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Paper 42
Entered: November 30, 2017

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ZTE (USA) INC., HTC CORPORATION, HTC AMERICA, INC., SAMSUNG ELECTRONICS CO., LTD., AND SAMSUNG ELECTRONICS AMERICA, INC.,
Petitioners,

v.

EVOLVED WIRELESS LLC,
Patent Owner.

Case IPR2016-00757
Case IPR2016-01345[1]
Patent 7,881,236 B2

Before WILLIAM V. SAINDON, PATRICK M. BOUCHER, and TERRENCE W. McMILLIN, *Administrative Patent Judges*.

McMILLIN, *Administrative Patent Judge*.

# FINAL WRITTEN DECISION
*35 U.S.C. § 318(a) and 37 C.F.R. § 42.73*

[1] These cases have been consolidated. Unless otherwise indicated, citations are to the record of IPR2016-00757.

In response to a Petition (Paper 3, "Pet.") filed by ZTE (USA) Inc., HTC Corporation, and HTC America, Inc., (collectively, "Petitioner"), we instituted an *inter partes* review of claims 1–10, 12, and 13 of U.S. Patent No. 7,881,236 B2 ("the '236 patent"). Paper 11 ("Dec."), 19. Samsung Electronics Co., Ltd., and Samsung Electronics America, Inc., filed a Petition in IPR2016-01345 that was substantially identical to the Petition in this proceeding, and trial was instituted in IPR2016-01345 on the same grounds as in this proceeding. Paper 12, 2. Therefore, IPR2016-01345 was consolidated with this proceeding. *Id*. During the trial, Evolved Wireless LLC ("Patent Owner") timely filed a Response (Paper 22, "PO Resp."), to which Petitioner timely filed a Reply (Paper 28, "Reply"). An oral hearing was held on August 8, 2017, and a copy of the transcript was entered into the record. Paper 36 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6. This Decision is a Final Written Decision under 35 U.S.C. § 318(a) as to the patentability of the claims on which we instituted trial. Based on the record before us, Petitioner has shown, by a preponderance of the evidence, that claims 1–10, 12, and 13 are unpatentable.

## I. BACKGROUND

### *A. The '236 Patent*

The '236 patent "relates to a mobile communication technology." Ex. 1001, col. 1, ll. 17–18. In particular, the patent describes a random access procedure for user equipment ("UE") and a base station in a telecommunication system. *Id*. at col. 3, ll. 42–59. Figure 1 of the '236 patent illustrates a particular example of such a telecommunication system—

the Evolved Universal Mobile Telecommunication System ("E-UMTS"), and is reproduced below.

**FIG. 1**

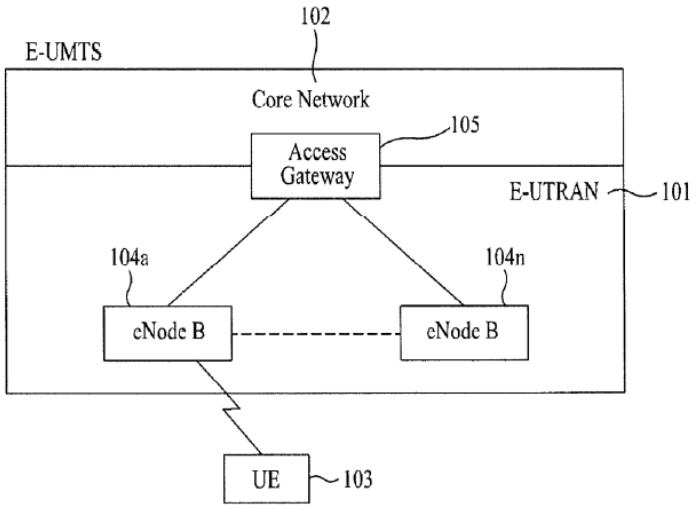


Figure 1 provides a schematic view of a network architecture for the E-UMTS, which may be conceived in terms of two component networks: Evolved UMTS Terrestrial Radio Access Network ("E-UTRAN") 101 and Core Network 102. *Id*. at col. 1, ll. 26–35. The first of these, E-UTRAN 101, may include user equipment ("UE") 103, multiple base stations 104 (referred to in the '236 patent as "eNode B" or "eNB"), and Access Gateway ("AG") 105. *Id*. at col. 1, ll. 35–39. Access Gateway 105 is positioned at the end of the network and connected to an external network, and can include a portion for processing user traffic and a portion for processing control traffic. *Id*. at col. 1, ll. 39–41.

As the '236 patent describes, "a UE performs the random access procedure" in a number of instances, including "when the UE performs

initial access" to a base station and "when there is uplink data transmission in a situation where uplink time synchronization is not aligned or where a specific radio resource used for requesting radio resources is not allocated." *Id*. at col. 3, ll. 42–57. A version of Figure 5 of the '236 patent annotated by Petitioner (Ex. 2009, 12) is reproduced below.

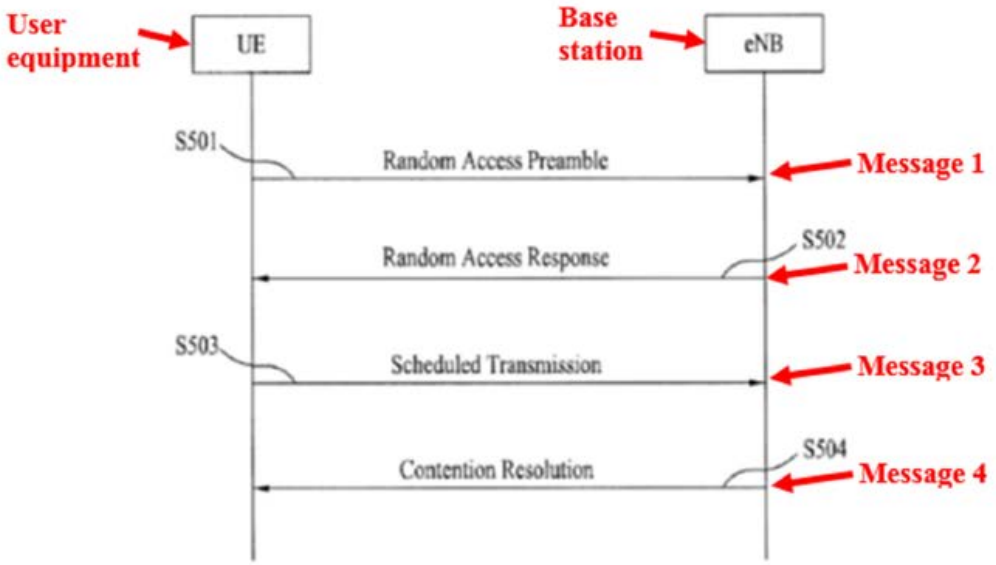


Figure 5 shows an example of a random access procedure performed between user equipment UE and base station eNB. Ex. 1001, col. 6, ll. 53–55. The procedure begins with transmission of a "random access preamble" from the UE to the base station at step S501 (referred to as a "message 1" transmitting step). *Id*. at col. 4, ll. 3–7. The UE receives a "random access response" from the base station at step S502 "in correspondence with the transmitted random access preamble" (referred to as a "message 2" receiving step). *Id*. at col. 4, ll. 7–11. Of particular relevance, the UE then transmits an uplink message to the base station at step S503 (referred to as a "message 3" or "Msg3" transmitting step). *Id*. at col. 4, ll. 11–14. The UE receives a

corresponding "contention resolution" message from the base station at step S504 (referred to as a "message 4" receiving step). *Id*. at col. 4, ll. 14–17.

In the random access procedure, the UE stores data to be transmitted via the message 3 in a "Msg 3 buffer" and transmits the stored data "in correspondence with the reception of an Uplink (UL) Grant signal." *Id*. at col. 4, ll. 18–21. The UL Grant signal indicates information about uplink radio resources that may be used when the UE transmits a signal to the base station. *Id*. at col. 4, ll. 21–26. For example, the UL Grant could be received on the Physical Downlink Control Channel (PDCCH), indicating that new data may be transmitted, or the UL Grant could be received on the Physical Downlink Shared Channel (PDSCH), which indicates that it was received in a random access response message (i.e., message 2). *Id*. at col. 5, ll. 9–22. Thus, some UL Grants are received as part of the above message 1-2-3-4 random access procedure, and some are not. According to the '236 patent, then-current LTE system standards provided that data stored in the Msg3 buffer of the UE would be transmitted to the base station "*regardless of* the reception mode of the UL Grant signal," and that "if the data stored in the Msg3 buffer is transmitted in correspondence with the reception of *all* UL Grant signals, problems may occur." *Id*. at col. 4, ll. 26–32 (emphases added). Thus, the alleged problem is that the UE could send Msg3 buffer data when it was not supposed to, outside of the proper message 1-2-3-4 random access procedure. The '236 patent purports to solve such problems. *Id*. at col. 4, ll. 33–34.

Figure 9 of the '236 patent is reproduced below.

**FIG. 9**

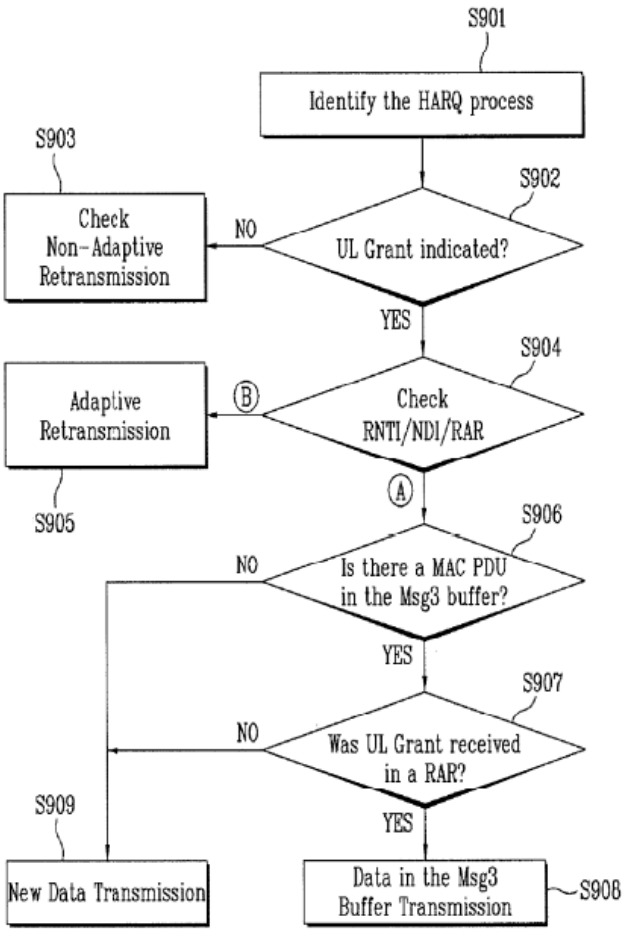


Figure 9 is a flowchart of a method showing the operation of an uplink Hybrid Automatic Repeat Request ("HARQ") entity in a UE. *Id*. at col. 13, ll. 35–39. After a UL grant signal is received from the base station at step 902, the UE determines at step 906 whether there are data in the Msg3 buffer. *Id*. at col. 13, ll. 42–44. If so, a further determination is made at step 907 whether the received UL grant signal is on a random access response ("RAR") message, i.e., that the UL grant was on a message 2 in the above

random access procedure. *Id*. at col. 13, l. 66–col. 14, l. 3. The UE transmits the data in the Msg3 buffer to the base station "only when" both conditions are met, i.e., "only when there is data [stored]in the Msg3 buffer when receiving the UL Grant signal and the UL Grant signal is received on the random access response message (S908)." *Id*. at col. 14, ll. 3–7. Conversely, if either condition is not met, i.e. there are no data in the Msg3 buffer or the UL Grant signal is not on a random access response message, then the UE determines that the base station is making a request for transmission of new data and performs new data transmission at step 909. *Id*. at col. 14, ll. 7–13.

*B. Illustrative Claims*

Claims 1 and 7 of the '236 patent, reproduced below, are independent claims respectively directed at the above-described method and at user equipment that implements the above-described method.

> 1. A method of transmitting data by a user equipment through an uplink, the method comprising:
>
> receiving an uplink grant (UL Grant) signal from a base station on a specific message;
>
> determining whether there is data stored in a message 3 (Msg3) buffer when receiving the UL Grant signal on the specific message;
>
> determining whether the specific message is a random access response message;
>
> transmitting the data stored in the Msg3 buffer to the base station using the UL Grant signal received on the specific message, if there is data stored in the Msg3 buffer when receiving the UL Grant signal on the specific message and the specific message is the random access response message; and
>
> transmitting new data to the base station in correspondence with the UL Grant signal received on the specific message, if there is no data stored in the Msg3 buffer when receiving the UL Grant signal on the specific message or the specific message is not the random access response message.

7. A user equipment, comprising:

a reception module adapted to receive an uplink grant (UL Grant) signal from a base station on a specific message;

a transmission module adapted to transmit data to the base station using the UL Grant signal received on the specific message;

a message 3 (Msg3) buffer adapted to store UL data to be transmitted in a random access procedure;

a Hybrid Automatic Repeat Request (HARQ) entity adapted to determine whether there is data stored in the Msg3 buffer when the reception module receives the UL Grant signal and the specific message is a random access response message, acquiring the data stored in the Msg3 buffer if there is data stored in the Msg3 buffer when the reception module receives the UL Grant signal and the specific message is the random access response message, and controlling the transmission module to transmit the data stored in the Msg3 buffer to the base station using the UL Grant signal received by the reception module on the specific message; and

a multiplexing and assembly entity used for transmission of new data,

wherein the HARQ entity acquires the new data to be transmitted from the multiplexing and assembly entity if there is no data stored in the Msg3 buffer when the reception module receives the UL Grant signal on the specific message or the received message is not the random access response message, and controls the transmission module to transmit the new data acquired from the multiplexing and assembly entity using the UL Grant signal received by the reception module on the specific message.

### *C. Instituted Grounds of Unpatentability*

We instituted trial for challenges under 35 U.S.C. § 103(a)[2] over the following combinations of references. Dec. 19.

[2] Because the '236 patent has a filing date before September 16, 2012 (the effective date of the Leahy-Smith America Invents Act (AIA), Pub. L. No. 112-29, § 4(c), 125 Stat. 284 (2011)), we refer herein to the pre-AIA versions of 35 U.S.C. §§ 102 and 103.

| References | Challenged Claims |
|---|---|
| 3GPP TS 300[3] and 3GPP TS 321[4] | 1–6 |
| 3GPP TS 300, 3GPP TS 321, and Ericsson[5] | 7–10, 12, 13 |

Petitioner asserts that 3GPP TS 300 and 3GPP TS 321 are printed publications published prior to the filing date of the provisional patent application from which the '236 patent claims priority and are thus prior art under 35 U.S.C. § 102(a). Pet. 10–15. Petitioner asserts that Ericsson is prior art under 35 U.S.C. § 102(e) because the application on which it was based was filed prior to the filing date of the provisional patent application from which the '236 patent claims priority. *Id.* at 11. Patent Owner does not challenge any of these assertions of Petitioner or otherwise challenge the prior art status of the cited references. *See generally* PO Resp. Based on this record, Petitioner has established the cited references are prior art under 35 U.S.C. §§ 102 and 103.

*D. Real Parties in Interest and Related Proceedings*

Petitioner identifies ZTE (USA) Inc., HTC Corporation, and HTC America, Inc. as the real parties in interest. Pet. 2.[6] Patent Owner identifies only itself as a real party in interest. Paper 7, 2.

The parties indicate that the '236 patent is the subject of several district-court litigations: *Evolved Wireless, LLC v. Apple, Inc.*, No. 1:15-cv-542 (D. Del.); *Evolved Wireless, LLC v. HTC Corp.*, No. 1:15-cv-543

[3] 3GPP TS 36.300 v8.4.0 (2008) (Ex. 1002, "3GPP TS 300").
[4] 3GPP TS 36.321 v8.2.0 (2008) (Ex. 1003, "3GPP TS 321").
[5] U.S. Patent No. 9,204,468 B2, filed June 9, 2008, issued Dec. 1, 2015 (Ex. 1004, "Ericsson").
[6] Samsung Electronics Co., Ltd., and Samsung Electronics America, Inc., were identified as the real parties in interest in IPR2016-01345 (Paper 1, 3).

(D. Del.); *Evolved Wireless, LLC v. Lenovo Group Ltd.*, 1:15-cv-544 (D. Del.); *Evolved Wireless, LLC v. Samsung Electronics Co. Ltd.*, 1:15-cv-545 (D. Del.); *Evolved Wireless, LLC v. ZTE Corp.*, 1:15-cv-546 (D. Del.); *Evolved Wireless LLC v. Microsoft Corp.*, 1:15-cv-547 (D. Del.). Pet. 2–3; Paper 7, 2–3. In addition, the '236 patent is the subject of the following *inter partes* reviews: IPR2016-01228 and IPR2016-01229.

## II. ANALYSIS

### *A. Claim Construction*

The Board interprets claims of an unexpired patent using the broadest reasonable construction in light of the specification of the patent in which they appear. *See* 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard); Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012). "[T]he claim construction inquiry . . . begins and ends in all cases with the actual words of the claim." *Renishaw PLC v. Marposs Società per Azioni*, 158 F.3d 1243, 1248 (Fed. Cir. 1998). Under the broadest reasonable construction standard, claim terms are generally given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art at the time of the invention. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

A claim-construction disagreement between the parties is grounded in use of the word "if" in the two "transmitting" limitations of independent claims 1 and 7. *See* Pet. 16–19; PO Resp. 9–32; Reply 3–9. Those limitations implicate two conditions, resulting in different data being transmitted depending on whether both conditions are satisfied or not. The

first condition is whether "there is data stored in the Msg3 buffer when receiving the UL Grant signal on the specific message," and the second condition is whether "the specific message is the random access response message." Ex. 1001, col. 16, l. 59 – col. 17, l. 3; col. 17, l. 38 – col. 18, l. 7. "If" both conditions are satisfied, the "data stored in the Msg3 buffer" are transmitted to the base station; and "if" either condition is not satisfied, "new data" are transmitted to the base station. *Id*.

Petitioner presents an argument that addresses the first "transmitting" limitation in isolation, contending that the limitation "requires no construction and should be given its plain and ordinary meaning consistent with the broadest reasonable interpretation standard." Pet. 16. According to Petitioner, "[t]he first 'transmitting' feature is straight-forward," because it requires transmitting the data stored in the Msg3 buffer when the two conditions are met and nothing more. *Id*. That is, Petitioner contends that "if" in the first "transmitting" limitation should be construed as introducing a "*sufficient* condition." *Id*. at 16–17.

Patent Owner presents a counterargument that considers an interplay between the two "transmitting" limitations, correctly observing that the two conditions "are independent of one another" and that the recitations in the two "transmitting" limitations are "logical opposite[s]." PO Resp. 9–12. As Patent Owner asserts, "both limitations cannot, at the same time, be true." *Id*. at 12. In considering this logical interplay, Patent Owner contends that "if" in each "transmitting" limitation should therefore be construed as introducing a *necessary* condition: "The proper claim construction is one that follows the claim's plain language; that is Msg3 data is transmitted if

[both conditions are] met . . . and new data are transmitted if [either condition] is not met." *Id*. at 13.[7]

We have considered the positions of both parties, and conclude that Patent Owner presents the more compelling reading of the claim. In isolation, the plain and ordinary meaning of "if" is amenable to both *sufficient-condition* and *necessary-condition* constructions. Indeed, it is trivial to construct English sentences in which a listener would naturally understand one of those constructions to be implicated. For instance, "If there is smoke, there is fire" is naturally understood not to preclude the possibility of fire if there is no smoke (sufficient if). Conversely, "If you take another step, I'll shoot," is naturally understood to mean that the speaker will not shoot if the listener does not take another step (necessary if).

To resolve the ambiguity, we look, as we must, to the context provided by the claims themselves, as well as to the Specification in whose light they must be considered under the broadest-reasonable-interpretation standard. *See Vitronics Corp. v. Conceptronic, Inc*., 90 F.3d 1576, 1582 (Fed. Cir. 1996) ("the context of the surrounding words of the claim also must be considered in determining the ordinary and customary meaning of

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[7] Patent Owner characterizes its position as equivalent to reciting "but not transmitting the new data" as part of the first "transmitting" limitation, i.e., when both conditions are met; and to reciting "but not transmitting any data stored in the Msg3 buffer" as part of the second "transmitting" limitation, i.e., when at least one of the conditions is not met. PO Resp. 10. Although such additional language is logically consistent with Patent Owner's position, we find it unnecessary to incorporate such negative limitations into the claims; the proper construction can be resolved by correctly construing the meaning of "if."

those terms"). We agree with Patent Owner's characterization of Petitioner's position as improperly including the optional possibility of transmitting data stored in the Msg3 buffer even when both conditions are not satisfied. *See* PO Resp. 12–13. Such an optional possibility is a logical consequence of a sufficient-if construction, and we acknowledge that such a reading would be tenable if the claim included only the first "transmitting" step.[8] But the claim explicitly answers the question of what occurs when at least one of the conditions is not satisfied: "new data" are transmitted to the base station. Ex. 1001, col. 16, l. 16 – col. 17, l. 3; col. 17, l. 52 – col. 18, l. 7. By isolating the first "transmitting" limitation, Petitioner improperly reaches too broad a construction of the claim as a whole.

Furthermore, Patent Owner's proposed construction is consistent with the Specification of the '236 patent. For example, in the Background of the Invention , the Specification observes that, in the prior art, "if the UL Grant signal is received in a state in which data is stored in the Msg3 buffer, the data stored in the Msg3 buffer is transmitted *regardless of* the reception mode of the UL Grant." *Id*. at col. 4, ll. 26–30 (emphasis added). As explained in the Specification, applicants purport to resolve such a deficiency because "if the data stored in the Msg3 buffer is transmitting in correspondence with the reception of *all* UL Grant signals, problems may occur." *Id*. col. 4, ll. 30–34 (emphasis added). In addition, the description of Figure 9 of the patent, reproduced above, explicitly explains that data in the Msg3 buffer are transmitted to the base station "only when" both conditions recited in the claims are met. *Id*. at col. 14, ll. 3–8.

[8] Indeed, this is precisely the case for a child of the '236 patent, as discussed *infra*.

The parties also address the relevance of the prosecution history of a child of the '236 patent. PO Resp. 22–25; Reply 8. During prosecution of U.S. Patent No. 9,532,336 B2 (Ex. 2007, "the '336 patent"), which shares the same written description as the '236 patent, explicit language was included in the independent method claims to require transmission of data stored in the Msg3 buffer "only when" such data are stored in the Msg3 buffer and the UL Grant was received on the random access response message. Ex. 2008, 146. Such "only when" language did not appear in the claims as originally filed, and was added in response to a rejection in which the Examiner made the following remarks:[9]

> Claim 1 recites the limitation "if there is data stored in the Msg3 buffer and if the UL Grant signal was received on the random access response." The limitation is directed to the action to transmit the UL Grant, however, *there is no language to limit the claim to only this scenario* or the claim language *does not provide an alternative for what if the statement is not true*. The Applicant's invention is not being claimed in independent claims 1 and 9.

*Id*. at 139 (emphases added).

Importantly, the claims in the '336 patent do not include language that corresponds to the second "transmitting" limitation of the claims at issue in this proceeding—the "only when" language was added to a limitation that corresponds to the first "transmitting" limitation. We agree with Patent Owner's characterization of the relevance of these facts and of the Examiner's prior basis for rejection of unamended claims of the '336 patent. That is "the Examiner specifically rejected a claim without the 'only when'

[9] Independent method claim 26 of the '336 patent was added by amendment at the same time, including the "only when" language. Ex. 2008, 151.

language *because there was no alternative recited in the claim . . . if the condition[s were] not met*." PO Resp. 24. The addition of the "only when" language in the '336 patent resolves the ambiguity, recognized by the Examiner, that is otherwise resolved in the claims at issue in this proceeding by the presence of the second "transmitting" limitation. In light of this difference in the claims in the two patents, we are not persuaded by Petitioner's argument that "Patent Owner's decision to narrow the language from 'if' in the '236 patent to 'only when' in the child patent demonstrates the difference in meaning between these two phrases and belies Patent Owner's argument that they mean the same thing." Reply 8.

For these reasons, we agree with Patent Owner that "if" in the "transmitting" limitations of independent claims 1 and 7 is properly construed, under the broadest-reasonable-interpretation standard, as introducing *necessary* conditions, rather than sufficient conditions.[10] We adopt such a construction for purposes of this Decision.

*B. Legal Principles Governing 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

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[10] This construction is consistent with the reasoning of *Ex Parte Schulhauser*, Appeal No. 2011-002626, slip op. (PTAB Sept. 19, 2012) (precedential). Similar to the claims at issue in this proceeding, *Schulhauser* considered a claim that recited "mutually exclusive" steps. *Schulhauser*, slip op. at 6. The Board held that, under the broadest reasonable interpretation, the claim "covers at least two methods, one in which the prerequisite condition for the [first] step is met and one in which the prerequisite condition for the [second] step is met." *Id*. at 8. The Board did not thereby hold that the language of one of the steps could simply be read out of the claim (as Petitioner's argument would effectively require) nor that that language could not properly inform construction of the other of the steps.

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." We resolve the question of obviousness 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) objective evidence of nonobviousness, i.e., secondary considerations.[11] *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

*C. Level of Skill in the Art*

Petitioner contends:

> The person of ordinary skill in the art of the subject matter of the 236 patent would have had a master's degree in electrical engineering with 2-3 years of experience in cellular communication system, and would have been aware of the efforts of the Third Generation Partnership Project and its various groups. (Ex. 1016, Min decl., at ¶ 34.) Alternatively, that person would have had a Ph. D. in electrical engineering with the same familiarity with the work of the Third Generation Partnership Project and its various groups. (*Id.*)

Pet. 6. Patent Owner does not present any argument or contentions relating to the level of skill in the art. *See generally* PO Resp. We find Petitioner's proposal reasonable, and accordingly, based on this record, we adopt the level of skill in the art proposed by Petitioner.

*D. Obviousness of Claims 1–6 Over 3GPP TS 300 and 3GPP TS 321*

Independent claim 1 and dependent claims 2–6 are challenged as obvious over 3GPP TS 300 (Ex. 1002) and 3GPP TS 321 (Ex. 1003) (Pet.

[11] The record does not include allegations or evidence of objective indicia of nonobviousness.

20–48), and the Board instituted an *inter partes* review on this challenge (Dec. 19).

*1. 3GPP TS 300 (Ex. 1002)*

Technical Specification 300 is published by the 3GPP[12] and "provides an overview and overall description of the E-UTRAN (Evolved Universal Terrestrial Radio Access Network) radio interface protocol architecture" in an LTE system. Ex. 1002, 11. Section 10.1.5 describes a Random Access Procedure, and section 10.1.5.1 outlines a contention-based random access procedure. *Id*. at 48–49.

*2. 3GPP TS 321(Ex. 1003)*

Technical Specification 321 is published by the 3GPP and "specifies the E-UTRA [Evolved Universal Terrestrial Radio Access] MAC [Medium Access Control] Protocol" in an LTE system. Ex. 1003, 6. Section 5.4 of 3GPP TS 321 describes uplink data transfer, section 5.4.1 describes UL Grant reception, and section 5.4.2.1 states:

> At the given TTI [transmission time interval], the HARQ entity shall:
>
> - if an uplink grant indicating that the NDI has been incremented compared to the value in the previous transmission of this HARQ process is indicated for this TTI or if this is the very first transmission for this HARQ process (i.e. a new transmission takes place for this HARQ process):
>
> > - if there is an ongoing Random Access procedure and there is a MAC PDU in the [Message3] buffer:

[12] The Third Generation Partnership Project is a standards-setting organization for mobile communications and was developing a cellular communication system known as the Long Term Evolution (LTE). Pet. 6; PO Resp. 2. *See also* Ex. 1001, col. 1, ll. 22–25.

> - obtain the MAC PDU to transmit from the [Message3] buffer.
>
> - else, if the "uplink prioritisation" entity indicates the need for a new transmission:
>
> - obtain the MAC PDU to transmit from the "Multiplexing and assembly" entity;
>
> - instruct the HARQ process corresponding to this TTI to trigger a new transmission using the identified parameters.

*Id*. at 18 (brackets in original).

*3. Obviousness Analysis*

Petitioner asserts that claims 1–6 would have been obvious over the combination of 3GPP TS 300 and 3GPP TS 321. Pet. 20–48. Petitioner advances several reasons why persons of ordinary skill in the art would have been motivated to combine the teachings of 3GPP TS 300 and 3GPP TS 321. *Id*. at 46–48 (citing Ex. 1016 (Min Decl. ¶¶ 116–119)). Petitioner asserts skilled artisans "would have consulted the two complementary references together because both specifications were part of the then-current LTE standard" and such artisans "considered the LTE standard as one collective reference set." *Id*. at 46. The '236 patent repeatedly refers to the "LTE system standard" as a whole. Ex. 1001, col. 4, l. 26, col. 12, l. 17, col. 12, l. 49, col. 13, l. 6. Petitioner also asserts "[s]killed artisans also would have consulted the 300 and 321 references together because both specifications described LTE's random access procedure" and "[t]o understand and implement the random access procedure, the skilled artisan would have needed to consult both specifications together, rather than

treating each specification in isolation." Pet. 46. And, 3GPP TS 300 references "3GPP TS 321." Ex. 1002, 11. Patent Owner does not contest Petitioner's assertions related to the reason for combining the teachings of the cited references. *See generally* PO Resp. Based on this record, we conclude Petitioner has established that a person of ordinary skilled in the art would have had a reason to combine the teachings of 3GPP TS 300 and 3GPP TS 321.

*a. Independent Claim 1*

Claim 1 is a method claim. The preamble of claim 1 recites, "[a] method of transmitting data by a user equipment through an uplink." Petitioner cites section 5.4 of 3GPP TS 321, which is titled "UL-SCH data transfer" (Ex. 1003, 18), and section 10.1.5.1 of 3GPP TS 300, which describes a "contention based random access procedure" in which step 3 is the "[f]irst scheduled UL transmission on UL-SCH" by the "UE" (Ex. 1002, 48–49). Pet. 22–23. "SCH" is an abbreviation for synchronization channel. Ex. 1002, 14. We find the cited art teaches, "[a] method of transmitting data by a user equipment through an uplink."

The first method step of claim 1 recites, "receiving an uplink grant (UL Grant) signal from a base station on a specific message." Petitioner cites both 3GPP TS 321 and 3GPP TS 300 as teaching this step. Pet. 23–24. 3GPP TS 321 states, "the UE shall for each TTI [Transmission Time Interval]: - if [(1)] an uplink grant for the TTI has been received on the PDCCH [Physical Downlink Control Channel] for the UE's C-RNTI [Cell-Radio Network Temporary Identifier] or Temporary C-RNTI; or – [(2)] if an uplink grant for this TTI has been received in a Random Access Response; - [then] indicate a valid uplink grant." Ex. 1003, 18. Petitioner cites Figure

10.1.5.1 of 3GPP TS 300 as showing eNodeB, a base station, would transmit the random access response to the UE in step 2. Ex. 1002, 48. We find the cited art teaches, "receiving an uplink grant (UL Grant) signal from a base station on a specific message."

The second method step of claim 1 recites, "determining whether there is data stored in a message 3 (Msg3) buffer when receiving the UL Grant signal on the specific message." Petitioner cites 3GPP TS 321 as teaching this step. Pet. 24–25. Section 5.4.2.1 of 3GPP TS 321 states, "[a]t the given TTI [Transmission Time Interval], the HARQ [Hybrid Automatic Repeat Request] entity shall: . . . if there is an ongoing Random Access procedure and there is a MAC PDU [Medium Access Control Packet Data Unit] in the [Message3][13] buffer." Ex. 1003, 18. With regard to when the determination of whether there is data stored in the Msg3 buffer occurs, 3GPP TS 321 teaches making this determination during the same TTI (Time Transmission Interval). *Id*. Thus, Section 5.4.2.1 describes determining whether there is data in the Msg3 buffer ("if . . . there is a . . . [Data Unit] in the [Message3] buffer") when the UL Grant signal is received on the specific message ("if there is an ongoing Random Access procedure"). *Id*.

Patent Owner argues that Petitioner's declarant, Dr. Min, testified that 3GPP TS 321 does not teach making this determination in the same TTI. PO Resp. 34. But this is incorrect. We credit the testimony of Dr. Min, who repeatedly testified that 3GPP TS 321 teaches making this determination in the same TTI. *See, e.g.*, Ex. 2004, 96:20–21 ("What the 321 reference says is to determine for that TTI, and that's what the claim language is."). We

[13] This bracketed material in original.

find 3GPP TS 321 teaches, "determining whether there is data stored in a message 3 (Msg3) buffer when receiving the UL Grant signal on the specific message."

The third method step of claim 1 recites, "determining whether the specific message is a random access response message." Petitioner cites 3GPP TS 321 for this element. Pet. 25–26. Section 5.4.1 of 3GPP TS 321 states, "if an uplink grant for this TTI has been received in a Random Access Response." Ex. 1003, 18. We find 3GPP TS 321 teaches, "determining whether the specific message is a random access response message."

The fourth method step of claim 1 recites:

> transmitting the data stored in the Msg3 buffer to the base station using the UL Grant signal received on the specific message, if there is data stored in the Msg3 buffer when receiving the UL Grant signal on the specific message and the specific message is the random access response message.

Petitioner cites 3GPP TS 300 and 3GPP TS 321 as teaching this element. Pet. 29–31; Reply 10–13. Petitioner argues that condition (1), "if there is data stored in the Msg3 buffer when receiving the UL Grant signal on the specific message" was shown to be taught in relation to the second step of claim 1, and condition (2), "if . . . the specific message is the random access response message" was shown to be taught in relation to the third step of claim 1. And, section 5.4.2.1 of 3GPP TS 321 states, "if there is an ongoing Random Access procedure and there is a MAC PDU in the [Message3] buffer": - obtain the MAC PDU to transmit from the [Message3] buffer." Ex. 1003, 18 (brackets in original).

The fifth and final method step of claim 1 recites:

> transmitting new data to the base station in correspondence with the UL Grant signal received on the specific message, if there is no data stored in the Msg3 buffer when receiving the UL Grant signal on the specific message or the specific message is not the random access response message.

Petitioner cites 3GPP TS 321 as teaching this element. Pet. 37–40. Section 5.4.2.1 of 3GPP TS 321 states:

> - if there is an ongoing Random Access procedure and there is a MAC PDU in the [Message3] buffer:
>
> > - obtain the MAC PDU to transmit from the [Message3] buffer.
>
> - ***else***, if the "uplink prioritisation" entity indicates the need for a new transmission:
>
> > - obtain the MAC PDU to transmit from the "Multiplexing and assembly" entity;
> >
> > - instruct the HARQ process corresponding to this TTI to trigger a new transmission using the identified parameters.

Ex. 1003, 18 (emphasis added) (brackets in original). This element provides that "new data" should be transmitted if either conditions (1) or (2) are not met. The cited passage in 3GPP TS 321 teaches triggering a "new transmission" if there is not a MAC PDU (i.e., no data) in the Msg3 buffer. With regard to this element, Patent Owner acknowledges, "the 321 reference (Exhibit 1003)—which purportedly invalidates the claims of the '236 patent, teaches transmitting new data for a = true [condition (1) met] and b = false

[condition (2) not met]." PO Resp. 18–19 (citing Pet. at 39 (Scenario 3)).[14] Thus, Patent Owner acknowledges that 3GPP TS 321 teaches transmitting new data if one of conditions (1) or (2) fails.

Although Petitioner advocates for a construction in which "if" introduces sufficient conditions, Petitioner alternatively presents arguments that account for the construction we adopt, namely that "if" introduces necessary conditions. In these alternative arguments, Petitioner asserts that both 3GPP TS 321 and 3GPP TS 300 would be interpreted by one of ordinary skill in the art to teach or suggest transmission of the data in the Msg3 buffer only if both conditions (1) and (2) are met and transmission of new data if either condition (1) or (2) is not met. Pet. 29–31; *see also* Reply 10–13. Petitioner's showing in this regard is supported by the Declaration of Paul S. Min, Ph. D. (Ex. 1016). Patent Owner proffers a Declaration by Todor Cooklev, Ph. D. (Ex. 2006), which it contends supports its position. *See, e.g.*, PO Resp. 42, 46.

Petitioner argues that the Cooklev Declaration should be given no weight because the declarant did not acknowledge "that (i) willful false statements are punishable by fine, imprisonment, or both; or (ii) the statements are true under penalty of perjury." Reply 6–7 (citations omitted).[15] In an IPR proceeding, evidence includes affidavits. 37 C.F.R.

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[14] In Petitioner's Scenario 3, there is data in the Msg3 buffer (condition (1) is met) but the random access procedure is not ongoing (condition (2) is not met). Pet. 39–40. At pages 38–42 of the Response, Patent Owner argues that Petitioner's evidence fails with regard to the second transmitting step of claim 1, but Patent Owner only addresses Petitioner's Scenario 1 (condition (1) is not met and condition (2) is met (Pet. 38–39)) and Scenario 2 (neither condition (1) nor (2) is met (Pet. 39)).

[15] Petitioner also argues the Cooklev Declaration should be given no weight

§ 42.63(a) ("[e]vidence consists of affidavits"). 37 C.F.R. § 42.2 defines affidavit as "affidavit or declaration under § 1.68 of this chapter. A transcript of an *ex parte* deposition or a declaration under 28 U.S.C. 1746 may be used as an affidavit." 37 C.F.R. § 1.68 requires that the declarant be warned, on the same document, that "willful false statements and the like are punishable by fine or imprisonment, or both." 28 U.S.C. § 1746 provides that unsworn declarations under penalty of perjury may be used where a matter is required or permitted to be supported by sworn declaration or affidavit. To give weight to Dr. Cooklev's statements would thwart the purpose of these rules. *See Intel Corp. v. Alacritech, Inc.*, IPR 2017-01402, Paper 8, 6 (PTAB Nov. 6, 2017) (citation omitted).

Patent Owner had notice of the defect in the Cooklev Declaration at least as early as the filing of Petitioner's Reply on June 14, 2017. Reply 1, 6–7, 11, 25.[16] In addition, the defect in the Cooklev Declaration was discussed at the oral hearing on August 8, 2017. Tr. 22:9–23:5, 45:1–46:3. At the oral hearing, Patent Owner acknowledged that the Cooklev Declaration was defective. Tr. 45:1–46:3. Nevertheless, Patent Owner took no affirmative steps to cure the defect. Although we recognize that Petitioner may well have capitalized tactically on the defect by forgoing cross-examination in which Dr. Cooklev may have provided sworn testimony consistent with his Declaration, we cannot simply ignore the

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because Dr. Cooklev applies the clear and convincing evidence standard to the invalidity evidence (Ex. 2006 ¶ 16) rather than the preponderance of evidence standard applicable in this proceeding (35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d)). Reply 1, 25.

[16] We also note that Petitioner noticed the deposition of Dr. Cooklev (Paper 26) but withdrew the notice (Paper 27).

regulatory and statutory requirements that render that Declaration defective. To give weight to the Declaration would require us to surmise that Dr. Cooklev would swear to the statements in his Declaration, and we are in no position to do so. Accordingly, we do not consider Ex. 2006 and give no weight to Patent Owner's reliance on the Cooklev Declaration.

3GPP TS 321 states, "[i]f the UE receives a[n uplink] grant for its RA-RNTI and a grant for its C-RNTI, the UE may choose to continue with either the grant for its RA-RNTI or the grant for its C-RNTI." Ex. 1003, 18. The RA-RNTI refers to the Random Access Radio Network Temporary Identifier and is used "when Random Access Response messages are transmitted." *Id*. at 7. *See also* Ex. 1003 at 10 ("RA-RNTI for Random Access Response on DL-SCH"). Section 5.1.4 of 3GPP TS 321 states, "[o]nce the Random Access Preamble is transmitted [Message 1], the UE shall . . . monitor for Random Access Response(s) identified by the RA-RNTI . . . if the Random Access Response [Message 2] contains a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble (see subclause 5.1.3), the UE shall: . . . process the received UL grant value." *Id*. at 13. Taking these passages into consideration with the process in Section 5.4.2.1 discussed above (*see* Ex. 1003, 18 ("if there is an ongoing Random Access procedure and there is a MAC PDU in the [Message3] buffer": - obtain the MAC-PDU to transmit from the [Message3] buffer, else . . . trigger a new transmission" (brackets in original)), 3GPP TS 321 teaches to transmit the data in the Msg3 buffer only in response to an uplink grant in the random access message and there is data in the Msg3 buffer (conditions (1) and (2) are met) and to transmit new data only if conditions 1 or 2 are not met.

3GPP TS 300 in Figure 10.1.5.1-1, reproduced below, shows a random access procedure. Ex. 1002, 48.

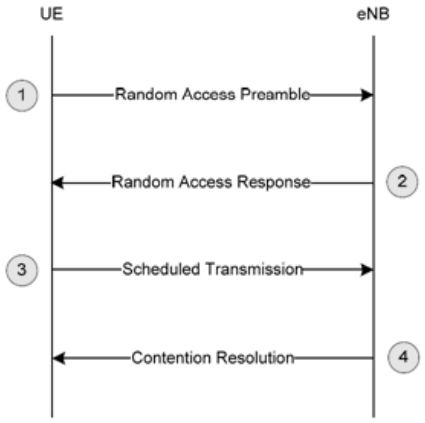


**Figure 10.1.5.1-1: Contention based Random Access Procedure**

Figure 10.1.5.1-1 depicts a random access method in which the UE transmits a Random Access Preamble in message 1 and eNB, a base station, transmits a Random Access Response in message 2. The "Random Access Response generated by MAC on DL-SCH . . . Addressed to RA-RNTI . . . Conveys at least . . . [an] initial UL grant." Ex. 1002, 49. In response, the UE transmits Scheduled Transmission, message 3, described as "First Scheduled UL transmission on UL-SCH" which "depends on the UL grant conveyed in step 2." *Id*.

With regard to these passages in 3GPP TS 300 and 3GPP TS 321, Petitioner argues:

> Reading these complementary standards documents together, as skilled artisans would do, they would understand that the 300 and 321 references taught two facts. First, message 3 transmission should occur only if "there is an ongoing random access procedure and there is a MAC PDU in the [Message3] buffer." (*Id*.[Min Decl.] at ¶ 76 (citing Ex. 1003, 321 reference, at § 5.4.2.1 (brackets in original)).) Second, message 3 transmission requires a prior random access response grant. (*Id*. (citing Ex. 1002, 300 reference, at § 10.1.5.1).) These two facts

> established that a UE should transmit message 3 ***only if*** it receives a random access response grant while data is in the message 3 buffer. (*Id*.) Therefore, the 300 and 321 references collectively taught the "only if" feature. (*Id*.)

Pet. 32.

Petitioner's arguments are persuasive. With respect to the first transmitting step, 3GPP TS 321 describes transmitting the contents of the Msg3 buffer when both conditions are met: "if there is an ongoing Random Access procedure [(condition 2)] and there is a MAC PDU in the [Message3] buffer [(condition 1)]." Ex. 1003, 18. The language "if there is an ongoing Random Access procedure" in section 5.4.2.1 requires verifying whether the current process *is* a random access procedure, which means that it must know that the uplink grant was the "specific message," i.e., a proper message 2, or otherwise the current process would not be a random access procedure.[17] As shown in sections 3.1 and 5.1.4, a Random Access Response may be identified by the RA-RNTI. *Id*. at 7, 13. Thus, when discussing the "ongoing Random Access procedure," the reference is implicating the uplink grant "received in a Random Access Response." *Id*. at 18. If the reference intended the "ongoing Random Access procedure" to include both the uplink grants received in section 5.4.1, as Patent Owner appears to contend, then it would have merely referenced the more generic "valid uplink grant." With regard to 3GPP TS 300, based on the passages cited above, Petitioner's declarant, Dr. Min, states, "the eNodeB sends the

[17] That is, the UL grant was something else, such as "an uplink grant . . . received on the PDCCH for the UE's C-RNTI or Temporary C-RNTI," as expressed in Section 5.4.1 as the alternative to a Random Access Response. Ex. 1003, 18.

UE a random access response grant, and the UE responds with a message 3 transmission that depends on the random access response grant. This taught that the message 3 transmission requires a prior random access response grant." Ex. 1016 ¶ 75. Accordingly, upon consideration of the cited passages in 3GPP TS 300 and 3GPP TS 321, the Min Declaration, and Petitioner's arguments, we find 3GPP TS 300 and 3GPP TS 321 teach the first "transmitting" limitation recited in claim 1 under the construction we have adopted.

Similarly, with respect to the second transmitting step, section 5.4.2.1 of 3GPP TS 321 indicates that after determining "if there is an ongoing Random Access Message and there is a MAC PDU in the [Message3] buffer" "obtain the MAC PDU to transmit from the Message3] buffer" or "else" make a "new transmission." [18] Ex. 1003, 18 (brackets in original). Accordingly, 3GPP TS 321 teaches the second "transmitting" limitation under the construction we adopted.

Petitioner also argues that evidence of simultaneous development by others shows that a person of ordinary skill in the art would have interpreted the 3GPP TS 300 and 3GPP TS 321 as teaching transmission of the data in

[18] Patent Owner attempts to distinguish the procedure of section 5.4.2.1 of 3GPP TS 321 under Petitioner's Scenarios 1 and 2 (*see* fn. 14 above) on the basis that this passage refers to an "'uplink prioritisation' entity." *See* PO Resp. 38. Dr. Min testified that the "'uplink prioritisation' entity" refers to the "Scheduling/Priority Handling" entity shown in Figures 6-1 and 6-2 of 3GPPP TS 300 (Ex. 1002, 28). Ex. 2004, 117, l. 18 – 127, l. 2. Dr. Min also testified the function of the "'uplink prioritisation' entity" is to receive the new data and transmit it to the "'Multiplexing and assembly' entity" and the "HARQ entity" referred to in section 5.4.2.1 of 3GPP TS 321 and shown in Figures 6-1 and 6-2 of 3GPP TS 300. *Id*. at 123, l. 16 – 124, l. 3.

the Msg3 buffer only if conditions (1) and (2) are met. Pet. 35–37. Petitioner contends Ex. 1005 titled, "3GPP TSG-RAN WG2#61bis" which was submitted to the 3GPP by Philips and NXP Semiconductors for a meeting held on March 31 through April 4, 2008, in Shenzden, China, teaches the fourth step of claim 1, the first "transmitting"' limitation. *Id*. at 34–35. Figure 2 and the related description in the Philips submission to 3GPPG shows transmission of the data in the Msg3 buffer if conditions (1) and (2) are met. Ex. 1005, 1–2. Petitioner makes a similar contention with Ex. 1008 titled, "3GPP TSG-RAN WG2 #63" which was submitted to the 3GPP by Qualcomm Europe for a meeting held on August 18 through 22, 2008, in Jeju Island, Korea. Pet. 37. In this document, Qualcomm proposed the "HARQ should obtain the MAC PDU to transmit from the [Message3] buffer ***only*** in response to UL grant in a Random Access Response." Ex. 1008, 2 (emphasis added). Patent Owner argues that the Petitioner's simultaneous development argument is wrong because Petitioner did not otherwise show invalidity under the proper construction of the claims. PO Resp. 47. However, as indicated above, we find 3GPP TS 321 and 3GPP TS 300 have been shown to teach the method recited in claim 1 under the proper construction. In addition, we agree with Petitioner that Ex. 1005 and Ex. 1008 are evidence of simultaneous invention by others working within 3GPP on the LTE standard and provide further support for concluding claim 1 would have been obvious. *See Geo M. Martin Co. v. Alliance Machine Sys Int'l LLC*, 618 F.3d 1294, 1306 (Fed. Cir. 2010) ("Independently made, simultaneous inventions, made 'within a comparatively short space of time,' are persuasive evidence that the claimed apparatus 'was the product only of ordinary mechanical or engineering skill.'")

We conclude that Petitioner demonstrates, by a preponderance of the evidence, that claim 1 is unpatentable under 35 U.S.C. § 103(a) over 3GPP TS 300 and 3GPP TS 321.

*b. Dependent Claims 2–6*

Dependent claim 2 recites, "wherein the transmitting the new data to the base station includes: acquiring a Medium Access Control Protocol Data Unit (MAC PDU) from a multiplexing and assembly entity; and transmitting the MAC PDU to the base station." Petitioner cites 3GPP TS 321 as teaching this element. Pet. 40–41. As noted above, section 5.4.2.1 of 3GPP TS 321 states:

> - if there is an ongoing Random Access procedure and there is a MAC PDU in the [Message3] buffer:
>
> > - obtain the MAC PDU to transmit from the [Message3] buffer.
>
> - else, if the "uplink prioritisation" entity indicates the need for a new transmission:
>
> > ***- obtain the MAC PDU to transmit from the "Multiplexing and assembly" entity;***
> >
> > ***- instruct the HARQ process corresponding to this TTI to trigger a new transmission using the identified parameters.***

Ex. 1003, 18 (emphasis added). We find 3GPP TS 321 teaches the limitations of claim 2.

Dependent claim 3 recites, "wherein the UL Grant signal received on the specific message is a UL Grant signal received on a Physical Downlink Control Channel (PDCCH), and wherein the user equipment transmits new

data in correspondence with the UL Grant signal received on the PDCCH." Petitioner cites 3GPP TS 321. Pet. 41–42. As shown above, section 5.4.1. of 3GPP TS 321 states, "if an uplink grant for this TTI has been received on the PDCCH" and section 5.4.2.1 states, "if the 'uplink prioritisation' entity indicates the need for a new transmission: - obtain the MAC PDU to transmit from the 'Multiplexing and assembly' entity; - instruct the HARQ process corresponding to this TTI to trigger a new transmission using the identified parameters." Ex. 1003, 18. We find 3GPP TS 321 teaches the limitations of claim 3.

Dependent claim 4 recites, "wherein the data stored in the Msg3 buffer is a Medium access Control Protocol Data Unit (MAC PDU) including a user equipment identifier." Petitioner cites 3GPP TS 300 and 3GPP TS 321. Pet. 42–44. As shown above, section 5.4.2.1 of 3GPP TS 321 states, "if . . . there is a MAC PDU in the [Message3] buffer." Ex. 1003, 18 (brackets in original). Section 6.1.2 of 3GPP TS 321 teaches, "[a] MAC PDU consists of . . . zero, or more MAC control elements." *Id*. at 24. One of the "MAC Control Elements" is the "C-RNTI MAC Control Element" that "contains the C-RNTI of the UE." *Id*. at 26. The "C-RNTI" is the "Cell-Radio Network Temporary Identifier." *Id*. at 7. Section 10.1.5.1 of 3GPP TS 300 teaches message 3 (Scheduled Transmission) "[c]onveys at least the C-RNTI of the UE." Ex. 1002, 48–49. We find the cited art teaches the limitations of claim 4.

Dependent claim 5 recites, "wherein the data stored in the Msg3 buffer further includes information about a buffer status report (BSR) if the user equipment starts a random access procedure for the BSR." Petitioner cites 3GPP TS 300 and 3GPP TS 321. Pet. 44–46. Section 5.4.5 of 3GPP

TS 321 is directed to "Buffer Status Reporting" and states, "[t]he Buffer Status reporting procedure is used to provide the serving eNB with information about the amount of data in the UL buffers of the UE." Ex. 1003, 21. As noted above, section 5.4.2.1 of 3GPP TS 321 states, "if . . . there is a MAC-PDU in the [Message3] buffer." *Id*. at 18 (brackets in original). Also, as shown above, section 6.1.2 of 3GPP TS 321 teaches, "[a] MAC PDU consists of . . . zero, or more MAC control elements." *Id*. at 24. One of the "MAC Control Elements" is a "Buffer Status Report (BSR)." *Id*. at 26. Section 10.1.5.1 of 3GPP TS 300 teaches message 3 (Scheduled Transmission) "[i]ncludes an uplink Buffer Status Report when possible." Ex. 1002, 48–49. We find the cited art teaches the limitations of claim 5.

Dependent claim 6 recites, "wherein the UL Grant signal received on the specific message is either a UL Grant signal received on a Physical Downlink Control Channel (PDCCH) or a UL Grant signal on the random access response message." Petitioner cites 3GPP TS 321. Pet. 45–46. As noted above, section 5.4.1 of 3GPP TS 321 states, "the UE shall for each TTI [Transmission Time Interval]: - if an uplink grant for this TTI has been received on the PDCCH [Physical Downlink Control Channel] for the UE's C-RNTI [Cell-Radio Network Temporary Identifier] or Temporary C-RNTI; or – if an uplink grant for this TTI has been received in a Random Access Response." Ex. 1003, 18. We find 3GPP TS 321 teaches the limitations of claim 6.

Patent Owner fails to contest any part of Petitioner's showing with regard to dependent claims 2–6. *See generally* PO Resp. We conclude that Petitioner demonstrates, by a preponderance of the evidence, that claims 2–6

are unpatentable under 35 U.S.C. § 103(a) over 3GPP TS 300 and 3GPP TS 321.

*E. Obviousness of Claims 7–10, 12, and 13 Over 3GPP TS 300, 3GPP TS 321, and Ericsson*

Independent claim 7 and dependent claims 8–10, 12, and 13 were challenged as obvious over 3GPP TS 300 (Ex. 1002), 3GPP TS 321 (Ex. 1003), and Ericsson (Ex. 1004) (Pet. 48–59) and the Board instituted an *inter partes* review on this challenge (Dec. 19).

*1. Ericsson (Ex. 1004)*

Ericsson is titled "Timing Alignment in an LTE System" and generally describes the use of a timing advance value for transmissions from user equipment to a controlling node of a cell in a cellular communications system, such as an LTE system. Ex. 1004, Abstract, col. 1, ll. 5–8, col. 7, ll. 15–18. When the Ericsson method is "applied in an LTE system, the procedure in which it is employed is preferably an LTE Random Access procedure." *Id*. at col. 7, ll. 21– 23. Figure 6 of Ericsson is reproduced below.

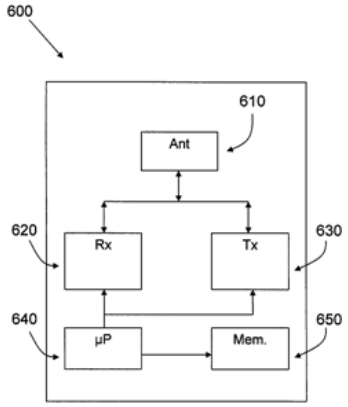


Fig 6

Figure 6 is a schematic block diagram of a transceiver for use as a user terminal or user equipment. Ex. 1004, col. 7, ll. 24–26. Transceiver 600 comprises antenna 610, transmit part 630, receive part 620, memory 650, and microprocessor 640. *Id*. at col. 7, ll. 26–30. Memory 640, transmit part 630, and antenna 610 can transmit access requests to a controlling node, and antenna 610 and receiver 620 can receive messages from a controlling node. *Id*. at col. 7, ll. 33–40.

*2. Obviousness Analysis*

Petitioner asserts that claims 7–10, 12, and 13 would have been obvious over the combination of 3GPP TS 300, 3GPP TS 321, and Ericsson. Pet. 48–59. With regard to combining the teachings of 3GPP TS 300, 3GPP TS 321, and Ericsson, the Petition asserts:

> The skilled artisan would have combined the teachings of the 300 and 321 references with the specific hardware implementation details provided in the Ericsson patent. (Ex. 1016, Min decl., at ¶ 157.) The 300 and 321 references described a UE, an eNodeB, and their components at a high level from a functional point of view, but by their very nature, did not provide all of the specific structural details. (*Id*. at ¶ 157 (citing Ex. 1003, 321 reference, at 4.1 ("The objective is to describe the MAC architecture and the MAC entity from a functional point of view.").) Many structural features such as a transmission module and reception module would have been routine, common-sense design choices for the skilled artisan, who would have recognized that those features are necessary to implement working LTE devices. (*Id*. at ¶ 157.) But to the extent the skilled artisan had wanted more information about a UE's structure, the skilled artisan would have logically and predictably consulted a reference such as the Ericsson patent, which provided a block diagram of the components included in a UE, such as transmission and reception modules. (*Id*. at ¶ 157.) The skilled artisan would have also turned to the Ericsson patent because it is in the same field of endeavor as the prior art specifications

> concerning LTE's random access process and was created by a well-known manufacturer of cellular devices. (*Id*. at ¶ 157.) Like the prior art specifications, the Ericsson patent specifically focused on the LTE random access procedure. (*Id*. (citing Ex. 1004, Ericsson patent, at 4:42-54, 7:16-23).)

Pet. 58–59. Patent Owner fails to contest Petitioner's presentation with regard to the motivation to combine 3GPP TS 300, 3GPP TS 321, and Ericsson. *See generally* PO Resp. Based on this record, we conclude Petitioner has established that a person of ordinary skilled in the art would have had a reason to combine the teachings of 3GPP TS 300, 3GPP TS 321, and Ericsson.

*a. Independent Claim 7*

Claim 7 is an apparatus claim directed to a user equipment (UE). It recites modules, a buffer, and entities which perform the same functions as recited in claim 1. Patent Owner states, "[t]he similarities between claim 1 (a method claim) and claim 7 (an apparatus claim), are notable," "[t]he structure of claim 7 resembles the structure of claim 1" that "is written as an apparatus claim, with entities 'adapted to' perform steps." PO Resp. 30–31.

The preamble of claim 7 recites "user equipment." Section 5.4 of 3GPP TS 321 teaches a UE. Ex. 1003, 18–22. Section 10.1.5.1 of 3GPP TS 300 teaches a UE. Ex. 1002, 48–50. Ericsson teaches a UE. Ex. 1004, Figure 1. We find the cited art teaches, "user equipment."

The first element of claim 7 recites, "a reception module adapted to receive an uplink grant (UL Grant) signal from a base station on a specific message." Figure 6 of Ericsson, shown above, is a block diagram of a UE and the detailed description teaches, "[t]he transceiver 600 also uses the antenna 610 and ***the receiver 620 for receiving an initiation message such***

***as MSG 2 in response from the controlling node*** along with a second timing advance value." Ex. 1004, col. 7, ll. 24–26, 38–41 (emphasis added). The controlling node is an eNodeB, a base station. *Id*. at col. 3, l. 66. The functions of this element were shown to be taught by the cited art in the discussion above relating to the first step of claim 1. *See also* Pet. 49–50. We find the cited art teaches, "a reception module adapted to receive an uplink grant (UL Grant) signal from a base station on a specific message."

The second element of claim 7 recites, "a transmission module adapted to transmit data to the base station using the UL Grant signal received on the specific message." The description of Figure 6 of Ericsson teaches, "the transmit part 630 and the antenna 610 for requesting communication with the controlling node in a contention based procedure by transmitting an access request such as MSG 1." Ex. 1004, col. 7, ll. 34–37. The functions of this element were shown to be taught by the cited art in the discussion above relating to claim 1. *See also* Pet. 50–51. We find the cited art teaches, "a transmission module adapted to transmit data to the base station using the UL Grant signal received on the specific message."

The remaining four elements of claim 7 recite:

> a message 3 (Msg3) buffer adapted to store UL data to be transmitted in a random access procedure;
>
> a Hybrid Automatic Repeat Request (HARQ) entity adapted to determine whether there is data stored in the Msg3 buffer when the reception module receives the UL Grant signal and the specific message is a random access response message, acquiring the data stored in the Msg3 buffer if there is data stored in the Msg3 buffer when the reception module receives the UL Grant signal and the specific message is the random access response message, and controlling the transmission module to transmit the data stored in the Msg3 buffer to the base station

> using the UL Grant signal received by the reception module on the specific message; and
>
> a multiplexing and assembly entity used for transmission of new data,
>
> wherein the HARQ entity acquires the new data to be transmitted from the multiplexing and assembly entity if there is no data stored in the Msg3 buffer when the reception module receives the UL Grant signal on the specific message or the received message is not the random access response message, and controls the transmission module to transmit the new data acquired from the multiplexing and assembly entity using the UL Grant signal received by the reception module on the specific message.

3GPP TS 300 and 3GPP TS 321 teach these elements as shown above with regard to claim 1. *See also* Pet. 50–53.

We conclude that Petitioner demonstrates, by a preponderance of the evidence, that claim 7 is unpatentable under 35 U.S.C. § 103(a) over 3GPP TS 300, 3GPP TS 321 and Ericsson.

*b. Dependent Claims 8–10, 12, and 13*

Claim 8 recites,

> one or more HARQ processes; and
>
> HARQ buffers respectively corresponding to the one or more HARQ processes,
>
> wherein the HARQ entity transfers the data acquired from the multiplexing and assembly entity or the Msg3 buffer to a specific HARQ process of the one or more HARQ processes and controls the specific HARQ process to transmit the data acquired from the multiplexing and assembly entity or the Msg3 buffer through the transmission module.

Petitioner cites 3GPP TS 321. Pet. 53–55. Section 5.4.2.1 of 3GPP TS 321 teaches, "[a] number of parallel HARQ processes are used in the UE to support the HARQ entity." Ex. 1003, 18. Section 5.4.2.2 of 3GPP TS 321

teaches, "[e]ach HARQ process is associated with a HARQ buffer." *Id*. at 19. As shown above with regard to claim 1, 3GPP TS 321 teaches the functions of claim 8. *See also* Pet. 54–55. We find the cited art teaches the limitations of claim 8.

Claim 9 recites,

> wherein, when the specific HARQ process transmits the data stored in the Msg3 buffer through the transmission module, the data stored in the Msg3 buffer is controlled to be copied into a specific HARQ buffer corresponding to the specific HARQ process, and the data copied into the specific HARQ buffer is controlled to be transmitted through the transmission module.

Section 5.4.2.2 of 3GPP TS 321 teaches, "the HARQ process shall . . . - store the MAC PDU in the associated HARQ buffer; - generate a transmission." Ex. 1003, 19. As shown above with regard to claim 1, 3GPP TS 321 teaches storing the MAC PDU in the Msg3 buffer and transmitting the MAC PDU. *See also* Pet. 56–57. We find the cited art teaches the limitations of claim 9.

Claim 10 recites the same element as claim 3, claim 12 recites the same element as claim 4, and claim 13 recites the same element as claim 6. As shown above with regard to claims 3, 4, and 6, respectively, the cited art teaches the elements recited in claims 10, 12 and 13.

Patent Owner fails to contest any part of Petitioner's showing with regard to dependent claims 8–10, 12, and 13. *See generally* PO Resp. Based on this record, we conclude that Petitioner demonstrates, by a preponderance of the evidence, that claims 8–10, 12, and 13 are unpatentable under 35 U.S.C. § 103(a) over 3GPP TS 300, 3GPP TS 321 and Ericsson.

## III. CONCLUSION

For the foregoing reasons, we conclude that Petitioner demonstrates, by a preponderance of the evidence, that claims 1–6 are unpatentable under 35 U.S.C. § 103(a) over 3GPP TS 300 and 3GPP TS 321 and claims 7–10, 12, and 13 are unpatentable under 35 U.S.C. § 103(a) over 3GPP TS 300, 3GPP TS 321, and Ericsson.

## IV. ORDER

It is

ORDERED that, based on a preponderance of the evidence, claims 1–10, 12, and 13 are held to be unpatentable;

FURTHER ORDERED that, because this is final written decision, parties to this proceeding seeking judicial review of our decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

IPR2016-00757
Patent 7,881,236 B2

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IPR2016-00757
Patent 7,881,236 B2

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Paper 47
Entered: March 26, 2018

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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ZTE (USA) INC., HTC CORPORATION, HTC AMERICA, INC.,
SAMSUNG ELECTRONICS CO., LTD., and
SAMSUNG ELECTRONICS AMERICA, INC.,
Petitioners,

v.

EVOLVED WIRELESS LLC,
Patent Owner.

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Case IPR2016-00757[1]
Patent 7,881,236 B2

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Before WILLIAM V. SAINDON, PATRICK M. BOUCHER, and TERRENCE W. McMILLIN, *Administrative Patent Judges*

McMILLIN, *Administrative Patent Judge*

DECISION
Denying Patent Owner's Request for Rehearing
*37 C.F.R. § 42.71(d)*

[1] IPR2016-01345 has been consolidated with this proceeding.

## I. INTRODUCTION

Pursuant to 37 C.F.R. § 42.71(d), Evolved Wireless, LLC ("Patent Owner") requests rehearing of our Final Written Decision (Paper 42, "Dec."). Paper 43 ("Req. Reh'g"). As authorized by the Board (Paper 44, 2–3), Petitioners filed an opposition to Patent Owner's rehearing request (Paper 45) and Patent Owner filed a reply in support of its request for rehearing (Paper 46).

For the reasons set forth below, Patent Owner's Request for Rehearing is *denied*.

## II. STANDARD OF REVIEW

A party requesting rehearing bears the burden of showing that the decision should be modified. 37 C.F.R. § 42.71(d). The party must identify specifically all matters we misapprehended or overlooked, and the place where each matter was addressed previously in a motion, an opposition, or a reply. *Id*. With this in mind, we address the arguments presented by Patent Owner.

## III. ANALYSIS

Patent Owner submits that we (1) "overlooked the Patent Owner's argument that Petitioner has made a general conclusion that its prior art behaves according to the Board's narrow *only if* construction for the first transmitting limitation, even though that prior art does not create the conditions that test the *only if* behavior;" (2) "overlooked the Patent Owner's argument that the 321 reference taught the only if behavior only in hindsight;" and (3) "misapprehended" and "improperly modified the Patent Owner's argument that the 321 reference made the *only if* behavior obvious into one that the 321 reference disclosed that behavior." Req. Reh'g 1–2.

We have fully reviewed and considered all of Patent Owner's arguments in the rehearing request and are not persuaded that any changes to our Final Written Decision are necessary or appropriate.

In the Final Written Decision, with regard to claim construction, the Board concluded, "we agree with Patent Owner that 'if' in the 'transmitting' limitations of independent claims 1 and 7 is properly construed, under the broadest reasonable interpretation standard, as introducing necessary conditions, rather than sufficient conditions." Dec. 15. The transmitting limitations of claim 1 recite:

> transmitting the data stored in the Msg3 buffer to the base station using the UL Grant signal received on the specific message, ***if*** there is data stored in the Msg3 buffer when receiving the UL Grant signal on the specific message and the specific message is the random access response message; and
>
> transmitting new data to the base station in correspondence with the UL Grant signal received on the specific message, ***if*** there is no data stored in the Msg3 buffer when receiving the UL Grant signal on the specific message or the specific message is not the random access response message.

Ex. 1001, 16:59–17:3 (emphasis added). Independent claim 7 contains commensurate limitations. *Id*. at 17:30–18:7. The operation of these two transmitting limitations can be described as follows:

> Those limitations implicate two conditions, resulting in different data being transmitted depending on whether both conditions are satisfied or not. The first condition is whether "there is data stored in the Msg3 buffer when receiving the UL Grant signal on the specific message," and the second condition is whether "the specific message is the random access response message." Ex. 1001, col. 16, l. 59 – col. 17, l. 3; col. 17, l. 38 – col. 18, l. 7. "If" both conditions are satisfied, the "data stored in the Msg3 buffer"

> are transmitted to the base station; and "if" either condition is not satisfied, "new data" are transmitted to the base station. *Id*.

Dec. 10–11. The Patent Owner refers to these operations, in light of the claim construction adopted by the Board, as the "'only if' behavior" in the rehearing request. Req. Reh'g *passim*. In the Final Written Decision, the Board found that the 321 reference[2] and the 300 reference[3] taught the first "transmitting" limitation and the 321 reference taught the second "transmitting" limitation under a proper claim construction. Dec. 28.

Pursuant to 35 U.S.C. §316(e), the Petitioner had "the burden of proving a proposition of unpatentability by a preponderance of the evidence." In support of its arguments in the Response, Patent Owner relied on the Declaration of Todor Cooklev, Ph. D. (Ex. 2006) which was unsigned and to which we gave no evidentiary weight.[4] *See* Dec. 23–25. In contrast, Petitioner's case was supported by the Declaration of Paul S. Min, Ph. D. (Ex. 1006) to which we gave appropriate evidentiary weight. Dec. *passim*. Petitioner's evidence cannot be rebutted by Patent Owner's unsworn attorney argument. *See Gemtron Corp. v. Saint-Gobain Corp.*, 572 F.3d 1371, 1380 (Fed. Cir. 2009) ("[U]nsworn attorney argument . . . is not evidence and cannot rebut . . . evidence."). Thus, the weight of the evidence greatly favored Petitioner.

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[2] 3GPP TS 36.321 v8.2.0 (2008) (Ex. 1003, "3GPP TS 321").
[3] 3GPP TS 36.300 v8.4.0 (2008) (Ex. 1002, "3GPP TS 300").
[4] In our Final Written Decision, we noted that, despite having notice of the defect with the Cooklev Declaration, Patent Owner took no affirmative steps to cure the defect. Dec. 23–25. Patent Owner did not request leave to cure the defect in the Cooklev Delcaration in connection with the rehearing request or otherwise.

Patent Owner first argues that the Board failed to consider a "more complex case of UL Grant reception" based on an annotated Figure 7 of the 300 reference to which Patent Owner added a second UL Grant. Req. Reh'g. 9. Patent Owner argued that this "more complex case" showed that the data in the Msg3 buffer could be transmitted based on a UL Grant not in a random access response. *Id*. at 10. The fact that Patent Owner can hypothesize a system that is more complex than the cited references teach does not negate the teachings of the cited references.[5]

Patent Owner next argues, "[t]he Board overlooked . . . the Patent Owner's argument concerning the 321 reference relied on hindsight." Req. Reh'g. 11. Specifically, Patent Owner argues:

> The Petitioner argued that the 321 reference rendered the *only if* behavior obvious. (Pet. at 29-31.) The Patent Owner argued that the 321 reference rendered the *only if* feature of the claim obvious only in hindsight. (Response at 42-43.) The Patent Owner pointed out that the Petitioner's argument hinges on the recognition that "erroneous grants" were known at the time of the invention. (*Id*. at 42.) The Patent Owner pointed out that recognition of any grant as being problematic only first appeared in the '236 patent. (*Id*.) Accordingly, the Patent Owner argued that the Petitioner's argument with respect to the 321 reference relies on improper hindsight. (*Id*. *at 42-43*.)

Req. Reh'g. 11–12. In the Response, Patent Owner's hindsight argument was presented as part of its argument that "[n]one of the prior art teaches the

[5] Patent Owner's hypothetical case was discussed and found not to be persuasive in the Final Written Decisions in IPR2016-01228 (Paper 27, 33–34) and IPR2016-01229 (Paper 27, 35) in which independent claims 1 and 7 of the '236 patent were held to be unpatentable in view of combinations of references not asserted in this proceeding. IPR2016-01228 Paper 27, 40–41; IPR2016-01229 Paper 27, 41–42.

'only if' behavior or renders it obvious." PO Resp. 42–43. We implicitly responded to this argument by finding the 321 reference and the 300 reference teach this feature. Dec. 28. We also noted the evidence of simultaneous invention, which indicates that others recognized the problem recognized by the inventors of the '236 patent and offered the same solution as claimed in the '236 patent. Dec. 28–29.

Patent Owner finally argues that the Board misapprehended an argument made by Petitioner. Req. Reh'g 2, 13–14. Patent Owner argues, "[n]otably the Board understood that Petitioner argued that the 321 and 300 references . . . each separately teach the 'only if' behavior." *Id*. at 13 (citing Dec. 23). There was no misapprehension by the Board of Petitioner's argument. On pages 29–31 of the Petition, there was a section titled, "[t]he 321 reference by itself renders the 'only if' feature obvious" and, on pages 31-32 of the Petition, there was a section titled, "[t]he 300 reference taught the 'only if' feature."

Patent Owner also suggests "[t]he Board improperly analyzed arguments about the 321 reference as if that reference supported an anticipation argument, and accordingly misapprehended the Petitioner's Ground for invalidity." Req. Reh'g 13. In support of this argument, Patent Owner quotes the following sentence from page 23 of the Final Written Decision: "Petitioner asserts that both 3GPP TS 321 and 3GPP TS 300 would be interpreted by one of ordinary skill in the art to teach or suggest transmission of the data in the Msg3 buffer only if both conditions (1) and (2) are met and transmission of new data if either condition (1) or (2) is not met." *Id*. This statement was made in the context of the Board's "Obviousness Analysis" of claim 1 and relates to the Board's analysis of

whether the cited combination of references teaches or suggests all the limitations of claim 1. *See* Pet. 18–30. As shown in the Final Written Decision, the Board reviewed and considered the teachings and suggestions of the cited combination of references and concluded claim 1 would have been obvious. *Id*. Patent Owner has not shown that this conclusion was in error.

## IV. ORDER

Accordingly, it is ORDERED that Patent Owner's Request for Rehearing is *denied*.

IPR2016-00757
Patent 7,881,236 B2

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Paper 27
Entered: November 30, 2017

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC., MICROSOFT CORPORATION,
MICROSOFT MOBILE OY, and
MICROSOFT MOBILE INC. (F/K/A/ NOKIA INC.),
Petitioner,

v.

EVOLVED WIRELESS LLC,
Patent Owner.

Case IPR2016-01228
Patent 7,881,236 B2

Before WILLAM V. SAINDON, PATRICK M. BOUCHER, and TERRENCE W. McMILLIN, *Administrative Patent Judges*.

BOUCHER, *Administrative Patent Judge*.

# FINAL WRITTEN DECISION
*35 U.S.C. § 318(a) and 37 C.F.R. § 42.73*

In response to a Petition (Paper 2, "Pet.") filed by Apple Inc., Microsoft Corporation, Microsoft Mobile Oy, and Microsoft Mobile Inc. (f/k/a Nokia Inc.) (collectively, "Petitioner"), we instituted an *inter partes* review of claims 1–10, 12, and 13 of U.S. Patent No. 7,881,236 B2 ("the '236 patent"). Paper 8 ("Dec."), 21. During the trial, Evolved Wireless LLC ("Patent Owner") timely filed a Response (Paper 14, "PO Resp."), to which Petitioner timely filed a Reply (Paper 16, "Reply"). An oral hearing was held on September 15, 2017, and a copy of the transcript was entered into the record. Paper 22 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6. This Decision is a Final Written Decision under 35 U.S.C. § 318(a) as to the patentability of the claims on which we instituted trial. Based on the record before us, Petitioner has shown, by a preponderance of the evidence, that claims 1–10, 12, and 13 are unpatentable.

## I. BACKGROUND

### *A. The '236 Patent*

The '236 patent "relates to a mobile communication technology." Ex. 1001, col. 1, ll. 17–18. In particular, the patent describes a random access procedure for user equipment ("UE") and a base station in a telecommunication system. *Id.* at col. 3, ll. 42–59. Figure 1 of the '236 patent illustrates a particular example of such a telecommunication system—the Evolved Universal Mobile Telecommunication System ("E-UMTS"), and is reproduced below.

**FIG. 1**

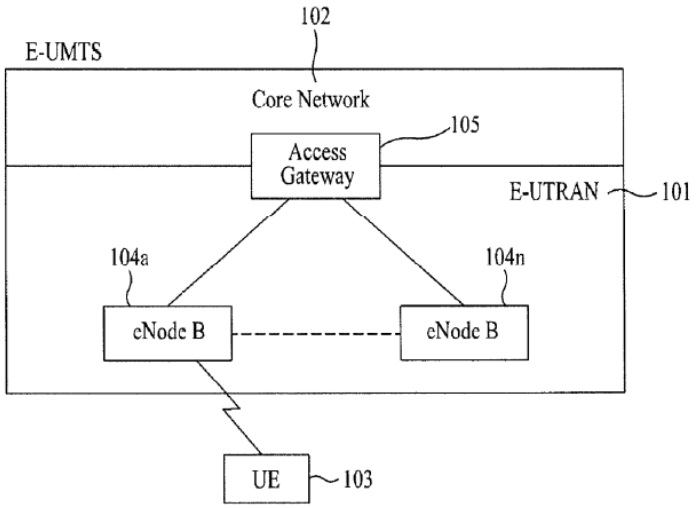


Figure 1 provides a schematic view of a network architecture for the E-UMTS, which may be conceived in terms of two component networks: Evolved UMTS Terrestrial Radio Access Network ("E-UTRAN") 101 and Core Network 102. *Id*. at col. 1, ll. 26–35. The first of these, E-UTRAN 101, may include user equipment ("UE") 103, multiple base stations 104 (referred to in the '236 patent as "eNode B" or "eNB"), and Access Gateway ("AG") 105. *Id*. at col. 1, ll. 35–39. Access Gateway 105 is positioned at the end of the network and connected to an external network, and can include a portion for processing user traffic and a portion for processing control traffic. *Id*. at col. 1, ll. 38–41.

As the '236 patent describes, "a UE performs the random access procedure" in a number of instances, including "when the UE performs initial access" to a base station and "when there is uplink data transmission in a situation where uplink time synchronization is not aligned or where a

specific radio resource used for requesting radio resources is not allocated." *Id*. at col. 3, ll. 42–57. A version of Figure 5 of the '236 patent annotated by Petitioner is reproduced below.

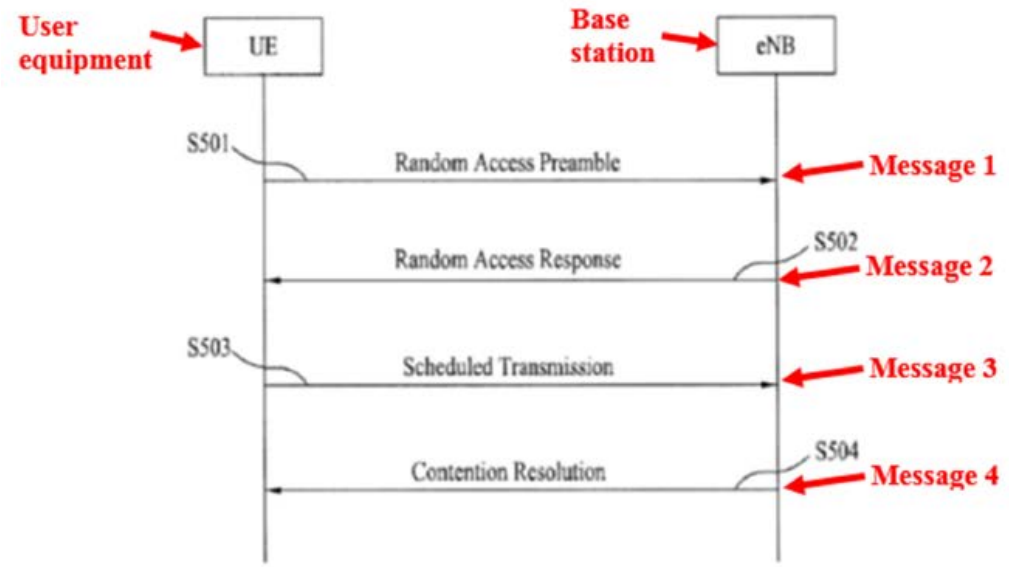


Figure 5 shows an example of a random access procedure performed between user equipment UE and base station eNB. *Id*. at col. 6, ll. 53–55. The procedure begins with transmission of a "random access preamble" from the UE to the base station at step S501 (referred to as a "message 1" transmitting step). *Id*. at col. 4, ll. 3–7. The UE receives a "random access response" from the base station at step S502 "in correspondence with the transmitted random access preamble" (referred to as a "message 2" receiving step). *Id*. at col. 4, ll. 7–11. Of particular relevance, the UE then transmits an uplink message to the base station at step S503 (referred to as a "message 3" or "Msg3" transmitting step). *Id*. at col. 4, ll. 11–14. The UE receives a corresponding "contention resolution" message from the base station at step S504 (referred to as a "message 4" receiving step). *Id*. at col. 4, ll. 14–17.

In the random access procedure, the UE stores data to be transmitted via the message 3 in a "Msg3 buffer" and transmits the stored data "in correspondence with the reception of an Uplink (UL) Grant signal." *Id*. at col. 4, ll. 18–21. The UL Grant signal indicates information about uplink radio resources that may be used when the UE transmits a signal to the base station. *Id*. at col. 4, ll. 21–26. According to the '236 patent, then-current Long-Term Evolution ("LTE") system standards provided that data stored in the Msg3 buffer of the UE would be transmitted to the base station "*regardless of* the reception mode of the UL Grant signal," and that "if the data stored in the Msg3 buffer is transmitted in correspondence with the reception of *all* UL Grant signals, problems may occur." *Id*. at col. 4, ll. 26–32 (emphases added). The '236 patent purports to solve such problems. *Id*. at col. 4, ll. 33–34.

Figure 9 of the '236 patent is reproduced below.

**FIG. 9**

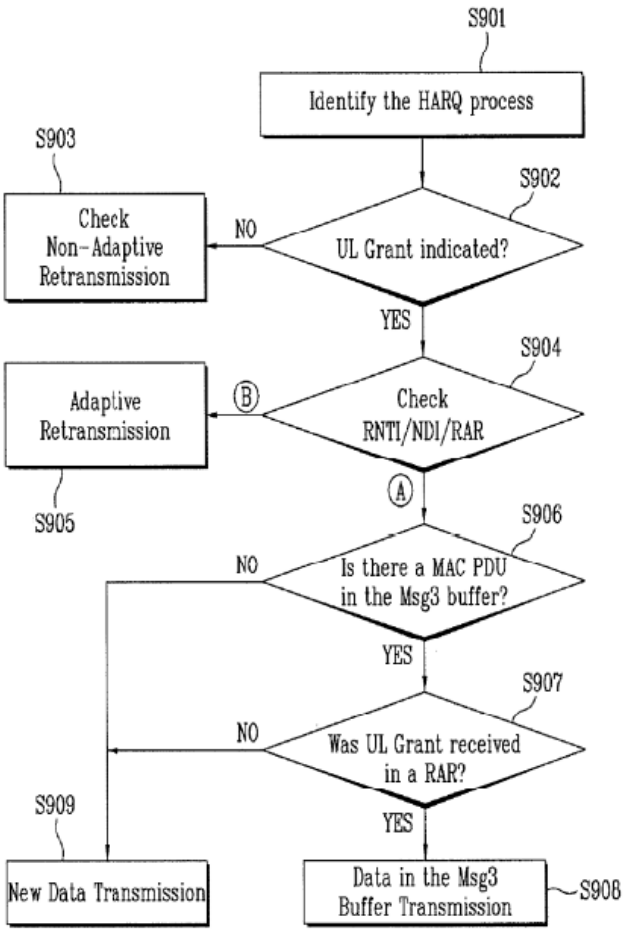


Figure 9 is a flowchart of the method described by the '236 patent, showing the operation of an uplink Hybrid Automatic Repeat Request ("HARQ") entity in a UE. *Id*. at col. 13, ll. 35–39. After a UL grant signal is received from the base station at step 902, the UE determines at step 906 whether there are data in the Msg3 buffer. *Id*. at col. 13, ll. 42–44, 66–67. If so, a further determination is made at step 907 whether the received UL grant signal is on a random access response ("RAR") message. *Id*. at col. 13, l.

66–col. 14, l. 3. The UE transmits the data in the Msg3 buffer to the base station "only when" both conditions are met, i.e., "only when there is data in the Msg3 buffer when receiving the UL Grant signal and the UL Grant signal is received on the random access response message (S908)." *Id*. at col. 14, ll. 3–7. Conversely, if either condition is not met, i.e. there are no data in the Msg3 buffer or the UL Grant signal is not on a random access response message, then the UE determines that the base station is making a request for transmission of new data and performs new-data transmission at step 909. *Id*. at col. 14, ll. 7–13.

### *B. Illustrative Claims*

Claims 1 and 7 of the '236 patent, reproduced below, are independent claims respectively directed at the above-described method and at user equipment that implements the above-described method.

> 1. A method of transmitting data by a user equipment through an uplink, the method comprising:
>
> receiving an uplink grant (UL Grant) signal from a base station on a specific message;
>
> determining whether there is data stored in a message 3 (Msg3) buffer when receiving the UL Grant signal on the specific message;
>
> determining whether the specific message is a random access response message;
>
> transmitting the data stored in the Msg3 buffer to the base station using the UL Grant signal received on the specific message, if there is data stored in the Msg3 buffer when receiving the UL Grant signal on the specific message and the specific message is the random access response message; and
>
> transmitting new data to the base station in correspondence with the UL Grant signal received on the specific message, if there is no data stored in the Msg3 buffer when receiving the UL Grant signal on the specific message or the specific message is not the random access response message.

7. A user equipment, comprising:

a reception module adapted to receive an uplink grant (UL Grant) signal from a base station on a specific message;

a transmission module adapted to transmit data to the base station using the UL Grant signal received on the specific message;

a message 3 (Msg3) buffer adapted to store UL data to be transmitted in a random access procedure;

a Hybrid Automatic Repeat Request (HARQ) entity adapted to determine whether there is data stored in the Msg3 buffer when the reception module receives the UL Grant signal and the specific message is a random access response message, acquiring the data stored in the Msg3 buffer if there is data stored in the Msg3 buffer when the reception module receives the UL Grant signal and the specific message is the random access response message, and controlling the transmission module to transmit the data stored in the Msg3 buffer to the base station using the UL Grant signal received by the reception module on the specific message; and

a multiplexing and assembly entity used for transmission of new data,

wherein the HARQ entity acquires the new data to be transmitted from the multiplexing and assembly entity if there is no data stored in the Msg3 buffer when the reception module receives the UL Grant signal on the specific message or the received message is not the random access response message, and controls the transmission module to transmit the new data acquired from the multiplexing and assembly entity using the UL Grant signal received by the reception module on the specific message.

### *C. Instituted Grounds of Unpatentability*

We instituted trial for challenges under 35 U.S.C. § 103(a) over the following combinations of references. Dec. 21.

| References | Challenged Claim(s) |
|---|---|
| Kitazoe,[1] Prior art described in the '236 patent,[2] and Specification 321[3] | 1–4, 6–10, 12, and 13 |
| Kitazoe, Prior art described in the '236 patent, Specification 321, and Kitazoe II[4] | 5 |

*D. Real Parties in Interest and Related Proceedings*

Petitioner identifies Apple Inc., Microsoft Corporation, Microsoft Mobile Oy, Microsoft Mobile Inc. (f/k/a Nokia Inc.), Microsoft Luxembourg International Mobile SARL, and Microsoft Luxembourg USA Mobile SARL as real parties in interest. Pet. 1. Petitioner asserts that "[t]he Microsoft entities have numerous affiliated and/or related entities," but that "no unnamed Microsoft entity is funding or controlling this Petition or any resulting IPR." *Id*. Patent Owner identifies only itself as a real party in interest. Paper 5, 2.

The parties indicate that the '236 patent is the subject of several district-court litigations: *Evolved Wireless, LLC v. Apple, Inc*., No. 1:15-cv-542 (D. Del.); *Evolved Wireless, LLC v. HTC Corp*., No. 1:15-cv-543 (D. Del.); *Evolved Wireless, LLC v. Lenovo Group Ltd*., 1:15-cv-544 (D. Del.); *Evolved Wireless, LLC v. Samsung Electronics Co. Ltd*., 1:15-cv-545 (D. Del.); *Evolved Wireless, LLC v. ZTE Corp*., 1:15-cv-546 (D. Del.); *Evolved Wireless LLC v. Microsoft Corp*., 1:15-cv-547 (D. Del.). Pet. 1–2;

[1] U.S. Patent No. 8,180,058 B2, filed June 10, 2008, issued May 15, 2012 (Ex. 1005, "Kitazoe").
[2] *See* "Discussion of the Related Art," U.S. Patent No. 7,881,236 (Ex. 1001).
[3] 3GPP Technical Specification 36.321 V8.1.0 (March 2008) (Ex. 1007, "Specification 321").
[4] U.S. Patent Publication No. 2009/0163211 A1, filed Dec. 17, 2008, published June 25, 2009 (Ex. 1009, "Kitazoe II").

Paper 5, 2–3. In addition, the '236 patent is the subject of the following *inter partes* reviews: IPR2016-00757, which has been consolidated with IPR2016-01345 (both of which involve a different petitioner); and IPR2016-01229 (which involves this Petitioner on different grounds).

*E. Cooklev Declaration*

Patent Owner proffers a Declaration by Todor Cooklev, Ph.D., as evidentiary support of its claim-construction and substantive arguments. Ex. 2009. Petitioner argues that the Declaration "is entitled to no weight" because "[n]otoriously absent from Exhibit 2009 is any indication that the declarant was 'warned that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. 1001),' or a statement by the declarant that 'all statements made of the declarant's own knowledge are true and that all statements made on information and belief are believed to be true.' *See* 37 CFR 1.68." Reply 2–3. We agree with Petitioner that Dr. Cooklev's Declaration is defective and can be accorded no weight.

In an *inter partes* review proceeding, evidence includes "affidavits," which are defined in our regulations by reference to the provisions of 37 C.F.R. § 1.68 and 28 U.S.C. § 1746. *See* 37 C.F.R. § 42.2. The former of these, i.e., 37 C.F.R. § 1.68, requires that a declarant be warned, on the same document, that "willful false statements and the like are punishable by fine or imprisonment, or both." The latter, i.e., 28 U.S.C. § 1746, provides that unsworn declarations may substitute for sworn declarations if accompanied by a statement in substantially the form, "I declare . . . under penalty of perjury under the laws of the United States of America that the foregoing is

true and correct." To give weight to Dr. Cooklev's statements would thwart the purpose of these provisions. *See Intel Corp. v. Alacritech, Inc.*, Case IPR2017-01402, slip op. at 6 (PTAB Nov. 6, 2017) (Paper 8).

At the oral hearing, Patent Owner conceded that Dr. Cooklev's Declaration is defective. Tr. 36:16–17 ("Well, yes, he did not swear under the penalty of perjury"). Indeed, Patent Owner had notice of the defect in Dr. Cooklev's Declaration at least as early as the filing of Petitioner's Reply on July 26, 2017. Reply 2–3. Nevertheless, Patent Owner took no affirmative steps to cure the defect. Although we recognize that Petitioner may well have capitalized tactically on the defect by forgoing cross-examination in which Dr. Cooklev may have provided sworn testimony consistent with his Declaration, we cannot simply ignore the regulatory and statutory requirements that render that Declaration defective. To give weight to the Declaration would require us to surmise that Dr. Cooklev would swear to the statements in his Declaration, and we are in no position to do so.

Accordingly, we give no weight to Dr. Cooklev's Declaration.

## II. ANALYSIS

### *A. Claim Construction*

The Board interprets claims of an unexpired patent using the broadest reasonable construction in light of the specification of the patent in which they appear. *See* 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard); Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012).

*1. "transmitting . . . if"*

A claim-construction disagreement between the parties is grounded in use of the word "if" in the two "transmitting" limitations of independent claims 1 and 7. *See* Pet. 17–21; PO Resp. 10–32; Reply 3–21. Those limitations implicate two conditions, resulting in different data being transmitted depending on whether both conditions are satisfied or not. The first condition is whether "there is data stored in the Msg3 buffer when receiving the UL Grant signal on the specific message," and the second condition is whether "the specific message is the random access response message." Ex. 1001, col. 16, l. 59–col. 17, l. 3; col. 17, l. 38–col. 18, l. 7. "If" both conditions are satisfied, the "data stored in the Msg3 buffer" are transmitted to the base station; and "if" either condition is not satisfied, "new data" are transmitted to the base station. *Id*.

Petitioner presents an argument that effectively addresses each "transmitting" limitation in isolation, contending that "the claim language . . . speaks for itself," and that "the term 'if' is used to indicate that the action occurs in the presence of the condition, but possibly also at other times." Pet. 20–21. That is, Petitioner contends that "if" in each "transmitting" limitation should be construed as introducing a *sufficient* condition.

Patent Owner presents a counterargument that considers an interplay between the two "transmitting" limitations, correctly observing that the two conditions "are independent of one another" and that the recitations in the two "transmitting" limitations are "logical opposite[s]." PO Resp. 10–15. As Patent Owner asserts, "both limitations cannot, at the same time, be true." *Id*. at 14. In considering this logical interplay, Patent Owner contends

that "if" in each "transmitting" limitation should therefore be construed as introducing a *necessary* condition: "The proper claim construction is one that follows the claim's plain language . . . ; that is Msg3 data is transmitted if [both conditions are] met . . . and new data are transmitted if [either condition] is not met." *Id*. at 15.[5]

We have considered the positions of both parties and conclude that Patent Owner presents the more compelling reading of the claim. In isolation, the plain and ordinary meaning of "if" is amenable to both *sufficient-condition* and *necessary-condition* constructions. Indeed, it is trivial to construct English sentences in which a listener would naturally understand one of those constructions to be implicated. For instance, "If there is smoke, there is fire" is naturally understood not to preclude the possibility of fire if there is no smoke (sufficient if). Conversely, "If you take another step, I'll shoot," is naturally understood to mean that the speaker will not shoot if the listener does not take another step (necessary if).

To resolve the ambiguity, we look, as we must, to the context provided by the claims themselves, as well as to the Specification in whose light they must be considered under the broadest-reasonable-interpretation

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[5] Patent Owner characterizes its position as equivalent to reciting "but not transmitting the new data" as part of the first "transmitting" limitation, i.e., when both conditions are met; and to reciting "but not transmitting any data stored in the Msg3 buffer" as part of the second "transmitting" limitation, i.e., when at least one of the conditions is not met. PO Resp. 12–13. Although such additional language is logically consistent with Patent Owner's position, we find it unnecessary to incorporate such negative limitations into the claims; the proper construction can be resolved by correctly construing the meaning of "if."

standard. *See Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996) ("the context of the surrounding words of the claim also must be considered in determining the ordinary and customary meaning of those terms"). We agree with Patent Owner's characterization of Petitioner's position as improperly including the optional possibility of transmitting data stored in the Msg3 buffer even when both conditions are not satisfied. *See* PO Resp. 14–15. Such an optional possibility is a logical consequence of a sufficient-if construction, and we acknowledge that such a reading would be tenable if the claim included only the first "transmitting" step.[6] But the claim explicitly answers the question of what occurs when at least one of the conditions is not satisfied: "new data" are transmitted to the base station. Ex. 1001, col. 16, l. 16–col. 17, l. 3; col. 17, l. 52–col. 18, l. 7. By isolating the "transmitting" limitations, Petitioner improperly reaches too broad a construction of the claim as a whole.

Furthermore, Patent Owner's proposed construction is consistent with the Specification of the '236 patent. For example, in motivating its disclosure, the Specification observes that, in the prior art, "if the UL Grant signal is received in a state in which data is stored in the Msg3 buffer, the data stored in the Msg3 buffer is transmitted *regardless of* the reception mode of the UL Grant signal." *Id.* at col. 4, ll. 26–30 (emphasis added). The Specification purports to resolve such a deficiency because "if the data stored in the Msg3 buffer is transmitted in correspondence with the reception of *all* UL Grant signals, problems may occur." *Id.* col. 4, ll. 30–34 (emphasis added). In addition, the description of Figure 9 of the patent,

[6] Indeed, this is precisely the case for a child of the '236 patent, as discussed *infra*.

reproduced above, explicitly explains that data in the Msg3 buffer are transmitted to the base station "only when" both conditions recited in the claims are met, i.e., they are necessary conditions. *Id*. at col. 14, ll. 3–8.

The parties also address the relevance of the prosecution history of a child of the '236 patent. PO Resp. 25–27; Reply 20–21. During prosecution of U.S. Patent No. 9,532,336 B2 (Ex. 2011, "the '336 patent"), which shares the same written description as the '236 patent, explicit language was included in the independent method claims to require transmission of data stored in the Msg3 buffer "only when" such data are stored in the Msg3 buffer and the UL Grant was received on the random access response message. Ex. 2012, 146. Such "only when" language did not appear in the claims as originally filed, and was added in response to a rejection in which the Examiner made the following remarks:[7]

> Claim 1 recites the limitation "if there is data stored in the Msg3 buffer and if the UL Grant signal was received on the random access response." The limitation is directed to the action to transmit the UL Grant, however, *there is no language to limit the claim to only this scenario* or the claim language *does not provide an alternative for what if the statement is not true*. The Applicant's invention is not being claimed in independent claims 1 and 9.

*Id*. at 139 (emphases added).

Importantly, the claims in the '336 patent do not include language that corresponds to the second "transmitting" limitation of the claims at issue in this proceeding—the "only when" language was added to a limitation that corresponds to the first "transmitting" limitation. We agree with Patent

[7] Independent method claim 26 of the '336 patent was added by amendment at the same time, including the "only when" language. Ex. 2012, 151.

Owner's characterization of the relevance of these facts and of the Examiner's prior basis for rejection of unamended claims of the '336 patent. That is "the Examiner specifically rejected a claim without the 'only when' language *because there was no alternative recited in the claim . . . if the condition[s were] not met*." PO Resp. 27. The addition of the "only when" language in the '336 patent resolves the ambiguity, recognized by the Examiner, that is otherwise resolved in the claims at issue in this proceeding by the presence of the second "transmitting" limitation.

We disagree with Petitioner's contention that "the Examiner's reasoning is flawed because . . . a comprising claim is open-ended and may cover additional, unrecited actions (such as actions performed when a condition is not met)." Reply 20. In making his remarks, the Examiner had rejected the claim for indefiniteness, and nothing in the amendment that resolved the indefiniteness to the Examiner's satisfaction, i.e., reciting "only when," precludes additional, unrecited actions when the conditions are not met. In light of the difference in the claims in the two patents, we are also not persuaded by Petitioner's contention that "the cited portions of the child patent's file history reinforce Petitioner's argument that the term 'if' in the claims of the '236 patent means 'if.'" *Id*. As indicated above, the word "if," in isolation and without more, is ambiguous whether it introduces a sufficient or necessary condition. That ambiguity was resolved by additional language in the claims of the '336 patent and is resolved in the claims of the '236 patent through the logical interplay of express limitations.

For these reasons, we agree with Patent Owner that "if" in the "transmitting" limitations of independent claims 1 and 7 is properly construed, under the broadest-reasonable-interpretation standard, as

introducing *necessary* conditions, rather than sufficient conditions.[8] We adopt such a construction for purposes of this Decision.

*2. Other Terms*

The Petition addresses the construction of certain other terms recited in independent claim 7, taking the position that such terms should not be construed as means-plus-function limitations—a position different than that taken by Petitioner in related litigation where a different claim-construction standard is applied. Pet. 21. Patent Owner does not respond to Petitioner's position and does not proffer its own construction of those terms.

Given that the identified terms do not recite the word "means," and given that Patent Owner does not challenge Petitioner's position, we find it unnecessary to construe the terms expressly. *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348 (Fed. Cir. 2015) (en banc) ("the failure to use the word 'means' also creates a rebuttable presumption—this time that § 112, para. 6 does not apply"); *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) ("[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the

[8] This construction is consistent with the reasoning of *Ex Parte Schulhauser*, Appeal No. 2013-007847, slip op. (PTAB Apr. 28, 2016) (precedential). Similar to the claims at issue in this proceeding, *Schulhauser* considered a claim that recited "mutually exclusive" steps. *Schulhauser*, slip op. at 6. The Board held that, under the broadest reasonable interpretation, the claim "covers at least two methods, one in which the prerequisite condition for the [first] step is met and one in which the prerequisite condition for the [second] step is met." *Id.* at 8. The Board did not thereby hold that the language of one of the steps could simply be read out of the claim (as Petitioner's argument would effectively require) nor that that language could not properly inform construction of the other of the steps.

controversy."). We accord the terms their ordinary and customary meaning, without resort to the provisions of 35 U.S.C. § 112, ¶ 6.

*B. Legal Principles*

A claim is unpatentable for obviousness under 35 U.S.C. § 103 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) objective evidence of non-obviousness, i.e., secondary considerations.[9] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Additionally, the obviousness inquiry typically requires an analysis of "whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring "articulated reasoning with some rational underpinning to support the legal conclusion of obviousness")); *see In re Warsaw Orthopedic, Inc.*, 832 F.3d 1327, 1333 (Fed. Cir. 2016) (citing *DyStar Textilfarben GmbH & Co. Deutschland KG v. C. H. Patrick Co.*, 464 F.3d 1356, 1360 (Fed. Cir. 2006)).

[9] The parties do not address secondary considerations, which, accordingly, do not form part of our analysis.

To prevail on its challenges, Petitioner must demonstrate by a preponderance of the evidence that the claims are unpatentable. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). "In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable." *Harmonic Inc. v. Avid Tech., Inc.* 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify "with particularity . . . the evidence that supports the grounds for the challenge to each claim")). The burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC. v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1326–27 (Fed. Cir. 2008)) (discussing the burden of proof in *inter partes* review). Furthermore, Petitioner does not satisfy its burden of proving obviousness by employing "mere conclusory statements." *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

### *C. Level of Skill in the Art*

Petitioner contends that a person of ordinary skill in the art "would have had a Master's of Science Degree in an academic area emphasizing electrical engineering, physics, computer engineering, or an equivalent field (or a similar technical Master's Degree, or higher degree) with a concentration in wireless communication and networking systems." Pet. 22–23. Alternatively, according to Petitioner, a person of ordinary skill "would have had a Bachelor's Degree (or higher degree) in an academic area emphasizing electrical engineering, physics, or computer engineering and having two or more years of experience in wireless communication and

networking systems." *Id*. at 23. Petitioner asserts that "[a]dditional education in a relevant field, such as computer engineering, physics, or electrical engineering, or industry experience may compensate for a deficit in one of the other aspects of the requirements stated above." *Id*. In addition, Petitioner contends that a person of ordinary skill "would also have had experience with the wireless Standard Setting Organizations such as ETSI, IEEE, and 3GPP[10], and would have been familiar with relevant standards and draft standards directed to wireless communications." *Id*. Petitioner's declarant, Jonathan Wells, Ph.D., makes substantially the same statements as appear in the Petition. Ex. 1003 ¶ 39.

Patent Owner does not directly address the level of skill possessed by a person of ordinary skill in the art in its Response.

For purposes of this Decision, we agree with and adopt the level of skill proposed by Petitioner.

### *D. Scope and Content of the Prior Art*

#### *1. Kitazoe*

##### *a. Availability as Prior Art*

The '236 patent was filed on August 10, 2009, claiming the benefit of the August 11, 2008, filing date of U.S. Prov. Appl. No. 61/087,988 under 35 U.S.C. § 119(e), and claiming priority under 35 U.S.C. § 119(a) to Korean patent application 10-2009-0057128, filed June 25, 2009. Ex. 1001

[10] The Third Generation Partnership Project ("3GPP"), which published Specification 321, is a standards-setting organization for mobile communications and was developing the LTE cellular communication system. *See* Pet. 33; PO Resp. 2; Ex. 1001, col. 1, ll. 22–25.

at [60], [30]. Petitioner "does not acknowledge that the '236 patent is entitled to its proclaimed priority date." Pet. 4, n.1. Patent Owner does not address this issue in its Response.

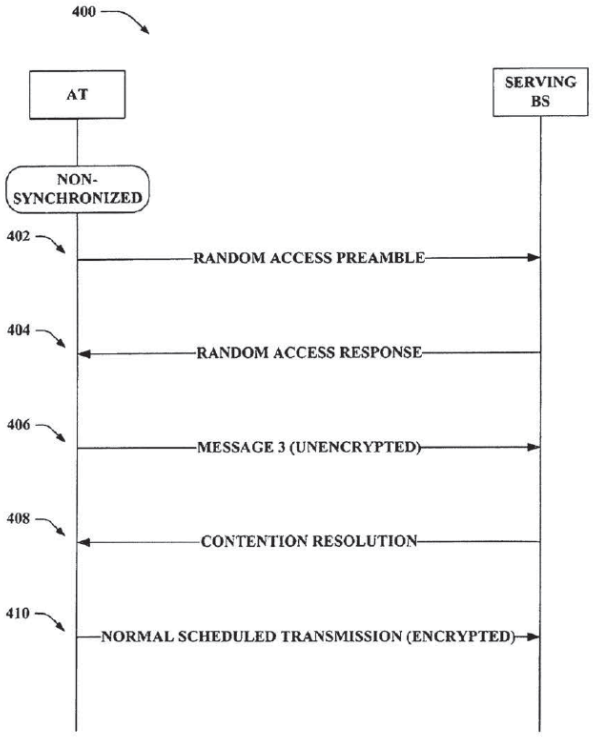
Kitazoe was filed on June 10, 2008, claiming the benefit of the August 14, 2007, filing date of U.S. Prov. Appl. No. 60/955,867 under 35 U.S.C. § 119(e). Ex. 1005 at [60]. Petitioner contends that "at least one claim of the Kitazoe patent is supported by disclosure in the Kitazoe Provisional," and that Kitazoe is therefore "entitled to the earlier priority date of the Kitazoe Provisional" application. Pet. 4–8. Patent Owner does not dispute this contention in its Response.

Petitioner presents arguments that Kitazoe's claims are supported by the disclosure of U.S. Prov. Appl. No. 60/955,867 so that its teachings are available as prior art as of August 14, 2007. *Id*. We do not reach these arguments. Patent Owner has not presented antedating evidence that might bear on the availability of Kitazoe as prior art to the '236 patent. Even if Petitioner's arguments fail, Kitazoe still qualifies as prior art under 35 U.S.C. § 102(e) by virtue of its June 10, 2008, filing date, which precedes the August 11, 2008, earliest potential effective filing date for the challenged claims.

*b. Disclosure of Kitazoe*

Kitazoe is titled "Encryption of the Scheduled Uplink Message in Random Access Procedure," and generally discloses a system and method for selectively encrypting uplink messages from access terminals to base stations in random-access procedures to gain access to wireless communications systems, such as LTE systems. Ex. 1005, [54], abst., col. 1,

ll. 23–26, col. 1, ll. 45–46, col. 2, ll. 13–15, col. 6, ll. 27–48. Kitazoe describes a "random access procedure that leverages encrypted and/or unencrypted data in a scheduled uplink message." *Id*. at abst. The scheduled uplink message can be referred to as a "message 3," and access terminals include "cellular phones, smart phones . . . and/or any other suitable device" for communicating over wireless systems. *Id*. at col. 8, ll. 31–34, col. 7, ll. 46–50. Figure 4 of Kitazoe is reproduced below.




In Figure 4, signaling diagram 400 illustrates uplink message transmission by an access terminal ("AT"). *Id*. at col. 5, ll. 25–28, col. 12, ll. 58–60. At step 402, the access terminal transmits a random-access preamble to a serving base station ("Serving BS"). *Id*. at col. 12, ll. 63–64. At step 404, a random-access response is sent by the serving base station to the access terminal, which, at step 406, can use the uplink grant to transmit unencrypted message 3 to the base station. *Id*. at col. 13, ll. 1–8. In

response to message 3, at step 408, the base station can send a contention-resolution message to the access terminal, which, at step 410, transmits a "normal scheduled" encrypted message to the base station. *Id*. at col. 13, ll. 12–14, col. 13, ll. 21–24. The access terminal can include memory that can store data to be transmitted.

*2. Prior Art Described in the '236 Patent*

Petitioner contends that statements in the "Discussion of the Related Art" section of the '236 patent "include[] a detailed description of a random access procedure in an LTE system" that constitutes admissions of the scope and content of the prior art. Pet. 13–15; *see* Ex. 1001, col. 1, l. 21–col. 4, l. 34. In particular, Petitioner asserts that, although the '236 patent does not use the term "prior art" to describe the disclosures, the section title, "Discussion of the Related Art," alone indicates a description of "prior art related to the disclosure of the '236 patent." *Id*. at 15; *see Ex parte Ji-Young Lee*, 2006 WL 4075454 at *20 (BPAI Feb. 23, 2007) ("where terms such as 'background art, or 'related art,' or 'conventional'" appear in a patent's specification, they should be "presume[d]" to denote admissions of prior art even if the specification does not specifically use the term "prior art"). Petitioner further asserts that the section describes the current state of LTE systems as of the filing of the '236 patent. *Id*.; *see* Ex. 1001, col. 1, ll. 30–32 ("The E-UMTS is evolved from the existing UMTS and has been currently standardized in the 3GPP"), col. 4, ll. 26–30 ("According to the current LTE system standard . . .").

Patent Owner does not contest that prior art described in the '236 patent can be properly considered in this *inter partes* review proceeding, and

several panels of the Board have held admissions of the scope and content of the prior art in a patent's specification are available as prior art for the purposes of *inter partes* review proceedings. *E.g., Ericsson v. Intellectual Ventures*, Case IPR2014-01330, slip op. at 2, n.3 (PTAB Feb. 19, 2016) (Paper 29); *Apple v. Yosmot 33*, Case IPR2015-00761, slip op. at 11 (PTAB July 29, 2015) (Paper 5); *Intri-Plex Tech. v. Saint-Gobain Performance Plastics*, Case IPR2014-00309, slip op. at 19–21 (PTAB Mar. 23, 2014) (Paper 83).

The prior art described in the '236 patent includes disclosure of a random-access procedure in an LTE system where the UE stores data to be transmitted in a Msg3 buffer, and transmits the data "in correspondence with" receipt from the base station of a UL grant signal that contains information about radio resources. Ex. 1001, col. 4, ll. 18–26. "According to the current LTE system standard, it is defined that, if the UL Grant signal is received in a state in which data is stored in the Msg3 buffer, the data stored in the Msg3 buffer is transmitted." *Id.* at col. 4, ll. 26–29.

*3. Specification 321*

Specification 321 is a technical specification published by the 3GPP and describes the "Medium Access Control" ("MAC") architecture in an LTE system, used for "[d]ata transfer" and for "[r]adio resource allocation." Ex. 1007, 8. Detailed procedures involving the MAC architecture are described in Section 5 of the reference, *id.* at 11–22, and several specific aspects of these procedures are relevant to Petitioner's challenges.

For example, Sections 5.1.4 and 5.1.5 describe procedures in which user equipment monitors a Physical Downlink Control Channel ("PDCCH")

for certain messages. *Id*. at 12–14. As described in Section 5.1.4, once the random-access preamble is transmitted, the user equipment monitors the PDCCH in a time window (referred to as a "TTI" or "transmission time interval") for random-access responses. *Id*. at 12. The user equipment may stop such monitoring after successfully receiving a random-access response that corresponds to the random-access preamble transmission. *Id*. As part of a contention-resolution procedure described in Section 5.1.5, the user equipment also monitors the PDCCH for a contention-resolution message after an uplink message, such as message 3, is transmitted. *Id*. at 13 ("Once the uplink message . . . is transmitted, the UE shall . . . monitor the PDCCH until the Contention Resolution Timer expires.") (bracketing in original omitted). As set forth in Section 5.4.1, the user equipment includes a "HARQ entity" that controls transmission and reception of messages by the user equipment, including the random-access response message, and dictates which transmissions use which uplink grants. *Id*. at 16; *see* Ex. 1003 ¶ 79.

The HARQ entity is described in detail in Section 5.4.2.1, which explains that "[t]here is one HARQ entity at the [user equipment]," and that "[a] number of parallel HARQ processes are used in the [user equipment] to support the HARQ entity, allowing transmissions to take place continuously while waiting for the feedback on the successful or unsuccessful reception of previous transmissions." *Id*. at 17. Each such HARQ process "is associated with a HARQ buffer." *Id*. (Section 5.4.2.2).

Of particular relevance is Section 5.4.2.1's enumeration of the conditions under which, at a given transmission time interval, the HARQ entity transmits a new payload, generates a retransmission, or has its associated buffer flushed. First, if an uplink grant indicates a "new

transmission" for the transmission time interval *and* an "uplink prioritisation" entity indicates the need for a new transmission, the protocol data unit ("PDU") to be transmitted is obtained from a "Multiplexing and assembly" entity *and* the HARQ process is instructed to trigger transmission of the new payload using identified parameters. *Id*. Second, if an uplink grant indicates a "new transmission" but the uplink prioritization entity does *not* indicate the need for a new transmission, the HARQ buffer is flushed. *Id*. Third, if an uplink grant does *not* indicate a new transmission, the HARQ entity is instructed to generate a retransmission under two circumstances: (a) the uplink grant indicates a retransmission, *or* (b) the HARQ buffer of the corresponding HARQ process is not empty. *Id*.

### *E. Analysis*

Petitioner relies on Dr. Wells's testimony in explaining how the combination of Kitazoe, the prior art described in the '236 patent, and Specification 321 teach the limitations of claims 1–4, 6–10, 12, and 13. Pet. 30–62 (citing Ex. 1003). Petitioner additionally relies on Kitazoe II, discussed below, in addressing the further limitation of claim 5. *Id*. at 62–65.

#### *1. Combination of Kitazoe, Prior Art Described in the '236 Patent, and Specification 321*

Petitioner proposes to combine the teachings of Kitazoe, the prior art described in the '236 patent, and Specification 321 into a system that has the following characteristics and which Petitioner contends meets all limitations of the relevant claims. Pet. 30–34. First, Petitioner observes that Kitazoe

describes transmitting an unencrypted Msg3 to the target base station during a random access procedure "in response to [a] received random access response." *Id*. at 30 (citing Ex. 1005, col. 13, ll. 60–66). Petitioner also observes that the prior art described in the '236 patent includes storing data to be transmitted via the Msg3 in a Msg3 buffer and includes transmitting the data stored in the Msg3 buffer "in correspondence with" reception of an uplink grant signal. *Id*. at 30–31 (citing Ex. 1001, col. 4, ll. 18–21. Based on these observations, Petitioner reaches two conclusions regarding the combination of Kitazoe and the prior art described in the '236 patent: (1) the Msg3 data transmitted by the user equipment, as described in Kitazoe, is stored in a Msg3 buffer, described as prior art in the '236 patent; and (2) to transmit the data stored in the Msg3 buffer, "the user equipment makes a determination that there is data stored in the Msg3 buffer when the UL grant signal is received," described as prior art in the '236 patent. *Id*. at 31 (citing Ex. 1001, col. 4, ll. 18–29; Ex. 1003 ¶ 88).

Second, Petitioner observes that Specification 321 teaches that the user equipment receives the contention-resolution message on a PDCCH. *Id*. at 31 (citing Ex. 1007 § 5.1.5). Coupled with Kitazoe's teaching of user equipment receiving a contention-resolution message, Petitioner reasons that, in the combined system, the contention-resolution message of Kitazoe is received on a PDCCH. *Id*. at 31 (citing Ex. 1005, col. 13, ll. 24–26, Fig. 4; Ex. 1007 § 5.1.5; Ex. 1003 ¶ 106).

Third, Petitioner observes that Specification 321 teaches that the user equipment in an LTE system like that taught by Kitazoe includes a HARQ entity that controls transmission and reception of messages by the user equipment. *Id*. at 31–32 (citing Ex. 1007, § 5.4.1; Ex. 1003 ¶¶ 114–115).

Petitioner reasons that the HARQ entity taught by Specification 321, and its functionality, would be included in the user equipment of Kitazoe:

> In the combination, the reception of messages from the base station (such as the random access response), the transmission of messages to the base station (such as the [Msg3] and new data), and the processing of uplink grants received by the user equipment are performed by the HARQ entity and the HARQ processes taught by [Specification 321]. The user equipment of the combination also monitors the downlink for random access responses sent by the base station, and ceases monitoring "after successful reception of a Random Access Response corresponding to the Random Access Preamble transmission." . . . Also in the combination, new data to be transmitted by the user equipment to the base station is acquired from a "Multiplexing and assembly entity" by the HARQ entity.

*Id*. (citing Ex. 1007 §§ 5.4.1, 5.4.2.1). Petitioner supports this reasoning with testimony by Dr. Wells, which we credit. Ex. 1003 ¶¶ 83–116. Petitioner's analysis reasonably identifies corresponding elements among the references in proposing the combination.

Petitioner also provides explicit reasoning why a person of skill in the art would have combined the references' teachings in the proposed manner. Pet. 32–34. As Petitioner recognizes, Kitazoe, the prior art described in the '236 patent, and Specification 321 "all describe wireless network systems implementing the 'LTE' protocol." *Id*. at 32–33 (citing Ex. 1005, col. 6, l. 46; Ex. 1001, col. 1, ll. 20–32; Ex. 1007 §§ 3.2, 4.3.1). This commonality, according to Petitioner, makes the result of its proposed modifications predictable because "the common technology of all three disclosures indicates that the proposed modification would be straightforward for a [person of ordinary skill in the art] to implement." *Id*. at 33 (citing Ex. 1005,

col. 6, l. 46; Ex. 1001, col. 1, ll. 20–32; Ex. 1007 §§ 3.2, 4.3.1; Ex. 1003 ¶ 118). As Petitioner asserts, a person of ordinary skill in the art

> would have modified the user equipment described in Kitazoe to store [Msg3] data to be transmitted in the [Msg3] buffer described by the [prior art described in the '236 patent], to determine that data is store[d] in the [Msg3] buffer when an uplink grant is received, and to include a HARQ entity and its associated components to handle message processing as taught by [Specification 321], in order to conform the user equipment to the current LTE system standard.

Pet. 32. These assertions provide rational underpinning to Petitioner's reasoning, which we find persuasive.

Patent Owner disputes this reasoning, referring to the art described in the '236 patent that is relied on by Petitioner as "cited in the '236 patent as 3GPP TS 36.321 *V8.2.0*" and asserting that "the current LTE system standard" referred to in the '236 patent "encompasses V8.2.0, not V8.1.0 (which is Petitioners' Exhibit 1007)." PO Resp. 43. Although Patent Owner is correct that the references cited on the face of the '236 patent include the V8.2.0 version of the standard (and do not include the V8.1.0 version applied in Petitioner's challenges), the argument is unpersuasive.[11] The mere identification of one version of the standard in the list of references made of record during prosecution does not impute the degree of meaning to the phrase "the current LTE system standard" that Patent Owner attempts to impose. Rather, we agree with Petitioner that "Patent Owner provides no evidence or explanation to support its conclusion that 'the "current LTE

[11] We note that the V8.2.0 version of the standard is applied in challenges by other petitioners in IPR2016-00757 and IPR2016-01345 (consolidated).

system standard" . . . encompasses V8.2.0, not V8.1.0." Reply 23 (quoting PO Resp. 43).

Accordingly, we conclude that Petitioner articulates sufficient reasoning for combining the references' teachings, in accordance with the principles set forth in *KSR*.

*2. Independent Claim 1*

For independent claim 1, Petitioner relies on the structure of its proposed combination in contending that all limitations are met, and identifies specific references that disclose individual teachings. Pet. 34–48. Specifically, Petitioner contends that Kitazoe teaches "receiving an uplink grant (UL Grant) signal from a base station on a specific message." *Id.* at 35–37 (citing Ex. 1005, col. 17, ll. 27–28, col. 13, ll. 1–8, col. 16, ll. 41–43, col. 13, ll. 11–16).

For the limitation of "determining whether there is data stored in a message 3 (Msg3) buffer when receiving the UL Grant signal on the specific message," Petitioner observes that, in its proposed combination, "the user equipment 'utilize[s] the uplink grant' received in the random access response 'to transmit message 3' to the base station," and that "[t]he ['] data to be transmitted via the message 3 [is stored] in a message 3 (Msg3) buffer.'" *Id.* at 37–38 (quoting Ex. 1005, col. 13, ll. 6–8; Ex. 1001, col. 4, ll. 18–21) (alterations by Petitioner except for addition of omitted quotation mark). Petitioner's reasoning that the limitation is met relies on the inference that "in order to transmit the data stored in the Msg3 buffer 'if the UL Grant signal is received in a state in which data is stored in the Msg3 buffer,' the user equipment must determine whether there is data stored in

the Msg3 buffer when the UL grant signal is received." *Id*. (quoting Ex. 1001, col. 4, ll. 26–29).

Patent Owner disputes this inference, characterizing it as "just an assumption" "that data cannot be transmitted unless some entity has determined that there is data to send." PO Resp. 37. Although we agree that the art cited by Petitioner is not explicit on the point, 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. In this instance, Dr. Wells testifies in support of Petitioner's position that a person of skill in the art "would have understood that, in order to transmit the data stored in the Msg3 buffer 'if the UL Grant signal is received in a state in which data is stored in the Msg3 buffer,' the user equipment must necessarily determine whether there is data stored in the Msg3 buffer when the UL grant signal is received." Ex. 1003 ¶ 75 (citing Ex. 1001, col. 4, ll. 18–29). We credit this testimony, which we find reasonable, and conclude that Petitioner adequately demonstrates that the limitation is met by the combination of art.

With respect to the limitation of "determining whether the specific message is a random access response message," Petitioner makes a sufficient showing through its observation that Kitazoe "teaches that the user equipment determines 'non-security-critical' information 'that can be transmitted as part of the . . . unencrypted message 3,' and determines 'security-critical information' that can be transmitted as part of the later encrypted message." Pet. 40 (quoting Ex. 1005, col. 11, ll. 20–27) (alteration by Petitioner). Supported by testimony of Dr. Wells, Petitioner

reasons that "[i]n order to determine whether to send 'non-security-critical' or 'security-critical' information in response to a specific message, the user equipment determines whether the specific message including the uplink grant is a random access response message." *Id*. at 40 (citing Ex. 1003 ¶ 93). Patent Owner does not dispute this argument.

For the two "transmitting" limitations, in addition to addressing the claim construction that Petitioner advocates, Petitioner alternatively addresses the claim construction we adopt for this Decision. *Id*. at 42–44. Specifically, Petitioner identifies Kitazoe's teaching that "the term 'message 3' refers to the scheduled transmission sent by the access terminal to [the] base station [] as granted by the random access response message from [the] base station." *Id*. at 43 (quoting Ex. 1005, col. 8, ll. 32–35) (alterations by Petitioner). Supported by testimony of Dr. Wells, Petitioner reasons that "[t]his indicates that message 3 is only sent using the uplink grant included in the random access response," and that "[b]ecause the message 3 is sent when this particular uplink grant is received and this particular uplink grant is only included in the random access response . . . , Kitazoe teaches that message 3 is sent only when the random access response is received (i.e., only when 'the specific message is the random access response message')." *Id*. (citing Ex. 1003 ¶ 98). This reasoning is persuasive.

Furthermore, also supported by testimony of Dr. Wells, Petitioner contends that a person of ordinary skill in the art "would have understood that the data in the Msg3 buffer can be transmitted 'only when' there is data stored in the Msg3 buffer." *Id*. at 43–44 (citing Ex. 1003 ¶ 99). We agree with Petitioner's and Dr. Well's reasonable inference that a person of skill in

the art would have understood that "if there is no data stored in the Msg3 buffer, . . . there would have been nothing to transmit." *Id.* at 44 (citing Ex. 1003 ¶ 99). Petitioner thus shows that the combination of art meets the first "transmitting" limitation, with both recited conditions satisfied.

For the converse case, when at least one of the recited conditions is not met, Petitioner makes two relevant observations. First, "Kitazoe teaches that the user equipment 'transmits a normal scheduled transmission message, which is encrypted, to the base station' after the random access procedure is completed." *Id.* at 47 (quoting Ex. 1005, col. 13, ll. 21–26) (alteration by Petitioner). Second, "Kitazoe further teaches that encrypted messages (such as this) cannot be sent in response to the random access response message (i.e., before message 3 is received by the base station), because the base station determines a 'security configuration' for the UE based on the information included in message 3." *Id.* (citing Ex. 1005, col. 10, ll. 65–67). That is, Kitazoe teaches that encrypted messages cannot be sent to the base station before determining the security configuration, "because the base station 'would not know which security configuration to apply in order to decrypt such encrypted message[s]' and thus 'would be unable to decipher the encrypted' messages." *Id.* (citing Ex. 1005, col. 10, l. 65–col. 11, l. 1). We agree with Petitioner's reasoning that these disclosures teach that the encrypted scheduled transmission message, i.e., the "new data," is transmitted only after the random access procedure is complete. *See id.* at 47–48.

Patent Owner "does not dispute" that Kitazoe "shows transmission of the Msg3 buffer data (the Scheduled Transmission) taking place after receipt of a random access response." PO Resp. 39. Nevertheless, Patent Owner

contends that "Kitazoe takes a narrow view of what can occur during a random access procedure" and "does not consider the more complex case" in which a "UL Grant is not in a random access response message but is instead contained in a PDCCH communication." *Id*. at 40–41. In such a "more complex case," Patent Owner argues, "the Msg3 buffer data is sent responsive to a [different message], an UL Grant *not* in a random access response." *Id*. at 42. Patent Owner contends that such a "more complex case" illustrates an example in which Msg3 buffer data are transmitted even when the (necessary) conditions recited in the first "transmitting" step are not satisfied. *Id*.

Patent Owner's argument is not persuasive. Patent Owner's reliance on its "more complex case" is unavailing. As Dr. Wells testifies, this complex case is a "contrived hypothetical" that does not "relate[] to what is described in Kitazoe," Ex. 2010, 60:21–22, 61:6–8. The fact that Patent Owner can hypothesize a system that is more complex than Kitazoe that does not teach or suggest the claim limitation does not negate the fact that the system described in Kitazoe does.

We conclude that Petitioner demonstrates, by a preponderance of the evidence, that independent claim 1 is unpatentable under 35 U.S.C. § 103(a) over Kitazoe, prior art described in the '236 patent, and Specification 321.

*3. Dependent Claims 2–4 and 6*

Each of claims 2–4 and 6 depends directly from independent claim 1. Patent Owner does not contest any aspect of Petitioner's challenge to these claims apart from its arguments directed at underlying claim 1. For each of

these claims, we agree with Petitioner's reasoning, which is summarized below.

Claim 2 recites that the second "transmitting" limitation of claim 1 includes "acquiring a Medium Access Control Protocol Data Unit (MAC PDU) from a multiplexing and assembly entity" and "transmitting the MAC PDU to the base station." Ex. 1001, col. 17, ll. 4–9. For these additional limitations, Petitioner identifies Specification 321's disclosure of user equipment that "obtain[s] the MAC PDU to transmit from the 'Multiplexing and assembly' entity" and for "instruct[ing] the HARQ process . . . to trigger the transmission of this new payload." Pet. 48; Ex. 1007, 17 (§ 5.4.2.1).

Claim 3 recites that the UL Grant signal received on the specific message "is a UL Grant signal received on a Physical Downlink Control Channel (PDCCH)" and that "the user equipment transmits new data in correspondence with the UL Grant signal received on the PDCCH." Ex. 1001, col. 17, ll. 10–16. For these limitations, Petitioner relies on its identification of new data transmitted to the base station in correspondence with the UL grant signal received in the contention resolution message from the base station, as taught by Specification 321. Pet. 48–49; Ex. 1007, 13–14 (§ 5.1.5).

Claim 4 recites that the data stored in the Msg3 buffer "is a Medium Access Control Protocol Data Unit (MAC PDU) including a user equipment identifier." Ex. 1001, col. 17, ll. 17–20. For this limitation, Petitioner identifies Kitazoe's disclosure that "a MAC layer PDU can be used for the . . . message 3" and that the message 3 can include an "access terminal identifier," which "can also be called a . . . user equipment (UE)." Pet. 49; Ex. 1005, col. 16, ll. 30–32, col. 6, ll. 62–66, col. 9, ll. 22–23.

Claim 6 recites that the UL Grant signal received on the specific message "is either a UL Grant signal received on a Physical Downlink Control Channel (PDCCH) or a UL Grant signal received on the random access response message." Ex. 1001, col. 17, ll. 25–29. By again pointing to Specification 321's disclosure related to a contention-resolution message, Petitioner identifies a teaching of the second of these recitations, i.e., "a UL Grant signal received on the random access response message." Pet. 49–50.

Based on these identifications, which are not contested by Patent Owner, we conclude that Petitioner demonstrates, by a preponderance of the evidence, that claims 2–4 and 6 are unpatentable under 35 U.S.C. § 103(a) over Kitazoe, prior art described in the '236 patent, and Specification 321.

*4. Independent Claim 7*

Independent claim 7 recites "user equipment" with limitations that generally parallel those of independent method claim 1, but specifying that functions are performed by "a reception module," "a transmission module," "a message 3 (Msg3) buffer," a "Hybrid Automatic Repeat Request (HARQ) entity," and "a multiplexing and assembly entity used for transmission of new data." Ex. 1001, col. 17, l. 30–col. 18, l. 7. As Patent Owner acknowledges, "[i]n large part, claim 7 claims an apparatus that performs the method claimed in claim 1" by "includ[ing] entities adapted to carry out the steps like those of claim 1." PO Resp. 9–10, 30.

We have referred to each of these structural elements above in the context of Petitioner's proposed combination of art, and therefore agree with Petitioner that such structural elements are met by the combination. *See* Pet. 50–59. For the functionality performed by such structural elements,

Petitioner advances arguments that parallel those made for independent claim 1. *See id*. For the same reasons discussed above, we conclude that Petitioner makes a sufficient showing of such functionality. Patent Owner does not contest Petitioner's arguments apart from its arguments directed at claim 1.

We conclude that Petitioner demonstrates, by a preponderance of the evidence, that claim 7 is unpatentable under 35 U.S.C. § 103(a) over Kitazoe, prior art described in the '236 patent, and Specification 321.

*5. Dependent Claims 8–10, 12, and 13*

Each of claims 8–10, 12, and 13 depends, directly or indirectly, from independent claim 7. Patent Owner does not contest any aspect of Petitioner's challenge to these claims apart from its arguments directed at corresponding independent method claim 1. For each of these claims, we agree with Petitioner's reasoning, which is summarized below.

Claim 8 recites "one or more HARQ processes" and "HARQ buffers respectively corresponding to the one or more HARQ processes," with specific limitations on data transmission by "the HARQ entity" recited in claim 7. Ex. 1001, col. 18, ll. 8–19. Claim 9 depends from claim 8 and further recites additional data-transmission limitations by the HARQ processes of claim 8. For both of these claims, Petitioner relies on the description of HARQ entities described in Specification 321, discussed above, and its related description of data transmission by such HARQ entities. Pet. 60–61; Ex. 1007, 17 (§ 5.4.2.1). We agree with Petitioner that the limitations are met by that disclosure.

Claims 10, 12, and 13 respectively parallel claims 3, 4, and 6, but include structural limitations consistent with their status as apparatus claims directed to "user equipment." Ex. 1001, col. 18, ll. 27–33. For each of these claims, Petitioner relies on the same disclosure, discussed above, as it does for the corresponding method claims. Pet. 61–62.

Based on Petitioner's identifications, which are not contested by Patent Owner, we conclude that Petitioner demonstrates, by a preponderance of the evidence, that claims 8–10, 12, and 13 are unpatentable under 35 U.S.C. § 103(a) over Kitazoe, prior art described in the '236 patent, and Specification 321.

*6. Claim 5:*
*Combination of Kitazoe, Prior Art Described in the '236 Patent, Specification 321, and Kitazoe II*

Claim 5 depends from claim 4 and recites that "the data stored in the Msg3 buffer further includes information about a buffer status report (BSR) if the user equipment starts a random access procedure for the BSR." Ex. 1001, col. 17, ll. 21–24. Petitioner challenges claim 5 as unpatentable under 35 U.S.C. § 103(a) over Kitazoe, prior art described in the '236 patent, Specification 321, and Kitazoe II. Pet. 62–65.

*a. Availability of Kitazoe II as Prior Art*

Kitazoe II was filed on December 17, 2008, claiming the benefit of the December 19, 2007, filing date of U.S. Prov. Appl. No. 61/015,159 under 35 U.S.C. § 119(e). Ex. 1009 at [22], [60]. Petitioner contends that "at least one claim of the Kitazoe-II patent is supported by disclosure in the

Kitazoe-II Provisional," and that Kitazoe-II is therefore "entitled to the earlier priority date of the Kitazoe-II Provisional" application. Pet. 8–11.

Petitioner presents arguments that Kitazoe II's claims are supported by the disclosure of U.S. Prov. Appl. No. 61/015,159, so that Kitazoe II's teachings are available as prior art as of December 19, 2017. *Id*. For example, Petitioner asserts the limitations recited in claim 1 and in thirty-eight other claims of Kitazoe II are described in the Kitazoe II provisional application. *Id*. Patent Owner does not respond to these contentions and does not present any antedating evidence that might bear on the availability of Kitazoe II as prior art to the '236 patent. On the record before us, we are persuaded for purposes of this Decision that Kitazoe II is entitled to the earlier effective filing date of the Kitazoe II provisional application, and is prior art to the '236 patent under 35 U.S.C. § 102(e).

*b. Disclosure of Kitazoe II*

Kitazoe II is titled, "Method and Apparatus for Transfer of a Message on a Common Control Channel for Random Access in a Wireless Communication Network," and describes "[t]echniques for sending a message for random access by a user equipment." Ex. 1009 at [54], abst. Kitazoe II discloses that the user equipment may send a message for random access that includes a buffer status report. *Id*. at abst., ¶ 72.

*c. Analysis*

Petitioner contends that the limitation of dependent claim 5 is met by Kitazoe II, which describes that the user equipment may send a buffer-status-report message in Msg3. Pet. 63–64 (citing Ex. 1009, abst., ¶ 72). In

addition, Petitioner contends that one of ordinary skill would have combined this teaching with those of the other references. Pet. 63–64. Petitioner contends that the combination would "increase the data efficiency of the random access procedure, as taught by Kitazoe-II," which "would have been predictable because" the references "describe techniques related to wireless networks using the 'LTE' protocol." *Id*. at 64 (citing Ex. 1003 ¶¶ 122–123). Patent Owner does not respond to these contentions. *See* PO Resp. 45 (relying on arguments directed at claim 1).

We are persuaded that Petitioner both identifies relevant disclosure in Kitazoe II that meets the limitation of claim 5 and provides sufficient articulated reasoning with rational underpinning for combining the teachings of Kitazoe, prior art described in the '236 patent, and Specification 321 with that of Kitazoe II. That is, Petitioner's analysis for claims 1 and 4 sufficiently establishes that those claims are unpatentable for the reasons discussed above, and that one of skill in the art would additionally store information about a buffer status report in the data stored in the Msg3 buffer in accordance with the teachings of Kitazoe II. Accordingly, we conclude that Petitioner demonstrates, by a preponderance of the evidence, that claim 5 is unpatentable under 35 U.S.C. § 103(a) over Kitazoe, prior art described in the '236 patent, Specification 321, and Kitazoe II.

## III. CONCLUSION

We conclude that Petitioner demonstrates, by a preponderance of the evidence, that claims 1–4, 6–10, 12, and 13 are unpatentable under 35 U.S.C. § 103(a) over Kitazoe, prior art described in the '236 patent, and Specification 321; and that claim 5 is unpatentable under 35 U.S.C. § 103(a)

over Kitazoe, prior art described in the '236 patent, Specification 321, and Kitazoe II.

## IV. ORDER

It is

ORDERED that, based on a preponderance of the evidence, claims 1–10, 12, and 13 of U.S. Patent No. 7,881,236 B2 are held to be unpatentable; and

FURTHER ORDERED that, because this is a final written decision, parties to this proceeding seeking judicial review of our decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

IPR2016-01228
Patent 7,881,236 B2

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Paper 32
Entered: March 26, 2018

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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APPLE INC., MICROSOFT CORPORATION,
MICROSOFT MOBILE OY, and
MICROSOFT MOBILE INC. (F/K/A/ NOKIA INC.),
Petitioner,

v.

EVOLVED WIRELESS LLC,
Patent Owner.

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Case IPR2016-01228
Patent 7,881,236 B2

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Before WILLAM V. SAINDON, PATRICK M. BOUCHER, and TERRENCE W. McMILLIN, *Administrative Patent Judges*.

BOUCHER, *Administrative Patent Judge*.

DECISION
Denying Patent Owner's Request for Rehearing
*37 C.F.R. § 42.71(d)*

Patent Owner requests rehearing of our Final Written Decision holding claims 1–10, 12, and 13 of U.S. Patent No. 7,881,236 ("the '236 patent") unpatentable. Paper 28 ("Req. Reh'g"). Pursuant to our authorization, Petitioner filed an Opposition (Paper 30) and Patent Owner filed a Reply (Paper 31). By email correspondence, we denied Petitioner's requests either to expunge Patent Owner's Reply from the record as advancing new arguments or to authorize Petitioner to file a sur-reply.

For the reasons set forth below, Patent Owner's Request for Rehearing is denied.

## I. BACKGROUND

"The burden of showing a decision should be modified lies with the party challenging the decision." 37 C.F.R. § 42.71(d). When requesting rehearing of a decision, the party must identify specifically all matters the party believes the Board misapprehended or overlooked, and the place where each matter was previously addressed in the record. *Id*.

Patent Owner's Request for Rehearing focuses on the "transmitting" limitations of independent method claim 1 and the corresponding limitations of independent apparatus claim 7. The "transmitting" limitations of claim 1 recite:

> transmitting the data stored in the Msg3 buffer to the base station using the UL Grant signal received on the specific message, ***if*** there is data stored in the Msg3 buffer when receiving the UL Grant signal on the specific message and the specific message is the random access response message; and
>
> transmitting new data to the base station in correspondenc with the UL Grant signal received on the specific message, ***if*** there is no data stored in the Msg3 buffer when receiving the UL

> Grant signal on the specific message or the specific message is not the random access response message.

Ex. 1001, col. 16, l. 59–col. 17, l. 3 (emphases added). In the Final Written Decision, we agreed with Patent Owner that, under the broadest reasonable interpretation, the recitation of "if" in these limitations introduces necessary conditions rather than sufficient conditions. Paper 27 ("Dec."), 12–17. That is, the operation of the two "transmitting" limitations can be described as follows:

> Those limitations implicate two conditions, resulting in different data being transmitted depending on whether both conditions are satisfied or not. The first condition is whether "there is data stored in the Msg3 buffer when receiving the UL Grant signal on the specific message," and the second condition is whether "the specific message is the random access response message." . . . "If" both conditions are satisfied, the "data stored in the Msg3 buffer" are transmitted to the base station; and "if" either condition is not satisfied, "new data" are transmitted to the base station.

*Id*. at 12 (citations omitted). This construction is frequently referred to by the parties as the "only when" construction.

Although Petitioner advocated for a broader construction in which the recitation of "if" more broadly introduces *sufficient* conditions, the Petition also addressed the construction we adopted. Paper 2, 42–44; *see* Dec. 32 (noting Petitioner's alternative argument). In addition to the documentary prior art cited by the Petition, Petitioner also relied on a Declaration by Jonathan Wells, Ph.D., which we accorded evidentiary weight. Ex. 1003; *see* Dec. 32–34. In contrast, we did not accord weight to a Declaration by Todor Cooklev, Ph.D., proffered by Patent Owner, because that declaration

was unsworn and therefore defective.[1] Ex. 2009; Dec. 10–11. Petitioner's evidence cannot be rebutted by Patent Owner's unsworn attorney argument. *See Gemtron Corp. v. Saint-Gobain Corp.*, 572 F.3d 1371, 1380 (Fed. Cir. 2009) ("[U]nsworn attorney argument . . . is not evidence and cannot rebut . . . evidence."). Thus, the weight of the evidence greatly favored Petitioner.

Weighing that evidence—even adopting the construction of the "transmitting" limitations advocated by Patent Owner—we concluded that Petitioner demonstrated sufficiently that both "transmitting" limitations are disclosed by Kitazoe. Dec. 32–34. Ultimately, we concluded that Petitioner demonstrated, by a preponderance of the evidence, that both independent claims 1 and 7 are unpatentable over the combination of art considered, and that the claims that depend therefrom are also unpatentable. *Id.* at 41.

In its Request for Rehearing, Patent Owner contends that "[t]he Board should reconsider its Final Written Decision . . . for two independent reasons." Req. Reh'g 1. First, Patent Owner contends that we "overlooked the Patent Owner's argument about why the additional UL Grant it discussed in the Response is not a 'contrived hypothetical' but is instead grounded in the '236 patent's specification." *Id.* Second, "and more importantly," Patent Owner contends that we overlooked an argument advanced by Patent Owner in its response that the prior art relied on by Petitioner "does not create the conditions that test" the adopted construction. *Id.*

[1] In the Final Written Decision, we noted that, despite having notice of the defect with the Cooklev Declaration, Patent Owner took no affirmative steps to cure the defect. Dec. 11. Patent Owner did not request leave to cure the defect in the Cooklev Declaration with its Request for Rehearing or otherwise.

## II. ANALYSIS

Both of Patent Owner's contentions are grounded in its position that that Kitazoe did not consider conditions that could test whether the Msg3 buffer data are transmitted if the conditions recited in the claims are not met.[2] Req. Reh'g 6. That is, Patent Owner does not dispute in its Request for Rehearing that transmission occurs when the conditions *are* met. *Id*.; *see also* Paper 14, 39 ("Patent Owner does not dispute that [Kitazoe] shows transmission of the Msg3 buffer data . . . taking place after receipt of a random access response."). Instead, Patent Owner bases its request on an argument that Kitazoe insufficiently addresses the circumstance of what behavior results when the conditions are *not* met.

In addressing the "transmitting" limitations, the Final Written Decision considered and addressed this circumstance, i.e. "when at least one of the recited conditions is not met." Dec. 33. In addressing that circumstance, we cited disclosure by Kitazoe identified by Petitioner that "teach that the encrypted scheduled transmission message, i.e., the 'new data,' is transmitted only after the random access procedure is complete." *Id*.

In its Request for Rehearing, Patent Owner reiterates its argument that "Kitazoe 'takes a narrow view of what can occur during a random access procedure.'" Req. Reh'g 9 (quoting Paper 14, 40). Instead, as it did in its Response, Patent Owner "illustrate[s] a more complex case of UL Grant

[2] There appears to be an important omission of the word "not" in the following sentence of the Request for Rehearing: "And fatal to Petitioner's argument, the one place they looked—Kitazoe—admittedly did not consider conditions that could test the [*sic*] whether the Msg3 buffer data is transmitted if Condition X is [***not***] met." Req. Reh'g 6.

reception." *Id*. But we expressly considered this "more complex case"—for which Patent Owner relies on unsworn attorney argument and the unsworn Cooklev Declaration—in light of the cross-examined testimony of Dr. Wells. Dec. 33–34. As summarized in the Final Written Decision, Dr. Wells testified that Patent Owner's "more complex case" is a "contrived hypothetical" that does not "relate[] to what is described in Kitazoe." *Id*. at 34 (quoting Ex. 2010, 60:21–22, 61:6–8). That such a case may have been discussed in the Specification of the '236 patent is not relevant to what a person of ordinary skill in the art would understand from Kitazoe's teachings. *See* Req. Reh'g 11–12.

Although we have reconsidered Patent Owner's reiterated argument, we do not now reach a different conclusion. Patent Owner effectively attempts to intensify Petitioner's burden by casting the already narrower construction of "if" adopted by the Final Written Decision as encompassing a negative limitation. Req. Reh'g 5–6. That is, Patent Owner contends that Petitioner could only make a sufficient showing by exhaustively demonstrating that no prior art performs the respective "transmitting" steps when the conditions are not met. *Id*. at 6 ("Petitioners didn't look everywhere."). This argument demands too much by relying on hypothetical scenarios not addressed by the reference itself, with the attorney argument by Patent Owner supported only by the defective Declaration of its witness. As in the Final Written Decision, we continue to accord weight to the contrary testimony of Dr. Wells, while not according weight to the testimony of Dr. Cooklev.

For these reasons, we are not persuaded that the Final Written Decision misapprehended or overlooked any argument by Patent Owner that would justify a change in that Decision.

## III. ORDER

Accordingly, it is

ORDERED that Patent Owner's Request for Rehearing is *denied*.

IPR2016-01228
Patent 7,881,236 B2

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Paper 27
Entered: November 30, 2017

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC., MICROSOFT CORPORATION,
MICROSOFT MOBILE OY, and
MICROSOFT MOBILE INC. (F/K/A/ NOKIA INC.),
Petitioner,

v.

EVOLVED WIRELESS LLC,
Patent Owner.

Case IPR2016-01229
Patent 7,881,236 B2

Before WILLAM V. SAINDON, PATRICK M. BOUCHER, and TERRENCE W. McMILLIN, *Administrative Patent Judges*.

BOUCHER, *Administrative Patent Judge*.

# FINAL WRITTEN DECISION
*35 U.S.C. § 318(a) and 37 C.F.R. § 42.73*

In response to a Petition (Paper 2, "Pet.") filed by Apple Inc., Microsoft Corporation, Microsoft Mobile Oy, and Microsoft Mobile Inc. (f/k/a Nokia Inc.) (collectively, "Petitioner"), we instituted an *inter partes* review of claims 1–10, 12, and 13 of U.S. Patent No. 7,881,236 B2 ("the '236 patent"). Paper 8 ("Dec."), 21. During the trial, Evolved Wireless LLC ("Patent Owner") timely filed a Response (Paper 14, "PO Resp."), to which Petitioner timely filed a Reply (Paper 16, "Reply"). An oral hearing was held on September 15, 2017, and a copy of the transcript was entered into the record. Paper 22 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6. This Decision is a Final Written Decision under 35 U.S.C. § 318(a) as to the patentability of the claims on which we instituted trial. Based on the record before us, Petitioner has shown, by a preponderance of the evidence, that claims 1–10, 12, and 13 are unpatentable.

## I. BACKGROUND

### *A. The '236 Patent*

The '236 patent "relates to a mobile communication technology." Ex. 1001, col. 1, ll. 17–18. In particular, the patent describes a random access procedure for user equipment ("UE") and a base station in a telecommunication system. *Id.* at col. 3, ll. 42–59. Figure 1 of the '236 patent illustrates a particular example of such a telecommunication system—the Evolved Universal Mobile Telecommunication System ("E-UMTS"), and is reproduced below.

**FIG. 1**

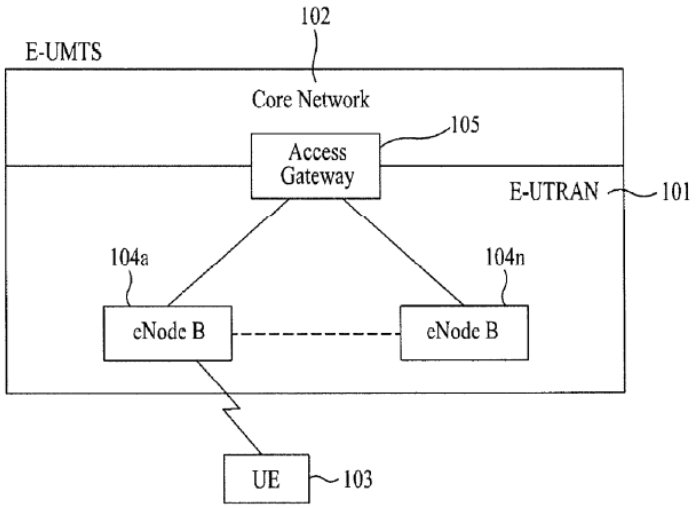


Figure 1 provides a schematic view of a network architecture for the E-UMTS, which may be conceived in terms of two component networks: Evolved UMTS Terrestrial Radio Access Network ("E-UTRAN") 101 and Core Network 102. *Id*. at col. 1, ll. 26–35. The first of these, E-UTRAN 101, may include user equipment ("UE") 103, multiple base stations 104 (referred to in the '236 patent as "eNode B" or "eNB"), and Access Gateway ("AG") 105. *Id*. at col. 1, ll. 35–39. Access Gateway 105 is positioned at the end of the network and connected to an external network, and can include a portion for processing user traffic and a portion for processing control traffic. *Id*. at col. 1, ll. 38–41.

As the '236 patent describes, "a UE performs the random access procedure" in a number of instances, including "when the UE performs initial access" to a base station and "when there is uplink data transmission in a situation where uplink time synchronization is not aligned or where a

specific radio resource used for requesting radio resources is not allocated." *Id*. at col. 3, ll. 42–57. A version of Figure 5 of the '236 patent annotated by Petitioner is reproduced below.

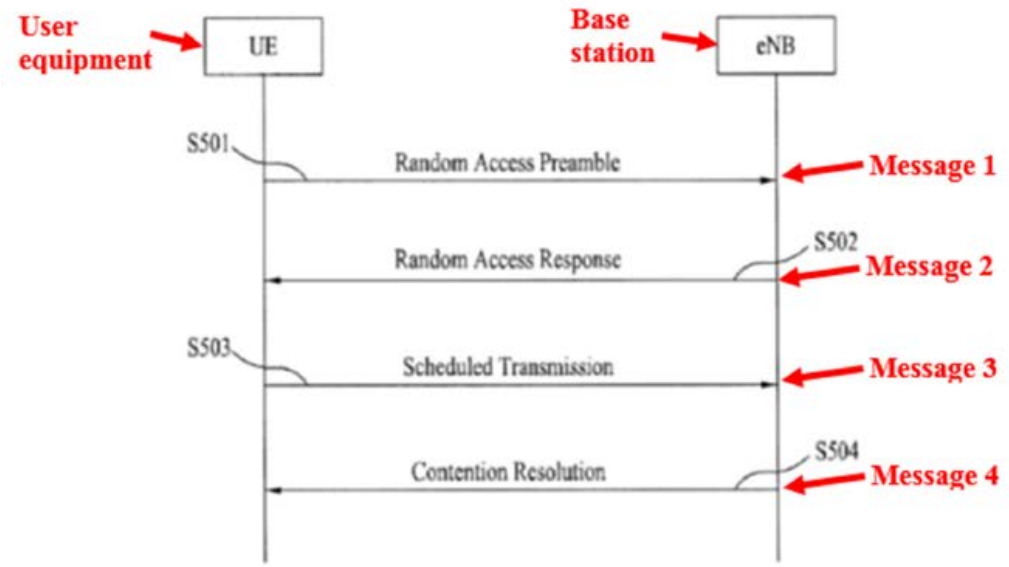


Figure 5 shows an example of a random access procedure performed between user equipment UE and base station eNB. *Id*. at col. 6, ll. 53–55. The procedure begins with transmission of a "random access preamble" from the UE to the base station at step S501 (referred to as a "message 1" transmitting step). *Id*. at col. 4, ll. 3–7. The UE receives a "random access response" from the base station at step S502 "in correspondence with the transmitted random access preamble" (referred to as a "message 2" receiving step). *Id*. at col. 4, ll. 7–11. Of particular relevance, the UE then transmits an uplink message to the base station at step S503 (referred to as a "message 3" or "Msg3" transmitting step). *Id*. at col. 4, ll. 11–14. The UE receives a corresponding "contention resolution" message from the base station at step S504 (referred to as a "message 4" receiving step). *Id*. at col. 4, ll. 14–17.

In the random access procedure, the UE stores data to be transmitted via the message 3 in a "Msg3 buffer" and transmits the stored data "in correspondence with the reception of an Uplink (UL) Grant signal." *Id*. at col. 4, ll. 18–21. The UL Grant signal indicates information about uplink radio resources that may be used when the UE transmits a signal to the base station. *Id*. at col. 4, ll. 21–26. According to the '236 patent, then-current Long-Term Evolution ("LTE") system standards provided that data stored in the Msg3 buffer of the UE would be transmitted to the base station "*regardless of* the reception mode of the UL Grant signal," and that "if the data stored in the Msg3 buffer is transmitted in correspondence with the reception of *all* UL Grant signals, problems may occur." *Id*. at col. 4, ll. 26–32 (emphases added). The '236 patent purports to solve such problems. *Id*. at col. 4, ll. 33–34.

Figure 9 of the '236 patent is reproduced below.

**FIG. 9**

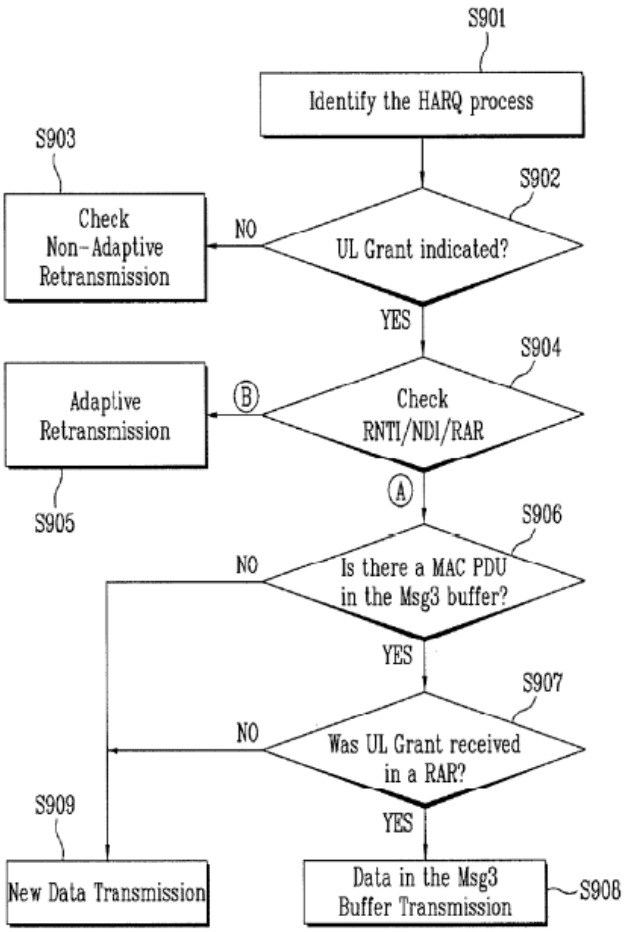


Figure 9 is a flowchart of the method described by the '236 patent, showing the operation of an uplink Hybrid Automatic Repeat Request ("HARQ") entity in a UE. *Id*. at col. 13, ll. 35–39. After a UL grant signal is received from the base station at step 902, the UE determines at step 906 whether there are data in the Msg3 buffer. *Id*. at col. 13, ll. 42–44, 66–67. If so, a further determination is made at step 907 whether the received UL grant signal is on a random access response ("RAR") message. *Id*. at col. 13, l.

66–col. 14, l. 3. The UE transmits the data in the Msg3 buffer to the base station "only when" both conditions are met, i.e., "only when there is data in the Msg3 buffer when receiving the UL Grant signal and the UL Grant signal is received on the random access response message (S908)." *Id*. at col. 14, ll. 3–7. Conversely, if either condition is not met, i.e. there are no data in the Msg3 buffer or the UL Grant signal is not on a random access response message, then the UE determines that the base station is making a request for transmission of new data and performs new-data transmission at step 909. *Id*. at col. 14, ll. 7–13.

### *B. Illustrative Claims*

Claims 1 and 7 of the '236 patent, reproduced below, are independent claims respectively directed at the above-described method and at user equipment that implements the above-described method.

> 1. A method of transmitting data by a user equipment through an uplink, the method comprising:
>
> receiving an uplink grant (UL Grant) signal from a base station on a specific message;
>
> determining whether there is data stored in a message 3 (Msg3) buffer when receiving the UL Grant signal on the specific message;
>
> determining whether the specific message is a random access response message;
>
> transmitting the data stored in the Msg3 buffer to the base station using the UL Grant signal received on the specific message, if there is data stored in the Msg3 buffer when receiving the UL Grant signal on the specific message and the specific message is the random access response message; and
>
> transmitting new data to the base station in correspondence with the UL Grant signal received on the specific message, if there is no data stored in the Msg3 buffer when receiving the UL Grant signal on the specific message or the specific message is not the random access response message.

7. A user equipment, comprising:

a reception module adapted to receive an uplink grant (UL Grant) signal from a base station on a specific message;

a transmission module adapted to transmit data to the base station using the UL Grant signal received on the specific message;

a message 3 (Msg3) buffer adapted to store UL data to be transmitted in a random access procedure;

a Hybrid Automatic Repeat Request (HARQ) entity adapted to determine whether there is data stored in the Msg3 buffer when the reception module receives the UL Grant signal and the specific message is a random access response message, acquiring the data stored in the Msg3 buffer if there is data stored in the Msg3 buffer when the reception module receives the UL Grant signal and the specific message is the random access response message, and controlling the transmission module to transmit the data stored in the Msg3 buffer to the base station using the UL Grant signal received by the reception module on the specific message; and

a multiplexing and assembly entity used for transmission of new data,

wherein the HARQ entity acquires the new data to be transmitted from the multiplexing and assembly entity if there is no data stored in the Msg3 buffer when the reception module receives the UL Grant signal on the specific message or the received message is not the random access response message, and controls the transmission module to transmit the new data acquired from the multiplexing and assembly entity using the UL Grant signal received by the reception module on the specific message.

### *C. Instituted Grounds of Unpatentability*

We instituted trial for challenges under 35 U.S.C. § 103(a) over the following combinations of references. Dec. 21.

| References | Challenged Claim(s) |
|---|---|
| Kitazoe,[1] Niu,[2] and Specification 321[3] | 1–4, 6–10, 12, and 13 |
| Kitazoe, Niu, Specification 321, and Kitazoe II[4] | 5 |

*D. Real Parties in Interest and Related Proceedings*

Petitioner identifies Apple Inc., Microsoft Corporation, Microsoft Mobile Oy, Microsoft Mobile Inc. (f/k/a Nokia Inc.), Microsoft Luxembourg International Mobile SARL, and Microsoft Luxembourg USA Mobile SARL as real parties in interest. Pet. 1. Petitioner asserts that "[t]he Microsoft entities have numerous affiliated and/or related entities," but that "no unnamed Microsoft entity is funding or controlling this Petition or any resulting IPR." *Id*. Patent Owner identifies only itself as a real party in interest. Paper 5, 2.

The parties indicate that the '236 patent is the subject of several district-court litigations: *Evolved Wireless, LLC v. Apple, Inc*., No. 1:15-cv-542 (D. Del.); *Evolved Wireless, LLC v. HTC Corp*., No. 1:15-cv-543 (D. Del.); *Evolved Wireless, LLC v. Lenovo Group Ltd*., 1:15-cv-544 (D. Del.); *Evolved Wireless, LLC v. Samsung Electronics Co. Ltd*., 1:15-cv-545 (D. Del.); *Evolved Wireless, LLC v. ZTE Corp*., 1:15-cv-546 (D. Del.); *Evolved Wireless LLC v. Microsoft Corp*., 1:15-cv-547 (D. Del.). Pet. 1–2; Paper 5, 2–3. In addition, the '236 patent is the subject of the following

[1] U.S. Patent No. 8,180,058 B2, filed June 10, 2008, issued May 15, 2012 (Ex. 1005, "Kitazoe").
[2] U.S. Patent No. 6,161,160, filed Sept. 3, 1998, issued Dec. 12, 2000 (Ex. 1012, "Niu").
[3] 3GPP Technical Specification 36.321 V8.1.0 (March 2008) (Ex. 1007, "Specification 321").
[4] U.S. Patent Publication No. 2009/0163211 A1, filed Dec. 17, 2008, published June 25, 2009 (Ex. 1009, "Kitazoe II").

*inter partes* reviews: IPR2016-00757, which has been consolidated with IPR2016-01345 (both of which involve a different petitioner); and IPR2016-01228 (which involves this Petitioner on different grounds).

### *E. Cooklev Declaration*

Patent Owner proffers a Declaration by Todor Cooklev, Ph.D., as evidentiary support of its claim-construction and substantive arguments. Ex. 2011. Petitioner argues that the Declaration "is entitled to no weight" because "[n]otoriously absent from Exhibit [2011[5]] is any indication that the declarant was 'warned that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. 1001),' or a statement by the declarant that 'all statements made of the declarant's own knowledge are true and that all statements made on information and belief are believed to be true.' *See* 37 CFR 1.68." Reply 2–3. We agree with Petitioner that Dr. Cooklev's Declaration is defective and can be accorded no weight.

In an *inter partes* review proceeding, evidence includes "affidavits," which are defined in our regulations by reference to the provisions of 37 C.F.R. § 1.68 and 28 U.S.C. § 1746. *See* 37 C.F.R. § 42.2. The former of these, i.e., 37 C.F.R. § 1.68, requires that a declarant be warned, on the same document, that "willful false statements and the like are punishable by fine or imprisonment, or both." The latter, i.e., 28 U.S.C. § 1746, provides that unsworn declarations may substitute for sworn declarations if accompanied by a statement in substantially the form, "I declare . . . under penalty of

[5] Petitioner incorrectly refers to Dr. Cooklev's Declaration as "Exhibit 2009" in its Reply.

perjury under the laws of the United States of America that the foregoing is true and correct." To give weight to Dr. Cooklev's statements would thwart the purpose of these provisions. *See Intel Corp. v. Alacritech, Inc.*, Case IPR2017-01402, slip op. at 6 (PTAB Nov. 6, 2017) (Paper 8).

At the oral hearing, Patent Owner conceded that Dr. Cooklev's Declaration is defective. Tr. 36:16–17 ("Well, yes, he did not swear under the penalty of perjury"). Indeed, Patent Owner had notice of the defect in Dr. Cooklev's Declaration at least as early as the filing of Petitioner's Reply on July 26, 2017. Reply 2–3. Nevertheless, Patent Owner took no affirmative steps to cure the defect. Although we recognize that Petitioner may well have capitalized tactically on the defect by forgoing cross-examination in which Dr. Cooklev may have provided sworn testimony consistent with his Declaration, we cannot simply ignore the regulatory and statutory requirements that render that Declaration defective. To give weight to the Declaration would require us to surmise that Dr. Cooklev would swear to the statements in his Declaration, and we are in no position to do so.

Accordingly, we give no weight to Dr. Cooklev's Declaration.

## II. ANALYSIS

### *A. Claim Construction*

The Board interprets claims of an unexpired patent using the broadest reasonable construction in light of the specification of the patent in which they appear. *See* 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest

reasonable interpretation standard); Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012).

*1. "transmitting . . . if"*

A claim-construction disagreement between the parties is grounded in use of the word "if" in the two "transmitting" limitations of independent claims 1 and 7. *See* Pet. 15–18; PO Resp. 10–32; Reply 3–21. Those limitations implicate two conditions, resulting in different data being transmitted depending on whether both conditions are satisfied or not. The first condition is whether "there is data stored in the Msg3 buffer when receiving the UL Grant signal on the specific message," and the second condition is whether "the specific message is the random access response message." Ex. 1001, col. 16, l. 59–col. 17, l. 3; col. 17, l. 38–col. 18, l. 7. "If" both conditions are satisfied, the "data stored in the Msg3 buffer" are transmitted to the base station; and "if" either condition is not satisfied, "new data" are transmitted to the base station. *Id*.

Petitioner presents an argument that effectively addresses each "transmitting" limitation in isolation, contending that "the claim language . . . speaks for itself," and that "the term 'if' is used to indicate that the action occurs in the presence of the condition, but possibly also at other times." Pet. 18. That is, Petitioner contends that "if" in each "transmitting" limitation should be construed as introducing a *sufficient* condition.

Patent Owner presents a counterargument that considers an interplay between the two "transmitting" limitations, correctly observing that the two conditions "are independent of one another" and that the recitations in the two "transmitting" limitations are "logical opposite[s]." PO Resp. 10–15.

As Patent Owner asserts, "both limitations cannot, at the same time, be true." *Id*. at 14. In considering this logical interplay, Patent Owner contends that "if" in each "transmitting" limitation should therefore be construed as introducing a *necessary* condition: "The proper claim construction is one that follows the claim's plain language . . . ; that is Msg3 data is transmitted if [both conditions are] met . . . and new data are transmitted if [either condition] is not met." *Id*. at 15.[6]

We have considered the positions of both parties and conclude that Patent Owner presents the more compelling reading of the claim. In isolation, the plain and ordinary meaning of "if" is amenable to both *sufficient-condition* and *necessary-condition* constructions. Indeed, it is trivial to construct English sentences in which a listener would naturally understand one of those constructions to be implicated. For instance, "If there is smoke, there is fire" is naturally understood not to preclude the possibility of fire if there is no smoke (sufficient if). Conversely, "If you take another step, I'll shoot," is naturally understood to mean that the speaker will not shoot if the listener does not take another step (necessary if).

[6] Patent Owner characterizes its position as equivalent to reciting "but not transmitting the new data" as part of the first "transmitting" limitation, i.e., when both conditions are met; and to reciting "but not transmitting any data stored in the Msg3 buffer" as part of the second "transmitting" limitation, i.e., when at least one of the conditions is not met. PO Resp. 12–13. Although such additional language is logically consistent with Patent Owner's position, we find it unnecessary to incorporate such negative limitations into the claims; the proper construction can be resolved by correctly construing the meaning of "if."

To resolve the ambiguity, we look, as we must, to the context provided by the claims themselves, as well as to the Specification in whose light they must be considered under the broadest-reasonable-interpretation standard. *See Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996) ("the context of the surrounding words of the claim also must be considered in determining the ordinary and customary meaning of those terms"). We agree with Patent Owner's characterization of Petitioner's position as improperly including the optional possibility of transmitting data stored in the Msg3 buffer even when both conditions are not satisfied. *See* PO Resp. 14–15. Such an optional possibility is a logical consequence of a sufficient-if construction, and we acknowledge that such a reading would be tenable if the claim included only the first "transmitting" step.[7] But the claim explicitly answers the question of what occurs when at least one of the conditions is not satisfied: "new data" are transmitted to the base station. Ex. 1001, col. 16, l. 16–col. 17, l. 3; col. 17, l. 52–col. 18, l. 7. By isolating the "transmitting" limitations, Petitioner improperly reaches too broad a construction of the claim as a whole.

Furthermore, Patent Owner's proposed construction is consistent with the Specification of the '236 patent. For example, in motivating its disclosure, the Specification observes that, in the prior art, "if the UL Grant signal is received in a state in which data is stored in the Msg3 buffer, the data stored in the Msg3 buffer is transmitted *regardless of* the reception mode of the UL Grant signal." *Id.* at col. 4, ll. 26–30 (emphasis added). The Specification purports to resolve such a deficiency because "if the data

[7] Indeed, this is precisely the case for a child of the '236 patent, as discussed *infra*.

stored in the Msg3 buffer is transmitted in correspondence with the reception of *all* UL Grant signals, problems may occur." *Id*. col. 4, ll. 30–34 (emphasis added). In addition, the description of Figure 9 of the patent, reproduced above, explicitly explains that data in the Msg3 buffer are transmitted to the base station "only when" both conditions recited in the claims are met, i.e. they are necessary conditions. *Id*. at col. 14, ll. 3–8.

The parties also address the relevance of the prosecution history of a child of the '236 patent. PO Resp. 25–27; Reply 20–21. During prosecution of U.S. Patent No. 9,532,336 B2 (Ex. 2013, "the '336 patent"), which shares the same written description as the '236 patent, explicit language was included in the independent method claims to require transmission of data stored in the Msg3 buffer "only when" such data are stored in the Msg3 buffer and the UL Grant was received on the random access response message. Ex. 2014, 146. Such "only when" language did not appear in the claims as originally filed, and was added in response to a rejection in which the Examiner made the following remarks:[8]

> Claim 1 recites the limitation "if there is data stored in the Msg3 buffer and if the UL Grant signal was received on the random access response." The limitation is directed to the action to transmit the UL Grant, however, *there is no language to limit the claim to only this scenario* or the claim language *does not provide an alternative for what if the statement is not true*. The Applicant's invention is not being claimed in independent claims 1 and 9.

*Id*. at 139 (emphases added).

[8] Independent method claim 26 of the '336 patent was added by amendment at the same time, including the "only when" language. Ex. 2014, 151.

Importantly, the claims in the '336 patent do not include language that corresponds to the second "transmitting" limitation of the claims at issue in this proceeding—the "only when" language was added to a limitation that corresponds to the first "transmitting" limitation. We agree with Patent Owner's characterization of the relevance of these facts and of the Examiner's prior basis for rejection of unamended claims of the '336 patent. That is "the Examiner specifically rejected a claim without the 'only when' language *because there was no alternative recited in the claim . . . if the condition[s were] not met*." PO Resp. 27. The addition of the "only when" language in the '336 patent resolves the ambiguity, recognized by the Examiner, that is otherwise resolved in the claims at issue in this proceeding by the presence of the second "transmitting" limitation.

We disagree with Petitioner's contention that "the Examiner's reasoning is flawed because . . . a comprising claim is open-ended and may cover additional, unrecited actions (such as actions performed when a condition is not met)." Reply 20. In making his remarks, the Examiner had rejected the claim for indefiniteness, and nothing in the amendment that resolved the indefiniteness to the Examiner's satisfaction, i.e., reciting "only when," precludes additional, unrecited actions when the conditions are not met. In light of the difference in the claims in the two patents, we are also not persuaded by Petitioner's contention that "the cited portions of the child patent's file history reinforce Petitioner's argument that the term 'if' in the claims of the '236 patent means 'if.'" *Id*. As indicated above, the word "if," in isolation and without more, is ambiguous whether it introduces a sufficient or necessary condition. That ambiguity was resolved by additional

language in the claims of the '336 patent and is resolved in the claims of the '236 patent through the logical interplay of express limitations.

For these reasons, we agree with Patent Owner that "if" in the "transmitting" limitations of independent claims 1 and 7 is properly construed, under the broadest-reasonable-interpretation standard, as introducing *necessary* conditions, rather than sufficient conditions.[9] We adopt such a construction for purposes of this Decision.

*2. Other Terms*

The Petition addresses the construction of certain other terms recited in independent claim 7, taking the position that such terms should not be construed as means-plus-function limitations—a position different than that taken by Petitioner in related litigation where a different claim-construction standard is applied. Pet. 19. Patent Owner does not respond to Petitioner's position and does not proffer its own construction of those terms.

Given that the identified terms do not recite the word "means," and given that Patent Owner does not challenge Petitioner's position, we find it unnecessary to construe the terms expressly. *Williamson v. Citrix Online,*

[9] This construction is consistent with the reasoning of *Ex Parte Schulhauser*, Appeal No. 2013-007847, slip op. (PTAB Apr. 28, 2016) (precedential). Similar to the claims at issue in this proceeding, *Schulhauser* considered a claim that recited "mutually exclusive" steps. *Schulhauser*, slip op. at 6. The Board held that, under the broadest reasonable interpretation, the claim "covers at least two methods, one in which the prerequisite condition for the [first] step is met and one in which the prerequisite condition for the [second] step is met." *Id.* at 8. The Board did not thereby hold that the language of one of the steps could simply be read out of the claim (as Petitioner's argument would effectively require) nor that that language could not properly inform construction of the other of the steps.

*LLC*, 792 F.3d 1339, 1348 (Fed. Cir. 2015) (en banc) ("the failure to use the word 'means' also creates a rebuttable presumption—this time that § 112, para. 6 does not apply"); *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) ("[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy."). We accord the terms their ordinary and customary meaning, without resort to the provisions of 35 U.S.C. § 112, ¶ 6.

### *B. Legal Principles*

A claim is unpatentable for obviousness under 35 U.S.C. § 103 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) objective evidence of non-obviousness, i.e., secondary considerations.[10] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Additionally, the obviousness inquiry typically requires an analysis of "whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring "articulated

[10] The parties do not address secondary considerations, which, accordingly, do not form part of our analysis.

reasoning with some rational underpinning to support the legal conclusion of obviousness")); *see In re Warsaw Orthopedic, Inc.*, 832 F.3d 1327, 1333 (Fed. Cir. 2016) (citing *DyStar Textilfarben GmbH & Co. Deutschland KG v. C. H. Patrick Co.*, 464 F.3d 1356, 1360 (Fed. Cir. 2006)).

To prevail on its challenges, Petitioner must demonstrate by a preponderance of the evidence that the claims are unpatentable. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). "In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable." *Harmonic Inc. v. Avid Tech., Inc.* 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify "with particularity . . . the evidence that supports the grounds for the challenge to each claim")). The burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC. v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1326–27 (Fed. Cir. 2008)) (discussing the burden of proof in *inter partes* review). Furthermore, Petitioner does not satisfy its burden of proving obviousness by employing "mere conclusory statements." *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

### *C. Level of Skill in the Art*

Petitioner contends that a person of ordinary skill in the art "would have had a Master's of Science Degree in an academic area emphasizing electrical engineering, physics, computer engineering, or an equivalent field (or a similar technical Master's Degree, or higher degree) with a concentration in wireless communication and networking systems." Pet. 20.

Alternatively, according to Petitioner, a person of ordinary skill "would have had a Bachelor's Degree (or higher degree) in an academic area emphasizing electrical engineering, physics, or computer engineering and having two or more years of experience in wireless communication and networking systems." *Id*. Petitioner asserts that "[a]dditional education in a relevant field, such as computer engineering, physics, or electrical engineering, or industry experience may compensate for a deficit in one of the other aspects of the requirements stated above." *Id*. at 20–21. In addition, Petitioner contends that a person of ordinary skill "would also have had experience with the wireless Standard Setting Organizations such as ETSI, IEEE, and 3GPP[11], and would have been familiar with relevant standards and draft standards directed to wireless communications." *Id*. Petitioner's declarant, Jonathan Wells, Ph.D., makes substantially the same statements as appear in the Petition. Ex. 1003 ¶ 39.

Patent Owner does not directly address the level of skill possessed by a person of ordinary skill in the art in its Response.

For purposes of this Decision, we agree with and adopt the level of skill proposed by Petitioner.

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[11] The Third Generation Partnership Project ("3GPP"), which published Specification 321, is a standards-setting organization for mobile communications and was developing the LTE cellular communication system. *See* Pet. 33; PO Resp. 2; Ex. 1001, col. 1, ll. 22–25.

*D. Scope and Content of the Prior Art*

*1. Kitazoe*

*a. Availability as Prior Art*

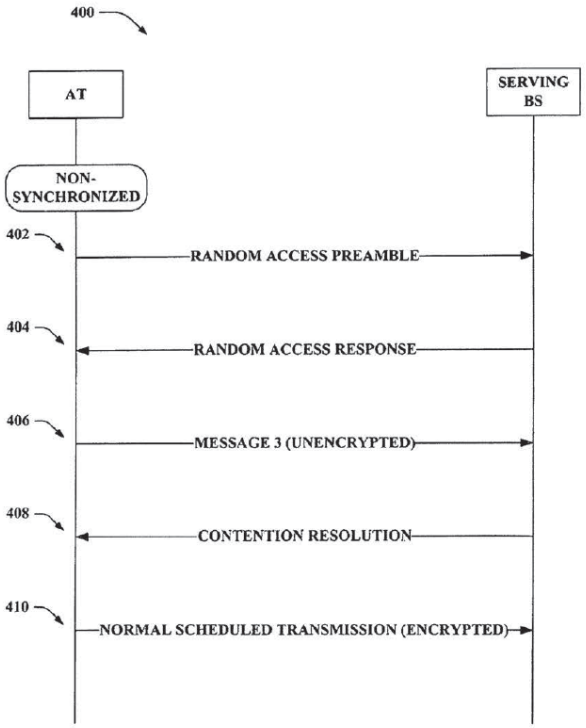
The '236 patent was filed on August 10, 2009, claiming the benefit of the August 11, 2008, filing date of U.S. Prov. Appl. No. 61/087,988 under 35 U.S.C. § 119(e), and claiming priority under 35 U.S.C. § 119(a) to Korean patent application 10-2009-0057128, filed June 25, 2009. Ex. 1001 at [60], [30]. Petitioner "does not acknowledge that the '236 patent is entitled to its proclaimed priority date." Pet. 4, n.1. Patent Owner does not address this issue in its Response.

Kitazoe was filed on June 10, 2008, claiming the benefit of the August 14, 2007, filing date of U.S. Prov. Appl. No. 60/955,867 under 35 U.S.C. § 119(e). Ex. 1005 at [60]. Petitioner contends that "at least one claim of the Kitazoe patent is supported by disclosure in the Kitazoe Provisional," and that Kitazoe is therefore "entitled to the earlier priority date of the Kitazoe Provisional" application. Pet. 4–8. Patent Owner does not dispute this contention in its Response.

Petitioner presents arguments that Kitazoe's claims are supported by the disclosure of U.S. Prov. Appl. No. 60/955,867 so that its teachings are available as prior art as of August 14, 2007. *Id.* We do not reach these arguments. Patent Owner has not presented antedating evidence that might bear on the availability of Kitazoe as prior art to the '236 patent. Even if Petitioner's arguments fail, Kitazoe still qualifies as prior art under 35 U.S.C. § 102(e) by virtue of its June 10, 2008, filing date, which precedes the August 11, 2008, earliest potential effective filing date for the challenged claims.

*b. Disclosure of Kitazoe*

Kitazoe is titled "Encryption of the Scheduled Uplink Message in Random Access Procedure," and generally discloses a system and method for selectively encrypting uplink messages from access terminals to base stations in random-access procedures to gain access to wireless communications systems, such as LTE systems. Ex. 1005, [54], abst., col. 1, ll. 23–26, col. 1, ll. 45–46, col. 2, ll. 13–15, col. 6, ll. 27–48. Kitazoe describes a "random access procedure that leverages encrypted and/or unencrypted data in a scheduled uplink message." *Id.* at abst. The scheduled uplink message can be referred to as a "message 3," and access terminals include "cellular phones, smart phones . . . and/or any other suitable device" for communicating over wireless systems. *Id.* at col. 8, ll. 31–34, col. 7, ll. 46–50. Figure 4 of Kitazoe is reproduced below.



In Figure 4, signaling diagram 400 illustrates uplink message transmission by an access terminal ("AT"). *Id*. at col. 5, ll. 25–28, col. 12, ll. 58–60. At step 402, the access terminal transmits a random-access preamble to a serving base station ("Serving BS"). *Id*. at col. 12, ll. 63–64. At step 404, a random-access response is sent by the serving base station to the access terminal, which, at step 406, can use the uplink grant to transmit unencrypted message 3 to the base station. *Id*. at col. 13, ll. 1–8. In response to message 3, at step 408, the base station can send a contention-resolution message to the access terminal, which, at step 410, transmits a "normal scheduled" encrypted message to the base station. *Id*. at col. 13, ll. 12–14, col. 13, ll. 21–24. The access terminal can include memory that can store data to be transmitted.

*2. Niu*

Niu is titled "Network Interface Device Architecture for Storing Transmit and Receive Data in a Random Access Buffer Memory Across Independent Clock Domains," and generally describes methods and systems for buffering data in random-access memory in a network interface device. Ex. 1012, [54], col. 1, ll. 9–12, col. 2, l. 66–col. 3, l. 5. The buffer can store data "to be output onto the network" and receive data for storage. *Id*. at abst., col. 7, l. 64–col. 8, l. 9. A circuit in Niu's network interface device "can asynchronously determine the presence of at least one stored data frame" in the transmit buffer. *Id*. at col. 11, ll. 23–27.

*3. Specification 321*

Specification 321 is a technical specification published by the 3GPP and describes the "Medium Access Control" ("MAC") architecture in an LTE system, used for "[d]ata transfer" and for "[r]adio resource allocation." Ex. 1007, 8. Detailed procedures involving the MAC architecture are described in Section 5 of the reference, *id*. at 11–22, and several specific aspects of these procedures are relevant to Petitioner's challenges.

For example, Sections 5.1.4 and 5.1.5 describe procedures in which user equipment monitors a Physical Downlink Control Channel ("PDCCH") for certain messages. *Id*. at 12–14. As described in Section 5.1.4, once the random-access preamble is transmitted, the user equipment monitors the PDCCH in a time window (referred to as a "TTI" or "transmission time interval") for random-access responses. *Id*. at 12. The user equipment may stop such monitoring after successfully receiving a random-access response that corresponds to the random-access preamble transmission. *Id*. As part of a contention-resolution procedure described in Section 5.1.5, the user equipment also monitors the PDCCH for a contention-resolution message after an uplink message, such as message 3, is transmitted. *Id*. at 13 ("Once the uplink message . . . is transmitted, the UE shall . . . monitor the PDCCH until the Contention Resolution Timer expires.") (bracketing in original omitted). As set forth in Section 5.4.1, the user equipment includes a "HARQ entity" that controls transmission and reception of messages by the user equipment, including the random-access response message, and dictates which transmissions use which uplink grants. *Id*. at 16; *see* Ex. 1003 ¶ 79.

The HARQ entity is described in detail in Section 5.4.2.1, which explains that "[t]here is one HARQ entity at the [user equipment]," and that

"[a] number of parallel HARQ processes are used in the [user equipment] to support the HARQ entity, allowing transmissions to take place continuously while waiting for the feedback on the successful or unsuccessful reception of previous transmissions." *Id*. at 17. Each such HARQ process "is associated with a HARQ buffer." *Id*. (Section 5.4.2.2).

Of particular relevance is Section 5.4.2.1's enumeration of the conditions under which, at a given transmission time interval, the HARQ entity transmits a new payload, generates a retransmission, or has its associated buffer flushed. First, if an uplink grant indicates a "new transmission" for the transmission time interval *and* an "uplink prioritisation" entity indicates the need for a new transmission, the protocol data unit ("PDU") to be transmitted is obtained from a "Multiplexing and assembly" entity *and* the HARQ process is instructed to trigger transmission of the new payload using identified parameters. *Id*. Second, if an uplink grant indicates a "new transmission" but the uplink prioritization entity does *not* indicate the need for a new transmission, the HARQ buffer is flushed. *Id*. Third, if an uplink grant does *not* indicate a new transmission, the HARQ entity is instructed to generate a retransmission under two circumstances: (a) the uplink grant indicates a retransmission, *or* (b) the HARQ buffer of the corresponding HARQ process is not empty. *Id*.

### *E. Analysis*

Petitioner relies on Dr. Wells's testimony in explaining how the combination of Kitazoe, Niu, and Specification 321 teach the limitations of claims 1–4, 6–10, 12, and 13. Pet. 27–61 (citing Ex. 1003). Petitioner

additionally relies on Kitazoe II, discussed below, in addressing the further limitation of claim 5. *Id*. at 61–64.

*1. Combination of Kitazoe, Niu, and Specification 321*

Petitioner proposes to combine the teachings of Kitazoe, Niu, and Specification 321 into a system that has the following characteristics and which Petitioner contends meets all limitations of the relevant claims. Pet. 27–31. First, Petitioner observes that Kitazoe describes transmitting an unencrypted Msg3 to the target base station during a random access procedure "in response to [a] received random access response." *Id*. at 27 (citing Ex. 1005, col. 13, ll. 60–66). Petitioner also observes that, in Kitazoe, the user equipment includes memory for storing "data to be transmitted," which Petitioner equates with a "buffer." *Id*. (citing Ex. 1005, col. 19, l. 64–col. 20, l. 1). "Similarly, Niu teaches a 'transmit buffer' located within a 'random access memory' for storing 'transmit data to be output onto the network.'" *Id*. at 27–28 (quoting Ex. 1012, abst., col. 2, l. 66–col. 3, l. 1, col. 8, l. 5). In addition, Petitioner observes that Niu further teaches "asynchronously determin[ing] the presence of at least one stored data frame" in the transmit buffer in response to the occurrence of an event. *Id*. at 28 (quoting Ex. 1012 col. 3, ll. 58–61, col. 11, ll. 23–24).

Based on these observations, Petitioner reaches two conclusions regarding the combination of Kitazoe and Niu: (1) the Msg3 data transmitted by the user equipment, as described in Kitazoe, is stored in the "transmit buffer" described by Niu prior to transmission; and (2) to transmit the data stored in the Msg3 buffer, "the user equipment 'determines the presence of at least one stored data frame' in the transmit buffer when the

random access response including the UL grant signal is received," as described in Niu. *Id*. (citing Ex. 1012, col. 3, ll. 58–61, col. 11, ll. 23–24; Ex. 1005, col. 13, ll. 60–66; Ex. 1003 ¶ 131).

Second, Petitioner observes that Specification 321 teaches that the user equipment receives the contention-resolution message on a PDCCH. *Id*. at 28 (citing Ex. 1007 § 5.1.5). Coupled with Kitazoe's teaching of user equipment receiving a contention-resolution message, Petitioner reasons that, in the combined system, the contention-resolution message of Kitazoe is received on a PDCCH. *Id*. at 28 (citing Ex. 1005, col. 13, ll. 24–26, Fig. 4; Ex. 1007 § 5.1.5; Ex. 1003 ¶ 106).

Third, Petitioner observes that Specification 321 teaches that the user equipment in an LTE system like that taught by Kitazoe includes a HARQ entity that controls transmission and reception of messages by the user equipment. *Id*. at 28–29 (citing Ex. 1007, § 5.4.1; Ex. 1003 ¶¶ 132). Petitioner reasons that the HARQ entity taught by Specification 321, and its functionality, would be included in the user equipment of Kitazoe:

> In the combination, the reception of messages from the base station (such as the random access response), the transmission of messages to the base station (such as the [Msg3] and new data), and the processing of uplink grants received by the user equipment are performed by the HARQ entity and the HARQ processes taught by [Specification 321]. The user equipment of the combination also monitors the downlink for random access responses sent by the base station, and ceases monitoring "after successful reception of a Random Access Response corresponding to the Random Access Preamble transmission." . . . Also in the combination, new data to be transmitted by the user equipment to the base station is acquired from a "Multiplexing and assembly entity" by the HARQ entity.

*Id*. (citing Ex. 1007 §§ 5.4.1, 5.4.2.1). Petitioner supports this reasoning with testimony by Dr. Wells, which we credit. Ex. 1003 ¶¶ 125–132. Petitioner identifies corresponding elements among the references in proposing the combination.

Petitioner also provides explicit reasoning why a person of skill in the art would have combined the references' teachings in the proposed manner. Pet. 29–31. This reasoning is grounded in Petitioner's contention that the modifications would "enable 'efficient transfer of' the [Msg3] data." *Id*. at 29 (citing Ex. 1012, col. 4, ll. 52–53). In particular, Petitioner contends that a person of ordinary skill in the art "would have modified the user equipment described in Kitazoe to store [Msg3] data to be transmitted in a transmit buffer, as taught by Niu, and to determine that data is stored in the transmit buffer, as also taught by Niu, when the random access response including the uplink grant is received." *Id*. at 29.

In explaining the rationale for combining the references, Petitioner focuses on Niu's disclosure of a "synchronization circuit" that "enabl[es] the use of a random access memory as a buffer in a network interface device." *See* Ex. 1012, col. 2. l. 66–col. 3, l. 1, col. 3, ll. 58–61. Petitioner reasons that one of skill in the art would have understood that Niu's synchronization circuit allows a device, such as the user equipment of Kitazoe, to asynchronously determine the presence of data in a transmit buffer. Pet. 30 (citing Ex. 1012, col. 3, ll. 58–61). "This allows the operation of the device to be 'optimized' by enabling it to determine whether there is data in a buffer in response to an event, such as the reception of an uplink grant from the network." *Id*. (citing Ex. 1012, col. 12, ll. 12–15; Ex. 1015, col. 13, ll. 60–66; Ex. 1003 ¶ 134). Because Niu teaches that such an arrangement

"enables faster, more reliable design implementation," Petitioner argues that a person of skill in the art would have been motivated to perform the described modification to achieve this benefit, and that the results of the modification "would have been predictable because Kitazoe describes storing data to be transferred in memory (i.e., a buffer), and Niu describes one known way of implementing such functionality." *Id*. (citing Ex. 1012, col. 13, ll. 50–53; Ex. 1005, col. 19, l. 64–col. 20, l. 1; Ex. 1003 ¶ 134).

In addressing the further combination with Specification 321, Petitioner recognizes that both Kitazoe and Specification 321 "describe wireless network systems implementing the 'LTE' protocol." *Id*. (citing Ex. 1005, col. 6, l. 46; Ex. 1007 §§ 3.2, 4.3.1). This commonality, according to Petitioner, makes the result of its proposed modifications predictable, particularly to modify the operations of the user equipment of Kitazoe to conform to the LTE system standard described by Specification 321. *Id*. at 31 (citing Ex. 1003 ¶ 135). These assertions provide rational underpinning to Petitioner's reasoning, which we find persuasive.

Patent Owner disputes this reasoning, contending that "Niu is not analogous art, or at a minimum Petitioners have not shown that it is." PO Resp. 32. A prior-art reference is considered to be analogous to a claimed invention if it is either: (1) from the same field of endeavor, regardless of the problem addressed; or (2) reasonably pertinent to the particular problem with which the inventor is concerned, regardless of the field of endeavor. *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004). In that regard, "[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one." *KSR*, 550 U.S. at 417.

Patent Owner contends that the '236 patent and Niu "are in different fields of endeavor" because "[t]he '236 patent is directed to wireless systems" and "Niu, on the other hand, is directed to wired systems." PO Resp. 34. Patent Owner also contends that "the Petition does not suggest how Niu is pertinent to the entire problem or the *particular problem* the inventors were trying to solve," characterizing the "problem" as "the loss of data and the deadlock that could result[] from indiscriminately transmitting messages independent of the type of UL Grant received." *Id*. (citing *Circuit Check, Inc. v. QXQ Inc*., 795 F.3d 1331, 1335 (Fed. Cir. 2015); Ex. 1001, col. 12, ll. 13–24, col. 13, ll. 14–18; Ex. 1003 ¶¶ 84–85).

Although we agree with Petitioner that Patent Owner characterizes the relevant fields of endeavor too narrowly by drawing an artificial distinction between wired and wireless systems—a distinction that is tenuously related to the relevance of Niu's teachings, Reply 21–23— it is sufficient that we find Niu reasonably pertinent to the particular problem with which the '236 patent is concerned, namely the handling of data stored in the Msg3 buffer. *See id*. at 23. Although Niu checks a buffer before sending a wired transmission, and Petitioner proposes to use that check before sending a wireless transmission as required by the challenged claims, the problem addressed is the same—checking a buffer before transmission. We find no evidence of a distinction as to what happens after the check. That is, the '236 patent is explicit that "problems may occur" "if the data stored in the Msg3 buffer is transmitted in correspondence with the reception of all UL Grant signals." Ex. 1001, col. 4, ll. 30–33. In the context of this relatively broad characterization of the problem addressed by the '236 patent, the

teachings related to Niu's "transmit buffer" are reasonably pertinent. *See* Ex. 1003 ¶ 133.

Accordingly, we conclude that Petitioner articulates sufficient reasoning for combining the references' teachings, in accordance with the principles set forth in *KSR*.

*2. Independent Claim 1*

For independent claim 1, Petitioner relies on the structure of its proposed combination in contending that all limitations are met, and identifies specific references that disclose individual teachings. Pet. 31–46. Specifically, Petitioner contends that Kitazoe teaches "receiving an uplink grant (UL Grant) signal from a base station on a specific message." *Id.* at 33–34 (citing Ex. 1005, col. 17, ll. 27–28, col. 13, ll. 1–8, col. 16, ll. 41–43, col. 13, ll. 11–16).

For the limitation of "determining whether there is data stored in a message 3 (Msg3) buffer when receiving the UL Grant signal on the specific message," Petitioner observes that, in its proposed combination, "the user equipment 'utilize[s] the uplink grant' received in the random access response 'to transmit message 3' to the base station," and that "[t]he data to be transmitted via the message 3 is stored in a 'transmit buffer.'" *Id.* at 35 (quoting Ex. 1005, col. 13, ll. 6–8; citing Ex. 1012, abst., col. 2, l. 66–col. 3, l. 1, col. 8, l. 5). Petitioner's reasoning that the limitation is met relies on Niu's explicit disclosure that its synchronization circuit "determine[s] the presence of at least one stored data frame." Ex. 1012, col. 11, ll. 23–24. Incorporating this disclosure into its proposed combination of teachings, Petitioner reasons that the combination includes "user equipment [that]

'determines the presence of at least one stored data frame' in the transmit buffer when the random access response including the UL grant signal is received in order to transmit the message 3 data." Pet. 35 (citing Ex. 1012, col. 3, ll. 58–61, col. 11, ll. 23–24; Ex. 1005, col. 13, ll. 60–66; Ex. 1003 ¶ 127).

Patent Owner disputes this reasoning, characterizing it as "misleading" and embracing an "unexplained discrepancy . . . between 'determining whether there is data stored' (as required by the '236 patent) and measuring the amount of data stored (as Niu teaches)." PO Resp. 37. But in making this argument, Patent Owner places unreasonable weight on Petitioner's citation of Niu's disclosure at column 3, lines 58 to 59, that "the amount of data stored in the random access transmit buffer is monitored asynchronously," while evading Petitioner's additional citation to Niu's disclosure at column 11, lines 23 to 24, that "the synchronization circuit can asynchronously determine the presence of at least one stored data frame." *See* Reply 25. Patent Owner's additional hypothetical involving the presence of a partial data frame stored in the buffer does not diminish the reasonable understandings that one of skill in the art would draw from Niu. *See* PO Resp. 37. That is, we agree with Petitioner that Niu's teaching of asynchronous determination of the presence of at least one stored data frame would reasonably teach one of skill in the art to determine whether there are data stored in the buffer. *See* Ex. 1003 ¶ 134.

With respect to the limitation of "determining whether the specific message is a random access response message," Petitioner makes a sufficient showing through its observation that Kitazoe "teaches that the user equipment determines 'non-security-critical' information 'that can be

transmitted as part of the . . . unencrypted message 3,' and determines 'security-critical information' that can be transmitted as part of the later encrypted message." Pet. 38 (quoting Ex. 1005, col. 11, ll. 20–27) (alteration by Petitioner). Supported by testimony of Dr. Wells, Petitioner reasons that "[i]n order to determine whether to send 'non-security-critical' or 'security-critical' information in response to a specific message, the user equipment determines whether the specific message including the uplink grant is a random access response message." *Id.* at 38 (citing Ex. 1003 ¶ 93). Patent Owner does not dispute this argument.

For the two "transmitting" limitations, in addition to addressing the claim construction that Petitioner advocates, Petitioner alternatively addresses the claim construction we adopt for this Decision. *Id.* at 40–41. Specifically, Petitioner identifies Kitazoe's teaching that "the term 'message 3' refers to the scheduled transmission sent by the access terminal to [the] base station [] as granted by the random access response message from [the] base station." *Id.* at 40 (quoting Ex. 1005, col. 8, ll. 32–35) (alterations by Petitioner). Supported by testimony of Dr. Wells, Petitioner reasons that "[t]his indicates that message 3 is only sent using the uplink grant included in the random access response," and that "[b]ecause the message 3 is sent when this particular uplink grant is received and this particular uplink grant is only included in the random access response . . . , Kitazoe teaches that message 3 is sent only when the random access response is received (i.e., only when 'the specific message is the random access response message')." *Id.* (citing Ex. 1003 ¶ 128). This reasoning is persuasive.

Furthermore, also supported by testimony of Dr. Wells, Petitioner contends that a person of ordinary skill in the art "would have understood that the data in the Msg3 buffer can be transmitted 'only when' there is data stored in the Msg3 buffer." *Id.* at 41(citing Ex. 1003 ¶ 129). We agree with Petitioner's and Dr. Well's reasonable inference that a person of skill in the art would have understood that "if there is no data stored in the Msg3 buffer, . . . there would have been nothing to transmit." *Id.* (citing Ex. 1003 ¶ 129). Petitioner thus shows that the combination of art meets the first "transmitting" limitation when both recited conditions are satisfied.

For the converse case, when at least one of the recited conditions is not met, Petitioner makes two relevant observations. First, "Kitazoe teaches that the user equipment 'transmits a normal scheduled transmission message, which is encrypted, to the base station' after the random access procedure is completed." *Id.* at 45 (quoting Ex. 1005, col. 13, ll. 21–26) (alteration by Petitioner). Second, "Kitazoe further teaches that encrypted messages (such as this) cannot be sent in response to the random access response message (i.e., before message 3 is received by the base station), because the base station determines a 'security configuration' for the UE based on the information included in message 3." *Id.* (citing Ex. 1005, col. 10, ll. 65–67). That is, Kitazoe teaches that encrypted messages cannot be sent to the base station before determining the security configuration, "because the base station 'would not know which security configuration to apply in order to decrypt such encrypted message[s]' and thus 'would be unable to decipher the encrypted' messages." *Id.* (citing Ex. 1005, col. 10, l. 65–col. 11, l. 1). We agree with Petitioner's reasoning that these disclosures teach that the encrypted scheduled transmission message, i.e., the "new data," is

transmitted only after the random access procedure is complete. *See id*. at 45–46.

Patent Owner "does not dispute" that Kitazoe "shows transmission of the Msg3 buffer data (the Scheduled Transmission) taking place after receipt of a random access response." PO Resp. 40. Nevertheless, Patent Owner contends that "Kitazoe takes a narrow view of what can occur during a random access procedure" and "does not consider the more complex case" in which a "UL Grant is not in a random access response message but is instead contained in a PDCCH communication." *Id*. at 41–42. In such a "more complex case," Patent Owner argues, "the Msg3 buffer data is sent responsive to a [different message], an UL Grant *not* in a random access response." *Id*. at 44. Patent Owner contends that such a "more complex case" illustrates an example in which Msg3 buffer data are transmitted even when the (necessary) conditions recited in the first "transmitting" step are not satisfied. *Id*.

Patent Owner's argument is not persuasive. Patent Owner's reliance on its "more complex case" is unavailing. As Dr. Wells testifies, this complex case is a "contrived hypothetical" that does not "relate[] to what is described in Kitazoe," Ex. 2010, 60:21–22, 61:6–8. The fact that Patent Owner can hypothesize a system that is more complex than Kitazoe that does not teach or suggest the claim limitation does not negate the fact that the system described in Kitazoe does.

We conclude that Petitioner demonstrates, by a preponderance of the evidence, that independent claim 1 is unpatentable under 35 U.S.C. § 103(a) over Kitazoe, Niu, and Specification 321.

*3. Dependent Claims 2–4 and 6*

Each of claims 2–4 and 6 depends directly from independent claim 1. Patent Owner does not contest any aspect of Petitioner's challenge to these claims apart from its arguments directed at underlying claim 1. For each of these claims, we agree with Petitioner's reasoning, which is summarized below.

Claim 2 recites that the second "transmitting" limitation of claim 1 includes "acquiring a Medium Access Control Protocol Data Unit (MAC PDU) from a multiplexing and assembly entity" and "transmitting the MAC PDU to the base station." Ex. 1001, col. 17, ll. 4–9. For these additional limitations, Petitioner identifies Specification 321's disclosure of user equipment that "obtain[s] the MAC PDU to transmit from the 'Multiplexing and assembly' entity" and for "instruct[ing] the HARQ process . . . to trigger the transmission of this new payload." Pet. 46; Ex. 1007, 17 (§ 5.4.2.1).

Claim 3 recites that the UL Grant signal received on the specific message "is a UL Grant signal received on a Physical Downlink Control Channel (PDCCH)" and that "the user equipment transmits new data in correspondence with the UL Grant signal received on the PDCCH." Ex. 1001, col. 17, ll. 10–16. For these limitations, Petitioner relies on its identification of new data transmitted to the base station in correspondence with the UL grant signal received in the contention resolution message from the base station, as taught by Specification 321. Pet. 47; Ex. 1007, 13–14 (§ 5.1.5).

Claim 4 recites that the data stored in the Msg3 buffer "is a Medium Access Control Protocol Data Unit (MAC PDU) including a user equipment identifier." Ex. 1001, col. 17, ll. 17–20. For this limitation, Petitioner

identifies Kitazoe's disclosure that "a MAC layer PDU can be used for the . . . message 3" and that the message 3 can include an "access terminal identifier," which "can also be called a . . . user equipment (UE)." Pet. 47–48; Ex. 1005, col. 16, ll. 30–32, col. 6, ll. 62–66, col. 9, ll. 22–23.

Claim 6 recites that the UL Grant signal received on the specific message "is either a UL Grant signal received on a Physical Downlink Control Channel (PDCCH) or a UL Grant signal received on the random access response message." Ex. 1001, col. 17, ll. 25–29. By again pointing to Specification 321's disclosure related to a contention-resolution message, Petitioner identifies a teaching of the second of these recitations, i.e., "a UL Grant signal received on the random access response message." Pet. 48.

Based on these identifications, which are not contested by Patent Owner, we conclude that Petitioner demonstrates, by a preponderance of the evidence, that claims 2–4 and 6 are unpatentable under 35 U.S.C. § 103(a) over Kitazoe, Niu, and Specification 321.

*4. Independent Claim 7*

Independent claim 7 recites "user equipment" with limitations that generally parallel those of independent method claim 1, but specifying that functions are performed by "a reception module," "a transmission module," "a message 3 (Msg3) buffer," a "Hybrid Automatic Repeat Request (HARQ) entity," and "a multiplexing and assembly entity used for transmission of new data." Ex. 1001, col. 17, l. 30–col. 18, l. 7. As Patent Owner acknowledges, "[i]n large part, claim 7 claims an apparatus that performs the method claimed in claim 1" by "includ[ing] entities adapted to carry out the steps like those of claim 1." PO Resp. 9–10, 30.

We have referred to each of these structural elements above in the context of Petitioner's proposed combination of art, and therefore agree with Petitioner that such structural elements are met by the combination. *See* Pet. 48–58. For the functionality performed by such structural elements, Petitioner advances arguments that parallel those made for independent claim 1. *See id*. For the same reasons discussed above, we conclude that Petitioner makes a sufficient showing of such functionality. Patent Owner does not contest Petitioner's arguments apart from its arguments directed at claim 1.

We conclude that Petitioner demonstrates, by a preponderance of the evidence, that claim 7 is unpatentable under 35 U.S.C. § 103(a) over Kitazoe, Niu, and Specification 321.

*5. Dependent Claims 8–10, 12, and 13*

Each of claims 8–10, 12, and 13 depends, directly or indirectly, from independent claim 7. Patent Owner does not contest any aspect of Petitioner's challenge to these claims apart from its arguments directed at corresponding independent method claim 1. For each of these claims, we agree with Petitioner's reasoning, which is summarized below.

Claim 8 recites "one or more HARQ processes" and "HARQ buffers respectively corresponding to the one or more HARQ processes," with specific limitations on data transmission by "the HARQ entity" recited in claim 7. Ex. 1001, col. 18, ll. 8–19. Claim 9 depends from claim 8 and further recites additional data-transmission limitations by the HARQ processes of claim 8. For both of these claims, Petitioner relies on the description of HARQ entities described in Specification 321, discussed

above, and its related description of data transmission by such HARQ entities. Pet. 59–60; Ex. 1007, 17 (§ 5.4.2.1). We agree with Petitioner that the limitations are met by that disclosure.

Claims 10, 12, and 13 respectively parallel claims 3, 4, and 6, but include structural limitations consistent with their status as apparatus claims directed to "user equipment." Ex. 1001, col. 18, ll. 27–33. For each of these claims, Petitioner relies on the same disclosure, discussed above, as it does for the corresponding method claims. Pet. 60–61.

Based on Petitioner's identifications, which are not contested by Patent Owner, we conclude that Petitioner demonstrates, by a preponderance of the evidence, that claims 8–10, 12, and 13 are unpatentable under 35 U.S.C. § 103(a) over Kitazoe, Niu, and Specification 321.

### *6. Claim 5: Combination of Kitazoe, Niu, Specification 321, and Kitazoe II*

Claim 5 depends from claim 4 and recites that "the data stored in the Msg3 buffer further includes information about a buffer status report (BSR) if the user equipment starts a random access procedure for the BSR." Ex. 1001, col. 17, ll. 21–24. Petitioner challenges claim 5 as unpatentable under 35 U.S.C. § 103(a) over Kitazoe, Niu, Specification 321, and Kitazoe II. Pet. 61–64.

#### *a. Availability of Kitazoe II as Prior Art*

Kitazoe II was filed on December 17, 2008, claiming the benefit of the December 19, 2007, filing date of U.S. Prov. Appl. No. 61/015,159 under 35 U.S.C. § 119(e). Ex. 1009 at [22], [60]. Petitioner contends that

"at least one claim of the Kitazoe-II patent is supported by disclosure in the Kitazoe-II Provisional," and that Kitazoe-II is therefore "entitled to the earlier priority date of the Kitazoe-II Provisional" application. Pet. 9–11.

Petitioner presents arguments that Kitazoe II's claims are supported by the disclosure of U.S. Prov. Appl. No. 61/015,159, so that Kitazoe II's teachings are available as prior art as of December 19, 2017. *Id*. For example, Petitioner asserts the limitations recited in claim 1 and in thirty-eight other claims of Kitazoe II are described in the Kitazoe II provisional application. *Id*. Patent Owner does not respond to these contentions and does not present any antedating evidence that might bear on the availability of Kitazoe II as prior art to the '236 patent. On the record before us, we are persuaded for purposes of this Decision that Kitazoe II is entitled to the earlier effective filing date of the Kitazoe II provisional application, and is prior art to the '236 patent under 35 U.S.C. § 102(e).

*b. Disclosure of Kitazoe II*

Kitazoe II is titled, "Method and Apparatus for Transfer of a Message on a Common Control Channel for Random Access in a Wireless Communication Network," and describes "[t]echniques for sending a message for random access by a user equipment." Ex. 1009 at [54], abst. Kitazoe II discloses that the user equipment may send a message for random access that includes a buffer status report. *Id*. at abst., ¶ 72.

*c. Analysis*

Petitioner contends that the limitation of dependent claim 5 is met by Kitazoe II, which describes that the user equipment may send a buffer-

status-report message in Msg3. Pet. 63–64 (citing Ex. 1009, abst., ¶ 72). In addition, Petitioner contends that one of ordinary skill would have combined this teaching with those of the other references. Pet. 62–63. Petitioner contends that the combination would "increase the data efficiency of the random access procedure, as taught by Kitazoe-II," which "would have been predictable because" the references "describe techniques related to wireless networks using the 'LTE' protocol." *Id*. at 63–64 (citing Ex. 1003 ¶¶ 138–139). Patent Owner does not respond to these contentions.

We are persuaded that Petitioner both identifies relevant disclosure in Kitazoe II that meets the limitation of claim 5 and provides sufficient articulated reasoning with rational underpinning for combining the teachings of Kitazoe, Niu, and Specification 321 with that of Kitazoe II. That is, Petitioner's analysis for claims 1 and 4 sufficiently establishes that those claims are unpatentable for the reasons discussed above, and that one of skill in the art would additionally store information about a buffer status report in the data stored in the Msg3 buffer in accordance with the teachings of Kitazoe II. Accordingly, we conclude that Petitioner demonstrates, by a preponderance of the evidence, that claim 5 is unpatentable under 35 U.S.C. § 103(a) over Kitazoe, Niu, Specification 321, and Kitazoe II.

## III. CONCLUSION

We conclude that Petitioner demonstrates, by a preponderance of the evidence, that claims 1–4, 6–10, 12, and 13 are unpatentable under 35 U.S.C. § 103(a) over Kitazoe, Niu, and Specification 321; and that claim 5 is unpatentable under 35 U.S.C. § 103(a) over Kitazoe, Niu, Specification 321, and Kitazoe II.

## IV. ORDER

It is

ORDERED that, based on a preponderance of the evidence, claims 1–10, 12, and 13 of U.S. Patent No. 7,881,236 B2 are held to be unpatentable; and

FURTHER ORDERED that, because this is a final written decision, parties to this proceeding seeking judicial review of our decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

IPR2016-01229
Patent 7,881,236 B2

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Paper 32
Entered: March 26, 2018

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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APPLE INC., MICROSOFT CORPORATION,
MICROSOFT MOBILE OY, and
MICROSOFT MOBILE INC. (F/K/A/ NOKIA INC.),
Petitioner,

v.

EVOLVED WIRELESS LLC,
Patent Owner.

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Case IPR2016-01229
Patent 7,881,236 B2

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Before WILLAM V. SAINDON, PATRICK M. BOUCHER, and TERRENCE W. McMILLIN, *Administrative Patent Judges*.

BOUCHER, *Administrative Patent Judge*.

DECISION
Denying Patent Owner's Request for Rehearing
*37 C.F.R. § 42.71(d)*

Patent Owner requests rehearing of our Final Written Decision holding claims 1–10, 12, and 13 of U.S. Patent No. 7,881,236 ("the '236 patent") unpatentable. Paper 28 ("Req. Reh'g"). Pursuant to our authorization, Petitioner filed an Opposition (Paper 30) and Patent Owner filed a Reply (Paper 31). By email correspondence, we denied Petitioner's requests either to expunge Patent Owner's Reply from the record as advancing new arguments or to authorize Petitioner to file a sur-reply.

For the reasons set forth below, Patent Owner's Request for Rehearing is denied.

## I. BACKGROUND

"The burden of showing a decision should be modified lies with the party challenging the decision." 37 C.F.R. § 42.71(d). When requesting rehearing of a decision, the party must identify specifically all matters the party believes the Board misapprehended or overlooked, and the place where each matter was previously addressed in the record. *Id*.

Patent Owner's Request for Rehearing focuses on the "transmitting" limitations of independent method claim 1 and the corresponding limitations of independent apparatus claim 7. The "transmitting" limitations of claim 1 recite:

> transmitting the data stored in the Msg3 buffer to the base station using the UL Grant signal received on the specific message, ***if*** there is data stored in the Msg3 buffer when receiving the UL Grant signal on the specific message and the specific message is the random access response message; and
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> transmitting new data to the base station in correspondenc with the UL Grant signal received on the specific message, ***if*** there is no data stored in the Msg3 buffer when receiving the UL

> Grant signal on the specific message or the specific message is not the random access response message.

Ex. 1001, col. 16, l. 59–col. 17, l. 3 (emphases added). In the Final Written Decision, we agreed with Patent Owner that, under the broadest reasonable interpretation, the recitation of "if" in these limitations introduces necessary conditions rather than sufficient conditions. Paper 27 ("Dec."), 12–17. That is, the operation of the two "transmitting" limitations can be described as follows:

> Those limitations implicate two conditions, resulting in different data being transmitted depending on whether both conditions are satisfied or not. The first condition is whether "there is data stored in the Msg3 buffer when receiving the UL Grant signal on the specific message," and the second condition is whether "the specific message is the random access response message." . . . "If" both conditions are satisfied, the "data stored in the Msg3 buffer" are transmitted to the base station; and "if" either condition is not satisfied, "new data" are transmitted to the base station.

*Id*. at 12 (citations omitted). This construction is frequently referred to by the parties as the "only when" construction.

Although Petitioner advocated for a broader construction in which the recitation of "if" more broadly introduces *sufficient* conditions, the Petition also addressed the construction we adopted. Paper 2, 40–41; *see* Dec. 33 (noting Petitioner's alternative argument). In addition to the documentary prior art cited by the Petition, Petitioner also relied on a Declaration by Jonathan Wells, Ph.D., which we accorded evidentiary weight. Ex. 1003; *see* Dec. 32–34. In contrast, we did not accord weight to a Declaration by Todor Cooklev, Ph.D., proffered by Patent Owner, because that declaration

was unsworn and therefore defective.[1] Ex. 2011; Dec. 10–11. Petitioner's evidence cannot be rebutted by Patent Owner's unsworn attorney argument. *See Gemtron Corp. v. Saint-Gobain Corp.*, 572 F.3d 1371, 1380 (Fed. Cir. 2009) ("[U]nsworn attorney argument . . . is not evidence and cannot rebut . . . evidence."). Thus, the weight of the evidence greatly favored Petitioner.

Weighing that evidence—even adopting the construction of the "transmitting" limitations advocated by Patent Owner—we concluded that Petitioner demonstrated sufficiently that both "transmitting" limitations are disclosed by Kitazoe. Dec. 33–35. Ultimately, we concluded that Petitioner demonstrated, by a preponderance of the evidence, that both independent claims 1 and 7 are unpatentable over the combination of art considered, and that the claims that depend therefrom are also unpatentable. *Id.* at 42.

In its Request for Rehearing, Patent Owner contends that "[t]he Board should reconsider its Final Written Decision . . . for two independent reasons." Req. Reh'g 1. First, Patent Owner contends that we "overlooked the Patent Owner's argument about why the additional UL Grant it discussed in the Response is not a 'contrived hypothetical' but is instead grounded in the '236 patent's specification." *Id.* Second, "and more importantly," Patent Owner contends that we overlooked an argument advanced by Patent Owner in its response that the prior art relied on by Petitioner "does not create the conditions that test" the adopted construction. *Id.*

[1] In the Final Written Decision, we noted that, despite having notice of the defect with the Cooklev Declaration, Patent Owner took no affirmative steps to cure the defect. Dec. 11. Patent Owner did not request leave to cure the defect in the Cooklev Declaration with its Request for Rehearing or otherwise.

## II. ANALYSIS

Both of Patent Owner's contentions are grounded in its position that that Kitazoe did not consider conditions that could test whether the Msg3 buffer data are transmitted if the conditions recited in the claims are not met.[2] Req. Reh'g 6. That is, Patent Owner does not dispute in its Request for Rehearing that transmission occurs when the conditions *are* met. *Id*.; *see also* Paper 14, 40 ("Patent Owner does not dispute that [Kitazoe] shows transmission of the Msg3 buffer data . . . taking place after receipt of a random access response."). Instead, Patent Owner bases its request on an argument that Kitazoe insufficiently addresses the circumstance of what behavior results when the conditions are *not* met.

In addressing the "transmitting" limitations, the Final Written Decision considered and addressed this circumstance, i.e. "when at least one of the recited conditions is not met." Dec. 34. In addressing that circumstance, we cited disclosure by Kitazoe identified by Petitioner that "teach that the encrypted scheduled transmission message, i.e., the 'new data,' is transmitted only after the random access procedure is complete." *Id*. at 34–35.

In its Request for Rehearing, Patent Owner reiterates its argument that "Kitazoe 'takes a narrow view of what can occur during a random access procedure.'" Req. Reh'g 9 (quoting Paper 14, 41). Instead, as it did in its Response, Patent Owner "illustrate[s] a more complex case of UL Grant

[2] There appears to be an important omission of the word "not" in the following sentence of the Request for Rehearing: "And fatal to Petitioner's argument, the one place they looked—Kitazoe—admittedly did not consider conditions that could test the [*sic*] whether the Msg3 buffer data is transmitted if Condition X is [***not***] met." Req. Reh'g 6.

reception." *Id*. But we expressly considered this "more complex case"—for which Patent Owner relies on unsworn attorney argument and the unsworn Cooklev Declaration—in light of the cross-examined testimony of Dr. Wells. Dec. 34–35. As summarized in the Final Written Decision, Dr. Wells testified that Patent Owner's "more complex case" is a "contrived hypothetical" that does not "relate[] to what is described in Kitazoe." *Id*. at 35 (quoting Ex. 2010, 60:21–22, 61:6–8). That such a case may have been discussed in the Specification of the '236 patent is not relevant to what a person of ordinary skill in the art would understand from Kitazoe's teachings. *See* Req. Reh'g 11–12.

Although we have reconsidered Patent Owner's reiterated argument, we do not now reach a different conclusion. Patent Owner effectively attempts to intensify Petitioner's burden by casting the already narrower construction of "if" adopted by the Final Written Decision as encompassing a negative limitation. Req. Reh'g 5–6. That is, Patent Owner contends that Petitioner could only make a sufficient showing by exhaustively demonstrating that no prior art performs the respective "transmitting" steps when the conditions are not met. *Id*. at 6 ("Petitioners didn't look everywhere."). This argument demands too much by relying on hypothetical scenarios not addressed by the reference itself, with the attorney argument by Patent Owner supported only by the defective Declaration of its witness. As in the Final Written Decision, we continue to accord weight to the contrary testimony of Dr. Wells, while not according weight to the testimony of Dr. Cooklev.

For these reasons, we are not persuaded that the Final Written Decision misapprehended or overlooked any argument by Patent Owner that would justify a change in that Decision.

## III. ORDER

Accordingly, it is

ORDERED that Patent Owner's Request for Rehearing is *denied*.