



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

SAR EVALUATION REPORT

FOR

WCDMA/LTE Tablet + BT/BLE, DTS/UNII a/b/g/n and ANT+

MODEL NUMBER: SM-T387T

FCC ID: A3LSMT387T

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Prepared for
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TL-637

Revision History


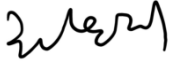
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1. Attestation of Test Results

Applicant Name	SAMSUNG ELECTRONICS CO.,LTD.			
FCC ID	A3LSMT387T			
Model Number	SM-T387T			
Applicable Standards	FCC 47 CFR § 2.1093 Published RF exposure KDB procedures IEEE Std 1528-2013			
SAR Limits (W/Kg)				
Exposure Category	Peak spatial-average(1g of tissue)			
General population / Uncontrolled exposure	1.6			
The Highest Reported SAR (W/kg)				
RF Exposure Conditions	Equipment Class			
	Licensed	DTS	UNII	DSS(BT)
Standalone	1.06	0.88	0.94	0.33
Simultaneous TX	1.55	1.48	1.55	1.30
Date Tested	6/27/2018 to 7/27/2018			
Test Results	Pass			
<p>UL Korea, Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Korea, Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.</p> <p>Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Korea, Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Korea, Ltd. 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 IAS, any agency of the Federal Government, or any agency of any government.</p>				
Approved & Released By:		Prepared By:		
				
Justin Park Lead Test Engineer UL Korea, Ltd. Suwon Laboratory		Eunji Choi Associate Test Engineer UL Korea, Ltd. Suwon Laboratory		

2. Test Specification, Methods and Procedures

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

- 248227 D01 802.11 Wi-Fi SAR v02r02
- 447498 D01 General RF Exposure Guidance v06
- 616217 D04 SAR for laptop and tablets v01r02
- 690783 D01 SAR Listings on Grants v01r03
- 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
- 941225 D06 Hotspot Mode v02r01

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

- [TCB workshop](#) October, 2014; Page 36, RF Exposure Procedures Update (Overlapping LTE Bands)
- [TCB workshop](#) October, 2016; Page 7, RF Exposure Procedures (Bluetooth Duty Factor)

Additional Guidance: KDB inquiry

- Additional SAR test of corner side – KDB guidance to identify that SAR test when sensor and antenna is located near corner side.

3. Facilities and Accreditation

The test sites and measurement facilities used to collect data are located at

Suwon
SAR 1 Room
SAR 2 Room
SAR 3 Room

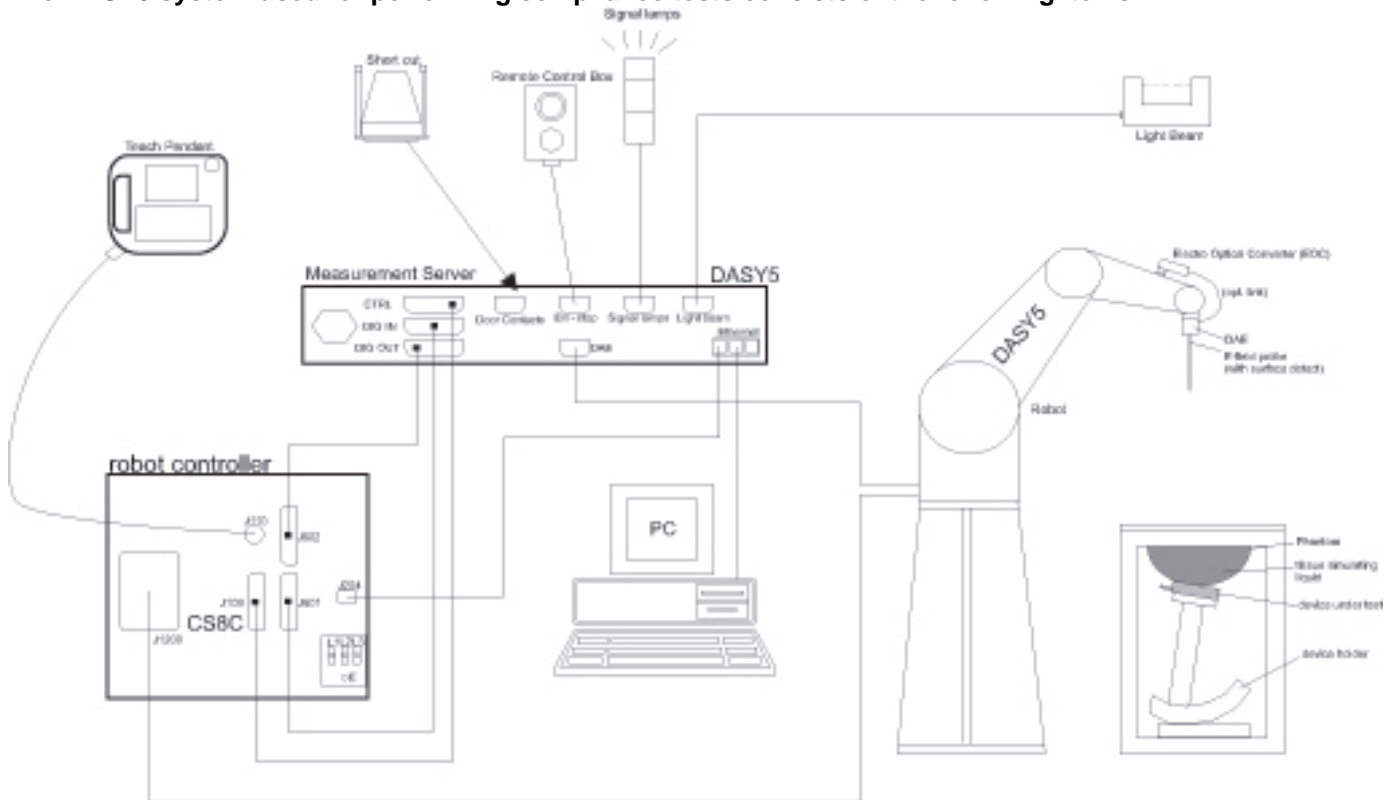
UL Korea, Ltd. is accredited by IAS, Laboratory Code TL-637.

The full scope of accreditation can be viewed at <http://www.iasonline.org/PDF/TL/TL-637.pdf>.

4. SAR Measurement System & Test Equipment

4.1. SAR Measurement System

The DASY5 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 WinXP or Win7 and the DASY5 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.

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 Standard 1528 and IEC 62209 standards, 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.

Step 5: Z-Scan (FCC only)

The Z Scan measures points along a vertical straight line. The line runs along the Z-axis of a one-dimensional grid. In order to get a reasonable extrapolation the extrapolated distance should not be larger than the step size in Z-direction.

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	Agilent	E5071C	MY46522054	8-8-2018
Dielectric Assessment Kit	SPEAG	DAK-3.5	1196	6-26-2019
Dielectric Assessment Kit	SPEAG	DAK-3.5	1046	4-17-2019
Shorting block	SPEAG	DAK-3.5 Short	SM DAK 200 BA	N/A
Thermometer	LKM	DTM3000	3424	8-11-2018
Thermometer	Lutron	MHB-382SD	AH.91478	8-10-2018

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
MXG Analog Signal Generator	Agilent	N5181A	MY50145882	8-7-2018
Power Sensor	Agilent	U2000A	MY54260010	8-8-2018
Power Sensor	Agilent	U2000A	MY54260007	8-8-2018
Power Amplifier	EXODUS	1410025-AMP2027-10003	10003	8-8-2018
Directional Coupler	Agilent	772D	MY52180193	8-7-2018
Directional Coupler	Agilent	778D	MY52180432	8-7-2018
Low Pass Filter	MICROLAB	LA-15N	03943	8-7-2018
Low Pass Filter	FILTRON	L14012FL	1410003S	8-7-2018
Low Pass Filter	MICROLAB	LA-60N	03942	8-7-2018
Attenuator	Agilent	8491B/003	MY39269292	8-7-2018
Attenuator	Agilent	8491B/010	MY39269315	8-7-2018
Attenuator	Agilent	8491B/020	MY39269298	8-7-2018
E-Field Probe (SAR1)	SPEAG	EX3DV4	7330	1-22-2019
E-Field Probe (SAR2)	SPEAG	EX3DV4	7313	2-20-2019
E-Field Probe (SAR3)	SPEAG	EX3DV4	7314	9-28-2018
Data Acquisition Electronics (SAR1)	SPEAG	DAE4	1468	8-22-2018
Data Acquisition Electronics (SAR2)	SPEAG	DAE4	1447	3-15-2019
Data Acquisition Electronics (SAR3)	SPEAG	DAE4	1494	7-20-2018
Data Acquisition Electronics (SAR3)	SPEAG	DAE4	614	6-22-2019
System Validation Dipole	SPEAG	D750V3	1122	2-19-2019
System Validation Dipole	SPEAG	D835V2	4d194	7-19-2018
System Validation Dipole	SPEAG	D1750V2	1125	2-16-2019
System Validation Dipole	SPEAG	D1900V2	5d190	9-20-2018
System Validation Dipole	SPEAG	D2450V2	939	9-19-2018
System Validation Dipole	SPEAG	D2600V2	1097	1-17-2019
System Validation Dipole	SPEAG	D5GHzV2	1209	2-15-2019
Thermometer (SAR1)	Lutron	MHB-382SD	AH.91463	8-10-2018
Thermometer (SAR2)	Lutron	MHB-382SD	AH.50215	2-9-2019
Thermometer (SAR3)	Lutron	MHB-382SD	AH.50213	8-16-2018

Others

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Base Station Simulator	R & S	CMW500	150313	12-08-2018
Base Station Simulator	R & S	CMW500	150314	12-05-2018
Bluetooth Tester	TESCOM	TC-3000C	3000C000546	8-7-2018

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 Std 1528-2013 is not required in SAR reports submitted for equipment approval.

6. Device Under Test (DUT) Information

6.1. DUT Description

Device Dimension	Overall (Length x Width): 206.6 mm x 126.7 mm Overall Diagonal: 234.0 mm Display Diagonal: 203.1 mm																		
Back Cover	<input checked="" type="checkbox"/> The Back Cover is not removable.																		
Battery Options	<input checked="" type="checkbox"/> The rechargeable battery is not user accessible.																		
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, Ch.149, Ch.151)																		
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, Ch.149)																		
Test Sample Information	<table border="1"> <thead> <tr> <th>No.</th> <th>S/N</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>R32K500K5RX</td> <td>Main Conducted</td> </tr> <tr> <td>2</td> <td>R32K500K9WM</td> <td>Wi-Fi Conducted</td> </tr> <tr> <td>3</td> <td>R32K500K31T</td> <td>SAR</td> </tr> <tr> <td>4</td> <td>R32K500K6YZ</td> <td>SAR</td> </tr> <tr> <td>5</td> <td>R32K500K6JR</td> <td>SAR</td> </tr> </tbody> </table>	No.	S/N	Notes	1	R32K500K5RX	Main Conducted	2	R32K500K9WM	Wi-Fi Conducted	3	R32K500K31T	SAR	4	R32K500K6YZ	SAR	5	R32K500K6JR	SAR
No.	S/N	Notes																	
1	R32K500K5RX	Main Conducted																	
2	R32K500K9WM	Wi-Fi Conducted																	
3	R32K500K31T	SAR																	
4	R32K500K6YZ	SAR																	
5	R32K500K6JR	SAR																	

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 (Release.7) HSUPA (Release.6) HSPA+ (Release 9)	100%
LTE	FDD Band 2 FDD Band 4 FDD Band 5 FDD Band 7 FDD Band 12 FDD Band 66 FDD Band 71	QPSK 16QAM Rel. 10 Carrier Aggregation (1 Uplink and 2 Downlinks)	100% (FDD)
Does this device support SV-LTE (1xRTT-LTE)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Wi-Fi	2.4 GHz	802.11b 802.11g 802.11n (HT20)	99.7% (802.11b) 98.2% (802.11g) 98.1% (802.11n 20MHz BW)
	5 GHz	802.11a 802.11n (HT20) 802.11n (HT40)	98.2% (802.11a) 98.1% (802.11n 20MHz BW) 96.1% (802.11n 40MHz BW)
	Does this device support bands 5.60 ~ 5.65 GHz? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
	Does this device support Band gap channel(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Bluetooth	2.4 GHz	Version 4.2 LE	76.9% (DH5)

Notes:

- The Bluetooth protocol is considered source-based averaging. Bluetooth GFSK (DH5) was verified to have the highest duty cycle of 76.9% and was considered and used for SAR Testing.
- Duty cycle for Wi-Fi is referenced from the DTS and UNII report.

6.3. Nominal and Maximum Output Power

KDB 447498 sec.4.1. at the maximum rated output power and within the tune-up tolerance range specified for the product, but not more than 2 dB lower than the maximum tune-up tolerance limit.

RF Air interface	Antenna	Mode	Max. RF Output Power (dBm)	Reduced. RF Output Power (dBm)
W-CDMA Band II	Ant.1	R99	24.5	11.0
		HSDPA	23.5	10.0
		HSUPA	23.5	9.0
W-CDMA Band IV	Ant.1	R99	25.0	14.0
		HSDPA	24.5	13.5
		HSUPA	24.5	13.5
W-CDMA Band V	Ant.1	R99	25.0	19.0
		HSDPA	24.5	18.5
		HSUPA	24.0	18.5

RF Air interface	Antenna	Mode	Max. RF Output Power (dBm)	Reduced. RF Output Power (dBm)
LTE Band 2	Ant.1	QPSK	24.5	12.0
LTE Band 4	Ant.1	QPSK	25.0	13.0
LTE Band 5	Ant.1	QPSK	25.2	16.0
LTE Band 7	Ant.2	QPSK	23.0	12.0
LTE Band 12	Ant.1	QPSK	25.0	17.0
LTE Band 66	Ant.1	QPSK	25.0	14.0
LTE Band 71	Ant.1	QPSK	25.0	15.0

RF Air interface	Mode	Max. RF Output Power (dBm)	Reduced. RF Output Power (dBm)
WiFi 2.4 GHz (Ch.1)	802.11b	21.0	14.0
	802.11g	14.0	14.0
	802.11n HT20	14.0	14.0
WiFi 2.4 GHz (Ch.2)	802.11b	21.0	14.0
	802.11g	18.0	14.0
	802.11n HT20	17.0	14.0
WiFi 2.4 GHz (Ch.3 - Ch.10)	802.11b	21.0	14.0
	802.11g	19.0	14.0
	802.11n HT20	18.0	14.0
WiFi 2.4 GHz (Ch.11)	802.11b	19.0	14.0
	802.11g	12.0	12.0
	802.11n HT20	12.0	12.0
WiFi 5.2 GHz (U-NII 1)	802.11a	17.0	10.0
	802.11n HT20	16.0	10.0
	802.11n HT40	12.0	10.0
WiFi 5.3 GHz (U-NII 2A)	802.11a	17.0	10.0
	802.11n HT20	16.0	10.0
	802.11n HT40	12.0	10.0
WiFi 5.5 GHz (U-NII 2C)	802.11a	15.0	10.0
	802.11n HT20	15.0	10.0
	802.11n HT40	11.0	10.0
WiFi 5.8 GHz (U-NII 3)	802.11a	17.0	10.0
	802.11n HT20	16.0	10.0
	802.11n HT40	12.0	10.0
Bluetooth		10.0	
Bluetooth LE		7.0	

Note(s):

1. LTE QPSK configuration has the highest maximum average output power per 3GPP standard.
2. LTE Band 4 (Frequency range: 1710-1755 MHz) is covered by LTE Band 66 (Frequency range: 1710-1780 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

6.4. General LTE SAR Test and Reporting Considerations

Item	Description						
Frequency range, Channel Bandwidth, Numbers and Frequencies	Band 2	Frequency range: 1850 - 1910 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					
		Channel Bandwidth					
		20 MHz	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					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	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					
		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						
	Channel Bandwidth						
	20 MHz	15 MHz	10 MHz	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 66	Frequency range: 1710 - 1780 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	

General LTE SAR Test and Reporting Considerations (Continued)

Item	Description																																																														
Frequency range, Channel Bandwidth, Numbers and Frequencies	Band 71	Frequency range: 663 - 698 MHz																																																													
		Channel Bandwidth																																																													
		20 MHz	15 MHz	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>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. 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																																																														
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.																																																														

Note(s):

- SAR Testing for LTE was performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

6.5. LTE Carrier Aggregation

DL Inter-Bnad (2CC max)

E-UTRA CA configuration (BCS)	E-UTRA Band	Bandwidth						Max Aggregated BW	Reverse Y/N
		1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz		
CA_2A-4A (1)	Band 2			Yes	Yes			20MHz	Y
	Band 4			Yes	Yes				
CA_2A-12A (2)	Band 2			Yes	Yes			20 MHz	Y
	Band 12			Yes	Yes				
CA_4A-12A (0)(3)	Band 4	Yes	Yes	Yes	Yes			20 MHz	N
	Band 12			Yes	Yes				
	Band 4			Yes	Yes			20 MHz	
	Band 12			Yes	Yes				

DL Intra-Bnad Non-Contiguous (2CC max)

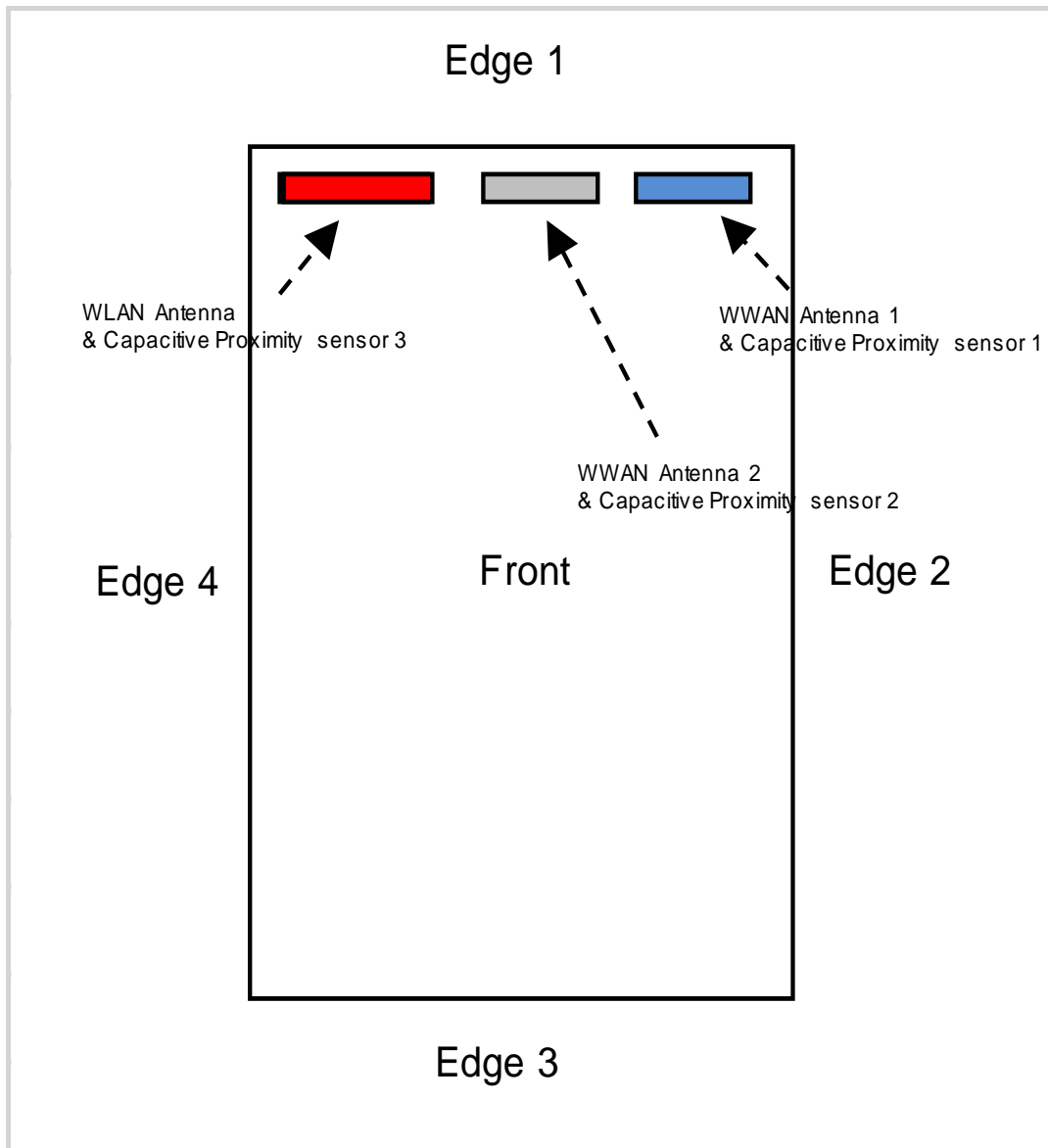
E-UTRA CA configuration (BCS)	E-UTRA Band	Allowed Channel BW Per Carrier (MHz)		Max Aggregated BW	Reverse Y/N
		1st Carrier	2nd Carrier		
CA_4A-4A (1)	Band 4	5, 10	5, 10	20MHz	Y

Note(s):

For supported channels, please refer to §6.4.

6.6. Proximity sensor feature

The DUT has three proximity sensors to reduce the output power. The position of the sensors and antenna are as shown in the graphic.

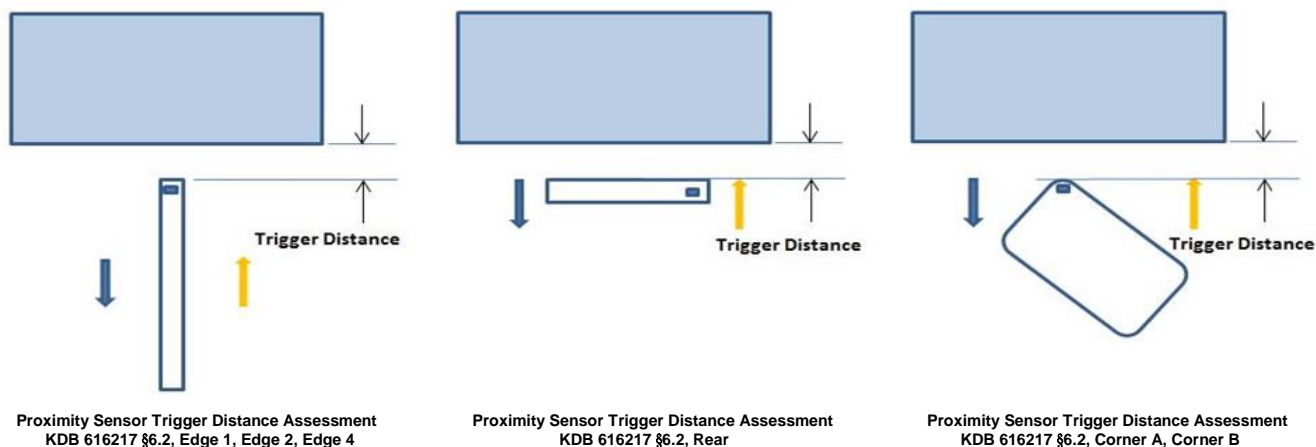


6.6.1. Proximity Sensor Triggering Distance (KDB 616217 §6.2)

Rear, Edge 1, Edge 2, Edge 4, Corner A (Side of between Edge 1 and Edge 2), Corner B (Side of between Edge 1 and Edge 4) of the DUT was placed directly below the flat phantom. The DUT was moved toward the phantom in accordance with the steps outlined in KDB 616217 §6.2 to determine the trigger distance for enabling power reduction. The DUT was moved away from the phantom to determine the trigger distance for resuming full power.

The DUT featured a visual indicator on its display that showed the status of the proximity sensor (Triggered or not triggered). This was used to determine the status of the sensor during the proximity sensor assessment as monitoring the output power directly was not practical without affecting the measurement.

It was confirmed separately that the output power was altered according to the proximity sensor status indication. This was achieved by observing the proximity sensor status at the same time as monitoring the conducted power. Section 9 contains both the full and reduced conducted power measurements.



LEGEND

- Direction of DUT travel for determination of power reduction triggering point
- Direction of DUT travel for determination of full power resumption triggering point

Summary of Trigger Distances

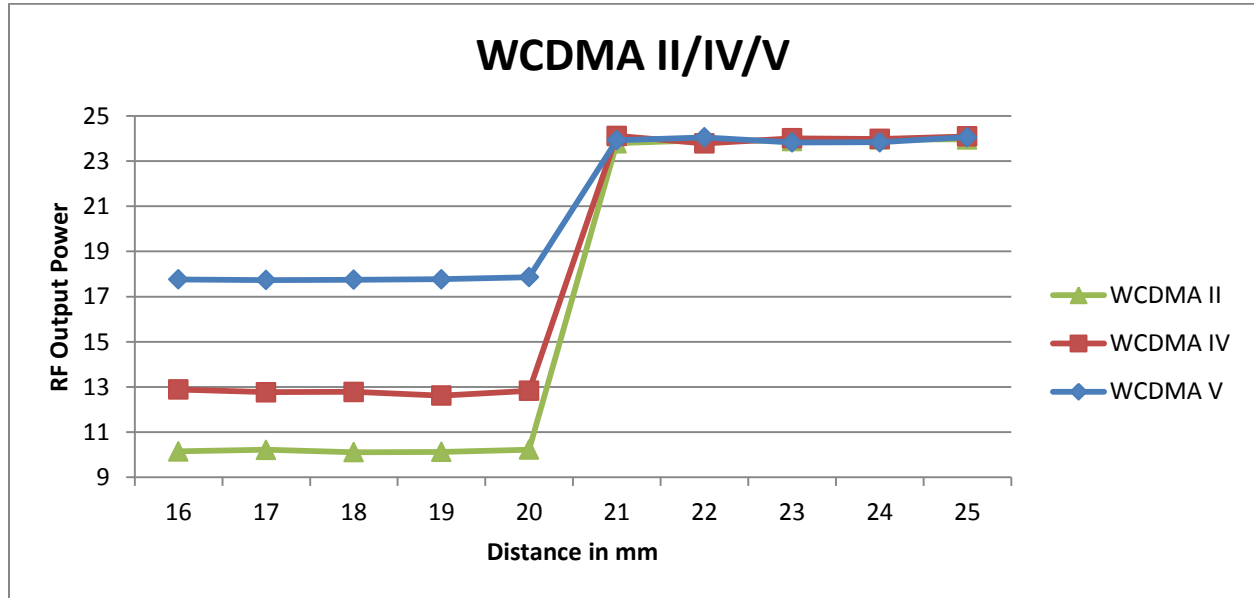
Antenna	Tissue simulating liquid	Trigger distance - Rear		Trigger distance - Edge 1		Trigger distance - Edge 2		Trigger distance - Edge 4		Trigger distance - Corner A		Trigger distance - Corner B	
		Moving toward phantom	Moving from phantom	Moving toward phantom	Moving from phantom	Moving toward phantom	Moving from phantom	Moving toward phantom	Moving from phantom	Moving toward phantom	Moving from phantom	Moving toward phantom	Moving from phantom
WWAN Ant.1	750 muscle	20 mm	20 mm	16 mm	16 mm	6 mm	6 mm	N/A	N/A	11 mm	11 mm	N/A	N/A
	850 muscle	20 mm	20 mm	16 mm	16 mm	6 mm	6 mm	N/A	N/A	11 mm	11 mm	N/A	N/A
	1750 muscle	20 mm	20 mm	16 mm	16 mm	6 mm	6 mm	N/A	N/A	11 mm	11 mm	N/A	N/A
	1900 muscle	20 mm	20 mm	16 mm	16 mm	6 mm	6 mm	N/A	N/A	11 mm	11 mm	N/A	N/A
WWAN Ant.2	2600 muscle	15 mm	15 mm	11 mm	11 mm	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WLAN Ant.	2450 muscle	12 mm	12 mm	9 mm	9 mm	N/A	N/A	7 mm	7 mm	N/A	N/A	7 mm	7 mm
	5000 muscle	12 mm	12 mm	9 mm	9 mm	N/A	N/A	7 mm	7 mm	N/A	N/A	7 mm	7 mm

Proximity Sensor Triggering Distance Measurement Results

W-CDMA Band II / IV / V

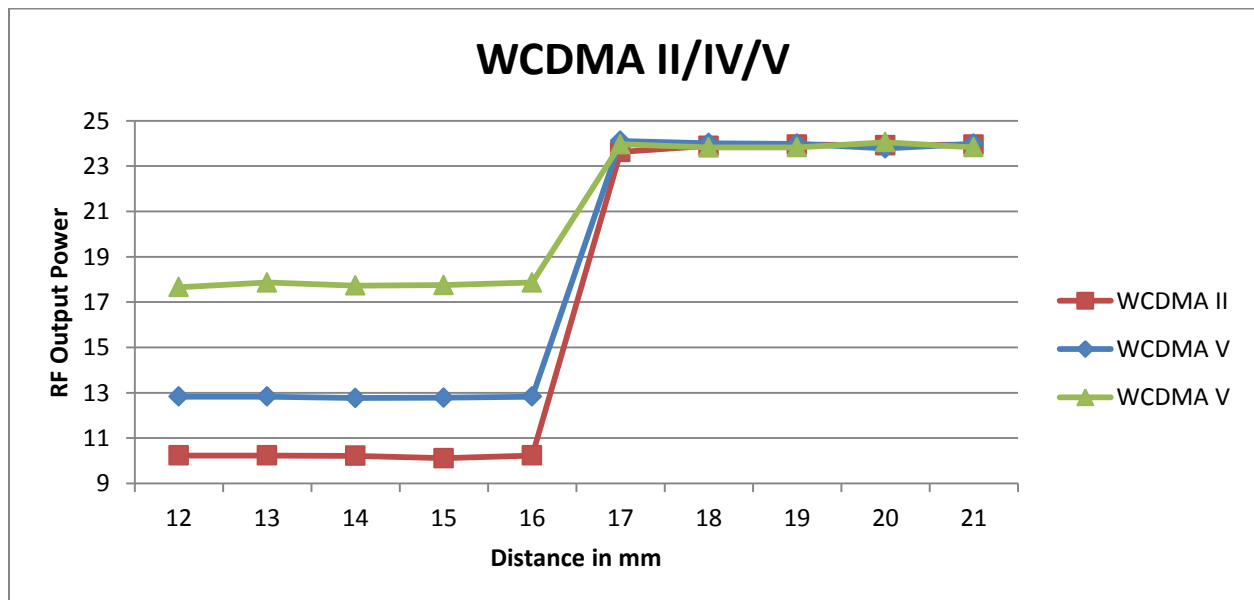
Rear, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	16	17	18	19	20	21	22	23	24	25
WCDMA II	10.2	10.2	10.1	10.1	10.2	23.8	23.9	23.9	24.0	24.0
WCDMA IV	12.9	12.8	12.8	12.6	12.8	24.1	23.8	24.0	24.0	24.1
WCDMA V	17.8	17.7	17.8	17.8	17.9	23.9	24.1	23.8	23.8	24.1



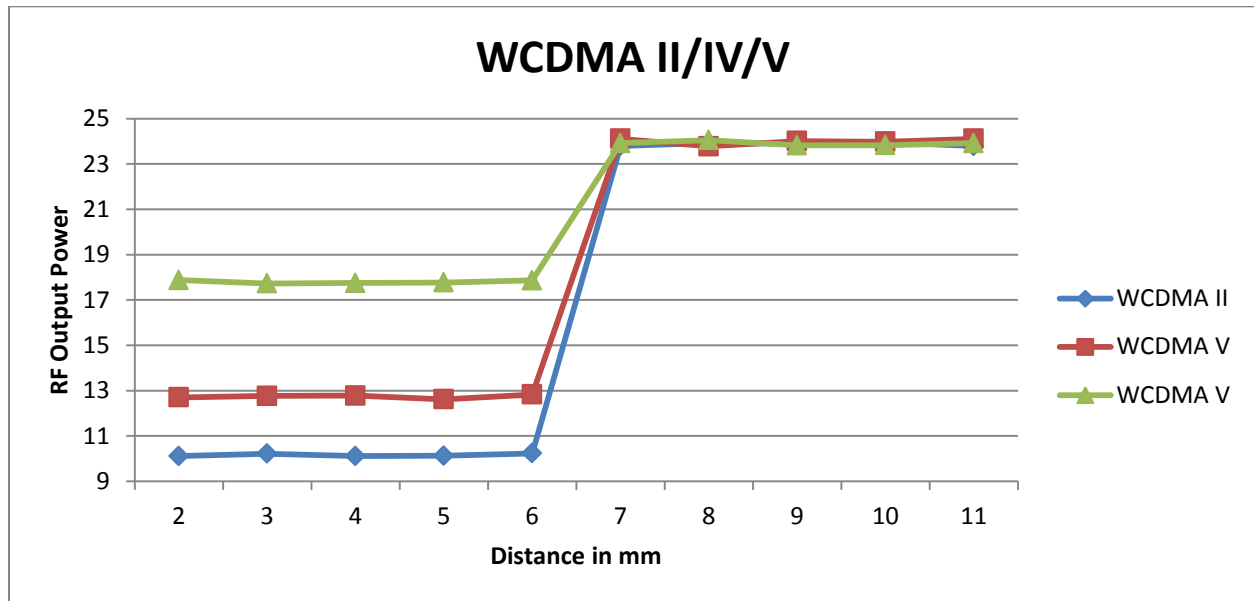
Edge 1, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	12	13	14	15	16	17	18	19	20	21
WCDMA II	10.2	10.2	10.2	10.1	10.2	23.6	23.9	24.0	23.9	24.0
WCDMA V	12.8	12.8	12.8	12.8	12.8	24.1	24.0	24.0	23.8	24.0
WCDMA V	17.7	17.9	17.7	17.8	17.9	24.0	23.8	23.8	24.1	23.8



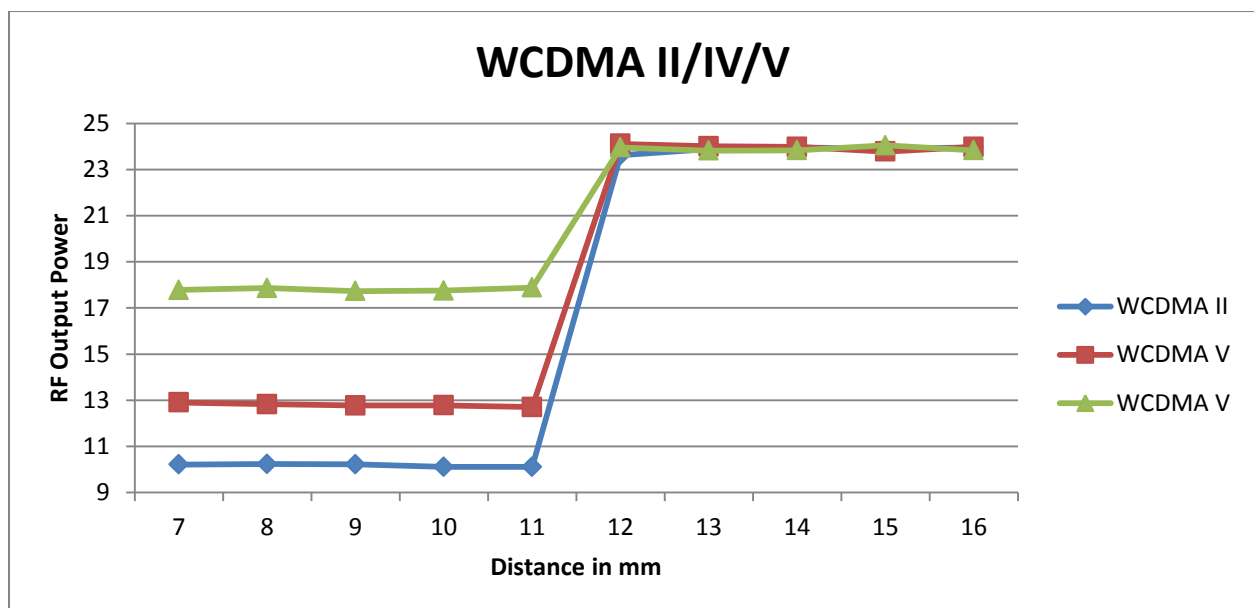
Edge 2, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	2	3	4	5	6	7	8	9	10	11
WCDMA II	10.1	10.2	10.1	10.1	10.2	23.8	23.9	23.9	24.0	23.8
WCDMA V	12.7	12.8	12.8	12.6	12.8	24.1	23.8	24.0	24.0	24.1
WCDMA V	17.9	17.7	17.8	17.8	17.9	23.9	24.1	23.8	23.8	23.9



Corner A, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

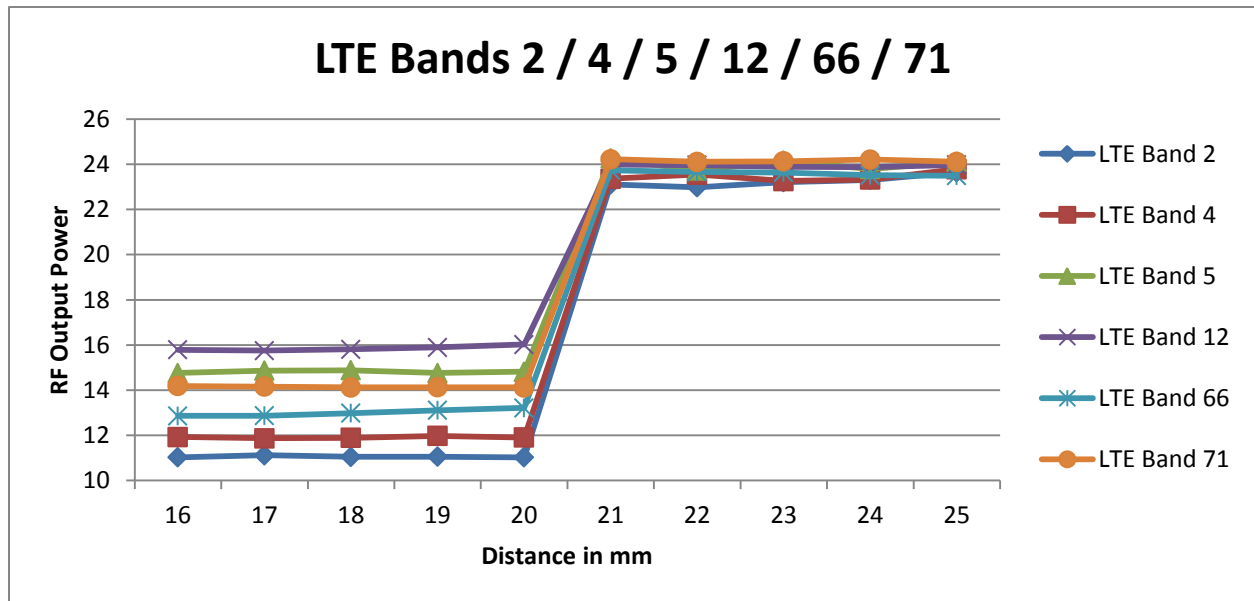
Distance to DUT vs. Output Power in dBm										
Distance (mm)	7	8	9	10	11	12	13	14	15	16
WCDMA II	10.2	10.2	10.2	10.1	10.1	23.6	23.9	24.0	23.9	24.0
WCDMA V	12.9	12.8	12.8	12.8	12.7	24.1	24.0	24.0	23.8	24.0
WCDMA V	17.8	17.9	17.7	17.8	17.9	24.0	23.8	23.8	24.1	23.8



LTE Band 2 / 4 / 5 / 12 / 66 / 71

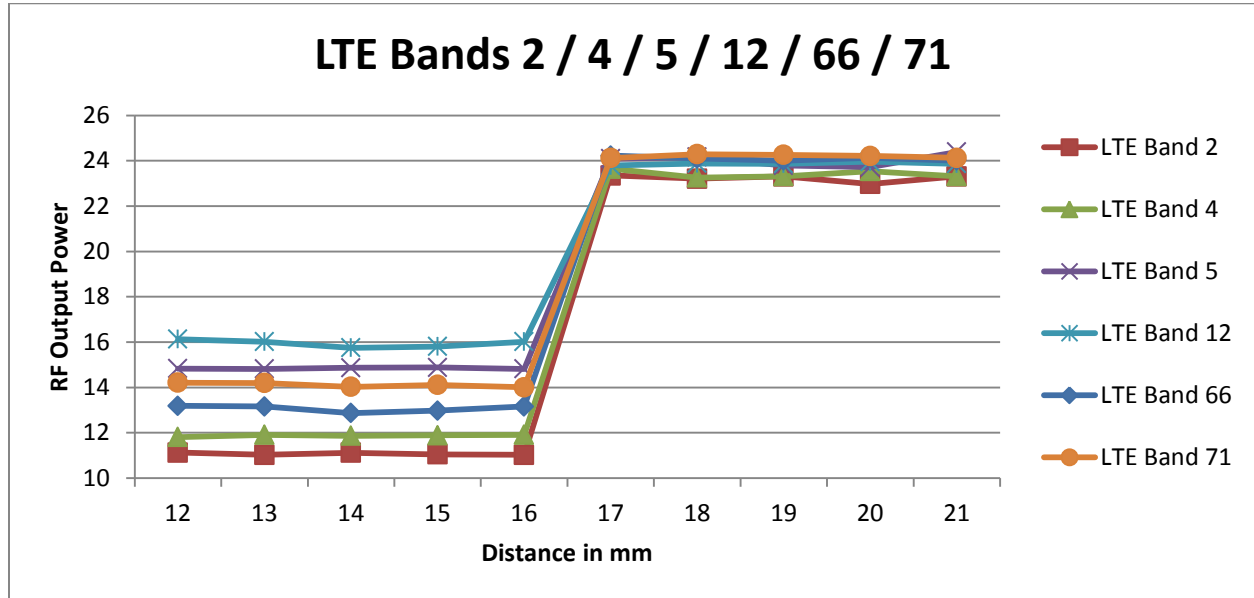
Rear, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	16	17	18	19	20	21	22	23	24	25
LTE Band 2	11.0	11.1	11.1	11.1	11.0	23.1	23.0	23.2	23.3	23.7
LTE Band 4	11.9	11.9	11.9	12.0	11.9	23.4	23.5	23.3	23.3	23.8
LTE Band 5	14.8	14.9	14.9	14.8	14.8	24.3	23.7	24.2	23.8	24.1
LTE Band 12	15.8	15.8	15.8	15.9	16.0	24.0	24.0	23.9	23.9	24.0
LTE Band 66	12.9	12.9	13.0	13.1	13.2	23.7	23.7	23.6	23.5	23.5
LTE Band 71	14.2	14.2	14.1	14.1	14.1	24.2	24.1	24.1	24.2	24.1



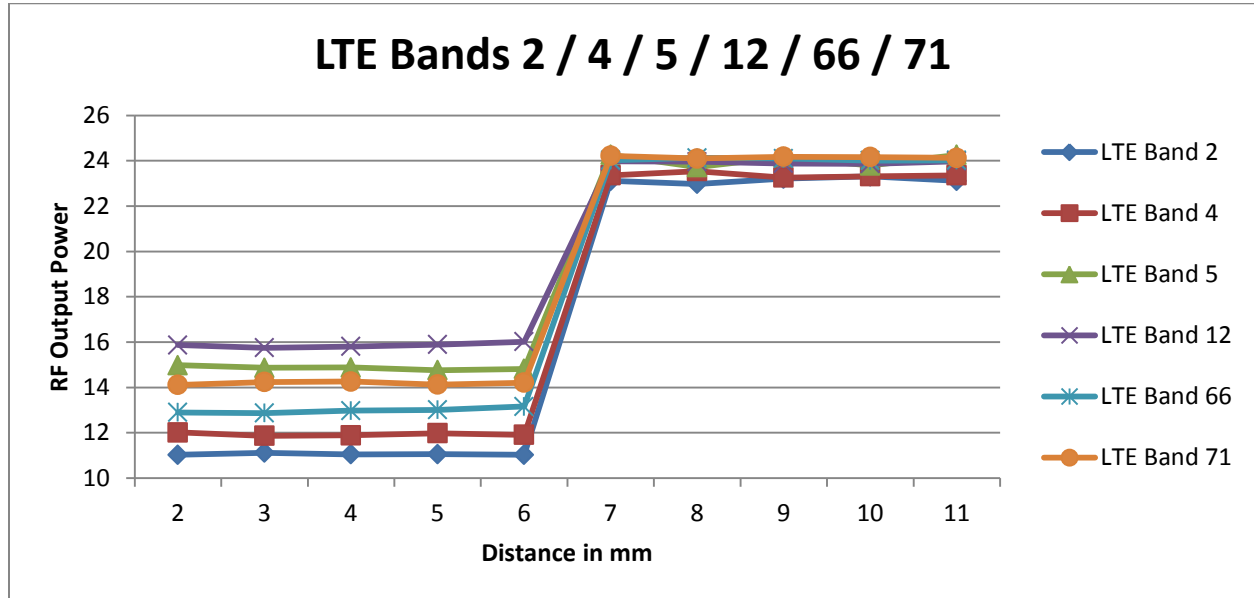
Edge 1, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	12	13	14	15	16	17	18	19	20	21
LTE Band 2	11.1	11.0	11.1	11.1	11.0	23.4	23.2	23.3	23.0	23.3
LTE Band 4	11.8	11.9	11.9	11.9	11.9	23.7	23.3	23.3	23.5	23.3
LTE Band 5	14.8	14.8	14.9	14.9	14.8	24.1	24.2	23.8	23.7	24.4
LTE Band 12	16.1	16.0	15.8	15.8	16.0	23.8	23.9	23.9	24.0	23.9
LTE Band 66	13.2	13.2	12.9	13.0	13.2	24.2	24.1	24.0	24.1	24.0
LTE Band 71	14.2	14.2	14.0	14.1	14.0	24.1	24.3	24.3	24.2	24.1



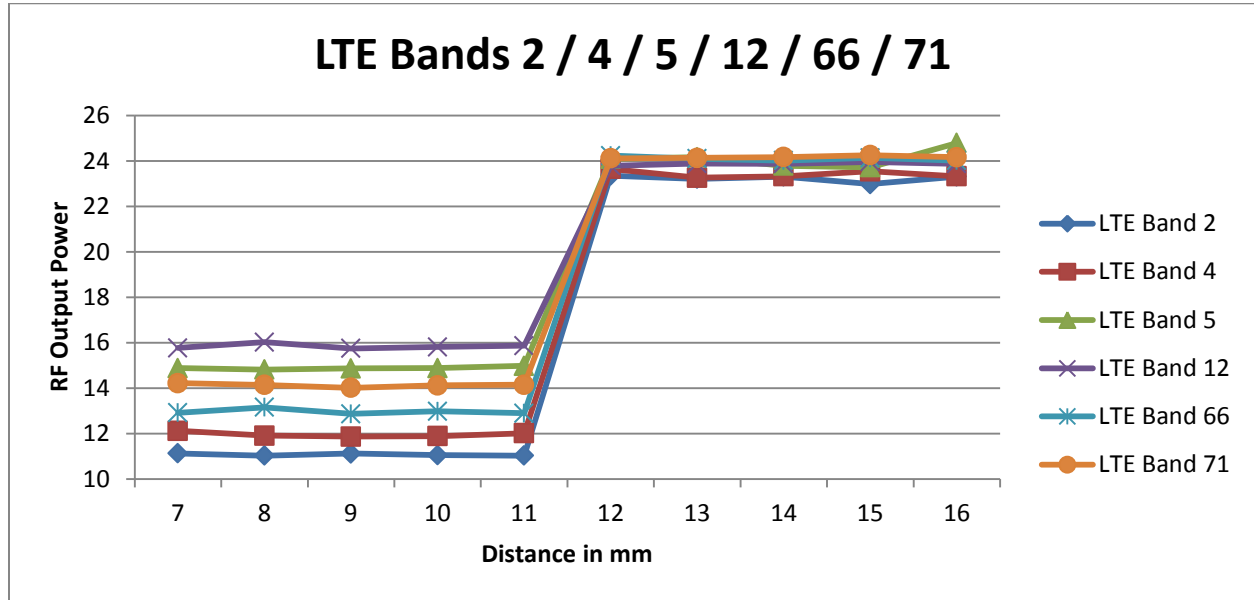
Edge 2, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	2	3	4	5	6	7	8	9	10	11
LTE Band 2	11.0	11.1	11.1	11.1	11.0	23.1	23.0	23.2	23.3	23.1
LTE Band 4	12.0	11.9	11.9	12.0	11.9	23.4	23.5	23.3	23.3	23.4
LTE Band 5	15.0	14.9	14.9	14.8	14.8	24.3	23.7	24.2	23.8	24.3
LTE Band 12	15.9	15.8	15.8	15.9	16.0	24.0	24.0	23.9	23.9	24.0
LTE Band 66	12.9	12.9	13.0	13.0	13.2	24.0	24.1	24.1	24.0	24.0
LTE Band 71	14.1	14.2	14.3	14.1	14.2	24.2	24.1	24.2	24.2	24.1



Corner A, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

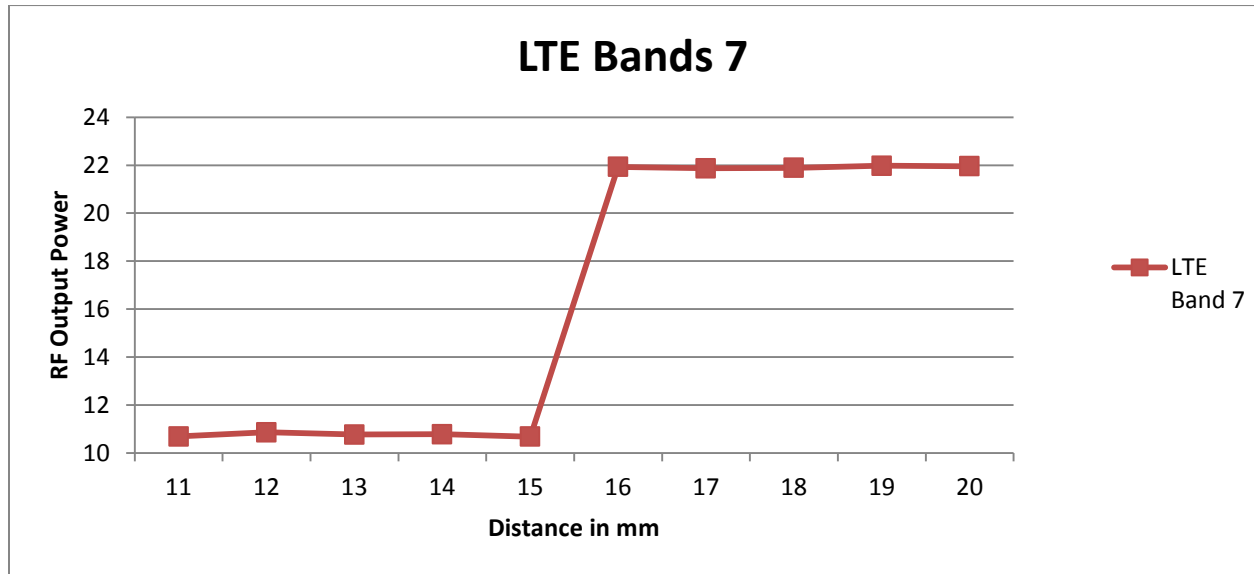
Distance to DUT vs. Output Power in dBm										
Distance (mm)	7	8	9	10	11	12	13	14	15	16
LTE Band 2	11.1	11.0	11.1	11.1	11.0	23.4	23.2	23.3	23.0	23.3
LTE Band 4	12.1	11.9	11.9	11.9	12.0	23.7	23.3	23.3	23.5	23.3
LTE Band 5	14.9	14.8	14.9	14.9	15.0	24.1	24.2	23.8	23.7	24.8
LTE Band 12	15.8	16.0	15.8	15.8	15.9	23.8	23.9	23.9	24.0	23.9
LTE Band 66	12.9	13.2	12.9	13.0	12.9	24.2	24.1	24.0	24.1	24.0
LTE Band 71	14.2	14.1	14.0	14.1	14.2	24.1	24.1	24.2	24.3	24.2



LTE Band 7

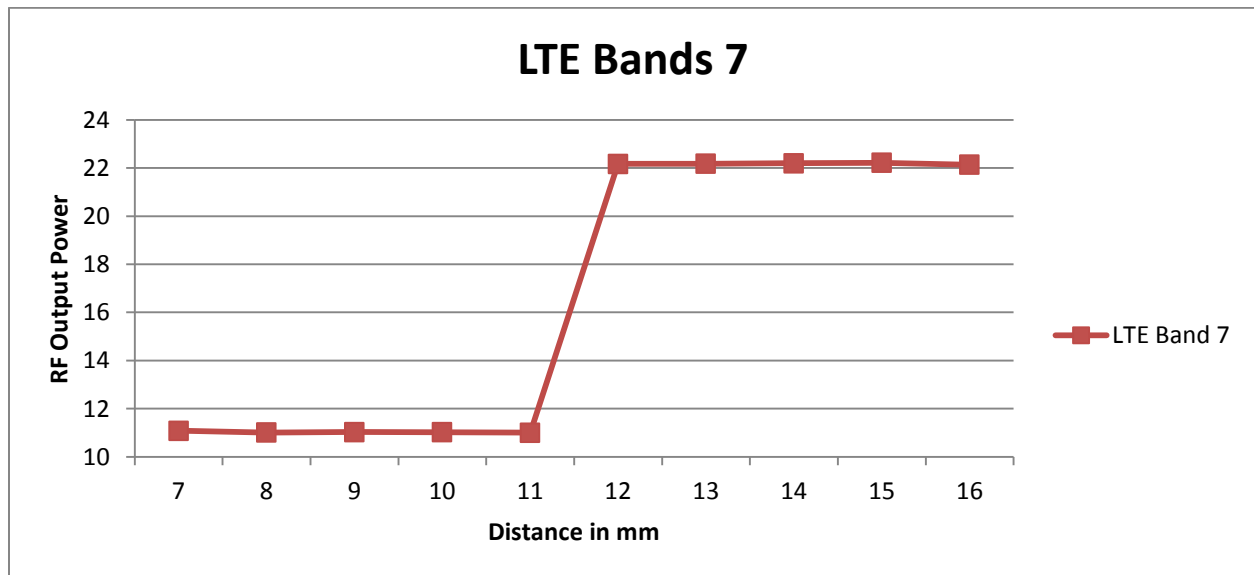
Rear, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	11	12	13	14	15	16	17	18	19	20
LTE Band 7	10.7	10.9	10.8	10.8	10.7	21.9	21.9	21.9	22.0	22.0



Edge 1, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

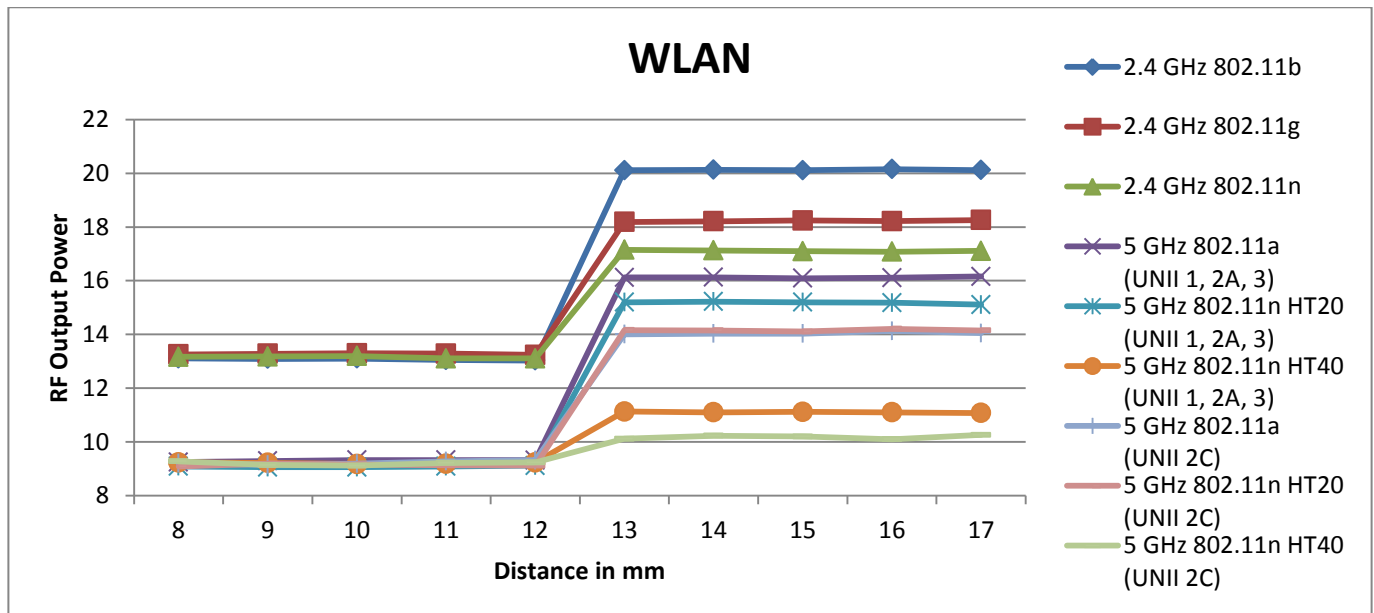
Distance to DUT vs. Output Power in dBm										
Distance (mm)	7	8	9	10	11	12	13	14	15	16
LTE Band 7	11.1	11.0	11.0	11.0	11.0	22.2	22.2	22.2	22.2	22.1



WLAN 2.4GHz and 5GHz

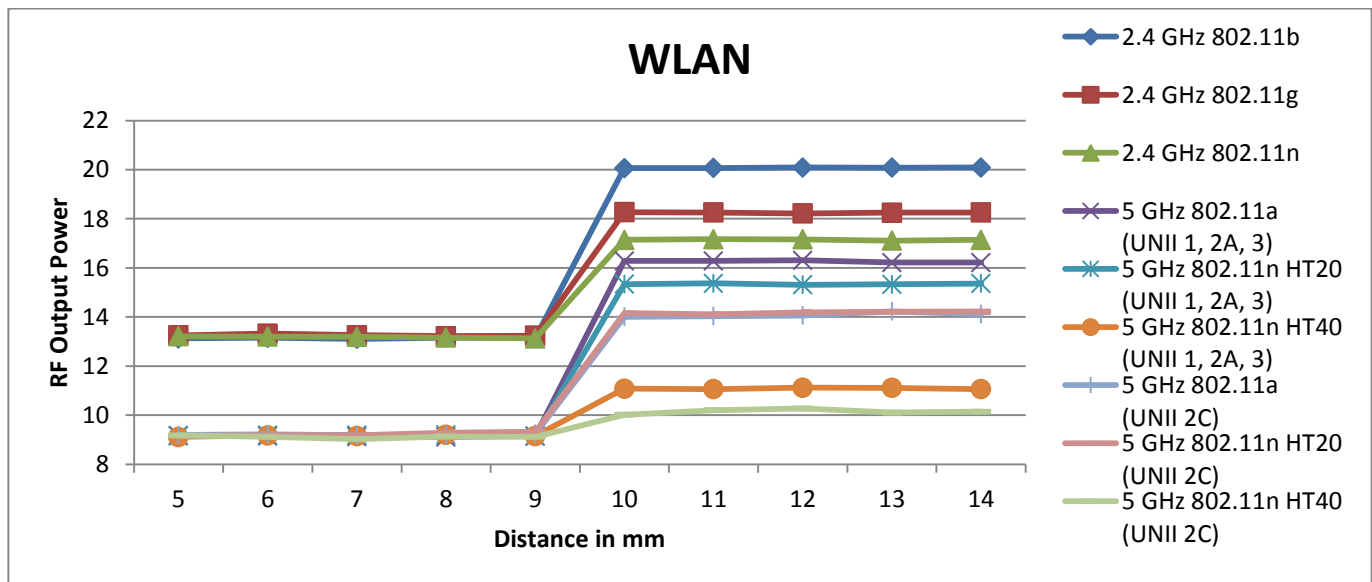
Rear, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance	8	9	10	11	12	13	14	15	16	17
2.4 GHz 802.11b	13.1	13.1	13.1	13.1	13.0	20.1	20.1	20.1	20.2	20.1
2.4 GHz 802.11g	13.3	13.3	13.3	13.3	13.2	18.2	18.2	18.2	18.2	18.3
2.4 GHz 802.11n	13.2	13.2	13.2	13.1	13.1	17.2	17.1	17.1	17.1	17.1
5 GHz 802.11a (UNII 1, 2A, 3)	9.3	9.3	9.3	9.3	9.3	16.1	16.1	16.1	16.1	16.2
5 GHz 802.11n HT20 (UNII 1, 2A, 3)	9.1	9.1	9.1	9.1	9.1	15.2	15.2	15.2	15.2	15.1
5 GHz 802.11n HT40 (UNII 1, 2A, 3)	9.2	9.2	9.2	9.2	9.2	11.1	11.1	11.1	11.1	11.1
5 GHz 802.11a (UNII 2C)	9.2	9.2	9.2	9.3	9.3	14.0	14.0	14.0	14.1	14.1
5 GHz 802.11n HT20 (UNII 2C)	9.1	9.2	9.2	9.1	9.1	14.2	14.2	14.1	14.2	14.2
5 GHz 802.11n HT40 (UNII 2C)	9.3	9.1	9.1	9.2	9.2	10.1	10.2	10.2	10.1	10.3



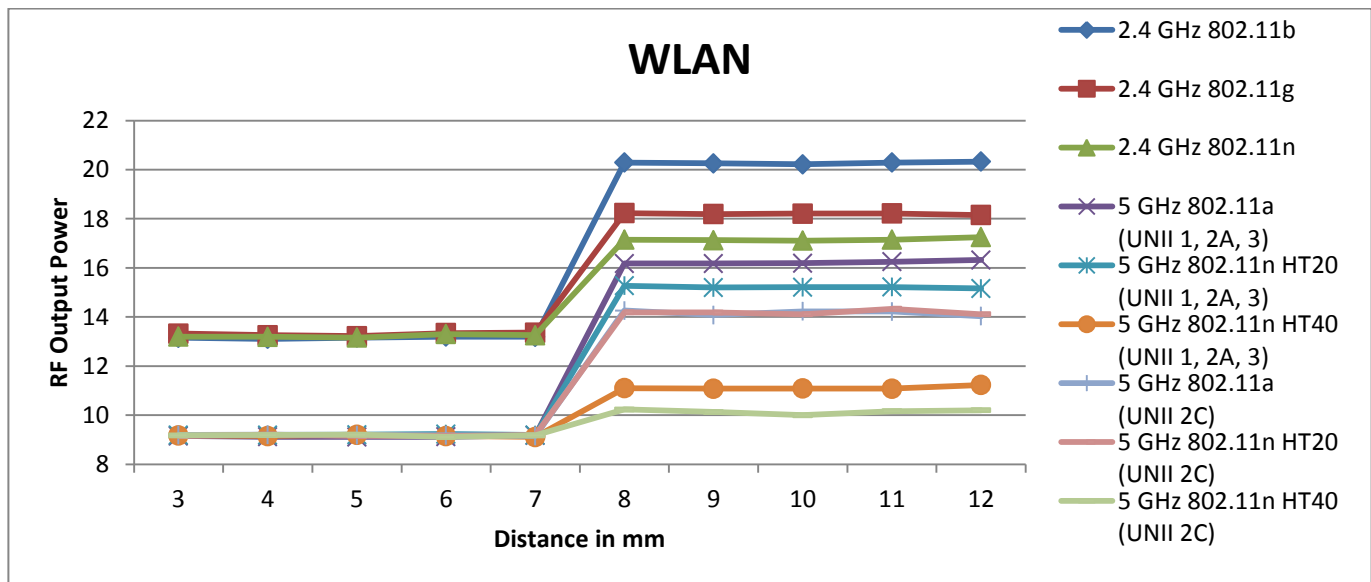
Edge 1, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	5	6	7	8	9	10	11	12	13	14
2.4 GHz 802.11b	13.1	13.2	13.1	13.2	13.2	20.1	20.1	20.1	20.1	20.1
2.4 GHz 802.11g	13.3	13.3	13.3	13.2	13.2	18.3	18.3	18.2	18.3	18.3
2.4 GHz 802.11n	13.2	13.2	13.2	13.2	13.1	17.1	17.2	17.2	17.1	17.1
5 GHz 802.11a (UNII 1, 2A, 3)	9.2	9.2	9.1	9.1	9.2	16.3	16.3	16.3	16.2	16.2
5 GHz 802.11n HT20 (UNII 1, 2A, 3)	9.2	9.2	9.2	9.2	9.1	15.3	15.4	15.3	15.3	15.4
5 GHz 802.11n HT40 (UNII 1, 2A, 3)	9.1	9.2	9.2	9.2	9.2	11.1	11.1	11.1	11.1	11.1
5 GHz 802.11a (UNII 2C)	9.2	9.2	9.2	9.2	9.2	14.0	14.0	14.1	14.2	14.1
5 GHz 802.11n HT20 (UNII 2C)	9.2	9.2	9.2	9.3	9.3	14.2	14.1	14.2	14.2	14.2
5 GHz 802.11n HT40 (UNII 2C)	9.2	9.1	9.0	9.1	9.1	10.0	10.2	10.3	10.1	10.1



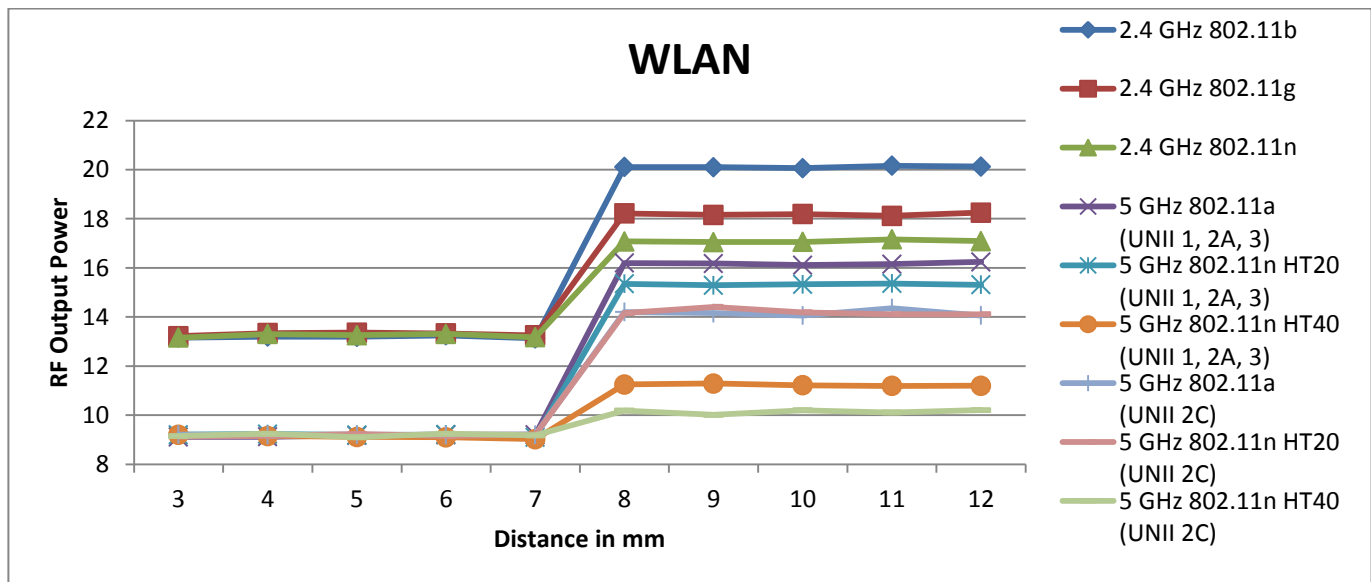
Edge 4, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	3	4	5	6	7	8	9	10	11	12
2.4 GHz 802.11b	13.2	13.1	13.2	13.2	13.2	20.3	20.3	20.2	20.3	20.3
2.4 GHz 802.11g	13.3	13.3	13.2	13.3	13.4	18.2	18.2	18.2	18.2	18.2
2.4 GHz 802.11n	13.2	13.2	13.2	13.3	13.3	17.2	17.1	17.1	17.2	17.3
5 GHz 802.11a (UNII 1, 2A, 3)	9.2	9.1	9.1	9.1	9.2	16.2	16.2	16.2	16.3	16.3
5 GHz 802.11n HT20 (UNII 1, 2A, 3)	9.2	9.2	9.2	9.2	9.2	15.3	15.2	15.2	15.2	15.2
5 GHz 802.11n HT40 (UNII 1, 2A, 3)	9.2	9.2	9.2	9.2	9.1	11.1	11.1	11.1	11.1	11.2
5 GHz 802.11a (UNII 2C)	9.2	9.2	9.2	9.2	9.2	14.3	14.1	14.2	14.2	14.0
5 GHz 802.11n HT20 (UNII 2C)	9.2	9.2	9.2	9.2	9.2	14.2	14.2	14.1	14.3	14.1
5 GHz 802.11n HT40 (UNII 2C)	9.2	9.2	9.2	9.1	9.2	10.2	10.1	10.0	10.2	10.2



Corner B, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	3	4	5	6	7	8	9	10	11	12
2.4 GHz 802.11b	13.2	13.2	13.2	13.3	13.1	20.1	20.1	20.1	20.2	20.1
2.4 GHz 802.11g	13.2	13.3	13.4	13.3	13.3	18.2	18.2	18.2	18.1	18.3
2.4 GHz 802.11n	13.2	13.3	13.3	13.3	13.2	17.1	17.1	17.1	17.2	17.1
5 GHz 802.11a (UNII 1, 2A, 3)	9.1	9.1	9.2	9.2	9.2	16.2	16.2	16.1	16.2	16.2
5 GHz 802.11n HT20 (UNII 1, 2A, 3)	9.2	9.2	9.2	9.2	9.1	15.4	15.3	15.3	15.4	15.3
5 GHz 802.11n HT40 (UNII 1, 2A, 3)	9.2	9.2	9.1	9.1	9.0	11.3	11.3	11.2	11.2	11.2
5 GHz 802.11a (UNII 2C)	9.2	9.2	9.2	9.2	9.2	14.2	14.2	14.1	14.4	14.1
5 GHz 802.11n HT20 (UNII 2C)	9.1	9.2	9.2	9.2	9.2	14.2	14.4	14.2	14.1	14.1
5 GHz 802.11n HT40 (UNII 2C)	9.2	9.2	9.1	9.2	9.2	10.2	10.0	10.2	10.1	10.2



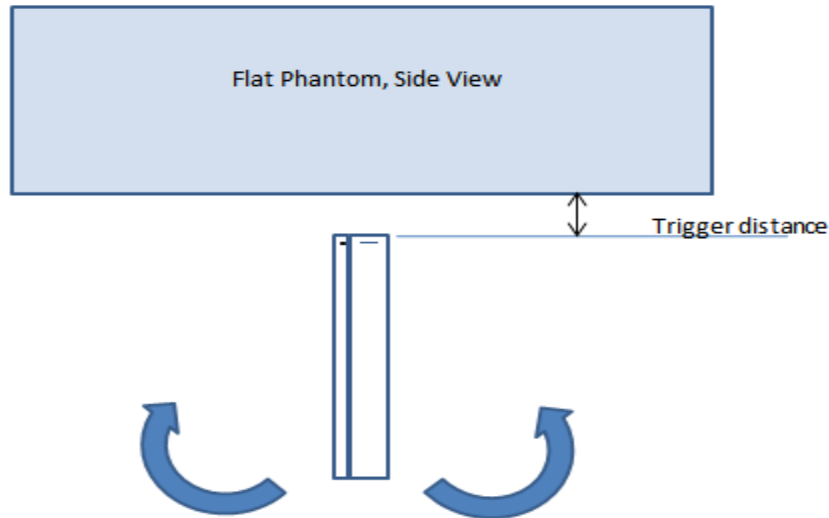
6.6.2. Proximity Sensor Coverage (KDB 616217 §6.3)

As there is no spatial offset between the antenna and the proximity sensor element, proximity sensor coverage did not need to be assessed.

6.6.3. Proximity Sensor Tilt Angle Assessment (KDB 616217 §6.4)

The DUT was positioned directly below the flat phantom at the minimum measured trigger distance with Edge 1, Edge 2, Edge 4 parallel to the base of the flat phantom for each band.

The EUT was rotated about Edge 1, Edge 2, Edge 4 for angles up to +/- 45°. If the output power increased during the rotation the DUT was moved 1mm toward the phantom and the rotation repeated. This procedure was repeated until the power remained reduced for all angles up to +/- 45°.



Proximity sensor tilt angle assessment (Edge 1, Edge 2, Edge 4) KDB 616217 §6.4

Summary of Tablet Tilt Angle Influence to Proximity Sensor Triggering (Edge 1)

Band (MHz)	Minimum trigger distance measured according to KDB 616217 §6.2	Minimum distance at which power reduction was maintained over +/-45°	Power reduction status										
			-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°
750	16 mm	16 mm	On	On	On	On	On	On	On	On	On	On	On
850	16 mm	16 mm	On	On	On	On	On	On	On	On	On	On	On
1750	16 mm	16 mm	On	On	On	On	On	On	On	On	On	On	On
1900	16 mm	16 mm	On	On	On	On	On	On	On	On	On	On	On
2450	9 mm	9 mm	On	On	On	On	On	On	On	On	On	On	On
2600	11 mm	11 mm	On	On	On	On	On	On	On	On	On	On	On
5000	9 mm	9 mm	On	On	On	On	On	On	On	On	On	On	On

Summary of Tablet Tilt Angle Influence to Proximity Sensor Triggering (Edge 2)

Band (MHz)	Minimum trigger distance measured according to KDB 616217 §6.2	Minimum distance at which power reduction was maintained over +/- 45°	Power reduction status											
			-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°	
750	6 mm	6 mm	On	On	On	On	On	On	On	On	On	On	On	On
850	6 mm	6 mm	On	On	On	On	On	On	On	On	On	On	On	On
1750	6 mm	6 mm	On	On	On	On	On	On	On	On	On	On	On	On
1900	6 mm	6 mm	On	On	On	On	On	On	On	On	On	On	On	On

Summary of Tablet Tilt Angle Influence to Proximity Sensor Triggering (Edge 4)

Band (MHz)	Minimum trigger distance measured according to KDB 616217 §6.2	Minimum distance at which power reduction was maintained over +/- 45°	Power reduction status											
			-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°	
2450	7 mm	7 mm	On	On	On	On	On	On	On	On	On	On	On	On
5000	7 mm	7 mm	On	On	On	On	On	On	On	On	On	On	On	On

6.6.4. Resulting test positions for SAR measurements

Wireless technologies	Position	§6.6.1 Triggering Distance	§6.6.2 Coverage	§6.6.3 Tilt Angle	Worst case distance for SAR
WWAN (Ant.1)	Rear	20 mm	N/A	N/A	19 mm
	Edge 1	16 mm	N/A	14 mm	15 mm
	Edge 2	6 mm	N/A	6 mm	5 mm
	Corner A	11 mm	N/A	N/A	10 mm
WWAN (Ant.2)	Rear	15 mm	N/A	N/A	14 mm
	Edge 1	11 mm	N/A	11 mm	10 mm
WLAN	Rear	12 mm	N/A	N/A	11 mm
	Edge 1	9 mm	N/A	9 mm	8 mm
	Edge 4	7 mm	N/A	7 mm	6 mm
	Corner B	7 mm	N/A	N/A	6 mm

7. RF Exposure Conditions (Test Configurations)

Refer to “SAR Photos and Ant locations” Appendix 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

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, Proximity Sensor Off																
Cellular	W-CDMA Band II	1907.6	24.50	282	0	2	2	185	82		77.9	77.9	77.9	> 50 mm	> 50 mm	
Cellular	W-CDMA Band IV	1752.6	25.00	316	0	2	2	185	82		-MEASURE- 83.7	-MEASURE- 83.7	-MEASURE- 83.7	> 50 mm	> 50 mm	
Cellular	W-CDMA Band V	846.6	25.00	316	0	2	2	185	82		-MEASURE- 58.2	-MEASURE- 58.2	-MEASURE- 58.2	> 50 mm	> 50 mm	
Cellular	LTE Band 2	1900	24.50	282	0	2	2	185	82		-MEASURE- 77.7	-MEASURE- 77.7	-MEASURE- 77.7	> 50 mm	> 50 mm	
Cellular	LTE Band 4	1745	25.00	316	0	2	2	185	82		-MEASURE- 83.5	-MEASURE- 83.5	-MEASURE- 83.5	> 50 mm	> 50 mm	
Cellular	LTE Band 5	844	25.20	331	0	2	2	185	82		-MEASURE- 60.8	-MEASURE- 60.8	-MEASURE- 60.8	> 50 mm	> 50 mm	
Cellular	LTE Band 7	2560	23.00	200	0	2	48	185	59		-MEASURE- 64	-MEASURE- 64	-MEASURE- 6.7	> 50 mm	> 50 mm	
Cellular	LTE Band 12	711	25.00	316	0	2	2	185	82		-MEASURE- 53.3	-MEASURE- 53.3	-MEASURE- 53.3	> 50 mm	> 50 mm	
Cellular	LTE Band 66	1770	25.00	316	0	2	2	185	82		-MEASURE- 84.1	-MEASURE- 84.1	-MEASURE- 84.1	> 50 mm	> 50 mm	
Cellular	LTE Band 71	688	25.00	316	0	2	2	185	82		-MEASURE- 52.4	-MEASURE- 52.4	-MEASURE- 52.4	> 50 mm	> 50 mm	
Power Back-off, Proximity Sensor On																
Cellular	W-CDMA Band II	1907.6	11.00	13	0	2	2				3.6	3.6	3.6			
Cellular	W-CDMA Band IV	1752.6	14.00	25	0	2	2				-MEASURE- 6.6	-MEASURE- 6.6	-MEASURE- 6.6			
Cellular	W-CDMA Band V	846.6	19.00	79	0	2	2				-MEASURE- 14.5	-MEASURE- 14.5	-MEASURE- 14.5			
Cellular	LTE Band 2	1900	12.00	16	0	2	2				-MEASURE- 4.4	-MEASURE- 4.4	-MEASURE- 4.4			
Cellular	LTE Band 4	1745	13.00	20	0	2	2				-MEASURE- 5.3	-MEASURE- 5.3	-MEASURE- 5.3			
Cellular	LTE Band 5	844	16.00	40	0	2	2				-MEASURE- 7.3	-MEASURE- 7.3	-MEASURE- 7.3			
Cellular	LTE Band 7	2560	12.00	16	0	2					-MEASURE- 5.1	-MEASURE- 5.1	-MEASURE-			
Cellular	LTE Band 12	711	17.00	50	0	2	2				-MEASURE- 8.4	-MEASURE- 8.4	-MEASURE- 8.4			
Cellular	LTE Band 66	1770	14.00	25	0	2	2				-MEASURE- 6.7	-MEASURE- 6.7	-MEASURE- 6.7			
Cellular	LTE Band 71	688	15.00	32	0	2	2				-MEASURE- 5.3	-MEASURE- 5.3	-MEASURE- 5.3			

Note(s):

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

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, Proximity Sensor Off																
Cellular	W-CDMA Band II	1907.6	24.50	282	0	2	2	185	82		< 50 mm	< 50 mm	< 50 mm	1458.6 mW -EXEMPT-	428.6 mW -EXEMPT-	
Cellular	W-CDMA Band IV	1752.6	25.00	316	0	2	2	185	82		< 50 mm	< 50 mm	< 50 mm	1463.3 mW -EXEMPT-	433.3 mW -EXEMPT-	
Cellular	W-CDMA Band V	846.6	25.00	316	0	2	2	185	82		< 50 mm	< 50 mm	< 50 mm	925 mW -EXEMPT-	343.6 mW -EXEMPT-	
Cellular	LTE Band 2	1900	24.50	282	0	2	2	185	82		< 50 mm	< 50 mm	< 50 mm	1458.8 mW -EXEMPT-	428.8 mW -EXEMPT-	
Cellular	LTE Band 4	1745	25.00	316	0	2	2	185	82		< 50 mm	< 50 mm	< 50 mm	1463.6 mW -EXEMPT-	433.6 mW -EXEMPT-	
Cellular	LTE Band 5	844	25.20	331	0	2	2	185	82		< 50 mm	< 50 mm	< 50 mm	922.9 mW -EXEMPT-	343.3 mW -EXEMPT-	
Cellular	LTE Band 7	2560	23.00	200	0	2	48	185	59		< 50 mm	< 50 mm	< 50 mm	1443.8 mW -EXEMPT-	183.8 mW -MEASURE-	
Cellular	LTE Band 12	711	25.00	316	0	2	2	185	82		< 50 mm	< 50 mm	< 50 mm	817.8 mW -EXEMPT-	329.6 mW -EXEMPT-	
Cellular	LTE Band 66	1770	25.00	316	0	2	2	185	82		< 50 mm	< 50 mm	< 50 mm	1462.7 mW -EXEMPT-	432.7 mW -EXEMPT-	
Cellular	LTE Band 71	688	25.00	316	0	2	2	185	82		< 50 mm	< 50 mm	< 50 mm	800 mW -EXEMPT-	327.6 mW -EXEMPT-	
Power Back-off, Proximity Sensor On																
Cellular	W-CDMA Band II	1907.6	11.00	13	0	2	2				< 50 mm	< 50 mm	< 50 mm			
Cellular	W-CDMA Band IV	1752.6	14.00	25	0	2	2				< 50 mm	< 50 mm	< 50 mm			
Cellular	W-CDMA Band V	846.6	19.00	79	0	2	2				< 50 mm	< 50 mm	< 50 mm			
Cellular	LTE Band 2	1900	12.00	16	0	2	2				< 50 mm	< 50 mm	< 50 mm			
Cellular	LTE Band 4	1745	13.00	20	0	2	2				< 50 mm	< 50 mm	< 50 mm			
Cellular	LTE Band 5	844	16.00	40	0	2	2				< 50 mm	< 50 mm	< 50 mm			
Cellular	LTE Band 7	2560	12.00	16	0	2					< 50 mm	< 50 mm				
Cellular	LTE Band 12	711	17.00	50	0	2	2				< 50 mm	< 50 mm	< 50 mm			
Cellular	LTE Band 66	1770	14.00	25	0	2	2				< 50 mm	< 50 mm	< 50 mm			
Cellular	LTE Band 71	688	15.00	32	0	2	2				< 50 mm	< 50 mm	< 50 mm			

Note(s):

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

SAR Test Exclusion Calculations for WLAN

Antennas < 50mm to adjacent edges

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, Proximity Sensor Off															
Wi-Fi 2.4 GHz	2462	21.00	126	0	2	87	185	2		39.5	39.5	> 50 mm	> 50 mm	39.5	
Wi-Fi 5.3 GHz	5320	17.00	50	0	2	87	185	2		-MEASURE-	-MEASURE-	> 50 mm	> 50 mm	-MEASURE-	
Wi-Fi 5.5 GHz	5700	15.00	32	0	2	87	185	2		23.1	23.1	> 50 mm	> 50 mm	23.1	
Wi-Fi 5.8 GHz	5825	17.00	50	0	2	87	185	2		-MEASURE-	-MEASURE-	> 50 mm	> 50 mm	-MEASURE-	
Bluetooth	2480	10.50	10	0	2	87	185	2		15.3	15.3	> 50 mm	> 50 mm	15.3	
										-MEASURE-	-MEASURE-	> 50 mm	> 50 mm	-MEASURE-	
										24.1	24.1	> 50 mm	> 50 mm	24.1	
										-MEASURE-	-MEASURE-	> 50 mm	> 50 mm	-MEASURE-	
										3.1	3.1	> 50 mm	> 50 mm	3.1	
										-MEASURE-	-MEASURE-	> 50 mm	> 50 mm	-MEASURE-	
Power Back-off, Proximity Sensor On															
Wi-Fi 2.4 GHz	2462	14.00	25	0	2			2		7.8	7.8			7.8	
Wi-Fi 5.3 GHz	5320	10.00	10	0	2			2		-MEASURE-	-MEASURE-			-MEASURE-	
Wi-Fi 5.5 GHz	5700	10.00	10	0	2			2		4.6	4.6			4.6	
Wi-Fi 5.8 GHz	5825	10.00	10	0	2			2		-MEASURE-	-MEASURE-			-MEASURE-	
										4.8	4.8			4.8	
										-MEASURE-	-MEASURE-			-MEASURE-	
										4.8	4.8			4.8	
										-MEASURE-	-MEASURE-			-MEASURE-	

Note(s):

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

Antennas > 50mm to adjacent edges

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, Proximity Sensor Off															
Wi-Fi 2.4 GHz	2462	21.00	126	0	2	87	185	2		< 50 mm	< 50 mm	465.6 mW	1445.6 mW	< 50 mm	
Wi-Fi 5.3 GHz	5320	17.00	50	0	2	87	185	2		< 50 mm	< 50 mm	435 mW	1415 mW	< 50 mm	
Wi-Fi 5.5 GHz	5700	15.00	32	0	2	87	185	2		< 50 mm	< 50 mm	432.8 mW	1412.8 mW	< 50 mm	
Wi-Fi 5.8 GHz	5825	17.00	50	0	2	87	185	2		< 50 mm	< 50 mm	432.2 mW	1412.2 mW	< 50 mm	
Bluetooth	2480	10.50	10	0	2	87	185	2		< 50 mm	< 50 mm	465.3 mW	1445.3 mW	< 50 mm	
										< 50 mm	< 50 mm	-EXEMPT-	-EXEMPT-	< 50 mm	
Power Back-off, Proximity Sensor On															
Wi-Fi 2.4 GHz	2462	14.00	25	0	2			2		< 50 mm	< 50 mm			< 50 mm	
Wi-Fi 5.3 GHz	5320	10.00	10	0	2			2		< 50 mm	< 50 mm			< 50 mm	
Wi-Fi 5.5 GHz	5700	10.00	10	0	2			2		< 50 mm	< 50 mm			< 50 mm	
Wi-Fi 5.8 GHz	5825	10.00	10	0	2			2		< 50 mm	< 50 mm			< 50 mm	

Note(s):

1. 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	Pwr Back-off	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Corner A	Corner B
			(Top Edge)	(Right Edge)	(Bottom Edge)	(Left Edge)	Note 2	Note 3
W-CDMA Band II	OFF	Yes	Yes	Yes	No	No	Yes	
	ON	Yes	Yes	Yes	No	No	Yes	
W-CDMA Band IV	OFF	Yes	Yes	Yes	No	No	Yes	
	ON	Yes	Yes	Yes	No	No	Yes	
W-CDMA Band V	OFF	Yes	Yes	Yes	No	No	Yes	
	ON	Yes	Yes	Yes	No	No	Yes	
LTE Band 2	OFF	Yes	Yes	Yes	No	No	Yes	
	ON	Yes	Yes	Yes	No	No	Yes	
LTE Band 4	OFF	Yes	Yes	Yes	No	No	Yes	
	ON	Yes	Yes	Yes	No	No	Yes	
LTE Band 5	OFF	Yes	Yes	Yes	No	No	Yes	
	ON	Yes	Yes	Yes	No	No	Yes	
LTE Band 7	OFF	Yes	Yes	Yes	No	Yes	No	
	ON	Yes	Yes	Yes	No	No	No	
LTE Band 12	OFF	Yes	Yes	Yes	No	No	Yes	
	ON	Yes	Yes	Yes	No	No	Yes	
LTE Band 66	OFF	Yes	Yes	Yes	No	No	Yes	
	ON	Yes	Yes	Yes	No	No	Yes	
LTE Band 71	OFF	Yes	Yes	Yes	No	No	Yes	
	ON	Yes	Yes	Yes	No	No	Yes	
Wi-Fi 2.4 GHz	OFF	Yes	Yes	No	No	Yes		Yes
	ON	Yes	Yes	No	No	Yes		Yes
Wi-Fi 5.3 GHz	OFF	Yes	Yes	No	No	Yes		Yes
	ON	Yes	Yes	No	No	Yes		Yes
Wi-Fi 5.5 GHz	OFF	Yes	Yes	No	No	Yes		Yes
	ON	Yes	Yes	No	No	Yes		Yes
Wi-Fi 5.8 GHz	OFF	Yes	Yes	No	No	Yes		Yes
	ON	Yes	Yes	No	No	Yes		Yes
Bluetooth	OFF	Yes	Yes	No	No	Yes		No

Note(s):

1. Yes = Testing is required. No = Testing is not required.
2. Corner A side is located between Edge 1 and Edge 2.
3. Corner B side is located between Edge 1 and Edge 4.
4. For Corner A and Corner B, Additional Corner side tests are evaluated for bands that support reduced power due to proximity sensor operation.

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.

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

IEEE Std 1528-2013

Refer to Table 3 within the IEEE Std 1528-2013

Dielectric Property Measurements Results:

SAR 1 Room

Date	Freq. (MHz)	Liquid Parameters		Measured	Target	Delta (%)	Limit ±(%)	
07-03-2018	Body 2450	e'	53.7800	Relative Permittivity (ϵ_r):	53.78	52.70	2.05	5
		e"	14.6200	Conductivity (σ):	1.99	1.95	2.14	5
	Body 2400	e'	53.9800	Relative Permittivity (ϵ_r):	53.98	52.77	2.29	5
		e"	14.5000	Conductivity (σ):	1.93	1.90	1.95	5
	Body 2480	e'	53.7200	Relative Permittivity (ϵ_r):	53.72	52.66	2.01	5
		e"	14.7200	Conductivity (σ):	2.03	1.99	1.89	5
07-05-2018	Body 835	e'	54.1800	Relative Permittivity (ϵ_r):	54.18	55.20	-1.85	5
		e"	21.6800	Conductivity (σ):	1.01	0.97	3.77	5
	Body 820	e'	54.3200	Relative Permittivity (ϵ_r):	54.32	55.28	-1.73	5
		e"	21.7600	Conductivity (σ):	0.99	0.97	2.44	5
	Body 850	e'	54.0500	Relative Permittivity (ϵ_r):	54.05	55.16	-2.01	5
		e"	21.5900	Conductivity (σ):	1.02	0.99	3.37	5
07-27-2018	Body 680	e'	58.0900	Relative Permittivity (ϵ_r):	58.09	55.82	4.08	5
		e"	24.1000	Conductivity (σ):	0.91	0.96	-4.85	5
	Body 715	e'	57.7300	Relative Permittivity (ϵ_r):	57.73	55.68	3.68	5
		e"	23.7600	Conductivity (σ):	0.94	0.96	-1.64	5
	Body 750	e'	57.4100	Relative Permittivity (ϵ_r):	57.41	55.55	3.36	5
		e"	23.4200	Conductivity (σ):	0.98	0.96	1.41	5

SAR 2 Room

Date	Freq. (MHz)	Liquid Parameters		Measured	Target	Delta (%)	Limit ±(%)	
06-28-2018	Body 750	e'	55.3400	Relative Permittivity (ϵ_r):	55.34	55.55	-0.37	5
		e"	23.0500	Conductivity (σ):	0.96	0.96	-0.19	5
	Body 700	e'	55.8400	Relative Permittivity (ϵ_r):	55.84	55.74	0.18	5
		e"	23.5100	Conductivity (σ):	0.92	0.96	-4.60	5
	Body 795	e'	54.8900	Relative Permittivity (ϵ_r):	54.89	55.37	-0.87	5
		e"	22.6700	Conductivity (σ):	1.00	0.97	3.68	5
07-02-2018	Body 835	e'	53.7100	Relative Permittivity (ϵ_r):	53.71	55.20	-2.70	5
		e"	21.6700	Conductivity (σ):	1.01	0.97	3.72	5
	Body 820	e'	53.8200	Relative Permittivity (ϵ_r):	53.82	55.28	-2.64	5
		e"	21.7400	Conductivity (σ):	0.99	0.97	2.35	5
	Body 850	e'	53.6000	Relative Permittivity (ϵ_r):	53.60	55.16	-2.82	5
		e"	21.6300	Conductivity (σ):	1.02	0.99	3.56	5
07-02-2018	Body 1750	e'	52.0000	Relative Permittivity (ϵ_r):	52.00	53.44	-2.70	5
		e"	14.7700	Conductivity (σ):	1.44	1.49	-3.29	5
	Body 1710	e'	52.1100	Relative Permittivity (ϵ_r):	52.11	53.54	-2.68	5
		e"	14.7200	Conductivity (σ):	1.40	1.46	-4.24	5
	Body 1755	e'	51.9900	Relative Permittivity (ϵ_r):	51.99	53.43	-2.69	5
		e"	14.7700	Conductivity (σ):	1.44	1.49	-3.22	5
07-02-2018	Body 1900	e'	51.5800	Relative Permittivity (ϵ_r):	51.58	53.30	-3.23	5
		e"	14.9000	Conductivity (σ):	1.57	1.52	3.56	5
	Body 1850	e'	51.6800	Relative Permittivity (ϵ_r):	51.68	53.30	-3.04	5
		e"	14.8700	Conductivity (σ):	1.53	1.52	0.63	5
	Body 1910	e'	51.5600	Relative Permittivity (ϵ_r):	51.56	53.30	-3.26	5
		e"	14.9200	Conductivity (σ):	1.58	1.52	4.25	5
07-04-2018	Body 1750	e'	53.5600	Relative Permittivity (ϵ_r):	53.56	53.44	0.22	5
		e"	14.7000	Conductivity (σ):	1.43	1.49	-3.75	5
	Body 1710	e'	53.6800	Relative Permittivity (ϵ_r):	53.68	53.54	0.25	5
		e"	14.7400	Conductivity (σ):	1.40	1.46	-4.11	5
	Body 1755	e'	53.5500	Relative Permittivity (ϵ_r):	53.55	53.43	0.23	5
		e"	14.6900	Conductivity (σ):	1.43	1.49	-3.74	5
07-04-2018	Body 1900	e'	53.1000	Relative Permittivity (ϵ_r):	53.10	53.30	-0.38	5
		e"	14.8500	Conductivity (σ):	1.57	1.52	3.21	5
	Body 1850	e'	53.2700	Relative Permittivity (ϵ_r):	53.27	53.30	-0.06	5
		e"	14.7700	Conductivity (σ):	1.52	1.52	-0.04	5
	Body 1910	e'	53.0600	Relative Permittivity (ϵ_r):	53.06	53.30	-0.45	5
		e"	14.8600	Conductivity (σ):	1.58	1.52	3.83	5
07-12-2018	Body 1900	e'	54.5200	Relative Permittivity (ϵ_r):	54.52	53.30	2.29	5
		e"	14.7900	Conductivity (σ):	1.56	1.52	2.80	5
	Body 1850	e'	54.6700	Relative Permittivity (ϵ_r):	54.67	53.30	2.57	5
		e"	14.7700	Conductivity (σ):	1.52	1.52	-0.04	5
	Body 1910	e'	54.4800	Relative Permittivity (ϵ_r):	54.48	53.30	2.21	5
		e"	14.8000	Conductivity (σ):	1.57	1.52	3.41	5

SAR 3 Room

Date	Freq. (MHz)		Liquid Parameters	Measured	Target	Delta (%)	Limit ±(%)		
07-02-2018	Body 5250	e'	47.2600	Relative Permittivity (ϵ_r):	47.26	48.95	-3.46	5	
		e"	18.5900	Conductivity (σ):	5.43	5.35	1.38	5	
	Body 5260	e'	47.2600	Relative Permittivity (ϵ_r):	47.26	48.94	-3.43	5	
		e"	18.6100	Conductivity (σ):	5.44	5.36	1.46	5	
	Body 5600	e'	46.7000	Relative Permittivity (ϵ_r):	46.70	48.48	-3.67	5	
		e"	18.8700	Conductivity (σ):	5.88	5.76	1.99	5	
	Body 5750	e'	46.5000	Relative Permittivity (ϵ_r):	46.50	48.27	-3.68	5	
		e"	19.0100	Conductivity (σ):	6.08	5.94	2.39	5	
	Body 5825	e'	46.3500	Relative Permittivity (ϵ_r):	46.35	48.20	-3.84	5	
		e"	19.0400	Conductivity (σ):	6.17	6.00	2.78	5	
	07-05-2018	Body 5250	e'	48.1200	Relative Permittivity (ϵ_r):	48.12	48.95	-1.70	5
			e"	18.6200	Conductivity (σ):	5.44	5.35	1.54	5
Body 5260		e'	48.1000	Relative Permittivity (ϵ_r):	48.10	48.94	-1.71	5	
		e"	18.6300	Conductivity (σ):	5.45	5.36	1.57	5	
Body 5600		e'	47.5200	Relative Permittivity (ϵ_r):	47.52	48.48	-1.98	5	
		e"	18.9300	Conductivity (σ):	5.89	5.76	2.31	5	
Body 5750		e'	47.2700	Relative Permittivity (ϵ_r):	47.27	48.27	-2.08	5	
		e"	19.0900	Conductivity (σ):	6.10	5.94	2.82	5	
Body 5825		e'	47.1600	Relative Permittivity (ϵ_r):	47.16	48.20	-2.16	5	
		e"	19.1700	Conductivity (σ):	6.21	6.00	3.48	5	
07-05-2018		Body 750	e'	56.5500	Relative Permittivity (ϵ_r):	56.55	55.55	1.81	5
			e"	23.3400	Conductivity (σ):	0.97	0.96	1.06	5
	Body 700	e'	57.0500	Relative Permittivity (ϵ_r):	57.05	55.74	2.35	5	
		e"	23.7700	Conductivity (σ):	0.93	0.96	-3.55	5	
	Body 790	e'	56.1300	Relative Permittivity (ϵ_r):	56.13	55.39	1.33	5	
		e"	23.0000	Conductivity (σ):	1.01	0.97	4.57	5	
07-06-2018	Body 2600	e'	50.8000	Relative Permittivity (ϵ_r):	50.80	52.51	-3.26	5	
		e"	14.5600	Conductivity (σ):	2.10	2.16	-2.59	5	
	Body 2500	e'	51.0900	Relative Permittivity (ϵ_r):	51.09	52.64	-2.94	5	
		e"	14.2600	Conductivity (σ):	1.98	2.02	-1.88	5	
	Body 2700	e'	50.4600	Relative Permittivity (ϵ_r):	50.46	52.38	-3.67	5	
		e"	14.8100	Conductivity (σ):	2.22	2.30	-3.39	5	
07-12-2018	Body 680	e'	58.2700	Relative Permittivity (ϵ_r):	58.27	55.82	4.40	5	
		e"	24.1500	Conductivity (σ):	0.91	0.96	-4.65	5	
	Body 715	e'	57.9400	Relative Permittivity (ϵ_r):	57.94	55.68	4.06	5	
		e"	23.7700	Conductivity (σ):	0.95	0.96	-1.60	5	
	Body 750	e'	57.6000	Relative Permittivity (ϵ_r):	57.60	55.55	3.70	5	
		e"	23.4400	Conductivity (σ):	0.98	0.96	1.50	5	
07-19-2018	Body 680	e'	57.8900	Relative Permittivity (ϵ_r):	57.89	55.82	3.72	5	
		e"	24.1700	Conductivity (σ):	0.91	0.96	-4.58	5	
	Body 715	e'	57.5100	Relative Permittivity (ϵ_r):	57.51	55.68	3.29	5	
		e"	23.8000	Conductivity (σ):	0.95	0.96	-1.48	5	
	Body 750	e'	57.1400	Relative Permittivity (ϵ_r):	57.14	55.55	2.87	5	
		e"	23.4800	Conductivity (σ):	0.98	0.96	1.67	5	

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 \pm 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 \geq 15.0 cm for SAR measurements \leq 3 GHz and \geq 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 2.5 mm.
For 5 GHz band - Distance between probe sensors and phantom surface was set to 1.4 mm
- The dipole input power (forward power) was 100 mW.
- The results are normalized to 1 W input power.

Reference Target SAR Values

The reference SAR values can be obtained from the calibration certificate of system validation dipoles.

System Dipole	Serial No.	Cal. Date	Freq. (MHz)	Target SAR Values (W/kg)	
				1g/10g	Body
D750V3	1122	2-19-2018	750	1g	8.63
				10g	5.72
D835V2	4d194	7-19-2017	835	1g	9.30
				10g	6.09
D1750V2	1125	2-16-2018	1750	1g	36.80
				10g	19.50
D1900V2	5d190	9-20-2017	1900	1g	40.00
				10g	21.10
D2450V2	939	9-19-2017	2450	1g	50.70
				10g	23.90
D2600V2	1097	1-17-2018	2600	1g	54.40
				10g	24.20
D5GHzV2	1209	2-15-2018	5250	1g	75.70
				10g	21.00
			5600	1g	79.00
				10g	21.90
			5750	1g	75.60
				10g	20.80

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 10% of the manufacturer calibrated dipole SAR target.

SAR 1 Room

Date Tested	System Dipole		T.S. Liquid	Measured Results		Target (Ref. Value)	Delta ±10 %	Plot No.	
	Type	Serial #		Zoom Scan to 100 mW	Normalize to 1 W				
7-3-2018	D2450V2	939	Body	1g	5.16	51.60	50.70	1.78	1,2
				10g	2.37	23.70	23.90	-0.84	
7-5-2018	D835V2	4d194	Body	1g	1.00	9.95	9.30	6.99	
				10g	0.65	6.54	6.09	7.39	
7-27-2018	D750V3	1122	Body	1g	0.85	8.47	8.63	-1.85	
				10g	0.56	5.64	5.72	-1.40	

SAR 2 Room

Date Tested	System Dipole		T.S. Liquid	Measured Results		Target (Ref. Value)	Delta ±10 %	Plot No.	
	Type	Serial #		Zoom Scan to 100 mW	Normalize to 1 W				
6-28-2018	D750V3	1122	Body	1g	0.87	8.66	8.63	0.35	
				10g	0.58	5.75	5.72	0.52	
7-2-2018	D835V2	4d914	Body	1g	1.00	9.96	9.30	7.10	3, 4
				10g	0.65	6.53	6.09	7.22	
7-2-2018	D1750V2	1125	Body	1g	3.79	37.90	36.80	2.99	
				10g	2.01	20.10	19.50	3.08	
7-2-2018	D1900V2	5d190	Body	1g	4.27	42.70	40.00	6.75	
				10g	2.20	22.00	21.10	4.27	
7-4-2018	D1750V2	1125	Body	1g	3.85	38.50	36.80	4.62	5, 6
				10g	2.05	20.50	19.50	5.13	
7-4-2018	D1900V2	5d190	Body	1g	4.34	43.40	40.00	8.50	7, 8
				10g	2.24	22.40	21.10	6.16	
7-12-2018	D1900V2	5d190	Body	1g	4.00	40.00	40.00	0.00	
				10g	2.02	20.20	21.10	-4.27	

SAR 3 Room

Date Tested	System Dipole		T.S. Liquid	Measured Results		Target (Ref. Value)	Delta ±10 %	Plot No.	
	Type	Serial #		Zoom Scan to 100 mW	Normalize to 1 W				
7-2-2018	D5GHzV2 (5250 MHz)	1209	Body	1g	7.74	77.40	75.70	2.25	
				10g	2.15	21.50	21.00	2.38	
7-2-2018	D5GHzV2 (5600 MHz)	1209	Body	1g	8.33	83.30	79.00	5.44	
				10g	2.28	22.80	21.90	4.11	
7-2-2018	D5GHzV2 (5750 MHz)	1209	Body	1g	7.66	76.60	75.60	1.32	
				10g	2.11	21.10	20.80	1.44	
7-5-2018	D5GHzV2 (5250 MHz)	1209	Body	1g	8.09	80.90	75.70	6.87	
				10g	2.25	22.50	21.00	7.14	
7-5-2018	D5GHzV2 (5600 MHz)	1209	Body	1g	8.56	85.60	79.00	8.35	9, 10
				10g	2.35	23.50	21.90	7.31	
7-5-2018	D5GHzV2 (5750 MHz)	1209	Body	1g	7.81	78.10	75.60	3.31	
				10g	2.17	21.70	20.80	4.33	
7-5-2018	D750V3	1122	Body	1g	0.85	8.53	8.63	-1.16	
				10g	0.57	5.67	5.72	-0.87	
7-6-2018	D2600V2	1097	Body	1g	5.41	54.10	54.40	-0.55	11, 12
				10g	2.37	23.70	24.20	-2.07	
7-12-2018	D750V3	1122	Body	1g	0.87	8.72	8.63	1.04	
				10g	0.58	5.80	5.72	1.40	
7-19-2018	D750V3	1122	Body	1g	0.90	9.01	8.63	4.40	13, 14
				10g	0.60	6.00	5.72	4.90	

9. Conducted Output Power Measurements

9.1. W-CDMA

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 specification. The DUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7).

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 Release 5 procedures in section 5.2 of 3GPP TS34.121. A summary of these settings are illustrated below:

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subtest	1	2	3	4
W-CDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set 1			
	Power Control Algorithm	Algorithm 2			
	β_c	2/15	11/15	15/15	15/15
	β_d	15/15	15/15	8/15	4/15
	Bd (SF)	64			
	β_c/β_d	2/15	11/15	15/8	15/4
	β_{hs}	4/15	24/15	30/15	30/15
MPR (dB)	0	0	0.5	0.5	
HSDPA Specific Settings	D_{ACK}	8			
	D_{NAK}	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback (Table 5.2B.4)	4ms			
	CQI Repetition Factor (Table 5.2B.4)	2			
$A_{hs}=\beta_{hs}/\beta_c$	30/15				

HSPA (HSDPA & HSUPA) Setup Procedures used to establish the test signals

The following 5 Sub-tests were completed according to Release 6 procedures in table C,11.1.3 of 3GPP TS 34.121-1 v13. A summary of these settings are illustrated below:

	Mode	HSPA				
	Subtest	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2 kbps RMC				
	HSDPA FRC	H-Set 1				
	HSUPA Test	HSPA				
	Power Control Algorithm	Algorithm 2				Algorithm 1
	β_c	11/15	6/15	15/15	2/15	15/15
	β_d	15/15	15/15	9/15	15/15	0
	β_{ec}	209/225	12/15	30/15	2/15	5/15
	β_c/β_d	11/15	6/15	15/9	2/15	-
	β_{hs}	22/15	12/15	30/15	4/15	5/15
	β_{ed}	1309/225	94/75	47/15	56/75	47/15
CM (dB)	1	3	2	3	1	
MPR (dB)	0	2	1	2	0	
HSDPA Specific Settings	DACK	8				0
	DNAK	8				0
	DCQI	8				0
	Ack-Nack repetition factor	3				
	CQI Feedback (Table 5.2B.4)	4ms				
	CQI Repetition Factor (Table 5.2B.4)	2				
A _{hs} = β_{hs}/β_c	30/15					
HSUPA Specific Settings	E-DPDCCH	6	8	8	5	0
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	12
	ETFCI (from 34.121 Table C.11.1.3)	75	67	92	71	67
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E-TFCIs	5	5	2	5	1
	Reference E-TFCI	11	11	11	11	67
	Reference E-TFCI PO	4	4	4	4	18
	Reference E-TFCI	67	67	92	67	67
	Reference E-TFCI PO	18	18	18	18	18
	Reference E-TFCI	71	71	71	71	71
	Reference E-TFCI PO	23	23	23	23	23
	Reference E-TFCI	75	75	75	75	75
	Reference E-TFCI PO	26	26	26	26	26
	Reference E-TFCI	81	81	81	81	81
Reference E-TFCI PO	27	27	27	27	27	
Maximum Channelization Codes	2xSF2				SF4	

HSPA+

Since 16QAM is not used for uplink, the uplink Category and release is same as HSUPA, Therefore, the RF conducted power is not measured.

W-CDMA Band II Measured Results

Band	Mode		UL Ch No.	Freq. (MHz)	Max. RF output power (dBm)		Reduced RF output power (dBm)	
					MPR (dB)	Meas. Avg Pwr	MPR (dB)	Meas. Avg Pwr
W-CDMA Band II	Rel 99	RMC, 12.2 kbps	9262	1852.4	N/A	23.0	N/A	10.1
			9400	1880.0	N/A	23.1	N/A	10.1
			9538	1907.6	N/A	23.2	N/A	10.2
	HSDPA	Subtest 1	9262	1852.4	0	22.2	0	9.1
			9400	1880.0	0	22.3	0	9.2
			9538	1907.6	0	22.2	0	9.3
		Subtest 2	9262	1852.4	0	22.2	0	9.1
			9400	1880.0	0	22.3	0	9.1
			9538	1907.6	0	22.2	0	9.2
		Subtest 3	9262	1852.4	0.5	21.7	0.5	8.6
			9400	1880.0	0.5	21.8	0.5	8.7
			9538	1907.6	0.5	21.7	0.5	8.7
		Subtest 4	9262	1852.4	0.5	21.8	0.5	8.6
			9400	1880.0	0.5	21.8	0.5	8.7
			9538	1907.6	0.5	21.8	0.5	8.8
	HSUPA	Subtest 1	9262	1852.4	0	21.9	0	8.9
			9400	1880.0	0	22.1	0	9.0
			9538	1907.6	0	21.5	0	8.7
		Subtest 2	9262	1852.4	2	21.2	0	8.2
			9400	1880.0	2	20.9	0	8.3
			9538	1907.6	2	21.0	0	8.0
		Subtest 3	9262	1852.4	1	20.8	0	8.1
			9400	1880.0	1	20.7	0	8.2
			9538	1907.6	1	20.6	0	8.3
		Subtest 4	9262	1852.4	2	21.0	0	8.2
			9400	1880.0	2	21.3	0	8.8
			9538	1907.6	2	21.2	0	8.4
		Subtest 5	9262	1852.4	0	21.7	0	8.9
			9400	1880.0	0	21.7	0	8.8
			9538	1907.6	0	21.7	0	8.8

W-CDMA Band IV Measured Results

Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Max. RF output power (dBm)	Reduced RF output power (dBm)	
						Meas. Avg Pwr	Meas. Avg Pwr	
W-CDMA Band IV	Rel 99	RMC, 12.2 kbps	1312	1712.4	N/A	23.3	12.6	
			1413	1732.6	N/A	23.6	13.1	
			1513	1752.6	N/A	23.7	12.8	
	HSDPA	Subtest 1	1312	1712.4	0	22.3	11.7	
			1413	1732.6	0	22.6	12.2	
			1513	1752.6	0	22.5	12.0	
		Subtest 2	1312	1712.4	0	22.3	11.6	
			1413	1732.6	0	22.6	12.1	
			1513	1752.6	0	22.5	11.9	
		Subtest 3	1312	1712.4	0.5	21.6	11.1	
			1413	1732.6	0.5	22.2	11.6	
			1513	1752.6	0.5	22.0	11.4	
		Subtest 4	1312	1712.4	0.5	21.8	10.7	
			1413	1732.6	0.5	22.1	11.6	
			1513	1752.6	0.5	22.1	11.4	
		HSUPA	Subtest 1	1312	1712.4	0	22.3	11.2
				1413	1732.6	0	22.4	12.0
				1513	1752.6	0	22.2	11.6
	Subtest 2		1312	1712.4	2	21.2	9.6	
			1413	1732.6	2	21.5	10.1	
			1513	1752.6	2	21.0	10.2	
	Subtest 3		1312	1712.4	1	21.3	10.4	
			1413	1732.6	1	21.5	11.2	
			1513	1752.6	1	21.4	10.6	
	Subtest 4		1312	1712.4	2	21.4	10.6	
			1413	1732.6	2	21.5	11.5	
			1513	1752.6	2	21.5	11.1	
	Subtest 5		1312	1712.4	0	22.5	11.1	
			1413	1732.6	0	22.8	12.1	
			1513	1752.6	0	22.6	11.8	

W-CDMA Band V Measured Results

Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Max. RF output power (dBm)	Reduced RF output power (dBm)			
						Meas. Avg Pwr	Meas. Avg Pwr			
W-CDMA Band V	Rel 99	RMC, 12.2 kbps	4132	826.4	N/A	23.8	18.0			
			4183	836.6	N/A	23.8	18.0			
			4233	846.6	N/A	23.9	18.1			
	HSDPA	Subtest 1		4132	826.4	0	22.9	17.0		
				4183	836.6	0	22.8	17.1		
				4233	846.6	0	22.9	17.2		
		Subtest 2			4132	826.4	0	22.8	17.1	
					4183	836.6	0	22.8	17.1	
					4233	846.6	0	22.9	17.2	
		Subtest 3			4132	826.4	0.5	21.7	16.4	
					4183	836.6	0.5	22.3	16.5	
					4233	846.6	0.5	22.4	16.7	
		Subtest 4			4132	826.4	0.5	22.1	16.4	
					4183	836.6	0.5	22.4	16.5	
					4233	846.6	0.5	22.4	16.6	
		HSUPA	Subtest 1			4132	826.4	0	22.3	16.7
						4183	836.6	0	22.6	16.8
						4233	846.6	0	22.7	16.9
	Subtest 2					4132	826.4	2	21.2	16.0
						4183	836.6	2	21.2	16.1
						4233	846.6	2	21.5	16.2
	Subtest 3					4132	826.4	1	20.8	15.9
						4183	836.6	1	21.0	15.1
						4233	846.6	1	21.2	16.1
	Subtest 4					4132	826.4	2	22.0	16.4
						4183	836.6	2	21.6	16.5
						4233	846.6	2	21.8	16.5
	Subtest 5					4132	826.4	0	22.8	17.0
						4183	836.6	0	22.8	17.0
						4233	846.6	0	22.9	17.2

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
NS_03	6.6.2.2.1	2, 4, 10, 23, 25, 35, 36, 66, 70	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
NS_04	6.6.2.2.2, 6.6.3.3.19	41	5, 10, 15, 20	Table 6.2.4-4, Table 6.2.4-4a	
				10, 15, 20	≥ 50 (NOTE 1)
NS_05	6.6.3.3.1	1	15, 20	Table 6.2.4-18 (NOTE 2)	
			10, 15, 20	≥ 50	≤ 1 (NOTE 1)
			15, 20	Table 6.2.4-18 (NOTE 2)	
NS_06	6.6.2.2.3	12, 13, 14, 17	1.4, 3, 5, 10	Table 5.6-1	N/A
NS_07	6.6.2.2.3 6.6.3.3.2	13	10	Table 6.2.4-2	
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10	6.6.2.2.1 6.6.3.3.13	23	1.4, 3, 5, 10, 15, 20	Table 6.2.4-5	
NS_11	6.6.3.3.5	26	1.4, 3, 5, 10, 15	Table 6.2.4-6	
NS_12	6.6.3.3.6	26	5	Table 6.2.4-7	
NS_13	6.6.3.3.7	26	10, 15	Table 6.2.4-8	
NS_14	6.6.3.3.8	26	1.4, 3, 5, 10, 15	Table 6.2.4-9	
				Table 6.2.4-10	
NS_15	6.6.3.3.9	27	3, 5, 10	Table 6.2.4-11, Table 6.2.4-12, Table 6.2.4-13	
NS_16	6.6.3.3.10	28	5, 10	Table 5.6-1	N/A
NS_17	6.6.3.3.11	28	5	≥ 2	≤ 1
				10, 15, 20	≥ 1
NS_18	6.6.3.3.12	44	10, 15, 20	Table 6.2.4-14	
NS_19	6.2.2 6.6.2.2.1 6.6.3.3.14	23	5, 10, 15, 20	Table 6.2.4-15	
				Table 6.2.4-16	
NS_20	6.6.2.2.1 6.6.3.3.15	30	5, 10	Table 6.2.4-16	
				Table 6.2.4-17	
NS_21	6.6.3.3.16	42, 43	5, 10, 15, 20	Table 6.2.4-17	
NS_22	6.6.3.3.17	42, 43	5, 10, 15, 20	N/A	
NS_23	6.6.3.3.20	65 (NOTE 4)	5, 10, 15, 20	Table 6.2.4-19	
NS_24	6.6.3.3.21	65 (NOTE 4)	5, 10, 15, 20	Table 6.2.4-20	
NS_25	6.6.3.3.22	68	10, 15	Table 6.2.4-21	
NS_26	6.6.2.2.5, 6.6.3.3.23	48	5, 10, 15, 20	Table 6.2.4-22	
NS_27	6.2.2A, 6.6.3.3.24	46 (NOTE 5)	20	Table 6.2.4-23	
				Table 6.2.4-24	
NS_28	6.2.2A, 6.6.2.3.1a, 6.6.3.3.25	46 (NOTE 5)	20	Table 6.2.4-24	
NS_29	6.2.2A, 6.6.3.3.26	46 (NOTE 5)	20	Table 6.2.4-25	
NS_30	6.2.2A, 6.6.3.3.27	46 (NOTE 5)	20	Table 6.2.4-26	
NS_31	-	-	-	-	-
NS_32	-	-	-	-	-

NOTE 1: Applicable when the lower edge of the assigned E-UTRA UL channel bandwidth frequency is larger than or equal to the upper edge of PHS band (1915.7 MHz) + 4 MHz + the channel BW assigned, where channel BW is as defined in subclause 5.6. A-MPR for

LTE Band 2 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						1860 MHz	1880 MHz	1900 MHz		1860 MHz	1880 MHz	1900 MHz
LTE Band 2	20	QPSK	1	0	0	23.3	23.5	23.5	0	10.4	10.9	11.0
			1	49	0	23.7	24.1	23.9	0	10.1	11.1	10.8
			1	99	0	23.5	23.8	22.3	0	10.8	10.9	10.8
			50	0	1	22.2	21.9	21.6	0	9.7	10.9	11.1
			50	24	1	22.2	22.6	22.2	0	10.1	11.1	10.8
			50	50	1	22.6	22.4	21.6	0	10.2	11.0	10.3
		16QAM	100	0	1	22.2	22.2	21.9	0	9.9	10.9	10.6
			1	0	1	22.3	22.8	22.8	0	9.9	11.3	11.3
			1	49	1	22.8	22.9	22.9	0	10.6	11.2	10.8
			1	99	1	22.4	22.7	21.9	0	11.2	11.2	10.9
			50	0	2	21.3	20.8	20.7	0	9.7	10.9	11.2
			50	24	2	21.2	21.4	21.1	0	10.0	11.2	10.9
			50	50	2	21.7	21.3	20.2	0	10.3	11.0	10.3
			100	0	2	21.0	20.7	20.5	0	10.0	10.9	10.7
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						1857.5 MHz	1880 MHz	1902.5 MHz		1857.5 MHz	1880 MHz	1902.5 MHz
LTE Band 2	15	QPSK	1	0	0	23.9	22.7	23.7	0	10.5	10.8	11.0
			1	37	0	24.0	24.2	23.9	0	9.6	10.8	10.0
			1	74	0	23.8	24.0	22.0	0	10.0	10.9	10.9
			36	0	1	23.1	21.1	22.1	0	9.6	10.8	10.2
			36	20	1	23.0	21.6	22.1	0	9.7	11.0	10.1
			36	39	1	22.0	21.3	21.5	0	9.7	10.9	10.0
		16QAM	75	0	1	22.4	22.5	22.2	0	9.8	10.9	10.2
			1	0	1	23.1	22.3	23.4	0	9.9	10.8	11.2
			1	37	1	23.2	23.3	22.6	0	10.1	10.8	10.2
			1	74	1	23.0	23.2	22.1	0	10.4	10.8	10.9
			36	0	2	22.1	20.4	21.1	0	9.8	10.9	10.4
			36	20	2	22.0	20.8	21.0	0	9.9	11.1	10.2
			36	39	2	22.0	21.5	20.9	0	9.9	10.9	10.0
			75	0	2	21.9	21.3	21.0	0	9.9	10.9	10.3
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						1855 MHz	1880 MHz	1905 MHz		1855 MHz	1880 MHz	1905 MHz
LTE Band 2	10	QPSK	1	0	0	24.0	23.0	24.0	0	9.6	10.7	10.1
			1	25	0	24.0	24.0	23.9	0	9.9	11.0	10.3
			1	49	0	23.4	24.0	22.5	0	9.8	10.8	10.9
			25	0	1	21.7	21.0	21.9	0	9.9	11.0	10.4
			25	12	1	21.9	21.5	21.1	0	10.0	11.1	10.4
			25	25	1	21.8	21.9	21.7	0	9.9	11.1	10.5
		16QAM	50	0	1	22.1	22.2	21.9	0	9.9	11.1	10.4
			1	0	1	23.0	22.4	23.0	0	9.9	10.7	10.1
			1	25	1	23.2	23.3	23.0	0	10.3	11.0	10.3
			1	49	1	23.2	23.1	21.4	0	10.2	10.7	10.8
			25	0	2	20.8	20.0	21.0	0	9.8	11.0	10.4
			25	12	2	20.8	20.4	20.5	0	10.0	11.2	10.6
			25	25	2	20.9	21.0	20.2	0	9.9	11.1	10.5
			50	0	2	20.9	21.0	20.6	0	9.8	11.0	10.4

LTE Band 2 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						1852.5 MHz	1880 MHz	1907.5 MHz		1852.5 MHz	1880 MHz	1907.5 MHz
LTE Band 2	5	QPSK	1	0	0	23.5	23.5	23.7	0	10.0	11.3	10.5
			1	12	0	23.9	24.1	23.8	0	10.1	11.0	10.4
			1	24	0	23.6	23.8	22.4	0	10.0	11.2	11.1
			12	0	1	22.1	22.9	22.4	0	9.9	11.1	10.1
			12	7	1	22.1	22.9	22.3	0	9.9	11.1	10.5
			12	13	1	22.5	22.9	22.6	0	9.9	11.1	10.7
		16QAM	25	0	1	22.1	22.1	21.1	0	10.0	11.3	10.7
			1	0	1	22.6	22.5	22.6	0	10.5	11.2	10.4
			1	12	1	22.8	22.5	22.8	0	10.4	11.2	10.5
			1	24	1	22.5	22.3	22.7	0	10.5	11.2	11.3
			12	0	2	21.3	21.8	21.8	0	10.1	11.1	10.2
			12	7	2	21.2	21.8	21.8	0	10.1	11.2	10.6
			12	13	2	21.6	21.9	21.8	0	10.2	11.2	10.8
			25	0	2	20.9	21.0	20.9	0	10.1	11.2	10.5
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						1851.5 MHz	1880 MHz	1908.5 MHz		1851.5 MHz	1880 MHz	1908.5 MHz
LTE Band 2	3	QPSK	1	0	0	24.0	23.4	23.6	0	10.0	11.2	10.8
			1	8	0	24.0	24.0	23.2	0	9.9	11.2	11.0
			1	14	0	24.1	24.1	22.3	0	10.0	11.2	11.2
			8	0	1	22.8	22.5	22.6	0	9.8	11.1	10.8
			8	4	1	22.8	22.1	22.8	0	9.9	11.0	11.0
			8	7	1	22.8	22.4	22.9	0	9.9	11.0	11.1
		16QAM	15	0	1	22.7	21.8	22.7	0	9.9	11.0	11.0
			1	0	1	22.7	22.9	22.8	0	9.9	11.1	11.1
			1	8	1	22.8	23.1	22.1	0	9.8	11.1	11.2
			1	14	1	22.5	23.1	21.5	0	9.8	11.2	10.9
			8	0	2	21.5	21.8	21.6	0	10.0	11.1	10.8
			8	4	2	21.2	21.8	21.8	0	10.0	11.2	11.0
			8	7	2	21.3	21.8	22.0	0	10.0	11.2	11.1
			15	0	2	21.5	21.6	21.2	0	9.9	11.1	11.0
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						1850.7 MHz	1880 MHz	1909.3 MHz		1850.7 MHz	1880 MHz	1909.3 MHz
LTE Band 2	1.4	QPSK	1	0	0	23.5	23.5	23.1	0	10.0	10.9	10.8
			1	3	0	23.6	23.7	23.1	0	10.1	11.1	11.1
			1	5	0	23.6	23.7	22.6	0	9.9	11.0	11.2
			3	0	0	23.2	23.1	22.9	0	9.9	11.1	11.0
			3	1	0	23.2	23.2	22.8	0	10.0	11.1	11.1
			3	3	0	23.2	23.2	22.7	0	10.0	11.1	11.2
		16QAM	6	0	1	22.4	22.9	22.8	0	10.0	11.2	11.1
			1	0	1	22.6	22.6	22.7	0	10.0	11.1	11.2
			1	3	1	22.8	22.8	22.6	0	10.2	11.3	11.2
			1	5	1	22.6	22.7	22.3	0	10.0	11.2	11.2
			3	0	1	22.1	22.2	21.7	0	10.1	11.2	11.2
			3	1	1	21.9	22.3	21.5	0	10.1	11.2	11.2
			3	3	1	22.1	22.3	21.3	0	10.1	11.2	11.2
			6	0	2	21.2	21.1	21.4	0	10.2	11.2	11.1

LTE Band 4 Measured Results

SAR for LTE Band 4 (Frequency range: 1710-1755 MHz) is covered by LTE Band 66 (Frequency range: 1710-1780 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

LTE Band 5 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						829 MHz	836.5 MHz	844 MHz		829 MHz	836.5 MHz	844 MHz
LTE Band 5	10	QPSK	1	0	0		24.1		0		14.9	
			1	25	0		24.4		0		15.4	
			1	49	0		24.4		0		15.1	
			25	0	1		23.3		0		15.1	
			25	12	1		23.3		0		15.3	
			25	25	1		23.3		0		15.2	
			50	0	1		23.2		0		15.1	
		16QAM	1	0	1		22.8		0		15.2	
			1	25	1		23.3		0		15.5	
			1	49	1		23.1		0		15.3	
			25	0	2		22.4		0		15.2	
			25	12	2		22.5		0		15.3	
			25	25	2		22.4		0		15.2	
			50	0	2		22.3		0		15.2	
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						826.5 MHz	836.5 MHz	846.5 MHz		826.5 MHz	836.5 MHz	846.5 MHz
LTE Band 5	5	QPSK	1	0	0	23.8	24.2	24.1	0	14.9	14.8	15.4
			1	12	0	24.1	24.5	24.4	0	15.2	15.0	15.6
			1	24	0	24.0	24.2	24.2	0	15.1	14.9	15.1
			12	0	1	23.1	23.1	23.1	0	15.0	15.1	15.5
			12	7	1	23.2	23.1	23.1	0	15.2	15.2	15.4
			12	13	1	23.1	23.2	23.1	0	15.1	15.1	15.4
			25	0	1	23.2	23.2	23.2	0	15.1	15.1	15.4
		16QAM	1	0	1	22.7	22.6	22.5	0	14.7	14.5	14.9
			1	12	1	22.7	22.6	22.5	0	14.6	15.0	14.8
			1	24	1	22.7	22.6	22.6	0	14.4	15.2	14.8
			12	0	2	22.0	22.2	22.1	0	14.9	14.9	15.2
			12	7	2	22.0	22.2	22.1	0	15.2	15.1	15.3
			12	13	2	22.2	22.3	22.2	0	15.2	15.2	15.2
			25	0	2	22.3	22.5	22.3	0	15.0	15.2	15.6
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						825.5 MHz	836.5 MHz	847.5 MHz		825.5 MHz	836.5 MHz	847.5 MHz
LTE Band 5	3	QPSK	1	0	0	24.2	24.4	24.2	0	15.0	15.2	15.1
			1	8	0	24.1	24.4	24.3	0	15.1	15.3	15.3
			1	14	0	24.5	24.4	24.4	0	15.1	15.3	15.2
			8	0	1	23.0	23.2	23.2	0	15.1	15.1	15.1
			8	4	1	23.1	23.2	23.2	0	15.1	15.2	15.2
			8	7	1	23.1	23.2	23.2	0	15.1	15.2	15.1
			15	0	1	23.1	23.2	23.1	0	15.0	15.2	15.2
		16QAM	1	0	1	22.6	23.5	23.4	0	15.5	15.0	15.2
			1	8	1	23.4	23.6	23.3	0	15.4	15.0	15.4
			1	14	1	23.5	23.4	23.4	0	15.1	15.0	15.2
			8	0	2	22.3	22.2	22.2	0	15.0	15.0	15.1
			8	4	2	22.4	22.4	22.2	0	15.1	14.9	14.9
			8	7	2	22.3	22.3	22.1	0	15.0	14.9	14.9
			15	0	2	22.2	22.3	22.3	0	15.0	15.1	15.1

Note(s):

10 MHz Bandwidths 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 Band 5 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						824.7 MHz	836.5 MHz	848.3 MHz		824.7 MHz	836.5 MHz	848.3 MHz
LTE Band 5	1.4	QPSK	1	0	0	24.1	24.1	24.2	0	15.0	15.1	15.3
			1	3	0	24.2	24.2	24.3	0	15.1	15.3	15.3
			1	5	0	24.1	24.1	24.3	0	15.0	15.2	15.2
			3	0	0	24.2	24.3	24.3	0	15.1	15.3	15.4
			3	1	0	24.2	24.4	24.4	0	15.2	15.3	15.4
			3	3	0	24.2	24.3	24.4	0	15.2	15.2	15.4
		16QAM	6	0	1	23.3	23.1	23.3	0	15.2	15.2	15.3
			1	0	1	23.1	23.5	23.1	0	15.1	14.9	15.2
			1	3	1	23.5	23.1	23.6	0	15.2	15.6	15.4
			1	5	1	23.0	23.2	23.3	0	15.1	14.9	15.2
			3	0	1	23.3	23.3	23.0	0	15.1	14.8	15.3
			3	1	1	23.3	23.3	23.0	0	15.4	15.1	15.3
			3	3	1	23.3	23.3	23.0	0	15.2	15.4	15.3
			6	0	2	22.3	22.4	22.5	0	15.2	15.3	15.5

LTE Band 7 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						2510 MHz	2535 MHz	2560 MHz		2510 MHz	2535 MHz	2560 MHz
LTE Band 7	20	QPSK	1	0	0	22.2	22.2	22.2	0	10.7	11.0	11.4
			1	49	0	22.3	22.2	22.3	0	11.0	11.2	11.6
			1	99	0	22.3	22.1	22.0	0	10.9	11.1	11.1
			50	0	1	21.3	21.2	21.3	0	10.8	11.1	11.4
			50	24	1	21.3	21.2	21.3	0	11.0	11.2	11.6
			50	50	1	21.2	21.0	21.1	0	11.1	11.2	11.4
			100	0	1	21.2	21.1	21.4	0	11.1	11.1	11.5
		16QAM	1	0	1	21.3	20.7	21.0	0	11.2	11.5	11.7
			1	49	1	21.4	20.9	21.3	0	11.6	11.6	11.6
			1	99	1	21.2	20.6	21.1	0	11.2	11.5	11.6
			50	0	2	20.1	20.3	20.4	0	10.9	11.1	11.5
			50	24	2	20.2	20.3	20.2	0	11.0	11.2	11.7
			50	50	2	20.2	20.2	20.3	0	11.1	11.1	11.5
			100	0	2	20.2	20.2	20.4	0	11.1	11.0	11.5
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						2507.5 MHz	2535 MHz	2562.5 MHz		2507.5 MHz	2535 MHz	2562.5 MHz
LTE Band 7	15	QPSK	1	0	0	22.3	22.5	22.2	0	11.1	11.3	11.7
			1	37	0	22.3	22.4	22.3	0	11.0	11.2	11.5
			1	74	0	22.3	22.4	22.0	0	11.4	11.4	11.4
			36	0	1	21.2	21.3	21.4	0	11.0	11.2	11.6
			36	20	1	21.2	21.1	21.3	0	11.0	11.2	11.7
			36	39	1	21.2	21.1	21.1	0	11.1	11.3	11.6
			75	0	1	21.2	21.1	21.2	0	11.1	11.3	11.6
		16QAM	1	0	1	21.0	21.4	21.5	0	11.3	11.5	11.6
			1	37	1	20.8	21.2	22.0	0	11.2	11.4	11.5
			1	74	1	20.8	21.2	21.8	0	11.5	11.6	11.4
			36	0	2	20.3	20.3	20.3	0	11.0	11.2	11.7
			36	20	2	20.3	20.2	20.1	0	11.2	11.2	11.8
			36	39	2	20.2	20.2	20.0	0	11.0	11.2	11.6
			75	0	2	20.2	20.1	20.3	0	11.1	11.2	11.7
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						2505 MHz	2535 MHz	2565 MHz		2505 MHz	2535 MHz	2565 MHz
LTE Band 7	10	QPSK	1	0	0	22.3	22.4	22.4	0	10.6	11.0	11.2
			1	25	0	22.4	22.4	22.4	0	10.8	11.2	11.4
			1	49	0	22.3	22.3	22.2	0	10.8	11.1	11.0
			25	0	1	21.3	21.2	21.4	0	10.9	11.2	11.5
			25	12	1	21.2	21.1	21.2	0	10.9	11.2	11.5
			25	25	1	21.2	21.1	21.0	0	11.1	11.2	11.4
			50	0	1	21.1	21.2	21.2	0	10.9	11.2	11.4
		16QAM	1	0	1	21.0	21.3	21.2	0	10.7	11.3	11.2
			1	25	1	21.2	21.6	21.4	0	11.1	11.5	11.5
			1	49	1	20.9	21.5	21.0	0	10.7	11.3	11.0
			25	0	2	20.2	20.3	20.6	0	11.1	11.1	11.6
			25	12	2	20.2	20.3	20.5	0	11.1	11.2	11.7
			25	25	2	20.1	20.1	20.5	0	11.2	11.2	11.5
			50	0	2	20.2	20.2	20.3	0	11.0	11.2	11.5

LTE Band 7 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						2502.5 MHz	2535 MHz	2567.5 MHz		2502.5 MHz	2535 MHz	2567.5 MHz
LTE Band 7	5	QPSK	1	0	0	22.0	21.8	22.1	0	11.0	11.3	11.5
			1	12	0	22.4	22.2	22.4	0	10.8	11.1	11.3
			1	24	0	22.0	21.7	22.4	0	11.0	11.3	11.2
			12	0	1	21.2	21.0	21.1	0	11.0	11.3	11.4
			12	7	1	21.2	21.0	20.9	0	10.9	11.2	11.3
			12	13	1	21.2	21.1	21.1	0	10.9	11.1	11.2
			25	0	1	21.1	21.2	21.0	0	11.0	11.3	11.3
		16QAM	1	0	1	21.1	20.7	20.6	0	11.6	11.4	11.7
			1	12	1	20.8	20.7	20.6	0	11.5	11.2	11.5
			1	24	1	20.8	20.7	20.4	0	11.6	11.4	11.4
			12	0	2	20.0	20.0	20.1	0	11.2	11.3	11.5
			12	7	2	20.0	20.2	20.1	0	11.2	11.2	11.5
			12	13	2	20.0	20.1	20.1	0	11.2	11.1	11.4
			25	0	2	20.1	20.2	20.2	0	11.1	11.2	11.4

LTE Band 12 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						704 MHz	707.5 MHz	711 MHz		704 MHz	707.5 MHz	711 MHz
LTE Band 12	10	QPSK	1	0	0		23.8		0		16.0	
			1	25	0		24.1		0		16.4	
			1	49	0		24.2		0		16.2	
			25	0	1		22.8		0		15.9	
			25	12	1		22.8		0		16.1	
			25	25	1		22.8		0		16.0	
			50	0	1		22.9		0		16.0	
		16QAM	1	0	1		22.8		0		15.9	
			1	25	1		23.4		0		16.4	
			1	49	1		23.1		0		16.1	
			25	0	2		21.7		0		15.9	
			25	12	2		21.8		0		16.0	
			25	25	2		21.9		0		16.0	
			50	0	2		21.9		0		15.9	
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						701.5 MHz	707.5 MHz	713.5 MHz		701.5 MHz	707.5 MHz	713.5 MHz
LTE Band 12	5	QPSK	1	0	0	23.5	23.8	24.0	0	15.6	15.8	16.1
			1	12	0	23.8	24.0	24.0	0	15.9	16.2	16.3
			1	24	0	23.8	23.9	24.1	0	15.8	16.0	16.0
			12	0	1	22.7	22.9	22.9	0	16.0	16.0	16.1
			12	7	1	22.6	22.9	22.8	0	15.9	16.0	16.1
			12	13	1	22.6	23.0	22.9	0	15.9	16.0	16.1
			25	0	1	22.7	22.8	22.9	0	15.8	16.0	16.1
		16QAM	1	0	1	22.7	22.5	22.8	0	15.7	15.7	15.9
			1	12	1	22.5	22.3	22.8	0	15.5	15.8	16.1
			1	24	1	22.8	22.5	22.8	0	15.5	15.5	15.8
			12	0	2	21.8	22.0	21.9	0	15.9	16.0	16.1
			12	7	2	21.5	21.9	21.7	0	15.9	16.1	16.2
			12	13	2	21.5	21.9	21.8	0	15.8	16.1	15.9
			25	0	2	21.7	22.1	21.9	0	15.8	16.1	15.9
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						700.5 MHz	707.5 MHz	714.5 MHz		700.5 MHz	707.5 MHz	714.5 MHz
LTE Band 12	3	QPSK	1	0	0	23.7	24.1	24.2	0	15.9	15.9	16.0
			1	8	0	23.9	23.9	23.9	0	16.1	16.0	16.1
			1	14	0	23.9	23.9	24.1	0	16.0	16.1	16.2
			8	0	1	22.8	22.9	22.9	0	16.0	16.0	16.1
			8	4	1	22.8	22.8	22.9	0	15.9	16.0	16.2
			8	7	1	22.8	22.8	22.9	0	15.9	16.1	16.2
			15	0	1	22.8	22.9	22.9	0	15.9	16.1	16.1
		16QAM	1	0	1	22.9	22.7	23.2	0	15.7	15.8	16.1
			1	8	1	22.7	23.1	23.1	0	16.2	16.2	16.1
			1	14	1	22.3	22.9	23.1	0	16.2	15.9	16.1
			8	0	2	21.9	21.6	21.8	0	16.0	15.8	16.3
			8	4	2	21.7	21.9	21.8	0	16.3	15.9	16.1
			8	7	2	22.0	21.5	21.8	0	16.2	15.8	16.1
			15	0	2	21.8	21.7	21.9	0	15.9	16.0	16.1

Note(s):

10 MHz Bandwidths 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 Band 12 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						699.7 MHz	707.5 MHz	715.3 MHz		699.7 MHz	707.5 MHz	715.3 MHz
LTE Band 12	1.4	QPSK	1	0	0	23.8	23.9	23.8	0	15.8	15.9	16.0
			1	3	0	24.1	23.9	23.9	0	16.0	16.0	16.0
			1	5	0	23.8	23.9	23.9	0	15.9	15.9	16.0
			3	0	0	23.8	23.9	23.9	0	16.0	15.9	16.1
			3	1	0	23.8	24.0	24.0	0	15.9	16.1	16.1
			3	3	0	23.9	24.0	24.0	0	16.0	16.1	16.0
		16QAM	6	0	1	22.7	22.9	22.9	0	15.9	16.0	16.0
			1	0	1	22.4	22.8	22.9	0	15.9	16.0	15.9
			1	3	1	22.6	23.0	23.0	0	16.0	16.1	15.8
			1	5	1	22.5	22.8	23.0	0	16.1	16.0	16.3
			3	0	1	22.9	22.8	22.9	0	15.9	16.1	16.1
			3	1	1	22.8	22.5	23.1	0	15.9	16.2	16.0
			3	3	1	22.8	22.7	23.1	0	15.9	16.2	16.1
			6	0	2	21.6	22.0	21.9	0	16.2	16.1	16.0

LTE Band 66 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						1720 MHz	1745 MHz	1770 MHz		1720 MHz	1745 MHz	1770 MHz
LTE Band 66	20	QPSK	1	0	0	23.2	23.5	23.9	0	12.0	12.0	12.9
			1	49	0	23.3	23.8	23.8	0	12.4	12.7	13.0
			1	99	0	23.5	23.8	24.0	0	11.8	12.6	12.7
			50	0	1	22.3	22.8	23.1	0	12.1	12.3	12.8
			50	24	1	22.3	22.7	23.0	0	12.1	12.6	12.8
			50	50	1	22.4	22.7	23.2	0	12.1	12.7	12.7
			100	0	1	22.3	22.7	23.1	0	12.1	12.4	12.8
		16QAM	1	0	1	22.2	22.7	22.9	0	12.4	12.5	13.2
			1	49	1	22.5	22.6	22.9	0	12.8	13.1	13.4
			1	99	1	22.2	22.5	22.9	0	12.2	13.1	12.9
			50	0	2	21.3	21.8	22.0	0	12.1	12.3	12.8
			50	24	2	21.3	21.7	21.9	0	12.2	12.6	12.8
			50	50	2	21.3	21.8	21.9	0	12.1	12.7	12.5
			100	0	2	21.4	21.7	22.1	0	12.1	12.5	12.6
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						1717.5 MHz	1745 MHz	1772.5 MHz		1717.5 MHz	1745 MHz	1772.5 MHz
LTE Band 66	15	QPSK	1	0	0	23.2	23.9	24.0	0	12.2	12.3	13.0
			1	37	0	23.2	23.8	23.9	0	12.5	12.6	12.9
			1	74	0	23.3	23.9	24.0	0	12.2	12.8	13.0
			36	0	1	22.2	22.7	23.0	0	12.3	12.5	12.9
			36	20	1	22.2	22.6	23.0	0	12.4	12.6	12.9
			36	39	1	22.2	22.7	23.0	0	12.1	12.7	13.0
			75	0	1	22.3	22.7	23.0	0	12.2	12.6	12.9
		16QAM	1	0	1	22.0	22.9	23.7	0	12.4	12.2	13.3
			1	37	1	22.1	22.8	23.5	0	12.7	12.5	13.3
			1	74	1	21.9	22.9	23.7	0	12.4	12.7	13.2
			36	0	2	21.4	21.6	22.0	0	12.3	12.5	12.8
			36	20	2	21.1	21.5	22.0	0	12.4	12.6	12.9
			36	39	2	21.3	21.5	22.0	0	12.2	12.7	12.8
			75	0	2	21.2	21.7	22.0	0	12.3	12.6	12.8
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						1715 MHz	1745 MHz	1775 MHz		1715 MHz	1745 MHz	1775 MHz
LTE Band 66	10	QPSK	1	0	0	23.2	23.9	24.0	0	12.0	12.3	12.8
			1	25	0	23.2	23.7	24.2	0	12.4	12.7	12.9
			1	49	0	23.3	23.7	24.0	0	12.1	12.7	12.9
			25	0	1	22.3	22.7	22.9	0	12.2	12.5	12.8
			25	12	1	22.2	22.6	23.0	0	12.3	12.7	13.0
			25	25	1	22.2	22.6	23.0	0	12.4	12.7	13.0
			50	0	1	22.2	22.5	23.0	0	12.3	12.6	13.0
		16QAM	1	0	1	22.1	22.9	23.0	0	12.3	12.2	12.7
			1	25	1	22.1	23.1	23.1	0	12.7	12.6	13.0
			1	49	1	22.6	22.8	23.0	0	12.5	12.6	12.7
			25	0	2	21.2	21.7	22.1	0	12.2	12.5	12.8
			25	12	2	21.2	21.8	22.1	0	12.3	12.6	13.1
			25	25	2	21.2	21.6	22.3	0	12.4	12.8	13.0
			50	0	2	21.1	21.6	22.1	0	12.4	12.6	12.8

LTE Band 66 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						1712.5 MHz	1745 MHz	1777.5 MHz		1712.5 MHz	1745 MHz	1777.5 MHz
LTE Band 66	5	QPSK	1	0	0	22.9	23.5	24.0	0	12.4	12.8	13.2
			1	12	0	23.2	23.8	24.2	0	12.3	12.8	13.1
			1	24	0	23.0	23.6	23.9	0	12.7	13.1	13.4
			12	0	1	22.1	22.5	23.1	0	12.4	12.7	13.2
			12	7	1	22.1	22.6	23.1	0	12.3	12.7	13.2
			12	13	1	22.2	22.6	23.1	0	12.4	12.7	13.2
			25	0	1	22.1	22.6	23.1	0	12.3	12.8	13.2
		16QAM	1	0	1	21.6	22.1	22.7	0	12.9	12.9	13.1
			1	12	1	21.8	22.2	22.8	0	12.8	12.8	13.2
			1	24	1	21.7	22.0	22.8	0	13.1	13.2	13.3
			12	0	2	20.9	21.7	22.1	0	12.5	12.8	13.1
			12	7	2	21.0	21.4	22.2	0	12.4	12.8	13.2
			12	13	2	20.9	21.5	22.0	0	12.5	12.8	13.2
			25	0	2	21.1	21.6	22.1	0	12.4	12.8	13.0
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						1711.5 MHz	1745 MHz	1778.5 MHz		1711.5 MHz	1745 MHz	1778.5 MHz
LTE Band 66	3	QPSK	1	0	0	23.0	23.6	24.2	0	12.3	12.7	13.2
			1	8	0	23.2	23.5	24.0	0	12.3	12.7	13.1
			1	14	0	23.1	23.7	24.1	0	12.5	12.8	13.2
			8	0	1	22.1	22.5	23.0	0	12.2	12.7	13.1
			8	4	1	22.1	22.5	23.1	0	12.3	12.7	13.1
			8	7	1	22.1	22.5	22.9	0	12.3	12.7	13.1
			15	0	1	22.1	22.5	23.0	0	12.2	12.7	13.1
		16QAM	1	0	1	22.4	22.6	23.1	0	12.6	12.7	13.1
			1	8	1	21.6	22.8	23.0	0	12.6	12.6	13.2
			1	14	1	22.4	22.7	22.9	0	12.8	12.7	13.1
			8	0	2	21.3	21.4	22.0	0	12.3	12.7	13.2
			8	4	2	21.2	21.5	22.2	0	12.3	12.8	13.2
			8	7	2	21.3	21.5	22.1	0	12.3	12.8	13.2
			15	0	2	21.1	21.5	21.9	0	12.3	12.7	13.1
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						1710.7 MHz	1745 MHz	1779.3 MHz		1710.7 MHz	1745 MHz	1779.3 MHz
LTE Band 66	1.4	QPSK	1	0	0	23.0	23.3	23.7	0	12.0	12.5	12.9
			1	3	0	23.1	23.6	23.8	0	12.2	12.7	13.0
			1	5	0	23.0	23.4	23.6	0	12.2	12.6	12.9
			3	0	0	23.0	23.5	23.9	0	12.2	12.6	12.9
			3	1	0	23.2	23.5	24.0	0	12.2	12.7	13.0
			3	3	0	23.1	23.5	23.9	0	12.2	12.7	13.0
			6	0	1	21.9	22.4	22.7	0	12.2	12.6	12.9
		16QAM	1	0	1	21.9	22.4	23.0	0	12.3	12.6	12.9
			1	3	1	22.2	22.5	23.1	0	12.5	12.7	13.0
			1	5	1	22.0	22.4	23.0	0	12.5	12.6	12.9
			3	0	1	22.0	22.6	22.8	0	12.3	12.6	13.1
			3	1	1	21.9	22.6	22.6	0	12.3	12.7	13.1
			3	3	1	21.7	22.7	23.0	0	12.4	12.7	13.1
			6	0	2	21.3	21.5	21.7	0	12.0	12.8	13.1

LTE Band 71 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						673 MHz	680.5 MHz	688 MHz		673 MHz	680.5 MHz	688 MHz
LTE Band 71	20	QPSK	1	0	0		24.1		0		13.4	
			1	49	0		24.3		0		14.2	
			1	99	0		23.8		0		13.4	
			50	0	1		23.2		0		13.8	
			50	24	1		23.2		0		14.0	
			50	50	1		23.2		0		13.7	
			100	0	1		23.1		0		13.9	
		16QAM	1	0	1		22.9		0		13.3	
			1	49	1		22.8		0		14.5	
			1	99	1		22.4		0		13.4	
			50	0	2		22.3		0		13.7	
			50	24	2		22.1		0		13.9	
			50	50	2		22.1		0		13.7	
			100	0	2		22.3		0		13.8	
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						670.5 MHz	680.5 MHz	690.5 MHz		670.5 MHz	680.5 MHz	690.5 MHz
LTE Band 71	15	QPSK	1	0	0		24.2		0		13.7	
			1	37	0		24.2		0		14.1	
			1	74	0		24.0		0		13.4	
			36	0	1		23.2		0		13.9	
			36	20	1		23.1		0		14.0	
			36	39	1		23.1		0		13.8	
			75	0	1		23.3		0		13.8	
		16QAM	1	0	1		23.3		0		13.8	
			1	37	1		23.5		0		14.6	
			1	74	1		23.1		0		14.2	
			36	0	2		22.1		0		13.8	
			36	20	2		22.1		0		14.0	
			36	39	2		22.1		0		13.8	
			75	0	2		22.3		0		14.0	
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						668 MHz	680.5 MHz	693 MHz		668 MHz	680.5 MHz	693 MHz
LTE Band 71	10	QPSK	1	0	0	24.0	24.4	24.0	0	13.4	14.0	13.8
			1	25	0	24.2	24.2	23.8	0	14.7	14.1	13.6
			1	49	0	24.1	24.0	23.6	0	13.2	13.9	13.3
			25	0	1	23.2	23.2	22.9	0	14.3	13.9	13.5
			25	12	1	23.2	23.2	22.8	0	14.5	14.0	13.5
			25	25	1	23.2	23.2	22.8	0	14.1	13.9	13.4
			50	0	1	23.1	23.3	22.8	0	14.2	14.0	13.4
		16QAM	1	0	1	23.5	23.5	23.0	0	13.7	13.8	13.5
			1	25	1	23.6	23.6	23.0	0	14.0	14.3	13.7
			1	49	1	23.6	23.4	22.6	0	13.5	13.1	13.2
			25	0	2	22.2	22.2	21.9	0	14.3	13.8	13.6
			25	12	2	22.1	22.1	21.9	0	14.6	14.1	13.5
			25	25	2	22.2	22.1	21.9	0	14.1	13.9	13.4
			50	0	2	22.1	22.4	21.9	0	14.2	13.9	13.4

Note(s):

20 MHz, 15 MHz Bandwidths 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 Band 71 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			MPR	Reduced Meas. Avg Pwr (dBm)		
						665.5 MHz	680.5 MHz	695.5 MHz		665.5 MHz	680.5 MHz	695.5 MHz
LTE Band 71	5	QPSK	1	0	0	24.0	24.3	23.6	0	14.1	14.0	13.4
			1	12	0	24.1	24.1	23.6	0	14.5	14.2	13.5
			1	24	0	24.2	24.2	23.5	0	14.7	14.1	13.3
			12	0	1	23.0	23.2	22.8	0	14.3	14.1	13.2
			12	7	1	23.1	23.2	22.7	0	14.5	14.2	13.3
			12	13	1	23.2	23.2	22.6	0	14.5	14.1	13.3
			25	0	1	23.1	23.2	22.8	0	14.5	14.1	13.3
		16QAM	1	0	1	23.3	23.1	22.3	0	14.1	14.5	13.4
			1	12	1	23.4	23.1	22.3	0	14.6	14.5	13.5
			1	24	1	23.5	22.9	22.2	0	14.4	14.6	13.4
			12	0	2	21.8	22.1	21.7	0	14.3	14.3	13.3
			12	7	2	22.0	22.2	21.6	0	14.5	14.3	13.4
			12	13	2	22.2	22.3	21.6	0	14.5	14.3	13.3
			25	0	2	22.1	22.2	21.7	0	14.4	14.2	13.3

9.2.1. LTE Rel. 10 Carrier Aggregation

LTE Release 10 Carrier Aggregation

The following power measurements were performed with a single carrier uplink; CA for this particular project only supports one (1) uplink and two (2) downlinks.

1) Max power results

E-UTRA CA configuration (BCS)	Bands		UL					DL					LTE Rel 8 Tx. Power [dBm]	LTE Rel 10 Tx. Power [dBm]	Delta	
	PCC	SCC	PCC					PCC			SCC					
	1st	2nd	Mode	BW (MHz)	Channel	Freq. (MHz)	RB/Offset	BW (MHz)	Channel	Freq. (MHz)	BW (MHz)	Channel				Freq. (MHz)
2A-4A	2A	4A	QPSK	10	18650	1855.0	1/0	10	650	1935.0	10	2175	2132.5	24.05	23.86	-0.19
	4A	2A	QPSK	10	20175	1732.5	1/49	10	2175	2132.5	10	900	1960.0	24.22	23.99	-0.23
2A-12A	2A	12A	QPSK	10	18650	1855.0	1/0	10	650	1935.0	10	5095	737.5	24.05	23.89	-0.16
	12A	2A	QPSK	10	23095	707.5	1/49	10	5095	737.5	10	900	1960.0	24.18	23.97	-0.21
4A-12A	4A	12A	QPSK	10	20175	1732.5	1/49	10	2175	2132.5	10	5095	737.5	24.22	23.98	-0.24
4A-4A	4A	4A	QPSK	10	20175	1732.5	1/49	10	2175	2132.5	10	2350	2150.0	24.22	23.99	-0.23

2) Reduction power results

E-UTRA CA configuration (BCS)	Bands		UL					DL					LTE Rel 8 Tx. Power [dBm]	LTE Rel 10 Tx. Power [dBm]	Delta	
	PCC	SCC	PCC					PCC			SCC					
	1st	2nd	Mode	BW (MHz)	Channel	Freq. (MHz)	RB/Offset	BW (MHz)	Channel	Freq. (MHz)	BW (MHz)	Channel				Freq. (MHz)
2A-4A	2A	4A	16QAM	10	18900	1880.0	25/12	10	900	1960.0	10	2175	2132.5	11.15	11.25	0.10
	4A	2A	QPSK	10	20175	1732.5	1/25	10	2175	2132.5	10	900	1960.0	11.94	11.70	-0.24
2A-12A	2A	12A	16QAM	10	18900	1880.0	25/12	10	900	1960.0	10	5095	737.5	11.15	11.33	0.18
	12A	2A	16QAM	10	23095	707.5	1/25	10	5095	737.5	10	900	1960.0	16.41	16.39	-0.02
4A-12A	4A	12A	QPSK	10	20175	1732.5	1/25	10	2175	2132.5	10	5095	737.5	11.94	11.71	-0.23
4A-4A	4A	4A	QPSK	10	20175	1732.5	1/25	10	2175	2132.5	10	2350	2150.0	11.94	11.70	-0.24

Note:

- Per KDB 941225 D05A LTE Rel. 10 KDB Inquiry Sheet: SAR is excluded for Carrier Aggregation when measured power does not exceed LTE Release 8 by more than a 1/4 dBm.
- When the same frequency band is used for both contiguous and non-contiguous in DL CA Intra band, power was measured using the configuration with the largest aggregated bandwidth and maximum output power among the contiguous and non-contiguous in DL CA Intra band configurations.

9.3. Wi-Fi 2.4 GHz (DTS Band)

Measured Results

Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Max Pwr.			Reduction Pwr.		
					Avg Pwr (dBm)	Max Output Power (dBm)	SAR Test (Yes/No)	Avg Pwr (dBm)	Max Output Power (dBm)	SAR Test (Yes/No)
2.4	802.11b	1 Mbps	1	2412	20.6	21.0	Yes	13.2	14	Yes
			6	2437	20.9	21.0		13.8	14	
			11	2462	18.0	19.0		13.2	14	
	802.11g	6 Mbps	1	2412	Not Require	14.0	No	13.6	14	No
			6	2437		19.0		13.6	14	
			11	2462		12.0		11.9	12	
	802.11n (HT20)	6.5 Mbps	1	2412	Not Require	14.0	No	13.6	14	No
			6	2437		18.0		13.5	14	
			11	2462		12.0		11.9	12	

Note(s):

- Output Power and SAR is not required for 802.11g/n HT20 channels when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

9.4. Wi-Fi 5 GHz (U-NII Bands)

Measured Results

Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Max Pwr.			Reduction Pwr.		
					Avg Pwr (dBm)	Max Output Power (dBm)	SAR Test (Yes/No)	Avg Pwr (dBm)	Max Output Power (dBm)	SAR Test (Yes/No)
5.3 (U-NII 2A)	802.11a	6 Mbps	52	5260	16.2	17.0	Yes	Not Required	10.0	No
			56	5280	16.4					
			60	5300	16.3					
			64	5320	16.4					
	802.11n (HT20)	6.5 Mbps	52	5260	Not Required	16.0	No	Not Required	10.0	No
			56	5280						
			60	5300						
	802.11n (HT40)	13.5 Mbps	54	5270	Not Required	12.0	No	9.5	10.0	Yes
			62	5310				9.4		
5.5 (U-NII 2C)	802.11a	6 Mbps	100	5500	14.3	15.0	Yes	Not Required	10.0	No
			120	5600	14.1					
			140	5700	14.6					
	802.11n (HT20)	6.5 Mbps	100	5500	Not Required	15.0	No	Not Required	10.0	No
			120	5600						
			140	5700						
	802.11n (HT40)	13.5 Mbps	102	5510	Not Required	11.0	No	9.4	10.0	Yes
			118	5590				9.2		
			134	5670				9.1		
5.8 (U-NII 3)	802.11a	6 Mbps	149	5745	16.9	17.0	Yes	Not Required	10.0	No
			157	5785	16.9					
			165	5825	16.2					
	802.11n (HT20)	6.5 Mbps	149	5745	Not Required	16.0	No	Not Required	10.0	No
			157	5785						
			165	5825						
	802.11n (HT40)	13.5 Mbps	151	5755	Not Required	12.0	No	9.1	10.0	Yes
			159	5795				9.5		

Note(s):

- For "Not required", SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band.
- When the same transmission mode configurations have the same maximum output power on the same channel for the 802.11 a/g/n/ac modes, the channel in the lower order/sequence 802.11 mode (i.e. a, g, n then ac) is selected.
- When the specified maximum output power is the same for both UNII band I and UNII band 2A, begin SAR measurement in UNII band 2A; and if the highest reported SAR for UNII band 2A is
 - ≤ 1.2 W/kg, SAR is not required for UNII band I
 - > 1.2 W/kg, both bands should be tested independently for SAR.

9.5. Bluetooth

Average Power Measured Results

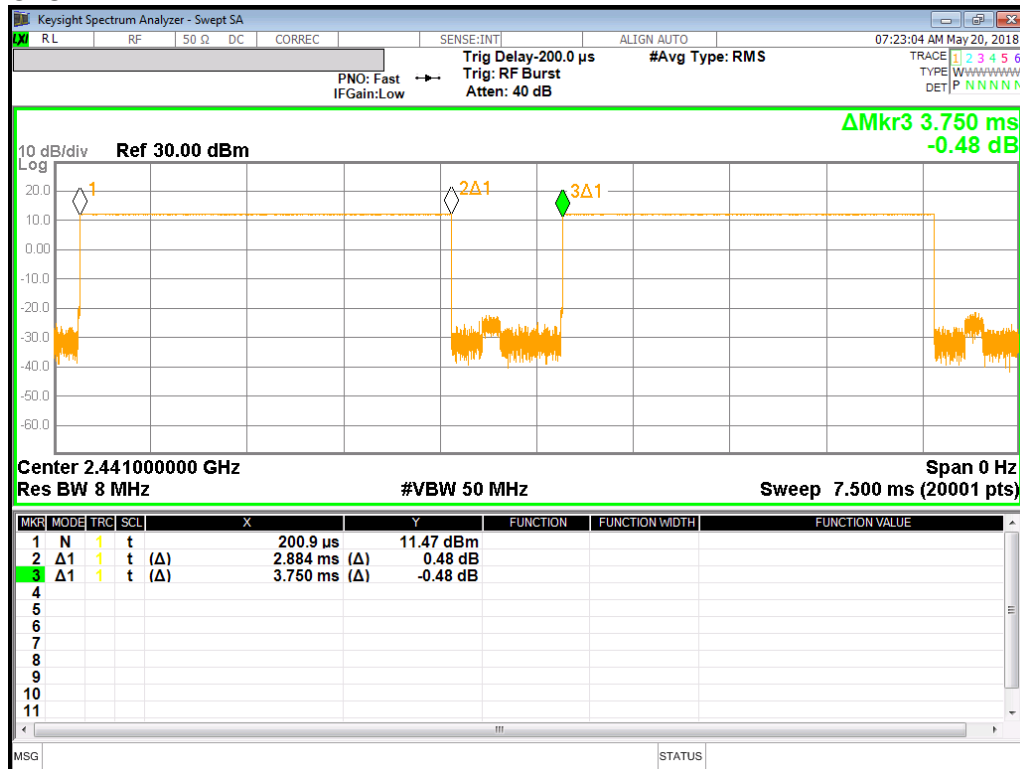
Band (GHz)	Mode	Ch #	Freq. (MHz)	Meas. Avg Pwr (dBm)
2.4	GFSK	0	2402	8.2
		39	2441	9.1
		78	2480	8.8
	EDR, $\pi/4$ DQPSK	0	2402	7.8
		39	2441	8.7
		78	2480	8.5
	EDR, 8-DPSK	0	2402	7.9
		39	2441	8.7
		78	2480	8.5
	LE, GFSK	0	2402	5.4
		19	2440	6.1
		39	2480	6.9

Duty Factor Measured Results

Mode	Type	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)
GFSK	DH5	2.884	3.750	76.9%	1.30

Duty Cycle plots

GFSK



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

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.

KDB 248227 D01 SAR meas for 802.11:

SAR test reduction for 802.11 Wi-Fi transmission mode configurations are considered separately for DSSS and OFDM. An initial test position is determined to reduce the number of tests required for certain exposure configurations with multiple test positions. An initial test configuration is determined for each frequency band and aggregated band according to maximum output power, channel bandwidth, wireless mode configurations and other operating parameters to streamline the measurement requirements. For 2.4 GHz DSSS, either the initial test position or DSSS procedure is applied to reduce the number of SAR tests; these are mutually exclusive. For OFDM, an initial test position is only applicable to next to the ear, UMPC mini-tablet and hotspot mode configurations, which is tested using the initial test configuration to facilitate test reduction. For other exposure conditions with a fixed test position, SAR test reduction is determined using only the initial test configuration.

The multiple test positions require SAR measurements in head, hotspot mode or UMPC mini-tablet configurations may be reduced according to the highest reported SAR determined using the initial test position(s) by applying the DSSS or OFDM SAR measurement procedures in the required wireless mode test configuration(s). The initial test position(s) is measured using the highest measured maximum output power channel in the required wireless mode test configuration(s). When the reported SAR for the initial test position is:

- ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and wireless mode combination within the frequency band or aggregated band. DSSS and OFDM configurations are considered separately according to the required SAR procedures.
- > 0.4 W/kg, SAR is repeated using the same wireless mode test configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position, on the highest maximum output power channel, until the reported SAR is ≤ 0.8 W/kg or all required test positions are tested.
 - For subsequent test positions with equivalent test separation distance or when exposure is dominated by coupling conditions, the position for maximum coupling condition should be tested.
 - When it is unclear, all equivalent conditions must be tested.
- For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, measure the SAR for these positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required test channels are considered.
 - The additional power measurements required for this step should be limited to those necessary for identifying subsequent highest output power channels to apply the test reduction.
- When the specified maximum output power is the same for both UNII 1 and UNII 2A, begin SAR measurements in UNII 2A with the channel with the highest measured output power. If the reported SAR for UNII 2A is ≤ 1.2 W/kg, SAR is not required for UNII 1; otherwise treat the remaining bands separately and test them independently for SAR.
- When the specified maximum output power is different between UNII 1 and UNII 2A, begin SAR with the band that has the higher specified maximum output. If the highest reported SAR for the band with the highest specified power is ≤ 1.2 W/kg, testing for the band with the lower specified output power is not required; otherwise test the remaining bands independently for SAR.

To determine the initial test position, Area Scans were performed to determine the position with the *Maximum Value of SAR (measured)*. The position that produced the highest *Maximum Value of SAR* is considered the worst case position; thus used as the initial test position.

10.1. W-CDMA Band II

RF Exposure Conditions	Mode	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
							Tune-up limit	Meas.	Meas.	Scaled	
Standalone	Rel. 99 RMC	Off	19	Rear	9400	1880.0	24.5	23.1	0.550	0.764	1
				Edge 1	9262	1852.4	24.5	23.0	0.612	0.866	
			9400		1880.0	24.5	23.1	0.681	0.946		
			9538		1907.6	24.5	23.2	0.777	1.056		
			5		Edge 2	9400	1880.0	24.5	23.1	0.529	
			10	Corner A	9262	1852.4	24.5	23.0	0.575	0.814	
					9400	1880.0	24.5	23.1	0.625	0.868	
			9538		1907.6	24.5	23.2	0.636	0.864		
	Rel. 99 RMC	On	0	Rear	9400	1880.0	11.0	10.1	0.604	0.740	
				Edge 1	9400	1880.0	11.0	10.1	0.566	0.694	
				Edge 2	9400	1880.0	11.0	10.1	0.117	0.143	
				Corner A	9400	1880.0	11.0	10.1	0.180	0.221	

10.2. W-CDMA Band IV

RF Exposure Conditions	Mode	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.		
							Tune-up limit	Meas.	Meas.	Scaled			
Standalone	Rel. 99 RMC	Off	19	Rear	1413	1732.6	25.0	23.6	0.528	0.726	2		
				Edge 1	1312	1712.4	25.0	23.3	0.607	0.899			
			1413		1732.6	25.0	23.6	0.675	0.929				
			1513		1752.6	25.0	23.7	0.718	0.976				
			5		Edge 2	1413	1732.6	25.0	23.6	0.524		0.721	
			10	Corner A	1413	1732.6	25.0	23.6	0.477	0.656			
			Rel. 99 RMC	On	0	Rear	1312	1712.4	14.0	12.6		0.505	0.694
							1413	1732.6	14.0	13.1		0.650	0.803
	1513	1752.6					14.0	12.8	0.734	0.959			
	Edge 1	1413				1732.6	14.0	13.1	0.468	0.578			
	Edge 2	1413				1732.6	14.0	13.1	0.120	0.148			
	Corner A	1413				1732.6	14.0	13.1	0.199	0.246			

10.3. W-CDMA Band V

RF Exposure Conditions	Mode	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	
							Tune-up limit	Meas.	Meas.	Scaled		
Standalone	Rel. 99 RMC	Off	19	Rear	4183	836.6	25.0	23.8	0.418	0.552		
				Edge 1	4183	836.6	25.0	23.8	0.337	0.445		
			5		Edge 2	4183	836.6	25.0	23.8	0.440		0.581
			10		Corner A	4183	836.6	25.0	23.8	0.074		0.097
			Rel. 99 RMC	On	0	Rear	4183	836.6	19.0	18.0		0.637
	Edge 1	4183				836.6	19.0	18.0	0.257	0.321		
	Edge 2	4183				836.6	19.0	18.0	0.295	0.368		
	Corner A	4183				836.6	19.0	18.0	0.158	0.197		

10.4. LTE Band 2 (20MHz Bandwidth)

RF Exposure Conditions	Mode	PWR Back-off	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	
Standalone	QPSK	Off	19	Rear	18900	1880.0	1	49	24.5	24.1	0.559	0.610	4
							50	24	23.5	22.6	0.472	0.576	
			15	Edge 1	18900	1880.0	1	49	24.5	24.1	0.673	0.734	
							50	24	23.5	22.6	0.551	0.672	
			5	Edge 2	18900	1880.0	1	49	24.5	24.1	0.625	0.682	
							50	24	23.5	22.6	0.493	0.601	
			10	Corner A	18900	1880.0	1	49	24.5	24.1	0.535	0.584	
							50	24	23.5	22.6	0.442	0.539	
	QPSK	On	0	Rear	18900	1880.0	1	49	12.0	11.1	0.486	0.601	
							50	24	12.0	11.1	0.486	0.593	
				Edge 1	18900	1880.0	1	49	12.0	11.1	0.389	0.481	
							50	24	12.0	11.1	0.371	0.453	
				Edge 2	18900	1880.0	1	49	12.0	11.1	0.076	0.095	
							50	24	12.0	11.1	0.078	0.095	
				Corner A	18900	1880.0	1	49	12.0	11.1	0.114	0.141	
							50	24	12.0	11.1	0.115	0.140	

10.5. LTE Band 4 (10MHz Bandwidth)

SAR for LTE Band 4 (Frequency range: 1710-1755 MHz) is covered by LTE Band 66 (Frequency range: 1710-1780 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

10.6. LTE Band 5 (10MHz Bandwidth)

RF Exposure Conditions	Mode	PWR Back-off	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	
Standalone	QPSK	Off	19	Rear	20525	836.5	1	49	25.2	24.4	0.455	0.547	5
							25	12	24.2	23.3	0.370	0.456	
			15	Edge 1	20525	836.5	1	49	25.2	24.4	0.372	0.447	
							25	12	24.2	23.3	0.314	0.387	
			5	Edge 2	20525	836.5	1	49	25.2	24.4	0.428	0.515	
							25	12	24.2	23.3	0.350	0.432	
			10	Corner A	20525	836.5	1	49	25.2	24.4	0.078	0.094	
							25	12	24.2	23.3	0.058	0.072	
	QPSK	On	0	Rear	20525	836.5	1	25	16.0	15.4	0.303	0.350	
							25	12	16.0	15.3	0.293	0.347	
				Edge 1	20525	836.5	1	25	16.0	15.4	0.119	0.138	
							25	12	16.0	15.3	0.116	0.137	
				Edge 2	20525	836.5	1	25	16.0	15.4	0.131	0.152	
							25	12	16.0	15.3	0.125	0.148	
				Corner A	20525	836.5	1	25	16.0	15.4	0.069	0.080	
							25	12	16.0	15.3	0.066	0.078	

10.7. LTE Band 7 (20MHz Bandwidth)

RF Exposure Conditions	Mode	PWR Back-off	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	
Standalone	QPSK	Off	14	Rear	21350	2560.0	1	49	23.0	22.3	0.437	0.509	6
							50	24	22.0	21.3	0.375	0.438	
			10	Edge 1	21350	2560.0	1	49	23.0	22.3	0.632	0.736	
							50	24	22.0	21.3	0.515	0.602	
			0	Edge 2	21350	2560.0	1	49	23.0	22.3	0.326	0.380	
							50	24	22.0	21.3	0.278	0.325	
	0	Edge 4	21350	2560.0	1	49	23.0	22.3	0.181	0.211			
					50	24	22.0	21.3	0.153	0.179			
	QPSK	On	0	Rear	21350	2560.0	1	49	12.0	11.6	0.522	0.577	
							50	24	12.0	11.6	0.517	0.571	
				Edge 1	21350	2560.0	1	49	12.0	11.6	0.348	0.385	
							50	24	12.0	11.6	0.348	0.385	

10.8. LTE Band 12 (10MHz Bandwidth)

RF Exposure Conditions	Mode	PWR Back-off	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	
Standalone	QPSK	Off	19	Rear	23095	707.5	1	49	25.0	24.2	0.247	0.298	
							25	12	24.0	22.8	0.186	0.243	
			15	Edge 1	23095	707.5	1	49	25.0	24.2	0.187	0.226	
							25	12	24.0	22.8	0.148	0.194	
			5	Edge 2	23095	707.5	1	49	25.0	24.2	0.154	0.186	
							25	12	24.0	22.8	0.116	0.152	
			10	Corner A	23095	707.5	1	49	25.0	24.2	0.041	0.050	
							25	12	24.0	22.8	0.033	0.043	
	QPSK	On	0	Rear	23095	707.5	1	25	17.0	16.4	0.335	0.384	
							25	12	17.0	16.1	0.338	0.416	
				Edge 1	23095	707.5	1	25	17.0	16.4	0.241	0.276	
							25	12	17.0	16.1	0.236	0.291	
				Edge 2	23095	707.5	1	25	17.0	16.4	0.141	0.162	
							25	12	17.0	16.1	0.144	0.177	
				Corner A	23095	707.5	1	25	17.0	16.4	0.086	0.098	
							25	12	17.0	16.1	0.081	0.100	

10.9. LTE Band 66 (20MHz Bandwidth)

RF Exposure Conditions	Mode	PWR Back-off	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				
Standalone	QPSK	Off	19	Rear	132572	1770.0	1	99	25.0	24.0	0.567	0.711				
							50	50	24.0	23.2	0.483	0.586				
			15	Edge 1	132572	1770.0	1	99	25.0	23.5	0.648	0.909				
							132322	1745.0	1	99	25.0	23.8	0.675	0.892		
							1	99	25.0	24.0	0.707	0.887				
							50	50	24.0	23.2	0.585	0.709				
			5	Edge 2	132572	1770.0	1	99	25.0	24.0	0.495	0.621				
							50	50	24.0	23.2	0.423	0.513				
			10	Corner A	132572	1770.0	1	99	25.0	24.0	0.517	0.648				
							50	50	24.0	23.2	0.444	0.538				
			QPSK	On	0	0	Rear	132072	1720.0	1	49	14.0	12.4	0.590	0.850	
										50	24	14.0	12.1	0.529	0.822	
	1	49								14.0	12.7	0.631	0.858			
	50	24								14.0	12.6	0.626	0.858			
	1	49								14.0	13.0	0.755	0.951			
	50	24								14.0	12.8	0.740	0.964	8		
	Edge 1	132572					1770.0	1	49	14.0	13.0	0.434	0.546			
								50	24	14.0	12.8	0.420	0.547			
	Edge 2	132572					1770.0	1	49	14.0	13.0	0.121	0.152			
								50	24	14.0	12.8	0.120	0.156			
	Corner A	132572					1770.0	1	49	14.0	13.0	0.207	0.261			
								50	24	14.0	12.8	0.200	0.261			

10.10. LTE Band 71 (20MHz Bandwidth)

RF Exposure Conditions	Mode	PWR Back-off	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	
Standalone	QPSK	Off	19	Rear	133297	680.5	1	49	25.0	24.3	0.223	0.261	9
							50	0	24.0	23.2	0.183	0.221	
			15	Edge 1	133297	680.5	1	49	25.0	24.3	0.145	0.170	
							50	0	24.0	23.2	0.125	0.151	
			5	Edge 2	133297	680.5	1	49	25.0	24.3	0.121	0.142	
							50	0	24.0	23.2	0.098	0.119	
			10	Corner A	133297	680.5	1	49	25.0	24.3	0.036	0.042	
							50	0	24.0	23.2	0.029	0.035	
	QPSK	On	0	Rear	133297	680.5	1	49	15.0	14.2	0.164	0.197	
							50	24	15.0	14.0	0.157	0.198	
				Edge 1	133297	680.5	1	49	15.0	14.2	0.130	0.156	
							50	24	15.0	14.0	0.117	0.148	
				Edge 2	133297	680.5	1	49	15.0	14.2	0.063	0.075	
							50	24	15.0	14.0	0.065	0.082	
				Corner A	133297	680.5	1	49	15.0	14.2	0.041	0.049	
							50	24	15.0	14.0	0.041	0.051	

10.11. Wi-Fi (DTS Band)

Frequency Band	Mode	RF Exposure Conditions	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Duty Cycle (%)	Power (dBm)		1-g SAR (W/kg)		Note	Plot No.	
										Tune-up limit	Meas.	Meas.	Scaled			
2.4GHz	802.11b 1 Mbps	Standalone		11	Rear	6	2437.0	0.720	99.7%	21.0	20.9	0.602	0.624	2		
					Edge 1	6	2437.0	0.207	99.7%	21.0	20.9	0.182	0.189	4		
					Edge 4	1	2412.0	0.904	99.7%	21.0	20.6	0.802	0.882	3		
						6	2437.0	0.936	99.7%	21.0	20.9	0.852	0.883		11	
					Corner B	6	2437.0	0.192	99.7%	21.0	20.9					
					On	Rear	1	2412.0	0.789	99.7%	14.0	13.2	0.672	0.805	3	
							6	2437.0	0.900	99.7%	14.0	13.8	0.832	0.866		
						Edge 1	6	2437.0	0.147	99.7%	14.0	13.8	0.123	0.128	4	
						Edge 4	6	2437.0	0.503	99.7%	14.0	13.8	0.491	0.511	2	
						Corner B	6	2437.0	0.126	99.7%	14.0	13.8				

Note(s):

1. When the Highest reported SAR is ≤ 0.4 or 1.0 W/kg (1-g or 10-g respectively). Therefore, further SAR measurements within this exposure condition are not required.
2. Highest reported SAR is > 0.4 or 1.0 W/kg (1-g or 10-g respectively). Due to the highest reported SAR for this test position, other test positions in this exposure condition were evaluated until a SAR ≤ 0.8 or 2.0 W/kg (1-g or 10-g respectively) was reported.
3. Testing for a second channel was required because the reported SAR for this test position was > 0.8 or 2.0 W/kg (1-g or 10-g respectively).
4. Additional testing required in order satisfying FCC simultaneous transmission limit criteria.
5. SAR testing is not required for OFDM mode(s) when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

10.12. Wi-Fi (U-NII Bands)

Frequency Band	Mode	RF Exposure Conditions	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Duty Cycle (%)	Power (dBm)		1-g SAR (W/kg)		Note	Plot No.
										Tune-up limit	Meas.	Meas.	Scaled		
5.3 GHz UNII 2A	802.11a 6 Mbps	Standalone	Off	11	Rear	64	5320.0	0.954	98.2%	17.0	16.4	0.448	0.520	2	
					Edge 1	56	5280.0	1.630	98.2%	17.0	16.4	0.807	0.939		12
						64	5320.0	1.535	98.2%	17.0	16.4	0.740	0.859	3	
					Edge 4	64	5320.0	0.681	98.2%	17.0	16.4				
	802.11n 13.5Mbps (HT40)		On	0	Rear	54	5270.0	0.973	96.1%	10.0	9.5	0.536	0.624		
					Edge 1	54	5270.0	0.666	96.1%	10.0	9.5	0.445	0.518	2	
					Edge 4	54	5270.0	0.320	96.1%	10.0	9.5				
					Corner B	54	5270.0	0.491	96.1%	10.0	9.5				

Frequency Band	Mode	RF Exposure Conditions	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Duty Cycle (%)	Power (dBm)		1-g SAR (W/kg)		Note	Plot No.
										Tune-up limit	Meas.	Meas.	Scaled		
5.5 GHz UNII 2C	802.11a 6 Mbps	Standalone	Off	11	Rear	140	5700.0	0.501	98.2%	15.0	14.6				
					Edge 1	140	5700.0	0.559	98.2%	15.0	14.6				
						6	5700.0	0.575	98.2%	15.0	14.6	0.252	0.280	1	
					Corner B	140	5700.0	0.392	98.2%	15.0	14.6				
	802.11n 13.5Mbps (HT40)		On	0	Rear	102	5510.0	1.489	96.1%	10.0	9.4	0.733	0.886		
					Edge 1	118	5590.0	2.015	96.1%	10.0	9.2	0.741	0.938	3	13
					Edge 4	102	5510.0	0.593	96.1%	10.0	9.4	0.348	0.420	2	
					Corner B	102	5510.0	0.590	96.1%	10.0	9.4				

Frequency Band	Mode	RF Exposure Conditions	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Duty Cycle (%)	Power (dBm)		1-g SAR (W/kg)		Note	Plot No.
										Tune-up limit	Meas.	Meas.	Scaled		
5.8 GHz UNII 3	802.11a 6 Mbps	Standalone	Off	11	Rear	157	5785.0	0.884	98.2%	17.0	16.9				
					Edge 1	157	5785.0	0.734	98.2%	17.0	16.9				
						6	5785.0	1.124	98.2%	17.0	16.9	0.503	0.523		
					Corner B	157	5785.0	0.919	98.2%	17.0	16.9	0.473	0.492	2	
	802.11n 13.5Mbps (HT40)		On	0	Rear	159	5795.0	1.207	96.1%	10.0	9.5	0.624	0.737		14
					Edge 1	159	5795.0	0.524	96.1%	10.0	9.5				
					Edge 4	159	5795.0	0.470	96.1%	10.0	9.5				
					Corner B	159	5795.0	0.811	96.1%	10.0	9.5	0.350	0.413	2	

Note(s):

- Highest reported SAR is ≤ 0.4 or 1.0 W/kg (1-g or 10-g respectively). Therefore, further SAR measurements within this exposure condition are not required.
- Highest reported SAR is > 0.4 or 1.0 W/kg (1-g or 10-g respectively). Due to the highest reported SAR for this test position, other test positions in this exposure condition were evaluated until a SAR ≤ 0.8 or 2.0 W/kg (1-g or 10-g respectively) was reported.
- Testing for a second channel was required because the reported SAR for this test position was > 0.8 or 2.0 W/kg (1-g or 10-g respectively).
- Additional testing required in order satisfying FCC simultaneous transmission limit criteria.

10.13. Bluetooth

Frequency Band	Mode	RF Exposure Conditions	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle (%)	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up limit	Meas.	Meas.	Scaled	
2.4GHz	GFSK	Standalone	N/A	0	Rear	39	2441.0	76.9%	10.0	9.1	0.206	0.333	15
					Edge 1	39	2441.0	76.9%	10.0	9.1	0.029	0.047	
					Edge 4	39	2441.0	76.9%	10.0	9.1	0.125	0.202	

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 .

Peak spatial-average (1g of tissue)

Frequency Band (MHz)	Air Interface	RF Exposure Conditions	Test Position	Repeated SAR (Yes/No)	Highest Measured SAR (W/kg)	Repeated Measured SAR (W/kg)	Largest to Smallest SAR Ratio
750	LTE Band 12	Standalone	Rear	No	0.338	N/A	N/A
	LTE Band 71	Standalone	Rear	No	0.223	N/A	N/A
835	W-CDMA Band V	Standalone	Rear	No	0.637	N/A	N/A
	LTE Band 5	Standalone	Rear	No	0.455	N/A	N/A
1750	W-CDMA Band IV	Standalone	Rear	No	0.734	N/A	N/A
	LTE Band 66	Standalone	Rear	No	0.755	N/A	N/A
1900	W-CDMA Band II	Standalone	Edge 1	No	0.777	N/A	N/A
	LTE Band 2	Standalone	Edge 1	No	0.673	N/A	N/A
2450	Wi-Fi 802.11b/g/n	Standalone	Edge 4	Yes	0.852	0.845	1.01
	Bluetooth	Standalone	Rear	No	0.206	N/A	N/A
2600	LTE Band 7	Standalone	Edge 1	No	0.632	N/A	N/A
5300	Wi-Fi 802.11a/n	Standalone	Edge 1	Yes	0.807	0.835	1.03
5500	Wi-Fi 802.11a/n	Standalone	Rear	No	0.741	N/A	N/A
5800	Wi-Fi 802.11a/n	Standalone	Rear	No	0.624	N/A	N/A

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 not > 1.20 .

12. Simultaneous Transmission SAR Analysis

KDB 447498 D01 General RF Exposure Guidance introduces a new formula for calculating the SAR to Peak Location Ratio (SPLSR) between pairs of simultaneously transmitting antennas:

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

Where:

SAR₁ is the highest measured 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 measured 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

Ri 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:

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

Simultaneous Transmission Condition

RF Exposure Condition	Item	Capable Transmit Configurations		
	1	W-CDMA	+	DTS
	2	W-CDMA	+	U-NII
	3	W-CDMA	+	BT
	4	LTE	+	DTS
	5	LTE	+	U-NII
	6	LTE	+	BT

Notes:

1. DTS and UNII supports Hotspot.
2. DTS and UNII supports Wi-Fi Direct.
3. W-CDMA and LTE supports Hotspot and VoIP.
4. DTS Radio cannot transmit simultaneously with Bluetooth Radio.
5. U-NII Radio cannot transmit simultaneously with Bluetooth Radio.
6. U-NII Radio cannot transmit simultaneously with DTS Radio.

Estimated SAR for Simultaneous Transmission SAR Analysis

Considerations for SAR estimation

1. When standalone SAR test exclusion applies, standalone SAR must also be estimated to determine simultaneous transmission SAR test exclusion.
2. Dedicated Host Approach criteria for SAR test exclusion is likewise applied to SAR estimation, with certain distinctions between test exclusion and SAR estimation:
 - o When the separation distance from the antenna to an adjacent edge is ≤ 5 mm, a distance of 5 mm is applied for SAR estimation; this is the same between test exclusion and SAR estimation calculations.
 - o When the separation distance from the antenna to an adjacent edge is > 5 mm but ≤ 50 mm, the actual antenna-to-edge separation distance is applied for SAR estimation.
 - o When the minimum test separation distance is > 50 mm, the estimated SAR value is 0.4 W/kg
3. Please refer to Estimated SAR Tables to see which test positions are inherently compliant as they consist of only estimated SAR values for all applicable transmitters and consequently will always have sum of SAR values < 1.2 W/kg. Simultaneous transmission SAR analysis was therefore not performed for these test positions.

Estimated SAR for WWAN

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, Proximity Sensor Off																
Cellular	W-CDMA Band II	1907.6	24.50	282	0	2	2	185	82			-MEASURE-	-MEASURE-	-MEASURE-	0.400	0.400
Cellular	W-CDMA Band IV	1752.6	25.00	316	0	2	2	185	82			-MEASURE-	-MEASURE-	-MEASURE-	0.400	0.400
Cellular	W-CDMA Band V	846.6	25.00	316	0	2	2	185	82			-MEASURE-	-MEASURE-	-MEASURE-	0.400	0.400
Cellular	LTE Band 2	1900	24.50	282	0	2	2	185	82			-MEASURE-	-MEASURE-	-MEASURE-	0.400	0.400
Cellular	LTE Band 5	844	25.20	331	0	2	2	185	82			-MEASURE-	-MEASURE-	-MEASURE-	0.400	0.400
Cellular	LTE Band 7	2560	23.00	200	0	2	48	185	59			-MEASURE-	-MEASURE-	-MEASURE-	0.400	-MEASURE-
Cellular	LTE Band 12	711	25.00	316	0	2	2	185	82			-MEASURE-	-MEASURE-	-MEASURE-	0.400	0.400
Cellular	LTE Band 66	1770	25.00	316	0	2	2	185	82			-MEASURE-	-MEASURE-	-MEASURE-	0.400	0.400
Cellular	LTE Band 71	688	25.00	316	0	2	2	185	82			-MEASURE-	-MEASURE-	-MEASURE-	0.400	0.400
Power Back-off, Proximity Sensor On																
Cellular	W-CDMA Band II	1907.6	11.00	13	0	2	2					-MEASURE-	-MEASURE-	-MEASURE-		
Cellular	W-CDMA Band IV	1752.6	14.00	25	0	2	2					-MEASURE-	-MEASURE-	-MEASURE-		
Cellular	W-CDMA Band V	846.6	19.00	79	0	2	2					-MEASURE-	-MEASURE-	-MEASURE-		
Cellular	LTE Band 2	1900	12.00	16	0	2	2					-MEASURE-	-MEASURE-	-MEASURE-		
Cellular	LTE Band 5	844	16.00	40	0	2	2					-MEASURE-	-MEASURE-	-MEASURE-		
Cellular	LTE Band 7	2560	12.00	16	0	2						-MEASURE-	-MEASURE-	-MEASURE-		
Cellular	LTE Band 12	711	17.00	50	0	2	2					-MEASURE-	-MEASURE-	-MEASURE-		
Cellular	LTE Band 66	1770	14.00	25	0	2	2					-MEASURE-	-MEASURE-	-MEASURE-		
Cellular	LTE Band 71	688	18.00	63	0	2	2					-MEASURE-	-MEASURE-	-MEASURE-		

Estimated SAR for WLAN

Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)						Estimated 1-g SAR Value (W/kg)						
		dBm	mW	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front	
Full Power, Proximity Sensor Off																
Wi-Fi 2.4 GHz	2462	21.00	126	0	2	87	185	2				-MEASURE-	-MEASURE-	0.400	0.400	-MEASURE-
Wi-Fi 5.3 GHz	5320	17.00	50	0	2	87	185	2				-MEASURE-	-MEASURE-	0.400	0.400	-MEASURE-
Wi-Fi 5.5 GHz	5700	15.00	32	0	2	87	185	2				-MEASURE-	-MEASURE-	0.400	0.400	-MEASURE-
Wi-Fi 5.8 GHz	5825	17.00	50	0	2	87	185	2				-MEASURE-	-MEASURE-	0.400	0.400	-MEASURE-
Bluetooth	2480	10.00	10	0	2	87	185	2				-MEASURE-	-MEASURE-	0.400	0.400	-MEASURE-
Power Back-off, Proximity Sensor On																
Wi-Fi 2.4 GHz	2462	14	25	0	2			2				-MEASURE-	-MEASURE-			-MEASURE-
Wi-Fi 5.3 GHz	5320	10	10	0	2			2				-MEASURE-	-MEASURE-			-MEASURE-
Wi-Fi 5.5 GHz	5700	10	10	0	2			2				-MEASURE-	-MEASURE-			-MEASURE-
Wi-Fi 5.8 GHz	5825	10	10	0	2			2				-MEASURE-	-MEASURE-			-MEASURE-

12.1. Sum of the SAR for W-CDMA Band II & Wi-Fi & BT

Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)		
	WWAN ①	DTS ②	U-NII ③	BT ④	WWAN + DTS ① + ②	WWAN + U-NII ① + ③	WWAN + BT ① + ④
Rear	0.764	0.866	0.938	0.333	1.630	1.702	1.097
Edge 1	1.056	0.189	0.939	0.047	1.245	1.995	1.103
Edge 2	0.734	0.400	0.400	0.400	1.134	1.134	1.134
Edge 3	0.400	0.400	0.400	0.400	0.800	0.800	0.800
Edge 4	0.400	0.883	0.523	0.202	1.283	0.923	0.602
Corner A	0.868	0.400	0.400	0.400	1.268	1.268	1.268
Corner B	0.400	0.883	0.492		1.283	0.892	0.400

SAR to Peak Location Separation Ratio (SPLSR)

Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure
	① WWAN	② DTS	③ U-NII	④ BT					
Rear	0.764	0.866			① + ②	1.630	0.02	No	1
	0.764		0.938		① + ③	1.702	0.02	No	2
Edge 1	1.056		0.939		① + ③	1.995	0.04	No	3

12.2. Sum of the SAR for W-CDMA Band IV & Wi-Fi & BT

Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)		
	WWAN ①	DTS ②	U-NII ③	BT ④	WWAN + DTS ① + ②	WWAN + U-NII ① + ③	WWAN + BT ① + ④
Rear	0.959	0.866	0.938	0.333	1.825	1.897	1.292
Edge 1	0.976	0.189	0.939	0.047	1.165	1.915	1.023
Edge 2	0.721	0.400	0.400	0.400	1.121	1.121	1.121
Edge 3	0.400	0.400	0.400	0.400	0.800	0.800	0.800
Edge 4	0.400	0.883	0.523	0.202	1.283	0.923	0.602
Corner A	0.656	0.400	0.400	0.400	1.056	1.056	1.056
Corner B	0.400	0.883	0.492		1.283	0.892	0.400

SAR to Peak Location Separation Ratio (SPLSR)

Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure
	① WWAN	② DTS	③ U-NII	④ BT					
Rear	0.959	0.866			① + ②	1.825	0.03	No	4
	0.959		0.938		① + ③	1.897	0.03	No	5
Edge 1	0.976		0.939		① + ③	1.915	0.03	No	6

12.3. Sum of the SAR for W-CDMA Band V & Wi-Fi & BT

Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)		
	WWAN ①	DTS ②	U-NII ③	BT ④	WWAN + DTS ① + ②	WWAN + U-NII ① + ③	WWAN + BT ① + ④
Rear	0.795	0.866	0.938	0.333	1.661	1.733	1.128
Edge 1	0.445	0.189	0.939	0.047	0.634	1.384	0.492
Edge 2	0.581	0.400	0.400	0.400	0.981	0.981	0.981
Edge 3	0.400	0.400	0.400	0.400	0.800	0.800	0.800
Edge 4	0.400	0.883	0.523	0.202	1.283	0.923	0.602
Corner A	0.197	0.400	0.400	0.400	0.597	0.597	0.597
Corner B	0.400	0.883	0.492		1.283	0.892	0.400

SAR to Peak Location Separation Ratio (SPLSR)

Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure	
	① WWAN	② DTS	③ U-NII	④ BT						
Rear	0.795	0.866			① + ②	1.661	87.2	0.02	No	7
	0.795		0.938		① + ③	1.733	85.8	0.03	No	8

12.4. Sum of the SAR for LTE Band 2 & Wi-Fi & BT

Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)		
	WWAN ①	DTS ②	U-NII ③	BT ④	WWAN + DTS ① + ②	WWAN + U-NII ① + ③	WWAN + BT ① + ④
Rear	0.610	0.866	0.938	0.333	1.476	1.548	0.943
Edge 1	0.734	0.189	0.939	0.047	0.923	1.673	0.781
Edge 2	0.682	0.400	0.400	0.400	1.082	1.082	1.082
Edge 3	0.400	0.400	0.400	0.400	0.800	0.800	0.800
Edge 4	0.400	0.883	0.523	0.202	1.283	0.923	0.602
Corner A	0.584	0.400	0.400	0.400	0.984	0.984	0.984
Corner B	0.400	0.883	0.492		1.283	0.892	0.400

SAR to Peak Location Separation Ratio (SPLSR)

Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure	
	① WWAN	② DTS	③ U-NII	④ BT						
Edge 1	0.734		0.939		① + ③	1.673	84.5	0.03	No	9

12.5. Sum of the SAR for LTE Band 5 & Wi-Fi & BT

Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)		
	WWAN ①	DTS ②	U-NII ③	BT ④	WWAN + DTS ① + ②	WWAN + U-NII ① + ③	WWAN + BT ① + ④
Rear	0.547	0.866	0.938	0.333	1.413	1.485	0.880
Edge 1	0.447	0.189	0.939	0.047	0.636	1.386	0.494
Edge 2	0.515	0.400	0.400	0.400	0.915	0.915	0.915
Edge 3	0.400	0.400	0.400	0.400	0.800	0.800	0.800
Edge 4	0.400	0.883	0.523	0.202	1.283	0.923	0.602
Corner A	0.094	0.400	0.400	0.400	0.494	0.494	0.494
Corner B	0.400	0.883	0.492		1.283	0.892	0.400

12.6. Sum of the SAR for LTE Band 7 & Wi-Fi & BT

Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)		
	WWAN ①	DTS ②	U-NII ③	BT ④	WWAN + DTS ① + ②	WWAN + U-NII ① + ③	WWAN + BT ① + ④
Rear	0.577	0.866	0.938	0.333	1.443	1.515	0.910
Edge 1	0.736	0.189	0.939	0.047	0.925	1.675	0.783
Edge 2	0.380	0.400	0.400	0.400	0.780	0.780	0.780
Edge 3	0.400	0.400	0.400	0.400	0.800	0.800	0.800
Edge 4	0.211	0.883	0.523	0.202	1.094	0.734	0.413
Corner A	0.736	0.400	0.400	0.400	1.136	1.136	1.136
Corner B	0.400	0.883	0.492		1.283	0.892	0.400

SAR to Peak Location Separation Ratio (SPLSR)

Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure	
	① WWAN	② DTS	③ U-NII	④ BT						
Edge 1	0.736		0.939		① + ③	1.675	79.7	0.03	No	10

12.7. Sum of the SAR for LTE Band 12 & Wi-Fi & BT

Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)		
	WWAN ①	DTS ②	U-NII ③	BT ④	WWAN + DTS ① + ②	WWAN + U-NII ① + ③	WWAN + BT ① + ④
Rear	0.416	0.866	0.938	0.333	1.282	1.354	0.749
Edge 1	0.291	0.189	0.939	0.047	0.480	1.230	0.338
Edge 2	0.186	0.400	0.400	0.400	0.586	0.586	0.586
Edge 3	0.400	0.400	0.400	0.400	0.800	0.800	0.800
Edge 4	0.400	0.883	0.523	0.202	1.283	0.923	0.602
Corner A	0.100	0.400	0.400	0.400	0.500	0.500	0.500
Corner B	0.400	0.883	0.492		1.283	0.892	0.400

12.8. Sum of the SAR for LTE Band 66 & Wi-Fi & BT

Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)		
	WWAN ①	DTS ②	U-NII ③	BT ④	WWAN + DTS ① + ②	WWAN + U-NII ① + ③	WWAN + BT ① + ④
Rear	0.964	0.866	0.938	0.333	1.830	1.902	1.297
Edge 1	0.909	0.189	0.939	0.047	1.098	1.848	0.956
Edge 2	0.621	0.400	0.400	0.400	1.021	1.021	1.021
Edge 3	0.400	0.400	0.400	0.400	0.800	0.800	0.800
Edge 4	0.400	0.883	0.523	0.202	1.283	0.923	0.602
Corner A	0.648	0.400	0.400	0.400	1.048	1.048	1.048
Corner B	0.400	0.883	0.492		1.283	0.892	0.400

SAR to Peak Location Separation Ratio (SPLSR)

Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure	
	① WWAN	② DTS	③ U-NII	④ BT						
Rear	0.964	0.866			① + ②	1.830	87.2	0.03	No	11
	0.964		0.938		① + ③	1.902	85.6	0.03	No	12
Edge 1	0.909		0.939		① + ③	1.848	78.3	0.03	No	13

12.9. Sum of the SAR for LTE Band 71 & Wi-Fi & BT

Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)		
	WWAN ①	DTS ②	U-NII ③	BT ④	WWAN + DTS ① + ②	WWAN + U-NII ① + ③	WWAN + BT ① + ④
Rear	0.261	0.866	0.938	0.333	1.127	1.199	0.594
Edge 1	0.170	0.189	0.939	0.047	0.359	1.109	0.217
Edge 2	0.142	0.400	0.400	0.400	0.542	0.542	0.542
Edge 3	0.400	0.400	0.400	0.400	0.800	0.800	0.800
Edge 4	0.400	0.883	0.523	0.202	1.283	0.923	0.602
Corner A	0.051	0.400	0.400	0.400	0.451	0.451	0.451
Corner B	0.400	0.883	0.492		1.283	0.892	0.400

Conclusion:

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

Figure (1)

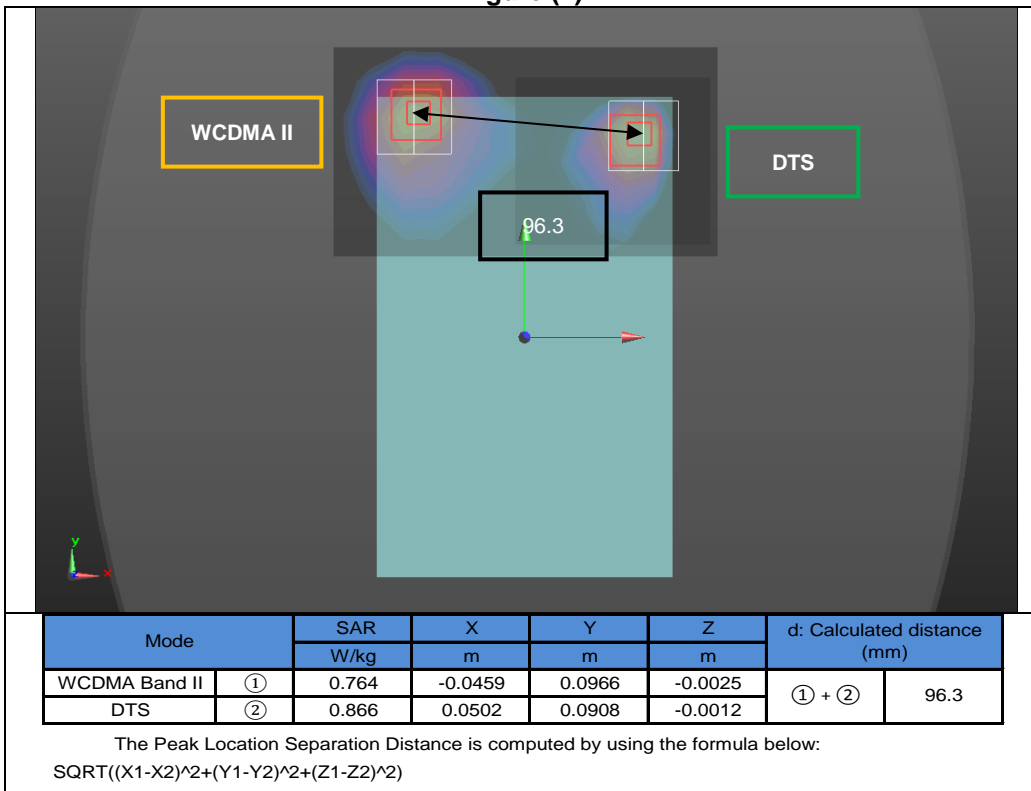


Figure (2)

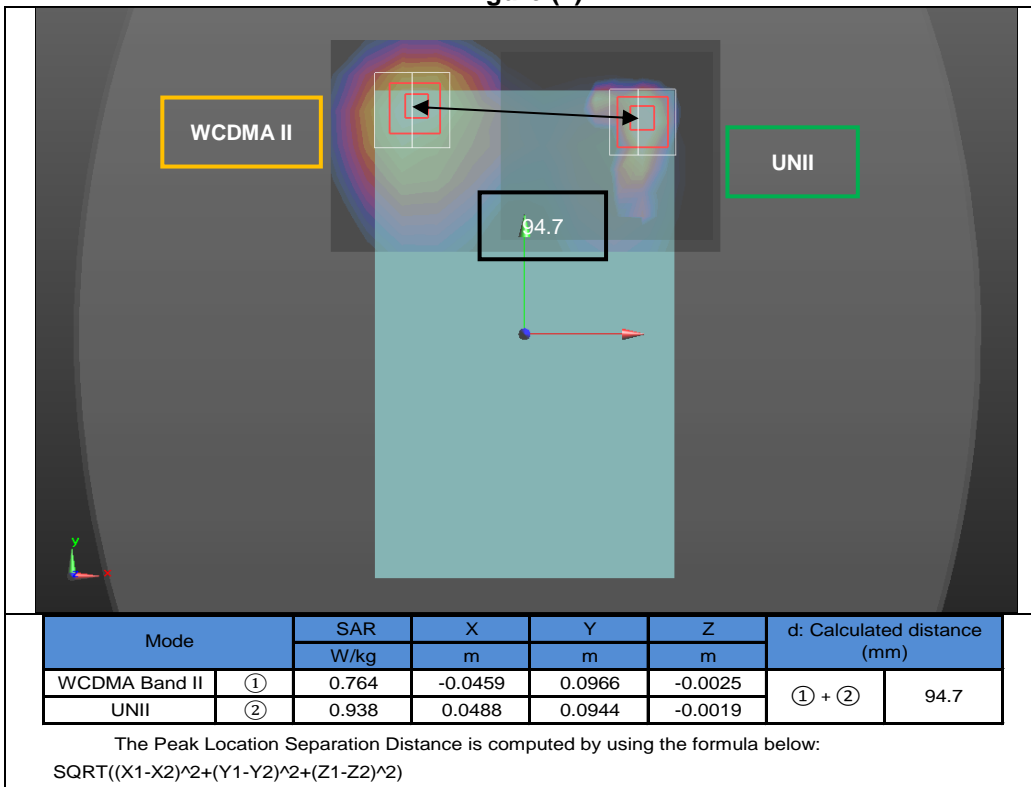


Figure (3)

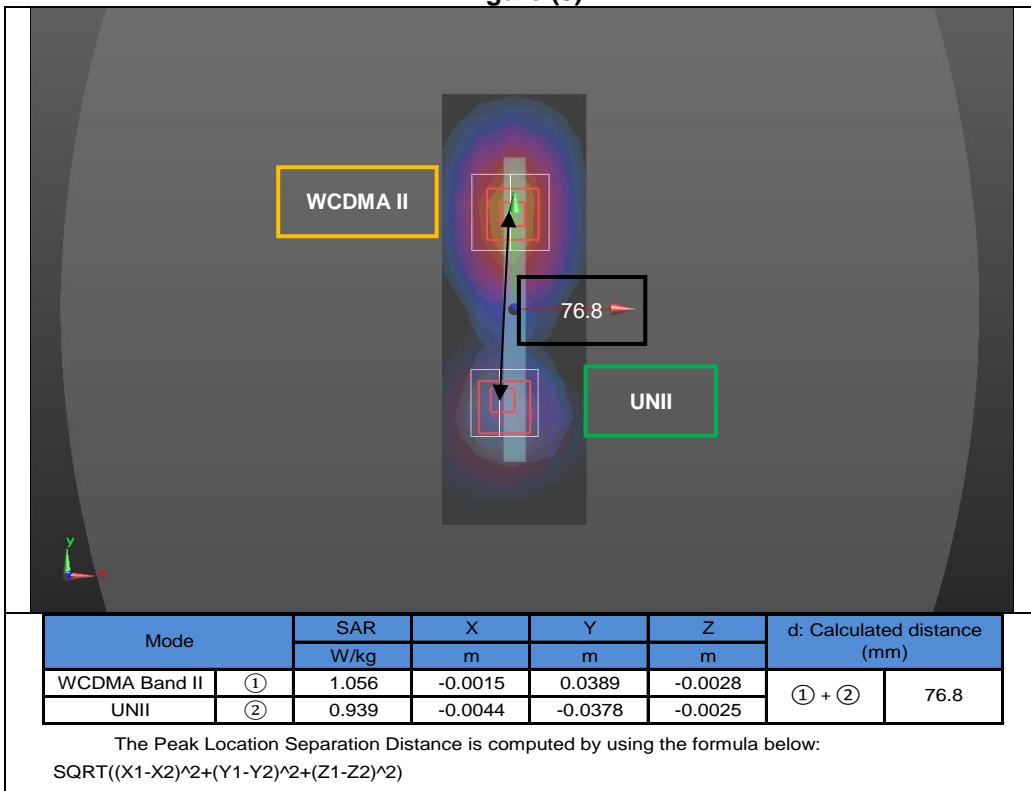


Figure (4)

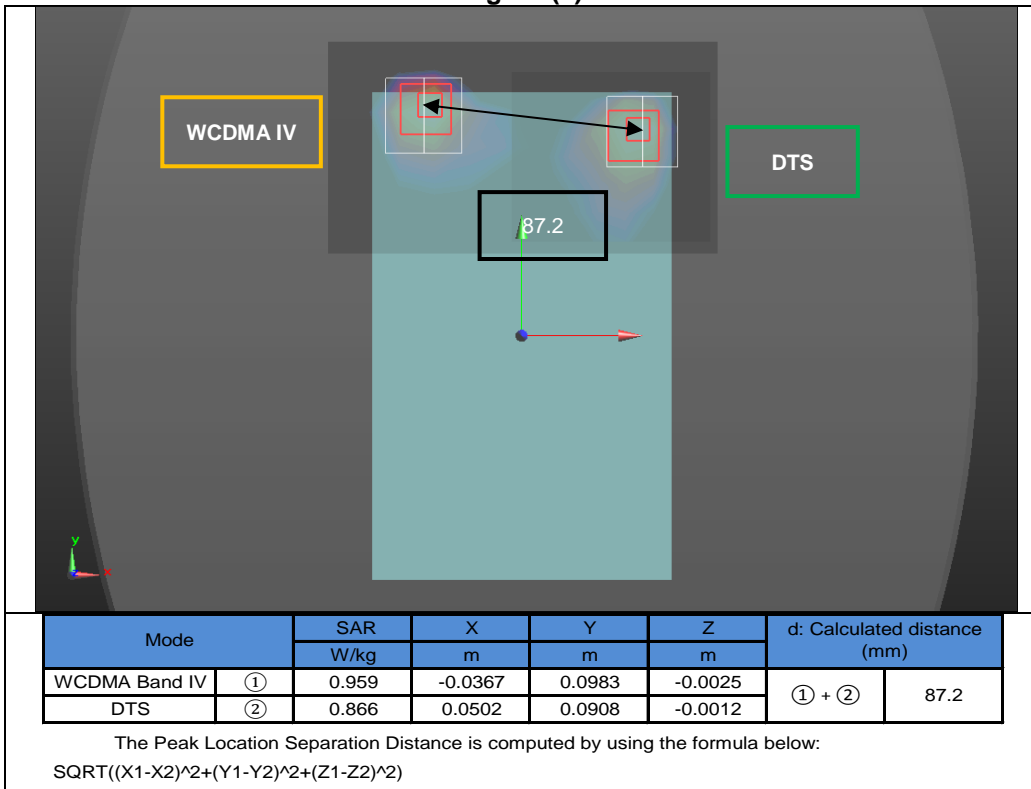


Figure (5)

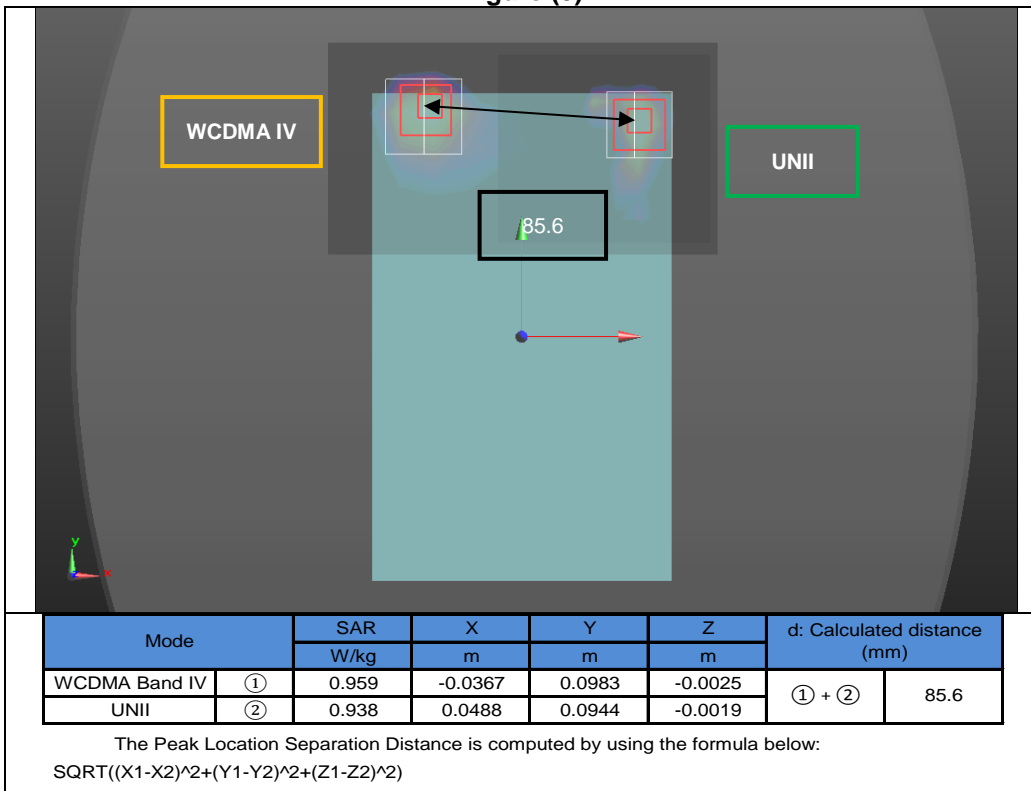


Figure (6)

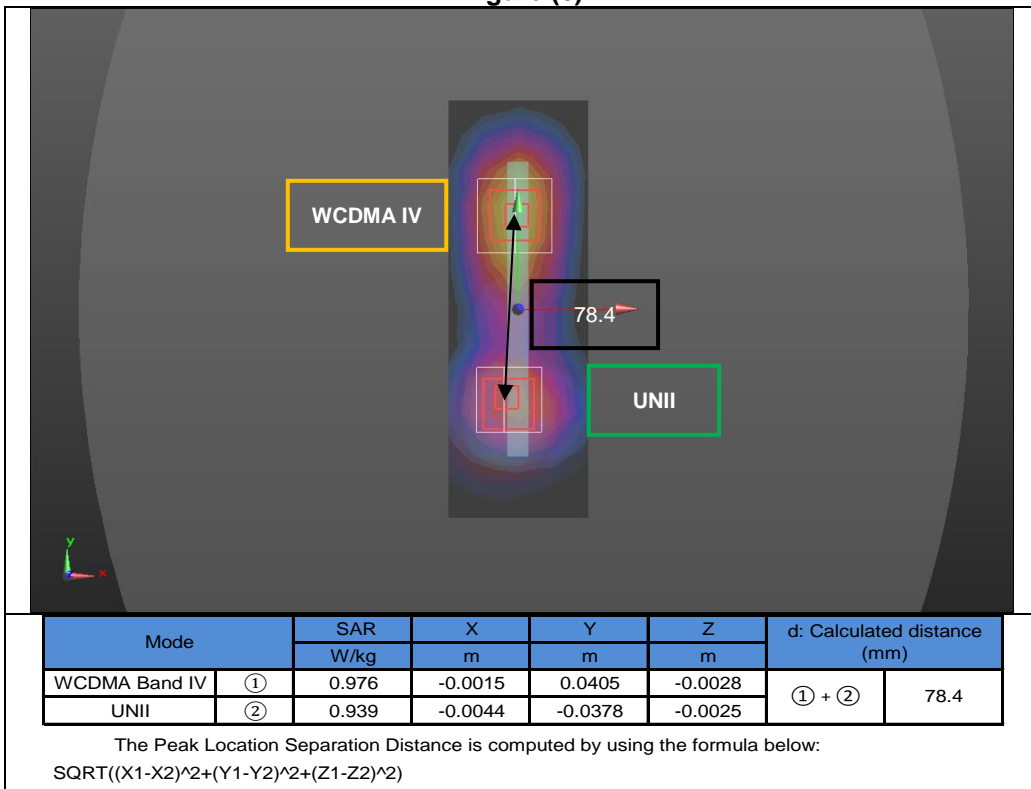


Figure (7)

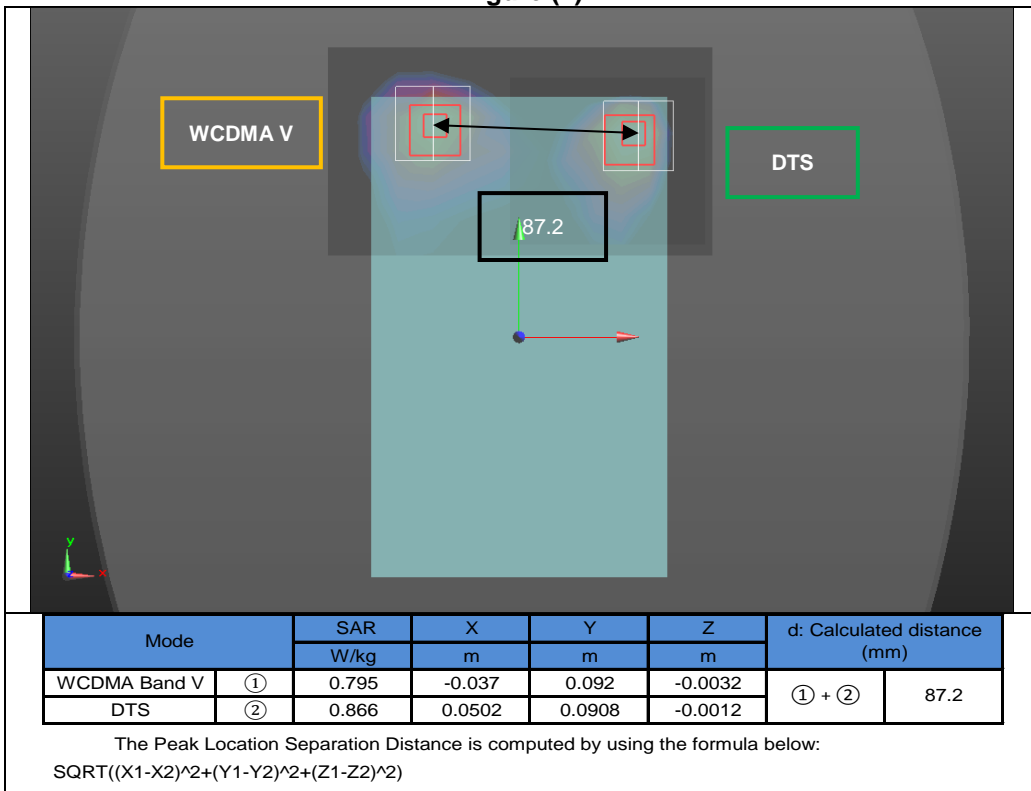


Figure (8)

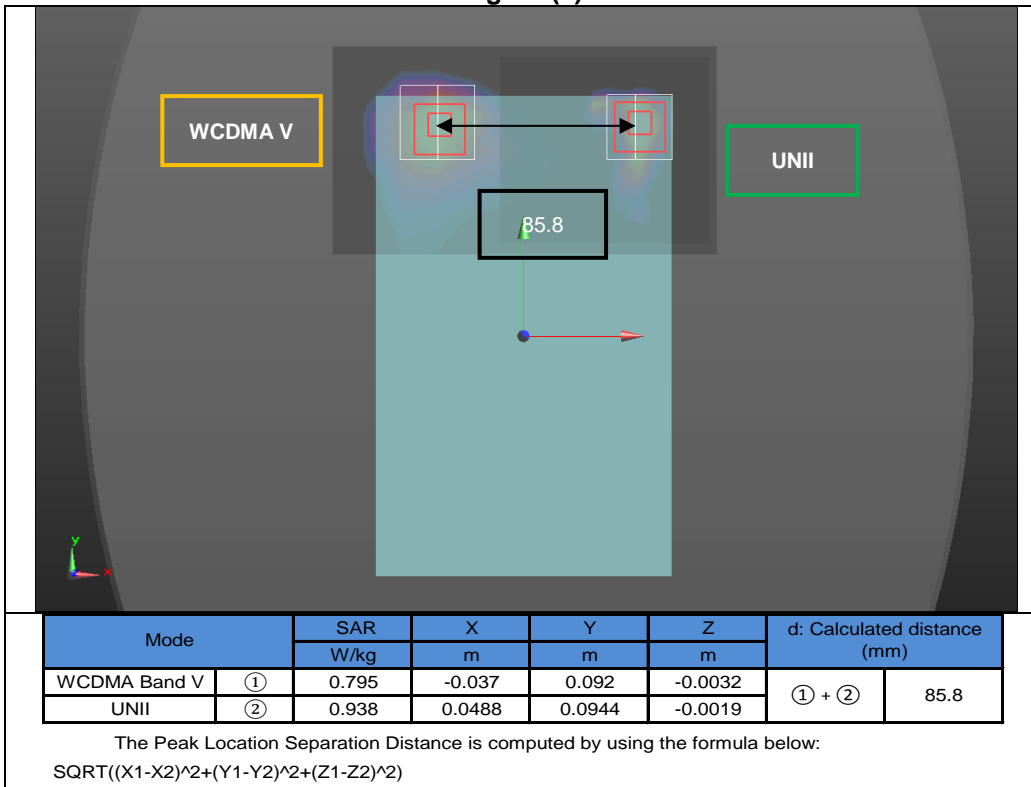


Figure (9)

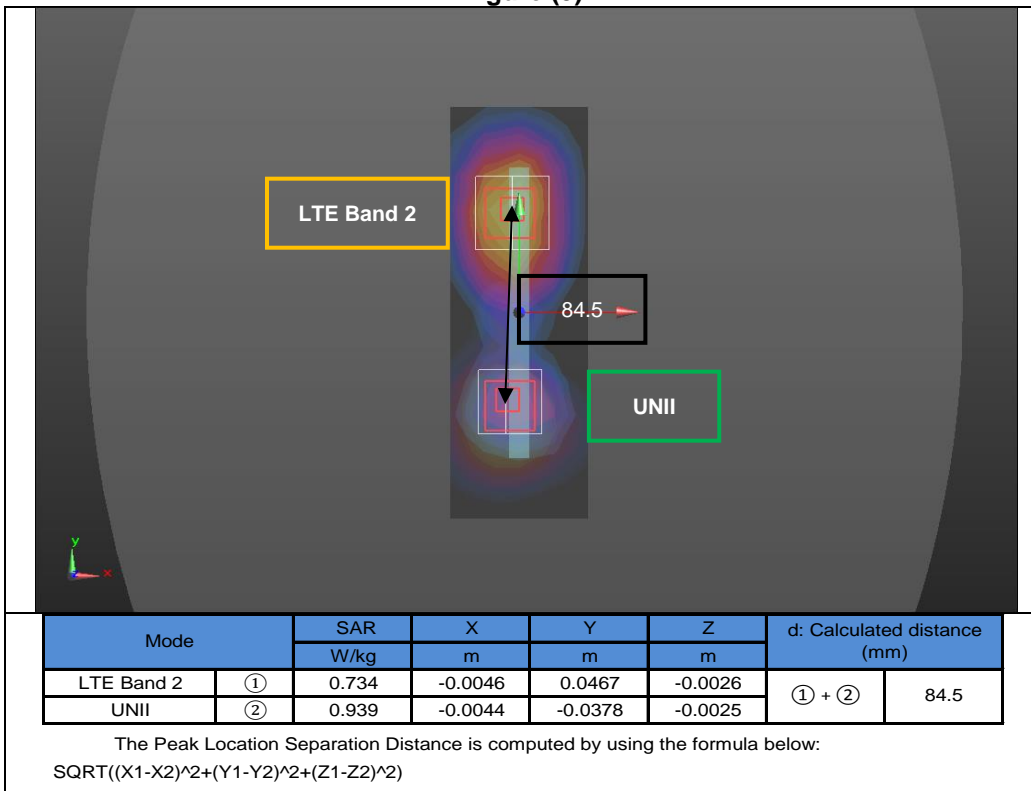


Figure (10)

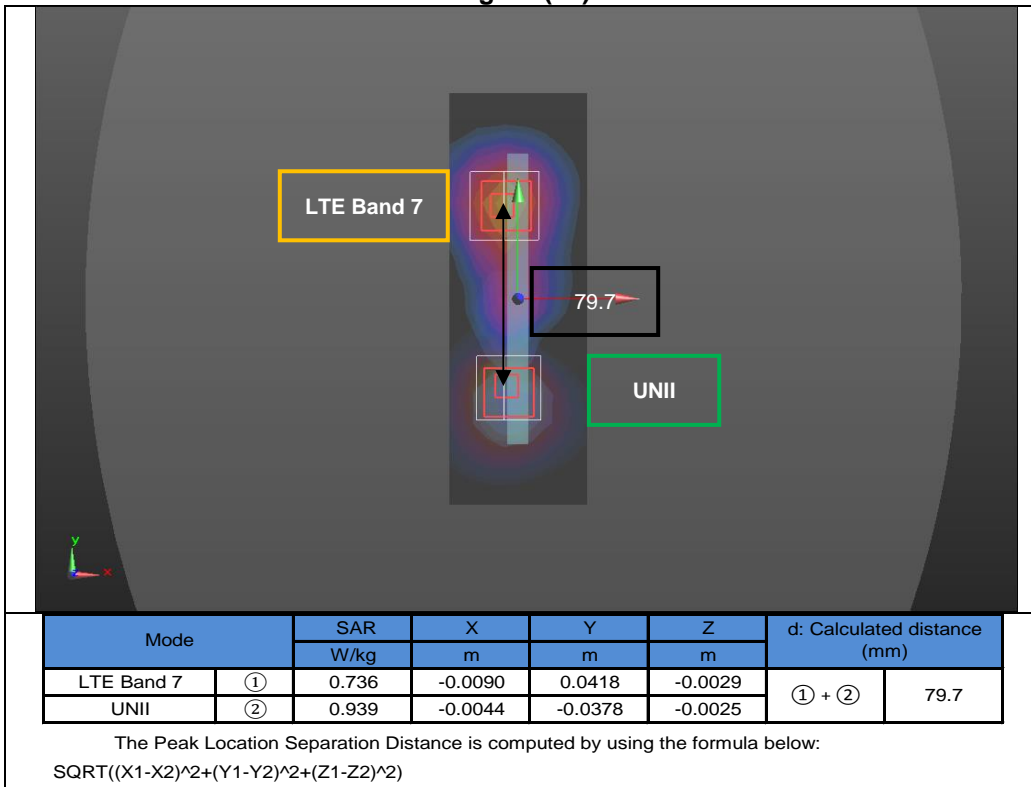


Figure (11)

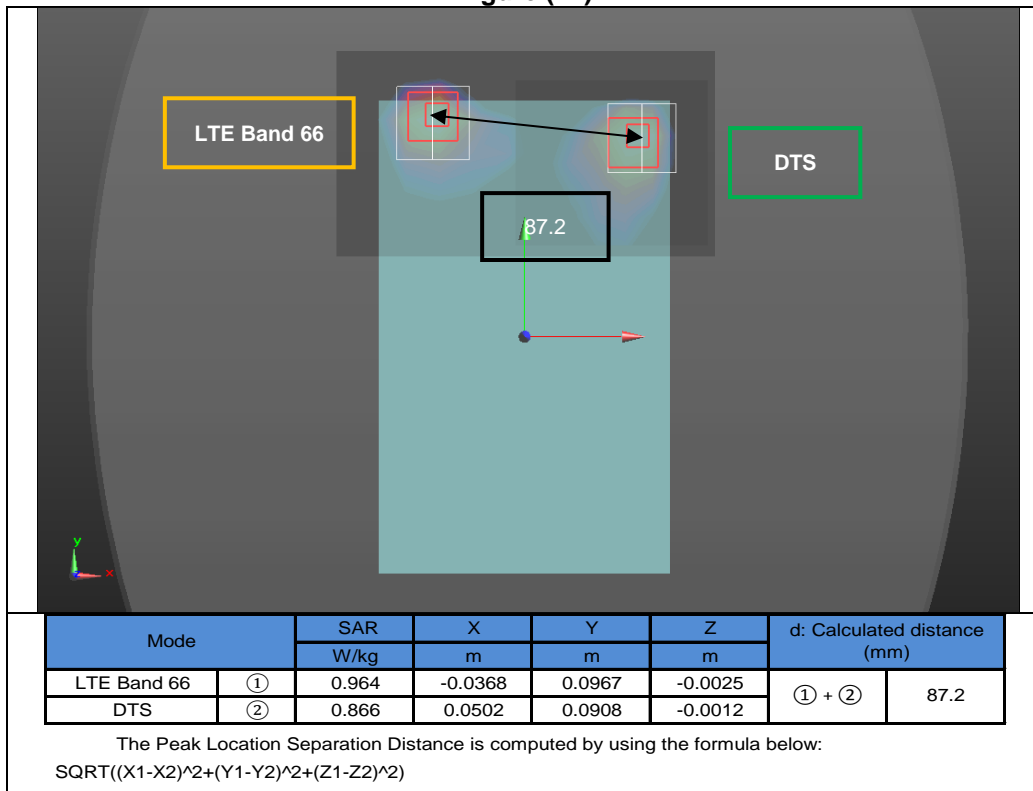


Figure (12)

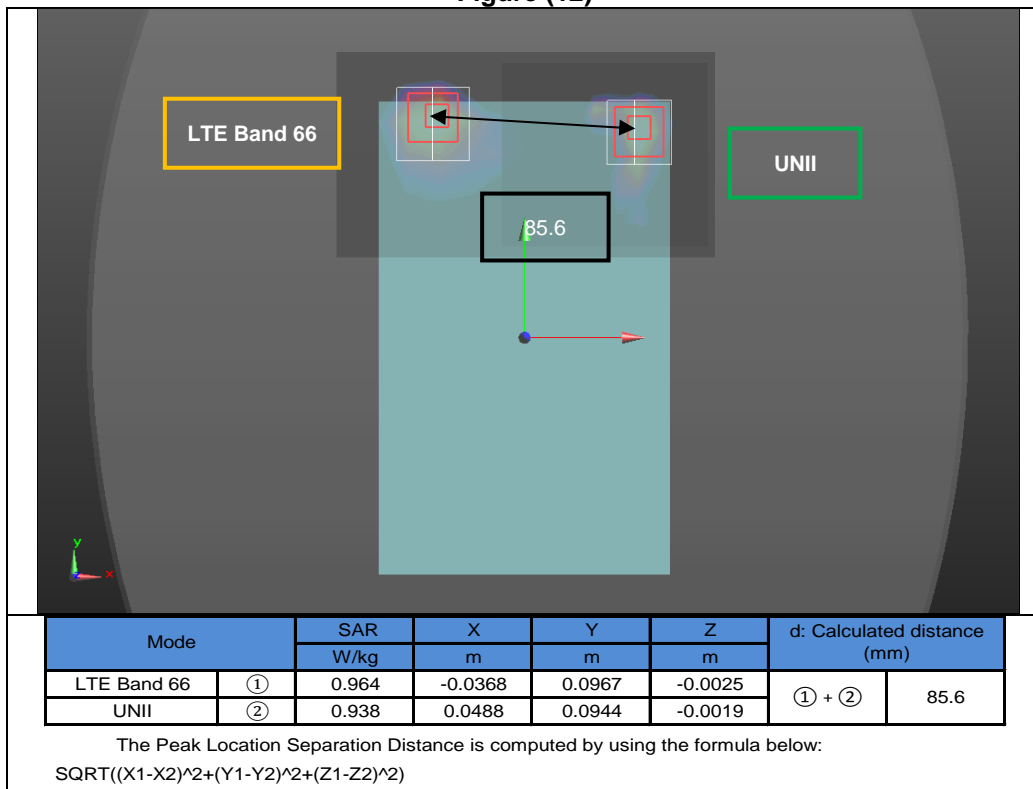
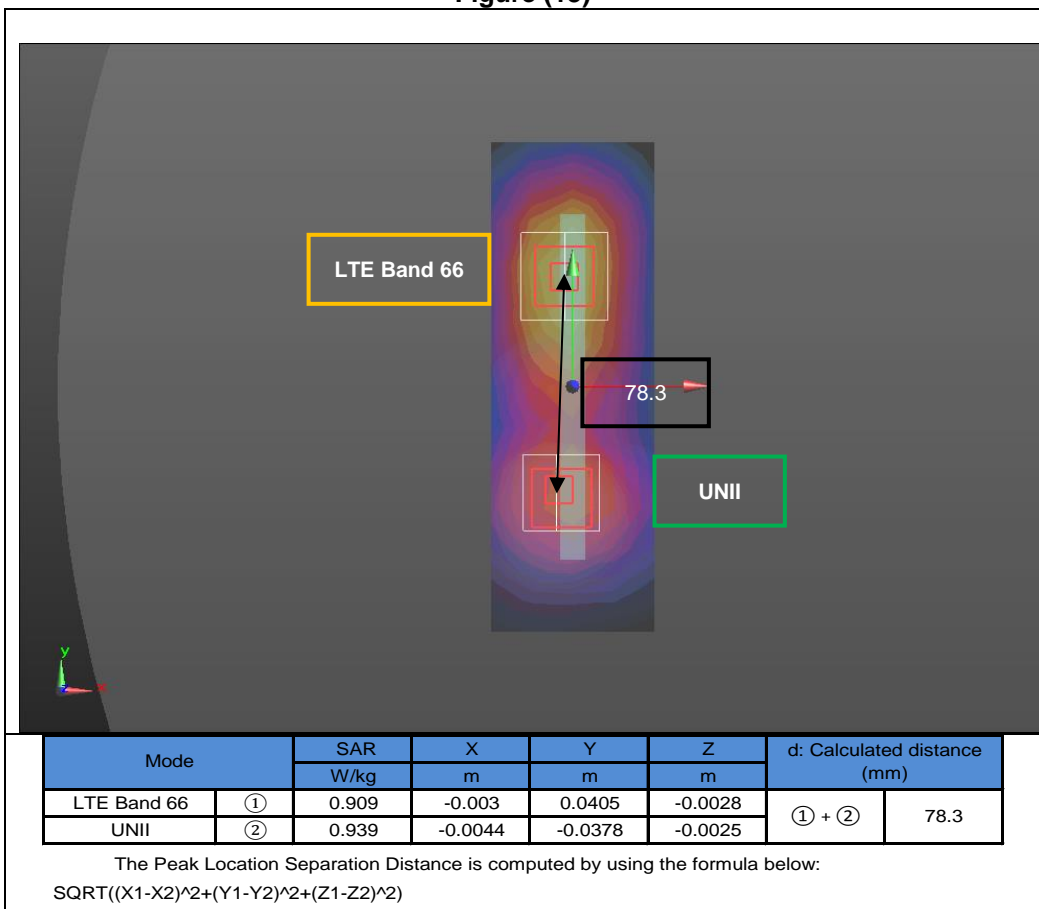


Figure (13)



Appendixes

Refer to separated files for the following appendixes.

4788549592-S1V1 FCC Report SAR_App A_Photos & Ant. Locations

4788549592-S1V1 FCC Report SAR_App B_Highest SAR Test Plots

4788549592-S1V1 FCC Report SAR_App C_System Check Plots

4788549592-S1V1 FCC Report SAR_App D_SAR Tissue Ingredients

4788549592-S1V1 FCC Report SAR_App E_Probe Cal. Certificates

4788549592-S1V1 FCC Report SAR_App F_Dipole Cal. Certificates

END OF REPORT