

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ERICSSON INC. and NOKIA OF AMERICA CORPORATION,
Petitioner,

v.

ACTIVE WIRELESS TECHNOLOGIES LLC,
Patent Owner.

IPR2024-00986
Patent 10,785,764 B2

Before MONICA S. ULLAGADDI, DAVID COTTA, and
JASON M. REPKO, *Administrative Patent Judges*.

REPKO, *Administrative Patent Judge*.

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

I. INTRODUCTION

Ericsson Inc. and Nokia of America Corporation (collectively “Petitioner”) filed a petition requesting an *inter partes* review of claims 3, 4, and 6 of U.S. Patent No. 10,785,764 B2 (Ex. 1001, “the ’764 patent”). Paper 1 (“Pet.”). Active Wireless Technologies LLC (“Patent Owner”) filed a Preliminary Response. Paper 8 (“Prelim. Resp.”).

To institute an *inter partes* review, we must 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). For the reasons discussed below, Petitioner has met this standard. Thus, we institute an *inter partes* review.

A. Related Matters

The parties identify the following case as a related matter involving the ’764 patent (and other patents): *Active Wireless Technologies LLC v. T-Mobile USA, Inc., et al.*, Case No. 2:23-cv-00261-JRG (E.D. Tex.). Pet. 74; Paper 6, 2. Patent Owner argues that the Board should exercise its discretion to deny the Petition in view of this case. Prelim. Resp. 16–23. After the Preliminary Response was filed, however, the parties filed a joint motion to dismiss the ’764 patent from the case. *See* Ex. 1019, 1–2. That motion was granted. *Id.* at 5. Thus, Patent Owner’s discretionary-denial argument regarding that case is moot.

The parties also identify *Active Wireless Technologies LLC v. Verizon Communications, Inc., et al.*, Case No. 2:23-cv-00620-JRG (E.D. Tex.) as a related matter. Pet. 74; Paper 6, 2.

B. The ’764 Patent

The challenged patent generally relates to wireless communications for a single-cell multicast service. Ex. 1001, 1:6–10. Single-cell point-to-

multipoint (SC-PtM) is a multicast transmission of a multimedia broadcast service in a single cell. *Id.* at 1:51–53. Terminals in the cell acquire scheduling and configuration of a single-cell multicast control channel (SC-MCCH). *Id.* at 1:64–2:1. These terminals periodically check for changes to the information on the SC-MCCH. *Id.* at 2:10–13. The downlink control information (DCI) has a bit to indicate that the information on the SC-MCCH has changed. *Id.* at 2:20–26. In the same subframe, the physical downlink control channel (PDCCH) that schedules an SC-MCCH transmission must be acquired. *Id.* at 2:26–30.

SC-PtM could be used in a narrow-band Internet-of-Things (NB-IoT) system. *Id.* at 1:25–50. Terminals in an NB-IoT system may have low power consumption, long standby times, reduced costs, and wide coverage. *Id.* at 1:34–36. But, because of the cost, an NB-IoT system may not support transmitting a change indication and scheduling a new SC-MCCH-information transmission in the same subframe. *Id.* at 2:34–40, 2:64. Also, if the relevant service information has not changed, dealing with the change notification causes the terminals to consume additional power unnecessarily. *Id.* at 2:47–49. This is undesirable for terminals in an NB-IoT system, which may require low power consumption. *Id.* at 1:34–36, 3:49–51. 36. According to the '764 patent, a new way to indicate these changes is needed to implement the SC-PtM feature in NB-IoT systems. *Id.* at 2:34–40.

The '764 patent discloses an information-change transmission method for single-cell multicast service. *Id.* at 2:55–58. According to the method, an information-change notification for a SC-MCCH is received on one narrow-band PDCCH (NPDCCH) and the SC-MCCH information according to an indication of DCI is received on another. *Id.* at 2:59–67. When the terminal receives a change notification, it can determine whether the changed-service

information is relevant to its operation from a serial number carried in the change notification. *Id.* at 10:58–64. If so, the terminal continues to receive the SC-MCCH information. *Id.* Otherwise, it may ignore the current change without receiving the SC-MCCH information. *Id.*

C. Claims

Claims 3, 4, and 6 are challenged. Pet. 13. Claims 3 and 6 are independent. Claim 3 is reproduced below.

3. A base station comprising:

- [3.1] transmitting circuitry configured to transmit Single-Cell Multicast Control Channel (SC-MCCH) information; and
- [3.2] generating circuitry configured to generate a second downlink control information (DCI) format indicating an SC-MCCH information change notification, wherein
- [3.3] the transmitting circuitry is configured to transmit, in more than one second subframe, the second DCI format carried on a second narrowband physical downlink control channel (NPDCCH),
- [3.4] the generating circuitry configured to generate a first DCI format indicating a resource for a transmission of another SC-MCCH information,
- [3.5] the transmitting circuitry is configured to transmit, in more than one first subframe, the first DCI format carried on a first NPDDCH,¹
- [3.6] a period of the more than one first subframe is different from a period of the more than one second subframe, and
- [3.7] the transmitting circuitry is configured to transmit the another SC-MCCH information with use of the resource

¹ Both parties treat “NPDDCH” as a typographical error that is meant to be “NPDCCH.” *See* Pet. 29 n.5; Prelim. Resp. 14 n.2. In this decision, the Board treats “NPDDCH” as “NPDCCH.”

indicated by the first DCI format and in accordance with the second DCI format.

Ex. 1001, 12:47–13:4 (with the Petitioner’s limitation numbering added).

D. Evidence

Name	Reference	Exhibit No.
Shin	US 11,160,094 B2, issued Oct. 26, 2021	1004, 1005 ²
Xu	US 10,785,752 B2, issued Sept. 22, 2020	1006
RAN72 ³	3rd Generation Partnership Project (3GPP), <i>Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Multiplexing and channel coding (Release 13)</i> , 3GPP TS 36.212 V13.2.0 (2016) 3GPP, <i>Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer procedures (Release 13)</i> , 3GPP TS 36.213 V13.2.0 (2016) 3GPP, <i>Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification (Release 13)</i> , 3GPP TS 36.331 V13.2.0 (2016)	1007–1009
Fujishiro	US 2019/0182632 A1, published June 13, 2019	1011

² United States Patent No. 11,160,094 to Shin et al. (Ex. 1005) is the National Stage Entry under 35 U.S.C. § 371 of International Application No. PCT/KR2017/008647, filed on August 9, 2017 and published as WO 2018/030793 (Ex. 1017), which claims the benefit of U.S. Provisional Application No. 62/372,323 (“’323 Provisional”, Ex. 1013). The certified translation of the ’323 Provisional is Exhibit 1004.

³ Petitioner refers to all three technical specifications collectively as RAN72. Pet. 41.

E. Challenges

Petitioner asserts that claims 3, 4, and 6 are unpatentable on the following grounds. Pet. 13.

Claims Challenged	35 U.S.C. §	Reference(s)/Basis
3, 4, 6	103	Shin
3, 4, 6	103	Xu, RAN72, Fujishiro

II. ANALYSIS

A. Level of Ordinary Skill in the Art

According to Petitioner,

[A] POSITA in August 2016 would have been familiar with wireless communications networks, equipment, and integrated circuit chips, and would have had at least a working knowledge of the communication protocols used in LTE and 5G radio access networks (RAN). A POSITA would have had at least a Bachelor's degree in Electrical Engineering or related field, and at least two years of work experience in design, development, and/or testing wireless telecommunication systems. A POSITA would have had familiarity with the wireless standards and protocols related to data transmission and network management. To the extent a POSITA would have had a more advanced degree, such as a Master's degree in Electrical Engineering or related field, then a POSITA may have had less work experience.

Pet. 7–8 (citing Ex. 1003 ¶ 39).

In its Preliminary Response, Patent Owner applies Petitioner's definition. Prelim. Resp. 10 (citing Pet. 7–8).

Petitioner's definition appears consistent with the challenged patent and the prior art of record. *See* Pet. 7–8. Thus, we apply that definition.

B. Claim Construction

The Board is required to construe only those terms that are in controversy and only to the extent necessary to resolve the controversy.

Realtime Data, LLC v. Iancu, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (citing

Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc., 200 F.3d 795, 803 (Fed. Cir. 1999)).

Petitioner proposes giving each term its plain and ordinary meaning. Pet. 7. Patent Owner agrees. Prelim. Resp. 10. On the current record, no terms are in controversy, and the Board does not need to construe any term here.

C. Obviousness over Shin (Ground 1)

Petitioner asserts that claims 3, 4, and 6 are unpatentable as obvious over Shin. Pet. 16.

1. Shin

Shin describes sending and receiving SC-PtM information in an NB-IoT system. Ex. 1004, 14. Shin's method uses PRBs⁴ from existing NPDCCH procedures for NPDCCH carrying the control information: MC-MTCH and SC-MCCH. *Id.* at 34. Existing NPDCCH procedures include legacy NB-IoT. *Id.*

Of relevance to Petitioner's challenges, Shin describes two cases for transmitting the control information, labeled "I" and "II." *Id.* In case I, Shin's device delivers control information with DCI format N1. *Id.* In this case, a terminal can obtain SC-PtM related information by monitoring the DCI format N1 size using SS-RNTI or G-RNTI. *Id.* at 35. In case II, Shin's device delivers control information using DCI format N2. *Id.* In both cases, the MCCH change notification is transmitted in CSS using DCI format N2. *Id.* at 36.

⁴ PRB stands for Physical Resource Block. Ex. 1005, 10:62–63.

2. *Claim 3*

a. *The Second DCI Format*

Claim 3 recites, in part,

[3.2] generating circuitry configured to generate a second downlink control information (DCI) format *indicating an SC-MCCH information change notification*, wherein

[3.3] the transmitting circuitry is configured to transmit, in more than one second subframe, the second DCI format *carried on a second narrowband physical downlink control channel (NPDCCH)*.

Ex. 1001, 12:51–58 (emphasis and numbering added).

Shin teaches three DCI formats: N0, N1, and N2. Ex. 1004, 28–30, 34. Shin’s UE may obtain the SC-MCCH information by monitoring preset common search spaces (CSSs) in the PRBs. *Id.* Shin’s UE monitors two types of common NPDCCH search spaces to receive a NPDCCH: Type1 and Type2. *Id.* at 25. A search space has several candidates that are repeated in consecutive subframes. *Id.* at 25–26. According to one embodiment, Shin transmits the MCCH changing notification in Type 1 CSS using DCI format N2. *Id.* Shin’s UE detects NPDCCH with either the N1 or N2 format. *Id.* at 27. This embodiment is relied upon by Petitioner to address the second format. *See* Pet. 24–25.

Petitioner argues that Shin’s base station transmits the SC-MCCH change notification using DCI format N2. *Id.* (citing Ex. 1004, 22, 34, 36; Ex. 1004, 15:51–63, 33:28–40; Ex. 1003 ¶¶ 119–120). Thus, Petitioner argues that, like the recited second DCI format, Shin’s DCI format N2 indicates the change notification and is carried on the NPDCCH. *Id.* (citing Ex. 1004, 36; Ex. 1005, 42:37–46).

In Patent Owner’s view, the cited parts of Shin “only generally disclose detected NPDCCH with DCI Format N1 or N2.” Prelim. Resp. 13 (citing Pet 26–27; Ex. 1005, 20:49–54, 26:24–25, 18:58–64). According to Patent Owner, the cited teachings do not disclose or teach a second DCI format (1) carried on the second narrowband NPDCCH and (2) used for indicating the SC-MCCH information change notification, as required by the challenged claim. *Id.* at 13–14.

We disagree because Petitioner relies on more than Shin’s general disclosure of the available formats. *See* Pet. 25–26. Rather, Petitioner specifically maps the N2 format to the recited second DCI format. *See, e.g., id.* at 25 (“Shin discloses that *DCI format N2* should be used to transmit a SC-MCCH change notification”); *id.* at 26 (“Shin discloses that the RF unit (transmitting circuitry) of the base station is configured to transmit the second DCI format (*i.e. DCI format N2*) on a NPDCCH”) (emphasis added). Patent Owner’s arguments do not squarely address Petitioner’s reliance on the N2 format. *See* Prelim. Resp. 13–14.

Here, Petitioner shows that Shin discloses that the N2 format is used for the SC-MCCH information change notification. *See* Pet. 24–25. In both cases (I and II) of the relied-upon embodiment, Shin transmits the change notification using DCI format N2. Ex. 1004, 36. As for being carried on the NPDCCH, Shin discloses that “a NB-IoT UE detects NPDCCH with DCI Format N1 or N2 ending in subframe n,” which Petitioner quotes. *Id.* at 27, *quoted in* Pet. 26.

Thus, Petitioner adequately shows that Shin discloses the second DCI format recited in limitations [3.2] and [3.3]. *See* Pet. 23–27.

b. A First DCI Format

Claim 3 recites, in part,

[3.4] the generating circuitry configured to generate a first DCI format indicating a resource for a transmission of *another SC-MCCH information*;

[3.5] the transmitting circuitry is configured to transmit, in more than one first subframe, the first DCI format carried on a first [NPDCCH].

Ex. 1001, 12:59–64 (emphasis added).⁵

As for the first DCI format, Petitioner argues that, when using legacy NB-IoT PRBs, Shin sends SC-MCCH control information using DCI format N1. Pet. 27–29 (citing Ex. 1004, 35; Ex. 1005, 36:1–15, 36:25–38; Ex. 1003 ¶¶ 131–132).

According to Patent Owner, Shin does not disclose the transmission of another SC-MCCH information, as recited in claim 3—i.e., information other than the SC-MCCH information change notification. Prelim. Resp. 14–15. Patent Owner argues that the cited passages in Shin disclose only that “the ‘DCI correspond[s] to a NPDCCH order [] carried by NPDCCH,’ . . . , that ‘the same SC-MCCH information may be transmitted a number of times’, or that ‘MCCH control information is transmitted with multiple PRBs.’” *Id.* at 15 (citing Pet. 30–31; Ex. 1005, 25:41–43, 25:40–50, 45:18–27).

We disagree. Patent Owner’s argument here focuses on pages 30 and 31 of the Petition. *See id.* But Petitioner discusses the “another SC-MCCH information” in the section at pages 27 through 29 of the Petition. In that

⁵ Here, we have corrected the typographical error “NPDDCH” to “NPDCCH” (*see* Pet. 29 n.5; Prelim. Resp. 14 n.2), as noted above (*see* Section I.C *supra*).

section, Petitioner argues that Shin sends SC-MCCH control information in either DCI format N1 or N2, but Shin uses format N1—i.e., the claimed first format—when using legacy NB-IoT PRBs. Pet. 27–28 (citing Ex. 1004, 32, 35; Ex. 1005, 30:20–24, 31:57–60, 36:1–15; Ex. 1003 ¶¶ 130–131). As discussed above, Petitioner relies on the embodiment that uses DCI format N2—i.e., the claimed second format—to communicate the change notification. *See* Section II.C.2.a. In this way, Petitioner sufficiently explains that Shin uses one DCI format to indicate a resource for transmission of SC-MCCH control information and another to transmit the SC-MCCH change notifications. *See* Pet. 29.

Thus, Petitioner sufficiently shows that Shin discloses the recited “first DCI format indicating a resource for a transmission of another SC-MCCH information.” *See id.* at 27–29.

c. Subframes

According to claim 3, the first DCI format is transmitted “in more than one first subframe,” and the second DCI format is transmitted “in more than one second subframe.” Ex. 1001, 12:56–64.

Petitioner argues that Shin transmits DCI format N1 and N2 in more than one first and second subframes, respectively because their transmissions are repeated in several subframes. Pet. 26–27, 29–30 (citing Ex. 1004, 22, 25, 29; Ex. 1005, 18:58–64, 25:40–50, 26:24–25; Ex. 1003 ¶¶ 126–127, 136).

Patent Owner argues that Shin’s DCI N2 format is not transmitted “in more than one second subframe,” because it spans only three symbols of the first slot and those three symbols are less than one full subframe. Prelim. Resp. 18–19 (citing Ex. 1005, Fig. 3).

We disagree. The basis for Patent Owner’s argument is that the claim requires that the symbols must span the entire subframe. *See id.* at 18–19. At this stage, we see no reason to limit the claim in this way. Rather, the plain language of claim 3 does not expressly recite “symbols.” Ex. 1001, 12:56. Also, Patent Owner’s argument does not squarely address Petitioner’s position that Shin repeatedly transmits the DCI format in multiple subframes. *See* Pet. 26–27, 29–30.

We agree with Petitioner’s argument about the first and second subframes. *See id.* Specifically, Shin discloses that the NPDCCH search space is defined by a set of NPDCCH candidates in which “each candidate is repeated in a set of R consecutive NB-IoT downlink subframes.” Ex. 1004, 25, *quoted in* Pet. 27. Shin further discloses that “the same SC-MCCH information may be repeated a number of times.” *Id.* at 22, *quoted in* Pet. 30.

Thus, Petitioner sufficiently shows that Shin discloses that the first DCI format is transmitted “in more than one first subframe,” and the second DCI format is transmitted “in more than one second subframe.” Pet. 26–27, 29–30.

d. Different Periods

Claim 3 further recites, in part, “a period of the more than one first subframe *is different from* a period of the more than one second subframe.” Ex. 1001, 12:65–67 (emphasis added). As discussed in the previous section, the more than one first and second subframes are associated with the first and second DCI formats in claim 3. *See* Section II.C.2.c *supra*.

Petitioner argues that Shin sends SC-MCCH control information and SC-MCCH change information in different subframes. Pet. 32 (citing Ex. 1004, 36; Ex. 1005, 42:37:46). Shin transmits SC-MCCH control

information using DCI format N1 and the SC-MCCH change notification using DCI format N2. *Id.* at 24–25, 27–29; *see* Sections II.C.2.a–c *supra*.

Petitioner also notes that bandwidth in an NB-IoT system is limited to a single PRB, as described in the '764 patent. Pet. 31–32 (citing Ex. 1001, 2:34–40; Ex. 1003 ¶ 140).

In Patent Owner's view, Petitioner assumes that, because bandwidth in a NB-IoT system is limited to a single PRB, Shin must (1) use multiple subframes for the first DCI and (2) send the period of the more than one first subframe in different subframes. Prelim. Resp. 17 (citing Pet. 31).

According to Patent Owner, this assumption is conclusory, lacks any evidence, and improperly depends on the '764 patent's specification. *Id.*

We disagree with Patent Owner's view of Petitioner's reliance on the '764 patent here, because Petitioner merely cites the patent for background information about the NB-IoT system. Pet. 31–32 (citing Ex. 1001, 2:34–40). Even if we did not consider this discussion, Petitioner's reasoning would be sufficient at this stage because the basis for the challenge is Shin's disclosure of the SC-MCCH change notification and control information. *Id.* at 32.

We agree with Petitioner that, independent of any disclosure in the background of the '764 patent, Shin alone discloses that “a period of the more than one first subframe is different from a period of the more than one second subframe,” as claimed, because Shin expressly states that “the MCCH changing notification is transmitted to a different SF^[6] than the SF from which MCCH control is transmitted.” Ex. 1004, 35, *quoted in* Pet. 32.

⁶ Here, we understand “different SF than the SF from which . . .” to indicate that different subframes are used. *See* Ex. 1004, 35. Petitioner also interprets “SF” to mean subframe. Pet. 31.

e. Resource Indicated by the First DCI Format

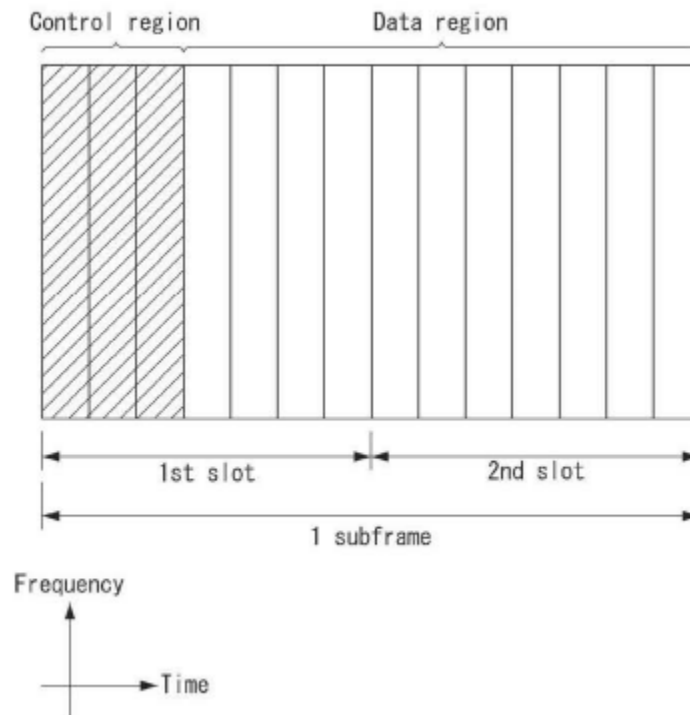
Claim 3 recites, in part,

[3.7] the transmitting circuitry is configured to transmit the another SC-MCCH information with use of the resource indicated by the first DCI format and in accordance with the second DCI format.

Ex. 1001, 12:47–13:4.

Petitioner argues that “Shin discloses that SC-MCCH information is transmitted that SC-MCCH information is transmitted with the resource indicated by the first DCI format, and the SC-MCCH information is indicated on PDCCH.” Pet. 33 (citing Ex. 1004, 22; 15:33–39; Ex. 1003 ¶ 144). Petitioner argues that the data region containing the PDSCH’s SC-MCCH is “indicated by” a control region containing the first DCI format carried on a PDCCH. *Id.* (citing Ex. 1004, 33; Ex. 1005, 32:59–63). Petitioner illustrates this point using Shin’s Figure 3, below.

FIG. 3



Shin's Figure 3 shows a control region in three symbols of the front part of a subframe's first slot. Ex. 1005, Fig. 3; Ex. 1004, 16. The data region spans the rest of the first slot and the entire second slot of the subframe. Ex. 1005, Fig. 3. The data region is to be assigned with a PDSCH. Ex. 1004, 16.

The control information transmitted through the PDCCH is the DCI. *Id.* Shin transmits SC-MCCH control information using DCI format N1, and transmits the SC-MCCH change notification using DCI format N2. Pet. 24–25, 27–29; *see* Sections II.C.2.a–c *supra*. Petitioner argues that, upon receiving the SC-MCCH change notification, Shin's UE acquires updated SC-MCCH information. Pet. 34 (citing Ex. 1004, 22; Ex. 1005, 15:58–61; Ex. 1003 ¶ 147).

Patent Owner argues that “[t]here is no teaching, suggestion, or motivation that such a change notification is related to the separate embodiment in Shin that the Petition incorrectly alleges corresponds to the resource indicated by the first DCI format described above.” Prelim. Resp. 20. In Patent Owner's view, the cited part of Shin merely describes, “[u]pon receiving the change notification, a UE attempting to receive an MBMS service transmitted using SC-PtM may acquire new SC-MCCH information.” *Id.* (citing Pet. 34; Ex. 1005, 15:58–61). Patent Owner argues that Petitioner's argument is conclusory and untethered to Shin's embodiment. *Id.* at 19–20.

We disagree. The basis for Petitioner's argument is the embodiment in which Shin transmits SC-MCCH control information using DCI format N1 and transmits the SC-MCCH change notification using DCI format N2. Pet. 24–25, 27–29; *see* Sections II.C.2.a–c *supra*. Patent Owner's argument does not squarely address Petitioner's reasoning. *See* Prelim. Resp. 19–20. Instead, Patent Owner focuses on a particular quote from Shin taken out of

context and divorced from Petitioner’s rationale. *Id.* at 20 (quoting Ex. 1005, 15:58–61).

We agree with Petitioner’s argument about how Shin indicates the resources. Pet. 33 (citing Ex. 1004, 33; Ex. 1005, 32:59–63). Shin’s Figure 3 shows the control region and data region, as Petitioner describes. *See id.* Also, Shin expressly states that “SC-MCCH transmissions (and the associated radio resources and MCS) *are indicated* on PDCCH.” Ex. 1004, 22 (emphasis added). For this reason in addition to the reasons described in Sections II.C.2.a–c *supra*, discussing the N1 and N2 DCI formats, Petitioner sufficiently shows that Shin discloses “the transmitting circuitry is configured to transmit the another SC-MCCH information with use of the resource indicated by the first DCI format and in accordance with the second DCI format.” Pet. 33–35.

3. Conclusion

Apart from the arguments discussed above, Patent Owner does not present arguments specifically directed to the other limitations of claim 3 and those in claims 4 and 6. *See* Prelim. Resp. Rather, Patent Owner argues that Petitioner has not shown that claims 4 and 6 are unpatentable for the same reasons as claim 3, because claim 6 is an analog of claim 3 and claim 4 depends from claim 3. *Id.* at 28.

Even so, Petitioner has the burden to show that the challenged claims are unpatentable. Thus, we have reviewed Petitioner’s arguments and evidence submitted in connection with the remaining limitations of claim 3 and claims 4 and 6. We find Petitioner’s arguments and evidence to be sufficient at this stage and on this record. In particular, it is reasonably likely that Petitioner would prevail in showing that claim 3 is unpatentable because Shin discloses an 8-bit bitmap (the recited “multiple bits”) and that the UE

can obtain multimedia broadcast multicast service (MBMS) data by decoding the corresponding N-PDSCH to obtain SC-MTCH information. *See* Pet. 35–36 (citing Ex. 1004, 22, 32; Ex. 1005, 15:51–63, 32:45–58; Ex. 1003 ¶¶ 151–152). Also, we agree with Patent Owner’s characterization that claim 6, reciting a method, is an analog of claim 3, reciting a base station, because claim 6 recites the corresponding method steps mirroring the functions of claims 3’s base station. Prelim. Resp. 28. Thus, the analysis for claim 3 above (Section II.C.2) applies to claim 6. *See* Pet. 37.

At this stage and on this record, it is reasonably likely that Petitioner would prevail in showing that claims 3, 4, and 6 are unpatentable over Shin.

To the extent that the Board has expressed disagreement with Patent Owner’s arguments or agreement with Petitioner’s, we emphasize that a trial could produce additional evidence that may support a determination in the Final Written Decision that unpatentability has not been adequately proven. All the statements above should be viewed in that context and should not be understood to express a final determination.

D. Obviousness over Xu, RAN72, and Fujishiro (Ground 2)

Petitioner asserts that claims 3, 4, and 6 are unpatentable as obvious over the combination of Xu, RAN72, and Fujishiro. Pet. 45– 67.

1. Fujishiro’s Status as Prior Art

Fujishiro is a Patent Application Publication of Application No. 16/271,391, filed February 8, 2019. Ex. 1011, code (21). The ’391 Application claims priority to Provisional Application No. 62/372,919. *Id.*, code (60). According to the cover of Fujishiro, the provisional application’s filing date is August 10, 2016. *Id.*

Patent Owner, however, argues that the ’919 Provisional’s filing date is actually August 11, 2016—the same day as the effective filing date of the

claimed invention—when China Standard Time (CST) is used to determine the filing date. Prelim. Resp. 28. Patent Owner argues the electronic acknowledgement receipt shows that the receipt date is “10-AUG-2016” but the time stamp is “13:19:57.” *Id.* at 29 (citing Ex. 10101, 52). Patent Owner concludes that Fujishiro “was filed at 1:19:57am CST on August 11, 2016 because CST is 12 hours ahead of Eastern Daylight Time (during the period from March to November, and otherwise 13 hours ahead).” *Id.* at 29.

We see no basis for using China Standard Time here. “The time and date of receipt of an application filed via EFS-Web is the *local* time and date in USPTO headquarters in Alexandria, Virginia.” Manual of Patent Examining Procedure (MPEP) § 502.05 I.C.2 (9th ed. Rev. 07.2015, Nov. 2015) (emphasis added).⁷ The MPEP provides an example of how an application filed from the Pacific Time Zone would receive the filing date as of the USPTO’s local time:

For example, if an applicant in California officially files a patent application with the USPTO through EFS-Web by clicking on the SUBMIT button at 10 p.m. Pacific Time in California on May 1, that application would be officially received by the USPTO at 1 a.m., local time (i.e., Eastern Daylight Time) on May 2. Accordingly, the application would receive a filing date of May 2.

Id. Thus, we disagree with Patent Owner’s argument that Fujishiro is not prior art for this reason. Prelim. Resp. 28–29.

2. *Analysis of the Merits of Ground 2*

Ground 2 is based on Fujishiro, Xu, and RAN72. *See* Pet. 45.

⁷ Available at https://www.uspto.gov/web/offices/pac/mpep/old/e9r07-2015_nov/mpep-0500.pdf.

Xu relates to broadcast messages containing SC-MCCH configuration information, including a change notification. Ex. 1006, 3:16–26. Xu uses DCI in a PDCCH for the change notification. *Id.* at 16:20–22. According to Petitioner, Xu describes the DCI format 1-c, which is defined in RAN72. Pet. 46 (citing Ex. 1006, 16:51–53; Ex. 1007 § 5.3.3.1.4). RAN72 is a collection of documents describing the 3GPP standard. *See* Exs. 1007–1009. Petitioner argues that Xu does not disclose transmitting services in an NB-IoT system. Pet. 46–47.

Fujishiro relates to MBMS services on reduced-bandwidth networks, including NB-IoT. Ex. 1011 ¶ 5. According to Petitioner, Fujishiro receives a SC-MCCH change notification that is separate from the SC-MCCH itself. Pet. 51 (citing Ex. 1003 ¶ 179).

3. *The Obviousness Rationale*

Petitioner argues that it would have been obvious to look to Fujishiro for transmitting services in an NB-IoT system. Pet. 46–47 (citing Ex. 1001, 1:25–50; Ex. 1003 ¶ 165). Here, Petitioner relies on the challenged patent’s specification. *See id.* For limitations [3.2] and [3.4], Petitioner cites Fujishiro’s teachings about transmitting the change notification and the update notification’s format. *See, e.g., id.* at 51–53 (citing Ex. 1011 ¶¶ 92, 94, 102, Fig. 11B); *id.* at 57 (citing Ex. 1011 ¶ 94).

Petitioner further argues that it would have been obvious to combine Xu and RAN72 to arrive at “a period of the more than one first subframe is different from a period of the more than one second subframe,” as recited in limitation [3.6]. *Id.* at 59–62. Petitioner argues that RAN72 calls for “transmitting the SC-MCCH change notification in the same subframe as the updated SC-MCCH information” in a non-NB-IoT systems, but “*the ’764 Patent explains* that in an NB-IoT system, this procedure is not feasible.” *Id.*

at 60–61 (citing Ex. 1009, 5.8.1.3; Ex. 1003 ¶¶ 204–205; Ex. 1001, 2:34–40) (emphasis added).⁸ That is, Petitioner relies on the challenged patent’s own disclosure here. *See id.* Petitioner then concludes that, “in an NB-IoT system, DCI indicating an SC-MCCH change notification **must** be transmitted in a different subframe from the DCI indicating a resource for the updated SC-MCCH information.” *Id.* at 61. Thus, Petitioner relies on the challenged patent’s specification in the obviousness rationale for combining Xu with both Fujishiro and RAN72. *See id.* at 46–47 (citing Ex. 1001, 1:25–50); 61 (citing Ex. 1001, 2:34–40).

Patent Owner argues that Petitioner improperly uses the ’764 patent itself as a reason to combine Fujishiro, Xu, and RAN72. Prelim. Resp. 22 (citing Pet. 46–47), 26 (citing Pet. 61). Patent Owner argues that “the disclosure of the ’764 Patent itself describing its rationale for developing the claimed invention cannot be supplied as the missing puzzle piece for the Petition’s lacking combination.” *Id.* Patent Owner makes a similar argument for limitation [3.3]. *Id.* at 20–23. In Patent Owner’s view, Xu is silent on issue of NB-IoT communications, and the Petition lacks a reason to combine disclosures directed to SC-MCCH in NB-IoT and non-NB-IoT applications without the ’764 patent’s specification. *Id.* at 22 (citing Pet. 45–47).

We agree that Petitioner’s obviousness rationale appears to be based on the challenged patent’s disclosure—at least in part. *See* Pet. 46–47 (citing Ex. 1001, 1:25–50), 61 (citing Ex. 1001, 2:34–40). Dr. Mark P. Mahon’s corresponding testimony relies on the same parts of the challenged patent, adding little additional technical reasoning or support from the prior art of

⁸ Petitioner cites “Section 5.8a.1.3.”, but the quoted passage appears in Section 5.8.1.3. Pet. 60 (emphasis added).

record. *See* Ex. 1003 ¶¶ 165, 205–206. Petitioner’s reliance on the challenged patent itself raises the possibility that Petitioner has succumbed to impermissible hindsight bias. *See Zoltek Corp. v. United States*, 815 F.3d 1302, 1313 (Fed. Cir. 2016) (citing *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 421 (2007)) (discussing the “the distortion caused by hindsight bias”); *see also InTouch Tech., Inc. v. VGO Commc’ns, Inc.*, 751 F.3d 1327, 1351 (Fed. Cir. 2014) (“It appears that [the expert] relied on the . . . patent itself as her roadmap for putting what she referred to as pieces of a ‘jigsaw puzzle’ together.”).

Even so, the preliminary record also indicates that it may be inherent in an NB-IoT system that “DCI indicating an SC-MCCH change notification **must** be transmitted in a different subframe from the DCI indicating a resource for the updated SC-MCCH information.” Pet. 61. This is a factual issue best resolved on a fully developed record.

4. *The DCI Formats*

For limitation [3.7], Petitioner relies on a combination of Xu and RAN72. *See id.* at 62–64. Petitioner argues, “Xu discloses transmitting SC-MCCH configuration information through DCI and carried on a PDCCH.” *Id.* at 62 (quoting Ex.1006, 17:15–24). Petitioner relies on RAN72 for the teaching of transmitting MC-MCCH information after the change notification. *Id.* at 63.

Patent Owner argues that Petitioner does not explain which DCI format it is relying upon to show the formats recited in limitation [3.7]: “the transmitting circuitry is configured to transmit the another SC-MCCH information with use of the resource indicated by *the first DCI format* and in accordance with *the second DCI format*.” Prelim. Resp. 27 (citing Pet. 62–64) (emphasis added). As for the rest of the claim, Patent Owner argues that

none of the references teach or suggest the recited formats, asserting that it is unclear whether Xu discloses a second DCI format, that Fujishiro does not disclose any specific second format, and that RAN72's format is completely different from Xu's format 1-c. *Id.* at 21–22; *see also id.* at 23–25 (arguing that the combination does not disclose the claimed formats).

In the section addressing limitation [3.7], Petitioner does not discuss the first and second formats. Pet. 62–64. For example, Petitioner does not explain how its analysis of the first and second formats for the other limitations relates to the teachings in Xu and RAN72 that it argues correspond to the subject matter in limitation [3.7]. *See id.*

In discussing its reasons for combining the prior art, Petitioner asserts that Xu refers to DCI format 1-c. *Id.* at 46. In the Petition's analysis of limitation [3.2], Petitioner argues that Xu “does not expressly state the DCI that is used to transmit the SC-MCCH” (*id.* at 50), and a “POSITA understood that a Direct Indication would be transmitted via DCI format N2” (*id.* at 52 (citing Ex. 1007, Section 6.4.3.3; Ex. 1003 ¶ 180)). Likewise, in the Petition's analysis of limitation [3.3], Petitioner argues that “a POSITA understood that the another SC-MCCH information would have been transmitted using a first DCI format, such as DCI format N1.” *Id.* at 57 (citing Ex. 1003 ¶ 194). In the section addressing limitation [3.7], Petitioner does not identify any teachings showing that, for example, a POSITA would have transmitted “another SC-MCCH information with use of the resource indicated by the first DCI format and in accordance with the second DCI format,” as claimed. *See id.* at 62–64.

For this reason, we cannot say that it is reasonably likely that Petitioner would prevail in showing that all claims challenged in the Petition are unpatentable based on Ground 2.

E. 35 U.S.C. § 325(d)

Patent Owner argues that the Petition should be denied under § 325(d) because Petitioner’s Ground 2 is based on Fujishiro, which was considered during prosecution. Prelim. Resp. 30–32.

Under 35 U.S.C. § 325(d), the Board may exercise discretion to deny a petition that presents the same or substantially the same art or arguments as were previously presented to the Office. To evaluate arguments for discretionary denial under § 325(d), the Board uses a two-part framework:

(1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and

(2) if either condition of first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims. If a condition in the first part of the framework is satisfied and the petitioner fails to make a showing of material error, the Director generally will exercise discretion not to institute *inter partes* review.

Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH, IPR2019-01469, Paper 6 at 8–9 (PTAB Feb. 13, 2020) (precedential).

Patent Owner does not argue that the Examiner considered Shin. *See* Prelim. Resp. 30–32. Rather, the sole basis for Patent Owner’s § 325(d) argument is that Petitioner relies on Fujishiro for the same features that the Examiner already considered. *Id.*

Yet it is reasonably likely that Petitioner would prevail in showing that claims 3, 4, and 6 is unpatentable over Shin, which covers all claims challenged in the Petition. *See* Section II.C *supra*. And we must grant or deny institution on both of Petitioner’s grounds. *See* 37 C.F.R. § 42.108(a) (“When instituting . . . review, the Board will authorize the review to

proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.”); *see also PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1359–60 (Fed. Cir. 2018) (interpreting the relevant statutory provisions, in light of *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348 (2018), to require “a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition”).

As for discretionary denials, the Board must determine whether § 325(d) is sufficiently implicated that its statutory purpose would be undermined by instituting on both grounds. *See SAS Q&As*, D1 (USPTO June 5, 2018).⁹ Here, § 325(d) is not sufficiently implicated that its statutory purpose would be undermined. Rather, the benefits of holding a trial to resolve the Shin ground for which Petitioner has shown a likelihood of prevailing outweigh any theoretical burden of addressing the weaker Fujishiro-based ground, to the extent that the Examiner considered Fujishiro. *See Dril-Quip, Inc., v. FMC Tech., Inc.*, PGR2021-00049, Paper 10 at 13–14 (PTAB Aug. 4, 2021) (declining to exercise discretion to deny institution under § 325(d) even though one asserted ground was “weak” on the merits).

Thus, we do not exercise our discretion to deny institution based on § 325(d).

III. CONCLUSION

It is reasonably likely that Petitioner would prevail in showing all challenged claims are unpatentable. Thus, we institute an *inter partes* review.

⁹ https://www.uspto.gov/sites/default/files/documents/sas_qas_20180605.pdf

IV. ORDER

It is

ORDERED that, under 35 U.S.C. § 314(a), an *inter partes* review of claims 3, 4, and 6 of the '764 patent is instituted for all grounds in the Petition; and

FURTHER ORDERED that, under 35 U.S.C. § 314(a), *inter partes* review of the '764 patent is instituted on this Decision's entry date, and under 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is given of the trial's institution.

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