

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

v.

CELLULAR COMMUNICATIONS EQUIPMENT LLC,
Patent Owner.

Case IPR2016-01493¹
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 HTC Corporation, HTC America, Inc., ZTE Corporation, and ZTE (USA), Inc. filed a petition in (now terminated) IPR2017-01081, and have been joined to the instant proceeding.

I. INTRODUCTION

Apple Inc., filed a Petition (Paper 1, “Pet.”) pursuant to 35 U.S.C. §§ 311–19 to institute an *inter partes* review of claims 1, 3, 19, and 21 (“the challenged claims”) of U.S. Patent No. 8,457,676 B2 (“the ’676 patent,” Ex. 1001). Pet. 1. The Petition is supported by the Declaration of Zygmunt J. Haas, Ph.D. (“Haas Declaration,” “Haas Dec.,” Ex. 1006). HTC Corporation, HTC America, Inc., ZTE Corporation, and ZTE (USA), Inc. (collectively “Petitioner”) were joined into this *inter partes* review and the *inter partes* review was subsequently terminated as to Apple Inc. Papers 23, 26. 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, 3, 19, and 21 the ’676 patent. Paper 7 (“Inst. Dec.”). Patent Owner filed a Response. Paper 12 (“PO Resp.”). The Patent Owner’s Response is supported by the Declaration of Jay P. Kesan, Ph.D. (“Kesan Declaration,” “Kesan Dec.,” Ex. 2007). Petitioner filed a Reply. Paper 16 (“Reply”). An oral hearing was held on November 8, 2017. Paper 31 (“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 not shown by a preponderance of the evidence that claims 1, 3, 19, and 21 are unpatentable.

A. Related Matters

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

AT&T Inc., et al., 2:15-cv-00576 (E.D. Tex.); *Cellular Commc 'ns Equipment LLC v. Sprint Corp. et al.*, 2:15-cv-00579 (E.D. Tex.); *Cellular Commc 'ns Equipment LLC v. T-Mobile USA, Inc. et al.*, 2:15-cv-00580 (E.D. Tex.); and *Cellular Commc 'ns Equipment LLC v. Verizon Commc 'ns, Inc. et al.*, 2:15-cv-00581 (E.D. Tex.). Paper 5, 2. In addition, there is one other *inter partes* review proceeding asserting unpatentability of the '676 patent: *HTC Corporation and HTC America, Inc. v. Cellular Communications Equipment LLC*, Case IPR2016-01501 ("1501 IPR"). Paper 5, 3. A Final Written Decision in IPR2016-01501 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 measurement of path-loss “based on the DL [downlink] (e.g. DL pilot channel)” is an effective parameter to analyze for optimizing the tradeoffs. *Id.* at 4:6. The inventors found that “[e]ven if the frequency of potential power adjustments at the terminal is high but the measured path-loss is not changing, [then] UL signaling would be a waste of resources.” *Id.* at 4:7–9.

C. Illustrative Claim

Of the challenged claims, claims 1 and 19 are the only 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.

D. Instituted Grounds of Unpatentability

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

Claims	Basis	References
1 and 19	§ 103	Fong ² and Ericsson ³
3 and 21	§ 103	Fong, Ericsson, and Bark ⁴

I. ANALYSIS

A. Claim Construction

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); *Cuozzo Speed Techs., LLC v. Lee*, 136 S.Ct. 2131, 2144–46 (2016). Under the broadest reasonable interpretation standard, claim terms are given their ordinary and customary meaning as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

² U.S. Patent Application Pub. No. 2004/0223455 A1 published Nov. 11, 2004 (Ex. 1003, “Fong”)

³ R2-052744, FILTERING FOR UE POWER HEADROOM MEASUREMENT, 3GPP RAN WG2 #49 MEETING, SEOUL, KOREA, NOVEMBER 2, 2005 (Ex. 1004, “Ericsson”)

⁴ U.S. Patent No 6,445,917 B2 issued Sept. 3, 2002 (Ex. 1005, “Bark”)

Claim 19 recites “memory including software . . . configured, with the at least one processor, 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.” The question raised regarding these “memory including software . . . configured [with at least one] processor” terms (“processor terms”) is whether or not they require construction as means-plus-function terms under 35 U.S.C. § 112 ¶ 6. Petitioner notes that Patent Owner’s position in the District Court Lawsuit is that the processor terms are not subject to section 112, paragraph 6 construction, but, if they are subject to § 112 ¶ 6, the corresponding structure in the Specification of the ’676 patent is a “memory including software and at least one processor.” Pet. 12 (citing Ex. 1018, 8). For purposes of the Petition, Petitioner assumes this articulation of corresponding structure is commensurate with the broadest reasonable construction of the processor terms. *Id.*

Patent Owner responds in its Preliminary Response that “Petitioner offers no construction for this limitation other than to argue § 112 as is plainly not allowed under 35 U.S.C. § 311(b).” Prelim. Resp. 16. Patent Owner further contends that “the declaration of Petitioner’s expert cites no reasons and provides no support for his naked assertions. Thus, the Board should afford this testimony little or no weight.” Prelim. Resp. 16 (citations and emphasis omitted).

In the Institution Decision we determined that the processor terms are not means-plus-function limitations under section 112, paragraph 6. Inst. Dec. 5–8. We also determined that neither Petitioner nor Patent Owner has provided any argument or evidence tending to overcome the presumption against means-plus-function treatment for the processor terms. *Id.* at 7–8 (citing Pet. 11–13; Prelim. Resp. 16; *Apex Inc. v. Raritan Comp., Inc.*, 325 F.3d 1364, 1371–72 (Fed. Cir. 2003) (“In general, a claim term that does not use the word ‘means’ triggers a rebuttable presumption that section 112, paragraph 6 does not apply.”)). Thus, we invited the parties to address the interpretation of the processor terms and provide their respective positions during trial. *Id.* at 8.

In its Response, Patent Owner contends that these terms are not subject to section 112, paragraph 6, but offers no construction of these terms. PO Resp. 14–22. Petitioner responded that it “agrees with the Board in the Decision to Institute that no further construction of the ‘processor’ terms is necessary.” Reply. 1.

Thus, on the full record before us, we determine that the presumption against § 112, ¶ 6 treatment has not been overcome, so we do not construe the processor terms as means-plus-function limitations. We additionally determine that no further construction of the processor terms is necessary.

Based on the full record before us, we determine it is unnecessary to provide express constructions for any other claim terms. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Ltd.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017)

B. Principles of Law

A patent 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 ordinary skill in the art; and (4) objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

In that regard, 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 Translogic*, 504 F.3d at 1259.

C. Level of Skill

Petitioner asserts, through its declarant, the level of skill includes “a B.S. degree in Electrical Engineering, Computer Engineering, Computer Science, or equivalent training, as well as at least three years of technical experience in the field of wireless cellular communication systems and networks.” Ex. 1006 (Hass Dec.) ¶ 15. Patent Owner does not assert a specific level of skill. Thus, 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).

D. Obviousness of Claims 1 and 19 over Fong and Ericsson

Petitioner asserts that claims 1 and 19 are unpatentable under 35 U.S.C. § 103(a) as obvious in view of Fong and Ericsson.⁵ Pet. 13. To support its contentions, Petitioner provides explanations as to how the prior art allegedly teaches each claim limitation. *Id.* at 13–41.

Fong (Exhibit 1003) describes a wireless communication network, including a mobile station and a base station that communicate information over a wireless link. Ex. 1003, Abstract. Fong communicates “reverse request messages containing buffer status and data rate information over a reverse wireless link.” *Id.* ¶ 43, Fig. 2. Initially, call setup messaging is exchanged between base station 19 and mobile station 16, and base station 19 allocates a reverse request channel (R-REQCH) to the mobile

⁵ In the Institution Decision, we determined that Petitioner had made a threshold showing that Ericsson qualifies as a prior art printed publication under 35 U.S.C. § 102(b). Inst. Dec. 9 n.3; *see* Pet. 7–8; Ex. 1012; *Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1348 (Fed. Cir. 2016) (“A reference will be considered publicly accessible if it was ‘disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence, can locate it.’” (citation omitted)). The parties did not brief this issue during trial and, taking into account the standard of proof applicable at this stage of the proceeding, we discern no reason to change our preliminary determination.

station. *Id.* Then, the base station sends “various messages to the mobile station, with such message(s) containing trigger parameters that are used by the mobile station to trigger the transmission of a reverse request message on R-REQCH.” *Id.* These trigger parameters “can be sent by the base station to the mobile station at any time during the active state of the mobile station.” *Id.*

Next, the mobile station detects “whether a trigger has occurred to send a reverse request message.” *Id.* ¶ 50, Fig. 2. “If a trigger has occurred, based on the trigger parameters sent by the base station to the mobile station, the mobile station sends . . . a reverse request message on R-REQCH.” *Id.* The reverse request message includes a field, MAXIMUM_TPR, or maximum traffic-to-pilot ratio, an indication of the maximum supportable data rate of the mobile station. *Id.* ¶¶ 34–35, 39. Fong also refers to MAXIMUM_TPR as a representation of power headroom, *id.* ¶¶ 40, 58, and describes power-related information as coming in various forms, including “the actual power headroom remaining in the mobile station,” *id.* ¶ 41.

Ericsson (Exhibit 1004) describes the following regarding measuring the time between successive transmissions of power headroom information in an integer number of transmission time intervals (TTIs):

The UPH [UE power headroom] information bits are sent in the Scheduling Information, SI, appended at the end of the MAC-e PDU. The periodicity of the Scheduling Information sent to node B is defined in the order of TTI, with 1 TTI as the shortest report period and is configurable through RRC [radio resource control] signaling. Note that apart from the configurable periodicity, the inclusion of SI can be made arbitrarily, if for instance padding

allows it or if triggered by higher priority data entering the UE buffer.

Ex. 1004, 2 (alterations added).

1. Analysis

As an initial matter, Patent Owner argues that there is a relevant difference in power control, resource allocation, and architecture between on the one hand CDMA 2000 and WCDMA systems, such as Fong and Ericsson, and on the other hand the LTE system, to which it alleges the '676 invention is limited. PO Resp. 23. 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. Haas on issues requiring analysis from the perspective of a person of ordinary skill in the art.” *Id.* at 24 (emphasis omitted). Specifically, Patent Owner asserts “WCDMA systems [such as Fong and Ericsson] did not reflect the same needs for power headroom reporting that LTE systems require Nor do WCDMA systems use power headroom information for scheduling of resources in the same manner as in LTE.” *Id.* at 23 (citing Ex. 2007 ¶¶ 25–35). For this reason, Patent Owner asserts “[Neither Ericsson nor] Fong . . . offer[s] a solution analogous to the power headroom reporting criteria that hold specific benefit to an LTE implementation, as described by the '676 patent” and “Dr. Haas 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 23–24.

Petitioner responds that “whether Petitioner considered LTE in the analysis of the prior art is irrelevant, because the challenged claims do not require, and are not limited to, LTE.” Reply 3 (emphasis omitted). We agree. *See* Ex. 1020, 40:5–10 (Patent Owner’s declarant’s testimony acknowledging this is correct). 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 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 CDMA 2000 and 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 part of the obviousness inquiry, we consider whether a [person having ordinary skill in the art] would have been motivated to combine the prior art to achieve the claimed invention. . . .” *In re Warsaw Orthopedic, Inc.*, 832 F.3d 1327, 1333 (Fed. Cir. 2016) (internal quotation and citation omitted).

Initially, Petitioner asserted “a [person of ordinary skill in the art] would have found it obvious to specify Fong’s MIN_DURATION time threshold between successive transmissions of power headroom information using transmission time intervals (TTIs), as taught by Ericsson Contribution.[⁶] Such a combination would have yielded a predictably beneficial result.” Pet. 16. Petitioner further asserted “the application of the TTI of Ericsson Contribution to Fong’s MIN_DURATION would have been the mere application of a known technique to a piece of prior art ready for improvement.” Pet. 19.

Subsequently, in Petitioner’s Reply, Petitioner asserted

Petitioner’s arguments do not require substituting TTIs as the “uniform time intervals” identified in Figure 5. Rather, the Petition sets forth that Fong discloses a “triggering criterion that

⁶ Petitioner also relies on the testimony of its declarant who asserts “it was well-known in the wireless communications art to utilize transmission time intervals to specify time periods between sending power headroom reports.” Ex. 1006, 37–38 (citing Ex. 1004, 2). This testimony relies on the Ericsson reference and does not cite to any other evidence. *See id.* To the extent that Petitioner is relying on its declarant’s testimony alone to show this limitation would have been obvious, we find the testimony merely cumulative to the teachings of Ericsson itself that are put forth in the Petition and we are not persuaded by it.

is met based upon reaching the MIN_DURATION threshold of time following the transmission of ... power headroom information,” and Ericsson discloses “specifying a time duration between subsequent power headroom reports in transmission time intervals (TTIs).” Pet. []35. The “uniform time intervals” identified in Figure 5 are simply evidence supporting the reasons why a [person of ordinary skill in the art] would consider Ericsson’s teaching. Petitioner does not rely on substituting TTIs for those uniform time intervals.

Reply 20. In other words, Petitioner asserts currently it is *not* relying on Ericsson as a simple substitution of a known element for another yielding a predictable result. At the hearing, Petitioner reaffirmed this understanding:

[Petitioner’s Counsel:] I think that the case law on sort of motivations to combine or why we make a combination aren’t limited to situations that require dropping in a specific portion of one system with another system, and based on there being a predictable result. I think that it’s a broader understanding, based on what’s being taught. And in the context of Fong, it’s teaching that you’re going to have a triggering criteria, that that triggering criteria is going to be, for example, based on expiration of a time period, and that with that discussion in Fong, a skilled artisan’s motivated to go look to the prior art for different ways of articulating that time period.

Tr. 64:12–65:3.

“[T]he ‘predictable result’ discussed in *KSR* refers [] to the expectation that prior art elements are capable of being physically combined.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1326 (Fed. Cir. 2009) (citing *KSR*, 550 U.S. 398). Because Petitioner is no longer relying on the concept of applying a “known technique” to a device “ready for improvement” to obtain a predictable result as a way to

combine Fong and Ericsson, Petitioner must provide an explicit motivation to combine.⁷ See *Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1367–68 (Fed. Cir. 2008) (analyzing the ability to physically combine prior art under the rubric of applying a “known technique” to a device “ready for improvement”).

We now analyze whether Petitioner has articulated reasoning with some rational underpinning for the combination of Ericsson and Fong. See *KSR*, 550 U.S. at 418. Petitioner first argues that one of ordinary skill would have looked generically to “written contributions to 3GPP” such as Ericsson because they “contain solutions to known problems.” Pet. 16. Petitioner notes that Fong also teaches setting MIN_DURATION “to prevent the mobile station from transmitting reverse request messages too frequently.” *Id.* at 13 (quoting Ex. 1003 ¶ 45), 44, 57. Petitioner also asserts that, because “Fong [] does not reference the particular unit of time in which MIN_DURATION is specified . . . a [person of ordinary skill in the art] would have looked to other documentation in the wireless communication arts directed to power headroom reporting.” *Id.* at 17. We disagree that this is a motivation to combine the references. Petitioner’s statements suggest only that the references *could* be combined but does not explain why specifically Ericsson’s TTI solves an articulated problem, even the generic

⁷ To the extent that Petitioner asserts that, despite its admissions, it is relying on the combination Fong and Ericsson as a “predictable result,” we are not persuaded by Petitioner’s showing, because Petitioner has not presented sufficient evidence regarding how to physically combine Fong and Ericsson.

problem of “too frequent” power headroom reports. *See id.* at 13 (quoting Ex. 1003 ¶ 45), 44, 57. For example, Petitioner has not provided a reason, other than the disclosure in ’676 patent itself, why the use of TTI would improve the Fong device and how it would do so.

Petitioner further asserts that Ericsson’s TTIs are similar to “uniform time intervals” of Fong. Pet. 17; *See* Tr. 7:8–8:7. “Uniform time intervals” is a term coined by Petitioner that is not found or explained explicitly in Fong. *See generally*, Ex. 1003. Petitioner states “Fong’s system already tracks time durations in uniform time periods[, t]hat is, Fong teaches dividing up periods of data transmission into 10 ms periods (i.e., 10 ms transmission time intervals). Pet. 17–18 (citing Ex. 1003 (“A further rule that is adhered to by mobile stations according to some embodiments is that the data rate transmitted in a particular 10-ms (millisecond) period is based on the latest reverse request message information.”))).

Patent Owner’s declarant responds “neither Dr. Haas nor Fong provide[s] any indication that the ‘10-ms period’ corresponds to the ‘Uniform time periods’ that were identified in Figure 5 by Dr. Haas.” Ex. 2007 ¶ 85. Patent Owner responds further that

in the CDMA 2000 system of Fong, the 10-ms intervals for data transmission relate to the transmissions on the R-PDCH, whereas the reverse request messages are transmitted on the R-REQCH during time intervals clearly *different* from the time intervals of the R-PDCH. *See* Kesan Decl. at ¶¶ 85-87. . . . A person of ordinary skill in the art would understand that the ‘TTIs’ of Ericsson would correspond to a ***data transmission***, such as the transmission periods of the R-PDCH in Fong. *Id.* Thus, the time period between the sending of reverse request messages on the

R-REQCH does not correspond to a measure of multiple transmission time intervals, and the substitution of Ericsson's 'TTIs' into the timing of the R-REQCH transmission would not have been obvious to a person of ordinary skill in the art. *Id.*

PO Resp. 44. Although Patent Owner is discussing "substitution" in the text quoted above, Patent Owner explains the differences between Fong and Ericsson and gives context to the alleged combination of Fong and Ericsson.

Given that Petitioner is not relying on "substitution," we are mindful that "[t]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference," *In re Keller*, 642 F.2d 413, 425 (CCPA 1981); *see also In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012) (citing *In re Keller*, 642 F.2d at 425), but rather whether "a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention," *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1361 (Fed. Cir. 2007). The import of Patent Owner's argument, however, is that Petitioner relies on a far too general motivation to combine the references (based on "uniform time periods") and engages in impermissible hindsight as to the particular combination of the teachings of Fong and Ericsson.

Additionally, Petitioner does not respond directly to the factual contentions by Patent Owner quoted above.⁸ In fact, Petitioner admits

⁸ Petitioner asserts "Fong expressly suggests that [CDMA 2000] is applicable to other wireless protocols, including 3GPP, and Ericsson is likewise directed to 3GPP wireless protocols" (Reply 20–21), but this does not address the specifics of Patent Owner's argument.

“Petitioner does not rely on Fong as disclosing the threshold MIN_DURATION in units of TTIs . . . , Fong discloses that its system is capable of tracking time durations in ‘uniform time periods,’ which would have made Ericsson’s measurement of time periods between power headroom reports in units of TTIs, another uniform time period, easily implementable.” Reply 14–15 (citing Pet. 16–19, 33–35).

We find that Petitioner’s choice to define “uniform time periods” in Fong where they are not specifically discussed in Fong is a hindsight recasting of Fong in order to create a motivation to combine Ericsson with Fong. The notion that Fong’s purported “uniform time periods” *could* be associated with Ericsson’s TTIs does not explain why a person of ordinary skill in the art would have combined Ericsson with Fong. Nor has Petitioner established that Ericsson’s TTIs solve a problem in Fong. Rather, Petitioner’s rationale for the combination appears to be a baseless attempt to reach the limitation reciting a “threshold of k transmission time intervals . . . , wherein k is an integer” in claims 1 and 19.

Petitioner fails to “explain why a person of ordinary skill in the art would have combined elements from specific references in the way the claimed invention does.” *ActiveVideo Networks, Inc. v. Verizon Comms., Inc.*, 694 F.3d 1312, 1328 (Fed. Cir. 2012); *see also Hyundai Motor Co. v. Blitzsafe Texas, LLC*, Case IPR2016-01476, slip op. at 32 (PTAB Jan. 24, 2017) (Paper 12) (“A determination of obviousness cannot be reached where the record lacks ‘explanation as to how or why the references would be combined to produce the claimed invention.’” (quoting *Trivascular, Inc. v.*

Samuels, 812 F.3d 1056, 1066 (Fed. Cir. 2016))). Specifically, neither Petitioner nor its declarant explains why a general desire to send reports less frequently or the existence of “uniform time periods” would lead to using Ericsson’s TTIs in the context of Fong’s teachings, besides seeking the benefits described in the ’676 patent – a reason tainted by hindsight. See *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553 (Fed. Cir. 1983) (“To imbue one of ordinary skill in the art with knowledge of the invention in suit, when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher.”)

Thus, Petitioner has not established sufficiently that Fong’s alleged “uniform time period,” the significance of which is not explained by Petitioner, would be combined with Fong’s MIN_DURATION variable and the TTI disclosures in Ericsson. As Patent Owner argued at the hearing Petitioner does not have “a connection between [Fong and Ericsson] that connects those two and says why [one] would use the TTIs in Ericsson [to] have any benefit to the power headroom reporting criteria in Fong[.]”

Tr. 41:19–26. We agree.

Petitioner also suggests a motivation to combine Fong and Ericsson would be to encode MIN-DURATION with a smaller number of bits:

In addition to the advantages detailed in the Petition, Dr. Haas explained during cross-examination that it would require a smaller number of bits to encode MIN_DURATION in TTIs than in milliseconds. Ex. 2006, 160:5-22. That is, the granularity of

specifying MIN_DURATION in units of TTIs, as opposed to milliseconds, means that MIN_DURATION can be encoded and communicated to user equipment using fewer bits.

Reply 13. We have considered this rationale and are not persuaded by it. As an initial matter, this rationale was not discussed in the Petition and was extrapolated in conclusory fashion by Petitioner's declarant during a deposition.⁹ See Ex. 2006, 160:5-22. Nevertheless, Petitioner and its declarant do not explain adequately why and how that disclosure benefits Fong's particular system. For example, Petitioner has not explained how MIN_DURATION is encoded in Fong or what other changes to the system using TTIs would entail. In fact, Petitioner acknowledges "Fong does not explicitly specify any unit of time [for encoding MIN_DURATION], as confirmed by Patent Owner's expert." Reply 11 n.1 (citing Ex. 1020, 115:3-116:19). In the absence of any record evidence on specific benefits,

⁹ Of course, "the introduction of new evidence in the course of the trial is to be expected in inter partes review trial proceedings." *Genzyme Therapeutic Prod. Ltd. P'ship v. Biomarin Pharm. Inc.*, 825 F.3d 1360, 1366 (Fed. Cir. 2016). That new evidence, however, must be responsive to an argument raised by the opposing party in its opposition brief. By contrast, when "new evidence necessary to make out a prima facie case for . . . unpatentability" or "new evidence that could have been presented in a prior filing" is introduced, these are indications that a new issue has been raised improperly. See Trial Practice Guide, 77 Fed. Reg. at 48,767; see also *Arista Network, Inc. v. Cisco System, Inc.*, Case IPR2016-00308, slip op. n.12 (May 25, 2017) (Paper 42) (striking testimony elicited by Patent Owner from Petitioner's declarant at deposition because it represented a new theory not presented in the Petition and striking arguments based on that testimony from the Petitioner's reply). Nevertheless, we do not exclude this evidence.

the general premise that encoding MIN_DURATION in fewer bits is somehow beneficial, without more, is not sufficient to establish the requisite “articulated reasoning with some rational underpinning” for combining Ericsson with Fong. *See In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006). Petitioner must put forth a rationale for the combination that is specific and particular. Although Petitioner’s reasons for the combination need not be expressly found in a reference, Petitioner’s reasoning must be persuasive. We are not persuaded that the alleged benefit of using TTIs would have motivated a person of ordinary skill in the art to combine Fong and Ericsson.

In sum, Petitioner has not articulated a sufficient rationale for implementing Ericsson’s concept of TTIs as the specific trigger to send headroom reports in Fong. Thus, based on the full record before us, we are not persuaded that Petitioner has provided a sufficient rationale for combining Fong and Ericsson. Accordingly, we determine that Petitioner has not shown by a preponderance of the evidence that claims 1 and 19 would have been obvious over the combination of Fong and Ericsson.

E. Obviousness of Claims 3 and 21 over Fong, Ericsson, and Bark

Petitioner contends that claims 3 and 21, which depend from claims 1 and 19, respectively, are unpatentable under 35 U.S.C. § 103(a) as obvious over Fong, Ericsson, and Bark. Pet. 48. To support its contentions, Petitioner provides explanations as to how the prior art allegedly teaches each claim limitation. *Id.* at 48–60. Petitioner also relies upon the Declaration of Dr. Haas for support. Ex. 1006.

Petitioner relies on the same reasons for combining Fong and Ericsson that are discussed above. Pet. 43 & n.3. As noted above, Petitioner has not articulated a sufficient rationale for the motivation to set Ericsson's TTIs as specific time to send headroom reports in Fong. Petitioner does not rely on Bark to remedy the deficiencies of the Fong-Ericsson combination. *Id.* at 43 n.3.

For the reasons above, we determine that Petitioner has not shown by a preponderance of the evidence that claims 3 and 21 would have been obvious over the combination of Fong, Ericsson, and Bark.

II. CONCLUSION

Petitioner has not demonstrated by a preponderance of the evidence the unpatentability of claims 1, 3, 19, and 21 on any of the instituted grounds.

III. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1, 3, 19, and 21 of the '676 patent have not 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.

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