United States Court of Appeals for the Federal Circuit

CONSTELLATION DESIGNS, LLC,
Plaintiff-Appellee

v.

LG ELECTRONICS INC., LG ELECTRONICS USA, INC., LG ELECTRONICS ALABAMA, INC.,
Defendants-Appellants

2024-1822

Appeal from the United States District Court for the Eastern District of Texas in No. 2:21-cv-00448-JRG, Judge J. Rodney Gilstrap.

Decided: April 28, 2026

JEFFREY B. WALL, Gibson Dunn & Crutcher, LLP, Washington, DC, argued for plaintiff-appellee. Also represented by JUDSON OWEN LITTLETON; BRADLEY WAYNE CALDWELL, JASON DODD CASSADY, AUSTIN CURRY, AISHA MAHMOOD HALEY, ROBERT SETH REICH, JR., JAMES F. SMITH, Caldwell Cassady & Curry, Dallas, TX; DANIEL J. RICHARDSON, Sullivan & Cromwell LLP, Washington, DC.

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JOSEPH CHRISTOFF, CHRISTIAN A. CHU, MICHAEL J. MCKEON; ASHLEY BOLT, Atlanta, GA.

Before LOURIE and STOLL, *Circuit Judges*, and OETKEN, *District Judge*.[1]

STOLL, *Circuit Judge*.

This patent infringement case raises issues of eligibility, infringement, and damages and relates to communication systems that use non-uniform constellations that have increased capacity compared to conventional, uniform constellations operating within a similar signal-to-noise ratio band. Constellation Designs, LLC sued LG Electronics Inc.; LG Electronics USA, Inc.; and LG Electronics Alabama, Inc. (collectively, "LG") for patent infringement in the United States District Court for the Eastern District of Texas, which proceeded to a jury trial. The district court entered a final judgment against LG for willfully infringing claims 17, 21, 24, and 28 of U.S. Patent No. 8,842,761; claim 5 of U.S. Patent No. 10,693,700; claims 21 and 23 of U.S. Patent No. 11,019,509; and claims 24 and 44 of U.S. Patent No. 11,018,922.

LG challenges on appeal the district court's (1) summary judgment of patent eligibility under 35 U.S.C. § 101, (2) denial of LG's motion for judgment as a matter of law of non-infringement, and (3) denial of LG's motion for judgment as a matter of law of no damages or denial of LG's motion to exclude the testimony of Constellation's damages expert.

For the reasons discussed below, we vacate the summary judgment of eligibility for claims 17, 21, 24, and 28 of

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[1] Honorable J. Paul Oetken, District Judge, United States District Court for the Southern District of New York, sitting by designation.

the '761 patent and claim 5 of the '700 patent; affirm the summary judgment of eligibility for claims 21 and 23 of the '509 patent and claims 24 and 44 of the '922 patent; affirm the denial of LG's motion for judgment as a matter of law of non-infringement; and affirm the denial of judgment as a matter of law of no damages as well as the denial of LG's motion to exclude the testimony of Constellation's damages expert. Accordingly, we vacate-in-part, affirm-in-part, and remand for further proceedings consistent with this opinion.

BACKGROUND

I. Technological Background

In a conventional digital communication system, a transmitter, as shown in Figure 2 of the '761 patent (reproduced below), uses a coder (e.g., an encoder), mapper, and modulator to transform a bitstream of digital "bits" (i.e., sequences of 0s and 1s) into an analog signal for transmission over a communications channel. '761 patent col. 3 ll. 30–31, col. 5 ll. 22–34.

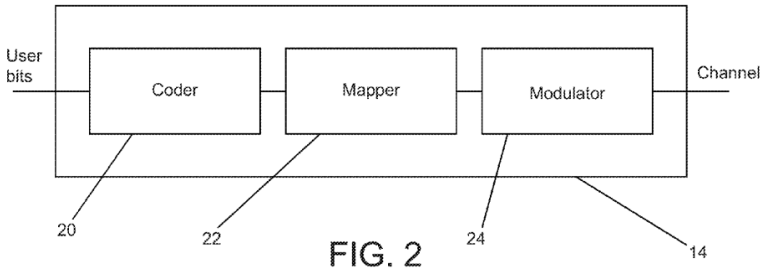
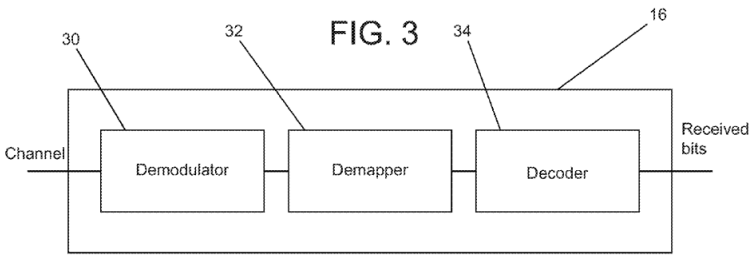


FIG. 2

Id. Fig. 2. As shown in Figure 3 (reproduced below), at the communication channel's other end, a receiver receives the analog signal and transforms it back into a bitstream of digital bits using, for example, a demodulator, a demapper, and a decoder. *Id.* at col. 3 ll. 32–33, col. 5 ll. 35–43.



Id. Fig. 3. For example, the bits of digital information that make up a television program are first converted into analog broadcast signals. *See* J.A. 20165–66 (Trial Tr. 204:16–207:12) (testimony of named inventor Dr. Chris Jones). Once that process is complete, antennas and radio towers transmit those broadcast signals over the air until they reach a television capable of receiving them. *See id.* But as they travel, the broadcast signals become weaker—a process called "attenuation"—and pick up "noise," distorting the broadcast signals and making it difficult to map the received broadcast signals back to the correct set of digital bits. *See id.* The relationship between the strength of the broadcast signal and the strength of the noise is known as the "signal-to-noise ratio" (SNR). *Id.* The television's receiver attempts to convert the broadcast signals back into digital bits and display the program on the screen, but errors in the conversion can cause a distorted image for viewers. *See id.*

Traditionally, the "receiver attempts to detect the symbols that were transmitted by mapping a received signal to [a] constellation." '761 patent col. 1 ll. 31–33. "The term 'constellation' is used to describe the possible symbols that can be transmitted by a typical digital communication system." *Id.* at col. 1 ll. 29–31. For example, as depicted in Figure 21 (reproduced below), a constellation's group of symbols are representable on a Cartesian plane or in a chart as a visual representation of the relationship between digital bits and broadcast signals.

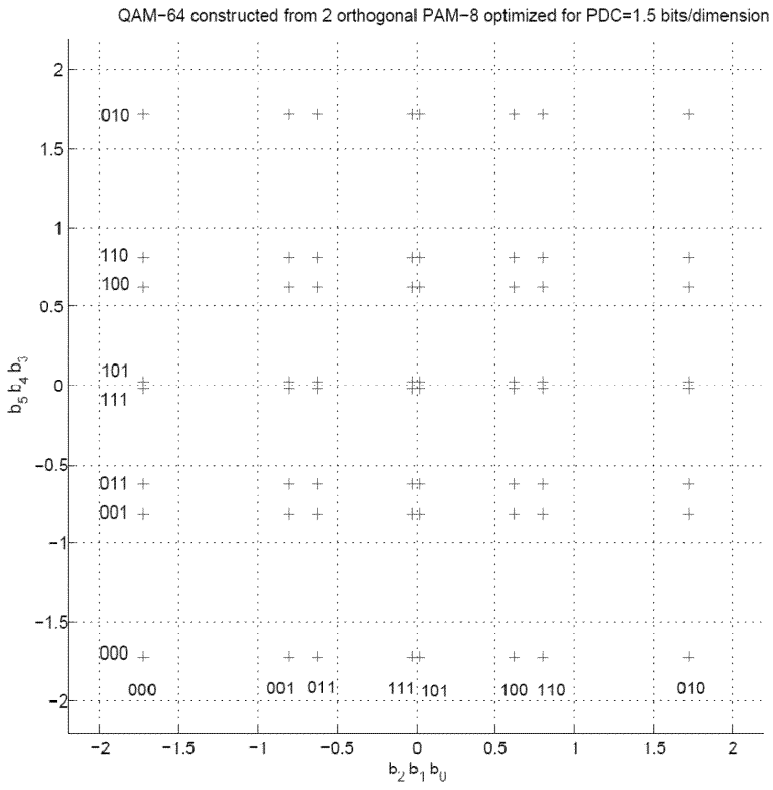


FIG. 21

Id. Fig. 21. Because each symbol in the constellation is plotted according to its I (i.e., in-phase or cosine wave) amplitudes on the x-axis and Q (i.e., quadrature or sine wave) amplitudes on the y-axis, each symbol represents a unique combination of amplitude and phase of the I and Q waves. *See* J.A. 20168–69 (Trial Tr. 213:22–219:16) (testimony of Dr. Chris Jones). In other words, each point in the constellation corresponds to a symbol representing a unique bit pattern. Moreover, the I and Q wave functions are said to be orthogonal to each other—that is, they are 90 degrees apart—such that they can be transmitted simultaneously without interfering with each other at the receiver. *See id.* These symbols are stored in the mapper and demapper of digital communication systems, and the constellation

serves as a key to convert between groups of digital bits and analog broadcast signals. *See* '761 patent col. 5 ll. 29–34, col. 5 ll. 38–43; *see also id.* at col. 1 ll. 29–33.

Constellations have well-known characteristics, including dimensionality, size, shape, and capacity. For example, a constellation's *dimensionality* may be represented as one-dimensional or two-dimensional on a Cartesian plane, where a quadrature amplitude modulation (QAM) constellation is an example of a two-dimensional constellation modulating the amplitude of the real (I) and imaginary (Q) parts. *Id.* at col. 1 ll. 37–41, col. 1 l. 66–col. 2 l. 4, col. 12 ll. 8–45. A constellation also has a *size*, which is determined by the number of unique constellation points in a diagram and is normally identified as a power of two, such as 16QAM or 32QAM. *See, e.g.*, *id.* at col. 7 ll. 19–26. The greater the size, the more bits each constellation symbol represents. J.A. 20172 (Trial Tr. 231:4–23) (testimony of Dr. Chris Jones). Moreover, a constellation has a *shape* which is affected by whether the constellation's points are evenly-spaced (uniform) or unevenly-spaced (non-uniform). '761 patent col. 1 ll. 25–28, col. 1 ll. 59–65, col. 4 ll. 47–59, col. 7 ll. 40–42; *see also id.* Figs. 20–21 (showing non-uniform constellations); J.A. 20172–74 (Trial Tr. 231:24–239:2) (testimony of Dr. Chris Jones). And, finally, a constellation has a *capacity*, which is a quantification of the information existing at corresponding points in the transmitter and receiver. '761 patent col. 6 ll. 23–51. One type of capacity is called "parallel decode (PD) capacity" and it is recited in several disputed claims of the asserted patents. *Id.* at col. 4 ll. 56–59. PD capacity compares the information sent into the "mapper" in the transmitter shown in Figure 2 above with information coming out of the "demapper" in the receiver shown in Figure 3 above and measures the difference. *See id.* at col. 6 ll. 45–49.

The background section of the '761 patent explains that it was previously understood that "[t]he minimum distance (d_{min}) between constellation points is indicative of the

capacity of a constellation at high signal-to-noise ratios." *Id.* at col. 1 ll. 33–35. In other words, it was thought that using a uniform constellation with a maximum distance between the constellation points would result in improved capacity. *See* J.A. 20172 (Trial Tr. 230:7–231:3) (testimony of Dr. Chris Jones). Based on this understanding, engineers have traditionally designed *uniform* constellations and modified the constellation characteristics to maximize the distance between the points in the constellation. *See* '761 patent col. 1 l. 33–col. 2 l. 3. Indeed, the asserted patents disclose that conventional "constellations used in many communication systems are designed to maximize d_{min}." *Id.* at col. 1 ll. 35–37.

Rather than optimizing constellations based on d_{min}, however, the inventors of the '761, '700, '509, and '922 patents tried a new approach. They constructed non-uniform constellations using an iterative process "for locating points (in a one or multiple dimensional space) in order to maximize capacity between the input and output of a bit or symbol mapper and demapper[,] respectively." *Id.* at col. 2 ll. 17–20; *see also id.* at col. 1 ll. 25–31. The '761 patent describes determining constellations that are "optimized based upon a capacity measure such as parallel decoding capacity." *Id.* at Abstract; *see also id.* at col. 5 l. 44–col. 6 l. 22. As noted above, a constellation's PD capacity measures the amount of information successfully transmitted through a communication system by comparing the information sent to the mapper on one end of a channel with the information coming out of the demapper on the other end. J.A. 20174 (Trial Tr. 238:15–239:2) (testimony of Dr. Chris Jones); *see* '761 patent col. 6 ll. 45–51. The '761 patent specification explains that "capacity optimized constellation[s] at low SNRs are geometrically shaped constellations that can achieve significantly higher performance gains (measured as reduction in minimum required SNR) than [conventional] constellations that maximize d_{min}." '761 patent col. 8 ll. 2–7.

The '761 patent discloses an exemplary process for selecting a constellation having an optimal capacity. *See id.* at col. 7 ll. 11–col. 9 ll. 10. Figure 5 (reproduced below) shows an exemplary "process for selecting the points, and potentially the labeling, of a geometrically shaped constellation." *Id.* at col. 7 ll. 15–19.

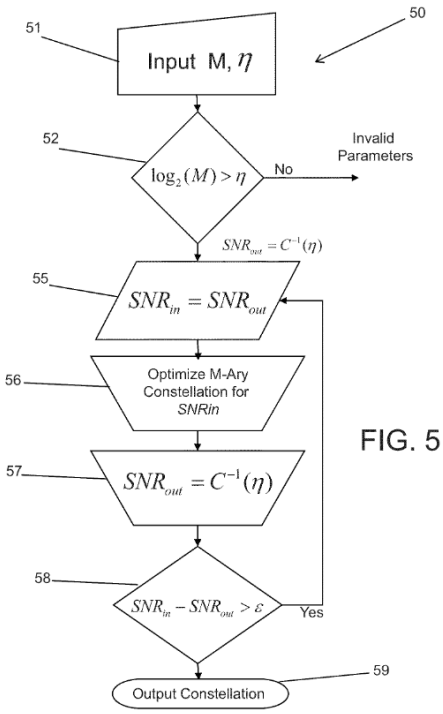


FIG. 5

Id. Fig. 5.

The '761 patent specification describes the process depicted in Figure 5 as follows:

> The process 50 commences with the selection ([51]) of an appropriate constellation size M and a desired capacity per dimension ŋ. In the illustrated embodiment, the process involves a check (52) to ensure that the constellation size can support the desired capacity. In the event that the constellation size could support the desired capacity, then

> the process iteratively optimizes the M-ary constellation for the specified capacity. Optimizing a constellation for a specified capacity often involves an iterative process, because the optimal constellation depends upon the SNR at which the communication system operates. The SNR for the optimal constellation to give a required capacity is not known a priori. . . .
>
> In the illustrated embodiment, the iterative optimization loop involves selecting [(55)] an initial estimate of the SNR at which the system is likely to operate (i.e.[,] SNR_{in}). . . . An M-ary constellation is then obtained by optimizing (56) the constellation to maximize a selected capacity measure at the initial SNR_{in} estimate. . . .
>
> The SNR at which the optimized M-ary constellation provides the desired capacity per dimension η (SNR_{out}) is determined (57). A determination (58) is made as to whether the SNR_{out} and SNR_{in} have converged. In the illustrated embodiment convergence is indicated by SNR_{out} equaling SNR_{in}. . . . When SNR_{out} and SNR_{in} have not converged, the process performs another iteration selecting SNR_{out} as the new SNR_{in} (55). When SNR_{out} and SNR_{in} have converged, the capacity measure of the constellation has been optimized.

Id. at col. 7 l. 19–col. 8 l. 2.

One of the named inventors, Dr. Chris Jones, conceded that the inventors did not invent (1) any of the communication system hardware, (2) using unequally spaced (i.e., non-uniform) constellations, or even (3) optimizing non-uniform constellations for a particular constellation characteristic. *See* J.A. 20186–87 (Trial Tr. 286:17–289:6) (testimony of Dr. Chris Jones); J.A. 1218–24 (Dr. Chris Jones Dep. 149:11–155:21); '761 patent col. 1 ll. 59–62. In addition, each of the asserted patents also cites an earlier

article describing optimizing a non-uniform signal set constellation for PD capacity to accomplish a shaping gain. *See, e.g.*, '761 patent References Cited (citing J.A. 1201–04 (Sommer reference)); *see also* '922 patent col. 19 ll. 1–24 (same).

Constellation explains that "[t]o measure performance using [PD] capacity, [the inventors] 'wr[ote] . . . software' and 'buil[t] an optimizer' to test the results for each constellation" created during the iterative process. Appellee's Br. 10 (fourth and fifth alterations in original) (quoting J.A. 20173–74 (testimony of Dr. Chris Jones)) (citing J.A. 20215 (testimony of Constellation's technical expert, Dr. Mark Jones)).

II. The Asserted Patent Claims

Constellation initially sued LG for willful infringement of 239 claims across seven patents. Constellation asserted these claims against LG's televisions that are compatible with an over-the-air broadcast television standard from the Advanced Television Systems Committee (ATSC) called "ATSC 3.0," and specifically, protocol "A/322" of the standard, which governs the physical layer of signals transmitted by broadcasters. At the summary judgment stage and trial, Constellation asserted nine claims across four patents: claims 17, 21, 24, and 28 of the '761 patent; claim 5 of the '700 patent; claims 21 and 23 of the '509 patent; and claims 24 and 44 of the '922 patent.

Constellation divides the claims into two groups: (1) claims that cover "non-uniform constellations constructed using [PD] capacity," and (2) claims that "recite specific constellations of particular sizes or with specific points discovered using that process." Appellee's Br. 11–12 (citing J.A. 20215 (testimony of Dr. Mark Jones)). Consistent with Constellation's view, we discern two groups of claims on appeal: (1) the asserted '761 and '700 patent claims, which recite a geometrically spaced symbol constellation optimized for capacity using PD

capacity (collectively, "the optimization claims"); and (2) the asserted '509 and '922 patent claims, which recite specific non-uniform constellations (collectively, "the constellation claims").

Claim 17 of the '761 patent is representative of the optimization claims:[2]

> 17. A digital communication system, comprising:
>
> a receiver configured to receive signals transmitted via a communication channel using a QAM symbol constellation;
>
> wherein the receiver, comprises:
>
> a demodulator configured to demodulate the signal received via the communication channel;
>
> a demapper configured to estimate likelihoods of symbols in a QAM symbol constellation from the demodulated signal;
>
> a decoder that is configured to estimate decoded bits from the likelihoods generated by the demapper using an LDPC code; and
>
> wherein the QAM symbol constellation is a geometrically spaced symbol constellation optimized for capacity using parallel

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[2] While we have considered all the claims at issue on appeal, because claim 17 of the '761 patent is substantially similar to the other asserted claims in the '761 and '700 patents, our opinion identifies claim 17 as representative of the optimization claims. Similarly, because claim 21 of the '509 patent is substantially similar to the other asserted claims of the '509 and '922 patents, this opinion identifies claim 21 as representative of the constellation claims.

> decode capacity that provides a given capacity at a reduced signal-to-noise ratio compared to a QAM signal constellation that maximizes d_{min}.

'761 patent col. 14 ll. 4–23.

As with the '761 and '700 patents, the '509 and '922 patents both "generally relate[] to bandwidth and/or power efficient digital transmission systems and more specifically to the use of unequally spaced constellations having increased capacity." '509 patent col. 1 ll. 38–41; '922 patent col. 1 ll. 51–54. But the '509 patent additionally describes embodiments with non-uniform constellations with overlapping constellation point locations. *See* '509 patent Title. And the '922 patent recites hundreds of specific, non-uniform constellations constructed based on optimizing PD capacity to improve performance. *See* '922 patent col. 2 l. 64–col. 4 l. 39, Figs. 41–44 (listing the constellation points corresponding to the geometric PAM-8 constellation designs optimized for PD capacity at specific SNRs), Figs. 72–81 (listing the constellation points corresponding to the geometric PAM-16 constellation designs optimized for PD capacity at specific SNRs), Figs. 126–45 (listing the constellation points corresponding to the geometric PAM-32 constellation designs optimized for PD capacity at specific SNRs).

Claim 21 the '509 patent is representative of the constellation claims:

> 21. A communication system, comprising a receiver that receives signals via a communication channel having a channel signal-to-noise ratio (SNR), wherein the receiver uses a symbol constellation to transform the received signals into received bits, and the symbol constellation includes constellation points at a plurality of unique point locations, where:

> the plurality of unique point locations are unequally spaced;
>
> the constellation points each have a location and a different label; and
>
> the locations of at least two of the constellation points are the same.

'509 patent col. 19 ll. 35–47.

III. Procedural Background

After Constellation sued for infringement of the '761, '700, '509, and '922 patents in the Eastern District of Texas, Constellation successfully moved for summary judgment of patent eligibility of all asserted claims. J.A. 2. The district court held all the claims eligible as being directed to a technical solution to a technical problem. Specifically, the district court held that the technical problem is loss of data in over-the-air data transmission and the claimed solution is a communication system that uses a constellation that is optimized for PD capacity to provide improved capacity at a reduced signal-to-noise ratio compared to conventional QAM signal constellations that are created to maximize the distance between the constellation points. *See* J.A. 20025 p. 94 l. 6–p. 95 l. 1; *see also* J.A. 2.

The court then held a jury trial on validity, infringement, willful infringement, and damages. The jury found all asserted claims not invalid and that LG's accused televisions, with semiconductor chips manufactured by LG or third party Realtek Semiconductor Corp., infringed at least one of the asserted claims of each asserted patent. J.A. 32–36. The jury awarded Constellation $1,684,469.00 for past damages based on a per-television royalty of $6.75. J.A. 38; *see* J.A. 83–86. The jury also found, by clear and convincing evidence, that LG's infringement of the asserted claims was willful. J.A. 37.

After trial, LG moved for JMOL of non-infringement, contending that, in showing that the accused products read on the claims, Constellation improperly relied on evidence related to the ATSC 3.0 standard for some claim elements and other evidence of infringement for other elements of the same claim. J.A. 53–77. After post-trial briefing, the district court denied JMOL, holding that "nothing . . . prevents a plaintiff from performing both a standard-based infringement read and a direct comparison of a limitation to an accused product." J.A. 55. Accordingly, the district court did not fault Constellation for relying on a standard-read for some limitations and a direct comparison to the accused products for other limitations of the same claim. J.A. 60. The district court also held that there was substantial evidence at trial for the jury to find infringement for each asserted claim and rejected LG's argument that the jury's infringement findings should be set aside. J.A. 60–76.

The district court also denied LG's separate JMOL of no damages. J.A. 43–52. The district court held that LG's argument was procedurally improper because it challenged "the admissibility of [Constellation's damages expert] Dr. Sullivan's testimony under the guise of challenging the sufficiency of the evidence." J.A. 48. The court also rejected LG's arguments on the merits, holding that "[t]here is substantial evidence in the record [demonstrating] that the [challenged] licenses [in the hypothetical reasonable royalty negotiation] are comparable" and thus properly relied on. J.A. 49; J.A. 3. The district court also denied LG's motion for a new trial, holding that LG's arguments challenging the jury instructions on use of industry standards, capability, and willfulness were addressed by the concurrent orders on LG's motions for JMOL and failed on the merits. J.A. 78–82. The district court then entered an Amended Final Judgment on April 26, 2024, granting Constellation an ongoing royalty at the rate of $6.75 per television. J.A. 83–86.

LG appeals the district court's summary judgment of patent eligibility under § 101, denial of JMOL of non-infringement, denial of JMOL of no damages, and denial of LG's motion to exclude the testimony of Constellation's damages expert. We have jurisdiction under 28 U.S.C. § 1295(a)(1).

DISCUSSION

I. Patent Eligibility

We first address the district court's summary judgment of patent eligibility.[3] We apply regional circuit law when reviewing a district court's grant of summary judgment. *C R Bard Inc. v. AngioDynamics, Inc.*, 979 F.3d 1372, 1378 (Fed. Cir. 2020). Applying Fifth Circuit law, we review the district court's grant of summary judgment de novo. *LaserDynamics, Inc. v. Quanta Comput., Inc.*, 694 F.3d 51, 66 (Fed. Cir. 2012) (citing *Cambridge Toxicology Grp., Inc. v. Exnicios*, 495 F.3d 169, 173, 179 (5th Cir. 2007)). Summary judgment is appropriate when "there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(a); *see Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 247–48, 255 (1986).

Patent eligibility under 35 U.S.C. § 101 is a question of law that may involve underlying questions of fact. *Interval Licensing LLC v. AOL, Inc.*, 896 F.3d 1335, 1342 (Fed. Cir. 2018). "We review the district court's ultimate conclusion on patent eligibility de novo." *Id.* To determine whether a patent claims ineligible subject matter, the Supreme Court has established a two-step framework. First, we must

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[3] Although Constellation moved for summary judgment in its favor on patent eligibility, LG never cross-moved for summary judgment of patent ineligibility. Instead, LG argued that "genuine issues of material fact preclude[d] summary judgment." J.A. 1164–87.

determine whether the claims at issue are directed to a patent-ineligible concept such as an abstract idea. *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 217 (2014). Second, if the claims are directed to an abstract idea, we must "consider the elements of each claim both individually and 'as an ordered combination' to determine whether the additional elements 'transform the nature of the claim' into a patent-eligible application." *Id.* (quoting *Mayo Collaborative Servs. v. Prometheus Lab'ys, Inc.*, 566 U.S. 66, 78–79 (2012)). To transform an abstract idea into a patent-eligible application, the claims must do "more than simply stat[e] the [abstract idea] while adding the words 'apply it.'" *Id.* at 221 (second alteration in original) (quoting *Mayo*, 566 U.S. at 72).

Because we see meaningful differences between the optimization claims and the constellation claims, we address them separately in turn.

A. The Optimization Claims

At step one of the *Alice* inquiry, "[w]e must first determine whether the claims at issue are directed to a patent-ineligible concept." *Id.* at 218. We recognize that "[a]t some level, 'all inventions . . . embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.'" *Id.* at 217 (quoting *Mayo*, 566 U.S. at 71). Thus, at *Alice* step one, "it is not enough to merely identify a patent-ineligible concept underlying the claim; we must determine whether that patent-ineligible concept is what the claim is 'directed to.'" *Thales Visionix Inc. v. United States*, 850 F.3d 1343, 1349 (Fed. Cir. 2017) (quoting *Rapid Litig. Mgmt. Ltd. v. CellzDirect, Inc.*, 827 F.3d 1042, 1050 (Fed. Cir. 2016)).

"*Alice* step one presents a legal question that can be answered based on the intrinsic evidence," including the patent's specification and claims. *CardioNet, LLC v. InfoBionic, Inc.*, 955 F.3d 1358, 1372–74 (Fed. Cir. 2020). Although "the specification may help illuminate the true focus

of a claim, when analyzing patent eligibility, reliance on the specification must always yield to the claim language." *ChargePoint, Inc. v. SemaConnect, Inc.*, 920 F.3d 759, 766 (Fed. Cir. 2019). "Even a specification full of technical details about a physical invention may nonetheless conclude with claims that claim nothing more than the broad law or abstract idea underlying the claims, thus preempting all use of that law or idea." *Id.* at 769.

We thus begin by analyzing claim 17 of the '761 patent at *Alice* step one to determine whether the claim language is directed to an abstract idea—and thus ineligible—or a technological solution to a technological problem—and thus eligible for patent protection. *See id.* at 773. Claim 17 recites a QAM symbol constellation that is "optimized" for PD capacity to achieve a particular result: capacity at a reduced signal-to-noise ratio compared to conventional QAM signal constellations that maximize d_{min}. *See* '761 patent col. 14 ll. 4–23. The claim itself does not recite how to achieve a constellation "optimized" for PD capacity. Rather, this important and distinguishing element of the claim is described in a result-oriented way. That is, the claim recites a constellation optimized for PD capacity such that it achieves a better capacity when compared to the prior art constellations that were maximized for d_{min}. Similar to the Supreme Court's reasoning in *O'Reilly v. Morse*, 56 U.S. (15 How.) 62 (1853), we conclude that claim 17 is ineligible because it is an abstract, result-oriented claim directed to all ways of achieving a recited result.

In *Morse*, the Supreme Court "upheld claims related to the details of Samuel Morse's invention of the electromagnetic telegraph, but invalidated a claim for the use of 'electromagnetism, however developed for marking or printing intelligible characters, signs, or letters, at any distances.'" *ChargePoint*, 920 F.3d at 769 (quoting *Morse*, 56 U.S. at 112). "The Court [in *Morse*] expressed concern that such a broad claim would cover any application of printing at a distance via electromagnetism regardless of whether those

applications used the invention in the patent." *Id.* (citing *Morse*, 56 U.S. at 113). Morse's invalidated claim "encompassed all solutions for achieving a desired result" and was "drafted in such a result-oriented way that [it] amounted to encompassing the 'principle in the abstract' no matter how implemented." *Interval Licensing*, 896 F.3d at 1343.

This was also the case in *ChargePoint, Inc. v. SemaConnect, Inc.*, 920 F.3d at 769. There, we determined that ChargePoint's inventors "had the good idea to add networking capabilities to existing [electric vehicle] charging stations to facilitate various business interactions," but they failed to provide "a technical explanation of how to enable communication over a network for device interaction," let alone claim those details. *ChargePoint*, 920 F.3d at 770. "Instead, the broad claim language would cover any mechanism for implementing network communication on a charging station, thus preempting the entire industry's ability to use networked charging stations." *Id.* *Morse* and *ChargePoint* thus instruct that part of a court's duty in analyzing claims for patent eligibility is to distinguish claims that cover "nothing more than the broad law or abstract idea underlying the claims, thus preempting all use of that law or idea," from those that recite a specific embodiment covering a technological solution to a technological problem. *Id.* at 769.

Applying the principles in *Morse* and *ChargePoint* here, the breadth of claim 17 demonstrates that the claim is directed to the abstract idea of "optimizing" a constellation for PD capacity. *See Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015) ("[P]reemption may signal patent ineligible subject matter."). While claim 17 does not recite every way to optimize a constellation, it does recite every way to optimize a constellation for PD capacity. The claim is written so broadly that it covers the mathematical concept of optimizing a constellation for PD capacity to accomplish improved capacity. It is undisputed that this claim element is the

distinguishing feature in claim 17. Indeed, one of the '761 patent's named inventors explained that "the most limiting aspect of the claim is . . . the final claim element," which is the claim's "wherein" clause. J.A. 1211–12 (Dr. Chris Jones Dep. 17:12–18:18). The wherein clause, however, recites only that "the QAM symbol constellation is a geometrically spaced symbol constellation optimized for capacity using parallel decode capacity that provides a given capacity at a reduced signal-to-noise ratio compared to a QAM signal constellation that maximizes d_{min}." '761 patent col. 14 ll. 4–23. This broad claim language covers all manners and ways of optimizing a constellation based on one of a limited number of known characteristics of constellations—capacity—and one of a limited number of known capacity measures—PD capacity. *See id.* Indeed, Constellation admits that non-uniform constellations were known, that measuring PD capacity was known, and that even optimizing non-uniform constellations based on PD capacity was contemplated, thus supporting our view that the claims are not as specific in technique as Constellation contends. *See* '761 patent col. 1 ll. 59–65; *see* J.A. 20186–87 (Trial Tr. 286:17–289:6) (testimony of Dr. Chris Jones conceding that the inventor did not invent receivers, demodulators, demappers, decoders, low-density parity check codes, constellations, and optimized non-uniform constellations); *see also* '922 patent col. 19 ll. 1–24 (citing J.A. 1201–04 (Sommer reference optimizing a non-uniform signal set constellation for PD capacity to accomplish a shaping gain)). This confirms that claim 17 is indeed "directed to" the abstract idea of "optimizing" a constellation for PD capacity.

Constellation argues that the optimization claims are eligible because they are not directed to simply optimizing constellations; rather, they recite a "concrete technique"—using PD capacity—to optimize constellations. Appellee's Br. 26–28. Constellation contends that the inventors advantageously recognized that optimizing for PD capacity

and allowing the constellation to be non-uniform has counterintuitive results, improving efficiency by over 25%. Oral Arg. at 20:05–22:12, 38:27–40:50, https://www.cafc.uscourts.gov/oral-arguments/24-1822_12042025.mp3; J.A. 20172–74 (Trial Tr. 231:14–239:2) (testimony of Dr. Chris Jones). While we appreciate Constellation's argument and acknowledge that the issue is close, we view the optimization claims here as analogous to the result-oriented claim in *Morse*. Claim 17 lacks sufficient details about the alleged "concrete technique." Indeed, the language of claim 17 does not include any of the details that describe the inventors' "process for selecting the points, and potentially the labeling, of a geometrically shaped constellation," "ensur[ing] that the constellation size can support the desired capacity," and "iteratively optimiz[ing] the M-ary constellation for the specified capacity" as described in the specification. '761 patent col. 7 l. 11–col. 8 l. 7, Fig. 5.

Even if the specification includes enough detail to describe the invention, "[t]he § 101 inquiry must focus on the language of the [a]sserted [c]laims themselves," *Synopsys, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1149 (Fed. Cir. 2016) (citation omitted), and "the specification cannot be used to import details from the specification if those details are not claimed," *ChargePoint*, 920 F.3d at 769. Here, the specification provides some technical details about the invention, but the claims nonetheless recite nothing more than the broad abstract idea of "optimizing" a constellation for PD capacity, thus preempting all use of that idea. *Compare* '761 patent col. 7 l. 11–col. 8 l. 7, Fig. 5, *with id.* at col. 14 ll. 4–23. This brings us back to the preemption concerns of *Morse* and *ChargePoint*, where the claims similarly "encompassed all solutions for achieving a desired result" because they "were drafted in such a result-oriented way that they amounted to encompassing the 'principle in the abstract' no matter how implemented."

Interval Licensing, 896 F.3d at 1343. In our view, this is effectively what is claimed in claim 17.

At step two of the *Alice* inquiry—the search for an inventive concept—"we consider the elements of each claim both individually and 'as an ordered combination' to determine whether the additional elements 'transform the nature of the claim' into a patent-eligible application." *Alice*, 573 U.S. at 217 (quoting *Mayo*, 566 U.S. at 78–79). Where a claim is directed to an abstract idea, the claim "must include 'additional features' to ensure 'that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].'" *Id.* at 221 (alterations in original) (quoting *Mayo*, 566 U.S. at 77). These additional features cannot simply be "'well-understood, routine, conventional activit[ies]' previously known to the industry." *Id.* at 225 (alteration in original) (quoting *Mayo*, 566 U.S. at 73). Instead, the inventive concept must be "sufficient to ensure that the patent in practice amounts to significantly more" than a patent on the abstract idea. *See Mayo*, 566 U.S. at 72–73.

Here, Constellation argues that its claims "disclose an innovative way of improving the performance of a digital-communication system through the use of non-uniform constellations that are optimized based on [PD] capacity." Appellee's Br. 25. Constellation emphasizes the improvements of its invention over the "earlier approaches" to digital communications, including the efficiency gains. *Id.* at 36–37. Constellation also points to "LG's statements touting the benefits of the . . . technology reflected in the ATSC 3.0 Standard." *Id.* at 37 (citing J.A. 6105). However, Constellation points to no elements of the *claims* individually or as an ordered combination that transform the nature of the claim. Indeed, Constellation's alleged inventive concept is the abstract idea itself. And, as the Supreme Court and this court have explained, "[a]n inventive concept that transforms the abstract idea into a patent-eligible invention must be significantly more than the abstract idea

itself." *Bascom Glob. Internet Servs., Inc. v. AT&T Mobility LLC*, 827 F.3d 1341, 1349 (Fed. Cir. 2016) (citing *Alice*, 573 U.S. at 222–24); *BSG Tech LLC v. Buyseasons, Inc.*, 899 F.3d 1281, 1290–91 (Fed. Cir. 2018) ("If a claim's only 'inventive concept' is the application of an abstract idea using conventional and well-understood techniques, the claim has not been transformed into a patent-eligible application of an abstract idea." (citations omitted)); *see also Alice*, 573 U.S. at 217–18.

Constellation's remaining arguments regarding an inventive concept also fail. Constellation argues that an article credited the inventors as the first to develop non-uniform constellations optimized for PD capacity. Appellee's Br. 37 (citing J.A. 6097 (crediting the named inventors for first describing "[t]he optimization of constellations in the 1-dimensional space with respect to [bit interleaved coded modulation] capacity," which is synonymous with PD capacity)). In addition, Constellation points to LG's unsuccessful attempts to challenge the obviousness of Constellation's patents both at trial and before the Patent Trial and Appeal Board as evidence of an inventive concept. *Id.* at 37–38. Indeed, Constellation alleges that "LG cannot point to anyone before the named inventors who had tried pairing conventional features of a communication system with non-uniform constellations that were constructed in the manner disclosed by the patented inventions." *Id.* at 38. However, Constellation conflates the separate novelty and obviousness inquiries under 35 U.S.C. §§ 102 and 103, respectively, with the search for an inventive concept and fails to identify what in the *claim* provides the inventive concept other than the abstract idea itself. *See Two-Way Media Ltd. v. Comcast Cable Commc'ns, LLC*, 874 F.3d 1329, 1338 (Fed. Cir. 2017) ("To save a patent at step two, an inventive concept must be evident in the claims." (citation omitted)). Claim 17 is therefore patent ineligible.

We reach the same conclusion for the other optimization claims—claims 21, 24, and 28 of the '761 patent and claim 5 of the '700 patent. After full analysis of these claims—which are very similar to claim 17—we conclude that they too are directed to an abstract idea and do not recite an inventive concept for the same reasons we discussed above regarding claim 17. We therefore vacate the district court's summary judgment of validity of these claims and remand to the district court for proceedings consistent with this opinion.

B. The Constellation Claims

We next turn to the constellation claims, and *Alice* step one.

Instead of claiming the abstract idea of "optimizing" a constellation for capacity without limiting the optimization to any meaningful process or any constraints, the constellation claims are directed to "specific constellations" that the inventors developed using the techniques described in the specifications. Appellee's Br. 27. Even LG agrees that neither the '509 nor '922 patents' claims "recite optimization," and instead cover specific constellations. *See* Appellants' Br. 15–16. We conclude that this distinction between the result-oriented optimization claims and constellation claims makes all the difference.

Claim 21 of the '509 patent, for example, covers a concrete implementation of a technological improvement to solve a technological problem. *Cf. Chamberlain Grp., Inc. v. Techtronic Indus. Co.*, 935 F.3d 1341, 1347 (Fed. Cir. 2019). As we discussed above, the problem perceived by the patentee was overcoming the limits of constellation capacity to achieve better coding gains. *See* '509 patent col. 1 l. 55–col. 2 l. 5. As Constellation contends, the inventors discovered that moving constellation points with the objective of maximizing capacity between the input of a mapper and the output of a demapper, instead of the output of the demodulator, led to the counterintuitive conclusion that

"[t]he best thing to do is to start having points land on top of one another." J.A. 20172–74 (Trial Tr. 231:14–239:2) (testimony of Dr. Chris Jones); Oral Arg. at 20:05–22:12, 38:27–40:50; '509 patent col. 2 ll. 21–37. Accordingly, the specification explains that Constellation's invention is the idea of "us[ing] signal constellations, which have unequally spaced (i.e.[,] 'geometrically' shaped) points," in which "the locations of geometrically shaped points are designed to provide a given capacity measure at a reduced [SNR] compared to the SNR required by[ ]a constellation that maximizes d_{min}," thus improving coding gains. '509 patent col. 4 l. 65–col. 5 l. 8.

The specification then describes "a process for obtaining a constellation optimized for capacity for use in a communication system having a fixed code rate and modulation scheme." '509 patent col. 3 ll. 53–56, Fig. 5. That process "select[s] the points, and potentially the labeling, of a geometrically shaped constellation" to "iteratively optimize[] the M-ary constellation for the specified capacity" and improve coding gains. *See id.* at col. 7 ll. 35–46. Rather than broadly claiming all means of "optimizing," claim 21 is an application of the described process with parameters representing the described invention, including that "the plurality of unique point locations are unequally spaced," "each have a location and a different label," and "the locations of at least two of the constellation points are the same." '509 patent col. 19 ll. 35–47. Thus, claim 21 in its entirety is directed to solving a particular technological problem—overcoming capacity constraints to improve coding gains—using a particular technological solution—specific, non-uniform constellations with overlapping constellation point locations.

We thus hold that the limitations in claim 21 provide enough specificity and structure to satisfy *Alice* step one. And because we conclude that claim 21 of the '509 patent is not directed to an abstract idea, we do not reach *Alice*

step two. Claim 21 is patent eligible under § 101. *See CardioNet*, 955 F.3d at 1371.

We reach the same conclusion for the other constellation claims—claim 23 of the '509 patent and claims 24 and 44 of the '922 patent—because, "[f]or purposes of validity, the parties did not argue the[se] claims separately, so they rise or fall together." *Vanda Pharms., Inc. v. West-Ward Pharms. Int'l Ltd.*, 887 F.3d 1117, 1134 n.9 (Fed. Cir. 2018); *see also Endo Pharms. Inc. v. Teva Pharms. USA, Inc.*, 919 F.3d 1347, 1353 n.3 (Fed. Cir. 2019). Thus, we vacate and remand the summary judgment of eligibility of the optimization claims but affirm the district court's summary judgment of eligibility of the constellation claims.

II. Infringement

We next address the district court's denial of LG's motion for JMOL of non-infringement. We review a denial of JMOL de novo according to Fifth Circuit law by reapplying the JMOL standard, where "judgment as a matter of law is proper after a party has been fully heard by the jury on a given issue, and there is no legally sufficient evidentiary basis for a reasonable jury to have found for that party with respect to that issue." *Ford v. Cimarron Ins. Co., Inc.*, 230 F.3d 828, 830 (5th Cir. 2000) (citation modified).

At trial, Constellation relied on the ATSC 3.0 and A/322 standards to show LG's accused televisions meet some claim limitations while using product-specific evidence to meet other claim limitations. LG first raises a legal challenge, asserting that a patent owner may only rely on a standard to prove infringement when the standard meets every limitation of the claim as opposed to just one or several limitations. Appellants' Br. 37. In contrast, Constellation contends, and the district court agreed, that a patent owner may prove infringement based on standards-related evidence for some elements while using evidence about the accused products to show satisfaction of other elements of the same claim. Appellee's Br. 46–47;

J.A. 54–62. We agree with Constellation and the district court.

LG's argument turns on the reading and application of our decision in *Fujitsu Ltd. v. Netgear Inc.*, 620 F.3d 1321 (Fed. Cir. 2010). Appellants' Br. 38–40. There, the plaintiff sought to carve out an exception to the rule that a plaintiff must establish infringement by comparing the asserted claims directly to the accused products. *Fujitsu*, 620 F.3d at 1326–27. Specifically, the plaintiff sought to prove (1) that the defendant's products practiced two industry standards for wireless communications, and (2) any implementation of the standards would necessarily satisfy all elements of the asserted patent claims. *Id.* at 1327. Thus, according to the plaintiff, there was no need to "show evidence of infringement for each accused product" because any product that "compl[ied] with the standard" would "necessarily infringe[] the asserted claims." *Id.* at 1325. We condoned the plaintiff's carve out, holding that "if an accused product operates in accordance with a standard, then comparing the claims to that standard is the same as comparing the claims to the accused product." *Id.* at 1327. However, "to prove infringement by showing standard compliance," we required two conditions be met: (1) the standard "provide[s] the level of specificity required to establish that practicing that standard would always result in infringement," and (2) "the relevant section of the standard" is mandatory, or, if it is optional, there is evidence showing that the accused product implements the optional portion of the standard. *Id.* at 1327–28.

The district court interpreted the reasoning of *Fujitsu* as "also appl[ying] on a limitation-by-limitation basis." J.A. 57. In other words, if an accused product meets—or the standard that the accused product practices necessarily meets—every element of the claim, then the accused product infringes the patent claim. We agree with the district court's reading and application of *Fujitsu* in this case. First, as explained by the district court and supported by

Fujitsu, "[j]udicial resources may be conserved by showing that a class of products practices a limitation." *Id.* (citing *Fujitsu*, 620 F.3d at 1327). "It would be a waste of judicial resources to separately analyze a limitation for each individual product that practices a standard when it can be shown that all products practice that limitation because they practice a standard." *Id.*; *Fujitsu*, 620 F.3d at 1327. As explained in *Fujitsu*, "[i]f two products undisputedly operate in the same manner, a finding of infringement against one will create a persuasive case against the other" with no prejudice to future litigants. *Fujitsu*, 620 F.3d at 1327; J.A. 57.

Second, the same concerns we addressed in *Fujitsu*—regarding "the level of specificity required to establish that practicing [an industry] standard would always result in infringement" and whether the "standard is optional"—are present in a limitation-by-limitation analysis and can be addressed by requiring the same evidentiary showings we required in *Fujitsu*. J.A. 57. Indeed, as the district court recognized, *Fujitsu* and its progeny logically permit a plaintiff to prove satisfaction of a claim limitation based on an industry standard if:

> (1) the relevant portion of the standard is sufficiently specific to show that practicing it would always result in practicing that limitation, and (2) the relevant portion of the standard is mandatory, or, if it is optional, there is evidence showing that the accused device implements that portion of the standard.

J.A. 59. This does not vitiate *Fujitsu*, as LG contends, because we have not identified anything in *Fujitsu* or its progeny that prevents the same reasoning that we applied to a *claim* from being applied to a *limitation* as well. *See* J.A. 57; *see also Fujitsu*, 620 F.3d at 1327–28.

LG's remaining arguments go to the sufficiency of the evidence presented to the jury. Because infringement is a

fact-bound inquiry, a jury's infringement verdict should be upheld unless the "evidence points so strongly and overwhelmingly in favor of one party that the court believes that reasonable jurors could not arrive at any contrary conclusion." *Versata Software, Inc. v. SAP Am., Inc.*, 717 F.3d 1255, 1261 (Fed. Cir. 2013) (citations omitted). Indeed, we must "resolve all conflicting evidence in favor of [the verdict] and refrain from weighing the evidence or making credibility determinations." *Gomez v. St. Jude Med. Daig Div. Inc.*, 442 F.3d 919, 933 (5th Cir. 2006) (citation omitted).

Here, substantial evidence supports the jury's verdict of infringement. For example, LG's technical expert, Dr. Akl, testified that the accused televisions are compatible with the ATSC 3.0 standard such that they can receive and process ATSC 3.0 signals. J.A. 20359 (Trial Tr. 61:5–63:10) (testimony of LG's technical expert, Dr. Akl). Further, Constellation's technical expert, Dr. Mark Jones, testified that—based on tests he performed on LG's televisions, ATSC documents, LG's source code, and LG's internal testing documents—all the accused televisions were able to receive ATSC 3.0 signals that relied on the same constellations as those used in the standard. J.A. 20220–22 (Trial Tr. 101:13–111:23) (testimony of Dr. Mark Jones); J.A. 20216 (Trial Tr. 87:7–11) (same). Because Dr. Mark Jones also offered evidence that the ATSC 3.0 standard (and specifically, the A/322 protocol) utilizes Constellation's patented constellations, this compatibility supports the inference that the accused televisions infringe the asserted constellations. J.A. 20229–30 (Trial Tr. 139:13–142:12) (testimony of Dr. Mark Jones); J.A. 20171 (Trial Tr. 225:6–15) (testimony of named inventor Dr. Chris Jones); J.A. 20216 (Trial Tr. 87:23–88:4) (testimony of Dr. Mark Jones). The jury also heard testimony from LG's corporate representative, Mr. Lewis, that the LG chips used in its accused televisions incorporate the A/322 protocol, which the FCC adopted as mandatory for

ATSC 3.0 television receivers. J.A. 20317 (Trial Tr. 189:2–192:25) (testimony of Mr. Lewis).

In addition, contrary to LG's arguments, the jury heard testimony from multiple witnesses at trial that demappers and decoders are critical features for any television that receives broadcast signals. For example, Dr. Mark Jones testified that the Realtek-based accused televisions had demappers and decoders. J.A. 20228–29 (Trial Tr. 135:22–139:12) (testimony of Dr. Mark Jones discussing J.A. 18039–40, 18048); *see* J.A. 20219–22 (Trial Tr. 97:11–111:23) (testimony of Dr. Mark Jones discussing J.A. 15630, 15962). Multiple witnesses, including both Dr. Mark Jones and Dr. Akl, also testified that modern digital communication systems use soft decoding and therefore rely on likelihoods. *See* J.A. 20219 (Trial Tr. 97:23–99:10) (testimony of Dr. Mark Jones); J.A. 20358–59 (Trial Tr. 57:6–61:4) (testimony of Dr. Akl). Dr. Mark Jones testified specifically that both Realtek's documents and the ATSC recommendations showed that the Realtek chip in the accused televisions supported demapping. J.A. 20228–29 (Trial Tr. 135:22–139:12) (testimony of Dr. Mark Jones). Thus, we conclude that substantial evidence supports the jury's verdict of infringement and affirm the district court's denial of LG's JMOL of non-infringement.

III. Damages

LG asks us to reverse the district court's denial of JMOL of no damages or, alternatively, to reverse the denial of LG's motion to exclude the testimony of Dr. Sullivan, Constellation's damages expert. Appellants' Br. 54. Specifically, LG asserts that Dr. Sullivan had no basis for relying on a built-in apportionment theory because he relied on third-party Zenith licenses that are not sufficiently comparable because they cover different patents, technologies, and product types. *Id.*

We are not persuaded. As the district court acknowledged, LG's challenge is not properly directed to JMOL and

the sufficiency of the evidence presented to the jury on damages. J.A. 48–52. Instead, LG challenges the admissibility of Constellation's expert testimony, which—under the law of the regional circuit, here the Fifth Circuit—we would ordinarily review for abuse of discretion. *See EcoFactor, Inc. v. Google LLC*, 137 F.4th 1333, 1338 (Fed. Cir. 2025) (en banc). Our court has made clear that challenges to the "admissibility of . . . expert testimony," including "whether [a] damages model is properly tied to the facts of the case," "should be resolved under the framework of . . . *Daubert*." *Versata*, 717 F.3d at 1264 (citations omitted). Because we agree with the district court's determination that LG's arguments were inappropriate for JMOL, we see no error in the district court's denial of LG's JMOL motion.

While LG also states that it challenges the district court's denial of its motion to exclude Dr. Sullivan's testimony under *Daubert*, LG does not present any argument separate from its JMOL argument. LG does not cite or include in the appendix Dr. Sullivan's expert report and instead relies on the evidence presented to the jury for both its JMOL challenge and its *Daubert* challenge. We will thus treat its argument accordingly. We agree with the district court that Dr. Sullivan relied on sufficient facts to opine that the Zenith licenses were sufficiently comparable to rely on built-in apportionment. *See* J.A. 48–49. For example, LG's corporate representative, Mr. Lewis, testified that the Zenith licenses were structured to provide a single royalty rate regardless of the number of Zenith patents found to be infringed. J.A. 20333 (Trial Tr. 256:3–16) (testimony of Mr. Lewis). In addition, Constellation's technical expert, Dr. Mark Jones, testified about the technical similarities between the asserted patents and the Zenith patents. For example, he testified that the Zenith patents and the asserted patents recite similar features and specific decoding methods, describe specific constellations for mapping symbols for transmission across a communication channel, were put to similar use in the physical layer of the

ATSC standard by television manufacturers, and achieved similar technological benefits. J.A. 20236–39 (Trial Tr. 168:7–179:20) (testimony of Dr. Mark Jones). Finally, Dr. Sullivan testified about the economic similarities between the hypothetical negotiation and the Zenith licenses. For example, Dr. Sullivan explained that the parties were similarly situated, as well as that the licenses similarly covered the same products (i.e., televisions), extended through the life of the patents, were non-exclusive, were structured as a running royalty, and applied to sales with a nexus in the United States. J.A. 20276–78 (Trial Tr. 25:7–33:19) (testimony of Constellation's damages expert, Dr. Sullivan); J.A. 20280 (Trial Tr. 43:3–21) (same); J.A. 20294 (Trial Tr. 97:2–15) (same). Because evidence supports that the Zenith licenses were sufficiently comparable, Dr. Sullivan had a sufficient basis for relying on a built-in apportionment theory.

Because LG has not shown that the district court erred in denying either its motion to exclude or its motion for judgment as a matter of law of no damages, we affirm.[4]

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[4] During oral argument, LG argued for the first time that if we determine—as we do here—that some asserted claims are patent ineligible, we should vacate the damages award. *See* Oral Arg. 18:03–19:34, 42:44–45:38. This argument was foreseeable and should have been raised in LG's opening brief. *See, e.g.*, *ABS Glob., Inc. v. Cytonome/ST, LLC*, 984 F.3d 1017, 1027 (Fed. Cir. 2021) (collecting cases for proposition that arguments raised for the first time during oral argument are forfeited). Even so, Constellation's damages expert, Dr. Sullivan, testified that the value of Constellation's asserted patents was tied to the *technology* rather than any asserted patent or claim, J.A. 20280 (Trial Tr. 42:11–23) (testimony of Dr. Sullivan), and none of LG's witnesses disputed this testimony. *Cf.*

CONCLUSION

We have considered the parties' remaining arguments and do not find them persuasive. For the foregoing reasons, we vacate the district court's summary judgment of eligibility for claims 17, 21, 24, and 28 of the '761 patent and claim 5 of the '700 patent. We affirm the district court's summary judgment of eligibility for claims 21 and 23 of the '509 patent and claims 24 and 44 of the '922 patent. We affirm the district court's denial of JMOL of non-infringement and no damages, as well as its denial of LG's motion to exclude the testimony of Constellation's damages expert. We remand for further proceedings consistent with this opinion.

VACATED-IN-PART, AFFIRMED-IN-PART, AND REMANDED

COSTS

No costs.

J.A. 20333 (Trial Tr. 256:3–16) (testimony of Mr. Lewis acknowledging that the Zenith licenses were similarly tied to the technology rather than any patents or claims).