

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HTC CORPORATION and HTC AMERICA, INC., ZTE CORPORATION,
and ZTE (USA), INC.
Petitioner,

v.

CELLULAR COMMUNICATIONS EQUIPMENT LLC,
Patent Owner.

Case IPR2016-01501¹
Patent 8,457,676 B2

Before BRYAN F. MOORE, GREGG I. ANDERSON, and
JOHN A. HUDALLA, *Administrative Patent Judges*.

MOORE, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. 318(a)

¹ ZTE Corporation, and ZTE (USA), Inc. filed a petition in (now terminated) IPR2017-01079, and have been joined to the instant proceeding.

I. INTRODUCTION

HTC Corporation and HTC America, Inc. (collectively “HTC”) filed a Petition (Paper 1, “Pet.”) pursuant to 35 U.S.C. §§ 311–319 to institute an *inter partes* review of claims 1, 3, 19, 21, 33, and 34 (“the challenged claims”) of U.S. Patent No. 8,457,676 B2 (“the ’676 patent,” Ex. 1001). The Petition is supported by the Declaration of Tim A. Williams, Ph.D. (“Williams Declaration,” “Williams Dec.,” Ex. 1003). ZTE Corporation and ZTE (USA), Inc. (collectively “ZTE”) were joined into this *inter partes* review. Paper 18. Thus, HTC and ZTE (collectively “Petitioner”) are currently Petitioner in this *inter partes* review. Cellular Communications Equipment LLC (“Patent Owner”) filed a Preliminary Response (“Prelim. Resp.,” Paper 6).

On February 13, 2017, we instituted an *inter partes* review of claims 1, 19, and 33 of the ’676 patent. Paper 7, 20 (“Inst. Dec.”). Patent Owner filed a Response. Paper 11 (“PO Resp.”). The Patent Owner Response is supported by the Declaration of Jay P. Kesan, Ph.D. (“Kesan Declaration,” “Kesan Dec.,” Ex. 2005). Petitioner filed a Reply. Paper 13 (“Reply”). An oral hearing was held on November 8, 2017. Paper 24 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a). For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1, 19, and 33 are unpatentable.

A. *Related Proceedings*

Petitioner advises us that the following District Court lawsuits are related to this proceeding: *Cellular Communications Equipment LLC v.*

AT&T Inc., No. 2:15-cv-00576 (E.D. Tex.); *Cellular Commc 'ns Equipment LLC v. Sprint Corp.*, No. 2:15-cv-00579 (E.D. Tex.); *Cellular Commc 'ns Equipment LLC v. T-Mobile USA, Inc.*, No. 2:15-cv-00580 (E.D. Tex.); and *Cellular Commc 'ns Equipment LLC v. Verizon Commc 'ns, Inc.*, No. 2:15-cv-00581 (E.D. Tex.). Pet. 1. In addition, there is one other *inter partes* review proceeding asserting unpatentability of the '676 patent: *Apple Inc. v. Cellular Communications Equipment LLC*, Case IPR2016-01493 ("1493 IPR"). A Final Written Decision in IPR2016-01493 is being issued concurrently with the instant Decision.

B. The '676 Patent

The '676 patent generally relates to wireless communication technologies and the reporting of power headroom information from a mobile unit to a base station. The '676 patent is directed to an apparatus and method that "provides specific reporting criteria that are an attractive trade-off between signalling overhead versus overall uplink performance for LTE [Long-Term Evolution]." Ex. 1001, 4:32–35. When the user equipment (UE) determines that a threshold from a set of one or more criteria has been reached, it triggers sending a power control headroom report to the base station. *Id.* at Abstract. The inventors state that the triggering criteria used in the invention "are found to be very efficient for sending a power control headroom report in the uplink, while optimizing uplink performance, and while minimizing signaling overhead." *Id.* at 4:35–38. Further, the triggering criterion "includes a threshold having been reached, and the threshold is adjustable via a signal to the user equipment from a base station." *Id.* at Abstract. The inventors state that the time since the last

headroom report as measured by an integer multiplied by the transmission time interval (TTI) is a triggering criterion. *Id.* at 4:53–59. The inventors state that the absolute difference between the current and latest path-loss also is a triggering criterion. *Id.* at 4:60–65.

C. Illustrative Claim

The instituted claims 1, 19, and 33² are independent claims.

Claim 1, reproduced below, is illustrative.

1. A method comprising:

determining that a set of at least one triggering criterion is met;
and

providing a power control headroom report on an uplink from user equipment, in response to determining that the set is met,

wherein said at least one triggering criterion include at least one threshold having been reached, wherein said at least one threshold is adjustable via a signal to the user equipment,

wherein the set of at least one triggering criterion comprises a criterion being met based on reaching a threshold of the at least one threshold of k transmission time intervals following a previous power control headroom report, wherein k is an integer and wherein said at least one threshold adjustable via the signal comprises adjusting the threshold integer k.

Ex. 1001, 6:26–40 (paragraphing added).

² Claim 33 was changed in a Certificate of Correction dated July 7, 2015.
Ex. 1002, 1.

D. Instituted Ground of Unpatentability

We instituted trial on the following ground (Inst. Dec. 20):

Claims	Basis	Reference
1, 19, and 33	§ 103	Kwak ³

II. ANALYSIS

A. Relevant Law

1. Obviousness

A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and, (4) where in evidence, so-called secondary considerations, including commercial success, long-felt but unsolved needs, failure of others, and unexpected results.⁴ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966) (“the *Graham* factors”).

³ U.S. Patent Application Pub. No. 2006/0140154 A1, published June 29, 2006 (Ex. 1005, “Kwak”).

⁴ Patent Owner does not put forth evidence it alleges tend to show secondary considerations of non-obviousness in its Response.

2. Level of Skill

The level of ordinary skill in the art usually is evidenced by the references themselves. See *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995); *In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978). For an obviousness analysis, prior art references must be “considered together with the knowledge of one of ordinary skill in the pertinent art.” *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994) (quoting *In re Samour*, 571 F.2d 559, 562 (CCPA 1978)). Moreover, “it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom.” *In re Preda*, 401 F.2d 825, 826 (CCPA 1968). That is because an obviousness analysis “need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR*, 550 U.S. at 418; see also *In re Translogic Tech., Inc.*, 504 F.3d at 1259.

3. Claim Interpretation

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b). Under this standard, we interpret claim terms using “the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the

applicant's specification.” *In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997).

We presume that claim terms have their ordinary and customary meaning. *See Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1062 (Fed. Cir. 2016) (“Under a broadest reasonable interpretation, words of the claim must be given their plain meaning, unless such meaning is inconsistent with the specification and prosecution history.”); *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007) (“The ordinary and customary meaning is the meaning that the term would have to a person of ordinary skill in the art in question.” (internal citation and quotation marks omitted)). A patentee, however, may rebut this presumption by acting as his or her own lexicographer, providing a definition of the term in the specification with “reasonable clarity, deliberateness, and precision.” *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). Only those terms that are in controversy need to be construed, and only to the extent necessary to resolve the controversy. *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999); *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Ltd.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

A. Level of Skill

Petitioner asserts “[a] person of ordinary skill in the art of the subject matter of the ’676 patent would have had a Bachelor’s degree in electrical engineering or a similar degree, with 2–4 years of experience in the design and implementation of wireless communication systems, or the equivalent.” Pet. 8 (citing Ex. 1003 ¶ 42). Patent Owner does not offer a proposed level

of skill in its Patent Owner Response.⁵ We adopt Petitioner’s articulation of the level of skill and acknowledge that the level of ordinary skill in the art is also reflected by the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995); *In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978).

B. Claim Construction

In the Institution Decision, we adopted Patent Owner’s construction of “transmission time intervals” as argued by Patent Owner in its Preliminary Response. Inst. Dec. 5–7. We intended this construction to be read consistent with the use of TTI in the Specification. *Id.* Petitioner and Patent Owner did not present further arguments regarding this construction in the Petitioner’s Reply or the Patent Owner’s Response, respectively. *See generally*, Reply, PO Resp. 13–14. We discern no reason to change our preliminary construction. Thus, we determine, on the full record before us, that the broadest reasonable interpretation, consistent with the Specification, of “transmission time intervals” is “time periods determined by the duration of a transmission of one or more transport blocks.” *See* Prelim Resp. 17.

Based on the full record before us, we determine it is unnecessary to provide express constructions for any other claim terms.⁶

⁵ In related Case IPR2016-01493, Patent Owner argues that one of ordinary skill would look at the art for the perspective of LTE systems only. IPR2016-01493, PO Resp. 5–7. Patent Owner does not make that argument here nor does Patent Owner assert that issue is relevant to this case. Thus, we do not address that issue.

⁶ In related Case IPR2016-01493, the parties argued whether the terms “memory including software . . . configured, with the at least one processor,

C. Obviousness of Claims over Kwak

Petitioner contends that claims 1, 19, and 33 are unpatentable under 35 U.S.C. § 103(a) as obvious over Kwak. Pet. 23. To support its contentions, Petitioner provides explanations as to how the prior art allegedly teaches each claim limitation. *Id.* at 23–39. As discussed below, Patent Owner asserts Kwak fails to teach or suggest three specific limitations of each independent claim. PO Resp. 16–26. Upon consideration the full record of evidence and arguments, we determine that Petitioner has shown by a preponderance of the evidence that claims 1, 19, and 33 are unpatentable under 35 U.S.C. § 103(a) as obvious over Kwak.

Kwak (Exhibit 1005) describes “a method and apparatus for signaling the transmit power status (TPS), that is, uplink channel status of a User Equipment (UE) for use in uplink packet transmission scheduling.” Ex. 1005 ¶ 3. Kwak describes a Universal Mobile Telecommunication Service (UMTS) system for providing voice, data, multimedia, and wideband information to mobile subscribers or computer users. *Id.* ¶ 5. The UMTS architecture described in Kwak consists of User Equipment (UE) 20,

to cause the apparatus to at least: determine that a set of at least one triggering criterion is met,” and “memory including software . . . configured, with the at least one processor, to cause the apparatus to at least . . . provide a power control headroom report on an uplink from user equipment, in response to the set having been met” in claim 19 require construction as means-plus-function terms under 35 U.S.C. § 112 ¶ 6. We decided in the Decision on Institution, based on the record at that time, that 35 U.S.C. § 112 ¶ 6 did not apply. Although the parties do not argue this issue in this case, we do not apply 35 U.S.C. § 112 ¶ 6 to those terms in this case for the same reasons.

the UMTS Terrestrial Radio Access Network (UTRAN) 12, Radio Network Controllers (RNCs) 16a and 16b, and Node Bs 18a to 18d. *Id.* at Fig. 1, ¶¶ 6–9.

Kwak describes communicating transit power status (TPS) information from a UE to a Node B. *Id.* ¶¶ 28–31, 51. “The TPS is expressed as the maximum transmit power of the UE,” the “maximum data rate available to the UE,” or “the ratio of the maximum transmit power to the transmit power of the control channel, that is, the power margin of the UE.” *Id.* ¶ 51. Kwak describes the UE using the medium access control (MAC) layer to transmit the TPS to Node B. *Id.* ¶¶ 52, 63.

Kwak describes various criteria for triggering a TPS transmission from the UE to the Node B. For example, Kwak describes an exemplary embodiment in which the UE transmits a TPS every TPS period 910. *Id.* ¶¶ 73–74, 77. TPS period 910 is a value which can be “notified to the UE and the Node B from the RNC by upper layer signaling using Radio Resource Control (RRC) and Node B Application Part (NBAP) protocols.” *Id.* ¶ 78. Kwak also describes another exemplary embodiment in which the UE transmits a TPS every instance “when a predetermined event is fulfilled.” *Id.* ¶ 83. Kwak describes an example of a triggering event, i.e., when the difference in time between a previous TPS and the current TPS exceeds a predetermined threshold. *Id.* ¶ 87. Kwak also describes the Node B as receiving the TPS and using the information in scheduling. *See, e.g., id.* ¶¶ 20, 24, 25, 91, 102, 114.

1. *Analysis*

As to whether Kwak is analogous art, Patent Owner argues that there is a relevant difference in power control, resource allocation, and architecture between WCDMA systems and the LTE systems (to which it alleges the '676 invention is limited). PO Resp. 14–15. According to Patent Owner, failure to appreciate that difference in the earlier generation of cellular systems and newer technologies of the '676 patent resulted in “an incomplete analysis from Dr. Williams on issues requiring analysis from the perspective of a person of ordinary skill in the art.” *Id.* at 15. Specifically, Patent Owner asserts “3rd Generation WCDMA systems did not reflect the same needs for power headroom reporting as LTE systems Nor do WCDMA systems use power headroom information for scheduling of resources in the same manner as in LTE.” *Id.* at 23 (citing Ex. 2005 ¶¶ 25–35). For this reason, Patent Owner asserts “Kwak does not offer a solution analogous to the power headroom reporting criteria that hold specific benefit to an LTE implementation” and “Dr. Williams has not performed his analysis from that perspective, and accordingly, his opinions regarding obviousness that require such perspective are unreliable and should be given little weight.” *Id.* at 24.

Petitioner responds that “nothing in the claim language limits the purported invention to LTE/3.9G systems [].” Reply 3. We agree. For example, the Specification indicates that the invention is not limited to LTE: “Although the present invention is applicable in the context of the EUTRAN (LTE or 3.9G), its principles are not limited to such an environment, and instead may also be applicable to various other current and future wireless

telecommunications systems and access technologies.” Reply 2–3 (quoting Ex. 1001, 4:28–32).

Two criteria are relevant in determining whether prior art is analogous: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the art is not within the same field of endeavor, whether it is still reasonably pertinent to the particular problem to be solved. *In re Clay*, 966 F.2d 656, 658–59, 23 USPQ2d 1058, 1060 (Fed.Cir.1992) (citations omitted). Because the claims do not cite LTE and the Specification states the invention is applicable to “current” technologies, Fong and Ericsson are from the same field of endeavor as the challenged patent. Thus, we determine that Fong and Ericsson are properly analogous art. Additionally, we find that nothing in the record suggests consideration of the relevance of LTE versus WCDMA under the proper construction of the claims would lead to a different interpretation of the evidence or affect the credibility of either declarant. As to claim 1, Petitioner establishes sufficiently that Kwak discloses determining that a set of at least one triggering criterion is met. Pet. 27–28; Ex. 1005. For example, Kwak describes various examples of triggering criteria for transmission of TPS information, including a time-based criterion (a TPS period), an event-based criterion using threshold values, and embodiments using combinations of both periodic and event-based criteria. Ex. 1005 ¶¶ 73, 74, 77, 83, 87, 92, 93, 103,04.

Petitioner establishes sufficiently that Kwak teaches providing a power control headroom report on an uplink from user equipment, in response to determining that the set of triggering criteria is met. Pet. 28–29;

Ex. 1005. For example, Kwak discloses fourth and fifth embodiments using both periodic and event-based criteria for triggering TPS transmission from a UE to a Node B. Ex. 1005 ¶¶ 92, 93, 103, 104, Figs. 11–12. In the fourth embodiment, a TPS is transmitted every TPS period 1111, as well as any time a specified event occurs. *Id.* ¶¶ 93, 96. In the fifth embodiment, a TPS is transmitted only if both the criteria are met, i.e., that a specified event has occurred and the threshold TPS period 1210 has been reached. *Id.* ¶¶ 104, 107. Additionally, Kwak teaches a second embodiment using a set of one triggering criteria in which the UE transmits a TPS every TPS period 910. *Id.* ¶¶ 73, 74, 77. The TPS, or transmit power status, is expressed as the maximum transmit power of the UE, the maximum data rate available to the UE, or “the ratio of the maximum transmit power to the transmit power of the control channel, that is, the power margin of the UE.” *Id.* at 51. Thus, Petitioner persuasively shows that Kwak’s TPS is a power control headroom report. Pet. 29 (citing Ex. 1003 at ¶ 99).

Petitioner establishes sufficiently that Kwak teaches “said at least one triggering criterion include at least one threshold having been reached, wherein said at least one triggering criterion is adjustable via a signal to the user equipment.” Pet. 28–29; Ex. 1005. For example, Petitioner contends “Kwak teaches that the TPS period trigger is adjustable through notification to the UE and the Node B from the RNC by upper layer signaling using RRC and NBAP protocols.” Pet. 29 (citing Ex. 1005 ¶¶ 78, 97, 109). The following is the statement from Kwak cited above by Petitioner and its declarant: “The TPS period 910 is a predetermined fixed value or notified to the UE and the Node B from the RNC by upper layer signaling using Radio

Resource Control (RRC) and Node B Application Part (NBAP) protocols.” *Id.* (citing Ex. 1002 (Williams Decl.) ¶ 100 (citing Kwak at ¶¶ 78, 97, 109 (each disclosing nearly identical language to the quoted language from ¶ 78))).

Patent Owner asserts Petitioner’s declarant “Dr. Williams provides no analysis as to why this statement establishes the adjustability of the TPS period.” PO Resp. 17. Specifically, Patent Owner asserts that TPS period is a predetermined fixed value is “notified” to the UE and the Node B by the RNC but cannot be changed or adjusted once the UE is notified of its value. *Id.* at 17–18 (citing Ex. 2005 (Kesan Decl.) ¶ 55). Further, Patent Owner asserts Petitioner and its declarant do not explain how Kwak renders the adjustable limitation obvious. *Id.*

Petitioner responds that “[b]y contrasting a ‘fixed value’ with a value that is ‘notified’ to the UE by upper layer signaling, one of ordinary skill in the art understands Kwak to be teaching the ability to adjust that value.” Reply 5 (citing Ex. 1008 ¶ 20). In other words, Petitioner asserts that “notification” of the value implies that the value is set based on that “notification” rather than using the predetermined fixed value because the conjunction “or” is used between fixed value and notified. We agree. The context of paragraph 78 of Kwak is that a TPS is transmitted as soon as possible after the TPS period 910 has expired. Ex. 1005 ¶ 78. The quoted languages states that the “TPS period 910 is . . . notified to the UE.” *Id.* We credit Petitioner’s declarant’s testimony that this implies that TPS period 910 will be used by the UE as described in Kwak’s paragraph 78. See Ex. 1008 ¶ 20; Ex. 2006 (Williams Reply Dep.), 52:4–56:21.

Patent Owner argues that even if the UE is notified of the “initial” value of TPS period 910, it is not adjusted or changed after that initial value. PO Resp. 18. Petitioner responds that the Specification of the ’676 patent equates “configuring” the parameters with “adjusting” the parameters. Pet. 6; *compare* Ex. 1001, 4:66–5:3 (“parameters . . . are configured by the eNode-B . . . via RRC signaling from the eNode-B to the terminal [i.e., UE].”), *with* Ex. 1001, 5:28–30 (“the method 300 can begin with the base station adjusting one or more of the thresholds . . . at the user equipment by signalling to the UE”). We agree that configuring and adjusting are used interchangeably in the Specification. Also, according to the Specification, the first step in the claimed method is “adjusting” the parameters at step 307, which demonstrates that the Specification associates setting the initial value with an “adjustment.” Ex. 1001, 5:28–30.

Claim 1 recites that the threshold is “adjustable via a signal,” but it does not recite that the threshold must have any particular value prior to the adjustment. Both parties’ declarants agree that when the threshold is set via the notification in Kwak, it must have some predetermined value prior to being set. Ex. 1008 (Williams Decl.) ¶ 23; Ex. 1009 (Kesan Decl.) at 130:22–131:3. Thus, we determine that Petitioner has persuasively shown that the threshold in Kwak is “adjustable via a signal.”

Petitioner establishes sufficiently that Kwak teaches “the set of at least one triggering criterion comprises a criterion being met based on reaching a threshold of the at least one threshold of k transmission time intervals following a previous power control headroom report, wherein k is an integer, and wherein said at least one threshold adjustable via the signal comprises

adjusting the threshold k .” Pet. 30–32; Ex. 1005. Specifically, Kwak describes the TPS period as a threshold that must be reached before a subsequent TPS is sent, and teaches that the TPS period is set as a certain number of transmission time intervals following a previous power control headroom report. Pet. 30 (citing Ex. 1005 ¶¶ 77, 78, 96, 99, 107, 110, 111; Figs. 9, 11–12). Petitioner further argues that

one of ordinary skill in the art reading Kwak’s disclosure of a TPS period would have understood that disclosure in the context of a UMTS system to teach that the period is a value for k transmission time intervals measured from a previous TPS report, where k is an integer. Moreover, because Kwak teaches that the TPS period is adjustable via notification to the UE and the Node B by RRC and NBAP upper signaling, one of ordinary skill in the art would have understood that such adjustment would involve changing the value k . Alternatively, it would have also been obvious to one of ordinary skill in the art to utilize k transmission time intervals, where k is an integer, as the value for TPS period, and to adjust TPS period by adjusting the value k .

Id. at 30–31 (citing Ex. 1003 ¶¶ 94–105).

Patent Owner contends that Kwak does not disclose a threshold of k transmission time intervals. PO Resp. at 19–25. Patent Owner asserts “[t]he evidence provided by Kwak is simply ambiguous as to the relationship of TPS Period 910, 1111, or 1210 [relied on by Petitioner] to any interval of time.” *Id.* at 20. Petitioner relies in part on Figure 9 of Kwak reproduced below.

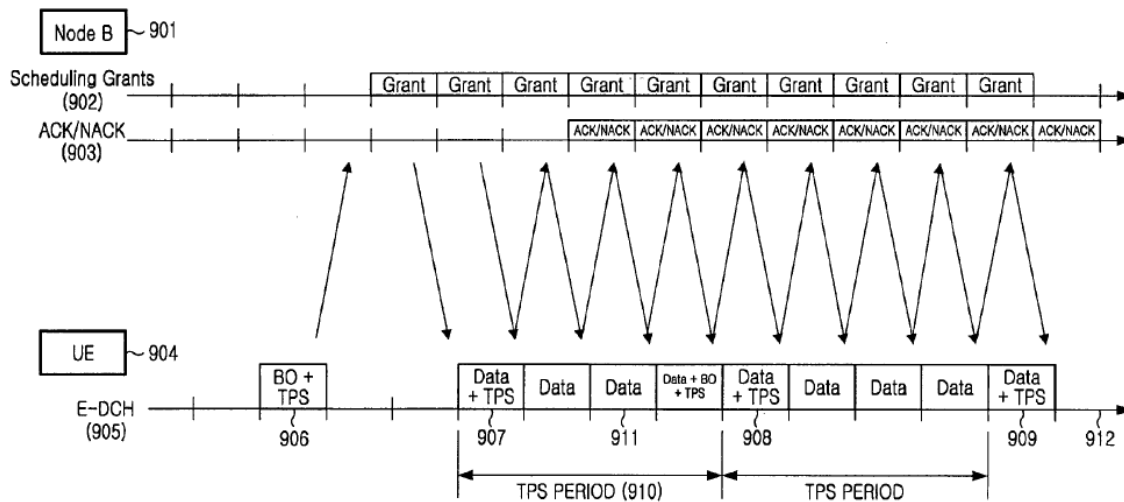


FIG.9

Figure 9, above, shows the time periods within the period TPS 910. Ex. 1005, Fig. 9. Patent Owner asserts that Petitioner relies on its declarant as the only evidence that the time periods such as 906, 907, 908, and 909 are all equal such that TSP 910 is an integer number of transmission time intervals. PO Resp. 21. Additionally, Patent Owner asserts that although there are four time intervals in the TPS period 910, this does not show that the TPS period is defined by a multiple of those time periods. Patent Owner contends that the “more plausible understanding” is that Kwak’s TPS periods are defined as a fixed amount of time, rather than an integer number of time intervals. *Id.* at 24.

Petitioner responds that Kwak teaches “time intervals” throughout its disclosure in multiple instances, as well as in the figures. Reply 11–12 (citing Ex. 1005 ¶¶ 70, 71, 79, 87–89, 92, 97, 98, 100, 108, 110, 112, 119, Figs. 8, 9, 10, 12; Ex. 1008 ¶¶ 25–31). The Petition and Petitioner’s declarant Dr. Williams cite to portions of Kwak that teach that these time

intervals (such as 906, 907, 908, and 909 in Figure 9 above) are “transmission time intervals” within our construction of that phrase. Pet. 30–31; Ex. 1005 ¶¶ 77–78, 96, 98, 99, 107, 109, 110, Figs. 9, 11–12; Ex. 1003 ¶ 102 (“[T]hese figures illustrate a typical system utilizing transmission time intervals (TTIs) as a period of time Kwak itself refers to these blocks variously as ‘time intervals’ and ‘transmission time intervals.’”). We agree with Petitioner’s interpretation.

Also, Patent Owner argues that the TPS period must be “defined” by an integer multiple of TTIs. Nevertheless, the claim only requires that “at least one threshold adjustable via the signal comprises adjusting the threshold integer k.” Petitioner has shown that TPS 910 is an integer number (four) of transmission time intervals (such as 907, etc.) that can be adjusted by notifying the UE and that it would have been obvious to change a value k to represent those four transmission time intervals. Pet. 30–31 (citing Ex. 1003 ¶¶ 94–105).

For the reasons above, we determine that Petitioner has shown a preponderance of evidence that claim 1 would have been obvious over Kwak.

Patent Owner does not argue claims 19 and 33 separately. Claims 19 and 33 recite an apparatus and a network element, respectively, comprising: “at least one processor; and at least one memory including software, where the at least one memory and the software are configured, with the at least one processor, to cause the apparatus to at least” The remaining limitations of claim 19 are identical to those in claim 1 but are written in apparatus form rather than method form. Claim 33 likewise includes

limitations from claim 1 in apparatus form along with certain other limitations, which we discuss below. Petitioner relies on the same analysis discussed above for the limitations that are common to or substantially similar among claims 1, 19, and 33. *See* Pet. 35–39.

As to the initial clauses of claims 19 and 33, Petitioner contends:

One of ordinary skill in the art would understand Kwak’s teaching of UE to each inherently include at least a processor, memory, and software for performing these tasks. That is, the UE in Kwak must necessarily include and use a processor, memory, and software to generate TPS information, determine whether to send it, and transmit the TPS from the UE to the Node B. Alternatively, it would have been obvious to one of ordinary skill in the art to utilize a processor, memory, and software to generate TPS information, determine whether to transmit it, and transmit the TPS information from the UE to the Node B. In the context of a typical UMTS as described by Kwak, it was well known to those of skill in the art that the UE in such a system typically involved mobile telephones containing at least one processor, memory, and software capable of performing these tasks. The skilled artisan, reading Kwak’s disclosure, would have been motivated to utilize the components and capabilities of typical UE to perform these tasks. It therefore would have been obvious to one of ordinary skill in the art for the UE to include a processor, memory, and software to perform the tasks described by Kwak.

Pet. at 27–28 (citations omitted).

We are persuaded by this contention. Thus, based on Petitioner’s showing regarding the processor, memory, and software limitations of claim 19, and for the same reasons discussed above with respect to claim 1, Petitioner has shown sufficiently that Kwak teaches each of the limitations of claim 19.

Claim 33 additionally recites “receiv[ing] a power control headroom report on an uplink from user equipment, in response to the user equipment determining that a set of at least one triggering criterion is met because at least one threshold has been reached.” Petitioner contends Kwak meets this limitation. Pet. 27–28. As discussed above, Kwak discloses fourth and fifth embodiments using both periodic and event-based criteria for triggering TPS transmission from a UE to a Node B. Ex. 1005 ¶¶ 92, 93, 103, 104, Figs. 11–12. In the fourth embodiment, a TPS is transmitted every TPS period 1111, as well as any time a specified event occurs. *Id.* ¶¶ 93, 96. In the fifth embodiment, a TPS is transmitted only if both the criteria are met, i.e., that a specified event has occurred and the threshold TPS period 1210 has been reached. *Id.* ¶¶ 104, 107.

Claim 33 recites “provide a threshold adjustment signal to the user equipment in order to adjust the at least one threshold” as opposed to claim 1 which recites “wherein said at least one threshold is adjustable via a signal to the apparatus.” There is no difference between these two phrases that affect our analysis of the prior art. Thus, Petitioner’s contentions regarding claim 1 apply to this phrase. The remaining limitations of claim 33 are identical or substantially similar to limitations in claim 1. Thus, based on Petitioner’s showing for claim 33, and for the reasons discussed above with respect to claims 1 and 19, Petitioner has shown sufficiently that Kwak teaches each of the limitations of claim 33.

On the full record before us, we are persuaded that Petitioner has established a preponderance of evidence that Petitioner that claims 1, 19, and 33 would have been obvious in view of Kwak.

III. CONCLUSION

For the foregoing reasons, we determine Petitioner has demonstrated, by a preponderance of the evidence, the unpatentability of claims 1, 19, and 33 of the '676 patent in that they would have been obvious in view of Kwak.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1, 19, and 33 of the '676 patent have been shown to be unpatentable.

This is a final decision. Parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

PETITIONER:

Steve Moore
Steve.moore@pillsburylaw.com

Brian Nash
Brian.nash@pillsburylaw.com

Rene Mai
Rene.mai@pillsburylaw.com

PATENT OWNER:

Terry Saad
tsaad@bcpc-law.com

Nicholas Kliewer
nkliewer@bcpc-law.com