



SAR EVALUATION REPORT

PERMISSIVE CHANGE

**FCC 47 CFR § 2.1093
IEEE 1528-2013**

For
Radio Module
(Tested inside of Panasonic Tablet PC FZ-G2mk2)

FCC ID: ACJ9TGWW22A
Model Name: WW22A

Report Number: R14206457-S2V3
Issue Date: 12/5/2022

Prepared for
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(RTP, NC Location)



(Ise-shi, Mie-ken, Japan. Noted testing only)

Revision History

Rev.	Date	Revisions	Revised By
V1	11/1/2022	Initial Issue	--
V2	11/14/2022	Updated reference material in § 6.5	Richard Jankovics
V3	12/5/2022	Updated bands measured in § 9.2 and 10.	Richard Jankovics

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1. Attestation of Test Results

Applicant Name	Panasonic Corporation of North America 2 Riverfront Plaza, 9th Floor Newark, NJ, 07102-5940, USA			
FCC ID	ACJ9TGWW22A			
Model Name	WW22A			
Applicable Standards	Published RF exposure KDB procedures IEEE 1528-2013			
Exposure Category	SAR Limits (W/Kg)			
	Peak spatial-average (1g of tissue)		Extremities (hands, wrists, ankles, etc.) (10g of tissue)	
General population / Uncontrolled exposure	1.6		4	
RF Exposure Conditions	Highest Reported SAR (W/kg)			
	PCE	DTS	NII	DSS
Body	1.442	0.925	0.854	0.138
Simultaneous TX	1.588	1.571	1.588	1.521
Date Tested	3/02/2022 to 9/01/2022, 8/29/2022 to 9/01/2022, 10/28/2022			
Test Results	Pass			



Note: WLAN and Bluetooth SAR data is referenced from UL Report R14206457-S1V3.

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

This report contains data provided by the customer which can impact the validity of results. UL LLC is only responsible for the validity of results after the integration of the data provided by the customer.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, or any agency of the U.S. Government, or any agency of the U.S. government.

Approved & Released By: 	Prepared By: 
Devin Chang Senior Test Engineer UL Verification Services Inc.	Richard Jankovics Operations Leader UL LLC

2. Test Specification, Methods and Procedures

The tests documented in this report were performed in accordance with FCC 47 CFR § 2.1093, IEEE 1528-2013, the following FCC Published RF exposure [KDB](#) procedures:

- 447498 D01 General RF Exposure Guidance v06
- 447498 D03 Supplement C Cross-Reference v01
- 447498 D04 Interim General RF Exposure Guidance v01
- 616217 D04 SAR for laptop and tablets v01r02
- 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
- 865664 D02 RF Exposure Reporting v01r02
- 941225 D01 3G SAR Procedures v03r01
- 941225 D05 SAR for LTE Devices v02r05
- 941225 D05A LTE Rel.10 KDB Inquiry Sheet v01r02

In addition to the above, the following information was used:

- [TCB Workshop](#) October 2014; RF Exposure Procedures (Other LTE Considerations)
- [TCB Workshop](#) April 2015; RF Exposure Procedures (Overlapping LTE Bands)
- [TCB Workshop](#) October 2015; RF Exposure Procedures (KDB 941225 D05A)
- [TCB Workshop](#) April 2016; RF Exposure Procedures (LTE Carrier Aggregation for DL)
- [TCB Workshop](#) October 2016; RF Exposure Procedures (LTE Carrier Aggregation for UL)
- [TCB workshop](#) October 2016; RF Exposure Procedures (DUT Holder Perturbations)
- [TCB Workshop](#) May 2017; RF Exposure Procedures (Broadband Liquid Above 3 GHz)
- [TCB Workshop](#) November 2017; RF Exposure Procedures (LTE UL/DL Carrier Aggregation SAR)
- [TCB Workshop](#) April 2018; RF Exposure Procedures (LTE DL CA SAR Test Exclusion)
- [TCB Workshop](#) October 2018; RF Exposure Procedures (LTE Inter-Band Uplink Carrier Aggregation – Interim Procedures)
- [TCB Workshop](#) April 2019; RF Exposure Procedures (Tissue Simulating Liquids (TSL))

3. Facilities and Accreditation

UL LLC is accredited by A2LA, cert. # 0751.06 for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
<input type="checkbox"/>	Building: 12 Laboratory Dr RTP, NC 27709, U.S.A	US0067	2180C	825374
<input checked="" type="checkbox"/>	Building: 2800 Perimeter Park Dr. Suite B Morrisville, NC 27560, U.S.A	US0067	27265	825374

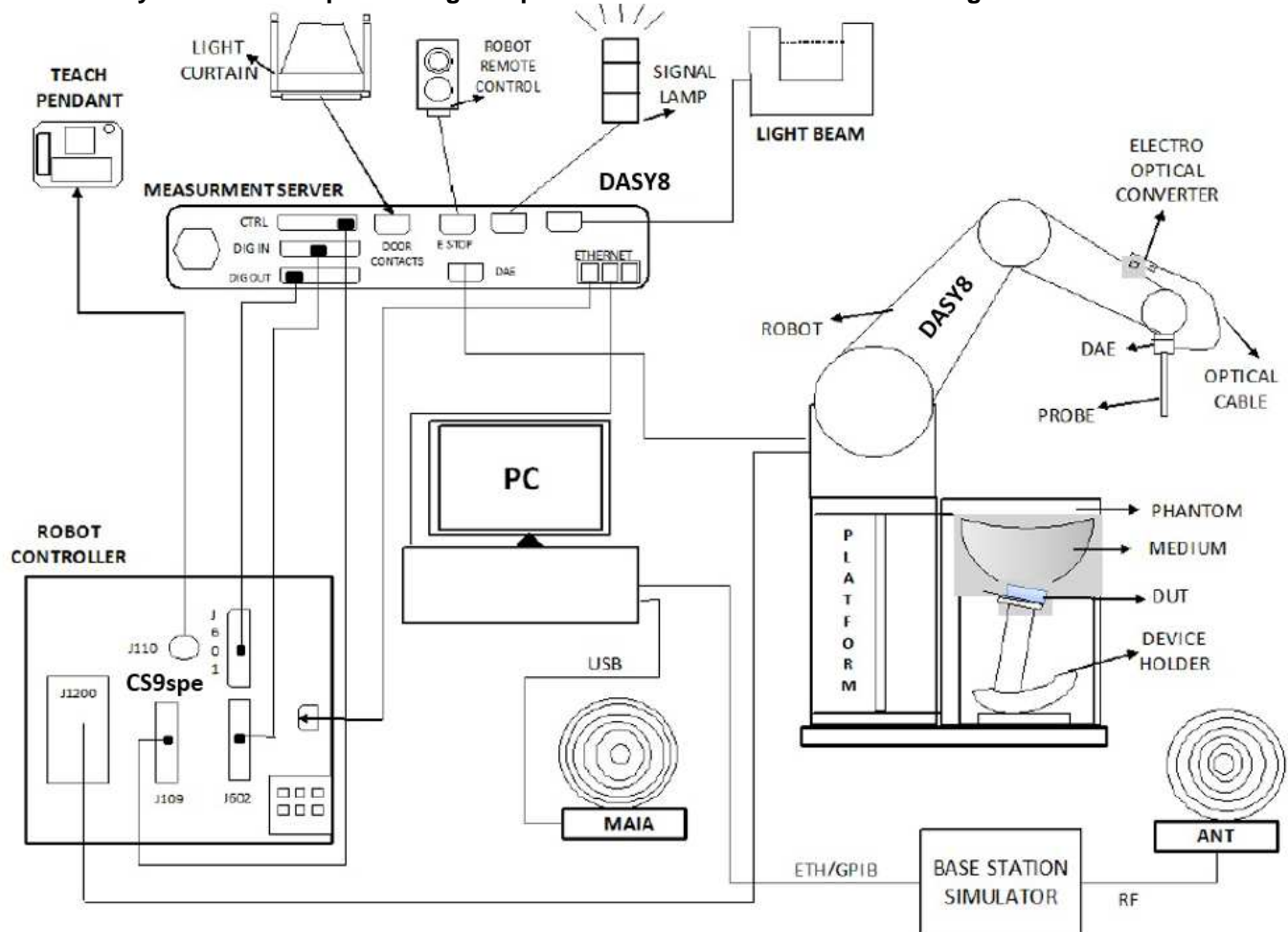
The test sites and measurement facilities used to collect data for the noted DLCA measurements (§ 9.4) are located at 4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 Japan. A2LA Certificate Number 5107.02.

	Address	ISED CABID	ISED Company Number	FCC Registration
<input checked="" type="checkbox"/>	Building: 4383-326 Asama-cho, Ise-shi, Mie -ken 516-0021 Japan	JP0002	2973C	199967

4. SAR Measurement System & Test Equipment

4.1. SAR Measurement System

The DASY system used for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running Win7, Win10 and the DASY52¹ and DASY8² software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

¹ DASY52 software used: DASY52.10.4 & S 14.6.14 and older generations.

² DASY8 software used: DASY16.0.0 and older generations.

4.2. SAR Scan Procedures

Step 1: Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. The minimum distance of probe sensors to surface is 2.1 mm. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

Step 2: Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE 1528-2013, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan). If only one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of Zoom Scans has to be increased accordingly.

Area Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
Maximum area scan spatial resolution: Δx_{Area} , Δy_{Area}	≤ 2 GHz: ≤ 15 mm $2 - 3$ GHz: ≤ 12 mm	$3 - 4$ GHz: ≤ 12 mm $4 - 6$ GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be \leq the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

Step 3: Zoom Scan

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The Zoom Scan measures points (refer to table below) within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the Zoom Scan evaluates the averaged SAR for 1 g and 10 g and displays these values next to the job's label.

Zoom Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

		≤ 3 GHz	> 3 GHz	
Maximum zoom scan spatial resolution: $\Delta x_{Zoom}, \Delta y_{Zoom}$		≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*	
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$	≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm	
	graded grid	$\Delta z_{Zoom}(1)$: between 1 st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z	≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm	
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details. * When zoom scan is required and the <i>reported</i> SAR from the <i>area scan based 1-g SAR estimation</i> procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

Step 4: Power drift measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

4.3. Test Equipment

The measuring equipment used to perform the tests documented in this report has been calibrated in accordance with the manufacturers' recommendations, and is traceable to recognized national standards.

Dielectric Property Measurements

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Network Analyzer	Copper Mountain Technologies	R140	190514	05/19/2023
Network Analyzer ¹	Keysight	E5063A	MY54100681	08/20/2022
Dielectric Probe	SPEAG	DAKS-3.5	1051	11/16/2022
Shorting Block	SPEAG	DAK-3.5 Short	SM DAK 200 DA	11/16/2022
Thermometer	Fisher Scientific	15-078-181	210204689	03/13/2023

Note(s):

1. Equipment not used past calibration due date.

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Signal Generator	Keysight	N5181A	MY50140788	12/09/2022
Signal Generator	Keysight	N5182B	MY61252718	12/06/2022
Signal Generator	Agilent	83640B	3844A00978	08/18/2022
Signal Generator	Rohde & Schwarz	SMA100B	105115	04/18/2023
Signal Generator	Keysight	N5182B	MY51350128	05/19/2023
Power Meter	Keysight	N1912A	MY55136012	07/16/2022
Power Sensor ¹	Keysight	N1921A	MY55090030	05/27/2022
Power Sensor	Keysight	N1921A	MY55090025	09/07/2022
Amplifier	Amplicial	AMP0.4G6-34-27	150507	N/A
Amplifier	MITEQ	AMF-4D-00400600-50-30P	N/A	N/A
Directional coupler	Werlatone, Inc.	C8060-102	3266	N/A
Directional coupler	Mini-Circuits	ZUDC10-183+	1438	N/A
DC Power Supply	Miteq	PS 15V1	1990186	N/A

Note(s):

2. Equipment not used past calibration due date.

Lab Equipment

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
E-Field Probe	SPEAG	EX3DV4	7709	02/25/2023
E-Field Probe	SPEAG	EX3DV4	7711	03/11/2023
E-Field Probe	SPEAG	EX3DV4	3686	01/18/2023
E-Field Probe ¹	SPEAG	EX3DV4	7569	04/26/2022
E-Field Probe	SPEAG	EX3DV4	3989	01/19/2023
Data Acquisition Electronics	SPEAG	DAE4	1716	03/08/2023
Data Acquisition Electronics	SPEAG	DAE4	1714	02/23/2023
Data Acquisition Electronics	SPEAG	DAE4	1259	08/19/2022
Data Acquisition Electronics	SPEAG	DAE4	1439	08/11/2022
System Validation Dipole	SPEAG	D2100V2	1043	10/05/2022
System Validation Dipole	SPEAG	D750V3	1139	10/06/2022
System Validation Dipole	SPEAG	D900V2	1d180	10/06/2022
System Validation Dipole	SPEAG	D1900V2	5d202	10/06/2022
System Validation Dipole	SPEAG	D1750V2	1136	10/12/2022
System Validation Dipole	SPEAG	D2300V2	1050	11/09/2022
System Validation Dipole	SPEAG	D2600V2	1104	11/09/2022
System Validation Dipole	SPEAG	D3500V2	1135	03/02/2023
System Validation Dipole	SPEAG	D3700V2	1110	03/02/2023
Environmental Indicator	Control Company	06-662-4	200037610	02/24/2023
Environmental Indicator	Control Company	06-662-4	200037635	02/24/2023

Note(s):

1. Equipment not used past calibration due date.

Other

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Base Station Simulator	Rohde & Schwarz	CMW500	170193	04/29/2023
Base Station Simulator	Rohde & Schwarz	CMW500	170733	11/15/2022
Base Station Simulator	Rohde & Schwarz	CMW500	170732	11/18/2022
Base Station Simulator	Rohde & Schwarz	CMW500	170194	05/05/2023
Base Station Simulator	Anritsu	MT8821C	6262116751	05/14/2023
Base Station Simulator ¹	Anritsu	MT8821C	6262287681	04/30/2022

Note(s):

1. Equipment not used past calibration due date.

ULCA Measurement on 10/28/2022

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Base Station Simulator	Rohde & Schwarz	CMW500	170732	09/13/2023
Power Sensor	Keysight	N1921A	MY55090025	09/27/2023
Power Meter	Keysight	N1911A	MY55116004	09/02/2023

DLCA Equipment used by Ise-shi, Mie-ken, Japan lab on 8/29/2022 to 9/1/2022

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
UXM 5G Wireless Test Platform	Keysight	E7515B	MY59321679	02/08/2023
RF Device, Active, Power Meter	Rohde & Schwarz	NRP50S	101419	06/10/2023
Directional Coupler	NARDA	4216-10	02871	04/04/2023
Microwave Cable	Huber+Suhner	F102D/11PC24/11PC24/1000m	537062/126E	02/22/2023
Thermo-Hygrometer	CUSTOM. Inc	CTH-201	3101	07/03/2023

5. Measurement Uncertainty

Per KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be $\leq 30\%$, for a confidence interval of $k = 2$. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE 1528-2013 is not required in SAR reports submitted for equipment approval.

Therefore, the measurement uncertainty is not required.

6. Device Under Test (DUT) Information

6.1. DUT Description

Device Dimension	Overall (Length x Width): 280.4 mm x 198.8 mm Overall Diagonal: 318 mm Display Diagonal: 281 mm This is a Tablet / laptop device (overall diagonal dimension of the keyboard and/or display section of a laptop or tablet is > 20 cm)															
Back Cover	Normal Battery Cover (cover integrated with battery)															
Battery Options	Standard – Lithium-ion battery, Rating 11.4 Vdc, 50 Wh															
Wireless Router (Hotspot)	Wi-Fi Hotspot mode permits the device to share its cellular data connection with other Wi-Fi-enabled devices. <input checked="" type="checkbox"/> Mobile Hotspot (Wi-Fi 2.4 GHz) <input checked="" type="checkbox"/> Mobile Hotspot (Wi-Fi 5 GHz, except DFS band) Refer to UL Report R14206457-S1V3 for WLAN															
Wi-Fi Direct	Wi-Fi Direct enabled devices transfer data directly between each other <input checked="" type="checkbox"/> Wi-Fi Direct (Wi-Fi 2.4 GHz) <input checked="" type="checkbox"/> Wi-Fi Direct (Wi-Fi 5 GHz, except DFS band) Refer to UL Report R14206457-S1V3 for WLAN															
Bluetooth Tethering (Hotspot)	BT Tethering mode permits the device to share its cellular data connection with other devices. <input checked="" type="checkbox"/> BT Tethering (Bluetooth 2.4 GHz) Refer to UL Report R14206457-S1V3 for Bluetooth															
Test sample information	<table border="1"> <thead> <tr> <th>S/N</th> <th>IMEI</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td>1JTSA76425</td> <td>N/A</td> <td>WWAN Radiated</td> </tr> <tr> <td>1JTSA76420</td> <td>N/A</td> <td>WWAN Radiated/Conducted</td> </tr> <tr> <td>1JTSA76422</td> <td>N/A</td> <td>WWAN Radiated/Conducted</td> </tr> <tr> <td>1JTSA76436</td> <td>N/A</td> <td>WWAN Radiated/Conducted</td> </tr> </tbody> </table>	S/N	IMEI	Notes	1JTSA76425	N/A	WWAN Radiated	1JTSA76420	N/A	WWAN Radiated/Conducted	1JTSA76422	N/A	WWAN Radiated/Conducted	1JTSA76436	N/A	WWAN Radiated/Conducted
S/N	IMEI	Notes														
1JTSA76425	N/A	WWAN Radiated														
1JTSA76420	N/A	WWAN Radiated/Conducted														
1JTSA76422	N/A	WWAN Radiated/Conducted														
1JTSA76436	N/A	WWAN Radiated/Conducted														
Hardware Version	N/A															
Software Version	DRTU.00514.22.110.0															

6.2. Wireless Technologies

Wireless technologies	Frequency bands	Operating mode	Duty Cycle used for SAR testing
W-CDMA (UMTS)	Band II Band IV Band V	UMTS Rel. 99 (Voice & Data) HSDPA (Rel. 5) HSUPA (Rel. 6)	100%
LTE	FDD Band 2 FDD Band 4 FDD Band 5 FDD Band 7 FDD Band 12 FDD Band 13 FDD Band 14 FDD Band 17 FDD Band 25 FDD Band 26 TDD Band 38 TDD Band 41 TDD Band 42 TDD Band 48 FDD Band 66 Carrier Aggregation ² FDD Band 5B FDD Band 7C TDD Band 38C TDD Band 41C TDD Band 42C	QPSK 16QAM 64QAM Rel. 11 Carrier Aggregation (2 Uplinks and 5 Downlinks)	100% (FDD) 63.3% (TDD) <small>Power Class 3</small> Refer to §6.4
Does this device support SV-LTE (1xRTT-LTE)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			

Notes:

1. Measured Duty Cycle is not required due to SAR test exemption.
2. LTE-uplink 2CA is the total combined power of the UL CA.

6.3. General LTE SAR Test and Reporting Considerations

Item	Description						
Frequency range, Channel Bandwidth, Numbers and Frequencies	Band 2	Frequency range: 1850 - 1910 MHz (BW = 60 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low	18700 /1860	18675/ 1857.5	18650/ 1855	18625/ 1852.5	18615/ 1851.5	18607/ 1850.7
	Mid	18900 1880	18900/ 1880	18900/ 1880	18900/ 1880	18900/ 1880	18900/ 1880
	High	19100 1900	19125/ 1902.5	19150/ 1905	19175/ 1907.5	19185/ 1908.5	19193/ 1909.3
	Band 4	Frequency range: 1710 - 1755 MHz (BW = 45 MHz)					
		Channel Bandwidth					
		20 MHz ¹	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low	20050/ 1720	20025/ 1717.5	20000/ 1715	19975/ 1712.5	19965/ 1711.5	19957/ 1710.7
	Mid	20175 1732.5	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5
	High	20300/ 1745	20325/ 1747.5	20350/ 1750	20375/ 1752.5	20385/ 1753.5	20393/ 1754.3
	Band 5	Frequency range: 824 - 849 MHz (BW = 25 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz ¹	5 MHz	3 MHz	1.4 MHz
	Low			20450/ 829	20425/ 826.5	20415/ 825.5	20407/ 824.7
	Mid			20525 836.5	20525/ 836.5	20525/ 836.5	20525/ 836.5
	High			20600/ 844	20625/ 846.5	20635/ 847.5	20643/ 848.3
	Band 7	Frequency range: 2500 - 2570 MHz (BW = 70 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low	20850 2510	20825 2507.5	20800 2505	20775 2502.5		
	Mid	21100 2535	21100 2535	21100 2535	21100 2535		
	High	21350 2560	21375 2562.5	21400 2565	21425 2567.5		
	Band 12	Frequency range: 699 – 716 MHz (BW = 17 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz ¹	5 MHz	3 MHz	1.4 MHz
Low			23060/ 704	23035/ 701.5	23025/ 700.5	23017/ 699.7	
Mid			23095 707.5	23095/ 707.5	23095/ 707.5	23095/ 707.5	
High			23130/ 711	23155/ 713.5	23165/ 714.5	23173/ 715.3	
Band 13	Frequency range: 777 - 787 MHz (BW = 10 MHz)						
	Channel Bandwidth						
	20 MHz	15 MHz	10 MHz ¹	5 MHz ¹	3 MHz	1.4 MHz	
Low				23205/ 779.5			
Mid			23230 782	23230/ 782			
High				23255/ 784.5			
Band 14	Frequency range: 788 - 798 MHz (BW = 10 MHz)						
	Channel Bandwidth						
	20 MHz	15 MHz	10 MHz ¹	5 MHz ¹	3 MHz	1.4 MHz	
Low				23305/ 790.5			
Mid			23330 793	23330/ 793			
High				23355/ 793.5			

					795.5		
Band 17	Frequency range: 704 - 716 MHz (BW = 12 MHz)						
	Channel Bandwidth						
	20 MHz	15 MHz	10 MHz ¹	5 MHz ¹	3 MHz	1.4 MHz	
Low			23780/ 709	23755/ 706.5			
Mid			23790/ 710	23790/ 710			
High			23800/ 711	23825/ 713.5			
Band 25	Frequency range: 1850 - 1915 MHz (BW = 65 MHz)						
	Channel Bandwidth						
	20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz	
Low	26140/ 1860	26115/ 1857.5	26090/ 1855	26065/ 1852.5	26055/ 1851.5	26047/ 1850.7	
Mid	26365/ 1882.5	26365/ 1882.5	26365/ 1882.5	26365/ 1882.5	26365/ 1882.5	26365/ 1882.5	
High	26590/ 1905	26615/ 1907.5	26640/ 1910	26665/ 1912.5	26675/ 1913.5	26683/ 1914.3	
Band 26	Frequency range: 814 - 849 MHz (BW = 35 MHz)						
	Channel Bandwidth						
	20 MHz	15 MHz ¹	10 MHz	5 MHz	3 MHz	1.4 MHz	
Low		26765/ 821.5	26740/ 819	26715/ 816.5	26705/ 815.5	26697/ 814.7	
Mid		26865/ 831.5	26865/ 831.5	26865/ 831.5	26865/ 831.5	26865/ 831.5	
High		26965/ 841.5	26990/ 844	27015/ 846.5	27025/ 847.5	27033/ 848.3	
Band 38	Frequency range: 2570 - 2620 MHz (BW = 50 MHz)						
	Channel Bandwidth						
	20 MHz ¹	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz	
Low	37850/ 2580	37825/ 2577.5	37800/ 2575	37775/ 2572.5			
Mid	38000/ 2595	38000/ 2595	38000/ 2595	38000/ 2595			
High	38150 2610	38175/ 2612.5	38200/ 2615	38225/ 2617.5			
Band 41 ²	Frequency range: 2496 - 2690 MHz (BW = 194 MHz)						
	Channel Bandwidth						
	20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz	
Low	39750 / 2506.0						
Mid-Low	40185 / 2549.5						
Mid	40620 / 2593.0						
Mid-High	41055 / 2636.5						
High	41490 / 2680.0						
Band 48	Frequency range: 3550 - 3700 MHz (BW = 150 MHz)						
	Channel Bandwidth						
	20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz	
Low	55340/ 3560	55315/ 3557.5	55290/ 3555	55265/ 3552.5			
Mid-Low	55773/ 3603.3	55765/ 3602.5	55757/ 3601.7	55748/ 3600.8			
Mid-High	56207/ 3646.7	56215/ 3647.5	56223/ 3648.3	56232/ 3649.2			
High	56640/ 3690	56665/ 3692.5	56690/ 3695	56715/ 3697.5			
Band 66	Frequency range: 1710 - 1780 MHz (BW = 70 MHz)						
	Channel Bandwidth						
	20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz	
Low	132072/ 1720	132047/ 1717.5	132022/ 1715	131997/ 1712.5	131987/ 1711.5	131979/ 1710.7	
Mid	132322/ 1745	132322/ 1745	132322/ 1745	132322/ 1745	132322/ 1745	132322/ 1745	
High	132572/ 1770	132597/ 1772.5	132622/ 1775	132647/ 1777.5	132657/ 1778.5	132665/ 1779.3	

	Band 71	Frequency range: 663 - 698 MHz (BW = 35 MHz)																																																																		
		Channel Bandwidth																																																																		
		20 MHz ¹	15 MHz ¹	10 MHz	5 MHz	3 MHz	1.4 MHz																																																													
Low	133222/ 673	133197/ 670.5	133172/ 668	133147/ 665.5																																																																
Mid	133297/ 680.5	133297/ 680.5	133297/ 680.5	133297/ 680.5																																																																
High	133372/ 688	133397/ 690.5	133422/ 693	133447/ 695.5																																																																
LTE transmitter and antenna implementation	Refer to Appendix A.																																																																			
Maximum power reduction (MPR)	<p align="center">Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3</p> <table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th> <th rowspan="2">MPR (dB)</th> </tr> <tr> <th>1.4 MHz</th> <th>3.0 MHz</th> <th>5 MHz</th> <th>10 MHz</th> <th>15 MHz</th> <th>20 MHz</th> </tr> </thead> <tbody> <tr> <td>QPSK</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 3</td> </tr> <tr> <td>256 QAM</td> <td colspan="6">≥ 1</td> <td>≤ 5</td> </tr> </tbody> </table> <p>MPR Built-in by design The manufacturer MPR values are always within the 3GPP maximum MPR allowance but may not follow the default MPR values. Some power reduction states do not support MPR. A-MPR (additional MPR) was disabled during SAR testing</p>						Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})						MPR (dB)	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1	16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1	16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2	64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3	256 QAM	≥ 1						≤ 5
Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})							MPR (dB)																																																												
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz																																																														
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1																																																													
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1																																																													
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2																																																													
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2																																																													
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3																																																													
256 QAM	≥ 1						≤ 5																																																													
Power reduction	Yes. Power reduction based on proximity sensor for WWAN and Tablet docking status for WLAN.																																																																			
Spectrum plots for RB configurations	A properly configured base station simulator was used for the SAR and power measurements; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.																																																																			

Notes:

1. Maximum bandwidth does not support at least three non-overlapping channels in certain channel bandwidths. When a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing per KDB 941225 D05 SAR for LTE Devices.
2. LTE band 41 test channels in accordance with October 2014 TCB workshop for all channels bandwidths.
3. SAR Testing for LTE was performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

6.4. LTE (TDD) Considerations

According to KDB 941225 D05 SAR for LTE Devices, for Time-Division Duplex (TDD) systems, SAR must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP LTE TDD configurations.

LTE TDD Bands support 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations and Table 4.2-1 for Special subframe configurations.

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS)

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$(1+X) \cdot 2192 \cdot T_s$	$(1+X) \cdot 2560 \cdot T_s$	$7680 \cdot T_s$	$(1+X) \cdot 2192 \cdot T_s$	$(1+X) \cdot 2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$			$7680 \cdot T_s$		
5	$6592 \cdot T_s$	$(2+X) \cdot 2192 \cdot T_s$	$(2+X) \cdot 2560 \cdot T_s$	$20480 \cdot T_s$	$(2+X) \cdot 2192 \cdot T_s$	$(2+X) \cdot 2560 \cdot T_s$
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-		
9	$13168 \cdot T_s$			-		
10	$13168 \cdot T_s$	$13152 \cdot T_s$	$12800 \cdot T_s$	-	-	-

Table 4.2-2: Uplink-downlink configurations & Calculated Duty Cycle

Uplink-Downlink Configuration	Downlink-to-Uplink Switch-point Periodicity	Subframe Number										Calculated Duty Cycle (%)
		0	1	2	3	4	5	6	7	8	9	
0	5 ms	D	S	U	U	U	D	S	U	U	U	63.3%
1	5 ms	D	S	U	U	D	D	S	U	U	D	43.3%
2	5 ms	D	S	U	D	D	D	S	U	D	D	23.3%
3	10 ms	D	S	U	U	U	D	D	D	D	D	31.7%
4	10 ms	D	S	U	U	D	D	D	D	D	D	21.7%
5	10 ms	D	S	U	D	D	D	D	D	D	D	11.7%
6	5 ms	D	S	U	U	U	D	S	U	U	D	53.3%

Calculated Duty Cycle = Extended cyclic prefix in uplink * (T_s) * # of S + # of U / period

Note(s):

This device supports uplink-downlink configurations 0-6. The configuration with highest duty cycle was used for SAR Testing: configuration 0 at 63.3% duty cycle.

6.5. Power Reduction by Proximity Sensing

The DUT has proximity sensors to reduce the output power. The client performed confirmation of the trigger distance. Results are as follows.

TSL	Trigger Distance – Edge 4		Trigger Distance – Rear		Trigger Distance – Rear Tilt (Edge4 side)	
	Moving Toward Phantom	Moving From Phantom	Moving Toward Phantom	Moving From Phantom	Moving Toward Phantom	Moving From Phantom
750/900/1750/1900/2400	20 mm	20 mm	10 mm	10 mm	10 mm	10 mm

Test Distances:

- Edge 4: 19 mm
- Rear: 9 mm
- Rear Tilt (Edge4 side): 9 mm

	Proximity Sensor Detection					
	Edge1	Edge2	Edge3	Edge4	Rear	Rear Tilt (Edge4 side)
Tablet	No	No	No	Yes	Yes	Yes
Laptop	No	No	No	No	No	No

Refer to Appendix G for trigger results.

7. RF Exposure Conditions (Test Configurations)

Refer to Appendix A for the specific details of the antenna-to-antenna and antenna-to-edge(s) distances.

7.1. Standalone SAR Test Exclusion Considerations

Since the *Dedicated Host Approach* is applied, the standalone SAR test exclusion procedure in KDB 447498 § 4.3.1 is applied in conjunction with KDB 616217 § 4.3 to determine the minimum test separation distance:

- When the separation distance from the antenna to an adjacent edge is ≤ 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.
- When the separation distance from the antenna to an adjacent edge is > 5 mm, the actual antenna-to-edge separation distance is applied to determine SAR test exclusion.

SAR Test Exclusion Calculations for WWAN

Tablet Mode

Antennas < 50mm to adjacent edges

Antenna	Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)						Calculated Threshold Value					
			dBm	mW	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front
Full Power																
WWAN	W-CDMA 2	1907.6	24.50	282	7.6	40.8	268.4	82.1	1.7		48.7	9.5	> 50 mm	> 50 mm	77.9	
WWAN	W-CDMA 4	1752.6	24.50	282	7.6	40.8	268.4	82.1	1.7		-MEASURE-	9.1	> 50 mm	> 50 mm	74.7	
WWAN	W-CDMA 5	846.6	24.50	282	7.6	40.8	268.4	82.1	1.7		-MEASURE-	6.3	> 50 mm	> 50 mm	51.9	
WWAN	LTE Band 2	1900	24.50	282	7.6	40.8	268.4	82.1	1.7		48.6	9.5	> 50 mm	> 50 mm	77.7	
WWAN	LTE Band 4	1754.3	23.50	224	7.6	40.8	268.4	82.1	1.7		37.1	7.2	> 50 mm	> 50 mm	59.3	
WWAN	LTE Band 5	844	24.50	282	7.6	40.8	268.4	82.1	1.7		32.4	6.3	> 50 mm	> 50 mm	51.8	
WWAN	LTE Band 7	2560	24.50	282	7.6	40.8	268.4	82.1	1.7		56.4	11	> 50 mm	> 50 mm	90.2	
WWAN	LTE Band 12	711	24.50	282	7.6	40.8	268.4	82.1	1.7		29.7	5.8	> 50 mm	> 50 mm	47.6	
WWAN	LTE Band 13	782	24.50	282	7.6	40.8	268.4	82.1	1.7		31.2	6.1	> 50 mm	> 50 mm	49.9	
WWAN	LTE Band 14	798	24.50	282	7.6	40.8	268.4	82.1	1.7		31.5	6.1	> 50 mm	> 50 mm	50.4	
WWAN	LTE Band 17	710	24.50	282	7.6	40.8	268.4	82.1	1.7		29.7	5.8	> 50 mm	> 50 mm	47.5	
WWAN	LTE Band 25	1905	24.50	282	7.6	40.8	268.4	82.1	1.7		48.7	9.5	> 50 mm	> 50 mm	77.8	
WWAN	LTE Band 26	841.4	24.50	282	7.6	40.8	268.4	82.1	1.7		-MEASURE-	6.3	> 50 mm	> 50 mm	51.7	
WWAN	LTE Band 38	2610	24.50	282	7.6	40.8	268.4	82.1	1.7		56.9	11	> 50 mm	> 50 mm	91.1	
WWAN	LTE Band 41	2680	24.50	282	7.6	40.8	268.4	82.1	1.7		57.7	11.3	> 50 mm	> 50 mm	92.3	
WWAN	LTE Band 42	3590	19.50	89	7.6	40.8	268.4	82.1	1.7		21.1	4.1	> 50 mm	> 50 mm	33.7	
WWAN	LTE Band 48	3690	19.50	89	7.6	40.8	268.4	82.1	1.7		21.4	4.2	> 50 mm	> 50 mm	34.2	
WWAN	LTE Band 66	1780	23.50	224	7.6	40.8	268.4	82.1	1.7		-MEASURE-	7.3	> 50 mm	> 50 mm	59.8	
Power Reduction																
WWAN	W-CDMA 2	1907.6	19.50	89	7.6				1.7		5.4				24.6	
WWAN	W-CDMA 4	1752.6	18.40	69	7.6				1.7		11.4				18.3	
WWAN	W-CDMA 5	846.6	16.90	49	7.6				1.7		5.6				9	
WWAN	LTE Band 2	1900	19.60	91	7.6				1.7		5.7				25.1	
WWAN	LTE Band 4	1754.3	18.50	71	7.6				1.7		11.8				18.8	
WWAN	LTE Band 5	844	18.60	72	7.6				1.7		8.3				13.2	
WWAN	LTE Band 7	2560	17.50	56	7.6				1.7		11.2				17.9	
WWAN	LTE Band 12	711	20.90	123	7.6				1.7		13				20.7	
WWAN	LTE Band 13	782	20.20	105	7.6				1.7		11.6				16.6	
WWAN	LTE Band 14	798	19.80	95	7.6				1.7		10.6				17	
WWAN	LTE Band 17	710	20.90	123	7.6				1.7		13				20.7	
WWAN	LTE Band 25	1905	19.50	89	7.6				1.7		5.4				24.6	
WWAN	LTE Band 26	841.4	18.90	78	7.6				1.7		8.9				18.3	
WWAN	LTE Band 38	2610	20.50	112	7.6				1.7		22.6				36.2	
WWAN	LTE Band 41	2680	20.50	112	7.6				1.7		22.9				36.7	
WWAN	LTE Band 42	3590	12.50	18	7.6				1.7		4.3				6.8	
WWAN	LTE Band 48	3690	13.90	25	7.6				1.7		6				9.6	
WWAN	LTE Band 66	1780	18.50	71	7.6				1.7		11.8				18.9	

Note(s):

According to KDB 447498, if the calculated threshold value is >3 then SAR testing is required.

Laptop Mode

Antennas < 50mm to adjacent edges

Antenna	Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)	Calculated Threshold Value
			dBm	mW		
Full Power						
WWAN	W-CDMA 2	1907.6	24.50	282	123.8	> 50 mm
WWAN	W-CDMA 4	1752.6	24.50	282	123.8	> 50 mm
WWAN	W-CDMA 5	846.6	24.50	282	123.8	> 50 mm
WWAN	LTE Band 2	1900	24.50	282	123.8	> 50 mm
WWAN	LTE Band 4	1754.3	23.50	224	123.8	> 50 mm
WWAN	LTE Band 5	844	24.50	282	123.8	> 50 mm
WWAN	LTE Band 7	2560	24.50	282	123.8	> 50 mm
WWAN	LTE Band 12	711	24.50	282	123.8	> 50 mm
WWAN	LTE Band 13	782	24.50	282	123.8	> 50 mm
WWAN	LTE Band 14	798	24.50	282	123.8	> 50 mm
WWAN	LTE Band 17	710	24.50	282	123.8	> 50 mm
WWAN	LTE Band 25	1905	24.50	282	123.8	> 50 mm
WWAN	LTE Band 26	841.4	24.50	282	123.8	> 50 mm
WWAN	LTE Band 38	2610	24.50	282	123.8	> 50 mm
WWAN	LTE Band 41	2680	24.50	282	123.8	> 50 mm
WWAN	LTE Band 42	3590	19.50	89	123.8	> 50 mm
WWAN	LTE Band 48	3690	19.50	89	123.8	> 50 mm
WWAN	LTE Band 66	1780	23.50	224	123.8	> 50 mm
Power Reduction						
WWAN	W-CDMA 2	1907.6	19.50	89		
WWAN	W-CDMA 4	1752.6	18.40	69		
WWAN	W-CDMA 5	846.6	16.90	49		
WWAN	LTE Band 2	1900	19.60	91		
WWAN	LTE Band 4	1754.3	18.50	71		
WWAN	LTE Band 5	844	18.60	72		
WWAN	LTE Band 7	2560	17.50	56		
WWAN	LTE Band 12	711	20.90	123		
WWAN	LTE Band 13	782	20.20	105		
WWAN	LTE Band 14	798	19.80	95		
WWAN	LTE Band 17	710	20.90	123		
WWAN	LTE Band 25	1905	19.50	89		
WWAN	LTE Band 26	841.4	18.90	78		
WWAN	LTE Band 38	2610	20.50	112		
WWAN	LTE Band 41	2680	20.50	112		
WWAN	LTE Band 42	3590	12.50	18		
WWAN	LTE Band 48	3690	13.90	25		
WWAN	LTE Band 66	1780	18.50	71		

Note(s):

According to KDB 447498, if the calculated threshold value is >3 then SAR testing is required.

Tablet Mode

Antennas > 50mm to adjacent edges

Antenna	Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)						Calculated Threshold Value					
			dBm	mW	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front
Full Power																
WWAN	W-CDMA 2	1907.6	24.50	282	7.6	40.8	268.4	82.1	1.7		< 50 mm	< 50 mm	2292.6 mW -EXEMPT-	429.6 mW -EXEMPT-	< 50 mm	
WWAN	W-CDMA 4	1752.6	24.50	282	7.6	40.8	268.4	82.1	1.7		< 50 mm	< 50 mm	2297.3 mW -EXEMPT-	434.3 mW -EXEMPT-	< 50 mm	
WWAN	W-CDMA 5	846.6	24.50	282	7.6	40.8	268.4	82.1	1.7		< 50 mm	< 50 mm	1995.7 mW -EXEMPT-	344.2 mW -EXEMPT-	< 50 mm	
WWAN	LTE Band 2	1900	24.50	282	7.6	40.8	268.4	82.1	1.7		< 50 mm	< 50 mm	2292.8 mW -EXEMPT-	429.8 mW -EXEMPT-	< 50 mm	
WWAN	LTE Band 4	1754.3	23.50	224	7.6	40.8	268.4	82.1	1.7		< 50 mm	< 50 mm	2297.3 mW -EXEMPT-	434.3 mW -EXEMPT-	< 50 mm	
WWAN	LTE Band 5	844	24.50	282	7.6	40.8	268.4	82.1	1.7		< 50 mm	< 50 mm	1992.1 mW -EXEMPT-	343.9 mW -EXEMPT-	< 50 mm	
WWAN	LTE Band 7	2560	24.50	282	7.6	40.8	268.4	82.1	1.7		< 50 mm	< 50 mm	2277.8 mW -EXEMPT-	414.8 mW -EXEMPT-	< 50 mm	
WWAN	LTE Band 12	711	24.50	282	7.6	40.8	268.4	82.1	1.7		< 50 mm	< 50 mm	1213.1 mW -EXEMPT-	330 mW -EXEMPT-	< 50 mm	
WWAN	LTE Band 13	782	24.50	282	7.6	40.8	268.4	82.1	1.7		< 50 mm	< 50 mm	1308.2 mW -EXEMPT-	337 mW -EXEMPT-	< 50 mm	
WWAN	LTE Band 14	798	24.50	282	7.6	40.8	268.4	82.1	1.7		< 50 mm	< 50 mm	1329.8 mW -EXEMPT-	338.7 mW -EXEMPT-	< 50 mm	
WWAN	LTE Band 17	710	24.50	282	7.6	40.8	268.4	82.1	1.7		< 50 mm	< 50 mm	1211.8 mW -EXEMPT-	330 mW -EXEMPT-	< 50 mm	
WWAN	LTE Band 25	1905	24.50	282	7.6	40.8	268.4	82.1	1.7		< 50 mm	< 50 mm	2292.7 mW -EXEMPT-	429.7 mW -EXEMPT-	< 50 mm	
WWAN	LTE Band 26	841.4	24.50	282	7.6	40.8	268.4	82.1	1.7		< 50 mm	< 50 mm	1388.6 mW -EXEMPT-	343.6 mW -EXEMPT-	< 50 mm	
WWAN	LTE Band 38	2610	24.50	282	7.6	40.8	268.4	82.1	1.7		< 50 mm	< 50 mm	2276.8 mW -EXEMPT-	413.8 mW -EXEMPT-	< 50 mm	
WWAN	LTE Band 41	2680	24.50	282	7.6	40.8	268.4	82.1	1.7		< 50 mm	< 50 mm	2275.8 mW -EXEMPT-	412.6 mW -EXEMPT-	< 50 mm	
WWAN	LTE Band 42	3590	19.50	89	7.6	40.8	268.4	82.1	1.7		< 50 mm	< 50 mm	2263.2 mW -EXEMPT-	400.2 mW -EXEMPT-	< 50 mm	
WWAN	LTE Band 48	3690	19.50	89	7.6	40.8	268.4	82.1	1.7		< 50 mm	< 50 mm	2262.1 mW -EXEMPT-	399.1 mW -EXEMPT-	< 50 mm	
WWAN	LTE Band 66	1780	23.50	224	7.6	40.8	268.4	82.1	1.7		< 50 mm	< 50 mm	2296.4 mW -EXEMPT-	433.4 mW -EXEMPT-	< 50 mm	
Power Reduction																
WWAN	W-CDMA 2	1907.6	19.50	89	7.6				1.7		< 50 mm				< 50 mm	
WWAN	W-CDMA 4	1752.6	18.40	69	7.6				1.7		< 50 mm				< 50 mm	
WWAN	W-CDMA 5	846.6	16.90	49	7.6				1.7		< 50 mm				< 50 mm	
WWAN	LTE Band 2	1900	19.60	91	7.6				1.7		< 50 mm				< 50 mm	
WWAN	LTE Band 4	1754.3	18.50	71	7.6				1.7		< 50 mm				< 50 mm	
WWAN	LTE Band 5	844	18.60	72	7.6				1.7		< 50 mm				< 50 mm	
WWAN	LTE Band 7	2560	17.50	56	7.6				1.7		< 50 mm				< 50 mm	
WWAN	LTE Band 12	711	20.90	123	7.6				1.7		< 50 mm				< 50 mm	
WWAN	LTE Band 13	782	20.20	105	7.6				1.7		< 50 mm				< 50 mm	
WWAN	LTE Band 14	798	19.80	95	7.6				1.7		< 50 mm				< 50 mm	
WWAN	LTE Band 17	710	20.90	123	7.6				1.7		< 50 mm				< 50 mm	
WWAN	LTE Band 25	1905	19.50	89	7.6				1.7		< 50 mm				< 50 mm	
WWAN	LTE Band 26	841.4	18.90	78	7.6				1.7		< 50 mm				< 50 mm	
WWAN	LTE Band 38	2610	20.50	112	7.6				1.7		< 50 mm				< 50 mm	
WWAN	LTE Band 41	2680	20.50	112	7.6				1.7		< 50 mm				< 50 mm	
WWAN	LTE Band 42	3590	12.50	18	7.6				1.7		< 50 mm				< 50 mm	
WWAN	LTE Band 48	3690	13.90	25	7.6				1.7		< 50 mm				< 50 mm	
WWAN	LTE Band 66	1780	18.50	71	7.6				1.7		< 50 mm				< 50 mm	

Note(s):

According to KDB 447498, if the calculated Power threshold is less than the output power then SAR testing is required.

Tablet Mode

Antennas > 50mm to adjacent edges

Antenna	Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)	Calculated Threshold Value
			dBm	mW		
Full Power						
WWAN	W-CDMA 2	1907.6	24.50	282	123.8	846.6 mW -EXEMPT-
WWAN	W-CDMA 4	1752.6	24.50	282	123.8	851.3 mW -EXEMPT-
WWAN	W-CDMA 5	846.6	24.50	282	123.8	579.6 mW -EXEMPT-
WWAN	LTE Band 2	1900	24.50	282	123.8	846.8 mW -EXEMPT-
WWAN	LTE Band 4	1754.3	23.50	224	123.8	851.3 mW -EXEMPT-
WWAN	LTE Band 5	844	24.50	282	123.8	578.5 mW -EXEMPT-
WWAN	LTE Band 7	2560	24.50	282	123.8	831.8 mW -EXEMPT-
WWAN	LTE Band 12	711	24.50	282	123.8	527.7 mW -EXEMPT-
WWAN	LTE Band 13	782	24.50	282	123.8	554.4 mW -EXEMPT-
WWAN	LTE Band 14	798	24.50	282	123.8	560.5 mW -EXEMPT-
WWAN	LTE Band 17	710	24.50	282	123.8	527.3 mW -EXEMPT-
WWAN	LTE Band 25	1905	24.50	282	123.8	846.7 mW -EXEMPT-
WWAN	LTE Band 26	841.4	24.50	282	123.8	577.5 mW -EXEMPT-
WWAN	LTE Band 38	2610	24.50	282	123.8	830.8 mW -EXEMPT-
WWAN	LTE Band 41	2680	24.50	282	123.8	829.6 mW -EXEMPT-
WWAN	LTE Band 42	3590	19.50	89	123.8	87.2 mW -EXEMPT-
WWAN	LTE Band 48	3690	19.50	89	123.8	86.1 mW -EXEMPT-
WWAN	LTE Band 66	1780	23.50	224	123.8	850.4 mW -EXEMPT-
Power Reduction						
WWAN	W-CDMA 2	1907.6	19.50	89		
WWAN	W-CDMA 4	1752.6	18.40	69		
WWAN	W-CDMA 5	846.6	16.90	49		
WWAN	LTE Band 2	1900	19.60	91		
WWAN	LTE Band 4	1754.3	18.50	71		
WWAN	LTE Band 5	844	18.60	72		
WWAN	LTE Band 7	2560	17.50	56		
WWAN	LTE Band 12	711	20.90	123		
WWAN	LTE Band 13	782	20.20	105		
WWAN	LTE Band 14	798	19.80	95		
WWAN	LTE Band 17	710	20.90	123		
WWAN	LTE Band 25	1905	19.50	89		
WWAN	LTE Band 26	841.4	18.90	78		
WWAN	LTE Band 38	2610	20.50	112		
WWAN	LTE Band 41	2680	20.50	112		
WWAN	LTE Band 42	3590	12.50	18		
WWAN	LTE Band 48	3690	13.90	25		
WWAN	LTE Band 66	1780	18.50	71		

Note(s):

According to KDB 447498, if the calculated Power threshold is less than the output power then SAR testing is required.

7.2. Required Test Configurations

The table below identifies the standalone test configurations required for this device according to the findings in Section 7.1:

Test Configurations	Tablet						Laptop
	Rear	Rear Tilt (Edge4 side)	Edge 1	Edge 2	Edge 3	Edge 4	Bottom
			(Top Edge)	(Right Edge)	(Bottom Edge)	(Left Edge)	
W-CDMA Band 2 Full Power	Yes	Yes	Yes	No	No	Yes	No
W-CDMA Band 2 w/ Power Reduction	Yes	Yes	No	No	No	Yes	No
W-CDMA Band 4 Full Power	Yes	Yes	Yes	No	No	Yes	No
W-CDMA Band 4 w/ Power Reduction	Yes	Yes	No	No	No	Yes	No
W-CDMA Band 5 Full Power	Yes	Yes	Yes	No	No	Yes	No
W-CDMA Band 5 w/ Power Reduction	Yes	Yes	No	No	No	Yes	No
LTE Band 2 Full Power	Yes	Yes	Yes	No	No	Yes	No
LTE Band 2 w/ Power Reduction	Yes	Yes	No	No	No	Yes	No
LTE Band 4 Full Power	Yes	Yes	Yes	No	No	Yes	No
LTE Band 4 w/ Power Reduction	Yes	Yes	No	No	No	Yes	No
LTE Band 5 Full Power	Yes	Yes	Yes	No	No	Yes	No
LTE Band 5 w/ Power Reduction	Yes	Yes	No	No	No	Yes	No
LTE Band 7 Full Power	Yes	Yes	Yes	No	No	Yes	No
LTE Band 7 w/ Power Reduction	Yes	Yes	No	No	No	Yes	No
LTE Band 12 Full Power	Yes	Yes	Yes	No	No	Yes	No
LTE Band 12 w/ Power Reduction	Yes	Yes	No	No	No	Yes	No
LTE Band 13 Full Power	Yes	Yes	Yes	No	No	Yes	No
LTE Band 13 w/ Power Reduction	Yes	Yes	No	No	No	Yes	No
LTE Band 14 Full Power	Yes	Yes	Yes	No	No	Yes	No
LTE Band 14 w/ Power Reduction	Yes	Yes	No	No	No	Yes	No
LTE Band 17 Full Power	Yes	Yes	Yes	No	No	Yes	No
LTE Band 17 w/ Power Reduction	Yes	Yes	No	No	No	Yes	No
LTE Band 25 Full Power	Yes	Yes	Yes	No	No	Yes	No
LTE Band 25 w/ Power Reduction	Yes	Yes	No	No	No	Yes	No
LTE Band 26 Full Power	Yes	Yes	Yes	No	No	Yes	No
LTE Band 26 w/ Power Reduction	Yes	Yes	No	No	No	Yes	No
LTE Band 38 Full Power	Yes	Yes	Yes	No	No	Yes	No
LTE Band 38 w/ Power Reduction	Yes	Yes	No	No	No	Yes	No
LTE Band 41 Full Power	Yes	Yes	Yes	No	No	Yes	No
LTE Band 41 w/ Power Reduction	Yes	Yes	No	No	No	Yes	No
LTE Band 42 Full Power	Yes	Yes	Yes	No	No	Yes	No
LTE Band 42 w/ Power Reduction	Yes	Yes	No	No	No	Yes	No
LTE Band 48 Full Power	Yes	Yes	Yes	No	No	Yes	No
LTE Band 48 w/ Power Reduction	Yes	Yes	No	No	No	Yes	No
LTE Band 66 Full Power	Yes	Yes	Yes	No	No	Yes	No
LTE Band 66 w/ Power Reduction	Yes	Yes	No	No	No	Yes	No

Note(s):

Yes = Testing is required.
 No = Testing is not required.

8. Dielectric Property Measurements & System Check

8.1. Dielectric Property Measurements

The temperature of the tissue-equivalent medium used during measurement must also be within 18°C to 25°C and within $\pm 2^\circ\text{C}$ of the temperature when the tissue parameters are characterized.

The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements. The parameters should be re-measured after each 3 – 4 days of use; or earlier if the dielectric parameters can become out of tolerance; for example, when the parameters are marginal at the beginning of the measurement series.

Tissue dielectric parameters were measured at the low, middle and high frequency of each operating frequency range of the test device.

The dielectric constant (ϵ_r) and conductivity (σ) of typical tissue-equivalent media recipes are expected to be within $\pm 5\%$ of the required target values; but for SAR measurement systems that have implemented the SAR error compensation algorithms documented in IEEE 1528-2013, to automatically compensate the measured SAR results for deviations between the measured and required tissue dielectric parameters, the tolerance for ϵ_r and σ may be relaxed to $\pm 10\%$. This is limited to frequencies ≤ 3 GHz.

Tissue Dielectric Parameters

FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

Target Frequency (MHz)	Head		Body	
	ϵ_r	σ (S/m)	ϵ_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 – 2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5000	36.2	4.45	49.3	5.07
5100	36.1	4.55	49.1	5.18
5200	36.0	4.66	49.0	5.30
5300	35.9	4.76	48.9	5.42
5400	35.8	4.86	48.7	5.53
5500	35.6	4.96	48.6	5.65
5600	35.5	5.07	48.5	5.77
5700	35.4	5.17	48.3	5.88
5800	35.3	5.27	48.2	6.00

Dielectric Property Measurements Results:

SAR Lab	Date	Band (MHz)	Tissue Type	Frequency (MHz)	Relative Permittivity (ϵ_r)			Conductivity (σ)		
					Measured	Target	Delta (%)	Measured	Target	Delta (%)
1A	03/01/2022	2600	Head	2600	39.58	39.01	1.46	1.911	1.96	-2.61
				2495	39.71	39.14	1.45	1.825	1.85	-1.28
				2690	39.41	38.90	1.32	1.988	2.06	-3.47
1A	03/04/2022	2600	Head	2600	39.20	39.01	0.48	1.976	1.96	0.71
				2495	39.36	39.14	0.55	1.899	1.85	2.72
				2690	39.06	38.90	0.42	2.052	2.06	-0.36
1A	03/08/2022	2600	Head	2600	38.70	39.01	-0.80	1.977	1.96	0.76
				2495	38.92	39.14	-0.57	1.904	1.85	2.99
				2690	38.57	38.90	-0.84	2.047	2.06	-0.60
1A	03/13/2022	2600	Head	2600	37.51	39.01	-3.85	1.981	1.96	0.96
				2495	37.71	39.14	-3.66	1.890	1.85	2.24
				2690	37.31	38.90	-4.08	2.065	2.06	0.27
1A	03/17/2022	2600	Head	2600	38.67	39.01	-0.87	1.97	1.96	0.60
				2495	38.83	39.14	-0.80	1.90	1.85	2.51
				2690	38.50	38.90	-1.02	2.05	2.06	-0.46
1A	03/18/2022	1750	Head	1750	40.49	40.08	1.01	1.35	1.37	-1.68
				1710	40.54	40.15	0.98	1.32	1.35	-1.66
				1780	40.42	40.04	0.95	1.36	1.39	-1.58
1A	03/21/2022	1750	Head	1750	38.64	40.08	-3.60	1.37	1.37	-0.14
				1710	38.64	40.15	-3.75	1.35	1.35	0.19
				1755	38.64	40.08	-3.59	1.37	1.37	-0.13
1A	03/25/2022	1750	Head	1750	39.01	40.08	-2.68	1.36	1.37	-0.95
				1710	39.06	40.15	-2.71	1.34	1.35	-0.70
				1755	39.00	40.08	-2.69	1.36	1.37	-0.93
1A	04/15/2022	3500	Head	3500	39.22	37.93	3.40	2.77	2.91	-4.90
				3400	39.69	38.04	4.33	2.69	2.81	-4.14
				3600	39.02	37.82	3.19	2.92	3.01	-3.28
1A	04/19/2022	3500	Head	3500	39.10	37.93	3.09	2.77	2.91	-4.90
				3400	39.29	38.04	3.28	2.68	2.81	-4.64
				3600	38.94	37.82	2.97	2.87	3.01	-4.94
1A	04/20/2022	3700	Head	3700	38.30	37.70	1.59	2.96	3.12	-4.92
				3600	38.39	37.82	1.52	2.86	3.01	-5.17
				3800	38.18	37.59	1.58	3.04	3.22	-5.49
1A	04/22/2022	3500	Head	3500	39.98	37.93	5.41	2.81	2.91	-3.56
				3400	40.41	38.04	6.22	2.73	2.81	-2.93
				3600	39.75	37.82	5.12	2.93	3.01	-2.65
1A	04/22/2022	3700	Head	3700	39.74	37.70	5.41	3.06	3.12	-1.71
				3600	39.75	37.82	5.12	2.93	3.01	-2.65
				3800	39.73	37.59	5.70	3.14	3.22	-2.47
1A	04/27/2022	2600	Head	2600	40.06	39.01	2.69	1.98	1.96	0.91
				2495	40.27	39.14	2.88	1.88	1.85	1.64
				2690	39.83	38.90	2.40	2.07	2.06	0.51

SAR Lab	Date	Band (MHz)	Tissue Type	Frequency (MHz)	Relative Permittivity (ϵ_r)			Conductivity (σ)		
					Measured	Target	Delta (%)	Measured	Target	Delta (%)
1B	05/24/2022	2600	Head	2600	39.31	39.01	0.77	2.01	1.96	2.64
				2495	39.50	39.14	0.91	1.93	1.85	4.45
				2690	39.14	38.90	0.62	2.09	2.06	1.48
1B	05/24/2022	3500	Head	3500	37.52	37.93	-1.08	2.80	2.91	-3.83
				3400	37.69	38.04	-0.93	2.71	2.81	-3.43
				3600	37.34	37.82	-1.26	2.89	3.01	-4.11
2A	03/03/2022	750	Head	750	40.38	41.96	-3.77	0.905	0.89	1.38
				660	40.67	42.42	-4.13	0.875	0.89	-1.27
				800	40.21	41.71	-3.58	0.921	0.90	2.73
2A	03/08/2022	750	Head	750	43.24	41.96	3.05	0.922	0.89	3.20
				660	43.46	42.42	2.44	0.891	0.89	0.54
				800	43.05	41.71	3.22	0.939	0.90	4.70
2A	03/13/2022	750	Head	750	40.83	41.96	-2.70	0.901	0.89	0.83
				660	41.09	42.42	-3.14	0.872	0.89	-1.57
				800	40.65	41.71	-2.53	0.915	0.90	2.06
2A	03/16/2022	900	Head	900	40.63	41.50	-2.10	0.960	0.97	-1.01
				880	40.70	41.50	-1.93	0.952	0.95	0.78
				915	40.58	41.50	-2.22	0.966	0.98	-1.44
2A	03/21/2022	1900	Head	1900	38.12	40.00	-4.70	1.44	1.40	3.21
				1850	38.20	40.00	-4.50	1.42	1.40	1.07
				1920	38.11	40.00	-4.73	1.45	1.40	3.87
2A	05/02/2022	1900	Head	1900	40.67	40.00	1.68	1.46	1.40	4.00
				1850	40.73	40.00	1.82	1.43	1.40	2.00
				1920	40.64	40.00	1.60	1.47	1.40	4.93
3A	06/21/2022	2600	Head	2600	39.64	39.01	1.61	1.96	1.96	0.04
				2495	39.75	39.14	1.55	1.88	1.85	1.59
				2690	39.52	38.90	1.60	2.04	2.06	-1.04
3B	06/15/2022	900	Head	900	41.80	41.50	0.72	0.97	0.97	-0.48
				820	41.97	41.60	0.88	0.94	0.90	4.29
				915	41.73	41.50	0.55	0.97	0.98	-0.71
3B	06/15/2022	2600	Head	2600	38.99	39.01	-0.05	1.95	1.96	-0.47
				2495	39.15	39.14	0.02	1.87	1.85	1.26
				2690	38.84	38.90	-0.15	2.03	2.06	-1.67
3B	06/21/2022	3500	Head	3500	38.16	37.93	0.61	2.83	2.91	-2.66
				3400	38.30	38.04	0.67	2.71	2.81	-3.43
				3600	38.27	37.82	1.20	2.95	3.01	-2.15

8.2. System Check

SAR system verification is required to confirm measurement accuracy, according to the tissue dielectric media, probe calibration points and other system operating parameters required for measuring the SAR of a test device. The system verification must be performed for each frequency band and within the valid range of each probe calibration point required for testing the device. The same SAR probe(s) and tissue-equivalent media combinations used with each specific SAR system for system verification must be used for device testing. When multiple probe calibration points are required to cover substantially large transmission bands, independent system verifications are required for each probe calibration point. A system verification must be performed before each series of SAR measurements using the same probe calibration point and tissue-equivalent medium. Additional system verification should be considered according to the conditions of the tissue-equivalent medium and measured tissue dielectric parameters, typically every three to four days when the liquid parameters are re-measured or sooner when marginal liquid parameters are used at the beginning of a series of measurements.

System Performance Check Measurement Conditions:

- The measurements were performed in the flat section of the TWIN SAM or ELI phantom, shell thickness: 2.0 ± 0.2 mm (bottom plate) filled with Body or Head simulating liquid of the following parameters.
- The depth of tissue-equivalent liquid in a phantom must be ≥ 15.0 cm for SAR measurements ≤ 3 GHz and ≥ 10.0 cm for measurements > 3 GHz.
- The DASY system with an E-Field Probe was used for the measurements.
- The dipole was mounted on the small tripod so that the dipole feed point was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10 mm (above 1 GHz) and 15 mm (below 1 GHz) from dipole center to the simulating liquid surface.
- The coarse grid with a grid spacing of 15 mm was aligned with the dipole.
For 5 GHz band - The coarse grid with a grid spacing of 10 mm was aligned with the dipole.
- Special 7x7x7 (below 3 GHz) and/or 8x8x7 (above 3 GHz) fine cube was chosen for the cube.
- Distance between probe sensors and phantom surface was set to 3 mm.
For 5 GHz band - Distance between probe sensors and phantom surface was set to 2.5 mm
- The dipole input power (forward power) was recorded and the results are normalized to 1 W input power.

System Check Results

The 1-g and 10-g SAR measured with a reference dipole, using the required tissue-equivalent medium at the test frequency, must be within $\pm 10\%$ of the manufacturer calibrated dipole SAR target. Refer to Appendix B for the SAR System Check Plots.

SAR Lab	Date	Tissue Type	Dipole Type_Serial #	Dipole Cal. Due Data	Dipole Power (dBm)	Measured Results for 1g SAR				Measured Results for 10g SAR				Plot No.
						Zoom Scan	Normalize to 1W	Target (Ref. Value)	Delta $\pm 10\%$	Zoom Scan	Normalize to 1W	Target (Ref. Value)	Delta $\pm 10\%$	
1A	3/2/2022	Head	D2600V2 SN: 1104	11/9/2022	20.0	5.320	53.20	58.00	-8.28	2.390	23.90	26.10	-8.43	1,2
1A	3/4/2022	Head	D2600V2 SN: 1104	11/9/2022	20.0	5.610	56.10	58.00	-3.28	2.510	25.10	26.10	-3.83	
1A	3/8/2022	Head	D2600V2 SN: 1104	11/9/2022	20.0	5.510	55.10	58.00	-5.00	2.460	24.60	26.10	-5.75	
1A	3/13/2022	Head	D2600V2 SN: 1104	11/9/2022	20.0	5.580	55.80	58.00	-3.79	2.500	25.00	26.10	-4.21	
1A	3/17/2022	Head	D2600V2 SN: 1104	11/9/2022	20.0	5.500	55.00	58.00	-5.17	2.470	24.70	26.10	-5.36	
1A	3/18/2022	Head	D1750V2 SN: 1136	10/12/2022	20.0	3.520	35.20	34.44	2.21	1.880	18.80	18.63	0.91	3,4
1A	3/21/2022	Head	D1750V2 SN: 1136	10/12/2022	20.0	3.490	34.90	34.44	1.34	1.870	18.70	18.63	0.38	
1A	3/25/2022	Head	D1750V2 SN: 1136	10/12/2022	20.0	3.510	35.10	34.44	1.92	1.880	18.80	18.63	0.91	
1A	4/15/2022	Head	D3500V2 SN: 1135	3/2/2023	13.0	1.310	65.66	66.30	-0.97	0.502	25.16	24.90	1.04	
1A	4/19/2022	Head	D3500V2 SN: 1135	3/2/2023	15.0	2.130	67.36	66.30	1.59	0.815	25.77	24.90	3.50	5,6
1A	4/20/2022	Head	D3700V2 SN: 1110	3/2/2023	13.0	1.270	63.65	69.20	-8.02	0.470	23.56	24.90	-5.40	
1A	4/22/2022	Head	D3500V2 SN: 1135	3/2/2023	13.0	1.320	66.16	66.30	-0.22	0.507	25.41	24.90	2.05	
1A	4/22/2022	Head	D3700V2 SN: 1110	3/2/2023	13.0	1.260	63.15	69.20	-8.74	0.466	23.36	24.90	-6.20	7,8
1A	4/27/2022	Head	D2600V2 SN: 1104	11/9/2022	20.0	5.520	55.20	58.00	-4.83	2.480	24.80	26.10	-4.98	
1B	5/24/2022	Head	D2600V2 SN: 1104	11/9/2022	20.0	5.850	58.50	58.00	0.86	2.610	26.10	26.10	0.00	9,10
1B	5/24/2022	Head	D3500V2 SN: 1135	3/2/2023	20.0	7.100	71.00	66.30	7.09	2.730	27.30	24.90	9.64	11,12
2A	3/3/2022	Head	D750V3 SN: 1139	10/6/2022	20.0	0.848	8.48	8.12	4.43	0.554	5.54	5.41	2.40	
2A	3/8/2022	Head	D750V3 SN: 1139	10/6/2022	20.0	0.853	8.53	8.12	5.05	0.563	5.63	5.41	4.07	13,14
2A	3/13/2022	Head	D750V3 SN: 1139	10/6/2022	20.0	0.844	8.44	8.12	3.94	0.554	5.54	5.41	2.40	
2A	3/16/2022	Head	D900V2 SN: 1d180	10/6/2022	20.0	1.090	10.90	10.63	2.54	0.700	7.00	6.97	0.43	15,16
2A	3/21/2022	Head	D1900V2 SN: 5d202	10/6/2022	20.0	4.110	41.10	37.86	8.56	2.130	21.30	20.26	5.13	17,18
2A	5/3/2022	Head	D1900V2 SN: 5d202	10/6/2022	11.0	0.511	40.59	37.86	7.21	0.267	21.21	20.26	4.68	
3A	6/21/2022	Head	D2600V2 SN: 1104	11/9/2022	20.0	5.270	52.70	58.00	-9.14	2.360	23.60	26.10	-9.58	19,20
3B	6/15/2022	Head	D900V2 SN: 1d180	10/6/2022	17.0	0.552	11.01	10.63	3.61	0.354	7.06	6.97	1.34	21,22
3B	6/15/2022	Head	D2600V2 SN: 1104	11/9/2022	17.0	2.810	56.07	58.00	-3.33	1.250	24.94	26.10	-4.44	23,24
3B	6/21/2022	Head	D3500V2 SN: 1135	3/2/2023	20.0	6.600	66.00	66.30	-0.45	2.560	25.60	24.90	2.81	25,26

9. Conducted Output Power Measurements

Tune-Up Power Limits provided by the manufacturer are used to scale measured SAR values.

9.1. W-CDMA

Per KDB 941225 D01 3G SAR Procedures for W-CDMA:

Maximum output power is verified on the high, middle and low channels and using the appropriate 12.2 kbps RMC with TPC (transmit power control) set to all "1's"

Release 99 Setup Procedures used to establish the test signals

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1. A summary of these settings is illustrated below:

Mode	Subtest	Rel99
WCDMA General Settings	Loopback Mode	Test Mode 2
	Rel99 RMC	12.2kbps RMC
	Power Control Algorithm	Algorithm2
	β_c/β_d	8/15

HSDPA Setup Procedures used to establish the test signals

The following 4 Sub-tests were completed according to procedures in table C.10.1.4 of 3GPP TS 34.121-1. A summary of these settings is illustrated below:

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note 1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and $\Delta_{NACK} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$, and $\Delta_{CQI} = 24/15$ with $\beta_{HS} = 24/15 * \beta_c$.

Note 3: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{HS}/\beta_c = 24/15$. For all other combinations of DPDCCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$.

HSUPA Setup Procedures used to establish the test signals

The following 5 Sub-tests were completed according to procedures in table C.11.1.3 of 3GPP TS 34.121-1. A summary of these settings is illustrated below:

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note 1)	β_{ec}	β_{ed} (Note 4) (Note 5)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/25	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1} : 47/15 β_{ed2} : 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

Note 1: For sub-test 1 to 4, Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$. For sub-test 5, Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 5/15$ with $\beta_{HS} = 5/15 * \beta_c$.

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{HS}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.

Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$.

Note 4: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

Note 5: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 6: For subtests 2, 3 and 4, UE may perform E-DPDCH power scaling at max power which could results in slightly smaller MPR values.

DC-HSDPA Setup Procedures used to establish the test signals

The following 4 Sub-tests for DC-HSDPA were completed according to procedures in table C08.1.12 of 3GPP TS 34.121-1. A summary of subtest settings is illustrated below:

Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Processes	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
Note 1:	The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table.	
Note 2:	Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.	

HSPA+ Setup Procedures used to establish the test signals

The following 1 Sub-test was completed according to procedures in table C.11.1.4 of 3GPP TS34.121. A summary of these settings is illustrated below:

Table C.11.1.4: β values for transmitter characteristics tests with HS-DPCCH and E-DCH with 16QAM

Sub-test	β_c (Note 3)	β_d	β_{HS} (Note 1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	β_{ed1} : 30/15 β_{ed2} : 30/15	β_{ed3} : 24/15 β_{ed4} : 24/15	3.5	2.5	14	105	105
Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CGI} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$. Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0). Note 3: DPDCH is not configured, therefore the β_c is set to 1 and $\beta_d = 0$ by default. Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value. Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.											

Maximum Output Power (Tune-up Limit) for W-CDMA

SAR measurement is not required for the HSDPA, HSUPA, DC-HSDPA and HSPA+. When primary mode and the adjusted SAR is ≤ 1.2 W/kg and secondary mode is $\leq 1/4$ dB higher than the primary mode

RF Air interface	Mode	Tune-up Power Limit (dBm)	
		Main Antenna	
		Maximum	Reduced
W-CDMA Band 2	R99	24.5	19.5
	HSDPA	24.5	18.5
	HSUPA	24.5	18.5
W-CDMA Band 4	R99	24.5	18.4
	HSDPA	24.5	17.4
	HSUPA	24.5	17.4
W-CDMA Band 5	R99	24.5	17.9
	HSDPA	22.5	16.9
	HSUPA	23.5	16.9

W-CDMA Band II Measured Results

Mode		UL Ch No.	Freq. (MHz)	Maximum Average Power (dBm)			Reduced Average Power (dBm)		
				Measured Pw r	MPR	Tune-up Limit	Measured Pw r	MPR	Tune-up Limit
Release 99	Rel 99 (RMC, 12.2 kbps)	9262	1852.4	24.1	N/A	24.5	18.9	N/A	19.5
		9400	1880.0	24.0			18.8		
		9538	1907.6	24.1			19.0		
HSDPA	Subtest 1	9262	1852.4	23.1	0	24.5	17.9	0	18.5
		9400	1880.0	23.0			17.8		
		9538	1907.6	23.1			18.0		
	Subtest 2	9262	1852.4	23.1	0	24.5	17.9	0	18.5
		9400	1880.0	23.0			17.8		
		9538	1907.6	23.1			18.0		
	Subtest 3	9262	1852.4	22.5	0.5	24.0	17.4	0.5	18.0
		9400	1880.0	22.5			17.3		
		9538	1907.6	22.6			17.5		
	Subtest 4	9262	1852.4	22.5	0.5	24.0	17.4	0.5	18.0
		9400	1880.0	22.5			17.3		
		9538	1907.6	22.6			17.5		
HSUPA	Subtest 1	9262	1852.4	22.8	0	24.5	17.9	0	18.5
		9400	1880.0	23.0			17.9		
		9538	1907.6	23.0			17.6		
	Subtest 2	9262	1852.4	21.6	2	22.5	16.4	2	16.5
		9400	1880.0	21.3			16.3		
		9538	1907.6	21.5			16.4		
	Subtest 3	9262	1852.4	23.0	1	23.5	16.5	1	17.5
		9400	1880.0	22.9			17.4		
		9538	1907.6	22.9			16.4		
	Subtest 4	9262	1852.4	22.8	2	22.5	16.4	2	16.5
		9400	1880.0	22.5			16.3		
		9538	1907.6	22.6			16.5		
	Subtest 5	9262	1852.4	23.0	0	24.5	17.5	0	18.50
		9400	1880.0	22.9			17.3		
		9538	1907.6	22.9			17.6		

W-CDMA Band IV Measured Results

Mode		UL Ch No.	Freq. (MHz)	Maximum Average Power (dBm)			Reduced Average Power (dBm)		
				Measured Pw r	MPR	Tune-up Limit	Measured Pw r	MPR	Tune-up Limit
Release 99	Rel 99 (RMC, 12.2 kbps)	1312	1712.4	24.2	N/A	24.5	18.3	N/A	18.4
		1413	1732.6	24.4			18.3		
		1513	1752.6	23.8			18.1		
HSDPA	Subtest 1	1312	1712.4	23.0	0	24.5	17.3	0	17.4
		1413	1732.6	23.1			17.3		
		1513	1752.6	22.9			17.1		
	Subtest 2	1312	1712.4	22.8	0	24.5	17.3	0	17.4
		1413	1732.6	22.9			17.3		
		1513	1752.6	22.7			17.1		
	Subtest 3	1312	1712.4	22.3	0.5	24.0	16.8	0.5	16.9
		1413	1732.6	22.3			16.8		
		1513	1752.6	22.1			16.6		
	Subtest 4	1312	1712.4	22.2	0.5	24.0	16.8	0.5	16.9
		1413	1732.6	22.4			16.8		
		1513	1752.6	22.2			16.6		
HSUPA	Subtest 1	1312	1712.4	22.8	0	24.5	16.9	0	17.4
		1413	1732.6	23.0			17.0		
		1513	1752.6	22.7			16.8		
	Subtest 2	1312	1712.4	22.5	2	22.5	15.3	2	15.4
		1413	1732.6	22.5			15.4		
		1513	1752.6	22.3			15.2		
	Subtest 3	1312	1712.4	22.5	1	23.5	15.5	1	16.4
		1413	1732.6	22.9			15.5		
		1513	1752.6	22.7			15.5		
	Subtest 4	1312	1712.4	23.0	2	22.5	16.7	2	15.4
		1413	1732.6	23.1			16.7		
		1513	1752.6	22.9			16.5		
	Subtest 5	1312	1712.4	23.0	0	24.5	16.9	0	17.4
		1413	1732.6	23.0			17.0		
		1513	1752.6	22.7			16.6		

W-CDMA Band V Measured Results

Mode		UL Ch No.	Freq. (MHz)	Maximum Average Power (dBm)			Reduced Average Power (dBm)		
				Measured Pw r	MPR	Tune-up Limit	Measured Pw r	MPR	Tune-up Limit
Release 99	Rel 99 (RMC, 12.2 kbps)	4132	826.4	22.5	N/A	24.5	17.7	N/A	17.9
		4183	836.6	22.5			17.7		
		4233	846.6	22.5			17.6		
HSDPA	Subtest 1	4132	826.4	21.5	0	22.5	16.7	0	16.9
		4183	836.6	21.7			16.7		
		4233	846.6	21.6			16.6		
	Subtest 2	4132	826.4	21.5	0	22.5	16.7	0	16.9
		4183	836.6	21.6			16.6		
		4233	846.6	21.6			16.6		
	Subtest 3	4132	826.4	21.1	0.5	22.0	16.2	0.5	16.4
		4183	836.6	21.0			16.2		
		4233	846.6	20.9			16.1		
	Subtest 4	4132	826.4	21.1	0.5	22.0	16.2	0.5	16.4
		4183	836.6	21.1			16.1		
		4233	846.6	21.1			16.0		
HSUPA	Subtest 1	4132	826.4	23.4	0	23.5	15.9	0	16.9
		4183	836.6	22.8			16.1		
		4233	846.6	22.6			16.1		
	Subtest 2	4132	826.4	21.8	2	21.5	15.1	2	14.9
		4183	836.6	22.0			15.0		
		4233	846.6	21.8			15.0		
	Subtest 3	4132	826.4	23.3	1	22.5	15.2	1	15.9
		4183	836.6	23.5			15.2		
		4233	846.6	23.3			15.1		
	Subtest 4	4132	826.4	23.3	2	21.5	15.1	2	14.9
		4183	836.6	23.3			15.2		
		4233	846.6	23.2			15.1		
	Subtest 5	4132	826.4	22.6	0	23.5	16.4	0	16.9
		4183	836.6	23.0			16.2		
		4233	846.6	22.8			16.1		

9.2. LTE

The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification.

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3

Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3
256 QAM	≥ 1						≤ 5

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of "NS_01".

Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR)

Network Signalling value	Requirements (subclause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N _{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	N/A

Maximum Output Power (Tune-up Limit) for LTE

According to April 2015 TCB workshop, SAR test exclusion can be applied for testing overlapping LTE bands as follows:

- a) The maximum output power, including tolerance, for the smaller band must be \leq the larger band to qualify for the SAR test exclusion.
- b) The channel bandwidth and other operating parameters for the smaller band must be fully supported by the larger band.
 - LTE Band 2 (1850-1910 MHz, Full Power only) is covered by LTE Band 25 (1850-1915 MHz)
 - LTE Band 4 (1710-1755 MHz) is covered by LTE Band 66 (1710-1780 MHz)
 - LTE Band 5 (824-849 MHz) is covered by LTE Band 26 (814-849 MHz)
 - LTE Band 17 (704-716 MHz) is covered by LTE Band 12 (699-716 MHz)
 - LTE Band 38 (2570-2620 MHz) is covered by LTE Band 41 (2496-2690 MHz)
 - LTE Band 42 (3550-3600 MHz) is covered by LTE Band 48 (3550-3700 MHz).

Maximum bandwidth does not support at least three non-overlapping channels in certain channel bandwidths. When a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing per KDB 941225 D05 SAR for LTE Devices.

LTE QPSK configuration has the highest maximum average output power per 3GPP standard.

SAR measurement is not required for the 16QAM, and 64QAM when the highest maximum output power for 16QAM, and 64QAM is \leq ½ dB higher than the QPSK or when the reported SAR for the QPSK configuration is \leq 1.45 W/kg.

Please refer to section 6.3. for LTE detail test channels.

RF Air interface	Mode	Tune-up Power Limit (dBm)	
		Main Antenna	
		Maximum	Reduced
LTE Band 2	QPSK	24.5	19.6
LTE Band 4	QPSK	23.5	18.5
LTE Band 5	QPSK	24.5	18.6
LTE Band 7	QPSK	24.5	18.5
LTE Band 12	QPSK	24.5	20.9
LTE Band 13	QPSK	24.5	20.2
LTE Band 14	QPSK	24.5	19.8
LTE Band 17	QPSK	24.5	20.9
LTE Band 25	QPSK	24.5	19.5
LTE Band 26	QPSK	24.5	18.9
LTE Band 38	QPSK	24.5	20.5
LTE Band 41	QPSK	24.5	20.5
LTE Band 42	QPSK	19.5	12.5
LTE Band 48	QPSK	19.5	13.9
LTE Band 66	QPSK	23.5	18.5

LTE Band 2 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Reduced Average Power (dBm)				
				18700	18900	19100	MPR	Tune-up Limit
				1860 MHz	1880 MHz	1900 MHz		
20 MHz	QPSK	1	0	18.3	18.2	18.6	0	19.6
		1	49	18.2	18.2	18.3	0	19.6
		1	99	18.0	18.2	18.3	0	19.6
		50	0	18.3	18.4	18.5	0	19.6
		50	24	18.2	18.3	18.4	0	19.6
		50	50	18.2	18.2	18.4	0	19.6
		100	0	18.2	18.3	18.4	0	19.6
	16QAM	1	0	18.2	18.7	18.9	0	19.6
		1	49	18.2	18.6	18.7	0	19.6
		1	99	18.0	18.5	18.7	0	19.6
		50	0	18.4	18.3	18.6	0	19.6
		50	24	18.3	18.3	18.5	0	19.6
		50	50	18.2	18.2	18.4	0	19.6
		100	0	18.3	18.3	18.5	0	19.6
	64QAM	1	0	18.7	18.6	18.9	0	19.6
		1	49	18.6	18.6	18.7	0	19.6
		1	99	18.5	18.6	18.8	0	19.6
		50	0	18.5	18.5	18.6	0	19.6
		50	24	18.4	18.4	18.5	0	19.6
		50	50	18.3	18.4	18.5	0	19.6
		100	0	18.3	18.4	18.5	0	19.6
BW (MHz)	Mode	RB Allocation	RB offset	Reduced Average Power (dBm)				
				18675	18900	19125	MPR	Tune-up Limit
				1857.5 MHz	1880 MHz	1902.5 MHz		
15 MHz	QPSK	1	0	18.3	18.4	18.6	0	19.6
		1	37	18.0	18.2	18.4	0	19.6
		1	74	18.1	18.2	18.4	0	19.6
		36	0	18.1	18.3	18.4	0	19.6
		36	20	18.1	18.2	18.4	0	19.6
		36	39	18.1	18.2	18.4	0	19.6
		75	0	18.1	18.2	18.4	0	19.6
	16QAM	1	0	18.6	18.4	18.9	0	19.6
		1	37	18.5	18.6	18.8	0	19.6
		1	74	18.5	18.6	18.8	0	19.6
		36	0	18.2	18.4	18.5	0	19.6
		36	20	18.2	18.3	18.4	0	19.6
		36	39	18.2	18.3	18.5	0	19.6
		75	0	18.3	18.3	18.4	0	19.6
	64QAM	1	0	18.6	18.7	18.9	0	19.6
		1	37	18.4	18.5	18.8	0	19.6
		1	74	18.4	18.5	18.8	0	19.6
		36	0	18.2	18.4	18.5	0	19.6
		36	20	18.3	18.4	18.5	0	19.6
		36	39	18.2	18.3	18.6	0	19.6
		75	0	18.3	18.3	18.5	0	19.6
BW (MHz)	Mode	RB Allocation	RB offset	Reduced Average Power (dBm)				
				18650	18900	19150	MPR	Tune-up Limit
				1855 MHz	1880 MHz	1905 MHz		
10 MHz	QPSK	1	0	18.0	18.2	18.5	0	19.6
		1	25	18.0	18.1	18.4	0	19.6
		1	49	18.0	18.1	18.4	0	19.6
		25	0	18.1	18.2	18.5	0	19.6
		25	12	18.0	18.2	18.5	0	19.6
		25	25	18.1	18.2	18.5	0	19.6
		50	0	18.1	18.2	18.4	0	19.6
	16QAM	1	0	18.1	18.3	18.6	0	19.6
		1	25	18.0	18.3	18.5	0	19.6
		1	49	17.9	18.2	18.5	0	19.6
		25	0	18.2	18.4	18.6	0	19.6
		25	12	18.1	18.4	18.7	0	19.6
		25	25	18.2	18.3	18.6	0	19.6
		50	0	18.2	18.3	18.5	0	19.6
	64QAM	1	0	18.5	18.6	18.9	0	19.6
		1	25	18.3	18.5	18.3	0	19.6
		1	49	18.4	18.5	18.8	0	19.6
		25	0	18.2	18.4	18.6	0	19.6
		25	12	18.2	18.3	18.7	0	19.6
		25	25	18.2	18.3	18.6	0	19.6
		50	0	18.2	18.3	18.5	0	19.6

LTE Band 2 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Reduced Average Power (dBm)					
				18625	18900	19175	MPR	Tune-up Limit	
				1852.5 MHz	1880 MHz	1907.5 MHz			
5 MHz	QPSK	1	0	18.1	18.2	18.5	0	19.6	
		1	12	18.1	18.2	18.5	0	19.6	
		1	24	18.0	18.2	18.4	0	19.6	
		12	0	18.0	18.2	18.5	0	19.6	
		12	7	18.1	18.2	18.5	0	19.6	
		12	13	18.0	18.2	18.4	0	19.6	
		25	0	18.0	18.2	18.5	0	19.6	
	16QAM	1	0	18.2	18.3	18.7	0	19.6	
		1	12	18.2	18.3	18.6	0	19.6	
		1	24	18.2	18.3	18.6	0	19.6	
		12	0	18.2	18.4	18.6	0	19.6	
		12	7	18.2	18.3	18.6	0	19.6	
		12	13	18.2	18.3	18.6	0	19.6	
		25	0	18.1	18.2	18.5	0	19.6	
	64QAM	1	0	18.1	18.2	18.5	0	19.6	
		1	12	18.0	18.1	18.4	0	19.6	
		1	24	17.9	18.1	18.4	0	19.6	
		12	0	18.2	18.3	18.6	0	19.6	
		12	7	18.2	18.3	18.6	0	19.6	
		12	13	18.2	18.3	18.6	0	19.6	
		25	0	18.1	18.2	18.5	0	19.6	
	3 MHz	QPSK	1	0	18.0	18.1	18.4	0	19.6
			1	8	18.1	18.2	18.4	0	19.6
			1	14	18.0	18.1	18.3	0	19.6
8			0	18.0	18.2	18.4	0	19.6	
8			4	18.0	18.2	18.4	0	19.6	
8			7	18.0	18.1	18.4	0	19.6	
15			0	18.0	18.2	18.4	0	19.6	
16QAM		1	0	18.2	18.2	18.5	0	19.6	
		1	8	18.2	18.3	18.6	0	19.6	
		1	14	18.1	18.2	18.4	0	19.6	
		8	0	18.2	18.3	18.5	0	19.6	
		8	4	18.2	18.3	18.5	0	19.6	
		8	7	18.2	18.3	18.6	0	19.6	
		15	0	18.1	18.2	18.4	0	19.6	
64QAM		1	0	18.4	18.5	18.8	0	19.6	
		1	8	18.5	18.6	18.3	0	19.6	
		1	14	18.3	18.4	18.8	0	19.6	
		8	0	18.2	18.3	18.6	0	19.6	
		8	4	18.2	18.3	18.6	0	19.6	
		8	7	18.2	18.3	18.6	0	19.6	
		15	0	18.1	18.2	18.5	0	19.6	
1.4 MHz		QPSK	1	0	18.0	18.0	18.2	0	19.6
			1	3	18.0	18.1	18.4	0	19.6
			1	5	18.0	18.1	18.3	0	19.6
	3		0	18.0	18.0	18.3	0	19.6	
	3		1	18.1	18.1	18.3	0	19.6	
	3		3	18.0	18.1	18.4	0	19.6	
	6		0	17.9	18.1	18.3	0	19.6	
	16QAM	1	0	18.4	18.1	18.4	0	19.6	
		1	3	18.5	18.2	18.5	0	19.6	
		1	5	18.4	18.2	18.4	0	19.6	
		3	0	18.2	18.4	18.6	0	19.6	
		3	1	18.3	18.4	18.6	0	19.6	
		3	3	18.3	18.4	18.6	0	19.6	
		6	0	18.0	18.3	18.6	0	19.6	
	64QAM	1	0	18.4	18.5	18.8	0	19.6	
		1	3	18.5	18.6	18.9	0	19.6	
		1	5	18.4	18.5	18.3	0	19.6	
		3	0	18.4	18.5	18.8	0	19.6	
		3	1	18.5	18.6	18.8	0	19.6	
		3	3	18.4	18.5	18.8	0	19.6	
		6	0	18.0	18.1	18.4	0	19.6	

LTE Band 7 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				20850	21100	21350	MFR	Tune-up Limit	20850	21100	21350	MFR	Tune-up Limit
				2510 MHz	2535 MHz	2560 MHz			2510 MHz	2535 MHz	2560 MHz		
20 MHz	QPSK	1	0	23.1	23.2	22.9	0	24.5	17.5	17.5	17.3	0	18.5
		1	49	23.0	22.9	22.7	0	24.5	17.4	17.2	17.2	0	18.5
		1	99	22.9	22.7	22.6	0	24.5	17.4	17.0	17.0	0	18.5
		50	0	22.1	22.1	21.8	1	23.5	17.6	17.4	17.3	0	18.5
		50	24	22.1	22.0	21.7	1	23.5	17.6	17.4	17.3	0	18.5
		50	50	22.0	21.9	21.7	1	23.5	17.5	17.3	17.2	0	18.5
	16QAM	100	0	22.0	22.0	21.7	1	23.5	17.5	17.4	17.2	0	18.5
		1	0	22.6	22.7	22.5	1	23.5	17.9	17.6	17.8	0	18.5
		1	49	22.5	22.3	22.3	1	23.5	17.8	17.7	17.7	0	18.5
		1	99	22.5	22.1	22.2	1	23.5	17.7	17.5	17.5	0	18.5
		50	0	21.2	21.1	21.0	2	22.5	17.7	17.5	17.4	0	18.5
		50	24	21.2	21.1	20.9	2	22.5	17.7	17.5	17.3	0	18.5
	64QAM	50	50	21.1	21.0	20.8	2	22.5	17.6	17.4	17.3	0	18.5
		100	0	21.1	21.1	20.8	2	22.5	17.6	17.5	17.3	0	18.5
		1	0	22.5	22.5	22.5	2	22.5	18.0	18.0	17.8	0	18.5
		1	49	22.5	22.5	22.4	2	22.5	17.7	17.6	17.7	0	18.5
		1	99	22.5	22.3	22.5	2	22.5	17.9	17.4	17.5	0	18.5
		50	0	21.4	21.4	21.1	3	21.5	17.8	17.7	17.6	0	18.5
15 MHz	QPSK	50	24	21.5	21.3	21.1	3	21.5	17.9	17.6	17.5	0	18.5
		50	50	21.3	21.2	21.1	3	21.5	17.8	17.5	17.5	0	18.5
		100	0	21.3	21.3	21.0	3	21.5	17.7	17.6	17.5	0	18.5
		1	0	23.1	23.2	22.8	0	24.5	17.6	17.5	17.3	0	18.5
		1	37	23.0	22.9	22.7	0	24.5	17.5	17.2	17.3	0	18.5
		1	74	22.9	22.7	22.6	0	24.5	17.4	17.1	17.1	0	18.5
	16QAM	36	0	22.1	22.0	21.7	1	23.5	17.5	17.4	17.2	0	18.5
		36	20	22.0	22.0	21.8	1	23.5	17.5	17.4	17.3	0	18.5
		36	39	22.0	21.9	21.7	1	23.5	17.5	17.3	17.2	0	18.5
		75	0	21.9	21.9	21.7	1	23.5	17.5	17.3	17.2	0	18.5
		1	0	22.5	22.6	21.8	1	23.5	17.6	17.9	17.7	0	18.5
		1	37	22.5	22.3	21.7	1	23.5	17.5	17.5	17.6	0	18.5
	64QAM	1	74	22.4	22.1	21.6	1	23.5	17.9	17.4	17.4	0	18.5
		36	0	21.2	21.0	20.8	2	22.5	17.6	17.5	17.3	0	18.5
		36	20	21.1	21.0	20.9	2	22.5	17.6	17.4	17.4	0	18.5
		36	39	21.1	20.9	20.8	2	22.5	17.6	17.4	17.3	0	18.5
		75	0	21.1	21.0	20.8	2	22.5	17.6	17.4	17.3	0	18.5
		1	0	22.4	22.4	22.2	2	22.5	18.0	17.9	17.7	0	18.5
10 MHz	QPSK	1	37	22.5	22.4	22.2	2	22.5	17.6	17.7	17.6	0	18.5
		1	74	22.5	22.2	22.1	2	22.5	17.8	17.5	17.5	0	18.5
		36	0	21.4	21.4	21.1	3	21.5	17.7	17.5	17.4	0	18.5
		36	20	21.3	21.3	21.2	3	21.5	17.7	17.5	17.5	0	18.5
		36	39	21.4	21.2	21.1	3	21.5	17.7	17.4	17.4	0	18.5
		75	0	21.3	21.3	21.0	3	21.5	17.6	17.5	17.3	0	18.5
	16QAM	1	0	22.2	22.1	22.2	1	23.5	17.6	17.6	17.4	0	18.5
		1	25	22.1	21.8	22.1	1	23.5	17.5	17.4	17.3	0	18.5
		1	49	22.1	21.8	22.0	1	23.5	17.5	17.3	17.2	0	18.5
		25	0	21.3	21.0	20.9	2	22.5	17.7	17.5	17.5	0	18.5
		25	12	21.3	21.1	20.9	2	22.5	17.7	17.5	17.5	0	18.5
		25	25	21.2	20.9	20.8	2	22.5	17.6	17.5	17.4	0	18.5
	64QAM	50	0	21.2	21.0	20.8	2	22.5	17.6	17.4	17.4	0	18.5
		1	0	22.5	22.5	22.2	2	22.5	17.9	17.9	17.8	0	18.5
		1	25	22.5	22.4	22.1	2	22.5	17.8	17.7	17.6	0	18.5
		1	49	22.4	22.3	22.1	2	22.5	17.9	17.3	17.5	0	18.5
		25	0	21.4	21.2	21.2	3	21.5	17.7	17.5	17.5	0	18.5
		25	12	21.4	21.2	21.2	3	21.5	17.7	17.5	17.5	0	18.5

LTE Band 7 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				20775	21100	21425	MPR	Tune-up Limit	20775	21100	21425	MPR	Tune-up Limit
				2502.5 MHz	2535 MHz	2567.5 MHz			2502.5 MHz	2535 MHz	2567.5 MHz		
5 MHz	QPSK	1	0	23.1	22.8	22.8	0	24.5	17.5	17.2	17.3	0	18.5
		1	12	23.0	22.8	22.8	0	24.5	17.4	17.2	17.2	0	18.5
		1	24	23.0	22.7	22.7	0	24.5	17.4	17.2	17.1	0	18.5
		12	0	21.9	21.8	21.8	1	23.5	17.5	17.3	17.3	0	18.5
		12	7	22.0	21.9	21.8	1	23.5	17.5	17.3	17.3	0	18.5
		12	13	22.0	21.8	21.8	1	23.5	17.5	17.3	17.3	0	18.5
		25	0	22.0	21.8	21.8	1	23.5	17.5	17.3	17.3	0	18.5
	16QAM	1	0	22.2	22.4	21.9	1	23.5	17.7	17.5	17.5	0	18.5
		1	12	22.2	22.4	21.9	1	23.5	17.6	17.5	17.4	0	18.5
		1	24	22.1	22.3	21.8	1	23.5	17.6	17.4	17.4	0	18.5
		12	0	21.1	21.1	20.9	2	22.5	17.6	17.5	17.4	0	18.5
		12	7	21.2	21.0	20.9	2	22.5	17.6	17.5	17.4	0	18.5
		12	13	21.1	21.0	20.9	2	22.5	17.6	17.5	17.4	0	18.5
	64QAM	25	0	21.1	21.0	20.8	2	22.5	17.5	17.4	17.3	0	18.5
		1	0	22.2	22.4	22.3	2	22.5	17.5	17.3	17.3	0	18.5
		1	12	22.2	22.4	22.2	2	22.5	17.4	17.3	17.2	0	18.5
		1	24	22.2	22.3	22.2	2	22.5	17.4	17.3	17.2	0	18.5
		12	0	21.4	21.1	21.1	3	21.5	17.7	17.5	17.4	0	18.5
		12	7	21.4	21.1	21.2	3	21.5	17.6	17.5	17.4	0	18.5
		12	13	21.3	21.1	21.1	3	21.5	17.6	17.5	17.4	0	18.5
		25	0	21.3	21.1	21.1	3	21.5	17.5	17.4	17.3	0	18.5

LTE Band 12 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				23095 707.5 MHz			MFR	Tune-up Limit	23095 707.5 MHz			MFR	Tune-up Limit
10 MHz	QPSK	1	0	23.7			0	24.5	19.8			0	20.9
		1	25	23.7			0	24.5	19.8			0	20.9
		1	49	23.6			0	24.5	19.6			0	20.9
		25	0	22.8			1	23.5	19.9			0	20.9
		25	12	22.8			1	23.5	19.9			0	20.9
		25	25	22.7			1	23.5	19.8			0	20.9
		50	0	22.8			1	23.5	19.8			0	20.9
	16QAM	1	0	22.7			1	23.5	19.9			0	20.9
		1	25	22.7			1	23.5	19.9			0	20.9
		1	49	22.6			1	23.5	19.7			0	20.9
		25	0	21.9			2	22.5	20.0			0	20.9
		25	12	21.8			2	22.5	20.0			0	20.9
		25	25	21.8			2	22.5	19.9			0	20.9
		50	0	21.8			2	22.5	19.9			0	20.9
	64QAM	1	0	21.0			2	22.5	20.2			0	20.9
		1	25	21.0			2	22.5	20.2			0	20.9
		1	49	20.9			2	22.5	20.1			0	20.9
		25	0	20.2			3	21.5	20.0			0	20.9
		25	12	20.2			3	21.5	20.0			0	20.9
		25	25	20.1			3	21.5	19.9			0	20.9
50		0	20.1			3	21.5	19.9			0	20.9	
BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				23035 701.5 MHz	23095 707.5 MHz	23155 713.5 MHz	MFR	Tune-up Limit	23035 701.5 MHz	23095 707.5 MHz	23155 713.5 MHz	MFR	Tune-up Limit
5 MHz	QPSK	1	0	24.1	23.8	23.8	0	24.5	19.8	19.8	19.9	0	20.9
		1	12	24.0	23.8	23.9	0	24.5	19.8	19.9	20.0	0	20.9
		1	24	24.0	23.8	23.8	0	24.5	19.8	19.8	19.9	0	20.9
		12	0	23.1	22.8	22.8	1	23.5	19.9	19.9	19.9	0	20.9
		12	7	23.0	22.8	22.9	1	23.5	19.8	19.8	20.0	0	20.9
		12	13	23.1	22.7	22.9	1	23.5	19.8	19.8	19.9	0	20.9
		25	0	23.1	22.8	22.8	1	23.5	19.8	19.8	19.9	0	20.9
	16QAM	1	0	22.9	22.9	23.4	1	23.5	20.0	19.9	20.1	0	20.9
		1	12	22.8	22.9	23.4	1	23.5	20.0	20.0	20.1	0	20.9
		1	24	22.9	22.9	23.4	1	23.5	19.9	20.0	20.1	0	20.9
		12	0	22.2	21.9	22.0	2	22.5	20.0	20.0	20.0	0	20.9
		12	7	22.2	21.9	22.1	2	22.5	19.9	19.9	20.1	0	20.9
		12	13	22.3	21.9	22.1	2	22.5	19.9	19.9	20.0	0	20.9
		25	0	22.3	21.8	21.9	2	22.5	19.8	19.8	19.9	0	20.9
	64QAM	1	0	22.4	22.0	22.5	2	22.5	19.8	19.7	19.9	0	20.9
		1	12	22.4	22.0	22.5	2	22.5	19.8	19.8	19.9	0	20.9
		1	24	22.3	22.0	22.4	2	22.5	19.7	19.8	19.9	0	20.9
		12	0	21.1	21.2	21.1	3	21.5	19.9	20.0	20.0	0	20.9
		12	7	21.2	21.2	21.2	3	21.5	19.9	20.0	20.1	0	20.9
		12	13	21.2	21.2	21.2	3	21.5	19.9	20.0	20.1	0	20.9
25		0	21.2	21.1	21.1	3	21.5	19.8	19.9	19.9	0	20.9	
BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				23025 700.5 MHz	23095 707.5 MHz	23165 714.5 MHz	MFR	Tune-up Limit	23025 700.5 MHz	23095 707.5 MHz	23165 714.5 MHz	MFR	Tune-up Limit
3 MHz	QPSK	1	0	23.6	23.7	23.9	0	24.5	19.7	19.8	19.9	0	20.9
		1	8	23.6	23.8	23.9	0	24.5	19.8	19.9	19.9	0	20.9
		1	14	23.6	23.7	23.8	0	24.5	19.8	19.7	19.8	0	20.9
		8	0	22.6	22.7	22.9	1	23.5	19.8	19.8	19.9	0	20.9
		8	4	22.6	22.7	22.9	1	23.5	19.8	19.9	19.9	0	20.9
		8	7	22.7	22.8	22.9	1	23.5	19.8	19.9	19.9	0	20.9
		15	0	22.7	22.7	22.9	1	23.5	19.8	19.8	19.9	0	20.9
	16QAM	1	0	22.7	22.7	23.3	1	23.5	19.9	20.0	20.1	0	20.9
		1	8	22.7	22.7	23.3	1	23.5	19.9	20.0	20.1	0	20.9
		1	14	22.7	22.6	23.3	1	23.5	19.9	19.9	20.0	0	20.9
		8	0	21.7	21.9	22.0	2	22.5	19.9	20.0	20.0	0	20.9
		8	4	21.7	21.9	22.0	2	22.5	19.9	20.0	20.1	0	20.9
		8	7	21.8	21.9	22.0	2	22.5	20.0	20.0	20.1	0	20.9
		15	0	21.7	21.8	21.9	2	22.5	19.9	19.9	20.0	0	20.9
	64QAM	1	0	22.4	22.3	22.2	2	22.5	20.1	20.2	20.3	0	20.9
		1	8	22.4	22.4	22.1	2	22.5	20.2	20.3	19.9	0	20.9
		1	14	22.4	22.3	22.5	2	22.5	20.1	19.9	19.9	0	20.9
		8	0	21.2	21.3	21.3	3	21.5	19.9	20.0	20.1	0	20.9
		8	4	21.2	21.3	21.3	3	21.5	20.0	20.0	20.1	0	20.9
		8	7	21.3	21.3	21.3	3	21.5	20.0	20.0	20.1	0	20.9
15		0	21.2	21.3	21.4	3	21.5	19.9	19.9	20.0	0	20.9	

LTE Band 12 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				23017	23095	23173	MPR	Tune-up Limit	23017	23095	23173	MPR	Tune-up Limit
				699.7 MHz	707.5 MHz	715.3 MHz			699.7 MHz	707.5 MHz	715.3 MHz		
1.4 MHz	QPSK	1	0	23.4	23.7	23.8	0	24.5	19.7	19.7	19.8	0	20.9
		1	3	23.5	23.7	23.8	0	24.5	19.8	19.8	19.9	0	20.9
		1	5	23.5	23.7	23.7	0	24.5	19.7	19.7	19.8	0	20.9
		3	0	23.4	23.6	23.8	0	24.5	19.6	19.7	19.8	0	20.9
		3	1	23.5	23.7	23.8	0	24.5	19.7	19.8	19.9	0	20.9
		3	3	23.5	23.7	23.8	0	24.5	19.7	19.8	19.8	0	20.9
		6	0	22.5	22.7	22.8	1	23.5	19.7	19.8	19.9	0	20.9
	16QAM	1	0	22.6	22.8	23.2	1	23.5	19.9	19.8	19.9	0	20.9
		1	3	22.6	22.9	23.2	1	23.5	19.9	19.9	20.0	0	20.9
		1	5	22.6	22.8	23.2	1	23.5	19.9	19.8	19.9	0	20.9
		3	0	22.7	22.7	23.0	1	23.5	19.8	20.0	20.1	0	20.9
		3	1	22.8	22.8	23.0	1	23.5	19.8	20.1	20.1	0	20.9
		3	3	22.8	22.8	23.0	1	23.5	19.8	20.0	20.1	0	20.9
		6	0	21.7	21.8	21.8	2	22.5	19.9	20.0	20.1	0	20.9
	64QAM	1	0	22.1	22.4	22.3	2	22.5	20.1	20.2	20.3	0	20.9
		1	3	22.2	22.2	22.3	2	22.5	20.2	20.3	19.9	0	20.9
		1	5	22.2	22.4	22.3	2	22.5	20.1	20.0	19.9	0	20.9
		3	0	21.9	22.4	22.3	2	22.5	20.0	20.1	20.2	0	20.9
		3	1	22.0	22.4	22.4	2	22.5	20.1	20.2	20.3	0	20.9
		3	3	22.0	22.4	22.4	2	22.5	20.0	20.2	20.2	0	20.9
		6	0	21.0	21.1	21.5	3	21.5	19.7	19.8	19.9	0	20.9

LTE Band 13 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)				Reduced Average Power (dBm)			
				23230		MFR	Tune-up Limit	23230		MFR	Tune-up Limit
				782 MHz				782 MHz			
10 MHz	QPSK	1	0	24.4	0	24.5	19.2	0	20.2		
		1	25	24.3	0	24.5	19.3	0	20.2		
		1	49	24.1	0	24.5	19.1	0	20.2		
		25	0	23.5	1	23.5	19.3	0	20.2		
		25	12	23.4	1	23.5	19.4	0	20.2		
		25	25	23.3	1	23.5	19.3	0	20.2		
		50	0	23.4	1	23.5	19.3	0	20.2		
	16QAM	1	0	23.4	1	23.5	19.3	0	20.2		
		1	25	23.3	1	23.5	19.4	0	20.2		
		1	49	23.1	1	23.5	19.3	0	20.2		
		25	0	22.3	2	22.5	19.5	0	20.2		
		25	12	22.5	2	22.5	19.5	0	20.2		
		25	25	22.4	2	22.5	19.5	0	20.2		
		50	0	22.4	2	22.5	19.5	0	20.2		
	64QAM	1	0	22.1	2	22.5	19.5	0	20.2		
		1	25	22.1	2	22.5	19.6	0	20.2		
		1	49	22.0	2	22.5	19.4	0	20.2		
		25	0	21.1	3	21.5	19.5	0	20.2		
		25	12	21.0	3	21.5	19.5	0	20.2		
		25	25	21.0	3	21.5	19.5	0	20.2		
50		0	21.0	3	21.5	19.5	0	20.2			
5 MHz	QPSK	1	0	23.9	0	24.5	19.5	0	20.2		
		1	12	24.0	0	24.5	19.5	0	20.2		
		1	24	23.9	0	24.5	19.4	0	20.2		
		12	0	23.0	1	23.5	19.4	0	20.2		
		12	7	23.0	1	23.5	19.4	0	20.2		
		12	13	23.0	1	23.5	19.3	0	20.2		
		25	0	23.0	1	23.5	19.5	0	20.2		
	16QAM	1	0	23.5	1	23.5	19.5	0	20.2		
		1	12	23.5	1	23.5	19.6	0	20.2		
		1	24	23.5	1	23.5	19.5	0	20.2		
		12	0	22.2	2	22.5	19.6	0	20.2		
		12	7	22.2	2	22.5	19.5	0	20.2		
		12	13	22.2	2	22.5	19.5	0	20.2		
		25	0	22.1	2	22.5	19.4	0	20.2		
	64QAM	1	0	21.6	2	22.5	19.6	0	20.2		
		1	12	21.5	2	22.5	19.8	0	20.2		
		1	24	21.4	2	22.5	19.6	0	20.2		
		12	0	21.0	3	21.5	19.5	0	20.2		
		12	7	21.0	3	21.5	19.6	0	20.2		
		12	13	20.9	3	21.5	19.5	0	20.2		
25		0	21.0	3	21.5	19.5	0	20.2			

LTE Band 14 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)				Reduced Average Power (dBm)			
				23330		MPR	Tune-up Limit	23330		MPR	Tune-up Limit
				793 MHz				793 MHz			
10 MHz	QPSK	1	0	24.0	0	24.5	18.8	0	19.8		
		1	25	23.8	0	24.5	18.7	0	19.8		
		1	49	23.7	0	24.5	18.6	0	19.8		
		25	0	23.0	1	23.5	18.8	0	19.8		
		25	12	23.0	1	23.5	18.8	0	19.8		
		25	25	22.9	1	23.5	18.8	0	19.8		
		50	0	22.9	1	23.5	18.8	0	19.8		
	16QAM	1	0	23.1	1	23.5	19.0	0	19.8		
		1	25	23.0	1	23.5	18.8	0	19.8		
		1	49	22.9	1	23.5	18.7	0	19.8		
		25	0	22.2	2	22.5	19.0	0	19.8		
		25	12	22.2	2	22.5	19.0	0	19.8		
		25	25	22.1	2	22.5	18.9	0	19.8		
		50	0	22.1	2	22.5	18.9	0	19.8		
	64QAM	1	0	20.9	2	22.5	19.2	0	19.8		
		1	25	20.8	2	22.5	19.1	0	19.8		
		1	49	20.6	2	22.5	18.9	0	19.8		
		25	0	19.8	3	21.5	19.0	0	19.8		
		25	12	19.8	3	21.5	19.0	0	19.8		
		25	25	19.7	3	21.5	18.9	0	19.8		
		50	0	19.7	3	21.5	18.9	0	19.8		
	5 MHz	QPSK	1	0	24.1	0	24.5	18.9	0	19.8	
			1	12	24.0	0	24.5	18.8	0	19.8	
			1	24	24.0	0	24.5	18.7	0	19.8	
12			0	23.0	1	23.5	18.8	0	19.8		
12			7	23.0	1	23.5	18.8	0	19.8		
12			13	22.9	1	23.5	18.8	0	19.8		
16QAM		25	0	23.0	1	23.5	18.8	0	19.8		
		1	0	23.3	1	23.5	19.0	0	19.8		
		1	12	23.2	1	23.5	18.9	0	19.8		
		1	24	23.1	1	23.5	18.9	0	19.8		
		12	0	22.2	2	22.5	19.0	0	19.8		
		12	7	22.2	2	22.5	19.0	0	19.8		
64QAM		12	13	22.1	2	22.5	18.9	0	19.8		
		25	0	22.1	2	22.5	18.8	0	19.8		
		1	0	21.1	2	22.5	18.9	0	19.8		
		1	12	21.0	2	22.5	18.8	0	19.8		
		1	24	20.9	2	22.5	18.7	0	19.8		
		12	0	19.7	3	21.5	19.0	0	19.8		
		12	7	19.7	3	21.5	19.0	0	19.8		
		12	13	19.7	3	21.5	18.9	0	19.8		
		25	0	19.7	3	21.5	18.9	0	19.8		

LTE Band 25 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)					
				26140	26365	26590	MFR	Tune-up Limit	26140	26365	26590	MFR	Tune-up Limit	
				1860 MHz	1882.5 MHz	1905 MHz			1860 MHz	1882.5 MHz	1905 MHz			
20 MHz	QPSK	1	0	23.4	23.2	24.0	0	24.5	18.0	17.9	18.1	0	19.5	
		1	49	23.1	23.1	23.2	0	24.5	17.7	17.8	17.9	0	19.5	
		1	99	23.1	23.1	23.4	0	24.5	17.6	17.7	18.0	0	19.5	
		50	0	22.3	22.2	22.6	1	23.5	17.9	17.8	18.0	0	19.5	
		50	24	22.2	22.1	22.5	1	23.5	17.8	17.7	18.0	0	19.5	
		50	50	22.2	22.1	22.4	1	23.5	17.8	17.7	17.9	0	19.5	
		100	0	22.2	22.1	22.8	1	23.5	17.8	17.7	18.5	0	19.5	
		16QAM	1	0	22.9	22.7	23.1	1	23.5	18.5	18.3	18.6	0	19.5
			1	49	22.6	22.5	22.8	1	23.5	18.2	18.2	18.4	0	19.5
			1	99	22.5	22.5	22.9	1	23.5	18.1	18.1	18.5	0	19.5
	50		0	21.4	21.2	21.4	2	22.5	18.0	17.8	18.1	0	19.5	
	50		24	21.3	21.2	21.4	2	22.5	17.8	17.8	18.1	0	19.5	
	50		50	21.3	21.2	21.3	2	22.5	17.8	17.8	18.0	0	19.5	
	100		0	21.3	21.2	21.9	2	22.5	17.9	17.8	18.3	0	19.5	
	64QAM		1	0	21.8	21.7	20.8	2	22.5	18.4	18.3	18.6	0	19.5
			1	49	21.6	21.6	21.5	2	22.5	18.2	18.1	18.3	0	19.5
			1	99	21.5	21.5	21.6	2	22.5	18.1	18.1	18.4	0	19.5
		50	0	20.5	20.4	20.4	3	21.5	18.1	18.0	18.2	0	19.5	
		50	24	20.4	20.3	20.4	3	21.5	18.0	17.9	18.2	0	19.5	
		50	50	20.3	20.3	20.3	3	21.5	17.9	17.9	18.1	0	19.5	
		100	0	20.4	20.3	19.5	3	21.5	17.9	17.9	18.2	0	19.5	
		15 MHz	QPSK	1	0	23.8	23.3	23.6	0	24.5	18.0	17.9	18.2	0
	1			37	23.6	23.3	23.3	0	24.5	17.9	17.8	17.9	0	19.5
	1			74	23.5	23.3	23.5	0	24.5	17.8	17.8	18.1	0	19.5
36	0			22.6	22.1	22.5	1	23.5	17.9	17.7	18.1	0	19.5	
36	20			22.5	22.1	22.4	1	23.5	17.8	17.6	17.9	0	19.5	
36	39			22.4	22.1	22.3	1	23.5	17.8	17.7	17.9	0	19.5	
75	0			22.4	22.0	22.4	1	23.5	17.8	17.7	18.0	0	19.5	
16QAM	1			0	23.2	22.8	23.1	1	23.5	18.5	18.3	18.5	0	19.5
	1		37	22.9	22.5	22.7	1	23.5	18.0	18.2	18.3	0	19.5	
	1		74	22.8	22.7	22.9	1	23.5	17.9	18.2	18.5	0	19.5	
	36		0	21.5	21.2	21.5	2	22.5	18.0	17.8	18.1	0	19.5	
	36		20	21.3	21.1	21.4	2	22.5	17.8	17.7	18.0	0	19.5	
	36		39	21.3	21.1	21.4	2	22.5	17.8	17.8	17.9	0	19.5	
	75		0	21.3	21.2	21.5	2	22.5	17.9	17.8	18.0	0	19.5	
	64QAM		1	0	21.8	21.5	22.0	2	22.5	18.4	18.2	18.6	0	19.5
1			37	21.6	21.5	21.7	2	22.5	18.2	18.1	18.3	0	19.5	
1			74	21.5	21.5	21.9	2	22.5	18.1	18.2	18.4	0	19.5	
36			0	20.5	20.3	20.7	3	21.5	18.0	17.9	18.2	0	19.5	
36			20	20.3	20.2	20.6	3	21.5	17.9	17.8	18.1	0	19.5	
36			39	20.3	20.2	20.5	3	21.5	17.9	17.9	18.0	0	19.5	
75			0	20.3	20.2	20.6	3	21.5	17.9	17.8	18.3	0	19.5	
10 MHz			QPSK	1	0	23.7	23.4	23.7	0	24.5	17.9	17.7	18.0	0
	1			25	23.6	23.5	23.7	0	24.5	17.8	17.7	17.9	0	19.5
	1			49	23.5	23.6	23.7	0	24.5	17.6	17.7	17.9	0	19.5
	25	0		22.7	22.5	22.7	1	23.5	17.9	17.7	17.9	0	19.5	
	25	12		22.7	22.6	22.7	1	23.5	17.9	17.8	17.9	0	19.5	
	25	25		22.5	22.5	22.8	1	23.5	17.7	17.7	18.0	0	19.5	
	50	0		22.6	22.4	22.7	1	23.5	17.8	17.6	17.9	0	19.5	
	16QAM	1		0	22.8	22.6	22.8	1	23.5	18.1	17.8	18.1	0	19.5
		1	25	22.7	22.6	22.7	1	23.5	17.9	17.8	18.0	0	19.5	
		1	49	22.6	22.6	22.8	1	23.5	17.8	17.8	18.1	0	19.5	
		25	0	21.8	21.6	21.8	2	22.5	18.1	17.8	18.1	0	19.5	
		25	12	21.8	21.6	21.7	2	22.5	18.1	17.9	18.1	0	19.5	
		25	25	21.6	21.6	21.7	2	22.5	17.9	17.9	18.2	0	19.5	
		50	0	21.6	21.4	21.7	2	22.5	17.9	17.8	18.0	0	19.5	
		64QAM	1	0	21.9	21.5	21.7	2	22.5	18.4	18.1	18.4	0	19.5
	1		25	21.8	21.6	21.7	2	22.5	18.2	18.1	18.3	0	19.5	
	1		49	21.7	21.7	21.7	2	22.5	18.1	18.2	18.4	0	19.5	
	25		0	20.6	20.3	20.5	3	21.5	18.0	17.8	18.0	0	19.5	
	25		12	20.7	20.4	20.5	3	21.5	18.0	17.9	18.1	0	19.5	
	25		25	20.5	20.4	20.6	3	21.5	17.9	17.9	18.1	0	19.5	
	50		0	20.5	20.3	20.5	3	21.5	17.8	17.8	18.0	0	19.5	

LTE Band 25 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				26065	26365	26665	MPR	Tune-up Limit	26065	26365	26665	MPR	Tune-up Limit
				1852.5 MHz	1882.5 MHz	1912.5 MHz			1852.5 MHz	1882.5 MHz	1912.5 MHz		
5 MHz	QPSK	1	0	23.8	23.5	23.8	0	24.5	17.9	17.8	18.1	0	19.5
		1	12	23.8	23.5	23.8	0	24.5	17.8	17.8	18.0	0	19.5
		1	24	23.7	23.5	23.9	0	24.5	17.8	17.8	18.1	0	19.5
		12	0	22.8	22.6	22.8	1	23.5	17.9	17.8	18.0	0	19.5
		12	7	22.8	22.6	22.8	1	23.5	17.9	17.7	18.0	0	19.5
		12	13	22.7	22.5	22.8	1	23.5	17.9	17.7	18.1	0	19.5
		25	0	22.7	22.6	21.7	1	23.5	17.9	17.7	18.0	0	19.5
	16QAM	1	0	23.0	23.1	22.9	1	23.5	18.5	18.0	18.2	0	19.5
		1	12	22.9	23.1	22.8	1	23.5	18.1	17.9	18.2	0	19.5
		1	24	22.9	23.0	23.0	1	23.5	18.0	17.9	18.3	0	19.5
		12	0	21.8	21.7	21.9	2	22.5	18.1	17.9	18.2	0	19.5
		12	7	21.9	21.7	21.9	2	22.5	18.1	17.9	18.2	0	19.5
		12	13	21.8	21.6	21.9	2	22.5	18.1	17.9	18.2	0	19.5
		25	0	21.7	21.6	20.9	2	22.5	18.0	17.8	18.1	0	19.5
	64QAM	1	0	21.5	21.2	21.5	2	22.5	18.0	17.8	18.0	0	19.5
		1	12	21.5	21.3	21.6	2	22.5	17.9	17.7	18.0	0	19.5
		1	24	21.5	21.2	21.7	2	22.5	17.9	17.7	18.1	0	19.5
		12	0	20.7	20.4	20.8	3	21.5	18.0	17.9	18.1	0	19.5
		12	7	20.7	20.4	20.8	3	21.5	18.0	17.9	18.2	0	19.5
		12	13	20.7	20.4	20.8	3	21.5	18.0	17.8	18.2	0	19.5
		25	0	20.6	20.3	20.9	3	21.5	17.9	17.8	18.1	0	19.5

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				26055	26365	26675	MPR	Tune-up Limit	26055	26365	26675	MPR	Tune-up Limit
				1851.5 MHz	1882.5 MHz	1913.5 MHz			1851.5 MHz	1882.5 MHz	1913.5 MHz		
3 MHz	QPSK	1	0	23.6	23.3	23.5	0	24.5	17.8	17.7	18.0	0	19.5
		1	8	23.7	23.5	23.7	0	24.5	17.9	17.8	18.1	0	19.5
		1	14	23.6	23.3	23.7	0	24.5	17.8	17.7	18.0	0	19.5
		8	0	22.6	22.4	22.7	1	23.5	17.9	17.8	18.0	0	19.5
		8	4	22.6	22.4	22.8	1	23.5	17.9	17.7	18.1	0	19.5
		8	7	22.6	22.4	22.8	1	23.5	17.9	17.7	18.0	0	19.5
		15	0	22.6	22.4	22.8	1	23.5	17.9	17.7	18.0	0	19.5
	16QAM	1	0	22.8	22.5	22.6	1	23.5	18.0	17.8	18.1	0	19.5
		1	8	22.8	22.6	22.7	1	23.5	18.0	17.9	18.2	0	19.5
		1	14	22.7	22.5	22.6	1	23.5	18.0	17.8	18.1	0	19.5
		8	0	21.8	21.6	21.8	2	22.5	18.0	17.9	18.1	0	19.5
		8	4	21.8	21.6	21.8	2	22.5	18.0	17.9	18.2	0	19.5
		8	7	21.7	21.6	21.8	2	22.5	18.0	17.9	18.2	0	19.5
		15	0	21.6	21.5	21.7	2	22.5	17.9	17.8	18.0	0	19.5
	64QAM	1	0	21.6	21.4	22.1	2	22.5	18.2	18.1	18.4	0	19.5
		1	8	21.8	21.5	22.2	2	22.5	18.2	18.1	18.1	0	19.5
		1	14	21.7	21.5	22.2	2	22.5	18.1	18.1	18.4	0	19.5
		8	0	20.5	20.3	21.0	3	21.5	17.9	17.9	18.2	0	19.5
		8	4	20.6	20.3	21.0	3	21.5	18.0	17.9	18.2	0	19.5
		8	7	20.5	20.3	21.0	3	21.5	17.9	17.9	18.2	0	19.5
		15	0	20.5	20.3	20.9	3	21.5	18.0	17.8	18.1	0	19.5

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				26047	26365	26683	MPR	Tune-up Limit	26047	26365	26683	MPR	Tune-up Limit
				1850.7 MHz	1882.5 MHz	1914.3 MHz			1850.7 MHz	1882.5 MHz	1914.3 MHz		
1.4 MHz	QPSK	1	0	23.7	23.7	23.6	0	24.5	17.8	17.8	17.9	0	19.5
		1	3	23.8	23.8	23.7	0	24.5	17.9	17.9	18.0	0	19.5
		1	5	23.7	23.7	23.7	0	24.5	17.8	17.8	17.9	0	19.5
		3	0	23.6	23.7	23.7	0	24.5	17.7	17.8	17.9	0	19.5
		3	1	23.7	23.8	23.8	0	24.5	17.8	17.9	18.0	0	19.5
		3	3	23.7	23.8	23.8	0	24.5	17.8	17.9	18.0	0	19.5
		6	0	22.7	22.7	22.8	1	23.5	17.8	17.9	18.0	0	19.5
	16QAM	1	0	22.9	23.1	22.8	1	23.5	18.0	17.9	18.4	0	19.5
		1	3	22.9	23.1	22.9	1	23.5	18.0	18.0	18.4	0	19.5
		1	5	22.9	23.1	22.8	1	23.5	18.0	17.9	18.4	0	19.5
		3	0	22.8	22.9	22.9	1	23.5	17.9	18.1	18.1	0	19.5
		3	1	22.9	23.0	23.0	1	23.5	18.0	18.2	18.2	0	19.5
		3	3	22.8	22.9	23.0	1	23.5	18.0	18.2	18.2	0	19.5
		6	0	21.9	21.7	22.0	2	22.5	18.0	18.1	18.0	0	19.5
	64QAM	1	0	22.0	21.9	21.7	2	22.5	18.3	18.3	18.4	0	19.5
		1	3	22.1	22.0	21.9	2	22.5	18.1	17.9	18.4	0	19.5
		1	5	22.0	21.9	21.8	2	22.5	18.0	17.8	18.4	0	19.5
		3	0	22.0	21.9	21.8	2	22.5	18.2	18.2	18.3	0	19.5
		3	1	22.0	21.9	21.9	2	22.5	18.3	18.0	18.4	0	19.5
		3	3	22.0	21.9	21.9	2	22.5	18.2	17.9	18.3	0	19.5
		6	0	20.7	20.6	20.6	3	21.5	17.9	18.0	18.1	0	19.5

LTE Band 26 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				26865		MFR	Tune-up Limit	26865		MFR	Tune-up Limit		
				831.5 MHz				831.5 MHz					
15 MHz	QPSK	1	0	23.9			0	24.5	17.7			0	18.9
		1	37	23.9			0	24.5	17.7			0	18.9
		1	74	23.8			0	24.5	17.6			0	18.9
		36	0	22.9			1	23.5	17.7			0	18.9
		36	20	22.8			1	23.5	17.7			0	18.9
		36	39	22.8			1	23.5	17.6			0	18.9
		75	0	22.8			1	23.5	17.6			0	18.9
	16QAM	1	0	22.9			1	23.5	18.2			0	18.9
		1	37	22.9			1	23.5	18.1			0	18.9
		1	74	22.8			1	23.5	18.1			0	18.9
		36	0	21.9			2	22.5	17.7			0	18.9
		36	20	21.9			2	22.5	17.7			0	18.9
		36	39	21.9			2	22.5	17.7			0	18.9
		75	0	21.8			2	22.5	17.7			0	18.9
	64QAM	1	0	22.1			2	22.5	18.1			0	18.9
		1	37	22.1			2	22.5	18.1			0	18.9
		1	74	22.0			2	22.5	18.0			0	18.9
		36	0	20.5			3	21.5	17.8			0	18.9
		36	20	20.4			3	21.5	17.8			0	18.9
		36	39	20.5			3	21.5	17.8			0	18.9
		75	0	20.4			3	21.5	17.8			0	18.9
BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				26740	26865	26990	MFR	Tune-up Limit	26740	26865	26990	MFR	Tune-up Limit
				819 MHz	831.5 MHz	844 MHz			819 MHz	831.5 MHz	844 MHz		
10 MHz	QPSK	1	0	24.0	23.8	24.0	0	24.5	17.7	17.6	17.7	0	18.9
		1	25	23.8	23.9	24.0	0	24.5	17.6	17.6	17.7	0	18.9
		1	49	23.8	23.9	23.8	0	24.5	17.6	17.6	17.6	0	18.9
		25	0	22.9	22.9	23.0	1	23.5	17.7	17.7	17.8	0	18.9
		25	12	23.0	22.8	23.0	1	23.5	17.8	17.6	17.7	0	18.9
		25	25	22.9	22.9	22.9	1	23.5	17.7	17.6	17.7	0	18.9
		50	0	23.0	22.7	22.9	1	23.5	17.8	17.6	17.6	0	18.9
	16QAM	1	0	23.1	22.9	23.4	1	23.5	17.9	17.8	17.9	0	18.9
		1	25	23.0	22.8	23.4	1	23.5	17.7	17.7	17.8	0	18.9
		1	49	22.9	22.8	23.3	1	23.5	17.7	17.7	17.7	0	18.9
		25	0	22.1	21.9	22.0	2	22.5	17.9	17.8	17.9	0	18.9
		25	12	22.1	21.9	22.1	2	22.5	17.9	17.8	17.9	0	18.9
		25	25	22.1	21.9	22.1	2	22.5	17.9	17.8	17.8	0	18.9
		50	0	22.0	21.8	22.0	2	22.5	17.8	17.7	17.8	0	18.9
	64QAM	1	0	21.4	21.7	21.7	2	22.5	18.1	18.0	18.1	0	18.9
		1	25	21.5	21.8	21.7	2	22.5	18.0	18.0	18.1	0	18.9
		1	49	21.5	21.7	21.6	2	22.5	18.0	18.0	18.0	0	18.9
		25	0	20.6	20.5	20.7	3	21.5	17.9	17.8	17.9	0	18.9
		25	12	20.6	20.5	20.7	3	21.5	18.0	17.8	17.9	0	18.9
		25	25	20.5	20.5	20.7	3	21.5	17.9	17.8	17.9	0	18.9
		50	0	20.4	20.4	20.6	3	21.5	17.9	17.7	17.8	0	18.9
BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				26715	26865	27015	MFR	Tune-up Limit	26715	26865	27015	MFR	Tune-up Limit
				816.5 MHz	831.5 MHz	846.5 MHz			816.5 MHz	831.5 MHz	846.5 MHz		
5 MHz	QPSK	1	0	24.1	23.8	24.1	0	24.5	17.8	17.6	17.8	0	18.9
		1	12	24.0	23.9	24.0	0	24.5	17.7	17.7	17.7	0	18.9
		1	24	23.9	23.8	23.9	0	24.5	17.7	17.6	17.7	0	18.9
		12	0	22.9	22.8	23.0	1	23.5	17.8	17.6	17.8	0	18.9
		12	7	22.9	23.0	23.0	1	23.5	17.8	17.7	17.7	0	18.9
		12	13	22.9	22.9	23.0	1	23.5	17.7	17.7	17.7	0	18.9
		25	0	22.9	22.8	23.0	1	23.5	17.7	17.6	17.7	0	18.9
	16QAM	1	0	23.2	23.4	23.2	1	23.5	17.9	17.8	17.9	0	18.9
		1	12	23.1	23.5	23.1	1	23.5	17.9	17.8	17.9	0	18.9
		1	24	23.1	23.4	23.1	1	23.5	17.9	17.8	17.9	0	18.9
		12	0	22.1	22.0	22.2	2	22.5	17.9	17.7	17.8	0	18.9
		12	7	22.1	22.2	22.1	2	22.5	17.9	17.8	17.9	0	18.9
		12	13	22.1	22.1	22.1	2	22.5	17.8	17.8	17.8	0	18.9
		25	0	22.0	22.0	22.0	2	22.5	17.8	17.6	17.7	0	18.9
	64QAM	1	0	21.9	21.4	22.0	2	22.5	17.8	17.6	17.7	0	18.9
		1	12	21.8	21.5	21.9	2	22.5	17.7	17.6	17.7	0	18.9
		1	24	21.8	21.5	21.8	2	22.5	17.7	17.6	17.7	0	18.9
		12	0	20.8	20.5	20.6	3	21.5	17.9	17.7	17.9	0	18.9
		12	7	20.7	20.7	20.6	3	21.5	17.9	17.8	17.9	0	18.9
		12	13	20.7	20.6	20.5	3	21.5	17.9	17.8	17.9	0	18.9
		25	0	20.7	20.4	20.6	3	21.5	17.8	17.7	17.8	0	18.9

LTE Band 26 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				26705	26865	27025	MPR	Tune-up Limit	26705	26865	27025	MPR	Tune-up Limit
				815.5 MHz	831.5 MHz	847.5 MHz			815.5 MHz	831.5 MHz	847.5 MHz		
3 MHz	QPSK	1	0	24.0	23.9	24.0	0	24.5	17.7	17.6	17.7	0	18.9
		1	8	24.0	24.0	24.1	0	24.5	17.7	17.7	17.7	0	18.9
		1	14	23.9	23.9	23.9	0	24.5	17.6	17.6	17.6	0	18.9
		8	0	22.9	22.9	23.0	1	23.5	17.7	17.7	17.7	0	18.9
		8	4	23.0	22.9	23.0	1	23.5	17.7	17.7	17.8	0	18.9
		8	7	22.9	22.9	23.0	1	23.5	17.7	17.6	17.8	0	18.9
	16QAM	15	0	22.9	22.9	23.0	1	23.5	17.7	17.7	17.8	0	18.9
		1	0	23.1	22.9	23.4	1	23.5	17.8	17.8	17.9	0	18.9
		1	8	23.1	23.0	23.5	1	23.5	17.9	17.8	17.9	0	18.9
		1	14	23.0	22.9	23.3	1	23.5	17.8	17.8	17.8	0	18.9
		8	0	22.1	22.1	22.1	2	22.5	17.8	17.8	17.9	0	18.9
		8	4	22.1	22.1	22.1	2	22.5	17.8	17.8	17.9	0	18.9
	64QAM	8	7	22.1	22.1	22.2	2	22.5	17.8	17.8	17.9	0	18.9
		15	0	22.0	22.0	22.1	2	22.5	17.7	17.7	17.8	0	18.9
		1	0	22.0	22.0	21.8	2	22.5	18.1	18.1	18.0	0	18.9
		1	8	22.0	22.1	21.9	2	22.5	18.1	18.1	18.1	0	18.9
		1	14	21.9	22.0	21.8	2	22.5	18.0	18.0	18.0	0	18.9
		8	0	20.7	20.8	20.8	3	21.5	17.9	17.8	17.8	0	18.9
1.4 MHz	QPSK	8	4	20.8	20.9	20.8	3	21.5	17.9	17.9	17.8	0	18.9
		8	7	20.7	20.8	20.7	3	21.5	17.9	17.9	17.8	0	18.9
		15	0	20.8	20.7	20.7	3	21.5	17.8	17.8	17.9	0	18.9
		1	0	23.8	23.9	23.9	0	24.5	17.6	17.5	17.6	0	18.9
		1	3	23.9	23.9	24.0	0	24.5	17.7	17.6	17.6	0	18.9
		1	5	23.8	23.8	23.9	0	24.5	17.6	17.5	17.6	0	18.9
	16QAM	3	0	23.9	23.8	23.9	0	24.5	17.6	17.5	17.6	0	18.9
		3	1	23.9	23.9	24.0	0	24.5	17.7	17.6	17.7	0	18.9
		3	3	23.9	23.9	23.9	0	24.5	17.7	17.6	17.7	0	18.9
		6	0	22.9	22.9	22.9	1	23.5	17.6	17.6	17.6	0	18.9
		1	0	23.0	23.0	23.3	1	23.5	17.7	17.7	17.7	0	18.9
		1	3	23.0	23.1	23.4	1	23.5	17.8	17.7	17.8	0	18.9
	64QAM	1	5	23.0	23.0	23.3	1	23.5	17.7	17.6	17.7	0	18.9
		3	0	23.2	23.0	23.1	1	23.5	17.9	17.8	17.9	0	18.9
		3	1	23.2	23.0	23.2	1	23.5	18.0	17.9	17.9	0	18.9
		3	3	23.2	23.0	23.2	1	23.5	17.9	17.9	17.9	0	18.9
		6	0	22.1	22.1	21.9	2	22.5	17.9	17.8	17.9	0	18.9
		1	0	22.2	21.8	21.9	2	22.5	18.1	18.0	18.1	0	18.9
64QAM	1	3	22.3	21.9	22.0	2	22.5	18.2	18.1	18.2	0	18.9	
	1	5	22.2	21.8	22.0	2	22.5	18.1	18.0	18.0	0	18.9	
	3	0	22.1	21.9	21.7	2	22.5	18.1	18.0	18.0	0	18.9	
	3	1	22.2	22.0	21.8	2	22.5	18.1	18.1	18.1	0	18.9	
	3	3	22.2	22.0	21.8	2	22.5	18.1	18.0	18.1	0	18.9	
	6	0	20.8	21.1	20.9	3	21.5	17.7	17.7	17.7	0	18.9	

LTE Band 41 Measured Results

Table with columns for BW (MHz), Mode, RB Allocation, RB offset, Maximum Average Power (dBm) (39750, 40185, 40620, 41055, 41490, MPR, Tune-up Limit), and Reduced Average Power (dBm) (39750, 40185, 40620, 41055, 41490, MPR, Tune-up Limit). Rows are categorized by BW (20 MHz, 15 MHz, 10 MHz) and Mode (QPSK, 16QAM, 64QAM).

LTE Band 41 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)							Reduced Average Power (dBm)							
				39750	40185	40620	41055	41490	MPR	Tune-up Limit	39750	40185	40620	41055	41490	MPR	Tune-up Limit	
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz			2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz			
5 MHz	QPSK	1	0	24.1	23.9	24.0	23.6	23.8	0	24.5	19.6	19.2	19.2	19.0	19.0	0	20.5	
		1	12	24.1	23.8	24.0	23.6	23.8	0	24.5	19.6	19.1	19.1	18.9	19.0	0	20.5	
		1	24	24.1	23.8	23.9	23.6	23.8	0	24.5	19.6	19.1	19.1	18.9	18.9	0	20.5	
		12	0	23.1	22.9	23.1	22.8	22.8	1	23.5	19.6	19.2	19.2	19.0	19.0	0	20.5	
		12	7	23.1	22.9	23.1	22.7	22.7	1	23.5	19.6	19.2	19.2	19.0	19.0	0	20.5	
		12	13	23.2	22.9	23.0	22.7	22.7	1	23.5	19.6	19.1	19.2	19.0	19.0	0	20.5	
	16QAM	25	0	23.2	22.9	23.0	22.7	22.7	1	23.5	19.6	19.2	19.2	19.0	19.0	0	20.5	
		1	0	23.3	23.0	23.2	22.8	22.9	1	23.5	19.6	19.3	19.3	19.1	19.1	0	20.5	
		1	12	23.3	23.0	23.1	22.8	22.8	1	23.5	19.6	19.3	19.3	19.1	19.1	0	20.5	
		1	24	23.3	22.9	23.1	22.8	22.8	1	23.5	19.5	19.2	19.2	19.1	19.1	0	20.5	
		12	0	22.3	22.0	22.2	21.9	21.9	2	22.5	19.7	19.3	19.3	19.1	19.1	0	20.5	
		12	7	22.3	22.0	22.2	21.9	21.9	2	22.5	19.7	19.3	19.3	19.1	19.1	0	20.5	
		12	13	22.3	22.0	22.2	21.9	21.9	2	22.5	19.7	19.3	19.3	19.1	19.1	0	20.5	
		25	0	22.3	22.0	22.1	21.8	21.8	2	22.5	19.7	19.3	19.2	19.1	19.0	0	20.5	
		64QAM	1	0	21.9	21.7	21.8	21.4	21.5	2	22.5	19.4	19.0	19.0	18.8	18.9	0	20.5
			1	12	21.9	21.6	21.8	21.5	21.5	2	22.5	19.4	19.0	19.0	18.7	18.7	0	20.5
	1		24	22.0	21.6	21.7	21.4	21.4	2	22.5	19.4	18.9	18.9	18.7	18.7	0	20.5	
	12		0	21.2	20.9	21.1	20.9	20.8	3	21.5	19.7	19.3	19.3	19.1	19.1	0	20.5	
	12		7	21.2	20.9	21.1	20.8	20.8	3	21.5	19.7	19.3	19.3	19.1	19.1	0	20.5	
	12		13	21.3	20.9	21.1	20.8	20.8	3	21.5	19.7	19.3	19.2	19.1	19.0	0	20.5	
	25		0	21.3	21.0	21.2	20.9	20.8	3	21.5	19.8	19.3	19.3	19.1	19.1	0	20.5	

LTE Band 48 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)						Reduced Average Power (dBm)					
				55340	55773	56207	56640	MPR	Tune-up Limit	55340	55773	56207	56640	MPR	Tune-up Limit
				3560 MHz	3603.3 MHz	3646.7 MHz	3690 MHz			3560 MHz	3603.3 MHz	3646.7 MHz	3690 MHz		
20 MHz	QPSK	1	0	18.5	19.2	19.3	18.6	0	19.5	13.7	13.5	13.6	13.7	0	13.9
		1	49	18.2	18.9	19.0	18.4	0	19.5	13.3	13.2	13.3	13.3	0	13.9
		1	99	18.2	18.9	19.0	18.3	0	19.5	13.4	13.2	13.3	13.4	0	13.9
		50	0	17.3	18.0	18.1	17.4	1	18.5	13.5	13.3	13.4	13.5	0	13.9
		50	24	17.2	18.0	18.1	17.4	1	18.5	13.4	13.2	13.3	13.4	0	13.9
		50	50	17.2	17.9	18.0	17.4	1	18.5	13.4	13.2	13.2	13.4	0	13.9
	100	0	17.2	18.0	18.1	17.4	1	18.5	13.4	13.3	13.3	13.4	0	13.9	
	16QAM	1	0	17.7	18.3	18.4	17.8	1	18.5	13.8	13.6	13.7	13.8	0	13.9
		1	49	17.3	18.0	18.1	17.5	1	18.5	13.4	13.3	13.4	13.4	0	13.9
		1	99	17.3	18.1	18.2	17.5	1	18.5	13.5	13.3	13.4	13.4	0	13.9
		50	0	16.4	17.1	17.2	16.5	2	17.5	13.5	13.4	13.5	13.5	0	13.9
		50	24	16.3	17.1	17.2	16.5	2	17.5	13.5	13.3	13.4	13.5	0	13.9
		50	50	16.3	17.0	17.1	16.5	2	17.5	13.4	13.3	13.3	13.4	0	13.9
	100	0	16.3	17.1	17.1	16.4	2	17.5	13.4	13.3	13.4	13.5	0	13.9	
	64QAM	1	0	16.9	17.5	17.4	17.0	2	17.5	13.6	13.9	13.9	13.9	0	13.9
		1	49	16.6	17.3	17.4	16.8	2	17.5	13.7	13.6	13.6	13.7	0	13.9
		1	99	16.6	17.4	17.4	16.7	2	17.5	13.8	13.7	13.7	13.7	0	13.9
		50	0	15.4	16.1	16.2	15.6	3	16.5	13.6	13.4	13.5	13.5	0	13.9
		50	24	15.3	16.1	16.1	15.5	3	16.5	13.4	13.4	13.4	13.5	0	13.9
		50	50	15.3	16.0	16.1	15.4	3	16.5	13.4	13.3	13.4	13.4	0	13.9
	100	0	15.3	16.0	16.1	15.4	3	16.5	13.4	13.3	13.4	13.5	0	13.9	
15 MHz	QPSK	1	0	18.4	19.1	19.2	18.4	0	19.5	13.6	13.4	13.5	13.6	0	13.9
		1	37	18.1	18.9	19.0	18.3	0	19.5	13.4	13.2	13.3	13.3	0	13.9
		1	74	18.2	18.9	19.0	18.3	0	19.5	13.4	13.1	13.3	13.3	0	13.9
		36	0	17.3	18.0	18.1	17.3	1	18.5	13.5	13.2	13.3	13.4	0	13.9
		36	20	17.2	17.9	18.0	17.4	1	18.5	13.4	13.2	13.3	13.4	0	13.9
		36	39	17.1	17.9	18.0	17.3	1	18.5	13.4	13.2	13.3	13.3	0	13.9
	75	0	17.2	17.9	18.0	17.3	1	18.5	13.4	13.2	13.3	13.3	0	13.9	
	16QAM	1	0	17.5	18.2	18.2	17.6	1	18.5	13.7	13.5	13.5	13.6	0	13.9
		1	37	17.2	18.0	18.1	17.4	1	18.5	13.4	13.3	13.3	13.4	0	13.9
		1	74	17.2	18.0	18.1	17.4	1	18.5	13.4	13.3	13.3	13.4	0	13.9
		36	0	16.4	17.1	17.2	16.5	2	17.5	13.6	13.3	13.5	13.5	0	13.9
		36	20	16.3	17.0	17.1	16.5	2	17.5	13.5	13.3	13.3	13.4	0	13.9
		36	39	16.2	17.0	17.0	16.4	2	17.5	13.4	13.2	13.3	13.4	0	13.9
	75	0	16.3	17.0	17.1	16.4	2	17.5	13.5	13.2	13.4	13.4	0	13.9	
	64QAM	1	0	16.0	16.7	16.8	16.1	2	17.5	13.2	13.0	13.1	13.2	0	13.9
		1	37	15.8	16.5	16.6	15.9	2	17.5	13.0	12.8	12.9	13.0	0	13.9
		1	74	15.8	16.6	16.6	15.9	2	17.5	13.0	12.8	12.9	12.9	0	13.9
		36	0	15.4	16.1	16.2	15.2	3	16.5	13.6	13.4	13.4	13.6	0	13.9
		36	20	15.4	16.1	16.1	15.5	3	16.5	13.5	13.3	13.4	13.5	0	13.9
		36	39	15.3	16.1	16.1	15.5	3	16.5	13.5	13.3	13.4	13.4	0	13.9
	75	0	15.3	16.0	16.1	15.4	3	16.5	13.5	13.3	13.4	13.4	0	13.9	
10 MHz	QPSK	1	0	18.1	19.0	19.1	18.2	0	19.5	13.4	13.3	13.4	13.5	0	13.9
		1	25	17.9	18.9	19.0	18.1	0	19.5	13.3	13.1	13.2	13.2	0	13.9
		1	49	17.9	18.9	19.0	18.0	0	19.5	13.4	13.2	13.3	13.3	0	13.9
		25	0	17.0	18.0	18.1	17.2	1	18.5	13.4	13.3	13.3	13.4	0	13.9
		25	12	17.0	17.9	18.0	17.1	1	18.5	13.4	13.2	13.3	13.4	0	13.9
		25	25	17.0	17.9	18.0	17.1	1	18.5	13.4	13.2	13.2	13.3	0	13.9
	50	0	17.0	17.9	18.0	17.2	1	18.5	13.4	13.2	13.3	13.4	0	13.9	
	16QAM	1	0	17.3	18.2	18.3	17.4	1	18.5	13.7	13.4	13.5	13.6	0	13.9
		1	25	17.1	18.0	18.1	17.2	1	18.5	13.5	13.2	13.4	13.4	0	13.9
		1	49	17.1	18.1	18.2	17.2	1	18.5	13.5	13.3	13.4	13.4	0	13.9
		25	0	16.1	17.0	17.1	16.3	2	17.5	13.5	13.3	13.4	13.4	0	13.9
		25	12	16.1	17.0	17.1	16.2	2	17.5	13.5	13.2	13.3	13.4	0	13.9
		25	25	16.0	17.0	17.1	16.2	2	17.5	13.4	13.2	13.3	13.4	0	13.9
	50	0	16.1	17.0	17.1	16.2	2	17.5	13.5	13.3	13.4	13.4	0	13.9	
	64QAM	1	0	15.7	16.7	16.8	15.8	2	17.5	13.0	13.0	13.0	13.0	0	13.9
		1	25	15.6	16.5	16.6	15.6	2	17.5	13.0	12.8	12.9	12.9	0	13.9
		1	49	15.6	16.5	16.6	15.6	2	17.5	13.0	12.8	12.9	12.9	0	13.9
		25	0	15.1	16.0	16.2	15.2	3	16.5	13.5	13.3	13.4	13.4	0	13.9
		25	12	15.1	16.0	16.1	15.2	3	16.5	13.4	13.3	13.4	13.4	0	13.9
		25	25	15.1	16.0	16.1	15.1	3	16.5	13.4	13.2	13.3	13.4	0	13.9
	50	0	15.1	16.0	16.1	15.2	3	16.5	13.4	13.2	13.3	13.4	0	13.9	

LTE Band 48 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)						Reduced Average Power (dBm)					
				55265	55748	56232	56715	MPR	Tune-up Limit	55265	55748	56232	56715	MPR	Tune-up Limit
				3552.5 MHz	3600.8 MHz	3649.2 MHz	3697.5 MHz			3552.5 MHz	3600.8 MHz	3649.2 MHz	3697.5 MHz		
5 MHz	QPSK	1	0	17.8	18.9	19.0	17.6	0	19.5	13.4	13.1	13.3	13.3	0	13.9
		1	12	17.7	18.8	18.9	17.7	0	19.5	13.2	13.0	13.2	13.2	0	13.9
		1	24	17.7	18.9	18.9	17.7	0	19.5	13.2	13.1	13.2	13.3	0	13.9
		12	0	16.8	17.9	18.0	16.8	1	18.5	13.3	13.1	13.3	13.4	0	13.9
		12	7	16.8	17.9	18.0	16.8	1	18.5	13.2	13.1	13.3	13.3	0	13.9
		12	13	16.8	17.9	18.0	16.8	1	18.5	13.3	13.1	13.3	13.3	0	13.9
		25	0	16.8	17.9	18.0	16.8	1	18.5	13.2	13.1	13.2	13.3	0	13.9
	16QAM	1	0	17.0	18.1	18.0	17.0	1	18.5	13.4	13.1	13.4	13.4	0	13.9
		1	12	16.9	18.0	17.9	17.0	1	18.5	13.3	13.0	13.3	13.4	0	13.9
		1	24	16.9	18.0	17.9	17.0	1	18.5	13.5	13.1	13.4	13.4	0	13.9
		12	0	15.9	17.0	17.1	16.1	2	17.5	13.5	13.2	13.3	13.4	0	13.9
		12	7	16.0	17.0	17.1	16.0	2	17.5	13.5	13.2	13.3	13.4	0	13.9
		12	13	15.9	17.0	17.1	16.0	2	17.5	13.4	13.2	13.3	13.4	0	13.9
		25	0	15.9	17.0	17.0	16.0	2	17.5	13.4	13.1	13.3	13.3	0	13.9
	64QAM	1	0	15.6	16.7	16.8	15.7	2	17.5	13.1	13.0	13.1	13.0	0	13.9
		1	12	17.4	16.6	16.7	15.6	2	17.5	13.0	12.9	13.0	13.0	0	13.9
		1	24	17.4	16.6	16.7	15.6	2	17.5	13.1	12.9	13.0	13.1	0	13.9
		12	0	14.8	15.9	16.0	14.9	3	16.5	13.4	13.2	13.3	13.4	0	13.9
		12	7	14.8	16.0	16.0	14.9	3	16.5	13.4	13.2	13.3	13.3	0	13.9
		12	13	14.8	15.9	16.0	14.9	3	16.5	13.4	13.2	13.3	13.3	0	13.9
		25	0	14.8	16.0	16.1	15.0	3	16.5	13.4	13.2	13.3	13.4	0	13.9

LTE Band 66 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)					
				132072	132322	132572	MPR	Tune-up Limit	132072	132322	132572	MPR	Tune-up Limit	
				1720 MHz	1745 MHz	1770 MHz			1720 MHz	1745 MHz	1770 MHz			
20 MHz	QPSK	1	0	23.1	23.1	23.0	0	23.5	17.7	17.6	17.6	0	18.5	
		1	49	22.8	22.9	22.8	0	23.5	17.4	17.4	17.4	0	18.5	
		1	99	22.9	22.9	22.8	0	23.5	17.4	17.4	17.4	0	18.5	
		50	0	22.0	22.0	21.9	1	22.5	17.6	17.5	17.5	0	18.5	
		50	24	21.9	21.9	21.9	1	22.5	17.5	17.5	17.5	0	18.5	
		50	50	22.0	21.9	21.8	1	22.5	17.4	17.4	17.4	0	18.5	
	16QAM	100	0	22.0	21.9	21.9	1	22.5	17.5	17.5	17.4	0	18.5	
		1	0	22.5	22.4	22.5	1	22.5	17.8	18.0	18.0	0	18.5	
		1	49	22.3	22.2	22.2	1	22.5	17.6	17.8	17.8	0	18.5	
		1	99	22.4	22.3	22.2	1	22.5	17.5	17.9	17.8	0	18.5	
		50	0	21.1	21.1	21.0	2	21.5	17.7	17.6	17.6	0	18.5	
		50	24	21.0	21.0	21.0	2	21.5	17.7	17.5	17.6	0	18.5	
	64QAM	50	50	21.1	20.9	20.9	2	21.5	17.6	17.5	17.5	0	18.5	
		100	0	21.1	21.0	20.9	2	21.5	17.6	17.6	17.6	0	18.5	
		1	0	21.4	21.5	21.4	2	21.5	18.1	18.0	18.0	0	18.5	
		1	49	21.2	21.2	21.2	2	21.5	17.9	17.8	17.8	0	18.5	
		1	99	21.3	21.3	21.2	2	21.5	17.8	17.8	17.8	0	18.5	
		50	0	20.2	20.2	20.2	3	20.5	17.8	17.7	17.7	0	18.5	
	15 MHz	QPSK	50	24	20.1	20.1	20.1	3	20.5	17.7	17.7	17.7	0	18.5
			50	50	20.1	20.1	20.0	3	20.5	17.7	17.6	17.6	0	18.5
			100	0	20.2	20.1	20.0	3	20.5	17.7	17.7	17.6	0	18.5
1			0	23.1	23.0	23.0	0	23.5	17.7	17.6	17.6	0	18.5	
1			37	22.9	22.9	22.9	0	23.5	17.5	17.4	17.4	0	18.5	
1			74	22.9	22.9	22.9	0	23.5	17.4	17.5	17.4	0	18.5	
16QAM		36	0	22.0	21.9	21.9	1	22.5	17.6	17.5	17.5	0	18.5	
		36	20	21.9	21.9	21.8	1	22.5	17.5	17.4	17.4	0	18.5	
		36	39	21.8	21.9	21.9	1	22.5	17.5	17.3	17.3	0	18.5	
		75	0	21.9	21.9	21.8	1	22.5	17.5	17.4	17.4	0	18.5	
		1	0	22.5	21.0	22.5	1	22.5	17.7	17.9	18.1	0	18.5	
		1	37	22.3	22.3	22.4	1	22.5	17.4	17.8	17.8	0	18.5	
64QAM		1	74	22.3	22.3	22.2	1	22.5	17.4	17.9	17.9	0	18.5	
		36	0	21.0	21.0	21.0	2	21.5	17.7	17.5	17.6	0	18.5	
		36	20	21.0	20.9	20.9	2	21.5	17.6	17.5	17.5	0	18.5	
		36	39	20.9	20.9	21.0	2	21.5	17.5	17.4	17.5	0	18.5	
		75	0	21.0	21.0	20.9	2	21.5	17.6	17.5	17.5	0	18.5	
		1	0	21.4	21.4	21.4	2	21.5	18.1	18.0	18.0	0	18.5	
10 MHz		QPSK	1	0	23.0	22.9	22.9	0	23.5	17.6	17.4	17.4	0	18.5
			1	25	22.8	22.8	22.8	0	23.5	17.4	17.3	17.3	0	18.5
			1	49	22.8	22.8	22.8	0	23.5	17.4	17.3	17.3	0	18.5
	25		0	21.9	21.9	21.9	1	22.5	17.5	17.4	17.4	0	18.5	
	25		12	21.9	21.9	21.9	1	22.5	17.5	17.4	17.4	0	18.5	
	25		25	21.9	21.8	21.8	1	22.5	17.4	17.3	17.4	0	18.5	
16QAM	50	0	21.9	21.9	21.8	1	22.5	17.5	17.4	17.4	0	18.5		
	1	0	22.0	22.1	22.0	1	22.5	17.6	17.5	17.6	0	18.5		
	1	25	21.9	21.9	22.0	1	22.5	17.5	17.4	17.5	0	18.5		
	1	49	21.9	21.8	21.9	1	22.5	17.5	17.4	17.4	0	18.5		
	25	0	21.1	21.1	21.0	2	21.5	17.7	17.6	17.6	0	18.5		
	25	12	21.1	21.1	21.1	2	21.5	17.7	17.5	17.6	0	18.5		
64QAM	25	25	21.0	21.0	21.0	2	21.5	17.6	17.5	17.6	0	18.5		
	50	0	21.0	21.0	20.9	2	21.5	17.6	17.5	17.5	0	18.5		
	1	0	21.3	21.3	21.3	2	21.5	17.9	17.8	17.8	0	18.5		
	1	25	21.2	21.2	21.2	2	21.5	17.9	17.7	17.8	0	18.5		
	1	49	21.2	21.2	21.1	2	21.5	17.8	17.7	17.7	0	18.5		
	25	0	20.1	20.1	20.0	3	20.5	17.7	17.6	17.5	0	18.5		
10 MHz	QPSK	25	12	20.1	20.0	20.1	3	20.5	17.7	17.6	17.5	0	18.5	
		25	25	20.0	20.0	20.0	3	20.5	17.6	17.5	17.6	0	18.5	
		50	0	20.0	20.0	19.9	3	20.5	17.6	17.5	17.5	0	18.5	
		1	0	23.0	22.9	22.9	0	23.5	17.6	17.4	17.4	0	18.5	
		1	25	22.8	22.8	22.8	0	23.5	17.4	17.3	17.3	0	18.5	
		1	49	22.8	22.8	22.8	0	23.5	17.4	17.3	17.3	0	18.5	
	16QAM	25	0	21.9	21.9	21.9	1	22.5	17.5	17.4	17.4	0	18.5	
		25	12	21.9	21.9	21.9	1	22.5	17.5	17.4	17.4	0	18.5	
		25	25	21.9	21.8	21.8	1	22.5	17.4	17.3	17.4	0	18.5	
		50	0	21.9	21.9	21.8	1	22.5	17.5	17.4	17.4	0	18.5	
		1	0	22.0	22.1	22.0	1	22.5	17.6	17.5	17.6	0	18.5	
		1	25	21.9	21.9	22.0	1	22.5	17.5	17.4	17.5	0	18.5	
	64QAM	1	49	21.9	21.8	21.9	1	22.5	17.5	17.4	17.4	0	18.5	
		25	0	21.1	21.1	21.0	2	21.5	17.7	17.6	17.6	0	18.5	
		25	12	21.1	21.1	21.1	2	21.5	17.7	17.5	17.6	0	18.5	
		25	25	21.0	21.0	21.0	2	21.5	17.6	17.5	17.6	0	18.5	
		50	0	21.0	21.0	20.9	2	21.5	17.6	17.5	17.5	0	18.5	
		1	0	21.3	21.3	21.3	2	21.5	17.9	17.8	17.8	0	18.5	
	10 MHz	QPSK	1	25	21.2	21.2	21.2	2	21.5	17.9	17.7	17.8	0	18.5
			1	49	21.2	21.2	21.1	2	21.5	17.8	17.7	17.7	0	18.5
			25	0	20.1	20.1	20.0	3	20.5	17.7	17.6	17.5	0	18.5
25			12	20.1	20.0	20.1	3	20.5	17.7	17.6	17.5	0	18.5	
25			25	20.0	20.0	20.0	3	20.5	17.6	17.5	17.6	0	18.5	
50			0	20.0	20.0	19.9	3	20.5	17.6	17.5	17.5	0	18.5	

LTE Band 66 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				131997	132322	132647	MPR	Tune-up Limit	131997	132322	132647	MPR	Tune-up Limit
				1712.5 MHz	1745 MHz	1777.5 MHz			1712.5 MHz	1745 MHz	1777.5 MHz		
5 MHz	QPSK	1	0	23.0	22.9	22.9	0	23.5	17.7	17.4	17.5	0	18.5
		1	12	23.0	22.9	22.9	0	23.5	17.6	17.3	17.4	0	18.5
		1	24	23.0	22.9	22.9	0	23.5	17.5	17.3	17.4	0	18.5
		12	0	21.9	21.9	21.8	1	22.5	17.5	17.3	17.4	0	18.5
		12	7	21.9	21.9	21.9	1	22.5	17.5	17.4	17.4	0	18.5
		12	13	21.9	21.9	21.8	1	22.5	17.5	17.3	17.4	0	18.5
	16QAM	25	0	21.9	21.9	21.8	1	22.5	17.5	17.4	17.4	0	18.5
		1	0	22.1	22.1	22.1	1	22.5	17.8	17.9	17.6	0	18.5
		1	12	22.1	22.0	22.0	1	22.5	17.7	17.9	17.5	0	18.5
		1	24	22.1	22.0	21.9	1	22.5	17.7	17.9	17.5	0	18.5
		12	0	21.1	21.0	21.0	2	21.5	17.6	17.6	17.6	0	18.5
		12	7	21.1	21.0	21.0	2	21.5	17.6	17.6	17.6	0	18.5
	64QAM	12	13	21.1	21.0	21.0	2	21.5	17.6	17.6	17.5	0	18.5
		25	0	21.0	20.9	20.9	2	21.5	17.6	17.5	17.5	0	18.5
		1	0	21.3	20.9	20.9	2	21.5	17.6	17.5	17.5	0	18.5
		1	12	21.3	20.9	20.8	2	21.5	17.5	17.4	17.4	0	18.5
		1	24	21.2	20.8	20.8	2	21.5	17.5	17.4	17.3	0	18.5
		12	0	20.0	20.0	20.0	3	20.5	17.7	17.5	17.6	0	18.5
		12	7	20.0	20.0	20.0	3	20.5	17.7	17.5	17.6	0	18.5
		12	13	20.0	20.0	20.0	3	20.5	17.6	17.5	17.6	0	18.5
25	0	20.0	19.9	19.9	3	20.5	17.6	17.5	17.5	0	18.5		
3 MHz	QPSK	1	0	22.9	22.8	22.8	0	23.5	17.5	17.3	17.4	0	18.5
		1	8	23.0	22.9	22.9	0	23.5	17.5	17.4	17.4	0	18.5
		1	14	22.9	22.8	22.8	0	23.5	17.4	17.2	17.3	0	18.5
		8	0	21.9	21.8	21.8	1	22.5	17.4	17.3	17.4	0	18.5
		8	4	21.9	21.9	21.8	1	22.5	17.4	17.3	17.4	0	18.5
		8	7	21.9	21.9	21.9	1	22.5	17.5	17.3	17.4	0	18.5
	16QAM	15	0	21.9	21.8	21.8	1	22.5	17.5	17.3	17.4	0	18.5
		1	0	21.9	22.0	21.9	1	22.5	17.5	17.4	17.5	0	18.5
		1	14	21.8	21.9	21.8	1	22.5	17.4	17.3	17.4	0	18.5
		8	0	21.1	21.0	20.9	2	21.5	17.7	17.4	17.5	0	18.5
		8	4	21.1	21.0	21.0	2	21.5	17.7	17.5	17.5	0	18.5
		8	7	21.1	21.0	21.0	2	21.5	17.7	17.5	17.5	0	18.5
	64QAM	15	0	21.0	20.9	20.8	2	21.5	17.6	17.4	17.4	0	18.5
		1	0	21.2	21.2	21.2	2	21.5	17.8	17.7	17.7	0	18.5
		1	8	21.4	21.3	21.3	2	21.5	17.9	17.8	17.8	0	18.5
		1	14	21.2	21.2	21.1	2	21.5	17.8	17.7	17.7	0	18.5
		8	0	20.0	20.0	20.0	3	20.5	17.6	17.5	17.5	0	18.5
		8	4	20.1	20.0	20.0	3	20.5	17.7	17.5	17.5	0	18.5
		8	7	20.1	20.0	20.0	3	20.5	17.6	17.5	17.5	0	18.5
		15	0	20.0	19.9	19.9	3	20.5	17.5	17.5	17.5	0	18.5
1.4 MHz	QPSK	1	0	22.8	22.8	22.7	0	23.5	17.5	17.2	17.3	0	18.5
		1	3	22.9	22.8	22.8	0	23.5	17.5	17.2	17.3	0	18.5
		1	5	22.8	22.7	22.7	0	23.5	17.4	17.2	17.2	0	18.5
		3	0	22.8	22.8	22.7	0	23.5	17.3	17.2	17.3	0	18.5
		3	1	22.9	22.9	22.8	0	23.5	17.4	17.3	17.4	0	18.5
		3	3	22.8	22.9	22.8	0	23.5	17.4	17.2	17.3	0	18.5
	16QAM	6	0	21.7	21.7	21.7	1	22.5	17.4	17.2	17.3	0	18.5
		1	0	22.2	22.2	21.7	1	22.5	17.6	17.3	17.7	0	18.5
		1	3	22.3	22.2	21.8	1	22.5	17.7	17.4	17.8	0	18.5
		1	5	22.2	22.2	21.8	1	22.5	17.6	17.3	17.7	0	18.5
		3	0	22.0	22.1	21.9	1	22.5	17.6	17.5	17.5	0	18.5
		3	1	22.1	22.1	22.0	1	22.5	17.6	17.6	17.6	0	18.5
	64QAM	3	3	22.1	22.1	22.0	1	22.5	17.6	17.5	17.6	0	18.5
		6	0	20.8	20.7	21.0	2	21.5	17.6	17.5	17.3	0	18.5
		1	0	21.0	21.2	20.9	2	21.5	17.7	17.7	17.7	0	18.5
		1	3	21.1	21.3	21.0	2	21.5	17.7	17.8	17.9	0	18.5
		1	5	21.1	21.2	21.0	2	21.5	17.7	17.7	17.7	0	18.5
		3	0	20.9	21.2	20.8	2	21.5	17.5	17.7	17.7	0	18.5
		3	1	20.9	21.3	20.8	2	21.5	17.5	17.8	17.8	0	18.5
		3	3	20.9	21.3	20.9	2	21.5	17.5	17.8	17.8	0	18.5
6	0	20.0	19.8	19.9	3	20.5	17.6	17.4	17.4	0	18.5		

9.3. LTE Up-Link Carrier Aggregation

The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification.

For inter-band carrier aggregation with uplink assigned to one E-UTRA band (Table 5.6A-1), the requirements in subclause 6.2.3 apply.

For inter-band carrier aggregation with one component carrier per operating band and the uplink active in two E-UTRA bands, the requirements in subclause 6.2.3 apply for each uplink component carrier.

For intra-band contiguous carrier aggregation the allowed Maximum Power Reduction (MPR) for the maximum output power applicable to the DUT in table below. In case the modulation format is different on different component carriers then the MPR is determined by the rules applied to higher order of those modulations.

Modulation	CA bandwidth Class B and C / Smallest Component Carrier Transmission Bandwidth Configuration				MPR (dB)
	25 RB	50 RB	75 RB	100 RB	
QPSK	> 8 and ≤ 25	> 12 and ≤ 50	> 16 and ≤ 75	> 18 and ≤ 100	≤ 1
QPSK	> 25	> 50	> 75	> 100	≤ 2
16 QAM	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 8 and ≤ 25	> 12 and ≤ 50	> 16 and ≤ 75	> 18 and ≤ 100	≤ 2
16 QAM	> 25	> 50	> 75	> 100	≤ 3
64 QAM	≤ 8 and allocation wholly contained within a single CC	≤ 12 and allocation wholly contained within a single CC	≤ 16 and allocation wholly contained within a single CC	≤ 18 and allocation wholly contained within a single CC	≤ 2
64 QAM	> 8 or allocation extends across two CC's	> 12 or allocation extends across two CC's	> 16 or allocation extends across two CC's	> 18 or allocation extends across two CC's	≤ 3

For PUCCH and SRS transmissions, the allowed MPR is according to that specified for PUSCH WPKD modulation for the corresponding transmission bandwidth.

For intra-band contiguous carrier aggregation bandwidth class C with non-contiguous resource allocation, the allowed Maximum Power Reduction (MPR) for the maximum output power in Table 6.2.2A-1 is specified as follows

$$\text{MPR} = \text{CEIL} \{ \min(M_A, M_{IM5}), 0.5 \}$$

Where M_A is defined as follows

$$\begin{aligned} M_A = & \quad 8.2 & ; 0 \leq A < 0.025 \\ & 9.2 - 40A & ; 0.025 \leq A < 0.05 \\ & 8 - 16A & ; 0.05 \leq A < 0.25 \\ & 4.83 - 3.33A & ; 0.25 \leq A \leq 0.4 \\ & 3.83 - 0.83A & ; 0.4 \leq A \leq 1 \end{aligned}$$

and M_{IM5} is defined as follows

$$\begin{aligned} M_{IM5} = & \quad 4.5 & ; \Delta_{IM5} < 1.5 * \text{BW}_{\text{Channel_CA}} \\ & 6.0 & ; 1.5 * \text{BW}_{\text{Channel_CA}} \leq \Delta_{IM5} < \text{BW}_{\text{Channel_CA}}/2 + \Delta f_{\text{ooB}} \\ M_A & & ; \Delta_{IM5} \geq \text{BW}_{\text{Channel_CA}}/2 + \Delta f_{\text{ooB}} \end{aligned}$$

Where

$$A = N_{\text{RB_alloc}} / N_{\text{RB_agg}}$$

$$\Delta_{IM5} = \max \left(\left| F_{\text{C_agg}} - (3 * F_{\text{agg_alloc_low}} - 2 * F_{\text{agg_alloc_high}}) \right|, \left| F_{\text{C_agg}} - (3 * F_{\text{agg_alloc_high}} - 2 * F_{\text{agg_alloc_low}}) \right| \right)$$

$\text{CEIL}\{M_A, 0.5\}$ means rounding upwards to closest 0.5dB, i.e. $\text{MPR} \in [3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0, 8.5]$

For intra-band carrier aggregation, the MPR is evaluated per slot and given by the maximum value taken over the transmission(s) on all component carriers within the slot; the maximum MPR over the two slots is then applied for the entire subframe.

For intra-band non-contiguous carrier aggregation with one uplink carrier on the PCC, the requirements in the subclause 6.2.3 apply. For intra-band non-contiguous aggregation with two uplink carriers the MPR is defined for those E-UTRA bands where maximum possible $W_{\text{GAP}} \leq 42.2$ MHz as follows

$$\text{MPR} = \text{CEIL}\{M_A, 0.5\}$$

Where M_N is defined as follows

$$\begin{aligned} M_N = & \quad -0.125N + 18.25 & ; 2 \leq N \leq 50 \\ & -0.0333 N + 13.67 & ; 50 < N \leq 200 \end{aligned}$$

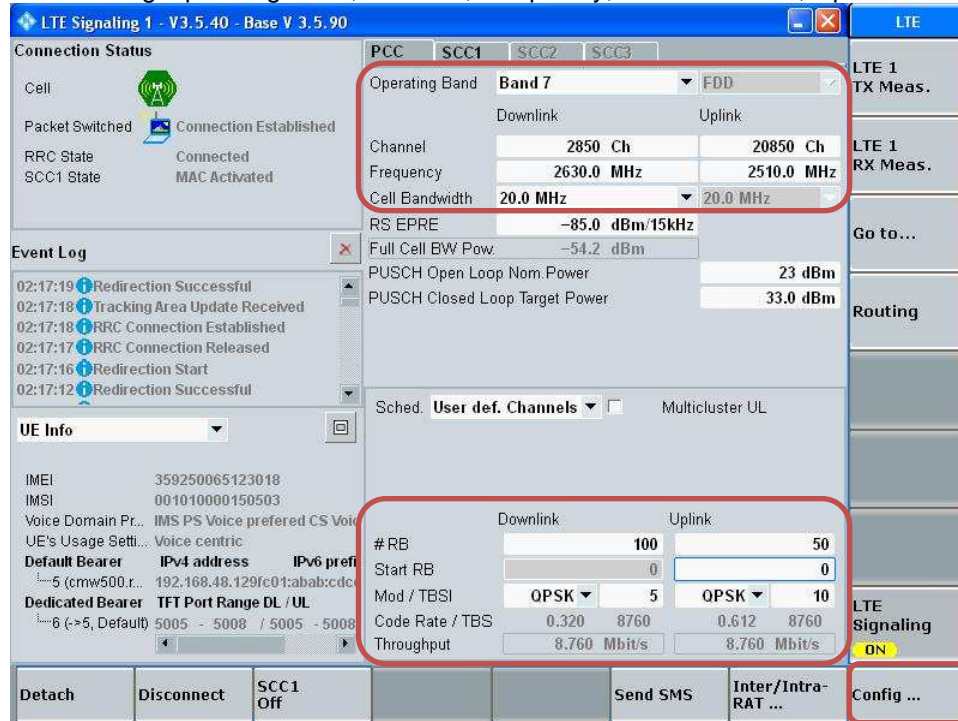
Where $N = N_{\text{RB_alloc}}$ is the number of allocated resource blocks.

For the UE maximum output power modified by MPR, the power limits specified in subclause 6.2.5A apply.

LTE Carrier Aggregation Test Signal Set-up Procedure
 (Use normal LTE set-up procedure in addition with the following steps)

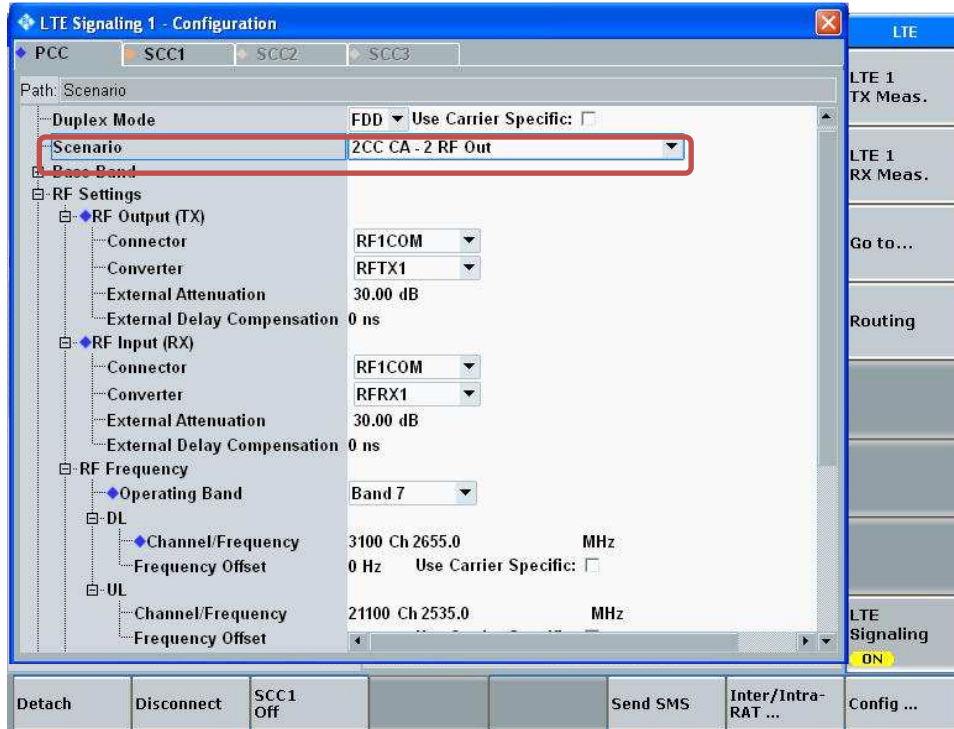
Set to CMW-500 with following parameters:

- PCC tab:
 - Select the testing Operating Band, Channel, Frequency, Cell Bandwidth, Uplink RBs

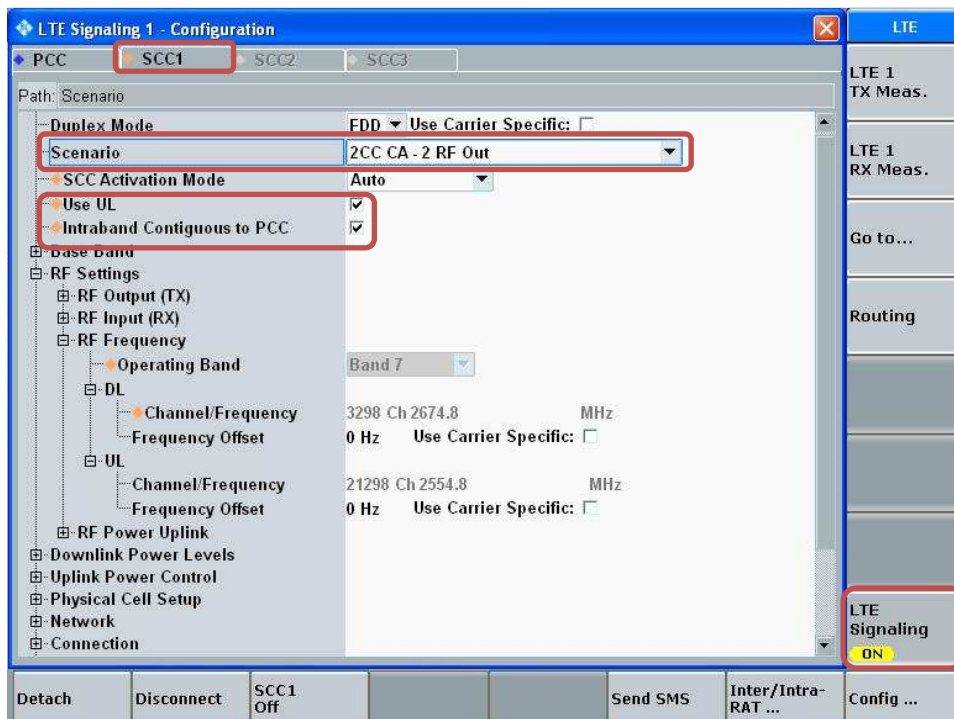


- Go to "Config...."

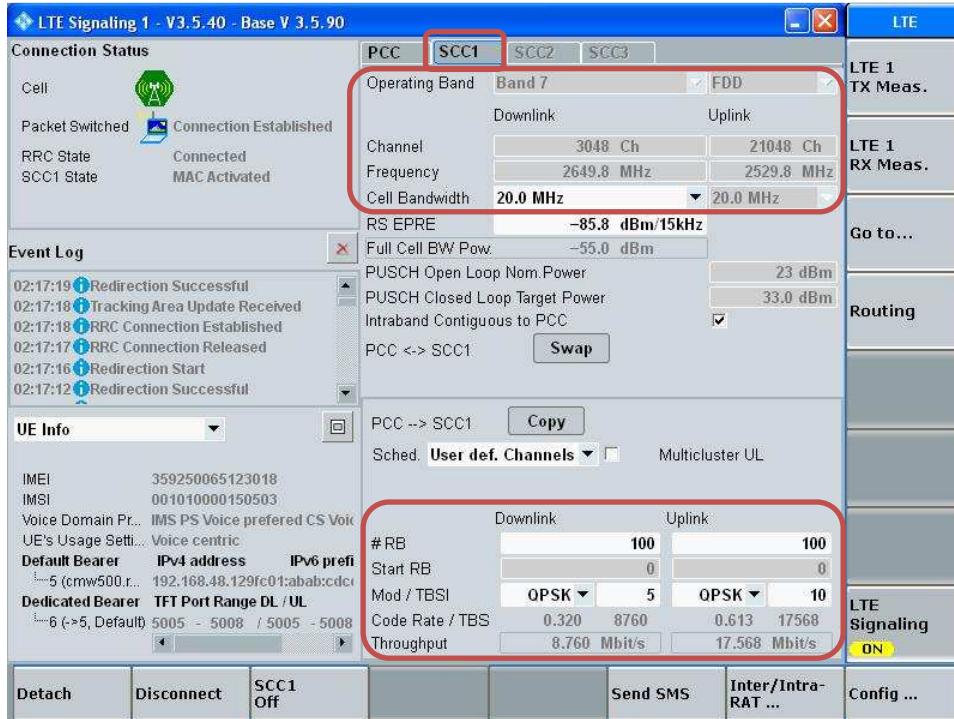
- Go to "Scenario"
- Set to "2CC CA – 2 RF Out"



- Select "SCC1" tab
- Go to "Scenario"
- Set to "2CC CA – 2 RF Out"
- Enable "Use UL"
- Enable "Intraband Contiguous to PCC"
- Select "LTE Signaling" button

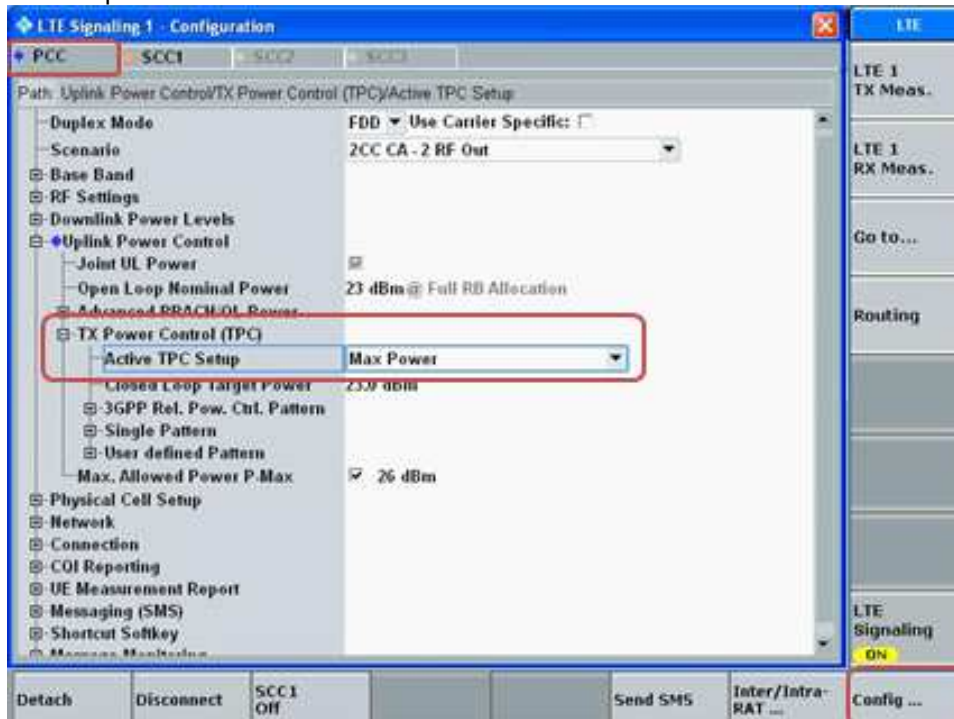


- Select “SCC1” tab
 - Select the testing Cell Bandwidth, Uplink RBs

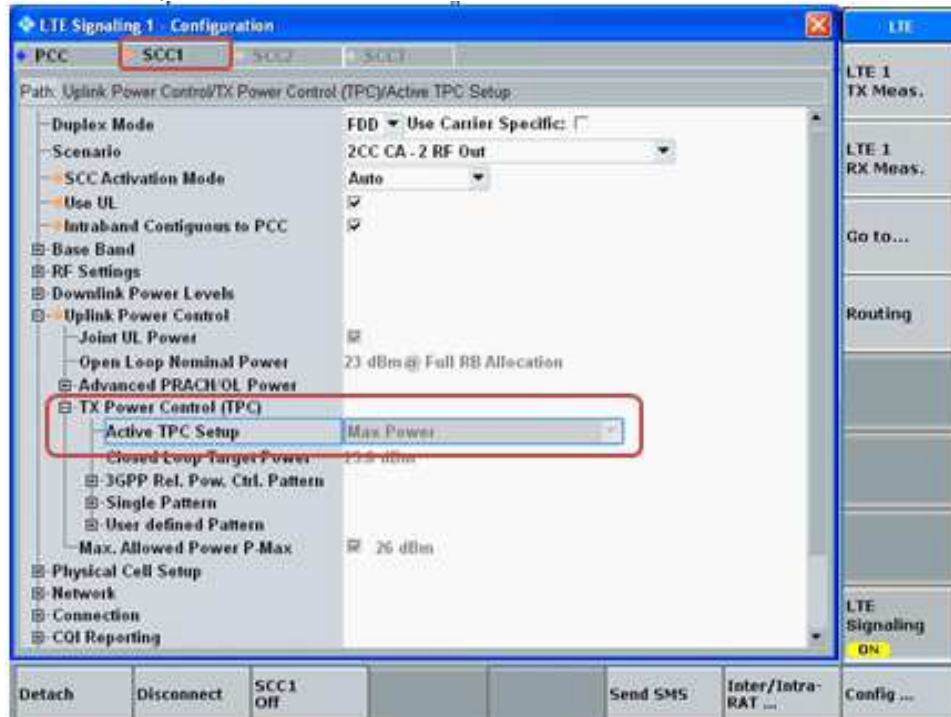


Max Power Setting

- Select “Config ...” button
- Select PCC tab
- Set “Active TPC Setup” to “Max Power”

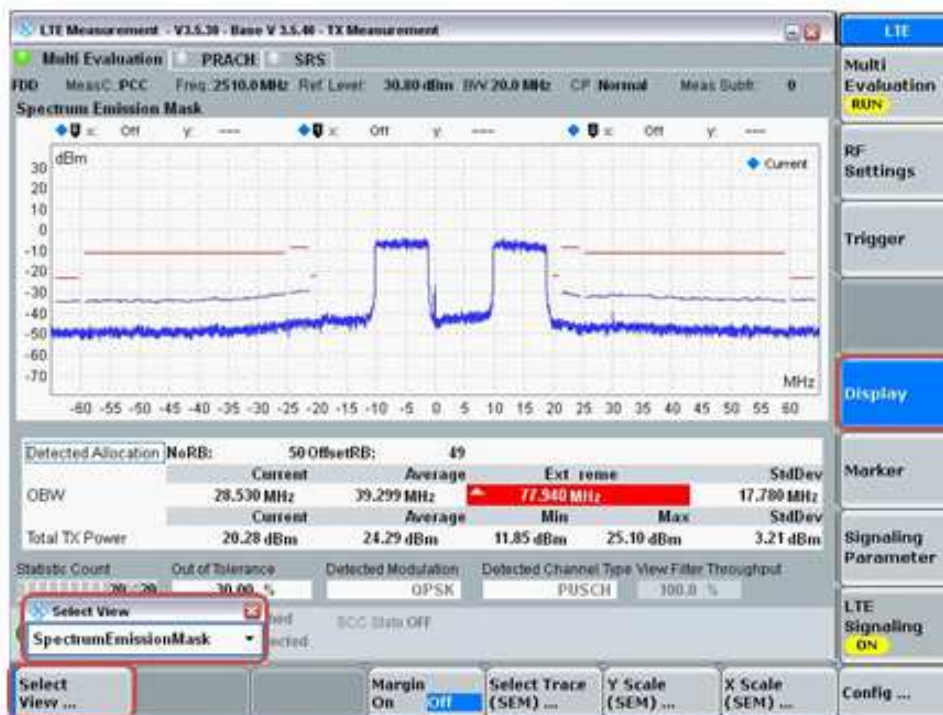


- Select SCC1 tab
- Verify that “Active TPC Setup” is set to “Max Power”



View TX Power

- Go to “Display”
- Select “Select View...”
- Select “Spectrum Emission Mask”



LTE Intra-Band Contiguous Carrier Aggregation

UL CA shall be tested based on the worst-case SAR configuration determined from non-CA SAR testing result. The channel BW, channel number, RB allocation, etc. would be selected to allow contiguous CA of PCC and SCC. Uplink output power for UL CA is the total power measured across the PCC and SCC.

UL CA power measurements were performed with QPSK modulation based on the worst-case standalone SAR.

The UL CA mode power measurements represent the total power across both carriers. Measurements were made for all supported PCC bandwidths using the channel/RB combination resulting in the highest standalone output power at the least MPR (0 dB). SCCs were set to use configurations similar to the PCC to establish conservative or worst case equivalent SAR test conditions (highest maximum power with MPR of 0 dB and RB allocation setting).

The standalone power measurement is the power for the PCC in the non-CA mode (i.e. single carrier power). In all cases the UL CA power is less than or equal to the standalone power, which is in accordance with the tune-up limits in table below.

According to November 2017 TCB workshop, Uplink CA SAR Test Guidance as follows:

- a) When the maximum output for UL CA is ≤ standalone LTE mode (without CA)
 - PCC is configured according to the highest standalone SAR configuration tested
 - SCC and subsequent CCs are configured according to procedures used for power measurement and parameters (BW, RB etc.) similar to that used for the PCC
- b) When the Reported SAR for UL CA configuration, described above, is > 1.2 W/kg, UL CA SAR is also required for all required test channels(PCC based)
- c) UL CA SAR is also required for standalone SAR configurations > 1.2 W/kg when they are scaled to the UL CA power level

Maximum Output Power (Tune-up Limit) for LTE UL Carrier Aggregation

RF Air interface	Mode	Tune-up Power Limit (dBm)	
		WWAN Antenna	
		Maximum	Reduced
CA_5B	QPSK	24.5	18.6
CA_7C	QPSK	24.5	18.5
CA_38C	QPSK	24.5	20.5
CA_41C	QPSK	24.5	20.5
CA_42C	QPSK	19.50	12.50

LTE CA 5B Measured Results

UL CA Combination	Antenna	Power Mode	Modulation	PCC(20525)				SCC(20597)				Standalone Power		(PCC + SCC) UL CA Power			Worst case positions at standalone
				BW (MHz)	Freq	RB	Offset	BW (MHz)	Freq	RB	Offset	Tune-Up Limit (dBm)	UL CA Inactive (dBm)	Tune-Up Limit (dBm)	UL CA active (dBm)	Delta	
CA_5B	WWAN	Max	QPSK	10	831.6	1	49	10	841.5	1	0	24.5	24.0	24.5	23.9	0.0	NA
CA_5B	WWAN	Reduced	QPSK	10	831.6	1	49	10	841.5	1	0	18.6	17.6	18.6	17.7	0.0	NA

Note(s):

PCC RB allocation setting for UL CA has been adjusted based on the worst-case power.

LTE CA 7C Measured Results

UL CA Combination	Antenna	Power Mode	Modulation	PCC				SCC				Standalone Power		(PCC + SCC) UL CA Power			Worst case positions at standalone
				BW (MHz)	Freq	RB	Offset	BW (MHz)	Freq	RB	Offset	Tune-Up Limit (dBm)	UL CA Inactive (dBm)	Tune-Up Limit (dBm)	UL CA active (dBm)	Delta	
CA_7C	WWAN	Max	QPSK	20	2510	1	99	20	2529.8	1	0	24.5	24.3	24.5	23.5	-0.8	Rear Tilt (Edge4 side)
CA_7C	WWAN	Max	QPSK	20	2525.1	1	99	20	2544.9	1	0	24.5	24.2	24.5	22.6	-1.6	Rear Tilt (Edge4 side)
CA_7C	WWAN	Max	QPSK	20	2540.2	1	99	20	2560	1	0	24.5	24.0	24.5	23.6	-0.4	Rear Tilt (Edge4 side)
CA_7C	WWAN	Reduced	QPSK	20	2510	1	99	20	2529.8	1	0	18.5	17.7	18.5	18.0	0.3	Edge 4
CA_7C	WWAN	Reduced	QPSK	20	2525.1	1	99	20	2544.9	1	0	18.5	17.4	18.5	17.7	0.3	Edge 4
CA_7C	WWAN	Reduced	QPSK	20	2540.2	1	99	20	2560	1	0	18.5	17.2	18.5	17.5	0.3	Edge 4

Note(s):

PCC RB allocation setting for UL CA has been adjusted based on the worst-case power.

LTE CA 38C Measured Results

UL CA Combination	Antenna	Power Mode	Modulation	PCC				SCC				Standalone Power		(PCC + SCC) UL CA Power			Worst case positions at standalone
				BW (MHz)	Freq	RB	Offset	BW (MHz)	Freq	RB	Offset	Tune-Up Limit (dBm)	UL CA Inactive (dBm)	Tune-Up Limit (dBm)	UL CA active (dBm)	Delta	
CA_38C	WWAN	Max	QPSK	20	2580	1	99	20	2599.8	1	0	24.5	24.3	24.5	24.0	-0.3	NA
CA_38C	WWAN	Max	QPSK	20	2585.1	1	99	20	2604.9	1	0	24.5	24.2	24.5	24.1	-0.1	NA
CA_38C	WWAN	Max	QPSK	20	2590.2	1	99	20	2610	1	0	24.5	24.2	24.5	24.2	0.1	NA
CA_38C	WWAN	Reduced	QPSK	20	2580	1	99	20	2599.8	1	0	20.5	19.7	20.5	19.9	0.2	NA
CA_38C	WWAN	Reduced	QPSK	20	2585.1	1	99	20	2604.9	1	0	20.5	19.7	20.5	20.0	0.3	NA
CA_38C	WWAN	Reduced	QPSK	20	2590.2	1	99	20	2610	1	0	20.5	19.7	20.5	20.0	0.3	NA

Note(s):

PCC RB allocation setting for UL CA has been adjusted based on the worst-case power.

LTE CA 41C Measured Results

UL CA Combination	Antenna	Power Mode	Modulation	PCC				SCC				Standalone Power		(PCC + SCC) UL CA Power			Worst case positions at standalone
				BW (MHz)	Freq	RB	Offset	BW (MHz)	Freq	RB	Offset	Tune-Up Limit (dBm)	UL CA Inactive (dBm)	Tune-Up Limit (dBm)	UL CA active (dBm)	Delta	
CA_41C	WWAN	Max	QPSK	20	2506	1	99	20	2525.8	1	0	24.5	24.3	24.5	24.5	0.2	Rear Tilt (Edge4 side)
CA_41C	WWAN	Max	QPSK	20	2583.1	1	99	20	2602.9	1	0	24.5	24.2	24.5	24.4	0.2	Rear Tilt (Edge4 side)
CA_41C	WWAN	Max	QPSK	20	2583.9	1	99	20	2603.7	1	0	24.5	24.1	24.5	24.3	0.1	Rear Tilt (Edge4 side)
CA_41C	WWAN	Max	QPSK	20	2660.2	1	99	20	2680	1	0	24.5	23.9	24.5	24.0	0.1	Rear Tilt (Edge4 side)
CA_41C	WWAN	Reduced	QPSK	20	2506	1	99	20	2525.8	1	0	20.5	19.9	20.5	20.1	0.2	Edge 4
CA_41C	WWAN	Reduced	QPSK	20	2583.1	1	99	20	2602.9	1	0	20.5	19.6	20.5	19.6	0.0	Edge 4
CA_41C	WWAN	Reduced	QPSK	20	2583.9	1	99	20	2603.7	1	0	20.5	19.6	20.5	19.8	0.2	Edge 4
CA_41C	WWAN	Reduced	QPSK	20	2660.2	1	99	20	2680	1	0	20.5	19.3	20.5	19.6	0.2	Edge 4

Note(s):

PCC RB allocation setting for UL CA has been adjusted based on the worst-case power.

9.4. LTE Down-Link Carrier Aggregation

The tables below show the supported frequency bands of the device for DL Inter-band and DL Intra-band combinations.

Power measurements were performed on the channel with the highest maximum output power from Tune-up Procedure on WWAN antenna.

When carrier aggregation is limited to downlink only, uplink maximum output power (single carrier) is measured for the supported combinations of downlink carrier aggregation listed in the table below. In applying the power measurement procedures of KDB 941225 D05A and April 2018 TCB workshop for DL CA to qualify for UL SAR test exclusion, power measurement is required only for the subset in each row with the largest combination of frequency bands and CCs (far right most configuration highlighted in the table below).

Index	2CC	Restriction	Completely Covered by Measurement Superset	Index	3CC	Restriction	Completely Covered by Measurement Superset	Index	4CC	Restriction	Completely Covered by Measurement Superset	Index	5CC	Restriction	Completely Covered by Measurement Superset
2CC# 1	CA_2C		4CC#7	3CC# 1	CA_41D		4CC#23	4CC# 1	CA_41E		No	5CC# 1	CA_2A-48E		No
2CC# 2	CA_5B		4CC#11	3CC# 2	CA_42D		No	4CC# 2	CA_42E		No	5CC# 2	CA_13A-48E		No
2CC# 3	CA_7B		No	3CC# 3	CA_48D		4CC#29	4CC# 3	CA_48E		5CC# 3	5CC# 3	CA_48E-66A		No
2CC# 4	CA_7C		No	3CC# 4	CA_56D		No	4CC# 4	CA_2A-46D		5CC#10	5CC# 4	CA_2A-2A-46D		No
2CC# 5	CA_12B		3CC#31	3CC# 5	CA_2A-5B		5CC# 6	4CC# 5	CA_2A-48D		5CC# 11	5CC# 5	CA_2A-5A-46D		No
2CC# 6	CA_38C		No	3CC# 6	CA_2A-7B		No	4CC# 6	CA_2A-66D		No	5CC# 6	CA_2A-5B-66B		No
2CC# 7	CA_41C		4CC#21	3CC# 7	CA_2A-7C		No	4CC# 7	CA_2C-5B		No	5CC# 7	CA_2A-5B-66C		No
2CC# 8	CA_42C		4CC#24	3CC# 8	CA_2A-12B		4CC#45	4CC# 8	CA_4A-46D		No	5CC# 8	CA_2A-13A-46D		No
2CC# 9	CA_48C		5CC#23	3CC# 9	CA_2A-46C		4CC#50	4CC# 9	CA_5A-46D		5CC# 13	5CC# 9	CA_2A-13A-66D		No
2CC# 10	CA_66B		No	3CC# 10	CA_2A-48C		4CC#52	4CC# 10	CA_5A-66D		No	5CC# 10	CA_2A-46D-66A		No
2CC# 11	CA_66C		No	3CC# 11	CA_2A-66B		No	4CC# 11	CA_5B-66B		No	5CC# 11	CA_2A-48D-66A		No
2CC# 12	CA_2A-2A		5CC#24	3CC# 12	CA_2A-66C		No	4CC# 12	CA_5B-66C		No	5CC# 12	CA_5A-7A-46D		No
2CC# 13	CA_2A-4A		4CC#35	3CC# 13	CA_2C-5A		No	4CC# 13	CA_7A-46D		No	5CC# 13	CA_5A-46D-66A		No
2CC# 14	CA_2A-5A		4CC#39	3CC# 14	CA_2C-12A		No	4CC# 14	CA_12A-46D		No	5CC# 14	CA_5B-66A-66B		No
2CC# 15	CA_2A-7A		3CC#64	3CC# 15	CA_2C-29A		No	4CC# 15	CA_13A-46D		5CC# 15	5CC# 15	CA_13A-46D-66A		No
2CC# 16	CA_2A-12A		4CC#43	16	CA_4A-5B		No	4CC# 16	CA_13A-48D		5CC# 19	5CC# 16	CA_13A-48C-48C		No
2CC# 17	CA_2A-13A		5CC#30	3CC# 17	CA_4A-7B		No	4CC# 17	CA_13A-66D		No	5CC# 17	CA_13A-48C-66B		No
2CC# 18	CA_2A-14A		No	3CC# 18	CA_4A-7C		No	4CC# 18	CA_25A-41D		No	5CC# 18	CA_13A-48C-66C		No
2CC# 19	CA_2A-17A		No	3CC# 19	CA_4A-12B		No	4CC# 19	CA_41A-41D		No	5CC# 19	CA_13A-48D-66A		No
2CC# 20	CA_2A-29A		3CC#70	3CC# 20	CA_4A-46C		No	4CC# 20	CA_41A-42D		No	5CC# 20	CA_48D-66A-66A		No
2CC# 21	CA_2A-46A		4CC#49	3CC# 21	CA_5A-7B		No	4CC# 21	CA_41C-41C		No	5CC# 21	CA_48A-48C-66B		No
2CC# 22	CA_2A-48A		5CC#33	3CC# 22	CA_5A-7C		No	4CC# 22	CA_41C-42C		No	5CC# 22	CA_48A-48C-66A		No
2CC# 23	CA_2A-66A		4CC#53	3CC# 23	CA_5A-46C		4CC#59	4CC# 23	CA_41D-42A		No	5CC# 23	CA_48C-48C-66A		No
2CC# 24	CA_4A-4A		4CC#55	3CC# 24	CA_5A-66B		No	4CC# 24	CA_42C-42C		No	5CC# 24	CA_2A-2A-5A-66B		No
2CC# 25	CA_4A-5A		No	3CC# 25	CA_5A-66C		No	4CC# 25	CA_46D-66A		5CC# 20	5CC# 25	CA_2A-2A-5A-66C		No
2CC# 26	CA_4A-7A		3CC#81	3CC# 26	CA_5B-66A		4CC#62	4CC# 26	CA_48C-48C		5CC#23	5CC# 26	CA_2A-2A-12B-66A		No
2CC# 27	CA_4A-12A		No	3CC# 27	CA_7A-46C		No	4CC# 27	CA_48C-66B		No	5CC# 27	CA_2A-2A-66A-66B		No
2CC# 28	CA_4A-13A		No	3CC# 28	CA_12A-46C		No	4CC# 28	CA_48C-66C		No	5CC# 28	CA_2A-2A-66A-66C		No
2CC# 29	CA_4A-17A		No	3CC# 29	CA_12A-66B		No	4CC# 29	CA_48D-66A		No	5CC# 29	CA_2A-5B-66A-66A		No
2CC# 30	CA_4A-29A		No	3CC# 30	CA_12A-66C		No	4CC# 30	CA_2A-2A-5B		No	5CC# 30	CA_2A-13A-66A-66B		No
2CC# 31	CA_4A-46A		4CC#57	3CC# 31	CA_12B-66A		No	4CC# 31	CA_2A-2A-12B		5CC#26	5CC# 31	CA_2A-13A-66A-66C		No
2CC# 32	CA_5A-7A		4CC#58	3CC# 32	CA_13A-46C		4CC#63	4CC# 32	CA_2A-2A-46C		No	5CC# 32	CA_2A-46A-46C-66A		No
2CC# 33	CA_5A-25A		No	3CC# 33	CA_13A-48C		4CC#67	4CC# 33	CA_2A-2A-66B		No	5CC# 33	CA_2A-48A-48C-66A		No
2CC# 34	CA_5A-38A		No	3CC# 34	CA_13A-66B		No	4CC# 34	CA_2A-2A-66C		No	5CC# 34	CA_13A-48A-48C-66A		No
2CC# 35	CA_5A-41A		No	3CC# 35	CA_13A-66C		No	4CC# 35	CA_2A-4A-5B		No				
2CC# 36	CA_5A-46A		3CC#86	3CC# 36	CA_25A-41C		No	4CC# 36	CA_2A-4A-7B		No				
2CC# 37	CA_5A-66A		4CC#60	3CC# 37	CA_26A-41C		No	4CC# 37	CA_2A-4A-7C		No				
2CC# 38	CA_7A-7A		No	3CC# 38	CA_41A-41C		No	4CC# 38	CA_2A-4A-12B		No				
2CC# 39	CA_7A-12A		No	3CC# 39	CA_41A-42C		No	4CC# 39	CA_2A-5A-46C		No				
2CC# 40	CA_7A-42A		No	3CC# 40	CA_41C-42A		No	4CC# 40	CA_2A-5A-66B		No				
2CC# 41	CA_7A-46A		No	3CC# 41	CA_42A-42C		No	4CC# 41	CA_2A-5A-66C		No				
2CC# 42	CA_7A-66A		No	3CC# 42	CA_46C-66A		4CC#71	4CC# 42	CA_2A-5B-66A		5CC#29				

Index	2CC	Restriction	Completely Covered by Measurement Superset	Index	3CC	Restriction	Completely Covered by Measurement Superset	Index	4CC	Restriction	Completely Covered by Measurement Superset
2CC# 43	CA_12A-25A		No	3CC# 43	CA_48A-48C		4CC# 74	4CC# 43	CA_2A-12A-66B		No
2CC# 44	CA_12A-46A		No	3CC# 44	CA_48A-66B		No	4CC# 44	CA_2A-12A-66C		No
2CC# 45	CA_12A-66A		3CC# 88	3CC# 45	CA_48A-66C		No	4CC# 45	CA_2A-12B-66A		No
2CC# 46	CA_13A-46A		3CC# 89	3CC# 46	CA_48C-66A		No	4CC# 46	CA_2A-13A-46C		No
2CC# 47	CA_13A-48A		4CC# 64	3CC# 47	CA_66A-66B		No	4CC# 47	CA_2A-13A-66B		No
2CC# 48	CA_13A-66A		4CC# 68	3CC# 48	CA_66A-66C		No	4CC# 48	CA_2A-13A-66C		No
2CC# 49	CA_14A-66A		3CC# 93	3CC# 49	CA_2A-2A-4A		4CC# 75	4CC# 49	CA_2A-46A-46C		5CC# 32
2CC# 50	CA_25A-25A		3CC# 94	3CC# 50	CA_2A-2A-5A		4CC# 78	4CC# 50	CA_2A-46C-66A		No
2CC# 51	CA_25A-26A		No	3CC# 51	CA_2A-2A-12A		4CC# 79	4CC# 51	CA_2A-48A-48C		5CC# 33
2CC# 52	CA_25A-41A		No	3CC# 52	CA_2A-2A-13A		4CC# 80	4CC# 52	CA_2A-48C-66A		No
2CC# 53	CA_26A-41A		No	3CC# 53	CA_2A-2A-29A		No	4CC# 53	CA_2A-66A-66B		No
2CC# 54	CA_26A-46A		No	3CC# 54	CA_2A-2A-46A		No	4CC# 54	CA_2A-66A-66C		No
2CC# 55	CA_29A-66A		3CC# 95	3CC# 55	CA_2A-2A-66A		4CC# 81	4CC# 55	CA_4A-4A-5B		No
2CC# 56	CA_41A-41A		No	3CC# 56	CA_2A-4A-4A		4CC# 82	4CC# 56	CA_4A-4A-12B		No
2CC# 57	CA_41A-42A		No	3CC# 57	CA_2A-4A-5A		No	4CC# 57	CA_4A-46A-46C		No
2CC# 58	CA_42A-42A		No	3CC# 58	CA_2A-4A-7A		4CC# 84	4CC# 58	CA_5A-7A-46C		No
2CC# 59	CA_46A-66A		3CC# 97	3CC# 59	CA_2A-4A-12A		No	4CC# 59	CA_5A-46C-66A		No
2CC# 60	CA_48A-48A		4CC# 72	3CC# 60	CA_2A-4A-13A		No	4CC# 60	CA_5A-66A-66B		No
2CC# 61	CA_48A-66A		3CC# 99	3CC# 61	CA_2A-4A-29A		No	4CC# 61	CA_5A-66A-66C		No
2CC# 62	CA_66A-66A		No	3CC# 62	CA_2A-5A-46A		No	4CC# 62	CA_5B-66A-66A		No
				3CC# 63	CA_2A-5A-66A		No	4CC# 63	CA_13A-46C-66A		No
				3CC# 64	CA_2A-7A-7A		No	4CC# 64	CA_13A-48A-48C		5CC# 34
				3CC# 65	CA_2A-7A-12A		No	4CC# 65	CA_13A-48A-66B		No
				3CC# 66	CA_2A-7A-66A		No	4CC# 66	CA_13A-48A-66C		No
				3CC# 67	CA_2A-12A-66A		4CC# 87	4CC# 67	CA_13A-48C-66A		No
				3CC# 68	CA_2A-13A-46A		No	4CC# 68	CA_13A-66A-66B		No
				3CC# 69	CA_2A-13A-66A		4CC# 88	4CC# 69	CA_13A-66A-66C		No
				3CC# 70	CA_2A-29A-66A		No	4CC# 70	CA_46A-46C-66A		No
				3CC# 71	CA_2A-46A-46A		4CC# 89	4CC# 71	CA_46C-66A-66A		No
				3CC# 72	CA_2A-46A-66A		No	4CC# 72	CA_48A-48A-66B		No
				3CC# 73	CA_2A-48A-48A		4CC# 90	4CC# 73	CA_48A-48A-66C		No
				3CC# 74	CA_2A-48A-66A		No	4CC# 74	CA_48A-48C-66A		No
				3CC# 75	CA_2A-66A-66A		No	4CC# 75	CA_2A-2A-4A-4A		No
				3CC# 76	CA_4A-4A-5A		No	4CC# 76	CA_2A-2A-4A-5A		No
				3CC# 77	CA_4A-4A-7A		No	4CC# 77	CA_2A-2A-4A-12A		No
				3CC# 78	CA_4A-4A-12A		No	4CC# 78	CA_2A-2A-5A-66A		No
				3CC# 79	CA_4A-4A-13A		No	4CC# 79	CA_2A-2A-12A-66A		No
				3CC# 80	CA_4A-4A-29A		No	4CC# 80	CA_2A-2A-13A-66A		No
				3CC# 81	CA_4A-7A-7A		No	4CC# 81	CA_2A-2A-66A-66A		No
				3CC# 82	CA_4A-7A-12A		No	4CC# 82	CA_2A-4A-4A-5A		No
				3CC# 83	CA_4A-46A-46A		No	4CC# 83	CA_2A-4A-4A-12A		No
				3CC# 84	CA_5A-7A-7A		No	4CC# 84	CA_2A-4A-7A-7A		No
				3CC# 85	CA_5A-7A-46A		No	4CC# 85	CA_2A-4A-7A-12A		No
				3CC# 86	CA_5A-46A-66A		No	4CC# 86	CA_2A-5A-66A-66A		No
				3CC# 87	CA_5A-66A-66A		No	4CC# 87	CA_2A-12A-66A-66A		No
				3CC# 88	CA_12A-66A-66A		No	4CC# 88	CA_2A-13A-66A-66A		No
				3CC# 89	CA_13A-46A-66A		No	4CC# 89	CA_2A-46A-46A-66A		No
				3CC# 90	CA_13A-48A-48A		4CC# 91	4CC# 90	CA_2A-48A-48A-66A		No
				3CC# 91	CA_13A-48A-66A		No	4CC# 91	CA_13A-48A-48A-66A		No
				3CC# 92	CA_13A-66A-66A		No	4CC# 92	CA_48A-48A-66A-66A		No
				3CC# 93	CA_14A-66A-66A		No				
				3CC# 94	CA_25A-25A-26A		No				
				3CC# 95	CA_29A-66A-66A		No				
				3CC# 96	CA_46A-46A-66A		No				
				3CC# 97	CA_46A-66A-66A		No				
				3CC# 98	CA_48A-48A-66A		4CC# 92				
				3CC# 99	CA_48A-66A-66A		No				

In applying the power measurement procedures of KDB 941225 D05A for DL CA to qualify for UL SAR test exclusion, power measurement is required only for the CA configuration with the largest aggregated DL CA BW in each frequency band, independently for contiguous and non-contiguous CA; however, if the same frequency band is used for both contiguous and non-contiguous CA, power measurement was performed using the configuration with the largest aggregated BW and maximum output power among contiguous and non-contiguous CA.

2CC DL CA Measured Results

E-UTRA CA configuration	CC1 (UL)				CC1(DL)			CC2 (DL)			Aggregated BW	CA Inactive (dBm)	CA Active (dBm)	Delta	2CC #	
	Mode	BW (MHz)	Channel	Freq (MHz)	RB_Offset	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel						Freq (MHz)
CA_7B	QPSK	15	21076	2532.6	1,0	15	3076	2652.6	5	3169	2661.9	20	24.6	24.6	0.0	3
CA_7C	QPSK	20	21001	2525.1	1,0	20	3001	2645.1	20	3199	2664.9	40	24.5	24.6	0.1	4
CA_38C	QPSK	20	37901	2585.1	1,0	20	37901	2585.1	20	38099	2604.9	40	24.5	24.4	0.0	6
CA_66B	QPSK	10	132373	1750.1	50,0	10	66837	2150.1	10	66936	2160.0	20	22.2	22.2	0.0	10
CA_66C	QPSK	20	132323	1745.1	50,0	20	66787	2145.1	20	66985	2164.9	40	22.3	22.3	0.0	11
CA_2A-14A	QPSK	20	18900	1880.0	50,0	20	900	1960.0	10	5330	763.0	30	23.1	23.1	0.0	18
CA_2A-17A	QPSK	10	18900	1880.0	50,0	10	900	1960.0	10	5790	740.0	20	22.9	22.9	0.0	19
CA_4A-5A	QPSK	10	20175	1732.5	50,0	10	2175	2132.5	10	2450	874.0	20	21.8	21.8	0.0	25
CA_4A-12A	QPSK	10	20175	1732.5	50,0	10	2175	2132.5	10	5130	741.0	20	21.8	21.9	0.0	27
CA_4A-13A	QPSK	20	20175	1732.5	50,0	20	2175	2132.5	10	5230	751.0	30	22.0	22.0	0.0	28
CA_4A-17A	QPSK	10	20175	1732.5	50,0	10	2175	2132.5	10	5790	740.0	20	21.9	22.0	0.1	29
CA_4A-29A	QPSK	10	20175	1732.5	50,0	10	2175	2132.5	10	9720	723.0	20	21.9	21.8	0.0	30
CA_5A-25A	QPSK	10	20525	836.5	50,0	10	2525	881.5	20	8365	1962.5	30	23.0	22.9	0.0	33
CA_5A-38A	QPSK	10	20525	836.5	50,0	10	2525	881.5	20	38000	2595.0	30	22.9	22.9	0.0	34
CA_5A-41A	QPSK	10	20525	836.5	50,0	10	2525	881.5	20	40620	2593.0	30	23.0	22.9	0.0	35
CA_7A-7A	QPSK	20	20850	2510.0	50,0	20	2850	2630.0	20	3350	2680.0	40	23.6	23.6	0.0	38
CA_7A-12A	QPSK	20	21100	2535.0	50,0	20	3100	2655.0	10	5130	741.0	30	23.3	23.4	0.1	39
CA_7A-42A	QPSK	20	21100	2535.0	50,0	20	3100	2655.0	20	42590	3500.0	40	23.3	23.4	0.1	40
CA_7A-46A	QPSK	20	21100	2535.0	50,0	20	3100	2655.0	20	50690	5540.0	40	23.3	23.3	0.1	41
CA_7A-66A	QPSK	20	21100	2535.0	50,0	20	3100	2655.0	20	66886	2155.0	40	23.4	23.5	0.1	42
CA_12A-25A	QPSK	10	23060	704.0	50,0	10	5060	734.0	20	8365	1962.5	30	23.4	23.3	-0.1	43
CA_12A-46A	QPSK	10	23095	707.5	50,0	10	5095	737.5	20	50665	5537.5	30	23.3	23.3	0.0	44
CA_25A-26A	QPSK	20	26365	1882.5	50,0	20	8365	1962.5	15	8865	876.5	35	22.8	22.8	0.0	51
CA_25A-41A	QPSK	20	26365	1882.5	50,0	20	8365	1962.5	20	40620	2593.0	40	22.8	22.8	0.0	52
CA_26A-41A	QPSK	15	26865	831.5	50,0	15	8865	876.5	20	40620	2593.0	35	23.0	23.0	0.0	53
CA_26A-46A	QPSK	10	26865	831.5	50,0	10	8865	876.5	20	50665	5537.5	30	22.9	22.9	0.0	54
CA_41A-41A	QPSK	20	39750	2506.0	50,0	20	39750	2506.0	20	41490	2680.0	40	23.6	23.6	0.1	56
CA_41A-42A	QPSK	20	40620	2593.0	50,0	20	40620	2593.0	20	42590	3500.0	40	23.4	23.3	-0.1	57
CA_42A-42A	QPSK	20	41690	3410.0	100,0	20	41690	3410.0	20	43490	3590.0	40	18.0	18.0	0.0	58
CA_66A-66A	QPSK	20	132072	1720.0	50,0	20	66536	2120.0	20	67236	2190.0	40	22.4	22.4	0.0	62

3CC DL CA Measured Results

E-UTRA CA configuration	CC1 (UL)					CC1 (DL)			CC2 (DL)			CC3 (DL)			Aggregated BW	CA Inactive (dBm)	CA Active (dBm)	Delta	3CC #
	Mode	BW (MHz)	Channel	Freq (MHz)	RB,Offset	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)					
CA_42D	QPSK	20	43292	3480.2	1,0	20	43292	3480.2	20	42590	3500.0	20	42788	3519.8	60	18.9	19.0	0.1	2
CA_66D	QPSK	20	132224	1735.2	1,0	20	66688	2135.2	20	66886	2155.0	20	67084	2174.8	60	23.2	23.3	0.1	4
CA_2A-7B	QPSK	20	18900	1880.0	1,0	20	900	1960.0	15	3076	2652.6	5	3169	2661.9	40	23.9	23.8	-0.1	6
CA_2A-7C	QPSK	20	18900	1880.0	1,0	20	900	1960.0	20	3001	2645.1	20	3199	2664.9	60	23.8	23.8	0.1	7
CA_2A-66B	QPSK	20	18900	1880.0	1,0	20	900	1960.0	10	66837	2150.1	10	66936	2160.0	40	23.9	24.0	0.0	11
CA_2A-66C	QPSK	20	18900	1880.0	1,0	20	900	1960.0	20	66787	2145.1	20	66985	2164.9	60	23.9	24.0	0.1	12
CA_2C-5A	QPSK	20	18801	1870.1	1,0	20	801	1950.1	20	999	1969.9	10	2525	881.5	50	23.8	23.7	-0.1	13
CA_2C-12A	QPSK	20	18801	1870.1	1,0	20	801	1950.1	20	999	1969.9	10	5095	737.5	50	23.9	23.8	-0.1	14
CA_2C-29A	QPSK	20	18801	1870.1	1,0	20	801	1950.1	20	999	1969.9	10	9715	722.5	50	23.8	23.8	0.0	15
CA_4A-5B	QPSK	20	20175	1732.5	1,0	20	2175	2132.5	10	2476	876.6	10	2575	886.5	40	23.0	22.9	-0.1	16
CA_4A-7B	QPSK	20	20175	1732.5	1,0	20	2175	2132.5	15	3076	2652.6	5	3169	2661.9	40	23.0	23.0	0.0	17
CA_4A-7C	QPSK	20	20175	1732.5	1,0	20	2175	2132.5	20	3001	2645.1	20	3199	2664.9	60	23.0	23.0	-0.1	18
CA_4A-12B	QPSK	20	20175	1732.5	1,0	20	2175	2132.5	5	5048	732.8	10	5120	740.0	35	23.1	23.0	-0.1	19
CA_4A-46C	QPSK	20	20175	1732.5	1,0	20	2175	2132.5	20	50692	5540.2	20	50890	5560.0	60	23.0	23.0	0.0	20
CA_5A-7B	QPSK	10	20525	836.5	50,0	10	2525	881.5	15	3076	2652.6	5	3169	2661.9	30	22.9	22.9	0.0	21
CA_5A-7C	QPSK	10	20525	836.5	50,0	10	2525	881.5	20	3001	2645.1	20	3199	2664.9	50	23.0	23.0	0.0	22
CA_5A-66B	QPSK	10	20525	836.5	50,0	10	2525	881.5	10	66837	2150.1	10	66936	2160.0	30	22.9	23.0	0.1	24
CA_5A-66C	QPSK	10	20525	836.5	50,0	10	2525	881.5	20	66787	2145.1	20	66985	2164.9	50	22.9	23.0	0.0	25
CA_7A-46C	QPSK	20	21100	2535.0	1,0	20	3100	2655.0	20	50692	5540.2	20	50890	5560.0	60	24.2	24.3	0.1	27
CA_12A-46C	QPSK	10	23095	707.5	50,0	10	5095	737.5	20	50692	5540.2	20	50890	5560.0	50	23.0	23.0	0.0	28
CA_12A-66B	QPSK	10	23095	707.5	50,0	10	5095	737.5	10	66837	2150.1	10	66936	2160.0	30	23.2	23.1	-0.1	29
CA_12A-66C	QPSK	10	23095	707.5	50,0	10	5095	737.5	20	66787	2145.1	20	66985	2164.9	50	23.1	23.2	0.0	30
CA_12B-66A	QPSK	5	23048	702.8	25,0	5	5048	732.8	10	5120	740.0	20	66886	2155.0	35	23.3	23.3	0.0	31
CA_13A-66B	QPSK	10	23230	782.0	50,0	10	5230	751.0	10	66837	2150.1	10	66936	2160.0	30	23.4	23.4	-0.1	34
CA_13A-66C	QPSK	10	23230	782.0	50,0	10	5230	751.0	20	66787	2145.1	20	66985	2164.9	50	23.4	23.3	-0.1	35
CA_25A-41C	QPSK	20	26363	1882.5	1,0	20	8365	1962.5	20	40521	2583.1	20	40719	2602.9	60	23.6	23.6	0.1	36
CA_26A-41C	QPSK	15	26865	831.5	1,0	15	8865	876.5	20	40521	2583.1	20	40719	2602.9	55	24.0	23.9	-0.1	37
CA_41A-41C	QPSK	20	39750	2506.0	1,0	20	39750	2506.0	20	41292	2660.2	20	41490	2680.0	60	24.4	24.3	-0.1	38
CA_41A-42C	QPSK	20	40620	2593.0	1,0	20	40620	2593.0	20	42491	3490.1	20	42689	3509.9	60	24.1	24.1	0.0	39
CA_41C-42A	QPSK	20	40521	2583.1	1,0	20	40521	2583.1	20	40719	2602.9	20	43490	3590.0	60	23.9	23.9	0.0	40
CA_42A-42C	QPSK	20	41690	3410.0	1,0	20	41690	3410.0	20	43292	3570.2	20	43490	3590.0	60	17.4	17.4	-0.1	41
CA_48A-66B*	QPSK	10	132622	1775.0	1,0	10	67086	2175.0	10	67185	2184.9	20	55340	3560.0	40	24.3	24.3	0.0	44
CA_48A-66C*	QPSK	20	132322	1745.0	1,0	20	66786	2145.0	20	66985	2164.9	20	55990	3625.0	60	24.5	24.5	0.0	45
CA_48C-66A*	QPSK	20	132422	1755.0	1,0	20	66886	2155.0	20	55891	3615.1	20	56089	3634.9	60	24.5	24.5	0.0	46
CA_66A-66B	QPSK	20	132072	1720.0	1,0	20	66536	2120.0	10	67187	2185.1	10	67286	2195.0	40	23.4	23.4	0.0	47
CA_66A-66C	QPSK	20	132072	1720.0	1,0	20	66535	2120.0	20	67038	2170.2	20	67236	2190.0	60	23.4	23.4	0.1	48
CA_2A-2A-29A	QPSK	20	18700	1860.0	1,0	20	700	1940.0	20	1100	1980.0	10	9715	722.5	50	24.0	24.0	-0.1	53
CA_2A-2A-46A	QPSK	20	18700	1860.0	1,0	20	700	1940.0	20	1100	1980.0	20	50665	5537.5	60	23.9	24.0	0.0	54
CA_2A-4A-5A	QPSK	20	18900	1880.0	1,0	20	900	1960.0	20	2175	2132.5	10	2450	874.0	50	24.0	23.9	-0.1	57
CA_2A-4A-12A	QPSK	20	18900	1880.0	1,0	20	900	1960.0	20	2175	2132.5	10	5130	741.0	50	24.0	24.0	0.0	59
CA_2A-4A-13A	QPSK	20	18900	1880.0	1,0	20	900	1960.0	20	2175	2132.5	10	5230	751.0	50	24.0	24.0	0.0	60
CA_2A-4A-29A	QPSK	20	18900	1880.0	1,0	20	900	1960.0	20	2175	2132.5	10	9720	723.0	50	24.0	24.0	0.0	61
CA_2A-5A-46A	QPSK	20	18900	1880.0	1,0	20	900	1960.0	10	2450	874.0	20	50665	5537.5	50	24.0	24.0	0.0	62
CA_2A-5A-66A	QPSK	20	18900	1880.0	1,0	20	900	1960.0	10	2525	881.5	20	66886	2155.0	50	24.0	24.0	0.1	63
CA_2A-7A-7A	QPSK	20	18900	1880.0	1,0	20	900	1960.0	20	2850	2630.0	20	3350	2680.0	60	23.9	23.9	-0.1	64
CA_2A-7A-12A	QPSK	20	18900	1880.0	1,0	20	900	1960.0	20	3100	2655.0	10	5130	741.0	50	23.9	23.9	0.0	65
CA_2A-7A-66A	QPSK	20	18900	1880.0	1,0	20	900	1960.0	20	3100	2655.0	20	66886	2155.0	60	24.0	23.9	-0.1	66
CA_2A-13A-46A	QPSK	20	18900	1880.0	1,0	20	900	1960.0	10	5230	751.0	20	50665	5537.5	50	23.9	23.9	0.0	68
CA_2A-29A-66A	QPSK	20	18900	1880.0	1,0	20	900	1960.0	10	9720	723.0	20	66886	2155.0	50	23.9	23.9	-0.1	70
CA_2A-46A-66A	QPSK	20	18900	1880.0	1,0	20	900	1960.0	20	50690	5540.0	20	66886	2155.0	60	23.9	24.0	0.1	72
CA_2A-48A-66A	QPSK	20	18900	1880.0	1,0	20	900	1960.0	20	55990	3625.0	20	66886	2155.0	60	23.9	24.0	0.1	74
CA_2A-66A-66A	QPSK	20	18900	1880.0	1,0	20	900	1960.0	20	66536	2120.0	20	67236	2190.0	60	24.0	24.3	0.3	75
CA_4A-4A-5A	QPSK	20	20050	1720.0	1,0	20	2050	2120.0	20	2300	2145.0	10	2525	881.5	50	23.0	22.9	-0.1	76
CA_4A-4A-7A	QPSK	10	20050	1720.0	50,0	10	2050	2120.0	10	2300	2145.0	20	3100	2655.0	40	21.8	21.8	0.1	77
CA_4A-4A-12A	QPSK	20	20050	1720.0	1,0	20	2050	2120.0	20	2300	2145.0	10	5095	737.5	50	23.0	23.0	-0.1	78
CA_4A-4A-13A	QPSK	20	20050	1720.0	1,0	20	2050	2120.0	20	2300	2145.0	10	5230	751.0	50	22.9	23.0	0.1	79
CA_4A-4A-29A	QPSK	20	20050	1720.0	1,0	20	2050	2120.0	20	2300	2145.0	10	9715	722.5	50	22.9	22.9	0.0	80
CA_4A-7A-7A	QPSK	20	20175	1732.5	1,0	20	2175	2132.5	20	2850	2630.0	20	3350	2680.0	60	23.0	23.0	-0.1	81
CA_4A-7A-12A	QPSK	10	20175	1732.5	50,0	10	2175	2132.5	20	3100	2655.0	10	5130	741.0	40	21.9	21.9	0.0	82
CA_4A-46A-46A	QPSK	20	20175	1732.5	1,0	20	2175	2132.5	20	46890	5160.0	20	54340	5905.0	60	22.9	22.9	0.0	83
CA_5A-7A-7A	QPSK	10	20525	836.5	50,0	10	2525	881.5	20	2850	2630.0	20	3350	2680.0	50	22.9	22.9	0.0	84
CA_5A-7A-46A	QPSK	10	20525	836.5	50,0	10	2525	881.5	20	3100	2655.0	20	50690	5540.0	50	22.8	22.9	0.1	85

Notes:

* Denotes measurements performed at Ise-shi, Mie-ken, Japan lab

E-UTRA CA configuration	CC1 (UL)					CC1 (DL)			CC2 (DL)			CC3 (DL)			Aggregated BW	CA Inactive (dBm)	CA Active (dBm)	Delta	3CC #
	Mode	BW (MHz)	Channel	Freq (MHz)	RB,Offset	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)					
CA_5A-46A-66A	QPSK	10	20525	836.5	50,0	10	2525	881.5	20	50690	5540.0	20	66886	2155.0	50	23.0	22.9	0.0	86
CA_5A-66A-66A	QPSK	10	20525	836.5	50,0	10	2525	881.5	20	66536	2120.0	20	67236	2190.0	50	22.9	23.0	0.0	87
CA_12A-66A-66A	QPSK	10	23095	707.5	50,0	10	5095	737.5	20	66536	2120.0	20	67236	2190.0	50	23.2	23.2	0.0	88
CA_13A-46A-66A	QPSK	10	23230	782.0	50,0	10	5230	751.0	20	50690	5540.0	20	66886	2155.0	50	23.3	23.2	-0.1	89
CA_13A-48A-66A	QPSK	10	23230	782.0	50,0	10	5230	751.0	20	55990	3625.0	20	66886	2155.0	50	23.4	23.2	-0.1	91
CA_13A-66A-66A	QPSK	10	23230	782.0	50,0	10	5230	751.0	20	66536	2120.0	20	67236	2190.0	50	23.3	23.3	0.0	92
CA_14A-66A-66A	QPSK	10	23330	793.0	50,0	10	5330	763.0	20	66536	2120.0	20	67236	2190.0	50	22.9	22.9	0.0	93
CA_25A-25A-26A	QPSK	20	26140	1860.0	1,0	20	8140	1940.0	20	8590	1985.0	5	8865	876.5	45	23.8	23.8	0.0	94
CA_29A-66A-66A*	QPSK	20	132072	1720.0	1,0	20	66536	2120.0	20	67236	2190.0	10	9715	722.5	50	24.7	24.7	0.0	95
CA_46A-46A-66A*	QPSK	20	132072	1720.0	1,0	20	66536	2120.0	20	50665	5537.5	20	50467	5517.7	60	24.7	24.7	0.0	96
CA_46A-66A-66A*	QPSK	20	132072	1720.0	1,0	20	66536	2120.0	20	67236	2190.0	20	50665	5537.5	60	24.7	24.7	0.0	97
CA_48A-66A-66A*	QPSK	20	132072	1720.0	1,0	20	66536	2120.0	20	67236	2190.0	20	55990	3625.0	60	24.7	24.7	0.0	99

Notes:

* Denotes measurements performed at Ise-shi, Mie-ken, Japan lab

4CC DL CA Measured Results

E-UTRA CA configuration	CC1 (UL)				CC1 (DL)				CC2 (DL)				CC3 (DL)				CC4 (DL)				Aggregated BW	CA Inactive (dBm)	CA Active (dBm)	Delta	4CC #
	Mode	BW (MHz)	Channel	Freq (MHz)	RB,Offset	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)								
CA 41E	QPSK	20	40320	2563.0	1,0	20	40320	2563.0	20	40518	2582.8	20	40716	2602.6	20	40914	2622.4	80	24.1	24.0	-0.1	1			
CA 42E	QPSK	20	42293	3470.3	1,0	20	42293	3470.3	20	42491	3490.1	20	42689	3509.9	20	42887	3529.7	80	18.0	18.0	0.0	2			
CA 2A 66D	QPSK	20	18900	1880.0	1,0	20	900	1960.0	20	66688	2135.2	20	66886	2155.0	20	67084	2174.8	80	23.8	24.0	0.2	6			
CA 2C-5B	QPSK	20	18801	1870.1	1,0	20	801	1950.1	20	999	1969.9	10	2476	876.6	10	2575	886.5	60	23.7	23.8	0.1	7			
CA 4A-46D	QPSK	20	20175	1732.5	1,0	20	2175	2132.5	20	50492	5520.2	20	50690	5540.0	20	50888	5559.8	80	23.1	23.1	0.0	8			
CA 5A-66D	QPSK	10	20525	836.5	1,0	10	2525	881.5	20	66688	2135.2	20	66886	2155.0	20	67084	2174.8	70	23.9	23.8	0.0	10			
CA 5B-66B	QPSK	10	20476	831.6	1,0	10	2476	876.6	10	2575	886.5	10	66837	2150.1	10	66936	2160.0	40	24.0	24.0	0.0	11			
CA 5B-66C	QPSK	10	20476	831.6	1,0	10	2476	876.6	10	2575	886.5	10	66787	2145.1	20	66985	2164.9	60	24.0	24.0	0.1	12			
CA 7A-46D	QPSK	20	21100	2535.0	1,0	20	3100	2655.0	20	50492	5520.2	20	50690	5540.0	20	50888	5559.8	80	24.4	24.5	0.1	13			
CA 12A-46D	QPSK	10	23095	707.5	1,0	10	5095	737.5	20	50492	5520.2	20	50690	5540.0	20	50888	5559.8	70	24.2	24.2	0.0	14			
CA 13A-66D	QPSK	10	23230	782.0	1,0	10	5230	751.0	20	66688	2135.2	20	66886	2155.0	20	67084	2174.8	70	24.2	24.2	0.0	17			
CA 25A-41D	QPSK	20	26365	1882.5	1,0	20	8365	1962.5	20	40422	2573.2	20	40620	2593.0	20	40818	2612.8	80	23.7	23.8	0.1	18			
CA 41A-41D	QPSK	20	39750	2506.0	1,0	20	39750	2506.0	20	41094	2640.4	20	41292	2660.2	20	41490	2680.0	80	24.5	24.5	0.0	19			
CA 41A-42D	QPSK	20	40620	2593.0	1,0	20	40620	2593.0	20	42392	3480.2	20	42590	3500.0	20	42788	3519.8	80	24.2	24.2	-0.1	20			
CA 41C-41C	QPSK	20	39750	2506.0	1,0	20	39750	2506.0	20	39948	2525.8	20	41292	2660.2	20	41490	2680.0	80	24.5	24.6	0.0	21			
CA 41C-42C	QPSK	20	40521	2583.1	1,0	20	40521	2583.1	20	40719	2602.9	20	42491	3490.1	20	42689	3509.9	80	24.1	24.2	0.0	22			
CA 41D-42A	QPSK	20	40422	2573.2	1,0	20	40422	2573.2	20	40620	2593.0	20	40818	2612.8	20	42590	3500.0	80	24.0	24.1	0.1	23			
CA 42C-42C	QPSK	20	41690	3410.0	1,0	20	41690	3410.0	20	41888	3429.8	20	43292	3570.2	20	43490	3590.0	80	17.9	17.8	-0.1	24			
CA 48C-66B*	QPSK	15	132047	1717.5	1,0	15	66511	2117.5	5	66604	2126.8	20	55340	3560.0	20	55538	3579.8	60	24.6	24.7	0.0	27			
CA 48C-66C*	QPSK	20	132072	1720.0	1,0	20	66536	2120.0	20	66734	2139.8	20	55340	3560.0	20	55538	3579.8	80	24.7	24.7	0.0	28			
CA 48D-66A*	QPSK	20	132072	1720.0	1,0	20	66536	2120.0	20	55990	3625.0	20	55792	3605.2	20	56386	3664.6	80	24.7	24.7	0.0	29			
CA 2A-2A-5B	QPSK	20	18700	1860.0	1,0	20	700	1940.0	20	1100	1980.0	10	2476	876.6	10	2575	886.5	60	23.8	23.8	0.0	30			
CA 2A-2A-46C	QPSK	20	18700	1860.0	1,0	20	700	1940.0	20	1100	1980.0	10	50692	5540.2	20	50890	5560.0	80	23.8	23.8	0.0	32			
CA 2A-2A-66B	QPSK	20	18700	1860.0	1,0	20	700	1940.0	20	1100	1980.0	10	66837	2150.1	10	66936	2160.0	60	23.8	23.9	0.1	33			
CA 2A-2A-66C	QPSK	20	18700	1860.0	1,0	20	700	1940.0	20	1100	1980.0	10	66787	2145.1	10	66985	2164.9	80	24.0	23.9	0.0	34			
CA 2A-4A-5B	QPSK	20	18900	1880.0	1,0	20	900	1960.0	20	2175	2132.5	10	2476	876.6	10	2575	886.5	60	23.8	23.8	0.0	35			
CA 2A-4A-7B	QPSK	20	18900	1880.0	1,0	20	900	1960.0	20	2175	2132.5	15	3076	2652.6	5	3169	2661.9	60	23.9	23.9	0.0	36			
CA 2A-4A-7C	QPSK	20	18900	1880.0	1,0	20	900	1960.0	20	2175	2132.5	20	3001	2645.1	20	3199	2664.9	80	23.9	23.9	0.0	37			
CA 2A-4A-12B	QPSK	20	18900	1880.0	1,0	20	900	1960.0	20	2175	2132.5	5	5048	732.8	10	5120	740.0	55	23.7	23.8	0.0	38			
CA 2A-5A-46C	QPSK	20	18900	1880.0	1,0	20	900	1960.0	10	2450	874.0	20	50692	5540.2	20	50890	5560.0	70	23.9	23.8	-0.1	39			
CA 2A-5A-66B	QPSK	20	18900	1880.0	1,0	20	900	1960.0	10	2450	874.0	20	66837	2150.1	10	66936	2160.0	50	23.8	23.9	0.1	40			
CA 2A-5A-66C	QPSK	20	18900	1880.0	1,0	20	900	1960.0	10	2450	874.0	20	66787	2145.1	20	66985	2164.9	70	23.9	23.9	0.1	41			
CA 2A-12A-66B	QPSK	20	18900	1880.0	1,0	20	900	1960.0	10	5060	734.0	10	66837	2150.1	10	66936	2160.0	50	24.0	24.0	0.0	43			
CA 2A-12A-66C	QPSK	20	18900	1880.0	1,0	20	900	1960.0	10	5060	734.0	20	66787	2145.1	20	66985	2164.9	70	23.9	23.9	0.0	44			
CA 2A-12B-66A	QPSK	20	18900	1880.0	1,0	20	900	1960.0	5	5048	732.8	10	5120	740.0	20	66886	2155.0	55	23.8	24.0	0.1	45			
CA 2A-13A-46C	QPSK	20	18900	1880.0	1,0	20	900	1960.0	10	5230	751.0	20	50692	5540.2	20	50890	5560.0	70	24.0	23.9	-0.1	46			
CA 2A-13A-66B	QPSK	20	18900	1880.0	1,0	20	900	1960.0	10	5230	751.0	10	66837	2150.1	10	66936	2160.0	50	23.9	23.9	0.0	47			
CA 2A-13A-66C	QPSK	20	18900	1880.0	1,0	20	900	1960.0	10	5230	751.0	20	66787	2145.1	20	66985	2164.9	70	23.9	23.9	0.0	48			
CA 2A-46C-66A	QPSK	20	18900	1880.0	1,0	20	900	1960.0	20	50692	5540.2	20	50890	5560.0	20	66886	2155.0	80	23.9	24.0	0.1	50			
CA 2A-48C-66A	QPSK	20	18900	1880.0	1,0	20	900	1960.0	20	55891	3615.1	20	56089	3634.9	20	66886	2155.0	80	23.8	23.9	0.1	52			
CA 2A-66A-66B	QPSK	20	18900	1880.0	1,0	20	900	1960.0	20	66536	2120.0	10	67187	2185.1	10	67286	2195.0	60	24.0	24.2	0.2	53			
CA 2A-66A-66C	QPSK	20	18900	1880.0	1,0	20	900	1960.0	20	66536	2120.0	20	67038	2170.2	20	67236	2190.0	80	23.9	24.2	0.3	54			
CA 4A-4A-5B	QPSK	20	20050	1720.0	1,0	20	2050	2120.0	20	2300	2145.0	10	2476	876.6	10	2575	886.5	60	23.2	23.2	-0.1	55			
CA 4A-4A-12B	QPSK	20	20050	1720.0	1,0	20	2050	2120.0	20	2300	2145.0	5	5048	732.8	10	5120	740.0	55	23.2	23.1	-0.1	56			
CA 4A-46A-46C	QPSK	20	20175	1732.5	1,0	20	2175	2132.5	20	46890	5160.0	20	54142	5885.2	20	54340	5905.0	80	23.1	23.0	-0.1	57			
CA 5A-7A-46C	QPSK	10	20450	829.0	1,0	10	2450	874.0	20	3100	2655.0	20	50692	5540.2	20	50890	5560.0	70	24.0	23.9	-0.1	58			
CA 5A-46C-66A	QPSK	10	20525	836.5	1,0	10	2525	881.5	20	50692	5540.2	20	50890	5560.0	20	66886	2155.0	70	23.9	23.9	-0.1	59			
CA 5A-66A-66B	QPSK	10	20525	836.5	1,0	10	2525	881.5	20	66536	2120.0	10	67187	2185.1	10	67286	2195.0	50	23.9	23.9	0.0	60			
CA 5A-66A-66C	QPSK	10	20525	836.5	1,0	10	2525	881.5	20	66536	2120.0	20	67038	2170.2	20	67236	2190.0	70	23.9	23.8	-0.1	61			
CA 5B-66A-66A	QPSK	10	20476	831.6	1,0	10	2476	876.6	10	2575	886.5	20	66536	2120.0	20	67236	2190.0	60	24.0	24.1	0.0	62			
CA 13A-46C-66A	QPSK	10	23230	782.0	1,0	10	5230	751.0	20	50692	5540.2	20	50890	5560.0	20	66886	2155.0	70	24.2	24.1	-0.1	63			
CA 13A-48A-66B	QPSK	10	23230	782.0	1,0	10	5230	751.0	20	55990	3625.0	10	66837	2150.1	10	66936	2160.0	50	24.2	24.1	-0.1	65			
CA 13A-48A-66C	QPSK	10	23230	782.0	1,0	10	5230	751.0	20	55990	3625.0	20	66787	2145.1	20	66985	2164.9	70	24.1	24.1	0.0	66			
CA 13A-48C-66A	QPSK	10	23230	782.0	1,0	10	5230	751.0	20	55891	3615.1	20	56089	3634.9	20	66886	2155.0	70	24.2	24.1	-0.1	67			
CA 13A-66A-66B	QPSK	10	23230	782.0	1,0	10	5230	751.0	20	66536	2120.0	10	67187	2185.1	10	67286	2195.0	50	24.2	24.1	-0.1	68			
CA 13A-66A-66C	QPSK	10	23230	782.0	1,0	10	5230	751.0	20	66536	2120.0	20	67038	2170.2	20	67236	21								

5CC DL CA Measured Results

E-UTRA CA configuration	CC1 (UL)						CC1 (DL)			CC2 (DL)			CC3 (DL)			CC4 (DL)			CC5 (DL)		Aggregated BW	CA Inactive (dBm)	CA Active (dBm)	Delta	SCC #
	Mode	BW (MHz)	Channel	Freq (MHz)	RB,Offset	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)					
CA 2A-48E*	QPSK	20	18900	1880.0	1,0	20	900	1960.0	20	55792	3605.2	20	55990	3625.0	20	56188	3644.8	20	56386	3664.6	100	24.3	24.2	0.0	1
CA 13A-48E*	QPSK	10	23230	782.0	1,0	10	5230	751.0	20	55792	3605.2	20	55990	3625.0	20	56188	3644.8	20	56386	3664.6	90	25.0	25.0	0.0	2
CA 48E-66A*	QPSK	20	132422	1755.0	1,0	20	66886	2155.0	20	55792	3605.2	20	55990	3625.0	20	56188	3644.8	20	56386	3664.6	100	24.5	24.5	0.0	3
CA 2A-2A-46D*	QPSK	20	18700	1860.0	1,0	20	700	1940.0	20	1100	1980.0	20	50492	5520.2	20	50690	5540.0	20	50888	5559.8	100	24.2	24.1	0.0	4
CA 2A-5A-46D*	QPSK	20	18900	1880.0	1,0	20	900	1960.0	10	2450	874.0	20	50492	5520.2	20	50690	5540.0	20	50888	5559.8	90	24.3	24.2	0.0	5
CA 2A-5B-66B*	QPSK	20	18900	1880.0	1,0	20	900	1960.0	10	2476	876.6	10	2575	886.5	10	66837	2150.1	10	66936	2160.0	60	24.3	24.2	0.0	6
CA 2A-5B-66C*	QPSK	20	18900	1880.0	1,0	20	900	1960.0	10	2476	876.6	10	2575	886.5	10	66787	2145.1	20	66985	2164.9	80	24.3	24.3	0.0	7
CA 2A-13A-46D*	QPSK	20	18900	1880.0	1,0	20	900	1960.0	10	5230	751.0	20	50492	5520.2	20	50690	5540.0	20	50888	5559.8	90	24.3	24.2	0.0	8
CA 2A-13A-66D*	QPSK	20	18900	1880.0	1,0	20	900	1960.0	10	5230	751.0	20	66688	2135.2	20	66886	2155.0	20	67084	2174.8	90	24.3	24.2	-0.1	9
CA 2A-46D-66A*	QPSK	20	18900	1880.0	1,0	20	900	1960.0	20	50492	5520.2	20	50690	5540.0	20	50888	5559.8	20	66886	2155.0	100	24.3	24.2	-0.1	10
CA 2A-48D-66A*	QPSK	20	18900	1880.0	1,0	20	900	1960.0	20	55792	3605.2	20	55990	3625.0	20	56188	3644.8	20	66886	2155.0	100	24.3	24.2	0.0	11
CA 5A-7A-46D*	QPSK	10	20450	829.0	1,0	10	2450	874.0	20	3100	2655.0	20	50665	5537.5	20	50467	5517.7	20	50863	5557.3	90	24.4	24.4	0.0	12
CA 5A-46D-66A*	QPSK	10	20525	836.5	1,0	10	2525	881.5	20	50492	5520.2	20	50690	5540.0	20	50888	5559.8	20	66886	2155.0	90	24.5	24.5	0.0	13
CA 5B-66A-66B*	QPSK	10	20476	831.6	1,0	10	2476	876.6	10	2575	886.5	20	66536	2120.0	10	67187	2185.1	10	67286	2195.0	60	24.5	24.5	0.1	14
CA 13A-46D-66A*	QPSK	10	23230	782.0	1,0	10	5230	751.0	20	50492	5520.2	20	50690	5540.0	20	50888	5559.8	20	66886	2155.0	90	25.0	25.0	0.0	15
CA 13A-48C-48C*	QPSK	10	23230	782.0	1,0	10	5230	751.0	20	55990	3625.0	20	56188	3644.8	20	55340	3560.0	20	55538	3579.8	90	25.1	25.1	0.0	16
CA 13A-48C-66B*	QPSK	10	23230	782.0	1,0	10	5230	751.0	20	55891	3615.1	20	56089	3634.9	10	66837	2150.1	10	66936	2160.0	70	25.0	25.0	0.0	17
CA 13A-48C-66C*	QPSK	10	23230	782.0	1,0	10	5230	751.0	20	55891	3615.1	20	56089	3634.9	20	66787	2145.1	20	66985	2164.9	90	25.0	25.0	0.0	18
CA 13A-48D-66A*	QPSK	10	23230	782.0	1,0	10	5230	751.0	20	55792	3605.2	20	55990	3625.0	20	56188	3644.8	20	66886	2155.0	90	25.0	25.0	0.0	19
CA 46D-66A-66A*	QPSK	20	132072	1720.0	1,0	20	66536	2120.0	20	66984	2164.8	20	50665	5537.5	20	50467	5517.7	20	50863	5557.3	100	24.8	24.7	0.0	20
CA 48A-48C-66B*	QPSK	10	132373	1750.1	1,0	20	66837	2151.1	10	66936	2160.0	20	56207	3625.0	20	55340	3560.0	20	55538	3579.8	80	24.4	24.4	0.0	21
CA 48A-48C-66C*	QPSK	20	132323	1745.1	1,0	20	66787	2145.1	20	66985	2164.9	20	56207	3625.0	20	55340	3560.0	20	55538	3579.8	100	24.5	24.5	0.0	22
CA 48C-48C-66A*	QPSK	20	132422	1755.0	1,0	20	66886	2155.0	20	55990	3625.0	20	56188	3644.8	20	55340	3560.0	20	55538	3579.8	100	24.5	24.5	0.0	23
CA 2A-2A-5A-66B*	QPSK	20	18700	1860.0	1,0	20	700	1940.0	20	1100	1980.0	10	2525	881.5	10	66837	2150.1	10	66936	2160.0	70	24.2	24.2	0.0	24
CA 2A-2A-5A-66C*	QPSK	20	18700	1860.0	1,0	20	700	1940.0	20	1100	1980.0	10	2525	881.5	20	66787	2145.1	20	66985	2164.9	90	24.2	24.2	0.0	25
CA 2A-2A-12B-66A*	QPSK	20	18700	1860.0	1,0	20	700	1940.0	20	1100	1980.0	5	5048	732.8	10	5120	740.0	20	66886	2155.0	75	24.2	24.1	0.0	26
CA 2A-2A-66A-66B*	QPSK	20	18700	1860.0	1,0	20	700	1940.0	20	1100	1980.0	20	66536	2120.0	10	67187	2185.1	10	67286	2195.0	80	24.2	24.2	0.0	27
CA 2A-2A-66A-66C*	QPSK	20	18700	1860.0	1,0	20	700	1940.0	20	1100	1980.0	20	66536	2120.0	20	67038	2170.2	20	67236	2190.0	100	24.2	24.2	0.0	28
CA 2A-5B-66A-66A*	QPSK	20	18900	1880.0	1,0	20	900	1960.0	10	2476	876.6	10	2575	886.5	20	66536	2120.0	20	67236	2190.0	80	24.3	24.3	0.1	29
CA 2A-13A-66A-66B*	QPSK	20	18900	1880.0	1,0	20	900	1960.0	10	5230	751.0	20	66536	2120.0	10	67187	2185.1	10	67286	2195.0	70	24.3	24.3	0.0	30
CA 2A-13A-66A-66C*	QPSK	20	18900	1880.0	1,0	20	900	1960.0	10	5230	751.0	20	66536	2120.0	20	67038	2170.2	20	67236	2190.0	90	24.3	24.3	0.0	31
CA 2A-46A-46C-66A*	QPSK	20	18900	1880.0	1,0	20	900	1960.0	20	46890	5160.0	20	54142	5885.2	20	54340	5905.0	20	66886	2155.0	100	24.3	24.2	0.0	32
CA 2A-48A-48C-66A*	QPSK	20	18900	1880.0	1,0	20	900	1960.0	20	55990	3625.0	20	55792	3605.2	20	55594	3585.4	20	66886	2155.0	100	24.2	24.2	0.0	33
CA 13A-48A-48C-66A*	QPSK	10	23230	782.0	1,0	10	5230	751.0	20	55990	3625.0	20	55792	3605.2	20	55594	3585.4	20	66886	2155.0	90	25.1	25.1	0.0	34

Notes:

* Denotes measurements performed at Ise-shi, Mie-ken, Japan lab

10. Measured and Reported (Scaled) SAR Results

SAR Test Reduction criteria are as follows:

- Reported SAR(W/kg) for WWAN = Measured SAR *Tune-up Scaling Factor
- Reported SAR(W/kg) for Wi-Fi and Bluetooth = Measured SAR * Tune-up scaling factor * Duty Cycle scaling factor
- Duty Cycle scaling factor = 1 / Duty cycle (%)

KDB 447498 D01 General RF Exposure Guidance:

Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:

- ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
- ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
- ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz

KDB 941225 D01 SAR test for 3G devices:

When the maximum output power and tune-up tolerance specified for production units in a secondary mode is $\leq \frac{1}{4}$ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode

KDB 941225 D05 SAR for LTE Devices:

SAR test reduction is applied using the following criteria:

- Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB, and 50% RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel.
- When the reported SAR is > 0.8 W/kg, testing for other Channels is performed at the highest output power level for 1RB, and 50% RB configuration for that channel.
- Testing for 100% RB configuration is performed at the highest output power level for 100% RB configuration across the Low, Mid and High Channel when the highest reported SAR for 1 RB and 50% RB are > 0.8 W/kg. Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation < 1.45 W/kg.
- Testing for 16-QAM modulation is not required because the reported SAR for QPSK is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of QPSK.
- Testing for the other channel bandwidths is not required because the reported SAR for the highest channel bandwidth is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of the highest channel bandwidth.
- For LTE bands that do not support at least three non-overlapping channels in certain channel bandwidths, test the available non-overlapping channels instead. When a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing; therefore, the requirement for H, M and L channels may not fully apply.

10.1. W-CDMA Band II

RF Exposure Conditions	Mode	Pwr State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
							Tune-up Limit	Meas.	Meas.	Scaled	
Body	Rel 99 RMC 12.2 kbps	Full Power	9	Rear	9400	1880.0	24.5	24.0	0.581	0.653	1
			9	Rear Tilt (Edge4 side)	9262	1852.4	24.5	24.1	1.230	1.355	
					9400	1880.0	24.5	24.0	1.260	1.417	
					9538	1907.6	24.5	24.1	0.999	1.088	
			0	Edge 1	9400	1880.0	24.5	24.0	0.371	0.417	
19	Edge 4	9400	1880.0	24.5	24.0	0.647	0.728				
Body	Rel 99 RMC 12.2 kbps	Power Reduction	0	Rear	9400	1880.0	19.5	18.8	0.560	0.652	2
			0	Rear Tilt (Edge4 side)	9262	1852.4	19.5	18.9	1.050	1.206	
					9400	1880.0	19.5	18.8	0.834	0.971	
					9538	1907.6	19.5	19.0	0.881	0.998	
			0	Edge 4	9262	1852.4	19.5	18.9	0.850	0.976	
					9400	1880.0	19.5	18.8	0.833	0.970	
					9538	1907.6	19.5	19.0	0.967	1.095	

10.2. W-CDMA Band IV

RF Exposure Conditions	Mode	Pwr State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
							Tune-up Limit	Meas.	Meas.	Scaled	
Hotspot	Rel 99 RMC 12.2 kbps	Full Power	9	Rear	1413	1732.6	24.5	24.4	0.573	0.586	3
			9	Rear Tilt	1312	1712.4	24.5	24.2	0.718	0.769	
					1413	1732.6	24.5	24.4	1.200	1.228	
					1513	1752.6	24.5	23.8	0.693	0.814	
			0	Edge 1	1413	1732.6	24.5	24.4	0.409	0.419	
			19	Edge 4	1312	1712.4	24.5	24.2	0.573	0.614	
					1413	1732.6	24.5	24.4	0.929	0.951	
1513	1752.6	24.5			23.8	0.519	0.610				
Hotspot	Rel 99 RMC 12.2 kbps	Power Reduction	0	Rear	1413	1732.6	18.4	18.3	0.491	0.502	4
			0	Rear Tilt	1312	1712.4	18.4	18.3	0.798	0.817	
					1413	1732.6	18.4	18.3	0.790	0.808	
					1513	1752.6	18.4	18.1	0.787	0.843	
			0	Edge 4	1312	1712.4	18.4	18.3	0.924	0.946	
					1413	1732.6	18.4	18.3	0.955	0.977	
					1513	1752.6	18.4	18.1	0.935	1.002	

10.3. W-CDMA Band V

RF Exposure Conditions	Mode	Pwr State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
							Tune-up Limit	Meas.	Meas.	Scaled	
Body	Rel 99 RMC 12.2 kbps	Full Power	9	Rear	4132	826.4	24.5	22.5	0.571	0.901	5
					4183	836.6	24.5	22.5	0.591	0.932	
					4233	846.6	24.5	22.5	0.576	0.909	
			9	Rear Tilt (Edge4 side)	4132	826.4	24.5	22.5	0.862	1.360	
					4183	836.6	24.5	22.5	0.768	1.212	
					4233	846.6	24.5	22.5	0.866	1.366	
			0	Edge 1	4183	836.6	24.5	22.5	0.207	0.327	
19	Edge 4	4183	836.6	24.5	22.5	0.485	0.765				
Body	Rel 99 RMC 12.2 kbps	Power Reduction	0	Rear	4183	836.6	17.9	17.7	0.275	0.290	6
			0	Rear Tilt (Edge4 side)	4183	836.6	17.9	17.7	0.467	0.492	
					4132	826.4	17.9	17.7	0.694	0.723	
			0	Edge 4	4183	836.6	17.9	17.7	0.794	0.837	
					4233	846.6	17.9	17.6	0.800	0.857	

10.4. LTE Band 2 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Pwr State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.	
									Tune-up Limit	Meas.	Meas.	Scaled		
Body	QPSK	Pwr Reduction	0	Rear	18900	1880.0	1	0	19.6	18.2	0.491	0.672		
							50	0	19.6	18.4	0.477	0.636		
					0	Rear Tilt (Edge4 Side)	18700	1860.0	1	0	19.6	18.3	0.880	1.198
			50	0					19.6	18.3	0.849	1.143		
			100	0					19.6	18.2	0.857	1.180		
			18900	1880.0			1	0	19.6	18.2	0.775	1.060		
							50	0	19.6	18.4	0.748	0.997		
							100	0	19.6	18.3	0.728	0.984		
			19100	1900.0	1	0	19.6	18.6	0.844	1.070				
					50	0	19.6	18.5	0.838	1.087				
					100	0	19.6	18.4	0.830	1.094				
					0	Edge 4	18700	1860.0	1	0	19.6	18.3	0.682	0.929
									50	0	19.6	18.3	0.685	0.922
									100	0	19.6	18.2	0.689	0.949
			18900	1880.0	50	0	19.6	18.4	0.686	0.915				
					1	0	19.6	18.6	0.779	0.988				
					19100	1900.0	50	0	19.6	18.5	0.784	1.017		
							100	0	19.6	18.4	0.782	1.031		

10.5. LTE Band 7 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Pwr State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.			
									Tune-up Limit	Meas.	Meas.	Scaled				
Body	QPSK	Full Power	9	Rear	20850	2510.0	1	0	24.5	23.1	0.632	0.874				
					21100	2535.0	1	0	24.5	23.2	0.638	0.859				
					21350	2560.0	50	0	23.5	22.1	0.494	0.687				
					1	0	24.5	22.9	0.674	0.986						
					9	Rear Tilt (Edge4 side)	20850	2510.0	1	0	24.5	23.1		0.752	1.040	
							50	24	23.5	22.1	0.588	0.814				
			1	0			24.5	23.2	0.857	1.153	8					
			21100	2535.0			50	0	23.5	22.1	0.702	0.976				
			100	0			23.5	22.0	0.656	0.933						
			21350	2560.0			1	0	24.5	22.9	0.743	1.086				
			0	Edge 1	50	0	23.5	21.8	0.716	1.054						
					1	0	24.5	23.2	0.179	0.241						
					50	0	23.5	22.1	0.138	0.192						
					19	Edge 4	20850	2510.0	1	0	24.5	23.1	0.678	0.938		
							1	0	24.5	23.2	0.600	0.808				
							21100	2535.0	50	0	23.5	22.1	0.444	0.617		
			21350	2560.0	1	0	24.5	22.9	0.697	1.019						
			Body	QPSK	Pwr Reduction	0	Rear	21100	2535.0	1	0	18.5	17.5	0.326	0.412	
										50	0	18.5	17.4	0.331	0.423	
						0	Rear Tilt (Edge4 side)	21100	2535.0	1	0	18.5	17.5	0.492	0.622	
										50	0	18.5	17.4	0.469	0.600	
						0	Edge 4	20850	2510.0	1	0	18.5	17.5	0.899	1.132	9
										50	0	18.5	17.6	0.887	1.094	
										100	0	18.5	17.5	0.832	1.055	
21100	2535.0	1						0	18.5	17.5	0.732	0.926				
		50						0	18.5	17.4	0.699	0.894				
		21350						2560.0	1	0	18.5	17.3	0.732	0.969		
50	0	18.5				17.3	0.725	0.951								

10.6. LTE Band 12 (10MHz Bandwidth)

RF Exposure Conditions	Mode	Pwr State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.	
									Tune-up Limit	Meas.	Meas.	Scaled		
Body	QPSK	Full Power	9	Rear	23095	707.5	1	25	24.5	23.7	0.370	0.446	10	
							25	0	23.5	22.8	0.216	0.252		
			9	Rear Tilt (Edge4 side)	23095	707.5	1	25	24.5	23.7	0.495	0.596		
							25	0	23.5	22.8	0.390	0.455		
			0	Edge 1	23095	707.5	1	25	24.5	23.7	0.313	0.377		
							25	0	23.5	22.8	0.240	0.280		
			19	Edge 4	23095	707.5	1	25	24.5	23.7	0.121	0.146		
							25	0	23.5	22.8	0.115	0.134		
Body	QPSK	Pwr Reduction	0	Rear	23095	707.5	1	0	20.9	19.8	0.528	0.686		
							25	0	20.9	19.9	0.444	0.563		
			0	Rear Tilt (Edge4 side)	23095	707.5	1	0	20.9	19.8	0.355	0.462		
							25	0	20.9	19.9	0.353	0.447		
			0	Edge 4	23095	707.5	1	0	20.9	19.8	0.744	0.967		
							25	0	20.9	19.9	0.753	0.955		
							50	0	20.9	19.8	0.761	0.971		11

10.7. LTE Band 13 (10MHz Bandwidth)

RF Exposure Conditions	Mode	Pwr State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.	
									Tune-up Limit	Meas.	Meas.	Scaled		
Body	QPSK	Full Power	9	Rear	23230	782.0	1	0	24.5	24.4	0.449	0.465	12	
							25	0	23.5	23.5	0.495	0.501		
			9	Rear Tilt (Edge4 side)	23230	782.0	1	0	24.5	24.4	0.535	0.554		
							25	0	23.5	23.5	0.496	0.502		
			0	Edge 1	23230	782.0	1	0	24.5	24.4	0.231	0.239		
							25	0	23.5	23.5	0.266	0.269		
			19	Edge 4	23230	782.0	1	0	24.5	24.4	0.668	0.691		
							25	0	23.5	23.5	0.607	0.614		
Body	QPSK	Pwr Reduction	0	Rear	23230	782.0	1	25	20.2	19.3	0.436	0.541	13	
							25	12	20.2	19.4	0.436	0.528		
			0	Rear Tilt (Edge4 side)	23230	782.0	1	25	20.2	19.3	0.453	0.562		
							25	12	20.2	19.4	0.492	0.596		
			0	Edge 4	23230	782.0	1	25	20.2	19.3	0.935	1.161		
							25	12	20.2	19.4	0.919	1.113		
							50	0	20.2	19.3	0.888	1.087		

10.8. LTE Band 14 (10MHz Bandwidth)

RF Exposure Conditions	Mode	Pwr State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Body	QPSK	Full Power	9	Rear	23330	793.0	1	0	24.5	24.0	0.320	0.359	14
							25	0	23.5	23.0	0.261	0.293	
			9	Rear Tilt (Edge4 side)	23330	793.0	1	0	24.5	24.0	0.402	0.451	
							25	0	23.5	23.0	0.364	0.408	
			0	Edge 1	23330	793.0	1	0	24.5	24.0	0.209	0.235	
							25	0	23.5	23.0	0.168	0.188	
			19	Edge 4	23330	793.0	1	0	24.5	24.0	0.398	0.447	
							25	0	23.5	23.0	0.322	0.361	
Body	QPSK	Pwr Reduction	0	Rear	23330	793.0	1	0	19.8	18.8	0.250	0.312	15
							25	0	19.8	18.8	0.307	0.386	
			0	Rear Tilt (Edge4 side)	23330	793.0	1	0	19.8	18.8	0.418	0.521	
							25	0	19.8	18.8	0.426	0.536	
			0	Edge 4	23330	793.0	1	0	19.8	18.8	0.854	1.065	
							25	0	19.8	18.8	0.912	1.148	
							50	0	19.8	18.8	0.909	1.155	

10.9. LTE Band 25 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Pwr State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.			
									Tune-up Limit	Meas.	Meas.	Scaled				
Body	QPSK	Full Power	9	Rear	26140	1860.0	1	0	24.5	23.4	0.546	0.697				
					26365	1882.5	1	0	24.5	23.2	0.507	0.684				
					26590	1905.0	1	0	24.5	24.0	0.718	0.815				
							50	0	23.5	22.6	0.551	0.686				
							100	0	23.5	22.8	0.548	0.638				
							1	0	24.5	23.4	1.130	1.442	16			
			9	Rear Tilt (Edge 4)	26140	1860.0	50	0	23.5	22.3	0.966	1.273				
					26365	1882.5	100	0	23.5	22.2	0.940	1.259				
							1	0	24.5	23.2	0.968	1.306				
							50	0	23.5	22.2	0.950	1.296				
					26590	1905.0	100	0	23.5	22.1	0.913	1.260				
							1	0	24.5	24.0	1.090	1.237				
			0	Edge 1	26590	1905.0	50	0	23.5	22.6	0.385	0.479				
							1	0	24.5	24.0	0.601	0.682				
			19	Edge 4	26590	1905.0	50	0	23.5	22.6	0.458	0.570				
							1	0	24.5	24.0	0.488	0.554				
			Body	QPSK	Pwr Reduction	0	Rear	26590	1905.0	1	0	19.5	18.1	0.510	0.706	
								50	0	19.5	18.0	0.491	0.692			
						0	Rear Tilt (Edge 4)	26140	1860.0	1	0	19.5	18.0	0.945	1.338	
								26365	1882.5	50	0	19.5	17.9	0.926	1.348	17
100	0	19.5								17.8	0.895	1.318				
1	0	19.5								17.9	0.836	1.222				
26590	1905.0	50						0	19.5	17.8	0.821	1.223				
		100						0	19.5	17.7	0.786	1.181				
0	Edge 4	26590				1905.0	1	0	19.5	18.1	0.808	1.118				
							50	0	19.5	18.0	0.783	1.103				
0	Edge 4	26140				1860.0	100	0	19.5	18.5	0.886	1.123				
							1	0	19.5	18.0	0.678	0.960				
							50	0	19.5	17.9	0.677	0.985				
							100	0	19.5	17.8	0.670	0.986				
							1	0	19.5	17.9	0.677	0.990				
							50	0	19.5	17.8	0.678	1.010				
0	Edge 4	26365				1882.5	100	0	19.5	17.7	0.676	1.016				
							1	0	19.5	18.1	0.754	1.043				
							50	0	19.5	18.0	0.744	1.049				
							100	0	19.5	18.5	0.764	0.968				

10.10. LTE Band 26 (15MHz Bandwidth)

RF Exposure Conditions	Mode	Pwr State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.			
									Tune-up Limit	Meas.	Meas.	Scaled				
Body	QPSK	Full Power	9	Rear	26865	831.5	1	0	24.5	23.9	0.534	0.615				
							36	0	23.5	22.9	0.431	0.501				
			9	Rear Tilt	26865	831.5	1	0	24.5	23.9	0.771	0.887	0.715	18		
							36	0	23.5	22.9	0.612	0.726				
			0	Edge 1	26865	831.5	1	0	24.5	23.9	0.187	0.215				
							36	0	23.5	22.9	0.150	0.174				
		19	Edge 4	26865	831.5	1	0	24.5	23.9	0.424	0.488					
						36	0	23.5	22.9	0.343	0.398					
		Body	QPSK	Pwr Reduction	0	Rear	26865	831.5	1	0	18.9	17.7	0.276	0.362		
									36	0	18.9	17.7	0.279	0.371		
						Rear Tilt (Edge 4)	26865	831.5	1	0	18.9	17.7	0.427	0.560		
									36	0	18.9	17.7	0.432	0.575		
Edge 4	26865					831.5	1	0	18.9	17.7	0.717	0.941	0.925	19		
							36	0	18.9	17.7	0.695	0.925				
75	0				18.9	17.6	0.616	0.829								

10.11. LTE Band 41 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Pwr State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.			
									Tune-up Limit	Meas.	Meas.	Scaled				
Body	QPSK	Full Power	9	Rear	40620	2593.0	1	0	24.5	24.1	0.504	0.548				
							50	0	23.5	23.1	0.395	0.437				
			9	Rear Tilt (Edge4 side)	40620	2593.0	1	0	24.5	24.1	0.612	0.665	0.519	20		
							50	0	23.5	23.1	0.469	0.519				
			0	Edge 1	40620	2593.0	1	0	24.5	24.1	0.099	0.108				
							50	0	23.5	23.1	0.067	0.074				
		19	Edge 4	40620	2593.0	1	0	24.5	24.1	0.494	0.537					
						50	0	23.5	23.1	0.394	0.436					
		Body	QPSK	Pwr Reduction	0	Rear	40620	2593.0	1	0	20.5	19.5	0.376	0.473		
									50	0	20.5	19.3	0.363	0.474		
					0	Rear Tilt (Edge4 side)	40620	2593.0	1	0	20.5	19.5	0.553	0.696		
									50	0	20.5	19.3	0.540	0.705		
0	Edge4				39750	2506.0	1	0	20.5	19.8	0.818	0.959				
							50	0	20.5	19.7	0.800	0.955				
							100	0	20.5	19.6	0.812	0.994				
					40185	2549.5	1	0	20.5	19.3	0.826	1.101				
							50	0	20.5	19.3	0.810	1.070				
							40620	2593.0	1	0	20.5	19.5	0.925	1.165		
50	0				20.5	19.3	0.909		1.187							
41055	2636.5				1	0	20.5	19.2	0.893	1.199	1.029	21				
					50	0	20.5	19.1	0.752	1.029						
41490	2680.0				1	0	20.5	19.3	0.835	1.108						
					50	0	20.5	19.1	0.812	1.129						

10.12. LTE Band 48 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Pwr State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Body	QPSK	Full Power	9	Rear	56207	3646.7	1	0	19.5	19.3	0.180	0.190	
							50	0	18.5	18.1	0.133	0.145	
			9	Rear Tilt (Edge4 side)	56207	3646.7	1	0	19.5	19.3	0.348	0.368	
							50	0	18.5	18.1	0.245	0.267	
			0	Edge 1	56207	3646.7	1	0	19.5	19.3	0.027	0.029	
							50	0	18.5	18.1	0.018	0.020	
			19	Edge 4	56207	3646.7	1	0	19.5	19.3	0.352	0.372	22
							50	0	18.5	18.1	0.266	0.290	
Body	QPSK	Pwr Reduction	0	Rear	56207	3646.7	1	0	13.9	13.6	0.101	0.109	
							50	0	13.9	13.4	0.095	0.108	
			0	Rear Tilt (Edge4 side)	56207	3646.7	1	0	13.9	13.6	0.228	0.247	
							50	0	13.9	13.4	0.217	0.246	
			0	Edge 4	55340	3560.0	1	0	13.9	13.7	1.000	1.050	
							50	0	13.9	13.5	0.979	1.078	
							100	0	13.9	13.4	1.020	1.134	
					55773	3603.3	1	0	13.9	13.5	1.050	1.151	
							50	0	13.9	13.3	1.030	1.183	
							56207	3646.7	1	0	13.9	13.6	1.220
			50	0	13.9	13.4	1.160	1.317					
			56640	3690.0	1	0	13.9	13.7	1.040	1.092			
			50	0	13.9	13.5	0.994	1.097					

10.13. LTE Band 66 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Pwr State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.			
									Tune-up Limit	Meas.	Meas.	Scaled				
Body	QPSK	Full Power	9	Rear	132322	1745.0	1	0	23.5	23.1	0.457	0.507				
							50	0	22.5	22.0	0.360	0.406				
			9	Rear Tilt (Edge4 side)	132072	1720.0	1	0	23.5	23.1	1.010	1.118	24			
							50	0	22.5	22.0	0.795	0.896				
					132322	1745.0	1	0	23.5	23.1	1.000	1.109				
							50	0	22.5	22.0	0.787	0.887				
			132572	1770.0	1	0	23.5	23.0	0.953	1.064						
					50	0	22.5	21.9	0.743	0.845						
			0	Edge 1 (Top)	132322	1745.0	1	0	23.5	23.1	0.287	0.318				
							50	0	22.5	22.0	0.219	0.247				
			19	Edge 4 (Left)	132072	1720.0	1	0	23.5	23.1	0.865	0.957				
							100	0	22.5	22.0	0.657	0.739				
					132322	1745.0	1	0	23.5	23.1	0.786	0.872				
							50	0	22.5	22.0	0.612	0.690				
					132572	1770.0	1	0	23.5	23.0	0.714	0.797				
							50	0	18.5	17.6	0.356	0.438				
			Body	QPSK	Pwr Reduction	0	Rear	132322	1745.0	1	0	18.5	17.5	0.406	0.510	
										50	0	18.5	17.5	0.633	0.795	
0	Rear Tilt (Edge4 side)	132322				1745.0	1	0	18.5	17.6	0.643	0.791				
							50	0	18.5	17.5	0.633	0.795				
0	Edge 4	132072				1720.0	1	0	18.5	17.7	0.734	0.880				
							50	0	18.5	17.6	0.764	0.938				
							100	0	18.5	17.5	0.778	0.975				
		132322				1745.0	1	0	18.5	17.6	0.794	0.977				
							50	0	18.5	17.5	0.788	0.990				
							132572	1770.0	1	0	18.5	17.6	0.807	0.997		
50	0	18.5				17.5	0.807	1.023	25							

11. SAR Measurement Variability

In accordance with published RF Exposure KDB 865664 D01 SAR measurement 100 MHz to 6 GHz. These additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

- 1) Repeated measurement is not required when the original highest measured SAR is < 0.8 or 2 W/kg (1-g or 10-g respectively); steps 2) through 4) do not apply.
- 2) When the original highest measured SAR is ≥ 0.8 or 2 W/kg (1-g or 10-g respectively), repeat that measurement once.
- 3) Perform a second repeated measurement only if the **ratio of largest to smallest SAR** for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 or 3.6 W/kg ($\sim 10\%$ from the 1-g or 10-g respective SAR limit).
- 4) Perform a third repeated measurement only if the original, first, or second repeated measurement is ≥ 1.5 or 3.75 W/kg (1-g or 10-g respectively) and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .

Frequency Band (MHz)	Air Interface	RF Exposure Conditions	Test Position	Ant	Pwr Level	Highest Measured SAR (W/kg)	First Repeated	
							Measured SAR (W/kg)	Largest to Smallest SAR Ratio
700	LTE Band 13	Body	Edge4	WWAN	Power Reduction	0.935	0.892	1.05
	LTE Band 14	Body	Edge4	WWAN	Power Reduction	0.912	0.905	1.01
850	WCDMA Band V	Body	Rear Tilt (Edge4 side)	WWAN	Full Power	0.866	0.847	1.02
	WCDMA Band V	Body	Edge4	WWAN	Power Reduction	0.800	0.795	1.01
1700	WCDMA Band IV	Body	Rear Tilt (Edge4 side)	WWAN	Full Power	1.200	1.200	1.00
	WCDMA Band IV	Body	Edge4	WWAN	Power Reduction	0.955	0.935	1.02
	LTE Band 66	Body	Edge4	WWAN	Power Reduction	0.807	0.809	1.00
1900	LTE Band 2	Body	Rear Tilt (Edge4 side)	WWAN	Power Reduction	0.880	0.871	1.01
	LTE Band 25	Body	Rear Tilt (Edge4 side)	WWAN	Full Power	1.130	1.100	1.03
	LTE Band 25	Body	Rear Tilt (Edge4 side)	WWAN	Power Reduction	0.945	0.904	1.05
2500	LTE Band 7	Body	Rear Tilt (Edge4 side)	WWAN	Full Power	0.857	0.850	1.01
2500	LTE Band 7	Body	Rear Tilt (Edge4 side)	WWAN	Power Reduction	0.899	0.890	1.01
2600	LTE Band 41	Body	Edge4	WWAN	Power Reduction	0.925	0.895	1.03
3600	LTE Band 48	Body	Edge4	WWAN	Power Reduction	1.220	1.220	1.00

Note(s):

Second Repeated Measurement is not required since the ratio of the largest to smallest SAR for the original and first repeated measurement is < 1.20 .

12. Simultaneous Transmission Conditions

Tx Mode	WWAN	WLAN #1		WLAN #2		
		2.4 GHz	5 GHz & 6 GHz	2.4 GHz	5 GHz & 6 GHz	BT
1	x	x		x		
2	x		x		x	
3	x					x
4	x	x				x
5	x		x			x

Note(s):

Spatial separation of WLAN #2 with all other antennas is significant enough that no overlapping exposure. Therefore, Sum of SAR only applied to remaining antennas (WWAN and WLAN #1).

12.1. Simultaneous transmission SAR test exclusion considerations

KDB 447498 D01 General RF Exposure Guidance provides two procedures for determining simultaneous transmission SAR test exclusion: Sum of SAR and SAR to Peak Location Ratio (SPLSR)

Sum of SAR

To qualify for simultaneous transmission SAR test exclusion based upon Sum of SAR the sum of the reported standalone SARs for all simultaneously transmitting antennas shall be below the applicable standalone SAR limit. If the sum of the SARs is above the applicable limit then simultaneous transmission SAR test exclusion may still apply if the requirements of the SAR to Peak Location Ratio (SPLSR) evaluation are met.

SAR to Peak Location Ratio (SPLSR)

KDB 447498 D01 General RF Exposure Guidance explains how to calculate the SAR to Peak Location Ratio (SPLSR) between pairs of simultaneously transmitting antennas:

$$SPLSR = (SAR_1 + SAR_2)^{1.5} / R_i$$

Where:

SAR₁ is the highest reported or estimated SAR for the first of a pair of simultaneous transmitting antennas, in a specific test operating mode and exposure condition

SAR₂ is the highest reported or estimated SAR for the second of a pair of simultaneous transmitting antennas, in the same test operating mode and exposure condition as the first

R_i is the separation distance between the pair of simultaneous transmitting antennas. When the SAR is measured, for both antennas in the pair, it is determined by the actual x, y and z coordinates in the 1-g SAR for each SAR peak location, based on the extrapolated and interpolated result in the zoom scan measurement, using the formula of $[(x_1-x_2)^2 + (y_1-y_2)^2 + (z_1-z_2)^2]$

In order for a pair of simultaneous transmitting antennas with the sum of 1-g SAR > 1.6 W/kg to qualify for exemption from Simultaneous Transmission SAR measurements, it has to satisfy the condition of:

$$(SAR_1 + SAR_2)^{1.5} / Ri \leq 0.04$$

When an individual antenna transmits at on two bands simultaneously, the sum of the highest *reported* SAR for the frequency bands should be used to determine **SAR₁**, or **SAR₂**. When SPLSR is necessary, the smallest distance between the peak SAR locations for the antenna pair with respect to the peaks from each antenna should be used.

The antennas in all antenna pairs that do not qualify for simultaneous transmission SAR test exclusion must be tested for SAR compliance, according to the enlarged zoom scan and volume scan post-processing procedures in KDB Publication 865664 D01

12.2. Sum of the SAR for WWAN, WLAN #1, and WLAN #2

RF Exposure conditions	Test Position	Standalone SAR (W/kg)						Σ 1-g SAR (W/kg)			
		WWAN	2.4 GHz WLAN		5 & 6 GHz WLAN		FHSS	1	2	3	4
			WLAN #1	WLAN #2	WLAN #1	WLAN #2	WLAN #2	①+②+③	①+④+⑤	①+②+⑥	①+④+⑥
①	②	③	④	⑤	⑥						
Body Tablet WWAN Pwr Reduction (0 cm)	Rear	0.706	0.075	0.681	0.211	0.562	0.086	1.462	1.479	0.867	1.003
	Rear Tilt (Edge1 side)		0.151	0.925	0.355	0.854	0.138	1.076	1.209	0.289	0.493
	Rear Tilt (Edge4 side)	1.348	0.029	0.011	0.155	0.041		1.388	1.544	1.377	1.503
	Edge1		0.422	0.268	0.553	0.201	0.020	0.690	0.754	0.442	0.573
	Edge4	1.322	0.035	0.000	0.034			1.357	1.356	1.357	1.356

RF Exposure conditions	Test Position	Standalone SAR (W/kg)						Σ 1-g SAR (W/kg)			
		WWAN	2.4 GHz WLAN		5 & 6 GHz WLAN		FHSS	5	6	7	8
			WLAN #1	WLAN #2	WLAN #1	WLAN #2	WLAN #2	①+②+③	①+④+⑤	①+②+⑥	①+④+⑥
①	②	③	④	⑤	⑥						
Body Tablet WWAN Full Power	Rear	0.986	0.075	0.681	0.211	0.562	0.086	1.742	1.759	1.147	1.283
	Rear Tilt (Edge1 side)		0.151	0.925	0.355	0.854	0.138	1.076	1.209	0.289	0.493
	Rear Tilt (Edge4 side)	1.442	0.029	0.011	0.155	0.041		1.482	1.638	1.471	1.597
	Edge1	0.554	0.422	0.268	0.553	0.201	0.020	1.244	1.308	0.996	1.127
	Edge4	1.019	0.035	0.000	0.034			1.054	1.053	1.054	1.053

The following tables are considering all combinations in which SPLSR is not needed

RF Exposure conditions	Test Position	Standalone SAR (W/kg)						Σ 1-g SAR (W/kg)			
		WWAN	2.4 GHz WLAN		5 & 6 GHz WLAN		FHSS	1	2	3	4
			WLAN #1	WLAN #2	WLAN #1	WLAN #2	WLAN #2	①+②+③	①+④+⑤	①+②+⑥	①+④+⑥
①	②	③	④	⑤	⑥						
Body Tablet WWAN Pwr Reduction (0 cm)	Rear	0.706	0.075	0.681	0.211	0.562	0.086	1.462	1.479	0.867	1.003
	Rear Tilt (Edge1 side)		0.151	0.925	0.355	0.854	0.138	1.076	1.209	0.289	0.493
	Rear Tilt (Edge4 side)	1.348	0.029	0.011	0.155	0.041		1.388	1.544	1.377	1.503
	Edge1		0.422	0.268	0.553	0.201	0.020	0.690	0.754	0.442	0.573
	Edge4	1.322	0.035	0.000	0.034			1.357	1.356	1.357	1.356

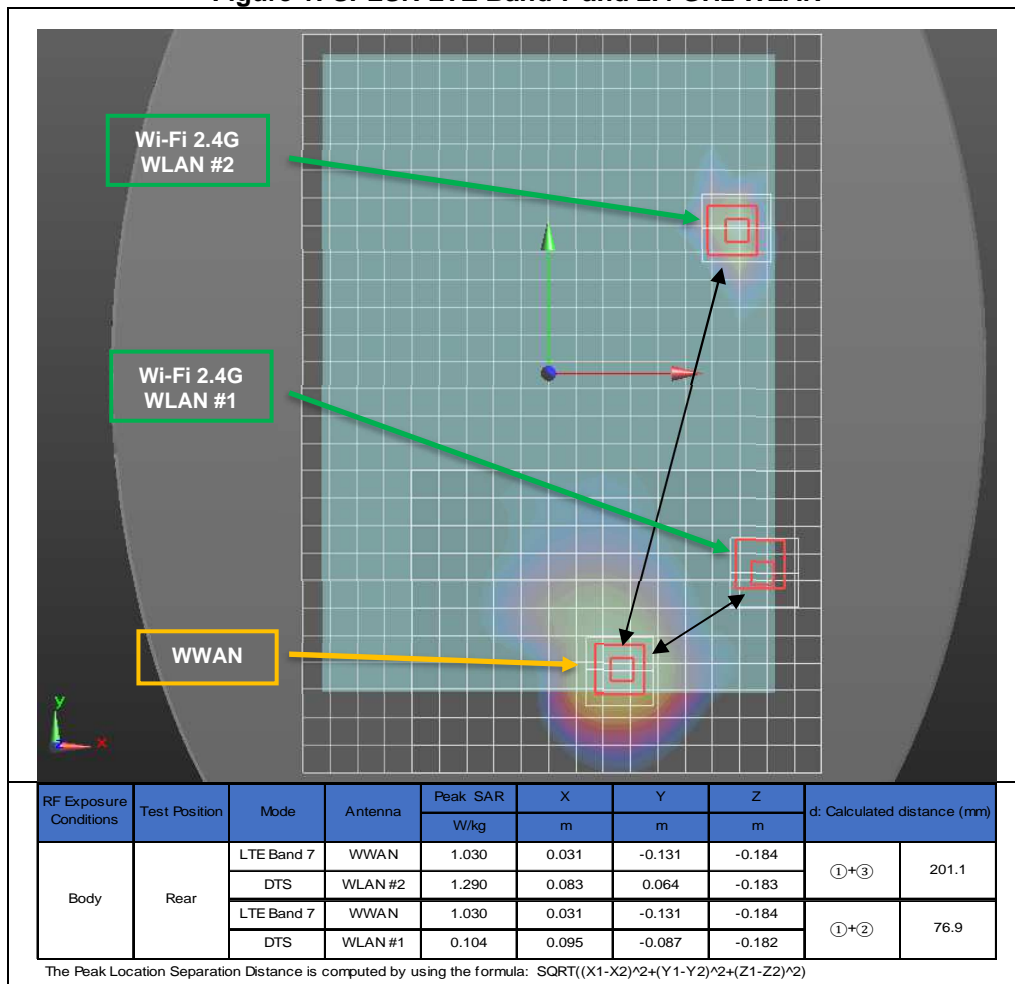
RF Exposure conditions	Test Position	Standalone SAR (W/kg)						Σ 1-g SAR (W/kg)			
		WWAN	2.4 GHz WLAN		5 & 6 GHz WLAN		FHSS	5	6	7	8
			WLAN #1	WLAN #2	WLAN #1	WLAN #2	WLAN #2	①+②+③	①+④+⑤	①+②+⑥	①+④+⑥
①	②	③	④	⑤	⑥						
Body Tablet WWAN Full Power	Rear	0.815	0.075	0.681	0.211	0.562	0.086	1.571	1.588	0.976	1.112
	Rear Tilt (Edge1 side)		0.151	0.925	0.355	0.854	0.138	1.076	1.209	0.289	0.493
	Rear Tilt (Edge4 side)	1.366	0.029	0.011	0.155	0.041		1.406	1.562	1.395	1.521
	Edge1	0.554	0.422	0.268	0.553	0.201	0.020	1.244	1.308	0.996	1.127
	Edge4	1.019	0.035	0.000	0.034			1.054	1.053	1.054	1.053

SAR to Peak Location Separation Ratio (SPLSR)

Scenario 5 – LTE Band 7

RF Exposure Conditions	Test Position	Standalone SAR (W/kg)			Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure
		PCE	DTS						
			WLAN #1	WLAN #2					
		①	②	③					
Body	Rear	0.986	0.075	0.681	①+②+③	1.742	76.9	0.03	No
		0.986		0.681	①+③	1.667	201.1	0.01	No
		0.986	0.075		①+②	1.061	76.9	0.01	No

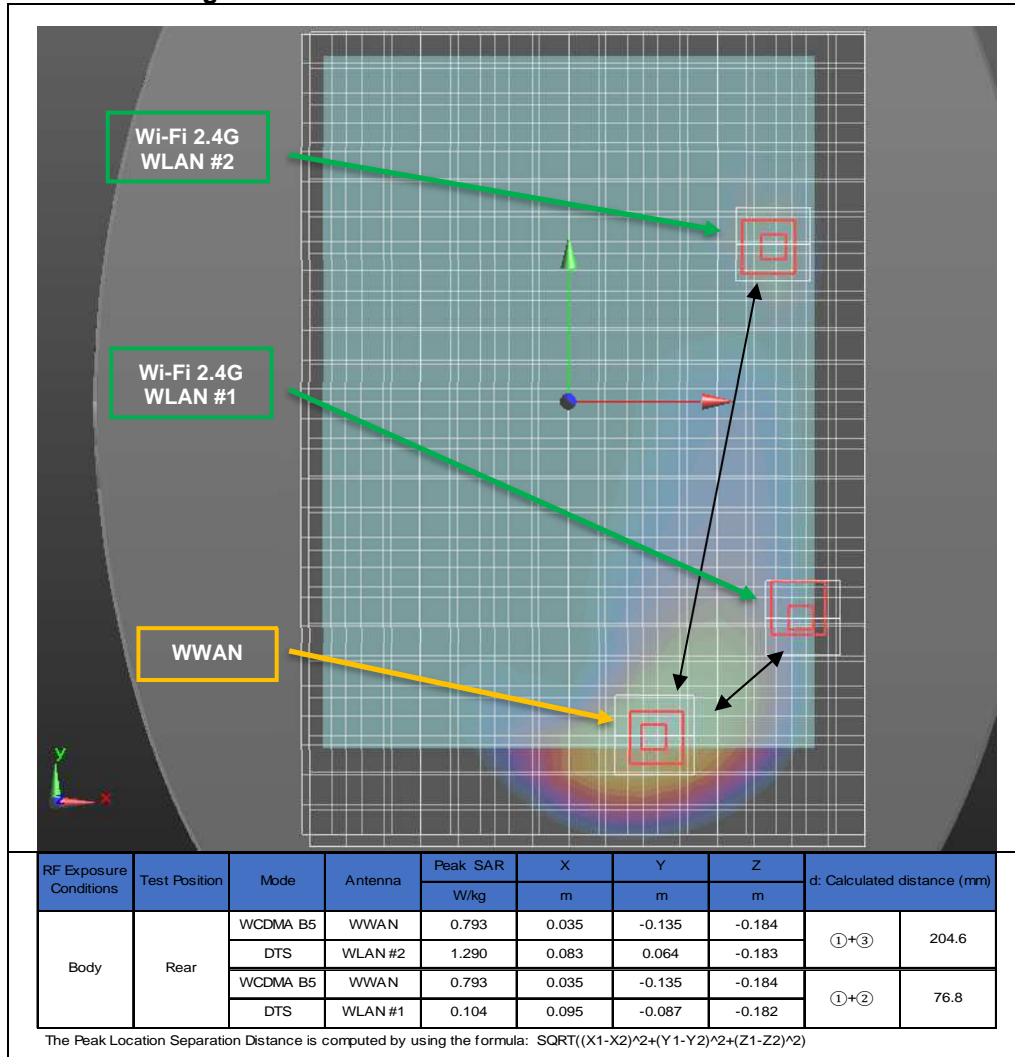
Figure 1: SPLSR LTE Band 7 and 2.4 GHz WLAN



Scenario 5 – WCDMA Band V

RF Exposure Conditions	Test Position	Standalone SAR (W/kg)			Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure	
		PCE	DTS							
			WLAN	2.4 GHz WLAN						
		①	WLAN #1	WLAN #2						③
Body	Rear	0.932	0.075	0.681	①+②+③	1.688	76.8	0.03	No	2
		0.932		0.681	①+③	1.613	204.6	0.01	No	
		0.932	0.075		①+②	1.007	76.8	0.01	No	

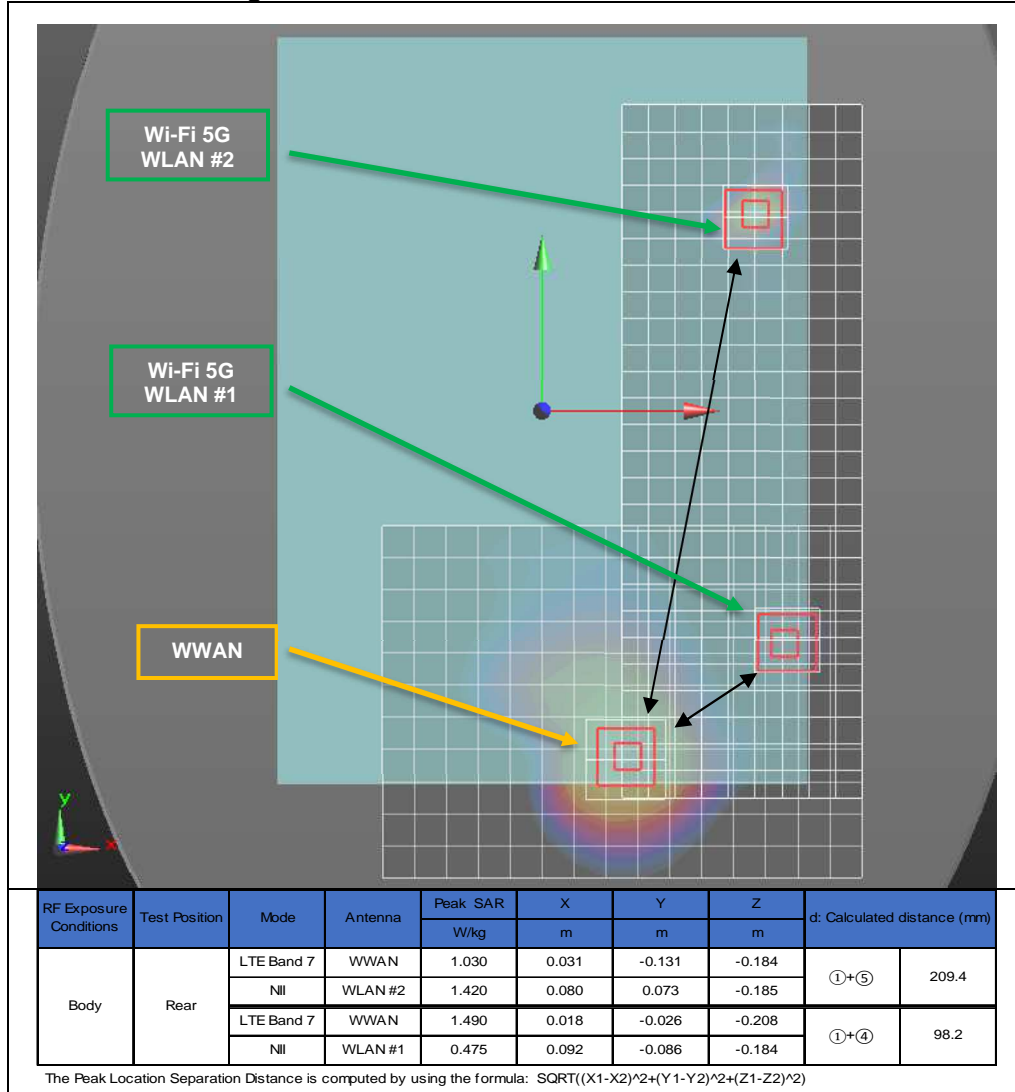
Figure 2: SPLSR W-CDMA Band V and 2.4 GHz WLAN



Scenario 6 – LTE Band 7

RF Exposure Conditions	Test Position	Standalone SAR (W/kg)			Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure	
		PCE	NII							
			WLAN	5 & 6 GHz WLAN						
			WLAN #1	WLAN #2						
①	④	⑤								
Body	Rear	0.986	0.211	0.562	①+④+⑤	1.759	98.2	0.02	No	3
		0.986		0.562	①+⑤	1.548	209.4	0.01	No	
		0.986	0.211		①+④	1.197	98.2	0.01	No	

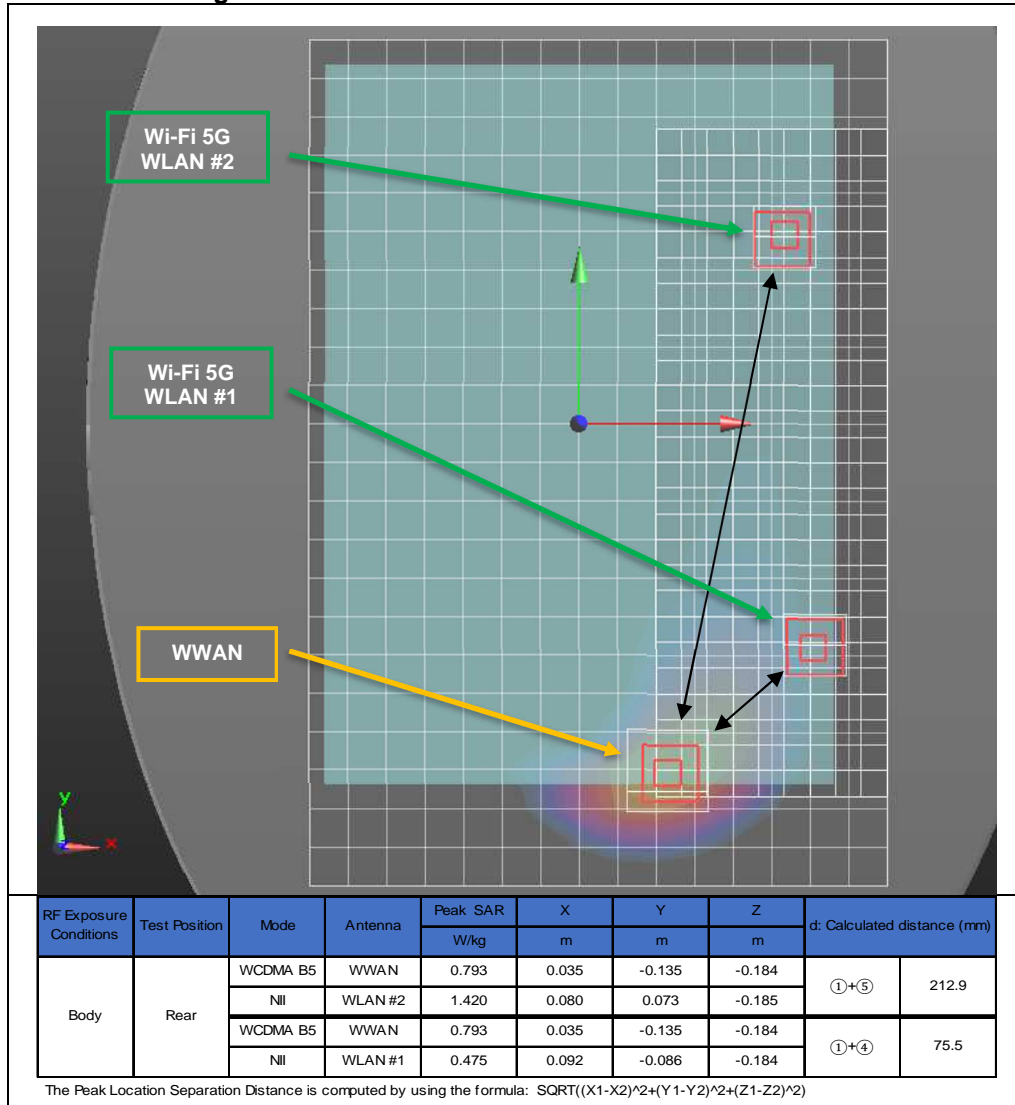
Figure 3: SPLSR LTE Band 7 and 5 GHz WLAN



Scenario 6 – WCDMA Band V

RF Exposure Conditions	Test Position	Standalone SAR (W/kg)			Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure
		PCE	NII						
			WLAN	5 & 6 GHz WLAN					
		①	④	⑤					
Body	Rear	0.932	0.211	0.562	①+④+⑤	1.705	75.5	0.03	No
		0.932		0.562	①+⑤	1.494	212.9	0.01	No
		0.932	0.211		①+④	1.143	75.5	0.02	No

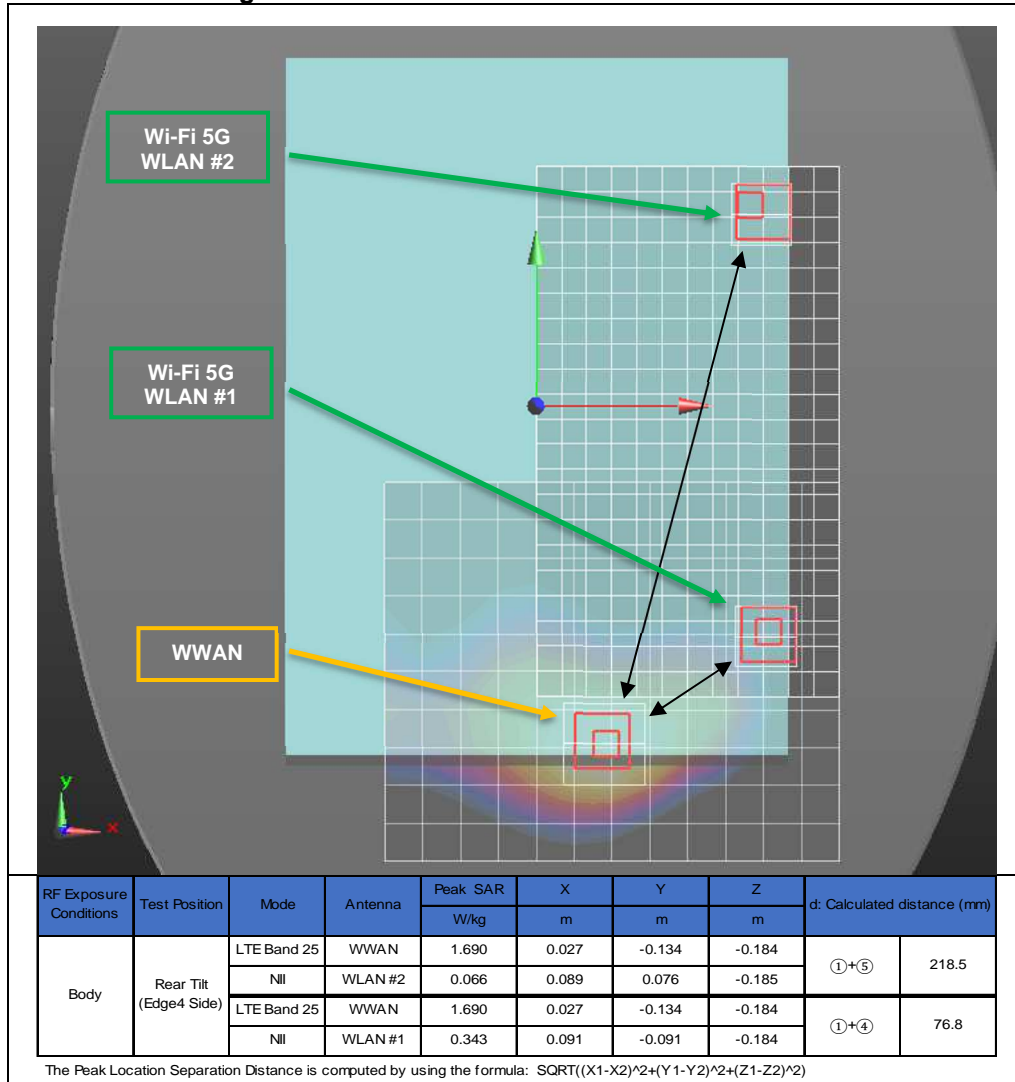
Figure 4: SPLSR W-CDMA Band V and 5 GHz WLAN



Scenario 6 – LTE Band 25

RF Exposure Conditions	Test Position	Standalone SAR (W/kg)			Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure	
		PCE	NII							
			WLAN	5 & 6 GHz WLAN						
		WLAN #1	WLAN #2							
①	④	⑤								
Body	Rear Tilt (Edge4 Side)	1.442	0.155	0.041	①+④+⑤	1.638	76.8	0.03	No	5
		1.442		0.041	①+⑤	1.483	218.5	0.01	No	
		1.442	0.155		①+④	1.597	76.8	0.03	No	

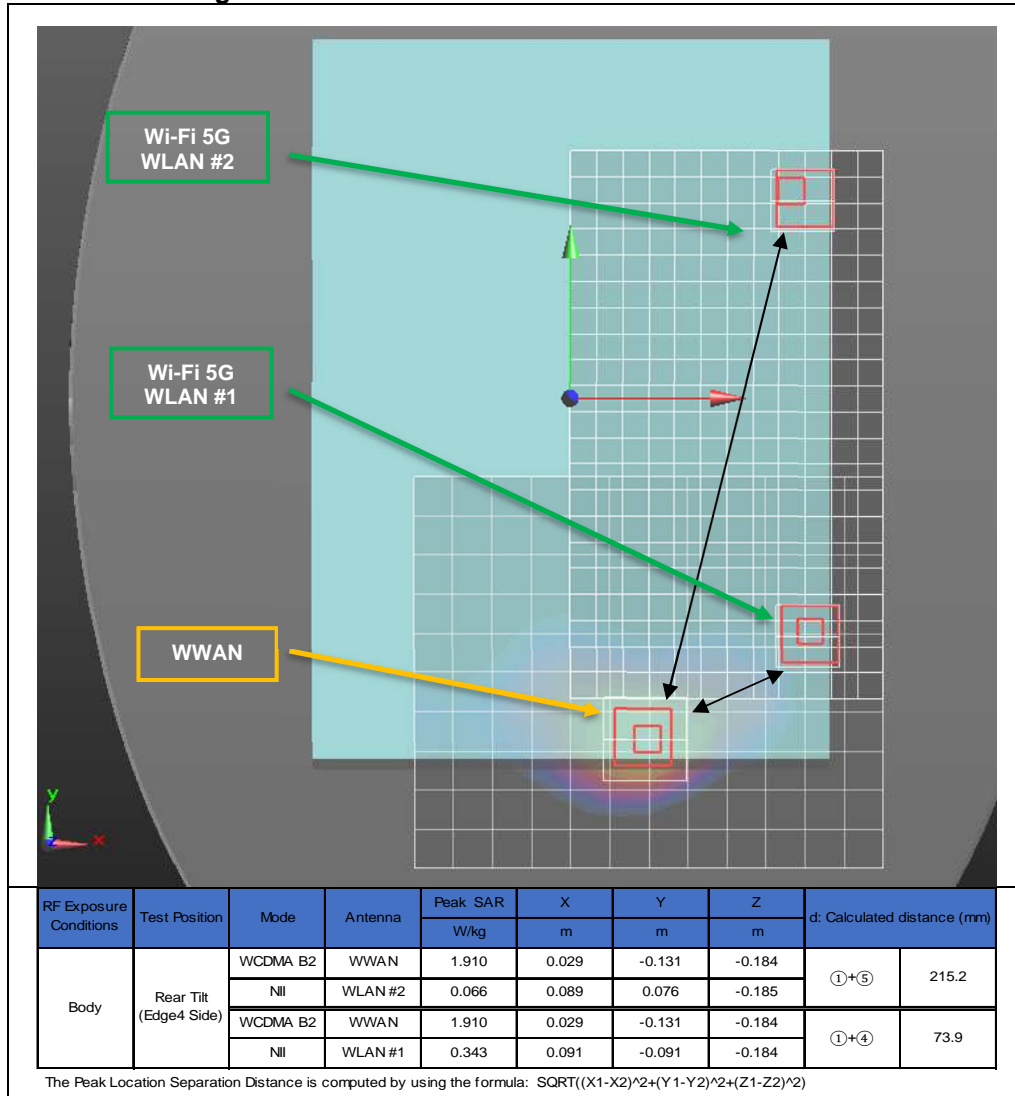
Figure 5: SPLSR LTE Band 25 and 5 GHz WLAN



Scenario 6 – WCDMA Band 2

RF Exposure Conditions	Test Position	Standalone SAR (W/kg)			Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure	
		PCE WWAN	NII 5 & 6 GHz WLAN							
			WLAN #1	WLAN #2						
		①	④	⑤						
Body	Rear Tilt (Edge4 Side)	1.417	0.155	0.041	①+④+⑤	1.613	73.9	0.03	No	6
		1.417		0.041	①+⑤	1.458	215.2	0.01	No	
		1.417	0.155		①+④	1.572	73.9	0.03	No	

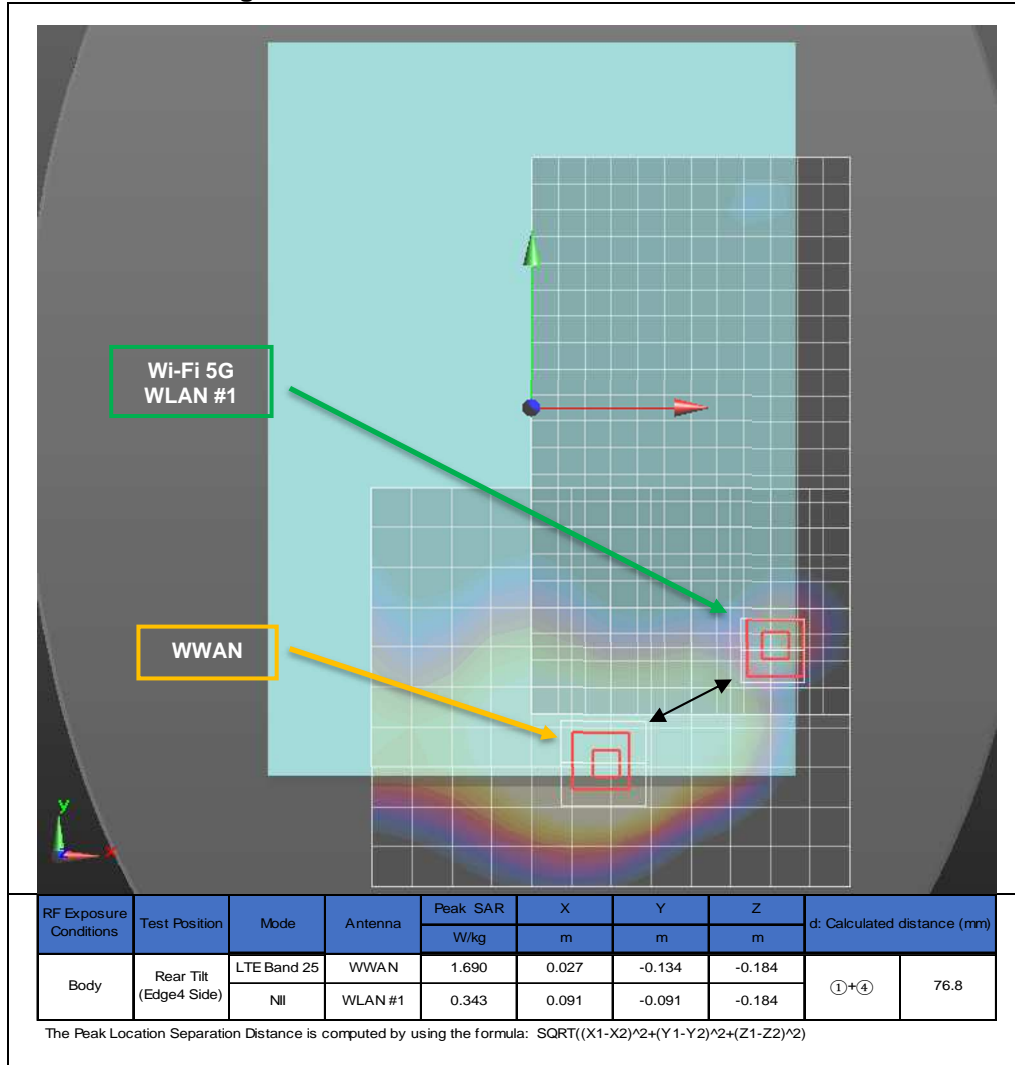
Figure 6: SPLSR W-CDMA Band II and 5 GHz WLAN



Scenario 8 – LTE Band 25

RF Exposure Conditions	Test Position	Standalone SAR (W/kg)			Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure	
		PCE	NII	DSS						
		WWAN	5 & 6 GHz WLAN	FHSS						
		①	④	⑥						
Body	Rear Tilt (Edge4 Side)	1.442	0.155		①+④+⑥	1.597	76.8	0.03	No	7

Figure 7: SPLSR LTE Band 25 and 5 GHz WLAN



Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because either the sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

Appendixes

Refer to separated files for the following appendixes.

Appendix A: SAR Setup Photos

Appendix B: SAR System Check Plots

Appendix C: SAR Highest Test Plots

Appendix D: SAR Tissue Ingredients

Appendix E: SAR Probe Certificates

Appendix F: SAR Dipole Certificates

Appendix G: Proximity Sensor Verification

END OF REPORT