

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
Petitioner,

v.

G+ COMMUNICATIONS, LLC,
Patent Owner.

IPR2023-00665
Patent 9,184,881 B2

Before GREGG I. ANDERSON, SCOTT B. HOWARD,
JASON M. REPKO, *Administrative Patent Judges*.

HOWARD, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. *Background and Summary*

Samsung Electronics Co., Ltd. (“Petitioner”) filed a Petition requesting *inter partes* review of claims 1–6 and 9–14 of U.S. Patent No. 9,184,881 B2 (Ex. 1001, “the ’881 patent”). Paper 1 (“Pet.”). G+ Communications, LLC (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”).

We have authority, acting on the designation of the Director, to determine whether to institute an *inter partes* review under 35 U.S.C. § 314 and 37 C.F.R. § 42.4(a). *Inter partes* review may not be instituted unless “the information presented in the petition filed under section 311 and any response filed under section 313 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) (2018). “When instituting *inter partes* review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.” 37 C.F.R. § 42.108(a) (2022).

B. *Real Parties in Interest*

Petitioner identifies Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. as the real parties in interest. Pet. 1.

Patent Owner identifies itself as the only real party in interest. Paper 3, 1 (Patent Owner’s Mandatory Notices).

C. *Related Matters*

The parties identify the following related district court proceeding in which the ’881 patent is asserted: *G+Communications LLC v. Samsung Electronics Co., Ltd.*, Case No. 2:22-cv-00078-JRG (E.D. Tex.). Pet. 1;

Paper 3, 1. Patent Owner also identifies a number of *inter partes* review proceedings. Paper 3, 1.

D. The '881 Patent

The '881 patent “relates to communication field, and in particular to a method for feeding back confirmation information on a physical uplink shared channel(PUSCH).” Ex. 1001, 1:13–15. More specifically, it relates to “the Time Division Duplex (“TDD” for short) mode of a Long Term Evolution (“LTE” for short) system.” Ex. 1001, 1:19–21.

Figure 1 of the '881 patent is reproduced below.

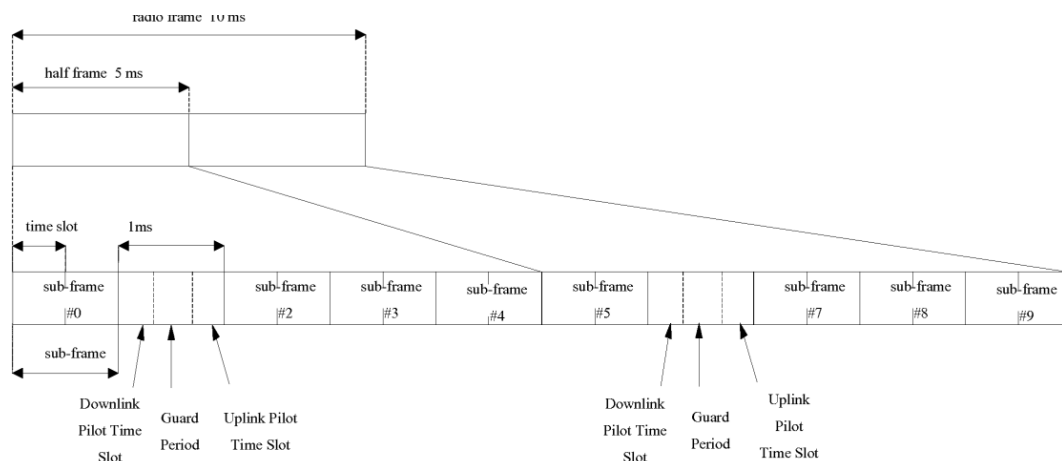


Figure 1 “is a schematic drawing of the frame structure of the LTE system under the TDD mode.” Ex. 1001, 6:13–14. “[I]n such a frame structure, one radio frame of 10 ms is divided into two half frames, and each of which is divided into 10 time slots with a length of 0.5 ms, and two adjacent time slots form a sub-frame with a length of 1 ms. One half frame includes 5 sub-frames.” Ex. 1001, 1:21–25.

An “acknowledgement/negative acknowledgement message (ACK/NACK)” may be fed back in the “[PUSCH] for transmitting the uplink data in this uplink subframe.” Ex. 1001, 2:35–43. “In some configurations . . . , the number of the downlink sub-frames allocated will be

greater than the number of the uplink sub-frames allocated, i.e., one uplink sub-frame should feed back the ACK/NACK information of a plurality of PDSCH [(Physical Downlink Shared Channel)] sub-frames. . . .” Ex. 1001, 2:52–60. “One method is to transmit the ACK/NACK information of a plurality of the downlink sub-frames together with the uplink data on the [PUSCH].” Ex. 1001, 2:64–67.

However, when that method is used, “if the control channel corresponding to the downlink data is not correctly detected, a User Equipment (“UE” for short) will not feed back the ACK/NACK information, i.e., the situation of Discontinuous Transmission (“DTX” for short) occurs.” Ex. 1001, 3:1–8. When that happens, “the confirmation information corresponding to this downlink data cannot be sent on the PUSCH together with the confirmation information corresponding to other downlink data.” Ex. 1001, 3:1–8. This can result in incorrect confirmation information:

Since the eNodeB does not know whether a DTX occurs to the sent downlink data, or to which downlink data the DTX occurs, if the downlink data is still regarded as being all received, it is quite easy to mistakenly feed back an ACK as the confirmation information that should be fed back as an NACK (the DTX should be regarded as the NACK), and further possibly, since the amount of the confirmation information fed back is inconsistent, it results in erroneous detection of the confirmation information of other downlink data, then the situation that the downlink sub-frame data is lost occurs, and UE cannot correctly obtain the information transferred by the received data block, thereby a re-transmission processing by a higher layer being required, which increases additional delay.

Ex. 1001, 3:8–21.

The ’881 patent is directed to solving that problem. Specifically, the ’881 patent states that the “eNodeB carries, in downlink control information, a number value of the downlink sub-frame corresponding to the

confirmation information which is fed back by one uplink sub-frame, and transmits data on a plurality of continuous downlink sub-frames after the sub-frame carrying the downlink control information.” Ex. 1001, 3:42–47. “[T]he number of the downlink sub-frames which transmit the data is equal to an number of the downlink sub-frames corresponding to the confirmation information fed back by the one uplink sub-frame.” Ex. 1001, 3:47–51. After the UE “receives the downlink sub-frame which carries the downlink control information, the data is received from the downlink sub-frame which transmits the data after this downlink sub-frame, and the confirmation information received is fed back to the eNodeB through a physical uplink shared channel through an uplink sub-frame.” Ex. 1001, 3:51–57.

“[I]n a situation that the user equipment fails to detect a physical downlink control channel corresponding to transmitted data in the sub-frame transmitting the data, or fails to receive the data thereof, the user equipment feeds back a negative acknowledgement message as the confirmation information of this downlink sub-frame.” Ex. 1001, 4:18–23. “[I]n a situation that the user equipment detects the physical downlink control channel corresponding to the transmitted data in the sub-frame transmitting the data, the user equipment analyzes the data in this downlink sub-frame, and feeds back an acknowledgement message as the confirmation information in a situation that the analysis is successful.” Ex. 1001, 4:23–29. “[O]therwise, the negative acknowledgement message is fed back as the confirmation information.” Ex. 1001, 4:29–31.

E. Illustrative Claims

Claims 1 and 9 are independent, illustrative of the claimed invention, and reproduced below with the dispositive claim limitation emphasized.

1. [1.pre] A method for feeding back confirmation information on a physical uplink shared channel, which is used for enabling a user equipment to feed back to an eNodeB whether data of a downlink sub-frame is correctly received in a situation that a number of the downlink sub-frames is greater than a number of uplink sub-frames in a time division duplex system, wherein the method comprises:

[1.a] the eNodeB carries, in downlink control information, a number value of the downlink sub-frame corresponding to the confirmation information which is fed back by one uplink sub-frame, and transmits data on a plurality of continuous downlink sub-frames after the sub-frame carrying the downlink control information, wherein the number of the downlink sub-frames which transmit the data is equal to a number of the downlink sub-frames corresponding to the confirmation information fed back by the one uplink sub-frame;

[1.b] after the user equipment receives the downlink sub-frame which carries the downlink control information, the data is received from the downlink sub-frame which transmits the data after this downlink sub-frame, and the confirmation information of receiving the data is fed back together with uplink data to the eNodeB through a physical uplink shared channel through an uplink sub-frame;

[1.c] wherein, in a situation that the user equipment feeds back a plurality of groups of the confirmation information, an amount of the confirmation information fed back in each group is equal to a maximum number of codeword streams in this downlink sub-frame, and respective confirmation information in each group corresponds to the confirmation information of the codeword stream of a corresponding downlink sub-frame;
[1.d] in the situation that the number of codeword streams of the downlink sub-frames is smaller than the maximum number of the codeword streams of the downlink sub-frame, the user equipment feeds back the confirmation information of the number of the maximum codeword streams, wherein confirmation information without a

corresponding codeword stream is set as a predefined fixed value; [1.e] *when the user equipment fails to detect the physical downlink control channel corresponding to the transmitted data in the sub-frame which transmits the data*, the user equipment feeds back the negative acknowledgement message as the confirmation information of each codeword stream in a group corresponding to this downlink sub-frame;

Ex. 1001, 11:5–51 (emphasis added).

9. [9.pre-1] A method for feeding back confirmation information on a physical uplink shared channel, wherein, when the confirmation information is fed back together with uplink data on the physical uplink shared channel, *in a situation that a user equipment fails to detect a physical downlink control channel corresponding to transmitted data in a sub-frame transmitting data*, the user equipment feeds back a negative acknowledgement message as confirmation information of this downlink sub-frame; [9.pre-2] in a situation that the user equipment detects the physical downlink control channel corresponding to the transmitted data in the sub-frame transmitting the data, the user equipment analyzes data in this downlink sub-frame, and feeds back an acknowledgement message as the confirmation information in a situation that the analysis is successful, otherwise, the negative acknowledgement message is fed back as the confirmation information;

[9.a] wherein

in a situation that the user equipment feeds back a plurality of groups of the confirmation information, an amount of the confirmation information fed back in each group is equal to a maximum number of codeword streams in this downlink sub-frame, and respective confirmation information in each group corresponds to the confirmation information of the codeword stream of a corresponding downlink sub-frame;

[9.b] in a situation that the number of the codeword streams of the downlink sub-frame is smaller than the maximum number of the codeword streams of the

downlink sub-frame, the user equipment feeds back the confirmation information of the maximum number of the codeword streams, wherein confirmation information without a corresponding codeword stream is set as a predefined fixed value;

[9.c] *when the user equipment fails to detect the physical downlink control channel corresponding to the transmitted data in the sub-frame which transmits the data*, the user equipment feeds back the negative acknowledgement message as the confirmation information of each codeword stream in a group corresponding to this downlink sub-frame.

Ex. 1001, 12:52–13:24 (emphases added)

F. Prior Art and Asserted Grounds

Petitioner asserts that claims 1–6 and 9–14 would have been unpatentable on the following grounds:

Claim(s) Challenged	35 U.S.C. §¹	Reference(s)/Basis
9	102(a)	Malladi ²
10	103(a)	Malladi, Kim ³
1, 4–6, 9, 13, 14	103(a)	Malladi, TDTech ⁴

¹ The Leahy-Smith America Invents Act (“AIA”) included revisions to 35 U.S.C. §§ 102, 103 that became effective on March 16, 2013. Because the ’814 patent issued from an application filed before March 16, 2013, we apply the pre-AIA versions of the statutory bases for unpatentability. *See* Ex. 1001, code (22) (application filed Oct. 15, 2010).

² US 2008/0253318 A1, published Oct. 16, 2008 (Ex. 1005).

³ US 2008/0095252 A1, published Apr. 24, 2008 (Ex. 1007).

⁴ TD Tech, R1-081339, ACK/NACK Multiplexing in PUSCH in TDD, 3GPP TSG RAN WG1#52bis (Shenzhen, China, 31 Mar – 4 Apr, 2008) (Ex. 1006).

Claim(s) Challenged	35 U.S.C. § ¹	Reference(s)/Basis
2, 11	103(a)	Malladi, TDTech, Huawei ⁵
3, 12	103(a)	Malladi, TDTech, Ericsson ⁶
7, 10	103(a)	Malladi, TDTech, Kim
8	103(a)	Malladi, TDTech, TS 36,211 V8.2.0 ⁷

Petitioner also relies on the testimony of Dr. Zhi Ding (Ex. 1002) and Craig Bishop (Ex. 1019).

Patent Owner relies on the testimony of Dr. Robert Akl (Ex. 2001).

II. ANALYSIS

A. Legal Standards

1. Anticipation

A patent claim is unpatentable under 35 U.S.C. § 102 if “the four corners of a single, prior art document describe every element of the claimed invention, either expressly or inherently, such that a person of ordinary skill in the art could practice the invention without undue experimentation.”

Advanced Display Sys., Inc. v. Kent State Univ., 212 F.3d 1272, 1282 (Fed. Cir. 2000). “A single prior art reference may anticipate without disclosing a feature of the claimed invention if such feature is necessarily present, or inherent, in that reference.” *Allergan, Inc. v. Apotex Inc.*, 754 F.3d 952, 958

⁵ Huawei, R1-074060, UL index in UL schedule grant for LTE TDD, 3GPP TSG RAN WG1 Meeting #50bis (Shanghai, China, October 08 – 12, 2007) (Ex. 1008).

⁶ Ericsson, R1-081528, Details of ACK/NAK bundling for TDD, TSG-RAN WG1 #52bis (Shenzhen, China, March 31 - April 4, 2008) (Ex. 1009).

⁷ 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical Channels and Modulation (Release 8), 3GPP TS 36.211 V8.2.0 (2008-03) (Ex. 1010).

(Fed. Cir. 2014). Moreover, the reference must also “disclose[] within the four corners of the document not only all of the limitations claimed but also all of the limitations arranged or combined in the same way as recited in the claim.” *Net MoneyIN, Inc. v. Verisign, Inc.*, 545 F.3d 1359, 1371 (Fed. Cir. 2008). However, “the reference need not satisfy an *ipsissimis verbis* test.” *In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009).

2. Obviousness

In *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966), the Supreme Court set out a framework for assessing obviousness under 35 U.S.C. § 103(a) that requires consideration of four factors: (1) the “level of ordinary skill in the pertinent art,” (2) the “scope and content of the prior art,” (3) the “differences between the prior art and the claims at issue,” and (4) if in evidence, “secondary considerations” of non-obviousness such as “commercial success, long felt but unsolved needs, failure of others, etc.” *Id.* at 17–18. “While the sequence of these questions might be reordered in any particular case,” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 407 (2007), the U.S. Court of Appeals for the Federal Circuit has repeatedly emphasized that “it is error to reach a conclusion of obviousness until all those factors are considered,” *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1328 (Fed. Cir. 2016).⁸

B. Level of Ordinary Skill in the Art

In determining whether an invention would have been obvious at the time it was made, we consider the level of ordinary skill in the pertinent art at the time of the invention. *Graham*, 383 U.S. at 17. “The importance of

⁸ Because neither party addresses objective evidence of non-obviousness, we focus solely on the first three *Graham* factors.

resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry.” *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991). The “person having ordinary skill in the art” is a hypothetical construct, from whose vantage point obviousness is assessed. *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998).

Factors pertinent to a determination of the level of ordinary skill in the art include “(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field.” *Envtl. Designs, Ltd. v. Union Oil Co. of Cal.*, 713 F.2d 693, 696–697 (Fed. Cir. 1983) (citing *Orthopedic Equip. Co. v. All Orthopedic Appliances, Inc.*, 707 F.2d 1376, 1381–82 (Fed. Cir. 1983)). “Not all such factors may be present in every case, and one or more of these or other factors may predominate in a particular case.” *Id.*

Petitioner argues that a person having ordinary skill in the art “would have had at least an undergraduate degree in electrical engineering, computer engineering, computer science or a related field along with at least two years of work experience in the field of wireless communication technology.” Pet. 4 (citing Ex. 1002 ¶¶ 24–25). Petitioner further argues that “[m]ore education can supplement practical experience and vice versa.” Pet. 4 (citing Ex. 1002 ¶¶ 24–25).

Patent Owner argues that “[b]ecause the proposed level of ordinary skill does not affect the ultimate analysis, Patent Owner takes no position with respect to Petitioner’s proposed level of ordinary skill in the art.” Prelim. Resp. 15.

Because it is consistent with the '881 patent and the asserted prior art and undisputed by Patent Owner, we adopt Petitioner's proposed formulation and apply it in our obviousness evaluations below.

C. Claim Construction

We apply the same claim construction standard used in the federal courts, in other words, the claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b), which is articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). See 37 C.F.R. § 42.100(b). Under the *Phillips* standard, the “words of a claim ‘are generally given their ordinary and customary meaning,’” which is “the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application.” *Phillips*, 415 F.3d at 1312–13.

Neither Petitioner nor Patent Owner propose any explicit constructions. Pet. 12; Prelim. Resp. 14–15.

For purposes of this Decision, we need not expressly construe any claim terms. See *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (noting that “we need only construe 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))).

D. Anticipation by Malladi

Petitioner argues that claim 9 is anticipated by Malladi. Pet. 13–33.

1. Malladi

Malladi is titled “Configurable Acknowledgement Processing in a Wireless Communication System” and is directed “to techniques for sending and receiving acknowledgement (ACK) information in a wireless

communication system.” Ex. 1005, code (54), ¶ 3. More specifically, Malladi describes

[a] base station [that] sends control information and data to a user equipment (UE) and receives ACK information from the UE. The base station performs detection for the ACK information based on (i) a first hypothesis for the control information being missed by the UE and (ii) a second hypothesis for the control information being received correctly by the UE. In one design, the ACK information may have a variable size, and the base station may perform detection for the ACK information based on different block codes for the first and second hypotheses. In another design, the ACK information may have a fixed size, and the base station may perform detection for the ACK information based on a single block code and obtain a fixed number of bits for the ACK information for both hypotheses.

Ex. 1005, code (57).

2. *Analysis of Claim 9*

The preamble of claim 9 recites, *inter alia*, “in a situation that a user equipment fails to detect a physical downlink control channel corresponding to transmitted data in a sub-frame transmitting data.” Ex. 1001, 12:55–58 (limitation [9.pre-1]). The body of claim 9 further recites “when the user equipment fails to detect the physical downlink control channel corresponding to the transmitted data in the sub-frame which transmits the data.” Ex. 1001, 13:18–20 (limitation [9.c]).⁹

Petitioner argues that Malladi discloses this limitation. *See* Pet. 16–18, 31–33. Specifically, Petitioner argues that Malladi describes a situation in which “the control information is missed by the UE.” Pet. 16–17 (quoting Ex. 1005 ¶ 9 and citing ¶¶ 73, 79, 85–86). Petitioner further states that “[a]s

⁹ Petitioner relies on the same evidence for both the preamble and limitation [9.c]. *See* Pet. 32.

Malladi explains, in this scenario, ‘the UE incorrectly decodes the PDCCH [(Physical Downlink Control Channel)] and misses the control information.’ Pet. 17 (quoting Ex. 1005 ¶ 61). According to Petitioner, “[b]y incorrectly decoding the PDCCH and missing the control information, the UE fails to detect the PDCCH of a DL transmission carrying corresponding data.” Pet. 17 (citing Ex. 1005 ¶ 7). Thus, Petitioner focuses on information being missed because it is decoded incorrectly. *See* Pet. 17, 31–32 (relying on argument in pages 16–17 regarding the preamble).

Patent Owner basically agrees with Petitioner’s description of how Malladi works. *See* Prelim. Resp. 25–30. However, Patent Owner argues that incorrectly decoding the PDCCH, which is disclosed in Malladi, is not the same thing as failing to detect a PDCCH as recited in claim 9. According to Patent Owner, the ’881 patent draws a distinction between failing to detect a PDCCH and failing to receive the data due to a decoding error. Prelim. Resp. 25 (citing Ex. 1001, 4:18–21).

In light of Patent Owner’s argument, we are not sufficiently persuaded that Petitioner has shown that Malladi teaches the disputed limitation. Specifically, on the current record, we agree with Patent Owner that the ’881 patent draws a distinction between a situation where the UE “fails to detect” a PDCCH and when it fails to receive the PDDCH, such as due to a decoding error.

The ’881 patent states as follows:

Preferably, in a situation that the user equipment fails to detect a physical downlink control channel corresponding to transmitted data in the sub-frame transmitting the data, or fails to receive the data thereof, the user equipment feeds back a negative acknowledgement message as the confirmation information of this downlink sub-frame; in a situation that the user equipment detects the physical downlink control channel corresponding to

the transmitted data in the sub-frame transmitting the data, the user equipment analyzes the data in this downlink sub-frame, and feeds back an acknowledgement message as the confirmation information in a situation that the analysis is successful, otherwise, the negative acknowledgement message is fed back as the confirmation information.

Ex. 1001, 4:18–31 (highlighting added). The yellow highlighted language above describes a situation in which the UE “fails to detect.” The paragraph goes on with the disjunctive “or” (red) followed by a second situation where the UE “fails to receive the data” (light blue). *See* Ex. 1001, 4:18–31. The use of the disjunctive “or” implies that the failing to detect is different than failing to receive. Indeed, if the ’881 patent considered the fails to receive the same as fails to detect, there would be no need to list both items.

However, the language recited in claim 9 only recites “fails to detect,” thus indicating that fails to receive is not encompassed by the claim. Thus the issue is whether Malladi discloses a UE that fails to detect or fails to receive. Based on the current record, Petitioner has not sufficiently shown that Malladi discloses a UE that fails to detect as recited in claim 9.

We focus on the Petition. The Petition frames it’s discussion of Malladi around a PDDCH that is improperly decoded. For example, Petitioner states: “As Malladi explains, in this scenario, *‘the UE incorrectly decodes the PDCCH and misses the control information.’* (EX1005, ¶[0061].)” Pet. 17 (emphasis added). The Petition continues by stating: “By *incorrectly decoding the PDCCH* and missing the control information, the UE fails to detect the PDCCH of a DL transmission carrying corresponding data. (See, *id.*, ¶[0007].)” Pet. 17 (emphasis added). Those arguments show that the UE has the PDCCH, but that data is not received due to a transmission error.

This is confirmed by Petitioner's reliance on Malladi Figure 8. Specifically, Petitioner relies on Malladi Figure 8 to show that the UE feeds back a negative acknowledgement message in response to missing the PDCCH for a DL subframe that is missed. *See* Pet. 17–18. A version of Malladi Figure 8 annotated by Petitioner is reproduced below.

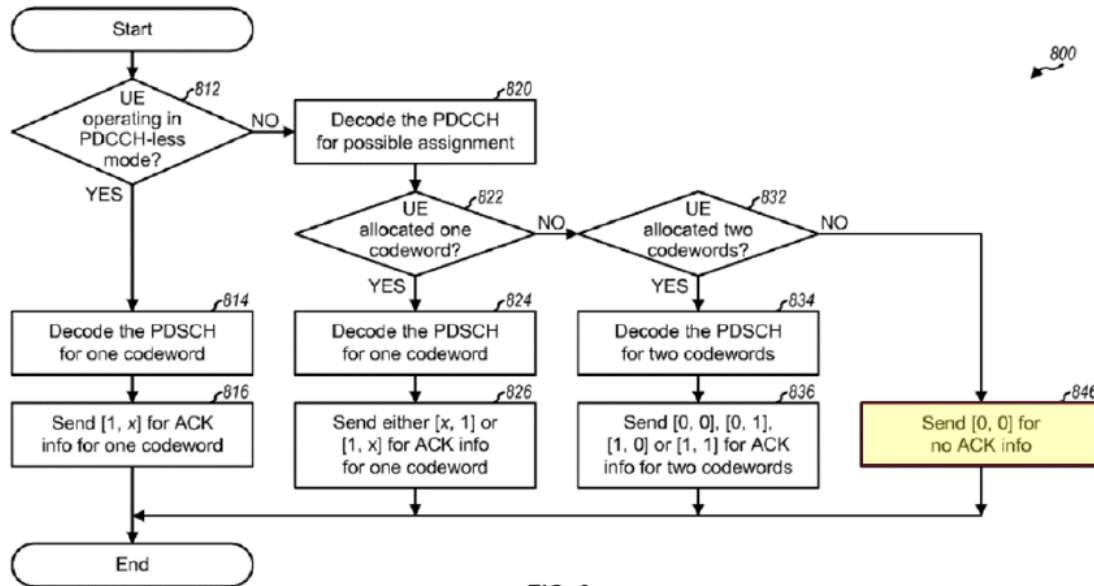


FIG. 8

Pet. 18. Malladi Figure 8 “shows a process for sending fixed-size ACK information.” Ex. 1005 ¶ 18. Petitioner annotated item 846, which states “Send [0, 0] for no ACK info,” with yellow. Pet. 18.

In order to reach item 846, the UE must first perform step 820, which says “Decode the PDCCH for possible assignment.” Ex. 1005, Fig. 8. In order to decode a PDCCH, the PDCCH must first be detected.

Additionally, the [0, 0] code which is sent in step 846 of Malladi Figure 8 also shows that the PDCCH was detected but improperly decoded. Malladi Figure 6 “shows four formats for fixed-size CQI and ACK information.” Ex. 1005 ¶ 16. In each of those formats, [0, 0] means “Missed PDCCH.” Ex. 1005, Fig. 6. Malladi further explains, in a

paragraph Petitioner relies on, that “Missed PDCCH” refers to one that was detected, but incorrectly decoded such that the control information is missed: “[T]he UE incorrectly decodes the PDCCH and misses the control information.” Ex. 1005 ¶ 61 (emphasis added).

In summary, the portions of Malladi describe a situation where a PDCCH was detected but incorrectly decoded, leading to a situation where the control information was missed/not received by the UE. In other words, Petitioner has not sufficiently shown, based on the current record, that Malladi discloses “when the user equipment fails to detect the physical downlink control channel corresponding to the transmitted data in the sub-frame which transmits the data” as recited in claim 9.

Accordingly, Petitioner has not shown a reasonable likelihood of showing that claim 9 was anticipated by Malladi.

E. Obviousness over Malladi and Other References

Petitioner also argues that claims 1–6 and 9–14 are obvious over the combination of Malladi and at least one additional reference. *See* Pet. 2–3.

Claim 1, like claim 9, recites substantially the same limitation discussed in the preceding section. *Compare* limitations [9.pre-1] and [9.c] (Ex. 1001, 12:55–58 and 13:18–20) with limitation [1.e] (Ex. 1001, 11:44–47). Petitioner argues that “[t]he Malladi-TD Tech combination discloses claim element[] . . . 1.e for substantially the same reasons Malladi discloses claim element[] . . . 9.c, . . . which recite the same or substantially the same features.” Pet. 53 (omission relate to other claim limitations). Petitioner further argues that the difference between Malladi and the Malladi-TD Tech combination are “immaterial” for this limitation. Pet. 54. Stated differently, Petitioner does not argue that TD Tech cures the deficiency associated with limitation [1.e].

Similarly, for claim 9, Petitioner does not argue that TDTech cures the deficiency associated with limitation [9.c]. Pet. 57. Nor does Petitioner argue that any of the other references it relies on relate to limitation [1.e] or [9.c]. See Pet. 58–71.

Accordingly, for the reasons discussed in the previous section, Petitioner has not shown a reasonable likelihood of showing that the subject matter of claims 1–6 and 9–14 would have been unpatentable based on Malladi and TDTech, either alone or in combination with additional references. See *In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992) (“[D]ependent claims are nonobvious if the independent claims from which they depend are nonobvious.”).

III. CONCLUSION

For the foregoing reasons, we determine that Petitioner fails to show a reasonable likelihood that it would prevail with respect to at least one of the claims challenged in the Petition. We, therefore, do not institute an *inter partes* review of the challenged claims based on the arguments and evidence presented in the Petition.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that no *inter partes* review is instituted as to any claim of the '881 patent.

IPR2023-00665
Patent 9,184,881 B2

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