

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,
Petitioner,

v.

INTELLECTUAL VENTURES II LLC,
Patent Owner.

IPR2025-00220
Patent 11,206,670 B2

Before KRISTEN L. DROESCH, FREDERICK C. LANEY, and
AARON W. MOORE, *Administrative Patent Judges*.

DROESCH, *Administrative Patent Judge*.

JUDGMENT

Final Written Decision

Determining All Challenged Claims Unpatentable

35 U.S.C. § 318(a)

I. INTRODUCTION

We have authority to hear this *inter partes* review under 35 U.S.C. § 6, and this Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, Petitioner has established by a preponderance of the evidence that claims 1–18 of U.S. Patent No. 11,206,670 B2 (Ex. 1001, “the ’670 Patent”) are unpatentable.

A. Background and Procedural History

Tesla, Inc. (“Petitioner”) filed a petition requesting *inter partes* review of claims 1–18 of the ’670 Patent. Paper 2 (“Petition” or “Pet.”). Intellectual Ventures II LLC (“Patent Owner”) timely filed a preliminary response. Paper 7.

Upon review of the parties’ arguments and supporting evidence, we instituted review with respect to all grounds and claims set forth in the Petition. Paper 10.

Patent Owner filed a response to the Petition (Paper 19, “PO Resp.” or “Response”) to which Petitioner filed a reply (Paper 23, “Pet. Reply” or “Reply”), and Patent Owner filed a sur-reply (Paper 26, “PO Sur-reply”).

In support of the Petition and Reply, Petitioner relies upon declarations of Zhi Ding Ph.D. Exs. 1003, 1037. In support of the Response, Patent Owner relies upon declarations of Todor V. Cooklev, Ph.D., and Gary R. Lomp, Ph.D. Exs. 2006, 2010. Petitioner filed a transcript of the deposition of Dr. Lomp. Ex. 1036.

An oral hearing was held on April 7, 2026, and a transcript of the hearing is included in the record. Paper 29.

B. Real Parties-In-Interest

Petitioner indicates that Tesla, Inc. is the real party-in-interest.

Pet. 78. Patent Owner indicates that Intellectual Ventures II LLC is the real party-in-interest. Paper 3, 2.

C. Related Matters

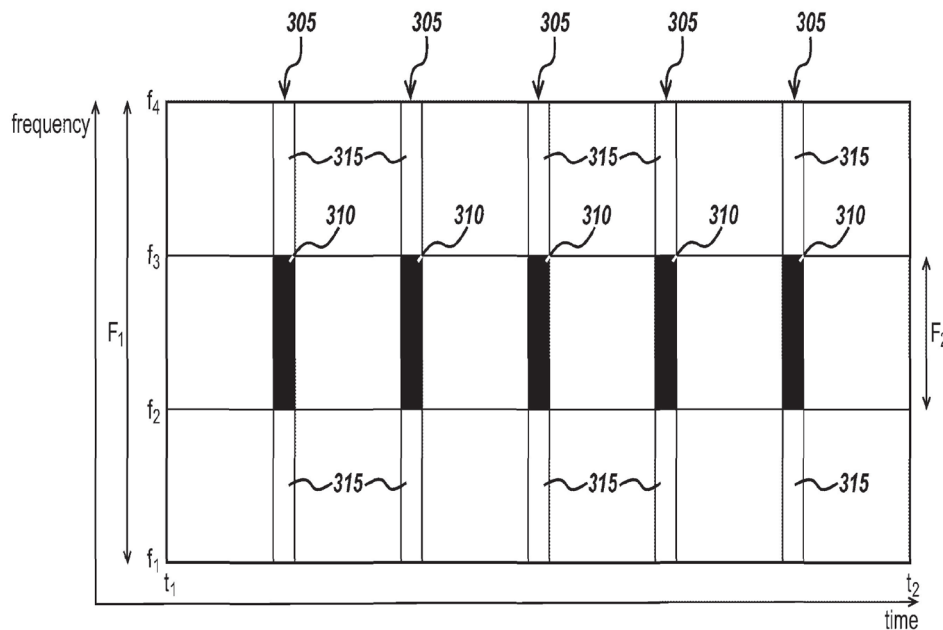
The parties indicate the '670 Patent is or was involved in the following district court litigations: *Intellectual Ventures II LLC v. Tesla, Inc.*, No. WDTX-6-24-cv-00188 (W.D. Tex.); *Intellectual Ventures II LLC v. Tesla, Inc.*, No. WDTX-1-24-cv-00884 (W.D. Tex.); and *Intellectual Ventures II LLC v. Tesla, Inc.*, No. WDTX-1-24-cv-00390 (W.D. Tex.). See Pet. 78; Paper 3, 2.

D. The '670 Patent (Ex. 1001)

The '670 Patent relates to “a system, method, base station and terminal device for communicating using a subordinate carrier of a host carrier.” Ex. 1001, 1:18–21. By way of background, the '670 Patent describes third and fourth generation mobile telecommunication systems, “such as those based on the 3GPP defined UMTS and Long Term Evolution (LTE) architectures,” as being “able to support a more sophisticated range of services than simple voice and messaging services offered by previous generations of mobile telecommunication systems.” *Id.* at 1:39–44. “[T]he parallel development of a class of devices and applications which, rather than taking advantage of the high data rates available, instead take advantage of the robust radio interface and increasing ubiquity of the coverage area.” *Id.* at 1:54–59. Examples of such devices and applications “include so-called machine type communication (MTC) applications . . . , some of which are in some respects typified by semi-autonomous or autonomous wireless

communication devices (i.e. MTC devices) communicating small amounts of data on a relatively infrequent basis,” such as in “smart meters.” *Id.* at 1:59–2:2. According to the ’670 Patent, “there is now a desire to use relatively inexpensive and less complex devices to communicate using LTE type networks.” *Id.* at 2:23–25.

The ’670 Patent describes two classes of device for communication using LTE network standards: “A first class of device is configured to communicate via a host carrier, and a second class of device is configured to communicate via a subordinate carrier.” Ex. 1001, 7:33–36. Figure 3 of the ’670 Patent, reproduced below, shows “a time and frequency resource allocation between a host carrier and a subordinate carrier.” *Id.* at 6:39–41.



In Figure 3, “[t]he host carrier has a frequency band F_1 , extending from the frequency f_1 to the frequency f_4 ” and “[t]he subordinate [carrier] has a frequency band F_2 , extending from a frequency f_2 to a frequency f_3 .” *Id.* at 8:29–33. “[C]ertain time periods 305 of the frequency band F_2 are allocated to the subordinate carrier” and the shaded portions 310 indicate

“those time and frequency resources allocated to the subordinate carrier.”
Id. at 8:38–44.

According to the '670 Patent, “3GPP LTE Releases 8, 9 and 10 (Rel. 8/9/10) define 6 downlink transmission bandwidth configurations from 1.4 MHz to 20 MHz representing the use of 6, 15, 25, 50, 75 or 100 resource blocks.” Ex. 1001, 9:32–35.

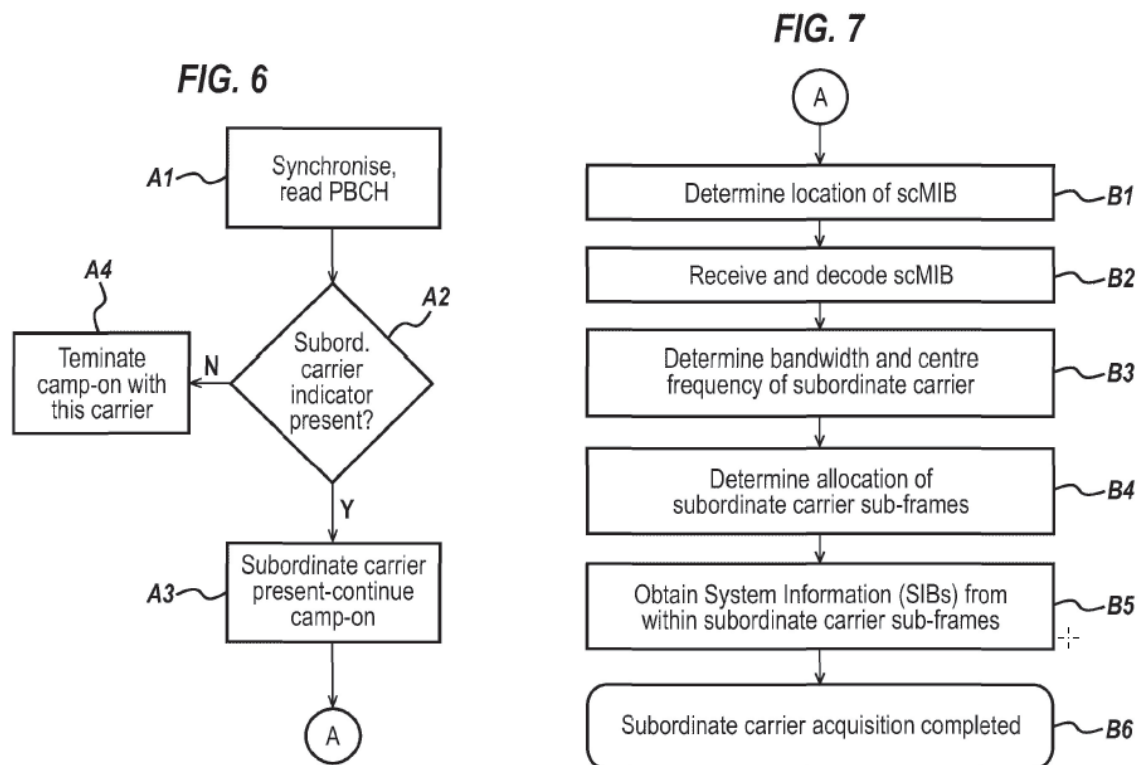
[F]or all bandwidth configurations Rel. 8/9/10 has specified that basic physical layer synchronisation signals (Primary Synchronisation Signals—PSS, and Secondary Synchronisation Signals—SSS), and the most fundamental system information (Master Information Block—MIB) is transmitted using only the central 6 resource blocks which are receivable with a 1.4 MHz transceiver.

Id. at 9:38–55. While “the synchronisation signals and the Master Information Block (MIB) of the system information are present within a frequency range which is likely to be receivable by a low-capability device,” “further system information, carried in System Information Blocks (SIBs), and the associated control signalling may be transmitted at a frequency which cannot be received by the low-capability device.” *Id.* at 12:57–65. “If a low-capability device attempts to camp-on to a network which does not support a subordinate carrier then the camp-on procedure will ultimately fail,” which “is a waste of time and power for the low-capability device.” *Id.* at 13:1–5.

According to the '670 Patent, it would be “desirable to signal to an MTC UE [(user equipment)] which has restricted reception bandwidth the presence of an MTC subordinate carrier within a larger bandwidth LTE carrier accessible to legacy UEs (LTE Rel. 8/9/10 UEs).” Ex. 1001, 13:6–9. “[F]or all LTE bandwidths (Rel. 8/9/10) the basic physical layer synchronisation signals and the most important system information (Master

Information Block) is transmitted using only the central 6 resource blocks (72 subcarriers)” and “[t]he Master Information Block (MIB) is transmitted in the Physical Broadcast Channel (PBCH) which is allocated to the central 72 subcarriers and to just the first 4 OFDMA symbols of the second slot of every 10 ms radio frame.” *Id.* at 13:10–18. Thus, “assuming that the low bandwidth MT UE is able to receive at least 6 resource blocks in the frequency domain, then the PBCH (for example the MIB) may be used to signal the presence of an MTC subordinate carrier.” *Id.* at 13:18–22.

Figures 6 and 7 reproduced below illustrate schematic flow diagrams of a first part and second part of a camp-on procedure for connecting to the subordinate carrier. *See* Ex. 1001, 6:46–50.



At step A1, an MTC device synchronises to a carrier using PSS and SSS, determines the frame timing, and proceeds to decode the PBCH to determine the MIB for the carrier. *See* Ex. 1001, 13:24–32. Next in Step A2, the MTC

device determines whether or not a subordinate carrier indicator flag is present in the MIB, that “may be signalled in one (or more) of the MIB bits that are spare in LTE Release 8/9/10 (10 bits are currently spare).” *Id.* at 13:32–37. If the MTC device determines that the MIB contains a subordinate carrier indicator flag then the camp-on process continues at step A3. *See id.* at 13:37–39. “As an alternative to using the MIB to signal the presence of a subordinate carrier, a subordinate carrier indicator signal could be provided at a known time/frequency somewhere other than in the MIB.” *Id.* at 13:47–50. “The subordinate carrier indicator signal may be relative to the host carrier PBCH and/or the System Frame Number conveyed in the host carrier PBCH/MIB.” *Id.* at 13:52–54.

The '670 Patent further describes that “[h]aving detected the presence of an MTC subordinate carrier the UE needs to determine the bandwidth of the subordinate carrier in order to be able to read the further system information which will contain the other characteristics of the subordinate carrier.” Ex. 1001, 14:7–11. One way in which the subordinate carrier bandwidth may be signalled to the MTC UE is by signalling the downlink bandwidth and possibly other characteristics in a Subordinate Carrier Master Information Block (scMIB). *See id.* at 14:11–30. “The scMIB would be signalled in fixed time/frequency resources, known in advance to the mobile terminal.” *Id.* at 14:30–33; *see id.* at 14:33–16:22. In order to receive and decode the scMIB, the MTC UE must be able to determine which resource elements in which it is carried, and it is assumed that the scMIB is always signalled in a fixed set of resource elements. *See id.* at 14:62–64, 15:10–13. “The fixed set of resource elements is contained within a subset (or all) of those subframes reserved by one (or more) of the

subframe allocations configured in the information element mbsfn-SubframeConfigList broadcast in the host carrier SIB2.” *Id.* at 15:17–21.

Following the initial steps of the camp-on procedure in Figure 6, at step B1 shown in Figure 7, the location of the scMIB is determined. *See* Ex. 1001, 16:24–26. At step B2, the scMIB is received and decoded. *See id.* at 16:33–35. At step B3, the bandwidth and central frequency of the subordinate carrier may be determined. *See id.* at 16:37–39. At step B4, the allocation of subordinate carrier subframes is determined, and an indication of those subframes may be specified in the scMIB. *See id.* at 16:48–55. “At . . . step B5, further system information (System Information Blocks) relating to the subordinate carrier is obtained from subframes allocated to the subordinate carrier” and “can be used to complete the camp on procedure of the MTC UE to the subordinate carrier at step B6.” *Id.* at 16:55–58.

E. Illustrative Claim

Claims 1, 7, and 13 are independent and claims 2–6, 8–12, and 14–18 dependent therefrom, respectively. *See* Ex. 1001, 18:54–20:48. Claim 1 is illustrative and reproduced below:

[1.0] 1. A user equipment (UE) comprising:

a transceiver; and

a processor, operatively coupled to the transceiver; wherein

[1.1] the transceiver and the processor are configured to receive a primary synchronization signal (PSS), a secondary synchronization signal (SSS), and a physical broadcast channel (PBCH) including a master information block (MIB), [1.2] the PSS, SSS and PBCH are in a first bandwidth of a cell having a cell bandwidth, [1.3]

wherein the first bandwidth is a first portion of the cell bandwidth, [1.4] wherein the MIB includes an indication of frequency resources and time resources for use in acquiring additional system information; and

[1.5] the transceiver and the processor are configured to acquire the additional system information using the indication of the frequency resources and the time resources, [1.6] wherein the indicated frequency resources and the time resources include control information for use by the UE to acquire a system information block 1.

Id. at 18:54–19:6 (Petitioner’s claim element references [1.0] through [1.6] added).

F. Asserted Patentability Challenge and Asserted Prior Art

Petitioner asserts that claims 1–18 would have been unpatentable based on the following ground (Pet. 16):

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–18	103(a) ¹	Wallen, ² Berggren ³

II. ANALYSIS

A. Claim Construction

In an *inter partes* review proceeding, the Board applies the same claim construction standard as that applied in federal courts in a civil action under 35 U.S.C. § 282(b), which is generally referred to as the *Phillips* standard. See 37 C.F.R. § 42.100(b); *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). Under the *Phillips* standard, “words of a claim ‘are generally given their ordinary and customary meaning.’” *Phillips*, 415 F.3d at 1312.

¹ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284 (2011), amended 35 U.S.C. § 103 effective March 16, 2013. Because the ’670 Patent claims an effective filing date prior to the effective date of the applicable AIA amendment, we refer to the pre-AIA version of § 103.

² US 2012/0327895 A1, published Dec. 27, 2012, filed Feb. 16, 2012 (Ex. 1005).

³ US 2011/0269475 A1, published Nov. 3, 2011, filed July 1, 2011 (Ex. 1007).

Under *Phillips*, in determining the ordinary and customary meaning, the starting point for the analysis is the language of the claims themselves. *See Phillips*, 415 F.3d at 1314. Furthermore, “the specification ‘is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.’” *Id.* at 1315 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). Extrinsic evidence may be useful, but it is unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence. *Id.* at 1319.

Petitioner does not provide any explicit proposed claim constructions. *See* Pet. 16; Pet. Reply 6 (citing *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017)). Patent Owner proposes a claim construction for the following recitation of independent claims 1, 7, and 13: “the MIB includes an indication of . . . resources for use in acquiring additional system information . . . the indicated . . . resources include control information for use by the UE to acquire a system information block 1.” *See* PO Resp. 27 (emphasis omitted, alterations in original). According to Patent Owner, “[u]nder its plain and ordinary meaning, [s]ystem information block 1 (SIB1) is an ordinary, legacy SIB, is not an MTC-specific SIB, and is not intended for an MTC device.” *See id.* (citing Ex. 2010 ¶ 40) (emphasis omitted).

In the Reply, Petitioner asserts that Patent Owner’s proposed construction is unsupported by, and inconsistent with, the claims, the purpose of the ’670 Patent, and testimony of Patent Owner’s expert, Dr. Lomp and should be rejected. Pet. Reply 2–6. More specifically, Petitioner contends that the proposed construction is inconsistent with the surrounding claim language because “[c]laims 1, 7, and 13 do not mention

MTC devices, do not require or limit what type of UE receives the SIB1, and do not specify a type of SIB.” *Id.* at 2–3. Petitioner asserts that Patent Owner has not pointed to any surrounding claim language to justify the requirement for a “legacy SIB” or the negative limitation of “not intended for an MTC device.” *See id.* at 3 (citing *Omega Eng’g, Inc. v Raytek Corp.*, 334 F.3d 1314, 1323 (Fed. Cir. 2003)). Petitioner further points out that a SIB 1 is defined by the type of information contained therein, not the intended receiver thereof. *See id.* (citing Ex. 1037 ¶ 26; Ex. 1038, 308; Ex. 2009, 59–60).⁴

Petitioner further argues that the proposed construction contradicts the goal of the ’670 Patent. According to Petitioner, “[t]he central problem addressed in the ’670 [P]atent is how to accommodate ‘MTC-like terminal[s]’ in legacy ‘LTE type network’ that are geared toward more complex devices.” Pet. Reply 3 (citing Ex. 1001, 2:3–25, 12:51–67); *see id.* at 3–4 (citing PO Resp. 2–3)) (third alteration in original). Petitioner contends that ’670 Patent Specification discloses and claims a solution to the problem of terminal devices with a lower bandwidth capability, such as MTC devices, may not be able to receive any more information than that contained in the MIB of a RE. 8/9/10 compliant LTE network. *See id.* (citing Ex. 1001, 9:32–10:5). According to Petitioner, “the claims of the ’670 [P]atent allow MTC devices to access system information beyond MIB (i.e., SIB1) in LTE networks.” *Id.* (citing Ex. 1037 ¶ 27). Petitioner contends that Patent Owner’s construction should not be adopted, and if it

⁴ Petitioner’s references are to the reference page numbers, not the exhibit page numbers for Exhibits 1038 and 2009.

were to be adopted, the claims of the '670 Patent would be too narrow in scope to encompass MTC devices, which is the focus of the '670 Patent Specification. *Id.* (citing *Phillips v. AWH Corp.*, 415 F.3d at 1312, 1343).

Petitioner further asserts that Dr. Lomp's cited declaration testimony (Ex. 2010 ¶ 40) cites other paragraphs (*id.* ¶¶ 38, 48) of his testimony and other extrinsic evidence that contradicts Patent Owner's proposed construction. *See* Pet. Reply 5 (citing PO Resp. 27; Ex. 2010 ¶ 40). Specifically, Petitioner points out that Dr. Lomp, in paragraph 48, states that legacy SIB1 can be detected by all devices on the network and includes information particularized for MTC-like communication devices. *See id.* (citing Ex. 2010 ¶¶ 40, 48; Ex. 1036, 12:9–12). Petitioner also points out that in other portions of the deposition, Dr. Lomp testifies to the opposite—that MTC devices could not receive SIBs. *See id.* at 5–6 (citing Ex. 1036, 11:6–17; Ex. 1037 ¶¶ 18–20; Ex. 2010 ¶ 35).

We agree that Patent Owner's proposed claim construction is wholly unsupported by, and inconsistent with, the language of independent claims 1, 7, and 13, and the aims of the '670 Patent Specification. *See* Ex. 1001, 2:3–25, 9:32–10:5, 12:51–67, 18:54–19:6, 19:26–42, 20:12–26. Moreover, the cited extrinsic evidence—testimony by Patent Owner's expert Dr. Lomp—does not support Patent Owner's proposed construction because it is internally inconsistent and also undermined by Dr. Lomp's inconsistent deposition testimony. *See* Ex. 1036, 11:6–17, 12:9–12; Ex. 2010 ¶¶ 40, 48. Similarly, the extrinsic evidence cited by Petitioner (e.g., Exs. 1037, 1038, 2009) undermines Patent Owner's position emphasizing the intended recipient devices of SIB1. In summary, we decline to adopt Patent Owner's proposed claim construction because it is unsupported by the claim language, the '670 Patent Specification, and the cited extrinsic evidence.

Accordingly, we construe the disputed claim limitation in accordance with the ordinary and customary meaning which does not include limiting SIB1 to an ordinary legacy SIB and excluding MTC specific SIBs or SIBs intended for MTC devices.

In addition, we need not construe explicitly any other claim term or phrase. *See, e.g., Nidec Motor Corp.* 868 F.3d at 1017 (“[W]e need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

B. Level of Ordinary Skill in the Art

Petitioner asserts that a person of ordinary skill in the art (“POSITA”) “would have had a bachelor’s degree from an accredited program in electrical engineering, computer engineering, computer science, or equivalent training, and at least two years of professional experience relating to wireless communication technology” and “[l]ack of professional experience can be remedied by additional education, and vice versa.” Pet. 15–16 (citing Ex. 1003 ¶¶ 19–21). Patent Owner does not dispute Petitioner’s definition. *See generally* PO Resp.

We find that “at least” in Petitioner’s formulation of the level of skill in the art is vague and open-ended. Otherwise, we adopt Petitioner’s definition of a person of ordinary skill in the art because it is consistent with the level of skill reflected by the ’670 Patent Specification and the prior art of record.

C. Principles of Law

A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject

matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) if in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).⁵

D. Entitlement of Challenged Claims to Benefit of Earlier Filing Date

Petitioner asserts that the earliest filing date on the face of the ‘670 Patent is January 21, 2013. *See* Pet. 15; Ex. 1001, code (63). Petitioner contends that “[t]he earliest *possible* priority date of the ’670 patent is January 20, 2012, [based on] the filing date of foreign priority application (GB1201000).” Pet. 15 (emphasis added); *see* Ex. 1001, code (30). According to Petitioner, “[a]ll the relied-upon prior art predates January 20, 2012.” Pet. 15. Petitioner further asserts that “to the extent Patent Owner asserts that the ’670 patent is entitled to the filing date of the foreign priority application (GB1201000), Petitioner reserves the right to contest that showing.” *Id.*

Wallen has a filing date of February 12, 2012, and claims benefit to the June 27, 2011, earlier filing date of provisional application No. 61/501,547 (“Wallen-Prov”). *See* Ex. 1005, codes (22), (60). Petitioner

⁵ The parties do not present evidence or arguments addressing secondary considerations of non-obviousness.

contends that Wallen is prior art under pre-AIA 35 U.S.C. § 102(e) as of the filing date of Wallen-Prov. *See* Pet. 17. Petitioner further contends that

Wallen is also prior art under pre-AIA 35 U.S.C. § 102(e) as of its **nonprovisional** filing date of February 16, 2012, because the '670 patent is not entitled to claim the benefit of GB 1201000 due to its lack of written description support of the Challenged Claims under pre-AIA 35 U.S.C. §112, first paragraph, such as lack of written description of the limitation *wherein the indicated frequency resources and the time resources include control information for use by the UE to acquire a system information block 1.*

Id. at 17 n.3.

Petitioner meets its initial burden of going forward with evidence (i.e., production) by asserting that the earliest filing date on the face of the '670 Patent is January 21, 2013, presenting Wallen as a prior art basis for unpatentability, and asserting that Wallen is prior art as of its February 16, 2012, filing date. *See* Pet. 15–17, 17 n.3; *Dynamic Drinkware*, 800 F.3d at 1379. Thereafter, the burden of production shifts to Patent Owner to argue or produce evidence that the prior art does not render the challenged claims unpatentable or that Wallen is not prior art because the challenged claims of '670 Patent are entitled to the benefit of a filing date prior to Wallen's February 16, 2012, filing date. *See Dynamic Drinkware*, 800 F.3d at 1380.

Patent Owner contends that the '670 Patent is entitled to its January 20, 2012, priority date. PO Resp. 43. Patent Owner asserts that GB1201000 expressly discloses a system information block 1 (SIB1). *See id.* at 57–58 (citing Ex. 1018, 25). Patent Owner contends that Petitioner's argument that the '670 Patent is not entitled to claim the benefit of priority to GB1201000 lacks merit. *See* Pet. 57 (citing Pet. 17 n.3).

In the Reply, Petitioner contends that Patent Owner has not satisfied its burden of production to show that the '670 Patent is entitled to the earlier January 20, 2012, filing date of GB1201000. *See* Pet. Reply 14–15.

Petitioner asserts that Patent Owner has made no substantive showing of actual entitlement, and the Response is deficient because it addresses only a single claim limitation. *See id.* at 14–15 (citing PO Resp. 57–58).

According to Petitioner, Patent Owner “did not attempt to show that the foreign priority application provides written description support for the challenged claims.” *Id.* at 15. Petitioner further faults Patent Owner’s Response as “focused only on whether the foreign priority application discloses ‘*a system information block 1*,’ not the entirety of the limitation that includes additional subject matter.” *Id.* (citing PO Resp. 57–58).

In the Sur-reply Patent Owner asserts that “[t]he Petition did not present a developed theory that GB1201000 lacks §112 support for the challenged claims as a whole; it offered only a conclusory footnote alleging only a single unsupported limitation.” PO Sur-reply 15 (citing Pet. 17 n.3). According to Patent Owner, “the Petitioner’s priority challenge was limited to an asserted ‘missing’ feature, Patent Owner’s rebuttal evidence on that feature satisfies any responsive production obligation and returns the controversy to Petitioner—who must then prove, with record evidence, that the cited disclosure still fails §112 for the challenged claims.” *Id.* at 15–16. Patent Owner contends that “*Dynamic Drinkware* does not allow a Petitioner to prevail simply by asserting that Patent Owner should have done more than respond to the Petition’s only identified alleged deficiency.” *Id.* at 16.

We do not agree with Patent Owner’s arguments. Contrary to Patent Owner’s arguments, the shifting burden of production framework of *Dynamic Drinkware* does not require Petitioner to specifically or

substantively challenge Patent Owner's claim for the benefit of an earlier filing date. As explained above, the burden of production shifted to Patent Owner to show that Wallen is not prior art because the '670 Patent is entitled to the earlier January 20, 2012, filing date of foreign priority application GB1201000. *See Dynamic Drinkware*, 800 F.3d at 1379–1380. For a claim in a later-filed application to be entitled to the filing date of an earlier application, the earlier application must provide written description support for the claimed subject matter. *Anascape, Ltd. v. Nintendo of Am. Inc.*, 601 F.3d 1333, 1337 (Fed. Cir. 2010). To satisfy the written description requirement, “a prior application itself must describe an invention, and do so in sufficient detail that one skilled in the art can clearly conclude that the inventor invented the claimed invention as of the filing date sought.” *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997); *see also VasCath v. Mahurkar*, 935 F.2d 1555, 1563–64 (Fed. Cir. 1991) (“[T]he applicant must . . . convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention . . . now claimed.” (emphasis omitted)), *Ariad Pharm. Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1352 (Fed. Cir. 2010) (en banc) (“[I]t is the specification itself that must demonstrate possession.”).

Patent Owner's arguments fail to meet this burden of production because, aside from addressing a system information block 1, Patent Owner's arguments do not substantively address how GB1201000 provides written description support for any other limitations of the claimed invention. *See* PO Resp. 43, 57. Accordingly, Patent Owner has not met its burden of production in coming forward with evidence or argument to show possession of the claimed invention in foreign priority application GB1201000, the burden of production did not shift back to Petitioner, and,

accordingly, the '670 Patent is not entitled to the benefit of the January 20, 2012, filing date of foreign priority application GB1201000.

E. Patentability Challenge to Claims 1–18 over Wallen and Berggren

1. Wallen (Ex. 1005)

a. Entitlement to Benefit of Earlier Filing Date

As briefly highlighted above Wallen has a filing date of February 12, 2012, and claims benefit to the June 27, 2011, earlier filing date of provisional application No. 61/501,547 (“Wallen-Prov”). *See* Ex. 1005 codes (22) (60). We need not address whether Wallen is entitled to the June 27, 2011, earlier filing date of Wallen-Prov, because Wallen qualifies as prior art to the '670 Patent as of its February 12, 2012, filing date.

b. Overview of Wallen

Wallen relates to “solutions to the problem in which a communication device supporting only a smaller bandwidth and/or longer response time relative to those of a legacy system . . . is not able to connect to a network having a higher bandwidth.” Ex. 1005 ¶ 85. By way of background, Wallen points to “an incompatibility between MTC devices supporting only a low bandwidth and/or having insufficient decoding performance . . . which prevents such devices from being able to connect to an LTE system as it is presently defined by the Third Generation Partnership Project (3GPP) standard.” *Id.* ¶ 15.

While such MTC devices would be able to perform a cell search and receive a Master Information Block (MIB) on just a 1.4 MHz bandwidth, camping on a conventional LTE cell would still not be possible because being able to receive the further broadcast information (e.g., a System Information

Block—“SIB”) that is required for the MTC device to be able to, for example, perform a random access via the Random Access Channel (RACH) requires that the MTC device be capable of supporting the full LTE bandwidth and also that the MTC device be able to decode the PDCCH and the PDSCH without any additional delay restrictions compared to the current standard.

Id. As such, it is

desirable to have methods and apparatuses that enable an MTC device to retain its relatively low performance characteristics (e.g., in terms of size of bandwidth supported and/or processing power) and yet be capable of connecting to a modern-day cellular communications system, such as but not limited to an LTE system, that ordinarily imposes higher performance requirements on connecting devices.

Id. ¶ 16.

Figure 9 of Wallen is reproduced below.

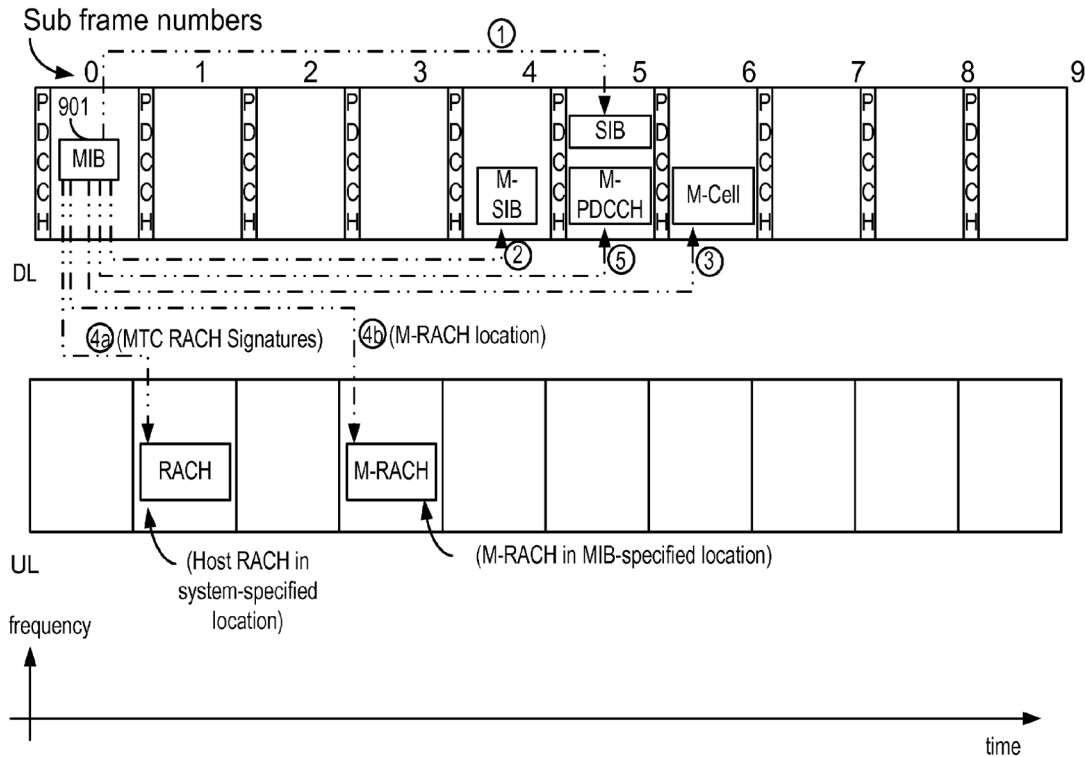


Figure 9 depicts “a timing/frequency diagram of a MIB 901 and its relationship to various other MTC elements within the host cell spectral resources.” Ex. 1005 ¶ 67; *see id.* ¶ 35. According to Wallen, “the LTE standard defines a MIB such that it includes spare bits,” which “can be used for conveying the MTC-related information, such as time- and/or frequency-wise locations of resource blocks or resource elements that the MTC device needs to receive and decode for further information to be able to connect to the M-cell.” *Id.* ¶ 65. “[T]he MIB supplies an MTC device with information that is useful for enabling the MTC device to locate an M-cell and/or to locate an M-PDCCH and/or to locate an M-SI, and/or to know how it can perform an M-RACH procedure.” *Id.* ¶ 67. For example, as shown in Figure 9,

the MIB 901 (which occupies its standard location in the host cell) includes time/frequency information (represented by the

number ‘1’ enclosed in a circle) that informs the MTC device of a location of the resource blocks and/or modulation and coding scheme (MCS) allocated to the first system information block (SIB 1) that is transmitted in a system standardized location (e.g., in subframe 5 in an LTE system).

Id. ¶ 68.

In another aspect (represented by the number “5” enclosed in a circle), the MIB 901 indicates the resource blocks, reference signal sequence, or search space allocated to a specific M-PDCCH, which should occupy regions of the host system’s radiofrequency spectrum that are different from the host system’s own (legacy) PDCCH locations. The M-PDCCH supplies control information to the MTC device, including MTC specific SIBs or downlink assignments pointing to the SIBs that are intended for this MTC device.

Id. ¶ 72.

2. Overview of Berggren (Ex. 1007)

Berggren relates to “[s]ignaling resource partition of a component carrier in a wireless communication system,” wherein “[t]he number of primary resource blocks and the number of extension resource blocks of the component carrier is encoded and signaled to a UE, so the UE can obtain the resource partition of the component carrier.” Ex. 1007, code (57).

According to Berggren, in LTE, “time-frequency resources of a carrier are divided into resource blocks (RBs), which represent orthogonal resources to be used for transmission.” Ex. 1007 ¶ 6. To establish “a connection to a cell in LTE, a UE first detects and synchronizes to the cell by receiving the synchronization signals, and then acquires the system information needed for operating within a cell.” *Id.* ¶ 74. According to Berggren, one of the crucial parts of the system information is “the downlink system bandwidth, i.e., the total number of available RBs of the component

carrier,” which “is included in the so called master information block (MIB) which contains only a small part of the system information and is transmitted with a periodicity of 40 ms on the BCH (Broadcast Channel).” *Id.* “The BCH is a transport channel which in turn is mapped to the PBCH (Physical BCH) which is always located in the 6 central RBs of the component carrier.” *Id.* Hence, Berggren explains, “the UE can receive the PBCH (and thus the MIB) without any prior information of the system bandwidth,” and “[t]he information contained in the MIB makes it possible to receive the channels that occupy the whole component carrier bandwidth, e.g., the control information in the PDCCH (Physical Downlink Control Channel) associated with the PDSCH (Physical Downlink Shared Channel), which contains the scheduled data transmissions.” *Id.*

3. Analysis of Claim 1

Undisputed Limitations

Petitioner asserts that Wallen’s disclosure of an MTC device that includes radio circuitry 1307 and processor 1315 that controls the other UE circuitry/hardware components 1305 that includes radio circuitry 1307 teaches the preamble recitation [1.0] “[a] user equipment (UE) comprising: a transceiver; and a processor, operatively coupled to the transceiver.” *See* Pet. 38–41 (reproducing Ex. 1005, Fig. 13 (with Petitioner’s added annotations); citing Ex. 1003 ¶¶ 66–69; Ex. 1005 ¶¶ 83–84) (emphasis omitted).

Petitioner asserts that Wallen’s disclosure of the transceiver and processor that utilizes LTE standard synchronization signals primary synchronization signal (PSS) and secondary synchronization signal (SSS) and receives the broadcast Master Information Block (MIB) teaches most of

limitation [1.1] “the transceiver and the processor are configured to receive a primary synchronization signal (PSS), a secondary synchronization signal (SSS), and a physical broadcast channel (PBCH) including a master information block (MIB).” *See* Pet. 41–42 (citing Ex. 1003 ¶¶ 70–75; Ex. 1005 ¶¶ 76, 77, 83–84). Petitioner implicitly acknowledges that Wallen does not expressly disclose a physical broadcast channel (PBCH), but relies on Berggren for confirming that the LTE standard specifies that a PBCH carries the MIB. *See* Pet. 42–43 (citing Ex. 1003 ¶ 74; Ex. 1007 ¶¶ 73–75). According to Petitioner, “a person of ordinary skill in the art would have been motivated to transmit Wallen’s MIB using a PBCH as taught by Berggren.” Pet. 43 (citing Pet. 33–38). In particular, Petitioner asserts that a person of ordinary skill in the art “would have been motivated for Wallen’s LTE system to utilize the LTE standard implementation details taught by Berggren,” and “it would have been predictable and beneficial for Wallen’s user equipment to receive the MIB in the [PBCH], as was standard in LTE.” Pet. 34 (citing Ex. 1003 ¶ 58), 37 (citing Ex. 1003 ¶ 63). According to Petitioner, “the combination is nothing more than ‘the predictable use of prior art elements according to their established functions.’” Pet. 38 (citing *KSR*, 550 U.S. at 417). Based on the entire record developed during trial, we are persuaded by a preponderance of the evidence that Petitioner provides sufficient articulated reasoning with rational underpinning to support the conclusion that it would have been obvious to a person of ordinary skill in the art to modify Wallen’s broadcast MIB with Berggren’s teachings of using a PBCH for transmitting broadcast MIBs. *See* Pet. 33–38; *KSR*, 550 U.S. at 418.

Petitioner further contends that Wallen’s disclosure that the PSS, SSS, and MIB are transmitted in a 1.4 MHz bandwidth, which is a subset of the

cell bandwidth, in combination with the teachings of Berggren, teach limitation [1.2] “the PSS, SSS and PBCH are in a first bandwidth of a cell having a cell bandwidth” and limitation [1.3] “wherein the first bandwidth is a first portion of the cell bandwidth.” *See* Pet. 43–46 (reproducing Ex. 1007 Table 1 (with Petitioner’s added annotations); citing Ex. 1003 ¶¶ 76–82; Ex. 1005 ¶¶ 10, 12, 15, 76, 80; Ex. 1007 ¶ 74).

Patent Owner does not address Petitioner’s showing for limitations [1.0] through [1.3]. *See* PO Resp. 36–43. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378. Based on the entire record developed during trial, we determine that Petitioner demonstrates by a preponderance of the evidence that the combination of Wallen and Berggren teaches or suggests the preamble [1.0] and limitations [1.1] through [1.3].

Disputed Limitations

Petitioner asserts that Wallen teaches limitation [1.4] “wherein the MIB includes an indication of frequency resources and time resources for use in acquiring additional system information.” *See* Pet. 46–49; Ex. 1003 ¶¶ 83–86. More specifically, and referring to paragraph 72 of Wallen, Petitioner asserts that Wallen discloses a MIB that indicates the frequency/time location of resource blocks allocated to a specific M-PDCCH. *See* Pet. 46–47 (citing Ex. 1003 ¶ 83; Ex. 1005 ¶ 72); *see* Pet. 47 (citing Ex. 1003 ¶ 84; Ex. 1005 ¶¶ 65, 77). Petitioner explains that “[a] ‘resource block’ is a term of art in the context of LTE standards that refers to a unit of time and frequency resources in a time-frequency grid.” Pet. 47 (citing Ex. 1003 ¶ 84; Ex. 1005 ¶¶ 42, 47). On the foregoing basis, Petitioner asserts that “Wallen’s indication of resource blocks, conveyed as

time and frequency locations, allocated to an M-PDCCH is *an indication of frequency resources and time resources*, as further illustrated in Figure 9.” Pet. 47–48 (reproducing Ex. 1005, Fig. 9 (Petitioner’s annotations added); citing Ex. 1003 ¶ 84). Petitioner further asserts that “[t]hese resource blocks of the M-PDCCH include control information that includes ‘downlink assignments pointing to the SIBs.’” Pet. 48 (citing Ex. 1003 ¶ 85; Ex. 1005 ¶ 72). According to Petitioner, “[t]herefore, the indicated resource blocks (*an indication of frequency resources and time resources*) are used for acquiring additional system information in the form of SIBs (*for use in acquiring additional system information*).” *Id.* (citing Ex. 1003 ¶ 85); *see* Pet. 48–49 (citing Ex. 1003 ¶ 86).

Petitioner also contends that Wallen’s MTC device that includes radio circuitry and a processor that are configured to receive SIBs using the indicated resource blocks having downlink assignments pointing to SIBs teaches limitation [1.5] “the transceiver and the processor are configured to acquire the additional system information using the indication of the frequency resources and the time resources.” *See* Pet. 49 (citing Ex. 1003 ¶¶ 87–89; Ex. 1005 ¶¶ 72, 83–84, Fig. 13).

Petitioner further asserts that Wallen teaches or suggests limitation [1.6] “wherein the indicated frequency resources and the time resources include control information for use by the UE to acquire a system information block 1.” *See* Pet. 50–53; Ex. 1003 ¶¶ 90–92. According to Petitioner,

Wallen’s MIB indicates the frequency and time locations of “resource blocks” (*the indicated frequency resources and the time resources*) “allocated to a specific M-PDCCH” which, in turn, includes “control information” (*control information*) such

as “downlink assignments pointing to the SIBs” (*for use by the UE to acquire a system information block*).

Pet. 50–51 (citing Ex. 1005 ¶ 72; Ex. 1006, 9). According to Petitioner, “Wallen’s MIB that provides the location in frequency and time of the M-PDCCH is illustrated in Figure 9.” Pet. 51 (reproducing Ex. 1005, Fig. 9 (Petitioner’s annotations added); citing Ex. 1003 ¶ 91). Petitioner asserts that an example of one of Wallen’s SIBs is SIB1 disclosed by Wallen. *See* Pet. 51–52 (citing Ex. 1003 ¶ 91; Ex. 1005 ¶ 68). Petitioner further contends that “it would have been obvious that one of Wallen’s SIBs that are received includes system information block 1 (SIB1) because SIB1 was known in LTE to carry information essential to connecting a cell.” Pet. 52 (citing Ex. 1003 ¶ 91; Ex. 1009, 2–3). According to Petitioner, “the indication of SIB1 represents simply specifying an implementation detail of which of the known ‘SIBs’ to indicate by Wallen’s M-PDCCH, and it was obvious, predictable, and beneficial that one of the ‘SIBs’ is a known and essential SIB in LTE, namely, SIB1.” *Id.* (citing Ex. 1003 ¶ 91).

In response, Patent Owner contends that there is no showing that the M-PDCCH downlink assignments to SIBs disclosed in Wallen “constitute ‘...control information for use by the UE to acquire a system information block 1....’” PO Resp. 37 (alterations in original). Patent Owner contends that “[t]he Petition’s mappings of Wallen to the elements of claim 1 attempt to combine disparate aspects of Wallen in a manner that cannot be reconciled with the teachings of Wallen.” *Id.* at 38 (citing Ex. 2010 ¶¶ 56, 70).

More specifically, Patent Owner asserts that “the Petition attempts to combine different aspects of Wallen’s first and fifth alternatives in a manner that contradicts other aspects of these alternatives.” PO Resp. 39 (citing

Ex. 1005 ¶¶ 68, 72); *see id.* at 38–39 (citing Ex. 1005 ¶¶ 67–72; Ex. 2010 ¶¶ 56, 70; Pet. 47); 40 (citing Ex. 2010 ¶¶ 72–76). Patent Owner asserts that the SIBs discussed in Wallen’s fifth alternative are SIBs specific to MTC devices and are accessed through a special physical downlink control channel used by MTC devices. *See id.* at 39–40 (citing Ex. 1005 ¶ 24; Ex. 2010 ¶¶ 67, 72). According to Patent Owner, “[t]he ‘frequency resources and time resources’ in Wallen’s fifth alternative do not point to ‘a system information block 1,’ but rather to SIBs specific to MTC devices.” *Id.* at 40 (citing Ex. 2010 ¶¶ 67–68). Patent Owner reproduces paragraph 68 of Wallen to point out Wallen’s first alternative, and points out a distinction in Wallen’s disclosure between legacy communication devices and MTC devices. *See id.* at 41 (citing Ex. 1005 ¶¶ 42–43, 68; Ex. 2010 ¶ 72). According to Patent Owner, “[i]n contrast to the ‘MTC specific SIBs’ that were the subject of Wallen’s fifth alternative, the ‘legacy SIB’ that is the subject of Wallen’s first alternative is not accessed through a special physical downlink control channel (M-PDCCH) adapted for use by MTC devices.” *Id.* (citing Ex. 2010 ¶ 71). Patent Owner further asserts that the legacy SIB is read by both legacy devices and MTC devices and is not a MTC specific SIB as described in the fifth alternative. *See id.* (citing Ex. 2010 ¶ 71). According to Patent Owner,

[i]t is clear (and would have been clear to POSITA) that Wallen’s special physical downlink control channel (M-PDCCH) is adapted for use by MTCs to acquire “MTC specific SIBs” (as disclosed in Wallen’s fifth alternative) rather than a ‘legacy [S]IB’ such as the first system information block (SIB1) (as discussed in Wallen’s first alternative).

Id. at 42 (citing Ex. 2010 ¶ 72).

Patent Owner also argues that “[t]he Petition’s proposed use of Wallen’s *special* physical downlink control channel (*M-PDCCH*) to acquire a *legacy SIB* is driven by hindsight, and would never have been adopted by a POSITA.” PO Resp. 42 (citing Ex. 2010 ¶ 74). Patent Owner further contends that “the Petition has failed to provide any explanation why a POSITA would have used Wallen’s *M-PDCCH* designed for acquiring ‘*MTC specific SIBs*’ for the purpose of acquiring a ‘*legacy [S]IB*.’” *See id.* at 42–43 (citing Ex. 2010 ¶ 75).

We do not agree with Patent Owner’s arguments, as they are misplaced. First, Patent Owner’s arguments are premised on Patent Owner’s proposed construction for system information block 1 as an ordinary, legacy SIB, not an MTC-specific SIB and not intended for an MTC device, which, for the reasons explained above in Section II.A., we do not adopt. Therefore, system information block 1 recited in claim 1 is not limited to legacy SIB1 and does not exclude MTC specific SIB1. Second, contrary to Patent Owner’s arguments, Petitioner does not propose combining the first and fifth aspects of Wallen’s disclosure related to Figure 9. *See* Pet. 50–53. Instead, Petitioner points out that Wallen’s MIB provides the location in frequency and time of the M-PDCCH which supplies control information to a MTC device including downlink assignments pointing to SIBs that are intended for a specific MTC device, and further asserts that it would have been obvious that one of Wallen’s SIBs in the downlink assignments pointing to SIBs includes a system information block 1 (SIB1) because SIB1 was known in LTE to carry information essential to connecting to a cell and “represents simply specifying an implementation detail.” Pet. 51–52.

Based on the entire record developed during trial, we are persuaded by a preponderance of the evidence that Petitioner provides sufficient

articulated reasoning with rational underpinning to support the conclusion that it would have been obvious to a person of ordinary skill in the art that one of Wallen’s SIBs in the downlink assignments pointing to SIBs intended for the MTC device includes SIB1 because SIB1 was known in LTE to carry information essential to connecting to a cell. *See* Pet. 51–52; Ex. 1009, 2–3; *KSR*, 550 U.S. at 418.

Based on the entire record developed during trial, we determine that Petitioner demonstrates by a preponderance of the evidence that Wallen teaches or suggests limitations [1.4] through [1.6].

Summary

Based on the entire record developed during trial, Petitioner establishes by a preponderance of the evidence that the subject matter of claim 1 would have been obvious over the combination of Wallen and Berggren. Accordingly, we are persuaded by a preponderance of the evidence that claim 1 is unpatentable under 35 U.S.C. § 103.

4. Analysis of Independent Claims 7 and 13

Independent claim 7 is directed to “[a] method” and independent 13 is directed to “[a]t least one non-transient computer readable medium containing program instructions to perform a method,” each reciting limitations similar in scope to claim 1. *Compare* Ex. 1001, 19:26–42 *and id.* at 20:12–27, *with id.* at 18:54–19:6. Petitioner and Patent Owner rely primarily on their respective analyses addressing claim 1 to address the limitations of claims 7 and 13. *See* Pet. 66–68, 69–71; PO Resp. 36–43.

Based on the entire record developed during trial, and for the same reasons as those explained above addressing claim 1, Petitioner establishes by a preponderance of the evidence that the subject matter of claims 7 and

13 would have been obvious over the combination of Wallen and Berggren. Accordingly, we are persuaded by a preponderance of the evidence that independent claims 7 and 13 are unpatentable under 35 U.S.C. § 103.

5. Analysis of Dependent Claims 2–6, 8–12, and 14–18

We have reviewed Petitioner’s contentions and cited supporting evidence addressing how the combination of Wallen and Berggren further teaches or suggests the limitations of dependent claims 2–6, 8–12, and 14–18. *See* Pet. 53–66, 68–69. Patent Owner does not substantively address the limitations of dependent claims 2–6, 8–12, and 14–18. *See generally* PO Resp. At any rate, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

Based on the entire record developed during trial, including the reasons explained above addressing independent claims 1, 7, and 13, Petitioner demonstrates by a preponderance of the evidence that the subject matter of dependent claims 2–6, 8–12, and 14–18 would have been obvious over the combination Wallen and Berggren. Accordingly, we are persuaded by a preponderance of the evidence that claims 2–6, 8–12, and 14–18 are unpatentable under 35 U.S.C. § 103.

III. CONCLUSION

For all of the foregoing reasons and based on the entire record developed during trial, Petitioner has demonstrated by a preponderance of the evidence that that claims 1–18 are unpatentable under 35 U.S.C. § 103. Our conclusion is summarized in the following table.

Claim(s)	35 U.S.C. §	Reference(s)/ Basis	Claim(s) Shown Unpatentable	Claim(s) Not Shown Unpatentable
1–18	103(a)	Wallen, Berggren	1–18	

VII. ORDER

For the foregoing reasons, it is:

ORDERED that Petitioner demonstrates by a preponderance of the evidence that claims 1–18 of the '670 Patent are unpatentable; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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