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/ac, ANT+ and NFC

MODEL NUMBER: SM-G889A

FCC ID: A3LSMG889A

REPORT NUMBER: 4788768228-S1V1

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Prepared for
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ACCREDITED
Testing Laboratory

TL-637

Revision History

Rev.	Date	Revisions	Revised By
V1	6/13/2019	Initial Issue	Sunghoon Kim

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1. Attestation of Test Results

Applicant Name	SAMSUNG ELECTRONICS CO.,LTD.
FCC ID	A3LSMG889A
Model Number	SM-G889A
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)	Product Specific 10-g (10g of tissue)
General population / Uncontrolled exposure	1.6	4.0

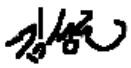
The Highest Reported SAR (W/kg)

RF Exposure Conditions		Equipment Class			
		Licensed	**DTS**	**U-NII**	**DSS(BT)**
Head		1.20	0.35	0.10	0.17
Body-worn		0.67	0.27	0.53	< 0.10
Hotspot		0.75	0.52	0.40	0.16
Product Specific 10g		2.96	N/A	1.58	N/A
Simultaneous TX	Head	1.55	1.55	1.52	1.46
	Body-worn	1.47	1.47	1.47	1.27
	Hotspot	1.59	1.59	1.59	1.22
	Product Specific 10g	3.97	N/A	3.97	N/A

Date Tested	2/13/2019 to 5/22/2019
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 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 37, RF Exposure Procedures Update (Other LTE Considerations)
- TCB workshop October, 2016; Page 7, RF Exposure Procedures (Bluetooth Duty Factor)
- TCB workshop October, 2016; Page 18, RF Exposure Procedures (DUT Holder Perturbations)
- TCB workshop May, 2017; Page 6, RF Exposure Procedures (LTE Test Conditions)
- TCB workshop April, 2018; Page 3, RF Exposure Procedures (LTE DL CA SAR Test Exclusion Update)

3. Facilities and Accreditation

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

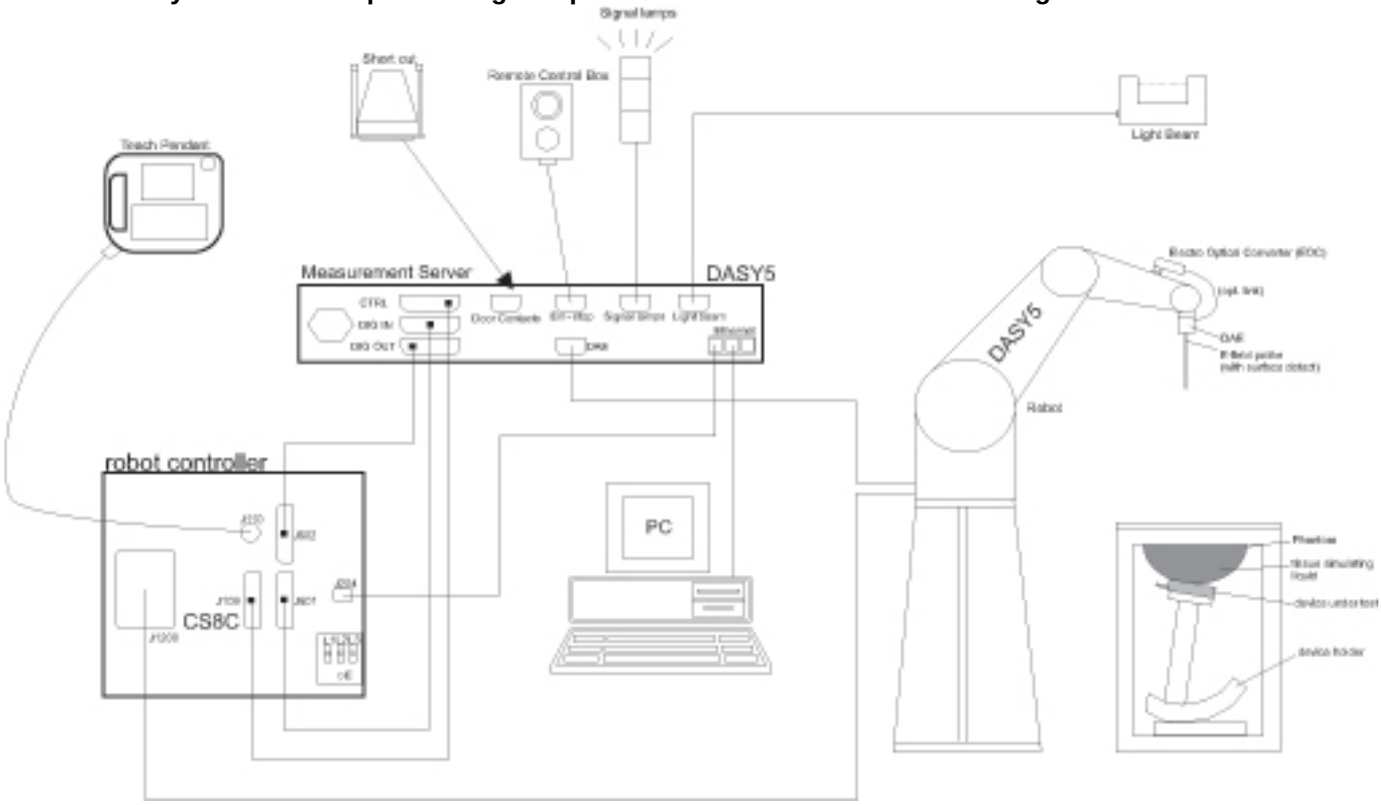
Suwon
SAR 1 Room
SAR 2 Room
SAR 3 Room
SAR 4 Room

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	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

Step 3: Zoom Scan

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

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

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

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

Step 4: Power drift measurement

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

Step 5: Z-Scan (FCC only)

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

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	8-7-2019
Dielectric Assessment Kit	SPEAG	DAK-3.5	1196	6-26-2019
Shorting block	SPEAG	DAK-3.5 Short	SMDAK 200 BA	N/A
Thermometer	LKM	DTM3000	3424	8-9-2019

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
MXG Analog Signal Generator	Agilent	N5181A	MY50145882	8-7-2019
Power Sensor	Agilent	U2000A	MY54260010	8-7-2019
Power Sensor	Agilent	U2000A	MY54260007	8-7-2019
Power Amplifier	EXODUS	1410025-AMP2027-10003	10003	8-8-2019
Directional Coupler	Agilent	772D	MY52180193	8-7-2019
Directional Coupler	Agilent	778D	MY52180432	8-7-2019
Low Pass Filter	MICROLAB	LA-15N	03943	8-7-2019
Low Pass Filter	FILTRON	L14012FL	1410003S	8-7-2019
Attenuator	Agilent	8491B/003	MY39269292	8-7-2019
Attenuator	Agilent	8491B/010	MY39269315	8-7-2019
Attenuator	Agilent	8491B/020	MY39269298	8-7-2019
E-Field Probe (SAR1)	SPEAG	EX3DV4	7376	9-26-2019
E-Field Probe (SAR2)	SPEAG	EX3DV4	7330	1-31-2020
E-Field Probe (SAR3)	SPEAG	EX3DV4	7314	8-30-2019
E-Field Probe (SAR4)	SPEAG	EX3DV4	3991	5-24-2019
Data Acquisition Electronics (SAR1)	SPEAG	DAE4	1494	7-23-2019
Data Acquisition Electronics (SAR1)	SPEAG	DAE4	912	11-16-2019
Data Acquisition Electronics (SAR2)	SPEAG	DAE4	1447	3-15-2019
Data Acquisition Electronics (SAR3)	SPEAG	DAE4	1468	8-22-2019
Data Acquisition Electronics (SAR4)	SPEAG	DAE4	1259	7-26-2019
System Validation Dipole	SPEAG	D750V3	1122	2-19-2020
System Validation Dipole	SPEAG	D835V2	4d194	7-24-2020
System Validation Dipole	SPEAG	D1750V2	1125	2-16-2020
System Validation Dipole	SPEAG	D1900V2	5d199	3-15-2020
System Validation Dipole	SPEAG	D2300V2	1090	11-5-2020
System Validation Dipole	SPEAG	D2450V2	960	3-20-2020
System Validation Dipole	SPEAG	D2450V2	939	10-16-2020
System Validation Dipole	SPEAG	D2600V2	1097	1-17-2020
System Validation Dipole	SPEAG	D5GHzV2	1184	8-21-2020
Thermometer (SAR1)	Lutron	MHB-382SD	AH.91463	8-8-2019
Thermometer (SAR2)	Lutron	MHB-382SD	AH.50215	8-13-2019
Thermometer (SAR3)	Lutron	MHB-382SD	AH.50213	8-14-2019
Thermometer (SAR4)	Lutron	MHB-382SD	AH.91478	8-8-2019

Others

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Base Station Simulator	R & S	CMW500	150313	8-9-2019
Base Station Simulator	R & S	CMW500	150314	8-9-2019
Base Station Simulator	R & S	CMW500	162790	8-9-2019
Wireless Connectivity Tester	R & S	CMW270	100982	8-8-2019
Bluetooth Tester	TESCOM	TC-3000C	3000C000546	8-7-2019

Note(s):

Refer to Appendix F that mentioned about justification for Extended SAR Dipole Calibrations (D750V3, D1750, D1900V2, D2450V2, D2600V2)

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 ≤ 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): 80.7 mm x 158.5 mm Overall Diagonal: 167.0 mm Display Diagonal: 130.0 mm		
Back Cover	☒ Normal Battery Cover with NFC		
Battery Options	☒ Standard – Lithium-ion battery, Rating 3.85 Vdc, 17.33 Wh		
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 5.8 GHz)		
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 – 48, Ch.149 - 161)		
Test Sample Information	**No.**	**S/N**	**Notes**
	1	R38M109WC5L	Main conducted
	2	R38M109W9NZ	Main conducted
	3	R38KB07F0GP	Main conducted
	4	R38KB07ED2R	WiFi conducted
	5	R38KB07ED2R	WiFi conducted
	6	R38M109WCEM	SAR
	7	R38M109WB1R	SAR
	8	R38M109WASN	SAR
	9	R38M109W8HE	SAR
	10	R38M109WC0D	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 (Category 14) HSUPA (Category 6) HSPA+ (DL Only)		100%
LTE	FDD Band 2 FDD Band 4 FDD Band 5 FDD Band 7 FDD Band 12 FDD Band 14 FDD Band 29 (Rx only) FDD Band 30 FDD Band 66 TDD Band 41 TDD Band 40 TDD Band 38	QPSK 16QAM 64QAM Rel. 10 Carrier Aggregation (1 Uplink and 3 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) 98.0% (802.11g) 97.9% (802.11n 20MHz BW)
	5 GHz	802.11a 802.11n (HT20) 802.11n (HT40) 802.11ac (VHT20) 802.11ac (VHT40) 802.11ac (VHT80)		98.0% (802.11a) 97.8% (802.11n,ac 20MHz BW) 95.7% (802.11n,ac 40MHz BW) 91.4% (802.11ac 80MHz BW)
Bluetooth	2.4 GHz	Version 5.0 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	Antenna	Mode	Time Slots	Max. RF Output Power (dBm)	
				Tune-up Limit	Frame Pwr
GSM850	Main.1	Voice/GPRS	1	**33.5**	**24.5**
		GPRS	2	**31.0**	**25.0**
		EGPRS	1	**28.0**	**19.0**
		EGPRS	2	**26.0**	**20.0**
GSM1900	Main.2	Voice/GPRS	1	**30.5**	**21.5**
		GPRS	2	**28.5**	**22.5**
		EGPRS	1	**26.0**	**17.0**
		EGPRS	2	**24.0**	**18.0**

RF Air interface	Antenna	Mode	Max. RF Output Power (dBm)	Reduced. RF Output Power (dBm)
W-CDMA Band II	Main.2	R99	**24.0**	**22.0**
		HSDPA	**23.0**	**22.0**
		HSUPA	**22.5**	**21.5**
W-CDMA Band IV	Main.2	R99	**24.0**	**21.0**
		HSDPA	**23.0**	**21.0**
		HSUPA	**23.0**	**21.0**
W-CDMA Band V	Main.1	R99	**24.5**	
		HSDPA	**23.0**	
		HSUPA	**22.5**	

RF Air interface	Antenna	Mode	Max. RF Output Power (dBm)	Reduced. RF Output Power (dBm)
LTE Band 2	Main.2	QPSK	**24.0**	**22.5**
LTE Band 4*	Main.2	QPSK	**24.5**	**21.5**
LTE Band 5	Main.1	QPSK	**24.5**	
LTE Band 7	Main.2	QPSK	**24.0**	
LTE Band 12	Main.1	QPSK	**24.5**	
LTE Band 14	Main.1	QPSK	**24.5**	
LTE Band 30	Main.2	QPSK	**23.5**	
LTE Band 38*	Main.2	QPSK	**24.0**	
LTE Band 40	Main.2	QPSK	**12.0**	
LTE Band 41	Main.2	QPSK	**24.0**	
LTE Band 66	Main.2	QPSK	**24.5**	**21.5**

Notes:

1. The device utilizes power reduction under some portable hotspot conditions for SAR compliance. There is power reduction for WWAN bands (WCDMA Band II / IV, LTE Band 2 / 4 / 66). 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. LTE QPSK configuration has the highest maximum average output power per 3GPP standard.
3. 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.
4. LTE Band 38 (Frequency range: 2570-2620 MHz) is covered by LTE Band 41 (Frequency range: 2496-2690 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

Normal WLAN & BT Conducted Power

RF Air interface	Mode	Max. RF Output Power (dBm)	Reduced. RF Output Power (dBm)
WiFi 2.4 GHz	802.11b (Ch.1 - Ch.11)	19.5	16.0
	802.11g (Ch.1, 2, 10, 11)	14.0	14.0
	802.11g (Ch.3, 9)	17.0	16.0
	802.11g (Ch.4 - 8)	18.0	16.0
	802.11n HT20 (Ch. 1, 2, 10, 11)	14.0	14.0
	802.11n HT20 (Ch. 3 - 9)	17.0	16.0
WiFi 5 GHz (Except UNII-3)	802.11a	18.0	10.0
	802.11n HT20	18.0	10.0
	802.11n HT20 (Ch.100)	16.0	10.0
	802.11n HT40	16.0	10.0
	802.11ac VHT20	18.0	10.0
	802.11ac VHT20 (Ch.100)	16.0	10.0
	802.11ac VHT40	16.0	10.0
	802.11ac VHT80	16.0	10.0
WiFi 5 GHz (UNII-3)	802.11a	16.5	10.0
	802.11n HT20	16.5	10.0
	802.11n HT40	16.0	10.0
	802.11ac VHT20	16.5	10.0
	802.11ac VHT40	16.0	10.0
	802.11ac VHT80	16.0	10.0
Bluetooth		14.0	
Bluetooth LE		9.0	

RSDB (Real Simultaneous Dual Band) WLAN Conducted Power

RF Air interface	Mode	Max. RF Output Power (dBm)	Reduced. RF Output Power (dBm)
WiFi 2.4 GHz	802.11b (Ch.1 - Ch.11)	16.0	16.0
	802.11g (Ch.1, 2, 10, 11)	Same as Normal WLAN Target power	Same as Normal WLAN Target power
	802.11g (Ch.3, 9)		
	802.11g (Ch.4 - 8)		
	802.11n HT20 (Ch. 1, 2, 10, 11)		
	802.11n HT20 (Ch. 3 - 9)		
WiFi 5 GHz (Except UNII-3)	802.11a		
	802.11n HT20		
	802.11n HT20 (Ch.100)		
	802.11n HT40		
	802.11ac VHT20		
	802.11ac VHT20 (Ch.100)		
	802.11ac VHT40		
	802.11ac VHT80		
WiFi 5 GHz (UNII-3)	802.11a		
	802.11n HT20		
	802.11n HT40		
	802.11ac VHT20		
	802.11ac VHT40		
	802.11ac VHT80		

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	1.4 MHz
	Low	18700 /1860	18675/ 1857.5	18650/ 1855	18625/ 1852.5	18615/ 1851.5	18607/ 1850.7
	Mid	18900/ 1880	18900/ 1880	18900/ 1880	18900/ 1880	18900/ 1880	18900/ 1880
	High	19100/ 1900	19125/ 1902.5	19150/ 1905	19175/ 1907.5	19185/ 1908.5	19193/ 1909.3
	Band 4	Frequency range: 1710 - 1755 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low	20050/ 1720	20025/ 1717.5	20000/ 1715	19975/ 1712.5	19965/ 1711.5	19957/ 1710.7
	Mid	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5
	High	20300/ 1745	20325/ 1747.5	20350/ 1750	20375/ 1752.5	20385/ 1753.5	20393/ 1754.3
	Band 5	Frequency range: 824 - 849 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low			20450/ 829	20425/ 826.5	20415/ 825.5	20407/ 824.7
	Mid			20525/ 836.5	20525/ 836.5	20525/ 836.5	20525/ 836.5
	High			20600/ 844	20625/ 846.5	20635/ 847.5	20643/ 848.3
	Band 7	Frequency range: 2500 - 2570 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low	20850 2510	20825 2507.5	20800 2505	20775 2502.5		
	Mid	21100 2535	21100 2535	21100 2535	21100 2535		
	High	21350 2560	21375 2562.5	21400 2565	21425 2567.5		
	Band 12	Frequency range: 699 – 716 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low			23060/ 704	23035/ 701.5	23025/ 700.5	23017/ 699.7
	Mid			23095/ 707.5	23095/ 707.5	23095/ 707.5	23095/ 707.5
	High			23130/ 711	23155/ 713.5	23165/ 714.5	23173/ 715.3
	Band 14	Frequency range: 788 - 798 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low				23305/ 790.5		
	Mid			23330/ 793	23330/ 793		
	High				23355/ 795.5		

General LTE SAR Test and Reporting Considerations (Continued)

Frequency range, Channel Bandwidth, Numbers and Frequencies

Band 30	Frequency range: 2305 - 2315 MHz					
	Channel Bandwidth					
	20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
Low				27685/ 2307.5		
Mid			27710/ 2310	27710/ 2310		
High				27735/ 2312.5		

Band 38	Frequency range: 2570 - 2620 MHz					
	Channel Bandwidth					
	20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
Low	37850/ 2580	37825/ 2577.5	37800/ 2575	37775/ 2572.5		
Mid	38000/ 2595	38000/ 2595	38000/ 2595	38000/ 2595		
High	38150 2610	38175/ 2612.5	38200/ 2615	38225/ 2617.5		

Band 40 -Lower band-	Frequency range: 2305 - 2315 MHz					
	Channel Bandwidth					
	20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
Low				38725/ 2307.5		
Mid			38750/ 2310	38750/ 2310		
High				38775/ 2312.5		

Band 40 -Upper band-	Frequency range: 2350 - 2360 MHz					
	Channel Bandwidth					
	20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
Low				39175/ 2352.5		
Mid			39200/ 2355	39200/ 2355		
High				39225/ 2357.5		

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

General LTE SAR Test and Reporting Considerations (Continued)

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** 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
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.

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

Notes:

1. 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 (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	$26336 \cdot T_s$			$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
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 x (T_s) x # of S + # of U

Example for Calculated Duty Cycle for Uplink-Downlink Configuration 0:
Calculated Duty Cycle = 5120 x [1/(15000 x 2048)] x 2 + 6 ms = 63.33%
where
T_s = 1/(15000 x 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

6.6. LTE Carrier Aggregation

DL Inter-Band (2CC Max)

E-UTRA CA configuration (BCS)	E-UTRA Band	Reversible	Bandwidth						Max Aggregated BW
			1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
CA_2A-5A (0)(1)	Band 2	Y			Yes	Yes	Yes	Yes	30 MHz
	Band 5				Yes	Yes			
	Band 2				Yes	Yes			20 MHz
	Band 5				Yes	Yes			
CA_2A-12A (0)(1)(2)	Band 2	Y			Yes	Yes	Yes	Yes	30 MHz
	Band 12				Yes	Yes			
	Band 2				Yes	Yes	Yes	Yes	30 MHz
	Band 12			Yes	Yes	Yes			
	Band 2				Yes	Yes			20 MHz
	Band 12				Yes	Yes			
CA_2A-14A (0)	Band 2	Y			Yes	Yes	Yes	Yes	30 MHz
	Band 14				Yes	Yes			
CA_2A-29A (0)(1)(2)	Band 2	N			Yes	Yes			20 MHz
	Band 29			Yes	Yes	Yes			
	Band 2				Yes	Yes			20 MHz
	Band 29				Yes	Yes			
	Band 2				Yes	Yes	Yes	Yes	30 MHz
	Band 29				Yes	Yes			
CA_5A-30A (0)	Band 5	Y			Yes	Yes			20 MHz
	Band 30				Yes	Yes			
CA_5A-66A (0)	Band 5	Y			Yes	Yes			30 MHz
	Band 66				Yes	Yes	Yes	Yes	
CA_12A-30A (0)	Band 12	Y			Yes	Yes			20 MHz
	Band 30				Yes	Yes			
CA_66A-12A (0)(1)(2)(3)(4)(5)	Band 66	N	Yes	Yes	Yes	Yes			20 MHz
	Band 12				Yes	Yes			
	Band 66		Yes	Yes	Yes	Yes	Yes	Yes	30 MHz
	Band 12				Yes	Yes			
	Band 66				Yes	Yes	Yes	Yes	30 MHz
	Band 12			Yes	Yes	Yes			
	Band 66				Yes	Yes			20 MHz
	Band 12				Yes	Yes			
	Band 66				Yes	Yes	Yes	Yes	30 MHz
	Band 12				Yes	Yes			
	Band 66				Yes	Yes	Yes		20 MHz
	Band 12				Yes				
CA_14A-30A (0)	Band 14	Y			Yes	Yes			20 MHz
	Band 30				Yes	Yes			
CA_14A-66A (0)	Band 14	Y			Yes	Yes			30 MHz
	Band 66				Yes	Yes	Yes	Yes	
CA_30A-29A (0)	Band 30	N			Yes	Yes			20 MHz
	Band 29				Yes	Yes			
CA_66A-29A (0)	Band 66	N			Yes	Yes	Yes	Yes	30 MHz
	Band 29				Yes	Yes			

DL Inter-Band (3CC Max)

E-UTRA CA configuration (BCS)	E-UTRA Band	Reversible	Bandwidth						Max Aggregated BW
			1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
CA_2A-2A-5A (0)	Band 2	Y	2A-2A BCS 0						50 MHz
	Band 5				Yes	Yes			
CA_2A-2A-12A (0)	Band 2	Y	2A-2A BCS 0						50 MHz
	Band 12				Yes	Yes			
CA_2A-2A-14A (0)	Band 2	Y	2A-2A BCS 0						50 MHz
	Band 14				Yes	Yes			
CA_2A-2A-29A(0)	Band 2	N	2A-2A BCS 0						50 MHz
	Band 29				Yes	Yes			
CA_2A-2A-66A (0)	Band 2	Y	2A-2A BCS 0						60 MHz
	Band 66				Yes	Yes	Yes	Yes	
CA_2A-5A-66A (0)	Band 2	Y			Yes	Yes	Yes	Yes	50 MHz
	Band 5				Yes	Yes			
	Band 66				Yes	Yes	Yes	Yes	
CA_2A-5B (0)	Band 2	Y			Yes	Yes	Yes	Yes	40 MHz
	Band 5		5B BCS 0						
CA_2A-12A-66A (0)	Band 2	Y			Yes	Yes	Yes	Yes	50 MHz
	Band 12				Yes	Yes			
	Band 66				Yes	Yes	Yes	Yes	
CA_2A-14A-66A (0)	Band 2	Y			Yes	Yes	Yes	Yes	50 MHz
	Band 14				Yes	Yes			
	Band 66				Yes	Yes	Yes	Yes	
CA_2A-29A-66A (0)	Band 2	Y			Yes	Yes	Yes	Yes	50 MHz
	Band 29				Yes	Yes			
	Band 66				Yes	Yes	Yes	Yes	
CA_2A-66A-66A (0)	Band 2	Y			Yes	Yes	Yes	Yes	60 MHz
	Band 66		66A-66A BCS 0						
CA_5A-66A-66A (0)	Band 5	Y			Yes	Yes			50 MHz
	Band 66		66A-66A BCS 0						
CA_5B-30A (0)	Band 5	Y	5B BCS 0						30 MHz
	Band 30				Yes	Yes			
CA_5B-66A (0)	Band 5	Y	5B BCS 0						40 MHz
	Band 66				Yes	Yes	Yes	Yes	
CA_66A-66A-12A (0)	Band 66	Y	66A BCS 0						40 MHz
	Band 12				Yes	Yes	Yes	Yes	

DL Intra-Band Non-contiguous

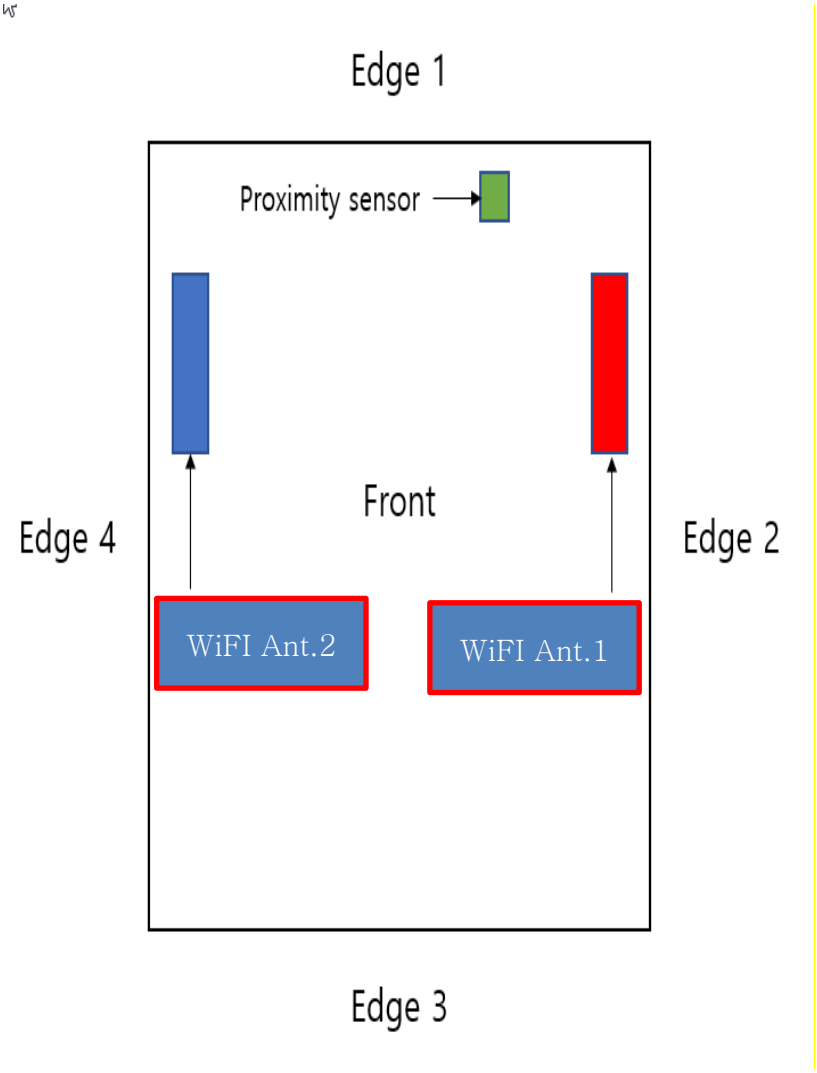
E-UTRA CA configuration (BCS)	E-UTRA Band	Reversible	Allowed Channel BW Per Carrier (MHz)		Max Aggregated BW
			1st Carrier	2nd Carrier	
CA_2A-2A (0)	Band 2	-	5, 10, 15, 20	5, 10, 15, 20	40 MHz
CA_66A-66A (0)	Band 66	-	5, 10, 15, 20	5, 10, 15, 20	40 MHz

DL Intra-Band Contiguous

E-UTRA CA configuration (BCS)	E-UTRA Band	Reversible	Allowed Channel BW Per Carrier (MHz)		Max Aggregated BW
			1st Carrier	2nd Carrier	
CA_5B (0)(1)	Band 5	-	5, 10	10	20 MHz
			10	5	
			3	5	8 MHz
			5	3	
CA_66B (0)	Band 66	-	5	5, 10, 15	30 MHz
			10	5, 10	
			15	5	
CA_66C (0)	Band 66	-	5	20	40 MHz
			10	15, 20	
			15	10, 15, 20	
			20	5, 10, 15, 20	

6.7. Proximity Sensor feature

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

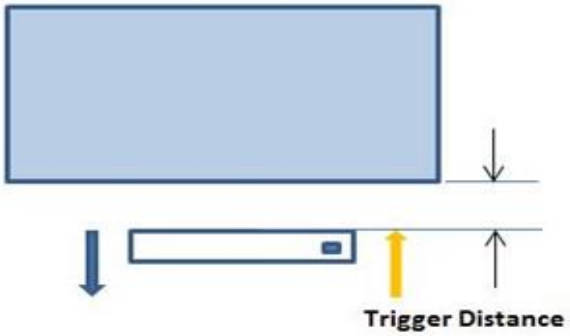


6.7.1. Proximity Sensor Triggering Distance (KDB 616217 §6.2)

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

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

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



Proximity Sensor Trigger Distance Assessment
KDB 616217 §6.2, Front

LEGEND

Direction of DUT travel for determination of power reduction triggering point

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

Summary of Trigger Distances

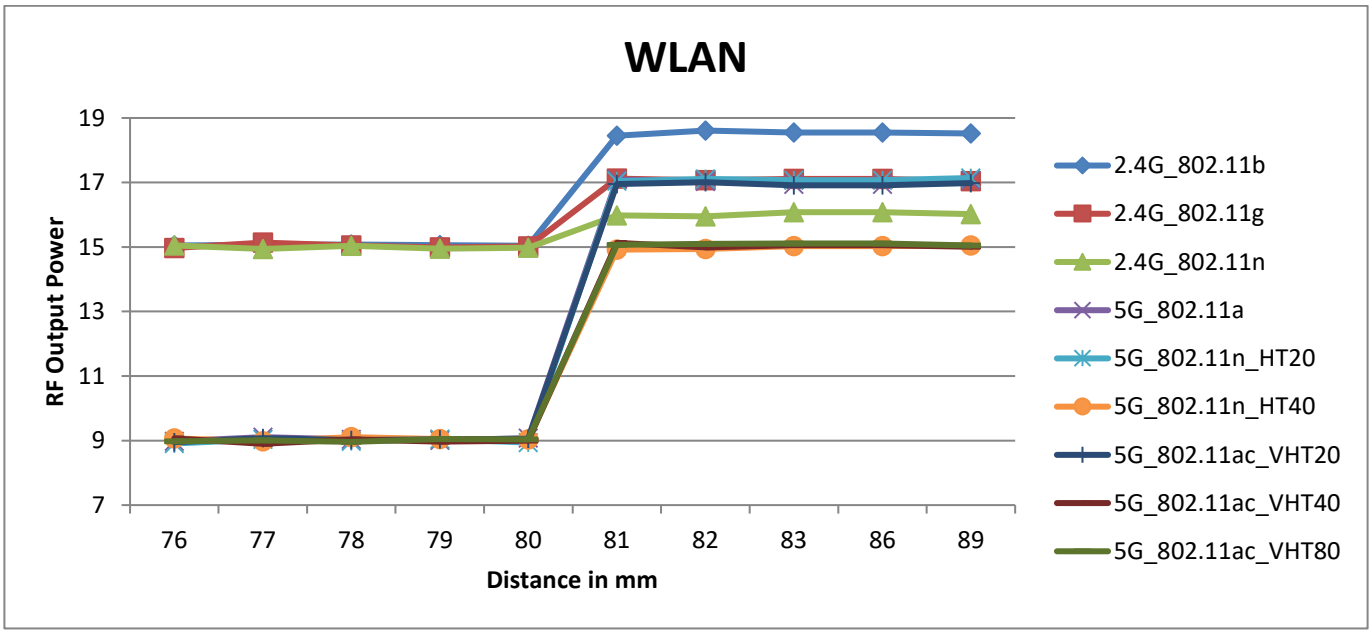
Tissue simulating liquid	Trigger distance - Front	
	Moving toward phantom	Moving from phantom
2.4G Head	80 mm	110 mm
5G Head	80 mm	110 mm

Proximity Sensor Triggering Distance Measurement Results

WLAN

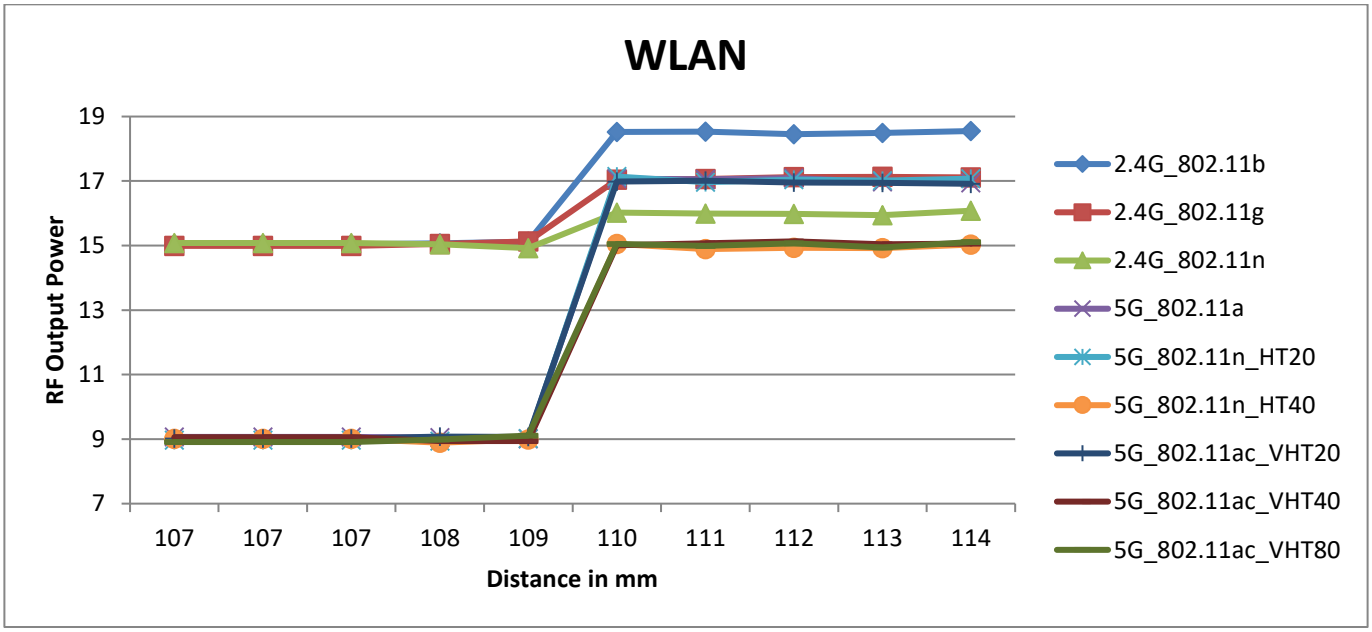
Front, DUT Moving Toward (Trigger) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	76	77	78	79	80	81	82	83	86	89
2.4G_802.11b	15.1	15.1	15.1	15.1	15.0	18.5	18.6	18.6	18.6	18.5
2.4G_802.11g	15.0	15.1	15.1	15.0	15.0	17.1	17.1	17.1	17.1	17.0
2.4G_802.11n	15.1	14.9	15.0	15.0	15.0	16.0	16.0	16.1	16.1	16.0
5G_802.11a	9.0	9.1	9.0	9.0	9.1	17.1	17.0	16.9	16.9	17.1
5G_802.11n_HT20	8.9	9.0	9.0	9.1	8.9	17.0	17.1	17.1	17.1	17.1
5G_802.11n_HT40	9.1	9.0	9.1	9.1	9.0	14.9	14.9	15.0	15.0	15.1
5G_802.11ac_VHT20	9.0	9.1	9.0	9.0	9.1	17.0	17.0	16.9	16.9	17.0
5G_802.11ac_VHT40	9.1	8.9	9.0	9.0	9.0	15.1	15.0	15.1	15.1	15.0
5G_802.11ac_VHT80	9.0	9.0	9.0	9.1	9.0	15.1	15.1	15.1	15.1	15.1



Front, DUT Moving Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	107	107	107	108	109	110	111	112	113	114
2.4G_802.11b	15.0	15.0	15.0	15.1	15.1	18.5	18.5	18.5	18.5	18.6
2.4G_802.11g	15.0	15.0	15.0	15.1	15.1	17.0	17.1	17.1	17.1	17.1
2.4G_802.11n	15.1	15.1	15.1	15.0	14.9	16.0	16.0	16.0	15.9	16.1
5G_802.11a	9.1	9.1	9.1	9.1	9.0	17.1	17.1	17.1	17.0	16.9
5G_802.11n_HT20	9.0	9.0	9.0	8.9	9.0	17.1	17.0	17.0	17.0	17.1
5G_802.11n_HT40	9.0	9.0	9.0	8.9	9.0	15.1	14.9	14.9	14.9	15.0
5G_802.11ac_VHT20	9.0	9.0	9.0	9.1	9.1	17.0	17.0	17.0	16.9	16.9
5G_802.11ac_VHT40	9.1	9.1	9.1	8.9	8.9	15.0	15.1	15.1	15.0	15.1
5G_802.11ac_VHT80	8.9	8.9	8.9	9.0	9.1	15.1	15.0	15.1	14.9	15.1



6.7.2. Resulting test positions for SAR measurements

Wireless technologies	DUT Position	§6.2 Triggering Distance	§6.3 Coverage	§6.4 Tilt Angle	Worst case distance for SAR
WLAN	Front	80 mm	N/A	N/A	79 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 (Main Ant.1)	Head	0 mm	Left Touch	N/A	Yes	
			Left Tilt (7°)	N/A	Yes	
			Right Touch	N/A	Yes	
			Right Tilt (7°)	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	No	1
			Edge 3 (Bottom)	< 25 mm	Yes	
			Edge 4 (Left)	< 25 mm	Yes	
	Product Specific 10g	0 mm	Rear	Refer to notes 2 & 3		
			Front			
			Edge 1 (Top)			
			Edge 2 (Right)			
			Edge 3 (Bottom)			
			Edge 4 (Left)			
WWAN (Main Ant.2)	Head	0 mm	Left Touch	N/A	Yes	
			Left Tilt (7°)	N/A	Yes	
			Right Touch	N/A	Yes	
			Right Tilt (7°)	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	No	1
	Product Specific 10g	0 mm	Rear	Refer to notes 2 & 3		
			Front			
			Edge 1 (Top)			
			Edge 2 (Right)			
			Edge 3 (Bottom)			
			Edge 4 (Left)			

Notes:

1. SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hot Spot SAR.
2. For Phablet devices: When hotspot mode applies, Product specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.
3. For Phablet devices: When hotspot mode applies and power reduction applies to hotspot mode, Product Specific 10-g SAR is required for each test position that has an adjusted SAR to maximum power that is > 1.2 W/kg.

Wireless technologies	RF Exposure Conditions	DUT-to-User Separation	Test Position	Antenna-to-edge/surface	SAR Required	Note
WLAN (Ant.1)	Head	0 mm	Left Touch	N/A	Yes	
			Left Tilt (7°)	N/A	Yes	
			Right Touch	N/A	Yes	
			Right Tilt (7°)	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	Yes	
			Edge 3 (Bottom)	> 25 mm	No	1
			Edge 4 (Left)	> 25 mm	No	1
	Product Specific 10g	0 mm	Rear	Refer to notes 2 & 3		
			Front			
			Edge 1 (Top)			
			Edge 2 (Right)			
			Edge 3 (Bottom)			
			Edge 4 (Left)			
WLAN & BT (Ant.2)	Head	0 mm	Left Touch	N/A	Yes	
			Left Tilt (7°)	N/A	Yes	
			Right Touch	N/A	Yes	
			Right Tilt (7°)	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	
	Product Specific 10g	0 mm	Rear	Refer to notes 2 & 3		
			Front			
			Edge 1 (Top)			
			Edge 2 (Right)			
			Edge 3 (Bottom)			
			Edge 4 (Left)			

Notes:

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

8. Dielectric Property Measurements & System Check

8.1 Dielectric Property Measurements

The temperature of the tissue-equivalent medium used during measurement must also be within 18°C to 25°C and within ± 2°C of the temperature when the tissue parameters are characterized.
The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements. The parameters should be re-measured after each 3 – 4 days of use; or earlier if the dielectric parameters can become out of tolerance; for example, when the parameters are marginal at the beginning of the measurement series.
Tissue dielectric parameters were measured at the low, middle and high frequency of each operating frequency range of the test device.

Tissue Dielectric Parameters

FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

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

IEEE Std 1528-2013

Refer to Table 3 within the IEEE Std 1528-2013

Dielectric Property Measurements Results:
SAR 1 Room

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
2-14-2019	Body 2600	e'	52.6200	Relative Permittivity (ϵ_r):	52.62	52.51	0.21	5
		e''	15.2400	Conductivity (σ):	2.20	2.16	1.96	5
	Body 2500	e'	52.8900	Relative Permittivity (ϵ_r):	52.89	52.64	0.48	5
		e''	14.9400	Conductivity (σ):	2.08	2.02	2.80	5
	Body 2700	e'	52.3700	Relative Permittivity (ϵ_r):	52.37	52.38	-0.03	5
		e''	15.5500	Conductivity (σ):	2.33	2.30	1.44	5
2-15-2019	Head 2600	e'	39.1800	Relative Permittivity (ϵ_r):	39.18	39.01	0.43	5
		e''	13.4500	Conductivity (σ):	1.94	1.96	-0.90	5
	Head 2500	e'	39.5000	Relative Permittivity (ϵ_r):	39.50	39.14	0.93	5
		e''	13.2100	Conductivity (σ):	1.84	1.85	-0.96	5
	Head 2700	e'	38.8900	Relative Permittivity (ϵ_r):	38.89	38.88	0.01	5
		e''	13.6700	Conductivity (σ):	2.05	2.07	-0.87	5
2-20-2019	Body 2600	e'	51.0100	Relative Permittivity (ϵ_r):	51.01	52.51	-2.86	5
		e''	15.2400	Conductivity (σ):	2.20	2.16	1.96	5
	Body 2500	e'	51.3100	Relative Permittivity (ϵ_r):	51.31	52.64	-2.52	5
		e''	14.9400	Conductivity (σ):	2.08	2.02	2.80	5
	Body 2700	e'	50.7200	Relative Permittivity (ϵ_r):	50.72	52.38	-3.18	5
		e''	15.4600	Conductivity (σ):	2.32	2.30	0.85	5
2-25-2019	Head 2600	e'	38.4500	Relative Permittivity (ϵ_r):	38.45	39.01	-1.44	5
		e''	13.1400	Conductivity (σ):	1.90	1.96	-3.19	5
	Head 2500	e'	38.7700	Relative Permittivity (ϵ_r):	38.77	39.14	-0.94	5
		e''	12.9400	Conductivity (σ):	1.80	1.85	-2.98	5
	Head 2700	e'	38.1400	Relative Permittivity (ϵ_r):	38.14	38.88	-1.92	5
		e''	13.3500	Conductivity (σ):	2.00	2.07	-3.19	5
3-14-2019	Head 2450	e'	38.1400	Relative Permittivity (ϵ_r):	38.14	39.20	-2.70	5
		e''	13.6300	Conductivity (σ):	1.86	1.80	3.15	5
	Head 2400	e'	38.3300	Relative Permittivity (ϵ_r):	38.33	39.30	-2.46	5
		e''	13.5000	Conductivity (σ):	1.80	1.75	2.85	5
	Head 2480	e'	38.0100	Relative Permittivity (ϵ_r):	38.01	39.16	-2.94	5
		e''	13.7000	Conductivity (σ):	1.89	1.83	3.10	5
3-14-2019	Body 2450	e'	53.4300	Relative Permittivity (ϵ_r):	53.43	52.70	1.39	5
		e''	14.8100	Conductivity (σ):	2.02	1.95	3.46	5
	Body 2400	e'	53.5700	Relative Permittivity (ϵ_r):	53.57	52.77	1.51	5
		e''	14.7200	Conductivity (σ):	1.96	1.90	3.49	5
	Body 2480	e'	53.3400	Relative Permittivity (ϵ_r):	53.34	52.66	1.29	5
		e''	14.9000	Conductivity (σ):	2.05	1.99	3.14	5
3-18-2019	Head 2450	e'	40.0700	Relative Permittivity (ϵ_r):	40.07	39.20	2.22	5
		e''	13.6600	Conductivity (σ):	1.86	1.80	3.38	5
	Head 2400	e'	40.2300	Relative Permittivity (ϵ_r):	40.23	39.30	2.37	5
		e''	13.5700	Conductivity (σ):	1.81	1.75	3.38	5
	Head 2480	e'	39.9900	Relative Permittivity (ϵ_r):	39.99	39.16	2.11	5
		e''	13.8200	Conductivity (σ):	1.91	1.83	4.00	5
3-25-2019	Body 2250	e'	52.2200	Relative Permittivity (ϵ_r):	52.22	52.97	-1.42	5
		e''	14.3600	Conductivity (σ):	1.80	1.76	2.29	5
	Body 2300	e'	52.0800	Relative Permittivity (ϵ_r):	52.08	52.90	-1.56	5
		e''	14.5000	Conductivity (σ):	1.85	1.80	2.82	5
	Body 2350	e'	51.9900	Relative Permittivity (ϵ_r):	51.99	52.84	-1.61	5
		e''	14.6000	Conductivity (σ):	1.91	1.85	3.08	5
3-27-2019	Head 5250	e'	35.3900	Relative Permittivity (ϵ_r):	35.39	35.93	-1.51	5
		e''	16.3500	Conductivity (σ):	4.77	4.70	1.50	5
	Head 5260	e'	35.3700	Relative Permittivity (ϵ_r):	35.37	35.92	-1.54	5
		e''	16.3600	Conductivity (σ):	4.78	4.71	1.54	5
	Head 5600	e'	34.7800	Relative Permittivity (ϵ_r):	34.78	35.53	-2.12	5
		e''	16.5000	Conductivity (σ):	5.14	5.06	1.53	5
	Head 5750	e'	34.5400	Relative Permittivity (ϵ_r):	34.54	35.36	-2.33	5
		e''	16.5800	Conductivity (σ):	5.30	5.21	1.67	5
	Head 5825	e'	34.4100	Relative Permittivity (ϵ_r):	34.41	35.30	-2.52	5
		e''	16.6100	Conductivity (σ):	5.38	5.27	2.08	5
4-25-2019	Body 2450	e'	52.9900	Relative Permittivity (ϵ_r):	52.99	52.70	0.55	5
		e''	14.8300	Conductivity (σ):	2.02	1.95	3.60	5
	Body 2400	e'	53.1000	Relative Permittivity (ϵ_r):	53.10	52.77	0.62	5
		e''	14.6800	Conductivity (σ):	1.96	1.90	3.21	5
	Body 2480	e'	52.9400	Relative Permittivity (ϵ_r):	52.94	52.66	0.53	5
		e''	14.9200	Conductivity (σ):	2.06	1.99	3.27	5

SAR 1 Room_(Continued)

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
5-13-2019	Body 2250	e'	52.3700	Relative Permittivity (ϵ_r):	52.37	52.97	-1.13	5
		e''	14.5200	Conductivity (σ):	1.82	1.76	3.43	5
	Body 2300	e'	52.2300	Relative Permittivity (ϵ_r):	52.23	52.90	-1.27	5
		e''	14.6200	Conductivity (σ):	1.87	1.80	3.67	5
	Body 2350	e'	52.1100	Relative Permittivity (ϵ_r):	52.11	52.84	-1.38	5
		e''	14.7000	Conductivity (σ):	1.92	1.85	3.78	5
5-15-2019	Head 2250	e'	39.0200	Relative Permittivity (ϵ_r):	37.64	39.20	-3.98	5
		e''	12.7700	Conductivity (σ):	1.87	1.80	4.06	5
	Head 2300	e'	39.0000	Relative Permittivity (ϵ_r):	37.71	39.30	-4.04	5
		e''	12.8900	Conductivity (σ):	1.83	1.75	4.45	5
	Head 2350	e'	38.9500	Relative Permittivity (ϵ_r):	37.60	39.17	-4.00	5
		e''	12.9900	Conductivity (σ):	1.90	1.83	3.80	5
5-17-2019	Body 2250	e'	52.9200	Relative Permittivity (ϵ_r):	52.92	52.97	-0.10	5
		e''	13.9100	Conductivity (σ):	1.74	1.76	-0.91	5
	Body 2300	e'	52.7700	Relative Permittivity (ϵ_r):	52.77	52.90	-0.25	5
		e''	14.0200	Conductivity (σ):	1.79	1.80	-0.58	5
	Body 2350	e'	52.6500	Relative Permittivity (ϵ_r):	52.65	52.84	-0.36	5
		e''	14.1000	Conductivity (σ):	1.84	1.85	-0.45	5
5-20-2019	Body 2250	e'	51.9200	Relative Permittivity (ϵ_r):	51.92	52.97	-1.98	5
		e''	14.3700	Conductivity (σ):	1.80	1.76	2.36	5
	Body 2300	e'	51.7000	Relative Permittivity (ϵ_r):	51.70	52.90	-2.28	5
		e''	14.4000	Conductivity (σ):	1.84	1.80	2.11	5
	Body 2350	e'	51.6500	Relative Permittivity (ϵ_r):	51.65	52.84	-2.25	5
		e''	14.3800	Conductivity (σ):	1.88	1.85	1.53	5

SAR 2 Room

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
2-21-2019	Body 835	e'	52.9000	Relative Permittivity (ϵ_r):	52.90	55.20	-4.17	5
		e''	21.2600	Conductivity (σ):	0.99	0.97	1.76	5
	Body 820	e'	53.0300	Relative Permittivity (ϵ_r):	53.03	55.28	-4.06	5
		e''	21.3300	Conductivity (σ):	0.97	0.97	0.42	5
	Body 850	e'	52.7900	Relative Permittivity (ϵ_r):	52.79	55.16	-4.29	5
		e''	21.2000	Conductivity (σ):	1.00	0.99	1.50	5

SAR 3 Room

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
2-19-2019	Head 750	e'	41.7900	Relative Permittivity (ϵ_r):	41.79	41.96	-0.41	5
		e''	21.4100	Conductivity (σ):	0.89	0.89	-0.03	5
	Head 700	e'	42.5600	Relative Permittivity (ϵ_r):	42.56	42.22	0.81	5
		e''	21.8200	Conductivity (σ):	0.85	0.89	-4.49	5
	Head 790	e'	41.2500	Relative Permittivity (ϵ_r):	41.25	41.76	-1.21	5
		e''	21.2900	Conductivity (σ):	0.94	0.90	4.36	5
2-19-2019	Head 835	e'	40.8000	Relative Permittivity (ϵ_r):	40.80	41.50	-1.69	5
		e''	19.4000	Conductivity (σ):	0.90	0.90	0.08	5
	Head 820	e'	40.9700	Relative Permittivity (ϵ_r):	40.97	41.60	-1.52	5
		e''	19.4500	Conductivity (σ):	0.89	0.90	-1.30	5
	Head 850	e'	40.6400	Relative Permittivity (ϵ_r):	40.64	41.50	-2.07	5
		e''	19.3500	Conductivity (σ):	0.91	0.92	-0.05	5
2-25-2019	Head 835	e'	42.7700	Relative Permittivity (ϵ_r):	42.77	41.50	3.06	5
		e''	19.8100	Conductivity (σ):	0.92	0.90	2.19	5
	Head 820	e'	42.9400	Relative Permittivity (ϵ_r):	42.94	41.60	3.21	5
		e''	19.8500	Conductivity (σ):	0.91	0.90	0.73	5
	Head 850	e'	42.6000	Relative Permittivity (ϵ_r):	42.60	41.50	2.65	5
		e''	19.7900	Conductivity (σ):	0.94	0.92	2.22	5
3-11-2019	Body 5250	e'	47.9400	Relative Permittivity (ϵ_r):	47.94	48.95	-2.07	5
		e''	18.6300	Conductivity (σ):	5.44	5.35	1.60	5
	Body 5260	e'	47.9100	Relative Permittivity (ϵ_r):	47.91	48.94	-2.10	5
		e''	18.6400	Conductivity (σ):	5.45	5.36	1.62	5
	Body 5600	e'	47.3500	Relative Permittivity (ϵ_r):	47.35	48.48	-2.33	5
		e''	18.8300	Conductivity (σ):	5.86	5.76	1.77	5
	Body 5750	e'	47.1100	Relative Permittivity (ϵ_r):	47.11	48.27	-2.41	5
		e''	18.9600	Conductivity (σ):	6.06	5.94	2.12	5
	Body 5825	e'	46.9900	Relative Permittivity (ϵ_r):	46.99	48.20	-2.51	5
		e''	19.0000	Conductivity (σ):	6.15	6.00	2.56	5
3-18-2019	Body 5250	e'	49.4500	Relative Permittivity (ϵ_r):	49.45	48.95	1.02	5
		e''	18.2800	Conductivity (σ):	5.34	5.35	-0.31	5
	Body 5260	e'	49.4200	Relative Permittivity (ϵ_r):	49.42	48.94	0.98	5
		e''	18.2900	Conductivity (σ):	5.35	5.36	-0.29	5
	Body 5600	e'	48.8600	Relative Permittivity (ϵ_r):	48.86	48.48	0.79	5
		e''	18.6600	Conductivity (σ):	5.81	5.76	0.86	5
	Body 5750	e'	48.6400	Relative Permittivity (ϵ_r):	48.64	48.27	0.76	5
		e''	18.8400	Conductivity (σ):	6.02	5.94	1.48	5
	Body 5825	e'	48.5100	Relative Permittivity (ϵ_r):	48.51	48.20	0.64	5
		e''	18.9000	Conductivity (σ):	6.12	6.00	2.02	5
3-25-2019	Body 5250	e'	48.5300	Relative Permittivity (ϵ_r):	48.53	48.95	-0.86	5
		e''	17.6900	Conductivity (σ):	5.16	5.35	-3.53	5
	Body 5260	e'	48.5300	Relative Permittivity (ϵ_r):	48.53	48.94	-0.83	5
		e''	17.7200	Conductivity (σ):	5.18	5.36	-3.39	5
	Body 5600	e'	48.0600	Relative Permittivity (ϵ_r):	48.06	48.48	-0.86	5
		e''	17.9900	Conductivity (σ):	5.60	5.76	-2.77	5
	Body 5750	e'	47.9200	Relative Permittivity (ϵ_r):	47.92	48.27	-0.73	5
		e''	18.1400	Conductivity (σ):	5.80	5.94	-2.29	5
	Body 5825	e'	47.7400	Relative Permittivity (ϵ_r):	47.74	48.20	-0.95	5
		e''	18.2100	Conductivity (σ):	5.90	6.00	-1.70	5
4-2-2019	Body 5250	e'	48.6000	Relative Permittivity (ϵ_r):	48.60	48.95	-0.72	5
		e''	18.5200	Conductivity (σ):	5.41	5.35	1.00	5
	Body 5260	e'	48.5700	Relative Permittivity (ϵ_r):	48.57	48.94	-0.75	5
		e''	18.5400	Conductivity (σ):	5.42	5.36	1.08	5
	Body 5600	e'	48.0800	Relative Permittivity (ϵ_r):	48.08	48.48	-0.82	5
		e''	19.0100	Conductivity (σ):	5.92	5.76	2.75	5
	Body 5750	e'	47.7900	Relative Permittivity (ϵ_r):	47.79	48.27	-1.00	5
		e''	19.1500	Conductivity (σ):	6.12	5.94	3.15	5
	Body 5825	e'	47.6200	Relative Permittivity (ϵ_r):	47.62	48.20	-1.20	5
		e''	19.2300	Conductivity (σ):	6.23	6.00	3.81	5

SAR 3 Room_(Continued)

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
4-5-2019	Body 5250	e'	47.3900	Relative Permittivity (ϵ_r):	47.39	48.95	-3.19	5
		e''	18.4800	Conductivity (σ):	5.39	5.35	0.78	5
	Body 5260	e'	47.3600	Relative Permittivity (ϵ_r):	47.36	48.94	-3.23	5
		e''	18.5000	Conductivity (σ):	5.41	5.36	0.86	5
	Body 5600	e'	46.8300	Relative Permittivity (ϵ_r):	46.83	48.48	-3.40	5
		e''	18.7600	Conductivity (σ):	5.84	5.76	1.40	5
	Body 5750	e'	46.5900	Relative Permittivity (ϵ_r):	46.59	48.27	-3.49	5
		e''	18.9000	Conductivity (σ):	6.04	5.94	1.80	5
	Body 5825	e'	46.4700	Relative Permittivity (ϵ_r):	46.47	48.20	-3.59	5
		e''	18.9700	Conductivity (σ):	6.14	6.00	2.40	5

SAR 4 Room

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
2-13-2019	Body 1750	e'	52.9800	Relative Permittivity (ϵ_r):	52.98	53.44	-0.86	5
		e''	14.7900	Conductivity (σ):	1.44	1.49	-3.16	5
	Body 1710	e'	53.0900	Relative Permittivity (ϵ_r):	53.09	53.54	-0.85	5
		e''	14.7600	Conductivity (σ):	1.40	1.46	-3.98	5
	Body 1755	e'	52.9700	Relative Permittivity (ϵ_r):	52.97	53.43	-0.86	5
		e''	14.7800	Conductivity (σ):	1.44	1.49	-3.15	5
2-20-2019	Head 1750	e'	40.3400	Relative Permittivity (ϵ_r):	40.34	40.08	0.64	5
		e''	13.7900	Conductivity (σ):	1.34	1.37	-1.98	5
	Head 1710	e'	40.4000	Relative Permittivity (ϵ_r):	40.40	40.15	0.63	5
		e''	13.9500	Conductivity (σ):	1.33	1.35	-1.49	5
	Head 1755	e'	40.3400	Relative Permittivity (ϵ_r):	40.34	40.08	0.66	5
		e''	13.7700	Conductivity (σ):	1.34	1.37	-2.05	5
2-21-2019	Body 1900	e'	54.9300	Relative Permittivity (ϵ_r):	54.93	53.30	3.06	5
		e''	15.0000	Conductivity (σ):	1.58	1.52	4.26	5
	Body 1850	e'	54.9900	Relative Permittivity (ϵ_r):	54.99	53.30	3.17	5
		e''	15.0500	Conductivity (σ):	1.55	1.52	1.85	5
	Body 1910	e'	54.9100	Relative Permittivity (ϵ_r):	54.91	53.30	3.02	5
		e''	15.0000	Conductivity (σ):	1.59	1.52	4.80	5
2-25-2019	Body 750	e'	55.7200	Relative Permittivity (ϵ_r):	55.72	55.55	0.31	5
		e''	23.8100	Conductivity (σ):	0.99	0.96	3.10	5
	Body 700	e'	55.8400	Relative Permittivity (ϵ_r):	55.84	55.74	0.18	5
		e''	25.0400	Conductivity (σ):	0.97	0.96	1.60	5
	Body 790	e'	55.6300	Relative Permittivity (ϵ_r):	55.63	55.39	0.43	5
		e''	22.8900	Conductivity (σ):	1.01	0.97	4.07	5
2-26-2019	Head 1750	e'	40.7200	Relative Permittivity (ϵ_r):	40.72	40.08	1.59	5
		e''	13.6500	Conductivity (σ):	1.33	1.37	-2.98	5
	Head 1710	e'	40.7900	Relative Permittivity (ϵ_r):	40.79	40.15	1.60	5
		e''	13.7400	Conductivity (σ):	1.31	1.35	-2.97	5
	Head 1755	e'	40.7200	Relative Permittivity (ϵ_r):	40.72	40.08	1.60	5
		e''	13.6400	Conductivity (σ):	1.33	1.37	-2.97	5
2-26-2019	Head 1900	e'	40.4700	Relative Permittivity (ϵ_r):	40.47	40.00	1.18	5
		e''	13.5000	Conductivity (σ):	1.43	1.40	1.87	5
	Head 1850	e'	40.6000	Relative Permittivity (ϵ_r):	40.60	40.00	1.50	5
		e''	13.5600	Conductivity (σ):	1.39	1.40	-0.37	5
	Head 1910	e'	40.4500	Relative Permittivity (ϵ_r):	40.45	40.00	1.13	5
		e''	13.5100	Conductivity (σ):	1.43	1.40	2.48	5
2-27-2019	Body 1750	e'	51.8200	Relative Permittivity (ϵ_r):	51.82	53.44	-3.03	5
		e''	15.0600	Conductivity (σ):	1.47	1.49	-1.40	5
	Body 1710	e'	51.8700	Relative Permittivity (ϵ_r):	51.87	53.54	-3.13	5
		e''	15.1700	Conductivity (σ):	1.44	1.46	-1.31	5
	Body 1755	e'	51.8100	Relative Permittivity (ϵ_r):	51.81	53.43	-3.03	5
		e''	15.0500	Conductivity (σ):	1.47	1.49	-1.38	5
3-11-2019	Body 1900	e'	54.4600	Relative Permittivity (ϵ_r):	54.46	53.30	2.18	5
		e''	14.9400	Conductivity (σ):	1.58	1.52	3.84	5
	Body 1850	e'	54.5400	Relative Permittivity (ϵ_r):	54.54	53.30	2.33	5
		e''	15.0000	Conductivity (σ):	1.54	1.52	1.51	5
	Body 1910	e'	54.4400	Relative Permittivity (ϵ_r):	54.44	53.30	2.14	5
		e''	14.9300	Conductivity (σ):	1.59	1.52	4.32	5
3-19-2019	Head 1900	e'	40.2700	Relative Permittivity (ϵ_r):	40.27	40.00	0.68	5
		e''	13.7700	Conductivity (σ):	1.45	1.40	3.91	5
	Head 1850	e'	40.4200	Relative Permittivity (ϵ_r):	40.42	40.00	1.05	5
		e''	13.9300	Conductivity (σ):	1.43	1.40	2.35	5
	Head 1910	e'	40.2500	Relative Permittivity (ϵ_r):	40.25	40.00	0.63	5
		e''	13.8100	Conductivity (σ):	1.47	1.40	4.76	5
3-19-2019	Body 1900	e'	53.9800	Relative Permittivity (ϵ_r):	53.98	53.30	1.28	5
		e''	14.9400	Conductivity (σ):	1.58	1.52	3.84	5
	Body 1850	e'	54.0700	Relative Permittivity (ϵ_r):	54.07	53.30	1.44	5
		e''	14.9400	Conductivity (σ):	1.54	1.52	1.11	5
	Body 1910	e'	53.9900	Relative Permittivity (ϵ_r):	53.99	53.30	1.29	5
		e''	14.9500	Conductivity (σ):	1.59	1.52	4.46	5

SAR 4 Room_(Continued)

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
3-27-2019	Head 2250	e'	38.6900	Relative Permittivity (ϵ_r):	38.69	39.56	-2.20	5
		e''	13.0900	Conductivity (σ):	1.64	1.62	1.10	5
	Head 2300	e'	38.6100	Relative Permittivity (ϵ_r):	38.61	39.47	-2.19	5
		e''	13.0400	Conductivity (σ):	1.67	1.66	0.24	5
	Head 2350	e'	38.5400	Relative Permittivity (ϵ_r):	38.54	39.38	-2.14	5
		e''	13.0500	Conductivity (σ):	1.71	1.71	-0.15	5
4-4-2019	Body 1750	e'	52.6300	Relative Permittivity (ϵ_r):	52.63	53.44	-1.52	5
		e''	15.3300	Conductivity (σ):	1.49	1.49	0.37	5
	Body 1710	e'	52.6500	Relative Permittivity (ϵ_r):	52.65	53.54	-1.67	5
		e''	15.5100	Conductivity (σ):	1.47	1.46	0.90	5
	Body 1755	e'	52.6300	Relative Permittivity (ϵ_r):	52.63	53.43	-1.49	5
		e''	15.3200	Conductivity (σ):	1.49	1.49	0.39	5
4-25-2019	Head 2450	e'	37.6400	Relative Permittivity (ϵ_r):	37.64	39.20	-3.98	5
		e''	13.7500	Conductivity (σ):	1.87	1.80	4.06	5
	Head 2400	e'	37.7100	Relative Permittivity (ϵ_r):	37.71	39.30	-4.04	5
		e''	13.7100	Conductivity (σ):	1.83	1.75	4.45	5
	Head 2475	e'	37.6000	Relative Permittivity (ϵ_r):	37.60	39.17	-4.00	5
		e''	13.7800	Conductivity (σ):	1.90	1.83	3.80	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	7-24-2018	835	1g	9.36	9.61
				10g	6.02	6.32
D1750V2	1125	2-16-2018	1750	1g	36.50	36.80
				10g	19.30	19.50
D1900V2	5d199	3-15-2018	1900	1g	40.40	39.60
				10g	21.10	20.80
D2300V2	1090	11-5-2018	2300	1g	48.80	46.20
				10g	23.40	22.30
D2450V2	960	3-20-2018	2450	1g	53.60	49.80
				10g	25.10	23.50
D2450V2	939	10-16-2018	2450	1g	53.20	50.10
				10g	24.80	23.50
D2600V2	1097	1-17-2018	2600	1g	56.40	54.40
				10g	25.30	24.20
D5GHzV2	1184	8-21-2018	5250	1g	81.10	75.00
				10g	23.40	20.90
			5600	1g	85.00	78.60
				10g	24.40	22.00
			5750	1g	82.60	76.20
				10g	23.70	21.20

Note(s):

Refer to Appendix F that mentioned about justification for Extended SAR Dipole Calibrations (D750V3, D1750, D1900V2, D2450V2, D2600V2)

System Check Results

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

SAR 1 Room

Date Tested	System Dipole		T.S. Liquid		Measured Results		Target (Ref. Value)	Delta ±10 %	Plot No.
	Type	Serial #			Zoom Scan to 100 mW	Normalize to 1 W			
2-14-2019	D2600V2	1007	Body	1g	5.68	56.80	54.40	4.41	
				10g	2.54	25.40	24.20	4.96	
2-15-2019	D2600V2	1007	Head	1g	6.04	60.40	56.40	7.09	1, 2
				10g	2.66	26.60	25.30	5.14	
2-20-2019	D2600V2	1007	Body	1g	5.43	54.30	54.40	-0.18	
				10g	2.35	23.50	24.20	-2.89	
2-25-2019	D2600V2	1097	Head	1g	5.76	57.60	56.40	2.13	
				10g	2.52	25.20	25.30	-0.40	
3-14-2019	D2450V2	960	Head	1g	5.79	57.90	53.60	8.02	3, 4
				10g	2.64	26.40	25.10	5.18	
3-14-2019	D2450V2	960	Body	1g	5.33	53.30	49.80	7.03	
				10g	2.47	24.70	23.50	5.11	
3-18-2019	D2450V2	960	Head	1g	5.52	55.20	53.60	2.99	
				10g	2.48	24.80	25.10	-1.20	
3-25-2019	D2300V2	1090	Body	1g	4.60	46.00	46.20	-0.43	
				10g	2.13	21.30	22.30	-4.48	
3-27-2019	D5GHzV2	1184	Head	1g	7.82	78.20	81.10	-3.58	
				10g	2.23	22.30	23.40	-4.70	
3-27-2019	D5GHzV2	1184	Head	1g	7.91	79.10	85.00	-6.94	
				10g	2.24	22.40	24.40	-8.20	
3-27-2019	D5GHzV2	1184	Head	1g	8.50	85.00	82.60	2.91	
				10g	2.41	24.10	23.70	1.69	
4-25-2019	D2450V2	939	Body	1g	5.32	53.20	50.10	6.19	
				10g	2.51	25.10	23.50	6.81	
5-13-2019	D2300V2	1090	Body	1g	4.73	47.30	46.20	2.38	
				10g	2.20	22.00	22.30	-1.35	
5-15-2019	D2300V2	1090	Head	1g	5.00	50.00	48.80	2.46	
				10g	2.34	23.40	23.40	0.00	
5-17-2019	D2300V2	1090	Body	1g	4.69	46.90	46.20	1.52	
				10g	2.26	22.60	22.30	1.35	
5-20-2019	D2300V2	1090	Body	1g	4.58	45.80	46.20	-0.87	
				10g	2.12	21.20	22.30	-4.93	

SAR 2 Room

Date Tested	System Dipole		T.S. Liquid		Measured Results		Target (Ref. Value)	Delta ±10 %	Plot No.
	Type	Serial #			Zoom Scan to 100 mW	Normalize to 1 W			
2-21-2019	D835V2	4d194	Body	1g	0.98	9.76	9.61	1.56	5, 6
				10g	0.64	6.39	6.32	1.11	

SAR 3 Room

Date Tested	System Dipole		T.S. Liquid		Measured Results		Target (Ref. Value)	Delta ±10 %	Plot No.
	Type	Serial #			Zoom Scan to 100 mW	Normalize to 1 W			
2-19-2019	D750V3	1122	Head	1g	0.83	8.3	8.22	1.46	
				10g	0.55	5.5	5.35	3.18	
2-19-2019	D835V2	4d194	Head	1g	0.98	9.8	9.36	4.17	7, 8
				10g	0.64	6.4	6.02	6.64	
2-25-2019	D835V2	4d194	Head	1g	0.94	9.4	9.36	0.00	
				10g	0.62	6.2	6.02	2.66	
3-11-2019	D5GHzV2	1184	Body	1g	7.70	77.0	75.00	2.67	
				10g	2.16	21.6	20.90	3.35	
3-11-2019	D5GHzV2	1184	Body	1g	8.27	82.7	78.60	5.22	
				10g	2.28	22.8	22.00	3.64	
3-11-2019	D5GHzV2	1184	Body	1g	8.22	82.2	76.20	7.87	9, 10
				10g	2.29	22.9	21.20	8.02	
3-18-2019	D5GHzV2	1184	Body	1g	7.38	73.8	75.00	-1.60	
				10g	2.04	20.4	20.90	-2.39	
3-18-2019	D5GHzV2	1184	Body	1g	8.30	83.0	78.60	5.60	
				10g	2.28	22.8	22.00	3.64	
3-18-2019	D5GHzV2	1184	Body	1g	7.63	76.3	76.20	0.13	
				10g	2.12	21.2	21.20	0.00	
3-25-2019	D5GHzV2	1184	Body	1g	7.56	75.6	75.00	0.80	
				10g	2.09	20.9	20.90	0.00	
3-25-2019	D5GHzV2	1184	Body	1g	7.88	78.8	78.60	0.25	
				10g	2.16	21.6	22.00	-1.82	
3-25-2019	D5GHzV2	1184	Body	1g	7.75	77.5	76.20	1.71	
				10g	2.14	21.4	21.20	0.94	
4-2-2019	D5GHzV2	1184	Body	1g	7.63	76.3	75.00	1.73	
				10g	2.17	21.7	20.90	3.83	
4-2-2019	D5GHzV2	1184	Body	1g	8.21	82.1	78.60	4.45	
				10g	2.25	22.5	22.00	2.27	
4-2-2019	D5GHzV2	1184	Body	1g	7.70	77.0	76.20	1.05	
				10g	2.14	21.4	21.20	0.94	
4-5-2019	D5GHzV2	1184	Body	1g	7.88	78.8	75.00	5.07	
				10g	2.20	22.0	20.90	5.26	
4-5-2019	D5GHzV2	1184	Body	1g	8.45	84.5	78.60	7.51	
				10g	2.33	23.3	22.00	5.91	
4-5-2019	D5GHzV2	1184	Body	1g	7.66	76.6	76.20	0.52	
				10g	2.13	21.3	21.20	0.47	

SAR 4 Room

Date Tested	System Dipole		T.S. Liquid		Measured Results		Target (Ref. Value)	Delta ±10 %	Plot No.
	Type	Serial #			Zoom Scan to 100 mW	Normalize to 1 W			
2-13-2019	D1750V2	1125	Body	1g	3.89	38.9	36.80	5.71	
				10g	2.11	21.1	19.50	8.21	
2-20-2019	D1750V2	1125	Head	1g	3.42	34.2	36.5	-6.30	
				10g	1.81	18.1	19.3	-6.22	
2-21-2019	D1900V2	5d199	Body	1g	4.12	41.2	39.6	4.04	11, 12
				10g	2.15	21.5	20.8	3.37	
2-25-2019	D750V3	1122	Body	1g	0.88	8.8	8.63	1.74	13, 14
				10g	0.59	5.9	5.72	2.80	
2-26-2019	D1750V2	1125	Head	1g	3.33	33.3	36.5	-8.77	15, 16
				10g	1.77	17.7	19.3	-8.29	
2-26-2019	D1900V2	5d199	Head	1g	3.97	39.7	40.4	-1.73	
				10g	2.05	20.5	21.1	-2.84	
2-27-2019	D1750V2	1125	Body	1g	3.62	36.2	36.80	-1.63	
				10g	1.93	19.3	19.5	-1.03	
3-11-2019	D1900V2	5d199	Body	1g	4.06	40.6	39.60	2.53	
				10g	2.11	21.1	20.80	1.44	
3-19-2019	D1900V2	5d199	Head	1g	4.11	41.1	40.4	1.73	
				10g	2.12	21.2	21.1	0.47	
3-19-2019	D1900V2	5d199	Body	1g	3.84	38.4	39.6	-3.03	
				10g	2.00	20.0	20.8	-3.85	
3-27-2019	D2300V2	1090	Head	1g	4.68	46.8	48.8	-4.10	17, 18
				10g	2.23	22.3	23.4	-4.70	
4-4-2019	D1750V2	1125	Body	1g	3.68	36.8	36.80	0.00	
				10g	1.96	19.6	19.50	0.51	
4-25-2019	D2450V2	939	Head	1g	5.33	53.3	53.20	0.19	
				10g	2.48	24.8	24.80	0.00	

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)	Maximum Average Power (dBm)			
					Measured		Tune-up Limit	
					Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr
GSM (Voice)	CS1	1	128	824.2	32.8	23.7	33.5	24.5
			190	836.6	32.7	23.7		
			251	848.8	32.6	23.5		
GPRS (GMSK)	CS1	1	128	824.2	32.8	23.7	33.5	24.5
			190	836.6	32.7	23.6		
			251	848.8	32.6	23.5		
		2	128	824.2	30.1	21.1	31.0	**25.0**
			190	836.6	30.2	21.1		
			251	848.8	30.1	21.1		
EGPRS (8PSK)	MCS5	1	128	824.2	26.8	17.8	28.0	19.0
			190	836.6	26.8	17.8		
			251	848.8	26.7	17.7		
		2	128	824.2	24.7	15.7	26.0	20.0
			190	836.6	24.7	15.7		
			251	848.8	24.5	15.4		

Notes:

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

- GMSK (GPRS) mode with 2 time slots for Max 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 ≤ 1/4dB higher than GMSK GPRS or the adjusted SAR of the highest reported SAR of GMSK GPRS is ≤ 1.2W/kg.

GSM1900 Measured Results

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Maximum Average Power (dBm)			
					Measured		Tune-up Limit	
					Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr
GSM (Voice)	CS1	1	512	1850.2	29.7	20.7	30.5	21.5
			661	1880.0	29.6	20.5		
			810	1909.8	29.2	20.1		
GPRS (GMSK)	CS1	1	512	1850.2	29.7	20.6	30.5	21.5
			661	1880.0	29.5	20.4		
			810	1909.8	29.4	20.3		
		2	512	1850.2	27.2	18.1	28.5	**22.5**
			661	1880.0	27.3	18.3		
			810	1909.8	27.1	18.1		
EGPRS (8PSK)	MCS5	1	512	1850.2	25.3	16.3	26.0	17.0
			661	1880.0	25.4	16.4		
			810	1909.8	25.5	16.5		
		2	512	1850.2	23.3	14.3	24.0	18.0
			661	1880.0	23.4	14.4		
			810	1909.8	23.3	14.3		

Notes:

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

- GMSK (GPRS) mode with 2 time slots for Max 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 ≤ 1/4dB higher than GMSK GPRS or the adjusted SAR of the highest reported SAR of GMSK GPRS is ≤ 1.2W/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
	βc/βd	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			
	βc	2/15	11/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	Bd (SF)	64			
	βc/βd	2/15	11/15	15/8	15/4
	βhs	4/15	24/15	30/15	30/15
	MPR (dB)	0	0	0.5	0.5
HSDPA Specific Settings	D_{ACK}	8			
	D_{NAK}	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback (Table 5.2B.4)	4ms			
	CQI Repetition Factor (Table 5.2B.4)	2			
	Ahs=βhs/βc	30/15			

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
	βc	11/15	6/15	15/15	2/15	15/15
	βd	15/15	15/15	9/15	15/15	0
	βec	209/225	12/15	30/15	2/15	5/15
	βc/βd	11/15	6/15	15/9	2/15	-
	βhs	22/15	12/15	30/15	4/15	5/15
	βed	1309/225	94/75	47/15	56/75	47/15
	CM (dB)	1	3	2	3	1
	MPR (dB)	0	2	1	2	0
HSDPA Specific Settings	DACK	8				0
	DNAK	8				0
	DCQI	8				0
	Ack-Nack repetition factor	3				
	CQI Feedback (Table 5.2B.4)	4ms				
	CQI Repetition Factor (Table 5.2B.4)	2				
	Ahs = βhs/βc	30/15				
HSUPA Specific Settings	E-DPDCCH	6	8	8	5	0
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	12
	ETFCI (from 34.121 Table C.11.1.3)	75	67	92	71	67
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E-TFCIs	5	5	2	5	1
	Reference E-TFCI	11	11	11	11	67
	Reference E-TFCI PO	4	4	4	4	18
	Reference E-TFCI	67	67	92	67	67
	Reference E-TFCI PO	18	18	18	18	18
	Reference E-TFCI	71	71	71	71	71
	Reference E-TFCI PO	23	23	23	23	23
	Reference E-TFCI	75	75	75	75	75
	Reference E-TFCI PO	26	26	26	26	26
	Reference E-TFCI	81	81	81	81	81
	Reference E-TFCI PO	27	27	27	27	27
	Maximum Channelization Codes	2xSF2				SF4

HSPA+

Only support Down Link.

W-CDMA Band II Measured Results

Mode		UL Ch No.	Freq. (MHz)	Maximum Average Power (dBm)			Reduced Average Power (dBm)		
				Measured Pwr	MPR	Tune-up Limit	Measured Pwr	MPR	Tune-up Limit
Release 99	Rel 99 (RMC, 12.2 kbps)	9262	1852.4	22.8	N/A	24.0	21.3	N/A	22.0
		9400	1880.0	22.9			21.3		
		9538	1907.6	22.9			21.4		
HSDPA	Subtest 1	9262	1852.4	22.9	0	23.0	21.3	0	22.0
		9400	1880.0	22.9			21.4		
		9538	1907.6	23.0			21.4		
	Subtest 2	9262	1852.4	22.2	0	23.0	21.3	0	22.0
		9400	1880.0	22.1			21.4		
		9538	1907.6	22.1			21.4		
	Subtest 3	9262	1852.4	21.6	0.5	22.5	20.8	0.5	21.5
		9400	1880.0	21.6			20.9		
		9538	1907.6	21.6			20.9		
	Subtest 4	9262	1852.4	21.2	0.5	22.5	20.5	0.5	21.5
		9400	1880.0	21.1			20.6		
		9538	1907.6	20.7			20.6		
HSUPA	Subtest 1	9262	1852.4	21.4	0	22.5	19.8	0	21.5
		9400	1880.0	21.5			19.8		
		9538	1907.6	21.5			19.9		
	Subtest 2	9262	1852.4	19.1	2	20.5	17.5	2	19.5
		9400	1880.0	19.1			17.6		
		9538	1907.6	19.1			17.6		
	Subtest 3	9262	1852.4	21.3	1	21.5	18.3	1	20.5
		9400	1880.0	21.5			18.4		
		9538	1907.6	21.5			18.4		
	Subtest 4	9262	1852.4	19.0	2	20.5	17.5	2	19.5
		9400	1880.0	19.1			17.6		
		9538	1907.6	19.1			17.6		
	Subtest 5	9262	1852.4	22.1	0	22.5	20.5	0	21.5
		9400	1880.0	22.2			20.5		
		9538	1907.6	22.1			20.5		

W-CDMA Band IV Measured Results

Mode		UL Ch No.	Freq. (MHz)	Maximum Average Power (dBm)			Reduced Average Power (dBm)		
				Measured Pwr	MPR	Tune-up Limit	Measured Pwr	MPR	Tune-up Limit
Release 99	Rel 99 (RMC, 12.2 kbps)	1312	1712.4	22.7	N/A	24.0	19.7	N/A	21.0
		1413	1732.6	22.4			19.4		
		1513	1752.6	22.7			19.6		
HSDPA	Subtest 1	1312	1712.4	21.2	0	23.0	19.7	0	21.0
		1413	1732.6	21.4			19.4		
		1513	1752.6	21.7			19.6		
	Subtest 2	1312	1712.4	21.0	0	23.0	19.7	0	21.0
		1413	1732.6	21.2			19.4		
		1513	1752.6	21.4			19.6		
	Subtest 3	1312	1712.4	20.7	0.5	22.5	19.7	0.5	20.5
		1413	1732.6	21.0			19.4		
		1513	1752.6	21.2			19.6		
	Subtest 4	1312	1712.4	20.5	0.5	22.5	19.7	0.5	20.5
		1413	1732.6	20.7			19.4		
		1513	1752.6	21.0			19.6		
HSUPA	Subtest 1	1312	1712.4	21.3	0	23.0	18.7	0	21.0
		1413	1732.6	21.4			18.5		
		1513	1752.6	21.6			18.6		
	Subtest 2	1312	1712.4	19.2	2	21.0	18.7	2	19.0
		1413	1732.6	19.4			18.4		
		1513	1752.6	19.6			18.6		
	Subtest 3	1312	1712.4	20.3	1	22.0	18.7	1	20.0
		1413	1732.6	20.5			18.5		
		1513	1752.6	20.7			18.6		
	Subtest 4	1312	1712.4	19.2	2	21.0	18.8	2	19.0
		1413	1732.6	19.4			18.5		
		1513	1752.6	19.6			18.6		
	Subtest 5	1312	1712.4	22.3	0	23.0	19.8	0	21.0
		1413	1732.6	22.6			19.6		
		1513	1752.6	22.8			19.7		

W-CDMA Band V Measured Results

Mode		UL Ch No.	Freq. (MHz)	Maximum Average Power (dBm)		
				Measured Pwr	MPR	Tune-up Limit
Release 99	Rel 99 (RMC, 12.2 kbps)	4132	826.4	23.4	N/A	24.5
		4183	836.6	23.2		
		4233	846.6	23.2		
HSDPA	Subtest 1	4132	826.4	21.9	0	23.0
		4183	836.6	21.7		
		4233	846.6	21.7		
	Subtest 2	4132	826.4	21.5	0	23.0
		4183	836.6	21.2		
		4233	846.6	21.3		
	Subtest 3	4132	826.4	21.5	0.5	22.5
		4183	836.6	21.2		
		4233	846.6	21.2		
	Subtest 4	4132	826.4	21.1	0.5	22.5
		4183	836.6	20.9		
		4233	846.6	20.9		
HSUPA	Subtest 1	4132	826.4	21.5	0	22.5
		4183	836.6	21.2		
		4233	846.6	21.3		
	Subtest 2	4132	826.4	19.6	2	20.5
		4183	836.6	19.3		
		4233	846.6	19.4		
	Subtest 3	4132	826.4	19.6	1	21.5
		4183	836.6	19.3		
		4233	846.6	19.4		
	Subtest 4	4132	826.4	19.6	2	20.5
		4183	836.6	19.3		
		4233	846.6	19.4		
	Subtest 5	4132	826.4	21.7	0	22.5
		4183	836.6	21.5		
		4233	846.6	21.5		

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
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3
256 QAM	≥ 1						≤ 5

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

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

Network Signalling value	Requirements (subclause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	N/A
NS_03	6.6.2.2.1	2, 4,10, 23, 25, 35, 36, 66, 70	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
			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 (NOTE1)	≤ 1 (NOTE1)
			15, 20	Table 6.2.4-18 (NOTE2)	
		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		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	6.2.2 6.6.2.2.1 6.6.3.3.14	23	5, 10, 15, 20	Table 6.2.4-15	
NS_21	6.6.2.2.1 6.6.3.3.15	30	5, 10	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

LTE Band 2 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				18700	18900	19100			18700	18900	19100		
				1860 MHz	1880 MHz	1900 MHz			1860 MHz	1880 MHz	1900 MHz		
20 MHz	QPSK	1	0	22.9	23.0	22.8	0.0	24.0	21.5	21.6	21.6	0.0	22.5
		1	49	23.0	22.9	23.0	0.0	24.0	21.7	21.7	21.7	0.0	22.5
		1	99	23.0	23.0	23.0	0.0	24.0	21.7	21.7	21.8	0.0	22.5
		50	0	21.9	22.0	21.9	1.0	23.0	21.6	21.7	21.7	0.0	22.5
		50	24	22.0	22.0	22.0	1.0	23.0	21.7	21.8	21.8	0.0	22.5
		50	50	21.9	22.0	22.0	1.0	23.0	21.7	21.7	21.7	0.0	22.5
		100	0	22.0	22.1	22.0	1.0	23.0	21.7	21.8	21.8	0.0	22.5
	16QAM	1	0	22.2	22.3	22.2	1.0	23.0	21.9	22.0	21.9	0.0	22.5
		1	49	22.3	22.4	22.3	1.0	23.0	22.0	22.0	22.1	0.0	22.5
		1	99	22.2	22.4	22.3	1.0	23.0	22.1	22.1	22.1	0.0	22.5
		50	0	20.8	21.0	20.9	2.0	22.0	21.6	21.7	21.7	0.0	22.5
		50	24	20.9	21.1	21.0	2.0	22.0	21.7	21.8	21.8	0.0	22.5
		50	50	20.9	21.0	21.0	2.0	22.0	21.6	21.8	21.8	0.0	22.5
		100	0	21.0	21.1	21.0	2.0	22.0	21.7	21.8	21.8	0.0	22.5
	64QAM	1	0	21.1	21.2	21.3	2.0	22.0	21.9	21.9	22.0	0.0	22.5
		1	49	21.1	21.2	21.3	2.0	22.0	22.0	22.0	22.1	0.0	22.5
		1	99	21.1	21.3	21.3	2.0	22.0	22.0	22.0	22.1	0.0	22.5
		50	0	19.9	20.0	19.9	3.0	21.0	20.6	20.7	20.7	0.0	22.5
		50	24	20.0	20.1	20.0	3.0	21.0	20.7	20.8	20.8	0.0	22.5
		50	50	19.9	20.0	20.0	3.0	21.0	20.7	20.8	20.8	0.0	22.5
		100	0	20.0	20.1	20.0	3.0	21.0	20.7	20.8	20.8	0.0	22.5
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				18675	18900	19125			18675	18900	19125		
				1857.5 MHz	1880 MHz	1902.5 MHz			1857.5 MHz	1880 MHz	1902.5 MHz		
15 MHz	QPSK	1	0	22.9	22.9	22.8	0.0	24.0	21.5	21.6	21.5	0.0	22.5
		1	37	23.0	23.0	22.9	0.0	24.0	21.7	21.7	21.6	0.0	22.5
		1	74	22.9	22.9	22.8	0.0	24.0	21.6	21.7	21.6	0.0	22.5
		36	0	22.0	22.0	21.9	1.0	23.0	21.7	21.7	21.6	0.0	22.5
		36	20	22.0	22.0	21.9	1.0	23.0	21.7	21.7	21.7	0.0	22.5
		36	39	22.0	22.0	21.9	1.0	23.0	21.7	21.7	21.6	0.0	22.5
		75	0	22.1	22.1	22.0	1.0	23.0	21.8	21.8	21.7	0.0	22.5
	16QAM	1	0	22.0	22.2	22.2	1.0	23.0	21.7	22.0	21.9	0.0	22.5
		1	37	22.1	22.3	22.3	1.0	23.0	21.8	22.1	22.0	0.0	22.5
		1	74	22.1	22.3	22.2	1.0	23.0	21.9	22.2	22.0	0.0	22.5
		36	0	21.0	21.0	20.9	2.0	22.0	21.6	21.7	21.7	0.0	22.5
		36	20	21.0	21.0	20.9	2.0	22.0	21.6	21.7	21.7	0.0	22.5
		36	39	21.0	21.0	20.9	2.0	22.0	21.6	21.7	21.7	0.0	22.5
		75	0	21.0	21.0	20.9	2.0	22.0	21.7	21.8	21.7	0.0	22.5
	64QAM	1	0	21.1	21.0	21.0	2.0	22.0	21.9	21.8	21.8	0.0	22.5
		1	37	21.2	21.1	21.0	2.0	22.0	22.0	21.9	21.9	0.0	22.5
		1	74	21.2	21.0	21.0	2.0	22.0	22.1	21.9	21.8	0.0	22.5
		36	0	19.9	20.1	20.0	3.0	21.0	20.6	20.8	20.7	0.0	22.5
		36	20	20.0	20.0	20.0	3.0	21.0	20.7	20.8	20.8	0.0	22.5
		36	39	19.9	20.0	20.0	3.0	21.0	20.7	20.8	20.7	0.0	22.5
		75	0	20.0	20.1	19.9	3.0	21.0	20.7	20.8	20.7	0.0	22.5

LTE Band 2 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				18650	18900	19150			18650	18900	19150		
				1855 MHz	1880 MHz	1905 MHz			1855 MHz	1880 MHz	1905 MHz		
10 MHz	QPSK	1	0	22.9	22.9	22.8	0.0	24.0	21.5	21.6	21.6	0.0	22.5
		1	25	23.0	23.0	22.9	0.0	24.0	21.6	21.7	21.7	0.0	22.5
		1	49	22.9	22.9	22.9	0.0	24.0	21.6	21.6	21.7	0.0	22.5
		25	0	21.9	21.9	21.9	1.0	23.0	21.6	21.7	21.6	0.0	22.5
		25	12	22.0	22.0	21.9	1.0	23.0	21.7	21.7	21.7	0.0	22.5
		25	25	21.9	22.0	21.9	1.0	23.0	21.6	21.7	21.7	0.0	22.5
		50	0	22.0	22.0	21.9	1.0	23.0	21.7	21.7	21.7	0.0	22.5
	16QAM	1	0	22.0	22.4	22.3	1.0	23.0	21.8	22.0	22.1	0.0	22.5
		1	25	22.1	22.4	22.4	1.0	23.0	21.9	22.0	22.1	0.0	22.5
		1	49	22.1	22.4	22.3	1.0	23.0	22.0	22.0	22.2	0.0	22.5
		25	0	20.9	21.0	20.9	2.0	22.0	21.7	21.7	21.7	0.0	22.5
		25	12	21.0	21.1	21.0	2.0	22.0	21.7	21.8	21.8	0.0	22.5
		25	25	21.0	21.0	20.9	2.0	22.0	21.7	21.7	21.7	0.0	22.5
		50	0	21.0	21.0	20.9	2.0	22.0	21.7	21.7	21.7	0.0	22.5
	64QAM	1	0	20.9	21.1	21.1	2.0	22.0	21.8	21.9	21.7	0.0	22.5
		1	25	20.9	21.1	21.2	2.0	22.0	21.8	22.0	21.8	0.0	22.5
		1	49	20.9	21.1	21.1	2.0	22.0	21.8	22.0	21.8	0.0	22.5
		25	0	20.0	20.0	19.9	3.0	21.0	20.7	20.7	20.7	0.0	22.5
		25	12	20.0	20.0	20.0	3.0	21.0	20.7	20.8	20.8	0.0	22.5
		25	25	20.0	20.0	19.9	3.0	21.0	20.7	20.8	20.8	0.0	22.5
		50	0	20.0	20.0	20.0	3.0	21.0	20.7	20.7	20.7	0.0	22.5
				Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				18625	18900	19175			18625	18900	19175		
				1852.5 MHz	1880 MHz	1907.5 MHz			1852.5 MHz	1880 MHz	1907.5 MHz		
5 MHz	QPSK	1	0	22.8	23.0	22.9	0.0	24.0	21.5	21.6	21.7	0.0	22.5
		1	12	22.9	23.0	23.0	0.0	24.0	21.6	21.7	21.8	0.0	22.5
		1	24	23.0	23.0	23.0	0.0	24.0	21.6	21.7	21.7	0.0	22.5
		12	0	22.0	22.0	22.0	1.0	23.0	21.6	21.7	21.7	0.0	22.5
		12	7	22.0	22.0	22.0	1.0	23.0	21.6	21.7	21.7	0.0	22.5
		12	13	21.9	22.0	21.9	1.0	23.0	21.6	21.7	21.7	0.0	22.5
		25	0	22.0	22.0	21.9	1.0	23.0	21.6	21.7	21.7	0.0	22.5
	16QAM	1	0	22.3	22.1	22.4	1.0	23.0	21.8	21.8	22.0	0.0	22.5
		1	12	22.2	22.2	22.4	1.0	23.0	21.8	21.8	22.1	0.0	22.5
		1	24	22.2	22.2	22.4	1.0	23.0	21.8	21.9	22.1	0.0	22.5
		12	0	20.9	21.0	21.1	2.0	22.0	21.6	21.8	21.9	0.0	22.5
		12	7	20.9	21.0	21.1	2.0	22.0	21.6	21.8	21.8	0.0	22.5
		12	13	20.9	21.1	21.1	2.0	22.0	21.6	21.8	21.8	0.0	22.5
		25	0	20.9	21.0	21.0	2.0	22.0	21.6	21.7	21.7	0.0	22.5
	64QAM	1	0	21.3	21.2	21.1	2.0	22.0	21.5	22.0	21.9	0.0	22.5
		1	12	21.3	21.3	21.1	2.0	22.0	21.9	22.0	22.0	0.0	22.5
		1	24	21.2	21.3	21.1	2.0	22.0	21.8	22.1	22.0	0.0	22.5
		12	0	20.0	20.1	19.9	3.0	21.0	20.7	20.8	20.8	0.0	22.5
		12	7	19.9	20.0	19.9	3.0	21.0	20.6	20.8	20.7	0.0	22.5
		12	13	19.9	20.0	19.8	3.0	21.0	20.6	20.7	20.7	0.0	22.5
		25	0	19.9	20.0	19.9	3.0	21.0	20.6	20.7	20.7	0.0	22.5

LTE Band 2 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				18615	18900	19185			18615	18900	19185		
				1851.5 MHz	1880 MHz	1908.5 MHz			1851.5 MHz	1880 MHz	1908.5 MHz		
3 MHz	QPSK	1	0	23.0	23.0	23.0	0.0	24.0	21.7	21.7	21.7	0.0	22.5
		1	8	23.0	22.9	23.0	0.0	24.0	21.7	21.6	21.7	0.0	22.5
		1	14	23.0	23.0	23.0	0.0	24.0	21.7	21.6	21.7	0.0	22.5
		8	0	22.0	22.0	22.0	1.0	23.0	21.6	21.6	21.7	0.0	22.5
		8	4	21.9	22.0	22.0	1.0	23.0	21.6	21.6	21.7	0.0	22.5
		8	7	21.9	21.9	21.9	1.0	23.0	21.6	21.6	21.7	0.0	22.5
		15	0	21.9	22.0	22.0	1.0	23.0	21.6	21.7	21.7	0.0	22.5
	16QAM	1	0	21.9	22.6	22.5	1.0	23.0	21.8	22.0	22.2	0.0	22.5
		1	8	22.0	22.4	22.4	1.0	23.0	21.8	21.9	22.2	0.0	22.5
		1	14	22.1	22.2	22.5	1.0	23.0	21.8	21.9	22.2	0.0	22.5
		8	0	21.0	21.0	21.0	2.0	22.0	21.6	21.7	21.7	0.0	22.5
		8	4	21.0	21.0	21.0	2.0	22.0	21.6	21.7	21.7	0.0	22.5
		8	7	21.0	21.0	21.0	2.0	22.0	21.6	21.7	21.7	0.0	22.5
		15	0	20.9	21.0	21.0	2.0	22.0	21.6	21.7	21.7	0.0	22.5
	64QAM	1	0	21.1	21.1	21.3	2.0	22.0	22.0	21.9	21.8	0.0	22.5
		1	8	20.9	21.3	21.0	2.0	22.0	21.9	21.9	21.9	0.0	22.5
		1	14	21.1	21.3	21.3	2.0	22.0	21.8	21.9	21.9	0.0	22.5
		8	0	19.9	20.0	20.0	3.0	21.0	20.7	20.7	20.7	0.0	22.5
		8	4	19.9	20.0	20.0	3.0	21.0	20.7	20.7	20.7	0.0	22.5
		8	7	19.9	20.0	20.0	3.0	21.0	20.7	20.7	20.7	0.0	22.5
		15	0	19.9	20.0	20.1	3.0	21.0	20.7	20.7	20.8	0.0	22.5

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				18607	18900	19193			18607	18900	19193		
				1850.7 MHz	1880 MHz	1909.3 MHz			1850.7 MHz	1880 MHz	1909.3 MHz		
1.4 MHz	QPSK	1	0	23.1	23.0	23.0	0.0	24.0	21.6	21.7	21.7	0.0	22.5
		1	3	23.0	23.0	23.0	0.0	24.0	21.5	21.7	21.6	0.0	22.5
		1	5	23.0	23.0	22.9	0.0	24.0	21.6	21.6	21.6	0.0	22.5
		3	0	23.0	22.9	22.8	0.0	24.0	21.5	21.5	21.5	0.0	22.5
		3	1	22.9	22.9	22.8	0.0	24.0	21.5	21.5	21.5	0.0	22.5
		3	3	22.9	22.9	22.9	0.0	24.0	21.6	21.6	21.5	0.0	22.5
		6	0	22.0	22.0	21.9	1.0	23.0	21.6	21.6	21.6	0.0	22.5
	16QAM	1	0	22.3	22.4	22.4	1.0	23.0	21.9	22.1	21.9	0.0	22.5
		1	3	22.0	22.1	22.4	1.0	23.0	21.8	22.0	21.8	0.0	22.5
		1	5	22.2	22.3	22.3	1.0	23.0	21.7	22.0	21.8	0.0	22.5
		3	0	22.1	22.0	21.9	1.0	23.0	21.5	21.6	21.8	0.0	22.5
		3	1	22.2	22.0	21.9	1.0	23.0	21.5	21.6	21.8	0.0	22.5
		3	3	22.1	22.0	21.9	1.0	23.0	21.6	21.6	21.7	0.0	22.5
		6	0	21.0	21.1	20.9	2.0	22.0	21.7	21.6	21.7	0.0	22.5
	64QAM	1	0	21.0	21.1	21.2	2.0	22.0	22.0	21.9	21.6	0.0	22.5
		1	3	21.2	21.0	21.0	2.0	22.0	22.1	21.9	21.6	0.0	22.5
		1	5	20.9	21.2	20.9	2.0	22.0	21.9	21.8	21.8	0.0	22.5
		3	0	21.1	20.9	21.0	2.0	22.0	21.8	21.6	21.8	0.0	22.5
		3	1	21.1	21.0	21.0	2.0	22.0	21.8	21.7	21.8	0.0	22.5
		3	3	21.1	21.0	20.9	2.0	22.0	21.8	21.7	21.8	0.0	22.5
		6	0	20.1	20.0	19.9	3.0	21.0	20.7	20.8	20.7	0.0	22.5

LTE Band 5 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				Measured Pwr (dBm)				
				[redacted]	20525	[redacted]		
					836.5 MHz			
10 MHz	QPSK	1	0		23.0		0.0	24.5
		1	25		23.0		0.0	24.5
		1	49		23.0		0.0	24.5
		25	0		22.0		1.0	23.5
		25	12		22.0		1.0	23.5
		25	25		22.0		1.0	23.5
		50	0		22.0		1.0	23.5
	16QAM	1	0		22.3		1.0	23.5
		1	25		22.3		1.0	23.5
		1	49		22.2		1.0	23.5
		25	0		21.0		2.0	22.5
		25	12		21.0		2.0	22.5
		25	25		21.0		2.0	22.5
		50	0		21.0		2.0	22.5
	64QAM	1	0		21.2		2.0	22.5
		1	25		21.3		2.0	22.5
		1	49		21.2		2.0	22.5
		25	0		20.0		3.0	21.5
		25	12		20.0		3.0	21.5
		25	25		20.0		3.0	21.5
		50	0		20.0		3.0	21.5

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				20425	20525	20625		
				826.5 MHz	836.5 MHz	846.5 MHz		
5 MHz	QPSK	1	0	23.0	22.9	22.8	0.0	24.5
		1	12	23.1	23.1	22.9	0.0	24.5
		1	24	23.1	23.0	22.9	0.0	24.5
		12	0	22.1	22.0	21.9	1.0	23.5
		12	7	22.1	22.0	21.9	1.0	23.5
		12	13	22.0	22.0	21.9	1.0	23.5
		25	0	22.1	22.0	21.9	1.0	23.5
	16QAM	1	0	22.4	22.1	22.2	1.0	23.5
		1	12	22.4	22.1	22.3	1.0	23.5
		1	24	22.4	22.2	22.3	1.0	23.5
		12	0	21.1	21.0	21.0	2.0	22.5
		12	7	21.0	21.0	20.9	2.0	22.5
		12	13	21.0	21.0	20.9	2.0	22.5
		25	0	21.0	21.0	20.9	2.0	22.5
	64QAM	1	0	21.3	21.0	21.3	2.0	22.5
		1	12	21.4	21.1	21.3	2.0	22.5
		1	24	21.4	21.1	21.2	2.0	22.5
		12	0	20.1	20.1	20.0	3.0	21.5
		12	7	20.1	20.0	20.0	3.0	21.5
		12	13	20.1	20.0	20.0	3.0	21.5
		25	0	20.1	20.0	19.9	3.0	21.5

LTE Band 5 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				20415	20525	20635		
				825.5 MHz	836.5 MHz	847.5 MHz		
3 MHz	QPSK	1	0	23.1	23.0	22.9	0.0	24.5
		1	8	23.1	22.9	22.9	0.0	24.5
		1	14	23.1	22.9	22.9	0.0	24.5
		8	0	22.1	22.0	21.8	1.0	23.5
		8	4	22.1	22.0	21.8	1.0	23.5
		8	7	22.1	22.0	21.8	1.0	23.5
		15	0	22.1	22.0	21.8	1.0	23.5
	16QAM	1	0	22.3	22.4	22.2	1.0	23.5
		1	8	22.2	22.3	22.2	1.0	23.5
		1	14	22.1	22.3	22.1	1.0	23.5
		8	0	21.1	21.0	20.9	2.0	22.5
		8	4	21.1	21.0	20.9	2.0	22.5
		8	7	21.1	21.0	20.9	2.0	22.5
		15	0	21.1	21.0	20.9	2.0	22.5
	64QAM	1	0	21.1	21.3	20.6	2.0	22.5
		1	8	21.2	21.2	21.0	2.0	22.5
		1	14	21.3	21.0	20.7	2.0	22.5
		8	0	20.2	20.1	19.9	3.0	21.5
		8	4	20.1	20.1	19.9	3.0	21.5
		8	7	20.1	20.0	19.8	3.0	21.5
		15	0	20.1	20.0	19.9	3.0	21.5

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)				
				Measured Pwr (dBm)			MPR	Tune-up Limit
				20407	20525	20643		
				824.7 MHz	836.5 MHz	848.3 MHz		
1.4 MHz	QPSK	1	0	23.1	23.1	22.9	0.0	24.5
		1	3	23.0	23.0	22.9	0.0	24.5
		1	5	23.0	23.0	22.8	0.0	24.5
		3	0	22.9	22.9	22.8	0.0	24.5
		3	1	23.0	22.9	22.8	0.0	24.5
		3	3	23.0	22.9	22.8	0.0	24.5
		6	0	22.0	22.0	21.8	1.0	23.5
	16QAM	1	0	22.4	22.4	22.1	1.0	23.5
		1	3	22.4	22.3	21.9	1.0	23.5
		1	5	22.3	22.2	22.0	1.0	23.5
		3	0	22.0	22.0	21.9	1.0	23.5
		3	1	22.0	22.0	21.9	1.0	23.5
		3	3	22.0	22.1	21.9	1.0	23.5
		6	0	21.0	21.0	20.9	2.0	22.5
	64QAM	1	0	21.3	21.2	21.0	2.0	22.5
		1	3	21.0	21.1	21.0	2.0	22.5
		1	5	21.2	20.9	21.1	2.0	22.5
		3	0	21.1	21.0	21.0	2.0	22.5
		3	1	21.0	21.0	21.0	2.0	22.5
		3	3	21.1	21.0	21.0	2.0	22.5
		6	0	20.1	20.0	19.8	3.0	21.5

Note(s):

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

LTE Band 7 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				Measured Pwr (dBm)				
				20850	21100	21350		
				2510 MHz	2535 MHz	2560 MHz		
20 MHz	QPSK	1	0	22.8	22.6	22.8	0.0	24.0
		1	49	22.9	22.6	22.8	0.0	24.0
		1	99	22.9	22.6	22.8	0.0	24.0
		50	0	21.9	21.6	21.9	1.0	23.0
		50	24	22.0	21.7	21.9	1.0	23.0
		50	50	21.9	21.7	21.9	1.0	23.0
		100	0	22.0	21.7	21.9	1.0	23.0
	16QAM	1	0	22.2	22.0	22.1	1.0	23.0
		1	49	22.3	22.1	22.1	1.0	23.0
		1	99	22.2	22.1	22.1	1.0	23.0
		50	0	20.9	20.6	20.9	2.0	22.0
		50	24	21.0	20.7	20.9	2.0	22.0
		50	50	20.9	20.7	20.9	2.0	22.0
		100	0	21.0	20.8	20.9	2.0	22.0
	64QAM	1	0	21.6	21.2	21.6	2.0	22.0
		1	49	21.6	21.3	21.7	2.0	22.0
		1	99	21.6	21.3	21.7	2.0	22.0
		50	0	20.2	19.9	20.2	3.0	21.0
		50	24	20.3	20.0	20.2	3.0	21.0
		50	50	20.2	20.0	20.2	3.0	21.0
		100	0	20.3	20.0	20.2	3.0	21.0
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				20825	21100	21375		
				2507.5 MHz	2535 MHz	2562.5 MHz		
15 MHz	QPSK	1	0	22.8	22.5	22.8	0.0	24.0
		1	37	22.9	22.6	22.9	0.0	24.0
		1	74	22.8	22.5	22.8	0.0	24.0
		36	0	21.9	21.7	21.9	1.0	23.0
		36	20	21.9	21.7	21.9	1.0	23.0
		36	39	21.9	21.7	21.9	1.0	23.0
		75	0	22.0	21.8	22.1	1.0	23.0
	16QAM	1	0	22.1	21.9	22.2	1.0	23.0
		1	37	22.2	22.1	22.2	1.0	23.0
		1	74	22.1	21.9	22.2	1.0	23.0
		36	0	20.9	20.7	20.9	2.0	22.0
		36	20	20.9	20.7	20.9	2.0	22.0
		36	39	20.9	20.7	20.9	2.0	22.0
		75	0	21.0	20.7	21.0	2.0	22.0
	64QAM	1	0	21.5	21.1	21.4	2.0	22.0
		1	37	21.6	21.1	21.4	2.0	22.0
		1	74	21.6	21.1	21.4	2.0	22.0
		36	0	20.2	20.0	20.3	3.0	21.0
		36	20	20.2	20.0	20.3	3.0	21.0
		36	39	20.1	20.0	20.3	3.0	21.0
		75	0	20.2	20.0	20.3	3.0	21.0

LTE Band 7 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				20800	21100	21400		
				2505 MHz	2535 MHz	2565 MHz		
10 MHz	QPSK	1	0	22.9	22.6	22.8	0.0	24.0
		1	25	23.0	22.6	22.9	0.0	24.0
		1	49	22.9	22.6	22.9	0.0	24.0
		25	0	22.0	21.6	22.0	1.0	23.0
		25	12	22.0	21.7	22.0	1.0	23.0
		25	25	22.0	21.6	22.0	1.0	23.0
		50	0	22.0	21.7	22.0	1.0	23.0
	16QAM	1	0	22.0	21.8	22.3	1.0	23.0
		1	25	22.1	21.8	22.3	1.0	23.0
		1	49	22.0	21.7	22.3	1.0	23.0
		25	0	21.0	20.7	21.0	2.0	22.0
		25	12	21.0	20.7	21.0	2.0	22.0
		25	25	21.0	20.7	21.0	2.0	22.0
		50	0	21.0	20.7	21.0	2.0	22.0
	64QAM	1	0	21.3	21.1	21.3	2.0	22.0
		1	25	21.3	21.2	21.4	2.0	22.0
		1	49	21.2	21.2	21.5	2.0	22.0
		25	0	20.3	19.9	20.3	3.0	21.0
		25	12	20.3	20.0	20.4	3.0	21.0
		25	25	20.3	20.0	20.3	3.0	21.0
		50	0	20.3	20.0	20.3	3.0	21.0
				Measured Pwr (dBm)			MPR	Tune-up Limit
				20775	21100	21425		
				2502.5 MHz	2535 MHz	2567.5 MHz		
5 MHz	QPSK	1	0	22.8	22.6	22.8	0.0	24.0
		1	12	22.8	22.6	22.9	0.0	24.0
		1	24	22.8	22.6	22.9	0.0	24.0
		12	0	22.0	21.7	22.0	1.0	23.0
		12	7	22.0	21.7	22.0	1.0	23.0
		12	13	21.9	21.6	22.0	1.0	23.0
		25	0	22.0	21.7	22.0	1.0	23.0
	16QAM	1	0	22.1	21.9	22.1	1.0	23.0
		1	12	22.1	21.9	22.2	1.0	23.0
		1	24	22.1	21.9	22.2	1.0	23.0
		12	0	21.1	20.8	21.1	2.0	22.0
		12	7	21.0	20.7	21.1	2.0	22.0
		12	13	21.0	20.7	21.0	2.0	22.0
		25	0	21.0	20.6	21.0	2.0	22.0
	64QAM	1	0	21.3	21.0	21.6	2.0	22.0
		1	12	21.4	21.1	21.7	2.0	22.0
		1	24	21.4	21.1	21.6	2.0	22.0
		12	0	20.3	20.0	20.3	3.0	21.0
		12	7	20.2	19.9	20.3	3.0	21.0
		12	13	20.2	19.9	20.3	3.0	21.0
		25	0	20.3	19.9	20.3	3.0	21.0

LTE Band 12 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				Measured Pwr (dBm)				
				[redacted]	23095	[redacted]		
					707.5 MHz			
10 MHz	QPSK	1	0		23.3		0.0	24.5
		1	25		23.3		0.0	24.5
		1	49		23.1		0.0	24.5
		25	0		22.3		1.0	23.5
		25	12		22.3		1.0	23.5
		25	25		22.2		1.0	23.5
		50	0		22.3		1.0	23.5
	16QAM	1	0		22.6		1.0	23.5
		1	25		22.5		1.0	23.5
		1	49		22.4		1.0	23.5
		25	0		21.3		2.0	22.5
		25	12		21.3		2.0	22.5
		25	25		21.2		2.0	22.5
		50	0		21.3		2.0	22.5
	64QAM	1	0		21.5		2.0	22.5
		1	25		21.5		2.0	22.5
		1	49		21.5		2.0	22.5
		25	0		20.3		3.0	21.5
		25	12		20.3		3.0	21.5
		25	25		20.3		3.0	21.5
		50	0		20.3		3.0	21.5

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				23035	23095	23155		
				701.5 MHz	707.5 MHz	713.5 MHz		
5 MHz	QPSK	1	0	23.3	23.2	23.0	0.0	24.5
		1	12	23.4	23.3	23.1	0.0	24.5
		1	24	23.4	23.2	23.1	0.0	24.5
		12	0	22.4	22.3	22.2	1.0	23.5
		12	7	22.4	22.3	22.2	1.0	23.5
		12	13	22.3	22.3	22.2	1.0	23.5
		25	0	22.4	22.3	22.2	1.0	23.5
	16QAM	1	0	22.5	22.5	22.4	1.0	23.5
		1	12	22.6	22.5	22.4	1.0	23.5
		1	24	22.6	22.5	22.4	1.0	23.5
		12	0	21.4	21.3	21.2	2.0	22.5
		12	7	21.4	21.3	21.1	2.0	22.5
		12	13	21.4	21.3	21.1	2.0	22.5
		25	0	21.3	21.2	21.2	2.0	22.5
	64QAM	1	0	21.8	21.4	21.7	2.0	22.5
		1	12	21.9	21.5	21.7	2.0	22.5
		1	24	21.9	21.5	21.6	2.0	22.5
		12	0	20.4	20.3	20.3	3.0	21.5
		12	7	20.4	20.3	20.3	3.0	21.5
		12	13	20.4	20.3	20.3	3.0	21.5
		25	0	20.4	20.3	20.3	3.0	21.5

LTE Band 12 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				23025	23095	23165		
				700.5 MHz	707.5 MHz	714.5 MHz		
3 MHz	QPSK	1	0	23.4	23.3	23.2	0.0	24.5
		1	8	23.4	23.2	23.1	0.0	24.5
		1	14	23.4	23.1	23.1	0.0	24.5
		8	0	22.4	22.3	22.1	1.0	23.5
		8	4	22.4	22.3	22.1	1.0	23.5
		8	7	22.4	22.2	22.1	1.0	23.5
		15	0	22.4	22.3	22.1	1.0	23.5
	16QAM	1	0	22.6	22.8	22.5	1.0	23.5
		1	8	22.6	22.6	22.5	1.0	23.5
		1	14	22.7	22.6	22.5	1.0	23.5
		8	0	21.4	21.3	21.1	2.0	22.5
		8	4	21.4	21.3	21.1	2.0	22.5
		8	7	21.4	21.3	21.1	2.0	22.5
		15	0	21.3	21.3	21.1	2.0	22.5
	64QAM	1	0	21.6	21.7	21.3	2.0	22.5
		1	8	21.6	21.7	21.3	2.0	22.5
		1	14	21.4	21.7	21.3	2.0	22.5
		8	0	20.4	20.4	20.2	3.0	21.5
		8	4	20.4	20.3	20.2	3.0	21.5
		8	7	20.4	20.3	20.2	3.0	21.5
		15	0	20.4	20.3	20.2	3.0	21.5
				Measured Pwr (dBm)			MPR	Tune-up Limit
				23017	23095	23173		
				699.7 MHz	707.5 MHz	715.3 MHz		
1.4 MHz	QPSK	1	0	23.5	23.3	23.1	0.0	24.5
		1	3	23.5	23.2	23.0	0.0	24.5
		1	5	23.4	23.2	23.0	0.0	24.5
		3	0	23.4	23.2	23.0	0.0	24.5
		3	1	23.4	23.2	23.0	0.0	24.5
		3	3	23.4	23.2	23.1	0.0	24.5
		6	0	22.4	22.3	22.1	1.0	23.5
	16QAM	1	0	22.4	22.6	22.5	1.0	23.5
		1	3	22.5	22.5	22.6	1.0	23.5
		1	5	22.4	22.5	22.4	1.0	23.5
		3	0	22.5	22.2	22.1	1.0	23.5
		3	1	22.6	22.2	22.1	1.0	23.5
		3	3	22.5	22.3	22.1	1.0	23.5
		6	0	21.5	21.4	21.1	2.0	22.5
	64QAM	1	0	21.7	21.4	21.6	2.0	22.5
		1	3	21.9	21.3	21.6	2.0	22.5
		1	5	21.6	21.5	21.5	2.0	22.5
		3	0	21.4	21.4	21.2	2.0	22.5
		3	1	21.4	21.4	21.3	2.0	22.5
		3	3	21.4	21.4	21.2	2.0	22.5
		6	0	20.5	20.4	20.1	3.0	21.5

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 14 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)		Tune-up Limit
				Measured Pwr (dBm)	MPR	
				23330		
				793 MHz		
10 MHz	QPSK	1	0	23.1	0.0	24.5
		1	25	23.3	0.0	24.5
		1	49	23.3	0.0	24.5
		25	0	22.2	1.0	23.5
		25	12	22.3	1.0	23.5
		25	25	22.3	1.0	23.5
		50	0	22.3	1.0	23.5
	16QAM	1	0	22.3	1.0	23.5
		1	25	22.4	1.0	23.5
		1	49	22.4	1.0	23.5
		25	0	21.2	2.0	22.5
		25	12	21.3	2.0	22.5
		25	25	21.3	2.0	22.5
		50	0	21.3	2.0	22.5
	64QAM	1	0	21.5	2.0	22.5
		1	25	21.5	2.0	22.5
		1	49	21.4	2.0	22.5
		25	0	20.3	3.0	21.5
		25	12	20.3	3.0	21.5
		25	25	20.3	3.0	21.5
		50	0	20.3	3.0	21.5
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)	MPR	Tune-up Limit
				23330		
				793 MHz		
5 MHz	QPSK	1	0	23.2	0.0	24.5
		1	12	23.3	0.0	24.5
		1	24	23.3	0.0	24.5
		12	0	22.3	1.0	23.5
		12	7	22.3	1.0	23.5
		12	13	22.3	1.0	23.5
		25	0	22.3	1.0	23.5
	16QAM	1	0	22.4	1.0	23.5
		1	12	22.5	1.0	23.5
		1	24	22.5	1.0	23.5
		12	0	21.3	2.0	22.5
		12	7	21.3	2.0	22.5
		12	13	21.3	2.0	22.5
		25	0	21.2	2.0	22.5
	64QAM	1	0	21.5	2.0	22.5
		1	12	21.6	2.0	22.5
		1	24	21.6	2.0	22.5
		12	0	20.3	3.0	21.5
		12	7	20.3	3.0	21.5
		12	13	20.3	3.0	21.5
		25	0	20.3	3.0	21.5

Note(s):

10/5 MHz Bandwidths does not support at least three non-overlapping channels in certain channel bandwidths. When a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing per KDB 941225 D05 SAR for LTE Devices

LTE Band 30 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			
				Measured Pwr (dBm)		MPR	Tune-up Limit
				[redacted] 27710	[redacted]		
				2310 MHz			
10 MHz	QPSK	1	0	21.6		0.0	23.5
		1	25	21.7		0.0	23.5
		1	49	21.7		0.0	23.5
		25	0	20.7		1.0	22.5
		25	12	20.7		1.0	22.5
		25	25	20.7		1.0	22.5
		50	0	20.7		1.0	22.5
	16QAM	1	0	20.8		1.0	22.5
		1	25	20.8		1.0	22.5
		1	49	20.8		1.0	22.5
		25	0	19.7		2.0	21.5
		25	12	19.8		2.0	21.5
		25	25	19.7		2.0	21.5
		50	0	19.8		2.0	21.5
	64QAM	1	0	19.9		2.0	21.5
		1	25	19.9		2.0	21.5
		1	49	19.8		2.0	21.5
		25	0	18.7		3.0	20.5
		25	12	18.7		3.0	20.5
		25	25	18.7		3.0	20.5
		50	0	18.7		3.0	20.5
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)		MPR	Tune-up Limit
				[redacted] 27710	[redacted]		
				2310 MHz			
5 MHz	QPSK	1	0	21.6		0.0	23.5
		1	12	21.6		0.0	23.5
		1	24	21.7		0.0	23.5
		12	0	20.7		1.0	22.5
		12	7	20.6		1.0	22.5
		12	13	20.7		1.0	22.5
		25	0	20.7		1.0	22.5
	16QAM	1	0	20.8		1.0	22.5
		1	12	20.9		1.0	22.5
		1	24	20.9		1.0	22.5
		12	0	19.8		2.0	21.5
		12	7	19.7		2.0	21.5
		12	13	19.7		2.0	21.5
		25	0	19.7		2.0	21.5
	64QAM	1	0	19.7		2.0	21.5
		1	12	19.7		2.0	21.5
		1	24	19.8		2.0	21.5
		12	0	18.6		3.0	20.5
		12	7	18.6		3.0	20.5
		12	13	18.6		3.0	20.5
		25	0	18.6		3.0	20.5

Note(s):

10/5 MHz Bandwidths does not support at least three non-overlapping channels in certain channel bandwidths. When a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing per KDB 941225 D05 SAR for LTE Devices

LTE Band 66 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				132072	132322	132572			132072	132322	132572		
				1720 MHz	1745 MHz	1770 MHz			1720 MHz	1745 MHz	1770 MHz		
20 MHz	QPSK	1	0	22.9	23.1	23.2	0.0	24.5	20.0	20.2	20.2	0.0	21.5
		1	49	23.0	23.2	23.3	0.0	24.5	20.1	20.3	20.3	0.0	21.5
		1	99	23.0	23.2	23.3	0.0	24.5	20.1	20.3	20.3	0.0	21.5
		50	0	22.0	22.3	22.3	1.0	23.5	20.0	20.3	20.3	0.0	21.5
		50	24	22.1	22.3	22.4	1.0	23.5	20.1	20.3	20.4	0.0	21.5
		50	50	22.0	22.3	22.3	1.0	23.5	20.1	20.3	20.3	0.0	21.5
		100	0	22.1	22.3	22.4	1.0	23.5	20.1	20.4	20.4	0.0	21.5
	16QAM	1	0	22.3	22.5	22.5	1.0	23.5	20.3	20.6	20.6	0.0	21.5
		1	49	22.3	22.7	22.7	1.0	23.5	20.5	20.6	20.7	0.0	21.5
		1	99	22.4	22.6	22.6	1.0	23.5	20.5	20.6	20.7	0.0	21.5
		50	0	20.9	21.2	21.3	2.0	22.5	20.0	20.3	20.3	0.0	21.5
		50	24	21.0	21.3	21.4	2.0	22.5	20.1	20.3	20.3	0.0	21.5
		50	50	21.0	21.3	21.3	2.0	22.5	20.1	20.3	20.3	0.0	21.5
		100	0	21.1	21.4	21.4	2.0	22.5	20.1	20.4	20.4	0.0	21.5
	64QAM	1	0	21.4	21.4	21.6	2.0	22.5	20.3	20.6	20.6	0.0	21.5
		1	49	21.5	21.5	21.7	2.0	22.5	20.3	20.7	20.7	0.0	21.5
		1	99	21.5	21.5	21.7	2.0	22.5	20.4	20.3	20.6	0.0	21.5
		50	0	20.3	20.3	20.3	3.0	21.5	20.0	20.3	20.3	0.0	21.5
		50	24	20.4	20.4	20.4	3.0	21.5	20.1	20.3	20.4	0.0	21.5
		50	50	20.3	20.4	20.3	3.0	21.5	20.0	20.3	20.3	0.0	21.5
		100	0	20.4	20.4	20.3	3.0	21.5	20.1	20.3	20.3	0.0	21.5
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				132047	132322	132597			132047	132322	132597		
				1717.5 MHz	1745 MHz	1772.5 MHz			1717.5 MHz	1745 MHz	1772.5 MHz		
15 MHz	QPSK	1	0	22.9	23.2	23.3	0.0	24.5	20.0	20.2	20.2	0.0	21.5
		1	37	23.0	23.2	23.4	0.0	24.5	20.1	20.3	20.3	0.0	21.5
		1	74	22.9	23.2	23.3	0.0	24.5	20.1	20.3	20.2	0.0	21.5
		36	0	22.1	22.3	22.4	1.0	23.5	20.1	20.3	20.3	0.0	21.5
		36	20	22.1	22.4	22.4	1.0	23.5	20.1	20.4	20.3	0.0	21.5
		36	39	22.1	22.3	22.4	1.0	23.5	20.1	20.3	20.3	0.0	21.5
		75	0	22.2	22.5	22.5	1.0	23.5	20.2	20.4	20.4	0.0	21.5
	16QAM	1	0	22.0	22.5	22.6	1.0	23.5	20.4	20.6	20.4	0.0	21.5
		1	37	22.1	22.6	22.7	1.0	23.5	20.5	20.7	20.5	0.0	21.5
		1	74	22.1	22.6	22.6	1.0	23.5	20.5	20.7	20.4	0.0	21.5
		36	0	21.0	21.3	21.4	2.0	22.5	20.1	20.3	20.2	0.0	21.5
		36	20	21.0	21.4	21.4	2.0	22.5	20.1	20.3	20.3	0.0	21.5
		36	39	21.0	21.3	21.3	2.0	22.5	20.1	20.3	20.2	0.0	21.5
		75	0	21.1	21.4	21.4	2.0	22.5	20.2	20.4	20.3	0.0	21.5
	64QAM	1	0	21.1	21.4	21.3	2.0	22.5	20.2	20.5	20.4	0.0	21.5
		1	37	21.2	21.5	21.4	2.0	22.5	20.2	20.5	20.4	0.0	21.5
		1	74	21.1	21.5	21.3	2.0	22.5	20.2	20.5	20.4	0.0	21.5
		36	0	20.0	20.4	20.4	3.0	21.5	20.1	20.3	20.2	0.0	21.5
		36	20	20.0	20.4	20.4	3.0	21.5	20.2	20.4	20.3	0.0	21.5
		36	39	20.0	20.4	20.4	3.0	21.5	20.1	20.3	20.2	0.0	21.5
		75	0	20.1	20.4	20.4	3.0	21.5	20.1	20.4	20.3	0.0	21.5

LTE Band 66 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				132022	132322	132622			132022	132322	132622		
				1715 MHz	1745 MHz	1775 MHz			1715 MHz	1745 MHz	1775 MHz		
10 MHz	QPSK	1	0	23.0	23.2	23.2	0.0	24.5	20.0	20.2	20.1	0.0	21.5
		1	25	23.0	23.3	23.3	0.0	24.5	20.1	20.3	20.2	0.0	21.5
		1	49	23.0	23.2	23.3	0.0	24.5	20.1	20.2	20.2	0.0	21.5
		25	0	22.0	22.3	22.3	1.0	23.5	20.0	20.2	20.2	0.0	21.5
		25	12	22.0	22.3	22.3	1.0	23.5	20.1	20.3	20.2	0.0	21.5
		25	25	22.0	22.3	22.3	1.0	23.5	20.0	20.3	20.2	0.0	21.5
		50	0	22.0	22.3	22.3	1.0	23.5	20.1	20.3	20.2	0.0	21.5
	16QAM	1	0	22.1	22.5	22.6	1.0	23.5	20.5	20.5	20.3	0.0	21.5
		1	25	22.1	22.5	22.7	1.0	23.5	20.5	20.5	20.4	0.0	21.5
		1	49	22.0	22.5	22.6	1.0	23.5	20.5	20.5	20.4	0.0	21.5
		25	0	21.0	21.3	21.3	2.0	22.5	20.1	20.3	20.2	0.0	21.5
		25	12	21.1	21.4	21.3	2.0	22.5	20.1	20.3	20.2	0.0	21.5
		25	25	21.0	21.3	21.3	2.0	22.5	20.1	20.3	20.2	0.0	21.5
		50	0	21.1	21.3	21.3	2.0	22.5	20.1	20.3	20.2	0.0	21.5
	64QAM	1	0	21.1	21.4	21.3	2.0	22.5	20.0	20.5	20.2	0.0	21.5
		1	25	21.1	21.5	21.4	2.0	22.5	20.1	20.6	20.2	0.0	21.5
		1	49	21.1	21.5	21.4	2.0	22.5	20.1	20.6	20.2	0.0	21.5
		25	0	20.0	20.3	20.3	3.0	21.5	20.1	20.3	20.2	0.0	21.5
		25	12	20.1	20.3	20.4	3.0	21.5	20.1	20.3	20.2	0.0	21.5
		25	25	20.0	20.3	20.3	3.0	21.5	20.1	20.3	20.2	0.0	21.5
		50	0	20.0	20.3	20.3	3.0	21.5	20.1	20.3	20.2	0.0	21.5
				Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				131997	132322	132647			131997	132322	132647		
				1712.5 MHz	1745 MHz	1777.5 MHz			1712.5 MHz	1745 MHz	1777.5 MHz		
5 MHz	QPSK	1	0	23.0	23.2	23.2	0.0	24.5	20.0	20.3	20.1	0.0	21.5
		1	12	23.1	23.3	23.3	0.0	24.5	20.1	20.4	20.2	0.0	21.5
		1	24	23.0	23.3	23.2	0.0	24.5	20.1	20.3	20.2	0.0	21.5
		12	0	22.1	22.3	22.3	1.0	23.5	20.1	20.3	20.2	0.0	21.5
		12	7	22.1	22.3	22.2	1.0	23.5	20.0	20.3	20.2	0.0	21.5
		12	13	22.0	22.3	22.2	1.0	23.5	20.1	20.3	20.2	0.0	21.5
		25	0	22.1	22.3	22.2	1.0	23.5	20.1	20.3	20.2	0.0	21.5
	16QAM	1	0	22.3	22.6	22.4	1.0	23.5	20.3	20.5	20.4	0.0	21.5
		1	12	22.3	22.6	22.4	1.0	23.5	20.4	20.6	20.4	0.0	21.5
		1	24	22.3	22.6	22.4	1.0	23.5	20.4	20.6	20.4	0.0	21.5
		12	0	21.1	21.2	21.3	2.0	22.5	20.2	20.3	20.2	0.0	21.5
		12	7	21.1	21.3	21.2	2.0	22.5	20.1	20.3	20.1	0.0	21.5
		12	13	21.0	21.3	21.2	2.0	22.5	20.1	20.3	20.1	0.0	21.5
		25	0	21.0	21.3	21.2	2.0	22.5	20.0	20.2	20.1	0.0	21.5
	64QAM	1	0	21.2	21.3	21.5	2.0	22.5	20.3	20.7	20.2	0.0	21.5
		1	12	21.2	21.4	21.5	2.0	22.5	20.4	20.7	20.2	0.0	21.5
		1	24	21.3	21.4	21.5	2.0	22.5	20.4	20.6	20.2	0.0	21.5
		12	0	20.1	20.3	20.2	3.0	21.5	20.1	20.3	20.2	0.0	21.5
		12	7	20.1	20.3	20.2	3.0	21.5	20.1	20.3	20.1	0.0	21.5
		12	13	20.0	20.3	20.2	3.0	21.5	20.1	20.3	20.1	0.0	21.5
		25	0	20.0	20.3	20.2	3.0	21.5	20.0	20.3	20.1	0.0	21.5

LTE Band 66 Measured Results (continued)

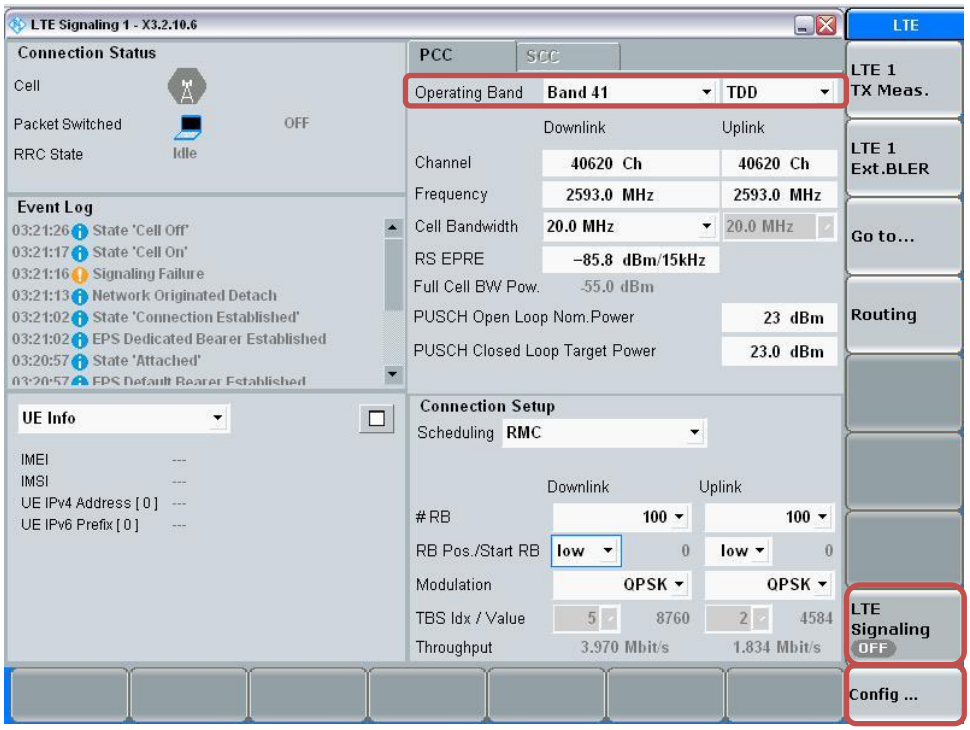
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				131987	132322	132657			131987	132322	132657		
				1711.5 MHz	1745 MHz	1778.5 MHz			1711.5 MHz	1745 MHz	1778.5 MHz		
3 MHz	QPSK	1	0	23.0	23.3	23.2	0.0	24.5	20.2	20.3	20.2	0.0	21.5
		1	8	23.2	23.3	23.2	0.0	24.5	20.2	20.3	20.2	0.0	21.5
		1	14	23.1	23.3	23.2	0.0	24.5	20.2	20.2	20.2	0.0	21.5
		8	0	22.1	22.4	22.2	1.0	23.5	20.1	20.3	20.1	0.0	21.5
		8	4	22.1	22.3	22.2	1.0	23.5	20.1	20.3	20.1	0.0	21.5
		8	7	22.1	22.3	22.2	1.0	23.5	20.1	20.3	20.1	0.0	21.5
		15	0	22.1	22.3	22.2	1.0	23.5	20.1	20.3	20.1	0.0	21.5
	16QAM	1	0	22.0	22.6	22.6	1.0	23.5	20.5	20.6	20.3	0.0	21.5
		1	8	22.0	22.6	22.7	1.0	23.5	20.5	20.5	20.3	0.0	21.5
		1	14	22.0	22.5	22.4	1.0	23.5	20.5	20.5	20.3	0.0	21.5
		8	0	21.0	21.3	21.2	2.0	22.5	20.2	20.4	20.2	0.0	21.5
		8	4	21.1	21.3	21.2	2.0	22.5	20.2	20.4	20.1	0.0	21.5
		8	7	21.1	21.4	21.2	2.0	22.5	20.2	20.4	20.1	0.0	21.5
		15	0	21.0	21.3	21.2	2.0	22.5	20.1	20.3	20.1	0.0	21.5
	64QAM	1	0	21.4	21.4	21.4	2.0	22.5	20.1	20.5	20.4	0.0	21.5
		1	8	21.2	21.3	21.4	2.0	22.5	20.1	20.5	20.3	0.0	21.5
		1	14	21.2	21.6	21.1	2.0	22.5	20.1	20.5	20.3	0.0	21.5
		8	0	20.0	20.3	20.2	3.0	21.5	20.1	20.3	20.1	0.0	21.5
		8	4	20.0	20.4	20.3	3.0	21.5	20.1	20.3	20.1	0.0	21.5
		8	7	20.0	20.4	20.2	3.0	21.5	20.1	20.3	20.1	0.0	21.5
		15	0	20.0	20.2	20.2	3.0	21.5	20.1	20.2	20.1	0.0	21.5
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				131979	132322	132665			131979	132322	132665		
				1710.7 MHz	1745 MHz	1779.3 MHz			1710.7 MHz	1745 MHz	1779.3 MHz		
1.4 MHz	QPSK	1	0	23.1	23.4	23.4	0.0	24.5	20.2	20.4	20.3	0.0	21.5
		1	3	23.1	23.3	23.4	0.0	24.5	20.1	20.4	20.3	0.0	21.5
		1	5	23.1	23.3	23.4	0.0	24.5	20.1	20.3	20.3	0.0	21.5
		3	0	23.0	23.2	23.3	0.0	24.5	20.0	20.2	20.2	0.0	21.5
		3	1	23.0	23.3	23.3	0.0	24.5	20.0	20.2	20.2	0.0	21.5
		3	3	23.0	23.3	23.3	0.0	24.5	20.0	20.2	20.2	0.0	21.5
		6	0	22.1	22.3	22.3	1.0	23.5	20.1	20.3	20.3	0.0	21.5
	16QAM	1	0	22.1	22.5	22.9	1.0	23.5	20.3	20.5	20.6	0.0	21.5
		1	3	22.1	22.3	22.8	1.0	23.5	20.3	20.4	20.5	0.0	21.5
		1	5	22.2	22.4	22.7	1.0	23.5	20.2	20.4	20.4	0.0	21.5
		3	0	22.1	22.2	22.2	1.0	23.5	20.0	20.3	20.2	0.0	21.5
		3	1	22.1	22.2	22.2	1.0	23.5	20.0	20.3	20.3	0.0	21.5
		3	3	22.1	22.2	22.3	1.0	23.5	20.1	20.2	20.3	0.0	21.5
		6	0	21.2	21.4	21.3	2.0	22.5	20.2	20.4	20.2	0.0	21.5
	64QAM	1	0	21.3	21.6	21.6	2.0	22.5	20.3	20.5	20.4	0.0	21.5
		1	3	21.2	21.8	21.4	2.0	22.5	20.2	20.5	20.4	0.0	21.5
		1	5	21.2	21.4	21.7	2.0	22.5	20.4	20.3	20.3	0.0	21.5
		3	0	21.1	21.4	21.3	2.0	22.5	19.9	20.3	20.3	0.0	21.5
		3	1	21.2	21.4	21.2	2.0	22.5	20.0	20.3	20.3	0.0	21.5
		3	3	21.1	21.4	21.3	2.0	22.5	20.0	20.3	20.3	0.0	21.5
		6	0	20.0	20.4	20.3	3.0	21.5	20.0	20.4	20.3	0.0	21.5

LTE Band TDD Measured Results

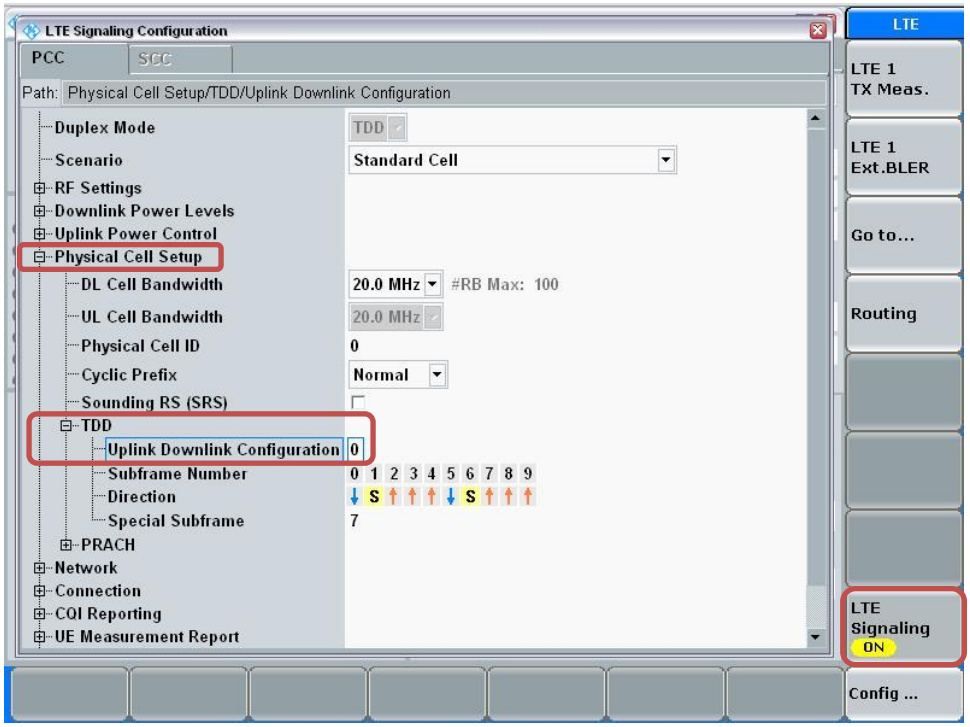
Procedure used to establish SAR test signal for LTE TDD Band

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….”

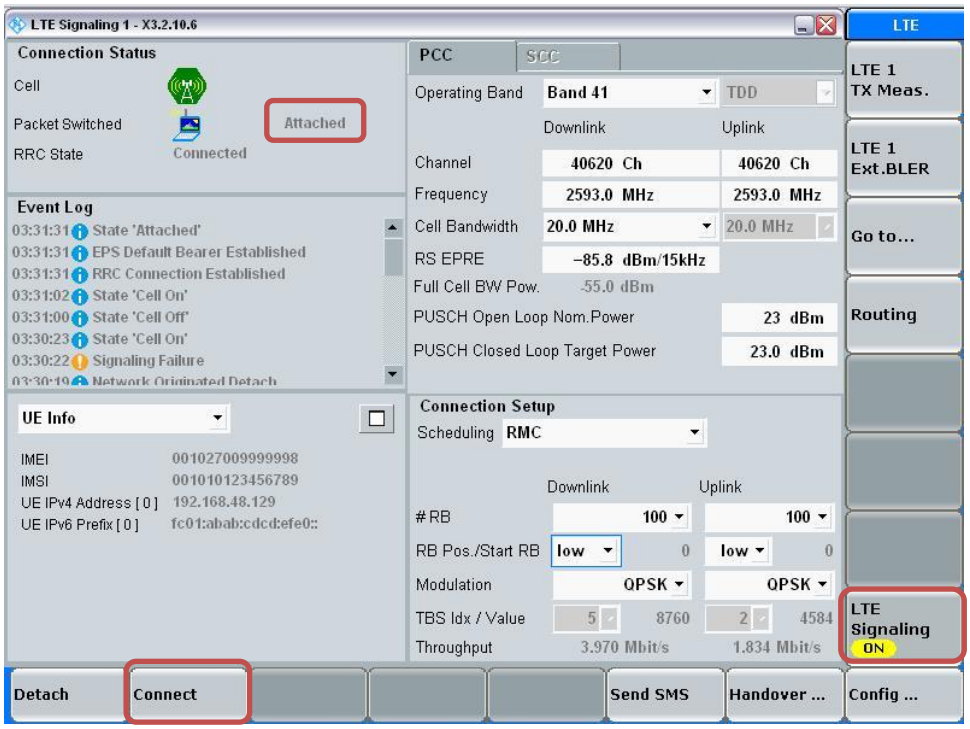


- Go to “Physical Cell Setup”
- Select “TDD” and Set “Uplink Downlink Configuration” to “0”
- Turn the cell on using “ON | OFF” key



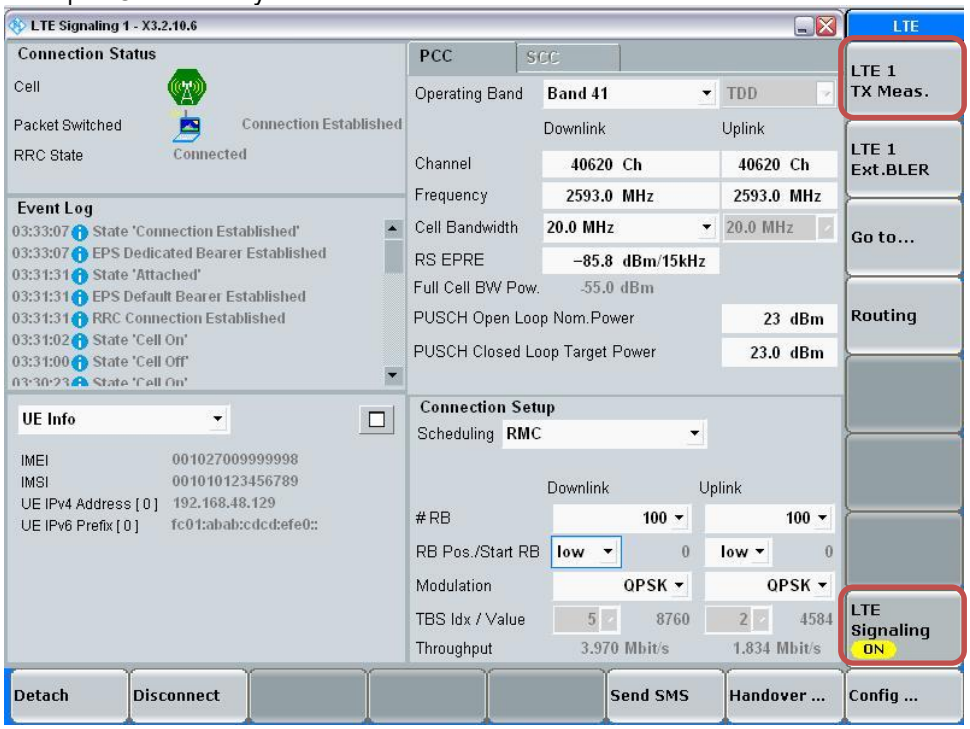
Connect to EUT

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

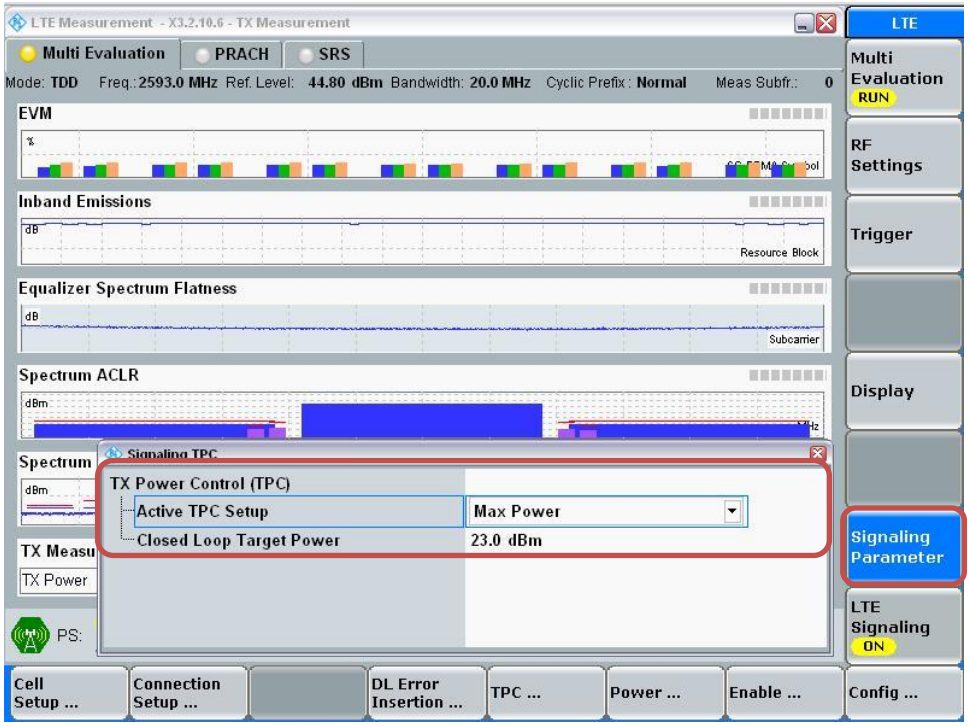


Max Power Setting

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

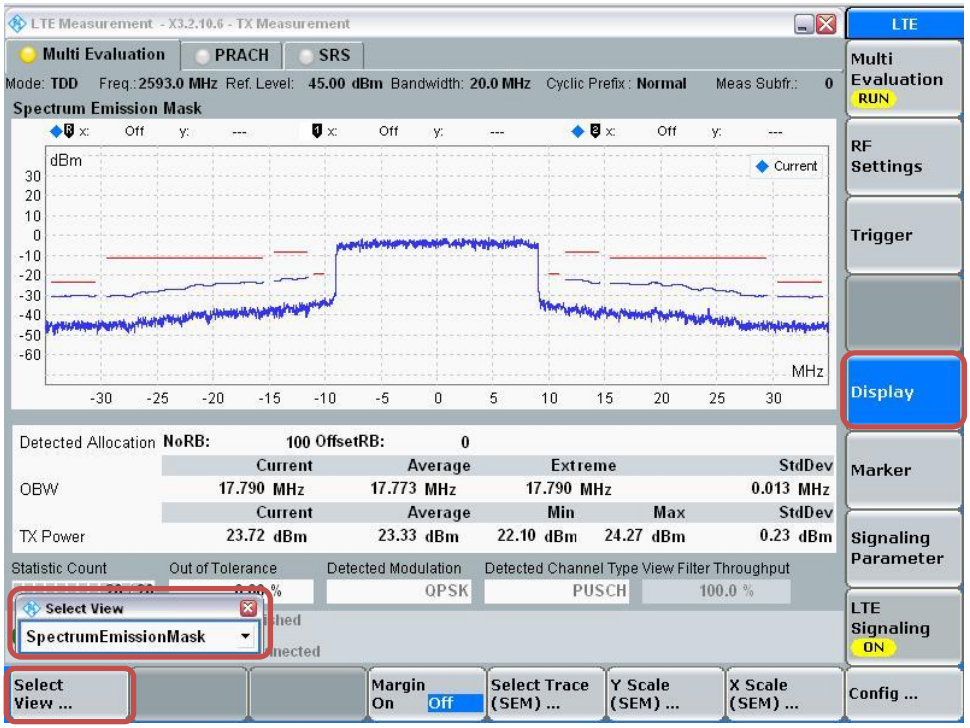


- Select “Signaling Parameter”
- Select “TX Power Control (TPC)” > Select “Active TPC Setup” to “Max Power” > Set “Closed Loop Target Power” to “23 dBm”



View TX Power

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



LTE Band 40-Lower frequency band Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)		
							2310 MHz	
LTE Band 40	10	QPSK	1	0	0		11.6	
			1	25	0		11.7	
			1	49	0		11.6	
			25	0	1		11.7	
			25	12	1		11.7	
			25	25	1		11.7	
			50	0	1		11.8	
		16QAM	1	0	1		11.8	
			1	25	1		11.9	
			1	49	1		11.8	
			25	0	2		11.7	
			25	12	2		11.8	
			25	25	2		11.7	
			50	0	2		11.8	
		64QAM	1	0	2		11.5	
			1	25	2		11.6	
			1	49	2		11.5	
			25	0	3		11.6	
			25	12	3		11.7	
			25	25	3		11.6	
			50	0	3		11.7	

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)		
						2307.5 MHz	2310 MHz	2312.5 MHz
LTE Band 40	5	QPSK	1	0	0		11.7	
			1	12	0		11.8	
			1	24	0		11.7	
			12	0	1		11.8	
			12	7	1		11.8	
			12	13	1		11.8	
			25	0	1		11.8	
		16QAM	1	0	1		11.8	
			1	12	1		11.9	
			1	24	1		11.8	
			12	0	2		11.8	
			12	7	2		11.7	
			12	13	2		11.7	
			25	0	2		11.8	
		64QAM	1	0	2		11.7	
			1	12	2		11.8	
			1	24	2		11.7	
			12	0	3		11.8	
			12	7	3		11.8	
			12	13	3		11.8	
			25	0	3		11.8	

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 40-Upper frequency band Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)		
							2355 MHz	
LTE Band 40	10	QPSK	1	0	0		11.4	
			1	25	0		11.4	
			1	49	0		11.3	
			25	0	1		11.4	
			25	12	1		11.5	
			25	25	1		11.4	
			50	0	1		11.5	
		16QAM	1	0	1		11.6	
			1	25	1		11.6	
			1	49	1		11.6	
			25	0	2		11.4	
			25	12	2		11.5	
			25	25	2		11.4	
			50	0	2		11.5	
		64QAM	1	0	2		11.6	
			1	25	2		11.6	
			1	49	2		11.6	
			25	0	3		11.5	
			25	12	3		11.6	
			25	25	3		11.5	
			50	0	3		11.6	

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)		
						2352.5 MHz	2355 MHz	2357.5 MHz
LTE Band 40	5	QPSK	1	0	0		11.4	
			1	12	0		11.4	
			1	24	0		11.4	
			12	0	1		11.5	
			12	7	1		11.5	
			12	13	1		11.4	
			25	0	1		11.4	
		16QAM	1	0	1		11.4	
			1	12	1		11.5	
			1	24	1		11.5	
			12	0	2		11.5	
			12	7	2		11.4	
			12	13	2		11.4	
			25	0	2		11.5	
		64QAM	1	0	2		11.4	
			1	12	2		11.4	
			1	24	2		11.3	
			12	0	3		11.6	
			12	7	3		11.5	
			12	13	3		11.5	
			25	0	3		11.5	

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 41 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					MPR	Tune-up Limit
				Measured Pwr (dBm)						
				39750	40185	40620	41055	41490		
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		
20 MHz	QPSK	1	0	22.1	22.0	22.2	22.1	22.1	0.0	24.0
		1	49	22.2	22.2	22.3	22.2	22.2	0.0	24.0
		1	99	22.1	22.1	22.2	22.3	22.1	0.0	24.0
		50	0	21.1	21.1	21.2	21.1	21.1	1.0	23.0
		50	24	21.2	21.2	21.3	21.2	21.2	1.0	23.0
		50	50	21.2	21.1	21.3	21.2	21.2	1.0	23.0
		100	0	21.2	21.2	21.3	21.2	21.3	1.0	23.0
	16QAM	1	0	21.2	21.2	21.1	21.2	21.6	1.0	23.0
		1	49	21.5	21.4	21.3	21.3	21.7	1.0	23.0
		1	99	21.3	21.3	21.2	21.3	21.3	1.0	23.0
		50	0	20.1	20.0	20.1	20.1	20.1	2.0	22.0
		50	24	20.1	20.1	20.3	20.2	20.2	2.0	22.0
		50	50	20.1	20.1	20.2	20.2	20.1	2.0	22.0
		100	0	20.2	20.2	20.3	20.2	20.2	2.0	22.0
	64QAM	1	0	20.3	20.1	19.9	20.1	20.3	2.0	22.0
		1	49	20.1	20.4	20.2	20.7	20.4	2.0	22.0
		1	99	20.2	20.2	20.0	20.4	20.3	2.0	22.0
		50	0	19.1	19.0	19.1	19.1	19.0	3.0	21.0
		50	24	19.1	19.1	19.2	19.2	19.1	3.0	21.0
		50	50	19.1	19.1	19.2	19.1	19.1	3.0	21.0
		100	0	19.2	19.1	19.3	19.2	19.2	3.0	21.0
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)					MPR	Tune-up Limit
				39750	40185	40620	41055	41490		
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		
15 MHz	QPSK	1	0	22.1	22.0	22.1	22.1	22.2	0.0	24.0
		1	37	22.2	22.2	22.3	22.3	22.2	0.0	24.0
		1	74	22.1	22.1	22.3	22.2	22.1	0.0	24.0
		36	0	21.2	21.2	21.3	21.2	21.2	1.0	23.0
		36	20	21.2	21.2	21.3	21.2	21.3	1.0	23.0
		36	39	21.2	21.2	21.2	21.2	21.2	1.0	23.0
		75	0	21.2	21.2	21.4	21.3	21.3	1.0	23.0
	16QAM	1	0	21.3	20.7	20.7	21.0	21.2	1.0	23.0
		1	37	21.3	21.1	21.1	21.3	21.0	1.0	23.0
		1	74	21.3	21.2	21.4	21.3	21.0	1.0	23.0
		36	0	20.2	20.1	20.3	20.2	20.2	2.0	22.0
		36	20	20.2	20.2	20.3	20.2	20.2	2.0	22.0
		36	39	20.1	20.1	20.2	20.2	20.2	2.0	22.0
		75	0	20.2	20.2	20.3	20.3	20.3	2.0	22.0
	64QAM	1	0	20.4	20.0	20.6	20.2	19.7	2.0	22.0
		1	37	20.1	19.9	20.4	20.2	19.9	2.0	22.0
		1	74	20.0	20.1	20.7	20.0	19.7	2.0	22.0
		36	0	19.1	19.1	19.2	19.1	19.2	3.0	21.0
		36	20	19.1	19.1	19.3	19.2	19.2	3.0	21.0
		36	39	19.1	19.2	19.2	19.1	19.2	3.0	21.0
		75	0	19.2	19.1	19.3	19.2	19.2	3.0	21.0

LTE Band 41 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)					MPR	Tune-up Limit
				39750	40185	40620	41055	41490		
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		
10 MHz	QPSK	1	0	22.1	22.1	22.2	22.1	22.1	0.0	24.0
		1	25	22.2	22.2	22.3	22.2	22.2	0.0	24.0
		1	49	22.1	22.1	22.2	22.1	22.1	0.0	24.0
		25	0	21.2	21.1	21.2	21.2	21.2	1.0	23.0
		25	12	21.2	21.2	21.3	21.2	21.2	1.0	23.0
		25	25	21.2	21.2	21.3	21.2	21.2	1.0	23.0
		50	0	21.2	21.2	21.3	21.2	21.2	1.0	23.0
	16QAM	1	0	21.3	21.0	21.1	21.2	21.0	1.0	23.0
		1	25	21.3	21.1	21.2	21.3	21.2	1.0	23.0
		1	49	21.3	21.0	21.2	21.3	21.1	1.0	23.0
		25	0	20.1	20.1	20.2	20.1	20.1	2.0	22.0
		25	12	20.2	20.2	20.2	20.2	20.2	2.0	22.0
		25	25	20.1	20.1	20.2	20.2	20.2	2.0	22.0
		50	0	20.2	20.1	20.3	20.2	20.2	2.0	22.0
	64QAM	1	0	20.0	20.0	20.4	19.9	20.1	2.0	22.0
		1	25	20.1	20.1	20.4	20.0	20.2	2.0	22.0
		1	49	20.0	20.1	20.4	19.9	20.1	2.0	22.0
		25	0	19.0	19.1	19.1	19.0	19.1	3.0	21.0
		25	12	19.1	19.1	19.2	19.1	19.2	3.0	21.0
		25	25	19.0	19.1	19.2	19.1	19.2	3.0	21.0
		50	0	19.0	19.0	19.2	19.1	19.1	3.0	21.0

				Measured Pwr (dBm)					MPR	Tune-up Limit
				39750	40185	40620	41055	41490		
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		
5 MHz	QPSK	1	0	22.2	22.1	22.2	22.2	22.2	0.0	24.0
		1	12	22.2	22.3	22.2	22.3	22.2	0.0	24.0
		1	24	22.2	22.2	22.2	22.2	22.2	0.0	24.0
		12	0	21.2	21.2	21.3	21.2	21.3	1.0	23.0
		12	7	21.2	21.2	21.3	21.2	21.2	1.0	23.0
		12	13	21.2	21.1	21.2	21.2	21.2	1.0	23.0
		25	0	21.2	21.2	21.2	21.2	21.2	1.0	23.0
	16QAM	1	0	21.0	21.1	21.2	21.0	21.2	1.0	23.0
		1	12	21.0	21.3	21.2	21.1	21.3	1.0	23.0
		1	24	21.0	21.2	21.3	21.1	21.3	1.0	23.0
		12	0	20.2	20.1	20.2	20.2	20.2	2.0	22.0
		12	7	20.2	20.1	20.2	20.1	20.1	2.0	22.0
		12	13	20.2	20.1	20.2	20.1	20.1	2.0	22.0
		25	0	20.2	20.1	20.2	20.2	20.2	2.0	22.0
	64QAM	1	0	20.1	20.1	20.2	20.3	20.3	2.0	22.0
		1	12	20.2	20.1	20.2	20.3	20.3	2.0	22.0
		1	24	20.1	20.2	20.2	20.2	20.4	2.0	22.0
		12	0	19.1	19.1	19.2	19.1	19.2	3.0	21.0
		12	7	19.1	19.1	19.2	19.1	19.1	3.0	21.0
		12	13	19.1	19.1	19.2	19.1	19.1	3.0	21.0
		25	0	19.1	19.0	19.1	19.0	19.1	3.0	21.0

9.3.1 LTE Rel.10 Carrier Aggregation

LTE Carrier Aggregation Down Link Combinations;

The DL CA power measurement conditions for various CC's combinations were determined according LTE DL CA SAR Test Exclusion guidance in TCB workshop note (April 2018). Only yellow highlighted cells need power measurement. The following power measurements were performed with a single carrier uplink; CA for this particular project only supports one (1) uplink and up to three (3) downlinks.

LTE Release 10 Carrier Aggregation

Index	2CC	Restriction	Completely Covered by Measurement Supersrt	Reverse
2CC #1	2A-2A		3CC#1	-
2CC #2	2A-5A		3CC#1	Y
2CC #3	2A-12A		3CC#2	Y
2CC #4	2A-14A		3CC#3	Y
2CC #5	2A-29A		3CC#4	N
2CC #6	5A-30A			Y
2CC #7	5A-66A		3CC#6	Y
2CC #8	5B		3CC#7	-
2CC #9	12A-30A			Y
2CC #10	66A-12A		3CC#8	Y
2CC #11	14A-30A			Y
2CC #12	14A-66A		3CC#9	Y
2CC #13	30A-29A			N
2CC #14	66A-29A		3CC#10	N
2CC #15	66A-66A		3CC#11	-
2CC #16	66B			-
2CC #17	66C			-

Index	3CC	Restriction	Completely Covered by Measurement Supersrt	Reverse
3CC #1	2A-2A-5A			O
3CC #2	2A-2A-12A			O
3CC #3	2A-2A-14A			O
3CC #4	2A-2A-29A			N
3CC #5	2A-2A-66A			O
3CC #6	2A-5A-66A			O
3CC #7	2A-5B			O
3CC #8	2A-12A-66A			O
3CC #9	2A-14A-66A			O
3CC #10	2A-29A-66A			O
3CC #11	2A-66A-66A			O
3CC #12	5A-66A-66A			O
3CC #13	5B-30A			O
3CC #14	5B-66A			O
3CC #15	66A-66A-12A			N

DL CA Measured Results

E-UTRA CA configuation (BCS)	Bands			UL					DL									LTE Rel 8 Tx. Power [dBm]	LTE Rel 10 Tx. Power [dBm]	Delta
	PCC	SCC1	SCC2	PCC					PCC			SCC1			SCC2					
	1st	2nd	3rd	Mode	BW (MHz)	Channel	Freq. (MHz)	RB/Offset	BW (MHz)	Channel	Freq. (MHz)	BW (MHz)	Channel	Freq. (MHz)	BW (MHz)	Channel	Freq. (MHz)			
5A-30A	5A	30A		QPSK	10	20525	836.5	1/25	10	2525	881.5	10	9820	2355				23.0	23.0	0.0
	30A	5A		QPSK	10	27710	2310	1/25	10	9820	2355	10	2525	881.5				21.7	21.7	0.0
12A-30A	12A	30A		QPSK	10	23095	707.5	1/0	10	5095	737.5	10	9820	2355				23.3	23.3	0.0
	30A	12A		QPSK	10	27710	2310	1/25	10	9820	2355	10	5060	734				21.7	21.7	0.0
14A-30A	14A	30A		QPSK	10	23330	793	1/49	10	763	5330	10	9820	2355				23.3	23.1	-0.2
	30A	14A		QPSK	10	27710	2310	1/25	10	9820	2355	10	5330	763				21.7	21.7	0.0
30A-29A	30A	29A		QPSK	10	27710	2310	1/25	10	9820	2355	10	9715	722.5				21.7	21.7	0.1
2A-2A-5A	2A	2A	5A	QPSK	20	19100	1900	1/99	20	1100	1980	20	700	1940	10	2525	881.5	23.0	22.7	-0.3
	5A	2A	2A	QPSK	10	20525	836.5	25/12	10	2525	881.5	20	900	1960	20	1100	1980	23.0	22.9	-0.1
2A-2A-12A	2A	2A	12A	QPSK	20	19100	1900	1/99	20	1100	1980	20	700	1940	10	5095	737.5	23.0	22.6	-0.4
	12A	2A	2A	QPSK	10	23095	707.5	1/0	10	5095	737.5	20	900	1960	20	1100	1980	23.3	23.3	0.0
2A-2A-14A	2A	2A	14A	QPSK	20	19100	1900	1/99	20	1100	1980	20	700	1940	10	763	5330	23.0	22.7	-0.3
	14A	2A	2A	QPSK	10	23330	793	1/49	10	763	5330	20	900	1960	20	1100	1980	23.3	23.0	-0.3
2A-2A-29A	2A	2A	29A	QPSK	20	19100	1900	1/99	20	1100	1980	20	700	1940	10	9715	722.5	23.0	22.7	-0.3
2A-2A-66A	2A	2A	66A	QPSK	20	19100	1900	1/99	20	1100	1980	20	700	1940	20	66786	2145	23.0	22.8	-0.2
	66A	2A	2A	QPSK	20	132572	1770	1/49	20	67036	2170	20	900	1960	20	1100	1980	23.3	23.0	-0.3
2A-5A-66A	2A	5A	66A	QPSK	20	19100	1900	1/99	20	1100	1980	10	2525	881.5	20	66786	2145	23.0	22.6	-0.3
	5A	66A	2A	QPSK	10	20525	836.5	25/12	10	2525	881.5	20	66786	2145	20	900	1960	22.0	22.0	0.0
	66A	2A	5A	QPSK	20	132572	1770	1/49	20	67036	2170	20	900	1960	10	2525	881.5	23.3	23.1	-0.2
2A-5B	2A	5B	5B	QPSK	20	19100	1900	1/99	20	1100	1980	10	2450	874	10	2549	883.9	23.0	22.6	-0.4
	5B	5B	2A	QPSK	10	20450	829	25/12	10	2450	874	10	2600	889	20	900	1960	22.0	22.0	-0.1
2A-12A-66A	2A	12A	66A	QPSK	20	19100	1900	1/99	20	1100	1980	10	5095	737.5	20	66786	2145	23.0	22.7	-0.3
	66A	2A	12A	QPSK	20	132572	1770	1/49	20	67036	2170	20	900	1960	10	5095	737.5	23.3	23.1	-0.2
2A-14A-66A	2A	14A	66A	QPSK	20	19100	1900	1/99	20	1100	1980	10	763	5330	20	66786	2145	23.0	22.7	-0.3
	14A	66A	2A	QPSK	10	23330	793	1/49	10	763	5330	20	66786	2145	20	900	1960	23.3	23.0	-0.3
	66A	2A	14A	QPSK	20	132572	1770	1/49	20	67036	2170	20	900	1960	10	763	5330	23.3	23.1	-0.3
2A-29A-66A	2A	29A	66A	QPSK	20	19100	1900	1/99	20	1100	1980	10	9715	722.5	20	66786	2145	23.0	22.7	-0.3
	66A	2A	29A	QPSK	20	132572	1770	1/49	20	67036	2170	20	900	1960	10	9715	722.5	23.3	23.1	-0.3
2A-66A-66A	2A	66A	66A	QPSK	20	19100	1900	1/99	20	1100	1980	20	66786	2145	20	67036	2170	23.0	22.7	-0.3
	66A	66A	2A	QPSK	20	132572	1770	1/49	20	67036	2170	20	66536	2120	20	900	1960	23.3	23.1	-0.2
5A-66A-66A	5A	66A	66A	QPSK	10	20525	836.5	25/12	10	2525	881.5	20	66786	2145	20	67036	2170	23.0	21.9	-1.1
	66A	66A	5A	QPSK	20	132572	1770	1/49	20	67036	2170	20	66536	2120	10	2525	881.5	23.3	23.1	-0.3
5B-30A	5B	5B	30A	QPSK	10	20450	829	1/25	10	2450	874	10	2549	883.9	10	9820	2355	23.0	22.9	-0.1
	30A	5B	5B	QPSK	10	27710	2310	1/25	10	9820	2355	10	2450	874	10	2549	883.9	21.7	21.6	-0.1
5B-66A	5B	5B	66A	QPSK	10	20450	829	1/25	10	2450	874	10	2549	883.9	20	66786	2145	23.0	23.0	-0.1
	66A	5B	5B	QPSK	20	132572	1770	1/49	20	67036	2170	10	2450	874	10	2549	883.9	23.3	23.1	-0.2
66A-66A-12A	66A	66A	12A	QPSK	20	132572	1770	1/49	20	67036	2170	20	66536	2120	10	5095	737.5	23.3	23.1	-0.2
66B	66B	66B		QPSK	15	132597	1772.5	1/37	15	67061	2172.5	5	66968	2163.2				23.4	23.0	-0.4
66C	66C	66C		QPSK	20	132572	1770	1/49	20	67036	2170	20	66838	2150.2				23.3	23.0	-0.4

Note:

1_Per KDB 941225 D05A LTE Rel. 10 KDB Inquiry Sheet: SAR is excluded for Carrier Aggregation when measured power does not exceed LTE Release 8 by more than a 1/4 dB.

2_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

Antenna	Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Maximum Average Power (dBm)			Reduced Average Power (dBm)		
						Meas Pwr	Tune-up Limit	SAR Test (Yes/No)	Meas Pwr	Tune-up Limit	SAR Test (Yes/No)
WLAN SISO Ant.1	2.4	802.11b	1 Mbps	1	2412.0	18.6	19.5	Yes	15.4	16.0	Yes
				6	2437.0	18.9			15.8		
				11	2462.0	18.4			15.3		
		802.11g	6 Mbps	1	2412.0	Not Required	14.0	No	Not Required	14.0	No
				6	2437.0		18.0			16.0	
				11	2462.0		14.0			14.0	
		802.11n (HT20)	6.5 Mbps	1	2412.0	Not Required	14.0	No	Not Required	14.0	No
				6	2437.0		17.0			16.0	
				11	2462.0		14.0			14.0	

Antenna	Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Maximum Average Power (dBm)			Reduced Average Power (dBm)		
						Meas Pwr	Tune-up Limit	SAR Test (Yes/No)	Meas Pwr	Tune-up Limit	SAR Test (Yes/No)
WLAN SISO Ant.2	2.4	802.11b	1 Mbps	1	2412.0	18.5	19.5	Yes	15.3	16.0	Yes
				6	2437.0	19.1			15.8		
				11	2462.0	18.2			15.2		
		802.11g	6 Mbps	1	2412.0	Not Required	14.0	No	Not Required	14.0	No
				6	2437.0		18.0			16.0	
				11	2462.0		14.0			14.0	
		802.11n (HT20)	6.5 Mbps	1	2412.0	Not Required	14.0	No	Not Required	14.0	No
				6	2437.0		17.0			16.0	
				11	2462.0		14.0			14.0	

Antenna	Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Maximum Average Power (dBm)			Reduced Average Power (dBm)		
						Meas Pwr	Tune-up Limit	SAR Test (Yes/No)	Meas Pwr	Tune-up Limit	SAR Test (Yes/No)
WLAN MIMO Ant.1	2.4	802.11n (HT20)	6.5 Mbps	1	2412.0	13.6	14.0	Yes	13.6	14.0	Yes
				6	2437.0	16.4	17.0		15.6	16.0	
				11	2462.0	13.3	14.0		13.3	14.0	

Antenna	Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Maximum Average Power (dBm)			Reduced Average Power (dBm)		
						Meas Pwr	Tune-up Limit	SAR Test (Yes/No)	Meas Pwr	Tune-up Limit	SAR Test (Yes/No)
WLAN MIMO Ant.2	2.4	802.11n (HT20)	6.5 Mbps	1	2412.0	13.2	14.0	Yes	13.2	14.0	Yes
				6	2437.0	16.2	17.0		15.3	16.0	
				11	2462.0	12.8	14.0		12.8	14.0	

Note(s):

1. SAR is not required for 802.11g/n modes when the adjusted SAR for 802.11b is < 1.2 W/kg.
2. 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.
3. For 802.11b mode, RSDB target power is same with Normal WLAN’s Reduced target power.

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

Measured Results

Antenna	Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Maximum Average Power (dBm)			Reduced Average Power (dBm)		
						Meas Pwr	Tune-up Limit	SAR Test (Yes/No)	Meas Pwr	Tune-up Limit	SAR Test (Yes/No)
WLAN SISO Ant.1	5.3 (U-NII 2A)	802.11a	6 Mbps	52	5260.0	17.9	18.0	Yes	Not Required	10.0	No
				56	5280.0	17.8					
				60	5300.0	17.7					
				64	5320.0	17.7					
		802.11n (HT20)	6.5 Mbps	52	5260.0	17.8	18.0	No		10.0	No
				56	5280.0	17.8					
				60	5300.0	17.7					
				64	5320.0	17.7					
		802.11n (HT40)	13.5 Mbps	54	5270.0	Not Required	16.0	No		10.0	No
				62	5310.0						
		802.11ac (VHT20)	6.5 Mbps	52	5260.0	17.5	18.0	No		10.0	No
				56	5280.0	17.8					
				60	5300.0	17.6					
				64	5320.0	17.4					
		802.11ac (VHT40)	13.5 Mbps	54	5270.0	Not Required	16.0	No		10.0	No
				62	5310.0						
		802.11ac (VHT80)	29.3 Mbps	58	5290.0	Not Required	16.0	No	9.6	10.0	Yes
	5.5 (U-NII 2C)	802.11a	6 Mbps	100	5500.0	17.8	18.0	Yes	Not Required	10.0	No
				112	5560.0	17.7					
				116	5580.0	17.7					
				140	5700.0	17.6					
		802.11n (HT20)	6.5 Mbps	100	5500.0	15.8	16.0	No		10.0	No
				112	5560.0	17.7	18.0				
				116	5580.0	17.7					
				140	5700.0	17.5					
		802.11n (HT40)	13.5 Mbps	102	5510.0	Not Required	16.0	No		10.0	No
				110	5550.0						
				134	5670.0						
		802.11ac (VHT20)	6.5 Mbps	100	5500.0	15.7	16.0	No		10.0	No
				112	5560.0	17.4	18.0				
				116	5580.0	17.7					
				140	5700.0	17.3					
		802.11ac (VHT40)	13.5 Mbps	102	5510.0	Not Required	16.0	No		10.0	No
				110	5550.0						
				134	5670.0						
		802.11ac (VHT80)	29.3 Mbps	106	5530.0	Not Required	16.0	No	9.8	10.0	Yes
	5.8 (U-NII 3)	802.11a	6 Mbps	149	5745.0	16.1	16.5	Yes	Not Required	10.0	No
				157	5785.0	16.0					
				165	5825.0	16.0					
		802.11n (HT20)	6.5 Mbps	149	5745.0	16.1	16.5	No		10.0	No
				157	5785.0	16.0					
				165	5825.0	16.0					
		802.11n (HT40)	13.5 Mbps	151	5755.0	Not Required	16.0	No		10.0	No
				159	5795.0						
		802.11ac (VHT20)	6.5 Mbps	149	5745.0	15.9	16.5	No		10.0	No
				157	5785.0	15.8					
				165	5825.0	15.8					
		802.11ac (VHT40)	13.5 Mbps	151	5755.0	Not Required	16.0	No		10.0	No
				159	5795.0						
		802.11ac (VHT80)	29.3 Mbps	155	5775.0	Not Required	16.0	No	10.0	10.0	Yes

Note(s):

1. 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.
2. When the same transmission mode configurations have the same maximum output power on the same channel for the 802.11 a/g/n/ac/ax modes, the channel in the lower order/sequence 802.11 mode (i.e. a, g, n ac) is selected.
3. When UNII band 2A’s specified maximum output power is higher or same than UNII band 1, 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 1
   - > 1.2 W/kg, both bands should be tested independently for SAR.

Measured Results

Antenna	Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Maximum Average Power (dBm)			Reduced Average Power (dBm)		
						Meas Pwr	Tune-up Limit	SAR Test (Yes/No)	Meas Pwr	Tune-up Limit	SAR Test (Yes/No)
WLAN SISO Ant.2	5.3 (U-NII 2A)	802.11a	6 Mbps	52	5260.0	17.9	18.0	Yes	Not Required	10.0	No
				56	5280.0	17.9					
				60	5300.0	17.9					
				64	5320.0	17.8					
		802.11n (HT20)	6.5 Mbps	52	5260.0	17.8	18.0	No		10.0	No
				56	5280.0	17.8					
				60	5300.0	17.8					
				64	5320.0	17.7					
		802.11n (HT40)	13.5 Mbps	54	5270.0	Not Required	16.0	No		10.0	No
				62	5310.0						
		802.11ac (VHT20)	6.5 Mbps	52	5260.0	17.7	18.0	No		10.0	No
				56	5280.0	17.7					
				60	5300.0	17.5					
				64	5320.0	17.5					
		802.11ac (VHT40)	13.5 Mbps	54	5270.0	Not Required	16.0	No		10.0	No
				62	5310.0						
		802.11ac (VHT80)	29.3 Mbps	58	5290.0	Not Required	16.0	No	9.8	10.0	Yes
	5.5 (U-NII 2C)	802.11a	6 Mbps	100	5500.0	17.8	18.0	Yes	Not Required	10.0	No
				112	5560.0	17.8					
				116	5580.0	17.8					
				140	5700.0	17.4					
		802.11n (HT20)	6.5 Mbps	100	5500.0	15.8	16.0	No		10.0	No
				112	5560.0	17.6	18.0				
				116	5580.0	17.6					
				140	5700.0	17.5					
		802.11n (HT40)	13.5 Mbps	102	5510.0	Not Required	16.0	No		10.0	No
				110	5550.0						
				134	5670.0						
		802.11ac (VHT20)	6.5 Mbps	100	5500.0	15.6	16.0	No		10.0	No
				112	5560.0	17.4	18.0				
				116	5580.0	17.6					
				140	5700.0	17.2					
		802.11ac (VHT40)	13.5 Mbps	102	5510.0	Not Required	16.0	No		10.0	No
				110	5550.0						
				134	5670.0						
		802.11ac (VHT80)	29.3 Mbps	106	5530.0	Not Required	16.0	No	9.9	10.0	Yes
	5.8 (U-NII 3)	802.11a	6 Mbps	149	5745.0	16.3	16.5	Yes	Not Required	10.0	No
				157	5785.0	15.6					
				165	5825.0	15.5					
		802.11n (HT20)	6.5 Mbps	149	5745.0	16.3	16.5	No		10.0	No
				157	5785.0	15.9					
				165	5825.0	15.9					
		802.11n (HT40)	13.5 Mbps	151	5755.0	Not Required	16.0	No		10.0	No
				159	5795.0						
		802.11ac (VHT20)	6.5 Mbps	149	5745.0	15.8	16.5	No		10.0	No
				157	5785.0	15.7					
				165	5825.0	15.6					
		802.11ac (VHT40)	13.5 Mbps	151	5755.0	Not Required	16.0	No		10.0	No
				159	5795.0						
		802.11ac (VHT80)	29.3 Mbps	155	5775.0	Not Required	16.0	No	9.9	10.0	Yes

Note(s):

1. 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.
2. When the same transmission mode configurations have the same maximum output power on the same channel for the 802.11 a/g/n/ac/ax modes, the channel in the lower order/sequence 802.11 mode (i.e. a, g, n ac) is selected.
3. When UNII band 2A’s specified maximum output power is higher or same than UNII band 1, 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 1
   - > 1.2 W/kg, both bands should be tested independently for SAR.

Measured Results

Antenna	Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Maximum Average Power (dBm)			Reduced Average Power (dBm)		
						Meas Pwr	Tune-up Limit	SAR Test (Yes/No)	Meas Pwr	Tune-up Limit	SAR Test (Yes/No)
WLAN MIMO Ant.1	5.3 (U-NII 2A)	802.11n (HT20)	6.5 Mbps	52	5260.0	17.6	18.0	No	Not Required	10.0	No
				56	5280.0	17.6					
				60	5300.0	17.6					
				64	5320.0	17.5					
		802.11n (HT40)	13.5 Mbps	54	5270.0	Not Required	16.0	No		10.0	No
				62	5310.0						
		802.11ac (VHT20)	6.5 Mbps	52	5260.0	17.4	18.0	No		10.0	No
				56	5280.0	17.6					
				60	5300.0	17.5					
				64	5320.0	17.3					
		802.11ac (VHT40)	13.5 Mbps	54	5270.0	Not Required	16.0	No		10.0	No
				62	5310.0						
		802.11ac (VHT80)	29.3 Mbps	58	5290.0	Not Required	16.0	No	9.3	10.0	Yes
	5.5 (U-NII 2C)	802.11n (HT20)	6.5 Mbps	100	5500.0	15.7	16.0	No	Not Required	10.0	No
				112	5560.0	17.6	18.0				
				116	5580.0	17.5					
				140	5700.0	17.3					
		802.11n (HT40)	13.5 Mbps	102	5510.0	Not Required	16.0	No		10.0	No
				110	5550.0						
				134	5670.0						
		802.11ac (VHT20)	6.5 Mbps	100	5500.0	15.4	16.0	No		10.0	No
				112	5560.0	17.3	18.0				
				116	5580.0	17.2					
				140	5700.0	17.3					
		802.11ac (VHT40)	13.5 Mbps	102	5510.0	Not Required	16.0	No		10.0	No
				110	5550.0						
				134	5670.0						
		802.11ac (VHT80)	29.3 Mbps	106	5530.0	Not Required	16.0	No	9.5	10.0	Yes
	5.8 (U-NII 3)	802.11n (HT20)	6.5 Mbps	149	5745.0	16.3	16.5	No	Not Required	10.0	No
				157	5785.0	15.9					
				165	5825.0	15.8					
		802.11n (HT40)	13.5 Mbps	151	5755.0	Not Required	16.0	No		10.0	No
				159	5795.0						
		802.11ac (VHT20)	6.5 Mbps	149	5745.0	15.7	16.5	No		10.0	No
				157	5785.0	15.5					
				165	5825.0	15.6					
		802.11ac (VHT40)	13.5 Mbps	151	5755.0	Not Required	16.0	No		10.0	No
				159	5795.0						
		802.11ac (VHT80)	29.3 Mbps	155	5775.0	Not Required	16.0	No	9.6	10.0	Yes

Note(s):

1. 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.
2. When the same transmission mode configurations have the same maximum output power on the same channel for the 802.11 a/g/n/ac/ax modes, the channel in the lower order/sequence 802.11 mode (i.e. a, g, n ac) is selected.
3. When UNII band 2A’s specified maximum output power is higher or same than UNII band 1, 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 1
   - > 1.2 W/kg, both bands should be tested independently for SAR.

Measured Results

Antenna	Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Maximum Average Power (dBm)			Reduced Average Power (dBm)		
						Meas Pwr	Tune-up Limit	SAR Test (Yes/No)	Meas Pwr	Tune-up Limit	SAR Test (Yes/No)
WLAN MIMO Ant.2	5.3 (U-NII 2A)	802.11n (HT20)	6.5 Mbps	52	5260.0	17.7	18.0	No	Not Required	10.0	No
				56	5280.0	17.8					
				60	5300.0	17.7					
				64	5320.0	17.6					
		802.11n (HT40)	13.5 Mbps	54	5270.0	Not Required	16.0	No		10.0	No
				62	5310.0						
		802.11ac (VHT20)	6.5 Mbps	52	5260.0	17.7	18.0	No		10.0	No
				56	5280.0	17.6					
				60	5300.0	17.4					
				64	5320.0	17.4					
		802.11ac (VHT40)	13.5 Mbps	54	5270.0	Not Required	16.0	No		10.0	No
				62	5310.0						
		802.11ac (VHT80)	29.3 Mbps	58	5290.0	Not Required	16.0	No	9.7	10.0	Yes
	5.5 (U-NII 2C)	802.11n (HT20)	6.5 Mbps	100	5500.0	15.8	16.0	No	Not Required	10.0	No
				112	5560.0	17.6	18.0				
				116	5580.0	17.5					
				140	5700.0	17.3					
		802.11n (HT40)	13.5 Mbps	102	5510.0	Not Required	16.0	No		10.0	No
				110	5550.0						
				134	5670.0						
		802.11ac (VHT20)	6.5 Mbps	100	5500.0	15.5	16.0	No		10.0	No
				112	5560.0	17.4	18.0				
				116	5580.0	17.2					
				140	5700.0	17.3					
		802.11ac (VHT40)	13.5 Mbps	102	5510.0	Not Required	16.0	No		10.0	No
				110	5550.0						
				134	5670.0						
		802.11ac (VHT80)	29.3 Mbps	106	5530.0	Not Required	16.0	No	9.7	10.0	Yes
	5.8 (U-NII 3)	802.11n (HT20)	6.5 Mbps	149	5745.0	16.3	16.5	No	Not Required	10.0	No
				157	5785.0	15.8					
				165	5825.0	15.7					
		802.11n (HT40)	13.5 Mbps	151	5755.0	Not Required	16.0	No		10.0	No
				159	5795.0						
		802.11ac (VHT20)	6.5 Mbps	149	5745.0	15.9	16.5	No		10.0	No
				157	5785.0	15.6					
				165	5825.0	15.4					
		802.11ac (VHT40)	13.5 Mbps	151	5755.0	Not Required	16.0	No		10.0	No
				159	5795.0						
		802.11ac (VHT80)	29.3 Mbps	155	5775.0	Not Required	16.0	No	9.5	10.0	Yes

Note(s):

1. 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.
2. When the same transmission mode configurations have the same maximum output power on the same channel for the 802.11 a/g/n/ac/ax modes, the channel in the lower order/sequence 802.11 mode (i.e. a, g, n ac) is selected.
3. When UNII band 2A’s specified maximum output power is higher or same than UNII band 1, 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 1
   - > 1.2 W/kg, both bands should be tested independently for SAR.

9.6 Bluetooth

Measured Results

Band (GHz)	Mode	Ch #	Freq. (MHz)	Maximum Average Power (dBm)	
				Meas Pwr	Tune-up Limit
2.4	GFSK	0	2402	13.0	14.0
		39	2441	13.4	
		78	2480	12.7	
	EDR, 8-DPSK	0	2402	5.1	
		39	2441	6.7	
		78	2480	5.6	
	LE, GFSK-1M	0	2402	5.9	9.0
		19	2440	6.9	
		39	2480	7.0	
	LE, GFSK-2M	0	2402	7.6	
		19	2440	8.7	
		39	2480	8.7	

Note(s):

SAR test is evaluated at GFSK mode in Bluetooth

Duty Factor Measured Results

Mode	Type	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)
GFSK	DH5	2.882	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 ≤ ¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

KDB 941225 D05 SAR for LTE Devices:

SAR test reduction is applied using the following criteria:

- Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB, and 50% RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel.
- When the reported SAR is > 0.8 W/kg, testing for other Channels is performed at the highest output power level for 1RB, and 50% RB configuration for that channel.
- Testing for 100% RB configuration is performed at the highest output power level for 100% RB configuration across the Low, Mid and High Channel when the highest reported SAR for 1 RB and 50% RB are > 0.8 W/kg. Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation < 1.45 W/kg.
- Testing for 16-QAM modulation is not required because the reported SAR for QPSK is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of QPSK.
- Testing for the other channel bandwidths is not required because the reported SAR for the highest channel bandwidth is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of the highest channel bandwidth.
- 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

Antenna	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	
Main.1	Head	GPRS 2 Slot	N/A	0	Left Touch	190	836.6	31.0	30.2	0.200	0.240	
					Left Tilt	190	836.6	31.0	30.2	0.109	0.131	
					Right Touch	190	836.6	31.0	30.2	0.209	0.251	1
					Right Tilt	190	836.6	31.0	30.2	0.096	0.115	
	Body-worn	GPRS 2 Slot	N/A	15	Rear	190	836.6	31.0	30.2	0.209	0.251	2
					Front	190	836.6	31.0	30.2	0.209	0.251	
	Hotspot	GPRS 2 Slot	N/A	10	Rear	190	836.6	31.0	30.2	0.310	0.373	3
					Front	190	836.6	31.0	30.2	0.253	0.304	
					Edge 3	190	836.6	31.0	30.2	0.198	0.238	
					Edge 4	190	836.6	31.0	30.2	0.084	0.101	

10.2 GSM1900

Antenna	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	
Main.2	Head	GPRS 2 Slot	N/A	0	Left Touch	661	1880.0	28.5	27.3	0.268	0.353	
					Left Tilt	661	1880.0	28.5	27.3	0.141	0.186	
					Right Touch	661	1880.0	28.5	27.3	0.392	0.516	4
					Right Tilt	661	1880.0	28.5	27.3	0.111	0.146	
	Body-worn	GPRS 2 Slot	N/A	15	Rear	661	1880.0	28.5	27.3	0.222	0.292	
					Front	661	1880.0	28.5	27.3	0.239	0.314	5
	Hotspot	GPRS 2 Slot	N/A	10	Rear	661	1880.0	28.5	27.3	0.418	0.550	
					Front	661	1880.0	28.5	27.3	0.452	0.595	6
					Edge 2	661	1880.0	28.5	27.3	0.263	0.346	
					Edge 3	661	1880.0	28.5	27.3	0.240	0.316	

10.3 W-CDMA Band II

Antenna	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	
Main.2	Head	Rel.99 RMC	Off	0	Left Touch	9400	1880.0	24.0	22.9	0.439	0.566	
					Left Tilt	9400	1880.0	24.0	22.9	0.250	0.322	
					Right Touch	9262	1852.4	24.0	22.8	0.590	0.776	
						9400	1880.0	24.0	22.9	0.665	0.858	
						9538	1907.6	24.0	22.9	0.712	0.908	7
					Right Tilt	9400	1880.0	24.0	22.9	0.179	0.231	
	Body-worn	Rel.99 RMC	Off	15	Rear	9400	1880.0	24.0	22.9	0.327	0.422	
					Front	9400	1880.0	24.0	22.9	0.370	0.477	8
	Hotspot	Rel.99 RMC	On	10	Rear	9400	1880.0	22.0	21.3	0.479	0.558	
					Front	9400	1880.0	22.0	21.3	0.543	0.633	9
					Edge 2	9400	1880.0	22.0	21.3	0.358	0.417	
					Edge 3	9400	1880.0	22.0	21.3	0.359	0.418	

10.4 W-CDMA Band IV

Antenna	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	
Main.2	Head	Rel.99 RMC	Off	0	Left Touch	1413	1732.6	24.0	22.4	0.226	0.324	
					Left Tilt	1413	1732.6	24.0	22.4	0.104	0.149	
					Right Touch	1413	1732.6	24.0	22.4	0.326	0.468	10
					Right Tilt	1413	1732.6	24.0	22.4	0.062	0.088	
	Body-worn	Rel.99 RMC	Off	15	Rear	1413	1732.6	24.0	22.4	0.338	0.485	
					Front	1413	1732.6	24.0	22.4	0.352	0.505	11
	Hotspot	Rel.99 RMC	On	10	Rear	1413	1732.6	21.0	19.4	0.422	0.610	12
					Front	1413	1732.6	21.0	19.4	0.392	0.566	
					Edge 2	1413	1732.6	21.0	19.4	0.176	0.254	
					Edge 3	1413	1732.6	21.0	19.4	0.261	0.377	
Antenna	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	
Main.2	Product Specific 10-g	Rel.99 RMC	Off	0	Rear	1312	1712.4	24.0	22.7	1.560	2.128	
						1413	1732.6	24.0	22.4	1.640	2.354	
						1513	1752.6	24.0	22.7	1.770	2.388	13

10.5 W-CDMA Band V

Antenna	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	
Main.1	Head	Rel.99 RMC	N/A	0	Left Touch	4183	836.6	24.5	23.2	0.360	0.490	14
					Left Tilt	4183	836.6	24.5	23.2	0.210	0.286	
					Right Touch	4183	836.6	24.5	23.2	0.326	0.444	
					Right Tilt	4183	836.6	24.5	23.2	0.171	0.233	
	Body-worn	Rel.99 RMC	N/A	15	Rear	4183	836.6	24.5	23.2	0.314	0.427	15
					Front	4183	836.6	24.5	23.2	0.302	0.411	
	Hotspot	Rel.99 RMC	N/A	10	Rear	4183	836.6	24.5	23.2	0.509	0.693	16
					Front	4183	836.6	24.5	23.2	0.469	0.638	
					Edge 3	4183	836.6	24.5	23.2	0.202	0.275	
					Edge 4	4183	836.6	24.5	23.2	0.131	0.178	

10.6 LTE Band 2 (20MHz Bandwidth)

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
Main.2	Head	QPSK	Off	0	Left Touch	19100	1900.0	1	99	24.0	23.0	0.540	0.682	
								50	24	23.0	22.0	0.423	0.531	
					Left Tilt	19100	1900.0	1	99	24.0	23.0	0.262	0.331	
								50	24	23.0	22.0	0.210	0.264	
					Right Touch	18700	1860.0	1	99	24.0	23.0	0.694	0.881	
						18900	1880.0	1	99	24.0	23.0	0.760	0.966	17
						19100	1900.0	1	99	24.0	23.0	0.753	0.951	
								50	24	23.0	22.0	0.600	0.753	
					Right Tilt	19100	1900.0	1	99	24.0	23.0	0.255	0.322	
								50	24	23.0	22.0	0.192	0.241	
	Body-worn	QPSK	Off	15	Rear	19100	1900.0	1	99	24.0	23.0	0.415	0.524	
								50	24	23.0	22.0	0.321	0.403	
					Front	19100	1900.0	1	99	24.0	23.0	0.428	0.540	18
								50	24	23.0	22.0	0.329	0.413	
	Hotspot	QPSK	On	10	Rear	19100	1900.0	1	99	22.5	21.8	0.527	0.623	
								50	24	22.5	21.8	0.519	0.612	
					Front	19100	1900.0	1	99	22.5	21.8	0.631	0.746	19
								50	24	22.5	21.8	0.607	0.716	
					Edge 2	19100	1900.0	1	99	22.5	21.8	0.442	0.523	
								50	24	22.5	21.8	0.421	0.497	
					Edge 3	19100	1900.0	1	99	22.5	21.8	0.262	0.310	
								50	24	22.5	21.8	0.252	0.297	

10.7 LTE Band 5 (10MHz Bandwidth)

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
Main.1	Head	QPSK	N/A	0	Left Touch	20525	836.5	1	25	24.5	23.0	0.321	0.452	
								25	12	23.5	22.0	0.255	0.359	
					Left Tilt	20525	836.5	1	25	24.5	23.0	0.174	0.245	
								25	12	23.5	22.0	0.138	0.194	
					Right Touch	20525	836.5	1	25	24.5	23.0	0.328	0.462	20
								25	12	23.5	22.0	0.255	0.359	
					Right Tilt	20525	836.5	1	25	24.5	23.0	0.165	0.232	
								25	12	23.5	22.0	0.130	0.183	
	Body-worn	QPSK	N/A	15	Rear	20525	836.5	1	25	24.5	23.0	0.275	0.387	21
								25	12	23.5	22.0	0.219	0.309	
					Front	20525	836.5	1	25	24.5	23.0	0.260	0.366	
								25	12	23.5	22.0	0.207	0.292	
	Hotspot	QPSK	N/A	10	Rear	20525	836.5	1	25	24.5	23.0	0.451	0.635	22
								25	12	23.5	22.0	0.360	0.507	
					Front	20525	836.5	1	25	24.5	23.0	0.427	0.602	
								25	12	23.5	22.0	0.340	0.479	
					Edge 3	20525	836.5	1	25	24.5	23.0	0.211	0.297	
								25	12	23.5	22.0	0.172	0.242	
					Edge 4	20525	836.5	1	25	24.5	23.0	0.102	0.144	
								25	12	23.5	22.0	0.082	0.115	

10.8 LTE Band 7 (20MHz Bandwidth)

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
Main.2	Head	QPSK	N/A	0	Left Touch	20850	2510.0	1	99	24.0	22.9	0.643	0.828	
								50	24	23.0	22.0	0.541	0.680	
						21100	2535.0	1	99	24.0	22.6	0.502	0.692	
						21350	2560.0	1	99	24.0	22.8	0.492	0.647	
					Left Tilt	20850	2510.0	1	99	24.0	22.9	0.245	0.315	
								50	24	23.0	22.0	0.213	0.268	
					Right Touch	20850	2510.0	1	99	24.0	22.9	0.931	1.198	23
								50	24	23.0	22.0	0.767	0.964	
								100	0	23.0	22.0	0.770	0.967	
						21100	2535.0	1	99	24.0	22.6	0.808	1.115	
								50	24	23.0	21.7	0.654	0.882	
						21350	2560.0	1	99	24.0	22.8	0.828	1.088	
								50	24	23.0	21.9	0.672	0.859	
					Right Tilt	20850	2510.0	1	99	24.0	22.9	0.203	0.261	
								50	24	23.0	22.0	0.165	0.207	
	Body-worn	QPSK	N/A	15	Rear	20850	2510.0	1	99	24.0	22.9	0.276	0.355	
								50	24	23.0	22.0	0.223	0.280	
					Front	20850	2510.0	1	99	24.0	22.9	0.306	0.394	24
								50	24	23.0	22.0	0.249	0.313	
	Hotspot	QPSK	N/A	10	Rear	20850	2510.0	1	99	24.0	22.9	0.470	0.605	
								50	24	23.0	22.0	0.381	0.479	
					Front	20850	2510.0	1	99	24.0	22.9	0.511	0.658	25
								50	24	23.0	22.0	0.417	0.524	
					Edge 2	20850	2510.0	1	99	24.0	22.9	0.383	0.493	
								50	24	23.0	22.0	0.301	0.378	
					Edge 3	20850	2510.0	1	99	24.0	22.9	0.210	0.270	
								50	24	23.0	22.0	0.179	0.225	

10.9 LTE Band 12 (10MHz Bandwidth)

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
Main.1	Head	QPSK	N/A	0	Left Touch	23095	707.5	1	0	24.5	23.3	0.232	0.308	26
								25	12	23.5	22.3	0.214	0.283	
					Left Tilt	23095	707.5	1	0	24.5	23.3	0.116	0.154	
								25	12	23.5	22.3	0.111	0.147	
					Right Touch	23095	707.5	1	0	24.5	23.3	0.217	0.288	
								25	12	23.5	22.3	0.190	0.251	
					Right Tilt	23095	707.5	1	0	24.5	23.3	0.113	0.150	
								25	12	23.5	22.3	0.097	0.128	
	Body-worn	QPSK	N/A	15	Rear	23095	707.5	1	0	24.5	23.3	0.311	0.413	
								25	12	23.5	22.3	0.260	0.344	
					Front	23095	707.5	1	0	24.5	23.3	0.347	0.461	27
								25	12	23.5	22.3	0.286	0.378	
	Hotspot	QPSK	N/A	10	Rear	23095	707.5	1	0	24.5	23.3	0.328	0.436	
								25	12	23.5	22.3	0.272	0.360	
					Front	23095	707.5	1	0	24.5	23.3	0.367	0.488	28
								25	12	23.5	22.3	0.302	0.399	
					Edge 3	23095	707.5	1	0	24.5	23.3	0.131	0.174	
								25	12	23.5	22.3	0.122	0.161	
					Edge 4	23095	707.5	1	0	24.5	23.3	0.283	0.376	
								25	12	23.5	22.3	0.250	0.331	

10.10 LTE Band 14 (10MHz Bandwidth)

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
Main.1	Head	QPSK	N/A	0	Left Touch	23330	793.0	1	49	24.5	23.3	0.313	0.409	29
								25	25	23.5	23.3	0.251	0.260	
					Left Tilt	23330	793.0	1	49	24.5	23.3	0.194	0.253	
								25	25	23.5	23.3	0.155	0.161	
					Right Touch	23330	793.0	1	49	24.5	23.3	0.295	0.385	
								25	25	23.5	23.3	0.238	0.247	
					Right Tilt	23330	793.0	1	49	24.5	23.3	0.163	0.213	
								25	25	23.5	23.3	0.132	0.137	
	Body-worn	QPSK	N/A	15	Rear	23330	793.0	1	49	25.0	23.3	0.274	0.402	
								25	25	24.0	23.3	0.224	0.261	
					Front	23330	793.0	1	49	25.0	23.3	0.289	0.424	30
								25	25	24.0	23.3	0.250	0.291	
	Hotspot	QPSK	N/A	10	Rear	23330	793.0	1	49	25.0	23.3	0.411	0.602	31
								25	25	24.0	23.3	0.337	0.392	
					Front	23330	793.0	1	49	25.0	23.3	0.342	0.501	
								25	25	24.0	23.3	0.281	0.327	
					Edge 3	23330	793.0	1	49	25.0	23.3	0.019	0.028	
								25	25	24.0	23.3	0.014	0.017	
					Edge 4	23330	793.0	1	49	25.0	23.3	0.162	0.237	
								25	25	24.0	23.3	0.139	0.162	

10.11 LTE Band 30 (20MHz Bandwidth)

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
Main.2	Head	QPSK	N/A	0	Left Touch	27710	2310.0	1	25	23.5	21.7	0.243	0.370	
								25	12	22.5	20.7	0.192	0.290	
					Left Tilt	27710	2310.0	1	25	23.5	21.7	0.226	0.344	
								25	12	22.5	20.7	0.180	0.272	
					Right Touch	27710	2310.0	1	25	23.5	21.7	0.428	0.651	32
								25	12	22.5	20.7	0.341	0.515	
					Right Tilt	27710	2310.0	1	25	23.5	21.7	0.151	0.230	
								25	12	22.5	20.7	0.120	0.181	
	Body-worn	QPSK	N/A	15	Rear	27710	2310.0	1	25	23.5	21.7	0.110	0.167	
								25	12	22.5	20.7	0.087	0.131	
					Front	27710	2310.0	1	25	23.5	21.7	0.177	0.269	33
								25	12	22.5	20.7	0.142	0.214	
	Hotspot	QPSK	N/A	10	Rear	27710	2310.0	1	25	23.5	21.7	0.197	0.300	
								25	12	22.5	20.7	0.155	0.234	
					Front	27710	2310.0	1	25	23.5	21.7	0.347	0.528	34
								25	12	22.5	20.7	0.273	0.412	
					Edge 2	27710	2310.0	1	25	23.5	21.7	0.231	0.351	
								25	12	22.5	20.7	0.185	0.279	
					Edge 3	27710	2310.0	1	25	23.5	21.7	0.090	0.137	
								25	12	22.5	20.7	0.071	0.108	

10.12 LTE Band 40 (10MHz Bandwidth)

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
Main.2	Head	QPSK	N/A	0	Left Touch	38750	2310.0	1	25	12.0	11.7	0.018	0.019	
								25	12	12.0	11.7	0.019	0.020	
					Left Tilt	38750	2310.0	1	25	12.0	11.7	0.016	0.017	
								25	12	12.0	11.7	0.016	0.017	
					Right Touch	38750	2310.0	1	25	12.0	11.7	0.042	0.045	35
								25	12	12.0	11.7	0.042	0.044	
					Right Tilt	38750	2310.0	1	25	12.0	11.7	0.011	0.012	
								25	12	12.0	11.7	0.011	0.012	
	Body-worn	QPSK	N/A	15	Rear	38750	2310.0	1	25	12.0	11.7	0.012	0.013	
								25	12	12.0	11.7	0.012	0.012	
					Front	38750	2310.0	1	25	12.0	11.7	0.012	0.013	
								25	12	12.0	11.7	0.014	0.014	36
	Hotspot	QPSK	N/A	10	Rear	38750	2310.0	1	25	12.0	11.7	0.020	0.021	
								25	12	12.0	11.7	0.023	0.024	
					Front	38750	2310.0	1	25	12.0	11.7	0.031	0.034	
								25	12	12.0	11.7	0.032	0.034	37
					Edge 2	38750	2310.0	1	25	12.0	11.7	0.018	0.019	
								25	12	12.0	11.7	0.018	0.019	
					Edge 3	38750	2310.0	1	25	12.0	11.7	0.011	0.012	
								25	12	12.0	11.7	0.012	0.013	

10.13 LTE Band 41 (20MHz Bandwidth)

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
Main.2	Head	QPSK	N/A	0	Left Touch	40620	2593.0	1	49	24.0	22.3	0.045	0.067	
								50	24	23.0	21.3	0.036	0.053	
					Left Tilt	40620	2593.0	1	49	24.0	22.3	0.031	0.046	
								50	24	23.0	21.3	0.024	0.036	
					Right Touch	40620	2593.0	1	49	24.0	22.3	0.088	0.131	38
								50	24	23.0	21.3	0.069	0.102	
					Right Tilt	40620	2593.0	1	49	24.0	22.3	0.054	0.081	
								50	24	23.0	21.3	0.040	0.059	
	Body-worn	QPSK	N/A	15	Rear	40620	2593.0	1	49	24.0	22.3	0.052	0.078	
								50	24	23.0	21.3	0.041	0.061	
					Front	40620	2593.0	1	49	24.0	22.3	0.061	0.091	39
								50	24	23.0	21.3	0.047	0.070	
	Hotspot	QPSK	N/A	10	Rear	40620	2593.0	1	49	24.0	22.3	0.090	0.134	
								50	24	23.0	21.3	0.070	0.104	
					Front	40620	2593.0	1	49	24.0	22.3	0.101	0.151	40
								50	24	23.0	21.3	0.080	0.118	
					Edge 2	40620	2593.0	1	49	24.0	22.3	0.066	0.098	
								50	24	23.0	21.3	0.065	0.095	
					Edge 3	40620	2593.0	1	49	24.0	22.3	0.047	0.070	
								50	24	23.0	21.3	0.039	0.058	

10.14 LTE Band 66 (20MHz Bandwidth)

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
Main.2	Head	QPSK	Off	0	Left Touch	132572	1770.0	1	49	24.5	23.3	0.370	0.484	
								50	24	23.5	22.4	0.298	0.385	
					Left Tilt	132572	1770.0	1	49	24.5	23.3	0.165	0.216	
								50	24	23.5	22.4	0.135	0.174	
					Right Touch	132572	1770.0	1	49	24.5	23.3	0.565	0.739	41
								50	24	23.5	22.4	0.469	0.606	
					Right Tilt	132572	1770.0	1	49	24.5	23.3	0.109	0.143	
								50	24	23.5	22.4	0.087	0.112	
	Body-worn	QPSK	Off	15	Rear	132572	1770.0	1	49	24.5	23.3	0.511	0.668	42
								50	24	23.5	22.4	0.416	0.538	
					Front	132572	1770.0	1	49	24.5	23.3	0.508	0.664	
								50	24	23.5	22.4	0.418	0.540	
	Hotspot	QPSK	On	10	Rear	132572	1770.0	1	49	21.5	20.3	0.489	0.641	
								50	24	21.5	20.4	0.497	0.644	
					Front	132572	1770.0	1	49	21.5	20.3	0.505	0.662	
								50	24	21.5	20.4	0.514	0.666	43
					Edge 2	132572	1770.0	1	49	21.5	20.3	0.255	0.334	
								50	24	21.5	20.4	0.261	0.338	
					Edge 3	132572	1770.0	1	49	21.5	20.3	0.344	0.451	
								50	24	21.5	20.4	0.352	0.456	

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		10-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
Main.2	Product Specific-10g	QPSK	Off	0	Rear	132072	1720.0	1	49	24.5	23.0	1.440	2.030	
								50	24	23.5	22.1	1.390	1.939	
						132322	1745.0	1	49	24.5	23.2	1.570	2.097	
								50	24	23.5	22.3	1.630	2.133	
						132572	1770.0	1	49	24.5	23.3	1.770	2.315	
								50	24	23.5	22.4	1.630	2.107	
								100	0	23.5	22.4	1.420	1.841	
					Front	132072	1720.0	1	49	24.5	23.0	1.450	2.044	
								50	24	23.5	22.1	1.390	1.939	
						132322	1745.0	1	49	24.5	23.2	1.670	2.231	
								50	24	23.5	22.3	1.620	2.119	
						132572	1770.0	1	49	24.5	23.3	2.060	2.694	
								50	24	23.5	22.4	1.630	2.107	
								100	0	23.5	22.4	2.280	2.957	44

10.15 Wi-Fi (DTS Band)

Antenna	Frequency Band	Mode	RF Exposure Conditions	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Duty Cycle (%)	Power (dBm)		1-g SAR (W/kg)		Note	Plot No.
											Tune-up limit	Meas.	Meas.	Scaled		
SISO (WiFi Ant.1)	2.4GHz	802.11b 1 Mbps	Head	On	0	Left Touch	6	2437.0	0.273	99.7	16.0	15.8	0.213	0.226	1	
						Left Tilt	6	2437.0	0.151	99.7	16.0	15.8				
						Right Touch	6	2437.0	0.115	99.7	16.0	15.8				
						Rightt Tilt	6	2437.0	0.071	99.7	16.0	15.8				
			Body-worn	Off	15	Rear	6	2437.0	0.168	99.7	19.5	18.9	0.148	0.170	1	
						Front	6	2437.0	0.068	99.7	19.5	18.9				
			Hotspot	Off	10	Rear	6	2437.0	0.282	99.7	19.5	18.9	0.230	0.264	1	
						Front	6	2437.0	0.104	99.7	19.5	18.9	0.080	0.092	4	
						Edge 1	6	2437.0	0.039	99.7	19.5	18.9				
						Edge 2	6	2437.0	0.250	99.7	19.5	18.9				
SISO (WiFi Ant.2)	2.4GHz	802.11b 1 Mbps	Head	On	0	Left Touch	6	2437.0	0.141	99.7	16.0	15.8				
						Left Tilt	6	2437.0	0.060	99.7	16.0	15.8				
						Right Touch	6	2437.0	0.416	99.7	16.0	15.8	0.305	0.324	1	45
						Rightt Tilt	6	2437.0	0.174	99.7	16.0	15.8				
			Body-worn	Off	15	Rear	6	2437.0	0.326	99.7	19.5	19.1	0.240	0.266	1	46
						Front	6	2437.0	0.111	99.7	19.5	19.1				
			Hotspot	Off	10	Rear	6	2437.0	0.551	99.7	19.5	19.1	0.470	0.522		47
						Front	6	2437.0	0.164	99.7	19.5	19.1	0.110	0.122	4	
						Edge 1	6	2437.0	0.025	99.7	19.5	19.1				
						Edge 4	6	2437.0	0.294	99.7	19.5	19.1	0.251	0.279	2	
MIMO (WiFi Ant.1)	2.4GHz	802.11n 6.5 Mbps	Head	On	0	Left Touch	6	2437.0	0.287	97.9	16.0	15.6				
						Left Tilt	6	2437.0	0.134	97.9	16.0	15.6				
						Right Touch	6	2437.0	0.384	97.9	16.0	15.6				
						Rightt Tilt	6	2437.0	0.155	97.9	16.0	15.6				
			Body-worn	Off	15	Rear	6	2437.0	0.151	97.9	17.0	16.4	0.111	0.130	1	48
						Front	6	2437.0	0.046	97.9	17.0	16.4	0.035	0.041	4	
			Hotspot	Off	10	Rear	6	2437.0	0.294	97.9	17.0	16.4				
						Front	6	2437.0	0.082	97.9	17.0	16.4				
						Edge 1	6	2437.0	0.032	97.9	17.0	16.4				
						Edge 2	6	2437.0	0.131	97.9	17.0	16.4				
						Edge 4	6	2437.0	0.102	97.9	17.0	16.4				
MIMO (WiFi Ant.2)	2.4GHz	802.11n 6.5 Mbps	Head	On	0	Left Touch	6	2437.0	0.287	97.9	16.0	15.3				
						Left Tilt	6	2437.0	0.134	97.9	16.0	15.3				
						Right Touch	6	2437.0	0.384	97.9	16.0	15.3	0.289	0.351	1	49
						Rightt Tilt	6	2437.0	0.155	97.9	16.0	15.3				
			Body-worn	Off	15	Rear	6	2437.0	0.151	97.9	17.0	16.2				
						Front	6	2437.0	0.046	97.9	17.0	16.2				
			Hotspot	Off	10	Rear	6	2437.0	0.294	97.9	17.0	16.2	0.211	0.260	1	50
						Front	6	2437.0	0.082	97.9	17.0	16.2	0.070	0.086	4	
						Edge 1	6	2437.0	0.032	97.9	17.0	16.2				
						Edge 2	6	2437.0	0.131	97.9	17.0	16.2				
						Edge 4	6	2437.0	0.102	97.9	17.0	16.2				

Note(s):

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

10.16 Wi-Fi (U-NII Bands)

Antenna	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)		Note	Plot No.
											Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled		
SISO (WiFI Ant.1)	5.3 GHz U-NII 2A	802.11ac VHT 80 29.3 Mbps	Head	On	0	Left Touch	58	5290.0	0.071	91.4	10.0	9.6	0.019	0.023			1	
						Left Tilt	58	5290.0	0.024	91.4	10.0	9.6						
						Right Touch	58	5290.0	0.013	91.4	10.0	9.6						
						Right Tilt	58	5290.0	0.010	91.4	10.0	9.6						
		802.11a 6 Mbps	Body-worn	Off	15	Rear	52	5260.0	0.773	98.0	18.0	17.9	0.346	0.364			1	51
						Front	52	5260.0	0.070	98.0	18.0	17.9						
			Product Specific 10-g	Off	0	Rear	52	5260.0	5.801	98.0	18.0	17.9			0.822	0.866	1	
						Front	52	5260.0	0.967	98.0	18.0	17.9			0.110	0.116	4	
						Edge 1	52	5260.0	0.117	98.0	18.0	17.9						
						Edge 2	52	5260.0	2.079	98.0	18.0	17.9						
SISO (WiFI Ant.2)	5.3 GHz U-NII 2A	802.11ac VHT 80 29.3 Mbps	Head	On	0	Left Touch	58	5290.0	0.037	91.4	10.0	9.8						
						Left Tilt	58	5290.0	0.046	91.4	10.0	9.8						
						Right Touch	58	5290.0	0.096	91.4	10.0	9.8	0.055	0.063			1	52
						Right Tilt	58	5290.0	0.037	91.4	10.0	9.8						
		802.11a 6 Mbps	Body-worn	Off	15	Rear	52	5260.0	0.421	98.0	18.0	17.9	0.226	0.235			1	
						Front	52	5260.0	0.132	98.0	18.0	17.9						
			Product Specific 10-g	Off	0	Rear	52	5260.0	8.492	98.0	18.0	17.9			1.040	1.081		53
						Front	52	5260.0	1.250	98.0	18.0	17.9			0.208	0.216	4	
						Edge 1	52	5260.0	0.189	98.0	18.0	17.9						
						Edge 4	52	5260.0	3.057	98.0	18.0	17.9			0.397	0.412	2	
MIMO (WiFI Ant.1)	5.3 GHz U-NII 2A	802.11ac VHT 80 29.3 Mbps	Head	On	0	Left Touch	58	5290.0	0.041	91.4	10.0	9.3						
						Left Tilt	58	5290.0	0.035	91.4	10.0	9.3						
						Right Touch	58	5290.0	0.122	91.4	10.0	9.3						
						Right Tilt	58	5290.0	0.035	91.4	10.0	9.3						
		802.11n HT 20 6.5 Mbps	Body-worn	Off	15	Rear	56	5280.0	0.743	97.8	18.0	17.6	0.356	0.396			1	54
						Front	56	5280.0	0.120	97.8	18.0	17.6	0.036	0.040			4	
			Product Specific 10-g	Off	0	Rear	56	5280.0	8.020	97.8	18.0	17.6			0.637	0.709	1	
						Front	56	5280.0	2.438	97.8	18.0	17.6						
						Edge 1	56	5280.0	0.222	97.8	18.0	17.6						
						Edge 2	56	5280.0	2.090	97.8	18.0	17.6						
						Edge 4	56	5280.0	2.870	97.8	18.0	17.6						
MIMO (WiFI Ant.2)	5.3 GHz U-NII 2A	802.11ac VHT 80 29.3 Mbps	Head	On	0	Left Touch	58	5290.0	0.041	91.4	10.0	9.7						
						Left Tilt	58	5290.0	0.035	91.4	10.0	9.7						
						Right Touch	58	5290.0	0.122	91.4	10.0	9.7	0.043	0.051			1	55
						Right Tilt	58	5290.0	0.035	91.4	10.0	9.7						
		802.11n HT 20 6.5 Mbps	Body-worn	Off	15	Rear	56	5280.0	0.743	97.8	18.0	17.8	0.266	0.288			1	
						Front	56	5280.0	0.120	97.8	18.0	17.8	0.057	0.062			4	
			Product Specific 10-g	Off	0	Rear	56	5280.0	8.020	97.8	18.0	17.8			1.010	1.093		56
						Front	56	5280.0	2.438	97.8	18.0	17.8			0.199	0.215	4	
						Edge 1	56	5280.0	0.222	97.8	18.0	17.8						
						Edge 2	56	5280.0	2.090	97.8	18.0	17.8						
						Edge 4	56	5280.0	2.870	97.8	18.0	17.8			0.406	0.440	2	

Note(s):

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

Antenna	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)		Note	Plot No.
											Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled		
SISO (WiFI Ant.1)	5.5 GHz U-NII 2C	802.11ac VHT 80 29.3 Mbps	Head	On	0	Left Touch	106	5530.0	0.080	91.4	10.0	9.8	0.027	0.031			1	
						Left Tilt	106	5530.0	0.028	91.4	10.0	9.8						
						Right Touch	106	5530.0	0.030	91.4	10.0	9.8						
						Right Tilt	106	5530.0	0.022	91.4	10.0	9.8						
		802.11a 6 Mbps	Body-worn	Off	15	Rear	100	5500.0	0.977	98.0	18.0	17.8	0.439	0.472				57
						Front	100	5500.0	0.139	98.0	18.0	17.8	0.059	0.064			2	
			Product Specific 10-g	Off	0	Rear	100	5500.0	25.600	98.0	18.0	17.8			1.470	1.581		58
						Front	100	5500.0	0.851	98.0	18.0	17.8			0.141	0.152	4	
						Edge 1	100	5500.0	0.194	98.0	18.0	17.8						
						Edge 2	100	5500.0	3.310	98.0	18.0	17.8			0.576	0.619	2	
SISO (WiFI Ant.2)	5.5 GHz U-NII 2C	802.11ac VHT 80 29.3 Mbps	Head	On	0	Left Touch	106	5530.0	0.053	91.4	10.0	9.9						
						Left Tilt	106	5530.0	0.047	91.4	10.0	9.9						
						Right Touch	106	5530.0	0.171	91.4	10.0	9.9	0.061	0.068			1	59
						Right Tilt	106	5530.0	0.099	91.4	10.0	9.9						
		802.11a 6 Mbps	Body-worn	Off	15	Rear	100	5500.0	0.901	98.0	18.0	17.8	0.438	0.468				
						Front	100	5500.0	0.264	98.0	18.0	17.8	0.115	0.123			2	
			Product Specific 10-g	Off	0	Rear	100	5500.0	10.200	98.0	18.0	17.8			1.060	1.132		
						Front	100	5500.0	1.686	98.0	18.0	17.8			0.308	0.329	4	
						Edge 1	100	5500.0	0.386	98.0	18.0	17.8						
						Edge 4	100	5500.0	5.040	98.0	18.0	17.8			0.587	0.627	2	
MIMO (WiFI Ant.1)	5.5 GHz U-NII 2C	802.11ac VHT 80 29.3 Mbps	Head	On	0	Left Touch	106	5530.0	0.068	91.4	10.0	9.5						
						Left Tilt	106	5530.0	0.035	91.4	10.0	9.5						
						Right Touch	106	5530.0	0.174	91.4	10.0	9.5						
						Right Tilt	106	5530.0	0.075	91.4	10.0	9.5						
		802.11n HT 20 6.5 Mbps	Body-worn	Off	15	Rear	112	5560.0	0.927	97.8	18.0	17.6	0.361	0.405				
						Front	112	5560.0	0.199	97.8	18.0	17.6	0.056	0.063			2	
			Product Specific 10-g	Off	0	Rear	112	5560.0	16.627	97.8	18.0	17.6			1.210	1.359		60
						Front	112	5560.0	2.475	97.8	18.0	17.6						
						Edge 1	112	5560.0	0.708	97.8	18.0	17.6						
						Edge 2	112	5560.0	3.430	97.8	18.0	17.6			0.456	0.512	2	
						Edge 4	112	5560.0	3.029	97.8	18.0	17.6						
MIMO (WiFI Ant.2)	5.5 GHz U-NII 2C	802.11ac VHT 80 29.3 Mbps	Head	On	0	Left Touch	106	5530.0	0.068	91.4	10.0	9.7						
						Left Tilt	106	5530.0	0.035	91.4	10.0	9.7						
						Right Touch	106	5530.0	0.174	91.4	10.0	9.7	0.082	0.096			1	61
						Right Tilt	106	5530.0	0.075	91.4	10.0	9.7						
		802.11n HT 20 6.5 Mbps	Body-worn	Off	15	Rear	112	5560.0	0.927	97.8	18.0	17.6	0.476	0.532				62
						Front	112	5560.0	0.199	97.8	18.0	17.6	0.095	0.106			2	
			Product Specific 10-g	Off	0	Rear	112	5560.0	16.627	97.8	18.0	17.6						
						Front	112	5560.0	2.475	97.8	18.0	17.6			0.322	0.360	4	
						Edge 1	112	5560.0	0.708	97.8	18.0	17.6						
						Edge 2	112	5560.0	3.430	97.8	18.0	17.6						
						Edge 4	112	5560.0	3.029	97.8	18.0	17.6						

Note(s):

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

Antenna	Frequency Band	Mode	RF Exposure Conditions	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Duty Cycle (%)	Power (dBm)		1-g SAR (W/kg)		Note	Plot No.
											Tune-up limit	Meas.	Meas.	Scaled		
SISO (WiFI Ant.1)	5.8 GHz U-NII 3	802.11ac VHT 80 29.3 Mbps	Head	On	0	Left Touch	155	5775.0	0.037	91.4	10.0	10.0	0.012	0.013	1	
						Left Tilt	155	5775.0	0.035	91.4	10.0	10.0				
						Right Touch	155	5775.0	0.020	91.4	10.0	10.0				
						Right Tilt	155	5775.0	0.021	91.4	10.0	10.0				
		802.11a 6 Mbps	Body-worn	Off	15	Rear	149	5745.0	0.260	98.0	16.5	16.1	0.114	0.128	1	
						Front	149	5745.0	0.077	98.0	16.5	16.1				
			Hotspot	Off	10	Rear	149	5745.0	0.405	98.0	16.5	16.1	0.174	0.195	4	
						Front	149	5745.0	0.098	98.0	16.5	16.1				
						Edge 1	149	5745.0	0.054	98.0	16.5	16.1				
						Edge 2	149	5745.0	0.413	98.0	16.5	16.1	0.165	0.185	1	
SISO (WiFI Ant.2)	5.8 GHz U-NII 3	802.11ac VHT 80 29.3 Mbps	Head	On	0	Left Touch	155	5775.0	0.014	91.4	10.0	9.9				
						Left Tilt	155	5775.0	0.024	91.4	10.0	9.9				
						Right Touch	155	5775.0	0.085	91.4	10.0	9.9	0.029	0.033	1	63
						Right Tilt	155	5775.0	0.052	91.4	10.0	9.9				
		802.11a 6 Mbps	Body-worn	Off	15	Rear	149	5745.0	0.505	98.0	16.5	16.3	0.257	0.276	1	64
						Front	149	5745.0	0.098	98.0	16.5	16.3				
			Hotspot	Off	10	Rear	149	5745.0	0.759	98.0	16.5	16.3	0.370	0.397	1	65
						Front	149	5745.0	0.127	98.0	16.5	16.3				
						Edge 1	149	5745.0	0.069	98.0	16.5	16.3				
						Edge 4	149	5745.0	0.396	98.0	16.5	16.3	0.182	0.195	4	
MIMO (WiFI Ant.1)	5.8 GHz U-NII 3	802.11ac VHT 80 29.3 Mbps	Head	On	0	Left Touch	155	5775.0	0.040	91.4	10.0	9.6				
						Left Tilt	155	5775.0	0.030	91.4	10.0	9.6				
						Right Touch	155	5775.0	0.060	91.4	10.0	9.6				
						Right Tilt	155	5775.0	0.026	91.4	10.0	9.6				
		802.11n HT 20 6.5 Mbps	Body-worn	Off	15	Rear	149	5745.0	0.520	97.8	16.5	16.3				
						Front	149	5745.0	0.101	97.8	16.5	16.3				
			Hotspot	Off	10	Rear	149	5745.0	0.633	97.8	16.5	16.3				
						Front	149	5745.0	0.181	97.8	16.5	16.3				
						Edge 1	149	5745.0	0.093	97.8	16.5	16.3				
						Edge 2	149	5745.0	0.388	97.8	16.5	16.3				
						Edge 4	149	5745.0	0.364	97.8	16.5	16.3				
MIMO (WiFI Ant.2)	5.8 GHz U-NII 3	802.11ac VHT 80 29.3 Mbps	Head	On	0	Left Touch	155	5775.0	0.040	91.4	10.0	9.5				
						Left Tilt	155	5775.0	0.030	91.4	10.0	9.5				
						Right Touch	155	5775.0	0.060	91.4	10.0	9.5	0.020	0.025	1	66
						Right Tilt	155	5775.0	0.026	91.4	10.0	9.5				
		802.11n HT 20 6.5 Mbps	Body-worn	Off	15	Rear	149	5745.0	0.520	97.8	16.5	16.3	0.258	0.277	1	67
						Front	149	5745.0	0.101	97.8	16.5	16.3				
			Hotspot	Off	10	Rear	149	5745.0	0.633	97.8	16.5	16.3	0.344	0.370	1	68
						Front	149	5745.0	0.181	97.8	16.5	16.3				
						Edge 1	149	5745.0	0.093	97.8	16.5	16.3				
						Edge 2	149	5745.0	0.388	97.8	16.5	16.3				
						Edge 4	149	5745.0	0.364	97.8	16.5	16.3				

Note(s):

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

10.17 Bluetooth

Antenna	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	
WiFi Ant.2	2.4GHz	GFSK	Head	0	Left Touch	39	2441.0	76.9	14.0	13.4	0.037	0.056	
					Left Tilt	39	2441.0	76.9	14.0	13.4	0.017	0.026	
					Right Touch	39	2441.0	76.9	14.0	13.4	0.112	0.168	69
					Rightt Tilt	39	2441.0	76.9	14.0	13.4	0.052	0.078	
			Body-worn	15	Rear	39	2441.0	76.9	14.0	13.4	0.047	0.071	70
					Front	39	2441.0	76.9	14.0	13.4	0.015	0.023	
			Hotspot	10	Rear	39	2441.0	76.9	14.0	13.4	0.103	0.155	71
					Front	39	2441.0	76.9	14.0	13.4	0.027	0.040	
					Edge 1	39	2441.0	76.9	14.0	13.4	0.004	0.007	
					Edge 4	39	2441.0	76.9	14.0	13.4	0.046	0.069	

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 (~ 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
700	LTE Band 12	Hotspot	Front	No	0.367	N/A	N/A
	LTE Band 14	Hotspot	Rear	No	0.411	N/A	N/A
835	GSM 850	Hotspot	Rear	No	0.310	N/A	N/A
	WCDMA Band V	Hotspot	Rear	No	0.509	N/A	N/A
	LTE Band 5	Hotspot	Rear	No	0.451	N/A	N/A
1750	WCDMA Band IV	Hotspot	Rear	No	0.422	N/A	N/A
	LTE Band 66	Head	Right Touch	No	0.565	N/A	N/A
1900	GSM 1900	Hotspot	Front	No	0.452	N/A	N/A
	WCDMA Band II	Head	Right Touch	No	0.712	N/A	N/A
	LTE Band 2	Head	Right Touch	No	0.760	N/A	N/A
2300	LTE Band 30	Head	Right Touch	No	0.428	N/A	N/A
	LTE Band 40	Head	Right Touch	No	0.042	N/A	N/A
2400	Wi-Fi 802.11b/g/n	Hotspot	Rear	No	0.470	N/A	N/A
	Bluetooth	Head	Right Touch	No	0.112	N/A	N/A
2600	LTE Band 7	Head	Right Touch	Yes	0.931	0.924	1.01
	LTE Band 41	Hotspot	Front	No	0.101	N/A	N/A
5300	Wi-Fi 802.11a/n	Body	Rear	No	0.356	N/A	N/A
5500	Wi-Fi 802.11a/n	Body	Rear	No	0.476	N/A	N/A
5800	Wi-Fi 802.11a/n	Hotspot	Rear	No	0.370	N/A	N/A

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	Product specific 10g	Rear	No	1.770	N/A	N/A
	LTE Band 66	Product specific 10g	Front	No	2.280	2.080	1.10
5300	Wi-Fi 802.11a/n	Product specific 10g	Rear	No	1.040	N/A	N/A
5500	Wi-Fi 802.11a/n	Product specific 10g	Rear	No	1.470	N/A	N/A

12 DUT Holder Perturbations

In accordance with published DUT Holder Perturbations in Oct.2016 TCB workshop,

When Highest reported SAR is over 1.2 or 3.0 W/kg (1-g or 10-g respectively), Holder perturbation verification is required for each antenna, using the highest configuration among all applicable frequency bands. Both Head test and Body test (Edge 1-4 sides) are evaluated with DUT holder. Both Front and Rear sides are evaluated without DUT holder. (Details of test setup are refer to Appendix A.)

So we are only consider about Head test and Body test (Edge 1-4 sides).

All highest SAR level is not over 1.2 or 3.0 W/kg (1-g or 10-g respectively) in All bands.

Please refer to Section 10. **So DUT Holder perturbations verification are not required.**

13 Simultaneous Transmission SAR Analysis

Simultaneous Transmission Condition

RF Exposure Condition	Item	Capable Transmit Configurations
Head & Body-worn & Hotspot & Product Specific 10-g	1	GSM (Voice/GPRS) + DTS Ant.1 (and/or) DTS Ant.2
	2	GSM (Voice/GPRS) + UNII Ant.1 (and/or) UNII Ant.2
	3	GSM (Voice/GPRS) + BT
	4	GSM (Voice/GPRS) + UNII Ant.1 (and/or) UNII Ant.2 + BT
	5	GSM (Voice/GPRS) + ***RSDB scenarios***
	6	W-CDMA + DTS Ant.1 (and/or) DTS Ant.2
	7	W-CDMA + UNII Ant.1 (and/or) UNII Ant.2
	8	W-CDMA + BT
	9	W-CDMA + UNII Ant.1 (and/or) UNII Ant.2 + BT
	10	W-CDMA + ***RSDB scenarios***
	11	LTE + DTS Ant.1 (and/or) DTS Ant.2
	12	LTE + UNII Ant.1 (and/or) UNII Ant.2
	13	LTE + BT
	14	LTE + UNII Ant.1 (and/or) UNII Ant.2 + BT
	15	LTE + ***RSDB scenarios***

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. U-NII Radio can transmit simultaneously with Bluetooth Radio.
5. DTS Radio cannot transmit simultaneously with Bluetooth Radio.
6. DTS Radio can transmit simultaneously with UNII Radio in RSDB scenarios.
7. BT tethering is consider about each RF exposure conditions
8. GSM (Voice) is only consider in both Head & Body-worn exposure conditions.

RSDB scenarios

Mode	Scenario	# of TX	5GHz		2.4GHz	
			Ant1	Ant2	Ant1	Ant2
2.4GHz+5GHz RSDB&MIMO	1	3	On	On	On	-
	2	3	On	On	-	On
2.4GHz+5GHz RSDB MIMO	3	4	On	On	On	On

Note(s):

For 2.4GHz SISO mode, SAR level of Normal WLAN configuration were considered for simultaneous transmission SAR analysis at RSDB scenarios.

Simultaneous transmission SAR test exclusion considerations

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

Sum of SAR

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

SAR to Peak Location Ratio (SPLSR)

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

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

Where:

SAR_1 is the highest reported or estimated SAR for the first of a pair of simultaneous transmitting antennas, in a specific test operating mode and exposure condition

SAR_2 is the highest reported or estimated SAR for the second of a pair of simultaneous transmitting antennas, in the same test operating mode and exposure condition as the first

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:

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

When an individual antenna transmits at on two bands simultaneously, the sum of the highest *reported* SAR for the frequency bands should be used to determine SAR_1.or SAR_2. When SPLSR is necessary, the smallest distance between the peak SAR locations for the antenna pair with respect to the peaks from each antenna should be used.

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

The antennas for the unlicensed transmitters are closely situated. As a result, the associated SAR hotspots are also closely situated. Some of the sum of SAR calculations yielded results over 1.6 W/kg. The SPSLR calculations for these situations were performed by treating the unlicensed SAR values as a single transmitter. The most conservative distance between all the unlicensed hotspots to the licensed hotspot was used for the value of *d* in the SPSLR calculation.

Simultaneous transmission SAR measurement

When simultaneous transmission SAR measurements are required in different frequency bands not covered by a single probe calibration point then separate tests for each frequency band are performed. The tests are performed using enlarged zoom scans which are processed, by means of superposition, using the DASY5 volume scan postprocessing procedures to determine the 1-g SAR for the aggregate SAR distribution.
The spatial resolution used for all enlarged zoom scans is the same as used for the most stringent zoom scans. I.E. the scan parameters required for the highest frequency assessed are used for all enlarged zoom scans. The scans cover the complete area of the device to ensure all transmitting antennas and radiating structures are assessed.
DASY5 provides the ability to perform Multiband Evaluations according to the latest standards using the Volume Scan job as well as appropriate routines for the Post-processing.
In order to extract and process measurements within different frequency bands, the SEMCAD X Post-processor performs the combination and subsequent superposition of these measurement data via DASY5= Combined MultiBand Averaged SAR.
Combined Multi Band Averaged SAR allows - in addition to the data extraction - an evaluation of the 1 g, 10 g and/or arbitrary averaged mass SAR.
Power Scaling Factor is used to allow the volume scans to be scaled by a value other than "1", this is important when the results need to be scaled to different maximum power levels. The Power Scaling Factor is applied to each individual point of the scan. When power scaling is used in multi-band combinations the scaling factor is applied to each individual point of the first scan, the second factor is then applied to each individual point of the second scan and so on. The scans are then combined.

13.1 Sum of the SAR for GSM 850 & Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)								∑ SAR (W/kg)													
		WWAN	DTS Ant.1	DTS Ant.2	DTS MIMO	UNII Ant.1	UNII Ant.2	UNII MIMO	BT	WWAN + DTS Ant.1	WWAN + DTS Ant.2	WWAN + DTS MIMO	WWAN + UNII Ant.1	WWAN + UNII Ant.2	WWAN + UNII MIMO	WWAN + BT	WWAN + DTS Ant.1 + UNII MIMO	WWAN + DTS Ant.2 + UNII MIMO	WWAN + DTS MIMO + UNII MIMO	WWAN+ UNII Ant.1 + BT	WWAN+ UNII Ant.2 + BT	WWAN+ UNII MIMO + BT
		1	2	3	4	5	6	7	8	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+2+7	1+3+7	1+4+7	1+5+8	1+6+8	1+7+8
Head (1g-SAR)	Left Touch	0.240	0.226	0.324	0.351	0.031	0.068	0.096	0.056	0.466	0.564	0.591	0.271	0.308	0.336	0.296	0.562	0.660	0.687	0.327	0.364	0.392
	Left Tilt	0.131	0.226	0.324	0.351	0.031	0.068	0.096	0.026	0.357	0.455	0.482	0.162	0.199	0.227	0.157	0.453	0.551	0.578	0.188	0.225	0.253
	Right Touch	0.251	0.226	0.324	0.351	0.031	0.068	0.096	0.168	0.477	0.575	0.602	0.282	0.319	0.347	0.419	0.573	0.671	0.698	0.450	0.487	0.515
	Right Tilt	0.115	0.226	0.324	0.351	0.031	0.068	0.096	0.078	0.341	0.439	0.466	0.146	0.183	0.211	0.193	0.437	0.535	0.562	0.224	0.261	0.289
Body-Worn (1g-SAR)	All positions	0.251	0.170	0.266	0.130	0.472	0.468	0.532	0.071	0.421	0.517	0.381	0.723	0.719	0.783	0.322	0.953	1.049	0.913	0.794	0.790	0.854
Hotspot (1-g SAR)	Rear	0.373	0.264	0.522	0.260	0.195	0.397	0.370	0.155	0.637	0.895	0.633	0.568	0.770	0.743	0.528	1.007	1.265	1.003	0.723	0.925	0.898
	Front	0.304	0.092	0.122	0.086	0.195	0.397	0.370	0.040	0.396	0.426	0.390	0.499	0.701	0.674	0.344	0.766	0.796	0.760	0.539	0.741	0.714
	Edge 1		0.264	0.522	0.260	0.195	0.397	0.370	0.007													
	Edge 2		0.264		0.260	0.185		0.370														
	Edge 3	0.238																				
	Edge 4	0.101		0.279	0.260		0.195	0.370	0.069		0.380	0.361		0.296	0.471	0.170		0.750	0.731		0.365	0.540

13.2 Sum of the SAR for GSM 1900 & Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)								∑ SAR (W/kg)													
		WWAN	DTS Ant.1	DTS Ant.2	DTS MIMO	UNII Ant.1	UNII Ant.2	UNII MIMO	BT	WWAN + DTS Ant.1	WWAN + DTS Ant.2	WWAN + DTS MIMO	WWAN + UNII Ant.1	WWAN + UNII Ant.2	WWAN + UNII MIMO	WWAN + BT	WWAN + DTS Ant.1 + UNII MIMO	WWAN + DTS Ant.2 + UNII MIMO	WWAN + DTS MIMO + UNII MIMO	WWAN+ UNII Ant.1 + BT	WWAN+ UNII Ant.2 + BT	WWAN+ UNII MIMO + BT
		1	2	3	4	5	6	7	8	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+2+7	1+3+7	1+4+7	1+5+8	1+6+8	1+7+8
Head (1g-SAR)	Left Touch	0.353	0.226	0.324	0.351	0.031	0.068	0.096	0.056	0.579	0.677	0.704	0.384	0.421	0.449	0.409	0.675	0.773	0.800	0.440	0.477	0.505
	Left Tilt	0.186	0.226	0.324	0.351	0.031	0.068	0.096	0.026	0.412	0.510	0.537	0.217	0.254	0.282	0.212	0.508	0.606	0.633	0.243	0.280	0.308
	Right Touch	0.516	0.226	0.324	0.351	0.031	0.068	0.096	0.168	0.742	0.840	0.867	0.547	0.584	0.612	0.684	0.838	0.936	0.963	0.715	0.752	0.780
	Right Tilt	0.146	0.226	0.324	0.351	0.031	0.068	0.096	0.078	0.372	0.470	0.497	0.177	0.214	0.242	0.224	0.468	0.566	0.593	0.255	0.292	0.320
Body-Worn (1g-SAR)	All positions	0.314	0.170	0.266	0.130	0.472	0.468	0.532	0.071	0.484	0.580	0.444	0.786	0.782	0.846	0.385	1.016	1.112	0.976	0.857	0.853	0.917
Hotspot (1-g SAR)	Rear	0.550	0.264	0.522	0.260	0.195	0.397	0.370	0.155	0.814	1.072	0.810	0.745	0.947	0.920	0.705	1.184	1.442	1.180	0.900	1.102	1.075
	Front	0.595	0.092	0.122	0.086	0.195	0.397	0.370	0.040	0.687	0.717	0.681	0.790	0.992	0.965	0.635	1.057	1.087	1.051	0.830	1.032	1.005
	Edge 1		0.264	0.522	0.260	0.195	0.397	0.370	0.007													
	Edge 2	0.346	0.264		0.260	0.185		0.370		0.610		0.606	0.531		0.716		0.980		0.976			
	Edge 3	0.316																				
	Edge 4			0.279	0.260		0.195	0.370	0.069													

13.3 Sum of the SAR for WCDMA Band II & Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)								∑ SAR (W/kg)												
		WWAN	DTS Ant.1	DTS Ant.2	DTS MIMO	UNII Ant.1	UNII Ant.2	UNII MIMO	BT	WWAN + DTS Ant.1	WWAN + DTS Ant.2	WWAN + DTS MIMO	WWAN + UNII Ant.1	WWAN + UNII Ant.2	WWAN + UNII MIMO	WWAN + BT	WWAN + DTS Ant.1 + UNII MIMO	WWAN + DTS Ant.2 + UNII MIMO	WWAN + DTS MIMO + UNII MIMO	WWAN+ UNII Ant.1 + BT	WWAN+ UNII Ant.2 + BT	WWAN+ UNII MIMO + BT
		1	2	3	4	5	6	7	8	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+2+7	1+3+7	1+4+7	1+5+8	1+6+8	1+7+8
Head (1g-SAR)	Left Touch	0.566	0.226	0.324	0.351	0.031	0.068	0.096	0.056	0.792	0.890	0.917	0.597	0.634	0.662	0.622	0.888	0.986	1.013	0.653	0.690	0.718
	Left Tilt	0.322	0.226	0.324	0.351	0.031	0.068	0.096	0.026	0.548	0.646	0.673	0.353	0.390	0.418	0.348	0.644	0.742	0.769	0.379	0.416	0.444
	Right Touch	0.908	0.226	0.324	0.351	0.031	0.068	0.096	0.168	1.134	1.232	1.259	0.939	0.976	1.004	1.076	1.230	1.328	1.355	1.107	1.144	1.172
	Right Tilt	0.231	0.226	0.324	0.351	0.031	0.068	0.096	0.078	0.457	0.555	0.582	0.262	0.299	0.327	0.309	0.553	0.651	0.678	0.340	0.377	0.405
Body-Worn (1g-SAR)	All positions	0.477	0.170	0.266	0.130	0.472	0.468	0.532	0.071	0.647	0.743	0.607	0.949	0.945	1.009	0.548	1.179	1.275	1.139	1.020	1.016	1.080
Hotspot (1-g SAR)	Rear	0.558	0.264	0.522	0.260	0.195	0.397	0.370	0.155	0.822	1.080	0.818	0.753	0.955	0.928	0.713	1.192	1.450	1.188	0.908	1.110	1.083
	Front	0.633	0.092	0.122	0.086	0.195	0.397	0.370	0.040	0.725	0.755	0.719	0.828	1.030	1.003	0.673	1.095	1.125	1.089	0.868	1.070	1.043
	Edge 1		0.264	0.522	0.260	0.195	0.397	0.370	0.007													
	Edge 2	0.417	0.264		0.260	0.185		0.370		0.681		0.677	0.602		0.787		1.051		1.047			
	Edge 3	0.418																				
	Edge 4			0.279	0.260		0.195	0.370	0.069													

13.4 Sum of the SAR for WCDMA Band IV & Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)								∑ SAR (W/kg)												
		WWAN	DTS Ant.1	DTS Ant.2	DTS MIMO	UNII Ant.1	UNII Ant.2	UNII MIMO	BT	WWAN + DTS Ant.1	WWAN + DTS Ant.2	WWAN + DTS MIMO	WWAN + UNII Ant.1	WWAN + UNII Ant.2	WWAN + UNII MIMO	WWAN + BT	WWAN + DTS Ant.1 + UNII MIMO	WWAN + DTS Ant.2 + UNII MIMO	WWAN + DTS MIMO + UNII MIMO	WWAN+ UNII Ant.1 + BT	WWAN+ UNII Ant.2 + BT	WWAN+ UNII MIMO + BT
		1	2	3	4	5	6	7	8	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+2+7	1+3+7	1+4+7	1+5+8	1+6+8	1+7+8
Head (1g-SAR)	Left Touch	0.324	0.226	0.324	0.351	0.031	0.068	0.096	0.056	0.550	0.648	0.675	0.355	0.392	0.420	0.380	0.646	0.744	0.771	0.411	0.448	0.476
	Left Tilt	0.149	0.226	0.324	0.351	0.031	0.068	0.096	0.026	0.375	0.473	0.500	0.180	0.217	0.245	0.175	0.471	0.569	0.596	0.206	0.243	0.271
	Right Touch	0.468	0.226	0.324	0.351	0.031	0.068	0.096	0.168	0.694	0.792	0.819	0.499	0.536	0.564	0.636	0.790	0.888	0.915	0.667	0.704	0.732
	Right Tilt	0.088	0.226	0.324	0.351	0.031	0.068	0.096	0.078	0.314	0.412	0.439	0.119	0.156	0.184	0.166	0.410	0.508	0.535	0.197	0.234	0.262
Body-Worn (1g-SAR)	All positions	0.505	0.170	0.266	0.130	0.472	0.468	0.532	0.071	0.675	0.771	0.635	0.977	0.973	1.037	0.576	1.207	1.303	1.167	1.048	1.044	1.108
Hotspot (1-g SAR)	Rear	0.610	0.264	0.522	0.260	0.195	0.397	0.370	0.155	0.874	1.132	0.870	0.805	1.007	0.980	0.765	1.244	1.502	1.240	0.960	1.162	1.135
	Front	0.566	0.092	0.122	0.086	0.195	0.397	0.370	0.040	0.658	0.688	0.652	0.761	0.963	0.936	0.606	1.028	1.058	1.022	0.801	1.003	0.976
	Edge 1		0.264	0.522	0.260	0.195	0.397	0.370	0.007													
	Edge 2	0.254	0.264		0.260	0.185		0.370		0.518		0.514	0.439		0.624		0.888		0.884			
	Edge 3	0.377																				
	Edge 4			0.279	0.260		0.195	0.370	0.069													
Product Specific (10-g SAR)	Rear	2.388				1.581	1.132	1.359					3.969	3.520	3.747							
	Front					0.152	0.329	0.360														
	Edge 1					1.581	1.132	1.359														
	Edge 2					0.619		0.512														
	Edge 3																					
	Edge 4						0.627	1.359														

13.5 Sum of the SAR for WCDMA Band V & Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)								∑ SAR (W/kg)												
		WWAN	DTS Ant.1	DTS Ant.2	DTS MIMO	UNII Ant.1	UNII Ant.2	UNII MIMO	BT	WWAN + DTS Ant.1	WWAN + DTS Ant.2	WWAN + DTS MIMO	WWAN + UNII Ant.1	WWAN + UNII Ant.2	WWAN + UNII MIMO	WWAN + BT	WWAN + DTS Ant.1 + UNII MIMO	WWAN + DTS Ant.2 + UNII MIMO	WWAN + DTS MIMO + UNII MIMO	WWAN+ UNII Ant.1 + BT	WWAN+ UNII Ant.2 + BT	WWAN+ UNII MIMO + BT
		1	2	3	4	5	6	7	8	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+2+7	1+3+7	1+4+7	1+5+8	1+6+8	1+7+8
Head (1g-SAR)	Left Touch	0.490	0.226	0.324	0.351	0.031	0.068	0.096	0.056	0.716	0.814	0.841	0.521	0.558	0.586	0.546	0.812	0.910	0.937	0.577	0.614	0.642
	Left Tilt	0.286	0.226	0.324	0.351	0.031	0.068	0.096	0.026	0.512	0.610	0.637	0.317	0.354	0.382	0.312	0.608	0.706	0.733	0.343	0.380	0.408
	Right Touch	0.444	0.226	0.324	0.351	0.031	0.068	0.096	0.168	0.670	0.768	0.795	0.475	0.512	0.540	0.612	0.766	0.864	0.891	0.643	0.680	0.708
	Right Tilt	0.233	0.226	0.324	0.351	0.031	0.068	0.096	0.078	0.459	0.557	0.584	0.264	0.301	0.329	0.311	0.555	0.653	0.680	0.342	0.379	0.407
Body-Worn (1g-SAR)	All positions	0.427	0.170	0.266	0.130	0.472	0.468	0.532	0.071	0.597	0.693	0.557	0.899	0.895	0.959	0.498	1.129	1.225	1.089	0.970	0.966	1.030
Hotspot (1-g SAR)	Rear	0.693	0.264	0.522	0.260	0.195	0.397	0.370	0.155	0.957	1.215	0.953	0.888	1.090	1.063	0.848	1.327	1.585	1.323	1.043	1.245	1.218
	Front	0.638	0.092	0.122	0.086	0.195	0.397	0.370	0.040	0.730	0.760	0.724	0.833	1.035	1.008	0.678	1.100	1.130	1.094	0.873	1.075	1.048
	Edge 1		0.264	0.522	0.260	0.195	0.397	0.370	0.007													
	Edge 2		0.264		0.260	0.185		0.370														
	Edge 3	0.275																				
	Edge 4	0.178		0.279	0.260		0.195	0.370	0.069		0.457	0.438		0.373	0.548	0.247		0.827	0.808		0.442	0.617

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

RF Exposure	Test Position	Standalone SAR (W/kg)								∑ SAR (W/kg)													
		WWAN	DTS Ant.1	DTS Ant.2	DTS MIMO	UNII Ant.1	UNII Ant.2	UNII MIMO	BT	WWAN + DTS Ant.1	WWAN + DTS Ant.2	WWAN + DTS MIMO	WWAN + UNII Ant.1	WWAN + UNII Ant.2	WWAN + UNII MIMO	WWAN + BT	WWAN + DTS Ant.1 + UNII MIMO	WWAN + DTS Ant.2 + UNII MIMO	WWAN + DTS MIMO + UNII MIMO	WWAN+ UNII Ant.1 + BT	WWAN+ UNII Ant.2 + BT	WWAN+ UNII MIMO + BT
		1	2	3	4	5	6	7	8	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+2+7	1+3+7	1+4+7	1+5+8	1+6+8	1+7+8
Head (1g-SAR)	Left Touch	0.682	0.226	0.324	0.351	0.031	0.068	0.096	0.056	0.908	1.006	1.033	0.713	0.750	0.778	0.738	1.004	1.102	1.129	0.769	0.806	0.834
	Left Tilt	0.331	0.226	0.324	0.351	0.031	0.068	0.096	0.026	0.557	0.655	0.682	0.362	0.399	0.427	0.357	0.653	0.751	0.778	0.388	0.425	0.453
	Right Touch	0.966	0.226	0.324	0.351	0.031	0.068	0.096	0.168	1.192	1.290	1.317	0.997	1.034	1.062	1.134	1.288	1.386	1.413	1.165	1.202	1.230
	Right Tilt	0.322	0.226	0.324	0.351	0.031	0.068	0.096	0.078	0.548	0.646	0.673	0.353	0.390	0.418	0.400	0.644	0.742	0.769	0.431	0.468	0.496
Body-Worn (1g-SAR)	All positions	0.540	0.170	0.266	0.130	0.472	0.468	0.532	0.071	0.710	0.806	0.670	1.012	1.008	1.072	0.611	1.242	1.338	1.202	1.083	1.079	1.143
Hotspot (1-g SAR)	Rear	0.623	0.264	0.522	0.260	0.195	0.397	0.370	0.155	0.887	1.145	0.883	0.818	1.020	0.993	0.778	1.257	1.515	1.253	0.973	1.175	1.148
	Front	0.746	0.092	0.122	0.086	0.195	0.397	0.370	0.040	0.838	0.868	0.832	0.941	1.143	1.116	0.786	1.208	1.238	1.202	0.981	1.183	1.156
	Edge 1		0.264	0.522	0.260	0.195	0.397	0.370	0.007													
	Edge 2	0.523	0.264		0.260	0.185		0.370		0.787		0.783	0.708		0.893		1.157		1.153			
	Edge 3	0.310																				
	Edge 4			0.279	0.260		0.195	0.370	0.069													

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

RF Exposure	Test Position	Standalone SAR (W/kg)								∑ SAR (W/kg)													
		WWAN	DTS Ant.1	DTS Ant.2	DTS MIMO	UNII Ant.1	UNII Ant.2	UNII MIMO	BT	WWAN + DTS Ant.1	WWAN + DTS Ant.2	WWAN + DTS MIMO	WWAN + UNII Ant.1	WWAN + UNII Ant.2	WWAN + UNII MIMO	WWAN + BT	WWAN + DTS Ant.1 + UNII MIMO	WWAN + DTS Ant.2 + UNII MIMO	WWAN + DTS MIMO + UNII MIMO	WWAN+ UNII Ant.1 + BT	WWAN+ UNII Ant.2 + BT	WWAN+ UNII MIMO + BT
		1	2	3	4	5	6	7	8	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+2+7	1+3+7	1+4+7	1+5+8	1+6+8	1+7+8
Head (1g-SAR)	Left Touch	0.452	0.226	0.324	0.351	0.031	0.068	0.096	0.056	0.678	0.776	0.803	0.483	0.520	0.548	0.508	0.774	0.872	0.899	0.539	0.576	0.604
	Left Tilt	0.245	0.226	0.324	0.351	0.031	0.068	0.096	0.026	0.471	0.569	0.596	0.276	0.313	0.341	0.271	0.567	0.665	0.692	0.302	0.339	0.367
	Right Touch	0.462	0.226	0.324	0.351	0.031	0.068	0.096	0.168	0.688	0.786	0.813	0.493	0.530	0.558	0.630	0.784	0.882	0.909	0.661	0.698	0.726
	Right Tilt	0.232	0.226	0.324	0.351	0.031	0.068	0.096	0.078	0.458	0.556	0.583	0.263	0.300	0.328	0.310	0.554	0.652	0.679	0.341	0.378	0.406
Body-Worn (1g-SAR)	All positions	0.387	0.170	0.266	0.130	0.472	0.468	0.532	0.071	0.557	0.653	0.517	0.859	0.855	0.919	0.458	1.089	1.185	1.049	0.930	0.926	0.990
Hotspot (1-g SAR)	Rear	0.635	0.264	0.522	0.260	0.195	0.397	0.370	0.155	0.899	1.157	0.895	0.830	1.032	1.005	0.790	1.269	1.527	1.265	0.985	1.187	1.160
	Front	0.602	0.092	0.122	0.086	0.195	0.397	0.370	0.040	0.694	0.724	0.688	0.797	0.999	0.972	0.642	1.064	1.094	1.058	0.837	1.039	1.012
	Edge 1		0.264	0.522	0.260	0.195	0.397	0.370	0.007													
	Edge 2		0.264		0.260	0.185		0.370														
	Edge 3	0.297																				
	Edge 4	0.144		0.279	0.260		0.195	0.370	0.069		0.423	0.404		0.339	0.514	0.213		0.793	0.774		0.408	0.583

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

RF Exposure	Test Position	Standalone SAR (W/kg)								∑ SAR (W/kg)													
		WWAN	DTS Ant.1	DTS Ant.2	DTS MIMO	UNII Ant.1	UNII Ant.2	UNII MIMO	BT	WWAN + DTS Ant.1	WWAN + DTS Ant.2	WWAN + DTS MIMO	WWAN + UNII Ant.1	WWAN + UNII Ant.2	WWAN + UNII MIMO	WWAN + BT	WWAN + DTS Ant.1 + UNII MIMO	WWAN + DTS Ant.2 + UNII MIMO	WWAN + DTS MIMO + UNII MIMO	WWAN+ UNII Ant.1 + BT	WWAN+ UNII Ant.2 + BT	WWAN+ UNII MIMO + BT
		1	2	3	4	5	6	7	8	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+2+7	1+3+7	1+4+7	1+5+8	1+6+8	1+7+8
Head (1g-SAR)	Left Touch	0.828	0.226	0.324	0.351	0.031	0.068	0.096	0.056	1.054	1.152	1.179	0.859	0.896	0.924	0.884	1.150	1.248	1.275	0.915	0.952	0.980
	Left Tilt	0.315	0.226	0.324	0.351	0.031	0.068	0.096	0.026	0.541	0.639	0.666	0.346	0.383	0.411	0.341	0.637	0.735	0.762	0.372	0.409	0.437
	Right Touch	1.198	0.226	0.324	0.351	0.031	0.068	0.096	0.168	1.424	1.522	1.549	1.229	1.266	1.294	1.366	1.520	1.618	1.645	1.397	1.434	1.462
	Right Tilt	0.261	0.226	0.324	0.351	0.031	0.068	0.096	0.078	0.487	0.585	0.612	0.292	0.329	0.357	0.339	0.583	0.681	0.708	0.370	0.407	0.435
Body-Worn (1g-SAR)	All positions	0.394	0.170	0.266	0.130	0.472	0.468	0.532	0.071	0.564	0.660	0.524	0.866	0.862	0.926	0.465	1.096	1.192	1.056	0.937	0.933	0.997
Hotspot (1-g SAR)	Rear	0.605	0.264	0.522	0.260	0.195	0.397	0.370	0.155	0.869	1.127	0.865	0.800	1.002	0.975	0.760	1.239	1.497	1.235	0.955	1.157	1.130
	Front	0.658	0.092	0.122	0.086	0.195	0.397	0.370	0.040	0.750	0.780	0.744	0.853	1.055	1.028	0.698	1.120	1.150	1.114	0.893	1.095	1.068
	Edge 1		0.264	0.522	0.260	0.195	0.397	0.370	0.007													
	Edge 2	0.493	0.264		0.260	0.185		0.370		0.757		0.753	0.678		0.863		1.127		1.123			
	Edge 3	0.270																				
	Edge 4			0.279	0.260		0.195	0.370	0.069													

SAR to Peak Location Separation Ratio (SPLSR)

RF Exposure	Test Position	Standalone SAR (W/kg)								∑ SAR (W/kg)		Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure
		WWAN	DTS Ant.1	DTS Ant.2	DTS MIMO	UNII Ant.1	UNII Ant.2	UNII MIMO	BT						
		1	2	3	4	5	6	7	8						
Head (1g-SAR)	Right Touch	1.198		0.324				0.096		1+3+7	1.618				1
		1.198		0.324						1+3	1.522	75.4	0.02	No	
		1.198						0.096		1+7	1.294	82.7	0.02	No	
				0.324				0.096		3+7	0.420	7.3	0.04	No	
		1.198			0.351			0.096		1+4+7	1.645				2
		1.198			0.351					1+4	1.549	74.3	0.03	No	
		1.198						0.096		1+7	1.294	82.7	0.02	No	
					0.351			0.096		4+7	0.447	9.8	0.03	No	

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

RF Exposure	Test Position	Standalone SAR (W/kg)								∑ SAR (W/kg)												
		WWAN	DTS Ant.1	DTS Ant.2	DTS MIMO	UNII Ant.1	UNII Ant.2	UNII MIMO	BT	WWAN + DTS Ant.1	WWAN + DTS Ant.2	WWAN + DTS MIMO	WWAN + UNII Ant.1	WWAN + UNII Ant.2	WWAN + UNII MIMO	WWAN + BT	WWAN + DTS Ant.1 + UNII MIMO	WWAN + DTS Ant.2 + UNII MIMO	WWAN + DTS MIMO + UNII MIMO	WWAN+ UNII Ant.1 + BT	WWAN+ UNII Ant.2 + BT	WWAN+ UNII MIMO + BT
		1	2	3	4	5	6	7	8	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+2+7	1+3+7	1+4+7	1+5+8	1+6+8	1+7+8
Head (1g-SAR)	Left Touch	0.308	0.226	0.324	0.351	0.031	0.068	0.096	0.056	0.534	0.632	0.659	0.339	0.376	0.404	0.364	0.630	0.728	0.755	0.395	0.432	0.460
	Left Tilt	0.154	0.226	0.324	0.351	0.031	0.068	0.096	0.026	0.380	0.478	0.505	0.185	0.222	0.250	0.180	0.476	0.574	0.601	0.211	0.248	0.276
	Right Touch	0.288	0.226	0.324	0.351	0.031	0.068	0.096	0.168	0.514	0.612	0.639	0.319	0.356	0.384	0.456	0.610	0.708	0.735	0.487	0.524	0.552
	Right Tilt	0.150	0.226	0.324	0.351	0.031	0.068	0.096	0.078	0.376	0.474	0.501	0.181	0.218	0.246	0.228	0.472	0.570	0.597	0.259	0.296	0.324
Body-Worn (1g-SAR)	All positions	0.461	0.170	0.266	0.130	0.472	0.468	0.532	0.071	0.631	0.727	0.591	0.933	0.929	0.993	0.532	1.163	1.259	1.123	1.004	1.000	1.064
Hotspot (1-g SAR)	Rear	0.436	0.264	0.522	0.260	0.195	0.397	0.370	0.155	0.700	0.958	0.696	0.631	0.833	0.806	0.591	1.070	1.328	1.066	0.786	0.988	0.961
	Front	0.488	0.092	0.122	0.086	0.195	0.397	0.370	0.040	0.580	0.610	0.574	0.683	0.885	0.858	0.528	0.950	0.980	0.944	0.723	0.925	0.898
	Edge 1		0.264	0.522	0.260	0.195	0.397	0.370	0.007													
	Edge 2		0.264		0.260	0.185		0.370														
	Edge 3	0.174																				
	Edge 4	0.376		0.279	0.260		0.195	0.370	0.069		0.655	0.636		0.571	0.746	0.445		1.025	1.006		0.640	0.815

13.10 Sum of the SAR for LTE Band 14 & Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)								∑ SAR (W/kg)												
		WWAN	DTS Ant.1	DTS Ant.2	DTS MIMO	UNII Ant.1	UNII Ant.2	UNII MIMO	BT	WWAN + DTS Ant.1	WWAN + DTS Ant.2	WWAN + DTS MIMO	WWAN + UNII Ant.1	WWAN + UNII Ant.2	WWAN + UNII MIMO	WWAN + BT	WWAN + DTS Ant.1 + UNII MIMO	WWAN + DTS Ant.2 + UNII MIMO	WWAN + DTS MIMO + UNII MIMO	WWAN+ UNII Ant.1 + BT	WWAN+ UNII Ant.2 + BT	WWAN+ UNII MIMO + BT
		1	2	3	4	5	6	7	8	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+2+7	1+3+7	1+4+7	1+5+8	1+6+8	1+7+8
Head (1g-SAR)	Left Touch	0.409	0.226	0.324	0.351	0.031	0.068	0.096	0.056	0.635	0.733	0.760	0.440	0.477	0.505	0.465	0.731	0.829	0.856	0.496	0.533	0.561
	Left Tilt	0.253	0.226	0.324	0.351	0.031	0.068	0.096	0.026	0.479	0.577	0.604	0.284	0.321	0.349	0.279	0.575	0.673	0.700	0.310	0.347	0.375
	Right Touch	0.385	0.226	0.324	0.351	0.031	0.068	0.096	0.168	0.611	0.709	0.736	0.416	0.453	0.481	0.553	0.707	0.805	0.832	0.584	0.621	0.649
	Right Tilt	0.213	0.226	0.324	0.351	0.031	0.068	0.096	0.078	0.439	0.537	0.564	0.244	0.281	0.309	0.291	0.535	0.633	0.660	0.322	0.359	0.387
Body-Worn (1g-SAR)	All positions	0.424	0.170	0.266	0.130	0.472	0.468	0.532	0.071	0.594	0.690	0.554	0.896	0.892	0.956	0.495	1.126	1.222	1.086	0.967	0.963	1.027
Hotspot (1-g SAR)	Rear	0.602	0.264	0.522	0.260	0.195	0.397	0.370	0.155	0.866	1.124	0.862	0.797	0.999	0.972	0.757	1.236	1.494	1.232	0.952	1.154	1.127
	Front	0.501	0.092	0.122	0.086	0.195	0.397	0.370	0.040	0.593	0.623	0.587	0.696	0.898	0.871	0.541	0.963	0.993	0.957	0.736	0.938	0.911
	Edge 1		0.264	0.522	0.260	0.195	0.397	0.370	0.007													
	Edge 2		0.264		0.260	0.185		0.370														
	Edge 3	0.028																				
	Edge 4	0.237		0.279	0.260		0.195	0.370	0.069		0.516	0.497		0.432	0.607	0.306		0.886	0.867		0.501	0.676

13.11 Sum of the SAR for LTE Band 30 & Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)								∑ SAR (W/kg)												
		WWAN	DTS Ant.1	DTS Ant.2	DTS MIMO	UNII Ant.1	UNII Ant.2	UNII MIMO	BT	WWAN + DTS Ant.1	WWAN + DTS Ant.2	WWAN + DTS MIMO	WWAN + UNII Ant.1	WWAN + UNII Ant.2	WWAN + UNII MIMO	WWAN + BT	WWAN + DTS Ant.1 + UNII MIMO	WWAN + DTS Ant.2 + UNII MIMO	WWAN + DTS MIMO + UNII MIMO	WWAN+ UNII Ant.1 + BT	WWAN+ UNII Ant.2 + BT	WWAN+ UNII MIMO + BT
		1	2	3	4	5	6	7	8	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+2+7	1+3+7	1+4+7	1+5+8	1+6+8	1+7+8
Head (1g-SAR)	Left Touch	0.370	0.226	0.324	0.351	0.031	0.068	0.096	0.056	0.596	0.694	0.721	0.401	0.438	0.466	0.426	0.692	0.790	0.817	0.457	0.494	0.522
	Left Tilt	0.344	0.226	0.324	0.351	0.031	0.068	0.096	0.026	0.570	0.668	0.695	0.375	0.412	0.440	0.370	0.666	0.764	0.791	0.401	0.438	0.466
	Right Touch	0.651	0.226	0.324	0.351	0.031	0.068	0.096	0.168	0.877	0.975	1.002	0.682	0.719	0.747	0.819	0.973	1.071	1.098	0.850	0.887	0.915
	Right Tilt	0.230	0.226	0.324	0.351	0.031	0.068	0.096	0.078	0.456	0.554	0.581	0.261	0.298	0.326	0.308	0.552	0.650	0.677	0.339	0.376	0.404
Body-Worn (1g-SAR)	All positions	0.269	0.170	0.266	0.130	0.472	0.468	0.532	0.071	0.439	0.535	0.399	0.741	0.737	0.801	0.340	0.971	1.067	0.931	0.812	0.808	0.872
Hotspot (1-g SAR)	Rear	0.300	0.264	0.522	0.260	0.195	0.397	0.370	0.155	0.564	0.822	0.560	0.495	0.697	0.670	0.455	0.934	1.192	0.930	0.650	0.852	0.825
	Front	0.528	0.092	0.122	0.086	0.195	0.397	0.370	0.040	0.620	0.650	0.614	0.723	0.925	0.898	0.568	0.990	1.020	0.984	0.763	0.965	0.938
	Edge 1		0.264	0.522	0.260	0.195	0.397	0.370	0.007													
	Edge 2	0.351	0.264		0.260	0.185		0.370		0.615		0.611	0.536		0.721		0.985		0.981			
	Edge 3	0.137																				
	Edge 4			0.279	0.260		0.195	0.370	0.069													

13.12 Sum of the SAR for LTE Band 40 & Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)								∑ SAR (W/kg)												
		WWAN	DTS Ant.1	DTS Ant.2	DTS MIMO	UNII Ant.1	UNII Ant.2	UNII MIMO	BT	WWAN + DTS Ant.1	WWAN + DTS Ant.2	WWAN + DTS MIMO	WWAN + UNII Ant.1	WWAN + UNII Ant.2	WWAN + UNII MIMO	WWAN + BT	WWAN + DTS Ant.1 + UNII MIMO	WWAN + DTS Ant.2 + UNII MIMO	WWAN + DTS MIMO + UNII MIMO	WWAN+ UNII Ant.1 + BT	WWAN+ UNII Ant.2 + BT	WWAN+ UNII MIMO + BT
		1	2	3	4	5	6	7	8	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+2+7	1+3+7	1+4+7	1+5+8	1+6+8	1+7+8
Head (1g-SAR)	Left Touch	0.020	0.226	0.324	0.351	0.031	0.068	0.096	0.056	0.246	0.344	0.371	0.051	0.088	0.116	0.076	0.342	0.440	0.467	0.107	0.144	0.172
	Left Tilt	0.017	0.226	0.324	0.351	0.031	0.068	0.096	0.026	0.243	0.341	0.368	0.048	0.085	0.113	0.043	0.339	0.437	0.464	0.074	0.111	0.139
	Right Touch	0.045	0.226	0.324	0.351	0.031	0.068	0.096	0.168	0.271	0.369	0.396	0.076	0.113	0.141	0.213	0.367	0.465	0.492	0.244	0.281	0.309
	Right Tilt	0.012	0.226	0.324	0.351	0.031	0.068	0.096	0.078	0.238	0.336	0.363	0.043	0.080	0.108	0.090	0.334	0.432	0.459	0.121	0.158	0.186
Body-Worn (1g-SAR)	All positions	0.014	0.170	0.266	0.130	0.472	0.468	0.532	0.071	0.184	0.280	0.144	0.486	0.482	0.546	0.085	0.716	0.812	0.676	0.557	0.553	0.617
Hotspot (1-g SAR)	Rear	0.024	0.264	0.522	0.260	0.195	0.397	0.370	0.155	0.288	0.546	0.284	0.219	0.421	0.394	0.179	0.658	0.916	0.654	0.374	0.576	0.549
	Front	0.034	0.092	0.122	0.086	0.195	0.397	0.370	0.040	0.126	0.156	0.120	0.229	0.431	0.404	0.074	0.496	0.526	0.490	0.269	0.471	0.444
	Edge 1		0.264	0.522	0.260	0.195	0.397	0.370	0.007													
	Edge 2	0.019	0.264		0.260	0.185		0.370		0.283		0.279	0.204		0.389		0.653		0.649			
	Edge 3	0.013																				
	Edge 4			0.279	0.260		0.195	0.370	0.069													

13.13 Sum of the SAR for LTE Band 41 & Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)								∑ SAR (W/kg)												
		WWAN	DTS Ant.1	DTS Ant.2	DTS MIMO	UNII Ant.1	UNII Ant.2	UNII MIMO	BT	WWAN + DTS Ant.1	WWAN + DTS Ant.2	WWAN + DTS MIMO	WWAN + UNII Ant.1	WWAN + UNII Ant.2	WWAN + UNII MIMO	WWAN + BT	WWAN + DTS Ant.1 + UNII MIMO	WWAN + DTS Ant.2 + UNII MIMO	WWAN + DTS MIMO + UNII MIMO	WWAN+ UNII Ant.1 + BT	WWAN+ UNII Ant.2 + BT	WWAN+ UNII MIMO + BT
		1	2	3	4	5	6	7	8	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+2+7	1+3+7	1+4+7	1+5+8	1+6+8	1+7+8
Head (1g-SAR)	Left Touch	0.067	0.226	0.324	0.351	0.031	0.068	0.096	0.056	0.293	0.391	0.418	0.098	0.135	0.163	0.123	0.389	0.487	0.514	0.154	0.191	0.219
	Left Tilt	0.046	0.226	0.324	0.351	0.031	0.068	0.096	0.026	0.272	0.370	0.397	0.077	0.114	0.142	0.072	0.368	0.466	0.493	0.103	0.140	0.168
	Right Touch	0.131	0.226	0.324	0.351	0.031	0.068	0.096	0.168	0.357	0.455	0.482	0.162	0.199	0.227	0.299	0.453	0.551	0.578	0.330	0.367	0.395
	Right Tilt	0.081	0.226	0.324	0.351	0.031	0.068	0.096	0.078	0.307	0.405	0.432	0.112	0.149	0.177	0.159	0.403	0.501	0.528	0.190	0.227	0.255
Body-Worn (1g-SAR)	All positions	0.091	0.170	0.266	0.130	0.472	0.468	0.532	0.071	0.261	0.357	0.221	0.563	0.559	0.623	0.162	0.793	0.889	0.753	0.634	0.630	0.694
Hotspot (1-g SAR)	Rear	0.134	0.264	0.522	0.260	0.195	0.397	0.370	0.155	0.398	0.656	0.394	0.329	0.531	0.504	0.289	0.768	1.026	0.764	0.484	0.686	0.659
	Front	0.151	0.092	0.122	0.086	0.195	0.397	0.370	0.040	0.243	0.273	0.237	0.346	0.548	0.521	0.191	0.613	0.643	0.607	0.386	0.588	0.561
	Edge 1		0.264	0.522	0.260	0.195	0.397	0.370	0.007													
	Edge 2	0.098	0.264		0.260	0.185		0.370		0.362		0.358	0.283		0.468		0.732		0.728			
	Edge 3	0.070																				
	Edge 4			0.279	0.260		0.195	0.370	0.069													

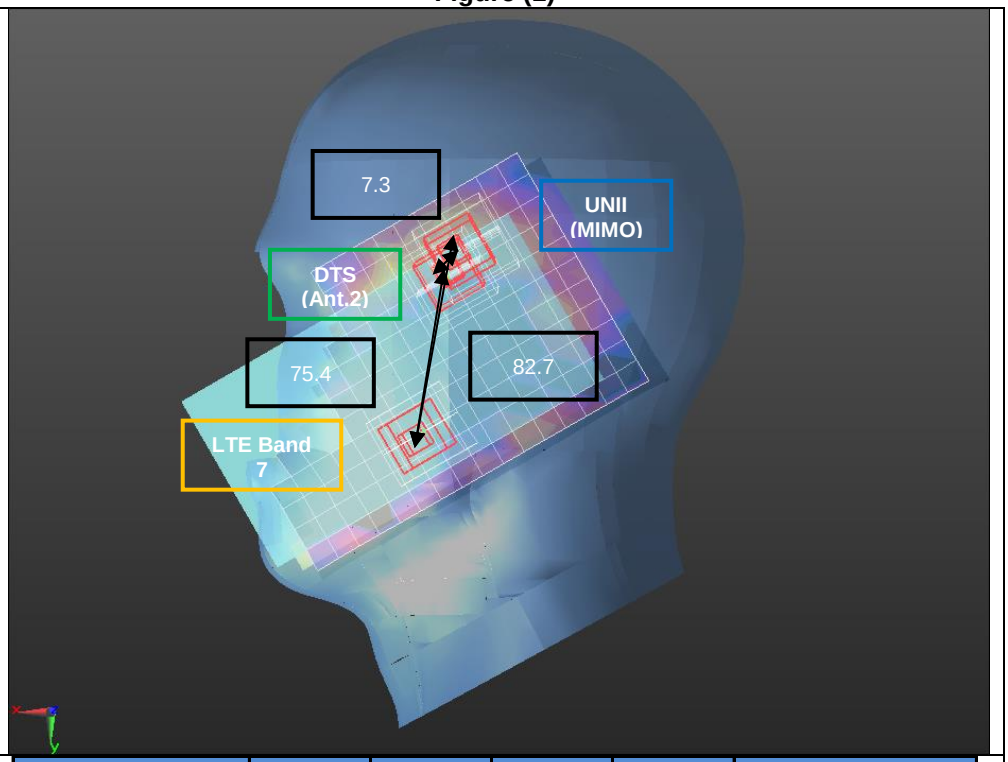
13.14 Sum of the SAR for LTE Band 66 & Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)								∑ SAR (W/kg)												
		WWAN	DTS Ant.1	DTS Ant.2	DTS MIMO	UNII Ant.1	UNII Ant.2	UNII MIMO	BT	WWAN + DTS Ant.1	WWAN + DTS Ant.2	WWAN + DTS MIMO	WWAN + UNII Ant.1	WWAN + UNII Ant.2	WWAN + UNII MIMO	WWAN + BT	WWAN + DTS Ant.1 + UNII MIMO	WWAN + DTS Ant.2 + UNII MIMO	WWAN + DTS MIMO + UNII MIMO	WWAN+ UNII Ant.1 + BT	WWAN+ UNII Ant.2 + BT	WWAN+ UNII MIMO + BT
		1	2	3	4	5	6	7	8	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+2+7	1+3+7	1+4+7	1+5+8	1+6+8	1+7+8
Head (1g-SAR)	Left Touch	0.484	0.226	0.324	0.351	0.031	0.068	0.096	0.056	0.710	0.808	0.835	0.515	0.552	0.580	0.540	0.806	0.904	0.931	0.571	0.608	0.636
	Left Tilt	0.216	0.226	0.324	0.351	0.031	0.068	0.096	0.026	0.442	0.540	0.567	0.247	0.284	0.312	0.242	0.538	0.636	0.663	0.273	0.310	0.338
	Right Touch	0.739	0.226	0.324	0.351	0.031	0.068	0.096	0.168	0.965	1.063	1.090	0.770	0.807	0.835	0.907	1.061	1.159	1.186	0.938	0.975	1.003
	Right Tilt	0.143	0.226	0.324	0.351	0.031	0.068	0.096	0.078	0.369	0.467	0.494	0.174	0.211	0.239	0.221	0.465	0.563	0.590	0.252	0.289	0.317
Body-Worn (1g-SAR)	All positions	0.668	0.170	0.266	0.130	0.472	0.468	0.532	0.071	0.838	0.934	0.798	1.140	1.136	1.200	0.739	1.370	1.466	1.330	1.211	1.207	1.271
Hotspot (1-g SAR)	Rear	0.644	0.264	0.522	0.260	0.195	0.397	0.370	0.155	0.908	1.166	0.904	0.839	1.041	1.014	0.799	1.278	1.536	1.274	0.994	1.196	1.169
	Front	0.666	0.092	0.122	0.086	0.195	0.397	0.370	0.040	0.758	0.788	0.752	0.861	1.063	1.036	0.706	1.128	1.158	1.122	0.901	1.103	1.076
	Edge 1		0.264	0.522	0.260	0.195	0.397	0.370	0.007													
	Edge 2	0.338	0.264		0.260	0.185		0.370		0.602		0.598	0.523		0.708		0.972		0.968			
	Edge 3	0.456																				
	Edge 4			0.279	0.260		0.195	0.370	0.069													
Product Specific (10-g SAR)	Rear	2.315				1.581	1.132	1.359					3.896	3.447	3.674							
	Front	2.957				0.152	0.329	0.360					3.109	3.286	3.317							
	Edge 1					1.581	1.132	1.359														
	Edge 2					0.619		0.512														
	Edge 3																					
	Edge 4						0.627	1.359														

Conclusion:

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

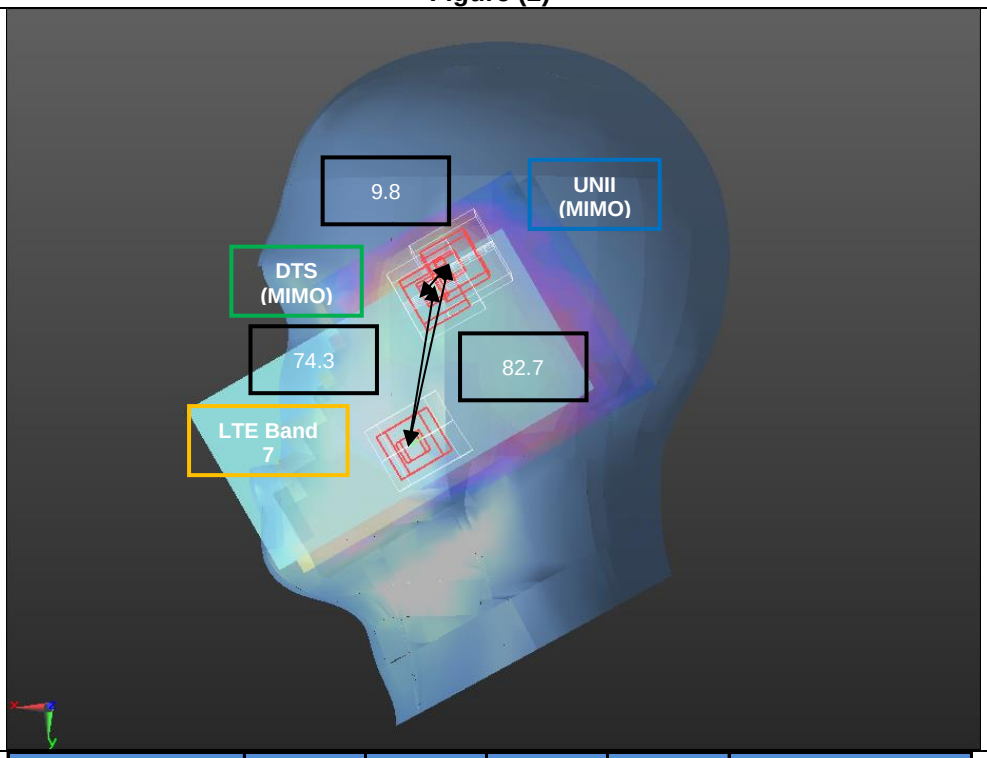
Figure (1)



Mode		SAR	X	Y	Z	d: Calculated distance (mm)	
		W/kg	m	m	m		
LTE Band 7	①	1.198	0.04972	0.05741	-0.002	① + ②	75.4
DTS_Ant.2	②	0.324	0.03566	-0.01668	-0.00269	① + ③	82.7
UNII_MIMO	③	0.096	0.03488	-0.02398	-0.00272	② + ③	7.3

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

Figure (2)



Mode		SAR	X	Y	Z	d: Calculated distance (mm)	
		W/kg	m	m	m		
LTE Band 7	①	1.198	0.04972	0.05741	-0.002	① + ②	74.3
DTS_MIMO	②	0.351	0.04105	-0.01639	-0.00226	① + ③	82.7
UNII_MIMO	③	0.096	0.03488	-0.02398	-0.00272	② + ③	9.8

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

Appendixes

Refer to separated files for the following appendixes.

4788768228-S1V1 FCC Report SAR_App A_Photos & Ant. Locations

4788768228-S1V1 FCC Report SAR_App B_Highest SAR Test Plots

4788768228-S1V1 FCC Report SAR_App C_System Check Plots

4788768228-S1V1 FCC Report SAR_App D_SAR Tissue Ingredients

4788768228-S1V1 FCC Report SAR_App E_Probe Cal. Certificates

4788768228-S1V1 FCC Report SAR_App F_Dipole Cal. Certificates

END OF REPORT