



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

SAR EVALUATION REPORT

FOR

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

MODEL NUMBER: SM-T395

FCC ID: A3LSMT395

REPORT NUMBER: 4788060215-S1V2

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Prepared for
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TL-637

Revision History

Rev.	Date	Revisions	Revised By
V1	8/28/2017	Initial Issue	Sunghoon Kim
V2	9/8/2017	Added SAR test of Corner side in tablet. -Revised Sec.6.7.1, Sec.7., Sec.8., Sec.10., -Revised Appendix A, C, F.	Sunghoon Kim

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1. Attestation of Test Results

Applicant Name	SAMSUNG ELECTRONICS CO.,LTD.				
FCC ID	A3LSMT395				
Model Name	SM-T395				
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		0.71	0.97	0.49	N/A
Body		0.80	0.80	0.74	N/A
Simultaneous TX	Head	1.52		1.05	N/A
	Body	1.59		1.53	N/A
Date Tested	7/31/2017 to 8/25/2017 , 9/7/2017 to 9/8/2017				
Test Results	Pass				
<p>UL Korea, Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Korea, Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.</p> <p>Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Korea, Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Korea, Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government.</p>					
Approved & Released By:			Prepared By:		
					
Justin Park Lead Test Engineer UL Korea, Ltd. Suwon Laboratory			Sunghoon Kim Associate Test Engineer UL Korea, Ltd. Suwon Laboratory		

2. Test Specification, Methods and Procedures

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

- 248227 D01 802.11 Wi-Fi SAR v02r02
- 447498 D01 General RF Exposure Guidance v06
- 616217 D04 SAR for laptop and tablets v01r02
- 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 D05A LTE Rel.10 KDB Inquiry sheet v01r02
- 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

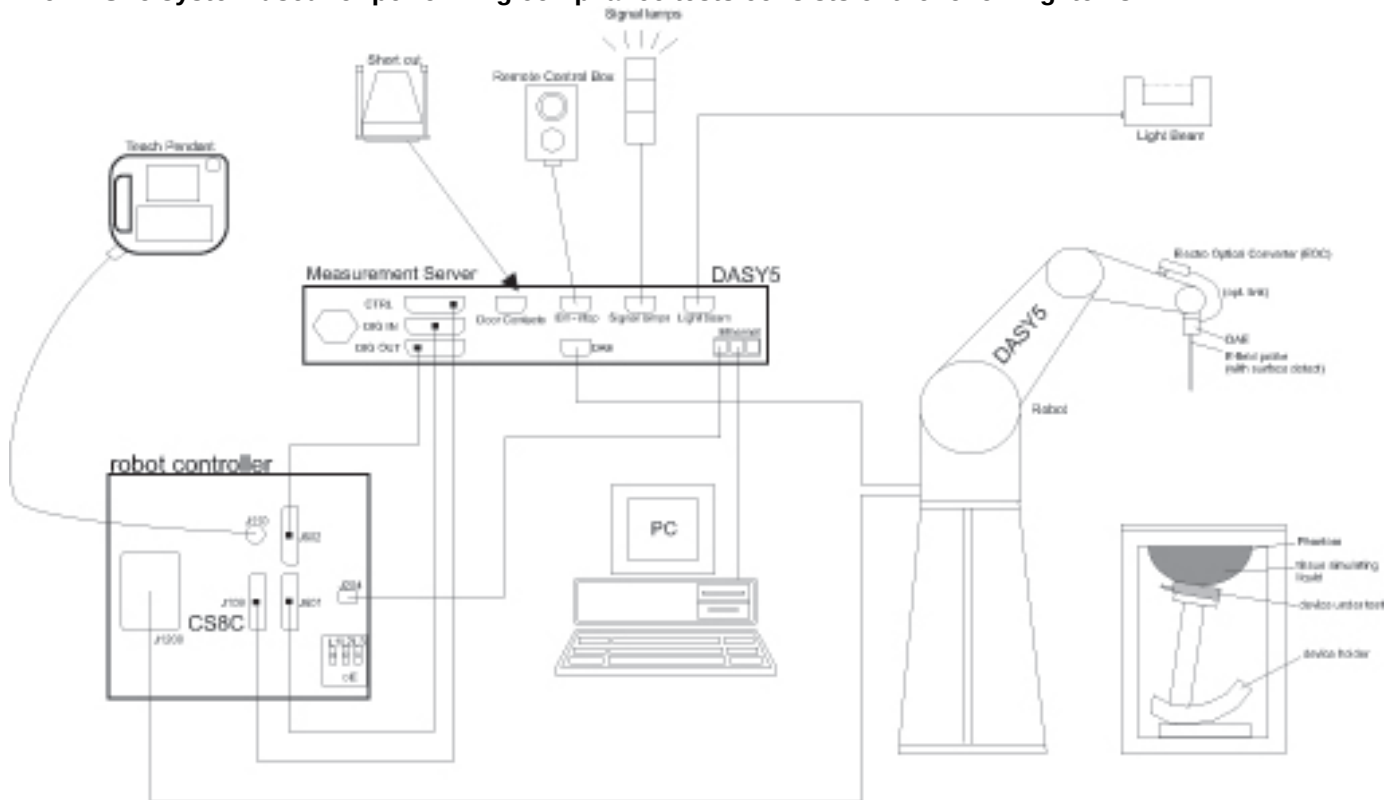
UL Korea, Ltd. is accredited by IAS, Laboratory Code TL-637.

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

4. SAR Measurement System & Test Equipment

4.1. SAR Measurement System

The DASY5 system used for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP or Win7 and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

4.2. SAR Scan Procedures

Step 1: Power Reference Measurement

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

Step 2: Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE Standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan). If only one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of Zoom Scans has to be increased accordingly.

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

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

Step 3: Zoom Scan

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

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

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

Step 4: Power drift measurement

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

Step 5: Z-Scan (FCC only)

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

4.3. Test Equipment

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

Dielectric Property Measurements

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Network Analyzer	Agilent	E5071C	MY46522054	8-18-2017
				8-8-2018
Dielectric Assessment Kit	SPEAG	DAK-3.5	1196	8-2-2018
Dielectric Assessment Kit	SPEAG	DAK-3.5	1046	4-25-2018
Shorting block	SPEAG	DAK-3.5 Short	SM DAK 200 BA	N/A
Thermometer	LKM	DTM3000	3424	8-17-2017
				8-11-2018
Thermometer	Lutron	MHB-382SD	AH.91478	8-10-2017
				8-10-2018

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
MXG Analog Signal Generator	Agilent	N5181A	MY50145882	8-16-2017
				8-7-2018
Power Sensor	Agilent	U2000A	MY54260010	8-17-2017
				8-8-2018
Power Sensor	Agilent	U2000A	MY54260007	8-17-2017
				8-8-2018
Power Amplifier	EXODUS	1410025-AMP2027-10003	10003	8-17-2017
				8-8-2018
Directional Coupler	Agilent	772D	MY52180193	8-17-2017
				8-7-2018
Directional Coupler	Agilent	778D	MY52180432	8-17-2017
				8-7-2018
Low Pass Filter	MICROLAB	LA-15N	03943	8-17-2017
				8-7-2018
Low Pass Filter	FILTRON	L14012FL	1410003S	8-17-2017
				8-7-2018
Low Pass Filter	MICROLAB	LA-60N	03942	8-17-2017
				8-7-2018
Attenuator	Agilent	8491B/003	MY39269292	8-17-2017
				8-7-2018
Attenuator	Agilent	8491B/010	MY39269315	8-17-2017
				8-7-2018
Attenuator	Agilent	8491B/020	MY39269298	8-17-2017
				8-7-2018
E-Field Probe (SAR1)	SPEAG	EX3DV4	7314	9-27-2017
E-Field Probe (SAR2)	SPEAG	EX3DV4	7313	1-30-2018
E-Field Probe (SAR3)	SPEAG	EX3DV4	7330	2-28-2018
Data Acquisition Electronics (SAR1)	SPEAG	DAE4	1447	9-19-2017
Data Acquisition Electronics (SAR2)	SPEAG	DAE4	1494	7-20-2018
Data Acquisition Electronics (SAR3)	SPEAG	DAE4	912	11-18-2017
Thermometer (SAR1)	Lutron	MHB-382SD	AH.91463	8-10-2017
				8-10-2018
Thermometer (SAR2)	Lutron	MHB-382SD	AH.50215	8-17-2017
				8-16-2018
Thermometer (SAR3)	Lutron	MHB-382SD	AH.50213	8-17-2017
				8-16-2018

System Check (Continued)

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
System Validation Dipole	SPEAG	D750V3	1122	8-30-2017
System Validation Dipole	SPEAG	D835V2	4d174	9-28-2017
System Validation Dipole	SPEAG	D1750V2	1125	8-26-2017
System Validation Dipole	SPEAG	D1900V2	5d190	9-28-2017
System Validation Dipole	SPEAG	D2450V2	939	9-23-2017
System Validation Dipole	SPEAG	D2600V2	1097	11-15-2017
System Validation Dipole	SPEAG	D5GHzV2	1209	2-24-2018

Others

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Base Station Simulator	R & S	CMW500	150313	8-16-2017
				8-7-2018
Base Station Simulator	R & S	CMW500	150314	8-16-2017
				8-7-2018

Note(s):

Refer to Appendix F that mentioned about justification for Extended SAR Dipole Calibrations(D750V3, SN : 1122 and D1750V2, SN : 1125).

5. Measurement Uncertainty

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

6. Device Under Test (DUT) Information

6.1. DUT Description

Device Dimension	Overall (Length x Width): 213.1 mm x 126.2 mm Overall Diagonal: 230.0 mm Display Diagonal: 203.0 mm																								
Back Cover	☒ Normal Battery Cover																								
Battery Options	☒ Standard – Lithium-ion battery, Rating 3.8 V, 16.91 Wh																								
Accessory	Protective cover and S-pen																								
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 – Ch.165)																								
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, Ch.36 – Ch.48, Ch.149 – Ch.165)																								
Test Sample Information	<table><tr><td>No.</td><td>S/N</td><td>Notes</td><td>No.</td><td>S/N</td><td>Notes</td></tr><tr><td>1</td><td>R32J500A5DF</td><td>Main Conducted</td><td>4</td><td>R32J500AFPT</td><td>SAR</td></tr><tr><td>2</td><td>R32J500B6RB</td><td>Wi-Fi Conducted</td><td>5</td><td>R32J500B9LL</td><td>SAR</td></tr><tr><td>3</td><td>R32J500AMCY</td><td>SAR</td><td>6</td><td>R32J500AM6J</td><td>SAR</td></tr></table>	No.	S/N	Notes	No.	S/N	Notes	1	R32J500A5DF	Main Conducted	4	R32J500AFPT	SAR	2	R32J500B6RB	Wi-Fi Conducted	5	R32J500B9LL	SAR	3	R32J500AMCY	SAR	6	R32J500AM6J	SAR
	No.	S/N	Notes	No.	S/N	Notes																			
	1	R32J500A5DF	Main Conducted	4	R32J500AFPT	SAR																			
	2	R32J500B6RB	Wi-Fi Conducted	5	R32J500B9LL	SAR																			
3	R32J500AMCY	SAR	6	R32J500AM6J	SAR																				

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 IV Band V	UMTS Rel. 99 (Voice & Data) HSDPA (Rel.8) HSUPA (Rel.8) HSPA+ (Rel.8)		100%	
LTE	FDD Band 2 FDD Band 4 FDD Band 5 FDD Band 7 FDD Band 17 TDD Band 38	QPSK 16QAM ☒ Rel. 10 Carrier Aggregation (1 Uplink and 2 Downlinks) (Carrier Aggregation is only supported for downlink and not for uplink.)		100% (FDD) 63.3% (TDD)	
		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 4.2 LE		76.88% (DH5)	

6.3. Nominal and Maximum Output Power

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

Upper limit (dB): -1.5 ~ 0.5		Max. RF Output Power (dBm)		Reduction. RF Output Power (dBm)	
RF Air interface	Mode	Target	Max. tune-up tolerance limit	Target	Max. tune-up tolerance limit
GSM850	Voice (1 slot)	32.5	33.0	31.5	32.0
	GPRS 1 slot	32.5	33.0	30.0	30.5
	GPRS 2 slots	30.5	31.0	28.5	29.0
	GPRS 3 slots	29.5	30.0	27.0	27.5
	GPRS 4 slots	28.5	29.0	26.0	26.5
	EGPRS 1 slot	27.5	28.0	27.5	28.0
	EGPRS 2 slots	25.5	26.0	25.5	26.0
	EGPRS 3 slots	24.0	24.5	24.0	24.5
	EGPRS 4 slots	23.0	23.5	23.0	23.5
GSM1900	Voice (1 slot)	29.5	30.0	24.5	25.0
	GPRS 1 slot	29.5	30.0	20.5	21.0
	GPRS 2 slots	29.0	29.5	20.0	20.5
	GPRS 3 slots	26.5	27.0	17.5	18.0
	GPRS 4 slots	25.5	26.0	16.5	17.0
	EGPRS 1 slot	26.5	27.0	20.5	21.0
	EGPRS 2 slots	24.5	25.0	18.5	19.0
	EGPRS 3 slots	23.0	23.5	17.0	17.5
	EGPRS 4 slots	21.5	22.0	16.5	17.0
W-CDMA Band II	R99	23.0	23.5	14.0	14.5
	HSDPA	23.0	23.5	14.0	14.5
	HSUPA	21.5	22.0	14.0	14.5
W-CDMA Band IV	R99	23.0	23.5	15.0	15.5
	HSDPA	23.0	23.5	15.0	15.5
	HSUPA	23.0	23.5	15.0	15.5
W-CDMA Band V	R99	23.5	24.0	20.0	20.5
	HSDPA	22.5	23.0	20.0	20.5
	HSUPA	21.0	21.5	20.0	20.5
LTE Band 2	QPSK, 16QAM	23.0	23.5	14.5	15.0
LTE Band 4	QPSK, 16QAM	23.5	24.0	13.5	14.0
LTE Band 5	QPSK, 16QAM	23.5	24.0	18.5	19.0
LTE Band 7	QPSK, 16QAM	23.5	24.0	12.0	12.5
LTE Band 17	QPSK, 16QAM	23.5	24.0	19.5	20.0
LTE Band 38	QPSK, 16QAM	23.5	24.0	16.0	16.5

Note(s):

This device support to both "Proximity sensor feature" and "IR sensor reduction feature" at License bands.

Each sensor feature is reduce the transmit power using a single fixed level of reduction. Both sensors are not operating at the same time and Proximity sensor was operated prior to IR sensor. Proximity sensor feature is operating when the device is used in close proximity to the user's body. SAR test distance is considered according to KDB 616217 D04 Section 6.

IR sensor feature is operating when the User is used at held to ear scenarios during voice or VoIP call. Per FCC Guidance, the held-to-ear exposure conditions were evaluated at reduced power according to the head SAR positions described in IEEE 1528 2013. Detailed description of the power reduction mechanism are included in the operational description.

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	17.0	17.5	13.0	13.5
	802.11g	16.0	16.5	13.0	13.5
	802.11n HT20	16.0	16.5	13.0	13.5
WiFi 2.4 GHz (Ch.12)	802.11b	8.0	8.5	8.0	8.5
	802.11g	8.0	8.5	8.0	8.5
	802.11n HT20	8.0	8.5	8.0	8.5
WiFi 2.4 GHz (Ch.13)	802.11b	8.0	8.5	8.0	8.5
	802.11g	3.0	3.5	3.0	3.5
	802.11n HT20	2.0	2.5	2.0	2.5
WiFi 5 GHz (Except 5700 MHz)	802.11a	12.0	12.5	8.0	8.5
	802.11n HT20	11.0	11.5	8.0	8.5
	802.11n HT40	11.0	11.5	8.0	8.5
	802.11ac VHT20	11.0	11.5	8.0	8.5
	802.11ac VHT40	11.0	11.5	8.0	8.5
	802.11ac VHT80	11.0	11.5	8.0	8.5
WiFi 5700 MHz	802.11a	11.0	11.5	8.0	8.5
	802.11n HT20	10.0	10.5	8.0	8.5
	802.11n HT40	11.0	11.5	8.0	8.5
	802.11ac VHT20	11.0	11.5	8.0	8.5
	802.11ac VHT40	11.0	11.5	8.0	8.5
	802.11ac VHT80	11.0	11.5	8.0	8.5
Bluetooth		8.5	9.0	N/A	
Bluetooth LE		1.0	1.5	N/A	

Note(s):

This device support to “Proximity sensor feature” at WLAN bands. Proximity sensor feature is operating when the device is used in close proximity to the user's body. SAR test distance is considered according to KDB 616217 D04 Section 6.

6.4. General LTE SAR Test and Reporting Considerations

Item	Description					
Frequency range, Channel Bandwidth, Numbers and Frequencies	Band 2	Frequency range: 1850 - 1910 MHz				
		Channel Bandwidth				
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz
	Low	18700/1860	18675/1857.5	18650/1855	18625/1852.5	18615/1851.5
						18607/1850.7
	Mid	18900/1880	18900/1880	18900/1880	18900/1880	18900/1880
	High	19100/1900	19125/1902.5	19150/1905	19175/1907.5	19185/1908.5
						19193/1909.3
	Band 4	Frequency range: 1710 - 1755 MHz				
		Channel Bandwidth				
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz
	Low	20050/1720	20025/1717.5	20000/1715	19975/1712.5	19965/1711.5
						19957/1710.7
	Mid	20175/1732.5	20175/1732.5	20175/1732.5	20175/1732.5	20175/1732.5
	High	20300/1745	20325/1747.5	20350/1750	20375/1752.5	20385/1753.5
						20393/1754.3
	Band 5	Frequency range: 824 - 849 MHz				
		Channel Bandwidth				
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz
	Low			20450/829	20425/826.5	20415/825.5
						20407/824.7
	Mid			20525/836.5	20525/836.5	20525/836.5
	High			20600/844	20625/846.5	20635/847.5
						20643/848.3
	Band 7	Frequency range: 2500 - 2570 MHz				
		Channel Bandwidth				
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz
	Low	20850/2510	20825/2507.5	20800/2505	20775/2502.5	
	Mid	21100/2535	21100/2535	21100/2535	21100/2535	
	High	21350/2560	21375/2562.5	21400/2565	21425/2567.5	
	Band 17	Frequency range: 704 - 716 MHz				
		Channel Bandwidth				
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz
	Low			23780/709	23755/706.5	
	Mid			23790/710	23790/710	
	High			23800/711	23825/713.5	
	Band 38	Frequency range: 2570 - 2620 MHz				
		Channel Bandwidth				
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz
	Low	37850/2580	37825/2577.5	37800/2575	37775/2572.5	
	Mid	38000/2595	38000/2595	38000/2595	38000/2595	
	High	38150/2610	38175/2612.5	38200/2615	38225/2617.5	

General LTE SAR Test and Reporting Considerations (Continued)

Item	Description																																						
LTE transmitter and antenna implementation	Refer to Appendix A.																																						
Maximum power reduction (MPR)	<div>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3</div> <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> <p>MPR Built-in by design</p> <p>The manufacturer MPR values are always within the 3GPP maximum MPR allowance but may not follow the default MPR values.</p> <p>A-MPR (additional MPR) was disabled during SAR testing</p>	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
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																																
Power reduction	Yes																																						
Spectrum plots for RB configurations	A properly configured base station simulator was used for the SAR and power measurements; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.																																						

6.5. LTE Carrier Aggregation

Combination	CA configuration	Bandwidth (MHz)											
		Carrier 1						Carrier 2					
		20	15	10	5	3	1.4	20	15	10	5	3	1.4
Intra-Band contiguous	7B		√								√		
	7C		√						√				
		√						√					
	7C(1)			√				√					
			√					√	√				
Intra-Band Non-contiguous	7A-7A				√				√				
				√					√	√			
			√					√	√				
		√						√					
	7A-7A(1)	√	√	√	√			√	√	√	√		
Inter-Band non-contiguous	5A - 7A			√	√	√	√	√	√	√			
	5A - 7A(1)			√	√			√	√	√			
	7A - 5A	√	√	√						√	√	√	√
	7A - 5A(1)	√	√	√						√	√		

Note(s):

For supported channels, please refer to §6.4

6.6. LTE (TDD) Considerations

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

SAR was tested with the highest transmission duty factor (63.33%) using Uplink-downlink configuration 0 and Special subframe configuration 7.

LTE TDD Band 38 supports 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations and Table 4.2-1 for Special subframe configurations.

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

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$			$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

Calculated Duty Cycle

Uplink-Downlink Configuration	Downlink-to-Uplink Switch-point Periodicity	Subframe Number										Calculated Duty Cycle (%)
		0	1	2	3	4	5	6	7	8	9	
0	5 ms	D	S	U	U	U	D	S	U	U	U	63.33
1	5 ms	D	S	U	U	D	D	S	U	U	D	43.33
2	5 ms	D	S	U	D	D	D	S	U	D	D	23.33
3	10 ms	D	S	U	U	U	D	D	D	D	D	31.67
4	10 ms	D	S	U	U	D	D	D	D	D	D	21.67
5	10 ms	D	S	U	D	D	D	D	D	D	D	11.67
6	5 ms	D	S	U	U	U	D	S	U	U	D	53.33

Calculated Duty Cycle = Extended cyclic prefix in uplink $\times (T_s) \times \#$ of S + $\#$ of U

Example for Calculated Duty Cycle for Uplink-Downlink Configuration 0:

Calculated Duty Cycle = $5120 \times [1/(15000 \times 2048)] \times 2 + 6 \text{ ms} = 63.33\%$

where

$T_s = 1/(15000 \times 2048)$ seconds

6.7. Power Reduction features

6.7.1. Proximity sensor feature

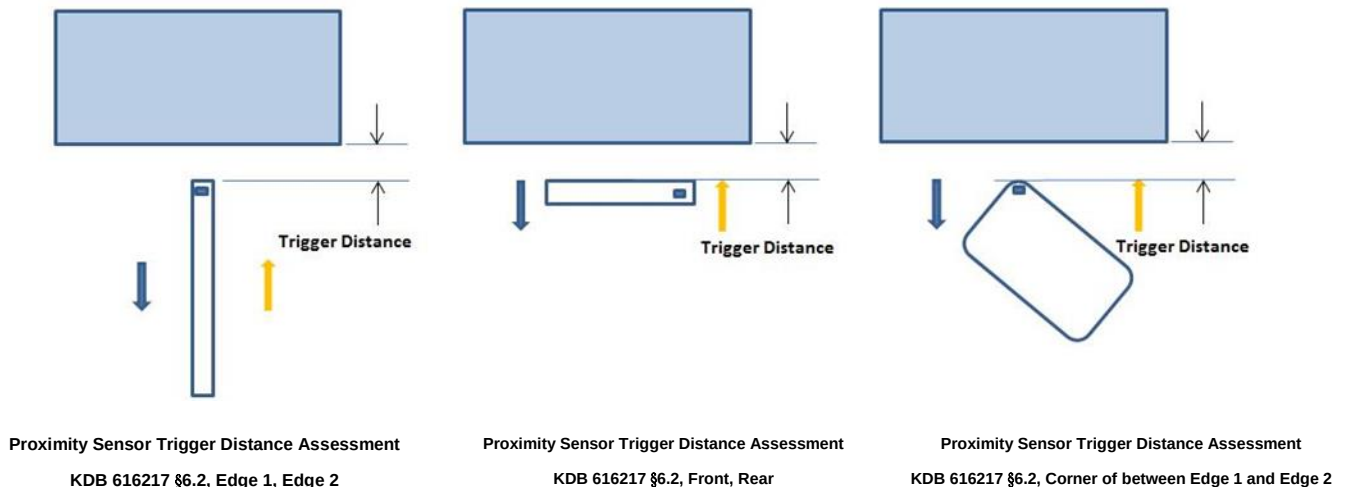
6.7.1.1 Proximity Sensor Triggering Distance (KDB 616217 §6.2)

Rear, Front, Edge 1, Edge 2, Corner 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 Rear, Front, Edge 1, Edge 2, Corner.

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

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



LEGEND

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

Summary of Trigger Distances

Tissue simulating liquid	Trigger distance - Rear	Trigger distance - Edge 1	Trigger distance - Edge 2	Trigger distance - Corner	Tissue simulating liquid	Trigger distance - Front
	Moving toward / from phantom	Moving toward / from phantom	Moving toward / from phantom	Moving toward / from phantom		Moving toward / from phantom
750 muscle	16 mm	16 mm	4 mm	9 mm	750 Head	12 mm
850 muscle	16 mm	16 mm	4 mm	9 mm	850 Head	12 mm
1750 muscle	16 mm	16 mm	4 mm	9 mm	1750 Head	12 mm
1900 muscle	16 mm	16 mm	4 mm	9 mm	1900 Head	12 mm
2600 muscle	16 mm	16 mm	4 mm	9 mm	2600 Head	12 mm
2450 muscle	6 mm	3 mm	N/A	N/A	2450 Head	N/A
5000 muscle	6 mm	3 mm	N/A	N/A	5000 Head	N/A

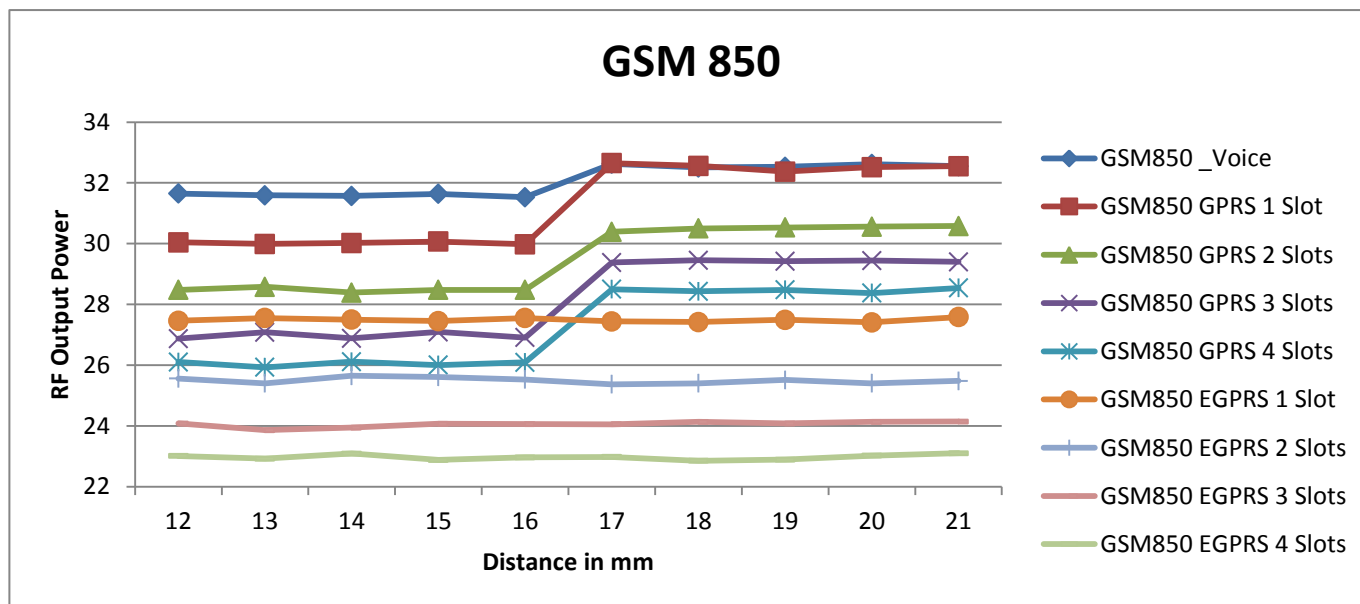
Note(s):

Corner side is located between Edge 1 and Edge 2.

Proximity Sensor Triggering Distance Measurement Results**GSM 850**

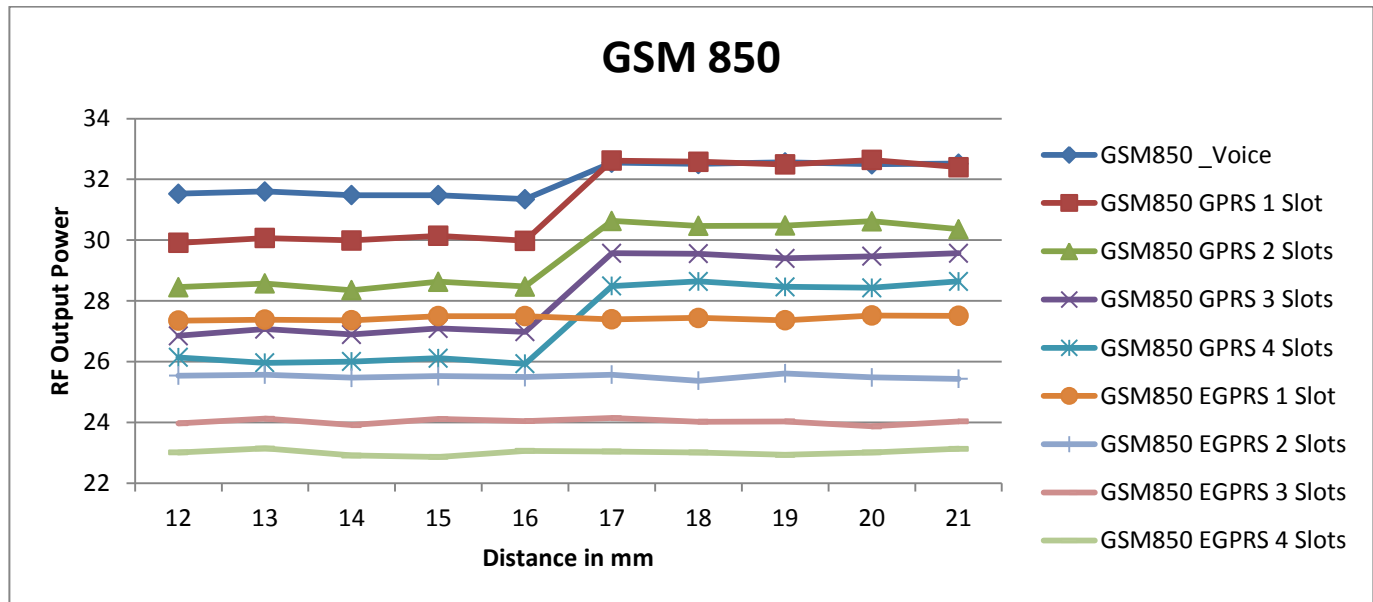
Rear, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	12	13	14	15	16	17	18	19	20	21
GSM850_Voice	31.7	31.6	31.6	31.6	31.5	32.6	32.5	32.5	32.6	32.6
GSM850 GPRS 1 Slot	30.0	30.0	30.0	30.1	30.0	32.7	32.6	32.4	32.5	32.6
GSM850 GPRS 2 Slots	28.5	28.6	28.4	28.5	28.5	30.4	30.5	30.5	30.6	30.6
GSM850 GPRS 3 Slots	26.9	27.1	26.9	27.1	26.9	29.4	29.5	29.4	29.4	29.4
GSM850 GPRS 4 Slots	26.1	25.9	26.1	26.0	26.1	28.5	28.4	28.5	28.4	28.5
GSM850 EGPRS 1 Slot	27.5	27.6	27.5	27.5	27.6	27.4	27.4	27.5	27.4	27.6
GSM850 EGPRS 2 Slots	25.6	25.4	25.7	25.6	25.5	25.4	25.4	25.5	25.4	25.5
GSM850 EGPRS 3 Slots	24.1	23.9	23.9	24.1	24.1	24.1	24.1	24.1	24.1	24.1
GSM850 EGPRS 4 Slots	23.0	22.9	23.1	22.9	23.0	23.0	22.9	22.9	23.0	23.1



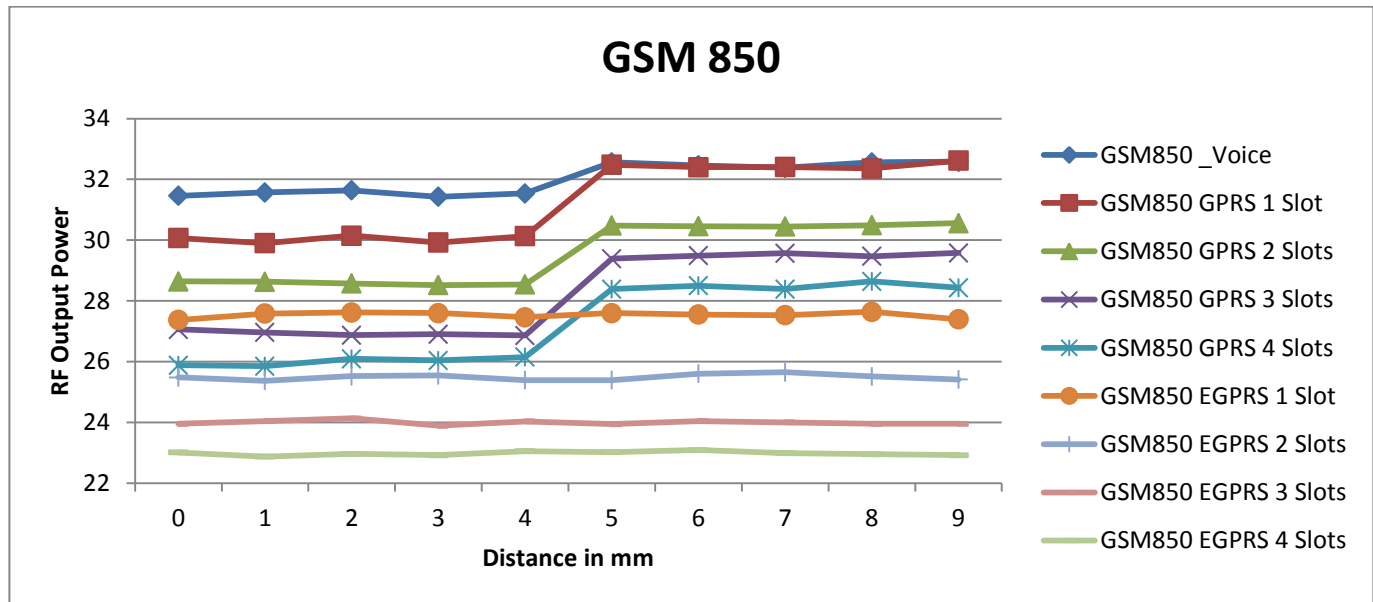
Edge 1, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	12	13	14	15	16	17	18	19	20	21
GSM850_Voice	31.5	31.6	31.5	31.5	31.4	32.6	32.5	32.6	32.5	32.5
GSM850 GPRS 1 Slot	29.9	30.1	30.0	30.1	30.0	32.6	32.6	32.5	32.6	32.4
GSM850 GPRS 2 Slots	28.5	28.6	28.4	28.6	28.5	30.6	30.5	30.5	30.6	30.4
GSM850 GPRS 3 Slots	26.9	27.1	26.9	27.1	27.0	29.6	29.6	29.4	29.5	29.6
GSM850 GPRS 4 Slots	26.1	26.0	26.0	26.1	25.9	28.5	28.6	28.5	28.4	28.6
GSM850 EGPRS 1 Slot	27.4	27.4	27.4	27.5	27.5	27.4	27.4	27.4	27.5	27.5
GSM850 EGPRS 2 Slots	25.5	25.6	25.5	25.5	25.5	25.6	25.4	25.6	25.5	25.4
GSM850 EGPRS 3 Slots	24.0	24.1	23.9	24.1	24.0	24.1	24.0	24.0	23.9	24.0
GSM850 EGPRS 4 Slots	23.0	23.1	22.9	22.9	23.1	23.0	23.0	22.9	23.0	23.1



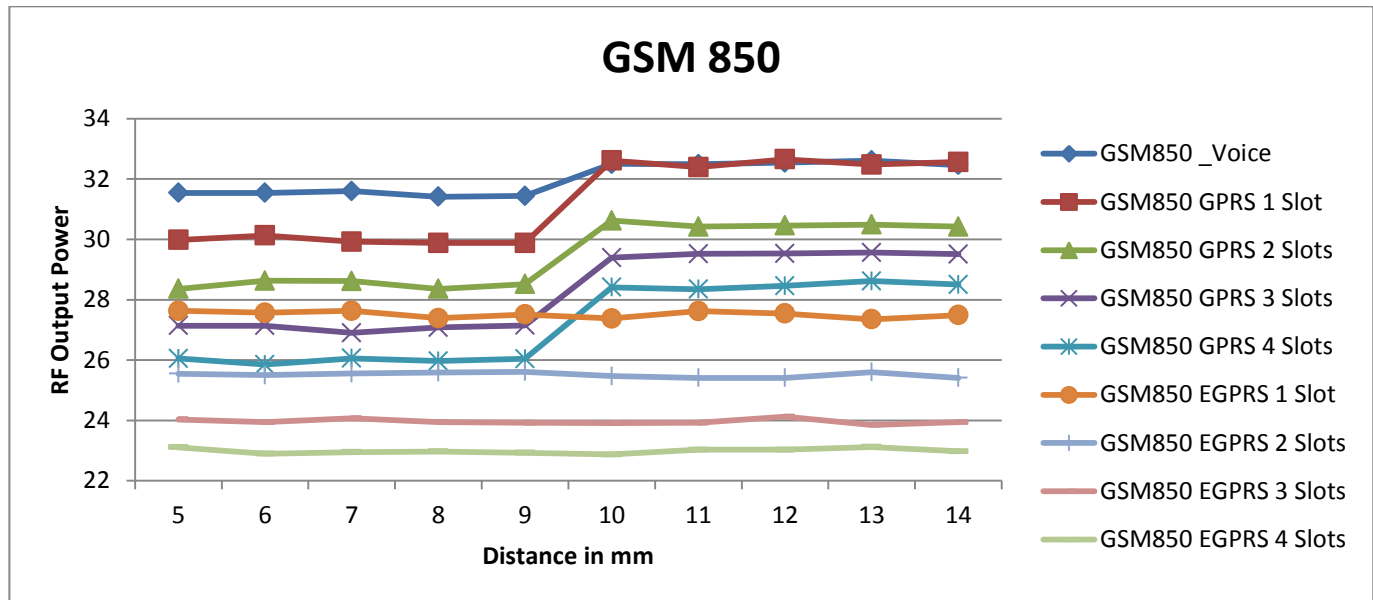
Edge 2, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	0	1	2	3	4	5	6	7	8	9
GSM850_Voice	31.5	31.6	31.6	31.4	31.5	32.6	32.5	32.4	32.6	32.6
GSM850 GPRS 1 Slot	30.1	29.9	30.2	29.9	30.1	32.5	32.4	32.4	32.4	32.6
GSM850 GPRS 2 Slots	28.6	28.6	28.6	28.5	28.5	30.5	30.5	30.5	30.5	30.6
GSM850 GPRS 3 Slots	27.1	27.0	26.9	26.9	26.9	29.4	29.5	29.6	29.5	29.6
GSM850 GPRS 4 Slots	25.9	25.9	26.1	26.0	26.2	28.4	28.5	28.4	28.6	28.4
GSM850 EGPRS 1 Slot	27.4	27.6	27.6	27.6	27.5	27.6	27.6	27.5	27.6	27.4
GSM850 EGPRS 2 Slots	25.5	25.4	25.5	25.6	25.4	25.4	25.6	25.7	25.5	25.4
GSM850 EGPRS 3 Slots	24.0	24.0	24.1	23.9	24.0	23.9	24.0	24.0	24.0	24.0
GSM850 EGPRS 4 Slots	23.0	22.9	23.0	22.9	23.1	23.0	23.1	23.0	23.0	22.9



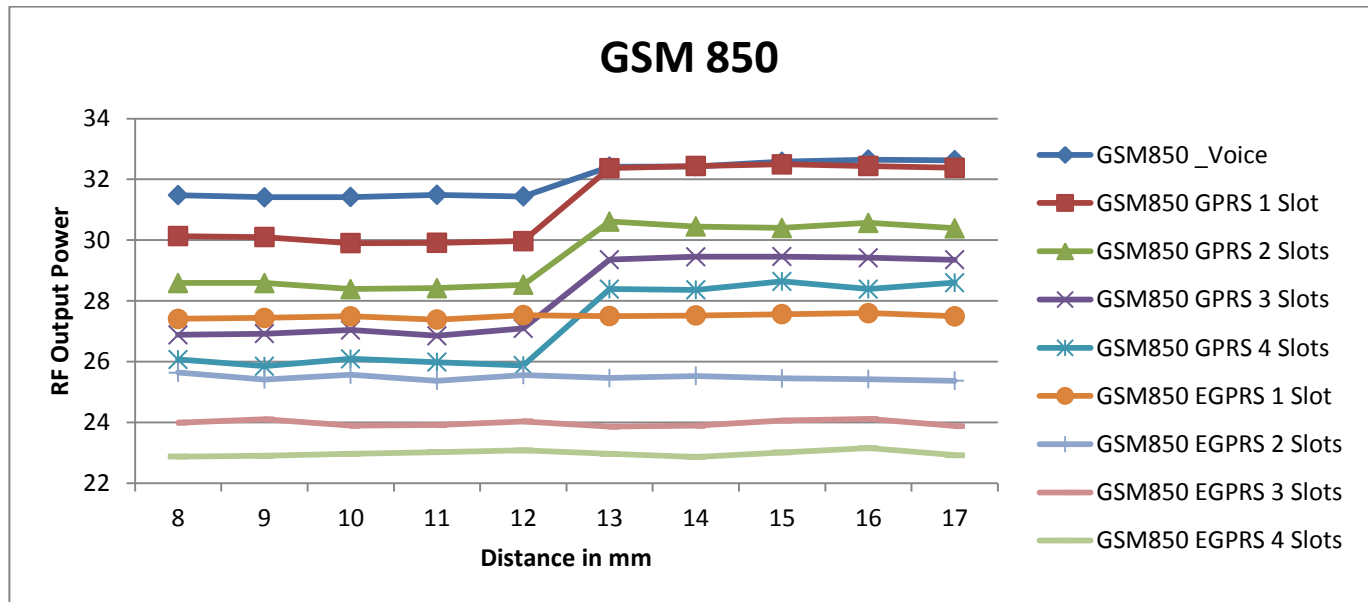
Corner, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	5	6	7	8	9	10	11	12	13	14
GSM850_Voice	31.5	31.5	31.6	31.4	31.4	32.5	32.5	32.5	32.6	32.5
GSM850 GPRS 1 Slot	30.0	30.1	29.9	29.9	29.9	32.6	32.4	32.7	32.5	32.6
GSM850 GPRS 2 Slots	28.4	28.6	28.6	28.4	28.5	30.6	30.4	30.5	30.5	30.4
GSM850 GPRS 3 Slots	27.1	27.1	26.9	27.1	27.2	29.4	29.5	29.5	29.6	29.5
GSM850 GPRS 4 Slots	26.1	25.9	26.1	26.0	26.0	28.4	28.4	28.5	28.6	28.5
GSM850 EGPRS 1 Slot	27.6	27.6	27.6	27.4	27.5	27.4	27.6	27.5	27.4	27.5
GSM850 EGPRS 2 Slots	25.6	25.5	25.6	25.6	25.6	25.5	25.4	25.4	25.6	25.4
GSM850 EGPRS 3 Slots	24.0	23.9	24.1	23.9	23.9	23.9	23.9	24.1	23.9	23.9
GSM850 EGPRS 4 Slots	23.1	22.9	23.0	23.0	22.9	22.9	23.0	23.0	23.1	23.0



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

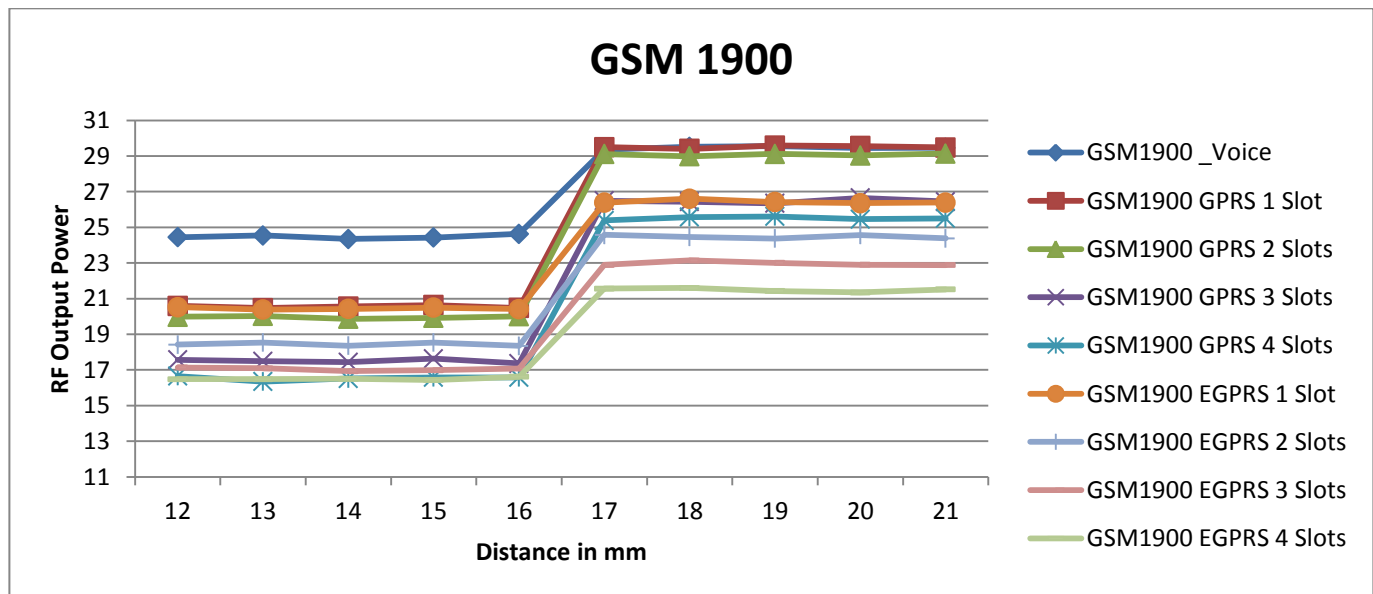
Distance to DUT vs. Output Power in dBm										
Distance (mm)	8	9	10	11	12	13	14	15	16	17
GSM850_Voice	31.5	31.4	31.4	31.5	31.4	32.4	32.4	32.6	32.7	32.6
GSM850 GPRS 1 Slot	30.1	30.1	29.9	29.9	30.0	32.4	32.4	32.5	32.4	32.4
GSM850 GPRS 2 Slots	28.6	28.6	28.4	28.4	28.5	30.6	30.5	30.4	30.6	30.4
GSM850 GPRS 3 Slots	26.9	26.9	27.0	26.9	27.1	29.4	29.5	29.5	29.4	29.4
GSM850 GPRS 4 Slots	26.1	25.9	26.1	26.0	25.9	28.4	28.4	28.6	28.4	28.6
GSM850 EGPRS 1 Slot	27.4	27.4	27.5	27.4	27.5	27.5	27.5	27.6	27.6	27.5
GSM850 EGPRS 2 Slots	25.6	25.4	25.6	25.4	25.6	25.5	25.5	25.5	25.4	25.4
GSM850 EGPRS 3 Slots	24.0	24.1	23.9	23.9	24.0	23.9	23.9	24.1	24.1	23.9
GSM850 EGPRS 4 Slots	22.9	22.9	23.0	23.0	23.1	23.0	22.9	23.0	23.2	22.9



GSM 1900

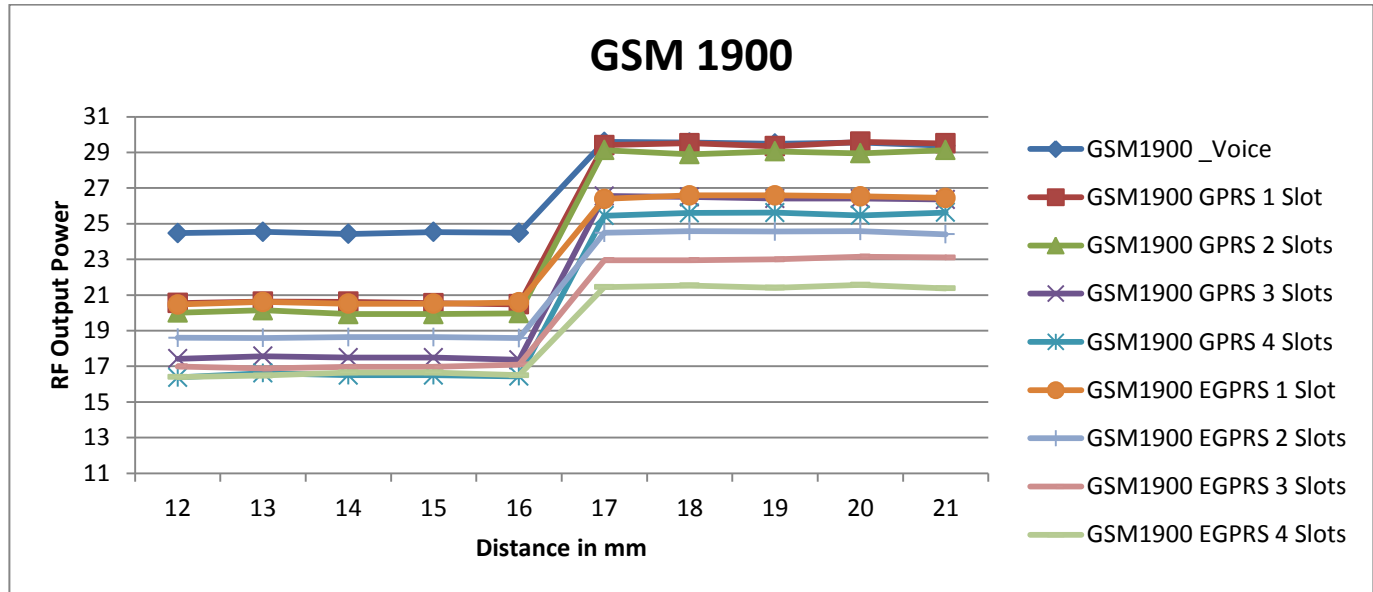
Rear, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	12	13	14	15	16	17	18	19	20	21
GSM1900_Voice	24.4	24.5	24.4	24.4	24.6	29.4	29.5	29.6	29.5	29.5
GSM1900 GPRS 1 Slot	20.6	20.5	20.6	20.6	20.5	29.5	29.4	29.6	29.6	29.5
GSM1900 GPRS 2 Slots	20.0	20.0	19.9	19.9	20.0	29.1	29.0	29.1	29.0	29.1
GSM1900 GPRS 3 Slots	17.6	17.5	17.4	17.6	17.4	26.5	26.4	26.4	26.7	26.5
GSM1900 GPRS 4 Slots	16.7	16.4	16.5	16.6	16.6	25.4	25.6	25.6	25.5	25.5
GSM1900 EGPRS 1 Slot	20.5	20.4	20.4	20.5	20.4	26.4	26.6	26.4	26.4	26.4
GSM1900 EGPRS 2 Slots	18.4	18.5	18.4	18.5	18.4	24.6	24.5	24.4	24.6	24.4
GSM1900 EGPRS 3 Slots	17.1	17.1	16.9	17.0	17.1	22.9	23.1	23.0	22.9	22.9
GSM1900 EGPRS 4 Slots	16.5	16.5	16.5	16.4	16.6	21.6	21.6	21.4	21.4	21.5



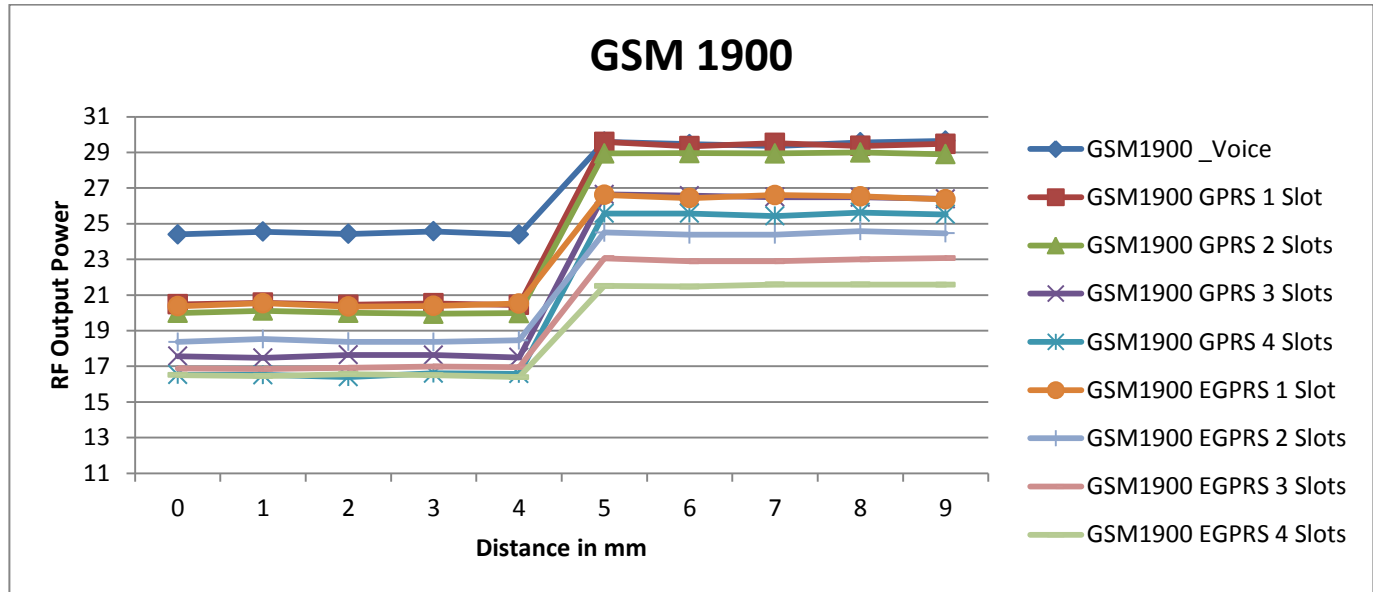
Edge 1, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	12	13	14	15	16	17	18	19	20	21
GSM1900_Voice	24.5	24.5	24.4	24.5	24.5	29.6	29.6	29.5	29.6	29.4
GSM1900 GPRS 1 Slot	20.6	20.6	20.6	20.5	20.5	29.4	29.5	29.4	29.6	29.5
GSM1900 GPRS 2 Slots	20.0	20.1	19.9	19.9	20.0	29.1	28.9	29.1	29.0	29.1
GSM1900 GPRS 3 Slots	17.4	17.6	17.5	17.5	17.4	26.6	26.5	26.4	26.4	26.4
GSM1900 GPRS 4 Slots	16.4	16.6	16.5	16.5	16.4	25.5	25.6	25.6	25.5	25.6
GSM1900 EGPRS 1 Slot	20.5	20.6	20.5	20.5	20.6	26.4	26.6	26.6	26.5	26.5
GSM1900 EGPRS 2 Slots	18.6	18.6	18.6	18.6	18.6	24.5	24.6	24.6	24.6	24.4
GSM1900 EGPRS 3 Slots	17.0	16.9	17.0	17.0	17.1	23.0	23.0	23.0	23.2	23.1
GSM1900 EGPRS 4 Slots	16.4	16.5	16.7	16.7	16.5	21.5	21.5	21.4	21.6	21.4



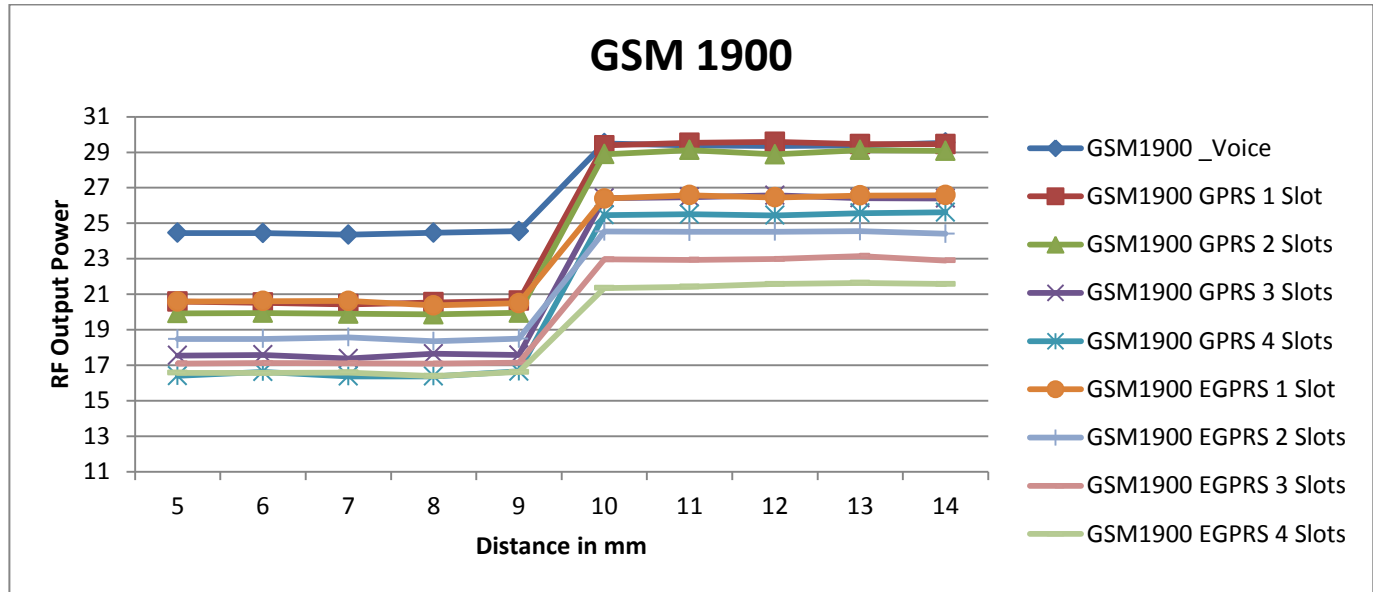
Edge 2, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	0	1	2	3	4	5	6	7	8	9
GSM1900_Voice	24.4	24.6	24.4	24.6	24.4	29.6	29.5	29.4	29.6	29.7
GSM1900 GPRS 1 Slot	20.5	20.6	20.5	20.5	20.4	29.6	29.4	29.5	29.4	29.5
GSM1900 GPRS 2 Slots	20.0	20.1	20.0	20.0	20.0	28.9	29.0	28.9	29.0	28.9
GSM1900 GPRS 3 Slots	17.6	17.5	17.6	17.6	17.5	26.6	26.6	26.5	26.5	26.4
GSM1900 GPRS 4 Slots	16.5	16.5	16.4	16.6	16.6	25.6	25.6	25.4	25.6	25.5
GSM1900 EGPRS 1 Slot	20.4	20.5	20.4	20.4	20.5	26.6	26.4	26.6	26.5	26.4
GSM1900 EGPRS 2 Slots	18.4	18.5	18.4	18.4	18.5	24.5	24.4	24.4	24.6	24.5
GSM1900 EGPRS 3 Slots	16.9	16.9	16.9	17.0	17.0	23.1	22.9	22.9	23.0	23.1
GSM1900 EGPRS 4 Slots	16.5	16.5	16.6	16.5	16.4	21.5	21.5	21.6	21.6	21.6



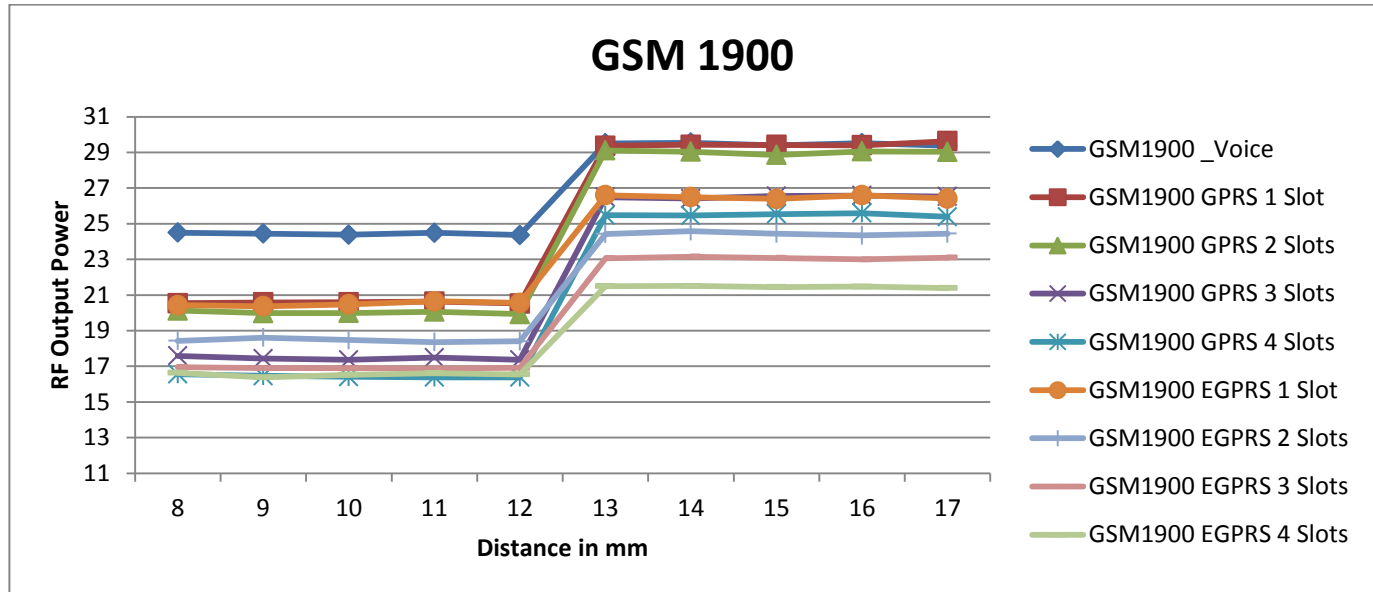
Corner, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	5	6	7	8	9	10	11	12	13	14
GSM1900_Voice	24.5	24.4	24.4	24.5	24.6	29.5	29.4	29.4	29.4	29.5
GSM1900 GPRS 1 Slot	20.6	20.5	20.4	20.5	20.6	29.4	29.5	29.6	29.5	29.5
GSM1900 GPRS 2 Slots	19.9	19.9	19.9	19.9	20.0	28.9	29.1	28.9	29.1	29.1
GSM1900 GPRS 3 Slots	17.5	17.6	17.4	17.6	17.6	26.4	26.5	26.6	26.4	26.4
GSM1900 GPRS 4 Slots	16.4	16.6	16.4	16.4	16.7	25.5	25.5	25.4	25.6	25.6
GSM1900 EGPRS 1 Slot	20.6	20.6	20.6	20.4	20.5	26.4	26.6	26.5	26.6	26.6
GSM1900 EGPRS 2 Slots	18.5	18.5	18.6	18.4	18.5	24.5	24.5	24.5	24.6	24.4
GSM1900 EGPRS 3 Slots	17.1	17.1	17.1	17.1	17.1	23.0	22.9	23.0	23.2	22.9
GSM1900 EGPRS 4 Slots	16.6	16.6	16.6	16.4	16.6	21.4	21.4	21.6	21.6	21.6



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

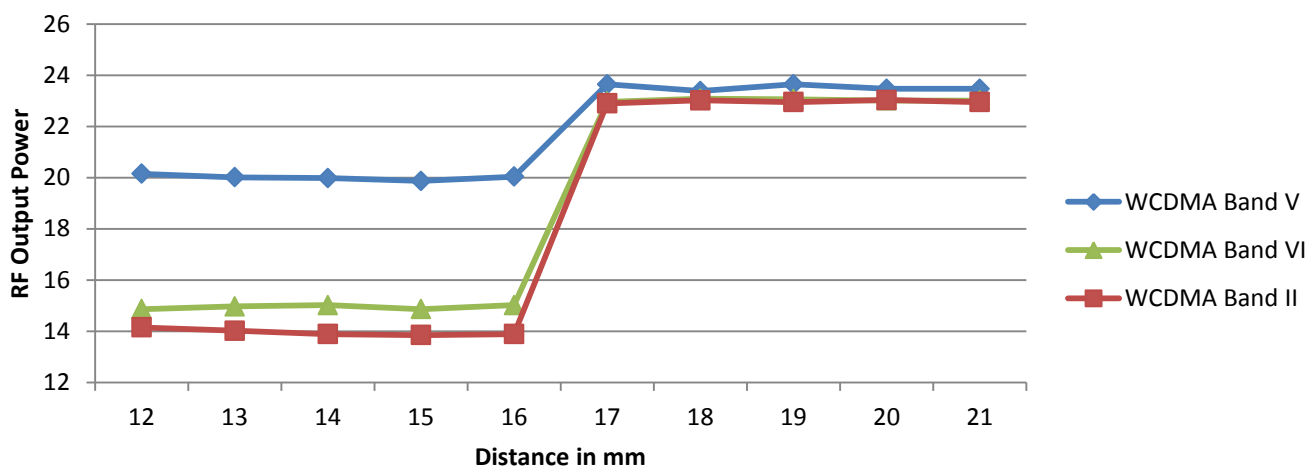
Distance to DUT vs. Output Power in dBm										
Distance (mm)	8	9	10	11	12	13	14	15	16	17
GSM1900_Voice	24.5	24.4	24.4	24.5	24.4	29.5	29.5	29.4	29.5	29.4
GSM1900 GPRS 1 Slot	20.5	20.6	20.6	20.6	20.5	29.4	29.4	29.4	29.4	29.6
GSM1900 GPRS 2 Slots	20.1	20.0	20.0	20.1	19.9	29.1	29.0	28.9	29.1	29.0
GSM1900 GPRS 3 Slots	17.6	17.4	17.4	17.5	17.4	26.5	26.4	26.6	26.6	26.5
GSM1900 GPRS 4 Slots	16.6	16.5	16.4	16.4	16.4	25.5	25.5	25.5	25.6	25.4
GSM1900 EGPRS 1 Slot	20.4	20.4	20.5	20.7	20.6	26.6	26.5	26.4	26.6	26.4
GSM1900 EGPRS 2 Slots	18.4	18.6	18.5	18.4	18.4	24.4	24.6	24.4	24.4	24.4
GSM1900 EGPRS 3 Slots	17.0	16.9	16.9	16.9	16.9	23.1	23.2	23.1	23.0	23.1
GSM1900 EGPRS 4 Slots	16.6	16.4	16.5	16.6	16.5	21.5	21.5	21.5	21.5	21.4



WCDMA Band II/ IV/ V

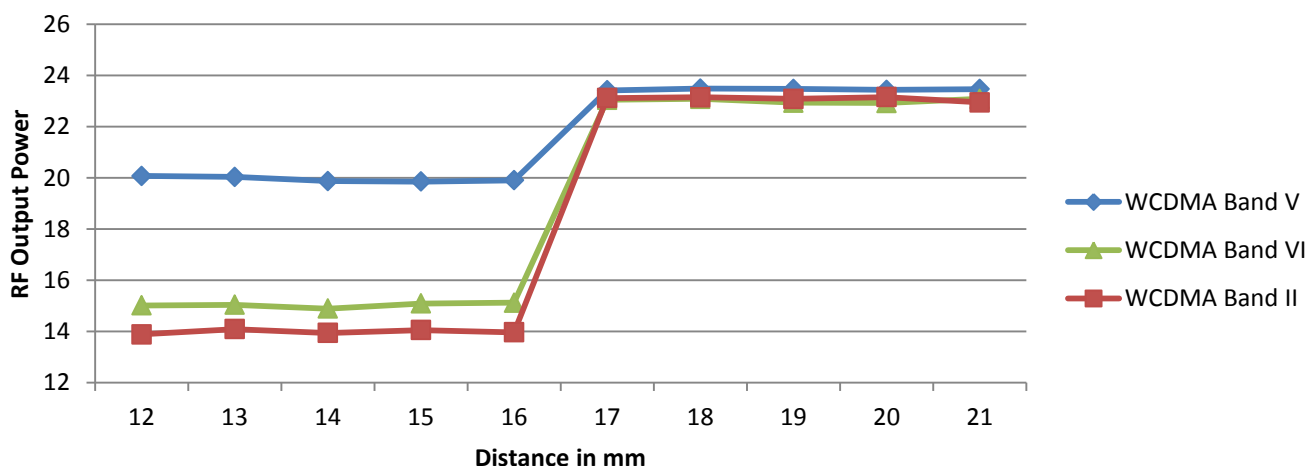
Rear, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	12	13	14	15	16	17	18	19	20	21
WCDMA Band V	20.2	20.0	20.0	19.9	20.0	23.6	23.4	23.6	23.5	23.5
WCDMA Band VI	14.9	15.0	15.0	14.9	15.0	23.0	23.1	23.1	23.0	23.0
WCDMA Band II	14.2	14.0	13.9	13.9	13.9	22.9	23.0	23.0	23.0	23.0

WCDMA Bands V / IV / II

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

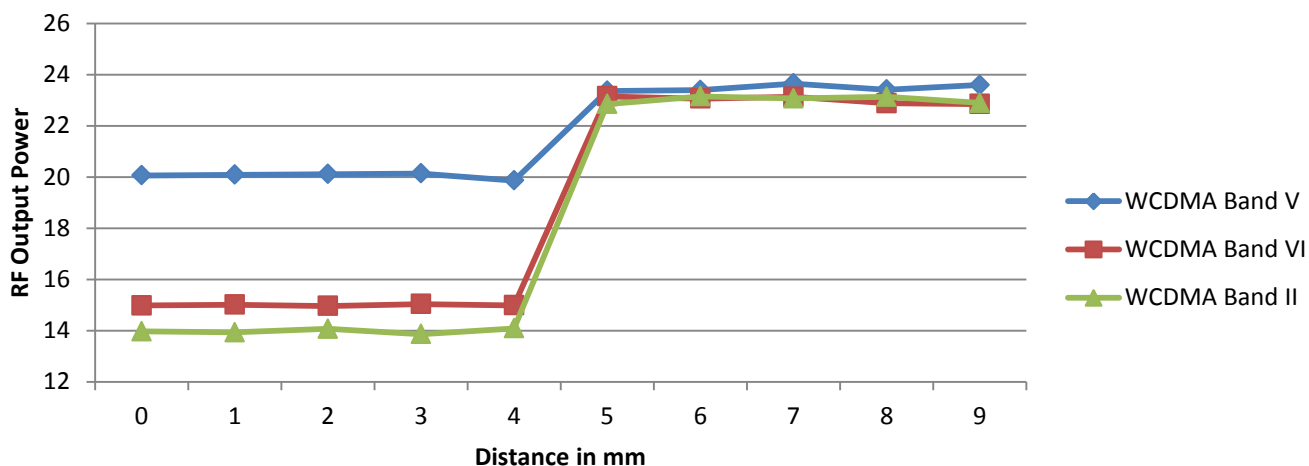
Distance to DUT vs. Output Power in dBm										
Distance (mm)	12	13	14	15	16	17	18	19	20	21
WCDMA Band V	20.1	20.0	19.9	19.9	19.9	23.4	23.5	23.5	23.4	23.5
WCDMA Band VI	15.0	15.0	14.9	15.1	15.1	23.0	23.1	22.9	22.9	23.1
WCDMA Band II	13.9	14.1	13.9	14.1	14.0	23.1	23.1	23.1	23.2	22.9

WCDMA Bands V / IV / II

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

Distance to DUT vs. Output Power in dBm										
Distance (mm)	0	1	2	3	4	5	6	7	8	9
WCDMA Band V	20.1	20.1	20.1	20.1	19.9	23.4	23.4	23.7	23.4	23.6
WCDMA Band VI	15.0	15.0	15.0	15.0	15.0	23.2	23.1	23.1	22.9	22.9
WCDMA Band II	14.0	13.9	14.1	13.9	14.1	22.9	23.2	23.1	23.1	22.9

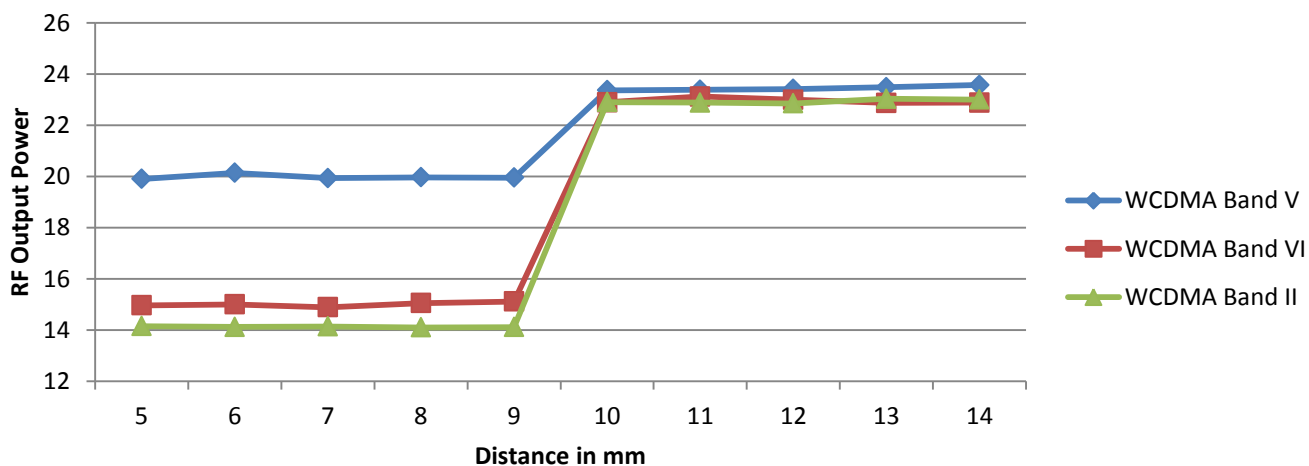
WCDMA Bands V / IV / II



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

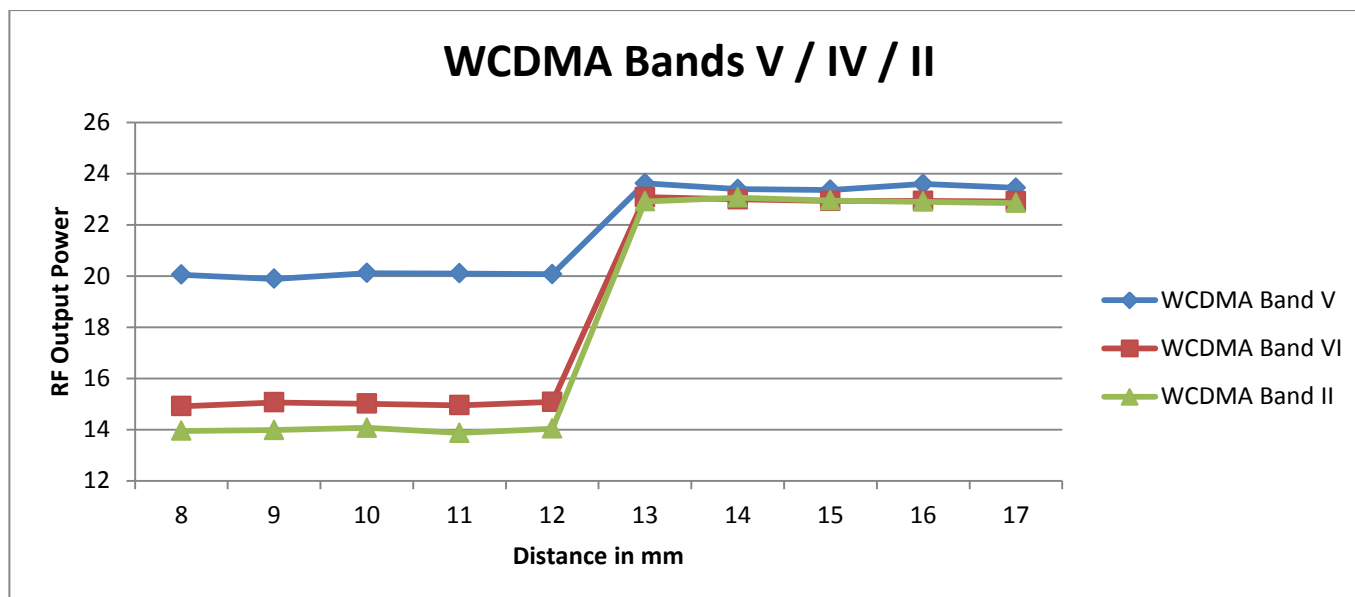
Distance to DUT vs. Output Power in dBm										
Distance (mm)	5	6	7	8	9	10	11	12	13	14
WCDMA Band V	19.9	20.1	19.9	20.0	20.0	23.4	23.4	23.4	23.5	23.6
WCDMA Band VI	15.0	15.0	14.9	15.1	15.1	22.9	23.1	23.0	22.9	22.9
WCDMA Band II	14.2	14.1	14.1	14.1	14.1	22.9	22.9	22.9	23.0	23.0

WCDMA Bands V / IV / II



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

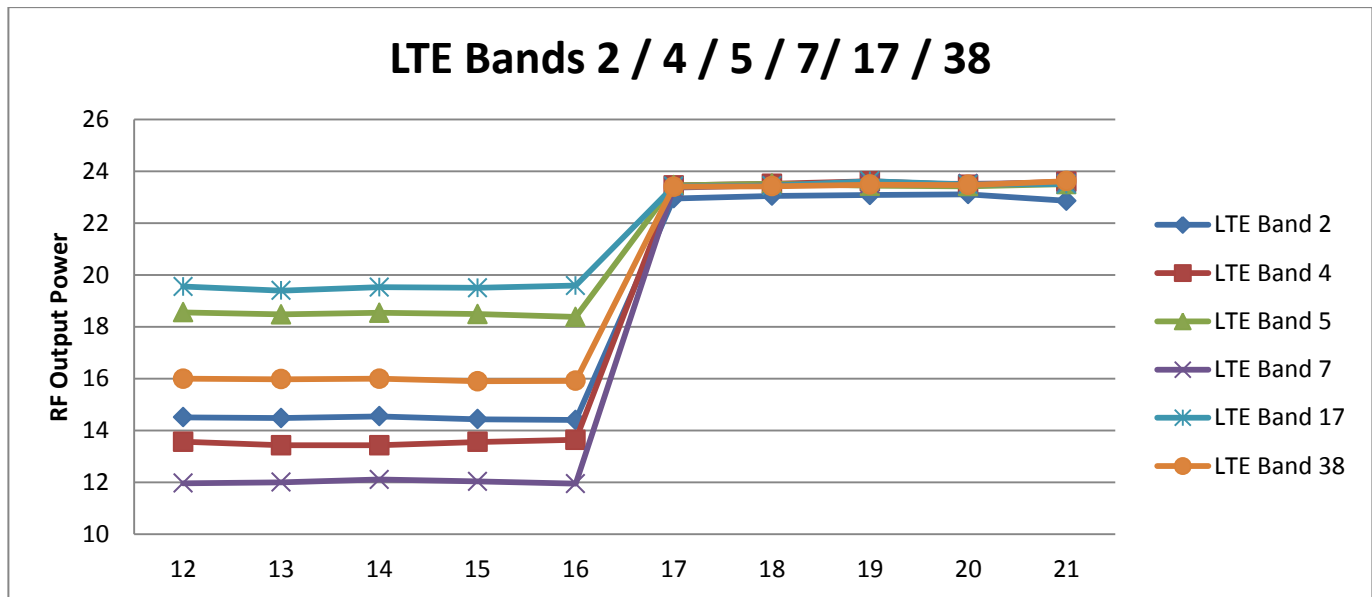
Distance to DUT vs. Output Power in dBm										
Distance (mm)	8	9	10	11	12	13	14	15	16	17
WCDMA Band V	20.1	19.9	20.1	20.1	20.1	23.6	23.4	23.4	23.6	23.4
WCDMA Band VI	14.9	15.1	15.0	15.0	15.1	23.1	23.0	22.9	22.9	22.9
WCDMA Band II	14.0	14.0	14.1	13.9	14.0	22.9	23.1	23.0	22.9	22.9



LTE Band 2/ 4/ 5/ 7/ 17/ 38

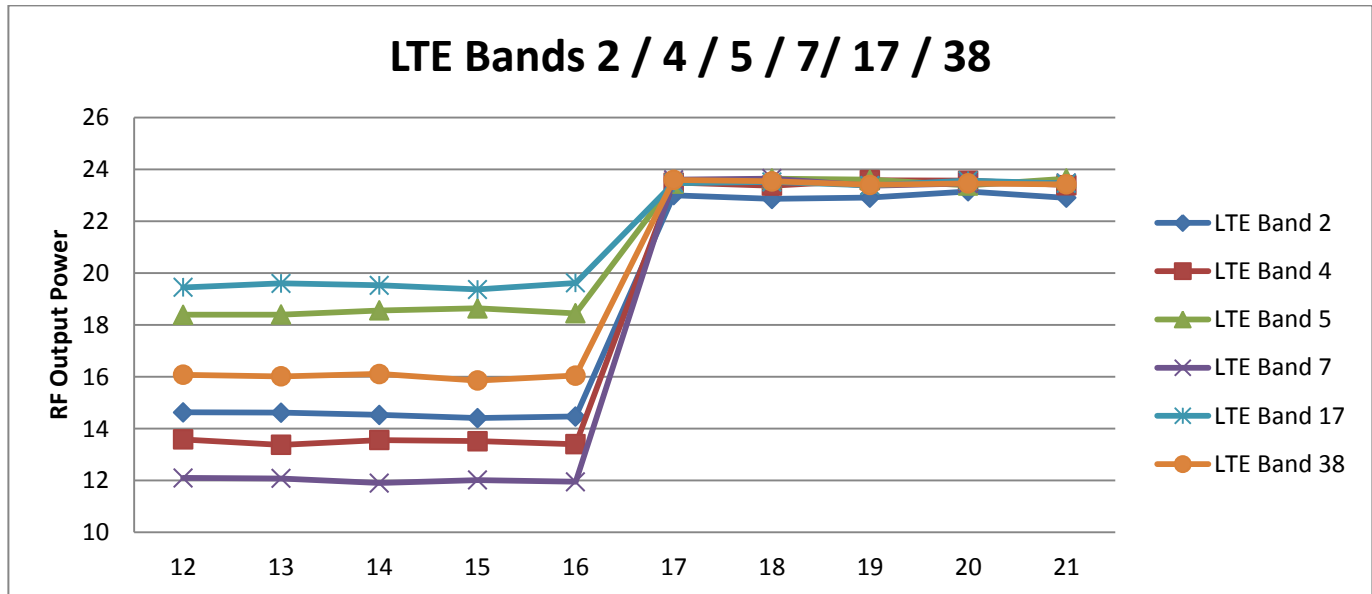
Rear, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	12	13	14	15	16	17	18	19	20	21
LTE Band 2	14.5	14.5	14.6	14.4	14.4	23.0	23.1	23.1	23.1	22.9
LTE Band 4	13.6	13.4	13.4	13.6	13.6	23.5	23.5	23.6	23.5	23.6
LTE Band 5	18.6	18.5	18.5	18.5	18.4	23.5	23.5	23.4	23.4	23.5
LTE Band 7	12.0	12.0	12.1	12.0	12.0	23.4	23.5	23.5	23.5	23.6
LTE Band 17	19.6	19.4	19.5	19.5	19.6	23.4	23.4	23.6	23.5	23.5
LTE Band 38	16.0	16.0	16.0	15.9	15.9	23.4	23.4	23.5	23.5	23.6



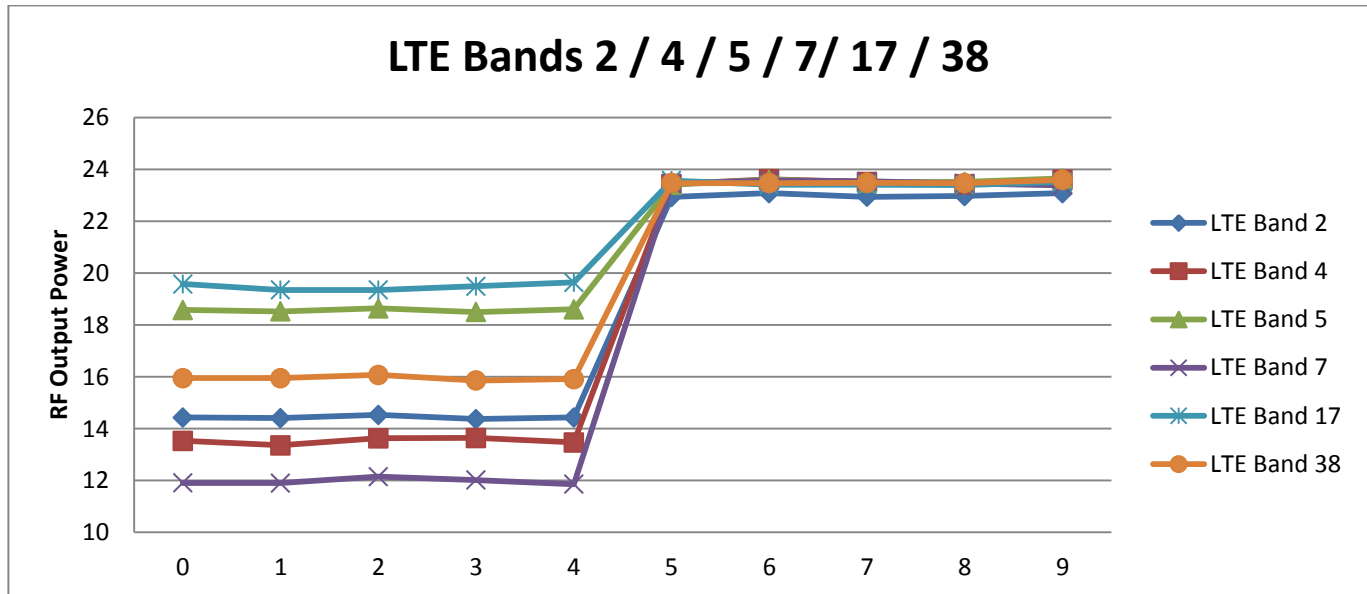
Edge 1, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	12	13	14	15	16	17	18	19	20	21
LTE Band 2	14.6	14.6	14.5	14.4	14.5	23.0	22.9	22.9	23.2	22.9
LTE Band 4	13.6	13.4	13.6	13.5	13.4	23.5	23.4	23.6	23.6	23.4
LTE Band 5	18.4	18.4	18.6	18.6	18.5	23.5	23.6	23.6	23.4	23.6
LTE Band 7	12.1	12.1	11.9	12.0	12.0	23.6	23.6	23.4	23.5	23.5
LTE Band 17	19.5	19.6	19.5	19.4	19.6	23.5	23.5	23.4	23.6	23.5
LTE Band 38	16.1	16.0	16.1	15.9	16.1	23.6	23.5	23.4	23.5	23.4



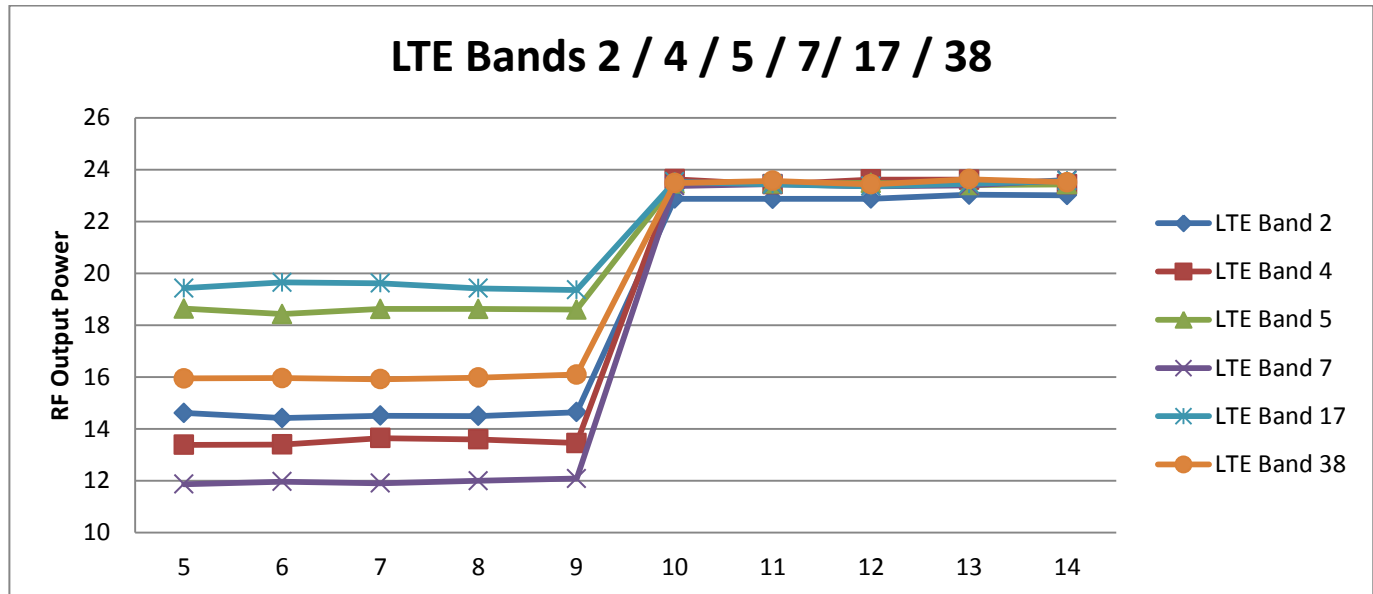
Edge 2, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	0	1	2	3	4	5	6	7	8	9
LTE Band 2	14.4	14.4	14.5	14.4	14.4	22.9	23.1	22.9	23.0	23.1
LTE Band 4	13.5	13.4	13.6	13.6	13.5	23.4	23.6	23.5	23.4	23.6
LTE Band 5	18.6	18.5	18.6	18.5	18.6	23.4	23.6	23.5	23.5	23.7
LTE Band 7	11.9	11.9	12.2	12.0	11.9	23.5	23.6	23.5	23.5	23.4
LTE Band 17	19.6	19.4	19.4	19.5	19.6	23.6	23.4	23.4	23.4	23.5
LTE Band 38	16.0	16.0	16.1	15.9	15.9	23.5	23.5	23.5	23.5	23.6



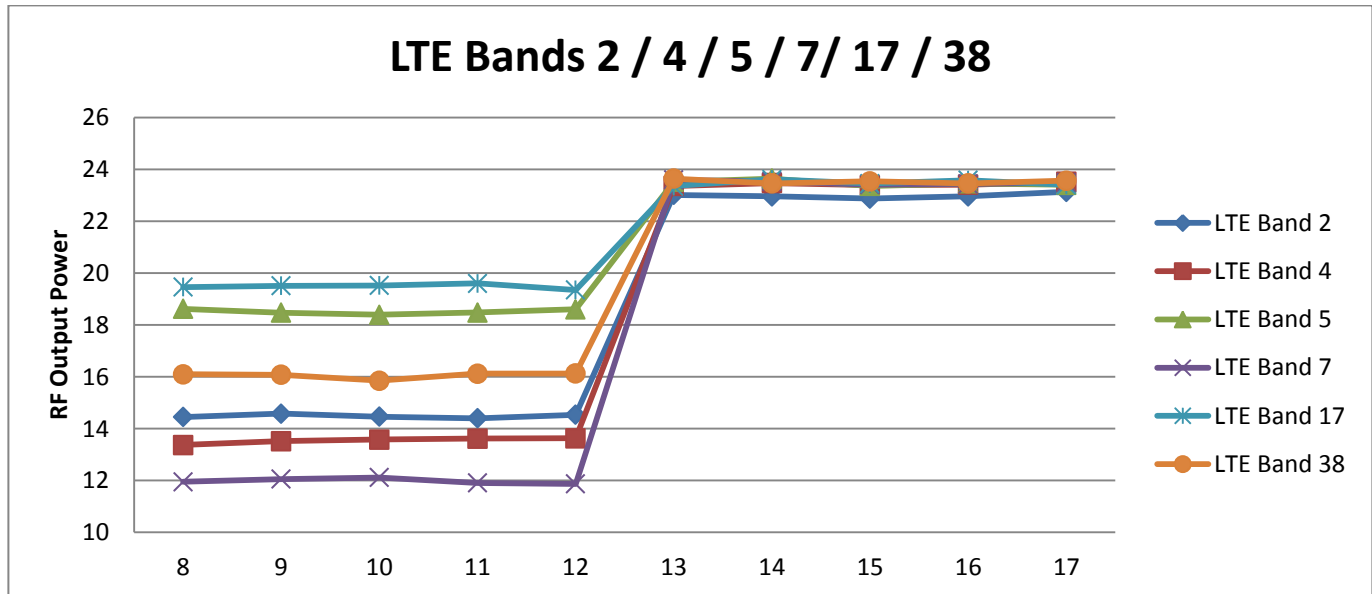
Corner, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	5	6	7	8	9	10	11	12	13	14
LTE Band 2	14.6	14.4	14.5	14.5	14.7	22.9	22.9	22.9	23.0	23.0
LTE Band 4	13.4	13.4	13.7	13.6	13.5	23.6	23.4	23.6	23.6	23.4
LTE Band 5	18.6	18.4	18.6	18.6	18.6	23.5	23.5	23.5	23.4	23.4
LTE Band 7	11.9	12.0	11.9	12.0	12.1	23.4	23.4	23.4	23.4	23.6
LTE Band 17	19.4	19.7	19.6	19.4	19.4	23.5	23.4	23.4	23.5	23.6
LTE Band 38	16.0	16.0	15.9	16.0	16.1	23.5	23.6	23.4	23.6	23.5



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

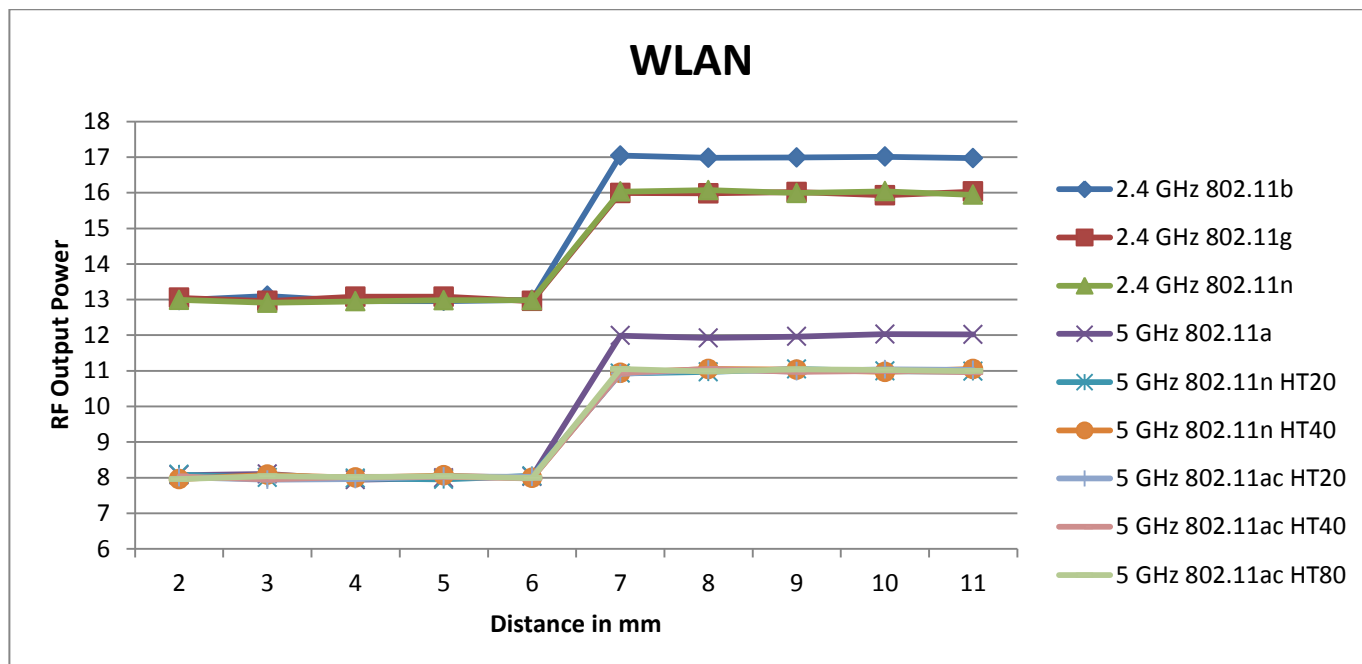
Distance to DUT vs. Output Power in dBm										
Distance (mm)	8	9	10	11	12	13	14	15	16	17
LTE Band 2	14.5	14.6	14.5	14.4	14.5	23.0	23.0	22.9	23.0	23.1
LTE Band 4	13.4	13.5	13.6	13.6	13.6	23.4	23.5	23.4	23.4	23.5
LTE Band 5	18.6	18.5	18.4	18.5	18.6	23.5	23.6	23.4	23.5	23.4
LTE Band 7	12.0	12.1	12.1	11.9	11.9	23.6	23.5	23.4	23.4	23.5
LTE Band 17	19.5	19.5	19.5	19.6	19.4	23.4	23.6	23.5	23.6	23.4
LTE Band 38	16.1	16.1	15.9	16.1	16.1	23.6	23.5	23.5	23.5	23.6



WLAN 2.4GHz and 5GHz

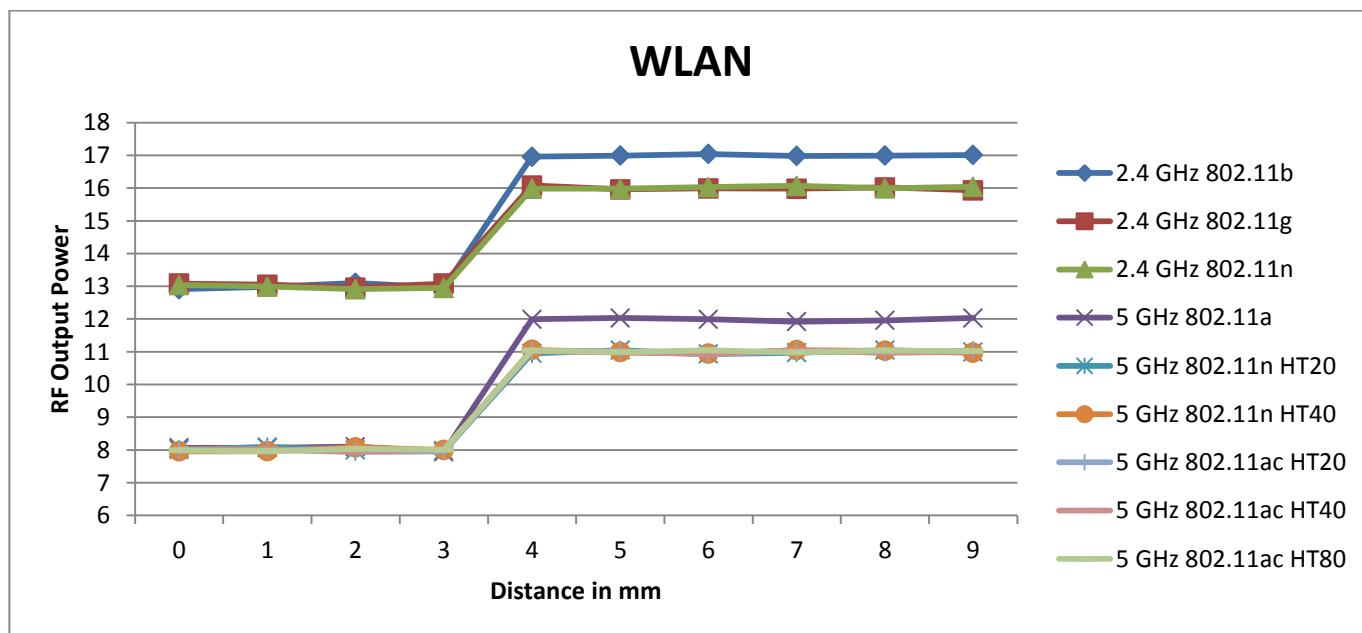
Rear, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm											
Antenna	Distance	2	3	4	5	6	7	8	9	10	11
WLAN	2.4 GHz 802.11b	13.0	13.1	13.0	13.0	13.0	17.0	17.0	17.0	17.0	17.0
	2.4 GHz 802.11g	13.1	13.0	13.1	13.1	13.0	16.0	16.0	16.0	15.9	16.0
	2.4 GHz 802.11n	13.0	12.9	13.0	13.0	13.0	16.0	16.1	16.0	16.0	15.9
	5 GHz 802.11a	8.1	8.1	7.9	8.0	8.0	12.0	11.9	12.0	12.0	12.0
	5 GHz 802.11n HT20	8.1	8.0	8.0	8.0	8.1	10.9	11.0	11.1	11.0	11.0
	5 GHz 802.11n HT40	8.0	8.1	8.0	8.1	8.0	10.9	11.1	11.0	11.0	11.1
	5 GHz 802.11ac HT20	8.0	7.9	8.0	8.0	8.0	10.9	11.0	11.0	11.0	11.0
	5 GHz 802.11ac HT40	8.0	8.0	8.0	8.0	8.0	10.9	11.1	11.0	11.0	11.0
	5 GHz 802.11ac HT80	8.0	8.0	8.0	8.0	8.0	11.1	11.0	11.0	11.0	11.0



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

Distance to DUT vs. Output Power in dBm											
Antenna	Distance (mm)	0	1	2	3	4	5	6	7	8	9
WLAN	2.4 GHz 802.11b	12.9	13.0	13.1	13.0	17.0	17.0	17.0	17.0	17.0	17.0
	2.4 GHz 802.11g	13.1	13.1	13.0	13.1	16.1	16.0	16.0	16.0	16.0	15.9
	2.4 GHz 802.11n	13.0	13.0	12.9	13.0	16.0	16.0	16.0	16.1	16.0	16.0
	5 GHz 802.11a	8.1	8.1	8.1	7.9	12.0	12.0	12.0	11.9	12.0	12.0
	5 GHz 802.11n HT20	8.0	8.1	8.0	8.0	11.0	11.1	10.9	11.0	11.1	11.0
	5 GHz 802.11n HT40	8.0	8.0	8.1	8.0	11.1	11.0	10.9	11.1	11.0	11.0
	5 GHz 802.11ac HT20	8.0	8.0	7.9	8.0	11.0	11.0	10.9	11.0	11.0	11.0
	5 GHz 802.11ac HT40	8.0	8.0	8.0	8.0	11.0	11.0	10.9	11.1	11.0	11.0
	5 GHz 802.11ac HT80	8.0	8.0	8.0	8.0	11.0	11.0	11.1	11.0	11.0	11.0



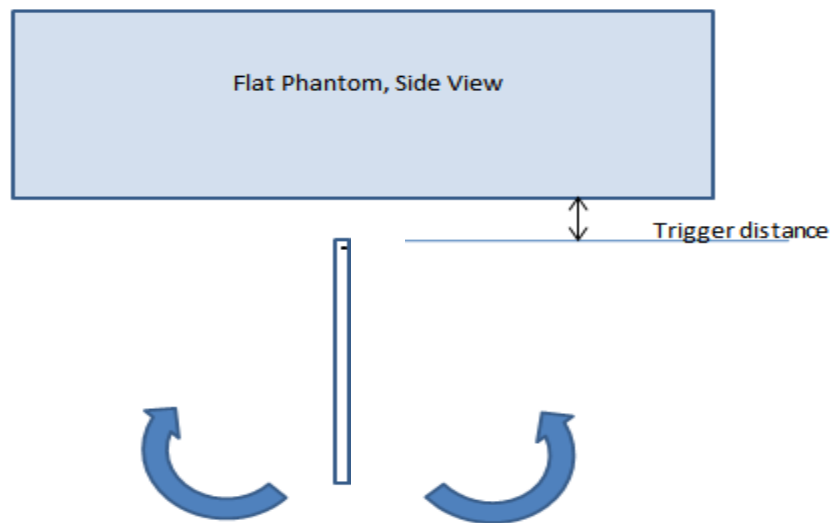
6.7.1.2 Proximity Sensor Coverage (KDB 616217 §6.3)

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

6.7.1.3 Proximity Sensor Tilt Angle Assessment (KDB 616217 §6.4)

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

The EUT was rotated about Edge 1, Edge 2 for angles up to $\pm 45^\circ$. 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 $\pm 45^\circ$.



Proximity sensor tilt angle assessment (Edge 1, Edge 2) 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 $\pm 45^\circ$	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
2600	16 mm	16 mm	On	On	On	On	On	On	On	On	On	On	On
2450	3 mm	3 mm	On	On	On	On	On	On	On	On	On	On	On
5000	3 mm	3 mm	On	On	On	On	On	On	On	On	On	On	On

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

Band (MHz)	Minimum trigger distance measured according to KDB 616217 §6.2	Minimum distance at which power reduction was maintained over +/-45°	Power reduction status										
			-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°
750	4 mm	4 mm	On	On	On	On	On	On	On	On	On	On	On
850	4 mm	4 mm	On	On	On	On	On	On	On	On	On	On	On
1750	4 mm	4 mm	On	On	On	On	On	On	On	On	On	On	On
1900	4 mm	4 mm	On	On	On	On	On	On	On	On	On	On	On
2600	4 mm	4 mm	On	On	On	On	On	On	On	On	On	On	On

6.7.1.4 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
	Edge 2	4 mm	N/A	4 mm	3 mm
	Corner	9mm	N/A	N/A	8 mm
	Front	12 mm	N/A	N/A	11 mm
WLAN	Rear	6 mm	N/A	N/A	5 mm
	Edge 1	3 mm	N/A	3 mm	2 mm

Note(s):

Corner side is located between Edge 1 and Edge 2.

6.7.2. IR sensor feature

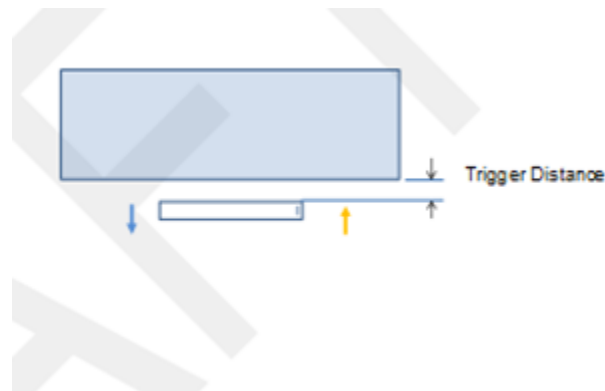
6.7.2.1 IR Sensor Triggering Distance (KDB 616217 §6.2)

Front 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 Front

The DUT featured a visual indicator on its display that showed the status of the IR sensor (Triggered or not triggered). This was used to determine the status of the sensor during the IR 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 IR sensor status indication. This was achieved by observing the IR sensor status at the same time as monitoring the conducted power. Section 9 contains both the full and reduced conducted power measurements.



IR Sensor Trigger Distance Assessment
KDB 616217 §6.2, Front

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

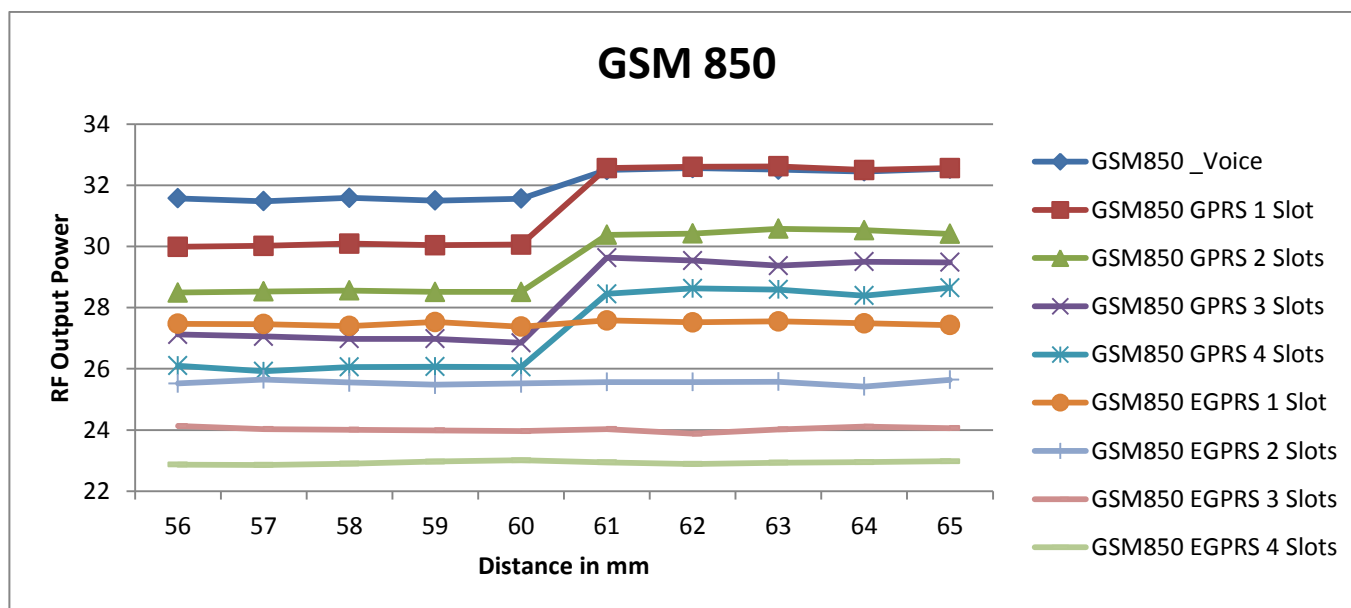
Tissue simulating liquid	Trigger distance - Front	
	Moving toward phantom	Moving from phantom
750 Head	60 mm	60 mm
850 Head	60 mm	60 mm
1750 Head	60 mm	60 mm
1900 Head	60 mm	60 mm
2600 Head	60 mm	60 mm

IR Sensor Triggering Distance Measurement Results

GSM 850

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

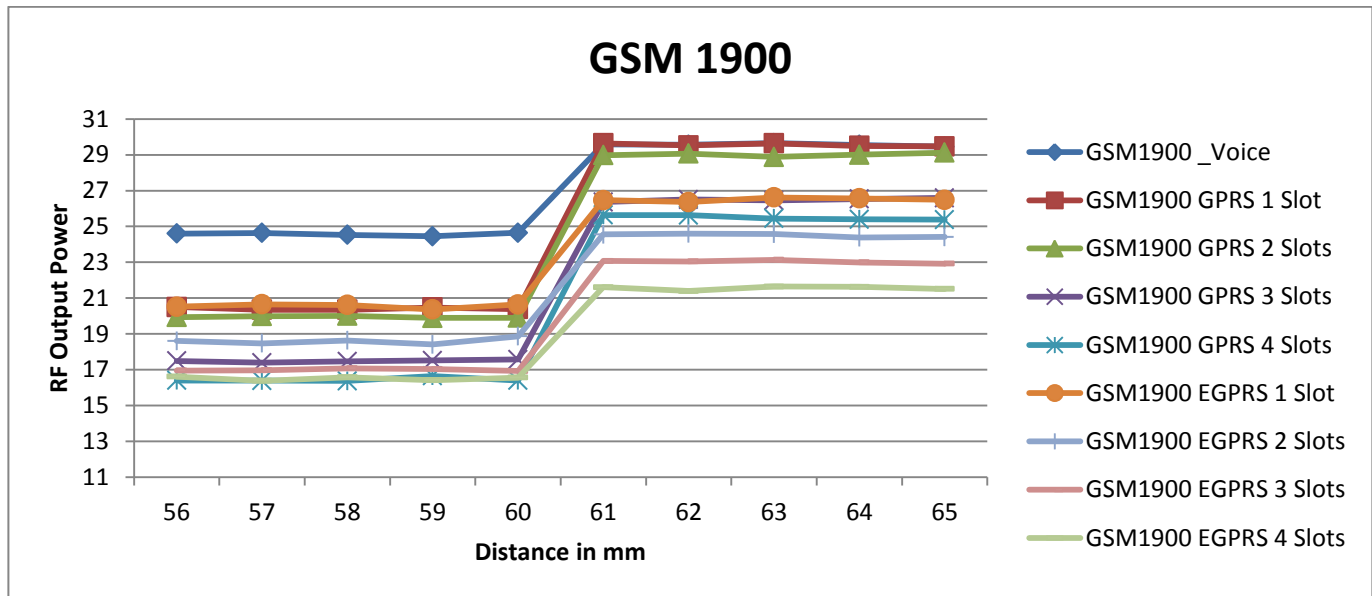
Distance to DUT vs. Output Power in dBm										
Distance (mm)	56	57	58	59	60	61	62	63	64	65
GSM850_Voice	31.6	31.5	31.6	31.5	31.6	32.5	32.6	32.5	32.5	32.5
GSM850 GPRS 1 Slot	30.0	30.0	30.1	30.0	30.1	32.6	32.6	32.6	32.5	32.6
GSM850 GPRS 2 Slots	28.5	28.5	28.6	28.5	28.5	30.4	30.4	30.6	30.5	30.4
GSM850 GPRS 3 Slots	27.1	27.1	27.0	27.0	26.9	29.6	29.5	29.4	29.5	29.5
GSM850 GPRS 4 Slots	26.1	25.9	26.1	26.1	26.1	28.5	28.6	28.6	28.4	28.7
GSM850 EGPRS 1 Slot	27.5	27.5	27.4	27.5	27.4	27.6	27.5	27.6	27.5	27.4
GSM850 EGPRS 2 Slots	25.5	25.7	25.6	25.5	25.5	25.6	25.6	25.6	25.4	25.6
GSM850 EGPRS 3 Slots	24.1	24.0	24.0	24.0	24.0	24.0	23.9	24.0	24.1	24.1
GSM850 EGPRS 4 Slots	22.9	22.9	22.9	23.0	23.0	22.9	22.9	22.9	23.0	23.0



GSM 1900

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

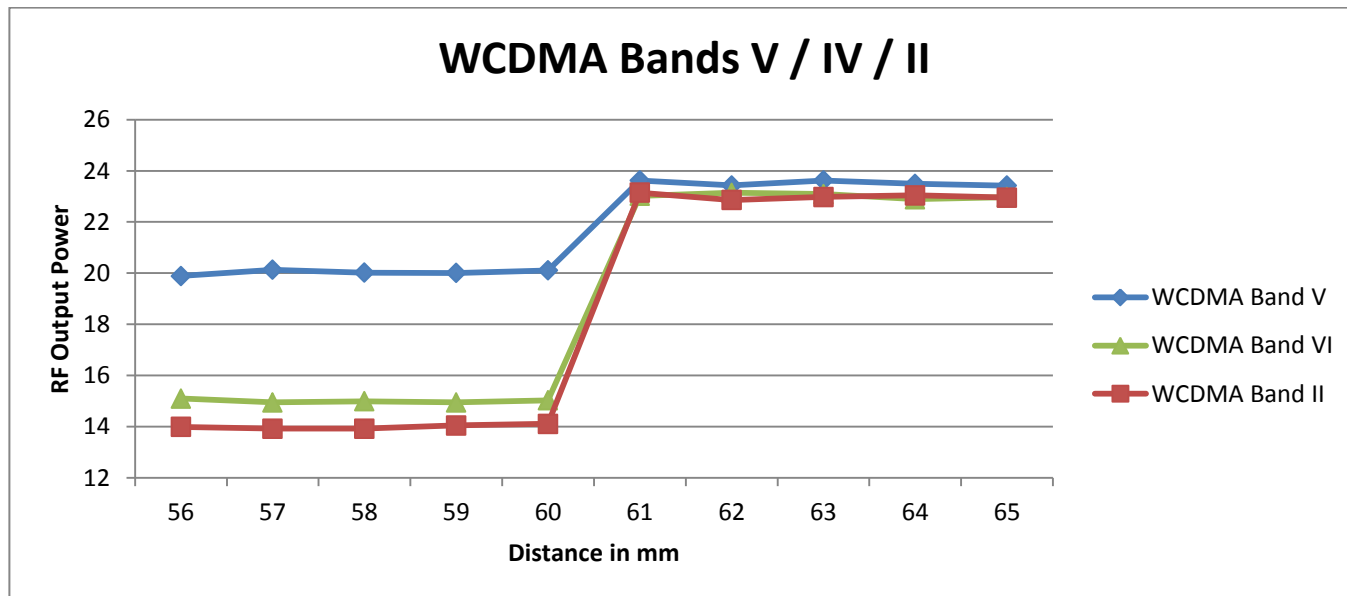
Distance to DUT vs. Output Power in dBm										
Distance (mm)	56	57	58	59	60	61	62	63	64	65
GSM1900_Voice	24.6	24.6	24.5	24.5	24.7	29.6	29.6	29.7	29.6	29.5
GSM1900 GPRS 1 Slot	20.5	20.4	20.4	20.5	20.4	29.6	29.5	29.6	29.5	29.5
GSM1900 GPRS 2 Slots	19.9	20.0	20.0	19.9	19.9	29.0	29.1	28.9	29.0	29.1
GSM1900 GPRS 3 Slots	17.5	17.4	17.5	17.5	17.6	26.4	26.5	26.5	26.5	26.6
GSM1900 GPRS 4 Slots	16.4	16.4	16.4	16.7	16.4	25.6	25.6	25.4	25.4	25.4
GSM1900 EGPRS 1 Slot	20.5	20.7	20.6	20.4	20.6	26.5	26.4	26.6	26.6	26.5
GSM1900 EGPRS 2 Slots	18.6	18.5	18.6	18.4	18.9	24.6	24.6	24.6	24.4	24.4
GSM1900 EGPRS 3 Slots	17.0	17.0	17.1	17.0	16.9	23.1	23.1	23.1	23.0	22.9
GSM1900 EGPRS 4 Slots	16.6	16.4	16.6	16.4	16.6	21.6	21.4	21.6	21.6	21.5



WCDMA Band II/ IV/ V

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

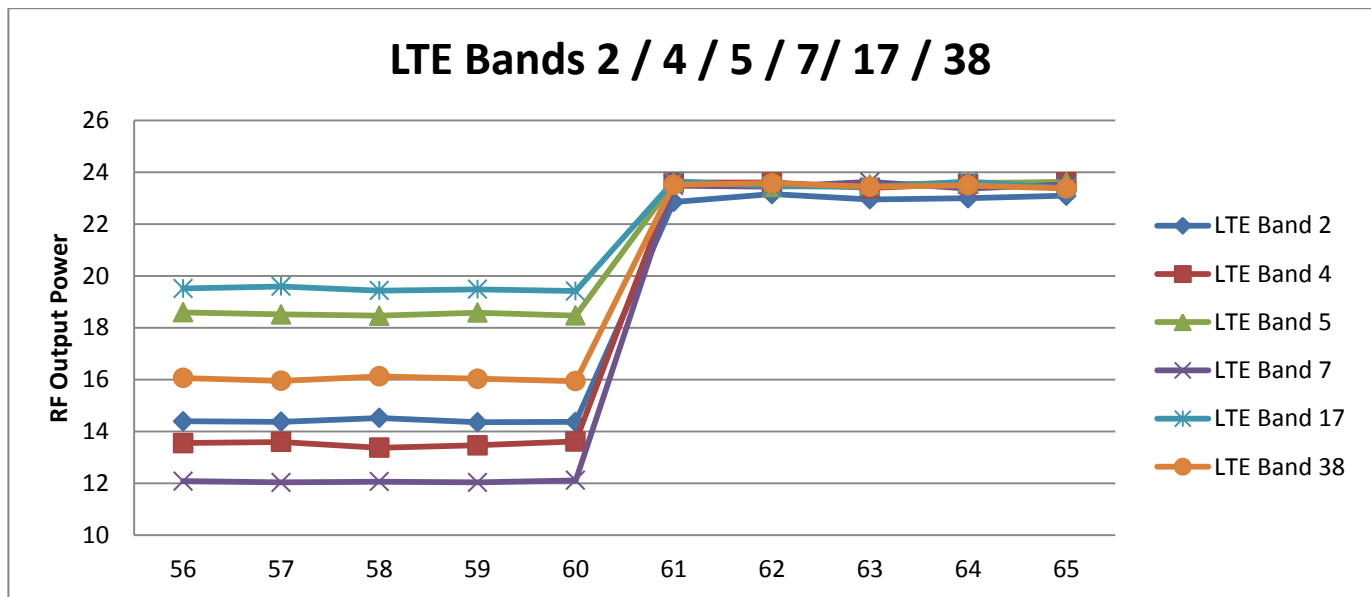
Distance to DUT vs. Output Power in dBm										
Distance (mm)	56	57	58	59	60	61	62	63	64	65
WCDMA Band V	19.9	20.1	20.0	20.0	20.1	23.6	23.4	23.6	23.5	23.4
WCDMA Band VI	15.1	15.0	15.0	15.0	15.0	23.0	23.1	23.1	22.9	23.0
WCDMA Band II	14.0	13.9	13.9	14.1	14.1	23.2	22.9	23.0	23.0	23.0



LTE Band 2/ 4/ 5/ 7/ 17/ 38

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

Distance to DUT vs. Output Power in dBm										
Distance (mm)	56	57	58	59	60	61	62	63	64	65
LTE Band 2	14.4	14.4	14.5	14.4	14.4	22.9	23.2	23.0	23.0	23.1
LTE Band 4	13.6	13.6	13.4	13.5	13.6	23.6	23.6	23.4	23.6	23.6
LTE Band 5	18.6	18.5	18.5	18.6	18.5	23.6	23.4	23.5	23.6	23.6
LTE Band 7	12.1	12.0	12.1	12.0	12.1	23.5	23.4	23.6	23.4	23.5
LTE Band 17	19.5	19.6	19.4	19.5	19.4	23.7	23.5	23.4	23.6	23.4
LTE Band 38	16.1	16.0	16.1	16.0	15.9	23.5	23.6	23.4	23.5	23.4

**6.7.2.2 Resulting test positions for SAR measurements**

Wireless technologies	DUT Position	§6.2 Triggering Distance	§6.3 Coverage	§6.4 Tilt Angle	Worst case distance for SAR
WWAN	Front	60 mm	N/A	N/A	59 mm

Notes:

Worst case distance for SAR is not consider for body exposure condition. Because Power reduction is only apply voice or VoIP held to ear scenarios.

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	Corner	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Corner
Full Power, Proximity Sensor Off																
Cellular	GPRS 4 Slots	848.8	29.00	397	2	4	8	195	83	6.4	73.2	73.2	45.7	> 50 mm	> 50 mm	61
Cellular	GPRS 2 Slots	1909.8	29.50	223	2	4	8	195	83	6.4	-MEASURE-	-MEASURE-	-MEASURE-	> 50 mm	> 50 mm	-MEASURE-
Cellular	W-CDMA II	1907.6	23.50	224	2	4	8	195	83	6.4	61.6	61.6	38.5	> 50 mm	> 50 mm	51.4
Cellular	W-CDMA IV	1752.6	23.50	224	2	4	8	195	83	6.4	-MEASURE-	-MEASURE-	-MEASURE-	> 50 mm	> 50 mm	-MEASURE-
Cellular	W-CDMA V	846.6	24.00	251	2	4	8	195	83	6.4	61.9	61.9	38.7	> 50 mm	> 50 mm	51.6
Cellular	LTE Band 2	1900	23.50	224	2	4	8	195	83	6.4	-MEASURE-	-MEASURE-	-MEASURE-	> 50 mm	> 50 mm	-MEASURE-
Cellular	LTE Band 4	1732.5	24.00	251	2	4	8	195	83	6.4	59.3	59.3	37.1	> 50 mm	> 50 mm	49.4
Cellular	LTE Band 5	836.5	24.00	251	2	4	8	195	83	6.4	-MEASURE-	-MEASURE-	-MEASURE-	> 50 mm	> 50 mm	-MEASURE-
Cellular	LTE Band 7	2560	24.00	251	2	4	8	195	83	6.4	46.2	46.2	28.9	> 50 mm	> 50 mm	38.5
Cellular	LTE Band 17	710	24.00	251	2	4	8	195	83	6.4	-MEASURE-	-MEASURE-	-MEASURE-	> 50 mm	> 50 mm	-MEASURE-
Cellular	LTE Band 38	2595	24.00	251	2	4	8	195	83	6.4	61.8	61.8	38.6	> 50 mm	> 50 mm	51.5
Cellular	LTE Band 4	1732.5	24.00	251	2	4	8	195	83	6.4	-MEASURE-	-MEASURE-	-MEASURE-	> 50 mm	> 50 mm	-MEASURE-
Cellular	LTE Band 5	836.5	24.00	251	2	4	8	195	83	6.4	66.1	66.1	41.3	> 50 mm	> 50 mm	55.1
Cellular	LTE Band 7	2560	24.00	251	2	4	8	195	83	6.4	-MEASURE-	-MEASURE-	-MEASURE-	> 50 mm	> 50 mm	-MEASURE-
Cellular	LTE Band 17	710	24.00	251	2	4	8	195	83	6.4	45.9	45.9	28.7	> 50 mm	> 50 mm	38.3
Cellular	LTE Band 38	2595	24.00	251	2	4	8	195	83	6.4	-MEASURE-	-MEASURE-	-MEASURE-	> 50 mm	> 50 mm	-MEASURE-
Cellular	LTE Band 4	1732.5	24.00	251	2	4	8	195	83	6.4	80.3	80.3	50.2	> 50 mm	> 50 mm	66.9
Cellular	LTE Band 5	836.5	24.00	251	2	4	8	195	83	6.4	-MEASURE-	-MEASURE-	-MEASURE-	> 50 mm	> 50 mm	-MEASURE-
Cellular	LTE Band 7	2560	24.00	251	2	4	8	195	83	6.4	42.3	42.3	26.4	> 50 mm	> 50 mm	35.2
Cellular	LTE Band 17	710	24.00	251	2	4	8	195	83	6.4	-MEASURE-	-MEASURE-	-MEASURE-	> 50 mm	> 50 mm	-MEASURE-
Cellular	LTE Band 38	2595	24.00	251	2	4	8	195	83	6.4	80.9	80.9	50.5	> 50 mm	> 50 mm	67.4
Cellular	LTE Band 4	1732.5	24.00	251	2	4	8	195	83	6.4	-MEASURE-	-MEASURE-	-MEASURE-	> 50 mm	> 50 mm	-MEASURE-
Power Back-off, Proximity Sensor On																
Cellular	GPRS 4 Slots	848.8	26.50	223	2	4	8			6.4	41.1	41.1	25.7			34.2
Cellular	GPRS 2 Slots	1909.8	20.50	28	2	4	8			6.4	-MEASURE-	-MEASURE-	-MEASURE-			-MEASURE-
Cellular	W-CDMA II	1907.6	14.50	28	2	4	8			6.4	7.7	7.7	4.8			6.4
Cellular	W-CDMA IV	1752.6	15.50	35	2	4	8			6.4	-MEASURE-	-MEASURE-	-MEASURE-			-MEASURE-
Cellular	W-CDMA V	846.6	20.50	112	2	4	8			6.4	7.7	7.7	4.8			6.4
Cellular	LTE Band 2	1900	15.00	32	2	4	8			6.4	-MEASURE-	-MEASURE-	-MEASURE-			-MEASURE-
Cellular	LTE Band 4	1732.5	14.00	25	2	4	8			6.4	9.3	9.3	5.8			7.7
Cellular	LTE Band 5	836.5	19.00	79	2	4	8			6.4	-MEASURE-	-MEASURE-	-MEASURE-			-MEASURE-
Cellular	LTE Band 7	2560	12.50	18	2	4	8			6.4	20.6	20.6	12.9			17.2
Cellular	LTE Band 17	710	20.00	100	2	4	8			6.4	-MEASURE-	-MEASURE-	-MEASURE-			-MEASURE-
Cellular	LTE Band 38	2595	16.50	45	2	4	8			6.4	8.8	8.8	5.5			7.4
Cellular	LTE Band 4	1732.5	14.00	25	2	4	8			6.4	-MEASURE-	-MEASURE-	-MEASURE-			-MEASURE-
Cellular	LTE Band 5	836.5	19.00	79	2	4	8			6.4	6.6	6.6	4.1			5.5
Cellular	LTE Band 7	2560	12.50	18	2	4	8			6.4	-MEASURE-	-MEASURE-	-MEASURE-			-MEASURE-
Cellular	LTE Band 17	710	20.00	100	2	4	8			6.4	14.5	14.5	9			12
Cellular	LTE Band 38	2595	16.50	45	2	4	8			6.4	-MEASURE-	-MEASURE-	-MEASURE-			-MEASURE-
Cellular	LTE Band 4	1732.5	14.00	25	2	4	8			6.4	5.8	5.8	3.6			4.8
Cellular	LTE Band 5	836.5	19.00	79	2	4	8			6.4	-MEASURE-	-MEASURE-	-MEASURE-			-MEASURE-
Cellular	LTE Band 7	2560	12.50	18	2	4	8			6.4	16.9	16.9	10.5			14
Cellular	LTE Band 17	710	20.00	100	2	4	8			6.4	-MEASURE-	-MEASURE-	-MEASURE-			-MEASURE-
Cellular	LTE Band 38	2595	16.50	45	2	4	8			6.4	14.5	14.5	9.1			12.1
Cellular	LTE Band 4	1732.5	14.00	25	2	4	8			6.4	-MEASURE-	-MEASURE-	-MEASURE-			-MEASURE-

Note(s):

1. According to KDB 447498, if the calculated threshold value is >3 then SAR testing is required.
2. Corner side is located between Edge 1 and Edge 2.

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	corner	Rear	Edge 1	Edge 2	Edge 3	Edge 4	corner
Full Power, Proximity Sensor Off																
Cellular	GPRS 4 Slots	848.8	29.00	397	2	4	8	195	83	6,4	< 50 mm	< 50 mm	< 50 mm	983.3 mW -EXEMPT-	349.5 mW -MEASURE-	< 50 mm
Cellular	GPRS 2 Slots	1909.8	29.50	223	2	4	8	195	83	6,4	< 50 mm	< 50 mm	< 50 mm	1558.5 mW -EXEMPT-	438.5 mW -EXEMPT-	< 50 mm
Cellular	W-CDMA II	1907.6	23.50	224	2	4	8	195	83	6,4	< 50 mm	< 50 mm	< 50 mm	1558.6 mW -EXEMPT-	438.6 mW -EXEMPT-	< 50 mm
Cellular	W-CDMA IV	1752.6	23.50	224	2	4	8	195	83	6,4	< 50 mm	< 50 mm	< 50 mm	1563.3 mW -EXEMPT-	443.3 mW -EXEMPT-	< 50 mm
Cellular	W-CDMA V	846.6	24.00	251	2	4	8	195	83	6,4	< 50 mm	< 50 mm	< 50 mm	981.4 mW -EXEMPT-	349.3 mW -EXEMPT-	< 50 mm
Cellular	LTE Band 2	1900	23.50	224	2	4	8	195	83	6,4	< 50 mm	< 50 mm	< 50 mm	1558.8 mW -EXEMPT-	438.8 mW -EXEMPT-	< 50 mm
Cellular	LTE Band 4	1732.5	24.00	251	2	4	8	195	83	6,4	< 50 mm	< 50 mm	< 50 mm	1564 mW -EXEMPT-	444 mW -EXEMPT-	< 50 mm
Cellular	LTE Band 5	836.5	24.00	251	2	4	8	195	83	6,4	< 50 mm	< 50 mm	< 50 mm	972.6 mW -EXEMPT-	348 mW -EXEMPT-	< 50 mm
Cellular	LTE Band 7	2560	24.00	251	2	4	8	195	83	6,4	< 50 mm	< 50 mm	< 50 mm	1543.8 mW -EXEMPT-	423.8 mW -EXEMPT-	< 50 mm
Cellular	LTE Band 17	710	24.00	251	2	4	8	195	83	6,4	< 50 mm	< 50 mm	< 50 mm	864.4 mW -EXEMPT-	334.2 mW -EXEMPT-	< 50 mm
Cellular	LTE Band 38	2595	24.00	251	2	4	8	195	83	6,4	< 50 mm	< 50 mm	< 50 mm	1543.1 mW -EXEMPT-	423.1 mW -EXEMPT-	< 50 mm
Power Back-off, Proximity Sensor On																
Cellular	GPRS 4 Slots	848.8	26.50	223	2	4	8			6,4	< 50 mm	< 50 mm	< 50 mm			< 50 mm
Cellular	GPRS 2 Slots	1909.8	20.50	28	2	4	8			6,4	< 50 mm	< 50 mm	< 50 mm			< 50 mm
Cellular	W-CDMA II	1907.6	14.50	28	2	4	8			6,4	< 50 mm	< 50 mm	< 50 mm			< 50 mm
Cellular	W-CDMA IV	1752.6	15.50	35	2	4	8			6,4	< 50 mm	< 50 mm	< 50 mm			< 50 mm
Cellular	W-CDMA V	846.6	20.50	112	2	4	8			6,4	< 50 mm	< 50 mm	< 50 mm			< 50 mm
Cellular	LTE Band 2	1900	15.00	32	2	4	8			6,4	< 50 mm	< 50 mm	< 50 mm			< 50 mm
Cellular	LTE Band 4	1732.5	14.00	25	2	4	8			6,4	< 50 mm	< 50 mm	< 50 mm			< 50 mm
Cellular	LTE Band 5	836.5	19.00	79	2	4	8			6,4	< 50 mm	< 50 mm	< 50 mm			< 50 mm
Cellular	LTE Band 7	2560	12.50	18	2	4	8			6,4	< 50 mm	< 50 mm	< 50 mm			< 50 mm
Cellular	LTE Band 17	710	20.00	100	2	4	8			6,4	< 50 mm	< 50 mm	< 50 mm			< 50 mm
Cellular	LTE Band 38	2595	16.50	45	2	4	8			6,4	< 50 mm	< 50 mm	< 50 mm			< 50 mm

Note(s):

1. According to KDB 447498, if the calculated Power threshold is less than the output power then SAR testing is required.
2. Corner side is located between Edge 1 and Edge 2.

SAR Test Exclusion Calculations for WLAN**Antennas < 50mm to adjacent edges**

Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)						Calculated Threshold Value					
		dBm	mW	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front
Full Power, Proximity Sensor Off															
Wi-Fi 2.4 GHz	2462	17.50	56	2	4	89	201	28		17.6 -MEASURE-	17.6 -MEASURE-	> 50 mm	> 50 mm	3.1 -MEASURE-	
Wi-Fi 5.3 GHz	5320	12.50	18	2	4	89	201	28		8.3 -MEASURE-	8.3 -MEASURE-	> 50 mm	> 50 mm	1.5 -EXEMPT-	
Wi-Fi 5.5 GHz	5720	12.50	18	2	4	89	201	28		8.6 -MEASURE-	8.6 -MEASURE-	> 50 mm	> 50 mm	1.5 -EXEMPT-	
Wi-Fi 5.8 GHz	5825	12.50	18	2	4	89	201	28		8.7 -MEASURE-	8.7 -MEASURE-	> 50 mm	> 50 mm	1.6 -EXEMPT-	
Bluetooth	2480	9.00	8	2	4	89	201	28		2.5 -EXEMPT-	2.5 -EXEMPT-	> 50 mm	> 50 mm	0.4 -EXEMPT-	
Power Back-off, Proximity Sensor On															
Wi-Fi 2.4 GHz	2462	13.50	22	2	4					6.9 -MEASURE-	6.9 -MEASURE-				
Wi-Fi 5.3 GHz	5320	8.50	7	2	4					3.2 -MEASURE-	3.2 -MEASURE-				
Wi-Fi 5.5 GHz	5720	8.50	7	2	4					3.3 -MEASURE-	3.3 -MEASURE-				
Wi-Fi 5.8 GHz	5825	8.50	7	2	4					3.4 -MEASURE-	3.4 -MEASURE-				

Note(s):

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

Antennas > 50mm to adjacent edges

Internal - Confine to adjacent edges															
Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)						Calculated Threshold Value					
		dBm	mW	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front
Full Power, Proximity Sensor Off															
Wi-Fi 2.4 GHz	2462	17.50	56	2	4	89	201	28		< 50 mm	< 50 mm	485.6 mW -EXEMPT-	1605.6 mW -EXEMPT-	< 50 mm	
Wi-Fi 5.3 GHz	5320	12.50	18	2	4	89	201	28		< 50 mm	< 50 mm	455 mW -EXEMPT-	1575 mW -EXEMPT-	< 50 mm	
Wi-Fi 5.5 GHz	5720	12.50	18	2	4	89	201	28		< 50 mm	< 50 mm	452.7 mW -EXEMPT-	1572.7 mW -EXEMPT-	< 50 mm	
Wi-Fi 5.8 GHz	5825	12.50	18	2	4	89	201	28		< 50 mm	< 50 mm	452.2 mW -EXEMPT-	1572.2 mW -EXEMPT-	< 50 mm	
Bluetooth	2480	9.00	8	2	4	89	201	28		< 50 mm	< 50 mm	485.3 mW -EXEMPT-	1605.3 mW -EXEMPT-	< 50 mm	
Power Back-off, Proximity Sensor On															
Wi-Fi 2.4 GHz	2462	13.50	22	2	4					< 50 mm	< 50 mm				
Wi-Fi 5.3 GHz	5320	8.50	7	2	4					< 50 mm	< 50 mm				
Wi-Fi 5.5 GHz	5720	8.50	7	2	4					< 50 mm	< 50 mm				
Wi-Fi 5.8 GHz	5825	8.50	7	2	4					< 50 mm	< 50 mm				

Note(s):

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

7.2 Required Test Configurations

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

Test Configurations	Pwr Back-off	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Corner
			(Top Edge)	(Right Edge)	(Bottom Edge)	(Left Edge)	Note 5
GSM850	OFF	Yes	Yes	Yes	No	Yes	Yes
	ON	Yes	Yes	Yes	No	No	Yes
GSM1900	OFF	Yes	Yes	Yes	No	No	Yes
	ON	Yes	Yes	Yes	No	No	Yes
W-CDMA Band II	OFF	Yes	Yes	Yes	No	No	Yes
	ON	Yes	Yes	Yes	No	No	Yes
W-CDMA Band IV	OFF	Yes	Yes	Yes	No	No	Yes
	ON	Yes	Yes	Yes	No	No	Yes
W-CDMA Band V	OFF	Yes	Yes	Yes	No	No	Yes
	ON	Yes	Yes	Yes	No	No	Yes
LTE Band 2	OFF	Yes	Yes	Yes	No	No	Yes
	ON	Yes	Yes	Yes	No	No	Yes
LTE Band 4	OFF	Yes	Yes	Yes	No	No	Yes
	ON	Yes	Yes	Yes	No	No	Yes
LTE Band 5	OFF	Yes	Yes	Yes	No	No	Yes
	ON	Yes	Yes	Yes	No	No	Yes
LTE Band 7	OFF	Yes	Yes	Yes	No	No	Yes
	ON	Yes	Yes	Yes	No	No	Yes
LTE Band 17	OFF	Yes	Yes	Yes	No	No	Yes
	ON	Yes	Yes	Yes	No	No	Yes
LTE Band 38	OFF	Yes	Yes	Yes	No	No	Yes
	ON	Yes	Yes	Yes	No	No	Yes
Wi-Fi 2.4 GHz	OFF	Yes	Yes	No	No	Yes	No
	ON	Yes	Yes	No	No	No	No
Wi-Fi 5.3 GHz	OFF	Yes	Yes	No	No	No	No
	ON	Yes	Yes	No	No	No	No
Wi-Fi 5.5 GHz	OFF	Yes	Yes	No	No	No	No
	ON	Yes	Yes	No	No	No	No
Wi-Fi 5.8 GHz	OFF	Yes	Yes	No	No	No	No
	ON	Yes	Yes	No	No	No	No
Bluetooth	OFF	No	No	No	No	No	No

Note(s):

1. Yes = Testing is required. No = Testing is not required.
2. This device is support to Next to ear voice calls, so Head exposure also consider about SAR test.
3. For Pwr Back-off, All Head exposure conditions were tested using Proximity-sensor reduction mode and IR-sensor reduction was additional tested at worst configuration.
4. Protective cover (with S-pen) is in-box item. So additional SAR test were performed worst configuration in each exposure conditions.
5. Corner side is located between Edge 1 and Edge 2.

8 Dielectric Property Measurements & System Check

8.1 Dielectric Property Measurements

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

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

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

Tissue Dielectric Parameters

FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

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

IEEE Std 1528-2013

Refer to Table 3 within the IEEE Std 1528-2013

Dielectric Property Measurements Results:**SAR 1 Room**

Date	Freq. (MHz)	Liquid Parameters		Measured	Target	Delta (%)	Limit ±(%)	
8-1-2017	Head 1750	e'	40.5100	Relative Permittivity (ϵ_r):	40.51	40.08	1.06	5
		e"	13.5800	Conductivity (σ):	1.32	1.37	-3.47	5
	Head 1710	e'	40.6500	Relative Permittivity (ϵ_r):	40.65	40.15	1.26	5
		e"	13.4900	Conductivity (σ):	1.28	1.35	-4.74	5
	Head 1755	e'	40.4900	Relative Permittivity (ϵ_r):	40.49	40.08	1.03	5
		e"	13.5800	Conductivity (σ):	1.33	1.37	-3.40	5
8-2-2017	Body 1750	e'	55.0300	Relative Permittivity (ϵ_r):	55.03	53.44	2.97	5
		e"	14.8500	Conductivity (σ):	1.44	1.49	-2.77	5
	Body 1710	e'	55.1200	Relative Permittivity (ϵ_r):	55.12	53.54	2.94	5
		e"	14.7600	Conductivity (σ):	1.40	1.46	-3.98	5
	Body 1755	e'	55.0200	Relative Permittivity (ϵ_r):	55.02	53.43	2.98	5
		e"	14.8500	Conductivity (σ):	1.45	1.49	-2.69	5
8-7-2017	Body 1900	e'	52.4200	Relative Permittivity (ϵ_r):	52.42	53.30	-1.65	5
		e"	14.9200	Conductivity (σ):	1.58	1.52	3.70	5
	Body 1850	e'	52.5800	Relative Permittivity (ϵ_r):	52.58	53.30	-1.35	5
		e"	14.9100	Conductivity (σ):	1.53	1.52	0.90	5
	Body 1910	e'	52.4000	Relative Permittivity (ϵ_r):	52.40	53.30	-1.69	5
		e"	14.9400	Conductivity (σ):	1.59	1.52	4.39	5
8-8-2017	Head 1900	e'	40.9300	Relative Permittivity (ϵ_r):	40.93	40.00	2.33	5
		e"	13.7800	Conductivity (σ):	1.46	1.40	3.99	5
	Head 1850	e'	41.0900	Relative Permittivity (ϵ_r):	41.09	40.00	2.73	5
		e"	13.6900	Conductivity (σ):	1.41	1.40	0.59	5
	Head 1910	e'	40.9000	Relative Permittivity (ϵ_r):	40.90	40.00	2.25	5
		e"	13.8100	Conductivity (σ):	1.47	1.40	4.76	5
8-14-2017	Body 5180	e'	47.9500	Relative Permittivity (ϵ_r):	47.95	49.05	-2.24	5
		e"	18.4900	Conductivity (σ):	5.33	5.27	1.03	5
	Body 5300	e'	47.7500	Relative Permittivity (ϵ_r):	47.75	48.88	-2.32	5
		e"	18.5900	Conductivity (σ):	5.48	5.41	1.24	5
	Body 5600	e'	47.2300	Relative Permittivity (ϵ_r):	47.23	48.48	-2.57	5
		e"	18.8900	Conductivity (σ):	5.88	5.76	2.10	5
	Body 5800	e'	46.9100	Relative Permittivity (ϵ_r):	46.91	48.20	-2.68	5
		e"	19.1000	Conductivity (σ):	6.16	6.00	2.66	5
	Body 5825	e'	46.8600	Relative Permittivity (ϵ_r):	46.86	48.20	-2.78	5
		e"	19.1300	Conductivity (σ):	6.20	6.00	3.27	5
8-17-2017	Head 1900	e'	38.7100	Relative Permittivity (ϵ_r):	38.71	40.00	-3.23	5
		e"	13.2200	Conductivity (σ):	1.40	1.40	-0.24	5
	Head 1850	e'	38.8800	Relative Permittivity (ϵ_r):	38.88	40.00	-2.80	5
		e"	13.1800	Conductivity (σ):	1.36	1.40	-3.16	5
	Head 1910	e'	38.6700	Relative Permittivity (ϵ_r):	38.67	40.00	-3.33	5
		e"	13.2200	Conductivity (σ):	1.40	1.40	0.28	5
8-18-2017	Head 1750	e'	40.9000	Relative Permittivity (ϵ_r):	40.90	40.08	2.03	5
		e"	13.9200	Conductivity (σ):	1.35	1.37	-1.06	5
	Head 1710	e'	41.0200	Relative Permittivity (ϵ_r):	41.02	40.15	2.18	5
		e"	13.8600	Conductivity (σ):	1.32	1.35	-2.12	5
	Head 1755	e'	40.8900	Relative Permittivity (ϵ_r):	40.89	40.08	2.03	5
		e"	13.9300	Conductivity (σ):	1.36	1.37	-0.91	5

SAR 1 Room (Continued)

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
8-21-2017	Head 5180	e'	35.5600	Relative Permittivity (ϵ_r):	35.56	36.01	-1.26	5
		e"	15.9800	Conductivity (σ):	4.60	4.63	-0.60	5
	Head 5300	e'	35.3800	Relative Permittivity (ϵ_r):	35.38	35.88	-1.38	5
		e"	16.0300	Conductivity (σ):	4.72	4.75	-0.62	5
	Head 5600	e'	34.9400	Relative Permittivity (ϵ_r):	34.94	35.53	-1.67	5
		e"	16.1500	Conductivity (σ):	5.03	5.06	-0.62	5
	Head 5800	e'	34.6600	Relative Permittivity (ϵ_r):	34.66	35.30	-1.81	5
		e"	16.2500	Conductivity (σ):	5.24	5.27	-0.56	5
	Head 5825	e'	34.6200	Relative Permittivity (ϵ_r):	34.62	35.30	-1.93	5
		e"	16.2600	Conductivity (σ):	5.27	5.27	-0.07	5
8-23-2017	Body 5180	e'	48.3500	Relative Permittivity (ϵ_r):	48.35	49.05	-1.42	5
		e"	18.1900	Conductivity (σ):	5.24	5.27	-0.61	5
	Body 5300	e'	48.3100	Relative Permittivity (ϵ_r):	48.31	48.88	-1.17	5
		e"	18.2100	Conductivity (σ):	5.37	5.41	-0.83	5
	Body 5600	e'	47.6600	Relative Permittivity (ϵ_r):	47.66	48.48	-1.69	5
		e"	18.5800	Conductivity (σ):	5.79	5.76	0.42	5
	Body 5800	e'	47.3700	Relative Permittivity (ϵ_r):	47.37	48.20	-1.72	5
		e"	18.7900	Conductivity (σ):	6.06	6.00	1.00	5
	Body 5825	e'	47.3200	Relative Permittivity (ϵ_r):	47.32	48.20	-1.83	5
		e"	18.8100	Conductivity (σ):	6.09	6.00	1.54	5

SAR 2 Room

Date	Freq. (MHz)	Liquid Parameters		Measured	Target	Delta (%)	Limit ±(%)	
8-7-2017	Body 835	e'	55.0500	Relative Permittivity (ϵ_r):	55.05	55.20	-0.27	5
		e"	21.5500	Conductivity (σ):	1.00	0.97	3.15	5
	Body 820	e'	55.2300	Relative Permittivity (ϵ_r):	55.23	55.28	-0.08	5
		e"	21.6200	Conductivity (σ):	0.99	0.97	1.79	5
	Body 850	e'	54.8700	Relative Permittivity (ϵ_r):	54.87	55.16	-0.52	5
		e"	21.4900	Conductivity (σ):	1.02	0.99	2.89	5
8-8-2017	Head 835	e'	41.4700	Relative Permittivity (ϵ_r):	41.47	41.50	-0.07	5
		e"	19.1900	Conductivity (σ):	0.89	0.90	-1.00	5
	Head 820	e'	41.6400	Relative Permittivity (ϵ_r):	41.64	41.60	0.09	5
		e"	19.2000	Conductivity (σ):	0.88	0.90	-2.57	5
	Head 850	e'	41.1800	Relative Permittivity (ϵ_r):	41.18	41.50	-0.77	5
		e"	19.1700	Conductivity (σ):	0.91	0.92	-0.98	5
8-14-2017	Head 835	e'	40.7100	Relative Permittivity (ϵ_r):	40.71	41.50	-1.90	5
		e"	19.2100	Conductivity (σ):	0.89	0.90	-0.90	5
	Head 820	e'	40.8600	Relative Permittivity (ϵ_r):	40.86	41.60	-1.78	5
		e"	19.2500	Conductivity (σ):	0.88	0.90	-2.31	5
	Head 850	e'	40.5400	Relative Permittivity (ϵ_r):	40.54	41.50	-2.31	5
		e"	19.1800	Conductivity (σ):	0.91	0.92	-0.93	5
8-14-2017	Body 835	e'	54.5300	Relative Permittivity (ϵ_r):	54.53	55.20	-1.21	5
		e"	20.3900	Conductivity (σ):	0.95	0.97	-2.40	5
	Body 820	e'	54.6900	Relative Permittivity (ϵ_r):	54.69	55.28	-1.06	5
		e"	20.4300	Conductivity (σ):	0.93	0.97	-3.82	5
	Body 850	e'	54.4400	Relative Permittivity (ϵ_r):	54.44	55.16	-1.30	5
		e"	20.3900	Conductivity (σ):	0.96	0.99	-2.38	5
8-17-2017	Body 835	e'	55.4500	Relative Permittivity (ϵ_r):	55.45	55.20	0.45	5
		e"	21.7500	Conductivity (σ):	1.01	0.97	4.11	5
	Body 820	e'	55.5900	Relative Permittivity (ϵ_r):	55.59	55.28	0.57	5
		e"	21.8500	Conductivity (σ):	1.00	0.97	2.87	5
	Body 850	e'	55.3100	Relative Permittivity (ϵ_r):	55.31	55.16	0.28	5
		e"	21.6300	Conductivity (σ):	1.02	0.99	3.56	5

SAR 2 Room (Continued)

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
8-17-2017	Head 835	e'	41.9200	Relative Permittivity (ϵ_r):	41.92	41.50	1.01	5
		e"	19.6200	Conductivity (σ):	0.91	0.90	1.21	5
	Head 820	e'	42.1600	Relative Permittivity (ϵ_r):	42.16	41.60	1.34	5
		e"	19.6600	Conductivity (σ):	0.90	0.90	-0.23	5
	Head 850	e'	41.7300	Relative Permittivity (ϵ_r):	41.73	41.50	0.55	5
		e"	19.6000	Conductivity (σ):	0.93	0.92	1.24	5
8-21-2017	Body 2450	e'	52.6800	Relative Permittivity (ϵ_r):	52.68	52.70	-0.04	5
		e"	14.8600	Conductivity (σ):	2.02	1.95	3.81	5
	Body 2400	e'	52.7500	Relative Permittivity (ϵ_r):	52.75	52.77	-0.04	5
		e"	14.7500	Conductivity (σ):	1.97	1.90	3.71	5
	Body 2480	e'	52.6100	Relative Permittivity (ϵ_r):	52.61	52.66	-0.10	5
		e"	14.9300	Conductivity (σ):	2.06	1.99	3.34	5
8-21-2017	Body 2600	e'	52.2700	Relative Permittivity (ϵ_r):	52.27	52.51	-0.46	5
		e"	15.3000	Conductivity (σ):	2.21	2.16	2.36	5
	Body 2500	e'	52.5500	Relative Permittivity (ϵ_r):	52.55	52.64	-0.17	5
		e"	14.9900	Conductivity (σ):	2.08	2.02	3.14	5
	Body 2700	e'	51.9500	Relative Permittivity (ϵ_r):	51.95	52.38	-0.83	5
		e"	15.5400	Conductivity (σ):	2.33	2.30	1.38	5
9-7-2017	Body 2600	e'	52.5600	Relative Permittivity (ϵ_r):	52.56	52.51	0.09	5
		e"	15.4100	Conductivity (σ):	2.23	2.16	3.10	5
	Body 2500	e'	52.8000	Relative Permittivity (ϵ_r):	52.80	52.64	0.31	5
		e"	15.1800	Conductivity (σ):	2.11	2.02	4.45	5
	Body 2700	e'	52.2900	Relative Permittivity (ϵ_r):	52.29	52.38	-0.18	5
		e"	15.6900	Conductivity (σ):	2.36	2.30	2.35	5
9-7-2017	Body 835	e'	53.1900	Relative Permittivity (ϵ_r):	53.19	55.20	-3.64	5
		e"	21.4000	Conductivity (σ):	0.99	0.97	2.43	5
	Body 820	e'	53.3000	Relative Permittivity (ϵ_r):	53.30	55.28	-3.58	5
		e"	21.4700	Conductivity (σ):	0.98	0.97	1.08	5
	Body 850	e'	53.1100	Relative Permittivity (ϵ_r):	53.11	55.16	-3.71	5
		e"	21.3300	Conductivity (σ):	1.01	0.99	2.12	5
9-7-2017	Body 750	e'	54.5900	Relative Permittivity (ϵ_r):	54.59	55.55	-1.72	5
		e"	23.1900	Conductivity (σ):	0.97	0.96	0.42	5
	Body 700	e'	55.1100	Relative Permittivity (ϵ_r):	55.11	55.74	-1.13	5
		e"	23.6500	Conductivity (σ):	0.92	0.96	-4.04	5
	Body 790	e'	54.1600	Relative Permittivity (ϵ_r):	54.16	55.39	-2.22	5
		e"	22.8200	Conductivity (σ):	1.00	0.97	3.75	5

SAR 3 Room

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
7-31-2017	Body 2600	e'	51.5600	Relative Permittivity (ϵ_r):	51.56	52.51	-1.81	5
		e"	15.3400	Conductivity (σ):	2.22	2.16	2.63	5
	Body 2500	e'	51.9000	Relative Permittivity (ϵ_r):	51.90	52.64	-1.40	5
		e"	15.1100	Conductivity (σ):	2.10	2.02	3.97	5
	Body 2700	e'	51.2900	Relative Permittivity (ϵ_r):	51.29	52.38	-2.09	5
		e"	15.6000	Conductivity (σ):	2.34	2.30	1.77	5
8-2-2017	Body 750	e'	54.5700	Relative Permittivity (ϵ_r):	54.57	55.55	-1.76	5
		e"	23.2200	Conductivity (σ):	0.97	0.96	0.55	5
	Body 700	e'	55.3200	Relative Permittivity (ϵ_r):	55.32	55.74	-0.75	5
		e"	24.0000	Conductivity (σ):	0.93	0.96	-2.62	5
	Body 790	e'	53.9300	Relative Permittivity (ϵ_r):	53.93	55.39	-2.64	5
		e"	22.9300	Conductivity (σ):	1.01	0.97	4.25	5
8-3-2017	Head 750	e'	43.4700	Relative Permittivity (ϵ_r):	43.47	41.96	3.59	5
		e"	21.6200	Conductivity (σ):	0.90	0.89	0.95	5
	Head 700	e'	44.1800	Relative Permittivity (ϵ_r):	44.18	42.22	4.65	5
		e"	21.9600	Conductivity (σ):	0.85	0.89	-3.88	5
	Head 790	e'	42.9700	Relative Permittivity (ϵ_r):	42.97	41.76	2.91	5
		e"	21.3900	Conductivity (σ):	0.94	0.90	4.85	5
8-7-2017	Body 2450	e'	52.9800	Relative Permittivity (ϵ_r):	52.98	52.70	0.53	5
		e"	14.8600	Conductivity (σ):	2.02	1.95	3.81	5
	Body 2400	e'	53.0300	Relative Permittivity (ϵ_r):	53.03	52.77	0.49	5
		e"	14.6700	Conductivity (σ):	1.96	1.90	3.14	5
	Body 2480	e'	52.9600	Relative Permittivity (ϵ_r):	52.96	52.66	0.57	5
		e"	14.9400	Conductivity (σ):	2.06	1.99	3.41	5
8-7-2017	Body 2600	e'	52.6900	Relative Permittivity (ϵ_r):	52.69	52.51	0.34	5
		e"	15.3700	Conductivity (σ):	2.22	2.16	2.83	5
	Body 2500	e'	52.9200	Relative Permittivity (ϵ_r):	52.92	52.64	0.54	5
		e"	14.9800	Conductivity (σ):	2.08	2.02	3.07	5
	Body 2700	e'	52.4500	Relative Permittivity (ϵ_r):	52.45	52.38	0.12	5
		e"	15.6800	Conductivity (σ):	2.35	2.30	2.29	5
8-9-2017	Head 2600	e'	38.0700	Relative Permittivity (ϵ_r):	38.07	39.01	-2.41	5
		e"	13.7200	Conductivity (σ):	1.98	1.96	1.09	5
	Head 2500	e'	38.3800	Relative Permittivity (ϵ_r):	38.38	39.14	-1.93	5
		e"	13.5400	Conductivity (σ):	1.88	1.85	1.52	5
	Head 2700	e'	37.7500	Relative Permittivity (ϵ_r):	37.75	38.88	-2.92	5
		e"	13.9000	Conductivity (σ):	2.09	2.07	0.80	5
8-11-2017	Body 2600	e'	52.2100	Relative Permittivity (ϵ_r):	52.21	52.51	-0.57	5
		e"	15.4900	Conductivity (σ):	2.24	2.16	3.64	5
	Body 2500	e'	52.5100	Relative Permittivity (ϵ_r):	52.51	52.64	-0.24	5
		e"	15.2000	Conductivity (σ):	2.11	2.02	4.59	5
	Body 2700	e'	51.9300	Relative Permittivity (ϵ_r):	51.93	52.38	-0.87	5
		e"	15.7500	Conductivity (σ):	2.36	2.30	2.74	5
8-14-2017	Body 1900	e'	53.7700	Relative Permittivity (ϵ_r):	53.77	53.30	0.88	5
		e"	14.8900	Conductivity (σ):	1.57	1.52	3.49	5
	Body 1850	e'	53.8600	Relative Permittivity (ϵ_r):	53.86	53.30	1.05	5
		e"	14.8700	Conductivity (σ):	1.53	1.52	0.63	5
	Body 1910	e'	53.7400	Relative Permittivity (ϵ_r):	53.74	53.30	0.83	5
		e"	14.9100	Conductivity (σ):	1.58	1.52	4.18	5

SAR 3 Room (Continued)

Date	Freq. (MHz)	Liquid Parameters		Measured	Target	Delta (%)	Limit ±(%)	
8-16-2017	Head 2450	e'	37.9400	Relative Permittivity (ϵ_r):	37.94	39.20	-3.21	5
		e''	13.6300	Conductivity (σ):	1.86	1.80	3.15	5
	Head 2400	e'	38.1200	Relative Permittivity (ϵ_r):	38.12	39.30	-2.99	5
		e''	13.4900	Conductivity (σ):	1.80	1.75	2.77	5
	Head 2480	e'	37.8400	Relative Permittivity (ϵ_r):	37.84	39.16	-3.38	5
		e''	13.7100	Conductivity (σ):	1.89	1.83	3.17	5
8-21-2017	Body 1750	e'	54.2100	Relative Permittivity (ϵ_r):	54.21	53.44	1.44	5
		e''	14.9700	Conductivity (σ):	1.46	1.49	-1.98	5
	Body 1710	e'	54.3600	Relative Permittivity (ϵ_r):	54.36	53.54	1.52	5
		e''	14.9500	Conductivity (σ):	1.42	1.46	-2.74	5
	Body 1755	e'	54.1900	Relative Permittivity (ϵ_r):	54.19	53.43	1.43	5
		e''	14.9600	Conductivity (σ):	1.46	1.49	-1.97	5
8-21-2017	Body 1900	e'	53.7900	Relative Permittivity (ϵ_r):	53.79	53.30	0.92	5
		e''	14.9700	Conductivity (σ):	1.58	1.52	4.05	5
	Body 1850	e'	53.8800	Relative Permittivity (ϵ_r):	53.88	53.30	1.09	5
		e''	14.9900	Conductivity (σ):	1.54	1.52	1.44	5
	Body 1910	e'	53.7900	Relative Permittivity (ϵ_r):	53.79	53.30	0.92	5
		e''	14.9900	Conductivity (σ):	1.59	1.52	4.73	5
8-23-2017	Head 2450	e'	38.5100	Relative Permittivity (ϵ_r):	38.51	39.20	-1.76	5
		e''	13.2300	Conductivity (σ):	1.80	1.80	0.13	5
	Head 2400	e'	38.7100	Relative Permittivity (ϵ_r):	38.71	39.30	-1.49	5
		e''	13.1000	Conductivity (σ):	1.75	1.75	-0.20	5
	Head 2480	e'	38.4300	Relative Permittivity (ϵ_r):	38.43	39.16	-1.87	5
		e''	13.3200	Conductivity (σ):	1.84	1.83	0.24	5
8-23-2017	Head 2600	e'	38.0200	Relative Permittivity (ϵ_r):	38.02	39.01	-2.54	5
		e''	13.5700	Conductivity (σ):	1.96	1.96	-0.02	5
	Head 2500	e'	38.3500	Relative Permittivity (ϵ_r):	38.35	39.14	-2.01	5
		e''	13.3600	Conductivity (σ):	1.86	1.85	0.17	5
	Head 2700	e'	37.7400	Relative Permittivity (ϵ_r):	37.74	38.88	-2.94	5
		e''	13.7500	Conductivity (σ):	2.06	2.07	-0.29	5
8-24-2017	Body 750	e'	55.6000	Relative Permittivity (ϵ_r):	55.60	55.55	0.10	5
		e''	23.2600	Conductivity (σ):	0.97	0.96	0.72	5
	Body 700	e'	56.1400	Relative Permittivity (ϵ_r):	56.14	55.74	0.72	5
		e''	23.6700	Conductivity (σ):	0.92	0.96	-3.96	5
	Body 790	e'	55.1800	Relative Permittivity (ϵ_r):	55.18	55.39	-0.38	5
		e''	22.9600	Conductivity (σ):	1.01	0.97	4.39	5
8-24-2017	Head 750	e'	42.8200	Relative Permittivity (ϵ_r):	42.82	41.96	2.05	5
		e''	21.6800	Conductivity (σ):	0.90	0.89	1.24	5
	Head 700	e'	43.5200	Relative Permittivity (ϵ_r):	43.52	42.22	3.08	5
		e''	21.9700	Conductivity (σ):	0.86	0.89	-3.84	5
	Head 790	e'	42.2900	Relative Permittivity (ϵ_r):	42.29	41.76	1.28	5
		e''	21.4000	Conductivity (σ):	0.94	0.90	4.90	5
9-7-2017	Body 1900	e'	52.6100	Relative Permittivity (ϵ_r):	52.61	53.30	-1.29	5
		e''	14.8800	Conductivity (σ):	1.57	1.52	3.42	5
	Body 1850	e'	53.0000	Relative Permittivity (ϵ_r):	53.00	53.30	-0.56	5
		e''	14.9300	Conductivity (σ):	1.54	1.52	1.04	5
	Body 1910	e'	52.5300	Relative Permittivity (ϵ_r):	52.53	53.30	-1.44	5
		e''	14.8700	Conductivity (σ):	1.58	1.52	3.90	5
9-7-2017	Body 1750	e'	53.5700	Relative Permittivity (ϵ_r):	53.57	53.44	0.24	5
		e''	14.8500	Conductivity (σ):	1.44	1.49	-2.77	5
	Body 1710	e'	53.7400	Relative Permittivity (ϵ_r):	53.74	53.54	0.37	5
		e''	14.8200	Conductivity (σ):	1.41	1.46	-3.59	5
	Body 1755	e'	53.5500	Relative Permittivity (ϵ_r):	53.55	53.43	0.23	5
		e''	14.8500	Conductivity (σ):	1.45	1.49	-2.69	5

8.2 System Check

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

System Performance Check Measurement Conditions:

- The measurements were performed in the flat section of the TWIN SAM or ELI phantom, shell thickness: 2.0 ±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 2.5 mm.
For 5 GHz band - Distance between probe sensors and phantom surface was set to 1.4 mm
- The dipole input power (forward power) was 100 mW.
- The results are normalized to 1 W input power.

Reference Target SAR Values

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

System Dipole	Serial No.	Cal. Date	Freq. (MHz)	Target SAR Values (W/kg)		
				1g/10g	Head	Body
D750V3	1122	8-30-2016	750	1g	8.32	8.69
				10g	5.41	5.72
D835V2	4d174	9-28-2016	835	1g	9.30	9.57
				10g	6.07	6.28
D1750V2	1125	8-26-2016	1750	1g	36.90	37.20
				10g	19.50	19.80
D1900V2	5d190	9-28-2016	1900	1g	40.00	38.80
				10g	21.00	20.60
D2450V2	939	9-23-2016	2450	1g	52.1	49.9
				10g	24.4	23.7
D2600V2	1097	11-15-2016	2600	1g	55.80	54.9
				10g	25.00	24.60
D5GHzV2	1209	2-24-2017	5300	1g	84.5	72.9
				10g	24.1	20.4
D5GHzV2	1209	2-24-2017	5600	1g	83.0	75.2
				10g	23.6	21.1
D5GHzV2	1209	2-24-2017	5800	1g	81.2	73.5
				10g	23.0	20.4

Note(s):

Refer to Appendix F that mentioned about justification for Extended SAR Dipole Calibrations(D750V3, SN : 1122 and D1750V2, SN : 1125).

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			
8-01-2017	D1750V2	1125	Head	1g	3.50	35.00	36.9	-5.15
				10g	1.87	18.70	19.5	-4.10
8-02-2017	D1750V2	1125	Body	1g	3.65	36.50	37.2	-1.88
				10g	1.95	19.50	19.8	-1.52
8-07-2017	D1900V2	5d190	Body	1g	4.22	42.20	38.8	8.76
				10g	2.18	21.80	20.6	5.83
8-08-2017	D1900V2	5d190	Head	1g	4.08	40.80	40.00	2.00
				10g	2.09	20.90	21	-0.48
8-14-2017	D5GHzV2 (5300 MHz)	1209	Body	1g	7.72	77.20	72.9	5.90
				10g	2.14	21.40	20.4	4.90
8-14-2017	D5GHzV2 (5600 MHz)	1209	Body	1g	8.13	81.30	75.2	8.11
				10g	2.27	22.70	21.1	7.58
8-14-2017	D5GHzV2 (5800 MHz)	1209	Body	1g	7.39	73.90	73.5	0.54
				10g	2.05	20.50	20.4	0.49
8-17-2017	D1900V2	5d190	Head	1g	3.92	39.20	40	-2.00
				10g	2.01	20.10	21	-4.29
8-18-2017	D1750V2	1125	Head	1g	3.63	36.30	36.9	-1.63
				10g	1.93	19.30	19.5	-1.03
8-21-2017	D5GHzV2 (5300 MHz)	1209	Head	1g	7.77	77.70	84.5	-8.05
				10g	2.22	22.20	24.1	-7.88
8-21-2017	D5GHzV2 (5600 MHz)	1209	Head	1g	8.43	84.30	83.00	1.57
				10g	2.39	23.90	23.6	1.27
8-21-2017	D5GHzV2 (5800 MHz)	1209	Head	1g	8.13	81.30	81.2	0.12
				10g	2.31	23.10	23.0	0.43
8-23-2017	D5GHzV2 (5300 MHz)	1209	Body	1g	7.78	77.80	72.9	6.72
				10g	2.18	21.80	20.4	6.86
8-23-2017	D5GHzV2 (5600 MHz)	1209	Body	1g	8.04	80.40	75.2	6.91
				10g	2.25	22.50	21.1	6.64
8-23-2017	D5GHzV2 (5800 MHz)	1209	Body	1g	7.54	75.40	73.5	2.59
				10g	2.10	21.00	20.4	2.94

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			
8-07-2017	D835V2	4d174	Body	1g	1.02	10.20	9.57	5, 6
				10g	0.67	6.72	6.28	
8-08-2017	D835V2	4d174	Head	1g	0.96	9.57	9.3	
				10g	0.63	6.28	6.07	
8-14-2017	D835V2	4d174	Head	1g	0.94	9.41	9.30	
				10g	0.62	6.16	6.07	
8-14-2017	D835V2	4d174	Body	1g	1.00	10.00	9.57	
				10g	0.66	6.59	6.28	
8-17-2017	D835V2	4d174	Body	1g	1.02	10.20	9.57	
				10g	0.67	6.67	6.28	
8-17-2017	D835V2	4d174	Head	1g	0.99	9.88	9.3	
				10g	0.65	6.49	6.07	
8-21-2017	D2450V2	939	Body	1g	5.37	53.70	49.9	7, 8
				10g	2.48	24.80	23.7	
8-21-2017	D2600V2	1097	Body	1g	5.71	57.10	54.9	
				10g	2.52	25.20	24.6	
9-07-2017	D2600V2	1097	Body	1g	5.65	56.50	54.9	9,10
				10g	2.47	24.70	24.6	
9-07-2017	D835V2	4d174	Body	1g	1.00	10.00	9.57	11,12
				10g	0.66	6.61	6.28	
9-07-2017	D750V2	1122	Body	1g	0.84	8.40	8.7	13,14
				10g	0.56	5.60	5.7	

SAR 3 Room

Date Tested	System Dipole		T.S. Liquid	Measured Results		Target (Ref. Value)	Delta ±10 %	Plot No.	
	Type	Serial #		Zoom Scan to 100 mW	Normalize to 1 W				
7-31-2017	D2600V2	1097	Body	1g	5.49	54.90	54.9	0.00	
				10g	2.39	23.90	24.6	-2.85	
8-02-2017	D750V2	1122	Body	1g	0.83	8.28	8.69	-4.72	
				10g	0.55	5.50	5.72	-3.85	
8-03-2017	D750V2	1122	Head	1g	0.77	7.70	8.32	-7.45	15,16
				10g	0.51	5.08	5.41	-6.10	
8-07-2017	D2450V2	939	Body	1g	5.06	50.60	49.90	1.40	
				10g	2.31	23.10	23.7	-2.53	
8-07-2017	D2600V2	1097	Body	1g	5.27	52.70	54.9	-4.01	
				10g	2.31	23.10	24.6	-6.10	
8-09-2017	D2600V2	1097	Head	1g	5.85	58.50	55.8	4.84	
				10g	2.53	25.30	25.0	1.20	
8-11-2017	D2600V2	1097	Body	1g	5.16	51.60	54.9	-6.01	17,18
				10g	2.26	22.60	24.6	-8.13	
8-14-2017	D1900V2	5d190	Body	1g	3.90	39.00	38.8	0.52	
				10g	2.01	20.10	20.6	-2.43	
8-16-2017	D2450V2	939	Head	1g	5.35	53.50	52.1	2.69	
				10g	2.40	24.00	24.4	-1.64	
8-21-2017	D1750V2	1125	Body	1g	3.45	34.50	37.2	-7.26	19,20
				10g	1.83	18.30	19.8	-7.58	
8-21-2017	D1900V2	5d190	Body	1g	3.96	39.60	38.80	2.06	
				10g	2.03	20.30	20.6	-1.46	
8-23-2017	D2450V2	939	Head	1g	5.15	51.50	52.1	-1.15	
				10g	2.33	23.30	24.4	-4.51	
8-23-2017	D2600V2	1097	Head	1g	5.38	53.80	55.8	-3.58	
				10g	2.37	23.70	25.0	-5.20	
8-24-2017	D750V2	1122	Head	1g	0.78	7.84	8.32	-5.77	
				10g	0.52	5.16	5.41	-4.62	
8-24-2017	D750V2	1122	Body	1g	0.87	8.73	8.69	0.46	
				10g	0.58	5.79	5.72	1.22	
9-07-2017	D1900V2	5d190	Body	1g	3.77	37.70	38.8	-2.84	21,22
				10g	1.94	19.40	20.6	-5.83	
9-07-2017	D1750V2	1125	Body	1g	3.51	35.10	37.2	-5.65	23,24
				10g	1.86	18.60	19.8	-6.06	

9 Conducted Output Power Measurements

9.1 GSM

Per KDB 941225 D01 3G SAR Procedures:

SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.

GSM850 Measured Results

Band	Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Max. Pwr		Proximity sensor Reduced Pwr		IR sensor Reduced Pwr	
						Burst (dBm)	Frame (dBm)	Burst (dBm)	Frame (dBm)	Burst (dBm)	Frame (dBm)
850	GSM (Voice)	CS1	1	128	824.2	32.1	23.1	31.4	22.4	31.6	22.6
				190	836.6	32.0	23.0	31.2	22.2	31.3	22.3
				251	848.8	31.8	22.8	30.9	21.9	31.1	22.1
	GPRS (GMSK)	CS1	1	128	824.2	32.1	23.0	29.6	20.6	29.9	20.9
				190	836.6	32.0	23.0	29.5	20.4	29.8	20.8
				251	848.8	31.9	22.9	29.4	20.4	29.5	20.5
			2	128	824.2	30.3	24.3	28.6	22.6	28.7	22.6
				190	836.6	30.3	24.3	28.5	22.5	28.6	22.6
				251	848.8	30.3	24.3	28.4	22.4	28.6	22.6
			3	128	824.2	29.1	24.8	27.1	22.9	27.4	23.1
				190	836.6	29.2	24.9	27.1	22.8	27.1	22.9
				251	848.8	29.4	25.2	27.2	22.9	27.2	23.0
			4	128	824.2	27.8	24.8	26.0	23.0	26.3	23.3
				190	836.6	28.0	25.0	26.0	23.0	26.0	23.0
				251	848.8	28.2	25.2	26.1	23.1	26.2	23.2
	EGPRS (8PSK)	MCS5	1	128	824.2	26.9	17.9	26.8	17.8	27.0	17.9
				190	836.6	27.0	18.0	27.1	18.0	27.1	18.0
				251	848.8	27.3	18.2	27.1	18.0	27.1	18.1
			2	128	824.2	24.9	18.8	25.5	19.5	25.5	19.4
				190	836.6	25.1	19.1	25.6	19.6	25.6	19.6
				251	848.8	25.4	19.4	25.5	19.5	25.9	19.9
			3	128	824.2	23.6	19.4	24.2	19.9	24.1	19.9
				190	836.6	23.8	19.6	24.1	19.9	24.3	20.0
				251	848.8	23.9	19.6	24.2	19.9	24.4	20.1
			4	128	824.2	22.3	19.3	22.9	19.9	23.0	20.0
				190	836.6	22.5	19.5	23.0	20.0	23.2	20.2
				251	848.8	22.8	19.8	23.3	20.3	23.3	20.3

Notes:

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

- Standalone: GMSK (GPRS) mode with 4 time slots for Max power and 4 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

GSM1900 Measured Results

Band	Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Max. Pwr		Proximity sensor Reduced Pwr		IR sensor Reduced Pwr	
						Burst (dBm)	Frame (dBm)	Burst (dBm)	Frame (dBm)	Burst (dBm)	Frame (dBm)
850	GSM (Voice)	CS1	1	512	1850.2	29.3	20.3	24.4	15.4	24.2	15.2
				661	1880	29.5	20.5	24.1	15.1	24.1	15.1
				810	1909.8	29.6	20.6	24.6	15.6	24.8	15.8
	GPRS (GMSK)	CS1	1	512	1850.2	29.3	20.3	19.3	10.3	19.3	10.3
				661	1880	29.2	20.2	19.6	10.6	19.6	10.6
				810	1909.8	29.7	20.6	20.6	11.5	20.2	11.1
			2	512	1850.2	28.9	22.9	19.3	13.3	19.0	13.0
				661	1880	29.0	23.0	19.3	13.3	19.3	13.3
				810	1909.8	29.3	23.2	20.2	14.2	20.3	14.2
			3	512	1850.2	26.4	22.1	16.7	12.4	16.6	12.4
				661	1880	26.1	21.8	16.9	12.6	16.9	12.6
				810	1909.8	26.5	22.2	17.5	13.3	17.6	13.3
			4	512	1850.2	25.4	22.4	16.2	13.1	16.2	13.2
				661	1880	25.4	22.3	16.4	13.4	16.4	13.4
				810	1909.8	25.4	22.4	16.8	13.8	16.8	13.8
	EGPRS (8PSK)	MCS5	1	512	1850.2	26.2	17.1	20.7	11.7	20.7	11.7
				661	1880	26.1	17.1	19.9	10.9	20.4	11.3
				810	1909.8	26.5	17.4	20.5	11.5	20.7	11.7
			2	512	1850.2	24.2	18.2	18.3	12.3	18.4	12.3
				661	1880	24.1	18.1	18.1	12.1	18.2	12.1
				810	1909.8	24.5	18.5	18.2	12.2	18.3	12.3
			3	512	1850.2	23.2	19.0	17.2	12.9	17.2	12.9
				661	1880	22.8	18.6	16.7	12.4	16.7	12.5
				810	1909.8	23.2	18.9	16.8	12.5	16.8	12.5
			4	512	1850.2	21.7	18.7	16.0	13.0	16.1	13.0
				661	1880	21.6	18.6	15.5	12.5	15.5	12.5
				810	1909.8	21.4	18.4	15.8	12.8	15.8	12.8

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 2 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

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
	β_c/β_d	8/15

HSDPA Setup Procedures used to establish the test signals

The following 4 Sub-tests were completed according to Release 5 procedures in section 5.2 of 3GPP TS34.121. A summary of these settings are illustrated below:

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

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

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

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

HSPA+

Since 16QAM is not used for uplink, the uplink Category and release is same as HSUPA, i.e., Rel. 8. Therefore, the RF conducted power is not measured.

W-CDMA Band II Measured Results

Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Max. Pwr (dBm)	MPR (dB)	Proximity-sensor Reduced Pwr (dBm)	IR-sensor Reduced Pwr (dBm)
W-CDMA Band II	Rel 99	RMC, 12.2 kbps	9262	1852.4	N/A	23.0	0	13.2	13.5
			9400	1880.0	N/A	23.0	0	13.1	13.5
			9538	1907.6	N/A	23.1	0	13.4	13.6
	HSDPA	Subtest 1	9262	1852.4	0	23.0	0	13.1	13.5
			9400	1880.0	0	22.9	0	13.1	13.4
			9538	1907.6	0	23.0	0	13.2	13.5
		Subtest 2	9262	1852.4	0	22.5	0	13.3	13.6
			9400	1880.0	0	22.1	0	13.1	13.5
			9538	1907.6	0	22.2	0	13.3	13.6
		Subtest 3	9262	1852.4	0.5	21.7	0	13.3	13.6
			9400	1880.0	0.5	21.2	0	13.2	13.5
			9538	1907.6	0.5	21.4	0	13.3	13.6
		Subtest 4	9262	1852.4	0.5	21.6	0	13.3	13.6
			9400	1880.0	0.5	21.1	0	13.2	13.5
			9538	1907.6	0.5	21.3	0	13.4	13.6
	HSUPA	Subtest 1	9262	1852.4	0	21.0	0	13.3	13.6
			9400	1880.0	0	20.6	0	12.5	12.5
			9538	1907.6	0	20.8	0	12.5	12.5
		Subtest 2	9262	1852.4	2	19.1	0	13.3	13.6
			9400	1880.0	2	18.6	0	13.2	13.5
			9538	1907.6	2	18.8	0	13.4	13.6
		Subtest 3	9262	1852.4	1	19.6	0	13.3	13.6
			9400	1880.0	1	19.1	0	13.2	13.5
			9538	1907.6	1	19.4	0	13.4	13.6
		Subtest 4	9262	1852.4	2	19.1	0	13.3	13.6
			9400	1880.0	2	18.6	0	13.2	13.5
			9538	1907.6	2	18.8	0	13.4	13.6
		Subtest 5	9262	1852.4	0	21.5	0	13.3	13.6
			9400	1880.0	0	21.0	0	13.2	13.5
			9538	1907.6	0	21.3	0	13.4	13.6

WCDMA Band IV Measured Results

Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Max. Pwr (dBm)	MPR (dB)	Proximity-sensor Reduced Pwr (dBm)	IR-sensor Reduced Pwr (dBm)
W-CDMA Band II	Rel 99	RMC, 12.2 kbps	1312	1712.4	N/A	22.7	0	14.0	14.1
			1413	1732.6	N/A	22.6	0	14.0	14.0
			1513	1752.6	N/A	22.5	0	14.2	14.2
	HSDPA	Subtest 1	1312	1712.4	0	22.6	0	13.9	14.0
			1413	1732.6	0	22.5	0	14.0	14.0
			1513	1752.6	0	22.5	0	14.2	14.2
		Subtest 2	1312	1712.4	0	21.9	0	14.0	14.1
			1413	1732.6	0	21.8	0	14.0	14.0
			1513	1752.6	0	21.9	0	14.3	14.2
		Subtest 3	1312	1712.4	0.5	21.2	0	14.1	14.1
			1413	1732.6	0.5	21.1	0	14.0	14.0
			1513	1752.6	0.5	21.1	0	14.3	14.2
		Subtest 4	1312	1712.4	0.5	21.0	0	14.0	14.1
			1413	1732.6	0.5	21.0	0	14.0	14.0
			1513	1752.6	0.5	21.0	0	14.3	14.2
	HSUPA	Subtest 1	1312	1712.4	0	21.7	0	14.1	14.1
			1413	1732.6	0	21.7	0	14.0	14.0
			1513	1752.6	0	21.7	0	14.3	14.2
		Subtest 2	1312	1712.4	2	20.4	0	14.1	14.2
			1413	1732.6	2	20.3	0	14.1	14.1
			1513	1752.6	2	20.3	0	14.4	14.3
		Subtest 3	1312	1712.4	1	21.8	0	14.1	14.2
			1413	1732.6	1	21.7	0	14.1	14.0
			1513	1752.6	1	21.7	0	14.3	14.3
		Subtest 4	1312	1712.4	2	20.4	0	14.1	14.2
			1413	1732.6	2	20.3	0	14.1	14.1
			1513	1752.6	2	20.3	0	14.3	14.3
		Subtest 5	1312	1712.4	0	22.7	0	14.0	14.2
			1413	1732.6	0	22.6	0	14.0	14.0
			1513	1752.6	0	22.7	0	14.3	14.3

WCDMA Band V Measured Results

Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Max. Pwr (dBm)	MPR (dB)	Proximity-sensor Reduced Pwr (dBm)	IR-sensor Reduced Pwr (dBm)
W-CDMA Band II	Rel 99	RMC, 12.2 kbps	4132	826.4	N/A	23.5	0	20.3	20.3
			4183	836.6	N/A	23.2	0	20.0	20.1
			4233	846.6	N/A	23.4	0	20.1	20.2
	HSDPA	Subtest 1	4132	826.4	0	22.6	0	20.2	20.3
			4183	836.6	0	22.5	0	19.9	20.0
			4233	846.6	0	22.5	0	20.1	20.1
		Subtest 2	4132	826.4	0	22.2	0	20.3	20.3
			4183	836.6	0	22.0	0	20.0	20.1
			4233	846.6	0	22.1	0	20.2	20.2
		Subtest 3	4132	826.4	0.5	21.5	0	20.2	20.3
			4183	836.6	0.5	21.3	0	20.0	20.0
			4233	846.6	0.5	21.4	0	20.1	20.2
		Subtest 4	4132	826.4	0.5	21.3	0	20.2	20.3
			4183	836.6	0.5	21.1	0	20.0	20.0
			4233	846.6	0.5	21.2	0	20.2	20.2
	HSUPA	Subtest 1	4132	826.4	0	20.8	0	19.4	19.4
			4183	836.6	0	20.6	0	19.0	19.0
			4233	846.6	0	20.6	0	19.2	19.2
		Subtest 2	4132	826.4	2	18.6	0	18.4	18.4
			4183	836.6	2	18.4	0	18.2	18.2
			4233	846.6	2	18.6	0	18.3	18.3
		Subtest 3	4132	826.4	1	19.4	0	19.3	19.4
			4183	836.6	1	19.3	0	19.1	19.1
			4233	846.6	1	19.3	0	19.2	19.2
		Subtest 4	4132	826.4	2	18.9	0	18.4	18.4
			4183	836.6	2	18.7	0	18.2	18.2
			4233	846.6	2	18.8	0	18.3	18.3
		Subtest 5	4132	826.4	0	21.3	0	20.2	20.3
			4183	836.6	0	21.1	0	20.0	20.0
			4233	846.6	0	21.2	0	20.1	20.1

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
64 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	13	10	Table 6.2.4-2	Table 6.2.4-2
	6.6.3.3.2				
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.

Max power results

LTE Band 2 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)		
						1860 MHz	1880 MHz	1900 MHz
LTE Band 2	20	QPSK	1	0	0	23.2	22.7	23.0
			1	49	0	23.1	22.7	23.0
			1	99	0	23.0	22.6	23.1
			50	0	1	22.2	21.7	21.9
			50	24	1	22.1	21.7	21.9
			50	50	1	22.1	21.7	22.0
		16QAM	100	0	1	22.1	21.7	21.9
			1	0	1	22.3	21.7	21.6
			1	49	1	22.2	21.6	21.6
			1	99	1	22.2	21.6	21.8
			50	0	2	21.1	20.7	20.9
			50	24	2	21.1	20.7	20.9
			50	50	2	21.0	20.6	20.9
			100	0	2	21.1	20.7	20.9
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)		
						1857.5 MHz	1880 MHz	1902.5 MHz
LTE Band 2	15	QPSK	1	0	0	23.3	22.9	23.0
			1	36	0	23.2	22.8	23.0
			1	74	0	23.1	22.8	23.1
			36	0	1	22.2	21.8	21.9
			36	18	1	22.2	21.7	22.0
			36	37	1	22.2	21.7	22.0
		16QAM	75	0	1	22.2	21.7	22.0
			1	0	1	21.8	21.8	22.1
			1	36	1	21.8	21.7	22.1
			1	74	1	21.7	21.6	22.2
			36	0	2	21.1	20.7	20.8
			36	18	2	21.1	20.7	20.9
			36	37	2	21.1	20.6	20.9
			75	0	2	21.1	20.7	20.9
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)		
						1855 MHz	1880 MHz	1905 MHz
LTE Band 2	10	QPSK	1	0	0	23.3	22.9	23.1
			1	25	0	23.3	22.8	23.1
			1	49	0	23.3	22.8	23.2
			25	0	1	22.2	21.7	21.9
			25	12	1	22.2	21.7	22.0
			25	25	1	22.2	21.7	22.0
		16QAM	50	0	1	22.2	21.7	22.0
			1	0	1	21.7	21.7	22.3
			1	25	1	21.7	21.7	22.3
			1	49	1	21.7	21.6	22.4
			25	0	2	21.2	20.7	20.9
			25	12	2	21.2	20.6	20.9
			25	25	2	21.2	20.6	20.9
			50	0	2	21.2	20.6	20.9

LTE Band 2 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)		
						1852.5 MHz	1880 MHz	1907.5 MHz
LTE Band 2	5	QPSK	1	0	0	23.3	22.8	23.2
			1	12	0	23.3	22.8	23.3
			1	24	0	23.3	22.8	23.3
			12	0	1	22.2	21.7	22.1
			12	6	1	22.2	21.7	22.1
			12	11	1	22.2	21.7	22.1
			25	0	1	22.2	21.7	22.1
		16QAM	1	0	1	22.1	21.6	22.4
			1	12	1	22.1	21.6	22.4
			1	24	1	22.1	21.6	22.5
			12	0	2	21.1	20.6	21.0
			12	6	2	21.1	20.6	21.0
			12	11	2	21.1	20.6	21.0
			25	0	2	21.1	20.6	21.0
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)		
						1851.5 MHz	1880 MHz	1908.5 MHz
LTE Band 2	3	QPSK	1	0	0	23.4	22.9	23.2
			1	7	0	23.3	22.9	23.2
			1	14	0	23.3	22.9	23.3
			8	0	1	22.2	21.7	22.1
			8	4	1	22.2	21.7	22.1
			8	7	1	22.3	21.7	22.1
			15	0	1	22.2	21.8	22.1
		16QAM	1	0	1	22.1	21.9	22.5
			1	7	1	22.0	21.9	22.4
			1	14	1	22.1	21.8	22.5
			8	0	2	21.2	20.5	20.8
			8	4	2	21.2	20.5	20.8
			8	7	2	21.2	20.5	20.9
			15	0	2	21.2	20.6	21.0
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)		
						1850.7 MHz	1880 MHz	1909.3 MHz
LTE Band 2	1.4	QPSK	1	0	0	23.3	22.7	23.2
			1	2	0	23.2	22.7	23.0
			1	5	0	23.2	22.7	23.1
			3	0	0	23.3	22.8	23.1
			3	1	0	23.3	22.8	23.2
			3	2	0	23.3	22.8	23.2
			6	0	1	22.2	21.7	22.1
		16QAM	1	0	1	22.1	21.5	22.2
			1	2	1	22.2	21.5	22.2
			1	5	1	22.2	21.5	22.2
			3	0	1	22.2	21.8	22.1
			3	1	1	22.2	21.9	22.2
			3	2	1	22.4	21.8	22.1
			6	0	2	21.2	20.6	20.9

LTE Band 4 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)		
						1720 MHz	1732.5 MHz	1745 MHz
LTE Band 4	20	QPSK	1	0	0		23.1	
			1	49	0		23.2	
			1	99	0		23.2	
			50	0	1		22.1	
			50	24	1		22.1	
			50	50	1		22.1	
			100	0	1		22.1	
		16QAM	1	0	1		22.0	
			1	49	1		22.1	
			1	99	1		22.1	
			50	0	2		21.0	
			50	25	2		21.0	
			50	50	2		21.0	
			100	0	2		21.1	
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)		
						1717.5 MHz	1732.5 MHz	1747.5 MHz
LTE Band 4	15	QPSK	1	0	0	23.2	23.2	23.1
			1	36	0	23.1	23.2	23.2
			1	74	0	23.2	23.2	23.2
			36	0	1	22.2	22.1	22.1
			36	18	1	22.2	22.1	22.2
			36	37	1	22.2	22.1	22.2
			75	0	1	22.2	22.1	22.2
		16QAM	1	0	1	21.9	21.9	22.2
			1	36	1	21.9	22.0	22.3
			1	74	1	21.9	22.0	22.3
			36	0	2	21.1	21.0	21.1
			36	18	2	21.1	21.0	21.1
			36	37	2	21.1	21.0	21.1
			75	0	2	21.1	21.1	21.2
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)		
						1715 MHz	1732.5 MHz	1750 MHz
LTE Band 4	10	QPSK	1	0	0	23.2	23.2	23.1
			1	25	0	23.1	23.2	23.1
			1	49	0	23.2	23.2	23.2
			25	0	1	22.2	22.1	22.1
			25	12	1	22.1	22.1	22.1
			25	25	1	22.1	22.1	22.1
			50	0	1	22.2	22.1	22.1
		16QAM	1	0	1	22.0	21.8	22.3
			1	25	1	21.9	21.8	22.4
			1	49	1	21.9	21.9	22.4
			25	0	2	21.1	21.0	21.1
			25	12	2	21.1	21.0	21.1
			25	25	2	21.1	21.0	21.2
			50	0	2	21.1	21.1	21.1

LTE Band 4 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)		
						1712.5 MHz	1732.5 MHz	1752.5 MHz
LTE Band 4	5	QPSK	1	0	0	23.1	23.0	23.0
			1	12	0	23.1	23.0	23.0
			1	24	0	23.1	23.0	23.1
			12	0	1	22.1	22.1	22.1
			12	6	1	22.1	22.1	22.1
			12	11	1	22.2	22.1	22.1
			25	0	1	22.1	22.1	22.1
		16QAM	1	0	1	22.1	22.0	22.0
			1	12	1	22.0	22.0	22.0
			1	24	1	22.1	22.1	22.0
			12	0	2	21.1	21.0	21.1
			12	6	2	21.1	21.0	21.1
			12	11	2	21.1	21.0	21.1
			25	0	2	21.1	21.0	21.1
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)		
						1711.5 MHz	1732.5 MHz	1753.5 MHz
LTE Band 4	3	QPSK	1	0	0	23.2	23.1	23.2
			1	7	0	23.1	23.1	23.1
			1	14	0	23.1	23.1	23.2
			8	0	1	22.2	22.1	22.1
			8	4	1	22.1	22.1	22.2
			8	7	1	22.1	22.1	22.2
			15	0	1	22.1	22.1	22.1
		16QAM	1	0	1	21.9	22.2	22.2
			1	7	1	21.9	22.2	22.2
			1	14	1	21.9	22.1	22.2
			8	0	2	21.0	21.0	21.0
			8	4	2	21.1	21.0	20.9
			8	7	2	21.1	21.0	21.0
			15	0	2	21.1	21.0	21.1
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)		
						1710.7 MHz	1732.5 MHz	1754.3 MHz
LTE Band 4	1.4	QPSK	1	0	0	23.1	23.1	23.1
			1	2	0	23.1	23.0	23.0
			1	5	0	23.1	23.1	23.1
			3	0	0	23.1	23.0	23.1
			3	1	0	23.1	23.0	23.1
			3	2	0	23.1	23.1	23.1
			6	0	1	22.1	22.1	22.2
		16QAM	1	0	1	21.7	22.0	22.0
			1	2	1	21.7	21.9	21.9
			1	5	1	21.7	22.0	22.0
			3	0	1	22.1	22.0	22.0
			3	1	1	22.0	21.8	22.0
			3	2	1	22.1	21.9	22.1
			6	0	2	21.0	20.8	20.9

Note(s):

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

LTE Band 5 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)		
						829 MHz	836.5 MHz	844 MHz
LTE Band 5	10	QPSK	1	0	0		23.6	
			1	25	0		23.6	
			1	49	0		23.6	
			25	0	1		22.5	
			25	12	1		22.5	
			25	25	1		22.4	
		16QAM	50	0	1		22.4	
			1	0	1		22.4	
			1	25	1		22.4	
			1	49	1		22.3	
			25	0	2		21.5	
			25	12	2		21.5	
			25	25	2		21.5	
			50	0	2		21.5	
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)		
						826.5 MHz	836.5 MHz	846.5 MHz
LTE Band 5	5	QPSK	1	0	0	23.2	23.0	23.1
			1	12	0	23.2	23.0	23.0
			1	24	0	23.2	23.0	23.0
			12	0	1	22.2	22.1	22.2
			12	6	1	22.2	22.1	22.1
			12	11	1	22.2	22.1	22.1
			25	0	1	22.2	22.1	22.1
		16QAM	1	0	1	22.2	22.2	22.2
			1	12	1	22.1	22.1	22.1
			1	24	1	22.2	22.1	22.1
			12	0	2	21.2	21.2	21.2
			12	6	2	21.2	21.1	21.1
			12	11	2	21.2	21.1	21.1
			25	0	2	21.2	21.1	21.1
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)		
						825.5 MHz	836.5 MHz	847.5 MHz
LTE Band 5	3	QPSK	1	0	0	23.3	23.2	23.2
			1	7	0	23.2	23.2	23.1
			1	14	0	23.2	23.2	23.1
			8	0	1	22.2	22.1	22.1
			8	4	1	22.2	22.2	22.1
			8	7	1	22.2	22.1	22.1
			15	0	1	22.2	22.2	22.2
		16QAM	1	0	1	22.0	22.2	22.2
			1	7	1	21.9	22.2	22.1
			1	14	1	22.0	22.2	22.1
			8	0	2	21.2	21.1	21.0
			8	4	2	21.2	21.1	21.0
			8	7	2	21.1	21.1	20.9
			15	0	2	21.2	21.1	21.2

LTE Band 5 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Avg Pwr (dBm)		
						824.7 MHz	836.5 MHz	848.3 MHz
LTE Band 5	1.4	QPSK	1	0	0	23.1	23.1	23.1
			1	2	0	23.1	23.0	23.0
			1	5	0	23.2	23.1	23.1
			3	0	0	23.2	23.1	23.1
			3	1	0	23.1	23.1	23.1
			3	2	0	23.1	23.2	23.1
			6	0	1	22.2	22.2	22.1
		16QAM	1	0	1	22.0	22.1	22.0
			1	2	1	21.9	22.0	21.9
			1	5	1	21.9	22.0	21.9
			3	0	1	21.9	22.1	21.9
			3	1	1	21.9	22.1	21.9
			3	2	1	21.9	22.0	22.0
			6	0	2	21.2	21.0	21.1

Note(s):

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

LTE Band 7 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Max. Avg Pwr (dBm)			
					MPR	2510 MHz	2535 MHz	2560 MHz
LTE Band 7	20	QPSK	1	0	0	23.6	24.0	23.7
			1	49	0	23.6	23.9	23.7
			1	99	0	23.5	23.9	23.7
			50	0	1	22.6	22.9	22.7
			50	24	1	22.6	22.9	22.7
			50	50	1	22.6	22.9	22.7
			100	0	1	22.6	22.9	22.7
		16QAM	1	0	1	22.6	22.9	22.5
			1	49	1	22.6	22.9	22.5
			1	99	1	22.5	22.8	22.4
			50	0	2	21.6	22.0	21.7
			50	24	2	21.6	21.9	21.7
			50	50	2	21.6	21.9	21.7
			100	0	2	21.7	21.9	21.7
Band	BW (MHz)	Mode	RB Allocation	RB offset	Max. Avg Pwr (dBm)			
					MPR	2507.5 MHz	2535 MHz	2562.5 MHz
LTE Band 7	15	QPSK	1	0	0	23.7	24.0	23.7
			1	37	0	23.7	23.9	23.6
			1	74	0	23.6	23.9	23.6
			36	0	1	22.7	23.0	22.7
			36	20	1	22.6	22.9	22.7
			36	39	1	22.6	22.9	22.7
			75	0	1	22.6	22.9	22.7
		16QAM	1	0	1	22.5	22.9	22.7
			1	37	1	22.5	22.8	22.6
			1	74	1	22.4	22.8	22.7
			36	0	2	21.6	21.9	21.7
			36	20	2	21.6	21.9	21.7
			36	39	2	21.6	21.9	21.7
			75	0	2	21.6	22.0	21.7
Band	BW (MHz)	Mode	RB Allocation	RB offset	Max. Avg Pwr (dBm)			
					MPR	2505 MHz	2535 MHz	2565 MHz
LTE Band 7	10	QPSK	1	0	0	23.6	23.9	23.7
			1	25	0	23.6	24.0	23.7
			1	49	0	23.6	24.0	23.7
			25	0	1	22.6	23.0	22.7
			25	12	1	22.6	22.9	22.6
			25	25	1	22.6	22.9	22.7
			50	0	1	22.6	22.9	22.7
		16QAM	1	0	1	22.5	22.9	22.6
			1	25	1	22.5	22.8	22.6
			1	49	1	22.5	22.8	22.6
			25	0	2	21.6	21.9	21.7
			25	12	2	21.6	21.9	21.7
			25	25	2	21.6	21.9	21.7
			50	0	2	21.6	21.9	21.7

LTE Band 7 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Max. Avg Pwr (dBm)			
					MPR	2502.5 MHz	2535 MHz	2567.5 MHz
LTE Band 7	5	QPSK	1	0	0	23.1	23.3	23.1
			1	12	0	23.0	23.2	23.1
			1	24	0	23.0	23.3	23.2
			12	0	1	22.1	22.4	22.2
			12	7	1	22.1	22.4	22.2
			12	13	1	22.1	22.4	22.2
			25	0	1	22.1	22.4	22.2
		16QAM	1	0	1	22.1	22.5	22.1
			1	12	1	22.1	22.4	22.0
			1	24	1	22.1	22.4	22.1
			12	0	2	21.0	21.4	21.2
			12	7	2	21.0	21.4	21.1
			12	13	2	21.0	21.4	21.1
			25	0	2	21.0	21.3	21.1

LTE Band 17 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Max. Avg Pwr (dBm)	
					MPR	710 MHz
LTE Band 17	10	QPSK	1	0	0	23.5
			1	25	0	23.4
			1	49	0	23.5
			25	0	1	22.4
			25	12	1	22.4
			25	25	1	22.4
			50	0	1	22.4
		16QAM	1	0	1	22.4
			1	25	1	22.2
			1	49	1	22.4
			25	0	2	21.3
			25	12	2	21.3
			25	25	2	21.3
			50	0	2	21.4
LTE Band 17	5	QPSK	1	0	0	23.6
			1	12	0	23.6
			1	24	0	23.6
			12	0	1	22.4
			12	7	1	22.4
			12	13	1	22.4
			25	0	1	22.4
		16QAM	1	0	1	22.7
			1	12	1	22.7
			1	24	1	22.7
			12	0	2	21.4
			12	7	2	21.4
			12	13	2	21.4
			25	0	2	21.4

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

Reduction power results

LTE Band 2 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Proximi sensor reduction. Avg Pwr (dBm)			IR sensor reduction. Avg Pwr (dBm)		
						1860 MHz	1880 MHz	1900 MHz	1860 MHz	1880 MHz	1900 MHz
LTE Band 2	20	QPSK	1	0	0	13.9	13.5	13.8	14.3	14.0	14.2
			1	49	0	13.9	13.4	13.8	14.2	13.9	14.2
			1	99	0	13.8	13.4	14.0	14.1	13.9	14.4
			50	0	0	14.0	13.6	13.8	14.3	14.0	14.1
			50	24	0	14.0	13.5	13.8	14.3	13.9	14.1
			50	50	0	13.9	13.5	13.9	14.2	13.9	14.2
			100	0	0	14.0	13.5	13.8	14.3	14.0	14.1
		16QAM	1	0	0	14.0	13.4	13.8	14.4	14.1	14.1
			1	49	0	13.9	13.3	13.9	14.4	14.0	14.0
			1	99	0	13.8	13.3	14.1	14.2	13.9	14.2
			50	0	0	14.0	13.5	13.7	14.3	13.9	14.1
			50	24	0	13.9	13.5	13.8	14.3	13.9	14.2
			50	50	0	13.9	13.5	13.8	14.2	13.9	14.2
			100	0	0	14.0	13.6	13.8	14.3	14.0	14.2
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Proximi sensor reduction. Avg Pwr (dBm)			IR sensor reduction. 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	14.1	13.6	13.6	14.4	14.1	14.1
			1	36	0	14.0	13.5	13.7	14.3	14.0	14.1
			1	74	0	13.9	13.5	13.8	14.3	14.0	14.2
			36	0	0	14.1	13.6	13.7	14.4	14.0	14.1
			36	18	0	14.0	13.5	13.8	14.4	14.0	14.2
			36	37	0	14.0	13.5	13.9	14.3	13.9	14.2
			75	0	0	14.0	13.5	13.8	14.4	13.9	14.2
		16QAM	1	0	0	13.8	13.4	13.7	13.8	13.8	14.1
			1	36	0	13.8	13.4	13.8	13.8	13.8	14.1
			1	74	0	13.7	13.3	13.9	13.8	13.7	14.1
			36	0	0	14.0	13.5	13.8	14.3	13.9	14.1
			36	18	0	14.0	13.5	13.8	14.3	13.9	14.2
			36	37	0	14.0	13.5	13.9	14.3	13.9	14.2
			75	0	0	14.0	13.5	13.8	14.3	14.0	14.1
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Proximi sensor reduction. Avg Pwr (dBm)			IR sensor reduction. Avg Pwr (dBm)		
						1855 MHz	1880 MHz	1905 MHz	1855 MHz	1880 MHz	1905 MHz
LTE Band 2	10	QPSK	1	0	0	14.0	13.7	13.8	14.5	14.1	14.1
			1	25	0	14.0	13.7	13.8	14.4	14.0	14.1
			1	49	0	14.0	13.6	13.9	14.4	14.0	14.2
			25	0	0	14.0	13.6	13.8	14.4	13.9	14.1
			25	12	0	14.0	13.5	13.8	14.4	13.9	14.2
			25	25	0	14.0	13.5	13.9	14.4	13.9	14.2
			50	0	0	14.0	13.5	13.8	14.4	13.9	14.2
		16QAM	1	0	0	13.8	13.5	13.7	14.0	13.8	14.1
			1	25	0	13.8	13.5	13.7	13.9	13.7	14.1
			1	49	0	13.7	13.4	13.8	13.9	13.7	14.2
			25	0	0	14.0	13.6	13.8	14.5	14.0	14.2
			25	12	0	14.0	13.5	13.8	14.5	13.9	14.2
			25	25	0	14.0	13.5	13.9	14.4	14.0	14.2
			50	0	0	14.0	13.5	13.8	14.4	14.0	14.1

LTE Band 2 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Proximi sensor reduction. Avg Pwr (dBm)			IR sensor reduction. 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	14.1	13.6	13.9	14.4	14.1	14.2
			1	12	0	14.1	13.5	13.9	14.4	14.0	14.2
			1	24	0	14.1	13.5	14.0	14.4	14.0	14.3
			12	0	0	14.1	13.5	14.0	14.4	13.9	14.2
			12	6	0	14.1	13.5	14.0	14.4	13.9	14.2
			12	11	0	14.1	13.5	14.0	14.4	13.9	14.2
		16QAM	25	0	0	14.1	13.5	14.0	14.4	13.9	14.2
			1	0	0	13.8	13.5	14.0	14.2	13.9	14.2
			1	12	0	13.8	13.5	14.0	14.2	13.9	14.2
			1	24	0	13.8	13.5	14.1	14.3	13.8	14.2
			12	0	0	14.0	13.5	13.9	14.4	13.9	14.3
			12	6	0	14.0	13.5	13.9	14.4	13.9	14.3
LTE Band 2	3	QPSK	12	11	0	14.0	13.4	13.9	14.4	13.9	14.3
			25	0	0	14.1	13.5	14.0	14.4	13.9	14.2
		16QAM	1	0	0	14.1	13.7	14.0	14.6	14.2	14.4
			1	7	0	14.1	13.6	14.0	14.6	14.1	14.4
			1	14	0	14.1	13.7	14.1	14.6	14.1	14.5
			8	0	0	14.1	13.5	14.0	14.4	13.9	14.2
LTE Band 2	1.4	QPSK	8	4	0	14.1	13.5	14.0	14.4	13.9	14.2
			8	7	0	14.1	13.5	14.0	14.4	13.9	14.2
			15	0	0	14.1	13.6	14.1	14.4	13.9	14.2
		16QAM	1	0	0	14.2	13.9	14.3	14.4	14.0	14.6
			1	7	0	14.1	13.8	14.1	14.3	13.9	14.6
			1	14	0	14.1	13.9	14.3	14.4	14.0	14.6
LTE Band 2	1.4	QPSK	8	0	0	13.9	13.5	13.7	14.3	13.8	14.0
			8	4	0	13.9	13.5	13.7	14.3	13.9	14.1
			8	7	0	13.9	13.4	13.7	14.3	13.9	14.0
			15	0	0	14.1	13.5	13.9	14.3	13.8	14.3
		16QAM	1	0	0	14.3	13.5	14.0	14.4	13.9	14.2
			1	2	0	14.2	13.5	14.0	14.5	13.9	14.2
LTE Band 2	1.4	QPSK	1	5	0	14.2	13.5	14.1	14.4	13.9	14.2
			3	0	0	14.1	13.6	14.0	14.5	14.0	14.3
			3	1	0	14.2	13.6	14.0	14.5	14.0	14.3
			3	2	0	14.2	13.6	14.0	14.5	14.0	14.3
			6	0	0	14.0	13.5	13.9	14.4	13.9	14.2
		16QAM	1	0	0	14.1	13.8	14.0	14.3	14.1	14.0
			1	2	0	14.1	13.8	14.0	14.2	14.1	14.0
			1	5	0	14.1	13.8	14.0	14.2	14.1	14.0
			3	0	0	14.3	13.7	14.0	14.6	14.0	14.3
			3	1	0	14.3	13.5	14.2	14.7	14.0	14.4
			3	2	0	14.3	13.6	14.1	14.7	13.9	14.4
			6	0	0	14.1	13.3	14.0	14.5	13.8	14.3

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LTE Band 4 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Proximi sensor reduction. Avg Pwr (dBm)			IR sensor reduction. 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		13.0			13.1	
			1	49	0		13.1			13.1	
			1	99	0		13.2			13.2	
			50	0	0		13.0			13.0	
			50	24	0		13.1			13.0	
			50	50	0		13.1			13.1	
			100	0	0		13.1			13.0	
		16QAM	1	0	0		13.2			13.1	
			1	49	0		13.3			13.2	
			1	99	0		13.3			13.1	
			50	0	0		13.1			13.0	
			50	25	0		13.1			13.0	
			50	50	0		13.1			13.0	
			100	0	0		13.1			13.1	
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Proximi sensor reduction. Avg Pwr (dBm)			IR sensor reduction. 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	13.1	13.1	13.1	13.1	13.0	13.1
			1	36	0	13.1	13.2	13.2	13.1	13.0	13.2
			1	74	0	13.2	13.2	13.3	13.1	13.1	13.2
			36	0	0	13.1	13.1	13.2	13.1	13.0	13.1
			36	18	0	13.1	13.1	13.2	13.1	13.1	13.1
			36	37	0	13.1	13.1	13.3	13.1	13.0	13.2
			75	0	0	13.1	13.1	13.2	13.1	13.0	13.2
		16QAM	1	0	0	12.8	13.1	13.3	12.8	12.9	13.2
			1	36	0	12.9	13.2	13.4	12.8	13.0	13.2
			1	74	0	12.8	13.2	13.4	12.7	13.0	13.3
			36	0	0	13.0	13.0	13.3	13.1	13.0	13.2
			36	18	0	13.0	13.0	13.3	13.0	13.0	13.2
			36	37	0	13.1	13.1	13.3	13.0	13.0	13.2
			75	0	0	13.0	13.1	13.2	13.1	13.1	13.2
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Proximi sensor reduction. Avg Pwr (dBm)			IR sensor reduction. 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	13.2	13.1	13.1	13.2	13.2	13.2
			1	25	0	13.1	13.1	13.2	13.1	13.1	13.2
			1	49	0	13.2	13.2	13.2	13.2	13.2	13.3
			25	0	0	13.1	13.0	13.1	13.1	13.0	13.1
			25	12	0	13.1	13.1	13.2	13.1	13.0	13.2
			25	25	0	13.1	13.1	13.2	13.1	13.0	13.2
			50	0	0	13.1	13.1	13.2	13.1	13.0	13.1
		16QAM	1	0	0	12.7	13.1	13.4	12.9	13.1	13.0
			1	25	0	12.7	13.1	13.4	12.8	13.1	13.1
			1	49	0	12.7	13.2	13.4	12.8	13.1	13.1
			25	0	0	13.1	13.1	13.2	13.1	13.1	13.2
			25	12	0	13.1	13.1	13.2	13.1	13.1	13.2
			25	25	0	13.1	13.1	13.2	13.1	13.1	13.2
			50	0	0	13.1	13.1	13.2	13.1	13.1	13.2

LTE Band 4 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Proximi sensor reduction, Avg Pwr (dBm)			IR sensor reduction, 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	13.1	13.1	13.3	13.2	13.1	13.3
			1	12	0	13.1	13.1	13.3	13.2	13.1	13.3
			1	24	0	13.1	13.2	13.4	13.2	13.1	13.3
			12	0	0	13.1	13.0	13.2	13.1	13.1	13.1
			12	6	0	13.1	13.1	13.2	13.2	13.0	13.2
			12	11	0	13.1	13.1	13.2	13.1	13.1	13.2
			25	0	0	13.1	13.1	13.2	13.1	13.0	13.2
		16QAM	1	0	0	12.9	13.1	13.2	13.1	13.0	13.4
			1	12	0	12.9	13.1	13.3	13.1	13.0	13.4
			1	24	0	13.0	13.2	13.3	13.2	13.0	13.4
			12	0	0	13.1	13.0	13.2	13.1	13.0	13.2
			12	6	0	13.1	13.0	13.2	13.1	13.0	13.2
			12	11	0	13.1	13.0	13.2	13.1	13.0	13.2
			25	0	0	13.1	13.1	13.2	13.1	13.0	13.1
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Proximi sensor reduction, Avg Pwr (dBm)			IR sensor reduction, 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	13.2	13.2	13.4	13.3	13.3	13.2
			1	7	0	13.2	13.3	13.4	13.3	13.3	13.3
			1	14	0	13.2	13.3	13.4	13.3	13.3	13.3
			8	0	0	13.1	13.0	13.2	13.1	13.0	13.1
			8	4	0	13.1	13.0	13.2	13.2	13.1	13.1
			8	7	0	13.1	13.0	13.2	13.1	13.0	13.1
			15	0	0	13.1	13.1	13.2	13.1	13.1	13.1
		16QAM	1	0	0	13.1	13.2	13.5	13.3	13.2	13.4
			1	7	0	13.1	13.2	13.4	13.3	13.2	13.3
			1	14	0	13.1	13.3	13.5	13.3	13.2	13.4
			8	0	0	13.0	13.1	13.0	13.1	13.0	12.9
			8	4	0	13.0	13.1	13.0	13.1	13.0	13.0
			8	7	0	13.0	13.1	13.0	13.1	13.0	13.0
			15	0	0	13.0	13.0	13.2	13.1	13.0	13.1
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Proximi sensor reduction, Avg Pwr (dBm)			IR sensor reduction, 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	13.0	13.1	13.2	13.2	13.1	13.1
			1	2	0	13.0	13.1	13.2	13.2	13.0	13.1
			1	5	0	13.0	13.1	13.2	13.1	13.1	13.1
			3	0	0	13.1	13.1	13.3	13.3	13.1	13.2
			3	1	0	13.1	13.2	13.3	13.3	13.1	13.2
			3	2	0	13.1	13.2	13.3	13.3	13.1	13.2
			6	0	0	13.1	13.1	13.2	13.1	13.0	13.1
		16QAM	1	0	0	13.0	13.3	13.2	13.0	13.2	13.2
			1	2	0	12.9	13.3	13.2	13.0	13.2	13.2
			1	5	0	12.9	13.3	13.2	13.0	13.3	13.2
			3	0	0	13.1	13.2	13.2	13.3	13.2	13.1
			3	1	0	13.1	13.2	13.3	13.3	13.2	13.2
			3	2	0	13.2	13.2	13.3	13.3	13.3	13.1
			6	0	0	13.2	12.9	13.3	13.2	12.9	13.1

Note(s):

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

LTE Band 5 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Proximi sensor reduction. Avg Pwr (dBm)			IR sensor reduction. 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		18.6			18.6	
			1	25	0		18.7			18.6	
			1	49	0		18.6			18.6	
			25	0	0		18.5			18.5	
			25	12	0		18.5			18.5	
			25	25	0		18.5			18.5	
		16QAM	50	0	0		18.5			18.5	
			1	0	0		18.5			18.5	
			1	25	0		18.4			18.4	
			1	49	0		18.4			18.4	
			25	0	0		18.6			18.6	
			25	12	0		18.6			18.6	
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Proximi sensor reduction. Avg Pwr (dBm)			IR sensor reduction. 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	18.4	18.2	18.2	18.3	18.1	18.2
			1	12	0	18.3	18.1	18.1	18.3	18.1	18.1
			1	24	0	18.3	18.1	18.1	18.3	18.1	18.1
			12	0	0	18.3	18.2	18.2	18.3	18.2	18.3
			12	6	0	18.3	18.2	18.2	18.3	18.2	18.2
			12	11	0	18.3	18.2	18.2	18.3	18.2	18.2
		16QAM	25	0	0	18.3	18.2	18.2	18.3	18.2	18.2
			1	0	0	18.1	18.2	18.2	18.3	18.3	18.2
			1	12	0	18.1	18.2	18.2	18.2	18.2	18.2
			1	24	0	18.1	18.2	18.1	18.3	18.3	18.1
			12	0	0	18.3	18.2	18.3	18.3	18.2	18.3
			12	6	0	18.3	18.2	18.3	18.3	18.1	18.3
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Proximi sensor reduction. Avg Pwr (dBm)			IR sensor reduction. 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	18.2	18.2	18.3	18.3	18.2	18.2
			1	7	0	18.2	18.2	18.2	18.3	18.2	18.2
			1	14	0	18.2	18.3	18.2	18.3	18.2	18.2
			8	0	0	18.2	18.2	18.2	18.3	18.2	18.2
			8	4	0	18.2	18.2	18.2	18.3	18.2	18.2
			8	7	0	18.2	18.2	18.2	18.2	18.2	18.2
		16QAM	15	0	0	18.3	18.2	18.2	18.3	18.2	18.2
			1	0	0	18.1	18.3	18.3	18.1	18.2	18.4
			1	7	0	18.1	18.3	18.2	18.0	18.2	18.4
			1	14	0	18.1	18.3	18.2	18.1	18.2	18.3
			8	0	0	18.3	18.2	18.1	18.3	18.2	18.1
			8	4	0	18.2	18.2	18.1	18.3	18.3	18.1
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Proximi sensor reduction. Avg Pwr (dBm)			IR sensor reduction. 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	18.2	18.2	18.3	18.3	18.2	18.2
			1	7	0	18.2	18.2	18.2	18.3	18.2	18.2
			1	14	0	18.2	18.3	18.2	18.3	18.2	18.2
			8	0	0	18.2	18.2	18.2	18.3	18.2	18.2
			8	4	0	18.2	18.2	18.2	18.3	18.2	18.2
			8	7	0	18.2	18.2	18.2	18.2	18.2	18.2
		16QAM	15	0	0	18.3	18.2	18.2	18.3	18.2	18.2
			1	0	0	18.1	18.3	18.3	18.1	18.2	18.4
			1	7	0	18.1	18.3	18.2	18.0	18.2	18.4
			1	14	0	18.1	18.3	18.2	18.1	18.2	18.3
			8	0	0	18.3	18.2	18.1	18.3	18.2	18.1
			8	4	0	18.2	18.2	18.1	18.3	18.3	18.1
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Proximi sensor reduction. Avg Pwr (dBm)			IR sensor reduction. 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	18.2	18.2	18.3	18.3	18.2	18.2
			1	7	0	18.2	18.2	18.2	18.3	18.2	18.2
			1	14	0	18.2	18.3	18.2	18.3	18.2	18.2
			8	0	0	18.2	18.2	18.2	18.3	18.2	18.2
			8	4	0	18.2	18.2	18.2	18.3	18.2	18.2
			8	7	0	18.2	18.2	18.2	18.2	18.2	18.2
		16QAM	15	0	0	18.3	18.2	18.2	18.3	18.2	18.2
			1	0	0	18.1	18.3	18.3	18.1	18.2	18.4
			1	7	0	18.1	18.3	18.2	18.0	18.2	18.4
			1	14	0	18.1	18.3	18.2	18.1	18.2	18.3
			8	0	0	18.3	18.2	18.1	18.3	18.2	18.1
			8	4	0	18.2	18.2	18.1	18.3	18.3	18.1
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Proximi sensor reduction. Avg Pwr (dBm)			IR sensor reduction. 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	18.2	18.2	18.3	18.3	18.2	18.2
			1	7	0	18.2	18.2	18.2	18.3	18.2	18.2
			1	14	0	18.2	18.3	18.2	18.3	18.2	18.2
			8	0	0	18.2	18.2	18.2	18.3	18.2	18.2
			8	4	0	18.2	18.2	18.2	18.3	18.2	18.2
			8	7	0	18.2	18.2	18.2	18.2	18.2	18.2
		16QAM	15	0	0	18.3	18.2	18.2	18.3	18.2	18.2
			1	0	0	18.1	18.3	18.3	18.1	18.2	18.4
			1	7	0	18.1	18.3	18.2	18.0	18.2	18.4
			1	14	0	18.1	18.3	18.2	18.1	18.2	18.3
			8	0	0	18.3	18.2	18.1	18.3	18.2	18.1
			8	4	0	18.2	18.2	18.1	18.3	18.3	18.1
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Proximi sensor reduction. Avg Pwr (dBm)			IR sensor reduction. 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	18.2	18.2	18.3	18.3	18.2	18.2
			1	7	0	18.2	18.2	18.2	18.3	18.2	18.2
			1	14	0	18.2	18.3	18.2	18.3	18.2	18.2
			8	0	0	18.2	18.2	18.2	18.3	18.2	18.2
			8	4	0	18.2	18.2	18.2	18.3	18.2	18.2
			8	7	0	18.2	18.2	18.2	18.2	18.2	18.2
		16QAM	15	0	0	18.3	18.2	18.2	18.3	18.2	18.2
			1	0	0	18.1	18.3	18.3	18.1	18.2	18.4
			1	7	0	18.1	18.3	18.2	18.0	18.2	18.4
			1	14	0	18.1	18.3	18.2	18.1	18.2	18.3
			8	0	0	18.3	18.2	18.1	18.3	18.2	18.1
			8	4	0	18.2	18.2	18.1	18.3	18.3	18.1
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Proximi sensor reduction. Avg Pwr (dBm)			IR sensor reduction. 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	18.2	18.2	18.3	18.3	18.2	18.2
			1	7	0	18.2	18.2	18.2	18.3	18.2	18.2
			1	14	0	18.2	18.3	18.2	18.3	18.2	18.2
			8	0	0	18.2	18.2	18.2	18.3	18.2	18.2
			8	4	0	18.2	18.2	18.2	18.3	18.2	18.2
			8	7	0	18.2	18.2	18.2	18.2	18.2	18.2
		16QAM	15	0	0	18.3	18.2	18.2	18.3	18.2	18.2
			1	0	0	18.1	18.3	18.3	18.1	18.2	18.4
			1	7	0	18.1	18.3	18.2	18.0	18.2	18.4
			1	14	0	18.1	18.3	18.2	18.1	18.2	18.3
			8	0	0	18.3	18.2	18.1	18.3	18.2	18.1
			8	4	0	18.2	18.2	18.1	18.3	18.3	18.1
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Proximi sensor reduction. Avg Pwr (dBm)			IR sensor reduction. 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	18.2	18.2	18.3	18.3	18.2	18.2
			1	7	0	18.2	18.2	18.2	18.3	18.2	18.2
			1	14	0	18.2	18.3	18.2	18.3	18.2	18.2
			8	0	0	18.2	18.2	18.2	18.3	18.2	18.2
			8	4	0	18.2	18.2	18.2	18.3	18.2	18.2
			8	7	0	18.2	18.2	18.2	18.2	18.2	18.2
		16QAM	15	0	0	18.3	18.2	18.2	18.3	18.2	18.2
			1	0	0	18.1	18.3	18.3	18.1	18.2	18.4
			1	7	0	18.1	18.3	18.2	18.0	18.2	18.4
			1	14	0	18.1	18.3	18.2	18.1	18.2	18.3
			8	0	0	18.3	18.2	18.1	18.3	18.2	18.1
			8	4	0	18.2	18.2	18.1	18.3	18.3	18.1
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Proximi sensor reduction. Avg Pwr (dBm)			IR sensor reduction. 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	18.2	18.2	18.3	18.3	18.2	18.2
			1	7	0	18.2	18.2	18.2	18.3	18.2	18.2
			1	14	0	18.2	18.3	18.2	18.3	18.2	18.2
			8	0	0	18.2	18.2	18.2	18.3	18.2	18.2
			8	4	0	18.2	18.2	18.2	18.3	18.2	18.2
			8	7	0	18.2	18.2	18.2	18.2	18.2	18.2
		16QAM	15	0	0	18.3	18.2	18.2	18.3	18.2	18.2
			1	0	0	18.1	18.3	18.3	18.1	18.2	18.4
			1	7	0	18.1	18.3	18.2	18.0	18.2	18.4
			1	14	0	18.1	18.3	18.2	18.1	18.2	18.3
			8	0	0	18.3	18.2	18.1	18.3	18.2	18.1
			8	4	0	18.2	18.2	18.1	18.3	18.3	18.1
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Proximi sensor reduction. Avg Pwr (dBm)			IR sensor reduction. 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	18.2	18.2	18.3	18.3	18.2	18.2
			1	7	0	18.2	18.2	18.2	18.3	18.2	18.2
			1	14	0	18.2	18.3	18.2	18.3	18.2	18.2
			8	0	0	18.2	18.2	18.2	18.3	18.2	18.2
			8	4	0	18.2	18.2	18.2	18.3	18.2	18.2
			8	7	0	18.2	18.2	18.2	18.2	18.2	18.2
		16QAM	15	0	0	18.3	18.2	18.2	18.3	18.2	18.2
			1	0	0	18.1	18.3	18.3	18.1	18.2	18.4
			1	7	0	18.1	18.3	18.2	18.0	18.2	18.4
			1	14	0	18.1	18.3	18.2	18.1	18.2	18.3
			8	0	0	18.3	18.2	18.1	18.3	18.2	18.1
			8	4	0	18.2	18.2	18.1	18.3	18.3	18.1
Band	BW (MHz)	Mode	RB Allocation	RB offset							

LTE Band 5 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Proximi sensor reduction. Avg Pwr (dBm)			IR sensor reduction. 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	18.2	18.3	18.2	18.1	18.2	18.2
			1	2	0	18.1	18.2	18.1	18.1	18.2	18.1
			1	5	0	18.2	18.3	18.2	18.2	18.2	18.2
			3	0	0	18.2	18.2	18.2	18.2	18.2	18.2
			3	1	0	18.2	18.2	18.2	18.2	18.2	18.2
			3	2	0	18.2	18.2	18.2	18.2	18.2	18.2
			6	0	0	18.2	18.2	18.2	18.2	18.2	18.2
		16QAM	1	0	0	18.0	18.1	18.0	18.2	18.1	18.0
			1	2	0	17.9	18.1	17.9	18.1	18.1	17.9
			1	5	0	18.0	18.1	18.0	18.2	18.1	17.9
			3	0	0	18.2	18.2	18.0	18.1	18.2	18.1
			3	1	0	18.0	18.0	18.1	18.1	18.1	18.1
			3	2	0	18.1	18.0	18.1	18.2	18.0	18.1
			6	0	0	18.2	18.0	18.2	18.2	18.1	18.2

Note(s):

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

LTE Band 7 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Proximity sensor reduction. Avg Pwr (dBm)				IR sensor reduction. Avg Pwr (dBm)		
					MPR	2510 MHz	2535 MHz	2560 MHz	2510 MHz	2535 MHz	2560 MHz
LTE Band 7	20	QPSK	1	0	0	11.7	12.1	12.0	11.9	12.4	12.0
			1	49	0	11.7	12.0	11.9	11.8	12.1	12.0
			1	99	0	11.7	12.0	11.9	11.8	12.0	12.0
			50	0	0	11.6	12.1	11.8	11.8	12.2	11.9
			50	24	0	11.6	12.0	11.8	11.8	12.2	11.9
			50	50	0	11.6	12.0	11.8	11.8	12.1	11.9
			100	0	0	11.6	12.0	11.8	11.8	12.2	11.9
		16QAM	1	0	0	11.7	12.1	11.6	11.9	12.2	11.7
			1	49	0	11.7	12.2	11.6	11.9	12.2	11.6
			1	99	0	11.7	12.1	11.5	11.8	12.0	11.5
			50	0	0	11.6	12.0	11.8	11.8	12.2	11.9
			50	24	0	11.6	12.0	11.8	11.8	12.1	11.9
			50	50	0	11.6	12.0	11.8	11.8	12.1	11.9
			100	0	0	11.7	12.0	11.8	11.8	12.2	11.9
Band	BW (MHz)	Mode	RB Allocation	RB offset	Proximity sensor reduction. Avg Pwr (dBm)				IR sensor reduction. Avg Pwr (dBm)		
					MPR	2507.5 MHz	2535 MHz	2562.5 MHz	2507.5 MHz	2535 MHz	2562.5 MHz
LTE Band 7	15	QPSK	1	0	0	11.7	12.1	11.9	11.8	12.2	12.0
			1	37	0	11.7	12.1	11.8	11.8	12.2	11.9
			1	74	0	11.7	12.1	11.8	11.8	12.1	11.9
			36	0	0	11.6	12.1	11.8	11.8	12.2	12.0
			36	20	0	11.6	12.0	11.8	11.8	12.1	11.9
			36	39	0	11.6	12.0	11.8	11.8	12.1	11.9
			75	0	0	11.6	12.0	11.8	11.8	12.1	11.9
		16QAM	1	0	0	11.5	12.1	11.9	11.3	12.0	12.1
			1	37	0	11.5	12.1	11.9	11.2	12.0	12.0
			1	74	0	11.5	12.0	11.9	11.2	11.9	12.1
			36	0	0	11.6	12.0	11.8	11.7	12.1	12.0
			36	20	0	11.6	12.0	11.8	11.7	12.1	12.0
			36	39	0	11.5	12.0	11.8	11.7	12.0	11.9
			75	0	0	11.6	12.0	11.8	11.8	12.1	11.9
Band	BW (MHz)	Mode	RB Allocation	RB offset	Proximity sensor reduction. Avg Pwr (dBm)				IR sensor reduction. Avg Pwr (dBm)		
					MPR	2505 MHz	2535 MHz	2565 MHz	2505 MHz	2535 MHz	2565 MHz
LTE Band 7	10	QPSK	1	0	0	11.7	12.0	11.8	12.0	12.2	12.0
			1	25	0	11.6	12.0	11.9	12.0	12.2	11.9
			1	49	0	11.7	12.0	11.8	11.9	12.2	11.9
			25	0	0	11.6	12.0	11.8	11.9	12.2	11.9
			25	12	0	11.6	12.0	11.8	11.8	12.2	11.9
			25	25	0	11.6	12.0	11.8	11.8	12.1	11.9
			50	0	0	11.6	12.0	11.8	11.9	12.2	11.9
		16QAM	1	0	0	11.2	12.1	12.0	11.5	12.1	11.9
			1	25	0	11.3	12.1	11.9	11.5	12.1	11.9
			1	49	0	11.3	12.1	11.9	11.5	12.0	12.0
			25	0	0	11.6	12.1	11.8	11.9	12.2	12.0
			25	12	0	11.7	12.1	11.8	11.8	12.2	11.9
			25	25	0	11.6	12.0	11.8	11.9	12.2	11.9
			50	0	0	11.6	12.0	11.7	11.9	12.1	11.8

LTE Band 7 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Proximity sensor reduction. Avg Pwr (dBm)			IR sensor reduction. Avg Pwr (dBm)			
					MPR	2502.5 MHz	2535 MHz	2567.5 MHz	2502.5 MHz	2535 MHz	2567.5 MHz
LTE Band 7	5	QPSK	1	0	0	11.3	11.7	11.5	11.4	11.8	11.6
			1	12	0	11.2	11.7	11.5	11.4	11.8	11.6
			1	24	0	11.3	11.7	11.5	11.4	11.7	11.5
			12	0	0	11.2	11.6	11.4	11.5	11.8	11.4
			12	7	0	11.2	11.6	11.4	11.5	11.7	11.4
			12	13	0	11.2	11.6	11.4	11.4	11.8	11.4
			25	0	0	11.2	11.6	11.3	11.4	11.7	11.5
		16QAM	1	0	0	11.0	11.8	11.3	11.2	11.9	11.4
			1	12	0	11.0	11.8	11.3	11.2	11.9	11.4
			1	24	0	11.1	11.8	11.4	11.2	11.9	11.4
			12	0	0	11.1	11.7	11.3	11.4	11.8	11.4
			12	7	0	11.1	11.6	11.3	11.4	11.8	11.4
			12	13	0	11.1	11.7	11.3	11.4	11.8	11.4
			25	0	0	11.2	11.6	11.4	11.4	11.7	11.5

LTE Band 17 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Proximity sensor reduction. Avg Pwr (dBm)	IR sensor reduction. Avg Pwr (dBm)
						710 MHz	710 MHz
LTE Band 17	10	QPSK	1	0	0	19.6	19.6
			1	25	0	19.6	19.6
			1	49	0	19.6	19.6
			25	0	0	19.5	19.5
			25	12	0	19.5	19.5
			25	25	0	19.5	19.5
			50	0	0	19.6	19.5
		16QAM	1	0	0	19.6	19.7
			1	25	0	19.6	19.7
			1	49	0	19.6	19.7
			25	0	0	19.6	19.6
			25	12	0	19.6	19.6
			25	25	0	19.6	19.6
			50	0	0	19.5	19.5
LTE Band 17	5	QPSK	1	0	0	19.6	19.7
			1	12	0	19.6	19.6
			1	24	0	19.6	19.7
			12	0	0	19.6	19.6
			12	7	0	19.5	19.5
			12	13	0	19.5	19.6
			25	0	0	19.5	19.5
		16QAM	1	0	0	19.5	19.9
			1	12	0	19.5	19.8
			1	24	0	19.5	19.8
			12	0	0	19.5	19.6
			12	7	0	19.5	19.6
			12	13	0	19.5	19.6
			25	0	0	19.5	19.6

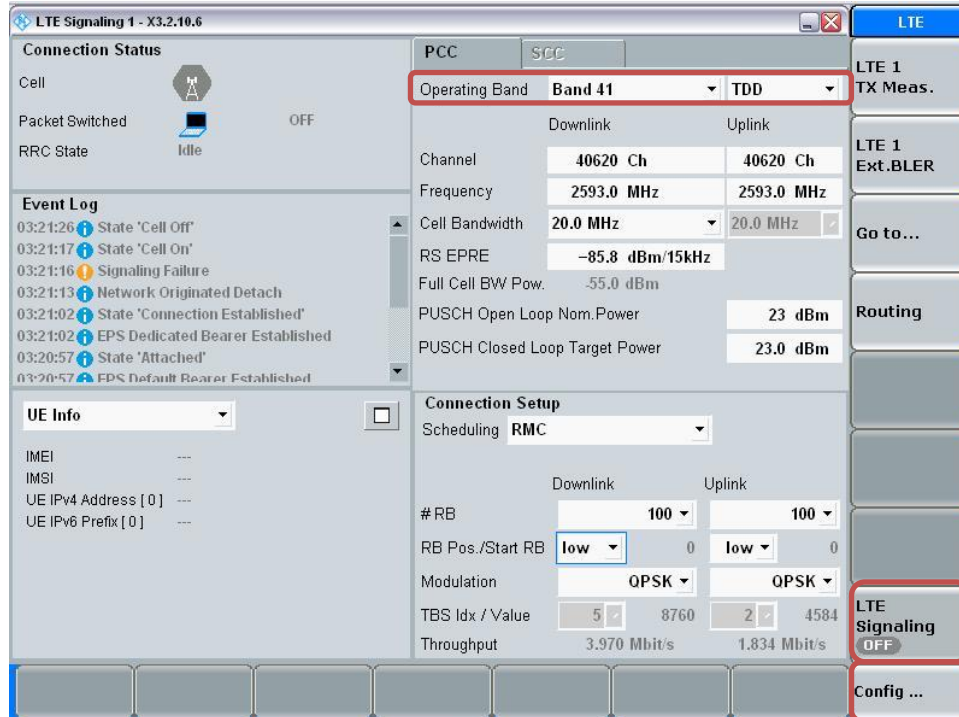
Note(s):

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

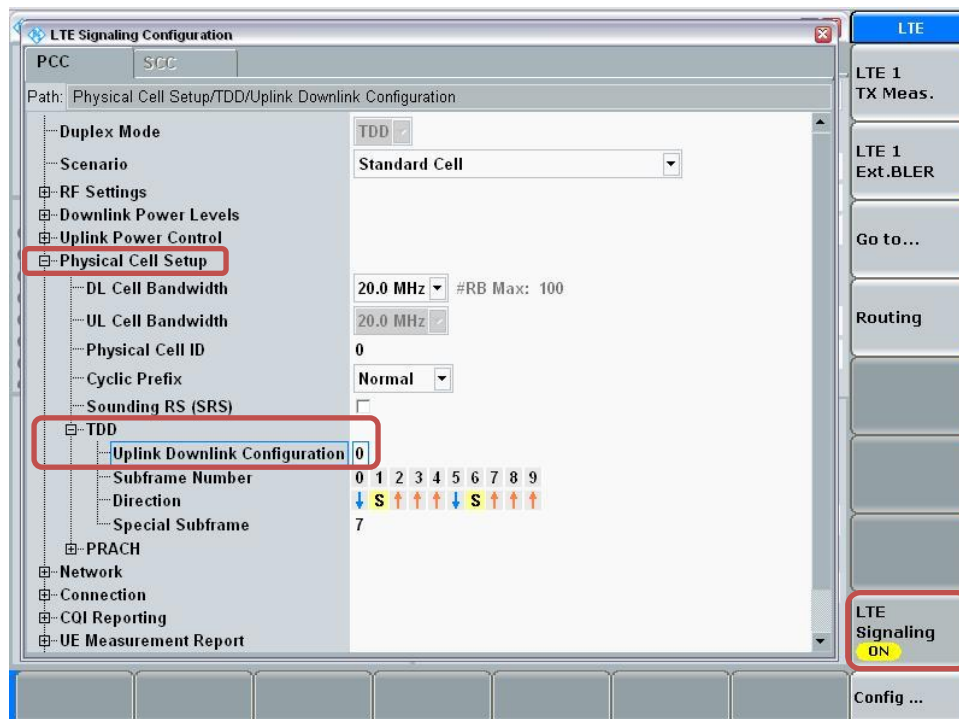
LTE Band 38 Measured Results**Procedure used to establish SAR test signal for LTE TDD Band**

Set to CMW-500 with following parameters:

- Turn the LTE Signaling off using “ON | OFF” key
- Operating Band: Select Band 41 and TDD
- Go to “Config...”

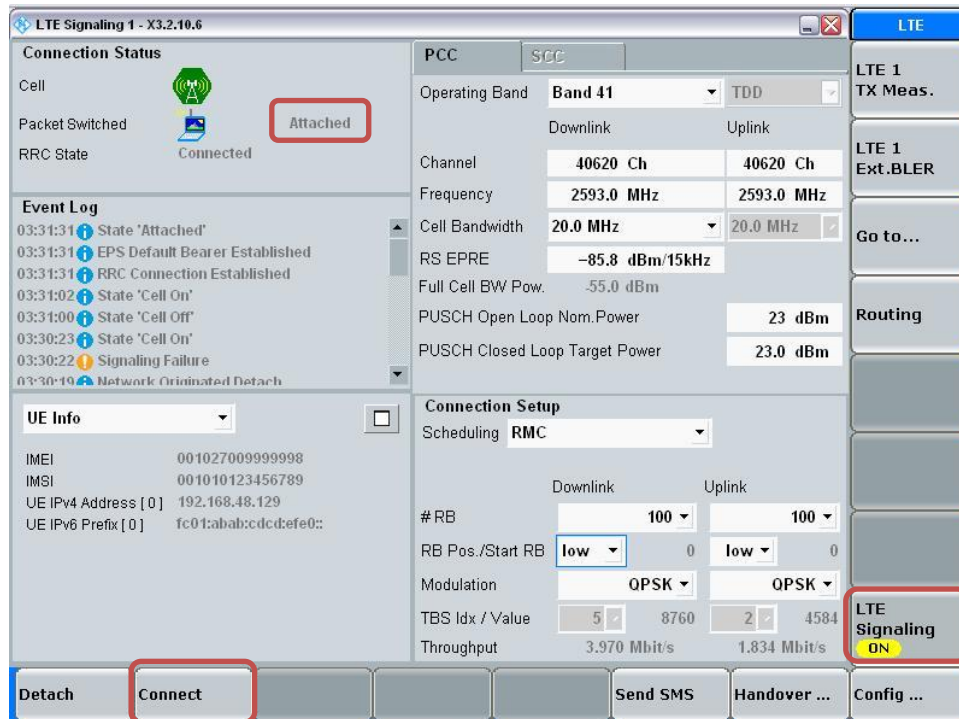


- Go to “Physical Cell Setup”
- Select “TDD” and Set “Uplink Downlink Configuration” to “0”
- Turn the cell on using “ON | OFF” key

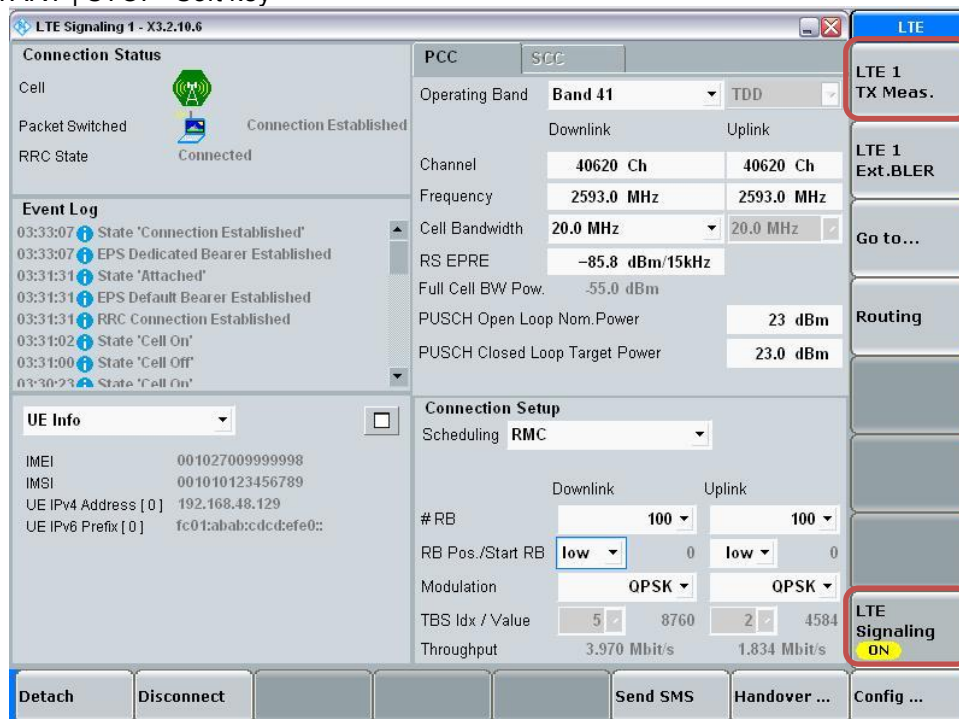


Connect to EUT

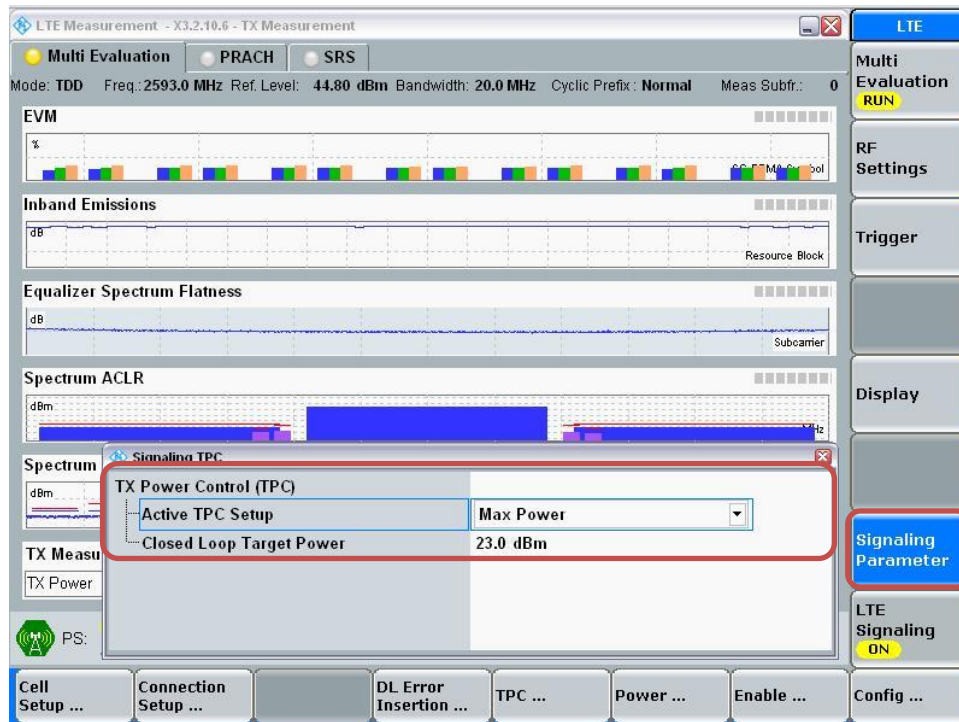
- Turn the cell on using “ON | OFF” key
- After EUT is Attached
- Select “Connect”

**Max Power Setting**

- Select “LTE 1 TX Meas.”
- Press “RESTART | STOP” Soft key

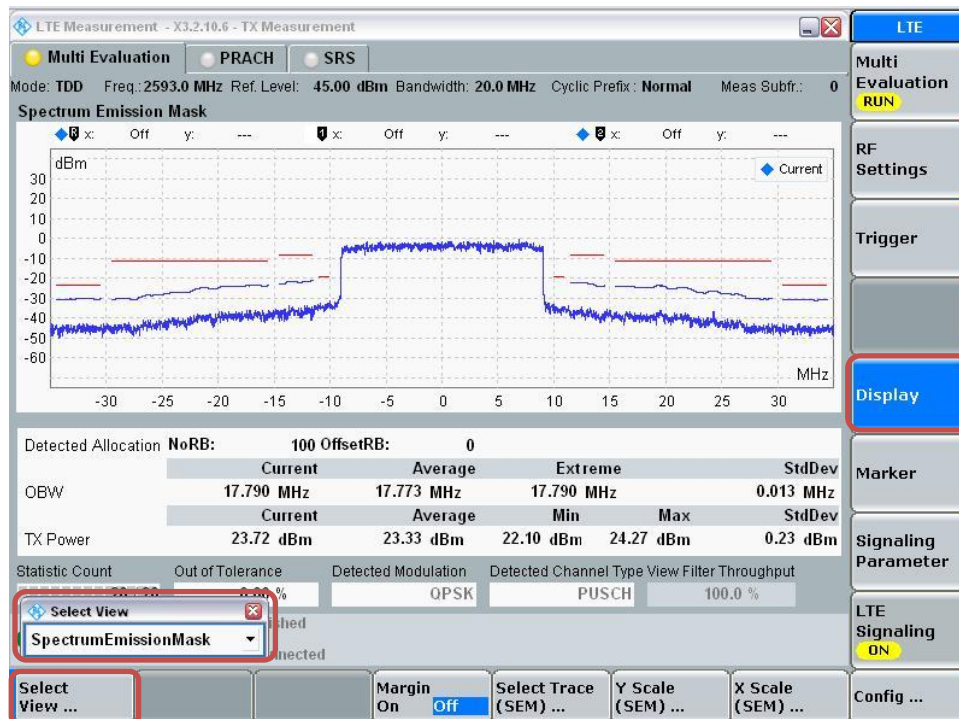


- Select “Signaling Parameter”
- Select “TX Power Control (TPC)” > Select “Active TPC Setup” to “Max Power” > Set “Closed Loop Target Power” to “23 dBm”



View TX Power

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



Max power results

LTE Band 38 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Max. Avg Pwr (dBm)			
					MPR	2580 MHz	2595 MHz	2610 MHz
LTE Band 38	20	QPSK	1	0	0		23.5	
			1	49	0		23.4	
			1	99	0		23.4	
			50	0	1		22.4	
			50	24	1		22.4	
			50	50	1		22.4	
		100	0	1		22.4		
		16QAM	1	0	1		22.4	
			1	49	1		22.4	
			1	99	1		22.3	
			50	0	2		21.4	
			50	24	2		21.3	
50	50		2		21.3			
100	0	2		21.4				
Band	BW (MHz)	Mode	RB Allocation	RB offset	Max. Avg Pwr (dBm)			
					MPR	2577.5 MHz	2595 MHz	2612.5 MHz
LTE Band 38	15	QPSK	1	0	0	23.3	23.4	23.2
			1	37	0	23.3	23.4	23.1
			1	74	0	23.2	23.4	23.2
			36	0	1	22.3	22.5	22.2
			36	20	1	22.2	22.5	22.2
			36	39	1	22.2	22.4	22.2
		75	0	1	22.3	22.4	22.2	
		16QAM	1	0	1	22.4	22.2	21.7
			1	37	1	21.9	22.1	22.1
			1	74	1	21.9	21.8	22.0
			36	0	2	21.2	21.4	21.2
			36	20	2	21.2	21.4	21.1
36	39		2	21.2	21.4	21.1		
75	0	2	21.2	21.4	21.2			
Band	BW (MHz)	Mode	RB Allocation	RB offset	Max. Avg Pwr (dBm)			
					MPR	2575 MHz	2595 MHz	2615 MHz
LTE Band 38	10	QPSK	1	0	0	23.2	23.3	23.1
			1	25	0	23.1	23.3	23.0
			1	49	0	23.2	23.3	23.1
			25	0	1	22.2	22.4	22.1
			25	12	1	22.2	22.4	22.1
			25	25	1	22.2	22.4	22.1
		50	0	1	22.2	22.4	22.1	
		16QAM	1	0	1	21.8	22.3	21.8
			1	25	1	21.8	22.3	21.7
			1	49	1	21.8	22.3	21.8
			25	0	2	21.1	21.4	21.0
			25	12	2	21.1	21.3	21.0
25	25		2	21.1	21.3	21.1		
50	0	2	21.1	21.4	21.0			

LTE Band 38 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Max. Avg Pwr (dBm)			
					MPR	2572.5 MHz	2595 MHz	2617.5 MHz
LTE Band 38	5	QPSK	1	0	0	22.9	23.1	22.7
			1	12	0	22.7	23.0	22.7
			1	24	0	22.9	23.0	22.7
			12	0	1	21.8	22.1	21.8
			12	7	1	21.8	22.1	21.8
			12	13	1	21.8	22.1	21.8
			25	0	1	21.8	22.1	21.8
		16QAM	1	0	1	21.6	21.7	21.2
			1	12	1	21.5	21.6	21.4
			1	24	1	21.3	21.8	21.5
			12	0	2	20.7	21.0	20.6
			12	7	2	20.7	21.0	20.6
			12	13	2	20.7	21.0	20.6
			25	0	2	20.7	20.9	20.7

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

Reduction power results

LTE Band 38 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Proximity sensor reduction. Avg Pwr (dBm)			IR sensor reduction. Avg Pwr (dBm)		
						2580 MHz	2595 MHz	2610 MHz	2580 MHz	2595 MHz	2610 MHz
LTE Band 38	20	QPSK	1	0	0		16.3			16.2	
			1	49	0		16.1			16.1	
			1	99	0		16.1			16.1	
			50	0	0		16.3			16.3	
			50	24	0		16.1			16.2	
			50	50	0		16.1			16.2	
			100	0	0		16.1			16.2	
		16QAM	1	0	0		16.1			16.5	
			1	49	0		16.4			16.5	
			1	99	0		16.3			16.0	
			50	0	0		16.2			16.2	
			50	24	0		16.1			16.2	
			50	50	0		16.1			16.2	
			100	0	0		16.2			16.2	
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Proximity sensor reduction. Avg Pwr (dBm)			IR sensor reduction. Avg Pwr (dBm)		
						2577.5 MHz	2595 MHz	2612.5 MHz	2577.5 MHz	2595 MHz	2612.5 MHz
LTE Band 38	15	QPSK	1	0	0	16.0	16.2	16.1	16.0	16.2	16.1
			1	37	0	16.0	16.2	15.9	16.1	16.2	16.0
			1	74	0	16.0	16.1	15.9	16.0	16.2	16.0
			36	0	0	15.9	16.2	16.0	16.0	16.2	16.1
			36	20	0	15.9	16.1	16.0	16.0	16.2	16.1
			36	39	0	16.0	16.1	15.9	16.0	16.2	16.1
			75	0	0	16.0	16.1	15.9	16.0	16.2	16.1
		16QAM	1	0	0	15.7	16.2	15.9	16.0	16.3	16.0
			1	37	0	15.8	16.0	16.0	16.0	16.1	15.8
			1	74	0	15.7	16.1	16.0	15.9	16.0	16.1
			36	0	0	16.0	16.3	16.0	16.1	16.3	16.1
			36	20	0	16.1	16.2	16.0	16.1	16.3	16.1
			36	39	0	16.0	16.2	15.9	16.0	16.3	16.0
			75	0	0	15.9	16.2	16.0	16.0	16.2	16.1
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Proximity sensor reduction. Avg Pwr (dBm)			IR sensor reduction. Avg Pwr (dBm)		
						2575 MHz	2595 MHz	2615 MHz	2575 MHz	2595 MHz	2615 MHz
LTE Band 38	10	QPSK	1	0	0	15.9	16.2	16.0	15.9	16.2	16.0
			1	25	0	15.9	16.2	15.9	15.9	16.2	16.0
			1	49	0	15.8	16.2	15.9	15.8	16.2	16.0
			25	0	0	15.9	16.1	15.9	16.0	16.2	16.0
			25	12	0	15.9	16.2	15.9	15.9	16.2	16.0
			25	25	0	15.9	16.1	15.9	15.9	16.2	16.0
			50	0	0	15.9	16.1	15.9	15.9	16.2	16.0
		16QAM	1	0	0	15.6	16.1	15.8	15.6	16.1	15.8
			1	25	0	15.5	16.1	15.7	15.6	16.2	15.8
			1	49	0	15.5	16.1	15.7	15.6	16.0	15.8
			25	0	0	15.9	16.2	15.9	16.0	16.2	16.0
			25	12	0	15.9	16.2	15.9	16.0	16.2	16.0
			25	25	0	15.9	16.2	15.9	16.0	16.2	16.0
			50	0	0	15.9	16.1	15.9	15.9	16.2	16.0

LTE Band 38 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Proximity sensor reduction. Avg Pwr (dBm)			IR sensor reduction. Avg Pwr (dBm)		
						2572.5 MHz	2595 MHz	2617.5 MHz	2572.5 MHz	2595 MHz	2617.5 MHz
LTE Band 38	5	QPSK	1	0	0	15.5	15.8	15.5	15.6	15.9	15.6
			1	12	0	15.4	15.8	15.4	15.6	15.9	15.6
			1	24	0	15.4	15.8	15.5	15.6	15.9	15.6
			12	0	0	15.6	15.8	15.5	15.6	16.0	15.6
			12	7	0	15.6	15.8	15.5	15.6	15.9	15.6
			12	13	0	15.6	15.8	15.5	15.6	15.9	15.6
			25	0	0	15.5	15.8	15.5	15.6	15.9	15.6
		16QAM	1	0	0	15.1	16.0	15.0	15.3	15.9	14.9
			1	12	0	15.3	15.9	15.1	15.3	15.9	14.9
			1	24	0	15.3	16.0	15.2	15.3	15.5	14.9
			12	0	0	15.6	15.8	15.5	15.6	15.9	15.5
			12	7	0	15.5	15.8	15.4	15.6	15.9	15.5
			12	13	0	15.5	15.8	15.5	15.6	15.9	15.5
			25	0	0	15.5	15.9	15.6	15.6	15.9	15.7

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

9.3.1 LTE Rel. 10 Carrier Aggregation

LTE Release 10 Carrier Aggregation

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

1) Max power results

Type	LTE CA combinations			PCC (UL)					SCC (DL)			LTE Rel 8	LTE Rel 10	Delta
	PCC	+	SCC	Mode	BW (MHz)	Channel	Freq. (MHz)	RB/Offset	BW (MHz)	Channel	Freq. (MHz)	Tx. Power [dBm]	Tx. Power [dBm]	
Intra Contiguous	7B			QPSK	15	21100	2535.0	1/0	5	3000	2645.0	23.98	23.80	-0.18
	7C			QPSK	15	21100	2535.0	1/0	15	2950	2640.0	23.98	23.78	-0.20
				QPSK	20	21100	2535.0	1/0	20	2900	2635.0	23.97	23.70	-0.27
	7C(1)			QPSK	10	21100	2535.0	1/49	20	2950	2640.0	23.99	23.80	-0.19
				QPSK	15	21100	2535.0	1/0	20	2925	2637.5	23.98	23.93	-0.05
				QPSK	20	21100	2535.0	1/0	20	2900	2635.0	23.97	23.70	-0.27
Intra Non-Contiguous	7A + 7A			QPSK	5	21100	2535.0	1/24	15	2825	2627.5	23.26	23.49	0.23
				QPSK	10	21100	2535.0	1/49	15	2825	2627.5	23.99	23.90	-0.09
				QPSK	15	21100	2535.0	1/0	20	2850	2630.0	23.98	23.63	-0.35
				QPSK	20	21100	2535.0	1/0	20	2850	2630.0	23.97	23.86	-0.11
	7A + 7A(1)			QPSK	10	21100	2535.0	1/49	20	2850	2630.0	23.99	23.86	-0.13
Inter Non-Contiguous	5A + 7A			QPSK	10	20525	836.5	1/0	20	3100	2655.0	23.58	23.30	-0.28
	5A + 7A(1)			QPSK	10	20525	836.5	1/0	20	3100	2655.0	23.58	23.30	-0.28
	7A + 5A			QPSK	10	21100	2535.0	1/49	10	2525	881.5	23.99	23.50	-0.49
	7A + 5A(1)			QPSK	10	21100	2535.0	1/49	10	2525	881.5	23.99	23.50	-0.49

2) Proximity sensor Reduction power results

Type	LTE CA combinations		PCC (UL)					SCC (DL)			LTE Rel 8	LTE Rel 10	Delta	
	PCC	+	SCC	Mode	BW (MHz)	Channel	Freq. (MHz)	RB/Offset	BW (MHz)	Channel	Freq. (MHz)	Tx. Power [dBm]		Tx. Power [dBm]
Intra Contiguous	7B			QPSK	15	21100	2535.0	1/37	5	3000	2645.0	12.13	12.06	-0.07
	7C		QPSK	15	21100	2535.0	1/37	15	2950	2640.0	12.13	11.85	-0.28	
			16QAM	20	21100	2535.0	1/0	20	2900	2635.0	12.11	11.70	-0.41	
	7C(1)		16QAM	10	21100	2535.0	1/49	20	2950	2640.0	12.15	11.80	-0.35	
			QPSK	15	21100	2535.0	1/37	20	2925	2637.5	12.13	11.86	-0.27	
			16QAM	20	21100	2535.0	1/0	20	2900	2635.0	12.11	11.70	-0.41	
Intra Non-Contiguous	7A	+	7A	16QAM	5	21100	2535.0	1/24	15	2825	2627.5	11.84	11.10	-0.74
				16QAM	10	21100	2535.0	1/49	15	2825	2627.5	12.15	11.85	-0.30
				QPSK	15	21100	2535.0	1/37	20	2850	2630.0	12.13	11.78	-0.35
				16QAM	20	21100	2535.0	1/49	20	2850	2630.0	12.16	11.90	-0.26
	7A	+	7A(1)	16QAM	20	21100	2535.0	1/49	20	2850	2630.0	12.16	11.90	-0.26
Inter Non-Contiguous	5A	+	7A	QPSK	10	20525	836.5	1/25	20	3100	2655.0	18.67	18.14	-0.53
	5A	+	7A(1)	QPSK	10	20525	836.5	1/25	20	3100	2655.0	18.67	18.14	-0.53
	7A	+	5A	16QAM	20	21100	2535.0	1/49	10	2525	881.5	12.16	12.21	0.05
	7A	+	5A(1)	16QAM	20	21100	2535.0	1/49	10	2525	881.5	12.16	12.21	0.05

3) IR sensor Reduction power results

Type	LTE CA combinations			PCC (UL)					SCC (DL)			LTE Rel 8 Tx. Power [dBm]	LTE Rel 10 Tx. Power [dBm]	Delta
	PCC	+	SCC	Mode	BW (MHz)	Channel	Freq. (MHz)	RB/Offset	BW (MHz)	Channel	Freq. (MHz)			
Intra Contiguous	7B			QPSK	15	21100	2535.0	1/0	5	3000	2645.0	12.19	12.05	-0.14
	7C			QPSK	15	21100	2535.0	1/0	15	2950	2640.0	12.19	11.86	-0.33
				QPSK	20	21100	2535.0	1/0	20	2900	2635.0	12.35	11.78	-0.57
	7C(1)			16QAM	10	21100	2535.0	25/0	20	2950	2640.0	12.23	11.87	-0.36
				QPSK	15	21100	2535.0	1/0	20	2925	2637.5	12.19	12.01	-0.18
				QPSK	20	21100	2535.0	1/0	20	2900	2635.0	12.35	11.78	-0.57
Intra Non- Contiguous	7A + 7A			16QAM	5	21100	2535.0	1/24	15	2825	2627.5	11.93	11.15	-0.78
				16QAM	10	21100	2535.0	25/0	15	2825	2627.5	12.23	12.01	-0.22
				QPSK	15	21100	2535.0	1/0	20	2850	2630.0	12.19	11.80	-0.39
				QPSK	20	21100	2535.0	1/0	20	2850	2630.0	12.35	11.91	-0.44
		7A	+	7A(1)	QPSK	20	21100	2535.0	1/0	20	2850	2630.0	12.35	11.91
Inter Non- Contiguous	5A	+	7A	QPSK	10	20525	836.5	1/25	20	3100	2655.0	18.64	18.13	-0.51
	5A	+	7A(1)	QPSK	10	20525	836.5	1/25	20	3100	2655.0	18.64	18.13	-0.51
	7A	+	5A	QPSK	20	21100	2535.0	1/0	10	2525	881.5	12.35	12.02	-0.33
	7A	+	5A(1)	QPSK	20	21100	2535.0	1/0	10	2525	881.5	12.35	12.02	-0.33

Note:

Per KDB 941225 D05A LTE Rel. 10 KDB Inquiry Sheet: SAR is excluded for Carrier Aggregation when measured power does not exceed LTE Release 8 by more than a $\frac{1}{4}$ dBm

9.4 Wi-Fi 2.4GHz (DTS Band)

Measured Results (Max Power)

Mode	Data Rate	Ch #	Freq. (MHz)	Avg Pwr (dBm)	Max Output Power (dBm)	SAR Test (Yes/No)
802.11b	1 Mbps	1	2412	17.1	17.5	Yes
		6	2437	17.1		
		11	2462	16.9		
		12	2467	7.9	8.5	No
		13	2472	7.8		
802.11g	6 Mbps	1	2412	Not Require	16.5	No
		6	2437			
		11	2462		8.5	
		12	2467		3.5	
		13	2472			
802.11n (HT20)	6.5 Mbps	1	2412	Not Require	16.5	No
		6	2437			
		11	2462		8.5	
		12	2467		2.5	
		13	2472			

Measured Results (Proximity sensor Reduction Power)

Mode	Data Rate	Ch #	Freq. (MHz)	Avg Pwr (dBm)	Max Output Power (dBm)	SAR Test (Yes/No)
802.11b	1 Mbps	1	2412	13.2	13.5	Yes
		6	2437	13.3		
		11	2462	13.1		
		12	2467	7.9	8.5	No
		13	2472	7.8		
802.11g	6 Mbps	1	2412	13.1	13.5	No
		6	2437	13.4		
		11	2462	13.2		
		12	2467	8.1	8.5	
		13	2472	3.4	3.5	
802.11n (HT20)	6.5 Mbps	1	2412	13.3	13.5	No
		6	2437	12.6		
		11	2462	13.5		
		12	2467	8.2	8.5	
		13	2472	2.5	2.5	

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.
- Additionally, SAR is not required for Channels 12 and 13 because the tune-up limit and the measured output power for these two channels are no greater than those for the default test channels.

9.5 Bluetooth

Maximum tune-up tolerance limit is 9.0 dBm from the rated nominal maximum output power. This power level qualifies for exclusion of SAR testing.

9.6 Wi-Fi 5GHz (U-NII Bands)

Measured Results

Antenna	Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Max Pwr.			Proximity sensor 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 Main	5.3 (U-NII 2A)	802.11a	6 Mbps	52	5260	12.1	12.5	Yes	Not Required	8.5	No	
				56	5280	12.2						
				60	5300	11.9						
				64	5320	12.0						
		802.11n (HT20)	6.5 Mbps	52	5260	Not Required	11.5	No		8.5	No	
				56	5280							
				60	5300							
				64	5320							
		802.11n (HT40)	13.5 Mbps	54	5270		11.5	No		8.5	No	
				62	5310							
		802.11ac (VHT20)	6.5 Mbps	52	5260		11.5	No		8.5	No	
				56	5280							
				60	5300							
				64	5320							
		802.11ac (VHT40)	13.5 Mbps	54	5270		11.5	No		8.5	No	
				62	5310							
		802.11ac (VHT80)	29.3 Mbps	58	5290		11.5	No		8.5	8.5	Yes
	5.5 (U-NII 2C)	802.11a	6 Mbps	100	5500	12.0	12.5	Yes	Not Required	8.5	No	
				120	5600	11.8						
				124	5620	11.9						
				144	5720	12.0						
		802.11n (HT20)	6.5 Mbps	100	5500	Not Required	11.5	No		8.5	No	
				120	5600							
				124	5620							
				144	5720							
		802.11n (HT40)	13.5 Mbps	102	5510		11.5	No		8.5	No	
				118	5590							
				126	5630							
				142	5710							
		802.11ac (VHT20)	6.5 Mbps	100	5500		11.5	No		8.5	No	
				120	5600							
				124	5620							
				144	5720							
		802.11ac (VHT40)	13.5 Mbps	102	5510		11.5	No		8.5	No	
				118	5590							
				126	5630							
				142	5710							
		802.11ac (VHT80)	29.3 Mbps	106	5530		11.5	No		8.4	8.5	Yes
				122	5610					8.2		
				138	5690					8.5		
	5.8 (U-NII 3)	802.11a	6 Mbps	149	5745	12.2	12.5	Yes	Not Required	8.5	No	
				157	5785	12.2						
				165	5825	12.1						
		802.11n (HT20)	6.5 Mbps	149	5745	Not Required	11.5	No		8.5	No	
				157	5785							
				165	5825							
		802.11n (HT40)	13.5 Mbps	151	5755		11.5	No		8.5	No	
				159	5795							
		802.11ac (VHT20)	6.5 Mbps	149	5745		11.5	No		8.5	No	
				157	5785							
				165	5825							
		802.11ac (VHT40)	13.5 Mbps	151	5755		11.5	No		8.5	No	
				159	5795							
		802.11ac (VHT80)	29.3 Mbps	155	5775		11.5	No		8.5	8.5	Yes

Note(s):

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

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

KDB 941225 D05 SAR for LTE Devices:

SAR must be measured with the maximum TTI(transmit time interval) supported by the device in each LTE configuration.

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.

KDB 248227 D01 SAR meas for 802.11:

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

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

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

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

10.1 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	32.0	31.2	0.592	0.714	1
				Left Tilt	190	836.6	32.0	31.2	0.442	0.533	
				Right Touch	190	836.6	32.0	31.2	0.459	0.553	
				Right Tilt	190	836.6	32.0	31.2	0.388	0.468	
Head VoIP	GPRS 4 Slots	On	0	Left Touch	190	836.6	26.5	26.0	0.430	0.486	
				Left Tilt	190	836.6	26.5	26.0	0.324	0.366	
				Right Touch	190	836.6	26.5	26.0	0.321	0.363	
				Right Tilt	190	836.6	26.5	26.0	0.271	0.306	
Body	GPRS 4 Slots	Off	15	Rear	190	836.6	29.0	28.0	0.446	0.558	2
			15	Edge 1	190	836.6	29.0	28.0	0.177	0.221	
			8	Corner	190	836.6	29.0	28.0	0.139	0.174	
			3	Edge 2	190	836.6	29.0	28.0	0.374	0.468	
			0	Edge 4	190	836.6	29.0	28.0	0.132	0.165	
			0	Rear	190	836.6	26.5	26.0	0.453	0.512	
	GPRS 4 Slots	On	0	Edge 1	190	836.6	26.5	26.0	0.130	0.147	
			0	Corner	190	836.6	26.5	26.0	0.162	0.183	
			0	Edge 2	190	836.6	26.5	26.0	0.256	0.289	

Additional test

RF Exposure Conditions	Mode	Pwr Back Off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Note
							Tune-up limit	Meas.	Meas.	Scaled	
Head	Voice	On	0	Left Touch	190	836.6	32.0	31.2	0.267	0.322	1
					190	836.6	32.0	31.3	0.570	0.665	2
Body	GPRS 4 Slots	Off	15	Rear	190	836.6	29.0	28.0	0.142	0.178	1

Note(s):

1. Protective cover (with S-pen) is in-box. So additional SAR test were performed highest reported SAR position in each exposure conditions.
2. For Pwr Back-off, All Head exposure conditions were tested using Proximity-sensor reduction mode and IR-sensor reduction was additional tested at highest SAR position in Head exposure condition.

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	25.0	24.1	0.236	0.289	3
				Left Tilt	661	1880.0	25.0	24.1	0.173	0.212	
				Right Touch	661	1880.0	25.0	24.1	0.118	0.145	
				Right Tilt	661	1880.0	25.0	24.1	0.105	0.129	
Head VoIP	GPRS 2 Slots	On	0	Left Touch	810	1909.8	20.5	20.2	0.219	0.234	
				Left Tilt	810	1909.8	20.5	20.2	0.162	0.173	
				Right Touch	810	1909.8	20.5	20.2	0.100	0.107	
				Right Tilt	810	1909.8	20.5	20.2	0.082	0.088	
Body	GPRS 2 Slots	Off	15	Rear	661	1880.0	29.5	29.0	0.355	0.398	
			15	Edge 1	661	1880.0	29.5	29.0	0.124	0.139	
			8	Corner	661	1880.0	29.5	29.0	0.206	0.231	
			3	Edge 2	661	1880.0	29.5	29.0	0.418	0.468	4
	GPRS 2 Slots	On	0	Rear	810	1909.8	20.5	20.2	0.396	0.423	
			0	Edge 1	810	1909.8	20.5	20.2	0.193	0.206	
			0	Corner	810	1909.8	20.5	20.2	0.066	0.071	
			0	Edge 2	810	1909.8	20.5	20.2	0.091	0.097	

Additional test

RF Exposure Conditions	Mode	Pwr Back Off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Note
							Tune-up limit	Meas.	Meas.	Scaled	
Head	Voice	On	0	Left Touch	661	1880.0	25.0	24.1	0.225	0.276	1
					661	1880.0	25.0	24.1	0.222	0.272	2
Body	GPRS 2 Slots	Off	3	Edge 2	661	1880.0	29.5	29.0	0.271	0.304	1

Note(s):

1. Protective cover (with S-pen) is in-box. So additional SAR test were performed highest reported SAR position in each exposure conditions.
2. For Pwr Back-off, All Head exposure conditions were tested using Proximity -sensor reduction mode and IR-sensor reduction was additional tested at highest SAR position in Head exposure condition.

10.3 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	13.1	0.210	0.287	5
				Left Tilt	9400	1880.0	14.5	13.1	0.154	0.210	
				Right Touch	9400	1880.0	14.5	13.1	0.096	0.131	
				Right Tilt	9400	1880.0	14.5	13.1	0.082	0.112	
Body	Rel 99 RMC	Off	15	Rear	9400	1880.0	23.5	23.0	0.450	0.509	
			15	Edge 1	9400	1880.0	23.5	23.0	0.162	0.183	
			8	Corner	9400	1880.0	23.5	23.0	0.249	0.282	
			3	Edge 2	9400	1880.0	23.5	23.0	0.474	0.536	6
		On	0	Rear	9400	1880.0	14.5	13.1	0.387	0.529	
			0	Edge 1	9400	1880.0	14.5	13.1	0.206	0.281	
			0	Corner	9400	1880.0	14.5	13.1	0.047	0.064	
			0	Edge 2	9400	1880.0	14.5	13.1	0.084	0.115	

Additional test

RF Exposure Conditions	Mode	Pwr back Off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Note
							Tune-up limit	Meas.	Meas.	Scaled	
Head	Rel 99 RMC	On	0	Left Touch	9400	1880.0	14.5	13.1	0.179	0.245	1
				Left Touch	9400	1880.0	14.5	13.5	0.208	0.264	2
Body	Rel 99 RMC	Off	3	Edge 2	9400	1880.0	23.5	23.0	0.314	0.355	1

Note(s):

1. Protective cover (with S-pen) is in-box. So additional SAR test were performed highest reported SAR position in each exposure conditions.
2. For Pwr Back-off, All Head exposure conditions were tested using Proximity -sensor reduction mode and IR-sensor reduction was additional tested at highest SAR position in Head exposure condition.

10.4 W-CDMA Band IV

RF Exposure Conditions	Mode	Pwr back Off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
							Tune-up limit	Meas.	Meas.	Scaled	
Head	Rel 99 RMC	On	0	Left Touch	1413	1732.6	15.5	14.0	0.205	0.292	7
				Left Tilt	1413	1732.6	15.5	14.0	0.186	0.265	
				Right Touch	1413	1732.6	15.5	14.0	0.122	0.174	
				Right Tilt	1413	1732.6	15.5	14.0	0.082	0.117	
Body	Rel 99 RMC	Off	15	Rear	1413	1732.6	23.5	22.6	0.275	0.340	
			15	Edge 1	1413	1732.6	23.5	22.6	0.310	0.383	
			8	Corner	1413	1732.6	23.5	22.6	0.185	0.229	
			3	Edge 2	1413	1732.6	23.5	22.6	0.370	0.457	
		On	0	Rear	1413	1732.6	15.5	14.0	0.514	0.733	8
			0	Edge 1	1413	1732.6	15.5	14.0	0.248	0.353	
			0	Corner	1413	1732.6	15.5	14.0	0.084	0.119	
			0	Edge 2	1413	1732.6	15.5	14.0	0.091	0.129	

Additional test

RF Exposure Conditions	Mode	Pwr back Off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Note
							Tune-up limit	Meas.	Meas.	Scaled	
Head	Rel 99 RMC	On	0	Left Touch	1413	1735.6	15.5	14.0	0.159	0.227	1
				Left Touch	1413	1735.6	15.5	14.0	0.183	0.259	2
Body	Rel 99 RMC	On	0	Rear	1413	1735.6	15.5	14.0	0.324	0.462	1

Note(s):

1. Protective cover (with S-pen) is in-box. So additional SAR test were performed highest reported SAR position in each exposure conditions.
2. For Pwr Back-off, All Head exposure conditions were tested using Proximity -sensor reduction mode and IR-sensor reduction was additional tested at highest SAR position in Head exposure condition.

10.5 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	20.5	20.0	0.461	0.520	9
				Left Tilt	4183	836.6	20.5	20.0	0.356	0.401	
				Right Touch	4183	836.6	20.5	20.0	0.352	0.397	
				Right Tilt	4183	836.6	20.5	20.0	0.287	0.324	
Body	Rel 99 RMC	Off	15	Rear	4183	836.6	24.0	23.2	0.492	0.585	
			15	Edge 1	4183	836.6	24.0	23.2	0.205	0.244	
			8	Corner	4183	836.6	24.0	23.2	0.184	0.219	
			3	Edge 2	4183	836.6	24.0	23.2	0.454	0.540	
		On	0	Rear	4183	836.6	20.5	20.0	0.577	0.651	10
			0	Edge 1	4183	836.6	20.5	20.0	0.183	0.206	
			0	Corner	4183	836.6	20.5	20.0	0.159	0.179	
			0	Edge 2	4183	836.6	20.5	20.0	0.247	0.278	

Additional test

RF Exposure Conditions	Mode	Pwr back Off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Note
							Tune-up limit	Meas.	Meas.	Scaled	
Head	Rel 99 RMC	On	0	Left Touch	4183	836.6	20.5	20.0	0.231	0.260	1
				Left Touch	4183	836.6	20.5	20.1	0.464	0.513	2
Body	Rel 99 RMC	On	0	Rear	4183	836.0	20.5	20.0	0.291	0.328	1

Note(s):

1. Protective cover (with S-pen) is in-box. So additional SAR test were performed highest reported SAR position in each exposure conditions.
2. For Pwr Back-off, All Head exposure conditions were tested using Proximity -sensor reduction mode and IR-sensor reduction was additional tested at highest SAR position in Head exposure condition.

10.6 LTE Band 2 (20MHz Bandwidth)

RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	On	0	Left Touch	18900	1880.0	1	0	15.0	13.5	0.202	0.287	11
							50	0	15.0	13.6	0.208	0.289	
				Left Tilt	18900	1880.0	1	0	15.0	13.5	0.154	0.219	
							50	0	15.0	13.6	0.156	0.217	
				Right Touch	18900	1880.0	1	0	15.0	13.5	0.098	0.139	
							50	0	15.0	13.6	0.098	0.135	
				Right Tilt	18900	1880.0	1	0	15.0	13.5	0.084	0.120	
							50	0	15.0	13.6	0.087	0.120	
				Rear	18900	1880.0	1	0	23.5	22.7	0.440	0.526	
							50	0	22.5	21.7	0.345	0.411	
Body	QPSK	Off	15	Edge 1	18900	1880.0	1	0	23.5	22.7	0.141	0.169	12
							50	0	22.5	21.7	0.115	0.137	
			8	Corner	18900	1880.0	1	0	23.5	22.7	0.241	0.288	
							50	0	22.5	21.7	0.197	0.234	
			3	Edge 2	18900	1880.0	1	0	23.5	22.7	0.497	0.594	
							50	0	22.5	21.7	0.386	0.459	
	QPSK	On	0	Rear	18900	1880.0	1	0	15.0	13.5	0.424	0.603	
							50	0	15.0	13.6	0.416	0.578	
			0	Edge 1	18900	1880.0	1	0	15.0	13.5	0.214	0.304	
							50	0	15.0	13.6	0.218	0.303	
			0	Corner	18900	1880.0	1	0	15.0	13.5	0.044	0.063	
							50	0	15.0	13.6	0.054	0.075	
			0	Edge 2	18900	1880.0	1	0	15.0	13.5	0.095	0.134	
							50	0	15.0	13.6	0.090	0.125	

Additional test

RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Note
									Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	On	0	Left Touch	18900	1880.0	50	0	15.0	13.6	0.207	0.288	1
							50	0	15.0	14.0	0.208	0.263	2
Body	QPSK	On	0	Rear	18900	1880.0	1	0	15.0	13.5	0.337	0.479	1

Note(s):

1. Protective cover (with S-pen) is in-box. So additional SAR test were performed highest reported SAR position in each exposure conditions.
2. For Pwr Back-off, All Head exposure conditions were tested using Proximity -sensor reduction mode and IR-sensor reduction was additional tested at highest SAR position in Head exposure condition.

10.7 LTE Band 4 (20MHz Bandwidth)

RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	On	0	Left Touch	20175	1732.5	1	99	14.0	13.2	0.152	0.181	13
							50	50	14.0	13.1	0.163	0.200	
				Left Tilt	20175	1732.5	1	99	14.0	13.2	0.138	0.165	
							50	50	14.0	13.1	0.135	0.165	
				Right Touch	20175	1732.5	1	99	14.0	13.2	0.078	0.093	
							50	50	14.0	13.1	0.077	0.095	
				Right Tilt	20175	1732.5	1	99	14.0	13.2	0.062	0.074	
							50	50	14.0	13.1	0.060	0.073	
Body	QPSK	Off	15	Rear	20175	1732.5	1	99	24.0	23.2	0.345	0.414	14
							50	50	23.0	22.1	0.264	0.325	
			15	Edge 1	20175	1732.5	1	99	24.0	23.2	0.358	0.430	
							50	50	23.0	22.1	0.270	0.332	
			8	Corner	20175	1732.5	1	99	24.0	23.2	0.236	0.283	
							50	50	23.0	22.1	0.183	0.225	
			3	Edge 2	20175	1732.5	1	99	24.0	23.2	0.537	0.644	
							50	50	23.0	22.1	0.424	0.522	
	QPSK	On	0	Rear	20175	1732.5	1	99	14.0	13.2	0.365	0.436	
							50	50	14.0	13.1	0.360	0.441	
			0	Edge 1	20175	1732.5	1	99	14.0	13.2	0.196	0.234	
							50	50	14.0	13.1	0.202	0.247	
			0	Corner	20175	1732.5	1	99	14.0	13.2	0.069	0.082	
							50	50	14.0	13.1	0.058	0.071	
			0	Edge 2	20175	1732.5	1	99	14.0	13.2	0.074	0.088	
							50	50	14.0	13.1	0.074	0.091	

Additional test

RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Note
									Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	On	0	Left Touch	20175	1732.5	50	50	14.0	13.1	0.157	0.192	1
							50	50	14.0	13.1	0.149	0.184	2
Body	QPSK	Off	3	Edge 2	20175	1732.5	1	99	24.0	23.2	0.271	0.325	1

Note(s):

1. Protective cover (with S-pen) is in-box. So additional SAR test were performed highest reported SAR position in each exposure conditions.
2. For Pwr Back-off, All Head exposure conditions were tested using Proximity -sensor reduction mode and IR-sensor reduction was additional tested at highest SAR position in Head exposure condition.

10.8 LTE Band 5 (10MHz Bandwidth)

RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	On	0	Left Touch	20525	836.5	1	25	19.0	18.7	0.329	0.355	15
							25	0	19.0	18.5	0.335	0.373	
				Left Tilt	20525	836.5	1	25	19.0	18.7	0.256	0.276	
							25	0	19.0	18.5	0.259	0.288	
				Right Touch	20525	836.5	1	25	19.0	18.7	0.233	0.251	
							25	0	19.0	18.5	0.238	0.265	
				Right Tilt	20525	836.5	1	25	19.0	18.7	0.198	0.214	
							25	0	19.0	18.5	0.195	0.217	
Body	QPSK	Off	15	Rear	20525	836.5	1	0	24.0	23.6	0.578	0.637	16
							25	0	23.0	22.5	0.444	0.500	
			15	Edge 1	20525	836.5	1	0	24.0	23.6	0.224	0.247	
							25	0	23.0	22.5	0.177	0.199	
			8	Corner	20525	836.5	1	0	24.0	23.6	0.190	0.209	
							25	0	23.0	22.5	0.126	0.142	
			3	Edge 2	20525	836.5	1	0	24.0	23.6	0.489	0.539	
							25	0	23.0	22.5	0.369	0.415	
	QPSK	On	0	Rear	20525	836.5	1	25	19.0	18.7	0.412	0.444	
							25	0	19.0	18.5	0.411	0.457	
			0	Edge 1	20525	836.5	1	25	19.0	18.7	0.129	0.139	
							25	0	19.0	18.5	0.127	0.141	
			0	Corner	20525	836.5	1	25	19.0	18.7	0.124	0.134	
							25	0	19.0	18.5	0.124	0.138	
			0	Edge 2	20525	836.5	1	25	19.0	18.7	0.165	0.178	
							25	0	19.0	18.5	0.165	0.184	

Additional test

RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Note
									Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	On	0	Left Touch	20525	836.5	25	0	19.0	18.5	0.173	0.193	1
							25	0	19.0	18.5	0.331	0.367	2
Body	QPSK	Off	15	Rear	20525	836.5	1	0	24.0	23.6	0.218	0.240	1

Note(s):

1. Protective cover (with S-pen) is in-box. So additional SAR test were performed highest reported SAR position in each exposure conditions.
2. For Pwr Back-off, All Head exposure conditions were tested using Proximity -sensor reduction mode and IR-sensor reduction was additional tested at highest SAR position in Head exposure condition.

10.9 LTE Band 7 (20MHz Bandwidth)

RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	On	0	Left Touch	21100	2535.0	1	0	12.5	12.1	0.190	0.210	17
							50	0	12.5	12.1	0.187	0.207	
				Left Tilt	21100	2535.0	1	0	12.5	12.1	0.178	0.197	
							50	0	12.5	12.1	0.173	0.192	
				Right Touch	21100	2535.0	1	0	12.5	12.1	0.036	0.040	
							50	0	12.5	12.1	0.034	0.037	
Body	QPSK	Off	15	Rear	21100	2535.0	1	0	24.0	24.0	0.704	0.709	18
							50	0	23.0	22.9	0.566	0.573	
			15	Edge 1	21100	2535.0	1	0	24.0	24.0	0.562	0.566	
							50	0	23.0	22.9	0.419	0.424	
			8	Corner	21100	2535.0	1	0	24.0	24.0	0.459	0.462	
							50	0	23.0	22.9	0.357	0.362	
			3	Edge 2	21100	2535.0	1	0	24.0	24.0	0.587	0.591	
							50	0	23.0	22.9	0.464	0.470	
	QPSK	On	0	Rear	21100	2535.0	1	0	12.5	12.1	0.596	0.658	
							50	0	12.5	12.1	0.577	0.640	
			0	Edge 1	21100	2535.0	1	0	12.5	12.1	0.427	0.472	
							50	0	12.5	12.1	0.415	0.460	
			0	Corner	21100	2535.0	1	0	12.5	12.1	0.114	0.126	
							50	0	12.5	12.1	0.100	0.111	
			0	Edge 2	21100	2535.0	1	0	12.5	12.1	0.062	0.069	
							50	0	12.5	12.1	0.064	0.071	

Additional test

RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Note
									Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	On	0	Left Touch	21100	2535.0	1	0	12.5	12.1	0.121	0.134	1
							1	0	12.5	12.4	0.202	0.209	2
Body	QPSK	Off	15	Rear	21100	2535.0	1	0	24.0	24.0	0.660	0.665	1

Note(s):

1. Protective cover (with S-pen) is in-box. So additional SAR test were performed highest reported SAR position in each exposure conditions.
2. For Pwr Back-off, All Head exposure conditions were tested using Proximity -sensor reduction mode and IR-sensor reduction was additional tested at highest SAR position in Head exposure condition.

10.10. LTE Band 17 (10MHz Bandwidth)

RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	On	0	Left Touch	23790	710.0	1	0	20.0	19.6	0.368	0.399	19
							25	25	20.0	19.5	0.348	0.387	
				Left Tilt	23790	710.0	1	0	20.0	19.6	0.314	0.341	
							25	25	20.0	19.5	0.301	0.335	
				Right Touch	23790	710.0	1	0	20.0	19.6	0.212	0.230	
							25	25	20.0	19.5	0.210	0.233	
				Right Tilt	23790	710.0	1	0	20.0	19.6	0.175	0.190	
							25	25	20.0	19.5	0.174	0.193	
Body	QPSK	Off	15	Rear	23790	710.0	1	49	24.0	23.5	0.304	0.343	
							25	25	23.0	22.4	0.213	0.244	
			15	Edge 1	23790	710.0	1	49	24.0	23.5	0.136	0.154	
							25	25	23.0	22.4	0.107	0.123	
			8	Corner	23790	710.0	1	49	24.0	23.5	0.050	0.056	
							25	25	23.0	22.4	0.040	0.045	
			3	Edge 2	23790	710.0	1	49	24.0	23.5	0.161	0.182	
							25	25	23.0	22.4	0.151	0.173	
	QPSK	On	0	Rear	23790	710.0	1	0	20.0	19.6	0.605	0.657	20
							25	25	20.0	19.5	0.574	0.638	
			0	Edge 1	23790	710.0	1	0	20.0	19.6	0.265	0.288	
							25	25	20.0	19.5	0.253	0.281	
			0	Corner	23790	710.0	1	0	20.0	19.6	0.148	0.161	
							25	25	20.0	19.5	0.139	0.155	
			0	Edge 2	23790	710.0	1	0	20.0	19.6	0.159	0.173	
							25	25	20.0	19.5	0.157	0.175	

Additional test

RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Note
									Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	On	0	Left Touch	23790	710.0	1	0	20.0	19.6	0.234	0.254	1
							1	0	20.0	19.6	0.348	0.379	2
Body	QPSK	On	0	Rear	23790	710.0	1	0	20.0	19.6	0.345	0.374	1

Note(s):

1. Protective cover (with S-pen) is in-box. So additional SAR test were performed highest reported SAR position in each exposure conditions.
2. For Pwr Back-off, All Head exposure conditions were tested using Proximity -sensor reduction mode and IR-sensor reduction was additional tested at highest SAR position in Head exposure condition.

10.11. LTE Band 38 (20MHz Bandwidth)

RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	On	0	Left Touch	38000	2595.0	1	0	16.5	16.3	0.222	0.232	21
							50	0	16.5	16.3	0.223	0.235	
				Left Tilt	38000	2595.0	1	0	16.5	16.3	0.212	0.222	
							50	0	16.5	16.3	0.203	0.214	
				Right Touch	38000	2595.0	1	0	16.5	16.3	0.043	0.045	
							50	0	16.5	16.3	0.043	0.045	
Body	QPSK	Off	15	Rear	38000	2595.0	1	0	24.0	23.5	0.386	0.436	22
							50	0	23.0	22.4	0.295	0.337	
			15	Edge 1	38000	2595.0	1	0	24.0	23.5	0.204	0.230	
							50	0	23.0	22.4	0.164	0.187	
			8	Corner	38000	2595.0	1	0	24.0	23.5	0.224	0.253	
							50	0	23.0	22.4	0.180	0.206	
	QPSK	On	3	Edge 2	38000	2595.0	1	0	24.0	23.5	0.377	0.425	
							50	0	23.0	22.4	0.300	0.343	
			0	Rear	38000	2595.0	1	0	16.5	16.3	0.761	0.797	
							50	0	16.5	16.3	0.741	0.780	
			0	Edge 1	38000	2595.0	1	0	16.5	16.3	0.513	0.537	
							50	0	16.5	16.3	0.497	0.523	
			0	Corner	38000	2595.0	1	0	16.5	16.3	0.131	0.137	
							50	0	16.5	16.3	0.143	0.150	
			0	Edge 2	38000	2595.0	1	0	16.5	16.3	0.127	0.133	
							50	0	16.5	16.3	0.129	0.136	

Additional test

RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Note
									Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	On	0	Left Touch	38000	2595.0	50	0	16.5	16.3	0.165	0.174	1
							50	0	16.5	16.3	0.223	0.232	2
Body	QPSK	On	0	Rear	38000	2595.0	1	0	16.5	16.3	0.457	0.479	1

Note(s):

1. Protective cover (with S-pen) is in-box. So additional SAR test were performed highest reported SAR position in each exposure conditions.
2. For Pwr Back-off, All Head exposure conditions were tested using Proximity -sensor reduction mode and IR-sensor reduction was additional tested at highest SAR position in Head exposure condition.

10.12. Wi-Fi (DTS Band)

Frequency Band	Mode	RF Exposure Conditions	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Power (dBm)		1-g SAR (W/kg)		Note	Plot No.
									Tune-up limit	Meas.	Meas.	Scaled		
2.4GHz	802.11b 1 Mbps	Head	Off	0	Left Touch	6	2437.0	0.418	17.5	17.1	0.355	0.391	4	
					Left Tilt	6	2437.0	0.330	17.5	17.1	0.274	0.302	4	
					Right Touch	1	2412.0	1.005	17.5	17.1	0.858	0.952	3	
						6	2437.0	1.007	17.5	17.1	0.878	0.967		23
					Righttt Tilt	6	2437.0	0.832	17.5	17.1	0.719	0.792	2	
		Body	Off	5	Rear	6	2437.0	0.838	17.5	17.1	0.723	0.796		24
				2	Edge 1	6	2437.0	0.365	17.5	17.1	0.353	0.389	2	
				0	Edge 4	6	2437.0	0.212	17.5	17.1				
			On	0	Rear	6	2437.0	1.127	13.5	13.3	0.734	0.776		
				0	Edge 1	6	2437.0	0.281	13.5	13.3	0.212	0.224	2	

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 Head 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.

Additional test

Frequency Band	Mode	RF Exposure Conditions	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Note
								Tune-up limit	Meas.	Meas.	Scaled	
2.4GHz	802.11b 1 Mbps	Head	Off	0	Right Touch	6	2437.0	17.5	17.1	0.728	0.802	1
		Body	Off	5	Rear	6	2437.0	17.5	17.1	0.369	0.406	1

Note(s):

1. Protective cover (with S-pen) is in-box. So additional SAR test were performed highest reported SAR position in each exposure conditions.

10.13. Wi-Fi (U-NII Band)

Frequency Band	Mode	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)		Note	Plot No.
									Tune-up limit	Meas.	Meas.	Scaled		
5.3 GHz U-NII 2A	802.11a 6 Mbps	Head	Off	0	Left Touch	56	5280.0	0.454	12.5	12.2				
					Left Tilt	56	5280.0	0.454	12.5	12.2				
					Right Touch	56	5280.0	0.823	12.5	12.2	0.314	0.339	1	25
					Right Tilt	56	5280.0	0.743	12.5	12.2				
	802.11a 6 Mbps	Body	Off	5	Rear	56	5280.0	0.786	12.5	12.2	0.352	0.380	2	
				2	Edge 1	56	5280.0	1.637	12.5	12.2	0.682	0.736		26
	802.11ac 29.3 Mbps (VHT80)	Body	On	0	Rear	58	5290.0	1.173	8.5	8.5	0.611	0.611		
				0	Edge 1	58	5290.0	0.915	8.5	8.5	0.408	0.408	2	
Frequency Band	Mode	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)		Note	Plot No.
									Tune-up limit	Meas.	Meas.	Scaled		
5.5 GHz U-NII 2C	802.11a 6 Mbps	Head	Off	0	Left Touch	100	5500.0	0.482	12.5	12.0				
					Left Tilt	100	5500.0	0.516	12.5	12.0				
					Right Touch	100	5500.0	1.048	12.5	12.0	0.365	0.411		27
					Right Tilt	100	5500.0	0.800	12.5	12.0	0.327	0.369	2	
	802.11a 6 Mbps	Body	Off	5	Rear	100	5500.0	1.051	12.5	12.0	0.462	0.521	2	
				2	Edge 1	100	5500.0	1.597	12.5	12.0	0.650	0.733		28
	802.11ac 29.3 Mbps (VHT80)	Body	On	0	Rear	138	5690.0	1.170	8.5	8.5	0.662	0.662		
				0	Edge 1	138	5690.0	0.910	8.5	8.5	0.389	0.389	2	
Frequency Band	Mode	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)		Note	Plot No.
									Tune-up limit	Meas.	Meas.	Scaled		
5.8 GHz U-NII 3	802.11a 6 Mbps	Head	Off	0	Left Touch	149	5745.0	0.794	12.5	12.2				
					Left Tilt	149	5745.0	0.784	12.5	12.2				
					Right Touch	149	5745.0	1.220	12.5	12.2	0.460	0.493		29
					Right Tilt	149	5745.0	1.074	12.5	12.2	0.420	0.450	2	
	802.11a 6 Mbps	Body	Off	5	Rear	149	5745.0	0.856	12.5	12.2	0.372	0.399	2	
				2	Edge 1	149	5745.0	1.734	12.5	12.2	0.641	0.687		30
	802.11ac 29.3 Mbps (VHT80)	Body	On	0	Rear	155	5775.0	1.130	8.5	8.5	0.564	0.564		
				0	Edge 1	155	5775.0	1.023	8.5	8.5	0.339	0.339	2	

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.

Additional test

Frequency Band	Mode	RF Exposure Conditions	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Note
								Tune-up limit	Meas.	Meas.	Scaled	
5.3 GHz U-NII 2A	802.11a 6 Mbps	Head	Off	0	Right Touch	56	5280.0	12.5	12.2	0.167	0.180	1
		Body	Off	2	Edge 1	56	5280.0	12.5	12.2	0.061	0.066	1
5.5 GHz U-NII 2C	802.11a 6 Mbps	Head	Off	0	Right Touch	100	5500.0	12.5	12.0	0.203	0.229	1
		Body	Off	2	Edge 1	100	5500.0	12.5	12.0	0.067	0.075	1
5.8 GHz U-NII 3	802.11a 6 Mbps	Head	Off	0	Right Touch	100	5500.0	12.5	12.2	0.300	0.321	1
		Body	Off	2	Edge 1	100	5500.0	12.5	12.2	0.103	0.110	1

Note(s):

1. Protective cover (with S-pen) is in-box. So additional SAR test were performed highest reported SAR position in each exposure conditions.

10.14. Bluetooth

Standalone SAR Test Exclusion Considerations & Estimated SAR

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$, for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- $f_{(\text{GHz})}$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

When the standalone SAR test exclusion is applied to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

- $(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm}) \cdot [f_{(\text{GHz})}/x]$ W/kg for test separation distances ≤ 50 mm;
where $x = 7.5$ for 1-g SAR, and $x = 18.75$ for 10-g SAR.
- 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the test separation distances is > 50 mm.

Head Exposure Conditions

Max. tune-up tolerance limit		Min. test separation distance (mm)	Frequency (GHz)	SAR test exclusion Result*	Test Configuration	Estimated 1-g SAR (W/kg)
(dBm)	(mW)					
9.0	8	5	2.480	2.5	Head	0.336

Conclusion:

*: The computed value is < 3 ; therefore, Bluetooth qualifies for Standalone SAR test exclusion.

Body Exposure Conditions

Antennas < 50 mm to adjacent edges

Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)						Calculated Threshold Value					
		dBm	mW	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front
Bluetooth	2480	9.00	8	2	4	89	201	28		2.5 -EXEMPT-	2.5 -EXEMPT-	> 50 mm	> 50 mm	0.4 -EXEMPT-	

Note(s):

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

Antennas > 50 mm to adjacent edges

Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)						Calculated Threshold Value					
		dBm	mW	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front
Bluetooth	2480	9.00	8	2	4	89	201	28		< 50 mm	< 50 mm	485.3 mW -EXEMPT-	1605.3 mW -EXEMPT-	< 50 mm	

Note(s):

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

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)	First Repeated	
						Measured SAR (W/kg)	Largest to Smallest SAR Ratio
750	LTE Band 17	Body	Rear	No	0.605	N/A	N/A
850	GSM 850	Head	Left Touch	No	0.592	N/A	N/A
	WCDMA Band V	Body	Rear	No	0.577	N/A	N/A
	LTE Band 5	Body	Rear	No	0.578	N/A	N/A
1750	WCDMA Band IV	Body	Rear	No	0.514	N/A	N/A
	LTE Band 4	Body	Edge 2	No	0.537	N/A	N/A
1900	GSM 1900	Body	Edge 2	No	0.418	N/A	N/A
	WCDMA Band II	Body	Edge 2	No	0.474	N/A	N/A
	LTE Band 2	Body	Edge 2	No	0.497	N/A	N/A
2400	Wi-Fi 802.11b/g/n	Head	Right Touch	Yes	0.878	0.899	1.02
2600	LTE Band 7	Body	Rear	No	0.704	N/A	N/A
	LTE Band 38	Body	Rear	No	0.761	N/A	N/A
5300	Wi-Fi 802.11a/n/ac	Body	Edge 1	No	0.682	N/A	N/A
5500	Wi-Fi 802.11a/n/ac	Body	Rear	No	0.662	N/A	N/A
5800	Wi-Fi 802.11a/n/ac	Body	Edge 1	No	0.641	N/A	N/A

Note(s):

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

12 Simultaneous Transmission SAR Analysis

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

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

Where:

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

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

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

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

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

Simultaneous Transmission Condition

RF Exposure Condition	Item	Capable Transmit Configurations		
Head	1	GSM(Voice/GPRS/EDGE)	+	DTS
	2	GSM(Voice/GPRS/EDGE)	+	U-NII
	3	GSM(Voice/GPRS/EDGE)	+	BT
	4	W-CDMA	+	DTS
	5	W-CDMA	+	U-NII
	6	W-CDMA	+	BT
	7	LTE	+	DTS
	8	LTE	+	U-NII
	9	LTE	+	BT
Body	10	GSM(GPRS/EDGE)	+	DTS
	11	GSM(GPRS/EDGE)	+	U-NII
	12	GSM(GPRS/EDGE)	+	BT
	13	W-CDMA	+	DTS
	14	W-CDMA	+	U-NII
	15	W-CDMA	+	BT
	16	LTE	+	DTS
	17	LTE	+	U-NII
	18	LTE	+	BT

Notes:

1. DTS and UNII (Ch.149 - Ch.165) supports Hotspot.
2. DTS and UNII (Ch.36 - Ch.48, Ch.149 - Ch.165) supports Wi-Fi Direct.
3. GPRS/EDGE, CDMA, W-CDMA and LTE support Hotspot.
4. VoIP is supported in GPRS/EDGE, CDMA, W-CDMA and LTE.
5. DTS Radio cannot transmit simultaneously with Bluetooth Radio.
6. U-NII Radio cannot transmit simultaneously with Bluetooth Radio.
7. U-NII Radio cannot transmit simultaneously with DTS Radio.
8. BT tethering mode are considered in RF exposure conditions

Estimated SAR for Simultaneous Transmission SAR Analysis

Considerations for SAR estimation

- When standalone SAR test exclusion applies, standalone SAR must also be estimated to determine simultaneous transmission SAR test exclusion.
- 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
- 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	Corner	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Corner
Full Power, Proximity Sensor Off																
Cellular	GPRS 4 Slots	848.8	29.00	397	2	4	8	195	83	6.4	-MEA SURE	-MEA SURE	-MEA SURE	0.400	-MEA SURE	-MEA SURE
Cellular	GPRS 2 Slots	1909.8	29.50	223	2	4	8	195	83	6.4	-MEA SURE	-MEA SURE	-MEA SURE	0.400	0.400	-MEA SURE
Cellular	W-CDMA II	1907.6	23.50	224	2	4	8	195	83	6.4	-MEA SURE	-MEA SURE	-MEA SURE	0.400	0.400	-MEA SURE
Cellular	W-CDMA IV	1752.6	23.50	224	2	4	8	195	83	6.4	-MEA SURE	-MEA SURE	-MEA SURE	0.400	0.400	-MEA SURE
Cellular	W-CDMA V	846.6	24.00	251	2	4	8	195	83	6.4	-MEA SURE	-MEA SURE	-MEA SURE	0.400	0.400	-MEA SURE
Cellular	LTE Band 2	1900	23.50	224	2	4	8	195	83	6.4	-MEA SURE	-MEA SURE	-MEA SURE	0.400	0.400	-MEA SURE
Cellular	LTE Band 4	1732.5	24.00	251	2	4	8	195	83	6.4	-MEA SURE	-MEA SURE	-MEA SURE	0.400	0.400	-MEA SURE
Cellular	LTE Band 5	836.5	24.00	251	2	4	8	195	83	6.4	-MEA SURE	-MEA SURE	-MEA SURE	0.400	0.400	-MEA SURE
Cellular	LTE Band 7	2560	24.00	251	2	4	8	195	83	6.4	-MEA SURE	-MEA SURE	-MEA SURE	0.400	0.400	-MEA SURE
Cellular	LTE Band 17	710	24.00	251	2	4	8	195	83	6.4	-MEA SURE	-MEA SURE	-MEA SURE	0.400	0.400	-MEA SURE
Cellular	LTE Band 38	2595	24.00	251	2	4	8	195	83	6.4	-MEA SURE	-MEA SURE	-MEA SURE	0.400	0.400	-MEA SURE
Power Back-off, Proximity Sensor On																
Cellular	GPRS 4 Slots	848.8	26.50	223	2	4	8			6.4	-MEA SURE	-MEA SURE	-MEA SURE			-MEA SURE
Cellular	GPRS 2 Slots	1909.8	20.50	28	2	4	8			6.4	-MEA SURE	-MEA SURE	-MEA SURE			-MEA SURE
Cellular	W-CDMA II	1907.6	14.50	28	2	4	8			6.4	-MEA SURE	-MEA SURE	-MEA SURE			-MEA SURE
Cellular	W-CDMA IV	1752.6	15.50	35	2	4	8			6.4	-MEA SURE	-MEA SURE	-MEA SURE			-MEA SURE
Cellular	W-CDMA V	846.6	20.50	112	2	4	8			6.4	-MEA SURE	-MEA SURE	-MEA SURE			-MEA SURE
Cellular	LTE Band 2	1900	15.00	32	2	4	8			6.4	-MEA SURE	-MEA SURE	-MEA SURE			-MEA SURE
Cellular	LTE Band 4	1732.5	14.00	25	2	4	8			6.4	-MEA SURE	-MEA SURE	-MEA SURE			-MEA SURE
Cellular	LTE Band 5	836.5	19.00	79	2	4	8			6.4	-MEA SURE	-MEA SURE	-MEA SURE			-MEA SURE
Cellular	LTE Band 7	2560	12.50	18	2	4	8			6.4	-MEA SURE	-MEA SURE	-MEA SURE			-MEA SURE
Cellular	LTE Band 17	710	20.00	100	2	4	8			6.4	-MEA SURE	-MEA SURE	-MEA SURE			-MEA SURE
Cellular	LTE Band 38	2595	16.50	45	2	4	8			6.4	-MEA SURE	-MEA SURE	-MEA SURE			-MEA SURE

Estimated SAR for WLAN

Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)						Estimated 1-g SAR Value (W/kg)					
		dBm	mW	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front
Full Power, Proximity Sensor Off															
Wi-Fi 2.4 GHz	2462	17.50	56	2	4	89	201	28		-MEA SURE	-MEA SURE	0.400	0.400	-MEA SURE	
Wi-Fi 5.3 GHz	5320	12.50	18	2	4	89	201	28		-MEA SURE	-MEA SURE	0.400	0.400	0.198	
Wi-Fi 5.5 GHz	5720	12.50	18	2	4	89	201	28		-MEA SURE	-MEA SURE	0.400	0.400	0.205	
Wi-Fi 5.8 GHz	5825	12.50	18	2	4	89	201	28		-MEA SURE	-MEA SURE	0.400	0.400	0.207	
Bluetooth	2480	9.00	8	2	4	89	201	28		0.336	0.336	0.400	0.400	0.060	
Power Back-off, Proximity Sensor On															
Wi-Fi 2.4 GHz	2462	13.5	22	2	4					-MEA SURE	-MEA SURE				
Wi-Fi 5.3 GHz	5320	8.5	7	2	4					-MEA SURE	-MEA SURE				
Wi-Fi 5.5 GHz	5720	8.5	7	2	4					-MEA SURE	-MEA SURE				
Wi-Fi 5.8 GHz	5825	8.5	7	2	4					-MEA SURE	-MEA SURE				

12.1 Sum of the SAR for WWAN & Wi-Fi & BT

RF Exposure conditions	Test position	① WWAN	② DTS	③ U-NII	④ BT	① + ② WWAN + DTS		① + ③ WWAN + U-NII		① + ④ WWAN + BT	
						Σ 1-g SAR (mW/g)	SPLSR (Yes/ No)	Σ 1-g SAR (mW/g)	SPLSR (Yes/ No)	Σ 1-g SAR (mW/g)	SPLSR (Yes/ No)
Head	Left Touch	0.714	0.391	0.493	0.336	1.105	No	1.207	No	1.050	No
	Left Tilt	0.533	0.302	0.493	0.336	0.835	No	1.026	No	0.869	No
	Right Touch	0.553	0.967	0.493	0.336	1.520	No	1.046	No	0.889	No
	Right Tilt	0.468	0.792	0.493	0.336	1.260	No	0.961	No	0.804	No
Body	All position	0.797	0.796	0.736	0.400	1.593	No	1.533	No	1.197	No

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.

Appendixes

Refer to separated files for the following appendixes.

4788060215-S1V2 FCC Report SAR_App A_Photos & Ant. Locations

4788060215-S1V2 FCC Report SAR_App B_Highest SAR Test Plots

4788060215-S1V2 FCC Report SAR_App C_System Check Plots

4788060215-S1V2 FCC Report SAR_App D_SAR Tissue Ingredients

4788060215-S1V2 FCC Report SAR_App E_Probe Cal. Certificates

4788060215-S1V2 FCC Report SAR_App F_Dipole Cal. Certificates

END OF REPORT