United States Court of Appeals for the Federal Circuit

CISCO SYSTEMS, INC.,
Appellant

v.

TQ DELTA, LLC,
Appellee

2018-1806

Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in No. IPR2016-01466.

ARRIS GROUP, INC.,
Appellant

v.

TQ DELTA, LLC,
Appellee

2018-1917

Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in No. IPR2016-01160.

Decided: July 10, 2019

THEODORE M. FOSTER, Haynes & Boone, LLP, Dallas, TX, argued for appellant Cisco Systems, Inc. Also represented by DAVID L. MCCOMBS, DEBRA JANECE MCCOMAS.

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RAJENDRA A. CHIPLUNKAR, McAndrews, Held & Malloy, Ltd., Chicago, IL, argued for appellee. Also represented by PETER J. MCANDREWS.

Before NEWMAN, LINN, and WALLACH, *Circuit Judges.*

WALLACH, *Circuit Judge.*

The instant appeal is the companion to concurrently issuing appeal No. 2018-1799, where we determined that claims 6, 11, 16, and 20 of Appellee TQ Delta, LLC's ("TQ Delta") U.S. Patent No. 8,611,404 ("the '404 patent") are unpatentable as obvious over the same combination of prior art analyzed in this appeal. *See TQ Delta, LLC v. Dish Network, LLC*, No. 2018-1799, slip op. 19 (Fed. Cir. July 10, 2019). We presume familiarity with our opinion in related appeal, which recites the same technology and illustrative claim as in the instant appeal, and we, therefore, recite only that which is necessary to understand the issues on appeal here. *See TQ Delta*, slip op. 2–4,

Appellant Cisco Systems, Inc. ("Cisco") sought inter partes review ("IPR") with the U.S. Patent and Trademark Office ("USPTO") of claims 6, 10, 11, 15, 16, and 20 of the '404 patent. Appellant ARRIS Group, Inc. ("Arris") also filed a petition for IPR of claims 1–20 of the '404 patent. In both the Cisco and Arris (collectively, "Appellants") IPRs, the USPTO's Patent Trial and Appeal Board ("PTAB") issued final written decisions finding, inter alia, that the claims were not unpatentable over a combination of the prior art. *See Arris Grp., Inc. v. TQ Delta, LLC*, No. IPR2016-01160, 2017 WL 6398317, at *7 (P.T.A.B. Dec. 13, 2017); *ARRIS Grp., Inc. v. TQ Delta, LLC*, No. IPR2016-01160, 2018 WL 1176779, at *3 (P.T.A.B. Mar. 5, 2018) (denying rehearing); *see also Cisco Sys., Inc. v. TQ Delta, LLC.*, IPR No. 2016-01466 (P.T.A.B. Feb. 7, 2018) (J.A. 1–16).

Appellants appeal. Because we have already determined that claims 6, 11, 16, and 20 of the '404 patent would have been obvious, *see TQ Delta*, slip op. at 19, the issue of patentability of these claims is mooted in this appeal, *see ArcelorMittal v. AK Steel Corp.*, 856 F.3d 1365, 1370 (Fed. Cir. 2017) ("A case becomes moot—and therefore no longer a Case or Controversy for purposes of Article III—when the issues presented are no longer live or the parties lack a legally cognizable interest in the outcome." (internal quotation marks omitted) (citing *Already, LLC v. Nike, Inc.*, 568 U.S. 85, 91 (2013))). The remaining claims being challenged on appeal are the patentability of claims 1–5, 7–10, 12–15, and 17–19 ("the Challenged Claims"). We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(4)(A) (2012). We vacate and remand.

BACKGROUND

Entitled "Multicarrier Transmission System with Low Power Sleep Mode and Rapid-On Capability," the '404 patent relates to the field of "multicarrier transmission systems." '404 patent col. 1 l. 31. Relevant here, the exact

term "synchronization signal" appears only in the claims. *See id.* col. 10 l. 6–col. 12 l. 6. However, the specification describes a "synchronizing pilot tone 62*a*," *id.* col. 7 l. 15, and refers to it as "a timing reference signal," *id.* col. 5 ll. 38–39. The specification similarly describes using the "timing reference signal" for "synchronization" as well as other types of timing signals. *See id.* col. 5 ll. 39–45 (describing the "timing reference signal" being "synchronized with the Master Clock in the transmitter" and explaining that "[o]ther forms of timing signal[s] may, of course, be used").

Independent claim 6[1] is illustrative and recites in relevant part:

> An apparatus comprising a transceiver operable to . . . receive, in the full power mode, a *synchronization signal*; . . . [and] receive, in the low power mode, a *synchronization signal*; and exit from the low power and restore the full power mode by using the at least one parameter and without needing to reinitialize the transceiver.

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[1] While Cisco and Arris challenge certain claims in the instant appeal that are not challenged in the related appeal issued today, *see TQ Delta*, slip op. at 2, neither party disputes the PTAB's selection of independent claim 6 as illustrative of the Challenged Claims, nor do they present any argument why claims 1–5, 7–10, 12–15, and 17–19 are separately patentable, *see generally* Cisco's Br.; Arris's Br. Thus, we need not separately address those dependent claims. *See Affinity Labs of Tex., LLC v. DIRECTV, LLC*, 838 F.3d 1253, 1264 n.4 (Fed. Cir. 2016) (holding that when "[a party] has not separately argued the patent eligibility of the dependent claims," it "has waived any argument that those claims should be analyzed separately").

Id. col. 10 ll. 29–43 (emphases added).

DISCUSSION

I. Standard of Review and Legal Standard

"We review the PTAB's factual findings for substantial evidence and its legal conclusions de novo." *Redline Detection, LLC v. Star Envirotech, Inc.*, 811 F.3d 435, 449 (Fed. Cir. 2015) (citation omitted). "Substantial evidence is something less than the weight of the evidence but more than a mere scintilla of evidence," meaning that "[i]t is such relevant evidence as a reasonable mind might accept as adequate to support a conclusion." *In re NuVasive, Inc.*, 842 F.3d 1376, 1379–80 (Fed. Cir. 2016) (internal quotation marks and citations omitted). "If two inconsistent conclusions may reasonably be drawn from the evidence in record, the PTAB's decision to favor one conclusion over the other is the epitome of a decision that must be sustained upon review for substantial evidence." *Elbit Sys. of Am., LLC v. Thales Visionix, Inc.*, 881 F.3d 1354, 1356 (Fed. Cir. 2018) (internal quotation marks, brackets, and citation omitted).

At the time of the Final Written Decisions, the PTAB gave "[a] claim . . . its broadest reasonable construction in light of the specification of the patent in which it appears." 37 C.F.R. § 42.100(b) (2017). A specification "includes both the written description and the claims" of the patent. *In re Packard*, 751 F.3d 1307, 1320 n.11 (Fed. Cir. 2014). "A patent's specification, together with its prosecution history,[2] constitutes intrinsic evidence to which the PTAB gives priority when it construes claims." *Knowles Elecs. LLC v.*

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2 A patent's prosecution history "consists of the complete record of the proceedings before the [US]PTO," which provides "evidence of how the [US]PTO and the inventor understood the patent." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1317 (Fed. Cir. 2005) (en banc) (citations omitted).

Cirrus Logic, Inc., 883 F.3d 1358, 1361–62 (Fed. Cir. 2018) (citation omitted). We review the PTAB's assessment of the intrinsic evidence de novo. *See id.* at 1362.

II. The PTAB Improperly Construed the "Synchronization Signal" Limitation

The PTAB construed illustrative claim 6's term "synchronization signal" to mean "a signal allowing synchronization between the clock of the transmitter of the signal and the clock of the receiver of the signal." J.A. 10; *Arris Grp*, 2017 WL 6398317, at *4.[3] The PTAB further clarified, when rendering its obviousness determination, that "[its] construction of 'synchronization signal' excludes a synchronization frame." *Arris Grp.*, 2017 WL 6398317, at *6. Appellants assert that by improperly limiting the construction of "synchronization signal" to "a signal allowing synchronization between the clock of the transmitter of the signal and the clock of the receiver of the signal," the PTAB did not apply "the broadest reasonable [interpretation] in light of the specification of the '404 patent." Cisco's Br. 23; Arris's Br. 31.[4] Cisco specifically asserts that

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[3] Arris and Cisco raised similar claim construction challenges and the PTAB ultimately made identical or substantially similar determinations in both IPRs. *See ARRIS Grp., Inc. v. TQ Delta, LLC*, No. IPR2016-01160, 2018 WL 1176779, at *3 (P.T.A.B. Mar. 5, 2018) (denying rehearing); *Cisco Sys., Inc. v. TQ Delta, LLC*, IPR2016-01466 (P.T.A.B. Feb. 7, 2018) (J.A. 1–16). Unless otherwise noted, we will cite to the determination in *ARRIS* yet, our holdings apply equally to *ARRIS* and *Cisco*.

[4] Appellants articulate substantially similar arguments as to the "synchronization signal" limitation on appeal. *See* Arris's Br. 26; Cisco's Br. 23. As such, we address their arguments together. We use "Appellants" to refer to arguments made by both parties and "Arris" or "Cisco" to refer to arguments made by that party alone.

"synchronization signal" includes "a signal used to maintain timing between transceivers." Cisco's Br. 35. We agree with Appellants.

The '404 patent's claims and specification teach that "synchronization signal" means "a signal allowing frame synchronization between the transmitter of the signal and the receiver of the signal," and is not limited to describing what the signal must synchronize or to a particular type of synchronization. We begin our analysis with the claim language. *In re Power Integrations, Inc.,* 884 F.3d 1370, 1376 (Fed. Cir. 2018) ("[C]laim construction must begin with the words of the claims themselves." (citation omitted)). The term "synchronization signal" is recited twice in claim 6: first, the transceiver "receive[s], in the full power mode, a synchronization signal," '404 patent col. 10 l. 33, and second, the transceiver "receive[s], in the low power mode, a synchronization signal," *id.* col. 10 l. 39. We also look to the surrounding claim language for context when the illustrative claim does not provide much clarification. *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."). The "receiving a plurality of superframes" element of the independent claim 1, however, only refers to the full power mode. '404 patent col. 10 ll. 2–4 ("An apparatus comprising a transceiver operable to: transmit, in full power mode, a plurality of superframes. . . ."). Claim 6, therefore, explains that the transceiver operates in in full power mode at least when transmitting the "plurality of superframes."

The remainder of the specification does not expressly define or even recite the term "synchronization signal." However it still provides useful insight for claim construction purposes. *See generally* '404 patent; *see Trs. of Columbia Univ. v. Symantec Corp.,* 811 F.3d 1359, 1363 (Fed. Cir. 2016) ("[T]he specification is *always* highly relevant to the claim construction analysis and is, in fact, the single best

guide to the meaning of a disputed term." (internal quotation marks and citation omitted)).[5] The '404 patent's written description explains that in its preferred embodiment, timing reference signal is the signal that allows "both" the synchronization of the respective transmitter and receiver clocks, as well as the synchronization of the transmitter and receiver frame counters. '404 patent col. 5 ll. 37–45. The specification describes "[o]ther forms of timing signals" that may be used, as well as one embodiment as "advantageous[]." *Id.* col. 5 ll. 45, 42. As such, without any clear indication otherwise in the specification, synchronization is not restricted to the "advantageous" clock-based preferred embodiment as described in the specification. *See Liebel-Flarsheim Co v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004) (explaining that "it is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited"). Additionally, the '404 patent's "timing reference signal" provides the reference for both frequency and frame synchronization, and the presence of frame synchronization requires frequency synchronization. *See* '404 patent col. 5 ll. 37–41 (explaining that "[d]uring normal (non-sleep mode) operation, a phase-lock loop (PLL) 62 receives . . . a

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[5] The PTAB based its construction on the specification's reference to a "timing reference signal" in the "normal (non-sleep mode) operation," as representative of the claimed "synchronization signal." *Arris Grp.*, 2017 WL 6398317, at *3–5; *see* '404 patent col. 5 l. 37; *see also* J.A. 2350 (explaining, in Arris's Petition for IPR, that "[t]he timing reference signal is thus inferred to be representative of th[e synchronization signal] claim limitation), 2548 (providing, in Patent Owner Response to Petition for IPR, that "the claimed 'synchronization signal' relates to timing synchronization").

timing reference signal 62*a* (*see* FIG. 1A) via a line 62*b* [which] . . . is transmitted from the transmitter with which the receiver 16 communicates (e.g., the CO transmitter)"); J.A. 2834, 2866 (explaining, in Arris's expert declaration, that "[t]he '404 [p]atent teaches the transmission of a timing signal to maintain synchronization between ADSL transceivers called the 'timing reference frame, each frame having a duration of one symbol period of approximately two hundred and fifty microseconds'"). The specification explains that the timing reference signal "is advantageously a pure tone of fixed frequency and phase which is synchronized with the Master Clock in the transmitter; its frequency defines the frame rate of the transceivers." '404 patent col. 5 ll. 41–45. Contrary to the PTAB's conclusion, we determine that the broadest reasonable interpretation of the disputed claim term "synchronization signal" is simply "used to establish or maintain a timing relationship between transceivers between the transmitter of the signal and the receiver of the signal," meaning synchronization signal includes frame synchronization.

TQ Delta's primary counterargument is unpersuasive. TQ Delta asserts that "Arris fails to show that the [PTAB] erred in finding that 'synchronization signal' does not include a 'synchronization frame.'" Appellee's Br. 46. However, the timing reference signal described in the specification allows for both frequency and frame synchronization. '404 patent col. 5 ll. 48–53 (explaining that "[t]he PLL 62 locks itself to [the timing reference] signal and drives clock 30 in synchronism with the Master Clock in the driving transmitter" and that this mechanism "also synchronizes frame counter 34 of the CPE transceiver to the corresponding frame counter of the CO transceiver"). As explained by the '404 patent, the timing reference signal "synchronizes frame counter 34 of the CPE transceiver to the corresponding frame counter of the CO transceiver." *Id.* col. 5 ll. 50–52. Therefore, because the existence of the frame synchronization requires frequency synchronization,

the "timing reference signal" demonstrates that the "synchronization signal," as disclosed by the Challenged Claims, is necessary. *See id.* col. 5 ll. 41–45 (explaining that the transmitter's "frequency defines the frame rate of the transceivers"). Thus, we vacate the PTAB's claim construction and we remand for the PTAB to consider Appellants' unpatentability challenge under the proper claim construction.

CONCLUSION

We have considered the parties' remaining arguments and find them unpersuasive. Accordingly, the Final Written Decisions of the U.S. Patent Trial and Appeal Board are vacated and the case is remanded.

VACATED AND REMANDED