

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

APEX BEAM TECHNOLOGIES LLC,
Patent Owner.

IPR2025-00908
Patent 11,108,639 B2

Before JUSTIN T. ARBES, SCOTT A. DANIELS, and
KEVIN W. CHERRY, *Administrative Patent Judges*.

CHERRY, *Administrative Patent Judge*.

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

I. INTRODUCTION

Apple Inc. (“Petitioner”) filed a petition to institute *inter partes* review of claims 1–20 of U.S. Patent No. 11,108,639 (Ex. 1001, “the ’639 patent”). Paper 2 (“Pet.”). Apex Beam Technologies LLC (“Patent Owner”) filed a Preliminary Response. Paper 9 (“Prelim. Resp.”). Patent Owner filed a request for discretionary denial. Paper 7. Petitioner responded in opposition to Patent Owner’s request for discretionary denial. Paper 8. Patent Owner’s request for discretionary denial was denied and the petition was referred to the Board. Paper 10.

We have authority under 35 U.S.C. § 314 to determine whether to institute an *inter partes* review. The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted unless “there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” The Supreme Court has held that the Board, in a decision to institute under 35 U.S.C. § 314(b), may not institute review on less than all claims challenged in the petition. *SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1355–56 (2018). Moreover, in accordance with our rules, “[w]hen 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) (2024); *see also PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018) (interpreting the statute to require “a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition”).

Applying those standards, and upon considering the Petition, the Preliminary Response, and the evidence of record, we determine the information presented a reasonable likelihood that Petitioner would prevail

in establishing the unpatentability of at least one of the challenged claims of the '639 patent. Accordingly, we institute an *inter partes* review.

II. BACKGROUND

A. *Related Matters*

The parties identify the following district-court proceeding between the parties concerning the '639 patent: *Apex Beam Technologies LLC v. Apple Inc.*, 6:24-cv-00223 (W.D. Tex.) (“the district court litigation”). Pet. 84; Paper 4, 2.

Petitioner also identifies the following district-court proceeding concerning the '639 patent: *Apex Beam Technologies LLC v. Samsung Electronics Co., Ltd. et al.*, 2:24-cv-00203 (E.D. Tex.). Pet. 84.

B. *Real Parties in Interest*

Petitioner identifies Apple Inc. as its real party in interest. Pet. 84.

Patent Owner identifies Apex Beam Technologies LLC as its real party in interest. Paper 4, 2.

C. *The '639 Patent*

The '639 patent is titled “Wireless Device Feedback for Semi-Persistent Scheduling Release.” Ex. 1001, Code (54). The '639 patent relates to “wireless device feedback for semi-persistent scheduling release,” and “enable[s] semi-persistent scheduling operation in a wireless device and/or one or more base stations.” *Id.* at 3:3–10. The '639 patent explains that, for deactivation of a downlink semi-persistent scheduling (DL SPS) configuration, “the base station may transmit a release/deactivation DCI [(downlink control information)] indicating that the DL SPS configuration is deactivated.” *Id.* at 32:56–58. “When a group of DL SPS configurations are jointly deactivated/released by a single deactivation/release DCI, existing

acknowledgment processes or HARQ [(hybrid automatic repeat request)] feedback codebook determination processes lead to inefficient DL SPS operation.” *Id.* at 32:63–67. Thus, it is one object of the ’639 patent “to enhance the existing DL SPS deactivation/release mechanisms when a group of DL SPS configurations are jointly released/deactivated.” *Id.* at 32:67–33:3.

The ’639 patent achieves its objective using a wireless device transmitting “the acknowledgement indicating the reception of the DCI (e.g., reception of the DCI that indicates SPS release of the first SPS configuration and the second SPS configuration),” and transmitting “based on the first HARQ codebook identifier being the same as the second HARQ codebook identifier in response to the first SPS configuration index and the second SPS configuration index being associated with the same deactivation state.” *Id.* at 49:50–62.

D. The Challenged Claims

Petitioner challenges claims 1–20 of the ’639 patent. Pet. 1. Of the challenged claims, claim 1 is the only independent claim and is reproduced below with Petitioner’s identifiers for the claim limitations, as illustrative of the subject matter recited in the challenged claims.

[1pre] A wireless device comprising:

[1a] one or more processors; and

[1b] memory storing instructions that, when executed by the one or more processors, cause the wireless device to:

[1c] receive one or more radio resource control (RRC) messages comprising:

- [1d] a first configuration parameter, of a first semi-persistent scheduling (SPS) configuration, indicating a first hybrid automatic repeat request (HARQ) codebook identifier;
- [1e] a second configuration parameter, of a second SPS configuration, indicating a second HARQ codebook identifier, wherein the second HARQ codebook identifier is the same as the first HARQ codebook identifier; and
- [1f] a third configuration parameter indicating a state that is mapped to the first SPS configuration and the second SPS configuration;
- [1g] receive a downlink control information (DCI), wherein a value of one or more bits of a HARQ process number field of the DCI indicates the state;
- [1h] deactivate the first SPS configuration and the second SPS configuration in response to receiving the DCI; and
- [1i] transmit an acknowledgment.

Ex. 1001, 55:5–30; Pet. iv.

E. Evidence

Petitioner submits the following evidence:

Evidence	Exhibit No.
Declaration of Narayan Mandayam, Ph.D.	1003
Fakoorian et al., US 2023/0084754 A1 (published Mar. 16, 2023, filed Nov. 22, 2022, provisional application (Ex. 1008) filed June 28, 2019) (“Fakoorian-1”) ¹	1004
Fakoorian et al., US 11,464,001 B2 (issued Oct. 4, 2022, filed July 29, 2020, provisional application (Ex. 1009) filed Aug. 16, 2019) (“Fakoorian-2”) ²	1005
Takahashi et al., WO 2021/064961 A1 (published Apr. 8, 2021, filed Oct. 3, 2019) (“Takahashi”) (translation of original in Japanese, Ex. 1010)	1006

¹ The Petition includes parallel citations to both Fakoorian-1 (Ex. 1004) and Fakoorian-1’s provisional application (Ex. 1008).

² The Petition also includes parallel citations to both Fakoorian-2 (Ex. 1005) and Fakoorian-2’s provisional application (Ex. 1009).

F. Asserted Grounds of Unpatentability

Petitioner asserts the following ground of unpatentability:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–20	103 ³	Fakoorian-1, Takahashi
1–20	103	Fakoorian-2
1–20	103	Fakoorian-2, Takahashi

Pet. 1.

III. PATENTABILITY ANALYSIS

Petitioner contends that claims 1–20 of the '639 patent are unpatentable under 35 U.S.C. § 103 over various combinations of Fakoorian-1, Takahashi, and Fakoorian-2. Pet. 1.

A patent claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious before the effective filing date of the claimed invention 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 ordinary skill in the art; and (4) when in evidence, objective evidence of nonobviousness.⁴ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

³ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. § 103. The '639 patent claims benefit of a November 6, 2019 priority date, which is after the effective date of the applicable AIA amendments. Ex. 1001, Code (60).

⁴ Patent Owner does not present arguments or evidence of secondary considerations in its Preliminary Response. Therefore, secondary

“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”)). This burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review).

We organize our patentability analysis into four sections. First, we address the level of ordinary skill in the art. Second, we address claim construction. Third, we provide an overview of the asserted references. And fourth, taking account of the information presented, we consider whether the Petition satisfies the threshold requirement for instituting an *inter partes* review under 35 U.S.C. § 314(a).

A. Level of Ordinary Skill in the Art

We consider the asserted grounds of unpatentability in view of the understanding of a person of ordinary skill in the art. In assessing the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (quoting *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986)). “[O]ne or more factors may predominate.” *Id.*

considerations do not constitute part of our analysis herein.

Relying on the declaration testimony of Dr. Mandayam, Petitioner contends that an ordinarily skilled artisan for the '639 patent “would have had a bachelor’s degree in electrical engineering, computer engineering, computer science, or a similar field, along with two years of experience designing or developing wireless networks, including long-term evolution LTE/4G or 5G new radio (NR) cellular technology.” Pet. 7. Petitioner additionally contends “[a]dditional years of experience could substitute for an advanced-level degree (and vice versa).” *Id.*

Patent Owner “utilizes Petitioner’s proposed level of skill in the art.” Prelim. Resp. 3.

Based on this record, we adopt Petitioner’s articulation of the level of ordinary skill in the art, which is consistent with the '639 patent and the asserted prior art, and we apply it in our obviousness evaluations below. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (the prior art, itself, can reflect appropriate level of ordinary skill in art).

B. Claim Construction

Next, we turn to claim construction. In interpreting the claims of the '639 patent, we “us[e] the same claim construction standard that would be used to construe the claim[s] in a civil action under 35 U.S.C. [§] 282(b).” *See* 37 C.F.R. § 42.100(b). The claim construction standard includes construing claims in accordance with the ordinary and customary meaning of such claims as would have been understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. *See id.*; *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005) (en banc).

Petitioner contends that “[a]ll claim terms should be construed according to the *Phillips* standard,” and that “no claim terms need be

construed to resolve issues of controversy in the present Petition.” Pet. 3. Patent Owner agrees “that claim construction is not required to resolve any issues.” Prelim. Resp. 3.

Having considered the record, we determine that no express claim construction is necessary for any claim terms. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (holding that only claim terms in controversy need to be construed, 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))).

C. The Prior Art

Before turning to Petitioner’s asserted grounds of unpatentability, we provide brief summaries of the asserted references.

1. Fakoorian-1 (Ex. 1004)

Fakoorian-1 is titled “Joint Activation and/or Release for Multiple Configured Grant and/or Semi-Persistent Scheduling Configurations.” Ex. 1004, Code (54). Fakoorian-1 relates to “wireless communication and to techniques and apparatuses for joint activation and/or release for multiple configured grant and/or semi-persistent scheduling configurations.” *Id.* ¶ 2. Fakoorian-1 endeavors to fill a need for improvements in Long Term Evolution (LTE) and NR technologies that “should be applicable to other multiple access technologies and the telecommunication standards that employ these technologies.” *Id.* ¶ 5.

Fakoorian-1 describes “a method of wireless communication, performed by a user equipment (UE),” that “may include receiving a single downlink control information (DCI) message, and mapping a bit sequence in the single DCI message to a configuration set that includes multiple

downlink semi-persistent scheduling (SPS) configurations or multiple uplink configured grant (CG) configurations to be jointly activated or released.” *Id.* ¶ 6.

2. *Fakoorian-2 (Ex. 1005)*

Fakoorian-2 is titled “Joint Activation of Multiple Semi-Persistent Scheduling Configurations in a Single Message.” Ex. 1005, Code (54). Fakoorian-2 relates to “joint activation and/or release for multiple configured grant configurations and/or multiple semi-persistent scheduling configurations.” *Id.* at 1:19–23. Fakoorian-2 endeavors to fill a need for improvements in 5G NR technology. *Id.* at 1:47–48.

Fakoorian-2 describes a method “performed by a user equipment (UE),” that “may include receiving a single downlink control information (DCI) message identifying a plurality of semi-persistent scheduling (SPS) configurations to be joint activated or released.” *Id.* at 1:58–62. Fakoorian-2 describes “determining, for each SPS configuration of the plurality of SPS configurations, a number of time slots between an end of the received DCI message and a beginning of one or more downlink (DL) data frames based on a first value carried in the DCI message” and “determining, for each SPS configuration of the plurality of SPS configurations, a number of time slots between an end of the one or more DL data frames and an instance in time at which the UE is to transmit a hybrid automatic repeat request acknowledgement (HARQ-ACK) based on a second value carried in the DCI message.” *Id.* at 1:63–2:5.

3. *Takahashi (Ex. 1006)*

Takahashi is titled “Terminal and Wireless Communication Method.” Ex.1006, Code (54). Takahashi discloses “a terminal and a wireless

communication method for next-generation mobile communication systems.” *Id.* ¶ 1. Takahashi endeavors to provide “a terminal and a wireless communication method capable of appropriate feedback of HARQ-ACK when multiple SPSs are used.” *Id.* ¶ 9. Takahashi describes a terminal including determining a size of a semi-static HARQ-ACK codebook “including HARQ-ACK corresponding to a downlink shared channel (physical downlink shared channel (PDSCH)) with semi-persistent scheduling (SPS) based on the number of SPS settings, the number of set or activated cells, and the number of HARQ-ACK timing values included in a set of the set of HARQ-ACK timing values.” *Id.* ¶ 10.

D. Alleged Ground of Unpatentability Over Fakoorian-1 and Takashi
Petitioner contends that claims 1–20 of the ’639 patent are unpatentable under 35 U.S.C. § 103 as obvious over Fakoorian-1 and Takahashi. Pet. 7–49. Patent Owner argues that Fakoorian-1 does not teach or suggest limitations [1d] and [1e] that are required in all claims. Prelim. Resp. 6–9. Having considered the arguments and evidence before us, we determine that Petitioner demonstrates a reasonable likelihood that it would prevail on this asserted ground of unpatentability. We focus our analysis on claim limitations [1d] and [1e].

1. Claim 1

a) Limitations [1d] and [1e]

Limitation [1d] requires “a first configuration parameter, of a first semi-persistent scheduling (SPS) configuration, indicating a first hybrid automatic repeat request (HARQ) codebook identifier.” Ex. 1001, 55:11–14.

Petitioner contends that the combination of Fakoorian-1 and Takahashi teaches this limitation. *See* Pet. 21–23. With respect to the “first configuration parameter of a first SPS configuration,” Petitioner notes that “Fakoorian-1 includes ‘multiple SPS configurations,’ which provides at least a first SPS configuration.” *Id.* at 21 (citing Ex. 1004 ¶ 65; Ex. 1008 ¶ 64). Petitioner argues that “Fakoorian-1’s first SPS configuration includes configuration parameters comprising a ‘periodicity,’ [Configured Scheduling Radio Network Temporary Identifier (CS-RNTI)], ‘HARQ process number,’ and ‘service type.’” *Id.* (citing Ex. 1004 ¶¶ 47, 50, 53–55, 57; Ex. 1008 ¶¶ 46, 49, 52–54, 56) (emphasis omitted). Petitioner contends that these parameters can be indicated to the UE in a Radio Resource Control (“RRC”) configuration. *Id.* at 22 (citing Ex. 1004 ¶ 48; Ex. 1008 ¶ 47). Thus, Petitioner argues that Fakoorian-1 provides an RRC message comprising at least a first configuration parameter of a first SPS configuration. *Id.* (citing Ex. 1003 ¶ 82).

As for the “[f]irst configuration parameter indicating a first HARQ codebook identifier,” Petitioner contends that “Fakoorian-1’s ‘HARQ process number’ provides at least one example of the first configuration parameter indicating a first HARQ codebook identifier.” *Id.* (citing Ex. 1003 ¶ 83) (emphasis omitted). Petitioner asserts that “[t]he number of HARQ processes of the first SPS configuration is a configuration parameter that indicates a HARQ codebook identifier.” *Id.* at 22–23. Petitioner contends that “Fakoorian-1’s ‘HARQ process number’ is ‘used to indicate which [SPS] configuration(s) are to be’ released, and Fakoorian-1’s UE acknowledges the ‘release by transmitting the acknowledgement in a codebook through a physical uplink control channel (PUCCH) resource.’”

Id. at 23 (citing Ex. 1004 ¶¶ 43, 58; Ex. 1008 ¶¶ 42, 57) (emphasis omitted). Petitioner submits that “the HARQ process number comprises a ‘bit sequence’ of ‘4 bits’ that indicates a HARQ index ‘used to activate or release the corresponding [SPS] configuration.’” *Id.* (citing Ex. 1004 ¶ 57; Ex. 1008 ¶ 56) (emphasis omitted).

Limitation [1e] requires “a second configuration parameter, of a second SPS configuration, indicating a second HARQ codebook identifier, wherein the second HARQ codebook identifier is the same as the first HARQ codebook identifier.” Similar to limitation [1d], for the “second configuration parameter of a second SPS configuration,” Petitioner submits that Fakoorian-1 discloses a “‘UE [that] has **16 downlink SPS configurations**,’ providing at least the first and second SPS configurations (*i.e.*, two of the 16 downlink SPS configurations),” and that “Fakoorian-1’s second SPS configuration comprises configuration parameters such as ‘**periodicity**,’ ‘**CS-RNTI**,’ ‘**HARQ process number**,’ and ‘**a codepoint that indicates a [] configuration index**.’” Pet. 24 (citing Ex. 1004 ¶¶ 47, 49, 53, 57; Ex. 1008 ¶¶ 46, 48, 52, 56; Ex. 1003 ¶ 86).

As for the “second configuration parameter indicating a second HARQ codebook identifier,” Petitioner argues, as it did for limitation [1d], that “the ‘HARQ process number’ of the second SPS configuration, in accordance with Fakoorian-1, provides at least one example of the second configuration parameter indicating a second HARQ codebook identifier.” *Id.* (citing Ex. 1003 ¶ 87).

With respect to the remainder of limitation [1e]—“wherein the second HARQ codebook identifier is the same as the first HARQ codebook identifier,” Petitioner asserts that “Fakoorian-1 provides Limitation [1e]

according to Patent Owner’s interpretation asserted in its amended complaint in the [district court] litigation: “[i]f a state is mapped to multiple SPS configurations, each of these SPS configurations is configured with the same HARQ-codebookID.” Pet. 25 (citing Ex. 1007 ¶ 311; Ex. 1003 ¶ 88). Petitioner contends that “Fakoorian-1 describes a state that is mapped to multiple SPS configurations such that each of those SPS configurations is configured with the same HARQ codebookID.” *Id.* at 25–26 (citing Ex. 1003 ¶ 89). In the alternative, Petitioner also contends that, even if Fakoorian-1 did not expressly describe this limitation, “a [person of ordinary skill in the art (POSITA)] would have additionally found it obvious to configure Fakoorian-1’s RRC messaging to convey, and its UE to receive, a configuration parameter of a second SPS configuration that indicates the same HARQ codebook identifier as the one indicated by the first configuration parameter of the first SPS configuration, in accordance with Takahashi’s teachings.” *Id.* at 27 (citing Ex. 1003 ¶¶ 93–96).

Patent Owner argues that for limitations [1d] and [1e], “Petitioner fails to identify any HARQ codebook identifier in the Fakoorian-1 . . . reference[], and Petitioner fails to show how these missing elements are disclosed or rendered obvious.” Prelim. Resp. 7. Patent Owner notes that the term “HARQ codebook identifier” is not recited in Fakooiran-1, and “[i]nstead, Petitioner relies on a different concept: a ‘HARQ process number.’” *Id.* Patent Owner argues that Petitioner fails to identify where Fakoorian-1 teaches that the claimed HARQ codebook identifier is the same as a HARQ process number. *Id.* Patent Owner contends that “Petitioner makes reference to Patent Owner’s interpretation of ‘HARQ codebook identifier’ in the district court litigation’s infringement contentions,” but

“even the excerpted portion of the contentions pasted into the Petition makes clear that Patent Owner is relying on a HARQ codebook identifier (also referred to as a ‘harq-CodebookID’) as opposed to a HARQ process number.” *Id.* (citing Ex. 1007 ¶ 311). Patent Owner asserts that “Petitioner’s mapping to the HARQ process number is based on unsupported expert testimony and purported POSITA knowledge,” and “[n]one of the references in the proposed combinations, including the combinations with Takahashi, disclose or render obvious a ‘HARQ codebook identifier’ or anything resembling the above ‘harq-CodebookID.’” *Id.* at 8.

Patent Owner also argues that “Petitioner’s mapping is further contradicted by the fact that Claim 1 refers to a ‘HARQ process number’ as a distinct claim element,” so “Petitioner’s reliance on a ‘HARQ process number’ to meet both limitations is an impermissibly inconsistent mapping.” *Id.* at 9.

We find that Petitioner has shown sufficiently on this record that the combination of Fakoorian-1 and Takahashi teaches limitations [1d] and [1e]. *See* Pet. 21–28. As Petitioner argues, Fakoorian-1 includes multiple SPS configurations and teaches that configuration parameters, related to a first and a second SPS configuration, may be sent to the UE in one or more RRC messages. *See* Pet. 21, 23–24. These parameters include a “periodicity,” “CS-RNTI,” “HARQ process number,” and “service type.” *Id.* at 21, 24. Petitioner has also shown sufficiently, based on the testimony of Dr. Mandayam, which at this stage stands un rebutted, that a person of ordinary skill in the art would have understood that a “HARQ process number” is “used to indicate which [SPS] configuration(s) are to be” released, and Fakoorian-1’s UE acknowledges the “release by transmitting the

acknowledgement in a codebook through a physical uplink control channel (PUCCH) resource.” *Id.* at 23. As Dr. Mandayam testifies, a person of ordinary skill in the art would have understood, based on Fakoorian-1, that a HARQ process number indicates an identifier for the HARQ codebook to be used by the UE to transmit the acknowledgment. *Id.* (citing Ex. 1003 ¶ 84). Dr. Mandayam provides sufficient reasoning, at this stage, to support his opinion, so we do not agree with Patent Owner that this testimony is conclusory. *See* Ex. 1003 ¶¶ 80–84. Thus, on this record, we find that this testimony is sufficient.

Patent Owner’s arguments that Fakoorian-1 does not specifically recite a “HARQ codebook identifier” are not persuasive because the claims merely require a “first configuration parameter” and a “second configuration parameter” that “*indicat[e]*” a first and second HARQ codebook identifier, not that the claimed “first configuration parameter” and “second configuration parameter” actually *be* a HARQ codebook identifier.⁵ Finally, we disagree with Patent Owner that Petitioner relies on an inconsistent mapping for limitations [1d], [1e], and [1g] for several reasons. *See* Prelim. Resp. 9. First, limitations [1d] and [1e] are components of “one or more radio resource control (RRC) messages” and limitation [1g] is reciting a component of “downlink control information (DCI).” Thus, Petitioner is mapping the components of different types of messages, not just the “HARQ process number” in the abstract. Second, limitation [1g] does not recite a “HARQ process number,” but instead “one or more bits of a HARQ process number field of the DCI.” The claim does not recite a HARQ process

⁵ The parties are invited to provide further briefing on the construction of “indicating” as recited in limitations [1d] and [1e].

number, but rather certain components of different types of messages. Petitioner has not mapped these limitations to the same component of the same message (or messages), but rather to distinct components of different types of messages. Thus, we do not agree with Patent Owner that Petitioner's mapping is inconsistent.

Accordingly, we find that Petitioner has shown sufficiently on this record that the combination of Fakoorian-1 and Takahashi accounts for limitations [1d] and [1e].

b) Undisputed Limitations

Petitioner asserts that the combination of Fakoorian-1 and Takahashi discloses the preamble and the remaining limitations of claim 1. Pet. 38–62. Petitioner identifies where the combination of Fakoorian-1 and Takahashi teaches these limitations, supported with testimony from Dr. Mandayam, which Patent Owner does not specifically rebut at this stage. We determine, on this record, that the combination of Fakoorian-1 and Takahashi discloses the preamble (whether or not limiting) and the remaining undisputed limitations of claim 1. *See LG Elecs., Inc. v. Conversant Wireless Licensing S.A.R.L.*, 759 F. App'x 917, 925 (Fed. Cir. 2019) (nonprecedential) (“The Board is ‘not required to address undisputed matters’ or arguments about limitations with which it was never presented.”) (quoting *In re NuVasive, Inc.*, 841 F.3d 966, 974 (Fed. Cir. 2016)).

c) Summary as to Claim 1

Based on the preliminary record before us, Petitioner has shown a reasonable likelihood that claim 1 would have been obvious over the combination of Fakoorian-1 and Takahashi.

2. *Claims 2–20*

Patent Owner does not raise any other separate arguments regarding claims 2–20. *See* Prelim. Resp. 6–7. On the current record, we do not find Patent Owner’s arguments persuasive, as explained above. We have reviewed Petitioner’s contentions regarding claims 2–20 (Pet. 36–49), and determine that Petitioner shows a reasonable likelihood of prevailing with respect to the obviousness of claims 2–20 over Fakoorian-1 and Takahashi.

E. *Remaining Grounds*

Petitioner contends that claims 1–20 of the ’639 patent are unpatentable under 35 U.S.C. § 103 as obvious over Fakoorian-2, Pet. 49–77, and that claims 1–20 of the ’639 patent are unpatentable under 35 U.S.C. § 103 as obvious over Fakoorian-2 and Takahashi. Pet. 77–83. As we preliminarily conclude that Petitioner demonstrates a reasonable likelihood that it will prevail on its challenge to claims 1–20 based on obviousness in view of Fakoorian-1 and Takahashi, we institute review on all challenged claims on all grounds set forth in the Petition, including Petitioner’s obviousness challenge to claims 1–20 based on Fakoorian-2, and obviousness challenge to claims 1–20 based on Fakoorian-2 and Takahashi. *See SAS*, 138 S. Ct. at 1354; *PGS*, 891 F.3d at 1360.

IV. CONCLUSION

After considering the arguments presented in the Petition, the Preliminary Response, and the evidence of record, we determine that Petitioner demonstrates a reasonable likelihood of success in proving that at least one claim of the ’639 patent is unpatentable. Thus, we institute an *inter partes* review of all challenged claims (i.e., claims 1–20).

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–20 of the '639 patent is hereby instituted on all grounds of unpatentability set forth in the Petition; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial commencing on the entry date of this decision.

IPR2025-00908
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