



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

SAR EVALUATION REPORT

FOR

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

MODEL NUMBER: SM-A605GN/DS, SM-A605GN

FCC ID: A3LSMA605GN

REPORT NUMBER: 4788371689-S1V1

ISSUE DATE: 3/26/2018

Prepared for
**SAMSUNG ELECTRONICS CO., LTD.
129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI,
GYEONGGI-DO, 16677, KOREA**

Prepared by
**UL Korea, Ltd.
26th floor, 152, Teheran-ro, Gangnam-gu Seoul, 06236, Korea**

**Suwon Test Site: UL Korea, Ltd. Suwon Laboratory
218 Maeyeong-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16675, Korea
TEL: (031) 337-9902
FAX: (031) 213-5433**



TL-637

Revision History

Rev.	Date	Revisions	Revised By
V1	3/26/2018	Initial Issue	Sunghoon Kim

Table of Contents

1.	Attestation of Test Results	6
2.	Test Specification, Methods and Procedures.....	7
3.	Facilities and Accreditation	7
4.	SAR Measurement System & Test Equipment	8
4.1.	SAR Measurement System.....	8
4.2.	SAR Scan Procedures.....	9
4.3.	Test Equipment.....	11
5.	Measurement Uncertainty.....	12
6.	Device Under Test (DUT) Information	12
6.1.	DUT Description	12
6.2.	Wireless Technologies.....	13
6.3.	Nominal and Maximum Output Power.....	14
6.4.	General LTE SAR Test and Reporting Considerations.....	16
6.5.	LTE Carrier Aggregation	18
6.6.	LTE (TDD) Considerations.....	19
6.7.	Power Reduction by Proximity Sensing	20
6.7.1.	Proximity Sensor Triggering Distance (KDB 616217 §6.2).....	20
6.7.2.	Proximity Sensor Coverage (KDB 616217 §6.3)	33
6.7.3.	Proximity Sensor Tilt Angle Assessment (KDB 616217 §6.4).....	33
6.7.4.	Resulting test positions for SAR measurements	34
7	RF Exposure Conditions (Test Configurations).....	35
8	Dielectric Property Measurements & System Check	36
8.1	Dielectric Property Measurements.....	36
8.2	System Check.....	41
9	Conducted Output Power Measurements.....	45
9.1	GSM	45
9.2	W-CDMA	47
9.3	LTE.....	53
9.3.1	LTE Rel. 10 Carrier Aggregation.....	79
9.4	Wi-Fi 2.4 GHz (DTS Band).....	81
9.5	Wi-Fi 5GHz (U-NII Bands).....	82
9.6	Bluetooth	83
10.	Measured and Reported (Scaled) SAR Results.....	84

10.1	GSM 850	86
10.2	GSM1900	86
10.3	W-CDMA Band II	87
10.4	W-CDMA Band IV.....	88
10.5	W-CDMA Band V.....	88
10.6	LTE Band 2 (20MHz Bandwidth).....	89
10.7	LTE Band 4 (20MHz Bandwidth).....	90
10.8	LTE Band 5 (10MHz Bandwidth).....	91
10.9	LTE Band 12 (10MHz Bandwidth).....	91
10.10	LTE Band 13 (10MHz Bandwidth)	92
10.11	LTE Band 17 (10MHz Bandwidth)	92
10.12	LTE Band 41 (20MHz Bandwidth)	93
10.13	LTE Band 66 (20MHz Bandwidth)	94
10.14	Wi-Fi (DTS Band).....	95
10.15	Wi-Fi (U-NII Bands).....	96
10.16	Bluetooth.....	97
11.	SAR Measurement Variability.....	98
12.	Simultaneous Transmission SAR Analysis.....	99
12.1	Sum of the SAR for GSM 850 & Wi-Fi & BT.....	100
12.2	Sum of the SAR for GSM 1900 & Wi-Fi & BT.....	100
12.3	Sum of the SAR for WCDMA Band II & Wi-Fi & BT.....	100
12.4	Sum of the SAR for WCDMA Band IV & Wi-Fi & BT	101
12.5	Sum of the SAR for WCDMA Band V & Wi-Fi & BT	101
12.6	Sum of the SAR for LTE Band 2 & Wi-Fi & BT.....	102
12.7	Sum of the SAR for LTE Band 4 & Wi-Fi & BT.....	102
12.8	Sum of the SAR for LTE Band 5 & Wi-Fi & BT.....	102
12.9	Sum of the SAR for LTE Band 12 & Wi-Fi & BT.....	103
12.10	Sum of the SAR for LTE Band 13 & Wi-Fi & BT	103
12.11	Sum of the SAR for LTE Band 17 & Wi-Fi & BT	103
12.12	Sum of the SAR for LTE Band 41 & Wi-Fi & BT	104
12.13	Sum of the SAR for LTE Band 66 & Wi-Fi & BT	104
Appendixes		105
	4788371689-S1V1 FCC Report SAR_App A_Photos & Ant. Locations.....	105
	4788371689-S1V1 FCC Report SAR_App B_Highest SAR Test Plots.....	105
	4788371689-S1V1 FCC Report SAR_App C_System Check Plots.....	105
	4788371689-S1V1 FCC Report SAR_App D_SAR Tissue Ingredients	105

<i>4788371689-S1V1 FCC Report SAR_App E_Probe Cal. Certificates</i>	<i>105</i>
<i>4788371689-S1V1 FCC Report SAR_App F_Dipole Cal. Certificates.....</i>	<i>105</i>

1. Attestation of Test Results

Applicant Name	SAMSUNG ELECTRONICS CO.,LTD.				
FCC ID	A3LSMA605GN				
Model Number	SM-A605GN/DS, SM-A605GN				
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)			Phablet (10g of tissue)	
General population / Uncontrolled exposure	1.6			4.0	
The Highest Reported SAR (W/kg)					
RF Exposure Conditions		Equipment Class			
		Licensed	DTS	U-NII	DSS(BT)
Head		0.23	0.28	1.07	0.17
Body-worn		1.09	0.14	0.45	N/A
Hotspot		1.09	0.31	0.75	
Phablet-10g		1.50	N/A	1.97	
Simultaneous TX	Head	1.30	0.51	1.30	0.40
	Body-worn	1.24	1.22	1.24	N/A
	Hotspot	1.39	1.39	1.26	
	Phablet-10g	3.46	N/A	3.46	
Date Tested		3/12/2018 to 3/26/2018			
Test Results		Pass			
UL Korea, Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Korea, Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report. Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Korea, Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Korea, Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government.					
Approved & Released By:			Prepared By:		
					
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
- 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
- 941225 D07 UMPC Mini Tablet v01r02

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

- [TCB workshop](#) October, 2014; Page 36, RF Exposure Procedures Update (Overlapping LTE Bands)
- [TCB workshop](#) October, 2014; Page 37, RF Exposure Procedures Update (Other LTE Considerations)
- [TCB workshop](#) October, 2016; Page 7, RF Exposure Procedures (Bluetooth Duty Factor)

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

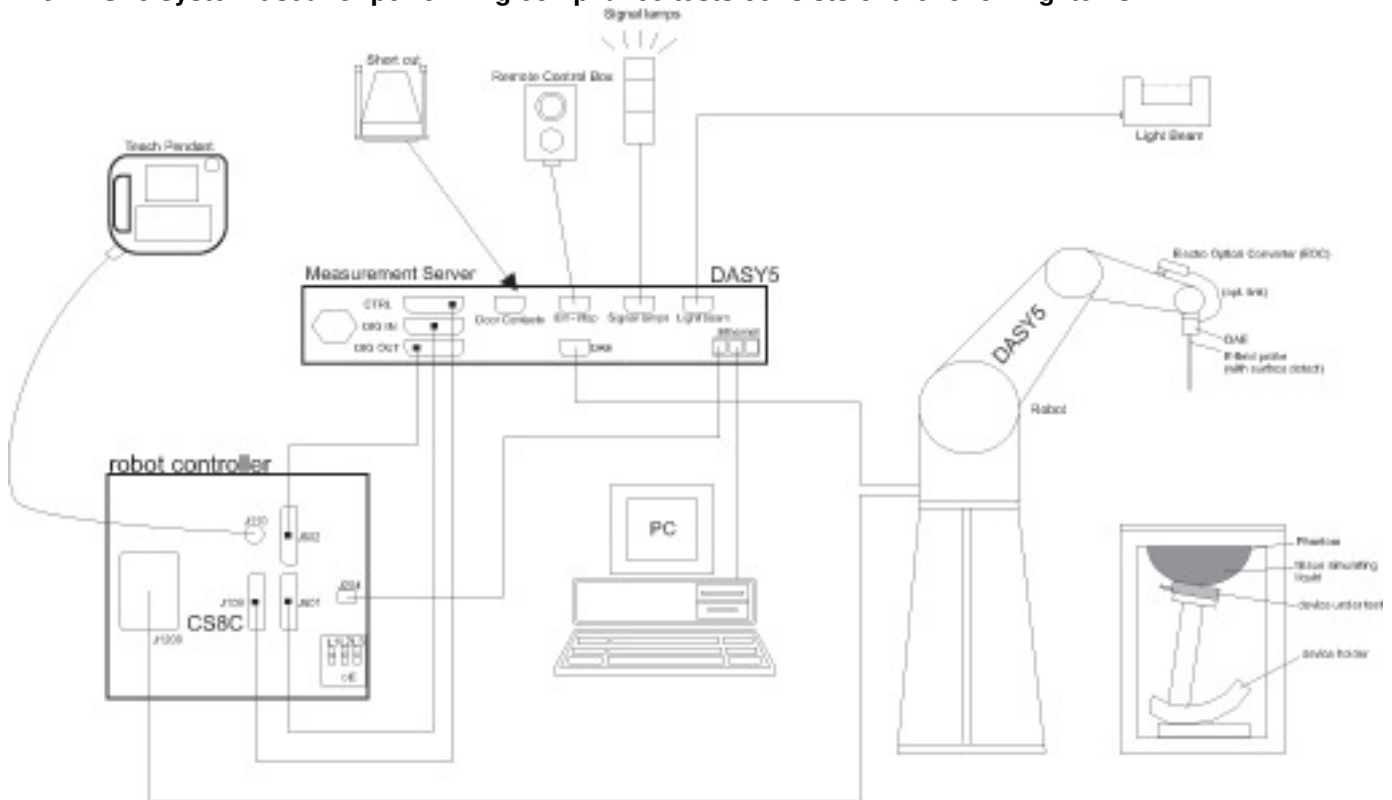
UL Korea, Ltd. is accredited by IAS, Laboratory Code TL-637.

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 <i>area scan based 1-g SAR estimation</i> procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

Step 4: Power drift measurement

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

Step 5: Z-Scan (FCC only)

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

4.3. Test Equipment

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

Dielectric Property Measurements

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

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
MXG Analog Signal Generator	Agilent	N5181A	MY50145882	8-7-2018
Power Sensor	Agilent	U2000A	MY54260010	8-8-2018
Power Sensor	Agilent	U2000A	MY54260007	8-8-2018
Power Amplifier	EXODUS	1410025-AMP2027-10003	10003	8-8-2018
Directional Coupler	Agilent	772D	MY52180193	8-7-2018
Directional Coupler	Agilent	778D	MY52180432	8-7-2018
Low Pass Filter	MICROLAB	LA-15N	03943	8-7-2018
Low Pass Filter	FILTRON	L14012FL	1410003S	8-7-2018
Low Pass Filter	MICROLAB	LA-60N	03942	8-7-2018
Attenuator	Agilent	8491B/003	MY39269292	8-7-2018
Attenuator	Agilent	8491B/010	MY39269315	8-7-2018
Attenuator	Agilent	8491B/020	MY39269298	8-7-2018
E-Field Probe (SAR1)	SPEAG	EX3DV4	7376	8-22-2018
E-Field Probe (SAR2)	SPEAG	EX3DV4	7330	1-22-2019
E-Field Probe (SAR3)	SPEAG	EX3DV4	7314	9-28-2018
Data Acquisition Electronics (SAR1)	SPEAG	DAE4	1468	8-22-2018
Data Acquisition Electronics (SAR2)	SPEAG	DAE4	1447	11-22-2018
Data Acquisition Electronics (SAR2)	SPEAG	DAE3	479	10-23-2018
Data Acquisition Electronics (SAR3)	SPEAG	DAE4	1494	7-20-2018
System Validation Dipole	SPEAG	D750V3	1122	2-19-2019
System Validation Dipole	SPEAG	D835V2	4d194	7-19-2018
System Validation Dipole	SPEAG	D1750V2	1125	2-16-2019
System Validation Dipole	SPEAG	D1900V2	5d190	9-20-2018
System Validation Dipole	SPEAG	D2450V2	939	9-19-2018
System Validation Dipole	SPEAG	D2600V2	1097	1-17-2019
System Validation Dipole	SPEAG	D5GHzV2	1209	2-15-2019
System Validation Dipole	SPEAG	D5GHzV2	1184	8-23-2018
Thermometer (SAR1)	Lutron	MHB-382SD	AH.91463	8-10-2018
Thermometer (SAR2)	Lutron	MHB-382SD	AH.50215	2-9-2019
Thermometer (SAR3)	Lutron	MHB-382SD	AH.50213	8-16-2018

Others

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

5. Measurement Uncertainty

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

6. Device Under Test (DUT) Information

6.1. DUT Description

Device Dimension	Overall (Length x Width): 160.2 mm x 75.7 mm Overall Diagonal: 169.0 mm Display Diagonal: 154.0 mm		
Back Cover	☒ The Back Cover is not removable.		
Battery Options	☒ The rechargeable battery is not user accessible		
Wireless Router (Hotspot)	Wi-Fi Hotspot mode permits the device to share its cellular data connection with other Wi-Fi-enabled devices. ☒ Mobile Hotspot (Wi-Fi 2.4 GHz) ☒ Mobile Hotspot (Wi-Fi 5 GHz_Ch.149 – 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 – Ch165)		
Test Sample Information	No.	S/N	Notes
	1	RB90179H	Wi-Fi/BT conduction
	2	R38K10CXD5Z	Main conduction
	3	R38K10CXCHV	SAR
	4	R38K10CXFRF	SAR
	5	R38K10CXCDR	SAR
	6	R38K10CXBRE	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%
	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 (Release.7) HSUPA (Release.9) DC-HSDPA (Release 8) HSPA+ (Release.9)		100%
LTE	FDD Band 2 FDD Band 4 FDD Band 5 FDD Band 12 FDD Band 13 FDD Band 17 TDD Band 41 FDD Band 66	QPSK 16QAM Rel. 10 Carrier Aggregation (1 Uplink and 2 Downlinks)		100% (FDD) 63.3% (TDD) ¹
	Does this device support SV-LTE (1xRTT-LTE)? ☐ Yes ☒ No			
Wi-Fi	2.4 GHz	802.11b 802.11g 802.11n (HT20)		99.7% (802.11b) 98.2% (802.11g) 98.1% (802.11n 20MHz BW)
	5 GHz	802.11a 802.11n (HT20) 802.11n (HT40)		98.2% (802.11a) 98.1% (802.11n 20MHz BW) 96.0% (802.11n 40MHz BW)
	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		76.9% (DH5)

Notes:

1. This device supports uplink-downlink configuration 0-6. The configuration with the highest duty cycle was used (Subframe Number 0 at 63.3%).
2. The Bluetooth protocol is considered source-based averaging. Bluetooth GFSK (DH5) was verified to have the highest duty cycle of 76.9% and was considered and used for SAR Testing.
3. Duty cycle for Wi-Fi is referenced from the DTS and UNII report.

6.3. Nominal and Maximum Output Power

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

RF Air interface	Mode	Time Slots	Max. RF Output Power (dBm)		Reduced. RF Output Power Hotspot back-off (dBm)		Reduced. RF Output Power Proximity sensor back-off (dBm)	
			Tune-up Limit	Frame Pwr	Tune-up Limit	Frame Pwr	Tune-up Limit	Frame Pwr
GSM850	Voice/GPRS	1	34.0	25.0	32.5	23.5	32.5	23.5
	GPRS	2	31.5	25.5	29.5	23.5	29.5	23.5
	GPRS	3	29.7	25.4	27.7	23.4	27.7	23.4
	GPRS	4	28.5	25.5	26.5	23.5	26.5	23.5
	EGPRS	1	27.5	18.5	25.5	16.5	25.5	16.5
	EGPRS	2	25.5	19.5	23.5	17.5	23.5	17.5
	EGPRS	3	23.5	19.2	22.0	17.7	22.0	17.7
GSM1900	EGPRS	4	23.5	20.5	21.0	18.0	21.0	18.0
	Voice/GPRS	1	30.5	21.5	28.0	19.0	28.0	19.0
	GPRS	2	28.0	22.0	25.0	19.0	25.0	19.0
	GPRS	3	26.2	21.9	23.2	18.9	23.2	18.9
	GPRS	4	25.0	22.0	22.0	19.0	22.0	19.0
	EGPRS	1	26.5	17.5	23.5	14.5	23.5	14.5
	EGPRS	2	24.5	18.5	21.5	15.5	21.5	15.5
	EGPRS	3	23.0	18.7	20.0	15.7	20.0	15.7
	EGPRS	4	21.5	18.5	18.5	15.5	18.5	15.5

RF Air interface	Mode	Max. RF Output Power (dBm)	Reduced. RF Output Power Hotspot back-off (dBm)	Reduced. RF Output Power Proximity sensor back-off (dBm)
W-CDMA Band II	R99	24.0	20.0	20.0
	HSDPA	23.5	19.5	19.5
	HSUPA	23.5	19.5	19.5
	DC-HSDPA	23.0	19.0	19.0
W-CDMA Band IV	R99	24.0	20.5	20.5
	HSDPA	23.0	20.0	20.0
	HSUPA	23.0	20.0	20.0
	DC-HSDPA	23.0	20.0	20.0
W-CDMA Band V	R99	24.5	22.5	22.5
	HSDPA	24.0	22.0	22.0
	HSUPA	24.0	22.0	22.0
	DC-HSDPA	24.0	22.0	22.0

RF Air interface	Mode	Max. RF Output Power (dBm)	Reduced. RF Output Power Hotspot back-off (dBm)	Reduced. RF Output Power Proximity sensor back-off (dBm)
LTE Band 2	QPSK	24.5	20.5	20.5
LTE Band 4	QPSK	24.5	20.5	20.5
LTE Band 5	QPSK	25.0	23.0	23.0
LTE Band 12	QPSK	25.0		
LTE Band 13	QPSK	25.0		
LTE Band 17	QPSK	25.0		
LTE Band 41	QPSK	24.5	23.5	23.5
LTE Band 66	QPSK	24.5	20.5	20.5

Notes:

1. The device utilizes power reduction under some portable hotspot conditions for SAR compliance. There is power reduction for WWAN bands. The reduced powers were confirmed via conducted power measurements the RF port. Detailed description of the hotspot power reduction mechanism is included in the operational description.
2. WWAN bands has support to proximity sensor back-off function. it is operating during extremity (hand-held) use conditions. And This function is apply to phablet 10-g SAR exposure condition. Other Head and Body exposure conditions are performed SAR test at full power. The proximity sensor details explain in SAR report according to Section 6 in KDB 616217.
3. Both back-off functions are not operating at the same time.
4. LTE QPSK configuration has the highest maximum average output power per 3GPP standard.

RF Air interface	Mode	Max. RF Output Power (dBm)	Reduced. RF Output Power IR Proximity sensor back-off (dBm)
WiFi 2.4 GHz (Ch.1 - Ch.11)	802.11b	19.5	13.5
	802.11g	13.5	13.5
	802.11n HT20	13.5	13.5
WiFi 2.4 GHz (Ch.12)	802.11b	13.5	
	802.11g	10.5	
	802.11n HT20	10.5	
WiFi 2.4 GHz (Ch.13)	802.11b	13.5	
	802.11g	5.5	
	802.11n HT20	5.5	
WiFi 5 GHz	802.11a	18.5	11.5
	802.11n HT20	18.5	11.5
	802.11n HT40	15.5	11.5
Bluetooth		10.5	
Bluetooth LE		1.5	

Note(s):

This device uses an independent fixed level power reduction mechanism for WLAN operations during voice or VoIP held to ear scenarios. 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 descriptions of the power reduction mechanism are included in the operational description.

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	18675/	18650/	18625/	18615/
		/1860	1857.5	1855	1852.5	1851.5
	Mid	18900/	18900/	18900/	18900/	18900/
		1880	1880	1880	1880	1880
	High	19100/	19125/	19150/	19175/	19185/
		1900	1902.5	1905	1907.5	1908.5
	Band 4	Frequency range: 1710 - 1755 MHz				
		Channel Bandwidth				
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz
	Low	20050/	20025/	20000/	19975/	19965/
		1720	1717.5	1715	1712.5	1711.5
	Mid	20175/	20175/	20175/	20175/	20175/
		1732.5	1732.5	1732.5	1732.5	1732.5
	High	20300/	20325/	20350/	20375/	20385/
		1745	1747.5	1750	1752.5	1753.5
	Band 5	Frequency range: 824 - 849 MHz				
		Channel Bandwidth				
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz
	Low			20450/	20425/	20415/
				829	826.5	825.5
	Mid			20525/	20525/	20525/
				836.5	836.5	836.5
	High			20600/	20625/	20635/
				844	846.5	847.5
	Band 12	Frequency range: 699 – 716 MHz				
		Channel Bandwidth				
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz
	Low			23060/	23035/	23025/
				704	701.5	700.5
	Mid			23095/	23095/	23095/
				707.5	707.5	707.5
	High			23130/	23155/	23165/
				711	713.5	714.5
	Band 13	Frequency range: 777 - 787 MHz				
		Channel Bandwidth				
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz
	Low				23205/	
					779.5	
	Mid			23230/	23230/	
				782	782	
	High				23255/	
					784.5	
	Band 17	Frequency range: 704 - 716 MHz				
		Channel Bandwidth				
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz
	Low			23780/	23755/	
				709	706.5	
	Mid			23790/	23790/	
				710	710	
	High			23800/	23825/	
				711	713.5	

General LTE SAR Test and Reporting Considerations (Continued)

Frequency range, Channel Bandwidth, Numbers and Frequencies	Band 41	Frequency range: 2496 - 2690 MHz																																																																			
		Channel Bandwidth																																																																			
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz																																																														
	Low	39750 / 2506.0																																																																			
	Low-Mid	40185 / 2549.5																																																																			
	Mid	40620 / 2593.0																																																																			
	Mid-High	41055 / 2636.5																																																																			
	High	41490 / 2680.0																																																																			
	Band 66	Frequency range: 1710 - 1780 MHz																																																																			
		Channel Bandwidth																																																																			
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz																																																														
	Low	132072/ 1720	132047/ 1717.5	132022/ 1715	131997/ 1712.5	131987/ 1711.5	131979/ 1710.7																																																														
	Mid	132322/ 1745	132322/ 1745	132322/ 1745	132322/ 1745	132322/ 1745	132322/ 1745																																																														
	High	132572/ 1770	132597/ 1772.5	132622/ 1775	132647/ 1777.5	132657/ 1778.5	132665/ 1779.3																																																														
LTE transmitter and antenna implementation	Refer to Appendix A.																																																																				
Maximum power reduction (MPR)	Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3 <table> <tr> <th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th><th rowspan="2">MPR (dB)</th></tr> <tr> <th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr> <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>64 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr> <tr> <td>256 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 2</td></tr> <tr> <td>64 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 3</td></tr> <tr> <td>256 QAM</td><td colspan="6">≥ 1</td><td>≤ 5</td></tr> </table> MPR Built-in by design The manufacturer MPR values are always within the 3GPP maximum MPR allowance but may not follow the default MPR values. A-MPR (additional MPR) was disabled during SAR testing							Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})						MPR (dB)	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1	16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2	256 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3	256 QAM	≥ 1						≤ 5
Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})						MPR (dB)																																																														
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz																																																															
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1																																																														
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1																																																														
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2																																																														
256 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2																																																														
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3																																																														
256 QAM	≥ 1						≤ 5																																																														
Power reduction	Yes																																																																				
Spectrum plots for RB configurations	A properly configured base station simulator was used for the SAR and power measurements; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.																																																																				

Notes:

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

6.5. LTE Carrier Aggregation

Combination	CA configuration	BCS Configuration n	Reverse Y/N	Bandwidth (MHz)										Max Aggregated BW (MHz)			
				Carrier 1						Carrier 2							
				20	15	10	5	3	1.4	20	15	10	5		3	1.4	
Intra-Band contiguous	2C	(0)	Yes				√			√						40	
						√				√	√						
				√	√					√	√	√	√				
	66C	(0)	Yes				√			√	√					40	
						√				√	√						
				√	√					√	√	√	√				
Intra-Band non- contiguous	2A-2A	(0)	Yes	√	√	√	√			√	√	√	√			40	
	4A-4A	(0)	Yes	√	√	√	√			√	√	√	√			40	
		(1)			√	√				√	√				20		
	66A-66A	(0)	Yes	√	√	√	√			√	√	√	√			40	
Inter-Band non- contiguous	2A-5A	(0)	Yes	√	√	√	√					√	√			30	
		(1)				√	√								20		
		(0)			√	√	√	√				√	√			30	
	2A-12A	(1)	Yes	√	√	√	√					√	√	√		30	
		(2)				√	√				√	√		√		30	
		(0)			√	√	√	√				√	√			30	
	2A-13A	(1)	Yes			√	√					√	√			20	
		(0)				√	√					√	√			20	
	2A-17A	(0)	Yes			√	√					√	√			20	
		(0)				√	√					√	√			20	
	4A-5A	(0)	Yes			√	√					√	√			20	
		(1)		√	√	√	√					√	√			30	
	4A-12A	(0)	Yes			√	√		√	√			√	√			20
		(1)		√	√	√	√		√	√			√	√		30	
		(2)		√	√	√	√					√	√	√		30	
		(3)				√	√					√	√		√	20	
		(4)		√	√	√	√					√	√			30	
		(5)			√	√	√	√					√	√		20	
	4A-13A	(0)	Yes	√	√	√	√					√				30	
		(1)				√	√					√				20	
	4A-17A	(0)	Yes			√	√					√	√			20	
	5A-41A	(0)	No			√	√			√						30	
	12A-66A	(0)	Yes			√	√						√	√	√	√	20
		(1)			√	√				√	√		√	√		30	
		(2)			√	√		√			√	√				30	
(3)				√	√					√	√				20		
(4)				√	√				√	√					30		
(5)					√	√				√	√				20		

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.

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

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

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
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 $\times (T_s) \times \# \text{ of S} + \# \text{ of U}$

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

Note(s):

This device supports uplink-downlink configurations 0-6. The configuration with highest duty cycle was used for SAR Testing: configuration 0 at 63.3% duty cycle and Special Subframe 7

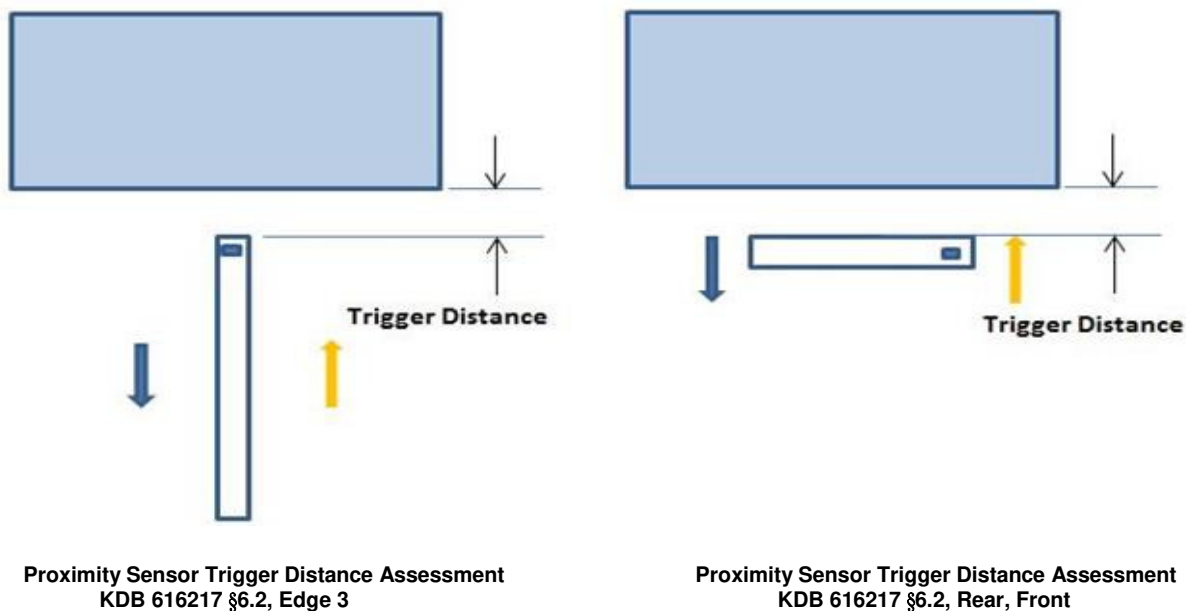
6.7. Power Reduction by Proximity Sensing

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

Front, Rear and Edge 3 of the DUT was placed directly below the flat phantom. The DUT was moved toward the phantom in accordance with the steps outlined in KDB 616217 §6.2 to determine the trigger distance for enabling power reduction. The DUT was moved away from the phantom to determine the trigger distance for resuming full power.

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

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



LEGEND

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

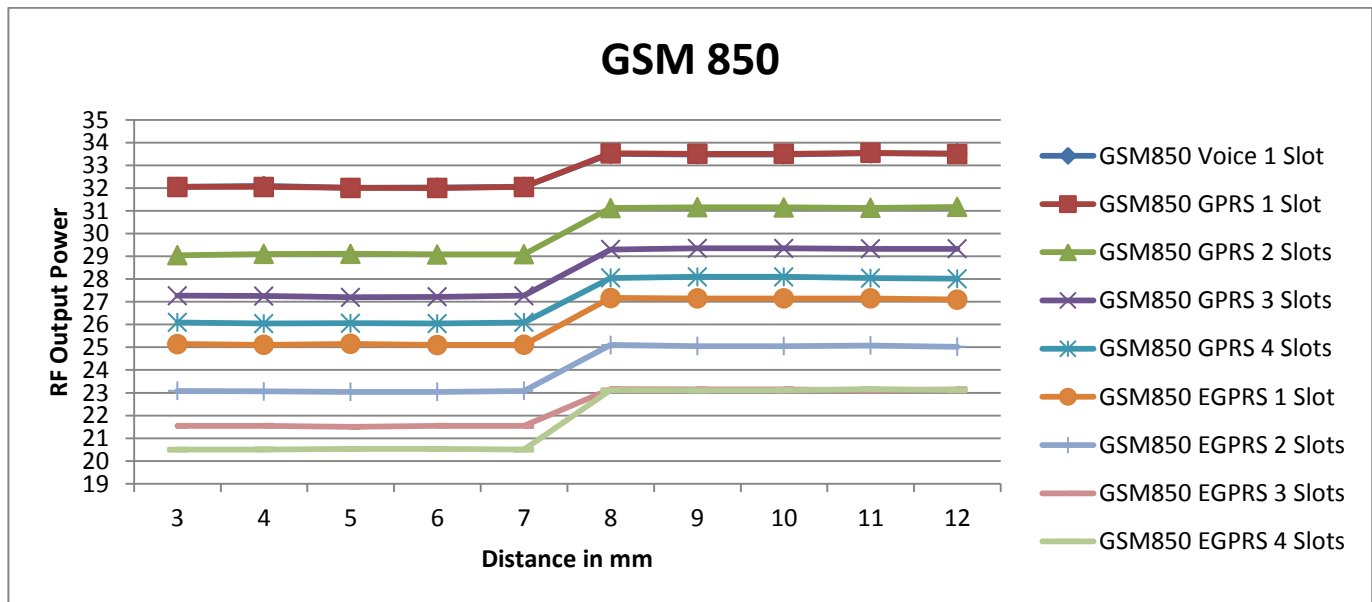
Summary of Trigger Distances

Tissue simulating liquid	Trigger distance - Front		Trigger distance - Rear		Trigger distance – Edge 3	
	Moving toward phantom	Moving from phantom	Moving toward phantom	Moving from phantom	Moving toward phantom	Moving from phantom
850 Body	7 mm	7 mm	14 mm	14 mm	14 mm	14 mm
1750 Body	7 mm	7 mm	14 mm	14 mm	14 mm	14 mm
1900 Body	7 mm	7 mm	14 mm	14 mm	14 mm	14 mm
2600 Body	7 mm	7 mm	14 mm	14 mm	14 mm	14 mm
2450 Head	70 mm	70 mm	N/A		N/A	
5G Head	70 mm	70 mm	N/A		N/A	

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

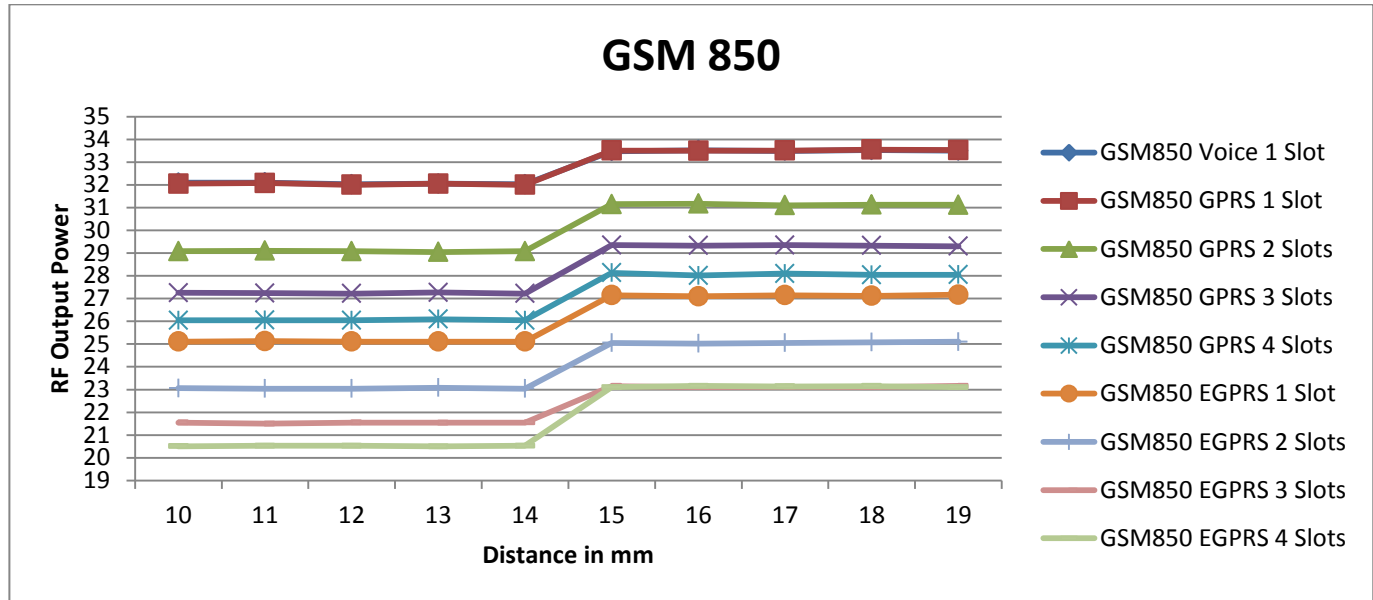
Front, DUT Moving Toward (Trigger) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	3	4	5	6	7	8	9	10	11	12
GSM850 Voice 1 Slot	32.1	32.1	32.0	32.0	32.1	33.5	33.5	33.5	33.5	33.5
GSM850 GPRS 1 Slot	32.1	32.1	32.0	32.0	32.1	33.5	33.5	33.5	33.6	33.5
GSM850 GPRS 2 Slots	29.1	29.1	29.1	29.1	29.1	31.1	31.2	31.2	31.1	31.2
GSM850 GPRS 3 Slots	27.3	27.3	27.2	27.2	27.3	29.3	29.4	29.4	29.3	29.3
GSM850 GPRS 4 Slots	26.1	26.0	26.1	26.0	26.1	28.1	28.1	28.1	28.0	28.0
GSM850 EGPRS 1 Slot	25.1	25.1	25.2	25.1	25.1	27.2	27.2	27.2	27.2	27.1
GSM850 EGPRS 2 Slots	23.1	23.1	23.0	23.0	23.1	25.1	25.1	25.1	25.1	25.0
GSM850 EGPRS 3 Slots	21.5	21.6	21.5	21.6	21.5	23.2	23.2	23.2	23.1	23.2
GSM850 EGPRS 4 Slots	20.5	20.5	20.5	20.5	20.5	23.1	23.1	23.1	23.2	23.1



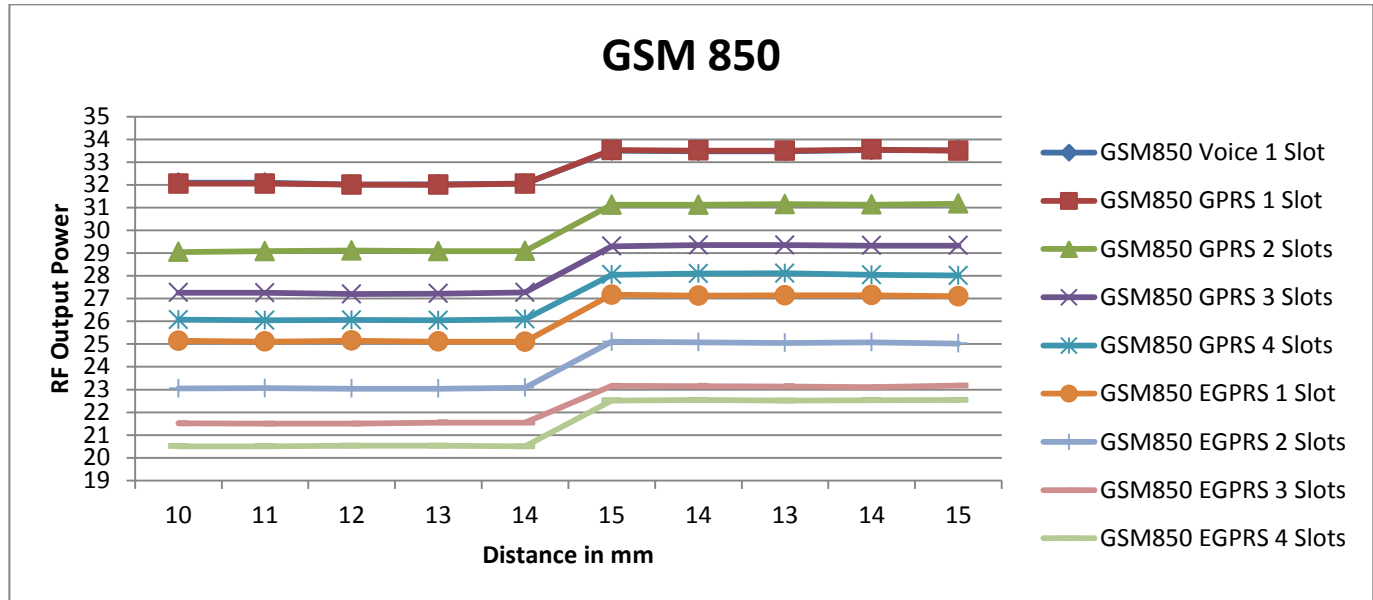
Rear, DUT Moving Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	10	11	12	13	14	15	16	17	18	19
GSM850 Voice 1 Slot	32.1	32.1	32.0	32.1	32.0	33.5	33.5	33.5	33.5	33.5
GSM850 GPRS 1 Slot	32.1	32.1	32.0	32.1	32.0	33.5	33.5	33.5	33.6	33.5
GSM850 GPRS 2 Slots	29.1	29.1	29.1	29.1	29.1	31.2	31.2	31.1	31.1	31.1
GSM850 GPRS 3 Slots	27.3	27.2	27.2	27.3	27.2	29.4	29.3	29.4	29.3	29.3
GSM850 GPRS 4 Slots	26.0	26.1	26.0	26.1	26.0	28.1	28.0	28.1	28.0	28.1
GSM850 EGPRS 1 Slot	25.1	25.1	25.1	25.1	25.1	27.2	27.1	27.2	27.1	27.2
GSM850 EGPRS 2 Slots	23.1	23.0	23.0	23.1	23.0	25.1	25.0	25.1	25.1	25.1
GSM850 EGPRS 3 Slots	21.6	21.5	21.6	21.5	21.6	23.2	23.1	23.1	23.1	23.2
GSM850 EGPRS 4 Slots	20.5	20.5	20.5	20.5	20.5	23.1	23.2	23.1	23.2	23.1



Edge 3, DUT Moving Away (Release) from the Phantom

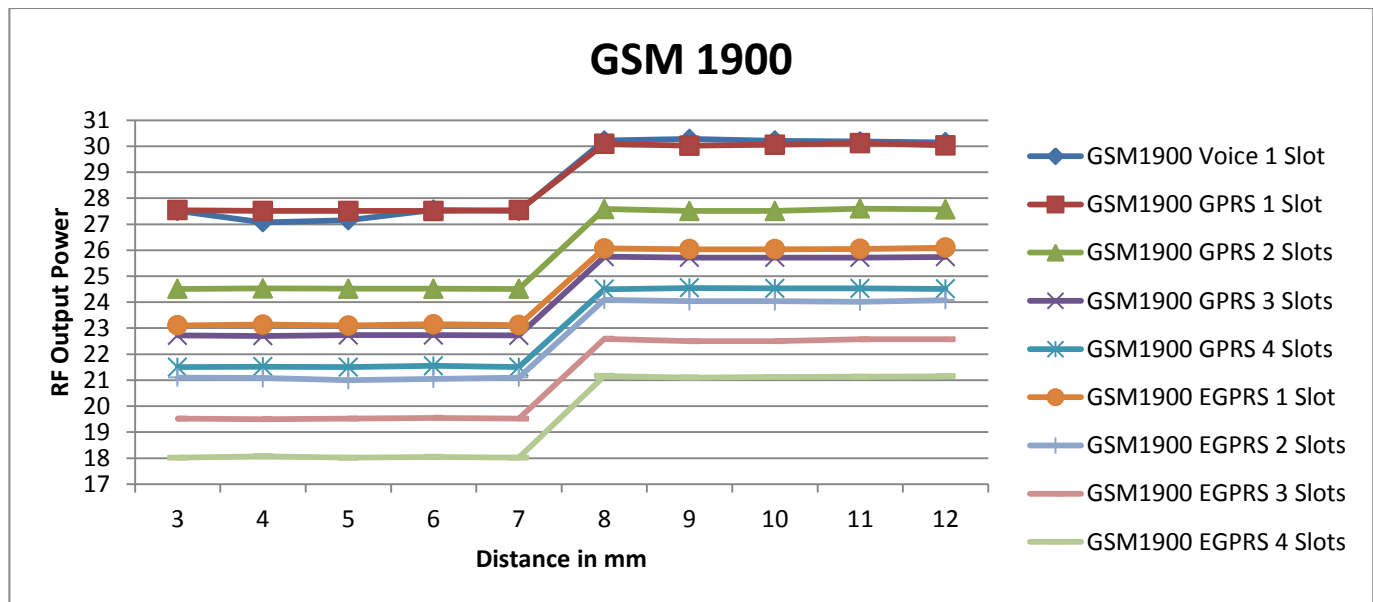
Distance to DUT vs. Output Power in dBm										
Distance (mm)	10	11	12	13	14	15	14	13	14	15
GSM850 Voice 1 Slot	32.1	32.1	32.0	32.0	32.1	33.5	33.5	33.5	33.5	33.5
GSM850 GPRS 1 Slot	32.1	32.1	32.0	32.0	32.1	33.5	33.5	33.5	33.6	33.5
GSM850 GPRS 2 Slots	29.1	29.1	29.1	29.1	29.1	31.1	31.1	31.2	31.1	31.2
GSM850 GPRS 3 Slots	27.3	27.3	27.2	27.2	27.3	29.3	29.4	29.4	29.3	29.3
GSM850 GPRS 4 Slots	26.1	26.0	26.1	26.0	26.1	28.1	28.1	28.1	28.0	28.0
GSM850 EGPRS 1 Slot	25.1	25.1	25.2	25.1	25.1	27.2	27.1	27.1	27.2	27.1
GSM850 EGPRS 2 Slots	23.1	23.1	23.0	23.0	23.1	25.1	25.1	25.1	25.1	25.0
GSM850 EGPRS 3 Slots	21.5	21.5	21.5	21.6	21.5	23.2	23.2	23.1	23.1	23.2
GSM850 EGPRS 4 Slots	20.5	20.5	20.5	20.5	20.5	22.5	22.5	22.5	22.5	22.5



GSM 1900

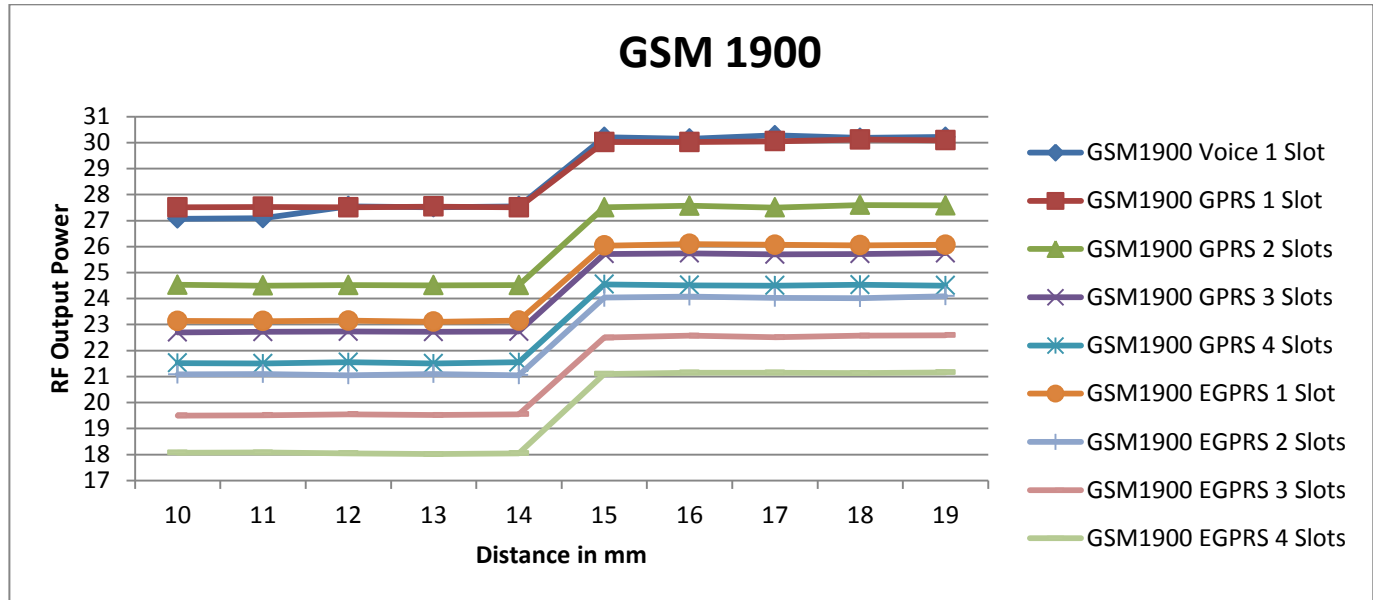
Front, DUT Moving Toward (Trigger) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	3	4	5	6	7	8	9	10	11	12
GSM1900 Voice 1 Slot	27.5	27.1	27.2	27.6	27.5	30.2	30.3	30.2	30.2	30.2
GSM1900 GPRS 1 Slot	27.5	27.5	27.5	27.5	27.5	30.1	30.0	30.1	30.1	30.0
GSM1900 GPRS 2 Slots	24.5	24.5	24.5	24.5	24.5	27.6	27.5	27.5	27.6	27.6
GSM1900 GPRS 3 Slots	22.7	22.7	22.7	22.7	22.7	25.8	25.7	25.7	25.7	25.7
GSM1900 GPRS 4 Slots	21.5	21.5	21.5	21.6	21.5	24.5	24.6	24.5	24.5	24.5
GSM1900 EGPRS 1 Slot	23.1	23.1	23.1	23.2	23.1	26.1	26.0	26.0	26.1	26.1
GSM1900 EGPRS 2 Slots	21.1	21.1	21.0	21.1	21.1	24.1	24.0	24.0	24.0	24.1
GSM1900 EGPRS 3 Slots	19.5	19.5	19.5	19.6	19.5	22.6	22.5	22.5	22.6	22.6
GSM1900 EGPRS 4 Slots	18.0	18.1	18.0	18.1	18.0	21.2	21.1	21.1	21.1	21.2



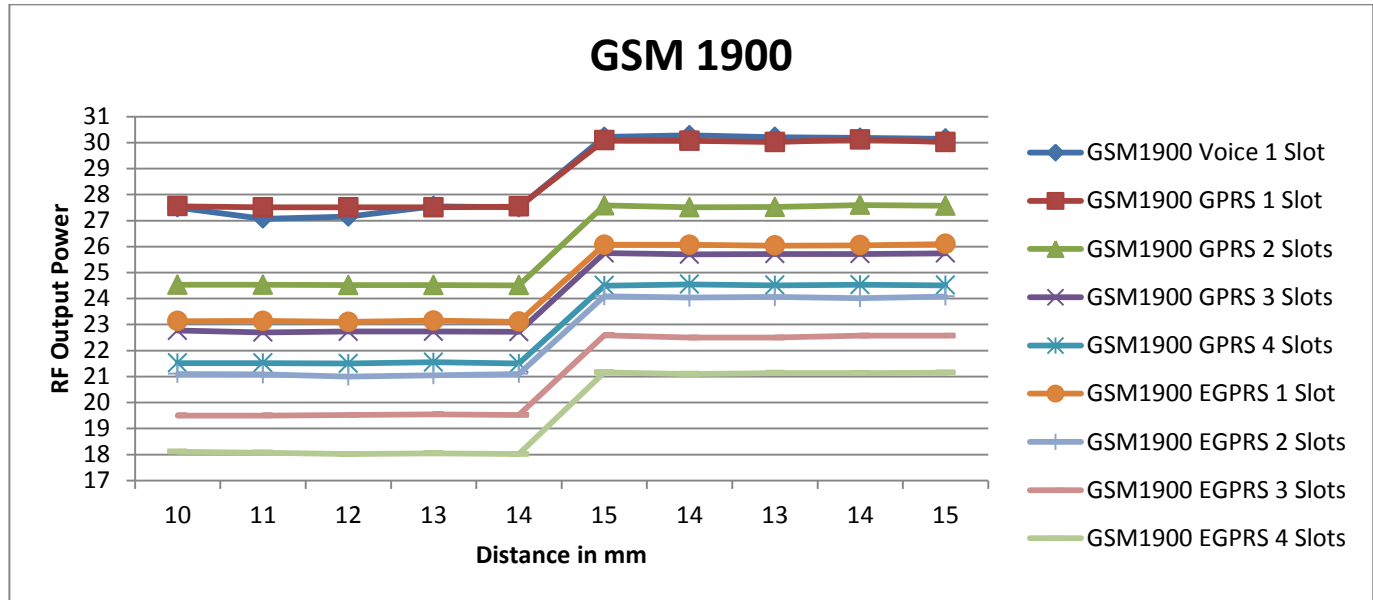
Rear, DUT Moving Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	10	11	12	13	14	15	16	17	18	19
GSM1900 Voice 1 Slot	27.1	27.1	27.6	27.5	27.6	30.2	30.2	30.3	30.2	30.2
GSM1900 GPRS 1 Slot	27.5	27.5	27.5	27.5	27.5	30.0	30.0	30.1	30.1	30.1
GSM1900 GPRS 2 Slots	24.5	24.5	24.5	24.5	24.5	27.5	27.6	27.5	27.6	27.6
GSM1900 GPRS 3 Slots	22.7	22.7	22.7	22.7	22.7	25.7	25.7	25.7	25.7	25.8
GSM1900 GPRS 4 Slots	21.5	21.5	21.6	21.5	21.6	24.6	24.5	24.5	24.5	24.5
GSM1900 EGPRS 1 Slot	23.1	23.1	23.2	23.1	23.2	26.0	26.1	26.1	26.1	26.1
GSM1900 EGPRS 2 Slots	21.1	21.1	21.1	21.1	21.1	24.0	24.1	24.0	24.0	24.1
GSM1900 EGPRS 3 Slots	19.5	19.5	19.6	19.5	19.6	22.5	22.6	22.5	22.6	22.6
GSM1900 EGPRS 4 Slots	18.1	18.1	18.1	18.0	18.1	21.1	21.2	21.2	21.1	21.2



Edge 3, DUT Moving Away (Release) from the Phantom

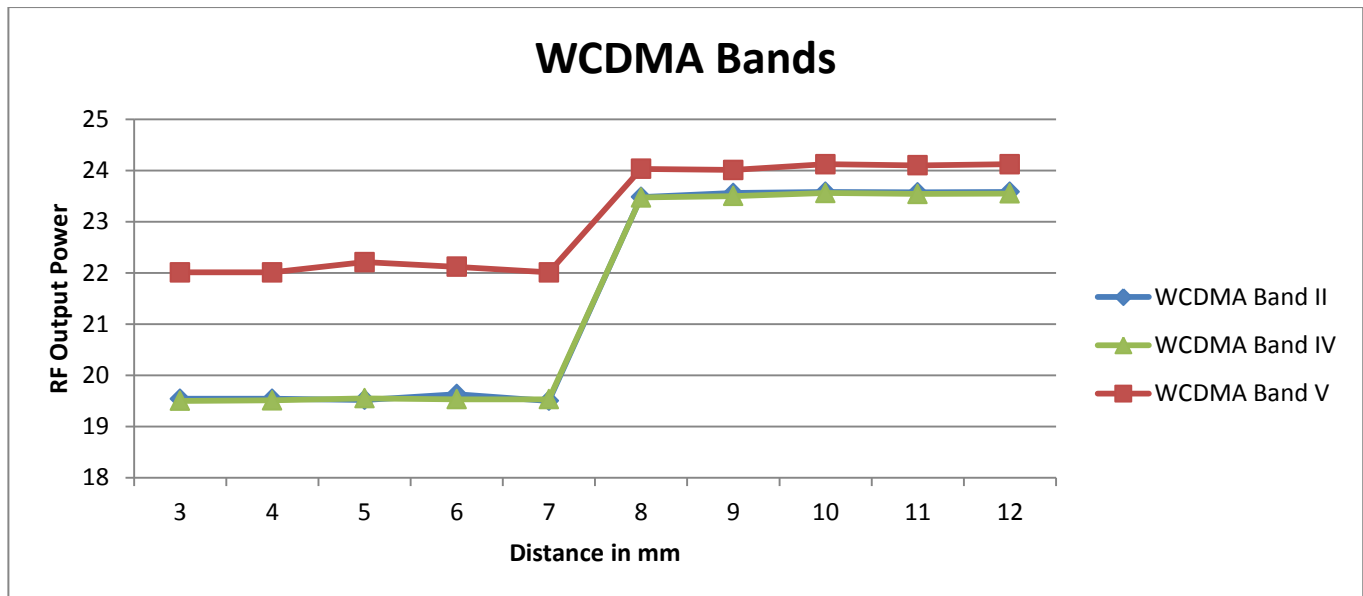
Distance to DUT vs. Output Power in dBm										
Distance (mm)	10	11	12	13	14	15	14	13	14	15
GSM1900 Voice 1 Slot	27.5	27.1	27.2	27.6	27.5	30.2	30.3	30.2	30.2	30.2
GSM1900 GPRS 1 Slot	27.6	27.5	27.5	27.5	27.5	30.1	30.1	30.0	30.1	30.0
GSM1900 GPRS 2 Slots	24.5	24.5	24.5	24.5	24.5	27.6	27.5	27.5	27.6	27.6
GSM1900 GPRS 3 Slots	22.8	22.7	22.7	22.7	22.7	25.8	25.7	25.7	25.7	25.7
GSM1900 GPRS 4 Slots	21.5	21.5	21.5	21.6	21.5	24.5	24.6	24.5	24.5	24.5
GSM1900 EGPRS 1 Slot	23.1	23.1	23.1	23.2	23.1	26.1	26.1	26.0	26.1	26.1
GSM1900 EGPRS 2 Slots	21.1	21.1	21.0	21.1	21.1	24.1	24.0	24.1	24.0	24.1
GSM1900 EGPRS 3 Slots	19.5	19.5	19.5	19.6	19.5	22.6	22.5	22.5	22.6	22.6
GSM1900 EGPRS 4 Slots	18.1	18.1	18.0	18.1	18.0	21.2	21.1	21.1	21.1	21.2



WCDMA Band II/IV/V

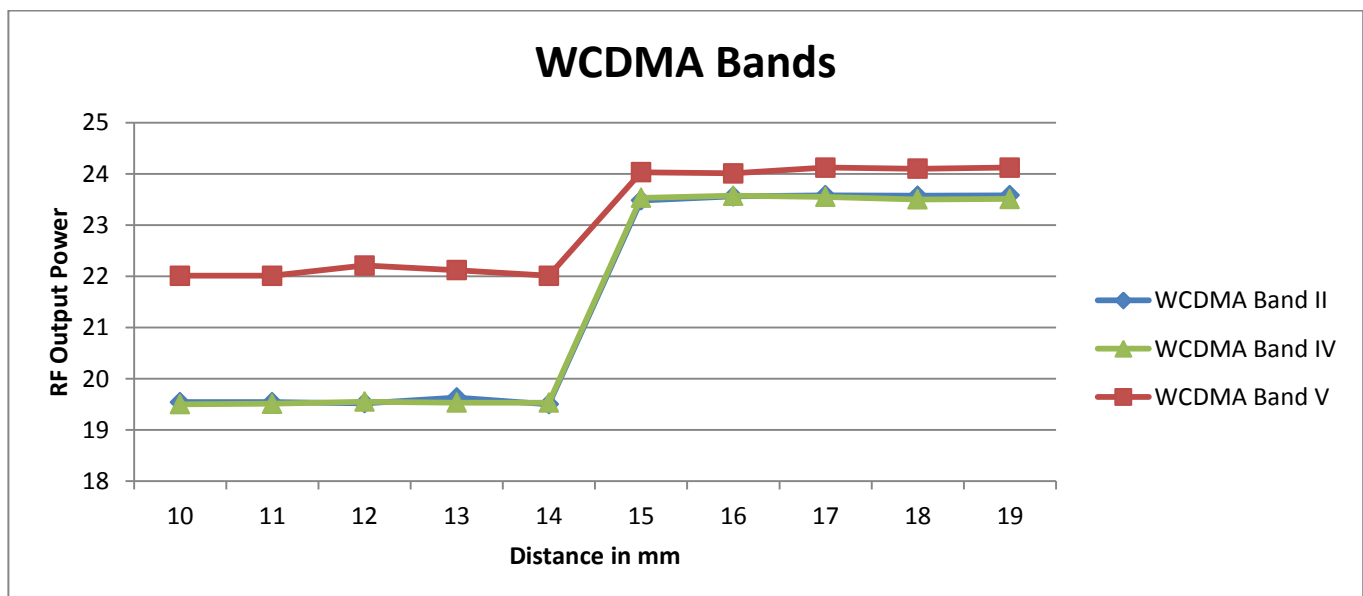
Front, DUT Moving Toward (Trigger) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	3	4	5	6	7	8	9	10	11	12
WCDMA Band II	19.5	19.5	19.5	19.6	19.5	23.5	23.6	23.6	23.6	23.6
WCDMA Band IV	19.5	19.5	19.6	19.5	19.5	23.5	23.5	23.6	23.5	23.6
WCDMA Band V	22.0	22.0	22.2	22.1	22.0	24.0	24.0	24.1	24.1	24.1



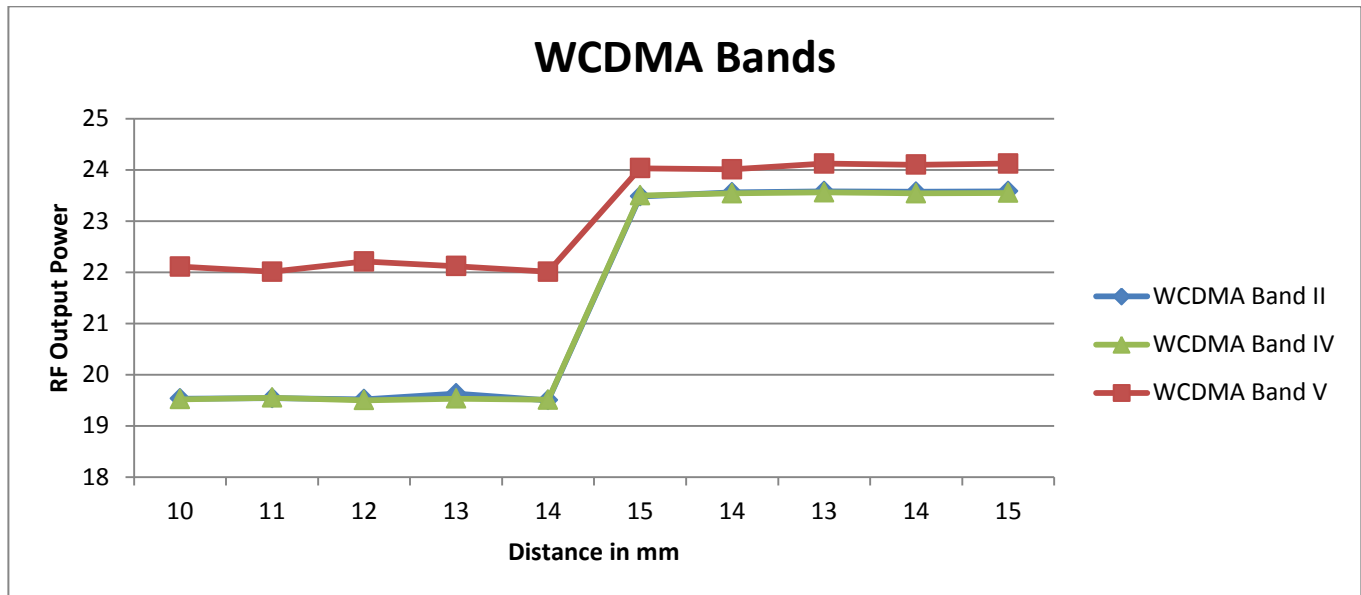
Rear, DUT Moving Toward (Trigger) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	10	11	12	13	14	15	16	17	18	19
WCDMA Band II	19.5	19.5	19.5	19.6	19.5	23.5	23.6	23.6	23.6	23.6
WCDMA Band IV	19.5	19.5	19.6	19.5	19.5	23.5	23.6	23.6	23.5	23.5
WCDMA Band V	22.0	22.0	22.2	22.1	22.0	24.0	24.0	24.1	24.1	24.1



Edge 3, DUT Moving Toward (Trigger) from the Phantom

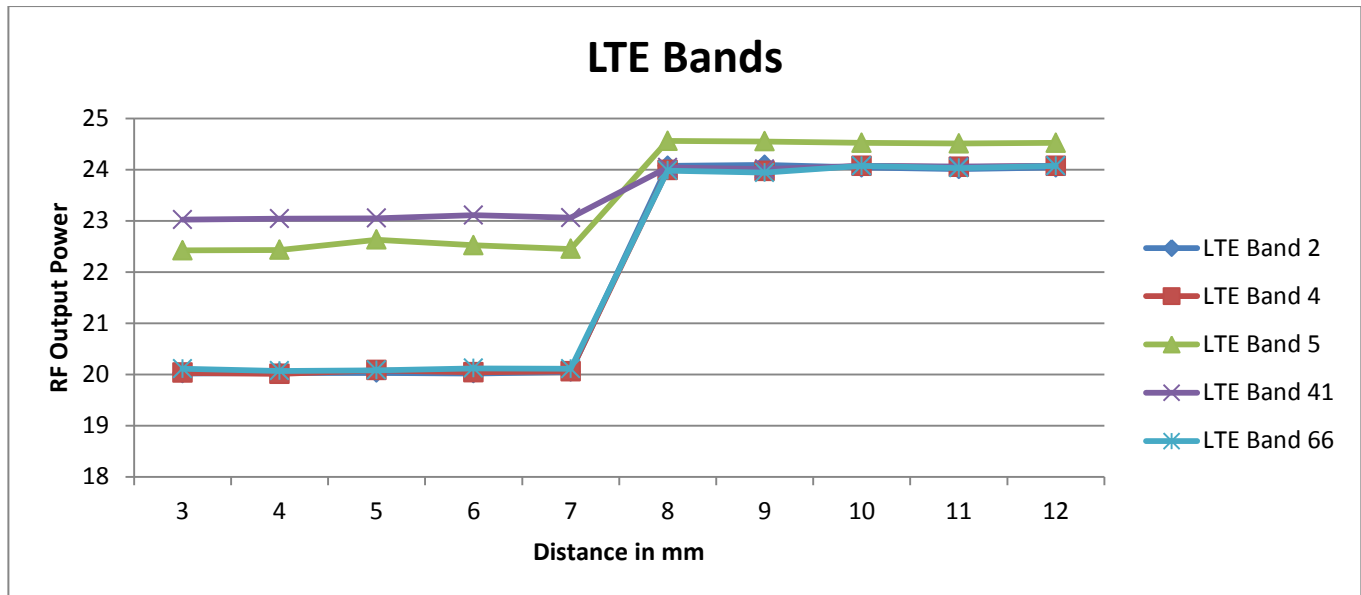
Distance to DUT vs. Output Power in dBm										
Distance (mm)	10	11	12	13	14	15	14	13	14	15
WCDMA Band II	19.5	19.5	19.5	19.6	19.5	23.5	23.6	23.6	23.6	23.6
WCDMA Band IV	19.5	19.6	19.5	19.5	19.5	23.5	23.5	23.6	23.5	23.6
WCDMA Band V	22.1	22.0	22.2	22.1	22.0	24.0	24.0	24.1	24.1	24.1



LTE Band 2/4/5/41/66

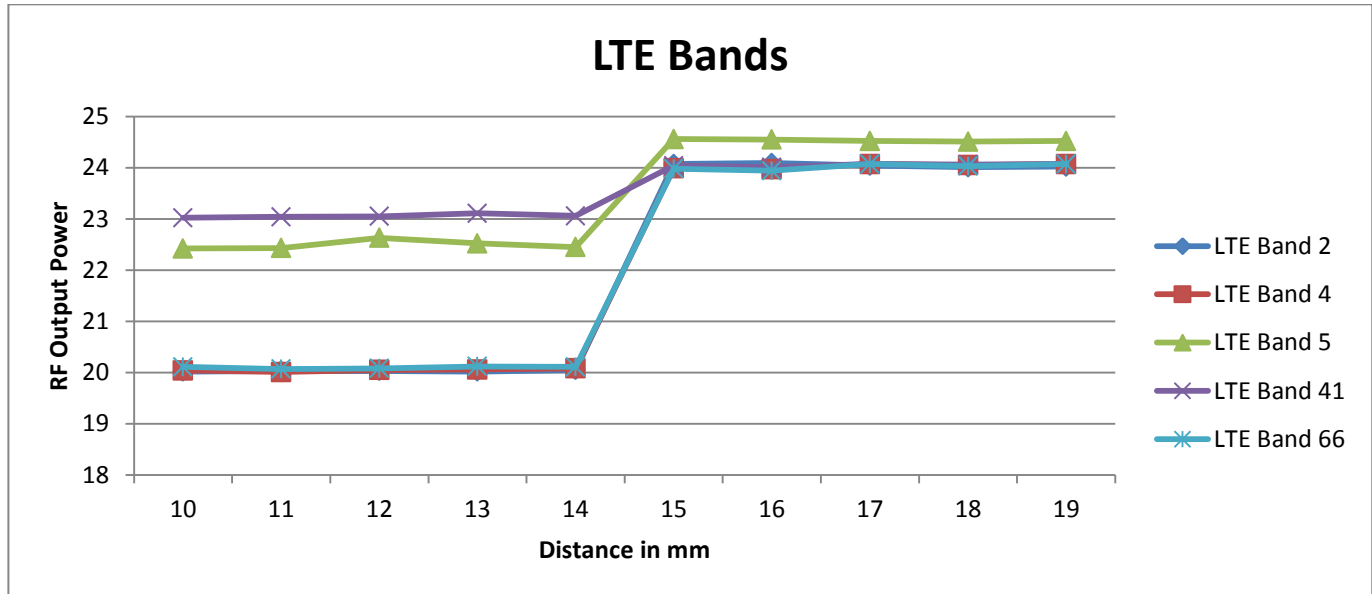
Front, DUT Moving Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	3	4	5	6	7	8	9	10	11	12
LTE Band 2	20.0	20.0	20.0	20.0	20.1	24.1	24.1	24.0	24.0	24.0
LTE Band 4	20.0	20.0	20.1	20.0	20.1	24.0	24.0	24.1	24.1	24.1
LTE Band 5	22.4	22.4	22.6	22.5	22.5	24.6	24.6	24.5	24.5	24.5
LTE Band 41	23.0	23.0	23.1	23.1	23.1	24.0	24.0	24.1	24.1	24.1
LTE Band 66	20.1	20.1	20.1	20.1	20.1	24.0	23.9	24.1	24.0	24.1



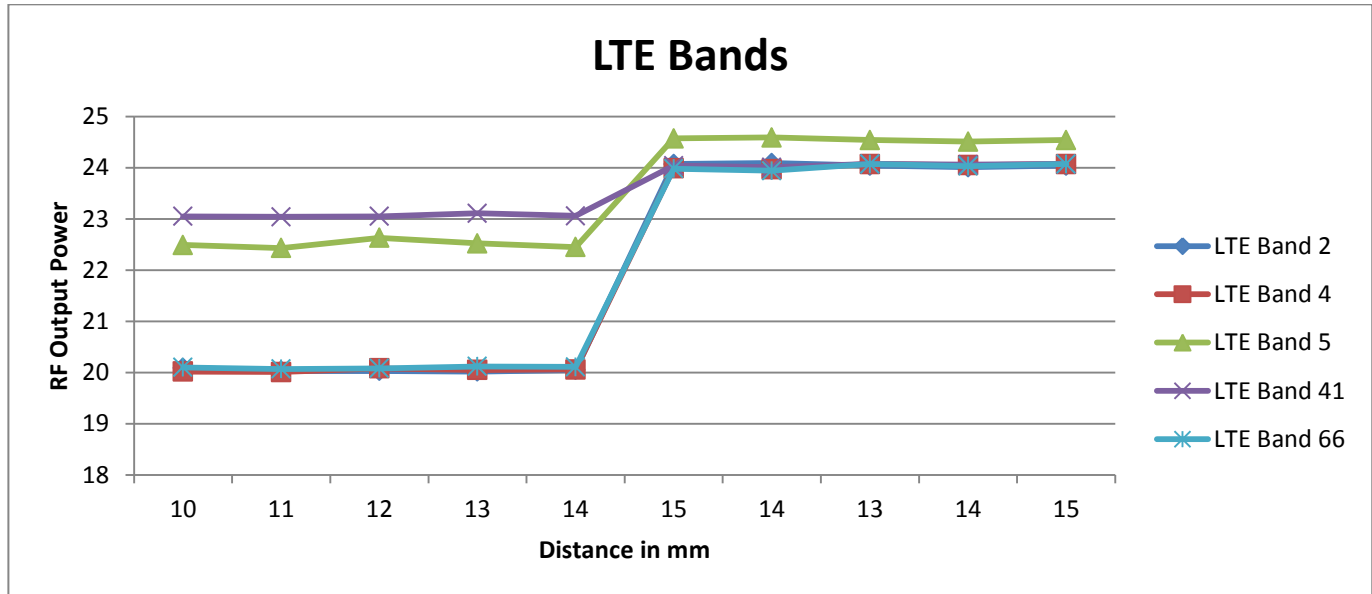
Rear, DUT Moving Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	10	11	12	13	14	15	16	17	18	19
LTE Band 2	20.0	20.0	20.0	20.0	20.1	24.1	24.1	24.0	24.0	24.0
LTE Band 4	20.0	20.0	20.1	20.1	20.1	24.0	24.0	24.1	24.1	24.1
LTE Band 5	22.4	22.4	22.6	22.5	22.5	24.6	24.6	24.5	24.5	24.5
LTE Band 41	23.0	23.0	23.1	23.1	23.1	24.0	24.0	24.1	24.1	24.1
LTE Band 66	20.1	20.1	20.1	20.1	20.1	24.0	23.9	24.1	24.0	24.1



Edge 3, DUT Moving Away (Release) from the Phantom

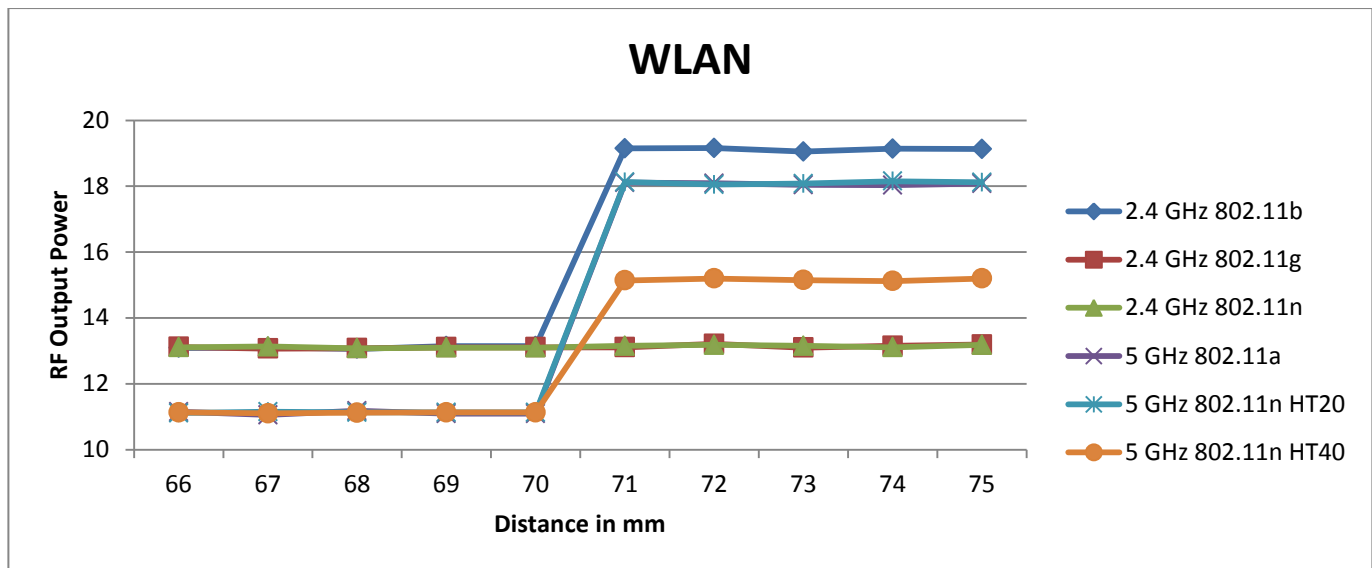
Distance to DUT vs. Output Power in dBm										
Distance (mm)	10	11	12	13	14	15	14	13	14	15
LTE Band 2	20.1	20.0	20.0	20.0	20.1	24.1	24.1	24.0	24.0	24.0
LTE Band 4	20.0	20.0	20.1	20.1	20.1	24.0	24.0	24.1	24.1	24.1
LTE Band 5	22.5	22.4	22.6	22.5	22.5	24.6	24.6	24.5	24.5	24.5
LTE Band 41	23.1	23.0	23.1	23.1	23.1	24.0	24.0	24.1	24.1	24.1
LTE Band 66	20.1	20.1	20.1	20.1	20.1	24.0	23.9	24.1	24.0	24.1



WLAN

Front, DUT Moving Toward (Trigger) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance	66	67	68	69	70	71	72	73	74	75
2.4 GHz 802.11b	13.1	13.1	13.1	13.1	13.1	19.2	19.2	19.1	19.1	19.1
2.4 GHz 802.11g	13.1	13.1	13.1	13.1	13.1	13.1	13.2	13.1	13.2	13.2
2.4 GHz 802.11n	13.1	13.1	13.1	13.1	13.1	13.2	13.2	13.2	13.1	13.2
5 GHz 802.11a	11.2	11.1	11.2	11.1	11.1	18.1	18.1	18.0	18.0	18.1
5 GHz 802.11n HT20	11.1	11.2	11.1	11.1	11.1	18.1	18.1	18.1	18.2	18.1
5 GHz 802.11n HT40	11.1	11.1	11.1	11.1	11.1	15.1	15.2	15.2	15.1	15.2



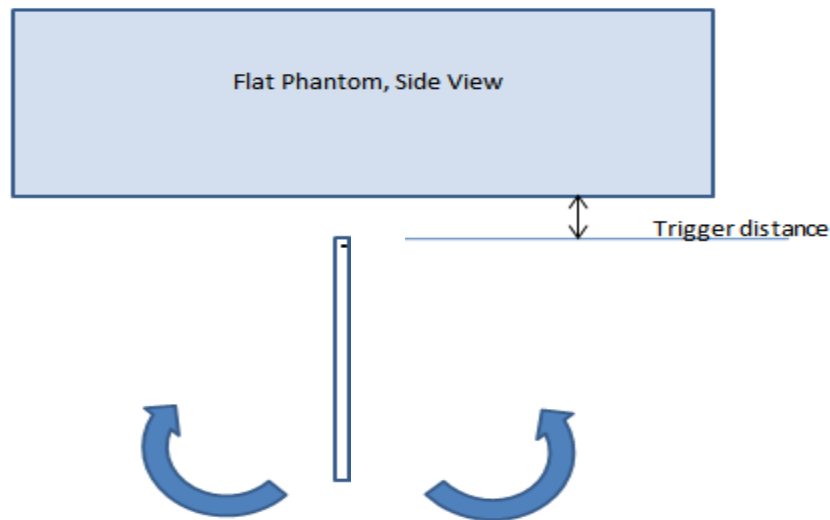
6.7.2 Proximity Sensor Coverage (KDB 616217 §6.3)

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

6.7.3 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 3 parallel to the base of the flat phantom for each band.

The EUT was rotated about Edge 3 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 3) KDB 616217 §6.4

Summary of Tablet Tilt Angle Influence to Proximity Sensor Triggering (Edge 3)

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°
850	14 mm	14 mm	On	On	On	On	On	On	On	On	On	On	On
1750	14 mm	14 mm	On	On	On	On	On	On	On	On	On	On	On
1900	14 mm	14 mm	On	On	On	On	On	On	On	On	On	On	On
2600	14 mm	14 mm	On	On	On	On	On	On	On	On	On	On	On

6.7.4 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	7 mm	N/A	N/A	6 mm
	Rear	14 mm	N/A	N/A	13 mm
	Edge 3	14 mm	N/A	14 mm	13 mm
WLAN	Front	70 mm	N/A	70 mm	69 mm

Notes:

1. Worst case distance for WLAN SAR is not considered for body exposure condition. Because Power reduction is applied only voice or VoIP held to ear scenarios.
2. For WLAN, This proximity sensor is only operating in Head exposure condition. So tilt (15 degree) position of Head exposure was additional verified.

7 RF Exposure Conditions (Test Configurations)

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

Wireless technologies	RF Exposure Conditions	DUT-to-User Separation	Test Position	Antenna-to-edge/surface	SAR Required	Note
WWAN	Head	0 mm	Left Touch	N/A	Yes	
			Left Tilt (15°)	N/A	Yes	
			Right Touch	N/A	Yes	
			Right Tilt (15°)	N/A	Yes	
	Body	15 mm	Rear	N/A	Yes	
			Front	N/A	Yes	
	Hotspot	10 mm	Rear	< 25 mm	Yes	
			Front	< 25 mm	Yes	
			Edge 1 (Top)	> 25 mm	No	1
			Edge 2 (Right)	< 25 mm	Yes	
			Edge 3 (Bottom)	< 25 mm	Yes	
			Edge 4 (Left)	< 25 mm	Yes	
	Phablet-10g	0 mm	Rear	< 25 mm	Yes	
			Front	< 25 mm	Yes	
			Edge 1 (Top)	> 25 mm	No	1
			Edge 2 (Right)	< 25 mm	Yes	
			Edge 3 (Bottom)	< 25 mm	Yes	
			Edge 4 (Left)	< 25 mm	Yes	
WLAN	Head	0 mm	Left Touch	N/A	Yes	
			Left Tilt (15°)	N/A	Yes	
			Right Touch	N/A	Yes	
			Right Tilt (15°)	N/A	Yes	
	Body	15 mm	Rear	N/A	Yes	
			Front	N/A	Yes	
	Hotspot	10 mm	Rear	< 25 mm	Yes	
			Front	< 25 mm	Yes	
			Edge 1 (Top)	< 25 mm	Yes	
			Edge 2 (Right)	> 25 mm	No	1
			Edge 3 (Bottom)	> 25 mm	No	1
			Edge 4 (Left)	< 25 mm	Yes	
	Phablet-10g	0 mm	Rear	< 25 mm	Yes	
			Front	< 25 mm	Yes	
			Edge 1 (Top)	< 25 mm	Yes	
			Edge 2 (Right)	> 25 mm	No	1
			Edge 3 (Bottom)	> 25 mm	No	1
			Edge 4 (Left)	< 25 mm	Yes	

Notes:

- SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hot Spot SAR.
- When Hotspot Mode is not supported, 10-g Phablet SAR is required for all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge in direct contact with a flat phantom, to address interactive hand use exposure conditions.
- When hotspot mode applies, 10-g Phablet SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg. When hotspot mode does not apply, 10-g Phablet SAR is required for all surfaces and Edges within 25mm of the antenna.

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 ±(%)
3-12-2018	Body 1900	e'	54.1500	Relative Permittivity (ε _r):	54.15	53.30	1.59	5
		e"	14.9600	Conductivity (σ):	1.58	1.52	3.98	5
	Body 1850	e'	54.3600	Relative Permittivity (ε _r):	54.36	53.30	1.99	5
		e"	14.8900	Conductivity (σ):	1.53	1.52	0.77	5
	Body 1910	e'	54.1200	Relative Permittivity (ε _r):	54.12	53.30	1.54	5
		e"	14.9800	Conductivity (σ):	1.59	1.52	4.66	5
3-15-2018	Body 1750	e'	54.1900	Relative Permittivity (ε _r):	54.19	53.44	1.40	5
		e"	14.7800	Conductivity (σ):	1.44	1.49	-3.23	5
	Body 1710	e'	54.3600	Relative Permittivity (ε _r):	54.36	53.54	1.52	5
		e"	14.7900	Conductivity (σ):	1.41	1.46	-3.78	5
	Body 1755	e'	54.1700	Relative Permittivity (ε _r):	54.17	53.43	1.39	5
		e"	14.7800	Conductivity (σ):	1.44	1.49	-3.15	5
3-15-2018	Body 1900	e'	53.8000	Relative Permittivity (ε _r):	53.80	53.30	0.94	5
		e"	14.7800	Conductivity (σ):	1.56	1.52	2.73	5
	Body 1850	e'	53.9100	Relative Permittivity (ε _r):	53.91	53.30	1.14	5
		e"	14.7600	Conductivity (σ):	1.52	1.52	-0.11	5
	Body 1910	e'	53.7800	Relative Permittivity (ε _r):	53.78	53.30	0.90	5
		e"	14.7900	Conductivity (σ):	1.57	1.52	3.34	5
3-18-2018	Body 1900	e'	52.3900	Relative Permittivity (ε _r):	52.39	53.30	-1.71	5
		e"	14.8900	Conductivity (σ):	1.57	1.52	3.49	5
	Body 1850	e'	52.5200	Relative Permittivity (ε _r):	52.52	53.30	-1.46	5
		e"	14.8100	Conductivity (σ):	1.52	1.52	0.23	5
	Body 1910	e'	52.3600	Relative Permittivity (ε _r):	52.36	53.30	-1.76	5
		e"	14.9100	Conductivity (σ):	1.58	1.52	4.18	5
3-21-2018	Body 1750	e'	52.2900	Relative Permittivity (ε _r):	52.29	53.44	-2.15	5
		e"	14.8500	Conductivity (σ):	1.44	1.49	-2.77	5
	Body 1710	e'	52.4000	Relative Permittivity (ε _r):	52.40	53.54	-2.14	5
		e"	14.8200	Conductivity (σ):	1.41	1.46	-3.59	5
	Body 1755	e'	52.2700	Relative Permittivity (ε _r):	52.27	53.43	-2.17	5
		e"	14.8500	Conductivity (σ):	1.45	1.49	-2.69	5
3-24-2018	Head 5180	e'	37.4100	Relative Permittivity (ε _r):	37.41	36.01	3.88	5
		e"	15.6000	Conductivity (σ):	4.49	4.63	-2.97	5
	Head 5300	e'	37.2300	Relative Permittivity (ε _r):	37.23	35.88	3.77	5
		e"	15.6700	Conductivity (σ):	4.62	4.75	-2.85	5
	Head 5600	e'	36.7700	Relative Permittivity (ε _r):	36.77	35.53	3.48	5
		e"	15.8300	Conductivity (σ):	4.93	5.06	-2.59	5
	Head 5800	e'	36.5000	Relative Permittivity (ε _r):	36.50	35.30	3.40	5
		e"	15.9700	Conductivity (σ):	5.15	5.27	-2.27	5
Head 5825	e'	36.4500	Relative Permittivity (ε _r):	36.45	35.30	3.26	5	
	e"	15.9700	Conductivity (σ):	5.17	5.27	-1.85	5	
3-25-2018	Body 1750	e'	53.5700	Relative Permittivity (ε _r):	53.57	53.44	0.24	5
		e"	14.7800	Conductivity (σ):	1.44	1.49	-3.23	5
	Body 1710	e'	53.7100	Relative Permittivity (ε _r):	53.71	53.54	0.31	5
		e"	14.8000	Conductivity (σ):	1.41	1.46	-3.72	5
	Body 1755	e'	53.5600	Relative Permittivity (ε _r):	53.56	53.43	0.25	5
		e"	14.7800	Conductivity (σ):	1.44	1.49	-3.15	5
3-25-2018	Body 1900	e'	53.3000	Relative Permittivity (ε _r):	53.30	53.30	0.00	5
		e"	14.9800	Conductivity (σ):	1.58	1.52	4.12	5
	Body 1850	e'	53.4400	Relative Permittivity (ε _r):	53.44	53.30	0.26	5
		e"	14.9100	Conductivity (σ):	1.53	1.52	0.90	5
	Body 1910	e'	53.2800	Relative Permittivity (ε _r):	53.28	53.30	-0.04	5
		e"	14.9900	Conductivity (σ):	1.59	1.52	4.73	5

SAR 2 Room

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
3-15-2018	Head 835	e'	42.9300	Relative Permittivity (ϵ_r):	42.93	41.50	3.45	5
		e"	19.3500	Conductivity (σ):	0.90	0.90	-0.18	5
	Head 820	e'	43.0700	Relative Permittivity (ϵ_r):	43.07	41.60	3.53	5
		e"	19.4100	Conductivity (σ):	0.88	0.90	-1.50	5
	Head 850	e'	42.8000	Relative Permittivity (ϵ_r):	42.80	41.50	3.13	5
		e"	19.3300	Conductivity (σ):	0.91	0.92	-0.15	5
3-15-2018	Body 835	e'	55.0800	Relative Permittivity (ϵ_r):	55.08	55.20	-0.22	5
		e"	21.0600	Conductivity (σ):	0.98	0.97	0.80	5
	Body 820	e'	55.1900	Relative Permittivity (ϵ_r):	55.19	55.28	-0.16	5
		e"	21.1400	Conductivity (σ):	0.96	0.97	-0.47	5
	Body 850	e'	55.0000	Relative Permittivity (ϵ_r):	55.00	55.16	-0.28	5
		e"	21.0200	Conductivity (σ):	0.99	0.99	0.64	5
3-20-2018	Head 835	e'	41.0100	Relative Permittivity (ϵ_r):	41.01	41.50	-1.18	5
		e"	19.4500	Conductivity (σ):	0.90	0.90	0.34	5
	Head 820	e'	41.1600	Relative Permittivity (ϵ_r):	41.16	41.60	-1.06	5
		e"	19.4900	Conductivity (σ):	0.89	0.90	-1.09	5
	Head 850	e'	40.8700	Relative Permittivity (ϵ_r):	40.87	41.50	-1.52	5
		e"	19.4300	Conductivity (σ):	0.92	0.92	0.36	5
3-22-2018	Head 2450	e'	39.2800	Relative Permittivity (ϵ_r):	39.28	39.20	0.20	5
		e"	13.5000	Conductivity (σ):	1.84	1.80	2.17	5
	Head 2400	e'	39.4300	Relative Permittivity (ϵ_r):	39.43	39.30	0.34	5
		e"	13.3800	Conductivity (σ):	1.79	1.75	1.93	5
	Head 2480	e'	39.1800	Relative Permittivity (ϵ_r):	39.18	39.16	0.05	5
		e"	13.5800	Conductivity (σ):	1.87	1.83	2.19	5
3-22-2018	Head 2600	e'	38.7500	Relative Permittivity (ϵ_r):	38.75	39.01	-0.67	5
		e"	13.8900	Conductivity (σ):	2.01	1.96	2.34	5
	Head 2500	e'	39.1100	Relative Permittivity (ϵ_r):	39.11	39.14	-0.07	5
		e"	13.6300	Conductivity (σ):	1.89	1.85	2.19	5
	Head 2700	e'	38.3700	Relative Permittivity (ϵ_r):	38.37	38.88	-1.32	5
		e"	14.0900	Conductivity (σ):	2.12	2.07	2.18	5
3-23-2018	Body 835	e'	53.1900	Relative Permittivity (ϵ_r):	53.19	55.20	-3.64	5
		e"	21.2200	Conductivity (σ):	0.99	0.97	1.57	5
	Body 820	e'	53.3100	Relative Permittivity (ϵ_r):	53.31	55.28	-3.56	5
		e"	21.2500	Conductivity (σ):	0.97	0.97	0.04	5
	Body 850	e'	53.0400	Relative Permittivity (ϵ_r):	53.04	55.16	-3.84	5
		e"	21.2100	Conductivity (σ):	1.00	0.99	1.55	5

SAR 3 Room

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit $\pm$ (%)
3-14-2018	Head 750	e'	42.0200	Relative Permittivity (ϵ_r):	42.02	41.96	0.14	5
		e''	21.5600	Conductivity (σ):	0.90	0.89	0.67	5
	Head 700	e'	42.7200	Relative Permittivity (ϵ_r):	42.72	42.22	1.19	5
		e''	21.9200	Conductivity (σ):	0.85	0.89	-4.05	5
	Head 790	e'	41.4700	Relative Permittivity (ϵ_r):	41.47	41.76	-0.69	5
		e''	21.2700	Conductivity (σ):	0.93	0.90	4.26	5
3-14-2018	Body 750	e'	54.0800	Relative Permittivity (ϵ_r):	54.08	55.55	-2.64	5
		e''	23.1000	Conductivity (σ):	0.96	0.96	0.03	5
	Body 700	e'	54.6300	Relative Permittivity (ϵ_r):	54.63	55.74	-1.99	5
		e''	23.5300	Conductivity (σ):	0.92	0.96	-4.52	5
	Body 790	e'	53.6300	Relative Permittivity (ϵ_r):	53.63	55.39	-3.18	5
		e''	22.7700	Conductivity (σ):	1.00	0.97	3.52	5
3-15-2018	Head 1750	e'	38.9400	Relative Permittivity (ϵ_r):	38.94	40.08	-2.86	5
		e''	13.5800	Conductivity (σ):	1.32	1.37	-3.47	5
	Head 1710	e'	39.1000	Relative Permittivity (ϵ_r):	39.10	40.15	-2.61	5
		e''	13.5300	Conductivity (σ):	1.29	1.35	-4.45	5
	Head 1755	e'	38.9200	Relative Permittivity (ϵ_r):	38.92	40.08	-2.89	5
		e''	13.5800	Conductivity (σ):	1.33	1.37	-3.40	5
3-15-2018	Head 1900	e'	38.3700	Relative Permittivity (ϵ_r):	38.37	40.00	-4.08	5
		e''	13.7900	Conductivity (σ):	1.46	1.40	4.06	5
	Head 1850	e'	38.5600	Relative Permittivity (ϵ_r):	38.56	40.00	-3.60	5
		e''	13.7400	Conductivity (σ):	1.41	1.40	0.96	5
	Head 1910	e'	38.3300	Relative Permittivity (ϵ_r):	38.33	40.00	-4.18	5
		e''	13.8100	Conductivity (σ):	1.47	1.40	4.76	5
3-17-2018	Body 750	e'	55.4500	Relative Permittivity (ϵ_r):	55.45	55.55	-0.17	5
		e''	23.1700	Conductivity (σ):	0.97	0.96	0.33	5
	Body 700	e'	55.9800	Relative Permittivity (ϵ_r):	55.98	55.74	0.43	5
		e''	23.5900	Conductivity (σ):	0.92	0.96	-4.28	5
	Body 790	e'	55.0000	Relative Permittivity (ϵ_r):	55.00	55.39	-0.71	5
		e''	22.8400	Conductivity (σ):	1.00	0.97	3.84	5
3-18-2018	Body 5250	e'	47.3200	Relative Permittivity (ϵ_r):	47.32	48.95	-3.33	5
		e''	18.7500	Conductivity (σ):	5.47	5.35	2.25	5
	Body 5260	e'	47.2900	Relative Permittivity (ϵ_r):	47.29	48.94	-3.37	5
		e''	18.7500	Conductivity (σ):	5.48	5.36	2.22	5
	Body 5600	e'	46.7200	Relative Permittivity (ϵ_r):	46.72	48.48	-3.63	5
		e''	19.0600	Conductivity (σ):	5.93	5.76	3.02	5
	Body 5750	e'	46.4400	Relative Permittivity (ϵ_r):	46.44	48.27	-3.80	5
		e''	19.2500	Conductivity (σ):	6.15	5.94	3.68	5
3-22-2018	Body 5825	e'	46.3900	Relative Permittivity (ϵ_r):	46.39	48.20	-3.76	5
		e''	19.2600	Conductivity (σ):	6.24	6.00	3.97	5
	Body 2450	e'	51.2800	Relative Permittivity (ϵ_r):	51.28	52.70	-2.69	5
		e''	14.8900	Conductivity (σ):	2.03	1.95	4.02	5
	Body 2400	e'	51.4100	Relative Permittivity (ϵ_r):	51.41	52.77	-2.58	5
		e''	14.7600	Conductivity (σ):	1.97	1.90	3.78	5
	Body 2480	e'	51.2000	Relative Permittivity (ϵ_r):	51.20	52.66	-2.78	5
		e''	14.9800	Conductivity (σ):	2.07	1.99	3.69	5

SAR 3 Room (Continued)

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
3-22-2018	Body 2600	e'	50.7900	Relative Permittivity (ϵ_r):	50.79	52.51	-3.28	5
		e''	15.3100	Conductivity (σ):	2.21	2.16	2.43	5
	Body 2500	e'	51.1300	Relative Permittivity (ϵ_r):	51.13	52.64	-2.86	5
		e''	15.0300	Conductivity (σ):	2.09	2.02	3.42	5
	Body 2700	e'	50.4200	Relative Permittivity (ϵ_r):	50.42	52.38	-3.75	5
		e''	15.5300	Conductivity (σ):	2.33	2.30	1.31	5
3-22-2018	Body 5250	e'	48.1000	Relative Permittivity (ϵ_r):	48.10	48.95	-1.74	5
		e''	18.7000	Conductivity (σ):	5.46	5.35	1.98	5
	Body 5260	e'	48.0800	Relative Permittivity (ϵ_r):	48.08	48.94	-1.75	5
		e''	18.7100	Conductivity (σ):	5.47	5.36	2.00	5
	Body 5600	e'	47.5000	Relative Permittivity (ϵ_r):	47.50	48.48	-2.02	5
		e''	19.0200	Conductivity (σ):	5.92	5.76	2.80	5
	Body 5750	e'	47.2400	Relative Permittivity (ϵ_r):	47.24	48.27	-2.14	5
		e''	19.1800	Conductivity (σ):	6.13	5.94	3.31	5
	Body 5825	e'	47.1200	Relative Permittivity (ϵ_r):	47.12	48.20	-2.24	5
		e''	19.2500	Conductivity (σ):	6.23	6.00	3.91	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	2-19-2018	750	1g	8.22	8.63
				10g	5.35	5.72
D835V2	4d194	7-19-2017	835	1g	9.33	9.30
				10g	6.03	6.09
D1750V2	1125	2-16-2018	1750	1g	36.50	36.80
				10g	19.30	19.50
D1900V2	5d190	9-20-2017	1900	1g	38.30	40.00
				10g	20.10	21.10
D2450V2	939	9-19-2017	2450	1g	52.30	50.70
				10g	24.60	23.90
D2600V2	1097	1-17-2018	2600	1g	56.40	54.40
				10g	25.30	24.20
D5GHzV2	1184	8-23-2017	5300	1g	81.30	76.40
				10g	23.20	21.30
			5500	1g	80.60	77.10
				10g	22.90	21.30
			5600	1g	82.30	79.20
				10g	23.40	22.20
			5800	1g	78.10	76.40
				10g	22.20	21.20
D5GHzV2	1209	2-15-2018	5250	1g	80.80	75.70
				10g	23.10	21.00
			5600	1g	83.40	79.00
				10g	23.80	21.90
			5750	1g	80.70	75.60
				10g	22.90	20.80

System Check Results

The 1-g and 10-g SAR measured with a reference dipole, using the required tissue-equivalent medium at the test frequency, must be within 10% of the manufacturer calibrated dipole SAR target.

SAR 1 Room

Date Tested	System Dipole		T.S. Liquid	Measured Results		Target (Ref. Value)	Delta ±10 %	Plot No.
	Type	Serial #		Zoom Scan to 100 mW	Normalize to 1 W			
3-12-2018	D1900V2	5d190	Body	1g	4.05	40.50	40.00	1.25
				10g	2.06	20.60	21.10	-2.37
3-15-2018	D1750V2	1125	Body	1g	3.59	35.90	36.80	-2.45
				10g	1.90	19.00	19.50	-2.56
3-15-2018	D1900V2	5d190	Body	1g	4.07	40.70	40.00	1.75
				10g	2.09	20.90	21.10	-0.95
3-18-2018	D1900V2	5d190	Body	1g	4.11	41.10	40.00	2.75
				10g	2.11	21.10	21.10	0.00
3-21-2018	D1750V2	1125	Body	1g	3.60	36.00	36.80	-2.17
				10g	1.90	19.00	19.50	-2.56
3-24-2018	5GHzV2 (5300)	1184	Head	1g	7.95	79.50	81.30	-2.21
				10g	2.25	22.50	23.20	-3.02
3-24-2018	5GHzV2 (5500)	1184	Head	1g	7.71	77.10	80.60	-4.34
				10g	2.19	21.90	22.90	-4.37
3-24-2018	5GHzV2 (5600)	1184	Head	1g	8.33	83.30	82.30	1.22
				10g	2.36	23.60	23.40	0.85
3-24-2018	5GHzV2 (5800)	1184	Head	1g	7.42	74.20	78.10	-4.99
				10g	2.11	21.10	22.20	-4.95
3-25-2018	D1750V2	1125	Body	1g	3.77	37.70	36.80	2.45
				10g	1.99	19.90	19.50	2.05
3-25-2018	D1900V2	5d190	Body	1g	4.19	41.90	40.00	4.75
				10g	2.14	21.40	21.10	1.42

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			
3-15-2018	D835V2	4d194	Head	1g	0.93	9.29	9.33	-0.43
				10g	0.61	6.11	6.03	1.33
3-15-2018	D835V2	4d194	Body	1g	1.00	9.96	9.30	7.10
				10g	0.65	6.54	6.09	7.39
3-20-2018	D835V2	4d194	Head	1g	1.00	10.00	9.33	7.18
				10g	0.66	6.61	6.03	9.62
3-22-2018	D2450V2	939	Head	1g	5.60	56.00	52.30	7.07
				10g	2.54	25.40	24.60	3.25
3-22-2018	D2600V2	1097	Head	1g	5.81	58.10	56.40	3.01
				10g	2.59	25.90	25.30	2.37
3-23-2018	D835V2	4d194	Body	1g	0.95	9.48	9.30	1.94
				10g	0.62	6.21	6.09	1.97

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			
3-14-2018	D750V3	1122	Head	1g	0.80	8.00	8.22	-2.68
				10g	0.53	5.29	5.35	-1.12
3-14-2018	D750V3	1122	Body	1g	0.84	8.39	8.63	-2.78
				10g	0.56	5.59	5.72	-2.27
3-15-2018	D1750V2	1125	Head	1g	3.42	34.20	36.50	-6.30
				10g	1.82	18.20	19.30	-5.70
3-15-2018	D1900V2	5d190	Head	1g	4.02	40.20	38.30	4.96
				10g	2.06	20.60	20.10	2.49
3-17-2018	D750V3	1122	Body	1g	0.83	8.30	8.63	-3.82
				10g	0.55	5.53	5.72	-3.32
3-18-2018	D5GHzV2 (5250)	1209	Body	1g	7.07	70.70	75.70	-6.61
				10g	1.99	19.90	21.00	-5.24
3-18-2018	D5GHzV2 (5600)	1209	Body	1g	7.81	78.10	79.00	-1.14
				10g	2.19	21.90	21.90	0.00
3-18-2018	D5GHzV2 (5750)	1209	Body	1g	7.20	72.00	75.60	-4.76
				10g	2.01	20.10	20.80	-3.37
3-22-2018	D2450V2	939	Body	1g	5.31	53.10	50.70	4.73
				10g	2.42	24.20	23.90	1.26
3-22-2018	D2600V2	1097	Body	1g	5.11	51.10	54.40	-6.07
				10g	2.24	22.40	24.20	-7.44
3-22-2018	D5GHzV2 (5250)	1209	Body	1g	7.07	70.70	75.70	-6.61
				10g	1.99	19.90	21.00	-5.24
3-22-2018	D5GHzV2 (5600)	1209	Body	1g	7.84	78.40	79.00	-0.76
				10g	2.21	22.10	21.90	0.91
3-22-2018	D5GHzV2 (5750)	1209	Body	1g	6.95	69.50	75.60	-8.07
				10g	1.94	19.40	20.80	-6.73

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

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Full Power			Reduced Power Hotspot back-off			Reduced Power Proximity sensor back-off		
					Burst Pwr (dBm)	Frame Pwr (dBm)	Max. Frame Pwr (dBm)	Burst Pwr (dBm)	Frame Pwr (dBm)	Max. Frame Pwr (dBm)	Burst Pwr (dBm)	Frame Pwr (dBm)	Max. Frame Pwr (dBm)
GSM (Voice)	CS1	1	128	824.4	33.6	24.6	25.0	32.2	23.2	23.5	32.2	23.1	23.5
			190	836.6	33.6	24.5		32.1	23.1		32.2	23.1	
			251	848.8	33.5	24.5		32.0	23.0		32.0	23.0	
GPRS (GMSK)	CS1	1	128	824.4	33.6	24.6	25.0	32.2	23.1	23.5	32.2	23.1	23.5
			190	836.6	33.5	24.5		32.0	23.0		32.1	23.0	
			251	848.8	33.4	24.4		31.9	22.9		32.0	22.9	
		2	128	824.4	31.5	25.5	25.5	29.5	23.5	23.5	29.5	23.5	23.5
			190	836.6	31.5	25.5		29.5	23.5		29.5	23.5	
			251	848.8	31.0	24.9		29.2	23.2		29.2	23.2	
		3	128	824.4	29.6	25.3	25.4	27.6	23.4	23.4	27.6	23.4	23.4
			190	836.6	29.5	25.2		27.5	23.3		27.5	23.3	
			251	848.8	29.0	24.8		27.2	22.9		27.2	22.9	
		4	128	824.4	28.1	25.1	25.5	26.2	23.2	23.5	26.3	23.3	23.5
			190	836.6	28.0	25.0		26.1	23.1		26.2	23.2	
			251	848.8	27.8	24.8		25.9	22.9		25.9	22.9	
EGPRS (8PSK)	MCS5	1	128	824.4	27.2	18.2	18.5	25.3	16.3	16.5	25.3	16.3	16.5
			190	836.6	27.1	18.1		25.2	16.2		25.2	16.2	
			251	848.8	26.6	17.5		25.0	15.9		25.0	15.9	
		2	128	824.4	25.1	19.1	19.5	23.2	17.1	17.5	23.2	17.1	17.5
			190	836.6	25.0	19.0		23.0	17.0		23.0	17.0	
			251	848.8	24.7	18.7		22.8	16.8		22.8	16.8	
		3	128	824.4	23.0	18.8	19.2	22.0	17.7	17.7	22.0	17.7	17.7
			190	836.6	22.9	18.6		21.9	17.6		21.9	17.6	
			251	848.8	22.7	18.4		21.9	17.6		21.9	17.6	
		4	128	824.4	23.3	20.3	20.5	21.0	17.9	18.0	20.9	17.9	18.0
			190	836.6	23.2	20.2		20.8	17.8		20.8	17.8	
			251	848.8	23.2	20.2		20.8	17.8		20.7	17.7	

Notes:

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

- GMSK (GPRS) mode with 4 time slots for Max power and 4 time slots for reduced power, based on the Tune-up Procedure. Refer to §6.3.
- SAR is not required for EGPRS (8PSK) mode because the maximum output power and tune-up limit is $\leq 1/4$ dB higher than GMSK GPRS or the adjusted SAR of the highest reported SAR of GMSK GPRS is ≤ 1.2 W/kg.

GSM1900 Measured Results

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Full Power			Reduced Power Hotspot back-off			Reduced Power Proximity sensor back-off		
					Burst Pwr (dBm)	Frame Pwr (dBm)	Max. Frame Pwr (dBm)	Burst Pwr (dBm)	Frame Pwr (dBm)	Max. Frame Pwr (dBm)	Burst Pwr (dBm)	Frame Pwr (dBm)	Max. Frame Pwr (dBm)
GSM (Voice)	CS1	1	512	1850.2	29.9	20.8	21.5	27.4	18.4	19.0	27.4	18.4	19.0
			661	1880.0	30.1	21.0		27.7	18.6		27.7	18.7	
			810	1909.8	30.2	21.1		27.7	18.7		27.6	18.6	
GPRS (GMSK)	CS1	1	512	1850.2	29.8	20.8	21.5	27.4	18.4	19.0	27.4	18.4	19.0
			661	1880.0	30.0	21.0		27.6	18.6		27.5	18.5	
			810	1909.8	30.1	21.0		27.6	18.6		27.5	18.5	
		2	512	1850.2	27.7	21.7	22.0	24.9	18.9	19.0	24.9	18.9	19.0
			661	1880.0	27.9	21.9		24.9	18.9		24.9	18.9	
			810	1909.8	27.6	21.6		24.9	18.9		24.9	18.9	
		3	512	1850.2	25.8	21.5	21.9	22.8	18.6	18.9	22.8	18.6	18.9
			661	1880.0	26.0	21.7		23.1	18.8		23.1	18.8	
			810	1909.8	25.8	21.6		22.9	18.6		22.9	18.6	
		4	512	1850.2	24.3	21.3	22.0	21.4	18.4	19.0	21.4	18.4	19.0
			661	1880.0	24.4	21.4		21.5	18.5		21.5	18.5	
			810	1909.8	24.4	21.4		21.5	18.5		21.5	18.5	
EGPRS (8PSK)	MCS5	1	512	1850.2	25.4	16.4	17.5	22.6	13.6	14.5	22.6	13.6	14.5
			661	1880.0	25.7	16.6		22.8	13.8		22.8	13.8	
			810	1909.8	25.5	16.5		22.7	13.7		22.7	13.7	
		2	512	1850.2	23.4	17.3	18.5	20.4	14.4	15.5	20.4	14.4	15.5
			661	1880.0	23.6	17.6		20.7	14.6		20.7	14.6	
			810	1909.8	23.5	17.4		20.6	14.5		20.6	14.5	
		3	512	1850.2	21.7	17.4	18.7	18.7	14.5	15.7	18.7	14.5	15.7
			661	1880.0	21.9	17.7		19.0	14.7		19.0	14.7	
			810	1909.8	21.8	17.5		18.9	14.6		18.9	14.6	
		4	512	1850.2	20.0	17.0	18.5	17.0	14.0	15.5	17.0	14.0	15.5
			661	1880.0	20.2	17.2		17.3	14.3		17.3	14.3	
			810	1909.8	20.1	17.1		17.2	14.2		17.2	14.1	

Notes:

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

- GMSK (GPRS) mode with 4 time slots for Max power and 4 time slots for reduced power, based on the Tune-up Procedure. Refer to §6.3.
- SAR is not required for EGPRS (8PSK) mode because the maximum output power and tune-up limit is $\leq 1/4$ dB higher than GMSK GPRS or the adjusted SAR of the highest reported SAR of GMSK GPRS is ≤ 1.2 W/kg.

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
HSDPA Specific Settings	MPR (dB)	0	0	0.5	0.5
	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-DPDCCH	6	8	8	5	0
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	12
	ETFCI (from 34.121 Table C.11.1.3)	75	67	92	71	67
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E-TFCIs	5	5	2	5	1
	Reference E-TFCI	11	11	11	11	67
	Reference E-TFCI PO	4	4	4	4	18
	Reference E-TFCI	67	67	92	67	67
	Reference E-TFCI PO	18	18	18	18	18
	Reference E-TFCI	71	71	71	71	71
	Reference E-TFCI PO	23	23	23	23	23
	Reference E-TFCI	75	75	75	75	75
	Reference E-TFCI PO	26	26	26	26	26
	Reference E-TFCI	81	81	81	81	81
	Reference E-TFCI PO	27	27	27	27	27
	Maximum Channelization Codes	2xSF2				SF4

DC-HSDPA Setup Procedures used to establish the test signals

The following tests were completed according to procedures in section 7.3.13 of 3GPP TS34.108 v9.5.0. A summary of these settings are illustrated below:

Downlink Physical Channels are set as per 3GPP TS34.121-1 v9.0.0 E.5.0

Table E.5.0: Levels for HSDPA connection setup

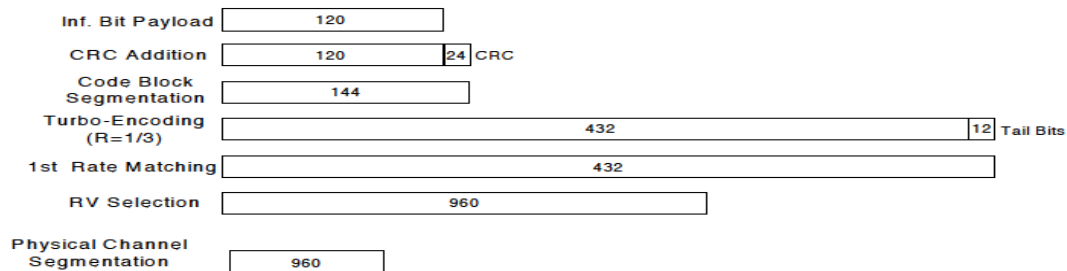
Parameter During Connection setup	Unit	Value
P-CPICH_Ec/Ior	dB	-10
P-CCPCH and SCH_Ec/Ior	dB	-12
PICH_Ec/Ior	dB	-15
HS-PDSCH	dB	off
HS-SCCH_1	dB	off
DPCH_Ec/Ior	dB	-5
OCNS_Ec/Ior	dB	-3.1

Call is set up as per 3GPP TS34.108 v9.5.0 sub clause 7.3.13

The configurations of the fixed reference channels for HSDPA RF tests are described in 3GPP TS 34.121, annex C for FDD and 3GPP TS 34.122.

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

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

**Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)**

The following 4 Sub-tests for HSDPA were completed according to Release 8 procedures in section 5.2 of 3GPP TS34.121. A summary of subtest settings are illustrated below:

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subtest	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set 12			
	Power Control Algorithm	Algorithm2			
	β_c	2/15	11/15	15/15	15/15
	β_d	15/15	15/15	8/15	4/15
	β_d (SF)	64			
	β_c/β_d	2/15	11/15	15/8	15/4
	β_{hs}	4/15	24/15	30/15	30/15
HSDPA Specific Settings	MPR (dB)	0	0	0.5	0.5
	DACK	8			
	DNAK	8			
	DCQI	8			
	Ack-Nack Repetition factor	3			
	CQI Feedback	4ms			
	CQI Repetition Factor	2			
	Ahs = β_{hs}/β_c	30/15			

HSPA+

Since 16QAM is not used for uplink, the uplink Category and release is same as HSUPA, i.e., Rel. 7. Therefore, the RF conducted power is not measured.

W-CDMA Band II Measured Results

Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Max. RF output power (dBm)	Reduced. RF output power Hotspot back-off (dBm)	Reduced. RF output power Proximity sensor back-off (dBm)
						Meas. Avg Pwr	Meas. Avg Pwr	Meas. Avg Pwr
W-CDMA Band II	Rel 99	RMC, 12.2 kbps	9262	1852.4	N/A	23.3	19.2	19.2
			9400	1880.0		23.4	19.4	19.4
			9538	1907.6		23.0	18.9	19.0
	HSDPA	Subtest 1	9262	1852.4	0	22.3	18.3	18.3
			9400	1880.0		22.4	18.4	18.4
			9538	1907.6		22.0	17.9	17.9
		Subtest 2	9262	1852.4	0	22.3	18.3	18.2
			9400	1880.0		22.4	18.4	18.4
			9538	1907.6		21.9	17.9	17.9
		Subtest 3	9262	1852.4	0.5	21.8	17.8	17.8
			9400	1880.0		21.9	17.9	17.9
			9538	1907.6		21.4	17.4	17.4
		Subtest 4	9262	1852.4	0.5	21.8	17.8	17.8
			9400	1880.0		21.9	17.9	17.9
			9538	1907.6		21.5	17.5	17.4
	HSUPA	Subtest 1	9262	1852.4	0	22.3	18.3	18.3
			9400	1880.0		22.4	18.4	18.4
			9538	1907.6		22.0	17.9	17.9
		Subtest 2	9262	1852.4	2	20.3	16.3	16.3
			9400	1880.0		20.4	16.4	16.4
			9538	1907.6		19.9	16.0	15.9
		Subtest 3	9262	1852.4	1	21.3	17.3	17.3
			9400	1880.0		21.4	17.4	17.4
			9538	1907.6		21.0	17.0	17.0
		Subtest 4	9262	1852.4	2	20.3	16.3	16.3
			9400	1880.0		20.4	16.4	16.4
			9538	1907.6		20.0	16.0	15.9
		Subtest 5	9262	1852.4	0	22.3	18.3	18.3
			9400	1880.0		22.5	18.4	18.4
			9538	1907.6		22.0	18.0	18.0
	DC-HSDPA	Subtest 1	9262	1852.4	0	22.3	18.3	18.3
			9400	1880.0		22.5	18.4	18.4
			9538	1907.6		22.0	18.0	18.0
		Subtest 2	9262	1852.4	0	22.3	18.3	18.3
			9400	1880.0		22.4	18.4	18.4
			9538	1907.6		22.0	17.9	17.9
		Subtest 3	9262	1852.4	0.5	21.8	17.8	17.8
			9400	1880.0		21.9	17.9	17.9
			9538	1907.6		21.4	17.4	17.4
		Subtest 4	9262	1852.4	0.5	21.8	17.8	17.8
			9400	1880.0		22.0	17.9	17.9
			9538	1907.6		21.5	17.5	17.5

W-CDMA Band IV Measured Results

Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Max. RF output power (dBm)	Reduced. RF output power Hotspot back-off (dBm)	Reduced. RF output power Proximity sensor back-off (dBm)
						Meas. Avg Pwr	Meas. Avg Pwr	Meas. Avg Pwr
W-CDMA Band IV	Rel 99	RMC, 12.2 kbps	1312	1712.4	N/A	23.5	20.0	20.0
			1413	1732.6		23.6	20.0	20.0
			1513	1752.6		23.3	19.8	19.8
	HSDPA	Subtest 1	1312	1712.4	0	22.5	19.0	19.0
			1413	1732.6		22.6	19.1	19.0
			1513	1752.6		22.4	18.8	18.8
		Subtest 2	1312	1712.4	0	22.5	19.0	19.0
			1413	1732.6		22.5	19.0	19.0
			1513	1752.6		22.3	18.8	18.8
		Subtest 3	1312	1712.4	0.5	22.0	18.5	18.5
			1413	1732.6		22.0	18.5	18.5
			1513	1752.6		21.8	18.3	18.3
		Subtest 4	1312	1712.4	0.5	22.0	18.5	18.5
			1413	1732.6		22.0	18.5	18.5
			1513	1752.6		21.8	18.3	18.3
	HSUPA	Subtest 1	1312	1712.4	0	22.5	19.0	19.0
			1413	1732.6		22.6	19.0	19.0
			1513	1752.6		22.3	18.8	18.8
		Subtest 2	1312	1712.4	2	20.5	17.0	17.0
			1413	1732.6		20.5	17.0	17.0
			1513	1752.6		20.3	16.8	16.8
		Subtest 3	1312	1712.4	1	21.5	18.0	18.0
			1413	1732.6		21.5	18.0	18.0
			1513	1752.6		21.3	17.8	17.8
		Subtest 4	1312	1712.4	2	20.5	17.0	17.0
			1413	1732.6		20.6	17.0	17.0
			1513	1752.6		20.3	16.8	16.8
		Subtest 5	1312	1712.4	0	22.6	19.0	19.0
			1413	1732.6		22.6	19.1	19.1
			1513	1752.6		22.3	18.8	18.8
	DC-HSDPA	Subtest 1	1312	1712.4	0	22.6	19.1	19.1
			1413	1732.6		22.6	19.1	19.1
			1513	1752.6		22.3	18.8	18.8
		Subtest 2	1312	1712.4	0	22.5	19.0	19.0
			1413	1732.6		22.5	19.0	19.0
			1513	1752.6		22.3	18.8	18.8
		Subtest 3	1312	1712.4	0.5	22.0	18.5	18.5
			1413	1732.6		22.0	18.5	18.5
			1513	1752.6		21.8	18.3	18.3
		Subtest 4	1312	1712.4	0.5	22.0	18.5	18.5
			1413	1732.6		22.0	18.5	18.5
			1513	1752.6		21.8	18.2	18.2

W-CDMA Band V Measured Results

Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Max. RF output power (dBm)	Reduced. RF output power Hotspot back-off (dBm)	Reduced. RF output power Proximity sensor back-off (dBm)
						Meas. Avg Pwr	Meas. Avg Pwr	Meas. Avg Pwr
W-CDMA Band V	Rel 99	RMC, 12.2 kbps	4132	826.4	N/A	24.0	22.0	22.0
			4183	836.6		24.1	22.0	22.0
			4233	846.6		23.9	21.9	21.9
	HSDPA	Subtest 1	4132	826.4	0	23.1	21.1	21.1
			4183	836.6		23.1	21.1	21.1
			4233	846.6		22.9	20.9	20.9
		Subtest 2	4132	826.4	0	23.0	21.0	21.0
			4183	836.6		23.0	21.0	21.0
			4233	846.6		22.9	20.9	20.9
		Subtest 3	4132	826.4	0.5	22.5	20.5	20.5
			4183	836.6		22.5	20.5	20.5
			4233	846.6		22.4	20.4	20.4
		Subtest 4	4132	826.4	0.5	22.5	20.5	20.5
			4183	836.6		22.5	20.5	20.5
			4233	846.6		22.4	20.4	20.4
	HSUPA	Subtest 1	4132	826.4	0	23.2	21.1	21.1
			4183	836.6		23.1	21.1	21.1
			4233	846.6		23.0	21.0	21.0
		Subtest 2	4132	826.4	2	21.1	19.2	19.1
			4183	836.6		21.1	19.1	19.1
			4233	846.6		20.9	19.0	19.0
		Subtest 3	4132	826.4	1	22.1	20.1	20.1
			4183	836.6		22.2	20.1	20.1
			4233	846.6		22.0	20.0	20.0
		Subtest 4	4132	826.4	2	21.1	19.2	19.2
			4183	836.6		21.1	19.1	19.1
			4233	846.6		21.0	19.0	19.0
		Subtest 5	4132	826.4	0	23.2	21.1	21.1
			4183	836.6		23.1	21.1	21.1
			4233	846.6		22.9	20.9	20.9
	DC-HSDPA	Subtest 1	4132	826.4	0	23.0	21.0	21.0
			4183	836.6		23.0	21.0	21.0
			4233	846.6		22.9	20.9	20.9
		Subtest 2	4132	826.4	0	23.0	21.0	21.0
			4183	836.6		23.1	21.0	21.0
			4233	846.6		22.9	20.9	20.9
		Subtest 3	4132	826.4	0.5	22.6	20.6	20.6
			4183	836.6		22.6	20.6	20.6
			4233	846.6		22.4	20.4	20.4
		Subtest 4	4132	826.4	0.5	22.5	20.5	20.5
			4183	836.6		22.5	20.5	20.5
			4233	846.6		22.4	20.4	20.4

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 1, 2 and 3

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

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

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

Network Signalling value	Requirements (subclause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N _{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	N/A
NS_03	6.6.2.2.1	2, 4, 10, 23, 25, 35, 36, 66, 70	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
			20	>10	≤ 1
NS_04	6.6.2.2.2, 6.6.3.3.19	41	5, 10, 15, 20	Table 6.2.4-4, Table 6.2.4-4a	
NS_05	6.6.3.3.1	1	10, 15, 20	≥ 50 (NOTE 1)	≤ 1 (NOTE 1)
			15, 20	Table 6.2.4-18 (NOTE 2)	
		65 (NOTE 3)	10, 15, 20	≥ 50	≤ 1 (NOTE 1)
			15, 20	Table 6.2.4-18 (NOTE 2)	
NS_06	6.6.2.2.3	12, 13, 14, 17	1.4, 3, 5, 10	Table 5.6-1	N/A
NS_07	6.6.2.2.3, 6.6.3.3.2	13	10	Table 6.2.4-2	
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10	6.6.2.2.1, 6.6.3.3.13	20	15, 20	Table 6.2.4-3	
NS_11	6.6.2.2.1, 6.6.3.3.13	23	1.4, 3, 5, 10, 15, 20	Table 6.2.4-5	
NS_12	6.6.3.3.5	26	1.4, 3, 5, 10, 15	Table 6.2.4-6	
NS_13	6.6.3.3.6	26	5	Table 6.2.4-7	
NS_14	6.6.3.3.7	26	10, 15	Table 6.2.4-8	
NS_15	6.6.3.3.8	26	1.4, 3, 5, 10, 15	Table 6.2.4-9, Table 6.2.4-10	
NS_16	6.6.3.3.9	27	3, 5, 10	Table 6.2.4-11, Table 6.2.4-12, Table 6.2.4-13	
NS_17	6.6.3.3.10	28	5, 10	Table 5.6-1	N/A
NS_18	6.6.3.3.11	28	5	≥ 2	≤ 1
			10, 15, 20	≥ 1	≤ 4
NS_19	6.6.3.3.12	44	10, 15, 20	Table 6.2.4-14	
NS_20	6.6.2.2.1, 6.6.3.3.14	23	5, 10, 15, 20	Table 6.2.4-15	
	6.6.3.3.15			Table 6.2.4-16	
NS_22	6.6.3.3.16	42, 43	5, 10, 15, 20	Table 6.2.4-17	
NS_23	6.6.3.3.17	42, 43	5, 10, 15, 20	N/A	
NS_24	6.6.3.3.20	65 (NOTE 4)	5, 10, 15, 20	Table 6.2.4-19	
NS_25	6.6.3.3.21	65 (NOTE 4)	5, 10, 15, 20	Table 6.2.4-20	
NS_26	6.6.3.3.22	68	10, 15	Table 6.2.4-21	
NS_27	6.6.2.2.5, 6.6.3.3.23	48	5, 10, 15, 20	Table 6.2.4-22	
NS_28	6.2.2A, 6.6.3.3.24	46 (NOTE 5)	20	Table 6.2.4-23	
NS_29	6.2.2A, 6.6.2.3.1a, 6.6.3.3.25	46 (NOTE 5)	20	Table 6.2.4-24	
NS_30	6.2.2A, 6.6.3.3.26	46 (NOTE 5)	20	Table 6.2.4-25	
NS_31	6.2.2A, 6.6.3.3.27	46 (NOTE 5)	20	Table 6.2.4-26	
NS_32	-	-	-	-	-

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

Max power Results

LTE Band 2 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Meas. Avg Pwr (dBm)		
						1860 MHz	1880 MHz	1900 MHz
LTE Band 2	20	QPSK	1	0	0	23.8	24.0	24.0
			1	49	0	23.7	23.8	23.6
			1	99	0	23.6	23.6	23.3
			50	0	1	22.8	23.0	22.8
			50	24	1	22.8	22.9	22.7
			50	50	1	22.7	22.7	22.5
		16QAM	100	0	1	22.8	23.0	22.7
			1	0	1	23.3	23.4	23.5
			1	49	1	23.0	23.2	23.2
			1	99	1	23.1	23.1	22.9
			50	0	2	21.7	22.0	21.8
			50	24	2	21.8	22.0	21.8
			50	50	2	21.7	21.8	21.6
			100	0	2	21.8	21.9	21.7
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Meas. Avg Pwr (dBm)		
						1857.5 MHz	1880 MHz	1902.5 MHz
LTE Band 2	15	QPSK	1	0	0	23.9	24.1	23.9
			1	37	0	23.4	23.7	23.3
			1	74	0	23.9	23.9	23.6
			36	0	1	22.8	23.0	22.7
			36	20	1	22.7	22.9	22.6
			36	39	1	22.7	22.8	22.5
		16QAM	75	0	1	22.7	22.9	22.5
			1	0	1	23.3	23.5	22.9
			1	37	1	23.0	23.2	22.5
			1	74	1	23.2	23.3	22.6
			36	0	2	21.7	22.0	21.6
			36	20	2	21.7	21.9	21.6
			36	39	2	21.7	21.9	21.5
			75	0	2	21.7	21.9	21.6
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Meas. Avg Pwr (dBm)		
						1855 MHz	1880 MHz	1905 MHz
LTE Band 2	10	QPSK	1	0	0	23.8	24.0	23.8
			1	25	0	23.6	23.8	23.4
			1	49	0	23.9	23.8	23.5
			25	0	1	22.7	22.8	22.5
			25	12	1	22.7	22.9	22.5
			25	25	1	22.7	22.9	22.5
		16QAM	50	0	1	22.7	22.9	22.5
			1	0	1	23.2	23.0	22.8
			1	25	1	23.0	22.8	22.4
			1	49	1	23.2	22.8	22.5
			25	0	2	21.8	21.9	21.6
			25	12	2	21.7	21.9	21.6
			25	25	2	21.7	21.9	21.5
			50	0	2	21.7	21.9	21.5

LTE Band 2 Measured Results (Continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Meas. Avg Pwr (dBm)		
						1852.5 MHz	1880 MHz	1907.5 MHz
LTE Band 2	5	QPSK	1	0	0	23.8	23.9	23.7
			1	12	0	23.6	23.7	23.4
			1	24	0	23.7	23.8	23.5
			12	0	1	22.7	22.9	22.6
			12	7	1	22.7	22.9	22.5
			12	13	1	22.7	22.8	22.4
			25	0	1	22.7	22.9	22.5
		16QAM	1	0	1	22.9	23.4	22.7
			1	12	1	22.8	23.4	22.5
			1	24	1	22.8	23.3	22.5
			12	0	2	21.8	22.0	21.6
			12	7	2	21.8	22.0	21.5
			12	13	2	21.8	22.0	21.5
			25	0	2	21.7	22.0	21.5
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Meas. Avg Pwr (dBm)		
						1851.5 MHz	1880 MHz	1908.5 MHz
LTE Band 2	3	QPSK	1	0	0	23.6	23.8	23.4
			1	8	0	23.6	23.8	23.4
			1	14	0	23.5	23.7	23.3
			8	0	1	22.7	22.9	22.4
			8	4	1	22.7	22.9	22.4
			8	7	1	22.7	22.9	22.5
			15	0	1	22.7	22.8	22.4
		16QAM	1	0	1	22.8	23.3	22.4
			1	8	1	22.8	23.3	22.5
			1	14	1	22.7	23.2	22.4
			8	0	2	21.8	21.9	21.6
			8	4	2	21.7	22.0	21.5
			8	7	2	21.7	22.0	21.5
			15	0	2	21.6	21.9	21.5
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Meas. Avg Pwr (dBm)		
						1850.7 MHz	1880 MHz	1909.3 MHz
LTE Band 2	1.4	QPSK	1	0	0	23.5	23.8	23.3
			1	3	0	23.6	23.8	23.4
			1	5	0	23.5	23.7	23.4
			3	0	0	23.5	23.8	23.3
			3	1	0	23.6	23.8	23.3
			3	3	0	23.6	23.8	23.3
			6	0	1	22.6	22.8	22.4
		16QAM	1	0	1	22.7	23.3	22.4
			1	3	1	22.7	23.3	22.5
			1	5	1	22.7	23.2	22.5
			3	0	1	22.8	23.0	22.4
			3	1	1	22.8	23.0	22.4
			3	3	1	22.8	23.0	22.4
			6	0	2	21.9	21.8	21.6

LTE Band 4 Measured Results

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

LTE Band 5 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Meas. Avg Pwr (dBm)		
						829 MHz	836.5 MHz	844 MHz
LTE Band 5	10	QPSK	1	0	0		24.5	
			1	25	0		24.1	
			1	49	0		24.5	
			25	0	1		23.4	
			25	12	1		23.3	
			25	25	1		23.4	
			50	0	1		23.5	
		16QAM	1	0	1		23.4	
			1	25	1		23.1	
			1	49	1		23.4	
			25	0	2		22.4	
			25	12	2		22.4	
			25	25	2		22.4	
			50	0	2		22.5	
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Meas. Avg Pwr (dBm)		
						826.5 MHz	836.5 MHz	846.5 MHz
LTE Band 5	5	QPSK	1	0	0	24.4	24.3	24.5
			1	12	0	24.2	24.3	24.3
			1	24	0	24.4	24.2	24.3
			12	0	1	23.4	23.4	23.3
			12	7	1	23.3	23.3	23.2
			12	13	1	23.3	23.3	23.3
			25	0	1	23.3	23.4	23.2
		16QAM	1	0	1	23.4	23.5	23.5
			1	12	1	23.3	23.4	23.2
			1	24	1	23.4	23.4	23.3
			12	0	2	22.5	22.5	22.4
			12	7	2	22.4	22.4	22.3
			12	13	2	22.4	22.5	22.4
			25	0	2	22.3	22.5	22.3
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Meas. Avg Pwr (dBm)		
						825.5 MHz	836.5 MHz	847.5 MHz
LTE Band 5	3	QPSK	1	0	0	24.3	24.1	24.1
			1	8	0	24.3	24.3	24.1
			1	14	0	24.3	24.1	24.1
			8	0	1	23.4	23.3	23.3
			8	4	1	23.3	23.2	23.3
			8	7	1	23.3	23.3	23.2
			15	0	1	23.4	23.4	23.2
		16QAM	1	0	1	23.7	23.2	23.3
			1	8	1	23.7	23.2	23.2
			1	14	1	23.6	23.1	23.2
			8	0	2	22.4	22.4	22.3
			8	4	2	22.5	22.4	22.3
			8	7	2	22.5	22.5	22.3
			15	0	2	22.4	22.5	22.2

LTE Band 5 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Meas. Avg Pwr (dBm)		
						824.7 MHz	836.5 MHz	848.3 MHz
LTE Band 5	1.4	QPSK	1	0	0	24.3	24.2	24.2
			1	3	0	24.3	24.3	24.2
			1	5	0	24.2	24.3	24.2
			3	0	0	24.2	24.1	24.1
			3	1	0	24.3	24.2	24.2
			3	3	0	24.3	24.3	24.1
			6	0	1	23.3	23.4	23.2
		16QAM	1	0	1	23.6	23.3	23.2
			1	3	1	23.6	23.3	23.3
			1	5	1	23.6	23.3	23.2
			3	0	1	23.4	23.3	23.4
			3	1	1	23.5	23.3	23.4
			3	3	1	23.5	23.4	23.4
			6	0	2	22.2	22.5	22.4

Note(s):

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

LTE Band 12 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Meas. Avg Pwr (dBm)		
						704 MHz	707.5 MHz	711 MHz
LTE Band 12	10	QPSK	1	0	0		24.8	
			1	25	0		24.4	
			1	49	0		24.5	
			25	0	1		23.4	
			25	12	1		23.4	
			25	25	1		23.4	
		16QAM	50	0	1		23.4	
			1	0	1		24.0	
			1	25	1		23.7	
			1	49	1		23.9	
			25	0	2		22.5	
			25	12	2		22.5	
			25	25	2		22.4	
			50	0	2		22.4	
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Meas. Avg Pwr (dBm)		
						701.5 MHz	707.5 MHz	713.5 MHz
LTE Band 12	5	QPSK	1	0	0	24.5	24.6	24.5
			1	12	0	24.3	24.4	24.4
			1	24	0	24.4	24.4	23.8
			12	0	1	23.4	23.4	23.3
			12	7	1	23.5	23.4	23.4
			12	13	1	23.5	23.4	23.3
			25	0	1	23.5	23.3	23.3
		16QAM	1	0	1	23.9	23.6	23.5
			1	12	1	23.8	23.4	23.4
			1	24	1	23.9	23.5	22.9
			12	0	2	22.6	22.5	22.3
			12	7	2	22.6	22.5	22.4
			12	13	2	22.6	22.5	22.3
			25	0	2	22.5	22.4	22.2
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Meas. Avg Pwr (dBm)		
						700.5 MHz	707.5 MHz	714.5 MHz
LTE Band 12	3	QPSK	1	0	0	24.4	24.4	24.3
			1	8	0	24.3	24.4	24.4
			1	14	0	24.4	24.3	24.0
			8	0	1	23.3	23.4	23.3
			8	4	1	23.4	23.4	23.3
			8	7	1	23.4	23.3	23.4
			15	0	1	23.4	23.3	23.4
		16QAM	1	0	1	23.4	23.8	23.3
			1	8	1	23.4	23.7	23.3
			1	14	1	23.4	23.7	22.8
			8	0	2	22.4	22.5	22.4
			8	4	2	22.5	22.5	22.4
			8	7	2	22.4	22.5	22.4
			15	0	2	22.3	22.4	22.4

LTE Band 12 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Meas. Avg Pwr (dBm)		
						699.7 MHz	707.5 MHz	715.3 MHz
LTE Band 12	1.4	QPSK	1	0	0	24.4	24.4	24.5
			1	3	0	24.4	24.4	24.5
			1	5	0	24.4	24.3	24.3
			3	0	0	24.3	24.4	24.3
			3	1	0	24.3	24.4	24.3
			3	3	0	24.4	24.3	24.2
			6	0	1	23.3	23.3	23.3
		16QAM	1	0	1	23.4	23.7	23.4
			1	3	1	23.4	23.8	23.5
			1	5	1	23.4	23.7	23.2
			3	0	1	23.6	23.6	23.3
			3	1	1	23.5	23.6	23.4
			3	3	1	23.6	23.5	23.3
			6	0	2	22.5	22.3	22.4

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 13 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Meas. Avg Pwr (dBm)
						782 MHz
LTE Band 13	10	QPSK	1	0	0	24.8
			1	25	0	24.3
			1	49	0	24.4
			25	0	1	23.4
			25	12	1	23.3
			25	25	1	23.3
			50	0	1	23.4
		16QAM	1	0	1	23.7
			1	25	1	23.2
			1	49	1	23.3
			25	0	2	22.4
			25	12	2	22.4
			25	25	2	22.4
			50	0	2	22.3
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Meas. Avg Pwr (dBm)
						782 MHz
LTE Band 13	5	QPSK	1	0	0	24.4
			1	12	0	24.2
			1	24	0	24.1
			12	0	1	23.4
			12	7	1	23.3
			12	13	1	23.3
			25	0	1	23.3
		16QAM	1	0	1	23.6
			1	12	1	23.4
			1	24	1	23.4
			12	0	2	22.5
			12	7	2	22.4
			12	13	2	22.4
			25	0	2	22.3

Note(s):

5/10 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 17 Measured Results

SAR for LTE Band 17 (Frequency range: 704-716 MHz) is covered by LTE Band 12 (Frequency range: 699-716 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

LTE Band 66 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Meas. Avg Pwr (dBm)		
						1720 MHz	1745 MHz	1770 MHz
LTE Band 66	20	QPSK	1	0	0	24.0	23.9	23.8
			1	49	0	23.8	23.7	23.8
			1	99	0	24.4	24.3	23.8
			50	0	1	22.9	22.8	22.8
			50	24	1	22.9	22.7	22.8
			50	50	1	22.9	22.8	22.9
			100	0	1	22.9	22.8	22.9
		16QAM	1	0	1	23.5	23.4	23.3
			1	49	1	23.4	23.3	23.2
			1	99	1	23.5	23.5	23.4
			50	0	2	22.0	21.8	21.8
			50	24	2	21.9	21.8	21.9
			50	50	2	22.0	21.9	22.0
			100	0	2	21.9	21.8	21.9
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Meas. Avg Pwr (dBm)		
						1717.5 MHz	1745 MHz	1772.5 MHz
LTE Band 66	15	QPSK	1	0	0	24.5	24.1	24.3
			1	37	0	24.0	23.6	24.2
			1	74	0	24.1	24.0	24.0
			36	0	1	23.1	22.9	23.0
			36	20	1	23.0	22.8	22.9
			36	39	1	22.9	22.7	22.9
			75	0	1	22.9	22.8	22.9
		16QAM	1	0	1	23.5	23.1	23.5
			1	37	1	23.2	22.7	23.2
			1	74	1	23.5	23.1	23.5
			36	0	2	22.0	21.9	21.9
			36	20	2	21.9	21.7	21.9
			36	39	2	21.8	21.7	21.9
			75	0	2	21.9	21.8	21.9
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Meas. Avg Pwr (dBm)		
						1715 MHz	1745 MHz	1775 MHz
LTE Band 66	10	QPSK	1	0	0	23.5	23.2	23.4
			1	25	0	24.0	23.7	23.9
			1	49	0	24.4	24.3	23.9
			25	0	1	22.9	22.8	22.9
			25	12	1	23.0	22.9	23.0
			25	25	1	23.0	22.9	23.1
			50	0	1	23.0	22.8	23.0
		16QAM	1	0	1	22.9	22.3	22.5
			1	25	1	23.3	22.7	22.9
			1	49	1	23.5	23.3	23.0
			25	0	2	22.0	21.8	22.0
			25	12	2	22.1	21.9	22.1
			25	25	2	22.1	21.9	22.1
			50	0	2	22.0	21.8	22.0

LTE Band 66 Measured Results (Continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Meas. Avg Pwr (dBm)		
						1712.5 MHz	1745 MHz	1777.5 MHz
LTE Band 66	5	QPSK	1	0	0	24.1	24.0	24.2
			1	12	0	23.8	23.8	23.8
			1	24	0	23.9	23.9	24.1
			12	0	1	23.0	22.8	23.0
			12	7	1	23.0	22.8	23.0
			12	13	1	23.0	22.8	23.0
			25	0	1	23.0	22.8	23.0
		16QAM	1	0	1	23.5	23.1	23.2
			1	12	1	23.5	22.9	23.1
			1	24	1	23.5	23.0	23.0
			12	0	2	22.2	21.9	22.1
			12	7	2	22.1	21.9	22.0
			12	13	2	22.1	21.9	22.0
			25	0	2	22.1	21.8	21.9
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Meas. Avg Pwr (dBm)		
						1711.5 MHz	1745 MHz	1778.5 MHz
LTE Band 66	3	QPSK	1	0	0	24.0	23.8	24.1
			1	8	0	24.0	23.7	24.0
			1	14	0	23.9	23.7	23.9
			8	0	1	23.0	22.8	23.0
			8	4	1	23.0	22.8	23.0
			8	7	1	23.0	22.8	23.0
			15	0	1	22.9	22.8	22.9
		16QAM	1	0	1	23.5	22.8	23.1
			1	8	1	23.5	22.9	23.2
			1	14	1	23.4	22.7	23.0
			8	0	2	22.1	22.0	22.0
			8	4	2	22.1	22.0	22.0
			8	7	2	22.1	22.0	22.0
			15	0	2	22.0	21.8	21.9
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Meas. Avg Pwr (dBm)		
						1710.7 MHz	1745 MHz	1779.3 MHz
LTE Band 66	1.4	QPSK	1	0	0	24.0	23.8	24.0
			1	3	0	23.9	23.8	24.0
			1	5	0	24.0	23.7	24.0
			3	0	0	23.9	23.7	23.9
			3	1	0	24.0	23.7	23.9
			3	3	0	23.9	23.8	23.9
			6	0	1	22.9	22.7	22.9
		16QAM	1	0	1	23.4	22.9	23.0
			1	3	1	23.3	23.0	23.1
			1	5	1	23.4	22.9	23.1
			3	0	1	23.1	22.8	23.1
			3	1	1	23.1	22.8	23.1
			3	3	1	23.1	22.8	23.2
			6	0	2	21.9	21.9	22.1

Reduced power Results**LTE Band 2 Measured Results**

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Reduced. Meas. Avg Pwr Hotspot back-off (dBm)			Reduced. Meas. Avg Pwr Proximity sensor back-off (dBm)		
						1860 MHz	1880 MHz	1900 MHz	1860 MHz	1880 MHz	1900 MHz
LTE Band 2	20	QPSK	1	0	0	19.9	20.1	19.9	19.9	20.0	20.0
			1	49	0	19.7	19.8	19.5	19.7	19.7	19.6
			1	99	0	19.7	19.6	19.3	19.7	19.6	19.3
			50	0	0	19.8	20.0	19.8	19.8	20.0	19.8
			50	24	0	19.8	19.9	19.7	19.8	19.9	19.7
			50	50	0	19.7	19.7	19.5	19.7	19.7	19.5
			100	0	0	19.8	19.9	19.7	19.8	19.9	19.7
		16QAM	1	0	0	20.3	20.5	20.5	20.3	20.4	20.5
			1	49	0	20.1	20.2	20.2	20.1	20.3	20.2
			1	99	0	20.1	20.0	19.9	20.2	20.1	19.9
			50	0	0	19.7	20.0	19.8	19.7	20.0	19.8
			50	24	0	19.8	20.0	19.8	19.8	20.0	19.8
			50	50	0	19.7	19.8	19.6	19.7	19.8	19.6
			100	0	0	19.8	19.9	19.7	19.8	19.9	19.7
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Reduced. Meas. Avg Pwr Hotspot back-off (dBm)			Reduced. Meas. Avg Pwr Proximity sensor back-off (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	20.0	20.1	20.0	20.0	20.1	20.0
			1	37	0	19.5	19.8	19.4	19.5	19.7	19.3
			1	74	0	20.0	20.0	19.7	19.9	19.9	19.8
			36	0	0	19.8	19.9	19.7	19.8	19.9	19.7
			36	20	0	19.7	19.9	19.6	19.7	19.9	19.6
			36	39	0	19.8	19.8	19.5	19.8	19.8	19.5
			75	0	0	19.7	19.8	19.6	19.7	19.8	19.6
		16QAM	1	0	0	20.4	20.5	20.0	20.4	20.1	20.3
			1	37	0	20.1	20.2	19.4	20.0	19.7	19.9
			1	74	0	20.3	20.4	19.7	20.4	19.9	20.1
			36	0	0	19.7	20.0	19.6	19.9	19.9	19.6
			36	20	0	19.7	19.9	19.6	19.8	19.9	19.6
			36	39	0	19.7	19.9	19.5	19.8	19.8	19.5
			75	0	0	19.7	19.9	19.6	19.8	19.9	19.6
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Reduced. Meas. Avg Pwr Hotspot back-off (dBm)			Reduced. Meas. Avg Pwr Proximity sensor back-off (dBm)		
						1855 MHz	1880 MHz	1905 MHz	1855 MHz	1880 MHz	1905 MHz
LTE Band 2	10	QPSK	1	0	0	19.8	20.0	19.7	19.9	20.0	19.7
			1	25	0	19.6	19.8	19.4	19.7	19.8	19.4
			1	49	0	19.8	19.9	19.5	19.9	19.8	19.5
			25	0	0	19.7	19.8	19.5	19.7	19.8	19.5
			25	12	0	19.7	19.9	19.5	19.7	19.9	19.5
			25	25	0	19.7	19.9	19.5	19.7	19.9	19.5
			50	0	0	19.7	19.9	19.5	19.7	19.9	19.5
		16QAM	1	0	0	19.9	20.4	19.7	20.3	20.0	19.8
			1	25	0	19.7	20.2	19.3	20.0	19.8	19.4
			1	49	0	19.9	20.3	19.5	20.3	19.8	19.6
			25	0	0	19.8	19.9	19.5	19.8	19.8	19.5
			25	12	0	19.8	19.9	19.5	19.7	19.9	19.5
			25	25	0	19.8	19.9	19.5	19.8	19.9	19.5
			50	0	0	19.7	19.9	19.5	19.7	19.9	19.5

LTE Band 2 Measured Results (Continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Reduced. Meas. Avg Pwr Hotspot back-off (dBm)			Reduced. Meas. Avg Pwr Proximity sensor back-off (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	19.9	19.9	19.7	19.8	20.1	19.7
			1	12	0	19.7	19.7	19.6	19.6	20.0	19.4
			1	24	0	19.8	19.8	19.5	19.7	19.9	19.5
			12	0	0	19.8	19.9	19.6	19.8	19.9	19.6
			12	7	0	19.7	19.9	19.5	19.7	19.9	19.5
			12	13	0	19.7	19.8	19.4	19.8	19.8	19.4
		16QAM	25	0	0	19.7	19.9	19.5	19.8	19.9	19.4
			1	0	0	20.0	20.5	19.7	20.3	20.1	19.7
			1	12	0	19.8	20.4	19.5	20.2	20.0	19.6
			1	24	0	19.9	20.4	19.6	20.3	20.0	19.6
			12	0	0	19.9	20.1	19.6	19.9	20.0	19.6
			12	7	0	19.8	20.0	19.5	19.9	20.0	19.5
LTE Band 2	3	QPSK	12	13	0	19.8	20.0	19.5	19.9	19.9	19.5
			25	0	0	19.7	20.0	19.5	19.8	19.9	19.4
		16QAM	1	0	0	19.7	19.8	19.4	19.7	19.8	19.5
			1	8	0	19.8	19.9	19.4	19.6	19.9	19.4
			1	14	0	19.6	19.7	19.4	19.6	19.7	19.3
			8	0	0	19.7	19.9	19.4	19.7	19.9	19.4
LTE Band 2	3	QPSK	8	4	0	19.7	19.9	19.4	19.7	19.9	19.4
			8	7	0	19.7	19.8	19.4	19.7	19.8	19.4
			15	0	0	19.7	19.8	19.4	19.7	19.8	19.4
		16QAM	1	0	0	19.8	20.3	19.5	19.8	20.3	19.3
			1	8	0	19.8	20.3	19.4	19.8	20.3	19.4
			1	14	0	19.7	20.2	19.3	19.8	20.1	19.3
LTE Band 2	3	QPSK	8	0	0	19.8	19.9	19.6	19.8	19.9	19.6
			8	4	0	19.8	20.0	19.6	19.8	19.9	19.5
			8	7	0	19.8	19.9	19.5	19.8	19.9	19.6
			15	0	0	19.7	19.9	19.5	19.7	19.9	19.5
		16QAM	1	0	0	19.8	20.3	19.5	19.8	20.3	19.3
			1	8	0	19.8	20.3	19.4	19.8	20.3	19.4
LTE Band 2	1.4	QPSK	1	14	0	19.7	20.2	19.3	19.8	20.1	19.3
			8	0	0	19.8	19.9	19.6	19.8	19.9	19.6
			8	4	0	19.8	20.0	19.6	19.8	19.9	19.5
			8	7	0	19.8	19.9	19.5	19.8	19.9	19.6
			15	0	0	19.7	19.9	19.5	19.7	19.9	19.5
		16QAM	1	0	0	20.1	20.2	19.5	20.1	19.9	19.4
LTE Band 2	1.4	QPSK	1	3	0	20.1	20.3	19.6	20.1	19.9	19.4
			1	5	0	19.7	20.2	19.5	20.0	19.9	19.4
			3	0	0	19.8	20.0	19.4	19.8	19.8	19.5
			3	1	0	19.9	20.0	19.4	19.8	19.9	19.5
			3	3	0	19.8	20.0	19.4	19.8	19.8	19.5
			6	0	0	19.9	19.7	19.5	19.6	20.0	19.5
LTE Band 2	1.4	QPSK	1	0	0	19.6	19.8	19.4	19.6	19.8	19.3
			1	3	0	19.7	19.8	19.5	19.7	19.9	19.3
			1	5	0	19.6	19.8	19.4	19.6	19.8	19.2
			3	0	0	19.6	19.8	19.3	19.6	19.7	19.2
			3	1	0	19.6	19.8	19.3	19.7	19.7	19.3
			3	3	0	19.6	19.8	19.3	19.7	19.8	19.3
LTE Band 2	1.4	QPSK	6	0	0	19.6	19.8	19.4	19.7	19.8	19.4
		16QAM	1	0	0	20.1	20.2	19.5	20.1	19.9	19.4
			1	3	0	20.1	20.3	19.6	20.1	19.9	19.4
			1	5	0	19.7	20.2	19.5	20.0	19.9	19.4
			3	0	0	19.8	20.0	19.4	19.8	19.8	19.5
			3	1	0	19.9	20.0	19.4	19.8	19.9	19.5
LTE Band 2	1.4	QPSK	3	3	0	19.8	20.0	19.4	19.8	19.8	19.5
			3	0	0	19.9	19.7	19.5	19.6	20.0	19.5
		16QAM	1	0	0	20.1	20.2	19.5	20.1	19.9	19.4
			1	3	0	20.1	20.3	19.6	20.1	19.9	19.4
			1	5	0	19.7	20.2	19.5	20.0	19.9	19.4
			3	0	0	19.8	20.0	19.4	19.8	19.8	19.5
LTE Band 2	1.4	QPSK	3	1	0	19.9	20.0	19.4	19.8	19.9	19.5
			3	3	0	19.8	20.0	19.4	19.8	19.8	19.5
			6	0	0	19.9	19.7	19.5	19.6	20.0	19.5
		16QAM	1	0	0	20.1	20.2	19.5	20.1	19.9	19.4
			1	3	0	20.1	20.3	19.6	20.1	19.9	19.4
			1	5	0	19.7	20.2	19.5	20.0	19.9	19.4
LTE Band 2	1.4	QPSK	3	0	0	19.8	20.0	19.4	19.8	19.8	19.5
			3	1	0	19.9	20.0	19.4	19.8	19.9	19.5
			3	3	0	19.8	20.0	19.4	19.8	19.8	19.5
			6	0	0	19.9	19.7	19.5	19.6	20.0	19.5
		16QAM	1	0	0	20.1	20.2	19.5	20.1	19.9	19.4
			1	3	0	20.1	20.3	19.6	20.1	19.9	19.4
LTE Band 2	1.4	QPSK	1	5	0	19.7	20.2	19.5	20.0	19.9	19.4
			3	0	0	19.8	20.0	19.4	19.8	19.8	19.5
			3	1	0	19.9	20.0	19.4	19.8	19.9	19.5
			3	3	0	19.8	20.0	19.4	19.8	19.8	19.5
			6	0	0	19.9	19.7	19.5	19.6	20.0	19.5
		16QAM	1	0	0	20.1	20.2	19.5	20.1	19.9	19.4
LTE Band 2	1.4	QPSK	1	3	0	20.1	20.3	19.6	20.1	19.9	19.4
			1	5	0	19.7	20.2	19.5	20.0	19.9	19.4
			3	0	0	19.8	20.0	19.4	19.8	19.8	19.5
			3	1	0	19.9	20.0	19.4	19.8	19.9	19.5
			3	3	0	19.8	20.0	19.4	19.8	19.8	19.5
			6	0	0	19.9	19.7	19.5	19.6	20.0	19.5

LTE Band 4 Measured Results

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

LTE Band 5 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Reduced. Meas. Avg Pwr Hotspot back-off (dBm)			Reduced. Meas. Avg Pwr Proximity sensor back-off (dBm)		
						829 MHz	836.5 MHz	844 MHz	829 MHz	836.5 MHz	844 MHz
LTE Band 5	10	QPSK	1	0	0		22.5			22.5	
			1	25	0		22.2			22.2	
			1	49	0		22.5			22.6	
			25	0	0		22.4			22.4	
			25	12	0		22.3			22.3	
			25	25	0		22.4			22.3	
		16QAM	50	0	0		22.4			22.4	
			1	0	0		22.8			22.8	
			1	25	0		22.6			22.6	
			1	49	0		22.8			22.8	
			25	0	0		22.4			22.4	
			25	12	0		22.3			22.3	
			25	25	0		22.3			22.3	
			50	0	0		22.5			22.5	
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Reduced. Meas. Avg Pwr Hotspot back-off (dBm)			Reduced. Meas. Avg Pwr Proximity sensor back-off (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	22.4	22.3	22.4	22.4	22.2	22.4
			1	12	0	22.3	22.2	22.3	22.2	22.2	22.3
			1	24	0	22.3	22.1	22.3	22.4	22.1	22.3
			12	0	0	22.4	22.3	22.3	22.4	22.3	22.2
			12	7	0	22.3	22.3	22.2	22.3	22.2	22.2
			12	13	0	22.3	22.3	22.3	22.3	22.3	22.3
			25	0	0	22.3	22.4	22.2	22.3	22.4	22.2
		16QAM	1	0	0	22.4	22.8	22.4	22.4	22.8	22.5
			1	12	0	22.3	22.8	22.3	22.3	22.7	22.2
			1	24	0	22.4	22.7	22.4	22.4	22.7	22.3
			12	0	0	22.4	22.5	22.3	22.4	22.5	22.3
			12	7	0	22.3	22.4	22.3	22.3	22.4	22.3
			12	13	0	22.3	22.5	22.3	22.4	22.5	22.3
			25	0	0	22.2	22.5	22.2	22.3	22.4	22.2
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Reduced. Meas. Avg Pwr Hotspot back-off (dBm)			Reduced. Meas. Avg Pwr Proximity sensor back-off (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	22.3	22.3	22.3	22.3	22.2	22.3
			1	8	0	22.4	22.4	22.4	22.3	22.2	22.3
			1	14	0	22.2	22.2	22.3	22.2	22.2	22.2
			8	0	0	22.3	22.3	22.4	22.3	22.2	22.3
			8	4	0	22.3	22.3	22.3	22.3	22.3	22.3
			8	7	0	22.3	22.4	22.4	22.3	22.3	22.3
			15	0	0	22.3	22.4	22.4	22.3	22.3	22.4
		16QAM	1	0	0	22.7	22.1	22.2	22.7	22.2	22.2
			1	8	0	22.7	22.2	22.1	22.7	22.2	22.2
			1	14	0	22.6	22.1	22.1	22.6	22.1	22.1
			8	0	0	22.4	22.4	22.4	22.4	22.4	22.4
			8	4	0	22.5	22.4	22.4	22.4	22.4	22.4
			8	7	0	22.5	22.5	22.5	22.4	22.5	22.5
			15	0	0	22.4	22.4	22.4	22.3	22.4	22.4

LTE Band 5 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Reduced. Meas. Avg Pwr Hotspot back-off (dBm)			Reduced. Meas. Avg Pwr Proximity sensor back-off (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	22.2	22.2	22.3	22.1	22.2	22.2
			1	3	0	22.3	22.2	22.3	22.2	22.2	22.2
			1	5	0	22.2	22.2	22.3	22.2	22.2	22.2
			3	0	0	22.2	22.1	22.2	22.1	22.2	22.1
			3	1	0	22.2	22.2	22.2	22.2	22.2	22.1
			3	3	0	22.2	22.2	22.3	22.2	22.3	22.1
			6	0	0	22.2	22.3	22.3	22.2	22.3	22.1
		16QAM	1	0	0	22.7	22.3	22.3	22.3	22.5	22.1
			1	3	0	22.7	22.3	22.3	22.3	22.6	22.2
			1	5	0	22.6	22.3	22.3	22.3	22.6	22.2
			3	0	0	22.4	22.2	22.2	22.4	22.3	22.2
			3	1	0	22.4	22.2	22.3	22.4	22.4	22.2
			3	3	0	22.4	22.3	22.3	22.4	22.5	22.2
			6	0	0	22.2	22.4	22.4	22.4	22.2	22.3

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 66 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Reduced. Meas. Avg Pwr Hotspot back-off (dBm)			Reduced. Meas. Avg Pwr Proximity sensor back-off (dBm)		
						1720 MHz	1745 MHz	1770 MHz	1720 MHz	1745 MHz	1770 MHz
LTE Band 66	20	QPSK	1	0	0	20.1	19.8	19.9	20.1	19.8	19.9
			1	49	0	19.9	19.7	19.9	20.0	19.7	19.8
			1	99	0	20.5	20.3	20.5	20.5	20.3	20.5
			50	0	0	20.0	19.8	19.8	20.0	19.8	19.8
			50	24	0	19.9	19.8	19.8	19.9	19.8	19.8
			50	50	0	19.9	19.8	20.0	19.9	19.8	19.9
			100	0	0	20.0	19.8	19.9	20.0	19.8	19.9
		16QAM	1	0	0	20.5	20.4	20.3	20.5	20.4	20.3
			1	49	0	20.4	20.3	20.2	20.3	20.2	20.2
			1	99	0	20.5	20.5	20.5	20.5	20.5	20.5
			50	0	0	19.9	19.9	19.8	19.9	19.8	19.8
			50	24	0	19.9	19.9	19.9	19.9	19.9	19.8
			50	50	0	20.0	19.9	20.0	19.9	19.9	19.9
			100	0	0	20.0	19.8	19.9	19.9	19.8	19.9
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Reduced. Meas. Avg Pwr Hotspot back-off (dBm)			Reduced. Meas. Avg Pwr Proximity sensor back-off (dBm)		
						1717.5 MHz	1745 MHz	1772.5 MHz	1717.5 MHz	1745 MHz	1772.5 MHz
LTE Band 66	15	QPSK	1	0	0	20.4	20.2	20.3	20.4	20.2	20.3
			1	37	0	19.8	19.7	19.9	19.8	19.7	19.8
			1	74	0	20.1	20.0	20.2	20.1	20.0	20.2
			36	0	0	20.1	19.9	20.0	20.0	19.9	20.0
			36	20	0	19.9	19.8	19.9	19.9	19.8	19.9
			36	39	0	19.9	19.8	19.9	19.9	19.7	19.9
			75	0	0	19.9	19.8	19.9	19.9	19.8	19.9
		16QAM	1	0	0	20.5	20.1	20.5	20.5	20.1	20.5
			1	37	0	20.1	19.8	20.3	20.2	19.7	20.3
			1	74	0	20.5	20.0	20.5	20.5	20.0	20.5
			36	0	0	20.1	19.9	19.9	20.1	19.9	20.0
			36	20	0	20.0	19.8	19.9	20.0	19.8	19.9
			36	39	0	19.9	19.7	19.9	19.9	19.7	19.9
			75	0	0	20.0	19.8	19.9	19.9	19.8	19.9
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Reduced. Meas. Avg Pwr Hotspot back-off (dBm)			Reduced. Meas. Avg Pwr Proximity sensor back-off (dBm)		
						1715 MHz	1745 MHz	1775 MHz	1715 MHz	1745 MHz	1775 MHz
LTE Band 66	10	QPSK	1	0	0	19.5	19.3	19.4	19.5	19.2	19.4
			1	25	0	20.0	19.8	19.9	20.0	19.7	19.9
			1	49	0	20.5	20.3	20.5	20.5	20.3	20.4
			25	0	0	20.0	19.8	19.9	20.0	19.8	19.9
			25	12	0	20.1	19.9	20.0	20.0	19.9	20.0
			25	25	0	20.1	19.9	20.1	20.0	19.9	20.1
			50	0	0	20.0	19.8	20.0	20.0	19.8	20.0
		16QAM	1	0	0	19.8	19.2	19.5	19.9	19.2	19.5
			1	25	0	20.3	19.7	20.0	20.3	19.7	20.0
			1	49	0	20.5	20.2	20.5	20.5	20.3	20.5
			25	0	0	20.0	19.8	20.0	20.0	19.8	19.9
			25	12	0	20.1	19.9	20.1	20.1	19.9	20.0
			25	25	0	20.1	19.9	20.2	20.1	19.9	20.1
			50	0	0	20.1	19.9	20.0	20.1	19.8	20.0

LTE Band 66 Measured Results (Continued)

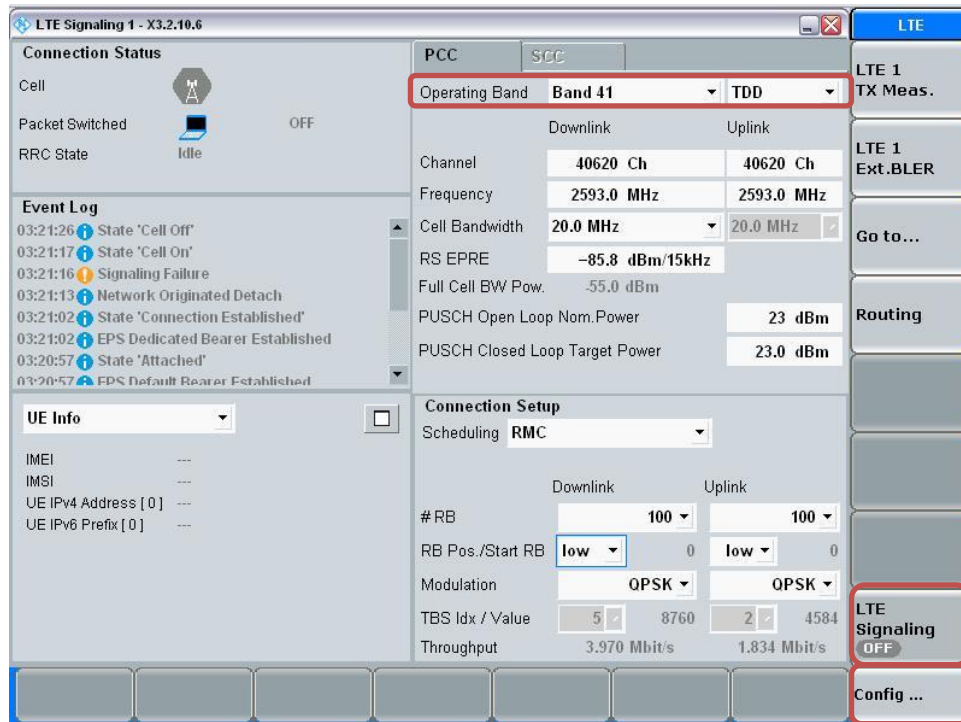
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Reduced. Meas. Avg Pwr Hotspot back-off (dBm)			Reduced. Meas. Avg Pwr Proximity sensor back-off (dBm)		
						1712.5 MHz	1745 MHz	1777.5 MHz	1712.5 MHz	1745 MHz	1777.5 MHz
LTE Band 66	5	QPSK	1	0	0	20.1	20.0	20.2	20.1	20.0	20.2
			1	12	0	19.9	19.9	20.0	19.9	19.9	19.9
			1	24	0	20.0	19.9	20.0	20.0	19.9	20.1
			12	0	0	20.1	19.9	20.0	20.1	19.9	20.0
			12	7	0	20.0	19.8	20.0	20.0	19.8	20.0
			12	13	0	20.0	19.8	20.0	20.0	19.8	20.0
			25	0	0	20.0	19.8	20.0	20.0	19.8	20.0
		16QAM	1	0	0	20.5	20.1	20.3	20.5	20.1	20.3
			1	12	0	20.5	20.0	20.2	20.5	20.0	20.1
			1	24	0	20.5	20.0	20.2	20.5	20.0	20.2
			12	0	0	20.2	20.0	20.1	20.2	19.9	20.0
			12	7	0	20.2	19.9	20.0	20.2	19.9	20.0
			12	13	0	20.1	19.9	20.0	20.1	19.9	20.0
			25	0	0	20.1	19.9	19.9	20.1	19.8	19.9
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Reduced. Meas. Avg Pwr Hotspot back-off (dBm)			Reduced. Meas. Avg Pwr Proximity sensor back-off (dBm)		
						1711.5 MHz	1745 MHz	1778.5 MHz	1711.5 MHz	1745 MHz	1778.5 MHz
LTE Band 66	3	QPSK	1	0	0	20.0	19.8	20.1	20.1	19.8	20.0
			1	8	0	20.0	19.7	20.1	20.1	19.8	20.0
			1	14	0	20.0	19.7	19.9	20.0	19.8	19.9
			8	0	0	20.0	19.8	20.0	20.0	19.8	20.0
			8	4	0	20.0	19.8	20.0	20.0	19.8	20.0
			8	7	0	20.0	19.8	20.0	20.0	19.8	20.0
			15	0	0	20.0	19.8	19.9	19.9	19.8	19.9
		16QAM	1	0	0	20.0	19.9	20.4	20.5	19.8	20.1
			1	8	0	20.0	19.9	20.5	20.4	19.7	20.2
			1	14	0	19.9	19.9	20.5	20.4	19.7	20.0
			8	0	0	20.1	19.9	20.0	20.1	19.9	19.9
			8	4	0	20.1	19.9	20.0	20.1	19.9	20.0
			8	7	0	20.1	19.9	20.1	20.1	19.9	20.0
			15	0	0	20.0	19.8	20.0	20.0	19.8	19.9
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Reduced. Meas. Avg Pwr Hotspot back-off (dBm)			Reduced. Meas. Avg Pwr Proximity sensor back-off (dBm)		
						1710.7 MHz	1745 MHz	1779.3 MHz	1710.7 MHz	1745 MHz	1779.3 MHz
LTE Band 66	1.4	QPSK	1	0	0	20.0	19.8	19.9	19.9	19.8	20.0
			1	3	0	20.0	19.8	19.9	19.9	19.8	20.0
			1	5	0	20.0	19.8	19.9	19.9	19.8	19.9
			3	0	0	20.0	19.8	19.9	19.9	19.8	19.9
			3	1	0	20.0	19.8	20.0	20.0	19.8	19.9
			3	3	0	20.0	19.8	20.0	20.0	19.8	20.0
			6	0	0	19.9	19.7	19.9	19.9	19.7	19.9
		16QAM	1	0	0	20.4	19.9	20.1	20.0	20.2	20.0
			1	3	0	20.4	20.0	20.0	20.0	20.2	20.1
			1	5	0	20.4	19.9	20.0	20.0	20.1	20.1
			3	0	0	20.2	19.8	20.1	20.2	19.9	20.0
			3	1	0	20.2	19.9	20.1	20.2	20.0	20.0
			3	3	0	20.2	19.9	20.1	20.2	20.0	20.0
			6	0	0	19.9	19.9	20.1	20.2	19.7	20.0

LTE Band TDD Measured Results

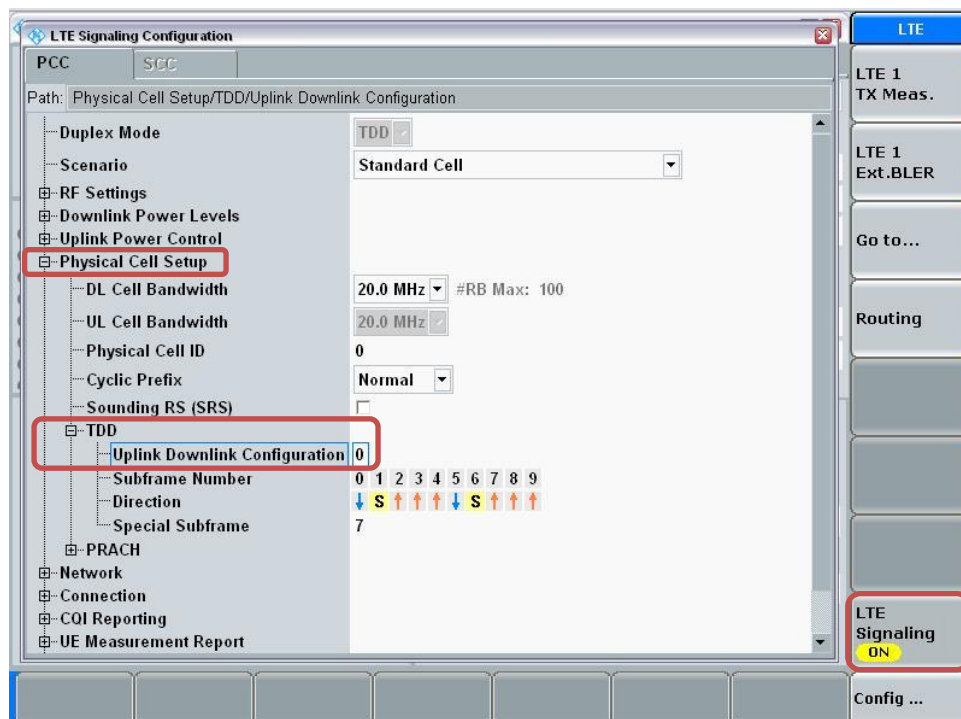
Procedure used to establish SAR test signal for LTE TDD Band

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...”

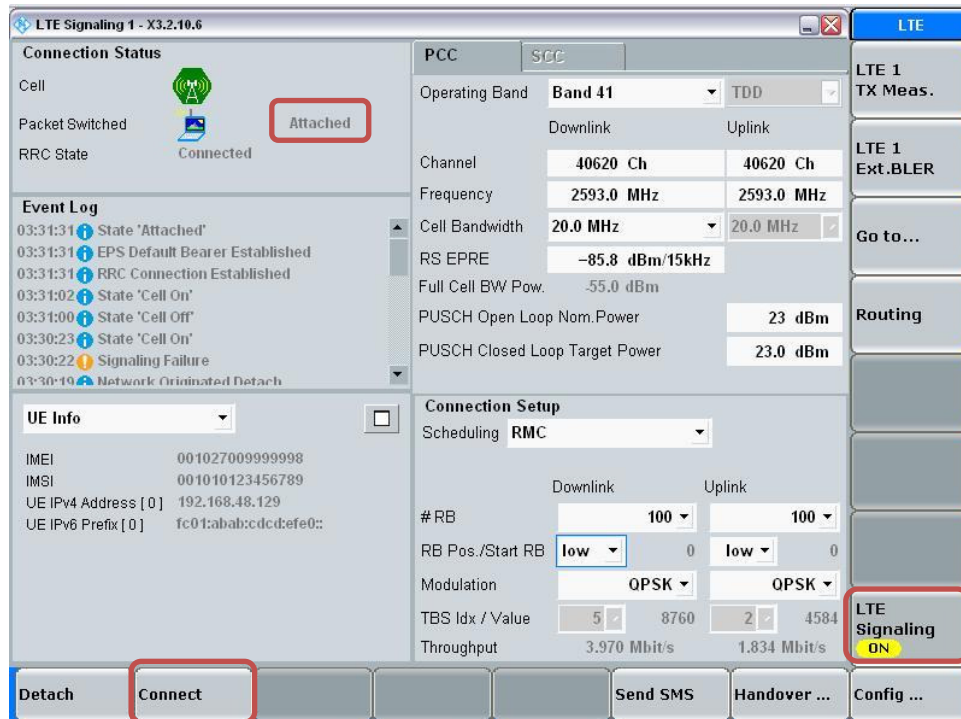


- Go to “Physical Cell Setup”
- Select “TDD” and Set “Uplink Downlink Configuration” to “0”
- Turn the cell on using “ON | OFF” key

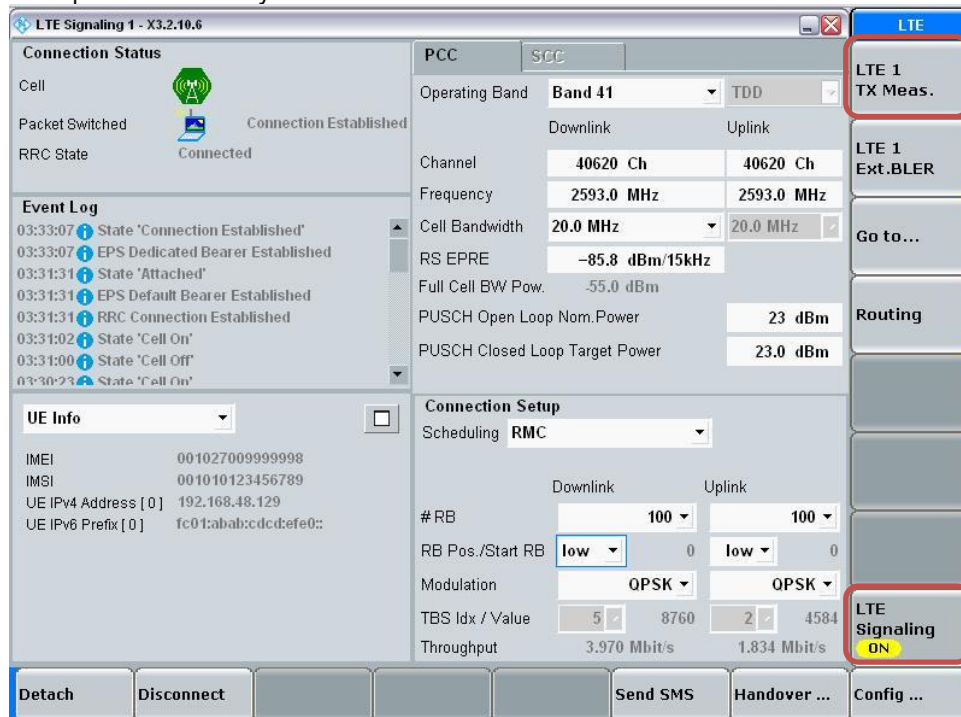


Connect to EUT

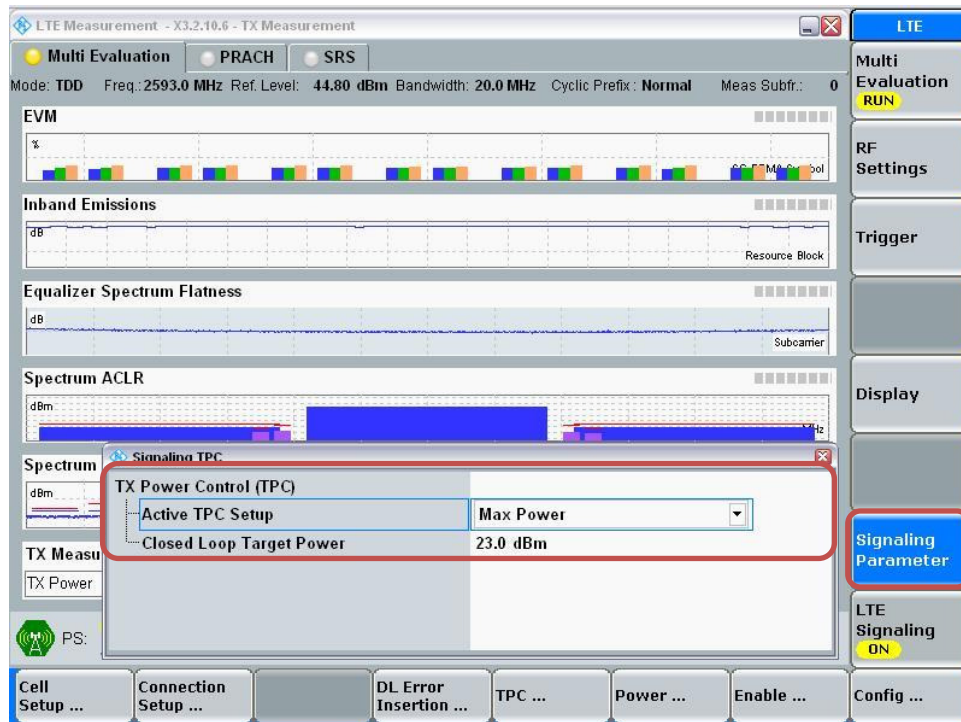
- Turn the cell on using “ON | OFF” key
- After EUT is Attached
- Select “Connect”

**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 41 Measured Results**

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Meas. Avg Pwr (dBm)				
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz
LTE Band 41	20	QPSK	1	0	0	24.0	24.3	24.4	24.1	23.8
			1	49	0	24.0	24.2	24.3	23.9	23.8
			1	99	0	24.4	24.5	24.5	24.1	24.0
			50	0	1	23.2	23.3	23.5	23.2	23.0
			50	24	1	23.2	23.3	23.4	23.0	22.9
			50	50	1	23.2	23.4	23.5	23.1	23.1
			100	0	1	23.2	23.4	23.4	23.2	23.0
		16QAM	1	0	1	22.9	23.3	23.3	23.0	22.7
			1	49	1	22.9	23.3	23.3	22.9	22.6
			1	99	1	23.1	23.4	23.5	23.0	22.9
			50	0	2	22.2	22.5	22.5	22.1	22.0
			50	24	2	22.1	22.3	22.5	22.0	21.8
			50	50	2	22.2	22.5	22.5	22.1	22.0
			100	0	2	22.2	22.5	22.5	22.0	21.9
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Meas. Avg Pwr (dBm)				
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz
LTE Band 41	15	QPSK	1	0	0	24.1	24.4	24.4	24.3	24.1
			1	37	0	24.1	23.8	24.4	23.8	23.2
			1	74	0	24.3	24.4	24.5	24.2	24.0
			36	0	1	23.2	23.3	23.5	23.2	22.9
			36	20	1	23.1	23.4	23.4	23.0	22.9
			36	39	1	23.1	23.3	23.4	23.0	23.1
			75	0	1	23.2	23.3	23.4	23.1	22.9
		16QAM	1	0	1	23.2	23.5	23.5	23.2	23.1
			1	37	1	22.9	23.2	22.9	22.9	22.8
			1	74	1	23.3	23.5	23.4	23.2	23.0
			36	0	2	22.2	22.4	22.5	22.2	22.0
			36	20	2	22.1	22.3	22.4	22.0	21.8
			36	39	2	22.1	22.4	22.4	22.0	21.9
			75	0	2	22.2	22.3	22.5	22.1	21.9
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Meas. Avg Pwr (dBm)				
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz
LTE Band 41	10	QPSK	1	0	0	24.3	24.5	24.4	24.4	24.5
			1	25	0	24.2	24.3	24.3	24.1	23.8
			1	49	0	24.3	24.5	24.4	24.3	24.4
			25	0	1	23.3	23.4	23.4	23.1	23.1
			25	12	1	23.2	23.3	23.4	23.1	22.9
			25	25	1	23.2	23.5	23.4	23.1	23.0
			50	0	1	23.2	23.3	23.4	23.1	22.7
		16QAM	1	0	1	23.4	23.4	23.5	23.3	23.3
			1	25	1	23.1	23.4	23.2	23.1	23.0
			1	49	1	23.4	23.5	23.4	23.4	23.4
			25	0	2	22.2	22.4	22.4	22.0	22.0
			25	12	2	22.2	22.3	22.4	22.1	21.9
			25	25	2	22.3	22.4	22.3	22.1	22.0
			50	0	2	22.2	22.4	22.4	22.1	22.0

LTE Band 41 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Max. Meas. Avg Pwr (dBm)				
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz
LTE Band 41	5	QPSK	1	0	0	24.2	24.5	24.4	24.1	24.1
			1	12	0	24.0	24.3	24.3	23.9	23.9
			1	24	0	24.3	24.3	24.4	24.0	24.0
			12	0	1	23.1	23.3	23.4	23.0	22.9
			12	7	1	23.2	23.3	23.3	23.1	22.9
			12	13	1	23.2	23.3	23.4	23.1	22.9
			25	0	1	23.2	23.3	23.3	23.1	22.9
		16QAM	1	0	1	23.2	23.3	23.4	23.0	22.8
			1	12	1	23.0	23.2	23.4	22.9	22.8
			1	24	1	23.1	23.2	23.4	22.9	22.8
			12	0	2	22.2	22.2	22.2	22.0	21.9
			12	7	2	22.3	22.3	22.4	22.1	21.8
			12	13	2	22.2	22.3	22.4	22.0	21.8
			25	0	2	22.1	22.2	22.2	22.1	21.9

Reduced power Results

LTE Band 41 Measured Results of Hotspot back-off

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Reduced. Meas. Avg Pwr Hotspot back-off (dBm)				
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz
LTE Band 41	20	QPSK	1	0	0	22.8	23.1	23.2	22.9	22.6
			1	49	0	22.8	23.1	23.1	22.7	22.6
			1	99	0	23.2	23.3	23.4	22.9	22.9
			50	0	0	22.9	23.2	23.3	23.0	22.8
			50	24	0	23.0	23.0	23.3	22.8	22.6
			50	50	0	23.1	23.2	23.4	23.0	22.8
			100	0	0	23.0	23.3	23.3	22.9	22.8
		16QAM	1	0	0	22.6	23.1	23.0	22.7	22.7
			1	49	0	22.7	23.2	23.1	22.6	22.7
			1	99	0	23.0	23.4	23.2	22.7	22.9
			50	0	0	22.1	22.4	22.5	22.2	22.1
			50	24	0	22.1	22.3	22.4	22.0	21.9
			50	50	0	22.2	22.5	22.4	22.1	22.0
			100	0	0	22.2	22.5	22.5	22.1	21.9
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Reduced. Meas. Avg Pwr Hotspot back-off (dBm)				
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz
LTE Band 41	15	QPSK	1	0	0	23.1	23.3	23.4	23.2	22.9
			1	37	0	22.9	22.7	22.8	22.8	22.1
			1	74	0	23.3	23.3	23.4	23.1	22.9
			36	0	0	23.0	23.1	23.3	23.0	22.8
			36	20	0	22.9	23.1	23.2	22.9	22.6
			36	39	0	23.0	23.1	23.2	22.8	22.8
			75	0	0	23.0	23.1	23.3	22.9	22.6
		16QAM	1	0	0	23.0	23.3	23.3	23.1	22.9
			1	37	0	22.8	23.0	22.5	22.7	22.7
			1	74	0	23.2	23.4	23.4	23.0	22.9
			36	0	0	22.2	22.3	22.5	22.1	22.0
			36	20	0	22.1	22.4	22.4	22.0	21.8
			36	39	0	22.1	22.4	22.4	21.9	22.0
			75	0	0	22.2	22.3	22.5	22.1	21.9
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Reduced. Meas. Avg Pwr Hotspot back-off (dBm)				
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz
LTE Band 41	10	QPSK	1	0	0	23.2	23.3	23.3	23.2	23.0
			1	25	0	22.9	23.0	23.1	22.9	22.6
			1	49	0	23.3	23.4	23.4	23.2	22.9
			25	0	0	23.0	23.2	23.2	22.9	22.7
			25	12	0	23.0	23.1	23.2	22.9	22.6
			25	25	0	23.1	23.1	23.2	22.9	22.5
			50	0	0	23.0	23.1	23.2	22.9	22.7
		16QAM	1	0	0	23.3	23.4	23.3	23.3	23.0
			1	25	0	23.0	23.1	23.1	22.8	22.7
			1	49	0	23.4	23.4	23.3	23.1	23.2
			25	0	0	22.2	22.4	22.4	22.1	22.0
			25	12	0	22.1	22.2	22.3	22.1	21.8
			25	25	0	22.3	22.3	22.4	22.1	21.9
			50	0	0	22.2	22.3	22.4	22.1	21.9

LTE Band 41 Measured Results of Hotspot back-off (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Reduced. Meas. Avg Pwr Hotspot back-off (dBm)				
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz
LTE Band 41	5	QPSK	1	0	0	22.9	23.2	23.2	22.8	22.8
			1	12	0	22.8	23.0	23.1	22.7	22.6
			1	24	0	22.9	23.1	23.1	22.8	22.8
			12	0	0	22.9	23.1	23.1	22.8	22.8
			12	7	0	22.9	23.1	23.1	22.8	22.7
			12	13	0	22.9	23.1	23.1	22.8	22.6
			25	0	0	22.9	23.1	23.1	22.7	22.7
		16QAM	1	0	0	22.9	23.1	23.3	22.8	22.7
			1	12	0	22.9	23.0	23.2	22.5	22.6
			1	24	0	22.9	23.0	23.2	22.7	22.6
			12	0	0	22.1	22.2	22.4	22.0	21.9
			12	7	0	22.0	22.3	22.4	22.1	21.9
			12	13	0	22.1	22.2	22.4	22.0	21.8
			25	0	0	22.1	22.3	22.4	22.0	21.8

LTE Band 41 Measured Results of Proximity sensor back-off

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Reduced. Meas. Avg Pwr Proximity sensor back-off (dBm)				
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz
LTE Band 41	20	QPSK	1	0	0	22.8	23.1	23.1	22.9	22.6
			1	49	0	22.9	23.0	23.1	22.7	22.6
			1	99	0	23.2	23.3	23.4	22.9	22.9
			50	0	0	23.0	23.2	23.3	23.0	22.8
			50	24	0	23.0	23.1	23.3	22.8	22.6
			50	50	0	23.1	23.2	23.3	22.9	22.8
			100	0	0	23.0	23.3	23.3	22.9	22.7
		16QAM	1	0	0	22.6	23.1	23.0	22.7	22.6
			1	49	0	22.7	23.2	23.1	22.6	22.6
			1	99	0	23.0	23.3	23.3	22.8	22.9
			50	0	0	22.1	22.4	22.4	22.2	22.0
			50	24	0	22.1	22.3	22.3	22.0	21.9
			50	50	0	22.2	22.5	22.5	22.1	22.0
			100	0	0	22.2	22.4	22.5	22.1	22.0
LTE Band 41	15	QPSK	1	0	0	23.1	23.3	23.3	23.2	22.9
			1	37	0	22.9	22.7	23.0	22.7	21.9
			1	74	0	23.3	23.3	23.4	23.0	23.0
			36	0	0	23.0	23.2	23.4	23.0	22.7
			36	20	0	22.9	23.1	23.2	22.8	22.6
			36	39	0	23.0	23.1	23.2	22.8	22.7
			75	0	0	23.0	23.0	23.4	22.9	22.8
		16QAM	1	0	0	23.0	23.3	23.4	23.1	23.0
			1	37	0	22.8	23.1	22.0	22.7	22.6
			1	74	0	23.2	23.4	23.2	23.0	22.9
			36	0	0	22.1	22.3	22.5	22.2	22.0
			36	20	0	22.1	22.3	22.4	22.0	21.8
			36	39	0	22.1	22.4	22.4	22.0	22.0
			75	0	0	22.2	22.3	22.5	22.1	21.9
LTE Band 41	10	QPSK	1	0	0	23.2	23.3	23.3	23.0	22.9
			1	25	0	22.9	23.0	23.1	22.7	22.7
			1	49	0	23.4	23.3	23.4	23.1	22.9
			25	0	0	23.0	23.2	23.2	22.8	22.8
			25	12	0	23.0	23.1	23.2	22.9	22.7
			25	25	0	23.1	23.3	23.2	22.8	22.7
			50	0	0	23.0	23.1	23.3	22.9	22.8
		16QAM	1	0	0	23.4	23.5	23.3	23.2	23.1
			1	25	0	22.9	23.2	23.0	22.8	22.7
			1	49	0	23.4	23.5	23.3	23.1	23.1
			25	0	0	22.3	22.4	22.4	22.1	22.0
			25	12	0	22.1	22.3	22.4	22.1	21.9
			25	25	0	22.3	22.4	22.4	21.9	21.9
			50	0	0	22.3	22.4	22.4	22.1	22.0

LTE Band 41 Measured Results of Proximity sensor back-off (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Reduced. Meas. Avg Pwr Proximity sensor back-off (dBm)				
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz
LTE Band 41	5	QPSK	1	0	0	22.9	23.2	23.2	22.8	22.8
			1	12	0	22.9	23.0	23.1	22.7	22.6
			1	24	0	22.9	23.1	23.1	22.6	22.7
			12	0	0	22.9	23.1	23.1	22.8	22.5
			12	7	0	23.0	23.0	23.2	22.8	22.7
			12	13	0	22.9	23.2	23.1	22.8	22.6
			25	0	0	22.9	23.1	23.2	22.9	22.7
		16QAM	1	0	0	22.9	23.1	23.3	22.8	22.8
			1	12	0	22.8	23.0	23.2	22.5	22.6
			1	24	0	22.9	23.0	23.2	22.6	22.6
			12	0	0	22.1	22.3	22.4	22.0	21.9
			12	7	0	22.1	22.3	22.4	22.0	21.9
			12	13	0	22.2	22.2	22.4	22.0	21.9
			25	0	0	22.1	22.3	22.4	22.1	21.9

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 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	2C			QPSK	15	18900	1880.0	1/0	15	1050	1975.0	24.05	24.14	0.09
	66C			QPSK	15	132047	1717.5	1/0	15	66661	2132.5	24.45	24.40	-0.05
Intra Non- Contiguous	2A	+	2A	QPSK	15	18900	1880.0	1/0	15	1125	1982.5	24.05	24.10	0.05
	4A	+	4A (0), (1)	QPSK	10	20000	1715.0	1/0	10	2350	2150.0	24.18	24.15	-0.03
	66A	+	66A	QPSK	15	132047	1717.5	1/0	15	67061	2172.5	24.45	24.37	-0.08
Inter Non- Contiguous	2A	+	5A (0), (1)	QPSK	15	18900	1880.0	1/0	10	2525	881.5	24.05	23.94	-0.11
	2A	+	12A (0), (1), (2)	QPSK	15	18900	1880.0	1/0	10	5095	737.5	24.05	23.94	-0.11
	2A	+	13A (0), (1)	QPSK	15	18900	1880.0	1/0	10	5230	751.0	24.05	23.93	-0.12
	2A	+	17A	QPSK	10	18900	1880.0	1/0	10	5790	740.0	23.97	24.04	0.07
	4A	+	5A (0), (1)	QPSK	10	20000	1715.0	1/0	10	2525	881.5	24.18	24.16	-0.02
	4A	+	12A (0), (1), (2), (3), (4), (5)	QPSK	10	20000	1715.0	1/0	10	5095	737.5	24.18	24.21	0.03
	4A	+	13A (0), (1)	QPSK	10	20000	1715.0	1/0	10	5230	751.0	24.18	24.14	-0.04
	4A	+	17A	QPSK	10	20000	1715.0	1/0	10	5790	740.0	24.18	24.15	-0.03
	5A	+	2A (0), (1)	QPSK	10	20525	836.5	1/49	20	900	1960.0	24.50	24.51	0.01
	5A	+	4A (0), (1)	QPSK	10	20525	836.5	1/49	20	2175	2132.5	24.50	24.50	0.00
	5A	+	41A	QPSK	10	20525	836.5	1/49	20	40620	2593.0	24.50	24.43	-0.07
	12A	+	2A (0), (1), (2)	QPSK	10	23095	707.5	1/0	20	900	1960.0	24.79	24.60	-0.19
	12A	+	4A (0), (1), (2), (3), (4), (5)	QPSK	10	23095	707.5	1/0	20	2175	2132.5	24.79	24.59	-0.20
	12A	+	66A (0), (1), (2), (3), (4), (5)	QPSK	10	23095	707.5	1/0	20	66786	2145.0	24.79	24.70	-0.09
	13A	+	2A (0), (1)	QPSK	10	23230	782.0	1/0	20	900	1960.0	24.78	24.67	-0.11
	13A	+	4A (0), (1)	QPSK	10	23230	782.0	1/0	20	2175	2132.5	24.78	24.68	-0.10
	17A	+	2A	QPSK	10	23790	710.0	1/0	10	900	1960.0	24.66	24.76	0.10
	66A	+	12A (0), (1), (2), (3), (4), (5)	QPSK	15	132047	1717.5	1/0	10	5095	737.5	24.45	24.50	0.05

Note(s):

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

2) Reduction power results of Hotspot back-off

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	2C			16QAM	5	18900	1880.0	1/0	20	1017	1971.7	20.50	20.50	0.00
	66C			16QAM	15	132597	1772.5	1/74	15	66911	2157.5	20.49	20.50	0.01
Intra Non-Contiguous	2A	+	2A	16QAM	5	18900	1880.0	1/0	15	700	1940.0	20.50	20.49	-0.01
	4A	+	4A (0), (1)	16QAM	10	20000	1715.0	1/25	10	2350	2150.0	20.48	20.50	0.02
	66A	+	66A	16QAM	15	132597	1772.5	1/74	15	66511	2117.5	20.49	20.48	-0.01
Inter Non-Contiguous	2A	+	5A (0), (1)	16QAM	5	18900	1880.0	1/0	10	2525	881.5	20.50	20.49	-0.01
	2A	+	12A (0), (1), (2)	16QAM	5	18900	1880.0	1/0	10	5095	737.5	20.50	20.50	0.00
	2A	+	13A (0), (1)	16QAM	5	18900	1880.0	1/0	10	5230	751.0	20.50	20.49	-0.01
	2A	+	17A	16QAM	5	18900	1880.0	1/0	10	5790	740.0	20.50	20.50	0.00
	4A	+	5A (0), (1)	16QAM	10	20000	1715.0	1/25	10	2525	881.5	20.48	20.50	0.02
	4A	+	12A (0), (1), (2), (3), (4), (5)	16QAM	10	20000	1715.0	1/25	10	5095	737.5	20.48	20.49	0.01
	4A	+	13A (0), (1)	16QAM	10	20000	1715.0	1/25	10	5230	751.0	20.48	20.48	0.00
	4A	+	17A	16QAM	10	20000	1715.0	1/25	10	5790	740.0	20.48	20.50	0.02
	5A	+	2A (0), (1)	16QAM	5	20525	836.5	1/0	20	900	1960.0	22.80	22.61	-0.19
	5A	+	4A (0), (1)	16QAM	5	20525	836.5	1/0	20	2175	2132.5	22.80	22.63	-0.17
	5A	+	41A	16QAM	5	20525	836.5	1/0	20	40620	2593.0	22.80	22.67	-0.13
	66A	+	12A (0), (1), (2), (3), (4), (5)	16QAM	15	132597	1772.5	1/74	10	5095	737.5	20.49	20.46	-0.03

3) Reduction power results of Proximity sensor back-off

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	2C			16QAM	20	19100	1900.0	1/0	20	902	1960.2	20.50	20.49	-0.01
	66C			16QAM	10	132622	1775.0	1/49	10	66987	2165.1	20.50	20.48	-0.02
Intra Non-Contiguous	2A	+	2A	16QAM	20	19100	1900.0	1/0	20	700	1940.0	20.50	20.49	-0.01
	4A	+	4A (0), (1)	16QAM	10	20000	1715.0	1/25	10	2350	2150.0	20.49	20.50	0.01
	66A	+	66A	16QAM	10	132622	1775.0	1/49	15	66511	2117.5	20.50	20.50	0.00
Inter Non-Contiguous	2A	+	5A (0), (1)	16QAM	20	19100	1900.0	1/0	10	2525	881.5	20.50	20.49	-0.01
	2A	+	12A (0), (1), (2)	16QAM	20	19100	1900.0	1/0	10	5095	737.5	20.50	20.49	-0.01
	2A	+	13A (0), (1)	16QAM	20	19100	1900.0	1/0	10	5230	751.0	20.50	20.48	-0.02
	2A	+	17A	16QAM	5	18625	1852.5	1/0	10	5790	740.0	20.35	20.50	0.15
	4A	+	5A (0), (1)	16QAM	10	20000	1715.0	1/25	10	2525	881.5	20.49	20.47	-0.02
	4A	+	12A (0), (1), (2), (3), (4), (5)	16QAM	10	20000	1715.0	1/25	10	5095	737.5	20.49	20.48	-0.01
	4A	+	13A (0), (1)	16QAM	10	20000	1715.0	1/25	10	5230	751.0	20.49	20.49	0.00
	4A	+	17A	16QAM	10	20000	1715.0	1/25	10	5790	740.0	20.49	20.50	0.01
	5A	+	2A (0), (1)	16QAM	10	20525	836.5	1/49	20	900	1960.0	22.80	22.68	-0.12
	5A	+	4A (0), (1)	16QAM	10	20525	836.5	1/49	20	2175	2132.5	22.80	22.63	-0.17
	5A	+	41A	16QAM	10	20525	836.5	1/49	20	40620	2593.0	22.80	22.59	-0.21
	66A	+	12A (0), (1), (2), (3), (4), (5)	16QAM	10	132622	1775.0	1/49	10	5095	737.5	20.50	20.48	-0.02

Note(s):

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

9.4 Wi-Fi 2.4 GHz (DTS Band)

Measured Results (Max power)

Mode	Data Rate	Ch #	Freq. (MHz)	Meas. Avg Pwr (dBm)	Max Output Power (dBm)	SAR Test (Yes/No)
802.11b	1 Mbps	1	2412	18.5	19.5	Yes
		6	2437	18.7		
		11	2462	18.7		
		12	2467	12.4	13.5	No
		13	2472	12.5	13.5	
802.11g	6 Mbps	1	2412	Not Require	13.5	No
		6	2437			
		11	2462			
		12	2467		10.5	
		13	2472		5.5	
802.11n (HT20)	6.5 Mbps	1	2412	Not Require	13.5	No
		6	2437			
		11	2462			
		12	2467		10.5	
		13	2472		5.5	

Measured Results (Reduced power)

Mode	Data Rate	Ch #	Freq. (MHz)	Meas. Avg Pwr (dBm)	Reduced Output Power (dBm)	SAR Test (Yes/No)
802.11b	1 Mbps	1	2412	12.5	13.5	Yes
		6	2437	12.6		
		11	2462	13.4		
		12	2467	12.4	13.5	No
		13	2472	12.5	13.5	
802.11g	6 Mbps	1	2412	12.5	13.5	No
		6	2437	12.7		
		11	2462	13.5		
		12	2467	9.6	10.5	
		13	2472	4.9	5.5	
802.11n (HT20)	6.5 Mbps	1	2412	12.6	13.5	No
		6	2437	12.7		
		11	2462	13.5		
		12	2467	9.6	10.5	
		13	2472	4.9	5.5	

Note(s):

- SAR is not required for 802.11g/n modes when the adjusted SAR for 802.11b is < 1.2 W/kg.
- 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 measurements were not deemed necessary.
- 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. Refer to §6.3.

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

Measured Results

Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Max Pwr.			Reduce Pwr		
					Meas. Avg Pwr (dBm)	Max Output Power (dBm)	SAR Test (Yes/No)	Meas. Avg Pwr (dBm)	Max Output Power (dBm)	SAR Test (Yes/No)
5.3 (U-NII 2A)	802.11a	6 Mbps	52	5260	17.9	18.5	Yes	Not Required	11.5	No
			56	5280	17.7					
			60	5300	18.1					
			64	5320	18.3					
	802.11n (HT20)	6.5 Mbps	52	5260	18.0	18.5	No	Not Required	11.5	No
			56	5280	17.7					
			60	5300	18.4					
			64	5320	18.4					
	802.11n (HT40)	13.5 Mbps	54	5270	Not Required	15.5	No	11.1	11.5	Yes
			62	5310				10.7		
5.5 (U-NII 2C)	802.11a	6 Mbps	100	5500	18.3	18.5	Yes	Not Required	11.5	No
			116	5580	18.4					
			132	5660	18.2					
			140	5700	18.1					
	802.11n (HT20)	6.5 Mbps	100	5500	18.3	18.5	No	Not Required	11.5	No
			116	5580	18.4					
			132	5660	18.2					
			140	5700	18.0					
	802.11n (HT40)	13.5 Mbps	102	5510	Not Required	15.5	No	11.2	11.5	Yes
			118	5590				11.4		
			142	5710				11.1		
5.8 (U-NII 3)	802.11a	6 Mbps	149	5745	18.1	18.5	Yes	Not Required	11.5	No
			157	5785	18.2					
			165	5825	17.7					
	802.11n (HT20)	6.5 Mbps	149	5745	18.1	18.5	No	Not Required	11.5	No
			157	5785	18.1					
			165	5825	17.7					
	802.11n (HT40)	13.5 Mbps	151	5755	Not Required	15.5	No	11.4	11.5	Yes
			159	5795				11.1		

Note(s):

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

9.6 Bluetooth

Average Power Measured Results

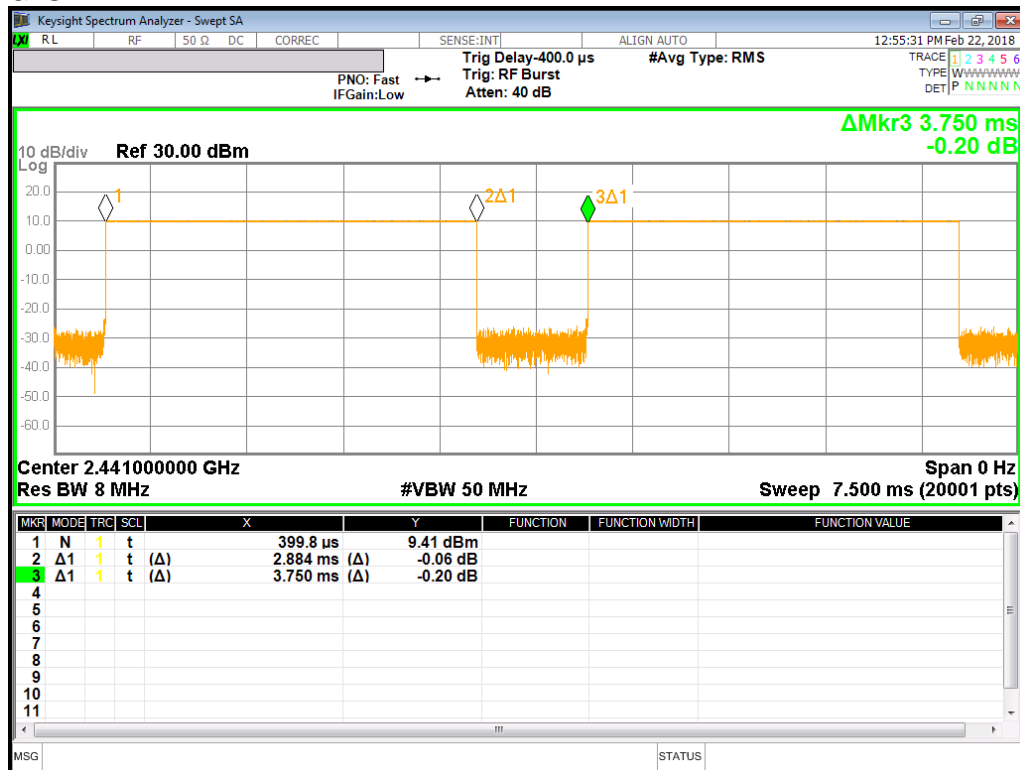
Band (GHz)	Mode	Ch #	Freq. (MHz)	Meas. Avg Pwr (dBm)
2.4	GFSK	0	2402	10.3
		39	2441	9.4
		78	2480	9.3
	EDR, $\pi/4$ DQPSK	0	2402	8.2
		39	2441	7.4
		78	2480	7.2
	EDR, 8-DPSK	0	2402	8.2
		39	2441	7.4
		78	2480	7.2
	LE, GFSK	0	2402	1.1
		19	2440	0.8
		39	2480	0.8

Duty Factor Measured Results

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

Duty Cycle plots

GFSK



10. Measured and Reported (Scaled) SAR Results

SAR Test Reduction criteria are as follows:

Reported SAR(W/kg) for WWAN= Measured SAR *Tune-up Scaling Factor

Reported SAR(W/kg) for Wi-Fi and Bluetooth= Measured SAR * Tune-up scaling factor * Duty Cycle scaling factor

KDB 447498 D01 General RF Exposure Guidance:

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

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

KDB 648474 D04 Handset SAR:

With headset attached, when the reported SAR for body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

KDB 648474 D04 Handset SAR (Phablet Only):

When hotspot mode does not apply, 10-g Extremity SAR is required for all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge in direct contact with a flat phantom, to address interactive hand use exposure conditions. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg .

Additional 1-g SAR testing at 5 mm is not required when hotspot mode 10-g extremity SAR is not required for the surfaces and edges; since all 1-g reported SAR < 1.2 W/kg.

KDB 941225 D01 SAR test for 3G devices:

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

KDB 941225 D05 SAR for LTE Devices:

SAR test reduction is applied using the following criteria:

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

KDB 248227 D01 SAR meas for 802.11:

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

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

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

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

10.1 GSM 850

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	GPRS 4 Slot	Off	0	Left Touch	190	836.6	28.5	28.0	0.125	0.140	1
				Left Tilt	190	836.6	28.5	28.0	0.089	0.100	
				Right Touch	190	836.6	28.5	28.0	0.156	0.174	
				Right Tilt	190	836.6	28.5	28.0	0.086	0.096	
Body-worn	GPRS 4 Slot	Off	15	Rear	190	836.6	28.5	28.0	0.325	0.363	2
				Front	190	836.6	28.5	28.0	0.176	0.197	
Hotspot	GPRS 4 Slot	On	10	Rear	190	836.6	26.5	26.1	0.366	0.397	3
				Front	190	836.6	26.5	26.1	0.225	0.244	
				Edge 2	190	836.6	26.5	26.1	0.180	0.195	
				Edge 3	190	836.6	26.5	26.1	0.171	0.186	
				Edge 4	190	836.6	26.5	26.1	0.045	0.049	

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	GPRS 4 Slot	Off	0	Left Touch	661	1880.0	25.0	24.4	0.046	0.053	4
				Left Tilt	661	1880.0	25.0	24.4	0.031	0.036	
				Right Touch	661	1880.0	25.0	24.4	0.037	0.042	
				Right Tilt	661	1880.0	25.0	24.4	0.030	0.034	
Body-worn	GPRS 4 Slot	Off	15	Rear	661	1880.0	25.0	24.4	0.313	0.357	5
				Front	661	1880.0	25.0	24.4	0.152	0.173	
Hotspot	GPRS 4 Slot	On	10	Rear	661	1880.0	22.0	21.5	0.331	0.370	6
				Front	661	1880.0	22.0	21.5	0.164	0.184	
				Edge 2	661	1880.0	22.0	21.5	0.036	0.040	
				Edge 3	661	1880.0	22.0	21.5	0.349	0.391	
				Edge 4	661	1880.0	22.0	21.5	0.037	0.041	

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	Off	0	Left Touch	9400	1880.0	24.0	23.4	0.091	0.104	7
				Left Tilt	9400	1880.0	24.0	23.4	0.055	0.063	
				Right Touch	9400	1880.0	24.0	23.4	0.064	0.073	
				Rightt Tilt	9400	1880.0	24.0	23.4	0.053	0.061	
Bod-worn	Rel 99 RMC	Off	15	Rear	9262	1852.4	24.0	23.3	0.698	0.826	
					9400	1880.0	24.0	23.4	0.789	0.902	8
					9538	1907.6	24.0	23.0	0.704	0.892	
				Front	9400	1880.0	24.0	23.4	0.428	0.489	
Hotspot	Rel 99 RMC	On	10	Rear	9400	1880.0	20.0	19.4	0.630	0.725	
				Front	9400	1880.0	20.0	19.4	0.331	0.381	
				Edge 2	9400	1880.0	20.0	19.4	0.060	0.069	
				Edge 3	9400	1880.0	20.0	19.4	0.668	0.769	9
				Edge 4	9400	1880.0	20.0	19.4	0.069	0.079	
RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		10-g SAR (W/kg)		Plot No.
							Tune-up limit	Meas.	Meas.	Scaled	
Phablet-10g	Rel 99 RMC	Off	13	Rear	9400	1880.0	24.0	23.4	0.501	0.573	
			6	Front	9400	1880.0	24.0	23.4	0.766	0.875	
			0	Edge 2	9400	1880.0	24.0	23.4	0.289	0.330	
			13	Edge 3	9400	1880.0	24.0	23.4	0.607	0.694	
			0	Edge 4	9400	1880.0	24.0	23.4	0.328	0.375	
		On	0	Rear	9400	1880.0	20.0	19.4	1.160	1.338	10
			0	Front	9400	1880.0	20.0	19.4	0.914	1.054	
			0	Edge 3	9400	1880.0	20.0	19.4	1.140	1.315	

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	Off	0	Left Touch	1413	1732.6	24.0	23.6	0.137	0.151	11
				Left Tilt	1413	1732.6	24.0	23.6	0.077	0.085	
				Right Touch	1413	1732.6	24.0	23.6	0.098	0.108	
				Rightt Tilt	1413	1732.6	24.0	23.6	0.060	0.066	
Bod-worn	Rel 99 RMC	Off	15	Rear	1312	1712.4	24.0	23.5	0.894	0.998	12
					1413	1732.6	24.0	23.6	0.785	0.865	
					1513	1752.6	24.0	23.3	0.793	0.923	
				Front	1413	1732.6	24.0	23.6	0.361	0.398	
Hotspot	Rel 99 RMC	On	10	Rear	1413	1732.6	20.5	20.0	0.702	0.782	13
				Front	1413	1732.6	20.5	20.0	0.326	0.363	
				Edge 2	1413	1732.6	20.5	20.0	0.060	0.067	
				Edge 3	1413	1732.6	20.5	20.0	0.629	0.701	
				Edge 4	1413	1732.6	20.5	20.0	0.080	0.089	
RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		10-g SAR (W/kg)		Plot No.
							Tune-up limit	Meas.	Meas.	Scaled	
Phablet-10g	Rel 99 RMC	Off	13	Rear	1413	1732.6	24.0	23.6	0.550	0.606	
			6	Front	1413	1732.6	24.0	23.6	0.794	0.875	
			0	Edge 2	1413	1732.6	24.0	23.6	0.358	0.394	
			13	Edge 3	1413	1732.6	24.0	23.6	0.524	0.577	
			0	Edge 4	1413	1732.6	24.0	23.6	0.316	0.348	
		On	0	Rear	1413	1732.6	20.5	20.0	1.140	1.267	14
			0	Front	1413	1732.6	20.5	20.0	1.140	1.267	
			0	Edge 3	1413	1732.6	20.5	20.0	1.110	1.234	

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	Off	0	Left Touch	4183	836.6	24.5	24.1	0.141	0.156	
				Left Tilt	4183	836.6	24.5	24.1	0.100	0.111	
				Right Touch	4183	836.6	24.5	24.1	0.190	0.211	15
				Rightt Tilt	4183	836.6	24.5	24.1	0.107	0.119	
Bod-worn	Rel 99 RMC	Off	15	Rear	4183	836.6	24.5	24.1	0.422	0.468	16
				Front	4183	836.6	24.5	24.1	0.258	0.286	
Hotspot	Rel 99 RMC	On	10	Rear	4183	836.6	22.5	22.0	0.555	0.618	17
				Front	4183	836.6	22.5	22.0	0.290	0.323	
				Edge 2	4183	836.6	22.5	22.0	0.194	0.216	
				Edge 3	4183	836.6	22.5	22.0	0.211	0.235	
				Edge 4	4183	836.6	22.5	22.0	0.047	0.052	

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	Off	0	Left Touch	18900	1880.0	1	0	24.5	24.0	0.107	0.120	18
							50	0	23.5	23.0	0.086	0.097	
				Left Tilt	18900	1880.0	1	0	24.5	24.0	0.054	0.061	
							50	0	23.5	23.0	0.045	0.051	
				Right Touch	18900	1880.0	1	0	24.5	24.0	0.072	0.081	
							50	0	23.5	23.0	0.064	0.072	
Body-worn	QPSK	Off	15	Rear	18700	1860.0	1	0	24.5	23.8	0.768	0.893	
							50	0	23.5	22.8	0.659	0.777	
					18900	1880.0	1	0	24.5	24.0	0.855	0.962	19
							50	0	23.5	23.0	0.731	0.825	
							100	0	23.5	23.0	0.795	0.902	
					19100	1900.0	1	0	24.5	24.0	0.719	0.809	
							50	0	23.5	22.8	0.612	0.723	
				Front	18900	1880.0	1	0	24.5	24.0	0.430	0.484	
							50	0	23.5	23.0	0.371	0.419	
Hotspot	QPSK	On	10	Rear	18700	1860.0	1	0	20.5	19.9	0.571	0.653	
							50	0	20.5	19.8	0.527	0.624	
					18900	1880.0	1	0	20.5	20.1	0.835	0.916	
							50	0	20.5	20.0	0.864	0.977	
							100	0	20.5	19.9	0.879	1.004	
					19100	1900.0	1	0	20.5	19.9	0.956	1.091	20
							50	0	20.5	19.8	0.912	1.078	
				Front	18900	1880.0	1	0	20.5	20.1	0.335	0.367	
							50	0	20.5	20.0	0.341	0.386	
				Edge 2	18900	1880.0	1	0	20.5	20.1	0.063	0.069	
							50	0	20.5	20.0	0.066	0.074	
				Edge 3	18700	1860.0	1	0	20.5	19.9	0.526	0.602	
							50	0	20.5	19.8	0.571	0.676	
					18900	1880.0	1	0	20.5	20.1	0.779	0.854	
							50	0	20.5	20.0	0.795	0.899	
							100	0	20.5	19.9	0.841	0.961	
					19100	1900.0	1	0	20.5	19.9	0.926	1.057	
							50	0	20.5	19.8	0.917	1.084	
				Edge 4	18900	1880.0	1	0	20.5	20.1	0.084	0.092	
							50	0	20.5	20.0	0.082	0.092	

LTE Band 2 (20MHz Bandwidth)_Continued

RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		10-g SAR (W/kg)		Plot No.
									Tune-up limit	Meas.	Meas.	Scaled	
Phablet-10g	QPSK	Off	13	Rear	18900	1880.0	1	0	24.5	24.0	0.665	0.748	
							50	0	23.5	23.0	0.550	0.620	
			6	Front	18900	1880.0	1	0	24.5	24.0	0.958	1.078	
							50	0	23.5	23.0	0.794	0.896	
			0	Edge 2	18900	1880.0	1	0	24.5	24.0	0.297	0.334	
							50	0	23.5	23.0	0.237	0.267	
			13	Edge 3	18900	1880.0	1	0	24.5	24.0	0.682	0.767	
							50	0	23.5	23.0	0.558	0.629	
			0	Edge 4	18900	1880.0	1	0	24.5	24.0	0.347	0.390	
							50	0	23.5	23.0	0.280	0.316	
		On	0	Rear	18900	1880.0	1	0	20.5	20.0	1.220	1.372	
							50	0	20.5	20.0	1.260	1.420	21
			0	Front	18900	1880.0	1	0	20.5	20.0	1.030	1.158	
							50	0	20.5	20.0	1.030	1.161	
			0	Edge 3	18900	1880.0	1	0	20.5	20.0	1.250	1.406	
							50	0	20.5	20.0	1.230	1.387	

10.7 LTE Band 4 (20MHz Bandwidth)

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

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	Off	0	Left Touch	20525	836.5	1	49	25.0	24.5	0.143	0.160	22
							25	0	24.0	23.4	0.093	0.107	
				Left Tilt	20525	836.5	1	49	25.0	24.5	0.097	0.109	
							25	0	24.0	23.4	0.065	0.074	
				Right Touch	20525	836.5	1	49	25.0	24.5	0.202	0.227	
							25	0	24.0	23.4	0.133	0.153	
				Right Tilt	20525	836.5	1	49	25.0	24.5	0.107	0.120	
							25	0	24.0	23.4	0.073	0.085	
Body-worn	QPSK	Off	15	Rear	20525	836.5	1	49	25.0	24.5	0.431	0.484	23
							25	0	24.0	23.4	0.298	0.344	
				Front	20525	836.5	1	49	25.0	24.5	0.259	0.291	
							25	0	24.0	23.4	0.176	0.203	
Hotspot	QPSK	On	10	Rear	20525	836.5	1	49	23.0	22.5	0.575	0.639	24
							25	0	23.0	22.4	0.490	0.566	
				Front	20525	836.5	1	49	23.0	22.5	0.301	0.334	
							25	0	23.0	22.4	0.254	0.293	
				Edge 2	20525	836.5	1	49	23.0	22.5	0.169	0.188	
							25	0	23.0	22.4	0.149	0.172	
				Edge 3	20525	836.5	1	49	23.0	22.5	0.247	0.274	
							25	0	23.0	22.4	0.213	0.246	
				Edge 4	20525	836.5	1	49	23.0	22.5	0.043	0.048	
							25	0	23.0	22.4	0.039	0.045	

10.9 LTE Band 12 (10MHz Bandwidth)

RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	N/A	0	Left Touch	23095	707.5	1	0	25.0	24.8	0.095	0.099	25
							25	12	24.0	23.4	0.077	0.087	
				Left Tilt	23095	707.5	1	0	25.0	24.8	0.053	0.056	
							25	12	24.0	23.4	0.043	0.048	
				Right Touch	23095	707.5	1	0	25.0	24.8	0.111	0.116	
							25	12	24.0	23.4	0.085	0.097	
				Right Tilt	23095	707.5	1	0	25.0	24.8	0.056	0.059	
							25	12	24.0	23.4	0.045	0.052	
Body-worn	QPSK	N/A	15	Rear	23095	707.5	1	0	25.0	24.8	0.086	0.090	26
							25	12	24.0	23.4	0.072	0.082	
				Front	23095	707.5	1	0	25.0	24.8	0.054	0.056	
							25	12	24.0	23.4	0.046	0.052	
Hotspot	QPSK	N/A	10	Rear	23095	707.5	1	0	25.0	24.8	0.142	0.149	27
							25	12	24.0	23.4	0.116	0.132	
				Front	23095	707.5	1	0	25.0	24.8	0.070	0.074	
							25	12	24.0	23.4	0.060	0.068	
				Edge 2	23095	707.5	1	0	25.0	24.8	0.164	0.172	
							25	12	24.0	23.4	0.132	0.150	
				Edge 3	23095	707.5	1	0	25.0	24.8	0.048	0.050	
							25	12	24.0	23.4	0.036	0.041	
				Edge 4	23095	707.5	1	0	25.0	24.8	0.131	0.137	
							25	12	24.0	23.4	0.117	0.133	

10.10 LTE Band 13 (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	N/A	0	Left Touch	23230	782.0	1	0	25.0	24.8	0.097	0.102	
							25	0	24.0	23.4	0.095	0.109	
				Left Tilt	23230	782.0	1	0	25.0	24.8	0.058	0.061	
							25	0	24.0	23.4	0.059	0.068	
				Right Touch	23230	782.0	1	0	25.0	24.8	0.110	0.116	
							25	0	24.0	23.4	0.117	0.134	28
Right Tilt	23230		782.0	1	0	25.0	24.8	0.047	0.050				
				25	0	24.0	23.4	0.048	0.055				
Body-worn	QPSK		15	Rear	23230	782.0	1	0	25.0	24.8	0.211	0.222	
							25	0	24.0	23.4	0.204	0.234	29
				Front	23230	782.0	1	0	25.0	24.8	0.147	0.155	
							25	0	24.0	23.4	0.145	0.166	
Hotspot	QPSK		10	Rear	23230	782.0	1	0	25.0	24.8	0.610	0.642	30
							25	0	24.0	23.4	0.481	0.551	
				Front	23230	782.0	1	0	25.0	24.8	0.155	0.163	
							25	0	24.0	23.4	0.160	0.183	
				Edge 2	23230	782.0	1	0	25.0	24.8	0.218	0.229	
							25	0	24.0	23.4	0.212	0.243	
				Edge 3	23230	782.0	1	0	25.0	24.8	0.195	0.205	
							25	0	24.0	23.4	0.147	0.168	
Edge 4	23230	782.0	1	0	25.0	24.8	0.132	0.139					
			25	0	24.0	23.4	0.130	0.149					

10.11 LTE Band 17 (10MHz Bandwidth)

SAR for LTE Band 17 (Frequency Range: 704-716 MHz) is covered by LTE Band 12 (Frequency Range: 699-716 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

10.12 LTE Band 41 (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	Off	0	Left Touch	40620	2593.0	1	99	24.5	24.5	0.149	0.150	
							50	50	23.5	23.5	0.108	0.109	
				Left Tilt	40620	2593.0	1	99	24.5	24.5	0.141	0.142	
							50	50	23.5	23.5	0.106	0.107	
				Right Touch	40620	2593.0	1	99	24.5	24.5	0.130	0.131	
							50	50	23.5	23.5	0.096	0.096	
				Right Tilt	40620	2593.0	1	99	24.5	24.5	0.180	0.181	31
							50	50	23.5	23.5	0.131	0.132	
Body-worn	QPSK	Off	15	Rear	40620	2593.0	1	99	24.5	24.5	0.365	0.367	32
							50	50	23.5	23.5	0.297	0.299	
				Front	40620	2593.0	1	99	24.5	24.5	0.184	0.185	
							50	50	23.5	23.5	0.146	0.147	
Hotspot	QPSK	On	10	Rear	40620	2593.0	1	99	23.5	23.4	0.560	0.575	
							50	50	23.5	23.4	0.560	0.580	33
				Front	40620	2593.0	1	99	23.5	23.4	0.283	0.291	
							50	50	23.5	23.4	0.286	0.296	
				Edge 2	40620	2593.0	1	99	23.5	23.4	0.124	0.127	
							50	50	23.5	23.4	0.128	0.132	
				Edge 3	40620	2593.0	1	99	23.5	23.4	0.168	0.173	
							50	50	23.5	23.4	0.171	0.177	
				Edge 4	40620	2593.0	1	99	23.5	23.4	0.151	0.155	
							50	50	23.5	23.4	0.163	0.169	

10.13 LTE Band 66 (20MHz Bandwidth)

RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	Off	0	Left Touch	132072	1720.0	1	99	24.5	24.4	0.159	0.165	34
							50	0	23.5	22.9	0.111	0.126	
				Left Tilt	132072	1720.0	1	99	24.5	24.4	0.060	0.062	
							50	0	23.5	22.9	0.044	0.050	
				Right Touch	132072	1720.0	1	99	24.5	24.4	0.136	0.141	
							50	0	23.5	22.9	0.080	0.091	
Right Tilt	132072	1720.0	1	99	24.5	24.4	0.079	0.081					
			50	0	23.5	22.9	0.050	0.057					
Body-worn	QPSK	Off	15	Rear	132072	1720.0	1	99	24.5	24.4	1.010	1.045	
							50	0	23.5	22.9	0.863	0.983	
							100	0	23.5	22.9	0.860	0.978	
					132322	1745.0	1	99	24.5	24.3	0.935	0.978	
							50	0	23.5	22.8	0.804	0.953	
					132572	1770.0	1	99	24.5	23.8	0.919	1.085	35
				50			0	23.5	22.8	0.560	0.657		
				Front	132072	1720.0	1	99	24.5	24.4	0.586	0.607	
							50	0	23.5	22.9	0.475	0.541	
				Hotspot	QPSK	On	10	Rear	132072	1720.0	1	99	20.5
50	0	20.5	20.0								0.814	0.919	
100	0	20.5	19.9								0.829	0.944	36
132322	1745.0	1	99						20.5	20.3	0.700	0.731	
		50	0						20.5	19.8	0.657	0.776	
132572	1770.0	1	99						20.5	20.5	0.493	0.496	
		50	0					20.5	19.8	0.467	0.545		
Front	132072	1720.0	1					99	20.5	20.5	0.326	0.328	
			50					0	20.5	20.0	0.281	0.317	
Edge 2	132072	1720.0	1					99	20.5	20.5	0.063	0.063	
			50					0	20.5	20.0	0.047	0.053	
Edge 3	132072	1720.0	1					99	20.5	20.5	0.768	0.772	
			50					0	20.5	20.0	0.704	0.795	
Edge 4	132072	1720.0	1					99	20.5	20.5	0.101	0.101	
			50					0	20.5	20.0	0.085	0.096	

LTE Band 66 (20MHz Bandwidth)_Continued

RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		10-g SAR (W/kg)		Plot No.
									Tune-up limit	Meas.	Meas.	Scaled	
Phablet-10g	QPSK	Off	13	Rear	132072	1720.0	1	99	24.5	24.4	0.790	0.818	
							50	0	23.5	22.9	0.609	0.694	
			6	Front	132072	1720.0	1	99	24.5	24.4	1.150	1.190	
							50	0	23.5	22.9	0.884	1.007	
			0	Edge 2	132072	1720.0	1	99	24.5	24.4	0.497	0.514	
							50	0	23.5	22.9	0.371	0.423	
			13	Edge 3	132072	1720.0	1	99	24.5	24.4	0.547	0.566	
							50	0	23.5	22.9	0.384	0.438	
			0	Edge 4	132072	1720.0	1	99	24.5	24.4	0.456	0.472	
							50	0	23.5	22.9	0.372	0.424	
		On	0	Rear	132072	1720.0	1	99	20.5	20.5	1.210	1.213	
							50	0	20.5	20.0	1.220	1.372	
			0	Front	132072	1720.0	1	99	20.5	20.5	1.380	1.383	
							50	0	20.5	20.0	1.330	1.496	37
			0	Edge 3	132072	1720.0	1	99	20.5	20.5	1.180	1.183	
							50	0	20.5	20.0	1.240	1.395	

10.14 Wi-Fi (DTS Band)

Frequency Band	Mode	RF Exposure Conditions	PWR Back-off	Dist. (mm)	Test Position	Ch #	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Duty Cycle (%)	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
2.4GHz	802.11b 1 Mbps	Head	On	0	Left Touch	11	2462.0	0.155	99.7	13.5	13.4			
					Left Tilt	11	2462.0	0.195	99.7	13.5	13.4			
					Right Touch	11	2462.0	0.310	99.7	13.5	13.4			
					Right Tilt	11	2462.0	0.420	99.7	13.5	13.4	0.273	0.279	38
		Body-worn	Off	15	Rear	6	2437.0	0.143	99.7	19.5	18.7	0.116	0.139	39
					Front	6	2437.0	0.070	99.7	19.5	18.7			
		Hotspot	Off	10	Rear	6	2437.0	0.306	99.7	19.5	18.7	0.249	0.299	
					Front	6	2437.0	0.139	99.7	19.5	18.7			
					Edge 1	6	2437.0	0.352	99.7	19.5	18.7	0.257	0.308	40
					Edge 4	6	2437.0	0.089	99.7	19.5	18.7			

Note(s):

- When the 802.11b reported SAR of the highest measured maximum output power channel is ≤ 0.8 W/kg, no further SAR testing is required. If SAR is > 0.8 W/kg and ≤ 1.2 W/kg, SAR is required for the next highest measured output power channel. Finally, if SAR is > 1.2 W/kg, SAR is required for the third channel.
- SAR testing is not required for OFDM mode(s) when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

10.15 Wi-Fi (U-NII Bands)

Frequency Band	Mode	RF Exposure Conditions	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Duty Cycle (%)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
5.3 GHz U-NII 2A	802.11n HT 40 13.5 Mbps	Head	On	0	Left Touch	54	5270.0	0.506	96.0	11.5	11.1					
					Left Tilt	54	5270.0	0.494	96.0	11.5	11.1					
					Right Touch	54	5270.0	1.078	96.0	11.5	11.1	0.403	0.456			
					Right Tilt	54	5270.0	1.112	96.0	11.5	11.1	0.418	0.473			41
	802.11a 6 Mbps	Body-worn	Off	15	Rear	64	5320.0	0.198	98.2	18.5	18.3					
					Front	64	5320.0	0.480	98.2	18.5	18.3	0.241	0.256			42
	802.11a 6 Mbps	Phablet-10g	Off	0	Rear	64	5320.0	5.535	98.2	18.5	18.3					
					Front	64	5320.0	12.941	98.2	18.5	18.3			1.120	1.191	
					Edge 1	64	5320.0	7.075	98.2	18.5	18.3			1.320	1.404	43
					Edge 4	64	5320.0	0.674	98.2	18.5	18.3					
Frequency Band	Mode	RF Exposure Conditions	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Duty Cycle (%)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
5.5 GHz U-NII 2C	802.11n HT 40 13.5 Mbps	Head	On	0	Left Touch	110	5550.0	1.142	96.0	11.5	11.4	0.587	0.625			
					Left Tilt	110	5550.0	1.246	96.0	11.5	11.4					
					Right Touch	102	5510.0	1.554	96.0	11.5	11.2	0.825	0.925			
						110	5550.0	1.834	96.0	11.5	11.4	1.000	1.065			44
					Right Tilt	102	5510.0	1.229	96.0	11.5	11.2	0.805	0.902			
						110	5550.0	1.075	96.0	11.5	11.4	0.906	0.965			
	802.11a 6 Mbps	Body-worn	Off	15	Rear	116	5580.0	0.304	98.2	18.5	18.4	0.151	0.159			
					Front	116	5580.0	0.917	98.2	18.5	18.4	0.431	0.453			45
	802.11a 6 Mbps	Phablet-10g	Off	0	Rear	116	5580.0	7.973	98.2	18.5	18.4					
					Front	116	5580.0	20.761	98.2	18.5	18.4			1.870	1.966	46
					Edge 1	116	5580.0	8.389	98.2	18.5	18.4			1.300	1.367	
					Edge 4	116	5580.0	0.686	98.2	18.5	18.4					
Frequency Band	Mode	RF Exposure Conditions	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Duty Cycle (%)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
5.8 GHz U-NII 3	802.11n HT 40 13.5 Mbps	Head	On	0	Left Touch	151	5755.0	1.523	96.0	11.5	11.4	0.604	0.642			
					Left Tilt	151	5755.0	1.371	96.0	11.5	11.4					
					Right Touch	151	5755.0	1.961	96.0	11.5	11.4	0.993	1.056			
						159	5795.0	1.829	96.0	11.5	11.1	0.929	1.068			47
					Right Tilt	151	5755.0	1.628	96.0	11.5	11.4	0.892	0.948			
						159	5795.0	1.620	96.0	11.5	11.1	0.837	0.962			
	802.11a 6 Mbps	Body-worn	Off	15	Rear	157	5785.0	0.216	98.2	18.5	18.2	0.097	0.106			
					Front	157	5785.0	0.963	98.2	18.5	18.2	0.410	0.448			48
	802.11a 6 Mbps	Hotspot	Off	10	Rear	157	5785.0	0.348	98.2	18.5	18.2	0.151	0.165			
					Front	157	5785.0	1.680	98.2	18.5	18.2	0.686	0.750			49
					Edge 1	157	5785.0	0.782	98.2	18.5	18.2	0.354	0.387			
					Edge 4	157	5785.0	0.096	98.2	18.5	18.2					

10.16 Bluetooth

Frequency Band	Mode	RF Exposure Conditions	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle (%)	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
2.4GHz	GFSK	Head	0	Left Touch	0	2402.0	76.9	10.5	10.3	0.056	0.076	
				Left Tilt	0	2402.0	76.9	10.5	10.3	0.065	0.088	
				Right Touch	0	2402.0	76.9	10.5	10.3	0.101	0.138	
				Righttt Tilt	0	2402.0	76.9	10.5	10.3	0.127	0.173	50

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:

- $(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm}) \cdot [\sqrt{f_{(\text{GHz})}/x}] \text{ W/kg}$ 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.

RF Air interface	RF Exposure Conditions	Frequency (GHz)	Max. tune-up tolerance Power		Min. test separation distance (mm)	SAR test exclusion Result*	Estimated 1-g SAR (W/kg)
			(dBm)	(mW)			
Bluetooth	Body-w orn	2.480	10.5	11	15	1.2	0.154
	Hotspot	2.480	10.5	11	10	1.7	0.231

Conclusion:

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

11. SAR Measurement Variability

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

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

Peak spatial-average (1g of tissue)

Frequency Band (MHz)	Air Interface	RF Exposure Conditions	Test Position	Repeated SAR (Yes/No)	Highest Measured SAR (W/kg)	Repeated Measured SAR (W/kg)	Largest to Smallest SAR Ratio
750	LTE Band 12	Hotspot	Edge 2	No	0.164	N/A	N/A
	LTE Band 13	Hotspot	Rear	No	0.610	N/A	N/A
835	GSM 850	Hotspot	Rear	No	0.366	N/A	N/A
	WCDMA Band V	Hotspot	Rear	No	0.555	N/A	N/A
	LTE Band 5	Hotspot	Rear	No	0.575	N/A	N/A
1750	WCDMA Band IV	Body	Rear	No	0.894	N/A	N/A
	LTE Band 66	Body	Rear	Yes	1.010	1.010	1.00
1900	GSM 1900	Hotspot	Edge 3	No	0.349	N/A	N/A
	WCDMA Band II	Body	Rear	No	0.789	N/A	N/A
	LTE Band 2	Hotspot	Rear	Yes	0.956	0.896	1.07
2400	Wi-Fi 802.11b/g/n	Head	Right Tilt	No	0.273	N/A	N/A
	Bluetooth	Head	Right Tilt	No	0.127	N/A	N/A
2600	LTE Band 41	Hotspot	Rear	No	0.560	N/A	N/A
5300	Wi-Fi 802.11a/n	Head	Right Tilt	No	0.418	N/A	N/A
5500	Wi-Fi 802.11a/n	Head	Right Touch	Yes	1.000	0.998	1.00
5800	Wi-Fi 802.11a/n	Head	Right Touch	Yes	0.993	1.030	1.04

Peak spatial-average (10g of tissue)

Frequency Band (MHz)	Air Interface	RF Exposure Conditions	Test Position	Repeated SAR (Yes/No)	Highest Measured SAR (W/kg)	Repeated Measured SAR (W/kg)	Largest to Smallest SAR Ratio
1750	WCDMA Band IV	Phablet-10g	Rear	No	1.140	N/A	N/A
	LTE Band 66	Phablet-10g	Front	No	1.380	N/A	N/A
1900	WCDMA Band II	Phablet-10g	Rear	No	1.160	N/A	N/A
	LTE Band 2	Phablet-10g	Rear	No	1.260	N/A	N/A
5300	Wi-Fi 802.11a/n	Phablet-10g	Edge 1	No	1.320	N/A	N/A
5500	Wi-Fi 802.11a/n	Phablet-10g	Front	No	1.870	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)	+ DTS
	2	GSM(Voice/GPRS)	+ BT
	3	GSM(Voice/GPRS)	+ U-NII
	4	W-CDMA	+ DTS
	5	W-CDMA	+ BT
	6	W-CDMA	+ U-NII
	7	LTE	+ DTS
	8	LTE	+ BT
	9	LTE	+ U-NII
Body-w orn	10	GSM(Voice/GPRS)	+ DTS
	11	GSM(Voice/GPRS)	+ BT
	12	GSM(Voice/GPRS)	+ U-NII
	13	W-CDMA	+ DTS
	14	W-CDMA	+ BT
	15	W-CDMA	+ U-NII
	16	LTE	+ DTS
	17	LTE	+ BT
	18	LTE	+ U-NII
Hotspot	19	GSM(GPRS)	+ DTS
	20	GSM(GPRS)	+ BT
	21	GSM(GPRS)	+ U-NII
	22	WCDMA	+ DTS
	23	WCDMA	+ BT
	24	WCDMA	+ U-NII
	25	LTE	+ DTS
	26	LTE	+ BT
	27	LTE	+ U-NII
Phablet-10g	28	WCDMA	+ U-NII
	29	LTE	+ U-NII

Notes:

1. DTS supports Wi-Fi Direct, Hotspot and VoIP.
2. U-NII supports Wi-Fi Direct, Hotspot and VoIP.
3. GPRS, W-CDMA, LTE supports Hotspot and VoIP.
4. DTS or U-NII Radio cannot transmit simultaneously with Bluetooth Radio.
5. DTS Radio cannot transmit simultaneously with U-NII Radio.
6. BT tethering is consider about each RF exposure conditions

12.1 Sum of the SAR for GSM 850 & 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	All position	0.174	0.279	1.068	0.173	0.453	No	1.242	No	0.347	No
Body-worn	Rear	0.363	0.139	0.159	0.154	0.502	No	0.522	No	0.517	No
	Front	0.197	0.139	0.453	0.154	0.336	No	0.650	No	0.351	No
Hotspot	Rear	0.397	0.299	0.165	0.231	0.696	No	0.562	No	0.628	No
	Front	0.244	0.308	0.750	0.231	0.552	No	0.994	No	0.475	No
	Edge 1		0.308	0.387	0.231	0.308	No	0.387	No	0.231	No
	Edge 2	0.195				0.195	No	0.195	No	0.195	No
	Edge 3	0.186				0.186	No	0.186	No	0.186	No
	Edge 4	0.049	0.308	0.750	0.231	0.357	No	0.799	No	0.280	No

12.2 Sum of the SAR for GSM 1900 & 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	All position	0.053	0.279	1.068	0.173	0.332	No	1.121	No	0.226	No
Body-worn	Rear	0.357	0.139	0.159	0.154	0.496	No	0.516	No	0.511	No
	Front	0.173	0.139	0.453	0.154	0.312	No	0.626	No	0.327	No
Hotspot	Rear	0.370	0.299	0.165	0.231	0.669	No	0.535	No	0.601	No
	Front	0.184	0.308	0.750	0.231	0.492	No	0.934	No	0.415	No
	Edge 1		0.308	0.387	0.231	0.308	No	0.387	No	0.231	No
	Edge 2	0.040				0.040	No	0.040	No	0.040	No
	Edge 3	0.391				0.391	No	0.391	No	0.391	No
	Edge 4	0.041	0.308	0.750	0.231	0.349	No	0.791	No	0.272	No

12.3 Sum of the SAR for WCDMA Band II & 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	All position	0.104	0.279	1.068	0.173	0.383	No	1.172	No	0.277	No
Body-worn	Rear	0.902	0.139	0.159	0.154	1.041	No	1.061	No	1.056	No
	Front	0.489	0.139	0.453	0.154	0.628	No	0.942	No	0.643	No
Hotspot	Rear	0.725	0.299	0.165	0.231	1.024	No	0.890	No	0.956	No
	Front	0.381	0.308	0.750	0.231	0.689	No	1.131	No	0.612	No
	Edge 1		0.308	0.387	0.231	0.308	No	0.387	No	0.231	No
	Edge 2	0.069				0.069	No	0.069	No	0.069	No
	Edge 3	0.769				0.769	No	0.769	No	0.769	No
	Edge 4	0.079	0.308	0.750	0.231	0.387	No	0.829	No	0.310	No
RF Exposure conditions	Test Position	① WWAN	② U-NII	① + ② WWAN + U-NII							
				Σ 10-g SAR (mW/g)	SPLSR (Yes/ No)						
Phablet-10g	All position	1.338	1.966	3.304	No						

12.4 Sum of the SAR for WCDMA Band IV & 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	All position	0.151	0.279	1.068	0.173	0.430	No	1.219	No	0.324	No
Body-worn	Rear	0.998	0.139	0.159	0.154	1.137	No	1.157	No	1.152	No
	Front	0.398	0.139	0.453	0.154	0.537	No	0.851	No	0.552	No
Hotspot	Rear	0.782	0.299	0.165	0.231	1.081	No	0.947	No	1.013	No
	Front	0.363	0.308	0.750	0.231	0.671	No	1.113	No	0.594	No
	Edge 1		0.308	0.387	0.231	0.308	No	0.387	No	0.231	No
	Edge 2	0.067				0.067	No	0.067	No	0.067	No
	Edge 3	0.701				0.701	No	0.701	No	0.701	No
	Edge 4	0.089	0.308	0.750	0.231	0.397	No	0.839	No	0.320	No
RF Exposure conditions	Test Position	① WWAN	② U-NII	① + ② WWAN + U-NII							
				Σ 10-g SAR (mW/g)	SPLSR (Yes/ No)						
Phablet-10g	All position	1.267	1.966	3.233	No						

12.5 Sum of the SAR for WCDMA Band V & 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	All position	0.211	0.279	1.068	0.173	0.490	No	1.279	No	0.384	No
Body-worn	Rear	0.468	0.139	0.159	0.154	0.607	No	0.627	No	0.622	No
	Front	0.286	0.139	0.453	0.154	0.425	No	0.739	No	0.440	No
Hotspot	Rear	0.618	0.299	0.165	0.231	0.917	No	0.783	No	0.849	No
	Front	0.323	0.308	0.750	0.231	0.631	No	1.073	No	0.554	No
	Edge 1		0.308	0.387	0.231	0.308	No	0.387	No	0.231	No
	Edge 2	0.216				0.216	No	0.216	No	0.216	No
	Edge 3	0.235				0.235	No	0.235	No	0.235	No
	Edge 4	0.052	0.308	0.750	0.231	0.360	No	0.802	No	0.283	No

12.6 Sum of the SAR for LTE Band 2 & 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	All position	0.120	0.279	1.068	0.173	0.399	No	1.188	No	0.293	No
Body-worn	Rear	0.962	0.139	0.159	0.154	1.101	No	1.121	No	1.116	No
	Front	0.484	0.139	0.453	0.154	0.623	No	0.937	No	0.638	No
Hotspot	Rear	1.091	0.299	0.165	0.231	1.390	No	1.256	No	1.322	No
	Front	0.386	0.308	0.750	0.231	0.694	No	1.136	No	0.617	No
	Edge 1		0.308	0.387	0.231	0.308	No	0.387	No	0.231	No
	Edge 2	0.074				0.074	No	0.074	No	0.074	No
	Edge 3	1.084				1.084	No	1.084	No	1.084	No
	Edge 4	0.092	0.308	0.750	0.231	0.400	No	0.842	No	0.323	No
RF Exposure conditions	Test Position	① WWAN	② U-NII	① + ② WWAN + U-NII							
				Σ 10-g SAR (mW/g)	SPLSR (Yes/ No)						
Phablet-10g	All position	1.420	1.966	3.386	No						

12.7 Sum of the SAR for LTE Band 4 & Wi-Fi & BT

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

12.8 Sum of the SAR for LTE Band 5 & 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	All position	0.227	0.279	1.068	0.173	0.506	No	1.295	No	0.400	No
Body-worn	Rear	0.484	0.139	0.159	0.154	0.623	No	0.643	No	0.638	No
	Front	0.291	0.139	0.453	0.154	0.430	No	0.744	No	0.445	No
Hotspot	Rear	0.639	0.299	0.165	0.231	0.938	No	0.804	No	0.870	No
	Front	0.334	0.308	0.750	0.231	0.642	No	1.084	No	0.565	No
	Edge 1		0.308	0.387	0.231	0.308	No	0.387	No	0.231	No
	Edge 2	0.188				0.188	No	0.188	No	0.188	No
	Edge 3	0.274				0.274	No	0.274	No	0.274	No
	Edge 4	0.048	0.308	0.750	0.231	0.356	No	0.798	No	0.279	No

12.9 Sum of the SAR for LTE Band 12 & 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	All position	0.116	0.279	1.068	0.173	0.395	No	1.184	No	0.289	No
Body-worn	Rear	0.090	0.139	0.159	0.154	0.229	No	0.249	No	0.244	No
	Front	0.056	0.139	0.453	0.154	0.195	No	0.509	No	0.210	No
Hotspot	Rear	0.149	0.299	0.165	0.231	0.448	No	0.314	No	0.380	No
	Front	0.074	0.308	0.750	0.231	0.382	No	0.824	No	0.305	No
	Edge 1		0.308	0.387	0.231	0.308	No	0.387	No	0.231	No
	Edge 2	0.172				0.172	No	0.172	No	0.172	No
	Edge 3	0.050				0.050	No	0.050	No	0.050	No
	Edge 4	0.137	0.308	0.750	0.231	0.445	No	0.887	No	0.368	No

12.10 Sum of the SAR for LTE Band 13 & 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	All position	0.134	0.279	1.068	0.173	0.413	No	1.202	No	0.307	No
Body-worn	Rear	0.234	0.139	0.159	0.154	0.373	No	0.393	No	0.388	No
	Front	0.166	0.139	0.453	0.154	0.305	No	0.619	No	0.320	No
Hotspot	Rear	0.642	0.299	0.165	0.231	0.941	No	0.807	No	0.873	No
	Front	0.183	0.308	0.750	0.231	0.491	No	0.933	No	0.414	No
	Edge 1		0.308	0.387	0.231	0.308	No	0.387	No	0.231	No
	Edge 2	0.243				0.243	No	0.243	No	0.243	No
	Edge 3	0.205				0.205	No	0.205	No	0.205	No
	Edge 4	0.149	0.308	0.750	0.231	0.457	No	0.899	No	0.380	No

12.11 Sum of the SAR for LTE Band 17 & Wi-Fi & BT

SAR for LTE Band 17 (Frequency range: 704-716 MHz) is covered by LTE Band 12 (Frequency range: 699-716 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

12.12 Sum of the SAR for LTE Band 41 & 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	All position	0.181	0.279	1.068	0.173	0.460	No	1.249	No	0.354	No
Body-worn	Rear	0.367	0.139	0.159	0.154	0.506	No	0.526	No	0.521	No
	Front	0.185	0.139	0.453	0.154	0.324	No	0.638	No	0.339	No
Hotspot	Rear	0.580	0.299	0.165	0.231	0.879	No	0.745	No	0.811	No
	Front	0.296	0.308	0.750	0.231	0.604	No	1.046	No	0.527	No
	Edge 1		0.308	0.387	0.231	0.308	No	0.387	No	0.231	No
	Edge 2	0.132				0.132	No	0.132	No	0.132	No
	Edge 3	0.177				0.177	No	0.177	No	0.177	No
	Edge 4	0.169	0.308	0.750	0.231	0.477	No	0.919	No	0.400	No

12.13 Sum of the SAR for LTE Band 66 & 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	All position	0.165	0.279	1.068	0.173	0.444	No	1.233	No	0.338	No
Body-worn	Rear	1.085	0.139	0.159	0.154	1.224	No	1.244	No	1.239	No
	Front	0.607	0.139	0.453	0.154	0.746	No	1.060	No	0.761	No
Hotspot	Rear	0.944	0.299	0.165	0.231	1.243	No	1.109	No	1.175	No
	Front	0.328	0.308	0.750	0.231	0.636	No	1.078	No	0.559	No
	Edge 1		0.308	0.387	0.231	0.308	No	0.387	No	0.231	No
	Edge 2	0.063				0.063	No	0.063	No	0.063	No
	Edge 3	0.795				0.795	No	0.795	No	0.795	No
	Edge 4	0.101	0.308	0.750	0.231	0.409	No	0.851	No	0.332	No
RF Exposure conditions	Test Position	① WWAN	② U-NII	① + ② WWAN + U-NII							
				Σ 10-g SAR (mW/g)	SPLSR (Yes/ No)						
Phablet-10g	All position	1.496	1.966	3.462	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 (10-g SAR is < 4.0 W/kg) or the SPLSR is < 1-g 0.04 (10-g 0.10) for all circumstances that require SPLSR calculation.

Appendixes

Refer to separated files for the following appendixes.

4788371689-S1V1 FCC Report SAR_App A_Photos & Ant. Locations

4788371689-S1V1 FCC Report SAR_App B_Highest SAR Test Plots

4788371689-S1V1 FCC Report SAR_App C_System Check Plots

4788371689-S1V1 FCC Report SAR_App D_SAR Tissue Ingredients

4788371689-S1V1 FCC Report SAR_App E_Probe Cal. Certificates

4788371689-S1V1 FCC Report SAR_App F_Dipole Cal. Certificates

END OF REPORT