

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

TOGAIL TECHNOLOGIES LTD.,
Patent Owner.

IPR2023-00644
Patent 11,115,165 B2

Before JAMESON LEE, GREGG I. ANDERSON, and
SHEILA F. McSHANE, *Administrative Patent Judges*.

McSHANE, *Administrative Patent Judge*.

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

I. INTRODUCTION

Apple Inc. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting *inter partes* review of claims 1–12 (the “challenged claims”) of U.S. Patent No. 11,115,165 B2 (Ex. 1001, “the ’165 patent”). Togail Technologies Ltd. (“Patent Owner”) did not file a Preliminary Response.

The Board has authority to determine whether to institute an *inter partes* review. *See* 35 U.S.C. § 314; 37 C.F.R. § 42.4(a). Under 35 U.S.C. § 314(a), we may not authorize an *inter partes* review unless the information in the petition and the preliminary response “shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.”

For the reasons stated below, we determine that Petitioner has established a reasonable likelihood that it would prevail with respect to at least one claim. We therefore institute *inter partes* review as to all of the challenged claims of the ’165 patent and all of the asserted grounds of unpatentability in the Petition.

II. BACKGROUND

A. Related Matters

The ’165 patent is a subject of several civil actions, including *Togail Technologies Ltd. v. Apple Inc.*, No. 6:22-cv-00326 (W.D.Tex.). Pet. 71; Paper 3, 2.

B. The ’165 Patent

The ’165 patent is titled “Method And Apparatus For Multiple Transmit/Receive Point (TRP) Operations” and issued on September 7, 2021 from an application filed on November 4, 2019. Ex. 1001, codes (22), (45),

(54). Related Provisional Application No. 62/754,706 was filed on November 2, 2018. *Id.*, code (60).

The '165 patent is directed to user equipment (UE) receiving Transmission Configuration Indicator (TCI) state data in a Physical Download Control Channel (PDCCH) for determining multiple Physical Downlink Shared Channels (PDSCHs). Ex. 1001, code (57). The TCI state data is associated with multiple Demodulation Reference Signal (DMRS) port groups. *Id.* The UE also obtains multiple Quasi Co-Location (QCL) assumptions for receiving the PDSCHs based on the DMRS port groups associated with the TCI state data. *Id.*

Figure 1, reproduced below, is a schematic diagram illustrating a multi-TRP system for use in “the next generation (e.g., Fifth Generation (5G) New Radio (NR)) wireless communication systems.” Ex. 1001, 1:24–39; 2:12–14).

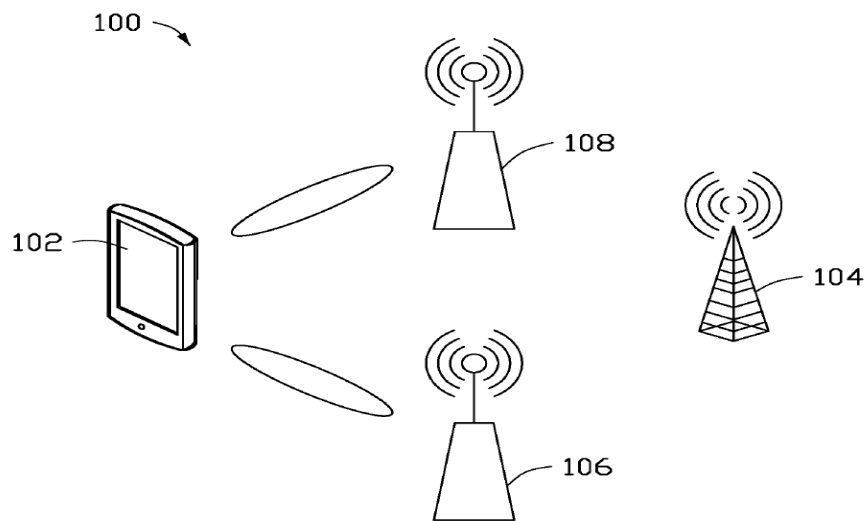


Figure 1, above, illustrates a multi-TRP system, with TRPs 106 and 108, UE 102, and base station (BS) 104. Ex. 1001, 4:65–5:2. UE 102 may connect to BS 104 through TRPs 106 and 108. *Id.* at 5:12–13. Each TRP may have

antenna panels to provide directional beams towards the UE, and the antenna panels on the TRP may be jointly used in the data transmission to the UE, forming a multi-input multi-output system. *Id.* at 5:14–18.

Figure 2, reproduced below, depicts a flowchart for a process of multi-TRP operation. Ex. 1001, 5:19–21.

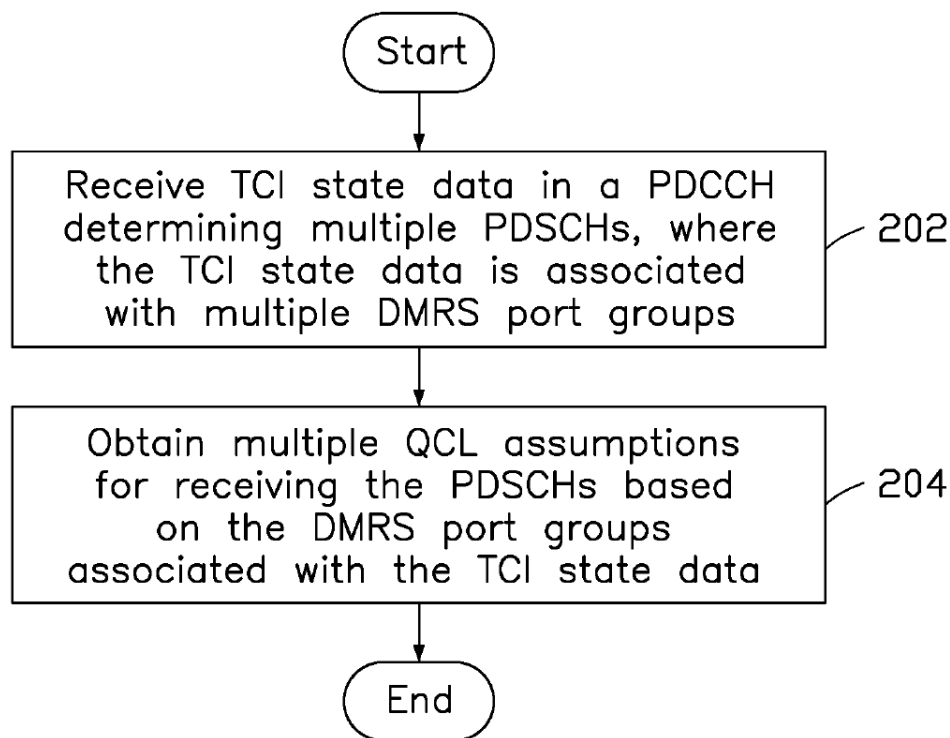


Figure 2, above, depicts a flowchart for the multi-TRP operations. In step 202, the UE receives TCI state data in a PDCCH, which is associated with multiple DMRS port groups. Ex. 1001, 5:22–24. Each DMRS port groups may correspond to one PDSCH. *Id.* at 6:25–26. If the TCI state data is associated with certain DRMS port groups, the UE may then determine the QCL assumptions for the DRMS port groups, as shown in step 204. *Id.* at 5:24–27, 6:26–31. Each of the PDSCHs derived from the PDCCH may correspond to a TRP. *Id.* at 6:32–34. QCL assumptions may include

different parameters such as spatial-domain QCL parameters (e.g., QCL TypeD parameters), or other QCL parameters such as average delay, delay spread, Doppler shift, and Doppler spread. *Id.* at 5:28–32.

C. Illustrative Claim

The '165 patent has 12 claims. Claims 1 and 7 are independent claims. Claim 1 is illustrative of the claimed subject matter and is reproduced below, with bracketed designations added for reference purposes.

1. A user equipment (UE) comprising:

[1.1] one or more non-transitory computer-readable media having computer-executable instructions embodied thereon; and

[1.2] at least one processor coupled to the one or more non-transitory computer-readable media, and configured to execute the computer-executable instructions to:

[1.3] receive, in a Physical Downlink Control Channel (PDCCH), Transmission Configuration Indicator (TCI) state data for determining a plurality of Physical Downlink Shared Channels (PDSCHs), the TCI state data being associated with a plurality of Demodulation Reference Signal (DMRS) port groups; and

[1.4] obtain a plurality of Quasi Co-Location (QCL) assumptions for receiving the plurality of PDSCHs based on the plurality of DMRS port groups associated with the TCI state data, wherein:

[1.5] each of the plurality of QCL assumptions corresponds to one of the plurality of DMRS port groups,

[1.6] the TCI state data corresponds to a TCI state configuration that includes a plurality of QCL Reference Signal (RS) sets, and

[1.7] each of the plurality of QCL RS sets corresponds to one of the plurality of DMRS port groups.

Ex. 1001, 12:57–13:13.

D. Asserted Grounds of Unpatentability

Petitioner challenges the patentability of claims 1–12 of the ’165 patent on the following grounds:

Claims Challenged	35 U.S.C. § ¹	Reference(s)
1–3, 5–9, 11, 12	103	Vilaipornsawai ² , Shin ³ , Grant ⁴
4, 10	103	Vilaipornsawai, Shin, Grant, Xue ⁵

Pet. 14.

III. ANALYSIS

A. Level of Ordinary Skill in the Art

Petitioner asserts that a person of ordinary skill in the art:

would have had a master’s degree from an accredited program in electrical engineering, computer engineering, computer science, or a related field, and three years of relevant experience in mobile communications or wireless networks; or a Ph.D. degree in one of the disciplines listed above and one year of relevant experience. More technical education, but less experience could have also met this standard.

Pet. 9 (citing Ex. 1003 ¶¶ 19–21).

¹ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. § 103, effective March 16, 2013. Because the application and provisional application for the ’165 patent were filed after this date, the post-AIA version of § 103 applies. *See* Ex. 1001, codes (22), (60).

² WO 2018/141246 A1, published August 9, 2018 (Ex. 1005).

³ US 2019/0068308 A1, published February 28, 2019 (Ex. 1006).

⁴ US 2020/0280409 A1, published September 3, 2020 (Ex. 1007).

⁵ US 2020/0260418 A1, published August 13, 2020 (Ex. 1012).

Patent Owner has not provided a Preliminary Response, and, thus, has not provided any proposed qualifications for a person of ordinary skill in the art.

For the purposes of this Decision, we adopt the assessment offered by Petitioner as it is consistent with the '165 patent and the prior art before us. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

B. Claim Construction

In this *inter partes* review, claims are construed using the same claim construction standard that would be used to construe the claims in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b) (2022). Under the principles set forth by our reviewing court, the “words of a claim ‘are generally given their ordinary and customary meaning,’” as would be understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

Petitioner asserts that “the terms of the challenged claims should be given their plain and ordinary meaning, and no terms require specific construction.” Pet. 10 (citing Ex. 1003 ¶ 50).

We determine that we need not expressly construe any claim terms at this juncture. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed.

Cir. 2019) (“The Board is required to construe ‘only those 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))).

C. Principles of Law

A patent 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 said 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 ordinary skill in the art; and (4) when in evidence, objective indicia of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

D. Obviousness of Claims 1–3, 5–9, 11, and 12 Over Vilaipornsawai, Shin, and Grant

Petitioner contends that claims 1–3, 5–9, 11, and 12 would have been obvious over Vilaipornsawai, Shin, and Grant. Pet. 15–60. To support its contentions, Petitioner provides explanations as to how the combination of the prior art teaches each claim limitation and provides rationale to combine the references. *Id.* Petitioner also relies upon the Ding Declaration (Ex. 1003) to support its positions.

We begin our discussion with brief summaries of Vilaipornsawai, Shin, and Grant, and then address the evidence and arguments presented.

1. Vilaipornsawai (Ex. 1005)

Vilaipornsawai is directed to supporting network communications by the use of PDCCHs messages for PDSCHs. Ex. 1005, code (57). Figure 1, reproduced below, depicts Vilaipornsawai's communication system. *Id.* ¶ 54.

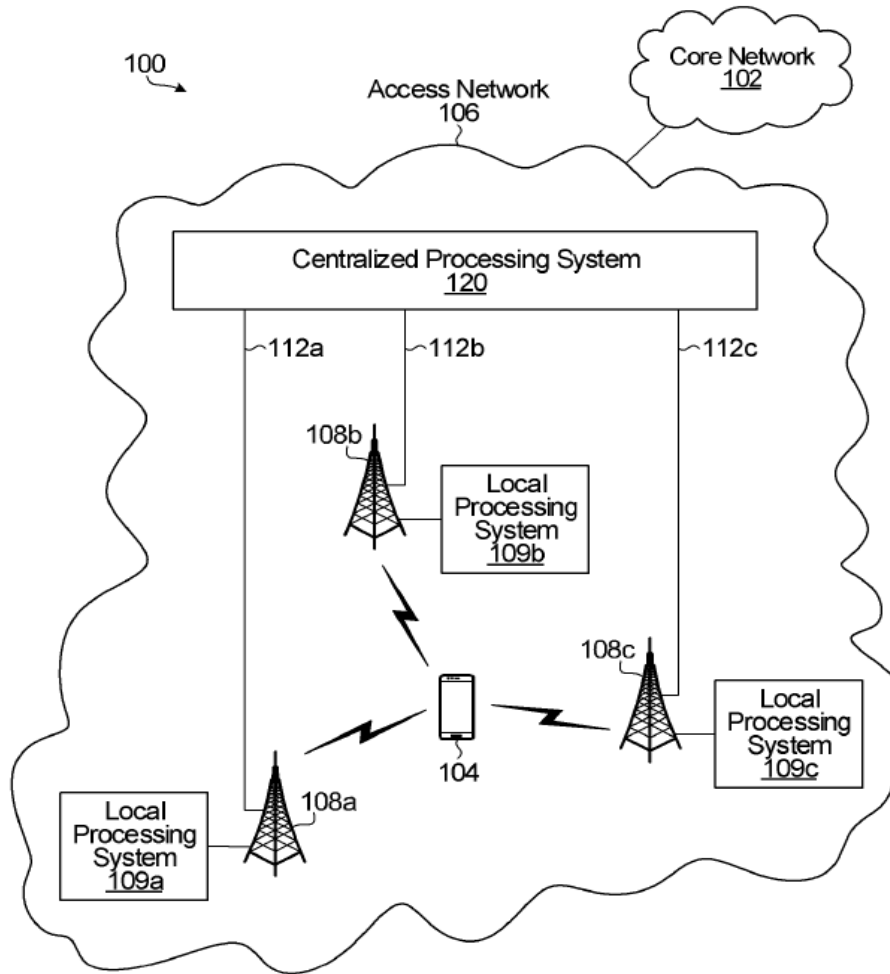


FIG. 1

Figure 1, above, depicts communication system 100, which includes core network 102 and access network 106. Ex. 1005 ¶ 54. Access network 106 is a wireless communication network that is connected or coupled to core network 102, with network elements or nodes 108a, 108b, 108c providing

wireless communication service within the respective wireless coverage areas. *Id.* ¶ 56. UE 104 wirelessly accesses communication system 100 using access network 106. *Id.* ¶ 57. UE 104 includes a radio transmitter and a radio receiver, which may be integrated into a radio transceiver, one or more antennas, and associated processing circuitry, such as antenna radio frequency (RF) circuitry, and network elements 108a-c and UE 104 may include similar types of components to support communications with each other. *Id.* In Vilaipornsawai, “network elements 108a-c may be configured to serve UE 104 in accordance with one or more CoMP [Coordinated Multi-Point] transmission schemes, such as Dynamic Point Selection (DPS) or Non-Coherent Joint Transmission. In these network coordination schemes, the same or different downlink PDSCH data stream(s) can be transmitted to a UE from multiple TRPs.” *Id.* ¶ 61.

In Vilaipornsawai, a single PDCCH message has resource assignment fields for multiple PDSCHs. Ex. 1005 ¶ 116. Vilaipornsawai discloses that Downlink Control Information [DCI] in PDCCH messages carries DMRS information for UEs to use to perform channel determinations and receive multiple PDSCHs. *Id.* ¶¶ 113–114.

2. *Shin (Ex. 1006)*

Shin is directed to a communication method for 5G networks, which includes identifying DMRS information, identifying port number information for receiving DMRS, and receiving the DMRS based on the DMRS type information, the DMRS symbol length information, and port number information. Ex. 1006, code (57). In Shin, the communication system may support joint transmissions from multiple TRPs to a single UE. *Id.* ¶ 200. Additionally, in Shin radio resources allocated for transmitting

different signals include DMRS, PDSCHs, and control channels such as PDCCH. *Id.* ¶¶ 50–52, 55. Shin explains that DMRS information communicated to a UE in 5G systems may include DMRS port grouping information, where the port grouping may be performed for NC-JT [Non-Coherent Joint Transmission]. *Id.* ¶¶ 62, 200.

3. Grant (Ex. 1007)

Grant is directed to cellular wireless communication, including 5G systems. Ex. 1007 ¶ 92. In Grant, the communication system may support joint transmission from multiple TRPs to a single UE, that includes states corresponding “to different TRP pairs, supporting, e.g., non-coherent joint transmission (NC-JT) from a pair of TRPs to the UE.” *Id.* ¶ 6. Grant uses transmissions of channels, such as PDSCHs and PDCCHs, as well as a reference signal such as DMRS. *Id.* ¶¶ 7, 157, 181. Grant uses the term “TCI” for an N-bit indicator, that is functionally identical to the QCL Reference Indicator (QRI), and which includes RS sets and a QCL indication for the sets. *Id.* ¶ 8.

2. Discussion

a. Claim 1

Petitioner asserts that Vilaipornsawai discloses the use of user equipment for the teaching of the preamble. Pet. 33–34. For the teaching of the limitation [1.1], Petitioner contends that Vilaipornsawai discloses the use of a memory storing instructions. *Id.* at 34–35. For limitation [1.2], Petitioner argues that Vilaipornsawai discloses the use of a processor and a memory with instructions. *Id.* at 35–36.

For limitation [1.3], Petitioner argues that Vilaipornsawai discloses “a system in which multiple TRPs transmit different PDSCHs to a UE in a joint

transmission (JT) scenario, and a single TRP transmits downlink control information (DCI) information in a PDCCH for scheduling the multiple PDSCHs, with the DCI including ‘DMRS information.’” Pet. 36 (citing Ex. 1003 ¶ 90). More specifically, Petitioner asserts that Vilaipornsawai discloses that wireless systems include data channels, like PDSCHs, and control channels, like PDCCHs. *Id.* at 36–37 (citing Ex. 1005 ¶ 50). Petitioner contends that Vilaipornsawai discloses a joint transmission (JT) where a single PDCCH message is used to convey the DCI for multiple PDSCHs. *Id.* at 37 (citing Ex. 1005 ¶¶ 65–67). Petitioner also asserts that Vilaipornsawai also discloses that a PDCCH message has one or more resource assignment fields for scheduling multiple PDSCHs, and for a JT scenario, “either single or multiple PDDCH messages are required to convey the DCI for the multiple PDSCHs from the multiple TRPs.” *Id.* at 37–38 (citing 1005 ¶¶ 67, 116). Petitioner contends that Vilaipornsawai discloses that the DCI of a PDCCH carries DMRS information for UEs to use to perform channel estimation for, and to receive, multiple PDSCHs. *Id.* at 38 (citing Ex. 1005 ¶¶ 113–114). Petitioner further contends that Vilaipornsawai discloses transmission of a PDCCH with DCI, including scheduling information for multiple PDSCHs, and also DMRS information, followed by joint transmission of PDSCHs from different TRPs, as shown in annotated Figure 1, below.

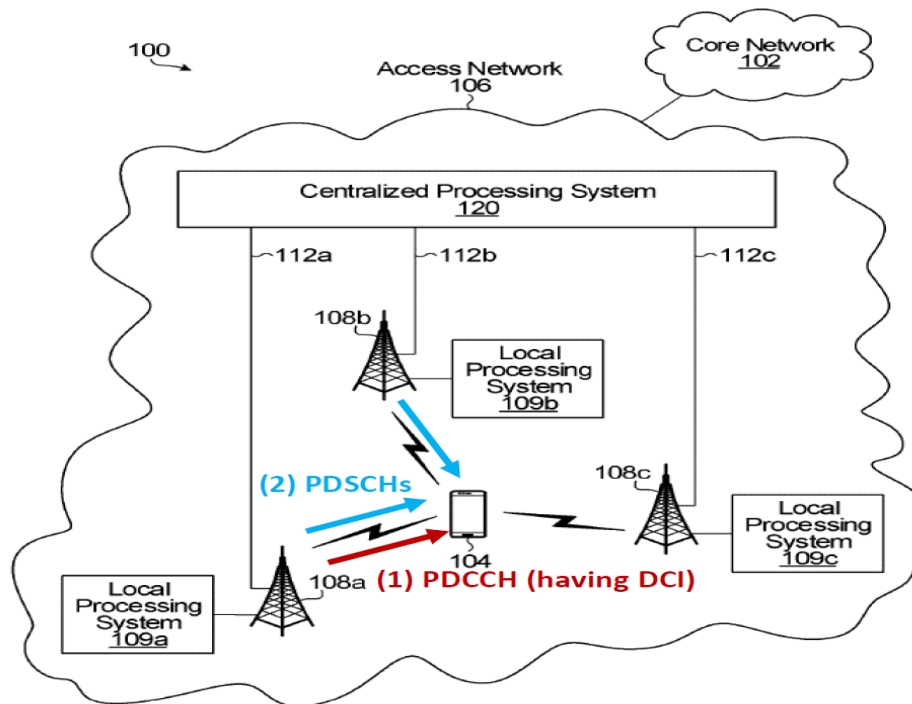


FIG. 1

Vilaipornsawai's Figure 1, as annotated by Petitioner, depicts transmission of a PDCCH with DCI and joint transmission of PDSCHs from different TRPs. Pet. 39–40. Petitioner also refers to annotated Figure 16 of Vilaipornsawai, reproduced below.

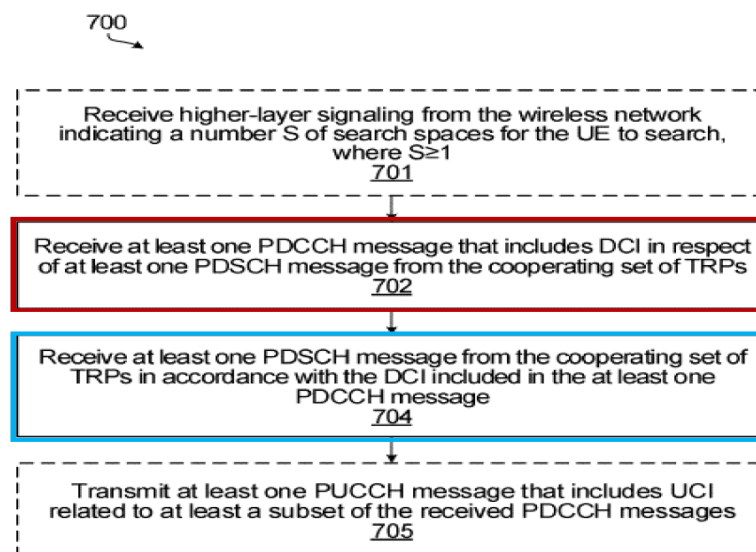


FIG. 16

As shown in Figure 16, as annotated by Petitioner, Petitioner asserts that Vilaipornsawai's transmission of a PDCCH is followed by the joint transmission of PDSCHs from different TRPs. Pet. 39–41 (citing Ex. 1003 ¶ 100).

Petitioner asserts that Vilaipornsawai and Shin are analogous art to the '165 patent and, while Vilaipornsawai does not specify the details of its DMRS information, Shin provides examples of DMRS information in a Joint Transmission (JT) scenario. Pet. 22–24. Petitioner further contends that Shin provides examples of Vilaipornsawai's DMRS information, such as DMRS port groups, that are beneficially included. *Id.* at 41. Petitioner argues that a person of ordinary skill in the art implementing Vilaipornsawai's system for joint transmission from multiple TRPs with multiple antennas would have specified these details of DMRS information communicated to a UE. *Id.* at 41–42 (citing Ex. 1003 ¶ 66). Petitioner asserts that, according to Shin, it is “necessary to transmit the DMRS port grouping information to the UE for NC-JT,” and the QCL assumptions among different ports in a DMRS port group assist with UE channel estimation. *Id.* at 42–43 (citing Ex. 1006 ¶¶ 200, 204; Ex. 1003 ¶ 104).

Petitioner additionally asserts that Vilaipornsawai and Shin in combination with Grant also teaches limitation [1.3]. Pet. 43–47. Petitioner refers to Grant's disclosure of transmission of TCI data, where “[e]ach [indicator] state refers to one or two RS sets, which indicates a QCL relationship for one or two DMRS port group(s).” *Id.* at 43–44 (citing Ex. 1007 ¶¶ 5, 8, 271; Ex. 1003 ¶ 108). Petitioner contends that indicating a QCL relationship between an RS set and a DMRS port groups offers the benefit of aiding DMRS based channel estimation and the reception of

DMSR signals. *Id.* at 44 (citing Ex.1003 ¶ 109 (citing Ex. 1010)).

Petitioner also asserts that Grant is analogous art to the '165 patent and it would have been obvious to a person of ordinary skill in the art to combine Grant with Vilaipornsawai and Shin to improve this channel estimation and DMRS signal reception. *Id.* at 28–29 (citing Ex.1003 ¶¶ 74–76).

For limitation [1.4], Petitioner asserts that Grant's TCI state data refers to "two RS sets," where "[e]ach RS set refers to one or more RS(s) which are QCLed with DM-RS ports within corresponding DM-RS group." Pet. 48 (citing Ex.1007 ¶ 5). Petitioner also refers to Shin's disclosure where "DMRS ports within one DMRS port group are QCL-ed," which indicates that Shin, as well as Grant, disclose the use of Quasi Co-Location (QCL) assumptions. *Id.* at 48 (citing Ex. 1006 ¶¶ 194–195; Ex. 1003 ¶¶ 116–118). Petitioner contends that Grant's TCI data provides QCL assumptions for receiving the different data in different PDSCHs from different TRPs. *Id.* at 48–49 (citing Ex. 1003 ¶ 118).

For limitation [1.5], Petitioner contends that Grant teaches that its TCI state data refers to "two RS sets, which indicates a QCL relationship for . . . two DMRS port group(s)" wherein "[e]ach RS set refers to one or more RS(s) which are QCLed with DM-RS ports within corresponding DM-RS group," which shows a one-to-one correspondence. Pet. 49 (citing Ex.1007 ¶ 5; Ex. 1003 ¶ 119). Petitioner also relies on Shin's disclosure of one-to-one correspondence. *Id.* at 50 (citing Ex. 1006 ¶¶ 194–195; Ex. 1003 ¶ 122).

For limitation [1.6], Petitioner relies upon Grant's disclosure of "two RS sets, which indicates a QCL relationship for one or two DMRS port group(s)," which is part of the TCI state data. Pet. 50–51 (citing Ex. 1007 ¶ 5; Ex. 1003 ¶¶ 126–127). Petitioner also refers to Table 3 of Grant, which

shows TCI states in relation to QCL RS sets. *Id.* at 51–52 (citing Ex. 1007, Table 3; Ex. 1003 ¶ 128).

For limitation [1.7], Petitioner asserts that Grant discloses a TCI state value that refers to two RS sets. Pet. 52 (citing Ex. 1007, Table 3). Petitioner argues that “Grant discloses a one-to-one correspondence between two RS sets and two DMRS port groups,” which teaches the required correspondence. *Id.* at 53 (citing Ex. 1003 ¶ 130).

We have reviewed Petitioner’s evidence and arguments and find it is sufficient at this juncture. Patent Owner has not provided a Preliminary Response presenting any disputes to Petitioner’s assertions.

We are persuaded that Petitioner has demonstrated a reasonable likelihood that it would prevail in showing that claim 1 would be obvious over Vilaipornsawai, Shin, and Grant.

b. Claims 2, 3, 5–9, 11, and 12

Petitioner provides evidence and argument that claims 2, 3, 5–9, 11, and 12 are obvious over Vilaipornsawai, Shin, and Grant. Pet. 53–60. We have reviewed Petitioner’s evidence and arguments on the obviousness of these claims and determine it is sufficient at this juncture.

Accordingly, we are persuaded that Petitioner has demonstrated a reasonable likelihood that it would prevail in showing that claims 2, 3, 5–9, 11, and 12 would be obvious over Vilaipornsawai, Shin, and Grant.

E. Obviousness of Claims 4 and 10 Over Vilaipornsawai, Shin, Grant, and Xue

Petitioner contends that claims 4 and 10 would have been obvious over Vilaipornsawai, Shin, Grant, and Xue. Pet. 61–66. To support its contentions, Petitioner provides explanations as to how the combination of

the prior art teaches each claim limitation and provides rationale to combine the references. *Id.* Petitioner also relies upon the Ding Declaration (Ex. 1003) to support its positions.

We begin our discussion with a brief summary of Xue, and then address the evidence and arguments presented.

1. Xue (Ex. 1012)

Xue is directed to cellular wireless communications systems such as 5G systems. Ex. 1012 ¶ 95. Xue describes a method in which “[a] terminal monitors downlink control information in a first time resource unit range according to a first rule,” where “the first time resource unit range is determined by using a first timer.” *Id.* ¶¶ 108, 148. In Xue, “the 1st time resource unit range is implemented by a timer 1,” “[a] start moment of the timer 1 is the same as a start moment of the 1st time resource unit range, and an effective period of the timer 1 is the same as a time length of the 1st time resource unit range,” and a time resource unit range may “include[] four consecutive slots.” *Id.* ¶¶ 159–160; Ex. 1003 ¶¶ 158–159. Xue describes that the UE uses a timer to keep track of time periods in which it “monitors and receives a PDCCH” and when the UE “does not receive the PDCCH.” *Id.* ¶ 2.

2. Discussion

Claim 4 depends from claim 1, and further recites “wherein the at least one processor is further configured to execute the computer-executable instructions to: indicate a relationship between the plurality of QCL assumptions and the plurality of DMRS port groups when a timer configured for the UE expires.” Ex. 1001, 13:26–31. Claim 10 depends from claim 7 and contains a similar limitation. *Id.* at 14:28–31.

As discussed for claim 1, Petitioner asserts that Vilaipornsawai's UE receives DMRS information for performing channel estimation and receiving/determining different PDSCHs from different TRPs, Shin discloses DMRS information for different DMRS port groups for different TRPs, and Grant's TCI indicates QCL assumptions connecting DMRS port groups and other reference signals (RSs). *See* Pet. 64. Petitioner further refers to Grant's description of "[e]xplicit update[s] of a TCI state," in which "[t]he UE receives a signalling message," where "the signalling can simultaneously update more than one TCI state." *Id.* (citing Ex. 1007 ¶ 289). Further, Grant discloses that "[i]f the UE receives the signalling message in slot n , the first time that the UE may apply the updated QCL assumption for demodulation of PDSCH . . . is in slot $n+d_1$." *Id.* (citing Ex. 1007 ¶ 289; Ex. 1003 ¶ 165). Petitioner asserts that it would have been obvious to one of ordinary skill in the art that a timer is one way for a UE to track time that has passed is equal to some number of slots, where a slot was known to span a fixed amount of time. *Id.* (citing Ex. 1001 ¶ 166 (citing Ex. 1006)). Petitioner argues that Xue confirms that it was common to use a timer to determine the passage of a fixed number of slots, especially in light of its method where "[a] terminal monitors downlink control information in a first time resource unit range according to a first rule." *Id.* at 64–65 (citing Ex. 1012 ¶ 108).

We have reviewed Petitioner's evidence and arguments on the obviousness of claims 4 and 10 and determine it is sufficient at this juncture. We are persuaded that Petitioner has demonstrated a reasonable likelihood that it would prevail in showing that claims 4 and 10 would be obvious over Vilaipornsawai, Shin, Grant, and Xue.

IV. CONCLUSION

For the foregoing reasons, we have determined that there is a reasonable likelihood that the Petitioner would prevail with respect to at least one of the claims challenged in the Petition. We therefore institute trial as to all challenged claims on all grounds stated in the Petition.

V. ORDER

Upon consideration of the record before us, it is:

ORDERED that *inter partes* review of claims 1–12 of the '165 patent is instituted on all grounds in the Petition; and

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

IPR2023-00644
Patent 11,115,165 B2

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