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UNITED STATES DISTRICT COURT

FOR THE NORTHERN DISTRICT OF CALIFORNIA

SAN JOSE DIVISION

REGENTS OF THE UNIVERSITY OF MINNESOTA,

Plaintiff,

v.

LSI CORPORATION AND AVAGO TECHNOLOGIES U.S. INC.,

Defendants.

Civil Action No. 18-cv-00821-EJD-NMC

DEFENDANTS' NOTICE OF MOTION AND MOTION FOR JUDGMENT ON THE PLEADINGS THAT THE ASSERTED CLAIMS ARE PATENT-INELIGIBLE UNDER 35 U.S.C. § 101

Date: May 31, 2018
Time: 9: 00 A.M.
Place: Courtroom 4 – 5th Floor

Hon. Edward J. Davila

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NOTICE OF MOTION

TO ALL PARTIES HEREIN AND THEIR ATTORNEYS OF RECORD:

PLEASE TAKE NOTICE that on May 31, 2018, at 9:00 A.M. or soon thereafter as counsel may be heard by the Honorable Edward J. Davila, in the United States District Court for the Northern District of California, located at 280 South 1st Street, San Jose, California, Defendants LSI Corporation and Avago Technologies U.S. Inc. (collectively, "Defendants") will move and hereby do move this Court for judgment on the pleadings under Federal Rule of Civil Procedure 12(c) holding that claims 13, 14, and 17 ("the Asserted Claims") of U.S. Patent No. 5,859,601 ("the '601 patent") are invalid under 35 U.S.C. § 101.

Judgment on the pleadings of invalidity of the Asserted Claims under 35 U.S.C. § 101 is warranted because the Asserted Claims are directed to ineligible subject matter, namely, an abstract, mathematical formula for encoding digital data.

This motion is based upon this Notice of Motion, the accompanying Memorandum and Points of Authorities, a declaration and exhibits in support thereof, any reply papers which may be filed, and such other arguments and evidence as may be brought before the Court prior to or at the hearing of this motion.

MEMORANDUM OF POINTS AND AUTHORITIES IN SUPPORT OF MOTION

I. INTRODUCTION AND STATEMENT OF THE ISSUE TO BE DECIDED

Defendants respectfully move pursuant to Fed. R. Civ. P. 12(c) for judgment on the pleadings holding that claims 13, 14, and 17 ("the Asserted Claims") of U.S. Patent No. 5,859,601 ("the '601 patent") are invalid under 35 U.S.C. § 101 because they are directed to ineligible subject matter, namely, an abstract, mathematical formula for encoding digital data.[1]

As set forth more fully below, the Asserted Claims are directed to an abstract, mathematical formula for converting a sequence of binary digits (*i.e.*, digital 1's and 0's known as "bits") into an "encoded" bit sequence. The steps of the claimed method involve nothing more

[1] The text of the Asserted Claims—which are the only claims asserted by Plaintiff in this case—is reproduced in the Appendix at the end of this brief.

than the operation of generic verbs (*i.e.*, "receiving," "imposing," and "generating") on conventional bits. *See* Appendix. The claimed method is not limited to any particular apparatus or machine. *See id*. The method thus pre-empts all uses of the abstract algorithm recited in the Asserted Claims.

Under Supreme Court precedent, claims are patent-ineligible under § 101 if they represent nothing more than an abstract idea. *See Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347 (2014); *Mayo Collaborative Servs. v. Prometheus Labs., Inc*., 566 U.S. 66 (2012). The concept of "encoding" is an "an abstract concept" that has been "long utilized to transmit information." *RecogniCorp, LLC v. Nintendo Co*., 855 F.3d 1322, 1326 (Fed. Cir. 2017). The Asserted Claims are not tied to any machine or system and cover mathematical algorithms that can be performed without any physical device. In other words, a person could "infringe" the asserted method by writing on paper sequences of 1's and 0's according to the prescribed mathematical formula. Clear precedent holds that mathematical formulas are not eligible for patenting under § 101. *See Gottschalk v. Benson*, 409 U.S. 63, 71-72 (1972) ("[T]he mathematical formula involved here has no substantial practical application except in connection with a digital computer, . . . the patent would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself.").

Given the deficiencies in the Asserted Claims, this case need go no further. "Failure to recite statutory subject matter is the sort of 'basic deficiency,' that can, and should, 'be exposed at the point of minimum expenditure of time and money by the parties and the court.'" *OIP Techs., Inc. v. Amazon.com, Inc*., 788 F.3d 1359, 1364 (Fed. Cir. 2015) (Mayer, concurring) (quoting *Bell Atl. Corp. v. Twombly*, 550 U.S. 544, 558 (2007)). Defendants therefore respectfully move under Fed. R. Civ. P. 12(c) for a judgment that the Asserted Claims are invalid under 35 U.S.C. § 101 for claiming an abstract idea.

II. LEGAL STANDARDS

A. Patent Eligibility Is Appropriately Decided On the Pleadings.

Patent eligibility under 35 U.S.C. § 101 is "an issue of law." *Accenture Global Servs., GmbH v. Guidewire Software, Inc*., 728 F.3d 1336, 1341 (Fed. Cir. 2013). The issue may involve underlying factual questions, such as "whether a claim element or combination of elements is well-understood, routine and conventional to a skilled artisan in the relevant field." *Berkheimer v. HP Inc.*, No. 2017-1437, 2018 WL 774096, at *5 (Fed. Cir. Feb. 8, 2018). However, if the patent *claims* at issue do not recite the allegedly unconventional materials disclosed in the specification, then patent eligibility is a pure issue of law. *See Berkheimer*, 2018 WL 774096, at *7 ("We conclude that claim 1 does not recite an inventive concept sufficient to transform the abstract idea into a patent eligible application. Claim 1 … does not recite any of the purportedly unconventional activities disclosed in the specification."); *D&M Holdings Inc. v. Sonos, Inc.*, No. 16-141-RGA, 2018 WL 1001052, at *6 (D. Del. Feb. 20, 2018) ("Here, none of the independent or dependent claim language captures the 'sophisticated computer programming' or the 'user interface' that Plaintiffs argue provide inventive concepts that were not well-understood, routine, or conventional.") (citing *Berkheimer*, 2018 WL 774096). Indeed, courts routinely address and, when appropriate, invalidate claims as patent-ineligible under Rule 12(c). *See, e.g., Smart Sys. Innovations, LLC v. Chicago Transit Auth.*, 873 F.3d 1364 (Fed. Cir. 2017) (affirming Rule 12(c) judgment of invalidity); *RecogniCorp*, 855 F.3d at 1324 (same).

The Rule 12(b)(6) standard applies to motions under Rules 12(c). *Dworkin v. Hustler Magazine Inc.*, 867 F.2d 1188, 1192 (9th Cir. 1989). Thus, to survive a Rule 12(c) motion, a complaint must contain sufficient factual matter, accepted as true, to state a claim for relief that is "plausible on its face." *Twombly*, 550 U.S. at 570.

B. <u>Patent Eligibility Under 35 U.S.C. § 101.</u>

Patent eligible subject matter is defined in the Patent Act as "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." 35 U.S.C. § 101. The Supreme Court has stated that it has long exempted abstract ideas, laws of nature, or natural phenomena from patentable subject matter. *Mayo*, 566 U.S. at 70. Abstract ideas, laws of nature, and natural phenomena are "the basic tools of scientific and technological work." *Ass'n for Molecular Pathology v. Myriad Genetics*, 133 S. Ct. 2107, 2116 (2013). Monopolization of such tools "through the grant of a patent might tend to impede innovation more than it would tend to promote it," thereby thwarting the object of the patent laws. Mayo, 566 U.S.

at 70. "We have described the concern that drives this exclusionary principle as one of pre-emption." *Alice*, 134 S. Ct. at 2354.[2]

III. FACTUAL BACKGROUND

A. Technical Background of the Asserted Claims.

The '601 patent relates generally to the encoding of binary data. (*See* Mayle Decl., Ex. A *e.g.* at 2:40-43 ("The present invention relates to a channel coding technique to improve data storage devices such as magnetic computer disk drives and professional and consumer tape recorders. The coding scheme, which is referred to herein as the maximum transition-run (MTR) coding, eliminates certain error-prone binary data patterns from the allowable set of input data patterns that are to be recorded in the storage medium.").) However, the Asserted Claims do not *claim* an inventive application of encoding binary data. Instead, in the Asserted Claims, the inventors claim a generic "method" of performing conventional mathematical operations—operations that can be performed using pen and paper or using a generic computer. Claim 13 is representative:[3]

> [Preamble:] A method for encoding m-bit binary datawords into n-bit binary codewords in a recorded waveform, where m and n are preselected positive integers such that n is greater than m, comprising the steps of:
>
> [Step 1:] receiving binary datawords; and
>
> [Step 2:] producing sequences of n-bit codewords;
>
> [Step 3:] imposing a pair of constraints (j;k) on the encoded waveform;
>
> [Step 4:] generating no more than j consecutive transitions of said sequence in the recorded waveform such that $j \geq 2$; and
>
> [Step 5:] generating no more than k consecutive sample periods of said sequences without a transition in the recorded waveform.

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[2] *See also Le Roy v. Tatham*, 55 U.S. 156, 175 (1853) ("no one can claim . . . an exclusive right" to an "abstract" idea); *Rubber-Tip Pencil Co. v. Howard*, 87 U.S. 498, 20 Wall. 498, 507 (1874) ("An idea of itself is not patentable, but a new device by which it may be made practically useful is. The idea of this patentee was a good one, but his device to give it effect, though useful, was not new. Consequently he took nothing by his patent.").

[3] The text of dependent claims 14 and 17, which are also asserted by Plaintiff, are reproduced in the attached Appendix.

The background relevant to the Asserted Claims is discussed below.

1. Binary Digits ("Bits").

The preamble of claim 13 recites "[a] method for encoding m-bit binary datawords into n-bit binary codewords . . . ." The word "bit" is short for "binary digit," which can be either a 1 or a 0. *See Benson*, 409 U.S. at 66 ("The pure binary system of positional notation uses two symbols as digits—0 and 1[.]").[4] Computers used bits to represent data long before the '601 patent's application was filed in 1996. *Id.*, 409 U.S. at 65 n.3.

2. The Claimed "m-bit Binary Datawords."

The preamble of claim 13 recites "m-bit binary datawords," and Step 1 of the claimed method is "receiving [the m-bit] binary datawords." *See* Appendix. The preamble states that "m" is a "preselected positive integer." *Id.* Thus, "m" is a variable, and can range from 2 to any arbitrarily larger integer. Consider the simple case where m = 2. Since there are only two bits (*i.e.*, 1 or 0), there are four possible 2-bit "datawords," all of which are given in Table 1 below.

Table 1: "m-bit binary datawords" (m = 2)	
Dataword 1	00
Dataword 2	01
Dataword 3	10
Dataword 4	11

The concept of "m-bit binary datawords" refers to parsing an incoming stream of bits into m-bit chunks. Thus, for example, an incoming 6-bit sequence "101000" (which may represent data) can be thought of as 10-10-00. This corresponds to 3 sequential 2-bit "datawords," which in Table 1 are: Dataword 3 (*i.e.*, "10") – Dataword 3 (*i.e.*, "10") – Dataword 1 (*i.e.*, "00"). Step 1 of claim 13 is therefore a generic step for "receiving" any given bit sequence, which is parsed into "m-bit datawords."

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[4] Dependent claim 17 further confirms that independent claim 13 is directed to encoding binary sequences of 1's and 0's—the claimed variable "j" refers to "consecutive transitions from 0 to 1 and from 1 to 0" and the claimed variable "k" relates to the number of consecutive non-transitions (*i.e.*, "k" relates to the number of consecutive 1's or consecutive 0's). *See* Appendix at claim 17.

3. The Claimed "n-bit Binary Codewords."

Claim 13 involves encoding m-bit binary datawords, discussed above, "into n-bit binary codewords," with the proviso that "n is greater than m." *See* Appendix at claim 13, preamble and Step 2. Consider an example where m = 2 and n = 3. Examples of 3-bit "codewords" (n = 3) corresponding to each of the possible 2-bit "datawords" (m = 2) are given in Table 2 below, where the first two columns are taken from Table 1 above:

Table 2: "n-bit binary codewords" (m = 2 and n = 3)			
Dataword 1	00	Codeword 1	001
Dataword 2	01	Codeword 2	011
Dataword 3	10	Codeword 3	100
Dataword 4	11	Codeword 4	110

To illustrate the "encoding" of m-bit datawords into n-bit codewords, take as an example an incoming 6-bit sequence of "101000" (again, equivalent to Dataword 3 – Dataword 3 – Dataword 1). Using the dataword to codeword pairings given in Table 2, the sequence "101000" would be "encoded" into the 9-bit sequence "100100001" (*i.e.*, Codeword 3 ("100") – Codeword 3 ("100") – Codeword 1 ("001")) according to Step 2 of claim 13, which recites "producing sequences of n-bit codewords." The sequence formed by the these codewords (*i.e.*, 100100001) has 9 bits while the incoming sequence (*i.e.*, 101000) has only 6 bits because, in this example, m = 2 and n = 3.

4. "Imposing a Pair of Constraints (j;k)."

Turning to Step 3 of claim 13, it recites "imposing a pair of constraints (j;k) on the encoded waveform." Appendix. The "j" constraint relates to the number of "consecutive transitions" in the sequence of n-bit codewords. Appendix, claim 13 at Step 4. In one format for recording bit sequences, the term "transition" refers to transitions "from 0 to 1 and from 1 to 0." Appendix, Claim 17. In other words, a "transition" occurs when the previous bit was a 0 and the current bit is a 1, or vice versa (*i.e.*, when the previous bit was 1 and the current bit is 0). A non-transition occurs when the previous and current bits are the same (*i.e.*, 11 or 00.)

In the example discussed previously, an exemplary 6-bit sequence "101000" is encoded into the 9-bit sequence "100100001." The leading 4 bits of the incoming sequence (101000) involves consecutive "transitions"—from 1 to 0, then 0 to 1, then 1 to 0—but in this example that leading sequence is encoded to "100100." Coloring has been added to draw attention to transitions and non-transitions between adjacent bits. In the encoded sequence, the run of consecutive transitions, that would have otherwise existed, has been interrupted by the insertion of extra 0's. Due to a deliberate selection of codewords in Table 2, the number of consecutive transitions that are possible in any given sequence of codewords is limited, represented by a number "j." In the case where n = 3, there are 8 potential codewords to choose from, but the potential codewords "101" and "010" were not selected for use in Table 2 because stringing these together in succession enables the possibility of an arbitrarily large number of transitions (*e.g.*, 101010101010101010101010 …). The four codewords that were chosen for use in Table 2 all either begin or end with "00" or "11." This choice was made because it *guarantees* that *any combination* of codewords will have a maximum number of consecutive "transitions."

Step 3 of Claim 13 also involves the "k" constraint, which relates to the number of consecutive *non*-transitions (*i.e.*, runs of bits such as 111111 … or 000000 ...) Referring to the example dataword / codeword pairings in Table 2 above, an exemplary incoming 6-bit sequence of "000000" is encoded to the 9-bit sequence "001001001." The run of six *consecutive* 0's has been interrupted by the insertion of 1's in the encoded bit string. Similarly, the pairings of Table 2 dictate that the exemplary incoming 6-bit sequence "111111" is encoded to the 9-bit sequence "110110110." Here, the run of six *consecutive* 1's has been interrupted by the insertion of 0's in the encoded bit string. The codewords in this example were chosen so as to guarantee that the number of consecutive non-transitions is limited to some finite number "k." This was achieved in Table 2 by not using either of the potential 3-bit codewords: "000" or "111."

The j and k constraints are "imposed" in Step 3, due to a deliberate choice of pairings between datawords and codewords, as discussed in the example above.[5] In Steps 4 and 5, the

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[5] As discussed above, there are 8 potential codewords for the case of n = 3 that might be used in Table 2 (*i.e.*, 000, 001, 010, 011, 100, 101, 110, 111). But 4 of these were intentionally not used in Table 2. In particular, to impose the j constraint, the potential codewords 101 and 010 were not

encoded sequence of codewords is recorded (*e.g.*, written down). Step 4 recites "generating no more than j consecutive transitions of said sequence [of n-bit codewords] in the recorded waveform such that $j > 2$," and Step 5 recites "generating no more than k consecutive sample periods of said sequences [of n-bit codewords] without a transition in the recorded waveform." The variables "j" and "k" from Step 3 are the same "j" and "k" recited in Steps 4 and 5. This means that in our example, one can use Table 2 to sequentially encode any given bit string into 3-bit codewords, and then one simply writes down the resulting sequence. Since the j and k constraints are automatically "imposed" due to the selection of particular codewords in Table 2, it is guaranteed that one would not "generate" more than j consecutive transitions or k consecutive non-transitions when recording the resulting sequence of codewords. Therefore, Steps 4 and 5 are identically satisfied in this example.

It bears emphasis that Table 2 above is just an example. Appropriate dataword to codeword pairings can, in principle, be devised for *any* values of m, n, j, and k. For example, Figure 6 of the '601 patent shows exemplary dataword to codeword pairings for the case of m=4, n=5, j=2, and k=8 (i.e., "the rate 4/5, MTR(2;8)" code). (Mayle Decl. Ex. A at 5:12-20 ("Many other pairings are possible . . . Note that the k=9 constraint comes into effect when the codewords 10000 00001 occur in sequence.").)

The Asserted Claims do not require the use of any particular circuitry or hardware. Indeed, the method can be performed on pen and paper, as discussed above.

5. An Analogy: Seating Children on a Train Using the Mathematical Formula of the Asserted Claims.

An analogy may help illustrate more concretely the abstract idea in the Asserted Claims just discussed. Imagine a train ride for children at an amusement park. The train holds many children, who are seated one at a time, starting in the front seat and working back, until the train is entirely full. There are two seating rules. Rule 1: there can be at most "j" seating "transitions" from boy to girl and girl to boy. Thus, every so often, there must be children of the *same* gender sitting in consecutive seats. Rule 2: there can be at most "k" children having the same gender

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used; to impose the k constraint, the potential codewords 000 and 111 were not used.

seated consecutively. Thus, if k consecutive *girls* board the train, the next child to board must be a *boy*, and vice versa.

The amusement park devises a way to ensure that these Rules are never broken. An attendant allows the children to form a single file line in any way that the children desire. However, before the children are allowed to board the train, the attendant sequentially rearranges ("encodes") the children according to the following Table:

Table 3	
Sequences of Children in Line	**"Encoded" Sequence of Children**
Girl – Girl	Girl – Girl – Boy
Girl – Boy	Girl – Boy – Boy
Boy – Girl	Boy – Girl – Girl
Boy – Boy	Boy – Boy – Girl

Table 3 is analogous to Table 2, which was discussed above. In particular, girls and boys are analogous to binary 0's and 1's, respectively. The first column of Table 3, which shows all possible 2-child sequences in the line for the train, is analogous to the claimed m-bit binary "datawords" in Table 1. (In this example, m = 2.) The second column of Table 3, which shows 3-child sequences for seating the children, is analogous to the claimed n-bit binary "codewords" (for the case of n =3). As can be seen from inspection of the above Table 3, whenever there are two consecutive girls (or boys) in line, the attendant ensures that the next person seated has the opposite gender. (*See* rows 1 and 4 of Table 3.) This imposes a "k" constraint. And whenever there is a pattern of "girl – boy" (or "boy – girl") in the line, the attendant inserts a boy (or a girl) as the next person to be seated on the train. (*See* rows 2 and 3.) This imposes a "j" constraint.

Such a method for seating children on a train is an abstract idea that is not eligible for patenting, just as the claimed abstract idea for "encoding" bits in the Asserted Claims of the '601 patent is not eligible for patenting.

IV. ARGUMENT

A. The Asserted Claims Fail the *Alice* Test.

As discussed previously, "abstract ideas" are not patent-eligible subject matter because patenting them would pre-empt basic ideas that are free to all. *Alice*, 134 S. Ct. at 2354. The *Alice* Court described a two-step test for determining whether claims are directed to patent-ineligible subject matter. 134 S. Ct. at 2355.

First, the Court must "determine whether the claims at issue are directed to a patent-ineligible concept," such as an abstract idea. *Alice*, 134 S. Ct. at 2355. Second, if the claim is directed to an abstract idea, the Court must determine whether the claim nonetheless contains an "inventive concept," *i.e.*, "an element or combination of elements that is sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [abstract idea] itself." *Alice*, 134 S. Ct. at 2355 (internal citation omitted). Here, the Asserted Claims fail both *Alice* steps. They are directed to the abstract idea of encoding bits using a mathematical formula. These claims are so abstract and sweeping that they cover the mathematical formula itself.

B. *Alice* Step One: The Claims Are Directed to an Abstract Idea.

Construing patent claims is generally an issue of law and should be guided by the "intrinsic evidence," *e.g.*, the claim language and the patent's specification. *Phillips v. AWH Corp.*, 415 F.3d 1313, 1314 (Fed. Cir. 2005) (*en banc*). Often, as here, no "formal claim construction" is required because the Asserted Claims recite "no more than an abstract idea . . . and there [is] no reasonable construction that would bring [them] within patentable subject matter." *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 719 (Fed. Cir. 2014) (internal quotations omitted, alteration in original).[6]

The text of the Asserted Claims, the patent's specification, and Plaintiff's own Infringement Contentions all confirm that: (1) the Asserted Claims are directed to the abstract idea of encoding data bits according to a mathematical algorithm, and (2) the Asserted Claims preempt all uses of this mathematical algorithm.

[6] The Asserted Claims are indefinite but they cover an unpatentable abstract idea under *any* claim construction that Plaintiff might propose to support its broad infringement contentions.

1. The Claim Language Covers An Abstract Mathematical Algorithm.

The text of the Asserted Claims does not meaningfully limit the scope of the claimed "methods" in any way that would make them pass muster under § 101. Independent claim 13 is couched in terms of the mathematical variables m, n, j, and k. The claims do not place any limitation on the value of m, while n is merely "greater than m." Likewise, none of the Asserted Claims places any limitation on k. In claim 13, j is equal to or greater than 2, but is otherwise unbounded. Along with the purely mathematical variables m, n, j, and k, the Asserted Claims use generic verbs—"receiving," "producing," "imposing," and "generating."

Note that the Asserted Claims do not specify *how* (or *where*) their generic steps are to be carried out and, most importantly, the claims are not limited to any specific hardware, circuitry, or application. For example, nothing in the claim language limits the claimed method to any technological context or particular apparatus. *See 24/7 Customer, Inc. v. LivePerson, Inc.*, No. 15-CV-02897-JST, 2017 WL 2311272, at *4 (N.D. Cal. May 25, 2017) ("Here, the claims do not provide for any specific implementation of this abstract idea . . . Rather, they simply recite a generalized solution in broad, functional language— namely, 'retrieving,' 'comparing,' and 'ranking' information about the customer and representative. . . . In other words, the claims recite the *what* of the invention, but none of the *how* that is necessary to turn the abstract idea into a patent-eligible application.") (citing *TDE Petroleum Data Sols., Inc. v. AKM Enter. Inc.*, 657 Fed. Appx. 991, 993 (Fed. Cir. 2016)). In short, the language of the Asserted Claims broadly covers an abstract mathematical algorithm. *See id.*[7]

2. The Specification Confirms that the Claims Cover An Abstract Mathematical Algorithm.

The scope of patent protection is defined by the claims, which are numbered paragraphs at the end of a patent's specification. The specification "shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint

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[7] The sweeping nature of the Asserted Claims can be juxtaposed with, for example, claim 1 of the '601 patent. Claim 1 recites an "apparatus" (as opposed to a generic "method" as in claim 13) for encoding binary data. (Mayle Decl. Ex. A, claim 1.) The apparatus of claim 1 comprises, among other things, a "receiver" and an "encoder." *See id.*

inventor regard as the invention." 35 U.S.C. § 112(b). Nothing in the '601 patent states or suggests that the Asserted Claims are limited to any exemplary embodiments disclosed in the specification. To the contrary, the specification shows that "the preferred embodiments of the invention" that "have been shown and described" in the specification are not claim limitations. (*See* Mayle Decl. Ex. A at 8:27-32.)[8] It is bedrock patent law in such a circumstance, courts should not "confine the claims" to material in the specification. *See Phillips*, 415 F.3d at 1313 ("[A]lthough the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments.").

Here, Plaintiff may attempt to save its abstract and sweepingly broad claims from invalidity by improperly trying to import requirements from the specification, or even by pointing to extrinsic sources.[9] But the Court should focus on what matters in a validity analysis: what is *actually claimed*. It does not matter what the inventors might have claimed if they had intended to limit their patent protection to specific materials disclosed in the specification. *See* 35 U.S.C. § 112(b); *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344, 1351 (Fed. Cir. 2014) ("[N]othing in the *claim language* expressly ties the method to an image processor. The claim generically recites a process of combining two data sets into a device profile; it does not claim the processor's use of that profile in the capturing, transforming, or rendering of a digital image. . . . The method claimed . . . is thus 'so abstract and sweeping' as to cover any and all uses of a device profile.") (internal citation omitted) (emphasis added). Put simply, Courts "do not

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[8] All of the figures in the patent involve abstract symbols and/or numbers. (*See* Mayle Decl. Ex. A.)

[9] For example, the University argued in the Amended Rule 26(f) Report that "the claims of the '601 Patent are patent eligible because they improve a physical process—reading data from a physical recording media." (Dkt. No. 99 at 2.) But the University did not attempt to justify its conclusory argument that the claims are limited in such a manner, nor did it show that the claims would not be invalid even if they were so limited. The University also cryptically argued that "a human cannot mentally impose constraints on an '***encoded waveform***,' such as recited in claim 13." (*Id.*) The Asserted Claims would be invalid even if that was the case (and it is not). Finally, the University cited a footnote from an opinion in another case, involving an unrelated, different patent, where the defendant did not even "raise" a § 101 defense. (*Id.* (citing *Carnegie Mellon Univ. v. Marvell Tech. Group*, Ltd., 807 F.3d 1283, 1297 n.3 (Fed. Cir. 2015) ("The fleeting reference to 'abstract idea' is not enough to raise an issue of subject-matter ineligibility[.]").

rewrite the claim to preserve its validity." *Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1374 (Fed. Cir. 2014). Any attempt to do so by Plaintiff should be rejected.

3. Plaintiff's Infringement Contentions Confirm that the Claims Cover an Abstract Mathematical Algorithm.

Plaintiff confirms through its Infringement Contentions that the Asserted Claims are not tied to or rooted in any particular hardware or technological context, but rather are sweepingly broad and abstract. Two allegations stand out.

First, Plaintiff alleges that "*[a]ny* commercially-viable implementation of MTR coding *requires* performance of the methods of claim 13 of the '601 Patent." (Dkt. No. 40 at ¶ 131 (emphasis added).)[10] This allegation is not tied to any specific technology or application; *any* implementation allegedly falls within the broad scope of the abstract claim. Second, Plaintiff alleges that the Asserted Claims cover mere virtual "simulations" of hypothetical designs. (Dkt. No. 40 at ¶¶ 20, 75, 95-98, 118, 119, 122.) A simulation is not an implementation, but rather, it is an abstract testing of a mathematical algorithm.

If, as Plaintiff alleges, the generic method of claim 13 is broad enough to cover "any" conceivable "implementation" of the claimed coding algorithm—including virtual "simulations" of hypothetical products—it clearly is not limited to or rooted in any particular application or use, but rather, effectively covers the abstract mathematical formula itself.

4. If Allowed to Stand, the Asserted Claims Would Preempt All Manner of Use of the Claimed Mathematical Algorithm.

As alluded to earlier, the concern that drives the exclusion of abstract ideas from the realm of patentable subject matter is that of pre-emption. *Alice*, 134 S. Ct. at 2354. In this context, "pre-emption" refers to the patenting of an idea or algorithm untethered to a specific application or device, such that all who follow would be prevented from practicing or using the idea. *See Benson*, 409 U.S. at 71-72 (1972) (reversing finding of patentability because the claims "would

[10] The acronym "MTR" means "maximum transition run," which relates to the claimed mathematical concept of eliminating "long runs of consecutive transitions" in encoded bit sequences. (*See* Mayle Decl. Ex. A, at the abstract of the '601 patent.)

wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself").

The law is well-settled that the abstract manipulation of bits—an "idea of itself"—is not patentable. *Rubber-Tip Pencil*, 87 U.S. 498, 20 Wall. at 507. Here, as shown above, the Asserted Claims describe "nothing more than the manipulation of basic mathematical constructs, the paradigmatic 'abstract idea.'" *In re Warmerdam*, 33 F.3d 1354, 1355, 1360 (Fed. Cir. 1994); *see Parker v. Flook*, 437 U.S. 584, 595 (1978) ("If a claim is directed essentially to a method of calculating, using a mathematical formula, even if the solution is for a specific purpose, the claimed method is nonstatutory.").[11]

The Asserted Claims pre-empt all uses of the claimed generic method for encoding bits, regardless of whether the method is performed on a device, in a virtual simulation of a hypothetical device, or on pen and paper. *See* Sections III.A.4 and IV.B.1-4, *supra*; *Alice*, 134 S. Ct. at 2354; *Mayo*, 566 U.S. at 70. If these claims are not invalidated under Section 101, "the patent would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself." *Benson*, 409 at 71-72.[12] Claim 8 of the Benson patent is instructive on this point because it recites a "method of converting signals from binary coded decimal form into binary" comprising steps of:

(1) storing the binary coded decimal signals in a reentrant shift register,

(2) shifting the signals to the right by at least three places, until there is a binary '1' in the second position of said register,

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[11] *See also RecogniCorp*, 855 F.3d at 1326 ("We find that claim 1 is directed to the abstract idea of encoding and decoding image data. It claims a method whereby a user displays images on a first display, assigns image codes to the images through an interface using a mathematical formula, and then reproduces the image based on the codes."); *Digitech Image Techs*, 758 F.3d at 1351 ("[N]nothing in the claim language expressly ties the method to an image processor. The claim generically recites a process of combining two data sets into a device profile; it does not claim the processor's use of that profile in the capturing, transforming, or rendering of a digital image. . . . The method claimed . . . is thus 'so abstract and sweeping' as to cover any and all uses of a device profile.") (internal citation omitted).

[12] *See also O'Reilly v. Morse*, 56 U.S. 62, 112-113 (1853) ("[Samuel Morse] claims the exclusive right to every improvement where the motive power is the electric or galvanic current, and the result is [telegraph,] the marking or printing intelligible characters, signs, or letters at a distance. . . . The court is of opinion that the claim is too broad, and not warranted by law.").

(3) masking out said binary '1' in said second position of said register,

(4) adding a binary '1' to the first position of said register,

(5) shifting the signals to the left by two positions,

(6) adding a '1' to said first position, and

(7) shifting the signals to the right by at least three positions in preparation for a succeeding binary '1' in the second position of said register.

Benson, 409 U.S. at 73-74.

The Court found that this process could be done on generic computers "long in use," or even "mentally," and as such, is not patentable-eligible subject matter:

> The conversion of BCD numerals to pure binary numerals can be done mentally.... The method sought to be patented varies the ordinary arithmetic steps a human would use by changing the order of the steps, changing the symbolism for writing the multiplier used in some steps, and by taking subtotals after each successive operation. The mathematical procedures can be carried out in existing computers long in use, no new machinery being necessary. And, as noted, they can also be performed without a computer.

Id., 409 U.S. at 67. Processes that people can perform using pen and paper are "a subcategory of unpatentable abstract ideas." *CyberSource Corp. v. Retail Decisions, Inc*., 654 F.3d 1366, 1371 (Fed. Cir. 2011) (citations omitted).

Similarly here, the Asserted Claims can be performed with a generic computer or, allegedly, in a "simulation," or using pen and paper. First, pick any string of bits. Second, parse this string into 2-bit "datawords," using the first two columns of Table 2. Third, convert each dataword into a 3-bit "codeword" using the last two columns of Table 2. Finally, write down these codewords sequentially. If this is done, one performs each step of the Asserted Claims, a result that confirms their abstract nature. *See Flook*, 437 U.S. at 586 (invalidating invention that was "primarily useful for computerized [applications]" but could "be made [using a] pencil and paper."); *see also CyberSource*, 654 F.3d at 1373 (citing *Benson*, 409 U.S. at 67).[13]

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[13] Plaintiff might try to save the Asserted Claims by arguing that they are somehow limited to a particular field of use. They are not. And in any event, limiting an abstract idea "to one field of use" does not make an abstract idea patentable. *Bilski v. Kappos*, 561 U.S. 593, 612 (2010). A claim is invalid under § 101 if *any* embodiment covers patent-ineligible subject matter. *Mentor*

For all of these reasons, the Court should find that the Asserted Claims fail *Alice* step one because they are directed to the abstract idea of encoding bits using a mathematical formula.

C. *Alice* Step Two: The Asserted Claims Lack an Inventive Concept.

Because the Asserted Claims are directed to an abstract idea, the Court must proceed to step two of Alice and determine whether the claim contains an "inventive concept," *i.e.*, "an element or combination of elements that is sufficient to ensure that the patent in practice amounts to *significantly more* than a patent upon the [abstract idea] itself." *Alice*, 134 S. Ct. at 2355 (internal citation omitted) (emphasis added). Again, the focus in a § 101 analysis is on what is claimed. Thus, Plaintiff cannot save its claims by pointing to purportedly "unconventional" activities allegedly disclosed in the specification, but not recited in the claims.[14]

The Asserted Claims do not contain an inventive concept. The claimed method as a whole is directed to data encoding, "an abstract concept long utilized to transmit information . . . Morse code, ordering food at a fast food restaurant via a numbering system, and Paul Revere's 'one if by land, two if by sea' signaling system all exemplify encoding at one end and decoding at the other end." *Recognicorp*, 855 F.3d at 1326.

And none of the individual method steps contain anything inventive. The preamble of claim 13 is merely directed to a "method for encoding m-bit binary datawords into n-bit binary codewords." It does not specify any particular hardware for effecting the claimed m- to n-bit conversion. Similarly, Steps 1 and 2 generically recite "receiving binary datawords" and "producing sequences of n-bit codewords," respectively. Step 3 is directed generally to the abstract j and k constraints themselves, while Steps 4 and 5 are directed generally to subsequent recording of the encoded bit sequence of Steps 1 - 3. The steps in claim 13 are couched entirely in terms of the generic verbs "receiving," "producing," "imposing," and "generating." No details are

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Graphic Corporation v. EVE-USA, Inc., 851 F.3d 1275, 1294-95 (Fed. Cir. 2017). Here, the Asserted Claims allegedly cover virtual "simulations," and activity done on pen and paper.

[14] In evaluating this step, the "mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention." 134 S. Ct. at 2358. For a computer or other conventional equipment "to be deemed meaningful in the context of this analysis, it must involve more than performance of 'well-understood, routine, [and] conventional activities previously known to the industry.'" *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat. Ass'n*, 776 F.3d 1343, 1347-48 (Fed. Cir. 2014) (quoting *Alice*, 134 S. Ct. at 2359).

given as to "*how*" or where these steps are done. *24/7 Customer*, 2017 WL 2311272, at *4.

Methods for encoding bits were known long before Plaintiff filed its patent application. In fact, the file of the prosecution of the '601 patent shows that the patent examiner found that methods for encoding m-bit datawords into n-bit codewords were "well known" (Mayle Decl. Ex. B at p. 54), and codes for performing such methods, including the *admittedly* "commonly used" "[R]unlength limited (RLL) codes," are discussed in the '601 patent's specification. (Mayle Decl. Ex. A, *e.g.*, at 1:15-66.) The '601 patent contains an exemplary code involving "logic rules" for an encoder, but the patent *admits* that these "logic rules are representative of those that could be developed for any of the MTR codes *using industry standard design packages*." (Ex. A at 5:45-47) (emphasis added). There is nothing at all inventive about using "industry standard design packages" to implement logic rules in an m-bit to n-bit encoder.

According to the patent, "[t]he idea" being claimed "is to eliminate all sequences with *three or more consecutive* transitions" of bits, but to "allow" two consecutive bit transitions "to survive in the recorded sequence." (Ex. A at 4:24-27) (emphasis added). There is nothing "inventive" about this "idea." Indeed, the '601 patent's specification admits that, as of the time patent application was filed, the prevention of "consecutive transitions" of bits could "be accomplished using *the existing* RLL (1,k) code." (Ex. A at 4:8-12) (emphasis added). And removing any doubt that the claimed "idea" was not inventive, long before the '601 inventors filed a patent application on the "idea" of eliminating "three or more consecutive transitions," (Ex. A at 4:24-27), this very "idea" was well-understood, routine, and conventional in the field. The exact "idea" had already been published—and particular implementations of it had even been *patented*—in the United States, in Japan, and in Europe. *See*, *e.g.*, U.S. Patent No. 5,392,270 ("the Okada patent") at 3:34-43 (Mayle Decl. Ex. C) (disclosing a method for encoding 8-bit datawords into 13-bit codewords, where bit transitions do "*not appear three or more times in a row* in a train of information data at the time of recording information data on a recording medium"); *id*. at 10:8-22 (disclosing an encoding method "to restrict the number of consecutive" bit transitions "to *two at a maximum before recording* record information on a disk.") (emphasis added).

An abstract idea, like the one claimed here, that was "previously known to the industry" is not inventive under § 101. *Alice*, 134 S. Ct. at 2359. And even if Plaintiff was the first to discover the claimed mathematical algorithm (it was not, *see supra*), the Asserted Claims would still be patent-ineligible because "the discovery of such a" mathematical algorithm "cannot support a patent unless there is some other inventive concept in its application." *Flook*, 437 U.S. at 594 (emphasis added). There is no such "other inventive concept" here.

For all of these reasons, the Court should find that the Asserted Claims fail *Alice* step two because they do not claim an inventive concept.

V. CONCLUSION

Patent eligibility should be adjudicated early to avoid the needless expenditure of effort and money by the parties and the Court. Here, the Asserted Claims cover an abstract, mathematical algorithm that can be performed with pen and paper, or on a generic computer. Defendants therefore respectfully move for judgment on the pleadings that the Asserted Claims are invalid under 35 U.S.C. § 101.

DATED: March 15, 2018

Respectfully submitted,

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APPENDIX: ASSERTED CLAIMS

Claim 13

[Preamble:] A method for encoding m-bit binary datawords into n-bit binary codewords in a recorded waveform, where m and n are preselected positive integers such that n is greater than m, comprising the steps of:

[Step 1:] receiving binary datawords; and

[Step 2:] producing sequences of n-bit codewords;

[Step 3:] imposing a pair of constraints (j;k) on the encoded waveform;

[Step 4:] generating no more than j consecutive transitions of said sequence in the recorded waveform such that $j \geq 2$; and

[Step 5:] generating no more than k consecutive sample periods of said sequences without a transition in the recorded waveform.

Claim 14

The method as in claim **13** wherein the consecutive transition limited is defined by the equation $2 \leq j < 10$.

Claim 17

The method as in claim **14** wherein the binary sequences produced by combining codewords have no more than one of j consecutive transitions from 0 to 1 and from 1 to 0 and no more than k+1 consecutive 0's and k+1 consecutive 1's when used in conjunction with the NRZ recording format.