHER ORDERED that the Sur−Reply is deemed filed. (This is a text−only entry generated by the court. There is no document associated with this entry.) (walc) (Entered: 03/28/2024)
04/08/2024	78	STATUS REPORT *CASE READINESS STATUS REPORT* by Resonant Systems, Inc.. (Mirzaie, Reza) (Entered: 04/08/2024)
04/11/2024	79	RESPONSE to 75 Claim Construction Brief by Resonant Systems, Inc.. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Affidavit of Kristopher R. Davis)(Mirzaie, Reza) (Entered: 04/11/2024)
04/11/2024	80	AFFIDAVIT in Support of 75 Claim Construction Brief *Corrected Declaration of Kristopher R. Davis In Support of Plaintiff's Claim Construction Brief* by Resonant Systems, Inc.. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D)(Davis, Kristopher) (Entered: 04/11/2024)
04/18/2024	81	Sealed Order. Signed by Judge Alan D Albright. (je3) (Entered: 04/18/2024)
04/18/2024	83	ORDER DENYING DEFENDANT'S MOTION TO TRANFER VENUE. Signed by Judge Alan D Albright. (kg) (Entered: 04/30/2024)

04/25/2024	82	Reply Claim Construction Brief by Apple, Inc.. (Attachments: # 1 Affidavit of James Yang, # 2 Exhibit 6, # 3 Exhibit 7)(Denning, Roger) (Entered: 04/25/2024)
05/09/2024	84	BRIEF *Sur Reply Claim Construction Brief* regarding 82 Claim Construction Brief by Resonant Systems, Inc.. (Mirzaie, Reza) (Entered: 05/09/2024)
05/10/2024	85	MOTION to Appear Pro Hac Vice by Kathryn A. Quisenberry *for Joy B. Kete* (Filing fee $ 100 receipt number ATXWDC−18752316) by on behalf of Apple, Inc.. (Quisenberry, Kathryn) (Entered: 05/10/2024)
05/15/2024	86	ORDER Setting/Resetting Markman Hearing. Markman Hearing REset for **5/31/2024 09:00 AM** in Midland before Judge Alan D Albright. Signed by Judge Alan D Albright. (kg) (Entered: 05/15/2024)
05/16/2024	87	BRIEF *Joint Claim Construction Statement* by Resonant Systems, Inc.. (Mirzaie, Reza) (Entered: 05/16/2024)

UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
MIDLAND DIVISION

RESONANT SYSTEMS, INC., d/b/a RevelHMI,

Plaintiff,

v.

APPLE, INC.,

Defendant.

Case No. 7:23-cv-00077

JURY TRIAL DEMANDED

COMPLAINT FOR INFRINGEMENT OF U.S. PATENTS 8,093,767, 8,860,337, 9,941,830, AND 11,152,882

This is an action for patent infringement arising under the Patent Laws of the United States of America, 35 U.S.C. § 1 *et seq.*, in which Plaintiff Resonant Systems, Inc., doing business as RevelHMI ("Plaintiff" or "RevelHMI") makes the following allegations against Defendant Apple, Inc. ("Defendant" or "Apple"):

INTRODUCTION

1. This complaint arises from Apple's unlawful infringement of the following United States patents owned by Plaintiff, which relate to improvements in haptic feedback devices: United States Patent Nos. 8,093,767 (the "'767 Patent"), 8,860,337 (the "'337 Patent"), 9,941,830 (the "'830 Patent), and 11,152,882 (the "'882 Patent") (collectively, the "Asserted Patents").

PARTIES

2. Plaintiff is a corporation organized and existing under the laws of the state of Washington, with a place of business at 520 South King Street, Seattle, Washington 98104.

Plaintiff is the sole owner by assignment of all right, title, and interest in the Asserted Patents, including the right to recover damages for past, present, and future infringement.

3. Defendant Apple Inc. is a publicly traded corporation organized under the laws of the State of California, with its principal place of business at One Apple Park Way, Cupertino, CA 95014. Apple may be served with process through its registered agent, CT Corporation System, at 330 North Brand Boulevard, Suite 700, Glendale, California 91203.

4. This Court has personal jurisdiction over Apple in this action at least because Apple has a regular and established places of business in this district.

JURISDICTION AND VENUE

5. This action arises under the patent laws of the United States, Title 35 of the United States Code. This Court has original subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a).

6. This Court has personal jurisdiction over Apple in this action because Apple has committed acts within this District giving rise to this action and has established minimum contacts with this forum such that the exercise of jurisdiction over Apple would not offend traditional notions of fair play and substantial justice. Apple, directly and through subsidiaries or intermediaries, has committed and continues to commit acts of infringement in this District by, among other things, importing, offering to sell, and selling products that infringe the Asserted Patents, and inducing others to do the same.

7. Venue is proper in this District under 28 U.S.C. §§ 1391 and 1400(b). Defendant has committed acts of infringement in this District and has regular and established places of business in this District, including its office located at 12545 Riata Vista Cir, Austin, TX 78727; 2901 S. Capital of Texas Hwy, Austin, TX 78746; 3121 Palm Way, Austin, TX 78758; 8401

Gateway Boulevard West, El Paso, TX 79925; 15900 La Cantera Parkway, San Antonio, TX 78256; and 7400 San Pedro Avenue, San Antonio, TX 78216, among others.

COUNT I

INFRINGEMENT OF U.S. PATENT NO. 8,093,767

8. Plaintiff realleges and incorporates by reference the foregoing paragraphs as if fully set forth herein.

9. Plaintiff owns by assignment all rights, title, and interest, including the right to recover damages for past, present, and future infringement, in U.S. Patent No. 8,093,767, entitled "Linear-resonant vibration module." The '767 Patent was duly and legally issued by the United States Patent and Trademark Office on January 10, 2012. A true and correct copy of the '767 Patent is attached as Exhibit 1.

10. On information and belief, Apple makes, uses, offers for sale, sells, and/or imports certain products and services, including without limitation iPhone products (iPhone 6s, 6s Plus, 7, 7 Plus, 8, 8 Plus, X, XR, XS, XS Max, 11, 11 Pro, 11 Pro Max, SE (second generation), 12, 12 mini, 12 Pro, 12 Pro Max, 13, 13 mini, 13 Pro, 13 Pro Max, SE (third generation), 14, 14 Plus, 14 Pro, 14 Pro Max), MacBook products (MacBook Pro from 2015, MacBook from 2018, MacBook Air from 2018) and Apple Watch products (1st generation, Series 1, Series 2, Series 3, Series 4, Series 5, SE, Series 6, Series 7, SE (second generation), Series 8, and Ultra) (collectively, "Accused Products"), that directly infringe, literally and/or under the doctrine of equivalents, one or more claims of the '767 Patent.

11. The Accused Products satisfy all claim limitations of one or more claims of the '767 Patent. A claim chart comparing exemplary independent claim 1 of the '767 Patent to representative Accused Products is attached as Exhibit 2 and incorporated by reference herein.

12. By making, using, offering for sale, selling and/or importing into the United States the Accused Products, Apple has injured Plaintiff and is liable for infringement of the '767 Patent pursuant to 35 U.S.C. § 271.

13. As a result of Apple's infringement of the '767 Patent, Plaintiff is entitled to monetary damages in an amount adequate to compensate for Apple's infringement, but in no event less than a reasonable royalty for the use made of the invention by Apple, together with interest and costs as fixed by the Court.

COUNT II

INFRINGEMENT OF U.S. PATENT NO. 8,860,337

14. Plaintiff realleges and incorporates by reference the foregoing paragraphs as if fully set forth herein.

15. Plaintiff owns by assignment all rights, title, and interest, including the right to recover damages for past, present, and future infringement, in U.S. Patent No. 9,941,830, entitled "Linear vibration modules and linear-resonant vibration modules." The '830 Patent was duly and legally issued by the United States Patent and Trademark Office on April 18, 2018. A true and correct copy of the '830 Patent is attached as Exhibit 5.

16. On information and belief, Apple makes, uses, offers for sale, sells, and/or imports certain products and services, including without limitation iPhone products (iPhone 6s, 6s Plus, 7, 7 Plus, 8, 8 Plus, X, XR, XS, XS Max, 11, 11 Pro, 11 Pro Max, SE (second generation), 12, 12 mini, 12 Pro, 12 Pro Max, 13, 13 mini, 13 Pro, 13 Pro Max, SE (third generation), 14, 14 Plus, 14 Pro, 14 Pro Max), MacBook products (MacBook Pro from 2015, MacBook from 2018, MacBook Air from 2018) and Apple Watch products (1st generation, Series 1, Series 2, Series 3, Series 4, Series 5, SE, Series 6, Series 7, SE (second generation), Series 8, and Ultra) (collectively,

"Accused Products"), that directly infringe, literally and/or under the doctrine of equivalents, one or more claims of the '830 Patent.

17. The Accused Products satisfy all claim limitations of one or more claims of the '830 Patent. A claim chart comparing exemplary independent claim 1 of the '830 Patent to representative Accused Products is attached as Exhibit 6.

18. By making, using, offering for sale, selling and/or importing into the United States the Accused Products, Apple has injured Plaintiff and is liable for infringement of the '830 Patent pursuant to 35 U.S.C. § 271.

19. As a result of Apple's infringement of the '830 Patent, Plaintiff is entitled to monetary damages in an amount adequate to compensate for Apple's infringement, but in no event less than a reasonable royalty for the use made of the invention by Apple, together with interest and costs as fixed by the Court.

COUNT III

INFRINGEMENT OF U.S. PATENT NO. 9,941,830

20. Plaintiff realleges and incorporates by reference the foregoing paragraphs as if fully set forth herein.

21. Plaintiff owns by assignment all rights, title, and interest, including the right to recover damages for past, present, and future infringement, in U.S. Patent No. 9,941,830, entitled "Linear vibration modules and linear-resonant vibration modules." The '830 Patent was duly and legally issued by the United States Patent and Trademark Office on April 18, 2018. A true and correct copy of the '830 Patent is attached as Exhibit 5.

22. On information and belief, Apple makes, uses, offers for sale, sells, and/or imports certain products and services, including without limitation iPhone products (iPhone 6s, 6s Plus, 7,

7 Plus, 8, 8 Plus, X, XR, XS, XS Max, 11, 11 Pro, 11 Pro Max, SE (second generation), 12, 12 mini, 12 Pro, 12 Pro Max, 13, 13 mini, 13 Pro, 13 Pro Max, SE (third generation), 14, 14 Plus, 14 Pro, 14 Pro Max), MacBook products (MacBook Pro from 2015, MacBook from 2018, MacBook Air from 2018) and Apple Watch products (1st generation, Series 1, Series 2, Series 3, Series 4, Series 5, SE, Series 6, Series 7, SE (second generation), Series 8, and Ultra) (collectively, "Accused Products"), that directly infringe, literally and/or under the doctrine of equivalents, one or more claims of the '830 Patent.

23. The Accused Products satisfy all claim limitations of one or more claims of the '830 Patent. A claim chart comparing exemplary independent claim 1 of the '830 Patent to representative Accused Products is attached as Exhibit 6.

24. By making, using, offering for sale, selling and/or importing into the United States the Accused Products, Apple has injured Plaintiff and is liable for infringement of the '830 Patent pursuant to 35 U.S.C. § 271.

25. As a result of Apple's infringement of the '830 Patent, Plaintiff is entitled to monetary damages in an amount adequate to compensate for Apple's infringement, but in no event less than a reasonable royalty for the use made of the invention by Apple, together with interest and costs as fixed by the Court.

COUNT IV

INFRINGEMENT OF U.S. PATENT NO. 11,152,882

26. Plaintiff realleges and incorporates by reference the foregoing paragraphs as if fully set forth herein.

27. Plaintiff owns by assignment all rights, title, and interest, including the right to recover damages for past, present, and future infringement, in U.S. Patent No. 11,152,882, entitled

"Oscillating-resonant-module controller." The '882 Patent was duly and legally issued by the United States Patent and Trademark Office on October 19, 2021. A true and correct copy of the '882 Patent is attached as Exhibit 7.

28. On information and belief, Apple makes, uses, offers for sale, sells, and/or imports certain products and services, including without limitation iPhone products (iPhone 6s, 6s Plus, 7, 7 Plus, 8, 8 Plus, X, XR, XS, XS Max, 11, 11 Pro, 11 Pro Max, SE (second generation), 12, 12 mini, 12 Pro, 12 Pro Max, 13, 13 mini, 13 Pro, 13 Pro Max, SE (third generation), 14, 14 Plus, 14 Pro, 14 Pro Max), MacBook products (MacBook Pro from 2015, MacBook from 2018, MacBook Air from 2018) and Apple Watch products (1st generation, Series 1, Series 2, Series 3, Series 4, Series 5, SE, Series 6, Series 7, SE (second generation), Series 8, and Ultra) (collectively, "Accused Products"), that directly infringe, literally and/or under the doctrine of equivalents, one or more claims of the '882 Patent.

29. The Accused Products satisfy all claim limitations of one or more claims of the '882 Patent. A claim chart comparing exemplary independent claim 1 of the '882 Patent to representative Accused Products is attached as Exhibit 8.

30. By making, using, offering for sale, selling and/or importing into the United States the Accused Products, Apple has injured Plaintiff and is liable for infringement of the '882 Patent pursuant to 35 U.S.C. § 271.

31. As a result of Apple's infringement of the '882 Patent, Plaintiff is entitled to monetary damages in an amount adequate to compensate for Apple's infringement, but in no event less than a reasonable royalty for the use made of the invention by Apple, together with interest and costs as fixed by the Court.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff respectfully requests that this Court enter:

a. A judgment in favor of Plaintiff that Apple has infringed, either literally and/or under the doctrine of equivalents, the ’767, ’337, ’830, and ’882 Patents;

b. A judgment and order requiring Apple to pay Plaintiff its damages, costs, expenses, and pre-judgment and post-judgment interest for Apple’s infringement of the ’767, ’337, ’830, and ’882 Patents;

c. A judgment and order requiring Apple to pay Plaintiff compulsory ongoing licensing fees, as determined by the Court;

d. A judgment and order requiring Apple to provide an accounting and to pay supplemental damages to Plaintiff, including without limitation, pre-judgment and post-judgment interest and compensation for infringing products released after the filing of this case that are not colorably different from the Accused Products;

e. A judgment and order finding that this is an exceptional case within the meaning of 35 U.S.C. § 285 and awarding to Plaintiff its reasonable attorneys’ fees against Apple; and

f. Any and all other relief as the Court may deem appropriate and just under the circumstances.

DEMAND FOR JURY TRIAL

Plaintiff, under Rule 38 of the Federal Rules of Civil Procedure, requests a trial by jury of any issues so triable by right.

Dated: June 1, 2023

Respectfully submitted,

/s/ Reza Mirzaie

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Attorneys for Plaintiff Resonant Systems, Inc. d/b/a RevelHMI

Exhibit 6

U.S. Patent No. 9,941,830 ("'830 Patent")

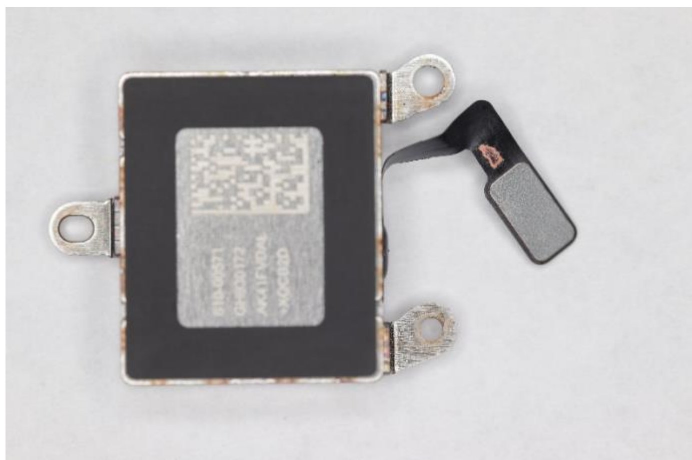
Accused Instrumentalities

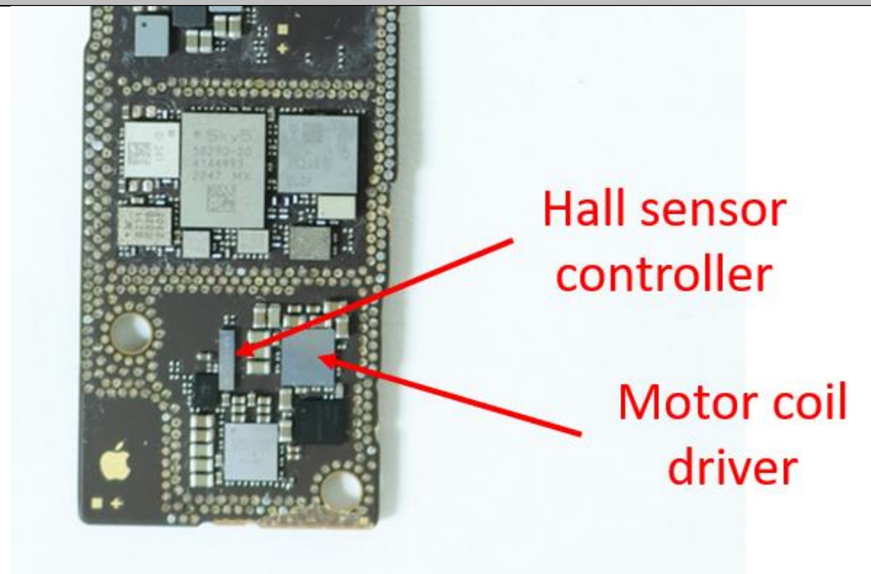
Apple products with Taptic Engine technology, including without limitation iPhone products, MacBook products, and Apple Watch products ("Accused Products"), infringe at least Claim 1 of the '830 Patent. Each Accused Product infringes the claims in substantially the same way, and the evidence shown in this chart is similarly applicable to each Accused Product.

Claim 1

Claim 1	Accused Products
[1pre]. A vibration module comprising:	To the extent the preamble is limiting, each Accused Product includes or constitutes a vibration module. For example, each of the Apple iPhone 14 and the Apple Watch Ultra contain a linear actuator ("Taptic Engine"), haptic controller(s), and associated circuitry, as described in connection with the claim limitations below. *See, e.g.*:

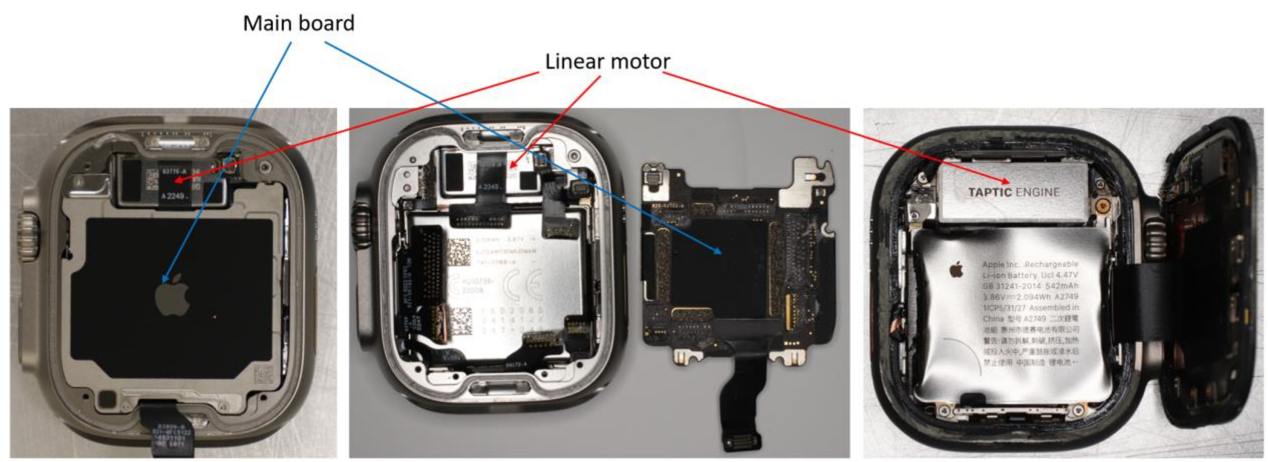
Photograph of iPhone 14 with rear cover removed, with A15 Bionic SoC at center right and Taptic Engine at bottom left.

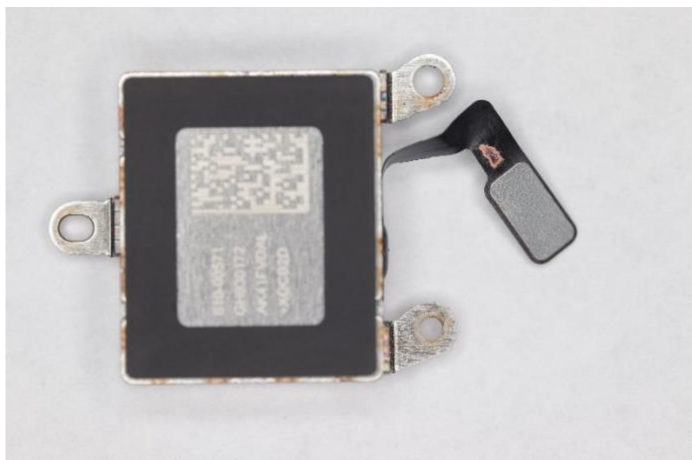
Claim 1	Accused Products
	 Photograph of Taptic Engine housing from iPhone 14.  Photograph of Taptic Engine housing from iPhone 14.

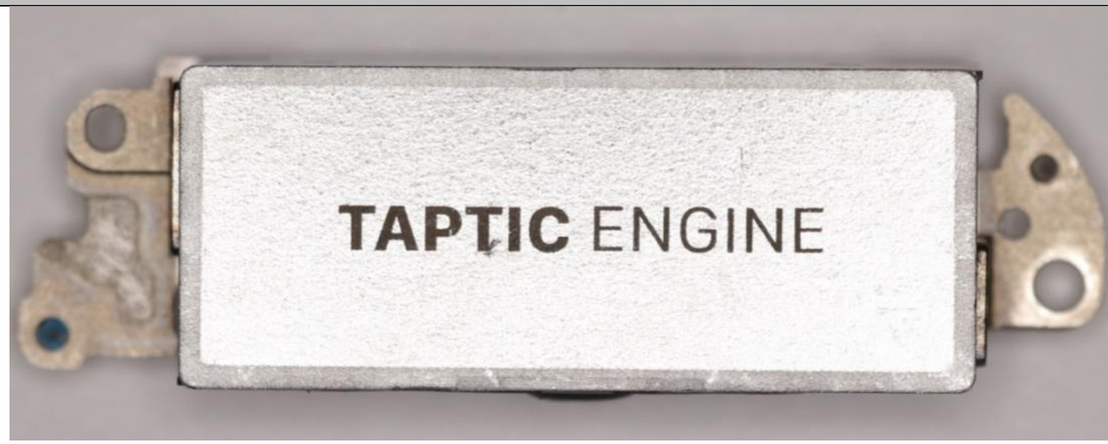
Claim 1	Accused Products
	 Photograph of Hall sensor controller and motor control driver from iPhone 14.

Claim 1	Accused Products
	The following devices contain a Taptic Engine: • iPhone 14 Pro Max • iPhone 14 Pro • iPhone 14 Plus • iPhone 14 • iPhone SE (3rd generation) • iPhone 13 Pro Max • iPhone 13 Pro • iPhone 13 • iPhone 13 mini • iPhone 12 Pro Max • iPhone 12 Pro • iPhone 12 • iPhone 12 mini • iPhone SE (2nd generation) • iPhone 11 Pro Max • iPhone 11 Pro • iPhone 11 • iPhone XS Max • iPhone XS • iPhone XR • iPhone X • iPhone 8 Plus • iPhone 8 • iPhone 7 Plus • iPhone 7 • iPhone 6s Plus • iPhone 6s Accessory Design Guidelines for Apple Devices, Release R20, *available at* https://developer.apple.com/accessories/Accessory-Design-Guidelines.pdf

Claim 1	Accused Products
	 Photograph of Apple Watch Ultra.

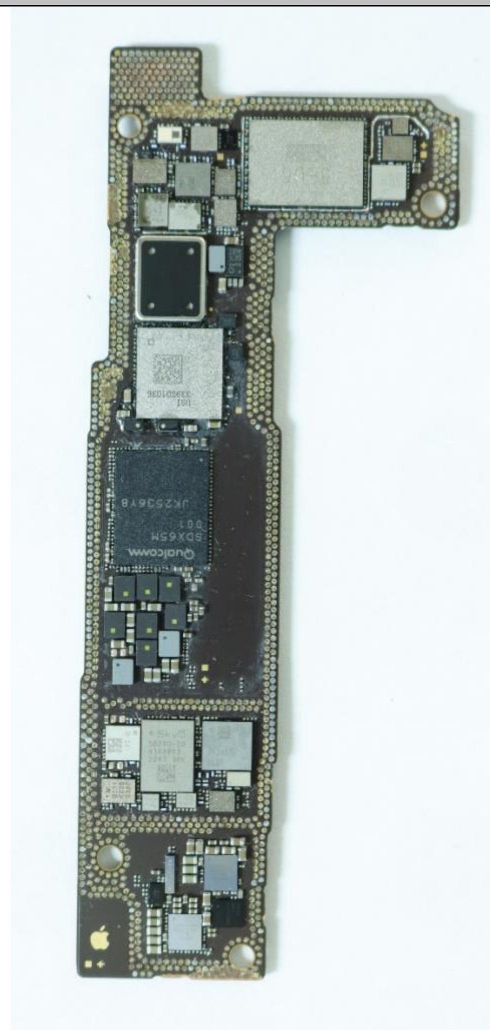
Claim 1	Accused Products
	 Wrist side, cover removed Wrist side, cover and main board removed Display side, display removed Annotated photograhs of Apple Watch Ultra showing linear actuator (taptic engine) and main system board.
[1a] a housing;	Each Accused Product comprises a housing. For example, the Taptic Engine in each of the iPhone 14 and Apple Watch Ultra has a hollow cavity that is soldered together to form a housing surrounding the moving mass and coils. *See, e.g.*:

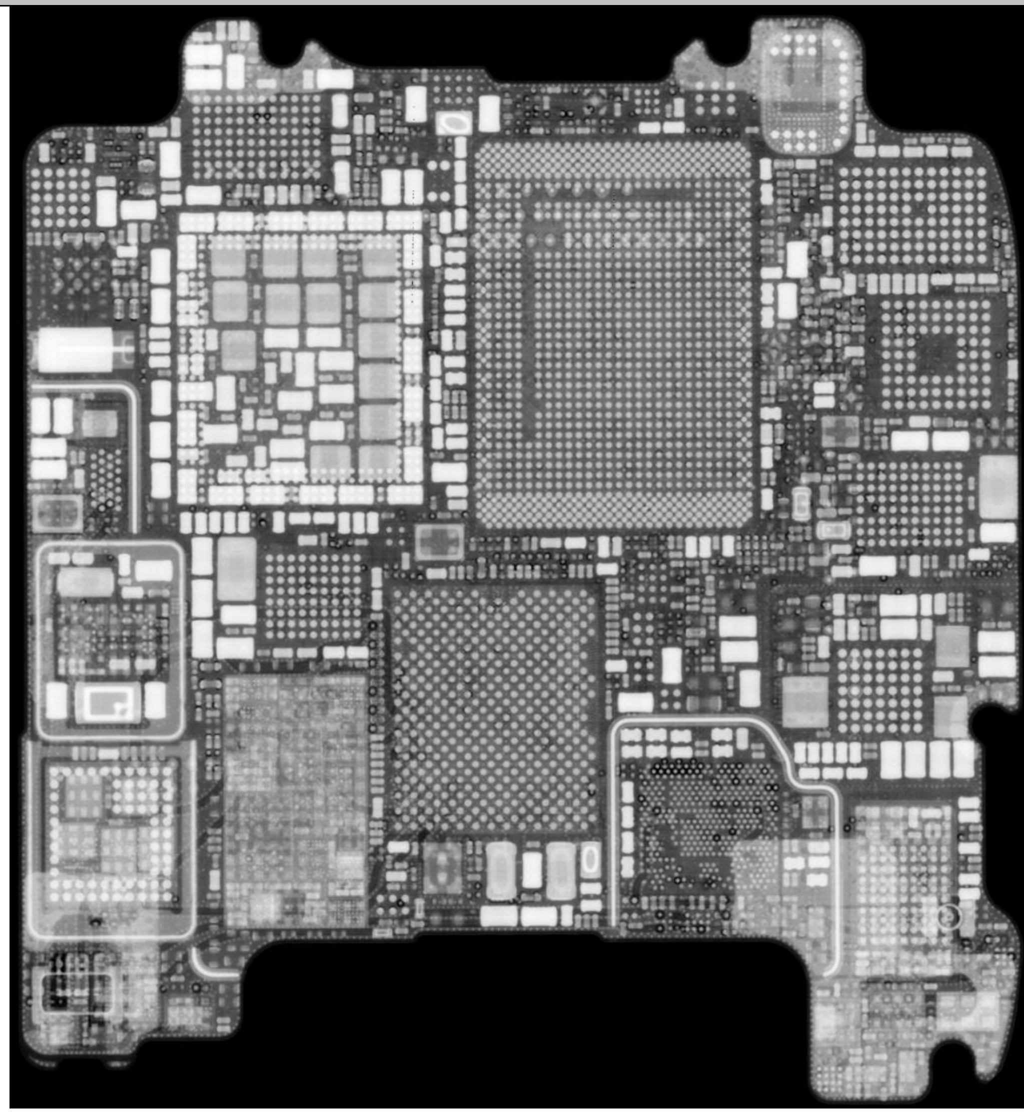
Claim 1	Accused Products
	 Photograph of Taptic Engine housing from iPhone 14.  Photograph of Taptic Engine housing from iPhone 14.

Claim 1	Accused Products
	 Photograph of Taptic Engine housing from Apple Watch Ultra.
[1b] a moveable component;	Each Accused Product comprises a moveable component. For example, the Taptic Engine in each of the iPhone 14 and Apple Watch Ultra includes a movable component comprising permanent magnet(s) and a mass. *See, e.g.*:

Claim 1	Accused Products
	 Photograph of moving mass (at right, connected to housing with springs) from iPhone 14.  Photograph of moving mass from Apple Watch Ultra.

Claim 1	Accused Products
[1c] a power supply;	Each Accused Product comprises a power supply. For example, the linear motor coil driver (described below) in each of the iPhone 14 and Apple Watch Ultra receives power from one or more voltage regulators on or near the Accused Product's system board. *See, e.g.*:

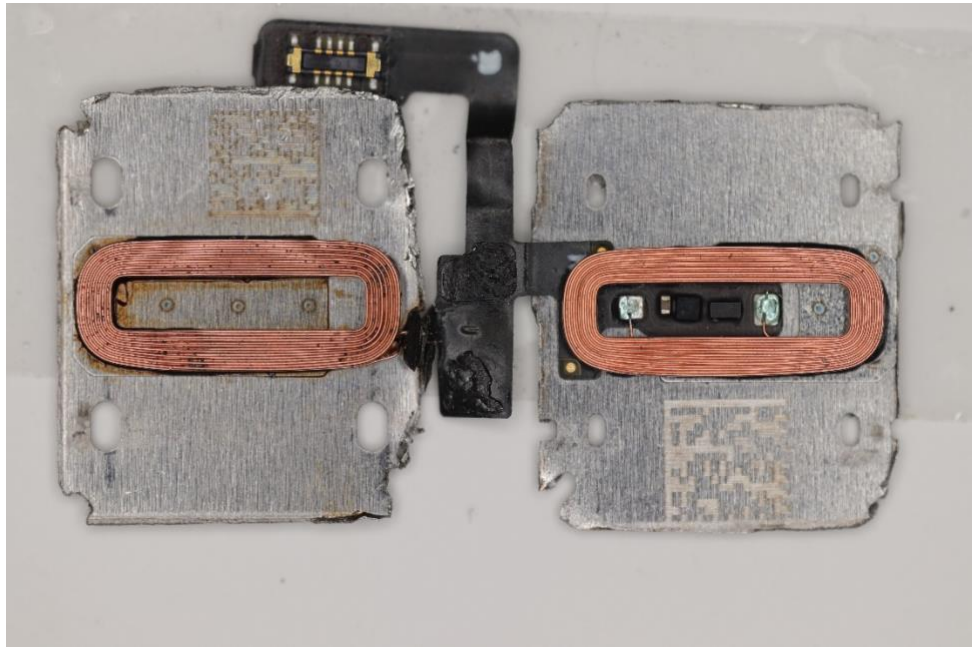
Claim 1	Accused Products
	 Photograph of iPhone 14 system board.

Claim 1	Accused Products
	 X-ray image of Apple Watch Ultra system board.

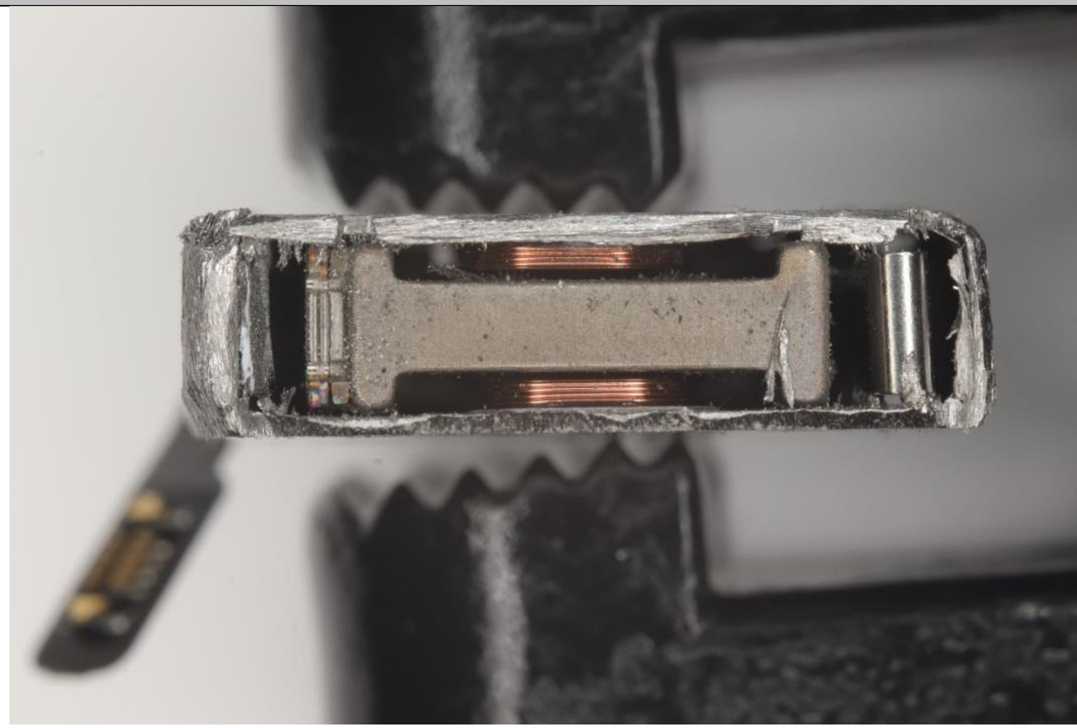
Claim 1	Accused Products
	See also claim elements below.
[1d] user-input features;	Each Accused Product comprises user-input features. For example, each of the iPhone 14 and Apple Watch Ultra comprises a touchscreen, buttons, and other user-input features. *See, e.g.*:

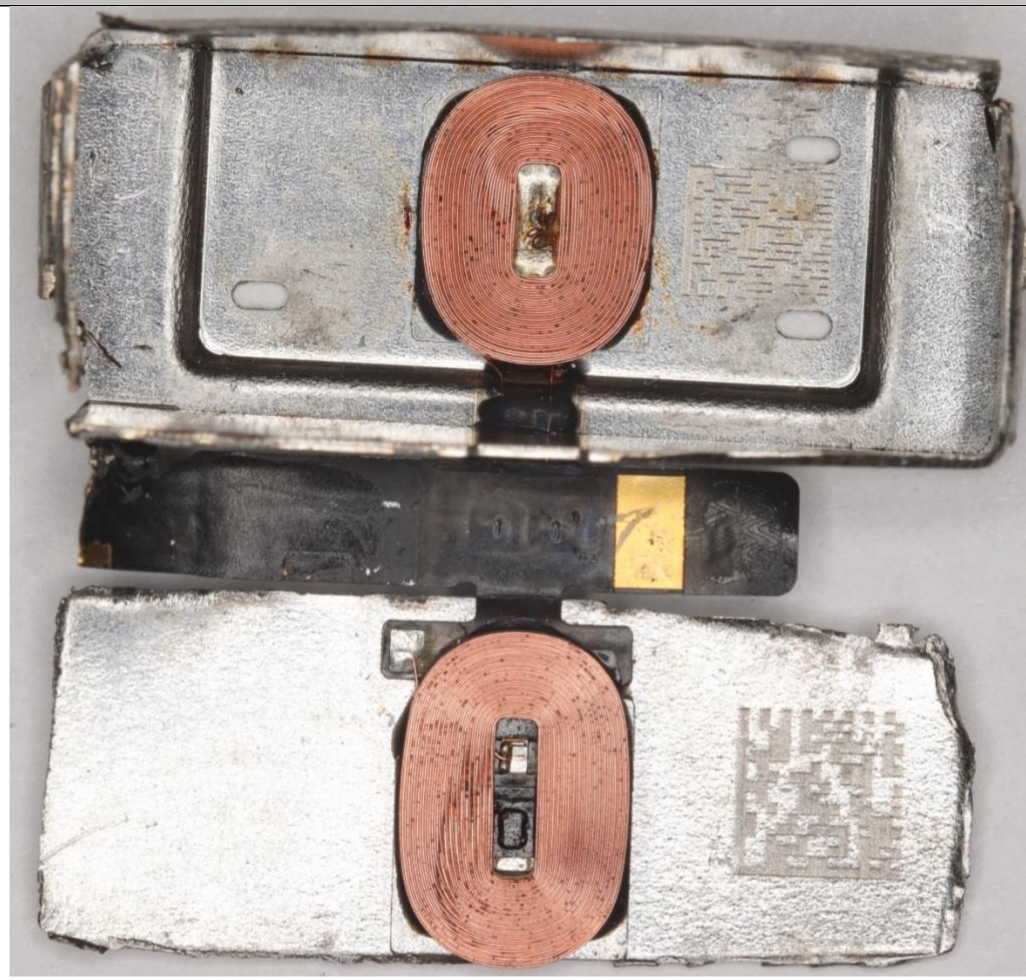
Claim 1	Accused Products
	 Photograph of iPhone 14 touchscreen, buttons, and switch, *available at* https://www.apple.com/iphone-14/.

Claim 1	Accused Products
	 Photograph of Apple Watch Ultra touchscreen, dial, and buttons.
[1e] a driving component that drives the moveable component to oscillate within the housing; and	Each Accused Product includes a driving component that drives the moveable component to oscillate within the housing. For example, the Taptic Engine includes one or more coils to form electromagnetic fields for driving the moveable component in two directions.

Claim 1	Accused Products
	See, e.g.:  Photograph of driving coils within disassembled Taptic Engine from iPhone 14. The two visible coils would be positioned above and below the moveable component when assembled.

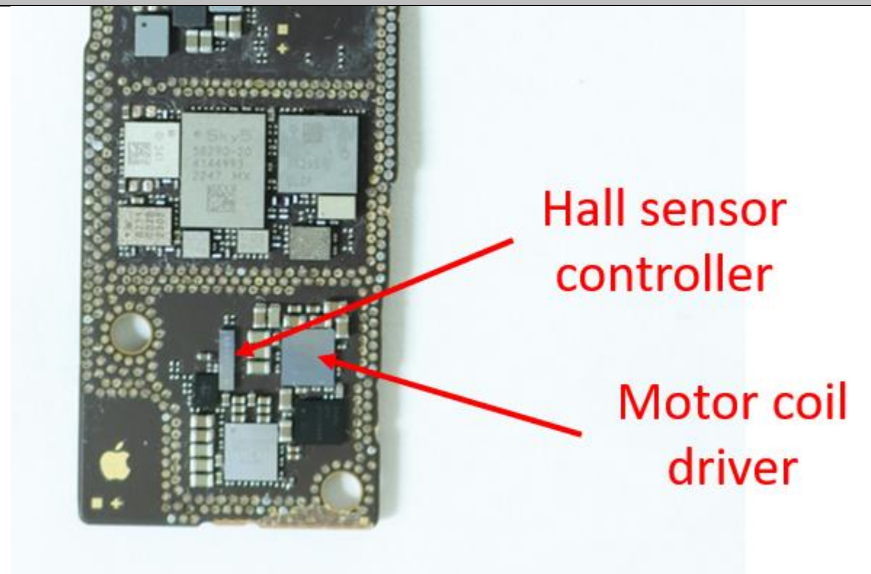
Claim 1	Accused Products
	 Photograph showing one driving coil (at right) within disassembled Taptic Engine from iPhone 14, with moveable component in place at left. The moveable component travels up and down from this perspective.

Claim 1	Accused Products
	 Photograph of internals of Taptic Engine from iPhone 14, showing drive coils (top and bottom) surrounding the moveable component. The moveable component travels left and right from this perspective.

Claim 1	Accused Products
	 Photograph of drive coils within disassembled Taptic Engine from Apple Watch Ultra. The two visible coils would be positioned above and below the movable component when assembled.

Claim 1	Accused Products
[1f] a control component that controls supply of power from the power supply to the driving component to cause the moveable component to oscillate at a frequency and an amplitude specified by one or more stored values.	Each Accused Product comprises a control component that controls supply of power from the power supply to the driving component to cause the moveable component to oscillate at a frequency and an amplitude specified by one or more stored values. For example, each Accused Product includes a main system processor, a linear motor coil driver, and a Hall sensor controller, which alone or in combination form a control component as claimed to drive the coils and thus move the magnetic mass in a linear oscillating motion, as described below. This control component can drive the moveable component at specified frequencies and amplitude, as demonstrated by public APIs and by testing. The public APIs, as well as any proprietary Apple APIs and interfaces, specify intenstity and sharpness (exemplary stored values) that directly and/or indirectly control the frequency and amplitude of the oscillation and that are stored at least within the system processor and associated volatile and non-volatile memory. On information and belief, the system processor and/or linear motor control driver include additional stored values specifying frequency and/or amplitude. *See, e.g.*:

Claim 1	Accused Products
	 Photographs showing iPhone 14 system board with A15 Bionic processor.

Claim 1	Accused Products
	 Annotated photograph of Hall sensor controller and motor coil driver from iPhone 14.

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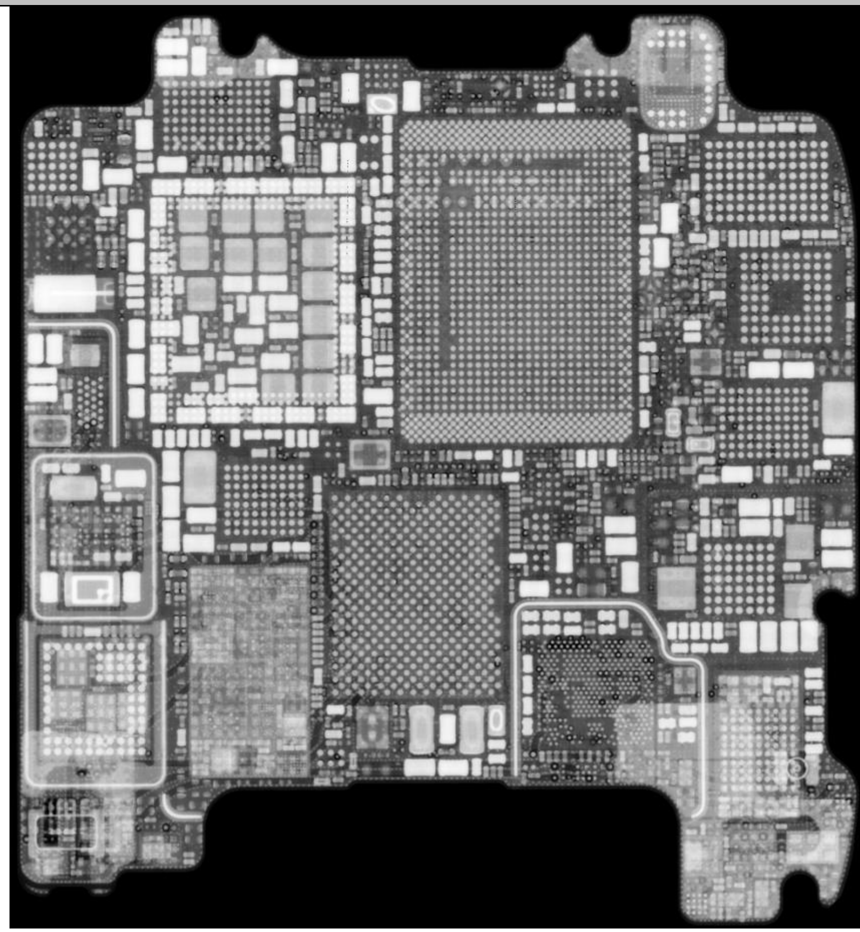
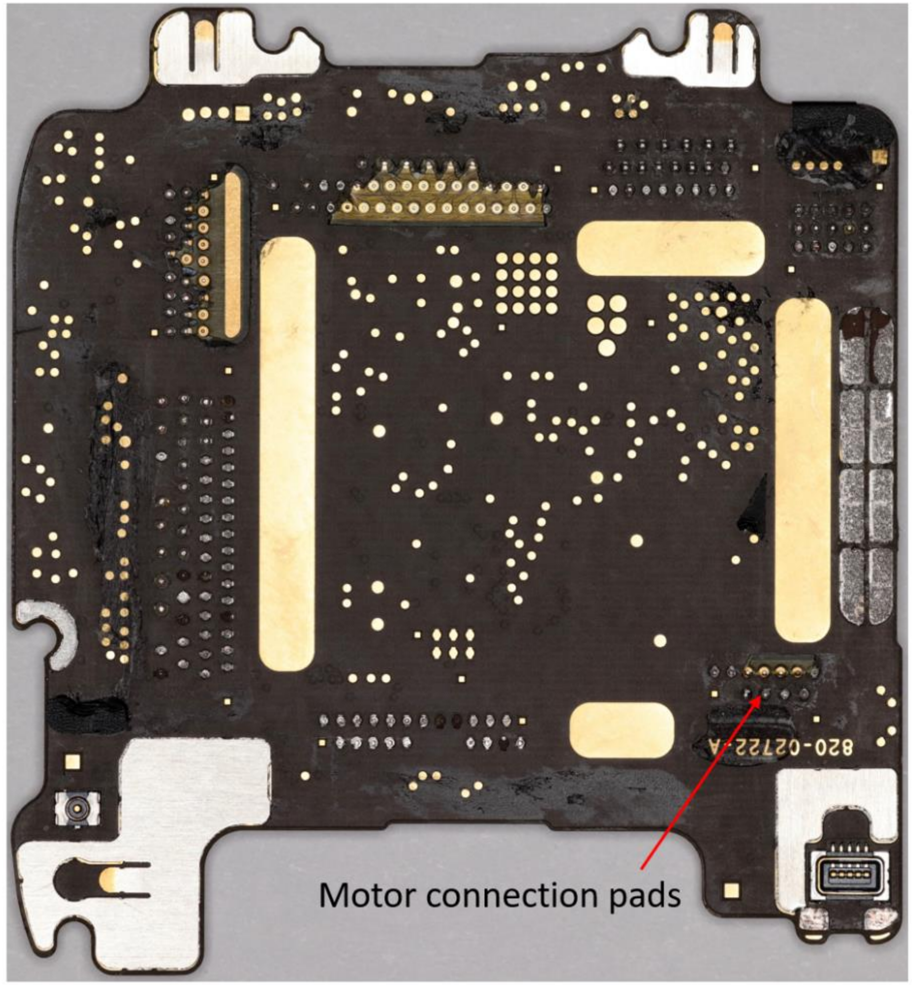
Claim 1	Accused Products
	 X-ray image of Apple Watch Ultra system board.

Claim 1	Accused Products
	 Annotated photograph of partially disassembled Apple Watch Ultra system board, showing connection points for haptic motor.

Claim 1	Accused Products
	(see below)

Declaration

```
class CHHapticEvent : NSObject
```

Overview

Each event represents a single haptic or audio signal. The event `type` determines whether it's audio or haptic. Use a `CHHapticPatternPlayer` object obtained through `CHHapticEngine` factory methods to play events. Haptic events can be transient or continuous. Transient haptic patterns are brief impulses that occur at a specific point in time, such as the haptic feedback you feel from swiping through a picker or toggling a switch. Continuous haptic patterns, like the vibration from a ringtone, take the form of lengthier feedback over a period of time.

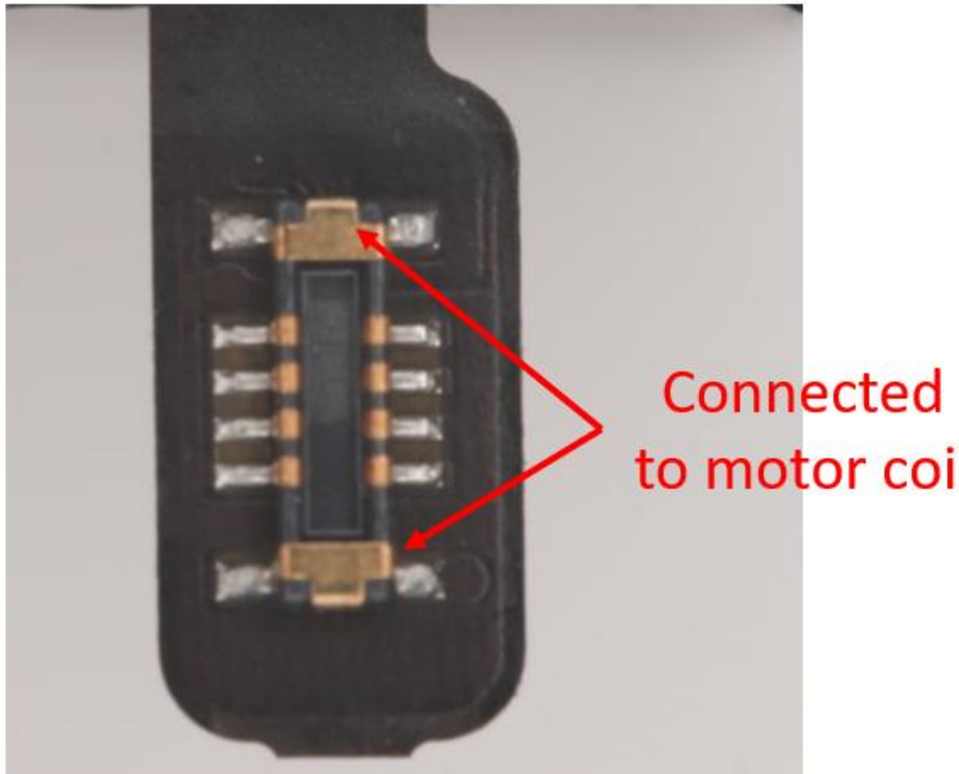
In the following graphic, transient haptic patterns on the left trigger at a specific time with a specific intensity. Continuous haptic patterns on the right sustain the haptic feedback over a specific duration of time, such as three seconds.

Specify when an event begins by setting its `relativeTime` property. Specify the length of the event by setting its `duration` property. Set optional parameters to customize event properties. For example, you can specify the intensity of a haptic event by creating an event parameter with ID `hapticIntensity`.

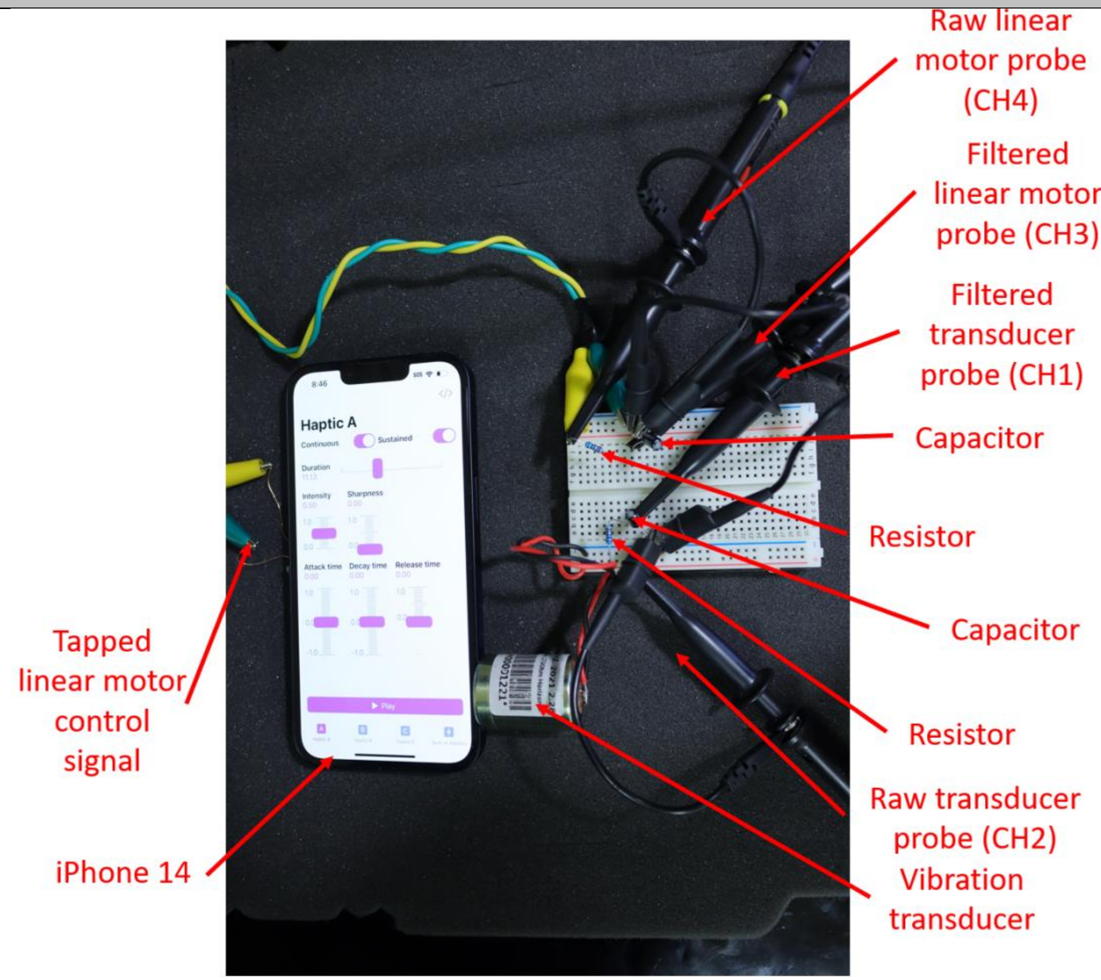
Documentation of CHHapticEvent object, https://developer.apple.com/documentation/corehaptics/chhapticevent

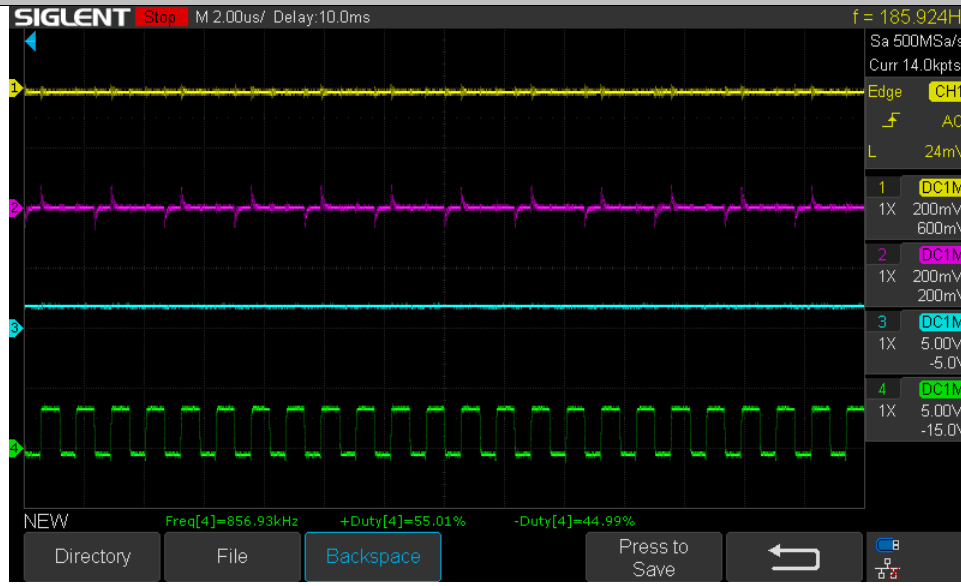
Claim 1	Accused Products
	Haptic Event Parameter IDs `static let hapticIntensity: CHHapticEvent.ParameterID` The strength of a haptic event. `static let hapticSharpness: CHHapticEvent.ParameterID` The feel of a haptic event. `static let attackTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins increasing. `static let decayTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins decreasing. `static let releaseTime: CHHapticEvent.ParameterID` The time at which to begin fading the haptic pattern. `static let sustained: CHHapticEvent.ParameterID` A Boolean value that indicates whether to sustain a haptic event for its specified duration. Documentation of haptic event parameters, https://developer.apple.com/documentation/corehaptics/chhapticevent/parameterid;

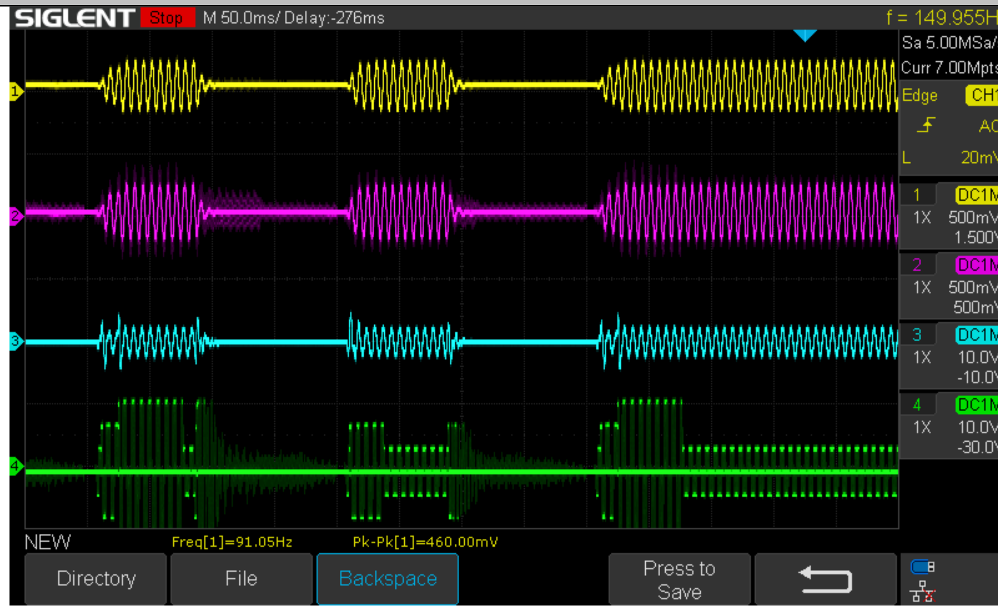
Claim 1	Accused Products
	4. The Continuous "Sharpness" parameter maps to frequency. For continuous events, we found that the sharpness parameter maps to frequency. On an iPhone 8, the lower sharpness boundary (0.0) of the Taptic Engine is 80 Hz; the higher sharpness boundary (1.0) is 230 Hz. This provides an effective range of 150 Hz, or roughly 1.5 octaves — which is impressive for a mobile phone released in 2017. Other phones or devices supporting Core Haptics might have different upper or lower boundaries since the frequency range is tied to the capabilities of the hardware actuator. https://medium.com/lofelt/10-things-you-should-know-about-designing-for-apple-core-haptics-9219fdebdcaa.

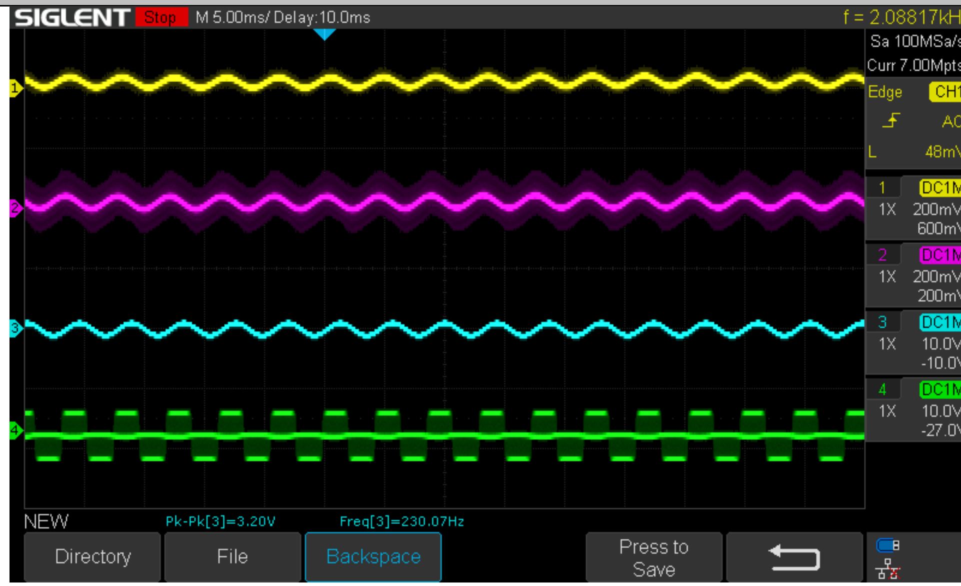
Claim 1	Accused Products
	 Annotated photograph of Taptic Engine connector from iPhone 14 showing positive and negative coil driving pins.

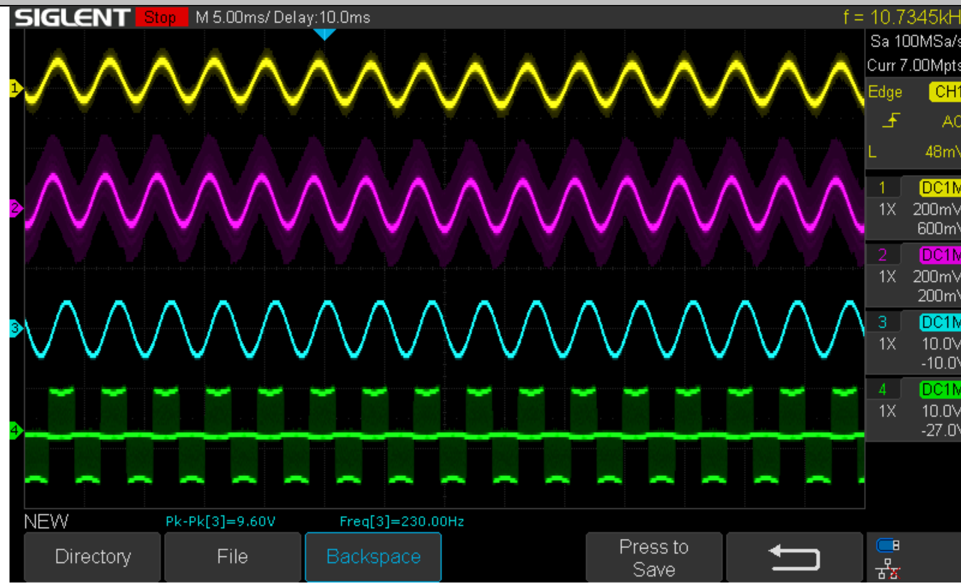
Claim 1	Accused Products
	 Photographs of test apparatus with electrical leads connected to motor coil drive traces of iPhone 14.

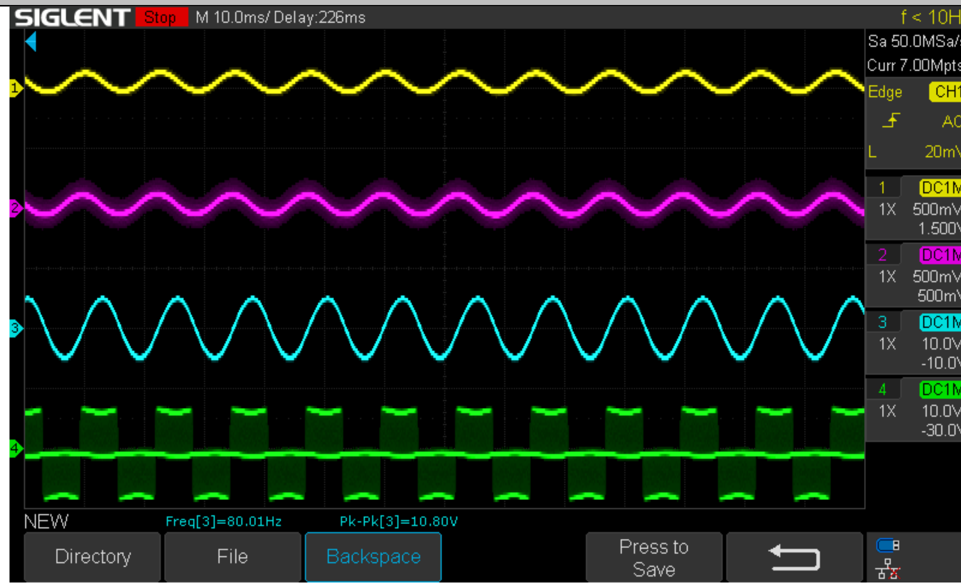
Claim 1	Accused Products
	 Photograph of test apparatus for measuring motor coil drive signal (from tapped connection) and actual motion (from attached vibration transducer) of iPhone 14. Note RC low-pass filter networks at top right with R = 220 Ω, C = 2.2 uF.

Claim 1	Accused Products
	 Oscilloscope trace showing, in green (CH4), the drive voltage applied by the iPhone 14 haptic controller(s); in this case, a pulse width modulated positive signal (modulation frequency 857 kHz) to drive the moveable component in one of two directions.

Claim 1	Accused Products
	 Oscilloscope trace showing, in green (CH4), the PWM-modulated drive voltage applied by the iPhone 14 haptic controller(s), with positive and negative voltages to drive the moveable component in a first and second direction. Channels 1 and 2 (yellow and purple) show the actual motion of the iPhone 14 resulting (pursuant to Newton's third law) from the motion of the moveable component.

Claim 1	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 0.5, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 3.2 V (peak-to-peak, through RC low-pass filter).

Claim 1	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 1, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 9.6V (peak-to-peak, through RC low-pass filter). Note that the externally measured vibration amplitude (yellow and purple traces, same scale as previous trace) is also significantly higher at intensity = 1 than 0.5.

Claim 1	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 1, sharpness = 0, with frequency of 80 Hz and motor drive amplitude of 10.8 V (peak-to-peak, through RC low-pass filter).

UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
MIDLAND-ODESSA DIVISION

RESONANT SYSTEMS, INC., d/b/a RevelHMI, Plaintiff, v. APPLE, INC., Defendant.	Case No. 7:23-cv-00077-DC **JURY TRIAL DEMANDED**

FIRST AMENDED COMPLAINT FOR INFRINGEMENT OF U.S. PATENTS 8,093,767, 8,860,337, 9,941,830, AND 11,152,882

This is an action for patent infringement arising under the Patent Laws of the United States of America, 35 U.S.C. § 1 *et seq.*, in which Plaintiff Resonant Systems, Inc., doing business as RevelHMI ("Plaintiff" or "RevelHMI"), makes the following allegations against Defendant Apple, Inc. ("Defendant" or "Apple"):

INTRODUCTION

1. This complaint arises from Apple's unlawful infringement of the following United States patents owned by Plaintiff, which relate to improvements in haptic feedback devices: United States Patent Nos. 8,093,767 (the "'767 Patent"), 8,860,337 (the "'337 Patent"), 9,941,830 (the "'830 Patent), and 11,152,882 (the "'882 Patent") (collectively, the "Asserted Patents").

PARTIES

2. Plaintiff is a corporation organized and existing under the laws of the state of Washington, with a place of business at 520 South King Street, Seattle, Washington 98104.

Plaintiff is the sole owner by assignment of all right, title, and interest in the Asserted Patents, including the right to recover damages for past, present, and future infringement.

3. Defendant Apple Inc. is a publicly traded corporation organized under the laws of the State of California, with its principal place of business at One Apple Park Way, Cupertino, CA 95014. Apple may be served with process through its registered agent, CT Corporation System, at 330 North Brand Boulevard, Suite 700, Glendale, California 91203.

4. This Court has personal jurisdiction over Apple in this action at least because Apple has a regular and established places of business in this district.

JURISDICTION AND VENUE

5. This action arises under the patent laws of the United States, Title 35 of the United States Code. This Court has original subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a).

6. This Court has personal jurisdiction over Apple in this action because Apple has committed acts within this District giving rise to this action and has established minimum contacts with this forum such that the exercise of jurisdiction over Apple would not offend traditional notions of fair play and substantial justice. Apple, directly and through subsidiaries or intermediaries, has committed and continues to commit acts of infringement in this District by, among other things, importing, offering to sell, and selling products that infringe the Asserted Patents, and inducing others to do the same.

7. Venue is proper in this District under 28 U.S.C. §§ 1391 and 1400(b). Defendant has committed acts of infringement in this District and has regular and established places of business in this District, including its office located at 12545 Riata Vista Cir, Austin, TX 78727; 2901 S. Capital of Texas Hwy, Austin, TX 78746; 3121 Palm Way, Austin, TX 78758; 8401

Gateway Boulevard West, El Paso, TX 79925; 15900 La Cantera Parkway, San Antonio, TX 78256; and 7400 San Pedro Avenue, San Antonio, TX 78216, among others.

COUNT I

INFRINGEMENT OF U.S. PATENT NO. 8,093,767

8. Plaintiff realleges and incorporates by reference the foregoing paragraphs as if fully set forth herein.

9. Plaintiff owns by assignment all rights, title, and interest, including the right to recover damages for past, present, and future infringement, in U.S. Patent No. 8,093,767, entitled "Linear-resonant vibration module." The '767 Patent was duly and legally issued by the United States Patent and Trademark Office on January 10, 2012. A true and correct copy of the '767 Patent is attached as Exhibit 1.

10. On information and belief, Apple makes, uses, offers for sale, sells, and/or imports certain products and services, including without limitation iPhone products (iPhone 6s, 6s Plus, 7, 7 Plus, 8, 8 Plus, X, XR, XS, XS Max, 11, 11 Pro, 11 Pro Max, SE (second generation), 12, 12 mini, 12 Pro, 12 Pro Max, 13, 13 mini, 13 Pro, 13 Pro Max, SE (third generation), 14, 14 Plus, 14 Pro, 14 Pro Max), MacBook products (MacBook Pro from 2015, MacBook from 2018, MacBook Air from 2018) and Apple Watch products (1st generation, Series 1, Series 2, Series 3, Series 4, Series 5, SE, Series 6, Series 7, SE (second generation), Series 8, and Ultra) (collectively, "Accused Products"), that directly infringe, literally and/or under the doctrine of equivalents, one or more claims of the '767 Patent.

11. The Accused Products satisfy all claim limitations of one or more claims of the '767 Patent. A claim chart comparing exemplary independent claim 1 of the '767 Patent to representative Accused Products is attached as Exhibit 2 and incorporated by reference herein.

12. By making, using, offering for sale, selling and/or importing into the United States the Accused Products, Apple has injured Plaintiff and is liable for infringement of the ’767 Patent pursuant to 35 U.S.C. § 271.

13. As a result of Apple’s infringement of the ’767 Patent, Plaintiff is entitled to monetary damages in an amount adequate to compensate for Apple’s infringement, but in no event less than a reasonable royalty for the use made of the invention by Apple, together with interest and costs as fixed by the Court.

COUNT II

INFRINGEMENT OF U.S. PATENT NO. 8,860,337

14. Plaintiff realleges and incorporates by reference the foregoing paragraphs as if fully set forth herein.

15. Plaintiff owns by assignment all rights, title, and interest, including the right to recover damages for past, present, and future infringement, in U.S. Patent No. 8,860,337, entitled “Linear vibration modules and linear-resonant vibration modules.” The ’337 Patent was duly and legally issued by the United States Patent and Trademark Office on October 14, 2014. A true and correct copy of the ’337 Patent is attached as Exhibit 3.

16. On information and belief, Apple makes, uses, offers for sale, sells, and/or imports certain products and services, including without limitation iPhone products (iPhone 6s, 6s Plus, 7, 7 Plus, 8, 8 Plus, X, XR, XS, XS Max, 11, 11 Pro, 11 Pro Max, SE (second generation), 12, 12 mini, 12 Pro, 12 Pro Max, 13, 13 mini, 13 Pro, 13 Pro Max, SE (third generation), 14, 14 Plus, 14 Pro, 14 Pro Max), MacBook products (MacBook Pro from 2015, MacBook from 2018, MacBook Air from 2018) and Apple Watch products (1st generation, Series 1, Series 2, Series 3, Series 4, Series 5, SE, Series 6, Series 7, SE (second generation), Series 8, and Ultra) (collectively,

"Accused Products"), that directly infringe, literally and/or under the doctrine of equivalents, one or more claims of the '337 Patent.

17. The Accused Products satisfy all claim limitations of one or more claims of the '337 Patent. A claim chart comparing exemplary independent claim 2 of the '337 Patent to representative Accused Products is attached as Exhibit 4.

18. By making, using, offering for sale, selling and/or importing into the United States the Accused Products, Apple has injured Plaintiff and is liable for infringement of the '337 Patent pursuant to 35 U.S.C. § 271.

19. As a result of Apple's infringement of the '337 Patent, Plaintiff is entitled to monetary damages in an amount adequate to compensate for Apple's infringement, but in no event less than a reasonable royalty for the use made of the invention by Apple, together with interest and costs as fixed by the Court.

COUNT III

INFRINGEMENT OF U.S. PATENT NO. 9,941,830

20. Plaintiff realleges and incorporates by reference the foregoing paragraphs as if fully set forth herein.

21. Plaintiff owns by assignment all rights, title, and interest, including the right to recover damages for past, present, and future infringement, in U.S. Patent No. 9,941,830, entitled "Linear vibration modules and linear-resonant vibration modules." The '830 Patent was duly and legally issued by the United States Patent and Trademark Office on April 18, 2018. A true and correct copy of the '830 Patent is attached as Exhibit 5.

22. On information and belief, Apple makes, uses, offers for sale, sells, and/or imports certain products and services, including without limitation iPhone products (iPhone 6s, 6s Plus, 7,

7 Plus, 8, 8 Plus, X, XR, XS, XS Max, 11, 11 Pro, 11 Pro Max, SE (second generation), 12, 12 mini, 12 Pro, 12 Pro Max, 13, 13 mini, 13 Pro, 13 Pro Max, SE (third generation), 14, 14 Plus, 14 Pro, 14 Pro Max), MacBook products (MacBook Pro from 2015, MacBook from 2018, MacBook Air from 2018) and Apple Watch products (1st generation, Series 1, Series 2, Series 3, Series 4, Series 5, SE, Series 6, Series 7, SE (second generation), Series 8, and Ultra) (collectively, "Accused Products"), that directly infringe, literally and/or under the doctrine of equivalents, one or more claims of the '830 Patent.

23. The Accused Products satisfy all claim limitations of one or more claims of the '830 Patent. A claim chart comparing exemplary independent claim 1 of the '830 Patent to representative Accused Products is attached as Exhibit 6.

24. By making, using, offering for sale, selling and/or importing into the United States the Accused Products, Apple has injured Plaintiff and is liable for infringement of the '830 Patent pursuant to 35 U.S.C. § 271.

25. As a result of Apple's infringement of the '830 Patent, Plaintiff is entitled to monetary damages in an amount adequate to compensate for Apple's infringement, but in no event less than a reasonable royalty for the use made of the invention by Apple, together with interest and costs as fixed by the Court.

COUNT IV

INFRINGEMENT OF U.S. PATENT NO. 11,152,882

26. Plaintiff realleges and incorporates by reference the foregoing paragraphs as if fully set forth herein.

27. Plaintiff owns by assignment all rights, title, and interest, including the right to recover damages for past, present, and future infringement, in U.S. Patent No. 11,152,882, entitled

"Oscillating-resonant-module controller." The '882 Patent was duly and legally issued by the United States Patent and Trademark Office on October 19, 2021. A true and correct copy of the '882 Patent is attached as Exhibit 7.

28. On information and belief, Apple makes, uses, offers for sale, sells, and/or imports certain products and services, including without limitation iPhone products (iPhone 6s, 6s Plus, 7, 7 Plus, 8, 8 Plus, X, XR, XS, XS Max, 11, 11 Pro, 11 Pro Max, SE (second generation), 12, 12 mini, 12 Pro, 12 Pro Max, 13, 13 mini, 13 Pro, 13 Pro Max, SE (third generation), 14, 14 Plus, 14 Pro, 14 Pro Max), MacBook products (MacBook Pro from 2015, MacBook from 2018, MacBook Air from 2018) and Apple Watch products (1st generation, Series 1, Series 2, Series 3, Series 4, Series 5, SE, Series 6, Series 7, SE (second generation), Series 8, and Ultra) (collectively, "Accused Products"), that directly infringe, literally and/or under the doctrine of equivalents, one or more claims of the '882 Patent.

29. The Accused Products satisfy all claim limitations of one or more claims of the '882 Patent. A claim chart comparing exemplary independent claim 1 of the '882 Patent to representative Accused Products is attached as Exhibit 8.

30. By making, using, offering for sale, selling and/or importing into the United States the Accused Products, Apple has injured Plaintiff and is liable for infringement of the '882 Patent pursuant to 35 U.S.C. § 271.

31. As a result of Apple's infringement of the '882 Patent, Plaintiff is entitled to monetary damages in an amount adequate to compensate for Apple's infringement, but in no event less than a reasonable royalty for the use made of the invention by Apple, together with interest and costs as fixed by the Court.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff respectfully requests that this Court enter:

a. A judgment in favor of Plaintiff that Apple has infringed, either literally and/or under the doctrine of equivalents, the ’767, ’337, ’830, and ’882 Patents;

b. A judgment and order requiring Apple to pay Plaintiff its damages, costs, expenses, and pre-judgment and post-judgment interest for Apple’s infringement of the ’767, ’337, ’830, and ’882 Patents;

c. A judgment and order requiring Apple to pay Plaintiff compulsory ongoing licensing fees, as determined by the Court;

d. A judgment and order requiring Apple to provide an accounting and to pay supplemental damages to Plaintiff, including without limitation, pre-judgment and post-judgment interest and compensation for infringing products released after the filing of this case that are not colorably different from the Accused Products;

e. A judgment and order finding that this is an exceptional case within the meaning of 35 U.S.C. § 285 and awarding to Plaintiff its reasonable attorneys’ fees against Apple; and

f. Any and all other relief as the Court may deem appropriate and just under the circumstances.

DEMAND FOR JURY TRIAL

Plaintiff, under Rule 38 of the Federal Rules of Civil Procedure, requests a trial by jury of any issues so triable by right.

Dated: August 14, 2023

Respectfully submitted,

/s/ Reza Mirzaie

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Attorneys for Plaintiff Resonant Systems, Inc. d/b/a RevelHMI

CERTIFICATE OF SERVICE

I hereby certify that on August 14, 2023, I electronically filed the foregoing document with the Clerk of the Court for the Western District of Texas using the ECF System which will send notification to the registered participants of the ECF System as listed on the Court's Notice of Electronic Filing.

/s/ *Reza Mirzaie*
Reza Mirzaie

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UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
MIDLAND-ODESSA DIVISION

RESONANT SYSTEMS, INC. d/b/a RevelHMI, *Plaintiff*, v. APPLE INC., *Defendant*.	Case No. 7:23-cv-00077-DC JURY TRIAL DEMANDED [redacted]

DEFENDANT APPLE INC.'S OPPOSED MOTION TO
TRANSFER VENUE TO THE NORTHERN DISTRICT OF CALIFORNIA

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I. INTRODUCTON

This case has numerous, direct relevant connections to the Northern District of California ("NDCA") and no relevant connection to the Western District of Texas ("WDTX"), much less Midland. As such, under a straightforward application of the *Volkswagen* factors, this case should be transferred to NDCA, the clearly more convenient venue.

On the most critical factor in the transfer analysis—the convenience of witnesses—there are numerous relevant witnesses in NDCA and none in WDTX. This is unsurprising because the features and functionalities accused of infringement in this case were developed almost entirely in NDCA, where Apple is headquartered. In particular, at least [redacted] Apple employees with knowledge relevant to the case—including Apple engineers knowledgeable about the accused technology, Apple employees with knowledge of sales and other financial information related of the accused products, Apple's patent licensing personnel, and Apple employees knowledgeable about relevant prior art—reside and work in NDCA. Accordingly, almost all relevant documents originated from, and are stored in, NDCA; all relevant Apple documents are accessible from NDCA; and Apple prior art samples and prototypes are stored in NDCA. Although Apple maintains some offices and employees in Texas, Apple is not aware of any unique connection between those offices or employees and this case.

Plaintiff Resonant Systems, Inc. d/b/a RevelHMI ("Resonant"), a Washington-based non-practicing entity, does not appear to have any ties to Texas, much less WDTX, either. Resonant's complaint alleges no facts describing operations or employees in Texas, and Apple has not discovered evidence of any such ties. To the contrary, Apple's investigation yielded facts that ***support*** transfer—one of the named inventors on all asserted patents resides in NDCA, and all other named inventors reside in Washington.

CONFIDENTIAL MATERIAL OMITTED

Similarly, the only potentially relevant third parties Apple has identified so far [redacted] are either in NDCA or are otherwise outside of WDTX's subpoena power. As such, Apple has not identified ***any*** relevant persons or entities, including third parties, with connections to Texas.

Because all factors either favor transfer or are neutral, and no factor favors keeping this case in WDTX, this case should be transferred to NDCA.

II. STATEMENT OF FACTS

A. Resonant Accuses Features Developed by Apple Almost Entirely in NDCA

Resonant filed this patent infringement suit in WDTX against Apple on June 1, 2023, alleging infringement of U.S. Patent Nos. 8,093,767, 8,860,337, 9,941,830, and 11,152,882 (the "Asserted Patents"). First Amended Complaint, Dkt. No. 20 ("FAC") at ¶ 1. Specifically, Resonant accuses "Apple products with Taptic Engine technology, including without limitation iPhone products, MacBook products, and Apple Watch products" of infringing the Asserted Patents. FAC at Ex. 2 at 1, Ex. 4 at 1, Ex. 6 at 1, Ex. 8 at 1; *see also* FAC at ¶¶ 10, 16, 22, 28.

Since its founding in 1976, Apple has been headquartered in Cupertino, California (in NDCA) and employs more than 36,000 people statewide. *See* Ex. 1 at 1; Ex. 2 at 3; FAC at ¶ 3. Apple's management, primary research and development, and marketing facilities are all in NDCA. *See* Ex. 1 at 1; Ankenbrandt Decl. at ¶ 5; Zhang Decl. at ¶¶ 4–8; Spevak Decl. at ¶ 4. Apple engineers who research, design, develop, and implement the Taptic Engines in the accused products are almost all in California, and nearly all reside and work in NDCA from Apple's headquarters. Zhang Decl. at ¶¶ 4–8. The engineers who do not work in NDCA are almost all in [redacted], California. *Id.* The one engineer who works outside of California resides in [redacted]. *Id.* Nearly all Apple employees involved with Apple's patent licensing as well as those knowledgeable about sales and financial information for the accused products likewise reside and

CONFIDENTIAL MATERIAL OMITTED

work in NDCA. Ankenbrandt Decl. at ¶ 5; Spevak Decl. at ¶ 4. The list below identifies Apple employees with relevant information in this case and the likely subject matter of their testimony.

- [redacted] engineers across [redacted] teams are responsible for and have knowledge of the research, design, development, and implementation of the Taptic Engines in the accused products. Zhang Decl. at ¶¶ 4–8. Of those, [redacted] engineers reside and work in NDCA, [redacted]. *Id.* None are in Texas. *Id.* None routinely travel to Texas for work, nor do any work with anyone in Texas. *Id.* at ¶ 9.

- Brian Ankenbrandt is a Senior Manager at Apple and is knowledgeable about Apple's intellectual property licensing practices relevant to this case. Ankenbrandt Decl. at ¶¶ 1, 4. Mr. Ankenbrandt is in NDCA. *Id.* at ¶ 1.

- Catherine Spevak is a Finance Manager at Apple and is knowledgeable about sales and financial information regarding the accused products. Spevak Decl. at ¶¶ 1, 4. Ms. Spevak is in NDCA. *Id.* at ¶ 1.

- Robin Goldberg is a Discovery Manager at Apple who is knowledgeable about Apple's inventory of potential prior art products. Goldberg Decl. at ¶¶ 1, 3. Ms. Goldberg is in NDCA. *Id.* at ¶ 1.

Hence, at least [redacted] Apple employees with relevant knowledge reside in NDCA and [redacted]. While there may be Apple store employees in WDTX with general knowledge about the sales of the accused produces in WDTX, those individuals do not have any unique knowledge relevant to this case and were not involved in the design or development of the Taptic Engines in the accused products; Apple therefore has not identified any as a relevant witness in this case. Moreover, Apple's investigation has not identified anyone with relevant information about the Taptic Engines in the accused products in WDTX. *See* Ankenbrandt Decl. at ¶ 5; Zhang Decl. at ¶ 9; Spevak Decl. at ¶ 4.

Similarly, the electronic and paper records related to the development of the Taptic Engines in the accused products are predominantly generated from, stored in, and/or accessible from NDCA. Zhang Decl. at ¶ 10. The financial and licensing documents relevant to this case are likewise located primarily in NDCA. Spevak Decl. at ¶ 4; Ankenbrandt Decl. at ¶ 6. Apple is not aware of any relevant, unique documents located in Texas. *See id.*; Zhang Decl. at ¶ 10.

In short, Apple's anticipated witnesses and relevant documents are almost all in California and highly concentrated in NDCA. No anticipated witness, document, or evidence is in WDTX.

B. Resonant is a Washington Company with No Apparent Ties to Texas

According to the First Amended Complaint, Resonant is "a corporation organized and existing under the laws of the state of Washington, with a place of business at 520 South King Street, Seattle, Washington 98104." FAC, ¶ 2. Robin Elenga, Resonant's founder and president, appears to be based in Seattle, Washington. Ex. 3 at 1. Mr. Elenga is a named inventor on all four Asserted Patents, and the lead inventor on three. Resonant is a patent holding company, and its only apparent operations consist of attempted licensing and litigation related to the Asserted Patents and related patents. *See, e.g.*, Ex. 4 at 1 (a research company's report on RevelHMI, showing a total of six employees including the founder); Ex. 5 at 1 (Resonant's Crunchbase profile, indicating between 1–10 employees); Ex. 6 (Resonant's official website—linked on its LinkedIn and Crunchbase profiles—which is blank); *see also, generally* FAC (Resonant's FAC provides no description of its business other than patent ownership). Resonant does not appear to design or manufacture any product, let alone any product that practices the Asserted Patents. *See id*. Thus, Resonant's relevant witnesses and documents appears to be only in Washington, and Resonant has no apparent ties to WDTX or Texas.

C. Many Third Party Witnesses are in NDCA and None are in WDTX

Relevant third parties are located in NDCA including: one named inventor of the asserted patents (Brian Marc Pepin), Ex. 7, and [redacted], Zhang Decl. at ¶ 11. Apple's investigation has failed to identify a relevant third party located in WDTX.

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III. LEGAL STANDARD

"For the convenience of parties and witnesses, in the interest of justice, a district court may transfer any civil action to any other district or division where it might have been brought." 28 U.S.C. § 1404(a). The movant must show "good cause" by demonstrating that the "transferee venue is clearly more convenient" than the transferor district. *In re Volkswagen of Am., Inc.*, 545 F.3d 304, 315 (5th Cir. 2008) ("*Volkswagen II*").

In evaluating convenience, the district court weighs both private and public interest factors.[1] *In re Volkswagen AG*, 371 F.3d 201, 203 (5th Cir. 2004) ("*Volkswagen I*"). The private factors include: "(1) the relative ease of access to sources of proof; (2) the availability of compulsory process to secure the attendance of witnesses; (3) the cost of attendance for willing witnesses; and (4) all other practical problems that make trial of a case easy, expeditious and inexpensive." *Id*. The public interest factors include: "(1) the administrative difficulties flowing from court congestion; (2) the local interest in having localized interests decided at home; (3) the familiarity of the forum with the law that will govern the case; and (4) the avoidance of unnecessary problems of conflict of laws of the application of foreign law." *Id.*

The convenience of the witnesses is the most important factor. *See In re Genentech, Inc.*, 566 F.3d 1338, 1343 (Fed. Cir. 2009); *Auto-Dril, Inc. v. Nat'l Oilwell Varco, L.P.*, No. 6:15-CV-00091, 2016 WL 6909479, at *7 (W.D. Tex. Jan. 28, 2016). Thus, the proposed transferee forum is "clearly more convenient" where, as here, most potential witnesses and relevant evidence are in the transferee district and few or none are in the transferor venue. *In re Nintendo Co., Ltd.*, 589 F.3d 1194, 1198 (Fed. Cir. 2009); *see also In re Hoffman-La Roche Inc.*, 587 F.3d 1333, 1336–37

[1] The plaintiff's choice of venue is not a distinct factor in the analysis. *Volkswagen II*, 545 F.3d at 314–15. Nor is the location of counsel. *Volkswagen I*, 371 F.3d at 206.

(Fed. Cir. 2009); *In re Juniper Networks, Inc.*, 14 F.4th 1313, 1323 (Fed. Cir. 2021); *In re TracFone Wireless, Inc.*, 852 F. App'x 537 (Fed. Cir. 2021); *In re Apple Inc.*, 979 F.3d 1332 (Fed. Cir. 2020); *In re Adobe Inc.*, No. 2020-126, 2020 WL 4308164 (Fed. Cir. Jul. 28, 2020); *USTA Tech., LLC v. Google LLC*, Case No. W-22-CA-01214-XR, 2023 WL 4833481, at *3–4 (W.D. Tex. July 26, 2023) (granting motion to transfer venue); *Collaborative Agreements, LLC. v. Adobe Sys. Inc.*, No. 1-14-CV-356, 2015 WL 10818739 (W.D. Tex. Aug. 21, 2015).

IV. NDCA IS CLEARLY MORE CONVENIENT THAN WDTX

A. This Case Could Have Been Brought in NDCA

A patent infringement case "may be brought in the judicial district where the defendant resides." 35 U.S.C. § 1400(b). And a corporate defendant "resides" in its state of incorporation. *TC Heartland LLC v. Kraft Foods Group Brands LLC*, 137 S. Ct. 1514 (2017). Thus, this case could have been brought in NDCA because Apple is incorporated in California. FAC, ¶ 3.

B. The Private Interest Factors Favor Transfer

The private interest factors strongly favor transfer because the relevant witnesses and evidence are almost all in NDCA and none are in WDTX.

1. Relative Ease of Access to Sources of Proof Strongly Favors Transfer

"In patent infringement cases, the bulk of the relevant evidence usually comes from the accused infringer. Consequently, the place where the defendant's documents are kept weighs in favor of transfer to that location." *Genentech*, 566 F.3d at 1345. "In determining the ease of access to sources of proof, the Court will look to the location where the allegedly infringing products were researched, designed, developed and tested." *XY, LLC v. Trans Ova Genetics, LC*, No. W-16-CA-00447-RP, 2017 WL 5505340, at *13 (W.D. Tex. Apr. 5, 2017).

Here, almost all research, design, development, and implementation of the accused features occurred or presently occurs in NDCA, at or near Apple's Cupertino headquarters. *See* Zhang

Decl. at ¶¶ 4–8. NDCA is the primary location where Apple engineers developed the Taptic Engine, as well as the accused products more generally, and it is also where the engineers who work on the Taptic Engine today now reside. Zhang Decl. at ¶¶ 4–8. Accordingly, electronic documents and source code relating to the Taptic Engines in the accused products were predominantly generated in and are accessed from NDCA. Zhang Decl. at ¶ 10. For the same reason, physical evidence, including Apple's prototypes and potential prior art products relevant to Apple's invalidity defenses, are stored in NDCA.[2] *Id.*; Goldberg Decl. at ¶ 3. Likewise, Apple's financial documents relating to sales of the accused products, as well as Apple's patent license agreements, are predominantly generated in and accessed from NDCA. Spevak Decl. at ¶ 4; Ankenbrandt Decl. at ¶ 6. In addition, third parties with potentially relevant documents, including a named inventor of all Asserted Patents and [redacted] are in NDCA. *See supra* Section II.C. This also weighs in favor of transfer. *See Koss Corp. v. Plantronics, Inc.*, No. 6:20-CV-00663-ADA, 2021 WL 2075685, *3 (W.D. Tex. May 20, 2021) ("[Movant]'s showing that additional, third-party documents . . . are located in NDCA further tips the scales in favor of transfer."). As such, nearly all the relevant sources of proof are in NDCA.

Importantly, Apple is not aware of any relevant sources of proof uniquely in WDTX or Texas. None of Apple's work relating to the accused technology was performed in WDTX. *See* Zhang Decl. at ¶¶ 9–10; Spevak Decl. at ¶ 4; Ankenbrandt Decl. at ¶ 6. Moreover, Resonant does

[2] For example, under Resonant's apparent theory of infringement for claim 1 of the '830 Patent, FAC at Ex. 6, and upon information and belief, Apple's iPhone 4 and iPhone 4S each has a linear resonance actuator with a housing, a moveable component, a power supply, user-input features, a driving component that drives the moveable component to oscillate within the housing; and a control component that controls supply of power from the power supply to the driving component to cause the moveable component to oscillate at a frequency and an amplitude specified by one or more stored values.

not allege that the claimed invention of the Asserted Patents was developed in WDTX. And there is no indication that Resonant practices any of the asserted patents in WDTX (or anywhere else).

The only tie to Texas Resonant has identified is several Apple office locations in Texas (FAC at ¶ 7), but these are irrelevant to the issues in this case. *See In re Apple Inc.*, No. 2022-128, 2022 WL 1196768, at *3 (Fed. Cir. Apr. 22, 2022), *cert. denied sub nom. CPC Pat. Techs. PTY Ltd. v. Apple Inc.*, 143 S. Ct. 206, 214 L. Ed. 2d 80 (2022) ("[A] party's 'general presence in a particular district' does not alone 'give that district a special interest in the case.'" (internal citation removed)). Sources of proof must be "relevant to the issues in this case" to affect the transfer analysis. *USTA*, 2023 WL 4833481 at *5. Here, there are no unique sources of proof relevant to this case in those offices. *See* Zhang Decl. at ¶ 10; Spevak Decl. at ¶ 4; Ankenbrandt Decl. at ¶ 6. Even if, hypothetically, some tidbits of relevant information are in WDTX that Apple's investigation so far has not uncovered, "[t]he mere presence of records in both the NDCA and the WDTX does not render this factor neutral. The quantity and substance of [Apple]'s documents bearing on the accused instrumentalities, which are created and maintained in the NDCA, are of significantly greater importance to the transfer analysis." *Id.*; *see also Apple*, 979 F.3d at 1339–40 ("[M]ovant need not show that all relevant documents are located in the transferee venue to support a conclusion that the location of relevant documents favors transfer.").

Given that NDCA is the center of the relevant sources of proof and WDTX has no known unique sources of proof, this factor clearly favors transfer.

2. Availability of Compulsory Process Favors Transfer

The availability of compulsory process also favors transfer in this case. *See In re Acer Am. Corp.*, 626 F.3d 1252, 1255 (Fed. Cir. 2010) (stating a court's ability to compel testimony and the production of documents through its subpoena power is "an important factor in the § 1404(a) calculus."). The compulsory process factor focuses on "non-party witnesses whose attendance may need to be secured by a court order." *Fintiv, Inc. v. Apple Inc.*, No. 6:18-CV-00372-ADA, 2019 WL 4743678, at *5 (W.D. Tex. Sept. 13, 2019) (citing *Volkswagen II*, 545 F.3d at 316). This factor "weigh[s] heavily in favor of transfer when more third-party witnesses reside within the transferee venue than reside in the transferor venue." *In re Apple, Inc.*, 581 F. App'x 886, 889 (Fed. Cir. 2014); *Hoffman-La Roche*, 587 F.3d at 1337–38.

A court may subpoena a witness to attend trial only (a) "within 100 miles of where the person resides, is employed, or regularly transacts business in person" or (b) "within the state where the person resides, is employed, or regularly transacts business in person, if the person . . . is commanded to attend a trial and would not incur substantial expense." Fed. R. Civ. P. 45(c)(1)(A), (B); *Gemalto S.A. v. CPI Card Grp. Inc.*, No. 15-CA-0910, 2015 WL 10818740, at *4 (W.D. Tex. Dec. 16, 2015). Moreover, the ability to compel live trial testimony is crucial for evaluating a witnesses' credibility. *Aguilar-Ayala v. Ruiz*, 973 F.2d 411, 419 (5th Cir. 1992).

Here, the availability of compulsory process clearly favors transfer because several potentially relevant third-party witnesses are in NDCA, and none are in WDTX. *See supra* Section II.C.; *In re Hulu LLC*, No. 2021-142, 2021 WL 3278194, *4 (Fed. Cir. Aug. 2, 2021) (finding this factor favors transfer where "multiple third-party witnesses . . . are overwhelmingly located within the subpoena power of only the transferee venue"); *In re Google LLC*, No. 2023-101, 2023 WL 1425780, *3 (Fed. Cir. Feb. 1, 2023) (finding that eleven witnesses in the transferee district versus three witnesses in the transferor district weighs "firmly" in favor of transfer); *USTA*, 2023 WL 4833481 at *4–5 (similar).

At least [redacted] potentially relevant non-party witnesses are subject to compulsory process in the NDCA District Court, which has subpoena power over individuals in California. *See In re Apple Inc.*, No. 2021-181, 2021 WL 5291804, *3 (Fed. Cir. Nov. 15, 2021) (noting that third parties with office in California are subject to NDCA's subpoena power). One is Brian Marc Pepin, a named inventor on all Asserted Patents, who resides in NDCA. *See supra* Section II.C. The other [redacted] non-party witnesses are [redacted]. *See supra* Section II.C.

Because the NDCA has usable subpoena power over the third-party witnesses likely to possess relevant information in this case, and WDTX does not, this factor clearly weighs in favor of transfer. *See Genentech*, 566 F.3d at 1345 ("The fact that the transferee venue is a venue with usable subpoena power here weighs in favor of transfer, and not only slightly.").

3. Convenience of Witnesses Strongly Favors Transfer

The convenience of witness factor is "probably the single most important factor in [the] transfer analysis." *Genentech*, 566 F.3d at 1343. "When the distance between an existing venue for trial . . . and a proposed venue under § 1404(a) is more than 100 miles, the factor of inconvenience to witnesses increases in direct relationship to the additional distance to be traveled." *Volkswagen I*, 371 F.3d at 204–05.

The convenience of witnesses strongly favors transfer in this case, as nearly all Apple witnesses and third-party witnesses are in NDCA, and no relevant witness is in WDTX. *See supra* Section II; *see also, e.g.*, *TracFone*, 852 F. App'x at 539–40; *Apple*, 979 F.3d at 1341–42; *In re HP Inc.*, No. 2018-149, 2018 WL 4692486, at *3 (Fed. Cir. Sept. 25, 2018); *Genentech*, 566 F.3d at 1343; *Via Vadis, LLC v. Netgear, Inc.*, No. 14-cv-809, 2015 WL 10818675, at *2 (W.D. Tex. July 30, 2015); *Datascape, Ltd. v. Dell Techs., Inc.*, No. 6:19-cv-00129-ADA, 2019 WL 4254069 (W.D. Tex. June 7, 2019); *Uniloc USA, Inc. v. Apple Inc.*, No. A-18-CV-990-LY, 2019 WL 2066121, at *3 (W.D. Tex. Apr. 8, 2019); *Polaris Innovations*, 2016 WL 7077069, at *9; *InfoGation Corp. v. Google LLC*, No. 6:20-CV-00366-ADA, 2021 WL 5547070, at *4 (W.D. Tex. Apr. 29, 2021).

[redacted] the engineers involved in, or knowledgeable about, research, design, development, and implementation of the Taptic Engines in the accused products are in California, and nearly all are in NDCA. *See supra* Section II.A. Apple personnel with relevant knowledge about licensing, finance, and potential prior art are also in NDCA. *Id*. And a named inventor of each Asserted Patent is in NDCA. *See supra* Section II.C.

Each of these witnesses is a short car ride from the NDCA courthouse (e.g., 15 minutes from San Jose), but more than 1,000 miles (as the crow flies) from Midland, Texas, with no direct flights available. *See* Exs. 8–9. If this case proceeds in WDTX, testifying will require Apple's NDCA witnesses to fly for at least six hours, including at least one layover. *Id*. That estimate does not account for time traveling to and from airports, waiting at the airports, renting cars or finding rides, and traveling to and from hotels. [redacted] the few Resonant witnesses in Washington can take a direct, 1.5- or 2-hour flight to NDCA, respectively, but would have comparable burdens to NDCA witnesses if required to testify in WDTX. *Compare* Exs. 10–11 *with* Exs. 12–13.

This travel burden is not insignificant and has been cited as a key reason why transfer is often appropriate. *See, e.g.*, *Volkswagen II*, 545 F.3d at 317 (witnesses may suffer "personal costs associated with being away from work, family and community"); *In re Acer*, 626 F.3d at 1255 (noting that requiring multiple employees of a party to travel from NDCA to Eastern Texas would "incur significant expenses for airfare, meals, and lodging, as well as losses in productivity from time spent away from work"); *Apple*, 979 F.3d at 1341–42 ("Additional distance means additional travel time; additional travel time increases the probability for meal and lodging expenses; and additional travel time with overnight stays increases the time which these fact witnesses must be away from their regular employment. Furthermore, the task of scheduling fact witnesses so as to minimize the time when they are removed from their regular work or home responsibilities gets increasingly difficult and complicated when the travel time from their home or work site to the court facility is five or six hours one-way as opposed to 30 minutes or an hour.”).

Hence, the most important factor in the transfer analysis—the convenience of the witnesses—clearly and heavily favors transfer to NDCA.

4. Other Practical Problems are Neutral or Slightly Favor Transfer

The “other practical problems” factor is neutral transfer as well. This factor assesses whether a transfer would impact judicial efficiency. Here, there are no practical considerations favoring either venue because neither WDTX nor NDCA has any previous experience with the Asserted Patents and there are no related lawsuits pending in either district. *See USTA*, 2023 WL 4833481 at *6.

C. The Public Interest Factors Favor Transfer

Like the private interest factors, the public interest factors favor transfer as well because NDCA and WDTX have comparable times-to-trial and NDCA has a strong local interest in this matter.

1. Court Congestion is Neutral or Slightly Favors Transfer

The relevant inquiry under the court congestion factor is the “speed with which a case can come to trial and be resolved.” *Genentech*, 566 F.3d at 1347; *Apple*, 979 F.3d at 1343. This factor is “the most speculative” and is given little weight compared to the other transfer factors. *Genentech*, 566 F.3d at 1347. In fact, the Court congestion factor cannot weigh against transfer where, as here, the plaintiff is a non-practicing entity. *See In re Google LLC*, 58 F.4th 1379, 1383 (Fed. Cir. 2023) (holding it is “a clear abuse of discretion to accord this factor any weight” where the plaintiff “is not engaged in product competition in the marketplace”); *In re Morgan Stanley*, 417 F. App’x 947, 950 (Fed. Cir. 2011) (similar).

Nonetheless, the Federal Circuit has "noted that 'the Western District of Texas and the Northern District of California show no significant differences in caseload or time-to-trial statistics.'" *Apple*, 2021 WL 5291804, at *4 (quoting *In re Juniper Networks*, 14 F.4th at 1322); *see also Apple*, 979 F.3d at 1343–44 (similar). And, in one decision, WDTX acknowledged that NDCA has a shorter time to trial for patent cases than WDTX. *Uniloc USA Inc. v. Box, Inc.*, No. 1:17-CV-754-LY, 2018 WL 2729202, at *4 (W.D. Tex. June 6, 2018) ("Patent cases . . . move more quickly than other civil cases, and the average time to trial in Northern California is marginally faster than in Western Texas.").

Hence, the court congestion factor is neutral or slightly favors transfer to NDCA.

2. Local Interest Strongly Favors Transfer

The local interest factor strongly weighs in favor of transfer. "Jury duty is a burden that ought not to be imposed upon the people of a community which has no relation to the litigation." *Volkswagen I*, 371 F.3d at 206. Thus, the "local interest" factor looks to the location(s) of "events that gave rise to [the] suit," such as where "the accused products were designed, developed, and tested." *Apple*, 979 F.3d at 1345; *see also Apple*, 2022 WL 1196768 at *3. It does not look for "connections to each forum writ large." *In re DISH Network L.L.C.*, 856 F. App'x 310, 310 (Fed. Cir. 2021).

NDCA has strong local interests in this matter because: (1) Apple's research, design, development, and implementation of the accused technology primarily takes place and is ultimately managed there; (2) Apple's headquarters and the large portion of its workforce are there; and (3) all or nearly all of Apple's likely witnesses and evidence are there. *See supra* Section II.A. As such, NDCA's interest in this matter is "self-evident" because it "calls into question the work and reputation of several individuals residing" in NDCA. *See Hoffman-La Roche*, 587 F.3d at 1336.

The local interest factor thus strongly favors transfer.

3. Familiarity with the Governing Law and Conflicts of Law are Neutral

Finally, the last two public interest factors—familiarity with the governing law and conflicts of law—are neutral; there are no perceived conflicts of law, and both districts are equally qualified to apply patent law. *See In re TS Tech.*, 551 F.3d 1315, at 1320–21 (Fed. Cir. 2008); *Magic Cross Ranch, L.P. v. Manion*, No. 3:12-CV-00541-P, 2012 WL 13027449, at *3 (N.D. Tex. Sept. 25, 2012) ("The Court finds that the other public interest factors are neutral. Both [districts] are equally capable of applying the law that will govern the case. No issues exist which suggest any potential problems of conflict of laws or applying foreign law.").

As such, consistent with the private interest factors, each of the public interest factors favor transfer as well.

V. CONCLUSION

For the reasons discussed above, Apple respectfully requests a transfer of this case to NDCA, as it is clearly the more convenient forum.

Date: October 10, 2023

Respectfully submitted,

/s/ Karrie Wheatley

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Attorneys for Defendant Apple Inc.

CERTIFICATE OF CONFERENCE

Pursuant to Local Rules CV-7(G), counsel for the parties met and conferred telephonically on October 2, 2023. Peter Tong attended for Plaintiff. Steve Wingard attended for Defendant. The parties discussed their positions on this motion. The discussions conclusively ended in an impasse, leaving an open issue for the court to resolve. Plaintiff indicated that it opposes this motion.

/s/ Steve Wingard
Steve Wingard

CERTIFICATE OF SERVICE

Pursuant to the Federal Rules of Civil Procedure and Local Rule CV-5, I hereby certify that, on October 10, 2023, all counsel of record who have appeared in this case are being served with a copy of the foregoing via the Court's CM/ECF system. I further certify that all counsel of record who have appeared in this case are being served with an unredacted copy of the foregoing via electronic mail.

/s/ Karrie Wheatley
Karrie Wheatley

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF TEXAS
MIDLAND-ODESSA DIVISION

RESONANT SYSTEMS, INC. d/b/a RevelHMI, *Plaintiff*, v. APPLE INC., *Defendant*.	Case No. 7:23-cv-00077-DC JURY TRIAL DEMANDED [redacted]

DECLARATION OF BRIAN ANKENBRANDT IN SUPPORT OF DEFENDANT APPLE INC.'S MOTION TO TRANSFER VENUE

I, Brian Ankenbrandt, hereby declare:

1. I am over 18 years of age and competent to make this declaration. [redacted]

[redacted] [redacted]

CONFIDENTIAL MATERIAL OMITTED

[redacted] [redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted]

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and that this declaration was executed this 26th day of September 2023, in Cupertino, California.

Brian Ankenbrandt

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF TEXAS
MIDLAND-ODESSA DIVISION

RESONANT SYSTEMS, INC. d/b/a RevelHMI, *Plaintiff*, v. APPLE INC., *Defendant*.	Case No. 7:23-cv-00077-DC JURY TRIAL DEMANDED [redacted]

DECLARATION OF CATHERINE SPEVAK IN SUPPORT OF DEFENDANT
APPLE INC.'S MOTION TO TRANSFER VENUE

I, Catherine Spevak, hereby declare:

1. I am over 18 years of age and competent to make this declaration. [redacted]

[redacted] [redacted]

[redacted]

[redacted]

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and that this declaration was executed this 14 day of September 2023, in Cupertino, California.

Catherine Spevak

UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
MIDLAND-ODESSA DIVISION

RESONANT SYSTEMS, INC. d/b/a RevelHMI, *Plaintiff*, v. APPLE INC., *Defendant*.	Case No. 7:23-cv-00077-DC JURY TRIAL DEMANDED [redacted]

DECLARATION OF CHANG ZHANG IN SUPPORT OF DEFENDANT
<u>APPLE INC.'S MOTION TO TRANSFER VENUE</u>

I, Chang Zhang, hereby declare:

1. I am over 18 years of age and competent to make this declaration. [redacted]

[redacted]

CONFIDENTIAL MATERIAL OMITTED

[redacted] [redacted]

[redacted] [redacted] [redacted]

[redacted] [redacted]

[redacted] [redacted]

CONFIDENTIAL MATERIAL OMITTED

[redacted]

[redacted]

[redacted]

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and that this declaration was executed this 26th day of September 2023, in San Jose, California.

Chang Zhang

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF TEXAS
MIDLAND-ODESSA DIVISION

RESONANT SYSTEMS, INC. d/b/a RevelHMI, *Plaintiff*, v. APPLE INC., *Defendant*.	Case No. 7:23-cv-00077-DC JURY TRIAL DEMANDED [redacted]

DECLARATION OF ROBIN GOLDBERG IN SUPPORT OF DEFENDANT APPLE INC.'S MOTION TO TRANSFER VENUE

I, Robin Goldberg, hereby declare:

1. I am over 18 years of age and competent to make this declaration. [redacted]

[redacted] [redacted]

[redacted]

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and that this declaration was executed this 13th day of September 2023, in Cupertino California.

/s/ Robin Goldberg
Robin Goldberg

Exhibit 7

US008093767B2

(12) **United States Patent**
Pepin et al.

(10) **Patent No.: US 8,093,767 B2**
(45) **Date of Patent: Jan. 10, 2012**

(54) **LINEAR-RESONANT VIBRATION MODULE**

(76) Inventors: **Brian Marc Pepin**, Oakland, CA (US); **Robin Elenga**, Seattle, WA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **12/782,697**

(22) Filed: **May 18, 2010**

(65) **Prior Publication Data**

US 2010/0289346 A1 Nov. 18, 2010

Related U.S. Application Data

(60) Provisional application No. 61/179,109, filed on May 18, 2009.

(51) **Int. Cl.**

H02K 33/00	(2006.01)
H02K 41/02	(2006.01)
H02K 41/00	(2006.01)
H02K 7/00	(2006.01)

(52) **U.S. Cl.** **310/15**; 310/12.15; 310/13; 310/14; 310/19

(58) **Field of Classification Search** 310/13–15, 310/19, 12.15

See application file for complete search history.

(56) **References Cited**

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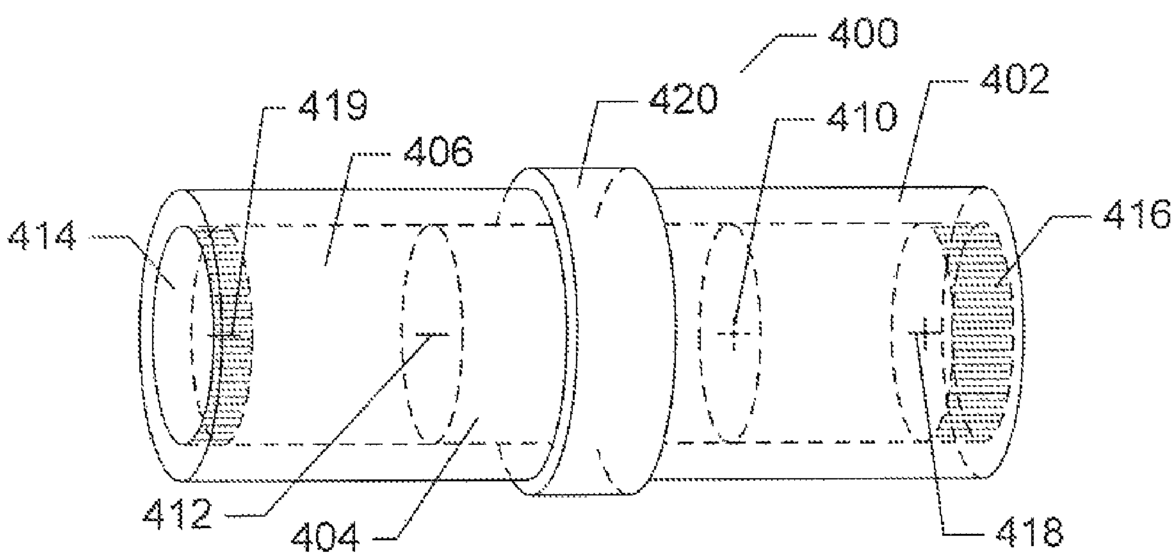
Primary Examiner — Quyen Leung
Assistant Examiner — Jose Gonzalez Quinones
(74) *Attorney, Agent, or Firm* — Olympic Patent Works PLLC.

(57) **ABSTRACT**

Various embodiments of the present invention comprise linear-resonant vibration modules that can be incorporated in a wide variety of appliances, devices, and systems to provide vibrational forces. The vibrational forces are produced by linear oscillation of a weight or member, in turn produced by rapidly alternating the polarity of one or more driving electromagnets. Feedback control is used to maintain the vibrational frequency of linear-resonant vibration module at or near the resonant frequency for the linear-resonant vibration module. Linear-resonant vibration modules can be designed to produce vibrational amplitude/frequency combinations throughout a large region of amplitude/frequency space.

5 Claims, 15 Drawing Sheets



US008860337B2

(12) **United States Patent**
Elenga et al.

(10) **Patent No.: US 8,860,337 B2**
(45) **Date of Patent: Oct. 14, 2014**

(54) **LINEAR VIBRATION MODULES AND LINEAR-RESONANT VIBRATION MODULES**

(75) Inventors: **Robin Elenga**, Seattle, WA (US); **Brian Marc Pepin**, Oakland, CA (US); **Glen Tompkins**, Woodinville, WA (US)

(73) Assignee: **Resonant Systems, Inc.**, Seattle, WA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 322 days.

(21) Appl. No.: **13/345,607**

(22) Filed: **Jan. 6, 2012**

(65) **Prior Publication Data**

US 2012/0133308 A1 May 31, 2012

Related U.S. Application Data

(63) Continuation-in-part of application No. 12/782,697, filed on May 18, 2010, now Pat. No. 8,093,767.

(60) Provisional application No. 61/179,109, filed on May 18, 2009.

(51) **Int. Cl.**
H02K 33/00 (2006.01)
H02K 33/16 (2006.01)

(52) **U.S. Cl.**
CPC ***H02K 33/16*** (2013.01)
USPC **318/128**; 318/129; 318/114

(58) **Field of Classification Search**
USPC 318/128, 129, 114; 310/19, 36, 254, 17; 340/407.1
See application file for complete search history.

(56) **References Cited**

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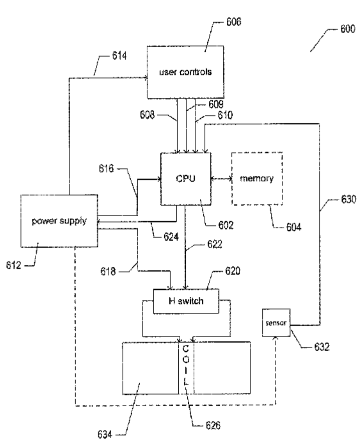
Primary Examiner — Karen Masih
(74) *Attorney, Agent, or Firm* — Olympic Patent Works, PLLC

(57) **ABSTRACT**

The current application is directed to various types of linear vibrational modules, including linear-resonant vibration modules, that can be incorporated in a wide variety of appliances, devices, and systems to provide vibrational forces. The vibrational forces are produced by linear oscillation of a weight or member, in turn produced by rapidly alternating the polarity of one or more driving electromagnets. Feedback control is used to maintain the vibrational frequency of linear-resonant vibration module at or near the resonant frequency for the linear-resonant vibration module. Both linear vibration modules and linear-resonant vibration modules can be designed to produce vibrational amplitude/frequency combinations throughout a large region of amplitude/frequency space.

5 Claims, 20 Drawing Sheets



US009941830B2

(12) United States Patent
Elenga et al.

(10) **Patent No.: US 9,941,830 B2**
(45) **Date of Patent: Apr. 10, 2018**

(54) **LINEAR VIBRATION MODULES AND LINEAR-RESONANT VIBRATION MODULES**

(71) Applicant: **Resonant Systems, Inc.**, Seattle, WA (US)

(72) Inventors: **Robin Elenga**, Seattle, WA (US); **Brian Marc Pepin**, Oakland, CA (US); **Glen Tompkins**, Woodinville, WA (US)

(73) Assignee: **Resonant Systems, Inc.**, Seattle, WA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **15/181,249**

(22) Filed: **Jun. 13, 2016**

(65) **Prior Publication Data**

US 2016/0301346 A1 Oct. 13, 2016

Related U.S. Application Data

(63) Continuation of application No. 14/469,210, filed on Aug. 26, 2014, now Pat. No. 9,369,081, which is a continuation of application No. 13/345,607, filed on Jan. 6, 2012, now Pat. No. 8,860,337, which is a continuation-in-part of application No. 12/782,697, filed on May 18, 2010, now Pat. No. 8,093,767.

(60) Provisional application No. 61/179,109, filed on May 18, 2009.

(51) **Int. Cl.**

H02K 33/00	(2006.01)
H02P 25/032	(2016.01)
H02K 33/16	(2006.01)

(52) **U.S. Cl.**
CPC ***H02P 25/032*** (2016.02); ***H02K 33/16*** (2013.01)

(58) **Field of Classification Search**
CPC H02P 25/032; H02K 7/1876; B06B 1/166
See application file for complete search history.

(56) **References Cited**

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4,549,535	A	10/1985	Wing
4,692,999	A	9/1987	Frandsen
5,017,819	A	5/1991	Patt et al.
5,187,398	A	2/1993	Stuart et al.
5,231,336	A	7/1993	van Namen

(Continued)

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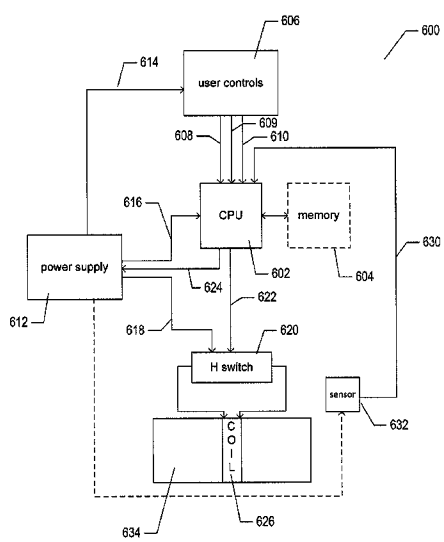
Primary Examiner — Karen Masih
(74) *Attorney, Agent, or Firm* — Olympic Patent Works PLLC

(57) **ABSTRACT**

The current application is directed to various types of linear vibrational modules, including linear-resonant vibration modules that can be incorporated in a wide variety of appliances, devices, and systems to provide vibrational forces. The vibrational forces are produced by linear oscillation of a weight or member, in turn produced by rapidly alternating the polarity of one or more driving electromagnets. Feedback control is used to maintain the vibrational frequency of linear-resonant vibration module at or near the resonant frequency for the linear-resonant vibration module. Both linear vibration modules and linear-resonant vibration modules can be designed to produce vibrational amplitude/frequency combinations throughout a large region of amplitude/frequency space.

20 Claims, 20 Drawing Sheets



US011152882B2

(12) **United States Patent**
Elenga et al.

(10) **Patent No.: US 11,152,882 B2**
(45) **Date of Patent: Oct. 19, 2021**

(54) **OSCILLATING-RESONANT-MODULE CONTROLLER**

(71) Applicant: **RESONANT SYSTEMS, INC.**, Seattle, WA (US)

(72) Inventors: **Robin Elenga**, Seattle, WA (US); **Dan Knodle**, Seattle, WA (US); **Brian Pepin**, Oakland, CA (US)

(73) Assignee: **RESONANT SYSTEMS, INC.**, Seattle, WA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **16/806,925**

(22) Filed: **Mar. 2, 2020**

(65) **Prior Publication Data**

US 2020/0274475 A1 Aug. 27, 2020

Related U.S. Application Data

(63) Continuation-in-part of application No. 15/043,584, filed on Feb. 14, 2016, now abandoned.

(60) Provisional application No. 62/116,144, filed on Feb. 13, 2015.

(51) **Int. Cl.**
H02P 25/032 (2016.01)

(52) **U.S. Cl.**
CPC ***H02P 25/032*** (2016.02)

(58) **Field of Classification Search**
CPC H02P 25/032; A61H 2201/5005; A61H 2201/5061; A61H 220/5084; A61H 23/0218; A61H 7/004
See application file for complete search history.

(56) **References Cited**

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2013/0237751 A1* 9/2013 Alexander A61H 19/44 600/38

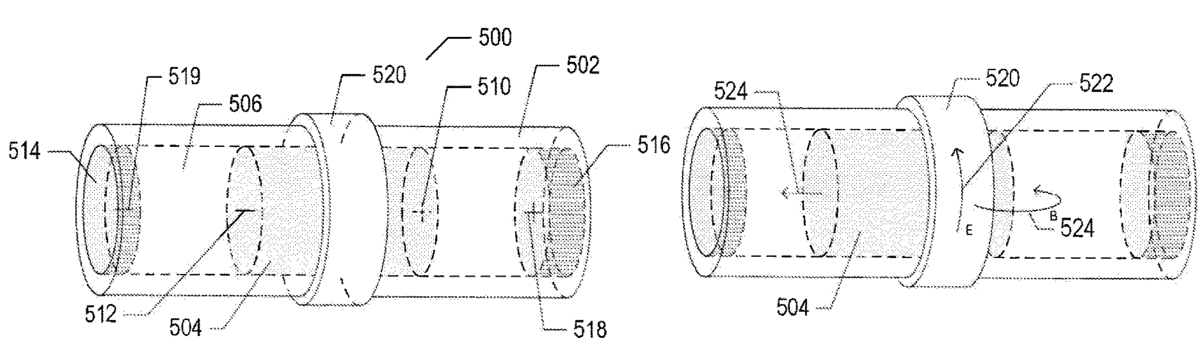
* cited by examiner

Primary Examiner — Zoheb S Imtiaz
(74) *Attorney, Agent, or Firm* — Olympic Patent PLLC

(57) **ABSTRACT**

The current document is directed to various types of oscillating resonant modules ("ORMs"), including linear-resonant vibration modules, that can be incorporated in a wide variety of appliances, devices, and systems to provide vibrational forces. The vibrational forces are produced by back-and-forth oscillation of a weight or member along a path, generally a segment of a space curve. A controller controls each of one or more ORMs to produce driving oscillations according to a control curve or control pattern for the ORM that specifies the frequency of the driving oscillations with respect to time. The driving oscillations, in turn, elicit a desired vibration response in the device, appliance, or system in which the one or more ORMs are included. The desired vibration response is achieved by selecting and scaling control patterns in view of known resonance frequencies of the device, appliance, or system.

20 Claims, 53 Drawing Sheets



UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
MIDLAND-ODESSA DIVISION

RESONANT SYSTEMS, INC., d/b/a RevelHMI, Plaintiff, v. APPLE INC., Defendants.	Case No. 7:23-cv-000077-DC [redacted]

PLAINTIFF REVELHMI'S OPPOSITION TO APPLE'S MOTION TO TRANSFER VENUE

[redacted]

[REDACTED PUBLIC VERSION]

Case: 24-129 Document: 2-2 Page: 140 Filed: 05/29/2024

TABLE OF CONTENTS

TABLE OF AUTHORITIES

Cases

I. INTRODUCTION

Apple failed to meet its burden of proving transfer is "clearly more convenient." At best, Apple's evidence shows that the NDCA offers *some* convenience, but Apple has *no evidence* that allows the Court to compare the *relative* conveniences and determine which venue is *more* convenient. Any convenience gained by transferring the case to the NDCA would be offset by inconveniencing an important third-party, Cirrus Logic, headquartered in Austin, Texas. The Court should deny Apple's motion, or in the alternative, transfer this case to Austin.

II. BACKGROUND

RevelHMI sued Apple for infringing several patents related to vibration technology. Dkt. 12. "Accused Products" include various iPhones, MacBooks, and Apple Watches. *Id.* ¶ 22. Exemplary claim 1 of Patent 9,941,830 recites: "A vibration module comprising: a housing; a moveable component; a power supply; user-input features; a driving component that drives the moveable component to oscillate within the housing; and a control component that controls supply of power from the power supply to the driving component to cause the moveable component to oscillate at a frequency and an amplitude specified by one or more stored values." Dkt. 1-5 at 15:55-67. Apple cannot meaningfully dispute that products like iPhones have a housing, power supply, user-input features, or a movable component that vibrates. Thus, RevelHMI expects that the trial will focus on the claimed driving component and control component. Plaintiff intends to prove at trial that amplifier components supplied by Cirrus Logic of Austin, Texas contribute to infringement of the claimed driving component and/or control component.

III. LEGAL STANDARD

Apple's motion correctly lists the public and private transfer factors but overlooks controlling authority and recent changes to the law.

A. Controlling Law Comes from the Fifth Circuit

Fifth Circuit law, not Federal Circuit law, controls the transfer analysis under § 1404. "[M]otions to transfer, as a procedural matter, [are] governed by the law of the regional circuit in which [the district court] sits." *Winner Int'l Royalty Corp v. Wang*, 202 F.3d 1340, 1352 (Fed. Cir. 2000) (citing *Stewart Org., Inc. v. Ricoh Corp.*, 487 U.S. 22, 32 (1988)); *In re EMC Corp*., 677 F.3d 1351, 1354 (Fed. Cir. 2012) ("transfer motions are governed by regional circuit law"). "Where the regional circuit court has spoken on the subject, [the Federal Circuit] must apply the law as stated." *Panduit Corp. v. All States Plastic Mfg. Co.*, 744 F.2d 1564, 1574–75 (Fed. Cir. 1984); *Microchip Tech. Inc. v. U.S. Philips Corp.*, 367 F.3d 1350, 1356 (Fed. Cir. 2004) ("We are obligated to follow regional circuit law. . . ."). Unless an issue "pertains uniquely to patent law," the Federal Circuit is "bound to apply the law of the [regional] Circuit." *Unitherm Food Sys., Inc. v. Swift-Eckrich, Inc.*, 546 U.S. 394, 398 (2006). Apple's Federal Circuit cases must be ignored when they conflict with controlling Fifth Circuit law.

B. Apple's Burden of Proof: Clearly More Convenient

"[T]he plaintiff's privilege of choosing venue places the burden on the defendant to demonstrate why the [venue] should be changed." *In re Volkswagen of Am., Inc.*, 545 F.3d 304, 315 n.10 (5th Cir. 2008). This is "a burden of proof question," and "it places a significant burden on the movant to show good cause for the transfer." *Id.* "[T]he fact that litigating would be more convenient for the defendant elsewhere is not enough to justify transfer. In other words, the standard is not met by showing one forum is more likely than not to be more convenient, but instead the party **must adduce evidence** and arguments **that clearly establish good cause** for transfer based on convenience and justice." *Def. Distributed v. Bruck*, 30 F.4th 414, 433 (5th Cir. 2022) (emphasis added).

Apple's brief admits that it has the burden of proving that transfer is not just convenient to some, but "clearly more convenient" than keeping the case. Dkt. 36-1 ("Motion") at 5. None of Apple's cases allow it to meet this burden by merely supplying evidence about the convenience of the NDCA while supplying no evidence about inconvenience to parties in the WDTX.

This burden of proof does not change just because venue discovery is burdensome. When a party files a motion to transfer, the "movant brings upon itself the burden of venue discovery." *Greenthread, LLC v. Intel Corp.,* No. 6:22-CV-00105-ADA, 2022 WL 4004781, at *5 (W.D. Tex. Sept. 1, 2022). A party that conducts lots of business in Texas can expect to provide a lot of venue discovery. *Mullen Indus. LLC v. Apple Inc.*, No. 6:22-CV-00145-ADA, 2022 WL 4747627, at *8 (W.D. Tex. Sept. 30, 2022).

IV. FACTS AND EVIDENCE

A. Cirrus Logic Is a Highly Relevant Third Party Located in Austin, Texas

Cirrus Logic, headquartered in Austin, Texas, sold [redacted] to Apple, which RevelHMI intends to prove at trial infringe the claimed driver and/or control component when used in the Accused Products. Ex. 1[1] at 2; Ex. 2 at 13. [redacted] Austin Cirrus Logic employees have relevant information about [redacted]. Ex. 3 at 2–3 ([redacted]; Ex. 2 at 13; Ex. 4 (Mr. Kratsas as "Director of Audio Amplifier Team"). [redacted]. Ex. 3 at 3. When served discovery seeking the quantity of relevant evidence Cirrus Logic has in Austin, Cirrus Logic objected that [redacted]

[1] All Exhibits attached to the Declaration of Peter Tong, submitted herewith.

[redacted]. Ex. 5 at 2–3.

B. RevelHMI Is a Real Business

Apple wrongly accuses RevelHMI of being merely a patent assertion entity. RevelHMI is a Washington corporation, now run by inventor Robin Elenga, who is the sole remaining employee after other employees were laid off during the COVID pandemic due to companies like Apple infringing RevelHMI's patents. Elenga Decl. ¶¶ 3–4. Before that, RevelHMI developed and sold vibrating/resonating products. *Id.* ¶ 4. Mr. Elenga is an original inventor, and RevelHMI is the original assignee of the Asserted Patents, not a third-party patent purchaser. *E.g.*, Dkt. 1-5 at cover.

C. Apple Has Relevant Witnesses Who Find WDTX More Convenient

Apple failed to investigate its many relevant witnesses who are closer to the WDTX, so it lacks sufficient evidence to prove which venue is ***more*** convenient.

1. Apple Has Many Relevant Employees in Austin

Apple has 8,407 employees, 515 suppliers, and 13 manufacturing facilities in Texas. Ex. 6 at 9. Of its employees, [redacted]. Some of these Austin employees [redacted] These facts, in combination with the wide ranging functionality (housing, power supply, user-input features, movable component, driving component, and control component) of the many accused products (many models of recent iPhones, MacBooks, and Apple Watches), make it reasonable to infer that a substantial (though indeterminate) number of employees in Austin—probably dozens or hundreds—have relevant knowledge about one of the many infringing features of the many accused products. Apple has no affirmative evidence to disprove this.

2. Apple's Unknown Distribution of Relevant Witnesses Nationwide and Overseas Due to Lack of Evidence

Apple has employees and suppliers across the United States. Ex. 6; Ex. 10 (tallying data from Ex. 6). Apple has about 35,204 employees and 5,370 suppliers closer to the WDTX, whereas about 40,296 employees and 4,596 suppliers are closer to the NDCA. Ex. 10. Under the proper Fifth Circuit 100-mile rule, their inconvenience is proportional to distance. These comparable numbers prevent an accurate assessment of the relative inconvenience posed by the WDTX and NDCA without a detailed investigation, but Apple did not investigate or provide detailed evidence.

[redacted] Moreover, Apple lacks [redacted] Regardless, the comparable number of employees and greater number of suppliers closer to the WDTX rebut any presumption that Apple's NDCA headquarters offers the most convenience just by being the headquarters.

Apple likely made no initial investigation of its relevant nationwide and worldwide employees because the Federal Circuit "rejected" the Fifth Circuit's "rigid application" of the 100-mile rule, effectively making witnesses beyond California and Texas irrelevant because they would be equally inconvenienced in either venue. *In re Google LLC*, No. 2021-170, 2021 WL 4427899, at *4 (Fed. Cir. Sept. 27, 2021). But shortly after Apple filed its motion, the Fifth Circuit ruled that the Federal Circuit ignored controlling Fifth Circuit law. *In re TikTok, Inc.*, 85 F.4th 352, 361 (5th Cir. Oct. 31, 2023). Thus, Apple had the burden of providing proof that transfer was clearly more convenient when considering ***all*** its relevant employees, not just those in California and Texas, but

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Apple failed to so because of an intervening change in controlling law. [redacted] on January 18, 2024, well after *TikTok*).

3. Apple's Attorney-Influenced Declarations Are Unreliable

Apple's declarants [redacted] provide unreliable statements because [redacted] RevelHMI sought discovery on "the complete methodology used by each of Apple's declarants," providing Apple the opportunity to explain the full extent of the investigation conducted by its declarants. Ex. 12 at 10. Apple merely responded that [redacted] This glaring omission shows that they used on an unreliable methodology or relied on incomplete, cherry-picked privileged information.

4. Apple Refuses to Provide Objective Evidence

[redacted] Without this, Apple lacks the evidence needed to show the relative convenience of its employees, including whether the relevant ones are closer to WDTX or NDCA.

Given the unreliability of the [redacted] declarations, RevelHMI asked Apple to perform an objective investigation by identifying the number of employees in Austin who have emails that hit on specifically relevant search terms. Ex. 12 at 9. To spare Apple from burdensome doc review, RevelHMI did not seek the underlying emails themselves—only the hit counts. Still, [redacted] the Court *has no objective evidence* about the quantity of relevant Austin employees that can be weighed against those in the NDCA. Apple has turned a blind eye and ignored its burden of proof.

5. Apple's Unreliable Declarations Omit Information About Many Relevant Witnesses in Austin

Apple failed to provide a declaration from a knowledgeable manager of its Austin office. None of Apple's declarants ([redacted]) work in Apple's Austin office, so they naturally lack personal knowledge of who works in Austin in which roles.

[redacted] was unable to unambiguously state in his declaration that there are no Apple employees in Texas who work on licensing of the accused products. This is because Apple refused to [redacted]

Similarly, [redacted] is unable to unambiguously declare that there are no Apple employees or third parties in Austin who designed, worked on, tested, or manufactured an accused feature relevant to this case. [redacted]

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[redacted]

Finally, [redacted] cannot unambiguously declare that there are no Apple employees involved in financials for the Accused Products. Apple employs [redacted]

Due to these omissions, the only evidentiary value of Apple's declarations is that the declarants work on some relevant teams, and those teams are in the NDCA. These limited, unreliable declarations cannot prove Apple's argument that there are no relevant witnesses or evidence in the WDTX. *See Scramoge Tech. Ltd. v. Apple Inc.*, No. 6:21-CV-00579-ADA, 2022 WL 1667561, at *3–4 (W.D. Tex. May 25, 2022) (criticizing a similar declaration from another Apple witness). The evidence shows that Apple's declarants lack "personal knowledge about the thousands of Apple engineers who work in the WDTX," but the evidence fails to show that relevant engineers do not exist in Austin. *Id.* The burden of proof falls on Apple, and Apple failed to meet it—including, for example, by refusing to [redacted]

V. LEGAL ANALYSIS

A. Apple's Motion Must Fail For Lack of Evidence

Apple cannot meet its burden of proof because, at most, Apple only offers evidence showing that the NDCA would be ***a*** convenient venue, but Apple has no evidence that allows the Court to determine whether NDCA is ***clearly more*** convenient than the WDTX. By analogy, if a party has a burden of proving which of two bags is heavier than the other, that party cannot meet the burden by providing only evidence about the weight of only one bag while turning a blind eye to the weight of the second bag. That burden requires either supplying evidence about the weights of both bags or using an objective comparison such as putting the bags on a balancing scale.

Here, Apple supplied some evidence about the convenience of witnesses in the NDCA. But Apple has provided no evidence about many of its relevant Austin employees who would be inconvenienced by transfer. Apple's declarants [redacted] (in other words, Apple turned a blind eye). None of Apple's declarants provide any [redacted] When asked to objectively investigate (e.g., by an email search), Apple [redacted]

Evidence shows that Apple likely has many relevant witnesses in Austin. It has 8,407 employees, 515 suppliers, and 13 manufacturing facilities in Texas. Ex. 6 at 9. [redacted] Dozens or hundreds are likely relevant.

Thus, the Court should find the following facts and deny the motion: 1) Apple presented some evidence about convenience in the NDCA; 2) some fraction of Apple's [redacted] suppliers, and their evidence in Austin are likely relevant, as well as employees and evidence in other states, but the specific number is unknown; 3) Apple failed to properly investigate its offices in Austin, the rest of the USA, or worldwide, and [redacted]; and 4) the Court thus lacks sufficient evidence to determine which venue is clearly more convenient and must deny the motion.

To Plaintiff's best knowledge, the issue is one of first impression, and no case addresses this explicit argument about the movant's burden of proof under similar facts, admissions, and stipulations (especially after the October 31, 2023 *TikTok* ruling). Policy supports enforcing the burden on the movant to provide the Court with sufficient evidence to determine which venue is clearly more convenient. In traditional cases like *Volkswagen*, 545 F.3d 304, the Court considered all witnesses and evidence relevant to the auto accident, allowing an informed ruling. Granting transfer here would encourage movants to present incomplete evidence about only one venue, remain willfully blind about inconveniences caused by transfer, and withhold unfavorable evidence during discovery. Ruling based on one-sided evidence risks injustice. Future movants should either perform their own objective, unprivileged investigation of **both** venues or provide the objective discovery sought by the non-moving party.

B. The NDCA Is Not Clearly More Convenient Than WDTX

1. The relative ease of access to sources of proof

<u>The ease of accessing physical evidence</u> favors keeping the case. When asked about its physical evidence in Austin, Cirrus Logic responded that it [redacted] The quantity of physical evidence in Austin at Cirrus Logic's headquarters likely dwarfs any at the tiny Cupertino office. Ex. 13 (comparing headcount). At counsel's office in Dallas, RevelHMI keeps patent prosecution files, original handwritten notes, and fifteen electrical and/or mechanical physical

samples of vibrators, boards, or related equipment, one of which is marked "TAPTIC ENGINE." Ex. 14 at 9. Apple does not appear to have any non-duplicative physical evidence in California. Samples of iPhones, iPads, Apple Watches are sold both new and used throughout the United States, and they are not unique to the NDCA. Apple's evidence should be discounted or ignored because Apple did not make it available for inspection. Ex. 8 at 3.

The ease of accessing electronic evidence is neutral. RevelHMI's electronic documents are on Mr. Elenga's portable laptop and/or hosted online such that they can be easily accessed from either venue. Ex. 14 at 8–9. Cirrus Logic has [redacted] Apple's electronic evidence in the NDCA should receive little or no weight because Apple would not produce it or permit RevelHMI to inspect it. Ex. 8 at 3. Also, some relevant subset of Apple's [redacted] in Austin likely have access to electronic records, code, and/or sensitive financial documents that offset those in the NDCA. Ex. 7. The [redacted] do not support Apple's argument that the Taptic Engine and Accused Products were primarily designed in the NDCA, only that Apple's declarants are *personally* unaware of what [redacted] do in Austin.

2. The availability of compulsory process to secure witness attendance

This factor weighs against transfer. Cirrus Logic's [redacted] can be compelled to testify in the WDTX, but not in the NDCA. *See* Section IV(A), *supra*. These witnesses will likely be important to proving infringement of the patented driving component and control component.

Coinventor Brian Pepin should be given less weight than the [redacted]. Unlike coinventor Robin Elenga, Brian Pepin no longer works at RevelHMI, so Brian Pepin's knowledge will likely be a duplicative subset of Robin Elenga's knowledge. Elenga Decl. ¶ 3. Brian Pepin is likely unnecessary for trial.

The [redacted] should receive little weight. Their relevance is unclear, and Apple was unable to name relevant people. They are not needed to [redacted], which is integrated into the Accused Products that are sold at Apple Stores nationwide. If Apple intends to rely on them for noninfringement, they will likely work willingly with Apple because they are *Apple's suppliers* with aligned interests. They will likely *willingly* appear at Apple's request, regardless of venue.

3. The cost of attendance for willing witnesses

This factor weighs against transfer because all traveling witnesses will, like Robin Elenga, find trial in Texas far less expensive than in San Francisco. Elenga Decl. ¶ 7 (using GSA estimates). Moreover, Robin Elenga has multiple cases pending in Texas, expects to regularly travel to Texas, and will not feel further inconvenienced. *Id.* ¶ 5–6. He has no similar plans for the NDCA. *Id.*

Apple's evidence only supports a finding that [redacted] would find the NDCA more convenient. *See* Section IV(C), *supra*. Apple lacks reliable, objective evidence that allows the Court to determine the relevance of its [redacted] employees (and nationwide and worldwide employees), whose conveniences are to be weighed against those in the NDCA. *Id.* Given the lack of evidence, Apple has failed to meet its burden of proving that the NDCA is clearly move convenient for its own employees.

4. Judicial economy

During venue discovery, RevelHMI filed a motion to compel Cirrus Logic in the WDTX to provide meaningful discovery responses. *Resonant Systems, Inc. v. Apple Inc.*, 6:23-mc-00870-ADA (W.D. Tex. Dec. 19, 2023). This factor favors keeping the case because the WDTX courts can coordinate to quickly compel Cirrus Logic to later provide general discovery if needed.

5. The administrative difficulties flowing from court congestion

Recent Federal Court Management Statistics show that the median time to trial for civil cases in the NDCA is 36.7 months, compared to only 25.8 months in WDTX—a difference of 10.9 months. Ex. 16. "The Federal Court Management Statistics are consistent with this Court's repeated recognition that congestion in the NDCA weighs against transfer." *Webroot, Inc. v. AO Kaspersky Lab*, No. 6:22-cv-00239-ADA-DTG, 2024 WL 171705, at *10 (W.D. Tex. Jan. 16, 2024).

Apple has no evidence otherwise and relies on an outdated case from nearly *6 years ago*. Motion at 13 (citing *Uniloc USA Inc. v. Box, Inc.*, No. 1:17-CV-754-LY, 2018 WL 2729202, at *4 (W.D. Tex. June 6, 2018)). But even if this were true then, current statistics show that the average time to trial for patent cases is five months faster in WDTX than NDCA. Exs. 17–18.

Contrary to Apple's assertions, "the right to a prompt adjudication is not limited to manufacturing entities." *Stingray IP Sols., LLC v. Amazon.com, Inc.*, No. 2:21-CV00202-JRG, Dkt. 92 at 16 (E.D. Tex. Mar. 28, 2022). Transfer law is governed by the Fifth Circuit, which does not limit applicability of the law to competitors. *Volkswagen*, 545 F.3d at 307, 315 (articulating this factor's applicability in automobile accident case seeking monetary damages); *see* Section III(A), *supra*. Apple is wrong about the law.

Either way, RevelHMI is a real business and considered [redacted]. *E.g.*, Ex. 15 at 4 ("[redacted]"); *see* Section IV(B), *supra*. Thus, court congestion weighs against transfer.

6. The local interest in having localized interests decided at home

The local interest factor weights against transfer. Cirrus Logic of Austin, Texas [redacted]. Apple argued that it has a local interest in the NDCA, but Apple's corresponding local interest in Texas remains unknown because Apple failed to properly investigate it. On balance, Apple's local interest cannot be accurately determined. Cirrus Logic's Texas interest and Apple's unknown interest cause this factor to weigh against transfer.

7. Familiarity of the forum with the governing law and the avoidance of unnecessary problems of conflict of laws

Apple conceded these two factors are neutral, so they do not support transfer.

VI. ALTERNATIVELY, THE COURT SHOULD TRANSFER TO AUSTIN

For the foregoing reasons, Apple's motion to transfer to the NDCA should be denied. But if the Court is inclined to transfer the case, then it should be transferred to Austin, where Cirrus Logic is headquartered, and which has a more convenient airport.

A. Applicable Law

The same transfer factors apply for inter-district transfer and intra-district transfer, except that the threshold burden is inapplicable. *In re Radmax, Ltd.*, 720 F.3d 285, 288 (5th Cir. 2013). Both the public and private interest factors favor Austin over Midland-Odessa.

B. Private Interest Factors Comparing Midland-Odessa to Austin

The relative ease of access to sources of proof favors Austin because that is where Cirrus Logic is headquartered, along with its [redacted]. *See* Section IV(A), *supra*.

The availability of compulsory process is neutral because Cirrus Logic can be compelled to attend trial in both Austin and Midland-Odessa.

The cost of attendance for willing witnesses favors transfer to Austin. For the reasons in Section IV(C), *supra*, Apple likely has many relevant employees at its Austin office, and they would find trial in Austin more convenient.

The judicial economy factor is neutral.

C. Public Interest Factors Comparing Midland-Odessa to Austin

The administrative difficulties factor, the familiarity of the forum with the governing law, and the avoidance of unnecessary problems of conflict of laws are all neutral.

The local interest factor favors Austin over Midland-Odessa because that is where Apple has a large office and that is where Cirrus Logic is headquartered.

D. Austin Is Preferred Over the NDCA

When comparing Austin and Midland-Odessa, the presence of Cirrus Logic and Apple in Austin make trial in Austin clearly more convenient. If this Court does not keep the case, then it should transfer the case to Austin, where both Apple and Cirrus Logic have a significant presence. Transferring the case to the NDCA would deprive Plaintiff of the opportunity to call Cirrus Logic's witnesses to trial there and unfairly prejudice Plaintiff's case. Transferring the case to the NDCA would also result in a later trial date, delaying justice.

For the foregoing reasons, Apple's motion to transfer to the NDCA should be denied. In the alternative, this case should be transferred to Austin.

Dated: February 2, 2024

Respectfully submitted,

/s/ Reza Mirzaie

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Attorneys for Resonant Systems Inc., d/b/a RevelHMI

CERTIFICATE OF SERVICE

I hereby certify that on February 2, 2024, I electronically filed the foregoing document with the Clerk of the Court for the Western District of Texas using the ECF System which will send notification to the registered participants of the ECF System as listed on the Court's Notice of Electronic Filing. Counsel will also be served via electronic mail.

/s/ Reza Mirzaie

Exhibit 7

[redacted]

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Empl Full Name Formal	Job Title	Location Nar	HR LOB Name - Empl
[redacted]			

[redacted]

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Exhibit 8

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December 11, 2023

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<u>VIA E-MAIL</u>

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Re: *Resonant Systems, Inc. d/b/a RevelHMI v. Apple Inc.*, Case No. 7:23-cv-00077-DC

Counsel,

We write to follow-up regarding Apple's letter dated October 30, 2023, as well as the parties' November 13, 2023, meet-and-confer.

[redacted]

[redacted]

[redacted]

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FISH.
FISH & RICHARDSON

[redacted]

December 11, 2023

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December 11, 2023

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[redacted]

December 11, 2023

Sincerely,

/s/ James Yang

James Yang

CC: Counsel of Record

Exhibit 9

[redacted]

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[redacted]

Exhibit 11

[redacted]

[redacted]

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January 18, 2024

VIA E-MAIL

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Re: *Resonant Systems, Inc. d/b/a RevelHMI v. Apple Inc.*, Case No. 7:23-cv-00077-DC

Counsel,

We write to follow up on the parties' meet-and-confer on January 12, 2024, regarding venue discovery issues.

[redacted]

[redacted]

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[redacted]

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January 18, 2024

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January 18, 2024

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[redacted]

Sincerely,

/s/ James Yang
James Yang

CC: Counsel of Record

Exhibit 12

[redacted]

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF TEXAS
MIDLAND-ODESSA DIVISION

RESONANT SYSTEMS, INC. d/b/a RevelHMI, *Plaintiff*, v. APPLE INC., *Defendant*.	Case No. 7:23-cv-00077-DC JURY TRIAL DEMANDED

DEFENDANT APPLE INC.'S FIRST SUPPLEMENTAL OBJECTIONS AND RESPONSES TO PLAINTIFF'S FIRST SET OF VENUE INTERROGATORIES (NOS. 1–5)

Pursuant to Rules 26 and 33 of the Federal Rules of Civil Procedure, Defendant Apple Inc. ("Defendant" or "Apple") hereby provides the following supplemental responses to Plaintiff Resonant Systems, Inc. d/b/a RevelHMI ("Plaintiff" or "Resonant") First Set of Venue Interrogatories. Apple provides these responses based on a reasonable investigation and on information available to Apple.

GENERAL STATEMENTS AND OBJECTIONS

1. The responses provided herein reflect continuing investigations of facts and discovery of information and documents relating to the claims and defenses at issue in this case. Accordingly, the responses herein are based on current knowledge and reasonable beliefs. Apple expressly reserves the right to modify and/or supplement any response, and to assert additional objections to these Interrogatories as necessary and/or appropriate.

[redacted]

2. Apple objects to each Interrogatory to the extent it seeks information protected by any applicable privilege, including but not limited to the attorney-client privilege, the work-product doctrine or immunity, joint-defense privilege, common-interest privilege, and any other applicable privilege, immunity, or exemption from discovery as outlined in the Federal Rules of Civil Procedure, Local Rules, orders of the Court, and applicable law. For the sake of clarity, Apple hereby asserts such privileges and/or exemptions. Any inadvertent disclosure or production of information and/or documents shall not be deemed a waiver of any privilege with respect to such information or documents or of any work-product doctrine or immunity that may attach thereto.

SPECIFIC OBJECTIONS AND RESPONSES TO INTERROGATORIES

INTERROGATORY NO. 1:

Identify all persons who live or work in Texas, in the United States east of the Mississippi River, and/or outside of the United States, whether or not employed by you, that may have relevant knowledge about the Accused Products or Related Instrumentalities, the patents-in-suit, prior art, and/or any other aspect of the claims or defenses at issue in this case, including designing, developing, producing, testing, researching, evaluating, analyzing, marketing, selling, monitoring, maintaining, servicing, supporting, assembling, testing, or manufacturing, and for each such person provide their full name, employer, title, job description, and a description of the relevant knowledge they may have about this case.

RESPONSE TO INTERROGATORY NO. 1 (SUPPLEMENTED 1/19/24):

[redacted]

[redacted]

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[redacted]

CONFIDENTIAL MATERIAL OMITTED

[redacted]

CONFIDENTIAL MATERIAL OMITTED

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

INTERROGATORY NO. 2:

Identify the sources, including the name of the sourcing entity and the location of the source by country and state or province, of where each accused component of the Accused Product is made and assembled.

RESPONSE TO INTERROGATORY NO. 2 (SUPPLEMENTED 1/19/24):

[redacted]

[redacted]

INTERROGATORY NO. 3:

Identify, for each Accused Product, the quantity of Apple employees who live or work in Texas and have worked on the Accused Product, including designing, developing, producing, testing, researching, evaluating, analyzing, marketing, selling, monitoring, maintaining, servicing, supporting, assembling, testing, or manufacturing.

RESPONSE TO INTERROGATORY NO. 3:

[redacted]

[redacted]

INTERROGATORY NO. 4:

Identify the quantity of Apple employees who live or work in Texas who have emails or documents from within the past 6 years containing one or more of the following search terms:

[redacted]

RESPONSE TO INTERROGATORY NO. 4:

[redacted]

[redacted]

INTERROGATORY NO. 5:

Explain the complete methodology used by each of Apple's declarants to form the basis of their declarations supporting Apple's Motion to Transfer, including but not limited to the scope of any searching or investigation performed, documents and things reviewed to form the basis of their statements, assumptions made, and limits of investigation.

RESPONSE TO INTERROGATORY NO. 5:

[redacted]

Date: January 19, 2024

Respectfully submitted,

/s/ James Yang
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Attorneys for Defendant Apple Inc.

[redacted]

CERTIFICATE OF SERVICE

The undersigned hereby certifies that all counsel of record who have appeared in this case are being served with a copy of this document via electronic mail.

/s/ Stephanie Lambarena
Stephanie Lambarena

UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
MIDLAND-ODESSA DIVISION

RESONANT SYSTEMS, INC., d/b/a RevelHMI, Plaintiff, v. APPLE INC., Defendant.	Case No. 7:23-cv-00077-DC

DECLARATION OF ROBIN ELENGA IN SUPPORT OF PLAINTIFF RESONANT SYSTEMS, INC.'S OPPOSITION TO APPLE'S MOTION TO TRANSFER VENUE

I, Robin Elenga, declare and state as follows:

1. I submit this declaration in support of Plaintiff's Opposition to Apple's Motion to Transfer Venue. I have personal knowledge of the facts set forth herein, and if called upon to testify, could and would testify competently thereto.

2. I am a named inventor on asserted U.S. Patent Nos. 8,093,767; 8,860,337; 9,941,830; and 11,152,882.

3. I am Plaintiff's founder, sole remaining employee, President, and largest shareholder. I expect to be Plaintiff's sole corporate designee at deposition and Plaintiff's sole corporate representative at trial. Because I am the sole remaining employee and because I continue to manage the day-to-day business of Resonant Technologies, Inc., I believe that I have the most encompassing plaintiff-side knowledge relative to this case, and I believe that co-inventor Brian Pepin has only a duplicative subset of my knowledge because he no longer works for Resonant Technologies, Inc.

4. I founded Resonant Technologies, Inc. in 2010 to develop high-performance vibration-based haptic actuators, drivers, and firmware. We secured numerous patents for our technology. We developed, launched, and sold a commercial product that incorporated our unique haptics technologies. Like many others during the COVID-19 pandemic, we were forced to lay off employees in 2020 due to business conditions. If we had incoming licensing revenue for the use of our patented technologies by Apple, the layoffs probably could have been avoided.

5. I am willing and expect to travel to Texas to testify in the above-captioned case. I do not personally find this inconvenient.

6. I am also willing and expect to travel to Texas in relation to Plaintiff's co-pending cases *Resonant Systems, Inc. v. Samsung Electronics Co., Ltd.*, No. 2:22-cv-00423-JRG and

Resonant Systems, Inc. v. Sony Group Corp., No. 2:22-cv-00424-JRG. I expect to regularly travel to Texas to prepare for, attend hearings in, and testify in these cases, so I would not find travel to another Texas venue for the Apple case to be inconvenient. I have no specific plans to travel to the Northern District of California.

7. I would prefer to travel to Midland, Texas for trial instead of to the Northern District of California because I believe it will be far less expensive. I have estimated my per-diem rates using the GSA website, and San Francisco looks to be approximately 50% more expensive. Below are true and correct screenshots of the GSA estimated rates for Midland, Texas and San Francisco, CA from https://www.gsa.gov/travel/plan-book/per-diem-rates/per-diem-rates-results?action=perdiems_report&fiscal_year=2024&state=CA&city=San%20Francisco and https://www.gsa.gov/travel/plan-book/per-diem-rates/per-diem-rates-results?action=perdiems_report&fiscal_year=2024&state=TX&city=midland&zip=. If I needed to travel a whole week for trial plus several days of preparation, then I estimate the resulting cost difference to be substantially less expensive in Midland, Texas.

FY 2024 Per Diem Rates for san ×

https://www.gsa.gov/travel/plan-book/per-diem-rates/per-diem-rates-results?action=perdiems_report&fiscal_year=2024&state=CA&city=san francisco&zip=

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Home › Travel resources › Per Diem Rates › Results

FY 2024 Per Diem Rates for san francisco, California

Change fiscal year: 2024 2023 2022 or New Search

Daily lodging rates (excluding taxes) | October 2023 - September 2024

Cities not appearing below may be located within a county for which rates are listed. To determine the county a destination is located in, visit the Census Geocoder.

Filter Results...

Primary Destination	County	2023 Oct	Nov	Dec	2024 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
San Francisco	San Francisco	$288	$288	$288	$333	$333	$333	$270	$270	$270	$270	$270	$288

Showing 1 to 1 of 1 entries

FY 2024 Per Diem Rates for Mi ×

https://www.gsa.gov/travel/plan-book/per-diem-rates/per-diem-rates-results?action=perdiems_report&fiscal_year=2024&state=TX&city=Midland&zip=

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FY 2024 Per Diem Rates for Midland, Texas

Change fiscal year: 2024 2023 2022 or New Search

Daily lodging rates (excluding taxes) | October 2023 - September 2024

Cities not appearing below may be located within a county for which rates are listed. To determine the county a destination is located in, visit the Census Geocoder.

Filter Results...

Primary Destination	County	2023 Oct	Nov	Dec	2024 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Standard Rate	Applies for all locations without specified rates	$107	$107	$107	$107	$107	$107	$107	$107	$107	$107	$107	$107
Midland / Odessa	Midland / Andrews / Ector / Martin	$183	$183	$183	$183	$183	$183	$183	$183	$183	$183	$183	$183

Showing 1 to 2 of 2 entries

I declare under penalty of perjury pursuant to the laws of the United States that the foregoing is true and correct.

Executed on February 2, 2024 at King County, Washington

Robin Elenga

UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
MIDLAND-ODESSA DIVISION

RESONANT SYSTEMS, INC. d/b/a RevelHMI, *Plaintiff*, v. APPLE INC., *Defendant*.	Case No. 7:23-cv-00077-DC JURY TRIAL DEMANDED [redacted]

DEFENDANT APPLE INC.'S REPLY IN SUPPORT OF ITS OPPOSED MOTION TO TRANSFER VENUE TO THE NORTHERN DISTRICT OF CALIFORNIA

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I. INTRODUCTION

The Northern District of California is clearly the most convenient venue for this case. As Apple explained in its opening brief, [redacted]. There are also [redacted] third parties in NDCA: [redacted] an inventor named on all asserted patents. And Resonant has no Texas connection beyond its own lawsuit filings.

Resonant does not dispute any of these facts. In fact, Resonant did not investigate the evidence cited in Apple's motion, not even deposing Apple's declarants. Instead, Resonant used venue discovery to create specious connections to WDTX where none genuinely exists. For example, rather than focusing on the accused features or functionalities, Resonant asserts (Opp. at 4) that WDTX is an appropriate venue because some Apple employees in Austin ***may*** (or, in Resonant's words, "likely") work on ***unrelated*** features of the accused products. The proper focus of the venue inquiry, though, is the whereabouts of witnesses and evidence related to Resonant's claims or Apple's defenses. Resonant also relies heavily on Cirrus Logic, a third-party component supplier based in Austin, [redacted]. Resonant's infringement contentions do not even mention Cirrus Logic, [redacted]. Resonant's attempts to distract from the overwhelming evidence in favor of transfer are thus meritless. This case should be transferred to NDCA.

II. PRIVATE INTEREST FACTORS FAVOR TRANSFER

A. Relative Ease of Access to Sources of Proof Strongly Favors Transfer

The relevant sources of proof are almost entirely in the NDCA. [redacted].[1] *See* Mot. at 2–4, 6–8. Likewise, evidence in the custody of [redacted]. *Id.* By contrast, there is no unique relevant evidence in WDTX. *Id.*

Resonant's opposition focuses on a single third-party: Cirrus Logic. This is a red herring. Resonant's complaint and infringement contentions do not even mention Cirrus Logic, and instead accuse "Apple products with Taptic Engine technology." Dkt. 20 (FAC) at ¶¶ 10, 16, 22, 28; Exs. 1–5 (Inf. Contentions). [redacted]. Despite Apple's repeated requests for Resonant's infringement theory as it relates to Cirrus Logic's amplifiers, Resonant has yet to supplement its infringement contentions. Ex. 6 (10/30/23 Letter); Dkt. 43-6, Ex. 8 (12/11/23 Letter); Dkt. 43-8, Ex. 11 (1/18/24 Letter). The Court should reject Resonant's "attempts to manufacture venue convenience by presenting [a third party] of tenuous relevance in Texas." *SurfCast, Inc. v. Microsoft Corp.*, No. 6:21-CV-01018-ADA, 2022 WL 4360591, at *4 (W.D. Tex. Sept. 20, 2022).

[redacted]

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[1] For example, [redacted].

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[redacted].

Resonant also undervalues the relevance of Apple's NDCA electronic documents. *See* Opp. at 11. [redacted]. Courts have repeatedly favored transfer when, as here, "only Apple employees in NDCA are credentialed to access" such electronic documents. *In re DoDots Licensing Solutions LLC*, No. 24-100, 2023 WL 8642716, *2 (Fed. Cir. Dec. 14, 2023); *see also In re Apple Inc.*, 2021 WL 5291804, *2 (Fed. Cir. Nov. 15, 2021); *Gesture Tech. Partners, LLC v. Apple Inc.*, No. 6:21-CV-00121-ADA, 2022 WL 3592451, *3 (W.D. Tex. Aug. 22, 2022).

Resonant's only WDTX evidence that it identifies are those ***it sent to its counsel*** in Dallas. Opp. at 10–11. But "attorneys may not manipulate the transfer analysis simply by moving documents to their offices." *Nat'l Union Fire Ins. Co. v. Lauren Eng'rs & Constructors*, No. 3:19-CV-1742-S, 2019 WL 6071073, at *4 n.1 (N.D. Tex. Nov. 14, 2019); *see also In re Samsung Elecs. Co., Ltd.*, 2 F.4th 1371, 1378–79 (Fed. Cir. 2021). Hence, such evidence has no weight in

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the venue analysis. Also, evidence in Dallas (NDTX) is irrelevant as it is "outside both [transferor and transferee] forums." *In re Toyota Motor Corp.*, 747 F.3d 1338, 1340 (Fed. Cir. 2014).

Finally, in its bid to distract from the facts that necessitate transfer, Resonant baselessly accuses Apple of hiding email custodians in Austin. Opp. at 6–7. Specifically, Resonant served an Interrogatory asking for "the quantity of Apple employees who live or work in Texas who have emails or documents from within the past 6 years" that hit on certain search terms. Dkt. 43-9, Ex. 12 at 9. This Court's Standing Order at Section II requires good cause to conduct email discovery, including for metadata. Rather than show good cause, Resonant improperly asks this Court to draw negative inferences simply because Apple raised legitimate objections to the enormous burden of searching thousands of employees' emails that vastly outweighs any possible benefit from Resonant's fishing expedition. The Court should decline to do so.

B. Availability of Compulsory Process Strongly Favors Transfer

As explained in Apple's Opening Brief (at 8–10), the availability of compulsory process favors transfer. Resonant's opposition points only to Cirrus Logic for this factor. Opp. at 11–12. [redacted].

As to [redacted] subject to NDCA's compulsory process, Resonant speculates: [redacted] Opp. at 12. But Resonant fails to grapple with the inconsistency of its positions. If the suppliers' locations are relevant—as Resonant asserts for Cirrus Logic—[redacted]

[redacted]. If their locations are irrelevant, so too is Cirrus Logic's location. Either way, the analysis favors transfer. *In re Apple, Inc.*, 581 F. App'x 886, 889 (Fed. Cir. 2014) (where more third-party witnesses reside in NDCA than WDTX, this factor "weigh[s] heavily in favor of transfer"). Resonant also does not explain why [redacted].

Finally, Resonant improperly discounts the NDCA residence of Mr. Pepin, an inventor on all asserted patents, by speculating that his knowledge will "likely" be duplicative of his co-inventor, Mr. Elenga, who is Resonant's president and sole employee. Opp. at 12. But Apple intends to serve a subpoena on Mr. Pepin for testimony about his role as an inventor; his alleged contribution to, conception of, and reduction to practice of the asserted patents; and [redacted]. Resonant does not dispute that compulsory process is required to enforce such a subpoena. Apple is also entitled to check Mr. Pepin's third-party testimony against Mr. Elenga's testimony as an interested party. As such, Mr. Pepin has unique knowledge relevant to this case, and his location is relevant to the transfer analysis. *See* Opp. at 12.

C. Convenience of Witnesses Strongly Favors Transfer

The convenience of witnesses is "the single most important factor," *In re Genentech, Inc.*, 566 F.3d 1338, 1343 (Fed. Cir. 2009), and strongly favors transfer. [redacted]. Mot. at 2–4. [redacted]. *Id*. This is not surprising, as Apple is headquartered [redacted]. Unable to refute any of this, Resonant resorts to baseless speculations and accusations.

As an initial matter, Resonant does not identify a single Apple employee in WDTX with

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any relevant information, [redacted]. Resonant instead relies on attorney conjecture [redacted]. Opp. at 12. But such "rank speculation [about] whether these employees have any [relevant] knowledge" is meritless. *In re TikTok, Inc.*, 85 F.4th 352, 361 n.9 (5th Cir. 2023); *see also Uniloc USA Inc. v. Box, Inc.*, 2018 WL 2729202, *2–5 (W.D. Tex. 2018) (giving no weight to the plaintiff "vaguely point[ing] to several witnesses at the Austin Box office that have relevant information, but not with specificity"). Apple has around 80,000 employees across all 50 states, including over 36,000 in California (more than in any other state). *See* Dkt. 37-3 (Mot., Ex. 2). [redacted]. What matters for transfer is the location of employees with ***relevant*** knowledge, and here, none are in Texas. *See In re Samsung Elecs. Co., Ltd.*, No. 2023-146, 2023 WL 8642711, at *2 (Fed. Cir. Dec. 14, 2023) ("[T]he presence of some [defendant's] employees in Eastern Texas, who have no technical knowledge of the accused functionality here, 'cannot overcome the immense inconvenience that the majority of relevant witnesses would face if this case were to be tried in' WDTX.").

To distract from its inability to identify any relevant Apple employees in WDTX, [redacted]

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[2] Resonant's Interrogatory No. 5: "Explain the complete methodology used by each of Apple's declarants to form the basis of their declarations supporting Apple's Motion to Transfer, including but not limited to the scope of any searching or investigation performed, documents and things reviewed to form the basis of their statements, assumptions made, and limits of investigation."

[redacted]. *See* Dkts. 36-2–36-5 at ¶ 2.

Similarly, Resonant complains that Apple did not identify all employees "east of the Mississippi River," Opp. at 5, and relies on *TikTok* to argue that Apple should "investigate" every one of its employees in the United States and "worldwide" as part of the transfer analysis, Opp. at 5–6, 9–10. Setting aside Resonant's improper attempt at burden-shifting, Resonant's argument ignores that Apple ***did*** investigate and locate the relevant employees and evidence, as demonstrated in Apple's motion and supporting declarations. *See* Mot. Indeed, the facts here favor transfer more than in *TikTok*, where the Fifth Circuit ordered transfer to NDCA because "most relevant witnesses are in China or California" and one was in Texas. *TikTok*, 85 F.4th at 361. [redacted]. *See* Mot. at 2–4.

Resonant then introduces another red herring by asserting that its owner, Mr. Elenga, who lives in Seattle, WA, would prefer to travel to WDTX, despite Seattle being much closer to NDCA. Dkt. 44-20 (Elenga Decl.) at ¶ 7. But Mr. Elenga's alleged preference is irrelevant. *See AlmondNet, Inc. v. Samsung Elecs. Co.*, No. W-21-CV-00891-ADA, at *10 (W.D. Tex. Nov. 28, 2022) ("[T]he Court will not weigh the convenience of a plaintiff's witnesses against transfer under this factor merely because the plaintiff attests that travel to this District would not represent an inconvenience."). Even if it was relevant, Mr. Elenga's singular preference [redacted]. *See* Mot. at 2–4; *Genentech*, 566 F.3d at 1345 ("In patent infringement cases, the bulk of the relevant evidence usually comes from the accused infringer."). As for Mr. Elenga's potential travel to EDTX for Resonant's other lawsuits, "it is improper for a district court to weigh the judicial economy factor in a plaintiff's favor solely based on the existence of multiple co-pending suits . . . . To hold otherwise, [the Court] would be effectively inoculating a plaintiff against convenience transfer under § 1404(a) simply because it filed related suits against multiple defendants in the transferor district. This is not the law under the Fifth Circuit." *In re Google Inc.*, No. 2017-107, 2017 WL 977038, at *3 (Fed. Cir. Feb. 23, 2017). And his potential trips to EDTX on some days would not necessarily make trips to WDTX on other days more convenient. These cases have different schedules and Midland is a seven-hour drive from Marshall, with few nearby airports.

Finally, Resonant cites "a plaintiff-generated tally" of Apple employee and supplier locations, Dkt. 44-19 (Tong Decl.) at ¶ 11; Opp. at 5, which is irrelevant. What matters is where the ***relevant*** witnesses are, not the purported totals of irrelevant employees that Resonant derived using some undisclosed methodology. *See Interactive Graphic Sols. LLC v. Microsoft Corp.*, No. W-21-CV-00462-ADA, 2022 WL 1314462, at *4 (W.D. Tex. Apr. 20, 2022). And even this self-serving data shows more Apple employees closer to NDCA than WDTX. Dkt. 44-10.

D. Other Practical Problems are Neutral

Resonant cites its own motion to compel filing for this factor. Opp. at 13. As explained above, Sections II.A. and II.C., *supra*, Resonant cannot manufacture its own anti-transfer factors. *See, e.g.*, *Google*, 2017 WL 977038 at *3; *Samsung*, 2 F.4th at 1378–79.

III. PUBLIC INTEREST FACTORS FAVOR TRANSFER

A. Court Congestion is Neutral

This factor is "the most speculative" and given little weight. *Genentech*, 566 F.3d at 1347. And where, as here, the plaintiff "is not engaged in product competition in the marketplace[,]" it is "a clear abuse of discretion to accord this factor any weight[.]" *In re Google LLC*, 58 F.4th

1379, 1383 (Fed. Cir. 2023); *see also Datanet LLC v. Dropbox Inc.*, No. 6:22-cv-01142-OLG-DTG, 2023 WL 7741313, at *7 (W.D. Tex. Nov. 14, 2023). Resonant insists it is "a real business and [redacted]" Opp. at 4, 13–14, but cannot deny that it currently makes no products. [redacted]. Resonant also does not dispute its website is blank. Dkt. 37-7 (Mot., Ex. 6).

B. Local Interest Strongly Favors Transfer

[redacted]—NDCA clearly has greater local interest. [redacted]. *See In re Apple Inc.*, No. 2022-128, 2022 WL 1196768, at *3 (Fed. Cir. 2022) ("[A] party's 'general presence in a particular district' does not alone 'give that district a special interest in the case.'" (internal citation removed)).

IV. THIS CASE DOES NOT PRESENT AN ISSUE OF FIRST IMPRESSION

Finally, Resonant attempts to distract this Court by claiming this case raises an issue of "first impression" in view of *TikTok*. Opp. at 10. But *TikTok* did not change the law,[3] nor does it require (as Resonant suggests) that parties investigate their worldwide employees. Instead, *TikTok* held that the district court abused its discretion by denying transfer "when 'virtually all of the events and witnesses regarding the case'" were in NDCA. *TikTok*, 85 F.4th at 366 (quoting *In re Radmax, Ltd.*, 720 F.3d 285, 290 (5th Cir. 2013)). And the facts and evidence here are so overwhelmingly one-sided that it does not come close to requiring new law.

The only legal development Resonant points to is the purported need to consider "***all*** [of Apple's] relevant employees, not just those in California and Texas[.]" Opp. at 5. Even if *TikTok*

[3] *TikTok* did not change the transfer law. In fact, it relied on the Fifth Circuit's *en banc* decision from *In re Volkswagen of Am., Inc.*, 545 F.3d 304, 309 (5th Cir. 2008), and also approvingly cited the Federal Circuit's decision in *In re Nintendo Co., Ltd.*, 589 F.3d 1194, 1199 (Fed. Cir. 2009).

required such a comprehensive search (it does not), Apple has satisfied its burden. [redacted]. Apple did not, as Resonant argues, withhold unfavorable evidence. Opp. at 10. The high concentration of relevant employees and evidence in NDCA is unsurprising given that Apple is headquartered there, and certainly does not raise an issue of first impression.

V. TRANSFER TO AUSTIN IS IMPROPER

In a tacit admission that Midland is not a convenient venue (because no relevant witness is there), Resonant hedges and requests transfer to Austin, saying it "has a more convenient airport." Opp. at 14. [redacted]. The only supposed Austin connection is Cirrus Logic, [redacted]. Further, the Court should not reward Resonant's attempts to manipulate the venue analysis by suddenly insisting that Cirrus Logic is relevant when it is not even mentioned in Resonant's infringement contentions. *See* Exs. 1–5. Hence, transfer to Austin is improper.

VI. CONCLUSON

Four factors strongly favor transfer, and none disfavor it. This case should be transferred to NDCA, which is clearly the more convenient venue.

Date: February 16, 2024

Respectfully submitted,

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Case: 24-129 Document: 2-2 Page: 272 Filed: 05/29/2024

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Attorneys for Defendant Apple Inc.

CERTIFICATE OF SERVICE

Pursuant to the Federal Rules of Civil Procedure and Local Rule CV-5, I hereby certify that, on February 16, 2024, all counsel of record who have appeared in this case are being served with a copy of the foregoing via the Court's CM/ECF system. I further certify that all counsel of record who have appeared in this case are being served with an unredacted copy of the foregoing via electronic mail.

/s/ Stephanie Lambarena
Stephanie Lambarena

Exhibit 7

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UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF TEXAS
MIDLAND-ODESSA DIVISION

RESONANT SYSTEMS, INC. d/b/a RevelHMI, *Plaintiff*, v. APPLE INC., *Defendant*.	Case No. 7:23-cv-00077-DC JURY TRIAL DEMANDED

DECLARATION OF SRDJAN MARIJANOVIC

I, Srdjan Marijanovic, hereby declare:

1. I am over 18 years of age and competent to make this declaration. [redacted]

[redacted] [redacted]

DocuSign Envelope ID: 47EAE938-D710-4A7F-A7B3-D06844548B6D

[redacted] [redacted]

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[redacted] [redacted]

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CONFIDENTIAL MATERIAL OMITTED

[redacted]

I declare under penalty of perjury that the foregoing is true and correct. Executed in Austin, Texas on this date: February 8, 2024

DocuSigned by:
Srdjan Marijanovic
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Srdjan Marijanovic

Exhibit 1

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
MIDLAND-ODESSA DIVISION

RESONANT SYSTEMS, INC. d/b/a RevelHMI,

Plaintiff,

v.

APPLE, INC.,

Defendant.

Case No. 7:23-cv-00077-DC

JURY TRIAL DEMANDED

<u>REVELHMI'S PRELIMINARY INFRINGEMENT CONTENTIONS</u>

Plaintiff Resonant Systems, Inc. ("RevelHMI") provides this Disclosure of its Infringement Contentions to Defendant Apple, Inc. ("Apple") in accordance with the Court's Standing Order Governing Proceedings. This disclosure is made solely for the purposes of this action.

Discovery is not yet open in this case. Apple has not yet produced any documents, and there have been no deposition testimony or discovery responses in this action, including no indication from Apple as to which claim elements, if any, it believes are not literally infringed. RevelHMI's investigation regarding the asserted claims and infringement contentions in this disclosure is ongoing, and its investigation of other potential grounds of infringement is ongoing. This disclosure is based upon information that RevelHMI has been able to obtain publicly, together with RevelHMI's current good faith beliefs and information regarding the Accused Products. This disclosure is provided without prejudice to RevelHMI's right to supplement or amend its disclosure as additional facts are discovered, documents and source code are obtained, analyses are made, and research is completed.

Further, this disclosure is based upon RevelHMI's present understanding of the meaning and scope of the claims of the Asserted Patents in the absence of claim construction proceedings in this action. RevelHMI reserves the right to supplement or amend these disclosures if its understanding of the claims changes, including when the Court construes them in this action.

ASSERTED PATENTS AND CLAIM CHARTS

RevelHMI asserts direct and indirect infringement (literally and under the doctrine of equivalents) against Apple under 35 U.S.C. § 271(a), 35 U.S.C. § 271(b), and 35 U.S.C. § 271(c) of 8,093,767 (the "'767 Patent"), 8,860,337 (the "'337 Patent"), 9,941,830 (the "'830 Patent), and 11,152,882 (the "'882 Patent") (collectively the "Asserted Patents"). To be clear, RevelHMI asserts that Apple literally infringes each asserted claim. To the extent literal infringement is disputed or not found, RevelHMI also asserts that Apple nonetheless infringes under the doctrine of equivalents because the accused features are insubstantially different from the claimed features, and because the claimed inventions and the accused products perform substantially the same function in substantially the same way to achieve the same result.

Charts setting forth exemplary Apple features and components practicing each asserted claim are found in the accompanying claim charts.

PRIORITY DATES

Each asserted claim of the '882 patent is entitled to a priority date at least as early as February 13, 2015. Each asserted claim of the remaining asserted patents is entitled to a priority date at least as early as May 18, 2009.

DOCUMENT PRODUCTION

RevelHMI refers Apple to the documents produced concurrently herewith, which include file histories of the Asserted Patents.

Dated: October 5, 2023 Respectfully submitted,

/s/ Reza Mirzaie

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Attorneys for Resonant Systems, Inc.
d/b/a RevelHMI

<u>CERTIFICATE OF SERVICE</u>

I certify that this document is being served upon counsel of record for Defendant on October 5, 2023 via electronic service.

<u>/s/ Christian W. Conkle</u>
Christian W. Conkle

Exhibit 2

U.S. Patent No. 8,093,767 ("'767 Patent")

Accused Instrumentalities

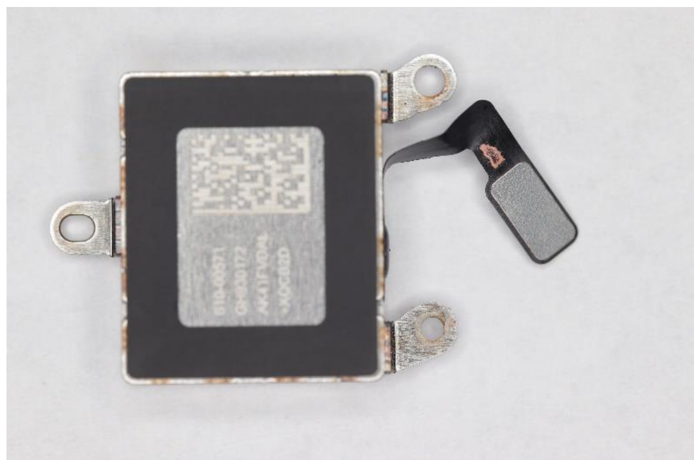
Apple products with Taptic Engine technology, including without limitation iPhone products (iPhone 6s, 6s Plus, 7, 7 Plus, 8, 8 Plus, X, XR, XS, XS Max, 11, 11 Pro, 11 Pro Max, SE (second generation), 12, 12 mini, 12 Pro, 12 Pro Max, 13, 13 mini, 13 Pro, 13 Pro Max, SE (third generation), 14, 14 Plus, 14 Pro, 14 Pro Max, 15, 15 Plus, 15 Pro, 15 Pro Max), MacBook products (MacBook Pro from 2015, MacBook from 2018, MacBook Air from 2018) and Apple Watch products (1st generation, Series 1, Series 2, Series 3, Series 4, Series 5, SE, Series 6, Series 7, SE (second generation), Series 8, Ultra, Series 9, Ultra 2), and all variants and iterations thereof (collectively, "Accused Products"), infringe at least Claims 1, 2, 3, 4, and 5 of the '767 Patent.

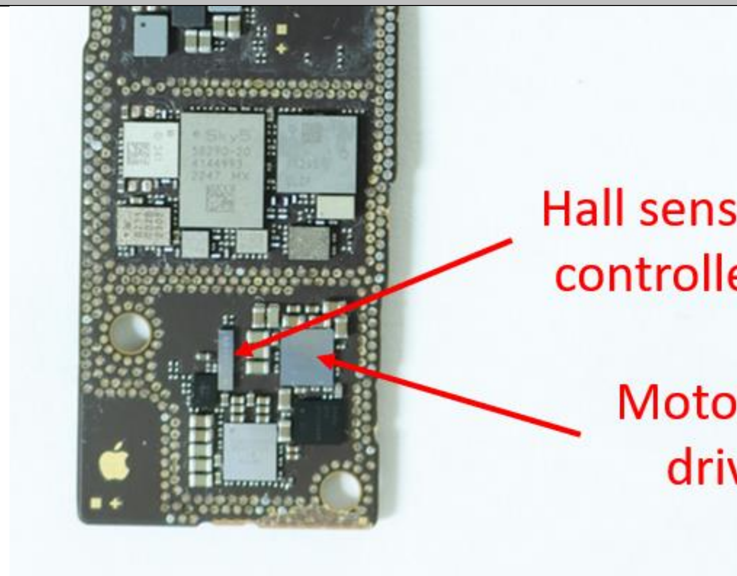
Each Accused Product infringes the claims in substantially the same way, and the evidence shown in this chart is similarly applicable to each Accused Product. For example, each Accused Product includes a linear vibration motor and supports substantially the same haptic feedback features. Each claim limitation is literally infringed by each Accused Product. However, to the extent any claim limitation is not met literally, it is nonetheless met under the doctrine of equivalents because the differences between the claim limitation and each Accused Product would be insubstantial, and each Accused Product performs substantially the same function, in substantially the same way, to achieve the same result as the claimed invention. Notably, Apple has not yet articulated which, if any, particular claim limitations it believes are not met by the Accused Products.

Claim 1

Claim 1	Accused Products
[1pre]. A linear resonant vibration module comprising:	To the extent the preamble is limiting, each Accused Product includes or constitutes a linear resonant vibration module. For example, each of the Apple iPhone 14 and the Apple Watch Ultra contain a linear actuator ("Taptic Engine"), haptic controller(s), and associated circuitry, as described in connection with the claim limitations below. *See, e.g.*:

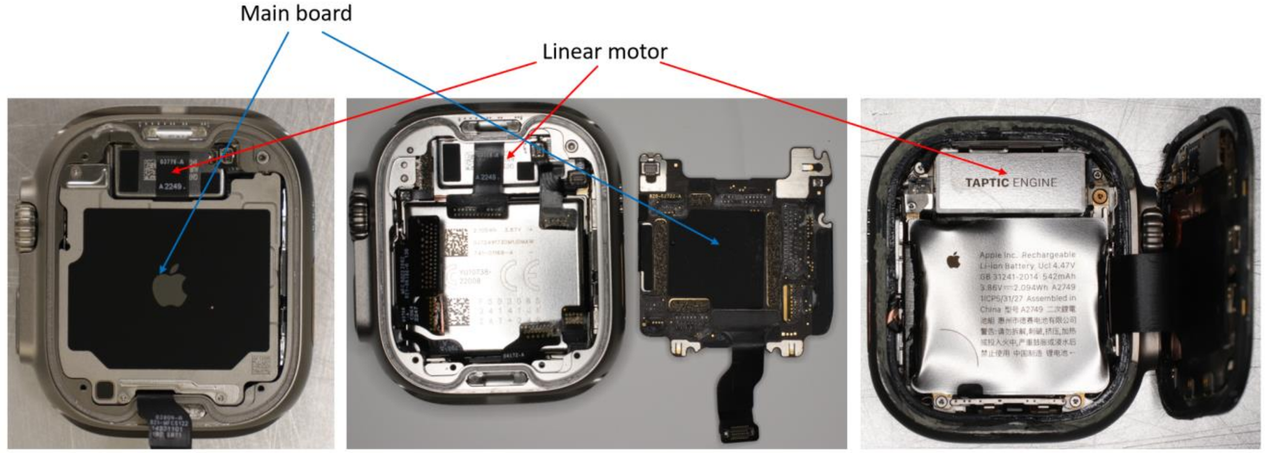
	 Photograph of iPhone 14 with rear cover removed, with A15 Bionic SoC at center right and Taptic Engine at bottom left.

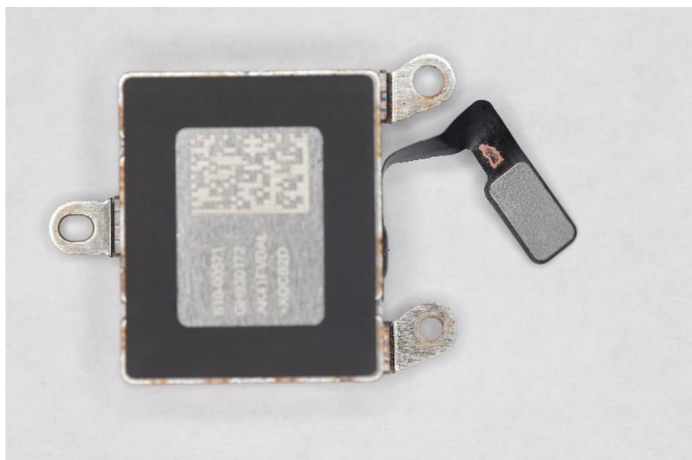
Claim 1	Accused Products
	 Photograph of Taptic Engine housing from iPhone 14.  Photograph of Taptic Engine housing from iPhone 14.

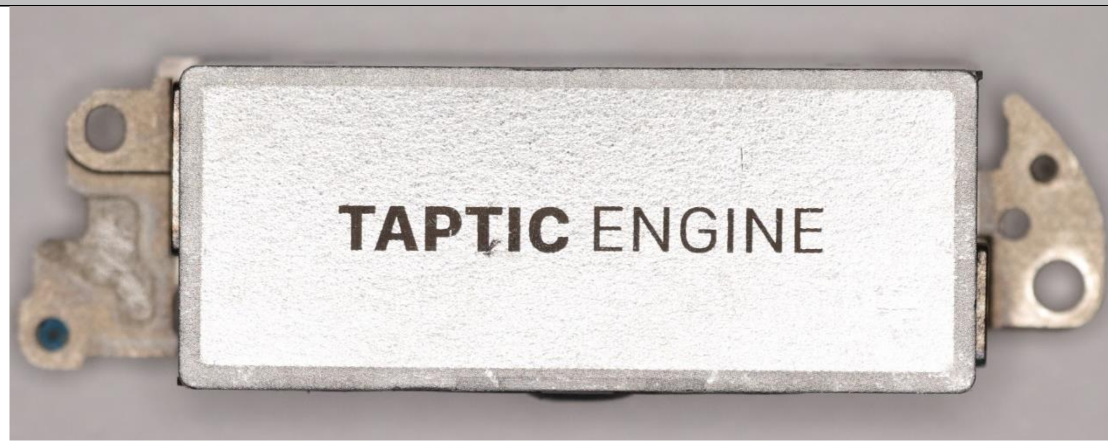
Claim 1	Accused Products
	 Photograph of Hall sensor controller and motor control driver from iPhone 14.

Claim 1	Accused Products
	The following devices contain a Taptic Engine: • iPhone 14 Pro Max • iPhone 14 Pro • iPhone 14 Plus • iPhone 14 • iPhone SE (3rd generation) • iPhone 13 Pro Max • iPhone 13 Pro • iPhone 13 • iPhone 13 mini • iPhone 12 Pro Max • iPhone 12 Pro • iPhone 12 • iPhone 12 mini • iPhone SE (2nd generation) • iPhone 11 Pro Max • iPhone 11 Pro • iPhone 11 • iPhone XS Max • iPhone XS • iPhone XR • iPhone X • iPhone 8 Plus • iPhone 8 • iPhone 7 Plus • iPhone 7 • iPhone 6s Plus • iPhone 6s Accessory Design Guidelines for Apple Devices, Release R20, *available at* https://developer.apple.com/accessories/Accessory-Design-Guidelines.pdf

<table>
<tr><th>Claim 1</th><th>Accused Products</th></tr>
<tr><td></td><td>
Photograph of Apple Watch Ultra.</td></tr>
</table>

Claim 1	Accused Products
	 Wrist side, cover removed Wrist side, cover and main board removed Display side, display removed Annotated photographs of Apple Watch Ultra showing linear actuator (Taptic engine) and main system board.
[1a] a housing;	Each Accused Product comprises a housing. For example, the Taptic Engine in each of the iPhone 14 and Apple Watch Ultra has a hollow cavity that is soldered together to form a housing surrounding the moveable component and coils. *See, e.g.*:

Claim 1	Accused Products
	 Photograph of Taptic Engine housing from iPhone 14.  Photograph of Taptic Engine housing from iPhone 14.

Claim 1	Accused Products
	 Photograph of Taptic Engine housing from Apple Watch Ultra.
[1b] a moveable component;	Each Accused Product comprises a moveable component. For example, the Taptic Engine in each of the iPhone 14 and Apple Watch Ultra includes a movable component comprising permanent magnet(s) and a mass. *See, e.g.*:

Claim 1	Accused Products
	 Photograph of moveable component (at right, connected to housing with springs) from iPhone 14.  Photograph of moveable component from Apple Watch Ultra.

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Claim 1	Accused Products
[1c] a power supply;	Each Accused Product comprises a power supply. For example, the linear motor coil driver (described below) in each of the iPhone 14 and Apple Watch Ultra receives power from one or more voltage regulators on or near the Accused Product's system board. *See, e.g.*:

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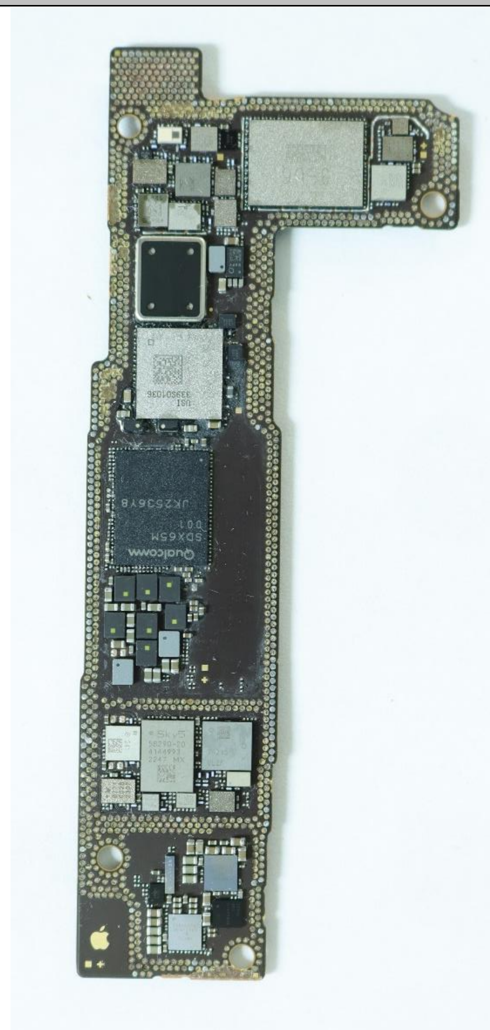
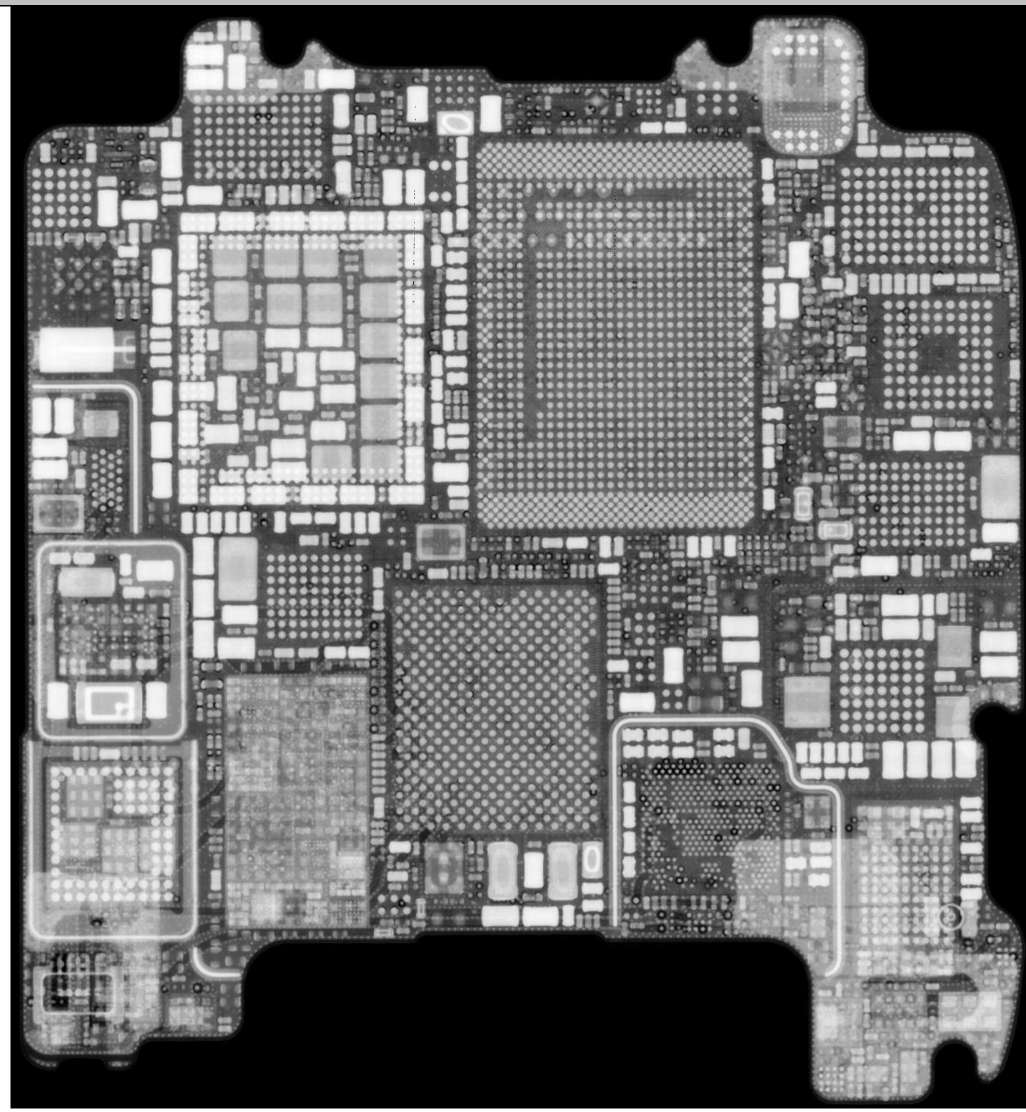
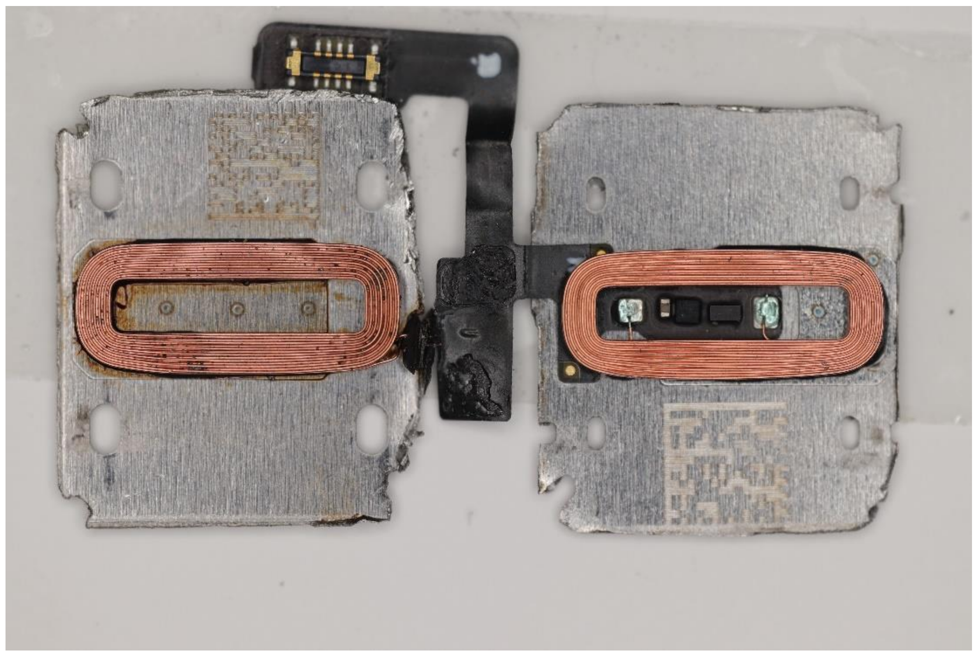
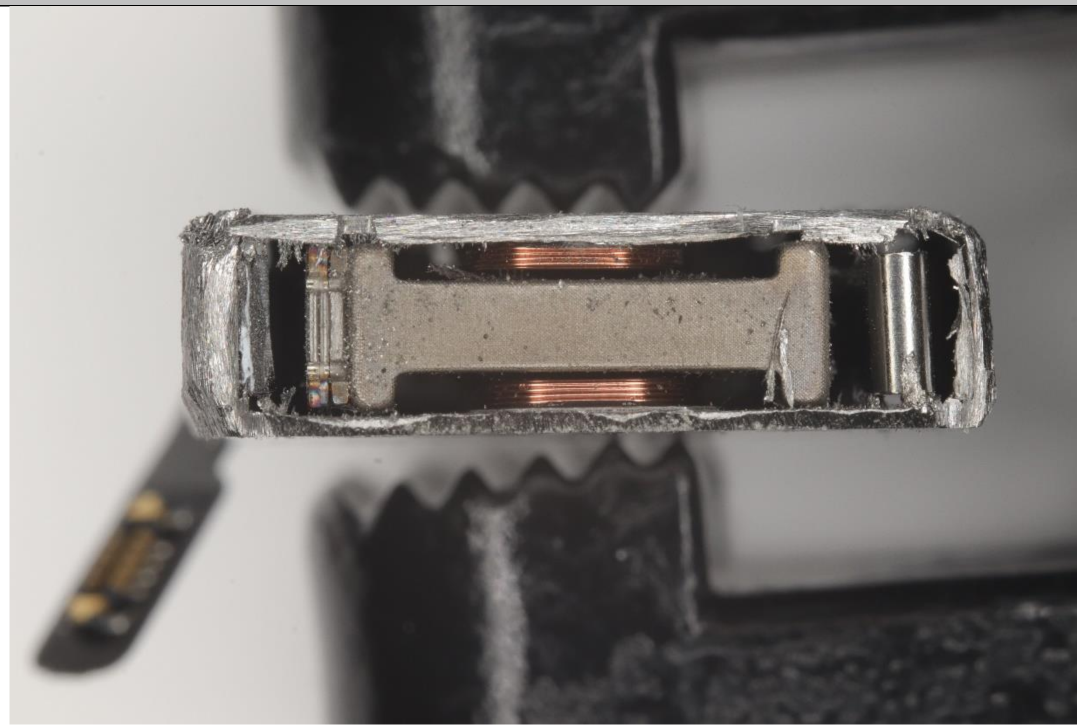
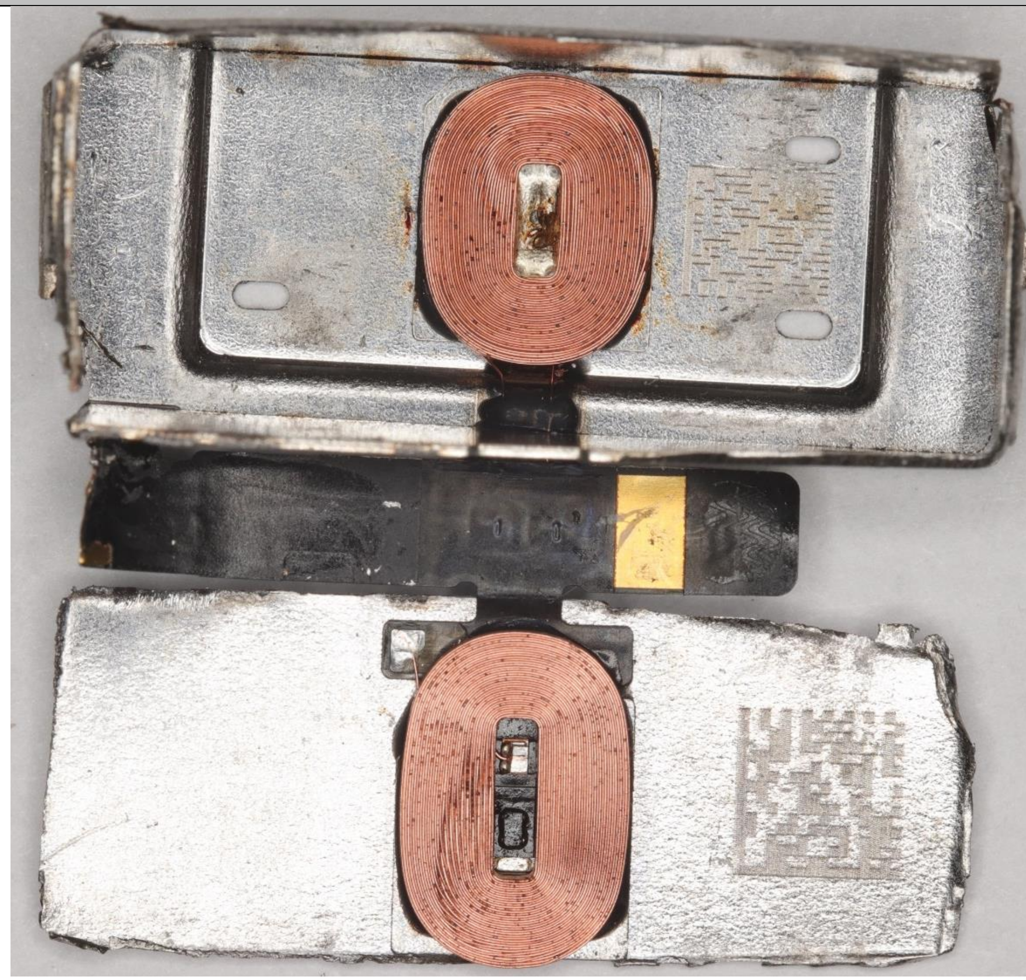
Claim 1	Accused Products
	 Photograph of iPhone 14 system board.

Claim 1	Accused Products
	 X-ray image of Apple Watch Ultra system board.

Claim 1	Accused Products
	See also claim elements below.
[1d] a driving component that drives the moveable component in each of two opposite directions; and	Each Accused Product includes a driving component that drives the moveable component in each of two opposite directions. For example, the Taptic Engine includes one or more coils to form electromagnetic fields for driving the moveable component in two directions. *See, e.g.*:  Photograph of driving coils within disassembled Taptic Engine from iPhone 14. The two visible coils would be positioned above and below the moveable component when assembled.

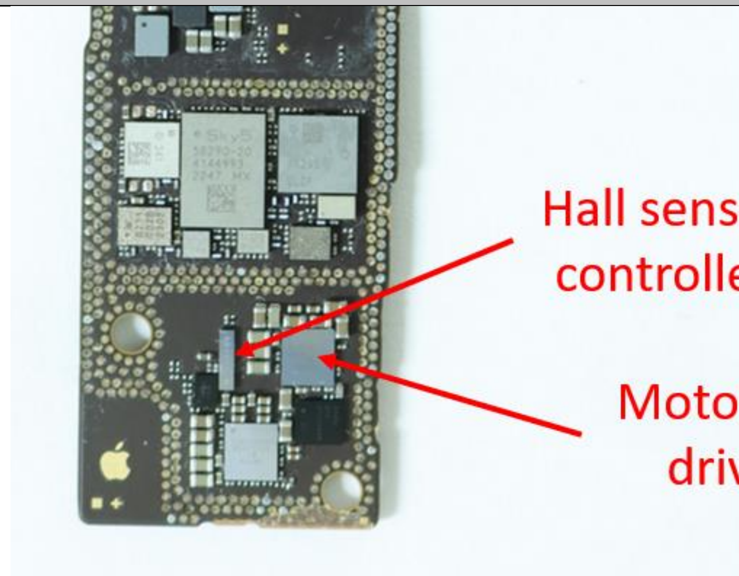
Claim 1	Accused Products
	 Photograph showing one driving coil (at right) within disassembled Taptic Engine from iPhone 14, with moveable component in place at left. The moveable component travels up and down from this perspective.

Claim 1	Accused Products
	 Photograph of internals of Taptic Engine from iPhone 14, showing drive coils (top and bottom) surrounding the moveable component. The moveable component travels left and right from this perspective.

Claim 1	Accused Products
	 Photograph of drive coils within disassembled Taptic Engine from Apple Watch Ultra. The two visible coils would be positioned above and below the movable component when assembled.

Claim 1	Accused Products
[1e] a control component that includes a microprocessor and that controls supply of power from the power supply to the driving component to cause the moveable component to linearly oscillate, the control component including, in addition to the microprocessor,	Each Accused Product comprises a control component that includes a microprocessor and that controls supply of power from the power supply to the driving component to cause the moveable component to linearly oscillate. For example, each Accused Product includes a main system processor, a linear motor coil driver, and a Hall sensor controller, which alone or in combination form a control component as claimed to drive the coils and thus move the magnetic mass in a linear oscillating motion, as described below. *See, e.g.*:

Claim 1	Accused Products
	 Photographs showing iPhone 14 system board with A15 Bionic processor.

Claim 1	Accused Products
	 Annotated photograph of Hall sensor controller and motor coil driver from iPhone 14.

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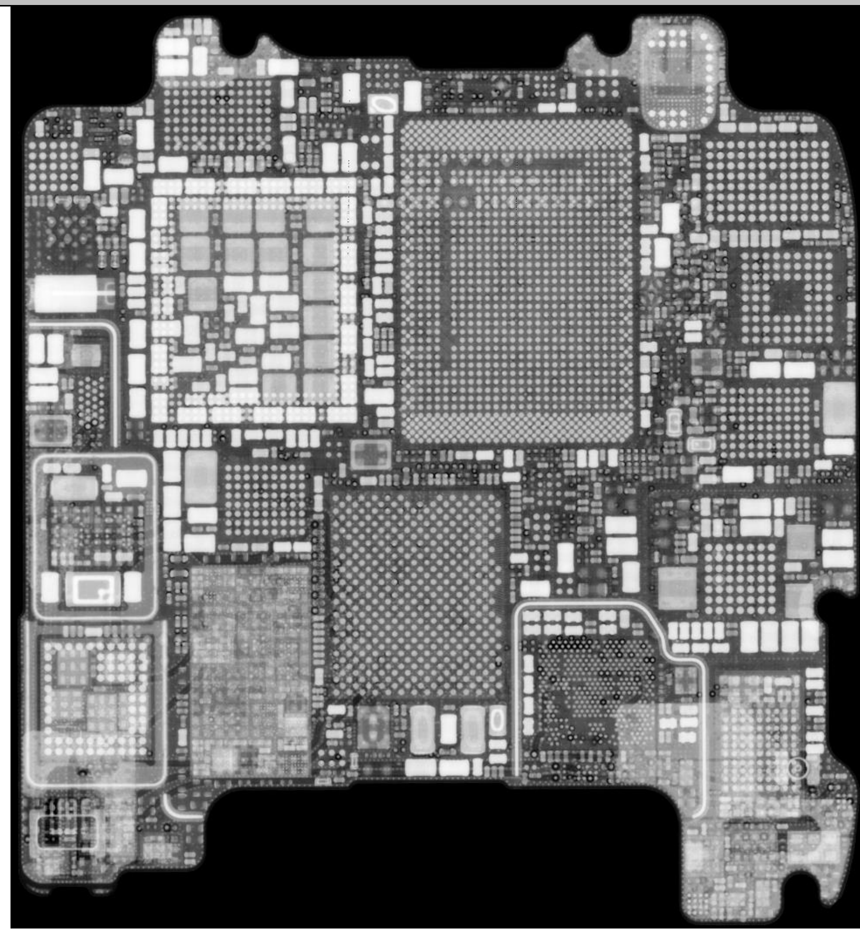
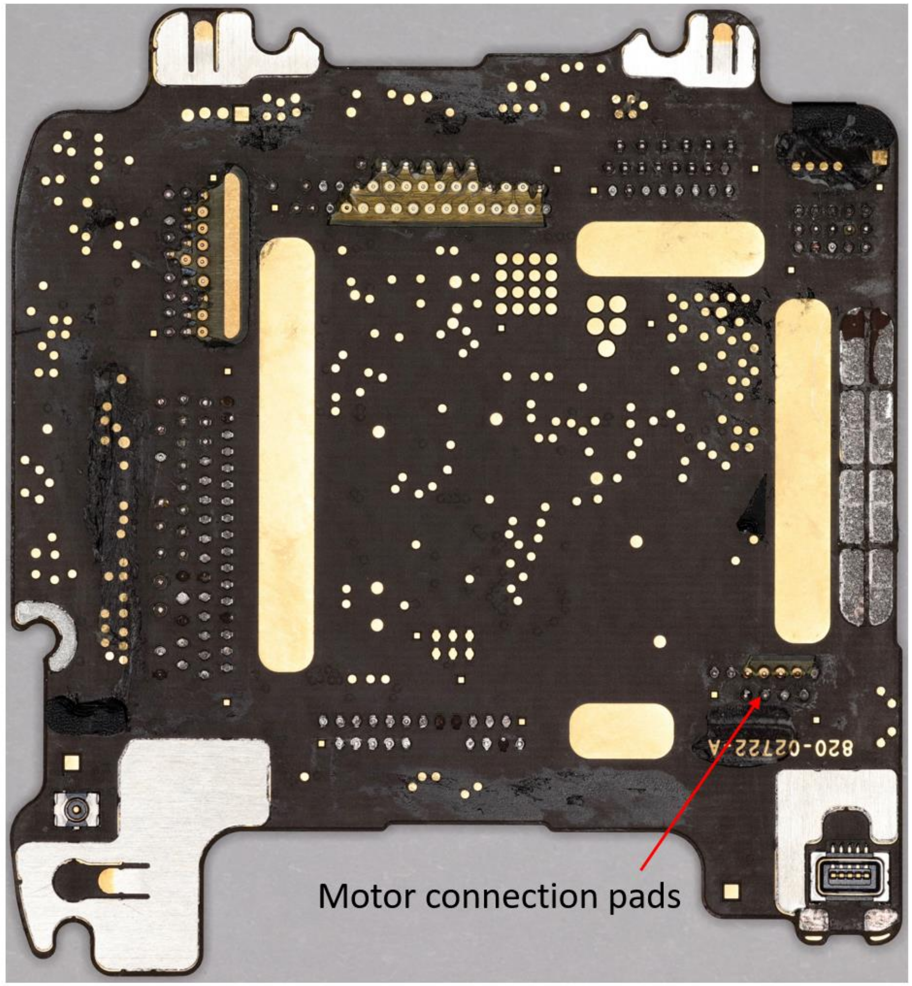
Claim 1	Accused Products
	 X-ray image of Apple Watch Ultra system board.

Claim 1	Accused Products
	 Annotated photograph of partially disassembled Apple Watch Ultra system board, showing connection points for haptic motor. *See also* claim elements below.

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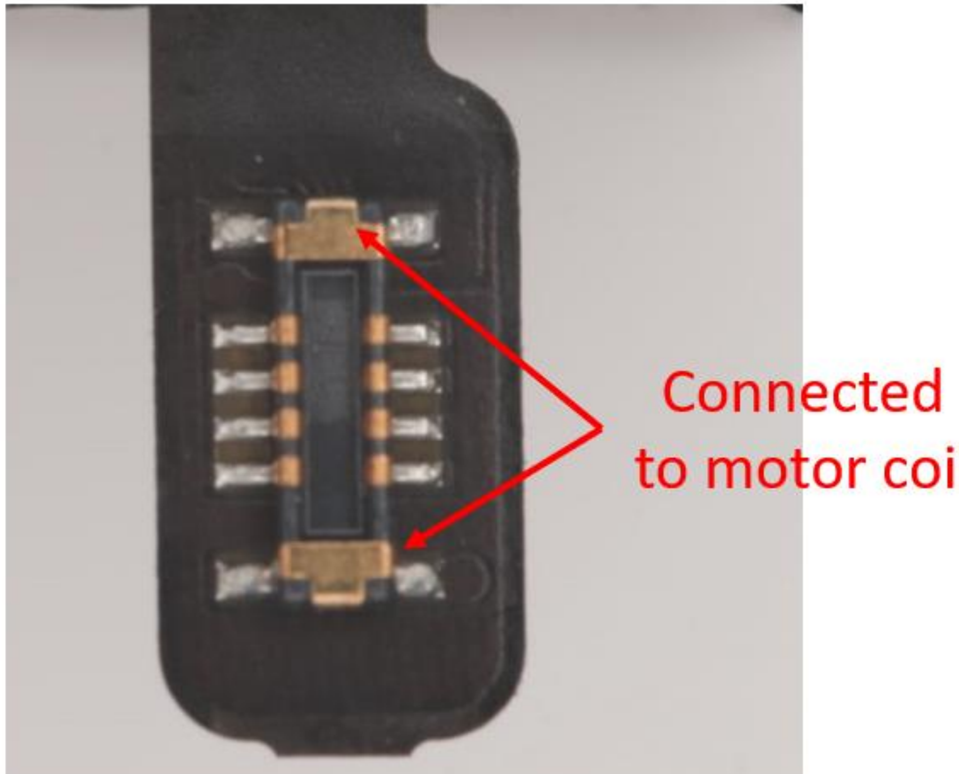
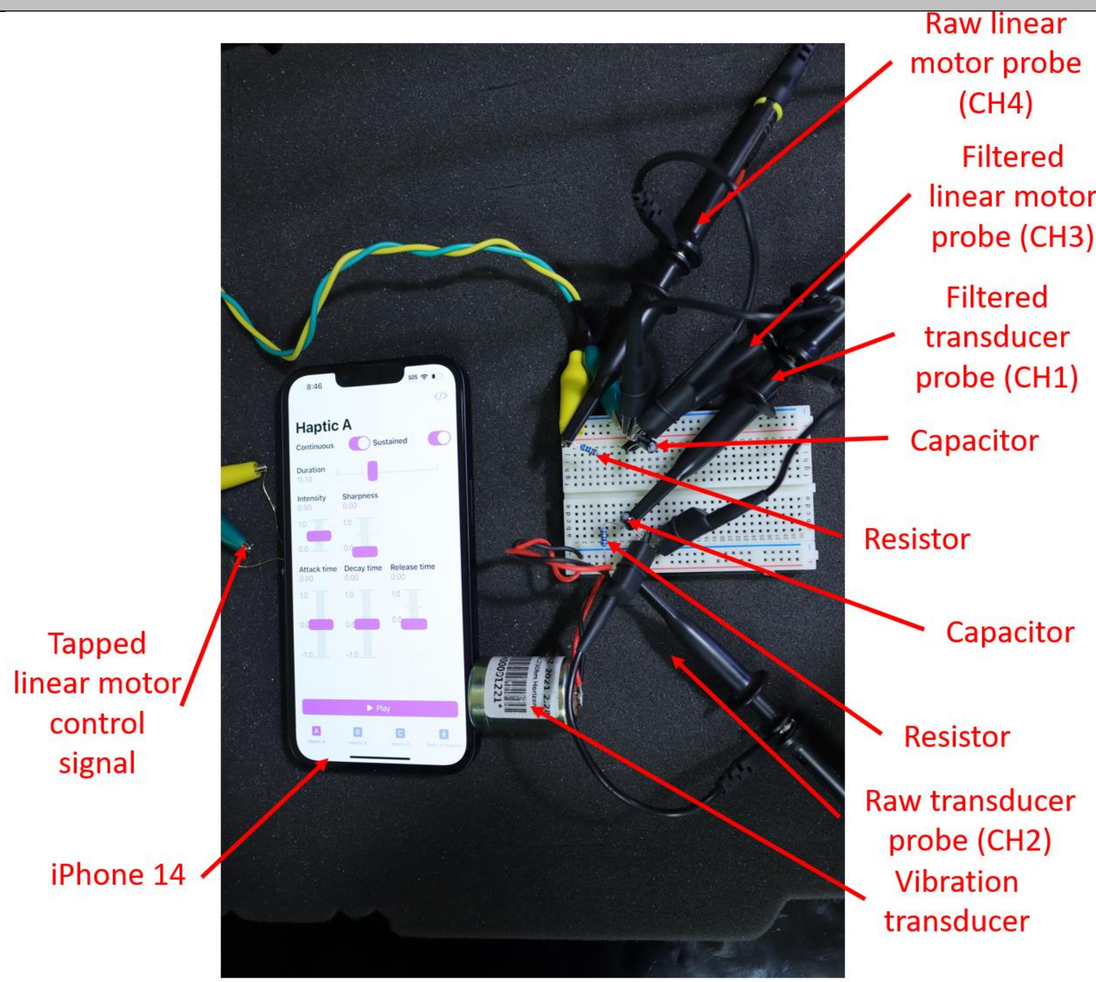
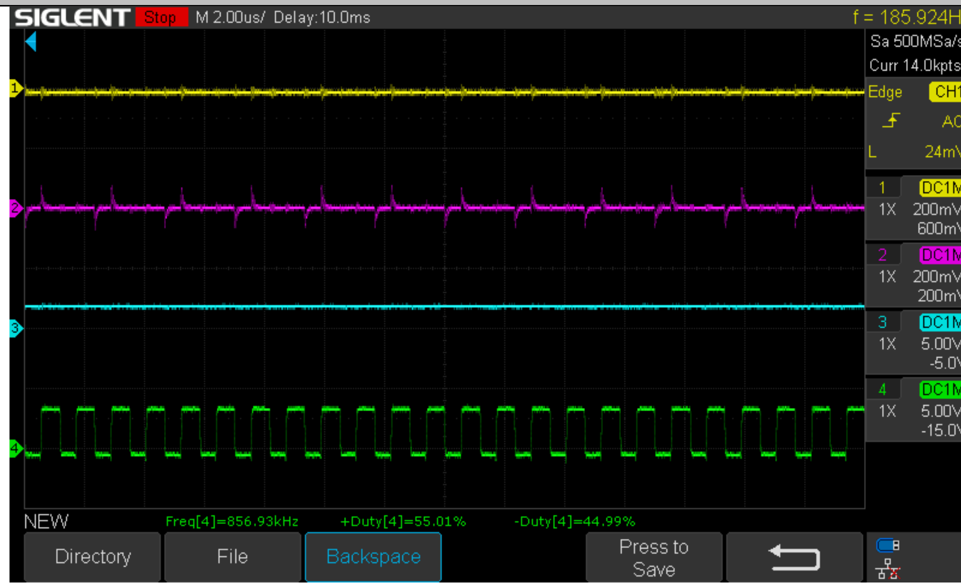
Claim 1	Accused Products
[1f] a control program, stored in one of a separated electronic memory or within the processor, that is executed by the microprocessor to control operation of the linear resonant vibration module, and	Each Accused Product comprises a control program, stored in one of a separated electronic memory or within the processor, that is executed by the microprocessor to control operation of the linear resonant vibration module. For example, one or more of the system processor and/or linear motor coil driver contains confidential and proprietary software and/or firmware to control the linear resonant vibration motor. *See* claim elements below for description of the operation of the control program(s).
[1g] a switch that receives a directional signal d from the processor and that selects a corresponding direction of the two opposite directions in which the driving component drives the moveable component,	Each Accused Product comprises a switch that receives a directional signal d from the processor and that selects a corresponding direction of the two opposite directions in which the driving component drives the moveable component. For example, each Accused Product comprises an h-bridge or similar switch that is capable of driving current in either polarity through the drive coils, each polarity inducing a magnetic field in one of the two opposite directions. *See*, *e.g.*:

Claim 1	Accused Products
	 Annotated photograph of Taptic Engine connector from iPhone 14 showing positive and negative coil driving pins.

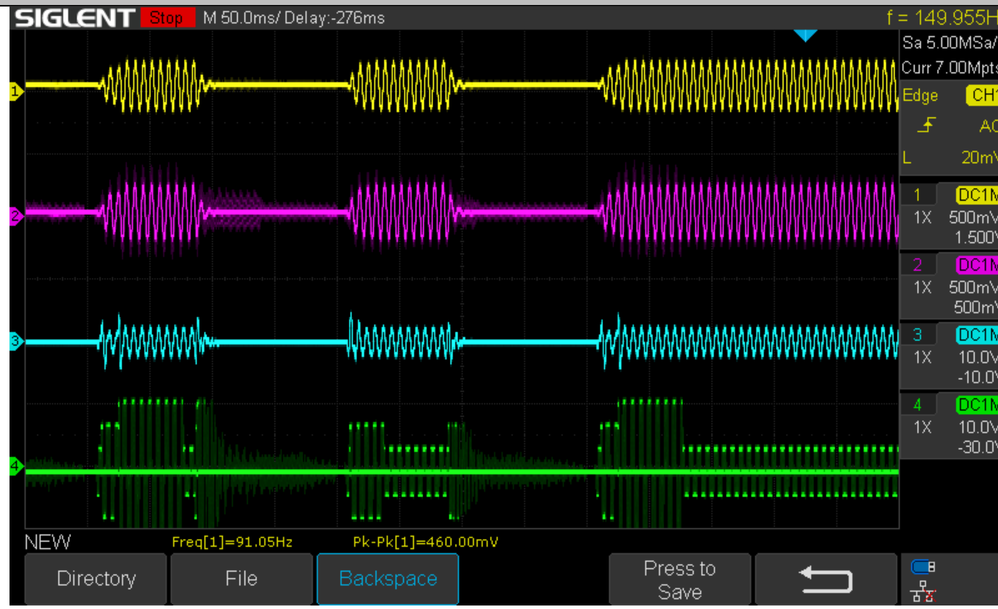
Claim 1	Accused Products
	Photographs of test apparatus with electrical leads connected to motor coil drive traces of iPhone 14.

<table>
<tr><th>Claim 1</th><th>Accused Products</th></tr>
<tr><td></td><td>


Photograph of test apparatus for measuring motor coil drive signal (from tapped connection) and actual motion (from attached vibration transducer) of iPhone 14. Note RC low-pass filter network at top right.
</td></tr>
</table>

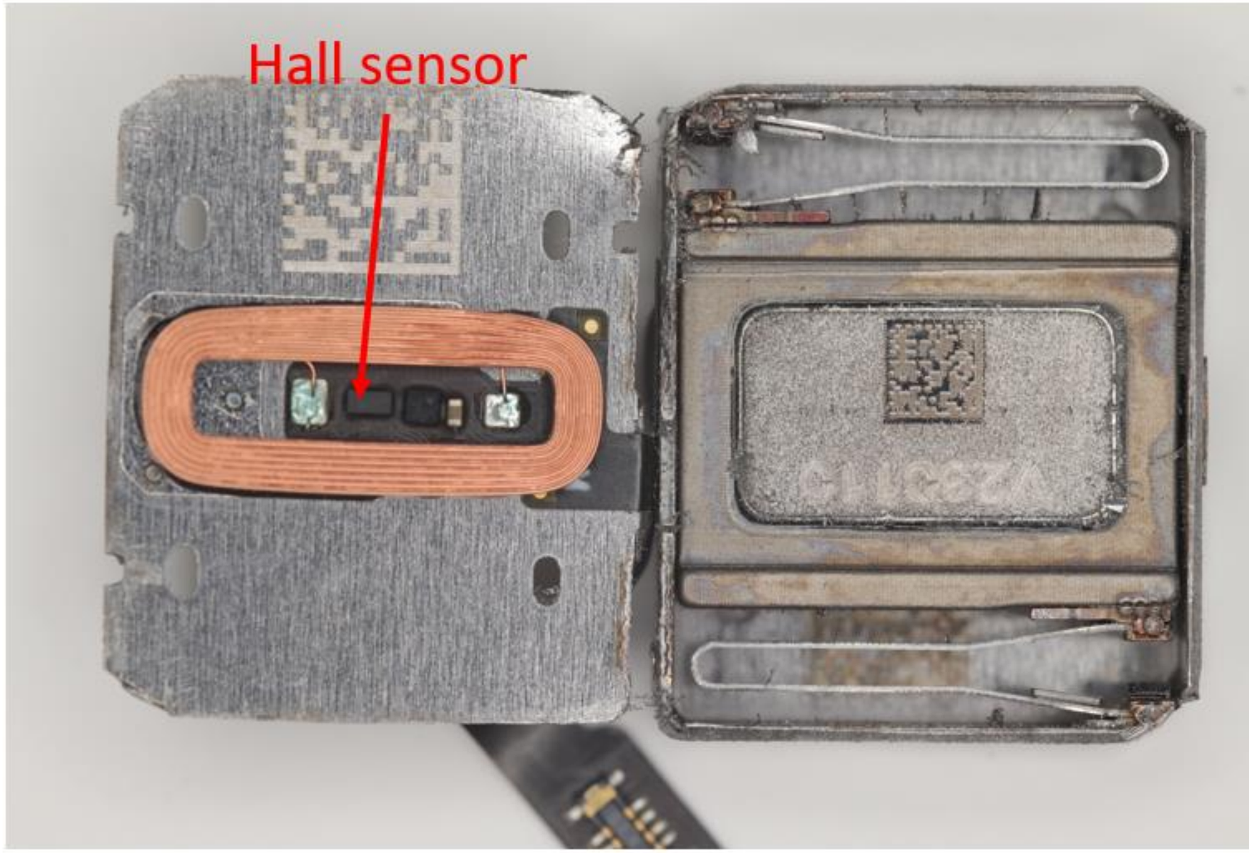
<table>
<tr><th>Claim 1</th><th>Accused Products</th></tr>
<tr><td></td><td>


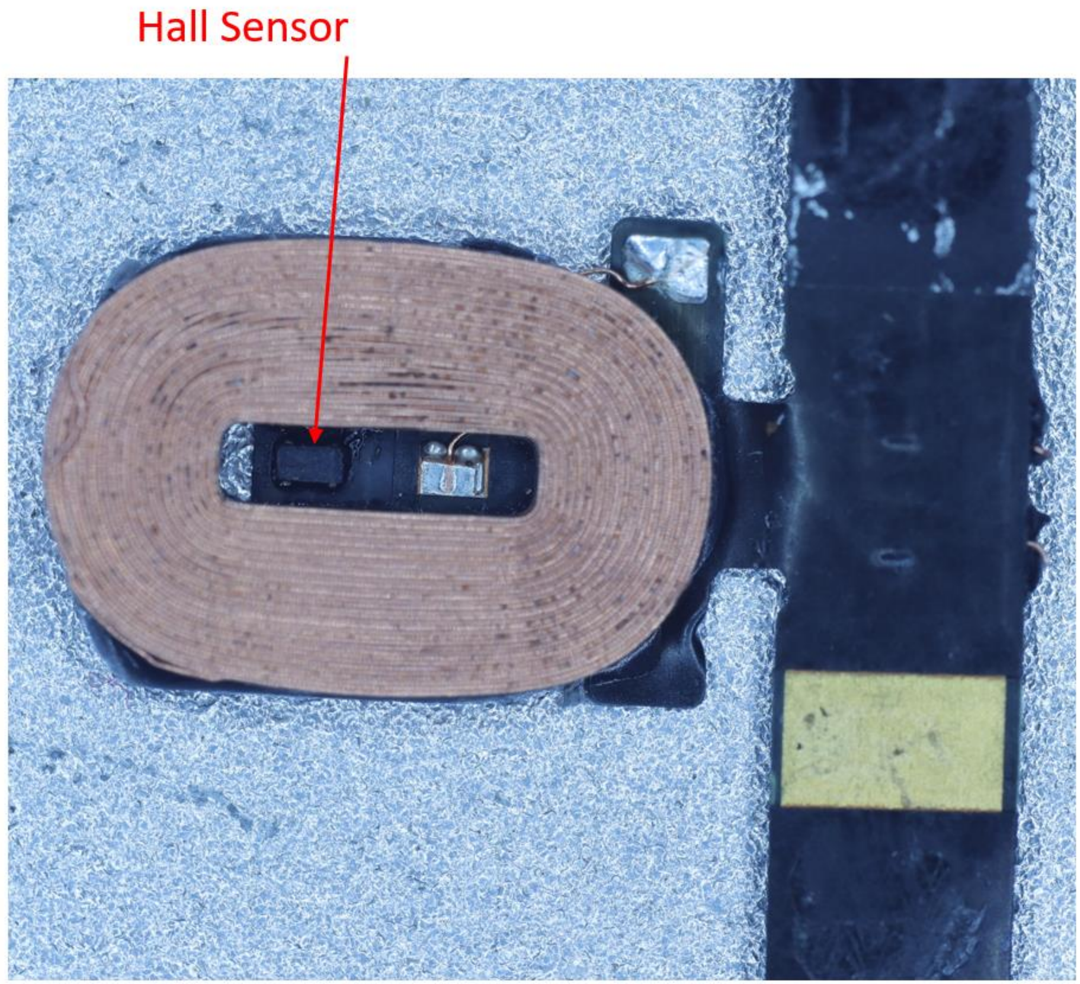
Oscilloscope trace showing, in green (CH4), the drive voltage applied by the iPhone 14 haptic controller(s); in this case, a pulse width modulated positive signal (modulation frequency 857 kHz) to drive the moveable component in one of two directions.
</td></tr>
</table>

<table>
<tr><th>Claim 1</th><th>Accused Products</th></tr>
<tr><td></td><td>

Oscilloscope trace showing, in green (CH4), the PWM-modulated drive voltage applied by the iPhone 14 haptic controller(s), with positive and negative voltages to drive the moveable component in a first and second direction. Channels 1 and 2 (yellow and purple) show the actual motion of the iPhone 14 resulting (pursuant to Newton's third law) from the motion of the moveable component.</td></tr>
<tr><td>[1h] the control component receiving output signals from sensors within the linear resonant vibration module during operation of the linear resonant vibration module and adjusting one or more operational control outputs of the control component according to the received</td><td>In each Accused Product, the control component receives output signals from sensors within the linear resonant vibration module during operation of the linear resonant vibration module and adjusts one or more operational control outputs of the control component according to the received output signals from the sensors in order that subsequent operation of linear resonant vibration module produces desired outputs from the one or more sensors corresponding to one or more operational control parameters.</td></tr>
</table>

Claim 1	Accused Products
output signals from the sensors in order that subsequent operation of linear resonant vibration module produces desired outputs from the one or more sensors corresponding to one or more operational control parameters.	For example, the Taptic Engine in each of the iPhone 14 and Apple Watch Ultra includes a Hall effect sensor that determines the position and/or velocity of the moveable component. On information and belief, circuits and software/firmware within the control component uses the signals from the Hall effect sensor to adjust the frequency, phase, amplitude, and/or other aspects of the coil drive signal in order to ensure the correct movement of the oscillating mass. *See, e.g.*:

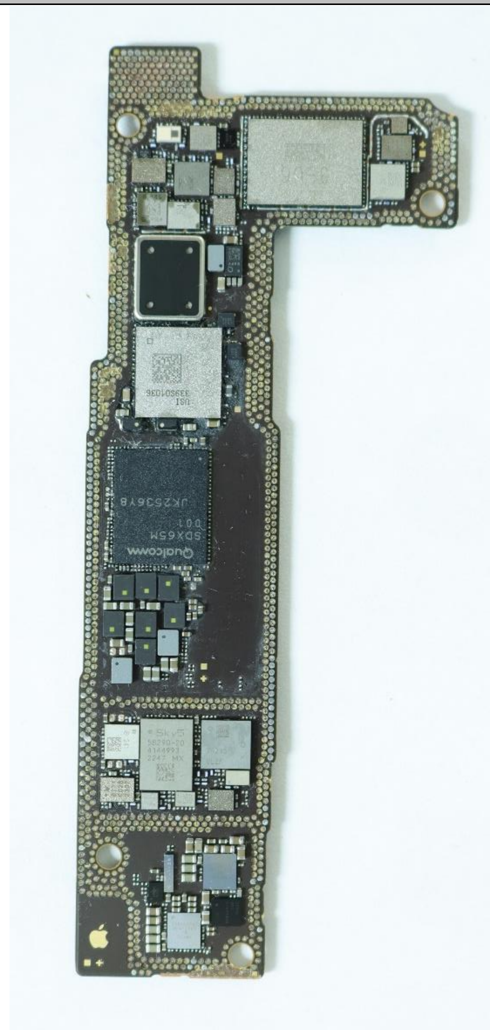
Claim 1	Accused Products
	 Annotated photograph showing Hall effect sensor within Taptic Engine of iPhone 14.

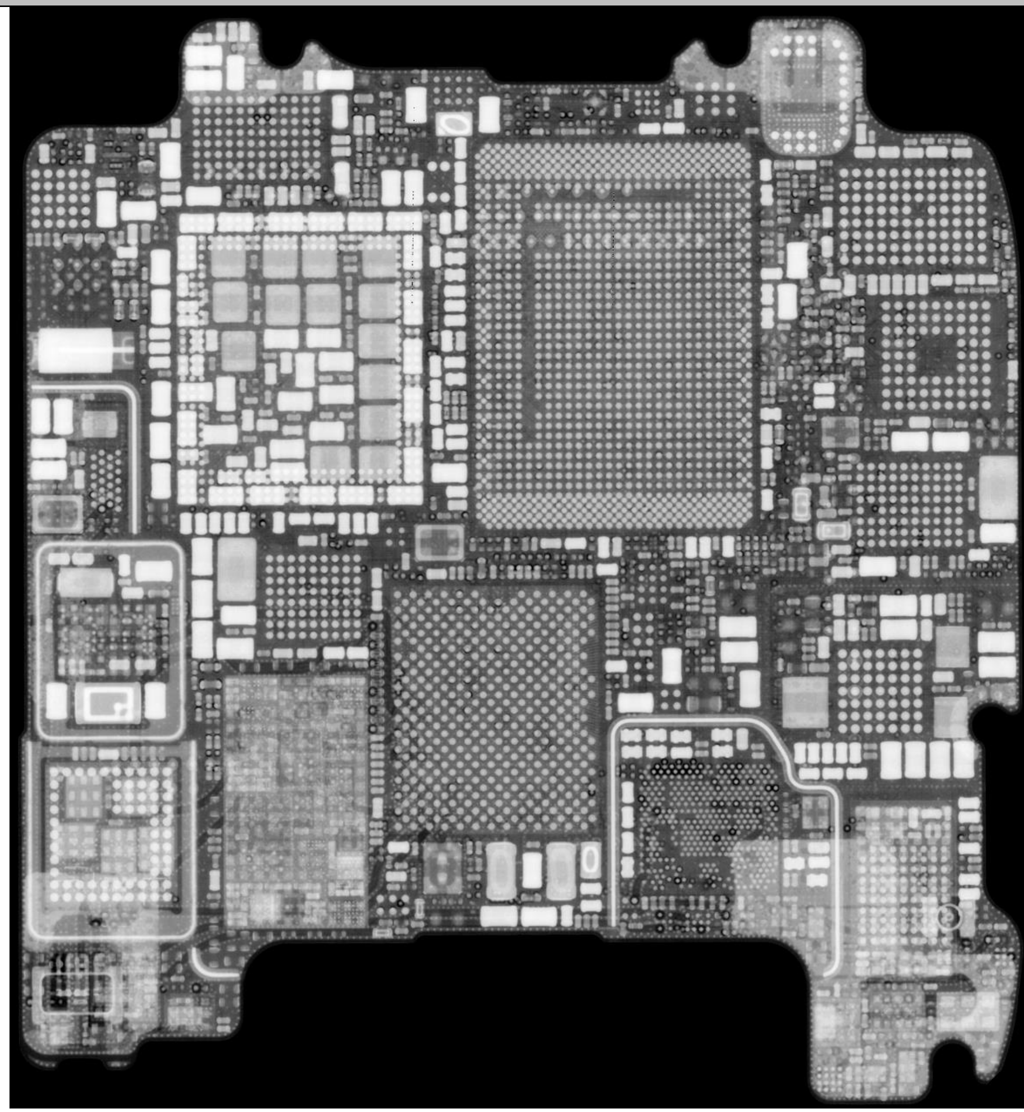
Claim 1	Accused Products
	 Annotated photograph showing Hall effect sensor within Taptic Engine of Apple Watch Ultra.

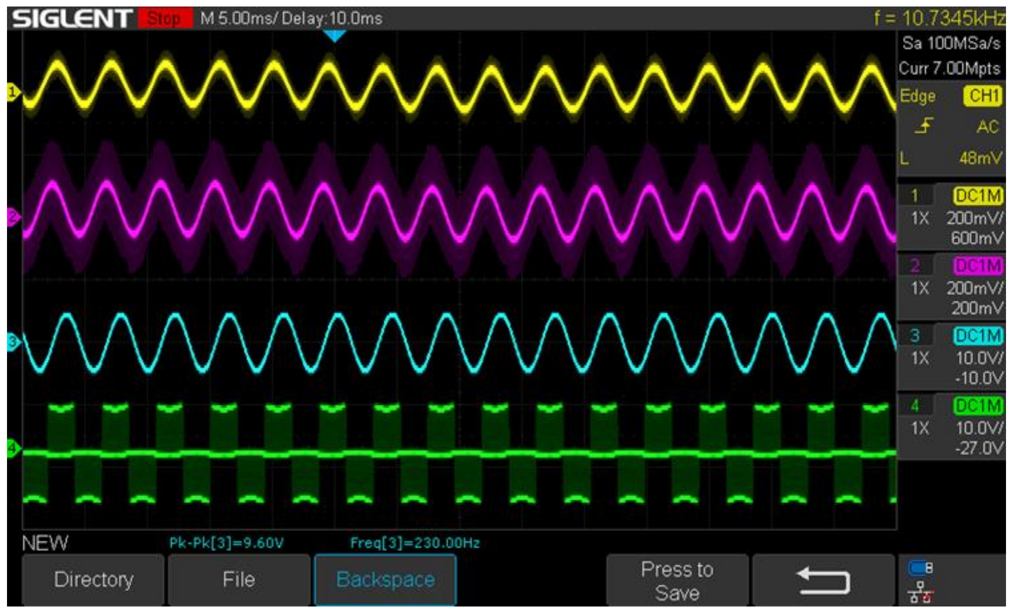
Claim 1	Accused Products
	To the extent Defendant contends and/or shows that this limitation is not literally present in the Accused Products, it is present under the doctrine of equivalents. There are no substantial differences between the accused functionality and the claimed invention. For example, the control component in each Accused Product may adjust one or more operational control outputs according to signals or values derived from the received output signals from one or more sensors, which performs substantially the same function (*e.g.*, adjusting one or more operational control outputs of the control component according to the received output signals from the sensors) in substantially the same way (*e.g.*, making adjustments based on information from sensors within the linear resonant vibration module) to achieve substantially the same result (*e.g.*, adjusting operational control outputs in order that subsequent operation of linear resonant vibration module produces desired outputs from the one or more sensors corresponding to one or more operational control parameter).

Claim 2

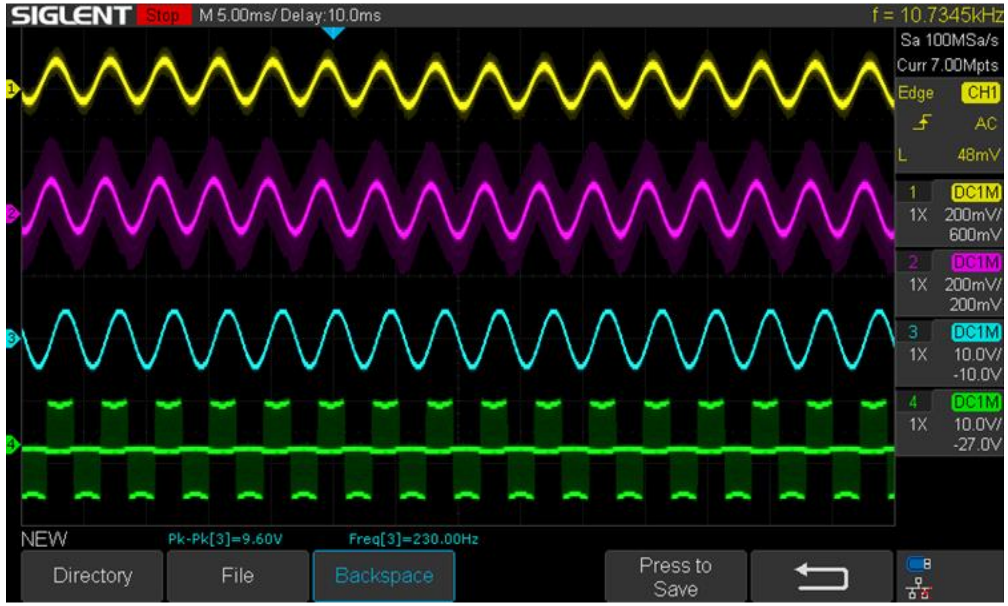
Claim 2	Accused Products
[2pre] The linear resonant vibration module of claim 1 wherein the switch comprises:	Each Accused Product comprises the linear resonant vibration module of claim 1. *See supra* claim 1.
[2a] a directional-signal d input;	Each Accused Product comprises a directional-signal d input. For example, each Accused Product comprises a directional-signal d input received from the processor of the control component. *See supra* claim element [1g].
[2b] a voltage input;	Each Accused Product comprises a voltage input. For example, the linear motor coil driver (described below) in each of the iPhone 14 and Apple Watch Ultra has a voltage input from one or more voltage regulators on or near the Accused Product's system board. *See supra* claim element [1c]. *See also*, *e.g.*:

Claim 2	Accused Products
	 Photograph of iPhone 14 system board.

Claim 2	Accused Products
	 X-ray image of Apple Watch Ultra system board.

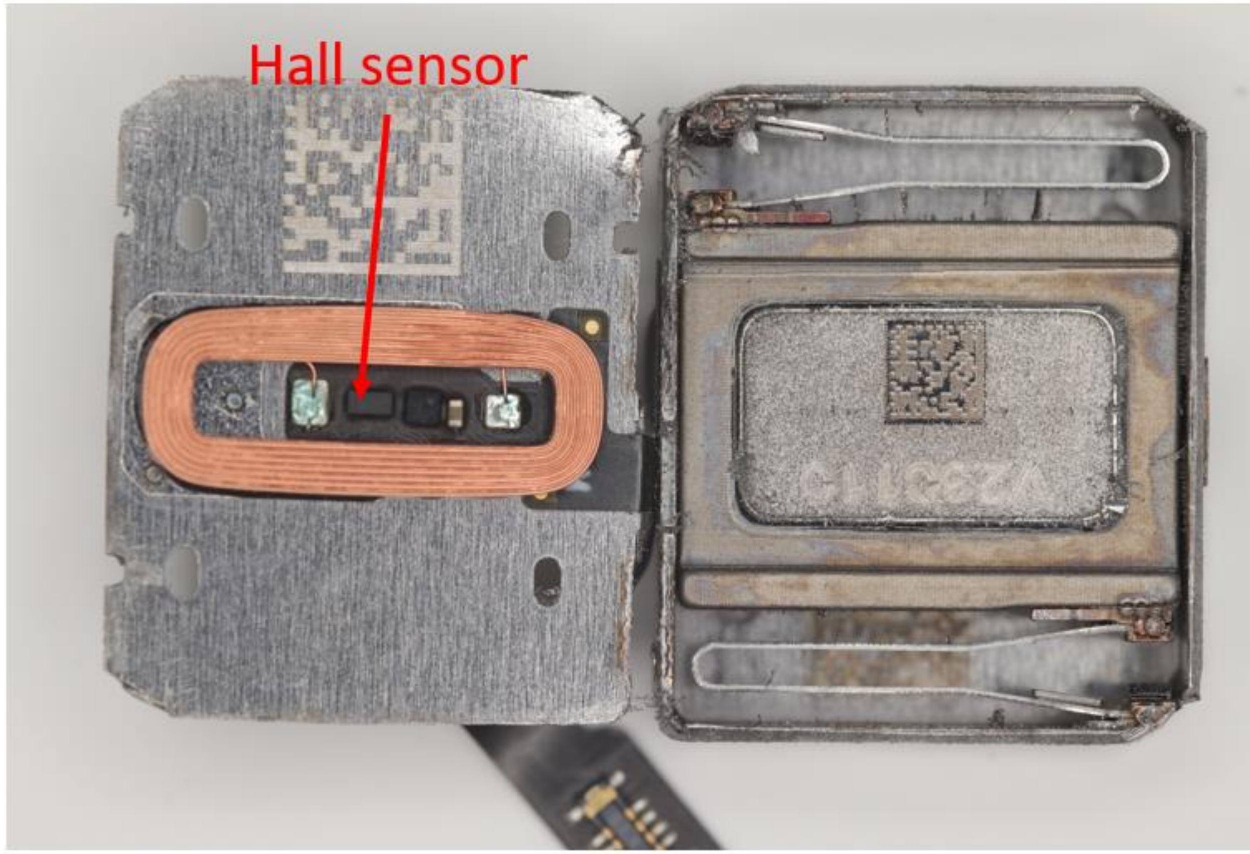
Claim 2	Accused Products
[2c] a directional-signal splitter/inverter that generates two complementary internal signals, d and $\overline{d}$, corresponding to directional-signal d; and	Each Accused Product comprises a directional-signal splitter/inverter that generates two complementary internal signals, d and $\overline{d}$, corresponding to directional-signal d. For example, the iPhone 14 and Apple Watch, like each Accused Product, each includes an h-bridge or similar switch that is capable of driving current in either polarity through the drive coils according to a pulse width modulation (PWM) scheme. This h-bridge or similar includes two complementary internal signals, d and $\overline{d}$, to operate solid-state switches, one internal signal d to control the solid-state switches for positive polarity and the other internal signal $\overline{d}$ to control solid-state switches for the negative polarity. *See, e.g.*:  Oscilloscope trace showing, in green (CH4), the PWM-modulated drive voltage applied by the iPhone 14 haptic controller(s), with positive and negative polarity voltages to drive the moveable component in a first and second direction. Channels 1 and 2 (yellow and purple) show the actual

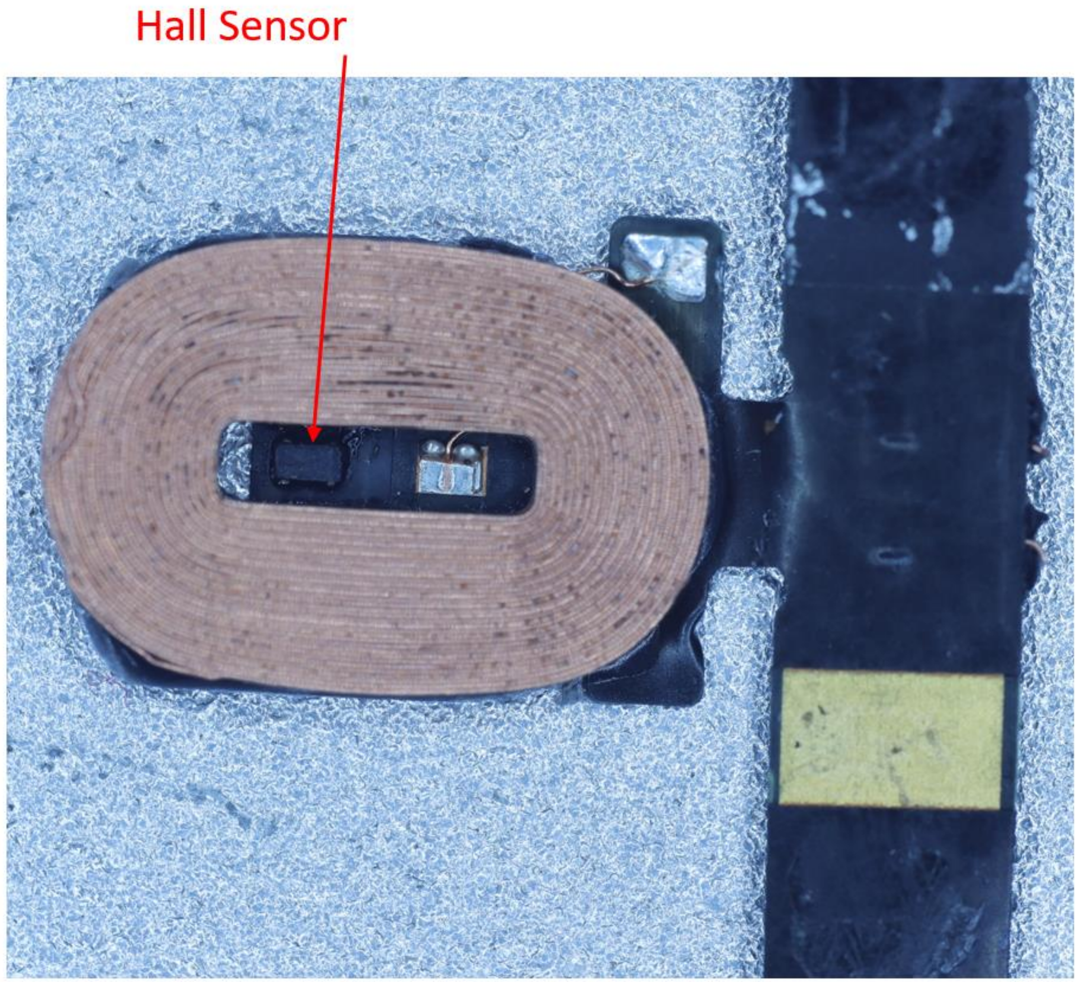
Claim 2	Accused Products
	motion of the iPhone 14 resulting (pursuant to Newton's third law) from the motion of the moveable component.
[2d] two pairs of solid-state switches, a first switch of each pair controlled by internal signal d and a second switch of the pair controlled by internal signal $\overline{d}$, that apply the input voltage in a first direction to the driving component when the d is in a first voltage state and that apply the input voltage in a second direction to the driving component when the d is in a second voltage state.	Each Accused Product comprises two pairs of solid-state switches, a first switch of each pair controlled by internal signal d and a second switch of the pair controlled by internal signal d, that apply the input voltage in a first direction to the driving component when the d is in a first voltage state and that apply the input voltage in a second direction to the driving component when the d is in a second voltage state. For example, the iPhone 14 and Apple Watch, like each Accused Product, each includes an h-bridge or similar switch that is capable of driving current in either polarity through the drive coils of each Accused Product according to a pulse width modulation (PWM) scheme and two pairs of solid-state switches. When the first switch of the first pair controlled by internal signal d and a second switch of the second pair controlled by internal signal $\overline{d}$ are turned on with a first voltage state, the input voltage with positive polarity is applied to the drive coil. When the first switch of the second pair controlled by the other internal signal d and a second switch of the first pair controlled by the other internal signal d are turned on with a second voltage state, the input voltage with negative polarity is applied to the drive coil.

Claim 2	Accused Products
	See, e.g.:  Oscilloscope trace showing, in green (CH4), the PWM-modulated drive voltage applied by the iPhone 14 haptic controller(s), with positive and negative voltages to drive the moveable component in a first and second direction. Channels 1 and 2 (yellow and purple) show the actual motion of the iPhone 14 resulting (pursuant to Newton's third law) from the motion of the moveable component.

Claim 3

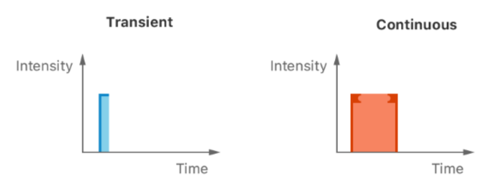
Claim 3	Accused Products
[3pre] The linear resonant vibration module of claim 2	Each Accused Product comprises the linear resonant vibration module of claim 2. *See* claim 2 above.
[3a] wherein the linear resonant vibration module	In each Accused Product, the linear resonant vibration module further includes a vibration sensor.

Claim 3	Accused Products
further includes a vibration sensor; and	For example, each Accused Product includes a Hall effect sensor, which senses vibration of the moveable component through measuring the magnetic field produced by a permanent magnet. *See, e.g.*:  Annotated photograph showing Hall effect sensor within Taptic Engine of iPhone 14.

<table>
<tr><th>Claim 3</th><th>Accused Products</th></tr>
<tr><td></td><td>

Annotated photograph showing Hall effect sensor within Taptic Engine of Apple Watch Ultra.</td></tr>
<tr><td>[3b] wherein the control program continuously monitors output from the</td><td>In each Accused Product, the control program continuously monitors output from the vibration sensor in order to adjust the frequency at which the control program changes the voltage state of the directional signal d.</td></tr>
</table>

Claim 3	Accused Products
vibration sensor in order to adjust the frequency at which the control program changes the voltage state of the directional signal d.	For example, public APIs, as well as any proprietary Apple APIs and interfaces, specify a sharpness parameter that directly and/or indirectly controls the vibration frequency of a moveable component as demonstrated by testing. On information and belief, the control program in each of the iPhone 14 and Apple Watch Ultra monitors the output from the Hall effect sensor to adjust the frequency of the direction signal in order to ensure the correct vibration frequency of the moveable component. *See supra* claim element [1g]. *See also, e.g.*:

Claim 3	Accused Products
	Declaration `class CHHapticEvent : NSObject` **Overview** Each event represents a single haptic or audio signal. The event `type` determines whether it's audio or haptic. Use a `CHHapticPatternPlayer` object obtained through `CHHapticEngine` factory methods to play events. Haptic events can be transient or continuous. Transient haptic patterns are brief impulses that occur at a specific point in time, such as the haptic feedback you feel from swiping through a picker or toggling a switch. Continuous haptic patterns, like the vibration from a ringtone, take the form of lengthier feedback over a period of time. In the following graphic, transient haptic patterns on the left trigger at a specific time with a specific intensity. Continuous haptic patterns on the right sustain the haptic feedback over a specific duration of time, such as three seconds.  Specify when an event begins by setting its `relativeTime` property. Specify the length of the event by setting its `duration` property. Set optional parameters to customize event properties. For example, you can specify the intensity of a haptic event by creating an event parameter with ID `hapticIntensity`. Documentation of CHHapticEvent object, https://developer.apple.com/documentation/corehaptics/chhapticevent

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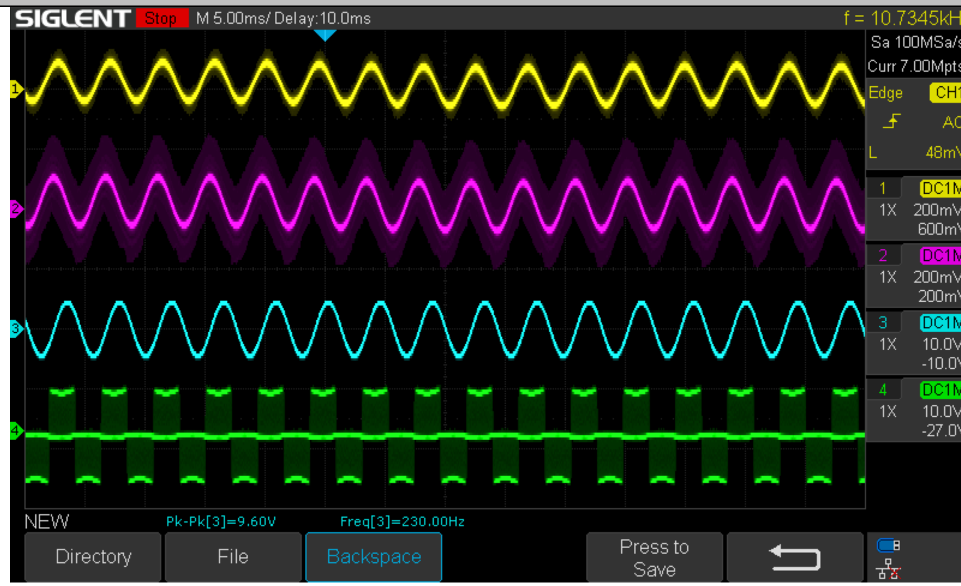
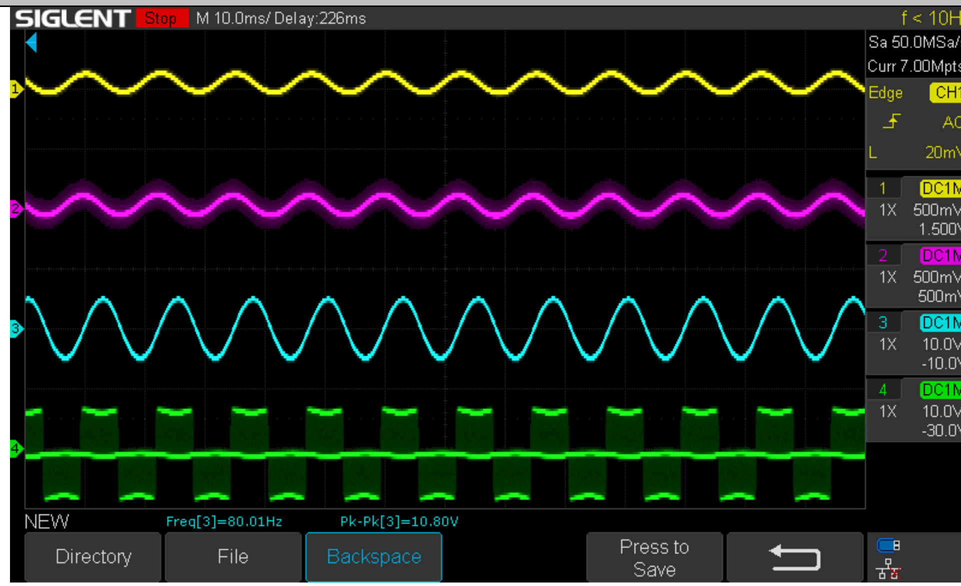
Claim 3	Accused Products
	Haptic Event Parameter IDs `static let hapticIntensity: CHHapticEvent.ParameterID` The strength of a haptic event. `static let hapticSharpness: CHHapticEvent.ParameterID` The feel of a haptic event. `static let attackTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins increasing. `static let decayTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins decreasing. `static let releaseTime: CHHapticEvent.ParameterID` The time at which to begin fading the haptic pattern. `static let sustained: CHHapticEvent.ParameterID` A Boolean value that indicates whether to sustain a haptic event for its specified duration. Documentation of haptic event parameters, https://developer.apple.com/documentation/corehaptics/chhapticevent/parameterid;

Claim 3	Accused Products
	4. The Continuous "Sharpness" parameter maps to frequency. For continuous events, we found that the sharpness parameter maps to frequency. On an iPhone 8, the lower sharpness boundary (0.0) of the Taptic Engine is 80 Hz; the higher sharpness boundary (1.0) is 230 Hz. This provides an effective range of 150 Hz, or roughly 1.5 octaves — which is impressive for a mobile phone released in 2017. Other phones or devices supporting Core Haptics might have different upper or lower boundaries since the frequency range is tied to the capabilities of the hardware actuator. https://medium.com/lofelt/10-things-you-should-know-about-designing-for-apple-core-haptics-9219fdebdcaa.

Claim 3	Accused Products
	 Oscilloscope trace from the testing apparatus showing the result of CHHapticEvent with intensity = 1, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 9.6V (peak-to-peak, through RC low-pass filter). Note that the externally measured vibration amplitude (yellow and purple traces, same scale as previous trace) is also significantly higher at intensity = 1 than 0.5.

Claim 3	Accused Products
	 Oscilloscope trace from the testing apparatus showing the result of CHHapticEvent with intensity = 1, sharpness = 0, with frequency of 80 Hz and motor drive amplitude of 10.8 V (peak-to-peak, through RC low-pass filter).

Claim 4

Claim 4	Accused Products
[4] The linear resonant vibration module of claim 2 wherein the control program receives user input from one or more input features, including one or more of buttons, dials, switches, and other user- input features.	Each Accused Product comprises the linear resonant vibration module of claim 2 wherein the control program receives user input from one or more input features, including one or more of buttons, dials, switches, and other user- input features. For example, each of the iPhone 14 and Apple Watch Ultra comprises a touchscreen, buttons, and other user-input features. *See, e.g.*:

Claim 4	Accused Products
	 Photograph of iPhone 14 touchscreen, buttons, and switch, *available at* https://www.apple.com/iphone-14/.

Claim 4	Accused Products
	 Photograph of Apple Watch Ultra touchscreen, dial, and buttons.

Claim 5

Claim 5	Accused Products
[5pre] The linear resonant vibration module of claim 4	Each Accused Product comprises the linear resonant vibration module of claim 4.

Claim 5	Accused Products
[5a] wherein, when the control program receives user input directing a change in vibration strength, the control program changes the current provided from a power supply to the driving component; and	In each Accused Product, when the control program receives user input directing a change in vibration strength, the control program changes the current provided from a power supply to the driving component. For example, each Accused Product includes a control program that receives user input directing a change in vibration strength, as demonstrated by public APIs and by testing. In public APIs, as well as any proprietary Apple APIs and interfaces, for example Apple's "Sounds & Haptics" controls, via touch and/or force sensors (keyboard and button feedback), or via third-party applications, an intensity value specified by user input directly and/or indirectly controls the vibration strength. Since the vibration strength is proportional to the magnetic field produced by the drive coils, which in turn is proportional to the current provided to the drive coils by the power supply, the control program changes the current from the power supply in order to produce the desired vibration strength. *See supra* claim element [1g]. *See also*, *e.g.*:

<table>
<tr><th>Claim 5</th><th>Accused Products</th></tr>
<tr><td></td><td>

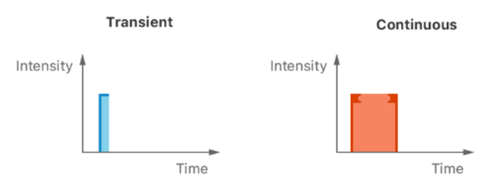
Declaration

```
class CHHapticEvent : NSObject
```

Overview

Each event represents a single haptic or audio signal. The event `type` determines whether it's audio or haptic. Use a `CHHapticPatternPlayer` object obtained through `CHHapticEngine` factory methods to play events. Haptic events can be transient or continuous. Transient haptic patterns are brief impulses that occur at a specific point in time, such as the haptic feedback you feel from swiping through a picker or toggling a switch. Continuous haptic patterns, like the vibration from a ringtone, take the form of lengthier feedback over a period of time.

In the following graphic, transient haptic patterns on the left trigger at a specific time with a specific intensity. Continuous haptic patterns on the right sustain the haptic feedback over a specific duration of time, such as three seconds.

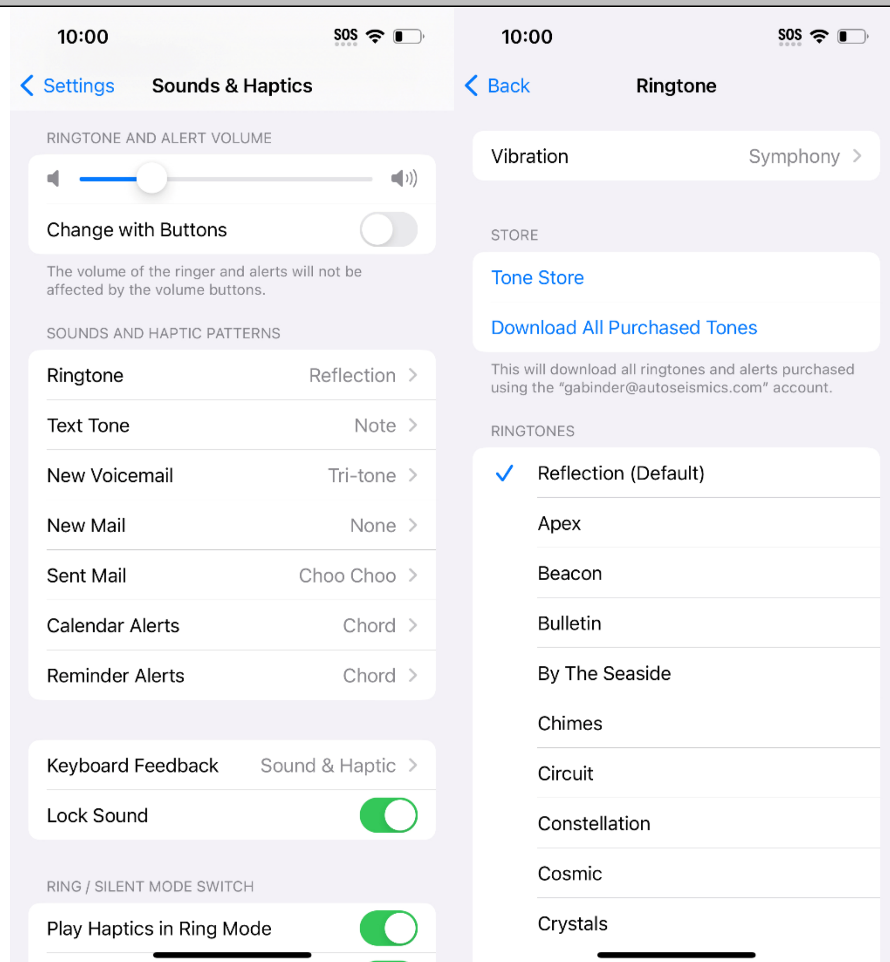


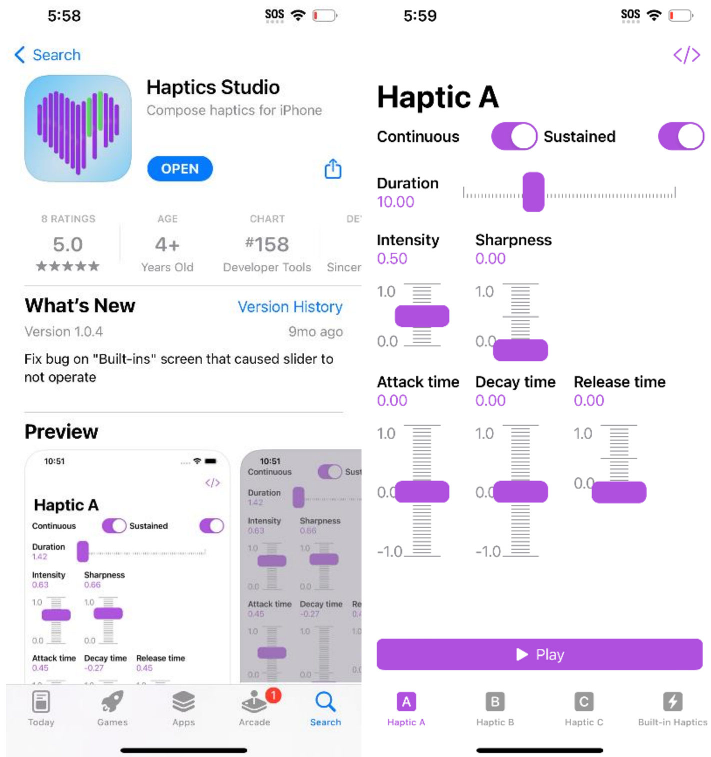
Specify when an event begins by setting its `relativeTime` property. Specify the length of the event by setting its `duration` property. Set optional parameters to customize event properties. For example, you can specify the intensity of a haptic event by creating an event parameter with ID `hapticIntensity`.

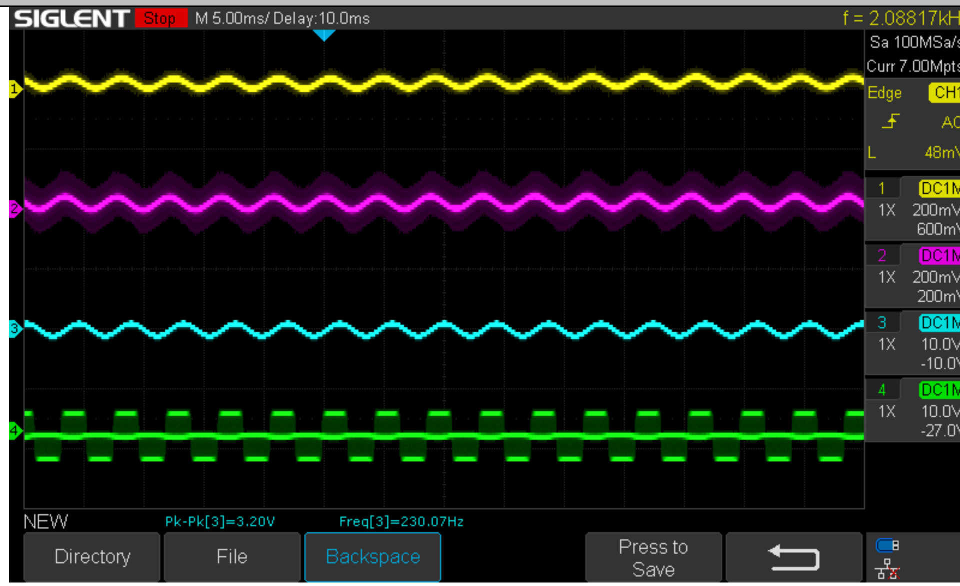
Documentation of CHHapticEvent object, https://developer.apple.com/documentation/corehaptics/chhapticevent

</td></tr>
</table>

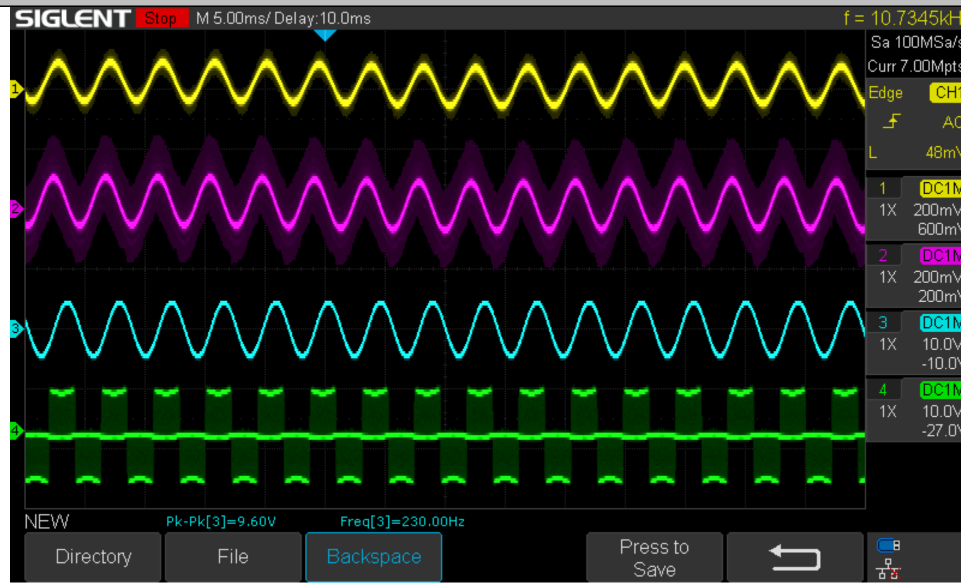
Claim 5	Accused Products
	Haptic Event Parameter IDs `static let hapticIntensity: CHHapticEvent.ParameterID` The strength of a haptic event. `static let hapticSharpness: CHHapticEvent.ParameterID` The feel of a haptic event. `static let attackTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins increasing. `static let decayTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins decreasing. `static let releaseTime: CHHapticEvent.ParameterID` The time at which to begin fading the haptic pattern. `static let sustained: CHHapticEvent.ParameterID` A Boolean value that indicates whether to sustain a haptic event for its specified duration. Documentation of haptic event parameters, https://developer.apple.com/documentation/corehaptics/chhapticevent/parameterid;

Claim 5	Accused Products
	 Screenshots of “Sounds & Haptics” and “Ringtone” settings, which allow selection of vibration strength.

Claim 5	Accused Products
	 Screenshots of exemplary "Haptics Studio" software, sold by Apple through its App Store, with independent user-input controls for vibration strength ("intensity").

<table>
<tr><th>Claim 5</th><th>Accused Products</th></tr>
<tr><td></td><td>

Oscilloscope trace showing the result of CHHapticEvent with intensity = 0.5, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 3.2 V (peak-to-peak, through RC low-pass filter).</td></tr>
</table>

Claim 5	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 1, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 9.6V (peak-to-peak, through RC low-pass filter). Note that the externally measured vibration strength (yellow and purple traces, same scale as previous trace) is also significantly higher at intensity = 1 than 0.5.
[5b] wherein, when the control program receives user input directing a change in vibration frequency, the control program changes the frequency at which the control program changes the voltage state of the directional signal d.	In each Accused Product, when the control program receives user input directing a change in vibration frequency, the control program changes the frequency at which the control program changes the voltage state of the directional signal d. For example, each Accused Product includes a control program that receives user input directing a change in vibration frequency, as demonstrated by public APIs and by testing. In public APIs, as well as any proprietary Apple APIs and interfaces, for example Apple's "Sounds & Haptics" controls, via touch and/or force sensors (keyboard and button feedback), or via third-party applications, a frequency value specified by user input directly and/or indirectly controls the vibration frequency. *See supra* claim element [1g].

Claim 5	Accused Products
	See also, e.g.:

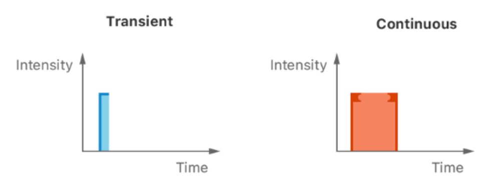
Declaration

```
class CHHapticEvent : NSObject
```

Overview

Each event represents a single haptic or audio signal. The event `type` determines whether it's audio or haptic. Use a `CHHapticPatternPlayer` object obtained through `CHHapticEngine` factory methods to play events. Haptic events can be transient or continuous. Transient haptic patterns are brief impulses that occur at a specific point in time, such as the haptic feedback you feel from swiping through a picker or toggling a switch. Continuous haptic patterns, like the vibration from a ringtone, take the form of lengthier feedback over a period of time.

In the following graphic, transient haptic patterns on the left trigger at a specific time with a specific intensity. Continuous haptic patterns on the right sustain the haptic feedback over a specific duration of time, such as three seconds.



Specify when an event begins by setting its `relativeTime` property. Specify the length of the event by setting its `duration` property. Set optional parameters to customize event properties. For example, you can specify the intensity of a haptic event by creating an event parameter with ID `hapticIntensity`.

Documentation of CHHapticEvent object, https://developer.apple.com/documentation/corehaptics/chhapticevent

Claim 5	Accused Products
	Haptic Event Parameter IDs `static let hapticIntensity: CHHapticEvent.ParameterID` The strength of a haptic event. `static let hapticSharpness: CHHapticEvent.ParameterID` The feel of a haptic event. `static let attackTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins increasing. `static let decayTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins decreasing. `static let releaseTime: CHHapticEvent.ParameterID` The time at which to begin fading the haptic pattern. `static let sustained: CHHapticEvent.ParameterID` A Boolean value that indicates whether to sustain a haptic event for its specified duration. Documentation of haptic event parameters, https://developer.apple.com/documentation/corehaptics/chhapticevent/parameterid;

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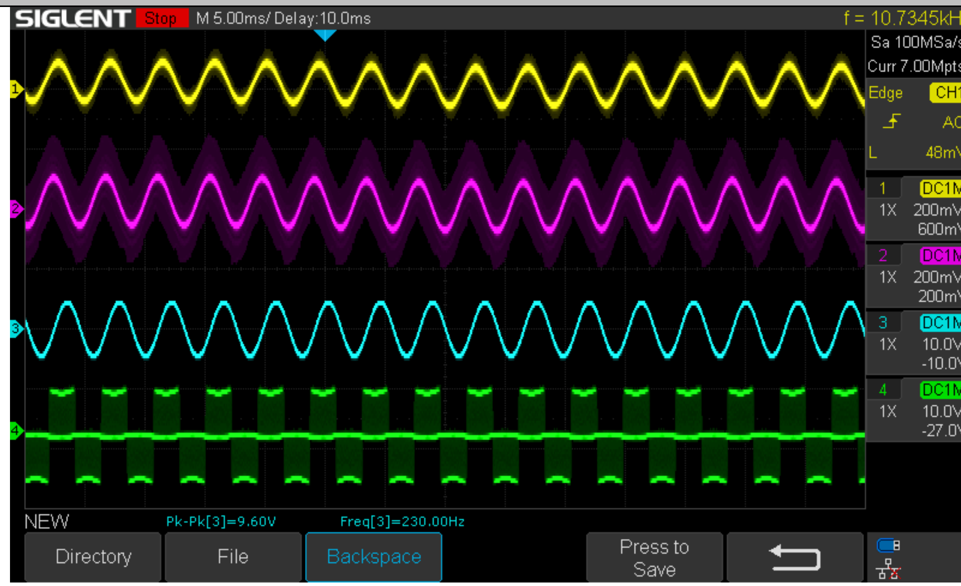
Claim 5	Accused Products
	4. The Continuous "Sharpness" parameter maps to frequency. For continuous events, we found that the sharpness parameter maps to frequency. On an iPhone 8, the lower sharpness boundary (0.0) of the Taptic Engine is 80 Hz; the higher sharpness boundary (1.0) is 230 Hz. This provides an effective range of 150 Hz, or roughly 1.5 octaves — which is impressive for a mobile phone released in 2017. Other phones or devices supporting Core Haptics might have different upper or lower boundaries since the frequency range is tied to the capabilities of the hardware actuator. https://medium.com/lofelt/10-things-you-should-know-about-designing-for-apple-core-haptics-9219fdebdcaa.

Claim 5	Accused Products
	 Screenshots of exemplary “Haptics Studio” software, sold by Apple through its App Store, with independent user-input controls for vibration strength (“intensity”).

Claim 5	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 1, sharpness = 1, with frequency of 230 Hz.

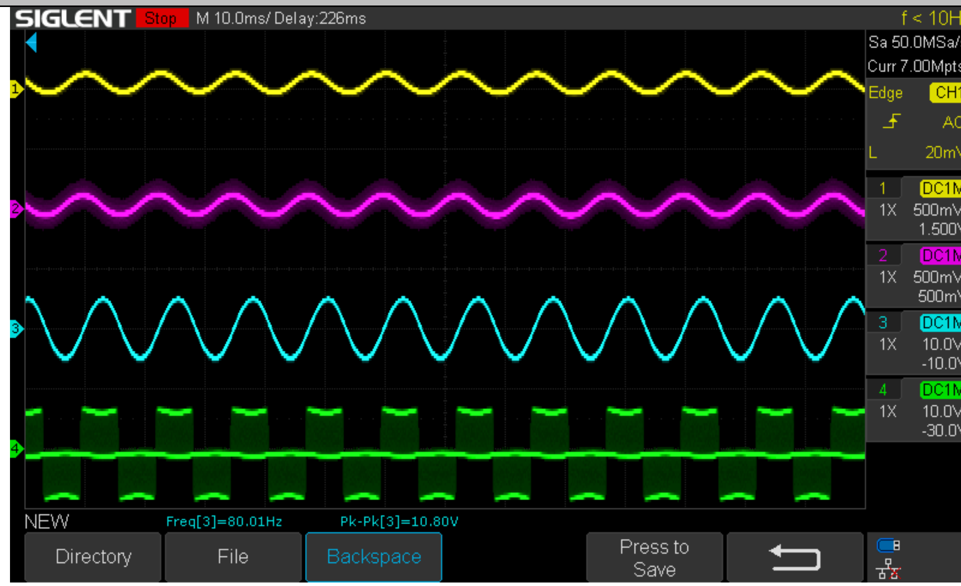
Claim 5	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 1, sharpness = 0, with frequency of 80 Hz.

Exhibit 3

U.S. Patent No. 8,860,337 ("'337 Patent")

Accused Instrumentalities

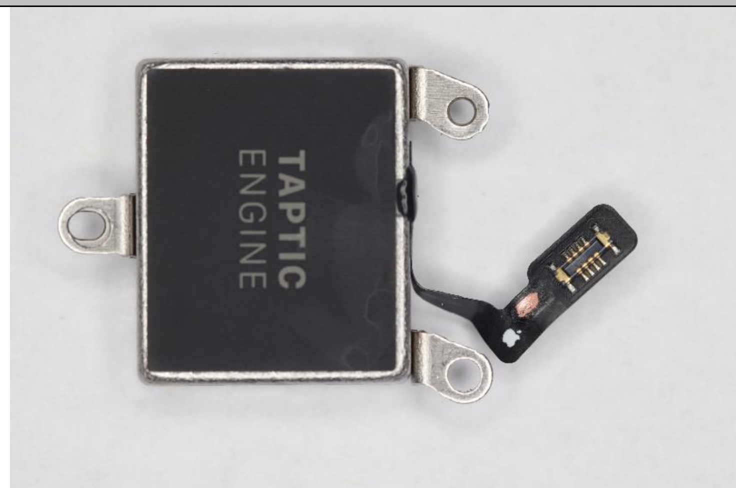
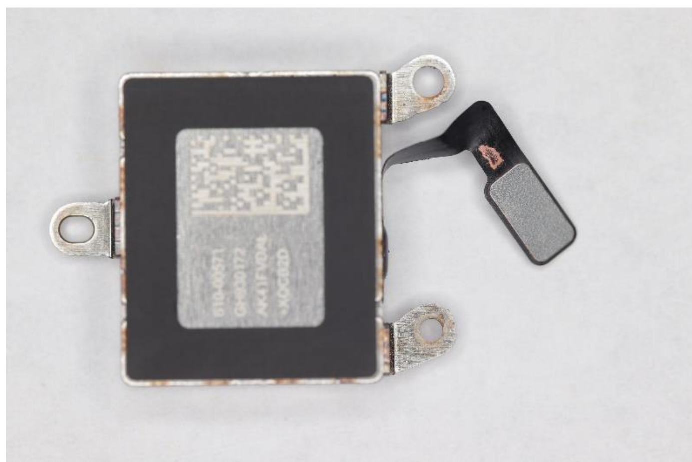
Apple products with Taptic Engine technology, including without limitation iPhone products (iPhone 6s, 6s Plus, 7, 7 Plus, 8, 8 Plus, X, XR, XS, XS Max, 11, 11 Pro, 11 Pro Max, SE (second generation), 12, 12 mini, 12 Pro, 12 Pro Max, 13, 13 mini, 13 Pro, 13 Pro Max, SE (third generation), 14, 14 Plus, 14 Pro, 14 Pro Max, 15, 15 Plus, 15 Pro, 15 Pro Max), MacBook products (MacBook Pro from 2015, MacBook from 2018, MacBook Air from 2018) and Apple Watch products (1st generation, Series 1, Series 2, Series 3, Series 4, Series 5, SE, Series 6, Series 7, SE (second generation), Series 8, Ultra, Series 9, Ultra 2), and all variants and iterations thereof (collectively, "Accused Products"), infringe at least Claims 1, 2, 3 and 4 of the '337 Patent.

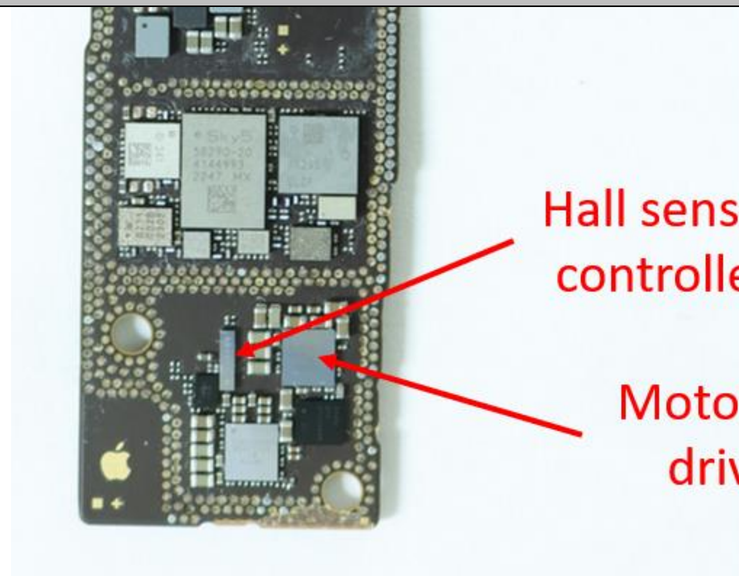
Each Accused Product infringes the claims in substantially the same way, and the evidence shown in this chart is similarly applicable to each Accused Product. For example, each Accused Product includes a linear vibration motor and supports substantially the same haptic feedback features. Each claim limitation is literally infringed by each Accused Product. However, to the extent any claim limitation is not met literally, it is nonetheless met under the doctrine of equivalents because the differences between the claim limitation and each Accused Product would be insubstantial, and each Accused Product performs substantially the same function, in substantially the same way, to achieve the same result as the claimed invention. Notably, Apple has not yet articulated which, if any, particular claim limitations it believes are not met by the Accused Products.

Claim 1

Claim 1	Accused Products
[1pre] A linear vibration module comprising:	To the extent the preamble is limiting, each Accused Product includes or constitutes a linear vibration module. For example, each of the Apple iPhone 14 and the Apple Watch Ultra contain a linear actuator ("Taptic Engine"), haptic controller(s), and associated circuitry, as described in connection with the claim limitations below. *See, e.g.*:

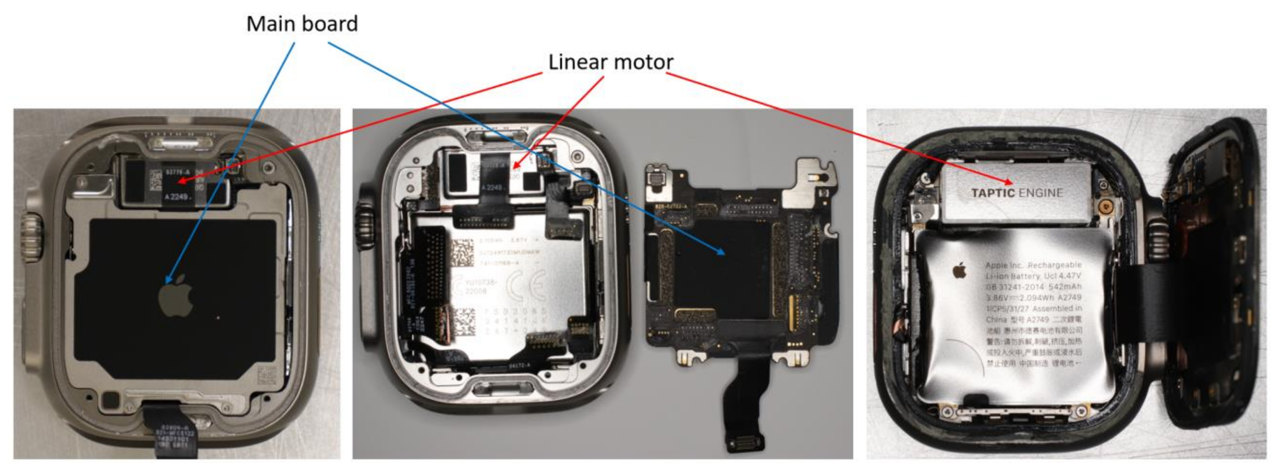
Photograph of iPhone 14 with rear cover removed, with A15 Bionic SoC at center right and Taptic Engine at bottom left.

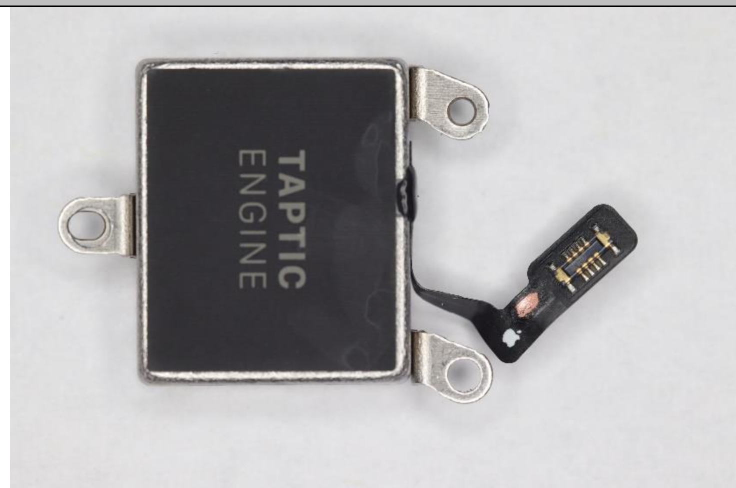
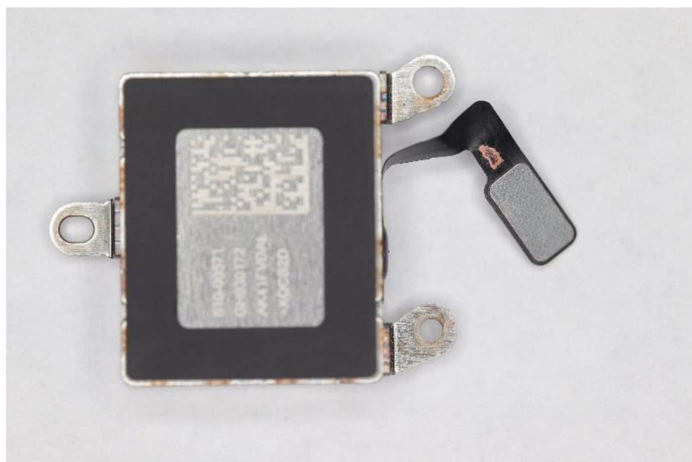
Claim 1	Accused Products
	 Photograph of Taptic Engine housing from the iPhone 14.  Photograph of Taptic Engine housing from the iPhone 14.

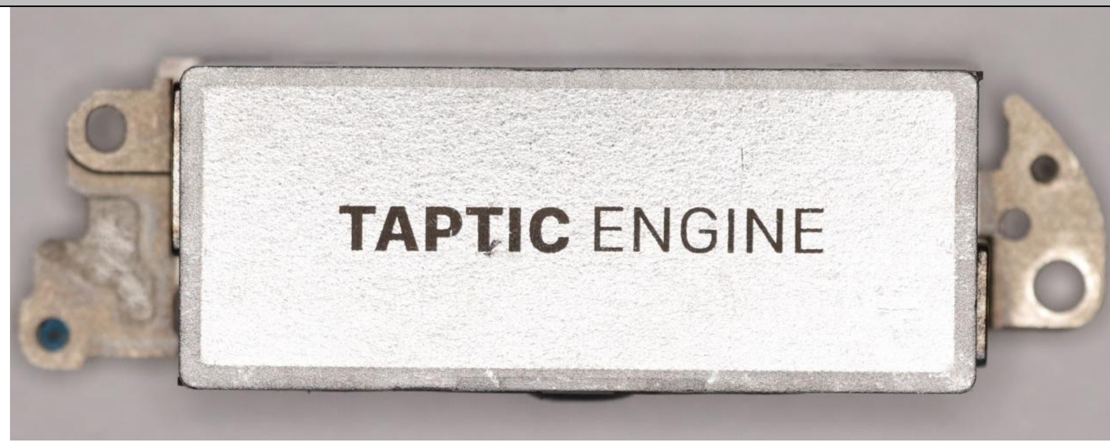
Claim 1	Accused Products
	 Photograph of Hall sensor controller and motor control driver from the iPhone 14.

Claim 1	Accused Products
	The following devices contain a Taptic Engine: • iPhone 14 Pro Max • iPhone 14 Pro • iPhone 14 Plus • iPhone 14 • iPhone SE (3rd generation) • iPhone 13 Pro Max • iPhone 13 Pro • iPhone 13 • iPhone 13 mini • iPhone 12 Pro Max • iPhone 12 Pro • iPhone 12 • iPhone 12 mini • iPhone SE (2nd generation) • iPhone 11 Pro Max • iPhone 11 Pro • iPhone 11 • iPhone XS Max • iPhone XS • iPhone XR • iPhone X • iPhone 8 Plus • iPhone 8 • iPhone 7 Plus • iPhone 7 • iPhone 6s Plus • iPhone 6s Accessory Design Guidelines for Apple Devices, Release R20, *available at* https://developer.apple.com/accessories/Accessory-Design-Guidelines.pdf

<table>
<tr><th>Claim 1</th><th>Accused Products</th></tr>
<tr><td></td><td>
Photograph of Apple Watch Ultra.</td></tr>
</table>

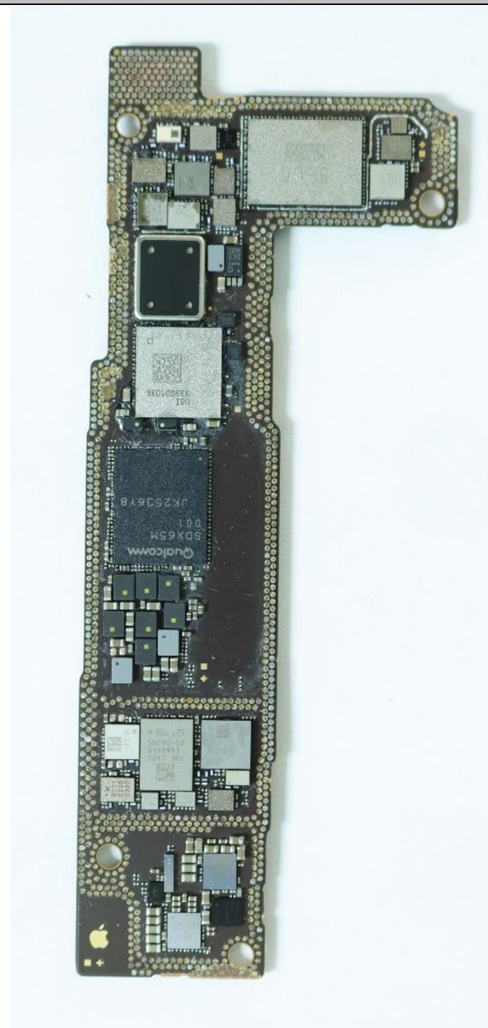
Claim 1	Accused Products
	 Wrist side, cover removed Wrist side, cover and main board removed Display side, display removed Annotated photographs of Apple Watch Ultra showing linear actuator (Taptic engine) and main system board.
[1a] a housing;	Each Accused Product comprises a housing. For example, the Taptic Engine in each of the iPhone 14 and Apple Watch Ultra has a metal structure that is soldered together to form a housing surrounding the moveable component and coils. *See, e.g.*:

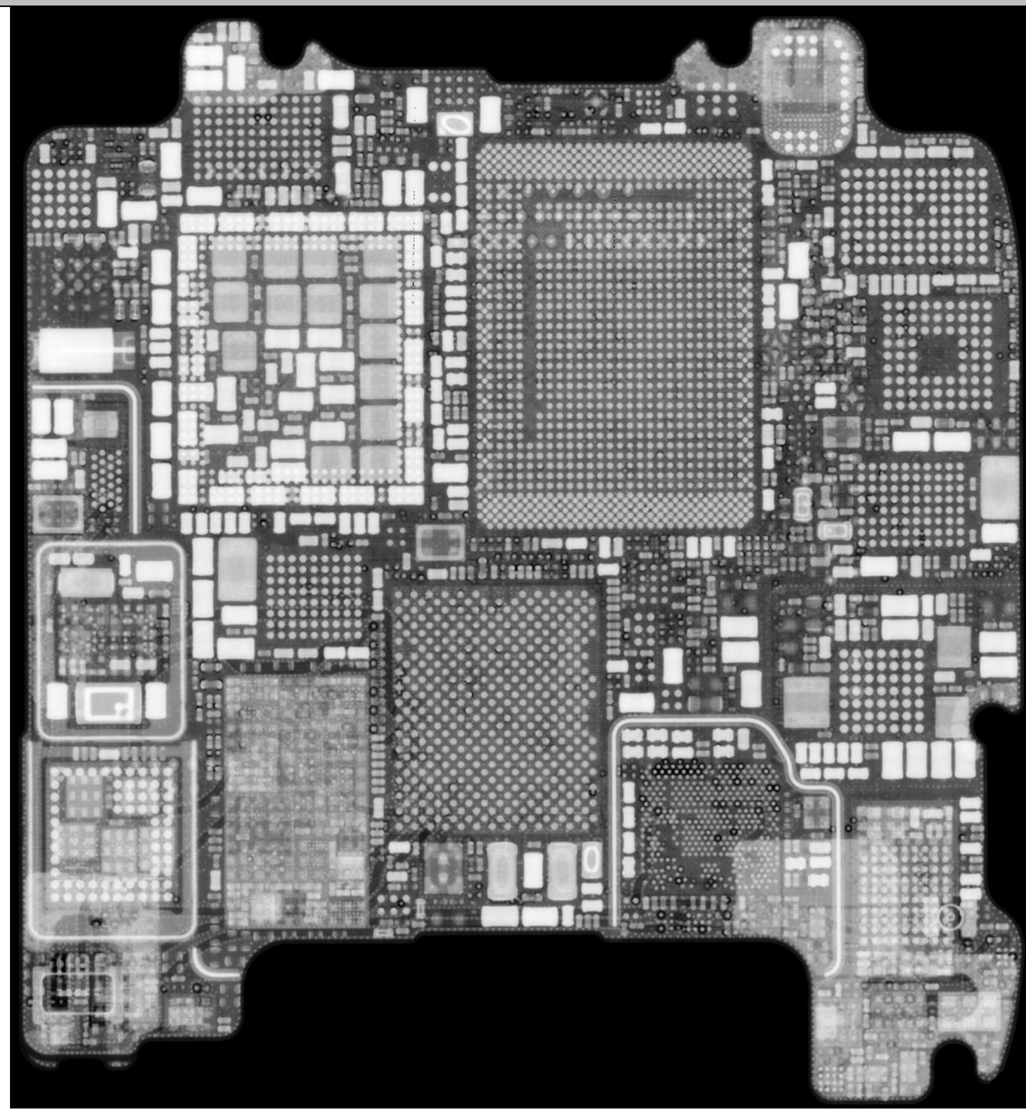
Claim 1	Accused Products
	 Photograph of Taptic Engine housing from the iPhone 14.  Photograph of Taptic Engine housing from the iPhone 14.

Claim 1	Accused Products
	 Photograph of Taptic Engine housing from Apple Watch Ultra.
[1b] a moveable component;	Each Accused Product comprises a moveable component. For example, the Taptic Engine in each of the iPhone 14 and Apple Watch Ultra includes a movable component comprising permanent magnet(s) and a mass. *See, e.g.*:

Claim 1	Accused Products
	 Photograph of moveable component (at right, connected to housing with springs) from the iPhone 14.  Photograph of moveable component from Apple Watch Ultra.

Claim 1	Accused Products
[1c] a power supply;	Each Accused Product comprises a power supply. For example, the linear motor coil driver (described below) in each of the iPhone 14 and Apple Watch Ultra receives power from one or more voltage regulators on or near the Accused Product's system board. *See, e.g.*:

Claim 1	Accused Products
	 Photograph of iPhone 14 system board.

Claim 1	Accused Products
	 X-ray image of Apple Watch Ultra system board.

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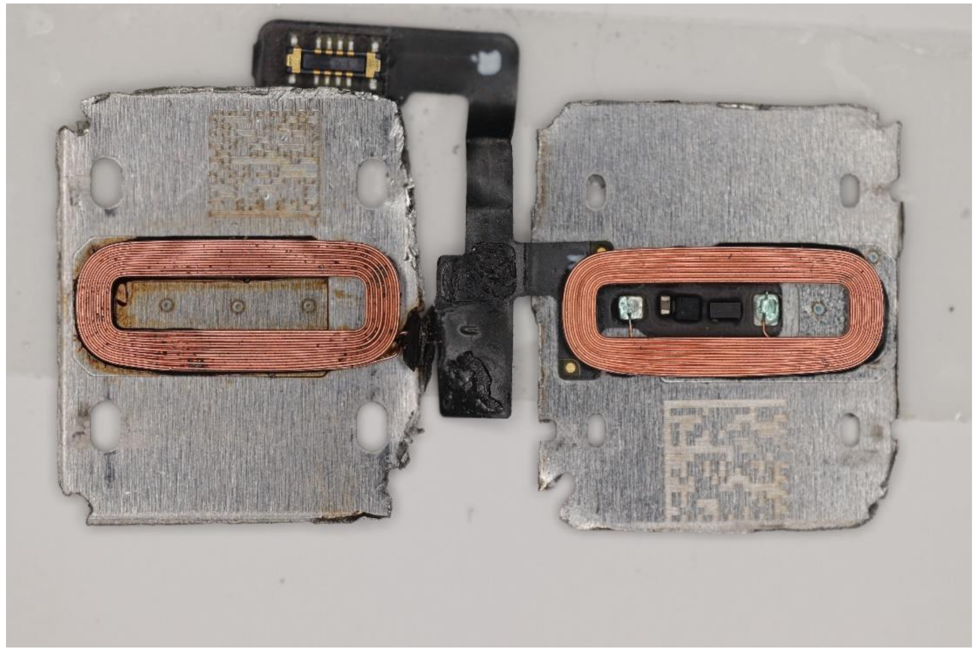
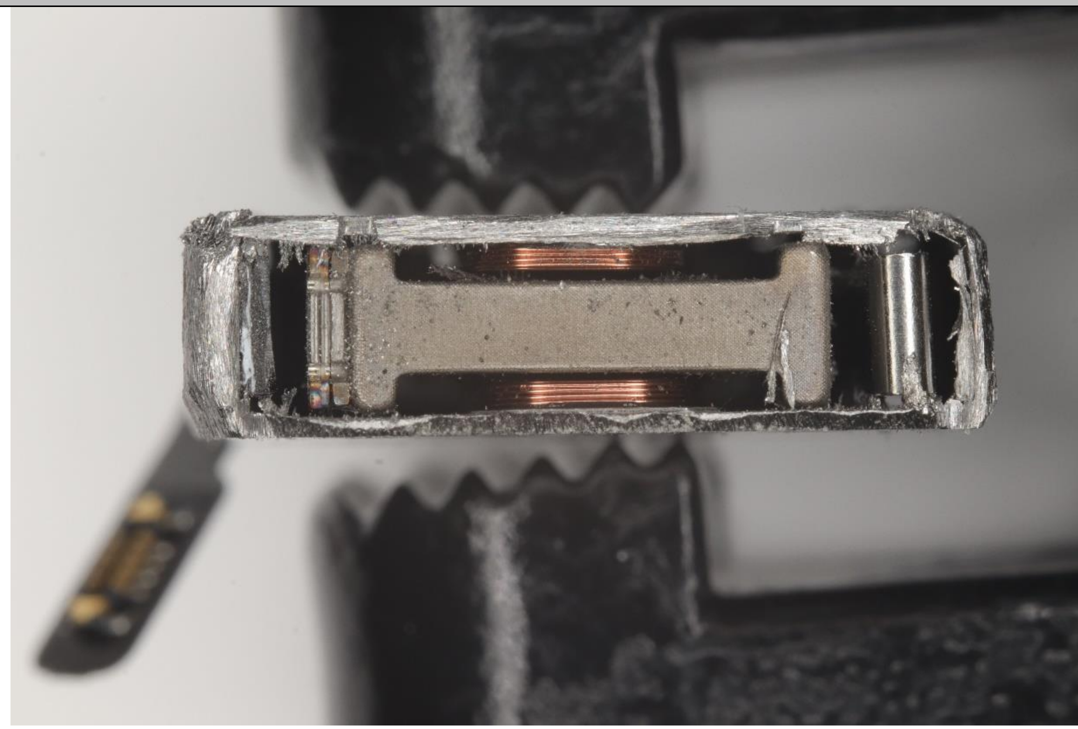
Claim 1	Accused Products
	See also claim elements below.
[1d] user-input features;	Each Accused Product comprises user-input features. For example, each of the iPhone 14 and Apple Watch Ultra comprises a touchscreen, buttons, and other user-input features. *See, e.g.*:

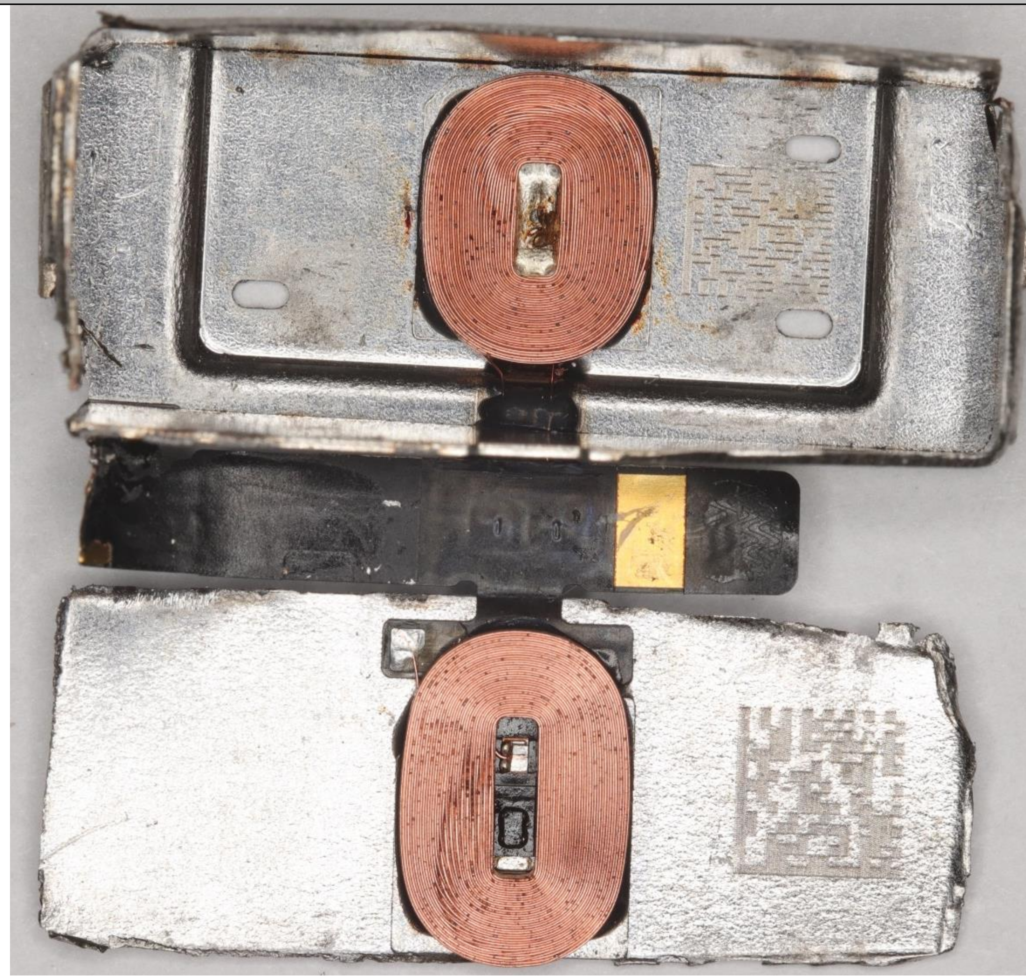
Claim 1	Accused Products
	 Photograph of iPhone 14 touchscreen, buttons, and switch, *available at* https://www.apple.com/iphone-14/.

Claim 1	Accused Products
	 Photograph of Apple Watch Ultra touchscreen, dial, and buttons.
[1e] a driving component that drives the moveable component in each of two opposite directions within the housing;	Each Accused Product comprises a driving component that drives the moveable component in each of two opposite directions within the housing. For example, the Taptic Engine includes one or more coils to form electromagnetic fields for driving the moveable component in two directions.

Claim 1	Accused Products
	See, e.g.:  Photograph of driving coils within disassembled Taptic Engine from the iPhone 14. The two visible coils would be positioned above and below the moveable component when assembled.

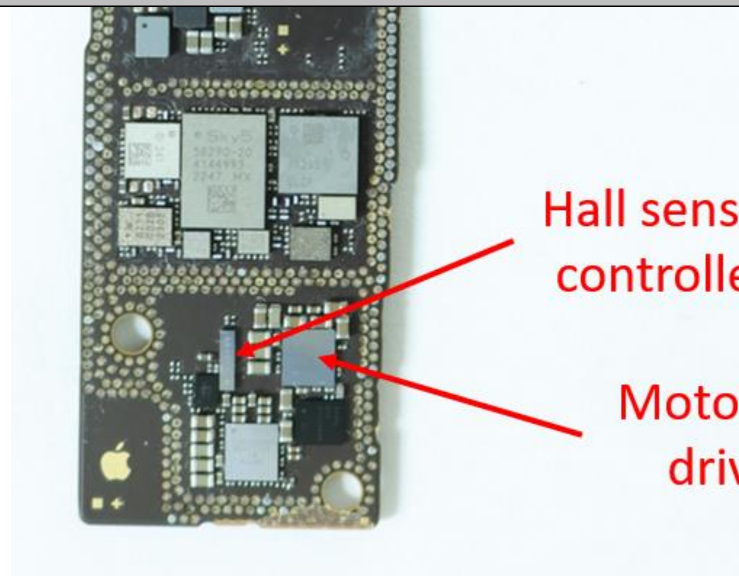
Claim 1	Accused Products
	 Photograph showing one driving coil (at right) within disassembled Taptic Engine from the iPhone 14, with moveable component in place at left. The moveable component travels up and down from this perspective.

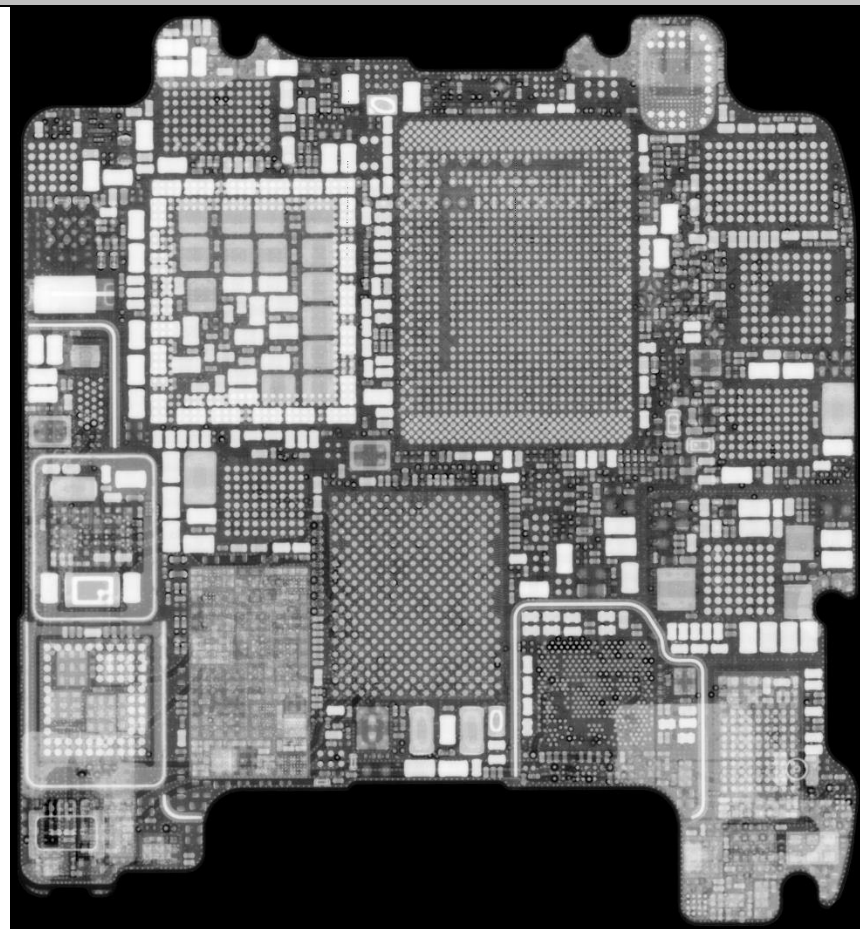
Claim 1	Accused Products
	 Photograph of internals of Taptic Engine from the iPhone 14, showing drive coils (top and bottom) surrounding the moveable component. The moveable component travels left and right from this perspective.

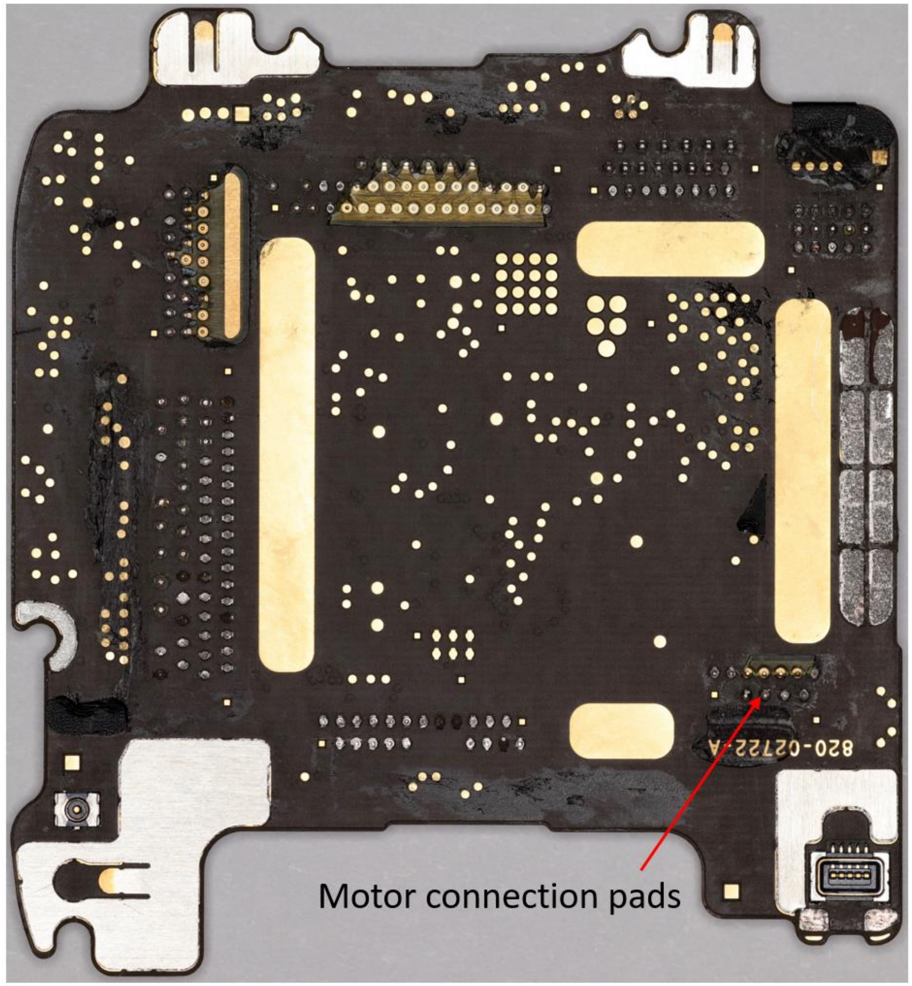
Claim 1	Accused Products
	 Photograph of drive coils within disassembled Taptic Engine from Apple Watch Ultra. The two visible coils would be positioned above and below the movable component when assembled.
[1f] a control component that controls supply of power from the power supply to the driving	Each Accused Product comprises a control component that controls supply of power from the power supply to the driving component to cause the moveable component to oscillate at a frequency and an amplitude specified by user input received from the user-input features.

Claim 1	Accused Products
component to cause the moveable component to oscillate at a frequency and an amplitude specified by user input received from the user-input features; and	For example, each Accused Product includes a main system processor, a linear motor coil driver, and a Hall sensor controller, which alone or in combination form a control component as claimed to drive the coils and thus move the magnetic mass in a linear oscillating motion, as described below. This control component can drive the moveable component at specified frequencies and amplitude, as demonstrated by public APIs and by testing. The public APIs, as well as any proprietary Apple APIs and interfaces, specify intensity and sharpness (exemplary stored values) that directly and/or indirectly control the frequency and amplitude of the oscillation. These frequencies and amplitudes are specified by user input received from the user-input features, for example via Apple's "Sounds & Haptics" controls, via touch and/or force sensors (keyboard and button feedback), or via third-party applications. *See, e.g.*:

Claim 1	Accused Products
	 Photographs showing iPhone 14 system board with A15 Bionic processor.

Claim 1	Accused Products
	 Annotated photograph of Hall sensor controller and motor coil driver from the iPhone 14.

Claim 1	Accused Products
	 X-ray image of Apple Watch Ultra system board.

Claim 1	Accused Products
	 Annotated photograph of partially disassembled Apple Watch Ultra system board, showing connection points for haptic motor.

<table>
<tr><th>Claim 1</th><th>Accused Products</th></tr>
<tr><td></td><td>

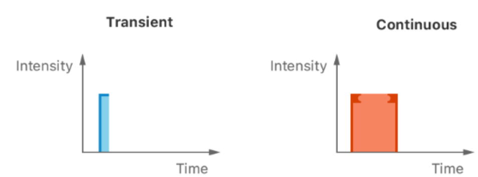
Declaration

```
class CHHapticEvent : NSObject
```

Overview

Each event represents a single haptic or audio signal. The event `type` determines whether it's audio or haptic. Use a `CHHapticPatternPlayer` object obtained through `CHHapticEngine` factory methods to play events. Haptic events can be transient or continuous. Transient haptic patterns are brief impulses that occur at a specific point in time, such as the haptic feedback you feel from swiping through a picker or toggling a switch. Continuous haptic patterns, like the vibration from a ringtone, take the form of lengthier feedback over a period of time.

In the following graphic, transient haptic patterns on the left trigger at a specific time with a specific intensity. Continuous haptic patterns on the right sustain the haptic feedback over a specific duration of time, such as three seconds.



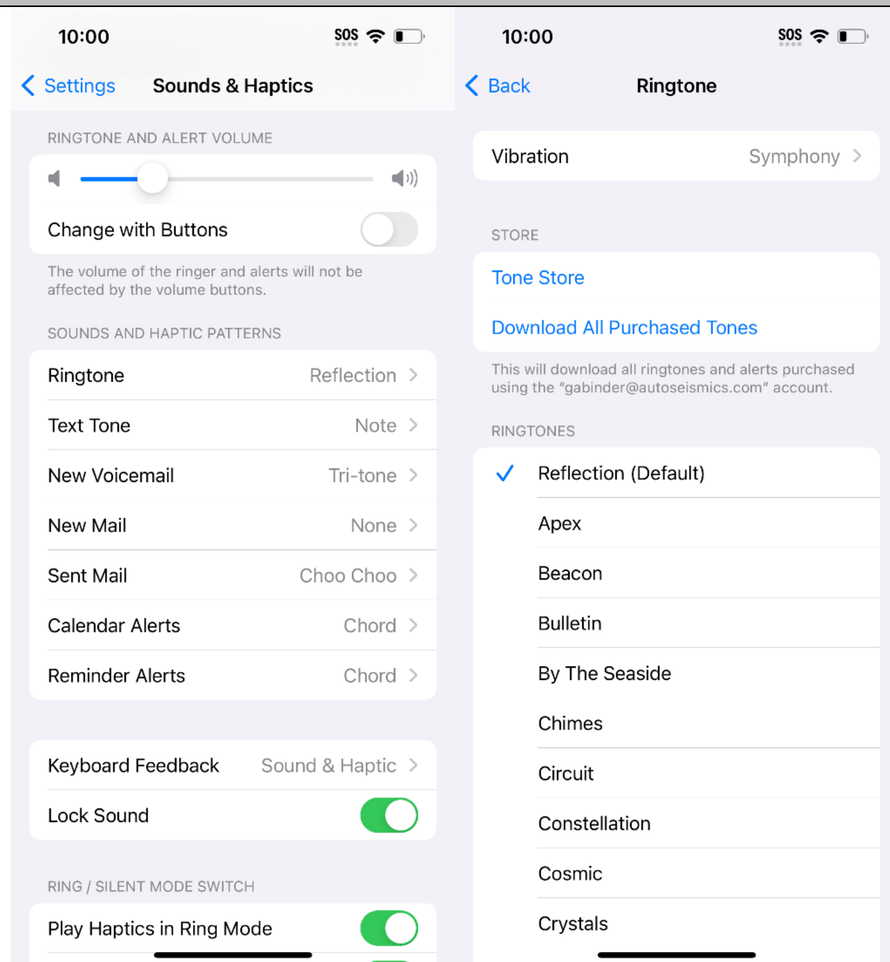
Specify when an event begins by setting its `relativeTime` property. Specify the length of the event by setting its `duration` property. Set optional parameters to customize event properties. For example, you can specify the intensity of a haptic event by creating an event parameter with ID `hapticIntensity`.

Documentation of CHHapticEvent object, https://developer.apple.com/documentation/corehaptics/chhapticevent

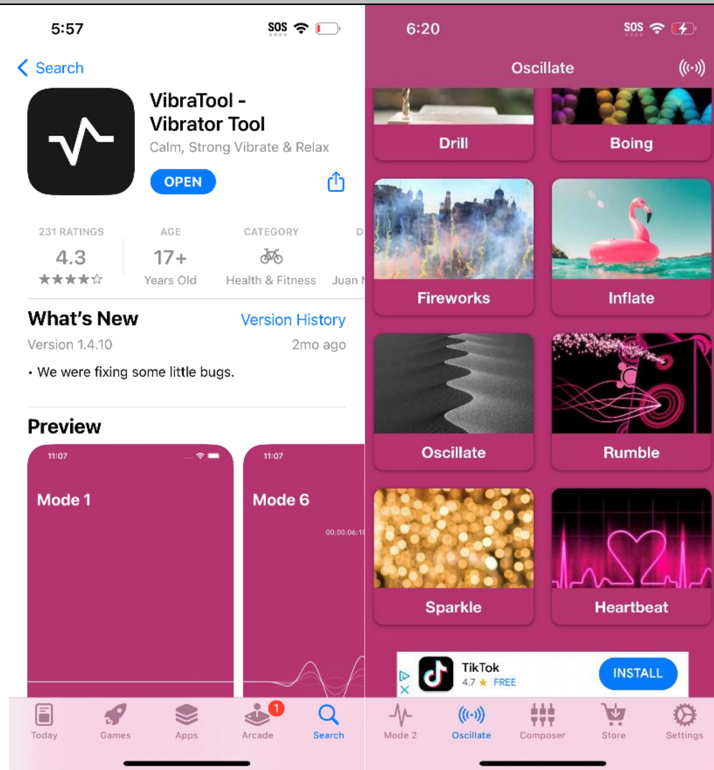
</td></tr>
</table>

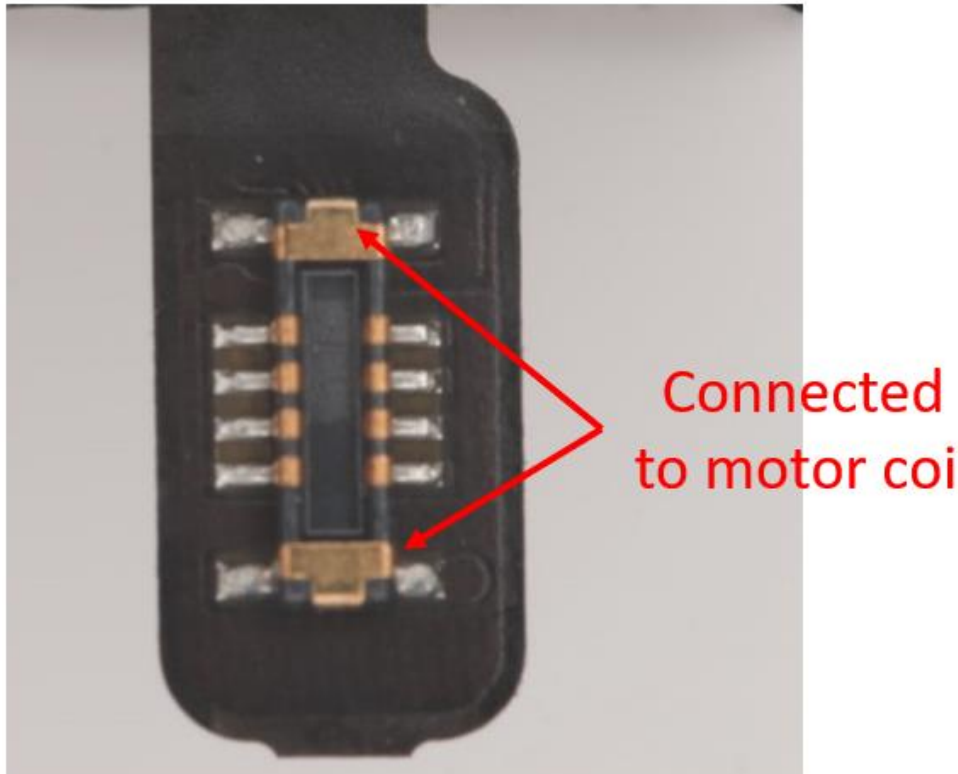
Claim 1	Accused Products
	Haptic Event Parameter IDs `static let hapticIntensity: CHHapticEvent.ParameterID` The strength of a haptic event. `static let hapticSharpness: CHHapticEvent.ParameterID` The feel of a haptic event. `static let attackTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins increasing. `static let decayTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins decreasing. `static let releaseTime: CHHapticEvent.ParameterID` The time at which to begin fading the haptic pattern. `static let sustained: CHHapticEvent.ParameterID` A Boolean value that indicates whether to sustain a haptic event for its specified duration. Documentation of haptic event parameters, https://developer.apple.com/documentation/corehaptics/chhapticevent/parameterid;

Claim 1	Accused Products
	4. The Continuous "Sharpness" parameter maps to frequency. For continuous events, we found that the sharpness parameter maps to frequency. On an iPhone 8, the lower sharpness boundary (0.0) of the Taptic Engine is 80 Hz; the higher sharpness boundary (1.0) is 230 Hz. This provides an effective range of 150 Hz, or roughly 1.5 octaves — which is impressive for a mobile phone released in 2017. Other phones or devices supporting Core Haptics might have different upper or lower boundaries since the frequency range is tied to the capabilities of the hardware actuator. https://medium.com/lofelt/10-things-you-should-know-about-designing-for-apple-core-haptics-9219fdebdcaa.

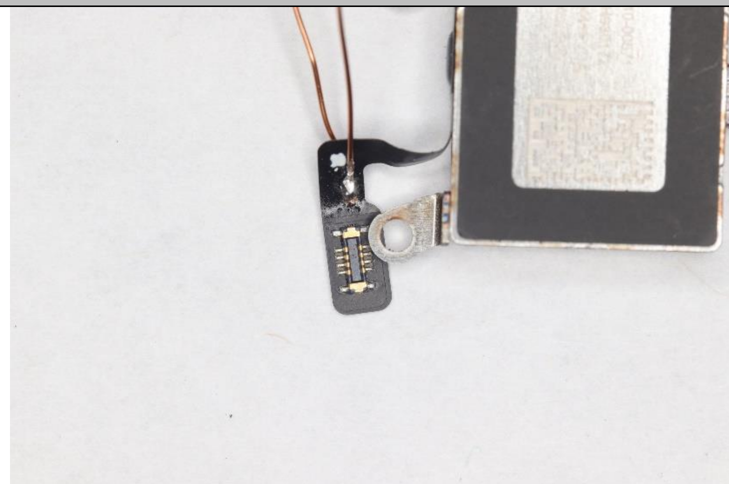
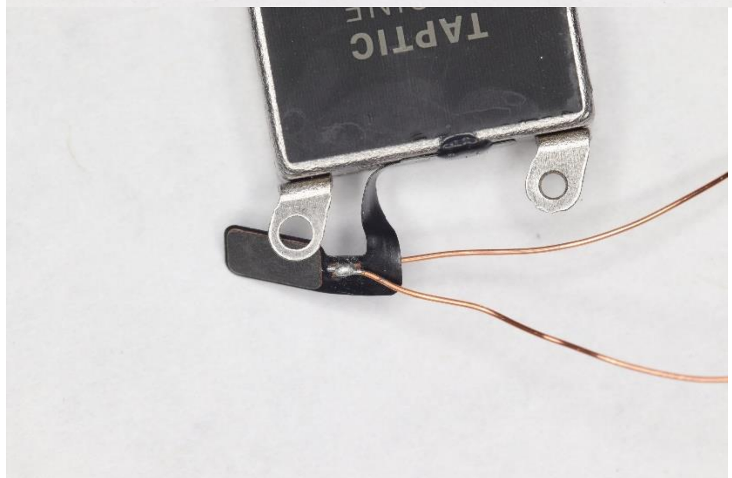
Claim 1	Accused Products
	 Screenshots of "Sounds & Haptics" and "Ringtone" settings, which allow selection of frequency and/or amplitude.

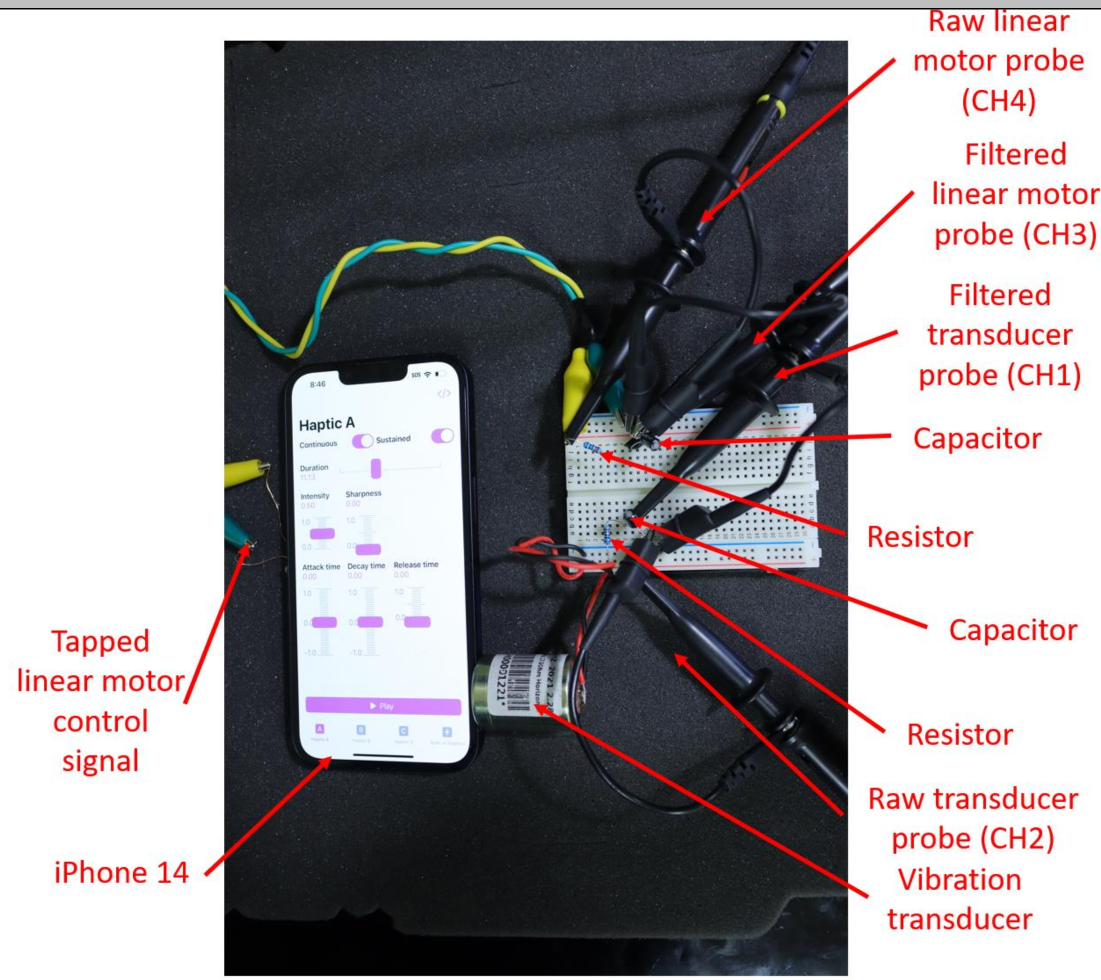
Claim 1	Accused Products
	 Screenshots of exemplary “Haptics Studio” software, sold by Apple through its App Store, with user-input controls for frequency (“sharpness”) and amplitude (“intensity”).

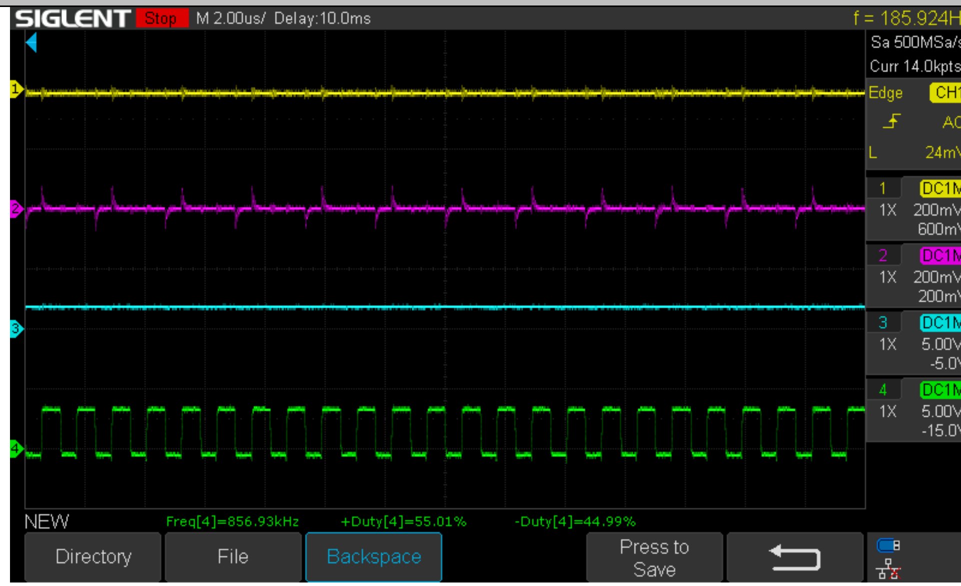
Claim 1	Accused Products
	 Screenshots of exemplary "VibraTool" software, sold by Apple through its App Store, with user-input controls for selecting frequency and amplitude.

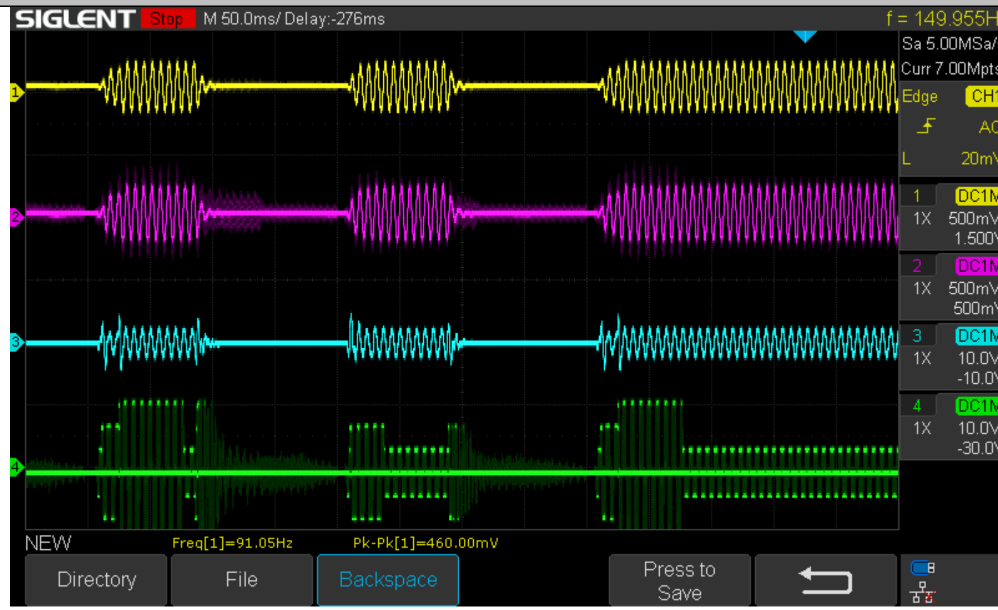
<table>
<tr><th>Claim 1</th><th>Accused Products</th></tr>
<tr><td></td><td>

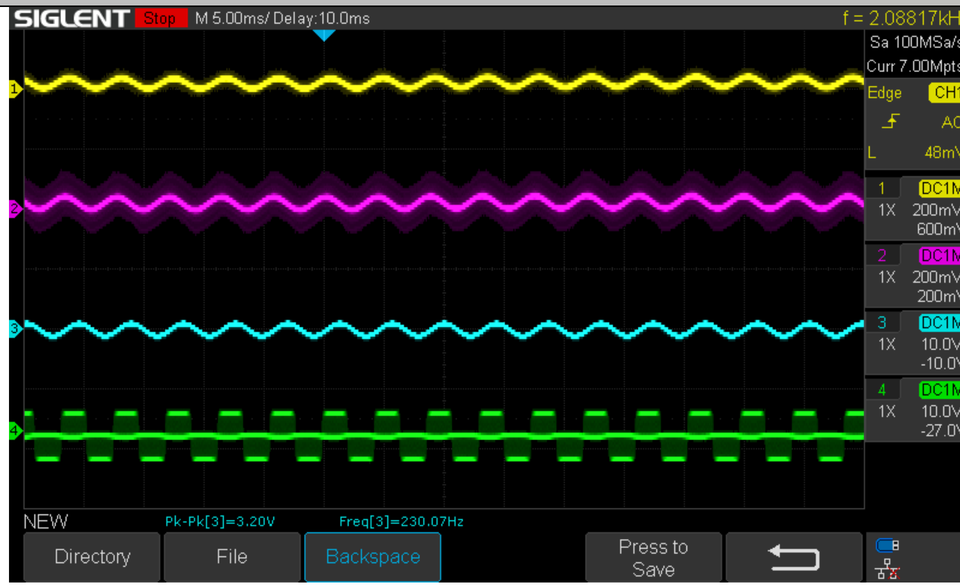
Annotated photograph of Taptic Engine connector from the iPhone 14 showing positive and negative coil driving pins.</td></tr>
</table>

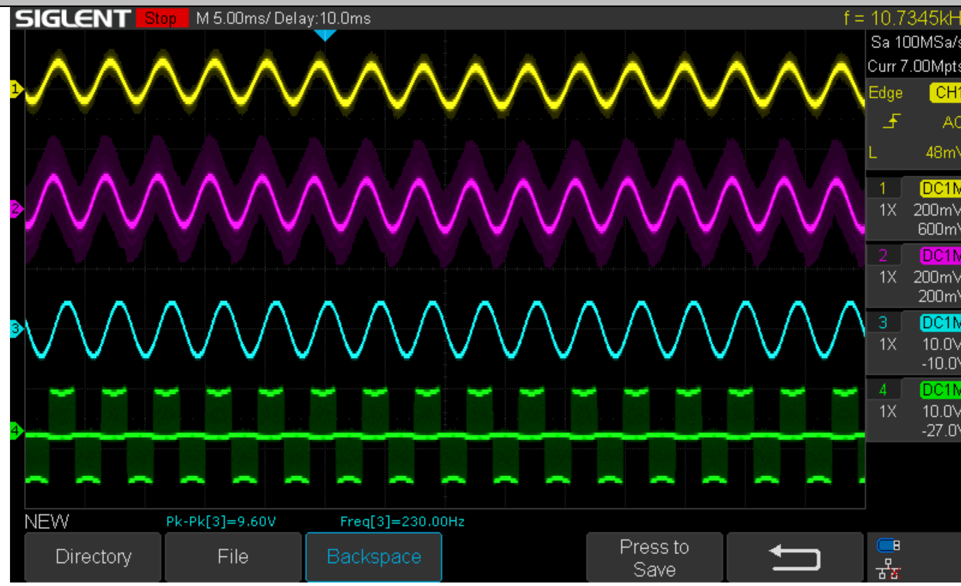
Claim 1	Accused Products
	  Photographs of test apparatus with electrical leads connected to motor coil drive traces of iPhone 14.

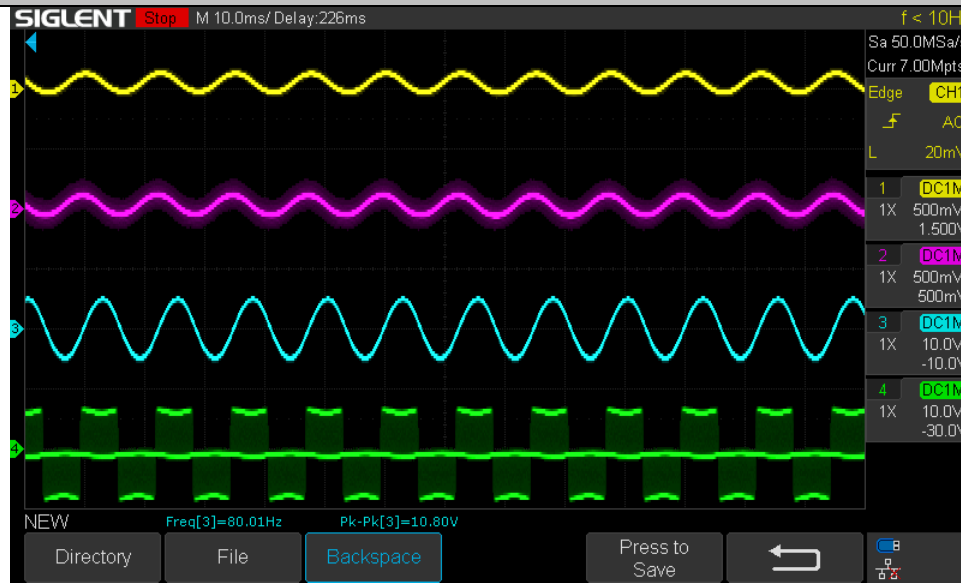
Claim 1	Accused Products
	 Photograph of test apparatus for measuring motor coil drive signal (from tapped connection) and actual motion (from attached vibration transducer) of iPhone 14. Note RC low-pass filter networks at top right with R = 220 Ω, C = 2.2 uF.

Claim 1	Accused Products
	 Oscilloscope trace showing, in green (CH4), the drive voltage applied by the iPhone 14 haptic controller(s); in this case, a pulse width modulated positive signal (modulation frequency 857 kHz) to drive the moveable component in one of two directions.

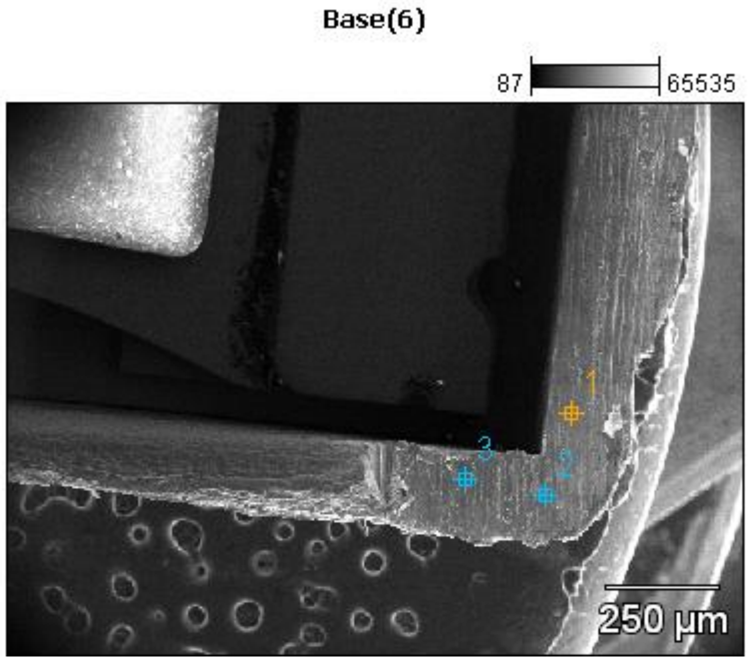
Claim 1	Accused Products
	 Oscilloscope trace showing, in green (CH4), the PWM-modulated drive voltage applied by the iPhone 14 haptic controller(s), with positive and negative voltages to drive the moveable component in a first and second direction. Channels 1 and 2 (yellow and purple) show the actual motion of the iPhone 14 resulting (pursuant to Newton's third law) from the motion of the moveable component.

Claim 1	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 0.5, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 3.2 V (peak-to-peak, through RC low-pass filter).

Claim 1	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 1, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 9.6V (peak-to-peak, through RC low-pass filter). Note that the externally measured vibration amplitude (yellow and purple traces, same scale as previous trace) is also significantly higher at intensity = 1 than 0.5.

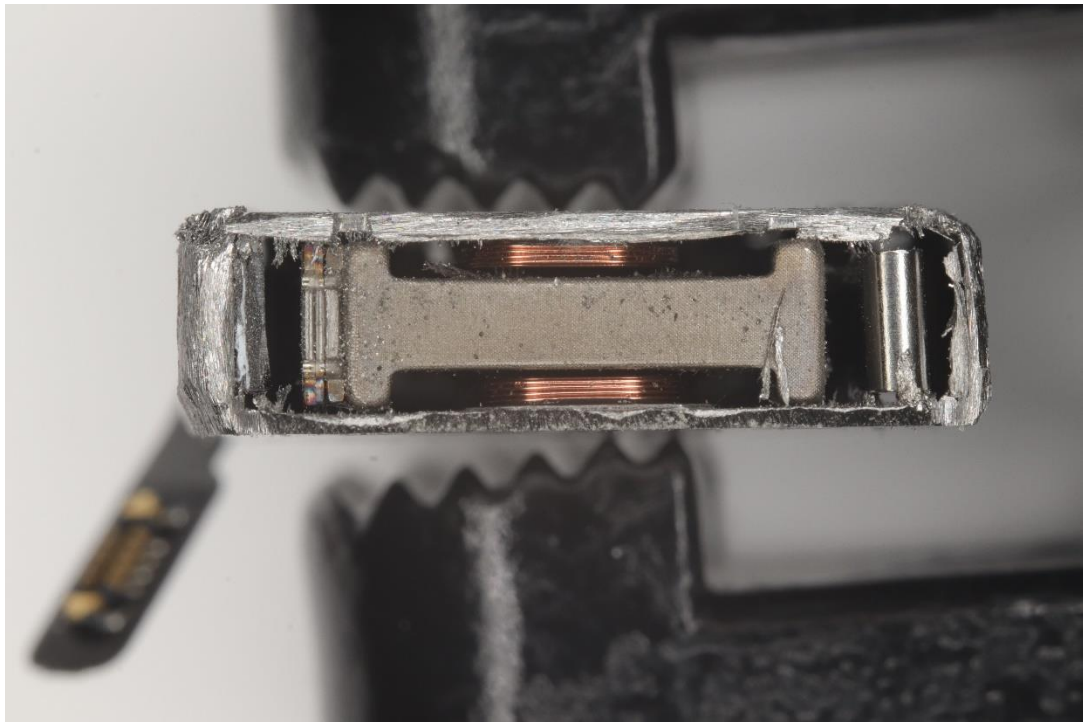
Claim 1	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 1, sharpness = 0, with frequency of 80 Hz and motor drive amplitude of 10.8 V (peak-to-peak, through RC low-pass filter). To the extent Defendant contends and/or shows that this limitation is not literally present in the Accused Products, it is present under the doctrine of equivalents. There are no substantial differences between the accused functionality and the claimed invention. For example, each Accused Product contains one or more microprocessors that coordinate(s) operation of the Taptic Engine, which performs substantially the same function (*e.g.*, receiving control signals input to the oscillating resonant module, receiving outputs from one or more sensors, and controlling the oscillation of the mass) in substantially the same way (*e.g.*, using digital logic) to achieve substantially the same result (*e.g.*, producing oscillations at a desired frequency and amplitude).
[1g] flux paths comprising a paramagnetic material that is shaped and positioned to reduce the reluctance of one or	Each Accused Product comprises flux paths comprising a paramagnetic material that is shaped and positioned to reduce the reluctance of one or more magnetic circuits within the linear vibration module.

Claim 1	Accused Products
more magnetic circuits within the linear vibration module.	For example, the elemental composition of the housing of the Taptic Engine in the iPhone 14 was determined from energy-dispersive X-ray spectroscopy (EDS). The housing primarily consists of an iron and chromium alloy, which indicates it is a ferritic stainless steel with paramagnetic properties and high magnetic permeability. The housing surrounds the driving coils and moveable component and is positioned to reduce the reluctance of the magnetic circuit formed by the driving coils, moveable component, and housing. *See, e.g.*:



Line	Wt.%	Error
C K	0.00	0.00
O K	0.00	0.00
Si K	0.32	0.03
Ti K	0.13	0.02
V K	0.19	0.04
Cr K	18.56	0.09
Fe K	80.20	0.22
Ni K	0.21	0.04
Nd L	0.00	0.00
Tl L	0.39	0.20

Scanning electron microscopic image of the housing of the Taptic Engine of the iPhone 14 depicting 3 points where EDS measurements were taken. The elemental composition by weight averaged from the 3 EDS measurements is shown in the table on the right. The iron and chromium composition suggests the housing consists of a ferritic stainless steel alloy with paramagnetic properties and high magnetic permeability.

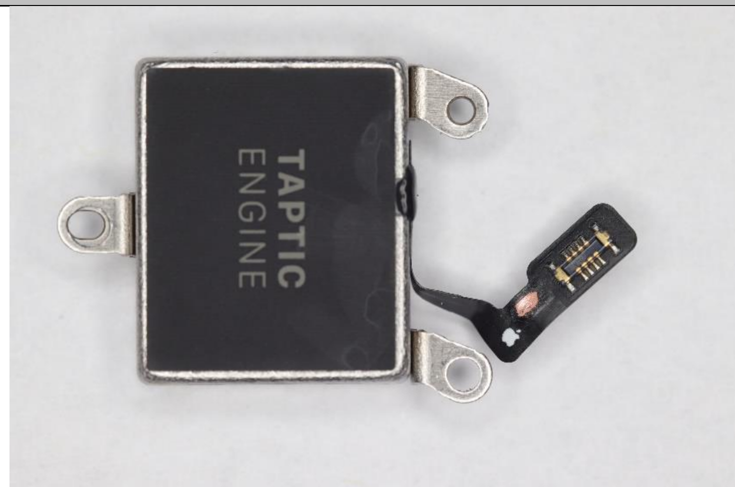
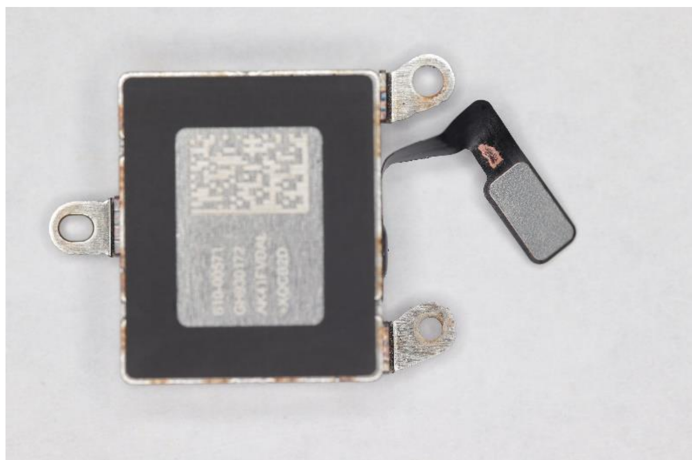
Claim 1	Accused Products
	 Photograph of internals of Taptic Engine from the iPhone 14, showing the magnetic circuit formed by the driving coils, moveable component, and housing composed of a paramagnetic material.

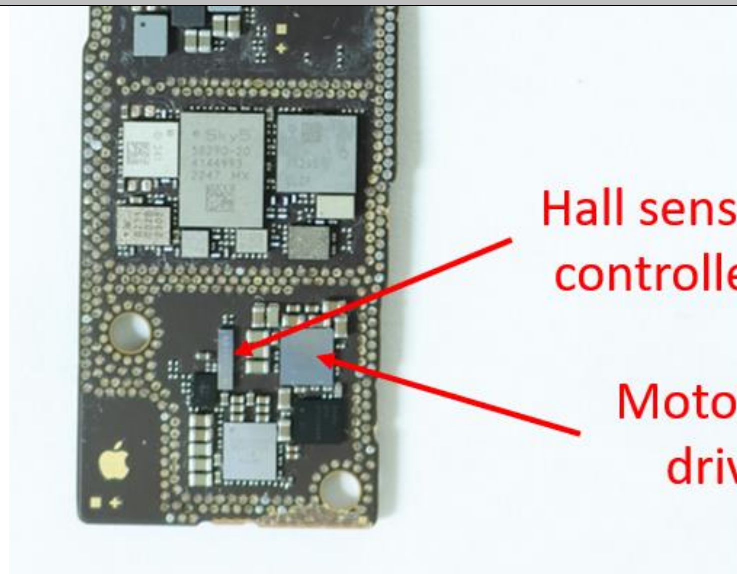
Claim 2

Claim 2	Accused Products
[2pre]. A linear vibration module comprising:	To the extent the preamble is limiting, each Accused Product includes or constitutes a linear vibration module.

Claim 2	Accused Products
	For example, each of the Apple iPhone 14 and the Apple Watch Ultra contain a linear actuator (“Taptic Engine”), haptic controller(s), and associated circuitry, as described in connection with the claim limitations below. *See*, *e.g.*:

Photograph of iPhone 14 with rear cover removed, with A15 Bionic SoC at center right and Taptic Engine at bottom left.

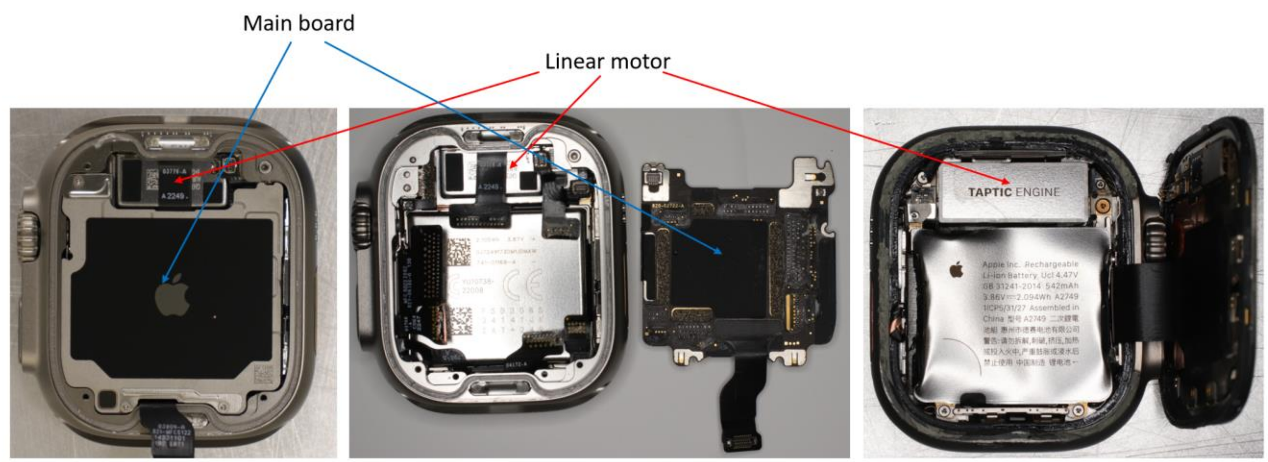
Claim 2	Accused Products
	 Photograph of Taptic Engine housing from the iPhone 14.  Photograph of Taptic Engine housing from the iPhone 14.

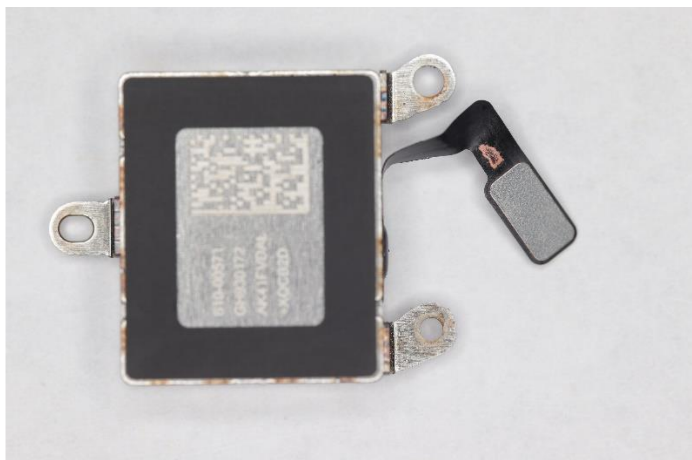
Claim 2	Accused Products
	 Photograph of Hall sensor controller and motor control driver from the iPhone 14.

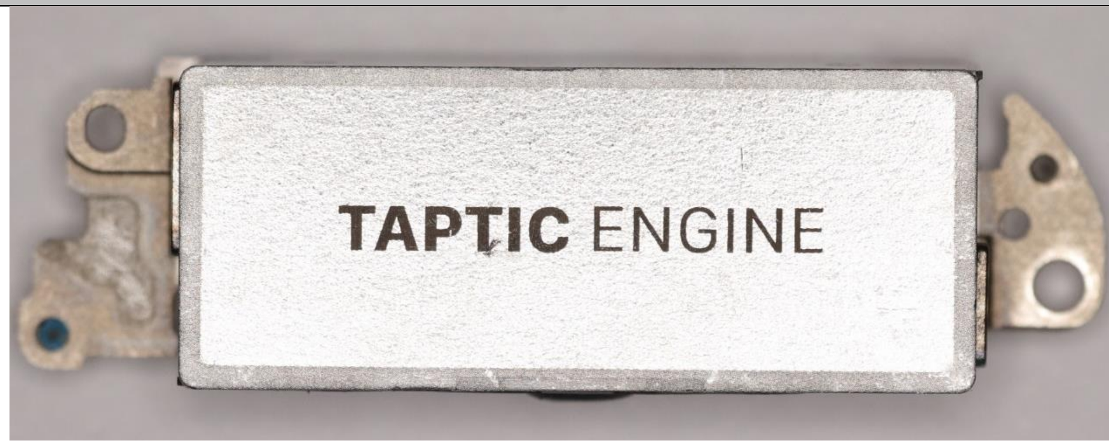
<table>
<tr><th>Claim 2</th><th>Accused Products</th></tr>
<tr><td></td><td>The following devices contain a Taptic Engine:
• iPhone 14 Pro Max
• iPhone 14 Pro
• iPhone 14 Plus
• iPhone 14
• iPhone SE (3rd generation)
• iPhone 13 Pro Max
• iPhone 13 Pro
• iPhone 13
• iPhone 13 mini
• iPhone 12 Pro Max
• iPhone 12 Pro
• iPhone 12
• iPhone 12 mini
• iPhone SE (2nd generation)
• iPhone 11 Pro Max
• iPhone 11 Pro
• iPhone 11
• iPhone XS Max
• iPhone XS
• iPhone XR
• iPhone X
• iPhone 8 Plus
• iPhone 8
• iPhone 7 Plus
• iPhone 7
• iPhone 6s Plus
• iPhone 6s

Accessory Design Guidelines for Apple Devices, Release R20, available at https://developer.apple.com/accessories/Accessory-Design-Guidelines.pdf</td></tr>
</table>

Claim 2	Accused Products
	 Photograph of Apple Watch Ultra.

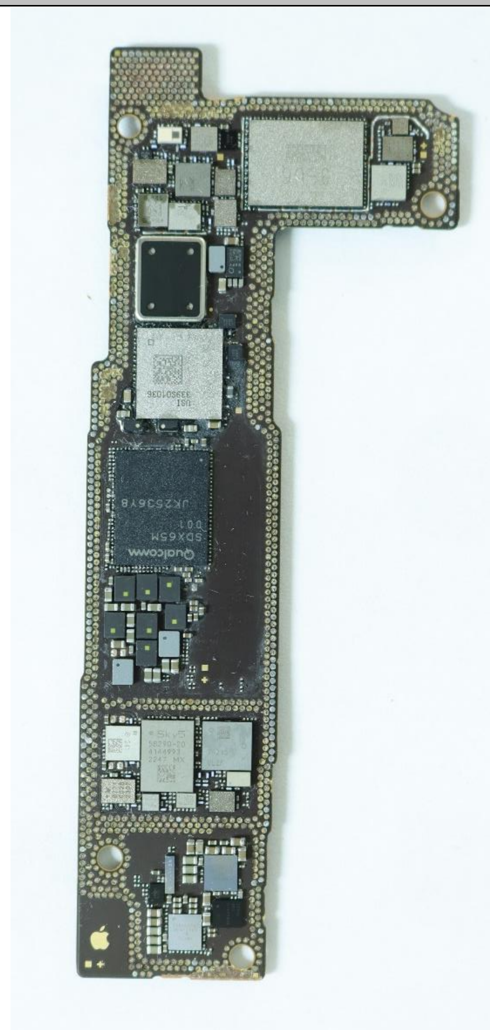
Claim 2	Accused Products
	 Wrist side, cover removed Wrist side, cover and main board removed Display side, display removed Annotated photographs of Apple Watch Ultra showing linear actuator (Taptic engine) and main system board.
[2a] a housing;	Each Accused Product comprises a housing. For example, the Taptic Engine in each of the iPhone 14 and Apple Watch Ultra has a metal structure that is soldered together to form a housing surrounding the moving component and coils. *See, e.g.*:

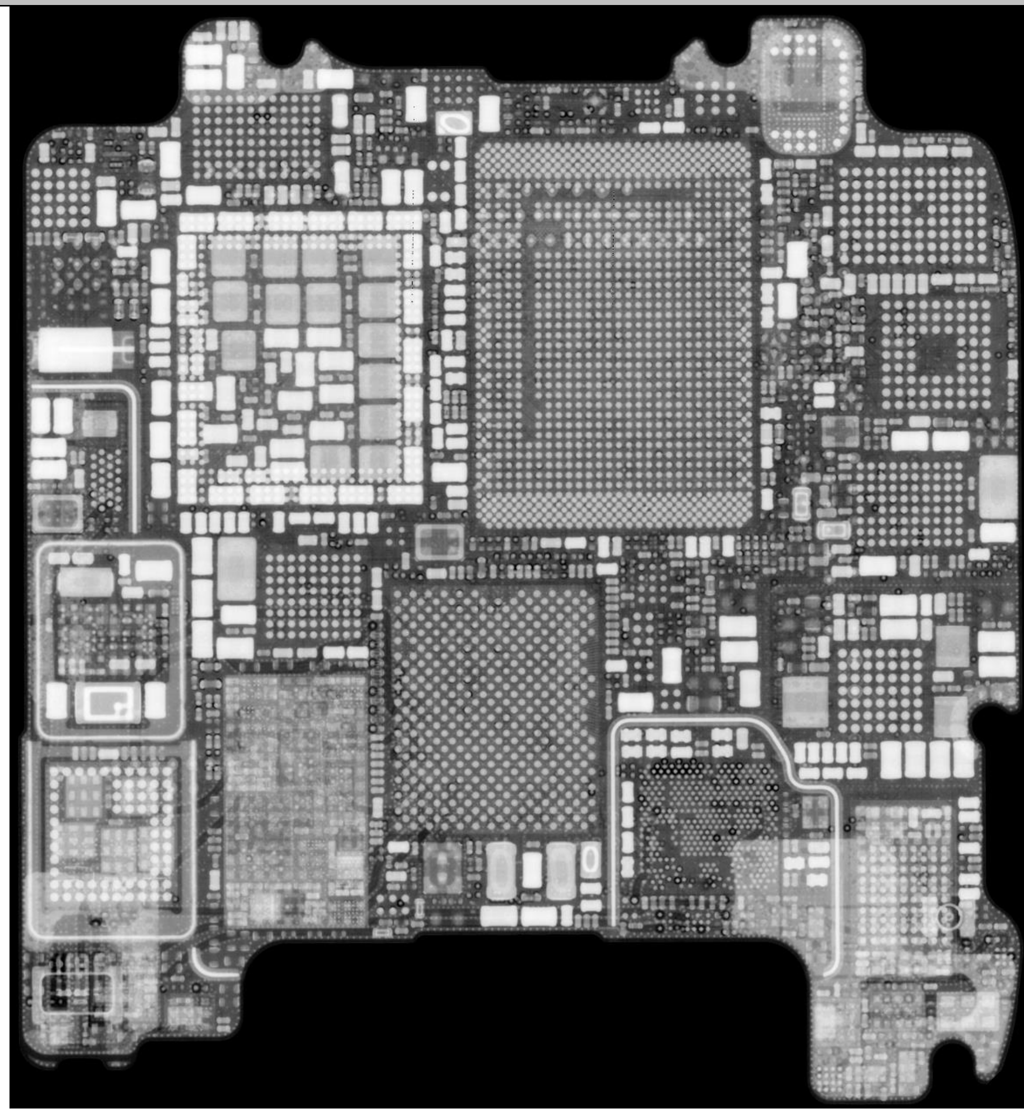
Claim 2	Accused Products
	 Photograph of Taptic Engine housing from the iPhone 14.  Photograph of Taptic Engine housing from the iPhone 14.

Claim 2	Accused Products
	 Photograph of Taptic Engine housing from Apple Watch Ultra.
[2b] a moveable component;	Each Accused Product comprises a moveable component. For example, the Taptic Engine in each of the iPhone 14 and Apple Watch Ultra includes a movable component comprising permanent magnet(s) and a mass. *See, e.g.*:

Claim 2	Accused Products
	 Photograph of moveable component (at right, connected to housing with springs) from the iPhone 14.  Photograph of moveable component from Apple Watch Ultra.

Claim 2	Accused Products
[2c] a power supply;	Each Accused Product comprises a power supply. For example, the linear motor coil driver (described below) in each of the iPhone 14 and Apple Watch Ultra receives power from one or more voltage regulators on or near the Accused Product's system board. *See*, *e.g.*:

Claim 2	Accused Products
	 Photograph of iPhone 14 system board.

Claim 2	Accused Products
	 X-ray image of Apple Watch Ultra system board.

Claim 2	Accused Products
	See also claim elements below.
[2d] user-input features;	Each Accused Product comprises user-input features. For example, each of the iPhone 14 and Apple Watch Ultra comprises a touchscreen, buttons, and other user-input features. *See, e.g.*:

Claim 2	Accused Products
	 Photograph of iPhone 14 touchscreen, buttons, and switch, *available at* https://www.apple.com/iphone-14/.

Claim 2	Accused Products
	 Photograph of Apple Watch Ultra touchscreen, dial, and buttons.
[2e] a driving component that drives the moveable component in each of two opposite directions within the housing; and	Each Accused Product includes a driving component that drives the moveable component to oscillate within the housing. For example, the Taptic Engine includes one or more coils to form electromagnetic fields for driving the moveable component in two directions.

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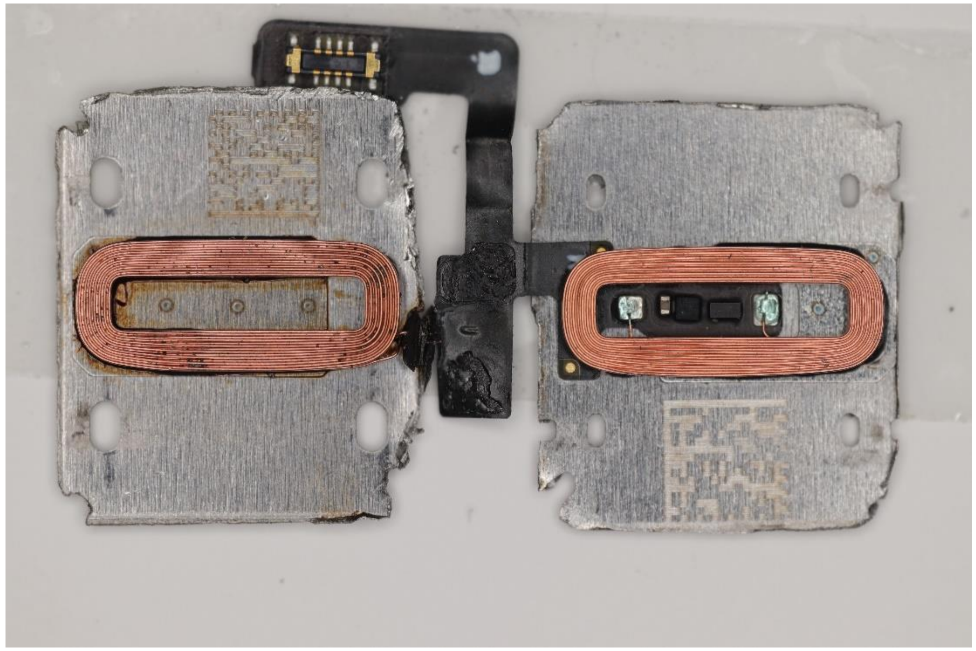
Claim 2	Accused Products
	See, e.g.:  Photograph of driving coils within disassembled Taptic Engine from the iPhone 14. The two visible coils would be positioned above and below the moveable component when assembled.

Claim 2	Accused Products
	 Photograph showing one driving coil (at right) within disassembled Taptic Engine from the iPhone 14, with moveable component in place at left. The moveable component travels up and down from this perspective.

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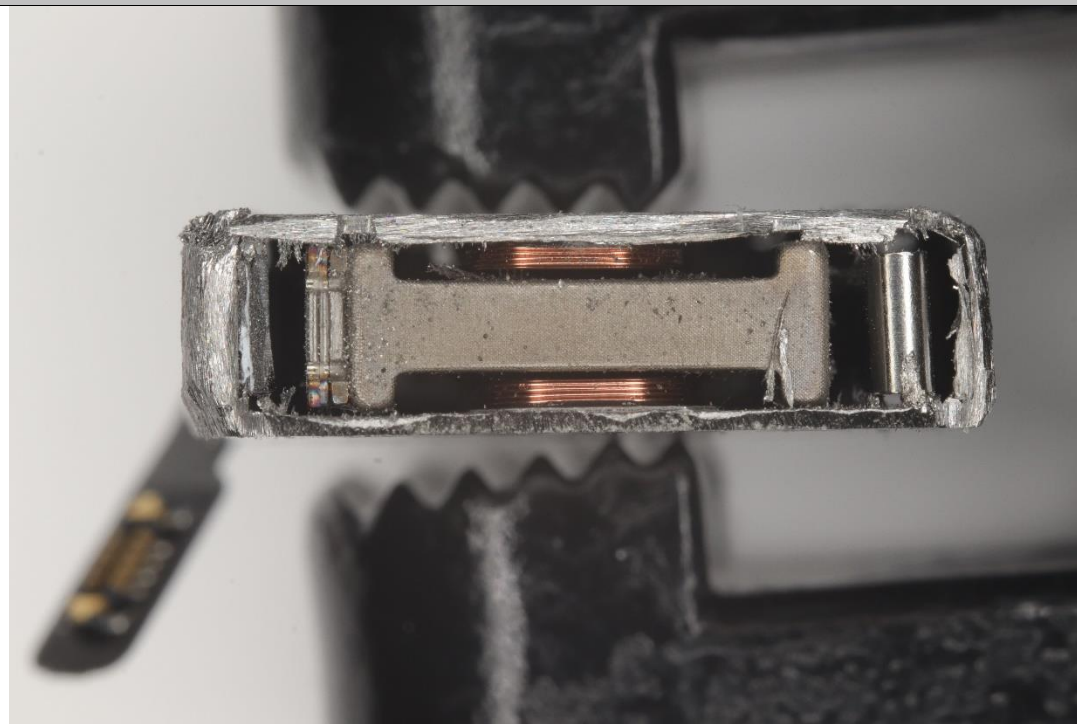
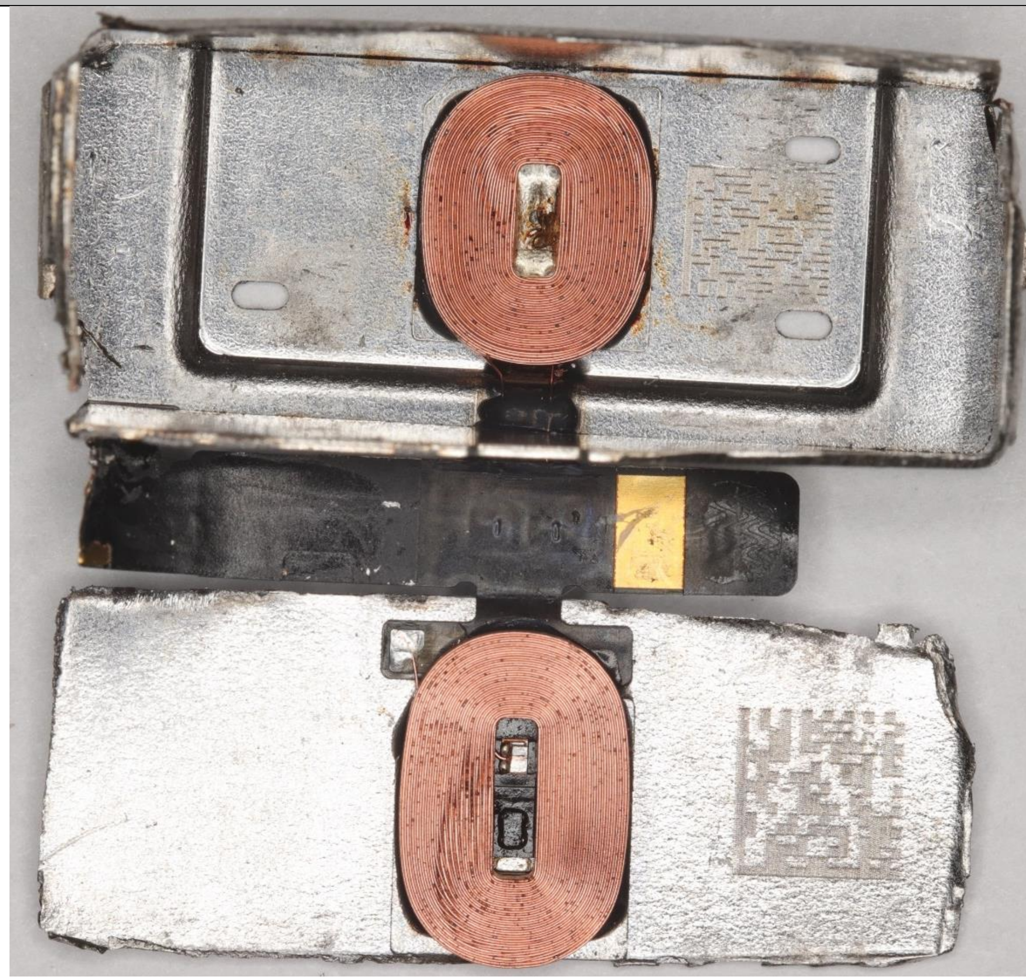
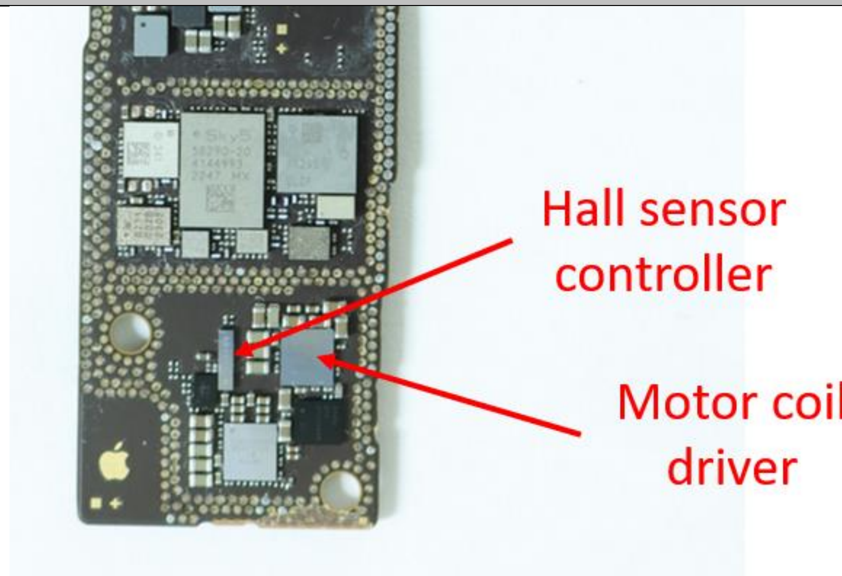
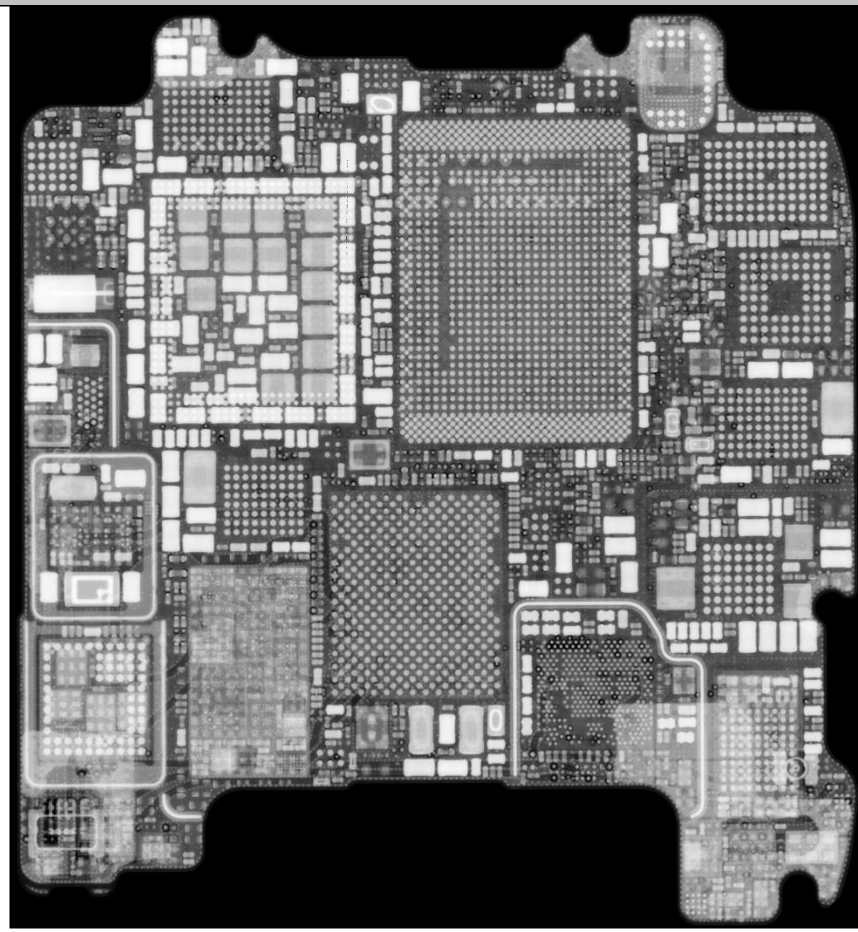
Claim 2	Accused Products
	 Photograph of internals of Taptic Engine from the iPhone 14, showing drive coils (top and bottom) surrounding the moveable component. The moveable component travels left and right from this perspective.

Claim 2	Accused Products
	 Photograph of drive coils within disassembled Taptic Engine from Apple Watch Ultra. The two visible coils would be positioned above and below the movable component when assembled.

Claim 2	Accused Products
[2f] a control component that controls supply of power from the power supply to the driving component to cause the moveable component to oscillate at a frequency and an amplitude specified by user input received from the user-input features,	Each Accused Product comprises a control component that controls supply of power from the power supply to the driving component to cause the moveable component to oscillate at a frequency and an amplitude specified by one or more stored values. For example, each Accused Product includes a main system processor, a linear motor coil driver, and a Hall sensor controller, which alone or in combination form a control component as claimed to drive the coils and thus move the magnetic mass in a linear oscillating motion, as described below. This control component can drive the moveable component at specified frequencies and amplitude, as demonstrated by public APIs and by testing. The public APIs, as well as any proprietary Apple APIs and interfaces, specify intensity and sharpness (exemplary stored values) that directly and/or indirectly control the frequency and amplitude of the oscillation. These frequencies and amplitudes are specified by user input received from the user-input features, for example via Apple's "Sounds & Haptics" controls, via touch and/or force sensors (keyboard and button feedback), or via third-party applications. *See, e.g.*:

Claim 2	Accused Products
	 Photographs showing iPhone 14 system board with A15 Bionic processor.

Claim 2	Accused Products
	 Annotated photograph of Hall sensor controller and motor coil driver from the iPhone 14.

Claim 2	Accused Products
	 X-ray image of Apple Watch Ultra system board.

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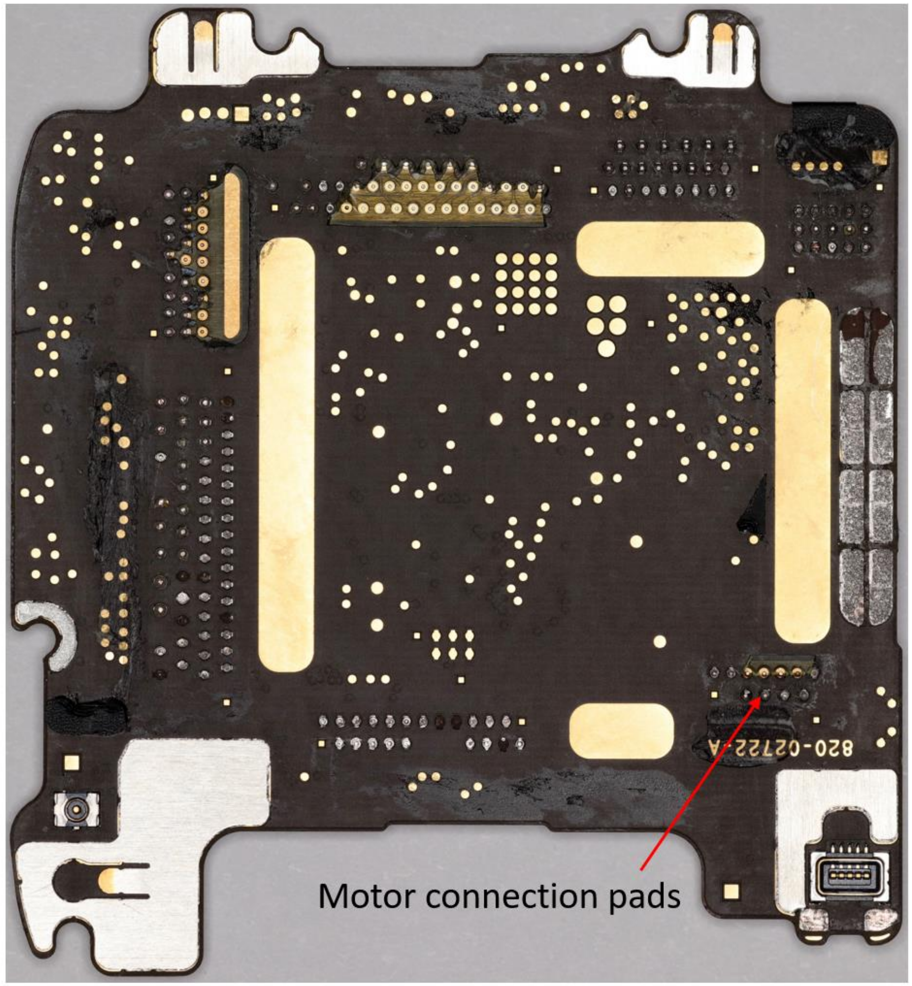
Claim 2	Accused Products
	 Annotated photograph of partially disassembled Apple Watch Ultra system board, showing connection points for haptic motor.

Claim 2	Accused Products
	(see below)

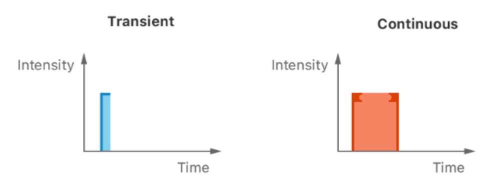
Declaration

```
class CHHapticEvent : NSObject
```

Overview

Each event represents a single haptic or audio signal. The event `type` determines whether it's audio or haptic. Use a `CHHapticPatternPlayer` object obtained through `CHHapticEngine` factory methods to play events. Haptic events can be transient or continuous. Transient haptic patterns are brief impulses that occur at a specific point in time, such as the haptic feedback you feel from swiping through a picker or toggling a switch. Continuous haptic patterns, like the vibration from a ringtone, take the form of lengthier feedback over a period of time.

In the following graphic, transient haptic patterns on the left trigger at a specific time with a specific intensity. Continuous haptic patterns on the right sustain the haptic feedback over a specific duration of time, such as three seconds.

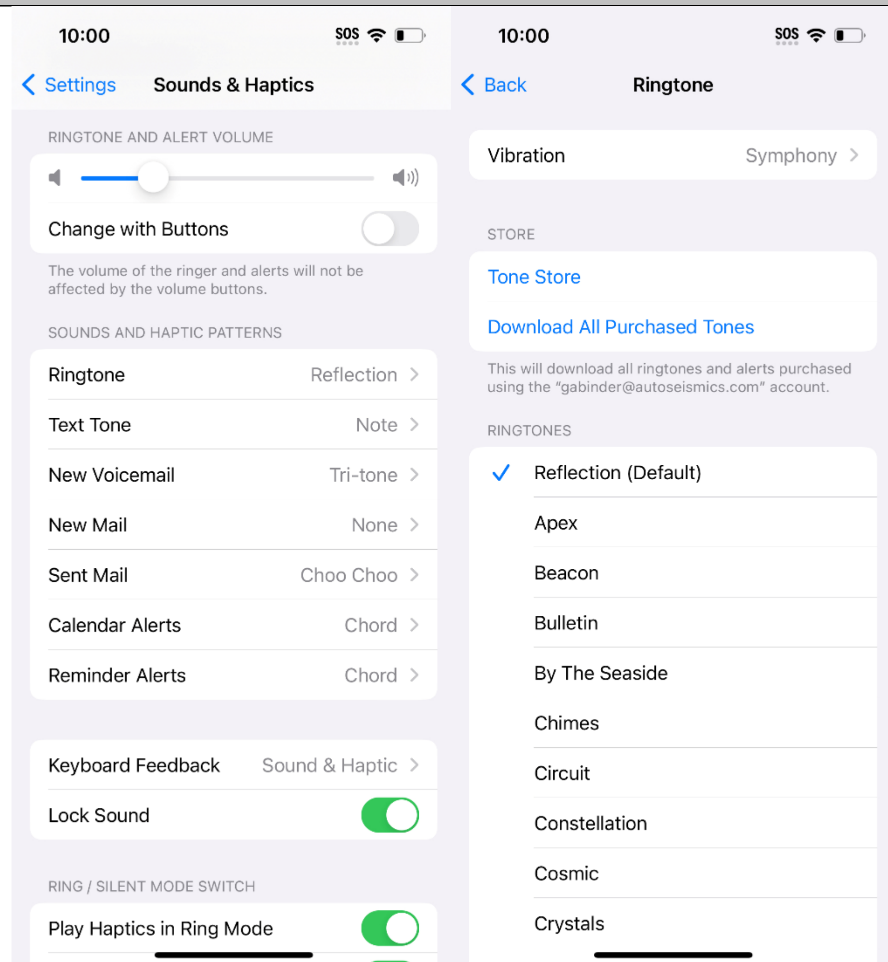


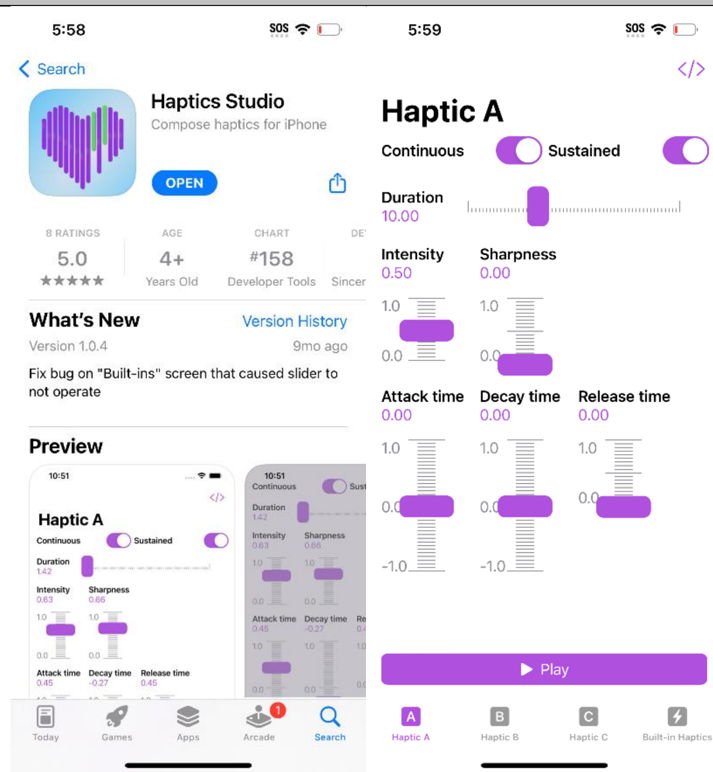
Specify when an event begins by setting its `relativeTime` property. Specify the length of the event by setting its `duration` property. Set optional parameters to customize event properties. For example, you can specify the intensity of a haptic event by creating an event parameter with ID `hapticIntensity`.

Documentation of CHHapticEvent object, https://developer.apple.com/documentation/corehaptics/chhapticevent

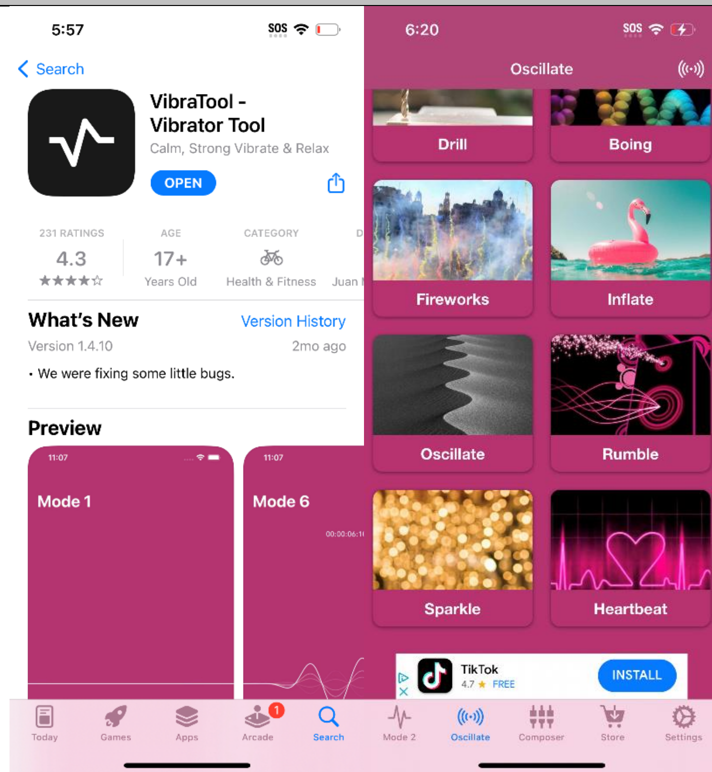
Claim 2	Accused Products
	Haptic Event Parameter IDs `static let hapticIntensity: CHHapticEvent.ParameterID` The strength of a haptic event. `static let hapticSharpness: CHHapticEvent.ParameterID` The feel of a haptic event. `static let attackTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins increasing. `static let decayTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins decreasing. `static let releaseTime: CHHapticEvent.ParameterID` The time at which to begin fading the haptic pattern. `static let sustained: CHHapticEvent.ParameterID` A Boolean value that indicates whether to sustain a haptic event for its specified duration. Documentation of haptic event parameters, https://developer.apple.com/documentation/corehaptics/chhapticevent/parameterid;

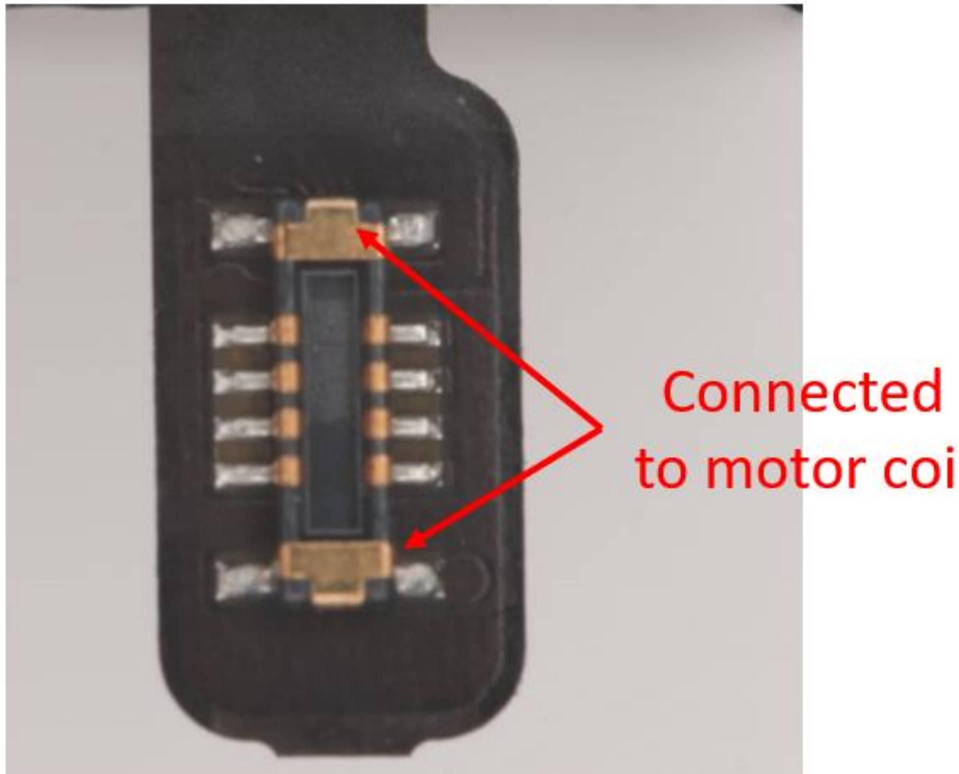
Claim 2	Accused Products
	4. The Continuous "Sharpness" parameter maps to frequency. For continuous events, we found that the sharpness parameter maps to frequency. On an iPhone 8, the lower sharpness boundary (0.0) of the Taptic Engine is 80 Hz; the higher sharpness boundary (1.0) is 230 Hz. This provides an effective range of 150 Hz, or roughly 1.5 octaves — which is impressive for a mobile phone released in 2017. Other phones or devices supporting Core Haptics might have different upper or lower boundaries since the frequency range is tied to the capabilities of the hardware actuator. https://medium.com/lofelt/10-things-you-should-know-about-designing-for-apple-core-haptics-9219fdebdcaa.

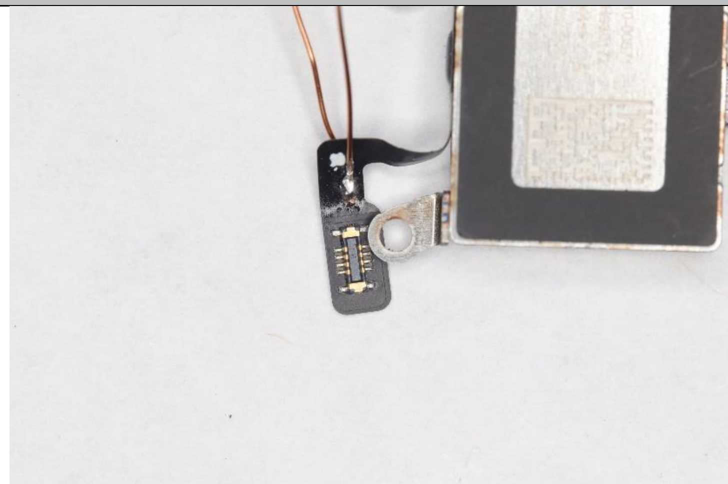
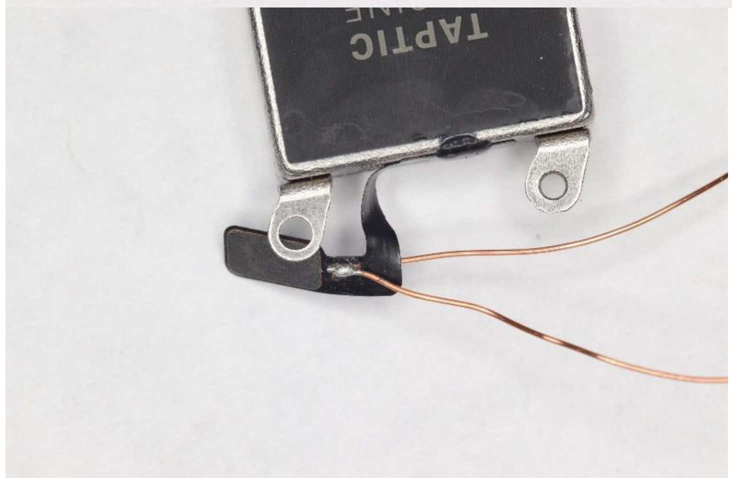
Claim 2	Accused Products
	 Screenshots of "Sounds & Haptics" and "Ringtone" settings, which allow selection of frequency and/or amplitude.

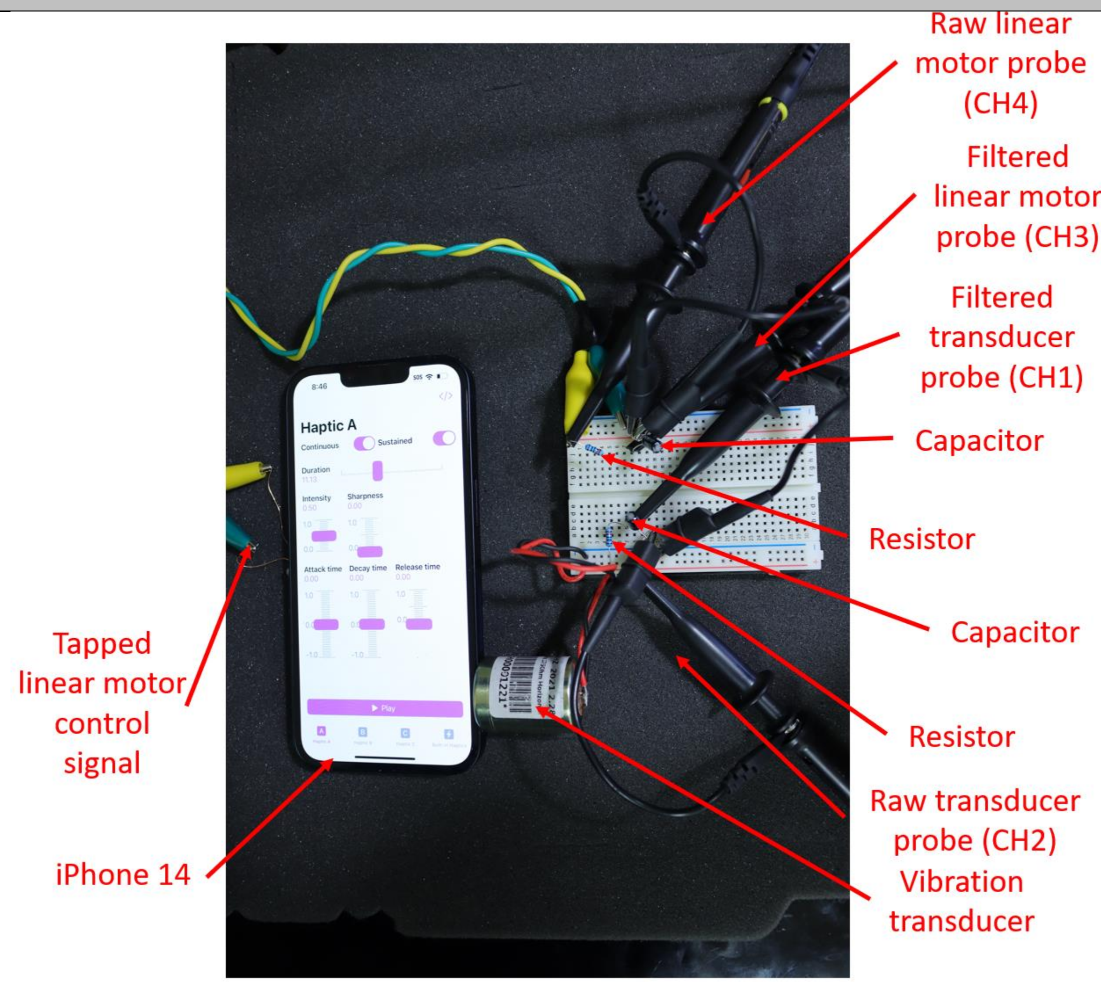
<table>
<tr><th>Claim 2</th><th>Accused Products</th></tr>
<tr><td></td><td>

Screenshots of exemplary “Haptics Studio” software, sold by Apple through its App Store, with user-input controls for frequency (“sharpness”) and amplitude (“intensity”).</td></tr>
</table>

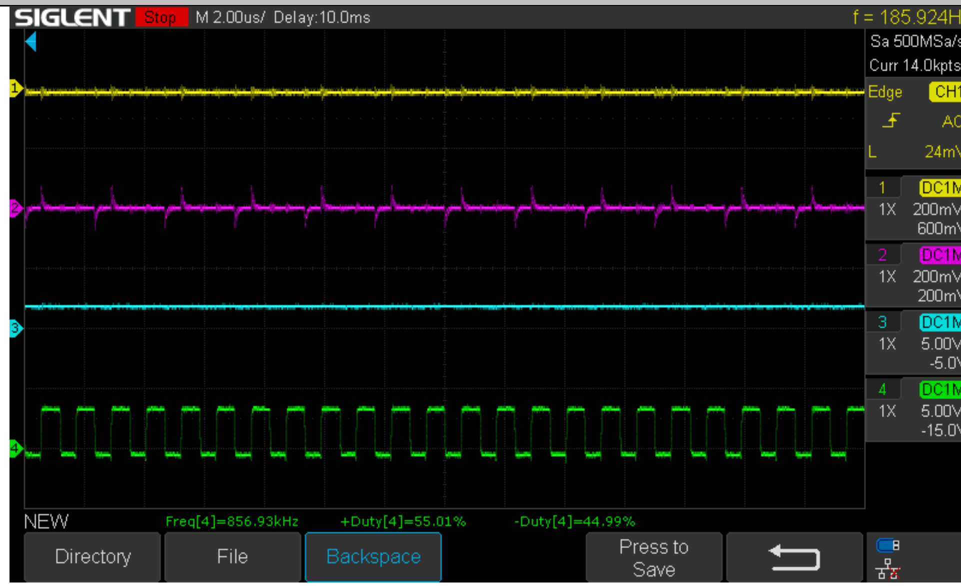
Claim 2	Accused Products
	 Screenshots of exemplary “VibraTool” software, sold by Apple through its App Store, with user-input controls for selecting frequency and amplitude.

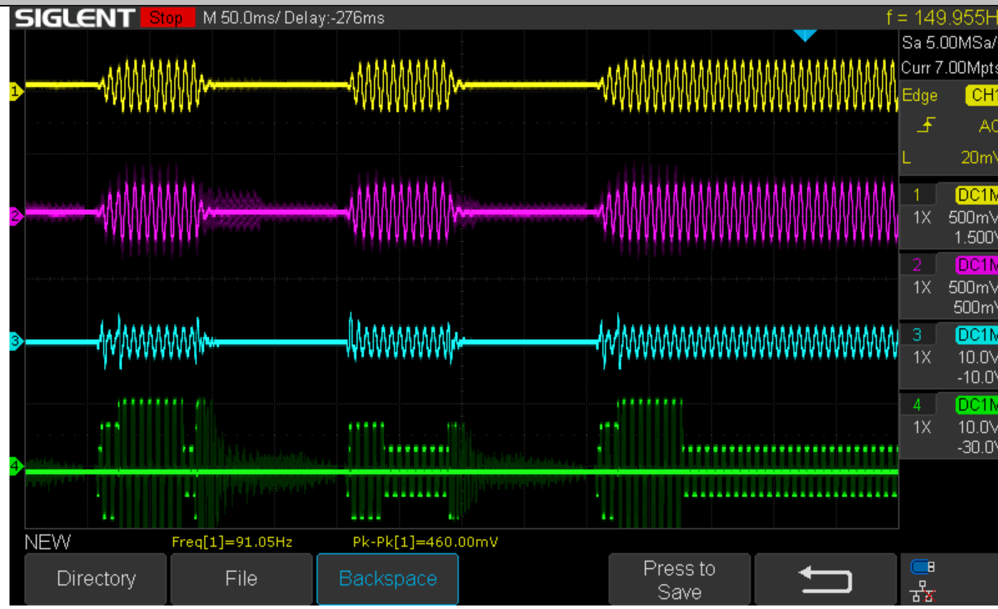
Claim 2	Accused Products
	 Annotated photograph of Taptic Engine connector from the iPhone 14 showing positive and negative coil driving pins.

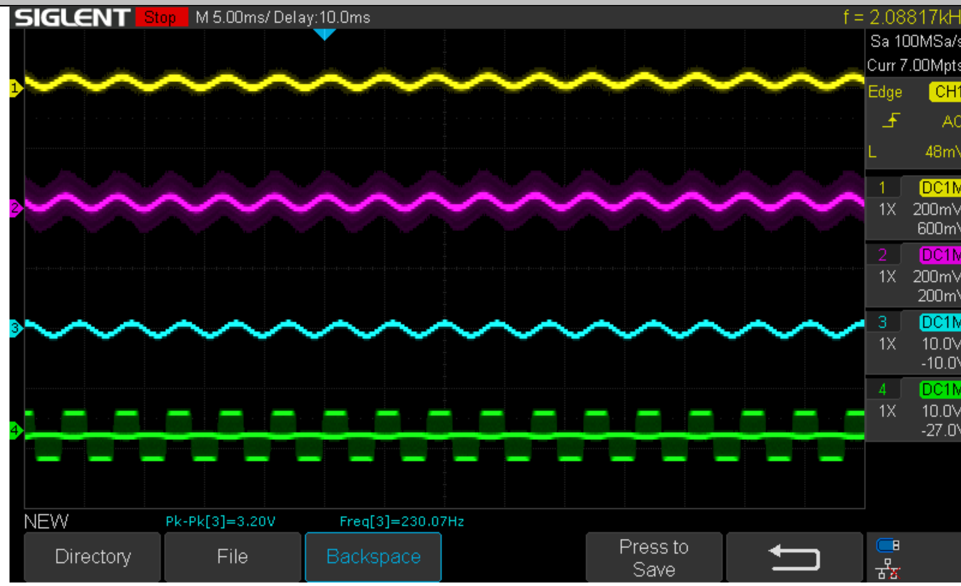
Claim 2	Accused Products
	  Photographs of test apparatus with electrical leads connected to motor coil drive traces of iPhone 14.

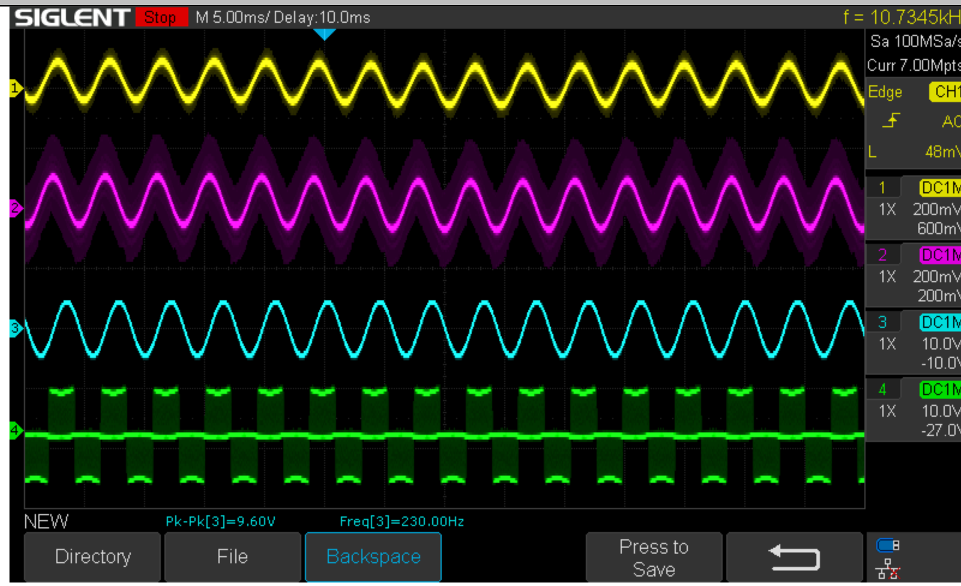
<table>
<tr><th>Claim 2</th><th>Accused Products</th></tr>
<tr><td></td><td>

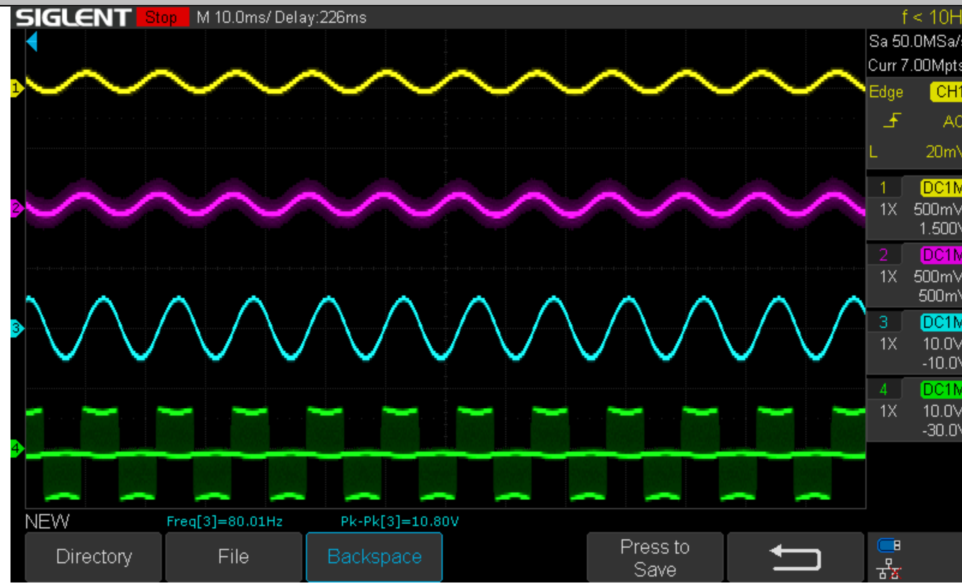
Photograph of test apparatus for measuring motor coil drive signal (from tapped connection) and actual motion (from attached vibration transducer) of iPhone 14. Note RC low-pass filter networks at top right with R = 220 Ω, C = 2.2 uF.</td></tr>
</table>

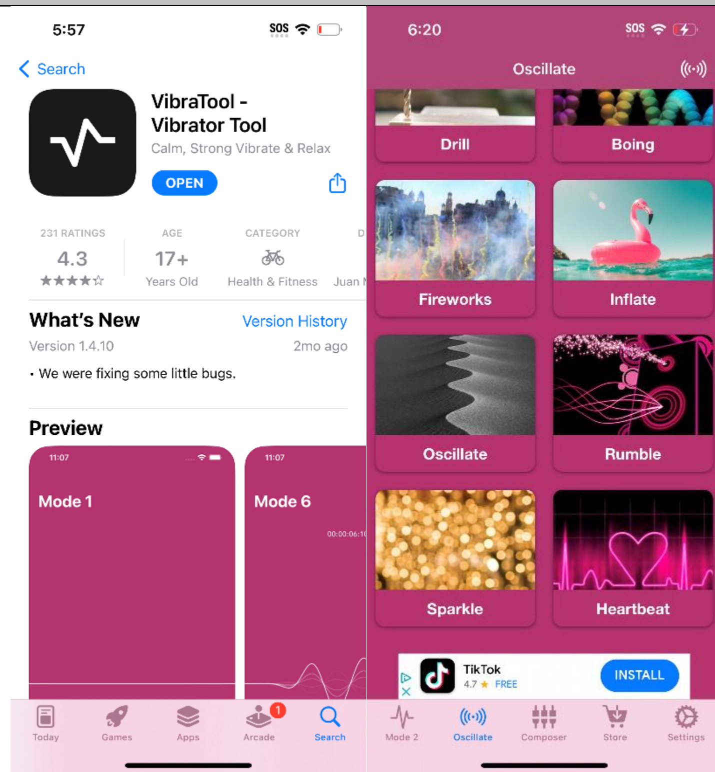
Claim 2	Accused Products
	 Oscilloscope trace showing, in green (CH4), the drive voltage applied by the iPhone 14 haptic controller(s); in this case, a pulse width modulated positive signal (modulation frequency 857 kHz) to drive the moveable component in one of two directions.

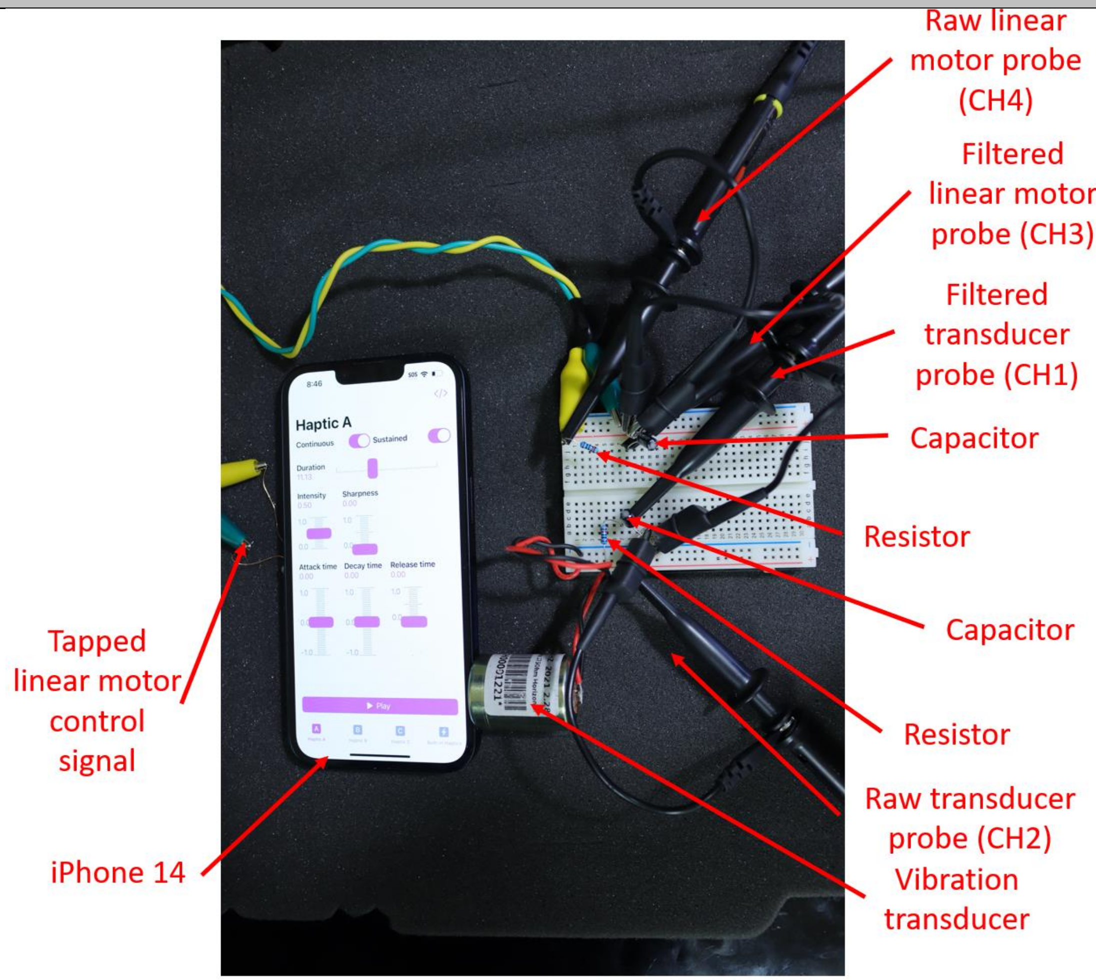
Claim 2	Accused Products
	 Oscilloscope trace showing, in green (CH4), the PWM-modulated drive voltage applied by the iPhone 14 haptic controller(s), with positive and negative voltages to drive the moveable component in a first and second direction. Channels 1 and 2 (yellow and purple) show the actual motion of the iPhone 14 resulting (pursuant to Newton's third law) from the motion of the moveable component.

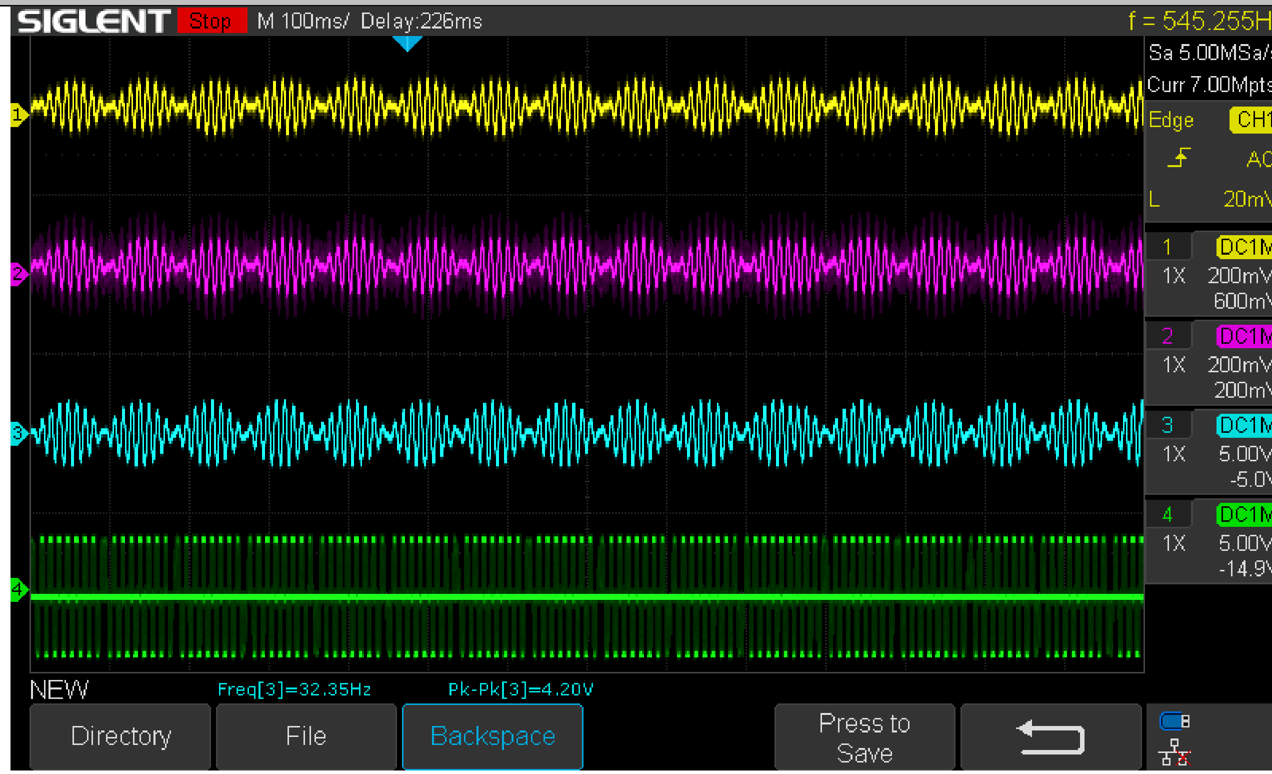
Claim 2	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 0.5, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 3.2 V (peak-to-peak, through RC low-pass filter).

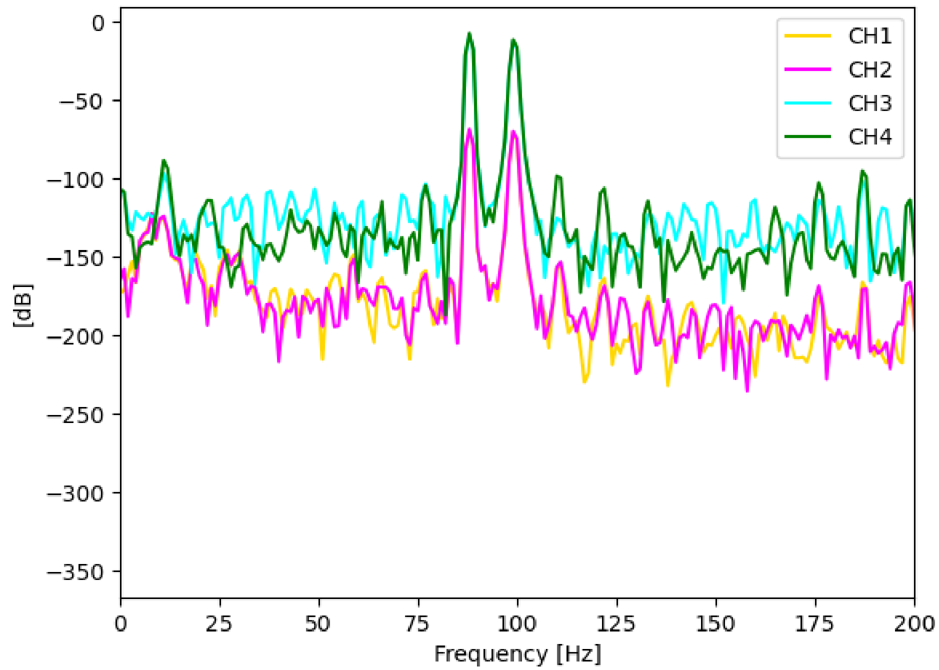
Claim 2	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 1, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 9.6V (peak-to-peak, through RC low-pass filter). Note that the externally measured vibration amplitude (yellow and purple traces, same scale as previous trace) is also significantly higher at intensity = 1 than 0.5.

Claim 2	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 1, sharpness = 0, with frequency of 80 Hz and motor drive amplitude of 10.8 V (peak-to-peak, through RC low-pass filter).
[2g] wherein the control component drives simultaneous oscillation of the moveable component at two or more frequencies to generate complex vibration modes.	In each of the Accused Products, the control component drives simultaneous oscillation of the moveable component at two or more frequencies to generate complex vibration modes. For example, the iPhone 14 is configured to drive the moveable component in a complex drive mode when used with software sold by Apple through its App Store. On information and belief, the Apple Watch Ultra supports the same or similar functionality. *See, e.g.*:

Claim 2	Accused Products
	 Screenshots of exemplary "VibraTool" software, sold by Apple through its App Store.

Claim 2	Accused Products
	 Photograph of test apparatus for measuring motor coil drive signal (from tapped connection) and actual motion (from attached vibration transducer) of iPhone 14. Note RC low-pass filter networks at top right with R = 220 Ω, C = 2.2 uF.

Claim 2	Accused Products
	 Oscilloscope trace showing “Oscillate” pattern from VibraTool, showing complex drive modes.

Claim 2	Accused Products
	 Spectrum analysis of "Oscillate" pattern from VibraTool, showing two or more peak frequencies (88 Hz and 99 Hz) of complex drive mode. For example, each Accused Product is configured to drive the moveable component in a complex drive mode when used with public APIs, as well as any proprietary Apple APIs. In the Apple Core Haptics API, one or more haptic patterns, which each includes a selected frequency, may be played simultaneously to produce two or more frequencies that generate complex vibration modes.

Claim 2	Accused Products
	(see below)

Play the AHAP

Assuming the engine has started, call the engine's method, `playPattern(from:)`, passing it the URL to playing the file.

```
// Tell the engine to play a pattern.
try engine?.playPattern(from: URL(fileURLWithPath: path))
```

This method of playback follows a *fire and forget* model; each haptic pattern plays until it reaches its end, then stops automatically.

Once the haptic starts playing, you can't stop it, and pressing other buttons layers those haptics on top of any existing haptic patterns in the middle of playback. This layering allows you to combine a haptic pattern with a more continuous intent, like the rumble of thunder, with a more impulse-driven haptic pattern built from transient taps, like the strike of lightning.

Core Haptics layers simultaneously playing haptics automatically. If you don't want the layering, your app should wait out the duration of the first haptic before starting subsequent haptic players.

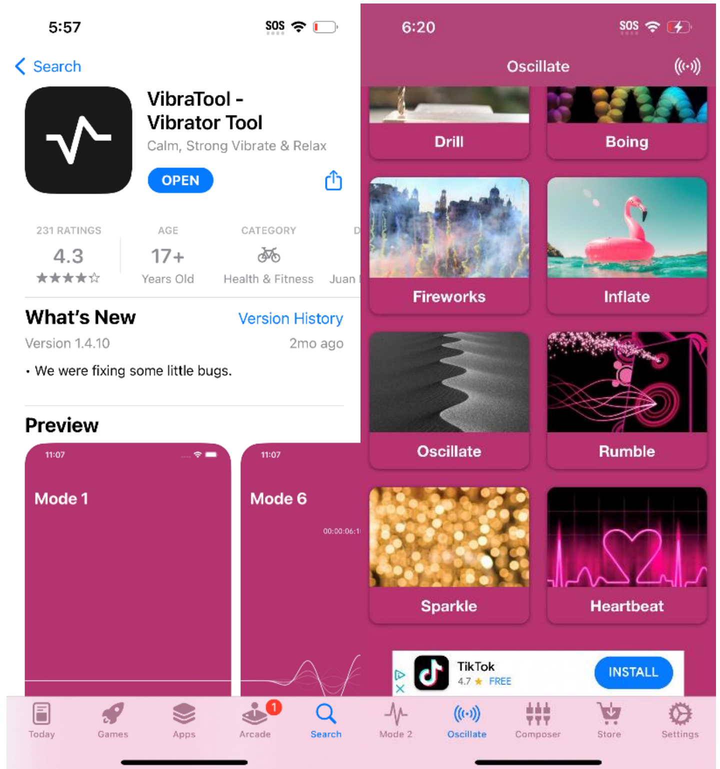
Note

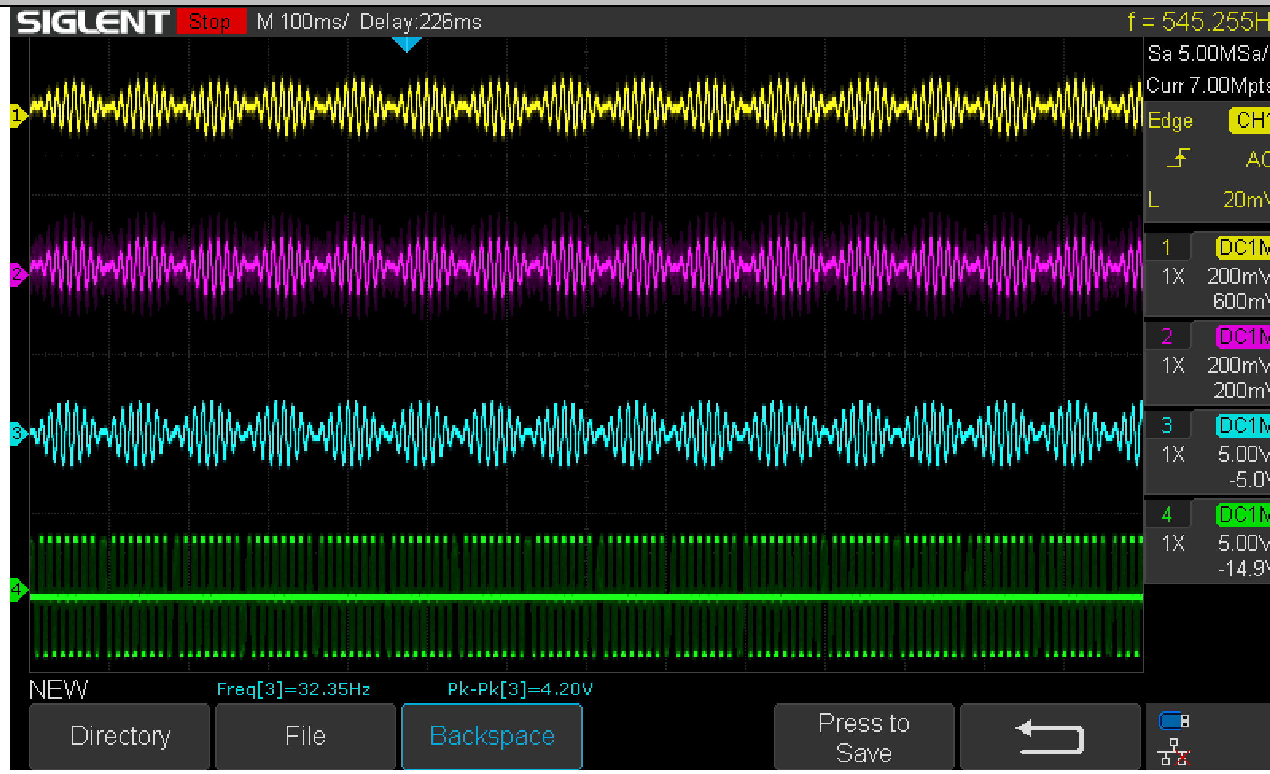
Haptic patterns don't blend like audio waveforms, and not all combinations produce a discernible effect. Playing two haptic events of the same type at the same time makes them hard to tell apart. Experiment with various combinations to ensure that the result feels right.

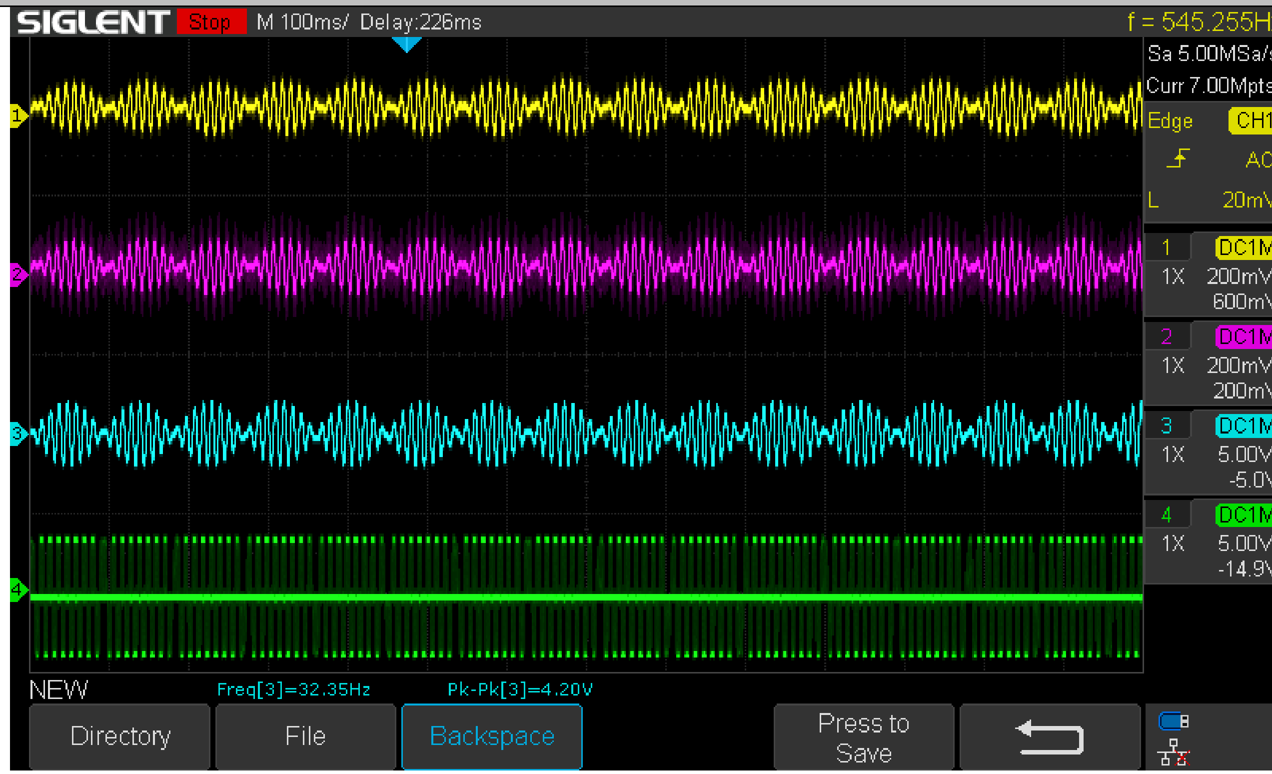
Documentation of the Apple Core Haptics API showing that more than one haptic pattern, which include a frequency, may be played simultaneously to produce two or more frequencies that generate complex vibration modes.
https://developer.apple.com/documentation/corehaptics/playing_a_custom_haptic_pattern_from_a_file

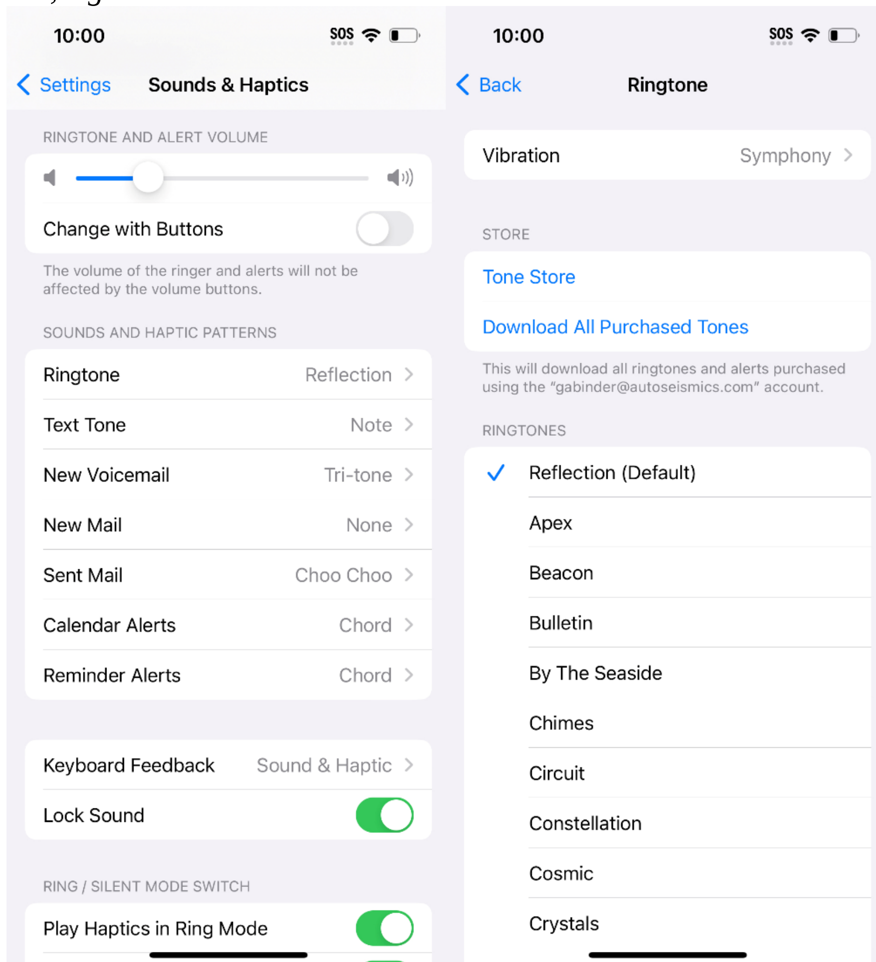
Claim 3

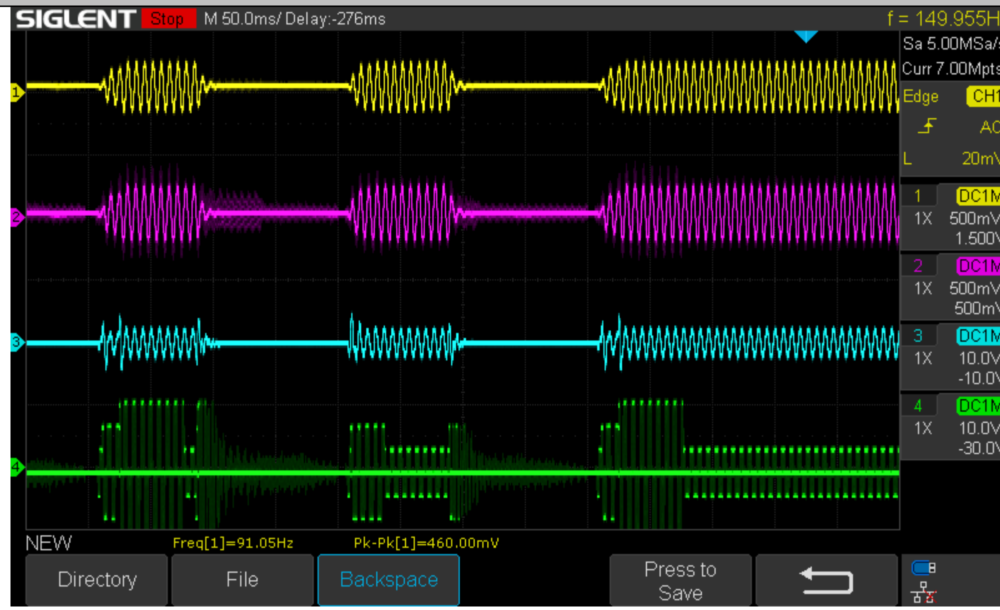
Claim 3	Accused Products
[3pre] The linear vibration module of claim 2 wherein the complex vibration modes include:	Each Accused Product comprises the linear vibration module of claim 2.
[3a] a primary oscillation frequency modulated by a modulating oscillation frequency;	In each Accused Product, the complex vibration modes include a primary oscillation frequency modulated by a modulating oscillation frequency. For example, as demonstrated by testing, the iPhone 14 is configured to drive the moveable component in a complex drive mode that includes a primary oscillation frequency modulated by a modulating oscillation frequency when used with public APIs, as well as any proprietary Apple APIs, interfaces, or software sold by Apple through its App Store such as VibraTool. On information and belief, the Apple Watch Ultra supports the same or similar functionality. *See supra* claim element [2g]. *See, e.g.*:

Claim 3	Accused Products
	 Screenshots of exemplary "VibraTool" software, sold by Apple through its App Store.

Claim 3	Accused Products
	 Oscilloscope trace from the testing apparatus showing “Oscillate” pattern from VibraTool, showing a primary oscillation frequency modulated by a lower modulating oscillation frequency.
[3b] a beat frequency; and	In each Accused Product, the complex vibration modes include a beat frequency. For example, as demonstrated by testing, the iPhone 14 is configured to drive the moveable component in a complex drive mode that includes a beat frequency when used with public APIs, as well as any proprietary Apple APIs, interfaces, or software sold by Apple through its App Store such as VibraTool. *See supra* claim element [2g]. *See, e.g.*:

Claim 3	Accused Products
	 Oscilloscope trace from the testing apparatus showing "Oscillate" pattern from VibraTool, showing a beat frequency.
[3c] an aperiodic oscillation waveform.	In each Accused Product, the complex vibration modes include an aperiodic oscillation waveform. For example, as demonstrated by testing, the iPhone 14 is configured to drive the moveable component in a complex drive mode that includes an aperiodic oscillation waveform when used with software sold by Apple through its App Store, public APIs, as well as any proprietary Apple APIs, and interfaces such as configuring the "Reflection" ringtone in the "Sounds and Haptics" interface. *See supra* claim element [2g].

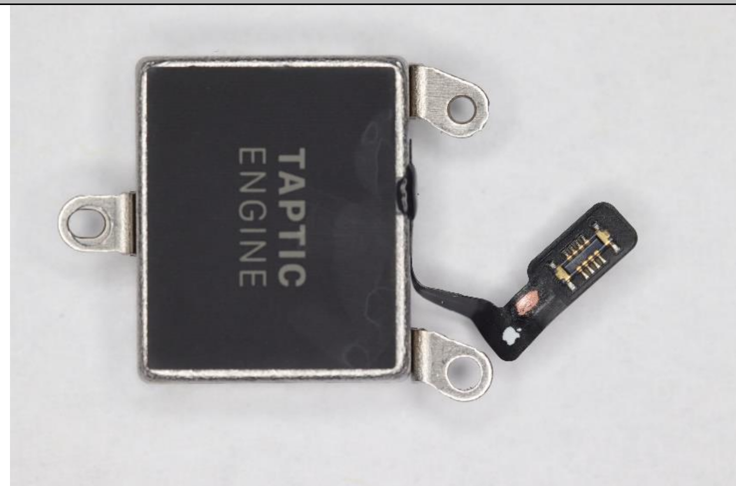
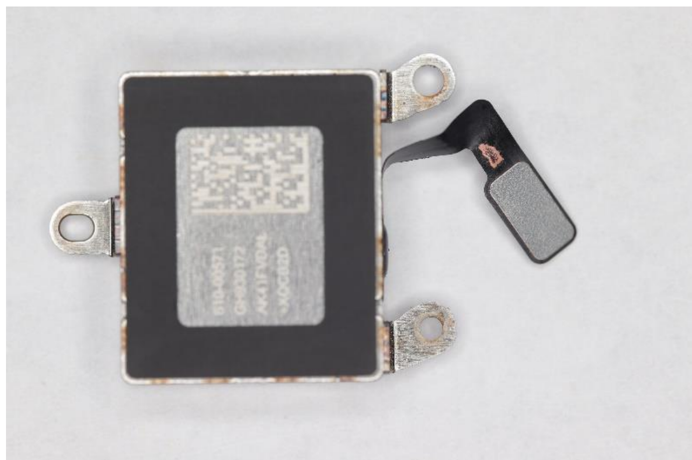
Claim 3	Accused Products
	See, e.g.:  Screenshots of "Sounds & Haptics" and "Ringtone" settings from the iPhone 14, which allow selection of aperiodic oscillation waveforms such as "Reflection".

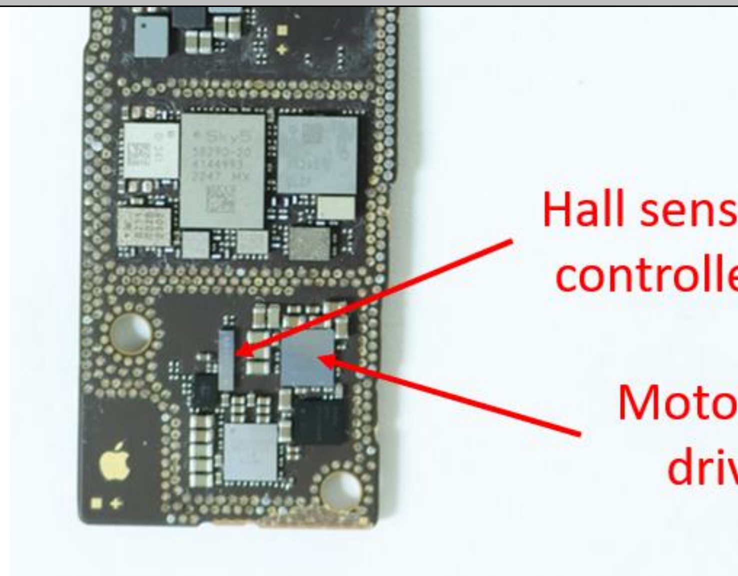
Claim 3	Accused Products
	 Oscilloscope trace from the testing apparatus showing the “Reflection” ringtone from the Apple iPhone 14, showing an aperiodic oscillation waveform.

Claim 4

Claim 4	Accused Products
[4pre] A linear vibration module comprising:	To the extent the preamble is limiting, each Accused Product includes or constitutes a linear vibration module. For example, each of the Apple iPhone 14 and the Apple Watch Ultra contain a linear actuator (“Taptic Engine”), haptic controller(s), and associated circuitry, as described in connection with the claim limitations below. *See, e.g.*:

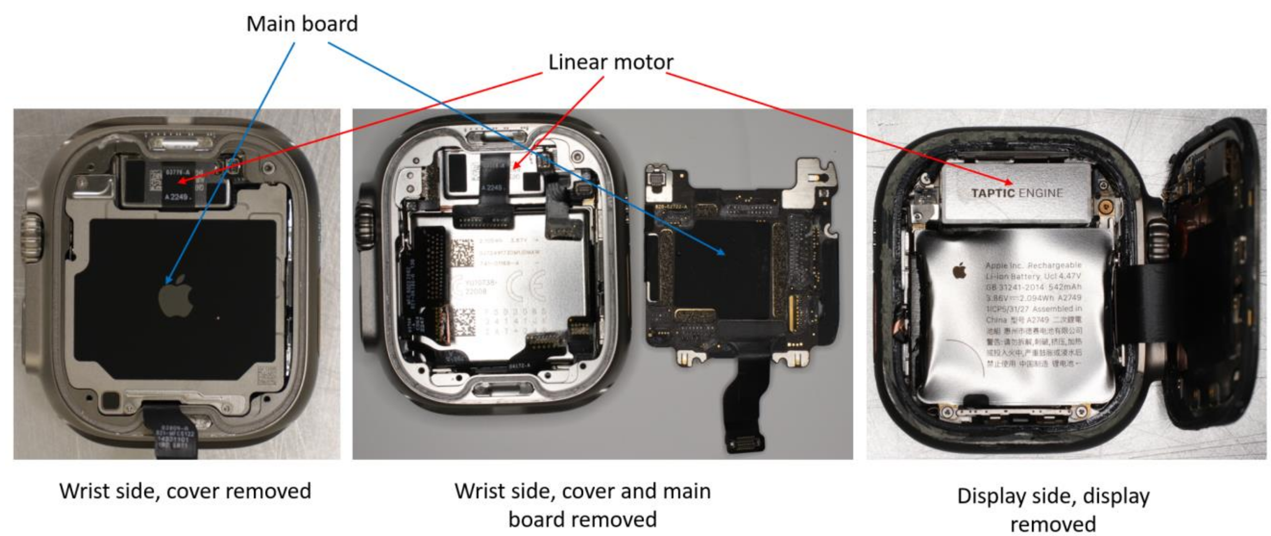
	 Photograph of iPhone 14 with rear cover removed, with A15 Bionic SoC at center right and Taptic Engine at bottom left.

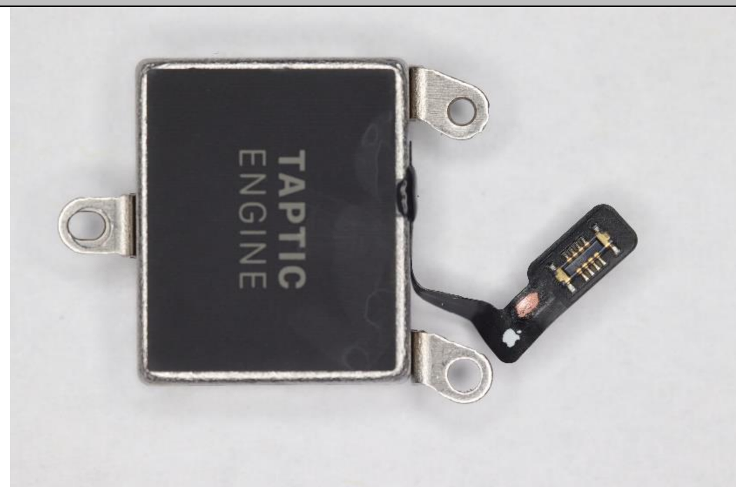
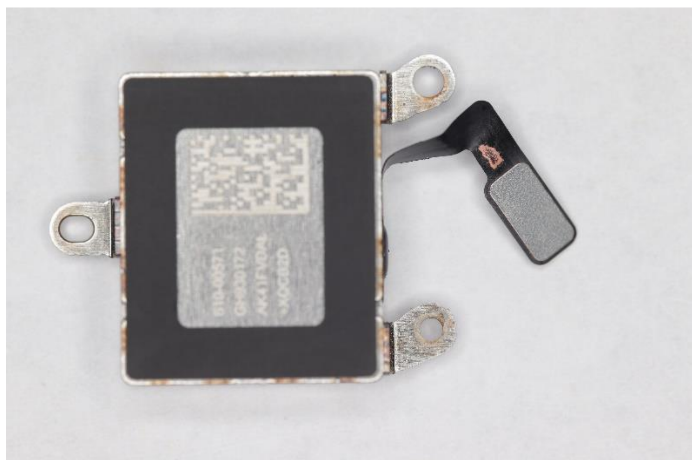
Claim 4	Accused Products
	 Photograph of Taptic Engine housing from the iPhone 14.  Photograph of Taptic Engine housing from the iPhone 14.

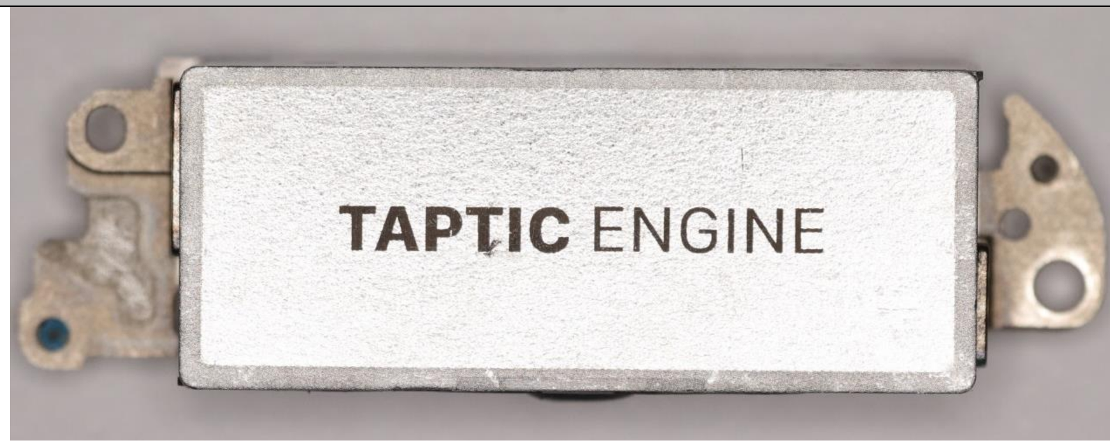
Claim 4	Accused Products
	 Photograph of Hall sensor controller and motor control driver from the iPhone 14.

Claim 4	Accused Products
	The following devices contain a Taptic Engine: • iPhone 14 Pro Max • iPhone 14 Pro • iPhone 14 Plus • iPhone 14 • iPhone SE (3rd generation) • iPhone 13 Pro Max • iPhone 13 Pro • iPhone 13 • iPhone 13 mini • iPhone 12 Pro Max • iPhone 12 Pro • iPhone 12 • iPhone 12 mini • iPhone SE (2nd generation) • iPhone 11 Pro Max • iPhone 11 Pro • iPhone 11 • iPhone XS Max • iPhone XS • iPhone XR • iPhone X • iPhone 8 Plus • iPhone 8 • iPhone 7 Plus • iPhone 7 • iPhone 6s Plus • iPhone 6s Accessory Design Guidelines for Apple Devices, Release R20, *available at* https://developer.apple.com/accessories/Accessory-Design-Guidelines.pdf

Claim 4	Accused Products
	 Photograph of Apple Watch Ultra.

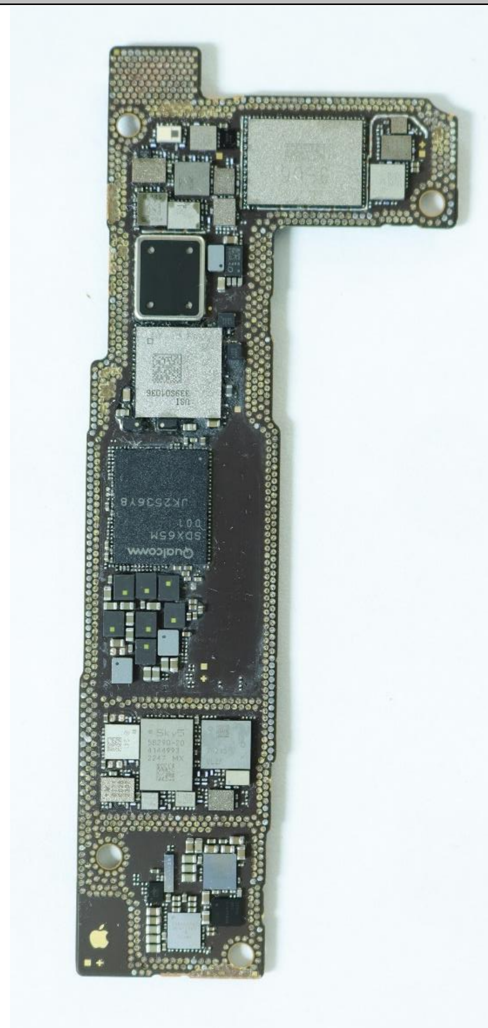
Claim 4	Accused Products
	 Annotated photographs of Apple Watch Ultra showing linear actuator (Taptic engine) and main system board.
[4a] a housing;	Each Accused Product comprises a housing. For example, the Taptic Engine in each of the iPhone 14 and Apple Watch Ultra has a metal structure that is soldered together to form a housing surrounding the moveable component and coils. *See, e.g.*:

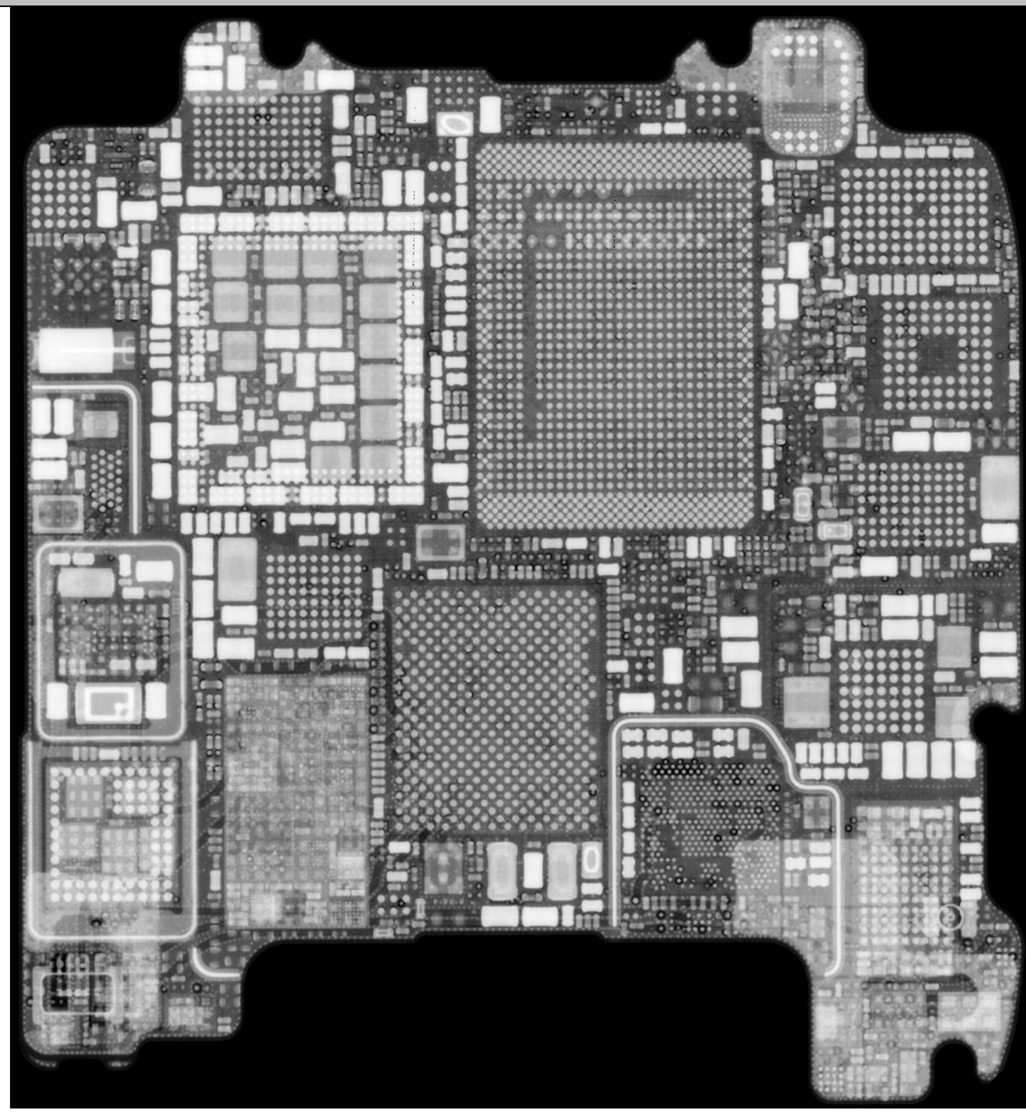
Claim 4	Accused Products
	 Photograph of Taptic Engine housing from the iPhone 14.  Photograph of Taptic Engine housing from the iPhone 14.

Claim 4	Accused Products
	 Photograph of Taptic Engine housing from Apple Watch Ultra.
[4b] a moveable component;	Each Accused Product comprises a moveable component. For example, the Taptic Engine in each of the iPhone 14 and Apple Watch Ultra includes a movable component comprising permanent magnet(s) and a mass. *See, e.g.*:

Claim 4	Accused Products
	 Photograph of moveable component (at right, connected to housing with springs) from the iPhone 14.  Photograph of moveable component from Apple Watch Ultra.

Claim 4	Accused Products
[4c] a power supply;	Each Accused Product comprises a power supply. For example, the linear motor coil driver (described below) in each of the iPhone 14 and Apple Watch Ultra receives power from one or more voltage regulators on or near the Accused Product's system board. *See*, *e.g.*:

Claim 4	Accused Products
	 Photograph of iPhone 14 system board.

Claim 4	Accused Products
	 X-ray image of Apple Watch Ultra system board.

Claim 4	Accused Products
	See also claim elements below.
[4d] user-input features;	Each Accused Product comprises user-input features. For example, each of the iPhone 14 and Apple Watch Ultra comprises a touchscreen, buttons, and other user-input features. *See, e.g.*:

Claim 4	Accused Products
	 Photograph of iPhone 14 touchscreen, buttons, and switch, *available at* https://www.apple.com/iphone-14/.

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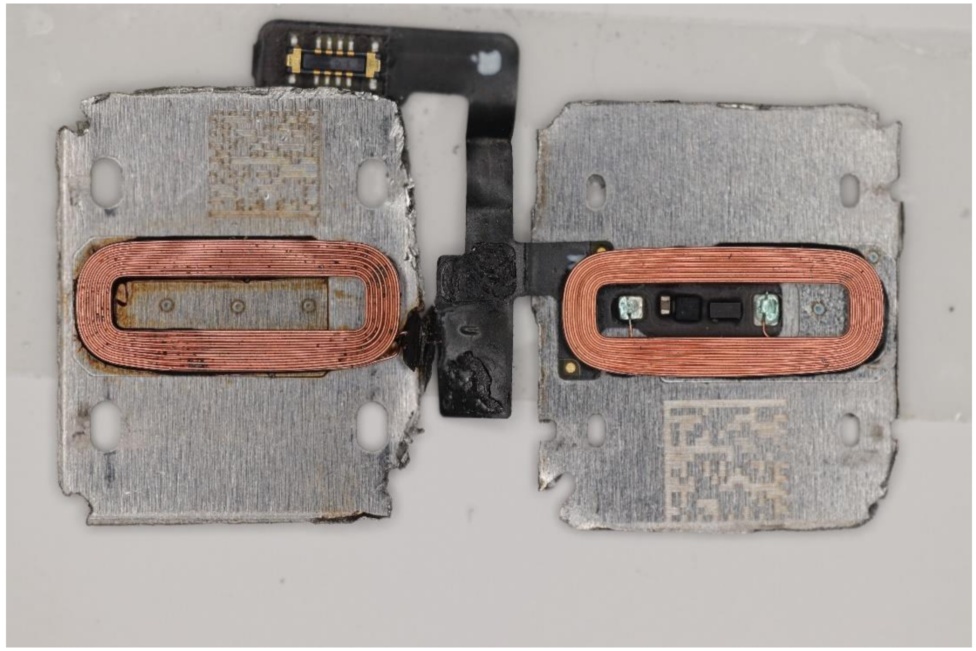
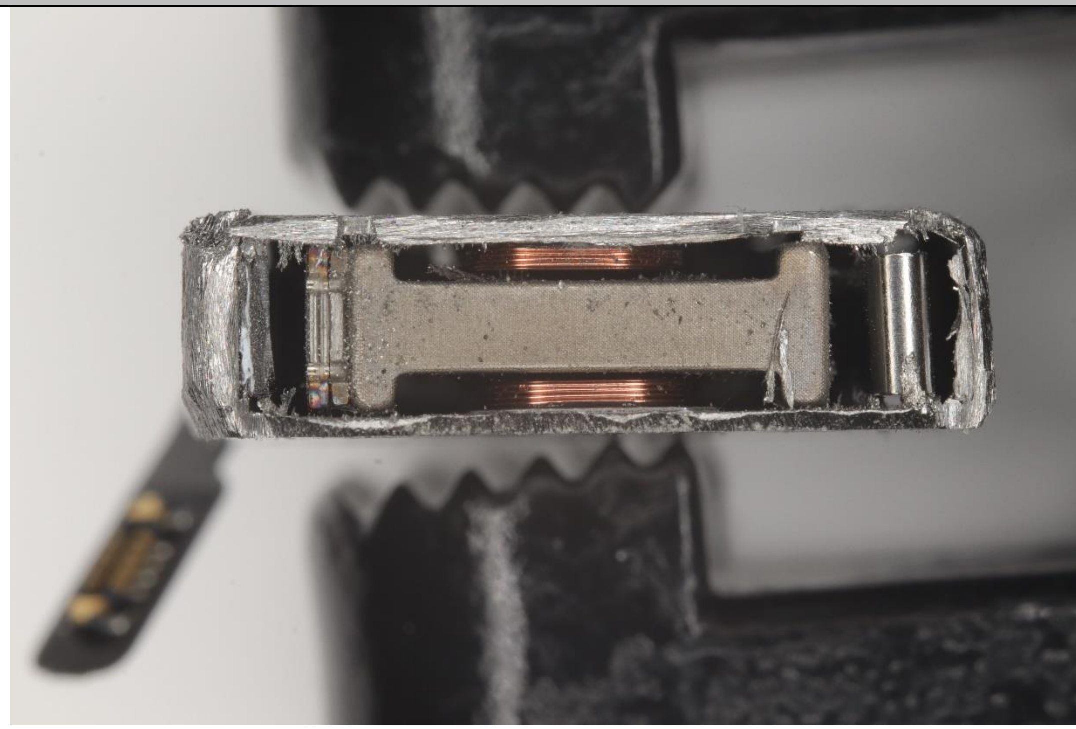
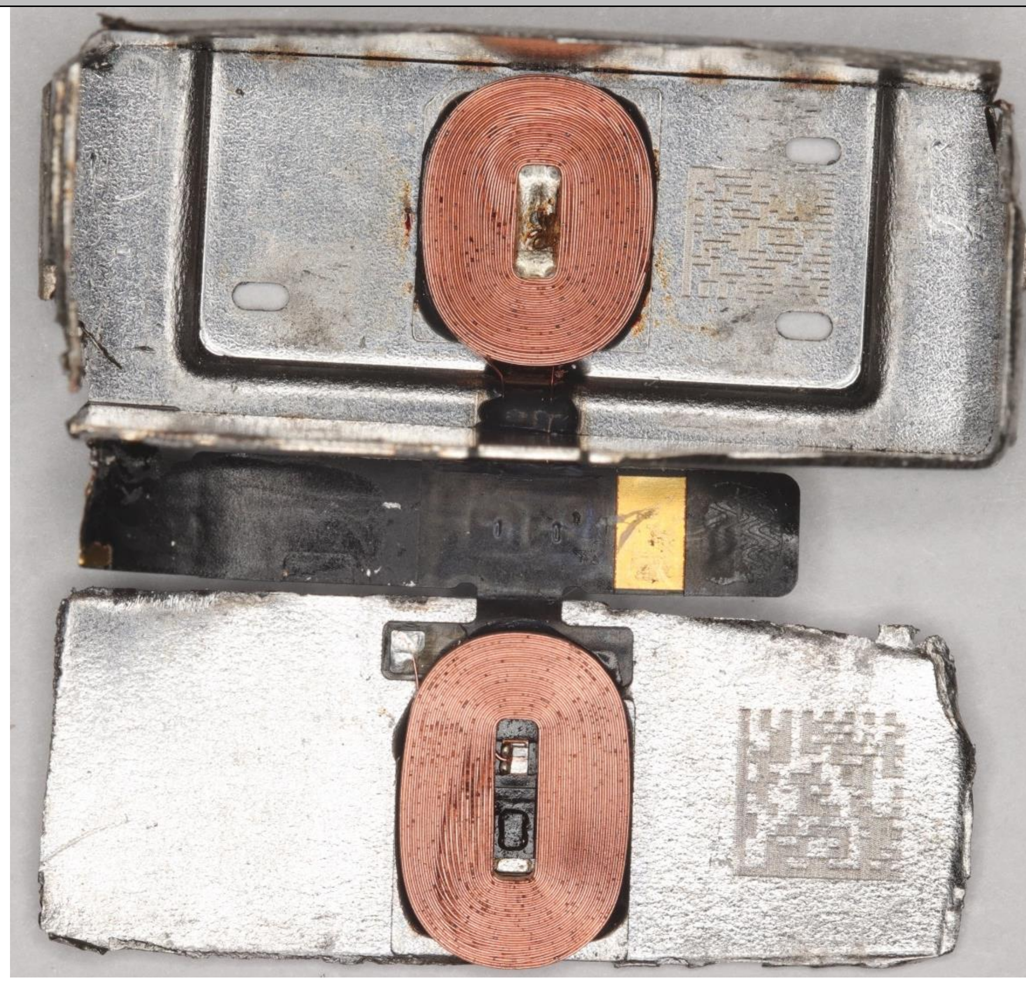
Claim 4	Accused Products
	 Photograph of Apple Watch Ultra touchscreen, dial, and buttons.
[4e] a driving component that drives the moveable component in each of two opposite directions within the housing; and	Each Accused Product comprises a driving component that drives the moveable component in each of two opposite directions within the housing. For example, the Taptic Engine includes one or more coils to form electromagnetic fields for driving the moveable component in two directions.

Claim 4	Accused Products
	See, e.g.:  Photograph of driving coils within disassembled Taptic Engine from the iPhone 14. The two visible coils would be positioned above and below the moveable component when assembled.

Claim 4	Accused Products
	 Photograph showing one driving coil (at right) within disassembled Taptic Engine from the iPhone 14, with moveable component in place at left. The moveable component travels up and down from this perspective.

Claim 4	Accused Products
	 Photograph of internals of Taptic Engine from the iPhone 14, showing drive coils (top and bottom) surrounding the moveable component. The moveable component travels left and right from this perspective.

Claim 4	Accused Products
	 Photograph of drive coils within disassembled Taptic Engine from Apple Watch Ultra. The two visible coils would be positioned above and below the movable component when assembled.
[4f] a control component that controls supply of power from the power supply to the driving	Each Accused Product comprises a control component that controls supply of power from the power supply to the driving component to cause the moveable component to oscillate at a

Claim 4	Accused Products
component to cause the moveable component to oscillate at a frequency and an amplitude that are independently specified by user input received from the user-input features.	frequency and an amplitude that are independently specified by user input received from the user-input features. For example, each Accused Product includes a main system processor, a linear motor coil driver, and a Hall sensor controller, which alone or in combination form a control component as claimed to drive the coils and thus move the magnetic mass in a linear oscillating motion, as described below. This control component can drive the moveable component at independently specified frequencies and amplitude, as demonstrated by public APIs and by testing. The public APIs, as well as any proprietary Apple APIs and interfaces, independently specify intensity and sharpness (exemplary stored values) that directly and/or indirectly control the frequency and amplitude of the oscillation. These frequencies and amplitudes are independently specified by user input received from the user-input features, for example via Apple's "Sounds & Haptics" controls, via touch and/or force sensors (keyboard and button feedback), or via third-party applications. *See, e.g.*:

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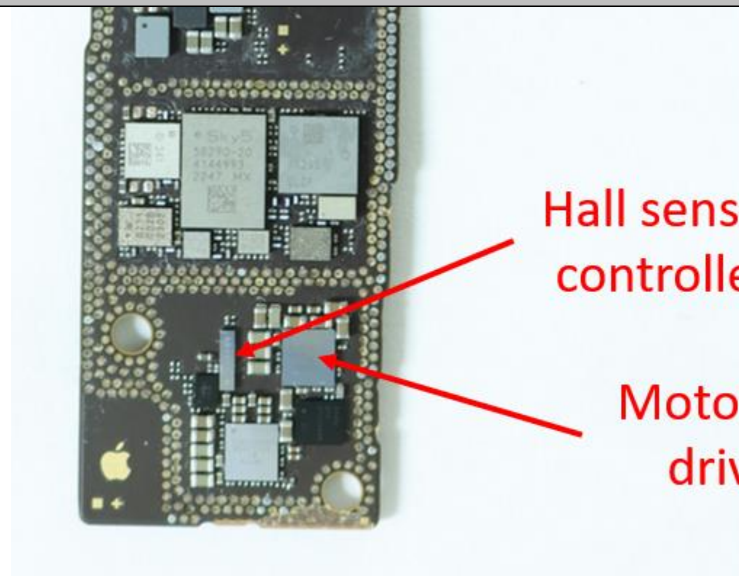
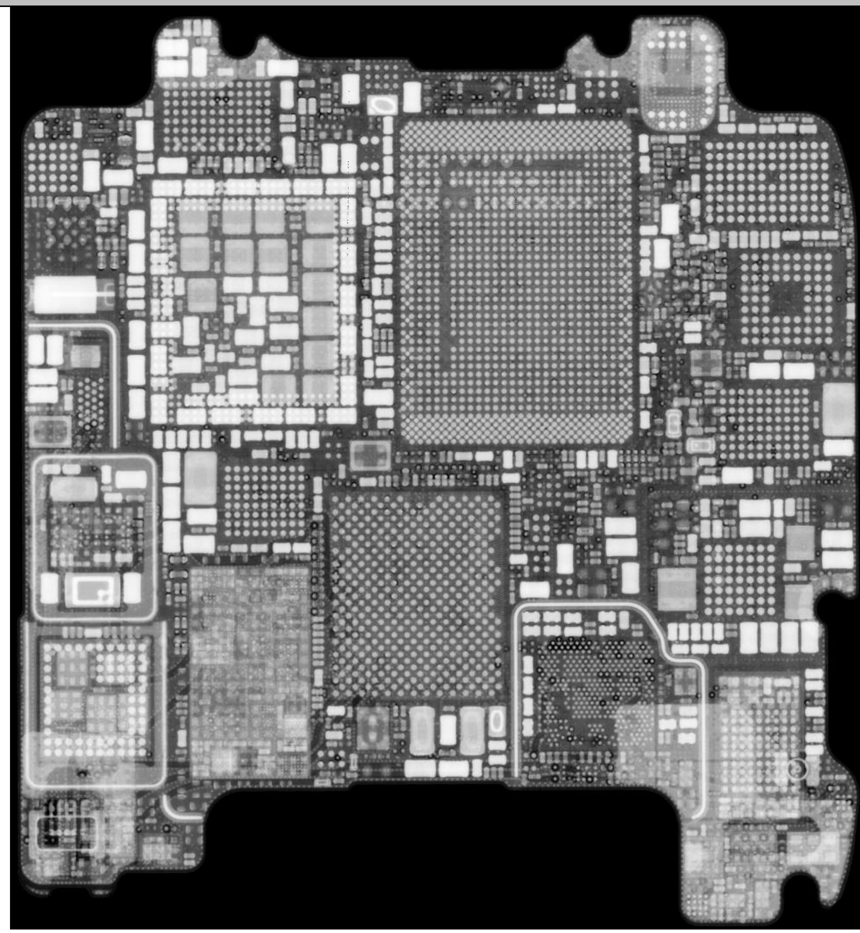
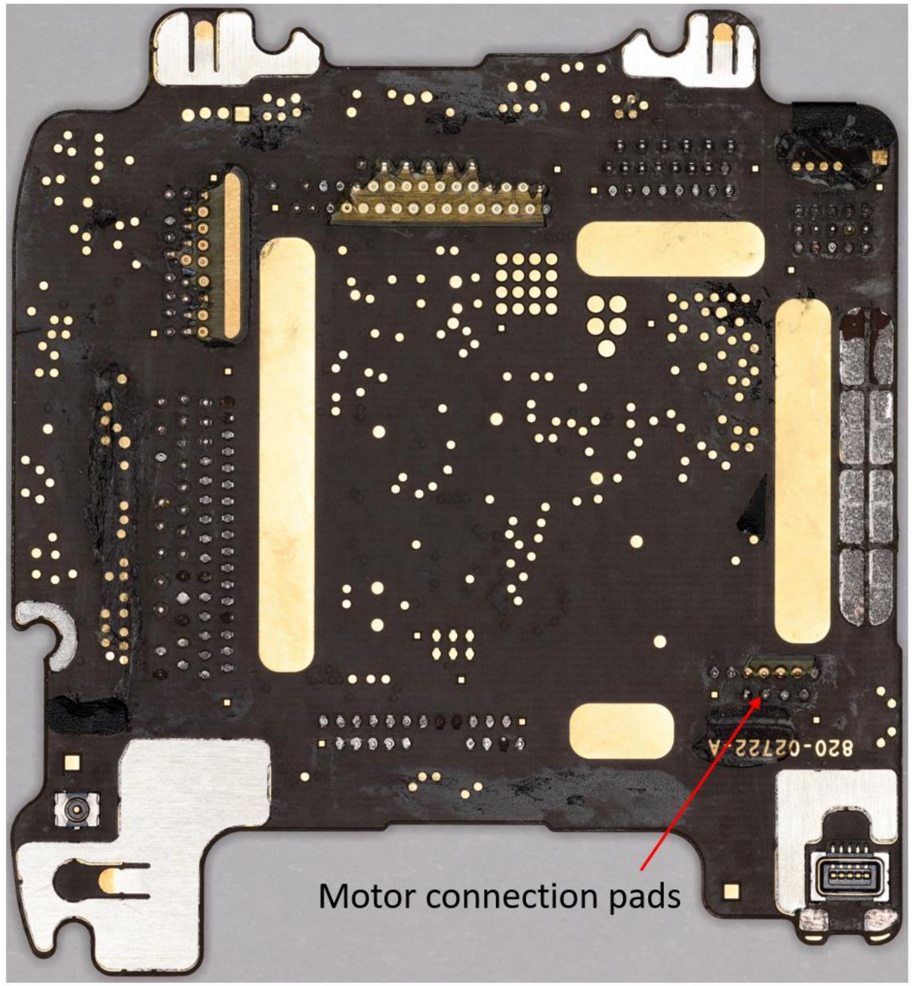
Claim 4	Accused Products
	 Photographs showing iPhone 14 system board with A15 Bionic processor.

Claim 4	Accused Products
	 Annotated photograph of Hall sensor controller and motor coil driver from the iPhone 14.

Claim 4	Accused Products
	 X-ray image of Apple Watch Ultra system board.

Claim 4	Accused Products
	 Annotated photograph of partially disassembled Apple Watch Ultra system board, showing connection points for haptic motor.

<table>
<tr><th>Claim 4</th><th>Accused Products</th></tr>
<tr><td></td><td>

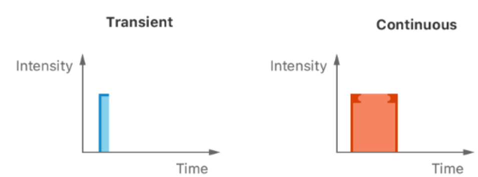
Declaration

```
class CHHapticEvent : NSObject
```

Overview

Each event represents a single haptic or audio signal. The event `type` determines whether it's audio or haptic. Use a `CHHapticPatternPlayer` object obtained through `CHHapticEngine` factory methods to play events. Haptic events can be transient or continuous. Transient haptic patterns are brief impulses that occur at a specific point in time, such as the haptic feedback you feel from swiping through a picker or toggling a switch. Continuous haptic patterns, like the vibration from a ringtone, take the form of lengthier feedback over a period of time.

In the following graphic, transient haptic patterns on the left trigger at a specific time with a specific intensity. Continuous haptic patterns on the right sustain the haptic feedback over a specific duration of time, such as three seconds.



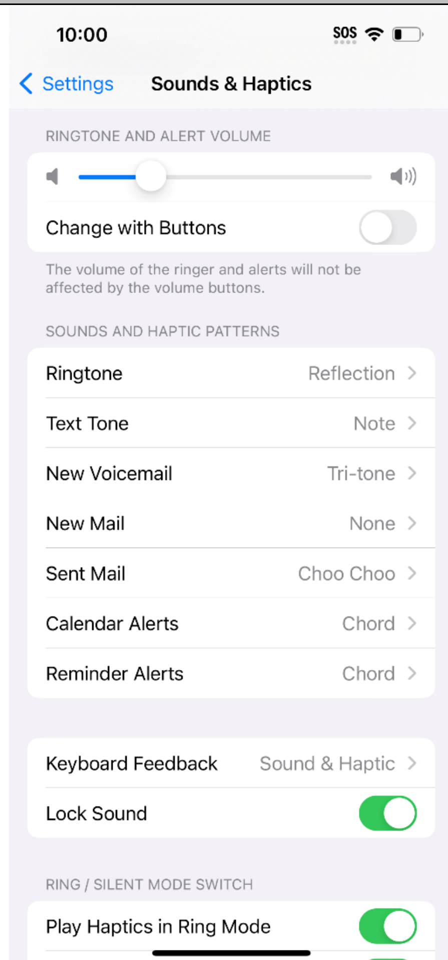
Specify when an event begins by setting its `relativeTime` property. Specify the length of the event by setting its `duration` property. Set optional parameters to customize event properties. For example, you can specify the intensity of a haptic event by creating an event parameter with ID `hapticIntensity`.

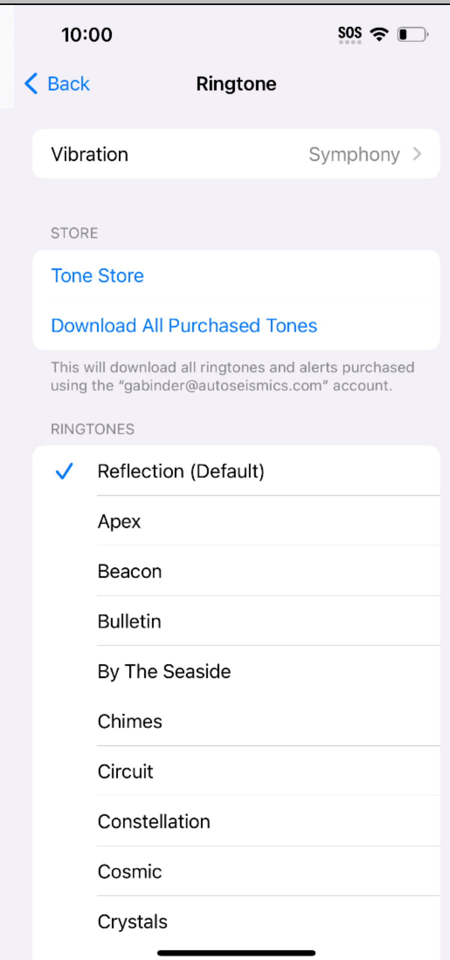
Documentation of CHHapticEvent object, https://developer.apple.com/documentation/corehaptics/chhapticevent

</td></tr>
</table>

Claim 4	Accused Products
	Haptic Event Parameter IDs `static let hapticIntensity: CHHapticEvent.ParameterID` The strength of a haptic event. `static let hapticSharpness: CHHapticEvent.ParameterID` The feel of a haptic event. `static let attackTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins increasing. `static let decayTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins decreasing. `static let releaseTime: CHHapticEvent.ParameterID` The time at which to begin fading the haptic pattern. `static let sustained: CHHapticEvent.ParameterID` A Boolean value that indicates whether to sustain a haptic event for its specified duration. Documentation of haptic event parameters, https://developer.apple.com/documentation/corehaptics/chhapticevent/parameterid;

Claim 4	Accused Products
	4. The Continuous "Sharpness" parameter maps to frequency. For continuous events, we found that the sharpness parameter maps to frequency. On an iPhone 8, the lower sharpness boundary (0.0) of the Taptic Engine is 80 Hz; the higher sharpness boundary (1.0) is 230 Hz. This provides an effective range of 150 Hz, or roughly 1.5 octaves — which is impressive for a mobile phone released in 2017. Other phones or devices supporting Core Haptics might have different upper or lower boundaries since the frequency range is tied to the capabilities of the hardware actuator. https://medium.com/lofelt/10-things-you-should-know-about-designing-for-apple-core-haptics-9219fdebdcaa.

<table>
<tr><th>Claim 4</th><th>Accused Products</th></tr>
<tr><td></td><td>




Screenshots of “Sounds & Haptics” and “Ringtone” settings, which allow selection of frequency and/or amplitude.
</td></tr>
</table>

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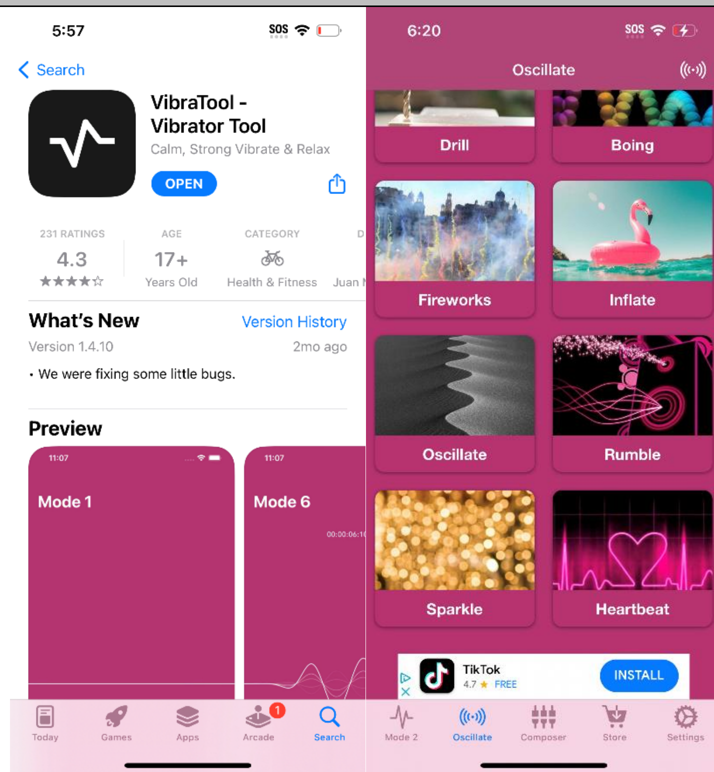
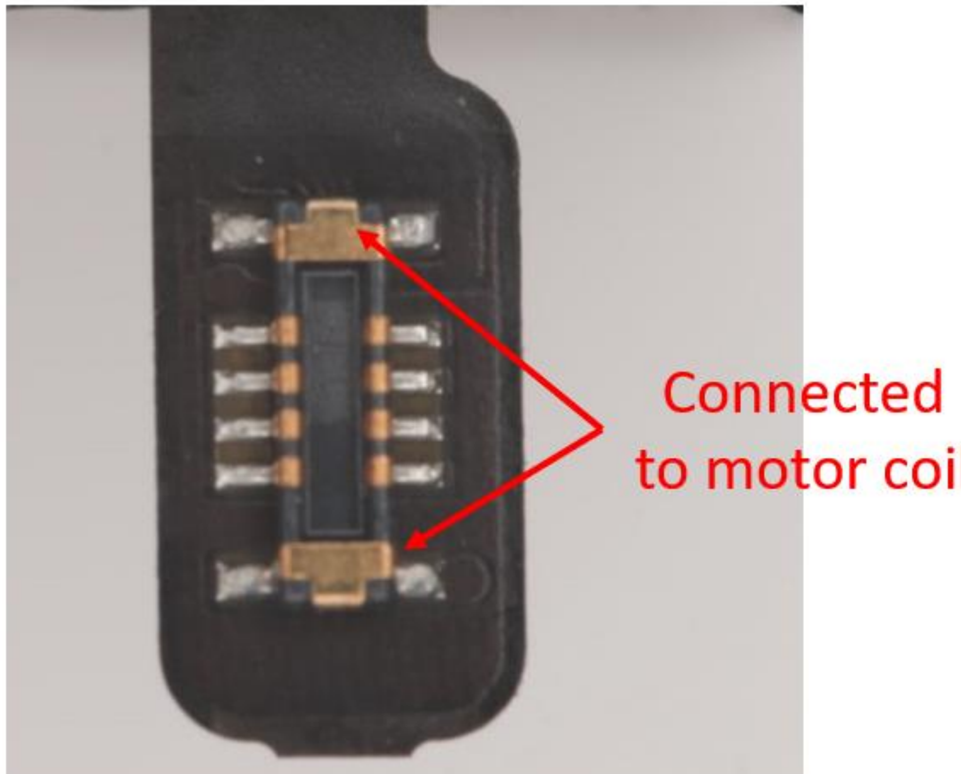
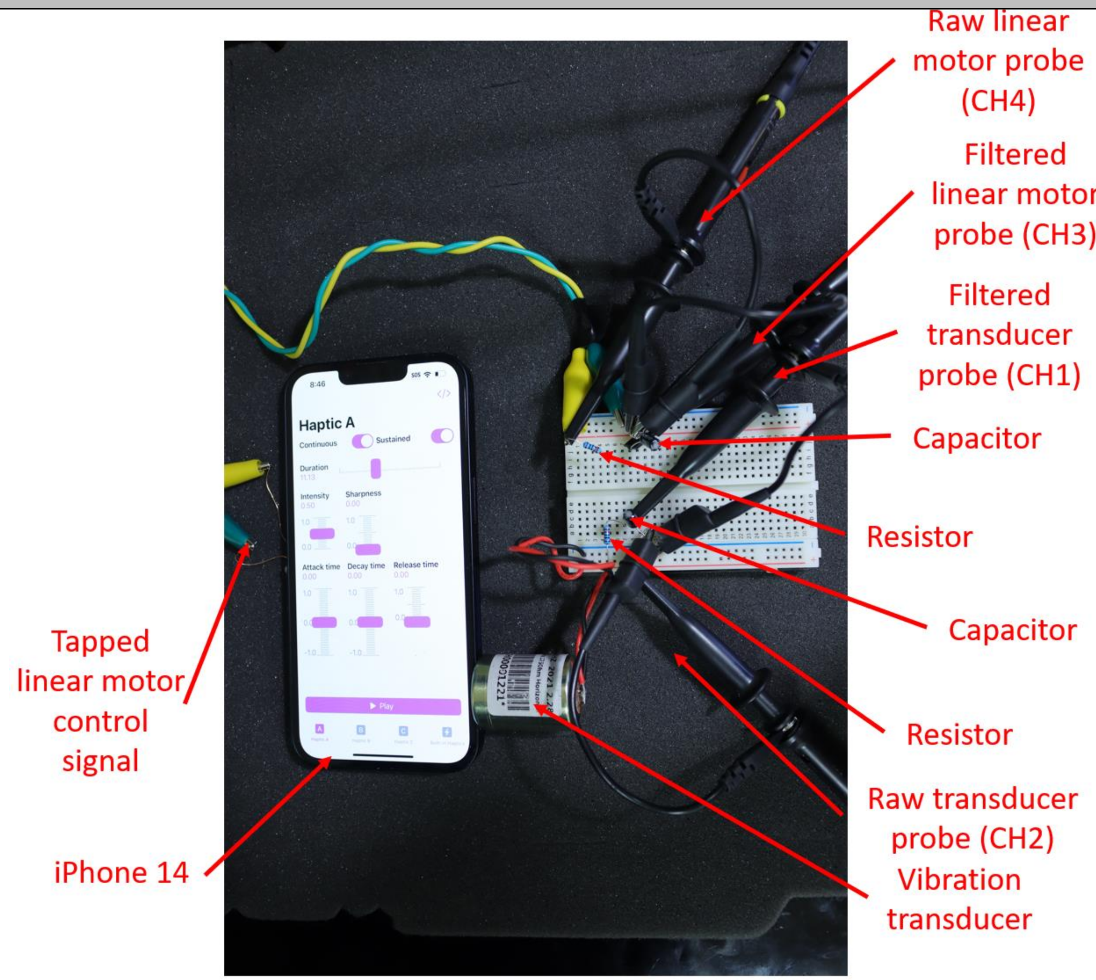
Claim 4	Accused Products
	 Screenshots of exemplary “Haptics Studio” software, sold by Apple through its App Store, with independent user-input controls for frequency (“sharpness”) and amplitude (“intensity”).

Claim 4	Accused Products
	 Screenshots of exemplary "VibraTool" software, sold by Apple through its App Store, with user-input controls for selecting frequency and amplitude.

Claim 4	Accused Products
	 Annotated photograph of Taptic Engine connector from the iPhone 14 showing positive and negative coil driving pins.

Claim 4	Accused Products
	 Photographs of test apparatus with electrical leads connected to motor coil drive traces of iPhone 14.

Claim 4	Accused Products
	 Photograph of test apparatus for measuring motor coil drive signal (from tapped connection) and actual motion (from attached vibration transducer) of iPhone 14. Note RC low-pass filter networks at top right with R = 220 Ω, C = 2.2 uF.

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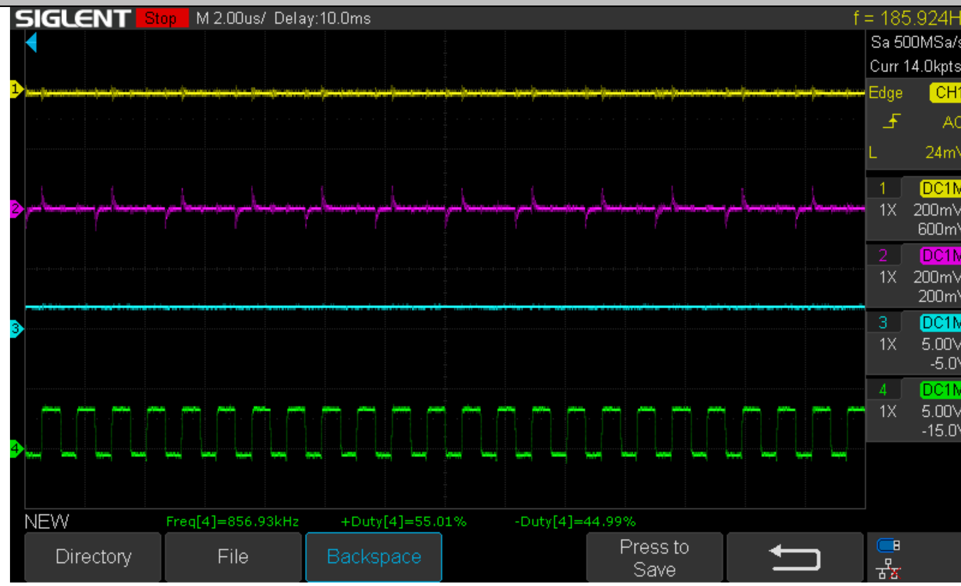
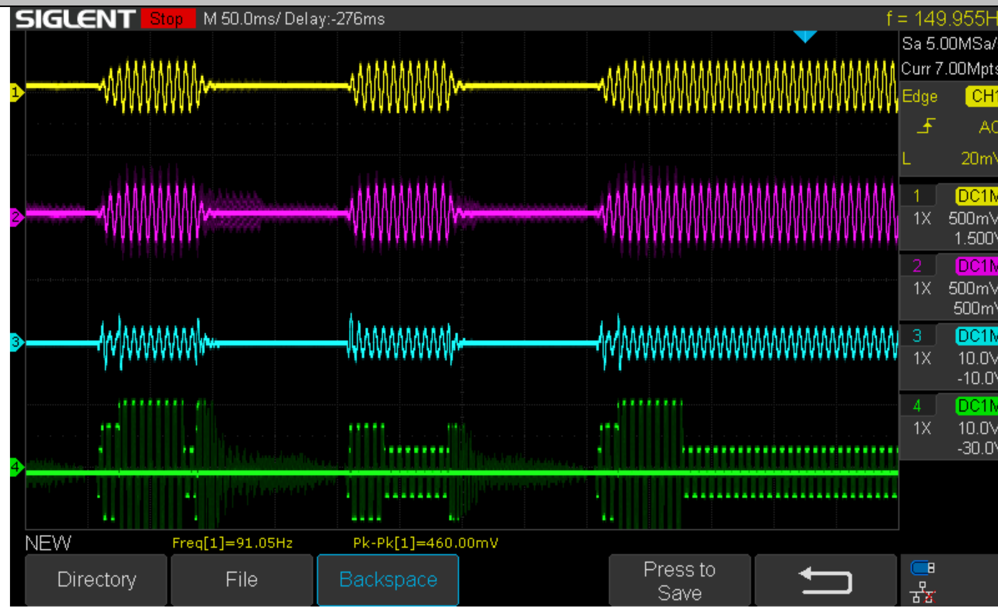
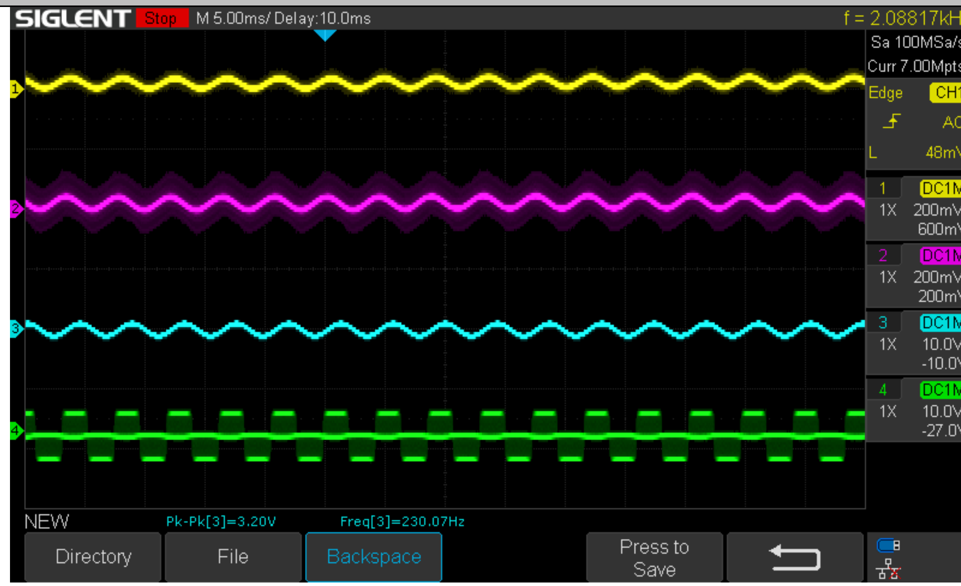
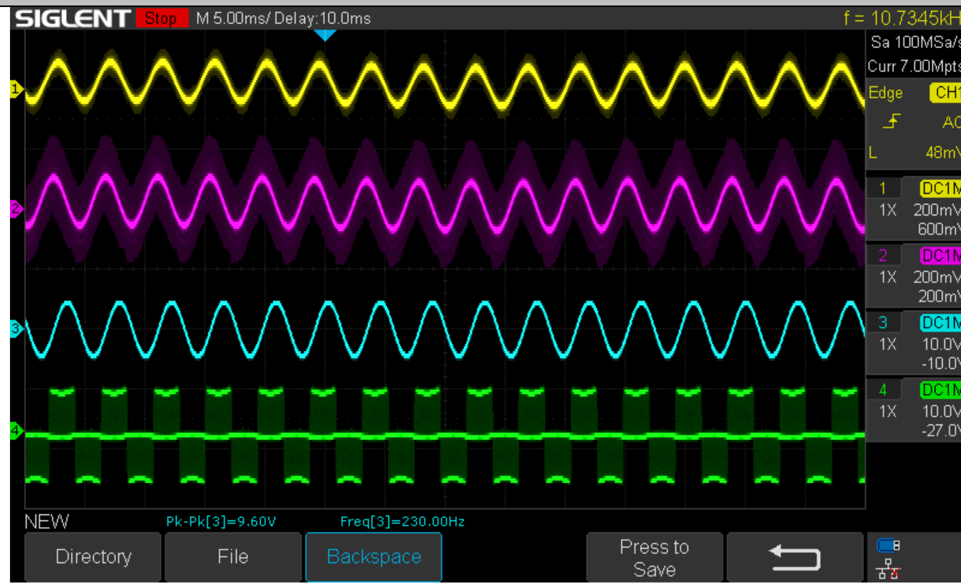
<table>
<tr><th>Claim 4</th><th>Accused Products</th></tr>
<tr><td></td><td>


Oscilloscope trace showing, in green (CH4), the drive voltage applied by the iPhone 14 haptic controller(s); in this case, a pulse width modulated positive signal (modulation frequency 857 kHz) to drive the moveable component in one of two directions.
</td></tr>
</table>

Claim 4	Accused Products
	 Oscilloscope trace showing, in green (CH4), the PWM-modulated drive voltage applied by the iPhone 14 haptic controller(s), with positive and negative voltages to drive the moveable component in a first and second direction. Channels 1 and 2 (yellow and purple) show the actual motion of the iPhone 14 resulting (pursuant to Newton's third law) from the motion of the moveable component.

Claim 4	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 0.5, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 3.2 V (peak-to-peak, through RC low-pass filter).

Claim 4	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 1, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 9.6V (peak-to-peak, through RC low-pass filter). Note that the externally measured vibration amplitude (yellow and purple traces, same scale as previous trace) is also significantly higher at intensity = 1 than 0.5.

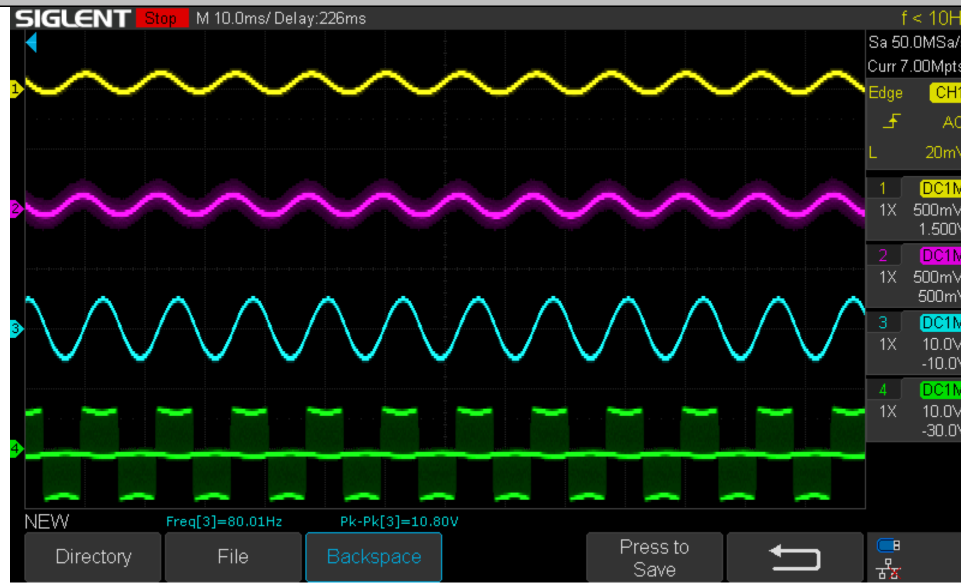
Claim 4	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 1, sharpness = 0, with frequency of 80 Hz and motor drive amplitude of 10.8 V (peak-to-peak, through RC low-pass filter). To the extent Defendant contends and/or shows that this limitation is not literally present in the Accused Products, it is present under the doctrine of equivalents. There are no substantial differences between the accused functionality and the claimed invention. For example, each Accused Product contains one or more microprocessors that coordinate(s) operation of the Taptic Engine, which performs substantially the same function (*e.g.*, controlling supply of power from the power supply to the driving component to cause the moveable component to oscillate at a frequency and an amplitude that are independently specified by user input received from the user-input features) in substantially the same way (*e.g.*, using digital logic) to achieve substantially the same result (*e.g.*, producing oscillations at a desired frequency and amplitude).

Exhibit 4

U.S. Patent No. 9,941,830 ("'830 Patent")

Accused Instrumentalities

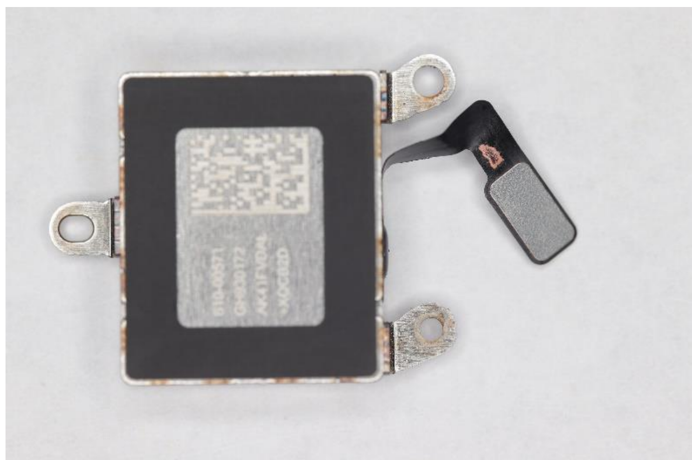
Apple products with Taptic Engine technology,, including without limitation iPhone products (iPhone 6s, 6s Plus, 7, 7 Plus, 8, 8 Plus, X, XR, XS, XS Max, 11, 11 Pro, 11 Pro Max, SE (second generation), 12, 12 mini, 12 Pro, 12 Pro Max, 13, 13 mini, 13 Pro, 13 Pro Max, SE (third generation), 14, 14 Plus, 14 Pro, 14 Pro Max, 15, 15 Plus, 15 Pro, 15 Pro Max), MacBook products (MacBook Pro from 2015, MacBook from 2018, MacBook Air from 2018) and Apple Watch products (1st generation, Series 1, Series 2, Series 3, Series 4, Series 5, SE, Series 6, Series 7, SE (second generation), Series 8, Ultra, Series 9, Ultra 2), and all variants and iterations thereof (collectively, "Accused Products"), infringe at least Claims 1, 2, 3, 4, 5, 6, 7, 8, 14, 15, 16, 17, 19, and 20 of the '830 Patent.

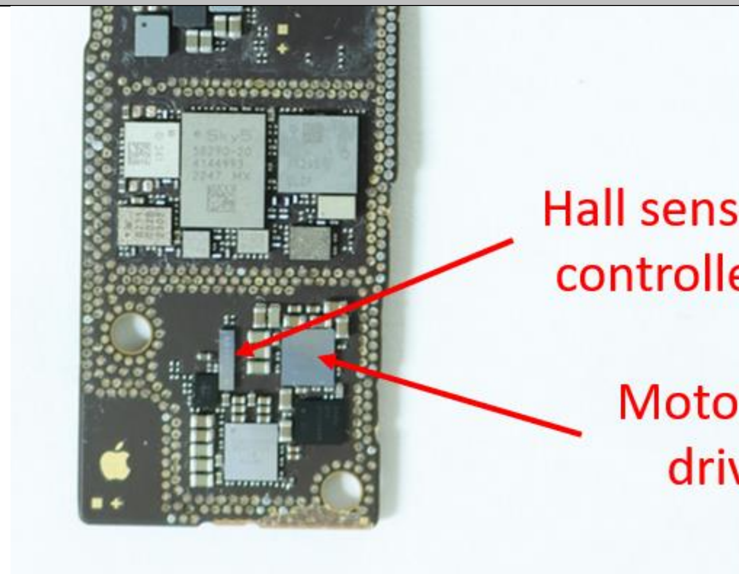
Each Accused Product infringes the claims in substantially the same way, and the evidence shown in this chart is similarly applicable to each Accused Product. Each claim limitation is literally infringed by each Accused Product. However, to the extent any claim limitation is not met literally, it is nonetheless met under the doctrine of equivalents because the differences between the claim limitation and each Accused Product would be insubstantial, and each Accused Product performs substantially the same function, in substantially the same way, to achieve the same result as the claimed invention. Notably, Defendant has not yet articulated which, if any, particular claim limitations it believes are not met by the Accused Products.

Claim 1

Claim 1	Accused Products
[1pre]. A vibration module comprising:	To the extent the preamble is limiting, each Accused Product includes or constitutes a vibration module. For example, each of the Apple iPhone 14 and the Apple Watch Ultra contain a linear actuator ("Taptic Engine"), haptic controller(s), and associated circuitry, as described in connection with the claim limitations below. *See, e.g.*:

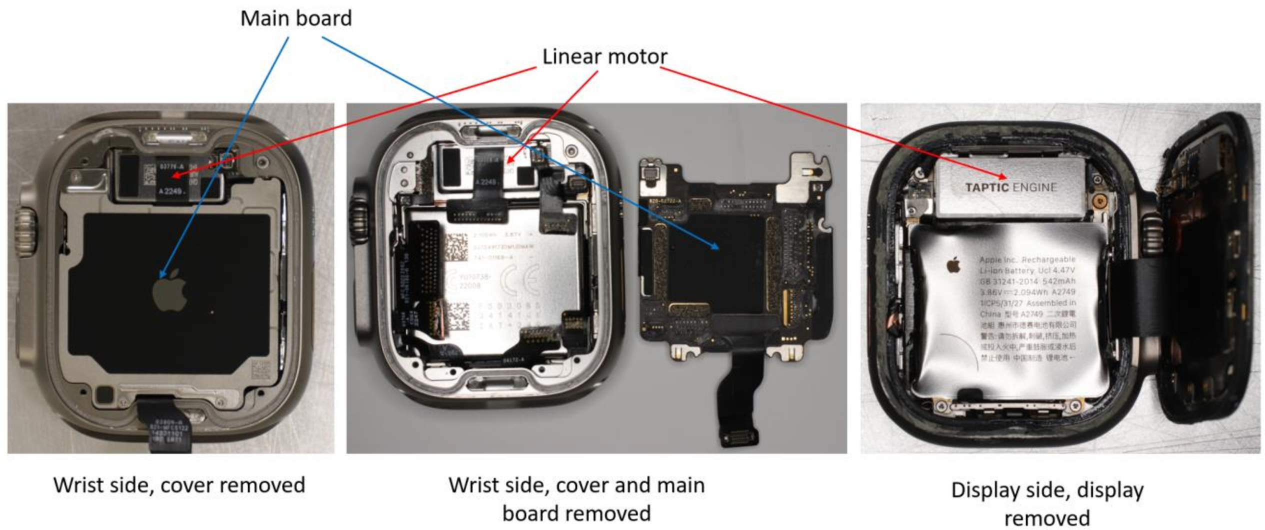
	 Photograph of iPhone 14 with rear cover removed, with A15 Bionic SoC at center right and Taptic Engine at bottom left.

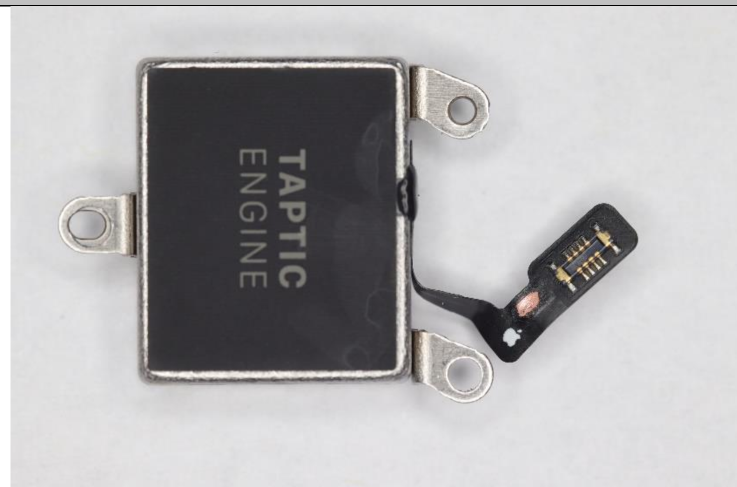
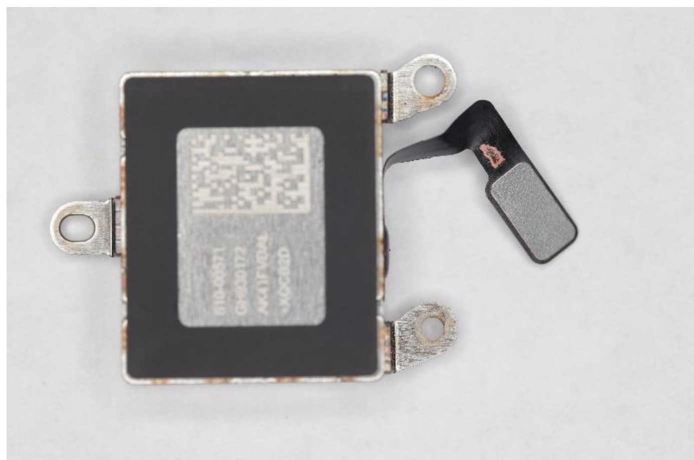
Claim 1	Accused Products
	 Photograph of Taptic Engine housing from the iPhone 14.  Photograph of Taptic Engine housing from the iPhone 14.

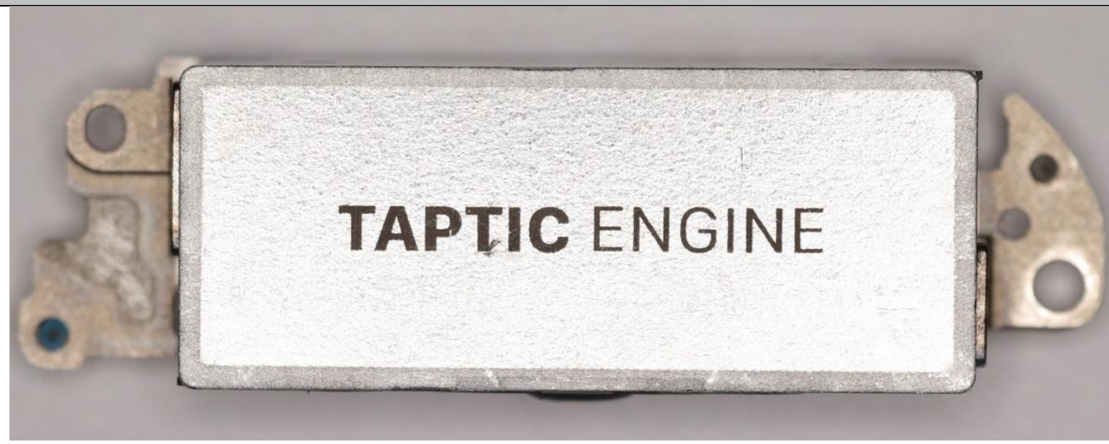
Claim 1	Accused Products
	 Photograph of Hall sensor controller and motor control driver from the iPhone 14.

Claim 1	Accused Products
	The following devices contain a Taptic Engine: • iPhone 14 Pro Max • iPhone 14 Pro • iPhone 14 Plus • iPhone 14 • iPhone SE (3rd generation) • iPhone 13 Pro Max • iPhone 13 Pro • iPhone 13 • iPhone 13 mini • iPhone 12 Pro Max • iPhone 12 Pro • iPhone 12 • iPhone 12 mini • iPhone SE (2nd generation) • iPhone 11 Pro Max • iPhone 11 Pro • iPhone 11 • iPhone XS Max • iPhone XS • iPhone XR • iPhone X • iPhone 8 Plus • iPhone 8 • iPhone 7 Plus • iPhone 7 • iPhone 6s Plus • iPhone 6s Accessory Design Guidelines for Apple Devices, Release R20, *available at* https://developer.apple.com/accessories/Accessory-Design-Guidelines.pdf

Claim 1	Accused Products
	 Photograph of Apple Watch Ultra.

Claim 1	Accused Products
	 Annotated photographs of Apple Watch Ultra showing linear actuator (Taptic engine) and main system board.
[1a] a housing;	Each Accused Product comprises a housing. For example, the Taptic Engine in each of the iPhone 14 and Apple Watch Ultra has a hollow cavity that is soldered together to form a housing surrounding the moveable component and coils. *See, e.g.*:

Claim 1	Accused Products
	 Photograph of Taptic Engine housing from the iPhone 14.  Photograph of Taptic Engine housing from the iPhone 14.

Claim 1	Accused Products
	 Photograph of Taptic Engine housing from Apple Watch Ultra.
[1b] a moveable component;	Each Accused Product comprises a moveable component. For example, the Taptic Engine in each of the iPhone 14 and Apple Watch Ultra includes a movable component comprising permanent magnet(s) and a mass. *See*, *e.g.*:

Claim 1	Accused Products
	 Photograph of moveable component (at right, connected to housing with springs) from the iPhone 14.  Photograph of moveable component from Apple Watch Ultra.

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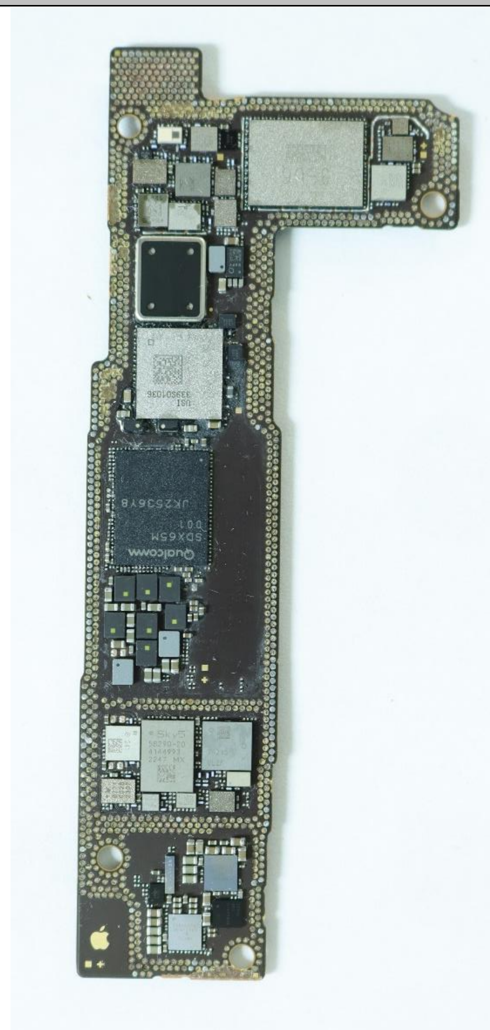
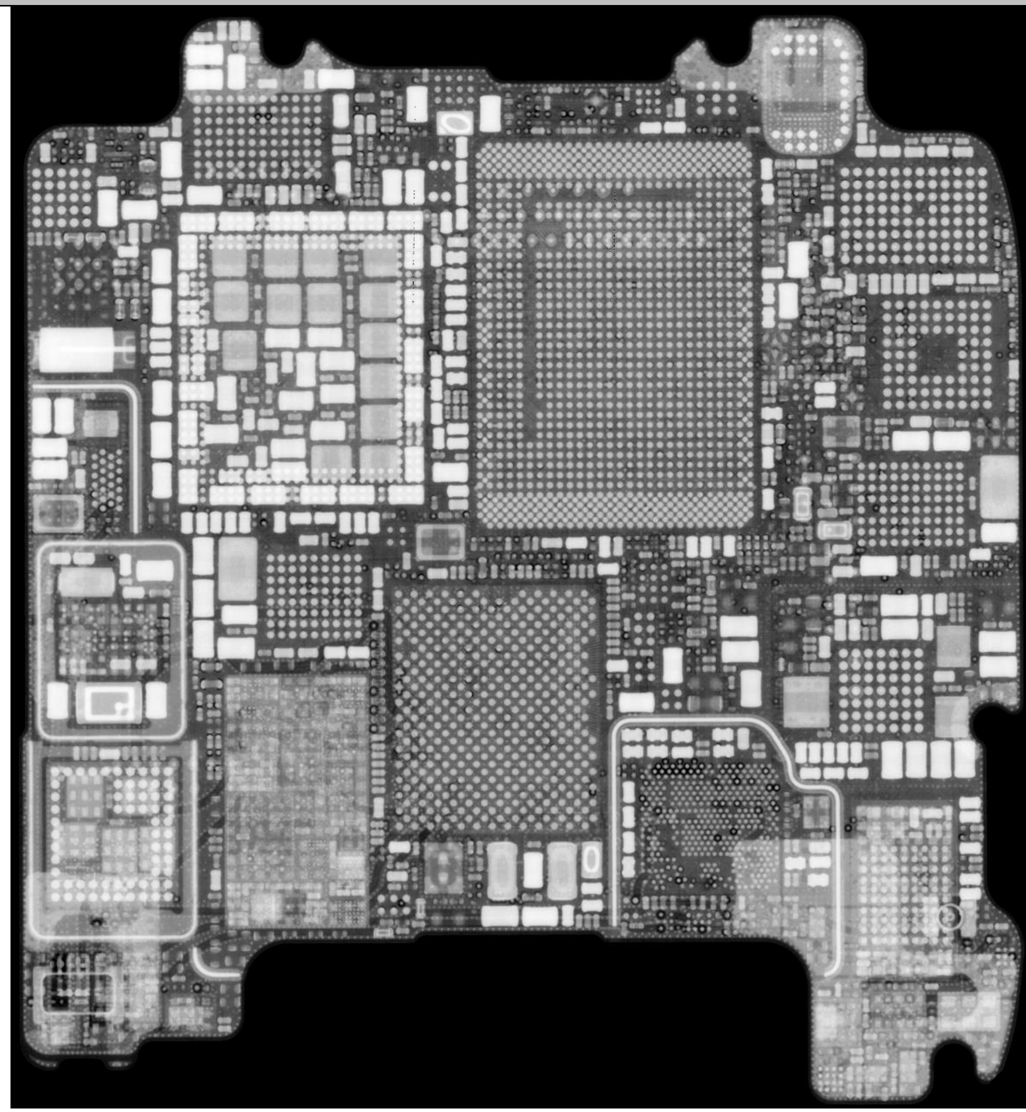
Claim 1	Accused Products
[1c] a power supply;	Each Accused Product comprises a power supply. For example, the linear motor coil driver (described below) in each of the iPhone 14 and Apple Watch Ultra receives power from one or more voltage regulators on or near the Accused Product's system board. *See, e.g.*:

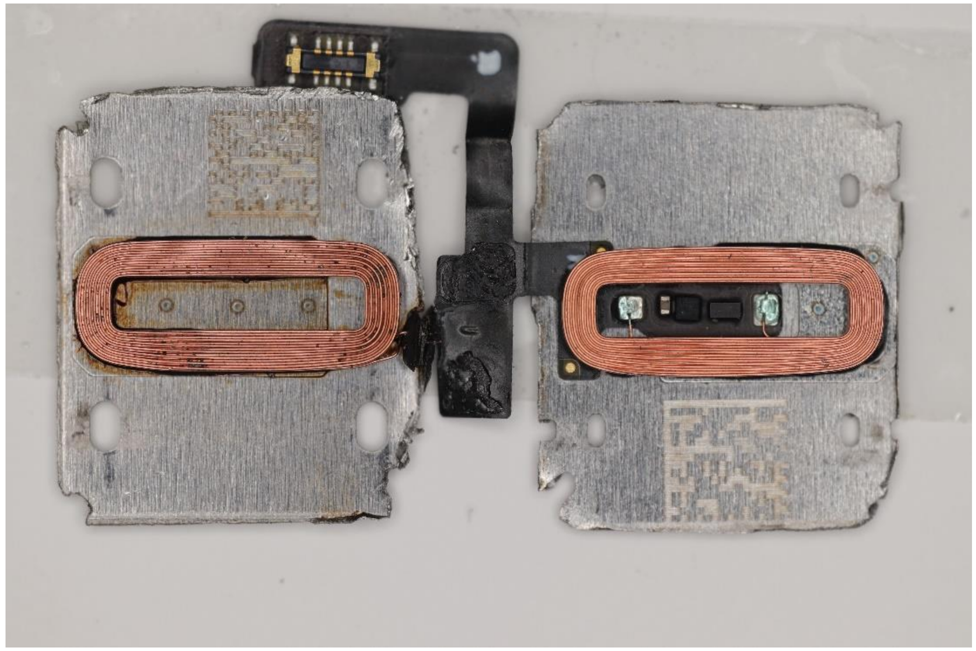
Claim 1	Accused Products
	 Photograph of iPhone 14 system board.

Claim 1	Accused Products
	 X-ray image of Apple Watch Ultra system board.

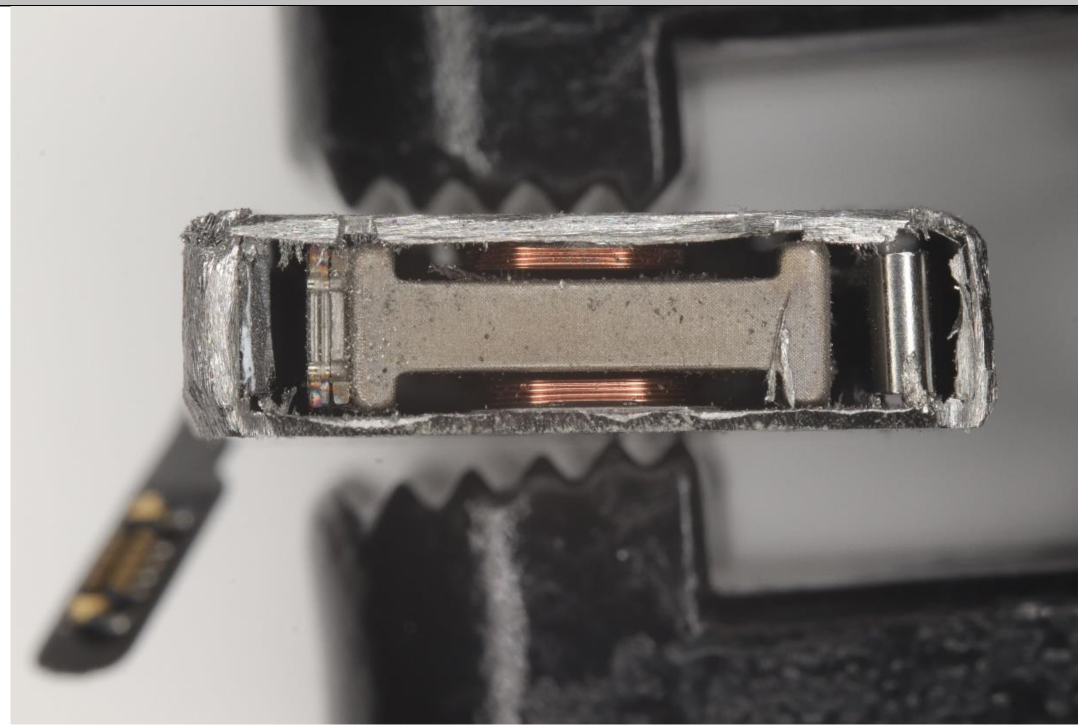
Claim 1	Accused Products
	See also claim elements below.
[1d] user-input features;	Each Accused Product comprises user-input features. For example, each of the iPhone 14 and Apple Watch Ultra comprises a touchscreen, buttons, and other user-input features. *See, e.g.*:

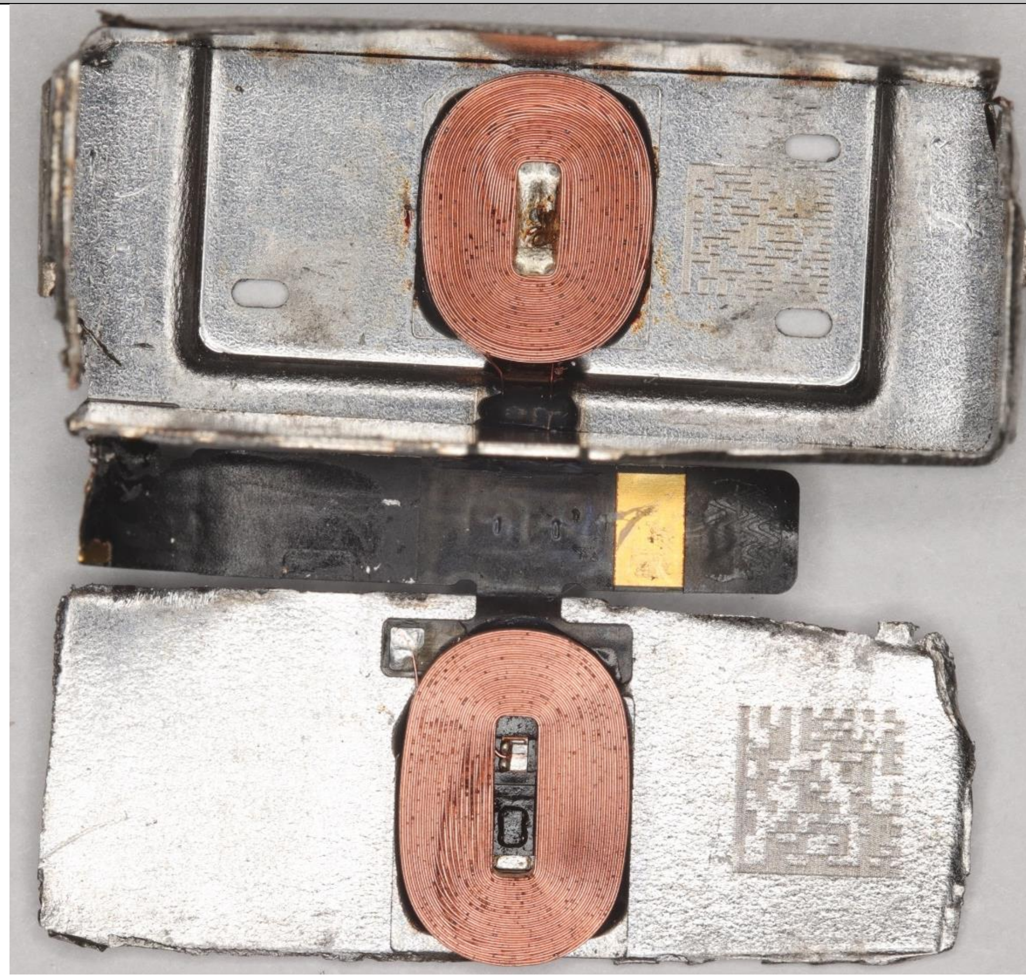
Claim 1	Accused Products
	 Photograph of iPhone 14 touchscreen, buttons, and switch, *available at* https://www.apple.com/iphone-14/.

Claim 1	Accused Products
	 Photograph of Apple Watch Ultra touchscreen, dial, and buttons.
[1e] a driving component that drives the moveable component to oscillate within the housing; and	Each Accused Product includes a driving component that drives the moveable component to oscillate within the housing. For example, the Taptic Engine includes one or more coils to form electromagnetic fields for driving the moveable component in two directions.

Claim 1	Accused Products
	See, e.g.:  Photograph of driving coils within disassembled Taptic Engine from the iPhone 14. The two visible coils would be positioned above and below the moveable component when assembled.

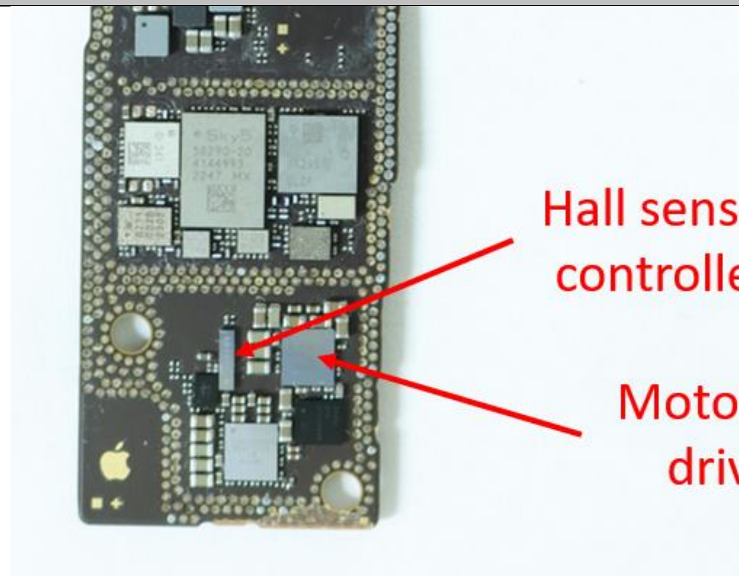
Claim 1	Accused Products
	 Photograph showing one driving coil (at right) within disassembled Taptic Engine from the iPhone 14, with moveable component in place at left. The moveable component travels up and down from this perspective.

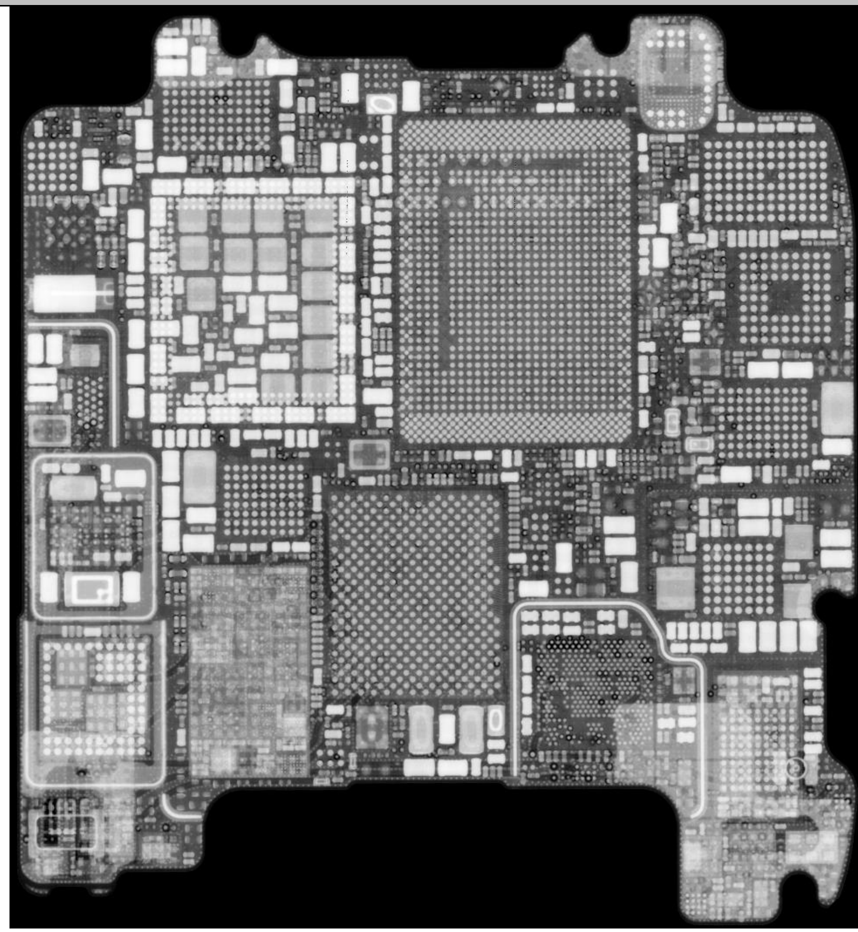
Claim 1	Accused Products
	 Photograph of internals of Taptic Engine from the iPhone 14, showing drive coils (top and bottom) surrounding the moveable component. The moveable component travels left and right from this perspective.

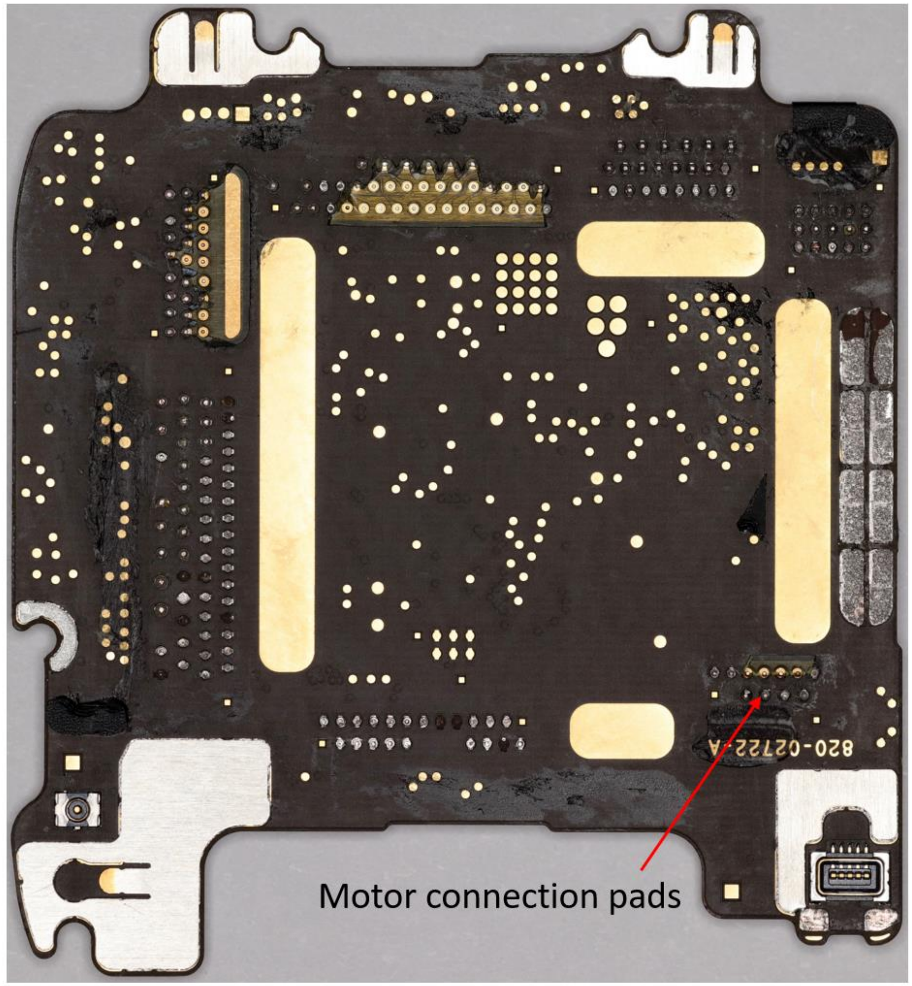
Claim 1	Accused Products
	 Photograph of drive coils within disassembled Taptic Engine from Apple Watch Ultra. The two visible coils would be positioned above and below the movable component when assembled.

Claim 1	Accused Products
[1f] a control component that controls supply of power from the power supply to the driving component to cause the moveable component to oscillate at a frequency and an amplitude specified by one or more stored values.	Each Accused Product comprises a control component that controls supply of power from the power supply to the driving component to cause the moveable component to oscillate at a frequency and an amplitude specified by one or more stored values. For example, each Accused Product includes a main system processor, a linear motor coil driver, and a Hall sensor controller, which alone or in combination form a control component as claimed to drive the coils and thus move the magnetic mass in a linear oscillating motion, as described below. This control component can drive the moveable component at specified frequencies and amplitude, as demonstrated by public APIs and by testing. The public APIs, as well as any proprietary Apple APIs and interfaces, specify intensity and sharpness (exemplary stored values) that directly and/or indirectly control the frequency and amplitude of the oscillation and that are stored at least within the system processor and associated volatile and non-volatile memory. On information and belief, the system processor and/or linear motor control driver include additional stored values specifying frequency and/or amplitude. *See, e.g.*:

Claim 1	Accused Products
	 Photographs showing iPhone 14 system board with A15 Bionic processor.

Claim 1	Accused Products
	 Annotated photograph of Hall sensor controller and motor coil driver from the iPhone 14.

<table>
<tr><th>Claim 1</th><th>Accused Products</th></tr>
<tr><td></td><td>
X-ray image of Apple Watch Ultra system board.</td></tr>
</table>

Claim 1	Accused Products
	 Annotated photograph of partially disassembled Apple Watch Ultra system board, showing connection points for haptic motor.

<table>
<tr><th>Claim 1</th><th>Accused Products</th></tr>
<tr><td></td><td>

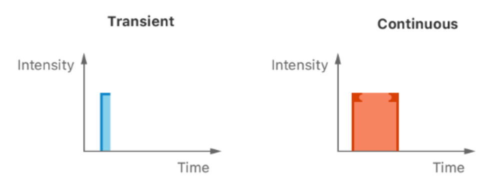
Declaration

```
class CHHapticEvent : NSObject
```

Overview

Each event represents a single haptic or audio signal. The event `type` determines whether it's audio or haptic. Use a `CHHapticPatternPlayer` object obtained through `CHHapticEngine` factory methods to play events. Haptic events can be transient or continuous. Transient haptic patterns are brief impulses that occur at a specific point in time, such as the haptic feedback you feel from swiping through a picker or toggling a switch. Continuous haptic patterns, like the vibration from a ringtone, take the form of lengthier feedback over a period of time.

In the following graphic, transient haptic patterns on the left trigger at a specific time with a specific intensity. Continuous haptic patterns on the right sustain the haptic feedback over a specific duration of time, such as three seconds.



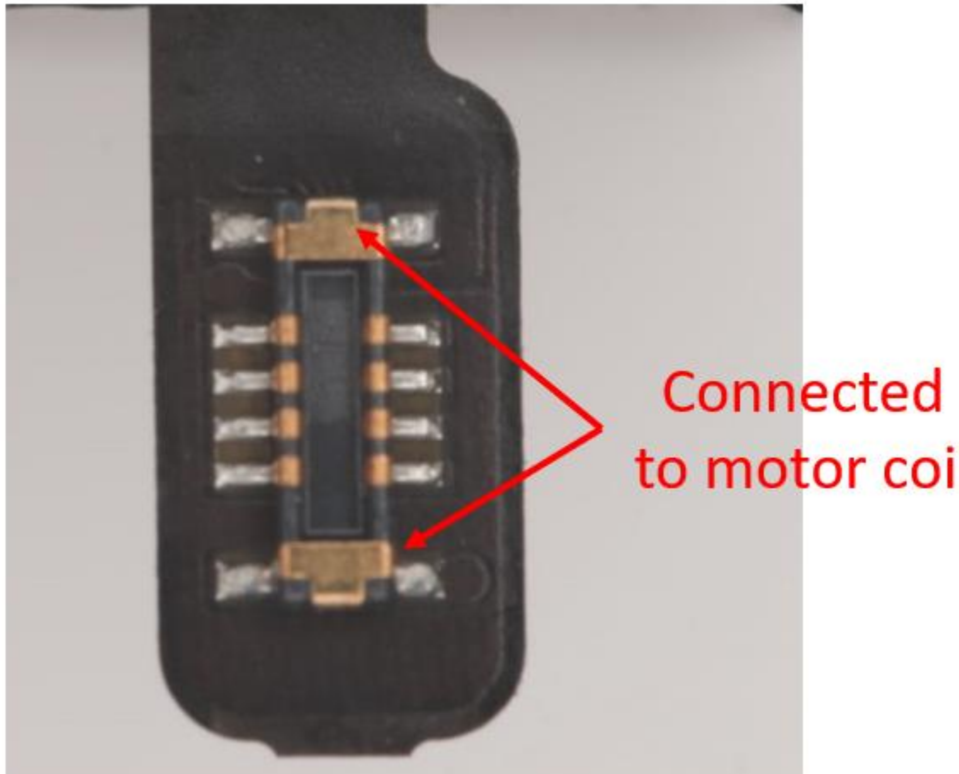
Specify when an event begins by setting its `relativeTime` property. Specify the length of the event by setting its `duration` property. Set optional parameters to customize event properties. For example, you can specify the intensity of a haptic event by creating an event parameter with ID `hapticIntensity`.

Documentation of CHHapticEvent object, https://developer.apple.com/documentation/corehaptics/chhapticevent

</td></tr>
</table>

Claim 1	Accused Products
	Haptic Event Parameter IDs `static let hapticIntensity: CHHapticEvent.ParameterID` The strength of a haptic event. `static let hapticSharpness: CHHapticEvent.ParameterID` The feel of a haptic event. `static let attackTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins increasing. `static let decayTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins decreasing. `static let releaseTime: CHHapticEvent.ParameterID` The time at which to begin fading the haptic pattern. `static let sustained: CHHapticEvent.ParameterID` A Boolean value that indicates whether to sustain a haptic event for its specified duration. Documentation of haptic event parameters, https://developer.apple.com/documentation/corehaptics/chhapticevent/parameterid;

Claim 1	Accused Products
	4. The Continuous “Sharpness” parameter maps to frequency. For continuous events, we found that the sharpness parameter maps to frequency. On an iPhone 8, the lower sharpness boundary (0.0) of the Taptic Engine is 80 Hz; the higher sharpness boundary (1.0) is 230 Hz. This provides an effective range of 150 Hz, or roughly 1.5 octaves — which is impressive for a mobile phone released in 2017. Other phones or devices supporting Core Haptics might have different upper or lower boundaries since the frequency range is tied to the capabilities of the hardware actuator. https://medium.com/lofelt/10-things-you-should-know-about-designing-for-apple-core-haptics-9219fdebdcaa.

Claim 1	Accused Products
	 Annotated photograph of Taptic Engine connector from the iPhone 14 showing positive and negative coil driving pins.

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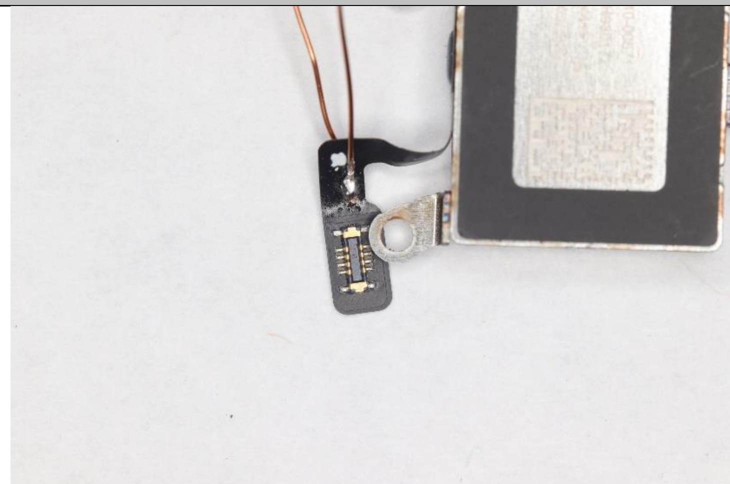
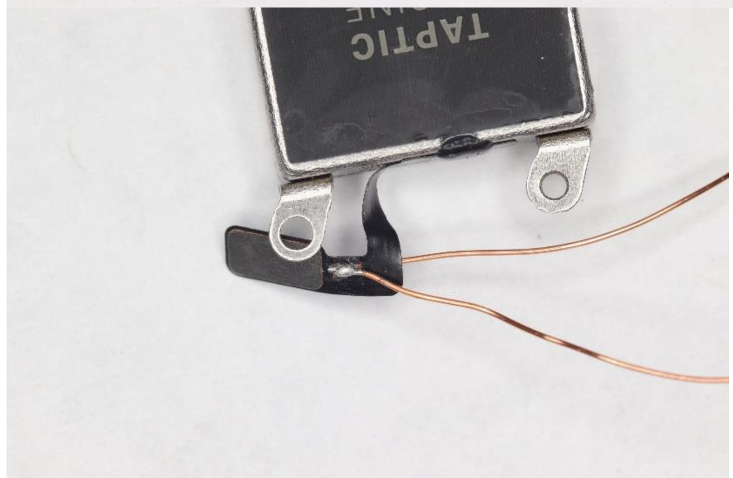
<table>
<tr><th>Claim 1</th><th>Accused Products</th></tr>
<tr><td></td><td>Photographs of test apparatus with electrical leads connected to motor coil drive traces of iPhone 14.</td></tr>
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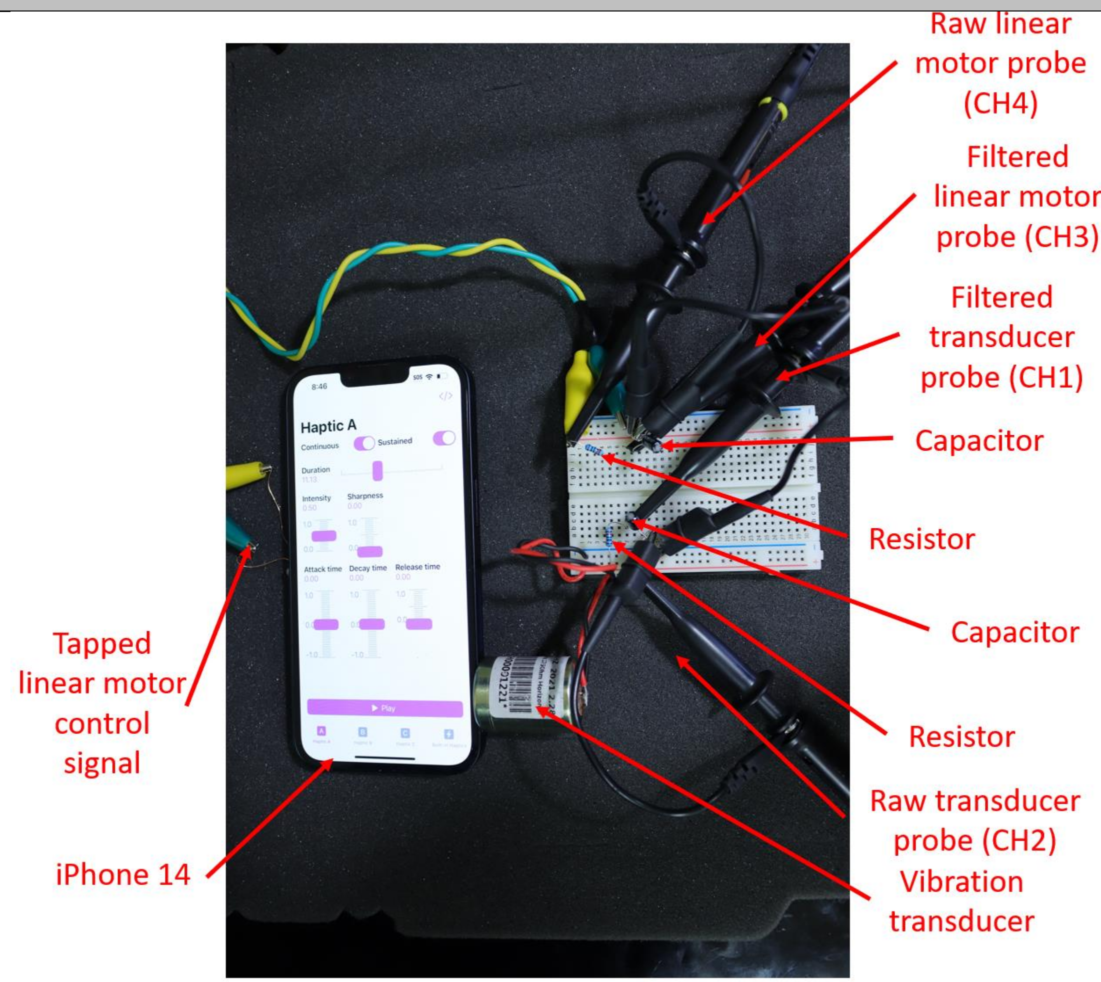

Photograph of test apparatus for measuring motor coil drive signal (from tapped connection) and actual motion (from attached vibration transducer) of iPhone 14. Note RC low-pass filter networks at top right with R = 220 Ω, C = 2.2 uF.
</td></tr>
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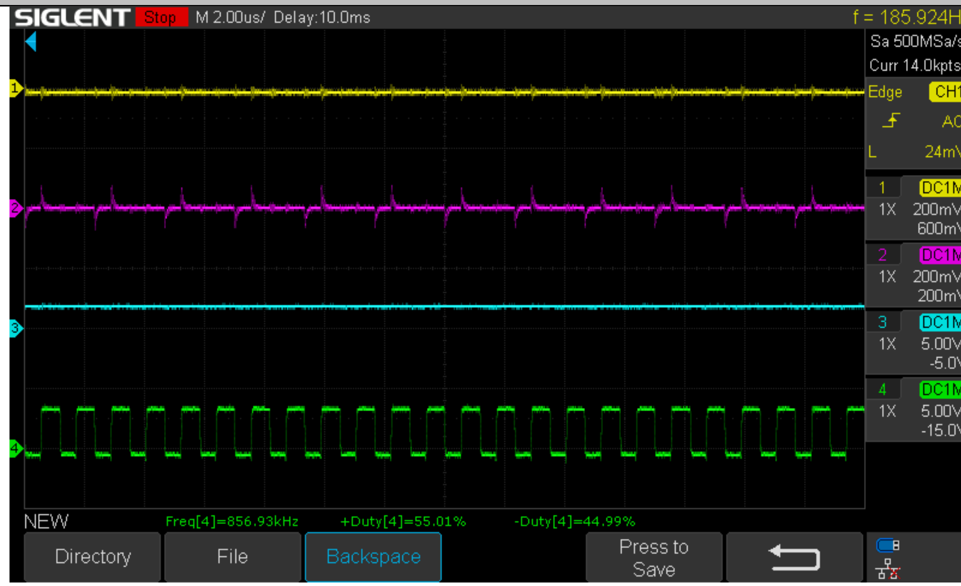
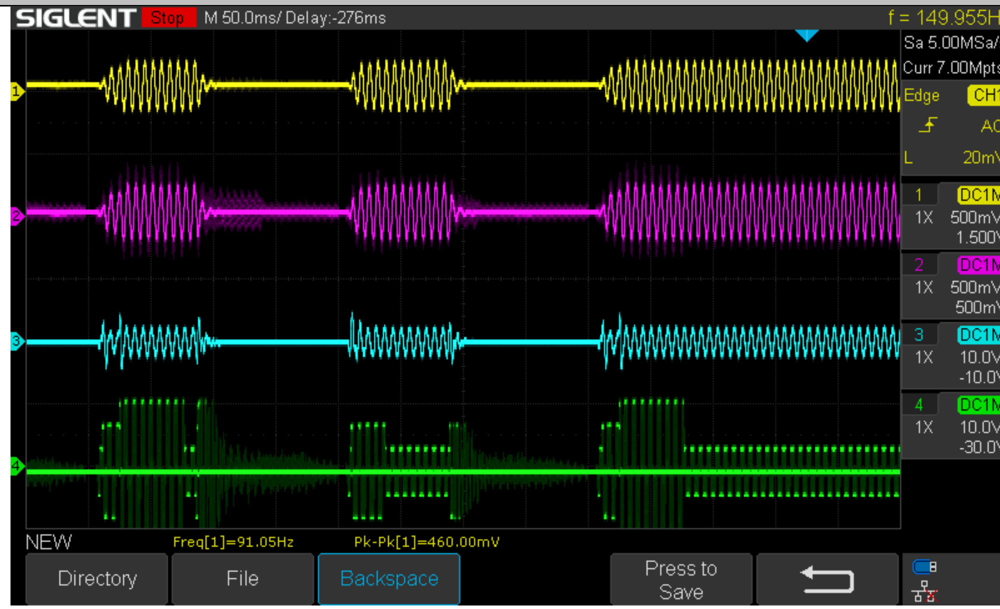
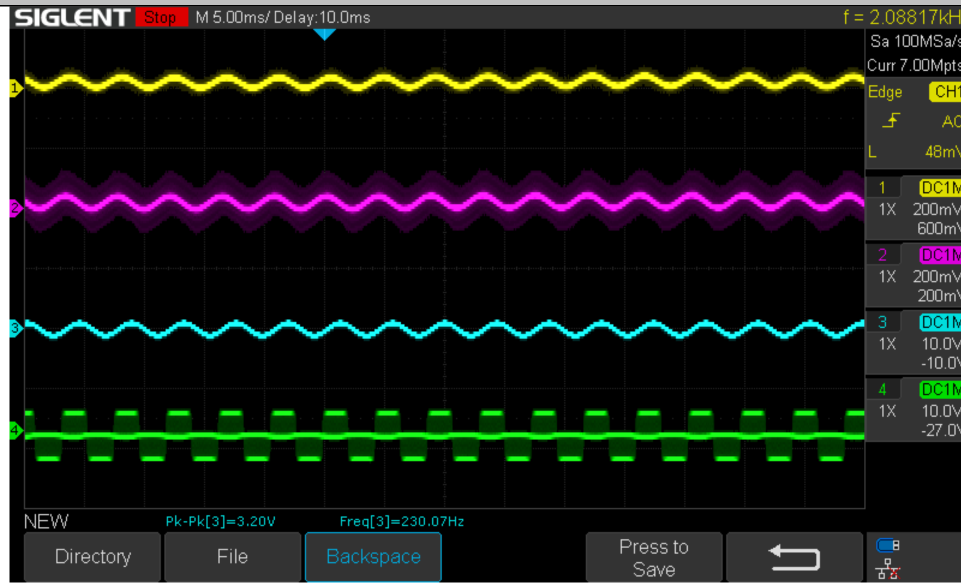
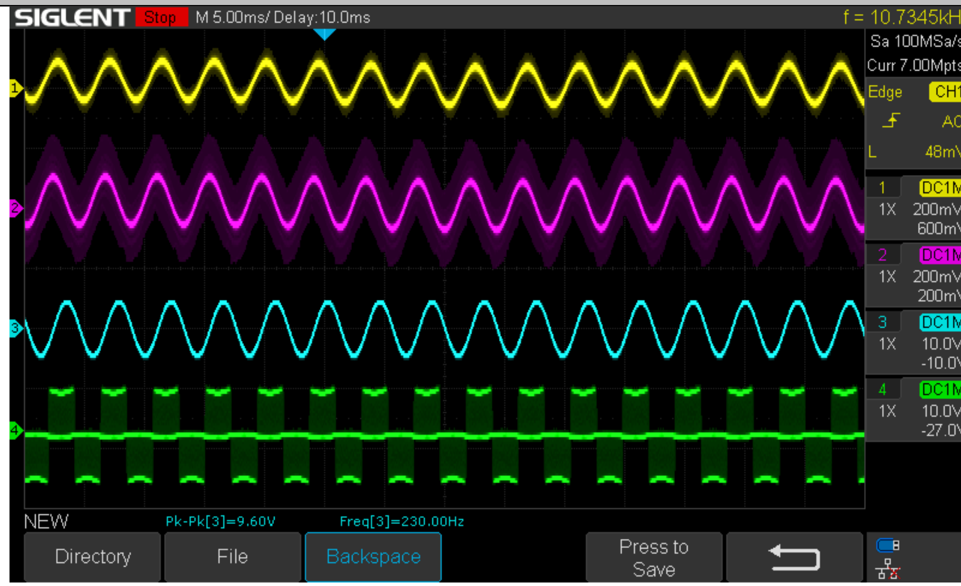
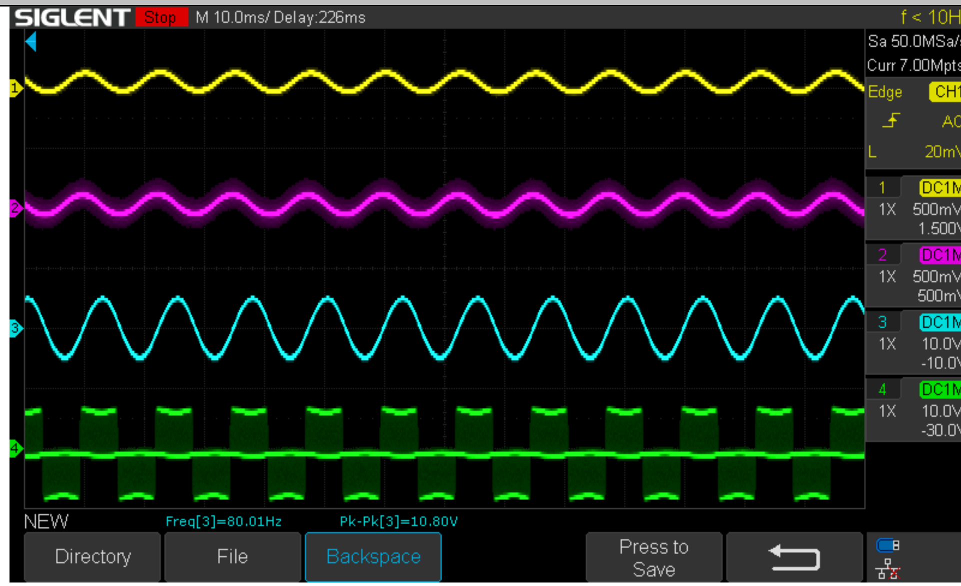
Claim 1	Accused Products
	 Oscilloscope trace showing, in green (CH4), the drive voltage applied by the iPhone 14 haptic controller(s); in this case, a pulse width modulated positive signal (modulation frequency 857 kHz) to drive the moveable component in one of two directions.

Claim 1	Accused Products
	 Oscilloscope trace showing, in green (CH4), the PWM-modulated drive voltage applied by the iPhone 14 haptic controller(s), with positive and negative voltages to drive the moveable component in a first and second direction. Channels 1 and 2 (yellow and purple) show the actual motion of the iPhone 14 resulting (pursuant to Newton’s third law) from the motion of the moveable component.

Claim 1	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 0.5, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 3.2 V (peak-to-peak, through RC low-pass filter).

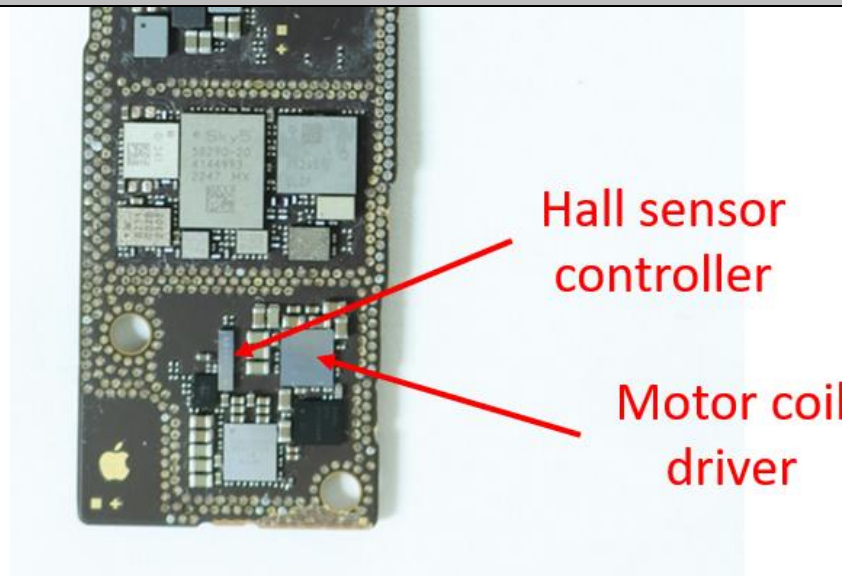
Claim 1	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 1, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 9.6V (peak-to-peak, through RC low-pass filter). Note that the externally measured vibration amplitude (yellow and purple traces, same scale as previous trace) is also significantly higher at intensity = 1 than 0.5.

Claim 1	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 1, sharpness = 0, with frequency of 80 Hz and motor drive amplitude of 10.8 V (peak-to-peak, through RC low-pass filter). To the extent Defendant contends and/or shows that this limitation is not literally present in the Accused Products, it is present under the doctrine of equivalents. There are no substantial differences between the accused functionality and the claimed invention. For example, each Accused Product contains one or more microprocessors that coordinate(s) operation of the Taptic Engine, which performs substantially the same function (*e.g.*, controlling supply of power from the power supply to the driving component to cause the moveable component to oscillate at a frequency and an amplitude specified by one or more stored values) in substantially the same way (*e.g.*, using digital logic) to achieve substantially the same result (*e.g.*, producing oscillations at a desired frequency and amplitude).

Claim 2

Claim 2	Accused Products
[2pre] The vibration module of claim 1 wherein the control component is one of:	Each Accused Product comprises the vibration module of claim 1 wherein the control component meets claim limitation [2b].
[2a] an variable oscillator circuit with additional control circuitry; and	*See infra* claim element [2b].
[2b] a control component that includes	Each Accused Product comprises a control component as claimed. *See supra* claim element [1f] and *infra* claim elements [2c]-[2d].
[2c] a microprocessor,	In each Accused Product, the control component includes a microprocessor. For example, each Accused Product includes a main system processor, a linear motor coil driver, and a Hall sensor controller, which alone or in combination form a microprocessor within the control component. *See, e.g.*:

Claim 2	Accused Products
	 Photographs showing iPhone 14 system board with A15 Bionic processor.

Claim 2	Accused Products
	 Annotated photograph of Hall sensor controller and motor coil driver from the iPhone 14.

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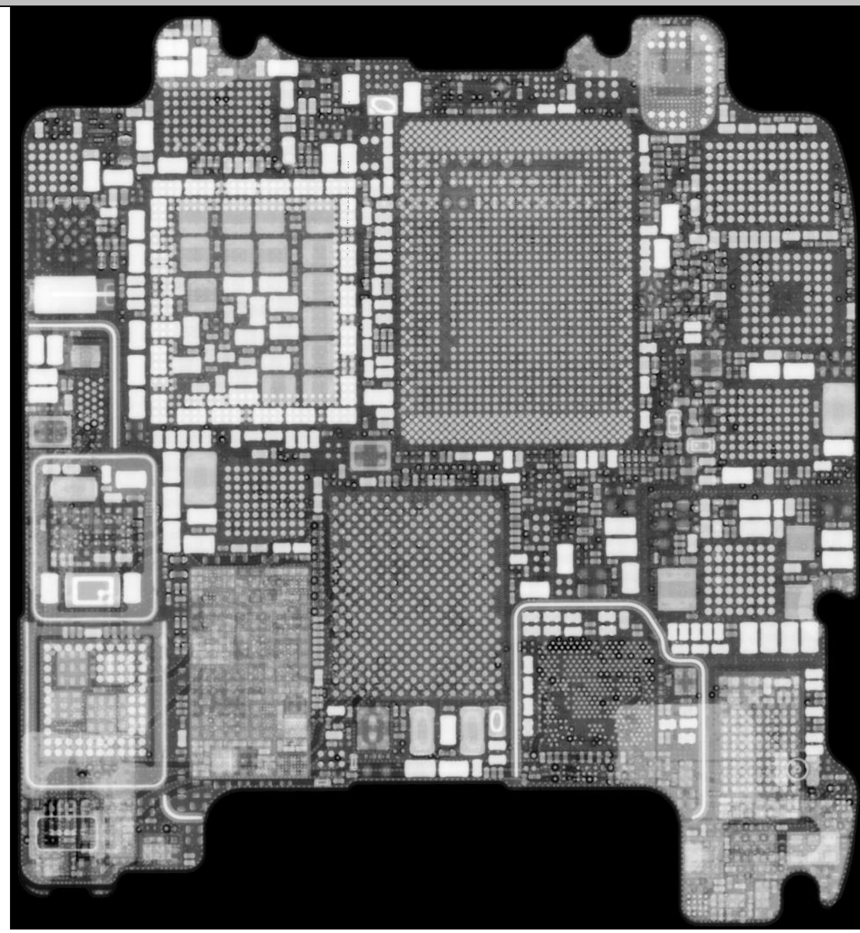
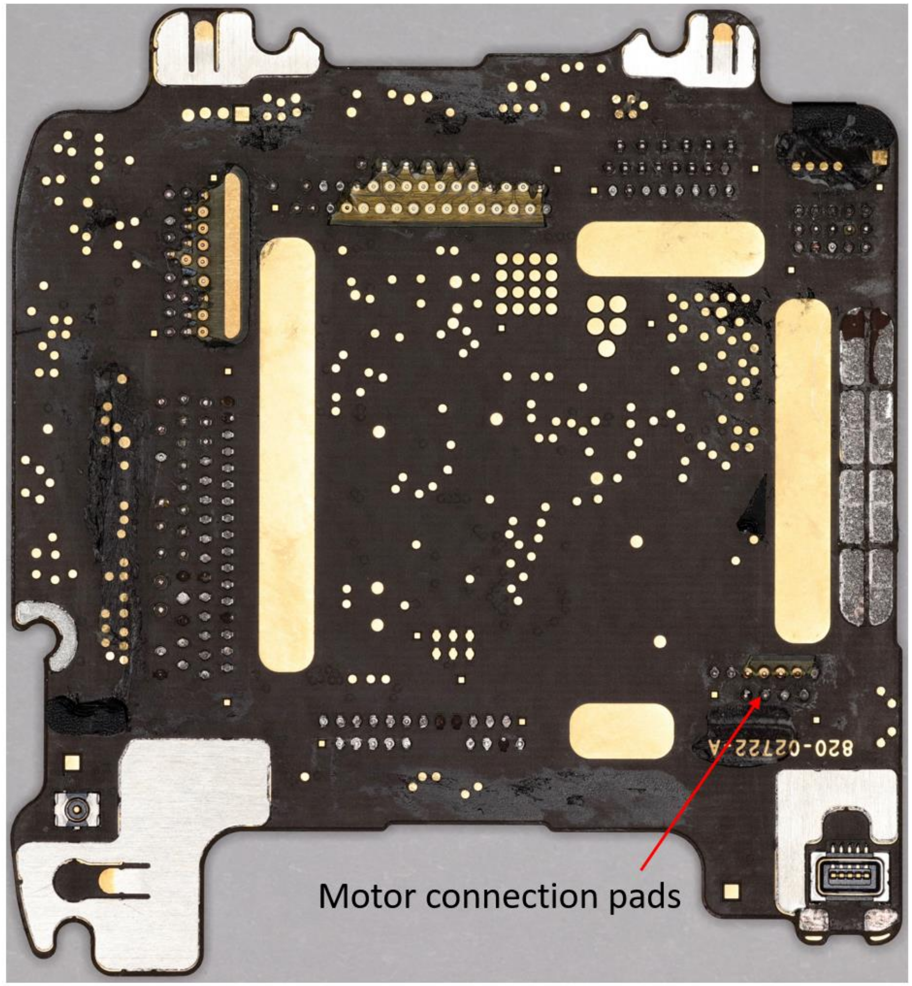
Claim 2	Accused Products
	 X-ray image of Apple Watch Ultra system board.

Claim 2	Accused Products
	 Annotated photograph of partially disassembled Apple Watch Ultra system board, showing connection points for haptic motor.
[2d] a control program, stored in an electronic memory	In each Accused Product, a control component includes a control program, stored in an electronic memory within, or separate from, the microprocessor, the control program executed by the

Claim 2	Accused Products
within, or separate from, the microprocessor, the control program executed by the microprocessor to control supply of power from the power supply to the driving component to cause the moveable component to oscillate at a frequency and an amplitude specified by the one or more stored values.	microprocessor to control supply of power from the power supply to the driving component to cause the moveable component to oscillate at a frequency and an amplitude specified by the one or more stored values. For example, one or more of the system processor and/or linear motor coil driver forming the microprocessor contains confidential and proprietary software and/or firmware to control the linear resonant vibration motor. When the control program is executed by the microprocessor, the control component can drive the moveable component at specified frequencies and amplitude, as demonstrated by public APIs and by testing. The public APIs, as well as any proprietary Apple APIs and interfaces, specify intensity and sharpness (exemplary stored values) that directly and/or indirectly control the frequency and amplitude of the oscillation and that are stored at least within the system processor and associated volatile and non-volatile memory. On information and belief, the system processor and/or linear motor control driver include additional stored values specifying frequency and/or amplitude. *See supra* claim element [1f].

Claim 3

Claim 3	Accused Products
[3] The vibration module of claim 1 wherein the control component receives output signals from sensors within the vibration module during operation of the vibration module and adjusts one or more operational control outputs of the control component according to the received output signals from the sensors.	Each Accused Product comprises the vibration module of claim 1 wherein the control component receives output signals from sensors within the vibration module during operation of the vibration module and adjusts one or more operational control outputs of the control component according to the received output signals from the sensors. For a further example, the control component generates electrical outputs to the driving coils (actuator) that cause alternating magnetic fields, moving the mass and therefore producing a vibration response as directed by the application processor and software running on the application processor. On information and belief, the control outputs are generated based on the closed-loop feedback received from the Hall effect sensor(s), as demonstrated by, for example, the presence of the Hall effect sensor(s) themselves and the precision and quality of the resulting vibration response.

Claim 3	Accused Products
	See, e.g.:

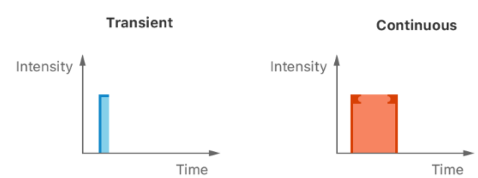
Declaration

```
class CHHapticEvent : NSObject
```

Overview

Each event represents a single haptic or audio signal. The event `type` determines whether it's audio or haptic. Use a `CHHapticPatternPlayer` object obtained through `CHHapticEngine` factory methods to play events. Haptic events can be transient or continuous. Transient haptic patterns are brief impulses that occur at a specific point in time, such as the haptic feedback you feel from swiping through a picker or toggling a switch. Continuous haptic patterns, like the vibration from a ringtone, take the form of lengthier feedback over a period of time.

In the following graphic, transient haptic patterns on the left trigger at a specific time with a specific intensity. Continuous haptic patterns on the right sustain the haptic feedback over a specific duration of time, such as three seconds.

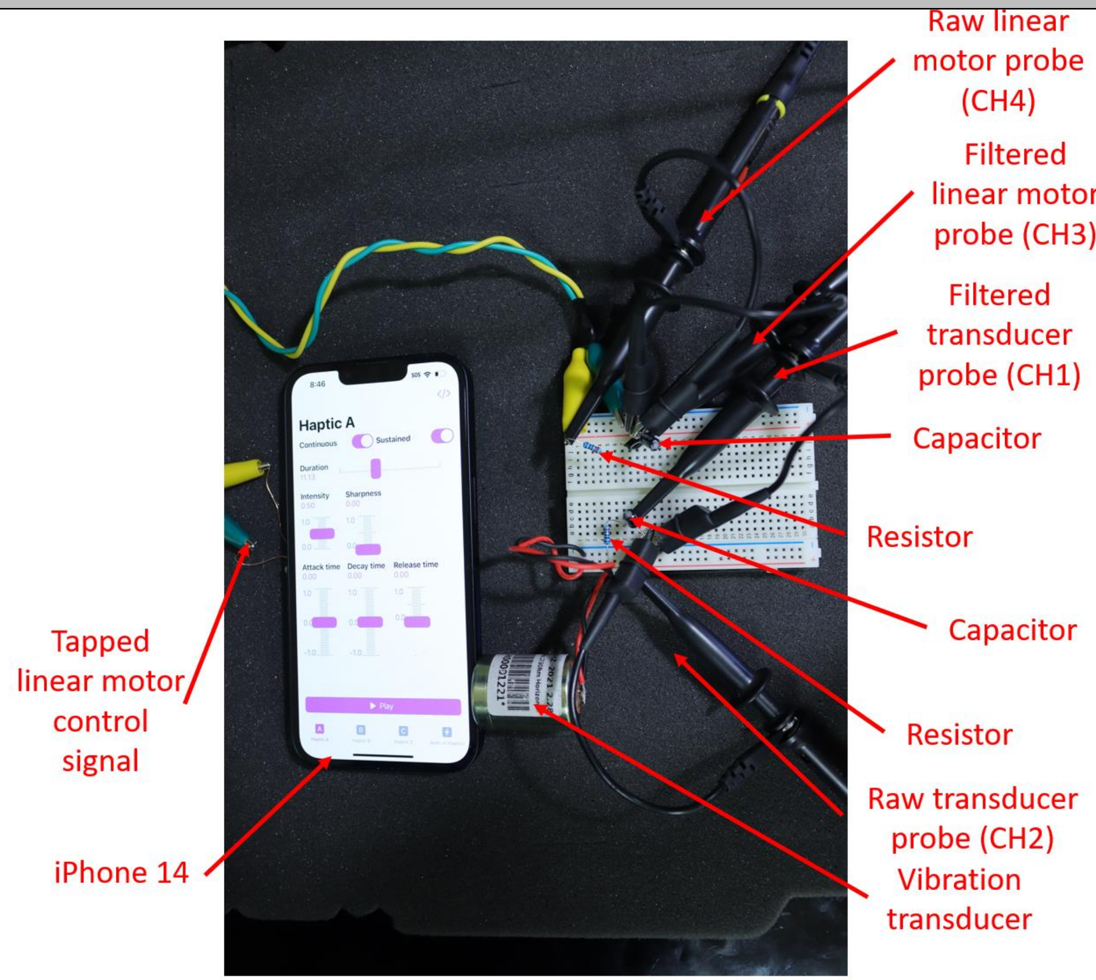


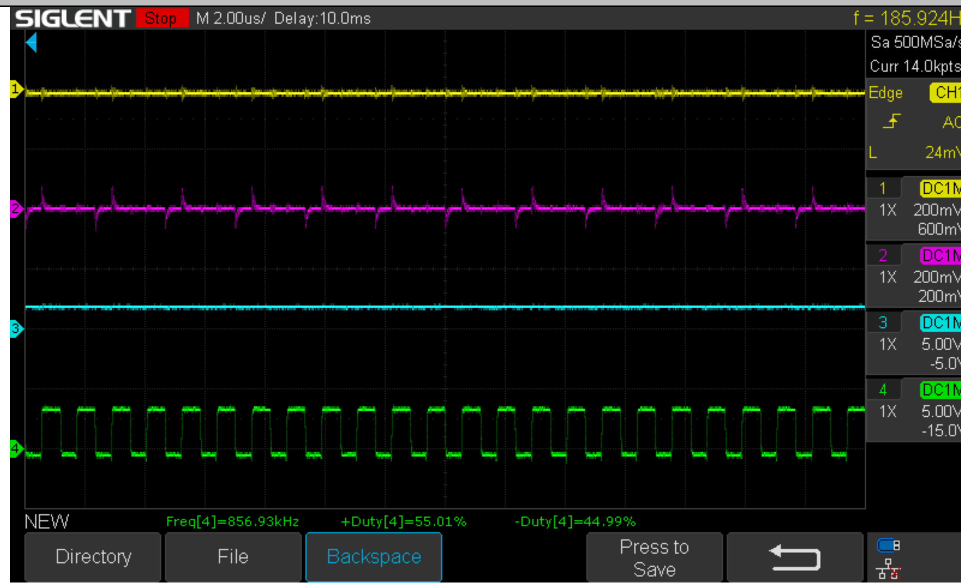
Specify when an event begins by setting its `relativeTime` property. Specify the length of the event by setting its `duration` property. Set optional parameters to customize event properties. For example, you can specify the intensity of a haptic event by creating an event parameter with ID `hapticIntensity`.

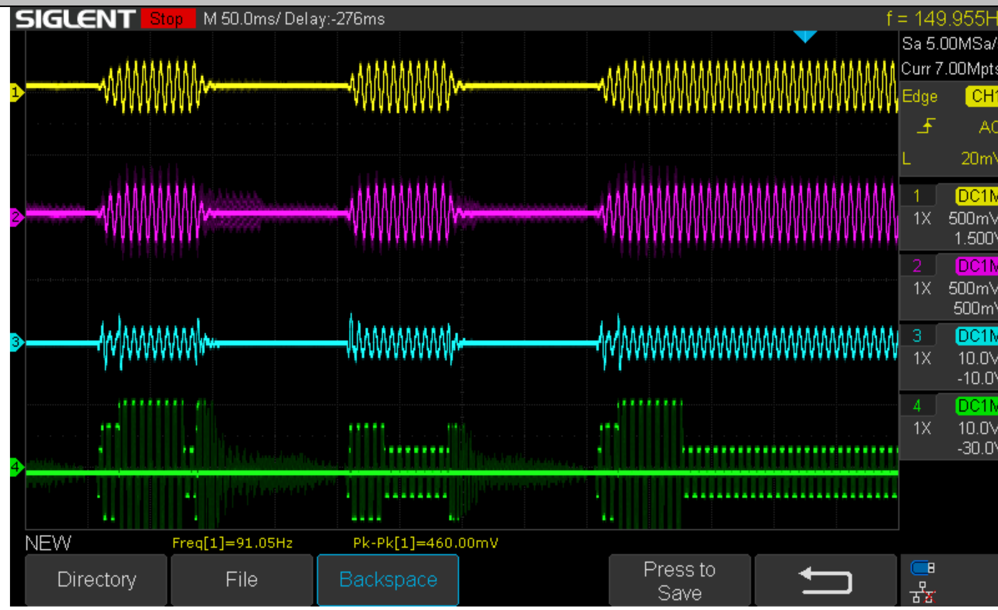
Documentation of CHHapticEvent object, https://developer.apple.com/documentation/corehaptics/chhapticevent, describing vibration patterns resulting from various control inputs

Claim 3	Accused Products
	Haptic Event Parameter IDs `static let hapticIntensity: CHHapticEvent.ParameterID` The strength of a haptic event. `static let hapticSharpness: CHHapticEvent.ParameterID` The feel of a haptic event. `static let attackTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins increasing. `static let decayTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins decreasing. `static let releaseTime: CHHapticEvent.ParameterID` The time at which to begin fading the haptic pattern. `static let sustained: CHHapticEvent.ParameterID` A Boolean value that indicates whether to sustain a haptic event for its specified duration. Documentation of haptic event parameters, https://developer.apple.com/documentation/corehaptics/chhapticevent/parameterid;

Claim 3	Accused Products
	4. The Continuous "Sharpness" parameter maps to frequency. For continuous events, we found that the sharpness parameter maps to frequency. On an iPhone 8, the lower sharpness boundary (0.0) of the Taptic Engine is 80 Hz; the higher sharpness boundary (1.0) is 230 Hz. This provides an effective range of 150 Hz, or roughly 1.5 octaves — which is impressive for a mobile phone released in 2017. Other phones or devices supporting Core Haptics might have different upper or lower boundaries since the frequency range is tied to the capabilities of the hardware actuator. https://medium.com/lofelt/10-things-you-should-know-about-designing-for-apple-core-haptics-9219fdebdcaa.

Claim 3	Accused Products
	 Photograph of test apparatus for measuring motor coil drive signal (from tapped connection) and actual motion (from attached vibration transducer) of iPhone 14.

Claim 3	Accused Products
	 Oscilloscope trace showing, in green (CH4), the drive voltage applied by the iPhone 14 haptic controller(s); in this case, a pulse width modulated positive signal (modulation frequency 857 kHz) to drive the moveable component to oscillate.

Claim 3	Accused Products
	 Oscilloscope trace showing, in green (CH4), the PWM-modulated drive voltage applied by the iPhone 14 haptic controller(s), with positive and negative voltages to drive the moveable component in a first and second direction. Channels 1 and 2 (yellow and purple) show the actual motion of the iPhone 14 resulting (pursuant to Newton's third law) from the oscillation of the moveable component. To the extent Defendant contends and/or shows that this limitation is not literally present in the Accused Products, it is present under the doctrine of equivalents. There are no substantial differences between the accused functionality and the claimed invention. For example, the control component in each Accused Product may adjust one or more operational control outputs according to signals or values derived from the received output signals from one or more sensors, which performs substantially the same function (*e.g.*, adjusting one or more operational control outputs of the control component according to the received output signals from the sensors) in substantially the same way (*e.g.*, making adjustments based on information from sensors within the linear resonant vibration module) to achieve substantially the same result (*e.g.*, causing the

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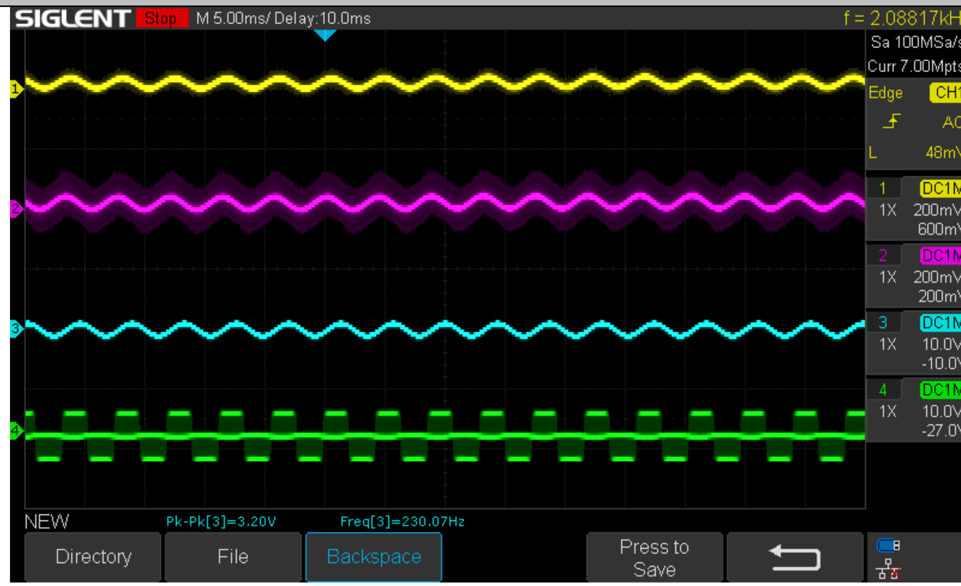
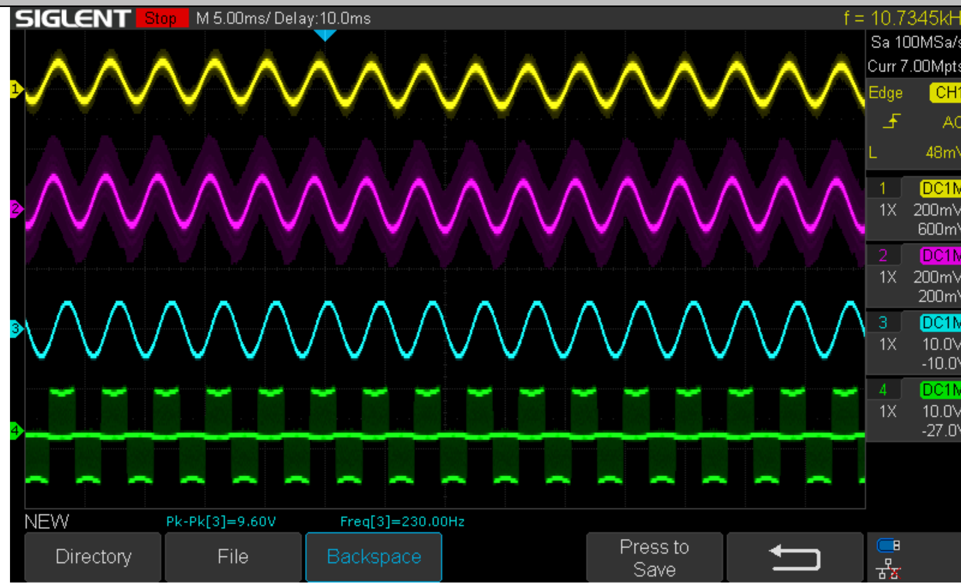
Claim 3	Accused Products
	moveable component to oscillate at a frequency and an amplitude specified by one or more stored values).

Claim 4

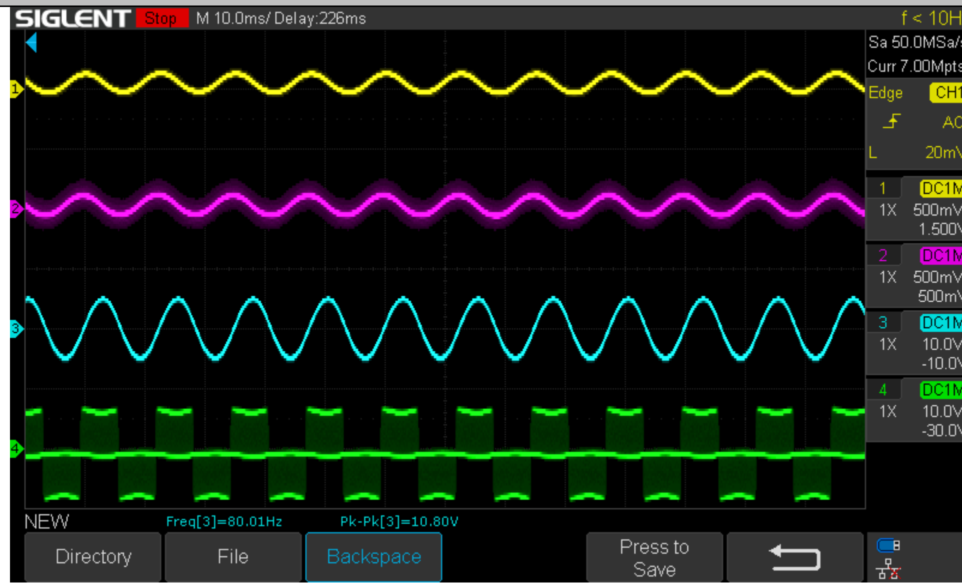
Claim 4	Accused Products
[4] The vibration module of claim 1 wherein the control component adjusts the one or more operational control outputs of the control component according to the received output signals from the sensors in order that subsequent operation of the vibration module produces desired outputs from the one or more sensors corresponding to one or more operational control parameters.	Each Accused Product comprises the vibration module of claim 1 wherein the control component adjusts the one or more operational control outputs of the control component according to the received output signals from the sensors in order that subsequent operation of the vibration module produces desired outputs from the one or more sensors corresponding to one or more operational control parameters. For example, each Accused Product adjusts the operational control outputs such as amplitude, frequency, and/or phase of the drive voltage applied by the control component. On information and belief, the operational control outputs are adjusted in a way to produce desired outputs of at least amplitude and frequency of a signal from a Hall effect sensor, which correspond to one or more operational control parameters "intensity" and "sharpness" that may be selected in various public APIs, as well as any proprietary Apple APIs and interfaces. *See supra* claim element [1f]. *See, e.g.*:

Case 7:23-cv-00077-ADA Document 47-5 Filed 02/16/24 Page 51 of 172

Claim 4	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 0.5, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 3.2 V (peak-to-peak, through RC low-pass filter).

<table>
<tr><th>Claim 4</th><th>Accused Products</th></tr>
<tr><td></td><td>

Oscilloscope trace showing the result of CHHapticEvent with intensity = 1, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 9.6V (peak-to-peak, through RC low-pass filter). Note that the externally measured vibration amplitude (yellow and purple traces, same scale as previous trace) is also significantly higher at intensity = 1 than 0.5.</td></tr>
</table>

<table>
<tr><th>Claim 4</th><th>Accused Products</th></tr>
<tr><td></td><td>

Oscilloscope trace showing the result of CHHapticEvent with intensity = 1, sharpness = 0, with frequency of 80 Hz and motor drive amplitude of 10.8 V (peak-to-peak, through RC low-pass filter).

To the extent Defendant contends and/or shows that this limitation is not literally present in the Accused Products, it is present under the doctrine of equivalents. There are no substantial differences between the accused functionality and the claimed invention. For example, the control component in each Accused Product may adjust one or more operational control outputs according to signals or values derived from the received output signals from one or more sensors, which performs substantially the same function (e.g., adjusts the one or more operational control outputs of the control component according to the received output signals from the sensors) in substantially the same way (e.g., making adjustments based on information from sensors within the linear resonant vibration module) to achieve substantially the same result (e.g., adjusting operational control outputs in order that subsequent operation of the vibration module produces desired outputs from the one or more sensors corresponding to one or more operational control parameters).</td></tr>
</table>

Claim 5

Claim 5	Accused Products
[5] The vibration module of claim 4 wherein the one or more operational control parameters is a strength of vibration produced by the oscillation of the moveable component; and wherein the one or more operational control outputs is a frequency at which the control component drives the moveable component to oscillate, the control component dynamically adjusting the power supplied to the driving component to produce oscillation of the movable component at a resonant frequency for the vibration module.	Each Accused Product comprises the vibration module of claim 4 wherein the one or more operational control parameters is a strength of vibration produced by the oscillation of the moveable component; and wherein the one or more operational control outputs is a frequency at which the control component drives the moveable component to oscillate, the control component dynamically adjusting the power supplied to the driving component to produce oscillation of the movable component at a resonant frequency for the vibration module. For example, each Accused Product includes a strength of vibration operational control parameter, corresponding to an "intensity" parameter that may be selected in various public APIs, as well as any proprietary Apple APIs and interfaces. *See supra* claim element [1f]. For example, each Accused Product includes a frequency for driving the moveable component to oscillate as an operational control output. The desired oscillation frequency corresponding to a "sharpness" parameter may be selected in various public APIs, as well as any proprietary Apple APIs and interfaces. When the "sharpness" parameter is chosen to be substantially similar to a pre-determined resonant frequency of the vibration module, the power supplied to the driving component will be adjusted in order to produce the selected resonant frequency. *See supra* claim element [1f]. *See, e.g.*:

<table>
<tr><th>Claim 5</th><th>Accused Products</th></tr>
<tr><td></td><td>

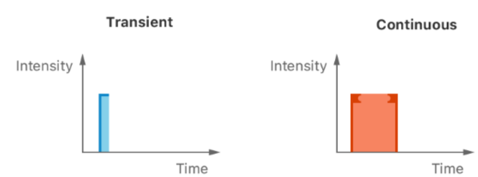
Declaration

```
class CHHapticEvent : NSObject
```

Overview

Each event represents a single haptic or audio signal. The event `type` determines whether it's audio or haptic. Use a `CHHapticPatternPlayer` object obtained through `CHHapticEngine` factory methods to play events. Haptic events can be transient or continuous. Transient haptic patterns are brief impulses that occur at a specific point in time, such as the haptic feedback you feel from swiping through a picker or toggling a switch. Continuous haptic patterns, like the vibration from a ringtone, take the form of lengthier feedback over a period of time.

In the following graphic, transient haptic patterns on the left trigger at a specific time with a specific intensity. Continuous haptic patterns on the right sustain the haptic feedback over a specific duration of time, such as three seconds.



Specify when an event begins by setting its `relativeTime` property. Specify the length of the event by setting its `duration` property. Set optional parameters to customize event properties. For example, you can specify the intensity of a haptic event by creating an event parameter with ID `hapticIntensity`.

Documentation of CHHapticEvent object, https://developer.apple.com/documentation/corehaptics/chhapticevent, describing vibration patterns resulting from various control inputs
</td></tr>
</table>

Claim 5	Accused Products
	Haptic Event Parameter IDs `static let hapticIntensity: CHHapticEvent.ParameterID` The strength of a haptic event. `static let hapticSharpness: CHHapticEvent.ParameterID` The feel of a haptic event. `static let attackTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins increasing. `static let decayTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins decreasing. `static let releaseTime: CHHapticEvent.ParameterID` The time at which to begin fading the haptic pattern. `static let sustained: CHHapticEvent.ParameterID` A Boolean value that indicates whether to sustain a haptic event for its specified duration. Documentation of haptic event parameters, https://developer.apple.com/documentation/corehaptics/chhapticevent/parameterid;

Claim 5	Accused Products
	4. The Continuous "Sharpness" parameter maps to frequency. For continuous events, we found that the sharpness parameter maps to frequency. On an iPhone 8, the lower sharpness boundary (0.0) of the Taptic Engine is 80 Hz; the higher sharpness boundary (1.0) is 230 Hz. This provides an effective range of 150 Hz, or roughly 1.5 octaves — which is impressive for a mobile phone released in 2017. Other phones or devices supporting Core Haptics might have different upper or lower boundaries since the frequency range is tied to the capabilities of the hardware actuator. https://medium.com/lofelt/10-things-you-should-know-about-designing-for-apple-core-haptics-9219fdebdcaa.

Claim 6

Claim 6	Accused Products
[6pre] The vibration module of claim 4	Each Accused Product comprises the vibration module of claim 4.
[6a] wherein the one or more operational control parameters include both a strength of vibration produced by the oscillation of the moveable component and a current operational mode; and	In each Accused Product, the one or more operational control parameters include both a strength of vibration produced by the oscillation of the moveable component and a current operational mode. For example, each Accused Product includes a strength of vibration operational control parameter, corresponding to an "intensity" parameter that may be selected in various public APIs, as well as any proprietary Apple APIs and interfaces. The default operational mode may correspond to a single haptic event with constant intensity and sharpness. Other operational modes, including more complex operational modes also exist as shown by the existence of complex and time-

Claim 6	Accused Products
	dependent vibrational behaviors not supported by the default operational mode. *See supra* claim element [1f] and *infra* claim 15. *See also*, *e.g.*:

Claim 6	Accused Products
	(see below)

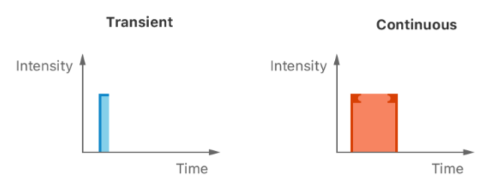
Declaration

```
class CHHapticEvent : NSObject
```

Overview

Each event represents a single haptic or audio signal. The event `type` determines whether it's audio or haptic. Use a `CHHapticPatternPlayer` object obtained through `CHHapticEngine` factory methods to play events. Haptic events can be transient or continuous. Transient haptic patterns are brief impulses that occur at a specific point in time, such as the haptic feedback you feel from swiping through a picker or toggling a switch. Continuous haptic patterns, like the vibration from a ringtone, take the form of lengthier feedback over a period of time.

In the following graphic, transient haptic patterns on the left trigger at a specific time with a specific intensity. Continuous haptic patterns on the right sustain the haptic feedback over a specific duration of time, such as three seconds.



Specify when an event begins by setting its `relativeTime` property. Specify the length of the event by setting its `duration` property. Set optional parameters to customize event properties. For example, you can specify the intensity of a haptic event by creating an event parameter with ID `hapticIntensity`.

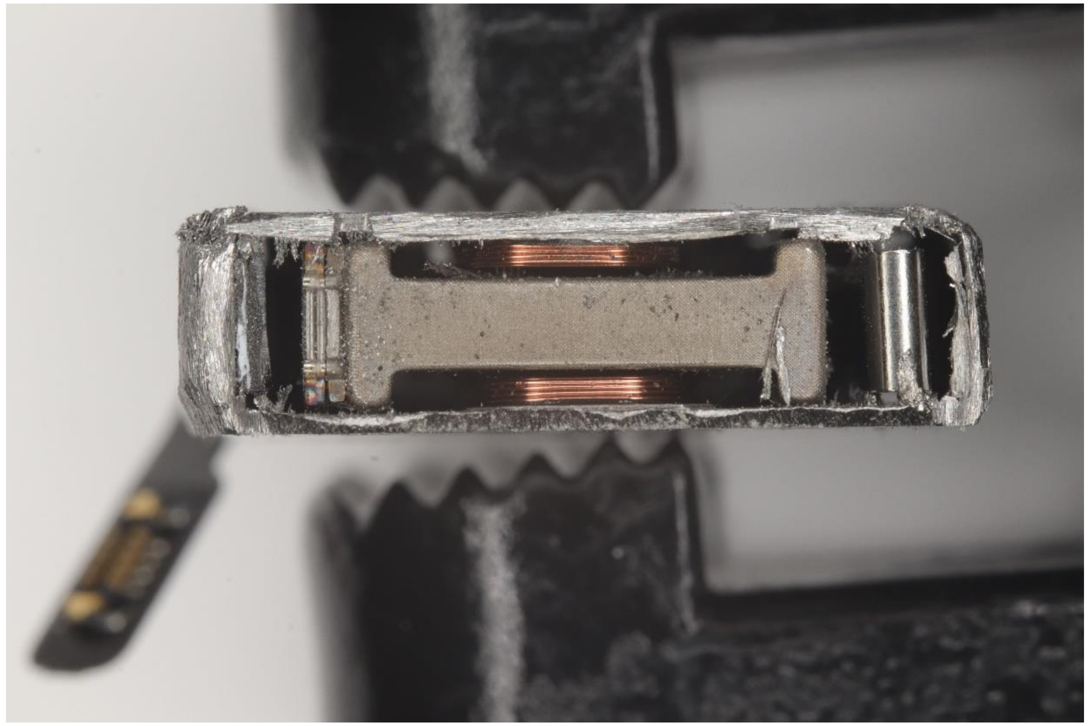
Documentation of CHHapticEvent object, https://developer.apple.com/documentation/corehaptics/chhapticevent, describing vibration patterns resulting from various control inputs

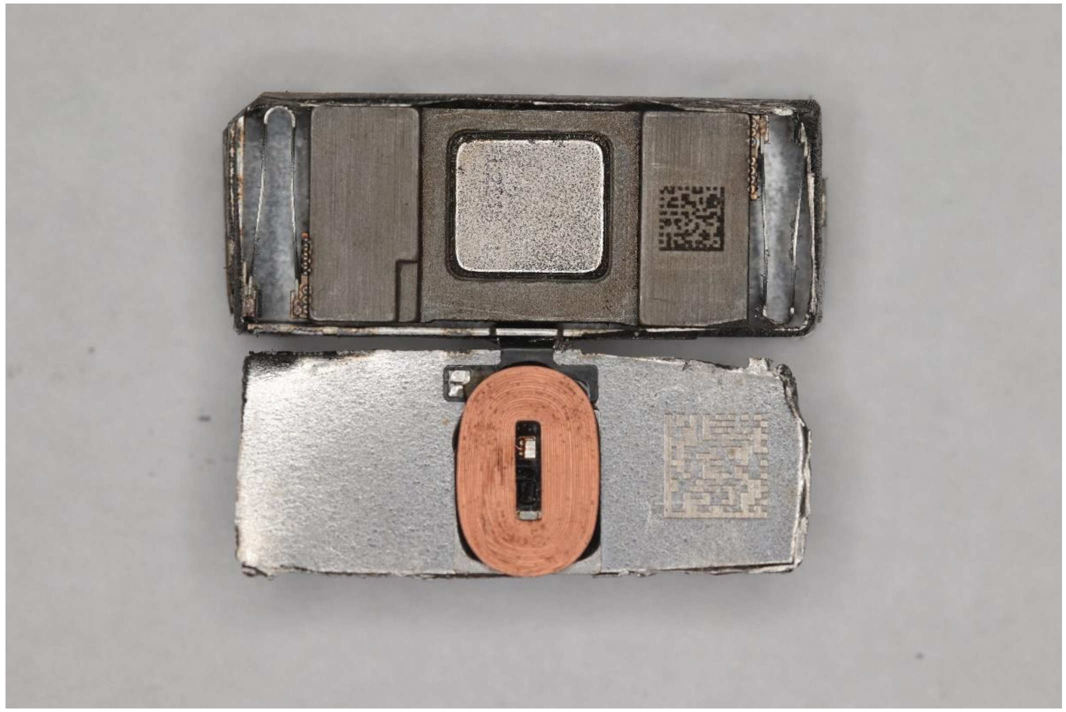
Claim 6	Accused Products
	Haptic Event Parameter IDs `static let hapticIntensity: CHHapticEvent.ParameterID` The strength of a haptic event. `static let hapticSharpness: CHHapticEvent.ParameterID` The feel of a haptic event. `static let attackTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins increasing. `static let decayTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins decreasing. `static let releaseTime: CHHapticEvent.ParameterID` The time at which to begin fading the haptic pattern. `static let sustained: CHHapticEvent.ParameterID` A Boolean value that indicates whether to sustain a haptic event for its specified duration. Documentation of haptic event parameters, https://developer.apple.com/documentation/corehaptics/chhapticevent/parameterid;

Claim 6	Accused Products
	4. The Continuous "Sharpness" parameter maps to frequency. For continuous events, we found that the sharpness parameter maps to frequency. On an iPhone 8, the lower sharpness boundary (0.0) of the Taptic Engine is 80 Hz; the higher sharpness boundary (1.0) is 230 Hz. This provides an effective range of 150 Hz, or roughly 1.5 octaves — which is impressive for a mobile phone released in 2017. Other phones or devices supporting Core Haptics might have different upper or lower boundaries since the frequency range is tied to the capabilities of the hardware actuator. https://medium.com/lofelt/10-things-you-should-know-about-designing-for-apple-core-haptics-9219fdebdcaa.
[6b] wherein the one or more operational control outputs is a control output that determines a current supplied by the power supply to the driving component and a frequency at which the control component drives the moveable component to oscillate.	In each Accused Product, the one or more operational control outputs is a control output that determines a current supplied by the power supply to the driving component and a frequency at which the control component drives the moveable component to oscillate. For example, the strength of vibration is determined from the force exerted on the permanent magnet in the moveable component by the magnetic field produced by electromagnetic coils in each Accused Product. Since the magnetic field is proportional to current in the electromagnetic coils, this indicates current supplied by the power supply to the driving component is a control output used to produce a desired vibration strength. For example, each Accused Product includes a frequency for driving the moveable component to oscillate as an operational control output. *See supra* claim element [1f].

Claim 7

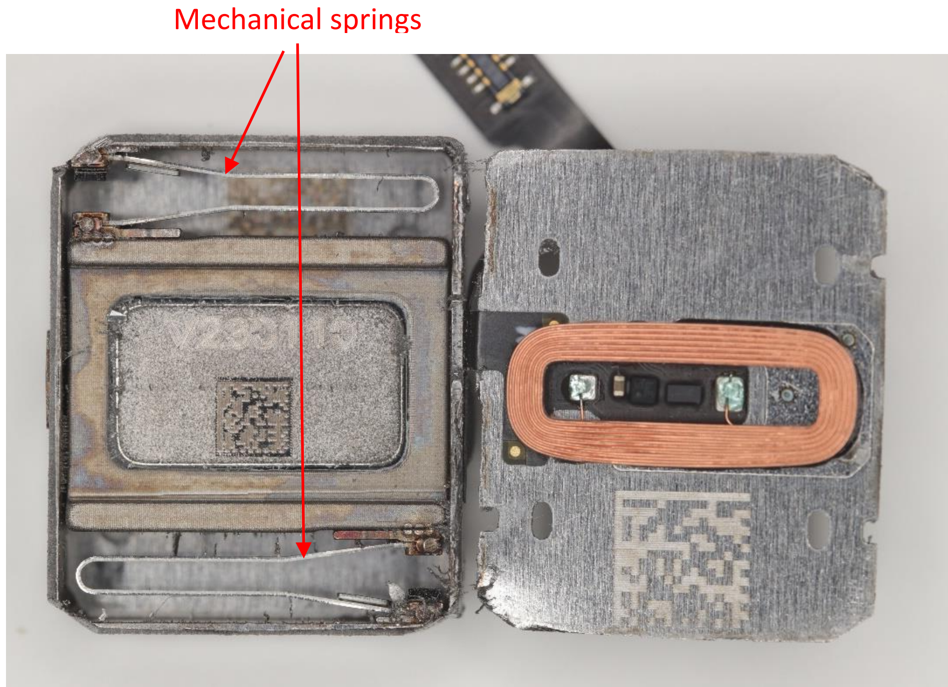
Claim 7	Accused Products
[7] The vibration module of claim 1 wherein the driving component comprises one or more electromagnetic coils that generate magnetic fields parallel to the directions in which the moveable component is driven by the driving component.	Each Accused Product comprises the vibration module of claim 1 wherein the driving component comprises one or more electromagnetic coils that generate magnetic fields parallel to the directions in which the moveable component is driven by the driving component. For example, each Accused Product comprises two electromagnetic coils that generate magnetic fields substantially parallel to the directions in which the moveable component is driven by the driving component. *See, e.g.*:  Photograph showing one driving coil (at right) within disassembled Taptic Engine from the iPhone 14, with moveable component in place at left. The moveable component travels up and down from

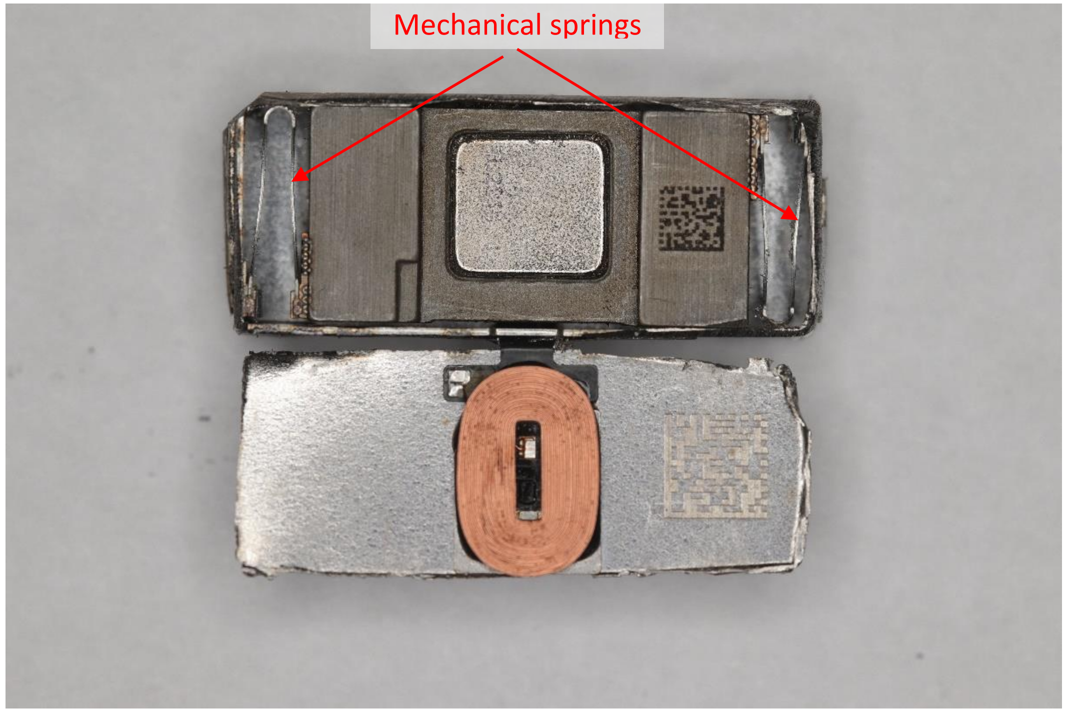
Claim 7	Accused Products
	this perspective, which is the same direction as magnetic field lines originating from the driving coils.  Photograph of internals of Taptic Engine from the iPhone 14, showing drive coils (top and bottom) surrounding the moveable component. The moveable component travels left and right from this perspective (red arrows) against mechanical springs. The drive coils produce a magnetic field direction substantially parallel to the left and right directions of motion of the moveable mass.

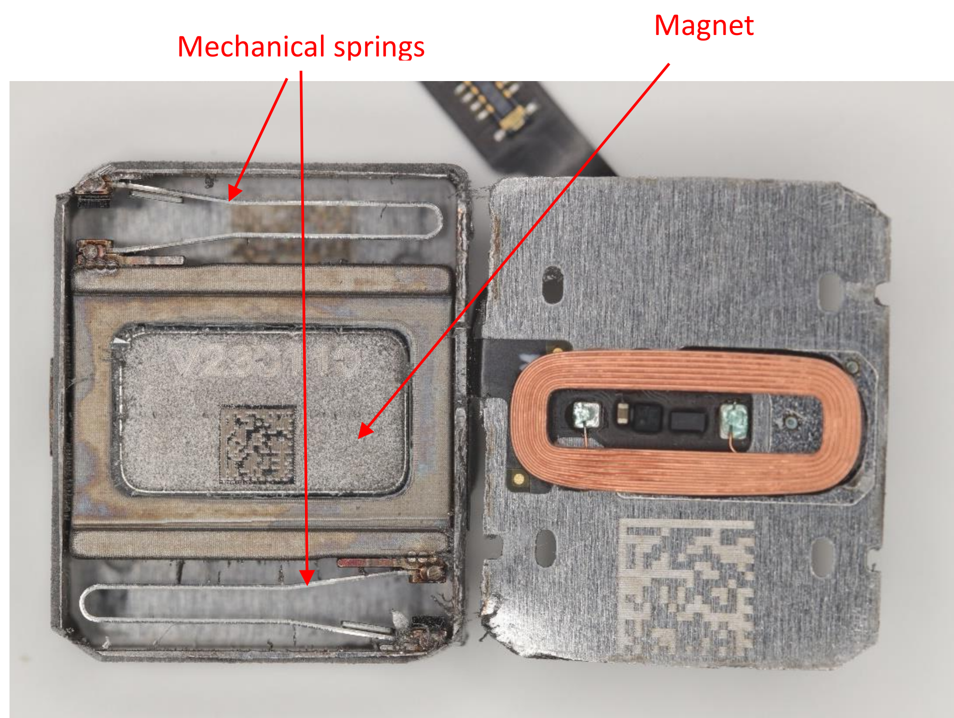
Claim 7	Accused Products
	 Photograph of drive coils within disassembled Taptic Engine from Apple Watch Ultra. The two visible coils would be positioned above and below the movable component when assembled. The moveable component travels left and right from this perspective, which is the same direction as magnetic field lines originating from the drive coils.

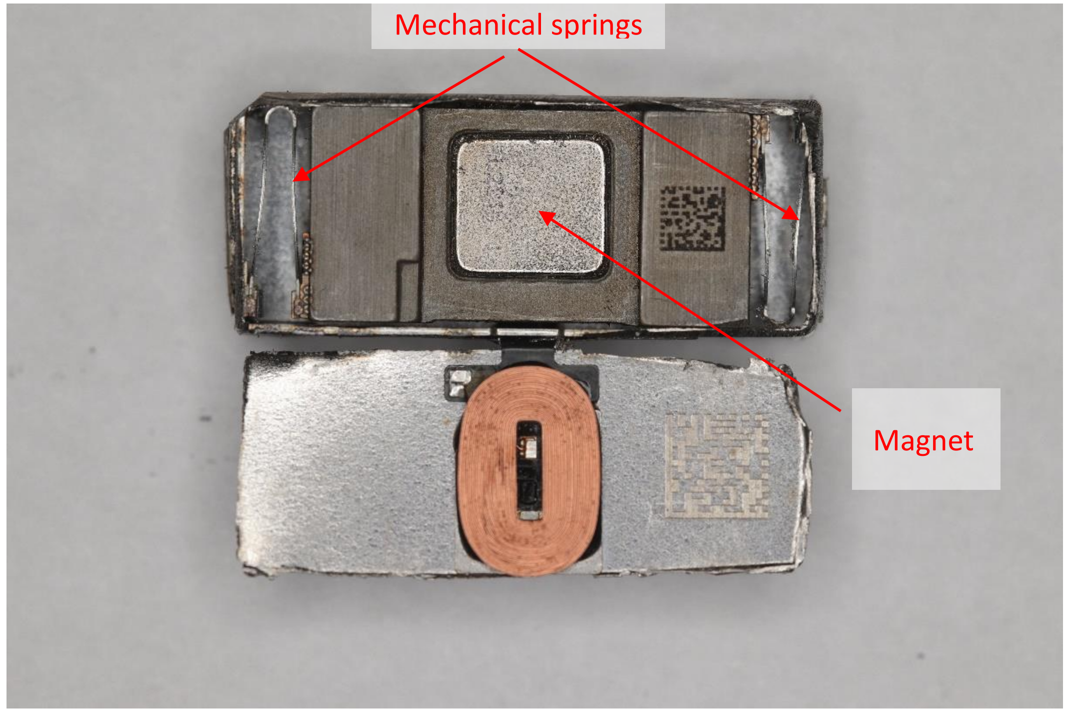
Claim 8

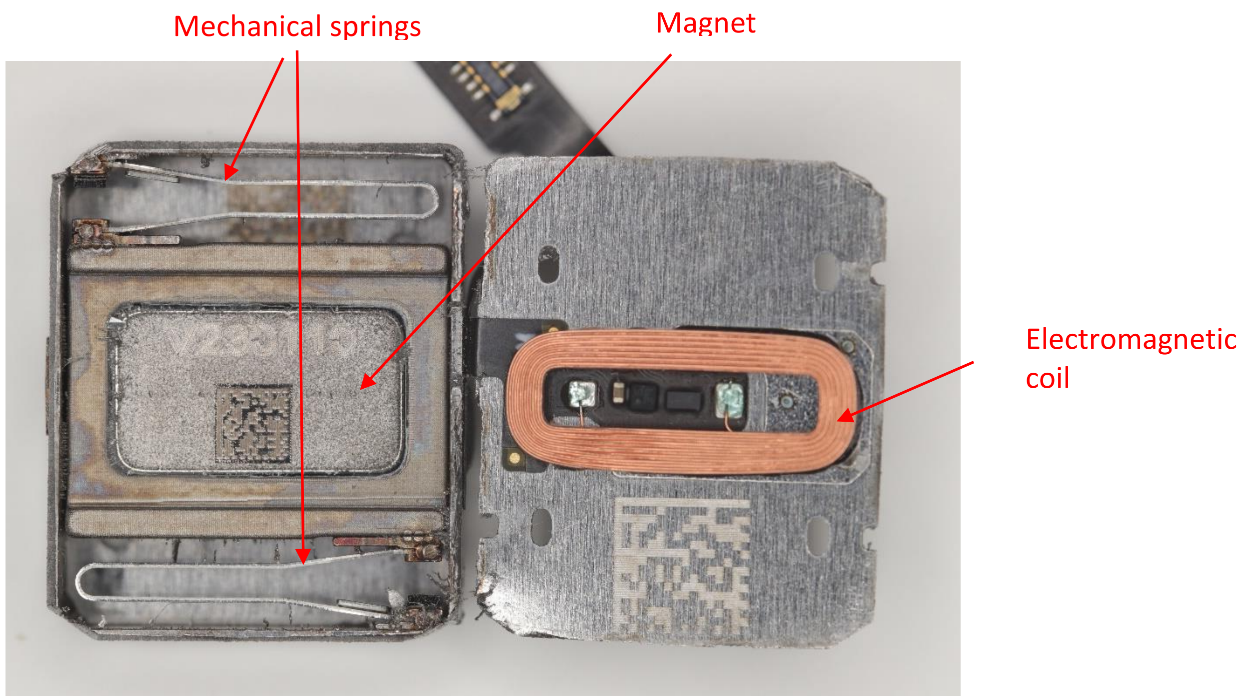
Claim 8	Accused Products
[8pre] The vibration module of claim 1	Each Accused Product comprises the vibration module of claim 1.
[8a] wherein the housing is a tube, capped at both ends by	In each Accused Product, the housing is a tube, capped at both ends by movable-component-repelling components selected from one of mechanical springs and magnets.

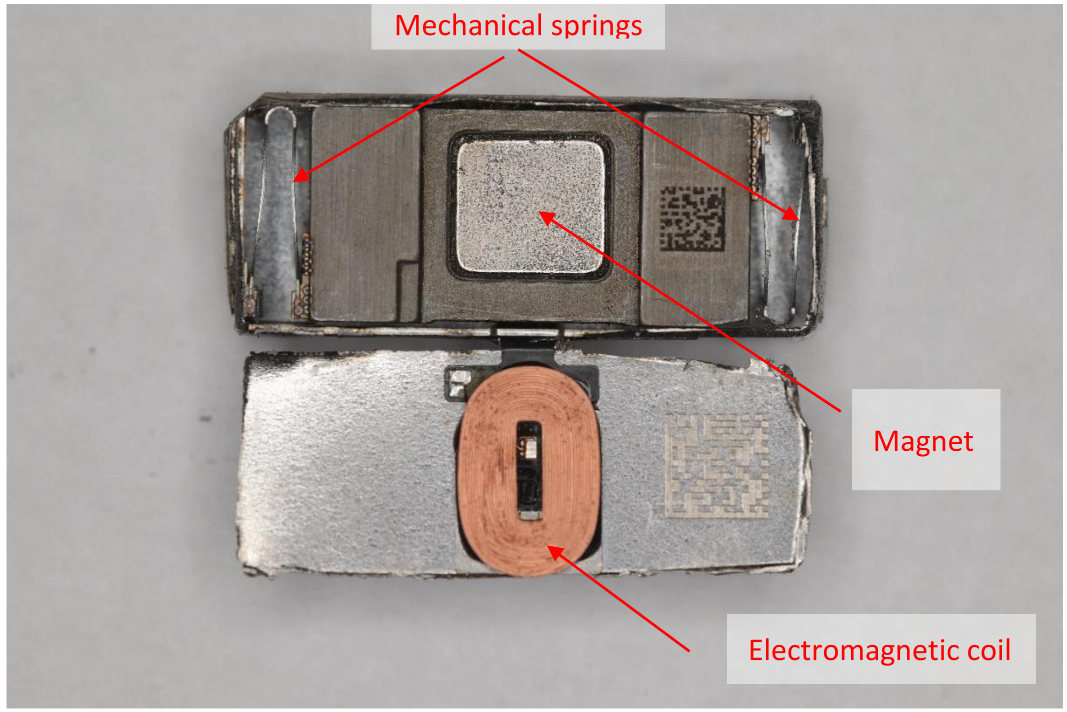
Claim 8	Accused Products
movable-component- repelling components selected from one of mechanical springs and magnets;	For example, in each Accused Product, the housing is a rectangular tube capped at both ends by mechanical springs. *See, e.g.*:  Photograph showing one driving coil (at right) within disassembled Taptic Engine from the iPhone 14, with moveable component in place at left inside a rectangular tube. The moveable component travels up and down from this perspective against two mechanical springs on the top and bottom.

Claim 8	Accused Products
	 Photograph of drive coils within disassembled Taptic Engine from Apple Watch Ultra, with the moveable component in place at the top inside a rectangular tube. The moveable component travels left and right from this perspective against two mechanical springs on the left and right.
[8b] wherein the movable component is a magnet shaped to slide within the tube; and	In each Accused Product, the moveable component is a magnet shaped to slide within the tube. *See, e.g.*:

Claim 8	Accused Products
	 Photograph of a disassembled Taptic Engine from the iPhone 14 showing a magnet shaped to slide within a rectangular tube.

Claim 8	Accused Products
	 Photograph of a disassembled Taptic Engine from Apple Watch Ultra showing a magnet shaped to slide within a rectangular tube.
[8c] wherein the driving component is an electromagnetic coil.	In each Accused Product, the driving component is an electromagnetic coil.

Claim 8	Accused Products
	See, e.g.:  Photograph of a disassembled Taptic Engine from the iPhone 14 showing an electromagnetic coil.

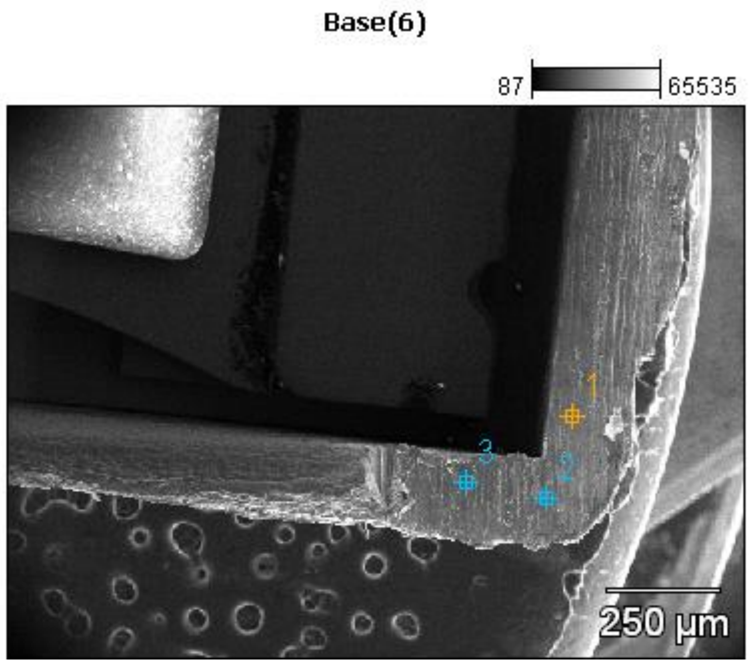
Claim 8	Accused Products
	 Photograph of a disassembled Taptic Engine from Apple Watch Ultra showing an electromagnetic coil.

Claim 14

Claim 14	Accused Products
[14] The vibration module of claim 1 further including flux paths comprising a paramagnetic material that is shaped and positioned to reduce the reluctance of one or	Each Accused Product comprises the vibration module of claim 1 further including flux paths comprising a paramagnetic material that is shaped and positioned to reduce the reluctance of one or more magnetic circuits within the vibration module. For example, the elemental composition of the housing of the Taptic Engine in the iPhone 14 was determined from energy-dispersive X-ray spectroscopy (EDS). The housing primarily consists of

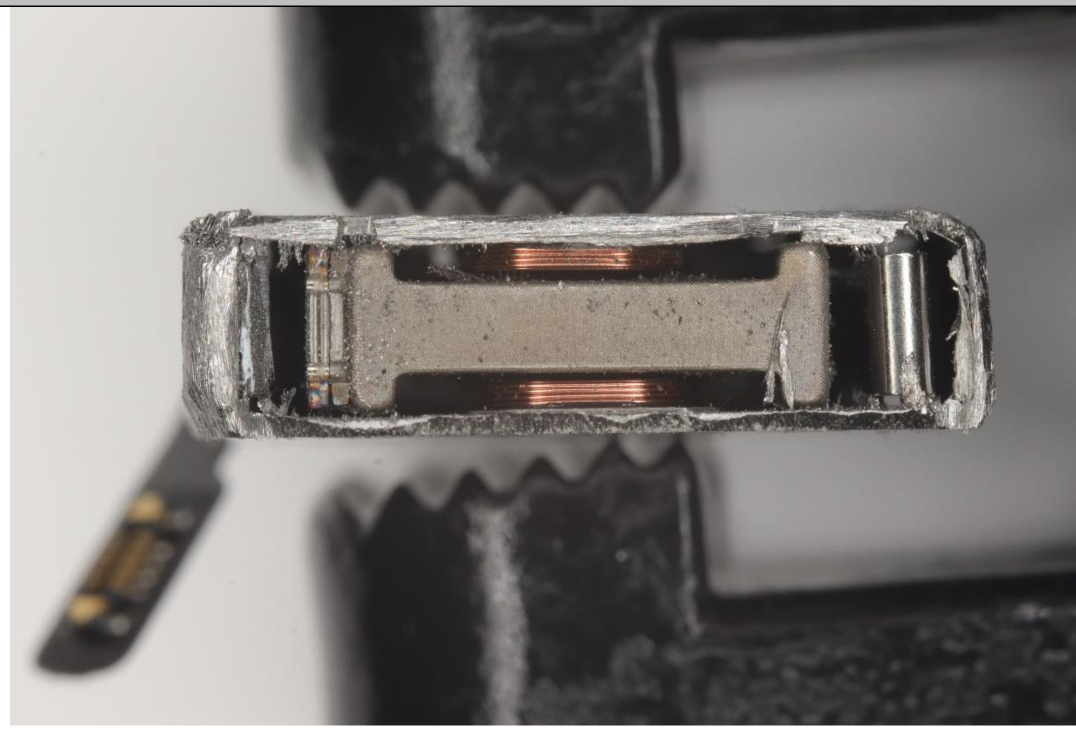
Claim 14	Accused Products
more magnetic circuits within the vibration module.	an iron and chromium alloy, which indicates it is a ferritic stainless steel with paramagnetic properties and high magnetic permeability. The housing surrounds the driving coils and moveable component and is positioned to reduce the reluctance of the magnetic circuit formed by the driving coils, moveable component, and housing.

See, e.g.:



Line	Wt.%	Error
C K	0.00	0.00
O K	0.00	0.00
Si K	0.32	0.03
Ti K	0.13	0.02
V K	0.19	0.04
Cr K	18.56	0.09
Fe K	80.20	0.22
Ni K	0.21	0.04
Nd L	0.00	0.00
Tl L	0.39	0.20

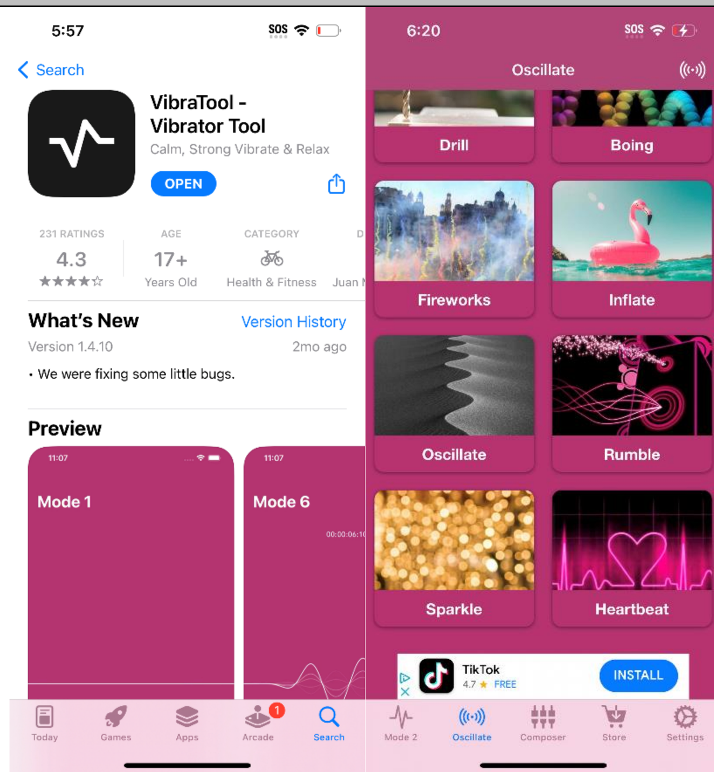
Scanning electron microscopic image of the housing of the Taptic Engine of the iPhone 14 depicting 3 points where EDS measurements were taken. The elemental composition by weight averaged from the 3 EDS measurements is shown in the table on the right. The iron and chromium composition suggests the housing consists of a ferritic stainless steel alloy with paramagnetic properties and high magnetic permeability.

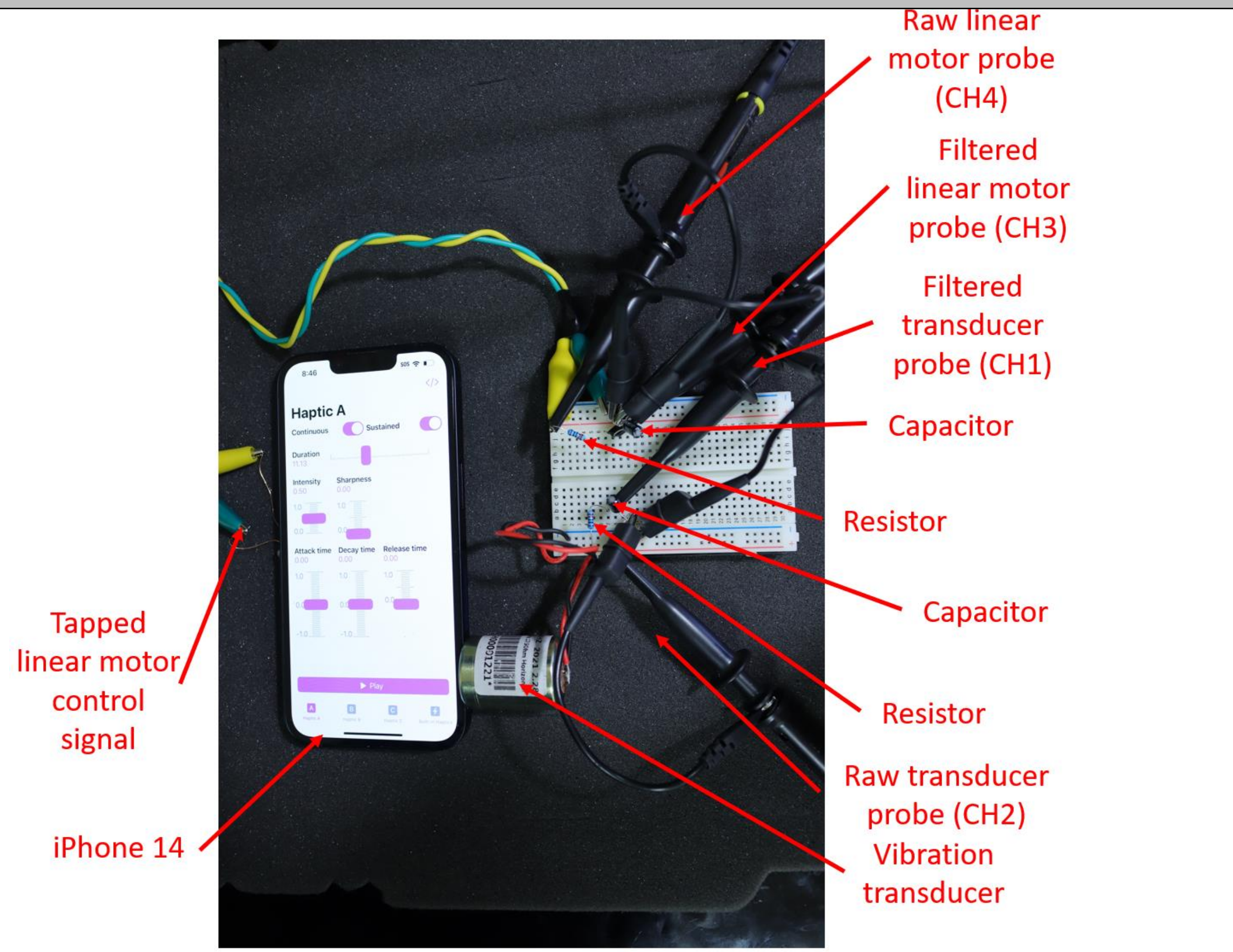
Claim 14	Accused Products
	 Photograph of internals of Taptic Engine from the iPhone 14, showing the magnetic circuit formed by the driving coils, moveable component, and housing composed of a paramagnetic material.

Claim 15

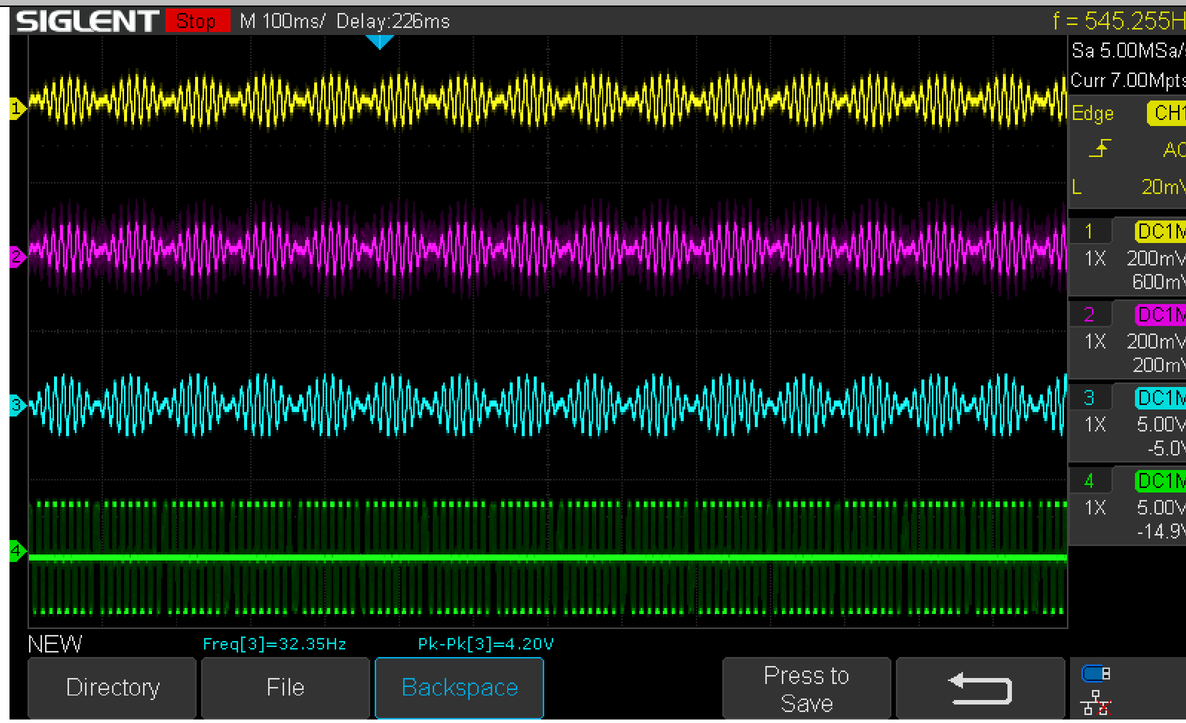
Claim 15	Accused Products
[15] The vibration module of claim 1 wherein the control component drives simultaneous oscillation of the moveable component at two or	Each Accused Product comprises the vibration module of claim 1 wherein the control component drives simultaneous oscillation of the moveable component at two or more frequencies to generate complex vibration modes. For example, the iPhone 14 is configured to drive the moveable component in a complex drive mode that includes at least two frequencies when used with software sold by Apple through its

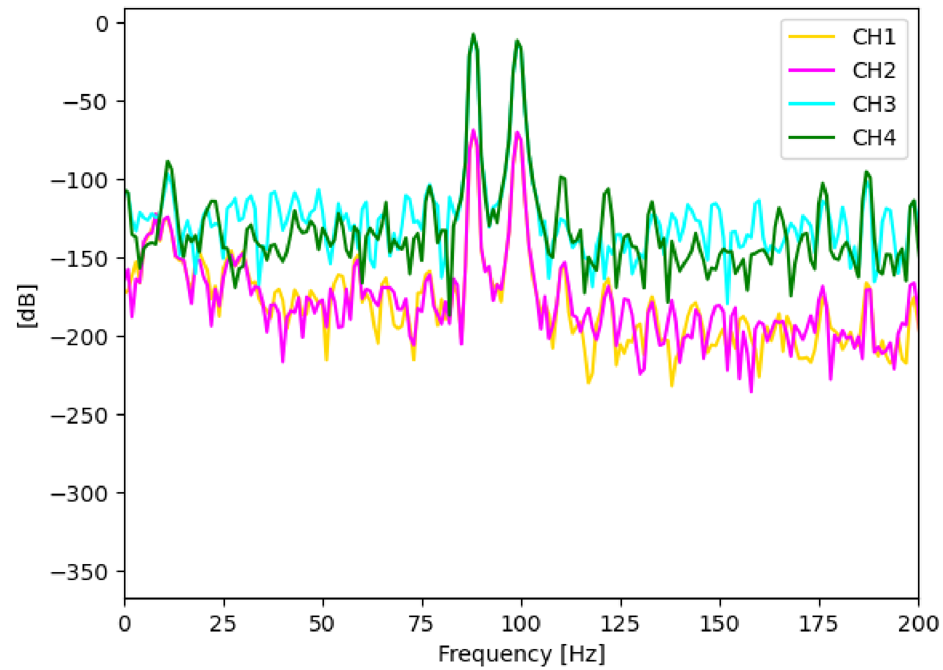
Claim 15	Accused Products
more frequencies to generate complex vibration modes.	App Store. On information and belief, the Apple Watch Ultra supports the same or similar functionality. For a further example, each Accused Product is configured to drive the moveable component in a complex drive mode when used with public APIs, as well as any proprietary Apple APIs. In the Apple Core Haptics API, one or more haptic patterns, which each includes a selected frequency, may be played simultaneously to produce two or more frequencies that generate complex vibration modes. *See, e.g.*:

Claim 15	Accused Products
	 Screenshots of exemplary "VibraTool" software, sold by Apple through its App Store.

<table>
<tr><th>Claim 15</th><th>Accused Products</th></tr>
<tr><td></td><td>


Photograph of test apparatus for measuring motor coil drive signal (from tapped connection) and actual motion (from attached vibration transducer) of iPhone 14. Note RC low-pass filter networks at top right with R = 220 Ω, C = 2.2 uF.
</td></tr>
</table>

Claim 15	Accused Products
	 Oscilloscope trace showing “Oscillate” pattern from VibraTool, showing complex drive modes.

Claim 15	Accused Products
	 Spectrum analysis of “Oscillate” pattern from VibraTool, showing two or more peak frequencies (88 Hz and 99 Hz) of complex drive mode.

<table>
<tr><th>Claim 15</th><th>Accused Products</th></tr>
<tr><td></td><td>

<h2>Play the AHAP</h2>

Assuming the engine has started, call the engine's method, `playPattern(from:)`, passing it the URL to playing the file.

```
// Tell the engine to play a pattern.
try engine?.playPattern(from: URL(fileURLWithPath: path))
```

This method of playback follows a fire and forget model; each haptic pattern plays until it reaches its end, then stops automatically.

Once the haptic starts playing, you can't stop it, and pressing other buttons layers those haptics on top of any existing haptic patterns in the middle of playback. This layering allows you to combine a haptic pattern with a more continuous intent, like the rumble of thunder, with a more impulse-driven haptic pattern built from transient taps, like the strike of lightning.

Core Haptics layers simultaneously playing haptics automatically. If you don't want the layering, your app should wait out the duration of the first haptic before starting subsequent haptic players.

Note

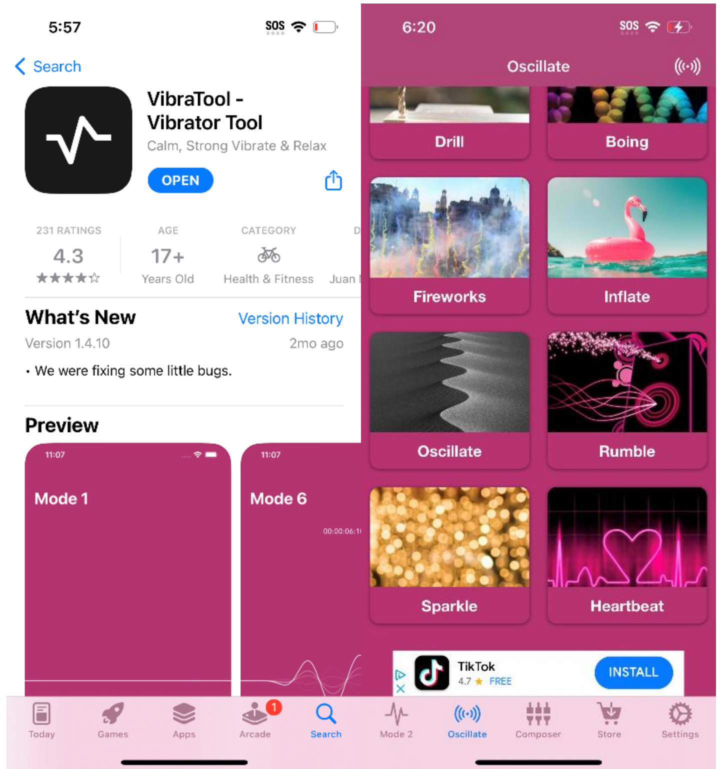
Haptic patterns don't blend like audio waveforms, and not all combinations produce a discernible effect. Playing two haptic events of the same type at the same time makes them hard to tell apart. Experiment with various combinations to ensure that the result feels right.

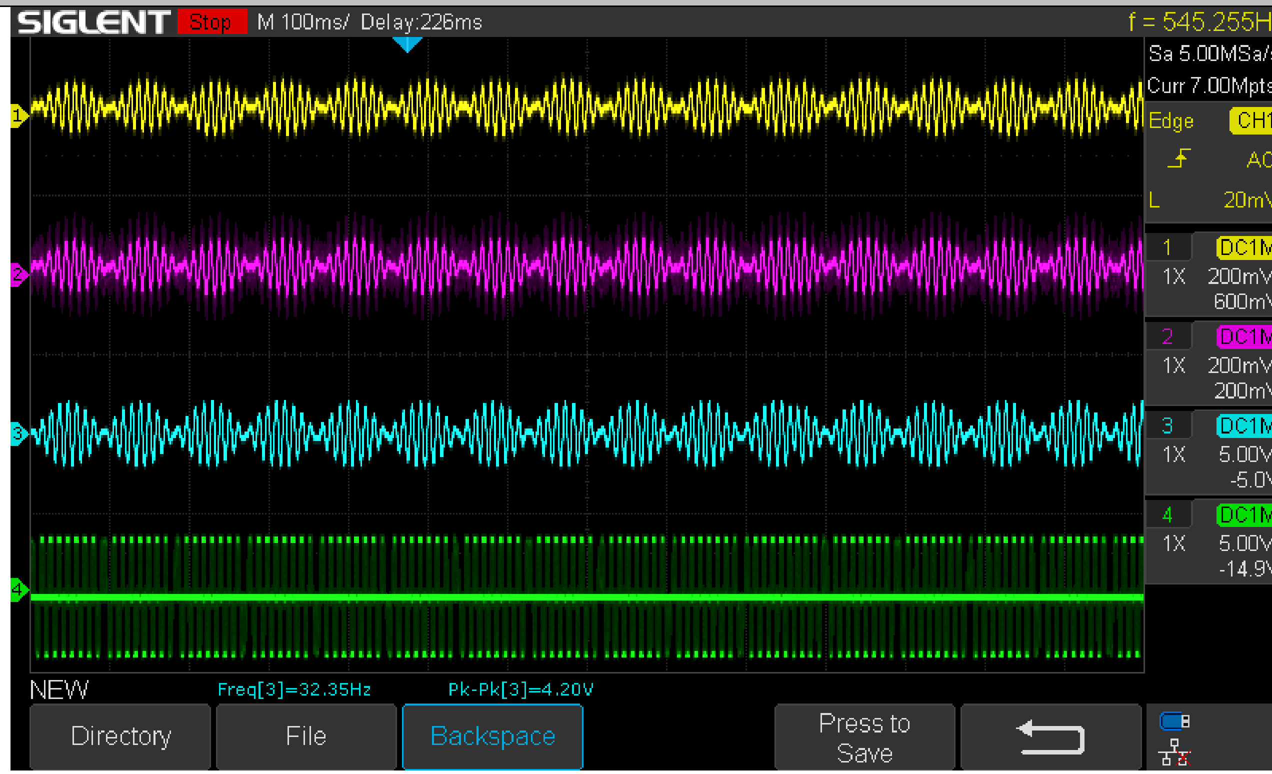
Documentation of the Apple Core Haptics API showing that more than one haptic pattern, which includes a frequency, may be played simultaneously to produce two or more frequencies that generate complex vibration modes. Source: https://developer.apple.com/documentation/corehaptics/playing_a_custom_haptic_pattern_from_a_file

</td></tr>
</table>

Claim 16

Claim 16	Accused Products
[16pre] The vibration module of claim 15 wherein the complex vibration modes include:	Each Accused Product comprises the vibration module of claim 15.
[16a] a primary oscillation frequency modulated by a modulating oscillation frequency;	In each Accused Product, the complex vibration modes include a primary oscillation frequency modulated by a modulating oscillation frequency. For example, as demonstrated by testing, the iPhone 14 is configured to drive the moveable component in a complex drive mode that includes a primary oscillation frequency modulated by a modulating oscillation frequency when used with software sold by Apple through its App Store such as VibraTool. On information and belief, the Apple Watch Ultra supports the same or similar functionality. *See supra* claim 15. *See also*, *e.g.*:

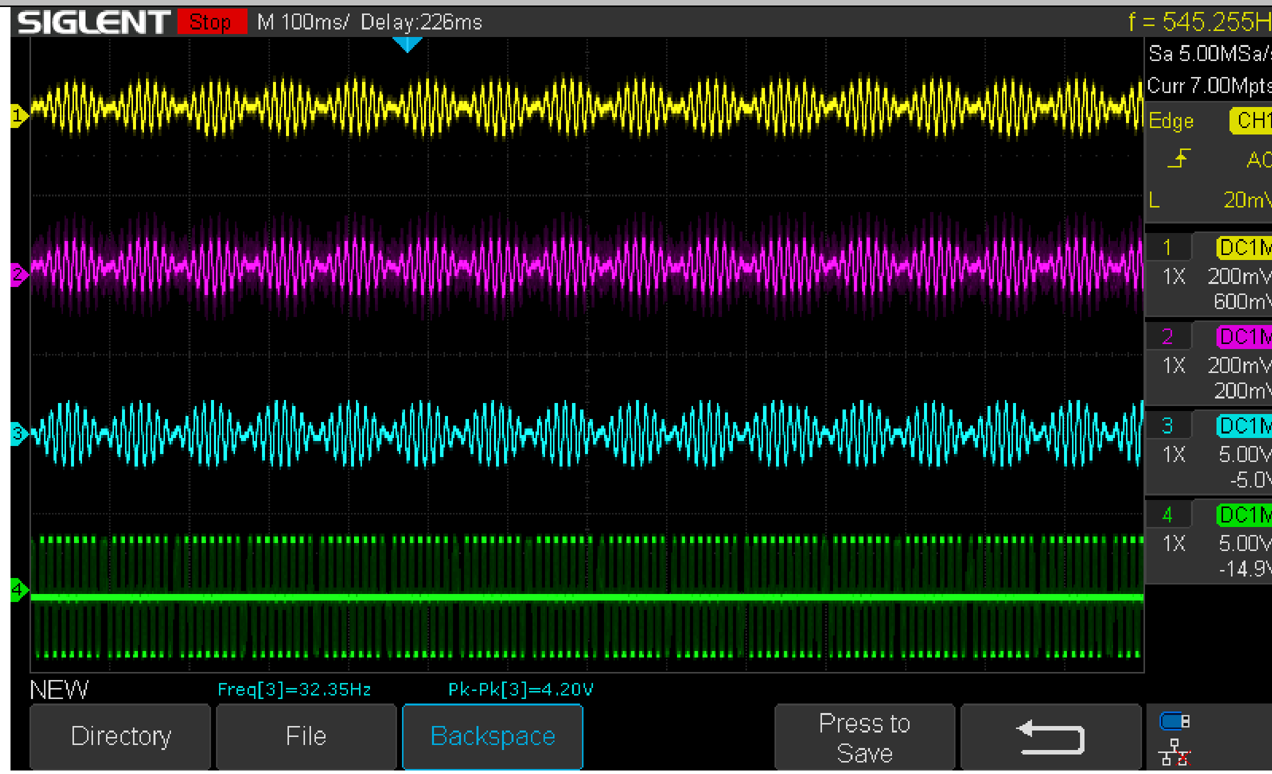
Claim 16	Accused Products
	 Screenshots of exemplary “VibraTool” software, sold by Apple through its App Store.

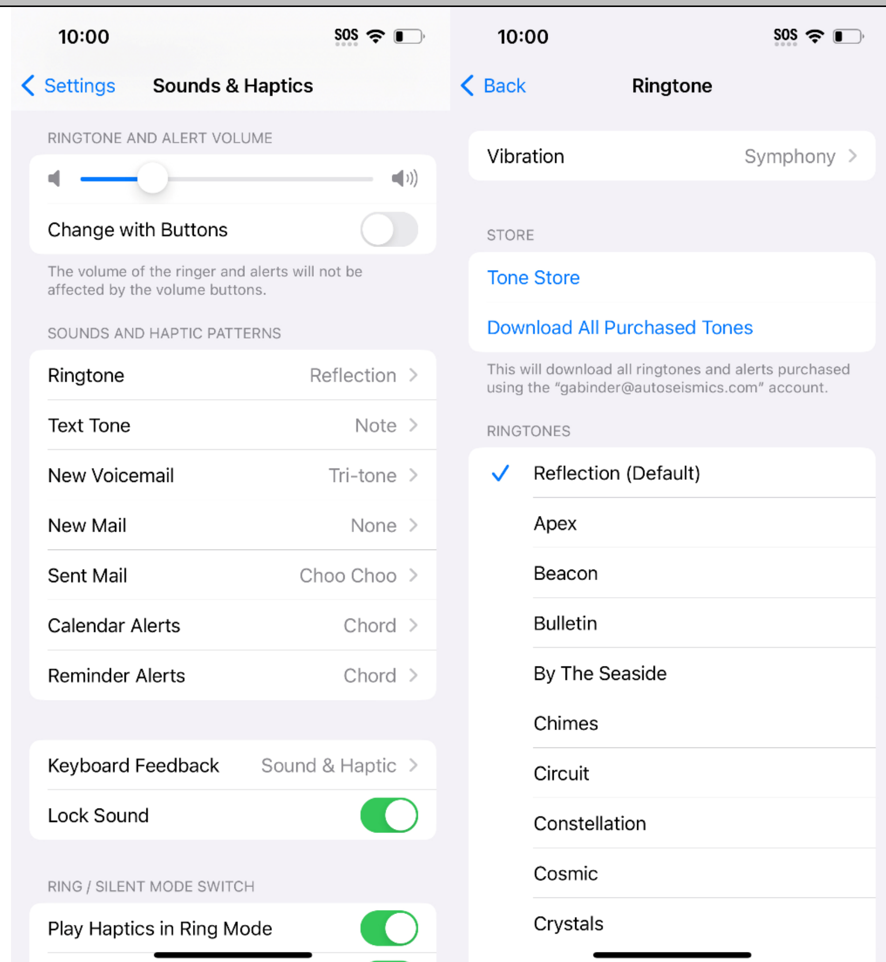
<table>
<tr><th>Claim 16</th><th>Accused Products</th></tr>
<tr><td></td><td>

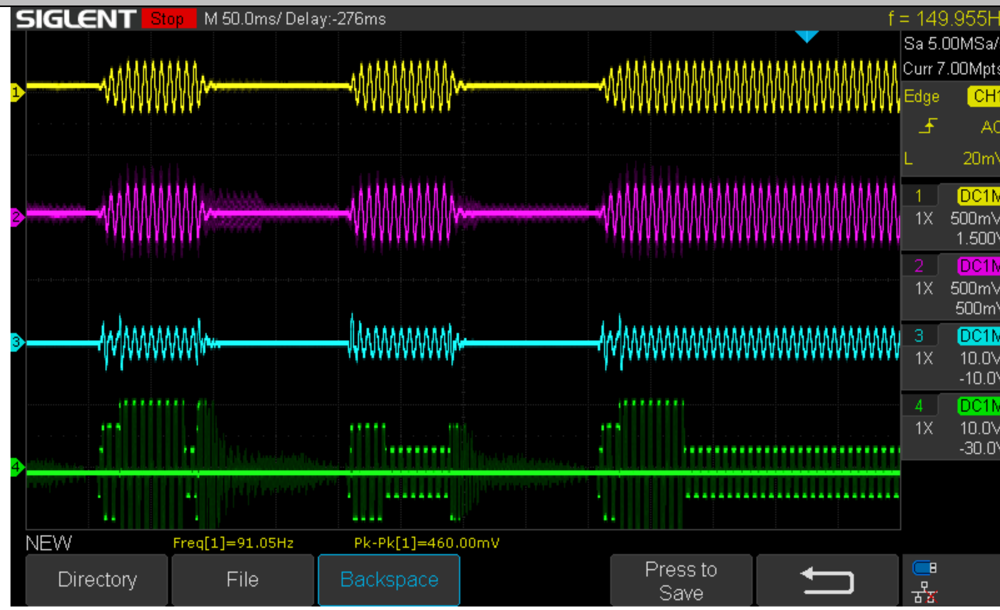
Oscilloscope trace from the testing apparatus showing “Oscillate” pattern from VibraTool, showing a primary oscillation frequency modulated by a lower modulating oscillation frequency.</td></tr>
<tr><td>[16b] a beat frequency; and</td><td>In each Accused Product, the complex vibration modes include a beat frequency.

For example, as demonstrated by testing, the iPhone 14 is configured to drive the moveable component in a complex drive mode that includes a beat frequency when used with software sold by Apple through its App Store such as VibraTool. On information and belief, the Apple Watch Ultra supports the same or similar functionality. See supra claim 15.

See, e.g.:</td></tr>
</table>

Claim 16	Accused Products
	 Oscilloscope trace from the testing apparatus showing “Oscillate” pattern from VibraTool, showing a beat frequency.
[16c] an aperiodic oscillation waveform.	In each Accused Product, the complex drive modes include an aperiodic oscillation waveform. For example, as demonstrated by testing, the iPhone 14 is configured to drive the moveable component in a complex drive mode that includes an aperiodic oscillation waveform such as during the “Reflection” ringtone. On information and belief, the Apple Watch Ultra supports the same or similar functionality. *See supra* claim 15. *See, e.g.*:

Claim 16	Accused Products
	 Screenshots of "Sounds & Haptics" and "Ringtone" settings from the iPhone 14, which allow selection of aperiodic oscillation waveforms such as "Reflection".

Claim 16	Accused Products
	 Oscilloscope trace from the testing apparatus showing the “Reflection” ringtone from the Apple iPhone 14, showing an aperiodic oscillation waveform.

Claim 17

Claim 17	Accused Products
[17] The vibration module of claim 1 wherein the control component controls supply of power from the power supply to the driving component to cause the moveable component to oscillate at a frequency and an amplitude that are independently specified by	Each Accused Product comprises the vibration module of claim 1 wherein the control component controls supply of power from the power supply to the driving component to cause the moveable component to oscillate at a frequency and an amplitude that are independently specified by user input received from the user-input features.

Claim 17	Accused Products
user input received from the user-input features.	For example, in each Accused Product, the control component can drive the moveable component at independently specified frequencies and amplitude, as demonstrated by public APIs and by testing. The public APIs, as well as any proprietary Apple APIs and interfaces, independently specify intensity and sharpness that directly and/or indirectly control the frequency and amplitude of the oscillation. These frequencies and amplitudes are independently specified by user input received from the user-input features, for example via Apple's "Sounds & Haptics" controls, via touch and/or force sensors (keyboard and button feedback), or via third-party applications. *See supra* claim element [1f]. *See, e.g.*:

<table>
<tr><th>Claim 17</th><th>Accused Products</th></tr>
<tr><td></td><td>

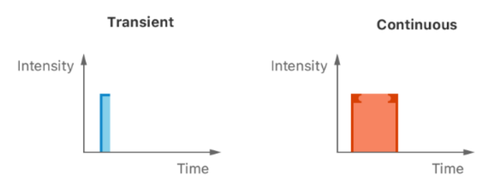
Declaration

```
class CHHapticEvent : NSObject
```

Overview

Each event represents a single haptic or audio signal. The event `type` determines whether it's audio or haptic. Use a `CHHapticPatternPlayer` object obtained through `CHHapticEngine` factory methods to play events. Haptic events can be transient or continuous. Transient haptic patterns are brief impulses that occur at a specific point in time, such as the haptic feedback you feel from swiping through a picker or toggling a switch. Continuous haptic patterns, like the vibration from a ringtone, take the form of lengthier feedback over a period of time.

In the following graphic, transient haptic patterns on the left trigger at a specific time with a specific intensity. Continuous haptic patterns on the right sustain the haptic feedback over a specific duration of time, such as three seconds.



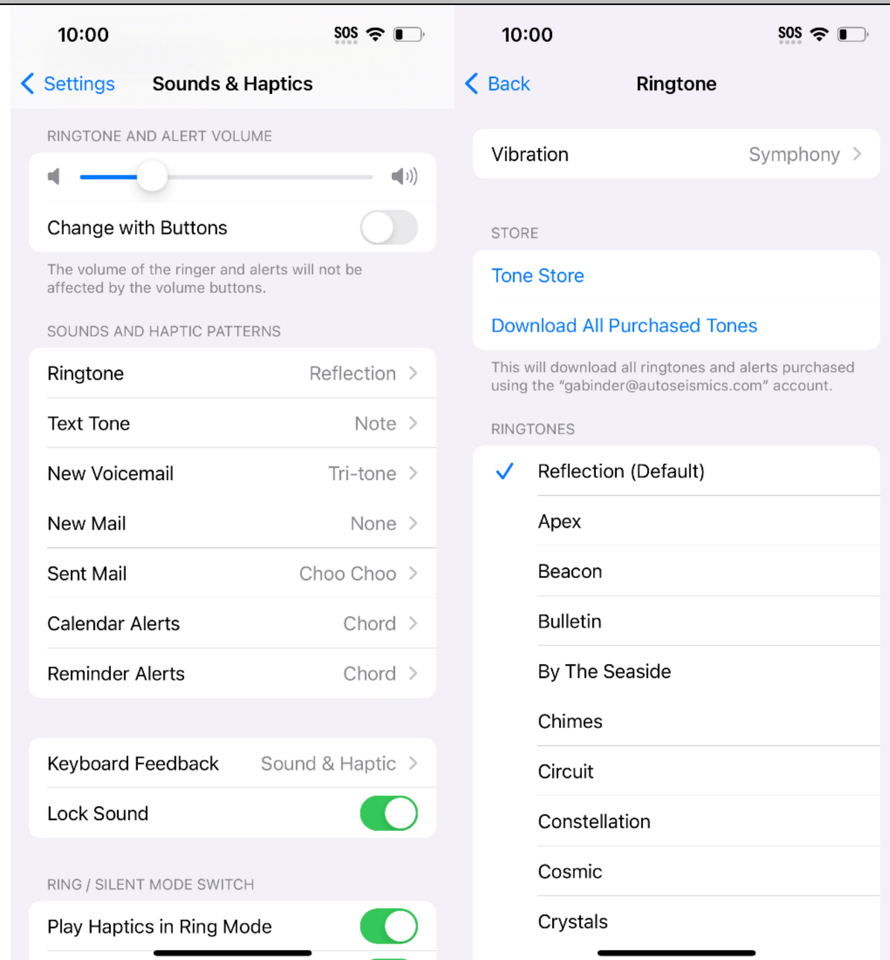
Specify when an event begins by setting its `relativeTime` property. Specify the length of the event by setting its `duration` property. Set optional parameters to customize event properties. For example, you can specify the intensity of a haptic event by creating an event parameter with ID `hapticIntensity`.

Documentation of CHHapticEvent object, https://developer.apple.com/documentation/corehaptics/chhapticevent

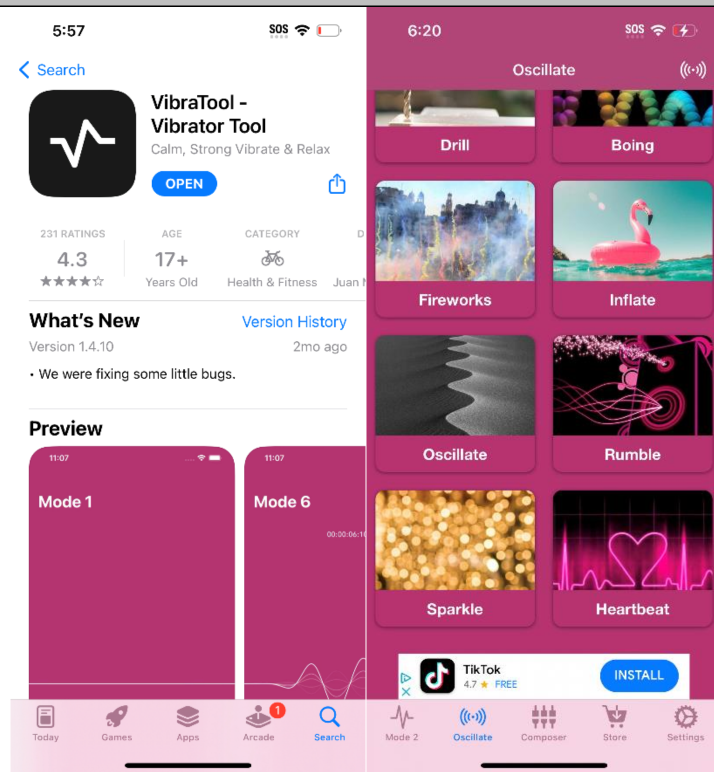
</td></tr>
</table>

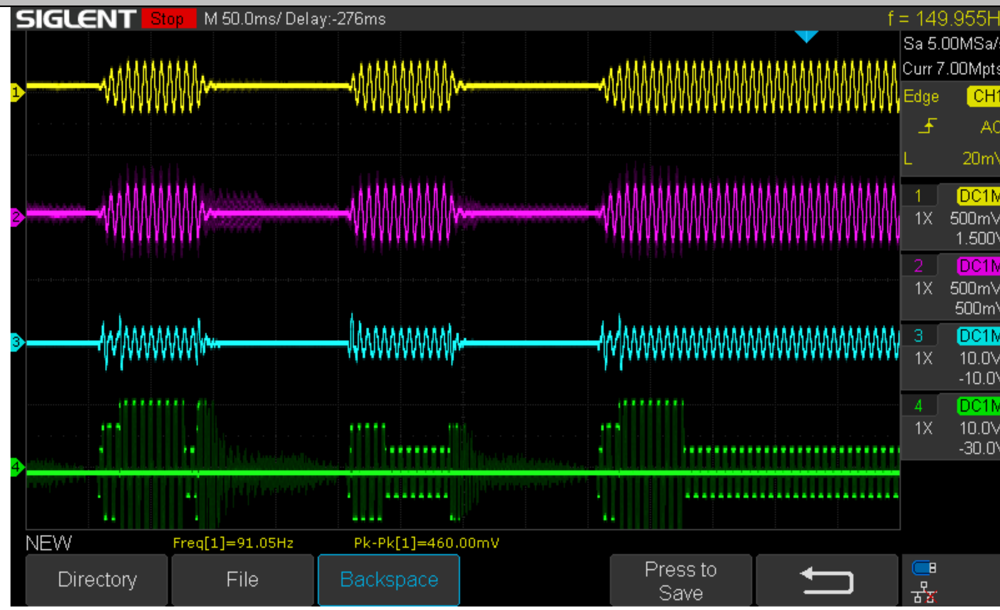
Claim 17	Accused Products
	Haptic Event Parameter IDs `static let hapticIntensity: CHHapticEvent.ParameterID` The strength of a haptic event. `static let hapticSharpness: CHHapticEvent.ParameterID` The feel of a haptic event. `static let attackTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins increasing. `static let decayTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins decreasing. `static let releaseTime: CHHapticEvent.ParameterID` The time at which to begin fading the haptic pattern. `static let sustained: CHHapticEvent.ParameterID` A Boolean value that indicates whether to sustain a haptic event for its specified duration. Documentation of haptic event parameters, https://developer.apple.com/documentation/corehaptics/chhapticevent/parameterid;

Claim 17	Accused Products
	4. The Continuous "Sharpness" parameter maps to frequency. For continuous events, we found that the sharpness parameter maps to frequency. On an iPhone 8, the lower sharpness boundary (0.0) of the Taptic Engine is 80 Hz; the higher sharpness boundary (1.0) is 230 Hz. This provides an effective range of 150 Hz, or roughly 1.5 octaves — which is impressive for a mobile phone released in 2017. Other phones or devices supporting Core Haptics might have different upper or lower boundaries since the frequency range is tied to the capabilities of the hardware actuator. https://medium.com/lofelt/10-things-you-should-know-about-designing-for-apple-core-haptics-9219fdebdcaa.

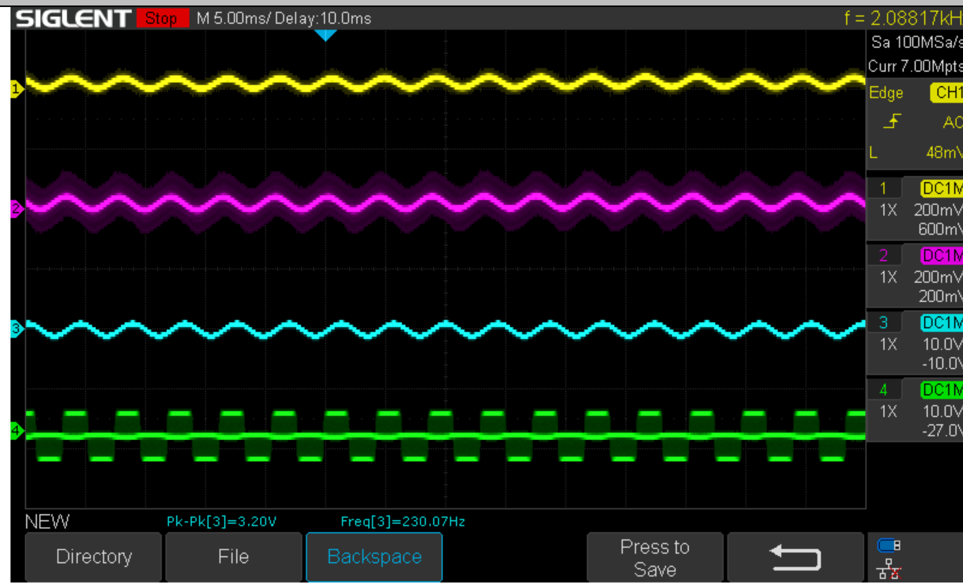
Claim 17	Accused Products
	 Screenshots of "Sounds & Haptics" and "Ringtone" settings, which allow selection of frequency and/or amplitude.

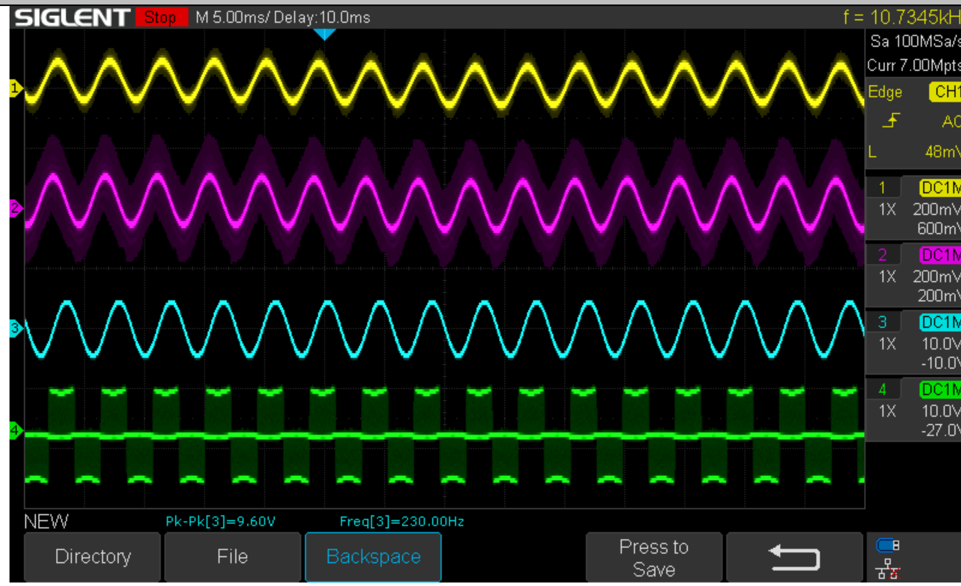
Claim 17	Accused Products
	 Screenshots of exemplary “Haptics Studio” software, sold by Apple through its App Store, with independent user-input controls for frequency (“sharpness”) and amplitude (“intensity”).

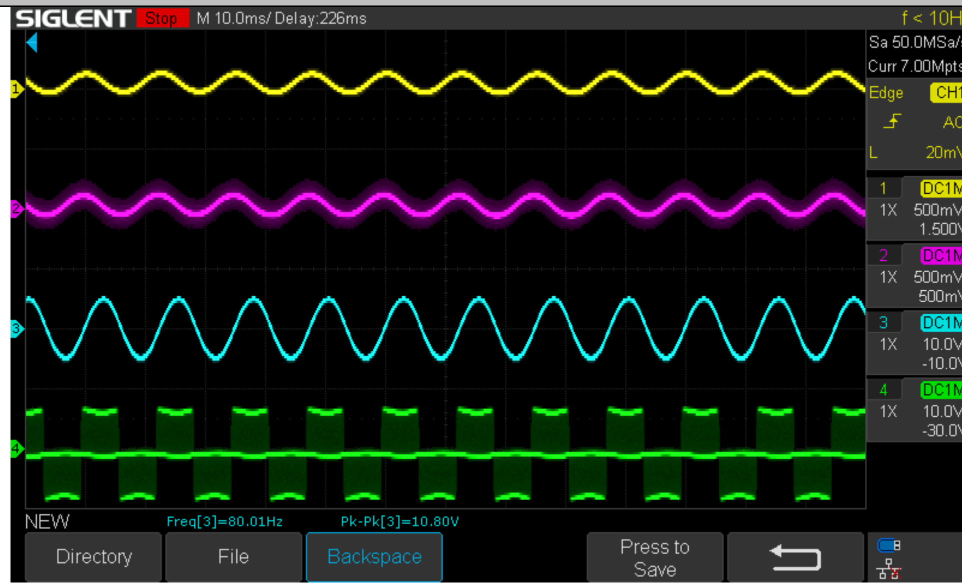
Claim 17	Accused Products
	 Screenshots of exemplary “VibraTool” software, sold by Apple through its App Store, with user-input controls for selecting frequency and amplitude.

<table>
<tr><th>Claim 17</th><th>Accused Products</th></tr>
<tr><td></td><td>

Oscilloscope trace showing, in green (CH4), the PWM-modulated drive voltage applied by the iPhone 14 haptic controller(s), with positive and negative voltages to drive the moveable component in a first and second direction. Channels 1 and 2 (yellow and purple) show the actual motion of the iPhone 14 resulting (pursuant to Newton’s third law) from the motion of the moveable component.</td></tr>
</table>

Claim 17	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 0.5, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 3.2 V (peak-to-peak, through RC low-pass filter).

Claim 17	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 1, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 9.6V (peak-to-peak, through RC low-pass filter). Note that the externally measured vibration amplitude (yellow and purple traces, same scale as previous trace) is also significantly higher at intensity = 1 than 0.5.

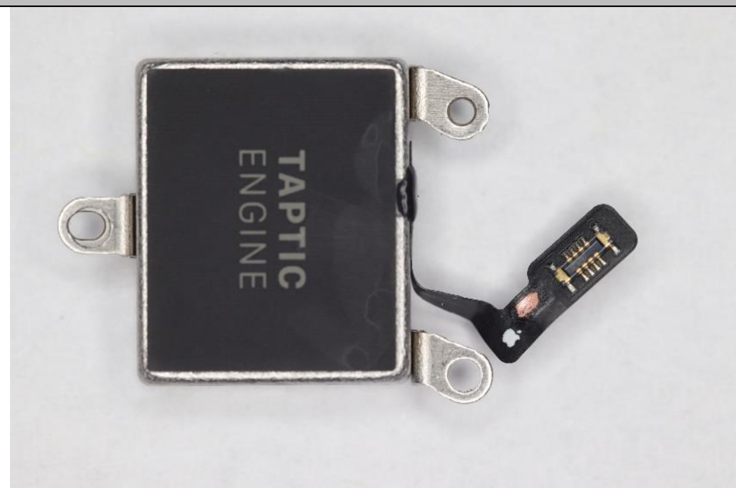
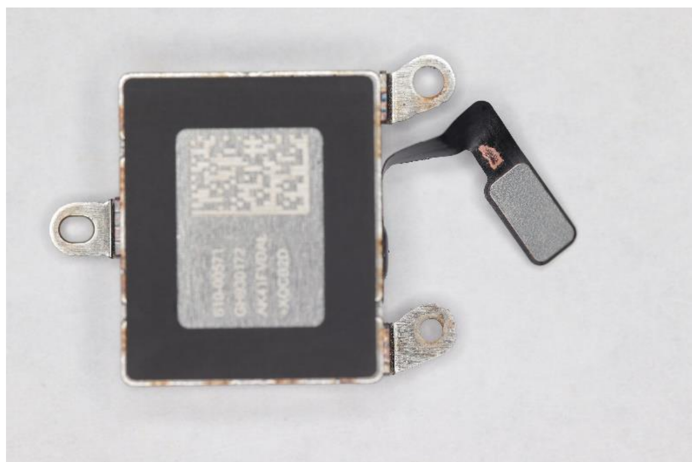
<table>
<tr><th>Claim 17</th><th>Accused Products</th></tr>
<tr><td></td><td>

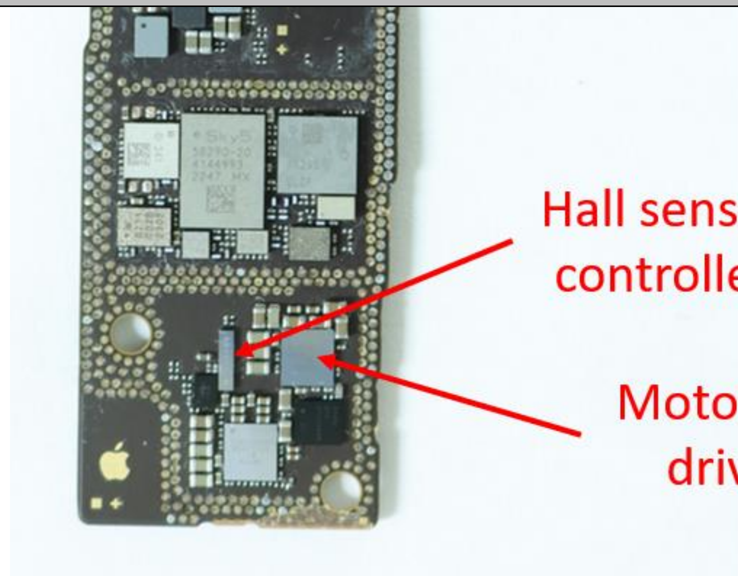
Oscilloscope trace showing the result of CHHapticEvent with intensity = 1, sharpness = 0, with frequency of 80 Hz and motor drive amplitude of 10.8 V (peak-to-peak, through RC low-pass filter).</td></tr>
</table>

Claim 19

Claim 19	Accused Products
[19pre] A vibration module comprising:	To the extent the preamble is limiting, each Accused Product includes a vibration module. For example, each of the Apple iPhone 14 and the Apple Watch Ultra contain a linear actuator (“Taptic Engine”), haptic controller(s), and associated circuitry, as described in connection with the claim limitations below. *See, e.g.*:

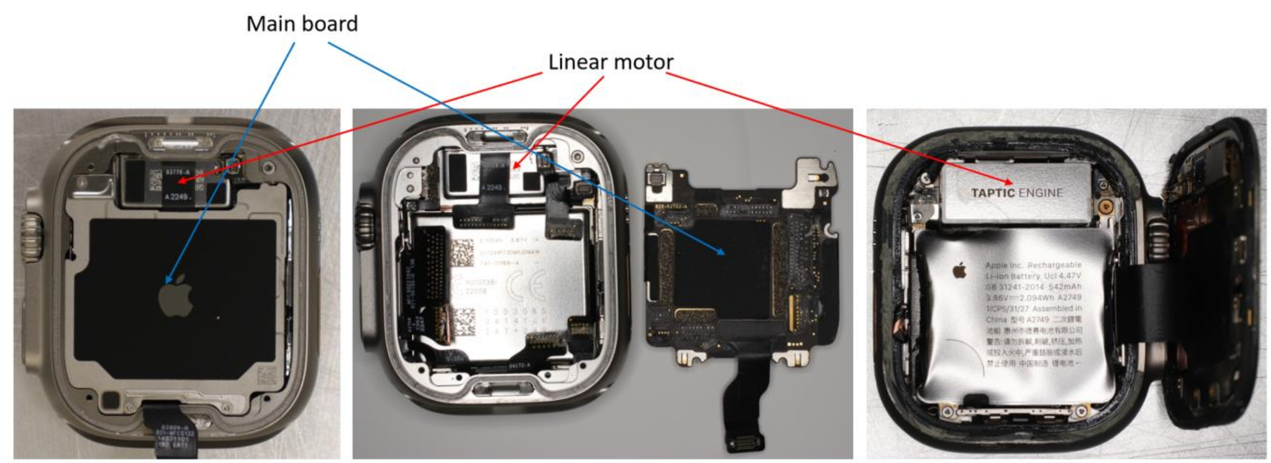
Photograph of iPhone 14 with rear cover removed, with A15 Bionic SoC at center right and Taptic Engine at bottom left.

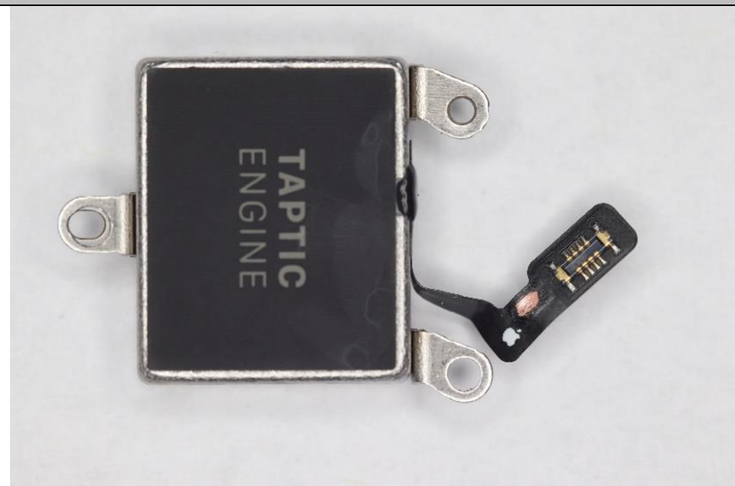
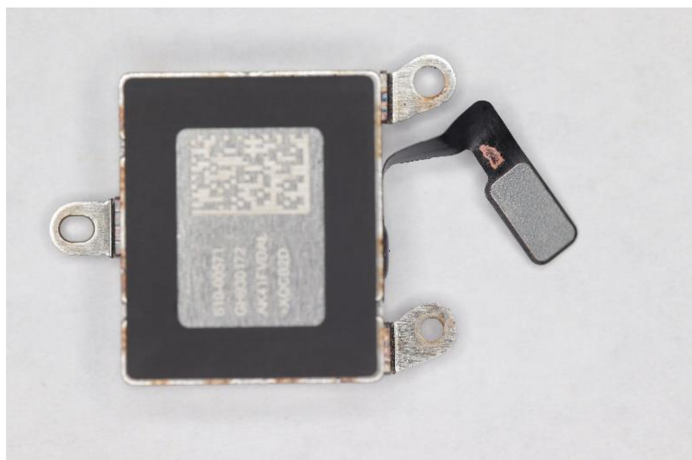
Claim 19	Accused Products
	 Photograph of Taptic Engine housing from the iPhone 14.  Photograph of Taptic Engine housing from the iPhone 14.

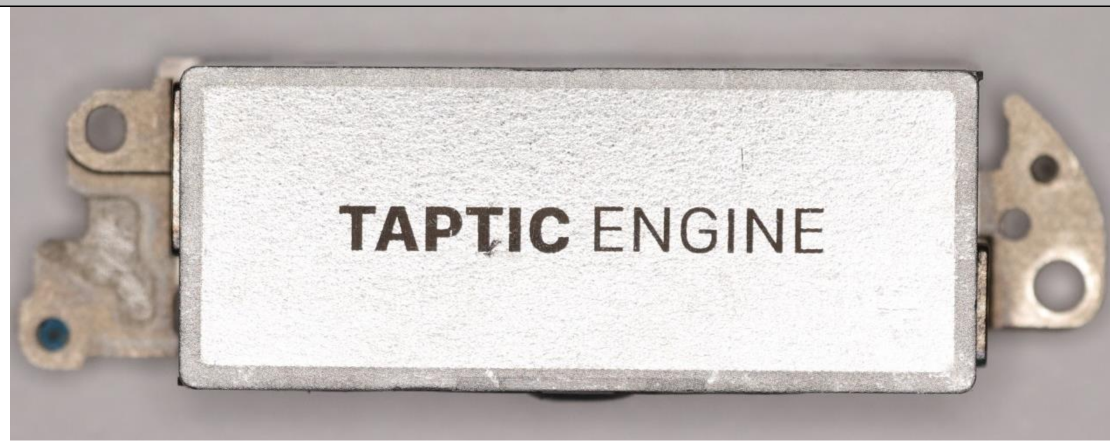
Claim 19	Accused Products
	 Photograph of Hall sensor controller and motor control driver from the iPhone 14.

Claim 19	Accused Products
	The following devices contain a Taptic Engine: • iPhone 14 Pro Max • iPhone 14 Pro • iPhone 14 Plus • iPhone 14 • iPhone SE (3rd generation) • iPhone 13 Pro Max • iPhone 13 Pro • iPhone 13 • iPhone 13 mini • iPhone 12 Pro Max • iPhone 12 Pro • iPhone 12 • iPhone 12 mini • iPhone SE (2nd generation) • iPhone 11 Pro Max • iPhone 11 Pro • iPhone 11 • iPhone XS Max • iPhone XS • iPhone XR • iPhone X • iPhone 8 Plus • iPhone 8 • iPhone 7 Plus • iPhone 7 • iPhone 6s Plus • iPhone 6s Accessory Design Guidelines for Apple Devices, Release R20, *available at* https://developer.apple.com/accessories/Accessory-Design-Guidelines.pdf

Claim 19	Accused Products
	 Photograph of Apple Watch Ultra.

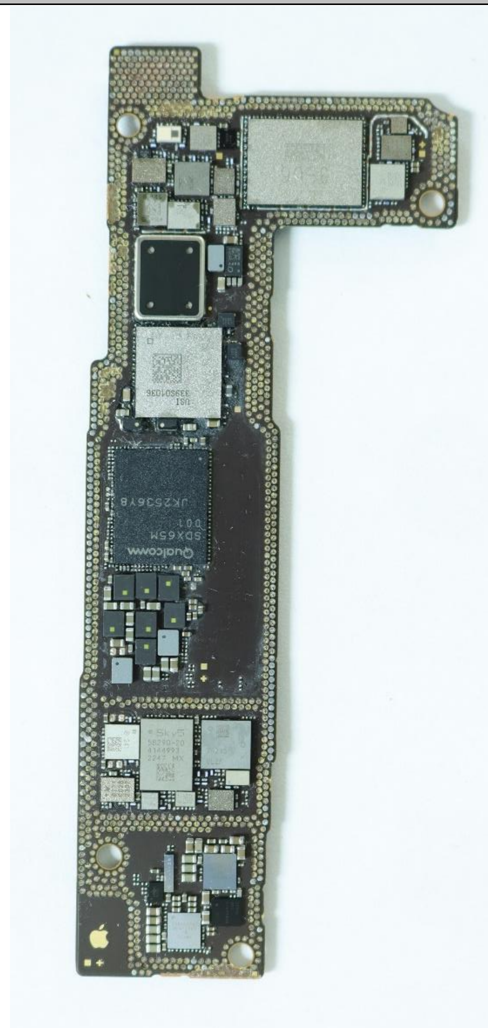
Claim 19	Accused Products
	 Wrist side, cover removed Wrist side, cover and main board removed Display side, display removed Annotated photographs of Apple Watch Ultra showing linear actuator (Taptic engine) and main system board.
[19a] a housing;	Each Accused Product comprises a housing. For example, the Taptic Engine in each of the iPhone 14 and Apple Watch Ultra has a hollow cavity that is soldered together to form a housing surrounding the moveable component and coils. *See, e.g.*:

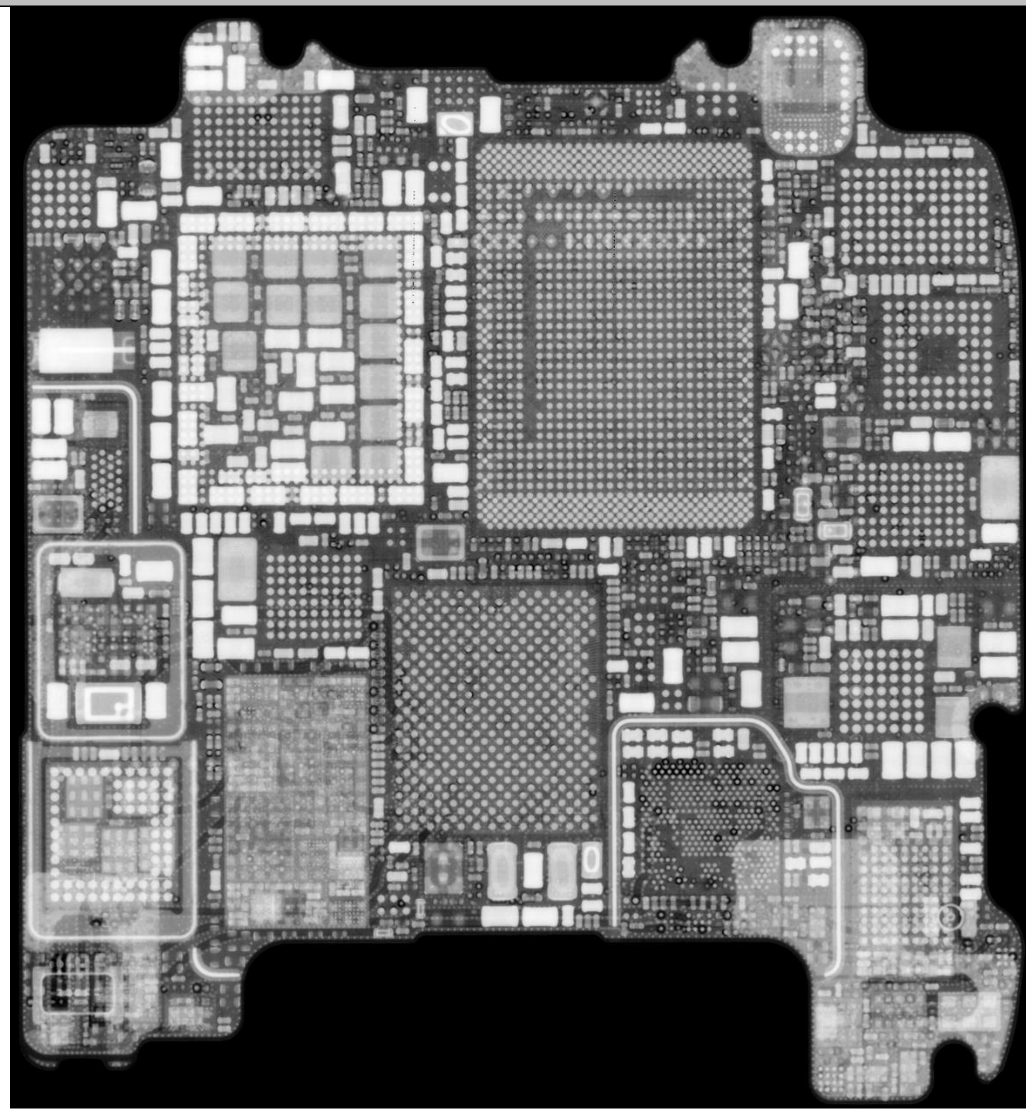
Claim 19	Accused Products
	 Photograph of Taptic Engine housing from the iPhone 14.  Photograph of Taptic Engine housing from the iPhone 14.

Claim 19	Accused Products
	 Photograph of Taptic Engine housing from Apple Watch Ultra.
[19b] a moveable component;	Each Accused Product comprises a moveable component. For example, the Taptic Engine in each of the iPhone 14 and Apple Watch Ultra includes a movable component comprising permanent magnet(s) and a mass. *See, e.g.*:

Claim 19	Accused Products
	 Photograph of moveable component (at right, connected to housing with springs) from the iPhone 14.  Photograph of moveable component from Apple Watch Ultra.

Claim 19	Accused Products
[19c] a power supply;	Each Accused Product comprises a power supply. For example, the linear motor coil driver (described below) in each of the iPhone 14 and Apple Watch Ultra receives power from one or more voltage regulators on or near the Accused Product's system board. *See, e.g.*:

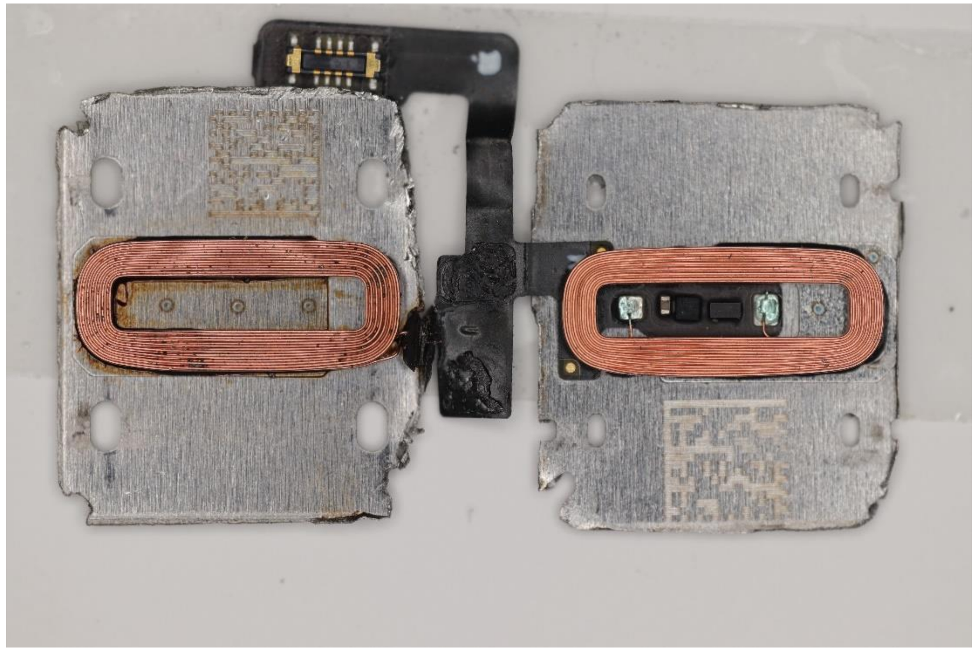
Claim 19	Accused Products
	 Photograph of iPhone 14 system board.

Claim 19	Accused Products
	 X-ray image of Apple Watch Ultra system board.

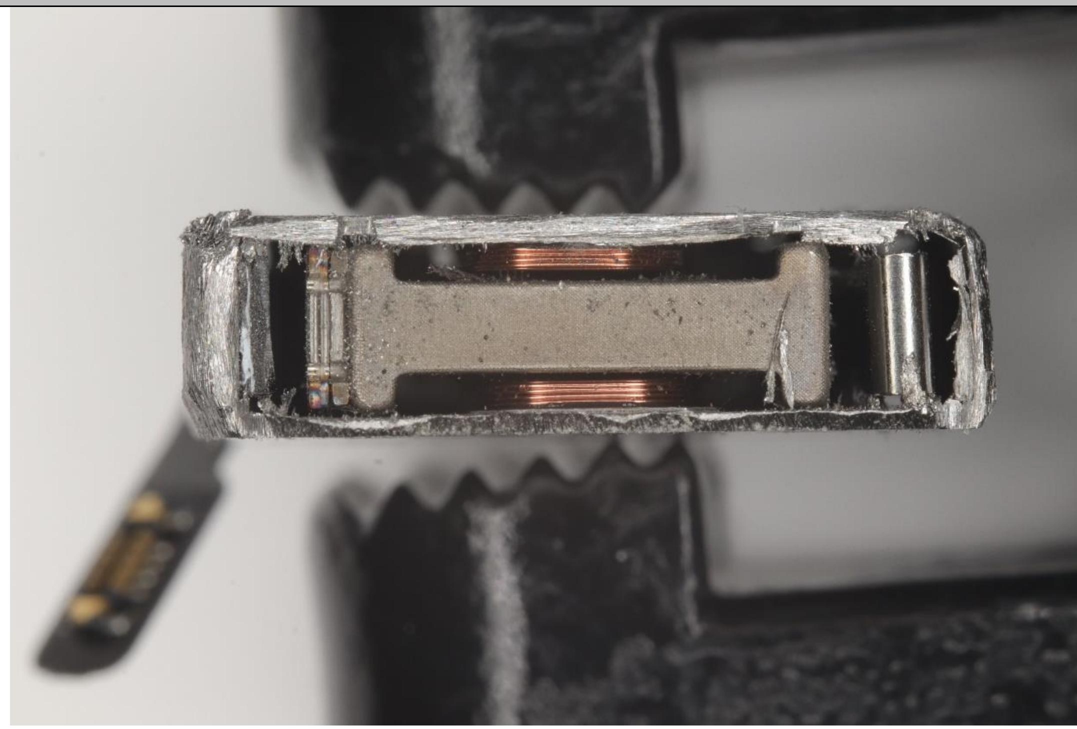
Claim 19	Accused Products
	See also claim elements below.
[19d] user-input features;	Each Accused Product comprises user-input features. For example, each of the iPhone 14 and Apple Watch Ultra comprises a touchscreen, buttons, and other user-input features. *See, e.g.*:

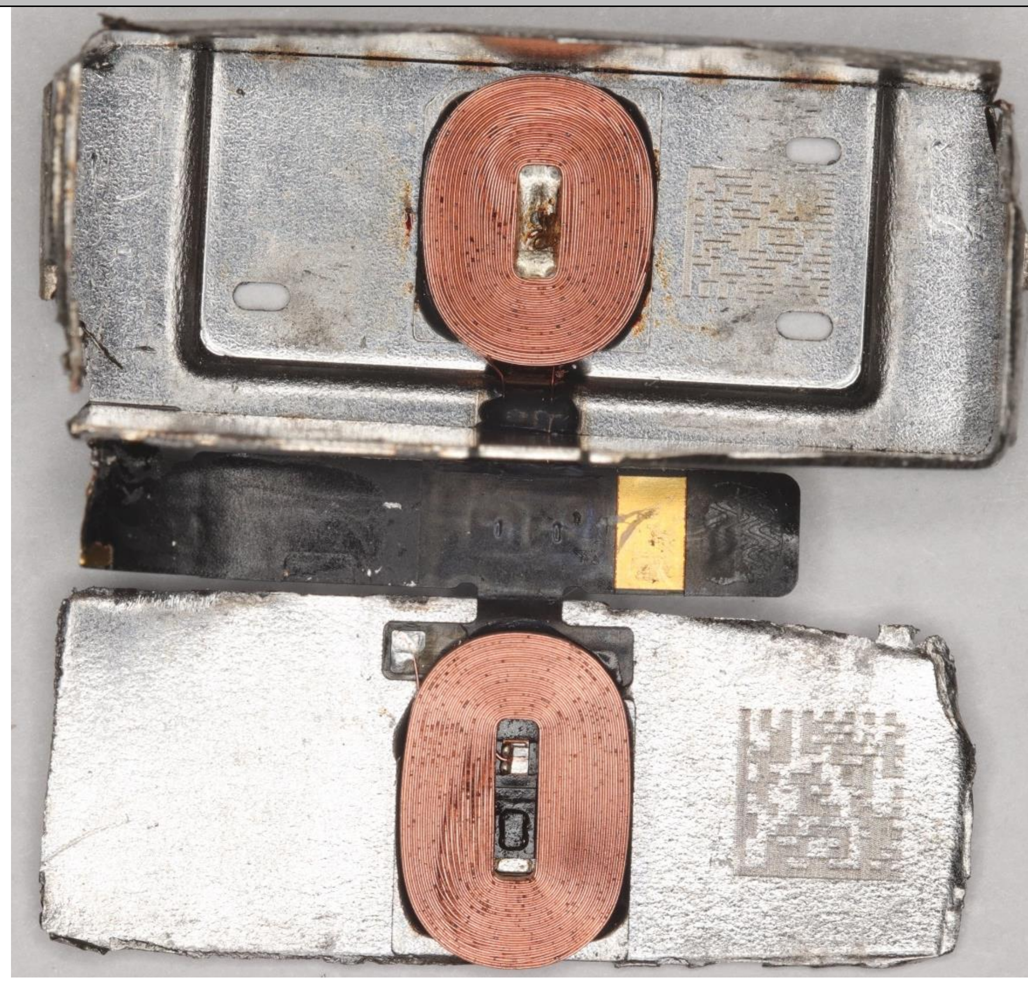
Claim 19	Accused Products
	 Photograph of iPhone 14 touchscreen, buttons, and switch, *available at* https://www.apple.com/iphone-14/.

Claim 19	Accused Products
	 Photograph of Apple Watch Ultra touchscreen, dial, and buttons.
[19e] a driving component that drives the moveable component to oscillate within the housing;	Each Accused Product comprises a driving component that drives the moveable component to oscillate within the housing. For example, the Taptic Engine includes one or more coils to form electromagnetic fields for driving the moveable component in two directions.

Claim 19	Accused Products
	See, e.g.:  Photograph of driving coils within disassembled Taptic Engine from the iPhone 14. The two visible coils would be positioned above and below the moveable component when assembled.

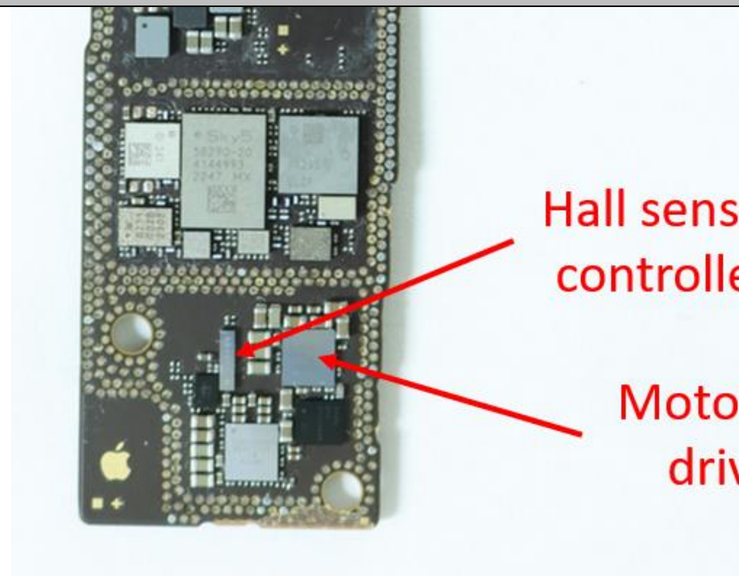
Claim 19	Accused Products
	 Photograph showing one driving coil (at right) within disassembled Taptic Engine from the iPhone 14, with moveable component in place at left. The moveable component travels up and down from this perspective.

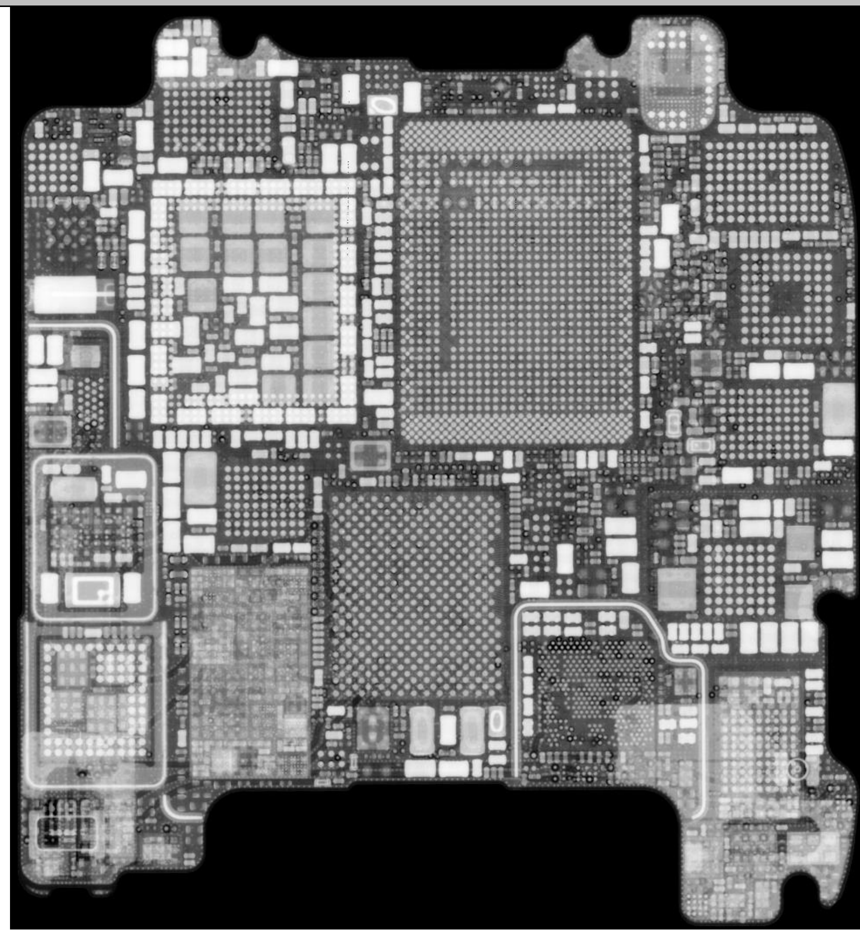
Claim 19	Accused Products
	 Photograph of internals of Taptic Engine from the iPhone 14, showing drive coils (top and bottom) surrounding the moveable component. The moveable component travels left and right from this perspective.

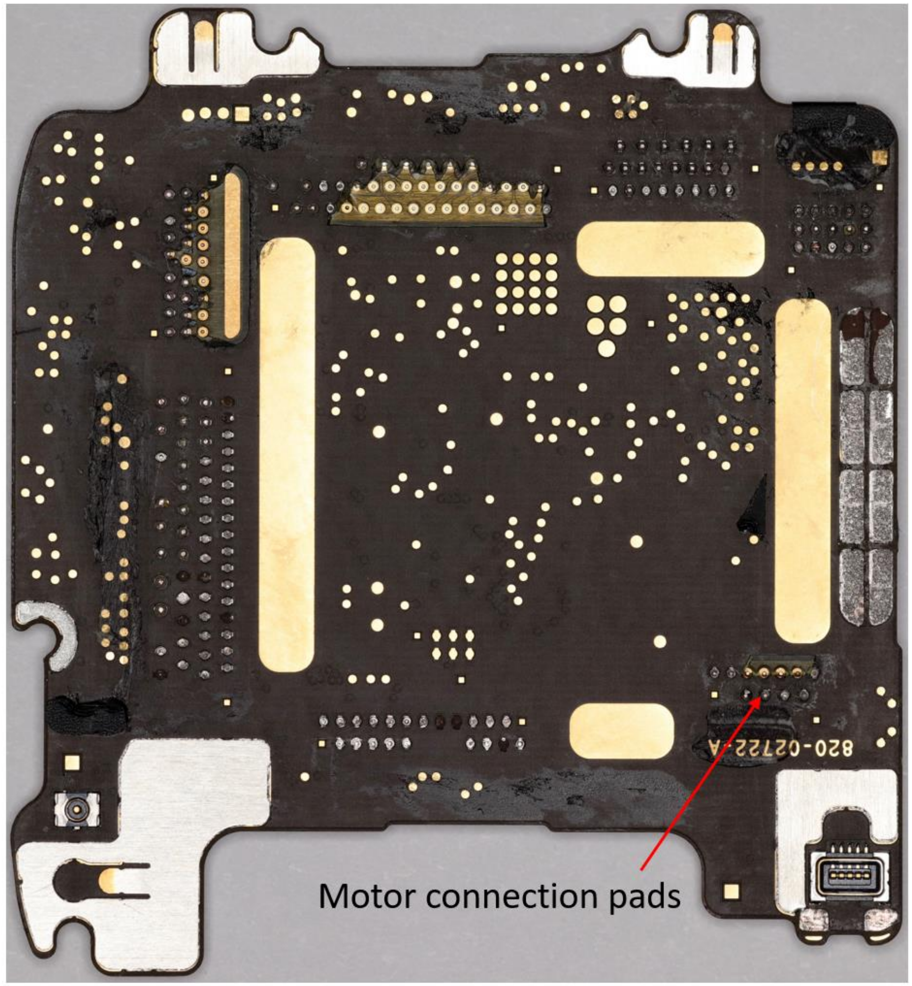
Claim 19	Accused Products
	 Photograph of drive coils within disassembled Taptic Engine from Apple Watch Ultra. The two visible coils would be positioned above and below the movable component when assembled.
[19f] a control component that controls supply of power from the power supply to the driving	Each Accused Product comprises a control component that controls supply of power from the power supply to the driving component to cause the moveable component to oscillate at a frequency and an amplitude specified by one or more stored values.

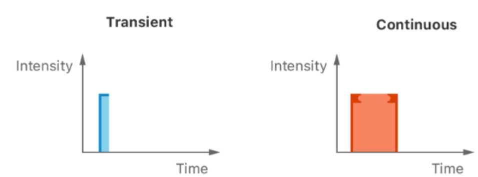
Claim 19	Accused Products
component to cause the moveable component to oscillate at a frequency and an amplitude specified by one or more stored values; and	For example, each Accused Product includes a main system processor, a linear motor coil driver, and a Hall sensor controller, which alone or in combination form a control component as claimed to drive the coils and thus move the magnetic mass in a linear oscillating motion, as described below. This control component can drive the moveable component at specified frequencies and amplitude, as demonstrated by public APIs and by testing. The public APIs, as well as any proprietary Apple APIs and interfaces, specify intensity and sharpness (exemplary stored values) that directly and/or indirectly control the frequency and amplitude of the oscillation and that are stored at least within the system processor and associated volatile and non-volatile memory. On information and belief, the system processor and/or linear motor control driver include additional stored values specifying frequency and/or amplitude. *See, e.g.*:

Claim 19	Accused Products
	 Photographs showing iPhone 14 system board with A15 Bionic processor.

Claim 19	Accused Products
	 Annotated photograph of Hall sensor controller and motor coil driver from the iPhone 14.

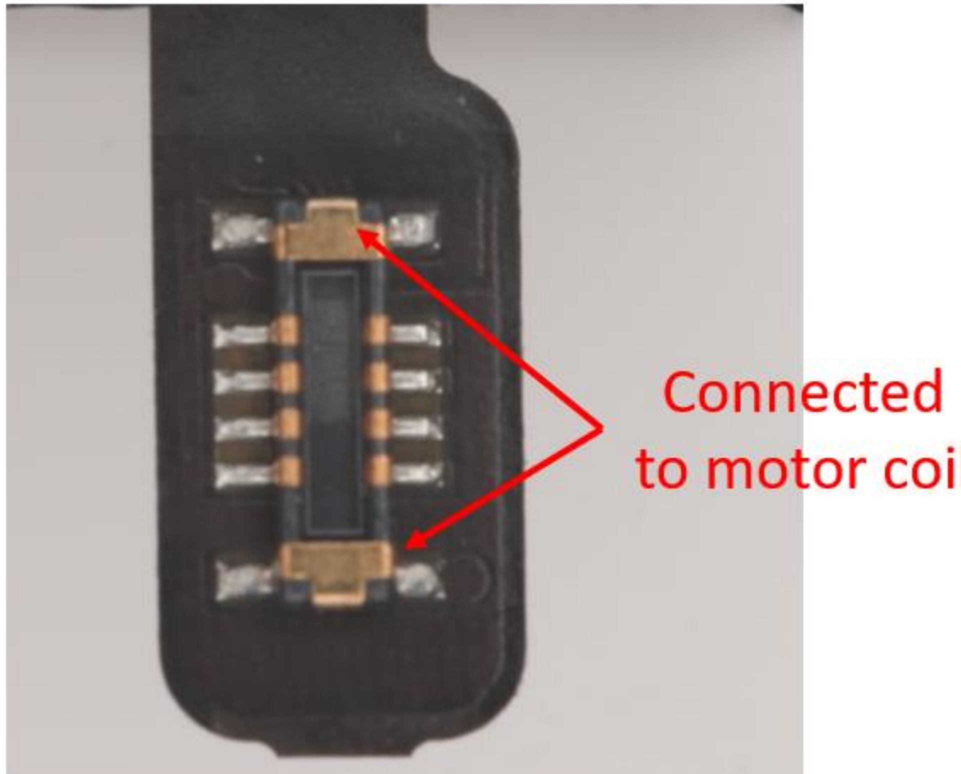
Claim 19	Accused Products
	 X-ray image of Apple Watch Ultra system board.

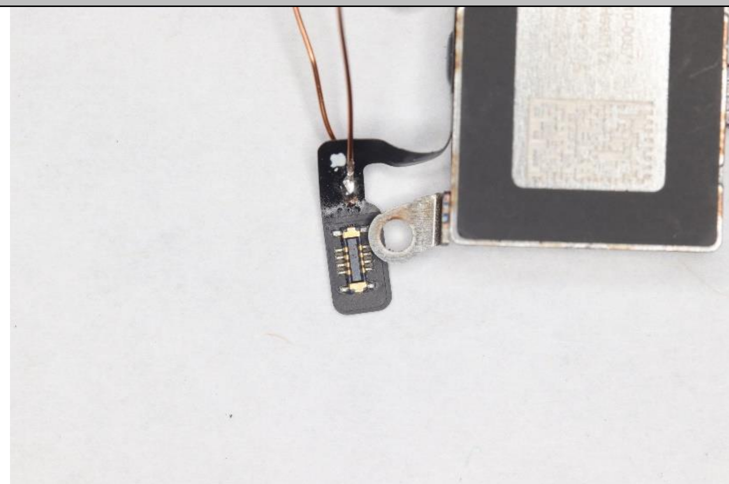
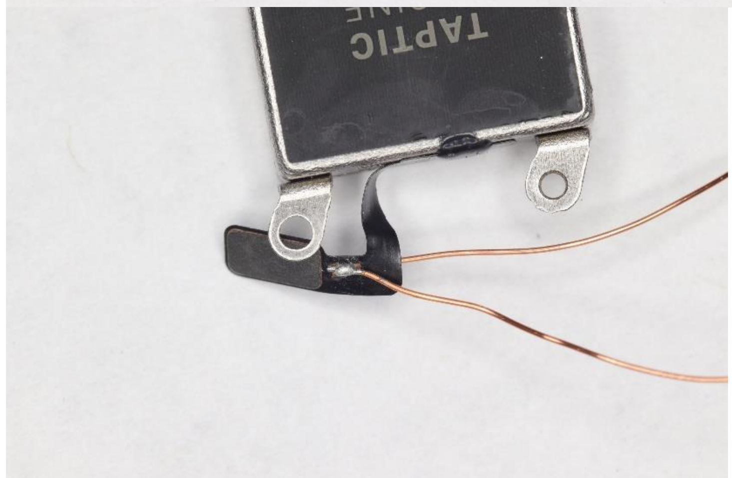
Claim 19	Accused Products
	 Annotated photograph of partially disassembled Apple Watch Ultra system board, showing connection points for haptic motor.

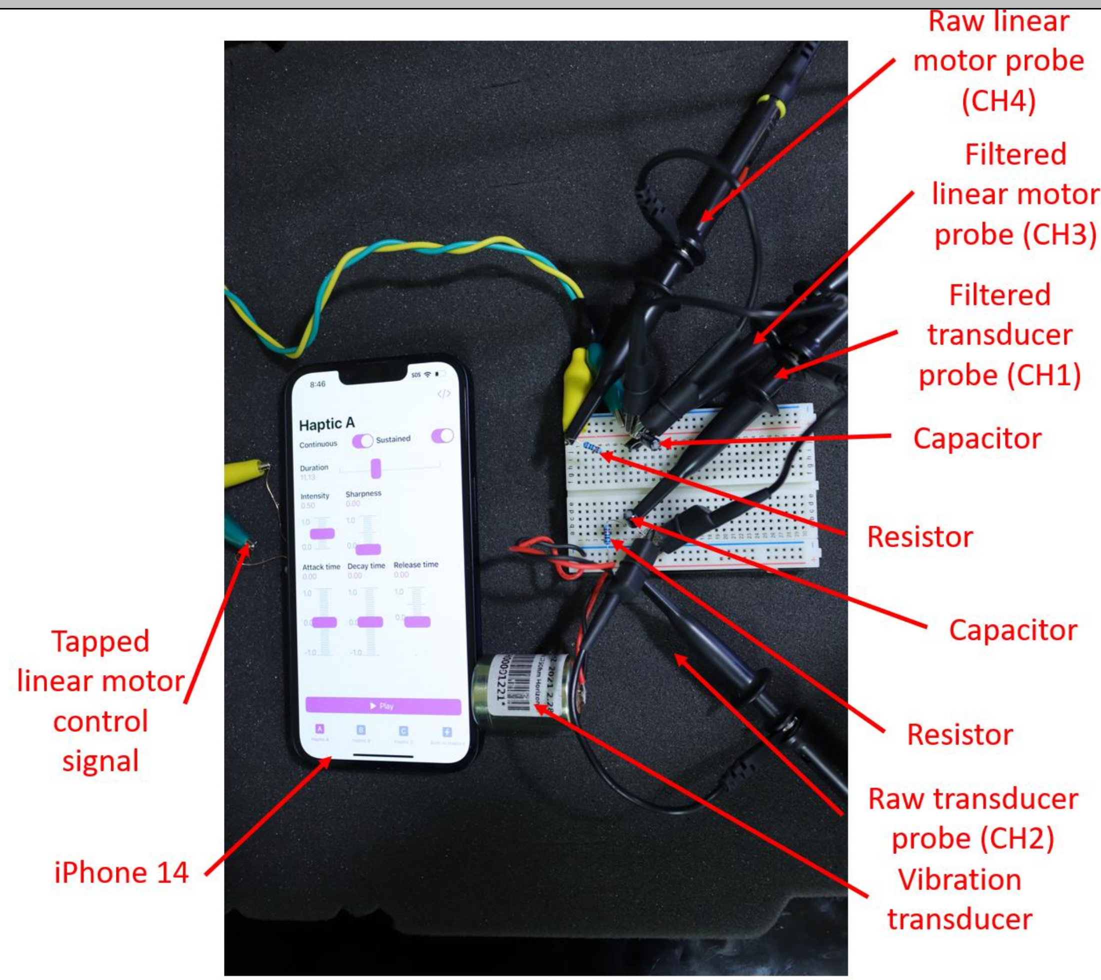
Claim 19	Accused Products
	Declaration `class CHHapticEvent : NSObject` **Overview** Each event represents a single haptic or audio signal. The event `type` determines whether it's audio or haptic. Use a `CHHapticPatternPlayer` object obtained through `CHHapticEngine` factory methods to play events. Haptic events can be transient or continuous. Transient haptic patterns are brief impulses that occur at a specific point in time, such as the haptic feedback you feel from swiping through a picker or toggling a switch. Continuous haptic patterns, like the vibration from a ringtone, take the form of lengthier feedback over a period of time. In the following graphic, transient haptic patterns on the left trigger at a specific time with a specific intensity. Continuous haptic patterns on the right sustain the haptic feedback over a specific duration of time, such as three seconds.  Specify when an event begins by setting its `relativeTime` property. Specify the length of the event by setting its `duration` property. Set optional parameters to customize event properties. For example, you can specify the intensity of a haptic event by creating an event parameter with ID `hapticIntensity`. Documentation of CHHapticEvent object, https://developer.apple.com/documentation/corehaptics/chhapticevent

Claim 19	Accused Products
	Haptic Event Parameter IDs `static let hapticIntensity: CHHapticEvent.ParameterID` The strength of a haptic event. `static let hapticSharpness: CHHapticEvent.ParameterID` The feel of a haptic event. `static let attackTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins increasing. `static let decayTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins decreasing. `static let releaseTime: CHHapticEvent.ParameterID` The time at which to begin fading the haptic pattern. `static let sustained: CHHapticEvent.ParameterID` A Boolean value that indicates whether to sustain a haptic event for its specified duration. Documentation of haptic event parameters, https://developer.apple.com/documentation/corehaptics/chhapticevent/parameterid;

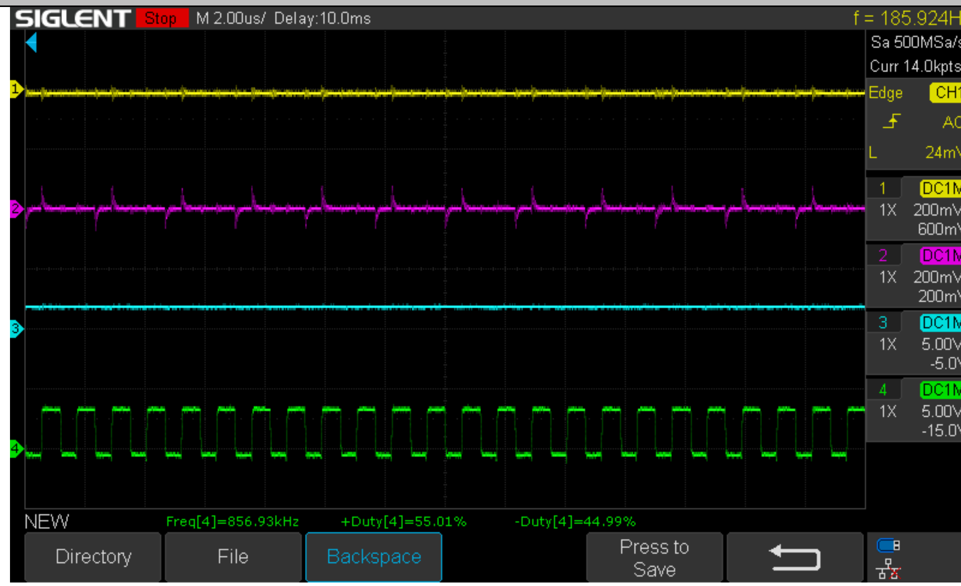
Claim 19	Accused Products
	4. The Continuous "Sharpness" parameter maps to frequency. For continuous events, we found that the sharpness parameter maps to frequency. On an iPhone 8, the lower sharpness boundary (0.0) of the Taptic Engine is 80 Hz; the higher sharpness boundary (1.0) is 230 Hz. This provides an effective range of 150 Hz, or roughly 1.5 octaves — which is impressive for a mobile phone released in 2017. Other phones or devices supporting Core Haptics might have different upper or lower boundaries since the frequency range is tied to the capabilities of the hardware actuator. https://medium.com/lofelt/10-things-you-should-know-about-designing-for-apple-core-haptics-9219fdebdcaa.

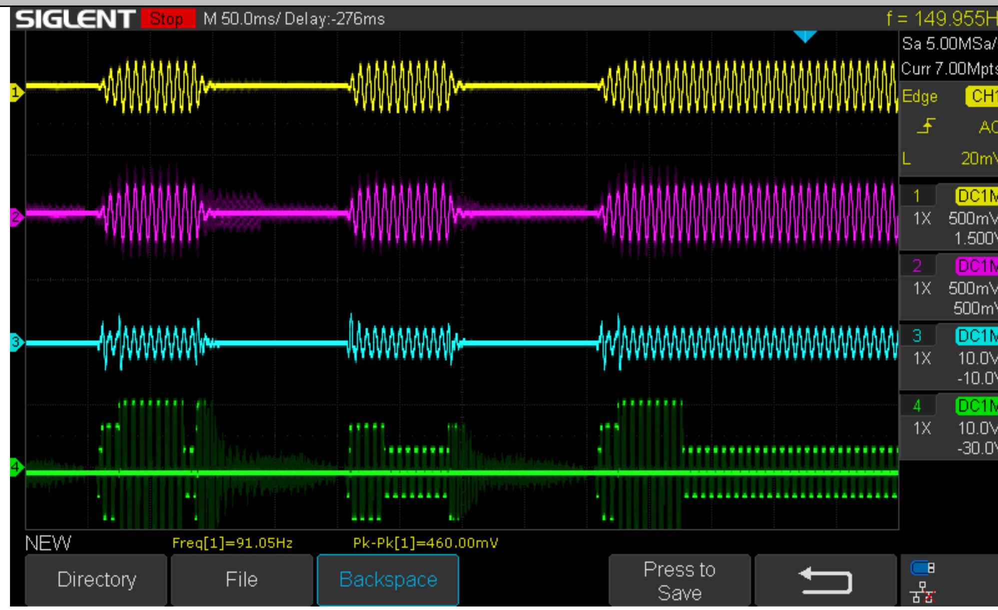
Claim 19	Accused Products
	 Annotated photograph of Taptic Engine connector from the iPhone 14 showing positive and negative coil driving pins.

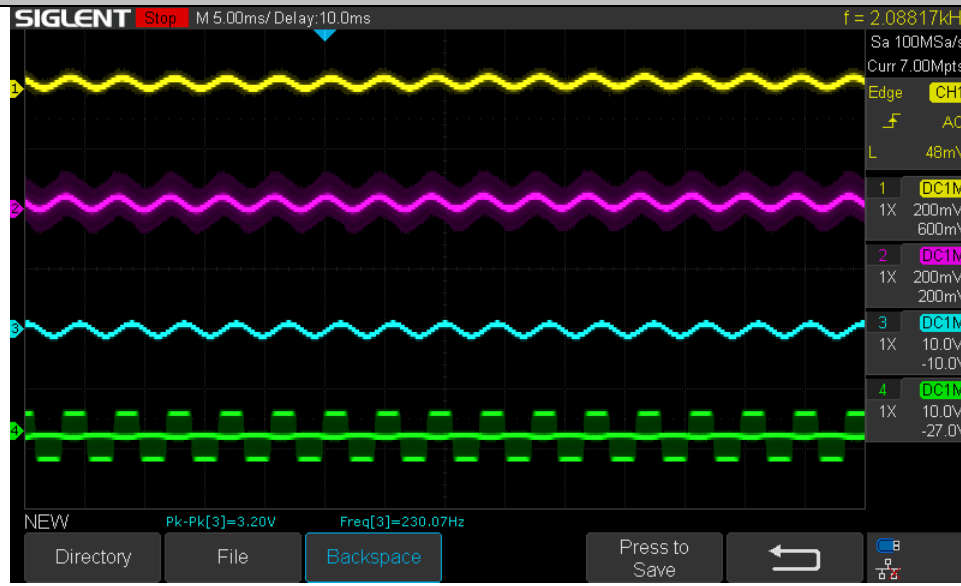
Claim 19	Accused Products
	  Photographs of test apparatus with electrical leads connected to motor coil drive traces of iPhone 14.

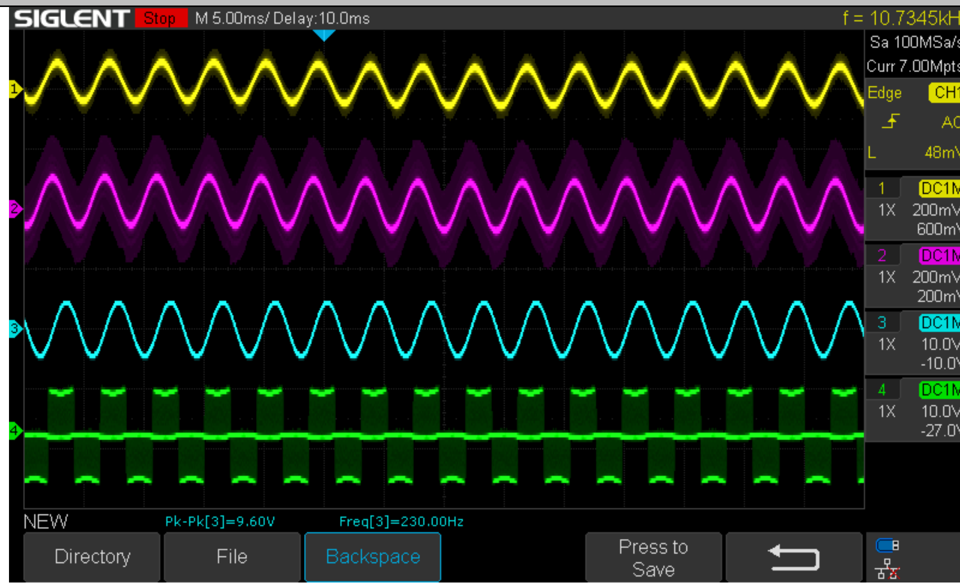
Claim 19	Accused Products
	

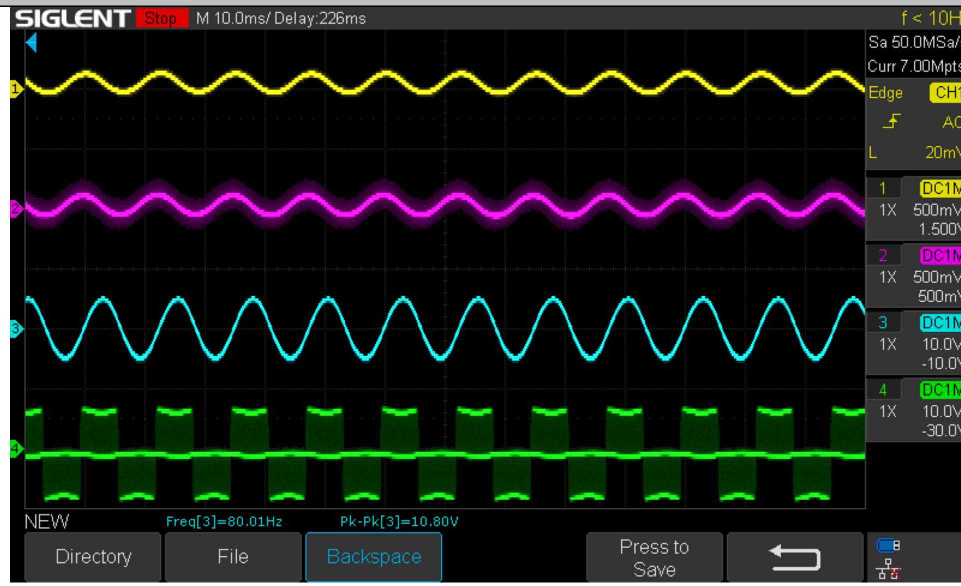
Photograph of test apparatus for measuring motor coil drive signal (from tapped connection) and actual motion (from attached vibration transducer) of iPhone 14. Note RC low-pass filter networks at top right with R = 220 Ω, C = 2.2 uF.

Claim 19	Accused Products
	 Oscilloscope trace showing, in green (CH4), the drive voltage applied by the iPhone 14 haptic controller(s); in this case, a pulse width modulated positive signal (modulation frequency 857 kHz) to drive the moveable component in one of two directions.

Claim 19	Accused Products
	 Oscilloscope trace showing, in green (CH4), the PWM-modulated drive voltage applied by the iPhone 14 haptic controller(s), with positive and negative voltages to drive the moveable component in a first and second direction. Channels 1 and 2 (yellow and purple) show the actual motion of the iPhone 14 resulting (pursuant to Newton's third law) from the motion of the moveable component.

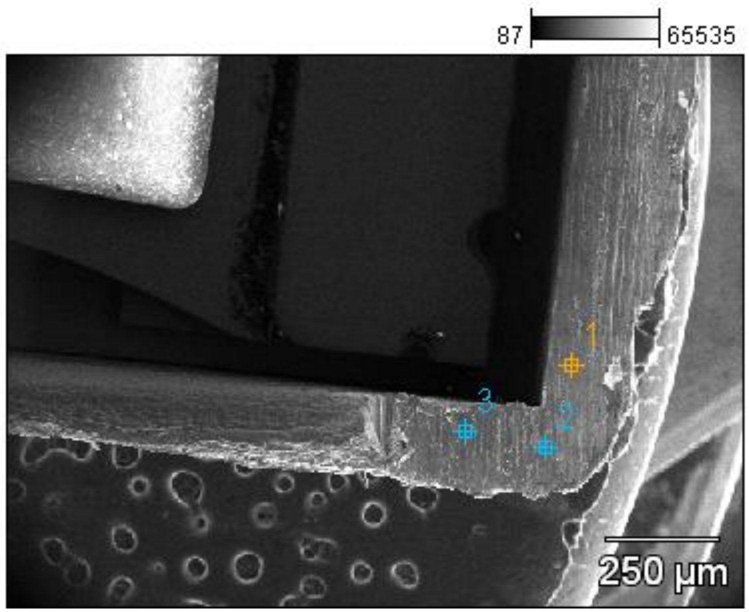
Claim 19	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 0.5, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 3.2 V (peak-to-peak, through RC low-pass filter).

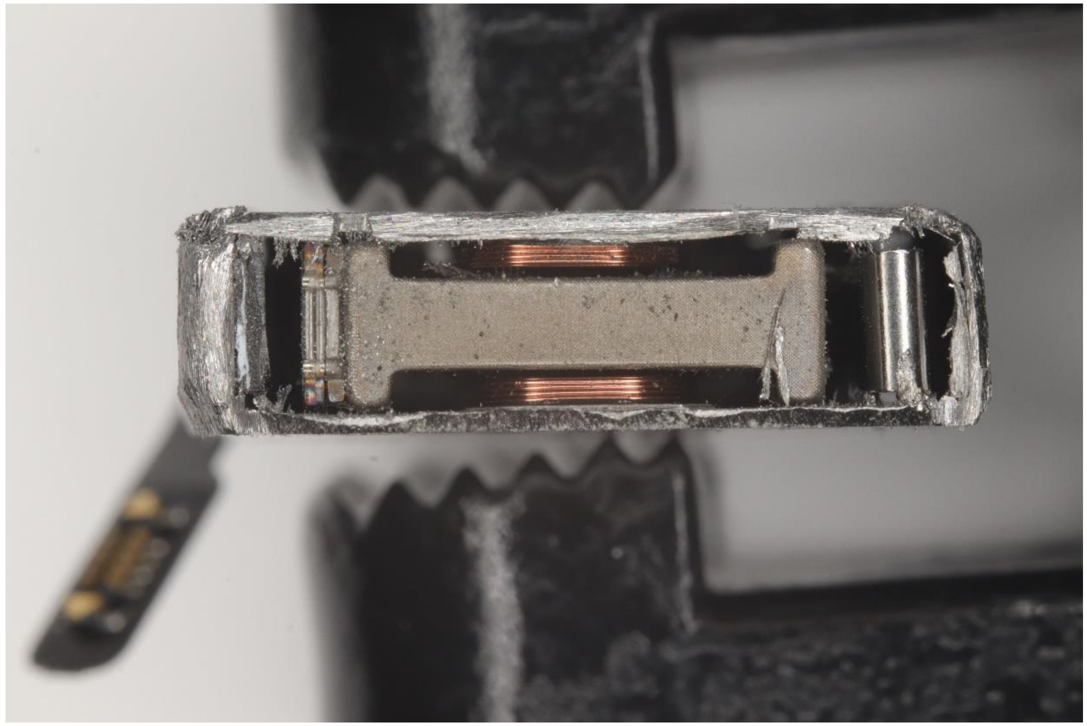
Claim 19	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 1, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 9.6V (peak-to-peak, through RC low-pass filter). Note that the externally measured vibration amplitude (yellow and purple traces, same scale as previous trace) is also significantly higher at intensity = 1 than 0.5.

Claim 19	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 1, sharpness = 0, with frequency of 80 Hz and motor drive amplitude of 10.8 V (peak-to-peak, through RC low-pass filter). To the extent Defendant contends and/or shows that this limitation is not literally present in the Accused Products, it is present under the doctrine of equivalents. There are no substantial differences between the accused functionality and the claimed invention. For example, each Accused Product contains one or more microprocessors that coordinate(s) operation of the Taptic Engine, which performs substantially the same function (*e.g.*, controls supply of power from the power supply to the driving component to cause the moveable component to oscillate at a frequency and an amplitude specified by one or more stored values) in substantially the same way (*e.g.*, using digital logic) to achieve substantially the same result (*e.g.*, producing oscillations at a desired frequency and amplitude).
[19g] flux paths comprising a paramagnetic material that is shaped and positioned to	Each Accused Product comprises flux paths comprising a paramagnetic material that is shaped and positioned to reduce the reluctance of one or more magnetic circuits within the vibration module.

<table>
<tr><th>Claim 19</th><th>Accused Products</th></tr>
<tr><td>reduce the reluctance of one or more magnetic circuits within the vibration module.</td><td>For example, the elemental composition of the housing of the Taptic Engine in the iPhone 14 was determined from energy-dispersive X-ray spectroscopy (EDS). The housing primarily consists of an iron and chromium alloy, which indicates it is a ferritic stainless steel with paramagnetic properties and high magnetic permeability. The housing surrounds the driving coils and moveable component and is positioned to reduce the reluctance of the magnetic circuit formed by the driving coils, moveable component, and housing.

See, e.g.:

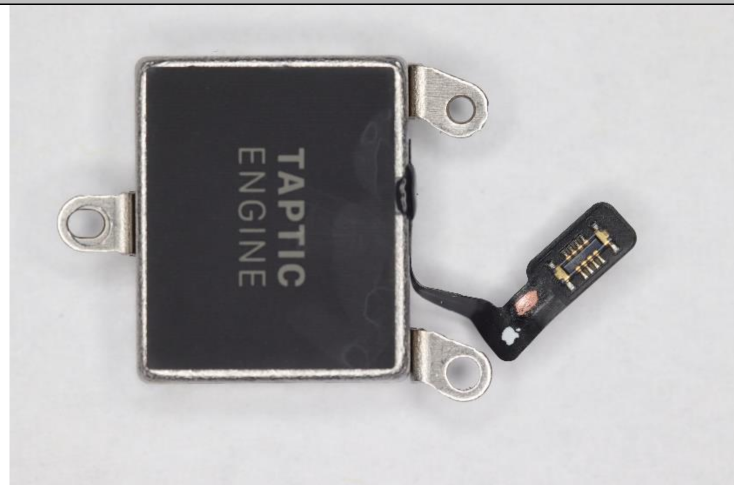
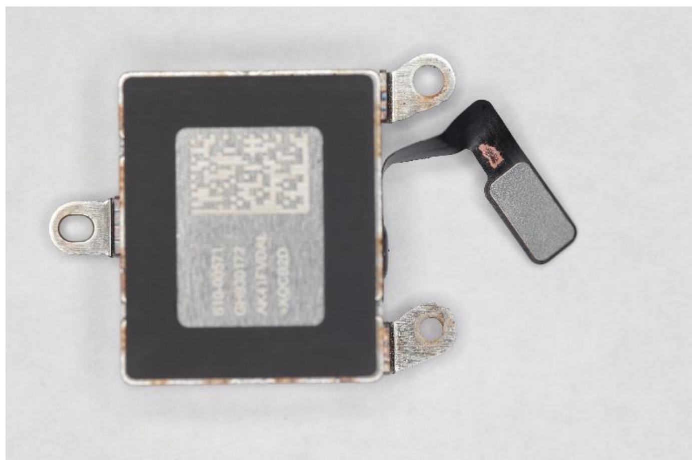
Base(6)

<table>
<tr><th>Line</th><th>Wt.%</th><th>Error</th></tr>
<tr><td>C K</td><td>0.00</td><td>0.00</td></tr>
<tr><td>O K</td><td>0.00</td><td>0.00</td></tr>
<tr><td>Si K</td><td>0.32</td><td>0.03</td></tr>
<tr><td>Ti K</td><td>0.13</td><td>0.02</td></tr>
<tr><td>V K</td><td>0.19</td><td>0.04</td></tr>
<tr><td>Cr K</td><td>18.56</td><td>0.09</td></tr>
<tr><td>Fe K</td><td>80.20</td><td>0.22</td></tr>
<tr><td>Ni K</td><td>0.21</td><td>0.04</td></tr>
<tr><td>Nd L</td><td>0.00</td><td>0.00</td></tr>
<tr><td>Tl L</td><td>0.39</td><td>0.20</td></tr>
</table>
Scanning electron microscopic image of the housing of the Taptic Engine of the iPhone 14 depicting 3 points where EDS measurements were taken. The elemental composition by weight averaged from the 3 EDS measurements is shown in the table on the right. The iron and chromium composition suggests the housing consists of a ferritic stainless steel alloy with paramagnetic properties and high magnetic permeability.</td></tr>
</table>

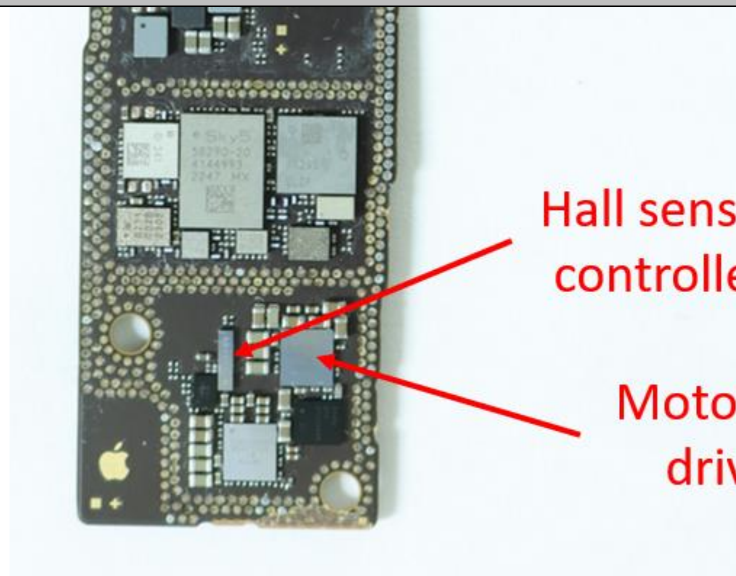
Claim 19	Accused Products
	 Photograph of internals of Taptic Engine from the iPhone 14, showing the magnetic circuit formed by the driving coils, moveable component, and housing composed of a paramagnetic material.

Claim 20

Claim 20	Accused Products
[20pre] A vibration module comprising:	To the extent the preamble is limiting, each Accused Product includes a vibration module. For example, each of the Apple iPhone 14 and the Apple Watch Ultra contain a linear actuator (“Taptic Engine”), haptic controller(s), and associated circuitry, as described in connection with the claim limitations below.

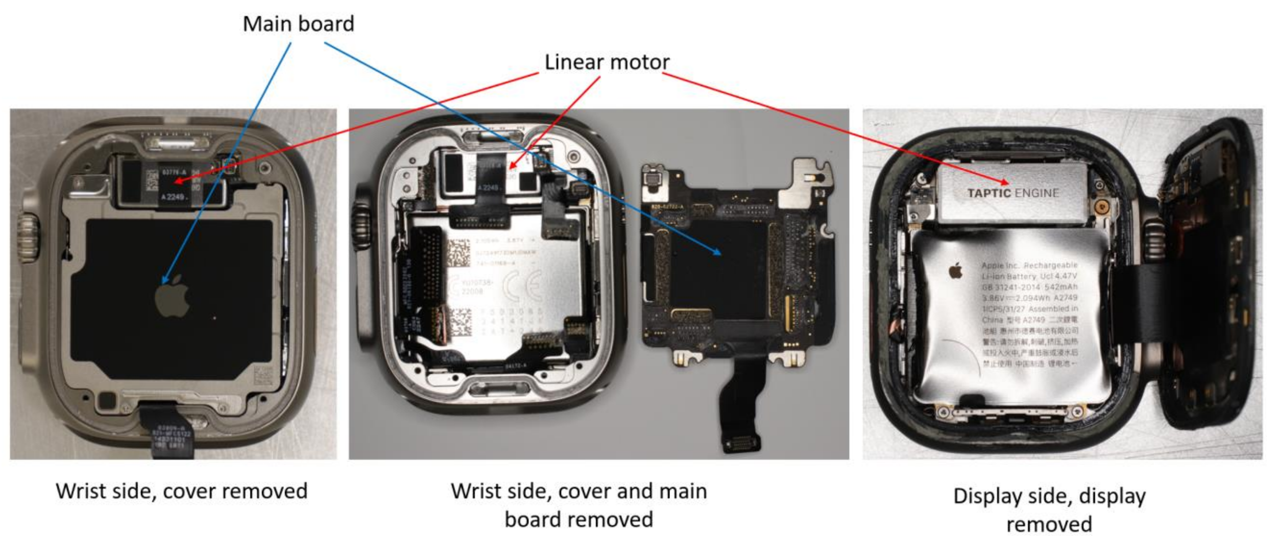
Claim 20	Accused Products
	See, e.g.:  Photograph of iPhone 14 with rear cover removed, with A15 Bionic SoC at center right and Taptic Engine at bottom left.

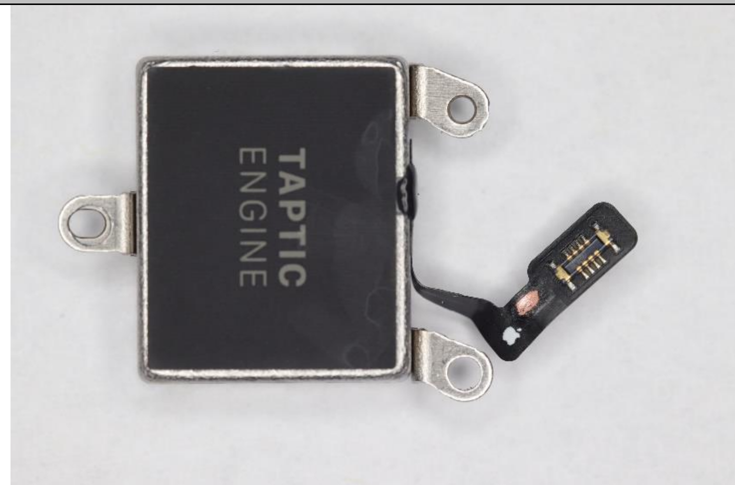
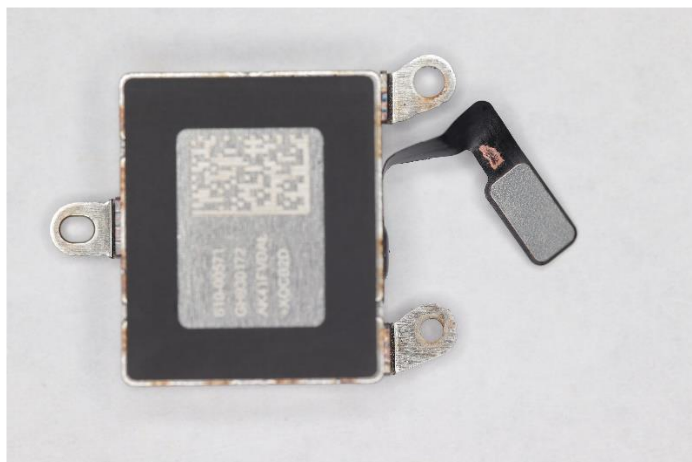
Claim 20	Accused Products
	 Photograph of Taptic Engine housing from the iPhone 14.  Photograph of Taptic Engine housing from the iPhone 14.

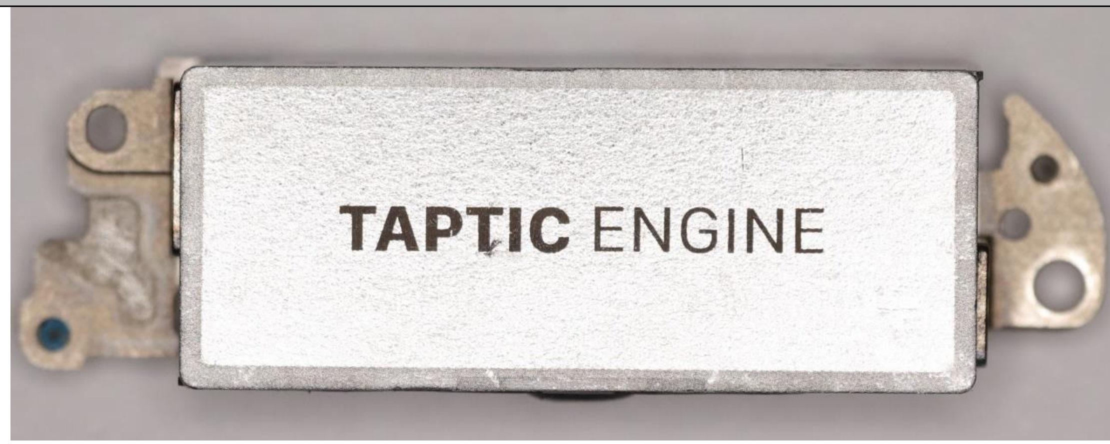
Claim 20	Accused Products
	 Photograph of Hall sensor controller and motor control driver from the iPhone 14.

Claim 20	Accused Products
	The following devices contain a Taptic Engine: • iPhone 14 Pro Max • iPhone 14 Pro • iPhone 14 Plus • iPhone 14 • iPhone SE (3rd generation) • iPhone 13 Pro Max • iPhone 13 Pro • iPhone 13 • iPhone 13 mini • iPhone 12 Pro Max • iPhone 12 Pro • iPhone 12 • iPhone 12 mini • iPhone SE (2nd generation) • iPhone 11 Pro Max • iPhone 11 Pro • iPhone 11 • iPhone XS Max • iPhone XS • iPhone XR • iPhone X • iPhone 8 Plus • iPhone 8 • iPhone 7 Plus • iPhone 7 • iPhone 6s Plus • iPhone 6s Accessory Design Guidelines for Apple Devices, Release R20, *available at* https://developer.apple.com/accessories/Accessory-Design-Guidelines.pdf

Claim 20	Accused Products
	 Photograph of Apple Watch Ultra.

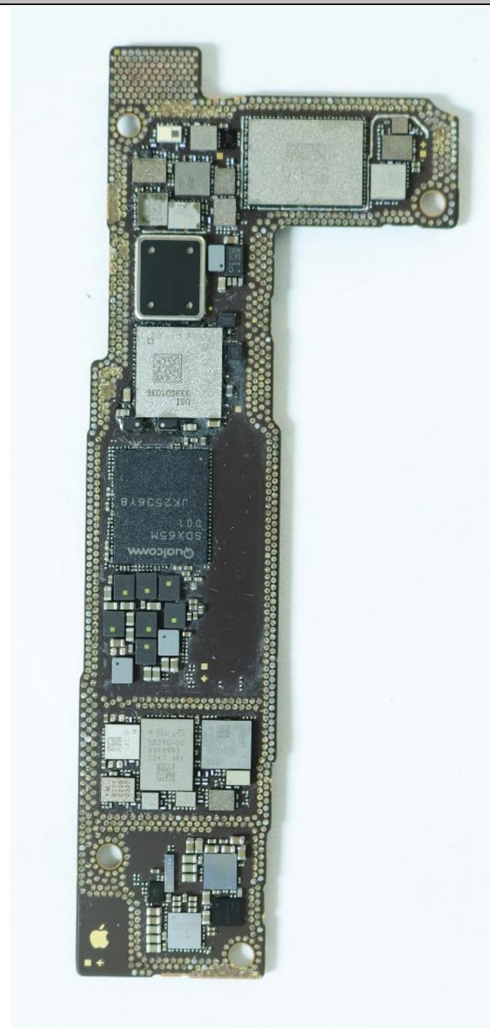
Claim 20	Accused Products
	 Annotated photographs of Apple Watch Ultra showing linear actuator (Taptic engine) and main system board.
[20a] a housing;	Each Accused Product comprises a housing. For example, the Taptic Engine in each of the iPhone 14 and Apple Watch Ultra has a hollow cavity that is soldered together to form a housing surrounding the moveable component and coils. *See, e.g.*:

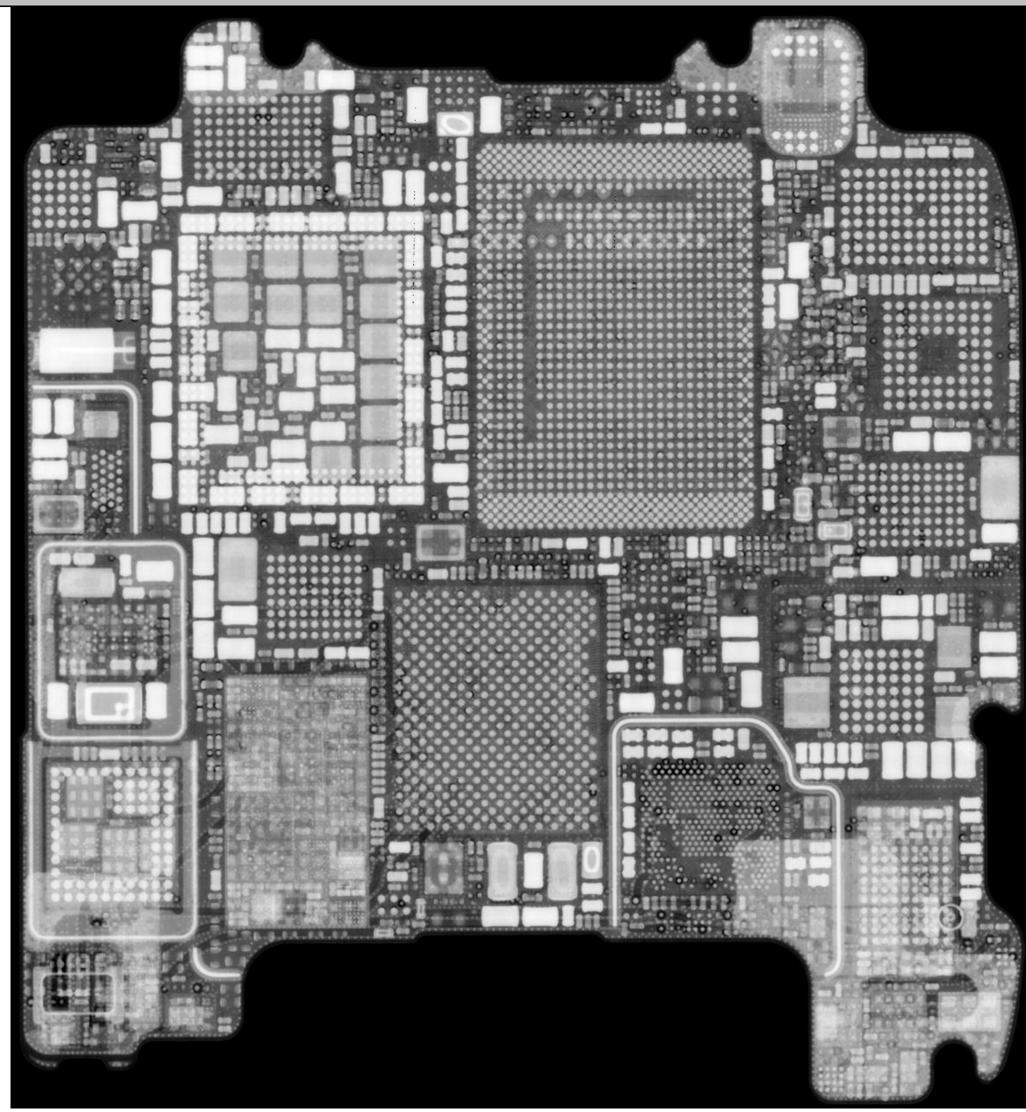
Claim 20	Accused Products
	 Photograph of Taptic Engine housing from the iPhone 14.  Photograph of Taptic Engine housing from the iPhone 14.

Claim 20	Accused Products
	 Photograph of Taptic Engine housing from Apple Watch Ultra.
[20b] a moveable component;	Each Accused Product comprises a moveable component. For example, the Taptic Engine in each of the iPhone 14 and Apple Watch Ultra includes a movable component comprising permanent magnet(s) and a mass. *See, e.g.*:

Claim 20	Accused Products
	 Photograph of moveable component (at right, connected to housing with springs) from the iPhone 14.  Photograph of moveable component from Apple Watch Ultra.

Claim 20	Accused Products
[20c] a power supply;	Each Accused Product comprises a power supply. For example, the linear motor coil driver (described below) in each of the iPhone 14 and Apple Watch Ultra receives power from one or more voltage regulators on or near the Accused Product's system board. *See, e.g.*:

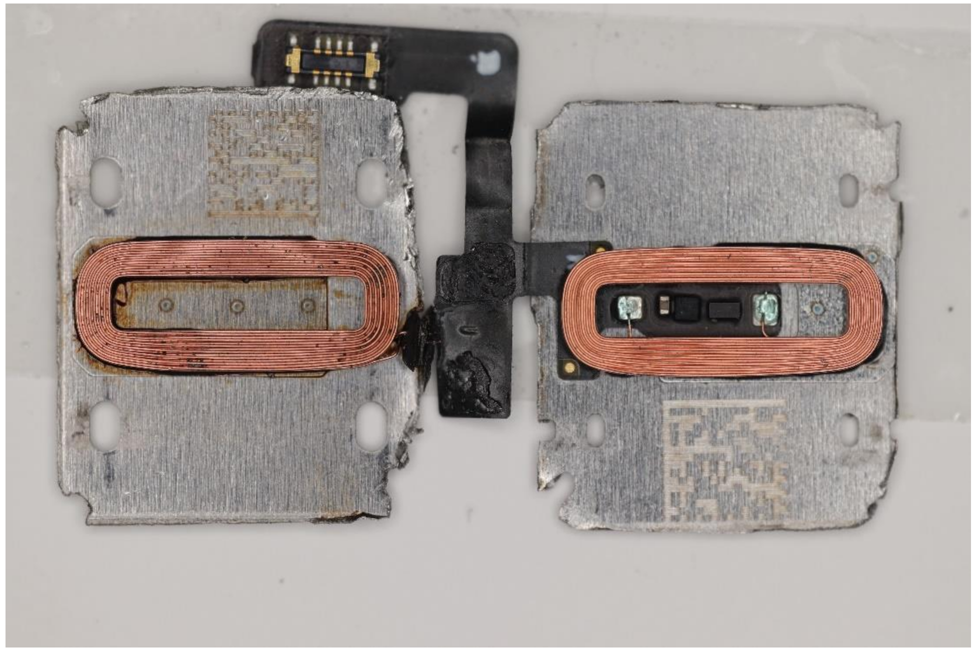
Claim 20	Accused Products
	 Photograph of iPhone 14 system board.

Claim 20	Accused Products
	 X-ray image of Apple Watch Ultra system board.

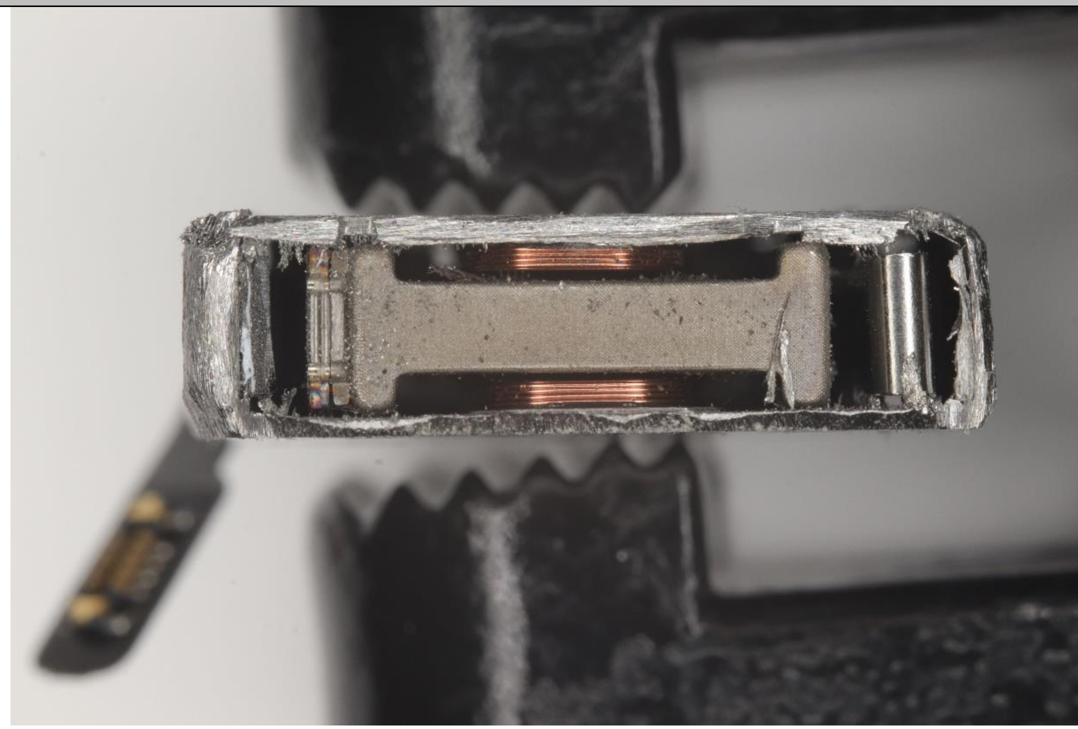
Claim 20	Accused Products
	See also claim elements below.
[20d] user-input features;	Each Accused Product comprises user-input features. For example, each of the iPhone 14 and Apple Watch Ultra comprises a touchscreen, buttons, and other user-input features. *See, e.g.*:

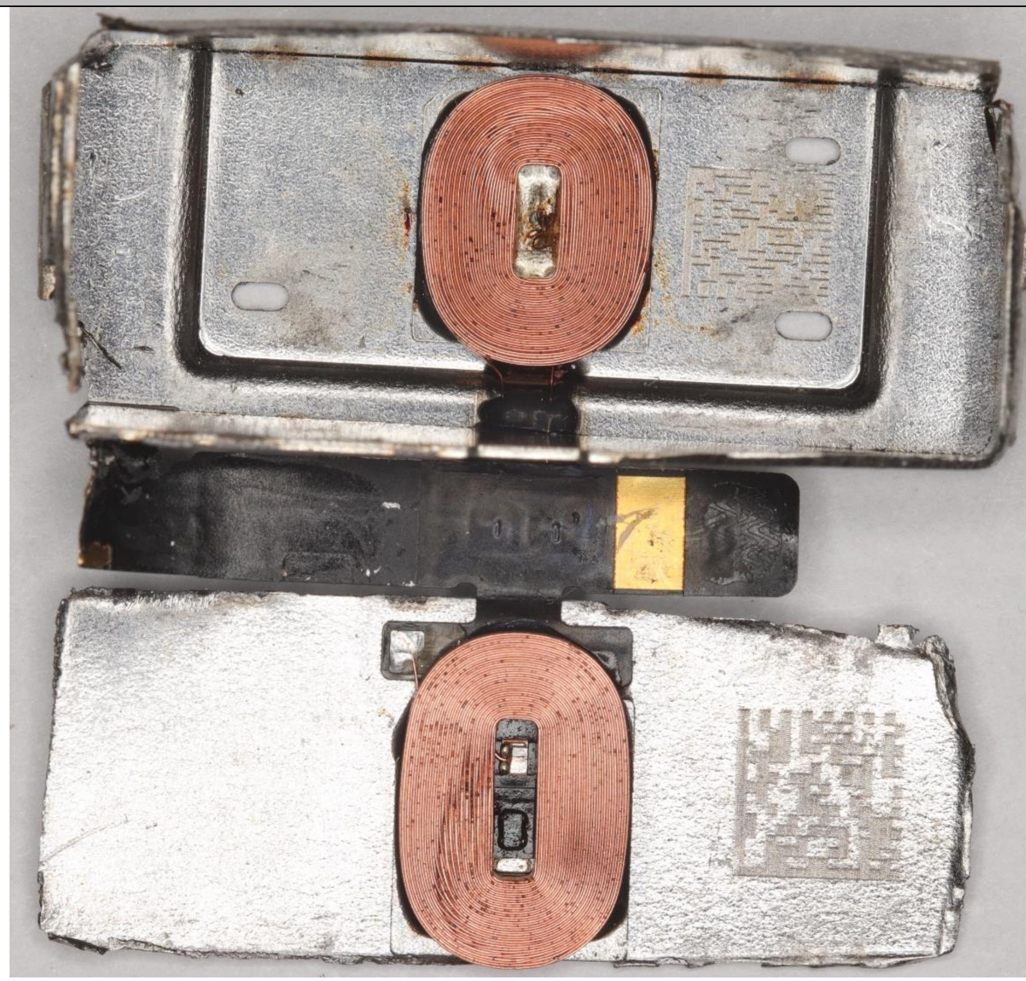
Claim 20	Accused Products
	 Photograph of iPhone 14 touchscreen, buttons, and switch, *available at* https://www.apple.com/iphone-14/.

Claim 20	Accused Products
	 Photograph of Apple Watch Ultra touchscreen, dial, and buttons.
[20e] a driving component that drives the moveable component to oscillate within the housing; and	Each Accused Product comprises a driving component that drives the moveable component to oscillate within the housing. For example, the Taptic Engine includes one or more coils to form electromagnetic fields for driving the moveable component in two directions.

Claim 20	Accused Products
	See, e.g.:  Photograph of driving coils within disassembled Taptic Engine from the iPhone 14. The two visible coils would be positioned above and below the moveable component when assembled.

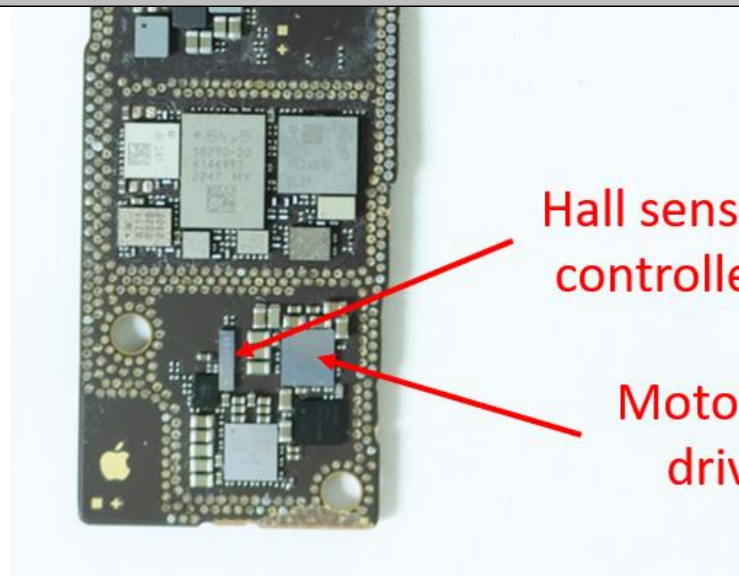
Claim 20	Accused Products
	 Photograph showing one driving coil (at right) within disassembled Taptic Engine from the iPhone 14, with moveable component in place at left. The moveable component travels up and down from this perspective.

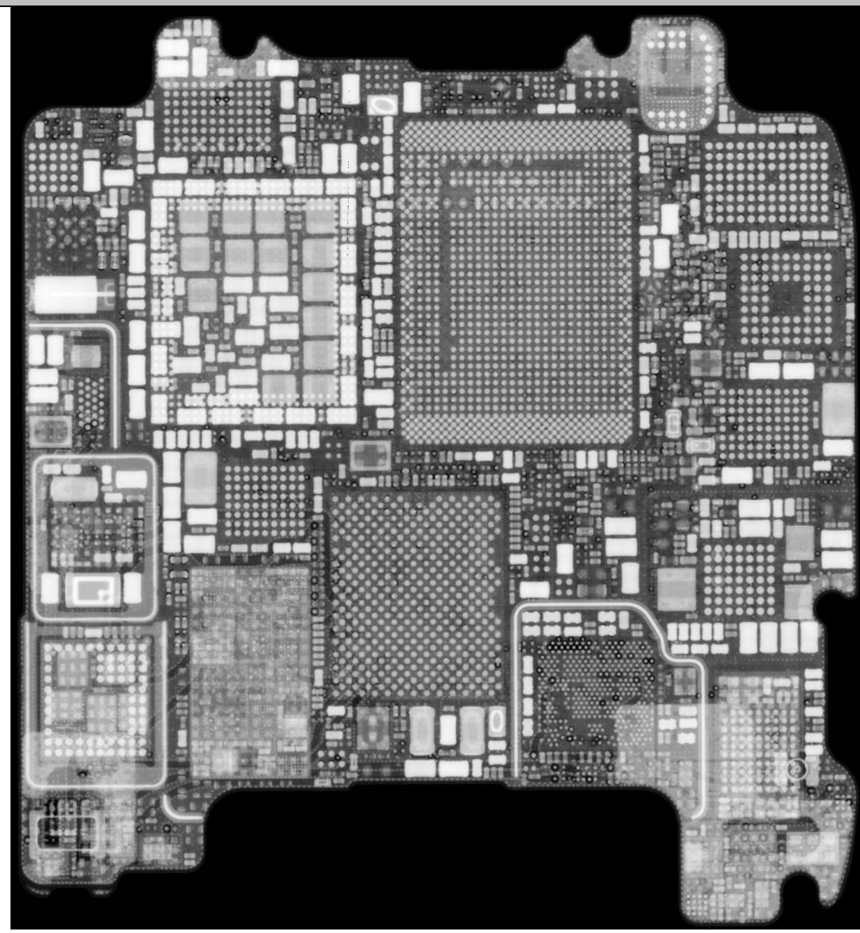
Claim 20	Accused Products
	 Photograph of internals of Taptic Engine from the iPhone 14, showing drive coils (top and bottom) surrounding the moveable component. The moveable component travels left and right from this perspective.

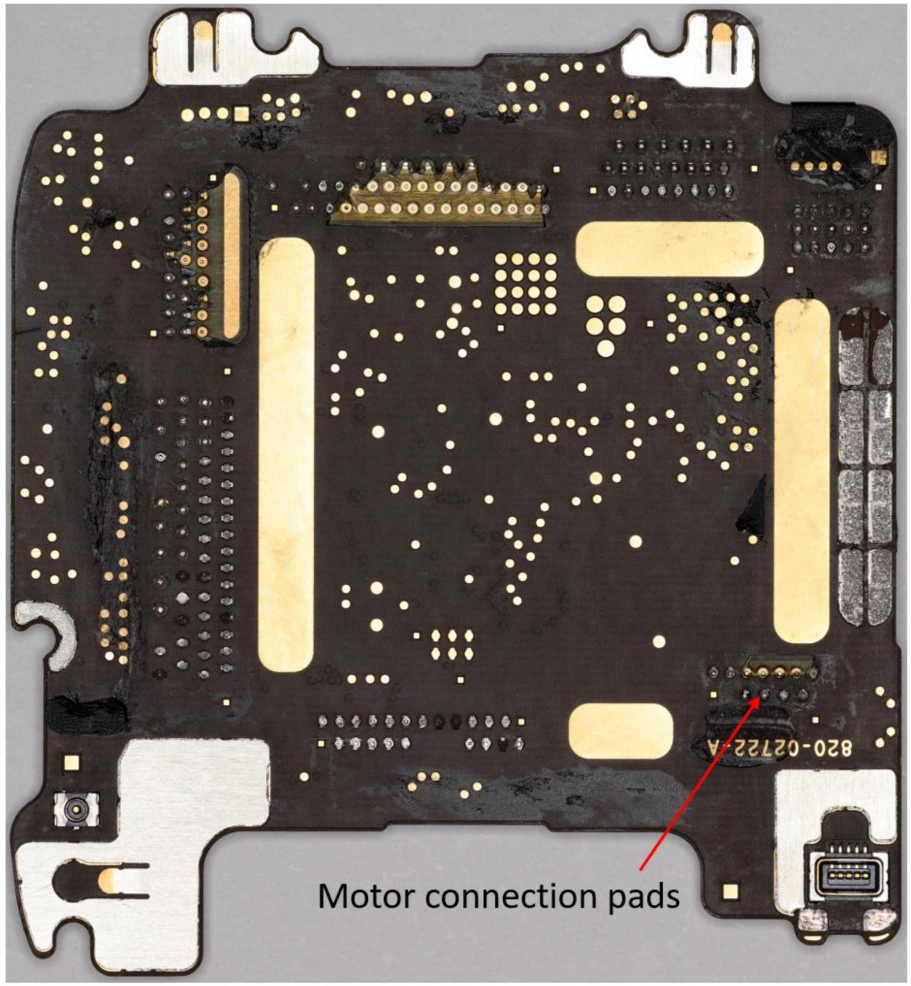
Claim 20	Accused Products
	 Photograph of drive coils within disassembled Taptic Engine from Apple Watch Ultra. The two visible coils would be positioned above and below the movable component when assembled.
[20f] a control component that controls supply of power from the power supply to the driving	Each Accused Product comprises a control component that controls supply of power from the power supply to the driving component to cause the moveable component to oscillate at a frequency and an amplitude specified by one or more stored values.

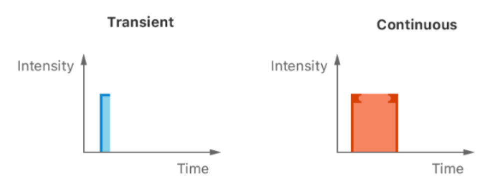
Claim 20	Accused Products
component to cause the moveable component to oscillate at a frequency and an amplitude specified by one or more stored values,	For example, each Accused Product includes a main system processor, a linear motor coil driver, and a Hall sensor controller, which alone or in combination form a control component as claimed to drive the coils and thus move the magnetic mass in a linear oscillating motion, as described below. This control component can drive the moveable component at specified frequencies and amplitude, as demonstrated by public APIs and by testing. The public APIs, as well as any proprietary Apple APIs and interfaces, specify intensity and sharpness (exemplary stored values) that directly and/or indirectly control the frequency and amplitude of the oscillation and that are stored at least within the system processor and associated volatile and non-volatile memory. On information and belief, the system processor and/or linear motor control driver include additional stored values specifying frequency and/or amplitude. *See, e.g.*:

Claim 20	Accused Products
	 Photographs showing iPhone 14 system board with A15 Bionic processor.

Claim 20	Accused Products
	 Annotated photograph of Hall sensor controller and motor coil driver from the iPhone 14.

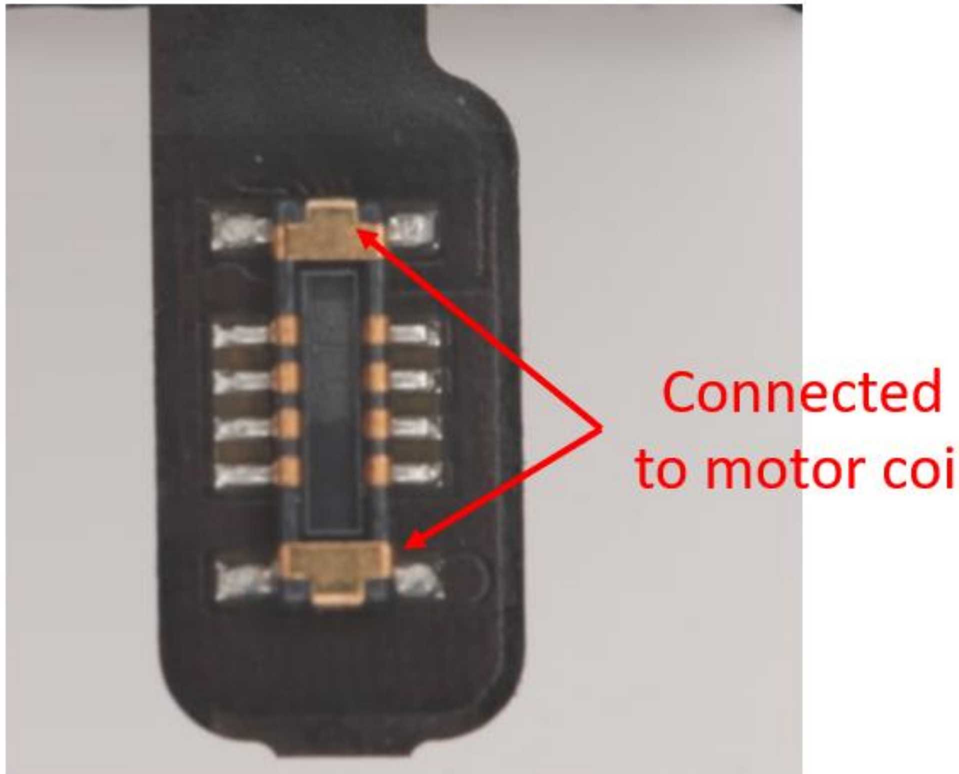
Claim 20	Accused Products
	 X-ray image of Apple Watch Ultra system board.

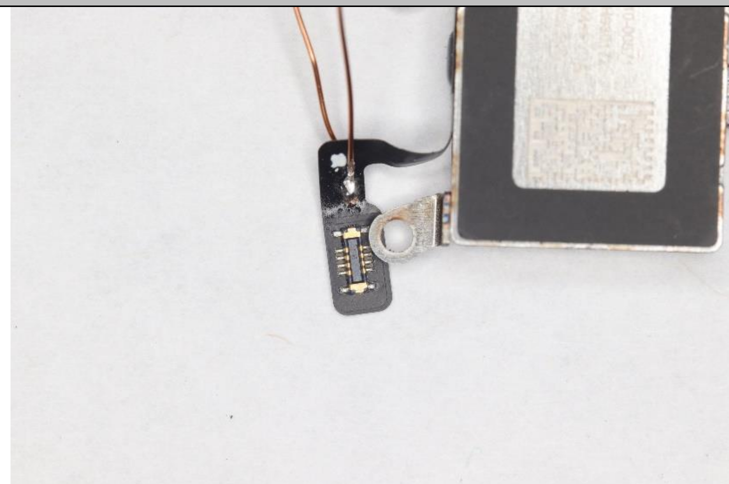
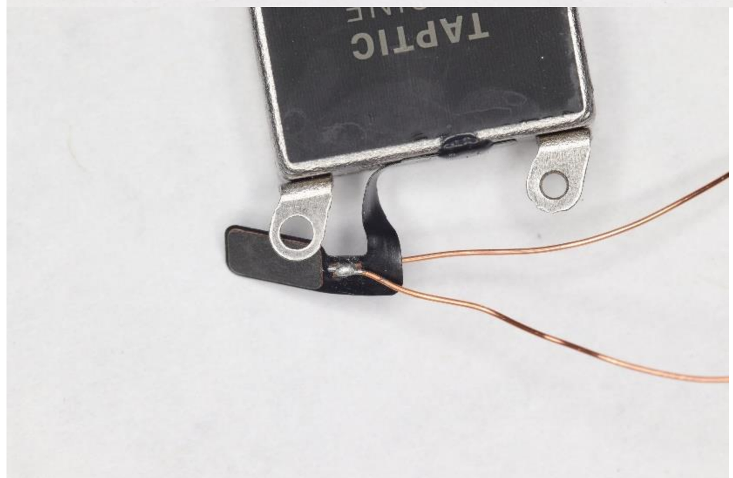
Claim 20	Accused Products
	 Annotated photograph of partially disassembled Apple Watch Ultra system board, showing connection points for haptic motor.

Claim 20	Accused Products
	Declaration `class CHHapticEvent : NSObject` **Overview** Each event represents a single haptic or audio signal. The event `type` determines whether it's audio or haptic. Use a `CHHapticPatternPlayer` object obtained through `CHHapticEngine` factory methods to play events. Haptic events can be transient or continuous. Transient haptic patterns are brief impulses that occur at a specific point in time, such as the haptic feedback you feel from swiping through a picker or toggling a switch. Continuous haptic patterns, like the vibration from a ringtone, take the form of lengthier feedback over a period of time. In the following graphic, transient haptic patterns on the left trigger at a specific time with a specific intensity. Continuous haptic patterns on the right sustain the haptic feedback over a specific duration of time, such as three seconds.  Specify when an event begins by setting its `relativeTime` property. Specify the length of the event by setting its `duration` property. Set optional parameters to customize event properties. For example, you can specify the intensity of a haptic event by creating an event parameter with ID `hapticIntensity`. Documentation of CHHapticEvent object, https://developer.apple.com/documentation/corehaptics/chhapticevent

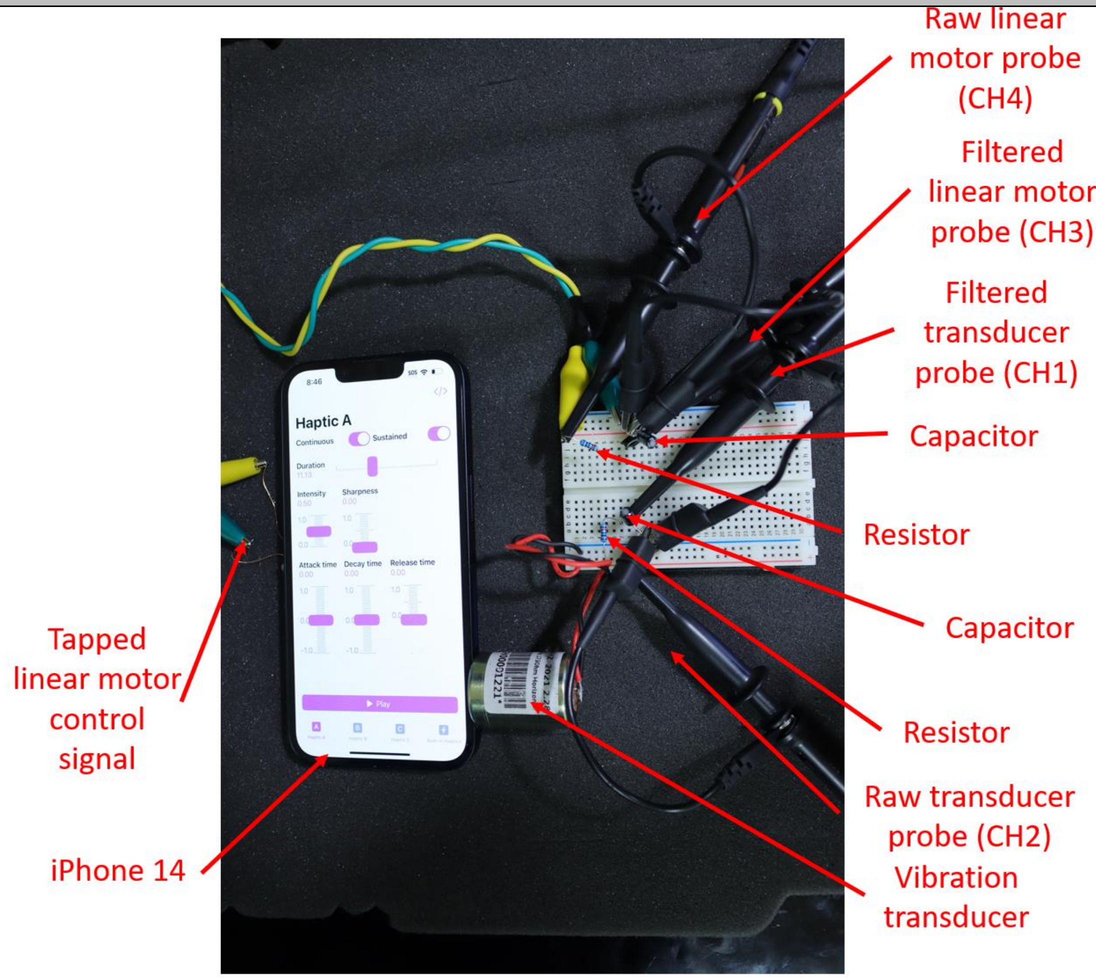
Claim 20	Accused Products
	Haptic Event Parameter IDs `static let hapticIntensity: CHHapticEvent.ParameterID` The strength of a haptic event. `static let hapticSharpness: CHHapticEvent.ParameterID` The feel of a haptic event. `static let attackTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins increasing. `static let decayTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins decreasing. `static let releaseTime: CHHapticEvent.ParameterID` The time at which to begin fading the haptic pattern. `static let sustained: CHHapticEvent.ParameterID` A Boolean value that indicates whether to sustain a haptic event for its specified duration. Documentation of haptic event parameters, https://developer.apple.com/documentation/corehaptics/chhapticevent/parameterid;

Claim 20	Accused Products
	4. The Continuous "Sharpness" parameter maps to frequency. For continuous events, we found that the sharpness parameter maps to frequency. On an iPhone 8, the lower sharpness boundary (0.0) of the Taptic Engine is 80 Hz; the higher sharpness boundary (1.0) is 230 Hz. This provides an effective range of 150 Hz, or roughly 1.5 octaves — which is impressive for a mobile phone released in 2017. Other phones or devices supporting Core Haptics might have different upper or lower boundaries since the frequency range is tied to the capabilities of the hardware actuator. https://medium.com/lofelt/10-things-you-should-know-about-designing-for-apple-core-haptics-9219fdebdcaa.

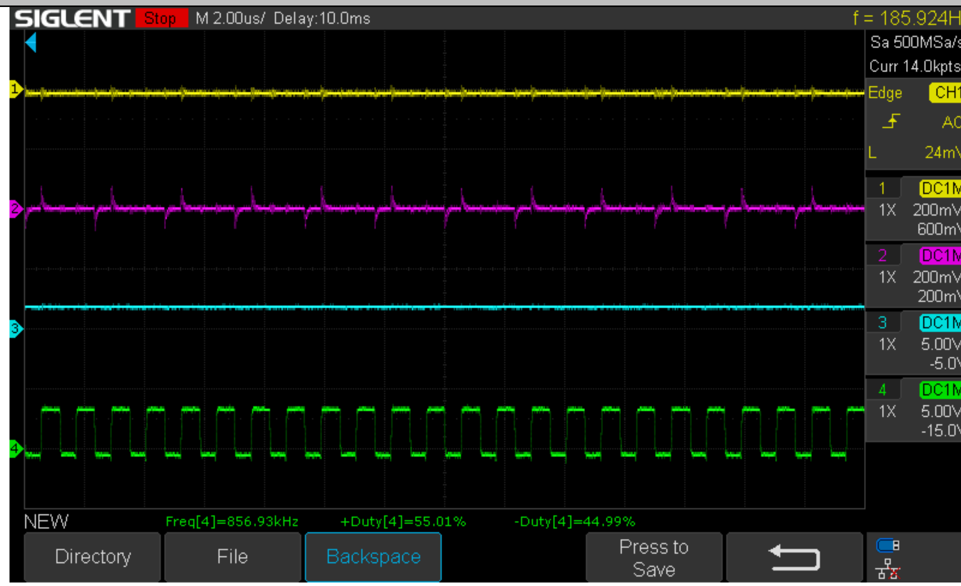
Claim 20	Accused Products
	 Annotated photograph of Taptic Engine connector from the iPhone 14 showing positive and negative coil driving pins.

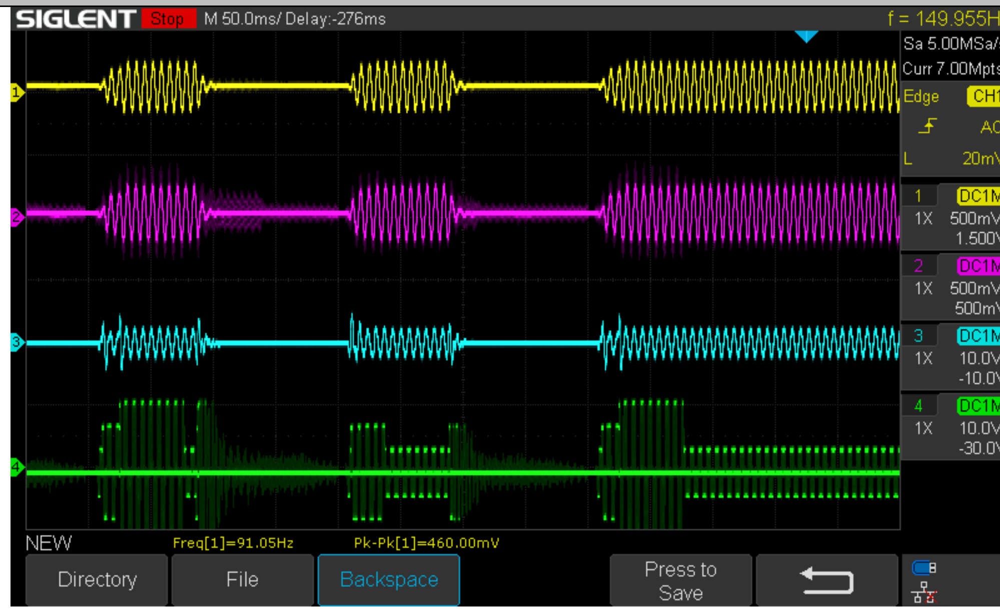
Claim 20	Accused Products
	  Photographs of test apparatus with electrical leads connected to motor coil drive traces of iPhone 14.

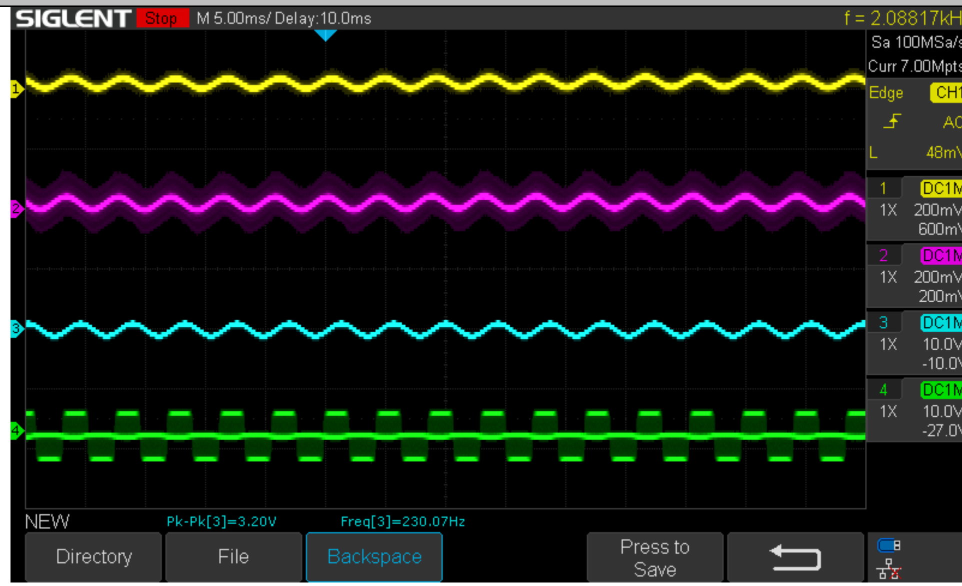
Claim 20	Accused Products

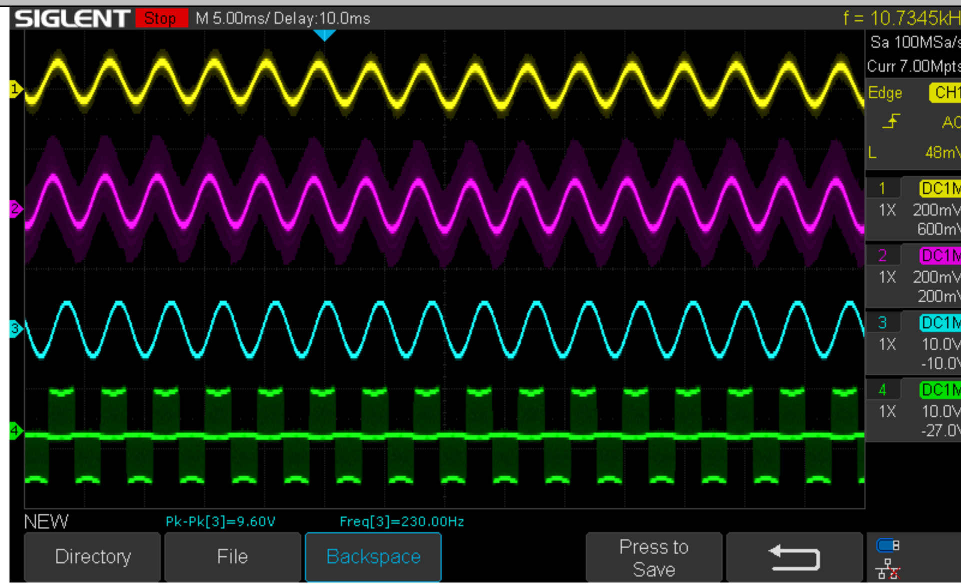


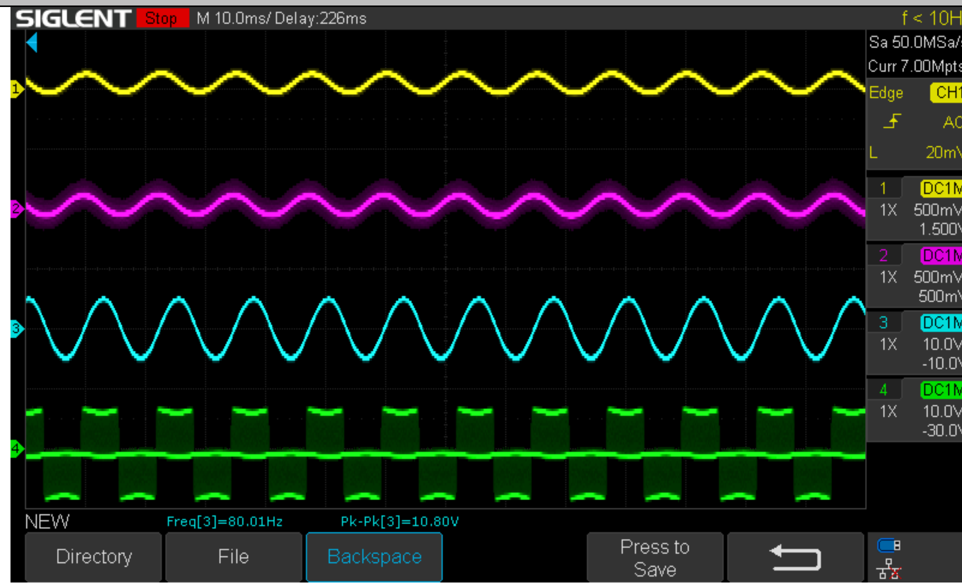
Photograph of test apparatus for measuring motor coil drive signal (from tapped connection) and actual motion (from attached vibration transducer) of iPhone 14. Note RC low-pass filter networks at top right with R = 220 Ω, C = 2.2 uF.

Claim 20	Accused Products
	 Oscilloscope trace showing, in green (CH4), the drive voltage applied by the iPhone 14 haptic controller(s); in this case, a pulse width modulated positive signal (modulation frequency 857 kHz) to drive the moveable component in one of two directions.

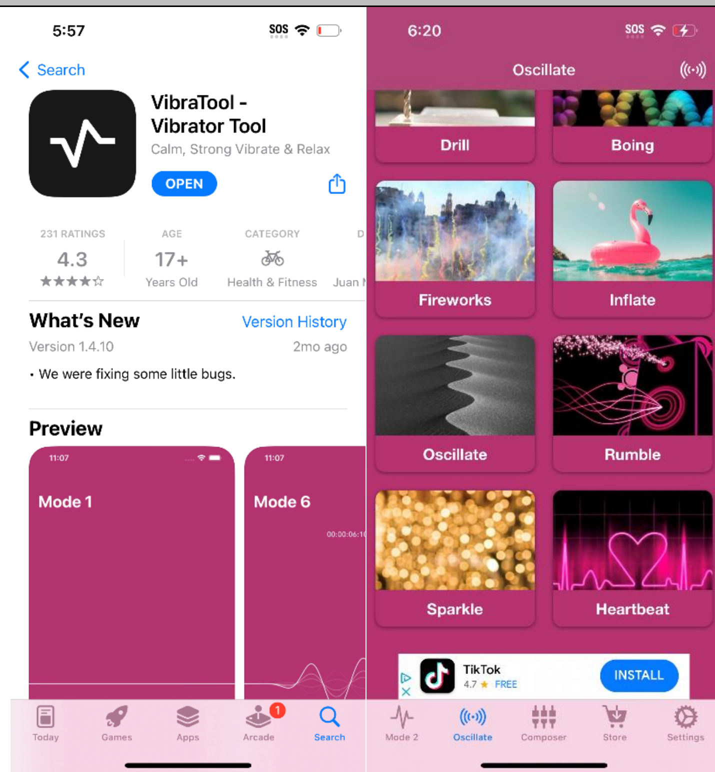
Claim 20	Accused Products
	 Oscilloscope trace showing, in green (CH4), the PWM-modulated drive voltage applied by the iPhone 14 haptic controller(s), with positive and negative voltages to drive the moveable component in a first and second direction. Channels 1 and 2 (yellow and purple) show the actual motion of the iPhone 14 resulting (pursuant to Newton's third law) from the motion of the moveable component.

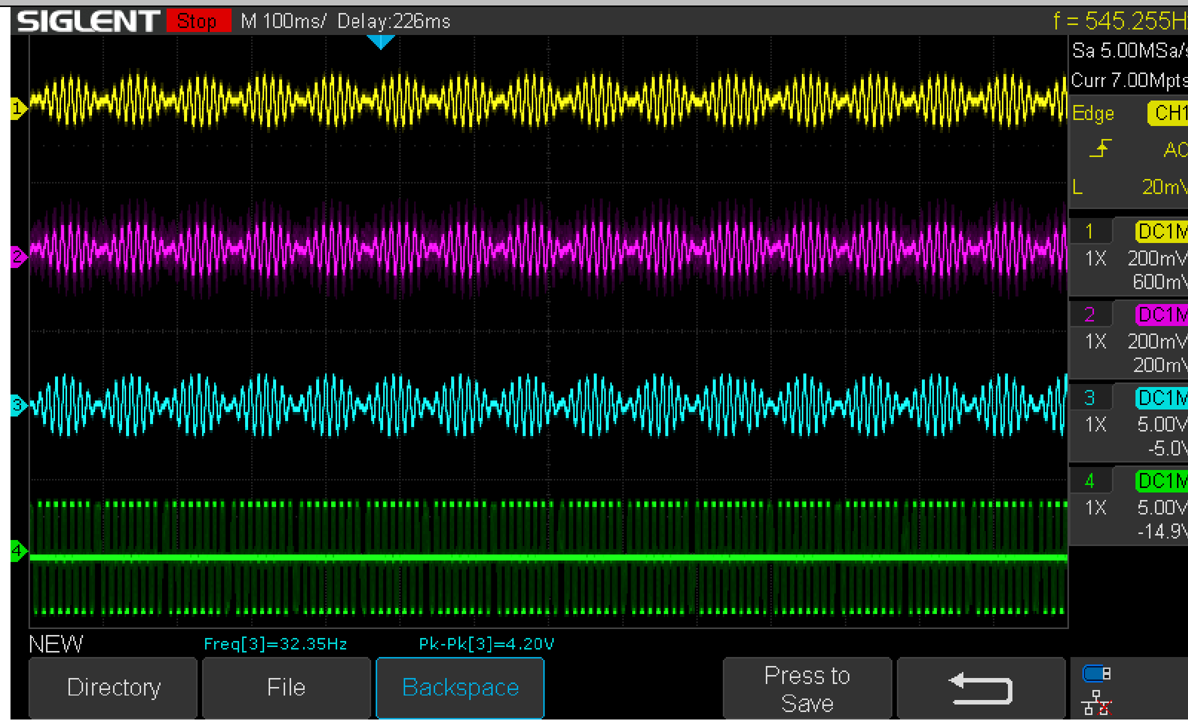
Claim 20	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 0.5, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 3.2 V (peak-to-peak, through RC low-pass filter).

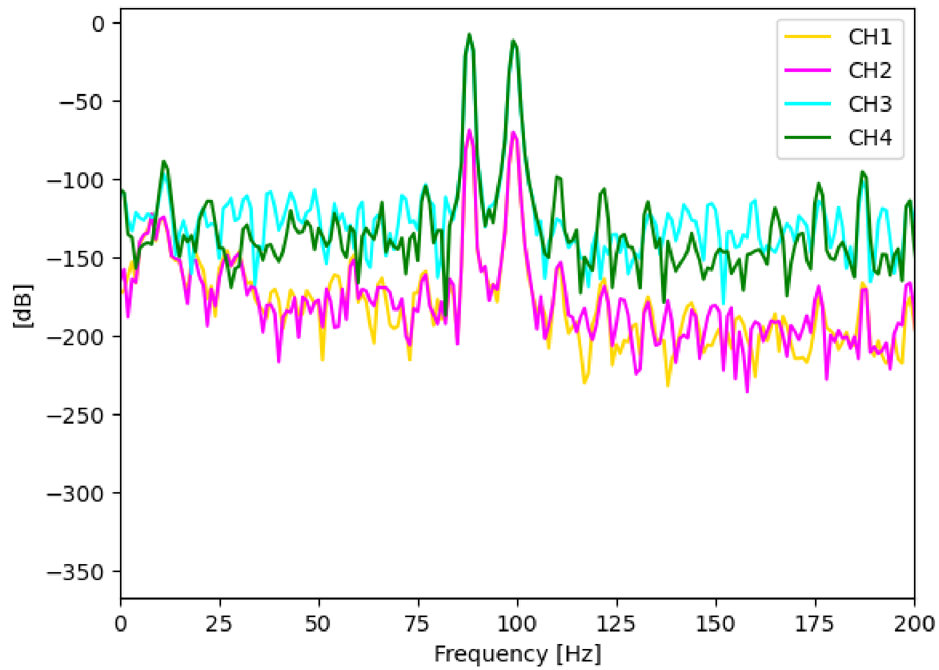
Claim 20	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 1, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 9.6V (peak-to-peak, through RC low-pass filter). Note that the externally measured vibration amplitude (yellow and purple traces, same scale as previous trace) is also significantly higher at intensity = 1 than 0.5.

Claim 20	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 1, sharpness = 0, with frequency of 80 Hz and motor drive amplitude of 10.8 V (peak-to-peak, through RC low-pass filter). To the extent Defendant contends and/or shows that this limitation is not literally present in the Accused Products, it is present under the doctrine of equivalents. There are no substantial differences between the accused functionality and the claimed invention. For example, each Accused Product contains one or more microprocessors that coordinate(s) operation of the Taptic Engine, which performs substantially the same function (*e.g.*, controls supply of power from the power supply to the driving component to cause the moveable component to oscillate at a frequency and an amplitude specified by one or more stored values) in substantially the same way (*e.g.*, using digital logic) to achieve substantially the same result (*e.g.*, producing oscillations at a desired frequency and amplitude).
[20g] wherein the control component drives simultaneous oscillation of the	In each Accused Product, the control component drives simultaneous oscillation of the moveable component at two or more frequencies to generate complex vibration modes.

Claim 20	Accused Products
moveable component at two or more frequencies to generate complex vibration modes.	For example, the iPhone 14 is configured to drive the moveable component in a complex drive mode that includes at least two frequencies when used with software sold by Apple through its App Store. On information and belief, the Apple Watch Ultra supports the same or similar functionality. For another example, each Accused Product is configured to drive the moveable component in a complex drive mode when used with public APIs, as well as any proprietary Apple APIs. In the Apple Core Haptics API, one or more haptic patterns, which each includes a selected frequency, may be played simultaneously to produce two or more frequencies that generate complex vibration modes. *See*, *e.g.*:

Claim 20	Accused Products
	 Screenshots of exemplary "VibraTool" software, sold by Apple through its App Store.

<table>
<tr><th>Claim 20</th><th>Accused Products</th></tr>
<tr><td></td><td>
Oscilloscope trace showing “Oscillate” pattern from VibraTool, showing complex drive modes.</td></tr>
</table>

Claim 20	Accused Products
	 Spectrum analysis of "Oscillate" pattern from VibraTool, showing two or more peak frequencies (88 Hz and 99 Hz) of complex drive mode.

Claim 20	Accused Products
	Play the AHAP Assuming the engine has started, call the engine's method, `playPattern(from:)`, passing it the URL to playing the file. `// Tell the engine to play a pattern.` `try engine?.playPattern(from: URL(fileURLWithPath: path))` This method of playback follows a *fire and forget* model; each haptic pattern plays until it reaches its end, then stops automatically. Once the haptic starts playing, you can't stop it, and pressing other buttons layers those haptics on top of any existing haptic patterns in the middle of playback. This layering allows you to combine a haptic pattern with a more continuous intent, like the rumble of thunder, with a more impulse-driven haptic pattern built from transient taps, like the strike of lightning. Core Haptics layers simultaneously playing haptics automatically. If you don't want the layering, your app should wait out the duration of the first haptic before starting subsequent haptic players. **Note** Haptic patterns don't blend like audio waveforms, and not all combinations produce a discernible effect. Playing two haptic events of the same type at the same time makes them hard to tell apart. Experiment with various combinations to ensure that the result feels right. Documentation of the Apple Core Haptics API showing that more than one haptic pattern, which includes a frequency, may be played simultaneously to produce two or more frequencies that generate complex vibration modes. Source: https://developer.apple.com/documentation/corehaptics/playing_a_custom_haptic_pattern_from_a_file

Exhibit 5

U.S. Patent No. 11,152,882 ("'882 Patent")

Accused Instrumentalities

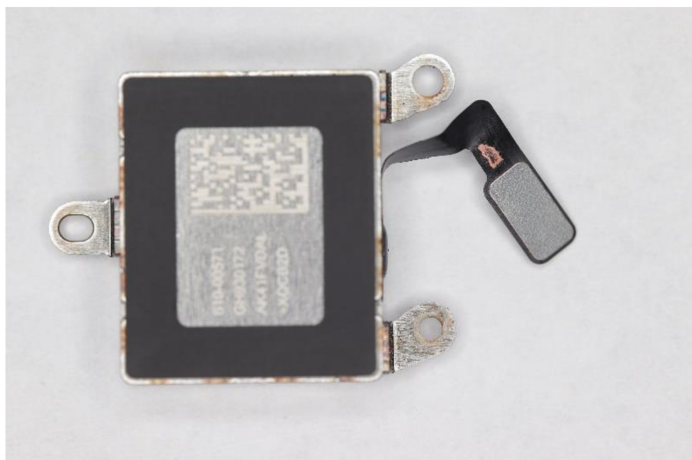
Apple products with Taptic Engine technology, including without limitation iPhone products (iPhone 6s, 6s Plus, 7, 7 Plus, 8, 8 Plus, X, XR, XS, XS Max, 11, 11 Pro, 11 Pro Max, SE (second generation), 12, 12 mini, 12 Pro, 12 Pro Max, 13, 13 mini, 13 Pro, 13 Pro Max, SE (third generation), 14, 14 Plus, 14 Pro, 14 Pro Max, 15, 15 Plus, 15 Pro, 15 Pro Max), MacBook products (MacBook Pro from 2015, MacBook from 2018, MacBook Air from 2018) and Apple Watch products (1st generation, Series 1, Series 2, Series 3, Series 4, Series 5, SE, Series 6, Series 7, SE (second generation), Series 8, Ultra, Series 9, Ultra 2), and all variants and iterations thereof (collectively, "Accused Products"), infringe at least Claims 1, 2, 3, 4, 5, 6, 7, 10, 17, 19, and 20 of the '882 Patent.

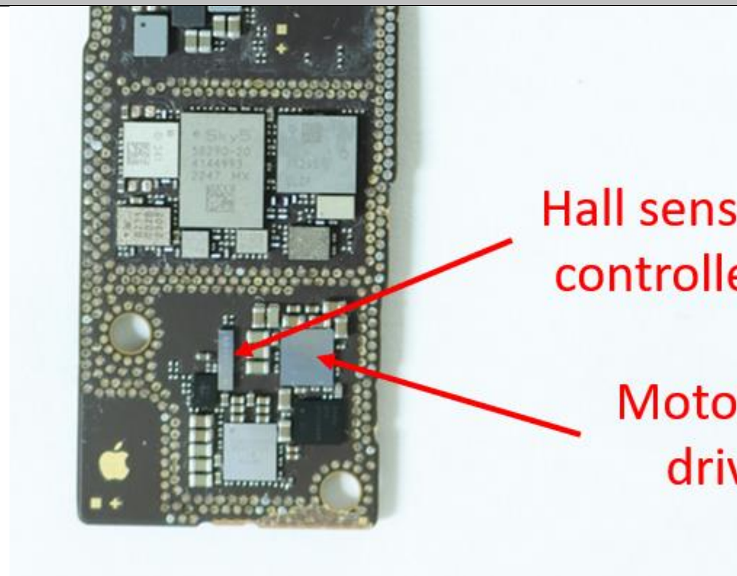
Each Accused Product infringes the claims in substantially the same way, and the evidence shown in this chart is similarly applicable to each Accused Product. For example, each Accused Product includes a linear vibration motor and supports substantially the same haptic feedback features. Each claim limitation is literally infringed by each Accused Product. However, to the extent any claim limitation is not met literally, it is nonetheless met under the doctrine of equivalents because the differences between the claim limitation and each Accused Product would be insubstantial, and each Accused Product performs substantially the same function, in substantially the same way, to achieve the same result as the claimed invention. Notably, Apple has not yet articulated which, if any, particular claim limitations it believes are not met by the Accused Products.

Claim 1

Claim 1	Accused Products
[1pre]. An oscillating resonant module comprising:	To the extent the preamble is limiting, each Accused Product includes or constitutes an oscillating resonant module. For example, each of the Apple iPhone 14 and the Apple Watch Ultra contain a linear actuator ("Taptic Engine"), haptic controller(s), and associated circuitry, as described in connection with the claim limitations below. *See, e.g.*:

Photograph of iPhone 14 with rear cover removed, with A15 Bionic SoC at center right and Taptic Engine at bottom left.

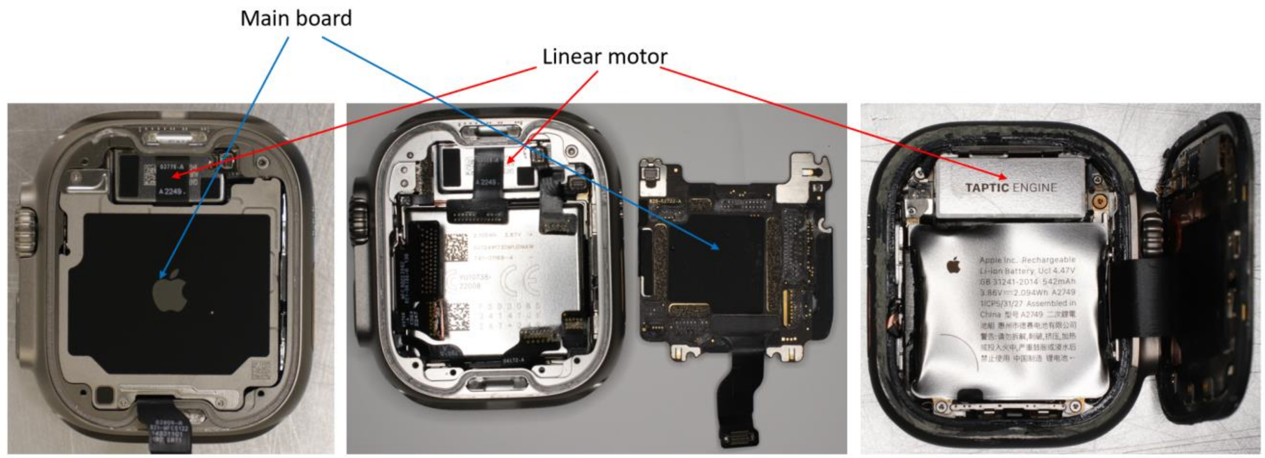
Claim 1	Accused Products
	 Photograph of Taptic Engine housing from iPhone 14.  Photograph of Taptic Engine housing from iPhone 14.

Claim 1	Accused Products
	 Photograph of Hall sensor controller and motor control driver from iPhone 14.

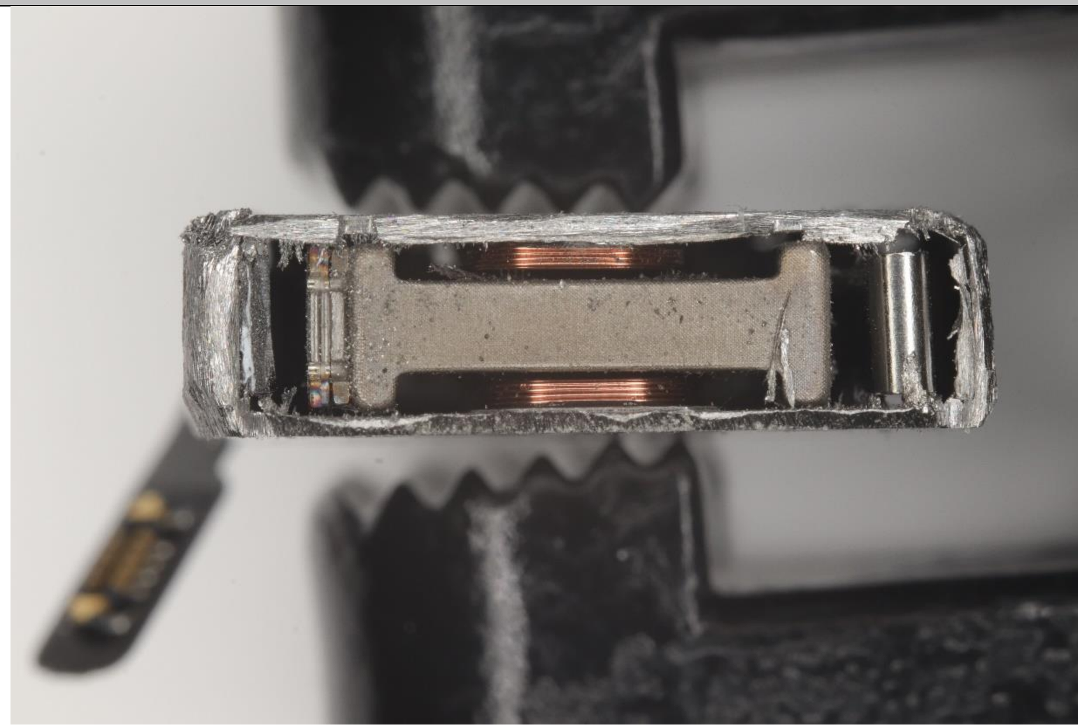
<table>
<tr><th>Claim 1</th><th>Accused Products</th></tr>
<tr><td></td><td>The following devices contain a Taptic Engine:
• iPhone 14 Pro Max
• iPhone 14 Pro
• iPhone 14 Plus
• iPhone 14
• iPhone SE (3rd generation)
• iPhone 13 Pro Max
• iPhone 13 Pro
• iPhone 13
• iPhone 13 mini
• iPhone 12 Pro Max
• iPhone 12 Pro
• iPhone 12
• iPhone 12 mini
• iPhone SE (2nd generation)
• iPhone 11 Pro Max
• iPhone 11 Pro
• iPhone 11
• iPhone XS Max
• iPhone XS
• iPhone XR
• iPhone X
• iPhone 8 Plus
• iPhone 8
• iPhone 7 Plus
• iPhone 7
• iPhone 6s Plus
• iPhone 6s

Accessory Design Guidelines for Apple Devices, Release R20, available at https://developer.apple.com/accessories/Accessory-Design-Guidelines.pdf</td></tr>
</table>

Claim 1	Accused Products
	 Photograph of Apple Watch Ultra.

Claim 1	Accused Products
	 Wrist side, cover removed Wrist side, cover and main board removed Display side, display removed Annotated photographs of Apple Watch Ultra showing linear actuator (Taptic engine) and main system board.
[1a] an oscillation path, which represents a segment of a space curve, along which a point within a mass moves;	Each Accused Product comprises an oscillation path, which represents a segment of a space curve, along which a point within a mass move. For example, each point within the moveable component within the Taptic Engine in the iPhone 14 and Apple Watch Ultra moves along a substantially linear space curve. *See, e.g.*:

Claim 1	Accused Products
	 Photograph showing one driving coil (at right) within disassembled Taptic Engine from iPhone 14, with moveable component in place at left supported by springs above and below. The moveable component travels up and down from this perspective.

Claim 1	Accused Products
	 Photograph of internals of Taptic Engine from iPhone 14, showing drive coils (top and bottom) surrounding the moveable component, supported by springs at left and right. The moveable component travels left and right from this perspective.

Claim 1	Accused Products
	 Photograph of moveable component from Apple Watch Ultra, with springs at left and right constraining the moveable component to an oscillation path.
[1b] a mass that is driven by energy supplied to the oscillating resonant module to oscillate back and forth along the oscillation path that represents a segment of a space curve;	Each Accused Product comprises a mass that is driven by energy supplied to the oscillating resonant module to oscillate back and forth along the oscillation path that represents a segment of a space curve. For example, each Accused Product drives one or more coils within the Taptic Engine in order to cause the mass to oscillate back and forth along the oscillation path. *See, e.g.*:

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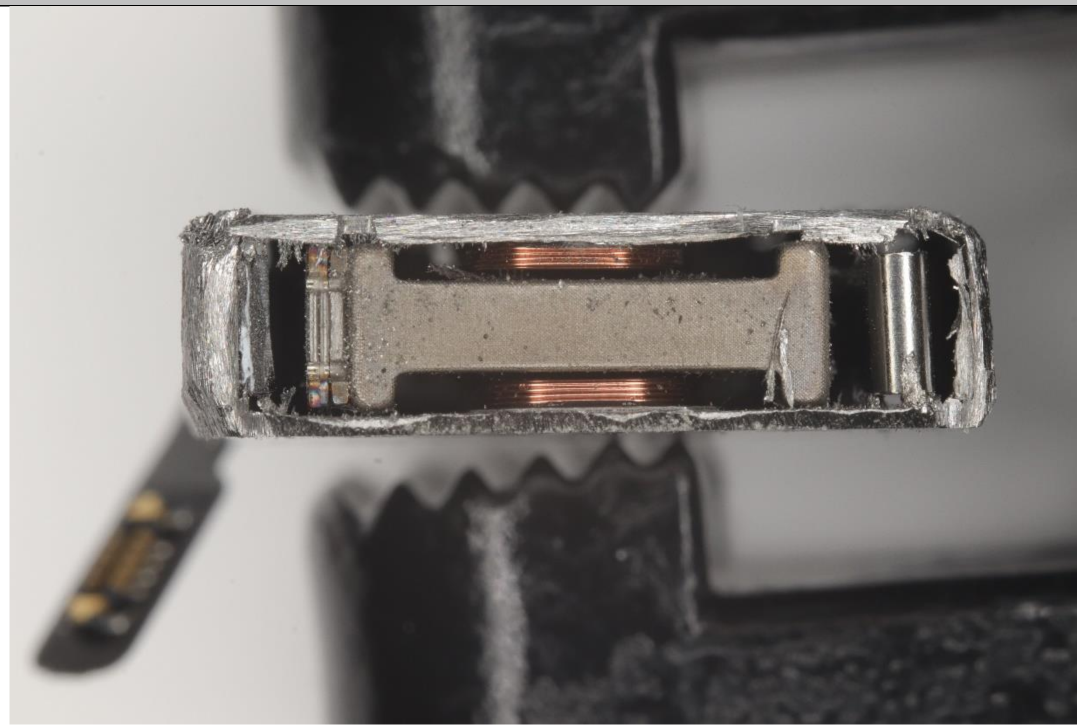
Claim 1	Accused Products
	 Photograph showing one driving coil (at right) within disassembled Taptic Engine from iPhone 14, with moveable component in place at left supported by springs above and below. The moveable component travels up and down from this perspective.

Claim 1	Accused Products
	 Photograph of internals of Taptic Engine from iPhone 14, showing drive coils (top and bottom) surrounding the moveable component, supported by springs at left and right. The moveable component travels left and right from this perspective.

Claim 1	Accused Products
	 Photograph of moveable component from Apple Watch Ultra, with springs at left and right constraining the moveable component to an oscillation path.

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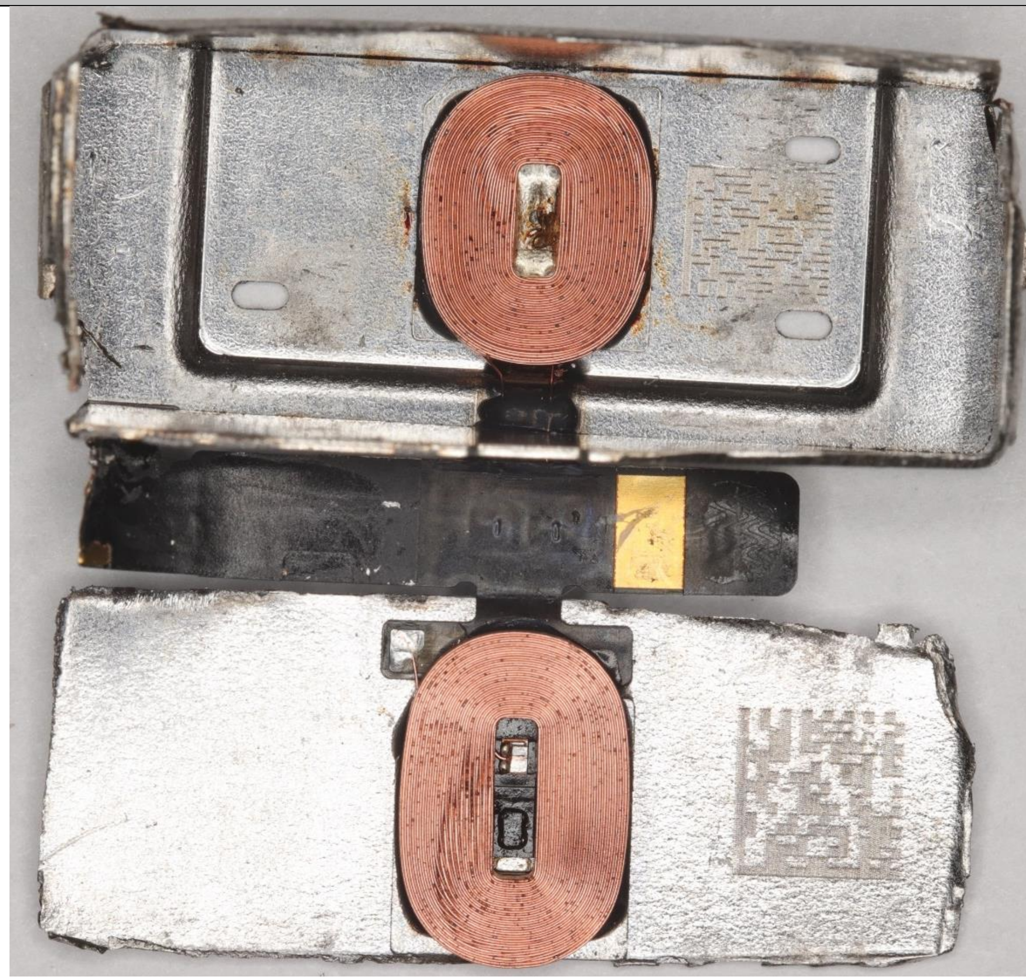
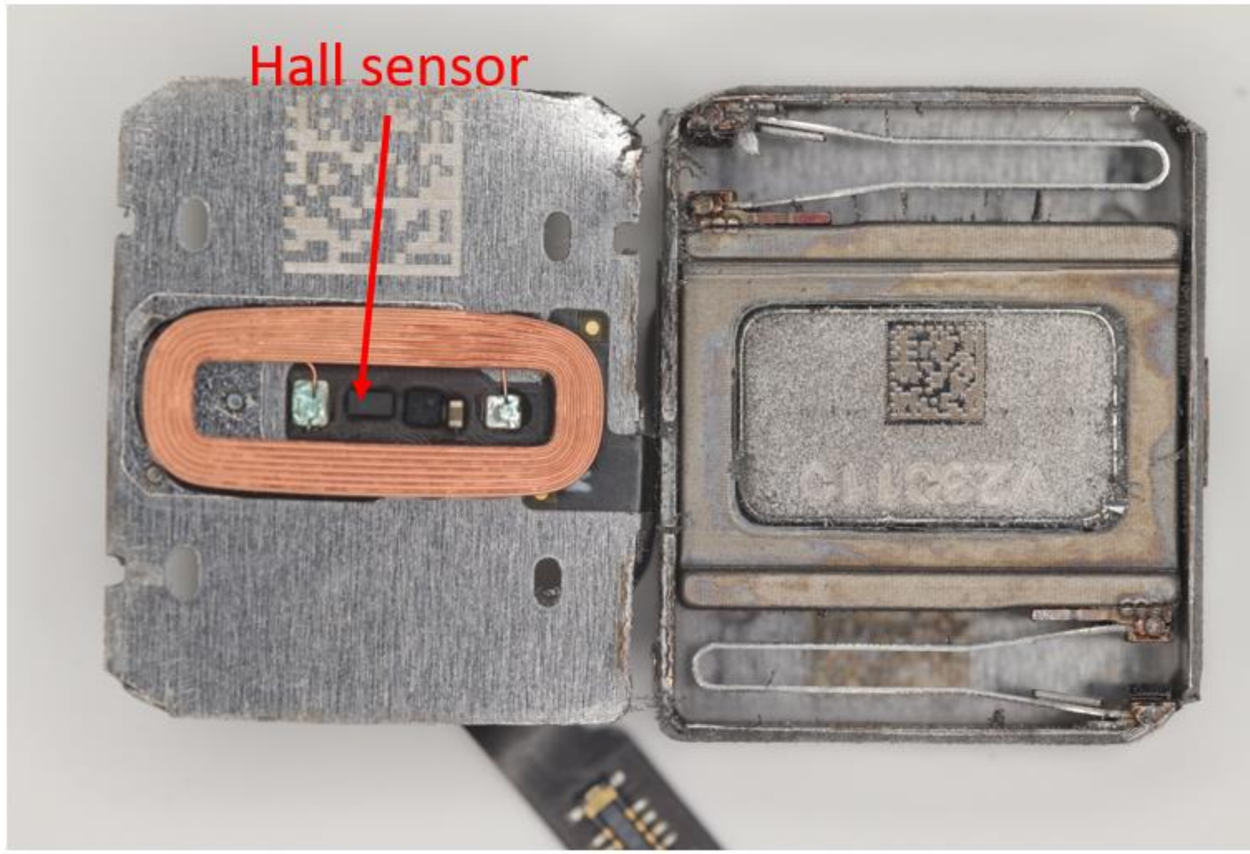
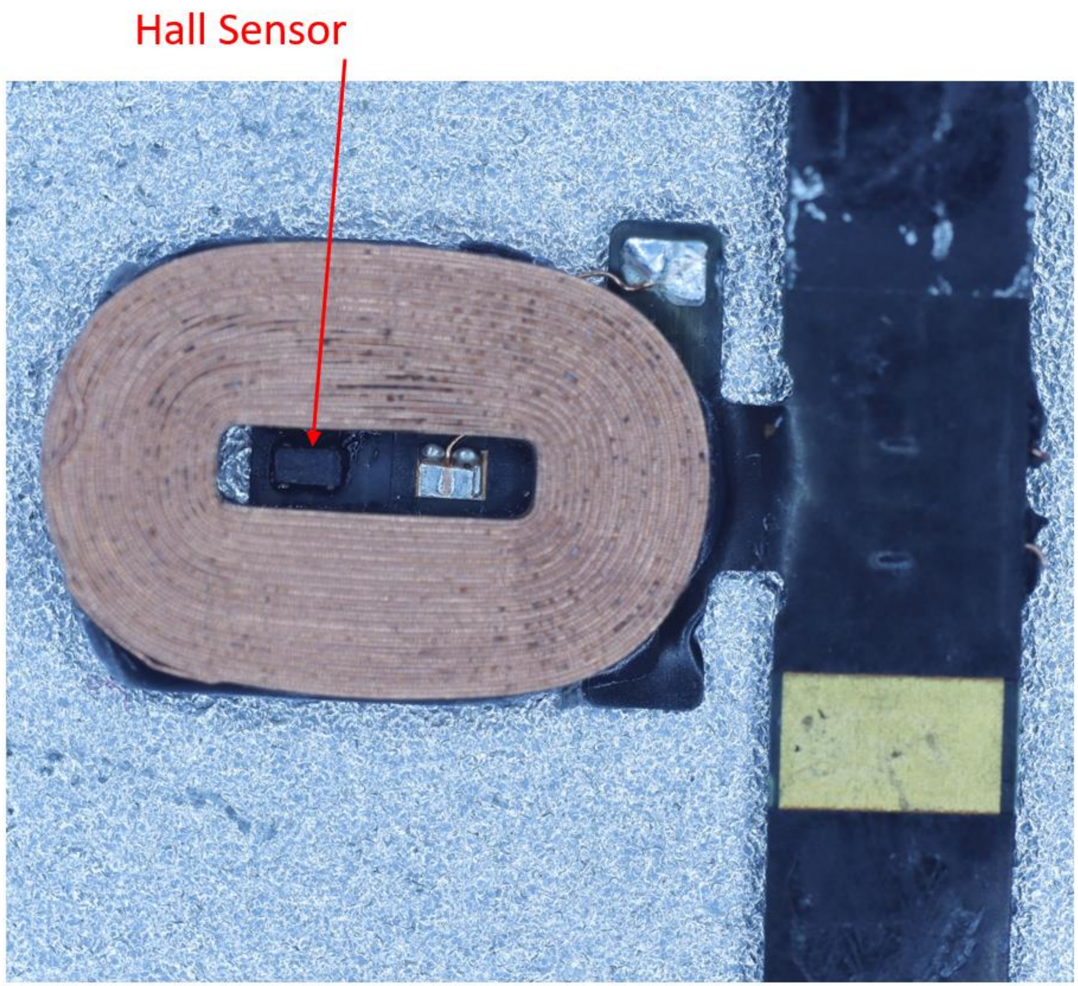
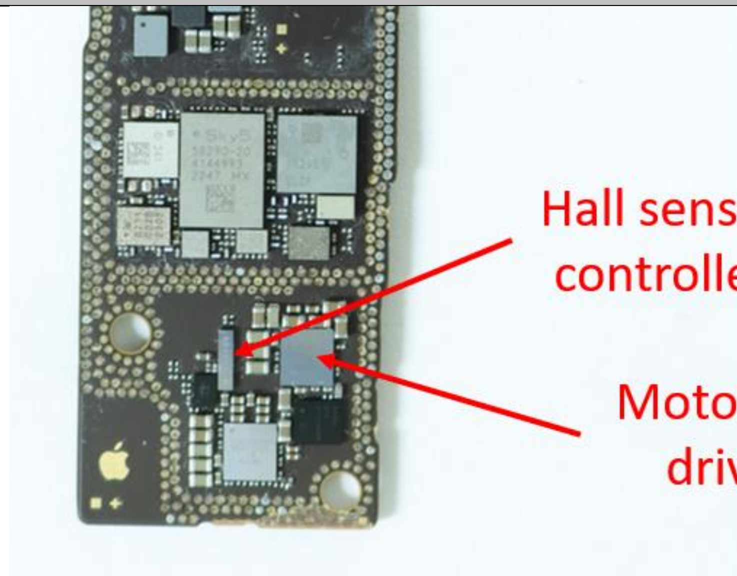
Claim 1	Accused Products
	 Photograph of drive coils within disassembled Taptic Engine from Apple Watch Ultra. The two visible coils would be positioned above and below the movable component when assembled.

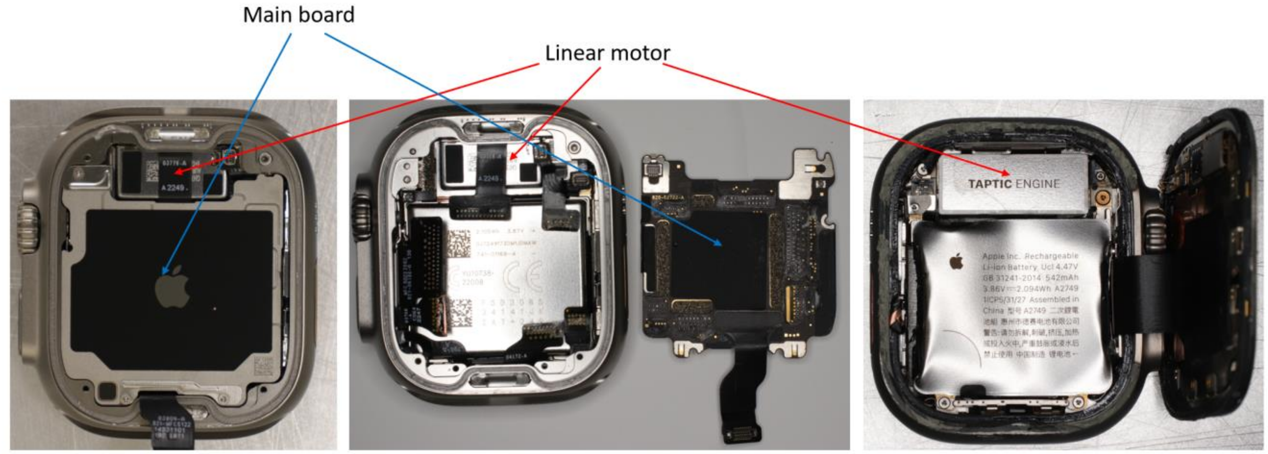
Claim 1	Accused Products
[1c] one or more sensors that output indications of the positions of the mass within the oscillation path at specific points in time; and	Each Accused Product includes one or more sensors that output indications of the positions of the mass within the oscillation path at specific points in time. For example, the Taptic Engine in each of the iPhone 14 and Apple Watch Ultra Includes a Hall effect sensor that determines the position and/or velocity of the moveable component. *See, e.g.*:  Annotated photograph showing Hall effect sensor within Taptic Engine of iPhone 14.

Claim 1	Accused Products
	 Annotated photograph showing Hall effect sensor within Taptic Engine of Apple Watch Ultra.
[1d] a control component that	Each Accused Product includes a control component as claimed.

Claim 1	Accused Products
	For example, one or more of the system processor and/or linear motor coil driver contains confidential and proprietary software and/or firmware to control the oscillating resonant module. *See, e.g.*:

Claim 1	Accused Products
	Photograph of iPhone 14 with rear cover removed, with A15 Bionic SoC at center right and Taptic Engine at bottom left.

Claim 1	Accused Products
	 Photograph of Hall sensor controller and motor control driver from iPhone 14.

Claim 1	Accused Products
	 Wrist side, cover removed — Wrist side, cover and main board removed — Display side, display removed Annotated photographs of Apple Watch Ultra showing linear actuator (Taptic engine) and main system board. *See also* claim elements below. To the extent Defendant contends and/or shows that this limitation is not literally present in the Accused Products, it is present under the doctrine of equivalents. There are no substantial differences between the accused functionality and the claimed invention. For example, each Accused Product contains one or more microprocessors that coordinate(s) operation of the Taptic Engine, which performs substantially the same function (*e.g.*, receiving control signals input to the oscillating resonant module, receiving outputs from one or more sensors, and controlling the oscillation of the mass) in substantially the same way (*e.g.*, using digital logic) to achieve substantially the same result (*e.g.*, producing oscillations at a desired frequency and amplitude).
[1e] receives control signals input to the oscillating resonant module,	The control component in each Accused Product receives control signals input to the oscillating resonant module.

Claim 1	Accused Products
	For example, the haptic controller receives serial or other data from the application processor to control the intensity and sharpness of the desired oscillation. These control signals are sent and received using a protocol for commanding haptic patterns, as demonstrated by public APIs and testing results. For another example, each of the iPhone 14 and Apple Watch Ultra comprises a touchscreen, buttons, and other user-input features to receive control inputs to the physical device. The main system processor receives control signals from those input devices. Public APIs, as well as any proprietary Apple APIs and interfaces, specify intensity and sharpness values received by the controller that directly and/or indirectly control the frequency and amplitude of the oscillation. *See*, *e.g.*:

<table>
<tr><th>Claim 1</th><th>Accused Products</th></tr>
<tr><td></td><td>

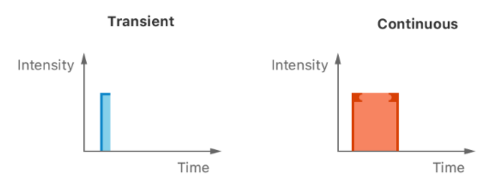
Declaration

```
class CHHapticEvent : NSObject
```

Overview

Each event represents a single haptic or audio signal. The event `type` determines whether it's audio or haptic. Use a `CHHapticPatternPlayer` object obtained through `CHHapticEngine` factory methods to play events. Haptic events can be transient or continuous. Transient haptic patterns are brief impulses that occur at a specific point in time, such as the haptic feedback you feel from swiping through a picker or toggling a switch. Continuous haptic patterns, like the vibration from a ringtone, take the form of lengthier feedback over a period of time.

In the following graphic, transient haptic patterns on the left trigger at a specific time with a specific intensity. Continuous haptic patterns on the right sustain the haptic feedback over a specific duration of time, such as three seconds.



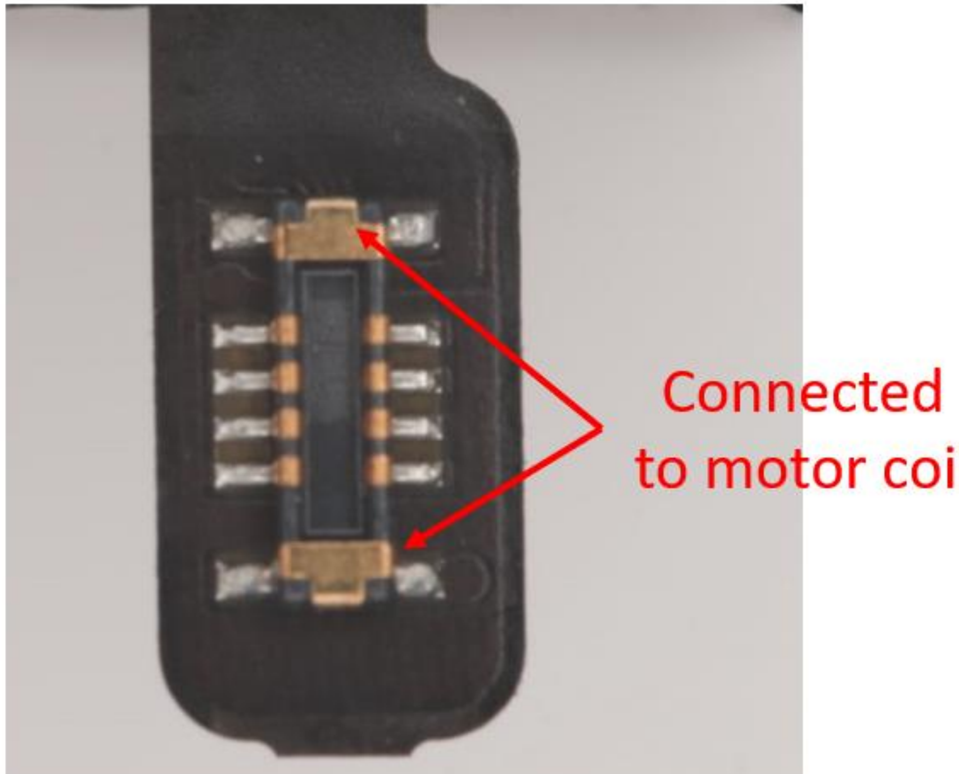
Specify when an event begins by setting its `relativeTime` property. Specify the length of the event by setting its `duration` property. Set optional parameters to customize event properties. For example, you can specify the intensity of a haptic event by creating an event parameter with ID `hapticIntensity`.

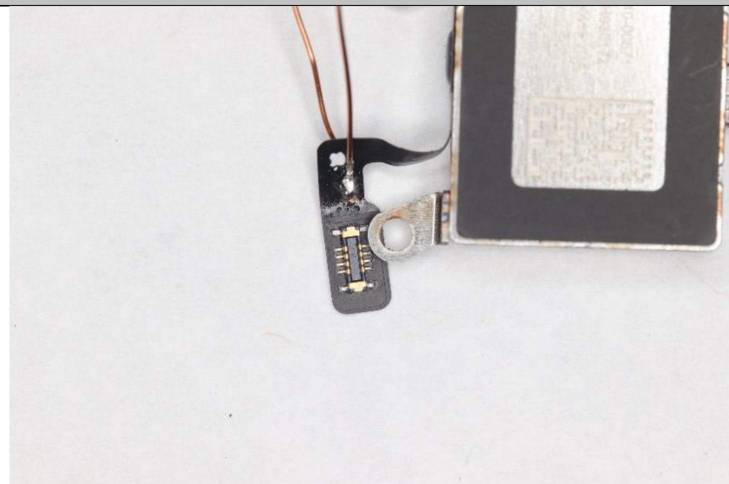
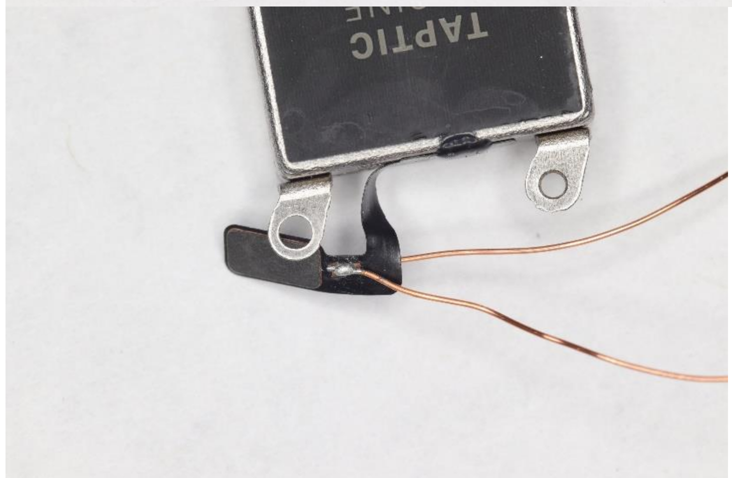
Documentation of CHHapticEvent object, https://developer.apple.com/documentation/corehaptics/chhapticevent

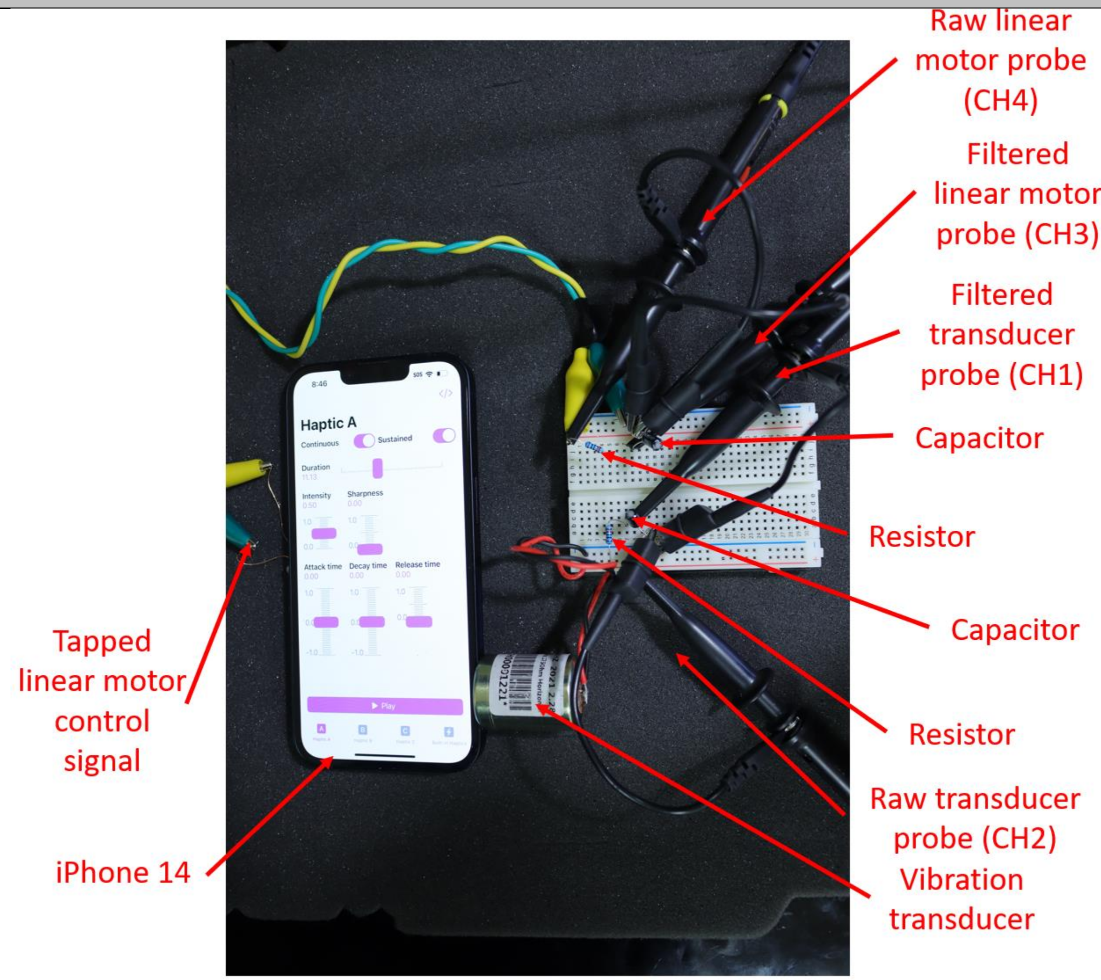
</td></tr>
</table>

Claim 1	Accused Products
	Haptic Event Parameter IDs `static let hapticIntensity: CHHapticEvent.ParameterID` The strength of a haptic event. `static let hapticSharpness: CHHapticEvent.ParameterID` The feel of a haptic event. `static let attackTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins increasing. `static let decayTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins decreasing. `static let releaseTime: CHHapticEvent.ParameterID` The time at which to begin fading the haptic pattern. `static let sustained: CHHapticEvent.ParameterID` A Boolean value that indicates whether to sustain a haptic event for its specified duration. Documentation of haptic event parameters, https://developer.apple.com/documentation/corehaptics/chhapticevent/parameterid

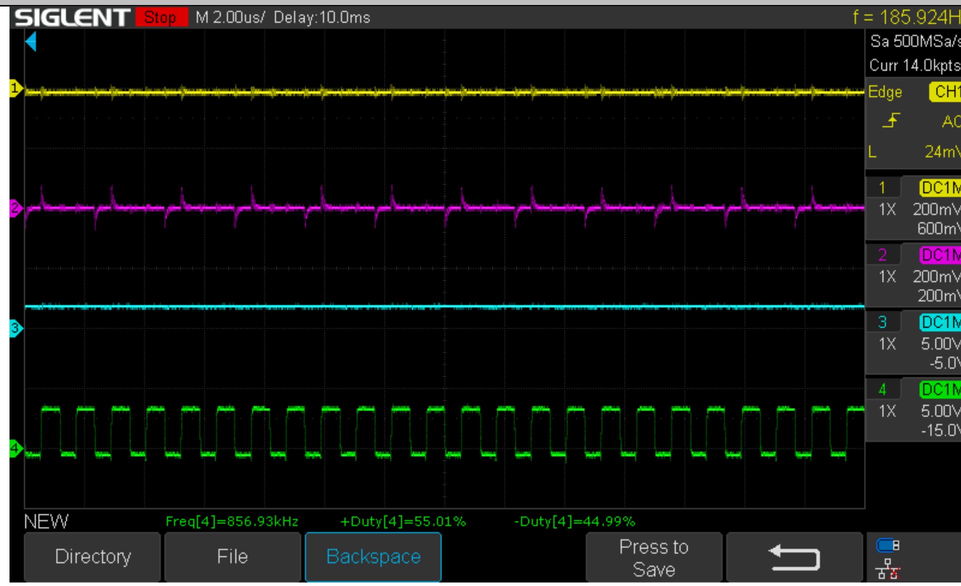
Claim 1	Accused Products
	4. The Continuous "Sharpness" parameter maps to frequency. For continuous events, we found that the sharpness parameter maps to frequency. On an iPhone 8, the lower sharpness boundary (0.0) of the Taptic Engine is 80 Hz; the higher sharpness boundary (1.0) is 230 Hz. This provides an effective range of 150 Hz, or roughly 1.5 octaves — which is impressive for a mobile phone released in 2017. Other phones or devices supporting Core Haptics might have different upper or lower boundaries since the frequency range is tied to the capabilities of the hardware actuator. https://medium.com/lofelt/10-things-you-should-know-about-designing-for-apple-core-haptics-9219fdebdcaa.

Claim 1	Accused Products
	 Annotated photograph of Taptic Engine connector from iPhone 14 showing positive and negative coil driving pins.

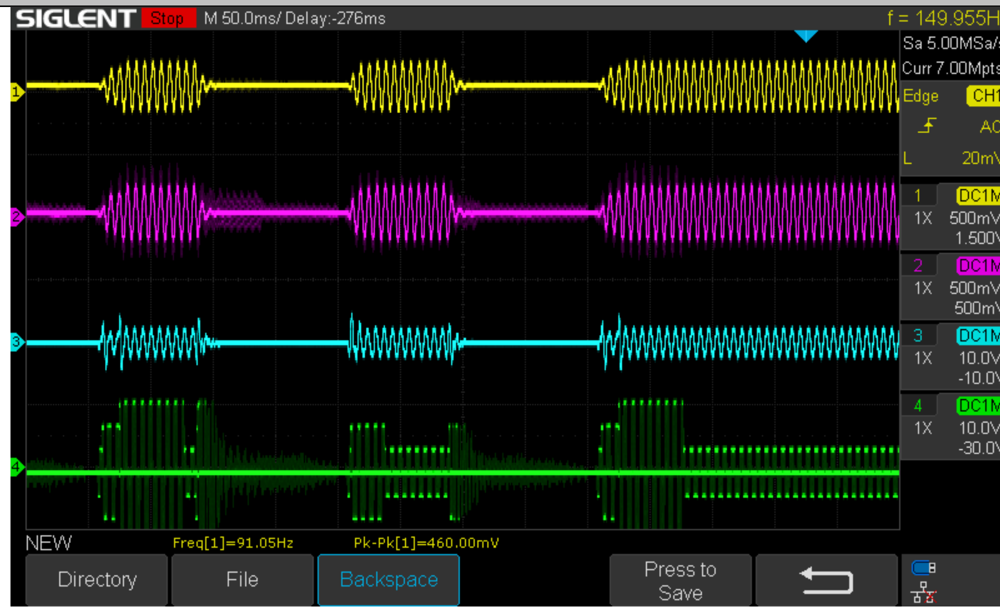
Claim 1	Accused Products
	  Photographs of test apparatus with electrical leads connected to motor coil drive traces of iPhone 14.

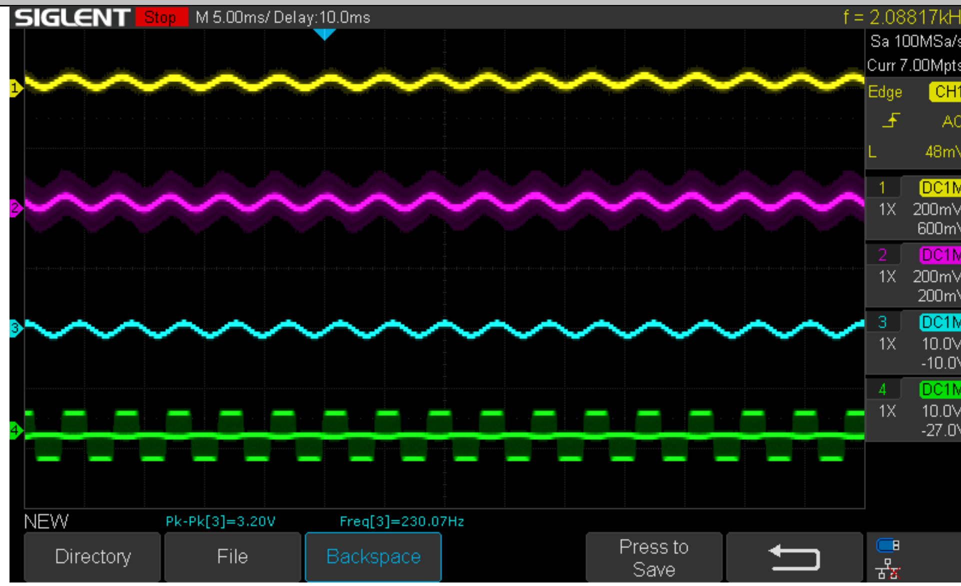
<table>
<tr><th>Claim 1</th><th>Accused Products</th></tr>
<tr><td></td><td>


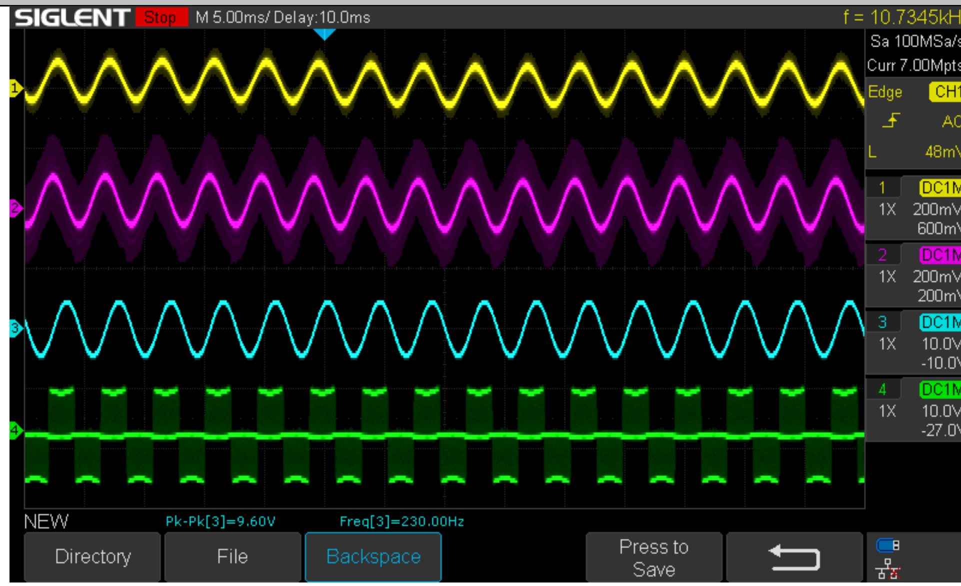
Photograph of test apparatus for measuring motor coil drive signal (from tapped connection) and actual motion (from attached vibration transducer) of iPhone 14. Note RC low-pass filter networks at top right with R = 220 Ω, C = 2.2 uF.
</td></tr>
</table>

<table>
<tr><th>Claim 1</th><th>Accused Products</th></tr>
<tr><td></td><td>

Oscilloscope trace showing, in green (CH4), the drive voltage applied by the iPhone 14 haptic controller(s); in this case, a pulse width modulated positive signal (modulation frequency 857 kHz) to drive the moveable component in one of two directions.</td></tr>
</table>

Claim 1	Accused Products
	 Oscilloscope trace showing, in green (CH4), the PWM-modulated drive voltage applied by the iPhone 14 haptic controller(s), with positive and negative voltages to drive the moveable component in a first and second direction. Channels 1 and 2 (yellow and purple) show the actual motion of the iPhone 14 resulting (pursuant to Newton's third law) from the motion of the moveable component.

Claim 1	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 0.5, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 3.2 V (peak-to-peak, through RC low-pass filter).

Claim 1	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 1, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 9.6V (peak-to-peak, through RC low-pass filter). Note that the externally measured vibration amplitude (yellow and purple traces, same scale as previous trace) is also significantly higher at intensity = 1 than 0.5.

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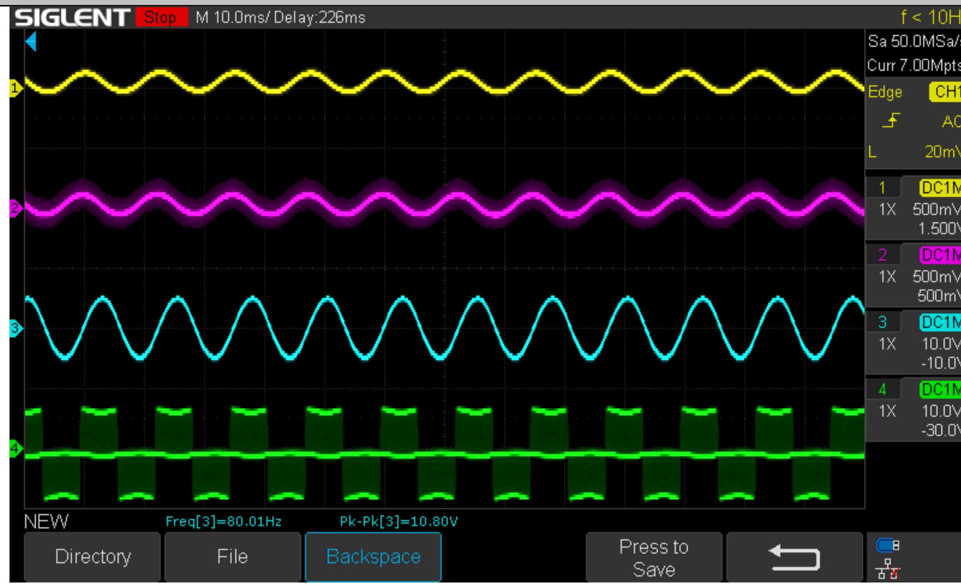
Claim 1	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 1, sharpness = 0, with frequency of 80 Hz and motor drive amplitude of 10.8 V (peak-to-peak, through RC low-pass filter).

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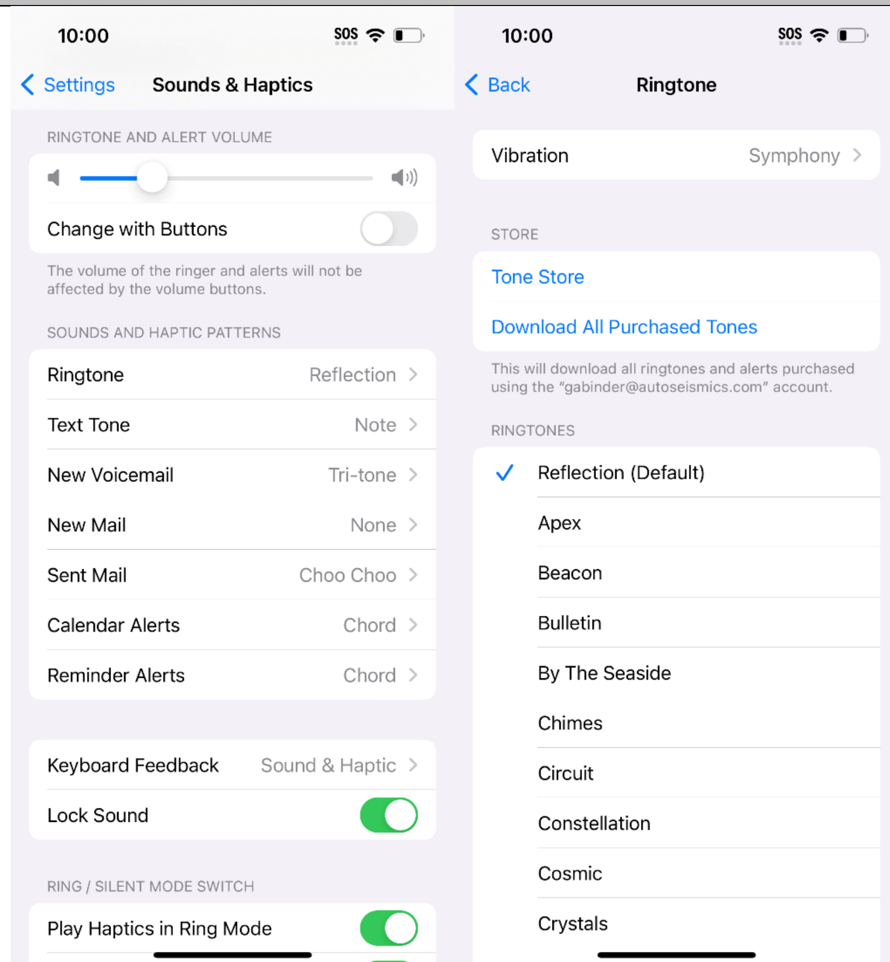
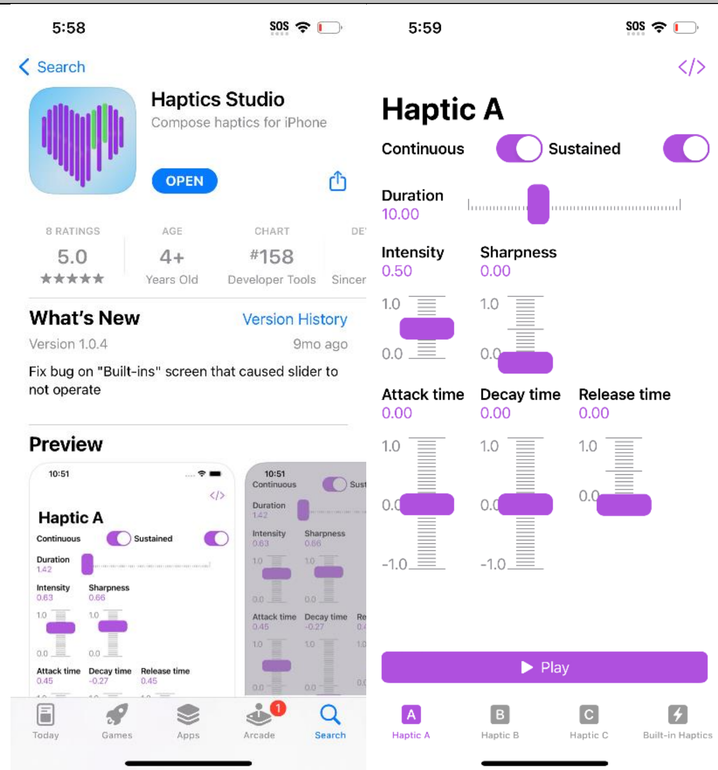
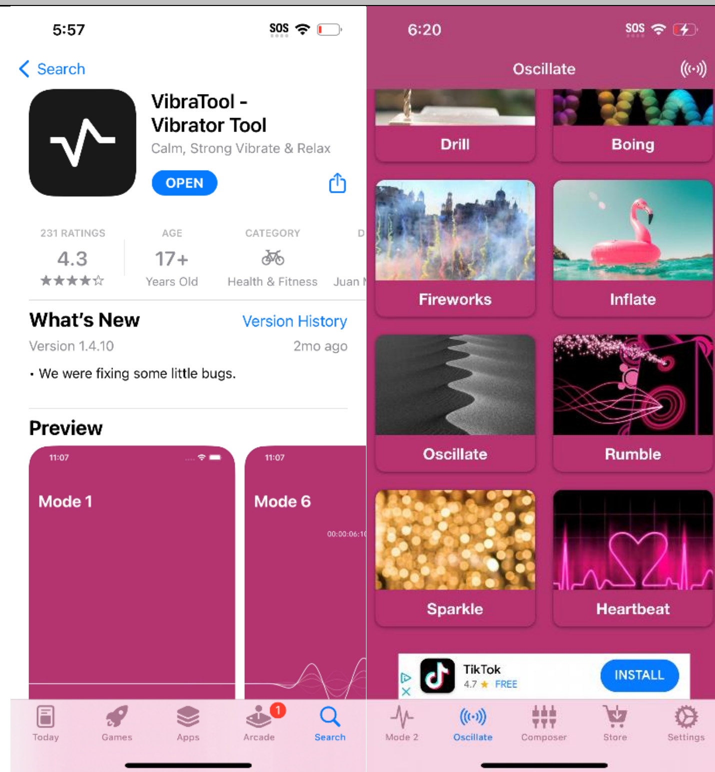
Claim 1	Accused Products
	 Photograph of iPhone 14 touchscreen, buttons, and switch, *available at* https://www.apple.com/iphone-14/.

Claim 1	Accused Products
	 Photograph of Apple Watch Ultra touchscreen, dial, and buttons.

Claim 1	Accused Products
	 Screenshots of "Sounds & Haptics" and "Ringtone" settings, which allow selection of frequency and/or amplitude.

Claim 1	Accused Products
	 Screenshots of exemplary “Haptics Studio” software, sold by Apple through its App Store, with independent user-input controls for frequency (“sharpness”) and amplitude (“intensity”).

Claim 1	Accused Products
	 Screenshots of exemplary "VibraTool" software, sold by Apple through its App Store, with user-input controls for selecting frequency and amplitude. To the extent Defendant contends and/or shows that this limitation is not literally present in the Accused Products, it is present under the doctrine of equivalents. There are no substantial differences between the accused functionality and the claimed invention. For example, the control component in each Accused Product receives signals from an application processor determined based in part on user input, which performs substantially the same function (*e.g.*, receiving control signals input to the oscillating resonant module) in substantially the same way (*e.g.*, digital and/or analog signalling and/or user input features) to achieve substantially the same result (*e.g.*, producing oscillations at a desired frequency and amplitude).

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Claim 1	Accused Products
[1f] receives outputs from the one or more sensors, and	The control component in each Accused Product receives outputs from the one or more sensors. For example, on information and belief, the control component receives outputs from the Hall effect sensor(s) inside the Taptic Engine, either directly or by means of dedicated Hall effect sensor control ICs. This fact is corroborated by, at least, the presence of the Hall effect sensors within the drive coils.
[1g] controls oscillation of the mass to produce a vibration response according to the received control signals by generating, using one or more of the received sensor outputs, control outputs to an actuator that drives the mass to oscillate.	The control component in each Accused Product controls oscillation of the mass to produce a vibration response according to the received control signals by generating, using one or more of the received sensor outputs, control outputs to an actuator that drives the mass to oscillate. For example, the control component generates electrical outputs to the driving coils (actuator) that cause alternating magnetic fields, moving the mass and therefore producing a vibration response as directed by the application processor and software running on the application processor. On information and belief, the control outputs are generated based on the closed-loop feedback received from the Hall effect sensor(s), as demonstrated by, for example, the presence of the Hall effect sensor(s) themselves and the precision and quality of the resulting vibration response. *See, e.g.*:

<table>
<tr><th>Claim 1</th><th>Accused Products</th></tr>
<tr><td></td><td>

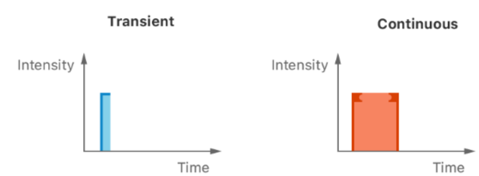
Declaration

```
class CHHapticEvent : NSObject
```

Overview

Each event represents a single haptic or audio signal. The event `type` determines whether it's audio or haptic. Use a `CHHapticPatternPlayer` object obtained through `CHHapticEngine` factory methods to play events. Haptic events can be transient or continuous. Transient haptic patterns are brief impulses that occur at a specific point in time, such as the haptic feedback you feel from swiping through a picker or toggling a switch. Continuous haptic patterns, like the vibration from a ringtone, take the form of lengthier feedback over a period of time.

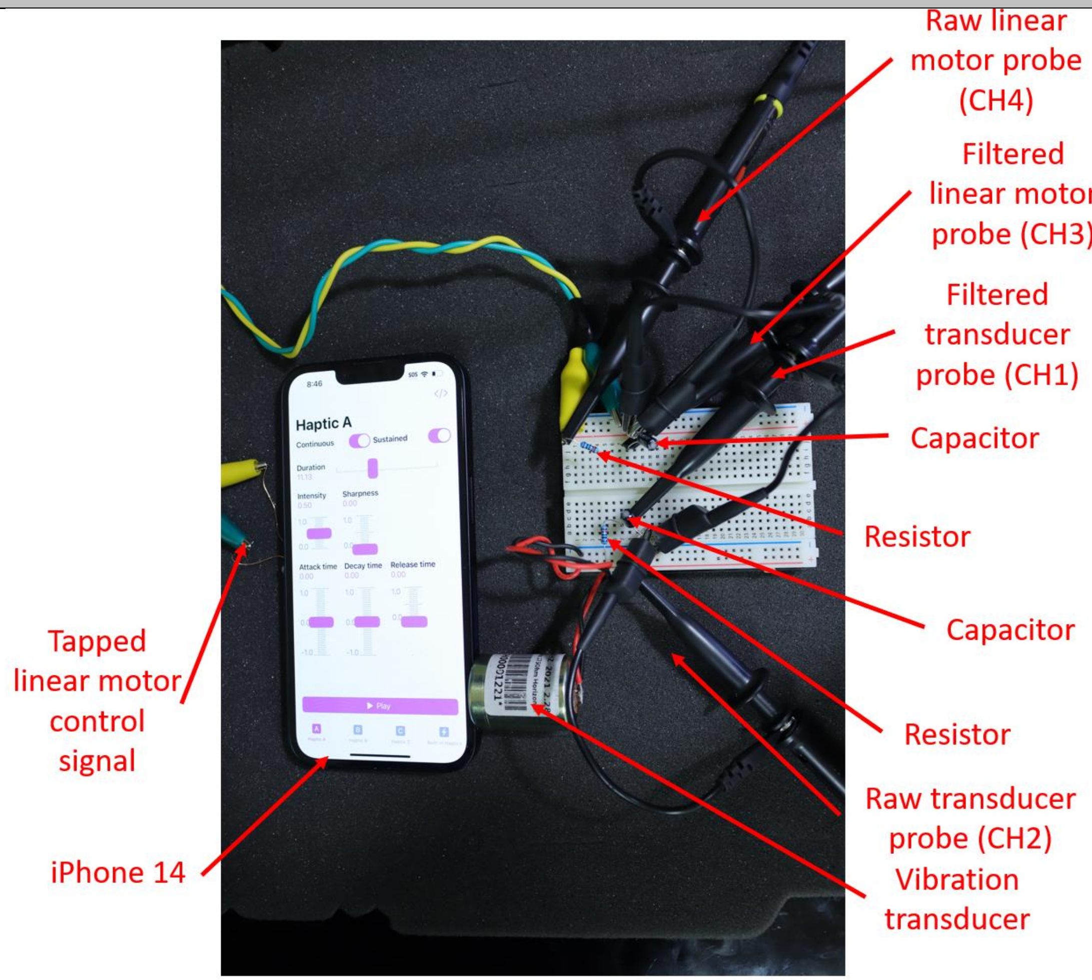
In the following graphic, transient haptic patterns on the left trigger at a specific time with a specific intensity. Continuous haptic patterns on the right sustain the haptic feedback over a specific duration of time, such as three seconds.



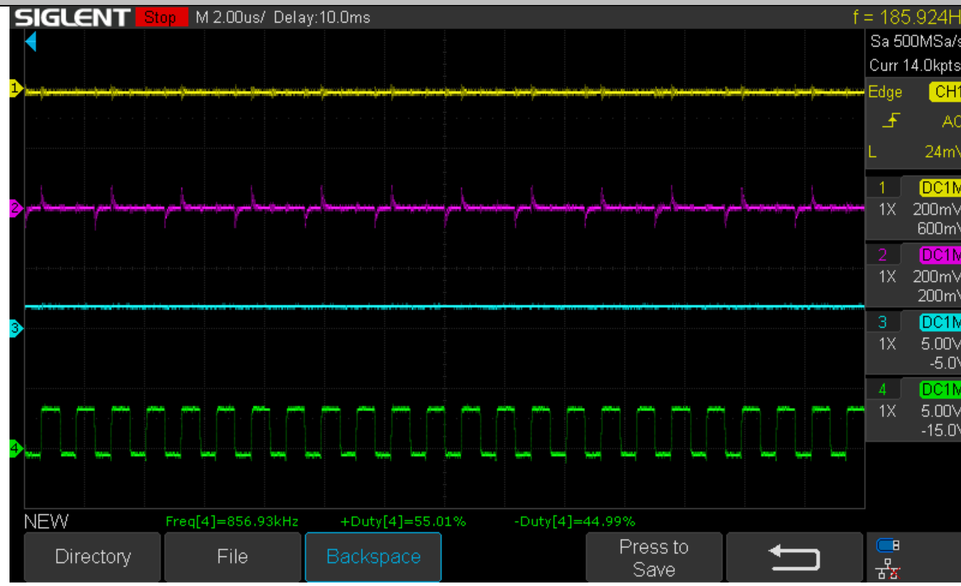
Specify when an event begins by setting its `relativeTime` property. Specify the length of the event by setting its `duration` property. Set optional parameters to customize event properties. For example, you can specify the intensity of a haptic event by creating an event parameter with ID `hapticIntensity`.

Documentation of CHHapticEvent object, https://developer.apple.com/documentation/corehaptics/chhapticevent, describing vibration patterns resulting from various control inputs
</td></tr>
</table>

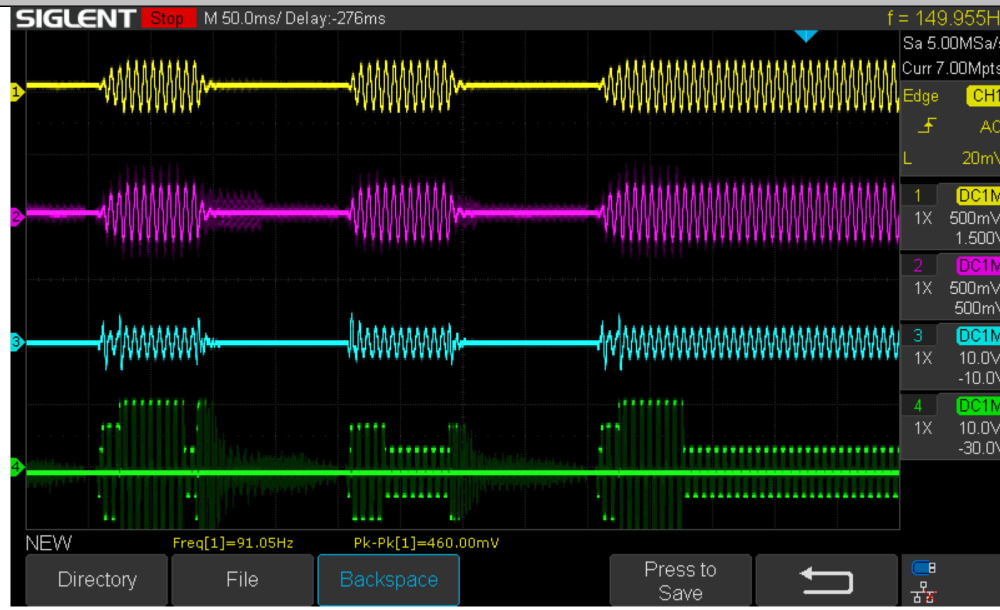
Claim 1	Accused Products



Photograph of test apparatus for measuring motor coil drive signal (from tapped connection) and actual motion (from attached vibration transducer) of iPhone 14.

<table>
<tr><th>Claim 1</th><th>Accused Products</th></tr>
<tr><td></td><td>

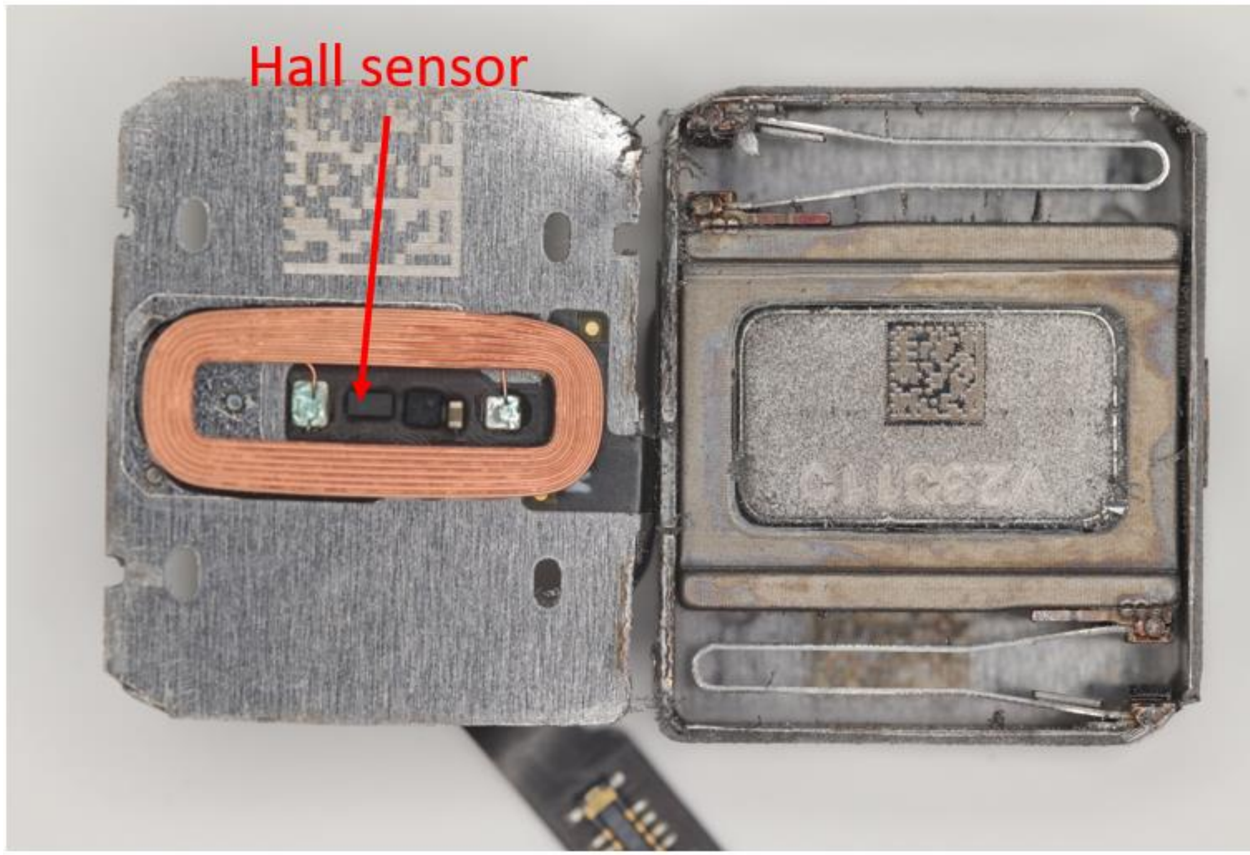
Oscilloscope trace showing, in green (CH4), the drive voltage applied by the iPhone 14 haptic controller(s); in this case, a pulse width modulated positive signal (modulation frequency 857 kHz) to drive the moveable component to oscillate.</td></tr>
</table>

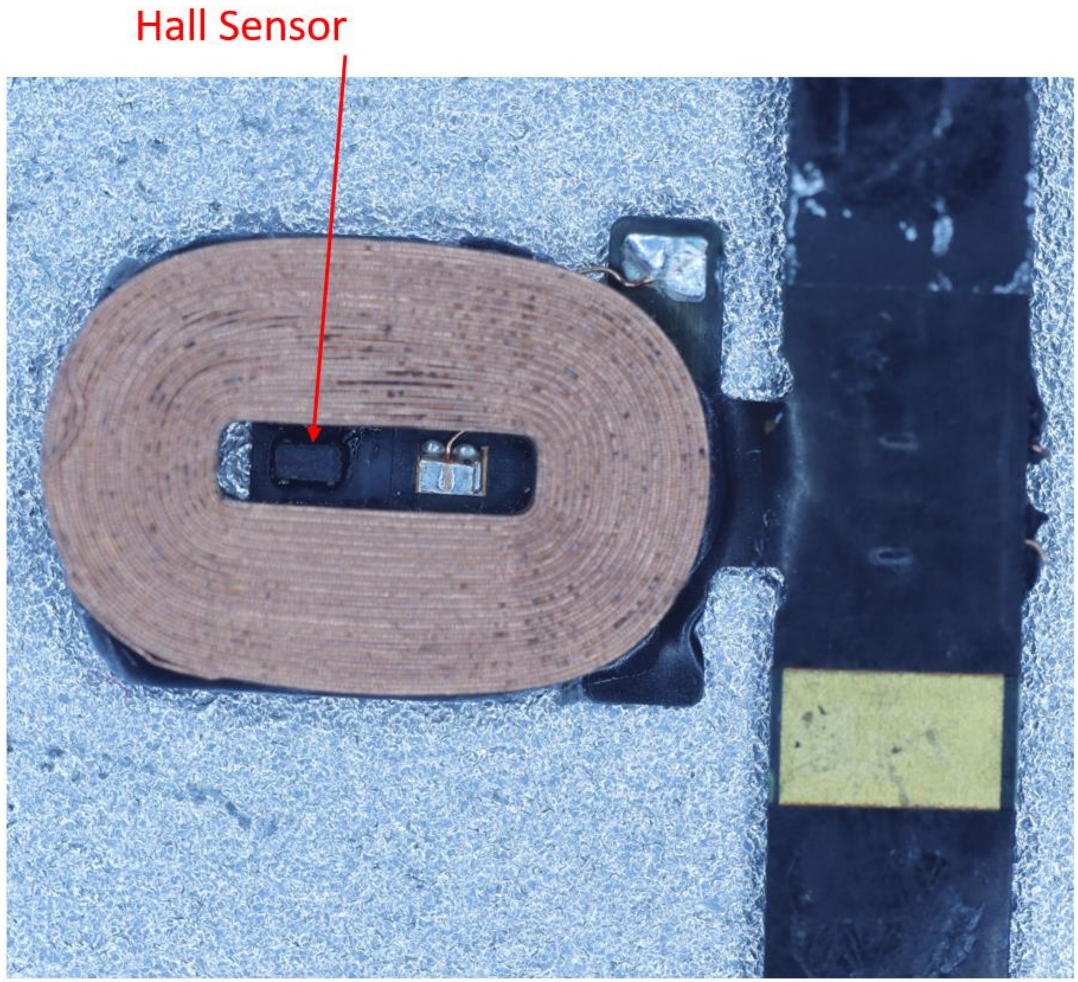
<table>
<tr><th>Claim 1</th><th>Accused Products</th></tr>
<tr><td></td><td>

Oscilloscope trace showing, in green (CH4), the PWM-modulated drive voltage applied by the iPhone 14 haptic controller(s), with positive and negative voltages to drive the moveable component in a first and second direction. Channels 1 and 2 (yellow and purple) show the actual motion of the iPhone 14 resulting (pursuant to Newton’s third law) from the oscillation of the moveable component.</td></tr>
</table>

Claim 2

Claim 2	Accused Products
[2pre] The oscillating resonant module of claim 1 wherein the one or more sensors are selected from among one or more:	Each Accused Product comprises the oscillating resonant module of claim 1 wherein the one or more sensors is selected from claim element [2b].
[2a] mechanical sensors;	*See infra* claim element [2b].

Claim 2	Accused Products
[2b] electromagnetic sensors; and	In each Accused Product, one or more sensors includes electromagnetic sensors. For example, each Accused Product includes a Hall effect sensor, which senses position of the moveable component through measuring the magnetic field produced by a permanent magnet. *See, e.g.*:  Annotated photograph showing Hall effect sensor within Taptic Engine of iPhone 14.

Claim 2	Accused Products
	 Annotated photograph showing Hall effect sensor within Taptic Engine of Apple Watch Ultra.
[2c] optical sensors.	*See supra* claim element [2a].

Claim 3

Claim 3	Accused Products
[3] The oscillating resonant module of claim 1 wherein the control component determines, from the received sensor outputs, the velocity of the mass from the positions of the mass at two or more points in time.	Each Accused Product comprises the oscillating resonant module of claim 1 wherein the control component determines, from the received sensor outputs, the velocity of the mass from the positions of the mass at two or more points in time. For example, each Accused Product includes a Hall effect sensor, which senses position of the moveable component through measuring the magnetic field produced by a permanent magnet. Since both amplitude and frequency of the motion of the moveable component are controlled by user-input, this indicates both position and velocity are determined in order for both parameters to be controlled simultaneously. *See supra* claim element [2b]. For a further example, proprietary and confidential software and/or firmware running on the Accused Product, or hardware source code for the control component, plays a role in the operation of the control component. On information and belief, this functionality includes determining the velocity of the mass based on Hall effect sensor outputs corresponding to positions of the mass at two or more points in time. This information is solely within Defendant's possession, custody, and control, and Plaintiff reserves the right to seek discovery into such proprietary and confidential software and/or firmware. To the extent Defendant contends and/or shows that this limitation is not literally present in the Accused Products, it is present under the doctrine of equivalents. There are no substantial differences between the accused functionality and the claimed invention. For example, the control component in each Accused Product may determine the velocity of the mass from inputs derived from the sensor outputs and associated with the positions of the mass at two or more points of time, which performs substantially the same function (*e.g.*, determining, from the received sensor outputs, the velocity of the mass from the positions of the mass at two or more points in time) in substantially the same way (*e.g.*, making a computation based on sensor outputs associated with the positions of the mass at different times) to achieve substantially the same result (*e.g.*, determining the velocity of the mass).

Claim 4

Claim 4	Accused Products
[4] The oscillating resonant module of claim 3 wherein the control outputs, output by the control component to the actuator, are computed as the output value of a function that takes, as input, the current position of the mass.	Each Accused Product comprises the oscillating resonant module of claim 3 wherein the control outputs, output by the control component to the actuator, are computed as the output value of a function that takes, as input, the current position of the mass. For example, each Accused Product includes a Hall effect sensor, which senses position of the moveable component through measuring the magnetic field produced by a permanent magnet. On information and belief, control outputs are computed as the output value of a function of at least the current position of the mass as measured with the Hall effect sensor in order to produce the desired vibration frequency and/or amplitude. *See supra* claim element [2b]. For a further example, proprietary and confidential software and/or firmware running on the Accused Product, or hardware source code for the control component, plays a role in the operation of the control component. On information and belief, this functionality includes computing the control outputs using a function that takes, as input, the current position of the mass (*e.g.*, based on Hall effect sensor outputs corresponding to positions of the mass). This information is solely within Defendant's possession, custody, and control, and Plaintiff reserves the right to seek discovery into such proprietary and confidential software and/or firmware. To the extent Defendant contends and/or shows that this limitation is not literally present in the Accused Products, it is present under the doctrine of equivalents. There are no substantial differences between the accused functionality and the claimed invention. For example, the control component in each Accused Product may use inputs derived from the sensor outputs and associated with the current position of the mass, which performs substantially the same function (*e.g.*, computing outputs as the output value of a function that takes, as input, the current position of the mass) in substantially the same way (*e.g.*, making a computation based on sensor outputs associated with the position of the mass) to achieve substantially the same result (*e.g.*, determining the position of the mass and the control outputs).

Claim 5

Claim 5	Accused Products
[5] The oscillating resonant module of claim 3 wherein the control outputs, output by the control component to the actuator, are computed as the output value of a function that takes, as input, the current position of the mass and the current velocity of the mass.	Each Accused Product comprises the oscillating resonant module of claim 3 wherein the control outputs, output by the control component to the actuator, are computed as the output value of a function that takes, as input, the current position of the mass and the current velocity of the mass. For example, each Accused Product includes a Hall effect sensor, which senses position of the moveable component through measuring the magnetic field produced by a permanent magnet. On information and belief, control outputs are computed as the output value of a function of both the current position and velocity of the mass as measured with the Hall effect sensor in order to produce both the desired vibration amplitude and frequency simultaneously. *See supra* claim element [2b]. For example, each Accused Product includes a Hall effect sensor, which senses position of the moveable component through measuring the magnetic field produced by a permanent magnet. On information and belief, control outputs are computed as the output value of a function of at least the current position of the mass as measured with the Hall effect sensor in order to produce the desired vibration frequency and/or amplitude. *See supra* claim element [2b]. For a further example, proprietary and confidential software and/or firmware running on the Accused Product, or hardware source code for the control component, plays a role in the operation of the control component. On information and belief, this functionality includes computing the control outputs using a function that takes, as input, the current position of the mass (*e.g.*, based on Hall effect sensor outputs corresponding to positions of the mass) and the current velocity of the mass (*e.g.*, computed as claimed in claim 3). This information is solely within Defendant's possession, custody, and control, and Plaintiff reserves the right to seek discovery into such proprietary and confidential software and/or firmware. To the extent Defendant contends and/or shows that this limitation is not literally present in the Accused Products, it is present under the doctrine of equivalents. There are no substantial differences between the accused functionality and the claimed invention. For example, the control component in each Accused Product may use inputs derived from the sensor outputs and associated with the current position and velocity of the mass, which performs substantially the

Claim 5	Accused Products
	same function (*e.g.*, computing outputs as the output value of a function that takes, as input, the current position of the mass and current velocity of the mass) in substantially the same way (*e.g.*, making a computation based on sensor outputs associated with the position and velocity of the mass) to achieve substantially the same result (*e.g.*, determining the control outputs).

Claim 6

Claim 6	Accused Products
[6] The oscillating resonant module of claim 3 wherein the control outputs, output by the control component to the actuator, are computed from pre-computed values indexed by the current position of the mass and the current velocity of the mass.	Each Accused Product comprises the oscillating resonant module of claim 3 wherein the control outputs, output by the control component to the actuator, are computed from pre- computed values indexed by the current position of the mass and the current velocity of the mass. For example, each Accused Product includes a Hall effect sensor, which senses position of the moveable component through measuring the magnetic field produced by a permanent magnet. On information and belief, control outputs are computed from pre- computed values indexed by both the current position and velocity of the mass as measured with the Hall effect sensor in order to produce both the desired vibration amplitude and frequency simultaneously. *See supra* claim element [2b]. For a further example, proprietary and confidential software and/or firmware running on the Accused Product, or hardware source code for the control component, plays a role in the operation of the control component. On information and belief, this functionality includes computing the control outputs using pre-computed values indexed by the current position of the mass (*e.g.*, based on Hall effect sensor outputs corresponding to positions of the mass) and the current velocity of the mass (*e.g.*, computed as claimed in claim 3). This information is solely within Defendant's possession, custody, and control, and Plaintiff reserves the right to seek discovery into such proprietary and confidential software and/or firmware. To the extent Defendant contends and/or shows that this limitation is not literally present in the Accused Products, it is present under the doctrine of equivalents. There are no substantial differences between the accused functionality and the claimed invention. For example, the control component in each Accused Product may use inputs derived from the sensor outputs and

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Claim 6	Accused Products
	associated with the current position and velocity of the mass, which performs substantially the same function (*e.g.*, computing outputs from pre-computed values indexed by the current position of the mass and the current velocity of the mass) in substantially the same way (*e.g.*, making a computation based on sensor outputs associated with the position and velocity of the mass) to achieve substantially the same result (*e.g.*, determining the position of the control outputs).

Claim 7

Claim 7	Accused Products
[7] The oscillating resonant module of claim 3 wherein the control outputs, output by the control component to the actuator, is are computed from pre-computed values indexed by the current position of the mass and the current velocity of the mass.	Each Accused Product comprises the oscillating resonant module of claim 3 wherein the control outputs, output by the control component to the actuator, is are computed from pre- computed values indexed by the current position of the mass and the current velocity of the mass. For example, each Accused Product includes a Hall effect sensor, which senses position of the moveable component through measuring the magnetic field produced by a permanent magnet. On information and belief, control outputs are computed from pre- computed values indexed by both the current position and velocity of the mass as measured with the Hall effect sensor in order to produce both the desired vibration amplitude and frequency simultaneously. *See supra* claim element [2b]. For a further example, proprietary and confidential software and/or firmware running on the Accused Product, or hardware source code for the control component, plays a role in the operation of the control component. On information and belief, this functionality includes computing the control outputs using pre-computed values indexed by the current position of the mass (*e.g.*, based on Hall effect sensor outputs corresponding to positions of the mass) and the current velocity of the mass (*e.g.*, computed as claimed in claim 3). This information is solely within Defendant's possession, custody, and control, and Plaintiff reserves the right to seek discovery into such proprietary and confidential software and/or firmware. To the extent Defendant contends and/or shows that this limitation is not literally present in the Accused Products, it is present under the doctrine of equivalents. There are no substantial differences between the accused functionality and the claimed invention. For example, the control

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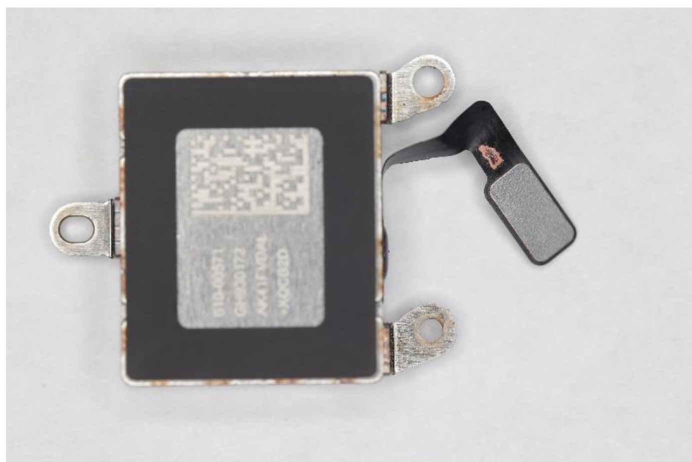
Claim 7	Accused Products
	component in each Accused Product may use inputs derived from the sensor outputs and associated with the current position and velocity of the mass, which performs substantially the same function (*e.g.*, computing outputs from pre-computed values indexed by the current position of the mass and the current velocity of the mass) in substantially the same way (*e.g.*, making a computation based on sensor outputs associated with the position and velocity of the mass) to achieve substantially the same result (*e.g.*, determining the position of the control outputs).

Claim 10

Claim 10	Accused Products
[10pre] A physical device that exhibits a vibration response when mechanical driven by one or more oscillating resonant modules included in the physical device, the physical device comprising:	To the extent the preamble is limiting, each Accused Product includes or constitutes a physical device that exhibits a vibration response when mechanical driven by one or more oscillating resonant modules included in the physical device, the physical device. For example, each of the Apple iPhone 14 and the Apple Watch Ultra is a physical device that contains a linear actuator ("Taptic Engine"), haptic controller(s), and associated circuitry, as described in connection with the claim limitations below. *See*, *e.g.*:

	 Photograph of iPhone 14 with rear cover removed, with A15 Bionic SoC at center right and Taptic Engine at bottom left.

Claim 10	Accused Products
	 Photograph of Taptic Engine housing from iPhone 14.  Photograph of Taptic Engine housing from iPhone 14.

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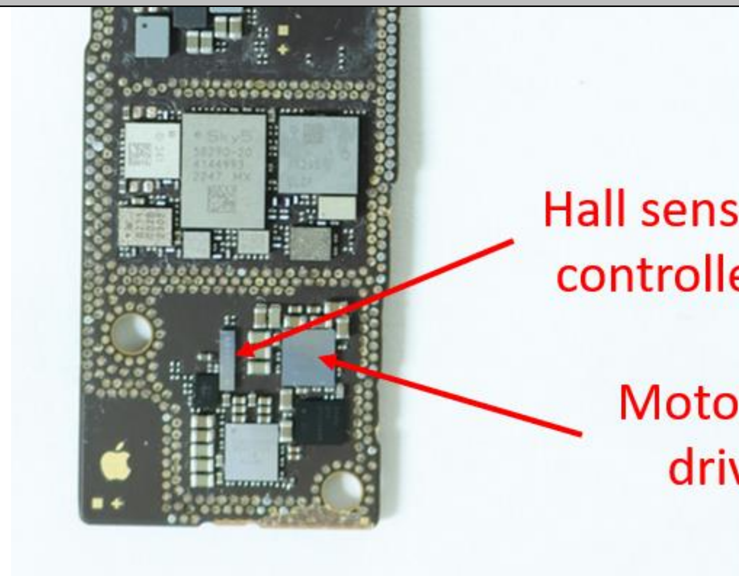
Claim 10	Accused Products
	 Photograph of Hall sensor controller and motor control driver from iPhone 14.

Claim 10	Accused Products
	The following devices contain a Taptic Engine: • iPhone 14 Pro Max • iPhone 14 Pro • iPhone 14 Plus • iPhone 14 • iPhone SE (3rd generation) • iPhone 13 Pro Max • iPhone 13 Pro • iPhone 13 • iPhone 13 mini • iPhone 12 Pro Max • iPhone 12 Pro • iPhone 12 • iPhone 12 mini • iPhone SE (2nd generation) • iPhone 11 Pro Max • iPhone 11 Pro • iPhone 11 • iPhone XS Max • iPhone XS • iPhone XR • iPhone X • iPhone 8 Plus • iPhone 8 • iPhone 7 Plus • iPhone 7 • iPhone 6s Plus • iPhone 6s Accessory Design Guidelines for Apple Devices, Release R20, *available at* https://developer.apple.com/accessories/Accessory-Design-Guidelines.pdf

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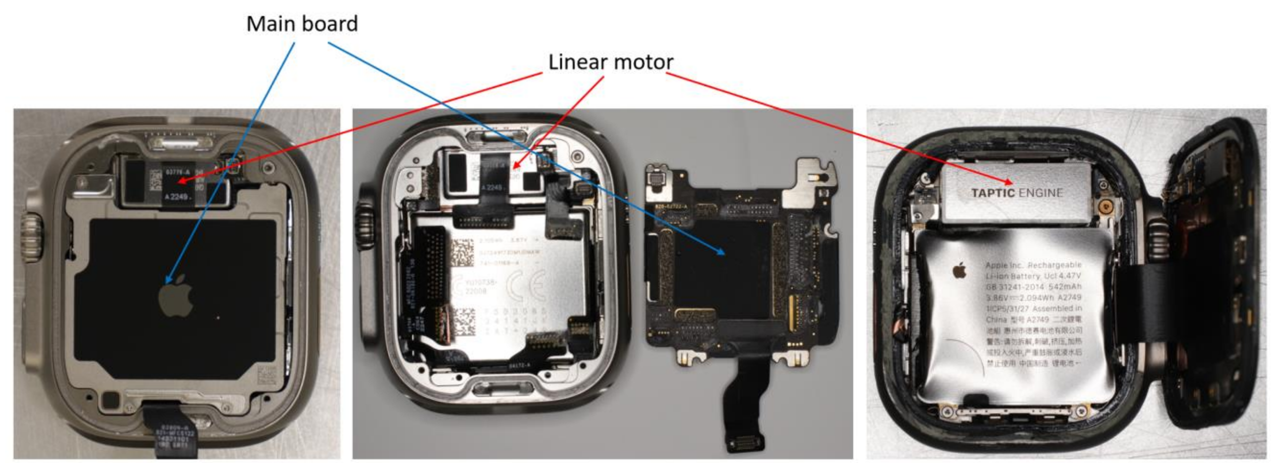
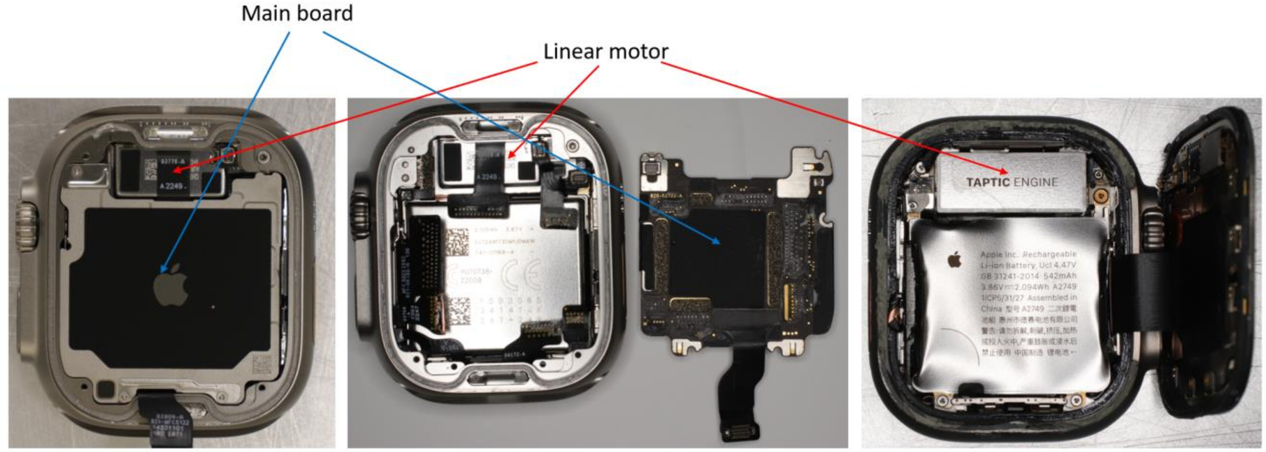
Claim 10	Accused Products
	 Photograph of Apple Watch Ultra.

Claim 10	Accused Products
	 Wrist side, cover removed Wrist side, cover and main board removed Display side, display removed Annotated photographs of Apple Watch Ultra showing linear actuator (Taptic engine) and main system board.
[10a] a controller; and	Each Accused Product comprises a controller. For example, the system contains confidential and proprietary hardware, software, and/or firmware to control the oscillating resonant module. *See, e.g.*:

Claim 10	Accused Products
	 Photograph of iPhone 14 with rear cover removed, with A15 Bionic SoC at center right and Taptic Engine at bottom right.

<table>
<tr><th>Claim 10</th><th>Accused Products</th></tr>
<tr><td></td><td>


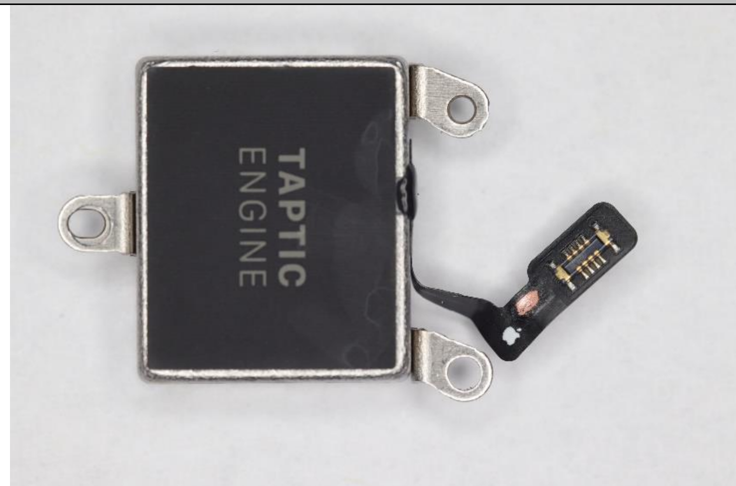
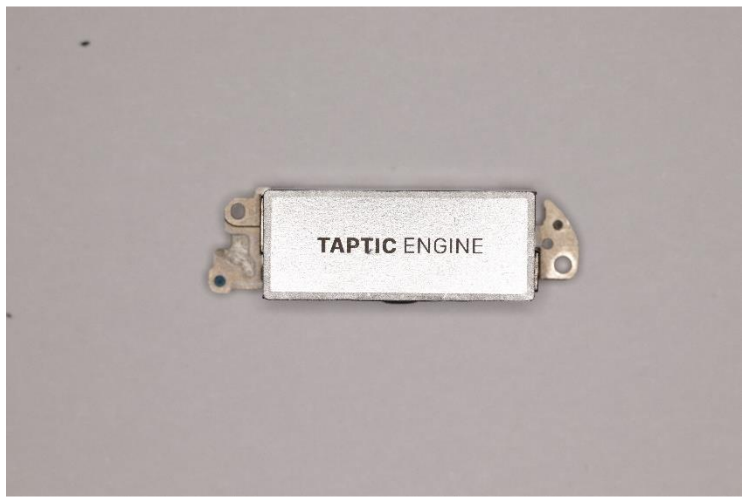
Wrist side, cover removed — Wrist side, cover and main board removed — Display side, display removed

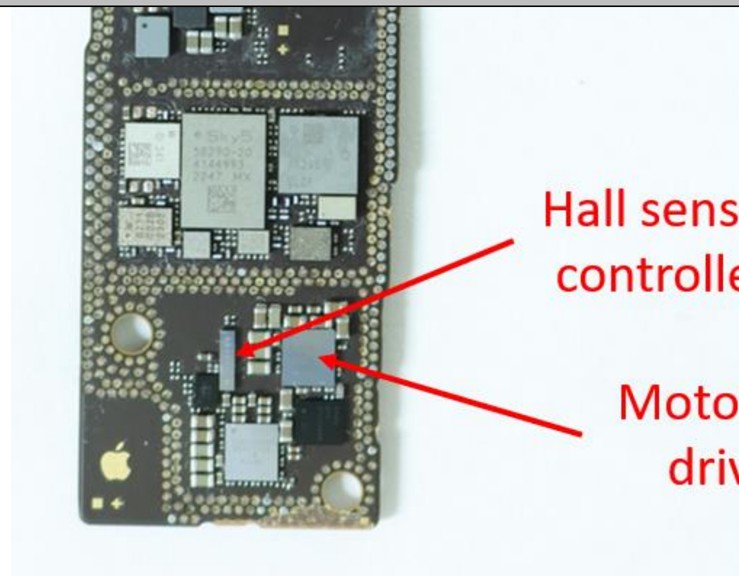
Annotated photographs of Apple Watch Ultra showing linear actuator (Taptic engine) and main system board.

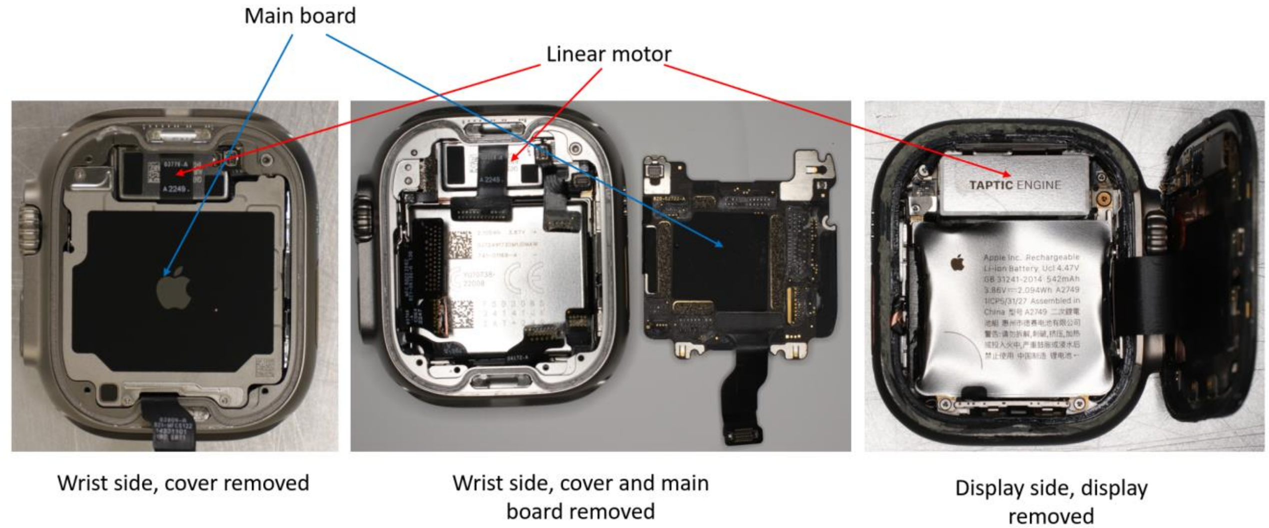
See also claim elements below.</td></tr>
<tr><td>[10b] the one or more oscillating resonant modules, each oscillating resonant including</td><td>Each Accused Product comprises one or more oscillating resonant modules.

For example, each Accused Product includes at least one oscillating resonant module comprising the Taptic Engine and associated control circuits.

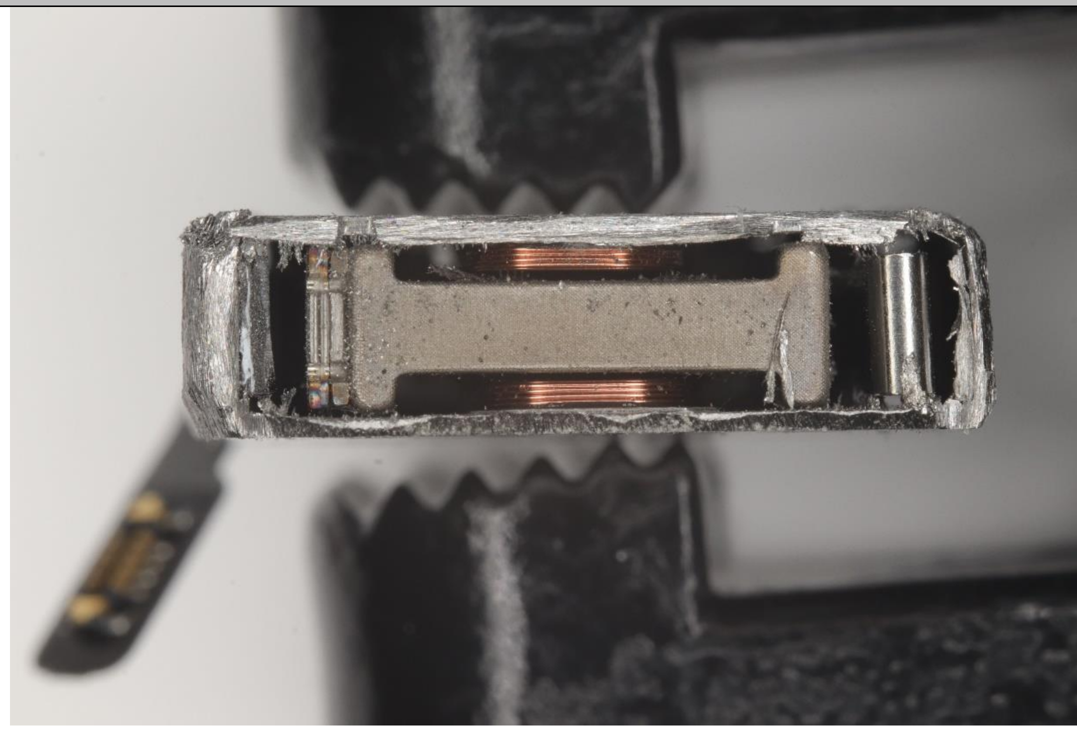
See, e.g.:</td></tr>
</table>

Claim 10	Accused Products
	 Photograph of Taptic Engine from iPhone 14.  Photograph of Taptic Engine from the Apple Watch Ultra.

Claim 10	Accused Products
	 Photograph of Hall sensor controller and motor control driver from iPhone 14.

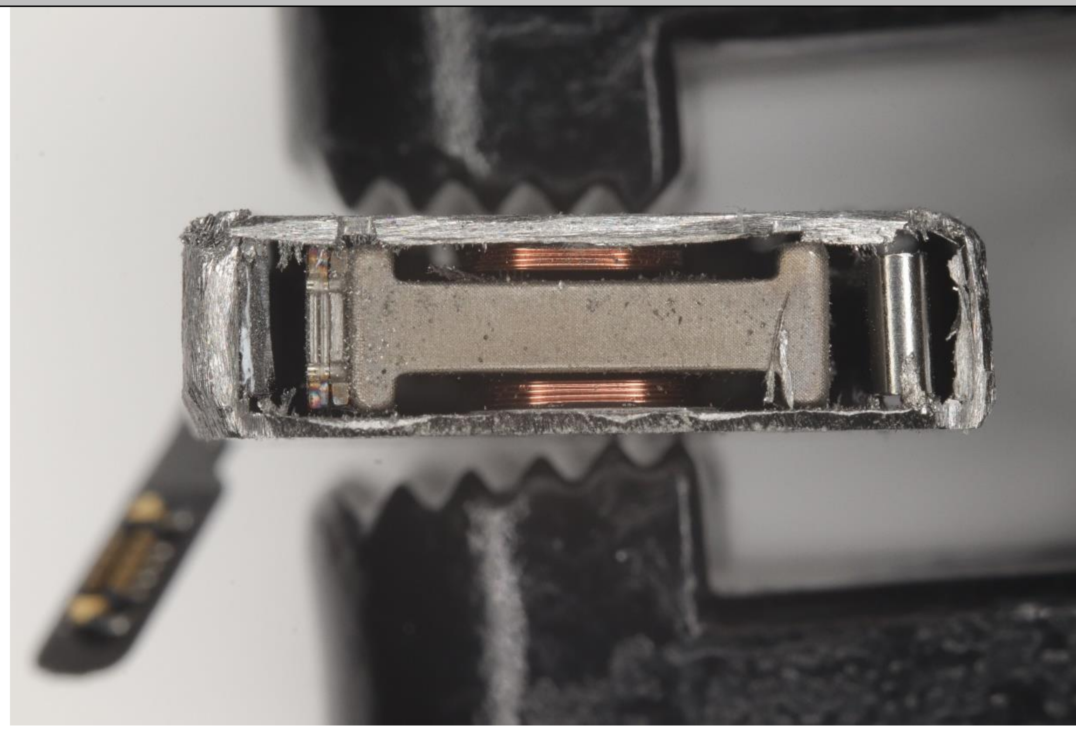
Claim 10	Accused Products
	 Annotated photographs of Apple Watch Ultra showing linear actuator (Taptic engine) and main system board. *See also* claim elements below.
[10c] an oscillation path, which represents a segment of a space curve, along which a point within a mass moves;	Each Accused Product comprises an oscillation path, which represents a segment of a space curve, along which a point within a mass moves. For example, each point within the moveable component within the Taptic Engine in the iPhone 14 and Apple Watch Ultra moves along a substantially linear space curve. *See, e.g.*:

Claim 10	Accused Products
	 Photograph showing one driving coil (at right) within disassembled Taptic Engine from iPhone 14, with moveable component in place at left supported by springs above and below. The moveable component travels up and down from this perspective.

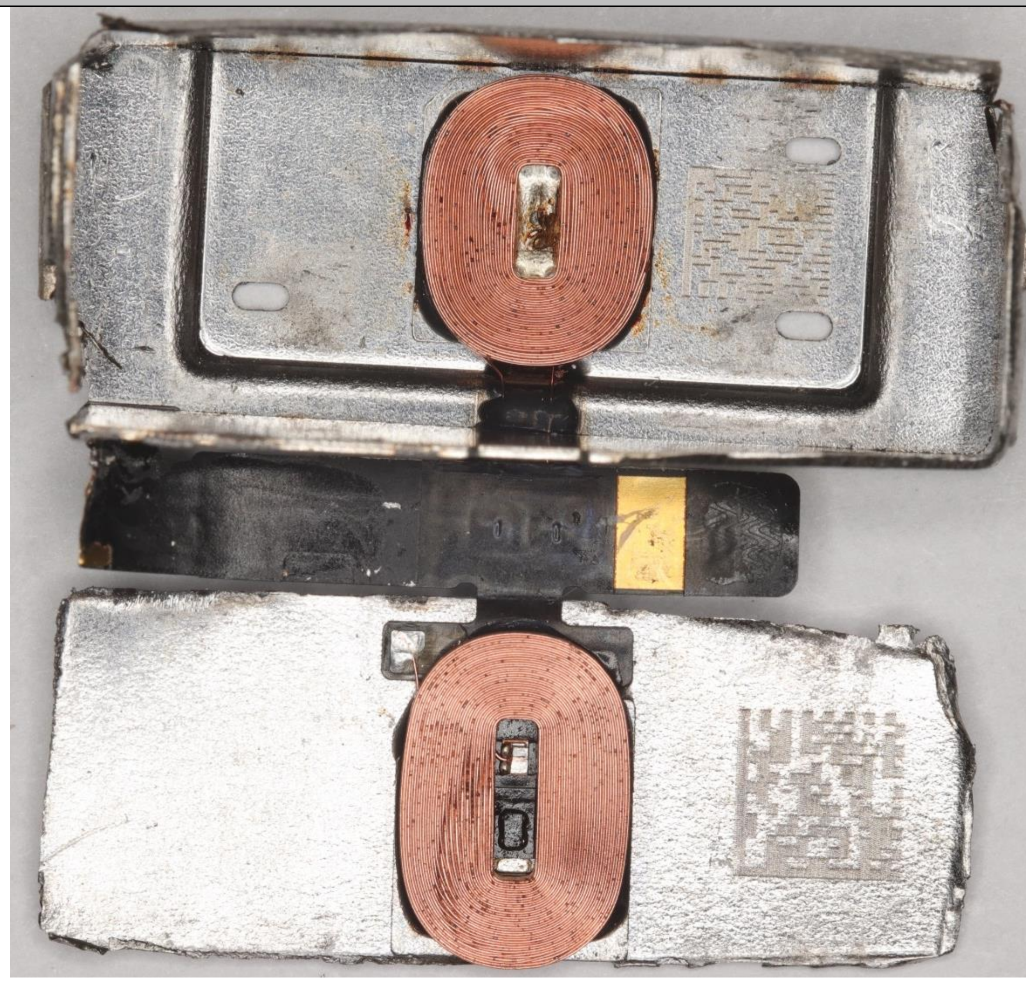
Claim 10	Accused Products
	 Photograph of internals of Taptic Engine from iPhone 14, showing drive coils (top and bottom) surrounding the moveable component, supported by springs at left and right. The moveable component travels left and right from this perspective.

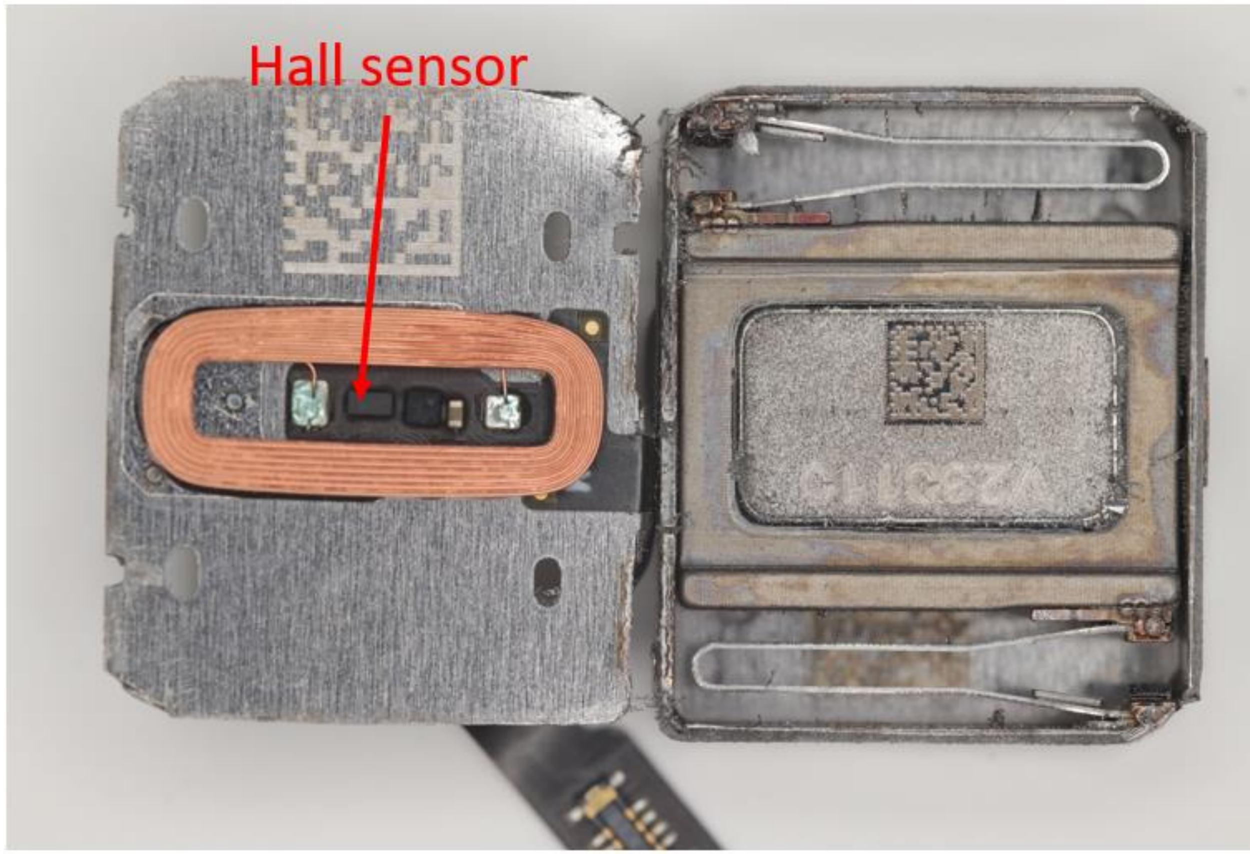
Claim 10	Accused Products
	 Photograph of moveable component from Apple Watch Ultra, with springs at left and right constraining the moveable component to an oscillation path.
[10d] a mass that is driven by energy supplied to the oscillating resonant module to oscillate back and forth along the oscillation path that represents a segment of a space curve;	Each Accused Product comprises a mass that is driven by energy supplied to the oscillating resonant module to oscillate back and forth along the oscillation path that represents a segment of a space curve. For example, each Accused Product drives one or more coils within the Taptic Engine in order to cause the mass to oscillate back and forth along the oscillation path. *See, e.g.*:

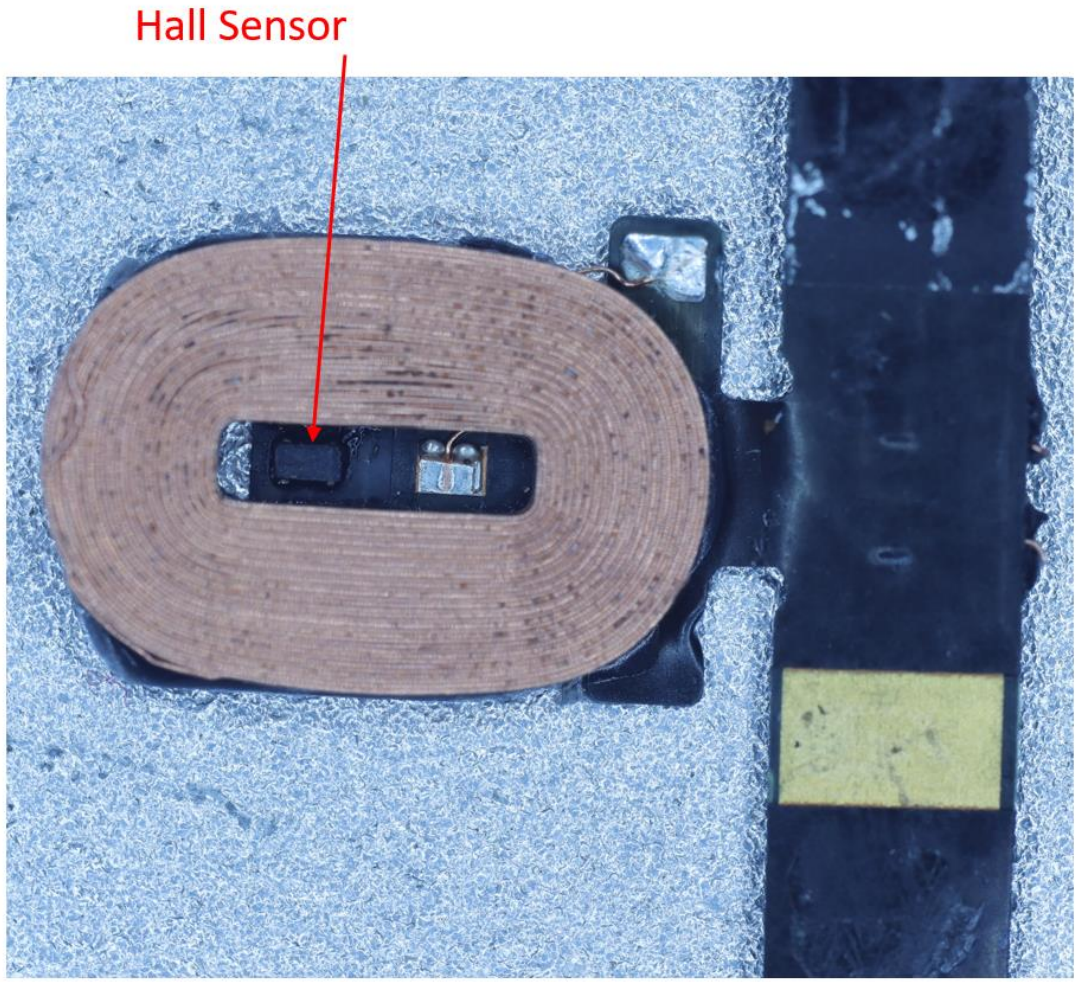
Claim 10	Accused Products
	 Photograph showing one driving coil (at right) within disassembled Taptic Engine from iPhone 14, with moveable component in place at left supported by springs above and below. The moveable component travels up and down from this perspective.

Claim 10	Accused Products
	 Photograph of internals of Taptic Engine from iPhone 14, showing drive coils (top and bottom) surrounding the moveable component, supported by springs at left and right. The moveable component travels left and right from this perspective.

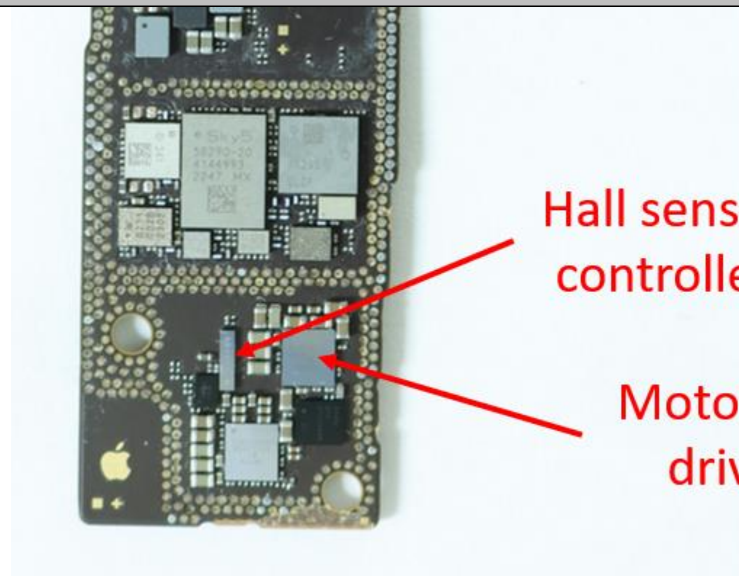
Claim 10	Accused Products
	 Photograph of moveable component from Apple Watch Ultra, with springs at left and right constraining the moveable component to an oscillation path.

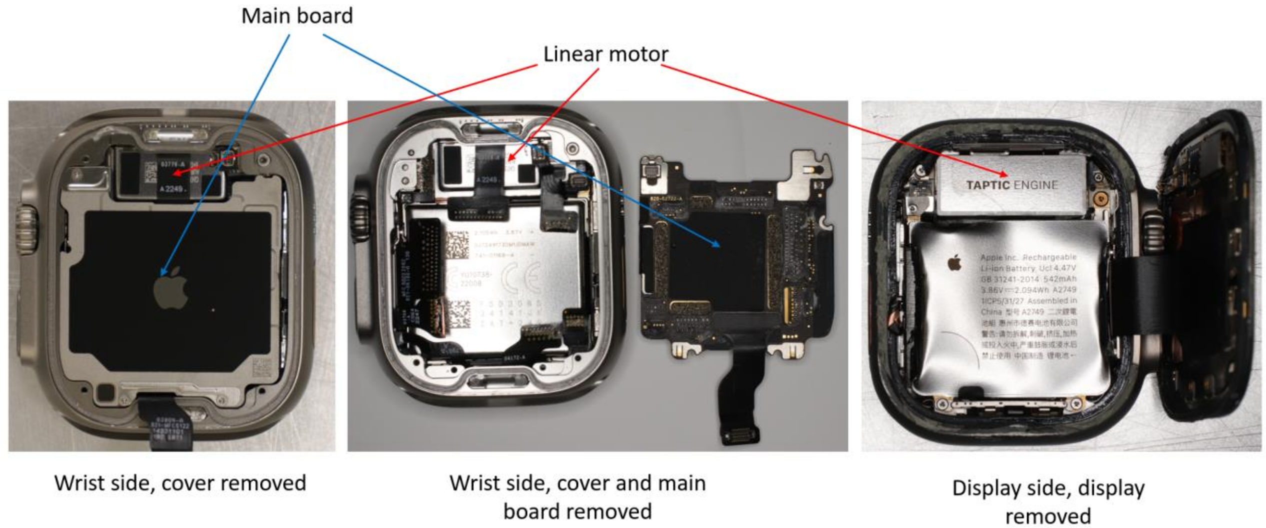
<table>
<tr><th>Claim 10</th><th>Accused Products</th></tr>
<tr><td></td><td>
Photograph of drive coils within disassembled Taptic Engine from Apple Watch Ultra. The two visible coils would be positioned above and below the movable component when assembled.</td></tr>
<tr><td>[10e] one or more sensors that output indications of the positions of the mass within</td><td>Each Accused Product comprises one or more sensors that output indications of the positions of the mass within the oscillation path at specific points in time.</td></tr>
</table>

Claim 10	Accused Products
the oscillation path at specific points in time, and	For example, the Taptic Engine in each of the iPhone 14 and Apple Watch Ultra includes a Hall effect sensor that determines the position and/or velocity of the moveable component. *See, e.g.*:  Annotated photograph showing Hall effect sensor within Taptic Engine of iPhone 14.

Claim 10	Accused Products
	 Annotated photograph showing Hall effect sensor within Taptic Engine of Apple Watch Ultra.
[10f] a control component that	Each Accused Product comprises a control component.

Claim 10	Accused Products
	For example, a motor coil driver and/or Hall sensor controller control the movement of the linear oscillating module. *See, e.g.*:  Photograph of iPhone 14 with rear cover removed, with A15 Bionic SoC at center right and Taptic Engine at bottom right.

Claim 10	Accused Products
	 Photograph of Hall sensor controller and motor control driver from iPhone 14.

Claim 10	Accused Products
	 Annotated photographs of Apple Watch Ultra showing linear actuator (Taptic engine) and main system board. *See also* claim elements below. To the extent Defendant contends and/or shows that this limitation is not literally present in the Accused Products, it is present under the doctrine of equivalents. There are no substantial differences between the accused functionality and the claimed invention. For example, each Accused Product contains one or more microprocessors that coordinate(s) operation of the Taptic Engine, which performs substantially the same function (*e.g.*, receiving control signals input to the oscillating resonant module, receiving outputs from one or more sensors, and controlling the oscillation of the mass) in substantially the same way (*e.g.*, using digital logic) to achieve substantially the same result (*e.g.*, producing oscillations at a desired frequency and amplitude).
[10g] receives control signals input to the oscillating resonant module by the controller,	The control component in each Accused Product receives control signals input to the oscillating resonant module by the controller.

Claim 10	Accused Products
	For example, the motor coil driver receives serial or other data from the system processor to control the intensity and sharpness of the desired oscillation. These control signals are sent and received using a protocol for commanding haptic patterns, as demonstrated by public APIs and testing results. *See, e.g.*:

Claim 10	Accused Products

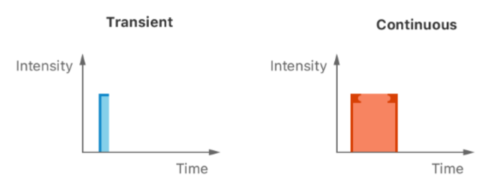
Declaration

```
class CHHapticEvent : NSObject
```

Overview

Each event represents a single haptic or audio signal. The event `type` determines whether it's audio or haptic. Use a `CHHapticPatternPlayer` object obtained through `CHHapticEngine` factory methods to play events. Haptic events can be transient or continuous. Transient haptic patterns are brief impulses that occur at a specific point in time, such as the haptic feedback you feel from swiping through a picker or toggling a switch. Continuous haptic patterns, like the vibration from a ringtone, take the form of lengthier feedback over a period of time.

In the following graphic, transient haptic patterns on the left trigger at a specific time with a specific intensity. Continuous haptic patterns on the right sustain the haptic feedback over a specific duration of time, such as three seconds.

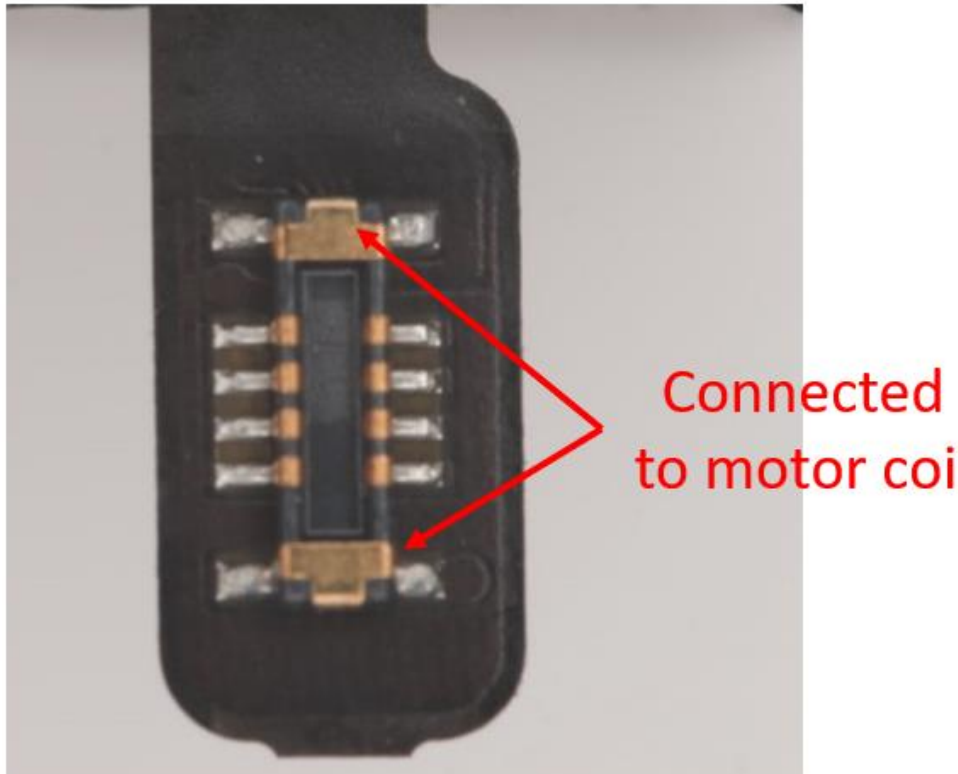


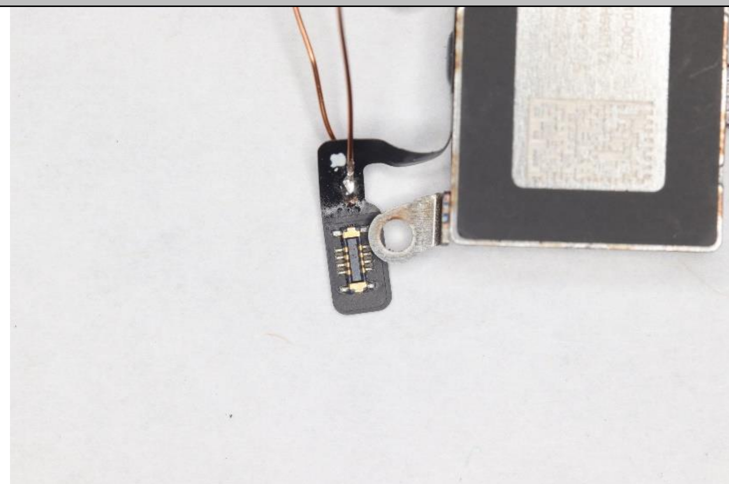
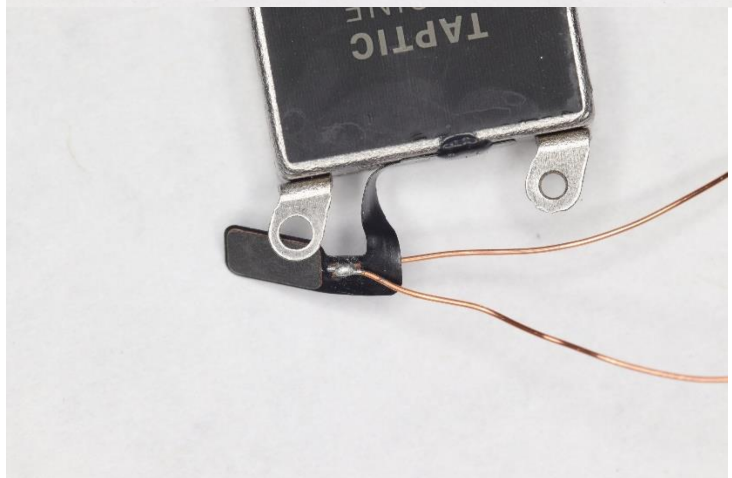
Specify when an event begins by setting its `relativeTime` property. Specify the length of the event by setting its `duration` property. Set optional parameters to customize event properties. For example, you can specify the intensity of a haptic event by creating an event parameter with ID `hapticIntensity`.

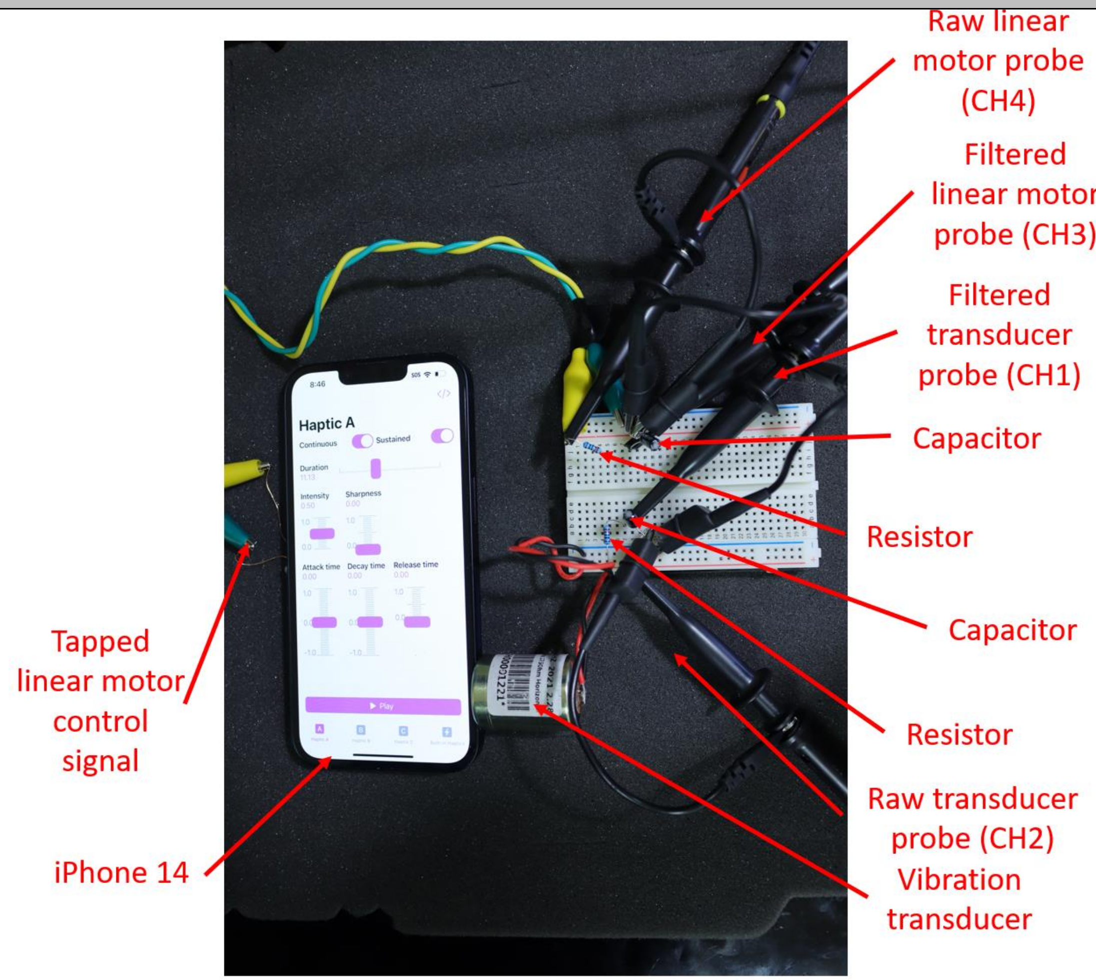
Documentation of CHHapticEvent object,
https://developer.apple.com/documentation/corehaptics/chhapticevent

Claim 10	Accused Products
	Haptic Event Parameter IDs `static let hapticIntensity: CHHapticEvent.ParameterID` The strength of a haptic event. `static let hapticSharpness: CHHapticEvent.ParameterID` The feel of a haptic event. `static let attackTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins increasing. `static let decayTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins decreasing. `static let releaseTime: CHHapticEvent.ParameterID` The time at which to begin fading the haptic pattern. `static let sustained: CHHapticEvent.ParameterID` A Boolean value that indicates whether to sustain a haptic event for its specified duration. Documentation of haptic event parameters, https://developer.apple.com/documentation/corehaptics/chhapticevent/parameterid

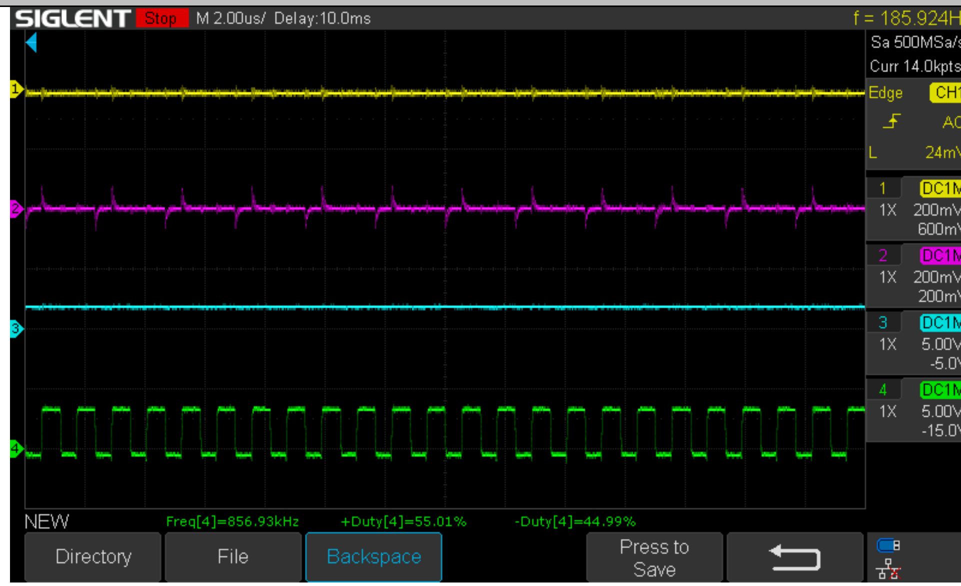
Claim 10	Accused Products
	4. The Continuous "Sharpness" parameter maps to frequency. For continuous events, we found that the sharpness parameter maps to frequency. On an iPhone 8, the lower sharpness boundary (0.0) of the Taptic Engine is 80 Hz; the higher sharpness boundary (1.0) is 230 Hz. This provides an effective range of 150 Hz, or roughly 1.5 octaves — which is impressive for a mobile phone released in 2017. Other phones or devices supporting Core Haptics might have different upper or lower boundaries since the frequency range is tied to the capabilities of the hardware actuator. https://medium.com/lofelt/10-things-you-should-know-about-designing-for-apple-core-haptics-9219fdebdcaa.

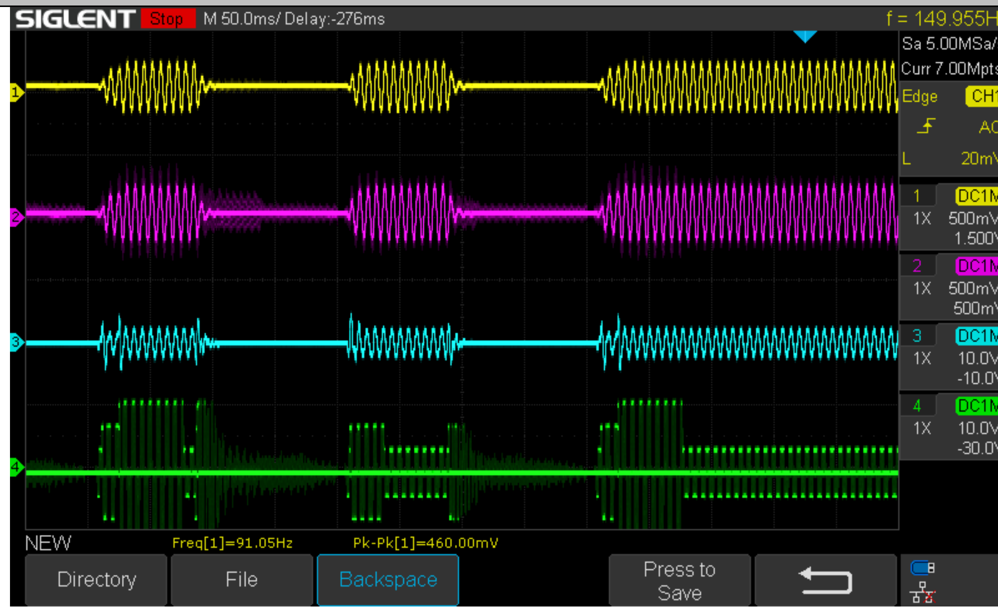
Claim 10	Accused Products
	 Annotated photograph of Taptic Engine connector from iPhone 14 showing positive and negative coil driving pins.

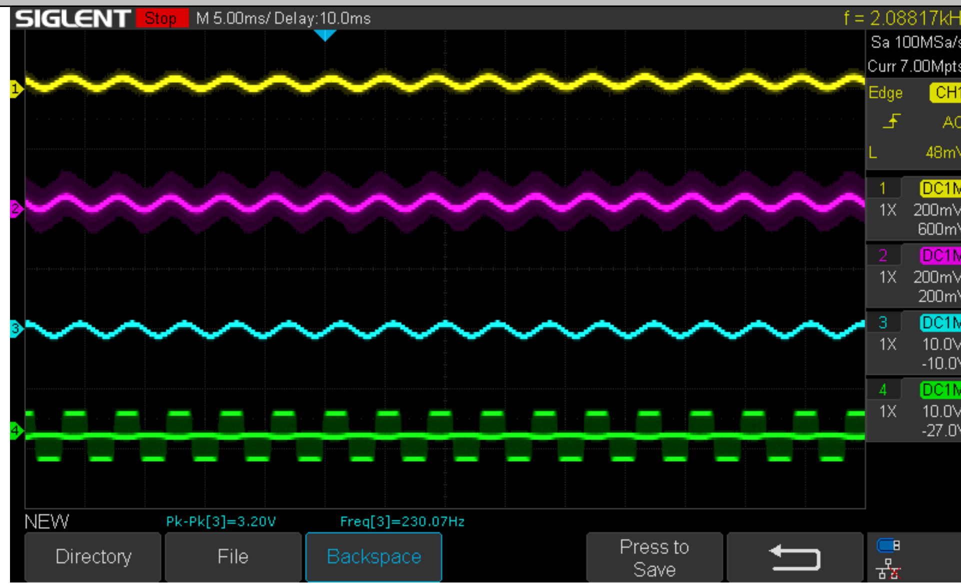
Claim 10	Accused Products
	  Photographs of test apparatus with electrical leads connected to motor coil drive traces of iPhone 14.

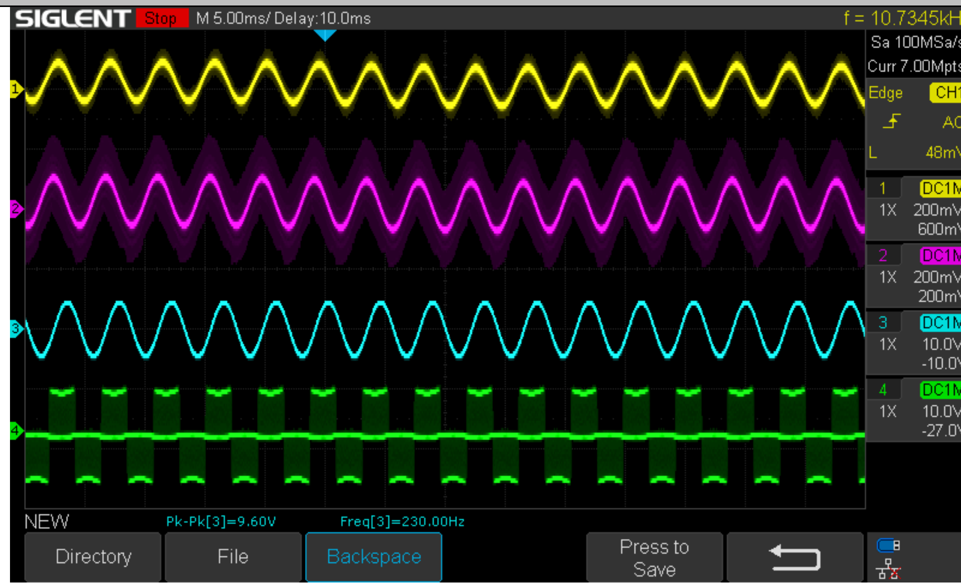
Claim 10	Accused Products
	

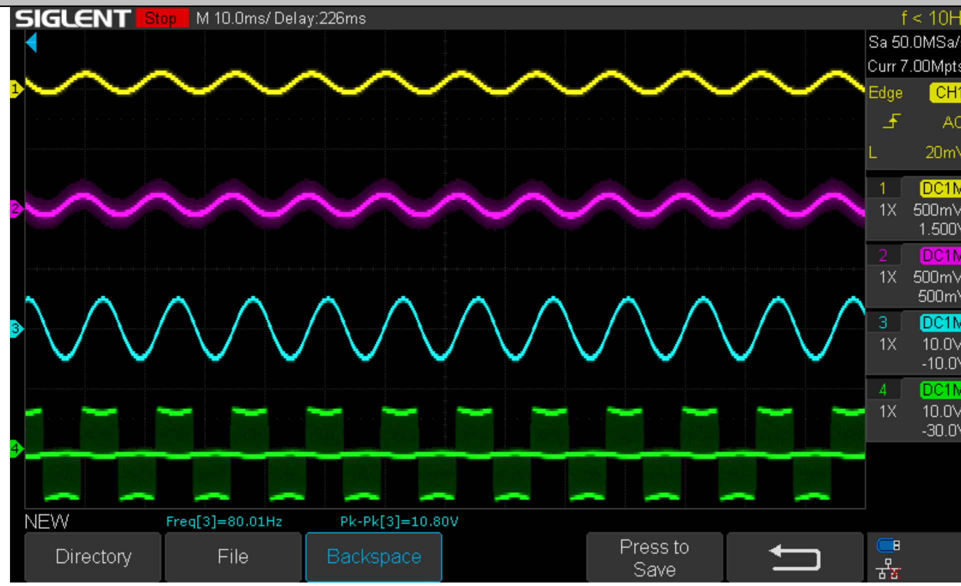
Photograph of test apparatus for measuring motor coil drive signal (from tapped connection) and actual motion (from attached vibration transducer) of iPhone 14. Note RC low-pass filter networks at top right with R = 220 Ω, C = 2.2 uF.

Claim 10	Accused Products
	 Oscilloscope trace showing, in green (CH4), the drive voltage applied by the iPhone 14 haptic controller(s); in this case, a pulse width modulated positive signal (modulation frequency 857 kHz) to drive the moveable component in one of two directions.

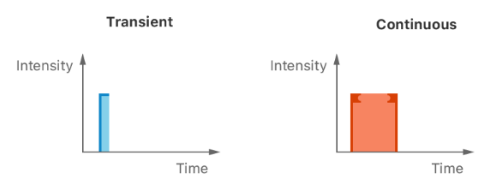
Claim 10	Accused Products
	 Oscilloscope trace showing, in green (CH4), the PWM-modulated drive voltage applied by the iPhone 14 haptic controller(s), with positive and negative voltages to drive the moveable component in a first and second direction. Channels 1 and 2 (yellow and purple) show the actual motion of the iPhone 14 resulting (pursuant to Newton's third law) from the motion of the moveable component.

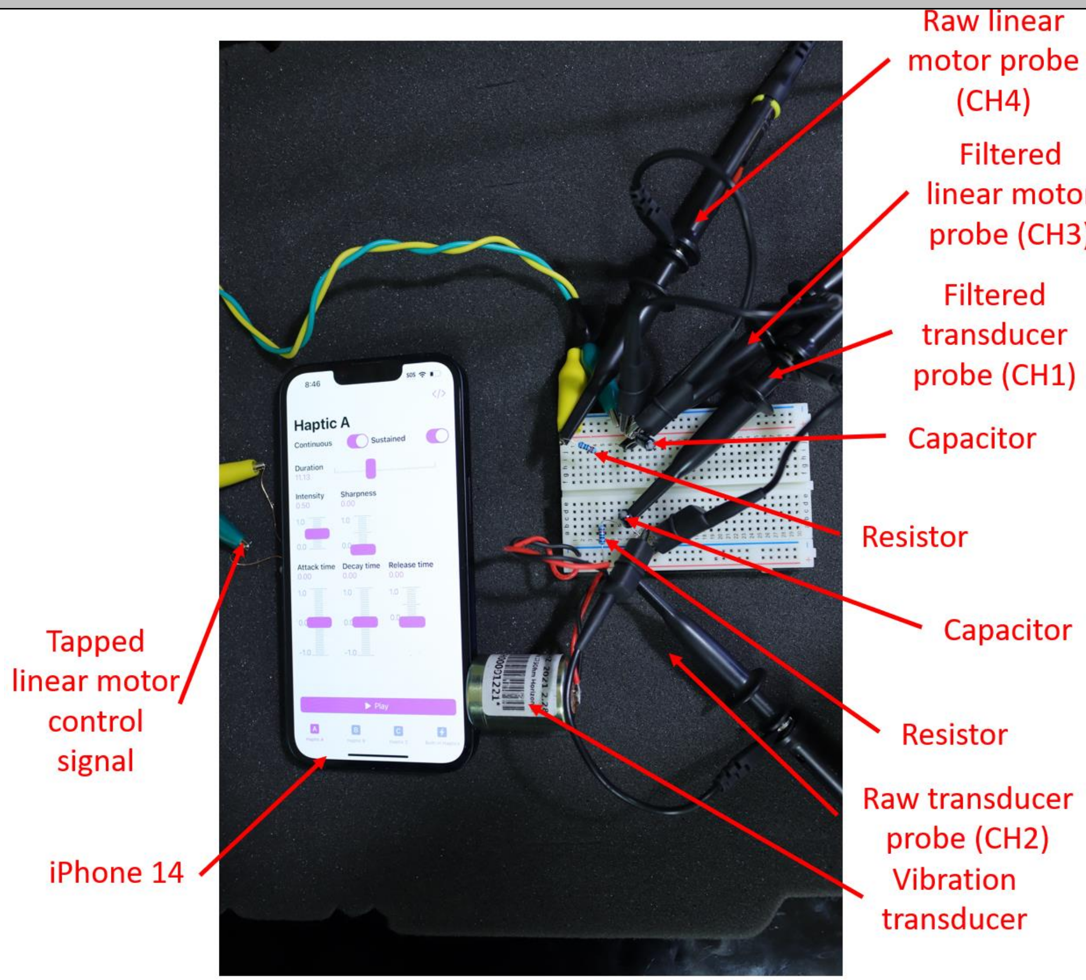
Claim 10	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 0.5, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 3.2 V (peak-to-peak, through RC low-pass filter).

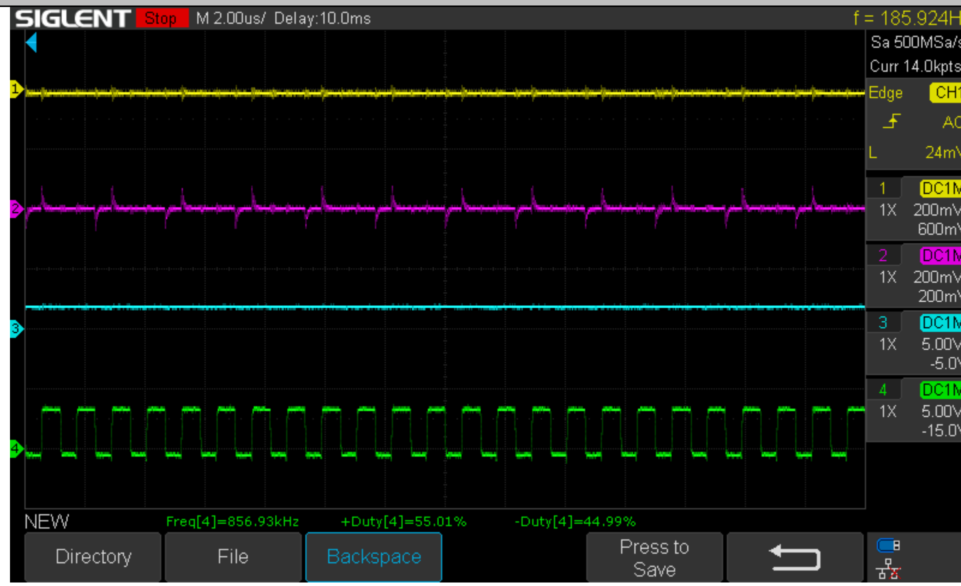
Claim 10	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 1, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 9.6V (peak-to-peak, through RC low-pass filter). Note that the externally measured vibration amplitude (yellow and purple traces, same scale as previous trace) is also significantly higher at intensity = 1 than 0.5.

Claim 10	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 1, sharpness = 0, with frequency of 80 Hz and motor drive amplitude of 10.8 V (peak-to-peak, through RC low-pass filter). To the extent Defendant contends and/or shows that this limitation is not literally present in the Accused Products, it is present under the doctrine of equivalents. There are no substantial differences between the accused functionality and the claimed invention. For example, the control component in each Accused Product receives signals from an application processor determined based in part on user input, which performs substantially the same function (*e.g.*, receiving control signals input to the oscillating resonant module) in substantially the same way (*e.g.*, digital and/or analog signalling and/or user input features) to achieve substantially the same result (*e.g.*, producing oscillations at a desired frequency and amplitude).
[10h] receives outputs from the one or more sensors, and	The control component in each Accused Product receives outputs from the one or more sensors. For example, on information and belief, the control component receives outputs from the Hall effect sensor(s) inside the Taptic Engine, either directly or by means of dedicated Hall effect

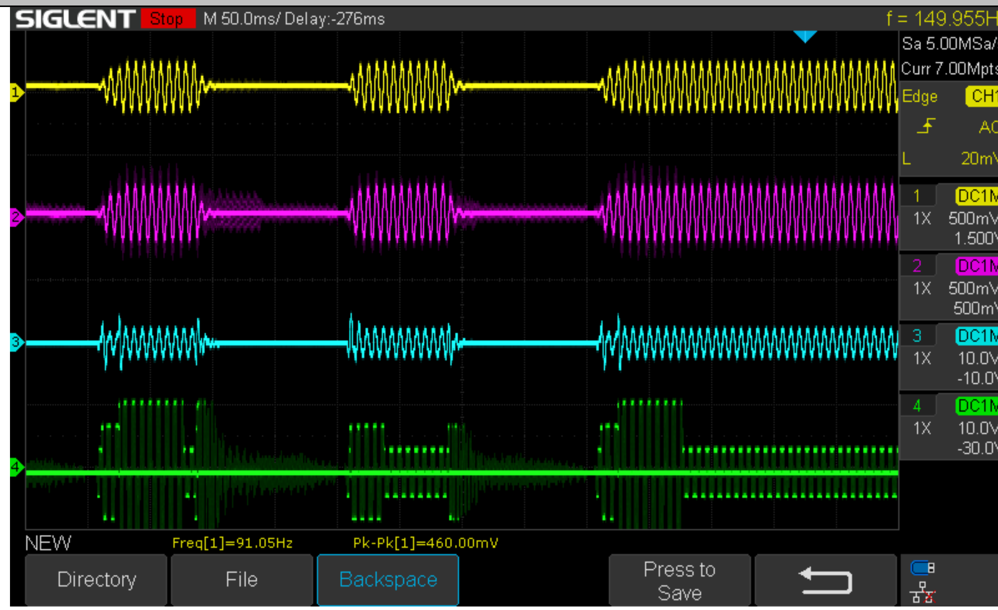
Claim 10	Accused Products
	sensor control ICs. This fact is corroborated by, at least, the presence of the Hall effect sensors within the drive coils.
[10i] controls oscillation of the mass to produce a vibration response according to the received control signals by generating, using one or more of the received sensor outputs, control outputs to an actuator that drives the mass to oscillate.	The control component in each Accused Product controls oscillation of the mass to produce a vibration response according to the received control signals by generating, using one or more of the received sensor outputs, control outputs to an actuator that drives the mass to oscillate. For example, the control component generates electrical outputs to the driving coils (actuator) that cause alternating magnetic fields, moving the mass and therefore producing a vibration response as directed by the application processor and software running on the application processor. On information and belief, the control outputs are generated based on the closed-loop feedback received from the Hall effect sensor(s), as demonstrated by, for example, the presence of the Hall effect sensor(s) themselves and the precision and quality of the resulting vibration response. *See, e.g.*:

Claim 10	Accused Products
	Declaration `class CHHapticEvent : NSObject` **Overview** Each event represents a single haptic or audio signal. The event `type` determines whether it's audio or haptic. Use a `CHHapticPatternPlayer` object obtained through `CHHapticEngine` factory methods to play events. Haptic events can be transient or continuous. Transient haptic patterns are brief impulses that occur at a specific point in time, such as the haptic feedback you feel from swiping through a picker or toggling a switch. Continuous haptic patterns, like the vibration from a ringtone, take the form of lengthier feedback over a period of time. In the following graphic, transient haptic patterns on the left trigger at a specific time with a specific intensity. Continuous haptic patterns on the right sustain the haptic feedback over a specific duration of time, such as three seconds.  Specify when an event begins by setting its `relativeTime` property. Specify the length of the event by setting its `duration` property. Set optional parameters to customize event properties. For example, you can specify the intensity of a haptic event by creating an event parameter with ID `hapticIntensity`. Documentation of CHHapticEvent object, https://developer.apple.com/documentation/corehaptics/chhapticevent, describing vibration patterns resulting from various control inputs

Claim 10	Accused Products
	 Photograph of test apparatus for measuring motor coil drive signal (from tapped connection) and actual motion (from attached vibration transducer) of iPhone 14.

<table>
<tr><th>Claim 10</th><th>Accused Products</th></tr>
<tr><td></td><td>

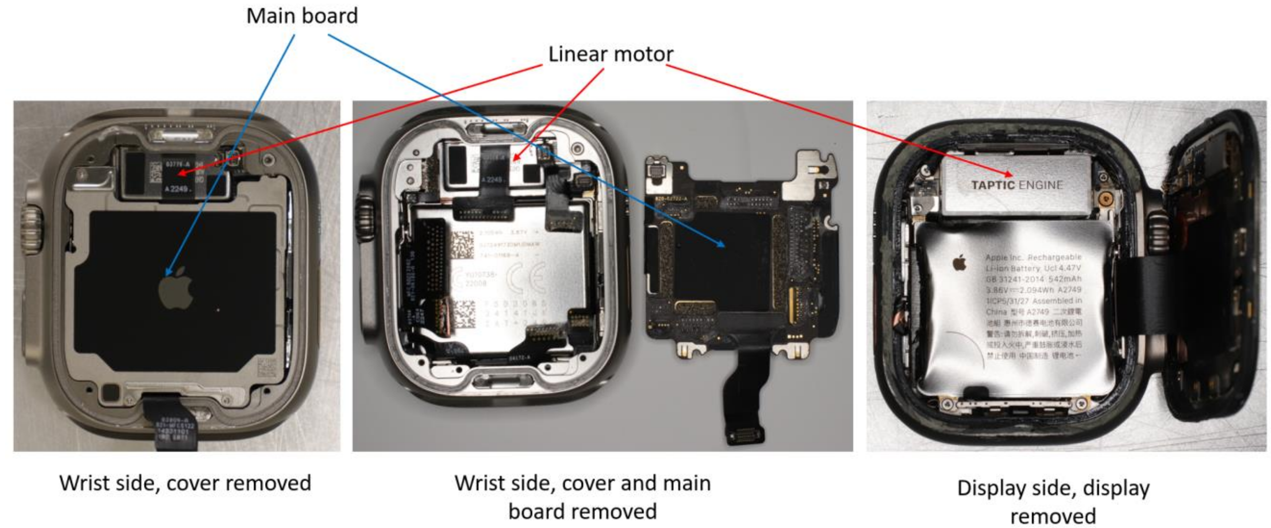
Oscilloscope trace showing, in green (CH4), the drive voltage applied by the iPhone 14 haptic controller(s); in this case, a pulse width modulated positive signal (modulation frequency 857 kHz) to drive the moveable component to oscillate.</td></tr>
</table>

Claim 10	Accused Products
	 Oscilloscope trace showing, in green (CH4), the PWM-modulated drive voltage applied by the iPhone 14 haptic controller(s), with positive and negative voltages to drive the moveable component in a first and second direction. Channels 1 and 2 (yellow and purple) show the actual motion of the iPhone 14 resulting (pursuant to Newton's third law) from the oscillation of the moveable component.

Claim 17

Claim 17	Accused Products
[17pre] The physical device of claim 1 further comprising:	Each Accused Product comprises the physical device of claim 1.
[17a] a controller, within the physical device, that	Each Accused Product comprises a controller within the physical device. For example, each Accused Product includes a main system processor that contains confidential and proprietary software and/or firmware that controls the oscillating resonant module.

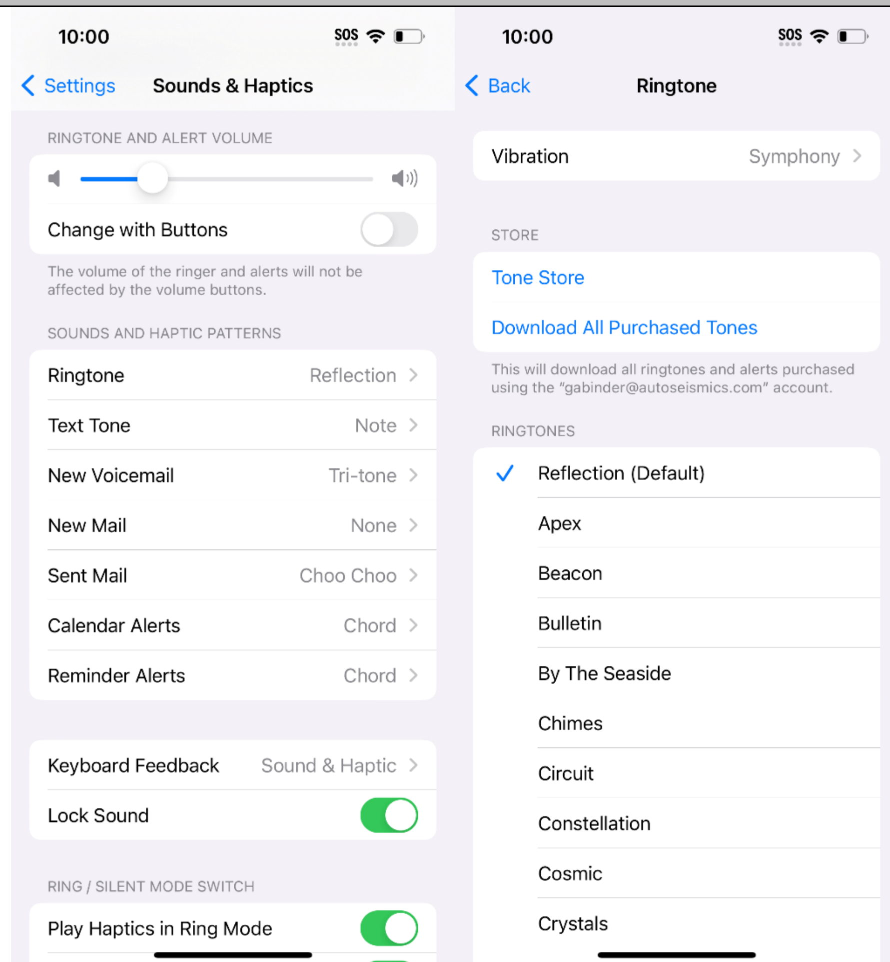
Claim 17	Accused Products
	See, e.g.:  Photograph of iPhone 14 with rear cover removed, with A15 Bionic SoC at center right and Taptic Engine at bottom right.

Claim 17	Accused Products
	 Annotated photographs of Apple Watch Ultra showing linear actuator (Taptic engine) and main system board.
[17b] receives control signals input to the physical device, and	The controller in each Accused Product receives control signals input to the physical device. For example, the haptic controller receives serial or other data from the application processor to control the intensity and sharpness of the desired oscillation. These control signals are sent and received using a protocol for commanding haptic patterns, as demonstrated by public APIs and testing results. For example, each of the iPhone 14 and Apple Watch Ultra comprises a touchscreen, buttons, and other user-input features to receive control inputs to the physical device. The controller receives control signals from those input devices. Public APIs, as well as any proprietary Apple APIs and interfaces, specify intensity and sharpness values received by the controller that directly and/or indirectly control the frequency and amplitude of the oscillation. *See, e.g.*:

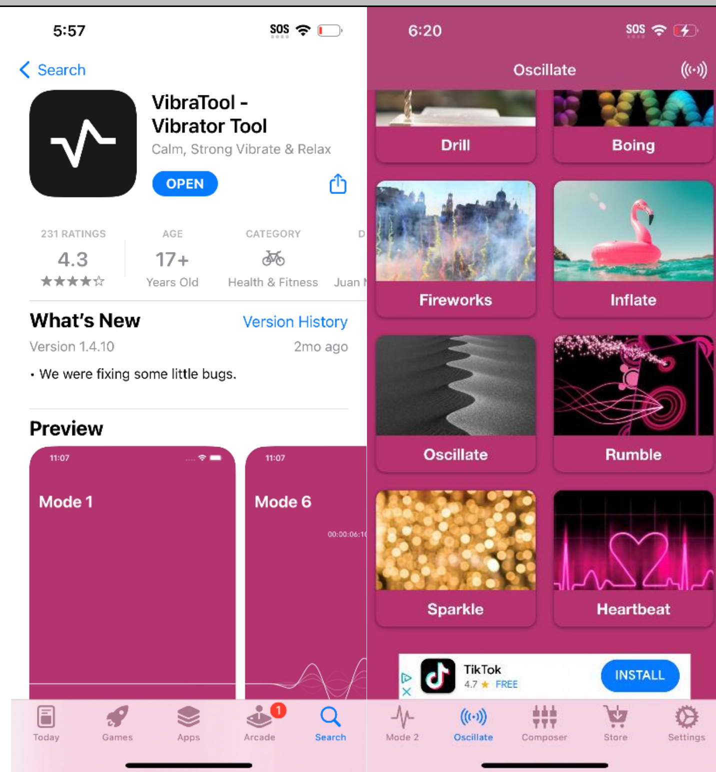
<table>
<tr><th>Claim 17</th><th>Accused Products</th></tr>
<tr><td></td><td>

Photograph of iPhone 14 touchscreen, buttons, and switch, available at https://www.apple.com/iphone-14/.</td></tr>
</table>

Claim 17	Accused Products
	 Photograph of Apple Watch Ultra touchscreen, dial, and buttons.

Claim 17	Accused Products
	 Screenshots of "Sounds & Haptics" and "Ringtone" settings, which allow selection of frequency and/or amplitude.

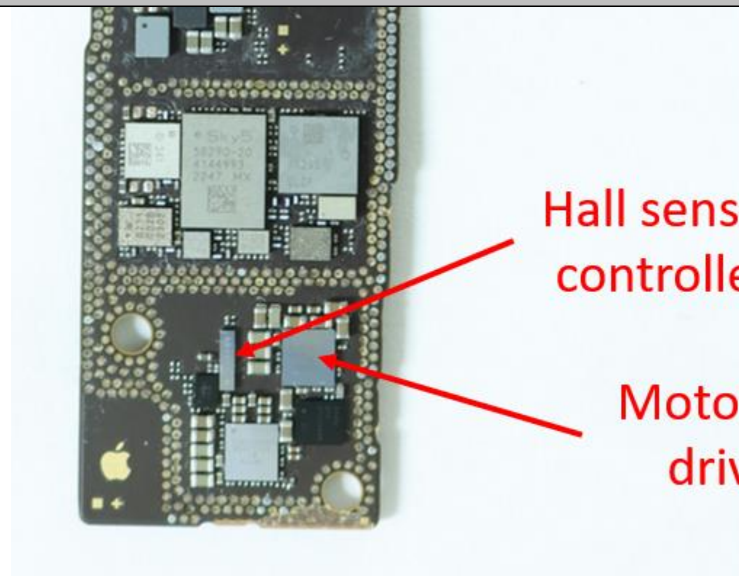
Claim 17	Accused Products
	 Screenshots of exemplary “Haptics Studio” software, sold by Apple through its App Store, with independent user-input controls for frequency (“sharpness”) and amplitude (“intensity”).

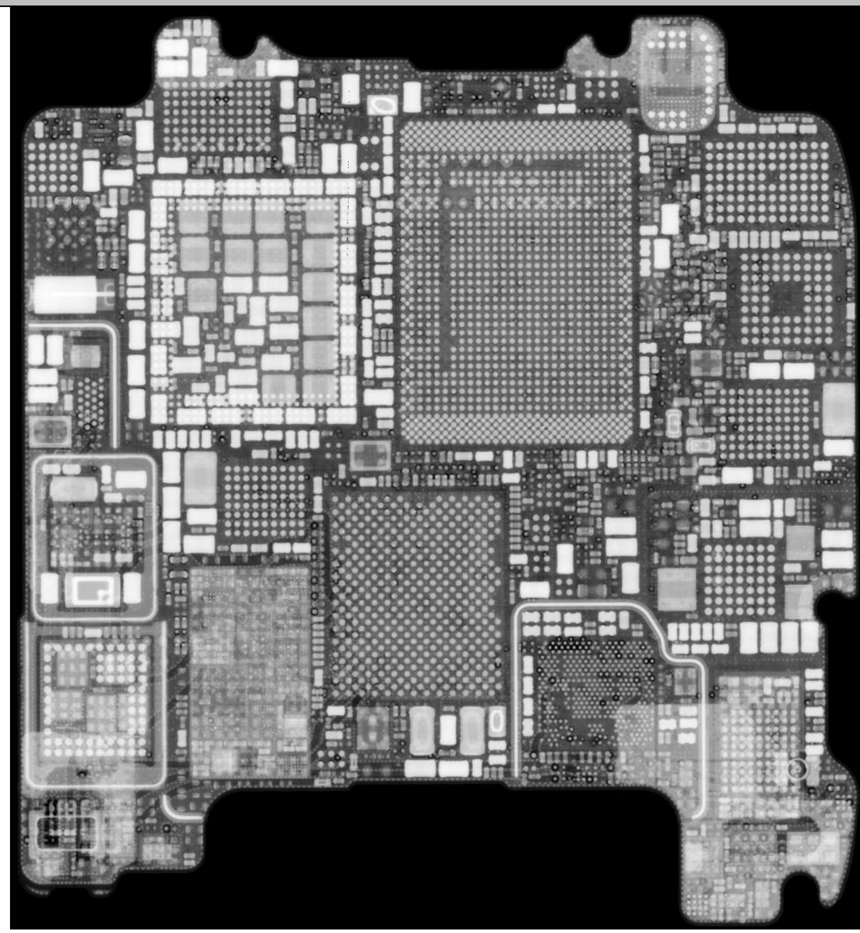
<table>
<tr><th>Claim 17</th><th>Accused Products</th></tr>
<tr><td></td><td>

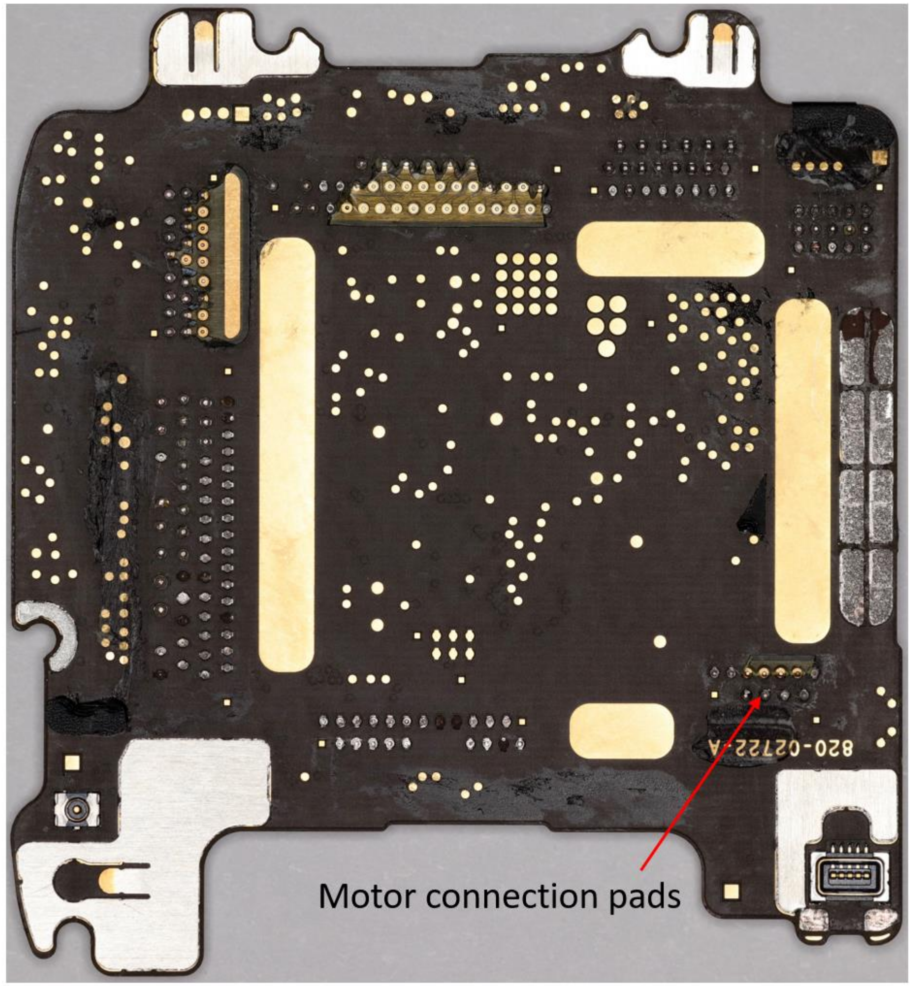
Screenshots of exemplary “VibraTool” software, sold by Apple through its App Store, with user-input controls for selecting frequency and amplitude.</td></tr>
<tr><td>[17c] outputs control signals to one or more of the one or more oscillating resonant modules to controls the vibration response produced by the one or more oscillating resonant modules.</td><td>The controller in each Accused Product outputs control signals to one or more of the one or more oscillating resonant modules to control the vibration response produced by the one or more oscillating resonant modules.</td></tr>
</table>

Claim 17	Accused Products
	For example, each Accused Product includes a main system processor that forms a controller to drive the coils and thus move the magnetic mass in a linear oscillating motion through a motor coil driver and Hall sensor controller, as described below. This controller can drive the moveable component at specified frequencies and amplitude, as demonstrated by public APIs and by testing. The public APIs, as well as any proprietary Apple APIs and interfaces, specify intensity and sharpness that directly and/or indirectly control the frequency and amplitude of the oscillation and that are stored at least within the system processor and associated volatile and non-volatile memory. *See, e.g.*:

Claim 17	Accused Products
	 Photographs showing iPhone 14 system board with A15 Bionic processor.

Claim 17	Accused Products
	 Annotated photograph of Hall sensor controller and motor coil driver from the iPhone 14.

Claim 17	Accused Products
	 X-ray image of Apple Watch Ultra system board.

Claim 17	Accused Products
	 Annotated photograph of partially disassembled Apple Watch Ultra system board, showing connection points for haptic motor.

<table>
<tr><th>Claim 17</th><th>Accused Products</th></tr>
<tr><td></td><td>

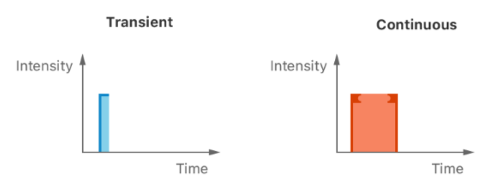
Declaration

```
class CHHapticEvent : NSObject
```

Overview

Each event represents a single haptic or audio signal. The event `type` determines whether it's audio or haptic. Use a `CHHapticPatternPlayer` object obtained through `CHHapticEngine` factory methods to play events. Haptic events can be transient or continuous. Transient haptic patterns are brief impulses that occur at a specific point in time, such as the haptic feedback you feel from swiping through a picker or toggling a switch. Continuous haptic patterns, like the vibration from a ringtone, take the form of lengthier feedback over a period of time.

In the following graphic, transient haptic patterns on the left trigger at a specific time with a specific intensity. Continuous haptic patterns on the right sustain the haptic feedback over a specific duration of time, such as three seconds.



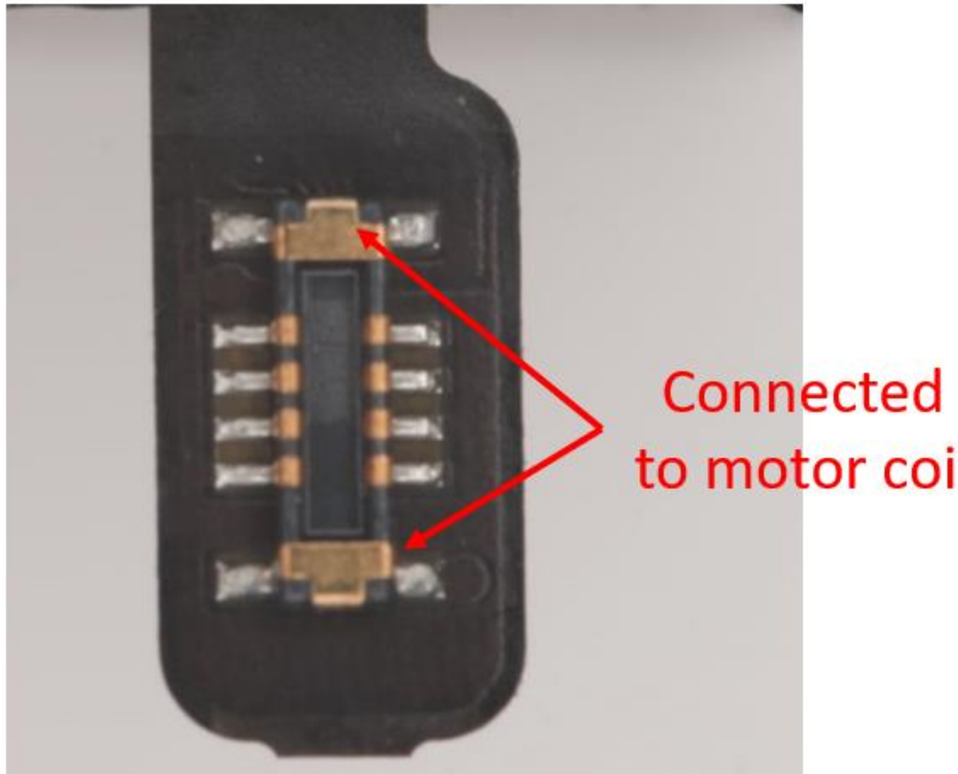
Specify when an event begins by setting its `relativeTime` property. Specify the length of the event by setting its `duration` property. Set optional parameters to customize event properties. For example, you can specify the intensity of a haptic event by creating an event parameter with ID `hapticIntensity`.

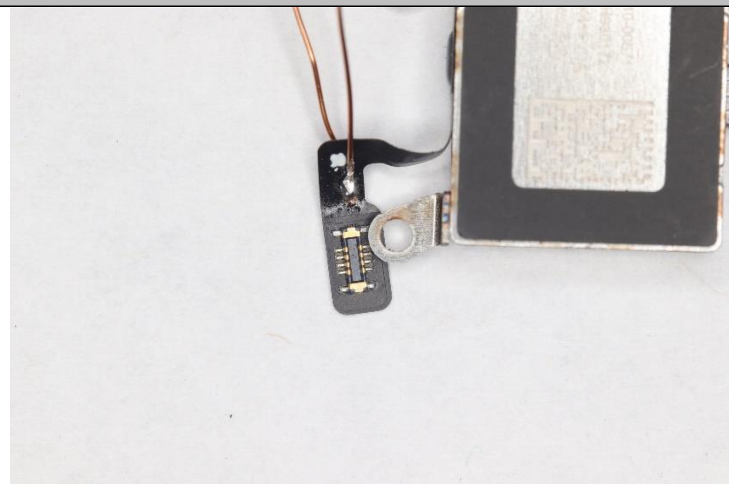
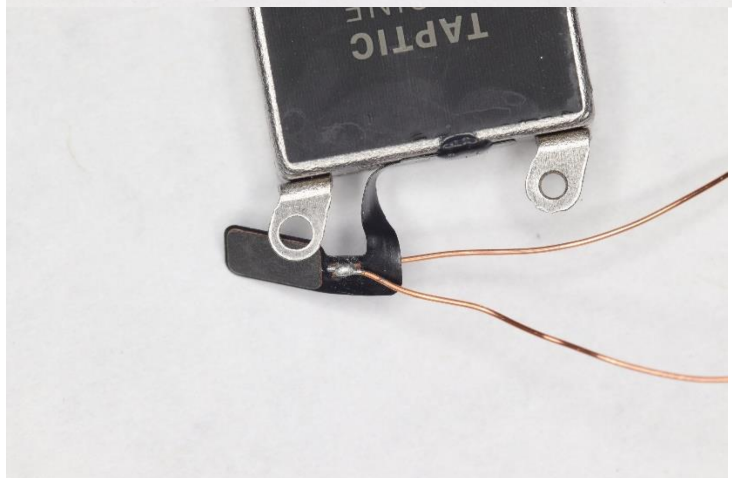
Documentation of CHHapticEvent object, https://developer.apple.com/documentation/corehaptics/chhapticevent

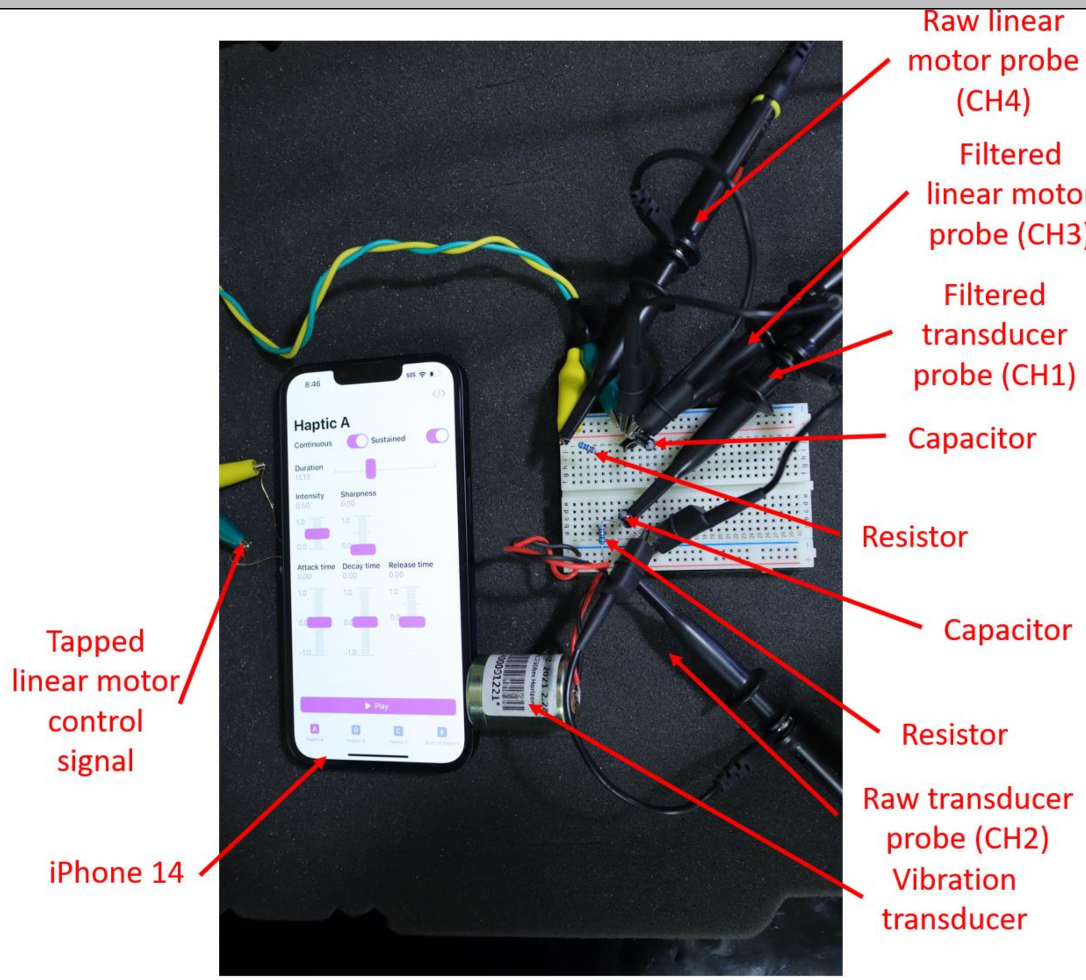
</td></tr>
</table>

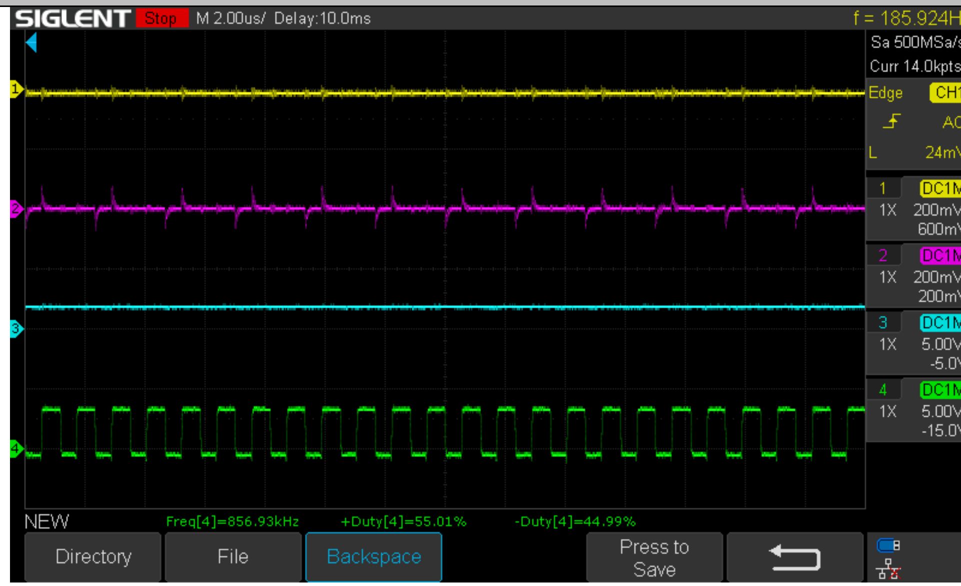
Claim 17	Accused Products
	Haptic Event Parameter IDs `static let hapticIntensity: CHHapticEvent.ParameterID` The strength of a haptic event. `static let hapticSharpness: CHHapticEvent.ParameterID` The feel of a haptic event. `static let attackTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins increasing. `static let decayTime: CHHapticEvent.ParameterID` The time at which a haptic pattern's intensity begins decreasing. `static let releaseTime: CHHapticEvent.ParameterID` The time at which to begin fading the haptic pattern. `static let sustained: CHHapticEvent.ParameterID` A Boolean value that indicates whether to sustain a haptic event for its specified duration. Documentation of haptic event parameters, https://developer.apple.com/documentation/corehaptics/chhapticevent/parameterid;

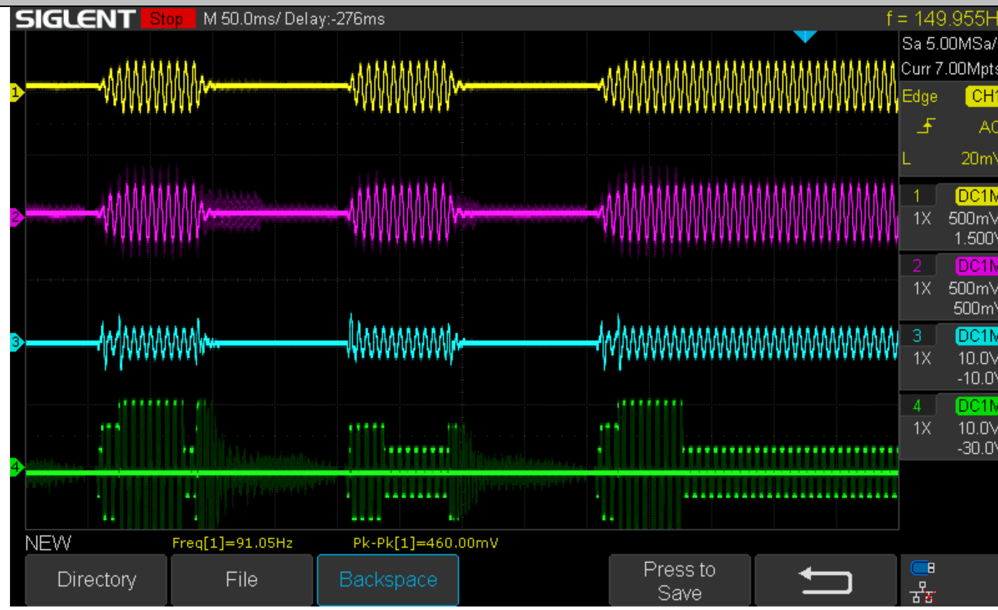
Claim 17	Accused Products
	4. The Continuous "Sharpness" parameter maps to frequency. For continuous events, we found that the sharpness parameter maps to frequency. On an iPhone 8, the lower sharpness boundary (0.0) of the Taptic Engine is 80 Hz; the higher sharpness boundary (1.0) is 230 Hz. This provides an effective range of 150 Hz, or roughly 1.5 octaves — which is impressive for a mobile phone released in 2017. Other phones or devices supporting Core Haptics might have different upper or lower boundaries since the frequency range is tied to the capabilities of the hardware actuator. https://medium.com/lofelt/10-things-you-should-know-about-designing-for-apple-core-haptics-9219fdebdcaa.

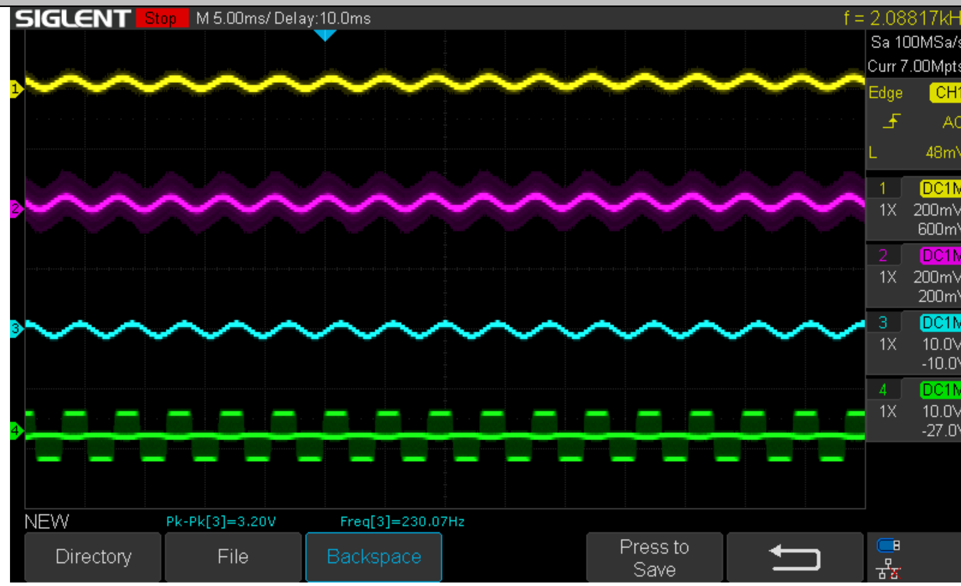
Claim 17	Accused Products
	 Annotated photograph of Taptic Engine connector from the iPhone 14 showing positive and negative coil driving pins.

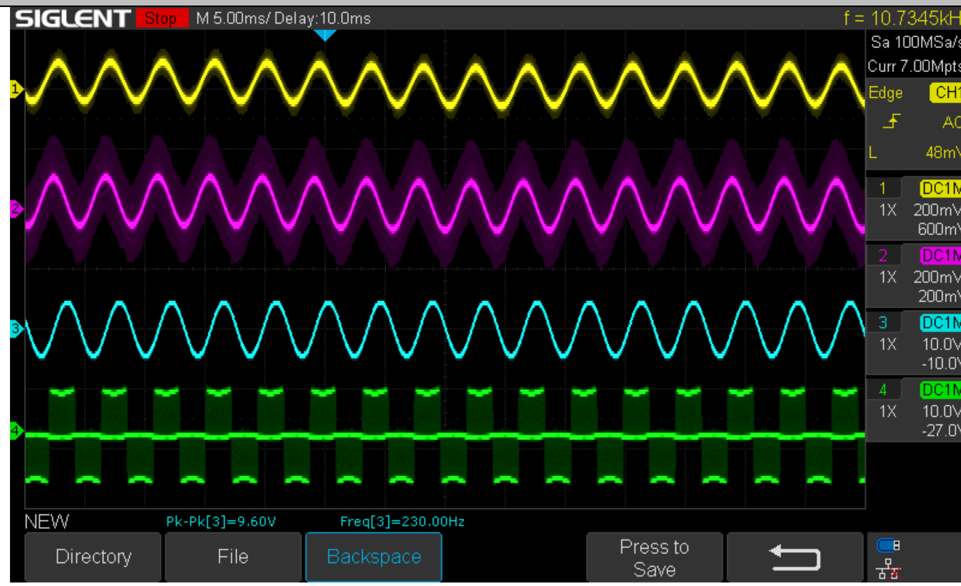
Claim 17	Accused Products
	  Photographs of test apparatus with electrical leads connected to motor coil drive traces of iPhone 14.

Claim 17	Accused Products
	 Photograph of test apparatus for measuring motor coil drive signal (from tapped connection) and actual motion (from attached vibration transducer) of iPhone 14. Note RC low-pass filter networks at top right with R = 220 Ω, C = 2.2 uF.

Claim 17	Accused Products
	 Oscilloscope trace showing, in green (CH4), the drive voltage applied by the iPhone 14 haptic controller(s); in this case, a pulse width modulated positive signal (modulation frequency 857 kHz) to drive the moveable component in one of two directions.

Claim 17	Accused Products
	 Oscilloscope trace showing, in green (CH4), the PWM-modulated drive voltage applied by the iPhone 14 haptic controller(s), with positive and negative voltages to drive the moveable component in a first and second direction. Channels 1 and 2 (yellow and purple) show the actual motion of the iPhone 14 resulting (pursuant to Newton's third law) from the motion of the moveable component.

Claim 17	Accused Products
	 Oscilloscope trace showing the result of CHHapticEvent with intensity = 0.5, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 3.2 V (peak-to-peak, through RC low-pass filter).

<table>
<tr><th>Claim 17</th><th>Accused Products</th></tr>
<tr><td></td><td>

Oscilloscope trace showing the result of CHHapticEvent with intensity = 1, sharpness = 1, with frequency of 230 Hz and motor drive amplitude of 9.6V (peak-to-peak, through RC low-pass filter). Note that the externally measured vibration amplitude (yellow and purple traces, same scale as previous trace) is also significantly higher at intensity = 1 than 0.5.</td></tr>
</table>

Claim 19

Claim 19	Accused Products
[19] The physical device of claim 17 wherein the controller passes at least a portion of the received control signals input to the physical device to one or more of the one or more oscillating resonant module.	Each Accused Product comprises the physical device of claim 17 wherein the controller passes at least a portion of the received control signals input to the physical device to one or more of the one or more oscillating resonant module. For example, the controller in each Accused Product passes control signals input to the physical device such as touchscreen keyboard input to the linear oscillating resonant module to produce haptic feedback.

Claim 19	Accused Products
	See, e.g.:  Screenshots of "Sounds & Haptics" settings, which allow haptic feedback in response to keyboard input.

Claim 20

Claim 20	Accused Products
[20] The physical device of claim 17 wherein the controller controls the one or more oscillating resonant modules to each produce a vibration response, the vibration responses produced by the oscillating resonant modules together producing a resonant-frequency vibration mode in the physical device.	Each Accused Product comprises the physical device of claim 17 wherein the controller controls the one or more oscillating resonant modules to each produce a vibration response, the vibration responses produced by the oscillating resonant modules together producing a resonant-frequency vibration mode in the physical device. For example, each Accused Product controls the oscillating resonant module to produce a vibration response at a specified frequency. The specified frequency can be selected to be substantially similar to a pre-determined resonant-frequency vibration mode in the physical device in order to maximize the vibration strength. *See supra* claim element [17c].

Exhibit 1

James Yang

From: ptong@raklaw.com
Sent: Tuesday, December 12, 2023 8:14 AM
To: James Yang; rak_revelhmi@raklaw.com
Cc: swingard@scottdoug.com; sburbank@scottdoug.com; rearle@scottdoug.com; Service - FR Apple/Resonant
Subject: Re: Resonant Systems Inc. v Apple Inc., W.D.Tex. 7:23-cv-00077-DC

[This email originated outside of F&R.]

Hi James,

Could we have a follow up meeting late Wednesday, early Thursday, or anytime Friday to discuss the items in your letter? Also, we would like to discuss the possibility of extending venue discovery and our reply deadline.

Peter Tong
Russ, August & Kabat
4925 Greenville Avenue, Suite 200 | Dallas, Texas 75206
Main +1 310 826 7474 | ptong@raklaw.com | www.raklaw.com

From: James Yang <jyang@fr.com>
Date: Monday, December 11, 2023 at 11:48 AM
To: rak_revelhmi@raklaw.com <rak_revelhmi@raklaw.com>
Cc: swingard@scottdoug.com <swingard@scottdoug.com>, sburbank@scottdoug.com <sburbank@scottdoug.com>, rearle@scottdoug.com <rearle@scottdoug.com>, Service - FR Apple/Resonant <ServiceFRAppleResonant@fr.com>
Subject: Resonant Systems Inc. v Apple Inc., W.D.Tex. 7:23-cv-00077-DC

Highly Confidential – Attorneys' Eyes Only

Counsel,

Please see the attached correspondence.

Best,
James Yang :: 858 678 4394 :: Fish & Richardson P.C.

****
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****

UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
MIDLAND-ODESSA DIVISION

RESONANT SYSTEMS, INC., d/b/a RevelHMI, Plaintiff, v. APPLE INC., Defendants.	Case No. 7:23-cv-000077-DC [redacted]

PLAINTIFF RESONANT'S SUR-REPLY TO APPLE'S MOTION TO TRANSFER VENUE

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I. Introduction

Apple did not dispute that it has the burden of proving that the NDCA is clearly more convenient, or that this burden requires Apple to provide evidence about the relevant witnesses in **both** the NDCA and WDTX so the Court can weigh them fairly. Apple's Reply (Dkt. 46-1) ignores this burden of proof and asks the Court to apply the wrong law.

Apple violated the Court's scheduling order by producing a Cirrus Logic declaration after the venue discovery cutoff, preventing Resonant[1] from deposing the witness. A motion to strike is filed herewith. If the Court denies the motion to strike, the Court should consider this sur-reply.

II. *TikTok* Changed the Law

Apple misinterprets *In re TikTok, Inc.*, 85 F.4th 352 (5th Cir. Oct. 31, 2023) by arguing that this case neither changes the law nor makes this a case of first impression. In 2004, the Fifth Circuit articulated the 100-mile rule. *In re Volkswagen AG*, 371 F.3d 201, 204–05 (5th Cir. 2004) ("When the distance between an existing venue for trial of a matter and a proposed venue under § 1404(a) is more than 100 miles, the factor of inconvenience to witnesses increases in direct relationship to the additional distance to be traveled."). In the years leading up to *TikTok*, the Federal Circuit stopped "rigidly" applying the Fifth Circuit's 100-mile rule. *In re Apple Inc.*, 979 F.3d 1332, 1341 (Fed. Cir. 2020) . In fact, the Federal Circuit *reversed* this Court's transfer analysis that a witness in Florida would find it "about twice as inconvenient" to attend trial in Texas than in California because "Texas sits halfway from Florida to California." *In re Apple Inc.*, No. 2022-128, 2022 WL 1196768, at *3 (Fed. Cir. 2022) ("we have repeatedly rejected" the 100-mile rule). In late 2023, *TikTok* restored the Fifth Circuit's rigid application of the 100-mile rule from *Volkswagen* as controlling law. *TikTok*, 85 F.4th at 361 (reversing the district court because "[t]hat

[1] "Plaintiff," "Revel," "RevelHMI, and "Resonant" all refer to the same party. Apple's Opposition uses "Resonant," so this Sur-Reply will follow suit.

conclusion ignores our 100-mile test”). The undersigned counsel found no case straddling *TikTok* that directly addresses the movant’s burden of proof.

Thus, under the pre-*TikTok* case of *In re Apple Inc.*, Apple could effectively ignore witnesses outside of California and Texas while still meeting its burden of proof, but that is insufficient after *TikTok.* Apple ignored such evidence when filing its motion, and Apple refused to investigate the facts or provide evidence about witnesses “east of the Mississippi River” during discovery after *TikTok* was decided. Dkt. 43-8 at 1 (Opposition Ex. 11). The evidence about Apple’s witnesses beyond California and Texas remains missing. Without such evidence, Apple can only prove that the NDCA is convenient to some, but Apple cannot meet its burden of proving the NDCA is clearly ***more*** convenient than the WDTX for its employees east of the Mississippi.

III. Relevance Matters, But Apple Still Has the Burden of Proof

Apple’s Reply attempts to distract the Court from its burden of proof by arguing that only *relevant* witnesses matter. It is true that only relevant witnesses matter, but Apple has the burden of putting all relevant witnesses before the Court so that the Court can weigh their convenience. Resonant explained the likely relevance of [redacted] Austin Apple employees in engineering, finance, or marketing, especially with Apple’s stipulation that some of them worked on the Accused Products. The parties agreed to exclude categorically irrelevant employees (such as low-level salespeople) from this count. Dkt. 43-6 at 2 (Opposition Ex. 8). Apple has the burden of rebutting the relevance of some of these [redacted] Apple employees who worked on the Accused Products.

IV. Apple’s Declarations Remain Insufficient for Its Burden of Proof

Apple has no meaningful reply to Resonant’s criticisms that Apple’s declarants relied on their incomplete*,* personal knowledge and attorney-picked, privileged evidence, not on a reliable investigation. Apple’s declarations cannot serve as evidence supporting Apple’s contention that "[n]early all relevant witnesses and evidence are in NDCA," because the declarants lack *personal knowledge* about who works in Austin and elsewhere. Dkt. 46-1 at 9; *e.g.*, Zhang Decl. ¶ 9 (limited "to my knowledge" about only "[redacted]"); *Scramoge Tech. Ltd. v. Apple Inc.*, No. 6:21-CV-00579-ADA, 2022 WL 1667561, at *3 (W.D. Tex. May 25, 2022) ("Worst of all" is Apple's attorneys arguing limited statements as authoritative truths). By having the declarants limit their understanding of the "Accused Products" to essentially be just the "Taptic Engine" rather than all of the accused components, such as the A15 Bionic chip, Apple artificially limited the scope of its statement to exclude relevant witnesses. *See* Dkt. 47-3 at 19 (contending that an accused A15 Bionic chip infringes). Apple clearly did **not** investigate all relevant witnesses and evidence per its burden of proof, instead only providing the personal knowledge of three declarants in the NDCA that their coworkers are in the NDCA based on attorney-fed, privileged information.

Apple argues its declarants performed an investigation because of paragraph 2 of Dkts. 36-2 to 36-5, which is nothing more than identical boilerplate. Apple has been warned against making "the same type of vague and unreliable statements across multiple declarations." *Scramoge*, 2022 WL 1667561, at *2–3 (addressing recycled paragraph 2 boilerplate). Here, Apple similarly cannot rely on paragraph 2 of the declarations because Apple withheld all the underlying "records," discussions, and methodology. Dkt. 43-6 (Opp. Ex. 8) at 2–3 (objecting to ROG 2 directed at methodology and RFP 8 directed at any underlying documents). "If a party fails to provide information or identify a witness as required by Rule 26…(e), the party is not allowed to use that information or witness to supply evidence on a motion." *Carley v. Crest Pumping Techs., L.L.C.*, No. MO:15-CV-00161-DC, 2016 WL 8849697, at *6 (W.D. Tex. Aug. 21, 2016).

V. For Evidence, Apple Misapplies the Burden of Proof and Misstates Facts

Apple asks the Court to commit an error by faulting Resonant because "Resonant did not

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investigate the evidence cited in Apples motion, not even deposing Apple's declarants." Dkt. 46-1 at 1. This has two problems. First, Resonant has no burden of proof, especially when Apple fails to provide *any* evidence about the inconvenience that transfer will cause to its employees in Austin and east of the Mississippi. *In re Volkswagen of Am., Inc.*, 545 F.3d 304, 315 n.10 (5th Cir. 2008) ("[T]he plaintiff's privilege of choosing venue places the burden on the defendant."). Resonant had no burden to depose any of Apple's witnesses or investigate Apple's incomplete evidence.

Second, Resonant *did attempt* to investigate the evidence cited in Apple's motion. Resonant asked Apple to produce the "evidence" in NDCA supposedly referenced by Apple's venue declarants, as well as the declarants' methodology. Apple *refused and produced nothing* in response, except its objections. Dkt. 43-6 at 2–3 (objecting to ROG 5 and RFP 8).[2] Again, Apple cannot assert that evidence exists while withholding it during discovery. *Carley*, 2016 WL 8849697, at *6.

Apple's Reply attempts to fault Resonant for not specifically identifying the Cirrus Logic amplifier in its infringement contentions. But venue transfer is again *Apple*'s burden of proof, so Apple needed to investigate and explain all relevant components for the Court, and Apple did not. Even if the Cirrus Logic amplifier were identified in the infringement contentions, the Court would still lack the necessary evidence to transfer the case because Apple will neither investigate nor provide discovery of the accused components in the infringement contentions besides the Taptic Engine. Apple provided no declarations about who is relevant to identified components such as the A15 chip, the M1 chip, or the M2 chip. Interrogatory 4 asked Apple to identify how many of its employees in Austin have emails that mention the accused components such as "A9–A17," "M1," "M2," "Taptic," "motor coil," "linear actuator," "CHHaptic," **and "Cirrus."** Dkt. 43-9 at

[2] It is ironic that Apple objected to the burden of electronically producing some documents, but argues that an entire trial, including Cirrus Logic's witnesses, should be moved to California.

9; Dkt. 47-5 (infringement chart containing many keywords, although not "Cirrus"). Apple refused. *Id.* The proof about how many of Apple's Austin employees are relevant to "Cirrus," A9-A17 chips, M1 and M2 chips, and the other accused components remains missing.

VI. For Witnesses, Apple Shifts the Burden of Proof and Misstates The Evidence

Apple's Reply misapplies the burden of proof by arguing that this Court's standing order does not require email discovery. This Court's standing order does not change the burden of proof for venue transfer. Apple was free to withhold the search term hit count (a low burden search) for the keywords of components mentioned in the infringement contentions, but in doing so, Apple prevented the critical evidence—a fair, objective measure of the quantity of relevant witnesses in Austin—from reaching the Court. Thus, the Court lacks at least half of the proof needed to determine whether the NDCA is clearly more convenient than the WDTX.

Apple's Reply implausibly suggests that [redacted] engineers will all be inconvenienced by trial. The undersigned counsel has never even heard of a patent trial with anywhere near this many engineers. Apple has not proven which of [redacted] are relevant for trial per its burden.

Apple's Reply attempts to discredit the relevance of all its [redacted] in Austin because Apple is [redacted], but the evidence shows otherwise. Apple [redacted] Many of them will be needed to testify about the components in the Accused Products, especially beyond the Taptic Engine, so they are relevant. Without more concrete evidence from either side, the Court may find that the quantity of Austin Apple employees needed to testify will offset the quantity of NDCA Apple employees (or fault Apple for failing to meet its burden of proof).

Finally, Apple's Reply mischaracterizes Mr. Elenga's declaration as merely a "preference."

This is not the case; he provided objective evidence in the form of GSA estimates that trial will be less costly in Texas for all travelling witnesses. Dkt. 44-20 ¶ 7.

VII. For Practical Problems (Copending Cases), Apple Misstates the Facts

Apple accuses Resonant of manufacturing the facts underlying this factor, but this is wrong. Resonant did not manufacture the fact that Cirrus is headquartered in Austin and not within the 100-mile radius of the NDCA courthouse required by Fed. R. Civ. P. 45(c). Cirrus has objected at every step of venue discovery against Resonant's venue discovery subpoena, forcing Resonant to file a motion to compel. *Resonant Systems, Inc. v. Apple Inc.*, 6:23-mc-00870-ADA (W.D. Tex. Dec. 19, 2023). That, combined with the declaration of [redacted] (Dkt. 46-3) supplied by Cirrus in violation of the Court's venue discovery order, makes clear that Apple is working behind the scenes with Cirrus Logic to resist every aspect of discovery. *See* Motion to Strike (filed herewith). This case will likely require frequent trips to the WDTX courthouse to compel Cirrus Logic to provide discovery, so this factor should weigh heavily against transfer.

VIII. Court Congestion: Justice Delayed Is Justice Denied

Apple wrongly asks the Court to disregard Fifth Circuit law by not weighing the court congestion factor in favor of Resonant. Apple's patent infringement contributed to Resonant's inability to keep its manufacturing operation running. Dkt. 44-20 ¶ 4. It cannot be the law that time-to-trial matters only for competitors, but once Apple's patent infringement succeeds in causing its competitor to shut down manufacturing, Apple's former competitor no longer needs timely adjudication of its rights. Apple gives no reason why the Fifth Circuit cases cited by Resonant should be ignored. *Volkswagen*, 371 F.3d at 203–04 (articulating this element with no "competitor" requirement in an auto accident case for damages in 2004); *TikTok*, 85 F.4th at 363–64 (rearticulating the factor with no "competitor" requirement in October 2023, months after *In re*

Google LLC, 58 F.4th 1379 (Fed. Cir. Feb. 1, 2023)).

IX. The Late Cirrus Logic Declaration Is Improper and Unreliable

If the Court does not grant Resonant's motion to strike, then the Court should not credit anything in [redacted] declaration (Dkt. 46-3) in favor of Apple. Apple supplied the declaration after the venue discovery cutoff, preventing Resonant from deposing and cross-examining the witness about his declaration. It is misleading, contradicts facts uncovered during venue discovery, and raises many concerns.

First, it is misleading because despite stating [redacted] Cirrus Logic is clearly working behind the scenes with Apple to hinder Resonant's case, so Cirrus Logic might [redacted]. Thus, Cirrus Logic employees should be counted as unwilling witnesses.

Second, [redacted]. One of them is not telling the truth.[3]

Third, [redacted] This is incomplete and unreliable. [redacted]

[3] This exemplifies the types of disputes that Resonant will likely have with Cirrus Logic that will require hearings in the WDTX. This Court should consider coordinating with the Waco division.

[redacted] His testimony here is unreliable because he [redacted], so he lacks the underlying personal knowledge.

Fourth, [redacted] makes no sense. Dkt. 43-3 ¶ 4. Cirrus [redacted]

Fifth, paragraph 7 of his declaration raises unanswered questions. Cirrus Logic's counsel repeatedly [redacted] These types of questions will remain unfairly unanswered because Apple produced this declaration after the venue discovery cutoff in violation of the Court's scheduling order.

The little reliable, high-level testimony [redacted]

[redacted], contradicts all of Apple's arguments that Cirrus Logic is irrelevant because the components are not identified in infringement contentions. Dkt. 46-3 ¶ 2. Moreover, Apple's motions to seal Cirrus Logic's [redacted] contradicts Apple's assertion that this case will merely involve "off the shelf" parts. Cirrus Logic's engineers will likely be needed to testify about how [redacted] work. *See* 46-4 and 46-5 (showing [redacted]). This type of [redacted].

X. Conclusion

If the Fifth Circuit's burden of proof that the proposed venue is *clearly more* convenient has any effect, then this Court should deny Apple's transfer motion. The record is clear: Apple focused only on evidence for the NDCA but failed to produce evidence about its Austin office and offices east of the Mississippi River. The Court can narrowly deny the motion because, by failing to investigate evidence and witnesses east of the Mississippi River, Apple failed to meet its burden of proof due to *TikTok* changing the law after Apple filed its motion, which will affect a small set of cases. Alternatively, the Court can more generally find Apple's refusal to provide discovery into Austin means that it has failed to meet its burden of proof. Apple cannot prove to the Court that the NDCA is clearly more convenient than the WDTX when the evidence about the convenience of Austin is not before the Court, just as one cannot prove that a first bag is clearly heavier than a second bag by producing evidence of the weight of only the first bag.

If the Court weighs the factors and evidence, then the inconvenience and cost imposed on travelling Cirrus Logic witnesses and Apple's Austin witnesses would counterbalance any convenience gained by trial in the NDCA, so trial in the NDCA is not clearly more convenient.

Dated: March 1, 2024

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on March 1, 2024, I electronically filed the foregoing document with the Clerk of the Court for the Western District of Texas using the ECF System which will send notification to the registered participants of the ECF System as listed on the Court's Notice of Electronic Filing. Counsel will also be served via electronic mail.

/s/ Reza Mirzaie

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
MIDLAND/ODESSA DIVISION

RESONANT SYSTEMS, INC., d/b/a RevelHMI, *Plaintiff,*	§ § §	
v.	§ §	**NO: MO:23-CV-00077**
APPLE INC., *Defendant.*	§ § §	

ORDER TO TRANSFER

The above-named and numbered case is transferred from the docket of U.S. District Judge David Counts to the docket of U.S. District Judge Alan Albright both judges having consented to the transfer.

It is therefore **ORDERED** the above-named and numbered case is hereby **TRANSFERRED** to the docket of U.S. District Judge Alan Albright. Pursuant to the Order Assigning the Business of the Court, the Clerk shall credit this case to the percentage of business of the receiving Judge. All Orders shall remain in effect unless otherwise ordered by Judge Albright.

It is so **ORDERED**.

SIGNED this 28th day of March, 2024.

DAVID COUNTS
UNITED STATES DISTRICT JUDGE

PUBLIC VERSION

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

SCRAMOGE TECHNOLOGY LIMITED,

Plaintiff,

v.

APPLE INC.,

Defendant.

Civil Action No. 6:21-cv-00579-ADA

JURY TRIAL DEMANDED

[redacted]

EMERGENCY [redacted] MOTION TO SEAL PORTIONS OF THE COURT'S ORDER GRANTING APPLE'S MOTION TO TRANSFER (DKT. 77)

Defendant Apple Inc. ("Apple") moves for an emergency order sealing portions of the Order granting Apple's Motion to Transfer ("Order") (Dkt. 77). Apple moves in this Court because the Parties' Joint Notice Regarding Deadline to Submit Redactions (Dkt. 79) was denied, as well as to satisfy the Court's instruction to follow its Standing Order Regarding Filing Documents Under Seal and Redacted Public Versions, despite the Order transferring the case to the Northern District of California. Apple also asks that the Court keep the entire Order sealed pending resolution of this motion and any related appeal by Apple, and if the Court is inclined to deny this motion to stay publishing the Order pending appellate review.[1]

I. INTRODUCTION

In moving to transfer, Apple submitted a declaration from a corporate representative detailing its lack of relevant ties to West Texas. As other corporate representatives do in federal actions every day, Apple's declarant educated himself on certain topics and made related statements under penalty of perjury. His statements were so uncontroversial that Plaintiff Scramoge Technology, Ltd. ("Scramoge") declined to even take his deposition.

When granting Apple's transfer motion, however, the Court *sua sponte* found that Apple's declarant lacked [redacted]. It described him as a [redacted] whose [redacted] was [redacted] and [redacted] Respectfully, Apple's declarant did not warrant these attacks on his character; he is simply a person who was doing his job.

Apple asks that the Court seal the entire Order through the pendency of any related appeal, to avoid significant and irreparable harm to the declarant's reputation. The declarant spoke truthfully on Apple's behalf, based on his own knowledge and information he learned from others. Unsealing the Order would expose him to considerable unnecessary censure. The

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[1] Apple's proposed redactions appear in Exhibit A.

critiques of Apple's declarant also go to the heart of the corporate representative framework, as codified in the Federal Rules and approved by the U.S. Supreme Court. Therefore, allowing time for the Court and the Federal Circuit to consider this important issue would be prudent.

Apple seeks emergency relief reluctantly, only after the Court denied its unopposed request for seven extra business days to tender a redacted version of the Order. (Ex. B.) Apple does so to allow it to promptly move the Court to vacate or reconsider portions of the Order based on evidence confirming the veracity of its corporate declarant's statements. At the very least, this Court should delay the irretrievable step of unsealing of its Order until the parties have had the opportunity to be fully heard.

II. FACTS

Scramoge filed its Amended Complaint on June 18, 2021. Apple subsequently identified the likely most relevant and knowledgeable witnesses on topics related to the accused features, which included technical employees as well as those in marketing, licensing, and finance. Specifically, Apple identified Ruben Larsson, Brandon Garbus, Vitor Silva, Krista Grewal, and Mark Rollins as potentially relevant witnesses.[2]

Apple's corporate representative under Rule 30(b)(6) of the Federal Rules of Civil Procedure on these issues personally spoke with these witnesses to confirm the groups in which they worked, the scope of their responsibilities, their locations, and how long they had been employed by Apple.[3] Only after verbally confirming these facts did the declarant executed his declaration attesting to them under penalty of perjury.

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[2] Apple also identified Rohan Dayal as a potentially relevant witness for the Apple Watch, which Scramoge accused of infringing U.S. Patent No. 10,424,941 ("the '941 patent"). Scramoge dismissed the '941 patent, however, after Apple filed its transfer motion.

[3] Apple's declarant spoke with Mr. Larsson, Mr. Garbus, and Ms. Grewal on October 19, 2021, with Mr. Silva on October 14, 2021, and with Mr. Hartnett on October 20, 2021.

After Scramoge identified additional witnesses located in Austin in its opposition brief, Apple's declarant spoke to most of these witnesses to assess whether they worked on the accused features.[4] During these phone calls, Apple's declarant investigated and confirmed that most of them did not. Only after doing so did he execute his reply declaration attesting to related facts, again under penalty of perjury. Dkt. 72-1.

III. LEGAL STANDARD

The common law presumption of public access to judicial records is not absolute. *See Nixon v. Warner Commc'ns, Inc.*, 435 U.S. 589, 598, (1978). As the Supreme Court has recognized, "[e]very court has supervisory power over its own records and files, and access has been denied where court files might have become a vehicle for improper purposes." *Id.* at 598. "[T]here are well-recognized situations in which the seal may and should be used." *Fed. Sav. & Loan Ins. Corp. v. Blain*, 808 F.2d 395, 399 (5th Cir. 1987). For example, the common-law right of inspection has bowed before the need to ensure that court records are not "used to gratify private spite or promote public scandal." *Nixon*, 435 U.S. at 598 (citation omitted). Similarly, "courts have refused to permit their files to serve as reservoirs of libelous statements for press consumption . . . or as sources of business information that might harm a litigant's competitive standing." *Id.* (citations omitted).

While the Fifth Circuit requires courts to exercise discretion to seal "charily," it also has refused to recognize any "strong presumption" in favor of public access. *SEC v. Van Waeyenberghe*, 990 F.2d 845, 848 (5th Cir. 1993). In a recent decision, the Fifth Circuit clarified that material filed for non-merits reasons "is not subject to the common-law right of access[.]" *Binh Hoa Le v. Exeter Finance Corp.*, 990 F.3d 410, 419-21 & n.31 (5th Cir. 2021).

[4] Apple's declarant spoke with Alex Pollard, John Tolman, Matthew Marks, Jeremy Meyers and Zao Yang on April 6, 2022 and with Andrew O'Connell on April 8, 2022.

Rather, "judicial records" subject to more extensive public access cover only those submitted at trial or in connection with "motions that require judicial resolution of the merits." *Id.* at 419 n.31 and 420 (the more "arduous" sealing analysis applies at the "adjudicative stage"). The materials relevant to Apple's transfer motion are not such adjudicative records.

IV. ARGUMENT

A. The Order Should Be Sealed To Protect Apple's Declarant From Irreparable Harm

1. Apple and Its Declarant Have Complied With Standard Corporate Representative Practices

The Court's Order suggests, in no uncertain terms, that Apple's use of a corporate declarant to support its transfer motion was somehow improper. But the Federal Rules expressly allow a designated corporate officer or representative to provide testimony even in the absence of personal knowledge. *See Brazos River Auth. V. GE Ionics, Inc.*, 469 F.3d 416, 433 (5th Cir. 2006) ("[T]he duty to present and prepare a Rule 30(b)(6) designee goes beyond matters personally known to that designee or to matters in which that designee was personally involved." (citations omitted) (quoting *U.S. v. Taylor*, 166 F.R.D. 356, 361 (M.D.N.C. 1996)). The representative must be prepared "to the extent matters are reasonably available, whether from documents, past employees, or other sources." *Id.*; *see also Power Home Solar, LLC v. Sigora Solar LLC*, 339 F.R.D. 64, 76 (W.D. Va. 2021) (recognizing that a corporate representative "may require extensive preparation, document review, interviews, and other forms of investigation to reasonably identify the corporation's relevant knowledge and positions and educate the corporate designee on the same.").

Here, Apple's declarant prepared himself consistent with these requirements. As his declaration explains, he based his statements "upon [his] personal knowledge, [his] review of corporate records maintained by Apple in the ordinary course of business, and/or [his] discussions with Apple employees." Dkt 37-1, ¶2 (emphasis added). Implicitly recognizing his competence to testify regarding those statements, Scramoge declined to depose him.

The Order's *sua sponte* observation that Apple's declarant [redacted] is incorrect. [redacted] In every case (including this one) in which he has served as Apple's corporate representative, Apple's declarant has spoken with numerous individuals to testify competently and under penalty of perjury as to the statements in his declaration.

The fact that Apple's declarant has spent considerable time educating himself on issues that might support or rebut the appropriateness of venue in West Texas, has personal knowledge on other issues, and has submitted declarations in several cases does not render him [redacted]—especially as Scramoge itself did not take issue with his statements.

2. The Court's Unjustified Statements AboutApple's Declarant Will Subject Him to Irreparable Harm, if Made Public.

Allowing the Order to become public is, respectfully, undeserved and would cause the declarant to suffer enormous irreparable harm for multiple reasons.

First, there is simply no basis for the Order's statement that Apple's declarant is a [redacted] As noted, Apple's declarant personally confirms the statements in his sworn declarations, including that in this case.

Rather than [redacted] the Court has long *credited* the declarant's statements. *See e.g., LoganTree LP v. Apple Inc.*, No. 6:21-cv-00397-ADA (W.D. Tex. May 11, 2022), Dkt. No. 38, at 6, 13 ("accord[ing] weight to the . . . [d]eclaration's representation that the source code and technical documents . . . were and are created and maintained in the NDCA" and noting declarant "ha[d] sufficiently explained the relevant knowledge that these witnesses possess"); *BillJCo, LLC v. Apple Inc.*, No. 6:21-cv-00528-ADA (W.D. Tex. Mar. 1, 2022), Dkt. No. 55, at 13-14 (rejecting plaintiff's assertion that declarant is a "universal witness" and therefore should be disregarded, and finding "no evidence that . . . his knowledge of 'sales and financial information concerning the accused products' [was] for the purpose of distorting the § 1404(a) analysis"); *CPC Patent Techs. Pty Ltd. v. Apple Inc.*, No. 6:21-cv-00165-ADA (W.D. Tex. Feb. 8, 2022), Dkt. No. 82, at 7 (relying extensively on declaration, but also recognizing declarant's lack of personal knowledge when appropriate (*e.g.,* as to venue interrogatories); *Identity Security LLC v. Apple, Inc.*, No. 6:21-cv-00460-ADA (W.D. Tex. Jan. 25, 2022), Dkt. No. 59, at 8 (relying on declaration in finding that two witnesses had identical job descriptions).

Second, not even Scramoge seriously contested the accuracy of Apple's declarant's statements. Scramoge did not allege that his statements were [redacted] and [redacted] Instead, Scramoge merely described his statements as "vague." Dkt. 67 at 2-3. But Scramoge never elicited testimony clarifying or challenging those allegedly "vague" statements, as it declined to depose the declarant.

Third, the Court's wide-ranging discussion of the declarant's [redacted] was unnecessary to the Court's decision of the transfer motion and thus unworthy of publication. Although [redacted], the Court ultimately granted Apple's transfer motion.

Finally, the declarant is a person with a personal and professional reputation. Before joining Apple, he attended the University of California, Berkeley and worked at leading intellectual property and economic consultants. An inaccurate public description of his credibility would follow him both professionally and personally and potentially limit his career

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potential, whether at Apple or elsewhere. This would be especially grievous as he was acting no differently from other corporate representatives.

To publish the negative characterizations without allowing Apple the opportunity to defend him and his reputation would be unfair. At minimum, Apple therefore asks that the Court allow Apple's minimal proposed redactions (as reflected in Exhibit A) until after it has considered Apple's motion to vacate or for reconsideration and any related appeals.

B. The Order Also Should Be Sealed To Protect Apple's Confidential Business Information as to Kevin Hartnett.

Apple also asks that the Court seal its analysis concerning Mr. Hartnett, as it relates to his work on [redacted]. Order at 15-16. The Supreme Court and the Fifth Circuit have routinely acknowledged that "sealing may be appropriate where orders [or other filings] incorporate confidential business information." *Nixon*, 435 U.S. at 598-99; *N. Cypress Med. Ctr. Operating Co. v. Cigna Healthcare,* 781 F.3d 182, 204 (5th Cir. 2015); *see Nixon,* 435 U.S. at 598-99; *see, e.g., Earle v. Aramark Corp.,* 247 F. App'x 519, 525-26 (5th Cir. 2007). Here, the Order's discussion of Mr. Hartnett's role reflects confidential business information, and Apple's interest in preserving its confidentiality outweighs any public interest in accessing it. *Apple Inc. v. Samsung Elecs. Co.*, 727 F.3d 1214, 1228 (Fed. Cir. 2013).

V. CONCLUSION

Apple's corporate representative provided a sworn declaration under penalty of perjury after confirming the relevant facts with specific witnesses. Scramoge did not directly challenge his statements and declined the opportunity to even depose him. Although the Court *sua sponte* disagreed with certain of his statements in ultimately granting transfer, Apple's representative does not deserve the public reproach that might accompany publication of the Order. Apple therefore implores the Court to keep sealed the entire Order pending resolution of this motion, Apple's expected motion to vacate or reconsider, and any related appeals. And if the Court is inclined to deny this motion, Apple requests the Court to stay publishing the Order pending appellate review

Dated: May 24, 2022

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CERTIFICATE OF CONFERENCE

The parties met and conferred on May 24, 2022. Scarmoge does not agree Apple's proposed redactions are appropriate. Accordingly, the issue is presented to the Court for resolution.

/s/ J. Stephen Ravel
J. Stephen Ravel

CERTIFICATE OF SERVICE

I hereby certify that all counsel of record are being served with a copy of the foregoing document via electronic mail on May 24, 2022.

/s/ J. Stephen Ravel
J. Stephen Ravel

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UNITED STATES DISTRICT COURT

FOR THE NORTHERN DISTRICT OF CALIFORNIA

SAN FRANCISCO DIVISION

SCRAMOGE TECHNOLOGY LIMITED, Plaintiff, v. APPLE INC., Defendant.	Case No. 5:22-cv-03041-JSC **APPLE INC.'S MOTION TO VACATE IN PART THE TRANSFER ORDER** Date: July 21, 2022 Time: 9:00 a.m. Ctrm.: Courtroom 8, 19th Floor Judge: Hon. Jacqueline Scott Corley Complaint Filed: June 18, 2021 Trial Date: Not Set

NOTICE OF MOTION AND APPLE INC.'S MOTION TO VACATE IN PART THE TRANSFER ORDER

PLEASE TAKE NOTICE that on July 21, 2022 at 9:00 a.m., or as soon thereafter as the matter may be heard before the Honorable Jacqueline Scott Corley in Courtroom 8, on the 19th Floor, of the above-entitled Court, located at 450 Golden Gate Avenue San Francisco, CA 94102, Defendant Apple Inc. ("Apple" or "Defendant") will, and hereby does, move the Court to grant Apple's Motion to Vacate in part the Transfer Order in the above matter. Apple's Motion is based on this notice of Motion, the accompanying Declaration of Rishi Gupta, Declaration of Ruben Larsson, Declaration of Brandon Garbus, Declaration of Kevin Hartnett, Declaration of Vitor Silva, Declaration of Krista Grewal, Declaration of Alex Pollard, Declaration of John Tolman, Declaration of Matthew Marks, Declaration of Jeremy Meyers, Declaration of Zao Yang, Declaration of Andrew O'Connell, Declaration of Fan Wang, and all other papers and arguments submitted in this matter and any other matters of which the Court may take judicial notice.

DATED: June 3, 2022

Respectfully submitted,

KILPATRICK TOWNSEND & STOCKTON LLP

By: */s/ Steven D. Moore*
STEVEN D. MOORE

Attorneys for Defendant Apple Inc.

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Defendant Apple Inc. ("Apple") moves this Court to vacate incorrect and baseless findings the transferor Court made related to Apple's corporate representative in its Order granting Apple's motion to transfer ("Order").

I. INTRODUCTION

This case was recently transferred from the Western District of Texas ("WDTX") pursuant to 28 U.S.C. § 1404(a). In the Order, in addition to weighing the convenience factors related to transfer, the Honorable Alan Albright of the Western District of Texas (hereinafter "WDTX Court") *sua sponte* issued an extended finding incorrectly disparaging the credibility of Apple's corporate representative, Mark Rollins, finding that he "lacks credibility before [the WDTX] Court." Without any evidence or even hearing Mr. Rollins testify, the WDTX Court declared that Mr. Rollins has "repeatedly" committed "offenses" by submitting "misleading" and "unreliable" declarations in support of Apple's transfer motions. Apple immediately moved to keep this order sealed to avoid the unwarranted irreparable harm to a private citizen's reputation, so that it could move to vacate those incorrect findings. Within 12 hours of the filing, and without holding a hearing, however, the WDTX Court denied Apple's motion and its request to keep the Order sealed pending an appeal. Instead, the WDTX Court immediately published the full Order.

Mr. Rollins, a finance manager at Apple, is a potential witness in this case with knowledge of sales and financial information concerning the accused products. He has engaged in no acts that could lead to an inference that he lacks credibility. The WDTX Court now lacks jurisdiction over this matter, so only this Court can rectify the harm caused by the incorrect and unsupported credibility findings in the Order. As shown below, this Court should vacate the credibility finding regarding Mr. Rollins because it is clearly erroneous and contravened by the evidence Apple has submitted herein. Without that correction, Apple and Mr. Rollins will suffer "manifest injustice." *United States v. Alexander*, 106 F.3d 874, 876 (9th Cir. 1997).

II. FACTS

A. The WDTX Court Grants Apple's Transfer Motion.

Scramoge, an Irish corporation with its principal place of business in Ireland, filed this patent infringement action in the Waco Division of WDTX in June 2021. Dkt. 1.[1] Scramoge accused Apple, a California corporation, of infringing patents relating to structural aspects of wireless power receiving modules ("Accused Features").[2] Apple moved to transfer the litigation to the Northern District of California pursuant to 28 U.S.C. § 1404(a) ("Motion"). Dkt. 37. Apple supported its Motion with a declaration from Mr. Rollins, a finance manager at Apple, who stated under oath that the declaration was based on his "personal knowledge, [his] review of corporate records maintained by Apple in the ordinary course of business, and/or [his] discussions with Apple employees." Dkt. 37-1 at ¶ 2. Mr. Rollins stated that, if called to testify, he "could and would testify competently and truthfully to each of the statements in this declaration under oath." *Id*. Relying on Mr. Rollins's declaration, Apple identified the witnesses who would likely be the most relevant and knowledgeable on topics related to the Accused Features: Ruben Larsson, Brandon Garbus, Vitor Silva, Krista Grewal, and Mark Rollins.[3] Mr. Larsson and Mr. Garbus are technical witnesses, Mr. Silva is Apple's marketing witness, Ms. Grewal is Apple's licensing witness, and Mr. Rollins (the subject of this motion) is Apple's finance witness and venue declarant. Each of these witnesses appears in Apple's initial disclosures, and Mr. Rollins will likely be Apple's Rule 30(b)(6) witness and may be a trial witness on damages.

Mr. Rollins spoke with each of the individuals identified in his declaration to confirm the groups in which they work, the scope of their responsibilities, their locations, what types of documents they work on, and how long they have been employed by Apple.[4] Only after verbally confirming these facts did he execute his declaration attesting to them under penalty of perjury. The declarations attached in support of this motion confirm that each witness spoke with Mr. Rollins about the relevant facts set forth in his declaration and confirmed them to be true and

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[1] Unless otherwise stated, docket entries cited herein relate to *Scramoge v. Apple Inc*., Case No. 6:21-cv-00579 (W.D. Tex.).

[2] U.S. Patent Nos. 10,622,842 ("the '842 Patent"), 9,806,565 ("the '565 Patent"), 10,804,740 ("the '740 Patent"), 9,843,215 ("the '215 Patent"), and 9,997,962 ("the '962 Patent") (collectively, the "Asserted Patents").

[3] Apple also identified Rohan Dayal as a potentially relevant witness for the Apple Watch, which Scramoge accused of infringing U.S. Patent No. 10,424,941. Scramoge dismissed that patent, however, after Apple moved to transfer.

[4] Mr. Rollins spoke with Mr. Larsson, Mr. Garbus, and Ms. Grewal on October 19, 2021, with Mr. Silva on October 14, 2021, and with Mr. Hartnett on October 20, 2021. *See* Declarations of Ruben Larsson ("Larsson Decl."), Brandon Garbus ("Garbus Decl."), Krista Grewal ("Grewal Decl."), Vitor Silva ("Silva Decl."), and Kevin Hartnett ("Hartnett Decl."), ¶ 4.

correct. *See* Larsson Decl., Garbus Decl., Grewal Decl., Hartnett Decl. and Silva Decl. at ¶¶ 3–5.

Mr. Rollins's declaration provided facts relevant to the analysis of the venue-convenience factors: the location of technical and financial documents relevant to the accused products; the location of Apple witnesses knowledgeable about Scramoge's allegations, including their titles, job responsibilities, and team structures; and information regarding Apple's sales and retail activities. Dkt. 37-1. Mr. Rollins did not opine on any technical question regarding Scramoge's infringement allegations or Apple's products; rather, he expressly based his understanding of the technology at issue on discussions with Apple employees and "Scramoge's complaints and preliminary infringement contentions." *Id.* at ¶¶ 2, 5.

During the venue discovery period, Scramoge noticed a Rule 30(b)(6) deposition of Mr. Rollins but then chose not to depose him or otherwise test the assertions in his declaration. Nonetheless, in its opposition to Apple's Motion, Scramoge contended that Mr. Rollins's declaration lacked detail about the location of physical and electronic evidence—detail that Scramoge did not pursue in discovery. Dkt. 67 at 2–3. Scramoge also argued, relying mainly on LinkedIn profiles for support, that there were six Apple employees who possess relevant knowledge located in Austin, Texas. *Id.* at 7–8. On reply, based on the new information Scramoge introduced regarding the allegedly relevant employees, Mr. Rollins provided a second declaration, and described under oath the locations and job responsibilities of the current and former Apple employees named in Scramoge's opposition, again based on conversations with those employees and a former employee's manager. *See* Dkt. 72-1. Mr. Rollins's reply declaration demonstrated that Scramoge was factually incorrect about the relevance and location of most these witnesses. *Id.*

On May 17, 2022, the WDTX Court issued a sealed order granting Apple's transfer motion and inappropriately attacking Mr. Rollins's credibility. Dkt. 77.

B. The Transfer Order Includes A General "Credibility" Finding Regarding Mr. Rollins.

Unprompted by the parties, the WDTX Court included in its Order an incorrect finding on Mr. Rollins's credibility along with a six-page section titled "Repeat Declarant Mark Rollins

Lacks Credibility." Dkt. 82 at 3–9.

First, the WDTX Court weighed the evidence before it in a manner that contravenes basic evidentiary practices. The WDTX Court faulted Mr. Rollins for providing "uninformed" statements in his reply declaration that contradicted Scramoge's allegations in its opposition. *Id.* at 8-9. Scramoge had identified, through unverified LinkedIn profiles, potential Apple witnesses in Austin, Texas, who, *if relevant*, could be weighed against transfer. Dkt. 67 at 7-8. Mr. Rollins submitted a reply declaration rebutting Scramoge's assertions. Dkt. 72-1. Nevertheless, the WDTX Court found that, on balance, Scramoge's unsworn LinkedIn "evidence" outweighed Mr. Rollins's sworn declaration. Like with his first declaration, Mr. Rollins spoke with each employee to confirm that all but one of them had no relevance to the Accused Features, and executed his declaration only after the relevant person verbally confirmed each fact set forth in the declaration.[5] But the WDTX Court found that Mr. Rollins was "uninformed" because he "must not" have talked to anyone (or at least not the right people) before completing his original declaration. Dkt 82 at 8–9. Yet again, the WDTX Court pointed to no factually incorrect statements made by Mr. Rollins. The fact that Mr. Rollins had not spoken to employees who were irrelevant to the claims in the litigation cannot weigh against his credibility or diligence.

Perhaps the most erroneous of all was Judge Albright's clearly erroneous finding about the location of a former Apple employee cited by Scramoge in its opposition: Fan Wang. *Id.* at 13. Ms. Wang was an AC/DC Adapter Design Engineer in the Adapter Group at Apple who previously lived in Austin, Texas, whose role was not related to the Accused Features. *See* Dkt. 72-1 at ¶ 11; Declaration of Fan Wang ("Wang Decl.") at ¶ 3. Mr. Rollins's declaration, supported by conversations with Ms. Wang's former supervisor, stated that Ms. Wang left Apple and Texas and relocated to China. Dkt. 72-1 at ¶ 11; O'Connell Decl. at ¶ 4. The LinkedIn profile that Scramoge identified also showed that her new position was in Shanghai. Dkt. 68-1, Ex. 3. Despite that—and because her "personal location" in LinkedIn had yet to be updated to

[5] Mr. Rollins spoke with Alex Pollard, John Tolman, Matthew Marks, Jeremy Meyers and Zao Yang on April 6, 2022, and with Andrew O'Connell on April 8, 2022. *See* Declarations of employees Alex Pollard ("Pollard Decl."), John Tolman ("Tolman Decl."), Matthew Marks ("Marks Decl."), Jeremy Meyers ("Meyers Decl."), Zao Yang ("Yang Decl.") at ¶ 4; Declaration of Andrew O'Connell ("O'Connell Decl.") at ¶5.

Shanghai—Judge Albright found that "Ms. Wang resides in Austin, Texas." Dkt. 82 at 13. This is not accurate. As Mr. Rollins attested to and Ms. Wang has since confirmed, after departing Apple, Ms. Wang relocated to Shanghai, China, to begin a new venture, Shanghai Biling Technology Co., Ltd., which also operates as Alpha Cen. Wang Decl. at ¶ 2–3. She lives in Shanghai, not Austin, and has not been in the United States within the last year. *Id.* at ¶ 3.

Further, Ms. Wang did not even work on the Accused Features. *Id.* Instead, her work involved the adapter design for USB-C and USB-A adapters that plug into a wall outlet. *Id.* Nonetheless, and without any evidence or even any argument from Scramoge in support, Judge Albright concluded not only that Ms. Wang still lives in Texas, but that she also has knowledge relevant to the Accused Features, *i.e.*, wireless power receiving modules, because of her work on "power adapter designs." Dkt. 82 at 13. Power adapter designs are not relevant to the Accused Features. *See* Wang Decl. at ¶ 3. Judge Albright used these incorrect findings about Ms. Wang as a basis to inform his overall finding that Mr. Rollins lacks credibility. To find a witness not credible based on blatantly incorrect facts is not appropriate.

In yet another unfounded inference, the WDTX Court concluded that Mr. Rollins "must not have" talked to "any of Ms. Wang's power design colleagues in Austin." Dkt. 82 at 13. This too, is false, and it directly contravenes Mr. Rollins's declaration. Dkt. 72-1 at ¶ 11. Mr. Rollins explained that he spoke with Andrew O'Connell, Ms. Wang's former manager, about her former role at Apple, its relation (if any) to the Accused Features, and her current location. *See id.* Despite Apple providing this evidence in its reply, the WDTX Court incorrectly found that Ms. Wang resides in Austin, Texas. And the WDTX Court incorrectly stated that Scramoge had argued that Mr. Rollins "provided a vague, incomplete, and generally unreliable declaration" (citing "Dkt. 67, *passim*"), when Scramoge had proffered no such argument.[6] Indeed, it would have been difficult for Scramoge to contest the reliability of Mr. Rollins's declaration, given that Scramoge declined to take his deposition.

Second, despite Scramoge's limited complaints regarding Mr. Rollins's declaration, the

[6] In its transfer opposition, Scramoge criticized two discrete assertions in Mr. Rollins's declaration—both regarding the nature of Apple's evidence in California—as vague. Dkt. 67 at 2–3. But Scramoge nowhere suggested that the declaration was "incomplete" or "unreliable."

WDTX Court issued broad and retroactive pronouncements about Mr. Rollins's credibility. For example, the WDTX Court stated that "Mr. Rollins frequently and repeatedly submitted unreliable and misleading declarations to this Court." Dkt. 82 at 4; *see also id*. at 9 n.3. But the Order did not support this accusation with examples of unreliable or misleading statements made by Mr. Rollins. The WDTX Court then characterized Mr. Rollins as "Apple's professionally paid venue witness" and speculated that his work preparing declarations "requires him to have spent weeks or months reviewing patent complaints, asserted patents, and infringement contentions" covering a range of technologies. *Id*. at 6. Asserting that Mr. Rollins frequently "supplies declarations on a wide scope of unrelated, technologically complex topics," the WDTX Court assumed that he "must rely on his attorneys to selectively spoon feed him information," and therefore found that he has "no credibility." *Id*. However, the WDTX Court's Order did not identify any "technologically complex" assertion made by Mr. Rollins in any declaration. Indeed, the only specific technological statement to which the WDTX Court cited was simply a description of the work of an Apple employee to whom Mr. Rollins spoke while preparing his declaration. *Id*. at 7 (quoting Ex. 37-1 at ¶ 11 n.1).

Third, the WDTX Court then faulted Mr. Rollins for routine actions that corporate representatives regularly and necessarily engage in under Rule 30(b)(6). Specifically, the WDTX Court criticized Mr. Rollins for: (1) "review[ing] attorney-selected documents and talk[ing] to attorney-selected witnesses"; (2) offering information learned through his review of Apple records and discussions with Apple employees; (3) using Bluebook signals in citations; and (4) "[w]orst of all," in the WDTX Court's view, ensuring that his under-oath statements were limited to his personal knowledge. Dkt. 82 at 6–9.

Seemingly for no other reason than that Mr. Rollins acted as a corporate witness—as authorized under FRCP 30(b)(6), the WDTX Court included the following unjustified statements about him in a public, signed order: (1) he makes "uninformed statement[s]"; (2) he performed a "deficient investigation"; (3) he is "unreliable"; (4) he has committed "offenses across many cases"; and (5) he has "frequently and repeatedly" submitted "misleading declarations." Dkt. 82 at 4, 8–9, 9 n.3. The WDTX Court explained that it provided a "detailed" account of Mr. Rollins's "offenses" "so that other courts and administrative agencies can similarly discount his credibility." *Id*. at 9 n.3. In other words, the WDTX Court sought to impugn Apple's key finance witness in this case, not just in WDTX, but in this Court and others as well. *See id.*

C. The WDTX Court Denied Apple's Motion to Keep the Court's Harmful Statements Under Seal and Immediately Unsealed the Order.

Because the parties filed their briefs under seal, the WDTX Court initially issued its transfer order under seal, ordering the parties to submit redactions within one week. Dkt. 77. Though the WDTX Court granted Apple's motion to transfer, it retained limited jurisdiction to determine which of the parties' proposed redactions to accept for the public version of the Order. Given the extraordinary and unanticipated nature of the credibility finding, Apple required additional time to consider the appropriate course of action. The parties jointly agreed on an eight-day extension of the deadline to file redactions. But the WDTX Court denied that joint request and required the parties to submit redactions by the next day. As ordered, Apple filed its proposed redactions seeking to redact the WDTX Court's unwarranted and false statements about Mr. Rollins and one item of confidential business information. At the same time, Apple filed a motion to seal the Order to prevent irreparable harm to Apple and Mr. Rollins from the WDTX Court's false statements. Apple requested full briefing on the matter and asked to keep the material under seal pending resolution of the motion to seal (and any subsequent appeal). Dkt. 80.

Without holding a hearing, the WDTX Court denied Apple's motion to seal almost immediately. And it disregarded Apple's request to maintain the transfer order under seal pending appellate review, instead immediately publishing the full Order (except for the single piece of confidential business information that Apple identified) on the public docket. Mr. Rollins's reputation quickly suffered. Media outlets published the incorrect and baseless facts and included further falsities propagated by the WDTX Court's Order. For example, one article is titled "Apple Wins Transfer of Patent Suit, After Judge Slams Expert." *See* Declaration of Rishi Gupta ("Gupta Decl."), Ex. A. Mr. Rollins is of course not an expert. But because the WDTX Court incorrectly painted him as such, without any support, the media latched on and amplified the unjustified criticisms. The article further employed the WDTX Court's findings throughout and specifically noted that Mr. Rollins was deemed a "'professionally paid venue witness' so other courts 'can similarly discount his credibility.'" *Id.*

In addition, the WDTX Court issued an opinion on sealing that again suggested Mr. Rollins has made "repeatedly inaccurate statements," though it identified no specific inaccuracy. Dkt. 81 at 5. The WDTX Court stated that Mr. Rollins has "fail[ed] to fully investigate," though it identified no deficiency in any investigation. *Id.* And the WDTX Court stated that Mr. Rollins has filed "repeated declarations on topics that he knows nothing about," again without identifying any such topic or any purportedly uninformed statement in any declaration. *Id.*

Mr. Rollins is Apple's key finance witness in this case. This incorrect credibility finding has the potential to affect how this Court or a jury may weigh Mr. Rollins's testimony in this matter as well as others. Further, with this case now transferred to this Court, there is no jurisdiction in WDTX for Apple to seek redress for the numerous false and unjustified statements that the WDTX Court made about Mr. Rollins's credibility. Thus, Apple brings this Motion here as to this witness whom Apple has designated as providing testimony on its behalf for topics related to finance and venue.

III. LEGAL STANDARD

A trial court has the inherent power to reconsider, set aside, or amend interlocutory orders at any time prior to entry of a final judgment as justice so requires. *See Sch. Dist. No. 5 v. Lundgren*, 259 F.2d 101, 104 (9th Cir. 1958); *see also* Fed. R. Civ. P. 60(b) advisory committee's note ("interlocutory judgments are not brought within the restrictions of [Rule 60], but rather they are left subject to the complete power of the court rendering them to afford such relief from them as justice requires."). The law-of-the-case doctrine generally prevents courts from "reexamin[ing] an issue previously decided by the same or higher court in the same case." *Lucas Auto. Eng'g, Inc. v. Bridgestone/Firestone, Inc.*, 275 F.3d 762, 766 (9th Cir. 2001). But a trial court has discretion to depart from the law of the case, including when: (1) the first decision was clearly erroneous; (2) the evidence is substantially different; or (3) a manifest injustice would otherwise result. *Alexander*, 106 F.3d at 876.

IV. ARGUMENT

This Court should exercise its discretion to vacate and strike the transfer order's credibility finding about Mr. Rollins because that finding is clearly erroneous, contrary to additional new evidence, and manifestly unjust.

A. The WDTX Court's Findings Regarding Mr. Rollins Were Clearly Erroneous.

The credibility determination that Apple seeks to vacate is wrong on the facts and wrong on the law. In particular, the WDTX Court: (1) based its findings on no evidence, resulting in findings that actually contravened the sworn evidence presented by Mr. Rollins; and (2) took umbrage with routine corporate representative practices that Mr. Rollins engaged in. Because the credibility determination is baseless and contravenes basic corporate representative practices, it was clearly erroneous and this Court should vacate the WDTX Court's finding.

First, the WDTX Court had no evidentiary basis to judge Mr. Rollins's credibility, particularly in the far-reaching way reflected in the Order. Since Scramoge chose not to depose Mr. Rollins, the WDTX Court had no deposition transcript or other form of cross-examination from which to assess credibility. Nor did the WDTX Court hear testimony from Mr. Rollins directly, as it ignored Apple's request for oral argument on the motion to transfer. Dkt. 75; *but see Louis v. Blackburn*, 630 F.2d 1105, 1110 (5th Cir. 1980) ("[T]he fact finder must observe the witness."). Indeed, instead of evidence, the WDTX Court relied on prior cases (in which his credibility had not been questioned by the Court) to demonstrate that based on the sheer number of declarations Mr. Rollins has submitted regarding venue, he is somehow not credible. Dkt. 82 at 4-6. Moreover, in opposition, Scramoge challenged only two of Mr. Rollins's statements about the location of Apple's evidence in California as "vague[]"; it did not otherwise contest Mr. Rollins's assertions, let alone suggest that he was unreliable, lacked credibility, or testified improperly about technical matters. Dkt. 67 at 2–3; *see also* Dkt. 72 at 1–2. Thus, the WDTX Court's credibility analysis is necessarily uninformed by the adversarial process. But "a district court cannot rest its decision simply on the paper record if a factual dispute's resolution turns on the parties' credibility." *Montes v. Janitorial Partners, Inc.*, 859 F.3d 1079, 1084–85 (D.C. Cir. 2017) (reversing district court's credibility determination for abuse of discretion). Nevertheless, the

WDTX Court took the extraordinary step of explaining that it provided a "detailed" account of Mr. Rollins's "offenses" "so that other courts and administrative agencies can similarly discount his credibility." Dkt. 82 at 9 n.3.

Second, the WDTX Court's credibility findings contradict Rule 30(b)(6) and related case law about testimony from corporate witnesses. A corporation "must prepare the designee to the extent matters are reasonably available, whether from documents, past employees, or other sources"—including when an issue "is not within [the designee's] direct personal knowledge." *Brazos River Auth. v. GE Ionics, Inc.*, 469 F.3d 416, 433-34 (5th Cir. 2006). But the WDTX Court faulted Mr. Rollins for engaging in this practice. For instance, the WDTX Court faulted Mr. Rollins for preparing his sworn declaration by reviewing documents and interviewing witnesses, Dkt. 82 at 7–8, even though Mr. Rollins had to conduct that review as a corporate representative witness. And despite denouncing Mr. Rollins for investigating corporate records and witnesses, the WDTX Court also objected to Mr. Rollins's declaration as "incomplete" because his statements were limited to his personal knowledge—whether preexisting or gleaned through his investigation. *Id.* at 3. The WDTX Court also seemingly faulted Mr. Rollins for not preemptively identifying every irrelevant Apple employee in Austin with a technical job title whose profile Scramoge might later discover on LinkedIn.[7] *Id.* at 7. The WDTX Court levelled baseless criticisms that Mr. Rollins's statements were "misleading" and "unreliable," without any supporting evidence. *Id.* at 4. Mr. Rollins is not, as the WDTX Court charged, a "professionally paid venue witness," *id.* at 6; rather, he is simply a corporate representative who provided truthful information on his employer's behalf. But the WDTX Court chose to single him out with unfounded criticisms that cast Mr. Rollins as untrustworthy.

Because the credibility finding was clearly erroneous, this Court should vacate the WDTX

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[7] Mr. Rollins's supplemental declaration explained why the six Apple employees in Austin whom Scramoge identified were not relevant to this case. Dkt. 72-1. The WDTX Court disagreed with Apple's showing of irrelevance, making technical judgments of its own in doing so. Dkt. 82 at 16. But that disagreement does not mean that Mr. Rollins said anything untruthful or that his investigation was "deficient." Indeed, the standard for investigation implied by the WDTX Court's criticisms would be impossible to meet, essentially calling Mr. Rollins's credibility into question because he did not prove a negative—that no employee in Austin does any work relevant to the Accused Features. It is not feasible to interview every technical employee in Austin instead of taking the reasonable, diligent path of interviewing witnesses on teams that actually work on the Accused Features to determine their relevance and locations—which is precisely what Mr. Rollins did.

Court's credibility finding.

B. New Evidence Further Contravenes The WDTX Court's Incorrect Findings.

The WDTX Court's credibility finding is clearly erroneous on the record before it. But new evidence establishes that the order is wrong for an additional reason, providing an independent basis to grant Apple's motion. *See* Larsson Decl., Garbus Decl., Grewal Decl., Hartnett Decl., Silva Decl., Pollard Decl., Tolman Decl., Marks Decl., Meyers Decl., Yang Decl., O'Connell Decl., and Wang Decl.

The WDTX Court found that Mr. Rollins made the "uninformed statement" that "[t]o the best of [his] knowledge," based on "personal knowledge, [his] review of corporate records … and/or discussions with Apple," that "the Apple employees with relevant information regarding the Accused Features and Accused Products are located in NDCA, San Diego, CA, and Auckland, New Zealand." Dkt. 82 at 8–9 (quoting Rollins Decl. at ¶¶ 2, 17). But this statement was not "uninformed," and is in fact true. After the WDTX Court issued its transfer order, Brandon Garbus provided an additional declaration, attached to this motion. Mr. Garbus is a Senior Manager in the Wireless Charging Technology Group. Dkt. 37-1 at ¶ 10; Garbus Decl. at ¶ 3. His declaration states that "the Wireless Charging Technology Group," relevant to the accused products in this case, "is located in NDCA, exception for a few employees located in San Diego, California, Auckland, New Zealand, and the single employee who moved from NDCA to WDTX for personal reasons in 2018." *See id.* Mr. Rollins's statement was correct, and the Garbus Declaration further confirms that fact.

Moreover, the WDTX Court held that Scramoge "convincingly rebut[ted] Mr. Rollins's statement by identifying six relevant Apple witnesses located in Austin (Alexander Pollard, John Tolman, Matthew Marks, Jeremy Meyers, Zao Yang, and Andrew O'Connell) and by supporting each argument with evidence. … Thus, Mr. Rollins must not have been given any corporate records that mention these Apple witnesses nor talked to individuals before making his declaration. The Court finds that the 'best' of Mr. Rollins's knowledge is based on a deficient investigation." Dkt. 82 at 9. Based on this assumption, the WDTX Court found that these six witnesses were relevant to this case. *Id.* That is demonstrably false. By "evidence," the WDTX

Court meant public and unverified LinkedIn profiles. Dkt. 82 at 9. By using these profiles and making its own technical judgments that contravene Mr. Rollins's sworn declaration (*see* Dkt. 82 at 16), the WDTX Court found that these profiles somehow rebutted Mr. Rollins's sworn declaration attesting that five of the six employees do not work on the Accused Features. Mr. Rollins made that declaration only after interviewing those employees or their direct supervisors. *Id*. at 13. A public LinkedIn profile cannot justify rejecting a sworn declaration, much less finding the declarant wholly lacking in credibility.

Here, in support of this Motion, Apple now provides declarations from each individual whom the WDTX Court incorrectly found to be relevant after wrongly discrediting Mr. Rollins. Each individual attests to (1) their role at Apple, (2) that their work does not relate to the Accused Features, (3) that they discussed their role with Mr. Rollins prior to Mr. Rollins executing his declarations, and (4) that they have reviewed Mr. Rollins's declaration and the facts set forth therein were true and correct. *See* Pollard Decl. at ¶ 3-5; Tolman Decl. at ¶ 3-5; Marks Decl. at ¶ 3-5; Meyers Decl. at ¶ 3-5; Yang Decl. at ¶ 3-5; O'Connell Decl. at ¶ 3-6.

Further, the WDTX Court made yet another incorrect finding about Fan Wang, a former Apple employee. The WDTX Court relied on her outdated personal location on LinkedIn to hold that she "resides in Austin, Texas," even though her profile also stated that she worked in Shanghai. Dkt. 82 at 13. Mr. Rollins spoke with Ms. Wang's former manager, Mr. O'Connell, who confirmed that Ms. Wang moved to China after leaving Apple. *See* Dkt. 72-1 at ¶ 11. The WDTX Court also found that she possessed relevant knowledge to the Accused Features, *i.e.*, wireless power receiving modules, because of her work on "power adapter designs." Dkt. 82 at 13. This is incorrect. *See* Wang Decl. at ¶ 3. Ms. Wang did not work on the Accused Features, rather her work involved design of USB-C and USB-A adapters that plug into a wall outlet. *Id.* Apple now supports this motion with a declaration from Fan Wang herself, who has confirmed that her work at Apple did not relate to the Accused Features and that, after departing Apple, she moved from Texas and relocated to Shanghai, China, to begin a new venture, Shanghai Biling Technology Co., Ltd., which operates as Alpha Cen. Wang Decl. at ¶ 3. She has not been in the United States within the last year. *Id*.

The WDTX Court thus made numerous unsupported and erroneous findings. The WDTX Court could only support these theories by "resolv[ing] all conflicting evidence, where provided [whatever the veracity], against Mr. Rollins." Dkt. 82 at 3. Apple now puts forth evidence from each employee listed in both of Mr. Rollins's declarations to demonstrate that Mr. Rollins investigated each fact prior to attesting to them under penalty of perjury, and that each fact was true and correct. Based on this substantial evidence and the record before the district court, this Court should vacate the WDTX Court's findings.

C. It Would Be Manifestly Unjust To Maintain The Findings Regarding Mr. Rollins.

Mr. Rollins is listed on Apple's initial disclosures as its finance witness. He is likely to be Apple's Rule 30(b)(6) witness, and perhaps a trial witness on topics relating to damages. And his testimony may inform Apple's damages experts' opinions. An incorrect and baseless negative credibility finding of this nature has the potential to cast a cloud on any testimony he provides in this case (and future cases). It would also grant Scramoge an unfair and incorrect avenue to challenge his credibility before this Court or a jury. It is unduly prejudicial for Apple's key financial witness to testify while this clearly erroneous finding has the potential to cast doubt in the mind of any factfinder. It is within the authority of this Court to vacate this finding because witness credibility determinations are quintessential fact-specific decisions, "peculiarly within the province of the [factfinder]" in a given case. *Ali v. Stephens*, 822 F.3d 776, 784 (5th Cir. 2016) (internal quotation marks omitted); *United States v. Allen*, 587 F.3d 246, 257 (5th Cir. 2009) ("Witness credibility and the weight of the evidence are the exclusive province of the fact-finder.")

Additionally, the credibility determination played almost no role in the substantive transfer analysis and, in fact, contravened the ultimate outcome. In analyzing the private- and public-interest factors under Fifth Circuit law, the transfer decision largely credited Mr. Rollins's declaration. *E.g.*, Dkt. 82 at 11, 15, 17–18. And the Order would have come out in Apple's favor with or without the credibility determination. The Court sought to publish this incorrect credibility finding "so that other courts and administrative agencies can similarly discount [Mr.

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Rollins's] credibility," Dkt. 82 at 9, as evidenced by the fact that the WDTX Court immediately unsealed its Order after denying Apple's motion to seal—just twelve hours after Apple filed the motion—despite Apple's explicit request to keep the Order sealed pending appellate review of that decision.

Further, this Order has already unjustly inflicted irreparable harm to Mr. Rollins himself through the media's portrayal of the credibility finding. *See* Gupta Decl., Ex. A (citing portions of the Order calling Mr. Rollins a "professionally paid venue witness," "unreliable," and "misleading.") Reputational harm "cannot be quantified, no amount of money damages is calculable, and therefore the harm cannot be adequately compensated and is irreparable." *Metalcraft of Mayville, Inc. v. Toro Co.*, 848 F.3d 1358, 1368 (Fed. Cir. 2017). Mr. Rollins is a private citizen with a personal and professional reputation. This inaccurate public description of his credibility may follow him and limit his career potential, at Apple or elsewhere. It would be manifestly unjust to allow these incorrect findings, supported with the seal of a federal judge, to go unrebutted. Apple implores this Court to vacate the prior finding on Mr. Rollins's credibility, and Apple's only remedy to seek this relief is before this Court since the Order divested the WDTX Court of jurisdiction over this matter.

V. CONCLUSION

Apple requests that this Court vacate the incorrect and baseless credibility finding about Mr. Rollins in the Order.

DATED: June 3, 2022

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that I electronically filed the foregoing with the Clerk of the Court for the United States Court of Appeals for the Federal Circuit by using the appellate CM/ECF system on May 29, 2024.

A copy of the foregoing was served upon the following counsel of record and the district judge via email and FedEx:

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