

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ERICSSON INC., NOKIA OF AMERICA CORP.,
AT&T SERVICES, INC.,
CELLCO PARTNERSHIP d/b/a VERIZON WIRELESS, GOOGLE LLC,
and T-MOBILE USA, INC.,
Petitioner,

v.

PEGASUS WIRELESS INNOVATION LLC,
Patent Owner.

IPR2025-00083
Patent 10,638,463 B2

Before KRISTEN L. DROESCH, BARBARA A. PARVIS, and
KEVIN W. CHERRY, *Administrative Patent Judges*.

PARVIS, *Administrative Patent Judge*.

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

Ericsson Inc., Nokia of America Corporation, AT&T Services, Inc., Cellco Partnership d/b/a Verizon Wireless, Google LLC, and T-Mobile USA, Inc. (collectively “Petitioner”) filed a petition requesting *inter partes* review of claims 1–9 of U.S. Patent No. 10,638,463 B2 (Ex. 1001, “the ’463 patent”). Paper 7 (“Petition” or “Pet.”). Petitioner filed a declaration of Dr. Sumit Roy in support of the Petition. Ex. 1002. Exclusive Licensee Pegasus Wireless Innovation LLC (hereinafter “Patent Owner”) timely filed a preliminary response. Paper 11 (“Preliminary Response” or “Prelim. Resp.”). With our authorization, Petitioner filed a preliminary reply (Paper 12, “Preliminary Reply” or “Prelim. Reply”) and Patent Owner filed a preliminary sur-reply (Paper 13, “Preliminary Sur-reply” or “Prelim. Sur-reply”).

On May 6, 2025, the parties sent an e-mail to update us that the parties agreed to dismiss the ’463 patent from the related district court proceedings identified below in Section I.B. Exs. 1041, 1042. We authorized additional briefing and Patent Owner and Petitioner each filed a Supplemental Brief addressing the impact of the dismissal on the parties’ arguments regarding discretionary denial. Paper 14 (PO Supp. Br.); Paper 15 (Pet. Supp. Br.).

Institution of *inter partes* review is authorized by statute when “the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314. We have authority to determine whether to institute review under 37 C.F.R. § 42.4.

Upon consideration of the arguments and the evidence of record at this preliminary stage, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing on at least one of the challenged claims

of the '463 patent. Accordingly, we grant Petitioner's request and institute *inter partes* review of all challenged claims of the '463 patent and with respect to all grounds set forth in the Petition.

I. BACKGROUND

A. Real Parties in Interest

Petitioner states:

The real parties in interest are Cellco Partnership d/b/a Verizon Wireless, Verizon Business Network Services LLC, Verizon Corporate Services Group Inc., TracFone Wireless, Inc., AT&T Corp., AT&T Services, Inc., AT&T Mobility LLC, AT&T Mobility II LLC, New Cingular Wireless PCS, LLC, Cricket Wireless LLC, T-Mobile USA, Inc., Sprint Solutions LLC, Sprint Spectrum LLC, Ericsson Inc., Telefonaktiebolaget LM Ericsson, Google LLC, and Nokia of America Corporation.

Pet. 88. Patent Owner states that “[t]he real parties-in-interest for this proceeding include: Patent Owner^[1], Pegasus Wireless Innovation LLC.”

Paper 8.

B. Related Matters

The parties indicate that the '463 patent is the subject of:

Pegasus Wireless Innovation LLC. v. Verizon Communications Inc., No. 2:23-cv-00640 (E.D. Tex.) (“parallel district court proceeding”);

Pegasus Wireless Innovation LLC. v. AT&T Inc. et al., No. 2:23-cv-00638 (E.D. Tex.) (“AT&T Case”); and

Pegasus Wireless Innovation LLC. v. T-Mobile US, Inc. et al.,

¹ Pegasus Wireless Innovation LLC is the exclusive licensee. *See* Reel 065219, Frames 0144 (recorded exclusive license). Under the license, Pegasus is granted, *inter alia*, “any and all other substantial right to and in the Patents necessary and sufficient under any applicable law or precedent to confer standing to Assignee and permit Assignee to initiate any actions on its own.” *Id.*

No. 2:23-cv-00639 (E.D. Tex.) (“T-Mobile Case”).
See Pet. 72 (citing Ex. 1030); Paper 8, 1. Petitioner indicates the AT&T case and T-Mobile case have been consolidated into the parallel district court proceeding for all pre-trial issues. *See id.*

Patent Owner identifies the following petitions for *inter partes* review involving the patents that are at issue in the above-listed district court proceedings: IPR2025-00036, IPR2025-00037, IPR2025-00084, IPR2025-00137, IPR2025-00138, IPR2025-00290, IPR2025-00291, IPR2025-00292, IPR2025-00293, and IPR2025-00317. Paper 11, 18.

C. The '463 Patent

The '463 patent is titled “Apparatus and Method of Uplink Control Channel Resource Allocation for New Radio.” Ex. 1001, code (54). The '463 patent relates to “allocating an uplink control channel resource in a next-generating/5G radio access network (hereinafter, referred to as a new radio (NR)).” *Id.* at 1:18–21. The '463 patent describes that “the 3rd generation partnership project (3GPP)” and, in particular, the “Radio Access Network Working Group 1 (RAN WG1)” studies “5G radio access technology” including “frame structures, channel coding and modulation, waveforms, multiple access methods, and the like for a new radio (NR).” *Id.* at 1:23–30. The '463 patent describes “a need to develop a method for enabling a user device to transmit an uplink channel, such as an uplink control channel and an uplink data channel, to a base station based on a bandwidth part (BWP) when the user device uses various BWPs in NR.” *Id.* at 1:42–46.

The '463 patent describes configuring “one or more bandwidth parts (BWPs) constituting bandwidths obtained by subdividing an NR CC [component carrier].” *Id.* at 7:1–2. Figure 3 of the '463 patent is a diagram

illustrating configuring physical uplink (UL) control channel (PUCCH) resources. *Id.* at 10:48–51.

FIG. 3B

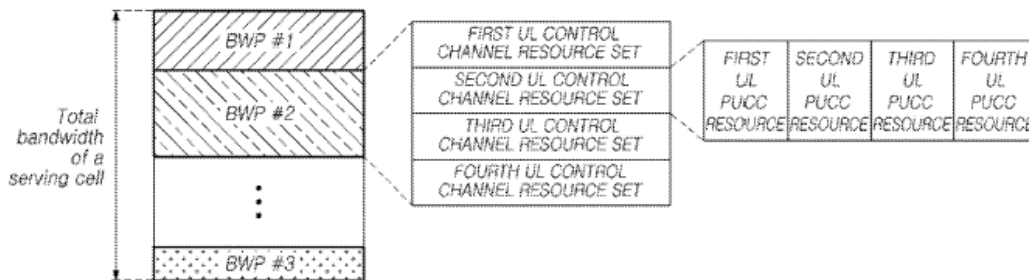


Figure 3B, above, is a diagram “illustrating i) PUCCH resource sets configuring each of N BWPs and ii) PUCCH resources configuring each PUCCH resource set.” *Id.* at 2:57–59. Figure 3B above shows non-overlapping UL BWP #1, BWP #2, and BWP #3 configured for user equipment (UE) from the “[t]otal bandwidth of a serving cell.” *Id.* at 9:49–56. As shown in Figure 3B, a base station (BS) configures first to fourth PUCCH resource sets for BWP #2. *Id.* at 9:61–10:3. The ’463 patent describes that “each PUCCH resource may be defined as PUCCH format configuration information, time/frequency domain PUCCH resource configuration information (or additionally code domain resource configuration information) in the UL BWP.” *Id.* at 10:6–10. As shown in Figure 3B, the “second PUCCH resource set” is “configured by a first to fourth PUCCH resources.” *Id.* at 10:10–14.

D. Illustrative Claim

Petitioner challenges claims 1–9 of the '463 patent. Pet. 1. Of the challenged claims, claims 1, 4, and 7 are independent. Claims 2 and 3 depend, directly, from claim 1; claims 5 and 6 depend, directly, from claim 4; and claims 8 and 9 depend, directly, from claim 7. Claim 1 is illustrative of the challenged claims and recites:

1. [1[pre]] A method of transmitting uplink (UL) control information by a user equipment, the method comprising:

[1[a]] receiving, from a base station, UL control channel resource set configuration information for UL control information transmission;

[1[b]] determining one of UL control channel resource sets contained in the UL control channel resource set configuration information;

[1[c]] determining one of UL control channel resources contained in the determined UL control channel resource set; and

[1[d]] transmitting UL control information through the determined UL control channel resource;

[1[e]] wherein the UL control channel resource sets are configured for each UL bandwidth part (BWP) configured for the user equipment; and

[1[f]] wherein the each UL BWP is activated through downlink (DL) control information.

Ex. 1001, 21:1–19.²

E. Evidence

Petitioner relies on the following patent evidence.

Name	Patent Document	Exhibit
Takeda	WO 2019/030929 A1	1007 ³

² Throughout our Decision we use Petitioner's designations for the elements of the challenged claims. *See, e.g.*, Pet. 19–35 (designations for claim 1).

³ Exhibit 1007 is a certified translation of Exhibit 1006. Herein, we refer to Exhibit 1007.

Yan	U.S. Patent No. 10,736,085 B2	1010
Marinier	US 2014/0056278 A1	1011

Petitioner also relies on 3GPP R1-1711853 (Exhibit 1012), which Petitioner argues is “a technical contribution submitted to the 3GPP TSG RAN WG1, NR AH 1706 meeting that was held between June 27–30, 2017. Pet. 9 (citing Exhibit 1017). Petitioner submits the Declaration of Mr. Craig Bishop (Ex. 1017) in support of its position that 3GPP R1-1711853 “became a ‘printed publication’ under 35 U.S.C. § 102 on June 29, 2017.” Pet. 9 (citing Ex. 1017).

Petitioner also relies on the testimony of Dr. Sumit Roy. Ex. 1002.

F. Asserted Grounds

Petitioner asserts that the challenged claims would have been unpatentable on the following grounds:

Claim(s) Challenged	35 U.S.C. §⁴	Reference(s)/Basis
1–9	103	Takeda, Yan
1–9	103	Marinier, Yan, 3GPP R1-1711853

II. DISCRETION TO DENY INSTITUTION

Patent Owner contends the Board should exercise discretion to deny institution under 35 U.S.C. § 314, citing the six factors articulated in *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential) (“*Fintiv*”). *See generally* Prelim. Resp. In its most recent

⁴ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284 (2011), amended 35 U.S.C. § 103, effective March 16, 2013. Because the challenged claims of the ’463 patent have an apparent effective filing date after March 16, 2013, the AIA version of § 103 applies. Our determinations and findings herein would not change if the pre-AIA provisions applied.

brief, Patent Owner acknowledges its “recent withdrawal of the ’463 patent from co-pending litigation,” but asserts “this does not change the outcome of the *Fintiv* analysis here.” PO Supp. Br. 1. Petitioner disagrees and argues “[t]here is no parallel proceeding involving the ’463 patent and consequently there is no basis for discretionary denial under §314(a) based on *Fintiv*.” Pet. Supp. Br. 1 (citations omitted).

Under § 314(a), the Director has discretion to deny institution of *inter partes* review. *See* 37 C.F.R. § 42.4(a) (“The Board institutes the trial on behalf of the Director.”); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2140 (2016) (“[T]he agency’s decision to deny a petition is a matter committed to the Patent Office’s discretion.”); *SAS Inst. v. Iancu*, 138 S. Ct. 1348, 1356 (2018) (“[Section] 314(a) invests the Director with discretion on the question whether to institute review” (emphasis omitted)).

The Board may, in the interest of fairness and the efficient use of Board resources, deny institution under § 314(a) where there are parallel district court proceedings involving the same or substantially the same parties and invalidity challenges. *Fintiv*, Paper 11 at 5–6, 12–13. In *NHK Spring Co. v. Intrix-Plex Technologies, Inc.*, the Board denied institution relying in part on § 314(a) because the parallel district court proceeding was scheduled to finish before the Board reached a final decision.

IPR2018-00752, Paper 8 (PTAB Sept. 12, 2018) (precedential). Following *NHK*, the Board in *Fintiv* articulated the following factors for consideration when determining whether to exercise discretion to deny institution in view of a parallel proceeding:

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.

Fintiv at 5–6. In evaluating these factors, we take “a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review.” *Id.* (citing Patent Trial and Appeal Board Consolidated Trial Practice Guide (November 2019), 58).⁵

On February 28, 2025, the USPTO rescinded the prior USPTO Director’s memorandum titled “Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation” (“Interim Procedure”). On March 24, 2025, the Chief Administrative Patent Judge issued a memorandum titled “Guidance on USPTO’s rescission of ‘Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation’” (“Chief Judge Memo”).⁶ According to the Chief Judge Memo, the purpose of the rescission was “to restore policy . . . to the guidance in place before the Interim Procedure, including the precedential decisions in [*Fintiv*] and [*Sotera*].” Chief Judge Memo 1. Subsequently, on March 26, 2025, the Acting Director of the USPTO issued

⁵ Available at

<https://www.uspto.gov/sites/default/files/documents/tpgnov.pdf?MURL=Tri alPracticeGuideConsolidated>

⁶ Available at

https://www.uspto.gov/sites/default/files/documents/guidance_memo_on_int erim_procedure_rescission_20250324.pdf

a memorandum titled “Interim Processes for PTAB Workload Management” (“Acting Director Memo”).⁷ The new processes outlined in the Acting Director Memo do not apply to this proceeding because the deadline for filing a preliminary response has already passed. *See* Acting Director Memo 3.

Patent Owner acknowledges its “recent withdrawal of the ’463 patent from co-pending litigation.” PO Supp. Br. 1. Patent Owner argues “[t]here [is] no reason to expend Board resources to decide the validity of patent claims that have been dropped from the co-pending litigation, particularly where a *Fintiv* denial is appropriate and warranted for the patents that remain in the litigation.” PO Supp. Br. 1. Patent Owner argues that the dismissal was to “conserve judicial and administrative resources” and the “resources of the parties” and that “the parties’ global dispute is now focused on claims that remain in litigation.” *Id.* at 1–2. Patent Owner argues that the dismissal of the ’463 patent without prejudice does not support proceeding with this *inter partes* review, because “it is mere speculation that a future dispute would arise where no current dispute exists.” *Id.* at 2.

Petitioner argues “[t]here is no parallel proceeding involving the ’463 patent and consequently there is no basis for discretionary denial under §314(a) based on *Fintiv*.” Pet. Supp. Br. 1 (citations omitted). We agree with Petitioner.

Contrary to Patent Owner’s arguments, the *Fintiv* factors “relate to whether efficiency, fairness, and the merits support the exercise of authority to deny institution in view of *an earlier trial date in the parallel*

⁷ *Available at*

<https://www.uspto.gov/sites/default/files/documents/InterimProcesses-PTABWorkloadMgmt-20250326.pdf>

proceeding.” *Fintiv* at 6 (emphasis added). Patent Owner’s arguments that “[t]here [is] no reason to expend Board resources to decide the validity of patent claims that have been dropped from the co-pending litigation,” the dismissal was to “conserve judicial and administrative resources” and the “resources of the parties,” and that “the parties’ global dispute is now focused on claims that remain in litigation” (PO Supp. Br. 1–2) pertain to Patent Owner’s current view of the disputes between the parties. Petitioner, on the other hand, “submits that discretionary denial under § 314(a) is not appropriate, and requests institution of the present IPR.” Pet. Supp. Br. 2. Patent Owner acknowledges (PO Supp. Br. 2) that the parties agreed to dismissal “without prejudice” (Ex. 1042), so although we agree with Patent Owner that “no current dispute exists” (PO Supp. Br. 2), a future dispute still is possible. Ex. 1042.

Here, as a result of the dismissal of the district court proceeding, the ’463 patent is no longer involved in the parallel district court proceeding. Ex. 1042. Patent Owner’s remaining arguments for discretionary denial under *Fintiv* based on the trial in that proceeding (Prelim. Resp.; Prelim. Sur-reply; PO Supp. Br.) are moot. We, therefore, decline to exercise our discretion to deny institution of *inter partes* review based on this Petition.

III. ANALYSIS

A. Legal Standards

A claim is unpatentable as obvious if the differences between the claimed invention and the prior art are such that the claimed invention 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 the claimed invention pertains. 35 U.S.C. § 103 (2011). 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, i.e., secondary considerations.⁸ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

Petitioner asserts that a person of ordinary skill in the art would have had “a bachelor’s degree in electrical engineering, computer engineering, or a related discipline, knowledge of the relevant 3GPP standards” and “at least 2 years of experience working in a field involving wireless communications.” Pet. 10 (citing Ex. 1002 ¶¶ 38–40). Petitioner asserts a “person with a different degree but with additional relevant experience could still qualify if the additional experience compensates for the different educational background.” *Id.* Petitioner also asserts a “person with less than 2 years of experience working in a field involving wireless communications could still qualify if the person has additional education that compensate[s] for their lesser experience.” *Id.*

Patent Owner does not dispute Petitioner’s level of skill at this preliminary juncture. *See generally* Prelim. Resp. We find that “at least” in Petitioner’s formulation of the level of skill in the art is vague and open-ended. Otherwise, we preliminarily adopt Petitioner’s formulation of the level of skill in the art, which appears consistent with the specification and prior art presented.

⁸ No objective evidence of nonobviousness has been presented at this preliminary stage in the proceeding.

C. Claim Construction

We interpret the challenged 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). Under that standard, we generally give claim terms their ordinary and customary meaning, as would be understood by a person of ordinary skill in the art at the time of the invention, in light of the language of the claims, the specification, and the prosecution history.

Phillips v. AWH Corp., 415 F.3d 1303, 1312–14 (Fed. Cir. 2005) (en banc).

At this early stage, neither party provides an express construction for any claim term and no express construction is necessary to resolve the conflict at this stage of the proceeding. “The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’” *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)). We, therefore, do not provide an express construction for any term at this preliminary stage in the proceeding.

D. Asserted Obviousness of Claims 1–9 over Takeda and Yan

1. Overview of Takeda

Takeda is titled “User Terminal and Wireless Communication Method.” Ex. 1007, code (54). Takeda relates to a user terminal and a wireless communication method in a next generation mobile communication system. *Id.* ¶ 1. Takeda describes in mobile communication systems, such as

“4G, 5G, 5G+ (Plus), NR (New RAT)” user equipment “controls reception of a DL [downlink] data channel . . . based on downlink control information (DCI: Downlink Control Information).” *Id.* ¶¶ 2, 4.

Takeda describes “a user terminal” that comprises “a receiving unit for monitoring a control resource domain of a frequency band for downlink (DL) in a carrier and receiving downlink control information (DCI)” and “a control unit for controlling transmission of an uplink (UL) signal in a frequency band for UL in the carrier based on the DCI” where “the control unit controls activation or deactivation of the frequency band for UL.” *Id.* ¶ 10. Takeda also describes the user terminal receiving “BWP [bandwidth part] configuration information using higher layer signaling,” including, for example “RRC signaling.” *Id.* ¶ 100.

Takeda describes that a “user terminal may be configured with only a single UL BWP, or may be configured with a plurality of UL BWPs.” *Id.* ¶ 103. Figure 9 is a diagram illustrating an example in which a plurality of UL BWPs are configured. *Id.* ¶ 112.

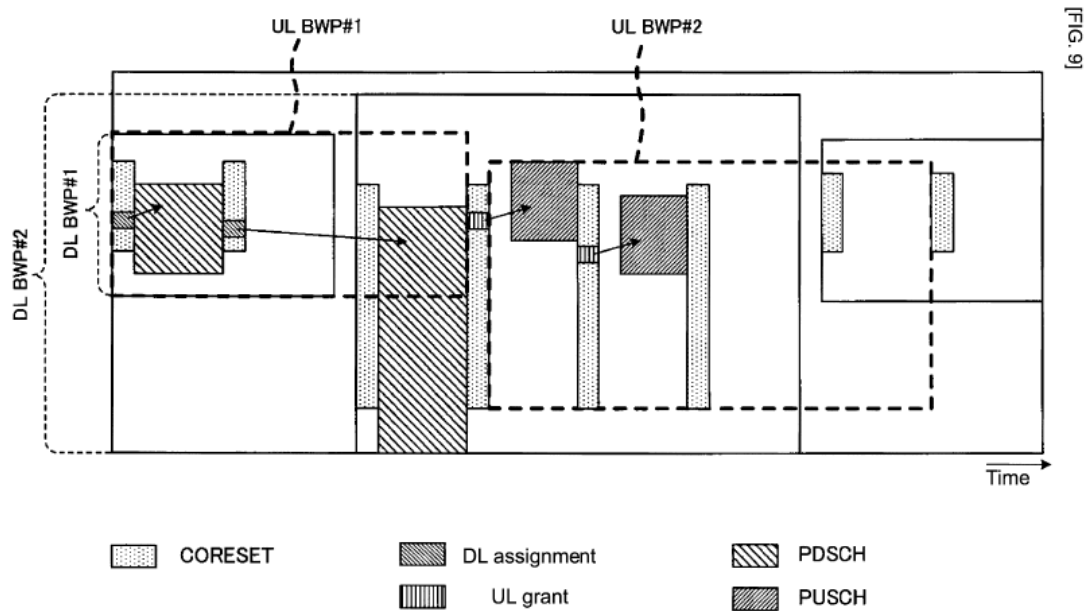


Figure 9, above, is a diagram that illustrates UL BWP#1 configured with the same bandwidth as DL BWP #1 and UL BWP#2 configured of a portion of UL BWP #2. *Id.* ¶¶ 110–112. Takeda describes that at least one of the DL BWPs configured in the user terminal includes a control resource set (CORESET), which is denoted using dots in the illustration in Figure 9. *Id.* ¶ 22, Fig. 9.

Takeda describes the user terminal controlling “activation of the UL BWP based on the BWP index.” *Id.* ¶ 112. In Takeda, “the user terminal monitors the CORESET configured in the activated DL BWP” and, in the example illustrated in Figure 9, “BWP index #2 is included in the UL grant detected in this CORESET, and thus the user terminal may deactivate UL BWP #1 and activate UL BWP #2.” *Id.* ¶ 113.

2. Overview of Yan

Yan is titled “Uplink Control Information Sending Method, Uplink Control Information Receiving Method, Apparatus, And System.” Ex. 1010,

code (54). An uplink control information sending method is illustrated in Figure 1 of Yan. *Id.* at 11:7–8.

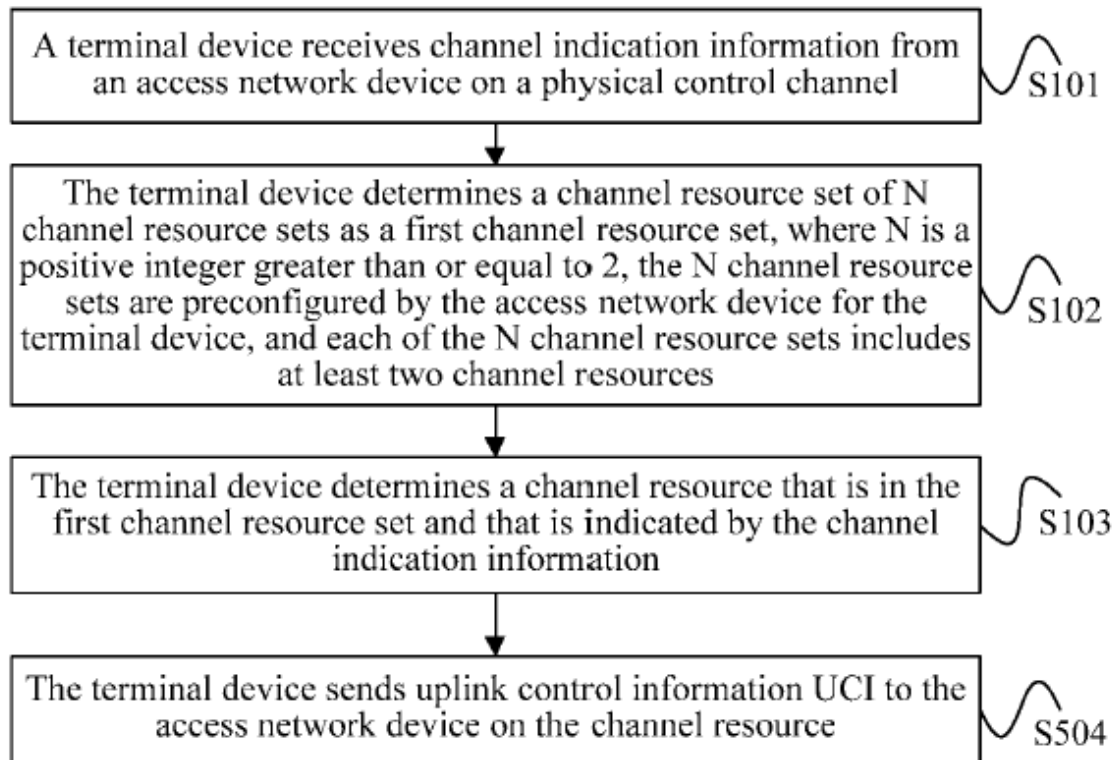


FIG. 1

Figure 1, above, is a flowchart of an uplink control information sending method having four steps (S101 through S104). *Id.* at 11:7–8; Fig. 1.

As shown in Figure 1, in step S101, a terminal device “receives channel indication information from an access network device on a physical control channel.” *Id.* at 11:17–19, Fig. 1. In step 102, the “terminal device determines a channel resource set of N channel resource sets as a first channel resource set, where N is a positive integer greater than or equal to 2.” *Id.* at 11:48–51. Yan describes that “the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources.”

Id. at 11:51–54. In step S103, the “terminal device determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information.” *Id.* at 12:5–7. In step S104, the “terminal device sends uplink control information UCI to the access network device” on “the channel resource determined in step S103.” *Id.* at 12:25–30.

3. Analysis of Claim 1

a. Motivation to Combine

The Petition includes a sub-section titled “Motivation to Combine,” in which Petitioner makes four arguments: (1) the ordinarily skilled artisan would have been motivated “to provide backwards network compatibility;” (2) the ordinarily skilled artisan would have been motivated “to more efficiently use UE power reserves;” (3) the ordinarily skilled artisan would have recognized that “Yan’s UL resource allocation method provides flexibility for UEs to select a UL resource for transmitting UCI;” and (4) the ordinarily skilled artisan would have recognized that “5G NR BWPs [in Takeda] still require resource allocation of PUCCH/PUSCH resources, and that 4G LTE resource allocation processes (as discussed in Yan) would have been a viable method for resource allocation for 5G NR BWPs.” Pet. 13–17 (citing Ex. 1002 ¶¶ 105–110). Petitioner argues that similarities in Takeda and Yan support Petitioner’s position that a person of ordinary skill in the art would have made Petitioner’s proposed combination and would have had a reasonable expectation of success. *Id.* at 17–18. Petitioner references the “Motivation to Combine” subsection in its element-by-element analysis. *See, e.g.*, Pet. 19–20, 23–24, 26, 29, 31, 34. Upon consideration, on this record, we find Petitioner’s arguments are supported by the evidence of record.

At this preliminary stage, Patent Owner does not dispute Petitioner’s motivation to combine arguments. *See generally* Prelim. Resp.; Prelim. Sur-

reply. On this record, we find that Petitioner provides sufficient rationale to combine the teachings of Takeda and Yan for purposes of institution.

b. The Preamble

The preamble recites “[a] method of transmitting uplink (UL) control information by a user equipment, the method comprising.” Ex. 1001, 21:2–3. Petitioner argues that each of Takeda and Yan teaches the preamble. Pet. 19–20. Petitioner, more specifically, argues “Takeda describes a user terminal that ‘controls transmission of a UL data channel.’” Pet. 19 (citing Ex. 1007 ¶¶ 4, 140, Fig. 8).⁹ Petitioner relies on Takeda’s description that “[u]plink control information (UCI) . . . is transmitted on the PUSCH or the PUCCH.” *Id.* (quoting Ex. 1007 ¶ 140). Petitioner also provides an annotated version of Figure 8 of Takeda in support of its position. *Id.* (citing Ex. 1007, Fig. 8).

Petitioner also argues “Yan discloses a method of transmitting UL control information by UE.” *Id.* at 20 (citing, e.g., Ex. 1010, 12:25–33; Fig. 1). Petitioner relies on Yan’s disclosure that “[t]he terminal device sends uplink control information UCI to the access network device on the channel resource.” *Id.* at 20 (citing Ex. 1010, 12:25–33).

At this preliminary stage, Patent Owner does not dispute Petitioner’s arguments and evidence for the preamble. Upon consideration, we find Petitioner’s arguments are consistent with the evidence of record.

On this record, we find that Petitioner’s arguments and evidence for the preamble are sufficient for purposes of institution.

⁹ We need not resolve whether the preamble is limiting at this stage because Petitioner shows sufficiently for purposes of institution that the prior art satisfies the recitation in the preamble.

c. Element 1[a]

Element 1[a] recites “receiving, from a base station, UL control channel resource set configuration information for UL control information transmission.” Ex. 1001, 21:4–6. Petitioner acknowledges that “Takeda does not state that that the configuration information is provided to the UE.” Pet. 21 (citing Ex. 1002 ¶121). Petitioner, however, argues the ordinarily skilled artisan would have understood based on Takeda’s teachings that configuring of resource channels would have been “provided through configuration information for the PUCCH resource or the PUSCH resource.” Pet. 20–21 (citing Ex. 1007 ¶¶ 99, 100, 106, 107, Fig. 8; Ex. 1002 ¶ 120). Petitioner, alternatively, argues that it would have been obvious to modify Takeda in view of the knowledge of the ordinarily skilled artisan such that resources are configured through configuration information provided by the base station to the user equipment. *Id.* at 22–23 (citing, e.g., Ex. 1002 ¶¶ 122–123; Ex. 1011 ¶¶ 98, 107; Ex. 1010, 2:1–6). Petitioner relies on Dr. Roy’s declaration testimony, Marinier, and Yan as evidence of the knowledge of an ordinarily skilled artisan. *Id.*

As another alternative, Petitioner relies on the combination of Takeda and Yan for element 1[a]. *Id.* at 23–26 (citing Ex. 1002 ¶¶ 124–128; Ex. 1010, 15:11–13, 19:5–12, Fig. 1). As rationale for making the proposed combination, Petitioner relies on its arguments in its sub-section titled “Motivation to Combine.” *Id.* On this record, we find that Petitioner’s arguments are supported by Yan’s description of a method that includes “receiving by the terminal device, configuration information of the N channel resource sets from the access network device by using higher layer signaling.” Ex. 1010, 19:5–12. For the reasons given above, on this record,

we find that Petitioner provides sufficient rationale to combine the teachings of Takeda and Yan for purposes of institution. *See* § III.D.3.a.

At this preliminary stage, Patent Owner does not dispute Petitioner’s arguments and evidence for element 1[a]. On this record, we find that Petitioner’s arguments and evidence for element 1[a] are sufficient for purposes of institution.

d. Element 1[b]

Element 1[b] recites “determining one of UL control channel resource sets contained in the UL control channel resource set configuration information.” Ex. 1001, 21:7–9. Petitioner argues the ordinarily skilled artisan would have understood based on Takeda’s teachings that “Takeda’s UE would have determined one of those UL control channel resource sets [that is UL control channel resource sets received by the user equipment in element 1[a]] when transmitting the *uplink signals transmitted within the UL BWP* of Takeda’s FIG. 8 (shown in shades of green within the UL BWP).” Pet. 26–27 (citing Ex. 1007 ¶¶ 140, 220). Petitioner argues, alternatively, that the ordinarily skilled artisan “would have found that “determining one of UL control channel resource sets contained in the UL control channel resource set configuration information” to be an obvious modification.” *Id.* at 27–28 (citing Ex. 1007 ¶¶ 76, 84, 104, 107, 112, 113, 123, Figs. 8, 9; Ex. 1002 ¶ 133).

As another alternative, Petitioner relies on the combination of Takeda and Yan for element 1[b]. *Id.* at 29 (citing, e.g., Ex. 1002 ¶¶ 134–137; Ex. 1010, 9:49–59, 11:48–54, 20:1–42, 22:7–25). As rationale for making the proposed combination, Petitioner relies on its arguments in its subsection titled “Motivation to Combine.” *Id.* On this record, we find that Petitioner’s arguments are supported by Yan’s description of a method that

includes “Step 102: The terminal device determines a channel resource set of the N channel resource sets as the first channel resource set.” Ex. 1010, 11:48–54; *see also id.* at 20:1–42 (describing an alternate embodiment in which “[t]he terminal device determines a channel resource set of the N channel resource sets as the first channel resource set”), 22:7–25 (describing another alternate embodiment including “Step S502: The terminal device determines a first channel resource of N channel resources according to the channel indication information”). For the reasons given above, on this record, we find that Petitioner provides sufficient rationale to combine the teachings of Takeda and Yan for purposes of institution. *See* § III.D.3.a.

At this preliminary stage, Patent Owner does not dispute Petitioner’s arguments and evidence for element 1[b]. On this record, we find that Petitioner’s arguments and evidence for claim element 1[b] are sufficient for purposes of institution.

e. Element 1[c]

Element 1[c] recites “determining one of UL control channel resources contained in the determined UL control channel resource set.” Ex. 1001, 21:10–12. Petitioner argues Takeda’s “PUSCH is a UL control channel resource” and relies on related teachings in Takeda. Pet. 29–31 (citing, e.g., Ex. 1007 ¶¶ 10, 140, 220, Fig. 8).

Petitioner, alternatively, relies on the combination of Takeda and Yan for element 1[c], arguing “[s]tep S103 of Yan’s FIG. 1 maps to 1[c], stating ‘[t]he terminal device determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information.’” *Id.* at 31 (quoting Ex. 1010, 12:5–7; citing, e.g., Ex. 1002 ¶ 142; Ex. 1010, 20:27–42). As rationale for making the proposed combination, Petitioner relies on its arguments in its sub-section titled

“Motivation to Combine.” *Id.* On this record, we find that Petitioner’s arguments are supported by Yan’s description of a method that includes “Step S103: The terminal device determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information.” Ex. 1010, 12:5–7; *see also id.* at 20:27–42 (describing an alternate embodiment in which “the terminal device determines the channel resource that is in the first channel resource set and that is indicated by the channel indication information”). For the reasons given above, on this record, we find that Petitioner provides sufficient rationale to combine the teachings of Takeda and Yan for purposes of institution. *See* § III.D.3.a.

At this preliminary stage, Patent Owner does not dispute Petitioner’s arguments and evidence for element 1[c]. On this record, we find that Petitioner’s arguments and evidence for claim element 1[c] are sufficient for purposes of institution.

f. Element 1[d]

Element 1[d] recites “transmitting UL control information through the determined UL control channel resource.” Ex. 1001, 21:13–14. Petitioner argues “Takeda’s FIG. 8 demonstrates transmission of UL information via a PUSCH.” And “Takeda states that a PUCCH is configured in the same way as a PUSCH.” Pet. 31 (citing, e.g., Ex. 1007 ¶ 140).

Petitioner, alternatively, relies on the combination of Takeda and Yan for element 1[d], arguing that Yan’s step S104 and similar steps described with respect to other embodiments in Yan teach or suggest element 1[d]. Pet. 32 (citing, e.g., Ex. 1010, 12:25–33, 20:43–50, 22:42–50, 25:65–26:11, 26:47–67; Ex. 1002 ¶ 146). As rationale for making the proposed combination, Petitioner relies on its arguments in its sub-section titled “Motivation to Combine.” *Id.*

On this record, we find that Petitioner’s arguments are supported by Yan’s description of a method that includes “Step S104: The terminal device sends uplink control information UCI to the access network device on the channel resource,” which was “determined in step S103.” Ex. 1010, 12:25–33; *see also id.* at 20:43–50 (describing an alternate embodiment including “Step S403: The access network device receives uplink control information UCI sent by the terminal device on the [determined] channel resource”), 22:42–50 (describing an alternate embodiment including “Step S504: The terminal device sends uplink control information UCI to the access network device on the second channel resource”), 25:65–26:11 (describing an alternate embodiment including “Step S1002: The access network device receives uplink control information UCI sent by the terminal device on the second channel resource”), 26:47–67 (describing an alternate embodiment in which describing a terminal device performs a processing procedure that includes that “[t]he first sending unit 113 is configured to send uplink control information UCI to the access network device on the channel resource”). For the reasons given above, on this record, we find that Petitioner provides sufficient rationale to combine the teachings of Takeda and Yan for purposes of institution. *See* § III.D.3.a.

At this preliminary stage, Patent Owner does not dispute Petitioner’s arguments and evidence for element 1[d]. On this record, we find that Petitioner’s arguments and evidence for claim element 1[d] are sufficient for purposes of institution.

g. Element 1[e]

Element 1[e] recites “wherein the UL control channel resource sets are configured for each UL bandwidth part (BWP) configured for the user equipment.” Ex. 1001, 21:15–17. Petitioner relies on the combination of

Takeda and Yan, arguing “[a]s discussed above, Takeda discloses that UL resources are configured for BWPs, and Yan’s resource allocation method would be used for selecting among the UL resources that are configured for each BWP to save power by avoiding discarding of UCI bits.” Pet. 34 (citing, e.g., Ex. 1002 ¶ 153; Ex. 1010, 2:1–6; Ex. 1007 ¶¶ 15, 17, 95–98, 101, 103, 110, 112, 115, 132, 155, 179). Petitioner argues “Yan’s method of allocating UL channel resources into sets would be implemented with Takeda’s configuration of BWPs and activation of BWPs through DCI to take advantage of the power efficiencies of Yan.” *Id.* at 16. As rationale for making the proposed combination, Petitioner relies on its arguments in its sub-section titled “Motivation to Combine.” *Id.* at 34.

Patent Owner argues that element 1[e] was added during prosecution and the Examiner was convinced that element 1[e] overcame the asserted art, Yiu, because Applicant argued that “Yiu ‘merely teaches about BWP but **fails** to teach i) **receiving any information** about **each UL** BWP.’” Prelim. Resp. 21 (citing Ex. 1004, 73). Patent Owner argues Petitioner “fail[s] to address the ‘each’ aspect” of element 1[e]. *Id.* at 23. Patent Owner argues that Petitioner relies “on Takeda’s vague disclosure regarding ‘one or more BWPs configured for the user terminal’ without addressing the claim requirements that must be satisfied for each UL BWP configured for a user terminal.” *Id.* at 24. Patent Owner also argues the Petition is deficient because Petitioner is not “specific about the number or identity of BWPs configured for a user terminal.” *Id.*

Petitioner’s arguments are supported by Takeda’s description that the “user terminal may be configured with only a single UL BWP, or may be configured with a plurality of BWPs.” Ex. 1007 ¶ 103. Takeda further describes that Figure 9 illustrates “a plurality of UL BWPs” that have been

configured “in the user terminal.” *Id.* ¶ 112. With respect to specificity regarding number and identity of BWPs, Takeda describes a “BWP index” that is “detected” and used by the user terminal to “control activation of the UL BWP.” *Id.* ¶¶ 112–113. Takeda describes that Figure 9 illustrates 2 UL BWPs, specifically, “UL BWP #1” and “UL BWP #2.” *Id.* ¶¶ 111, 113.

Petitioner’s arguments are further supported by Yan’s disclosure that “[b]efore the receiving, by a terminal device, channel indication information from an access network device on a physical control channel, the method further includes: receiving, by the terminal device, configuration information of the N channel resource sets from the access network device by using higher layer signaling.” Ex. 1010, 19:5–11. As discussed with respect to elements 1[b] through 1[d], on this record, we find Petitioner’s arguments sufficient regarding Yan’s disclosures and the combined teachings of Takeda and Yan showing elements 1[b] through 1[d] are met. *See* §§ III.D.3.c–f. Also, for the reasons given above, on this record, we find that Petitioner provides sufficient rationale to combine the teachings of Takeda and Yan for purposes of institution. *See* § III.D.3.a.

Upon consideration, we find Petitioner’s arguments are consistent with the evidence of record. Also, we are persuaded that Petitioner has offered articulated reasoning with a rational underpinning as to why one of ordinary skill in the art would have made Petitioner’s proposed combination of the teachings of Takeda and Yan.

On this record, we find that Petitioner’s arguments and evidence for claim element 1[e] are sufficient for purposes of institution. We find Patent Owner’s arguments do not undermine Petitioner’s evidence.

h. Element 1[f]

Element 1[f] recites “wherein the each UL BWP is activated through downlink (DL) control information.” Ex. 1001, 21:18–19. Petitioner relies on Takeda’s disclosures relating to activation of UL BWPs. Pet. 35 (citing Ex. 1007 ¶¶ 120, 139). Takeda discloses that the “user terminal may control activation and/or deactivation of one or more UL BWPs configured in the user terminal based on the explicit or implicit indication information.” Ex. 1007 ¶ 120. Takeda also discloses that exemplary “explicit indication information” is “a DCI [downlink control information] (UL grant).” *Id.* ¶¶ 10, 120. Takeda further discloses that the user terminal comprises “a receiving unit” for “receiving downlink control information (DCI)” and “a control unit” that “controls activation or deactivation of the frequency band for UL.” *Id.*

Patent Owner argues that element 1[f] was added during prosecution and the Examiner was convinced that element 1[f] overcame the asserted art, Yiu, because Applicant argued that “Yiu ‘**does not** teach activating **each UL BWP** through **DL control information**.’” Prelim. Resp. 21 (citing Ex. 1004, 73). Patent Owner argues Petitioner “fail[s] to explain how Takeda allegedly discloses that ‘the ***each*** UL BWP is activated through downlink (DL) control information.’” Prelim. Resp. 23. Patent Owner argues that Petitioner incorrectly characterizes “the examiner’s amendment that added ‘the’ to ‘the each UL BWP’ in element 1[f] as a ‘non-substantive examiner’s amendment’” because the examiner’s amendment “adds antecedent basis” and “points to element 1[d].” *Id.*

On this record, we find that Petitioner’s arguments are supported by Takeda’s disclosures above, as well as Takeda’s disclosure that “when a plurality of UL BWPs are configured in the user terminal” the “user terminal

may control activation of the UL BWP based on the BWP index included in the UL grant.” Ex. 1007 ¶ 112. Takeda further discloses the user terminal monitoring “the CORESET configured in the activated DL BWP” and, in accordance with the example illustrated in Figure 9, detecting “BWP index #2” in “the UL grant,” which causes the user terminal to “deactivate UL BWP #1 and activate UL BWP #2.” *Id.* ¶ 113.

Upon consideration, we find Petitioner’s arguments are consistent with the evidence of record. On this record, we find that Petitioner’s arguments and evidence for claim element 1[f] are sufficient for purposes of institution. We find Patent Owner’s arguments do not undermine Petitioner’s evidence.

i. Conclusion

After consideration of the arguments and the evidence of record at this early stage, we find that Petitioner has shown sufficiently, for purposes of institution, that the combination of Takeda and Yan teaches or suggests all recitations in claim 1. Also, we find that Petitioner provides sufficient rationale to combine the teachings of Takeda and Yan for purposes of institution. We find that Patent Owner’s arguments do not undermine Petitioner’s evidence.

Based on the record at this preliminary stage, we determine that Petitioner demonstrates a reasonable likelihood that claim 1 is unpatentable under 35 U.S.C. § 103 as obvious over the combination of Takeda and Yan.

4. Analysis of Claims 2–9

Claims 4 and 7 are independent claims directed to a method of receiving uplink control information by a base station and a user equipment for transmitting uplink control information, respectively. Each of claims 4 and 7 recite recitations similar to those recited in claim 1 including that both

claims 4 and 7 recite elements identical to elements 1[e] and 1[f]. Petitioner relies, for the most part, on its contentions with respect to claim 1 for how the combination of Takeda and Yan allegedly teaches the subject matter of independent claims 4 and 7. *See* Pet. 38–43. Patent Owner relies on the arguments directed to independent claim 1, which we addressed above in connection with our analysis of claim 1. *See* Prelim. Resp.

Based on our analysis of claim 1, and review of Petitioner’s additional contentions and corresponding cited evidence directed to claims 4 and 7, we determine that Petitioner demonstrates a reasonable likelihood that independent claims 4 and 7 would have been unpatentable under 35 U.S.C. § 103 as obvious over the combination of Takeda and Yan.

Claims 2 and 3 depend, directly, from claim 1; claims 5 and 6 depend, directly, from claim 4; and claims 8 and 9 depend, directly, from claim 7. Petitioner provides a detailed element-by-element analysis for claims 2, 3, 5, 6, 8, and 9. Pet. 35–38, 43.

We have reviewed Petitioner’s assertions and the evidence cited in support thereof for claims 2–9. Based on the record at this preliminary stage, we determine that Petitioner demonstrates a reasonable likelihood that claims 2, 3, 5, 6, 8, and 9 would have been unpatentable under 35 U.S.C. § 103 as obvious over Takeda and Yan.

E. Asserted Obviousness of Claims 1–9 over Marinier, Yan, and R1-1711853

Petitioner argues that claims 1–9 would have been unpatentable under 35 U.S.C. § 103 as obvious over Marinier, Yan, and R1-1711853. Pet. 43–61. Patent Owner argues, similar to Petitioner’s ground of obviousness over Takeda and Yan, that Petitioner has not shown that the combination of Marinier, Yan, and R1-1711853 teaches or suggests elements 1[e] and 1[f]

and the identically recited elements in independent claims 4 and 7. For element 1[e], Petitioner relies on the combination of Marinier and Yan and, alternatively, the combination of Marinier, Yan, and R1-1711853. Pet. 51–52. For element 1[f], Petitioner relies on Marinier and, alternatively, the combination of Marinier and R1-1711853. *Id.* at 52–54. Petitioner argues R1-1711853 “is a technical contribution submitted to the 3GPP TSG RAN WG1, NR AH 1706 meeting that was held between June 27-30, 2017” and that “R1-1711853 became a ‘printed publication’ under 35 U.S.C. § 102 on June 29, 2017.” *Id.* at 8–9 (citing, e.g., Ex. 1017 ¶¶ 30–33).

In our view, the issues relating to whether Petitioner has shown sufficiently that Marinier or the combination of Marinier and R1-1711853 teaches or suggests element 1[f], including whether Petitioner has shown sufficiently that R1-1711853 “became a ‘printed publication’ under 35 U.S.C. § 102 on June 29, 2017” (*id.*) are better left for full development of the record during trial. In view of our preliminary determination for claims 1–9 based on obviousness over Takeda and Yan, we decline at this stage to provide additional analysis for this unpatentability ground.

IV. CONCLUSION

For the foregoing reasons, we determine that Petitioner has demonstrated that there is a reasonable likelihood that it would prevail in showing unpatentability of at least one of the challenged claims of the ’463 patent. We, thus, institute *inter partes* review of all challenged claims of the ’463 patent on all grounds asserted in the Petition. *See* 37 C.F.R. § 42.108(a).

Any findings or conclusions in this Decision are made only for the purposes of institution and are not dispositive of any issue. We have not made a final determination with respect to the patentability of any

challenged claim. Our final determination will be based on the record as fully developed during trial, including any evidence or argument timely presented by the parties under our Rules.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that pursuant to 35 U.S.C. § 314, *inter partes* review of claims 1–9 of U.S. Patent No. 10,638,463 B2 is *instituted* with respect to all grounds of unpatentability set forth in the Petition; and

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

IPR2025-00083
Patent 10,638,463 B2

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