United States Court of Appeals for the Federal Circuit

HTC CORPORATION, ZTE (USA), INC.,
Appellants

v.

CELLULAR COMMUNICATIONS EQUIPMENT, LLC,
Appellee

2016-1880

Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in No. IPR2014-01134.

Decided: December 18, 2017

STEVEN ARTHUR MOORE, Pillsbury Winthrop Shaw Pittman LLP, San Diego, CA, argued for appellants. Also represented by MATTHEW ROBERT STEPHENS, BRIAN CHRISTOPHER NASH, Austin, TX.

BARRY JAMES BUMGARDNER, Nelson Bumgardner PC, Fort Worth, TX, argued for appellee. Also represented by JOHN P. MURPHY.

Before DYK, REYNA, and TARANTO, *Circuit Judges*.

REYNA, *Circuit Judge*.

HTC Corporation and ZTE (USA), Inc. appeal a final written decision of the Patent Trial and Appeal Board in an *inter partes* review. Appellants argue that the Board improperly construed the claim term "message" and erred in finding that HTC failed to show that the prior art anticipated or rendered obvious the challenged claims. We find no error in the Board's claim construction, and substantial evidence supports the Board's patentability determination. We affirm.

BACKGROUND

A. The '174 Patent

U.S. Patent No. 7,941,174 ("'174 patent") is directed to methods and apparatuses for a radio communications system where a subscriber station, i.e., a mobile device, is assigned a plurality of codes for transmitting messages. '174 Patent Abstract, col. 2 ll. 1–6. The assigned codes correspond to data transmission channels in a Universal Mobile Telecommunications System ("UMTS"), in particular here, a Dedicated Uplink Channel ("DCH") for transmitting messages and an Enhanced Dedicated Uplink Channel ("EDCH") for transmitting high bit rate messages. *Id.* col. 4 ll. 26–40. To send messages to a UMTS base station, the subscriber station requires "transmit" or "transmission" power. When radio transmission conditions deteriorate, such as when there is a high amount of interference in the communications cell, the base station may command the subscriber station to increase transmit power in order to send the message. *Id.* col. 7 ll. 20–26, 31–33; J.A. 2125. But the subscriber station is limited in the amount of transmission power it can use, called the "maximum transmission power," which is "preferably predetermined by the hardware of the subscriber station" or "predefined on the network side." *Id.* col. 2 ll. 50–51, 57–58. According to the '174 patent, operating at maximum transmission power is undesirable because the

subscriber station cannot increase transmission power to overcome poor transmission conditions, which in turn results in incomplete and aborted message transmissions. *See id.* col. 6 ll. 20–27.

To avoid operating at maximum transmission power, the '174 patent's claimed solution sets a "transmit power difference" or "power headroom" for the plurality of codes in the subscriber station at the beginning of a message transmission. *Id.* col. 6 ll. 40–47. Setting this power headroom permits the subscriber station when sending messages to increase transmit power to overcome interference and thus avoid aborted message transmission. The transmit power difference "corresponds to an unused transmit power at the start of the transmission" of a message, such as a message transmitted over EDCH. *Id.* col. 6 ll. 47–49.

Illustrative of the method claims, independent claim 1 teaches:

> 1. A method for operating a radio communication system in which a subscriber station is assigned a plurality of codes for transmitting messages, comprising:
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> > determining a transmit power difference which is to be maintained by the subscriber station between on one hand a total maximum transmit power of the subscriber station for the codes and on another hand a total transmit power of the subscriber station for the codes at a start of a message transmission using a first one of the codes.

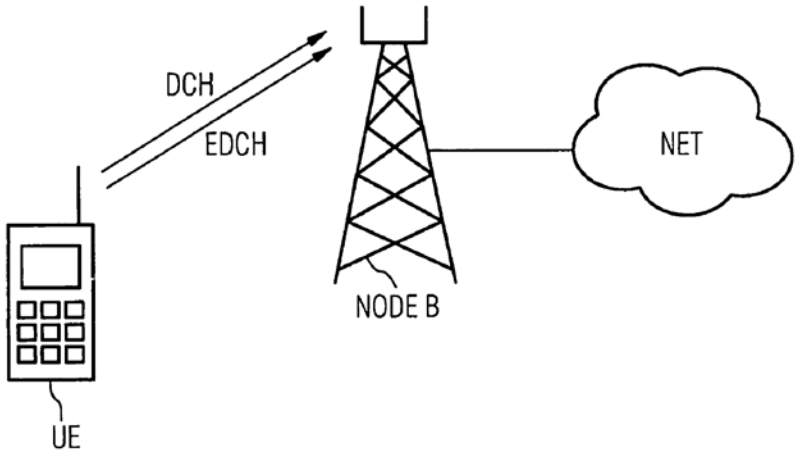
Id. col. 9 ll. 56–64.

Illustrative of the apparatus claims, independent claim 18 teaches:

> 18. A subscriber station for a radio communication system, the subscriber station assigned a plurality of codes for transmitting messages, comprising:
>
> > at least one processor programmed to determine a transmit power difference which is to be maintained by the subscriber station between on one hand a total maximum transmit power of the subscriber station for the codes and on another hand a total transmit power of the subscriber station for the codes at a start of a message transmission using a first one of the codes.

Id. col. 12 ll. 1–10.

The sole figure in the specification depicts the relationship between the mobile station, UE, which transmits messages over the DCH and EDCH channels, and base station, NODE B, in a UMTS system:



Id. Fig. 1.

Relevant to this appeal, the '174 patent recognizes that an EDCH message is measured in intervals of 10 milliseconds, which is comprised of 15 timeslots. *Id.* col. 5

ll. 29–31. The 10 ms transmission time interval is referred to as a "frame." *See* J.A. 1181–82, 2130. In UMTS systems available around 1999, transmission time intervals could either be 10 ms, 20 ms, 40 ms, or 80 ms. J.A. 2128.

B. Prior Art

1. Baker

U.S. Patent Application Pub. No. 2008/0151840 ("Baker") is directed to a UMTS communication system in which a mobile station transmits acknowledgement ("ACK") or non-acknowledgement ("NACK") signals to a base station upon receiving data from the base station. J.A. 909. To allow for the transmission of ACK/NACK signals, the mobile station must scale down the maximum transmit power allocated to its transmission codes: a dedicated physical data channel ("DPDCH") and a dedicated physical control channel ("DPCCH"). *Id.* Figure 4 depicts this process in a timing diagram, with P_{C1} and P_{D1} representing the transmit power associated with each of the two transmission channels, DPDCH and DPCCH, operating at maximum transmission power for the mobile station, P_{max}. When the ACK/NACK signal is to be transmitted, P_{C1} and P_{D1} are scaled down to P_{C2} and P_{D2}, respectively, for the duration of the ACK/NACK transmission.

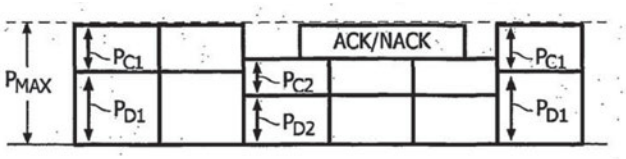


FIG. 4

See J.A. 911, 914.

As Baker explains, "at the boundary of the frame or time slot immediately preceding the sending of an ACK or NACK, these amplitudes [P_{C1} and P_{D1}] are adjusted by for example reducing DPCCH whilst maintaining the power ratio P_D/P_C constant." *Id.* Baker thus leaves capacity for the transmission of the ACK/NACK signal, or other types of signaling information. J.A. 914–15.

2. Reed

U.S. Patent No. 7,689,239 ("Reed") is directed to a system, method, and apparatus for "establishing headroom for a mobile station" based on "specific channel variance conditions and battery conditions." J.A. 901 Abstract. Reed defines "headroom" as "the difference between the maximum power of the transmitter and the transmission power level required for a particular data rate." J.A. 905 col. 1 ll. 29–31. Headroom is therefore a "margin built in" to the maximum data rate "to provide some protection against varying channel conditions." *Id.* col. 1 ll. 36–38. In the sole portion of the written description discussing a mobile station with multiple data streams, Reed states:

> If the mobile station desires to send two or more data streams (or hold voice and data connections at the same time), an addition [sic] degree of freedom allows the mobile station to deliberately increase the headroom on one of the data streams to de-prioritize that data stream. This would result in, for example, a longer time to transmit a text message from the mobile station but allow a digital picture to be transmitted at an optimum data rate.

J.A. 906 col. 4 ll. 14–21.

3. Love

U.S Patent No. 7,321,780 ("Love") is directed to "a method for rate selection by a communication device for

enhanced uplink during soft handoff in a wireless communication system." J.A. 917. Relevant here, Love discloses assigning codes to communication channels to transmit data and setting a "power margin" to limit the rate of data transmitted over the codes. *Id.* col. 6 ll. 11–19, col. 8 ll. 42–55. With respect to obviousness, HTC only challenges the Board's review of the scope and content of Reed.

C. Proceedings Before the Board

The Board instituted *inter partes* review of claims 1, 6, 9, 14, 18, and 19 of the '174 patent on three grounds: (1) anticipation by Baker; (2) obviousness over Reed in view of Baker; and (3) obviousness over Reed in view of Love. *Amazon.com, Inc. v. Cellular Commc'ns Equip., LLC*, No. IPR2014-01134, 2016 WL 98583, at *1 (P.T.A.B. Jan. 6, 2016) ("*Final Written Decision*").[1] On January 6, 2016, the Board issued a final written decision concluding that petitioners, including appellants HTC Corporation and ZTE (USA), Inc. (together, "HTC"), failed to show that any of the challenged claims were unpatentable. *Id.* at *11.

First, the Board adopted patent owner's, Cellular Communications Equipment, LLC ("CCE"), construction of the phrase "at a start of a message transmission using a first one of the codes," as it appears in claims 1, 9, and 18, to modify the phrase "a total transmit power of the subscriber station for the codes." *Id.* at *5.[2] The Board thus interpreted the "start of a message transmission

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[1] Ten parties petitioned for *inter partes* review before the Board. Two were dismissed before the Board issued its final written decision. Only two of the remaining eight, HTC Corporation and ZTE (USA), Inc., currently appeal the Board's final written decision.

[2] This construction is not disputed on appeal.

using a first one of the codes" limitation to require that a total transmit power difference exist at the start of a message transmission. *Id.*

Second, the Board found that HTC failed to show that Baker either explicitly or inherently disclosed the "start of a message transmission" limitation of the '174 patent. The Board reasoned that Baker did not disclose any indication that the frame or timeslot boundary immediately preceding an ACK/NACK signal is the start of a message transmission. *Id.* at *6. The Board then considered whether Baker inherently discloses the "start of a message transmission" limitation. It found that HTC provided no evidence that Baker discloses a mobile station that transmits EDCH messages, and thus HTC failed to show that the start of a frame preceding an ACK/NACK signal is necessarily the start of a message transmission. *Id.* at *6. The Board reasoned that the "mere possibility that the start of a frame may correspond to the start of a message transmission is not sufficient to show Baker anticipates the challenged claims." *Id.* The Board therefore concluded that HTC failed to show that Baker anticipated the challenged claims. *Id.*

Lastly, the Board denied HTC's obviousness challenges based on Reed in view of Love or Baker. The Board found that Reed discloses a mobile station that can transmit two or more data streams with each data stream having its own adjustable headroom. *Id.* at *8. In contrast, the '174 patent teaches a single headroom for multiple data streams. Thus, the Board concluded that Reed does not read on the limitation of the '174 patent that requires determining a single transmit power difference "between a maximum transmit power *for a plurality of codes* and a total transmit power for *a plurality of codes* at a start of a message transmission." *Id.* at *9.

HTC appeals. We have jurisdiction under 28 U.S.C. § 1295(a)(4)(A) (2012).

DISCUSSION

We review Board decisions in accordance with the Administrative Procedure Act, 5 U.S.C. § 706(2) (2012). *Dickinson v. Zurko*, 527 U.S. 150, 152, 165 (1999). Under the APA, we review the Board's legal conclusions de novo and its factual findings for substantial evidence. *ACCO Brands Corp. v. Fellowes, Inc.*, 813 F.3d 1361, 1365 (Fed. Cir. 2016). Substantial evidence is "such relevant evidence as a reasonable mind might accept as adequate to support a conclusion." *In re Gartside*, 203 F.3d 1305, 1312 (Fed. Cir. 2000) (quoting *Consol. Edison Co. of N.Y. v. NLRB*, 305 U.S. 197, 229 (1938)).

HTC raises three arguments on appeal. First, HTC argues that the Board failed to construe the term "message" according to its broadest reasonable interpretation. Second, HTC contends that Baker anticipates the challenged claims because it discloses reducing transmission power at the beginning of a frame boundary in a UMTS system, and therefore at the start of a message transmission. Third, HTC challenges the Board's finding that Reed does not disclose determining a single headroom for multiple data streams.

A. Claim Construction

Claim construction serves to define the scope of the patented invention and the patentee's right to exclude. *See Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 835 (2015). Claim construction is a question of law that may be based on underlying factual determinations. *Id.* at 841–42. We review the Board's constructions based on intrinsic evidence de novo and its factual findings based on extrinsic evidence for substantial evidence. *Wasica Finance GmbH v. Cont'l Auto. Sys., Inc.*, 853 F.3d 1272, 1278 (Fed. Cir. 2017).

On appeal, HTC challenges the Board's interpretation of the term "message" as applied by the Board in its

anticipation analysis. The record indicates that the Board neither expressly construed the term "message," nor did HTC seek construction of the term "message" before the Board. Despite no express construction of "message" below, Board findings establishing the scope of the patented subject matter may fall within the ambit of claim construction. *See Netword, LLC v. Centraal Corp.*, 242 F.3d 1347, 1355–56 (Fed. Cir. 2001). Because HTC's challenge is directed to the Board's expression of its understanding of the scope of the claim term "message," it is properly before us on appeal.

HTC advances inconsistent claim construction arguments. In its opening brief, HTC argues that the Board failed to apply the broadest reasonable interpretation of the term "message" by defining a message by its content and by requiring a specific beginning and endpoint. Appellants' Br. 37–38. During oral argument, however, HTC stated that the Board did not construe the term "message" as having an ending requirement. Oral Arg. 3:06–3:34, http://oralarguments.cafc.uscourts.gov/default.aspx?fl=2016-1880.mp3. Similarly, HTC's opening brief claims that the Board's construction of message improperly excludes single frame messages. Yet, at oral argument, HTC conceded that the Board's interpretation of "message" did not exclude single frame messages. Oral Arg. 1:45–2:21. In its reply brief, HTC takes a different tack, arguing that the Board improperly construed the phrase "at a start of a message transmission" and failed to distinguish between "message transmission" and "message." Reply 5–6.

Despite the inconsistent positions, HTC appears to primarily contend that the Board's application of the term "message" improperly excluded embodiments of "transmissions of data at intervals specified in a UMTS system," specifically by excluding single frame EDCH messages. Appellants' Br. 36–37, 41. But as HTC acknowledged, the Board made no such exclusion. Oral Arg. 1:45–2:21.

Rather, the Board agreed with CCE that a message transmission may occur over a single frame or over multiple frames and timeslots. *Final Written Decision* at *5. The Board relied on expert declarations from both HTC and CCE testifying that messages in a UMTS system can span multiple frames. *Id.*; *see* J.A. 1181–82 ("[A] message in a UMTS system can include one or more frames (each frame having 15 time slots)."). The Board thus properly understood "message" to encompass EDCH messages that last a single frame.

We therefore disagree with HTC that the Board erred in its understanding of the scope of the term "message" as claimed in the '174 patent.

B. Anticipation

A claim is anticipated if a single prior art reference discloses all the claimed limitations arranged or combined in the same way as in the claim. *Kennametal, Inc. v. Ingersoll Cutting Tool Co.*, 780 F.3d 1376, 1381 (Fed. Cir. 2015). Anticipation is a question of fact that we review for substantial evidence. *Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1341 (Fed. Cir. 2016). To anticipate a claim, a single prior art reference must disclose every limitation of the claimed invention either expressly or inherently. *Id.*

HTC only argued before the Board that the Baker reference discloses a mobile station that reduces the transmit power of DPDCH and DPCCH codes at the timeslot immediately preceding the ACK/NACK transmission. J.A. 276–77. HTC did not identify any disclosure in Baker showing that the frame boundary immediately preceding the ACK/NACK transmission is the start of a message transmission. *See* J.A. 696 (HTC conceding during oral hearing before the Board that it had not "identified anything in Baker that teaches that every frame is a new message"). The Board thus found that Baker's description of the boundary of the frame or

timeslot immediately preceding the ACK/NACK signal does not expressly disclose the "start of a message transmission" limitation as claimed in the '174 patent. *Final Written Decision* at *6. We see no error in the Board's decision. *See Eli Lilly & Co. v. L.A. Biomedical Research Inst.*, 849 F.3d 1073, 1074 (Fed. Cir. 2017) ("To anticipate a claim, a prior art reference must disclose every limitation of the claimed invention, either expressly or inherently." (citation and quotation marks omitted)).

The Board next considered whether Baker inherently anticipates the "start of a message transmission" limitation. A party seeking to establish inherent anticipation must show that a person of ordinary skill in the art would recognize that missing descriptive matter in a prior art reference is nevertheless necessarily present. *Cont'l Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1268 (Fed. Cir. 1991). The Board found that HTC failed to show that the Baker reference discloses a mobile station that transmits EDCH messages, relying on an admission from HTC's counsel stating that he did not know whether "Baker [is] talking about an EDCH message and not something else that can be more than one frame." *Final Written Decision* at *6; J.A. 697.[3] Absent evidence that Baker teaches a mobile

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[3] In its reply brief, HTC points to portions of CCE's expert declaration that generally discuss UMTS systems, in particular that EDCH data messages can be transmitted through DPDCH and DPCCH channels. Reply 13; J.A. 2128, 2130. This is a new argument. HTC did not argue before the Board that Baker teaches a mobile station that transmits EDCH messages. J.A. 12 ("Petitioner does not argue or identify evidence indicating that the mobile station in Baker transmits an EDCH message."). We decline to consider new arguments on appeal that were not raised below before the Board. *Icon Health & Fitness, Inc. v. Strava, Inc.*, 849 F.3d 1034, 1040 (Fed.

station that sends single-frame EDCH messages, the Board found that the start of a frame in Baker is not inherently the start of a message transmission. *Final Written Decision* at *6.

We agree with the Board's conclusion. HTC failed to identify evidence showing that Baker transmits EDCH messages. Without such evidence, HTC has only shown that it is possible for the start of a frame preceding an ACK/NACK signal to correspond to the start of a message transmission. This possibility, however, is not enough to find that Baker necessarily discloses the "start of a message transmission" limitation in independent claims 1, 9 and 18 of the '174 patent. As such, substantial evidence supports the Board's finding that Baker does not inherently anticipate the challenged claims of the '174 patent. *Cont'l Can*, 948 F.2d at 1269 ("Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing *may* result from a given set of circumstances is not sufficient." (quoting *In re Oelrich*, 666 F.2d 578, 581 (C.C.P.A. 1981))).

C. Obviousness

If a person of ordinary skill in the art at the time of the invention would find obvious the differences between the claimed subject matter and the prior art, the claimed subject matter cannot be patented. 35 U.S.C. § 103. Obviousness is a question of law with underlying factual findings relating to the "scope and content of the prior art, differences between the prior art and the claims at issue, the level of ordinary skill in the pertinent art, and any objective indicia of non-obviousness." *Randall Mfg. v. Rea*, 733 F.3d 1355, 1362 (Fed. Cir. 2013); *see Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). We review the

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Cir. 2017); *see Singleton v. Wulff*, 428 U.S. 106, 120 (1976).

Board's underlying factual findings for substantial evidence and its legal conclusion on obviousness de novo. *In re Mouttet*, 686 F.3d 1322, 1330–31 (Fed. Cir. 2012).

HTC argues that the Board ignored that prior art reference Reed contemplates creating power headroom for the entire mobile device by teaching that one data stream can be deprioritized in order to increase the transmit power available for another data stream. HTC is incorrect. The Board directly addressed the sole passage in Reed's specification describing a mobile station with multiple data streams, which states:

> If the mobile station desires to send two or more data streams (or hold voice and data connections at the same time), an addition [sic] degree of freedom *allows the mobile station to deliberately increase the headroom on one of the data streams to de-prioritize that data stream*. This would result in, for example, a longer time to transmit a text message from the mobile station but allow a digital picture to be transmitted at an optimum data rate.

J.A. 906 col. 4 ll. 14–21 (emphasis added). The Board found that Reed does not describe "determining a single headroom for a plurality of codes" as claimed in the '174 patent, but teaches "determining a separate headroom for each code." *Final Written Decision* at *8. To reach its conclusion, the Board relied on both parties' expert declarations. *Id.*[4] HTC's expert testified that "[o]ne skilled in

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[4] HTC's expert, Dr. Tim Williams, submitted two declarations in this matter. Because Dr. Williams's discussion of Reed in his second declaration was inconsistent with his first declaration, the Board found Dr. Williams's second declaration lacked credibility and afforded it little weight. *Final Written Decision* at *8. We

the art would understand that the data streams disclosed in Reed are assigned different codes, each code having its own headroom." *Id.* The Board also credited CCE's expert, who testified that "[o]ne of ordinary skill would recognize that in Reed, a subscriber station can use a plurality of codes for transmission of uplink messages, and each code has its own headroom," and that in the '174 patent, "[t]he power difference is for all the codes being used by the subscriber station." *Id.* (citing to portions of CCE's expert report). In addition, the Board found that Reed discloses determining power headroom for an entire mobile device only when the device is assigned one code, not a plurality of codes. *Id.* at *9.

We agree with the Board's reading of Reed. HTC does not point to any evidence in the record that would undermine the Board's findings on the scope and content of Reed. For mobile stations having multiple data streams, Reed discloses distinct power headrooms for each data stream. J.A. 906 col. 4 ll. 14–21. Because the Board's findings are supported by substantial evidence, we affirm its conclusion that HTC failed to show that the combination of Reed in view of Baker or Love renders obvious claims 1, 6, 9, 14, 18, and 19 of the '174 patent.

CONCLUSION

The Board did not err in its construction of the term "message." In addition, the Board's findings regarding anticipation and obviousness are supported by substantial evidence. We therefore affirm.

AFFIRMED

COSTS

No costs.

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see no error in the Board's handling of Dr. Williams's second declaration.