

Ex. 1029

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TCL Communication Technology Holdings Limited
TCT Mobile International Limited
TCT Mobile, Inc.
TCT Mobile (US) Inc.
TCT Mobile (US) Holdings Inc.,

Petitioner,

v.

Mitsubishi Electric Corporation,
Patent Owner.

Case No.: IPR2023-00997
U.S. Patent No. 10,200,976

PATENT OWNER'S RESPONSE

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TABLE OF EXHIBITS

No.	Description
2005	Declaration of Todor Cooklev
2006	TS 36.101 V10.0.0
2007	TS 36.101 V10.4.0
2008	TS 36.101 V11.2.0
2009	TS 36.101 V11.3.0
2010	Deposition Transcript of Mr. Mark Lanning

I. INTRODUCTION

Patent Owner Mitsubishi Electric Corporation (“Patent Owner” or “MELCO”) respectfully submits this Patent Owner Response to the Institution Decision (“ID”) issued on December 7, 2023, based on the Petition seeking *Inter Partes* Review (“IPR”) Petition for *Inter Partes* Review (Paper No. 2) (“the Petition”) of claim 2 (“the Challenged Claim”) of U.S. Patent No. 10,200,976 (“’976 Patent”) submitted by Petitioner TCL Communication Technology Holdings Limited, TCT Mobile International Limited, TCT Mobile, Inc., TCT Mobile (US) Inc., TCT Mobile (US) Holdings Inc. (collectively “Petitioner” or “TCL”).

None of the prior art cited in any of the Grounds asserted in the Petition discloses or suggests a “non-associated” cell ***configured by a base station*** to have downlink resources only as recited in claim 2 of the ’976 Patent. Instead, as of the ’976 Patent priority date, all of the prior art taught that the base station was required to configure each cell to have both uplink and downlink resources. While a mobile terminal may be configured to ignore such uplink resources, the base station nevertheless configured the cell to have those uplink resources. With no prior art teaching the “non-associated cell,” claim 2 is neither anticipated nor rendered obvious by any of the prior art, whether considered singly or in combination.

In addition, with respect to Grounds 1 and 3, the Petition provides plainly deficient motivations to combine the asserted prior art. In each case, the Petition

does not articulate adequate reasoning to combine the prior art nor explain how or why any teachings of the references can be combined. These deficient motivations to combine cannot support an obviousness assertion in either Ground 1 or 3.

For all these reasons, the Board should therefore find that claim 2 of the '976 Patent is patentable over all of Petitioner's asserted grounds.

II. BACKGROUND

A. The '976 Patent Discloses and Claims an Innovative Solution for Efficiently Configuring Downlink Resources While Minimizing Signaling Between Base Station and User Equipment

The conventional cellular communication system, as of January 7, 2011, the priority date of the '976 Patent, required resources for uplink (UL) to be reserved in the same frequency band as that of the resources for downlink (DL). EX1001, 10:37-40. This required pairing of UL and DL frequency resources in the correspondingly paired UL and DL frequency bands lead to inefficient allocation of resources, such as when user equipment (UE), e.g., a mobile phone, needed more resources for downloading data from a base station than it needed for uploading data. *Id.*, 10:40-47; EX2005, ¶32.

1. **Carrier Aggregation and Allocating Different UL and DL Resources**

Recognizing this inefficient allocation of resources, particularly in the context of a UE needing more downlink transmission resources than uplink, the 3rd Generation Partnership Project (3GPP) proposed a fourth generation (4G) cellular

communication system (also known as LTE) that would enable a UE to be configured with increased bandwidth and to be configured with more downlink resources than uplink resources. To achieve increased bandwidth, the concept of carrier aggregation (CA) was proposed in Release 10 of LTE. EX1001, 9:6-16. In CA, two or more component carriers (CCs) are aggregated to support wider transmission bandwidths in which the UE transmits and receives data across multiple CCs corresponding to a plurality of serving cells (of a base station) at the same time. *Id.*; EX2005, ¶33.

TS 36.300 V10.0.0 (EX1012) released by 3GPP proposed both implementing CA and allowing a UE to be configured with more downlink resources than uplink resources. *See, e.g.*, EX1012, 50 (§ 7.5 “Carrier Aggregation”). These same capabilities are also summarized in the ’976 Patent. EX1001, 9:3-67. When configured with CA, a UE can be configured to have UL and DL links with a Primary Serving Cell (PCell) and respective UL and DL links with one or more Secondary Serving Cells (SCell). EX1012, 50. The PCell includes a Downlink Primary Component Carrier (DL PCC) and an Uplink Primary Component Carrier (UL PCC) while each SCell includes a Downlink Secondary Component Carrier (DL SCC) and an Uplink Secondary Component Carrier (UL SCC). *Id.*; *see also* EX1001, 9:3-43. When configured with CA and communicating with one or more SCells in addition to the PCell, the UE’s configuration includes increased bandwidth for UL and DL

data transmission as compared to a UE without CA capability. *See* EX1001, 9:6-9; EX1012, 40 (§ 5.5 “Carrier Aggregation”); EX2005, ¶34.

In addition to CA, TS 36.300 V10.0.0 indicated that the UE can be configured to have difference usage of UL and DL resources, also referred to as asymmetrical CA. EX1012, 50; EX1001, 23:23-31. In the typical arrangement, the UE is configured to communicate with each SCell using one UL SCC and one DL SCC, each SCell having one UL SCC and one DL SCC available to the UE. EX2005, ¶35; EX2010, 27:7-12. But the UE can also be configured to have a number of DL SCCs larger than or equal to the number of UL SCCs although no UE configuration with an SCell can be for UL resources only. *Id.* The ’976 Patent describes the options for UE configurations of UL and DL resources. EX1001, 9:44-49.

Even though LTE permitted asymmetrical CA, it still resulted in a configuration in which each cell was configured with a UL resource associated with a DL resource. EX1001, 23:41-46. As a result, as of the priority date of the ’976 Patent, no cell could be configured by a base station to have a DL frequency band without a UL frequency band paired therewith. *Id.*, 23:46-49. Moreover, even when asymmetrical CA was performed, the UL resource for a cell needed to be necessarily reserved by the base station in the same frequency band as that of the DL resource. *Id.*, 24:3-8. Similarly, a UL frequency band, which is paired with a DL frequency

band, needed to be reserved by the base station in the DL frequency band, which diminished the efficient use of frequency resources. *Id.*, 24:8-15; EX2005, ¶36.

2. Pairing of DL and UL Frequency Bands and Corresponding Pairing of DL/UL Links in a Cell

LTE established predetermined pairing of frequency bands, also referred to as operating bands, usable for communication between a cell and a UE, as shown in TS 36.101. EX1001, 8:33-36. In particular, each DL frequency band has a predetermined pairing with a UL frequency band, where the uplink frequency band differs from the downlink frequency band. *Id.*, 8:36-43. This predetermined pairing derives from the necessary requirement in conventional communication, such as voice communication, to enable transmission and reception at the same time by splitting the frequencies between downlink and uplink. *Id.*, 8:36-47; EX2005, ¶37.

The predetermined pairing of frequency bands is shown, for example, in TS 36.101 V10.0.0 (identified as Non-Patent Document 8 in the '976 Patent), which was published after TS 36.300 V10.0.0 (EX1012). EX2006, 16-17 (§ 5.5 Operating Bands).

Table 5.5-1 E-UTRA operating bands

E-UTRA Operating Band	Uplink (UL) operating band BS receive UE transmit		Downlink (DL) operating band BS transmit UE receive		Duplex Mode
	$F_{UL, low}$	$F_{UL, high}$	$F_{DL, low}$	$F_{DL, high}$	
1	1920 MHz	– 1980 MHz	2110 MHz	– 2170 MHz	FDD
2	1850 MHz	– 1910 MHz	1930 MHz	– 1990 MHz	FDD
3	1710 MHz	– 1785 MHz	1805 MHz	– 1880 MHz	FDD
4	1710 MHz	– 1755 MHz	2110 MHz	– 2155 MHz	FDD
5	824 MHz	– 849 MHz	869 MHz	– 894 MHz	FDD
6 ¹	830 MHz	– 840 MHz	875 MHz	– 885 MHz	FDD
7	2500 MHz	– 2570 MHz	2620 MHz	– 2690 MHz	FDD
8	880 MHz	– 915 MHz	925 MHz	– 960 MHz	FDD
9	1749.9 MHz	– 1784.9 MHz	1844.9 MHz	– 1879.9 MHz	FDD
10	1710 MHz	– 1770 MHz	2110 MHz	– 2170 MHz	FDD
11	1427.9 MHz	– 1447.9 MHz	1475.9 MHz	– 1495.9 MHz	FDD
12	698 MHz	– 716 MHz	728 MHz	– 746 MHz	FDD
13	777 MHz	– 787 MHz	746 MHz	– 756 MHz	FDD
14	788 MHz	– 798 MHz	758 MHz	– 768 MHz	FDD
15	Reserved		Reserved		FDD
16	Reserved		Reserved		FDD
17	704 MHz	– 716 MHz	734 MHz	– 746 MHz	FDD
18	815 MHz	– 830 MHz	860 MHz	– 875 MHz	FDD
19	830 MHz	– 845 MHz	875 MHz	– 890 MHz	FDD
20	832 MHz	– 862 MHz	791 MHz	– 821 MHz	FDD
21	1447.9 MHz	– 1462.9 MHz	1495.9 MHz	– 1510.9 MHz	FDD
...					
33	1900 MHz	– 1920 MHz	1900 MHz	– 1920 MHz	TDD
34	2010 MHz	– 2025 MHz	2010 MHz	– 2025 MHz	TDD
35	1850 MHz	– 1910 MHz	1850 MHz	– 1910 MHz	TDD
36	1930 MHz	– 1990 MHz	1930 MHz	– 1990 MHz	TDD
37	1910 MHz	– 1930 MHz	1910 MHz	– 1930 MHz	TDD
38	2570 MHz	– 2620 MHz	2570 MHz	– 2620 MHz	TDD
39	1880 MHz	– 1920 MHz	1880 MHz	– 1920 MHz	TDD
40	2300 MHz	– 2400 MHz	2300 MHz	– 2400 MHz	TDD
41	2496 MHz	– 2690 MHz	2496 MHz	– 2690 MHz	TDD

Note 1: Band 6 is not applicable

As shown in Table 5.5-1 above, every UL operating band is paired with a DL operating band and vice versa. EX2005, ¶38.

To communicate the frequency band information and carrier frequency information in LTE, a cell broadcasts to UEs the frequency band information and uplink carrier frequency deployed by the cell as broadcast information in which the frequency band information is included in a System Information Block 1 (SIB1) and uplink carrier frequency is included in a SIB2. EX1001, 8:57-61. Even if the uplink

carrier frequency is not included in the SIB2, the UE can derive the uplink carrier frequency from the downlink carrier frequency included in SIB1 using a known default value for the transmit-receive (TX-RX) frequency separation. *Id.*, 8:61-65; EX2005, ¶39.

3. Proposals to Enable a UE to be Configured with DL Resource Only on an SCell

While TS 36.300 V10.0.0 proposed the ability of a UE to be configured with more DL resources than UL resources, it failed to disclose or suggest *how* to indicate such a configuration to the UE. EX2005, ¶40. The '976 Patent, on the other hand, describes multiple proposals for notifying the UE to be configured with more DL resources than UL resources, including being configured to use only the DL SCC of a particular SCell. EX1001, 23:23-40; EX2005, ¶40.

Where the DL/UL link information of a cell is included in the SIB, the '976 Patent discloses that the UE can recognize it should not be configured with the UL CC associated with the DL CC of that cell by receiving indication information in the SIB1 or SIB2. *Id.*, 24:41-61. For example, “ul-CarrierFreq” is a parameter in SIB2 indicating the carrier frequency of the UL CC associated with the DL CC in the cell. To indicate the UE should not be configured with the UL CC, “ul-CarrierFreq” can be configured without a value or the parameter itself can be removed altogether from the SIB2. *Id.*, 25:10-41. Alternatively, a new parameter called “ULCCconfig” can be added to the SIB as a binary value with a value of “1” if the UE is to be configured

with the UL CC and “0” if the UE is not configured with the UL CC. *Id.*, 25:42-52; EX2005, ¶41.

This use of an existing parameter or creating a parameter, as disclosed in the ’976 Patent, is similarly disclosed in R2-104515 (EX1013). EX2005, ¶42. In the case of R2-104515, Opt 2 suggested using an existing parameter “freqBandIndicator” to indicate the UE should not be configured with the UL CC when the parameter is absent. EX1013, 4. Notably, R2-104515 disclosed that when there is no “freqBandIndicator” included, the base station “can choose to transmit or not to transmit this secondary cell’s UL resources configurations to the UE” and the “UE can ignore these configurations because of UL absence.” *Id.* Since the base station can choose whether or not to transmit the cell’s UL resources configurations, R2-104515 thus makes clear that the base station has in fact configured the secondary cell to have UL resources configurations. EX2005, ¶43. In other words, even though the UE will not be configured with UL resources, the base station has configured the secondary cell to have UL resources, but the UE simply “ignores” those UL resources. *Id.*

In Opt 3, R2-104515 disclosed creating a new parameter “ul-PresenceIndicator,” similar to “ULCCconfig” described in the ’976 Patent, to indicate whether or not the UE is to be configured with UL resources. EX1013, 4-5. When it is set to false, “the UE ignores any UL resource configurations of the

secondary cell,” and the UE is not configured with UL resources. *Id.*, 5. Moreover, like Opt 2, when “ul-PresenceIndicator” is set to false in Opt 3, the base station “can choose to transmit or not to transmit this secondary cell’s UL resources configurations to the UE” and the “UE can ignore these configurations because of UL absence.” *Id.* Thus, in both Opt 2 and Opt 3 of R2-104515, the base station has already configured the secondary cell to have UL resources, but the UE simply “ignores” those UL resources so that it is not configured to use the UL resources of the secondary cell. EX2005, ¶44.

4. Innovation of the ’976 Patent to Enable Base Station to Configure Cell with DL Resources Only

Prior to the ’976 Patent, a POSITA would have understood that a cell “configured with DL resources only” meant that there are UL resources configured by the base station for the cell but those UL resources would be unused by the UE. But according to the ’976 Patent, “configured with DL resources only” means that there are no UL resources configured for the cell by the base station. That the base station has already configured the secondary cell to include UL resources as disclosed in R2-104515, even when a UE is to be configured with DL resources only, resulted in a significant inefficiency. This inefficiency arose due to the predetermined pairing of UL and DL frequency bands and the necessary pairing of UL and DL resources when a base station configures a cell, as explained above and as described in the ’976 Patent. EX2005, ¶45.

To overcome this inefficiency, the '976 Patent disclosed a new method of assigning frequency bands (i.e., operating bands) that includes establishing a frequency band for DL only with no paired UL frequency band. EX1001, 49:46-57; EX2005, ¶46. Fig. 41, shown below, provides an example of a DL frequency band without a paired UL frequency band.

F I G . 4 1

Band	Uplink (UL) operating Band	Downlink (DL) operating Band	Duplex Mode
	F _{UL_low} — F _{UL_high}	F _{DL_low} — F _{DL_high}	
A	—	FB_DL_l — FB_DL_h	FDD

As shown in Fig. 41, Band A has a designated frequency range between FB_DL_l and FB_DL_h for the downlink but with no frequency range pairing for the uplink. EX1001, 49:46-57.

Establishing a DL frequency band without a paired UL frequency band provides multiple benefits. First, it eliminates the need to allocate a frequency band for uplink as an actual frequency resource, which preserves that frequency band for other use and allows for efficient use of frequency resources in a case where there are discrete and narrow-band frequency resources. *Id.*, 49:58-67. By eliminating the need to always reserve a resource for UL in the same frequency band as that of a resource for DL in the communication system, the system can allocate the resource

for UL to another cell, another operator, or another system, which improves the efficient use of frequency resources. *Id.*, 32:40-50; EX2005, ¶47.

In addition, such a configuration enables a reduction in the amount of necessary information provided to a UE served by the cell. EX1001, 50:1-5. Since the parameter indicating the operating band is included in the SIB1, and the configuration of the frequency band for DL with no paired UL frequency band is predetermined (e.g., like in Fig. 41), the UE already knows this predetermined arrangement and can recognize the configuration in advance. *Id.*, 50:6-10. In other words, the UE can recognize that the frequency band in which that cell is configured has no UL frequency band, which enables the UE to recognize that there is no UL CC to be associated with a DL CC of that cell. *Id.*, 50:11-17. As a result, the information (e.g., “ULCCconfig” described in the ’976 Patent or “ul-PresenceIndicator” described in R2-104515) that a cell communicates can be reduced, which enables a reduced signaling amount from the cell to the UE, in contrast to the schemes described in R2-104515. *Id.*, 50:17-19; EX2005, ¶48.

Moreover, because the frequency band assigned to the cell has only a DL frequency band without a paired UL frequency band, the base station necessarily configures the cell without UL resources, which reduces the processing burden of the base station. EX2005, ¶49. By configuring the system to include a frequency band with DL only and no paired UL, the base station can use that frequency band

to configure a “non-associated cell” having DL resources only, in contrast to R2-104515 in which the base station configures each secondary cell to include both UL and DL resources. *Id.*

III. LEGAL STANDARDS

“In an inter partes review, the burden of persuasion is on the petitioner to prove ‘unpatentability by a preponderance of the evidence,’ 35 U.S.C. §316(e), and that burden never shifts to the patentee.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1375 (Fed. Cir. 2016). Specifically, the Petition must “identif[y] in writing ***and with particularity***, each claim challenged, the grounds on which the challenge to each claim is based, and the evidence that supports the grounds for the challenge to each claim.”¹ 35 U.S.C. § 312(a)(3); *see also Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) (“[i]t is of the utmost importance that petitioners . . . adhere to the requirement that the initial petition identify ‘with particularity’ the ‘evidence that supports the grounds for the challenge to each claim.’”). An IPR cannot be instituted unless “there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a).

¹ Emphases added in this Response unless otherwise indicated.

In addition, the Board must make its determination regarding institution based on what the Petition *actually presents* and not what it could have reasonably contained had it been reformulated. *Magnum Oil*, 829 F.3d at 1381 (holding that the Board is *not* “free to adopt arguments on behalf of petitioners that could have been, but were not, raised by the petitioner during [a post-grant proceeding]”). The Board cannot “deviate from the grounds in the petition and raise its own” theories of invalidity. *Sirona Dental Sys. GmbH v. Institut Straumann AG*, 892 F.3d 1349, 1356 (Fed. Cir. 2018).

Petitioner raises grounds based on 35 U.S.C. §§ 102 and 103. For anticipation under 35 U.S.C. § 102, a reference must “disclose[] within the four corners of the document . . . all of the limitations claimed,” and that disclosure must be “arranged or combined in the same way as recited in the claim.” *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1371 (Fed. Cir. 2008). Petitioner also cannot combine different embodiments in a single prior art or supplement missing limitations—no matter how minor—in proving anticipation. *See id.*

To prevail on obviousness under 35 U.S.C. § 103, Petitioner must demonstrate based on “record evidence” that the claimed “structural features . . . were known prior art elements.” *K/S Himpp v. Hear-Wear Techs., LLC*, 751 F.3d 1362, 1365 (Fed. Cir. 2014). “[W]hile ‘common sense’ can be invoked, even potentially to supply a limitation missing from the prior art, it must still be supported by evidence

and a reasoned explanation.” *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1363 (Fed. Cir. 2016). Moreover, “[o]bviousness requires more than a mere showing that the prior art includes separate references covering each separate limitation in a claim.” *Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1360 (Fed. Cir. 2011). “Rather, obviousness requires the additional showing that a person of ordinary skill at the time of the invention would have selected and combined those prior art elements in the normal courses of research and development to yield the claimed invention.” *Id.* These additional requirements cannot be met by “conclusory statements”—“there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006); *see also KSR Int’l. Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

IV. CLAIM CONSTRUCTION

Patent Owner accepts the Board’s adoption of the California case claim constructions.

V. PERSON OF ORDINARY SKILL IN THE ART

Patent Owner accepts the Board’s adoption of Petitioner’s proposal for the level of a person of ordinary skill in the art.

VI. RESPONSE TO PETITIONERS' ARGUMENTS

A. Ground 1: Even if Combinable, TS 36.300 and R2-104515 Fail to Disclose or Suggest a “non-associated cell” as Recited in Claim 2 of the '976 Patent

Claim 2 of the '976 Patent recites in pertinent part that “the communication terminal device performs downlink communication using the associated cell and *a non-associated cell configured by the base station to include only another resource for downlink*, the other resource for downlink being allocated to the downlink communication from the base station device.” EX1001, 54:43-48. Thus, in contrast to the “associated cell” having both uplink and downlink resources allocated, the base station configures the “non-associated cell” to have only a downlink resource with no uplink resource allocated. This understanding of claim 2 and the allocation of resources is consistent with Petitioner’s interpretation and thus not in dispute. *See* Petition, 56.

The Petition, however, ignores an important aspect of claim 2 regarding the *configuring* of the “non-associated cell.” According to the plain language of claim 2, it is the *base station*, not the communication terminal (e.g., UE), that configures the “non-associated cell” to have only a downlink resource. Petitioner’s expert Mr. Lanning expressly agreed the claim 2 requires the base station to configure the “non-associated cell” to have only a downlink resource. EX2010, 11:2-13. This distinction about what element configures the “non-associated cell” in claim 2 is

intentional but is not addressed in the Petition. And as explained herein, whether considered singly or in combination, neither TS 36.300 nor R2-104515 discloses or suggests that the base station configures the “non-associated cell” to have only a downlink resource.

1. TS 36.300, as of the priority date of the '976 Patent, did not disclose or suggest a “non-associated cell” configured by the base station to have only a downlink resource allocated

TS 36.300 10.0.0 (EX1012) is associated with other 3GPP technical specifications including TS 36.101. EX2005, ¶ 54. Whereas TS 36.300 provides “an overview and overall description of the E-UTRAN radio interface protocol architecture[, d]etails of the radio interface protocols are specified in companion specifications of the 36 series,” which includes TS 36.101. EX1012, 13; EX2005, ¶54. TS 36.101 provides the specification for User Equipment (UE) radio transmission and reception and “establishes the minimum RF characteristics and minimum performance requirements for E-UTRA User Equipment (UE).” EX2006, 12. A POSITA would have studied TS 36.101 to inform their understanding of whether a base station could configure a non-associated cell to have a resource for downlink without a resource for uplink. EX2005, ¶54.

As evidenced by TS 36.101 V10.0.0 (EX2006) contemporaneous to TS 36.300 V10.0.0, as well as subsequent versions of both prior to the priority date of the '976 Patent, there was no disclosure of a base station configuring a “non-

associated cell” to have only downlink resources allocated nor was such a configuration permitted. Rather, that version and all subsequent versions prior to the priority date only disclose the base station configuring an “associated cell” in which both uplink and downlink resources are allocated. Only more than a year after the priority date does TS 36.300 in conjunction with TS 36.101 V11.3.0 (EX2009) disclose the possibility of a base station configuring a “non-associated cell” to have only downlink resources allocated. EX2005, ¶55.

(a) TS 36.101 confirms that all operating bands in TS 36.300 prior to the priority date of the '976 Patent were assigned with both uplink and downlink resources

To inform a POSITA’s understanding of whether or not a cell included resources for uplink and downlink according to Release 10 as disclosed in TS 36.300 V10.0.0 (EX1012), a POSITA would have studied TS 36.101 V10.0.0 (EX2006), which was published in October 2010. EX2005, ¶56. Indeed, the '976 Patent specifically cites and describes the relevance of TS 36.101 V10.0.0 in relation to the required pairing of UL and DL operating bands, as explained in the Background section above. *Id.*; EX1001, 8:33-9:2. Of particular relevance within this version of TS 36.101 is Section 5 “Operating bands and channel arrangement,” reproduced below.

Table 5.5-1 E-UTRA operating bands

E-UTRA Operating Band	Uplink (UL) operating band BS receive UE transmit	Downlink (DL) operating band BS transmit UE receive	Duplex Mode
	$F_{UL,low} - F_{UL,high}$	$F_{DL,low} - F_{DL,high}$	
1	1920 MHz – 1980 MHz	2110 MHz – 2170 MHz	FDD
2	1850 MHz – 1910 MHz	1930 MHz – 1990 MHz	FDD
3	1710 MHz – 1785 MHz	1805 MHz – 1880 MHz	FDD
4	1710 MHz – 1755 MHz	2110 MHz – 2155 MHz	FDD
5	824 MHz – 849 MHz	869 MHz – 894 MHz	FDD
6 ¹	830 MHz – 840 MHz	875 MHz – 885 MHz	FDD
7	2500 MHz – 2570 MHz	2620 MHz – 2690 MHz	FDD
8	880 MHz – 915 MHz	925 MHz – 960 MHz	FDD
9	1749.9 MHz – 1784.9 MHz	1844.9 MHz – 1879.9 MHz	FDD
10	1710 MHz – 1770 MHz	2110 MHz – 2170 MHz	FDD
11	1427.9 MHz – 1447.9 MHz	1475.9 MHz – 1495.9 MHz	FDD
12	698 MHz – 716 MHz	728 MHz – 746 MHz	FDD
13	777 MHz – 787 MHz	748 MHz – 758 MHz	FDD
14	788 MHz – 798 MHz	758 MHz – 768 MHz	FDD
15	Reserved	Reserved	FDD
16	Reserved	Reserved	FDD
17	704 MHz – 716 MHz	734 MHz – 746 MHz	FDD
18	815 MHz – 830 MHz	860 MHz – 875 MHz	FDD
19	830 MHz – 845 MHz	875 MHz – 890 MHz	FDD
20	832 MHz – 862 MHz	791 MHz – 821 MHz	FDD
21	1447.9 MHz – 1462.9 MHz	1495.9 MHz – 1510.9 MHz	FDD
...			
33	1900 MHz – 1920 MHz	1900 MHz – 1920 MHz	TDD
34	2010 MHz – 2025 MHz	2010 MHz – 2025 MHz	TDD
35	1850 MHz – 1910 MHz	1850 MHz – 1910 MHz	TDD
36	1930 MHz – 1990 MHz	1930 MHz – 1990 MHz	TDD
37	1910 MHz – 1930 MHz	1910 MHz – 1930 MHz	TDD
38	2570 MHz – 2620 MHz	2570 MHz – 2620 MHz	TDD
39	1880 MHz – 1920 MHz	1880 MHz – 1920 MHz	TDD
40	2300 MHz – 2400 MHz	2300 MHz – 2400 MHz	TDD
41	2496 MHz – 2690 MHz	2496 MHz – 2690 MHz	TDD

Note 1: Band 6 is not applicable

EX2006, 16-17. The operating bands in Table 5.5-1 define the frequencies used for uplink and downlink communication and thus define both uplink and downlink resources being paired for every E-UTRA operating band. EX2005, ¶56.

According to TS 36.101 V10.0.0, the resources provided by the frequency bands are *always* assigned for both downlink and uplink when the base station configures the cell. Conversely, according to TS 36.101 V10.0.0 where every frequency band has paired UL and DL resources, it is not possible for the base station to configure the cell by assigning a resource for downlink without also assigning a

resource for uplink at the same time. A POSITA would therefore have concluded, as of October 2010, that Release 10 including TS 36.300 V10.0.0 (EX1012) did not disclose or suggest the concept of a “non-associated cell” configured by a base station to have downlink resources only. EX2005, ¶57.

The ability of a base station to configure a cell with only downlink resources remained missing from all 3GPP Technical Specifications developed prior to the priority date of the '976 Patent. EX2005, ¶58. In fact, TS 36.101 V10.4.0 (EX2007), published in September 2011 (after the '976 Patent priority date), defined E-UTRA operating bands similarly to V10.0.0 and also specifically defined carrier aggregation operation for the frequency bands for E-UTRA. EX2007, 16-17. The E-UTRA operating bands for TS 36.101 V10.4.0 are reproduced below:

Table 5.5-1 E-UTRA operating bands

E-UTRA Operating Band	Uplink (UL) operating band BS receive UE transmit		Downlink (DL) operating band BS transmit UE receive		Duplex Mode
	$F_{UL,low} - F_{UL,high}$		$F_{DL,low} - F_{DL,high}$		
1	1920 MHz	– 1980 MHz	2110 MHz	– 2170 MHz	FDD
2	1850 MHz	– 1910 MHz	1930 MHz	– 1990 MHz	FDD
3	1710 MHz	– 1785 MHz	1805 MHz	– 1880 MHz	FDD
4	1710 MHz	– 1755 MHz	2110 MHz	– 2155 MHz	FDD
5	824 MHz	– 849 MHz	869 MHz	– 894MHz	FDD
6 ¹	830 MHz	– 840 MHz	875 MHz	– 885 MHz	FDD
7	2500 MHz	– 2570 MHz	2620 MHz	– 2690 MHz	FDD
8	880 MHz	– 915 MHz	925 MHz	– 960 MHz	FDD
9	1749.9 MHz	– 1784.9 MHz	1844.9 MHz	– 1879.9 MHz	FDD
10	1710 MHz	– 1770 MHz	2110 MHz	– 2170 MHz	FDD
11	1427.9 MHz	– 1447.9 MHz	1475.9 MHz	– 1495.9 MHz	FDD
12	699 MHz	– 716 MHz	729 MHz	– 746 MHz	FDD
13	777 MHz	– 787 MHz	746 MHz	– 756 MHz	FDD
14	788 MHz	– 798 MHz	758 MHz	– 768 MHz	FDD
15	Reserved		Reserved		FDD
16	Reserved		Reserved		FDD
17	704 MHz	– 716 MHz	734 MHz	– 746 MHz	FDD
18	815 MHz	– 830 MHz	860 MHz	– 875 MHz	FDD
19	830 MHz	– 845 MHz	875 MHz	– 890 MHz	FDD
20	832 MHz	– 862 MHz	791 MHz	– 821 MHz	FDD
21	1447.9 MHz	– 1462.9 MHz	1495.9 MHz	– 1510.9 MHz	FDD
22	3410 MHz	– 3490 MHz	3510 MHz	– 3590 MHz	FDD
23	2000 MHz	– 2020 MHz	2180 MHz	– 2200 MHz	FDD
24	1626.5 MHz	– 1660.5 MHz	1525 MHz	– 1559 MHz	FDD
25	1850 MHz	– 1915 MHz	1930 MHz	– 1995 MHz	FDD
...					
33	1900 MHz	– 1920 MHz	1900 MHz	– 1920 MHz	TDD
34	2010 MHz	– 2025 MHz	2010 MHz	– 2025 MHz	TDD
35	1850 MHz	– 1910 MHz	1850 MHz	– 1910 MHz	TDD
36	1930 MHz	– 1990 MHz	1930 MHz	– 1990 MHz	TDD
37	1910 MHz	– 1930 MHz	1910 MHz	– 1930 MHz	TDD
38	2570 MHz	– 2620 MHz	2570 MHz	– 2620 MHz	TDD
39	1880 MHz	– 1920 MHz	1880 MHz	– 1920 MHz	TDD
40	2300 MHz	– 2400 MHz	2300 MHz	– 2400 MHz	TDD
41	2496 MHz	2690 MHz	2496 MHz	2690 MHz	TDD
42	3400 MHz	– 3600 MHz	3400 MHz	– 3600 MHz	TDD
43	3600 MHz	– 3800 MHz	3600 MHz	– 3800 MHz	TDD

Note 1: Band 6 is not applicable

Id. In addition, according to TS 36.101 V10.4.0, “E-UTRA carrier aggregation is designed to operate in the operating bands defined in Tables 5.5A-1 and 5.5A-2,” reproduced below:

Table 5.5A-1: Intra band CA operating bands

E-UTRA CA Band	E-UTRA Band	Uplink (UL) operating band			Downlink (DL) operating band			Duplex Mode
		BS receive / UE transmit			BS transmit / UE receive			
		FUL_low = FUL_high			FDL_low = FDL_high			
CA_1	1	1920 MHz	–	1980 MHz	2110 MHz	–	2170 MHz	FDD
CA_40	40	2300 MHz	–	2400 MHz	2300 MHz	–	2400 MHz	TDD

Table 5.5A-2: Inter band CA operating bands

E-UTRA CA Band	E-UTRA Band	Uplink (UL) operating band			Downlink (DL) operating band			Duplex Mode
		BS receive / UE transmit			BS transmit / UE receive			
		FUL_low = FUL_high			FDL_low = FDL_high			
CA_1-5	1	1920 MHz	–	1980 MHz	2110 MHz	–	2170 MHz	FDD
	5	824 MHz	–	849 MHz	869 MHz	–	894 MHz	

For each operating band, both uplink and downlink resources are always paired together. Accordingly, TS 36.101 V10.4.0, just like TS 36.101 V10.0.0, again teaches that it is *not* possible for the base station to configure the cell with downlink resources without also configuring the cell with uplink resources at the same time, including in the context of carrier aggregation. EX2005, ¶58.

Notably, TS 36.101 V11.2.0 (EX2008) published in September 2012, more than a year and a half after the '976 Patent priority date, still required assignment of both uplink and downlink resources across all operating bands including for carrier aggregation as shown in the following tables:

Table 5.5-1 E-UTRA operating bands

E-UTRA Operating Band	Uplink (UL) operating band BS receive UE transmit	Downlink (DL) operating band BS transmit UE receive	Duplex Mode
	F _{UL_low} – F _{UL_high}	F _{DL_low} – F _{DL_high}	
1	1920 MHz – 1980 MHz	2110 MHz – 2170 MHz	FDD
2	1850 MHz – 1910 MHz	1930 MHz – 1990 MHz	FDD
3	1710 MHz – 1785 MHz	1805 MHz – 1880 MHz	FDD
4	1710 MHz – 1755 MHz	2110 MHz – 2155 MHz	FDD
5	824 MHz – 849 MHz	869 MHz – 894 MHz	FDD
6 ¹	830 MHz – 840 MHz	875 MHz – 885 MHz	FDD
7	2500 MHz – 2570 MHz	2620 MHz – 2690 MHz	FDD
8	880 MHz – 915 MHz	925 MHz – 960 MHz	FDD
9	1749.9 MHz – 1784.9 MHz	1844.9 MHz – 1879.9 MHz	FDD
10	1710 MHz – 1770 MHz	2110 MHz – 2170 MHz	FDD
11	1427.9 MHz – 1447.9 MHz	1475.9 MHz – 1495.9 MHz	FDD
12	699 MHz – 716 MHz	729 MHz – 746 MHz	FDD
13	777 MHz – 787 MHz	746 MHz – 756 MHz	FDD
14	788 MHz – 798 MHz	758 MHz – 768 MHz	FDD
15	Reserved	Reserved	FDD
16	Reserved	Reserved	FDD
17	704 MHz – 716 MHz	734 MHz – 746 MHz	FDD
18	815 MHz – 830 MHz	860 MHz – 875 MHz	FDD
19	830 MHz – 845 MHz	875 MHz – 890 MHz	FDD
20	832 MHz – 862 MHz	791 MHz – 821 MHz	FDD
21	1447.9 MHz – 1462.9 MHz	1495.9 MHz – 1510.9 MHz	FDD
22	3410 MHz – 3490 MHz	3510 MHz – 3590 MHz	FDD
23	2000 MHz – 2020 MHz	2180 MHz – 2200 MHz	FDD
24	1626.5 MHz – 1660.5 MHz	1525 MHz – 1559 MHz	FDD
25	1850 MHz – 1915 MHz	1930 MHz – 1995 MHz	FDD
26	814 MHz – 849 MHz	859 MHz – 894 MHz	FDD
27	807 MHz – 824 MHz	852 MHz – 869 MHz	FDD
28	703 MHz – 748 MHz	758 MHz – 803 MHz	FDD

33	1900 MHz – 1920 MHz	1900 MHz – 1920 MHz	TDD
34	2010 MHz – 2025 MHz	2010 MHz – 2025 MHz	TDD
35	1850 MHz – 1910 MHz	1850 MHz – 1910 MHz	TDD
36	1930 MHz – 1990 MHz	1930 MHz – 1990 MHz	TDD
37	1910 MHz – 1930 MHz	1910 MHz – 1930 MHz	TDD
38	2570 MHz – 2620 MHz	2570 MHz – 2620 MHz	TDD
39	1880 MHz – 1920 MHz	1880 MHz – 1920 MHz	TDD
40	2300 MHz – 2400 MHz	2300 MHz – 2400 MHz	TDD
41	2496 MHz – 2690 MHz	2496 MHz – 2690 MHz	TDD
42	3400 MHz – 3600 MHz	3400 MHz – 3600 MHz	TDD
43	3600 MHz – 3800 MHz	3600 MHz – 3800 MHz	TDD
44	703 MHz – 803 MHz	703 MHz – 803 MHz	TDD

NOTE 1: Band 6 is not applicable

Table 5.5A-1: Intra-band contiguous CA operating bands

E-UTRA CA Band	E-UTRA Band	Uplink (UL) operating band			Downlink (DL) operating band			Duplex Mode
		BS receive / UE transmit			BS transmit / UE receive			
		F _{UL_low} – F _{UL_high}			F _{DL_low} – F _{DL_high}			
CA_1	1	1920 MHz	–	1980 MHz	2110 MHz	–	2170 MHz	FDD
CA_7	7	2500 MHz	–	2570 MHz	2620 MHz	–	2690 MHz	FDD
CA_38	38	2570 MHz	–	2620 MHz	2570MHz	–	2620 MHz	TDD
CA_40	40	2300 MHz	–	2400 MHz	2300 MHz	–	2400 MHz	TDD
CA_41	41	2496 MHz		2690 MHz	2496 MHz		2690 MHz	TDD

Table 5.5A-2: Inter-band CA operating bands

E-UTRA CA Band	E-UTRA Band	Uplink (UL) operating band		Downlink (DL) operating band		Duplex Mode
		BS receive / UE transmit		BS transmit / UE receive		
		F_{UL_low}	F_{UL_high}	F_{DL_low}	F_{DL_high}	
CA_1-5	1	1920 MHz	– 1980 MHz	2110 MHz	– 2170 MHz	FDD
	5	824 MHz	– 849 MHz	869 MHz	– 894 MHz	
CA_1-18	1	1920	– 1980 MHz	2110	– 2170 MHz	FDD
	18	815	– 830 MHz	860	– 875 MHz	
CA_1-19	1	1920 MHz	– 1980 MHz	2110 MHz	– 2170 MHz	FDD
	19	830 MHz	– 845 MHz	875 MHz	– 890 MHz	
CA_1-21	1	1920 MHz	– 1980 MHz	2110 MHz	– 2170 MHz	FDD
	21	1447.9 MHz	– 1462.9 MHz	1495.9 MHz	– 1510.9 MHz	
CA_2-17	2	1850 MHz	– 1910 MHz	1930 MHz	– 1990 MHz	FDD
	17	704 MHz	– 716 MHz	734 MHz	– 746 MHz	
CA_3-5	3	1710 MHz	– 1785 MHz	1805 MHz	– 1880 MHz	FDD
	5	824 MHz	– 849 MHz	869 MHz	– 894 MHz	
CA_3-7	3	1710 MHz	– 1785 MHz	1805 MHz	– 1880 MHz	FDD
	7	2500 MHz	– 2570 MHz	2620 MHz	– 2690 MHz	
CA_3-20	3	1710 MHz	– 1785 MHz	1805 MHz	– 1880 MHz	FDD
	20	832 MHz	– 862 MHz	791 MHz	– 821 MHz	
CA_4-12	4	1710 MHz	– 1755 MHz	2110 MHz	– 2155 MHz	FDD
	12	699 MHz	– 716 MHz	629 MHz	– 746 MHz	
CA_4-13	4	1710 MHz	– 1755 MHz	2110 MHz	– 2155 MHz	FDD
	13	777 MHz	– 787 MHz	746 MHz	– 756 MHz	
CA_4-17	4	1710 MHz	– 1755 MHz	2110 MHz	– 2155 MHz	FDD
	17	704 MHz	– 716 MHz	734 MHz	– 746 MHz	
CA_7-20	7	2500 MHz	– 2570 MHz	2620 MHz	– 2690 MHz	FDD
	20	832 MHz	– 862 MHz	791 MHz	– 821 MHz	

EX2008, 20-22. Thus, from prior to the priority date for the '976 Patent to a period of at least 18 months after the priority date, all versions of Release 10 and early versions of Release 11 required pairing of uplink and downlink resources across all operating bands including for carrier aggregation. EX2005, ¶59.

(b) Only well after the priority date of the '976 Patent does TS 36.101 first disclose assigning downlink resources only

That the 3GPP standard did not contemplate, disclose, or suggest a base station configuring a cell with downlink resources only is confirmed by TS 36.101 V11.3.0 (EX2009), published in December 2012, nearly two years after the '976 Patent priority date. For the first time, this version of TS 36.101 identifies an operating band in which only downlink resources are assigned. EX2005, ¶60.

Table 5.5-1 E-UTRA operating bands

E-UTRA Operating Band	Uplink (UL) operating band BS receive UE transmit	Downlink (DL) operating band BS transmit UE receive	Duplex Mode
	F _{UL,low} – F _{UL,high}	F _{DL,low} – F _{DL,high}	
1	1920 MHz – 1980 MHz	2110 MHz – 2170 MHz	FDD
2	1850 MHz – 1910 MHz	1930 MHz – 1990 MHz	FDD
3	1710 MHz – 1785 MHz	1805 MHz – 1880 MHz	FDD
4	1710 MHz – 1755 MHz	2110 MHz – 2155 MHz	FDD
5	824 MHz – 849 MHz	869 MHz – 894 MHz	FDD
6 ¹	830 MHz – 840 MHz	875 MHz – 885 MHz	FDD
7	2500 MHz – 2570 MHz	2620 MHz – 2690 MHz	FDD
8	880 MHz – 915 MHz	925 MHz – 960 MHz	FDD
9	1749.9 MHz – 1784.9 MHz	1844.9 MHz – 1879.9 MHz	FDD
10	1710 MHz – 1770 MHz	2110 MHz – 2170 MHz	FDD
11	1427.9 MHz – 1447.9 MHz	1475.9 MHz – 1495.9 MHz	FDD
12	699 MHz – 716 MHz	729 MHz – 746 MHz	FDD
13	777 MHz – 787 MHz	746 MHz – 756 MHz	FDD
14	788 MHz – 798 MHz	758 MHz – 768 MHz	FDD
15	Reserved	Reserved	FDD
16	Reserved	Reserved	FDD
17	704 MHz – 716 MHz	734 MHz – 746 MHz	FDD
18	815 MHz – 830 MHz	860 MHz – 875 MHz	FDD
19	830 MHz – 845 MHz	875 MHz – 890 MHz	FDD
20	832 MHz – 862 MHz	791 MHz – 821 MHz	FDD
21	1447.9 MHz – 1462.9 MHz	1495.9 MHz – 1510.9 MHz	FDD
22	3410 MHz – 3490 MHz	3510 MHz – 3590 MHz	FDD
23	2000 MHz – 2020 MHz	2180 MHz – 2200 MHz	FDD
24	1626.5 MHz – 1660.5 MHz	1525 MHz – 1559 MHz	FDD
25	1850 MHz – 1915 MHz	1930 MHz – 1995 MHz	FDD
26	814 MHz – 849 MHz	859 MHz – 894 MHz	FDD
27	807 MHz – 824 MHz	852 MHz – 869 MHz	FDD
28	703 MHz – 748 MHz	758 MHz – 803 MHz	FDD
29	N/A	717 MHz – 728 MHz	FDD ²
...			
33	1900 MHz – 1920 MHz	1900 MHz – 1920 MHz	TDD
34	2010 MHz – 2025 MHz	2010 MHz – 2025 MHz	TDD
35	1850 MHz – 1910 MHz	1850 MHz – 1910 MHz	TDD
36	1930 MHz – 1990 MHz	1930 MHz – 1990 MHz	TDD
37	1910 MHz – 1930 MHz	1910 MHz – 1930 MHz	TDD
38	2570 MHz – 2620 MHz	2570 MHz – 2620 MHz	TDD
39	1880 MHz – 1920 MHz	1880 MHz – 1920 MHz	TDD
40	2300 MHz – 2400 MHz	2300 MHz – 2400 MHz	TDD
41	2496 MHz – 2690 MHz	2496 MHz – 2690 MHz	TDD
42	3400 MHz – 3600 MHz	3400 MHz – 3600 MHz	TDD
43	3600 MHz – 3800 MHz	3600 MHz – 3800 MHz	TDD
44	703 MHz – 803 MHz	703 MHz – 803 MHz	TDD
NOTE 1: Band 6 is not applicable			
NOTE 2: Restricted to E-UTRA operation when carrier aggregation is configured. The downlink operating band is paired with the uplink operating band (external) of the carrier aggregation configuration that is supporting the configured Pcell.			

EX2009, 21-23. As shown in Table 5.5-1 above, operating band 29 (highlighted in yellow) has only downlink resources assigned. EX2005, ¶60.

Notably, operating band 29 in TS 36.101 V11.3.0 mirrors the operating band configuration shown in Fig. 41 of the '976 Patent.

F I G . 4 1

Band	Uplink (UL) operating Band	Downlink (DL) operating Band	Duplex Mode
	F _{UL_low} — F _{UL_high}	F _{DL_low} — F _{DL_high}	
A	—	FB_DL_l — FB_DL_h	FDD

Just like operating band 29 in TS 36.101 V11.3.0, the operating band in Fig. 41 of the '976 Patent has no uplink resources assigned. Moreover, as explained in detail in Section II.A.4 above, having a predetermined operating band assignment in which no uplink resources are assigned enables a base station to configure a cell with downlink resources only when it configures that cell with the operating band having only downlink resources. EX2005, ¶61.

It is also noted that the same assignment for operating band 29 is shown for carrier aggregation in TS 36.101 V11.3.0 as shown below:

Table 5.5A-1: Intra-band contiguous CA operating bands

E-UTRA CA Band	E-UTRA Band	Uplink (UL) operating band			Downlink (DL) operating band			Duplex Mode
		BS receive / UE transmit			BS transmit / UE receive			
		F _{UL_low} – F _{UL_high}			F _{DL_low} – F _{DL_high}			
CA_1	1	1920 MHz	–	1980 MHz	2110 MHz	–	2170 MHz	FDD
CA_7	7	2500 MHz	–	2570 MHz	2620 MHz	–	2690 MHz	FDD
CA_38	38	2570 MHz	–	2620 MHz	2570MHz	–	2620 MHz	TDD
CA_40	40	2300 MHz	–	2400 MHz	2300 MHz	–	2400 MHz	TDD
CA_41	41	2496 MHz		2690 MHz	2496 MHz		2690 MHz	TDD

Table 5.5A-2: Inter-band CA operating bands

E-UTRA CA Band	E-UTRA Band	Uplink (UL) operating band			Downlink (DL) operating band			Duplex Mode
		BS receive / UE transmit			BS transmit / UE receive			
		F _{UL_low} – F _{UL_high}			F _{DL_low} – F _{DL_high}			
CA_1-5	1	1920 MHz	–	1980 MHz	2110 MHz	–	2170 MHz	FDD
	5	824 MHz	–	849 MHz	869 MHz	–	894 MHz	
CA_1-18	1	1920	–	1980 MHz	2110	–	2170 MHz	FDD
	18	815	–	830 MHz	860	–	875 MHz	
CA_1-19	1	1920 MHz	–	1980 MHz	2110 MHz	–	2170 MHz	FDD
	19	830 MHz	–	845 MHz	875 MHz	–	890 MHz	
CA_1-21	1	1920 MHz	–	1980 MHz	2110 MHz	–	2170 MHz	FDD
	21	1447.9 MHz	–	1462.9 MHz	1495.9 MHz	–	1510.9 MHz	
CA_2-17	2	1850 MHz	–	1910 MHz	1930 MHz	–	1990 MHz	FDD
	17	704 MHz	–	716 MHz	734 MHz	–	746 MHz	
CA_2-29	2	1850 MHz	–	1910 MHz	1930 MHz	–	1990 MHz	FDD
	29	N/A			717 MHz	–	728 MHz	
CA_3-5	3	1710 MHz	–	1785 MHz	1805 MHz	–	1880 MHz	FDD
	5	824 MHz	–	849 MHz	869 MHz	–	894 MHz	
CA_3-7	3	1710 MHz	–	1785 MHz	1805 MHz	–	1880 MHz	FDD
	7	2500 MHz	–	2570 MHz	2620 MHz	–	2690 MHz	
CA_3-8	3	1710 MHz	–	1785 MHz	1805 MHz	–	1880 MHz	FDD
	8	880 MHz	–	915 MHz	925 MHz	–	960 MHz	
CA_3-20	3	1710 MHz	–	1785 MHz	1805 MHz	–	1880 MHz	FDD
	20	832 MHz	–	862 MHz	791 MHz	–	821 MHz	
CA_4-5	4	1710 MHz	–	1755 MHz	2110 MHz	–	2155 MHz	FDD
	5	824 MHz	–	849 MHz	869 MHz	–	894 MHz	
CA_4A-7A	4	1710 MHz	–	1755 MHz	2110 MHz	–	2155 MHz	FDD
	7	2500 MHz	–	2570 MHz	2620 MHz	–	2690 MHz	
CA_4-12	4	1710 MHz	–	1755 MHz	2110 MHz	–	2155 MHz	FDD
	12	699 MHz	–	716 MHz	629 MHz	–	746 MHz	
CA_4-13	4	1710 MHz	–	1755 MHz	2110 MHz	–	2155 MHz	FDD
	13	777 MHz	–	787 MHz	746 MHz	–	756 MHz	
CA_4-17	4	1710 MHz	–	1755 MHz	2110 MHz	–	2155 MHz	FDD
	17	704 MHz	–	716 MHz	734 MHz	–	746 MHz	
CA_4-29	4	1710 MHz	–	1755 MHz	2110 MHz	–	2155 MHz	FDD
	29	N/A			717 MHz	–	728 MHz	

As shown in Table 5.5A-2, the operating bands 2 and 29 (highlighted in yellow) are aggregated with operating band 29 being limited to downlink resources only. Accordingly, as shown by these tables, not until December 2012 does the 3GPP standard disclose for the first time an operating band assignment consistent with a

“non-associated cell” that can be configured by a base station to have download resources only. In every instance prior to December 2012, the 3GPP standard as shown by TS 36.101 always included assignments pairing uplink and downlink resources. EX2005, ¶62.

The transition over time of the 3GPP standard regarding an assignment of only downlink resources also supports and illustrates the consistency of the infringement allegations relying on a later version of the standard as compared to the version asserted in this IPR. The changes over time in the technical specifications have an impact and demonstrate an evolution that includes features and functions not present in earlier versions. For example, the specific changes in the operating band assignments reflected over time in TS 36.101 show that it was not until nearly two years after the '976 Patent priority date that the 3GPP standard included for the first time an operating band assignment having downlink resources only without a pairing for uplink resources. Accordingly, that the language in later versions of § 7.5 in TS 36.300 is the same as or similar to § 7.5 in TS 36.300 V10.0.0 (EX1012) does nothing to prove or support Petitioner's contention that TS 36.300 V10.0.0 teaches a “non-associated cell” configured by a base station to have downlink resources only, particularly when considering the context provided by TS 36.101.

(c) With no disclosure of assigning a downlink resource only until December 2012, the 3GPP standard including TS 36.300 and TS 36.101 fails to disclose or

suggest a “non-associated cell” as recited in claim 2 of the ’976 Patent

Given the absence of any disclosed example in the 3GPP standard of an operating band having downlink resources only and thus unpaired from uplink resources until December 2012, well after the ’976 Patent priority date, a POSITA would have concluded that the 3GPP standard including TS 36.300 V10.0.0 did not disclose or suggest a “non-associated cell” as recited in claim 2 that is configured by a base station to have downlink resources only. Moreover, this absence, in context with Petitioner’s relied upon disclosure from TS 36.300 V10.0.0 (EX1012), makes clear that no secondary serving cell (SCell) would have been configured by a base station to have downlink resources only. EX2005, ¶63.

While disclosing that a UE can be configured with more downlink resources than uplink resources (EX1012, 50), no operating band in the 3GPP standard prior to the ’976 Patent priority date had an operating band assignment with downlink resources only, unpaired from uplink resources. The absence of such an operating band assignment demonstrates that every SCell in TS 36.300 V10.0.0 would have been configured by a base station to include *both* uplink and downlink resources. EX2005, ¶64. Moreover, when the base station configures a cell having both uplink and downlink resources (i.e., an “associated cell”), the UE can be configured to use that cell’s downlink resources only by “ignoring” the UL resource configuration established by the base station. *See, e.g.*, EX1013, 5. Because claim 2 requires the

“non-associated cell” to be *configured by the base station* to have downlink resources only, TS 36.300 V10.0.0’s teaching that the *number* of downlink resources configured for use with the UE can be greater than the number of uplink resources is irrelevant to teaching the “non-associated cell” of claim 2. EX2005, ¶64.

2. R2-104515 does not disclose or suggest a “non-associated cell” configured by the base station to have only a downlink resource allocated

While R2-104515 discloses schemes that enables a UE to be configured with downlink resources only in a secondary cell, R2-104515 does not disclose or suggest that the *base station* configures the secondary cell to have downlink resources only (i.e., the “non-associated cell” of claim 2). In fact, R2-104515 makes clear that the base station configures the secondary cell to have *both* uplink and downlink resources while communicating to the UE whether to be configured to include or ignore the uplink resources available in the secondary cell. Accordingly, like TS 36.300 V10.0.0, R2-104515 fails to disclose or suggest a “non-associated cell” configured by the base station to have only a downlink resource allocated. EX2005, ¶65.

(a) **R2-104515’s recommended option makes clear the base station configures the secondary cell with both uplink and downlink resources**

Despite suggesting three possible options to notify a UE to be configured without UL resources in a secondary cell, R2-104515 identifies significant drawbacks to Opt 1 and Opt 2 and thus recommends Opt 3. *See* EX1013, Observation 1 at 3, Observation 2 at 4, and Proposal at 5. Opt 3 proposes to define a new information element (IE) it labels as *ul-PresenceIndicator*. *Id.*, 4-5. R2-104515 defines *ul-PresenceIndicator* as follows:

ul-PresenceIndicator

Indicates whether or not the UL resources are configured. When this parameter is set to ‘false’, the UE ignores any UL resource configurations of the secondary cell.

Id., 5. According to this definition, when *ul-PresenceIndicator* is set to false, “the UE **ignores** any UL resource configurations of the secondary cell” so that the UE is not configured with UL resources. Quite clearly, a POSITA would have understood that for the UE to be able to “ignore” any UL resource configurations of the secondary cell, such UL resource configurations necessarily exist for the secondary cell. EX2005, ¶66.

That the base station configured the secondary cell with both uplink and downlink resources is further confirmed in the paragraph following the definition:

When *ul-PresenceIndicator* is set to ‘false’, UL resources will not be configured by UE, or the UE deletes any existing UL resource configurations of this cell. If *ul-PresenceIndicator* is set to ‘true’, UL resources are configured as normal. Note that when a secondary cell’s *ul-PresenceIndicator* is set to ‘false’, eNB can choose to transmit or not to transmit its UL resources configurations to the UE. UE can ignore these configurations because of UL absence.

Id., 5. As explained in this paragraph, when ul-PresenceIndicator is set to false, the “UL resources will not be configured by UE,” but if set to true, “UL resources are configured as normal.” If ul-PresenceIndicator is being used to notify the UE whether it should or should not be configured with UL resources, then the necessary and logical conclusion to a POSITA is that the UE is also being notified of the UL resources that have been configured by the base station for the secondary cell. EX2005, ¶67.

The subsequent statements further confirm this understanding. According to R2-104515 in these statements, when ul-PresenceIndicator is false, the base station (i.e., eNB) “can choose to transmit or not to transmit this secondary cell’s UL resources configurations to the UE” and the “UE can ignore these configurations because of UL absence.” EX1013, 5. For the base station to choose *whether* to transmit the secondary cell’s UL resources configurations, the secondary cell must in fact have been configured with UL resources configurations. EX2005, ¶68. It also confirms that, even when receiving the UL resources configurations, the UE can simply “ignore” them. *Id.*

Mr. Lanning’s protestations that the base station would not send the UL resource configuration if the base station did not intend the UE to use the resource are also inconsistent with these subsequent statements in R2-104515. In his deposition, Mr. Lanning asserted that “the base station would not send to the UE a

resource or uplink on the secondary cell if it did not intend for the UE to use a resource -- an uplink resource on the secondary cell.” EX2010, 56:1-5. But R2-104515 expressly states that, when ul-PresenceIndicator is false, the base station *can* choose to transmit the secondary cell’s UL resources configurations to the UE. EX1013, 5.

(b) How the base station configures a secondary cell is different and distinct from how the base station informs a UE to be configured to communicate with that secondary cell

There is no contradiction between a base station configuring a secondary cell with both UL and DL resources and a base station messaging a UE to be configured to use only the DL resources of that secondary cell. The distinction between how the base station configures the secondary cell and what the base station instructs the UE to be configured to use those resources comports with the previous discussion of only having paired UL and DL resources for configuring a cell in Section II.A.2 while also permitting a UE to be configured to use DL resources only in a cell. EX2005, ¶70.

This distinction is further confirmed by R2-104515’s disclosure of using ul-PresenceIndicator to notify a UE to be configured with no UL resources despite the secondary cell being configured by the base station to have UL resources. R2-104515 specifically teaches having the UE “ignore” the UL resources configurations of the secondary cell. EX1013, 4-5. Indeed, if the base station had not configured

the secondary cell with UL resources configurations, then there would not be any need to provide the UE with the ul-PresenceIndicator. EX2005, ¶71.

Within this context, R2-104515's statement that "it is permitted that only DL resources are configured to secondary cells" is plainly in the context of *configuring the UE* with only DL resources when communicating with the secondary cells. This conclusion is supported by the above discussion regarding TS 36.300 and TS 36.101 that, as of the '976 Patent priority date, all frequency bands required configuring cells with paired UL and DL resources and that the base station was not capable of configuring the cell to have DL resources only. It is also consistent with R2-104515's recommended Opt 3 that makes clear that, while the UE can be configured to use only the DL resources of a secondary cell, the secondary cell has been configured by the base station to include UL resources configurations. EX1013, 5; EX2005, ¶72.

Accordingly, since R2-104515 teaches that the base station configures the secondary cell with UL resources, regardless of whether the UE is configured to use those UL resources, R2-104515 fails to disclose or suggest a "non-associated cell configured by the base station to include only another resource for downlink." EX2005, ¶73.

3. **Even if combinable, claim 2 is not invalid because both TS 36.300 V10.0.0 and R2-104515 fail to disclose or suggest a**

**“non-associated cell” configured by the base station to
include only a downlink resource**

As explained in VI.A.1 and VI.A.2 above, both TS 36.300 V10.0.0 and R2-104515 fail disclose or suggest “a non-associated cell configured by the base station to include only another resource for downlink,” as recited in claim 2 of the ’976 Patent. Rather, both references teach configuring secondary cells with both uplink and downlink resources. Accordingly, even if combinable, claim 2 is not invalid over the combination of TS 36.300 and R2-104515. EX2005, ¶74.

B. Ground 1: TS 36.300 and R2-104515 Are Not Combinable

The Petition failed to provide an adequate motivation to combine TS 36.300 with R2-104515. In addition, the ID includes reasoning for the motivation to combine that is absent from the Petition. It therefore would not have been obvious to combine the references.

**1. R2-104515 cannot be combined with TS 36.300 V10.0.0 to
meet the “non-associated cell” of claim 2.**

As explained in Sections II.A.2 and VI.A.1 above, all implementations of Release 10, including TS 36.300 (EX1012), did not disclose any example of a secondary cell being configured by a base station to have downlink resources only. All versions of TS 36.101 for Release 10, as well as early versions of TS 36.101 for Release 11, demonstrate the required assignment of both uplink and downlink resources including in the context of carrier aggregation. In other words, no version of Release 10 permitted an assignment of downlink resources only.

With all assignments requiring uplink and downlink resources and thus forbidding the assignment of downlink resources only according to Release 10 including TS 36.300 (EX1012), it would not have been possible to combine TS 36.300 with R2-104515.

2. Neither Petitioner's reasoning in the Petition nor the Board's Reasoning in the ID properly combines R2-104515 with TS 36.300

The Petition's discussion for combining R2-104515 (EX1013) with TS 36.300 (EX1012) was wholly inadequate and failed to articulate sufficient reasoning for the combination. To make up for this inadequacy, the Board improperly relies on reasoning entirely absent from the Petition. Also, given the limitations of the 3GPP standard as it existed prior to the '976 Patent priority date, any teachings of R2-104515 could not have been combined with TS 36.300.

(a) Petitioner's rationale for combining R2-104515 with TS 36.300 cannot meet the required standard for supporting obviousness

The Petition plainly fails to present a sufficient rationale or an articulated reason to support an obviousness conclusion that a POSITA would have been motivated to make the combination. The following provides a complete reproduction of Petitioner's rationale for making the combination:

It would have been obvious for a POSITA to consider the R2-104515 contribution because this contribution was published shortly after TS

36.300 and is requesting that a decision be made on how to modify the Carrier Aggregation (CA) functionality for the same release of the LTE standard as TS 36.300 (Release 10). Ex. 1003 at ¶125.

Petition, 45-46. An examination of these two contentions reveals how Petitioner's obviousness rationale cannot meet the standard required by the Federal Circuit.

Petitioner's first contention, that it "would have been obvious for a POSITA to consider the R2-104515 contribution because this contribution was published shortly after TS 36.300," does not even come close to providing sufficient reasoning for why it would have been obvious to make the combination. The Board and the Federal Circuit have held that references being compatible, analogous, in the same field of endeavor, and/or capable of being combined are insufficient motivations to combine. *See Johns Manville*, IPR2018-00827, Paper 9 at 10; *Personal Web Techs.*, 848 F.3d at 993. In this case, obvious "to consider" plainly fails to meet the minimum standard for a motivation to combine to render claim 2 unpatentable for obviousness in Ground 1.

Petitioner's second contention does little to cure the insufficiency of the first. Requesting a decision on how to modify Carrier Aggregation (CA) for the same release as TS 36.300 does not provide a rationale for why a POSITA "would have been motivated to make the combinations or modifications of prior art to arrive at the claimed invention." *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed.

Cir. 2015). In particular, asking for a decision on how to modify CA says nothing about and fails to provide any explanation for how the asserted combination would meet claim 2 including the requirement of a “non-associated cell” being configured by a base station to have downlink resources only. This contention also constitutes mere attorney argument, notably lacking any cite to R2-104515 or TS36.300. Moreover, the cited paragraph (§125) of Dr. Lanning’s declaration does nothing more than repeat the exact same wording provided in the Petition. Petitioner’s second contention, like the first contention, therefore fails to meet the required standard for combining references for purposes of obviousness.

The Petition’s summarizing of R2-104515’s teachings likewise fails to articulate a rationale that can meet the required obviousness standard set by the Federal Circuit. In both the summary of R2-104515 (Petition, 39-40) and when addressing limitation 2[3] (Petition, 61-62), Petitioner indicates that R2-104515 discloses that it is permitted to configure secondary cells with DL resources only and provides three options for how to indicate UL absence in secondary cells. But regardless of the accuracy of what R2-104515 teaches, simply indicating *what* R2-104515 teaches does not articulate a rationale for *how or why* such teachings should be combined with TS 36.300 to meet the claimed invention.

Finally, Dr. Lanning’s testimony about differences in uplink and downlink traffic does not teach or suggest a base station configuring a cell to have downlink

resources only but rather teaches the opposite. His testimony alleges that an uplink resource is not needed “because there is more downlink traffic to be sent to the UE from the eNB than the uplink traffic to be received from the UE.” EX1003, ¶150. But having more downlink traffic than uplink traffic simply suggests having *more* downlink resources than uplink resources – not having *no* uplink resources. Indeed, without uplink resources, the UE cannot send any traffic to the eNB. Dr. Lanning neither provides an example from either TS 36.300 or R2-104515 nor provides an explanation to support how such differences in traffic would result in a base station configuring no uplink resources in a secondary cell. His testimony thus fails to provide a rationale for combining the references.

In summary, both of Petitioner’s contentions in its motivation to combine TS 36.300 and R2-104515 cannot meet the Federal Circuit’s standard for obviousness. In addition, neither Petitioner’s summary of R2-104515 nor Dr. Lanning’s testimony cures this deficiency. Having provided an inadequate motivation to combine, Petitioner’s assertion of obviousness over TS 36.300 and R2-104515 must fail.

(b) The ID’s reasoning for accepting Petitioner’s obviousness rationale improperly relies on assertions and arguments absent from the Petition

In each instance of addressing the motivation for combining TS 36.300 and R2-104515, the ID either impermissibly attempts to supplement and cure the Petition’s inadequate motivation to combine by raising assertions absent from the

Petition or provides inadequate bases to satisfy the required standard for an obviousness combination. The Federal Circuit has made it clear that the Board must not make arguments that are not present in the Petition. *Magnum Oil*, 829 F.3d at 1381 (holding that the Board is **not** “free to adopt arguments on behalf of petitioners that could have been, but were not, raised by the petitioner during [a post-grant proceeding]”); *Sirona Dental Sys.*, 892 F.3d at 1356 (Board cannot “deviate from the grounds in the petition and raise its own” theories of invalidity).

In the first instance, the ID states that:

Ex. 1003 ¶¶ 112–113), 61 (quoting Ex. 1013, 1). Petitioner states that a person having ordinary skill in the art would have been motivated to combine the teachings of R2-104515 with those of TS 36.300 V10.0, because both seek to provide a standard for LTE release 10, and R2-104515 provides solutions to resolving the V10.0 standard’s lack of an uplink resource on secondary cells. *Id.* at 39–40 (citing Ex. 1003 ¶¶ 112–113), 45–46 (citing Ex. 1003 ¶ 125).

ID, 14. The first portion asserts that Petitioner stated a motivation to combine R2-104515 with TS 36.300 because both seek to provide a standard for LTE release 10. In fact, Petitioner never made such a statement as a **motivation to combine**. Petitioner simply indicated it would have been obvious for a POSITA **to consider** R2-104515 as it requests a decision for modifying CA for the same LTE standard release as TS 36.300. Petition, 45-46. But regardless of whether a POSITA is motivated to combine (as stated in the ID) or to consider them (as stated in the

Petition) on the basis of both seeking to provide a standard for LTE release 10, that both seek to provide a standard for LTE release 10 does not provide a sufficient rationale to combine. Rather, such a basis is nothing more than the references being compatible, analogous, in the same field of endeavor, and/or capable of being combined, which both the Board and the Federal Circuit have found to be inadequate rationales to combine.

In the second portion quoted above, the ID improperly augments and misrepresents what Petitioner actually asserted about R2-104515. While the Petition summarizes R2-104515 as teaching it is permitted to configure secondary cells with downlink resources only and describing three options to specify a secondary cell having no uplink (Petition, 39-40, 61-62)², nowhere does the Petition actually say such teachings are a motivation to combine R2-104515 with TS 36.300. Petitioner never uses these teachings as a motivation to combine but rather just as a summary of what is disclosed in R2-104515. When asserting obviousness, Petitioner exclusively asserts that R2-104515 requests a decision on modifying Carrier Aggregation functionality (Petition, 45-46) without any reference to a base station configuring secondary cells with downlink resources only nor how to notify the UE of such a configuration.

² The cited sections in Dr. Lanning's Declaration (EX1003, ¶¶112-113, 125) are identical or virtually identical to the text in the Petition.

In the second instance, the ID states that:

indeed discuss a no-uplink situation). Petitioner points to language from R2-104515 that “current agreements” permit that there may be an absence of uplink resources on secondary cells, which raises a question on how to indicate that absence. *Id.* at 61 (citing Ex. 1013, 1). We agree with Petitioner that, by providing options to answer a question raised in TS 36.300, it would have been obvious for a person having ordinary skill in the art to combine teachings from R2-104515 to resolve that question.

The assertion in the latter sentence has two problems. First, while R2-104515 says that it is permitted to have a secondary cell configured with only downlink resources, it is R2-104515, *not* TS 36.300, that states from such a configuration “comes a question of how to indicate UL absence of secondary cells.” Second, even if configuring a secondary cell with only downlink resources raises the question that is answered by R2-104515, Petitioner never makes this point *as a rationale* for combining the references. Instead, all references in the Petition to the options described in R2-104515 for indicating UL absence of secondary cells (Petition, 39-40, 61-62) are exclusively presented by Petitioner as what is taught by R2-104515, not why a POSITA would have been motivated to combine such teachings with TS 36.300. Accordingly, the ID’s assertion that it provides a motivation to combine has no basis in the Petition and improperly makes an argument for a motivation to combine absent from the Petition.

With a deficient motivation to combine and no articulated reasoning for how or why the references are combined, Petitioner's Ground 1 cannot meet the required standard for showing claim 2 is unpatentable as obvious over TS 36.300 in view of R2-104515.

C. Ground 2: Malladi Does not Anticipate Claim 2 Because Malladi Fails to Disclose or Suggest the "Non-Associated Cell" of Claim 2

As acknowledged in the ID, "Petitioner has not shown Malladi to disclose a non-associated cell having no uplink carriers." ID, 21. Ground 2 of the Petition therefore fails to demonstrate a reasonable likelihood that Malladi would have anticipated the "non-associated cell" of claim 2. Claim 2 therefore remains patentable over Malladi in Ground 2.

D. Ground 3: TS 25.319 Cannot Cure the Deficiencies of Malladi Because TS 25.319 Also Fails to Disclose or Suggest the "Non-Associated Cell" of Claim 2

The ID acknowledges, as explained in the Patent Owner Preliminary Response, that Malladi fails to disclose or suggest the "non-associated cell" of claim 2 of the '976 Patent. Even if combinable, TS 25.319 cannot cure this deficiency of Malladi.

1. Like Malladi, TS 25.319 Fails to Disclose or Suggest a Cell With Downlink Resources Only

Not only does TS 25.319 have no teachings of a cell having downlink resources only or that a base station configures a cell with downlink resources only, but Petitioner's evidence to support that TS 25.319 allegedly teaches such a cell relies on a clear misinterpretation of that evidence. A proper evaluation of the evidence fails to support Petitioner's contention and in fact comes to the opposite conclusion, i.e., TS 25.319 has no disclosure or suggestion of a base station configuring a cell to have downlink resources only. EX2005, ¶77.

Citing to the below excerpt from TS 25.319, Petitioner first incorrectly asserts that this excerpt teaches "that the total number of uplink component carriers (*uplink resources*) can be one when the total number of downlink component carriers (*downlink resources*) is two." Petition, 75 (emphasis in original).

4 Background and introduction

The technical purpose of the Enhanced Uplink feature is to improve the performance of uplink dedicated and common (FDD and 1.28Mcps TDD only) transport channels, i.e. to increase capacity and throughput and reduce delay. This is applicable for UTRA TDD and FDD.

The following techniques are part of the Enhanced Uplink feature:

- Node B controlled scheduling: possibility for the Node B to control, within the limits set by the RNC, the set of TFCs from which the UE may choose a suitable TFC.
- Node B controlled physical resource scheduling (TDD only).
- Hybrid ARQ: rapid retransmissions of erroneously received data packets between UE and Node B.
- Higher order modulation (16QAM) (TDD and FDD).
- Intra-frame code hopping (3.84 Mcps and 7.68 Mcps TDD only).
- Shorter TTI: possibility of introducing a 2 ms TTI (FDD only).
- Enhanced Uplink in CELL_FACH state and Idle mode (FDD and 1.28Mcps TDD only).
- Dual Cell E-DCH (FDD).

EX. 1015, 9 (highlighting by Petitioner). This excerpt teaches that the “technical purpose of the Enhanced Uplink feature is to improve the performance of uplink dedicated and common (FDD and 1.28 Mcps TDD only transport channels, i.e., to increase capacity and throughput and reduce delay,” and that the Enhanced Uplink feature includes Dual Cell E-DCH (FDD). *Id.* Notably absent from this excerpt is any discussion whatsoever about the number of uplink and downlink component carriers. Indeed, the highlighted portion simply discusses improving *performance* of the uplink channel but nothing about the *number* of uplink channels, carriers, or resources. The excerpt also lacks any mention at all of downlinks. Accordingly, interpreting this excerpt as purportedly teaching one uplink component carrier with two downlink component carriers is wholly unsupported. EX2005, ¶78.

Relying on the other cited excerpt from TS 25.319 (below), Petitioner makes a plain and clear misinterpretation of the text. Petition, 76-77.

Serving E-DCH cell: Cell from which the UE receives Absolute Grants from the Node-B scheduler. A UE has one Serving E-DCH cell.

[**Secondary E-DCH Active Set:** In **Dual Cell E-DCH operation**, the set of cells on the secondary downlink carrier where E-DCH is carried for one UE.

Secondary Serving E-DCH cell: In **Dual Cell E-DCH operation**, cell from which the UE receives Absolute Grants from the Node-B scheduler on the secondary downlink. A UE can have zero or one Serving E-DCH cell on the secondary uplink carrier.]

EX. 1015, 7 (highlighting by Petitioner). Petitioner asserts that the excerpted passage from TS 25.319 states that “zero or one” refers to the number of secondary uplink carriers on the secondary cell. Petition, 76-77. But the applicable passage Petitioner highlighted in blue is that a “UE can have zero or one ***Serving E-DCH cell*** on the secondary uplink carrier.” TS 25.319 thus teaches that “zero or one” ***Serving*** E-DCH cell can be “on the secondary uplink carrier,” not that a secondary cell can have zero or one secondary uplink carriers.³ In other words, in addition to ***Secondary Serving E-DCH cell*** being on the secondary uplink carrier, the ***Serving E-DCH*** can also be on the secondary uplink carrier. EX2005, ¶79. TS 25-319 confirms that multiple cells can be on the same carrier as the excerpted passage also defines Secondary E-DCH Active Set as “the ***set of cells on the secondary downlink carrier*** where E-DCH is carried for one UE.” EX1015, 7; EX2005, ¶79. Also, since TS 25-319 corresponds to the 3GPP 3G network, it makes no sense that this one reference teaches a cell configured by a base station to have downlink resources only when the later released 3GPP 4G network as of the ’976 Patent priority date had no such teaching as explained in Section VI.A.

In summary, none of the evidence cited by Petitioner from TS 25.319 supports its contention of TS 25.319 teaching a base station configuring a cell to have

³ It is also noted that this is the solitary mention of “secondary uplink carrier” in all of TS 25.319. TS 25.319 also has no other mention of “secondary uplink” or “uplink carrier.”

downlink resources only. Accordingly, even if combinable, the combination of Malladi and TS 25.319 fails to disclose or suggest a “non-associated cell” configured by a base station to have downlink resources only as recited in claim 2 of the ’976 Patent. Petitioner’s Ground 3 therefore cannot show claim 2 is unpatentable as obvious over Malladi in view of TS 25.319.

2. Ground 3: Petitioner Fails to Provide an Adequate Motivation for Combining Malladi With TS 25.319 and Fails to Articulate Sufficient Reasoning for How They Are Combined

Like Ground 1, Petitioners obviousness theory in Ground 3 similarly fails to meet the Federal Circuits obviousness standard for a motivation to combine.

As explained in the POPR, Petitioner’s motivation to combine Malladi with TS 25.319 in Ground 3 cannot meet the standard required by the Federal Circuit. In the ID, the Board makes the following discussion in support of the finding that Petitioner’s reasons to combine Malladi and TS 25.319 are sufficient:

We determine that Petitioner's stated reasons to combine Malladi and TS 25.319 are sufficient under the standard set forth by the Supreme Court in *KSR v. Teleflex*. The Court in *KSR* stated, "any need or problem known in the field of endeavor at the time of invention . . . can provide a reason for combining the elements in the manner claimed." *KSR*, 550 U.S. at 420. Here, Petitioner has shown that TS 25.319 represents the needs of an industry standard for the type of network, a 3G UTM network, that Malladi's invention was directed to. Pet. 73. We agree that a person having ordinary skill would look to TS 25.319 in order to alter Malladi's invention to meet the requirements of that standard. Further, it is not required that Petitioner explain how the teachings would be incorporated into the structure of Malladi, because "[t]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference," but instead, "whether 'a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention.'" *Allied Erecting & Dismantling Co. v. Genesis Attachments, LLC*, 825 F.3d 1373, 1381 (Fed. Cir. 2016).

ID, 23. Even accepting this rationale, the problem with Petitioner's reasons to combine is that Petitioner does not explain why TS 25.319's alleged teaching of a cell with only downlink resources is a **requirement** of the 3G UTM network.

Petitioner's complete motivation to combine for Ground 3 is as follows:

A POSITA would have been motivated to modify Malladi based on the teachings of TS 25.319 to comply with the required functionality for 3G UTM Release 9.

Pet. 73. At no point does Petitioner state or even suggest that having a cell configured by a base station to have downlink resources is “required functionality” of 3G UMTS Release 9. Accordingly, even accepting the Board’s finding that “Petitioner has shown that TS 25.319 represents the needs of an industry standard for the type of network, a 3G UTMS network, that Malladi’s invention was directed to” and that “that a person having ordinary skill would look to TS 25.319 in order to alter Malladi’s invention to meet the requirements of that standard,” (ID, 23), Petitioner never indicates how having a cell configured by a base station with only downlink resources meets any *requirement* of the standard. Indeed, neither does the Board in its ID.

Furthermore, the motivation to combine and assertions of obviousness in *Allied Erecting & Dismantling Co. v. Genesis Attachments, LLC* are inapposite to this IPR. 825 F.3d 1373 (Fed. Cir. 2016). In *Allied Erecting*, involving an *inter partes* reexamination, the Examiner based obviousness on modifying the second jaw in the primary Caterpillar reference to be movable as taught by the secondary Ogawa reference, i.e., the Examiner specifically identified the teaching from the secondary reference that would have motivated a POSITA to modify the primary reference. *Id.* at 1380. To rebut the Examiner, the patent owner asserted that such a combination would involve “a massive, nonobvious reconstruction of the device that not only changes its principle of operation, but renders the device inoperable as a result.” *Id.*

The Federal Circuit sustained the obviousness finding for the reasons cited in the ID at 23.

In contrast to *Allied*, Petitioner never identifies *what* teachings of TS 25.139 a POSITA would have been motivated to combine with Malladi. According to *Allied*, the standard is “whether ‘a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention.’” *Id.* At 1381. But at no point does Petitioner ever indicate what that teaching is. Nor does Petitioner ever indicate what functionality of TS 25.319 would be incorporated into Malladi. Instead, Petitioner simply makes a broad assertion of complying “with the required functionality for 3G UMTS Release 9” without ever identifying what that required functionality is or if having a cell configured by a base station with only downlink resources constitutes such required functionality.

Without any explanation or evidence to support that having a cell with only downlink resources is required functionality of 3G UMTS Release 9, Petitioner has failed to provide a proper motivation to combine TS 25.319’s alleged teaching of a cell with only downlink resources with Malladi. Petitioner’s Ground 3 therefore cannot meet the required standard for showing claim 2 is unpatentable as obvious over Malladi in view of TS 25.319.

VII. CONCLUSION

In view of the foregoing, Patent Owner respectfully submits that the Board should deny institution of all Grounds of the Petition.

Dated: March 1, 2024

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CERTIFICATE OF LENGTH (37 C.F.R. §§ 42.24(D))

The undersigned hereby certifies that, according to the word-processing system used to prepare the foregoing document, this document has 9279 words and thus complies with the applicable word limit.

Dated: March 1, 2024

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CERTIFICATE OF SERVICE (37 C.F.R. §§ 42.6(E), 42.105(A))

The undersigned hereby certifies that the foregoing document was served in its entirety on March 1, 2024, upon the following parties via Electronic Mail addresses jeremy.peterson@pvuslaw.com, bradford.cangro@pvuslaw.com, Jacob.snodgrass@pvuslaw.com, and TCLMELCOIPRService@pvuslaw.com:

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