

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LG ELECTRONICS INC.,
Petitioner,

v.

PANTECH WIRELESS, LLC,
Patent Owner.

IPR2023-01267
Patent 9,313,809 B2

Before DANIEL J. GALLIGAN, CHRISTOPHER L. OGDEN, and
SCOTT B. HOWARD, *Administrative Patent Judges*.

OGDEN, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Petitioner LG Electronics Inc. (“LG”) filed a Petition (Paper 2, “Pet.”) under 35 U.S.C. §§ 311–319 requesting *inter partes* review (“IPR”) of claims 1–10 of U.S. Patent No. 9,313,809 B2 (Ex. 1001, “the ’809 patent”). Patent Owner Pantech Wireless, LLC (“Pantech”) filed a Preliminary Response (Paper 22, “Prelim. Resp.”).¹ With our authorization, LG also filed a Preliminary Reply (Paper 23, Prelim. Reply”) and Pantech filed a Preliminary Sur-reply (Paper 25, “Prelim. Sur-reply”).

Under the authority delegated to us by the Director of the USPTO under 37 C.F.R. § 42.4(a), we may institute an *inter partes* review when “the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a); *see also* 37 C.F.R. § 42.108(c). Applying that standard, we institute an *inter partes* review of all the challenged claims of the ’809 patent for the reasons explained below. This is a preliminary decision, and we will base our final written decision on the full trial record.

¹ LG identifies itself and LG Electronics U.S.A., Inc. as the real parties in interest. Pet. 4. Pantech identifies itself and Pantech Corporation as the real parties in interest. Paper 3, 1.

II. BACKGROUND

A. THE '809 PATENT (EX. 1001)

The '809 patent describes a method “for terminating an enhanced random access channel (‘E-RACH’) message in an E-RACH transmission.” Ex. 1001, code (57). A random-access channel (“RACH”) is a shared channel “used for the transmission of short control messages” between a wireless transmit/receive unit (“WTRU”)² and a wireless network. *Id.* at 1:33–50. The term *E-RACH* in this context refers to a RACH that makes use of an enhanced dedicated channel (“E-DCH”) “to increase the data rate of the shared channel.” *Id.* at 1:65–67, 3:15–17.

The method described in the '809 patent involves releasing assigned resources used to transmit data on the E-DCH channel while the WTRU is in a cell forward access channel (“CELL_FACH”) state after determining that two buffers (E-DCH and HARQ) are empty. *See id.* at code (57), 5:34–61. The E-DCH buffer is a transmit buffer for data to be sent via the E-DCH channel, and the HARQ (“hybrid automatic repeat request”) buffer is, according to LG’s declarant, “a queue of data associated with prior transmissions that may be requested to be retransmitted by the UE if the prior transmission is not successfully received by the base station.” *Id.* at 5:34–35; Ex. 1003 ¶ 38.

² According to the '809 patent, “the terminology ‘wireless transmit/receive unit (WTRU)’ includes but is not limited to a user equipment (UE), a mobile station, a fixed or mobile subscriber unit, a pager, a cellular telephone, a personal digital assistant (PDA), a computer, or any other type of user device capable of operating in a wireless environment.” Ex. 1001, 2:66–3:4.

Figure 6, reproduced below, is a flow diagram depicting method 600 of releasing E-DCH resources based on the WTRU's buffer status. Ex. 1001, 5:34–36.

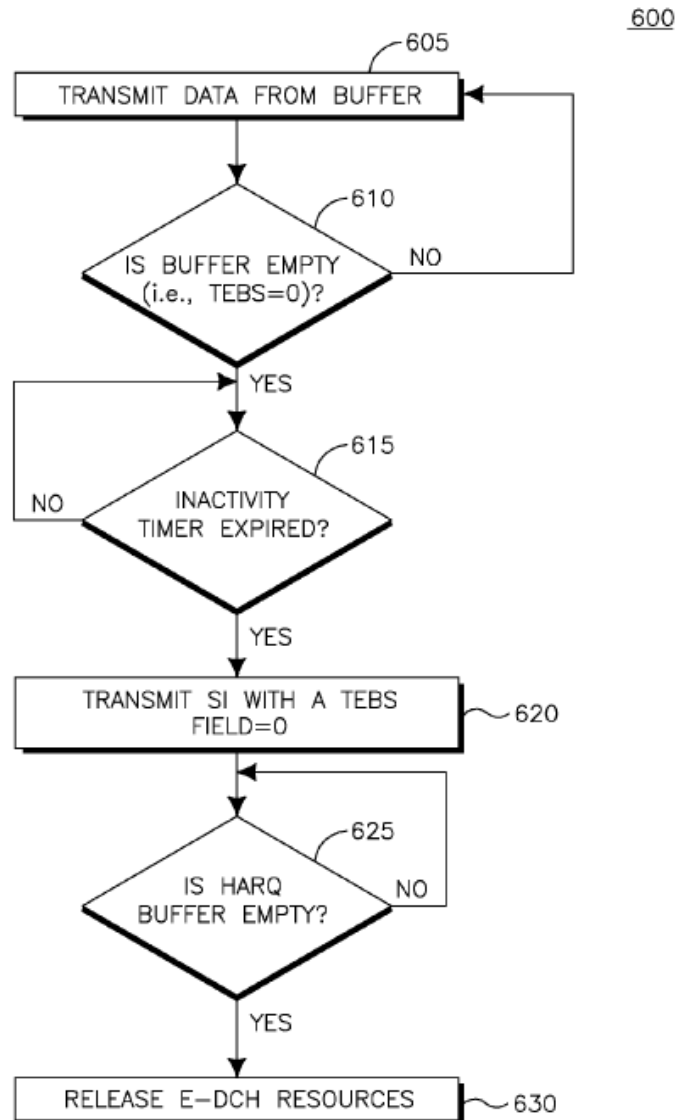


FIG. 6

As shown above, the WTRU continues to transmit any data (step 605) found within the E-DCH buffer until it determines that (1) the E-DCH buffer is empty (step 610), which occurs whenever the Total E-DCH Buffer Status (“TEBS”) is equal to zero; and (2) an inactivity timer has expired (step 615).

Ex. 1001, 5:36–43. At that point (step 620), the WTRU transmits to the wireless base station a special or reserved value of a scheduling information (“SI”) where TEBS is set to zero. *Id.* at 5:43–46. Then, after emptying the HARQ buffer (step 625), the WTRU releases the E-DCH resources (step 630). *Id.* at 5:59–61.

B. CHALLENGED CLAIMS AND GROUNDS

Independent claim 1 is as follows:

- [1.pre] 1. A method performed by a wireless transmit/receive unit (WTRU) to communicate with a base station using an enhanced dedicated channel (E-DCH) resource while in a cell forward access channel (CELL_FACH) state, the method comprising:
- [1.a] determining if a E-DCH buffer is empty;
 - [1.b] transmitting to the base station scheduling information (SI), wherein the SI includes a total E-DCH buffer status (TEBS) equal to zero when the E-DCH buffer is determined to be empty;
 - [1.c] determining if a hybrid automatic repeat request (HARQ) buffer is empty;
- and
- [1.d] releasing the E-DCH resource when the transmission of the SI with the TEBS equal to zero has been made and the HARQ buffer is empty.

Ex. 1001, 10:44–59; *accord* Pet. xiii (LG’s reference numbers added).

LG argues twelve grounds for *inter partes* review, as summarized in the following table (*see* Pet. 9):

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1, 4, 6, 10	103(a) ³	Wager, ⁴ TS25.321 ⁵
1, 4, 6, 10	103(a)	Lee, ⁶ Nokia, ⁷ TS25.321
2, 3, 5, 7–9	103(a)	Wager, TS25.321, Sarkkinen ⁸
2, 3, 5, 7–9	103(a)	Lee, Nokia, TS25.321, Sarkkinen
5, 7	103(a)	Wager, TS25.321, TS25.331 ⁹
5, 7	103(a)	Lee, Nokia, TS25.321, TS25.331
6–10	103(a)	Wager, TS25.321, Chun ¹⁰
6–10	103(a)	Lee, Nokia, TS25.321, Chun
6–10	103(a)	Wager, TS25.321, Sarkkinen, Chun
6–10	103(a)	Lee, Nokia, TS25.321, Sarkkinen, Chun
6–10	103(a)	Wager, TS25.321, TS25.331, Chun
6–10	103(a)	Lee, Nokia, TS25.321, TS25.331, Chun

³ 35 U.S.C. § 103(a) (2006), *amended by* Leahy–Smith America Invents Act (“AIA”), Pub. L. No. 112-29 § 103, sec. (n)(1), 125 Stat. 284, 287, 293 (2011) (effective Mar. 16, 2013). LG applies the pre-AIA version of the statute. *See* Pet. 7 (asserting that references are prior art under pre-AIA § 102 for use in §103(a)).

⁴ Wager et al., US 2009/0225709 A1, published Sept. 10, 2009 (Ex. 1005).

⁵ *Technical Specification Group Radio Access Network; Medium Access Control (MAC) Protocol Specification (Release 7)* (TS 25.321, v. 7.5.0, 3GPP, 2007) (“TS 25.321”) (Ex. 1009).

⁶ Lee et al., WO 2007/078155 A2, published July 12, 2007 (Ex. 1007).

⁷ Nokia, *Further Discussion on Enhanced CELL_FACH in REL8* (TSG-RAN WG2 Meeting #59, 3GPP, Aug. 2007) (Ex. 1008).

⁸ Sarkkinen, US 2006/0176845 A1, published Aug. 10, 2006 (Ex. 1010).

⁹ *Technical Specification Group Radio Access Network; Radio Resource Control (RRC) Protocol Specification (Release 7)* (TS 25.331, v. 7.5.0, 3GPP, 2007) (“TS 25.331”) (Ex. 1011).

¹⁰ Chun et al., US 2006/0251027 A1, published Nov. 9, 2006 (Ex. 1012).

C. DECLARATORY TESTIMONY

LG submits a declaration by Dr. Bertrand Hochwald. Ex. 1003. At this stage, Pantech does not submit declaratory testimony addressing the merits of the Petition.

D. RELATED PROCEEDINGS

As related matters, the parties identify *Pantech Corp. v. LG Electronics Inc.*, No. 22-cv-00113 (E.D. Tex. filed Sept. 2, 2022), *Pantech Corp. v. GNJMfg., Inc.*, No. 21-cv-62474 (S.D. Fl. filed Dec. 8, 2021, terminated Oct. 4, 2021), and *Pantech Corp. v. BLU Products, Inc.*, No. 21-cv-22663 (S.D. Fl. filed July 23, 2021, terminated Oct. 4, 2021). Pet. 4–5; Paper 3, 1.

III. DISCRETIONARY DENIAL

A. 35 U.S.C. § 314(a)

Pantech argues that we should exercise discretion to deny institution under 35 U.S.C. § 314(a) because the factors identified in *Apple, Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential), weigh in favor of denying institution in view of the district court litigation. Prelim. Resp. 19–29.

A Memorandum from Director Vidal titled *Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District*

Court Litigation (USPTO June 21, 2022) (“Interim Procedure”)¹¹ provides that “the PTAB will not deny institution of an IPR or PGR under *Fintiv* . . . where a petitioner stipulates not to pursue in a parallel district court proceeding the same grounds as in the petition or any grounds that could have reasonably been raised in the petition.” Interim Procedure 9. LG has submitted such a stipulation. Prelim. Reply 1; Ex. 1300. Thus, we do not exercise discretion to deny institution under § 314(a).

B. 35 U.S.C. § 325(d)

Pantech argues that we should exercise discretion to deny institution under 35 U.S.C. § 325(d) because, according to Pantech, the Petition argues the same or substantially the same prior art previously presented to the Office. Prelim. Resp. 29–35; Prelim. Sur-reply 1–3. For the reasons stated below, we decline to exercise discretion to deny on this basis.

Section 325(d) provides that, “[i]n determining whether to institute or order [an *inter partes* review], the Director may take into account whether, and reject the petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office.” In evaluating this question, we use a two-part framework, first determining “whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office.” *Advanced Bionics, LLC v. MED-*

¹¹ Available at https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf.

EL Elektromedizinische Geräte GmbH, IPR2019-01469, Paper 6 at 8 (PTAB Feb. 13, 2020) (precedential). If either condition of the first part of the framework is satisfied, then we determine, second, “whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims.” *Id.*

When deciding whether to exercise our discretion under § 325(d) in view of the *Advanced Bionics* framework, we weigh the following nonexclusive factors:

- (a) the similarities and material differences between the asserted references and the prior art involved during prosecution;
- (b) the cumulative nature of the asserted references and the prior art evaluated during prosecution;
- (c) the extent to which the asserted references were evaluated during prosecution, including whether a rejection rested on any reference;
- (d) the extent of overlap between the arguments made during prosecution and Petitioner’s reliance on the asserted references or Patent Owner’s contentions concerning them;
- (e) whether Petitioner has pointed out sufficiently how the Examiner erred in analyzing the asserted references; and
- (f) the extent to which additional evidence and facts presented in the petition warrant reconsideration of the asserted references or arguments.

See Becton, Dickinson & Co. v. B. Braun Melsungen AG, IPR2017-01586, Paper 8 at 17–18 (PTAB Dec. 15, 2017) (precedential as to § III.C.5, para. 1) (formatting altered); *see also Advanced Bionics*, Paper 6 at 9–11 (noting that the Board considers the *Becton, Dickinson* factors in an *Advanced Bionics* analysis).

During examination of parent Application No. 12/238,910, the Examiner rejected the then-existing independent claims multiple times under § 102 as being anticipated by Wager. *See* Ex. 1027, 366–68, 539–42, 587, 728–29. The applicant responded in each case by arguing that the application claimed priority to U.S. Provisional Application No. 60/975,985, filed Sept. 28, 2007 (“the ’985 provisional application,” Ex. 1029), which allegedly antedated Wager. *See* Ex. 1027, 387–88, 560–62, 754. The Examiner ultimately allowed a set of claims, and the application issued July 8, 2014 as Pelletier et al., US 8,744,104 B2 (Ex. 1026, “the ’104 patent”).

Representative claim 1 of the ’104 patent is as follows:

1. A method for completing an enhanced dedicated channel (E-DCH) transmission in a cell forward access channel (CELL_FACH) state by a wireless transmit/receive unit (WTRU), the method comprising:

- determining that *a buffer* is empty;
- on a condition that *the buffer* is empty, triggering a transmission by the WTRU of scheduling information (SI) with a total enhanced dedicated channel (E-DCH) buffer status (TEBS) equal to zero;
- determining *a last hybrid automatic repeat request (HARQ) data transmission*; and
- on a condition that *the buffer* is empty and *the last HARQ data transmission* has been determined, releasing an E-DCH resource.

’104 patent at 10:43–56 (emphasis added); *accord* Ex. 1027, 704. Claim 1 of the ’104 patent is similar to claim 1 of the ’809 patent, except that (1) the former refers to only a single “buffer” (corresponding to the “E-DCH buffer” in claim 1 of the ’809 patent) and (2) does not separately refer to a HARQ buffer or recite determining whether the HARQ buffer is empty, but

instead recites determining a “last HARQ data transmission.” *Compare* Ex. 1027, 704, *with* Ex. 1001, 10:44–59; *see also* Pet. 14 n.12 (contrasting the claims of the ’809 patent with those of the ’104 patent).

Later, when considering what would ultimately become claim 1 of the ’809 patent, the Examiner did not explicitly address whether the ’985 provisional application supported the applicant’s newly introduced reference to two distinct buffers (i.e., a E-DCH buffer and a HARQ buffer). *See* Ex. 1002, 152–59, 365–83; *see also* Pet. 15 (“While Wager was discussed during the ’104’s prosecution . . . , it was not substantively addressed for the ’809; . . . the Claims recite, e.g., ‘HARQ buffer’ elements that are not in the ’104’s claims.” (bolding omitted)).

For reasons we discuss more fully below, *see infra* Section IV.C, we determine that the Examiner erred by failing to revisit, in light of the added reference to a HARQ buffer, whether the ’985 provisional application supported the claims that issued in the ’809 patent. This error was material to the patentability of the challenged claims because the applicant’s arguments responding to the Examiner’s Wager rejections depend on Wager not being prior art. *See* Ex. 1027, 387–88, 560–62, 754; *see also* Pet. 15–16 (“The Examiner . . . erred by not rejecting the ’809 Claims over Wager.”).

Because we determine, under the second part of the *Advanced Bionics* framework, that the Examiner erred in a manner material to patentability of the challenged claims, we need not address the first part of the *Advanced Bionic* framework. Thus, we decline to deny institution discretionarily under § 325(d).

IV. GROUNDS OF THE PETITION

For the reasons below, we determine that LG has demonstrated a reasonable likelihood that it would prevail in showing that at least one of the challenged claims of the '809 patent is unpatentable under a ground of the Petition.

A. LEVEL OF ORDINARY SKILL IN THE ART

The level of ordinary skill in the pertinent art at the time of the invention is a factor in how we construe patent claims. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc). It is also one of the factors we consider when determining whether a patent claim is obvious over the prior art. *See Graham v. John Deere Co. of Kan. City*, 383 U.S. 1, 17–18 (1966).

To assess the level of ordinary skill, we construct a hypothetical “person of ordinary skill in the art,” from whose vantage point we assess obviousness and claim interpretation. *See In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998). This legal construct “presumes that all prior art references in the field of the invention are available to this hypothetical skilled artisan.” *Id.* (citing *In re Carlson*, 983 F.2d 1032, 1038 (Fed. Cir. 1993)).

LG argues that a person of ordinary skill in the art “would have had a bachelor’s degree in electrical and computer engineering, computer science, or the equivalent thereof, and . . . two years of experience with networking and wireless communications systems,” and that “[m]ore education can supplement practical experience, and vice-versa.” Pet. 18 (citing Ex. 1003 ¶¶ 53–54). Pantech does not presently contest this. *See Prelim. Resp.*

LG’s proposed articulation is uncontested, supported by testimonial evidence, and appears consistent with the types of problems and solutions in the ’809 patent. *See* Ex. 1001, 1:25–38. Thus, we adopt the above articulation of the level of ordinary skill for this decision.

B. CLAIM CONSTRUCTION

In an *inter partes* review, we construe a patent claim “using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b).” 37 C.F.R. § 42.100(b). This generally includes “construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” *Id.* The ordinary and customary meaning of a claim term “is its meaning to the ordinary artisan after reading the entire patent,” and “as of the effective filing date of the patent application.” *Phillips*, 415 F.3d at 1313, 1321.

Neither party argues that we should construe any particular claim terms, but the parties agree that the claim preambles of independent claims 1 and 6 are limiting. Pet. 18–19 (citing Ex. 1003 ¶¶ 55–57); Prelim. Resp. 17.

We agree that, for our decision, we do not need to construe any of the terms explicitly. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))). We discuss the claim terms below in the context of the prior art.

C. OBVIOUSNESS GROUNDS BASED ON WAGER

LG argues that claims 1, 4, 6, and 10 are unpatentable under § 103(a) as obvious over Wager in view of TS25.321. Pet. 9, 19–36.

A claim is unpatentable under § 103(a) if the differences between the claimed subject matter and the prior art are “such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). When a ground in a petition is based on a combination of references, we consider “whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *Id.* at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

We base our obviousness inquiry on factual considerations 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) any objective indicia of obviousness or non-obviousness that may be in evidence. *See Graham*, 383 U.S. at 17–18.

Considering these factors,¹² we determine that LG has shown a reasonable likelihood that claim 1 would have been obvious over Wager in view of TS23.321, for the reasons explained below.

¹² Neither party argues at this stage that there are objective indicia of obviousness or non-obviousness, so this factor is not part of our analysis. *See* Pet. 78 (arguing that there is no evidence on record of any secondary considerations of non-obviousness); *see* Prelim. Resp.

1. *Overview of Wager*

Wager describes “[a] low overhead signaling scheme for quickly and effectively releasing of common E-DCH resources between a UE and a base station.” Ex. 1005, code (57).

Figure 6, reproduced below, is a flowchart illustrating steps that may be taken to manage common E-DCH resources. Ex. 1005 ¶45.

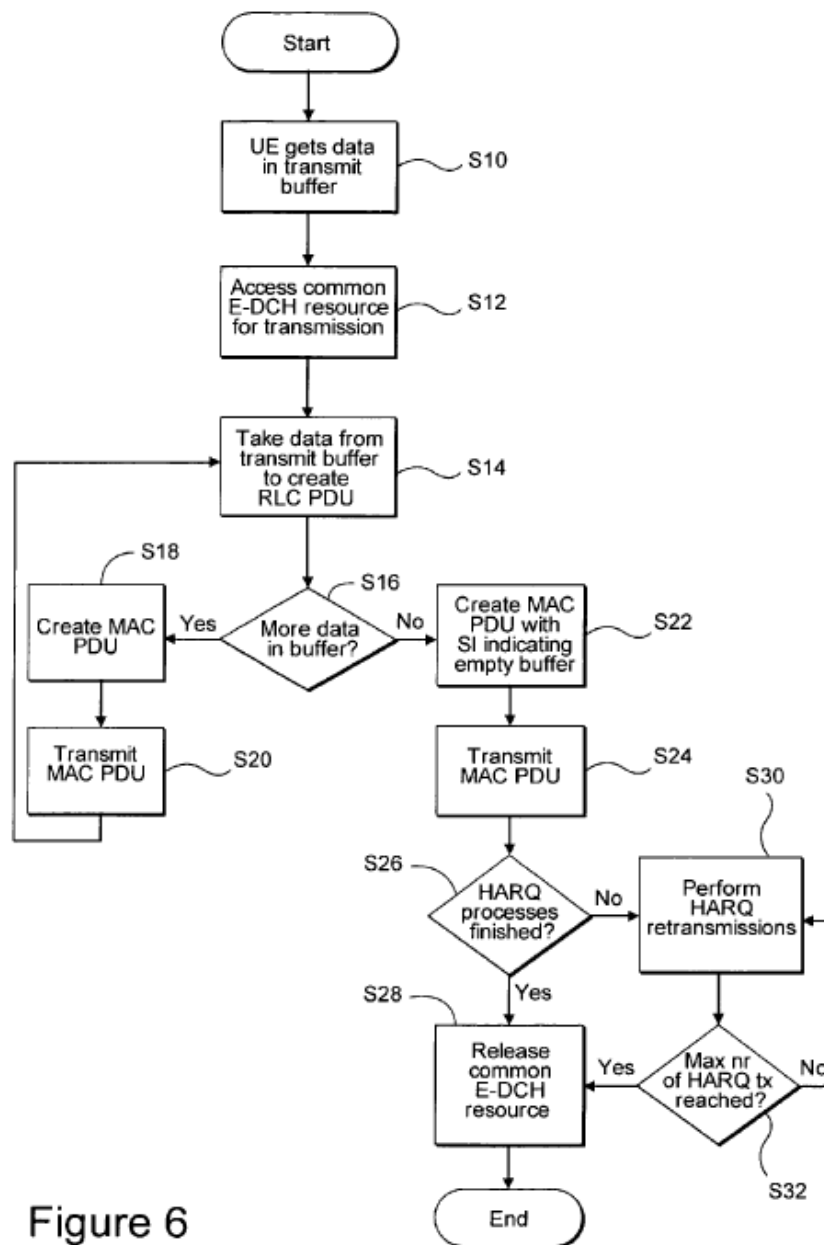


Figure 6

As shown in Figure 6 above, “the UE receives data in a transmit buffer” (step S10) and “sends a message on the RACH to the base station requesting access to a common E-DCH resource for uplink transmission (step S12).”

Ex. 1005 ¶ 45. Data is transmitted as long as there is data in the UE’s transmit buffer (steps S14, S16, S18, S20). *See id.*

“If there is no more data in the UE’s transmit buffer,” the UE transmits to the base station an SI “indicating that the mobile’s transmit buffer is empty” (steps S22, S24). Ex. 1005 ¶ 46. Then “[a] decision is made in the UE in step S26 whether all of the HARQ processes for this UE uplink transmission have been completed (step S26). If they are, the UE releases the common E-DCH resource (step S28).” *Id.* Otherwise, “the base station performs the necessary HARQ retransmissions for the still pending HARQ processes (step S30)” up to some maximum number of retransmissions (steps S30, S32), and then “the common E-DCH resource is released (step S28).” *Id.*

Wager claims priority to Provisional Application No. 61/015,316, filed Dec. 20, 2007 (“the Wager provisional application,” Ex. 1006).

2. *Whether Wager Is Prior Art*

The ’809 patent issued from an application filed June 30, 2014. Ex. 1001, code (22). It claims the benefit of priority, through a parent continuation application, to the ’985 provisional application, filed September 28, 2007, which would antedate the Wager provisional application. *See* Ex. 1001, codes (60), (63).

LG argues that the challenged claims are not entitled to the benefit of the ’985 provisional application because the latter “do[es] not provide written description support for at least ‘releasing the E-DCH resource

when . . . the HARQ buffer is empty.” Pet. 13 (citing Ex. 1003 ¶¶ 50–51). According to LG, the ’985 provisional application’s “sole discussion of ‘HARQ buffers’ (¶ 37) does not disclose releasing resources *when* the HARQ buffer is already empty,” and “the HARQ buffer is flushed only *after* the release process has begun: once the ‘WTRU-initiated triggers’ for release are satisfied (¶¶ 24–28), the WTRU ‘[c]lear[s]’ all resources by, e.g., ‘*flushing the HARQ buffers*’ (¶ 37).” Pet. 13–14 & n.12 (citing Ex. 1003 ¶ 51).

Pantech argues, to the contrary, that “the ’985 [p]rovisional [application] provides full support for this challenged claim element.” Prelim. Resp. 37 (citing Ex. 1027, 561). Pantech points to references in the ’985 provisional application to “WTRU-initiated triggers . . . based on the status of its queue or buffer,” including that “[t]he WTRU has emptied its buffer.” *Id.* at 38 (emphasis omitted) (quoting Ex. 1029 ¶¶ 24–25). According to Pantech, the ’985 provisional application discloses that such triggers “clear all resources that had been allocated for the E-RACH.” *Id.* at 39 (quoting Ex. 1029 ¶ 37).

Under these circumstances, Pantech has the initial burden of going forward on the issue of whether the challenged claims are entitled to the priority date of the ’985 provisional application. *See Dynamic Drinkware, LLC v. National Graphics, Inc.*, 800 F.3d 1375, 1379–1380 (Fed. Cir. 2015). Pantech has not, however, produced evidence showing that each of the limitations of the challenged claims may be found in the ’985 provisional application. Instead, Pantech focuses on a single limitation: whether the ’985 provisional application discloses releasing E-DCH resources based, in part on a HARQ buffer being empty. *See* Prelim. Resp. 37–39. Having not

addressed the other claim limitations, Pantech has not met its initial burden of showing that the '985 provisional application discloses the challenged claims as a whole. *See Zenon Envtl., Inc. v. U.S. Filter Corp.*, 506 F.3d 1370, 1378 (Fed. Cir. 2007) (“[T]o gain the benefit of the filing date of an earlier application under 35 U.S.C. § 120, each application in the chain leading back to the earlier application must comply with the written description requirement of 35 U.S.C. § 112.” (quoting *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1571 (Fed. Cir. 1997)); *see also In re Hogan*, 559 F.2d 595, 609 (CCPA 1977) (“[T]here has to be a continuous chain of copending applications each of which satisfies the requirements of § 112 with respect to the subject matter presently claimed.” (quoting *In re Schneider*, 481 F.2d 1350, 1356 (CCPA 1973)) (alteration in original)).

Also, based on the preliminary record, we find LG’s argument persuasive that the '985 provisional application fails to disclose basing the decision to release E-DCH resources, in part, on whether a HARQ buffer is empty. Although the '985 provisional application mentions flushing a HARQ buffer, this appears to occur only *after* triggering the release of E-DCH resources—not as a factor that contributes to triggering the release of the E-DCH resources. *See* Ex. 1029 ¶¶ 24–28, 37.

Next, Pantech argues that Wager is not entitled to a priority date antedating the priority date of the challenged claims because the Wager provisional application does not support every element of the challenged claims, such as the limitations directed to a HARQ buffer. Prelim. Resp. 40–41.

We disagree with Pantech that Wager cannot be prior art unless the Wager provisional application supports every element of the challenged

claims. As LG correctly points out, “[t]he Petition identifies where all the material relied upon is found in [the Wager provisional application], and elements [1.c]–[1.d] being rendered obvious by Wager in view of TS25.321—rather than Wager alone—does not impact Wager’s prior art status.” Prelim. Reply 2 (citing Pet. 25–36). LG has sufficiently shown, at this stage, that the Wager provisional application supports at least one claim in Wager, thus entitling LG to rely on the priority date of the Wager provisional application under § 102(e). *See* Pet. 19–20; Prelim. Reply 2; *Dynamic Drinkware*, 800 F.3d at 1380–81.

For the above reasons, we determine that LG has sufficiently shown, at this stage, that Wager is prior art.

3. *Overview of TS25.321*

TS25.321 is a 3GPP Technical Specification for a Medium Access Control (MAC) protocol. Ex. 1009, 1, 7–8. In a section titled “Control of E-DCH transmission and reception (FDD),” TS25.321 describes a single “HARQ entity” in the UE, supported by a number of parallel HARQ processes which “allow[] transmissions to take place continuously while waiting for the feedback on the successful or unsuccessful reception of previous transmissions.” *Id.* at 99. It states that “[e]ach HARQ process is associated with a physical buffer (HARQ buffer).” *Id.*

After each transmission time interval (“TTI”), the HARQ entity “instruct[s] the HARQ process to generate a re-transmission” until “the buffer of the HARQ process corresponding to the next TTI is empty.”

Ex. 1009, 99. If an ACK¹³ is received, the HARQ process “shall . . . flush the HARQ buffer.” *Id.* at 100.

4. Preamble

The preamble of claim 1 recites “[a] method performed by a wireless transmit/receive unit (WTRU) to communicate with a base station using an enhanced dedicated channel (E-DCH) resource while in a cell forward access channel (CELL_FACH) state.” Ex. 1001, 8:2–4.

LG argues that Wager (via the Wager provisional application) discloses the preamble, including a method of uplink communication using an E-DCH resource while in the CELL_FACH state. Pet. 25–26 (citing Ex. 1006, 1:3–6, 1:8–2:8, 2:19–21, 3:8–13, 3:24–4:5, 4:9–12, 4:17–20, 5:8–9, 5:12–19, Fig. 1; Ex. 1005 ¶¶ 4–5, 7–8, 27, 42, 44, Figs. 1, 5A–B; Ex. 1003 ¶¶ 77–80).

Pantech does not specifically contest LG’s arguments. *See* Prelim. Resp.

At this stage, we agree with LG that the Wager provisional application discloses the preamble of claim 1. Thus, although the parties agree that the preamble is limiting (Pet. 18–19; Prelim. Resp. 17), this does not affect the outcome of our decision to institute an *inter partes* review, and we need not decide that question at this stage.

¹³ According to Dr. Hochwald, “ACK refers to an acknowledgment signal that indicates to a recipient device (in this case, the UE) that the transmitting device (in this case, the [base station]) has acknowledged something.” Ex. 1003 ¶ 94.

5. *Limitation 1.a*

Limitation 1a recites “determining if a E-DCH buffer is empty.”
Ex. 1001, 10:49.

LG argues that the Wager provisional application discloses setting TEBS to zero “[o]nce a UE in CELL_FACH transmitting on a common E-DCH resource has emptied its RLC transmit buffer.” Pet. 27 (alteration in original) (quoting Ex. 1006, 4:9–10) (citing Ex. 1003 ¶¶ 83–84). According to LG, this action “reflects the UE determination that its E-DCH buffer, also called the ‘RLC transmit buffer,’ is empty.” *Id.* (citing Ex. 1006, 1:3–23, 3:6–13, 4:2–20; Ex. 1005 ¶¶ 8, 31, 33, 41, 43, 45–46, Figs. 3, 4, 5A, 5B; Ex. 1003 ¶¶ 81–85).

Pantech argues that “setting a buffer to zero does not determine if a buffer is empty. For example, ‘setting’ is a write operation whereas ‘determining’ is a read operation—and consequently, no ‘determination’ exists in Wager, as required by the claim language.” Prelim. Resp. 42. According to Pantech, LG does not cure this alleged deficiency by relying on a secondary reference. *Id.* at 42–43.

We do not understand LG to be arguing that the act of “determining” consists of setting the TEBS to zero. Rather, LG appears to argue that the UE sets the TEBS to zero based on a determination that “a common E-DCH resource has emptied its RLC transmit buffer.” Pet. 27 (quoting Ex. 1006, 4:9–10). This would, indeed, require a determination that the E-DCH buffer (the RLC transmit buffer) is empty; otherwise, the UE would not know when to send an SI to the base station in which the TEBS field is set to zero.

Thus, LG has sufficiently shown, at this stage, that Wager discloses limitation 1.a.

6. *Limitation 1.b*

Limitation 1b recites “transmitting to the base station scheduling information (SI), wherein the SI includes a total E-DCH buffer status (TEBS) equal to zero when the E-DCH buffer is determined to be empty.” Ex. 1001, 10:50–55.

LG argues that the Wager provisional discloses this step. Pet. 27–28 (citing Ex. 1006, 4:7–20; Ex. 1005 ¶¶ 8, 31, 33, 42, 45–46, 50–51, Figs. 3, 4, 6; Ex. 1003 ¶¶ 86–90).

Pantech contends that LG’s argument is deficient because it relies on the determination allegedly made in limitation 1.a, and is insufficient for the same reasons. *See* Prelim. Resp. 43–44.

We disagree with Pantech for the reasons discussed above for limitation 1.a. *See supra* Section IV.D.4. We also find LG’s argument persuasive, at this stage, that the Wager provisional discloses limitation 1.b, including transmitting an SI that indicates a TEBS equal to zero when the E-DCH buffer is empty. Ex. 1006, 4:9–12 (“Once a UE in CELL_FACH transmitting on a common E-DCH resource has emptied its RLC transmit buffer, it shall include the Scheduling Information (SI) field in the last MAC PDU, indicating Total E-DCH Buffer Status (TEBS) = 0.”).

7. *Limitation 1.c*

Limitation 1.c recites “determining if a hybrid automatic repeat request (HARQ) buffer is empty.” Ex. 1001, 10:54–55.

LG argues that the Wager provisional “discloses that the UE releases the common E-DCH resource when it determines that ‘all HARQ processes have finished’ [as indicated] by receiving an ‘ACK for all HARQ processes’

from the [base station].” Pet. 28 (quoting Ex. 1006, 4:14–15, 4:27–28) (citing Ex. 1006, 4:7–20, 4:27–5:4; Ex. 1005 ¶¶ 7, 34, 36, 38, 44–46, Figs. 5A, 5B, 6; Ex. 1003 ¶¶ 91–92, 94, 99).

LG contends that Wager “does not disclose details about how the HARQ processes are managed in the UE.” Pet. 28–29 (citing Ex. 1006, 4:7–20, 4:27–5:4; Ex. 1003 ¶ 95). To address this, LG argues that TS25.321 discloses that the UE flushes a HARQ buffer if an ACK is received. Pet. 29 (citing Ex. 1009, 99–100; Ex. 1003 ¶ 96). According to LG, this “affirmatively discloses that the UE determines the buffer is empty by flushing the buffer, and at minimum, it would have been obvious that flushing determines the buffer is empty as that is the purpose of flushing.” *Id.* (citing Ex. 1009, 99; Ex. 1003 ¶¶ 93, 96–97, 100).

LG contends that a person of ordinary skill in the art “would have been motivated to modify Wager’s resource release system according to TS25.321’s HARQ process teachings to yield a system where the UE determines if its HARQ buffer is empty after flushing its HARQ buffer once an ACK is received.” Pet. 29–30 (bolding omitted) (citing Ex. 1009, 19; Ex. 1003 ¶¶ 98–100); *see also* Pet. 22–24 (addressing motivation to combine, analogousness of the references, and reasonable expectation of success).

Pantech argues that “‘receiving an ACK for all HARQ processes’ does not disclose or suggest ‘determining if a HARQ buffer is empty,’” and that LG does not “offer an explanation for this difference.” Prelim. Resp. 43. Pantech also contends that TS25.321’s teaching of “‘flushing’ (the act of transferring out any remaining data . . .) is not equivalent to ‘determining if a HARQ buffer is empty,’ as required by the claim language.” *Id.*

We understand LG to be relying on TS25.321 for its teaching that receiving an ACK for a HARQ process is concomitant with flushing its corresponding HARQ buffer; thus, determining that an ACK has been received is the same as determining that the a HARQ buffer is empty. Pet. 22, 28. Based on the preliminary record, we agree with LG, because according to TS25.321, a HARQ process “shall” empty its associated buffer when an ACK is received. *See* Ex. 1009, 100. Pantech does not point us to any evidence, at this stage, that the word *determining* would exclude inferring the HARQ buffer status indirectly, or that the term otherwise departs from its ordinary and customary meaning.

We also preliminarily credit the testimony of Dr. Hochwald, uncontested at this stage, that “a UE flushing its HARQ buffer would determine that the buffer is empty when completing the flushing process, either as part of the flushing process itself or through a routine check[of] the status of the buffer.” Ex. 1003 ¶ 96 (citing Ex. 1009, 99–100).

Thus, we find LG’s argument persuasive, at this stage, that Wager teaches limitation 1.c in view of TS25.321.

8. *Limitation 1.d*

Limitation 1.d recites “releasing the E-DCH resource when the transmission of the SI with the TEBS equal to zero has been made and the HARQ buffer is empty.” Ex. 1001, 10:57–59.

LG argues that Wager discloses releasing E-DCH resources soon after completing transmission and after an ACK has been received for all HARQ processes. Pet. 30–31 (citing Ex. 1006, 2:9–15, 3:3–5, 4:2–3, 4:7–5:4; Ex. 1005 ¶¶ 7, 9, 26, 28, 31–34, 36, 40, 45–46, 51, Figs. 3, 4, 7; Ex. 1003

¶¶ 101–102, 104, 108). LG also argues that a person of ordinary skill in the art

would have been motivated to modify Wager’s “UE triggered resource release” scheme with TS25.321’s HARQ buffer teachings, yielding a system where the UE releases the E-DCH resource when the transmission of the SI with the TEBS=0 has been made (indicating that its E-DCH buffer is empty) and the UE’s HARQ buffer is empty after flushing its HARQ buffer once the base station acknowledges that “all HARQ processes have finished.”

Pet. 31 (bolding omitted) (citing Ex. 1006, 4:9–15; Ex. 1003 ¶¶ 101, 103, 105–107, 109).

Pantech contends that LG’s argument is deficient because it relies on the determination Wager, as modified by TS25.321, allegedly makes in limitation 1.c, and is insufficient for the same reason. *See* Prelim. Resp. 44.

We disagree with Pantech for the reasons discussed above in our discussion of limitation 1.c. *See supra* Section IV.D.6. We also find LG’s argument persuasive, at this stage, that releasing the E-DCH resource is contingent on both (1) the SI transmission having been sent indicating that TEBS = 0 and (2) the HARQ buffer being empty (as known to be true after receiving an ACK for all HARQ processes).

Thus, we find LG’s argument persuasive, at this stage, that Wager teaches limitation 1.d in view of TS25.321.

9. *Conclusion as to claim 1.*

For the above reasons, we determine that LG has shown, sufficiently at this stage, that Wager, in combination with TS25.321, teaches all the limitations of claim 1, and that a person of ordinary skill in the art would have had reason to combine the features of each reference as LG argues in

the Petition. We therefore determine that LG is reasonably likely to prevail in showing that claim 1 is unpatentable under § 103(a) as obvious over Wager in view of TS25.321.

10. Other Claims and Grounds Based on Wager

For the grounds based on Wager, Pantech does not specifically address claims other than claim 1. *See* Prelim. Resp. 41–44.

Because LG has shown a reasonable likelihood of prevailing with respect to claim 1 as discussed above, we will institute on all grounds raised in the Petition. *See SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018). At this stage, we need not address the merits of LG’s other grounds based on Wager, or claims other than claim 1.

D. OBVIOUSNESS GROUNDS BASED ON LEE

For completeness, we briefly address Pantech’s arguments regarding the grounds based on Lee.

Lee describes “[a] method for scheduling radio resources in a mobile communication system.” Ex. 1007, code (57). As part of the method, when the UE “determin[es] that the allocated radio resources are no longer needed,” it transmits to the base station an indication to that effect, which “includes an indication that there is no data left for transmission.” Ex. 1007, 9:18–19, 10:9–11. This indication takes the form of a “radio resource allocation release request message” having “a 1-bit indicator” that, if set to zero, “indicates that there is no more data for transmission left in the buffer of the specific UE.” *Id.* at 14:4–12, 16:7–10. This may be transmitted over “a dedicated physical channel,” and when received, the base station “re-allocates the . . . radio resources released by a specific UE, to other UEs.” *Id.*

at 15:8–12. Lee also describes “implementing HARQ in the downlink physical layer of a radio packet communication system.” *Id.* at 6:19–21.

LG acknowledges that Lee does not specifically describe “the details of efficiently communicating UL transmissions to a base station.” Pet. 38. Thus, LG relies on Nokia, which describes the use of “E-DCH channels for an enhanced CELL_FACH for uplink transmissions,” as well as providing HARQ functionality for uplink transmissions. Ex. 1008, 2; *see* Pet. 38.

At this stage, Pantech only disputes LG’s arguments that Lee, in combination with Nokia and TS25.321, teaches limitations 1.c and 1.d. *See* Prelim. Resp. 45–47.

For limitation 1.c, LG relies on TS25.321 for specifically teaching “determining and communicating when a UE’s data buffers are empty.” Pet. 40–41 (citing Ex. 1009, 2, 8, 67–68, 99–100; Ex. 1007, 6:19–8:17, 12:24–15:19, Fig. 6; Ex. 1003 ¶¶ 154–155). Analogously to its argument for limitation 1.c for the grounds based on Wager, LG argues that TS25.321 “affirmatively discloses that the UE determines the buffer is empty by flushing the buffer, and at minimum, it would have been obvious to a POSITA to determine that the HARQ buffer is empty after flushing it to keep track of the HARQ buffer status for future transmissions.” Pet. 52–53 (citing Ex. 1003 ¶¶ 189, 193–194).

LG’s arguments for limitation 1.d are likewise analogous to its arguments for limitation 1.d in the context of the grounds based on Wager. *See* Pet. 53–55.

For limitation 1.c, Pantech argues that “the act of *flushing* a buffer is not *determining* if a buffer is empty. For example, ‘flushing’ is akin to a write operation whereas ‘determining’ is a read operation—and

consequently, no ‘determination’ exists in Lee, as required by the claim language.” Prelim. Resp. 46 (citing Ex. 1009, 100). Pantech also argues that “the ‘flushing’ identified by [LG] is an action which does not guarantee that buffer will be empty at all after this action, and [LG] does not rely on any other secondary reference to cure this deficiency.” *Id.* Pantech also contends that LG “provides no evidence from TS25.321 or Lee that the WTRU ‘keeps track of’ the HARQ buffer status, as required for its argument. Moreover, the Petition relies upon mere say-so for this argument, without any underlying reasoning.” *Id.*

For limitation 1.d, Pantech contends that LG’s arguments are deficient because they rely on the determination allegedly made in limitation 1.c, and are insufficient for the same reason. *See* Prelim. Resp. 46–47.

We disagree with Pantech for the same reasons we discuss above in relation to the Wager grounds. *See supra* Sections IV.D.6–7. In particular, based on the preliminary record, we agree with LG that determining an ACK for a HARQ process has been received is the same as determining that a HARQ buffer is empty, because according to TS25.321, the HARQ process “shall” empty its buffer when an ACK is received. *See* Ex. 1009, 100. We also preliminarily credit the supporting testimony of Dr. Hochwald, which is uncontested at this stage. Ex. 1003 ¶¶ 96, 193 (citing Ex. 1009, 99–100).

Thus, we find LG’s argument sufficiently persuasive that Lee and Nokia teach limitations 1.c and 1.d in view of TS25.321.

V. CONCLUSION

For the reasons above, LG has shown that there is a reasonable likelihood it would prevail with respect to at least one of the claims

challenged in the Petition, and we institute trial on all asserted grounds and all challenged claims. *See* 37 C.F.R. § 42.108(a).

VI. ORDER

It is

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–10 of the '809 patent is instituted with respect to all the grounds set forth in the Petition; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, *inter partes* review of the '809 patent commences on the entry date of this Order, and the Board hereby gives notice of the institution of a trial.

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Patent 9,313,809 B2

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