

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 CONTINGENT
MOTION TO AMEND**

PRELIMINARY GUIDANCE SOUGHT
PURSUANT TO 84 FED. REG. 9497

TABLE OF CONTENTS

I.	INTRODUCTION.....	1
II.	STATEMENT OF RELIEF REQUESTED.....	2
A.	Reasonable Number of Substitute Claims – 37 C.F.R. § 42.121(a)(3)	2
B.	The Amendments are Non-Broadening – 37 C.F.R. § 42.121(a)(2)(ii)	2
C.	The Amendments are Supported – 37 C.F.R. § 42.121(a)(2)(ii).....	3
D.	The Amendment is Responsive – 37 C.F.R. § 42.121(a)(2)(i)	4
III.	RESPONSE TO GROUNDS IN PETITION.....	5
A.	The State of the Art, the '976 Patent's Innovation, and Substitute Claim 3.....	5
1.	Predetermined Pairing of Frequency Bands in the Prior Art	5
2.	Innovation of the '976 Patent to Enable Base Station to Configure Cell with DL Resources Only	7
3.	Substitute Claim 3	9
B.	Ground 1 – Substitute Claim 3 is Not Obvious Over the Combination of TS 36.300 V10.0.0 in view of R2-104515	11
1.	The frequency bands used in TS 36.300 and R2-104515 are described in TS 36.101, which shows only predetermined pairings of UL and DL frequency bands as of the priority date of the '976 Patent.....	11
2.	TS 36.101 did not disclose assigning downlink resources only to an operating band until well after the priority date of the '976 Patent.....	14
3.	TS 36.300 V10.0.0 and R2-104515 fails to disclose or suggest a “non-associated cell” being configured by the base station to include only another resource for downlink that is “included in a second downlink frequency band that is not paired with any uplink frequency band” as recited in substitute claim 3 of the '976 Patent	16
4.	Even if combinable, substitute claim 3 is not invalid because both TS 36.300 V10.0.0 and R2-104515 fail to disclose or	

	suggest a “non-associated cell” being configured by the base station to include only another resource for downlink that is “included in a second downlink frequency band that is not paired with any uplink frequency band”	18
C.	Ground 2: Malladi Does not Anticipate Substitute Claim 3.....	19
D.	Ground 3: TS 25.319 Cannot Cure the Deficiencies of Malladi	19
1.	Like Malladi, TS 25.319 Fails to Disclose or Suggest a Cell With Downlink Resources Only	19
2.	TS 25.319 Fails to Disclose or Suggest the “non-associated cell” having the other resource for downlink being “included in a second downlink frequency band that is not paired with any uplink frequency band.....	22
E.	Invalidity Burden	24
F.	Duty of Candor	24
IV.	CONCLUSION	25

I. INTRODUCTION

Patent Owner Mitsubishi Electric Corporation (“Patent Owner” or “MELCO”) respectfully submits this contingent Motion to Amend (“MTA”) in conjunction with its 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”).

Patent Owner requests preliminary guidance from the Board on this contingent MTA. *See* Notice Regarding a New Pilot Program, 84 Fed. Reg. 9497 (Mar. 15, 2019). Patent Owner submits that this contingent MTA meets the requirements of 37 C.F.R § 42.121 and 35 U.S.C. § 326(d).

This motion presents a substitute claim in Appendix A. The substitute claim narrows the scope of the challenged claim and is made in response to Petitioner’s allegations of invalidity. Patent Owner also submits evidence in support of a finding of patentability for the substitute claim including a declaration by Dr. Todor Cooklev (EX2011). The new limitations added to the substitute claim meet

the requirements of 35 U.S.C. § 112 and do not add new matter. The amended language in the substitute claim is expressed in the specification and drawings of the '976 patent.

II. STATEMENT OF RELIEF REQUESTED

Patent Owner requests the Board to consider this Motion on a contingent basis and grant entry of substitute claim 3 in the event that original claim 2 is found invalid. *See* below Table 1. Original claim 1 was not challenged by Petitioner and thus remains in the '976 patent as-is.

Table 1: Claim Correspondence	
Original '976 Patent Claim	Proposed Substitute Claim
Claim 1 (Independent)	None
Claim 2 (Independent)	Claim 3

A. Reasonable Number of Substitute Claims – 37 C.F.R. § 42.121(a)(3)

The single substitute claim is presumed to be reasonable because it replaces the one challenged claim. *See* 37 C.F.R. § 42.121(a)(3).

B. The Amendments are Non-Broadening – 37 C.F.R. § 42.121(a)(2)(ii)

The substitute claim 3 retains the claim limitations of original claim 2 and adds additional claim limitations making the substitute claim 3 narrower in scope than original claim 2. *See* 37 C.F.R. § 42.121(a)(3).

C. The Amendments are Supported – 37 C.F.R. § 42.121(a)(2)(ii)

The amendments identified in Appendix A for substitute claim 3 are fully supported by the disclosure and the original claims the '976 patent. Table 2 below identifies written description support, including figures, for substitute claim 3 including the new limitations. The citations below in Table 2 are to EX2012, which is a copy of the specification and drawings as filed.

TABLE 2: Substitute Claim Support	
Substitute Claim	Support
3. (Contingent substitute for claim 2) A communication terminal device performing radio communication with a base station device, wherein	Figs. 1, 4, 7, 13, 29, 36, 38, 39, 44 ¶¶ [0129-0132; 0233-0240; 0332-0338; 0350-0369; 0388-0394] Claim 1
the communication terminal device performs uplink communication using an associated cell configured by the base station to include a resource for uplink and a resource for downlink,	Figs. 4, 13-15, 28, 29, 35-39, 43-44 ¶¶ [0081, 0129; 0141-0143; 0232; 0233; 0331-0338; 0346-0348; 0352; 0355-0358; 0387] Claim 1
the resource for uplink <u>being included in an uplink frequency band that is paired with a first downlink frequency band and</u> being allocated to the uplink communication to the base station device,	Figs. 13, 14, 16, 28, 35, 37, 43 ¶¶ [0061; 0079; 0136-0139; 0145; 0152; 0155; 0255; 0262-0271; 0370] Claim 1

the resource for downlink <u>being included in the first downlink frequency band and</u> being allocated to the downlink communication from the base station device, and	Figs. 13, 14, 16, 28, 35, 37, 43 ¶¶ [0061; 0079; 0136-0139; 0145; 0152; 0155; 0255; 0262-0271; 0370] Claim 1
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,	Figs. 15, 28, 37, 41, 43 ¶¶ [0081; 0083; 0129; 0141-0143; 0157; 0228, 0232; 0233; 0331-0338; 0346-0348; 0352; 0355-0358; 0381; 0387] Claim 1
the other resource for downlink <u>being included in a second downlink frequency band that is not paired with any uplink frequency band and</u> being allocated to the downlink communication from the base station device.	Figs. 15, 28, 37, 40, 41, 43 ¶¶ [0081; 0083; 0129; 0141-0143; 0157; 0228, 0232; 0233; 0331-0338; 0346-0348; 0352; 0355-0358; 0372-0379; 0381; 0387] Claim 1

D. The Amendment is Responsive – 37 C.F.R. § 42.121(a)(2)(i)

Substitute claim 3 adds novel and nonobvious feature combinations that address Petitioner’s arguments under §§ 102 and 103 as set forth in Grounds 1-3 of the Petition as explained in Section III herein. *See* Appx. A; *see also Lectrosonics, Inc. v. Zaxcom, Inc.*, Case IPR2018-01129, 01130, Paper 15 (Feb. 25, 2019), Paper 15 at 6-7 (adding a novel and nonobvious feature or combination to avoid prior art will meet the requirements of § 42.121(a)(2)(i)-(ii)).

III. RESPONSE TO GROUNDS IN PETITION

A. The State of the Art, the '976 Patent's Innovation, and Substitute Claim 3

As of the '976 Patent priority date, 3G and 4G cellular systems used predetermined pairings of downlink and uplink frequency bands. With the advent of carrier aggregation (CA) and the ability to configure user equipment (UE) with more downlink resources than uplink resources in Release 10 of 4G, these predetermined pairings of frequency bands created inefficiencies recognized and addressed by inventive features in the '976 Patent. EX2011, ¶31. These inventive features disclosed in the '976 Patent include configuring a frequency band with downlink resources only. *See* EX1001, 49:46-50:19; Fig. 41. This feature is reflected in substitute claim 3.

1. Predetermined Pairing of Frequency Bands in the Prior Art

4G 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 downlink (DL) frequency band has a predetermined pairing with an uplink (UL) frequency band, where the UL frequency band differs from the DL 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.*, 8:43-47; EX2011, ¶32.

The predetermined pairing of frequency bands in 4G LTE 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. EX2011, ¶33. The predetermined pairing of UL and DL operating bands remained in effect through at least TS 36.101 V11.2.0 published more than a year after the priority date of the '976 Patent. *See* EX2008, 20-22.

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

This predetermined pairing of UL and DL operating bands resulted in a significant inefficiency. EX2011, ¶34. 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. 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

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. *Id.*

Establishing a DL frequency band without a paired UL frequency band as disclosed in the '976 Patent 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; EX2011, ¶35.

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. For example, since the DL component carrier (CC) configured in the DL frequency band configured by a base station for a cell is included in the information communicated to a UE, and the configuration of the frequency band for DL with no paired UL frequency band is predetermined, such as shown in Fig. 41 of the '976 Patent, 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 because of the predetermined arrangement, which enables the UE to recognize that there is no UL CC to be associated with a DL CC of that cell without needing to be informed of that configuration. *Id.*, 50:11-17. As a result, the cell's system information can be reduced, which enables a reduced signaling amount from the cell to the UE. *Id.*, 50:17-19; EX2011, ¶36.

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. EX2011, ¶37. 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. None of the prior art cited in the Grounds discloses or suggests this feature. *Id.*

3. Substitute Claim 3

Substitute claim 3 recites the following:

A communication terminal device performing radio communication with a base station device, wherein

the communication terminal device performs uplink communication using an associated cell configured by the base station to include a resource for uplink and a resource for downlink, the resource for uplink being

included in an uplink frequency band that is paired with a first downlink frequency band and being allocated to the uplink communication to the base station device, the resource for downlink being included in the first downlink frequency band and being allocated to the downlink communication from the base station device, and

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 included in a second downlink frequency band that is not paired with any uplink frequency band and being allocated to the downlink communication from the base station device.

The underlined portions in red represent new limitations present in substitute claim 3 but absent in original claim 2 of the '976 Patent.

These new limitations recite a new and unobvious relationship between downlink and uplink frequency bands that is neither disclosed nor suggested by any of the prior art cited in Grounds 1-3 of the Petition. Among these new limitations, substitute claim 3 recites that, for the non-associated cell configured by the base station to include only another resource for downlink, that other resource for downlink is included in a second downlink frequency band that *is not paired*

with any uplink frequency band. As of the '976 Patent priority date, none of the prior art cited in the Grounds 1-3 of the Petition discloses or suggests a downlink frequency band unpaired from an uplink frequency band. Rather, at that time, all downlink frequency bands and uplink frequency bands were paired together in a predetermined manner.

B. Ground 1 – Substitute Claim 3 is Not Obvious Over the Combination of TS 36.300 V10.0.0 in view of R2-104515

According to substitute claim 3, the resource for uplink for the associated cell is “included in an uplink frequency band that is paired with a first downlink frequency band,” and the associated cell’s resource for downlink is “included in the first downlink frequency band.” The non-associated cell is configured by the base station to include only another resource for downlink that is “included in a second downlink frequency band that *is not paired* with any uplink frequency band.” Appendix A (emphasis added).

1. The frequency bands used in TS 36.300 and R2-104515 are described in TS 36.101, which shows only predetermined pairings of UL and DL frequency bands as of the priority date of the '976 Patent

To understand how to configure uplink and downlink frequency resources for a cell according to 3GPP Release 10 prior to the '976 Patent priority date, a POSITA would have studied TS 36.101 V10.0.0 (EX2006), published in October

2010. EX2011, ¶40. 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 used to configure UL and DL resources for a cell. *See* EX1001, 8:33-47; 35:63-36:9. Moreover, to understand how to implement the requirements and recommendations of TS 36.300 10.0.0 (EX1012) and R2-104515 (EX1013), a POSITA would have understood the need to consider other 3GPP technical specifications, including TS 36.101. EX2011, ¶40.

R2-104515 confirms the relevance of TS 36.101 for understanding the required pairing of UL and DL resources in every operating band. R2-104515 makes multiple references to implementing its proposal by making changes to TS 36.331, such as Opt 2 with respect to the parameter 'freqBandIndicator.' EX1013, 3-4. TS 36.331 V10.0.0 defines "*freqBandIndicator*" as follows:

▪ <i>freqBandIndicator</i> [↵] Defined in TS 36.101 [42, table 5.5-1]. [↵]
--

EX2014, 132. Since TS 36.331 V10.0.0 indicates that "*freqBandIndicator*" used in Opt 2 is defined in table 5.5-1 of TS 36.101, that table is necessarily relevant to understanding operating band assignments in 4G Release 10. EX2011, ¶41.

Table 5.5-1 of TS 36.101 V10.0.0 in Section 5 "Operating bands and channel arrangement" is 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	880 MHz – 894 MHz	FDD
6 ¹	830 MHz – 840 MHz	875 MHz – 885 MHz	FDD
7	2500 MHz – 2670 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

EX2006, 16-17. As shown in Table 5.5-1, every operating band has a predetermined pairing of UL and DL frequency resources. Conversely, no operating band is defined to have DL frequency resources only. EX2011, ¶42. Thus, 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. *Id.*

All 3GPP Technical Specifications developed prior to the priority date of the '976 Patent required a predetermined pairing of UL and DL frequency resources

for every operating band. EX2011, ¶43. In fact, 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. *See* 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 3GPP 4G Release 10 and early versions of Release 11 required pairing of uplink and downlink resources across all operating bands including for carrier aggregation. EX2011, ¶43.

2. TS 36.101 did not disclose assigning downlink resources only to an operating band until well after the priority date of the '976 Patent

That the 3GPP standard did not contemplate, disclose, or suggest an operating band having 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, the 3GPP in this version of TS 36.101 identifies an operating band in which only downlink resources are assigned. EX2011, 44.

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. 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. EX2011, ¶44.

Accordingly, as shown by the progression of TS 36.101 over time, not until December 2012 does the 3GPP standard disclose for the first time an operating band assignment consistent with a “non-associated cell” being configured by the base station to include only another resource for downlink that is “included in a second downlink frequency band that is not paired with any uplink frequency band,” as recited in substitute claim 3. In every instance prior to December 2012, the 3GPP standard included assignments pairing uplink and downlink frequency bands for every operating band. EX2011, ¶45.

- 3. TS 36.300 V10.0.0 and R2-104515 fails to disclose or suggest a “non-associated cell” being configured by the base station to include only another resource for downlink that is “included in a second downlink frequency band that is not**

**paired with any uplink frequency band” as recited in
substitute claim 3 of the ’976 Patent**

Given the absence of any disclosed example in the 3GPP standard of an operating band having downlink resources only that is unpaired from uplink resources prior to December 2012, well after the ’976 Patent priority date, a POSITA would have concluded that no such operating band was permissible in 3GPP 4G Release 10. EX2011, ¶46. Moreover, both TS 36.300 V10.0.0 and R2-104515 have no disclosure or suggestion of such an operating band as recited in substitute claim 3. *Id.*

The only mentions of “frequency band” in TS 36.300 V10.0.0 are limited and are irrelevant to a “non-associated cell” being configured by the base station to include only another resource for downlink that is “included in a second downlink frequency band that is not paired with any uplink frequency band,” as recited in substitute claim 3 of the ’976 Patent. The mentions are exclusively in § 10 relating to Mobility and searching E-UTRA frequency bands (i.e., the bands listed in § 5 of TS 36.101) for cell selection. EX1012, 53, 68, 71, 73, 75. In none of these mentions does TS 36.300 disclose or suggest anything relevant to an operating band having downlink resources only. EX2011, ¶47.

R2-104515 has no mention of “frequency band” other than in relation to the parameter ‘freqBandIndicator’ present in TS 36.331 and defined by TS 36.101. But as already explained, TS 36.101 defines all operating bands for this parameter to have both UL and DL resources prior to the ’976 Patent priority date. Accordingly, R2-104515 also discloses nothing relevant to an operating band having downlink resources only. EX2011, ¶48.

- 4. Even if combinable, substitute claim 3 is not invalid because both TS 36.300 V10.0.0 and R2-104515 fail to disclose or suggest a “non-associated cell” being configured by the base station to include only another resource for downlink that is “included in a second downlink frequency band that is not paired with any uplink frequency band”**

As explained in the immediately preceding sections, both TS 36.300 V10.0.0 and R2-104515 fail disclose or suggest a “non-associated cell” being configured by the base station to include only another resource for downlink that is “included in a second downlink frequency band that is not paired with any uplink frequency band,” as recited in substitute claim 3. Rather, all operating bands that would have been used as of the priority date of the ’976 Patent in TS 36.300 V10.0.0 and R2-104515 were configured with both uplink and downlink frequency bands paired together. Accordingly, even if combinable, substitute claim 3 is not invalid over the combination of TS 36.300 and R2-104515. EX2011, ¶49.

C. Ground 2: Malladi Does not Anticipate Substitute Claim 3

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 substitute claim 3 for the same reason. Moreover, Malladi has no discussion at all of frequency (or operating) bands. EX2011, ¶50. Malladi therefore also fails to disclose or suggest the other resource for downlink of the “non-associated cell” being “included in a second downlink frequency band that is not paired with any uplink frequency band,” as recited in substitute claim 3.

D. Ground 3: TS 25.319 Cannot Cure the Deficiencies of Malladi

The ID acknowledges that Malladi fails to disclose or suggest the “non-associated cell” of claim 2 of the ’976 Patent. ID, 21. Malladi therefore fails to disclose or suggest the same limitation in substitute claim 3 for the same reason. 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 cell having downlink resources only. EX2011, ¶52.

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. EX2011, ¶53.

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.¹ 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. EX2011, ¶54. 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; EX2011, ¶ 54.

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 downlink resources only. Accordingly, even if combinable, the combination of Malladi and TS 25.319 fails to disclose or suggest a “non-associated cell” as recited in substitute claim 3.

2. TS 25.319 Fails to Disclose or Suggest the “non-associated cell” having the other resource for downlink being “included in a second downlink frequency band that is not paired with any uplink frequency band”

Similar to Malladi, TS 25.319 has no discussion at all of frequency (or operating) bands. EX2011, ¶56. TS 25.319 therefore also fails to disclose or suggest the other resource for downlink of the “non-associated cell” being

¹ 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.”

“included in a second downlink frequency band that is not paired with any uplink frequency band,” as recited in substitute claim 3.

It is also noted that, like TS 36.101 in relation to TS 36.300 and R2-104515, TS 25.101 in relation to TS 25.319 shows that every operating band has a predetermined pairing of both UL and DL resources.

Table 5.0: UTRA FDD frequency bands

Operating Band	UL Frequencies UE transmit, Node B receive	DL frequencies UE receive, Node B transmit
I	1920 - 1980 MHz	2110 -2170 MHz
II	1850 -1910 MHz	1930 -1990 MHz
III	1710-1785 MHz	1805-1880 MHz
IV	1710-1755 MHz	2110-2155 MHz
V	824 - 849 MHz	869-894 MHz
VI	830-840 MHz	875-885 MHz
VII	2500-2570 MHz	2620-2690 MHz
VIII	880 - 915 MHz	925 - 960 MHz
IX	1749.9-1784.9 MHz	1844.9-1879.9 MHz
X	1710-1770 MHz	2110-2170 MHz
XI	1427.9 - 1447.9 MHz	1475.9 - 1495.9 MHz
XII	699 – 716 MHz	729 – 746 MHz
XIII	777 - 787 MHz	746 - 756 MHz
XIV	788 – 798 MHz	758 – 768 MHz
XV	Reserved	Reserved
XVI	Reserved	Reserved
XVII	Reserved	Reserved
XVIII	Reserved	Reserved
XIX	830 – 845MHz	875 – 890 MHz
XX	832 – 862 MHz	791 – 821 MHz
XXI	1447.9 – 1462.9 MHz	1495.9 – 1510.9 MHz

TS 25.101 V9.7.0, the first version published after the '976 Patent priority date, lists the available operating bands as shown in Table 5.0 above and that every operating band has a predetermined pairing of UL and DL resources. EX2013, 17. All prior versions of TS 25.101 also required the predetermined pairings of UL and DL resources for every operating band. EX2011, ¶57.

Accordingly, even considering TS 25.319 in context with other 3GPP 3G technical specifications including TS 25.101, it would have been clear to a POSITA that 3GPP 3G, including TS 25.319, did not disclose or suggest a “non-associated cell” being configured by the base station to include only another resource for downlink that is “included in a second downlink frequency band that is not paired with any uplink frequency band” as recited in substitute claim 3. Therefore, even if combinable, substitute claim 3 is valid over the combination of Malladi and TS 25.319. EX2011, ¶58.

E. Invalidity Burden

Petitioner bears the burden of proving that the substitute claim is anticipated or obvious. The above analysis identifies clear differences between the amended claim language and the prior art asserted by the Petitioner.

F. Duty of Candor

Patent Owner acknowledges that it has a duty to disclose information that may be material to patentability of the substitute claim, which is not already of record.

IV. 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

/Marc Weinstein/

Marc K. Weinstein (Reg. No. 43,250)

Xsensus LLP

Attorneys for Patent Owner

**APPENDIX A TO PATENT OWNER'S MOTION TO AMEND
LISTING OF THE CLAIMS**

1. (Not Instituted, no substitution)
2. (Instituted, contingently substituted with claim 3)
3. (Contingent substitute for claim 2) A communication terminal device

performing radio communication with a base station device, wherein

the communication terminal device performs uplink communication using an associated cell configured by the base station to include a resource for uplink and a resource for downlink, the resource for uplink being included in an uplink frequency band that is paired with a first downlink frequency band and being allocated to the uplink communication to the base station device, the resource for downlink being included in the first downlink frequency band and being allocated to the downlink communication from the base station device, and

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 included in a second downlink frequency band that is not paired with any uplink frequency band and being allocated to the downlink communication from the base station device.

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:

Jeremy D. Peterson
Bradford A. Cangro
Jacob A. Snodgrass

Dated: March 1, 2024

/Marc Weinstein/

Marc K. Weinstein (Reg. No. 43,250)

Xsensus LLP

Attorneys for Patent Owner