

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

APEX BEAM TECHNOLOGIES LLC,
Patent Owner.

IPR2025-00897
Patent 10,944,527 B2

Before KEVIN W. CHERRY, JOHN D. HAMANN, and
SCOTT RAEVSKY, *Administrative Patent Judges*.

HAMANN, *Administrative Patent Judge*.

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

I. INTRODUCTION

Apple Inc. (“Petitioner”) filed a petition for *inter partes* review of claims 1–20 of U.S. Patent No. 10,944,527 B2 (Ex. 1001, “the ’527 patent”). Paper 2 (“Pet.”). Apex Beam Technologies LLC (“Patent Owner”) filed a Preliminary Response. Paper 9 (“Prelim. Resp.”). Patent Owner’s request for discretionary denial was denied and the Petition was forwarded to the Board. Paper 10.

We have authority to determine whether to institute an *inter partes* review under 35 U.S.C. § 314 (2024) and 37 C.F.R. § 42.4(a) (2024). An *inter partes* review may be instituted if “the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a).

Upon consideration of the papers, we determine that the information presented in the Petition demonstrates that there is a reasonable likelihood that Petitioner would prevail in establishing the unpatentability of at least one challenged claim of the ’527 patent.

A. *Real Parties-In-Interest*

The parties identify themselves as the real parties-in-interest. Pet. 94; Paper 4, 2.

B. *Related Matters*

The parties collectively identify *Apex Beam Technologies LLC v. Apple Inc.*, 6-24-cv-00223 (W.D. Tex.); *Apex Beam Technologies LLC v. Samsung Electronics Co.*, No. 2:24-cv-00188 (E.D. Tex.); *Apex Beam Technologies LLC v. ZTE Corp.*, No. 2:22-cv-00031 (E.D. Tex.); *Apex Beam*

Technologies LLC v. OnePlus Technology (Shenzhen) Co., No. 2:22-cv-00032 (E.D. Tex.); and *Apex Beam Technologies LLC v. TCT Mobile Int'l Ltd.*, No. 2:21-cv-00438 (E.D. Tex.) as matters that may affect, or be affected by, a decision in this proceeding. Pet. 94; Paper 4, 2.

C. The '527 Patent

The '527 patent relates to multiple antenna transmission in a wireless communication system. Ex. 1001, 1:19–20. As background, the '527 patent explains that in massive Multiple-Input Multiple-Output (MIMO), “multiple antennas can improve communication quality by forming narrower beams pointing to a specific direction through beamforming.” *Id.* at 1:26–28. “In a massive MIMO system, the total throughput of a cell can be greatly increased by the number of massive antennas, so the number of single-cell users can be greatly increased.” *Id.* at 1:37–39. “However, an increase in the number of cell users will lead to a large amount of signaling overhead for dynamic scheduling of wireless time-frequency resources,” according to the '527 patent. *Id.* at 1:40–42. “The signaling overhead of wireless resource dynamic scheduling is an urgent problem to be solved in massive MIMO system[s],” the '527 patent states. *Id.* at 1:42–44.

In response, the '527 patent discloses embodiments that address this problem. *Id.* at 1:45–46. More specifically, the '527 patent discloses reducing “[t]he overhead of wireless resource scheduling signaling . . . by using beam information.” *Id.* at 12:48–51. For example, the '527 patent discloses for an embodiment that “by associating [a] first time resource pool with [a] first antenna port group, [a user equipment (UE)] can quickly determine[] the location of the first time resource pool in the time domain by [an] index of the first antenna port group.” *Id.* at 2:3–8. The '527 patent

explains that an antenna port can be “formed by superposing multiple physical antennas through antenna virtualization; the mapping coefficients from the multiple physical antennas to the antenna port(s) constitute an antenna virtualization vector for the antenna virtualization.” *Id.* at 2:34–38. The ’527 patent discloses that a time resource can comprise a symbol or a subframe. *Id.* at 5:63–65.

In addition, the ’527 patent discloses for another embodiment that “by associating the first time resource pool with the first antenna port group, the UE can quickly determine the antenna virtualization vectors which used for receiving radio signal transmitted on the first time resource pool by the location of the first time resource pool in the time domain.” *Id.* at 2:9–14. The ’527 patent discloses that a radio signal can include one or more of Channel State Information Reference signal(s) (CSI-RSs). *Id.* at 2:29–33.

D. Illustrative Claim

Of the challenged claims, claims 1, 6, 11, and 16 are independent. Claim 1 is illustrative of the challenged claims and is reproduced below.

1. A method for multi-antenna transmission in a user equipment, comprising:

receiving a first radio signal from a base station; and
receiving a first signaling from the base station;

wherein the first radio signal is transmitted by K antenna port groups of the base station; the antenna port group includes a positive integer number of antenna port(s); a first antenna port group is one of the K antenna port groups; the first signaling is used to determine a first time resource pool; at least one of a first antenna virtualization vector and a second antenna virtualization vector is associated with the first antenna port group; the first antenna virtualization vector is an antenna virtualization vector available to the base station in the first time resource pool; the second antenna virtualization vector is an antenna virtualization

vector available to the user equipment in the first time resource pool; and the K is a positive integer greater than 1.

Ex. 1001, 29:8–26.

E. Asserted Ground of Unpatentability

Petitioner asserts that the challenged claims of the '527 patent are unpatentable based on the following ground:

Claim(s) Challenged	35 U.S.C. § ¹	Reference(s)
1–20	103	Kim, ² Dahlman, ³ Kim966 ⁴

Pet. 15–92. Petitioner submits in support of its arguments the Declaration of Expert Dr. Narayan Mandayam (Ex. 1003).

II. LEVEL OF ORDINARY SKILL IN THE ART

To determine whether an invention would have been obvious at the time it was made, we consider the level of ordinary skill in the pertinent art at the time of the invention. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). 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)

¹ The Leahy-Smith America Invents Act (“AIA”) included revisions to 35 U.S.C. § 103 that became effective on March 16, 2013. Because the earliest possible effective filing date of the '527 patent is after March 16, 2013, we apply the AIA version of this basis for unpatentability.

² US 2013/0182594 A1, published July 18, 2013 (Ex. 1004, “Kim”).

³ Erik Dahlman et al., 4G: LTE/LTE-Advanced for Mobile Broadband (2d ed.) (2014) (Ex. 1007, “Dahlman”).

⁴ US 2015/0162966 A1, published June 11, 2015 (Ex. 1008, “Kim966”).

(citing *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962–63 (Fed. Cir. 1986)). “[O]ne or more factors may predominate.” *Id.*

Petitioner argues that one of ordinary skill in the art at the time of the invention of the ’527 patent “would have 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,” and that “[a]dditional education might substitute for some of the experience, and additional substantial experience might substitute for some of the educational background.” Pet. 12 (citing Ex. 1003 ¶¶ 40–43).

Patent Owner at this stage of the proceeding does not provide an alternative definition for a level of skill in the art that one would have had at the time of the invention of the ’527 patent or identify any shortcoming in Petitioner’s formulation. *See* Prelim. Resp. 3–4.

For purposes of this Decision on Institution, we adopt Petitioner’s definition of the level of skill for one of ordinary skill in the art. Pet. 12. We view the definition for the level of ordinary skill is consistent with the ’527 patent and the asserted prior art, and we apply it in our analysis below.

III. CLAIM CONSTRUCTION

Because the Petition was filed after November 13, 2018, we apply the same claim construction standard that would be used in a civil action under 35 U.S.C. § 282(b), following the standard articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). 37 C.F.R. § 42.100(b). In applying such standard, claim terms are generally given their ordinary and customary meaning, as would be understood by a person of ordinary skill in

the art, at the time of the invention and in the context of the entire patent disclosure. *Phillips*, 415 F.3d at 1312–13. “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).

Petitioner argues that “no claim terms need be construed to resolve issues of controversy in the present Petition.” Pet. 2. At this stage, Patent Owner agrees that no terms need construction. Prelim. Resp. 3.

We determine that no express constructions are needed for us to render our Decision on Institution. *See, e.g., Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)) (“[W]e need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy.’”). Rather, at this stage of the proceeding, we apply the plain and ordinary meaning of the claim terms.

IV. PRINCIPLES OF LAW

A 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 at the time of the invention to a person having ordinary skill in the art. *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) objective evidence of non-obviousness, if present.⁵ *See Graham*, 383 U.S. at 17–18. When evaluating a claim for obviousness, we also must “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)).

V. ALLEGED OBVIOUSNESS OVER KIM, DAHLMAN, AND KIM966

Petitioner argues that the combination of Kim, Dahlman, and Kim966 renders obvious claims 1–20. Pet. 15–92. We have reviewed the parties’ arguments and the evidence of record. For the reasons that follow, we determine that Petitioner demonstrates a reasonable likelihood that it would prevail in showing that the combination of Kim, Dahlman, and Kim966 renders at least one of these challenged claims obvious.

A. *Summary of Kim*

Kim “relates to a wireless mobile communication system . . . for effectively transmitting and receiving a [CSI-RS] and measuring interference.” Ex. 1004 ¶ 3. In particular, Kim relates to “transmitting a reference signal for effective data transmission and reception, measuring interference, and generating channel state information in a [MIMO] transmission and reception.” *Id.* ¶ 16. Kim’s teachings are also directed to “effective transmission and reception of a reference signal in a massive [MIMO] wireless communication system which transmits data by using scores or more transmission antennas.” *Id.* ¶ 47.

⁵ Patent Owner does not present arguments or evidence of such objective evidence of non-obviousness. *See generally* Prelim. Resp.

To that end, Kim teaches “a method of transmitting a reference signal for generation of channel state information by [a base station] in a wireless communication system,” which “includes grouping a plurality of transmission antennas into a plurality of antenna groups, transmitting the reference signal to UEs in different time intervals or frequency intervals according to the antenna groups.” *Id.* ¶ 22. Similarly, Kim teaches “a method of transmitting a reference signal for generation of channel state information by [a base station] in a wireless communication system,” which “includes grouping a plurality of beams transmitted through a plurality of transmission antennas into a plurality of beam groups, transmitting the reference signal to UEs in different time intervals or frequency intervals according to the beam groups.” *Id.* ¶ 23.

B. Summary of Dahlman

Dahlman is a textbook entitled “4G: LTE/LTE-Advanced for Mobile Broadband.” Ex. 1007, Title. Dahlman describes multiple antenna processing, such as “MIMO (Multiple-Input/Multiple-Output) antenna processing.” *Id.* at 89. Dahlman explains that “[d]ownlink multi-antenna transmission is a key technology of LTE” and that “unknown *multi-antenna precoders* . . . will experience different ‘radio channels’ even if the set of antennas are located at the same site.” *Id.* at 154. Dahlman explains that “[e]ach individual downlink transmission is carried out from a specific antenna port, the identity of which is known to the terminal,” and that “each antenna port can, at least for the downlink, be seen as corresponding to a specific reference signal” and a “terminal receiver can then assume that this reference signal can be used to estimate the channel corresponding to the specific antenna port.” *Id.* “The reference signals can also be used by the

terminal to derive detailed channel-state information related to the antenna port.” *Id.* Dahlman describes “*CSI reference signals (CSI-RS)*,” that “are specifically intended to be used by terminals to acquire channel-state information (CSI), for example for channel-dependent scheduling, link adaptation, and transmission settings related to multi-antenna transmission.” *Id.* at 185.

C. Summary of Kim966

Kim966 is titled “Method and Device for Reporting Channel State Information in Wireless Communication System.” Ex. 1008, code (54). Kim966 discloses an “aperiodic transmission method for reducing overhead of transmission of a reference signal and a method and device for reporting relevant channel state information.” *Id.* ¶ 3. Kim966 provides “for reporting channel state information (CSI) by a user equipment (UE) having a plurality of CSI processes,” including “measuring a channel based on a CSI-reference signal (CSI-RS) resource associated with one CSI process of the plurality of CSI processes” and “measuring an interference based on a CSI-interference measurement (CSI-IM) resource associated with the one CSI process,” and “determining the CSI based on the measured channel and interference.” *Id.* ¶ 5. Kim966 explains that a “signal for a Multi User-Multi Input Multi Output (MU-MIMO)-paired UE may be transmitted in a portion of subframes corresponding to the CSI-IM resource,” and that the “signal for the MU-MIMO paired UE may be either a PDSCH for the MU-MIMO-paired UE or a dummy signal obtained by applying a precoding matrix associated with the MU-MIMO-paired UE.” *Id.* ¶¶ 13–14.

D. Challenged Claim 1

Patent Owner argues that the combination of Kim, Dahlman, and Kim966 does not teach two limitations of claim 1. Prelim. Resp. 1–2, 6–9. We first address the limitations disputed by Patent Owner and then turn to the undisputed limitations.

1. Disputed Limitations

Patent Owner argues that the combination fails to teach the following limitations of claim 1: (i) “receiving a first signaling from the base station” and (ii) “the first signaling is used to determine a first time resource pool.” *Id.*; Ex. 1001, 29:11, 29:16–17. For the reasons that follow, at this stage, we agree with Petitioner and find that the combination teaches these limitations.

In particular, we agree with Petitioner and find that Kim teaches a UE “**receiving** control information [(a **first signaling**)] . . . for controlling the first reference signal receiver.” Pet. 43 (quoting Ex. 1004 ¶ 21; citing *id.* ¶ 65; Ex. 1003 ¶ 100) (alterations in original). And we agree that Kim also teaches that a base station “‘should notify a UE of related control information before transmitting a CSI-RS’ and that this ‘control information is imperative for proper reception of the CSI-RSs.’” Pet. 43–44 (citing Ex. 1004 ¶ 65).

In addition, at this stage, we agree with Petitioner and find that Dahlman teaches a UE receiving a “system information block” (“SIB”) (i.e., a first signaling) which can include “information about the allocation of subframes to uplink/downlink and configuration of the special subframe in the case of TDD” (time division duplexing). Pet. 43; Ex. 1007, 358–359. We also agree with Petitioner that Dahlman teaches that system information “needs to be acquired by terminals [UEs] in order for them to be able to

access and, in general, operate properly within the network.” Ex. 1007, 355; *see also id.* at 355–362.

At this stage, we find persuasive Dr. Mandayam’s testimony that one of ordinary skill in the art “would have understood and . . . found obvious to implement Kim’s control information, which is received by the UE, as a System Information Block (SIB) (*a first signaling*), as taught by Dahlman, because the SIB is a type of control information sent *from the base station* to the UE (e.g., through a downlink shared channel (DL-SCH)) as described in Dahlman.” Ex. 1003 ¶ 101. This testimony is consistent with Kim and Dahlman’s teachings we discuss above.

At this stage, we find unavailing Patent Owner’s argument that “the ’527 [p]atent describes a System Information Block or a Channel State Information Reference signal(s) (CSI-RS) as both examples of the ‘first radio signal,’ *not* the first signaling.” Prelim. Resp. 7 (citing Ex. 1001, 2:29–33). Simply put, that the ’527 patent states “[i]n one embodiment, the first radio signal” includes a SIB, does not preclude a SIB from being the first signaling in the context of claim 1, as Petitioner argues. Moreover, the ’527 patent provides numerous examples describing what the first signaling may be for various embodiments, which supports that the “first signaling” may be a wide variety of signals. *E.g.*, Ex. 1001, 3:54–4:40.

In sum, the combined teachings of Kim and Dahlman teach the first disputed limitation—a UE receiving a first signaling (i.e., a SIB) from the base station.

We also agree with Petitioner and find that the proposed combination teaches the second disputed limitation—that “the first signaling is used to determine a first time resource pool.” Pet. 50–53. In particular, we agree

that Dahlman teaches that a SIB “includes information about the allocation of subframes to uplink/downlink and configuration of the special subframe in the case of TDD.” Pet. 51 (emphasis omitted); Ex. 1007, 359. And at this stage, we find persuasive Petitioner’s argument that “[b]ecause the SIB assigns time resources or an ‘allocation of subframes for uplink/downlink,’ an SIB would be understood to function as and render obvious as assigning the UE a collection of time intervals (e.g., subframes) or ‘*time resource pools*.’” Pet. 51 (citing Ex. 1007, 358–62; Ex. 1004 ¶¶ 60–61, 64–78, 84; Ex. 1003 ¶ 113).

Dahlman’s Figure 9.7, as annotated by Petitioner, is shown below. *Id.* at 52.

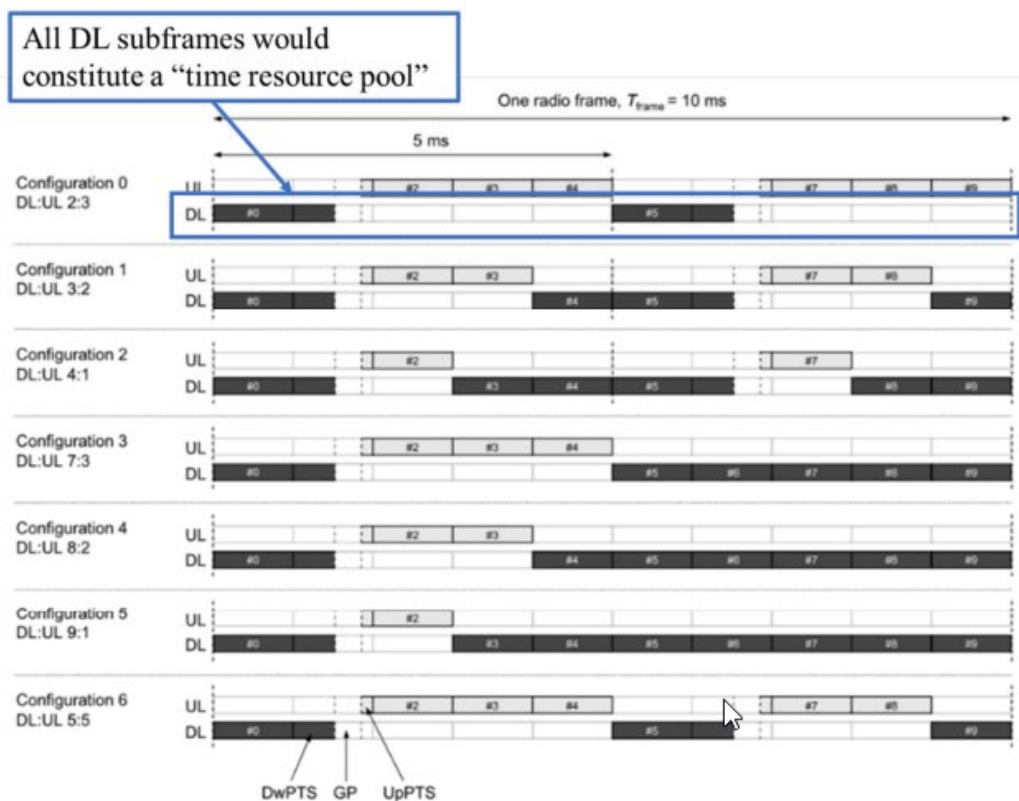


FIGURE 9.7
Different downlink/uplink configurations in case of TDD

Dahlman's Figure 9.7 shows different downlink/uplink configurations in the case of TDD. Ex. 1007, 158. Petitioner annotates the figure by (i) drawing a rectangular box around the subframes for the downlink of Configuration 0, and (ii) labeling the box as "All DL subframes would constitute a 'time resource pool.'" Pet. 52. At this stage, we find persuasive Petitioner's argument that as "[s]hown in Dahlman's annotated figure 9.7 below, a particular configuration for TDD would establish a 'pool' (Dahlman's 'allocation of subframes') of the downlink and uplink subframes (*time resources*) assigned to a UE." *Id.* at 51 (citing Ex. 1004 ¶¶ 61, 69; Ex. 1007, 358–62, Fig. 9.7; Ex. 1003 ¶ 113). And we find persuasive, at this stage, Dr. Mandayam's testimony that one of ordinary skill in the art "would have understood and found obvious that these uplink or downlink subframes represent time resources and thus the SIB *is used to determine a first time resource pool.*" Ex. 1003 ¶ 114; Pet. 52. The argument and testimony are consistent with Dahlman's teachings discussed above.

Moreover, as Petitioner argues, the '527 patent teaches that the assignment of time resources is accomplished through a "time resource pool" which is formed of "subframes," where a set of these can make a "sub-pool." Pet. 53; Ex. 1001, 16:4–12, Figs. 6–7. Thus, we find persuasive at this stage Dr. Mandayam's testimony that one of ordinary skill in the art "would have understood that 'time resources' refers to periods or slots of time, such as a collection or pool of subframes," as this testimony is consistent with the '527 patent. Ex. 1003 ¶ 115; Pet. 53.

At this stage, we find unavailing Patent Owner's argument that "the Petition jumps to the unsupported conclusion that 'the SIB is a type of control information sent *from the base station* to the UE' . . . for presumably

the proper reception of Kim’s CSI-RSs,” “[h]owever, the cited portion of Dahlman describing SIBs is silent regarding CSI-RSs or whether SIBs provide control information for CSI-RSs.” Prelim. Resp. 8 (citing Ex. 1007, 355–362). Rather, Dahlman’s teachings disclose that SIBs include “information about the allocation of subframes to uplink/downlink,” which relates to subframe allocation generally for signals, without differentiating between signals—CSI-RSs are signals. Ex. 1007, 355, 358–359. Dahlman also teaches SIBs can be transmitted using the DL-SCH, which is a channel between the base station and UE. *See id.* at 355, 358; Ex. 1003 ¶ 101. Moreover, Patent Owner focuses on Dahlman’s teachings alone without considering Kim’s combined teaching that a base station should notify a UE of related control information before transmitting a CSI-RS. Ex. 1004 ¶ 65.

We also find unavailing Patent Owner’s argument that “Petitioner ignores the . . . relationship between the first radio signal and first signaling” (i.e., “at least the transmission of the first radio signal through the first antenna port group occurs during the first time resource pool”). Prelim. Resp. 7. These disputed limitations themselves do not implicate such a relationship under their plain and ordinary meaning. *See In re Hiniker Co.*, 150 F.3d 1362, 1369 (Fed. Cir. 1998) (stating “the name of the game is the claim”). Notably, Patent Owner points to other limitations in claim 1 to argue for this relationship. Prelim. Resp. 7–8. And Patent Owner does not address Petitioner’s showings (which largely rely on Kim and Kim966’s teachings (Pet. 53–63)) for these other limitations. *Id.* at 6–9.

In addition, we note that while claim 1 recites that the first radio signal is transmitted by the first antenna port group (among K-1 others),

claim 1 only recites that the first antenna virtualization vector (which is associated with the first antenna port group) is *available* to the base station in the first time resource pool (which is determined by the first signaling), not that the vector actually must be used to transmit the first radio signal. *See* Ex. 1001, 29:8–26. Patent Owner does not address this distinction in arguing that “[t]he first radio signal is directly associated with the claimed ‘first signaling.’” Prelim. Resp. 6. The parties may want to consider addressing this issue further during trial, in accordance with our rules.

In sum, at this stage, we find that Petitioner’s combination also teaches the second disputed limitation—that “the first signaling is used to determine a first time resource pool.”

2. *Undisputed Limitations*

Petitioner asserts that the combination of Kim, Dahlman, and Kim966 discloses the preamble and the remaining limitations of claim 1. Pet. 38–64. Petitioner identifies where the combination of Kim, Dahlman, and Kim966 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 Kim, Dahlman, and Kim966 teaches 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)). We also find that Petitioner has provided sufficiently articulated reasoning, which Patent Owner does not

specifically address at this stage, to support combining Kim, Dahlman, and Kim966's teachings in the manner Petitioner does. Pet. 21–38.

3. *Summary*

In summary, based on the current record, we determine that Petitioner shows a reasonable likelihood that the combination of Kim, Dahlman, and Kim966 renders claim 1 obvious.

E. Challenged Claims 2–20

At this stage, Patent Owner does not address separately Petitioner's arguments and evidence as to how the combination of Kim, Dahlman, and Kim966 teaches the limitations of claims 2–20. *See* Prelim. Resp. 9–10. We leave for trial, however, whether Petitioner establishes that the combination of Kim, Dahlman, and Kim966 renders obvious claims 2–20.

VI. CONCLUSION

For the foregoing reasons, we determine that Petitioner shows a reasonable likelihood that it would prevail in proving the unpatentability of at least one of the challenged claims of the '527 patent. We thus institute an *inter partes* review of all of the challenged claims of the '527 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.

VII. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes*

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review of the '527 patent is instituted on all of the challenged claims and all grounds asserted 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; the trial commences on the entry date of this Decision.

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FOR PETITIONER:

W. Karl Renner
Jonathan Driesslein
Thomas Rozylowicz
FISH & RICHARDSON P.C.
axf-ptab@fr.com
driesslein@fr.com
tar@fr.com

FOR PATENT OWNER:

Vincent J. Rubino
Peter Lambrianakos
Enrique W. Iturralde
Julian G. Pymonto
Jacob D. Ostling
FABRICANT LLP
vrubino@fabricantllp.com
plambrianakos@fabricantllp.com
eiturralde@fabricantllp.com
jpymonto@fabricantllp.com
jostling@fabricantllp.com