SAR EVALUATION REPORT

FCC 47 CFR § 2.1093
IEEE Std 1528-2013

For

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

FCC ID: A3LSMT719
Model Name: SM-T719

Report Number: 16K22866-S1V3
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ACCREDITED

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Revision History

Rev.	Date	Revisions	Revised By
V1	3/22/2016	Initial Issue	Sunghoon Kim
V2	3/28/2016	Revised “< 4 mm” to “4 mm” in page 59 and Appendix A. Revised data in Sec10.10.	Sunghoon Kim
V3	3/29/2016	Added “note(s)’s 5.” in Sec 10.9. and 10.10.	Sunghoon Kim

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1. Attestation of Test Results

Applicant Name		SAMSUNG ELECTRONICS CO.,LTD.			
FCC ID		A3LSMT719			
Model Name		SM-T719			
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**	**U-NII**	**DSS(BT)**
Head		0.799	0.061	0.022	N/A
Body		1.084	0.664	0.722	0.432
Simultaneous TX	Head	0.864		0.822	N/A
	Body	1.576		1.413	1.372
Date Tested		2/11/2016 to 3/21/2016			
Test Results		Pass			

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.

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.

Approved & Released By:	Prepared By:
JiHo Choi Operations Manager UL Korea, Ltd Suwon Laboratory	Sunghoon Kim Laboratory Engineer UL Korea, Ltd Suwon Laboratory

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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
- 648474 D04 Handset SAR v01r03
- 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 D06 Hotspot Mode v02r01

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.

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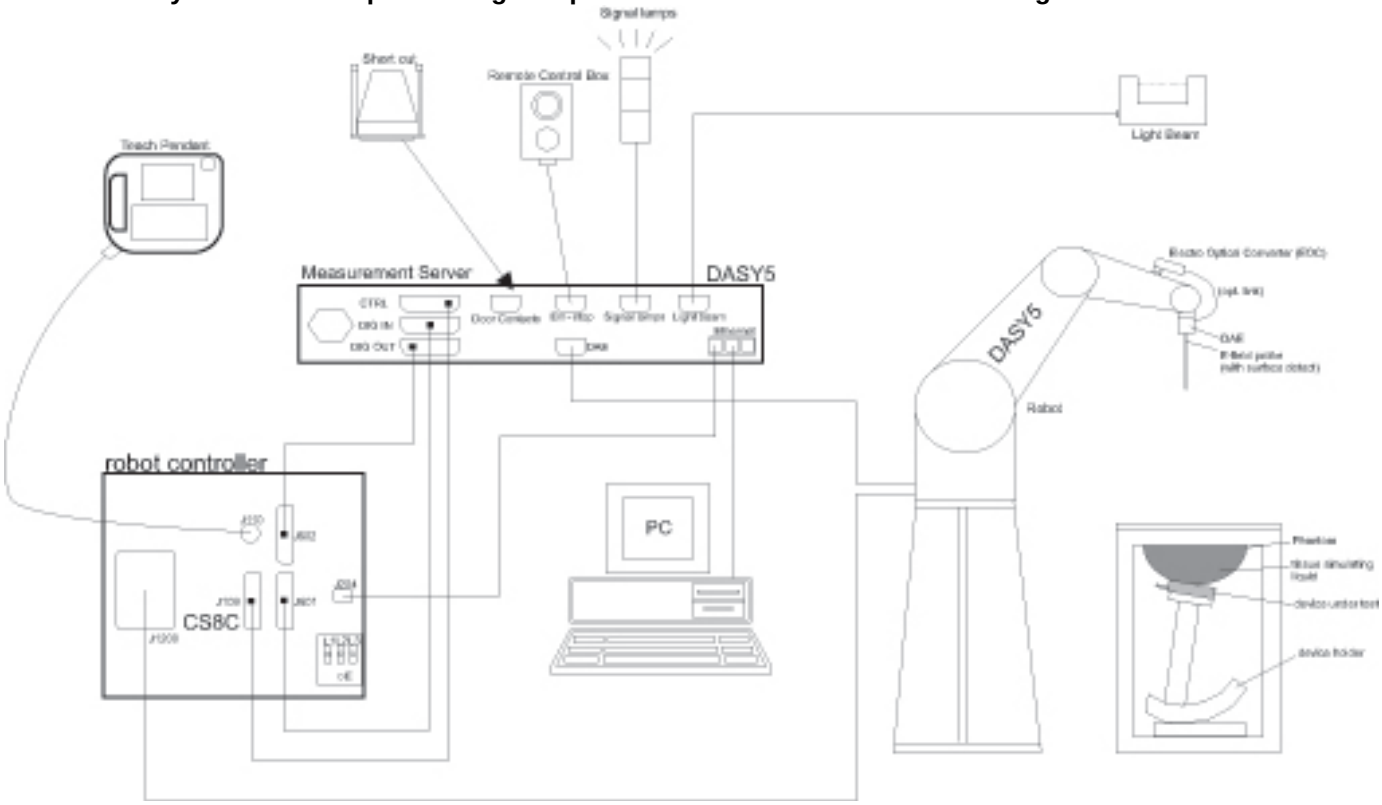
4. SAR Measurement System & Test Equipment

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.

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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	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
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 ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

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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: Δx_{Zoom}, Δy_{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 1st 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	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
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 *reported* SAR from the area scan based *1-g SAR estimation* 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.

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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	8-18-2016
Dielectric Assessment Kit	SPEAG	DAK-3.5	1196	8-4-2016
Shorting block	SPEAG	DAK-3.5 Short	SM DAK 200 BA	N/A
Thermometer	LKM	DTM3000	3424	8-19-2016
Thermometer	Lutron	MHB-382SD	AH.91478	8-12-2016

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
MXG Analog Signal Generator	Agilent	N5181A	MY50145882	8-18-2016
Power Sensor	Agilent	U2000A	MY54260010	8-18-2016
Power Sensor	Agilent	U2000A	MY54260007	8-18-2016
Power Amplifier	EXODUS	1410025-AMP2027-10003	10003	8-18-2016
Directional Coupler	Agilent	772D	MY52180193	8-18-2016
Directional Coupler	Agilent	778D	MY52180432	8-18-2016
Low Pass Filter	MICROLAB	LA-15N	03943	8-18-2016
Low Pass Filter	FILTRON	L14012FL	1410003S	8-18-2016
Low Pass Filter	MICROLAB	LA-60N	03942	8-18-2016
Attenuator	Agilent	8491B/003	MY39269292	8-18-2016
Attenuator	Agilent	8491B/010	MY39269315	8-18-2016
Attenuator	Agilent	8491B/020	MY39269298	8-18-2016
E-Field Probe (SAR1)	SPEAG	EX3DV4	7314	9-25-2016
E-Field Probe (SAR2)	SPEAG	EX3DV4	7376	9-2-2016
E-Field Probe (SAR3)	SPEAG	EX3DV4	7313	12-30-2016
Data Acquisition Electronics (SAR1)	SPEAG	DAE4	1447	9-23-2016
Data Acquisition Electronics (SAR2)	SPEAG	DAE4	1468	9-15-2016
Data Acquisition Electronics (SAR3)	SPEAG	DAE4	1494	11-11-2016
System Validation Dipole	SPEAG	D750V3	1122	8-17-2016
System Validation Dipole	SPEAG	D835V2	4d194	9-17-2016
System Validation Dipole	SPEAG	D1750V2	1125	8-20-2016
System Validation Dipole	SPEAG	D1900V2	5d190	9-29-2016
System Validation Dipole	SPEAG	D2450V2	939	9-28-2016
System Validation Dipole	SPEAG	D5GHzV2	1184	8-26-2016
Thermometer (SAR1)	Lutron	MHB-382SD	AH.91463	8-12-2016
Thermometer (SAR2)	Lutron	MHB-382SD	AH.50215	8-19-2016
Thermometer (SAR3)	Lutron	MHB-382SD	AH.50213	8-24-2016

Others

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Base Station Simulator	R & S	CMW500	150313	8-18-2016
Base Station Simulator	R & S	CMW500	150314	8-18-2016
Bluetooth Tester	TESCOM	TC-3000C	3000C000546	8-18-2016

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, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval.

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6. Device Under Test (DUT) Information

6.1. DUT Description

Device Dimension	Overall (Length x Width): 198.2 mm x 134.5 mm Overall Diagonal: 230 mm Display Diagonal: 203.5 mm		
Back Cover	☒ The rechargeable battery is not user accessible.		
Battery Options	☒ 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. ☒ Mobile Hotspot (Wi-Fi 2.4 GHz) ☒ Mobile Hotspot (Wi-Fi 5 GHz, Ch.149)		
Wi-Fi Direct	Wi-Fi Direct enabled devices transfer data directly between each other ☒ Wi-Fi Direct (Wi-Fi 2.4 GHz) ☒ Wi-Fi Direct (Wi-Fi 5 GHz)		
Test Sample Information	**No.**	**S/N**	**Notes**
	1	0d517735	Conducted
	2	R32H20000WM	Conducted
	3	R32H20001MW	SAR
	4	R32H2000GSF	SAR
	5	R32H2000HRB	SAR
	6	b04a70b9	SAR
	7	R32H2000PJA	SAR

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6.2. Wireless Technologies

Wireless technologies	Frequency bands	Operating mode		Duty Cycle used for SAR testing
GSM	850 1900	Voice (GMSK) GPRS (GMSK) EGPRS (8PSK)	GPRS Multi-Slot Class: ☐ Class 8 - 1 Up, 4 Down ☐ Class 10 - 2 Up, 4 Down ☐ Class 12 - 4 Up, 4 Down ☒ Class 33 - 4 Up, 5 Down	GSM Voice: 12.5% (E)GPRS: 1 Slot: 12.5% 2 Slots: 25% 3 Slots: 37.5% 4 Slots: 50%
	☒ Class B = GPRS connection interrupted during a GSM call, automatically resumed at end of call. Does this device support DTM (Dual Transfer Mode)? ☒ Yes ☐ No			
W-CDMA (UMTS)	Band II Band V	UMTS Rel. 99 (Voice & Data) HSDPA (Category 24) HSUPA (Category 6)		100%
LTE	FDD Band 2 FDD Band 4 FDD Band 5 FDD Band 17	QPSK 16QAM		100%
	Does this device support SV-LTE (1xRTT-LTE)? ☐ Yes ☒ No			
Wi-Fi	2.4 GHz	802.11b 802.11g 802.11n (HT20)		100%
	5 GHz	802.11a 802.11n (HT20, HT40) 802.11ac (VHT20, VHT40, VHT80)		100%
	Does this device support bands 5.60 ~ 5.65 GHz? ☒ Yes ☐ No			
	Does this device support Band gap channel(s)? ☒ Yes ☐ No			
Bluetooth	2.4 GHz	Version 4.1 LE		76.88% (DH5)

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6.3. Nominal and Maximum Output Power

KDB 447498 sec.4.1.(3) 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

Upper limit (dB): 0.5 ~ -1.5		Max. RF Output Power (dBm)		Reduce. RF Output Power (dBm)	
RF Air interface	Mode	Target	Max. tune-up tolerance limit	Target	Max. tune-up tolerance limit
			Burst		Burst
GSM850	Voice (1 slot)	32.5	**33.0**	23.0	**23.5**
	GPRS 1 slot	32.5	**33.0**	23.0	**23.5**
	GPRS 2 slots	31.0	**31.5**	21.5	**22.0**
	GPRS 3 slots	29.5	**30.0**	20.0	**20.5**
	GPRS 4 slots	28.0	**28.5**	18.5	**19.0**
	EGPRS 1 slot	27.0	**27.5**	17.0	**17.5**
	EGPRS 2 slots	25.5	**26.0**	15.5	**16.0**
	EGPRS 3 slots	24.0	**24.5**	14.0	**14.5**
	EGPRS 4 slots	22.5	**23.0**	12.5	**13.0**
GSM1900	Voice (1 slot)	30.0	**30.5**	24.0	**24.5**
	GPRS 1 slot	30.0	**30.5**	24.0	**24.5**
	GPRS 2 slots	28.0	**28.5**	22.5	**23.0**
	GPRS 3 slots	26.0	**26.5**	21.0	**21.5**
	GPRS 4 slots	25.0	**25.5**	19.5	**20.0**
	EGPRS 1 slot	26.5	**27.0**	19.5	**20.0**
	EGPRS 2 slots	25.0	**25.5**	18.0	**18.5**
	EGPRS 3 slots	23.5	**24.0**	16.5	**17.0**
	EGPRS 4 slots	22.0	**22.5**	15.0	**15.5**
W-CDMA Band V	R99	23.0	**23.5**	15.0	**15.5**
	HSDPA	23.0	**23.5**	15.0	**15.5**
	HSUPA	22.0	**22.5**	14.5	**15.0**
W-CDMA Band II	R99	21.5	**22.0**	14.0	**14.5**
	HSDPA	21.5	**22.0**	14.0	**14.5**
	HSUPA	21.2	**21.7**	13.8	**14.3**
LTE Band 2	QPSK, 16QAM	21.5	**22.0**	15.0	**15.5**
LTE Band 4	QPSK, 16QAM	23.5	**24.0**	14.5	**15.0**
LTE Band 5	QPSK, 16QAM	23.0	**23.5**	15.0	**15.5**
LTE Band 17	QPSK, 16QAM	23.0	**23.5**	15.0	**15.5**

Upper limit (dB): ~ 0.5		Max. RF Output Power (dBm)		Reduce RF Output Power (dBm)	
RF Air interface	Mode	Target	Max. Power limit	Target	Max. Power limit
WiFi 2.4 GHz (Ch.1 ~ Ch.11)	802.11b	19.0	**19.5**	11.0	**11.5**
	802.11g	16.0	**16.5**	11.0	**11.5**
	802.11n HT20	16.0	**16.5**	11.0	**11.5**
WiFi 2.4 GHz (Ch.12 & Ch.13)	802.11b	3.0	**3.5**	3.0	**3.5**
	802.11g	3.0	**3.5**	3.0	**3.5**
	802.11n HT20	3.0	**3.5**	3.0	**3.5**
WiFi 5 GHz	802.11a	15.0	**15.5**	8.0	**8.5**
	802.11n HT20	15.0	**15.5**	8.0	**8.5**
	802.11n HT40	14.0	**14.5**	8.0	**8.5**
	802.11ac VHT20	15.0	**15.5**	8.0	**8.5**
	802.11ac VHT40	14.0	**14.5**	8.0	**8.5**
	802.11ac VHT80	13.0	**13.5**	8.0	**8.5**
Bluetooth		11.0	**11.5**	N/A	
Bluetooth LE		3.0	**3.5**	N/A	

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6.4. General LTE SAR Test and Reporting Considerations

<table>
<tr><th>Item</th><th>Description</th></tr>
<tr><td>Frequency range, Channel Bandwidth, Numbers and Frequencies</td><td>
<table>
<tr><td rowspan="3">Band 2</td><td colspan="6">Frequency range: 1850-1910 MHz</td></tr>
<tr><td colspan="6">Channel Bandwidth</td></tr>
<tr><td>20 MHz</td><td>15 MHz</td><td>10 MHz</td><td>5 MHz</td><td>3 MHz</td><td>1.4 MHz</td></tr>
<tr><td>Low</td><td>18700 /1860</td><td>18675/ 1857.5</td><td>18650/ 1855</td><td>18625/ 1852.5</td><td>18615/ 1851.5</td><td>18607/ 1850.7</td></tr>
<tr><td>Mid</td><td>18900/ 1880</td><td>18900/ 1880</td><td>18900/ 1880</td><td>18900/ 1880</td><td>18900/ 1880</td><td>18900/ 1880</td></tr>
<tr><td>High</td><td>19100/ 1900</td><td>19125/ 1902.5</td><td>19150/ 1905</td><td>19175/ 1907.5</td><td>19185/ 1908.5</td><td>19193/ 1909.3</td></tr>
<tr><td rowspan="3">Band 4</td><td colspan="6">Frequency range: 1710 - 1755 MHz</td></tr>
<tr><td colspan="6">Channel Bandwidth</td></tr>
<tr><td>20 MHz</td><td>15 MHz</td><td>10 MHz</td><td>5 MHz</td><td>3 MHz</td><td>1.4 MHz</td></tr>
<tr><td>Low</td><td>20050/ 1720</td><td>20025/ 1717.5</td><td>20000/ 1715</td><td>19975/ 1712.5</td><td>19965/ 1711.5</td><td>19957/ 1710.7</td></tr>
<tr><td>Mid</td><td>20175/ 1732.5</td><td>20175/ 1732.5</td><td>20175/ 1732.5</td><td>20175/ 1732.5</td><td>20175/ 1732.5</td><td>20175/ 1732.5</td></tr>
<tr><td>High</td><td>20300/ 1745</td><td>20325/ 1747.5</td><td>20350/ 1750</td><td>20375/ 1752.5</td><td>20385/ 1753.5</td><td>20393/ 1754.3</td></tr>
<tr><td rowspan="3">Band 5</td><td colspan="6">Frequency range: 824 - 849 MHz</td></tr>
<tr><td colspan="6">Channel Bandwidth</td></tr>
<tr><td>20 MHz</td><td>15 MHz</td><td>10 MHz</td><td>5 MHz</td><td>3 MHz</td><td>1.4 MHz</td></tr>
<tr><td>Low</td><td></td><td></td><td>20450/ 829</td><td>20425/ 826.5</td><td>20415/ 825.5</td><td>20407/ 824.7</td></tr>
<tr><td>Mid</td><td></td><td></td><td>20525/ 836.5</td><td>20525/ 836.5</td><td>20525/ 836.5</td><td>20525/ 836.5</td></tr>
<tr><td>High</td><td></td><td></td><td>20600/ 844</td><td>20625/ 846.5</td><td>20635/ 847.5</td><td>20643/ 848.3</td></tr>
<tr><td rowspan="3">Band 17</td><td colspan="6">Frequency range: 704 - 716 MHz</td></tr>
<tr><td colspan="6">Channel Bandwidth</td></tr>
<tr><td>20 MHz</td><td>15 MHz</td><td>10 MHz</td><td>5 MHz</td><td>3 MHz</td><td>1.4 MHz</td></tr>
<tr><td>Low</td><td></td><td></td><td>23780/ 709</td><td>23755/ 706.5</td><td></td><td></td></tr>
<tr><td>Mid</td><td></td><td></td><td>23790/ 710</td><td>23790/ 710</td><td></td><td></td></tr>
<tr><td>High</td><td></td><td></td><td>23800/ 711</td><td>23825/ 713.5</td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>LTE transmitter and antenna implementation</td><td>LTE has 1 Main TX/RX Ant and 1 Diversity RX Ant Refer to Appendix A...</td></tr>
<tr><td>Maximum power reduction (MPR)</td><td>
Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3
<table>
<tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (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>
<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>
</table>
MPR Built-in by design
A-MPR (additional MPR) was disabled during SAR testing
</td></tr>
<tr><td>Power reduction</td><td>Yes</td></tr>
<tr><td>Spectrum plots for RB configurations</td><td>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.</td></tr>
</table>

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6.5. Power Reduction by Proximity Sensing

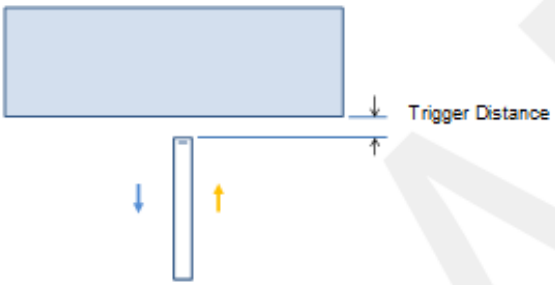
6.5.1. Proximity Sensor Triggering Distance (KDB 616217 §6.2)

Rear 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 measurement was then repeated for the surface of Edge 1

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.



Proximity Sensor Trigger Distance Assessment
KDB 616219 §6.2, Edge 1

Proximity Sensor Trigger Distance Assessment
KDB 616219 §6.2, Rear

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

Tissue simulating liquid	Trigger distance - Rear		Trigger distance - Edge 1	
	Moving toward phantom	Moving from phantom	Moving toward phantom	Moving from phantom
750 muscle	16 mm	16 mm	16 mm	16 mm
850 muscle	16 mm	16 mm	16 mm	16 mm
1750 muscle	16 mm	16 mm	16 mm	16 mm
1900 muscle	16 mm	16 mm	16 mm	16 mm
2450 muscle	8 mm	8 mm	N/A	N/A
5000 muscle	8 mm	8 mm	N/A	N/A

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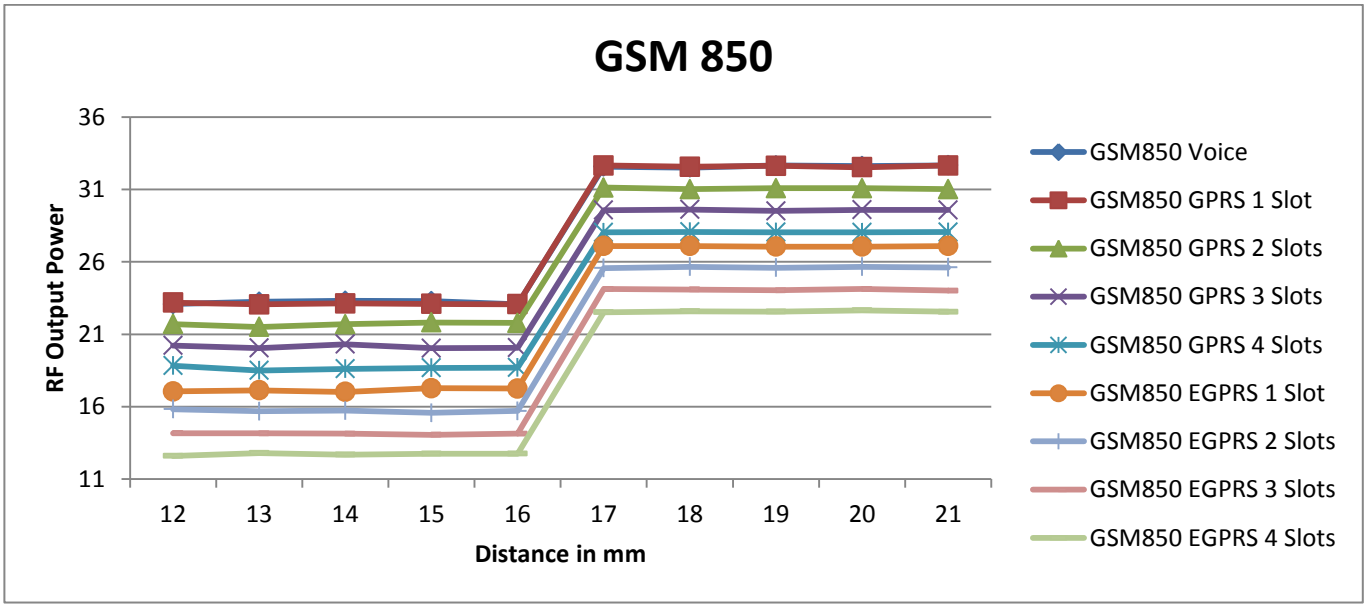
Proximity Sensor Triggering Distance Measurement Results

GSM 850

Rear, 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
GSM850 Voice	23.1	23.2	23.3	23.3	23.1	32.6	32.5	32.7	32.6	32.7
GSM850 GPRS 1 Slot	23.2	23.1	23.1	23.1	23.1	32.7	32.6	32.6	32.5	32.7
GSM850 GPRS 2 Slots	21.7	21.5	21.7	21.8	21.8	31.1	31.0	31.1	31.1	31.0
GSM850 GPRS 3 Slots	20.2	20.1	20.3	20.0	20.1	29.6	29.6	29.5	29.6	29.6
GSM850 GPRS 4 Slots	18.8	18.5	18.6	18.7	18.7	28.0	28.1	28.1	28.0	28.1
GSM850 EGPRS 1 Slot	17.1	17.1	17.0	17.3	17.3	27.1	27.1	27.1	27.1	27.1
GSM850 EGPRS 2 Slots	15.8	15.7	15.7	15.6	15.7	25.6	25.7	25.6	25.7	25.6
GSM850 EGPRS 3 Slots	14.2	14.2	14.1	14.1	14.1	24.1	24.1	24.0	24.1	24.0
GSM850 EGPRS 4 Slots	12.6	12.8	12.7	12.8	12.8	22.5	22.6	22.6	22.7	22.6



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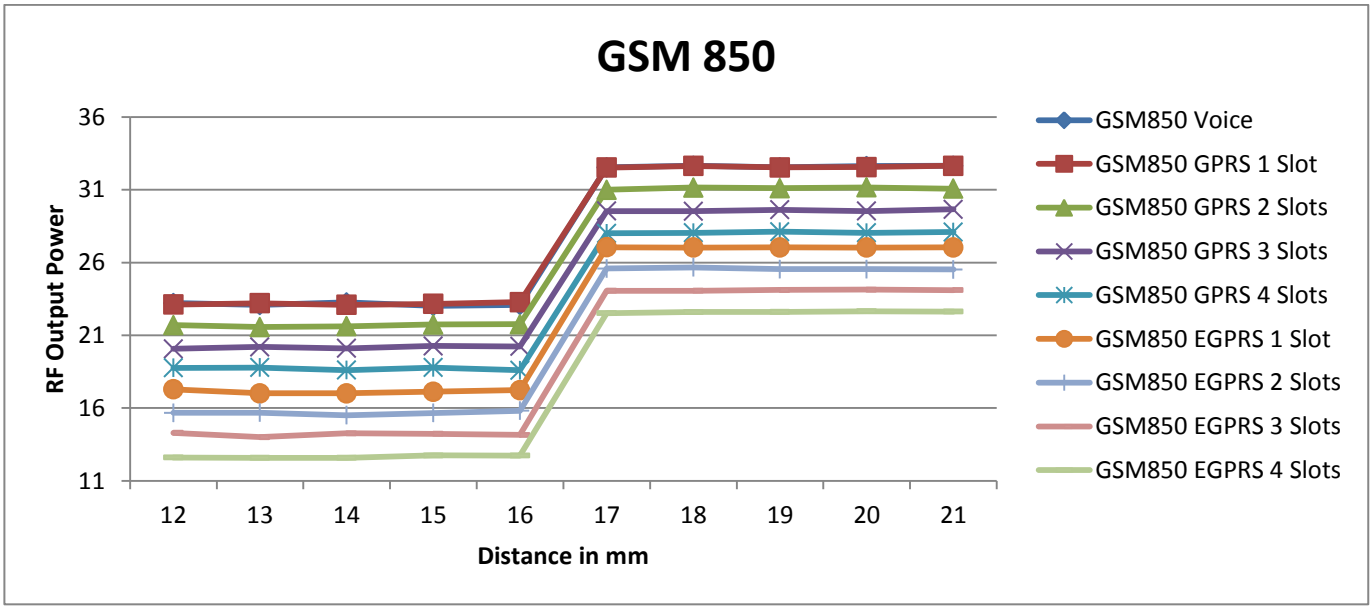
Edge 1, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance (mm)	12	13	14	15	16	17	18	19	20	21
GSM850 Voice	23.2	23.1	23.3	23.0	23.1	32.5	32.6	32.5	32.6	32.7
GSM850 GPRS 1 Slot	23.1	23.2	23.1	23.2	23.3	32.5	32.6	32.5	32.6	32.7
GSM850 GPRS 2 Slots	21.7	21.6	21.6	21.7	21.8	31.0	31.2	31.1	31.2	31.1
GSM850 GPRS 3 Slots	20.1	20.2	20.1	20.3	20.2	29.5	29.5	29.6	29.5	29.7
GSM850 GPRS 4 Slots	18.8	18.8	18.6	18.8	18.6	28.0	28.0	28.1	28.0	28.1
GSM850 EGPRS 1 Slot	17.3	17.0	17.0	17.1	17.2	27.1	27.0	27.0	27.0	27.0
GSM850 EGPRS 2 Slots	15.7	15.7	15.5	15.7	15.8	25.6	25.7	25.5	25.6	25.5
GSM850 EGPRS 3 Slots	14.3	14.0	14.3	14.2	14.2	24.1	24.1	24.1	24.1	24.1
GSM850 EGPRS 4 Slots	12.6	12.6	12.6	12.8	12.7	22.5	22.6	22.6	22.7	22.6



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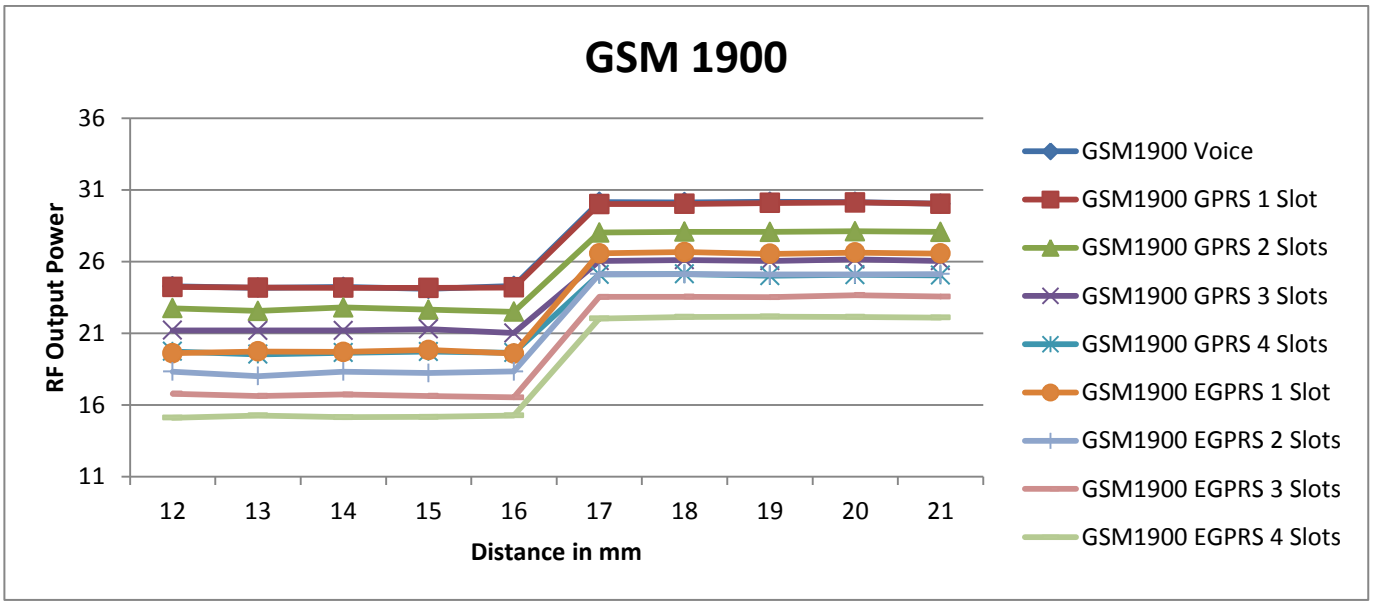
GSM 1900

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

Distance (mm)	12	13	14	15	16	17	18	19	20	21
GSM1900 Voice	24.3	24.2	24.2	24.1	24.3	30.2	30.1	30.2	30.2	30.0
GSM1900 GPRS 1 Slot	24.2	24.2	24.2	24.2	24.2	30.0	30.0	30.1	30.1	30.0
GSM1900 GPRS 2 Slots	22.7	22.6	22.8	22.6	22.5	28.0	28.1	28.1	28.1	28.1
GSM1900 GPRS 3 Slots	21.2	21.2	21.2	21.3	21.0	26.0	26.1	26.0	26.2	26.0
GSM1900 GPRS 4 Slots	19.7	19.5	19.6	19.7	19.6	25.1	25.1	25.0	25.1	25.0
GSM1900 EGPRS 1 Slot	19.6	19.7	19.7	19.8	19.6	26.6	26.7	26.5	26.6	26.6
GSM1900 EGPRS 2 Slots	18.3	18.0	18.3	18.2	18.3	25.1	25.1	25.1	25.1	25.1
GSM1900 EGPRS 3 Slots	16.8	16.6	16.7	16.6	16.5	23.5	23.5	23.5	23.7	23.6
GSM1900 EGPRS 4 Slots	15.1	15.3	15.1	15.2	15.3	22.0	22.1	22.2	22.1	22.1



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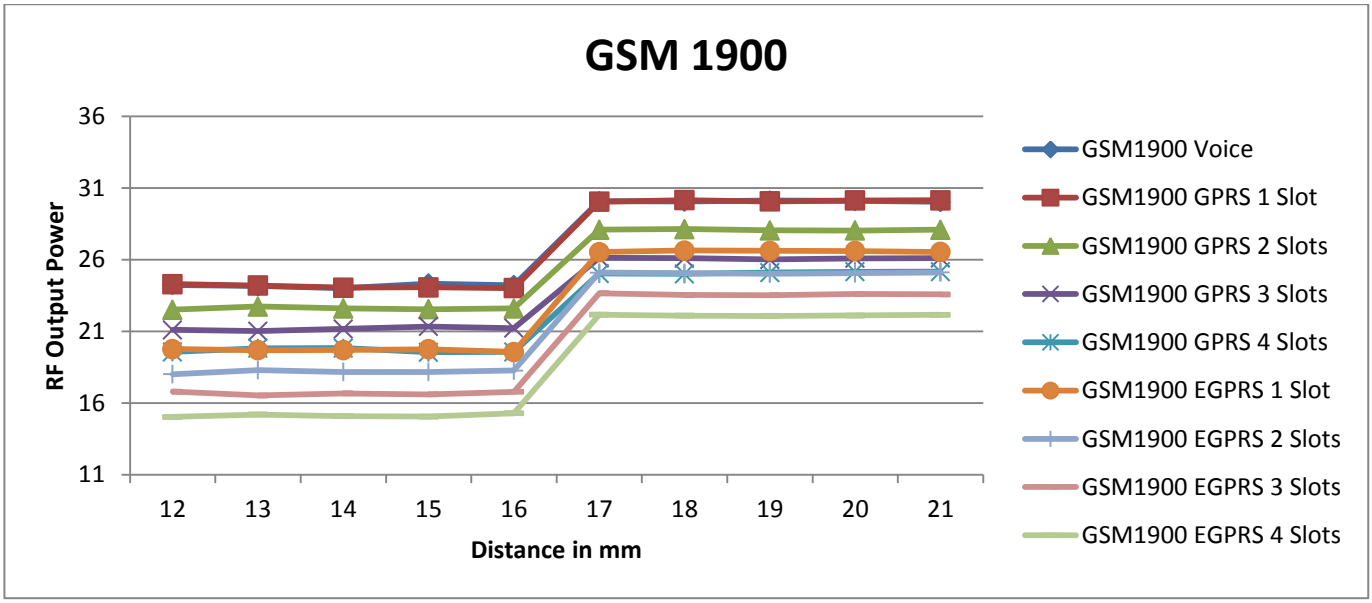
Edge 1, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance (mm)	12	13	14	15	16	17	18	19	20	21
GSM1900 Voice	24.2	24.2	24.0	24.3	24.2	30.1	30.1	30.1	30.1	30.0
GSM1900 GPRS 1 Slot	24.3	24.2	24.1	24.1	24.0	30.0	30.2	30.1	30.1	30.1
GSM1900 GPRS 2 Slots	22.5	22.7	22.6	22.5	22.6	28.1	28.1	28.0	28.0	28.1
GSM1900 GPRS 3 Slots	21.1	21.0	21.2	21.3	21.2	26.1	26.1	26.0	26.1	26.1
GSM1900 GPRS 4 Slots	19.6	19.8	19.8	19.5	19.6	25.0	25.0	25.1	25.2	25.2
GSM1900 EGPRS 1 Slot	19.8	19.7	19.7	19.8	19.6	26.5	26.6	26.6	26.6	26.5
GSM1900 EGPRS 2 Slots	18.0	18.3	18.2	18.2	18.3	25.1	25.1	25.0	25.1	25.1
GSM1900 EGPRS 3 Slots	16.8	16.5	16.7	16.6	16.8	23.7	23.5	23.5	23.6	23.6
GSM1900 EGPRS 4 Slots	15.0	15.2	15.1	15.1	15.3	22.2	22.1	22.1	22.1	22.2



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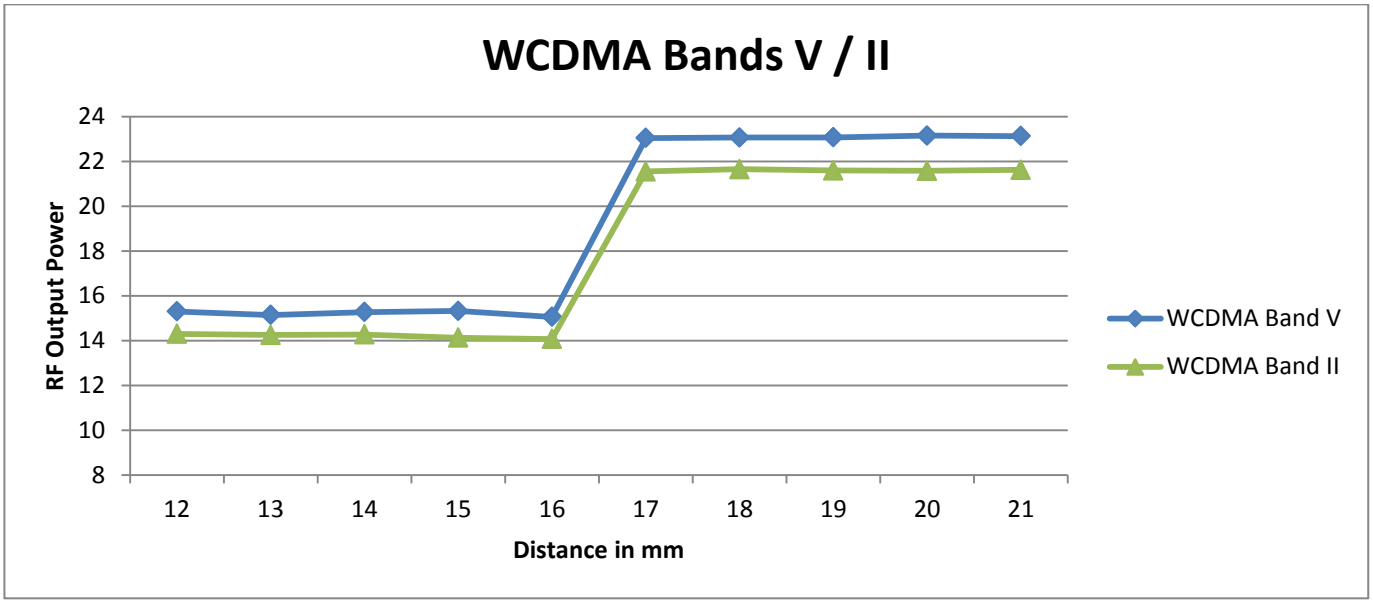
WCDMA Band V / IV / II

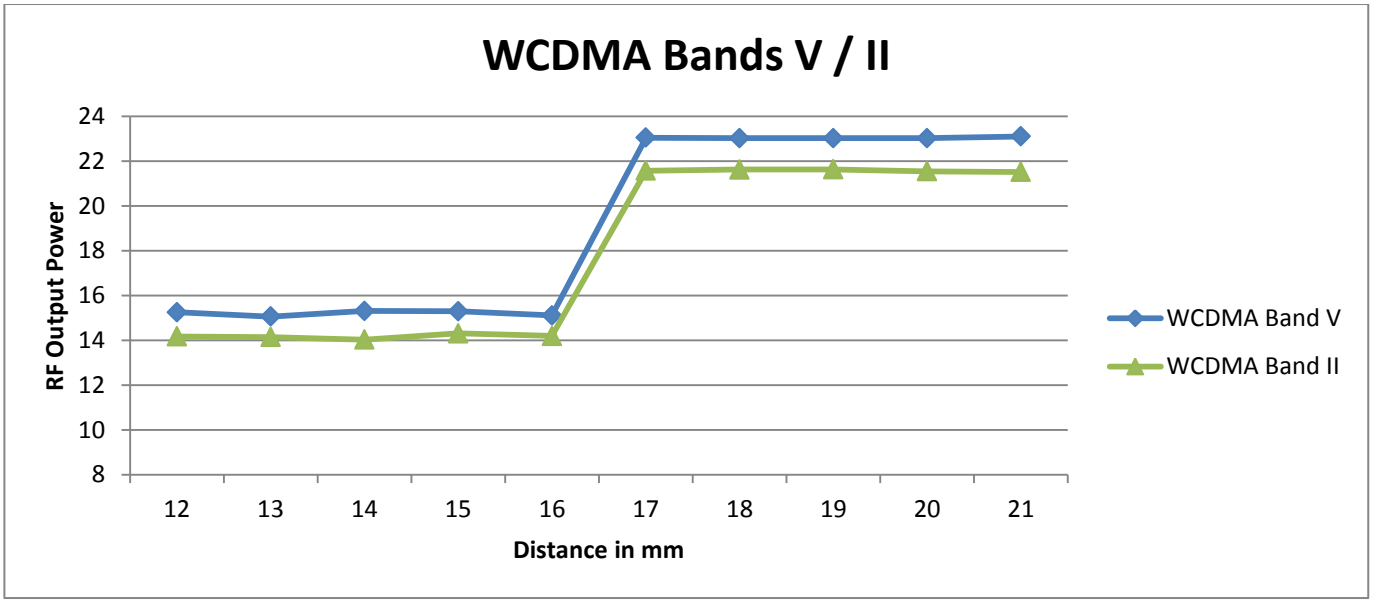
Rear, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance (mm)	12	13	14	15	16	17	18	19	20	21
WCDMA Band V	15.3	15.1	15.3	15.3	15.1	23.0	23.1	23.1	23.2	23.1
WCDMA Band II	14.3	14.3	14.3	14.1	14.1	21.6	21.7	21.6	21.6	21.6



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

Distance (mm)	12	13	14	15	16	17	18	19	20	21
WCDMA Band V	15.3	15.1	15.3	15.3	15.1	23.0	23.0	23.0	23.0	23.1
WCDMA Band II	14.2	14.1	14.0	14.3	14.2	21.6	21.6	21.6	21.5	21.5



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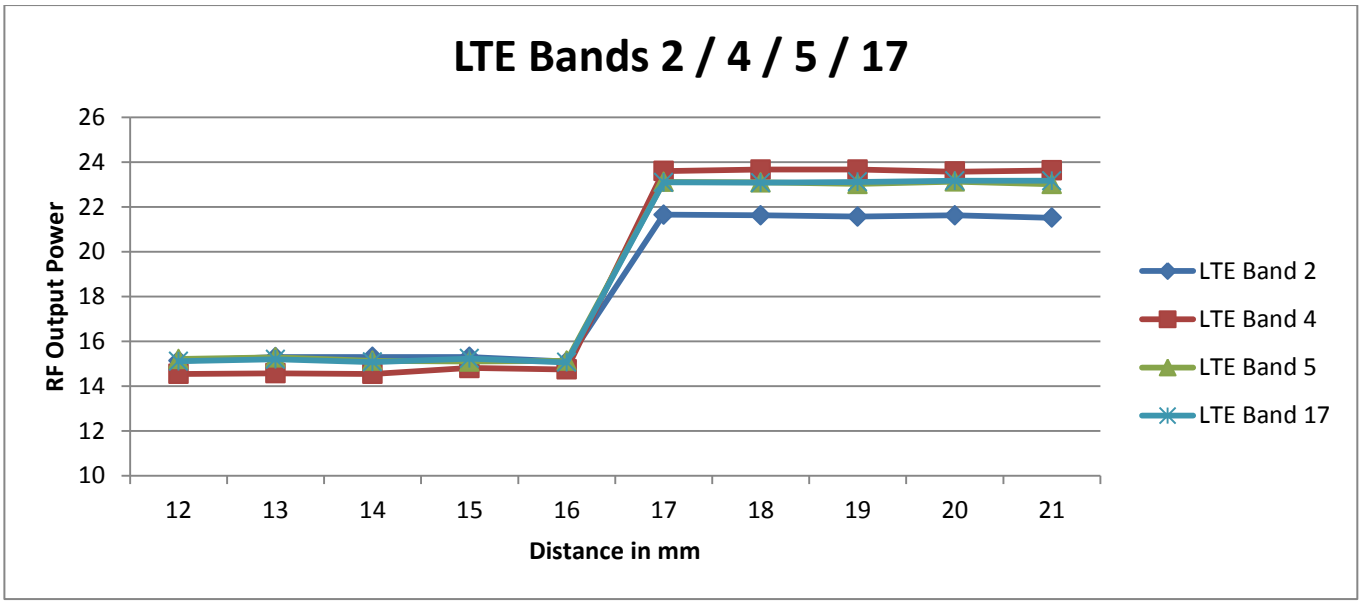
LTE Band 2 / 4 / 5 / 17

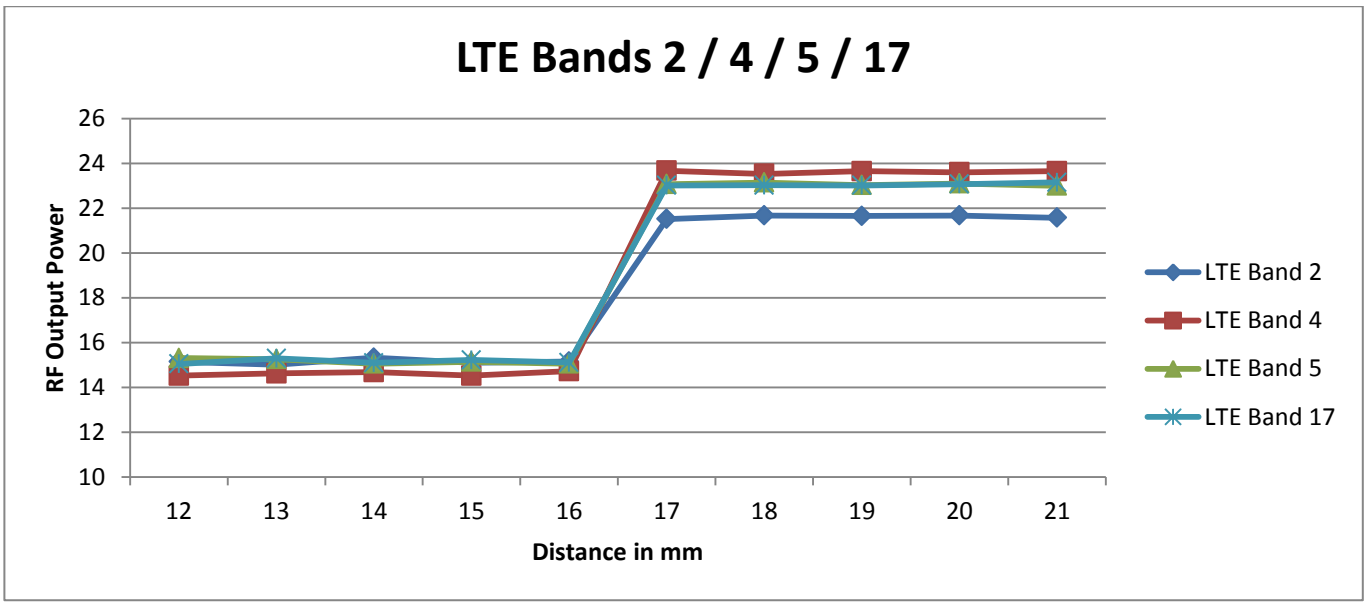
Rear, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance (mm)	12	13	14	15	16	17	18	19	20	21
LTE Band 2	15.1	15.3	15.3	15.3	15.1	21.7	21.6	21.6	21.6	21.5
LTE Band 4	14.5	14.6	14.5	14.8	14.7	23.6	23.7	23.7	23.6	23.6
LTE Band 5	15.2	15.3	15.1	15.1	15.1	23.1	23.1	23.0	23.1	23.0
LTE Band 17	15.1	15.2	15.1	15.2	15.1	23.1	23.1	23.1	23.2	23.2



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

Distance (mm)	12	13	14	15	16	17	18	19	20	21
LTE Band 2	15.1	15.0	15.3	15.1	15.2	21.5	21.7	21.7	21.7	21.6
LTE Band 4	14.5	14.6	14.7	14.5	14.7	23.7	23.5	23.7	23.6	23.7
LTE Band 5	15.3	15.3	15.1	15.1	15.1	23.1	23.1	23.0	23.1	23.0
LTE Band 17	15.0	15.3	15.1	15.2	15.1	23.0	23.0	23.0	23.1	23.2



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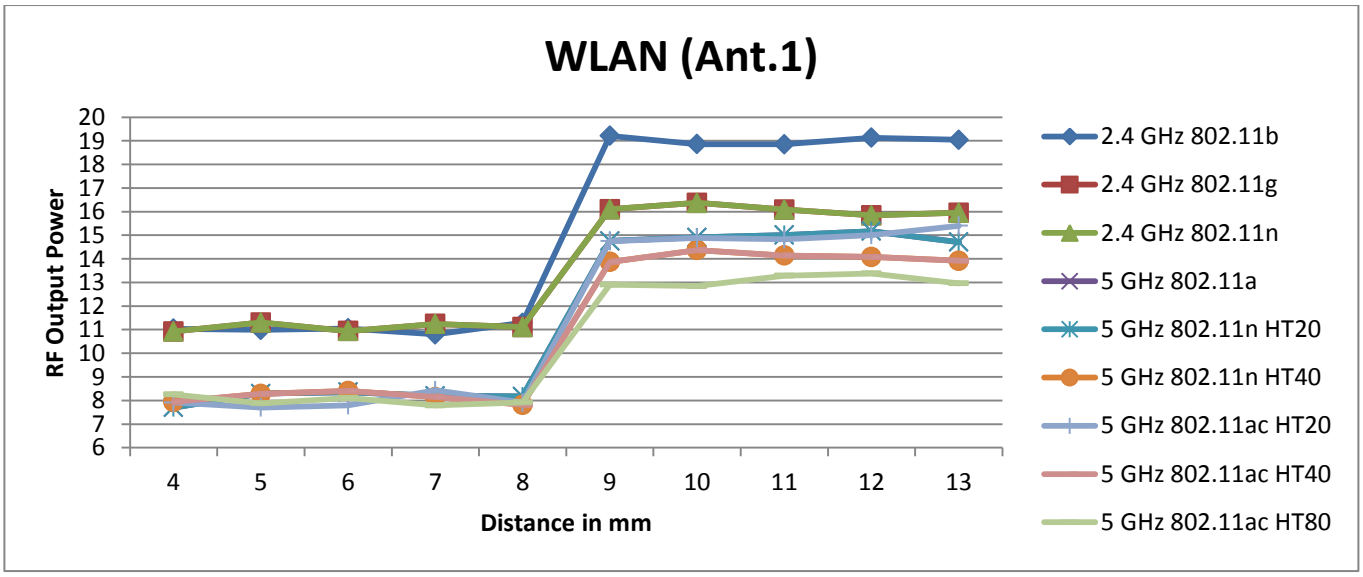
Wi-Fi 2.4GHz and 5GHz(Ant.1)

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

Distance	4	5	6	7	8	9	10	11	12	13
2.4 GHz 802.11b	11.0	11.0	11.1	10.8	11.3	19.2	18.9	18.9	19.1	19.0
2.4 GHz 802.11g	10.9	11.3	10.9	11.2	11.1	16.1	16.4	16.1	15.8	16.0
2.4 GHz 802.11n	10.9	11.3	10.9	11.2	11.1	16.1	16.4	16.1	15.8	16.0
5 GHz 802.11a	7.7	8.3	8.4	8.2	8.2	14.8	14.9	15.0	15.2	14.7
5 GHz 802.11n HT20	7.7	8.3	8.4	8.2	8.2	14.8	14.9	15.0	15.2	14.7
5 GHz 802.11n HT40	7.9	8.3	8.4	8.1	7.8	13.9	14.4	14.1	14.1	13.9
5 GHz 802.11ac HT20	7.9	7.7	7.8	8.4	7.9	14.8	14.9	14.8	15.0	15.4
5 GHz 802.11ac HT40	7.9	8.3	8.4	8.1	7.8	13.9	14.4	14.1	14.1	13.9
5 GHz 802.11ac HT80	8.3	7.9	8.1	7.8	7.9	12.9	12.9	13.3	13.4	13.0



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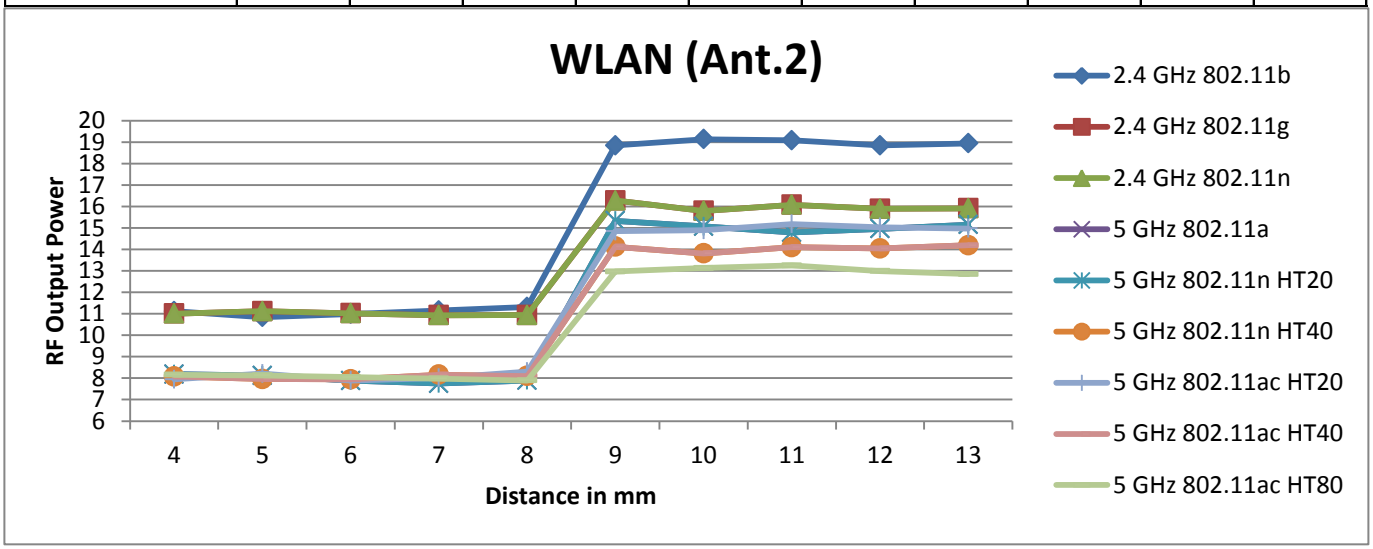
Wi-Fi 2.4GHz and 5GHz(Ant.2)

Distance (mm)	4	5	6	7	8	9	10	11	12	13
2.4 GHz 802.11b	11.1	10.8	11.0	11.2	11.3	18.8	19.1	19.1	18.8	18.9
2.4 GHz 802.11g	11.0	11.1	11.0	10.9	10.9	16.3	15.8	16.1	15.9	15.9
2.4 GHz 802.11n	11.0	11.1	11.0	10.9	10.9	16.3	15.8	16.1	15.9	15.9
5 GHz 802.11a	8.2	8.1	7.9	7.8	7.9	15.3	15.1	14.8	15.0	15.2
5 GHz 802.11n HT20	8.2	8.1	7.9	7.8	7.9	15.3	15.1	14.8	15.0	15.2
5 GHz 802.11n HT40	8.1	8.0	7.9	8.2	8.1	14.1	13.8	14.1	14.0	14.2
5 GHz 802.11ac HT20	7.9	8.2	7.9	8.0	8.3	14.9	14.9	15.2	15.0	15.0
5 GHz 802.11ac HT40	8.1	8.0	7.9	8.2	8.1	14.1	13.8	14.1	14.0	14.2
5 GHz 802.11ac HT80	8.2	8.1	8.1	8.0	7.9	13.0	13.1	13.3	13.0	12.9



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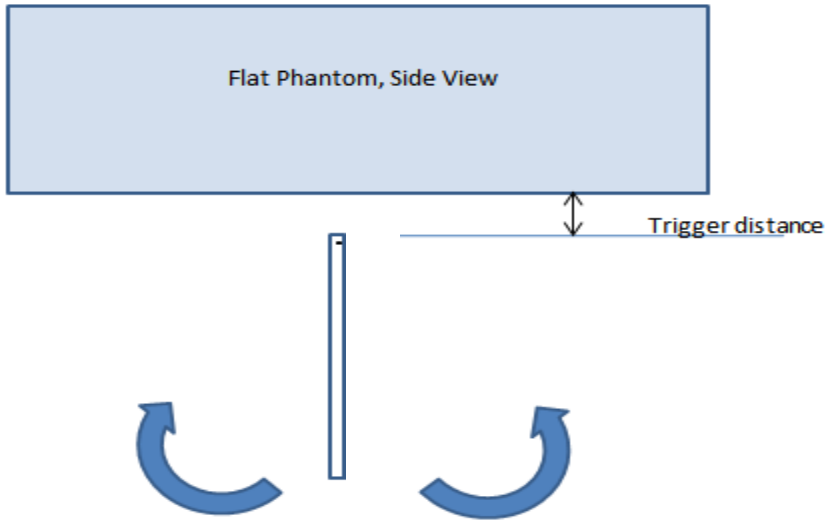
6.5.2. Proximity Sensor Coverage (KDB 616217 §6.3)

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

6.5.3. 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 parallel to the base of the flat phantom for each band.

The EUT was rotated about Edge 1 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) 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

6.5.4. Resulting test positions for SAR measurements

Wireless technologies	Position	§6.2 Triggering Distance	§6.3 Coverage	§6.4 Tilt Angle	Worst case distance for SAR
WWAN	Rear	16 mm	N/A	N/A	15 mm
	Edge 1	16 mm	N/A	16 mm	15 mm
WLAN	Rear	8 mm	N/A	N/A	7 mm

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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	GPRS 2 Slots	848.8	31.50	353	0	0	37	194.2	34		65 -MEASURE-	65 -MEASURE-	8.8 -MEASURE-	> 50 mm	9.6 -MEASURE-	
Cellular	GPRS 2 Slots	1909.8	28.50	177	0	0	37	194.2	34		48.9 -MEASURE-	48.9 -MEASURE-	6.6 -MEASURE-	> 50 mm	7.2 -MEASURE-	
Cellular	W-CDMA 5	846.6	23.50	224	0	0	37	194.2	34		41.2 -MEASURE-	41.2 -MEASURE-	5.6 -MEASURE-	> 50 mm	6.1 -MEASURE-	
Cellular	W-CDMA 2	1907.6	22.00	158	0	0	37	194.2	34		43.6 -MEASURE-	43.6 -MEASURE-	5.9 -MEASURE-	> 50 mm	6.4 -MEASURE-	
Cellular	LTE Band 2	1900	22.00	158	0	0	37	194.2	34		43.6 -MEASURE-	43.6 -MEASURE-	5.9 -MEASURE-	> 50 mm	6.4 -MEASURE-	
Cellular	LTE Band 4	1754.3	24.00	251	0	0	37	194.2	34		66.5 -MEASURE-	66.5 -MEASURE-	9 -MEASURE-	> 50 mm	9.8 -MEASURE-	
Cellular	LTE Band 5	844	23.50	224	0	0	37	194.2	34		41.2 -MEASURE-	41.2 -MEASURE-	5.6 -MEASURE-	> 50 mm	6.1 -MEASURE-	
Cellular	LTE Band 17	710	23.50	224	0	0	37	194.2	34		37.7 -MEASURE-	37.7 -MEASURE-	5.1 -MEASURE-	> 50 mm	5.6 -MEASURE-	
Power Back-off, Proximity Sensor On																
Cellular	GPRS 3 Slots	848.8	20.50	42	0	0					7.7 -MEASURE-	7.7 -MEASURE-				
Cellular	GPRS 3 Slots	1909.8	21.50	53	0	0					14.6 -MEASURE-	14.6 -MEASURE-				
Cellular	W-CDMA 5	846.6	15.50	35	0	0					6.4 -MEASURE-	6.4 -MEASURE-				
Cellular	W-CDMA 2	1907.6	14.50	28	0	0					7.7 -MEASURE-	7.7 -MEASURE-				
Cellular	LTE Band 2	1900	15.50	35	0	0					9.6 -MEASURE-	9.6 -MEASURE-				
Cellular	LTE Band 4	1754.3	15.00	32	0	0					8.5 -MEASURE-	8.5 -MEASURE-				
Cellular	LTE Band 5	844	15.50	35	0	0					6.4 -MEASURE-	6.4 -MEASURE-				
Cellular	LTE Band 17	710	15.50	35	0	0					5.9 -MEASURE-	5.9 -MEASURE-				

Note(s):

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

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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	GPRS 2 Slots	848.8	31.50	353	0	0	37	194.2	34		< 50 mm	< 50 mm	< 50 mm	978.8 mW -EXEMPT-	< 50 mm	
Cellular	GPRS 2 Slots	1909.8	28.50	177	0	0	37	194.2	34		< 50 mm	< 50 mm	< 50 mm	1550.5 mW -EXEMPT-	< 50 mm	
Cellular	W-CDMA 5	846.6	23.50	224	0	0	37	194.2	34		< 50 mm	< 50 mm	< 50 mm	976.9 mW -EXEMPT-	< 50 mm	
Cellular	W-CDMA 2	1907.6	22.00	158	0	0	37	194.2	34		< 50 mm	< 50 mm	< 50 mm	1550.6 mW -EXEMPT-	< 50 mm	
Cellular	LTE Band 2	1900	22.00	158	0	0	37	194.2	34		< 50 mm	< 50 mm	< 50 mm	1550.8 mW -EXEMPT-	< 50 mm	
Cellular	LTE Band 4	1754.3	24.00	251	0	0	37	194.2	34		< 50 mm	< 50 mm	< 50 mm	1555.3 mW -EXEMPT-	< 50 mm	
Cellular	LTE Band 5	844	23.50	224	0	0	37	194.2	34		< 50 mm	< 50 mm	< 50 mm	974.6 mW -EXEMPT-	< 50 mm	
Cellular	LTE Band 17	710	23.50	224	0	0	37	194.2	34		< 50 mm	< 50 mm	< 50 mm	860.6 mW -EXEMPT-	< 50 mm	
Power Back-off, Proximity Sensor On																
Cellular	GPRS 3 Slots	848.8	20.50	42	0	0					< 50 mm	< 50 mm				
Cellular	GPRS 3 Slots	1909.8	21.50	53	0	0					< 50 mm	< 50 mm				
Cellular	W-CDMA 5	846.6	15.50	35	0	0					< 50 mm	< 50 mm				
Cellular	W-CDMA 2	1907.6	14.50	28	0	0					< 50 mm	< 50 mm				
Cellular	LTE Band 2	1900	15.50	35	0	0					< 50 mm	< 50 mm				
Cellular	LTE Band 4	1754.3	15.00	32	0	0					< 50 mm	< 50 mm				
Cellular	LTE Band 5	844	15.50	35	0	0					< 50 mm	< 50 mm				
Cellular	LTE Band 17	710	15.50	35	0	0					< 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.

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SAR Test Exclusion Calculations for WLAN

Antennas < 50mm to adjacent edges

Ant.1

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	19.50	89	0.3	180.2	30	9	91.5		27.9 -MEASURE-	> 50 mm	4.7 -MEASURE-	15.5 -MEASURE-	> 50 mm	
Wi-Fi 5.3 GHz	5320	15.50	35	0.3	180.2	30	9	91.5		16.1 -MEASURE-	> 50 mm	2.7 -EXEMPT-	9 -MEASURE-	> 50 mm	
Wi-Fi 5.5 GHz	5700	15.50	35	0.3	180.2	30	9	91.5		16.7 -MEASURE-	> 50 mm	2.8 -EXEMPT-	9.3 -MEASURE-	> 50 mm	
Wi-Fi 5.8 GHz	5825	15.50	35	0.3	180.2	30	9	91.5		16.9 -MEASURE-	> 50 mm	2.8 -EXEMPT-	9.4 -MEASURE-	> 50 mm	
Bluetooth	2480	11.50	14	0.3	180.2	30	9	91.5		4.4 -MEASURE-	> 50 mm	0.7 -EXEMPT-	2.4 -EXEMPT-	> 50 mm	
Power Back-off, Proximity Sensor On															
Wi-Fi 2.4 GHz	2462	11.50	14	0.3						4.4 -MEASURE-					
Wi-Fi 5.3 GHz	5320	8.50	7	0.3						3.2 -MEASURE-					
Wi-Fi 5.5 GHz	5700	8.50	7	0.3						3.3 -MEASURE-					
Wi-Fi 5.8 GHz	5825	8.50	7	0.3						3.4 -MEASURE-					

Ant.2

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	19.50	89	0.3	156	84	17	11		27.9 -MEASURE-	> 50 mm	> 50 mm	8.2 -MEASURE-	12.7 -MEASURE-	
Wi-Fi 5.3 GHz	5320	15.50	35	0.3	156	84	17	11		16.1 -MEASURE-	> 50 mm	> 50 mm	4.7 -MEASURE-	7.3 -MEASURE-	
Wi-Fi 5.5 GHz	5700	15.50	35	0.3	156	84	17	11		16.7 -MEASURE-	> 50 mm	> 50 mm	4.9 -MEASURE-	7.6 -MEASURE-	
Wi-Fi 5.8 GHz	5825	15.50	35	0.3	156	84	17	11		16.9 -MEASURE-	> 50 mm	> 50 mm	5 -MEASURE-	7.7 -MEASURE-	
Power Back-off, Proximity Sensor On															
Wi-Fi 2.4 GHz	2462	11.50	14	0.3						4.4 -MEASURE-					
Wi-Fi 5.3 GHz	5320	8.50	7	0.3						3.2 -MEASURE-					
Wi-Fi 5.5 GHz	5700	8.50	7	0.3						3.3 -MEASURE-					
Wi-Fi 5.8 GHz	5825	8.50	7	0.3						3.4 -MEASURE-					

Note(s):

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

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Antennas > 50mm to adjacent edges

Ant.1

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	19.50	89	0.3	180.2	30	9	91.5		< 50 mm	1397.6 mW -EXEMPT-	< 50 mm	< 50 mm	510.6 mW -EXEMPT-	
Wi-Fi 5.3 GHz	5320	15.50	35	0.3	180.2	30	9	91.5		< 50 mm	1367 mW -EXEMPT-	< 50 mm	< 50 mm	480 mW -EXEMPT-	
Wi-Fi 5.5 GHz	5700	15.50	35	0.3	180.2	30	9	91.5		< 50 mm	1364.8 mW -EXEMPT-	< 50 mm	< 50 mm	477.8 mW -EXEMPT-	
Wi-Fi 5.8 GHz	5825	15.50	35	0.3	180.2	30	9	91.5		< 50 mm	1364.2 mW -EXEMPT-	< 50 mm	< 50 mm	477.2 mW -EXEMPT-	
Bluetooth	2480	11.50	14	0.3	180.2	30	9	91.5		< 50 mm	1397.3 mW -EXEMPT-	< 50 mm	< 50 mm	510.3 mW -EXEMPT-	
Power Back-off, Proximity Sensor On															
Wi-Fi 2.4 GHz	2462	13.50	22	0.3						< 50 mm					
Wi-Fi 5.3 GHz	5320	8.50	7	0.3						< 50 mm					
Wi-Fi 5.5 GHz	5700	8.50	7	0.3						< 50 mm					
Wi-Fi 5.8 GHz	5825	8.50	7	0.3						< 50 mm					

Ant.2

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	19.50	89	0.3	156	84	17	11		< 50 mm	1155.6 mW -EXEMPT-	435.6 mW -EXEMPT-	< 50 mm	< 50 mm	
Wi-Fi 5.3 GHz	5320	15.50	35	0.3	156	84	17	11		< 50 mm	1125 mW -EXEMPT-	405 mW -EXEMPT-	< 50 mm	< 50 mm	
Wi-Fi 5.5 GHz	5700	15.50	35	0.3	156	84	17	11		< 50 mm	1122.8 mW -EXEMPT-	402.8 mW -EXEMPT-	< 50 mm	< 50 mm	
Wi-Fi 5.8 GHz	5825	15.50	35	0.3	156	84	17	11		< 50 mm	1122.2 mW -EXEMPT-	402.2 mW -EXEMPT-	< 50 mm	< 50 mm	
Power Back-off, Proximity Sensor On															
Wi-Fi 2.4 GHz	2462	13.50	22	0.3						< 50 mm					
Wi-Fi 5.3 GHz	5320	8.50	7	0.3						< 50 mm					
Wi-Fi 5.5 GHz	5700	8.50	7	0.3						< 50 mm					
Wi-Fi 5.8 GHz	5825	8.50	7	0.3						< 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.

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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 (Top Edge)	Edge 2 (Right Edge)	Edge 3 (Bottom Edge)	Edge 4 (Left Edge)
GSM850	OFF	Yes	Yes	Yes	No	Yes
	ON	Yes	Yes	No	No	No
GSM1900	OFF	Yes	Yes	Yes	No	Yes
	ON	Yes	Yes	No	No	No
W-CDMA Band II	OFF	Yes	Yes	Yes	No	Yes
	ON	Yes	Yes	No	No	No
W-CDMA Band V	OFF	Yes	Yes	Yes	No	Yes
	ON	Yes	Yes	No	No	No
LTE Band 2	OFF	Yes	Yes	Yes	No	Yes
	ON	Yes	Yes	No	No	No
LTE Band 4	OFF	Yes	Yes	Yes	No	Yes
	ON	Yes	Yes	No	No	No
LTE Band 5	OFF	Yes	Yes	Yes	No	Yes
	ON	Yes	Yes	No	No	No
LTE Band 17	OFF	Yes	Yes	Yes	No	Yes
	ON	Yes	Yes	No	No	No
Wi-Fi 2.4 GHz SISO (Antenna 1)	OFF	Yes	No	Yes	Yes	No
	ON	Yes	No	No	No	No
Wi-Fi 2.4 GHz SISO (Antenna 2)	OFF	Yes	No	No	Yes	Yes
	ON	Yes	No	No	No	No
Wi-Fi 5 GHz SISO (Antenna 1)	OFF	Yes	No	No	Yes	No
	ON	Yes	No	No	No	No
Wi-Fi 5 GHz SISO (Antenna 2)	OFF	Yes	No	No	Yes	Yes
	ON	Yes	No	No	No	No
Bluetooth	OFF	Yes	No	No	No	No

Note(s):

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

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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 ± 2°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

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Dielectric Property Measurements Results:

SAR 1 Room

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
2-11-2016	Body 835	e'	57.5400	Relative Permittivity (ε_r):	57.54	55.20	4.24	5
		e''	20.7800	Conductivity (σ):	0.96	0.97	-0.54	5
	Body 820	e'	57.6200	Relative Permittivity (ε_r):	57.62	55.28	4.24	5
		e''	20.8600	Conductivity (σ):	0.95	0.97	-1.79	5
	Body 850	e'	57.3300	Relative Permittivity (ε_r):	57.33	55.16	3.94	5
		e''	20.7200	Conductivity (σ):	0.98	0.99	-0.80	5
2-15-2016	Body 835	e'	53.7200	Relative Permittivity (ε_r):	53.72	55.20	-2.68	5
		e''	21.5500	Conductivity (σ):	1.00	0.97	3.15	5
	Body 820	e'	53.8300	Relative Permittivity (ε_r):	53.83	55.28	-2.62	5
		e''	21.6900	Conductivity (σ):	0.99	0.97	2.12	5
	Body 850	e'	53.5700	Relative Permittivity (ε_r):	53.57	55.16	-2.88	5
		e''	21.4200	Conductivity (σ):	1.01	0.99	2.56	5
2-18-2016	Body 750	e'	54.4200	Relative Permittivity (ε_r):	54.42	55.55	-2.03	5
		e''	22.9300	Conductivity (σ):	0.96	0.96	-0.71	5
	Body 700	e'	55.0100	Relative Permittivity (ε_r):	55.01	55.74	-1.31	5
		e''	23.4400	Conductivity (σ):	0.91	0.96	-4.89	5
	Body 790	e'	54.0300	Relative Permittivity (ε_r):	54.03	55.39	-2.46	5
		e''	22.7400	Conductivity (σ):	1.00	0.97	3.39	5
2-22-2016	Body 2450	e'	51.5300	Relative Permittivity (ε_r):	51.53	52.70	-2.22	5
		e''	14.5800	Conductivity (σ):	1.99	1.95	1.86	5
	Body 2410	e'	51.8400	Relative Permittivity (ε_r):	51.84	52.76	-1.74	5
		e''	14.3900	Conductivity (σ):	1.93	1.91	1.09	5
	Body 2475	e'	51.3500	Relative Permittivity (ε_r):	51.35	52.67	-2.50	5
		e''	14.7100	Conductivity (σ):	2.02	1.99	1.98	5
2-26-2016	Head 750	e'	41.7000	Relative Permittivity (ε_r):	41.70	41.96	-0.62	5
		e''	21.3800	Conductivity (σ):	0.89	0.89	-0.17	5
	Head 700	e'	42.3600	Relative Permittivity (ε_r):	42.36	42.22	0.34	5
		e''	21.7400	Conductivity (σ):	0.85	0.89	-4.84	5
	Head 790	e'	41.2000	Relative Permittivity (ε_r):	41.20	41.76	-1.33	5
		e''	21.0700	Conductivity (σ):	0.93	0.90	3.28	5
3-2-2016	Body 2450	e'	52.5000	Relative Permittivity (ε_r):	52.50	52.70	-0.38	5
		e''	14.6000	Conductivity (σ):	1.99	1.95	2.00	5
	Body 2410	e'	52.6400	Relative Permittivity (ε_r):	52.64	52.76	-0.23	5
		e''	14.4800	Conductivity (σ):	1.94	1.91	1.72	5
	Body 2475	e'	52.4300	Relative Permittivity (ε_r):	52.43	52.67	-0.45	5
		e''	14.7000	Conductivity (σ):	2.02	1.99	1.91	5
3-7-2016	Head 2450	e'	38.3300	Relative Permittivity (ε_r):	38.33	39.20	-2.22	5
		e''	13.5500	Conductivity (σ):	1.85	1.80	2.55	5
	Head 2410	e'	38.4900	Relative Permittivity (ε_r):	38.49	39.28	-2.01	5
		e''	13.4600	Conductivity (σ):	1.80	1.76	2.46	5
	Head 2475	e'	38.2500	Relative Permittivity (ε_r):	38.25	39.17	-2.34	5
		e''	13.6100	Conductivity (σ):	1.87	1.83	2.52	5
3-9-2016	Head 5180	e'	37.1100	Relative Permittivity (ε_r):	37.11	36.01	3.05	5
		e''	15.4600	Conductivity (σ):	4.45	4.63	-3.84	5
	Head 5200	e'	37.0700	Relative Permittivity (ε_r):	37.07	35.99	3.00	5
		e''	15.4800	Conductivity (σ):	4.48	4.65	-3.77	5
	Head 5600	e'	36.5000	Relative Permittivity (ε_r):	36.50	35.53	2.72	5
		e''	15.7000	Conductivity (σ):	4.89	5.06	-3.39	5
	Head 5800	e'	36.2300	Relative Permittivity (ε_r):	36.23	35.30	2.63	5
		e''	15.8200	Conductivity (σ):	5.10	5.27	-3.19	5
	Head 5825	e'	36.1800	Relative Permittivity (ε_r):	36.18	35.30	2.49	5
		e''	15.8400	Conductivity (σ):	5.13	5.27	-2.65	5

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SAR 1 Room (Continued)

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
3-11-2016	Body 5180	e'	49.8400	Relative Permittivity (ε_r):	49.84	49.05	1.62	5
		e''	17.6200	Conductivity (σ):	5.07	5.27	-3.73	5
	Body 5200	e'	49.8100	Relative Permittivity (ε_r):	49.81	49.02	1.61	5
		e''	17.6400	Conductivity (σ):	5.10	5.29	-3.67	5
	Body 5600	e'	49.3200	Relative Permittivity (ε_r):	49.32	48.48	1.74	5
		e''	18.0200	Conductivity (σ):	5.61	5.76	-2.60	5
	Body 5800	e'	49.0700	Relative Permittivity (ε_r):	49.07	48.20	1.80	5
		e''	18.2200	Conductivity (σ):	5.88	6.00	-2.07	5
	Body 5825	e'	49.0300	Relative Permittivity (ε_r):	49.03	48.20	1.72	5
		e''	18.2600	Conductivity (σ):	5.91	6.00	-1.43	5
3-13-2016	Body 2450	e'	54.9700	Relative Permittivity (ε_r):	54.97	52.70	4.31	5
		e''	14.6000	Conductivity (σ):	1.99	1.95	2.00	5
	Body 2410	e'	55.1400	Relative Permittivity (ε_r):	55.14	52.76	4.51	5
		e''	14.4500	Conductivity (σ):	1.94	1.91	1.51	5
	Body 2475	e'	54.8700	Relative Permittivity (ε_r):	54.87	52.67	4.18	5
		e''	14.7100	Conductivity (σ):	2.02	1.99	1.98	5
3-14-2016	Head 2450	e'	41.0900	Relative Permittivity (ε_r):	41.09	39.20	4.82	5
		e''	13.2900	Conductivity (σ):	1.81	1.80	0.58	5
	Head 2410	e'	41.2000	Relative Permittivity (ε_r):	41.20	39.28	4.89	5
		e''	13.2200	Conductivity (σ):	1.77	1.76	0.63	5
	Head 2475	e'	41.0100	Relative Permittivity (ε_r):	41.01	39.17	4.70	5
		e''	13.3600	Conductivity (σ):	1.84	1.83	0.63	5
3-20-2016	Body 2450	e'	53.3100	Relative Permittivity (ε_r):	53.31	52.70	1.16	5
		e''	13.9700	Conductivity (σ):	1.90	1.95	-2.41	5
	Body 2410	e'	53.4300	Relative Permittivity (ε_r):	53.43	52.76	1.27	5
		e''	13.8100	Conductivity (σ):	1.85	1.91	-2.98	5
	Body 2475	e'	53.2300	Relative Permittivity (ε_r):	53.23	52.67	1.07	5
		e''	14.0800	Conductivity (σ):	1.94	1.99	-2.39	5

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SAR 2 Room

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
2-15-2016	Head 835	e'	42.4700	Relative Permittivity (ϵ_r):	42.47	41.50	2.34	5
		e''	19.6000	Conductivity (σ):	0.91	0.90	1.11	5
	Head 820	e'	42.6400	Relative Permittivity (ϵ_r):	42.64	41.60	2.49	5
		e''	19.6300	Conductivity (σ):	0.90	0.90	-0.38	5
	Head 850	e'	42.3200	Relative Permittivity (ϵ_r):	42.32	41.50	1.98	5
		e''	19.5700	Conductivity (σ):	0.92	0.92	1.09	5
2-19-2016	Head 835	e'	41.6900	Relative Permittivity (ϵ_r):	41.69	41.50	0.46	5
		e''	19.2500	Conductivity (σ):	0.89	0.90	-0.69	5
	Head 820	e'	41.8600	Relative Permittivity (ϵ_r):	41.86	41.60	0.62	5
		e''	19.2800	Conductivity (σ):	0.88	0.90	-2.16	5
	Head 850	e'	41.5300	Relative Permittivity (ϵ_r):	41.53	41.50	0.07	5
		e''	19.2100	Conductivity (σ):	0.91	0.92	-0.77	5
2-29-2016	Head 1900	e'	40.2300	Relative Permittivity (ϵ_r):	40.23	40.00	0.57	5
		e''	13.1400	Conductivity (σ):	1.39	1.40	-0.84	5
	Head 1850	e'	40.4100	Relative Permittivity (ϵ_r):	40.41	40.00	1.02	5
		e''	13.0000	Conductivity (σ):	1.34	1.40	-4.48	5
	Head 1910	e'	40.2000	Relative Permittivity (ϵ_r):	40.20	40.00	0.50	5
		e''	13.1800	Conductivity (σ):	1.40	1.40	-0.02	5
3-20-2016	Body 5180	e'	48.4100	Relative Permittivity (ϵ_r):	48.41	49.05	-1.30	5
		e''	18.3400	Conductivity (σ):	5.28	5.27	0.21	5
	Body 5200	e'	48.3700	Relative Permittivity (ϵ_r):	48.37	49.02	-1.33	5
		e''	18.3600	Conductivity (σ):	5.31	5.29	0.26	5
	Body 5600	e'	47.7200	Relative Permittivity (ϵ_r):	47.72	48.48	-1.56	5
		e''	18.7200	Conductivity (σ):	5.83	5.76	1.18	5
	Body 5800	e'	47.4200	Relative Permittivity (ϵ_r):	47.42	48.20	-1.62	5
		e''	18.9000	Conductivity (σ):	6.10	6.00	1.59	5
	Body 5825	e'	47.3500	Relative Permittivity (ϵ_r):	47.35	48.20	-1.76	5
		e''	18.9500	Conductivity (σ):	6.14	6.00	2.29	5

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SAR 3 Room

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
2-11-2016	Body 1750	e'	51.5900	Relative Permittivity (ϵ_r):	51.59	53.44	-3.46	5
		e''	14.8900	Conductivity (σ):	1.45	1.49	-2.51	5
	Body 1710	e'	51.7100	Relative Permittivity (ϵ_r):	51.71	53.54	-3.42	5
		e''	14.8500	Conductivity (σ):	1.41	1.46	-3.39	5
	Body 1755	e'	51.5800	Relative Permittivity (ϵ_r):	51.58	53.43	-3.46	5
		e''	14.8900	Conductivity (σ):	1.45	1.49	-2.43	5
2-15-2016	Body 1750	e'	54.4900	Relative Permittivity (ϵ_r):	54.49	53.44	1.96	5
		e''	14.8200	Conductivity (σ):	1.44	1.49	-2.97	5
	Body 1710	e'	54.5600	Relative Permittivity (ϵ_r):	54.56	53.54	1.90	5
		e''	14.8200	Conductivity (σ):	1.41	1.46	-3.59	5
	Body 1755	e'	54.4800	Relative Permittivity (ϵ_r):	54.48	53.43	1.97	5
		e''	14.8200	Conductivity (σ):	1.45	1.49	-2.89	5
2-16-2016	Head 1750	e'	41.3900	Relative Permittivity (ϵ_r):	41.39	40.08	3.26	5
		e''	13.4200	Conductivity (σ):	1.31	1.37	-4.61	5
	Head 1710	e'	41.5500	Relative Permittivity (ϵ_r):	41.55	40.15	3.50	5
		e''	13.5000	Conductivity (σ):	1.28	1.35	-4.67	5
	Head 1755	e'	41.3700	Relative Permittivity (ϵ_r):	41.37	40.08	3.23	5
		e''	13.4100	Conductivity (σ):	1.31	1.37	-4.61	5
2-19-2016	Body 1900	e'	53.7800	Relative Permittivity (ϵ_r):	53.78	53.30	0.90	5
		e''	14.9600	Conductivity (σ):	1.58	1.52	3.98	5
	Body 1850	e'	53.9100	Relative Permittivity (ϵ_r):	53.91	53.30	1.14	5
		e''	14.9100	Conductivity (σ):	1.53	1.52	0.90	5
	Body 1910	e'	53.7500	Relative Permittivity (ϵ_r):	53.75	53.30	0.84	5
		e''	14.9900	Conductivity (σ):	1.59	1.52	4.73	5
2-20-2016	Head 1900	e'	39.1800	Relative Permittivity (ϵ_r):	39.18	40.00	-2.05	5
		e''	13.7200	Conductivity (σ):	1.45	1.40	3.53	5
	Head 1850	e'	39.3700	Relative Permittivity (ϵ_r):	39.37	40.00	-1.58	5
		e''	13.6500	Conductivity (σ):	1.40	1.40	0.29	5
	Head 1910	e'	39.1600	Relative Permittivity (ϵ_r):	39.16	40.00	-2.10	5
		e''	13.7500	Conductivity (σ):	1.46	1.40	4.31	5
2-23-2016	Body 1900	e'	50.9200	Relative Permittivity (ϵ_r):	50.92	53.30	-4.47	5
		e''	15.0100	Conductivity (σ):	1.59	1.52	4.33	5
	Body 1850	e'	51.1600	Relative Permittivity (ϵ_r):	51.16	53.30	-4.02	5
		e''	14.9900	Conductivity (σ):	1.54	1.52	1.44	5
	Body 1910	e'	50.8800	Relative Permittivity (ϵ_r):	50.88	53.30	-4.54	5
		e''	15.0100	Conductivity (σ):	1.59	1.52	4.87	5
3-2-2016	Body 1900	e'	53.3400	Relative Permittivity (ϵ_r):	53.34	53.30	0.08	5
		e''	14.9300	Conductivity (σ):	1.58	1.52	3.77	5
	Body 1850	e'	53.5100	Relative Permittivity (ϵ_r):	53.51	53.30	0.39	5
		e''	14.8500	Conductivity (σ):	1.53	1.52	0.50	5
	Body 1910	e'	53.3100	Relative Permittivity (ϵ_r):	53.31	53.30	0.02	5
		e''	14.9400	Conductivity (σ):	1.59	1.52	4.39	5
3-3-2016	Head 1900	e'	38.6500	Relative Permittivity (ϵ_r):	38.65	40.00	-3.38	5
		e''	13.8200	Conductivity (σ):	1.46	1.40	4.29	5
	Head 1850	e'	38.9000	Relative Permittivity (ϵ_r):	38.90	40.00	-2.75	5
		e''	13.8000	Conductivity (σ):	1.42	1.40	1.40	5
	Head 1910	e'	38.6000	Relative Permittivity (ϵ_r):	38.60	40.00	-3.50	5
		e''	13.8300	Conductivity (σ):	1.47	1.40	4.91	5

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SAR 3 Room (Continued)

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
3-7-2016	Body 5180	e'	49.4800	Relative Permittivity (ϵ_r):	49.48	49.05	0.88	5
		e''	18.0100	Conductivity (σ):	5.19	5.27	-1.59	5
	Body 5200	e'	49.4400	Relative Permittivity (ϵ_r):	49.44	49.02	0.86	5
		e''	18.0300	Conductivity (σ):	5.21	5.29	-1.54	5
	Body 5600	e'	48.8200	Relative Permittivity (ϵ_r):	48.82	48.48	0.71	5
		e''	18.3900	Conductivity (σ):	5.73	5.76	-0.60	5
	Body 5800	e'	48.5300	Relative Permittivity (ϵ_r):	48.53	48.20	0.68	5
		e''	18.6000	Conductivity (σ):	6.00	6.00	-0.03	5
	Body 5825	e'	48.4900	Relative Permittivity (ϵ_r):	48.49	48.20	0.60	5
		e''	18.6300	Conductivity (σ):	6.03	6.00	0.57	5
3-11-2016	Body 5180	e'	48.7500	Relative Permittivity (ϵ_r):	48.75	49.05	-0.60	5
		e''	18.4000	Conductivity (σ):	5.30	5.27	0.54	5
	Body 5200	e'	48.7000	Relative Permittivity (ϵ_r):	48.70	49.02	-0.65	5
		e''	18.4300	Conductivity (σ):	5.33	5.29	0.64	5
	Body 5600	e'	48.0100	Relative Permittivity (ϵ_r):	48.01	48.48	-0.96	5
		e''	18.8400	Conductivity (σ):	5.87	5.76	1.83	5
	Body 5800	e'	47.6700	Relative Permittivity (ϵ_r):	47.67	48.20	-1.10	5
		e''	19.0500	Conductivity (σ):	6.14	6.00	2.39	5
	Body 5825	e'	47.6300	Relative Permittivity (ϵ_r):	47.63	48.20	-1.18	5
		e''	19.0900	Conductivity (σ):	6.18	6.00	3.05	5

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8.2. System Check

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

System Performance Check Measurement Conditions:

- The measurements were performed in the flat section of the TWIN SAM or ELI phantom, shell thickness: 2.0 ±0.2 mm (bottom plate) filled with Body or Head simulating liquid of the following parameters.
- The depth of tissue-equivalent liquid in a phantom must be ≥ 15.0 cm for SAR measurements ≤ 3 GHz and ≥ 10.0 cm for measurements > 3 GHz.
- The DASY system with an E-Field Probe was used for the measurements.
- The dipole was mounted on the small tripod so that the dipole feed point was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10 mm (above 1 GHz) and 15 mm (below 1 GHz) from dipole center to the simulating liquid surface.
- The coarse grid with a grid spacing of 15 mm was aligned with the dipole.
  For 5 GHz band - The coarse grid with a grid spacing of 10 mm was aligned with the dipole.
- Special 7x7x7 (below 3 GHz) and/or 8x8x7 (above 3 GHz) fine cube was chosen for the cube.
- Distance between probe sensors and phantom surface was set to 3 mm.
  For 5 GHz band - Distance between probe sensors and phantom surface was set to 2.5 mm
- The dipole input power (forward power) was 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	Head	Body
D750V3	1122	8-17-2015	750	1g	8.23	8.6
				10g	5.37	5.67
D835V2	4d194	9-17-2015	835	1g	9.38	9.49
				10g	6.09	6.18
D1750V2	1125	8-20-2015	1750	1g	36.70	37.20
				10g	19.50	20.00
D1900V2	5d190	9-29-2015	1900	1g	39.70	39.60
				10g	20.70	20.80
D2450V2	939	9-28-2015	2450	1g	51.6	50.7
				10g	23.9	23.7
D5GHzV2	1184	8-26-2015	5200	1g	79.6	76.1
				10g	22.7	21.2
D5GHzV2	1184	8-26-2015	5600	1g	82.8	80.5
				10g	23.6	22.3
D5GHzV2	1184	8-26-2015	5800	1g	80.3	78.7
				10g	22.8	21.7

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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			
2-11-2016	D835V2	4d194	Body	1g	0.96	9.56	9.49	0.74	
				10g	0.63	6.28	6.18	1.62	
2-15-2016	D835V2	4d194	Body	1g	0.98	9.84	9.49	3.69	
				10g	0.65	6.47	6.18	4.69	
2-18-2016	D750V3	1122	Body	1g	0.83	8.26	8.60	-3.95	1, 2
				10g	0.55	5.50	5.67	-3.00	
2-22-2016	D2450V2	939	Body	1g	5.28	52.80	50.7	4.14	
				10g	2.40	24.00	23.7	1.27	
2-26-2016	D750V3	1122	Head	1g	0.85	8.47	8.23	2.92	
				10g	0.56	5.63	5.37	4.84	
3-2-2016	D2450V2	939	Body	1g	5.36	53.60	50.7	5.72	
				10g	2.42	24.20	23.7	2.11	
3-7-2016	D2450V2	939	Head	1g	5.48	54.80	51.6	6.20	3, 4
				10g	2.48	24.80	23.9	3.77	
3-9-2016	D5GHzV2	1184	Head	1g	7.82	78.20	79.6	-1.76	
				10g	2.25	22.50	22.7	-0.88	
3-9-2016	D5GHzV2	1184	Head	1g	8.03	80.30	82.8	-3.02	
				1g	2.30	23.00	23.6	-2.54	
3-9-2016	D5GHzV2	1184	Head	10g	7.43	74.30	80.3	-7.47	
				10g	2.12	21.20	22.8	-7.02	
3-11-2016	D5GHzV2	1184	Body	1g	8.12	81.20	76.1	6.70	
				10g	2.30	23.00	21.2	8.49	
3-11-2016	D5GHzV2	1184	Body	1g	8.69	86.90	80.5	7.95	
				10g	2.41	24.10	22.3	8.07	
3-11-2016	D5GHzV2	1184	Body	1g	7.74	77.40	78.7	-1.65	
				10g	2.16	21.60	21.7	-0.46	
3-13-2016	D2450V2	939	Body	1g	5.28	52.80	50.7	4.14	
				10g	2.40	24.00	23.7	1.27	
3-14-2016	D2450V2	939	Head	1g	4.98	49.80	51.6	-3.49	
				10g	2.27	22.70	23.9	-5.02	
3-20-2016	D2450V2	939	Body	1g	5.06	50.60	50.7	-0.20	
				10g	2.34	23.40	23.7	-1.27	

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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			
2-15-2016	D835V2	4d194	Head	1g	1.01	10.10	9.38	7.68	5, 6
				10g	0.66	6.60	6.09	8.37	
2-19-2016	D835V2	4d194	Head	1g	0.97	9.71	9.38	3.52	
				10g	0.64	6.39	6.09	4.93	
2-29-2016	D1900V2	5d190	Head	1g	3.83	38.30	39.7	-3.53	
				10g	1.96	19.60	20.7	-5.31	
3-20-2016	D5GHzV2	1184	Body	1g	8.07	80.70	76.1	6.04	
				10g	2.27	22.70	21.2	7.08	
3-20-2016	D5GHzV2	1184	Body	1g	8.82	88.20	80.5	9.57	7, 8
				10g	2.44	24.40	22.3	9.42	
3-20-2016	D5GHzV2	1184	Body	1g	7.99	79.90	78.7	1.52	
				10g	2.21	22.10	21.7	1.84	

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			
2-11-2016	D1750V2	1125	Body	1g	3.67	36.70	37.20	-1.34	
				10g	1.93	19.30	20	-3.50	
2-15-2016	D1750V2	1125	Body	1g	3.72	37.20	37.20	0.00	
				10g	1.95	19.50	20	-2.50	
2-16-2016	D1750V2	1125	Head	1g	3.55	35.50	36.7	-3.27	9, 10
				10g	1.84	18.40	19.5	-5.64	
2-19-2016	D1900V2	5d190	Body	1g	4.16	41.60	39.6	5.05	
				10g	2.11	21.10	20.8	1.44	
2-20-2016	D1900V2	5d190	Head	1g	3.72	37.20	39.7	-6.30	11, 12
				10g	1.92	19.20	20.7	-7.25	
2-23-2016	D1900V2	5d190	Body	1g	4.10	41.00	39.6	3.54	
				10g	2.08	20.80	20.8	0.00	
3-2-2016	D1900V2	5d190	Body	1g	4.13	41.30	39.6	4.29	
				10g	2.09	20.90	20.8	0.48	
3-3-2016	D1900V2	5d190	Head	1g	3.97	39.70	39.7	0.00	
				10g	2.04	20.40	20.7	-1.45	
3-7-2016	D5GHzV2	1184	Body	1g	7.45	74.50	76.1	-2.10	
				10g	2.12	21.20	21.2	0.00	
3-7-2016	D5GHzV2	1184	Body	1g	8.23	82.30	80.5	2.24	
				10g	2.27	22.70	22.3	1.79	
3-7-2016	D5GHzV2	1184	Body	1g	7.74	77.40	78.7	-1.65	
				10g	2.16	21.60	21.7	-0.46	
3-11-2016	D5GHzV2	1184	Body	1g	7.44	74.40	76.1	-2.23	
				10g	2.09	20.90	21.2	-1.42	
3-11-2016	D5GHzV2	1184	Body	1g	8.60	86.00	80.5	6.83	
				10g	2.38	23.80	22.3	6.73	
3-11-2016	D5GHzV2	1184	Body	1g	7.55	75.50	78.7	-4.07	
				10g	2.09	20.90	21.7	-3.69	

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9. Conducted Output Power Measurements

9.1. GSM

GSM850 Measured Results

Band	Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Max. Pwr		Reduced Pwr	
						Burst (dBm)	Frame (dBm)	Burst (dBm)	Frame (dBm)
850	GSM (Voice)	CS1	1	128	824.2	32.4	23.4	23.4	14.3
				190	836.6	32.4	23.4	23.3	14.2
				251	848.8	32.4	23.4	23.1	14.0
	GPRS (GMSK)	CS1	1	128	824.2	32.4	23.4	23.4	14.4
				190	836.6	32.4	23.4	23.3	14.3
				251	848.8	32.4	23.4	23.1	14.1
			2	128	824.2	31.5	25.5	21.8	15.8
				190	836.6	31.2	25.2	21.7	15.6
				251	848.8	31.1	25.1	21.5	15.4
			3	128	824.2	29.6	25.3	20.2	15.9
				190	836.6	29.4	25.1	20.5	16.2
				251	848.8	29.2	24.9	20.1	15.9
			4	128	824.2	27.9	24.9	19.0	16.0
				190	836.6	27.8	24.8	18.6	15.6
				251	848.8	27.6	24.6	18.6	15.6
	EGPRS (8PSK)	MCS5	1	128	824.2	27.2	18.2	17.5	8.5
				190	836.6	27.0	18.0	17.3	8.3
				251	848.8	26.8	17.8	17.2	8.2
			2	128	824.2	25.6	19.6	16.0	10.0
				190	836.6	25.4	19.4	15.7	9.7
				251	848.8	25.2	19.2	15.6	9.6
			3	128	824.2	24.0	19.7	14.4	10.1
				190	836.6	23.7	19.5	14.1	9.9
				251	848.8	23.5	19.2	14.0	9.7
			4	128	824.2	22.3	19.3	12.7	9.7
				190	836.6	22.1	19.1	12.6	9.6
				251	848.8	21.9	18.8	12.3	9.3

Notes:

The worst-case configuration and mode for SAR testing is determined to be as follows:

- Standalone: GMSK (GPRS) mode with 2 time slots for Max power and 3 time slots for Reduced power, based on the output power measurements above
- SAR is not required for EGPRS (8PSK) mode because its output power is less than that of GPRS Mode

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GSM1900 Measured Results

Band	Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Max. Pwr		Reduced Pwr	
						Burst (dBm)	Frame (dBm)	Burst (dBm)	Frame (dBm)
1900	GSM (Voice)	CS1	1	512	1850.2	30.4	21.4	24.0	15.0
				661	1880.0	30.2	21.2	24.4	15.4
				810	1909.8	30.4	21.4	24.3	15.2
	GPRS (GMSK)	CS1	1	512	1850.2	30.3	21.3	24.1	15.0
				661	1880.0	30.1	21.1	24.4	15.4
				810	1909.8	30.3	21.3	24.3	15.2
			2	512	1850.2	28.5	22.5	22.4	16.4
				661	1880.0	28.5	22.5	22.8	16.7
				810	1909.8	28.5	22.5	22.6	16.6
			3	512	1850.2	25.7	21.5	21.1	16.9
				661	1880.0	26.2	21.9	21.2	16.9
				810	1909.8	26.0	21.8	20.9	16.7
			4	512	1850.2	24.5	21.5	19.6	16.6
				661	1880.0	25.2	22.2	19.6	16.6
				810	1909.8	24.9	21.9	19.8	16.8
	EGPRS (8PSK)	MCS5	1	512	1850.2	26.6	17.6	19.7	10.7
				661	1880.0	26.8	17.8	20.0	11.0
				810	1909.8	26.8	17.8	19.9	10.9
			2	512	1850.2	25.1	19.1	18.0	12.0
				661	1880.0	25.4	19.4	18.4	12.3
				810	1909.8	25.3	19.3	18.3	12.2
			3	512	1850.2	23.5	19.2	16.6	12.3
				661	1880.0	23.8	19.5	17.0	12.7
				810	1909.8	23.7	19.4	16.9	12.6
			4	512	1850.2	21.9	18.9	15.1	12.1
				661	1880.0	22.2	19.2	15.4	12.3
				810	1909.8	22.1	19.1	15.4	12.4

Notes:

The worst-case configuration and mode for SAR testing is determined to be as follows:

- Standalone: GMSK (GPRS) mode with 2 time slots for Max power and 3 time slots for Reduced power, based on the output power measurements above
- SAR is not required for EGPRS (8PSK) mode because its output power is less than that of GPRS Mode

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9.2. 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
	βc/βd	8/15

HSDPA Setup Procedures used to establish the test signals

The following 4 Sub-tests were completed according to Release 7 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			
	βc	2/15	11/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	Bd (SF)	64			
	βc/βd	2/15	11/15	15/8	15/4
	βhs	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			
	Ahs=βhs/βc	30/15			

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

The following 5 Sub-tests were completed according to Release 6 procedures in section 5.2 of 3GPP TS34.121. 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
	βc	11/15	6/15	15/15	2/15	15/15
	βd	15/15	15/15	9/15	15/15	0
	βec	209/225	12/15	30/15	2/15	5/15
	βc/βd	11/15	6/15	15/9	2/15	15/1
	βhs	22/15	12/15	30/15	4/15	5/15
	βed	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				
	Ahs = βhs/βc	30/15				
HSUPA Specific Settings	E-DPDCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI (from 34.121 Table C.11.1.3)	75	67	92	71	81
	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

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WCDMA Band V Measured Results

Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Max. Pwr (dBm)	Reduced Pwr (dBm)
W-CDMA Band V	Rel 99	RMC, 12.2 kbps	4132	826.4	N/A	22.7	15.2
			4183	836.6	N/A	22.5	15.0
			4233	846.6	N/A	22.5	14.8
	HSDPA	Subtest 1	4132	826.4	0	22.6	15.2
			4183	836.6	0	22.5	15.0
			4233	846.6	0	22.4	15.0
		Subtest 2	4132	826.4	0	22.3	14.9
			4183	836.6	0	22.2	14.7
			4233	846.6	0	22.1	14.6
		Subtest 3	4132	826.4	0.5	22.2	14.9
			4183	836.6	0.5	22.0	14.6
			4233	846.6	0.5	21.9	14.5
		Subtest 4	4132	826.4	0.5	22.2	14.9
			4183	836.6	0.5	22.1	14.6
			4233	846.6	0.5	21.9	14.5
	HSUPA	Subtest 1	4132	826.4	0	22.4	14.4
			4183	836.6	0	21.5	14.1
			4233	846.6	0	22.1	14.9
		Subtest 2	4132	826.4	2	18.8	11.5
			4183	836.6	2	18.7	11.2
			4233	846.6	2	18.6	11.1
		Subtest 3	4132	826.4	1	19.7	12.3
			4183	836.6	1	19.6	12.1
			4233	846.6	1	19.5	12.0
		Subtest 4	4132	826.4	2	18.8	11.5
			4183	836.6	2	18.7	11.1
			4233	846.6	2	18.6	11.0
		Subtest 5	4132	826.4	0	22.5	15.0
			4183	836.6	0	22.5	15.0
			4233	846.6	0	22.5	14.9

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W-CDMA Band II Measured Results

Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Max. Pwr (dBm)	Reduced Pwr (dBm)
W-CDMA Band II	Rel 99	RMC, 12.2 kbps	9262	1852.4	N/A	21.7	14.2
			9400	1880.0	N/A	21.7	14.4
			9538	1907.6	N/A	22.0	14.4
	HSDPA	Subtest 1	9262	1852.4	0	21.7	14.1
			9400	1880.0	0	21.7	14.5
			9538	1907.6	0	21.9	14.4
		Subtest 2	9262	1852.4	0	21.2	13.7
			9400	1880.0	0	21.3	14.0
			9538	1907.6	0	21.6	13.9
		Subtest 3	9262	1852.4	0.5	21.1	13.6
			9400	1880.0	0.5	21.2	13.9
			9538	1907.6	0.5	21.5	13.8
		Subtest 4	9262	1852.4	0.5	21.1	13.6
			9400	1880.0	0.5	21.1	13.9
			9538	1907.6	0.5	21.5	13.9
	HSUPA	Subtest 1	9262	1852.4	0	21.3	13.2
			9400	1880.0	0	21.4	13.5
			9538	1907.6	0	21.4	13.6
		Subtest 2	9262	1852.4	2	17.7	10.3
			9400	1880.0	2	17.7	10.5
			9538	1907.6	2	18.0	10.3
		Subtest 3	9262	1852.4	1	18.7	11.3
			9400	1880.0	1	18.7	11.4
			9538	1907.6	1	18.9	11.3
		Subtest 4	9262	1852.4	2	17.7	10.3
			9400	1880.0	2	17.7	10.5
			9538	1907.6	2	18.0	10.3
		Subtest 5	9262	1852.4	0	21.6	14.1
			9400	1880.0	0	21.7	14.3
			9538	1907.6	0	21.7	14.3

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9.3. 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 3

Modulation	Channel bandwidth / Transmission bandwidth (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

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 Signalling Value of “NS_01”.

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

Network Signalling value	Requirements (sub-clause)	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	NA
NS_03	6.6.2.2.1	2, 4,10, 23, 25, 35, 36	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
			20	>10	≤ 1
NS_04	6.6.2.2.2	41	5	>6	≤ 1
			10, 15, 20	See Table 6.2.4-4	
NS_05	6.6.3.3.1	1	10,15,20	≥ 50	≤ 1
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	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		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23[1]	1.4, 3, 5, 10	Table 6.2.4-5	Table 6.2.4-5
..					
NS_32	-	-	-	-	-
Note 1: Applies to the lower block of Band 23, i.e. a carrier placed in the 2000-2010 MHz region.					

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LTE Band 2 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)			Target MPR	Reduce. Avg Pwr (dBm)		
						1860 MHz	1880 MHz	1900 MHz		1860 MHz	1880 MHz	1900 MHz
LTE Band 2	20	QPSK	1	0	0	21.5	21.4	21.8	0	14.7	15.3	15.2
			1	49	0	21.8	21.7	22.0	0	14.8	15.5	15.5
			1	99	0	21.5	21.6	21.8	0	15.0	15.5	15.3
			50	0	1	20.5	20.8	20.9	0	14.9	15.2	15.3
			50	24	1	20.6	20.8	21.0	0	15.0	15.3	15.4
			50	50	1	20.6	20.8	20.9	0	15.1	15.3	15.3
			100	0	1	20.6	20.8	21.0	0	15.0	15.3	15.4
		16QAM	1	0	1	20.0	20.4	20.6	0	15.1	14.6	14.8
			1	49	1	20.7	20.6	20.5	0	14.9	15.3	15.4
			1	99	1	20.7	20.4	20.8	0	14.7	14.7	15.1
			50	0	2	19.5	19.8	19.8	0	14.9	15.2	15.2
			50	24	2	19.5	19.8	19.7	0	15.0	15.2	15.3
			50	50	2	19.7	19.8	19.6	0	15.0	15.2	15.3
			100	0	2	19.5	19.7	20.0	0	15.0	15.2	15.2
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)			Target MPR	Reduce. 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	21.4	21.6	21.9	0	14.9	15.1	15.2
			1	37	0	21.8	22.0	22.0	0	15.2	15.3	15.5
			1	74	0	21.8	22.0	21.8	0	15.1	15.1	15.3
			36	0	1	20.5	20.8	20.9	0	14.9	15.2	15.3
			36	20	1	20.6	20.8	20.9	0	15.0	15.3	15.3
			36	39	1	20.6	20.7	20.9	0	15.0	15.3	15.3
			75	0	1	20.5	20.8	20.9	0	14.9	15.2	15.4
		16QAM	1	0	1	20.6	20.7	20.6	0	14.9	15.0	15.2
			1	37	1	20.8	21.0	21.0	0	15.2	15.3	15.5
			1	74	1	20.8	20.6	20.7	0	15.0	14.9	14.9
			36	0	2	19.5	19.9	19.9	0	14.9	15.3	15.2
			36	20	2	19.5	19.8	19.8	0	15.0	15.3	15.2
			36	39	2	19.5	19.7	19.8	0	15.0	15.3	15.4
			75	0	2	19.4	19.6	19.9	0	15.0	15.2	15.4
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)			Target MPR	Reduce. Avg Pwr (dBm)		
						1855 MHz	1880 MHz	1905 MHz		1855 MHz	1880 MHz	1905 MHz
LTE Band 2	10	QPSK	1	0	0	21.6	21.7	21.8	0	14.8	15.2	15.2
			1	25	0	21.6	21.9	21.9	0	15.0	15.1	15.2
			1	49	0	21.7	21.8	21.7	0	15.0	15.1	15.2
			25	0	1	20.6	20.8	21.0	0	15.0	15.2	15.4
			25	12	1	20.5	20.8	20.9	0	14.9	15.2	15.3
			25	25	1	20.6	20.8	21.0	0	15.0	15.2	15.3
			50	0	1	20.5	20.8	20.9	0	15.0	15.2	15.4
		16QAM	1	0	1	20.6	20.5	20.8	0	14.8	15.1	15.2
			1	25	1	20.8	20.4	20.8	0	14.9	15.1	15.3
			1	49	1	20.2	20.6	20.8	0	14.9	14.7	15.2
			25	0	2	19.6	19.9	19.9	0	15.0	15.2	15.5
			25	12	2	19.5	19.9	20.0	0	14.9	15.3	15.4
			25	25	2	19.5	19.8	20.0	0	14.9	15.3	15.5
			50	0	2	19.5	19.8	19.9	0	14.9	15.3	15.3

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LTE Band 2 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)			Target MPR	Reduce. 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	21.3	21.7	21.6	0	14.9	15.3	15.5
			1	12	0	21.6	21.7	21.9	0	14.9	15.5	15.5
			1	24	0	21.5	21.6	22.0	0	14.8	15.4	15.4
			12	0	1	20.4	20.8	21.0	0	14.9	15.3	15.4
			12	7	1	20.5	20.7	20.9	0	14.9	15.3	15.4
			12	13	1	20.5	20.7	21.0	0	14.8	15.2	15.4
			25	0	1	20.5	20.8	21.0	0	15.0	15.2	15.4
		16QAM	1	0	1	20.0	20.6	20.5	0	14.9	15.1	15.3
			1	12	1	20.1	20.3	20.6	0	14.9	15.4	15.4
			1	24	1	19.9	20.3	20.6	0	14.7	15.2	15.2
			12	0	2	19.3	19.7	20.0	0	14.9	15.2	15.3
			12	7	2	19.4	19.7	20.0	0	14.9	15.2	15.3
			12	13	2	19.2	19.7	19.9	0	14.9	15.2	15.3
			25	0	2	19.6	19.7	19.8	0	15.1	15.3	15.2
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)			Target MPR	Reduce. 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	21.3	21.7	22.0	0	14.9	15.2	15.3
			1	8	0	21.4	21.8	22.0	0	14.8	15.1	15.3
			1	14	0	21.4	21.8	21.8	0	14.9	15.1	15.2
			8	0	1	20.5	20.6	21.0	0	14.8	15.2	15.5
			8	4	1	20.6	20.7	21.0	0	14.9	15.2	15.4
			8	7	1	20.5	20.7	21.0	0	14.9	15.2	15.5
			15	0	1	20.5	20.6	21.0	0	14.9	15.2	15.5
		16QAM	1	0	1	20.4	20.4	20.7	0	15.1	15.4	15.5
			1	8	1	20.2	20.8	21.0	0	15.3	15.3	15.4
			1	14	1	20.4	20.7	20.8	0	15.2	15.2	15.2
			8	0	2	19.6	19.6	20.0	0	15.1	14.8	15.4
			8	4	2	19.7	19.6	20.0	0	15.1	15.1	15.5
			8	7	2	19.7	19.4	20.0	0	14.9	15.1	15.4
			15	0	2	19.5	19.8	20.0	0	14.9	15.2	15.5
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)			Target MPR	Reduce. 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	21.4	21.6	21.8	0	14.9	15.0	15.2
			1	3	0	21.4	21.9	21.9	0	14.9	15.0	15.4
			1	5	0	21.4	21.8	21.7	0	14.9	15.1	15.3
			3	0	0	21.4	21.6	21.9	0	14.8	15.1	15.5
			3	1	0	21.4	21.6	22.0	0	15.0	15.2	15.5
			3	3	0	21.5	21.6	22.0	0	14.8	15.2	15.4
			6	0	1	20.4	20.8	21.0	0	14.8	15.1	15.4
		16QAM	1	0	1	20.3	20.4	20.9	0	15.1	15.1	15.3
			1	3	1	20.4	20.4	20.8	0	15.2	15.1	15.3
			1	5	1	20.2	20.3	20.9	0	15.1	15.0	15.2
			3	0	1	20.2	20.3	20.8	0	15.2	15.1	15.3
			3	1	1	20.2	20.4	20.9	0	15.1	15.1	15.2
			3	3	1	20.3	20.1	20.7	0	15.1	15.1	15.2
			6	0	2	19.4	19.4	19.8	0	15.1	15.1	15.5

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LTE Band 4 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)			Target MPR	Reduce. Avg Pwr (dBm)		
						1720 MHz	1732.5 MHz	1745 MHz		1720 MHz	1732.5 MHz	1745 MHz
LTE Band 4	20	QPSK	1	0	0	23.5	23.7	23.4	0	14.5	14.4	14.3
			1	49	0	23.5	23.2	23.4	0	14.5	14.1	14.4
			1	99	0	23.4	23.2	23.5	0	14.4	14.5	14.5
			50	0	1	22.5	22.4	22.5	0	14.5	14.3	14.4
			50	24	1	22.4	22.4	22.4	0	14.4	14.3	14.4
			50	50	1	22.3	22.5	22.5	0	14.3	14.3	14.5
			100	0	1	22.4	22.4	22.5	0	14.4	14.3	14.4
		16QAM	1	0	1	22.0	22.5	22.3	0	14.4	14.1	14.2
			1	49	1	21.8	22.5	22.3	0	14.5	14.2	14.7
			1	99	1	22.1	22.4	22.5	0	13.8	14.3	14.4
			50	0	2	21.5	21.3	21.3	0	14.5	14.4	14.2
			50	24	2	21.3	21.3	21.3	0	14.3	14.3	14.2
			50	50	2	21.3	21.4	21.4	0	14.3	14.4	14.3
			100	0	2	21.4	21.3	21.3	0	14.4	14.4	14.4
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)			Target MPR	Reduce. Avg Pwr (dBm)		
						1717.5 MHz	1732.5 MHz	1747.5 MHz		1717.5 MHz	1732.5 MHz	1747.5 MHz
LTE Band 4	15	QPSK	1	0	0	23.3	23.4	23.4	0	14.5	14.3	14.5
			1	37	0	23.3	23.5	23.5	0	14.4	14.6	14.5
			1	74	0	23.2	23.3	23.9	0	14.3	14.3	14.6
			36	0	1	22.4	22.4	22.5	0	14.5	14.3	14.5
			36	20	1	22.3	22.4	22.6	0	14.4	14.3	14.5
			36	39	1	22.3	22.4	22.6	0	14.4	14.3	14.5
			75	0	1	22.4	22.2	22.7	0	14.4	14.3	14.6
		16QAM	1	0	1	22.1	22.2	22.4	0	14.2	14.4	14.8
			1	37	1	21.8	22.5	22.7	0	14.5	15.0	14.8
			1	74	1	21.8	22.3	22.4	0	13.5	14.1	14.8
			36	0	2	21.4	21.3	21.3	0	14.4	14.3	14.5
			36	20	2	21.3	21.3	21.5	0	14.4	14.3	14.4
			36	39	2	21.2	21.3	21.6	0	14.3	14.4	14.4
			75	0	2	21.4	21.2	21.6	0	14.4	14.4	14.5
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)			Target MPR	Reduce. Avg Pwr (dBm)		
						1715 MHz	1732.5 MHz	1750 MHz		1715 MHz	1732.5 MHz	1750 MHz
LTE Band 4	10	QPSK	1	0	0	23.3	23.4	23.3	0	14.5	14.3	14.3
			1	25	0	23.3	23.5	23.4	0	14.4	14.4	14.6
			1	49	0	23.3	23.3	23.9	0	14.4	14.3	14.5
			25	0	1	22.5	22.4	22.7	0	14.5	14.2	14.5
			25	12	1	22.5	22.3	22.6	0	14.4	14.2	14.5
			25	25	1	22.4	22.4	22.6	0	14.4	14.3	14.5
			50	0	1	22.5	22.4	22.6	0	14.5	14.2	14.5
		16QAM	1	0	1	22.3	22.3	22.4	0	14.0	14.0	14.3
			1	25	1	22.5	22.3	22.4	0	14.3	14.1	14.5
			1	49	1	22.2	22.3	22.3	0	13.9	14.2	14.4
			25	0	2	21.5	21.4	21.7	0	14.5	14.4	14.6
			25	12	2	21.5	21.3	21.6	0	14.4	14.4	14.6
			25	25	2	21.5	21.4	21.5	0	14.5	14.5	14.7
			50	0	2	21.5	21.3	21.5	0	14.4	14.3	14.5

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LTE Band 4 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)			Target MPR	Reduce. Avg Pwr (dBm)		
						1712.5 MHz	1732.5 MHz	1752.5 MHz		1712.5 MHz	1732.5 MHz	1752.5 MHz
LTE Band 4	5	QPSK	1	0	0	23.4	23.5	23.5	0	14.2	14.1	14.5
			1	12	0	23.5	23.5	23.7	0	14.6	14.4	14.6
			1	24	0	23.3	23.4	23.8	0	14.4	14.3	14.6
			12	0	1	22.4	22.4	22.8	0	14.4	14.3	14.6
			12	7	1	22.4	22.4	22.6	0	14.5	14.3	14.6
			12	13	1	22.3	22.3	22.8	0	14.3	14.2	14.6
			25	0	1	22.4	22.4	22.7	0	14.4	14.3	14.6
		16QAM	1	0	1	22.3	22.3	22.7	0	14.2	14.3	14.1
			1	12	1	22.4	22.2	22.7	0	14.4	14.7	14.4
			1	24	1	22.3	22.1	22.6	0	14.4	14.4	14.3
			12	0	2	21.5	21.1	21.4	0	14.5	14.2	14.5
			12	7	2	21.4	21.1	21.8	0	14.6	14.3	14.6
			12	13	2	21.5	21.1	21.8	0	14.5	14.1	14.7
			25	0	2	21.4	21.2	21.7	0	14.6	14.3	14.7
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)			Target MPR	Reduce. Avg Pwr (dBm)		
						1711.5 MHz	1732.5 MHz	1753.5 MHz		1711.5 MHz	1732.5 MHz	1753.5 MHz
LTE Band 4	3	QPSK	1	0	0	23.3	23.3	23.9	0	14.4	14.3	14.6
			1	8	0	23.5	23.5	23.8	0	14.5	14.5	14.4
			1	14	0	23.4	23.5	24.0	0	14.5	14.2	14.6
			8	0	1	22.3	22.4	22.7	0	14.3	14.2	14.6
			8	4	1	22.4	22.4	22.7	0	14.4	14.3	14.6
			8	7	1	22.3	22.3	22.9	0	14.4	14.2	14.6
			15	0	1	22.4	22.3	22.7	0	14.4	14.3	14.6
		16QAM	1	0	1	22.4	22.1	22.6	0	14.6	14.2	14.5
			1	8	1	22.5	22.5	22.4	0	14.5	14.5	14.6
			1	14	1	22.1	22.1	22.7	0	14.6	14.3	14.4
			8	0	2	21.3	21.0	21.6	0	14.4	13.9	14.7
			8	4	2	21.2	21.1	21.7	0	14.4	14.1	14.7
			8	7	2	21.2	20.9	21.7	0	14.4	13.9	14.6
			15	0	2	21.3	21.3	21.6	0	14.4	14.2	14.4
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)			Target MPR	Reduce. Avg Pwr (dBm)		
						1710.7 MHz	1732.5 MHz	1754.3 MHz		1710.7 MHz	1732.5 MHz	1754.3 MHz
LTE Band 4	1.4	QPSK	1	0	0	23.5	23.2	23.6	0	14.5	14.2	14.5
			1	3	0	23.5	23.3	24.0	0	14.6	14.2	14.5
			1	5	0	23.4	23.1	23.8	0	14.4	14.0	14.6
			3	0	0	23.4	23.4	23.9	0	14.4	14.3	14.7
			3	1	0	23.3	23.4	24.0	0	14.4	14.4	14.8
			3	3	0	23.4	23.3	23.9	0	14.4	14.3	14.7
			6	0	1	22.3	22.3	22.9	0	14.3	14.3	14.8
		16QAM	1	0	1	22.4	22.1	22.6	0	14.2	14.1	14.5
			1	3	1	22.3	22.2	22.6	0	14.4	14.2	14.7
			1	5	1	22.4	22.0	22.6	0	14.3	14.1	14.7
			3	0	1	22.3	22.1	22.5	0	14.3	14.0	14.8
			3	1	1	22.3	22.4	22.5	0	14.3	14.0	14.8
			3	3	1	22.3	22.4	22.6	0	14.4	14.1	15.0
			6	0	2	21.3	21.0	21.6	0	14.5	14.1	14.8

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LTE Band 5 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)			Target MPR	Reduce. 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	23.4	23.1	23.1	0	15.3	15.2	15.1
			1	25	0	23.4	23.3	23.3	0	15.4	15.3	15.5
			1	49	0	23.1	23.0	23.0	0	15.0	15.0	15.1
			25	0	1	22.4	22.3	22.3	0	15.3	15.2	15.2
			25	12	1	22.3	22.3	22.2	0	15.3	15.3	15.2
			25	25	1	22.2	22.2	22.2	0	15.2	15.1	15.1
			50	0	1	22.3	22.2	22.2	0	15.2	15.2	15.1
		16QAM	1	0	1	22.1	22.0	22.2	0	15.1	14.8	15.1
			1	25	1	22.0	21.9	22.5	0	15.0	15.0	15.4
			1	49	1	22.0	21.5	21.8	0	15.0	14.3	15.1
			25	0	2	21.3	21.3	21.3	0	15.3	15.2	15.3
			25	12	2	21.4	21.4	21.3	0	15.3	15.3	15.2
			25	25	2	21.2	21.3	21.2	0	15.1	15.3	15.1
			50	0	2	21.3	21.1	21.1	0	15.2	15.2	15.1

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)			Target MPR	Reduce. 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	23.2	23.0	23.1	0	15.1	14.8	15.0
			1	12	0	23.3	23.5	23.4	0	15.2	15.3	15.4
			1	24	0	23.1	23.3	23.2	0	15.0	14.9	14.9
			12	0	1	22.3	22.3	22.2	0	15.2	15.2	15.1
			12	6	1	22.3	22.3	22.2	0	15.3	15.2	15.1
			12	11	1	22.2	22.2	22.2	0	15.2	15.2	15.0
			25	0	1	22.2	22.2	22.1	0	15.1	15.1	15.0
		16QAM	1	0	1	22.1	22.0	21.7	0	14.9	15.1	14.6
			1	12	1	22.4	22.2	22.3	0	15.3	15.3	14.6
			1	24	1	22.0	21.7	22.2	0	14.5	14.9	14.4
			12	0	2	21.3	21.2	21.0	0	15.0	15.1	15.0
			12	6	2	21.3	21.3	21.1	0	15.3	15.1	14.9
			12	11	2	21.2	21.3	21.1	0	15.2	15.0	14.9
			25	0	2	21.3	21.2	20.7	0	15.2	15.3	14.9

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)			Target MPR	Reduce. 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	23.1	23.1	23.0	0	15.2	15.1	15.0
			1	8	0	23.3	23.4	23.3	0	15.4	15.3	15.2
			1	14	0	23.3	23.1	23.2	0	15.3	15.1	14.9
			8	0	1	22.2	22.2	22.2	0	15.2	15.1	15.1
			8	4	1	22.2	22.3	22.2	0	15.1	15.2	15.2
			8	7	1	22.2	22.3	22.2	0	15.1	15.2	15.2
			15	0	1	22.2	22.2	22.1	0	15.1	15.0	15.0
		16QAM	1	0	1	22.1	22.4	22.0	0	15.0	14.8	15.0
			1	8	1	22.2	22.5	22.2	0	15.1	15.2	15.1
			1	14	1	22.1	22.0	22.0	0	14.8	14.9	15.0
			8	0	2	21.4	20.9	21.1	0	14.9	14.8	15.0
			8	4	2	21.5	20.9	21.2	0	15.0	14.7	15.2
			8	7	2	21.5	20.9	21.1	0	15.0	14.9	15.2
			15	0	2	21.3	21.1	21.0	0	15.2	15.1	14.8

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LTE Band 5 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)			Target MPR	Reduce. 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	23.5	23.0	23.1	0	15.3	14.9	15.0
			1	3	0	23.4	23.2	23.3	0	15.3	15.1	15.0
			1	5	0	23.3	23.1	23.3	0	15.2	15.1	15.0
			3	0	0	23.3	23.1	23.4	0	15.2	15.1	15.3
			3	1	0	23.3	23.2	23.3	0	15.3	15.2	15.1
			3	3	0	23.3	23.3	23.4	0	15.3	15.2	15.2
			6	0	1	22.3	22.1	22.2	0	15.3	15.1	15.2
		16QAM	1	0	1	22.3	22.0	22.1	0	15.1	15.0	15.1
			1	3	1	22.3	21.8	22.3	0	15.1	15.0	15.2
			1	5	1	22.3	22.0	22.2	0	15.0	15.0	14.9
			3	0	1	22.1	21.8	22.4	0	14.9	14.9	15.2
			3	1	1	22.2	22.0	22.4	0	14.9	14.9	15.1
			3	3	1	22.3	22.1	22.3	0	14.9	14.9	15.1
			6	0	2	21.3	21.0	21.3	0	15.0	15.0	15.1

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LTE Band 17 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)	Target MPR	Reduce. Avg Pwr (dBm)
						710 MHz		710 MHz
LTE Band 17	10	QPSK	1	0	0	23.1	0	15.0
			1	25	0	23.2	0	15.1
			1	49	0	22.9	0	15.1
			25	0	1	22.1	0	15.1
			25	12	1	22.1	0	15.1
			25	25	1	22.0	0	15.0
			50	0	1	22.0	0	15.0
		16QAM	1	0	1	22.0	0	14.8
			1	25	1	21.9	0	14.8
			1	49	1	21.5	0	14.5
			25	0	2	21.1	0	15.1
			25	12	2	21.1	0	15.1
			25	25	2	21.1	0	15.1
			50	0	2	21.0	0	15.1
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)	Target MPR	Max. Avg Pwr (dBm)
						710 MHz		710 MHz
LTE Band 17	5	QPSK	1	0	0	23.2	0	15.0
			1	12	0	23.3	0	14.9
			1	24	0	23.1	0	15.1
			12	0	1	22.0	0	15.0
			12	6	1	22.1	0	15.1
			12	11	1	21.9	0	15.0
			25	0	1	22.0	0	14.9
		16QAM	1	0	1	21.8	0	14.7
			1	12	1	22.1	0	15.2
			1	24	1	21.7	0	14.9
			12	0	2	20.7	0	15.0
			12	6	2	21.0	0	15.2
			12	11	2	21.1	0	14.9
			25	0	2	21.0	0	15.0

Note(s):

10/5 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

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9.4. Wi-Fi 2.4GHz (DTS Band)

Measured Results

Antenna	Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Max Pwr.			Reduced Pwr.		
						Avg Pwr (dBm)	Max Output Power (dBm)	SAR Test (Yes/No)	Avg Pwr (dBm)	Max Output Power (dBm)	SAR Test (Yes/No)
SISO Ant.1	2.4	802.11b	1 Mbps	1	2412	19.3	19.5	Yes	11.3	11.5	Yes
				6	2437	19.0			11.5		
				11	2462	19.2			11.3		
				12	2467	3.3	3.5	No	3.3	3.5	No
				13	2472	3.3			3.3		
		802.11g	6 Mbps	1	2412	18.8	19.5	No	10.9	11.5	No
				6	2437	19.5			11.2		
				11	2462	18.8			11.0		
				12	2467	3.1	3.5	No	3.1	3.5	No
				13	2472	3.0			3.0		
		802.11n (HT20)	6.5 Mbps	1	2412	Not Required	17.5	No	10.7	11.5	No
				6	2437				11.1		
				11	2462				10.8		
				12	2467		3.5	No	3.1	3.5	No
				13	2472				3.0		
SISO Ant.2	2.4	802.11b	1 Mbps	1	2412	19.1	19.5	Yes	10.7	11.5	Yes
				6	2437	19.0			10.5		
				11	2462	19.3			10.8		
				12	2467	3.3	3.5	No	3.3	3.5	No
				13	2472	3.2			3.2		
		802.11g	6 Mbps	1	2412	19.3	19.5	No	10.6	11.5	No
				6	2437	19.3			10.5		
				11	2462	18.8			10.7		
				12	2467	3.1	3.5	No	3.1	3.5	No
				13	2472	2.9			2.9		
		802.11n (HT20)	6.5 Mbps	1	2412	Not Required	17.5	No	10.5	11.5	No
				6	2437				10.5		
				11	2462				10.7		
				12	2467		3.5	No	2.8	3.5	No
				13	2472				2.7		

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.

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

Measured Results

Antenna	Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Max Pwr.			Reduce Pwr		
						Avg Pwr (dBm)	Max Output Power (dBm)	SAR Test (Yes/No)	Avg Pwr (dBm)	Max Output Power (dBm)	SAR Test (Yes/No)
SISO Ant.1	5.3 (U-NII 2A)	802.11a	6 Mbps	52	5260	15.3	15.5	Yes	Not Required	8.5	No
				56	5280	15.4					
				60	5300	15.4					
				64	5320	15.3					
		802.11n (HT20)	6.5 Mbps	52	5260	15.1	15.5	No		8.5	No
				56	5280	15.2					
				60	5300	15.1					
				64	5320	15.1					
		802.11n (HT40)	13.5 Mbps	54	5270	Not Required	14.5	No		8.5	No
				62	5310						
		802.11ac (VHT20)	6.5 Mbps	52	5260	15.1	15.5	No		8.5	No
				56	5280	15.2					
				60	5300	15.1					
				64	5320	15.1					
		802.11ac (VHT40)	13.5 Mbps	54	5270	Not Required	14.5	No		8.5	No
				62	5310						
		802.11ac (VHT80)	29.3 Mbps	58	5290	Not Required	13.5	No	8.5	8.5	Yes
	5.5 (U-NII 2C) <5.65GHz	802.11a	6 Mbps	100	5500	15.4	15.5	Yes	Not Required	8.5	No
				112	5560	15.4					
				116	5580	15.4					
				128	5640	15.5					
		802.11n (HT20)	6.5 Mbps	100	5500	15.1	15.5	No		8.5	No
				112	5560	15.2					
				116	5580	15.2					
				128	5640	15.4					
		802.11n (HT40)	13.5 Mbps	102	5510	Not Required	14.5	No		8.5	No
				110	5550						
				118	5590						
				126	5630						
		802.11ac (VHT20)	6.5 Mbps	100	5500	15.1	15.5	No		8.5	No
				112	5560	15.2					
				116	5580	15.2					
				128	5640	15.4					
		802.11ac (VHT40)	13.5 Mbps	102	5510	Not Required	14.5	No		8.5	No
				110	5550						
				118	5590						
				126	5630						
		802.11ac (VHT80)	29.3 Mbps	106	5530	Not Required	13.5	No	8.5	8.5	Yes
				122	5610				8.5		
	5.5 (U-NII 2C) >5.65GHz + 5.8 (U-NII 3)	802.11a	6 Mbps	132	5660	15.4	15.5	Yes	Not Required	8.5	No
				149	5745	15.4					
				165	5825	15.1					
		802.11n (HT20)	6.5 Mbps	132	5660	15.2	15.5	No		8.5	No
				149	5745	15.1					
				165	5825	14.9					
		802.11n (HT40)	13.5 Mbps	134	5670	Not Required	14.5	No		8.5	No
				151	5755						
				159	5795						
		802.11ac (VHT20)	6.5 Mbps	132	5660	15.2	15.5	No		8.5	No
				149	5745	15.1					
				165	5825	14.8					
		802.11ac (VHT40)	13.5 Mbps	134	5670	Not Required	14.5	No		8.5	No
				151	5755						
				159	5795						
		802.11ac	29.3 Mbps	155	5775	Not Required	13.5	No	8.5	8.5	Yes

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Antenna	Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Max Pwr.			Reduce Pwr		
						Avg Pwr (dBm)	Max Output Power (dBm)	SAR Test (Yes/No)	Avg Pwr (dBm)	Max Output Power (dBm)	SAR Test (Yes/No)
SISO Ant.2	5.3 (U-NII 2A)	802.11a	6 Mbps	52	5260	15.2	15.5	Yes	Not Required	8.5	No
				56	5280	15.3					
				60	5300	15.4					
				64	5320	15.3					
		802.11n (HT20)	6.5 Mbps	52	5260	14.9	15.5	No		8.5	No
				56	5280	15.1					
				60	5300	15.1					
				64	5320	15.0					
		802.11n (HT40)	13.5 Mbps	54	5270	Not Required	14.5	No		8.5	No
				62	5310						
		802.11ac (VHT20)	6.5 Mbps	52	5260	15.0	15.5	No		8.5	No
				56	5280	15.1					
				60	5300	15.2					
				64	5320	15.1					
		802.11ac (VHT40)	13.5 Mbps	54	5270	Not Required	14.5	No		8.5	No
				62	5310						
		802.11ac (VHT80)	29.3 Mbps	58	5290	Not Required	13.5	No	8.4	8.5	Yes
	5.5 (U-NII 2C) <5.65GHz	802.11a	6 Mbps	100	5500	15.4	15.5	Yes	Not Required	8.5	No
				112	5560	15.1					
				116	5580	15.2					
				128	5640	15.2					
		802.11n (HT20)	6.5 Mbps	100	5500	15.1	15.5	No		8.5	No
				112	5560	14.9					
				116	5580	14.9					
				128	5640	15.0					
		802.11n (HT40)	13.5 Mbps	102	5510	Not Required	14.5	No		8.5	No
				110	5550						
				118	5590						
				126	5630						
		802.11ac (VHT20)	6.5 Mbps	100	5500	15.1	15.5	No		8.5	No
				112	5560	14.9					
				116	5580	14.9					
				128	5640	14.8					
		802.11ac (VHT40)	13.5 Mbps	102	5510	Not Required	14.5	No		8.5	No
				110	5550						
				118	5590						
				126	5630						
		802.11ac (VHT80)	29.3 Mbps	106	5530	Not Required	13.5	No	8.2	8.5	Yes
				122	5610				8.3		
	5.5 (U-NII 2C) >5.65GHz + 5.8 (U-NII 3)	802.11a	6 Mbps	132	5660	15.0	15.5	Yes	Not Required	8.5	No
				149	5745	15.0					
				165	5825	15.1					
		802.11n (HT20)	6.5 Mbps	132	5660	14.8	15.5	No		8.5	No
				149	5745	14.7					
				165	5825	14.9					
		802.11n (HT40)	13.5 Mbps	134	5670	Not Required	14.5	No		8.5	No
				151	5755						
				159	5795						
		802.11ac (VHT20)	6.5 Mbps	132	5660	14.8	15.5	No		8.5	No
				149	5745	14.7					
				165	5825	14.9					
		802.11ac (VHT40)	13.5 Mbps	134	5670	Not Required	14.5	No		8.5	No
				151	5755						
				159	5795						
		802.11ac	29.3 Mbps	155	5775	Not Required	13.5	No	8.2	8.5	Yes

Note(s):

1. Output Power and SAR measurement is not required for 802.11n/ac (V)HT20/(V)HT40/VHT80 channels when the specified tune-up tolerances for 802.11n/ac (V)HT20/(V)HT40/VHT80 are lower than 802.11a by more than ½ dB and the measured SAR is ≤ 1.2 W/Kg.
2. 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.
3. 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.

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9.6. Bluetooth

Band (GHz)	Mode	Ch #	Freq. (MHz)	Avg Pwr (dBm)
2.4	V3.0 + EDR, GFSK	0	2402	10.6
		39	2441	10.8
		78	2480	10.0
	V3.0 + EDR, π/4 DQPSK	0	2402	7.4
		39	2441	7.6
		78	2480	6.7
	V3.0 + EDR, 8-DPSK	0	2402	7.4
		39	2441	7.6
		78	2480	6.8
	V4.0 LE, GFSK	0	2402	1.5
		19	2440	3.0
		39	2480	1.9

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10. Measured and Reported (Scaled) SAR Results

SAR Test Reduction criteria are as follows:

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 ≤ ¼ 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.

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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*.

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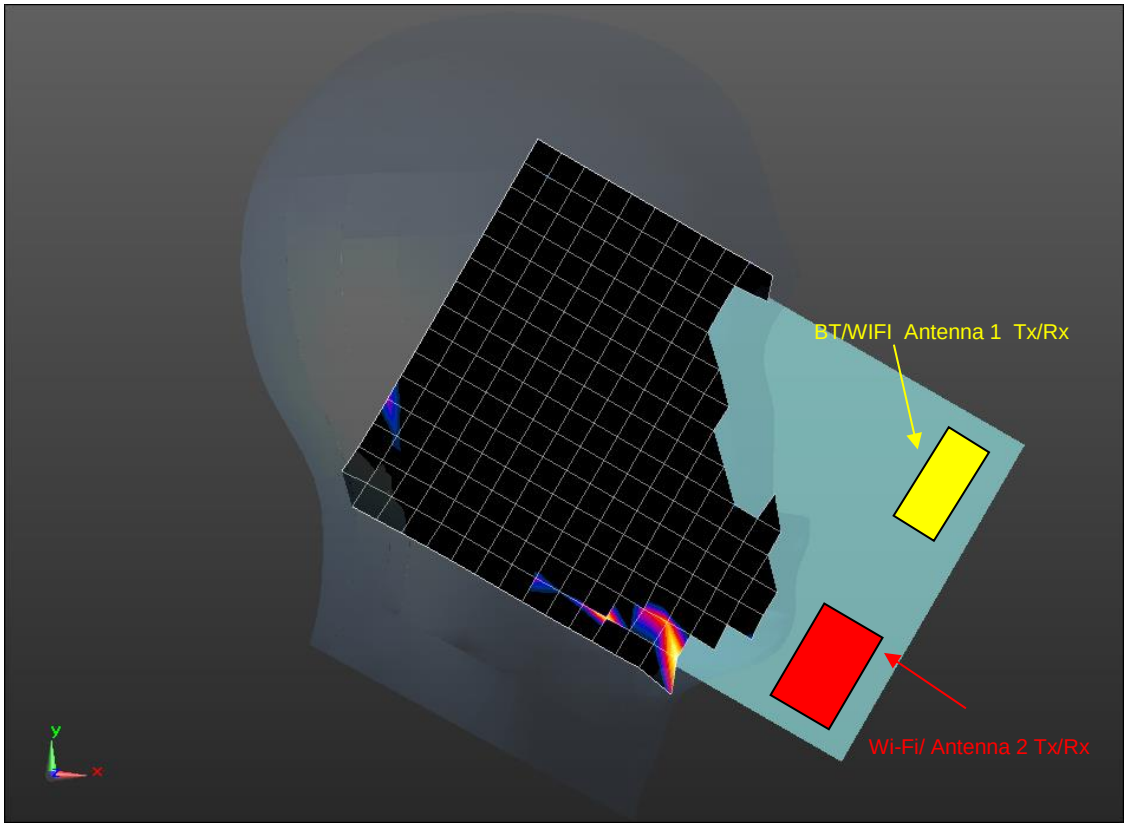
Justification for using Flat Phantom Measuring Head SAR

Due to the EUT with antenna located near the bottom and lower side edges near the mouth and jaw regions. The following head SAR plot is provided to show the measurements with truncated SAR distributions in the head measured with the SAM Phantom.



The following procedure was applied (KDB 648474 D04 Handset SAR):

- The phone was positioned with a separation distance of 4 mm between the ear reference point (ERP) and the outer surface of the flat phantom shell.
- While maintaining this distance at the ERP location of the phone, the low (bottom) edge of the phone is lowered from the phantom to establish the same separation distance at the peak SAR location identified by the truncated partial SAR distribution measured with the SAM phantom.
- The distance from the peak SAR location to the phone should be determined by the straight line passing perpendicularly through the phantom surface.
- Wi-Fi 2.4GHz Band and Wi-Fi 5GHz Band can't measurement from the SAM Phantom. Those were tested from The Flat Phantom instead of The SAM Phantom

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10.1. GSM850

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	
Head	Voice	On	0	Left Touch	190	836.6	23.5	23.3	0.165	0.174	
				Left Tilt	190	836.6	23.5	23.3	0.156	0.165	
				Right Touch	190	836.6	23.5	23.3	0.194	0.205	
				Right Tilt	190	836.6	23.5	23.3	0.192	0.203	
Head VoIP	GPRS 3 Slots	On	0	Left Touch	190	836.6	20.5	20.5	0.235	0.235	
				Left Tilt	190	836.6	20.5	20.5	0.223	0.223	
				Right Touch	190	836.6	20.5	20.5	0.277	0.277	1
				Right Tilt	190	836.6	20.5	20.5	0.276	0.276	
Body	GPRS 2 Slots	Off	15	Rear	190	836.6	31.5	31.2	0.362	0.390	
			15	Edge 1	190	836.6	31.5	31.2	0.609	0.655	
			0	Edge 2	190	836.6	31.5	31.2	0.124	0.133	
			0	Edge 4	190	836.6	31.5	31.2	0.229	0.246	
	GPRS 3 Slots	On	0	Rear	190	836.6	20.5	20.5	0.453	0.453	
			0	Edge 1	190	836.6	20.5	20.5	0.662	0.662	2

10.2. GSM1900

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	
Head	Voice	On	0	Left Touch	661	1880.0	24.5	24.4	0.301	0.308	
				Left Tilt	661	1880.0	24.5	24.4	0.326	0.333	
				Right Touch	661	1880.0	24.5	24.4	0.513	0.525	
				Right Tilt	661	1880.0	24.5	24.4	0.487	0.498	
Head VoIP	GPRS 3 Slots	On	0	Left Touch	661	1880.0	21.5	21.2	0.436	0.468	
				Left Tilt	661	1880.0	21.5	21.2	0.490	0.526	
				Right Touch	661	1880.0	21.5	21.2	0.744	0.799	3
				Right Tilt	661	1880.0	21.5	21.2	0.710	0.763	
Body	GPRS 2 Slots	Off	15	Rear	661	1880.0	28.5	28.5	0.260	0.260	
			15	Edge 1	661	1880.0	28.5	28.5	0.428	0.428	
			0	Edge 2	661	1880.0	28.5	28.5	0.200	0.200	
			0	Edge 4	512	1850.2	28.5	28.5	0.780	0.785	
					661	1880.0	28.5	28.5	0.988	0.988	
					810	1909.8	28.5	28.5	0.943	0.943	
	GPRS 3 Slots	On	0	Rear	512	1850.2	21.5	21.1	0.731	0.799	
					661	1880.0	21.5	21.2	0.776	0.834	
					810	1909.8	21.5	20.9	0.827	0.940	
			0	Edge 1	512	1850.2	21.5	21.1	0.906	0.990	
					661	1880.0	21.5	21.2	0.913	0.981	
					810	1909.8	21.5	20.9	0.954	1.084	4

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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	
Head	Rel 99 RMC	On	0	Left Touch	4183	836.6	15.5	15.0	0.223	0.250	
				Left Tilt	4183	836.6	15.5	15.0	0.212	0.238	
				Right Touch	4183	836.6	15.5	15.0	0.274	0.307	5
				Right Tilt	4183	836.6	15.5	15.0	0.261	0.293	
Body	Rel 99 RMC	Off	15	Rear	4183	836.6	23.5	22.5	0.370	0.464	
			15	Edge 1	4183	836.6	23.5	22.5	0.413	0.517	
			0	Edge 2	4183	836.6	23.5	22.5	0.089	0.111	
			0	Edge 4	4183	836.6	23.5	22.5	0.175	0.219	
		On	0	Rear	4183	836.6	15.5	15.0	0.390	0.438	
			0	Edge 1	4183	836.6	15.5	15.0	0.595	0.668	6

10.4. 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	
Head	Rel 99 RMC	On	0	Left Touch	9400	1880.0	14.5	14.4	0.252	0.260	
				Left Tilt	9400	1880.0	14.5	14.4	0.321	0.331	
				Right Touch	9400	1880.0	14.5	14.4	0.454	0.469	7
				Right Tilt	9400	1880.0	14.5	14.4	0.452	0.467	
Body	Rel 99 RMC	Off	15	Rear	9400	1880.0	22.0	21.7	0.302	0.321	
			15	Edge 1	9400	1880.0	22.0	21.7	0.451	0.480	
			0	Edge 2	9400	1880.0	22.0	21.7	0.195	0.207	
			0	Edge 4	9262	1852.4	22.0	21.7	0.834	0.900	
					9400	1880.0	22.0	21.7	0.941	1.001	8
					9538	1907.6	22.0	22.0	0.928	0.932	
		On	0	Rear	9400	1880.0	14.5	14.4	0.564	0.582	
			0	Edge 1	9400	1880.0	14.5	14.4	0.563	0.581	

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10.5. LTE Band 2 (20MHz Bandwidth)

RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	On	0	Left Touch	18900	1880.0	1	49	15.5	15.5	0.279	0.279	
							50	24	15.5	15.3	0.270	0.284	
				Left Tilt	18900	1880.0	1	49	15.5	15.5	0.328	0.328	
							50	24	15.5	15.3	0.339	0.357	
				Right Touch	18900	1880.0	1	49	15.5	15.5	0.527	0.527	
							50	24	15.5	15.3	0.542	0.571	9
				Right Tilt	18900	1880.0	1	49	15.5	15.5	0.457	0.457	
							50	24	15.5	15.3	0.479	0.505	
Body	QPSK	Off	15	Rear	18900	1880.0	1	49	22.0	21.7	0.259	0.277	
							50	50	21.0	20.8	0.212	0.221	
			15	Edge 1	18900	1880.0	1	49	22.0	21.7	0.461	0.493	
							50	50	21.0	20.8	0.379	0.394	
			0	Edge 2	18900	1880.0	1	49	22.0	21.7	0.216	0.231	
							50	50	21.0	20.8	0.176	0.183	
			0	Edge 4	18700	1860.0	1	49	22.0	21.8	0.828	0.858	
							50	50	21.0	20.6	0.712	0.777	
					18900	1880.0	1	49	22.0	21.7	0.932	0.996	
							50	50	21.0	20.8	0.797	0.829	
					19100	1900.0	1	49	22.0	22.0	0.998	1.009	10
							50	50	21.0	20.9	0.826	0.840	
							100	0	21.0	21.0	0.821	0.822	
	QPSK	On	0	Rear	18900	1880.0	1	49	15.5	15.5	0.552	0.552	
							50	24	15.5	15.3	0.566	0.596	
			0	Edge 1	18900	1880.0	1	49	15.5	15.5	0.630	0.630	
							50	24	15.5	15.3	0.658	0.693	

10.6. LTE Band 4 (20MHz Bandwidth)

RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	On	0	Left Touch	20175	1732.5	1	99	15.0	14.5	0.268	0.301	
							50	50	15.0	14.3	0.272	0.319	
				Left Tilt	20175	1732.5	1	99	15.0	14.5	0.344	0.387	
							50	50	15.0	14.3	0.338	0.397	
				Right Touch	20175	1732.5	1	99	15.0	14.5	0.386	0.434	
							50	50	15.0	14.3	0.393	0.461	
				Right Tilt	20175	1732.5	1	99	15.0	14.5	0.449	0.505	
							50	50	15.0	14.3	0.449	0.527	11
Body	QPSK	Off	15	Rear	20175	1732.5	1	0	24.0	23.7	0.491	0.526	
							50	50	23.0	22.5	0.391	0.442	
			15	Edge 1	20175	1732.5	1	0	24.0	23.7	0.628	0.673	
							50	50	23.0	22.5	0.500	0.565	
			0	Edge 2	20175	1732.5	1	0	24.0	23.7	0.266	0.285	
							50	50	23.0	22.5	0.189	0.214	
			0	Edge 4	20175	1732.5	1	0	24.0	23.7	0.737	0.790	12
							50	50	23.0	22.5	0.599	0.677	
	QPSK	On	0	Rear	20175	1732.5	1	99	15.0	14.5	0.409	0.460	
							50	50	15.0	14.3	0.418	0.490	
			0	Edge 1	20175	1732.5	1	99	15.0	14.5	0.577	0.649	
							50	50	15.0	14.3	0.575	0.675	

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10.7. LTE Band 5 (10MHz Bandwidth)

RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	On	0	Left Touch	20525	836.5	1	25	15.5	15.3	0.248	0.261	
							25	12	15.5	15.3	0.238	0.251	
				Left Tilt	20525	836.5	1	25	15.5	15.3	0.239	0.251	
							25	12	15.5	15.3	0.235	0.248	
				Right Touch	20525	836.5	1	25	15.5	15.3	0.298	0.313	
							25	12	15.5	15.3	0.309	0.326	13
				Right Tilt	20525	836.5	1	25	15.5	15.3	0.272	0.286	
							25	12	15.5	15.3	0.280	0.295	
Body	QPSK	Off	15	Rear	20525	836.5	1	25	23.5	23.3	0.401	0.415	
							25	0	22.5	22.3	0.314	0.328	
			15	Edge 1	20525	836.5	1	25	23.5	23.3	0.525	0.544	
							25	0	22.5	22.3	0.413	0.431	
			0	Edge 2	20525	836.5	1	25	23.5	23.3	0.164	0.170	
							25	0	22.5	22.3	0.117	0.122	
			0	Edge 4	20525	836.5	1	25	23.5	23.3	0.201	0.208	
							25	0	22.5	22.3	0.153	0.160	
	QPSK	On	0	Rear	20525	836.5	1	25	15.5	15.3	0.410	0.431	
							25	12	15.5	15.3	0.414	0.436	
			0	Edge 1	20525	836.5	1	25	15.5	15.3	0.605	0.636	14
							25	12	15.5	15.3	0.599	0.631	

10.8. LTE Band 17 (10MHz Bandwidth)

RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	On	0	Left Touch	23790	710.0	1	25	15.5	15.1	0.179	0.197	
							25	12	15.5	15.1	0.190	0.208	
				Left Tilt	23790	710.0	1	25	15.5	15.1	0.159	0.175	
							25	12	15.5	15.1	0.173	0.190	
				Right Touch	23790	710.0	1	25	15.5	15.1	0.201	0.221	15
							25	12	15.5	15.1	0.195	0.214	
				Right Tilt	23790	710.0	1	25	15.5	15.1	0.175	0.192	
							25	12	15.5	15.1	0.175	0.192	
Body	QPSK	Off	15	Rear	23790	710.0	1	25	23.5	23.2	0.178	0.192	
							25	12	22.5	22.1	0.136	0.148	
			15	Edge 1	23790	710.0	1	25	23.5	23.2	0.210	0.227	
							25	12	22.5	22.1	0.155	0.169	
			0	Edge 2	23790	710.0	1	25	23.5	23.2	0.040	0.043	
							25	12	22.5	22.1	0.031	0.034	
			0	Edge 4	23790	710.0	1	25	23.5	23.2	0.109	0.118	
							25	12	22.5	22.1	0.084	0.091	
	QPSK	On	0	Rear	23790	710.0	1	25	15.5	15.1	0.251	0.276	
							25	12	15.5	15.1	0.235	0.258	
				Edge 1	23790	710.0	1	25	15.5	15.1	0.400	0.439	16
							25	12	15.5	15.1	0.376	0.412	

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10.9. Wi-Fi (DTS Band)

Frequency Band	Mode	Antenna	RF Exposure Conditions	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
2.4GHz	802.11b 1 Mbps	SISO Ant.1	Head	On	10	Front	6	2437.0	0.077	11.5	11.5	0.061	0.061	17
		SISO Ant.2			10	Front	11	2462.0	0.005	11.5	10.8	0.003	0.004	
	802.11b 1 Mbps	SISO Ant.1	Body	Off	7	Rear	1	2412.0	0.904	19.5	19.3	0.630	0.664	18
					0	Edge 1			0.026	19.5	19.3	0.024	0.025	
						Edge 2			0.274	19.5	19.3	0.182	0.192	
						Edge 3			0.235	19.5	19.3	0.167	0.176	
						Edge 4			0.025	19.5	19.3			
		SISO Ant.2			7	Rear	11	2462.0	0.611	19.5	19.3	0.429	0.448	
					0	Edge3			0.047	19.5	19.3			
						Edge4			0.139	19.5	19.3	0.087	0.091	
	802.11b 1 Mbps	SISO Ant.1	Body	On	0	Rear	6	2437.0	0.707	11.5	11.5	0.550	0.551	
		SISO Ant.2			0	Rear	11	2462.0	0.309	11.5	10.8	0.194	0.227	

Note(s):

1. Highest *reported* SAR is ≤ 0.4 W/kg. Therefore, further SAR measurements within this exposure condition are not required.
2. Highest *reported* SAR is > 0.4 W/kg. Due to the highest *reported* SAR for this test position, other test positions in this exposure condition were evaluated until a SAR ≤ 0.8 W/kg was *reported*.
3. Testing for a second channel was required because the *reported* SAR for this test position was >0.8 W/kg.
4. Additional testing required in order satisfying FCC simultaneous transmission limit criteria.
5. For Head exposure condition, when DUT is using held-to-ear, Rear section of DUT was touched by User's hands. In this case, Power was reduced by Rear's proximity sensor. So Head exposure was tested using reduce power.

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10.10. Wi-Fi (U-NII Band)

Frequency Band	Mode	Antenna	RF Exposure Conditions	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
5.3 GHz U-NII 2A	802.11ac 29.3 Mbps (VHT80)	SISO Ant.1	Head	On	10	Front	58	5290.0	0.049	8.5	8.5	0.022	0.022	19
		SISO Ant.2			10	Front	58	5290.0	0.007	8.5	8.4	<0.001	<0.001	
	802.11a 6 Mbps	SISO Ant.1	Body	Off	7	Rear	56	5280.0	0.506	15.5	15.4	0.261	0.265	
					0	Edge 1			0.005	15.5	15.4	<0.001	<0.001	
						Edge 3			0.433	15.5	15.4			
						Edge 4			0.007	15.5	15.4	<0.001	<0.001	
		SISO Ant.2			7	Rear	60	5300.0	0.162	15.5	15.4	0.069	0.071	
					0	Edge 3			0.024	15.5	15.4			
						Edge 4			0.017	15.5	15.4			
	802.11ac 29.3 Mbps (VHT80)	SISO Ant.1	Body	On	0	Rear	58	5290.0	0.822	8.5	8.5	0.424	0.425	20
		SISO Ant.2			0	Rear	58	5290.0	0.082	8.5	8.4	0.029	0.029	

Frequency Band	Mode	Antenna	RF Exposure Conditions	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
5.5 GHz U-NII 2C	802.11ac 29.3 Mbps (VHT80)	SISO Ant.1	Head	On	10	Front	122	5610.0	0.043	8.5	8.5	0.022	0.022	21
		SISO Ant.2			10	Front	122	5610.0	0.012	8.5	8.3	<0.001	<0.001	
	802.11a 6 Mbps	SISO Ant.1	Body	Off	7	Rear	128	5640.0	0.595	15.5	15.5	0.490	0.492	
					0	Edge 1			0.010	15.5	15.5	<0.001	<0.001	
						Edge 3			0.244	15.5	15.5	0.133	0.134	
						Edge 4			0.019	15.5	15.5	0.004	0.004	
		SISO Ant.2			7	Rear	100	5500.0	0.198	15.5	15.4	0.089	0.092	
					0	Edge 3			0.048	15.5	15.4			
						Edge 4			0.044	15.5	15.4			
	802.11ac 29.3 Mbps (VHT80)	SISO Ant.1	Body	On	0	Rear	122	5610.0	1.152	8.5	8.5	0.720	0.722	22
		SISO Ant.2			0	Rear	122	5610.0	0.116	8.5	8.3	0.084	0.088	

Frequency Band	Mode	Antenna	RF Exposure Conditions	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
5.8 GHz U-NII 3	802.11ac 29.3 Mbps (VHT80)	SISO Ant.1	Head	On	10	Front	155	5775.0	0.028	8.5	8.5	<0.001	<0.001	
		SISO Ant.2			10	Front	155	5775.0	0.017	8.5	8.2	<0.001	<0.001	
	802.11a 6 Mbps	SISO Ant.1	Body	Off	7	Rear	132	5660.0	0.666	15.5	15.4	0.363	0.371	
					0	Edge 1			0.011	15.5	15.4	0.001	0.001	
						Edge 3			0.223	15.5	15.4			
						Edge 4			0.014	15.5	15.4	<0.001	<0.001	
		SISO Ant.2			7	Rear	165	5825.0	0.126	15.5	15.1	0.076	0.083	
					0	Edge 3			0.049	15.5	15.1			
						Edge 4			0.035	15.5	15.1			
	802.11ac 29.3 Mbps (VHT80)	SISO Ant.1	Body	On	0	Rear	155	5775.0	0.396	8.5	8.5	0.410	0.411	23
		SISO Ant.2			0	Rear	155	5775.0	0.104	8.5	8.2	0.089	0.095	

Note(s):

1. Highest *reported* SAR is ≤ 0.4 W/kg. Therefore, further SAR measurements within this exposure condition are not required.
2. Highest *reported* SAR is > 0.4 W/kg. Due to the highest *reported* SAR for this test position, other test positions in this exposure condition were evaluated until a SAR ≤ 0.8 W/kg was *reported*.
3. Testing for a second channel was required because the *reported* SAR for this test position was >0.8 W/kg.
4. Additional testing required in order satisfying FCC simultaneous transmission limit criteria.
5. For Head exposure condition, when DUT is using held-to-ear, Rear section of DUT was touched by User's hands. In this case, Power was reduced by Rear's proximity sensor. So Head exposure was tested using reduce power.

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10.11. Bluetooth

Frequency Band	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	
2.4 GHz	GFSK	0	Rear	39	2441.0	11.5	10.8	0.367	0.432	24

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 < 0.80 W/kg; steps 2) through 4) do not apply.
2) When the original highest measured SAR is ≥ 0.80 W/kg, 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 W/kg (~ 10% from the 1-g SAR limit).
4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

Frequency Band (MHz)	Air Interface	RF Exposure Conditions	Test Position	Repeated SAR (Yes/No)	Highest Measured SAR (W/kg)	Repeated Measured SAR (W/kg)	Largest to Smallest SAR Ratio
750	LTE Band 17	Body	Edge 1	No	0.4	N/A	N/A
850	GSM 850	Body	Edge 1	No	0.662	N/A	N/A
	WCDMA Band V	Body	Edge 1	No	0.595	N/A	N/A
	LTE Band 5	Body	Edge 1	No	0.605	N/A	N/A
1750	LTE Band 4	Body	Edge 4	No	0.737	N/A	N/A
1900	GSM 1900	Body	Edge 4	No	0.988	N/A	N/A
	WCDMA Band II	Body	Edge 4	No	0.941	N/A	N/A
	LTE Band 2	Body	Edge 4	Yes	0.998	0.984	1.01
2400	Wi-Fi 802.11b/g/n	Body	Rear	No	0.63	N/a	N/A
	Bluetooth	Body	Rear	No	0.367	N/A	N/A
5300	Wi-Fi 802.11a/n/ac	Body	Rear	No	0.424	N/A	N/A
5500	Wi-Fi 802.11a/n/ac	Body	Rear	No	0.72	N/A	N/A
5800	Wi-Fi 802.11a/n/ac	Body	Rear	No	0.41	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.

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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:

SAR_1 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

SAR_2 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		
Head	1	GSM(GPRS/EDGE)	+	DTS
	2	GSM(GPRS/EDGE)	+	U-NII
	3	W-CDMA	+	DTS
	4	W-CDMA	+	U-NII
	5	LTE	+	DTS
	6	LTE	+	U-NII
Body	7	GSM(GPRS/EDGE)	+	DTS
	8	GSM(GPRS/EDGE)	+	U-NII
	9	GSM(GPRS/EDGE)	+	BT
	10	W-CDMA	+	DTS
	11	W-CDMA	+	U-NII
	12	W-CDMA	+	BT
	13	LTE	+	DTS
	14	LTE	+	U-NII
	15	LTE	+	BT

Notes:

1. DTS and UNII (Only Ch.149) supports Hotspot.
2. DTS and U-NII supports Wi-Fi Direct.
3. GPRS/EDGE, W-CDMA and LTE support Hotspot.
4. VoIP is supported in GPRS/EDGE, W-CDMA and LTE.
5. DTS Radio can transmit simultaneously w ith Bluetooth Radio.
6. U-NII Radio can transmit simultaneously w ith Bluetooth Radio.
7. U-NII Radio can transmit simultaneously w ith DTS Radio.

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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:
   - 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.
   - 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.
   - 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)						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																
Cellular	GPRS 2 Slots	848.8	31.50	353	0	0	37	194.2	34		-MEASURE-	-MEASURE-	-MEASURE-	0.400	-MEASURE-	
Cellular	GPRS 2 Slots	1909.8	28.50	177	0	0	37	194.2	34		-MEASURE-	-MEASURE-	-MEASURE-	0.400	-MEASURE-	
Cellular	W-CDMA 5	846.6	23.50	224	0	0	37	194.2	34		-MEASURE-	-MEASURE-	-MEASURE-	0.400	-MEASURE-	
Cellular	W-CDMA 2	1907.6	22.00	158	0	0	37	194.2	34		-MEASURE-	-MEASURE-	-MEASURE-	0.400	-MEASURE-	
Cellular	LTE Band 2	1900	22.00	158	0	0	37	194.2	34		-MEASURE-	-MEASURE-	-MEASURE-	0.400	-MEASURE-	
Cellular	LTE Band 4	1754.3	24.00	251	0	0	37	194.2	34		-MEASURE-	-MEASURE-	-MEASURE-	0.400	-MEASURE-	
Cellular	LTE Band 5	844	23.50	224	0	0	37	194.2	34		-MEASURE-	-MEASURE-	-MEASURE-	0.400	-MEASURE-	
Cellular	LTE Band 17	710	23.50	224	0	0	37	194.2	34		-MEASURE-	-MEASURE-	-MEASURE-	0.400	-MEASURE-	
Power Back-off, Proximity Sensor On																
Cellular	GPRS 3 Slots	848.8	20.50	42	0	0					-MEASURE-	-MEASURE-				
Cellular	GPRS 3 Slots	1909.8	21.50	53	0	0					-MEASURE-	-MEASURE-				
Cellular	W-CDMA 5	846.6	15.50	35	0	0					-MEASURE-	-MEASURE-				
Cellular	W-CDMA 2	1907.6	14.50	28	0	0					-MEASURE-	-MEASURE-				
Cellular	LTE Band 2	1900	15.50	35	0	0					-MEASURE-	-MEASURE-				
Cellular	LTE Band 4	1754.3	15.00	32	0	0					-MEASURE-	-MEASURE-				
Cellular	LTE Band 5	844	15.50	35	0	0					-MEASURE-	-MEASURE-				
Cellular	LTE Band 17	710	15.50	35	0	0					-MEASURE-	-MEASURE-				

Estimated SAR for WLAN

Ant.1

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	19.50	89	0.3	180.2	30	9	91.5		-MEASURE-	0.400	-MEASURE-	-MEASURE-	0.400	
Wi-Fi 5.3 GHz	5320	15.50	35	0.3	180.2	30	9	91.5		-MEASURE-	0.400	0.359	-MEASURE-	0.400	
Wi-Fi 5.5 GHz	5700	15.50	35	0.3	180.2	30	9	91.5		-MEASURE-	0.400	0.371	-MEASURE-	0.400	
Wi-Fi 5.8 GHz	5825	15.50	35	0.3	180.2	30	9	91.5		-MEASURE-	0.400	0.375	-MEASURE-	0.400	
Bluetooth	2480	11.50	14	0.3	180.2	30	9	91.5		-MEASURE-	0.400	0.098	0.327	0.400	
Power Back-off, Proximity Sensor On															
Wi-Fi 2.4 GHz	2462	13.5	22	0.3						-MEASURE-					
Wi-Fi 5.3 GHz	5320	8.5	7	0.3						-MEASURE-					
Wi-Fi 5.5 GHz	5700	8.5	7	0.3						-MEASURE-					
Wi-Fi 5.8 GHz	5825	8.5	7	0.3						-MEASURE-					

Ant.2

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	19.50	89	0.3	156	84	17	11		-MEASURE-	0.400	0.400	-MEASURE-	-MEASURE-	
Wi-Fi 5.3 GHz	5320	15.50	35	0.3	156	84	17	11		-MEASURE-	0.400	0.400	-MEASURE-	-MEASURE-	
Wi-Fi 5.5 GHz	5700	15.50	35	0.3	156	84	17	11		-MEASURE-	0.400	0.400	-MEASURE-	-MEASURE-	
Wi-Fi 5.8 GHz	5825	15.50	35	0.3	156	84	17	11		-MEASURE-	0.400	0.400	-MEASURE-	-MEASURE-	
Power Back-off, Proximity Sensor On															
Wi-Fi 2.4 GHz	2462	13.50	22	0.3						-MEASURE-					
Wi-Fi 5.3 GHz	5320	8.50	7	0.3						-MEASURE-					
Wi-Fi 5.5 GHz	5700	8.50	7	0.3						-MEASURE-					
Wi-Fi 5.8 GHz	5825	8.50	7	0.3						-MEASURE-					

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12.1. Sum of the SAR for GSM850 & WLAN & BT

RF Exposure conditions	Test Position	① WWAN	DTS		④ BT (Ant.1)	① + ② WWAN + DTS(Ant.1)		① + ③ WWAN + DTS(Ant.2)		① + ② + ③ WWAN + DTS(Ant.1 & Ant.2)		① + ④ WWAN + BT	
			② Ant.1	③ Ant.2		∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
Head		0.277	0.061	0.004		0.338	No	0.281	No	0.342	No		
Body	Rear	0.453	0.664	0.448	0.432	1.117	No	0.901	No	1.565	No	0.885	No
	Edge 1	0.662	0.025	0.400	0.400	0.687	No	1.062	No	1.087	No	1.062	No
	Edge 2	0.133	0.192	0.400	0.098	0.325	No	0.533	No	0.725	No	0.231	No
	Edge 3	0.400	0.176	0.448	0.327	0.576	No	0.848	No	1.024	No	0.727	No
	Edge 4	0.246	0.400	0.087	0.400	0.646	No	0.333	No	0.733	No	0.646	No

RF Exposure conditions	Test Position	① WWAN	U-NII		① + ② WWAN + U-NII(Ant.1)		① + ③ WWAN + U-NII(Ant.2)		① + ② + ③ WWAN + U-NII(Ant.1 & Ant.2)	
			② Ant.1	③ Ant.2	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
Head		0.277	0.022	0.001	0.299	No	0.278	No	0.300	No
Body	Rear	0.453	0.722	0.095	1.175	No	0.548	No	1.270	No
	Edge 1	0.662	0.001	0.400	0.663	No	1.062	No	1.063	No
	Edge 2	0.133	0.400	0.400	0.533	No	0.533	No	0.933	No
	Edge 3	0.400	0.134	0.095	0.534	No	0.495	No	0.629	No
	Edge 4	0.246	0.004	0.095	0.250	No	0.341	No	0.345	No

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12.2. Sum of the SAR for GSM1900 & WLAN & BT

RF Exposure conditions	Test Position	① WWAN	DTS		④ BT (Ant.1)	① + ② WWAN + DTS(Ant.1)		① + ③ WWAN + DTS(Ant.2)		① + ② + ③ WWAN + DTS(Ant.1 & Ant.2)		① + ④ WWAN + BT	
			② Ant.1	③ Ant.2		∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
Head		0.799	0.061	0.004		0.860	No	0.803	No	0.864	No		
Body	Rear	0.940	0.664	0.448	0.432	1.604	**Yes**	1.388	No	2.052	**Yes**	1.372	No
	Edge 1	1.084	0.025	0.400	0.400	1.109	No	1.484	No	1.509	No	1.484	No
	Edge 2	0.200	0.192	0.400	0.098	0.392	No	0.600	No	0.792	No	0.298	No
	Edge 3	0.400	0.176	0.448	0.327	0.576	No	0.848	No	1.024	No	0.727	No
	Edge 4	0.988	0.400	0.087	0.400	1.388	No	1.075	No	1.475	No	1.388	No

SAR to Peak Location Separation Ratio (SPLSR)

Test Position	Worst-case combination			∑ 1-g SAR (mW/g)		Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure
	① WWAN	② DTS (Ant.1)	③ DTS (Ant. 2)						
Rear	0.940	0.664	0.448	① + ② + ③	2.052				1
	0.940	0.664		① + ②	1.604	184.6	0.011	No	
	0.940		0.448	① + ③	1.388	161.0	0.010	No	
		0.664	0.448	② + ③	1.112	80.0	0.015	No	

RF Exposure conditions	Test Position	① WWAN	U-NII		① + ② WWAN + U-NII(Ant.1)		① + ③ WWAN + U-NII(Ant.2)		① + ② + ③ WWAN + U-NII(Ant.1 & Ant.2)	
			② Ant.1	③ Ant.2	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
Head		0.799	0.022	0.001	0.821	No	0.800	No	0.822	No
Body	Rear	0.940	0.722	0.095	1.662	**Yes**	1.035	No	1.757	**Yes**
	Edge 1	1.084	0.001	0.400	1.085	No	1.484	No	1.485	No
	Edge 2	0.200	0.400	0.400	0.600	No	0.600	No	1.000	No
	Edge 3	0.400	0.134	0.095	0.534	No	0.495	No	0.629	No
	Edge 4	0.988	0.004	0.095	0.992	No	1.083	No	1.087	No

SAR to Peak Location Separation Ratio (SPLSR)

Test Position	Worst-case combination			∑ 1-g SAR (mW/g)		Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure
	① WWAN	② U-NII (Ant.1)	③ U-NII (Ant. 2)						
Rear	0.940	0.722	0.095	① + ② + ③	1.757				2
	0.940	0.722		① + ②	1.662	182.8	0.012	No	
	0.940		0.095	① + ③	1.035	170.6	0.006	No	
		0.722	0.095	② + ③	0.817	43.8	0.017	No	

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12.3. Sum of the SAR for WCDMA Band V & WLAN & BT

RF Exposure conditions	Test Position	① WWAN	DTS		④ BT (Ant.1)	① + ② WWAN + DTS(Ant.1)		① + ③ WWAN + DTS(Ant.2)		① + ② + ③ WWAN + DTS(Ant.1 & Ant.2)		① + ④ WWAN + BT	
			② Ant.1	③ Ant.2		∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
Head		0.307	0.061	0.004		0.368	No	0.311	No	0.372	No		
Body	Rear	0.464	0.664	0.448	0.432	1.128	No	0.912	No	1.576	No	0.896	No
	Edge 1	0.668	0.025	0.400	0.400	0.693	No	1.068	No	1.093	No	1.068	No
	Edge 2	0.111	0.192	0.400	0.098	0.303	No	0.511	No	0.703	No	0.209	No
	Edge 3	0.400	0.176	0.448	0.327	0.576	No	0.848	No	1.024	No	0.727	No
	Edge 4	0.219	0.400	0.087	0.400	0.619	No	0.306	No	0.706	No	0.619	No

RF Exposure conditions	Test Position	① WWAN	U-NII		① + ② WWAN + U-NII(Ant.1)		① + ③ WWAN + U-NII(Ant.2)		① + ② + ③ WWAN + U-NII(Ant.1 & Ant.2)	
			② Ant.1	③ Ant.2	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
Head		0.307	0.022	0.001	0.329	No	0.308	No	0.330	No
Body	Rear	0.464	0.722	0.095	1.186	No	0.559	No	1.281	No
	Edge 1	0.668	0.001	0.400	0.669	No	1.068	No	1.069	No
	Edge 2	0.111	0.400	0.400	0.511	No	0.511	No	0.911	No
	Edge 3	0.400	0.134	0.095	0.534	No	0.495	No	0.629	No
	Edge 4	0.219	0.004	0.095	0.223	No	0.314	No	0.318	No

12.4. Sum of the SAR for WCDMA Band II & WLAN & BT

RF Exposure conditions	Test Position	① WWAN	DTS		④ BT (Ant.1)	① + ② WWAN + DTS(Ant.1)		① + ③ WWAN + DTS(Ant.2)		① + ② + ③ WWAN + DTS(Ant.1 & Ant.2)		① + ④ WWAN + BT	
			② Ant.1	③ Ant.2		∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
Head		0.469	0.061	0.004		0.530	No	0.473	No	0.534	No		
Body	Rear	0.582	0.664	0.448	0.432	1.246	No	1.030	No	1.694	Yes	1.014	No
	Edge 1	0.581	0.025	0.400	0.400	0.606	No	0.981	No	1.006	No	0.981	No
	Edge 2	0.207	0.192	0.400	0.098	0.399	No	0.607	No	0.799	No	0.305	No
	Edge 3	0.400	0.176	0.448	0.327	0.576	No	0.848	No	1.024	No	0.727	No
	Edge 4	1.001	0.400	0.087	0.400	1.401	No	1.088	No	1.488	No	1.401	No

SAR to Peak Location Separation Ratio (SPLSR)

Test Position	Worst-case combination			∑ 1-g SAR (mW/g)		Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure
	① WWAN	② DTS (Ant.1)	③ DTS (Ant. 2)						
Rear	0.582	0.664	0.448	① + ② + ③	1.694				3
	0.582	0.664		① + ②	1.246	182.1	0.008	No	
	0.582		0.448	① + ③	1.030	160.0	0.007	No	
		0.664	0.448	② + ③	1.112	80.0	0.015	No	

RF Exposure conditions	Test Position	① WWAN	U-NII		① + ② WWAN + U-NII(Ant.1)		① + ③ WWAN + U-NII(Ant.2)		① + ② + ③ WWAN + U-NII(Ant.1 & Ant.2)	
			② Ant.1	③ Ant.2	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
Head		0.469	0.022	0.001	0.491	No	0.470	No	0.492	No
Body	Rear	0.582	0.722	0.095	1.304	No	0.677	No	1.399	No
	Edge 1	0.581	0.001	0.400	0.582	No	0.981	No	0.982	No
	Edge 2	0.207	0.400	0.400	0.607	No	0.607	No	1.007	No
	Edge 3	0.400	0.134	0.095	0.534	No	0.495	No	0.629	No
	Edge 4	1.001	0.004	0.095	1.005	No	1.096	No	1.100	No

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12.5. Sum of the SAR for LTE Band 2 & WLAN & BT

RF Exposure conditions	Test Position	① WWAN	DTS		④ BT (Ant.1)	① + ② WWAN + DTS(Ant.1)		① + ③ WWAN + DTS(Ant.2)		① + ② + ③ WWAN + DTS(Ant.1 & Ant.2)		① + ④ WWAN + BT	
			② Ant.1	③ Ant.2		∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
Head		0.571	0.061	0.004		0.632	No	0.575	No	0.636	No		
Body	Rear	0.596	0.664	0.448	0.432	1.260	No	1.044	No	1.708	**Yes**	1.028	No
	Edge 1	0.693	0.025	0.400	0.400	0.718	No	1.093	No	1.118	No	1.093	No
	Edge 2	0.231	0.192	0.400	0.098	0.423	No	0.631	No	0.823	No	0.329	No
	Edge 3	0.400	0.176	0.448	0.327	0.576	No	0.848	No	1.024	No	0.727	No
	Edge 4	1.009	0.400	0.087	0.400	1.409	No	1.096	No	1.496	No	1.409	No

SAR to Peak Location Separation Ratio (SPLSR)

Test Position	Worst-case combination			∑ 1-g SAR (mW/g)		Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure
	① WWAN	② DTS (Ant.1)	③ DTS (Ant. 2)						
Rear	0.596	0.664	0.448	① + ② + ③	1.708				4
	0.596	0.664		① + ②	1.260	189.6	0.007	No	
	0.596		0.448	① + ③	1.044	166.9	0.006	No	
		0.664	0.448	② + ③	1.112	80.0	0.015	No	

RF Exposure conditions	Test Position	① WWAN	U-NII		① + ② WWAN + U-NII(Ant.1)		① + ③ WWAN + U-NII(Ant.2)		① + ② + ③ WWAN + U-NII(Ant.1 & Ant.2)	
			② Ant.1	③ Ant.2	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
Head		0.571	0.022	0.001	0.593	No	0.572	No	0.594	No
Body	Rear	0.596	0.722	0.095	1.318	No	0.691	No	1.413	No
	Edge 1	0.693	0.001	0.400	0.694	No	1.093	No	1.094	No
	Edge 2	0.231	0.400	0.400	0.631	No	0.631	No	1.031	No
	Edge 3	0.400	0.134	0.095	0.534	No	0.495	No	0.629	No
	Edge 4	1.009	0.004	0.095	1.013	No	1.104	No	1.108	No

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12.6. Sum of the SAR for LTE Band 4 & WLAN & BT

RF Exposure conditions	Test Position	① WWAN	DTS		④ BT (Ant.1)	① + ② WWAN + DTS(Ant.1)		① + ③ WWAN + DTS(Ant.2)		① + ② + ③ WWAN + DTS(Ant.1 & Ant.2)		① + ④ WWAN + BT	
			② Ant.1	③ Ant.2		∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
Head		0.527	0.061	0.004		0.588	No	0.531	No	0.592	No		
Body	Rear	0.526	0.664	0.448	0.432	1.190	No	0.974	No	1.638	**Yes**	0.958	No
	Edge 1	0.675	0.025	0.400	0.400	0.700	No	1.075	No	1.100	No	1.075	No
	Edge 2	0.285	0.192	0.400	0.098	0.477	No	0.685	No	0.877	No	0.383	No
	Edge 3	0.400	0.176	0.448	0.327	0.576	No	0.848	No	1.024	No	0.727	No
	Edge 4	0.790	0.400	0.087	0.400	1.190	No	0.877	No	1.277	No	1.190	No

SAR to Peak Location Separation Ratio (SPLSR)

Test Position	Worst-case combination			∑ 1-g SAR (mW/g)		Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure
	① WWAN	② DTS (Ant.1)	③ DTS (Ant. 2)						
Rear	0.526	0.664	0.448	① + ② + ③	1.638				5
	0.526	0.664		① + ②	1.190	183.7	0.007	No	
	0.526		0.448	① + ③	0.974	174.3	0.006	No	
		0.664	0.448	② + ③	1.112	80.0	0.015	No	

RF Exposure conditions	Test Position	① WWAN	U-NII		① + ② WWAN + U-NII(Ant.1)		① + ③ WWAN + U-NII(Ant.2)		① + ② + ③ WWAN + U-NII(Ant.1 & Ant.2)	
			② Ant.1	③ Ant.2	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
Head		0.527	0.022	0.001	0.549	No	0.528	No	0.550	No
Body	Rear	0.526	0.722	0.095	1.248	No	0.621	No	1.343	No
	Edge 1	0.675	0.001	0.400	0.676	No	1.075	No	1.076	No
	Edge 2	0.285	0.400	0.400	0.685	No	0.685	No	1.085	No
	Edge 3	0.400	0.134	0.095	0.534	No	0.495	No	0.629	No
	Edge 4	0.790	0.004	0.095	0.794	No	0.885	No	0.889	No

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12.7. Sum of the SAR for LTE Band 5 & WLAN & BT

RF Exposure conditions	Test Position	① WWAN	DTS		④ BT (Ant.1)	① + ② WWAN + DTS(Ant.1)		① + ③ WWAN + DTS(Ant.2)		① + ② + ③ WWAN + DTS(Ant.1 & Ant.2)		① + ④ WWAN + BT	
			② Ant.1	③ Ant.2		∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
Head		0.326	0.061	0.004		0.387	No	0.330	No	0.391	No		
Body	Rear	0.436	0.664	0.448	0.432	1.100	No	0.884	No	1.548	No	0.868	No
	Edge 1	0.636	0.025	0.400	0.400	0.661	No	1.036	No	1.061	No	1.036	No
	Edge 2	0.170	0.192	0.400	0.098	0.362	No	0.570	No	0.762	No	0.268	No
	Edge 3	0.400	0.176	0.448	0.327	0.576	No	0.848	No	1.024	No	0.727	No
	Edge 4	0.208	0.400	0.087	0.400	0.608	No	0.295	No	0.695	No	0.608	No

RF Exposure conditions	Test Position	① WWAN	U-NII		① + ② WWAN + U-NII(Ant.1)		① + ③ WWAN + U-NII(Ant.2)		① + ② + ③ WWAN + U-NII(Ant.1 & Ant.2)	
			② Ant.1	③ Ant.2	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
Head		0.326	0.022	0.001	0.348	No	0.327	No	0.349	No
Body	Rear	0.436	0.722	0.095	1.158	No	0.531	No	1.253	No
	Edge 1	0.636	0.001	0.400	0.637	No	1.036	No	1.037	No
	Edge 2	0.170	0.400	0.400	0.570	No	0.570	No	0.970	No
	Edge 3	0.400	0.134	0.095	0.534	No	0.495	No	0.629	No
	Edge 4	0.208	0.004	0.095	0.212	No	0.303	No	0.307	No

12.8. Sum of the SAR for LTE Band 17 & WLAN & BT

RF Exposure conditions	Test Position	① WWAN	DTS		④ BT (Ant.1)	① + ② WWAN + DTS(Ant.1)		① + ③ WWAN + DTS(Ant.2)		① + ② + ③ WWAN + DTS(Ant.1 & Ant.2)		① + ④ WWAN + BT	
			② Ant.1	③ Ant.2		∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
Head		0.221	0.061	0.004		0.282	No	0.225	No	0.286	No		
Body	Rear	0.276	0.664	0.448	0.432	0.940	No	0.724	No	1.388	No	0.708	No
	Edge 1	0.439	0.025	0.400	0.400	0.464	No	0.839	No	0.864	No	0.839	No
	Edge 2	0.043	0.192	0.400	0.098	0.235	No	0.443	No	0.635	No	0.141	No
	Edge 3	0.400	0.176	0.448	0.327	0.576	No	0.848	No	1.024	No	0.727	No
	Edge 4	0.118	0.400	0.087	0.400	0.518	No	0.205	No	0.605	No	0.518	No

RF Exposure conditions	Test Position	① WWAN	U-NII		① + ② WWAN + U-NII(Ant.1)		① + ③ WWAN + U-NII(Ant.2)		① + ② + ③ WWAN + U-NII(Ant.1 & Ant.2)	
			② Ant.1	③ Ant.2	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
Head		0.221	0.022	0.001	0.243	No	0.222	No	0.244	No
Body	Rear	0.276	0.722	0.095	0.998	No	0.371	No	1.093	No
	Edge 1	0.439	0.001	0.400	0.440	No	0.839	No	0.840	No
	Edge 2	0.043	0.400	0.400	0.443	No	0.443	No	0.843	No
	Edge 3	0.400	0.134	0.095	0.534	No	0.495	No	0.629	No
	Edge 4	0.118	0.004	0.095	0.122	No	0.213	No	0.217	No

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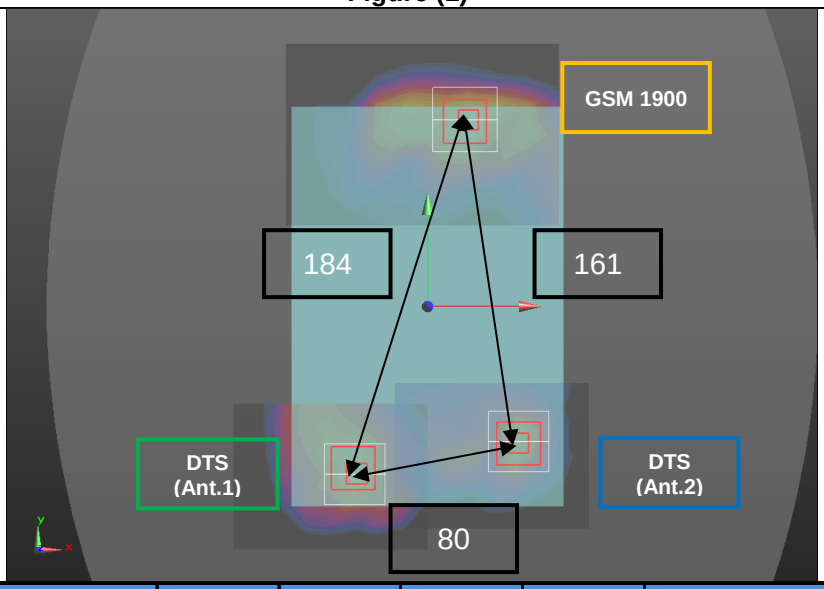
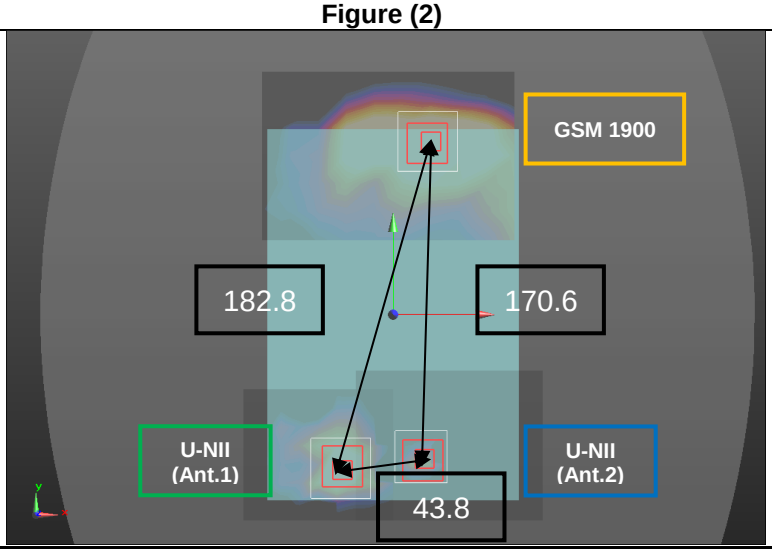
Figure (1)



Mode		Peak SAR	X	Y	Z	d: Calculated distance (mm)	
		mW/g	m	m	m		
GSM1900	①	0.94	0.022	0.093	-0.003	① + ②	184.6
DTS (Ant.1)	②	0.664	-0.033	-0.084	-0.004		
GSM1900	①	0.94	0.022	0.093	-0.003	① + ③	161.0
DTS (Ant.2)	③	0.448	0.045	-0.067	-0.004		
DTS (Ant.1)	②	0.664	-0.033	-0.084	-0.004	② + ③	80.0
DTS (Ant.2)	③	0.448	0.045	-0.067	-0.004		

The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Figure (2)



Mode		Peak SAR	X	Y	Z	d: Calculated distance (mm)	
		mW/g	m	m	m		
GSM1900	①	0.94	0.022	0.093	-0.003	① + ②	182.8
U-NII (Ant.1)	②	0.722	-0.027	-0.084	-0.004		
GSM1900	①	0.94	0.022	0.093	-0.003	① + ③	170.6
U-NII (Ant.2)	③	0.095	0.016	-0.078	-0.003		
U-NII (Ant.1)	②	0.722	-0.027	-0.084	-0.004	② + ③	43.8
U-NII (Ant.2)	③	0.095	0.016	-0.078	-0.003		

The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

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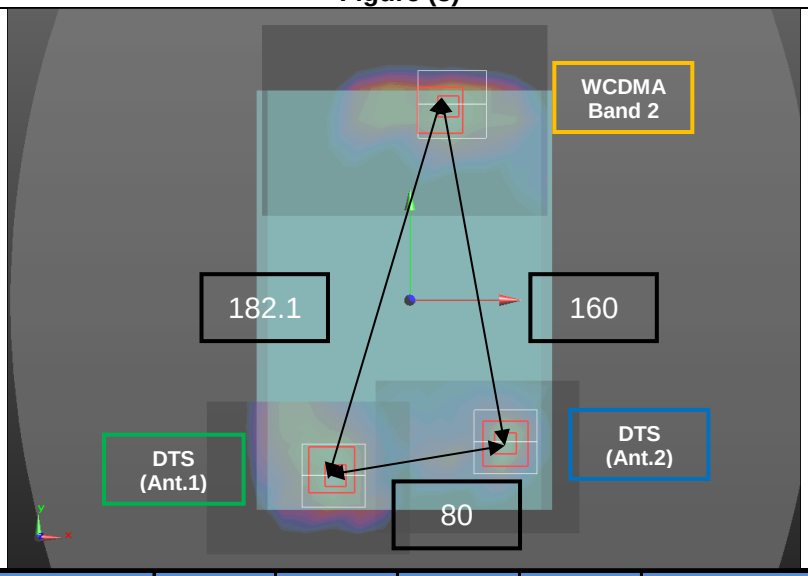
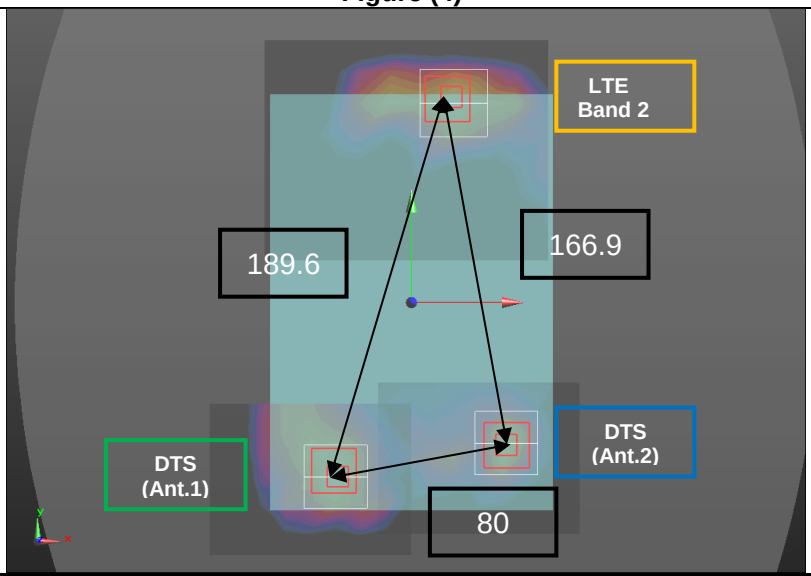
Figure (3)



Mode		Peak SAR	X	Y	Z	d: Calculated distance (mm)	
		mW/g	m	m	m		
WCDMA Band 2	①	0.582	0.018	0.091	-0.003	① + ②	182.1
DTS (Ant.1)	②	0.664	-0.033	-0.084	-0.004		
WCDMA Band 2	①	0.582	0.018	0.091	-0.003	① + ③	160.0
DTS (Ant.2)	③	0.448	0.045	-0.067	-0.004		
DTS (Ant.1)	②	0.664	-0.033	-0.084	-0.004	② + ③	80.0
DTS (Ant.2)	③	0.448	0.045	-0.067	-0.004		

The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Figure (4)



Mode		Peak SAR	X	Y	Z	d: Calculated distance (mm)	
		mW/g	m	m	m		
LTE Band 2	①	0.596	0.020	0.098	-0.003	① + ②	189.6
DTS (Ant.1)	②	0.664	-0.033	-0.084	-0.004		
LTE Band 2	①	0.596	0.020	0.098	-0.003	① + ③	166.9
DTS (Ant.2)	③	0.448	0.045	-0.067	-0.004		
DTS (Ant.1)	②	0.664	-0.033	-0.084	-0.004	② + ③	80.0
DTS (Ant.2)	③	0.448	0.045	-0.067	-0.004		

The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

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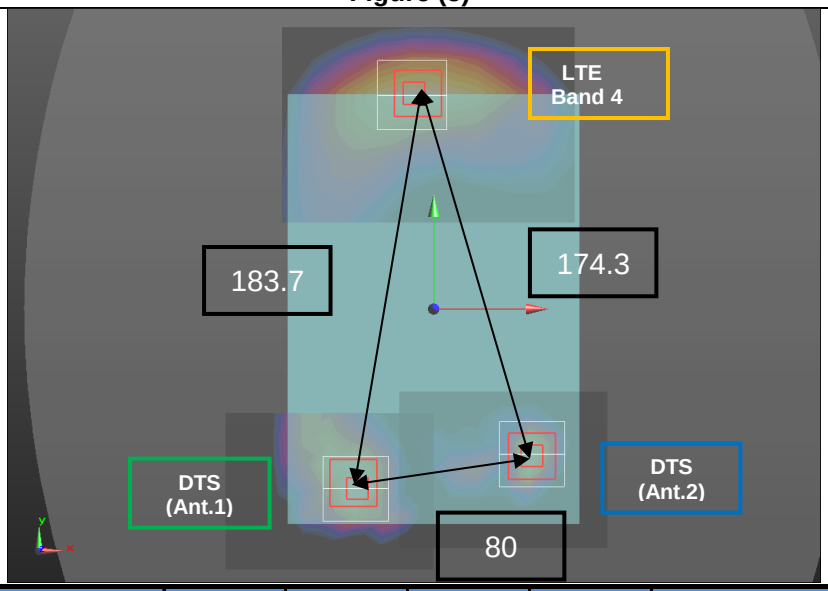
Figure (5)



Mode		Peak SAR	X	Y	Z	d: Calculated distance (mm)	
		mW/g	m	m	m		
LTE Band 4	①	0.526	-0.010	0.099	-0.003	① + ②	183.7
DTS (Ant.1)	②	0.664	-0.033	-0.084	-0.004		
LTE Band 4	①	0.526	-0.010	0.099	-0.003	① + ③	174.3
DTS (Ant.2)	③	0.448	0.045	-0.067	-0.004		
DTS (Ant.1)	②	0.664	-0.033	-0.084	-0.004	② + ③	80.0
DTS (Ant.2)	③	0.448	0.045	-0.067	-0.004		

The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

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.

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Appendixes

Refer to separated files for the following appendixes.

16K22866-S1V3 FCC Report SAR_App A_Photos & Ant. Locations

16K22866-S1V3 FCC Report SAR_App B_Highest SAR Test Plots

16K22866-S1V3 FCC Report SAR_App C_System Check Plots

16K22866-S1V3 FCC Report SAR_App D_SAR Tissue Ingredients

16K22866-S1V3 FCC Report SAR_App E_Probe Cal. Certificates

16K22866-S1V3 FCC Report SAR_App F_Dipole Cal. Certificates

END OF REPORT

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