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Paper 24
Entered: March 17, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COMMSCOPE TECHNOLOGIES LLC,
Petitioner,

v.

DALI WIRELESS, INC.
Patent Owner.

IPR2022-01242
Patent 11,026,232 B2

Before KARL D. EASTHOM, SHARON FENICK, and JOHN R. KENNY, *Administrative Patent Judges.*

KENNY, *Administrative Patent Judge*.

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

I. INTRODUCTION

CommScope Technologies LLC ("Petitioner") filed a Petition to institute an *inter partes* review of claims 1–20 (the "challenged claims") of U.S. Patent No. 11,026,232 B2 (Ex. 1001, the "'232 patent," "challenged patent") pursuant to 35 U.S.C. § 311 *et seq*.[1] Paper 1 ("Pet."). Dali Wireless, Inc. ("Patent Owner") filed a Preliminary Response. Paper 7 ("Prelim. Resp."). With our authorization, Petitioner filed a preliminary reply to address new events possibly relevant to a determination whether to exercise discretion under 35 U.S.C. § 314. (Paper 12, "Prelim. Reply"), and Patent Owner filed a preliminary sur-reply (Paper 13, "Prelim. Sur-reply").[2]

After considering the Petition, the Preliminary Response, the Preliminary Reply, the Preliminary Sur-reply, and the evidence of record, on February 7, 2023 we issued a decision instituting an *inter partes* review in this proceeding. Paper 21 ("Original Institution Decision," "Orig. Inst. Dec."). On February 27, 2023, the Director vacated and remanded our Original Institution Decision and directed us to revisit our analysis regarding *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential) ("*Fintiv*"). Paper 22 ("Remand Decision," "Remand Dec."), 6–7. Below, we revisit our *Fintiv* analysis and essentially repeat the analyses provided in Sections II and III of our Original Institution Decision regarding, the level of ordinary skill in the art, claim construction, and the asserted unpatentability challenges. Further, we include the descriptions set forth in

[1] Corning Optical Communications LLC filed the Petition with CommScope Technologies LLC. Paper 1. Corning Optical Communications LLC, however, was subsequently terminated from this proceeding. Paper 20.
[2] We authorized additional pre-institution papers, which were not filed. *See* Papers 14, 17.

Section I of our Original Institution Decision regarding the challenged patent, challenged claims, and the asserted challenges.

As set forth in Section IV below, after revisiting *Fintiv* in light of the Director's remand, we decline to exercise our delegated discretion to deny institution under *Fintiv*. Further, as set forth in Sections II and III below, we determine 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) (2018). Thus, we institute an *inter partes* review in this proceeding.

A. Related Matters

The parties identify the following related district court litigations ("Related Litigations"):

> (i) *Dali Wireless, Inc. v. AT&T Corp. et al.*, Case No. 2:22-cv-12 (E.D. Texas) ("ATT Eastern District Litigation");
>
> (ii) *Dali Wireless, Inc. v. Cellco Partnership et al.*, Case No. 6-22-cv-00104 (W.D. Texas) ("Western District Litigation"); and
>
> (iii) *Dali Wireless, Inc. v. T-Mobile US, Inc. et al.*, Case No. 2:22-cv-414 (E.D. Texas) ("T-Mobile Eastern District Litigation").

Pet. iv–v; Paper 4, 1; Prelim. Reply 1.

B. Challenged Patent

The specification of the '232 patent ("Specification") discloses a Reconfigurable Distributed Antenna System (DAS). Ex. 1001, 6:4–8. The Reconfigurable DAS comprises digital access units (DAUs) and remote radio head units (RRUs). *Id.* at 6:29–32. In the Specification, the DAU serves as an interface between a base station (BTS) and RRUs. *Id.* at 6:13–17.

Figure 4 of the '232 patent is shown below:

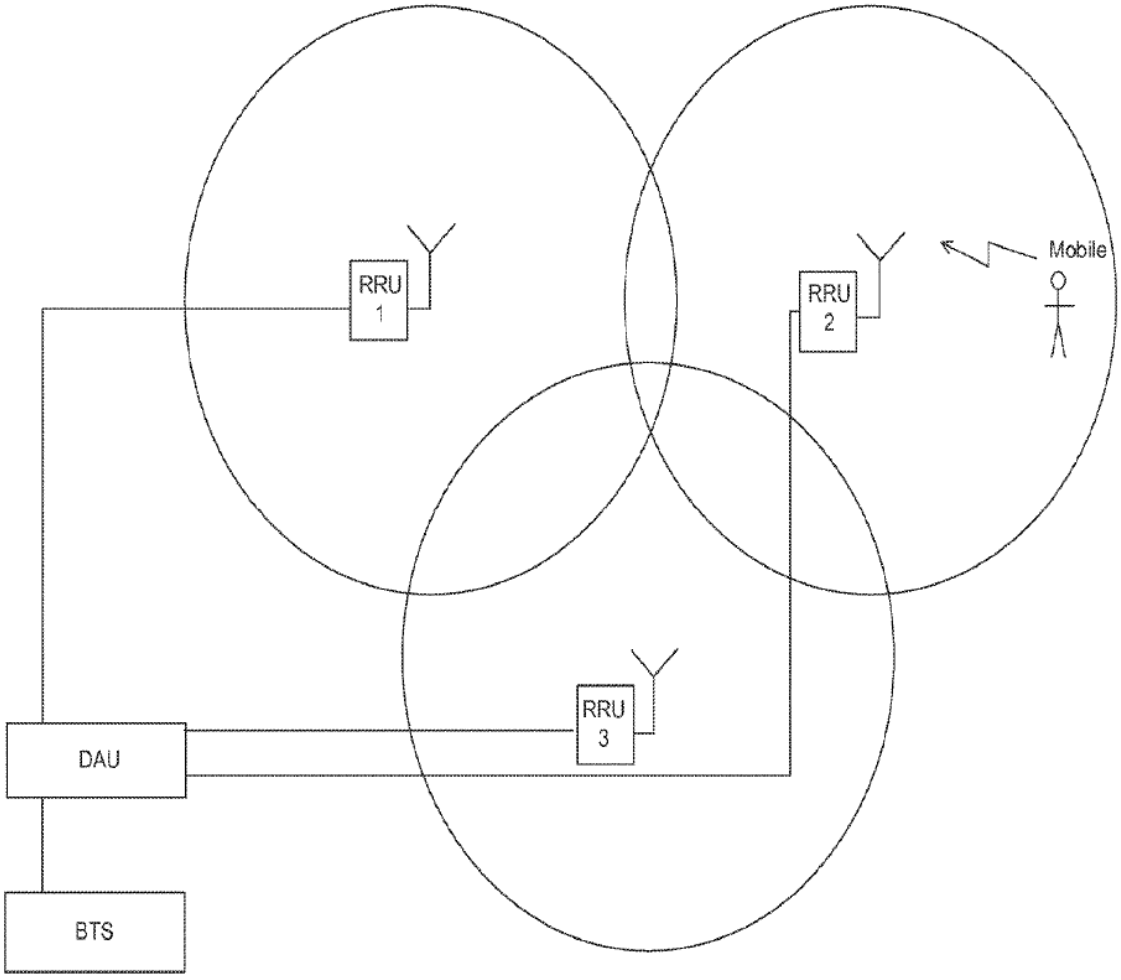


Figure 4 Indoor Localization System of GSM and LTE

Ex. 1001, Fig. 4. Figure 4 above shows an embodiment of an indoor system that employs multiple RRUs and a central DAU. *Id.* at 5:55–58, 11:9–11.

The Specification explains that movement of subscribers complicates allocation of base station RF (radio frequency) carriers. Ex. 1001, 1:42–58. The Specification further explains that when subscribers move from office floors to the cafeteria during lunchtime, for example, RF carriers assigned to office floors may be underused and resources assigned to the cafeteria may be overused. *Id.* at 1:46–58.

To address this problem, the Specification teaches that the DAU can assign different subsets of radio resources to the RRUs. Ex. 1001, 4:17–23. Figure 1 of the '232 patent is shown below:

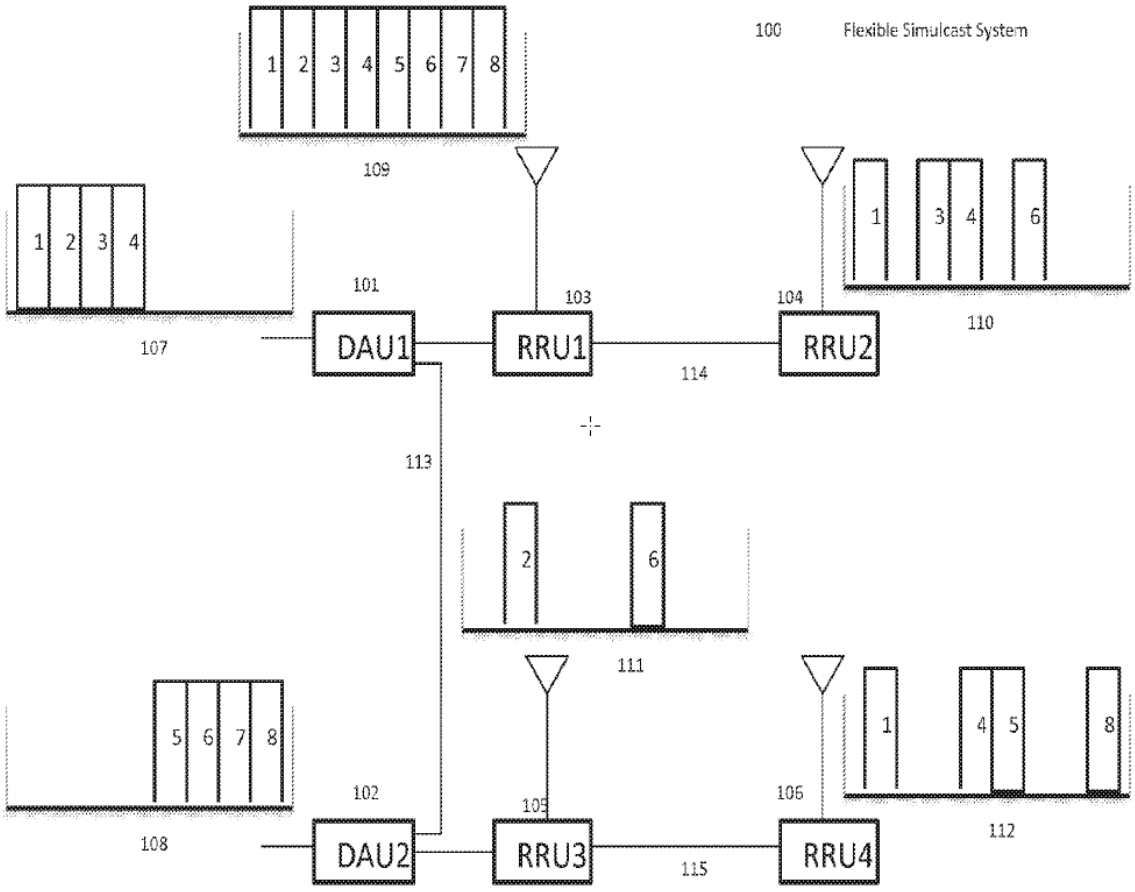


Figure 1: Flexible Simulcast Downlink Example

Id. at Fig. 1. Figure 1 above is a block diagram showing the basic structure and an example of a Flexible Simulcast downlink transport scenario having two DAUs and four RRUs. *Id.* at 5:44–47.[3] In Figure 1, the DAU1 and DAU2 receive signals (107, 108) from base stations (not shown). *Id.* at 6:32–39. Signals 107, 108 comprise eight carriers. *Id.* The DAU assigns, for use

[3] This passage in the '232 patent appears to have a typographical error. The passage refers to 4 DRUs, but Figure 1 shows 4 RRUs, not 4 DRUs.

at each RRU, a subset of the carriers—e.g., up to the full set of eight carriers at RRU1. *Id.* at 6:46–57. The DAU "detects which carriers and corresponding time slots for each carrier are active for each RRU." *Id.* at 12:5–13. This can "help identify" when a carrier is "loaded by a percentage greater than a predetermined threshold." *Id.*

C. Challenged Claims

Petitioner challenges claims 1–20. Pet. 1. Claims 1, 12, and 20 are independent. Claim 1 reads:

> 1. [1.1][4] A wireless system comprising:
>
> [1.2] one or more central nodes that receive a number of a plurality of radio resources from an operator hub that enables wireless communications and that provides the plurality of radio resources to a radio access network using the Common Public Radio Interface (CPRI) protocol; and
>
> [1.3] a plurality of wireless access points that is coupled to the one or more central nodes and distributes one or more wireless signals to one or more wireless subscribers, the plurality of wireless access points including at least a first access point and a second access point,
>
> [1.4] wherein one or more central nodes assigns a first subset of the number of the plurality of radio resources to the first access point and a second subset of the number of the plurality of radio resources to the second access point, the first subset including more radio resources than the second subset, and
>
> [1.5] wherein, in response to a change in need of a number of wireless subscribers coupled to the second access point and which of the second subset is loaded beyond a threshold, the one

[4]For ease of reference, we provide bracketed identifiers for the preambles and limitations of the challenged claims that are discussed. These designations are similar to those provided in the Petition with a few differences (e.g., limitation 1.2 is divided into elements 1B and 1C in the Petition).

> or more central nodes assign additional radio resources of the plurality of radio resources to the second access point.

Ex. 1001, 13:47–14:3.

D. Asserted Challenges to Patentability and Prior Art

Petitioner challenges claims 1–20 based on the grounds in the table below.

Ground	Claim(s) Challenged	35 U.S.C. §	Reference(s)
1	1–7, 9, 11–17, 19, 20	103(a)[5]	Hettstedt[6], Wellington[7]
2	1–7, 9, 11–17, 19, 20	103(a)	Hettstedt
3	1–7, 9, 11–17, 19, 20	103(a)	Wu[8]
4	1–7, 9, 11–17, 19, 20	103(a)	Wu, Sabat[9]
5	8, 18	103(a)	The combinations of references in Grounds 1–4 further combined with Fischer[10]

[5] The Leahy-Smith America Invents Act ("AIA") included revisions to 35 U.S.C. §§ 102, 103 that became effective on March 16, 2013. Because the '232 patent claims priority, through a series of continuation applications, to a utility application filed before March 16, 2013, and neither party has argued that the provisions of the AIA apply, we apply the pre-AIA versions of the statutory bases for unpatentability. *See* Ex. 1001, code (63).
[6] US Pub. 2008/0119198 A1 (Ex. 1005).
[7] US 8,112,094 B1 (Ex. 1007).
[8] US Pub. 2010/0128676 A1 (Ex. 1006).
[9] US Pub. 2009/0180426 A1(Ex. 1010).
[10] US Pub. 2010/0177759 A1 (Ex. 1008).

Ground	Claim(s) Challenged	35 U.S.C. §	Reference(s)
6	10	103(a)	The combinations of references in Grounds 1–4 further combined with Conyers[11]
7	11	103(a)	Wu, Sabat, Hettstedt

Pet. 1.

Petitioner relies on a declaration with proffered expert testimony from Dr. Anthony S. Acampora (Ex. 1003). Patent Owner relies on a declaration with proffered expert testimony from Dr. Douglas A. Chrissan (Ex. 2001).

II. LEVEL OF SKILL AND CLAIM CONSTRUCTION

A. Level of Skill in the Art

Petitioner proposes that an ordinarily skilled artisan would have a bachelor's degree in Electrical Engineering (or an equivalent field) with 2–3 years of work experience in wireless communications. Pet. 19 (citing Ex. 1003 ¶¶ 20–22). Patent Owner proposes that an ordinarily skilled artisan would have a bachelor's degree in Electrical Engineering (or a similar technical degree or equivalent work experience) and at least 3 years of experience working with wireless communication systems. Prelim. Resp. 12. The proposed definitions by the parties for an ordinarily skilled artisan are very similar and are consistent with the level of skill reflected in the Specification and in the asserted prior art references. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). For purposes of this Decision, we adopt Petitioner's definition, but we would reach the same conclusions if we were to adopt Patent Owner's. To the extent either party believes that there

[11] US 7,398,106 B2 (Ex. 1009).

is a significant difference between the two proposed definitions, that party should identify the significance of that difference at trial.

B. Claim Construction

Petitioner does not request that we construe any claim term. Pet. 19. Patent Owner requests that we construe (i) "radio resources," recited in claims 1, 3, 12, 14, and 20, and (ii) "using the Common Public Radio Interface (CPRI) protocol," recited in claim 1. Prelim. Resp. 12–21. Patent Owner further argues that the Petition should have expressly construed limitation 1.2. *Id.* at 18–19.

1. Radio Resources

a. Arguments

Patent Owner proposes that we construe "radio resources" as "RF carriers, CDMA codes, TDMA time slots, and other information defining or describing the way data is being transmitted by a wireless access point but do not include the underlying data that is transmitted." Prelim. Resp. 15. Patent Owner argues that this proposed construction is consistent with the construction provided in the Decision, Denying Institution of *Inter Partes* Review in IPR2020-01430 ("'1430 IPR," "'1430 IPR DI," the latter of which is Exhibit 2002 and '1430 IPR Paper 15) for the same term in US Patent No. 10,334,449 ("'449 patent"). *Id.* (citing Ex. 2002, 9–12). Patent Owner describes the '449 patent as a related patent. *Id.* Patent Owner further asserts that the Specification supports its construction by describing RF carriers, CDMA codes, and TDMA time slots as examples of radio resources. *Id.* at 17 (citing Ex. 1001, 4:15–23, 11:52–57, 12:13–24). Patent Owner also argues that in the '1430 IPR DI, the Board found that Oh (Ex. 2006) failed to

disclose sending "radio resources" to the radio units and that finding supports Patent Owner's proposed construction here. *Id.* at 17–18.

b. Analysis

First, we analyze Patent Owner's proposed construction. Then, we provide our preliminary partial construction for "radio resources."

i. Analysis of Patent Owner's Proposed Construction

With Patent Owner's proposed construction, radio resources (i) encompass RF carriers, CDMA codes, and TDMA time slots and (ii) encompass other information defining or describing the way data is being transmitted by a wireless access point, (iii) as long as the RF carriers, CDMA codes, and TDMA time slots or other information defining and describing the way data is being transmitted do not include underlying data. Prelim. Resp. 15. We address each of these three aspects of Patent Owner's proposed construction below.

(a) RF Carriers, CDMA Codes, and TDMA Time Slots

We agree with Patent Owner that "radio resources" encompass RF carriers, CDMA codes, and TDMA time slots. Prelim. Resp. 5.

The Specification identifies RF carriers, CDMA codes and TDMA time slots as exemplary radio resources. For instance, when describing the deployment of additional radio resources, the Specification identifies RF carriers, CDMA codes and TDMA time slots as radio resources that can be deployed: "the DAU Management Control module adaptively modifies the system configuration to slowly begin to deploy additional *radio resources (such as RF carriers, CDMA codes or TDMA time slots)*." Ex. 1001, 12:13–17 (emphasis added). When describing the removal of radio resources, the Specification describes RF carriers, CDMA codes and TDMA time slots as

radio resources that can be removed: "the DAU Management Control module adaptively modifies the system configuration to slowly begin to remove certain *radio resources (such as RF carriers, CDMA codes or TDMA time slots)*." *Id.* at 12:19–24 (emphasis added).

Similarly, the Specification describes determining or setting the appropriate amount of radio resources to be assigned and identifies RF carriers, CDMA codes or TDMA time slots as exemplary radio resources that can be allocated: "One . . . key function is determining and/or setting the appropriate amount of radio resources (*such as RF carriers, CDMA codes or TDMA time slots*) assigned to a particular RRU or group of RRUs to meet desired capacity and throughput objectives." Ex. 1001, 11:52–57 (emphasis added).

Petitioner does not dispute that "radio resources" encompass RF carriers, CDMA codes and TDMA time slots. Although Petitioner does not propose an express construction for "radio resources," it nevertheless argues that "[t]he '232 patent teaches that RF 'carriers' are 'radio resources.'" Pet. 24–25. Further, the teaching from the Specification that Petitioner relies on to support this argument identifies CDMA codes and TDMA time slots as additional radio resources. *Id.* (quoting Ex. 1001, 12:15–16). We also note that, in the '1430 IPR DI, "radio resources" was partially construed as encompassing RF carriers, CDMA codes and TDMA time slots. Ex. 2002, 11–12.

Thus, we agree with Patent Owner that "radio resources" encompass RF carriers, CDMA codes and TDMA time slots.

(b) Other Information Defining or Describing the Way Data Is Being Transmitted by a Wireless Access Point

We do not need to determine whether "radio resources" encompass other information defining or describing the way data is being transmitted by a wireless access point because Petitioner only maps "radio resources" to RF carriers. Pet. 24–25, 61. Thus, whether "radio resources" encompass other information defining or describing the way data is being transmitted by a wireless access point is not at issue here. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

(c) Not Including Underlying Data that Is Transmitted

Patent Owner's proposed construction for "radio resources" requires that RF carriers, CDMA codes, TDMA time slots or other information defining and describing the way data is being transmitted do not include underlying data that is transmitted. In isolation, the phrase "not including underlying data that is being transmitted" could be subject to different interpretations. It could simply mean that data being transmitted by itself is not a radio resource, but the RF carrier transmitting the data could be a radio resource. Patent Owner makes clear, however, that this interpretation is not the intent of its construction by arguing that, under its construction, Hettstedt's RF carriers are not radio resources because they have data modulated on them. Prelim. Resp. 24–27. Similarly, Patent Owner argues that Wu's carriers are not radio resources because they have payload data encapsulated in them. *Id.* at 34; *see also id.* at 35.

Patent Owner, however, cites nothing from the Specification that indicates RF carriers, CDMA codes, or TDMA time slots cease to be radio

resources merely because data is modulated or encapsulated on them. Prelim. Resp. 12–18. Further, we see no such teaching in the Specification.

Instead of pointing to a teaching from the Specification excluding RF carriers, CDMA codes, or TDMA time slots with data, Patent Owner relies on the partial construction in the '1430 IPR DI to exclude RF carriers, CDMA codes, or TDMA time slots. Prelim. Resp. 15–18. The '1430 IPR DI's partial construction, however, does not provide such an exclusion. Ex. 2002, 9–12. The pertinent issue in the '1430 IPR DI was whether data carried wirelessly using RF carriers, CDMA codes, and TDMA time slots was *by itself* a radio resource. *Id.* at 10. The '1430 IPR panel determined that RF carriers, CDMA codes, and TDMA time slots are radio resources, but data that does not incorporate information used in the transmission of the radio resource from an antenna of the remote unit is not. *Id.* at 12. The '1430 IPR panel did not hold that RF carriers, CDMA codes, and TDMA time slots are not radio resources when they have data modulated or encapsulated on them. *Id.* at 10–12. With the '1430 IPR DI's partial construction, the data modulated or encapsulated on the RF carriers, CDMA codes, and TDMA time slots are not radio resources, but the RF carriers, CDMA codes, and TDMA time slots upon which the data is modulated or encapsulated are. *Id.*

Further, the issue of whether RF carriers, CDMA codes, and TDMA time slots with modulated or encapsulated data would be radio resources was not before the '1430 IPR panel. Ex. 2002, 18–19. The alleged radio resources in the '1430 IPR DI were data that was not modulated or encapsulated on RF carriers, CDMA codes, and TDMA time slots. *Id.* Instead, the alleged radio resources were data sent to antenna units that would

subsequently be modulated or encapsulated on RF carriers, CDMA codes, and TDMA time slots by the antenna units. *Id.* In other words, the alleged radio resources were pre-modulated or pre-encapsulated data. *Id.*

Thus, the current record does not support Patent Owner's proposed requirement that, to be radio resources, the RF carriers, CDMA codes, TDMA time slots or other information defining and describing the way data is being transmitted cannot include underlying data that is transmitted.

ii. Our Partial Construction

For this Decision, we do not need to completely construe the term "radio resources." *Nidec Motor Corp.*, 868 F.3d at 1017. However, a partial construction is required, and for the reasons discussed above, for this Decision, we construe "radio resources" to encompass RF carriers, CDMA codes, and TDMA time slots, including RF carriers, CDMA codes, and TDMA time slots that include underlying data that is transmitted.[12]

2. Using the Common Public Radio Interface (CPRI) Protocol

Limitation 1.2 recites "one or more central nodes that receive a number of a plurality of radio resources from an operator hub that enables wireless communications and that provides the plurality of radio resources to a radio access network using the Common Public Radio Interface (CPRI) protocol." Ex. 1001, 13:48–53. Patent Owner argues that limitation 1.2 should be construed so the recited central nodes provide radio resources to a radio access network using the CPRI protocol. Prelim. Resp. 19–21. Patent Owner argues that, during prosecution of the '232 patent, the Examiner read limitation 1.2 as requiring that the recited central nodes provide the radio

[12] This is consistent with the construction of the same term in the same patent in the Western District Litigation. Ex. 1059, 1–2.

resources to the radio access network using the CPRI interface. *Id.* at 20 (citing Ex. 1002, 120). Patent Owner also asserts that the Specification supports this construction by disclosing that "[t]he DAUs [e.g., central nodes] and RRUs [remote radio units] frame the individual data packets corresponding to their respective radio signature using the Common Public Interface Standard (CPRI)." *Id.* at 20 (quoting Ex. 1001, 9:13–15) (bracketed text by Patent Owner).

The claim construction issue raised by Patent Owner concerns which entity in limitation 1.2 provides the plurality of radio resources to a radio access network using the CPRI protocol. Prelim. Resp. 19–21. As indicated above, Patent Owner proposes construing the limitation so the recited one or more central nodes provide those radio resources. *Id.* Petitioner implicitly construes the limitation as having the recited operator hub provide those radio resources. Pet. 25.

Patent Owner argues that the prosecution history of the '232 patent resolves this claim construction issue, quoting the Supplemental Notice of Allowability, dated November 20, 2020. Prelim. Resp. 20 (quoting Ex. 1002, 120); *see also* Ex. 1002, 115. Patent Owner quotes the following statement from that Supplemental Notice: "Akman et al (US 2010/0075678) teaches Central nodes that enable[] wireless communications and that provide[] the plurality of radio resources to a radio access network using the Common Public Radio Interface (CPRI) protocol (Paragraphs 0004 and 0022)." Prelim. Resp. 20 (quoting Ex. 1002, 120). Patent Owner argues that this statement demonstrates that the Examiner read limitation 1.2 as having the recited central node provide the radio resources using the CPRI protocol. *Id.* Patent Owner further argues that the Specification supports such a

construction because the Specification discloses that "[t]he DAUs [e.g., central nodes] and RRUs [remote radio units] frame the individual data packets corresponding to their respective radio signature using the Common Public Interface Standard (CPRI)." *Id.* (quoting Ex. 1001, 9:13–15).

For this Decision, we construe limitation 1.2 as having the recited operator hub provide the plurality of radio resources to a radio access network using the Common Public Radio Interface (CPRI) protocol.

First, the related limitations in independent claims 12 and 20 clearly specify that an operator hub provides the plurality of radio resources using the CPRI protocol. Claims 12 and 20 each recite "*receiving a plurality of radio resources from an operator hub* that operates using a Common Public Radio Interface (CPRI) protocol." Ex. 1001, 14:45–47 (emphasis added), 16:5–8 (emphasis added). From reviewing the Specification, we see no reason why claim 1 should be construed differently from claims 12 and 20 in this regard, and neither party has provided any such reason.

Second, the language of limitation 1.2 also supports our construction. Ex. 1001, 13:48–53. The verb "provides" grammatically agrees with the subject "operator hub," but not with the subject "one or more central nodes." *Id.* The verb "provides" is singular and, as such, it agrees with the subject "operator hub," which is also singular. With Patent Owner's proposed construction, the subject for the verb "provides" is "one or more central nodes." Prelim. Resp. 19–20. "One or more central nodes" is a subject comprising a singular term ("one") and a plural term ("more central nodes"). Grammatically, the verb following a subject with singular and plural terms joined by "or" should agree with the nearest term in the subject to the verb, which with Patent Owner's construction is "more central nodes." The Gregg

Reference Manual (11th Ed. 2011) (Ex. 3004) ¶ 1005. As mentioned, however, the verb "provides" is singular, and, as such, it does not grammatically agree with the plural term "more central nodes." Thus, there is grammatic agreement between the subject and the verb "providing," with our construction, but not with Patent Owner's.

Third, we do not read the Examiner's quoted statement in the Supplemental Notice of Allowability as setting forth a construction of limitation 1.2. Ex. 1002, 120. The statement appears to merely provide a shorthand description of the limitation. *Id.* If it were intended to set forth a construction of the limitation, the construction would be erroneous for the statement also indicates that the recited central nodes enable wireless communications. *Id.* In limitation 1.2, the operator hub, rather than the central nodes, clearly enables wireless communications. Ex. 1001, 13:48–53.

Fourth, Patent Owner's cited disclosure from the Specification teaches that DAUs and RRUs frame individual data packets using the CPRI protocol. Ex. 1001, 9:13–15 (cited in Prelim. Resp. 20–21). This appears to be the only disclosure in the Specification regarding the use of the CPRI protocol. *See generally* Ex. 1001. Both parties agree that the DAUs and the base stations in the Specification are the recited central nodes and the operator hub, respectively. Pet. 6; Prelim. Resp. 20, 40. Thus, Patent Owner's suggestion that there is no express disclosure in the Specification of the base station (the operator hub) using CPRI may be correct. Prelim. Resp. 20–21. We, however, do not find this potential lack of express disclosure in the Specification for the operator hub using the CPRI protocol to be determinative of how to construe limitation 1.2 because claims 12 and 20 expressly recite that the operator hub uses the CPRI protocol and those

claims issued without this express disclosure. Nevertheless, it would be helpful if the parties during trial further briefed the issue of how to construe limitation 1.2 in light of the Specification (and all other considerations).

In sum, we construe limitation 1.2 as having the recited operator hub provide the plurality of radio resources to a radio access network using the CPRI protocol.[13]

3. Lack of an Express Construction of Limitation 1.2 in the Petition

Patent Owner argues that the Petition should have offered a construction for limitation 1.2 because Petitioner offered a construction for the limitation in a parallel district court proceeding. Prelim. Resp. 19. Although it may have been preferable for Petitioner to have suggested a construction for limitation 1.2 here, we will not deny the Petition based on Petitioner's failure to do so. In this proceeding, Petitioner implicitly construed the limitation in a manner that is consistent with Petitioner's proposed district court construction. Based on its mapping of limitation 1.2 to Hettstedt, in this proceeding, Petitioner implicitly construed limitation 1.2 to require that the operator hub provides the radio resources to the radio access network using the CPRI protocol. Pet. 26. In the Western District Litigation, Petitioner proposed construing limitation 1.2 as "the operator hub uses the CPRI protocol to provide the plurality of radio resources to a radio access network." Ex. 2007, 4, 11. Under these circumstances, we will not deny the Petition for failing to expressly construe limitation 1.2.

[13] This is consistent with the construction of the same limitation in the same patent in the Western District Litigation. Ex. 1059, 1, 3.

III. ANALYSIS OF ASSERTED GROUNDS

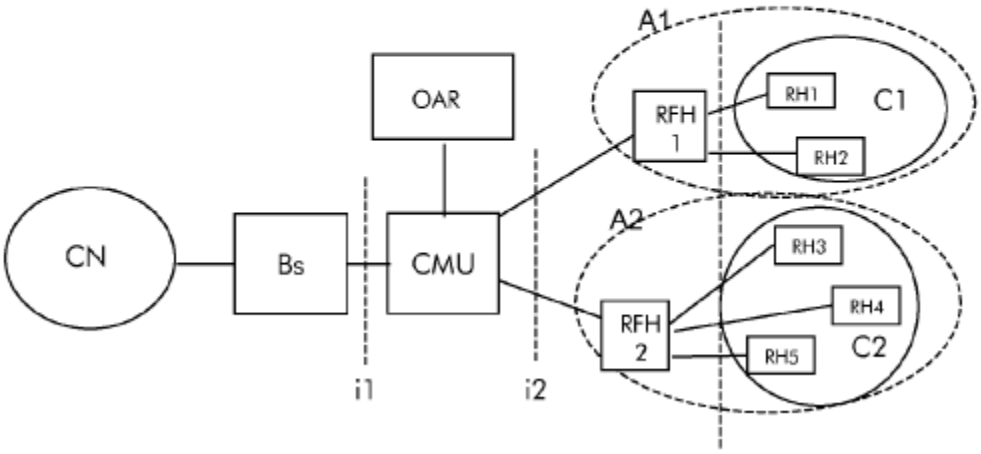
A. Ground 1: Asserted Obviousness over Hettstedt and Wellington

Petitioner asserts that claims 1–7, 9, 11–17, 19, and 20 would have been obvious over the combination of Hettstedt and Wellington. Pet. 1.

1. Hettstedt

Hettstedt is directed to a method and system for wireless cellular indoor communications with improved cell and load balancing management. Ex. 1005 ¶ 8. Hettstedt discloses a cell management unit (CMU) that can de-activate, shift, and activate carriers. *Id.* ¶¶ 43, 44. Figure 3 of Hettstedt, reproduced below, shows its system:

Figure 3



Id. at Fig. 3. Figure 3 above shows a wireless cellular indoor communications system, with a separated cell configuration. *Id.* ¶ 35. Further, Figure 3 depicts the system with a core network (CN), a base station (Bs), a cell management unit (CMU), an off-air repeater (OAR), radio heads (RH1–RH5), cell areas (C1 and C2), and indoor location areas (A1 and A2). *Id.* ¶¶ 39–40, 51.

Hettstedt's CMU provides "automatic cell management for adaptive cell configurations." Ex. 1005 ¶ 42. The CMU supports efficient load balancing "through the shifting of un-used carriers from radio heads inside areas of low traffic load to radio heads inside areas of high traffic load." *Id.* ¶ 44. Thus, "capacity can follow moving users in complex buildings, such as airports, stations, etc., with dynamic distribution of hot-spots." *Id.* ¶ 29.

2. Wellington

Wellington discloses a "methodology of managing cell congestion by adding a carrier." Ex. 1007, 4:59–60. Figure 2 of Wellington, reproduced below, illustrates this method:

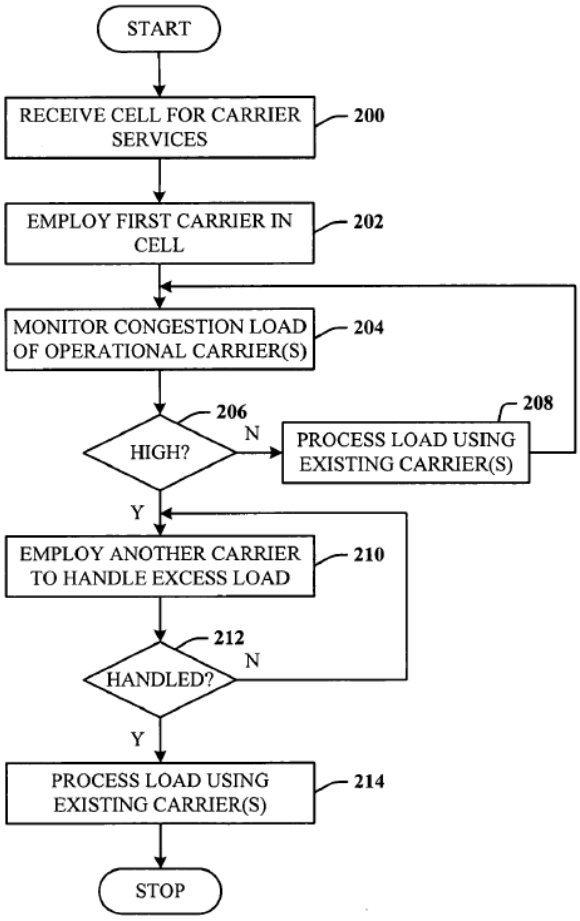


FIG. 2

Id. at Fig. 2; *see also id.* at Fig. 3. Figure 2 above illustrates Wellington's method of managing cell congestion by adding a carrier. *Id.* at 2:26–27. At step 204, the system monitors cell congestion of operational carriers. *Id.* at 5:9–10. At step 206, the system determines if the congestion load is high, which, if it is high, triggers the allocation of another carrier in step 210. *Id.* at 5:10–17.

Wellington explains that "[w]hen congestion in the one or more carriers [of a cell] reaches a predetermined level, another carrier can be automatically added to handle the overload." Ex. 1007, 1:61–63. Figure 4 of Wellington, reproduced below, illustrates components of the system, including a trigger component (404):

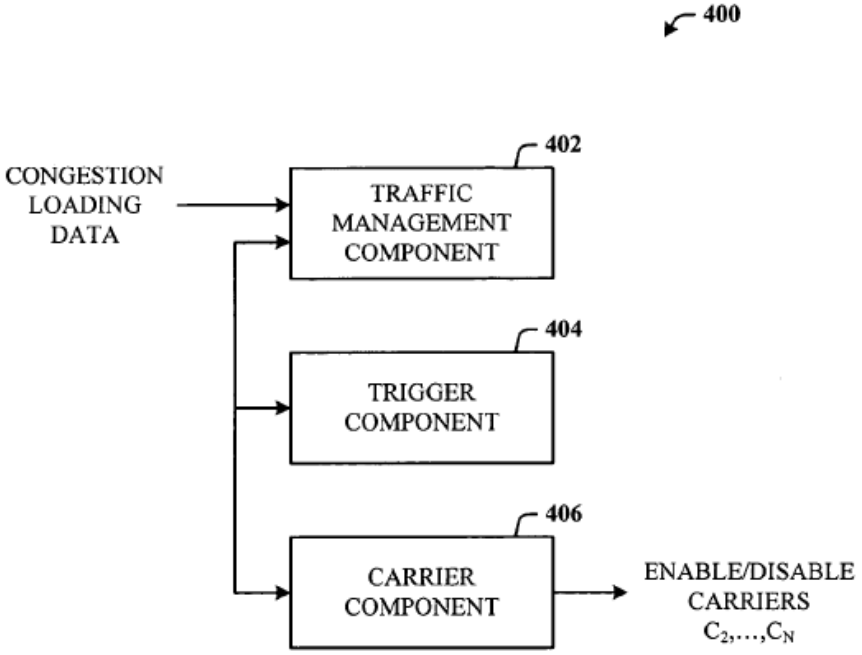


FIG. 4

Id. at Fig. 4, 5:56–6:18. Figure 4 is a block diagram of a system in Wellington that facilitates carrier management in a communications cell. *Id.* at 2:31–32. The trigger component in Figure 4 "monitors one or more

triggers which indicate that congestion in the existing carrier or carriers is at a point that requires an additional carrier." *Id.* at 5:65–67. Wellington's trigger component can use a predetermined threshold. *Id.* at 16:15–18 (claim 8).

3. Claim 1

a. [1.1] A wireless system

Petitioner argues that Hettstedt teaches the preamble of claim 1 by disclosing a "system for *wireless* cellular indoor communications." Pet. 22 (quoting Ex. 1005 ¶ 8; citing *id.* ¶¶ 40–41, 50, Figs. 2–6; Ex. 1003 ¶¶ 82–83.) (emphasis by Petitioner). Patent Owner provides no counterarguments for the preamble of claim 1. *See generally* Prelim. Resp. After reviewing the present record, we determine that Petitioner has made a sufficient showing for the preamble of claim 1.[14]

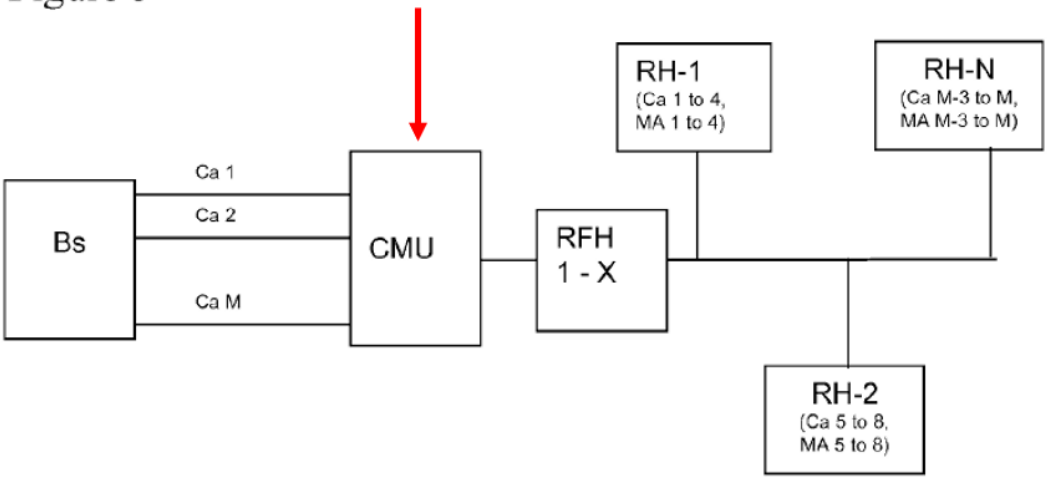
b. [1.2] one or more central nodes that receive a number of a plurality of radio resources from an operator hub that enables wireless communications and that provides the plurality of radio resources to a radio access network using the Common Public Radio Interface (CPRI) protocol; and

i. Parties' Arguments

Petitioner argues that Hettstedt teaches limitation 1.2. Pet. 23–26. Petitioner asserts that Hettstedt's cell management unit is the recited one or more central nodes. *Id.* at 23 (citing Ex. 1003 ¶¶ 85–86). Petitioner argues that, in Hettstedt, the cell management unit (CMU) is a central node between the base station (Bs) and the remote radio heads (RHs). *Id.* Petitioner provides the following annotated version of Figure 5 of Hettstedt:

[14] For this reason, we do not need to determine whether the preamble of claim 1 is limiting.

Figure 5 central node between Bs and RHs



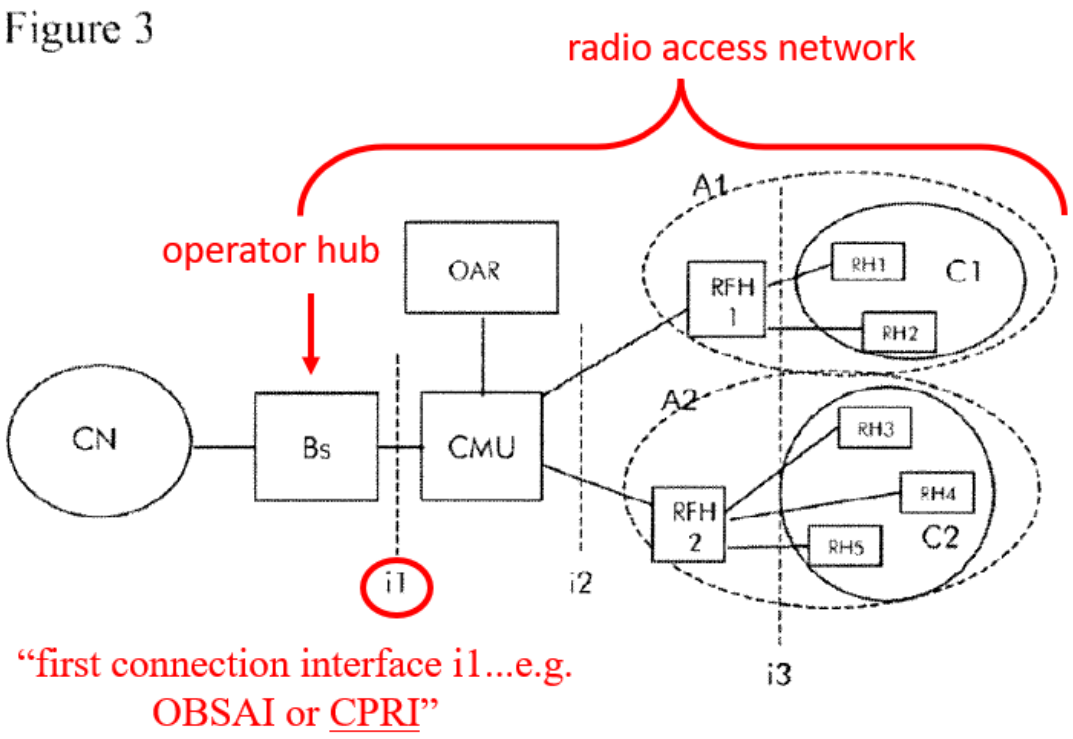
Pet. 23. Figure 5 above "shows an example of carrier distribution according to the wireless cellular indoor communications method of the invention." Ex. 1005 ¶ 37. In Figure 5, the CMU is between the Bs and the RHs. *Id.* at Fig. 5. The annotated figure above labels the CMU as the central node between Bs and RHs. Pet. 23.

Petitioner argues that Hettstedt's central management unit performs centralized functions, such as packaging, addressing, and frequency allocation. Pet. 23 (citing Ex. 1005 ¶¶ 28, 43–48). Petitioner further asserts that Hettstedt's CMU receives four carriers from each of the eight base stations. *Id.* at 24 (citing Ex. 1003 ¶¶ 88–90). Petitioner argues that these carriers are the recited radio resources. *Id.* According to Petitioner, these carriers are resources used by Hettstedt's radio heads. *Id.* (citing Ex. 1005 ¶ 50; Ex. 1003 ¶¶ 89, 93; Ex. 1017, 26). Petitioner further argues that the radio heads transmit the carriers to end user mobile devices. *Id.*

Petitioner asserts that Hettstedt's base station is an operator hub because it provides services from operators. Pet. 24 (citing Ex. 1005 ¶ 54; Ex. 1003 ¶¶ 86–87). Petitioner further argues that Hettstedt's base station

enables wireless communication by communicating with the core network and modulating the desired communication messages onto carriers. *Id.* at 26 (citing Ex. 1005 ¶¶ 8, 40–41; Ex. 1003 ¶ 95). Further, Petitioner asserts that Hettstedt's base station provides the modulated carriers to the CMU and radio heads, which comprise a radio access network. *Id.* (citing Ex. 1005, Figs. 3–6; Ex. 1003 ¶ 96). Petitioner argues that the radio heads provide the radio (RF) link for the end user devices to access the larger network. *Id.* (citing Ex. 1005 ¶¶ 41, 50).

Further, Petitioner asserts that Hettstedt teaches that its base station can use the CPRI protocol to provide carriers over the i1 interface to the other components of the RAN. Pet. 26 (citing Ex. 1005 ¶ 40; Ex. 1003 ¶ 97). Petitioner provides the following annotated version of Figure 3 of Hettstedt:



Id. Figure 3 above shows a wireless cellular indoor communications system, with a separated cell configuration. Ex. 1005 ¶ 35. In the above annotated

version of the figure, Petitioner identifies the Bs (base station) as the operator hub and identifies a radio access network. Pet. 26.

Patent Owner disputes that Hettstedt's carriers are the recited radio resources because the carriers are sent with packaged data or are combined with payload data. Prelim. Resp. 22. Patent Owner asserts that the definition of radio resources excludes such data and thus carriers carrying such data are not radio resources. *Id.* Patent Owner argues that the Decision, Denying Institution of *Inter Partes* Review in the IPR2020-01466 ("'1466 IPR," "'1466 DI," the latter of which is Exhibit 2004 and '1466 IPR Paper 16) recognized this deficiency in Hettstedt. *Id.* at 23. Patent Owner quotes the statement from the '1466 DI that reads as follows: "rather, Hettstedt specifically teaches that the CMU provides transparent operation of the radio heads without reconfiguration of any type to a remote radio head." *Id.* (quoting Ex. 2004, 14). Patent Owner further argues that the'1430 IPR DI recognized the same deficiency in another prior art reference, Oh (Ex. 2006). *Id.* Patent Owner asserts that the '1430 IPR DI found that Oh does not disclose "radio resources" because Oh discloses only underlying data included in the incoming communication traffic sent to the radio units. *Id.* (citing Ex. 2002, 17–19).

Patent Owner further argues that Hettstedt does not teach a central node that provides a plurality of radio resources to a radio access network using the CPRI protocol. Prelim. Resp. 29. Patent Owner asserts that Petitioner focuses on Hettstedt's alleged use of the CPRI interface between the base station and the CMU. *Id.* (citing Pet. 24–25; Ex. 1005 ¶ 40). Patent Owner argues, however, that an ordinarily skilled artisan would understand that claim 1 requires the use of the CPRI interface between the central node

(which Petitioner maps to the CMU) and the wireless access points (which Petitioner maps to the radio heads). *Id.* (citing Ex. 2001 ¶¶ 50–52).

ii. Analysis

After reviewing the current record, we determine that Petitioner has sufficiently shown that Hettstedt teaches limitation 1.2. Regarding the disputed issues, Hettstedt's carriers are radio resources because they are RF carriers. Ex. 1003 ¶¶ 88–93; Prelim. Resp. 22 ("Hettstedt . . . involve[s] sending underlying payload data packaged or combined with RF carrier channels"); Ex. 1005 ¶ 50 ("transmit four carriers over the full RF bandwidth of each service"). Patent Owner's argument that these RF carriers are not radio resources because these carriers are sent with or combined with data is premised on construing "radio resources" as excluding RF carriers that carry data—a construction that we do not adopt in this Decision. *See* Section II.B.1.b above.

Further, the '1466 DI does not support Patent Owner's counterarguments. That decision does not address whether Hettstedt's carriers are radio resources. Ex. 2004. The passage quoted by Patent Owner from that decision is actually a summary of Patent Owner's arguments, not a finding by the Board. Prelim. Resp. 23; Ex. 2004, 14. Further, that quoted passage does not actually address whether Hettstedt's carriers are radio resources (Ex. 2004, 14) nor does the analysis by the Board that follows that passage (*id.* at 15).

The '1430 DI also does not support Patent Owner's counterarguments. That decision does not address whether carriers with underlying data are radio resources. Instead, the decision holds that, on the record there, "there is

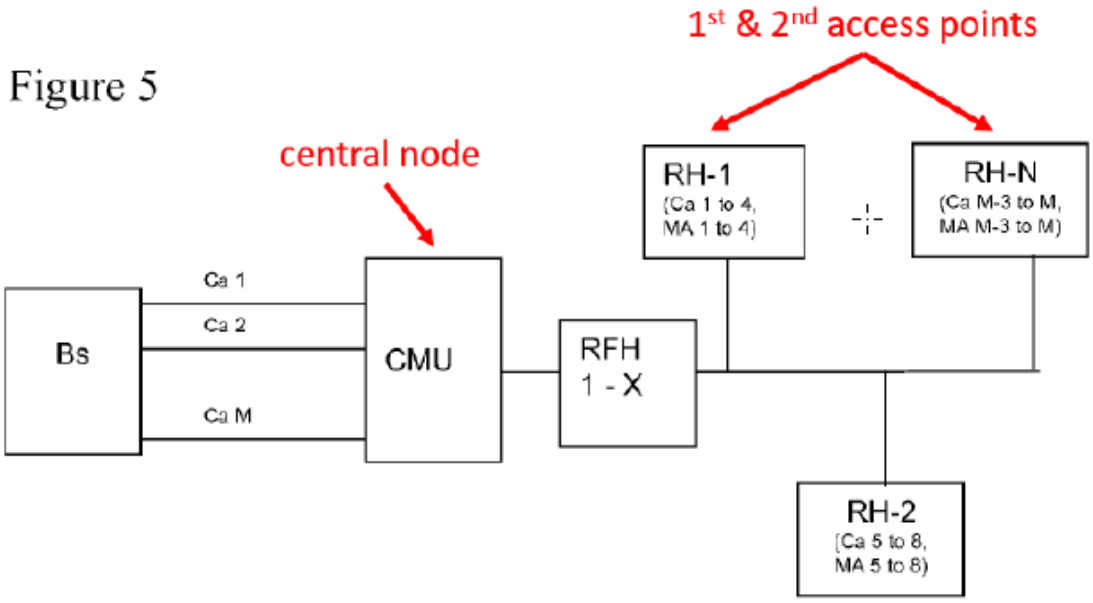
no indication in Oh" that the DAS antenna units in Oh transmit a digital representation of radio resources. Ex. 2002, 18.

Regarding the recited CPRI protocol, Petitioner has sufficiently shown that Hettstedt teaches an operator hub that provides the plurality of radio resources to a radio access network using the CPRI protocol. Pet. 25–26. Patent Owner's argument that Hettstedt does not teach the recited usage of the CPRI protocol because Hettstedt does not disclose one or more central nodes that provide the plurality of radio resources to a radio access network using the CPRI protocol is premised on a proposed claim construction by Patent Owner that the current record does not support and that we do not adopt for this Decision. *See* Section III.B.2 above.

We determine that Petitioner has sufficiently shown that Hettstedt teaches limitation 1.2.

> c. *[1.3] a plurality of wireless access points that is coupled to the one or more central nodes and distributes one or more wireless signals to one or more wireless subscribers, the plurality of wireless access points including at least a first access point and a second access point*

Petitioner argues that Hettstedt teaches limitation 1.3. Pet. 27. Petitioner argues that Hettstedt discloses a plurality of RHs coupled to the CMU. To illustrate this, Petitioner provides the following annotated version of Figure 5 of Hettstedt:

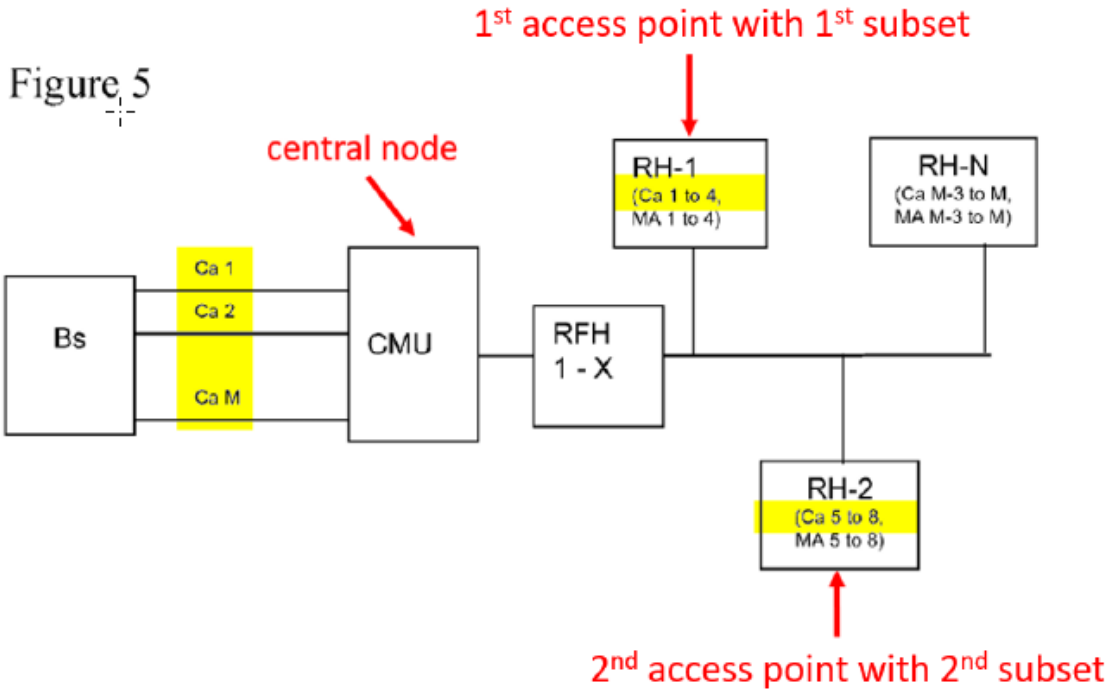


Id. at 27. In annotated Figure 5 above, Petitioner maps the recited central node to the CMU and maps the first and second access points to RH-1 and RH-N. Petitioner argues that Hettstedt's RHs are wireless access points. *Id.* (citing Ex. 1003 ¶¶ 100–101, Ex. 1005 ¶¶ 50, 53). Petitioner further argues that Hettstedt's RHs communicate wireless signals (radio signals) to wireless subscribers (mobile stations). *Id.* (citing Ex. 1005 ¶¶ 40–41, 50; Ex. 1003 ¶ 102). Patent Owner provides no counterarguments for limitation 1.3. *See generally* Prelim. Resp. After reviewing the present record, we determine that Petitioner has made a sufficient showing for limitation 1.3.

> *d. [1.4] wherein one or more central nodes assigns a first subset of the number of the plurality of radio resources to the first access point and a second subset of the number of the plurality of radio resources to the second access point, the first subset including more radio resources than the second subset*

Petitioner argues that Hettstedt teaches limitation 1.4. Pet. 28. Petitioner argues that Hettstedt discloses that its CMU (a central node) assigns subsets of carriers (radio resources) to the RHs (access points). *Id.*

(citing Ex. 1003 ¶¶ 104–106). Further, Petitioner asserts that the CMU comprises the functionality for mapping of the "carriers" to individual radio heads. *Id.* (citing Ex. 1005 ¶¶ 43, 45). Petitioner asserts that the CMU performs the frequency allocation of the remote radio heads. *Id.* (citing Ex. 1005 ¶ 28). Petitioner provides the following annotated version of Figure 5 of Hettstedt:



Id. at 29. The above annotated Figure 5 illustrates that the CMU assigns carriers 1–4 (first subset) to RH-1 (first access point) and carriers 5–8 (second subset) to RH-2 (second access point). *Id.*

Petitioner argues that Hettstedt discloses that the set of carriers at one RH can include more carriers than another RH. Pet. 29 (citing Ex. 1003 ¶¶ 107–112). Petitioner further argues that Hettstedt discloses adaptive cell reconfiguration. *Id.* (citing Ex. 1005 ¶ 44). Petitioner asserts that Hettstedt's CMU comprises means for (1) "de-activation" of un-used carriers, (2) "shifting" these carriers "from radio where these carriers are not used for

radio heads with high load on their active carriers," and (3) "activation of the shifted carriers" at radio heads of "high loading." *Id.* (citing Ex. 1005 ¶¶ 29, 44). According to Petitioner, the actions of de-activating, shifting, and activating carriers changes the number of carriers in the subsets such that some RHs will have more carriers than others. *Id.* (citing Ex. 1003 ¶¶ 108–112).

Patent Owner provides no counterarguments for limitation 1.4, other than its counterargument regarding "radio resources," discussed above for limitation 1.2. *See generally* Prelim. Resp. After reviewing the current record, we determine that Petitioner has made a sufficient showing for limitation 1.4.

> *e. [1.5] wherein, in response to a change in need of a number of wireless subscribers coupled to the second access point and which of the second subset is loaded beyond a threshold, the one or more central nodes assign additional radio resources of the plurality of radio resources to the second access point.*

i. Parties' Arguments

Petitioner argues that the combination of Hettstedt and Wellington teaches limitation 1.5. Pet. 30. Petitioner asserts that Hettstedt teaches that its CMU responds to a change in need of a number of wireless subscribers. *Id.* at 31 (citing Ex. 1003 ¶¶ 114–117). According to Petitioner, Hettstedt teaches that its CMU performs load balancing by shifting carriers from RHs inside areas of low traffic load to RHs inside areas of high traffic load. *Id.* (citing Ex. 1005 ¶¶ 29, 44). Further, Petitioner asserts that traffic load at the RH is one measure of the need of the wireless subscribers at the RH. *Id.* (citing Ex. 1003 ¶ 115). Petitioner argues that Hettstedt teaches to measure

the load at each carrier of each remote radio head, which would include at a second access point. *Id.* (citing Ex. 1005 ¶ 44).

Petitioner argues that Hettstedt discloses that its CMU "assigns additional radio resources of the plurality of radio resources to the second access point" in response to the change in need. Pet. 32 (emphasis omitted) (citing Ex. 1003 ¶¶ 118–121). According to Petitioner, Hettstedt's CMU shifts carriers (radio resources) to the radio heads with high load and activates those carriers at those radio heads. *Id.* (citing Ex. 1005 ¶¶ 29, 43–44). Petitioner asserts that the actions of shifting carriers to a radio head and activating those carriers is an example of assigning additional radio resources to that radio head. *Id.* (citing Ex. 1003 ¶ 119). Petitioner argues that the radio heads with high loads can be considered the recited "second access point." *Id.* According to Petitioner, the shifted carriers are "additional" radio resources for the high load radio head because those radio heads did not formerly have those carriers; rather, the carriers had to be shifted and activated at those radio heads. *Id.* (citing Ex. 1005, Fig. 5; Ex. 1003 ¶¶ 119–121).

Petitioner argues that Hettstedt discloses "which of the second subset is loaded beyond a threshold." Pet. 32. Petitioner asserts that Hettstedt discloses loading remote radio heads over a predetermined value. *Id.* (citing Ex. 1005, claim 3). Petitioner further argues that Wellington discloses allocating additional carriers when a subset of carriers is loaded beyond a threshold. *Id.* (citing Ex. 1003 ¶¶ 125–127). Petitioner asserts that Figure 2 of Wellington illustrates such an allocation, providing the following annotated version of that figure:

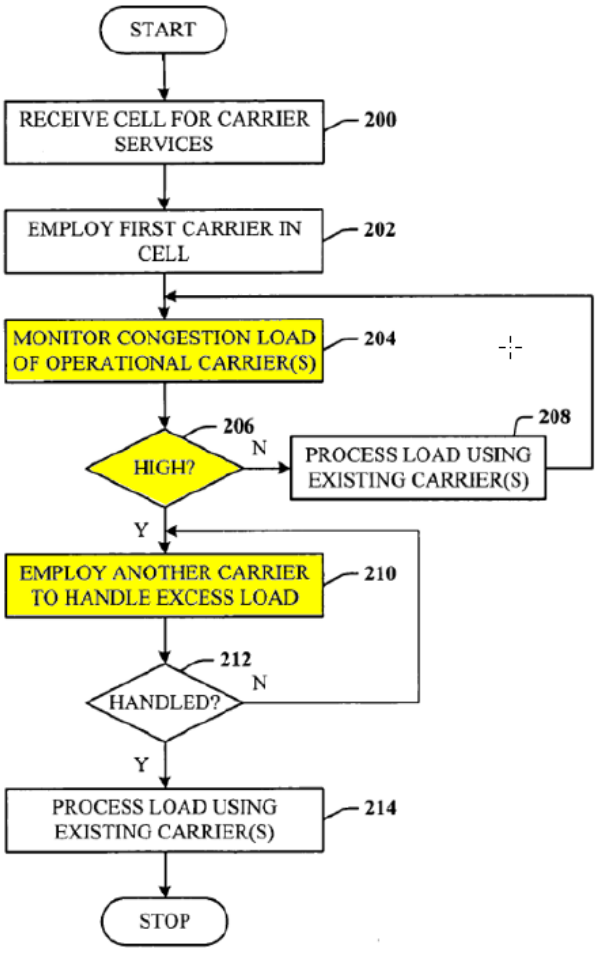


FIG. 2

Pet. 34. Figure 2 above illustrates a methodology of managing cell congestion by adding a carrier. Ex. 1007, 2:26–27. The annotated version of the figure above highlights steps 204, 206, and 210. Pet. 34. Petitioner argues that at step 204, Wellington's system monitors the congestion load of the current operational carrier(s), which Petitioner argues is a subset. *Id.* (citing Ex. 1007, 5:9–10). Further, Petitioner asserts that, at step 206, the system determines if the congestion load is "high," which triggers the allocation of "another carrier" in step 210. *Id.* (citing Ex. 1007, 5:10–17). Petitioner argues that Step 206 is an example of using a threshold. *Id.* at 35.

Petitioner asserts that Wellington provides further examples of using a threshold. *Id.* (citing Ex. 1007, 1:61–63, 5:56–67, claim 8 [16:15–23]; Ex. 1003 ¶¶ 126–127; Ex. 1037).

Petitioner asserts that an ordinarily skilled artisan would have been motivated to apply Wellington's teachings to Hettstedt's system to obviate the need for a human user to perform the load balancing (i.e., improve the system by making it automatic). Pet. 35–36 (citing Ex. 1003 ¶ 130). According to Petitioner, a threshold-based trigger avoids the need for the system to wait for user inputs. *Id.* at 36 (citing Ex. 1003 ¶ 130). Petitioner asserts that an ordinarily skilled artisan would naturally use a threshold for the trigger as taught by Wellington because a threshold is readily programmable and machine executable. *Id.* (citing Ex. 1003 ¶ 130). Additionally, Petitioner contends that an ordinarily skilled artisan would have been motivated to implement Wellington's teaching to improve the adaptability of Hettstedt's system. *Id.* (citing Ex. 1003 ¶ 130). According to Petitioner, a benefit of a threshold-based trigger is that it allows a system to fine-tune the load balancing by adjusting the threshold. *Id.* (citing Ex. 1003 ¶ 130). Petitioner asserts that there is no need to reprogram significant software when using a threshold-based trigger. *Id.* (citing Ex. 1003 ¶ 130).

Petitioner argues that Hettstedt's and Wellington's disclosures support their combination. Pet. 36. First, Petitioner asserts that Hettstedt's goal is "efficient" load balancing. *Id.* (citing Ex. 1005 ¶¶ 11, 21, 44). According to Petitioner, Wellington improves this goal by eliminating the inefficiency of waiting for a user's input. *Id.* Petitioner argues that Hettstedt contemplates scenarios where waiting for a user input for load balancing is not realistic, such as with sudden hot-spots that need dynamic distribution. *Id.* (citing

Ex. 1005 ¶ 29; Ex. 1003 ¶ 131). Petitioner asserts that Wellington's method solves this problem. *Id.* Petitioner quotes Wellington's disclosure that "[t]hus, carrier deployment and removal can occur quickly to handle dynamically changing characteristics in cell congestion." *Id.* (emphasis omitted) (quoting Ex. 1007, 4:50–52).

Further, Petitioner asserts that Hettstedt contemplates that its system could be made "automatically adaptive." Pet. 36 (citing Ex. 1005 ¶ 28). According to Petitioner, Wellington discloses the triggers to make Hettstedt's system automatic. *Id.* (citing Ex. 1007, 5:56–6:18, 8:48–9:7). Petitioner argues that, thus, Wellington's teachings naturally improve Hettstedt's system. *Id.*

Petitioner asserts that, in sum, the combination of Hettstedt and Wellington (a) improves Hettstedt's stated goal (efficient load balancing), (b) furthers Hettstedt's existing suggestion to make the system automatic and adaptive, and (c) does so in a way that is easy to implement because a threshold-based trigger is readily programmable and machine executable. Pet. 36–37.

Petitioner argues that an ordinarily skilled artisan would have had a reasonable expectation of success in combining Hettstedt's and Wellington's disclosures. Pet. 37. Petitioner asserts that Hettstedt already discloses how to determine a load. *Id.* (citing Ex. 1005 ¶ 44). Further, Petitioner argues the step of comparing the load to a threshold merely requires the addition of a simple "if/then" statement (e.g., IF load > threshold, THEN) to Hettstedt's software. *Id.* (citing Ex. 1003 ¶ 132). According to Petitioner, no special components would be required for Hettstedt's system, just a standard processor. *Id.* (citing Ex. 1003 ¶ 132; Ex. 1006 ¶¶ 40, 48). Petitioner further

argues that determining whether the load is beyond a "threshold" is a simple mathematical-type operation. *Id.* (citing Ex. 1003 ¶ 132). Petitioner asserts that, thus, the combination of Hettstedt and Wellington yields predictable results. *Id.*

Patent Owner disputes that an ordinarily skilled artisan would have been motivated to combine Hettstedt and Wellington. Prelim. Resp. 29–30. Patent Owner argues that Hettstedt does not disclose the allocation of bare radio resources (i.e., excluding payload data). *Id.* According to Patent Owner, Wellington, on the other hand, is directed to radio layer access management and discloses "additional carriers (e.g., a 2nd 5MHz UMTS carrier) can be added when capacity is needed on a site-by-site basis without clearing an additional 5MHz spectrum." *Id.* at 30 (citing Ex. 1007, code (57)).

Patent Owner argues that an ordinarily skilled artisan would not have looked to modify Hettstedt's need for balancing traffic load (i.e., packaged payload data packets or data modulated onto carriers) with Wellington's approach to adding additional cellular radio capacity or RF carriers. Prelim. Resp. 30. According to Patent Owner, an ordinarily skilled artisan would have recognized that such a combination would be incompatible. *Id.* (citing Ex. 2001 ¶¶ 77–78). Patent Owner asserts that Hettstedt's system employs pass-through radio heads that do not need or would not know what to do with bare radio resources since the radio heads are mere conduits that relay whatever traffic (i.e., packaged payload data packets or data modulated onto carriers) they receive from the CMU. *Id.* (citing Ex. 2001 ¶¶ 62–63, 77). Further, Patent Owner asserts that Hettstedt does not disclose allocating radio resources or RF carriers (exclusive of payload data) since doing so would not

be compatible with its "transparent" or pass-through radio heads. *Id.* (citing Ex. 2001 ¶¶ 77–78). Further, according to Patent Owner, for Hettstedt, an ordinarily skilled artisan would not have looked to solutions, such as Wellington's, that involve allocating additional RF carriers to cells. *Id.* at 31. Patent Owner asserts that such a combination would not be compatible with the pass-through radio heads in Hettstedt and would not have resulted in an inoperable solution. *Id.* (citing Ex. 2001 ¶¶ 77–78).

ii. Analysis

After reviewing the present record, we determine that Petitioner has sufficiently shown that the combination of Hettstedt and Wellington teaches limitation 1.2, that an ordinarily skilled artisan would have been motivated to combine Hettstedt's and Wellington's teachings, and that an ordinarily skilled artisan would have had a reasonable expectation of success in combining those teachings. Regarding the disputed issues of a motivation to combine and a reasonable expectation of success, based on the current preliminary record, we agree with Petitioner that an ordinarily skilled artisan would have been motivated to apply Wellington's teachings to Hettstedt's system to obviate the need for a human user to perform the load balancing (i.e., improve the system by making it automatic). Ex. 1003 ¶ 130. A threshold-based trigger avoids the need for the system to wait for user inputs. *Id.* Further, a threshold trigger is readily programmable and machine-executable. *Id.* Additionally, an ordinarily skilled artisan would have been motivated to apply Wellington's teaching to Hettstedt's system to improve the adaptability of that system. *Id.* A benefit of a threshold-based trigger is that system can fine-tune the load balancing by adjusting the threshold without the need to preprogram significant software. *Id.*

We agree with Petitioner that Hettstedt's and Wellington's disclosures support their combination. Hettstedt discloses a goal of efficient load balancing. Ex. 1005 ¶¶ 11, 21, 44; Ex. 1003 ¶ 131. Wellington helps achieve this goal by eliminating the inefficiency of waiting for a user's input. Ex. 1007, 4:50–52; Ex. 1003 ¶ 131. Hettstedt contemplates scenarios where waiting for a user input for load balancing is not realistic such as sudden "hot-spots" that need "dynamic distribution." Ex. 1005 ¶ 29; Ex. 1003 ¶ 131. Wellington's addresses this issue, disclosing that "carrier deployment and removal can occur quickly to handle dynamically changing characteristics in cell congestion." Ex. 1007, 4:50–52; Ex. 1003 ¶ 131. Further, Hettstedt teaches that its system could be made "automatically adaptive." Ex. 1005 ¶ 28; Ex. 1003 ¶ 131.

An ordinarily skilled artisan would have had a reasonable expectation of success in combining Hettstedt and Wellington. Ex. 1003 ¶ 132. Hettstedt discloses how to determine a load. Ex. 1005 ¶ 44. The step of comparing the load to a threshold merely requires adding a simple "if/then" statement (e.g., IF load > threshold, THEN) to Hettstedt's software. Ex. 1003 ¶ 132. No special components are required, just a standard processor. *Id.*; Ex. 1006 ¶¶ 40, 48; Ex. 1003 ¶ 132. Further, determining whether the load is beyond a "threshold" is a simple mathematical-type operation. Ex. 1003 ¶ 132.

Patent Owner's arguments against combining Hettstedt and Wellington are directed towards a bodily incorporation of structures described in the references, rather than a combination of their teachings. *In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012) ("The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference."); *In re Keller*, 642 F.2d 413, 425

(CCPA 1981); *see also* Prelim. Resp. 29–31; Ex. 2001 ¶¶ 76–78. Although Hettstedt may be directed towards allocating radio resources that include underlying data and Wellington may teach allocation of bare radio resources, an ordinarily skilled artisan is a person or ordinary creativity, and we find, on this preliminary record, that an ordinarily skilled artisan would apply Wellington's teachings concerning radio resources to radio resources with underlying data as well as bare radio resources. *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 421 (2007) ("A person of ordinary skill is also a person of ordinary creativity, not an automaton."). Further, Petitioner's proposed combination of Hettstedt and Wellington does not involve adding bare radio resources to Hettstedt's radio heads. Pet. 32–37. Rather, it concerns the allocating the radio resources of Hettstedt based on Wellington's teachings. *Id.* Thus, Patent Owner's arguments that it would not be operable to add bare radio resources to Hettstedt's radio heads is not responsive to Petitioner's proposed combination.

In sum, we determine that Petitioner has sufficiently shown that the combination of Hettstedt and Wellington teaches limitation 1.5, that an ordinarily skilled artisan would have been motivated to combine Hettstedt and Wellington, and that an ordinarily skilled artisan would have had a reasonable expectation of success in making that combination.

i. Summary

In sum, Petitioner has demonstrated a reasonable likelihood of proving that claim 1 would have been obvious over Hettstedt and Wellington.[15]

[15] Neither party has argued that any secondary considerations or objective evidence of nonobviousness exist. Thus, we do not address secondary considerations or objective evidence of nonobviousness in this Decision.

4. Independent Claims 12 and 20

Independent claim 1 recites "[a] wireless system." Independent claim 12 recites "[a] method," and independent claim 20 recites "[o]ne or more non-transitory computer readable storage media storing instructions." The limitations of the bodies of these three claims are similar (Ex. 1001, 13:47–14:3, 14:44–14:60, 16:1–20), and Petitioner sets forth how Hettstedt's and Wellington's disclosures teach or suggest the preamble recitations and the additional limitations of claims 12 and 20. *See, e.g.*, Pet. 38–39. Further, Patent Owner presents the same arguments for claims 12 and 20 as for claim 1. Prelim. Resp. 29–31. Thus, we determine that Petitioner has demonstrated a reasonable likelihood of proving that claims 12 and 20 would have been obvious over Hettstedt and Wellington.

5. Dependent Claims 2–7, 9, 11, 13–17, and 19

Petitioner sets forth how Hettstedt teaches the additional limitations that dependent claims 2–7, 9, 11, 13–17, and 19 add to the independent claims from which they depend (i.e., claims 1, 12, or 20). Pet. 41–51. Patent Owner does not provide any counterarguments concerning these additional limitations. Prelim. Resp. 31. After reviewing the present record, we determine that Petitioner has demonstrated a reasonable likelihood of proving that claims 2–7, 9, 11, 13–17, and 19 would have been obvious over Hettstedt and Wellington.

B. Ground 2: Asserted Obviousness over Hettstedt

Petitioner asserts that claims 1–7, 9, 11–17, 19, and 20 would have been obvious over Hettstedt. Pet. 1. For this asserted ground, Petitioner relies on its showing for Ground 1. *Id.* at 51–53. In addition, Petitioner argues that Hettstedt by itself suggests limitation 1.5. *Id.* Petitioner

acknowledges that, during prosecution of the '232 patent, the Examiner allowed the current claims over Heinz-Dieter (EP 1924109, Ex. 1034), a European counterpart of Hettstedt. *Id.* Petitioner further acknowledges that application claims were amended to distinguish the Heinz-Dieter reference. *Id.* at 6–7 (citing Ex. 1002, 117–119). *Id.* In particular, limitation 1.5 in claim 1 and the counterpart limitations in claims 12 and 20 were amended to add the phrase "and which of the second subset is loaded beyond a threshold." Ex. 1002, 117–119. Petitioner argues, however, that the Examiner erred in allowing the current claims over Hettstedt. Pet. 51.

Petitioner argues that claim 3 of Hettstedt discloses the shifted carriers are activated at radio heads that "are loaded over a predetermined value." Pet. 51 (citing Ex. 1005, claim 3). Petitioner further argues that the ordinary meaning of "threshold" is a "value." *Id.* at 51–52 (citing Exs. 1036, 1037). Petitioner asserts that an ordinarily skilled artisan would have found it obvious to modify Hettstedt to load the second subset beyond a threshold because Hettstedt discloses (i) each of its radio heads has a subset, (ii) its CMU shifts and activates additional carriers to radio heads with "high load on their active carriers," (iii) its CMU identifies the load on "each carrier on each of the radio heads," and (iv) its CMU activates carriers at the radio heads that are loaded over a predetermined level. *Id.* at 52 (citing Ex. 1003 ¶¶ 203–205).

Petitioner argues that an ordinarily skilled artisan would have been motivated based on the above teachings of Hettstedt to identify which radio heads have a high load on their active carriers by determining whether the load on their active carriers is "loaded over" (i.e., "loaded beyond") the predetermined value (i.e., the "threshold"). Pet. 52 (emphases omitted)

(citing Ex. 1003 ¶ 203). Petitioner asserts that an ordinarily skilled artisan would have been motivated to have the CMU assign an additional radio resource (by shifting and activated a carrier) when the load on the subset at a radio head exceeds the predetermined value. *Id.* (citing Ex. 1003 ¶ 203). Petitioner argues that any high load subset constitutes an example of the recited second subset. *Id.* at 52–53 (citing Ex. 1003 ¶ 203). Further, Petitioner argues that an ordinarily skilled artisan would have been motivated to use Hettstedt's predetermined value as a threshold based on the ordinary meaning of threshold. *Id.* at 53.

Petitioner further asserts that an ordinarily skilled artisan would have been motivated to use Hettstedt's predetermined value as the recited threshold to realize Hettstedt's teaching to identify which radio heads have "high" load and enable the CMU to perform its cells management "automatically" (by simply comparing the load to the threshold). Pet. 53 (citing Ex. 1003 ¶ 204).

Petitioner argues that an ordinarily skilled artisan would have had a reasonable expectation of success in modifying Hettstedt to use its predetermined value as a threshold because Hettstedt already discloses the building blocks to do so, including a predetermined value and how to identify the load on the subsets (by activity detection). Pet. 53 (citing Ex. 1003 ¶ 205). Petitioner asserts that determining whether the load is over the predetermined value is a simple mathematical comparison. *Id.* (citing Ex. 1003 ¶ 205).

Patent Owner does not separately address Ground 2. Prelim. Resp. 21–31. Thus, Ground 2 does not introduce any disputed issues that were not raised for Ground 1. After reviewing the current record, we determine that

Petitioner has demonstrated a reasonable likelihood of proving that claims 1–20 would have been obvious over Hettstedt. For the disputed issues applicable to Grounds 1 and 2, see Section III.A above.[16]

C. Ground 3: Asserted Obviousness over Wu

Petitioner asserts that claims 1–7, 9, 11–17, 19, and 20 would have been obvious over Wu. Pet. 1.

1. Wu

Wu discloses a carrier channel distribution system that can route individual carrier channels to Remote Transceiver Units (RTUs). Ex. 1006 ¶ 11. The carrier channels can be routed according to a routing policy that can be reconfigured as desired. *Id.*

[16] We assume that, for Ground 2, Patent Owner intended to raise all of the disputed issues it raised for Ground 1, except those related to combining Hettstedt and Wellington.

Figure 2 of Wu is reproduced below:

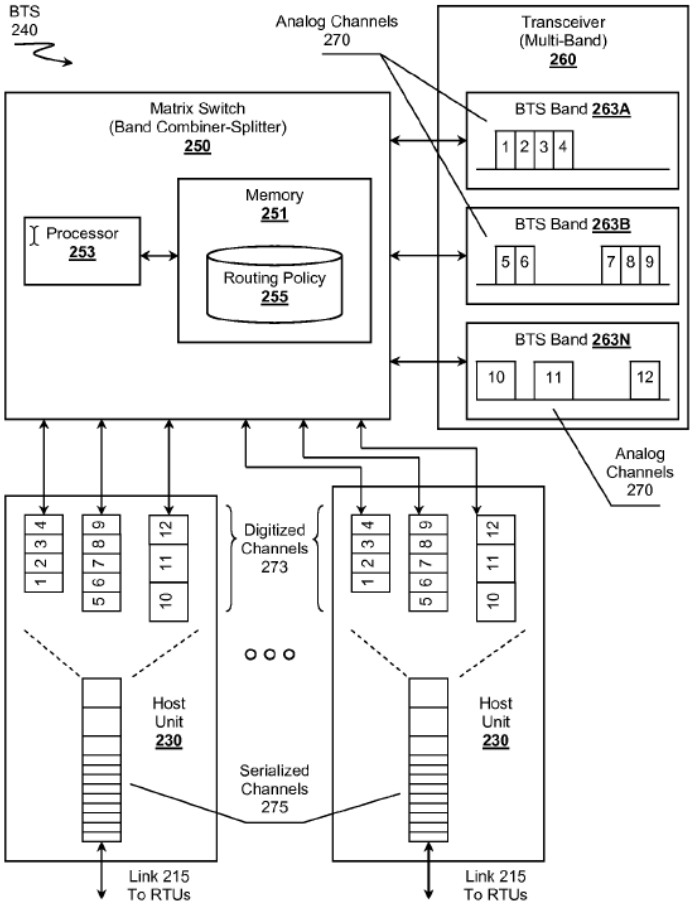


Figure 2

Ex. 1006, Fig. 2. Figure 2 above is a schematic of a base transceiver station (BTS) 240 having a matrix switch 250 and host units 230. *Id.* ¶ 15.

"Routing policy 255 can comprise[] one or more rules that govern behavior of switch 250 with respect to how analog channels 270 should be routed to host units 230 for further distribution to RTUs." Ex. 1006 ¶ 40. "Policy 255 is considered to include programmatic instructions stored on a computer readable memory 251 that can be executed within processor 253 that configures switch 250 to properly route the channels." *Id.* The rules of policy 255 can include one or more criterion representing a trigger for an

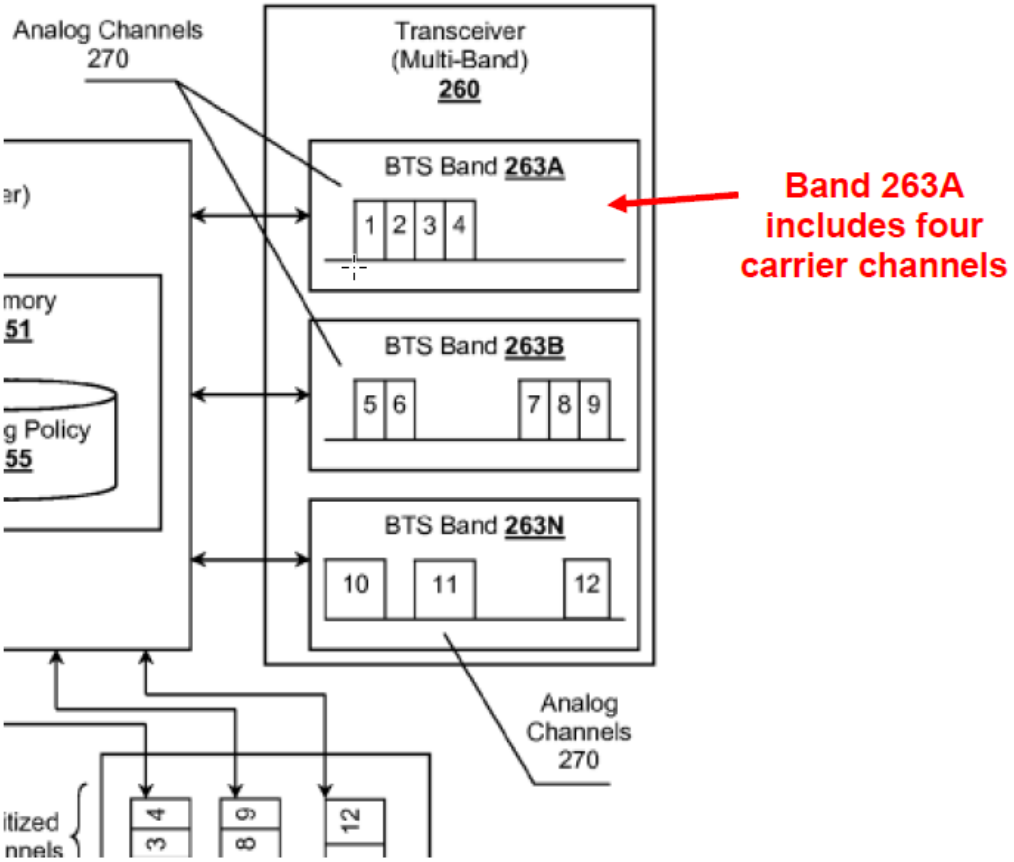
action that should be taken when the metrics satisfy the criteria of the rules. *Id.* When the criteria are met, matrix switch 250 can take appropriate routing action. *Id.* Metrics include observed metrics, for example a time (e.g., absolute, relative, date, etc.), a rate, a threshold, a quantity, a count, or other type of data that is measurable. *Id.* ¶ 42.

2. Disputed Issues

Petitioner sets forth how it contends Wu teaches or suggests every element of claims 1–7, 9, 11–17, 19, and 20. Pet. 54–81. Patent Owner disputes that Wu teaches or suggests (i) "radio resources," recited in claims 1, 3, 12, 15, and 20, and (ii) a central node, recited in claims 1, 3–5, 8, 11, and 18. Prelim. Resp. 31–40. We address the disputed issues for this ground.

a. Radio Resources

Petitioner argues that each band from Wu's multi-band transceiver 260 includes multiple carrier channels. Pet. 61. Petitioner argues that these carrier channels are RF carrier channels, which are radio resources. *Id.* Petitioner provides the following annotated version of a portion of Figure 2 of Wu:

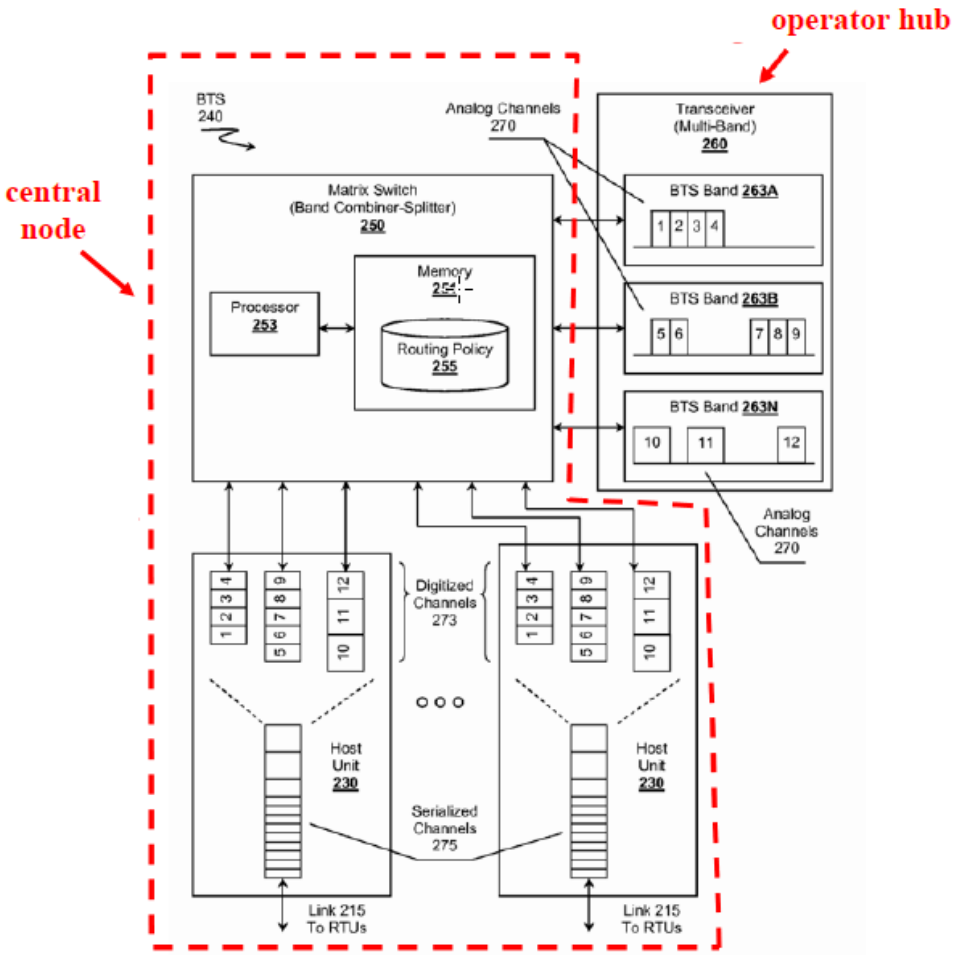


Id. The above annotated Figure 2 identifies carriers 1–4 in BTS Band 263A in Transceiver 260 as carrier channels. *Id.* Patent Owner argues that these carrier channels are not radio resources because they have data modulated on them. Prelim. Resp. 31–37.

We determine that Wu teaches radio resources. Band 263A in Wu includes four RF channels, each of which has an RF carrier. Ex. 1003 ¶ 225. For the reasons described in Section III.A.3.b.ii above for Ground 1, even if RF carriers have data modulated on them, they are still radio resources. Thus, we agree with Petitioner that Wu discloses "radio resources."

b. *Central Node*

Petitioner argues that the combination of matrix switch 250 and host units 230 in Wu is the recited central node. Pet. 58 (citing Ex. 1003 ¶ 223). Petitioner provides the following annotated version of Figure 2 of Wu:



Id. In annotated Figure 2 above, matrix switch 250 and host units 230 in Wu are identified as the central node. *Id.* Petitioner argues that the combination of switch 250 and units 230 manages communications to and from the distributed RTUs and transceiver 260 (the operator hub). *Id.* at 59. Petitioner

further argues that Figure 2 shows a matrix switch 250 is centrally located in the system between units 230 and the BTS transceiver 260. *Id.*

Patent Owner argues that the combination of matrix switch 250 and host units 230 is not the recited central node because the recited central node must be capable of assigning specific radio resources to specific wireless access points. Prelim. Resp. 38. Patent Owner further argues that Wu does not discloses radio resources, so Wu cannot teach assigning specific radio resources to specific wireless access points. *Id.* Patent Owner also argues that Wu does not disclose the ability to send specific downlink signals to specific remote units or assign specific radio resources to specific RTUs. *Id.* at 38–40.

On this preliminary record, we agree with Petitioner that the recited central node reads on the combination of matrix switch 250 and units 230 in Wu. As further set forth above, we find that Wu teaches radio resources. In addition, although Patent Owner argues that the recited central node in the challenged claims must be capable of assigning specific radio resources to specific wireless access points, Patent Owner does not support that argument, other than with conclusory expert testimony. Prelim. Resp. 38–40; Ex. 2001 ¶ 80. Limitation 1.4 recites providing some radio resources to a second access point, which were not provided to a first access point:

> wherein one or more central nodes assigns a first subset of the number of the plurality of radio resources to the first access point and a second subset of the number of the plurality of radio resources to the second access point, *the first subset including more radio resources than the second subset*.

Id. at 13:59–64 (emphasis added). Limitation 12.4[17] in claim 12 and limitation 20.4[18] in claim 20 have similar recitations.[19] *Id.* at 14:48–53, 16:8–12. Petitioner, however, has sufficiently set forth how the combination of Wu's switch 250 and host units 230 satisfies limitations 1.4, 12.4, and 20.4. Pet. 68–69. Patent Owner's arguments do not undermine Petitioner's showing, for limitations 1.4, 12.4, and 20.4, that the combination of Wu's switch 250 and host units 230 assigns different sets of RF carriers to two access points. Prelim. Resp. 37–40. Thus, we agree with Petitioner that Wu discloses the recited central node.

3. Summary

After reviewing the current record, we determine that Petitioner has demonstrated a reasonable likelihood of proving that claims 1–7, 9, 11–17, 19, and 20 would have been obvious over Wu.

D. Ground 4: Asserted Obviousness over Wu and Sabat

Petitioner asserts that claims 1–7, 9, 11–17, 19, and 20 would have been obvious over Wu and Sabat. Pet. 1. The disputed issues for this ground are the same as for Ground 3. *Id.* at 54–81; Prelim. Resp. 31–40. After

[17] Reciting "assigning a first subset of the plurality of radio resources to a first access point included in a plurality of wireless access points and a second subset of the plurality of radio resources to a second access point included in the plurality of wireless access points, the first subset including more radio resources than the second subset." Ex. 1001, 14:48–53.
[18] Reciting "assigning a first subset of the plurality of radio resources to a first access point included in a plurality of wireless access points and a second subset of the plurality of radio resources to a second access point included in the plurality of wireless access points, the first subset including more radio resources than the second subset." Ex. 1001, 20:8–12.
[19] What we refer to as limitations 12.4 and 20.4 are designated limitations 12E and 20E, respectively, in the Petition. Pet. 68.

reviewing the present record, we determine that Petitioner has demonstrated a reasonable likelihood of proving that claims 1–7, 9, 11–17, 19, and 20 would have been obvious over Wu and Sabat.

E. Ground 5: Asserted Obviousness over Grounds 1–4 and Fischer

Petitioner asserts that claims 8 and 18 would have been obvious over the combination of Fischer with the combinations of any of Grounds 1–4. Pet. 1. The disputed issues for this ground are the same as for Grounds 1–4. Prelim. Resp. 40–41. After reviewing the current record, we determine that Petitioner has demonstrated a reasonable likelihood of proving that claims 8 and 18 would have been obvious over each combination set forth in Grounds 1–4 with Fischer.

F. Ground 6: Asserted Obviousness over Grounds 1–4 and Conyers

Petitioner asserts that claim 10 would have been obvious over the combination of Conyers with the combination of any of Grounds 1–4. Pet. 1. The disputed issues for this ground are the same as for Grounds 1–4. Prelim. Resp. 40–41. After reviewing the present record, we determine that Petitioner has demonstrated a reasonable likelihood of proving that claim 10 would have been obvious over each combination in Grounds 1–4 with Conyers.

G. Ground 7: Asserted Obviousness over Wu, Sabat, and Hettstedt

Petitioner asserts that claim 11 would have been obvious over the combination of Wu, Sabat, and Hettstedt. Pet. 1. The disputed issues for this ground are the same as for Ground 4. *Id.* at 87–89; Prelim. Resp. 40–41. After reviewing the current record, we determine that Petitioner has demonstrated a reasonable likelihood of proving that claim 11 would have been obvious over Wu, Sabat, and Hettstedt.

IV. *FINTIV* ANALYSIS

Fintiv set forth six factors to consider when determining whether to deny institution based on the advanced stage of a parallel district court action:

> 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, 5–6.

The Director has issued additional guidance on the application of *Fintiv*. *See* Katherine K. Vidal, *Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation* (June 21, 2022)[20] ("*Fintiv* Memo"). Additionally, we are guided by the precedential decision of the Director in *OpenSky Indus., LLC v. VLSI Tech. LLC*, IPR2021-01064, Paper 102, 49–50 (Oct. 4, 2022) (precedential) ("*OpenSky*") and the Remand Decision. The *Fintiv* Memo indicates that if we "determine[] that the information presented at the institution stage presents a compelling unpatentability challenge, that determination alone

[20] Available at https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf

demonstrates that the PTAB should not discretionarily deny institution under *Fintiv*." *Fintiv* Memo 4–5. *OpenSky* makes clear that the compelling merits standard is a higher standard than the institution standard, requiring that it be "highly likely that the petitioner would prevail with respect to at least one challenged claim." *OpenSky*, 49. We are further instructed that we are to consider compelling merits only after a determination that the first five *Fintiv* Factors favor discretionary denial. Remand Dec. 4–5.

With this in mind, we first determine whether the first five *Fintiv* Factors favor a discretionary denial.

A. Fintiv Factors 1–5 Support Discretionary Denial

As set forth below, *Fintiv* Factors 1–5 favor discretionary denial.

1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;

Both parties argue that *Fintiv* Factor 1 is neutral or "at best neutral." Prelim. Reply 1; Prelim. Resp. 43. We agree. Neither party has argued that any party in the Related Ligations moved to stay any of the Related Litigations or that district courts in those litigations considered entering a stay. Thus, *Fintiv* Factor 1 is neutral. *Apple v. Fintiv*, IPR2020-00019, Paper 15, 11–12 (informative) ("*Fintiv* II") ("Neither party has requested a stay of the District Court case pending in this proceeding. Thus, the District Court has not ruled on this issue . . . .This factor does not weigh for or against discretionary denial in this case.").

2. proximity of the court's trial date to the Board's projected statutory deadline for a final written decision;

We find that *Fintiv* Factor 2 somewhat favors discretionary denial.

a. Due Date for the Final Written Decision

For *Fintiv* Factor 2, first, we must determine which statutory due date to use for our *Fintiv* analysis. When our Original Institution Decision mailed, the statutory due date for the Final Written Decision was February 7, 2024. Orig. Inst. Dec. (mailed February 7, 2023); 35 U.S.C. § 316(a)(11); 37 C.F.R. § 42.100(c). The current statutory due date for the Final Written Decision, however, is in March 2024, as this Decision is mailing in March 2023. 35 U.S.C. § 316(a)(11); 37 C.F.R. § 42.100(c).

For our *Fintiv* analysis, we will use the statutory deadline that existed when we issued our Original Institution Decision (i.e., February 7, 2024). First, the Remand Decision instructs us to revisit our *Fintiv* analysis, and we used February 7, 2024 as the statutory deadline when we did our original *Fintiv* analysis. Remand Dec. 6; Orig. Inst. Dec. 1. Second, the Remand Decision did not authorize any additional briefing, and the only statutory due date addressed by the parties in their *Fintiv* briefing was in February 2024. Remand Dec. 6; Prelim. Resp. 44 ("The anticipated date of any Final Written Decision in this matter would be approximately mid-February 2024."); Prelim. Reply 1 ("Feb. 2024 FWD date."). Third, it would be anomalous to discretionarily deny institution solely based on a statutory due date that did not exist at the time of the original decision, but was subsequently created due to review and remand.[21]

[21] We would reach the same conclusion regarding discretionary denial under *Fintiv* even if we used a March 2024 statutory due date. As set forth in this section, we find that *Fintiv* Factors 1–5 favor discretionary denial with a February 2024 statutory due date. A March 2024 statutory due date would, if anything, cause *Fintiv* Factors 1–5 to weigh more heavily in favor of discretionary denial. As set forth in Section IV.B below, however, we

b. Trial Dates

i. Parties' Arguments

Patent Owner argues that the trials in the ATT Eastern District Litigation and in the Western District Litigation will occur before February 2024. In particular, Patent Owner argues that the ATT Eastern District Litigation is expected to occur in mid-January 2024 based on median time from filing to trial in the Eastern District of Texas. Prelim. Resp. 44. Further, Patent Owner argues that trial in the Western District Litigation is scheduled to start December 8, 2023. *Id.*

Petitioner responds, arguing that the Final Written Decision is projected to occur before the trial in "only a minority of cases."[22] Prelim. Reply 3. In addition, Petitioner argues that the trial date of December 8, 2023 for the Western District Litigation is just a default date. *Id.* at 1. Petitioner also asserts that Patent Owner agreed to sever the both the ATT Eastern District Litigation and the Western District Litigation. *Id.* at 1–2. Further, Petitioner argues that the Markman hearing in the Western District Litigation was delayed by a month. *Id.* at 5. In addition, Petitioner asserts that the expected trial in the T-Mobile Litigation will occur well after February 2024. *Id.* at 1. Petitioner also argues Patent Owner agreed to transfer part of the Western District Litigation involving Petitioner to the Eastern District of Texas and the trial date for that portion of the case is

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determine that Petitioner presents a compelling patentability challenge. Thus, we would not deny under *Fintiv* even with a March 2024 statutory due date.

[22] Based on Petitioner's complete *Fintiv* discussion, most likely, Petitioner meant to argue that the FWD is projected to occur *after* the trial in only a minority of cases.

unknown. *Id.* at 2. Petitioner asserts that the "trial dates in all cases (not just one) should be considered and the FWD is projected to occur before the trial in only a minority of cases." *Id.* at 3 (*see supra* n.22).

Patent Owner argues that the one-month postponement of the Markman hearing in the Western District Litigation may not affect the trial date in that proceeding. Prelim. Sur-reply 5. Patent Owner further argues that even if the postponement were to delay the trial in the Western District Litigation by a month, the Western District trial would still occur before the Final Written Decision is due in this case. *Id.* Patent Owner also argues that the severance of the Western District and ATT Eastern District Litigations should not affect the *Fintiv* analysis because the original trial dates will remain the same for the first of each group of the severed cases and the other severed cases in each group will follow shortly thereafter. *Id.*

ii. Expected Trial Dates

For the reasons discussed below, we determine that at least the first trial in the ATT Eastern District Litigation is expected to occur before February 2024 and that the trial in the T-Mobile Litigation is expected to occur well after February 2024.

As indicated above, Patent Owner argues that, based on the median time from filing to trial in Eastern District of Texas, the first trial in the ATT Eastern District Litigation is expected to occur in January 2024. Prelim. Resp. 44. Petitioner does not dispute that, based on the median time to trial in the Eastern District of Texas, the first trial in the ATT Eastern District Litigation is expected to occur in January 2024. Prelim. Reply 1–3. Petitioner, in fact, concedes that at least one trial in the Related Litigations is expected to occur before February 2024: "the FWD is projected to occur

before the trial in only a minority of cases."[23] *Id.* at 3. Further, Petitioner expressly disputes Patent Owner's evidence of a pre-February 2024 trial in the Western District Litigation and argues that the trial in the T-Mobile Litigation will occur well after February 2024. *Id.* at 1–2.

As mentioned, the Related Litigations have a number of other expected trials. The parties have not specifically identified which of those other trials specifically are expected to take place before February 2024, other than the first trial in the Western District Litigation, which Patent Owner contends, but Petitioner disputes, is scheduled for trial in December 2023 and the Eastern District T-Mobile Litigation, which Petitioner contends, and Patent Owner does not dispute, is expected to occur in November 2024. Prelim. Resp. 44; Prelim. Reply 1–3; Prelim. Sur-reply 5. As set forth in Section IV.A.2.b.iii below, however, we do not need determine the expected dates for these other trials (and based on the present record provided by the parties would have very little ability to do so). As further set forth in Section IV.A.2.b.iii below, we also do not need to determine the expected date for the first trial in the Western District Litigation.

Thus, we determine that the expected trial date for first trial in the Eastern District ATT Litigation is in January 2024 and the expected trial date for the Eastern District T-Mobile Litigation is in November 2024.

[23] As discussed above, based on Petitioner's complete *Fintiv* discussion, most likely, Petitioner meant to argue that the FWD is projected to occur *after* the trial in only a minority of cases. Either phrasing, however, concedes that at least one trial is expected to occur before February 2024.

iii. Fintiv Factor 2 Somewhat Favors Discretionary Denial

As mentioned, the first trial in the Eastern District ATT Litigation is expected to occur before February 2024, and the trial in the T-Mobile Litigation is expected to occur well after the FWD statutory due date. These facts somewhat favor discretionary denial.

By itself, the expected commencement date for the first trial in the ATT Eastern District Litigation somewhat favors discretionary denial. The expected date in that litigation is January 2024, the month prior to February 2024. *Fintiv* II found that a trial that is expected to occur shortly before (e.g., a couple of months) the statutory deadline "somewhat favors" discretionary denial. *Fintiv* II, 13.

As mentioned, the Related Litigations have other expected trials. Citing *HP Inc. et al. v. Neodron Ltd.*, IPR2020-00459, Paper 17 ("*HP*") (PTAB Sept. 14, 2020), Petitioner argues that the expectation that many of those other trials would occur after February 2024 renders *Fintiv* Factor 2 neutral. We read *HP* differently. *HP* involved related litigations in the Western District of Texas and the Northern District of California. *HP*, 36. Five entities constituted the petitioner in *HP*, and two of those entities (i.e., Motorola and Lenovo) were parties to the action in the Northern District of California, but not the actions in the Western District of Texas. *Id.* at 38. Trials in the Western District of Texas were scheduled to take place before the statutory due date for the final written decision, but no trial was scheduled in the Northern District of California. *Id.* *HP* found that, under those circumstances, *Fintiv* Factor 2 is neutral. *Id.* In contrast, CommScope is the only remaining petitioner in this proceeding, and CommScope is a party to

the Eastern District ATT Litigation, whose first trial is expected to precede the FWD statutory due date. Thus, *HP* is distinguishable.

We do not need to resolve the parties' dispute regarding the expected trial dates for the Western District Litigation because those expected trial dates would not affect our analysis of *Fintiv* Factor 2. The earliest expected trial date argued by Patent Owner for the Western District Litigation is in December 2023. Prelim. Resp. 44. Although that is earlier than the expected trial date for the Eastern District ATT Litigation, it is still only two months prior to the original FWD statutory due date in February 2024. As such, a December 2023 trial date would only weigh somewhat in favor of discretionary denial, which we find that the expected trial date for the Eastern District ATT Litigation does. *Fintiv* II, 13. No party has argued that any of the remaining trials are expected to start more than two months before February 2024. Thus, none of those trials would be expected to occur more than two months prior to February 2024.

Fintiv Factor 2 somewhat favors discretionary denial.

3. investment in the parallel proceeding by the court and the parties;

We find that there has been a significant, but not overwhelming, investment by the district courts and the parties in the Related Litigations. Patent Owner argues, and Petitioner does not dispute, that by the time of our Original Institution Decision, the parties in the Western District Litigation will have exchanged preliminary invalidity and infringement contentions, completed claim construction, and have started fact discovery. Prelim. Resp. 45; Prelim. Reply 3–4. Patent Owner further argues that the parties in the ATT Eastern District Litigation will have exchanged preliminary

invalidity and infringement contentions, served interrogatories and completed document productions. Prelim. Resp. 45.

Petitioner argues, and Patent Owner does not dispute, that, as of December 7, 2022, neither party has taken any fact depositions in the Related Litigations. Prelim. Reply 3–4. Petitioner further argues that discovery in the Western District Litigation was not scheduled to start until December 2022 and that the Markman hearing in that litigation was postponed. *Id.* Petitioner subsequently informed us that the Western District Litigation held a Markman hearing and issued a claim construction order. Paper 19. Petitioner also argues that it promptly filed its Petition, which should weigh against discretionary denial. Prelim. Reply 4.

As mentioned, we find that there has been a significant, but not overwhelming, investment by the district courts and the parties in the Related Litigations. In particular, the completion of claim construction briefing and the issuance of a claim construction order in the Western District of Texas are significant events. Paper 19. The Related Litigations, however, appear to be in early stages regarding depositions and do not appear to have commenced expert discovery or pre-trial proceedings.

As indicated, Petitioner argues that we should credit its purportedly prompt filing of the Petition for *Fintiv* Factor 3. Prelim. Reply 4. We disagree. Petitioner chose not to address any of *Fintiv* Factors 1–5 in its Petition. Pet. 19–21. Petitioner sought and was granted additional briefing to address "intervening events" that occurred after the filing of its Petition regarding *Fintiv*. Paper 9, 2. Petitioner's alleged diligence in filing its Petition, however, was not an intervening event that occurred after the filing of the Petition and thus was not authorized subject matter for the Preliminary

Reply. *Id.* Thus, we disregard Petitioner's arguments regarding its alleged diligence in filing the Petition.

In sum, we find that *Fintiv* Factor 3 favors discretionary denial.

4. overlap between issues raised in the petition and in the parallel proceeding;

We find there is significant overlap between the issues raised in the Petition and in the parallel proceedings. Patent Owner argues, and Petitioner does not deny, that, in the Related Litigations, Petitioner challenges claims 1–7, 9, 11–17, 19, and 20 using the same prior art asserted here. Prelim. Resp. 46–47; Prelim. Reply 4. Further, Patent Owner argues, and Petitioner does not deny, that Petitioner has not offered to reduce its invalidity assertions in the Related Litigations based on the outcome of an institution decision in this case. Prelim. Resp. 46–47; Prelim. Reply 4; *see Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12, 18–19 (PTAB Dec. 1, 2020) (precedential as to § II.A). Petitioner, however, argues that it challenges claims in this proceeding that are not at issue in the Related Litigations, but Petitioner has not explained why the challenge to those additional claims is significant, and not merely a tactic to avoid discretionary denial. Prelim. Reply 4; *Cisco Sys., Inc. v. Oyster Optics LLC*, IPR2021-00238, Paper 10, 16 (PTAB June 1, 2021) ("The mere fact, however, that one claim being challenged here is not being asserted in the district court litigation without any explanation of why the lack of challenge of that particular claim in the district court is significant is not enough to favor institution.").

We find that there is significant overlap between the issues raised in the petition and in the parallel proceedings. Thus, *Fintiv* Factor 4 weighs in favor of discretionary denial.

5. whether the petitioner and the defendant in the parallel proceeding are the same party; and

We find that *Fintiv* Factor 5 favors discretionary denial. Patent Owner argues, and Petitioner does not dispute, that CommScope (Petitioner) is a party to both the Eastern District ATT Litigation and the Western District Litigation. Prelim. Resp. 47; Prelim. Reply 4–5. Petitioner, however, argues that Corning is only a party to the Western District Litigation. Prelim. Reply 4–5. Corning, however, was terminated as a party to this proceeding before our Original Institution Decision issued. Paper 20; Orig. Inst. Dec. Thus, *Fintiv* Factor 5 favors discretionary denial.

6. Summary Regarding Fintiv Factors 1–5

In sum, *Fintiv* Factors 2–5 favor or somewhat favor discretionary denial, and *Fintiv* Factor 1 is neutral. Collectively, the first five *Fintiv* Factors favor discretionary denial.

B. Fintiv Factor 6: Assessment Regarding Compelling Merits

Because we find that the first five *Fintiv* Factors favor discretionary denial, we determine whether Petitioner has presented a compelling unpatentability challenge. Remand Dec. 5. "[I]f the merits of a ground raised in the petition seem particularly strong on the preliminary record, this fact has favored institution." *Fintiv*, 14–15. "[C]ompelling, meritorious challenges will be allowed to proceed at the PTAB even where district court litigation is proceeding in parallel. Compelling, meritorious challenges are those in which the evidence, if unrebutted in trial, would plainly lead to a conclusion that one or more claims are unpatentable by a preponderance of the evidence." *Fintiv* Memo 4. The Director has stated:

> To be clear, a compelling-merits challenge is a higher standard than the reasonable likelihood required for the institution of an

> IPR under 35 U.S.C. § 314(a). A challenge can only "plainly lead to a conclusion that one or more claims are unpatentable" if it is highly likely that the petitioner would prevail with respect to at least one challenged claim. I recognize that all relevant evidence likely will not have been adduced at the point of institution; trial should produce additional evidence that may support a determination in the Final Written Decision that unpatentability has not been adequately proven. Thus, a determination of "compelling" merits should not be taken as a signal to the ultimate conclusion after trial. The Board shall provide its reasoning in determining whether the merits are compelling.

OpenSky, 49–50 (internal citation omitted) (quoting *Fintiv* Memo 4).

As set forth below, we determine that, on the present record, Petitioner has set forth a compelling unpatentability challenge to claim 1 under Ground 1.

1. [1.1] A wireless system

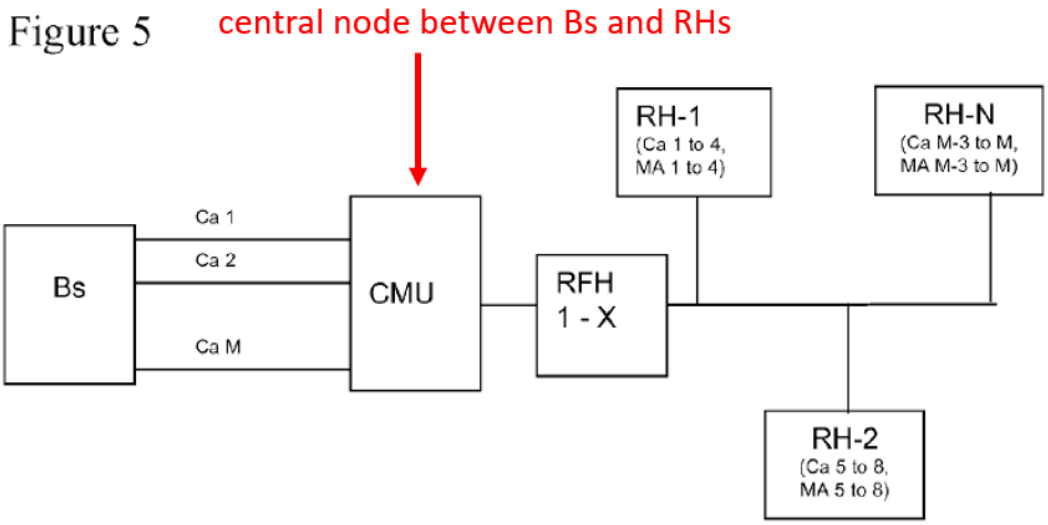
As discussed in Section III.A.3.a above, Petitioner argues, and Patent Owner does not dispute, that Hettstedt teaches the preamble of claim 1. On the present record, we determine that it is highly likely that Petitioner will prevail in showing that Hettstedt teaches the preamble of claim 1. In particular, Hettstedt discloses a system for wireless cellular indoor communications: "The object of the present invention is to provide a . . . system for wireless cellular indoor communications." Ex. 1005 ¶ 8.

2. [1.2] one or more central nodes that receive a number of a plurality of radio resources from an operator hub that enables wireless communications and that provides the plurality of radio resources to a radio access network using the Common Public Radio Interface (CPRI) protocol;

As discussed in Section III.A.3.b above, Petitioner argues that Hettstedt teaches limitation 1.2, but Patent Owner disputes that Hettstedt teaches the recited radio resources. On the current record, we determine that

it is highly likely that Petitioner will prevail in showing that Hettstedt teaches limitation 1.2.

Hettstedt's cell management unit is the recited one or more central nodes. Ex. 1003 ¶¶ 85–86. As shown in the annotated version of Figure 5 of Hettstedt reproduced below, the cell management unit (CMU) is a central node between the base station and the RHs (remote radio heads):



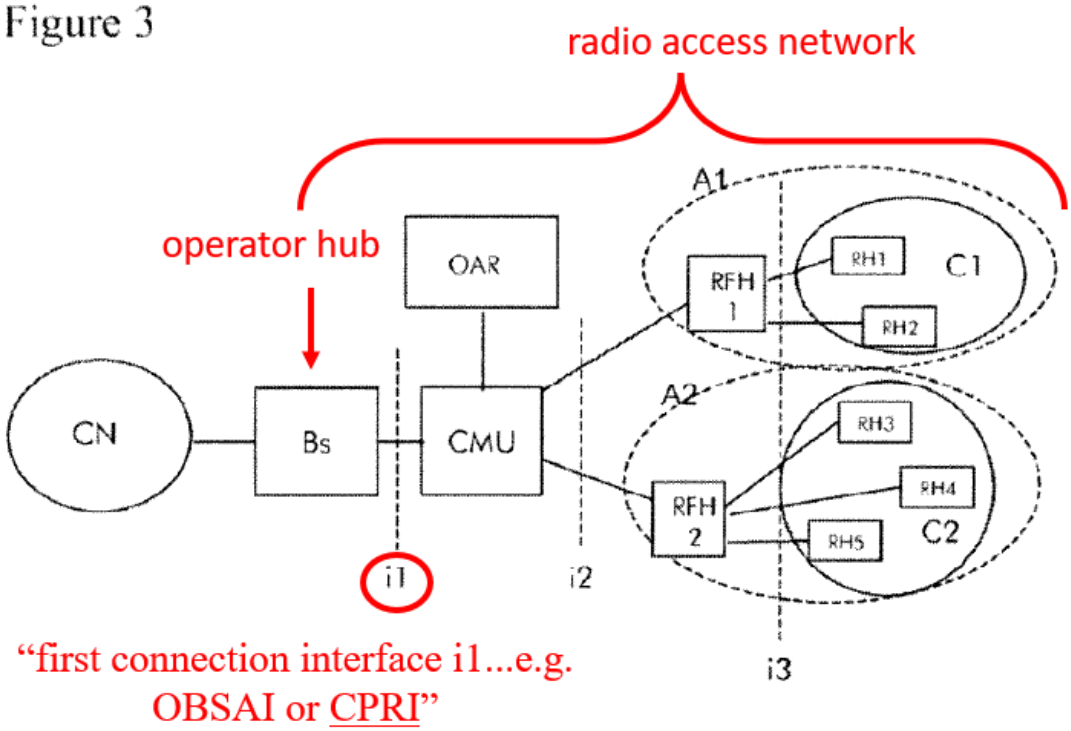
Id. ¶ 84; Ex. 1005, Fig. 5. Figure 5 above "shows an example of carrier distribution according to the wireless cellular indoor communications method of the invention." Ex. 1005 ¶ 37. In Figure 5, the CMU (the central node) is between the Bs (base station) and the RHs (remote radio heads). *Id.* at Fig. 5.

Hettstedt's central management unit performs centralized functions, such as packaging, addressing, and frequency allocation. Ex. 1005 ¶¶ 28, 43–48. Hettstedt's CMU receives four carriers from each of the eight base stations. Ex. 1003 ¶¶ 88–90; Ex. 1005 ¶ 54, Fig. 5. These carriers are resources used by Hettstedt's radio heads. Ex. 1005 ¶ 50; Ex. 1003 ¶¶ 89, 93; Ex. 1017, 26. Hettstedt's radio heads transmit the carriers to end user mobile devices. Ex. 1005 ¶ 50.

Hettstedt's base station is an operator hub because it provides services from operators. Ex. 1005 ¶ 54; Ex. 1003 ¶¶ 86–87. Further, Hettstedt's base station enables wireless communication by communicating with the core network and modulating the desired communication messages onto carriers. Ex. 1005 ¶¶ 8, 40–41; Ex. 1003 ¶ 95. In addition, Hettstedt's base station provides modulated carriers to the CMU and radio heads (RHs), which comprise a radio access network. Ex. 1005, Figs. 3–6; Ex. 1003 ¶ 96. The radio heads provide the radio (RF) link for the end user devices to access the larger network. Ex. 1005 ¶¶ 41, 50.

Further, as illustrated by the following annotated version of Figure 3 of Hettstedt, Hettstedt teaches that its base station can use the CPRI protocol to provide carriers over the i1 interface to the other components of the RAN. (see also Ex. 1005 ¶ 40; Ex. 1003 ¶ 97):

Figure 3



Ex. 1003 ¶ 97. Figure 3 above shows a wireless cellular indoor communications system, with a separated cell configuration. Ex. 1005 ¶ 35. In the above annotated version of the figure, the Bs is the operator hub and the radio access network is identified. *Id.*

As discussed in Section III.A.3.b.i above, Patent Owner disputes that Hettstedt's carriers are the recited radio resources because the carriers are sent with packaged data or are combined with payload data. Prelim. Resp. 22. Patent Owner asserts that the definition of radio resources excludes such data and thus carriers carrying such data are not radio resources. *Id.* Patent Owner argues that the Decision Denying Institution of *Inter Partes* Review in IPR2020-01466 ("'1466 IPR," "'1466 DI," the latter of which is Exhibit 2004 and '1466 IPR Paper 16) recognized this deficiency in Hettstedt. *Id.* at 23. Patent Owner quotes the statement from the '1466 DI that reads as follows: "rather, Hettstedt specifically teaches that the CMU provides transparent operation of the radio heads without reconfiguration of any type to a remote radio head." *Id.* (quoting Ex. 2004, 14). Patent Owner further argues that the'1430 IPR DI recognized the same deficiency in another prior art reference, Oh (Ex. 2006). *Id.* Patent Owner asserts that the '1430 IPR DI found that Oh does not disclose "radio resources" because Oh discloses only underlying data included in the incoming communication traffic sent to the radio units. *Id.* (citing Ex. 2002, 17–19).

As discussed in Section III.A.3.b.i above, Patent Owner further argues that Hettstedt does not teach a central node that provides a plurality of radio resources to a radio access network using the CPRI protocol. Prelim. Resp. 29. Patent Owner argues that an ordinarily skilled artisan would understand that claim 1 requires the use of the CPRI interface between the

central node (which Petitioner maps to the CMU) and the wireless access points (which Petitioner maps to the radio heads). *Id.* (citing Ex. 2001 ¶¶ 50–52).

On the record before us, we determine that is highly likely that Petitioner will prevail with respect to these disputed issues, and that Petitioner's showing is persuasive. On the current record, Hettstedt's carriers are radio resources because they are RF carriers. Ex. 1003 ¶¶ 88–93; Prelim. Resp. 22 ("Hettstedt . . . involve[s] sending underlying payload data packaged or combined with RF carrier channels"); Ex. 1005 ¶ 50 ("transmit four carriers over the full RF bandwidth of each service"); *see* Section II.B.1.b above. Patent Owner's argument that these RF carriers are not radio resources because they are sent with or combined with data is premised on construing "radio resources" as excluding RF carriers that carry data—a construction that is not supported by the current record. *See* Section II.B.1.b above. To the contrary, the current record supports construing radio resources as encompassing RF carriers that carry data. *See* Section II.B.1.b above.

Further, the '1466 DI does not support Patent Owner's counterarguments. That decision does not address whether Hettstedt's carriers are radio resources. Ex. 2004. The passage quoted by Patent Owner from that decision is actually a summary of Patent Owner's arguments, not a finding by the Board. Prelim. Resp. 23; Ex. 2004, 14. Further, that quoted passage does not actually address whether Hettstedt's carriers are radio resources (Ex. 2004, 14) nor does the analysis by the Board that follows that passage (*id.* at 15).

The '1430 DI also does not support Patent Owner's counterarguments. That decision does not address whether carriers with underlying data are radio resources. Instead, the decision holds that, on the record there, "there is no indication in Oh" that the DAS antenna units in Oh transmits a digital representation of radio resources. Ex. 2002, 18.

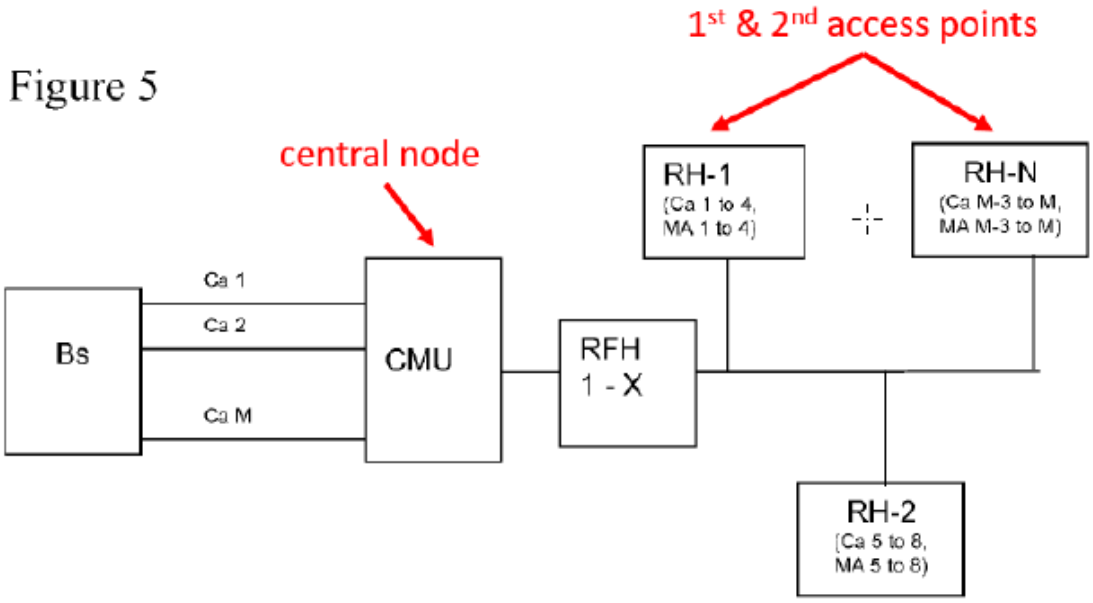
Regarding the recited CPRI protocol, Hettstedt teaches an operator hub that provides the plurality of radio resources to a radio access network using the CPRI protocol. Ex. 1003 ¶ 98. Patent Owner's argument that claim 1 requires that the recited one or more central nodes provide the plurality of radio resources to a radio access network using the CPRI protocol is premised on a proposed claim construction by Patent Owner that the current record does not support and that we do not adopt. *See* Section II.B.2 above. As set forth in Section II.B.2 above, the current record instead supports construing limitation 1.2 so the recited operator hub, not the recited one or more central nodes, provides the radio resources.

Based on the current record, we determine that it is highly likely that Petitioner will prevail in showing that Hettstedt teaches limitation 1.2.

3. [1.3] a plurality of wireless access points that is coupled to the one or more central nodes and distributes one or more wireless signals to one or more wireless subscribers, the plurality of wireless access points including at least a first access point and a second access point

As discussed in Section III.A.3.c above, Petitioner argues that Hettstedt teaches limitation 1.3, which Patent Owner does not dispute. We determine that it is highly likely that Petitioner will prevail in showing Hettstedt teaches limitation 1.3 based on the current record. Hettstedt discloses a plurality of remote radio heads (RHs) coupled to the CMU as shown by the following annotated version of Figure 5 of Hettstedt:

Figure 5

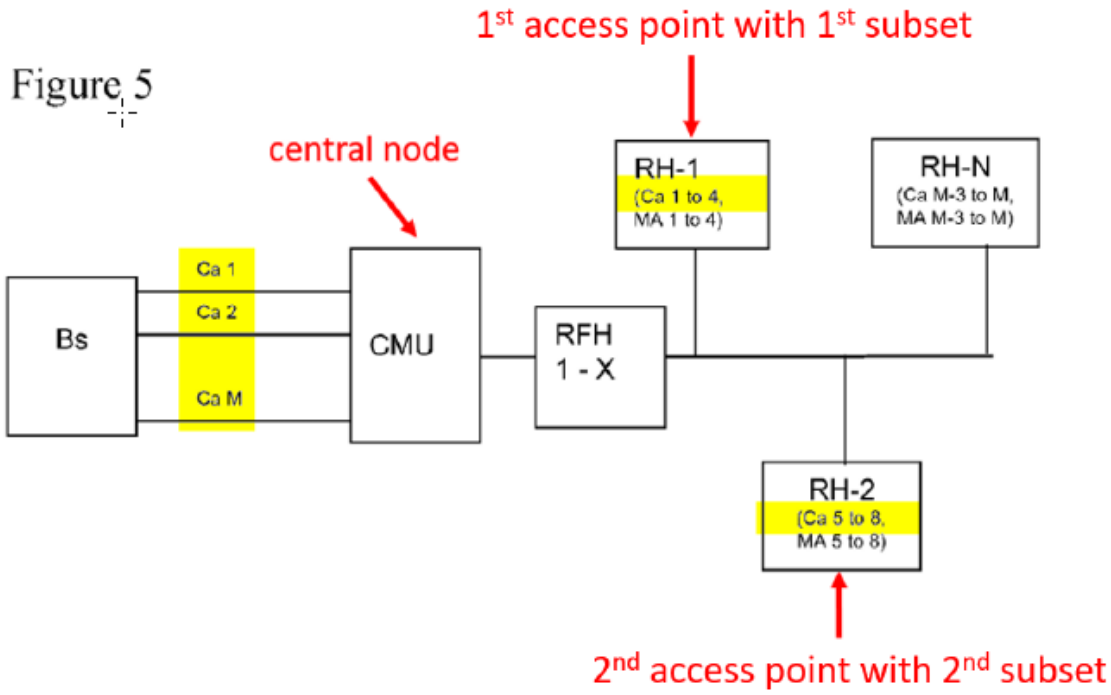


Ex. 1003 ¶ 81; Ex.1005, Fig. 5. In annotated Figure 5 above, on the present record, Petitioner presents a persuasive mapping of the recited central node to the CMU and of the first and second access points to RH-1 and RH-N. Hettstedt's RHs are wireless access points. Ex. 1003 ¶¶ 100–101, Ex. 1005 ¶¶ 50, 53. Further, Hettstedt's RHs communicate wireless signals (radio signals) to wireless subscribers (mobile stations). *Id.* (citing Ex. 1005 ¶¶ 40–41, 50; Ex. 1003 ¶ 102). Based on the current record, we determine that it is highly likely that Petitioner will prevail in showing that Hettstedt teaches limitation 1.3.

> *4. [1.4] wherein one or more central nodes assigns a first subset of the number of the plurality of radio resources to the first access point and a second subset of the number of the plurality of radio resources to the second access point, the first subset including more radio resources than the second subset*

As set forth in Section III.A.3.d above, Petitioner argues that Hettstedt teaches limitation 1.4; Patent Owner disputes that Hettstedt teaches the recited radio resources. We determine that it is highly likely that Petitioner

will prevail in showing that Hettstedt teaches limitation 1.4 based on the current record. Hettstedt discloses that its CMU (a central node) assigns subsets of carriers (radio resources) to the RHs (access points). Ex. 1003 ¶¶ 104–106. Hettstedt's CMU comprises the functionality for mapping of the "carriers to individual radio heads. Ex. 1005 ¶¶ 43, 45. Hettstedt's CMU performs the frequency allocation of the remote radio heads (Ex. 1005 ¶ 28) as illustrated by the following annotated version of Figure 5 of Hettstedt:



Ex. 1003 ¶ 106; Ex. 1005, Fig. 5. The above annotated Figure 5 illustrates that the CMU assigns carriers 1–4 (first subset) to RH-1 (first access point) and carriers 5–8 (second subset) to RH-2 (second access point). Ex. 1003 ¶ 106.

Hettstedt discloses that the set of carriers at one RH can include more carriers than another RH. Ex. 1003 ¶¶ 107–112. Further, Hettstedt discloses adaptive cell reconfiguration. Ex. 1003 ¶ 70; Ex. 1005 ¶ 44. In addition, Hettstedt's CMU comprises means for (1) "de-activation" of un-used carriers,

(2) "shifting" these carriers "from radio where these carriers are not used for radio heads with high load on their active carriers," and (3) "activation of the shifted carriers" at radio heads of "high loading." Ex. 1005 ¶¶ 29, 44. The actions of de-activating, shifting, and activating carriers changes the number of carriers in the subsets such that some RHs will have more carriers than others. Ex. 1003 ¶¶ 108–112. The present record persuasively supports Petitioner's arguments with respect to limitation 1.4 and Hettstedt's similar teachings regarding mapping of radio resources and adaptive cell reconfiguration.

As mentioned, Patent Owner disputes that Hettstedt teaches the recited radio resources. As discussed in Section IV.B.2 above, however, Petitioner is highly likely to prevail in showing that Hettstedt teaches those radio resources. Based on the current record, we determine that it is highly likely that Petitioner will prevail in showing that Hettstedt teaches limitation 1.4.

> *5. [1.5] wherein, in response to a change in need of a number of wireless subscribers coupled to the second access point and which of the second subset is loaded beyond a threshold, the one or more central nodes assign additional radio resources of the plurality of radio resources to the second access point.*

As set forth in Section III.A.3.e above, Petitioner argues that the combination of Hettstedt and Wellington teaches limitation 1.5; Patent Owner disputes that an ordinarily skilled artisan would have been motivated to combine Hettstedt and Wellington. We determine that it is highly likely that Petitioner will prevail in showing that the combination of Hettstedt and Wellington teaches limitation 1.5 and that an ordinarily skilled artisan would have been motivated to combine those references and had a reasonable expectation in so doing, based on the current record.

Hettstedt teaches that its CMU responds to a change in need of a number of wireless subscribers. Ex. 1003 ¶¶ 114–117. Further, Hettstedt teaches that its CMU performs load balancing by shifting carriers from RHs inside areas of low traffic load to RHs inside areas of high traffic load. *Id.* Ex. 1005 ¶¶ 29, 44. Traffic load at the RH is one measure of the need of the wireless subscribers at the RH. Ex. 1003 ¶ 115. Hettstedt teaches measuring the load at each carrier of each remote radio head, which would include at a second access point. Ex. 1005 ¶ 44.

Hettstedt discloses that its CMU "assigns additional radio resources of the plurality of radio resources to the second access point" in response to the change in need. Ex. 1003 ¶¶ 118–121. Hettstedt's CMU shifts carriers (radio resources) to the radio heads with high load and activates those carriers at those radio heads. Ex. 1005 ¶¶ 29, 43–44. The actions of shifting carriers to a radio head and activating those carriers is an example of assigning additional radio resources to that radio head. Ex. 1003 ¶ 119. Radio heads with high loads are the recited "second access point." *Id.* The shifted carriers are "additional" radio resources for the high load radio head because those radio heads did not formerly have those carriers; rather, the carriers had to be shifted and activated at those radio heads. Ex. 1005, Fig. 5; Ex. 1003 ¶¶ 119–121.

Hettstedt discloses "which of the second subset is loaded beyond a threshold." Hettstedt discloses loading remote radio heads over a predetermined value. Ex. 1005, claim 3. Wellington discloses allocating additional carriers when a subset of carriers is loaded beyond a threshold. Ex. 1003 ¶¶ 125–127. The following annotated version of Figure 2 of Wellington illustrates such an allocation:

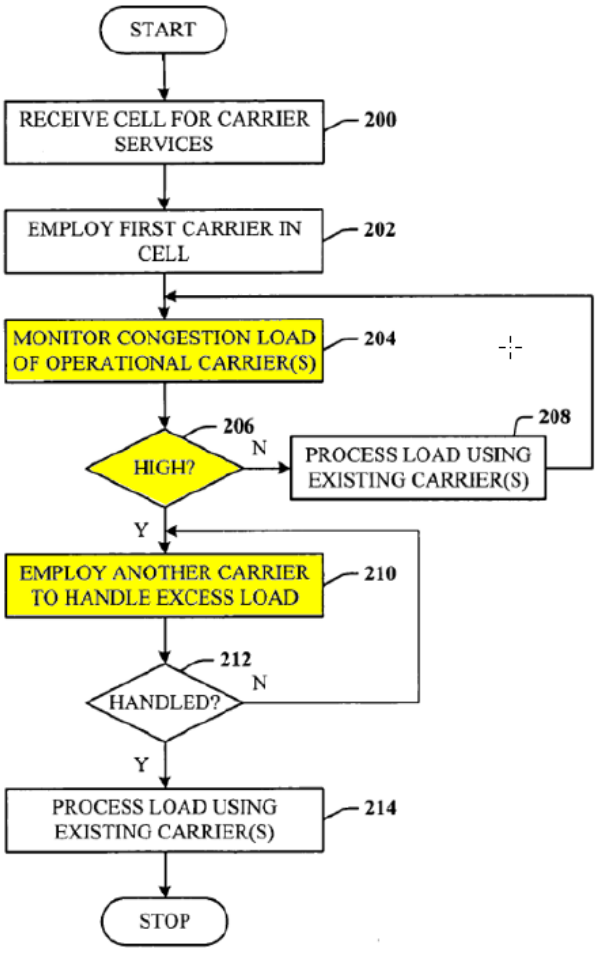


FIG. 2

Ex. 1003 ¶ 125; Ex. 1007, Fig. 2. Figure 2 above illustrates a methodology of managing cell congestion by adding a carrier. Ex. 1007, 2:26–27. The annotated version of the figure above highlights steps 204, 206, and 210. Ex. 1003 ¶ 125. At step 204, Wellington's system monitors the congestion load of the current operational carrier(s), which Petitioner argues is a subset. Ex. 1007, 5:9–10. At step 206, the system determines if the congestion load is "high," which triggers the allocation of "another carrier" in step 210. Ex. 1003 ¶ 126; Ex. 1007, 5:10–17. Step 206 is an example of using a threshold. Ex. 1003 ¶ 127. In addition, Wellington provides further

examples of using a threshold. Ex. 1007, 1:61–63, 5:56–67, claim 8 (16:15–23); Ex. 1003 ¶¶ 126–127; Ex. 1037. The present record persuasively supports Petitioner's arguments with respect to limitation 1.5 and the combination of Hettstedt's teachings adaptive cell reconfiguration and Wellington's teachings regarding handling excess load (i.e. load beyond a threshold).

Further, regarding the disputed issue of a motivation to combine, on the present record we determine that it is highly likely that Petitioner will prevail in showing that an ordinarily skilled artisan would have been motivated to apply Wellington's teachings to Hettstedt's system and would have had a reasonable expectation of success in so doing.

An ordinarily skilled artisan would have been motivated to apply Wellington's teachings to Hettstedt's system to obviate the need for a human user to perform the load balancing (i.e., improve the system by making it automatic) as a threshold-based trigger avoids the need for the system to wait for user inputs. Ex. 1003 ¶ 130. Further, an ordinarily skilled artisan would naturally use a threshold for the trigger as taught by Wellington because a threshold is readily programmable and machine executable. *Id.* In addition, an ordinarily skilled artisan would have been motivated to implement Wellington's teaching to improve the adaptability of Hettstedt's system. *Id.* A benefit of a threshold-based trigger is that it allows a system to fine-tune the load balancing by adjusting the threshold. *Id.* Further, there is no need to reprogram significant software when using a threshold-based trigger. *Id.*

Hettstedt's and Wellington's disclosures also support their combination. Ex. 1003 ¶ 131. Hettstedt's goal is "efficient" load balancing. *Id.*; Ex. 1005 ¶¶ 11, 21, 44. Wellington improves this goal by eliminating the

inefficiency of waiting for a user's input. Ex. 1003 ¶ 131. Hettstedt contemplates scenarios where waiting for a user input for load balancing is not realistic, such as with sudden hot-spots that need dynamic distribution. Ex. 1005 ¶ 29; Ex. 1003 ¶ 131. Wellington, in turn, teaches that carrier deployment and removal "can occur quickly to handle dynamically changing characteristics in cell congestion." Ex. 1007, 4:50–52; Ex. 1003 ¶ 131. Further, Hettstedt contemplates that its system could be made "automatically adaptive." Ex. 1005 ¶ 28; Ex. 1003 ¶ 131. Wellington provides for that adaption. Ex. 1003 ¶ 131.

An ordinarily skilled artisan would have had a reasonable expectation of success in combining Hettstedt's and Wellington's disclosures. Ex. 1003 ¶ 132. Hettstedt already discloses how to determine a load. *Id.*; Ex. 1005 ¶ 44). Further, the step of comparing the load to a threshold merely requires the addition of a simple "if/then" statement (e.g., IF load > threshold, THEN) to Hettstedt's software. Ex. 1003 ¶ 132. According to Petitioner, no special components would be required for Hettstedt's system, just a standard processor. *Id.*; Ex. 1006 ¶¶ 40, 48. Further, determining whether the load is beyond a "threshold" is a simple mathematical-type operation. Ex. 1003 ¶ 132.

Patent Owner's arguments against combining Hettstedt and Wellington are directed towards a bodily incorporation of structures described in the references, rather than a combination of their teachings. *Mouttet*, 686 F.3d at 1332 ("The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference."); *Keller*, 642 F.2d at 425; *see also* Prelim. Resp. 29–30; Ex. 2001 ¶¶ 76–78. Although Hettstedt may be directed towards allocating radio

resources that include underlying data and Wellington may teach allocation of bare radio resources, an ordinarily skilled artisan is a person or ordinary creativity, and would apply Wellington's teachings concerning radio resources to radio resources with underlying data as well as bare radio resources. *KSR,* 550 U.S. 398 at 421 ("A person of ordinary skill is also a person of ordinary creativity, not an automaton."). Further, Petitioner's proposed combination of Hettstedt and Wellington does not involve adding bare radio resources to Hettstedt's radio heads. Pet. 32–37. Rather, it concerns the allocating the radio resources of Hettstedt based on Wellington's teachings. *Id.* Thus, Patent Owner's arguments that it would not be operable for an ordinarily skilled artisan to add bare radio resources to Hettstedt's radio heads is not responsive to Petitioner's proposed combination.

Based on the current record, we determine that it is highly likely that Petitioner will prevail in showing that the combination of Hettstedt and Wellington teaches limitation 1.5 and that an ordinarily skilled artisan would have been motivated to combine those references and had a reasonable expectation of success in so doing.

6. Summary: Compelling Merits

In sum, based on the current record, we determine it is highly likely that Petitioner will prevail in its challenge to claim 1 under Ground 1. Thus, Petitioner has set forth a compelling, meritorious challenge that plainly leads to the conclusion that at least one claim is unpatentable (based on the current record).

C. Summary: Fintiv Analysis

Although we determine that *Fintiv* Factors 1–5 favor denial of institution, we also determine that it is highly likely that Petitioner would prevail with respect to at least one challenged claim. Therefore, Petitioner presents a compelling, meritorious challenge that plainly leads to a conclusion that at least one challenged claim is unpatentable. Accordingly, we decline to exercise our delegated discretion to deny institution under 35 U.S.C. § 314(a). We note, however, that as additional relevant evidence is likely to be adduced at trial, this determination of compelling merits "should not be taken as a signal to the ultimate conclusion after trial." *OpenSky*, 50; Remand Dec. 4.

V. CONCLUSION

Petitioner has demonstrated a reasonable likelihood of proving the unpatentability of at least one challenged claim of the '232 patent. Petitioner has further set forth a compelling, meritorious challenge that plainly leads to the conclusion that at least one claim is unpatentable (based on the current record). Thus, we decline to exercise our delegated discretion to deny institution under *Fintiv*, and we institute an *inter partes* review. We clarify, however, that our analysis is based only on the record as it stands now and that we have not made a final determination regarding the patentability of any challenged claim. Further, no party should rely on any preliminary finding in this Decision nor assume that the evidence cited in this Decision for any preliminary finding will result in a similar finding in the Final Written Decision after a complete record is developed.

VI. ORDER

It is

ORDERED that, pursuant to 35 U.S.C. § 314(a) an *inter partes* review of the '232 patent is hereby instituted on the asserted grounds set forth in the Petition; and

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

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