United States Court of Appeals for the Federal Circuit

03-1264, -1265

ANIMATICS CORPORATION,

Plaintiff-Appellant,

v.

QUICKSILVER CONTROLS, INC.
and DONALD P. LABRIOLA II,

Defendants-Cross Appellants.

DECIDED: June 8, 2004

Before MAYER, Chief Judge, SCHALL, and LINN, Circuit Judges.

SCHALL, Circuit Judge.

DECISION

Animatics Corporation ("Animatics") sued Quicksilver Controls, Inc. and Donald

P. Labriola II (collectively "Quicksilver") in the United States District Court for the

Northern District of California for infringement of U.S. Patent No. 5,912,541 C1 ("the

'541 patent").[1] A jury trial ensued with respect to the alleged infringement of claims 20, 24, 26, 28, 31, 32, and 35 of the patent. After the close of evidence, the district court granted Quicksilver's motion for judgment as a matter of law ("JMOL") of non-infringement of independent claim 20 and its dependent claim 24. The case was then submitted to the jury. After deliberating, the jury found by special verdict that claims 26, 28, 31, 32, and 35 were enabled. However, the jury could not reach a verdict on the alleged infringement of any of those claims, or on Quicksilver's assertion that claims 32 and 35 were invalid by reason of anticipation.

After the jury deadlocked, the parties renewed their JMOL motions. Ruling on the motions, the district court held (1) that Quicksilver had not infringed claims 26, 28, and 31; (2) that claims 32 and 35 were not invalid by reason of anticipation; and (3) that Quicksilver had infringed claims 32 and 35. Animatics Corp. v. Quicksilver Controls, Inc., No. C99-05133 WHA (N.D. Cal. Dec. 18, 2002) ("Post-Trial Order"). In due course, judgment was entered accordingly.

Animatics now appeals from the judgment of non-infringement with respect to claims 20, 24, 26, 28, and 31. For its part, Quicksilver cross-appeals the judgments of infringement with respect to claims 32 and 35 and the district court's ruling that claims 32 and 35 were not invalid. Quicksilver also challenges one of the district court's evidentiary rulings. For the reasons set forth below, we affirm-in-part, reverse-in-part, vacate-in-part, and remand.

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[1]   The original '541 patent underwent reexamination as a result of a third party reexamination request by Quicksilver. Unless otherwise noted, a reference to the '541 patent includes the amendments to the original '541 patent as documented on the Reexamination Certificate issued June 11, 2002.

DISCUSSION

I.

The '541 patent, entitled "Integrated DC Servo Motor and Controller," discloses a direct current ("DC") motor with an integrated microprocessor controller. The patent teaches a way to integrate various motor control components into a controller that can be attached to a motor in a modular fashion.

In brief, the direction, speed, and torque of a brushless DC motor depend on the amount and direction of the current flowing through the fixed windings of the stator. The stator is a hollow, non-rotating part of the motor around which conducting wire is strategically wound. Positioned inside the hollow portion of the stator is a rotor to which fixed magnets are attached. When current flows through the stator windings, a magnetic field is generated. This magnetic field can be controlled—e.g., rotated or varied in strength—by changing the direction or amount of current in the stator windings. The magnets fixed to the rotor will move as they attempt to stay aligned with the stator's magnetic field. This rotating magnetic field thus provides the motive force for the rotor. The controller directs the current to the motor's stator windings, thereby allowing the motor to move according to a predetermined set of parameters. The controller contains a power supply, a microprocessor, and an amplifier. Three claimed aspects of the '541 patent are particularly germane to this appeal.

First, independent claim 20 recites both "a modular motor body" and "a modular control unit in the form of an encasement, removably connected to said motor body in mating relationship therewith." '541 patent, col. 9, ll. 20-31. According to the '541 patent, "[t]he controller can be removed from the motor body by simply unscrewing

these screws and pulling the pins 65 and 70 free, allowing the motor body to remain attached to an application while the controller is removed for repair or replacement." Id. col. 5, II. 25-30. Such modularity was an improvement over the prior art where controllers were typically connected to the motors by a plurality of relatively long wires.

Second, independent claim 26 of the '541 patent claims, inter alia, "a motor having a rotor disposed within a first housing," id. col. 2, I. 1 (Reexamination Certificate), as well as a microprocessor that "produces an actuation signal to direct a proportional-integral-derivative (PID) filter connected to said microprocessor, said PID filter providing servo control of a drive amplifier supplying current to said motor." Id. col. 2, II. 19-23. The PID filter accepts position signals as feedback from an encoder attached to the motor. The PID filter uses mathematical algorithms to combine three control techniques: (1) position control, in which the difference between the desired position and the actual position of the motor is determined; (2) integral control, in which an electrical signal indicating the motion of the motor is integrated over time; and (3) derivative control, in which a derivative of the electrical signal is determined with respect to time. Use of a PID filter provides more precise control of the motor than conventional feedback/control techniques previously used in such motors. Various PID filters were well known in the prior art. However, PID filters are sensitive to both electromagnetic interference ("EMI") and heat. This made PID filters volatile when co-located or integrated with a motor. Conventional wisdom held that the closer a PID filter was located to the motor, the more problems would occur. The '541 patent overcame these problems.

Third, independent claim 32 and its dependent claims relate to synchronization of multiple motors. For example, claim 32 of the '541 patent claims "[a]n integrated motor device comprising," inter alia, "an encasement housing a controller, with said encasement removably connected to said body," id. col. 11, ll. 3, 7-8, and a "means for synchronizing said controller with a controller of at least one other like integrated motor device . . . ." Id. col. 12, ll. 1-2. Dependent claim 33 recites that "said means for synchronizing includes a synchronization pin in communication with said controller housed in said encasement," while dependent claim 34 recites that "said means for synchronizing further includes an internal timer of said microprocessor responsive to said synchronization pin." Id. col. 12, ll. 5-10. According to the written description, the claimed synchronization averts millisecond delays "by first inputting commands for the chain of motors into the microprocessors and then using internal timers of the microprocessors and synchronization pins to initiate motion of each of the rotors simultaneously." Id. col. 6, ll. 30-35.

<div align="center">II.</div>

Quicksilver manufacturers a line of integrated motors under the name SilverMax. The SilverMax is a fully-integrated intelligent servo motor, having digital control elements such as a digital servo amplifier and a digital driver. In the SilverMax motors, a PID filter is implemented via software running in the microprocessor. Post-Trial Order, at 7 n.1.

Animatics filed suit against Quicksilver on December 2, 1999, alleging direct infringement of the '541 patent. Following initiation of the suit, Quicksilver filed two separate reexamination requests with the United States Patent and Trademark Office,

citing separate items of prior art that allegedly raised substantial new questions of patentability with respect to the '541 patent. The district court stayed proceedings in the infringement case pending the outcome of the reexamination. As a result of the reexamination, Animatics amended its claims. Specifically, Animatics incorporated original dependent claim 29, which was directed to the PID filter, into independent claim 26. Amended claim 26 was eventually allowed, along with a number of new claims. See '541 patent, Reexamination Certificate.

Following the reexamination, the district court lifted the stay and a jury trial was held on infringement of claims 20, 24, 26 (newly amended), 28, 31, 32, and 35 of the '541 patent. As noted above, after the close of evidence, the district court granted Quicksilver's motion for JMOL of non-infringement of independent claim 20 and dependent claim 24. The district court based its JMOL ruling primarily on an in-court demonstration of the disassembly of one of the accused products that, according to the court, showed the accused product was not "modular." The case was then submitted to the jury. Although by special verdict, the jury found claims 26, 28, 31, 32, and 35 enabled, the jury could not reach a verdict with respect to the alleged infringement of those claims. Neither could the jury reach a verdict with respect to Quicksilver's assertion that claims 32 and 35 were invalid by reason of anticipation.

With the jury unable to reach a decision on infringement or invalidity, the parties submitted further briefs in support of their pending JMOL motions. The district court ruled on those motions on December 18, 2002, finding that Quicksilver had not infringed claims 26, 28, and 31. The district court also ruled that claims 32 and 35 of the '541 patent were not anticipated and were infringed by Quicksilver. On January 16, 2003,

the district court entered a final judgment, issued an injunction, and scheduled a jury trial on damages and willfulness for May 12, 2003. The final judgment contained a certification pursuant to Fed. R. Civ. P. 54(b). We thus have jurisdiction pursuant to 35 U.S.C. § 1295(a)(1).

III.

We review de novo a district court's decision to grant or deny a JMOL motion. See Electro Scientific Indus., Inc. v. Gen. Scanning, Inc., 247 F.3d 1341, 1349 (Fed. Cir. 2001). We do so by reapplying the JMOL standard set forth in the Federal Rules of Civil Procedure, which state that "[i]f, during a trial by jury a party has been fully heard on an issue and there is no legally sufficient evidentiary basis for a reasonable jury to find for that party on that issue, the court may determine the issue against that party and may grant a motion for judgment as a matter of law against that party . . . ." Fed. R. Civ. P. 50(a).

The first issue we address is infringement. The determination of infringement is a two-step process. First, the court construes the claims at issue to correctly determine their scope. Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1454 (Fed. Cir. 1998) (en banc). Second, the correctly construed claims are compared to the accused device. Id. This court reviews claim construction without deference. Id. However, applying the claim construction to the accused device to determine infringement is a question of fact. Embrex, Inc. v. Serv. Eng'g Corp., 216 F.3d 1343, 1348-49 (Fed. Cir. 2000).

A.

<u>Claims 20 and 24</u>

As noted above, independent claim 20, from which claim 24 depends, recites, inter alia, a "modular motor body housing" and "a modular control unit in the form of an encasement, removably connected to said motor body in mating relationship therewith." '541 patent, col. 9, ll. 30-31. The disputed claim term is "modular." The district court construed modular units as "standardized units that may be conveniently removed and replaced without significant impact to other components." <u>Animatics Corp. v. Quicksilver Controls, Inc.</u>, No. C99-05133 WHA, slip op. at 10 (N.D. Cal. Mar. 11, 2002) ("<u>First Claim Construction Order</u>").

During trial, Quicksilver presented an in-court demonstration in which a technician disassembled and reassembled the accused product. After viewing the demonstration, the district court stated that, "having seen that demonstration about how hard it is to take these things apart, no way does that satisfy the court's definition of 'modularity.'" Accordingly, the district court granted Quicksilver's JMOL motion for non-infringement with respect to claims 20 and 24.

On appeal, Animatics argues that the district court erred in construing claim 20 by adding the adverb "conveniently." According to Animatics, the court incorrectly added a reference to the level of ease with which the motor and controller modules may be taken apart and reassembled. Animatics argues that the district court's claim construction improperly imports a restriction from the specification into the claims. Quicksilver, on the other hand, argues that "it is clear from the specification and the prosecution history that the use of the term 'modular' was specifically meant to

emphasize the ease with which the motor and the controller could be separated and individually replaced."

There is "a heavy presumption in favor of the ordinary meaning of the claim language." Johnson Worldwide Assocs. v. Zebco Corp., 175 F.3d 985, 989 (Fed. Cir. 1999). The district court began its construction of "modular" by referring to a dictionary for the word's ordinary and accustomed meaning. See Texas Digital Sys., Inc., v. Telegenix, Inc., 308 F.3d 1193 (Fed. Cir. 2002). "Modular," according to Webster's Seventh New Collegiate Dictionary, means "constructed with standardized units or dimensions for flexibility and variety of use." Webster's Seventh New Collegiate Dictionary 244 (1976). The district court did not find that the specification compelled a different meaning. However, the court ultimately construed modular to mean "standardized units that may be conveniently removed and replaced without significant impact to other components." First Claim Construction Order at 10 (emphasis added).

We think that the district court improperly imported a limitation from the specification into its construction of "modular." It is axiomatic that limitations from the specification should not be read into the claims. Comark Communications v. Harris Corp., 156 F.3d 1182, 1186 (Fed. Cir. 1998). The specification describes a benefit of the claimed modularity as "providing for ease of interchange or replacement . . . ." '541 patent, col. 2, ll. 13-15. However, there is no clear indication that the patentee intended to depart from the ordinary meaning of modular, which does not explicitly mandate a limitation on the ease with which the "modular" units may be removed or replaced. See Johnson Worldwide, 175 F.3d at 989 (stating that the ordinary meaning is to be used

unless a special definition is shown "with reasonable clarity, definiteness, and precision").

Nonetheless, we believe this error was harmless. After reviewing the testimony surrounding the in-court demonstration of the disassembly of Quicksilver's accused product, we do not believe any jury could reasonably find that the accused product meets the ordinary definition of "modular." Furthermore, claim 20 requires that the modular control unit be "removably connected to said motor body in mating relationship therewith." '541 patent, col. 9, ll. 30-31. The in-court demonstration illustrated that this relationship is absent from the accused product. Accordingly, we affirm the district court's JMOL of non-infringement of claims 20 and 24.

B.

Claims 26, 28, and 31

Independent claim 26 of the '541 patent, from which claims 28 and 31 depend, is directed to a combination motor and controller. The controller of claim 26 has, inter alia, a microprocessor "wherein said microprocessor produces an actuation signal to direct a proportional-integral-derivative (PID) filter connected to said microprocessor." Id. col. 2, ll. 19-23 (Reexamination Certificate). The disputed claim limitation is "connected to." During trial, the district court accepted the parties' stipulation that the jury employ the ordinary meaning of the term "connected to." The court also accepted the parties' agreement that they would argue to the jury what the ordinary meaning of "connected to" was. Animatics Corp. v. Quicksilver Controls, Inc., No. C99-05133 WHA, slip op. at 2-3 (N.D. Cal. Nov. 6, 2002) ("Fourth Claim Construction Order"). When the jury was

unable to decide whether claim 26 was infringed, the district court was left to construe the "connected to" limitation.

The issue, as explained by the district court in its post-trial order, is "whether the phrase requires that the PID filter and the microprocessor be two separate (but electrically connected) circuits as opposed to . . . a PID software algorithm running inside the microprocessor." Post-Trial Order at 6. In other words, the issue is whether the PID controller can be an integral part of the microprocessor, or whether the claim language requires that the controller and the microprocessor be physically separate circuits.

The district court ruled that the limitation "calls out two separate physical circuits—a microprocessor and a PID filter—which must be 'connected to' each other." Id. at 6-7. The district court thus construed the limitation as requiring "two separate circuits" that "must be electrically 'connected to' each other." Id. at 7. The circuits "can reside on the same chip . . . so long as they are electrically connected." Id.

In support of this construction, the court first relied on what it perceived to be the plain language of the claim. The district court also appeared to rely heavily on the file history, noting that the original claim 26 did not have a PID filter requirement. Id. The PID filter requirement appeared in original dependent claim 29 of the '541 patent, which was incorporated into claim 26 during reexamination. The district court thus reasoned that the original claim 26 could not have contemplated a microprocessor that included a PID function and, for this reason, the microprocessor and PID filter are required to be two separate circuits. Id. at 9.

The district court also noted that the verb "connect" was consistently used elsewhere in the '541 patent to refer to the joining or linking of "<u>physical</u> objects." <u>Id.</u> at 9 (emphasis in original). Finally, the court stated that "[i]ndependent claims 70, 71 and 73 provide an instructive counterpoint." <u>Id.</u> at 10. The district court noted that these claims "[a]ll recite identical relevant language of the microprocessor 'having' a PID filter and software." <u>Id.</u> The district court thus reasoned that this "demonstrates that when the patentees wanted to claim a PID filter on par with software inside a microprocessor, they did so." <u>Id.</u>

Animatics argues that "connected to" should have its plain and ordinary meaning. Animatics points to Merriam-Webster's Collegiate Dictionary for a dictionary definition of "connected" as "(1) joined or linked together; or (2) having the parts or elements logically linked together." <u>Webster's Seventh New Collegiate Dictionary</u> at 244 (1976). Animatics contends that "[t]he patent provides no basis to infer that the patentee discarded the broad ordinary meaning of the term 'connected' and chose to use the 'special definition' of the term imposed by the court—restricting the term 'connected' to mean 'physically separate' and 'physically and electrically connected.'" For this reason, Animatics argues that the district court erred in its construction of the claim 26 term "connected to."

We agree with Animatics that the district court erred in requiring that the microprocessor and the PID controller be physically separate circuits that are electrically connected. Claims are generally given their plain meaning unless the patentee chooses to be his own lexicographer. <u>Vitronics Corp. v. Conceptronic, Inc.</u>, 90 F.3d 1576, 1582 (Fed. Cir. 1996). There should be a "clear and unambiguous disclaimer" of a software

implemented PID filter in order to support the district court's interpretation. <u>See</u> <u>Inverness Med. Switz. GmBH v. Princeton Biomeditech Corp.</u>, 309 F.3d 1365, 1372 (Fed. Cir. 2002).

A PID controller may be implemented in a number of different ways. First, the PID filter may be an analog circuit. An analog PID filter would be a completely separate circuit from the digital microprocessor. The analog feedback signals from the motor would pass through the analog PID filter. The filtered analog signal would be passed to an analog-to-digital (A/D) converter, and then to the microprocessor for analysis.

Second, the PID filter may be a digital circuit. In this case, the analog feedback signal from the motor is first digitized with an A/D converter. The feedback signal is then passed to the PID filter, and/or the microprocessor. If the PID filter is a digital circuit, then the physical line between the microprocessor and the filter becomes blurred because the parties agree that "microprocessor" would be construed as "a device that is capable of performing digital calculations and storing digital data for positioning a motor." <u>First Claim Construction Order</u> at 11. A digital filter certainly performs digital calculations on the feedback data and could conceivably be located on the same chip as the microprocessor.

Finally, the PID filter may be implemented using only software. The operation of the filter is represented by a software algorithm. As with the digital circuit, the feedback from the motor is digitized with an A/D converter. The software algorithm then operates directly on the digital data to produce the desired output. If the PID filter is implemented purely in software, then the physical line between the microprocessor and PID filter completely disappears.

We find no indication in the intrinsic evidence (claims, specification, or prosecution history) clearly indicating that the inventor intended to exclude a software-only implemented PID. Indeed, there is no indication as to which of the above methods is used. In the portion of the specification entitled "Best Mode for Carrying Out the Invention," the PID filter is explicitly referred to only twice. In both instances, the PID filter is described as being included in, or part of, the microprocessor. First, the '541 patent recites "[t]he controller 49 houses a microprocessor 50 including a proportional integral derivative (PID) filter." '541 patent, col. 3, ll. 22-25. Later in the same section, there is the statement that "[t]he microprocessor 50 includes a proportional integral derivative (PID) filter 53 which receives information from the encoder 48 to servo control the rotor." Id. col. 5, ll. 6-10. Neither of these descriptions excludes a software implemented PID filter.

Moreover, FIG. 1 shows that the link between the microprocessor and the PID filter is different from the links between other elements of the motor-controller. In FIG. 1, the PID filter and the microprocessor are shown adjacent to each other, while the other elements of the motor controller are connected by a line presumably representing an electrical connection. Thus, FIG. 1 provides no justification for limiting the term "connected to" to being "electrically connected," as opposed to "logically connected."

Claim 26 itself supports Animatics' assertion that the district court's construction was too narrow. Claim 26 refers to "the second housing" being in "mating relation to the first housing and electrically connected to the rotor position encoder." Id. col. 2, ll. 6-7 (Reexamination Certificate) (emphasis added). This indicates that the patentee did not limit the term "connected to" to mean "electrically connected." Indeed, neither the claim

nor the specification describes the connection between the microprocessor and PID filter as being electrical. Furthermore, the claim limitation does not, as the district court suggested, "call out two separate physical circuits." Indeed, the word "circuit" is not mentioned in claim 26 or in any of the embodiments described in the specification. In short, the claims, figures, and specification of the '541 patent appear to support Animatics' contention that the claim term "connected to" was too narrowly construed by the district court.

Referring to the file history, the district court correctly noted that "the meaning of 'microprocessor' and 'PID filter' did not morph together" and that the "independent meaning of these terms persisted" after the reexamination. Post-Trial Order at 9. However, we do not think this sufficient reason to assume that the "connected to" language necessarily excludes a PID filter that is purely implemented via software. Indeed, the definition of microprocessor adopted by the court, and not challenged by the parties, does not exclude a microprocessor that includes a PID filter. First Claim Construction Order at 11. The district court merely defined a microprocessor as "a device that is capable of performing digital calculations and storing digital data for positioning a motor." Id.

For the foregoing reasons, we conclude that the district court erred in construing the claim limitation "connected to" as requiring two physically separate circuits that are electrically connected, thereby precluding a software-only implementation of the PID filter. Accordingly, we reverse the JMOL of non-infringement with respect to claims 26, 28, and 31. Because, as the district court noted, "[i]t is undisputed that, in the accused products, PID is carried out via software running in the microprocessor," Post Trial

Order at 7 n.1, the case is remanded to the district court for entry of judgment of infringement of claims 26, 28, and 31 in favor of Animatics.

IV.

We now turn to Quicksilver's cross-appeal.

A.

Claims 32 and 35

Quicksilver first challenges the district court's grant of Animatics' motion for JMOL of infringement with respect to claims 32 and 35 of the '541 patent. Claim 32 recites a "means for synchronizing said controller with a controller of at least one other like integrated motor device." Claim 32 is written in means-plus-function format, as permitted by 35 U.S.C. § 112, ¶ 6. According to section 112, paragraph six, when an applicant chooses this format, the "claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." The district court recognized that claims 32 and 35 should be analyzed under section 112, paragraph six.

We begin our analysis with the issue of function. With respect to the function, the district court held that "the 'means for synchronization' in claims 32 and 35 do not require perfect synchronization." Post-Trial Order at 13. According to the district court, "[o]nly synchronization is required." Id.

On appeal, Quicksilver argues that the function performed by the "means for synchronizing" is "perfect synchronization" and that the district court erred when it construed the term as only requiring synchronization, without more. In advancing this argument, Quicksilver points to the specification, which states "[a] synchronization pin

located within each controller . . . allows a plurality of controllers and their associated motors to be perfectly synchronized despite the small delays inherent in RS-232." '541 patent, col. 5, ll. 41-44. Additionally, the specification recites "[i]t is essential in this case to assure that all the rotors start at the same time. Millisecond delays of RS-232 can degrade synchronization, and [internal timers and synchronization pins] initiate motion of each of the rotors simultaneously." Id. col. 6, ll. 29-35.

We reject Quicksilver's contention that the function recited in claim 32 requires perfect synchronization. We look primarily to the claim language itself to determine the function specified in a means-plus-function limitation. See Rodime PLC v. Seagate Tech., Inc., 174 F.3d 1294, 1302-03 (Fed. Cir. 1999) (admonishing the district court for improperly importing functions from the specification into the specified function in a means-plus-function limitation). Nothing suggests that the patentee intended to deviate from the ordinary meaning of the term "synchronization" in the claims to require it to mean "perfect synchronization." Indeed, when the patentee intended to recite the function of "perfect synchronization," the patentee used the phrase "perfectly synchronized." See '541 patent, col. 5, l. 43.

Furthermore, the portions of the specification upon which Quicksilver relies merely state a benefit of the invention (e.g., the synchronization pin allows the motors to be perfectly synchronized) or refer to a specific example described in the specification (e.g., an astronomer photographing a distant star). Nowhere does the specification indicate that the laudatory achievement of "perfect synchronization" is a requirement of the disclosed invention. We thus affirm the district court's ruling that perfect synchronization is not a required function of independent claim 32.

Turning now to the issue of the corresponding structure for the stated function in claim 32 of "synchronizing" multiple controllers, there are two places in the specification that disclose the corresponding structure for synchronizing:

> A synchronization pin located within each controller 49, not shown, allows a plurality of controllers 49 and their associated motors 45 to be perfectly synchronized despite the small delays inherent in RS-232.

'541 patent, col. 5, ll. 41-44.

> It is essential in this case to assure that all the rotors 42 start at the same time. Milliseconds delays of RS-232 can degrade synchronization, and are averted by first inputting commands for the chain of motors 45 into the microprocessors 49 and then using internal timers of the microprocessors and synchronization pins to initiate motion of each of the rotors 42 simultaneously.

Id. col. 6, ll. 27-35. It thus appears that the corresponding structure includes an external computer for inputting commands to the chain of motors, the internal timers of the individual microprocessors, and the synchronization pins. These structures work together to perform the function of synchronizing multiple controllers as recited in claim 32. The corresponding structure would also, under section 112, paragraph six, include equivalents thereof.

However, the district court ruled that "[p]lainly, the structure disclosed for synchronization is—first and foremost—the external computer that inputs motion commands into the chain of motors' microprocessors." Fourth Claim Construction Order at 4. The court excluded both the synchronization pins and internal timers from the structure corresponding to the "means for synchronizing." Id. at 4-5. In support of this construction, the district court relied on the doctrine of claim differentiation, which presumes that the difference between claims is significant and prevents narrow

dependent claim limitations from being read into broader independent claims. See SRI Int'l v. Matsushita Elec. Corp., 775 F.2d 1107 (Fed. Cir. 1985). Claims 33 and 34 both depend from claim 32. Claim 33 recites "wherein said means for synchronizing includes a synchronization pin . . . ." '541 patent, col. 12, ll. 5-6. At the same time, claim 34 recites "wherein said means for synchronizing further includes an internal timer of said microprocessor . . . ." Id. col. 12, ll. 10-11. Accordingly, the district court concluded that "the doctrine of claim differentiation supports the construction of 'means for synchronizing' in Claim 32 as including an external computer and not limited to solely the synchronization pin . . . alone or with an internal timer." Fourth Claim Construction Order at 5.

We agree with Quicksilver's contention that the district court's reliance on claim differentiation was legal error. Claim differentiation is a judicial doctrine that cannot be used to override the statute. In Laitram Corp. v. Rexnord, Inc., 939 F.2d 1533, 1538 (Fed. Cir. 1991), we stated that "[a] means plus function [element] is not made open-ended by the presence of another claim specifically claiming the disclosed structure which underlies the means clause or an equivalent of that structure." Id. We further stated that "one cannot escape [the] mandate [of section 112] by merely adding a claim or claims specifically reciting such structure or structures."

For these reasons, we vacate the grant of JMOL of infringement with respect to claims 32 and 35 and remand for a determination as to whether the structure used in the accused product infringes according to the above claim construction. More specifically, the corresponding structure for "synchronizing" includes an external

computer for inputting commands to the chain of motors, the internal timers of the individual microprocessors, the synchronization pins, and equivalents thereof.

B.

Validity

Quicksilver argues that claims 32 and 35 are anticipated by the Jufer reference, an article discussing the integration of traditionally peripheral electric motor components "in order to realize an integrated electric drive or a smart motor." Whether a patent is anticipated under 35 U.S.C. § 102(b) is a question of fact. Apple Computer, Inc. v. Articulate Sys., Inc., 234 F.3d 14, 20 (Fed. Cir. 2000). When reviewing a district court's JMOL decision, we must "determine whether 'viewing the evidence in the light most favorable to the non-moving-party,' and giving the non-movant 'the benefit of all reasonable inferences,' there is sufficient evidence of record to support a jury verdict in favor of the non-movant." Southwest Software, Inc. v. Harlequin, Inc., 226 F.3d 1280, 1289 (Fed. Cir. 2000).

Anticipation requires that a single prior art reference contain each and every element of the claimed invention. Lewmar Marine, Inc. v. Barient, Inc., 827 F.2d 744, 747 (Fed. Cir. 1987). However, "where a reference is silent about an asserted inherent characteristic, such a gap may be filled with recourse to extrinsic evidence." Cont'l Can Co. v. Monsanto Co., 948 F.2d 1264, 1268 (Fed. Cir. 1991). "Such evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." Id. "Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not

sufficient." Id. Finally, the prior art must also enable the claimed invention. Minn. Mining & Mfg. Co. v. Chemque, Inc., 303 F.3d 1294, 1306 (Fed. Cir. 2002). As the party challenging claims 32 and 35, Quicksilver bore the burden of establishing anticipation by clear and convincing evidence. Schumer v. Lab. Computer Sys., Inc., 308 F.3d 1304, 1315 (Fed. Cir. 2002).

The district court found that "[t]here was insufficient evidence to prove up by clear and convincing evidence that certain claim limitations were contained in the reference, expressly or inherently." Post-Trial Order at 17. Fundamentally, the district court viewed the testimony of Dr. Jufer, who authored the Jufer reference, as "general," "tentative," and "equivocal." See id. at 17-20. Having reviewed the Jufer reference, as well as the testimony of Dr. Jufer, we do not believe that Quicksilver met its burden of showing that all the limitations of claims 32 and 35 are disclosed and enabled in the Jufer reference. We agree with the district court's conclusion that Dr. Jufer's testimony was equivocal and unconvincing. For this reason, we affirm the district court's decision that the Jufer reference does not anticipate the '541 patent.

C.

Evidentiary Ruling

Finally, we address Quicksilver's contention that the district court improperly excluded the testimony of William Wright. This argument is without merit. Mr. Wright's testimony was primarily relevant with respect to the issue of whether Quicksilver's alleged infringement was willful. The exclusion thus had little bearing on whether Quicksilver's products infringe the '541 patent, which is the only final decision before us on appeal.

To the extent that Mr. Wright's testimony was probative of the infringement issues, we do not believe the district court abused its discretion in excluding his testimony. Quicksilver distorts the record in its brief by selectively quoting portions of the district court's ruling to assert that the district court did not assess the probative value of the evidence. Animatics correctly notes that "in the portion of the district court's analysis not addressed by Quicksilver, the court explicitly addressed both the prejudicial nature of Wright's testimony and its lack of probative value." For these reasons, we will not disturb the district court's decision to exclude the testimony of Mr. Wright.

In sum, we affirm the district court's JMOL of non-infringement of claims 20 and 24. We reverse the JMOL of non-infringement with respect to claims 26, 28, and 31 and remand to the district court for entry of judgment of infringement of claims 26, 28, and 31 in favor of Animatics. We affirm the district court's decision that the Jufer reference does not anticipate claims 32 and 35 of the '541 patent, but vacate the grant of JMOL of infringement with respect to those claims and remand for a determination as to whether the structure used in the accused product infringes according to the correct claim construction. Finally, we affirm the district court's decision to exclude the testimony of Mr. Wright.