

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
Petitioner,

v.

G+ COMMUNICATIONS, LLC,
Patent Owner.

Case IPR2023-00665
Patent 9,184,881

PATENT OWNER'S PRELIMINARY RESPONSE

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EXHIBIT LIST

Currently Filed – Patent Owner

Ex. No.	Description
2001	Declaration of Robert Akl, D.Sc.
2002	Dkt. 169 Claim Construction Memorandum Opinion and Order
2003	Ex. C-1 (881) – Invalidity Chart (Malladi), Samsung’s Invalidity Contentions in <i>G+ Communications, LLC v. Samsung Electronics Co., Ltd., et al.</i> , No. 2:22-cv-0078-JRG (E.D. Tex.)
2004	Ex. C-5 (881) – Invalidity Chart (Kim), Samsung’s Invalidity Contentions in <i>G+ Communications, LLC v. Samsung Electronics Co., Ltd., et al.</i> , No. 2:22-cv-0078-JRG (E.D. Tex.)
2005	Ex. Appendix C, ’881 Patent Invalidity Omnibus Chart, Samsung’s Invalidity Contentions in <i>G+ Communications, LLC v. Samsung Electronics Co., Ltd., et al.</i> , No. 2:22-cv-0078-JRG (E.D. Tex.)
2006	Understanding LTE with MATLAB, Houman Zarrinkoub

CLAIM LISTING

Independent Claim 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.
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Dependent Claims 2-8, 11-14	
2	The method according to claim 1, wherein the eNodeB uses a signaling in the downlink control information for representing an index of the uplink sub-frame for transmitting uplink data in the situation that the number of the downlink sub-frames is smaller than the number of the uplink sub-frames to carry the number of the downlink sub-frames corresponding to the confirmation information which is fed back by the one uplink sub-frame.
3	The method according to claim 1, wherein the eNodeB determines a set of number values of all the downlink sub-frames corresponding to information which is fed back by the one uplink sub-frame according to a configuration pattern for the current number of downlink/uplink sub-frames, and selects corresponding number values from the set according to an amount of the data actually required to be transmitted to be carried in the downlink control information.
4	The method according to claim 1, wherein the eNodeB sends a control signaling associated with the allocation of the physical uplink shared channel on a first downlink sub-frame in the downlink sub-frames corresponding to the confirmation information fed back by the uplink sub-frame.
5	The method according to claim 1, wherein in the uplink sub-frames fed back to the eNodeB, the user equipment, according to the order of serial numbers of the received downlink sub-frames which transmit the data, receives each downlink sub-frame which transmits the data and feeds back corresponding confirmation information.
6	The method according to claim 1, wherein in a situation that the user equipment fails to receive the data of in the sub-frame, 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.
7.a	The method according to claim 6, wherein in a situation that the data in the downlink sub-frame that transmits the data is sent as a single codeword stream, each piece of confirmation information in the uplink sub-frame fed back by the user equipment to the eNodeB corresponds to a codeword stream of one downlink sub-frame that transmits the data;
7.b	in a situation that the data in the downlink sub-frame that transmits the data is sent as multiple codeword streams, for one downlink sub-frame that transmits the data, the user equipment acquires the confirmation information corresponding to each codeword stream thereof,
7.c	in a situation that any one or more pieces of confirmation information among the confirmation information acquired is the negative acknowledgement message, the user equipment sets the confirmation information of this downlink sub-frame as a negative acknowledgement; in a situation that all the confirmation information acquired is the acknowledgement message, the user equipment sets the confirmation information of this downlink sub-frame as an acknowledgement.
8	The method according to claim 1, wherein in a situation that the downlink sub-frames sent by the eNodeB to the user equipment includes special sub-frames which cannot transmit data, the user equipment does not consider the special sub-frames when feeding back the confirmation information.
11.a	The method according to claim 2, wherein 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;

11.b	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.
12.a	The method according to claim 3, wherein 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;
12.b	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.
13.a	The method according to claim 4, wherein 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;
13.b	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.
14.a	The method according to claim 5, wherein 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;
14.b	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.

Independent Claim 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.

Dependent Claim 10	
10.a	The method according to claim 9, wherein in a situation that the data in the downlink sub-frame that transmits the data is sent as a single codeword stream, each piece of confirmation information in the uplink sub-frame fed back by the user equipment to an eNodeB corresponds to a codeword stream of one downlink sub-frame that transmits the data;
10.b	in a situation that the data in the downlink sub-frame which transmits the data is sent as multiple codeword streams, for one downlink sub-frame that transmits the data, the user equipment acquires the confirmation information corresponding to each codeword stream thereof,
10.c	in a situation that any one or more pieces of confirmation information among the confirmation information acquired is the negative acknowledgement message, the user equipment sets the confirmation information of this downlink sub-frame as a negative acknowledgement; in a situation that all the confirmation information acquired is the acknowledgement message, the user equipment sets the confirmation information of this downlink sub-frame as an acknowledgement.

I. INTRODUCTION

G+ Communications, LLC, the owner of U.S. Patent No. 9,184,881 (“the ’881 Patent”), submits this Preliminary Response to the Petition of Samsung Electronics Co., Ltd. (“Samsung” or “Petitioner”) challenging the validity of Claims 1-14 of the ’881 Patent (“Challenged Claims”). The Board should deny the Petition for discretionary reasons and/or based upon the merits.

The *Fintiv* factors favor denying institution of Samsung’s Petition, especially given the advanced stage of the co-pending district court litigation (“Texas Litigation”). Based on the median time-to-trial statistics, a Texas jury will consider invalidity of the ’881 Patent almost one year before the Board is expected to render a final written decision. Moreover, the Texas Litigation presents overlapping issues,¹ and the parties and the district court have already expended (and will continue to expend) significant time and resources in just the next few months while the Board decides whether or not to institute. In particular:

- the *Markman* hearing took place on June 1, 2023;

¹ For example, Petitioner asserted U.S. Patent Publication No. 3008/0253318 to Malladi *et al.* (“Malladi”) and U.S. Patent Publication No. 2008/0095252 to Kim *et al.* (“Kim”) in the Texas Litigation and included invalidity claim charts for both. Exs. 2003-2005.

- fact discovery closed on June 28, 2023;
- Judge Gilstrap issued a Claim Construction Memorandum Opinion and Order on July 13, 2023²;
- expert discovery closed on July 31, 2023;
- the parties filed dispositive motions and *Daubert* motions on August 7, 2023; and
- jury selection is scheduled to begin on November 13, 2023, within days of the Board’s expected decision on institution and almost one year before the Board’s expected final written decision.

Proceeding here, at this advanced stage of the litigation, is thus a poor use of the Board’s resources—especially given the Petition’s weakness on the merits and because Petitioner failed to provide an adequate *Sotera* stipulation.

The weakness of the Petition is evident. All grounds fail on the merits because Petitioner has not established a reasonable likelihood that it would prevail with respect to at least one of the Challenged Claims. For example, each of the Challenged Claims requires that the user equipment (“UE”) feeds back a negative acknowledgment message “in a situation that a user equipment fails to detect a physical downlink control channel [PDCCH] corresponding to transmitted data in a

² Ex. 2002.

sub-frame transmitting data,” and that “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” when the user equipment feeds back a plurality of groups of the confirmation information. Petitioner relies unsuccessfully on Malladi for the claim limitations that recite “fails to detect” and “codeword streams.”³

For example, the disclosures relied on by Petitioner show that Malladi first attempts to decode the PDCCH and a negative acknowledgment is sent when the UE is scheduled but the UE is unable to determine whether one or two codewords have been allocated (i.e., the control information is “missed”). Petitioner has not shown by these disclosures that the UE in Malladi “fails to detect” the PDCCH because in order to “decode” the PDCCH (correctly or incorrectly), a person of ordinary skill in the art (“POSITA”) would understand that the UE necessarily would have first detected it. This is shown clearly in Block 846 of Figure 8 in Malladi. Ex. 1005, Fig. 8; *id.*, [0101] (“Block 846 covers scenario 1 in which the UE is not scheduled as well as scenario 3 in which the UE is scheduled but misses the PDCCH.”). Block 846 would not occur unless the PDCCH was first detected and decoded in Block 820.

³ As discussed herein, Claims 1 and 9 are the sole independent claims. The term “codeword stream(s)” appears in limitations 1.c-1.e and 9.a-9.c, and the term “fails to detect” appears in limitations 1.e, 9.pre-1, and 9.c.

Petitioner presents no expert testimony that could establish otherwise. *See, e.g.*, Pet. at 17.

Petitioner also has not shown that a POSITA would consider Malladi's disclosure of "codewords" to be equivalent to the "codeword streams" recited in the Challenged Claims. Rather, Petitioner conclusorily states in passing in a footnote with no citation or substantiation that "[a] POSITA would have known that a codeword and a codeword-stream refer to the same concept and therefore mean the same thing."⁴ Pet. at 24 n. 6. But, as shown below, Patent Owner's evidence shows that a POSITA would not consider a codeword and a codeword-stream to be equivalent in some contexts and that, in at least one context, a codeword and a codeword stream exist at different layers of the OSI model and are thus not equivalent. Petitioner should have (but did not) explain the evidentiary basis for its allegations, including how the terms are purportedly analogous in the context of Malladi.

⁴ Although the Petition makes no mention of it, Petitioner's expert parrots the same exact thing without any support in his declaration. Ex. 1002 at 39 n.5 ("A person of ordinary skill in the art would have known that a codeword and a codeword-stream refer to the same concept and therefore mean the same thing.").

Such conclusory statements in the Petition that are countered with plausible evidence showing otherwise are insufficient to show that Petitioner would prevail with respect to at least one of the Challenged Claims. 35 U.S.C. § 312(a)(3) (requiring that the petition “identif[y], in writing and with particularity, each claim challenged, the grounds on which the challenge to each claim is based, *and the evidence that supports the grounds for the challenge to each claim*”) (emphasis added).

II. RELATED PROCEEDINGS IN THE DISTRICT COURT

The ’881 Patent is involved in *G+ Communications, LLC v. Samsung Electronics Co., Ltd., et al.*, No. 2:22-cv-0078-JRG (E.D. Tex.) (“Texas Litigation”).

III. THE ’881 PATENT PRESENTS A NOVEL SYSTEM AND METHOD FOR FEEDING BACK CONFIRMATION INFORMATION ON A PHYSICAL UPLINK SHARED CHANNEL

The ’881 Patent, entitled “Method for Feeding Back Confirmation Information on a Physical Uplink Shared Channel,” was filed on October 15, 2010, and issued on November 10, 2015. Ex. 1001 at 1. The ’881 Patent application is a continuation of application No. PCT/CN2009/071008, filed on March 25, 2009, which claims priority to Chinese Application No. 200810096053.2, filed on April 25, 2008. *Id.*, 1:5-9.

The ’881 Patent explains that, in Long Term Evolution (“LTE”)-Time Division Duplex (“TDD”), a UE should feed back in physical uplink control channel

(“PUCCH”) the acknowledgment/negative acknowledgment (“ACK/NACK”) of the data in the Physical Downlink Shared Channel (“PDSCH”) of the downlink subframe. *Id.*, 2:35-43. When the number of downlink sub-frames allocated is greater than the number of uplink sub-frames allocated, “one uplink subframe should feed back the ACK/NACK information of a plurality of PDSCH subframes.” *Id.*, 2:52-57. One way to accomplish this is “to transmit the ACK/NACK information of a plurality of the downlink sub-frames together with the uplink data on the [PUSCH].” *Id.*, 2:64-67.

Using this method, however, had several drawbacks. For example, when the UE fails to detect the control channel corresponding to the downlink data, the UE will not feed back ACK/NACK information, resulting in a Discontinuous Transmission (“DTX”) scenario. *Id.*, 3:1-5. In such case, the eNodeB “does not know whether a DTX occurs to the sent downlink data or to which downlink data the DTX occurs.” *Id.*, 3:8-10. Moreover, because the amount of confirmation information (i.e., ACK/NACK information) is inconsistent with the number of downlink sub-frames, an “erroneous detection of the confirmation of other downlink data” occurs, and the “UE cannot correctly obtain the information transferred,” resulting in retransmission processing by a higher layer. *Id.*, 3:14-21.

The applicants sought to solve these issues by disclosing and claiming an improved system in which the eNodeB carries, in downlink control information

(“DCI”), a number value of the downlink sub-frame corresponding to the confirmation information that 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 DCI. *Id.*, 3:43-51. The user equipment receives the downlink sub-frame that carries the DCI and then the data from the downlink sub-frames. *Id.*, 3:51-54. The UE then feeds back confirmation information for each of the downlink sub-frames to the eNodeB through a PUSCH of an uplink sub-frame. *Id.*, 3:54-57; 4:11-16. If the UE fails to detect either the PDCCH corresponding to a downlink sub-frame or the data therefrom, the UE feeds back a NACK for that downlink sub-frame. *Id.*, 4:18-23. Notably, the ’881 Patent distinguishes between failing to detect a PDCCH and failing to receive the data thereof (*id.*, 4:18-21), but the claim language specifies only the former. *See, e.g., id.*, cl. 1 (“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” (emphasis added)), cl. 9 (same).

In other words, the UE will send confirmation information for each of the scheduled downlink sub-frames regardless of whether it receives data for each of the downlink sub-frames. Thus, a DTX situation is avoided, and the eNodeB will know specifically which downlink sub-frame(s) were received and which were not.

IV. OVERVIEW OF THE RELEVANT ALLEGED PRIOR ART

A. Malladi (Ex. 1005)

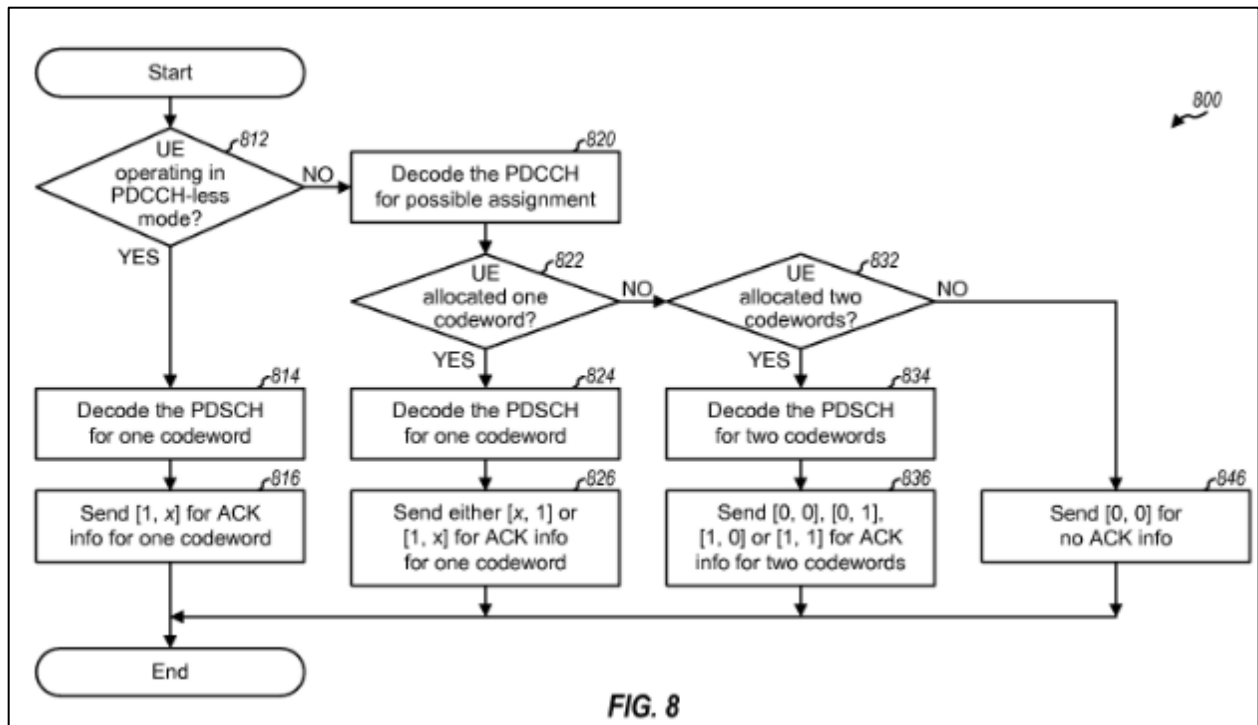
Malladi, entitled “Configurable Acknowledgement Processing in a Wireless Communication System,” was filed on March 13, 2008, and published on October 16, 2008. Malladi discloses techniques for sending and receiving ACK information in a wireless communication system in which a base station sends control information and data to a user equipment (UE) and receives ACK information from the UE.⁵ Ex. 1005, Abstract. Malladi discloses that the ACK information may have either a variable or fixed size. *Id.*, [0008]-[0009].

Malladi discloses that its system may support operation of the UE in either a PDCCH mode or a PDCCH-less mode. *Id.*, [0027]. In the PDCCH mode, the base station may send control information on the PDCCH to the UE and may send data in accordance with the control information on the PDSCH to the UE. *Id.* The UE may process the PDCCH to determine whether it has been scheduled and, if so,

⁵ Although Malladi discloses that its techniques “may be used for various wireless communication systems such as CDMA, TDMA, FDMA, OFDMA, SC-FDMA and other systems,” the disclosures and figures relied on by the Petition only show a one-to-one relationship between a single downlink sub-frame and control information and a single associated uplink sub-frame. *See, e.g.*, Ex. 1005, Fig. 2.

obtain control information sent to the UE. *Id.* The UE may then process the PDSCH based on the control information obtained from the PDCCH. *Id.* Malladi further discloses that its system supports transmission of data in transport blocks, and that “[e]ach transport block may be encoded separately to obtain a corresponding codeword.” *Id.*, [0028].

Figure 8 shows a design of a process 800 performed by the UE to send ACK information:



Id., Fig. 8, [0099]. According to Malladi, “[t]he UE may perform process 800 in each subframe in which data might be sent to the UE. The UE may initially determine whether the UE is operating in the PDCCH-less mode (block 812).” If the answer is ‘No’ for block 812, then:

[T]he UE may decode the PDCCH for a possible assignment for the UE (block 820). The UE may then determine whether an assignment of one codeword has been received (block 822). If the answer is ‘Yes’, then the UE may decode the PDSCH for one codeword (block 824). The UE may then send $[x, 1]$ or $[1, x]$ for ACK information for one codeword (block 826). If the answer is ‘No’ for block 822, then the UE may determine whether an assignment of two codewords has been received (block 832). If the answer is ‘Yes’, then the UE may decode the PDSCH for two codewords (block 834). The UE may then send $[0, 0]$, $[0, 1]$, $[1, 0]$ or $[1, 1]$ for ACK information for two codewords (block 836). Blocks 820 to 836 cover scenario 2 described above.

If the answer is ‘No’ for block 832, then the UE may send $[0, 0]$ for ACK information for no codewords (block 846). Block 846 covers scenario 1 in which the UE is not scheduled as well as scenario 3 in which the UE is scheduled but misses the PDCCH.

Id., [0099]-[0101].

V. STANDARDS

A. Institution of an IPR

Under 35 U.S.C. § 314(a), Petitioner carries the burden of showing a reasonable likelihood that it would prevail with respect to at least one of the Challenged Claims. Petitioner must prove unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e); *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1375-77 (Fed. Cir. 2016).

B. Petitions Based on Anticipation

To establish anticipation, each and every element in a claim, arranged as recited in the claim, must be found in a single prior art reference. *See Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008); *Karsten Mfg. Corp. v. Cleveland Golf Co.*, 242 F.3d 1376, 1383 (Fed. Cir. 2001). Although the elements must be arranged or combined in the same way as in the claim, “the reference need not satisfy an *ipsissimis verbis* test,” i.e., identity of terminology is not required. *In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009); *accord In re Bond*, 910 F.2d 831, 832 (Fed. Cir. 1990).

“If the prior art reference does not expressly set forth a particular element of the claim, that reference still may anticipate if that element is ‘inherent’ in its disclosure.” *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999). “To establish inherency, the extrinsic evidence ‘must make clear that the missing descriptive

matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.” *Id.* (quoting *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1268 (Fed. Cir. 1991)). “Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *Continental Can*, 948 F.2d at 1269 (quotation omitted).

C. Petitions Based on Obviousness

A petition based on obviousness must “meaningfully” address the first two *Graham* factors: (i) the scope and content of the prior art, and (ii) any differences between the claimed subject matter and the prior art. *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18 (1966). It is not the Board’s (or Patent Owner’s) role to “sift through the information” provided with a petition to identify the differences between a challenged claim and the prior art. *Google Inc. & Twitter, Inc., Petitioners, v. Everymd.com LLC, Pat. Owner.*, No. IPR2014-00347, 2014 WL 2175007, at *11 (P.T.A.B. May 22, 2014).

To assert obviousness by combining prior art references, Petitioner must prove that: (1) a motivation to combine the references exists; and (2) a POSITA would have had a reasonable expectation of success in combining the references. *Apotex Inc. v. Wyeth LLC*, IPR2014-00115, Paper 94 at 11 (P.T.A.B. Apr. 20, 2015) (“A party that petitions the Board for a determination of obviousness must show that

‘a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had reasonable expectation of success in doing so.’”).

The requirement for proving reasonable expectation of success refers to achieving what is claimed in the patent-at-issue. *Intelligent Bio-Sys. V. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367 (Fed. Cir. 2016) (“[O]ne must have a motivation to combine accompanied by a reasonable expectation of achieving what is claimed in the patent-at-issue.”). An articulated reason with a rational underpinning to combine specific teachings in the references in a particular manner to arrive at the claimed invention is required for a showing of obviousness. *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 418 (2007).

Objective indicia of non-obviousness cannot be ignored. *Fox Factory, Inc. v. SRAM, LLC*, IPR2016-01876, Paper 59, at * 9 (P.T.A.B. Apr. 2, 2018) (“Objective evidence of non-obviousness may often be the most probative and cogent evidence in the record and may often establish that an invention appearing to have been obvious in light of the prior art was not.”); *NuVasive, Inc. v. Iancu*, 752 F. App’x 985, 996 (Fed. Cir. 2018) (“On remand, the Board should reevaluate NuVasive’s objective evidence of non-obviousness such as long-felt need . . .”). A necessary safeguard and, like here, a required aspect of a petition based on obviousness, is a forthright discussion of the objective indicia of non-obviousness. *Plantronics, Inc.*

v. Aliph, Inc., 724 F.3d 1343, 1354-55 (Fed. Cir. 2013) (“Failure to give proper consideration to such evidence, as in this case, can be fatal . . .”). Tellingly, Petitioner makes no attempt to address any indicia of non-obviousness.

D. Claim Construction

In an *inter partes* review filed on or after November 13, 2018, claim terms are construed based on their ordinary and customary meaning. 37 C.F.R. § 42.100(b). Patent Owner submits that the Board need not expressly construe any claim term in a particular manner to arrive at the conclusion that the Petition is substantively deficient.

Although Patent Owner provides arguments below on the scope of certain claim terms, Patent Owner does not propose a comprehensive construction, as it would not be necessary to resolve the controversy and deny the Petition. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Ltd.*, 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’”) (citing *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)); *see also* Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340, 51,353 (Oct. 11, 2018) (Final Rule) (“Moreover, it also may not be necessary to determine the exact outer boundary of claim scope because only those terms that are in controversy need be

construed, and only to the extent necessary to resolve the controversy (e.g., whether the claim reads on a prior art reference).” (citing *Nidec*)).

If trial is instituted, however, and to the extent deemed necessary to resolve any dispute, Patent Owner reserves the right to propose more specific constructions of one or more claim terms.

VI. LEVEL OF ORDINARY SKILL IN THE ART

Petitioner defines a POSITA as having “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,” but that “[m]ore education can supplement practical experience and vice versa.” Pet. at 4. Because 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.

VII. THE BOARD SHOULD DENY INSTITUTION OF THIS PETITION UNDER 35 U.S.C. § 314(A)

Under § 314(a), the Director has discretion to deny institution. *NHK Spring Co. v. Intrix-Plex Technologies, Inc.*, IPR2018-00752, Paper 8 (PTAB Sept. 12, 2018) (precedential). *Fintiv* sets forth six non-exclusive factors for determining “whether efficiency, fairness, and the merits support the exercise of authority to deny institution in view of an earlier trial date in the parallel proceeding.” *Apple*

Inc. v. Fintiv Inc., IPR2020-00019, Paper 11 at 6 (PTAB Mar. 20, 2020)

(precedential). These factors include:

1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
2. proximity of the court's trial date to the Board's projected statutory deadline for a final written decision;
3. investment in the parallel proceeding by the court and the parties;
4. overlap between issues raised in the petition and in the parallel proceeding;
5. whether the petitioner and the defendant in the parallel proceeding are the same party; and
6. other circumstances that impact the Board's exercise of discretion, including the merits grounds raised in the Petition.

Id.

According to the Memorandum from Director Vidal dated June 21, 2022, "compelling, meritorious challenges will be allowed to proceed at the PTAB even where district court litigation is proceeding in parallel. Compelling, meritorious challenges are those in which the evidence, if unrebutted in trial, would plainly lead to a conclusion that one or more claims are unpatentable by a preponderance of the evidence." Ex. 1053 at 4. Moreover, "[w]hen 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, it mitigates concerns of potentially conflicting decisions and duplicative efforts between the district court and the PTAB.” *Id.* at 7 (citation omitted).

Here, the *Fintiv* factors favor denial of institution of this Petition, especially given the advanced stage of the Texas Litigation and because Petitioner has not presented compelling evidence of unpatentability. Nor has Petitioner provided a sufficient stipulation that it will not pursue in the Texas Litigation “any grounds that could have reasonably been raised in the petition.” *Id.* (emphasis added).

As such, the Board should deny institution of this Petition under § 314(a).

A. Factor 1 is Neutral as No Court Has Granted a Stay and No Evidence Exists That a Stay May Be Granted

Regarding Factor 1, the Texas Litigation has not been stayed and no evidence exists that a stay may be granted if trial is instituted. Factor 1 is thus neutral at best. *See, e.g., Cisco Sys., Inc. v. Ramot at Tel Aviv Univ. Ltd.*, No. IPR2020-00123, 2020 WL 2511247, at *3 (P.T.A.B. May 15, 2020) (finding factor 1 to be neutral where “there is little evidence to suggest that the district court will grant a stay, should another one be requested”).

B. Factors 2 and 5 Weigh in Favor of Denying Institution

As to Factors 2 and 5, Petitioner is the defendant in the Texas Litigation (Pet. at 1), and jury selection is scheduled to begin November 13, 2023 (Ex. 1055 at 1).

The Board’s institution decision is expected on or before November 10, 2023—just days before jury selection begins, and the final written decision in this case is expected around November 10, 2024. Thus, the district court’s trial is scheduled to precede the Board’s anticipated final written decision on overlapping asserted prior art **by almost a year**.

Petitioner’s contention that Factor 2 “is neutral” based on the median time-to-trial statistics for the Eastern District of Texas lacks merit. Pet. at 72. The Memorandum from Director Vidal dated June 21, 2022, instructs only that “the proximity to trial should not alone outweigh” other factors. Ex. 1053 at 8. As shown herein, other factors besides Factor 2 weigh in favor of denial, such as Factors 3, 4, 5, and 6, and no factor favors declining to exercise the Board’s discretion to deny institution. Moreover, based on the median time-to-trial statistics in the Eastern District of Texas (21 months), trial would take place around December 14, 2023 (March 14, 2022 + 21 months). Ex. 1054 at 35. Trial would thus still occur **almost 11 months prior** to the expected November 10, 2024, final written decision.

This timing is almost twice as much as that in *NHK* where the Board noted a mere six-month difference between a scheduled trial date and the deadline for the Board’s written decision. *NHK*, IPR2018-00752, Paper 8 at 20; *see also GlobalFoundries Inc. v. UNM Rainforest Innovations*, IPR2020-00984, Paper 11, at *11-16 (P.T.A.B. Dec. 9, 2020) (finding that a scheduled trial date four months

before the statutory deadline for a final written decision was a factor weighing in favor of discretionary denial); *NanoCollect Biomedical, Inc. v. Cytonome/ST, LLC*, IPR2020-00551, Paper 19, at *16 (P.T.A.B. Aug. 27, 2020) (same); *Intel Corp. v. LLC*, No. IPR2020-00583, 2021 WL 531706, at *2 (P.T.A.B. Feb. 11, 2021) (“Thus, at this time, it appears likely that trial will occur many months before any final written decision would likely issue in this proceeding. Therefore, we maintain our finding that *Fintiv* Factor 2 (proximity of the court’s trial date to the Board’s projected statutory deadline for a final written decision) weighs in favor of exercising our discretion to deny institution pursuant to 35 U.S.C. § 314(a).”).

Petitioner’s reliance on *Verizon Business Network Services* is misplaced. Pet. at 72. The Board’s final written decision in that case was expected only 3.5 months after trial was scheduled (and not nearly a year), and there was at least “some uncertainty” of the trial date due to COVID and prior (**backwards**) movement of the trial date. *Verizon Business Network Services, Inc. v. Huawei Techs. Co.*, IPR2020-01141, Paper 12 at 9-10.

Here, there is no evidence that the trial date will be rescheduled, and Petitioner’s filing of its Petition on March 6, 2023, **just 8 days before the statutory deadline**, does not support a finding of diligence on Petitioner’s part to avoid unnecessary duplication in the Texas Litigation. *See, e.g., Immersion Sys. LLC v. Midas Green Techs., LLC*, , 2022 WL 320520, at *6 (P.T.A.B. Jan. 31, 2022)

(quoting *Fintiv* at 11) (“As a matter of petition timing, notwithstanding that a defendant has one year to file a petition, it may impose unfair costs to a patent owner if the petitioner, faced with the prospect of a looming trial date, waits until the district court trial has progressed significantly before filing a petition at the Office.”).

Instituting trial under the facts and circumstances here would be an inefficient use of Board resources. *See NHK*, IPR2018-00752, Paper 8 at 20 (finding under similar circumstances that institution “would not be consistent with ‘an objective of the AIA . . . to provide an effective and efficient alternative to district court litigation’”); *Samsung Elecs. Co., Ltd. v. CALTECH*, IPR2023-00130, Paper 10 at 16 (finding factor two favors exercising authority to deny institution after stating, “[r]egardless of whether we consider the scheduled trial date or the trial date expected based on time-to-trial statistics, the trial in the Underlying Litigation would commence several months before the expected date of our final written decision.”).

Factors 2 and 5 thus weigh in favor of denying institution.

C. Factor 3 Weighs in Favor of Denying Institution

By the time the Board’s institution decision is likely to issue in early November 2023, the Parties and the district court will have already expended considerable time and resources. For example, the *Markman* hearing took place on June 1, 2023, fact discovery closed on June 28, 2023, Judge Gilstrap issued a Claim

Construction Memorandum Opinion and Order on July 13, 2023,⁶ expert discovery closed on July 31, 2023, the parties filed dispositive motions and *Daubert* motions on August 7, 2023, and jury selection is scheduled to begin November 13, 2023. Ex. 1055; *see also Google LLC v. Personalized Media Commc'ns, LLC*, No. IPR2020-00720, 2020 WL 6530766, at *2 (P.T.A.B. Nov. 5, 2020) (recognizing that “*Fintiv* holds that a district court’s investment in issuing a claim construction order weighs toward, not against, exercising discretion to deny institution”).

Based on the significant time and resources the parties have already expended and will likely have expended by the time of the expected decision on institution, Factor 3 weighs in favor of denying institution.

D. Factor 4 Weighs in Favor of Denying Institution

As to Factor 4, Petitioner presents overlapping arguments in the Texas Litigation and in the Petition. Petitioner’s invalidity contentions in the Texas Litigation contain similar proposed grounds for invalidity as are presented in the Petition for the Challenged Claims. Compare Pet. at 2-3 (asserting claim 9 is anticipated by Malladi and claims 1-14 are unpatentable as obvious by Malladi in view of Kim and other prior art) with Ex. 2003, Ex. 2005 (asserting claims 1-14 are unpatentable as anticipated and/or obvious based on Malladi); *see also* Pet. at 2-3 (asserting claims 7 and 10 are unpatentable as obvious over Malladi and Kim) with

⁶ Ex. 2002.

Ex. 2004, Ex. 2005 (asserting claims 1-14 are unpatentable as anticipated and/or obvious over Kim).

Despite this overlap, Petitioner argues “[t]he fourth factor (overlap) also weighs against denial” and purports to stipulate that “if the IPR is instituted, Petitioner will not pursue the IPR grounds in the district court litigation.” Pet. at 73. Petitioner’s “stipulation” is insufficient to alleviate any concerns of potentially conflicting decisions and duplicative efforts between the district court and the PTAB because Petitioner fails to stipulate that it will not pursue “any grounds that could have reasonably been raised in the petition.”⁷ Ex. 1053 at 7 (emphasis added); *see also Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 at 19 (stating that a “Sotera” stipulation “ensures that an *inter partes* review is a ‘true alternative’ to the district court proceeding”); *Roku, Inc. v. IOENGINE, LLC*, IPR2022-01551 (P.T.A.B. May 5, 2023), Paper 10 at 17-18 (exercising discretion to deny institution based on, *inter alia*, “the late state of the parallel district court proceeding” and petitioner’s failure to submit a *Sotera*-type stipulation “that would make discretionary denial inappropriate”).

Factor 4 thus weighs in favor of denying institution.

⁷ Even if it did, Factors 2, 3, 5, and 6 would still favor denial.

E. Factor 6 Weighs Against Institution

Factor 6 considers other circumstances that impact the Board's exercise of discretion. According to Petitioner, Factor 6 weighs against denial "because this petition presents compelling merits." Pet. at 73. Petitioner's argument lacks merit given the weakness of Petitioner's invalidity positions as shown below. For example, Petitioner cannot show that the alleged prior art meets each of the recited limitations in the independent Challenged Claims. For these and the reasons discussed below, Petitioner has failed to show a reasonable likelihood that it would prevail on any ground.

Thus, to the extent Factor 6 takes into account the merits of Petitioner's claims, Factor 6 weighs in favor of denial.

VIII. PETITIONER’S PROPOSED CHALLENGES

Ground	’881 Patent Claims	Type ⁸	Reference(s)
1	9	§ 102(a)	Malladi
2	10	§ 103(a)	Malladi in view of Kim (Ex. 1007)
3	1, 4-6, 9, 13, and 14	§ 103(a)	Malladi in view of TDTech (Ex. 1006)
4	2 and 11	§ 103(a)	Malladi in view of TDTech and Huawei (Ex. 1008)
5	3 and 12	§ 103(a)	Malladi in view of TDTech and Ericsson (Ex. 1009)
6	7 and 10	§ 103(a)	Malladi in view of TDTech and Kim
7	8	§ 103(a)	Malladi in view of TDTech and TS 36.211 V8.2.0 (Ex. 1010)

IX. GROUND 1: PETITIONER FAILED TO SHOW THAT MALLADI ANTICIPATES CLAIM 9

Petitioner relies on Malladi to purportedly anticipate Claim 9 in Ground 1. But, as discussed below, Petitioner has not established a reasonable likelihood of success that Malladi teaches or discloses claim elements 9.pre-1 and 9.c (“[a]/[the] user equipment fails to detect [a]/[the] physical downlink control channel”) and 9.a-9.c (multiple recitations of “codeword streams”). For these and the reasons stated below, Ground 1 fails. And because these claim elements also appear in the only

⁸ The pre-AIA versions of 35 U.S.C. §§ 102 and 103 apply because the ’881 Patent was filed before March 16, 2013.

other independent Challenged Claim (Claim 1), Grounds 2-7 fail for the same reasons.

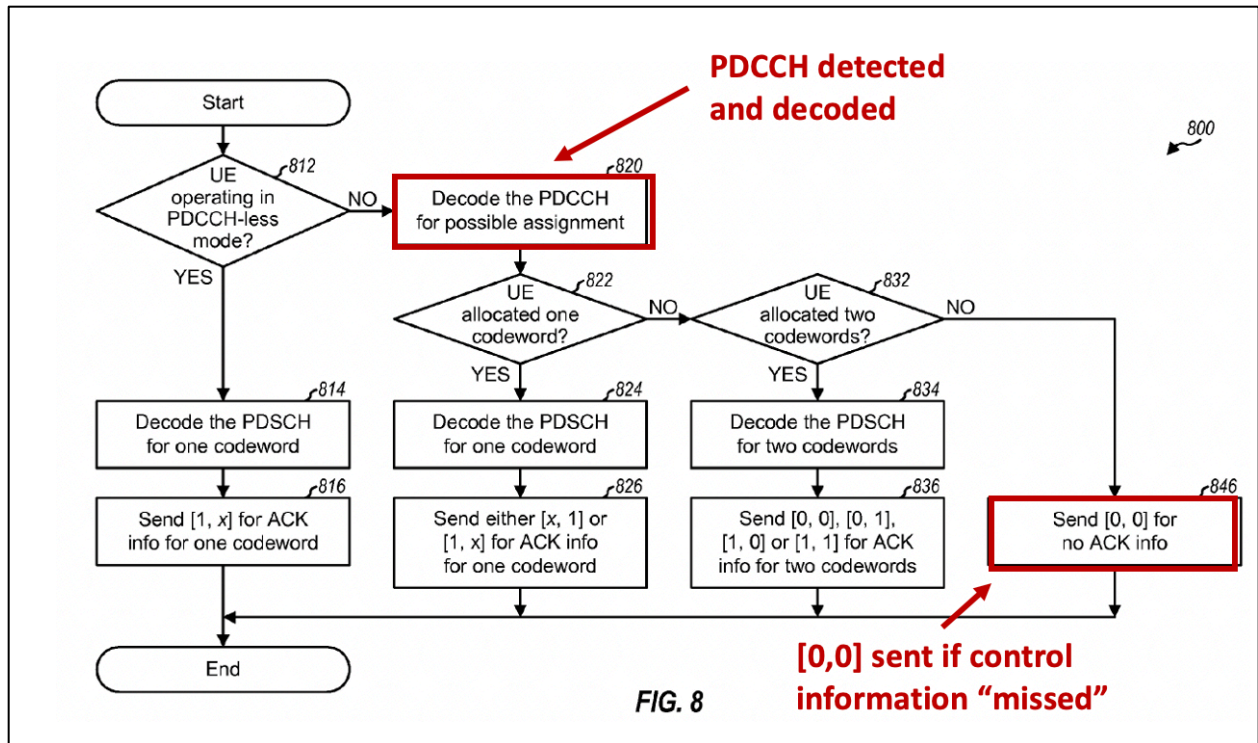
A. Claim Element [9.pre-1]: “in a situation that a user equipment fails to detect a physical downlink control channel corresponding to transmitted data in a sub-frame transmitting data, the user equipment feeds back a negative acknowledgement message as confirmation information of this downlink sub-frame;”

The '881 Patent distinguishes between a situation that the UE “fails to detect” a PDCCH corresponding to the transmitted data in the sub-frame transmitting the data and a situation in which the UE “fails to receive the data thereof.” Ex. 1001, 4:18-21. The Challenged Claims recite and require only the former—that is, the Challenged Claims recite and require the situation in which the UE “fails to detect” the PDCCH. Ex. 1001, cl. 1 (“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”), cl. 9 (same). This is fatal to all of Petitioner’s grounds because Petitioner shows only that Malladi “fails to receive the data thereof”—i.e., that Malladi’s UE “misses” the control information after unsuccessfully attempting to decode the PDCCH—and not that Malladi’s UE “fails to detect” the PDCCH.

Petitioner’s argument that Malladi discloses “in a situation that a user equipment fails to detect a physical downlink control channel” is contradicted by the very disclosures in Malladi on which Petitioner relies. Pet. at 16-18. Petitioner first relies on Malladi’s disclosure in [0061] in which “the UE incorrectly decodes the

PDCCH and misses the control information.” Pet. at 17. Petitioner then claims (with no support from its expert) that “[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.” *Id.* According to Petitioner, if the control information is missed, a two-bit value “[0,0]” is sent as the ACK information for such a subframe.” *Id.* (citing, *inter alia*, Ex. 1005, Figs. 6, 8, 11, and 12). These disclosures do not show that the UE in Malladi “fails to detect” the PDCCH. Rather, a POSITA would understand that, in order to “decode” the PDCCH (correctly or incorrectly), the UE necessarily would have first detected it. Ex. 2001, Akl Decl., ¶ 45.

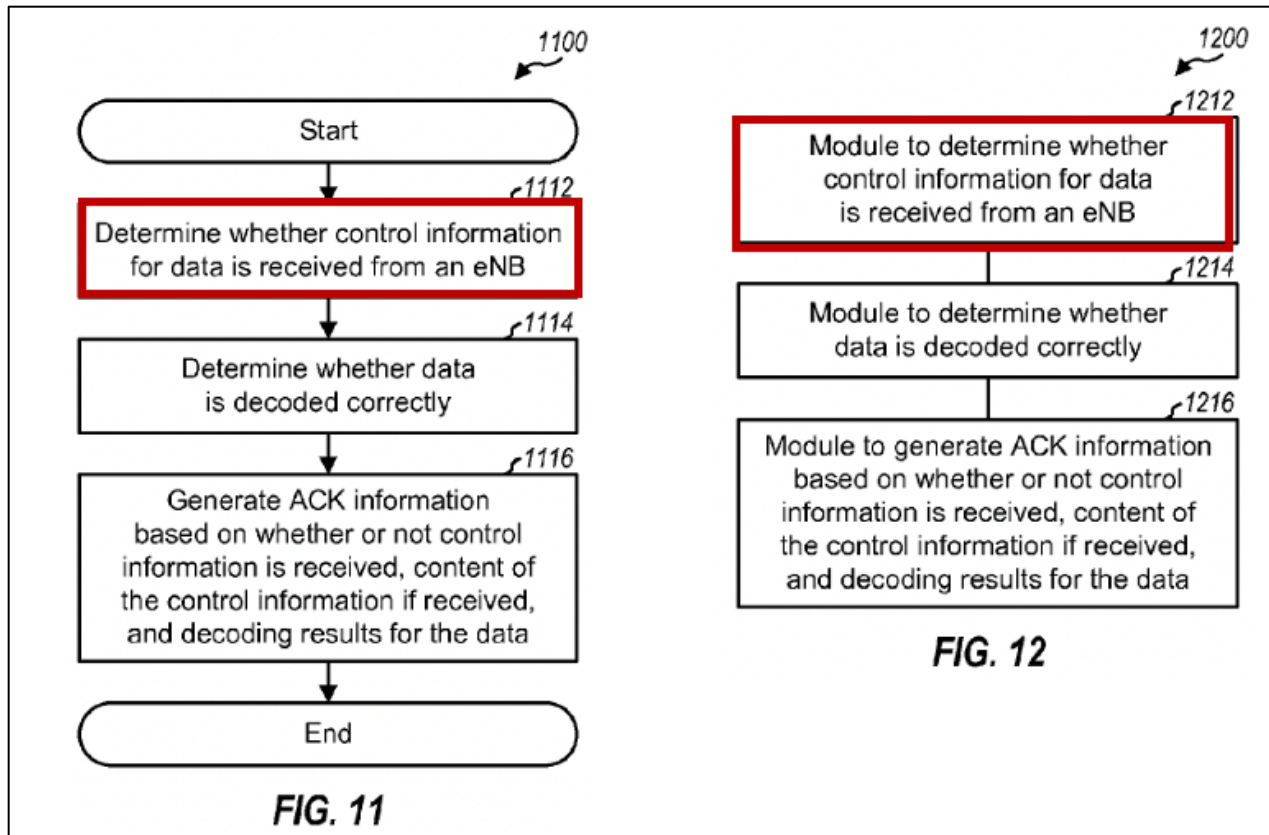
For example, Petitioner relies on Figure 8, which shows that Malladi first attempts to decode the PDCCH and a negative acknowledgment [0,0] is sent (after the PDCCH is detected and decoded) when the UE is unable to determine whether one or two codewords have been allocated (i.e., the control information is “missed”):



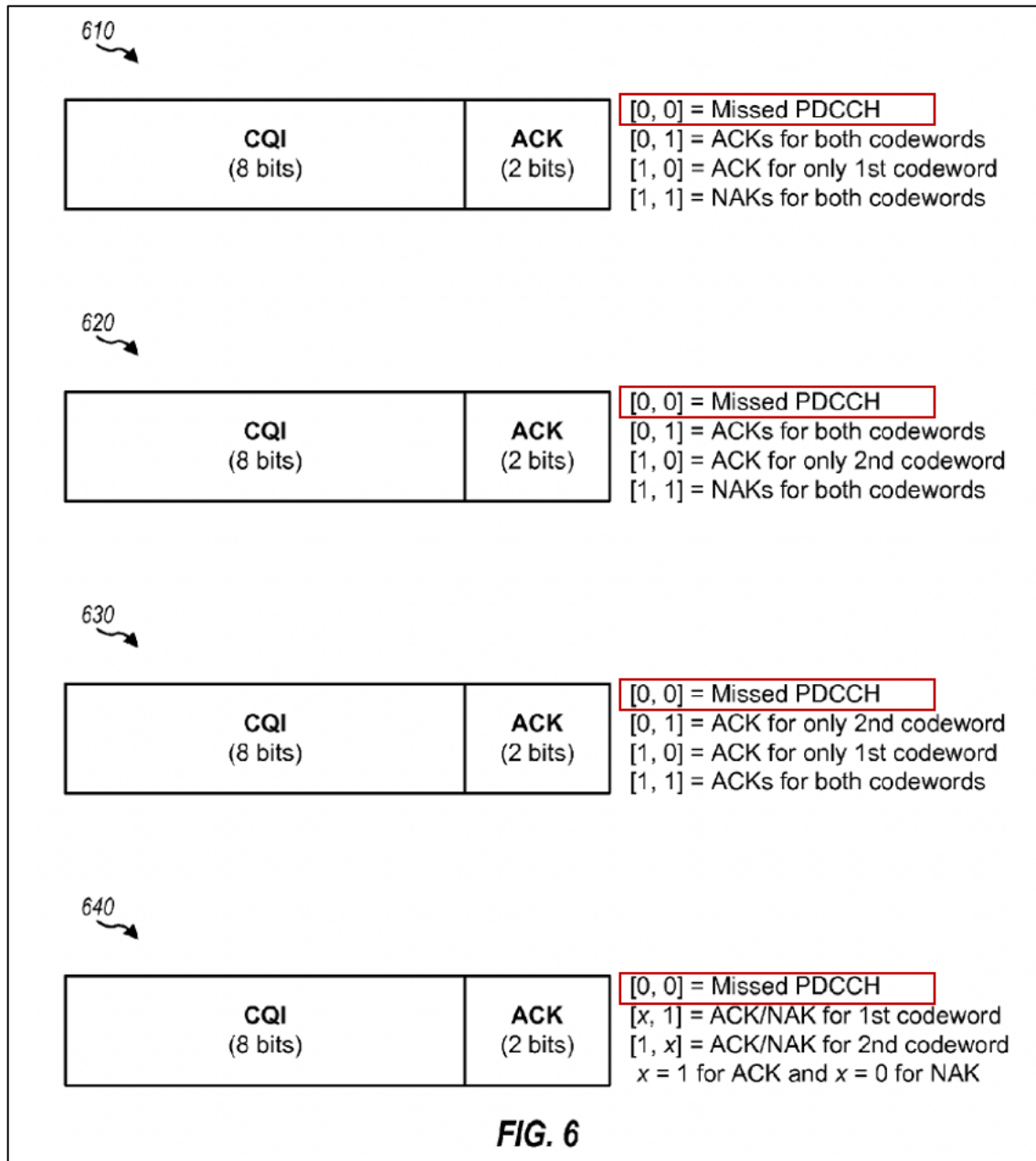
Ex. 1005, Fig. 8 (annotated). This is shown clearly in Block 846 of Figure 8 above.

Ex. 1005, [0101] (“Block 846 covers scenario 1 in which the UE is not scheduled as well as scenario 3 in which the UE is scheduled but misses the PDCCH.”). Block 846 would not occur unless the PDCCH was first detected and decoded in Block 820. Ex. 2001, Akl Decl., ¶ 46. Petitioner presents no expert testimony that could establish otherwise. *See, e.g.*, Pet. at 17.

Figures 11 and 12, which Petitioner also relies on, merely show that Malladi considers whether “control information is received from an eNB,” and do not show a scenario in which Malladi “fails to detect” control information:



Ex. 1005, Figs. 11-12 (annotated); *see also* Ex. 2001, AkI Decl., ¶ 47. Similarly, Figure 6 shows that [0,0] indicates “Missed PDCCH”:



Id., Fig. 6 (annotated). But Malladi explains throughout, including with respect to Figure 8, that the control information is “missed” when the PDCCH is “incorrectly decoded.” *See, e.g., id.*, [0061] (“However, the UE incorrectly decodes the PDCCH and misses the control information.”). And, as explained above, a POSITA would

understand that, in order to incorrectly decode the PDCCH, the PDCCH must first have been detected. Ex. 2001, Akl Decl., ¶ 48.

For at least these reasons, Petitioner has not shown that Malladi teaches or discloses claim element [9.pre-1].

B. Claim Element [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;”

According to Petitioner, “[a] POSITA would have known that a codeword and a codeword-stream refer to the same concept and therefore mean the same thing.” Pet. at 24 n. 6. Petitioner does not cite any support for its statement, *see generally id.*, although an identical footnote (also with no support) appears in the declaration of Petitioner’s expert (Ex. 1002 at 39 n. 5).

Because Petitioner has not explained the evidentiary basis for its statement, Patent Owner is unable to adequately respond. Notwithstanding, a POSITA would understand that a codeword and a codeword stream may mean vastly different things, depending on the context. For example, in some contexts, a codeword is the last step in the downlink shared channel (layer 2) processing chain that starts with transport blocks payload in bits and results with the construction of a codeword. Ex. 2001, Akl Decl., ¶¶ 51-52 (citing Ex. 2006 at 9 (“The DLSCH processing chain

involves attaching a CRC code for error detection, segmenting the data into smaller chunks known as subblocks, undertaking channel-coding operations based on turbo coding for the user data, carrying out a rate-matching operation that selects the number of output bits to reflect a desired coding rate, and finally reconstructing the codeblocks into codewords.”)).

In that same context, a “codeword stream” is the last step of the physical downlink shared channel (layer 1) processing chain that starts with the scrambling of codewords and results in one or more codeword streams that are transmitted on one or more MIMO antennas. Ex. 2001, Akl Decl., ¶ 53 (citing Ex. 2006 at 10 (“The next phase of processing is known as physical downlink shared channel processing. In this phase, the codewords first become subject to a scrambling operation and then undergo a modulation mapping that results in a modulated symbol stream. The next step comprises the LTE MIMO or multi-antenna processing, in which a single stream of modulated symbols is subdivided into multiple substreams destined for transmission via multiple antennas.”))).

Because the terms “codeword” and “codeword stream” are context dependent, Petitioner and its expert should have explained the evidentiary basis for Petitioner’s contention that they purportedly mean the same thing in the context of Malladi’s system. Petitioner did not meet its burden on this issue. 35 U.S.C. § 312(a)(3) (requiring that the petition “identif[y], in writing and with particularity, each claim

challenged, the grounds on which the challenge to each claim is based, *and the evidence that supports the grounds for the challenge to each claim*”) (emphasis added).

For at least these reasons, Petitioner has not shown that Malladi teaches or discloses claim element [9.a].

C. Claim Element [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;”

For the reasons discussed in Section IX.B (incorporated by reference herein), Petitioner has not shown that Malladi teaches or discloses claim element 9.a (“codeword streams”). For at least these same reasons, Petitioner has not shown that Malladi teaches or discloses claim element 9.b.

D. Claim Element [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”

For the reasons discussed in Section IX.A (incorporated herein by reference), Petitioner has not shown that Malladi teaches or discloses claim element 9.pre-1 (“a user equipment fails to detect a physical downlink control channel”). For at least these same reasons, Petitioner has not shown that Malladi teaches or discloses claim element 9.c.

X. GROUND 2: PETITIONER FAILED TO SHOW THAT MALLADI IN VIEW OF KIM RENDERS OBVIOUS CLAIM 10

For the reasons discussed in Section IX (incorporated by reference herein), Petitioner has not shown that Malladi teaches or discloses claim elements 9.pre-1 and 9.c (“[a]/[the] user equipment fails to detect [a]/[the] physical downlink control channel”) and 9.a-9.c (“codeword streams”). For at least the same reasons, and because it depends from Claim 9, Petitioner also has not shown that Malladi in view of Kim renders obvious Claim 10.

XI. GROUND 3: PETITIONER FAILED TO SHOW THAT MALLADI IN VIEW OF TDTECH RENDERS OBVIOUS CLAIMS 1, 4-6, 9, 13, AND 14

A. Malladi In View of TDTech Does Not Render Obvious Claim 1

- 1. Claim Element [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”**

For the reasons discussed in Sections IX.B-C (incorporated by reference herein), Petitioner has not shown that Malladi teaches or discloses claim element 9.a-9.c (“codeword streams”). For at least these same reasons, Petitioner has not shown that Malladi in view of TDTech teaches or discloses claim element 1.c, which also recites and requires “codeword streams.”

2. **Claim Element [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;”**

For the reasons discussed in Sections IX.B-C (incorporated by reference herein), Petitioner has not shown that Malladi teaches or discloses claim element 9.a-9.c (“codeword streams”). For at least these same reasons, Petitioner has not shown that Malladi in view of TDTech teaches or discloses claim element 1.d, which also recites and requires “codeword streams.”

3. **Claim Element [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.”**

For the reasons discussed in Section IX (incorporated by reference herein), Petitioner has not shown that Malladi teaches or discloses claim elements 9.pre-1 and 9.c (“[a]/[the] user equipment fails to detect [a]/[the] physical downlink control channel”) and 9.a-9.c (“codeword streams”). For at least these same reasons, Petitioner has not shown that Malladi in view of TDTech teaches or discloses claim element 1.e, which also recites and requires “codeword streams” and that the UE “fail[] to detect” the PDCCH.

B. Malladi In View of TDTech Does Not Render Obvious Dependent Claims 4-6, 13 and 14

For the reasons discussed in Section XI.A (incorporated by reference herein), Petitioner has not shown that Malladi teaches or discloses claim elements 1.e (“the user equipment fails to detect the physical downlink control channel”) and 1.a-1.c (“codeword streams”). For at least the same reasons, and because each of Claims 4-6, 13, and 14 depend either directly or indirectly from Claim 1, Petitioner also has not shown that Malladi in view of TDTech renders obvious dependent Claims 4-6, 13, and 14.

C. Malladi In View of TDTech Does Not Render Obvious Claim 9

1. **Claim Element [9.pre-1]: “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;”**

Patent Owner incorporates by reference herein Section IX.

2. **Claim Element [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;”**

Patent Owner incorporates by reference herein Section IX.

3. **Claim Element [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;”**

Patent Owner incorporates by reference herein Section IX.

4. **Claim Element [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”**

Patent Owner incorporates by reference herein Section IX.

XII. GROUND 4: PETITIONER FAILED TO SHOW THAT MALLADI IN VIEW OF TDTECH AND HUAWEI RENDERS OBVIOUS CLAIMS 2 AND 11

For the reasons discussed in Section XI.A (incorporated by reference herein), Petitioner has not shown that Malladi teaches or discloses claim elements 1.e (“the user equipment fails to detect the physical downlink control channel”) and 1.a-1.c (“codeword streams”). For at least the same reasons, and because each of Claims 2 and 11 depends either directly or indirectly from Claim 1, Petitioner has not shown that Malladi in view of TDTech and Huawei renders obvious dependent Claims 2 and 11.

XIII. GROUND 5: PETITIONER FAILED TO SHOW THAT MALLADI IN VIEW OF TDTECH AND ERICSSON RENDERS OBVIOUS CLAIMS 3 AND 12

For the reasons discussed in Section XI.A (incorporated by reference herein),

Petitioner has not shown that Malladi teaches or discloses claim elements 1.e (“the user equipment fails to detect the physical downlink control channel”) and 1.a-1.c (“codeword streams”). For at least the same reasons, and because each of Claims 3 and 12 depends either directly or indirectly from Claim 1, Petitioner has not shown that Malladi in view of TDTech and Ericsson renders obvious dependent Claims 3 and 12.

XIV. GROUND 6: PETITIONER FAILED TO SHOW THAT MALLADI IN VIEW OF TDTECH AND KIM RENDERS OBVIOUS CLAIMS 7 AND 10

For the reasons discussed in Sections IX and XI.A (incorporated by reference herein), Petitioner has not shown that Malladi teaches or discloses claim elements 1.e, 9.pre-1, and 9.c (“the user equipment fails to detect the physical downlink control channel”) and 1.a-1.c and 9.a-9.c (“codeword streams”). For the same reasons, and because Claim 7 depends either directly or indirectly from Claim 1, Petitioner has not shown that Malladi in view of TDTech and Kim renders obvious dependent Claim 7. Similarly, because Claim 10 depends from Claim 9, Petitioner has not shown that Malladi in view of TDTech and Kim renders obvious dependent Claim 10.

XV. GROUND 7: PETITIONER FAILED TO SHOW THAT MALLADI IN VIEW OF TDTECH AND TS 36.211 V8.2.0 RENDERS OBVIOUS CLAIM 8

For the reasons discussed in Section XI.A (incorporated by reference herein),

Petitioner has not shown that Malladi teaches or discloses claim elements 1.e (“the user equipment fails to detect the physical downlink control channel”) and 1.a-1.c (“codeword streams”). For at least the same reasons, and because Claim 8 depends directly from Claim 1, Petitioner has not shown that Malladi in view of TDTech and TS 36.211 V8.2.0 renders obvious dependent Claim 8.

XVI. CONCLUSION

For the reasons stated above, Patent Owner respectfully asks the Board to deny institution of IPR2023-00665.

Dated: August 10, 2023

Respectfully submitted,

/Theresa M. Dawson/

Theresa M. Dawson

Pro hac vice (to be filed)

CERTIFICATE OF WORD COUNT UNDER 37 C.F.R. § 42.24(b)(1)

I, the undersigned, do hereby certify that the foregoing Patent Owner Preliminary Response, including footnotes, contains no more than 14,000 words, as measured by the Word Count function of Microsoft Word as specified by 37 C.F.R. § 42.24(b)(1).

/Theresa M. Dawson/

Theresa M. Dawson

Pro hac vice (to be filed)

CERTIFICATE OF SERVICE

I hereby certify that on this 10th day of August 2023, a true and correct copy of the foregoing PATENT OWNER'S PRELIMINARY RESPONSE was served by electronic mail upon the following counsel of record for Petitioners:

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