UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN JOSE DIVISION

REGENTS OF THE UNIVERSITY OF MINNESOTA, Plaintiff, v. LSI CORPORATION, et al., Defendants.	Case No. 5:18-cv-00821-EJD **CLAIM CONSTRUCTION ORDER**

Plaintiff Regents of the University of Minnesota ("UMN") brings this suit against Defendants LSI Corporation and Avago Technologies U.S. Inc. (collectively, "LSI") for infringement of U.S. Patent No. 5,859,601, entitled "Method and Apparatus for Implementing Maximum Transition Run Codes" (the " '601 Patent"). The parties dispute the proper construction of three terms. *See* Am. Joint Claim Construction Statement ("CC Statement"), ECF No. 240. After careful consideration of the record and the parties' arguments at hearing, the Court construes the contested language of the patent-in-suit as set forth below.

I.   **BACKGROUND**

        A.   **Overview of the Technology**

        UMN is a public research university that occasionally patents and commercializes the inventions of its researchers. First Am. Compl. ("FAC") ¶¶ 4–6, 8, ECF No. 40. As relevant in this matter, UMN is the owner and assignee of the '601 Patent, for which Dr. Jaekyun Moon (a former UMN professor) and Dr. Barrett J. Brickner (Dr. Moon's former graduate student) are named inventors. *Id.* ¶¶ 48, 53, 73.

        The '601 Patent generally pertains to digital storage systems. CC Statement, Ex. A ('601

Patent) at col. 1:10–11, ECF No. 240-1. Such systems work by recording data as 1's and 0's,

though the formats with which they record that data can vary. The '601 Patent discusses two such

recording formats. First, a storage device can use the Non-Return-to-Zero ("NRZ") recording

format. '601 Patent at col. 1:24–27; *see also* CC Statement, Ex. D ("McLaughlin Decl.") ¶ 13. In

NRZ recording, a 1 is represented by positive magnetization within the storage device, and a 0 is

represented by negative magnetization within the storage device.[1] '601 Patent at col. 1:24–27.

Second, a storage device can use the Non-Return-to-Zero-Inversion ("NRZI") recording format.

'601 Patent at col. 1:29–32; *see also* McLaughlin Decl. ¶ 14. In this format, a 1 is represented by

a magnetic transition (*i.e.*, from positive to negative), and a 0 is represented by a non-transition.

'601 Patent at col. 1:29–32.

When a device attempts to read data on a digital storage system, noise that occurs during

the process can cause errors which, in turn, cause the device to misread the data. McLaughlin

Decl. ¶¶ 16, 25. The '601 Patent addresses this issue by introducing Maximum Transition Run

("MTR") codes, which eliminate certain patterns of data that are particularly error prone. '601

Patent at col. 2:43–47. In particular, MTR codes "impose[] a limit on the maximum number of

consecutive transitions that can occur," *id.* at col. 2:59–60, through the use of 'j' and 'k'

constraints, often written as (j;k). *Id.* at col. 4:46–48. The j constraint places a limit on the

maximum number of consecutive transition allowable, and the k constraint places a limit on the

maximum number of non-transitions allowable. *Id.* at col. 10:55–59; *see also* McLaughlin Decl.

¶ 29.

To achieve these constraints, the '601 Patent teaches the encoding of "datawords" (pieces

of input data) into "codewords" (corresponding pieces of output data). '601 Patent at col. 10:50–

51. The codewords are chosen such that, when the codewords are joined together in a string, the

(j;k) constraints are satisfied. This encoding can be performed by using either "block" codes or

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[1] The parties dispute whether the '601 Patent is limited to magnetic storage media, or if it encompasses other forms of digital storage. The Court uses magnetic storage as an exemplar in this Overview because the '601 Patent does the same, but the Court does not express any opinion on whether NRZ or any other recording formats are limited to magnetic storage.

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1 "state-dependent" codes. Block codes are those where each dataword is mapped to a unique

2 codeword. *Id.* at col. 5:66–67. By contrast, state-dependent codes assign codewords to datawords

3 based on the previously used codeword, or "state," of the system. *See id.* at col. 5:50–53, 61–66.

4 ### B.   Procedural History

5 This case was originally filed in the District of Minnesota on August 25, 2016. ECF No. 1.

6 After it was transferred to this district, the Court stayed the matter pending *inter partes* review

7 ("IPR") on May 11, 2018. ECF No. 211. The parties vigorously litigated the validity of certain

8 claims in the '601 Patent in IPR proceedings, including two trips to the Federal Circuit.

9 Ultimately, the Patent Trial and Appeal Board ("PTAB") held that claim 13 was unpatentable but

10 did not invalidate claims 14 and 17, which depend from claim 13. CC Statement, Ex. B ("PTAB

11 Decision"), ECF No. 240-2. LSI appealed that decision to the Federal Circuit, which affirmed.

12 *LSI Corp. v. Regents of Univ. of Minn.*, 43 F.4th 1349 (2022).

13 On October 7, 2022, the Court lifted its IPR stay upon stipulation of the parties. ECF No.

14 218. Throughout May and June of 2023, the parties briefed claim construction. *See* Pl.'s Opening

15 Claim Construction Br. ("UMN Br."), ECF No. 239; Defs.' Responsive Claim Construction Br.

16 ("LSI Resp."), ECF No. 247; Pl.'s Claim Construction Reply Br. ("UMN Reply"), ECF No. 249.

17 The Court held a tutorial and *Markman* hearing on July 19, 2023. ECF No. 256.

18 ### C.   Claim Language

19 UMN asserts infringement of only claims 14 and 17 of the '601 Patent. However, because

20 both claims depend from claim 13, the disputed terms for construction come only from claim 13,

21 which the Court reproduces below:

22
23 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:

24 receiving binary datawords; and
   producing sequences of n-bit codewords;

25 imposing a pair of constraints (j;k) on the encoded waveform;
   generating no more than j consecutive transitions of said sequence

26 in the recorded waveform such that $j \geqq 2$; and
   generating no more than k consecutive sample periods of said

27 sequences without a transition in the recorded waveform.

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'601 Patent at col. 10:47–59.

II. LEGAL STANDARD

Claim construction is a question of law to be decided by the court. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). "[T]he interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 (Fed. Cir. 2005) (citation omitted). Consequently, courts construe claims in the manner that "most naturally aligns with the patent's description of the invention." *Id.* (citation omitted).

When construing disputed terms, courts begin with "the language of the asserted claim itself." *Comark Commc'ns, Inc. v. Harris Corp.*, 156 F.3d 1182, 1186 (Fed. Cir. 1998) (citations omitted). That is because "[i]t is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.'" *Phillips*, 415 F.3d at 1312 (citation omitted). The words of a claim should be given their "ordinary and customary meaning," which is "the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention." *Id.* at 1312-13 (citations omitted). However, the person of ordinary skill in the art does not work from a blank slate—rather, she "is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Id.* at 1313. Thus, courts "have long emphasized the importance of the specification in claim construction." *David Netzer Consulting Eng'r LLC v. Shell Oil Co.*, 824 F.3d 989, 993 (Fed. Cir. 2016) (citation omitted). They have explained that the specification is "always highly relevant" and "[u]sually, it is dispositive; it is the single best guide to the meaning of a disputed term." *Phillips*, 415 F.3d at 1315 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

The prosecution history of a patent—which "consists of the complete record of the proceedings before the PTO [Patent and Trademark Office]"—is also intrinsic evidence of a claim term's meaning. *Id.* at 1317. But since the prosecution history "represents an ongoing negotiation

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between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Id.* Nonetheless, there are times when prosecution history is controlling. Where a patentee disavows certain meanings during prosecution, the doctrine of prosecution disclaimer "preclude[es] [her] from recapturing through claim interpretation [those] meanings." *Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1323 (Fed. Cir. 2003). To qualify as a disclaimer, such disavowal "must be both clear and unmistakable." *3M Innovative Props. Co. v. Tredegar Corp.*, 725 F.3d 1315, 1325 (Fed. Cir. 2013). That is a high bar: the disavowal "must be 'so clear as to show reasonable clarity and deliberateness,' and 'so unmistakable as to be unambiguous evidence of disclaimer.'" *Genuine Enabling Tech. LLC v. Nintendo Co.*, 29 F.4th 1365, 1374 (Fed. Cir. 2022) (quoting *Omega*, 334 F.3d at 1325).

Finally, the court is also authorized to consider extrinsic evidence, such as "expert and inventor testimony, dictionaries, and learned treatises." *Markman*, 52 F.3d at 980 (internal citations omitted). Although the court may consider evidence extrinsic to the patent and prosecution history, such evidence is considered "less significant than the intrinsic record" and "less reliable than the patent and its prosecution history in determining how to read claim terms." *Phillips*, 415 F.3d at 1317–18 (citation omitted). Thus, while extrinsic evidence may be useful in claim construction, ultimately "it is unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence." *Id*. at 1319.

III.   CONSTRUCTION OF DISPUTED TERMS

A.   "producing sequences of n-bit codewords"

UMN's Proposed Construction	LSI's Proposed Construction	Court's Construction
producing, as output, sequences of bits, where each sequence is n-bits long	producing a series of concatenated n-bit codewords, such that each received m-bit binary dataword is encoded into an n-bit codeword in a manner that is not state-dependent	producing, as output from the received binary datawords, n-bit codewords that are combined into a sequence

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1   The parties have two primary disagreements as to the construction of this term. First, they

2   disagree on whether state-dependent codes fall within the scope of the relevant claim language.

3   Second, they disagree on whether it is appropriate to include "concatenated" in the construction of

4   the term. The Court addresses each in turn.

1.   State-Dependent Codes

6   UMN argues that there is nothing inherent in the claim language that excludes state-

7   dependent codes. UMN Br. at 9. And in fact, if the term were construed as LSI requests, that

8   construction would create internal inconsistency with dependent claim 19, which expressly claims

9   a state-dependent encoder. UMN Reply at 9. LSI largely ignores the text of the '601 Patent,

10   instead focusing on what it views as a prosecution disclaimer. It contends that, in oral argument to

11   the Federal Circuit during the appeal of PTAB's final IPR decision, UMN expressly disclaimed

12   state-dependent codes. LSI Resp. at 6–8.

a.   Prosecution Disclaimer

14   The Court starts with LSI's prosecution disclaimer argument. It is unusual that LSI bases

15   its argument on statements made in oral argument before the Federal Circuit. While the doctrine

16   of prosecution disclaimer has been extended to statements made by a patent owner during IPR

17   proceedings, *Aylus Networks, Inc. v. Apple Inc.*, 856 F.3d 1353, 1361 (Fed. Cir. 2017), the parties

18   have not cited, and the Court has been unable to find, any authority extending the doctrine to oral

19   arguments before the Federal Circuit on an *appeal* from such IPR proceedings. The Court has its

20   doubts that prosecution disclaimer can arise from such oral arguments. But it need not—and does

21   not—seek to resolve those doubts now, because even assuming disclaimer could arise, LSI has not

22   shown that the requirements for disclaimer are met.

23   The purported disavowals of state-dependent codes were far from "clear and

24   unmistakable." *3M Innovative Props.*, 725 F.3d at 1325. Two of the supposed disavowals were

25   based on colloquies between UMN and the Federal Circuit panel in which they spoke in abstract

26   analogy. For example, in one exchange regarding anticipation by a prior art reference, UMN and

27   the panel discussed whether LSI was relying on both "A and B" or just "A" from the prior art

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reference. Ex. 2 ("Oral Arg. Tr.") at 20:16–22:5, ECF No. 247-1. And in another exchange,

UMN developed an extended metaphor comparing a four-legged stool without a back and a four-

legged stool with a back (a chair). *Id.* at 22:6–24:15. The disavowal there, according to LSI,

came when UMN stated, "We didn't claim the back. . . . the '601 patent doesn't claim the back."

Id. at 24:8–12. It is not at all apparent to the Court what UMN was referring to with "A" or "B" or

the "back," and it is not at all obvious what UMN intended to convey with those analogies.

Nor is the third alleged disavowal—UMN's statement that "I don't think anyone argued

that, that the claims covered the state-dependent aspect of it"—any more explicit. *Id.* at 24:19–21.

To observe that nobody made an argument about state-dependent codes is not the same thing as

affirmatively disclaiming such codes from the scope of a term's meaning. Mere non-argument is

hardly an unmistakable disclaimer.

Moreover, UMN seemed to suggest at points that state-dependent codes *were* encompassed

by the '601 Patent. It argued:

> I think what their argument is is that the state-dependent machine was
> different and beyond what was disclosed in the ['601] patent. Well,
> as a matter of fact, that's wrong . . . .

Id. at 23:11–14. Thus, at best, UMN's statements at oral argument were contradictory. That is not

enough to find prosecution disclaimer.[2]

b. Analysis of the Intrinsic Evidence

Having rejected LSI's prosecution disclaimer argument, the Court turns to the intrinsic

evidence to construe the disputed term. Based on that evidence, the Court agrees with UMN. On

its face, nothing in the term, "producing sequences of n-bit codewords," excludes state-dependent

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[2] LSI briefly argues the PTAB expressly found that the claims of the '601 Patent do not cover
state-dependent codes, LSI Resp. at 6 (citing PTAB Decision at 38–39); however, a review of the
PTAB's decision shows that is not the case. LSI also suggest that "[t]he Federal Circuit panel
repeatedly confirmed UMN's disclaimer during the hearing." *Id.* But that argument carries little
weight. It should not need to be said that comments made by a panel during oral argument do not
constitute a court's holding. And the very nature of oral argument is that judges will ask probing
questions of both parties, sometimes playing devil's advocate to encourage the parties to better
develop a line of reasoning. Given the dynamic and exploratory nature of oral argument, stray
comments by judges during argument are not authority, either binding or persuasive, on which this
Court can rely.

1   codes; indeed, the term says nothing at all about state-dependent codes. And the specification

2   contemplates the use of state-dependent codes as well. *See, e.g.*, '601 Patent at col. 4:61–62

3   ("*[S]tate-dependent encoders* . . . can be designed for the MTR constraint . . . .") (emphasis

4   added); col. 5:48–67 (describing operation of a state-dependent encoder); col. 6:33–34 (describing

5   an embodiment where "conditional mappings create[] a *state dependent encoder* with two states")

6   (emphasis added). Accordingly, the Court finds that state-dependent codes are not excluded from

7   the scope of the term.

8   **2.   Concatenation**

9   LSI argues that the idea of concatenation must be part of the claim construction because

10   the (j;k) constraints must be satisfied at the boundaries of different codewords. LSI Resp. at 5. In

11   its view, concatenation conveys the idea that the codewords are connected from end-to-end and

12   therefore the constraints apply across connected codewords. *Id.* LSI's concern is that, absent its

13   proposed concatenation language, a jury might erroneously believe that only each individual

14   codeword need satisfy the (j;k) constraints when the claims actually require the constraints to be

15   satisfied across the entire waveform generated by combining the codewords. UMN does not

16   address the specific boundary condition issue that LSI raises, only generically asserting that LSI

17   failed to cite sufficient evidence to support its construction. UMN Reply at 10.

18   There is ample evidence in the specification that a person of ordinary skill would

19   understand that the produced codewords must apply across the boundaries of different codewords

20   when those codewords are combined. *See, e.g.*, '601 Patent at col. 5:1–2 (an encoder must "meet

21   the MTR constraint at the *codeword boundaries*") (emphasis added); *id.* at col. 5:48–50, col. 6:2–

22   5 (applying boundary conditions eliminates some potential codewords); *id.* at col. 7:59–61

23   (describing how an embodiment "satisfy[ies] the MTR j=2 constraint at *codeword boundaries*")

24   (emphasis added). So, for example, if there are two codewords, "100" and "001," it is not enough

25   for each individual codeword to meet the (j;k) constraints. Their combined forms, "100001" and

26   "001100," must also satisfy the constraints.

27   The portions of the specification identified above inform the meaning of the word

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"sequences" in the disputed term, making it clear that the idea of a sequence involves concatenating, or combining, the codewords such that the (j;k) constraints must be evaluated across the concatenated codewords rather than only across individual codewords. That said, the Court is hesitant to include the word "concatenate" in its construction because that word is highly technical and, though accurate, may not provide much guidance to a jury. Instead, the Court draws inspiration from the language of claim 17. *See Phillips*, 415 F.3d at 1314 ("Other claims of the patent in question, both asserted and unasserted, can also be valuable sources of enlightenment as to the meaning of a claim term. . . . Because claim terms are normally used consistently throughout the patent, the usage of a term in one claim can often illuminate the meaning of the same term in other claims.") (citations omitted). Claim 17 recites, "wherein the binary sequences produced by combining codewords have no more than one of j consecutive transitions." '601 Patent at col. 11:1–3. That language more explicitly defines a "sequence" as a combination of codewords, and the parties have agreed that the language of claim 17 can be construed as its plain and ordinary meaning. CC Statement at 3.[3]

Therefore, the Court will use the language, "that are combined into a sequence," rather than "concatenated."

* * *

After resolving the parties' substantive disagreements over the disputed term, all that remains is to settle on the final language of the construction. The Court begins with UMN's construction because it is more straightforward and will likely be easier for a jury to digest, but it makes some modifications. First, because UMN's construction describes the codewords as "output," the Court specifies the input to avoid confusion. Thus, the Court adds the words, "from the received binary datawords," after the word, "output." Second, rather than describing the codewords as "sequences of bits"—which may confuse a jury because a "sequence" in the construction refers to an individual codeword while a "sequence" in the disputed term refers to a

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[3] The parties mistakenly label the language of claim 17 as coming from claim 13.

collection of multiple codewords—the Court simply uses the word, "codeword." The parties have already agreed that "dataword" and "codeword" can be given their plain and ordinary meanings, so the Court has no concern that use of those words in the construction will cause further confusion. *See* CC Statement at 2. Finally, the Court adds, "that are combined into a sequence," to describe the collection of codewords, as it indicated in its discussion of concatenation above.

In sum, the Court construes this disputed term as: "producing, as output from the received binary datawords, n-bit codewords that are combined into a sequence."

B. "encoded waveform"

UMN's Proposed Construction	LSI's Proposed Construction	Court's Construction
the recorded waveform	the produced sequences of n-bit codewords	the recorded waveform

The parties' dispute over this term centers on the question of how a court should interpret a patentee's choice to use different terms in a claim. LSI argues that that there "[t]here is an inference, however, that two different terms used in a patent have different meanings." LSI Resp. at 9 (quoting *Comaper Corp. v. Antec, Inc.*, 596 F.3d 1343, 1348 (Fed. Cir. 2010)). Since claim 13 uses both "recorded waveform" and "encoded waveform," the two terms must have different meanings. *Id.* at 9–10. UMN counters that the inference is rebuttable, and that in this case, there is good reason to believe that the claim refers to a single waveform that is both encoded and recorded such that "recorded waveform" and "encoded waveform" have the same meaning.

UMN has the better of the two arguments on this point. The Federal Circuit has held that, while the use of two different terms in the same claim "gives rise to an inference that a different meaning should be assigned to each" different term, "[t]hat inference [] is not conclusive; it is not unknown for different words to be used to express similar concepts, even though it may be poor drafting practice." *Bancorp Servs., L.L.C. v. Hartford Life Ins. Co.*, 359 F.3d 1367, 1373 (Fed. Cir. 2004).[4] That inference has been rebutted here. "Encoded waveform" is introduced with the

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[4] LSI suggests that *Bancorp* is inapposite because it deals with indefiniteness rather than claim construction, and that in any case, the Supreme effectively overruled *Bancorp* in *Nautilus, Inc. v.*

definite article, "the," which indicates that "encoded waveform" refers to an antecedent basis and has the same meaning as that antecedent basis. *X One, Inc. v. Uber Techs., Inc.*, 440 F. Supp. 3d 1019, 1034 (N.D. Cal. 2020) (citations omitted). The only waveform that can serve as an antecedent basis within claim 13 is "a recorded waveform" in the preamble, supporting UMN's position that "encoded waveform" has the same meaning as "recorded waveform."

Moreover, there is evidence that claim 13 refers only to a single waveform, and the use of "recorded waveform" and "encoded waveform" merely emphasize different characteristics of that single waveform. The preamble of claim 13 describes the invention as "encoding m-bit binary datawords into . . . a recorded waveform," showing that the "recorded waveform" is also encoded. '601 Patent at col. 10:47–48; *see also* McLaughlin Decl. ¶ 45. And the prosecution history, too, supports that conclusion. In initially rejecting claim 13, the patent examiner interchangeably referred to "encoded waveforms" and "recorded waveforms" without differentiating between the two. UMN Br., Ex. 1 at 38, ECF No. 239-1. Likewise, in its response, UMN described its invention by interchangeably referring to "encoded waveforms" and "recorded waveforms" (and at one point, just "the waveform"), all without differentiation. *Id.* at 47. Thus, the prosecution history illustrates that drawing a distinction between the two terms was not important to either the patent examiner or UMN.[5]

LSI's authorities to the contrary are readily distinguishable. In *Comaper*, the two terms that the court distinguished were "drive bay" and "drive bay slot." 596 F.3d at 1348. There, it was appropriate to infer that the two had different meanings because a "bay" is not a "bay slot." Similarly, in *Ethicon Endo-Surgery v. U.S. Surgical Corp.*, the terms were "pusher assembly" and

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Biosig Instruments, Inc., 572 U.S. 898 (2014). Neither suggestion is availing here. *Bancorp* is relevant here insofar as it explains how to interpret claim terms, and there is no reason to think that canons of construction applied in the context of indefiniteness somehow cannot be applied in formal claim construction. And in *Nautilus*, the Supreme Court opined on the standard for definiteness, not canons of claim construction; therefore *Bancorp*'s holdings on how to construe claim terms undoubtedly survive *Nautilus*.

[5] The fact that UMN introduced "encoded waveform" into claim 13 only after the initial rejection does not suggest that it has a different meaning than "recorded waveform" because the prosecution history does not indicate that UMN or the patent examiner ever drew a distinction between the two terms.

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"pusher bar." 93 F.3d 1572, 1579 (Fed. Cir. 1996). Although the adjectives in *Ethicon* are the same, the nouns, "assembly" and "bar," are not. The difference in nouns strengthens the inference that the two terms have different meanings since an assembly is plainly different than a bar. Those circumstances are unlike the ones present here, where the terms "encoded waveform" and "recorded waveform" are based on the same noun. They are both "waveforms," and differ only in that a different adjective is used to modify "waveform." In such a situation, the Court can readily conclude that there is a single waveform described alternately as "encoded" or "recorded."

As such, the Court adopts UMN's construction.

C.   "transition"

UMN's Proposed Construction	LSI's Proposed Construction	Court's Construction
a change in the recording medium from one state to another, which can be represented in different ways depending on the recording format	plain and ordinary meaning; a transition can be logically represented in multiple ways depending on the encoding format used—a change from 0 to 1 or from 1 to 0 when using NRZ format, for example, or a 1 when using NRZI format	plain and ordinary meaning; a transition can be logically represented in multiple ways depending on the recording format used—a change from 0 to 1 or from 1 to 0 when using NRZ format, for example, or a 1 when using NRZI format

The parties' dispute over this term centers on the question of whether the PTAB's construction of "transition" in the IPR proceedings has a collateral estoppel effect on the claim construction here. As a threshold matter, the Court finds that the PTAB's final IPR decision can have a collateral estoppel effect here. In general, PTAB decisions may collaterally estop a federal district court. *Papst Licensing GMBH & Co. KG v. Samsung Elecs. Am., Inc.*, 924 F.3d 1243, 1250–51 (Fed. Cir. 2019) (collecting cases). In the claim construction context, though, the Federal Circuit has previously expressed doubt that estoppel could apply because "the [PTAB] applies the broadest reasonable construction of the claims while the district courts apply a different standard of claim construction as explored in *Phillips*." *SkyHawke Techs., LLC v. Deca Int'l Corp.*, 828 F.3d 1373, 1376 (Fed. Cir. 2016). Nonetheless, collateral estoppel can apply here because the concerns highlighted in *SkyHawke* are not present. As the PTAB made clear, when construing

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"transition," it applied the same *Phillips* standard the Court applies now. PTAB Decision at 9.

Consequently, the PTAB's construction collaterally estops the Court if the traditional elements of

collateral estoppel are met.

When dealing with collateral estoppel in a patent suit, courts apply regional circuit law

except as to aspects that have "special or unique application to patent cases." *Aspex Eyewear, Inc.*

v. Zenni Optical Inc., 713 F.3d 1377, 1380 (Fed. Cir. 2013). Courts in this district typically apply

the three-part test set forth in *Hydranautics v. FilmTex Corp.*, 204 F.3d 880 (9th Cir. 2000).

Finjan LLC v. SonicWall, Inc., 2021 WL 3111685, at *2 & n.1 (N.D. Cal. July 22, 2021); *see also*

Droplets, Inc. v. Yahoo! Inc., 2019 WL 5781915, at *2 & n.2 (N.D. Cal. Oct. 15, 2019). Under

that test, Defendants must show "(1) the issue necessarily decided at the previous proceeding is

identical to the one which is sought to be relitigated; (2) the first proceeding ended with a final

judgment on the merits; and (3) the party against whom collateral estoppel is asserted was a party

or in privity with a party at the first proceeding." *Hyrdanautics*, 204 F.3d at 885.

UMN does not contest most of these elements, nor could it. It is clear that term being

construed here ("transition") is the same term that the PTAB construed, that the IPR proceedings

ended with a final judgment, and that the parties in the IPR proceedings and this action are the

same. *See* PTAB Decision at 10–21; *LSI Corp.*, 43 F.4th 1349. The only element of estoppel that

UMN contests is whether the construction of "transition" was "necessarily decided." UMN Br. at

20; UMN Reply at 13. UMN's position is that the PTAB's decision logically required it to reject

UMN's construction that "transition" referred to a magnetic transition, but the decision did not

logically require the PTAB to reject the alternate construction that UMN advances now. UMN Br.

at 20; UMN Reply at 13. The problem is that this argument has been squarely rejected. The

requirement that an issue be "necessarily decided" means only that the previous tribunal actually

decided the issue; where "a court hears 'evidence and argument from both parties, and specifically

rule[s] on the issue,' a party may not escape the rulings bin[d]ing effect on the ground that it was

not logically essential to the court's ultimate determination." *Droplets*, 2019 WL 5781915, at *4

(quoting *United States v. Johnson*, 256 F.3d 895, 915 (9th Cir, 2001)). The PTAB expressly

addressed and rejected UMN's alternate construction, so the issue was "necessarily decided."
PTAB Decision at 16–18.

As a result, the Court is collaterally estopped from adopting UMN's proposed construction, and it adopts LSI's construction, which is equivalent to the PTAB's construction, with one modification. Namely, the Court uses "recording format" rather than "encoding format" to describe the NRZ and NRZI formats. The '601 Patent consistently refers to NRZ and NRZI as recording formats. *See, e.g.*, '601 Patent at col. 1:24–25, 30, col. 7:52, 65, col. 11:5–6. And the PTAB, too, refers to them as recording formats. *See, e.g.*, PTAB Decision at 11, 14–15, 21. Therefore, making this minor modification is more faithful to the '601 Patent while still remaining consistent with the PTAB's construction.

IV. CONCLUSION

For the reasons set forth above, the Court construes the disputed terms as follows:

Claim Terms	Court's Construction
producing sequences of n-bit codewords	producing, as output from the received binary datawords, n-bit codewords that are combined into a sequence
encoded waveform	the recorded waveform
transition	plain and ordinary meaning; a transition can be logically represented in multiple ways depending on the recording format used—a change from 0 to 1 or from 1 to 0 when using NRZ format, for example, or a 1 when using NRZI format

IT IS SO ORDERED.

Dated: August 25, 2023

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EDWARD J. DAVILA
United States District Judge

United States District Court
Northern District of California