

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

TELEFONAKTIEBOLAGET LM ERICSSON,
Patent Owner.

IPR2022-00458
Patent 9,888,486 B2

Before SHARON FENICK, STEVEN M. AMUNDSON, and
STEPHEN E. BELISLE, *Administrative Patent Judges*.

BELISLE, *Administrative Patent Judge*.

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

I. INTRODUCTION

Apple Inc. (“Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting an *inter partes* review of claims 1–31 (“Challenged Claims”) of U.S. Patent No. 9,888,486 B2 (Ex. 1001, “the ’486 patent”). Petitioner identifies itself as a real party in interest. Pet. 68. Telefonaktiebolaget LM Ericsson (“Patent Owner”) identifies itself and Ericsson Inc. as real parties in interest (Paper 3, 2), and timely filed a Preliminary Response to the Petition (Paper 6, “Prelim. Resp.”).

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314(b) (2018); 37 C.F.R. § 42.4(a) (2022). We may not institute an *inter partes* review “unless . . . 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). 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). The “reasonable likelihood” standard is “a higher standard than mere notice pleading” but “lower than the ‘preponderance’ standard to prevail in a final written decision.” *Hulu, LLC v. Sound View Innovations, LLC*, IPR2018-01039, Paper 29 at 13 (PTAB Dec. 20, 2019) (precedential).

Applying those standards, and upon consideration of the information presented in the Petition and Preliminary Response, we determine that Petitioner has demonstrated a reasonable likelihood of success in proving that at least one claim of the ’486 patent is unpatentable. Accordingly, we institute an *inter partes* review as to all Challenged Claims of the ’486 patent on all grounds raised in the Petition. We base our factual findings and

conclusions at this stage of the proceeding on the evidentiary record developed so far. This is not a final decision as to the construction of any claim term or the patentability of any claim. Any final decision shall be based on the full trial record, including any response timely filed by Patent Owner. Any arguments not raised by Patent Owner in a timely filed response may be deemed waived, even if they were presented in the Preliminary Response.

II. BACKGROUND

A. *Related Proceeding*

Petitioner indicates that Samsung previously challenged the '486 Patent in IPR2021-00536, which terminated pursuant to settlement prior to a preliminary response. Pet. 64, 68 (citing *Samsung Elecs. Co. v. Telefonaktiebolaget LM Ericsson*, IPR2021-00536, Paper 11 (PTAB August 3, 2021)).

Patent Owner indicates that “[t]here are no judicial or administrative matters that would affect, or be affected by, a decision in this proceeding.” Paper 3, 2.

B. *The '486 Patent*

The '486 patent is titled “Method and Arrangement in a Telecommunication System,” and issued on February 6, 2018, from U.S. Patent Application No. 15/386,355, filed December 21, 2016, and according to the Petition, claims priority through a series of continuation applications to U.S. Provisional Patent Application No. 61/098,422, filed September 19,

2008.¹ Ex. 1001, codes (21), (22), (45), (54), (63); Ex. 1004, 43–44; see Pet. 9.

The '486 patent relates to Hybrid Automatic Repeat reQuest (“HARQ”) processes used for both semi-persistent scheduling (“SPS”) and dynamically scheduled transmissions between base stations and user equipment (“UE”) in a telecommunication system. Ex. 1001, 1:6–8, 1:12–14, 1:51–58. More specifically, the '486 patent relates to “a method in a cellular communication system, for avoiding errors in a HARQ process, wherein an NDI [New Data Indicator] flag is used both for indicating either semi-persistent scheduling, SPS activation or SPS retransmissions, and also for indicating, by toggling of the flag, a new transmission in dynamic scheduling mode.” *Id.* at Abstract.

When data is transmitted from a base station, such as an eNodeB, user equipment, such as a cell phone, that receives the transmission typically responds to the base station with a feedback signal that indicates either the successful reception (“ACK”) or the unsuccessful reception (“NACK”) of the data. Ex. 1001, 1:13–19. In case of a received NACK, the data sender (e.g., eNodeB) retransmits the same or another so-called redundancy version

¹ Although Petitioner states that the '486 patent has “an earliest claimed priority date of September 19, 2008[,] based on the filing of a provisional application” and cites pages 1 and 2 of Ex. 1001 (the '486 patent) (Pet. 9), we do not find any such priority claim to a provisional application identified in the '486 patent, and do not find any certificate of correction adding such a priority claim. See Ex. 1001; 37 C.F.R. § 1.78; *but see* Ex. 1004, 43–44 (application data sheet in prosecution history identifying priority claims to, *inter alia*, PCT/SE2009/050855 and U.S. Provisional Patent Application No. 61/098,422). Regardless, for purposes of institution, we treat the '486 patent as having an earliest claimed priority date of September 19, 2008.

of the same data unit. *Id.* at 1:19–26. Both transmission and retransmissions to the UE are controlled by a scheduler in the base station, and indicated via a control channel (i.e., a Physical Downlink Control Channel or “PDCCH”) using a PDCCH message. Ex. 1001, 1:28–37, 1:51–54. “The PDCCH message, comprising a scheduling message, i.e. an uplink Grant or a downlink Assignment, includes a field denoted as NDI (New Data Indicator),” and this “field size is currently 1 bit.” *Id.* at 2:47–50. As noted above, there are two different scheduling modes used by the scheduler when transmitting data to the UE, namely SPS and dynamic scheduling. *Id.* at 1:51–58.

In SPS, “each initial (new) transmission is made on pre-assigned resources, i.e. the radio resources are known in the time and frequency domain.” Ex. 1001, 1:55–58. “The SPS technique thus makes assignments (downlink data transmission) or grants (uplink data transmission) for the first transmission of data superfluous and thus saves control signaling resources.” *Id.* at 1:59–62. According to the ’486 patent, “it has been decided that SPS activation [i.e., new transmissions] will use the value NDI=0 [i.e., zero] and SPS retransmissions will use the value NDI=1 [i.e., one] in the corresponding PDCCH signal.” *Id.* at 3:1–4.

In dynamic scheduling, transmissions are made on an as-needed basis, and specific time slots and resources are not reserved as in SPS mode. “Dynamic scheduling is the mode in which each initial (new) transmission of data is indicated via a control channel (PDDCH[.]” when resources are needed, Ex. 1001, 1:51–54, and “requires relatively much signaling overhead,” *id.* at 1:63–64. “[W]here the first transmission is dynamically scheduled, the NDI bit is toggled with each new transmission.” *Id.* at 2:53–

55. “Thus the value can be either 0 or 1 for a new transmission and it will remain the same value for corresponding HARQ retransmissions for a specific MAC Protocol Data Unit, PDU.” *Id.* at 2:55–58. “For downlink transmission this allows the UE to detect whether a new HARQ transmission starts or whether a retransmission is to be expected.” *Id.* at 2:58–60.

According to the ’486 patent, “[f]or dynamically scheduled HARQ processes, the NDI has a different meaning as previously explained [above]. The decision to use the NDI bit for SPS activation and retransmission indication for SPS leads to problems, since a new interpretation is introduced.” Ex. 1001, 3:9–13. According to Patent Owner, “the Petition aptly describes the potential error that could occur if the NDI flag were incorrectly interpreted by the UE”:

For example, after a [base station] initiates SPS transmission with NDI=0, it may attempt to send a SPS retransmission with NDI=1. However, if the UE does not receive the retransmission, then the [base station] and the UE would be out of sync—the [base station] would believe that the most recent NDI equals 1, while the UE believes the most recent NDI equals 0. If the [base station] then tries to send a new transmission in dynamic mode, the [base station] would send an NDI with a value toggled relative to what the [base station] believes is the last NDI (i.e., 1) and send an NDI=0. The UE, however, would perceive the NDI to be the same as what the UE believes is the last NDI (i.e., 0), and would therefore misinterpret the transmission as a retransmission. This potential lack of synchronization could therefore defeat the UE’s ability to properly understand and organize the data that it receives.

Prelim. Resp. 8 (quoting Pet. 18) (alterations in original).

According to the ’486 patent, exemplary embodiments of the invention avoid this potential error by interpreting the NDI flag as being “toggled” to reflect a new data transmission—regardless of the value of the

NDI flag sent in the transmission itself—when the scheduling mode is shifted from SPS to dynamic:

The method comprises the steps of receiving, in a scheduling message, an indication that dynamically scheduled transmission will take place; if a semi persistent resource has occurred for the same HARQ process since a previously received indication for dynamically scheduled transmission, then considering the NDI flag to be toggled regardless of the value of the NDI flag. Thus, if the condition is fulfilled, a UE will always regard the NDI flag as indicating or requesting a new data transmission.

Ex. 1001, Abstract.

C. Illustrative Claim

The '486 patent includes thirty-one claims, all of which are challenged. Claims 1, 7, 12, 17, 22, and 27 are the challenged independent claims. Claim 1 is illustrative and reproduced below.

1. A method for processing scheduling information in a cellular communication system, the method comprising:
receiving, at a user equipment (UE), a scheduling message indicating an allocation of transmission resources for an uplink or downlink transmission associated with a first Hybrid Automatic Repeat reQuest (HARQ) process of the UE; and
if the scheduling message is addressed to an identifier that is associated with dynamic scheduling for the UE and a most recent previous transmission for the first HARQ process occurred on a semi-persistent scheduled resource:
interpreting the scheduling message as scheduling a new data transmission regardless of a value of a new data indicator (NDI) flag in the scheduling message;
storing the value of the NDI flag, and
receiving or transmitting the new transmission for the first HARQ process in accordance with the scheduling message.

Ex. 1001, 10:10–28.

D. Evidence

Petitioner relies on the following patent evidence.

Name	Patent Document	Exhibit
Ho	US 2010/0067468 A1	1005

Pet. 11. Petitioner also relies upon the Declaration of Sundeep Rangan, Ph.D. (Ex. 1002).

E. Asserted Grounds of Unpatentability

Petitioner challenges the patentability of claims 1–31 of the '486 patent based on the following grounds.

Claims Challenged	35 U.S.C. §	Reference(s)/Basis
1–31	103 ²	Ho ³

Pet. 11.

III. DISCRETIONARY DENIAL – 35 U.S.C. § 325(d)

Patent Owner argues the Board should exercise its discretion to deny institution of *inter partes* review under 35 U.S.C. § 325(d) because a reference “virtually identical” to Petitioner’s sole asserted prior art reference, namely Ho, previously was presented to the Office during prosecution of the '486 patent, and allegedly Petitioner has not demonstrated that the Office erred in allowing the '486 patent over that prior art. Prelim.

² The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. § 103. Because the '486 patent was effectively filed before March 16, 2013, the effective date of the relevant amendment, the pre-AIA version of § 103 applies.

³ We note that Petitioner presents this ground as “Ho in view of the knowledge of a POSITA.” Pet. 11.

Resp. 14–17. Based on the record before us, we decline to deny institution of *inter partes* review under § 325(d), for the reasons discussed below.

Section 325(d) provides that, in determining whether to institute an *inter partes* review, “the Director may take into account whether, and reject the petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office.” 35 U.S.C. § 325(d). The Board uses a two-part framework in determining whether to exercise its discretion under § 325(d), specifically

- (1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and
- (2) if either condition of [the] first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims.

Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH, IPR2019-01469, Paper 6 at 8 (PTAB Feb. 13, 2020) (precedential) (“*Advanced Bionics*”).

In applying the two-part framework, we consider the non-exclusive factors set forth in *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017) (precedential in relevant part) (“*Becton Dickinson*”), which “provide useful insight into how to apply the framework” under § 325(d). *Advanced Bionics*, Paper 6 at 9. Those non-exclusive factors include the following:

- (a) the similarities and material differences between the asserted art and the prior art involved during examination;
- (b) the cumulative nature of the asserted art and the prior art evaluated during examination;

- (c) the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection;
- (d) the extent of the overlap between the arguments made during examination and the manner in which Petitioner relies on the prior art or Patent Owner distinguishes the prior art;
- (e) whether Petitioner has pointed out sufficiently how the Examiner erred in its evaluation of the asserted prior art; and
- (f) the extent to which additional evidence and facts presented in the Petition warrant reconsideration of the prior art or arguments.

Becton Dickinson, Paper 8 at 17–18. “If, after review of factors (a), (b), and (d), it is determined that the same or substantially the same art or arguments previously were presented to the Office, then factors (c), (e), and (f) relate to whether the petitioner has demonstrated a material error by the Office.”

Advanced Bionics, Paper 6 at 10.

Under the first part of the § 325(d) framework, we find the evidence demonstrates that the same (or effectively the same or at least substantially the same) reference relied upon in the Petition, namely Ho, previously was presented to the Office during prosecution of the ’486 patent, based on our consideration of *Becton Dickinson* factor (a). Ex. 1001, code (56); *see generally* Exs. 1005, 2001. In particular, the ’486 patent cites on its face International Publication No. WO2010/030806 (Ex. 2001, “Ho-806”), which is part of the international patent family including Ho, where Ho-806 and Ho effectively are published versions of the same disclosure. Ex. 1001, code (56); *compare* Ex. 1005, *with* Ex. 2001; *see* Ex. 1004, 2 (IDS citing Ho-806), 63 (same IDS with Examiner’s signature). Indeed, as Patent Owner argues, “Ho-806 has the same inventors as Ho, contains the same figures, and contains substantially the same specification, with only slightly

different paragraph numbering due to paragraph numbers for ‘Field’ and ‘Background’ in Ho but not in Ho-806.” Prelim. Resp. 15; *compare* Ex. 1005, *with* Ex. 2001. Petitioner even concedes “Ho was listed on an IDS (by reference to its family member WO2010/030806 A1) filed during prosecution of the ’486 Patent.” Pet. 8. Oddly, Petitioner later argues Ho was *not* “cited on the face of the ’486 Patent” (Pet. 9), but we find this to mean that Ho, i.e., US 2010/0067468 A1 itself, is not listed—an argument we find unavailing as to whether the same or substantially the same art was before the Examiner, given the substantive identity of Ho’s and Ho 806’s disclosures. *See* Prelim. Resp. 16. Because, based on our consideration of *Becton Dickinson* factor (a) above, we determine that the same or at least substantially the same art was before the Examiner during examination, the first part of the *Advanced Bionics* framework is satisfied. We need not consider *Becton Dickinson* factors (b) and (d), and instead turn to the second part of the *Advanced Bionics* framework (i.e., *Becton Dickinson* factors (c), (e), and (f)). *See Ocado Grp., PLC v. AutoStore Tech. AS*, IPR2021-00398, Paper 10 at 20 (PTAB July 21, 2021).

Becton Dickinson factor (c) considers “the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection.” *Becton Dickinson*, Paper 8 at 17. Petitioner argues Ho “was never substantively addressed by the Examiner,” and was not “discussed during prosecution.” Pet. 8–9. In discussing the prosecution history of the ’486 patent, Petitioner argues “[t]here was no substantive examination.” Pet. 20 (citing Ex. 1004, 205–11). Patent Owner does not dispute this. *See* Prelim. Resp. 14–17. The fact that Ho (or cited Ho-806) was not a basis of rejection weighs against exercising discretion to deny

institution under § 325(d). *See Intel Corp. v. Qualcomm Inc.*, IPR2019-00128, Paper 9 at 16 (PTAB May 29, 2019).

Becton Dickinson factor (e) considers “whether Petitioner has pointed out sufficiently how the Examiner erred in its evaluation of the asserted prior art.” *Becton Dickinson*, Paper 8 at 18. As noted above, Petitioner argues Ho “was never substantively addressed by the Examiner” and was not “discussed during prosecution.” Pet. 8–9. Although not presented especially clearly, we understand Petitioner’s argument here effectively to be that the Examiner erred during examination by not substantively considering Ho (or cited Ho-806), and that Ho was never discussed by either the Examiner or the applicant during prosecution. *See id.* Petitioner also provides a detailed analysis of how Ho allegedly teaches each of the limitations in claims 1–31 of the ’486 patent. *See id.* at 25–64.

We agree with Petitioner that the Examiner did not identify the pertinence of Ho’s disclosure and did not issue a rejection based on such disclosure, and we find that this constitutes material Examiner error. As discussed below in Section IV, we determine that Petitioner has established a reasonable likelihood that at least one claim of the ’486 patent is unpatentable. Accordingly, *Becton Dickinson* factor (e) weighs against exercising discretion to deny institution under § 325(d).

Becton Dickinson factor (f) considers “the extent to which additional evidence and facts presented in the Petition warrant reconsideration of the prior art or arguments.” *Becton Dickinson*, Paper 8 at 18. Petitioner identifies the declaration of Dr. Rangan as new evidence that was not presented to the Examiner and that warrants consideration. *See* Pet. 25–64 (citing testimony by Dr. Rangan as to Ho’s teachings). We agree that the

Rangan Declaration in this case contains new, material, noncumulative evidence that was not proffered during prosecution of the '486 patent. As cited below in our discussion of the prior art, we find the Rangan Declaration probative to issues of patentability and helpful to our consideration of Ho, which was not addressed by the Examiner. Accordingly, *Becton Dickinson* factor (f) weighs against exercising discretion to deny institution under § 325(d).

Patent Owner argues, “Petitioner does not address the second part of the *Advanced Bionics* test, and that is fatal to the Petition.” Prelim. Resp. 17. But Patent Owner ignores Petitioner’s showing as discussed above in connection with *Becton Dickinson* factors (c), (e), and (f). *See id.* at 14–17. Patent Owner also does not dispute that (1) during prosecution of the '486 patent, Ho (or cited Ho-806) was not a basis for rejection, (2) neither the Examiner nor applicant discussed Ho (or cited Ho-806) (let alone features that the skilled artisan would understand Ho to teach), and (3) the Examiner did not have the benefit of testimony from Dr. Rangan as to Ho’s (or cited Ho-806’s) teachings. We find Patent Owner’s argument unavailing.

Upon review of the relevant prosecution history (or lack thereof), the art at issue, and the parties’ arguments, we find that Petitioner has demonstrated that the Office erred in a manner material to the patentability of the challenged claims of the '486 patent under the second part of the *Advanced Bionics* framework, and that the *Becton Dickinson* factors do not weigh in favor of denying institution of *inter partes* review under 35 U.S.C. § 325(d). Accordingly, we decline to deny institution under § 325(d).

IV. PATENTABILITY

A. *Applicable Law*

Petitioner challenges the patentability of claims 1–31 of the ’486 patent on the sole ground that the claims would have been obvious under 35 U.S.C. § 103 in view of Ho. “In an [*inter partes* review], the petitioner has the burden from the onset to show *with particularity* why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)) (emphasis added). This burden never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1326–27 (Fed. Cir. 2008)) (discussing the burden of proof in *inter partes* review).

A claim is unpatentable under 35 U.S.C. § 103 if “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) when of record, objective evidence of obviousness or non-obviousness, i.e., secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). Secondary considerations may

include the following: “commercial success, long felt but unsolved needs, failure of others, etc.”⁴ *Id.* The totality of the evidence submitted may show that the challenged claims would not have been obvious to one of ordinary skill in the art. *In re Piasecki*, 745 F.2d 1468, 1471–72 (Fed. Cir. 1984). When evaluating a combination of teachings, we must also “determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

We analyze the challenges presented in the Petition in accordance with the above-stated principles.

B. Level of Ordinary Skill in the Art

Petitioner contends that a person of ordinary skill in the art, at the time of the invention of the ’486 patent:

would have had a Master’s degree in Electrical Engineering, Computer Science, Physics, Applied Mathematics, or equivalent and three to five years of experience working with wireless digital communication systems.

Pet. 20 (citing Ex. 1002 ¶¶ 62–68).

Patent Owner does not present an alternative definition at this stage of the proceeding. *See generally* Prelim. Resp.

We regard Petitioner’s proposed definition as reasonable, and consistent with the prior art before us. *See In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (determining that the Board of Patent Appeals and Interferences did not err in concluding that the level of ordinary skill in the

⁴ At this stage of the proceeding, Patent Owner has not presented objective evidence of non-obviousness.

art was best determined by the references of record). Accordingly, we apply the level of skill set forth above, which also is consistent with the testimony of Dr. Rangan (Ex. 1002 ¶¶ 62–68).

We note that Petitioner adds to its proposed definition that “[a]dditional education might compensate for less experience, and vice-versa” (Pet. 20 (citing Ex. 1002 ¶¶ 62–68)), but we find this too vague to reliably implement in analyzing patentability, and thus, do not rely herein on this additional characterization of the skilled artisan.

C. Claim Construction

We construe claims “using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b); *see also Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc).

In this context, claim terms “are generally given their ordinary and customary meaning” as understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips*, 415 F.3d at 1312–13; *see CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) (There is “a ‘heavy presumption’ that a claim term carries its ordinary and customary meaning.”). “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*,

415 F.3d at 1312–17). Extrinsic evidence is “less significant than the intrinsic record in determining ‘the legally operative meaning of claim language.’” *Phillips*, 415 F.3d at 1317.

Only those claim terms that are in controversy need to be construed, and only to the extent necessary to resolve the controversy. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (stating 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))).

Petitioner submits that “the Board does not need to construe any claim term for purposes of resolving the issues presented by [the] Petition.” Pet. 20. Patent Owner submits, “[a]t this stage of the proceeding, Patent Owner takes no position regarding the proper construction of the claim terms in the ’486 patent.” Prelim. Resp. 14. In determining whether Petitioner has demonstrated a reasonable likelihood of establishing unpatentability of at least one challenged claim in this case, we need not and do not construe expressly any claim terms. *See Nidec*, 868 F.3d at 1017.

Nevertheless, during trial, we encourage the parties to consider whether any challenged method claims include conditional limitations (e.g., “if,” “when,” etc.), and if so, to discuss how any such conditional limitations should be construed. *See Ex parte Schulhauser*, Appeal No. 2013-007847, 2016 WL 6277792 (PTAB Apr. 28, 2016) (precedential); *Cont’l Auto. Sys., Inc. v. Horizon Glob. Americas Inc.*, IPR2021-00320, 2021 WL 2183083, at *5–6 (PTAB May 28, 2021); *Microsoft Corp. v. Uniloc 2017 LLC*, IPR2019-01116, Paper 22 at 49–52 (PTAB Oct. 26, 2020) (applying

Schulhauser under the *Phillips* standard and concluding that “*Schulhauser*, on its face, does not limit its application to circumstances where the broadest reasonable interpretation rule applies”); *Marvel Semiconductor Inc. v. Uniloc 2017 LLC*, IPR2019-01349, Paper 24 at 33–35 (PTAB Feb. 1, 2021) (same); see also *Lincoln Nat. Life Ins. Co. v. Transamerica Life Ins. Co.*, 609 F.3d 1364, 1370 (Fed. Cir. 2010) (precedential); *Hytera Commc’ns Co. v. Motorola Sols., Inc.*, 841 F. App’x 210, 215–18 (Fed. Cir. 2021) (nonprecedential). The parties are expected to assert all of their claim construction arguments and evidence in the Petition, Patent Owner’s Response, Petitioner’s Reply, or otherwise during trial, as permitted by our rules.

D. Obviousness of Claims 1–31 over Ho

Petitioner contends claims 1–31 are unpatentable under 35 U.S.C. § 103 as obvious over Ho (Ex. 1005). Pet. 25–64. Patent Owner opposes Petitioner’s contentions. Prelim. Resp. 18–28. Based on our review of the record before us, we determine that Petitioner has established a reasonable likelihood that it would prevail in showing that claims 1–31 are unpatentable as obvious over Ho, as discussed below. We turn first to an overview of Ho.

1. Overview of Ho (Ex. 1005)

Ho relates to “techniques for managing respective new transmissions and re-transmissions in a wireless communication system.” Ex. 1005 ¶ 3. Ho summarizes its disclosure as follows:

Various mechanisms are described herein for processing a new data indicator (NDI) associated with respective transmissions conducted for one or more Hybrid Automatic Repeat Request (HARQ) processes. For example, for a HARQ process shared between distinct scheduling schemes, an NDI associated with a

latter transmission can be regarded as toggled irrespective of the value of the NDI upon recognizing that a utilized scheduling scheme (e.g., as indicated via a radio network temporary identifier (RNTI) or the like) has changed between successive transmissions (e.g., from semi-persistent scheduling to dynamic scheduling), thereby allowing processing of the latter transmission as a transmission of new data. As additionally described herein, various techniques are described herein for NDI processing in the case of uplink grant and downlink assignment transmission.

Id. at Abstract.

We further discuss below the disclosure of Ho in connection with the parties' arguments.

2. Analysis

a) Independent Claim 1

Petitioner provides an element-by-element analysis of independent claim 1 in relation to Ho. Pet. 25–34. Petitioner's analysis relies on testimony from its declarant, Dr. Rangan. Ex. 1002 ¶¶ 79–95. Patent Owner opposes. Prelim. Resp. 18–24. As discussed below, Petitioner contends each limitation in claim 1 is taught by Ho.

(1) *(Preamble) “A method for processing scheduling information in a cellular communication system, the method comprising:”*

Petitioner contends Ho meets the preamble by disclosing:

According to an aspect, **a method** is described herein. The method can comprise **identifying information** relating to an initial transmission for a Hybrid Automatic Repeat Request (HARQ) process, **the information comprising scheduling information** and an initial new data indicator (NDI)

Pet. 25 (quoting Ex. 1005 ¶ 10; citing, *inter alia*, Ex. 1002 ¶ 79). Ho also discloses that “[t]o improve the accuracy of information transmitted within a wireless communication system, various techniques for re-transmitting information between communicating entities can be utilized in the event that an initial transmission of the information is unsuccessful.” Ex. 1005 ¶ 7; see Ex. 1002 ¶ 80. Patent Owner does not contend otherwise at this stage of the proceeding. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378. For the reasons given by Petitioner, we determine that Ho teaches this element of the claim.⁵

(2) “receiving, at a user equipment (UE), a scheduling message indicating an allocation of transmission resources for an uplink or downlink transmission associated with a first Hybrid Automatic Repeat reQuest (HARQ) process of the UE;”

In its Petition, Petitioner relies, in part, on an annotated version of Ho’s Figure 1, reproduced below, in discussing how Ho teaches this limitation.

⁵ Neither party at this stage of the proceeding argues that the preamble of claim 1 is limiting. We likewise express no view herein.

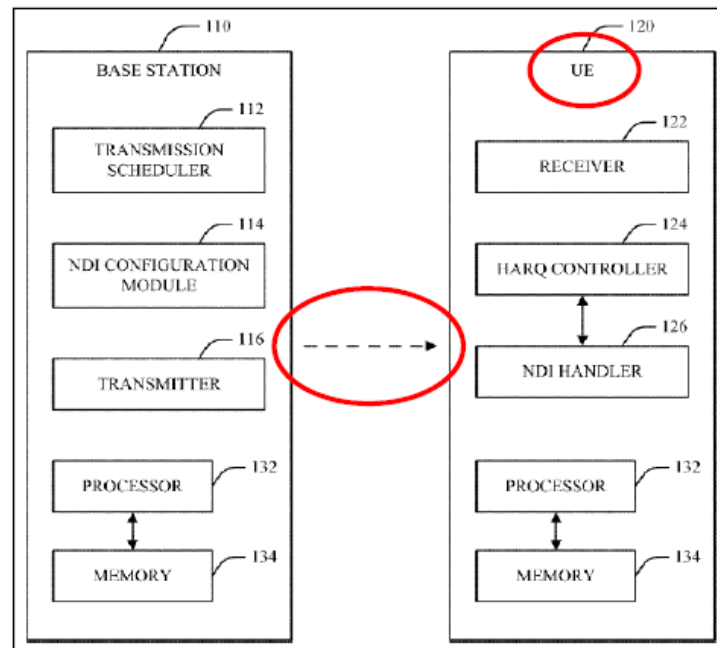


Figure 1, as annotated by Petitioner, depicts a block diagram of a system for managing respective transmissions and/or retransmissions associated with a HARQ process.

Pet. 26; Ex. 1005 ¶ 17, Fig. 1. Petitioner contends Ho’s Figure 1 teaches the receipt of information by a UE from a BS, as outlined in red (i.e., the two ovals). Pet. 26. Petitioner contends this received information includes a scheduling message. Pet. 26 (citing, *inter alia*, Ex. 1005 ¶¶ 71 (“Information, arguments, parameters, data, etc. *can be passed, forwarded, or transmitted* using any suitable means including memory sharing, *message passing*, token passing, network transmission, etc.” (emphases added)), 10 (“the information comprising scheduling information”); Ex. 1002 ¶ 81).

Petitioner contends Ho teaches “a received scheduling message indicates an allocation of transmission resources, for example a dynamic mode scheduling message specifies transmission times” (Pet. 27 (citing, *inter alia*, Ex. 1005 ¶ 38; Ex. 1002 ¶ 82)); and “receiving such scheduling messages for a transmission associated with a first HARQ process of the

UE” (Pet. 27 (citing, *inter alia*, Ex. 1005 ¶ 37; Ex. 1002 ¶ 83)). Petitioner argues, “[i]n general, Ho addresses those situations where ‘a given HARQ process [is] shared among multiple types of scheduling such as, for example, dynamic scheduling [] and semi-persistent scheduling.’” Pet. 27 (citing, *inter alia*, Ex. 1005 ¶ 7; Ex. 1002 ¶ 83) (second and third alterations in original).

Petitioner contends “Ho also teaches scheduling messages indicating an allocation of transmission resources for an uplink transmission, and also scheduling messages indicating an allocation of transmission resources for a downlink transmission.” Pet. 27–29 (citing, *inter alia*, Ex. 1005 ¶¶ 34, (“[B]ase station 110 can engage in one or more downlink (DL, also referred to as forward link (FL)) communications with UE 120, and UE 120 can engage in one or more uplink (UL, also referred to as reverse link (RL)) communications with base station 110.” (alteration in original)), 35 (“[R]espective DL transmissions within system 100 can be conducted from base station 110 via a transmitter 116 to a UE 120 via a receiver 122. While not illustrated in system 100, it should be appreciated that respective UL transmissions could also occur from a transmitter at UE 120 to a receiver at base station 110.”), Figs. 4–5; Ex. 1002 ¶ 84).

For the reasons stated in the Petition at pages 26–29, Petitioner sufficiently establishes that Ho teaches this limitation. Patent Owner does not contend otherwise at this stage of the proceeding.

- (3) “if the scheduling message is addressed to an identifier that is associated with dynamic scheduling for the UE and a most recent previous transmission for the first HARQ process occurred on a semi-persistent scheduled resource:”

Petitioner contends Ho teaches this limitation by disclosing that “a UE has two different types of identifiers: (1) a SPS C-RNTI, to be used for SPS mode; and (2) distinct C-RNTI identifiers, to be used for dynamic mode.” Pet. 29–30 (citing, *inter alia*, Ex. 1005 ¶ 43; Ex. 1002 ¶¶ 85–86). Petitioner contends Ho teaches “a UE can transition from SPS mode to dynamic mode, such that the most recent previous transmission for the first HARQ process (before the dynamic mode transmission . . .) would have occurred on a semi-persistent scheduled (SPS) resource.” Pet. 30 (citing, *inter alia*, Ex. 1005 ¶ 42 (“HARQ controller 124 and/or NDI handler 126 at UE 120 can monitor for changes in scheduling utilized by base station 110. It can be appreciated that, upon changing a utilized scheduling mechanism from SPS to dynamic scheduling . . .”); Ex. 1002 ¶ 87); see Pet. 30–31 (citing, *inter alia*, Ex. 1005 ¶¶ 40, 42–43; Ex. 1002 ¶ 88).

For the reasons stated in the Petition at pages 29–31, Petitioner sufficiently establishes that Ho teaches this limitation. Patent Owner does not contend otherwise at this stage of the proceeding.

- (4) “interpreting the scheduling message as scheduling a new data transmission regardless of a value of a new data indicator (NDI) flag in the scheduling message;”

Petitioner contends Ho teaches this limitation by disclosing:

[A]fter a given HARQ process identifier (ID) is used with a given scheduling scheme, NDI handler 126 can process a NDI

associated with a subsequent transmission performed for a different scheduling scheme in a predefined manner (*e.g.*, ***by regarding an associated transmission as a new transmission as opposed to a retransmission***) ***irrespective of the value of the NDI provided with the subsequent transmission.***

Pet. 31–32 (quoting Ex. 1005 ¶ 42; citing, *inter alia*, Ex. 1005 ¶¶ 10–15, 40, 46; Ex. 1002 ¶¶ 89–90) (alteration in original).

For the reasons stated in the Petition at pages 31–32, Petitioner sufficiently establishes that Ho teaches this limitation. Patent Owner does not contend otherwise at this stage of the proceeding.

(5) “*storing the value of the NDI flag, and*”

Petitioner contends Ho teaches this limitation by disclosing “[a] second aspect [of Ho] relates to a wireless communications apparatus, which can comprise ***a memory that stores data relating to . . . a NDI.***” Pet. 32 (quoting Ex. 1005 ¶ 11; citing Ex. 1002 ¶¶ 91–92) (first alteration in original). Petitioner’s declarant, Dr. Rangan, also testifies that the skilled artisan “would recognize . . . that this memory would be used to store the value of the NDI flag because, in dynamic mode, the NDI of the current transmission must be compared to the NDI of the previous transmission in order to know whether the transmission is new or a retransmission, so Ho teaches . . . storing the NDI flag in order to know whether the next dynamic transmission is new or a retransmission.” Ex. 1002 ¶ 91 (footnote omitted); *see* Pet. 32–33 (citing, *inter alia*, Ex. 1005 ¶ 39, Fig. 2; Ex. 1002 ¶ 91). Dr. Rangan also notes that the challenged patent itself discloses in the “Background” section that “the NDI bit is stored in relation to the HARQ process.” Ex. 1002 ¶ 91 n.6 (quoting Ex. 1001, 3:19–20). We also observe that Ho’s claim 11 recites a “wireless communications apparatus”

comprising “*a memory that stores data* relating to a Hybrid Automatic Repeat Request (HARQ) process, a first transmission and a second transmission for the HARQ process, and a *new data indicator (NDI)*.” Ex. 1005, claim 11 (emphases added).

Petitioner also contends Ho teaches “this step occurs if the scheduling message is addressed to a dynamic-mode identifier and the most recent previous transmission for the first HARQ process occurred on a semi-persistent scheduled resource, . . . so ongoing dynamic mode transmissions are properly interpreted.” Pet. 33 (citing, *inter alia*, Ex. 1005 ¶ 39, Fig. 2; Ex. 1002 ¶ 92).

Patent Owner argues “storing data ‘relating to’ an NDI is not the same as storing the value of the NDI flag itself, and Petitioner has not established that Ho discloses the latter, which is explicitly required by the Challenged Claims of the ’486 patent.” Prelim. Resp. 19; *see id.* at 22. Patent Owner also argues Petitioner “appears to present” a “flawed” “inherency argument” in asserting that “the NDI of the current transmission must be compared to the NDI of the previous transmission in order to know whether the transmission is new or a retransmission.” *Id.* at 20. According to Patent Owner, “Ho is clear that storing the NDI flag is not required when transitioning from an SPS transmission to a dynamic transmission.” *Id.*; *see id.* at 20–23. Similarly, Patent Owner argues “nothing in Ho requires the NDI Handler to store the NDI flag for subsequent dynamic transmissions.” *Id.* at 22. Patent Owner further argues the Board should reject Petitioner’s “attempt[] to inject a backup, but wholly unsupported, obviousness argument” for this limitation. *Id.* at 23. In particular, Patent Owner argues “Petitioner has not compared the teachings of the prior art to the claim

language to identify what is missing in the prior art,” provides no motivation to modify Ho, and does not address whether the skilled artisan would have had a reasonable expectation of success in making any such modification to Ho. *Id.* We find Patent Owner’s arguments here unavailing.

First, Patent Owner’s arguments that certain features disclosed in Ho are “not the same” as certain limitations at issue, or that Ho does not “require” certain features as claimed are misplaced, as Petitioner’s sole ground in this case is based on obviousness, not anticipation. The test for obviousness is not whether the claimed invention is *explicitly disclosed or expressly suggested* in Ho, as argued by Patent Owner, but whether the claimed subject matter would have been obvious to those of ordinary skill in the art *in light of the combined teachings* of Ho. *See In re Keller*, 642 F.2d 413, 425 (CCPA 1981); *In re Burckel*, 592 F.2d 1175, 1179 (CCPA 1979) (“[A] reference must be considered not only for what it expressly teaches, but also for what it fairly suggests.”); *see also Fleming v. Cirrus Design Corp.*, 28 F.4th 1214, 1223 (Fed. Cir. 2022) (“When considering obviousness of a claimed invention, the Supreme Court has emphasized that the ‘person of ordinary skill is also a person of ordinary creativity, not an automaton.’”). In this case, at this stage of the proceeding, the skilled artisan would have had a Master’s degree in Electrical Engineering, Computer Science, Physics, Applied Mathematics, or equivalent and three to five years of experience working with wireless digital communication systems. *See supra* Section IV.B. Patent Owner fails to explain *why* an artisan with this level of skill would not read Ho *to teach or at least fairly suggest* storing the value of a NDI flag, particularly given Ho’s explicit disclosure of storing data relating to the NDI and given that the field size of the NDI at the time

of the invention of the '486 patent was “currently 1 bit”—a single bit, as in a zero or one (Ex. 1001, 2:50 (“Background”)).

Second, Patent Owner’s arguments do not appear to be commensurate with the scope of the subject limitation, which recites only “storing the value of the NDI flag.” Indeed, method claim 1 does not explicitly recite any limitation concerning, for example, where the value of the NDI flag is stored, or what, if any, actions are taken with that stored value (i.e., method claim 1 recites storing the NDI flag value, but does not do anything with that value). Nevertheless, Patent Owner argues, for example: “*Importantly, the ‘dynamic NDI value needs to be stored at both the sender and the receiver, and retrieved when the HARQ process is for the first time used as [a] dynamic process after it has been used by SPS before.’*” Prelim. Resp. 10 (quoting Ex. 1001, 8:51–55) (emphases added) (alteration in original). But such arguments are divorced from the actual, broad limitations of claim 1.

Third, as noted above, Petitioner’s declarant, Dr. Rangan, testifies that the skilled artisan would have recognized Ho to *teach* storing the value of the NDI flag and explains why (i.e., “in order to know whether the next dynamic transmission is new or a retransmission”). Ex. 1002 ¶ 91; see Pet. 32–33. Patent Owner disputes this technical testimony of Dr. Rangan using only attorney argument, and without telling us, for example, why, even if Ho does not “re quire” storing of the NDI flag value, Ho would not have otherwise taught this feature to an artisan with the level of skill noted herein (see *supra* Section IV.B). See *In re Pearson*, 494 F.2d 1399, 1405 (CCPA 1974) (“Attorney’s argument in a brief cannot take the place of evidence.”).

Finally, we understand Petitioner to argue that the skilled artisan would have understood or recognized Ho to *teach* the subject limitation

given the disclosures in Ho cited by Petitioner. But Patent Owner appears to characterize the subject limitation as *missing* from Ho (or Ho’s teachings), and faults Petitioner for not providing a reason to modify Ho to include such a feature (“storing the value of the NDI flag”), and for not addressing whether the skilled artisan would have had a reasonable expectation of success in making any such modification to Ho. Based on our understanding of the Petition at this stage of the proceeding, we find Patent Owner’s arguments here misplaced and do not address Petitioner’s arguments as to the *teachings and suggestions* of Ho.

For the reasons stated in the Petition at pages 32–33, Petitioner sufficiently establishes that Ho teaches this limitation.

(6) “*receiving or transmitting the new transmission for the first HARQ process in accordance with the scheduling message.*”

Petitioner contends Ho teaches this limitation by disclosing “processing the subsequent transmission as a transmission of new data,” which would be in accordance with the scheduling message for a dynamic transmission” (Pet. 33 (quoting Ex. 1005, claim 4; citing, *inter alia*, Ex. 1002 ¶ 93)), and that “this transmission would be received by the UE in accordance with the scheduling message in the downlink case or transmitted by the UE in accordance with the scheduling message in the uplink case” (Pet. 34 (citing, *inter alia*, Ex. 1005 ¶¶ 48, 51; Ex. 1002 ¶ 94)). Petitioner’s declarant, Dr. Rangan, also testifies that the skilled artisan “would understand . . . that the purpose of interpreting the scheduling message [as scheduling a new data transmission regardless of a value of a NDI flag in the scheduling message] is to actually receive (in the downlink case) or transmit

(in the uplink case) the new transmission for the first HARQ process in accordance with that scheduling message.” Ex. 1002 ¶ 93; see Pet. 31.

Petitioner also contends Ho teaches “this step occurs if the scheduling message is addressed to a dynamic-mode identifier and the most recent previous transmission for the first HARQ process occurred on a semi-persistent scheduled resource.” Pet. 34 (citing, *inter alia*, Ex. 1005 ¶¶ 10–15, 42, 46; Ex. 1002 ¶ 95).

For the reasons stated in the Petition at pages 33–34, Petitioner sufficiently establishes that Ho teaches this limitation. Patent Owner does not contend otherwise at this stage of the proceeding.

(7) Conclusion

At this stage of the proceeding and based on the record before us, we are persuaded that Petitioner’s cited evidence sufficiently supports Petitioner’s contention that independent claim 1 is unpatentable as obvious over Ho. Accordingly, we determine that Petitioner has established a reasonable likelihood that it would prevail in showing that independent claim 1 is unpatentable as obvious over Ho.

b) Independent Claims 7, 12, 17, 22, and 27

Petitioner contends independent claims 7, 12, 17, 22, and 27 would have been unpatentable as obvious over Ho. Pet. 42–47, 52–57, 59–63. The Petition provides a detailed assessment of claims 7, 12, 17, 22, and 27, with references to the Petition’s analysis of claim 1, disclosures in Ho, and the declaration testimony of Dr. Rangan. *Id.* At this stage of the proceeding, Patent Owner does not present any separate arguments that are distinct to these claims. Rather, Patent Owner generally states the view that the alleged deficiencies in the Petition with respect to claim 1 also are applicable to

claims 7, 12, 17, 22, and 27. *See* Prelim. Resp. 23–24. As discussed above, we are persuaded that the cited evidence sufficiently supports Petitioner’s contention that independent claim 1 is unpatentable as obvious over Ho. For the reasons set forth in the Petition (Pet. 42–47, 52–57, 59–63), we also are persuaded that the current record sufficiently supports Petitioner’s challenges to independent claims 7, 12, 17, 22, and 27 for purposes of institution.

c) Dependent Claim 5

Claim 5 depends from independent claim 1 and further recites:

after receiving or transmitting the new data transmission for the first HARQ process on the dynamically-scheduled resource, determining whether a second scheduling message received for the dynamically-scheduled transmission for the first HARQ process relates to a new transmission or a re-transmission based on whether a current value of the NDI flag received in the second scheduling message is toggled.

Ex. 1001, 10:53–60.

Petitioner contends Ho teaches this limitation by disclosing, for example: “[I]f an NDI bit is initially equal to 0, retransmissions can be indicated as long as the NDI bit remains equal to 0. Alternatively, a new transmission can be indicated by toggling the NDI bit to 1, after which retransmissions of the new transmission can be indicated until the NDI bit is again toggled to 0.” Ex. 1005 ¶ 39; *see* Pet. 40 (quoting Ex. 1005 ¶ 39; citing, *inter alia*, Ex. 1002 ¶¶ 108, 110). Petitioner’s declarant, Dr. Rangan, also testifies, referring in part to Ho’s Figure 2 and the foregoing disclosure, that the skilled artisan would understand Ho to teach interpreting a second scheduling message received for the dynamically scheduled transmission for

the first HARQ process in the manner recited in claim 5. Ex. 1002 ¶ 110; *see* Pet. 40–41.

Patent Owner argues that “Claim 5 requires performing the claimed ‘determining...’ *after* performing the claimed ‘receiving or transmitting...’ (i.e., the claim includes a specific temporal limitation),” and that “Petitioner has not addressed this temporal limitation in its Petition.” Prelim. Resp. 24; *see id.* at 24–27. We find Patent Owner’s attorney argument here unavailing, particularly in view of Dr. Rangan’s uncontroverted testimony to the contrary (discussed above). *See In re Pearson*, 494 F.2d at 1405 (“Attorney’s argument in a brief cannot take the place of evidence.”). In particular, for example, Dr. Rangan testifies that Ho teaches “*subsequent*” dynamic mode messages, and that “*successive* transmissions can be made in dynamic mode,” where such transmissions or retransmissions occur one after the other and the type of transmission depends on whether the NDI bit is toggled. Ex. 1002 ¶ 110 (emphases added); *see* Pet. 40–41. Based on the record before us, we are unpersuaded that the skilled artisan, with a Master’s degree in Computer Science and three to five years of experience working with wireless digital communication systems, for example (*see supra* Section IV.B), would not read Ho *to teach or at least fairly suggest* the features of this limitation.

For the reasons stated in the Petition at pages 40–41, Petitioner sufficiently establishes that Ho teaches this limitation.

d) Dependent Claim 6

Claim 6 depends from dependent claim 5, which in turn depends from independent claim 1, and further recites:

comparing the stored value of the NDI flag with the current value of the NDI flag received in the second scheduling message for the dynamically-scheduled transmission to recognize if the NDI flag is toggled.

Ex. 1001, 10:61–65.

Petitioner’s declarant, Dr. Rangan, testifies that the skilled artisan “would . . . recognize[] ‘toggled’ means that the current value of the NDI flag received in the second scheduling message is the opposite of the value of the NDI flag from the previous scheduling message.” Ex. 1002 ¶ 113 (citing Ex. 1005 ¶¶ 37, 39); *see* Pet. 41. Dr. Rangan also testifies:

[I]n performing the method of claim 5 per the analysis above [*see supra* Section IV.D.2.c], Ho necessarily teaches comparing the stored value of the NDI flag with the current value of the NDI flag received in the second scheduling message for the dynamically scheduled transmission to recognize if the NDI flag is toggled, as there would seem to be no other way to recognize if the NDI flag is toggled and as that is the point of storing the NDI of the first dynamic transmission . . . in the first place.

Ex. 1002 ¶ 113; *see* Pet. 41.

Patent Owner argues “Petitioner has not established that Ho discloses a ‘second scheduling message’ that meets that temporal limitation [of claim 5],” and “[t]herefore, for similar reasons [argued by Patent Owner for claim 5], Petitioner also has not established that Ho discloses the functionality of Claim 6 pertaining to ‘the second scheduling message.’” Prelim. Resp. 27. As discussed above in Section IV.D.2.c concerning claim 5, based on the record before us, we disagree with Patent Owner’s premise here, and thus find Patent Owner’s use of those arguments against claim 6 also unavailing.

Patent Owner also appears to characterize the subject limitation of claim 6 as *missing* from Ho (or Ho’s teachings), and faults Petitioner for not

providing a reason to modify Ho to include such a feature, and for not addressing whether the skilled artisan would have had a reasonable expectation of success in making any such modification to Ho. Prelim. Resp. 27–28. Contrary to Patent Owner, we understand Petitioner to argue (as supported with the declaration of Dr. Rangan) that the skilled artisan would have understood or recognized Ho to *teach* the subject limitation given the disclosures in Ho cited by Petitioner. Based on our understanding of the Petition at this stage of the proceeding, we find Patent Owner’s arguments here misplaced and do not address Petitioner’s arguments as to the *teachings and suggestions* of Ho. *See In re Keller*, 642 F.2d at 425 (The test for obviousness is not whether the claimed invention is expressly suggested in any one or all of the references, but whether the claimed subject matter would have been obvious to those of ordinary skill in the art *in light of the combined teachings of those one or more references.*); *In re Burckel*, 592 F.2d at 1179.

For the reasons stated in the Petition at pages 40–41, Petitioner sufficiently establishes that Ho teaches this limitation.

e) *Dependent Claims 2–4, 8–11, 13–16, 18–21, 23–26, and 28–31*

Petitioner contends claims 2–4, 8–11, 13–16, 18–21, 23–26, and 28–31, which depend directly or indirectly from one of independent claims 1, 7, 12, 17, 22, and 27, are unpatentable as obvious over Ho. Pet. 35–40, 47–52, 57–59, 61–64. The Petition provides a detailed assessment of these claims, with references to the Petition’s analysis of claims 1, 5, and 6, disclosures in Ho, and the declaration testimony of Dr. Rangan. *Id.* At this stage of the proceeding, Patent Owner does not present any separate arguments that are

distinct to any of these claims. Rather, Patent Owner generally states the view that the alleged deficiencies in the Petition with respect to claim 1 also are applicable to claims 2–4, 8–11, 13–16, 18–21, 23–26, and 28–31. *See* Prelim. Resp. 2, 23–24. As discussed above, we are persuaded that the cited evidence sufficiently supports Petitioner’s contention that independent claim 1 is unpatentable as obvious over Ho. For the reasons set forth in the Petition (Pet. 35–40, 47–52, 57–59, 61–64), we also are persuaded that the current record sufficiently supports Petitioner’s challenges to claims 2–4, 8–11, 13–16, 18–21, 23–26, and 28–31 for purposes of institution.

f) Summary

For the foregoing reasons, and the reasons stated in the Petition (Pet. 25–64), we determine that Petitioner demonstrates a reasonable likelihood of success in establishing the unpatentability of claims 1–31 as obvious over Ho.

V. CONCLUSION

Based on the evidence before us, we determine that Petitioner has established a reasonable likelihood that claims 1–31 of the ’486 patent are unpatentable. Accordingly, we institute trial on all the challenges in the Petition.

At this stage of the proceeding, the Board has not made a final determination on the construction of any claim term or the patentability of any challenged claim.

VI. ORDER

Upon consideration of the record before us, it is:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–31 of the '486 patent is instituted with respect to all grounds set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), *inter partes* review of the '486 patent shall commence on the entry date of this Order, and notice is hereby given of the institution of a trial.

IPR2022-00458
Patent 9,888,486 B2

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