

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
U.S. Patent No. 11,206,670

**DECLARATION OF DR. ZHI DING, Ph.D.,
UNDER 37 C.F.R. § 1.68 IN SUPPORT OF PETITIONER REPLY**

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I. INTRODUCTION

1. I am making this declaration at the request of Tesla, Inc. in the matter of the *Inter Partes* Review (“IPR”) of U.S. Patent No. 11,206,670 (“the ’6709 patent”) to Young.

2. I am also being reimbursed for reasonable and customary expenses associated with my work and testimony in this IPR. My compensation is not contingent on the outcome of this matter or the specifics of my testimony, and I have no other interest in this case or the parties thereto.

3. I have been asked to provide opinions addressing arguments presented in Patent Owner’s Response (Paper 19, the “Response”) in this IPR, which are also stated in Dr. Lomp’s Declaration (Ex.2017). I understand that this Declaration is being filed concurrently with Petitioner’s Reply to the Response.

4. In preparation of this Declaration, I have considered all materials listed in my Prior Declaration (Ex.1003). I have also considered the following additional materials:

Ex.1036	Deposition Transcript of Dr. Gary R. Lomp, Ph.D., January 14, 2026
Ex.1038	E. Dahlman et al., <i>4G LTE/LTE-Advanced for Mobile Broadband</i> (2011) (selected pages).
Ex.1039	U.S. Patent Application Publication No. 2012/0117140
Ex.1040	U.S. Patent Application Publication No. 2012/0039313
Ex.2009	<i>LTE – The UMTS Long Term Evolution From Theory to Practice</i> (Second Edition) Sessia et al. (John Wiley & Sons Ltd. 2011)
Ex.2010	Declaration of Dr. Gary Lomp in Support of Patent Owner’s Response

5. In forming the opinions expressed below, I have considered:

- the documents listed above as well as any materials cited in my analysis below;
- the relevant legal standards, including the standard for obviousness, as explained to me by counsel, and any additional authoritative documents as cited in the body of this declaration; and
- my own knowledge and experience based upon my work in the field of wireless communication systems as described below.

6. Unless otherwise noted, all emphasis in any quoted material has been added.

II. QUALIFICATIONS AND PROFESSIONAL EXPERIENCE

7. My complete qualifications and professional experience are described

in my *Curriculum Vitae*, a copy of which can be found in Exhibit 1004. A brief summary of my relevant qualifications and professional experience is included in my Prior Declaration (Ex.1003) and is hereby incorporated by reference.

8. Based on my knowledge, experience, and education, I consider myself to be an expert at least in the field of wireless communications systems. As of the earliest priority date of the '670 patent, I was at least a person of ordinary skill in the art, and I had personal knowledge of the technologies utilized therein. See Ex.1003, ¶20.

III. LEVEL OF ORDINARY SKILL IN THE ART

9. I have performed the present analysis through the lens of a person of ordinary skill in the art ("POSITA") in the field of the '670 patent, as of its earliest possible priority date in January 2012, as defined in paragraphs 20-21 of my Prior Declaration (Ex.1003), which are hereby incorporated by reference.

IV. RELEVANT LEGAL STANDARDS

10. I am not an attorney. In preparing and expressing my opinions and considering the subject matter of the '670 patent, I am relying on certain basic legal principles that counsel have explained to me. These principles are discussed below.

11. I understand that prior art to the '670 patent includes patents and printed publications in the relevant art that predate the priority date of the alleged

invention recited in the '670 patent.

12. I have been informed that a claimed invention is unpatentable under 35 U.S.C. § 103 if the differences between the invention 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. I have also been informed by counsel that the obviousness analysis takes into account factual inquiries including the level of ordinary skill in the art, the scope and content of the prior art, and the differences between the prior art and the claimed subject matter.

13. I have been informed by counsel that the Supreme Court has recognized several rationales for combining references or modifying a reference to show obviousness of claimed subject matter. Some of these rationales include the following: (a) combining prior art elements according to known methods to yield predictable results; (b) simple substitution of one known element for another to obtain predictable results; (c) use of a known technique to improve a similar device (method, or product) in the same way; (d) applying a known technique to a known device (method, or product) ready for improvement to yield predictable results; (e) choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; and (f) some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art

reference or to combine prior art reference teachings to arrive at the claimed invention.

V. ANALYSIS

A. LTE Background and MTC Devices

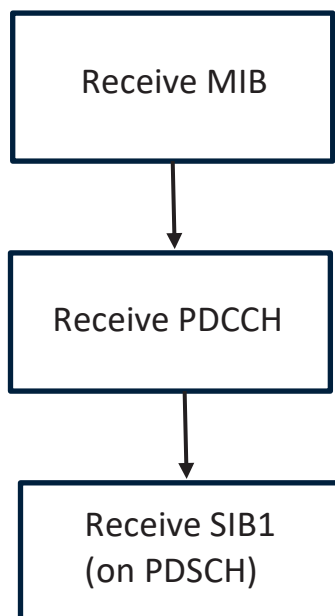
14. Dr. Lomp’s claim construction and arguments regarding Wallen rest on an incorrect premise about how “legacy” LTE networks prior to the ‘670 patent operate – that LTE system information known as system information block 1 (SIB1) could be received by MTC devices using legacy processes and formats that already existed in LTE networks. Ex.2010, ¶48 (“*Legacy SIB1*” is transmitted in a “core frequency range” that can be received by “all devices on the network,” including “MTC-like communication devices”) (emphasis in original); ¶73 (“Certain information is available to all devices (the MIB and Legacy SIB1)”). This premise is incorrect, as discussed below.

15. There is no dispute that system bandwidths in LTE could be up to 20 MHz, so conventional LTE mobile terminals were required to support bandwidths up to 20 MHz. *See, e.g.*, Ex.1001, 9:32-38; Ex.2010, ¶¶33-35; Ex.1005, [0010]. There is also no dispute that machine-type communication (MTC) devices were restricted to smaller bandwidths and thus, incapable of receiving some downlink information if such information spanned the full LTE system bandwidth. *See, e.g.*, Ex.1001, 9:55-10:5; Ex.2010, ¶35; Ex.1005, [0012]-[0015]. The dispute centers on

whether critical LTE system information known as system information block 1 (SIB1) was transmitted in such a way in then-existing LTE systems that lower-capability MTC devices could receive SIB1.

16. In more detail, it is undisputed that for a mobile device to connect to a base station in a “legacy” LTE network, the device first receives a Master Information Block (MIB), which is always transmitted in the same relatively small bandwidth of 1.4 MHz. Ex.1003, ¶¶31; Ex.2010, ¶¶32-35; Ex.1001, 9:32-55. MTC devices could therefore receive the MIB. POR, p. 11; Ex.1005, [0015] (“MTC devices would be able to...receive a Master Information Block (MIB) on just a 1.4 MHz bandwidth”).

17. I also agree with Dr. Lomp that the mobile device then receives information on a Physical Downlink Control Channel (PDCCH) followed by system information block 1 (SIB1), which is transmitted on the Physical Downlink Shared Channel (PDSCH). Ex.2010, ¶¶35-37 (“PDCCH is necessary to decode SIB1”); *see also* Ex.1007, [0075] (“[T]he system information, excluding the MIB, is transmitted on...SIBs. **The SIBs are ...mapped to the PDSCH,**” and “they are **scheduled through the PDCCH.** There are a number of different SIBs, e.g., SIB1...”). The above-described sequence for a mobile device to connect to an LTE network is summarized in the figure below.



Thus, receiving SIB1 in LTE involved a two-step process after receiving the MIB: receive PDCCH, and then receive SIB1.

- i. **SIB1 is transmitted using the LTE shared data channel (PDSCH), which uses the full system bandwidth in “legacy” LTE networks.**

18. Dr. Lomp offered conflicting testimony both in his declaration and, according to the transcript, during cross-examination about whether SIB1 occupies the full system bandwidth up to 20 MHz (and so cannot be received by MTC devices) or, alternatively, is limited to always being transmitted in 1.4 MHz of bandwidth (and so can always be received by MTC devices). *Compare* Ex.2010, ¶35 (“A UE must receive at least two SIBs (**SIB1** and SIB2) before being able to communicate with the BS. **These SIBs are transmitted on the PDSCH ... over the entire bandwidth of the cell and typically are not limited to 1.4 MHz.**”) to

¶48 (“SIB1...is prominent because it is transmitted in the ‘core frequency range’ (1.4 MHz in LTE) that can be detected and decoded by all devices on the network,” including “MTC-like communication devices”); and *compare* Transcript 10:7-11:17 (“I think a POSITA would understand **an MTC device could not receive SIB-1 that is the standardized version that is transmitted to the cell phones, because it’s too wide of band – in bandwidth, yes.**”) to 12:22-24 (“Q. So the SIB-1 is limited to always being transmitted in 1.4 megahertz? A. That’s right.”).

19. Dr. Lomp’s claim construction and arguments regarding Wallen are based on the proposition that SIB1 is always transmitted in 1.4 MHz of bandwidth. Ex.2010, ¶40, citing ¶48 (“SIB1, that is *Legacy* SIB1, is prominent because it is transmitted in the “core frequency range” (1.4 MHz in LTE) that can be detected and decoded by all devices on the network,” including “MTC-like communication devices.”) This proposition has no support in any document or reference. In contrast, the proposition that SIB1 is flexibly transmitted anywhere in the entire system bandwidth is supported by the ’670 patent itself, *see* Ex.1001, 9:38-58; Ex.2010, ¶35; *see also* Transcript 10:7-11:7 (discussing Ex.1001, 9:38-58), consistent with the prior art, *see, e.g.*, Ex.1007, [0074]-[0075] (“The information contained in the MIB makes it possible to receive the channels **that occupy the whole component carrier bandwidth, e.g., ...the PDSCH,**” where the “SIBs are

transmitted,” including “SIB1.”).

20. Dr. Lomp’s allegation that “MTC-like communication devices...can read SIB1” because it is always transmitted in a “core frequency range” of 1.4 MHz that all devices can receive, Ex.2010, ¶48; *see also* ¶73 (“Certain information is available to all devices (the MIB and Legacy SIB1).”), is unsupported by any documentary reference, and contradicted by Dr. Lomp himself, by the ‘670 Patent, and by how a POSITA would have understood then-existing LTE networks operate at the time of the ‘670 patent. A POSITA’s understanding is supported in other parts of Dr. Lomp’s declaration, his cross-examination testimony, Wallen, and the ‘670 patent itself:

- **Dr. Lomp:** “A UE must receive at least two SIBs (SIB1 and SIB2) before being able to communicate with the BS. These SIBs are transmitted ... over the entire bandwidth of the cell and typically are not limited to 1.4 MHz.” Ex.2010, ¶35.
- **Cross-examination of Dr. Lomp:** “Q. Would a POSITA understand this passage [Ex.1001, 9:33-58] as implying that an MTC device cannot receive SIB-1?
A. I think a POSITA would understand an MTC device could not receive SIB-1 that is the standardized version that is transmitted to the cell phones, because it’s too wide of band – in bandwidth, yes.” Ex.1036, 10:7-11:17.
- **Wallen:** “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 ... requires that the MTC device be capable of supporting the full LTE bandwidth.” Ex.1005, [0015].

- **’670 patent:** “[I]n order to receive the remainder of the carrier system information [beyond the MIB] **the terminal device is required to be able to receive the full bandwidth of the carrier.** However, and as also noted above, for some applications, for example in situations relating to **machine type communications (MTC)** ..., there is a drive to build low cost and hence low capability devices. ... **[T]erminal devices with a lower bandwidth capability may not even be able to receive any more system information than that contained in the MIB of a Rel. 8/9/10 compliant network.**” Ex.1001, 9:33-10:5.

21. Thus, the evidence supports that MTC devices would not be capable of receiving SIB1 as transmitted in “legacy” LTE networks as they existed prior to the ’670 patent.

- ii. The control channel (PDCCH) used to provide information necessary for receiving SIB1 in “legacy” LTE networks spans the full system bandwidth.**

22. Not only is SIB1 itself not limited to 1.4 MHz in conventional (or “legacy”) LTE networks, but the channel used to indicate SIB1 to mobile terminals – i.e., the Physical Downlink Shared Channel (PDCCH) – is also transmitted over the entire system bandwidth and therefore cannot be fully received by MTC

devices.

23. I agree with Dr. Lomp that “the PDCCH is necessary to decode SIB1.” Ex.2010, ¶38. I also agree with Dr. Lomp that “**the PDCCH is transmitted over the entire bandwidth of the cell in LTE**” and therefore “**an MTC device would not be able to receive a PDCCH.**” Ex.1036, 14:2-22. Consistent with this testimony, Wallen confirms that “[t]he PDCCH itself occupies the whole system bandwidth, which in turn forces current LTE (and similar) terminals to adapt its receiver bandwidth to match that of the system bandwidth in order to be able to receive the SIB,” Ex.1005, [0008]. This is why Wallen proposes a base station that “also allocates other parts of its radio frequency resources for use as, for example, an M-PDCCH...sized and timed to permit the reduced bandwidth communication device [such MTC devices] to connect to and utilize the communication system,” *id.*, [0047]; *see also* [0063]-[0064].

B. Claim Construction

24. Dr. Lomp incorrectly alleges that the “plain and ordinary meaning” of the term “*system information block 1*” (in claims 1, 7, and 13) refers to a “legacy SIB” and is “not intended for an MTC device.” Ex.2010, ¶40.

25. This construction is wrong for several reasons.

i. Dr. Lomp’s proposed construction is inconsistent with the ’670 patent claims and specification.

26. The claims because the claims are agnostic as to what type of device receives SIB1. This makes sense because a POSITA would have understood that SIB1 in legacy LTE networks is defined by the *type* of information contained therein, not by the intended receiver of the information. *See, e.g.*, Ex.1038, p. 308 (“LTE defines a number of different SIBs characterized by the type of information that is included within them,” including “SIB1” that itself “includes information mainly related to whether a terminal is allowed to camp on the cell.”); *see also* Ex.2009, 59-60 (“System information is structured by means of System Information Blocks (SIBs), each of which contains a set of functionally-related parameters,” and one of SIBs is “System Information Block Type 1 (SIB1).”)) Thus, to the extent an SIB1 can even be considered to have a type, a “legacy” SIB1 would refer only to the type of information contained therein, not to the type of system in which it is sent or the type of device that receives it.

27. Dr. Lomp’s proposed construction is also inconsistent with the specification of the ’670 patent. The central problem addressed in the ’670 patent is how to accommodate “MTC-like terminal[s]” in legacy “LTE type networks” that are geared toward devices with “complex transceivers” that “support wide bandwidth usage on the radio interface,” and not MTC devices which are

“relatively simple and inexpensive.” Ex.1001, 2:3-25; *see also id.*, 12:51-67. In other words, the ’670 specification recognizes and attempts to solve a problem that “terminal devices with a lower bandwidth capability,” such as MTC devices, “may not even be able to receive any more system information than that contained in the MIB of a Rel. 8/9/10 compliant [LTE] network.” Ex.1001, 9:32-10:5. Despite the ’670 patent being directed to how to accommodate “MTC-like terminal[s]” in legacy “LTE type networks” that are geared toward more complex devices, Dr. Lomp erroneously alleges that “*system information block 1*” in claims 1, 7, and 13 refers to a “legacy SIB” and is “not intended for an MTC device.” Ex.2010, ¶40. If Dr. Lomp’s construction were adopted, the claims of the ’670 patent would be too narrow in scope to encompass MTC devices, the very focus of the specification.

ii. Dr. Lomp’s proposed construction is also based on a flawed understanding of legacy LTE networks.

28. Confusingly, despite Dr. Lomp’s attempt to exclude MTC devices in its proposed construction, the construction is based on the false assumption that SIB1 is always transmitted in 1.4 MHz of LTE bandwidth **that can be received by both legacy devices and MTC devices**. Ex.2010, ¶40, citing Ex.2010, ¶48 (“*Legacy SIB1 is prominent because it is transmitted in...[]1.4 MHz in LTE[] that can be detected and decoded by all devices on the network,*” including “MTC-like communication devices.” (emphasis in original)).

29. However, as discussed previously in Section V.A.1, in then-existing, or “legacy,” LTE networks at the time of the ’670 patent, SIB1 is dynamically scheduled and formatted such that an MTC device could not receive it, so the ’670 patent claims a different way of transmitting SIB1 besides conventional LTE. Thus, if anything, the “*system information block 1*” (SIB1) as claimed is actually intended for MTC devices, because legacy LTE networks already specified a way to transmit SIB1, but the way SIB1 was transmitted for then-existing (or legacy) LTE terminals in LTE networks does not work for MTC devices.

30. In summary, Dr. Lomp’s proposed construction that excludes MTC devices from receiving “*system information block 1*” does not make sense when understood in the context of the ’670 patent, which focuses on MTC devices and how pre-existing LTE networks communicate system information, such as SIB1, in a way that is incompatible with simpler LTE devices such as MTC devices.

C. Wallen discloses or renders obvious the disputed limitations.

i. Wallen discloses or renders obvious limitation [1.4].

31. Dr. Lomp alleges that Wallen does not disclose or render obvious limitation [1.4], which is *wherein the MIB includes an indication of frequency resources and time resources for use in acquiring additional system information*.

32. As I explained in my first declaration (Ex.1003, ¶¶83-86), Wallen discloses that *the MIB (the MIB) includes an indication of frequency resources and*

time resources (indicates the resource blocks) *for use in acquiring additional system information* (where an MTC device can find control information that in turn points to SIBs intended for MTC devices):

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.**

Ex.1005, [0072]; Ex.1006, p. 9. Wallen’s indication of resource blocks, conveyed as time and frequency locations, allocated to an M-PDCCH is therefore *an indication of frequency resources and time resources*, as further illustrated in Figure 9 (which illustrates time on the x-axis and frequency on the y-axis, with an MIB pointing to specific regions of time and frequency).

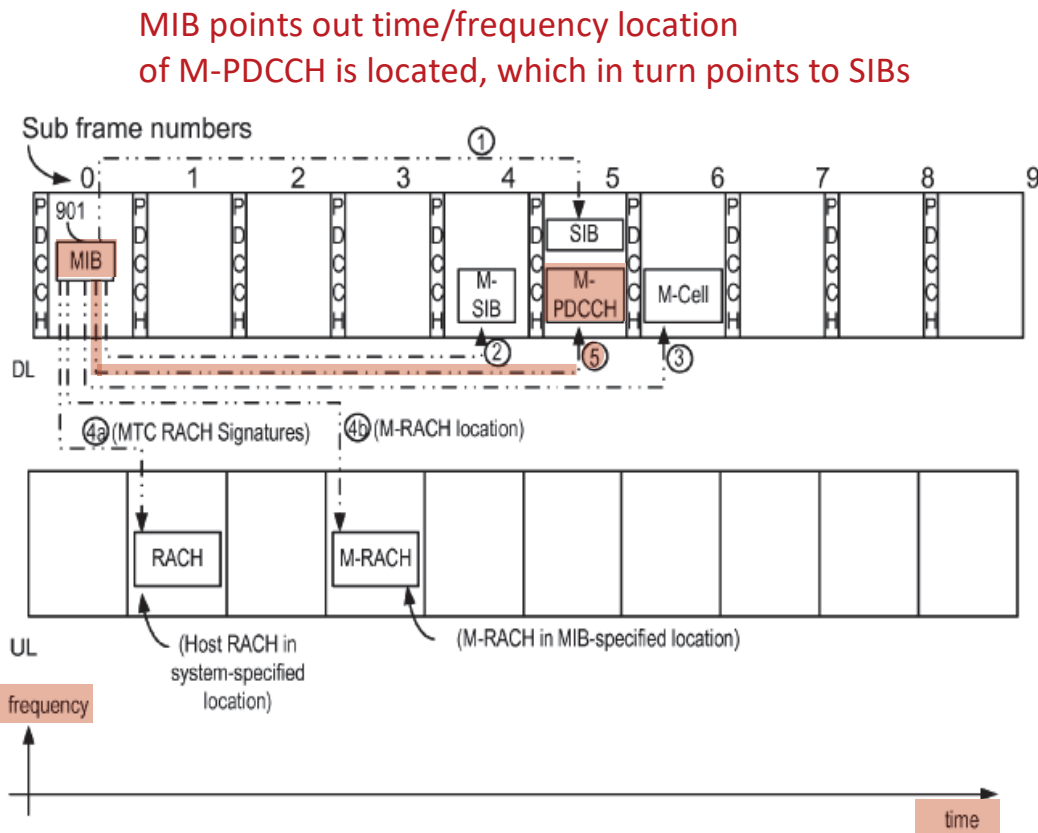


FIG. 9

Wallen, Figure 9 (annotated); Wallen-Prov, Figure 1

33. These resource blocks of the M-PDCCH include “control information” that indicates “downlink assignments pointing to the SIBs.” Wallen, [0072]; Wallen-Prov, p. 9. Therefore, 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*).

34. As best as can be understood, Dr. Lomp seems to argue that Wallen’s

“M-PDCCH” does not include general system information and so cannot be “*an indication of frequency resources and time resources for use in acquiring additional system information.*” Ex.2010, 67 (“A PDCCH is not a ‘System Information Channel,’” and “M-PDCCH does not supply or point to SIBs generally.”). Dr. Lomp seems to be reading a requirement into the claim limitation that the claimed “*additional system information*” must not be information received by MTCs. To the extent this is the argument, it fails for the reasons given the Dr. Lomp’s proposed claim construction fails – the position is not supported by the claims, the specification of the ‘670 patent, or a POSITA’s understanding of LTE.

ii. Wallen discloses or renders obvious limitation [1.6].

35. Dr. Lomp’s arguments regarding Wallen are essentially predicated on its flawed claim construction of “*system information block 1*” that it refers to a “legacy SIB” as not intended for an MTC device. More specifically, Dr. Lomp relies on Wallen’s description of SIB1 as a “legacy SIB” in Wallen’s first “alternative” (or embodiment) as necessarily excluding SIB1 being transmitted using its fifth “alternative” (or embodiment) because the fifth alternative refers to “MTC specific SIBs” or “SIBs that are intended for this MTC device.” *See* Ex.2010, ¶71 (“MTC-specific SIBs would not point to legacy SIBs because legacy SIBs are already available to all devices.”).

a) Dr. Lomp misinterprets Wallen's first alternative.

36. Dr. Lomp focuses on and misrepresents a snippet of Walton referring to “SIB1” as a “legacy SIB.” Ex.2010, ¶¶70-71. In doing so, however, Dr. Lomp disregards the full disclosure of Wallen’s first alternative, and conflates Wallen’s disclosure of a “legacy SIB” as one that could be received by a “legacy” communication device. *Id.* Dr. Lomp even goes so far to allege that Wallen’s “legacy SIB” in the first alternative (Ex.1005, [0068]) is “already available to all devices.” Ex.2010, ¶71; *see also* ¶73 (“Certain information is available to all devices (the MIB and Legacy SIB1”).

37. Wallen’s first alternative refers to one way of conveying an SIB1 – using an “MIB” to “inform[] the MTC device of a location of the resource blocks ... allocated to the first system information block (SIB1)” – a “legacy SIB” – but Dr. Lomp disregards that Wallen’s MIB does so by “**allocat[ing] frequency resources such that it can be read by an MTC device.**” Ex.1005, [0068]. Thus, Wallen acknowledges that in its first alternative, SIB1 is a “legacy” SIB in the sense of the information included, but it is not a legacy SIB if the MTC-compatible resources is used to transmit it. If “legacy” LTE networks already operated in such a way that MTC devices could receive SIB1, there would be no reason for Wallen, like the ’670 patent, to address the problem of “enabl[ing] an MTC device” to connect to “an LTE system.” Ex.1005, [0016].

38. As explained above in Section V.A.1, SIB1 in conventional LTE resides in a channel abbreviated as PDSCH, which is transmitted using the entire system bandwidth and cannot be received by an MTC device. Further, as explained above in Section V.A.2, a control channel, PDCCH, used to signal SIB1 also cannot be received by an MTC device. Thus, there are two differences between Wallen’s first alternative and the conventional LTE (or “legacy” LTE) manner of conveying SIB1 – (1) in Wallen’s first embodiment, the MIB points directly to SIB1, so the receiving device therefore does not need to perform the intermediate step of receiving a PDCCH (which an MTC device cannot receive); and (2) SIB1 is allocated “**frequency resources such that it can be read by an MTC device,**” as opposed to the conventional LTE system where SIB1 spans the system bandwidth. In other words, SIB1 includes known information that a device, such as an MTC device, needs for connecting with a cell, but the way SIB1 is communicated using Wallen’s first embodiment is not a “legacy” SIB1 in either the manner in which it is indicated by an MIB or in the frequency resources it occupies.

39. In summary, Dr. Lomp focuses on Wallen’s disclosure of SIB1 as a “legacy SIB” in its first alternative while overlooking or ignoring that Wallen is describing how SIB1 is being transmitted in a way that an “MTC device” can receive it – by allocating “frequency resources such that it can be read by an MTC

device,” Ex.1005, [0068], and while overlooking the differences between Walton’s first alternative and legacy LTE networks.

b) My interpretation of Wallen’s fifth alternative remains correct.

40. In Wallen’s fifth alternative, the “MIB” points to “M-PDCCH,” which, unlike the PDCCH of “legacy” LTE, is in a format that “**compl[ies]...with the MTC device’s lower bandwidth.**” Ex.1005, [0072]; *see also id.*, [0008], [0015] and *supra* Section V.A.2.

41. The M-PDCCH in turn “supplies control information to the MTC device, including...downlink assignments pointing to the SIBs that are intended for this MTC device.” *Id.* I summarized Wallen as follows in my first declaration, using an annotated Figure 9 (Ex.1003, 91):

MIB indicates the time/frequency location of M-PDCCH, which in turn has “control information” such as downlink assignments pointing to SIBs (not shown)

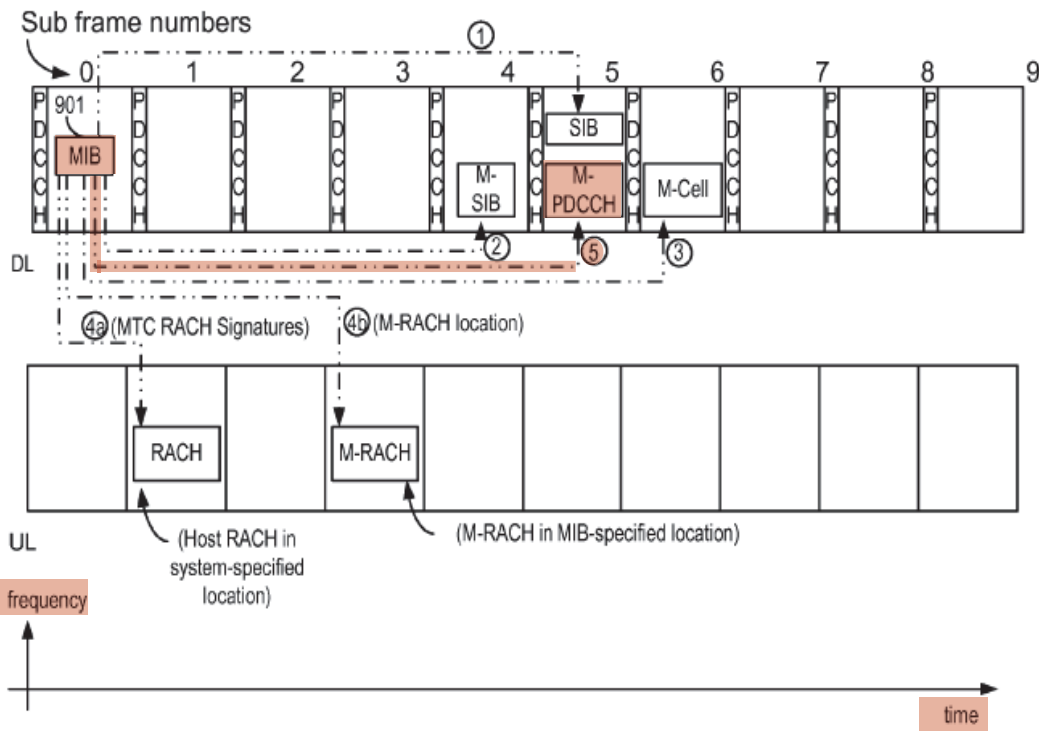


FIG. 9

Wallen, Figure 9 (annotated); Wallen-Prov, Figure 1

42. With the proper understanding of Wallen’s fifth embodiment in the context of then-existing LTE networks, a POSITA would have understood that one of the “SIBs” needed to be received by an MTC device for connecting to the LTE network is SIB1. Petition, 52; Ex.1003, ¶91; *see also* Ex.2010, ¶35 (“A UE must receive...SIB1...before being able to communicate with the BS [base station].”) and Ex.1036, 7:16-8:7. As explained above, at the time of the ’670 patent, SIB1 was not already transmitted in legacy LTE networks such that MTC devices could

receive this necessary information. Therefore, a POSITA would have understood that Wallen's "fifth alternative" in [0072] teaches a different change to LTE networks regarding how system information is indicated to an MTC device using the MIB as compared to the "first alternative" in [0068]. Accordingly, it would have been understood or obvious to a POSITA that Wallen's fifth alternative provides a different way than Wallen's first alternative to convey SIBs to MTC devices, and it would have been obvious to include SIB1 in Wallen's "SIBs that are intended for this MTC device" because SIB1 carries information that is "essential" for a device to connect to the network, as confirmed in my first declaration, Ex.1003, ¶¶50-51 (citing Ex.1009, p. 2, line 34-p. 3, line 2 (LTE defines thirteen SIBs, including SIB1); p. 3, lines 19-21 ("SIB1 ...must be present in every cell... A user equipment considers the cell as 'barred' in case it cannot find this essential system information."), and also confirmed by Dr. Lomp during cross-examination, Ex.1036, 8:4-7 ("Q. Was SIB-1 known to carry information essential for UAE [sic] to connect to the LTE network? A. It is -- it is known to be essential, yes.")). Accordingly, the evidence confirms that Wallen's example 5 renders obvious the plain reading of the recited "*system information block 1*."

43. Dr. Lomp's argument that the "combination of aspects of Wallen's first and fifth alternatives proposed in the Petition is inconsistent with the teachings of Wallen," Ex.2010, ¶72, is a red herring. My mapping for the disputed

limitations does not combine aspects of Wallen’s examples—nor did it need to. I cited to Wallen’s mention of SIB1 in the context of example 1 only as additional evidence that SIBs include SIB1. Below is an excerpt from my first declaration, where I state “An example of one of the “SIBs” that may be received is SIB1, as disclosed in Wallen.” (Ex.1003, ¶91):

An example of one of the “SIBs” that may be received is SIB1, as disclosed in Wallen. Wallen, [0068] ([T]he MIB 901 ... includes time/frequency information ... that informs the MTC device of a location of the resource blocks ... allocated to the first system information block (SIB 1)”); Wallen-Prov, 9. In fact, SIB1 is the only specific LTE SIB disclosed in Wallen. Moreover, it would have been obvious that one of the “SIBs” that are received includes the disclosed system information block 1 (SIB1) because SIB1 was known in LTE to carry information “essential” to connecting to a cell. Ex.1009, p. 2, line 34-p. 3, line 2 (LTE defines thirteen SIBs, including SIB1); p. 3, lines 19-21 (“SIB1 ... must be present in every cell... A user equipment considers the cell as ‘barred’ in case it cannot find this essential system information.”). Therefore, 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” to be indicated is a known and essential SIB in LTE, namely, SIB1, the only specific SIB disclosed in Wallen.

Wallen’s example 5 renders obvious limitation [1.6].

c) Wallen discloses limitation [1.6] even under a narrow reading requiring “legacy SIBs.”

44. Assuming for the sake of argument that Dr. Lomp’s requirement that the claims require “an ordinary, legacy SIB” is correct, Ex.2010, ¶40, Wallen’s example 5 still renders the disputed limitation obvious. Wallen explains that the

M-PDCCH “supplies control information to the MTC device, including...downlink assignments pointing to the SIBs that are intended for this MTC device,” and that this SIB control information may be in the “**legacy**” format:

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. The **M-PDCCH may comply with the legacy PDCCH format** for the MTC device’s lower bandwidth...

Ex.1005, [0072]. Accordingly, even if “legacy” is read into the claims, as urged by Dr. Lomp, Wallen’s disclosure of using “legacy” format (albeit also using a “lower bandwidth” for MTC devices) further suggests that the “SIBs” in example 5 are directed to “legacy” information. Moreover, as noted previously, to the extent an SIB1 can be a “legacy” SIB1, such designation would refer only to the type of information contained therein. Ex.1038, 308. There is no dispute that the SIBs Wallen’s MTC devices receive contain the “information to be able to connect” to the network. Ex. 1005, [0065]; Ex.2010, ¶57.

d) Summary

45. Dr. Lomp’s allegation or assumption that Wallen’s first alternative is fundamentally different than Wallen’s fifth alternative because the first relates to a “legacy” SIB1 whereas the fifth relates to MTC-specific SIBs is-wrong when

Wallen's teaching are understood in context – because in the first alternative SIB1 is not formatted in the “legacy” manner of then-existing LTE but is instead modified so that an MTC device can read it. Wallen's first and fifth alternatives provide different mechanisms for transmitting SIB1 such that it can be read by MTC devices.

D. Wallen-Prov provides written description support for the cited excerpts of Wallen.

i. Dr. Lomp is wrong regarding what Figure 6 of Wallen-Prov discloses.

46. Dr. Lomp alleges that Figure 6 of Wallen-Prov allegedly illustrates a conventional, or “legacy” UE device, whereas Figure 13 of Wallen illustrates an MTC device. Dr. Lomp's only support for its argument is that Figure 6 of Wallen-Prov corresponds to Figure 5 of Wallen-Prov, and Figure 5 illustrates “cellular telephones,” which are not MTC devices:

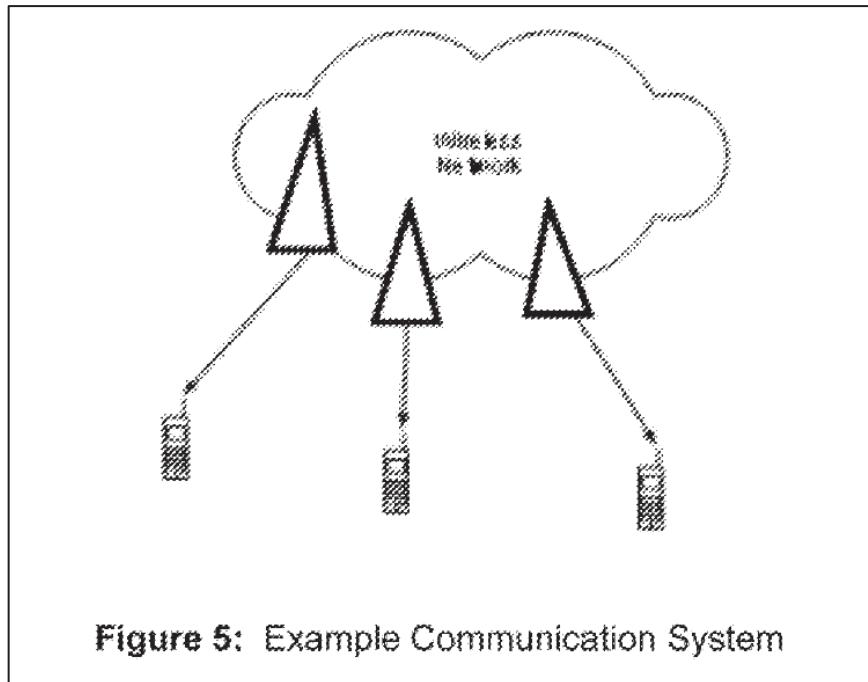
84. The left side of this excerpt shows Figure 6 of the Wallen-Prov, which depicts one of the UEs from Figure 5 which are <u>cellular telephones</u>. Ex. 1006, 12.
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Ex.2010, ¶84. Dr. Lomp cites Wallen-Prov (Ex.1006), but there is no mention anywhere in Wallen-Prov that the UE in Figure 6 is a “cellular telephone.”

47. During cross-examination, Dr. Lomp admitted that his only basis for saying the UEs in Figure 5 of Wallen-Prov are “cellular telephones” is the way

they look in the figure, although the figure is “fuzzy.” Ex.1036, 19:16-21:11 (“Q. What’s your basis for saying the UEs in Figure 5 are cellular telephones? A. They look exactly like cellular telephones. Q. What about them looks exactly like cellular telephones? A. Their shape, the display, the keypad, although it’s not -- it’s a fuzzy picture, but that’s what I see when I look at it.”). Figure 5 of Wallen-Prov is reproduced below for reference.

48. I disagree with Dr. Lomp’s suggestion that MTC devices cannot be equipped with a display or a keypad for operators to operate them. As examples, patent documents describe MTC devices as having a keypad, a display, etc. *See, e.g.*, Ex.1039, [0018] (Describing an “MTC device” that has “a display unit and/or keypad serving as the MMI (man-machine interface).”); Ex.1040, [0058] (Describing a “system [that] can be used in an...MTC device,” having a “keypad,” and “touch screen.”).



49. Dr. Lomp also alleges that all the UEs in Figure 5 of Wallen-Prov have a “microphone,” a “speaker,” and “voice capability,” *id.*, 21:12-22:2, which are allegedly “not found in devices proposed for Machine Communication,” Ex.2010, ¶90. Again, Dr. Lomp assumes, without proof, the UEs of Figure 5 of Wallen-Prov includes these features based solely on a “fuzzy” figure, when, in fact, Wallen-Prov does not disclose any of these features, never using the terms “microphone,” “speaker,” or “voice.”

50. In contrast to Dr. Lomp’s allegations, the explicit disclosure in Wallen-Prov makes clear that the example UE shown in its Figure 6 implements “some or all of the functionality described above,” Ex.1006, p. 12, meaning that the functionality described in the different MTC embodiments described “above”

on page 9, including Wallen-Prov's fifth embodiment, can be implemented in the UE shown in Figure 6. Based on the explicit disclosure in Wallen-Prov, a POSITA would have understood that Figure 6 is not a "cellular telephone" within Dr. Lomp's understanding of the term, but rather an MTC device. Therefore, Figure 13 and the cited description thereof in Wallen is supported by Figure 6 and the associated description in Wallen-Prov, as shown in my first declaration. *See* Ex.1003, pp. 89-90.

ii. Wallen, paragraph [0072] is supported in Wallen-Prov.

51. I have been informed that IV points to a small difference in wording between Wallen, [0072] and the corresponding description in Wallen-Prov as follows, where the underlined portion indicated in Wallen does not appear in Wallen-Prov. Response, 48-49.

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.**

Ex.1005, [0072].

The RBs, reference signal sequence or search space allocated to a specific MTC-PDCCH, which should be different than the legacy PDCCH locations, where an MTC can receive and detect control information,

including the MTC specific SIBs or downlink assignments pointing to the SIBs.

Ex.1006, 9. Thus, although its argument is not clear, IV seems to suggest the disclosures are not co-extensive.

52. Wallen, [0072] has written description support in Wallen-Prov, p. 9. Wallen-Prov's reference to "including the MTC specific SIBs or downlink assignments pointing to the SIBs" is clear that the SIBs are intended for the MTC device referenced in the passage, which states "**where an MTC can receive and detect control information,**" meaning that Wallen-Prov's disclosure supports the disclosure in Wallen. Ex.1006, 9. In context, Wallen's disclosure is clear that the SIBs are not solely intended for only one MTC device, but rather the exemplary referenced MTC device and other similarly-situated MTC devices. This is because both Wallen and Wallen-Prov address the problem of how to accommodate MTC devices in an LTE network. Ex.1005, [0016] ("It is therefore desirable to ... enable an MTC device to retain its relatively low performance characteristics (e.g., in terms of size of bandwidth supported ...) and yet be capable of connecting to...an LTE system, that ordinarily imposes higher performance requirements on connecting devices."); Ex.1006, 8 ("[I]t may be beneficial to make MTC Devices supporting only low bandwidth being able to operate in an LTE network with larger system bandwidth..."). Thus, paragraph [0072] of Wallen has written

description support in Wallen-Prov.

VI. CONCLUSION

53. This declaration and my opinions herein are made to the best of my knowledge and understanding, and based on the material available to me, at the time of signing this declaration. I declare that all statements made herein on my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 or Title 18 of the United States Code.

Date: 1/28/2026

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Date: 2026.01.28
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