SAR EVALUATION REPORT

IEEE Std 1528-2013

For
Body Worn Camera

FCC ID: X4GAB065 & X4GS01506
Model Name: AX1037

Report Number: 14641114-S1V2
Issue Date: 6/7/2023

Prepared for
Axon Enterprise Inc
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Scottsdale, AZ, 85255

Prepared by
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ACCREDITED
CERT #0751.05

Revision History

Rev.	Date	Revisions	Revised By
V1	5/10/2023	Initial Issue	--
V2	6/7/2023	Section 4.3: Updated Lab Equipment Information	Coltyce Sanders

Table of Contents

1. Attestation of Test Results

Applicant Name		Axon Enterprise Inc			
FCC ID		X4GAB065 & X4GS01506			
Model Name		AX1037			
Applicable Standards		Published RF exposure KDB procedures IEEE Std 1528-2013			
Exposure Category		SAR Limits (W/Kg)			
		Peak spatial average (1g of tissue)		Extremities (hands, wrists, ankles, etc.) (10g of tissue)	
General population / Uncontrolled exposure		1.6		4	
RF Exposure Conditions		Equipment Class - Highest Reported SAR (W/kg)			
		PCT	DTS	NII	DSS
Body-worn		1.161	0.164	0.305	0.016
Extremity		3.41	0.538	1.85	0.090
Simultaneous TX	Body-worn	1.354	1.325	1.354	1.177
	Extremity	3.546	3.546	3.427	3.427
Date Tested		2/23/2023 to 4/20/2023			
Test Results		Pass			

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested can demonstrate compliance with the requirements as documented in this report.

This report contains data provided by the customer which can impact the validity of results. UL Verification Services Inc. is only responsible for the validity of results after the integration of the data provided by the customer.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not considered unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. 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 A2LA, NIST, or any agency of the U.S. Government, or any agency of the U.S. government.

Approved & Released By:	Prepared By:
	
Devin Chang Senior Test Engineer UL Verification Services Inc.	Coltyce Sanders Staff Laboratory Engineer UL Verification Services Inc.

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 v07
- 447498 D04 Interim General RF Exposure Guidance v01
- 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
- 865664 D02 RF Exposure Reporting v01r02
- 941225 D05 SAR for LTE Devices v02r05
- 941225 D05A LTE Rel.10 KDB Inquiry Sheet v01r02

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

- TCB Workshop October 2014; RF Exposure Procedures (Other LTE Considerations)
- TCB Workshop April 2015; RF Exposure Procedures (Overlapping LTE Bands)
- TCB Workshop October 2015; RF Exposure Procedures (KDB 941225 D05A)
- TCB Workshop April 2016; RF Exposure Procedures (LTE Carrier Aggregation for DL)
- TCB Workshop October 2016; RF Exposure Procedures (Bluetooth Duty Factor)
- TCB Workshop October 2016; RF Exposure Procedures (DUT Holder Perturbations)
- TCB Workshop May 2017; RF Exposure Procedures (Broadband Liquid Above 3 GHz)
- TCB Workshop November 2017; RF Exposure Procedures (LTE UL/DL Carrier Aggregation SAR)
- TCB Workshop April 2018; RF Exposure Procedures (LTE DL CA SAR Test Exclusion)
- TCB Workshop April 2019; RF Exposure Procedures (Tissue Simulating Liquids (TSL))

3. Facilities and Accreditation

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

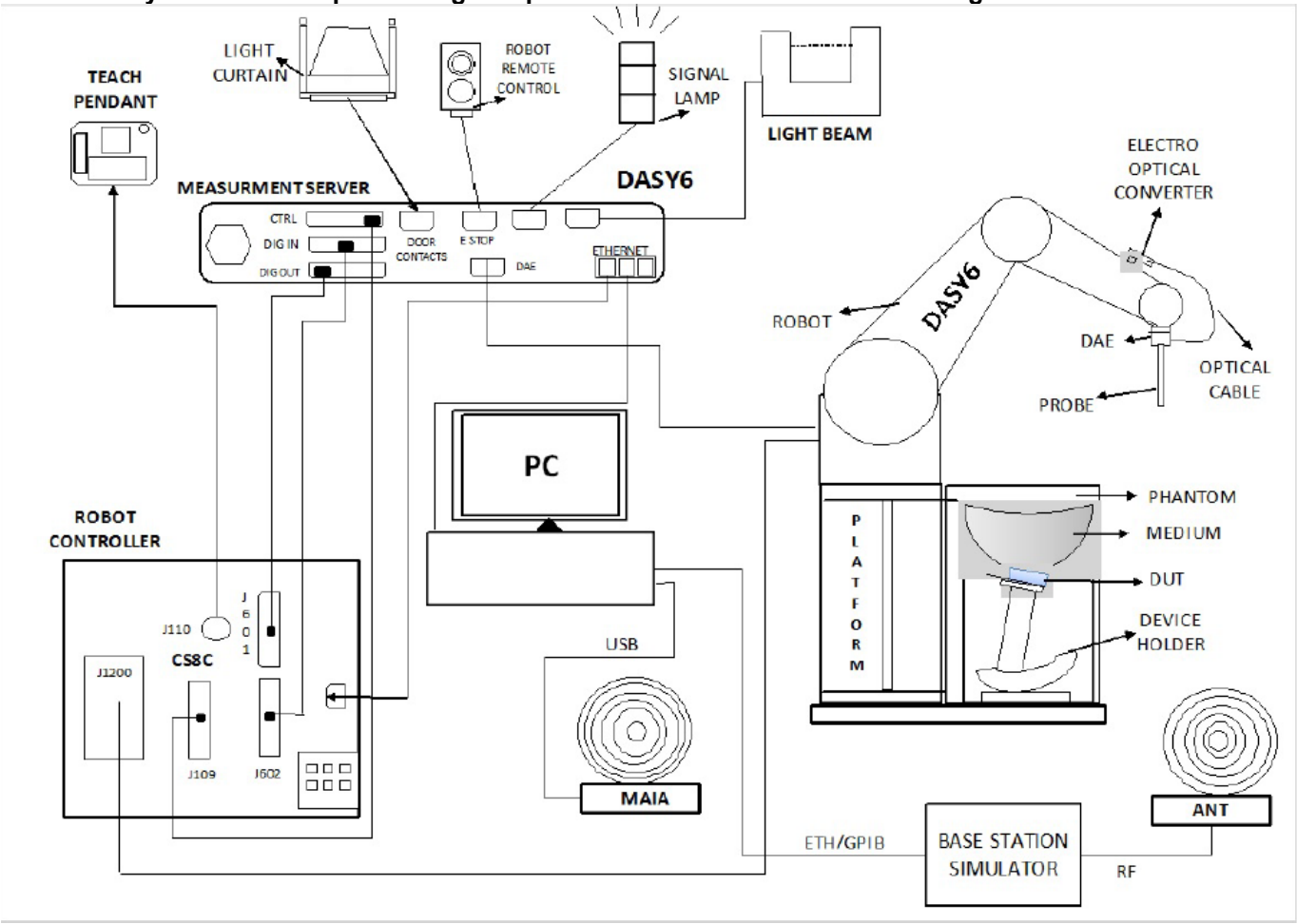
47173 Benicia Street	47266 Benicia Street
SAR Labs A to H	SAR Labs 1 to 14

UL Verification Services Inc. is accredited by A2LA, Certificate Number 0751.05

4. SAR Measurement System & Test Equipment

4.1. SAR Measurement System

The DASY 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 Win10 and the DASY6/8[1] 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.

[1] DASY6/8 software used: DASY6.16.2 or DASY8.16.2 and older generations

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 IEC/IEEE 62209-1528, 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	≤ $1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

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

* When zoom scan is required and the *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.

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
Vector Network Analyzer	ROHDE & SCHWARZ	ZNLE6	101274-mn	2/19/2024
Dielectric Probe kit	SPEAG	DAK-3.5	1082	9/19/2023
Shorting Block*	SPEAG	DAK-3.5 Short	SM DAK 200 BA	3/21/2023
Shorting Block	SPEAG	DAK-3.5 Short	SM DAK 200 BA	2/6/2024
Thermometer	Fisher Scientific	Traceable	122529162	8/9/2023

Note(s):

*Equipment not used past calibration due date.

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
MXG Analog Signal Generator	Agilent	N5181A	MY50140610	1/31/2024
Power Meter	HP	437B	3125U11364	1/31/2024
Power Meter	HP	437B	3125U11347	1/31/2024
Power Sensor	HP	8481A	3318A92374	1/31/2024
Power Sensor	HP	8481A	1926A27049	1/31/2024
Amplifier	Miteq	AMF-4D-00400600-50-30P	1795093	N/A
Bi-directional coupler	Werlatone	C8060-102	2711	N/A
DC Power Supply	Sorensen	XT 15-4	1802A01877	N/A
MXG Analog Signal Generator	Agilent	N5181A	MY50140630	1/31/2024
Power Meter	Keysight	N1912A	MY55196004	1/31/2024
Power Sensor	Agilent	N1921A	MY53260010	1/31/2024
Power Sensor	Agilent	N1921A	MY52260009	1/31/2024
Amplifier	Miteq	AMF-4D-00400600-50-30P	1795092	N/A
Bi-directional coupler	Werlatone	C8060-102	2149	N/A
DC Power Supply	Sorensen	XT 15-4	1817A02680	N/A

Lab Equipment

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
E-Field Probe (SAR Lab 7)	SPEAG	EX3DV4	3989	1/26/2024
E-Field Probe (SAR Lab 7)	SPEAG	EX3DV4	7356	3/17/2024
Data Acquisition Electronics (SAR Lab 7)	SPEAG	DAE4	1544	1/24/2024
Thermometer	TRACEABLE	6530CC	160643192	2/29/2024
System Validation Dipole	SPEAG	D750V3	1071	11/24/2023
System Validation Dipole	SPEAG	D835V2	4d002	11/24/2023
System Validation Dipole	SPEAG	D1750V2	1050	4/27/2023
System Validation Dipole	SPEAG	D1900V2	5d140	4/28/2023
System Validation Dipole	SPEAG	D2300V2	1002	4/25/2023
System Validation Dipole	SPEAG	D2300V2	1058	10/18/2023
System Validation Dipole	SPEAG	D2450V2	899	4/25/2023
System Validation Dipole	SPEAG	D2600V2	1036	4/25/2023
System Validation Dipole	SPEAG	D2600V2	1006	10/18/2023
System Validation Dipole	SPEAG	D5GHzV2	1168	11/23/2023

Other

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Power Meter	Keysight	N1911A	MY55196015	1/31/2024
Power Sensor	Agilent	N1921A	MY52270022	1/31/2024
Wideband Radio Communication Tester	R&S	CMW500	135384-pJ	2/29/2024
Wideband Radio Communication Tester	R&S	CMW500	137873-WG	2/28/2024
Wideband Radio Communication Tester	R&S	CMW500	170416-Lb	2/28/2024

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. Therefore, the measurement uncertainty is not required.

6. Device Under Test (DUT) Information

6.1. DUT Description

Device Dimension	Overall (Length x Width): 101 mm x 65 mm This is a Body-worn device
Back Cover	Removal Battery Cover
Battery Options	Rechargeable – Lithium-ion Polymer battery, Rating 3.85Vdc, 16.56Wh
Accessory	Body Mounts
Wireless Router (Hotspot)	Wi-Fi Hotspot mode permits the device to share its cellular data connection with other Wi-Fi-enabled devices. ☒ DUT does NOT support Hotspot mode
Wi-Fi Direct	Wi-Fi Direct enabled devices transfer data directly between each other ☒ DUT does NOT support Wi-Fi Direct
Bluetooth Tethering (Hotspot)	BT Tethering mode permits the device to share its cellular data connection with other devices. ☒ DUT does NOT support Bluetooth Hotspot mode
Test sample information	**S/N** / **IMEI** / **Notes** D01A09950 / N/A / SAR WWAN/WLAN Radiated/WLAN Conducted Unit D01A01191 / N/A / SAR WWAN/WLAN Radiated/WLAN Conducted Unit D01A04631 / N/A / SAR WWAN/WLAN Radiated/WLAN Conducted Unit D01A03971 / N/A / SAR WWAN/WLAN Radiated/WLAN Conducted Unit D01A00991 / N/A / SAR WWAN Conducted Unit
Hardware Version	DVT2
Software Version*	Production units: v.01.01.NA.01.08 Unit D01A09950: v1.1.15 Unit D01A01191: v0.2309.4 Unit D01A00991: v0.2302.13 Unit D01A04631: v0.2314.33 Unit D01A03971: v0.2314.33

Notes:

*Per the Manufacturer, All SW versions noted above are functionally equivalent for SAR testing. Refer to Declaration of changes for SW version differences.

6.2. Wireless Technologies

Wireless technologies	Frequency bands	Operating mode	Duty Cycle used for SAR testing
LTE	FDD Band 2 FDD Band 4 FDD Band 5 FDD Band 7 FDD Band 12 FDD Band 13 FDD Band 14 FDD Band 25 FDD Band 26 FDD Band 30 FDD Band 66	QPSK 16QAM 64QAM Rel. 12 Carrier Aggregation support downlink only[3]	100% (FDD)
Wi-Fi	2.4 GHz	802.11b 802.11g 802.11n (HT20) 802.11n (HT40)	99.20% (802.11b) [1]
	5 GHz	802.11a 802.11n (HT20) 802.11n (HT40) 802.11ac (VHT20) 802.11ac (VHT40) 802.11ac (VHT80)	96.26% (5.3GHz: 802.11n/ac 40MHz BW) [1] 98.19% (5.6GHz: 802.11a) [1] 93.14% (5.8GHz: 802.11n/ac 40MHz BW) [1]
	Does this device support band 5.60 ~ 5.65 GHz? ☒ Yes ☐ No		
	Does this device support Band gap channel(s)? ☒ Yes ☐ No		
Bluetooth	2.4 GHz	BR, EDR, and LE	77.20% (GFSK) [2]

Notes:

1. Duty cycle for Wi-Fi is referenced from the DTS Report (UL Report # 14641114-E3 and UNII Report (UL Report # 14641114-E4).
2. Refer to §9.4 for Bluetooth Measured Duty Cycle.
3. Refer to §9.2 for supported DL Carrier Aggregation combinations

6.3. General LTE SAR Test and Reporting Considerations

Item	Description						
Frequency range, Channel Bandwidth, Numbers and Frequencies	Band 2	Frequency range: 1850 - 1910 MHz (BW = 60 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 (BW = 45 MHz)					
		Channel Bandwidth					
		20 MHz [1]	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 (BW = 25 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz [1]	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 (BW = 70 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 (BW = 17 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz [1]	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 13	Frequency range: 777 - 787 MHz (BW = 10 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz [1]	5 MHz [1]	3 MHz	1.4 MHz
	Low				23205/ 779.5		
	Mid			**23230/ 782**	23230/ 782		
	High				23255/ 784.5		

General LTE SAR Test and Reporting Considerations (continued)

Item	Description						
Frequency range, Channel Bandwidth, Numbers and Frequencies	Band 14	Frequency range: 788 - 798 MHz (BW = 10 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz [1]	5 MHz [1]	3 MHz	1.4 MHz
	Low				23305/ 790.5		
	Mid			**23330/ 793**	23330/ 793		
	High				23355/ 795.5		
	Band 25	Frequency range: 1850 - 1915 MHz (BW = 65 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low	**26140/ 1860**	26115/ 1857.5	26090/ 1855	26065/ 1852.5	26055/ 1851.5	26047/ 1850.7
	Mid	**26365/ 1882.5**	26365/ 1882.5	26365/ 1882.5	26365/ 1882.5	26365/ 1882.5	26365/ 1882.5
	High	**26590/ 1905**	26615/ 1907.5	26640/ 1910	26665/ 1912.5	26675/ 1913.5	26683/ 1914.3
	Band 26	Frequency range: 814 - 849 MHz (BW = 35 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz [1]	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low		26765/ 821.5	26740/ 819	26715/ 816.5	26705/ 815.5	26697/ 814.7
	Mid		**26865/ 831.5**	26865/ 831.5	26865/ 831.5	26865/ 831.5	26865/ 831.5
	High		26965/ 841.5	26990/ 844	27015/ 846.5	27025/ 847.5	27033/ 848.3
	Band 30	Frequency range: 2305 - 2315 MHz (BW = 10 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz [1]	5 MHz [1]	3 MHz	1.4 MHz
	Low				27685/ 2307.5		
	Mid			**27710/ 2310**	27710/ 2310		
	High				27735/ 2312.5		
	Band 66	Frequency range: 1710 - 1780 MHz (BW = 70 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)

<table>
<tr><th>Item</th><th>Description</th></tr>
<tr><td>LTE transmitter and antenna implementation</td><td>Refer to Appendix A.</td></tr>
<tr><td>Maximum power reduction (MPR)</td><td>
Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3
<table>
<tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th><th rowspan="2">MPR (dB)</th></tr>
<tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr>
<tr><td>QPSK</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr>
<tr><td>64 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 2</td></tr>
<tr><td>64 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 3</td></tr>
<tr><td>256 QAM</td><td colspan="6">≥ 1</td><td>≤ 5</td></tr>
</table>
MPR Built-in by design
The manufacturer MPR values are always within the 3GPP maximum MPR allowance but may not follow the default MPR values.
A-MPR (additional MPR) was disabled during SAR testing
</td></tr>
<tr><td>Power reduction</td><td>No</td></tr>
<tr><td>Spectrum plots for RB configurations</td><td>A properly configured base station simulator was used for the SAR and power measurements; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.</td></tr>
</table>

Notes:

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

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.

SAR Test Exclusion Considerations for Body-worn Exposure Condition

RF Exposure Condition	Antenna	RF Air Interface	Frequency (GHz)	Output Power		Antenna Gain (dBi)	E.I.R.P		ERP (mW)	Separation Distances (cm)	Calculated P_{th}	SAR Test Configurations
				dBm	mW		dBm	mW		Back	Back	Back
Body-worn	LTE Main L/M Ant	LTE B2	1.910	24.5	282	-0.40	24.1	257	255	0.5	3	SAR Required
	LTE Main L/M Ant	LTE B4	1.755	23.7	234	2.00	25.7	372	370	0.5	4	SAR Required
	LTE Main L/M Ant	LTE B5	0.849	24.5	282	-1.60	22.9	195	193	0.5	9	SAR Required
	LTE Main H Ant	LTE B7	2.570	24.5	282	-1.90	22.6	182	180	0.5	3	SAR Required
	LTE Main L/M Ant	LTE B12	0.716	24.5	282	-2.70	21.8	151	149	0.5	11	SAR Required
	LTE Main L/M Ant	LTE B13	0.787	24.5	282	-1.50	23.0	200	198	0.5	10	SAR Required
	LTE Main L/M Ant	LTE B14	0.798	24.5	282	-1.40	23.1	204	202	0.5	10	SAR Required
	LTE Main L/M Ant	LTE B25	1.915	24.5	282	-0.40	24.1	257	255	0.5	3	SAR Required
	LTE Main L/M Ant	LTE B26	0.849	24.5	282	-1.70	22.8	191	189	0.5	9	SAR Required
	LTE Main H Ant	LTE B30	2.315	23.3	214	0.10	23.4	219	217	0.5	3	SAR Required
	LTE Main L/M Ant	LTE B66	1.780	23.7	234	2.00	25.7	372	370	0.5	4	SAR Required
	WiFi/BT Ant	WLAN 2.4G	2.472	19.0	79	1.55	20.6	114	112	0.5	3	SAR Required
	WiFi/BT Ant	WLAN 5.2G	5.240	17.0	50	1.64	18.6	73	71	0.5	1	SAR Required
	WiFi/BT Ant	WLAN 5.3G	5.320	17.0	50	3.22	20.2	105	103	0.5	1	SAR Required
	WiFi/BT Ant	WLAN 5.6G	5.720	17.0	50	4.53	21.5	142	140	0.5	1	SAR Required
	WiFi/BT Ant	WLAN 5.8G	5.825	14.8	30	1.98	16.8	48	46	0.5	1	SAR Required
	WiFi/BT Ant	Bluetooth	2.480	10.8	12	1.55	12.4	17	15	0.5	3	SAR Required

Note(s):

- Per to KDB 447498, when the maximum time-averaged output power or effective radiated power (ERP), whichever is greater, is less than or equal to the power threshold (P_{th}) in mW, SAR Testing is excluded for that test configuration.

Required Test Configurations for Body-worn Exposure Condition

RF Exposure Condition	Antenna	Band	Back
Body-worn	LTE Main L/M Ant	LTE L Element: LTE B5/12/13/14/26	Yes
		LTE M Element: LTE B2/4/25/66	Yes
	LTE Main H Ant	LTE B7/30	Yes
	WiFi/BT Ant	Wi-Fi 2.4GHz, Wi-Fi 5GHz, Bluetooth	Yes

Note(s):

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

SAR Test Exclusion Considerations for Extremity Exposure Condition

RF Exposure Condition	Antenna	RF Air Interface	Frequency (GHz)	Output Power		Antenna Gain (dBi)	E.I.R.P		ERP (mW)	Separation Distances (cm)						Calculated P_{th}						SAR Test Configurations					
				dBm	mW		dBm	mW		Back	Front	Edge Top	Edge Right	Edge Bottom	Edge Left	Back	Front	Edge Top	Edge Right	Edge Bottom	Edge Left	Back	Front	Edge Top	Edge Right	Edge Bottom	Edge Left
Extremity	LTE Main L/M Ant	LTE B2	1.910	24.5	282	-0.40	24.1	257	255	0.5	0.2	9.0	2.8	0.5	1.8	8	2	1746	203	8	94	SAR Required	SAR Required	SAR Excluded	SAR Required	SAR Required	SAR Required
	LTE Main L/M Ant	LTE B4	1.755	23.7	234	2.00	25.7	372	370	0.5	0.2	9.0	2.8	0.5	1.8	9	2	1772	211	9	98	SAR Required	SAR Required	SAR Excluded	SAR Required	SAR Required	SAR Required
	LTE Main L/M Ant	LTE B5	0.849	24.5	282	-1.60	22.9	195	193	0.5	0.5	9.3	1.1	0.2	0.5	23	20	1450	74	4	24	SAR Required	SAR Required	SAR Excluded	SAR Required	SAR Required	SAR Required
	LTE Main H Ant	LTE B7	2.570	24.5	282	-1.90	22.6	182	180	0.5	1.2	6.6	6.5	2.4	0.5	7	34	907	903	133	5	SAR Required	SAR Required	SAR Excluded	SAR Excluded	SAR Required	SAR Required
	LTE Main L/M Ant	LTE B12	0.716	24.5	282	-2.70	21.8	151	149	0.5	0.5	9.3	1.1	0.2	0.5	29	25	1331	85	6	30	SAR Required	SAR Required	SAR Excluded	SAR Required	SAR Required	SAR Required
	LTE Main L/M Ant	LTE B13	0.787	24.5	282	-1.50	23.0	200	198	0.5	0.5	9.3	1.1	0.2	0.5	25	22	1396	79	5	26	SAR Required	SAR Required	SAR Excluded	SAR Required	SAR Required	SAR Required
	LTE Main L/M Ant	LTE B14	0.798	24.5	282	-1.40	23.1	204	202	0.5	0.5	9.3	1.1	0.2	0.5	25	22	1405	78	5	26	SAR Required	SAR Required	SAR Excluded	SAR Required	SAR Required	SAR Required
	LTE Main L/M Ant	LTE B25	1.915	24.5	282	-0.40	24.1	257	255	0.5	0.2	9.0	2.8	0.5	1.8	8	2	1746	203	8	94	SAR Required	SAR Required	SAR Excluded	SAR Required	SAR Required	SAR Required
	LTE Main L/M Ant	LTE B26	0.849	24.5	282	-1.70	22.8	191	189	0.5	0.5	9.3	1.1	0.2	0.5	23	20	1450	74	4	24	SAR Required	SAR Required	SAR Excluded	SAR Required	SAR Required	SAR Required
	LTE Main H Ant	LTE B30	2.315	23.3	214	0.10	23.4	219	217	0.5	1.2	6.6	6.5	2.4	0.5	7	36	930	927	139	6	SAR Required	SAR Required	SAR Excluded	SAR Excluded	SAR Required	SAR Required
	LTE Main L/M Ant	LTE B66	1.780	23.7	234	2.00	25.7	372	370	0.5	0.2	9.0	2.8	0.5	1.8	9	2	1768	210	9	97	SAR Required	SAR Required	SAR Excluded	SAR Required	SAR Required	SAR Required
	WiFi/BT Ant	WLAN 2.4G	2.472	19.0	79	1.55	20.6	114	112	0.5	1.0	4.6	0.3	3.8	6.7	7	27	469	3	319	941	SAR Required	SAR Required	SAR Excluded	SAR Required	SAR Excluded	SAR Excluded
	WiFi/BT Ant	WLAN 5.2G	5.240	17.0	50	1.64	18.6	73	71	0.5	1.0	4.6	0.3	3.8	6.7	4	17	370	2	243	786	SAR Required	SAR Required	SAR Excluded	SAR Required	SAR Excluded	SAR Excluded
	WiFi/BT Ant	WLAN 5.3G	5.320	17.0	50	3.22	20.2	105	103	0.5	1.0	4.6	0.3	3.8	6.7	4	16	368	2	242	783	SAR Required	SAR Required	SAR Excluded	SAR Required	SAR Excluded	SAR Excluded
	WiFi/BT Ant	WLAN 5.6G	5.720	17.0	50	4.53	21.5	142	140	0.5	1.0	4.6	0.3	3.8	6.7	3	16	359	2	235	770	SAR Required	SAR Required	SAR Excluded	SAR Required	SAR Excluded	SAR Excluded
	WiFi/BT Ant	WLAN 5.8G	5.825	14.8	30	1.98	16.8	48	46	0.5	1.0	4.6	0.3	3.8	6.7	3	15	357	2	234	766	SAR Required	SAR Required	SAR Excluded	SAR Required	SAR Excluded	SAR Excluded
	WiFi/BT Ant	Bluetooth	2.480	10.8	12	1.55	12.4	17	15	0.5	1.0	4.6	0.3	3.8	6.7	7	27	469	3	319	940	SAR Required	SAR Excluded	SAR Excluded	SAR Required	SAR Excluded	SAR Excluded

Note(s):

- Per to KDB 447498, when the maximum time-averaged output power or effective radiated power (ERP), whichever is greater, is less than or equal to the power threshold (Pth) in mW, SAR Testing is excluded for that test configuration.
- Per KDB 447498, when 10-g extremity SAR applies, SAR test exemptions may be considered by applying a factor of 2.5 to the SAR-based exemption thresholds.

Required Test Configurations for Extremity Exposure Condition

RF Exposure Condition	Antenna	Band	Back	Front	Edge Top	Edge Right	Edge Bottom	Edge Left
Extremity	LTE Main L/M Ant	LTE L Element: LTE B5/12/13/14/26	Yes	Yes	No	Yes	Yes	Yes
		LTE M Element: LTE B2/4/25/66	Yes	Yes	No	Yes	Yes	Yes
	LTE Main H Ant	LTE B7/30	Yes	Yes	No	No	Yes	Yes
	WiFi/BT Ant	Wi-Fi 2.4GHz, Wi-Fi 5GHz, Bluetooth	Yes	Yes	No	Yes	Yes*	No

Note(s):

Yes = Testing is required.
No = Testing is not required.
*SAR was performed on Edge Bottom for WiFi/BT Ant for Sum of SAR Analysis. Refer to §12 for Simultaneous Transmission Analysis.

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.

The dielectric constant (εr) and conductivity (σ) of typical tissue-equivalent media recipes are expected to be within ± 5% of the required target values; but for SAR measurement systems that have implemented the SAR error compensation algorithms documented in IEEE Std 1528-2013, to automatically compensate the measured SAR results for deviations between the measured and required tissue dielectric parameters, the tolerance for εr and σ may be relaxed to ± 10%. This is limited to frequencies ≤ 3 GHz.

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

Dielectric Property Measurements Results

SAR Lab	Date	Band (MHz)	Tissue Type	Frequency (MHz)	Relative Permittivity (εr)			Conductivity (σ)		
					Measured	Target	Delta	Measured	Target	Delta
7	2/22/2023	2450	Head	2450	40.84	39.20	4.18%	1.80	1.80	-0.17%
				2400	40.92	39.30	4.13%	1.76	1.75	0.31%
				2500	40.74	39.14	4.10%	1.84	1.85	-0.87%
7	2/27/2023	750	Head	750	43.87	41.96	4.55%	0.91	0.89	1.79%
				660	44.25	42.42	4.31%	0.88	0.89	-1.15%
				800	43.69	41.71	4.76%	0.93	0.90	3.28%
7	2/27/2023	835	Head	835	43.19	41.50	4.07%	0.94	0.90	4.49%
				805	43.28	41.68	3.84%	0.93	0.90	3.42%
				850	43.16	41.50	4.00%	0.95	0.92	3.31%
7	2/27/2023	1750	Head	1750	41.67	40.08	3.96%	1.38	1.37	1.02%
				1695	41.74	40.17	3.91%	1.35	1.34	0.90%
				1755	41.66	40.08	3.95%	1.39	1.37	1.11%
7	3/6/2023	750	Head	750	42.16	41.96	0.47%	0.89	0.89	0.20%
				660	42.69	42.42	0.63%	0.86	0.89	-2.85%
				800	42.04	41.71	0.80%	0.91	0.90	1.69%
7	3/6/2023	835	Head	835	41.92	41.50	1.01%	0.93	0.90	3.04%
				805	42.02	41.68	0.82%	0.91	0.90	1.89%
				850	41.89	41.50	0.94%	0.93	0.92	1.91%
7	3/6/2023	1750	Head	1750	39.95	40.08	-0.34%	1.39	1.37	1.17%
				1695	40.05	40.17	-0.30%	1.35	1.34	1.20%
				1755	39.94	40.08	-0.34%	1.39	1.37	1.18%
7	3/6/2023	1900	Head	1900	40.52	40.00	1.30%	1.45	1.40	3.57%
				1850	40.63	40.00	1.58%	1.42	1.40	1.43%
				1920	40.48	40.00	1.20%	1.46	1.40	4.36%
7	3/9/2023	2300	Head	2300	37.75	39.47	-4.36%	1.67	1.66	0.32%
				2350	37.66	39.38	-4.38%	1.71	1.71	-0.10%
				2400	37.57	39.30	-4.39%	1.74	1.75	-0.55%
7	3/9/2023	2600	Head	2600	37.22	39.01	-4.59%	1.90	1.96	-3.27%
				2495	37.41	39.14	-4.43%	1.81	1.85	-2.04%
				2690	37.04	38.90	-4.77%	1.97	2.06	-4.39%
7	3/10/2023	2450	Head	2450	38.27	39.20	-2.37%	1.79	1.80	-0.78%
				2400	38.35	39.30	-2.41%	1.75	1.75	-0.21%
				2500	38.17	39.14	-2.47%	1.82	1.85	-1.67%
7	3/10/2023	5250	Head	5250	36.36	35.93	1.19%	4.62	4.70	-1.77%
				5150	36.55	36.05	1.39%	4.51	4.60	-2.02%
				5350	36.18	35.82	1.00%	4.72	4.80	-1.70%
7	3/10/2023	5750	Head	5750	35.42	35.36	0.16%	5.18	5.21	-0.65%
				5700	35.53	35.42	0.31%	5.12	5.16	-0.90%
				5850	35.24	35.30	-0.17%	5.29	5.32	-0.58%
7	3/13/2023	750	Head	750	41.08	41.96	-2.10%	0.88	0.89	-1.27%
				660	41.62	42.42	-1.89%	0.85	0.89	-3.76%
				800	41.03	41.71	-1.62%	0.90	0.90	0.00%
7	3/13/2023	1750	Head	1750	39.60	40.08	-1.21%	1.31	1.37	-4.38%
				1695	39.56	40.17	-1.52%	1.28	1.34	-4.56%
				1755	39.60	40.08	-1.19%	1.31	1.37	-4.36%
7	3/13/2023	5600	Head	5600	35.28	35.53	-0.71%	4.88	5.06	-3.52%
				5500	35.44	35.65	-0.58%	4.77	4.96	-3.79%
				5725	35.07	35.39	-0.91%	5.03	5.19	-3.11%
7	4/18/2023	2300	Head	2300	39.79	39.47	0.80%	1.61	1.66	-3.05%
				2350	39.68	39.38	0.75%	1.65	1.71	-3.38%
				2400	39.59	39.30	0.75%	1.68	1.75	-3.86%
7	4/18/2023	2600	Head	2600	40.04	39.01	2.64%	1.92	1.96	-2.30%
				2495	40.21	39.14	2.73%	1.83	1.85	-1.23%
				2690	39.87	38.90	2.50%	1.99	2.06	-3.23%

8.2. System Check

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

System Performance Check Measurement Conditions:

- The measurements were performed in the flat section of the TWIN SAM or ELI phantom, shell thickness: 2.0 ±0.2 mm (bottom plate) filled with Body or Head simulating liquid of the following parameters.
- The depth of tissue-equivalent liquid in a phantom must be ≥ 15.0 cm for SAR measurements ≤ 3 GHz and ≥ 10.0 cm for measurements > 3 GHz.
- The DASY system with an E-Field Probe was used for the measurements.
- The dipole was mounted on the small tripod so that the dipole feed point was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10 mm (above 1 GHz) and 15 mm (below 1 GHz) from dipole center to the simulating liquid surface.
- The coarse grid with a grid spacing of 15 mm was aligned with the dipole.
  For 5 GHz band - The coarse grid with a grid spacing of 10 mm was aligned with the dipole.
- Special 7x7x7 (below 3 GHz) and/or 8x8x7 (above 3 GHz) fine cube was chosen for the cube.
- Distance between probe sensors and phantom surface was set to 3 mm.
  For 5 GHz band - Distance between probe sensors and phantom surface was set to 2.5 mm
- The dipole input power (forward power) was 100 mW.
- The results are normalized to 1 W input power.

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. Refer to Appendix B for the SAR System Check Plots.

SAR Lab	Date	Tissue Type	Dipole Type & Serial Number	Dipole Cal. Due Date	Measured results for 1-g SAR				Measured results for 10-g SAR				Plot No.
					Zoom Scan at 100 mW	Normalize to 1 W	Target (Ref. Value)	Delta ±10%	Zoom Scan at 100 mW	Normalize to 1 W	Target (Ref. Value)	Delta ±10%	
7	2/23/2023	Head	D2450V2 SN: 899	4/25/2023	4.91	49.10	52.4	**-6.30%**	2.31	23.1	24.7	-6.48%	1
7	2/27/2023	Head	D750V3 SN: 1071	11/24/2023	0.894	8.94	8.39	**6.56%**	0.595	5.95	5.50	8.18%	2
7	2/27/2023	Head	D835V2 SN: 4d002	11/24/2023	1.07	10.70	9.83	**8.85%**	0.706	7.06	6.42	9.97%	3
7	2/27/2023	Head	D1750V2 SN: 1050	4/27/2023	3.54	35.4	36.4	-2.75%	1.89	18.9	19.1	-1.05%	
7	3/6/2023	Head	D750V3 SN: 1071	11/24/2023	0.846	8.46	8.39	0.83%	0.557	5.57	5.50	1.27%	
7	3/6/2023	Head	D835V2 SN: 4d002	11/24/2023	1.00	10.0	9.83	1.73%	0.657	6.57	6.42	2.34%	
7	3/6/2023	Head	D1750V2 SN: 1050	4/27/2023	3.47	34.7	36.4	-4.67%	1.85	18.5	19.1	-3.14%	
7	3/6/2023	Head	D1900V2 SN: 5d140	4/28/2023	3.83	38.3	39.6	**-3.28%**	1.99	19.9	20.7	-3.86%	4
7	3/9/2023	Head	D2300V2 SN: 1002	4/25/2023	5.00	50.0	48.9	**2.25%**	2.40	24.0	23.8	0.84%	5
7	3/9/2023	Head	D2600V2 SN: 1036	4/25/2023	5.50	55.0	56.2	**-2.14%**	2.48	24.8	25.0	-0.80%	6
7	3/10/2023	Head	D2450V2 SN: 899	4/25/2023	5.15	51.5	52.4	-1.72%	2.42	24.2	24.7	-2.02%	
7	3/10/2023	Head	D5GHzV2 SN: 1168 (5.25 GHz)	11/23/2023	8.11	81.1	78.0	**3.97%**	2.37	23.7	22.5	5.33%	7
7	3/10/2023	Head	D5GHzV2 SN: 1168 (5.75 GHz)	11/23/2023	8.41	84.1	80.1	**4.99%**	2.43	24.3	22.7	7.05%	8
7	3/13/2023	Head	D750V3 SN: 1071	11/24/2023	0.861	8.61	8.39	2.62%	0.571	5.71	5.50	3.82%	
7	3/13/2023	Head	D1750V2 SN: 1050	4/27/2023	3.45	34.5	36.4	**-5.22%**	1.85	18.5	19.1	-3.14%	9
7	3/13/2023	Head	D5GHzV2 SN: 1168 (5.60 GHz)	11/23/2023	8.39	83.9	80.7	**3.97%**	2.46	24.6	22.8	7.89%	10
7	4/18/2023	Head	D2300V2 SN: 1058	10/18/2023	4.78	47.8	48.5	**-1.44%**	2.32	23.2	23.6	-1.69%	11
7	4/18/2023	Head	D2600V2 SN: 1006	10/18/2023	5.57	55.7	54.3	**2.58%**	2.55	25.5	24.0	6.25%	12

9. Conducted Output Power Measurements

Tune-Up Power Limits provided by the manufacturer are used to scale measured SAR values.

9.1. 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

Maximum Output Power (Tune-up Limit) for LTE

According to April 2015 TCB workshop, SAR test exclusion can be applied for testing overlapping LTE bands as follows:

a) The maximum output power, including tolerance, for the smaller band must be ≤ the larger band to qualify for the SAR test exclusion.
b) The channel bandwidth and other operating parameters for the smaller band must be fully supported by the larger band.
   - LTE Band 2 (1850-1910 MHz) is covered by LTE Band 25 (1850-1915 MHz)
   - LTE Band 4 (1710-1755 MHz) is covered by LTE Band 66 (1710-1780 MHz)
   - LTE Band 5 (824-849 MHz) is covered by LTE Band 26 (814-849 MHz)

For some LTE Bands, certain channel bandwidths do not support at least three non-overlapping channels. When a device supports overlapping channel assignments 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. Please refer to section 6.3. for a detailed list of LTE test channels

- LTE Band 4 (1710-1755 MHz)
- LTE Band 5 (824-849 MHz)
- LTE Band 12 (699-716 MHz)
- LTE Band 13 (777-787 MHz)
- LTE Band 14 (788-798 MHz)
- LTE Band 26 (814-849 MHz)

Maximum Output Power (Tune-up Limit) for LTE (continued)

Band	Mode	Tune-up Power Limit (dBm)	
		LTE Main L/M Ant	LTE Main H Ant
		Maximum	Maximum
LTE Band 2	QPSK	24.5	
	16QAM	23.5	
	64QAM	22.5	
LTE Band 4	QPSK	23.7	
	16QAM	22.7	
	64QAM	21.7	
LTE Band 5	QPSK	24.5	
	16QAM	23.5	
	64QAM	22.5	
LTE Band 7	QPSK		24.5
	16QAM		23.5
	64QAM		22.5
LTE Band 12	QPSK	24.5	
	16QAM	23.5	
	64QAM	22.5	
LTE Band 13	QPSK	24.5	
	16QAM	23.5	
	64QAM	22.5	
LTE Band 14	QPSK	24.5	
	16QAM	23.5	
	64QAM	22.5	
LTE Band 25	QPSK	24.5	
	16QAM	23.5	
	64QAM	22.5	
LTE Band 26	QPSK	24.5	
	16QAM	23.5	
	64QAM	22.5	
LTE Band 30	QPSK		23.3
	16QAM		22.3
	64QAM		21.3
LTE Band 66	QPSK	23.7	
	16QAM	22.7	
	64QAM	21.7	

Note(s):

- LTE QPSK configuration has the highest maximum average output power per 3GPP standard.
- SAR measurement is not required for 16QAM and 64QAM modes when:
  - the highest maximum output power for 16QAM and 64QAM is ≤ ½ dB higher than the QPSK
  - or the reported SAR for the QPSK configuration is ≤ 1.45 W/kg.

LTE Band 7 Measured Results

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				20850	21100	21350		
				2510 MHz	2535 MHz	2560 MHz		
20	QPSK	1	0	23.9	24.0	23.9	0	24.5
		1	49	23.9	23.9	23.8	0	24.5
		1	99	23.9	23.8	23.7	0	24.5
		50	0	23.0	23.0	23.0	1	23.5
		50	24	23.1	23.0	23.0	1	23.5
		50	50	23.0	23.0	23.0	1	23.5
		100	0	23.0	23.0	22.9	1	23.5
	16QAM	1	0	23.3	23.4	23.3	1	23.5
		1	49	23.3	23.4	23.2	1	23.5
		1	99	23.3	23.3	23.2	1	23.5
		50	0	22.0	22.0	21.9	2	22.5
		50	24	22.0	22.1	22.0	2	22.5
		50	50	22.0	22.0	21.9	2	22.5
		100	0	22.0	22.0	21.9	2	22.5
	64QAM	1	0	22.2	22.3	22.5	2	22.5
		1	49	22.3	22.2	22.4	2	22.5
		1	99	22.1	22.2	22.5	2	22.5
		50	0	21.1	21.1	20.9	3	21.5
		50	24	21.1	21.1	21.0	3	21.5
		50	50	21.0	21.0	21.0	3	21.5
		100	0	21.0	21.0	20.9	3	21.5

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				20825	21100	21375		
				2507.5 MHz	2535 MHz	2562.5 MHz		
15	QPSK	1	0	24.0	24.0	23.9	0	24.5
		1	37	23.9	23.9	23.9	0	24.5
		1	74	24.0	23.9	23.7	0	24.5
		36	0	23.0	23.0	23.0	1	23.5
		36	20	23.1	23.0	23.0	1	23.5
		36	39	23.0	23.0	23.0	1	23.5
		75	0	23.0	23.0	23.0	1	23.5
	16QAM	1	0	23.3	22.9	23.3	1	23.5
		1	37	23.3	22.8	23.2	1	23.5
		1	74	23.4	22.8	23.2	1	23.5
		36	0	22.0	22.0	22.0	2	22.5
		36	20	22.1	22.0	22.0	2	22.5
		36	39	22.0	22.0	22.0	2	22.5
		75	0	22.0	22.0	22.0	2	22.5
	64QAM	1	0	22.5	22.2	22.0	2	22.5
		1	37	22.5	22.2	22.0	2	22.5
		1	74	22.1	22.1	22.1	2	22.5
		36	0	21.0	21.0	21.0	3	21.5
		36	20	21.0	21.0	21.0	3	21.5
		36	39	21.0	21.0	21.0	3	21.5
		75	0	21.0	21.0	21.0	3	21.5

LTE Band 7 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				20800	21100	21400		
				2505 MHz	2535 MHz	2565 MHz		
10	QPSK	1	0	23.9	23.9	23.9	0	24.5
		1	25	23.9	23.9	23.9	0	24.5
		1	49	24.0	23.9	23.7	0	24.5
		25	0	23.0	23.0	23.0	1	23.5
		25	12	23.0	23.0	23.0	1	23.5
		25	25	23.1	23.0	23.0	1	23.5
		50	0	23.1	23.0	23.0	1	23.5
	16QAM	1	0	23.0	22.9	23.2	1	23.5
		1	25	23.0	22.9	23.2	1	23.5
		1	49	23.0	22.9	23.1	1	23.5
		25	0	22.1	22.0	22.0	2	22.5
		25	12	22.1	22.0	22.0	2	22.5
		25	25	22.1	22.0	22.0	2	22.5
		50	0	22.1	22.0	21.9	2	22.5
	64QAM	1	0	22.1	22.3	22.0	2	22.5
		1	25	22.1	22.2	22.0	2	22.5
		1	49	22.2	22.2	22.0	2	22.5
		25	0	21.1	21.0	21.0	3	21.5
		25	12	21.1	21.0	21.0	3	21.5
		25	25	21.1	21.0	21.0	3	21.5
		50	0	21.0	21.0	20.9	3	21.5

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				20775	21100	21425		
				2502.5 MHz	2535 MHz	2567.5 MHz		
5	QPSK	1	0	24.0	24.0	23.9	0	24.5
		1	12	24.0	24.0	23.8	0	24.5
		1	24	24.1	24.0	23.8	0	24.5
		12	0	23.0	23.0	23.0	1	23.5
		12	7	23.1	23.0	23.0	1	23.5
		12	13	23.1	23.0	23.0	1	23.5
		25	0	23.1	23.0	23.0	1	23.5
	16QAM	1	0	23.1	23.1	23.4	1	23.5
		1	12	23.1	23.1	23.4	1	23.5
		1	24	23.2	23.1	23.3	1	23.5
		12	0	22.1	22.1	22.1	2	22.5
		12	7	22.1	22.1	22.1	2	22.5
		12	13	22.1	22.1	22.1	2	22.5
		25	0	22.0	22.0	22.0	2	22.5
	64QAM	1	0	21.9	22.2	22.1	2	22.5
		1	12	21.9	22.2	22.1	2	22.5
		1	24	21.9	22.2	22.1	2	22.5
		12	0	21.0	20.9	20.9	3	21.5
		12	7	21.0	21.0	21.0	3	21.5
		12	13	21.1	20.9	21.0	3	21.5
		25	0	21.0	20.9	20.9	3	21.5

LTE Band 12 Measured Results

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				[redacted]	23095	[redacted]		
					707.5 MHz			
10	QPSK	1	0		23.4		0	24.5
		1	25		23.3		0	24.5
		1	49		23.3		0	24.5
		25	0		22.3		1	23.5
		25	12		22.3		1	23.5
		25	25		22.2		1	23.5
		50	0		22.2		1	23.5
	16QAM	1	0		22.4		1	23.5
		1	25		22.3		1	23.5
		1	49		22.3		1	23.5
		25	0		21.5		2	22.5
		25	12		21.5		2	22.5
		25	25		21.4		2	22.5
		50	0		21.4		2	22.5
	64QAM	1	0		21.8		2	22.5
		1	25		21.6		2	22.5
		1	49		21.7		2	22.5
		25	0		20.4		3	21.5
		25	12		20.4		3	21.5
		25	25		20.4		3	21.5
		50	0		20.4		3	21.5

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				23035	23095	23155		
				701.5 MHz	707.5 MHz	713.5 MHz		
5	QPSK	1	0	23.6	23.6	23.3	0	24.5
		1	12	23.5	23.4	23.3	0	24.5
		1	24	23.4	23.4	22.7	0	24.5
		12	0	22.5	22.4	22.4	1	23.5
		12	7	22.5	22.4	22.4	1	23.5
		12	13	22.5	22.4	22.3	1	23.5
		25	0	22.5	22.4	22.4	1	23.5
	16QAM	1	0	22.7	22.6	22.8	1	23.5
		1	12	22.6	22.5	22.8	1	23.5
		1	24	22.6	22.5	22.4	1	23.5
		12	0	21.6	21.5	21.5	2	22.5
		12	7	21.6	21.5	21.5	2	22.5
		12	13	21.6	21.5	21.5	2	22.5
		25	0	21.5	21.4	21.4	2	22.5
	64QAM	1	0	21.9	21.4	21.6	2	22.5
		1	12	21.8	21.3	21.6	2	22.5
		1	24	21.7	21.3	21.5	2	22.5
		12	0	20.6	20.4	20.3	3	21.5
		12	7	20.7	20.4	20.3	3	21.5
		12	13	20.6	20.4	20.3	3	21.5
		25	0	20.6	20.3	20.3	3	21.5

LTE Band 12 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				23025	23095	23165		
				700.5 MHz	707.5 MHz	714.5 MHz		
3	QPSK	1	0	23.5	23.4	23.2	0	24.5
		1	8	23.5	23.4	23.2	0	24.5
		1	14	23.4	23.3	22.7	0	24.5
		8	0	22.6	22.4	22.3	1	23.5
		8	4	22.6	22.4	22.3	1	23.5
		8	7	22.5	22.4	22.3	1	23.5
		15	0	22.5	22.4	22.3	1	23.5
	16QAM	1	0	22.6	22.3	22.7	1	23.5
		1	8	22.7	22.4	22.8	1	23.5
		1	14	22.4	22.2	22.2	1	23.5
		8	0	21.6	21.5	21.4	2	22.5
		8	4	21.7	21.5	21.4	2	22.5
		8	7	21.5	21.5	21.5	2	22.5
		15	0	21.4	21.4	21.4	2	22.5
	64QAM	1	0	21.8	21.6	21.4	2	22.5
		1	8	21.9	21.7	21.6	2	22.5
		1	14	21.7	21.6	21.3	2	22.5
		8	0	20.6	20.4	20.3	3	21.5
		8	4	20.6	20.4	20.3	3	21.5
		8	7	20.5	20.4	20.4	3	21.5
		15	0	20.6	20.3	20.3	3	21.5

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				23017	23095	23173		
				699.7 MHz	707.5 MHz	715.3 MHz		
1.4	QPSK	1	0	23.4	23.2	23.1	0	24.5
		1	3	23.5	23.3	23.0	0	24.5
		1	5	23.4	23.2	22.8	0	24.5
		3	0	23.5	23.2	23.0	0	24.5
		3	1	23.5	23.3	23.0	0	24.5
		3	3	23.5	23.3	22.9	0	24.5
		6	0	22.5	22.2	21.9	1	23.5
	16QAM	1	0	22.5	22.3	22.5	1	23.5
		1	3	22.5	22.4	22.5	1	23.5
		1	5	22.5	22.3	22.0	1	23.5
		3	0	22.6	22.3	22.3	1	23.5
		3	1	22.7	22.4	22.2	1	23.5
		3	3	22.7	22.3	22.2	1	23.5
		6	0	21.6	21.3	21.0	2	22.5
	64QAM	1	0	21.7	21.7	21.4	2	22.5
		1	3	21.8	21.8	21.4	2	22.5
		1	5	21.7	21.6	21.2	2	22.5
		3	0	21.5	21.6	21.4	2	22.5
		3	1	21.6	21.7	21.4	2	22.5
		3	3	21.6	21.7	21.3	2	22.5
		6	0	20.7	20.3	20.6	3	21.5

LTE Band 13 Measured Results

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				[redacted]	23230 / 782 MHz	[redacted]		
10	QPSK	1	0		23.0		0	24.5
		1	25		23.4		0	24.5
		1	49		23.4		0	24.5
		25	0		22.5		1	23.5
		25	12		22.5		1	23.5
		25	25		22.4		1	23.5
		50	0		22.4		1	23.5
	16QAM	1	0		22.3		1	23.5
		1	25		22.9		1	23.5
		1	49		22.8		1	23.5
		25	0		21.6		2	22.5
		25	12		21.6		2	22.5
		25	25		21.6		2	22.5
		50	0		21.6		2	22.5
	64QAM	1	0		21.1		2	22.5
		1	25		21.6		2	22.5
		1	49		21.5		2	22.5
		25	0		20.6		3	21.5
		25	12		20.6		3	21.5
		25	25		20.6		3	21.5
		50	0		20.5		3	21.5

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				[redacted]	23230 / 782 MHz	[redacted]		
5	QPSK	1	0		23.5		0	24.5
		1	12		23.5		0	24.5
		1	24		23.4		0	24.5
		12	0		22.5		1	23.5
		12	7		22.5		1	23.5
		12	13		22.4		1	23.5
		25	0		22.5		1	23.5
	16QAM	1	0		22.6		1	23.5
		1	12		22.5		1	23.5
		1	24		22.5		1	23.5
		12	0		21.5		2	22.5
		12	7		21.5		2	22.5
		12	13		21.5		2	22.5
		25	0		21.4		2	22.5
	64QAM	1	0		21.8		2	22.5
		1	12		21.8		2	22.5
		1	24		21.7		2	22.5
		12	0		20.4		3	21.5
		12	7		20.5		3	21.5
		12	13		20.5		3	21.5
		25	0		20.5		3	21.5

LTE Band 14 Measured Results

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				[redacted]	23330 / 793 MHz	[redacted]		
10	QPSK	1	0	[redacted]	23.3	[redacted]	0	24.5
		1	25	[redacted]	23.3	[redacted]	0	24.5
		1	49	[redacted]	23.2	[redacted]	0	24.5
		25	0	[redacted]	22.4	[redacted]	1	23.5
		25	12	[redacted]	22.4	[redacted]	1	23.5
		25	25	[redacted]	22.4	[redacted]	1	23.5
		50	0	[redacted]	22.3	[redacted]	1	23.5
	16QAM	1	0	[redacted]	22.8	[redacted]	1	23.5
		1	25	[redacted]	22.7	[redacted]	1	23.5
		1	49	[redacted]	22.7	[redacted]	1	23.5
		25	0	[redacted]	21.5	[redacted]	2	22.5
		25	12	[redacted]	21.5	[redacted]	2	22.5
		25	25	[redacted]	21.5	[redacted]	2	22.5
		50	0	[redacted]	21.5	[redacted]	2	22.5
	64QAM	1	0	[redacted]	21.5	[redacted]	2	22.5
		1	25	[redacted]	21.5	[redacted]	2	22.5
		1	49	[redacted]	21.5	[redacted]	2	22.5
		25	0	[redacted]	20.6	[redacted]	3	21.5
		25	12	[redacted]	20.6	[redacted]	3	21.5
		25	25	[redacted]	20.5	[redacted]	3	21.5
		50	0	[redacted]	20.5	[redacted]	3	21.5

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				[redacted]	23330 / 793 MHz	[redacted]		
5	QPSK	1	0	[redacted]	23.4	[redacted]	0	24.5
		1	12	[redacted]	23.4	[redacted]	0	24.5
		1	24	[redacted]	23.3	[redacted]	0	24.5
		12	0	[redacted]	23.4	[redacted]	1	23.5
		12	7	[redacted]	23.4	[redacted]	1	23.5
		12	13	[redacted]	23.5	[redacted]	1	23.5
		25	0	[redacted]	22.4	[redacted]	1	23.5
	16QAM	1	0	[redacted]	22.3	[redacted]	1	23.5
		1	12	[redacted]	22.3	[redacted]	1	23.5
		1	24	[redacted]	22.3	[redacted]	1	23.5
		12	0	[redacted]	22.4	[redacted]	2	22.5
		12	7	[redacted]	22.4	[redacted]	2	22.5
		12	13	[redacted]	22.5	[redacted]	2	22.5
		25	0	[redacted]	21.5	[redacted]	2	22.5
	64QAM	1	0	[redacted]	21.7	[redacted]	2	22.5
		1	12	[redacted]	21.7	[redacted]	2	22.5
		1	24	[redacted]	21.7	[redacted]	2	22.5
		12	0	[redacted]	20.4	[redacted]	3	21.5
		12	7	[redacted]	20.4	[redacted]	3	21.5
		12	13	[redacted]	20.4	[redacted]	3	21.5
		25	0	[redacted]	20.4	[redacted]	3	21.5

LTE Band 25 Measured Results

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				26140	26365	26590		
				1860 MHz	1882.5 MHz	1905 MHz		
20	QPSK	1	0	23.7	23.7	23.6	0	24.5
		1	49	23.7	23.7	23.6	0	24.5
		1	99	23.7	23.7	23.5	0	24.5
		50	0	22.8	22.8	22.7	1	23.5
		50	24	22.9	22.8	22.7	1	23.5
		50	50	22.8	22.8	22.7	1	23.5
		100	0	22.8	22.8	22.7	1	23.5
	16QAM	1	0	23.1	23.2	23.1	1	23.5
		1	49	23.2	23.3	22.9	1	23.5
		1	99	23.1	23.2	23.0	1	23.5
		50	0	21.8	21.9	21.7	2	22.5
		50	24	21.9	21.9	21.8	2	22.5
		50	50	21.9	21.9	21.8	2	22.5
		100	0	21.8	21.8	21.7	2	22.5
	64QAM	1	0	22.0	22.0	22.3	2	22.5
		1	49	22.0	22.1	22.3	2	22.5
		1	99	22.0	22.0	22.2	2	22.5
		50	0	20.9	20.9	20.8	3	21.5
		50	24	20.9	20.9	20.8	3	21.5
		50	50	20.9	20.9	20.8	3	21.5
		100	0	20.9	20.9	20.7	3	21.5

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				26115	26365	26615		
				1857.5 MHz	1882.5 MHz	1907.5 MHz		
15	QPSK	1	0	23.7	23.7	23.7	0	24.5
		1	37	23.8	23.7	23.3	0	24.5
		1	74	23.8	23.6	23.6	0	24.5
		36	0	22.8	22.8	22.7	1	23.5
		36	20	22.9	22.8	22.7	1	23.5
		36	39	22.9	22.8	22.7	1	23.5
		75	0	22.9	22.9	22.8	1	23.5
	16QAM	1	0	23.1	22.6	23.0	1	23.5
		1	37	23.2	22.6	22.8	1	23.5
		1	74	23.1	22.6	22.9	1	23.5
		36	0	21.8	21.8	21.8	2	22.5
		36	20	21.8	21.9	21.8	2	22.5
		36	39	21.8	21.8	21.7	2	22.5
		75	0	21.9	21.8	21.8	2	22.5
	64QAM	1	0	22.3	22.0	21.8	2	22.5
		1	37	22.4	22.0	21.7	2	22.5
		1	74	22.3	21.9	21.7	2	22.5
		36	0	20.8	20.8	20.8	3	21.5
		36	20	20.9	20.9	20.8	3	21.5
		36	39	20.9	20.9	20.7	3	21.5
		75	0	20.9	20.9	20.8	3	21.5

LTE Band 25 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				26090	26365	26640		
				1855 MHz	1882.5 MHz	1910 MHz		
10	QPSK	1	0	23.8	23.8	23.6	0	24.5
		1	25	23.7	23.7	23.6	0	24.5
		1	49	23.8	23.7	23.6	0	24.5
		25	0	22.8	22.8	22.6	1	23.5
		25	12	22.9	22.8	22.7	1	23.5
		25	25	22.8	22.8	22.7	1	23.5
		50	0	22.8	22.8	22.7	1	23.5
	16QAM	1	0	22.9	22.7	22.9	1	23.5
		1	25	22.8	22.7	23.0	1	23.5
		1	49	22.8	22.6	23.0	1	23.5
		25	0	21.9	21.8	21.7	2	22.5
		25	12	22.0	21.9	21.8	2	22.5
		25	25	21.9	21.8	21.7	2	22.5
		50	0	21.9	21.9	21.7	2	22.5
	64QAM	1	0	22.1	22.1	21.7	2	22.5
		1	25	22.0	22.1	21.7	2	22.5
		1	49	22.0	22.0	21.7	2	22.5
		25	0	20.9	20.8	20.8	3	21.5
		25	12	21.0	20.9	20.8	3	21.5
		25	25	20.9	20.9	20.7	3	21.5
		50	0	20.9	20.8	20.7	3	21.5

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				26065	26365	26665		
				1852.5 MHz	1882.5 MHz	1912.5 MHz		
5	QPSK	1	0	23.8	23.8	23.6	0	24.5
		1	12	23.8	23.8	23.6	0	24.5
		1	24	23.8	23.8	23.6	0	24.5
		12	0	22.8	22.8	22.7	1	23.5
		12	7	22.9	22.8	22.7	1	23.5
		12	13	22.8	22.8	22.7	1	23.5
		25	0	22.9	22.8	22.7	1	23.5
	16QAM	1	0	22.9	22.9	23.1	1	23.5
		1	12	22.9	22.9	23.2	1	23.5
		1	24	22.9	22.9	23.1	1	23.5
		12	0	21.9	21.9	21.8	2	22.5
		12	7	21.9	21.9	21.9	2	22.5
		12	13	21.9	21.9	21.8	2	22.5
		25	0	21.8	21.9	21.7	2	22.5
	64QAM	1	0	22.0	21.7	21.9	2	22.5
		1	12	22.0	21.7	21.9	2	22.5
		1	24	22.0	21.7	21.9	2	22.5
		12	0	20.9	20.9	20.6	3	21.5
		12	7	20.9	20.9	20.7	3	21.5
		12	13	20.9	20.9	20.6	3	21.5
		25	0	20.9	20.8	20.7	3	21.5

LTE Band 25 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				26055	26365	26675		
				1851.5 MHz	1882.5 MHz	1913.5 MHz		
3	QPSK	1	0	23.7	23.7	23.7	0	24.5
		1	8	23.8	23.8	23.8	0	24.5
		1	14	23.7	23.7	23.6	0	24.5
		8	0	22.8	22.8	22.7	1	23.5
		8	4	22.8	22.8	22.7	1	23.5
		8	7	22.8	22.8	22.7	1	23.5
		15	0	22.8	22.8	22.7	1	23.5
	16QAM	1	0	22.8	22.6	23.0	1	23.5
		1	8	22.9	22.8	23.1	1	23.5
		1	14	22.7	22.6	23.0	1	23.5
		8	0	21.9	21.9	21.7	2	22.5
		8	4	21.9	21.9	21.8	2	22.5
		8	7	21.9	21.9	21.8	2	22.5
		15	0	21.8	21.9	21.7	2	22.5
	64QAM	1	0	21.9	22.0	21.7	2	22.5
		1	8	22.0	22.1	21.9	2	22.5
		1	14	21.9	22.0	21.7	2	22.5
		8	0	20.8	20.8	20.7	3	21.5
		8	4	20.8	20.9	20.8	3	21.5
		8	7	20.8	20.9	20.7	3	21.5
		15	0	20.9	20.8	20.7	3	21.5

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				26047	26365	26683		
				1850.7 MHz	1882.5 MHz	1914.3 MHz		
1.4	QPSK	1	0	23.6	23.8	23.6	0	24.5
		1	3	23.7	23.8	23.7	0	24.5
		1	5	23.7	23.7	23.6	0	24.5
		3	0	23.7	23.7	23.6	0	24.5
		3	1	23.8	23.8	23.7	0	24.5
		3	3	23.8	23.8	23.7	0	24.5
		6	0	22.7	22.8	22.6	1	23.5
	16QAM	1	0	22.7	22.8	22.9	1	23.5
		1	3	22.8	22.9	23.0	1	23.5
		1	5	22.7	22.8	22.9	1	23.5
		3	0	22.9	22.8	22.8	1	23.5
		3	1	22.9	22.9	22.8	1	23.5
		3	3	22.9	22.9	22.8	1	23.5
		6	0	21.9	21.9	21.5	2	22.5
	64QAM	1	0	22.1	21.9	21.7	2	22.5
		1	3	22.2	21.9	21.8	2	22.5
		1	5	22.1	21.8	21.7	2	22.5
		3	0	22.0	21.9	21.5	2	22.5
		3	1	22.1	21.9	21.6	2	22.5
		3	3	22.1	21.9	21.6	2	22.5
		6	0	20.7	21.0	20.7	3	21.5

LTE Band 26 Measured Results

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				[redacted]	26865	[redacted]		
					831.5 MHz			
15	QPSK	1	0		23.6		0	24.5
		1	37		23.5		0	24.5
		1	74		23.4		0	24.5
		36	0		22.6		1	23.5
		36	20		22.6		1	23.5
		36	39		22.6		1	23.5
		75	0		22.6		1	23.5
	16QAM	1	0		22.5		1	23.5
		1	37		22.5		1	23.5
		1	74		22.4		1	23.5
		36	0		21.6		2	22.5
		36	20		21.6		2	22.5
		36	39		21.6		2	22.5
		75	0		21.6		2	22.5
	64QAM	1	0		21.9		2	22.5
		1	37		21.8		2	22.5
		1	74		21.8		2	22.5
		36	0		20.6		3	21.5
		36	20		20.6		3	21.5
		36	39		20.6		3	21.5
		75	0		20.6		3	21.5

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				26740	26865	26990		
				819 MHz	831.5 MHz	844 MHz		
10	QPSK	1	0	23.6	23.6	23.6	0	24.5
		1	25	23.5	23.5	23.5	0	24.5
		1	49	23.5	23.5	23.1	0	24.5
		25	0	22.6	22.6	22.6	1	23.5
		25	12	22.7	22.6	22.6	1	23.5
		25	25	22.6	22.6	22.5	1	23.5
		50	0	22.6	22.6	22.5	1	23.5
	16QAM	1	0	22.7	22.5	22.9	1	23.5
		1	25	22.6	22.5	22.8	1	23.5
		1	49	22.5	22.4	22.5	1	23.5
		25	0	21.8	21.7	21.6	2	22.5
		25	12	21.8	21.6	21.6	2	22.5
		25	25	21.7	21.6	21.6	2	22.5
		50	0	21.7	21.6	21.5	2	22.5
	64QAM	1	0	21.7	21.9	21.8	2	22.5
		1	25	21.7	21.8	21.7	2	22.5
		1	49	21.4	21.8	21.7	2	22.5
		25	0	20.6	20.7	20.8	3	21.5
		25	12	20.7	20.6	20.8	3	21.5
		25	25	20.6	20.6	20.7	3	21.5
		50	0	20.5	20.6	20.7	3	21.5

LTE Band 26 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				26715	26865	27015		
				816.5 MHz	831.5 MHz	846.5 MHz		
5	QPSK	1	0	23.7	23.7	23.5	0	24.5
		1	12	23.7	23.6	23.5	0	24.5
		1	24	23.7	23.6	23.2	0	24.5
		12	0	22.7	22.7	22.6	1	23.5
		12	7	22.7	22.6	22.6	1	23.5
		12	13	22.7	22.6	22.5	1	23.5
		25	0	22.7	22.6	22.6	1	23.5
	16QAM	1	0	22.8	22.8	23.0	1	23.5
		1	12	22.8	22.8	23.0	1	23.5
		1	24	22.7	22.7	22.8	1	23.5
		12	0	21.7	21.7	21.7	2	22.5
		12	7	21.8	21.7	21.7	2	22.5
		12	13	21.7	21.7	21.7	2	22.5
		25	0	21.6	21.6	21.6	2	22.5
	64QAM	1	0	21.8	21.5	22.0	2	22.5
		1	12	21.7	21.5	22.0	2	22.5
		1	24	21.4	21.4	21.9	2	22.5
		12	0	20.6	20.6	20.6	3	21.5
		12	7	20.6	20.6	20.7	3	21.5
		12	13	20.6	20.6	20.6	3	21.5
		25	0	20.6	20.6	20.7	3	21.5

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				26705	26865	27025		
				815.5 MHz	831.5 MHz	847.5 MHz		
3	QPSK	1	0	23.7	23.6	23.5	0	24.5
		1	8	23.7	23.7	23.4	0	24.5
		1	14	23.6	23.6	23.2	0	24.5
		8	0	22.7	22.6	22.6	1	23.5
		8	4	22.7	22.6	22.6	1	23.5
		8	7	22.7	22.7	22.5	1	23.5
		15	0	22.7	22.7	22.5	1	23.5
	16QAM	1	0	22.7	22.5	22.9	1	23.5
		1	8	22.8	22.6	22.9	1	23.5
		1	14	22.7	22.5	22.6	1	23.5
		8	0	21.7	21.8	21.7	2	22.5
		8	4	21.8	21.8	21.7	2	22.5
		8	7	21.8	21.8	21.6	2	22.5
		15	0	21.7	21.7	21.6	2	22.5
	64QAM	1	0	21.7	21.8	21.8	2	22.5
		1	8	21.7	21.9	21.8	2	22.5
		1	14	21.4	21.8	21.8	2	22.5
		8	0	20.5	20.6	20.7	3	21.5
		8	4	20.5	20.7	20.7	3	21.5
		8	7	20.3	20.7	20.7	3	21.5
		15	0	20.6	20.6	20.7	3	21.5

LTE Band 26 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				26697	26865	27033		
				814.7 MHz	831.5 MHz	848.3 MHz		
1.4	QPSK	1	0	23.6	23.6	23.4	0	24.5
		1	3	23.7	23.7	23.3	0	24.5
		1	5	23.7	23.6	23.2	0	24.5
		3	0	23.7	23.6	23.3	0	24.5
		3	1	23.7	23.7	23.3	0	24.5
		3	3	23.7	23.7	23.3	0	24.5
		6	0	22.7	22.6	22.4	1	23.5
	16QAM	1	0	22.7	22.7	22.7	1	23.5
		1	3	22.8	22.8	22.7	1	23.5
		1	5	22.7	22.7	22.6	1	23.5
		3	0	22.8	22.7	22.5	1	23.5
		3	1	22.9	22.7	22.4	1	23.5
		3	3	22.9	22.7	22.5	1	23.5
		6	0	21.9	21.8	21.3	2	22.5
	64QAM	1	0	21.7	21.6	21.7	2	22.5
		1	3	21.7	21.7	21.8	2	22.5
		1	5	21.5	21.6	21.8	2	22.5
		3	0	21.6	21.6	21.5	2	22.5
		3	1	21.5	21.7	21.6	2	22.5
		3	3	21.5	21.7	21.6	2	22.5
		6	0	20.2	20.8	20.7	3	21.5

LTE Band 30 Measured Results

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				[redacted]	27710	[redacted]		
				[redacted]	2310 MHz	[redacted]		
10	QPSK	1	0	[redacted]	23.0	[redacted]	0	23.3
		1	25	[redacted]	23.0	[redacted]	0	23.3
		1	49	[redacted]	23.1	[redacted]	0	23.3
		25	0	[redacted]	22.1	[redacted]	1	22.3
		25	12	[redacted]	22.1	[redacted]	1	22.3
		25	25	[redacted]	22.1	[redacted]	1	22.3
		50	0	[redacted]	22.2	[redacted]	1	22.3
	16QAM	1	0	[redacted]	22.1	[redacted]	1	22.3
		1	25	[redacted]	22.1	[redacted]	1	22.3
		1	49	[redacted]	22.1	[redacted]	1	22.3
		25	0	[redacted]	21.2	[redacted]	2	21.3
		25	12	[redacted]	21.3	[redacted]	2	21.3
		25	25	[redacted]	21.2	[redacted]	2	21.3
		50	0	[redacted]	21.2	[redacted]	2	21.3
	64QAM	1	0	[redacted]	21.2	[redacted]	2	21.3
		1	25	[redacted]	21.2	[redacted]	2	21.3
		1	49	[redacted]	21.2	[redacted]	2	21.3
		25	0	[redacted]	20.2	[redacted]	3	20.3
		25	12	[redacted]	20.2	[redacted]	3	20.3
		25	25	[redacted]	20.2	[redacted]	3	20.3
		50	0	[redacted]	20.2	[redacted]	3	20.3

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				[redacted]	27710	[redacted]		
				[redacted]	2310 MHz	[redacted]		
5	QPSK	1	0	[redacted]	23.1	[redacted]	0	23.3
		1	12	[redacted]	23.1	[redacted]	0	23.3
		1	24	[redacted]	23.1	[redacted]	0	23.3
		12	0	[redacted]	22.1	[redacted]	1	22.3
		12	7	[redacted]	22.1	[redacted]	1	22.3
		12	13	[redacted]	22.0	[redacted]	1	22.3
		25	0	[redacted]	22.1	[redacted]	1	22.3
	16QAM	1	0	[redacted]	22.2	[redacted]	1	22.3
		1	12	[redacted]	22.2	[redacted]	1	22.3
		1	24	[redacted]	22.2	[redacted]	1	22.3
		12	0	[redacted]	21.1	[redacted]	2	21.3
		12	7	[redacted]	21.2	[redacted]	2	21.3
		12	13	[redacted]	21.2	[redacted]	2	21.3
		25	0	[redacted]	21.1	[redacted]	2	21.3
	64QAM	1	0	[redacted]	21.0	[redacted]	2	21.3
		1	12	[redacted]	21.0	[redacted]	2	21.3
		1	24	[redacted]	21.0	[redacted]	2	21.3
		12	0	[redacted]	20.1	[redacted]	3	20.3
		12	7	[redacted]	20.1	[redacted]	3	20.3
		12	13	[redacted]	20.0	[redacted]	3	20.3
		25	0	[redacted]	20.1	[redacted]	3	20.3

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LTE Band 66 Measured Results

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				132072	132322	132572		
				1720 MHz	1745 MHz	1770 MHz		
20	QPSK	1	0	22.9	22.8	22.9	0	23.7
		1	49	23.0	22.8	22.9	0	23.7
		1	99	22.9	22.7	22.8	0	23.7
		50	0	22.0	21.7	21.9	1	22.7
		50	24	21.8	21.7	21.8	1	22.7
		50	50	21.9	21.7	21.8	1	22.7
		100	0	21.9	21.7	21.9	1	22.7
	16QAM	1	0	22.4	22.4	22.4	1	22.7
		1	49	22.4	22.4	22.5	1	22.7
		1	99	22.3	22.3	22.4	1	22.7
		50	0	20.9	20.8	20.9	2	21.7
		50	24	20.8	20.8	20.9	2	21.7
		50	50	20.9	20.8	20.9	2	21.7
		100	0	20.9	20.8	20.9	2	21.7
	64QAM	1	0	21.1	21.2	21.5	2	21.7
		1	49	21.2	21.2	21.6	2	21.7
		1	99	21.1	21.1	21.5	2	21.7
		50	0	20.0	19.9	19.9	3	20.7
		50	24	19.9	19.9	19.9	3	20.7
		50	50	19.9	19.9	19.9	3	20.7
		100	0	19.9	19.9	19.9	3	20.7

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				132047	132322	132597		
				1717.5 MHz	1745 MHz	1772.5 MHz		
15	QPSK	1	0	21.8	22.9	21.9	0	23.7
		1	37	22.7	22.7	22.8	0	23.7
		1	74	22.6	22.6	22.6	0	23.7
		36	0	21.8	21.8	21.8	1	22.7
		36	20	21.8	21.8	21.8	1	22.7
		36	39	21.9	21.9	21.9	1	22.7
		75	0	21.8	21.8	21.8	1	22.7
	16QAM	1	0	22.4	22.4	22.3	1	22.7
		1	37	22.2	22.2	22.1	1	22.7
		1	74	22.1	22.1	22.0	1	22.7
		36	0	20.8	20.8	20.8	2	21.7
		36	20	20.8	20.8	20.8	2	21.7
		36	39	20.9	20.9	20.9	2	21.7
		75	0	20.8	20.8	20.8	2	21.7
	64QAM	1	0	21.5	21.4	21.2	2	21.7
		1	37	21.6	21.5	21.3	2	21.7
		1	74	21.5	21.4	21.2	2	21.7
		36	0	19.8	19.7	19.9	3	20.7
		36	20	19.9	19.9	20.0	3	20.7
		36	39	19.8	19.8	19.9	3	20.7
		75	0	19.8	19.8	19.9	3	20.7

LTE Band 66 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				132022	132322	132622		
				1715 MHz	1745 MHz	1775 MHz		
10	QPSK	1	0	22.9	22.8	23.0	0	23.7
		1	25	22.9	22.8	23.0	0	23.7
		1	49	22.9	22.8	22.9	0	23.7
		25	0	21.9	21.8	21.9	1	22.7
		25	12	21.9	21.8	21.9	1	22.7
		25	25	21.9	21.8	21.9	1	22.7
		50	0	21.9	21.8	21.9	1	22.7
	16QAM	1	0	21.9	21.8	22.3	1	22.7
		1	25	22.0	21.8	22.3	1	22.7
		1	49	21.9	21.7	22.3	1	22.7
		25	0	21.0	20.8	21.0	2	21.7
		25	12	21.0	20.8	20.9	2	21.7
		25	25	21.0	20.8	20.9	2	21.7
		50	0	21.0	20.8	20.9	2	21.7
	64QAM	1	0	21.1	21.2	21.1	2	21.7
		1	25	21.1	21.2	21.1	2	21.7
		1	49	21.0	21.2	21.0	2	21.7
		25	0	20.0	20.0	20.0	3	20.7
		25	12	20.0	19.9	20.0	3	20.7
		25	25	20.0	19.9	20.0	3	20.7
		50	0	19.9	19.9	19.9	3	20.7

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				131997	132322	132647		
				1712.5 MHz	1745 MHz	1777.5 MHz		
5	QPSK	1	0	22.8	22.8	22.8	0	23.7
		1	12	23.0	22.9	23.0	0	23.7
		1	24	22.8	22.7	22.8	0	23.7
		12	0	21.9	21.8	21.9	1	22.7
		12	7	22.0	21.9	22.0	1	22.7
		12	13	21.9	21.8	21.9	1	22.7
		25	0	21.9	21.8	21.9	1	22.7
	16QAM	1	0	21.9	21.8	22.3	1	22.7
		1	12	22.0	22.0	22.5	1	22.7
		1	24	21.9	21.8	22.3	1	22.7
		12	0	21.0	20.9	21.0	2	21.7
		12	7	21.0	20.9	21.1	2	21.7
		12	13	21.0	20.9	21.0	2	21.7
		25	0	20.8	20.8	20.9	2	21.7
	64QAM	1	0	21.1	20.9	20.7	2	21.7
		1	12	21.2	21.1	20.8	2	21.7
		1	24	21.0	20.9	20.7	2	21.7
		12	0	19.8	19.8	19.9	3	20.7
		12	7	19.9	19.9	20.0	3	20.7
		12	13	19.9	19.9	19.9	3	20.7
		25	0	19.9	19.8	19.8	3	20.7

LTE Band 66 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				131987	132322	132657		
				1711.5 MHz	1745 MHz	1778.5 MHz		
3	QPSK	1	0	22.8	22.7	22.8	0	23.7
		1	8	23.0	22.9	23.1	0	23.7
		1	14	22.8	22.7	22.8	0	23.7
		8	0	21.9	21.8	21.9	1	22.7
		8	4	22.0	21.9	22.0	1	22.7
		8	7	22.0	21.9	22.0	1	22.7
		15	0	21.9	21.8	21.9	1	22.7
	16QAM	1	0	21.9	21.6	22.2	1	22.7
		1	8	22.0	21.9	22.4	1	22.7
		1	14	21.8	21.6	22.2	1	22.7
		8	0	21.0	20.9	21.0	2	21.7
		8	4	21.0	21.0	21.1	2	21.7
		8	7	21.0	21.0	21.1	2	21.7
		15	0	20.9	20.9	21.0	2	21.7
	64QAM	1	0	21.0	21.1	20.9	2	21.7
		1	8	21.1	21.3	21.2	2	21.7
		1	14	20.9	21.0	20.9	2	21.7
		8	0	19.9	19.9	19.9	3	20.7
		8	4	19.9	20.0	20.0	3	20.7
		8	7	19.9	20.0	20.0	3	20.7
		15	0	19.9	19.9	19.9	3	20.7

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				131979	132322	132665		
				1710.7 MHz	1745 MHz	1779.3 MHz		
1.4	QPSK	1	0	22.8	22.8	22.9	0	23.7
		1	3	22.9	22.8	23.0	0	23.7
		1	5	22.8	22.8	22.9	0	23.7
		3	0	22.9	22.8	22.9	0	23.7
		3	1	23.0	22.8	23.0	0	23.7
		3	3	22.9	22.8	23.0	0	23.7
		6	0	21.9	21.8	21.9	1	22.7
	16QAM	1	0	21.8	21.9	22.2	1	22.7
		1	3	21.9	22.0	22.3	1	22.7
		1	5	21.9	21.9	22.2	1	22.7
		3	0	22.0	21.8	22.1	1	22.7
		3	1	22.1	21.9	22.1	1	22.7
		3	3	22.1	21.9	22.1	1	22.7
		6	0	21.1	20.9	20.8	2	21.7
	64QAM	1	0	21.2	20.9	21.0	2	21.7
		1	3	21.3	21.0	21.2	2	21.7
		1	5	21.2	20.9	21.1	2	21.7
		3	0	21.2	21.0	20.8	2	21.7
		3	1	21.2	21.0	20.9	2	21.7
		3	3	21.2	21.0	20.9	2	21.7
		6	0	19.8	20.2	20.0	3	20.7

9.2. LTE Down-Link Carrier Aggregation

The tables below show the supported frequency bands of the device for DL Inter-band and DL Intra-band combinations.

Power measurements were performed on the channel with the highest maximum output power from Tune-up Procedure for each applicable antenna.

LTE DL CA Combinations

When carrier aggregation is limited to downlink only, uplink maximum output power (single carrier) is measured for the supported combinations of downlink carrier aggregation listed in the table below. In applying the power measurement procedures of KDB 941225 D05A and April 2018 TCB workshop for DL CA to qualify for UL SAR test exclusion, power measurement is required only for the subset in each row with the largest combination of frequency bands and CCs (far right most configuration highlighted in the table below).

Index	2CC	Completely Covered by Measurement
2CC # 1	CA_5B	No
2CC # 2	CA_66B	No
2CC # 3	CA_66C	No
2CC # 4	CA_5A-5A	No
2CC # 5	CA_25A-25A	No
2CC # 6	CA_66A-66A	No
2CC # 7	CA_2A-4A	No
2CC # 8	CA_2A-5A	No
2CC # 9	CA_2A-12A	No
2CC # 10	CA_2A-13A	No
2CC # 11	CA_2A-14A	No
2CC # 12	CA_2A-66A	No
2CC # 13	CA_4A-5A	No
2CC # 14	CA_4A-12A	No
2CC # 15	CA_4A-13A	No
2CC # 16	CA_7A-5A	No
2CC # 17	CA_7A-12A	No
2CC # 18	CA_25A-5A	No
2CC # 19	CA_25A-12A	No
2CC # 20	CA_25A-26A	No
2CC # 21	CA_30A-5A	No
2CC # 22	CA_30A-12A	No
2CC # 23	CA_30A-14A	No
2CC # 24	CA_66A-5A	No
2CC # 25	CA_66A-12A	No
2CC # 26	CA_66A-13A	No

In applying the power measurement procedures of KDB 941225 D05A for DL CA to qualify for UL SAR test exclusion, power measurement is required only for the CA configuration with the largest aggregated DL CA BW in each frequency band, independently for contiguous and non-contiguous CA; however, if the same frequency band is used for both contiguous and non-contiguous CA, power measurement was performed using the configuration with the largest aggregated BW and maximum output power among contiguous and non-contiguous CA.

2CC DL CA Measured Results

Antenna	E-UTRA CA configuration	CC1 (UL)					CC2 (DL)			Aggregated BW	CA Inactive (dBm)	CA Active (dBm)	Delta (dBm)	2CC #
		Mode	BW (MHz)	Channel	Freq (MHz)	RB,Offset	BW (MHz)	Channel	Freq (MHz)					
LTE Main L/M Ant	CA_5B	QPSK	10	20476	831.6	1,25	10	2575	886.5	20	23.35	23.33	-0.02	1
LTE Main L/M Ant	CA_66B	QPSK	10	132373	1750.1	1,25	10	66936	2160	20	22.80	22.80	0.00	2
LTE Main L/M Ant	CA_66C	QPSK	20	132323	1745.1	1,49	20	66985	2164.9	40	22.80	22.80	0.00	3
LTE Main L/M Ant	CA_5A-5A	QPSK	10	20450	829	1,25	10	2600	889	20	23.50	23.40	-0.10	4
LTE Main L/M Ant	CA_25A-25A	QPSK	20	26140	1860	1,49	20	8590	1985	40	23.60	23.60	0.00	5
LTE Main L/M Ant	CA_66A-66A	QPSK	20	132322	1745	1,49	20	67236	2190	40	22.80	22.80	0.00	6
LTE Main L/M Ant	CA_2A-4A	QPSK	20	18900	1880	1,49	20	2300	2145	40	23.50	23.45	-0.05	7
LTE Main L/M Ant	CA_2A-5A	QPSK	20	18900	1880	1,49	10	2525	881.5	30	23.50	23.50	0.00	8
LTE Main L/M Ant	CA_2A-12A	QPSK	20	18900	1880	1,49	10	5095	737.5	30	23.50	23.50	0.00	9
LTE Main L/M Ant	CA_2A-13A	QPSK	20	18900	1880	1,49	10	5230	751	30	23.50	23.50	0.00	10
LTE Main L/M Ant	CA_2A-14A	QPSK	20	18900	1880	1,49	10	5330	763	30	23.50	23.45	-0.05	11
LTE Main L/M Ant	CA_2A-66A	QPSK	20	18900	1880	1,49	20	67236	2190	40	23.50	23.45	-0.05	12
LTE Main L/M Ant	CA_4A-5A	QPSK	20	20175	1732.5	1,49	10	2525	881.5	30	22.85	22.90	0.05	13
LTE Main L/M Ant	CA_4A-12A	QPSK	20	20175	1732.5	1,49	10	5095	737.5	30	22.85	22.90	0.05	14
LTE Main L/M Ant	CA_4A-13A	QPSK	20	20175	1732.5	1,49	10	5230	751	30	22.85	22.90	0.05	15
LTE Main H Ant	CA_7A-5A	QPSK	20	21100	2535	1,49	10	2525	881.5	30	23.80	23.80	0.00	16
LTE Main H Ant	CA_7A-12A	QPSK	20	21100	2535	1,49	10	5095	737.5	30	23.80	23.75	-0.05	17
LTE Main L/M Ant	CA_25A-5A	QPSK	20	26365	1882.5	1,49	10	2525	881.5	30	23.65	23.65	0.00	18
LTE Main L/M Ant	CA_25A-12A	QPSK	20	26365	1882.5	1,49	10	5095	737.5	30	23.65	23.65	0.00	19
LTE Main L/M Ant	CA_25A-26A	QPSK	20	26365	1882.5	1,49	15	8765	866.5	35	23.65	23.65	0.00	20
LTE Main H Ant	CA_30A-5A	QPSK	10	27710	2310	1,25	10	2525	881.5	20	22.95	22.95	0.00	21
LTE Main H Ant	CA_30A-12A	QPSK	10	27710	2310	1,25	10	5095	737.5	20	22.95	22.90	-0.05	22
LTE Main H Ant	CA_30A-14A	QPSK	10	27710	2310	1,25	10	5330	763	20	22.95	22.90	-0.05	23
LTE Main L/M Ant	CA_66A-5A	QPSK	20	132322	1745	1,49	10	2525	881.5	30	22.80	22.80	0.00	24
LTE Main L/M Ant	CA_66A-12A	QPSK	20	132322	1745	1,49	10	5095	737.5	30	22.80	22.80	0.00	25
LTE Main L/M Ant	CA_66A-13A	QPSK	20	132322	1745	1,49	10	5230	751	30	22.80	22.80	0.00	26

9.3. Wi-Fi 2.4GHz (DTS Band)

Maximum Output Power (Tune-up Limit) for Wi-Fi 2.4 GHz

The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures.

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 802.11b/g/n 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.

Band	Mode	Channel	Frequency (MHz)	Tune-up Power Limit WiFi/BT Ant Maximum
DSSS 2.4 GHz	802.11b	1	2412	19.0
		6	2437	19.0
		11	2462	19.0
OFDM 2.4 GHz	802.11g	1	2412	18.5
		6	2437	18.5
		11	2462	18.5
	802.11n (HT20)	1	2412	16.5
		6	2437	16.5
		11	2462	16.5
	802.11n (HT40)	3	2422	16.5
		6	2437	15.0
		9	2452	15.0

Note(s):

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.

Wi-Fi 2.4GHz Measured Results

Band	Mode	Ch #	Freq. (MHz)	Wifi/BT Ant Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)
DSSS 2.4 GHz	802.11b	1	2412	18.0	19.0	Yes
		6	2437	18.1	19.0	
		11	2462	18.0	19.0	
OFDM 2.4 GHz	802.11g	1	2412		18.5	No
		6	2437		18.5	
		11	2462		18.5	
	802.11n (HT20)	1	2412		16.5	No
		6	2437		16.5	
		11	2462		16.5	
	802.11n (HT40)	3	2422		16.5	No
		6	2437		15.0	
		9	2452		15.0	

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

Maximum Output Power (Tune-up Limit) for Wi-Fi 5 GHz

When the same transmission mode configurations have the same maximum output power on the same channel for the 802.11 a/g/n/ac modes, the channel in the lower order/sequence 802.11 transmission mode is selected.
The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures.

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.

Band	Mode	Channel	Frequency (MHz)	Tune-up Power Limit WiFi/BT Ant Maximum
U-NII-1 5.2 GHz	802.11a	36	5180	17.0
		40	5200	17.0
		44	5220	17.0
		48	5240	17.0
	802.11n (HT20)	36	5180	17.0
		40	5200	17.0
		44	5220	17.0
		48	5240	17.0
	802.11ac (VHT20)	36	5180	17.0
		40	5200	17.0
		44	5220	17.0
		48	5240	17.0
	802.11n (HT40)	38	5190	17.0
		46	5230	17.0
	802.11ac (VHT40)	38	5190	17.0
		46	5230	17.0
	802.11ac (VHT80)	42	5210	12.0

Note(s):
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.

Maximum Output Power (Tune-up Limit) for Wi-Fi 5 GHz (continued)

Band	Mode	Channel	Frequency (MHz)	Tune-up Power Limit WiFi/BT Ant Maximum
UNII-2A 5.3 GHz	802.11a	52	5260	17.0
		56	5280	17.0
		60	5300	17.0
		64	5320	17.0
	802.11n (HT20)	52	5260	17.0
		56	5280	17.0
		60	5300	17.0
		64	5320	17.0
	802.11ac (VHT20)	52	5260	17.0
		56	5280	17.0
		60	5300	17.0
		64	5320	17.0
	802.11n (HT40)	54	5270	17.0
		62	5310	17.0
	802.11ac (VHT40)	54	5270	17.0
		62	5310	17.0
	802.11ac (VHT80)	58	5290	14.0

Band	Mode	Channel	Frequency (MHz)	Tune-up Power Limit WiFi/BT Ant Maximum
UNII-2C 5.5 GHz	802.11a	100	5500	16.0
		116	5580	17.0
		124	5620	17.0
		144	5720	17.0
	802.11n (HT20)	100	5500	15.5
		116	5580	17.0
		124	5620	17.0
		144	5720	17.0
	802.11ac (VHT20)	100	5500	15.5
		116	5580	17.0
		124	5620	17.0
		144	5720	17.0
	802.11n (HT40)	102	5510	16.0
		118	5590	16.0
		126	5630	16.0
		142	5710	16.0
	802.11ac (VHT40)	102	5510	16.0
		118	5590	16.0
		126	5630	16.0
		142	5710	16.0
	802.11ac (VHT80)	106	5530	13.5
		122	5610	16.5
		138	5690	15.5

Maximum Output Power (Tune-up Limit) for Wi-Fi 5 GHz (continued)

Band	Mode	Channel	Frequency (MHz)	Tune-up Power Limit WiFi/BT Ant Maximum
UNII-3 5.8 GHz	802.11a	149	5745	14.5
		157	5785	14.5
		165	5825	14.5
	802.11n (HT20)	149	5745	14.5
		157	5785	14.0
		165	5825	14.5
	802.11ac (VHT20)	149	5745	14.5
		157	5785	14.0
		165	5825	14.5
	802.11n (HT40)	151	5755	14.75
		159	5795	14.25
	802.11ac (VHT40)	151	5755	14.75
		159	5795	14.25
	802.11ac (VHT80)	155	5775	13.75

Wi-Fi 5 GHz Measured Results

Band	Mode	Ch #	Freq. (MHz)	Wifi/BT Ant Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-2A 5.3 GHz	802.11a	52	5260		17.0	No
		56	5280		17.0	
		60	5300		17.0	
		64	5320		17.0	
	802.11n (HT20)	52	5260		17.0	No
		56	5280		17.0	
		60	5300		17.0	
		64	5320		17.0	
	802.11ac (VHT20)	52	5260		17.0	No
		56	5280		17.0	
		60	5300		17.0	
		64	5320		17.0	
	802.11n (HT40)	54	5270	15.8	17.0	Yes
		62	5310	15.8	17.0	
	802.11ac (VHT40)	54	5270		17.0	No
		62	5310		17.0	
	802.11ac (VHT80)	58	5290		14.0	No

Wi-Fi 5 GHz Measured Results (continued)

Band	Mode	Ch #	Freq. (MHz)	Wifi/BT Ant Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-2C 5.5 GHz	802.11a	100	5500	15.0	16.0	Yes
		116	5580	15.0	17.0	
		124	5620	15.1	17.0	
		144	5720	15.1	17.0	
	802.11n (HT20)	100	5500		15.5	No
		116	5580		17.0	
		124	5620		17.0	
		144	5720		17.0	
	802.11ac (VHT20)	100	5500		15.5	No
		116	5580		17.0	
		124	5620		17.0	
		144	5720		17.0	
	802.11n (HT40)	102	5510		16.0	No
		118	5590		16.0	
		126	5630		16.0	
		142	5710		16.0	
	802.11ac (VHT40)	102	5510		16.0	No
		118	5590		16.0	
		126	5630		16.0	
		142	5710		16.0	
	802.11ac (VHT80)	106	5530		13.5	No
		122	5610		16.5	
		138	5690		15.5	
Band	Mode	Ch #	Freq. (MHz)	Wifi/BT Ant Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-3 5.8 GHz	802.11a	149	5745		14.5	No
		157	5785		14.5	
		165	5825		14.5	
	802.11n (HT20)	149	5745		14.5	No
		157	5785		14.0	
		165	5825		14.5	
	802.11ac (VHT20)	149	5745		14.5	No
		157	5785		14.0	
		165	5825		14.5	
	802.11n (HT40)	151	5755	13.6	14.75	Yes
		159	5795	13.4	14.25	
	802.11ac (VHT40)	151	5755		14.75	No
		159	5795		14.25	
	802.11ac (VHT80)	155	5775		13.75	No

9.5. Bluetooth

Maximum Output Power (Tune-up Limit) for Bluetooth

From October 2016 TCB workshop, Power and SAR measurements were performed with test software using DH5 modulation and a duty cycle of 100%.

Band	Mode	Channel	Frequency (MHz)	Tune-up Power Limit WiFi/BT Ant Maximum
Bluetooth 2.4 GHz	BR GFSK	0	2412	10.8
		39	2437	10.8
		78	2462	10.8
	EDR π/4 DQPSK	0	2412	10.8
		39	2437	10.8
		78	2462	10.8
	EDR 8DPSK	0	2412	10.8
		39	2437	10.8
		78	2462	10.8
	LE GFSK	0	2402	7.8
		19	2440	7.8
		39	2480	7.8

Bluetooth Measured Results

Band	Mode	Ch #	Freq. (MHz)	Wifi/BT Ant Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)
Bluetooth 2.4GHz	BR GFSK	0	2402	8.8	10.8	Yes
		39	2441	9.1	10.8	
		78	2480	9.5	10.8	
	EDR, π/4 DQPSK	0	2402		10.8	No
		39	2441		10.8	
		78	2480		10.8	
	EDR, 8-DPSK	0	2402		10.8	No
		39	2441		10.8	
		78	2480		10.8	
	LE, GFSK	0	2402		7.8	No
		19	2440		7.8	
		39	2480		7.8	

Note(s):

SAR measurement is not required for BT EDR and BLE, when the maximum output power of the secondary mode is ≤ ¼ dB higher than the primary mode.

Bluetooth Duty Cycle Measured Results

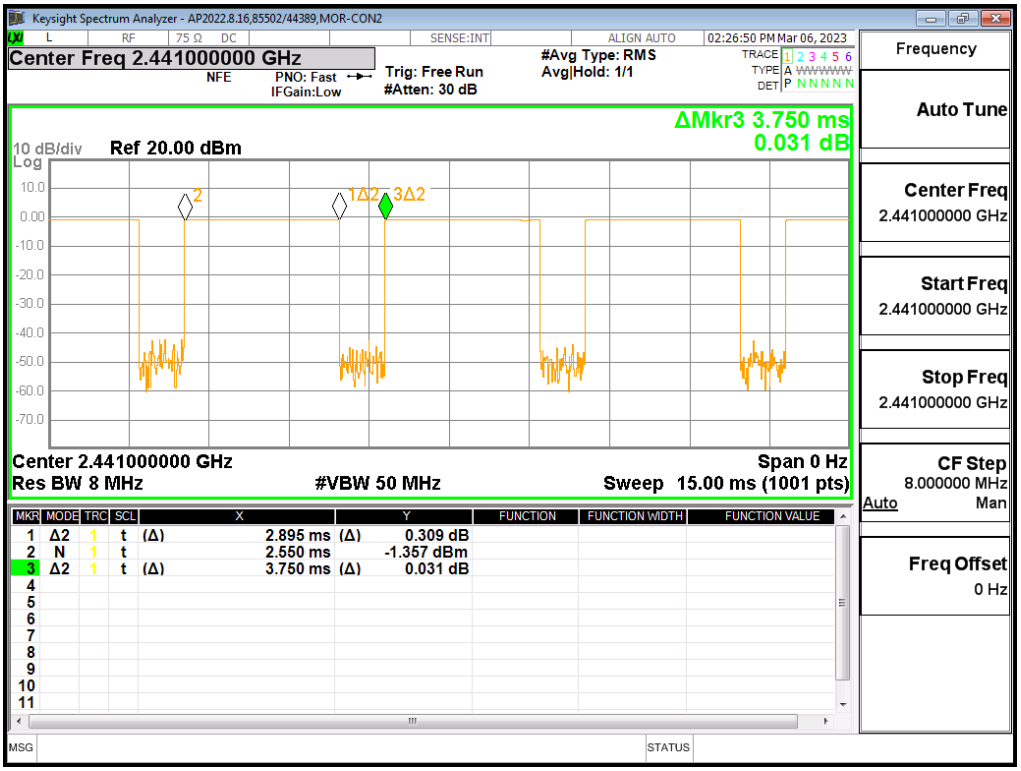
Band	Antenna	Mode	Data Rate	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)	Plot No.
Bluetooth	WiFi/BT Ant	GFSK	DH5	2.90	3.75	77.20%	1.30	1

Note(s):

Duty Cycle = (T on / period) * 100%

Duty Cycle plots

Plot 1: Bluetooth GFSK



10. Measured and Reported (Scaled) SAR Results

SAR Test Reduction criteria are as follows:

- Reported SAR(W/kg) for WWAN and Bluetooth = Measured SAR *Tune-up Scaling Factor
- Reported SAR(W/kg) for Wi-Fi = Measured SAR * Tune-up scaling factor * Duty Cycle scaling factor
- Duty Cycle scaling factor = 1 / Duty cycle (%)

KDB 447498 D01 General RF Exposure Guidance:

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

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

KDB 941225 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 is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration must be determined for each standalone and aggregated frequency band, according to the transmission mode configuration with the highest maximum output power specified for production units to perform SAR measurements. If the same highest maximum output power applies to different combinations of channel bandwidths, modulations and data rates, additional procedures are applied to determine which test configurations require SAR measurement. When applicable, an initial test position may be applied to reduce the number of SAR measurements required for next to the ear, UMPC mini-tablet or hotspot mode configurations with multiple test positions. For 2.4 GHz 802.11b DSSS, either the initial test position procedure for multiple exposure test positions or the DSSS procedure for fixed exposure position is applied; these are mutually exclusive. For 2.4 GHz and 5 GHz OFDM configurations, the initial test configuration is applied to measure SAR using either the initial test position procedure for multiple exposure test position configurations or the initial test configuration procedures for fixed exposure test conditions. Based on the reported SAR of the measured configurations and maximum output power of the transmission mode configurations that are not included in the initial test configuration, the subsequent test configuration and initial test position procedures are applied to determine if SAR measurements are required for the remaining OFDM transmission configurations. In general, the number of test channels that require SAR measurement is minimized based on maximum output power measured for the test sample(s).

10.1. LTE Band 7 (20MHz Bandwidth)

Antenna	RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB Offset	TuP Limit (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
LTE Main H Ant	Body-worn w/ Magnetic Mount	QPSK	0	Back	21100	2535.0	1	0	24.5	24.0	0.445	**0.499**	1
							50	0	23.5	23.0	0.350	0.393	
	Body-worn w/ Wing Clip Mount	QPSK	0	Back	21100	2535.0	1	0	24.5	24.0	0.316	0.355	
							50	0	23.5	23.0	0.251	0.282	

Antenna	RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB Offset	TuP Limit (dBm)	Meas. (dBm)	10-g Meas. (W/kg)	10-g Scaled (W/kg)	Plot No.
LTE Main H Ant	Extremity	QPSK	0	Back	21100	2535.0	1	0	24.5	24.0	0.840	0.942	
							50	0	23.5	23.0	0.672	0.754	
				Front	21100	2535.0	1	0	24.5	24.0	0.786	0.882	
							50	0	23.5	23.0	0.630	0.707	
				Edge Bottom	21100	2535.0	1	0	24.5	24.0	0.385	0.432	
							50	0	23.5	23.0	0.246	0.276	
				Edge Left	21100	2535.0	1	0	24.5	24.0	1.69	**1.90**	2
							50	0	23.5	23.0	1.30	1.46	

10.2. LTE Band 12 (10MHz Bandwidth)

Antenna	RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB Offset	TuP Limit (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
LTE Main L/M Ant	Body-worn w/ Magnetic Mount	QPSK	0	Back	23095	707.5	1	0	24.5	23.4	0.611	**0.787**	3
							25	0	23.5	22.3	0.515	0.679	
	Body-worn w/ Wing Clip Mount	QPSK	0	Back	23095	707.5	1	0	24.5	23.4	0.465	0.599	
							25	0	23.5	22.3	0.397	0.523	

Antenna	RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB Offset	TuP Limit (dBm)	Meas. (dBm)	10-g Meas. (W/kg)	10-g Scaled (W/kg)	Plot No.
LTE Main L/M Ant	Extremity	QPSK	0	Back	23095	707.5	1	0	24.5	23.4	0.882	**1.136**	4
							25	0	23.5	22.3	0.721	0.950	
				Front	23095	707.5	1	0	24.5	23.4	0.879	1.132	
							25	0	23.5	22.3	0.685	0.903	
				Edge Right	23095	707.5	1	0	24.5	23.4	0.448	0.577	
							25	0	23.5	22.3	0.355	0.468	
				Edge Bottom	23095	707.5	1	0	24.5	23.4	0.219	0.282	
							25	0	23.5	22.3	0.167	0.220	
				Edge Left	23095	707.5	1	0	24.5	23.4	0.667	0.859	
							25	0	23.5	22.3	0.541	0.713	

10.3. LTE Band 13 (10MHz Bandwidth)

Antenna	RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB Offset	TuP Limit (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
LTE Main L/M Ant	Body-worn w / Magnetic Mount	QPSK	0	Back	23230	782.0	1	25	24.5	23.4	0.875	**1.127**	5
							25	0	23.5	22.5	0.740	0.932	
							50	0	23.5	22.4	0.659	0.849	
	Body-worn w / Wing Clip Mount	QPSK	0	Back	23230	782.0	1	25	24.5	23.4	0.645	0.831	
							25	0	23.5	22.5	0.567	0.714	
Antenna	RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB Offset	TuP Limit (dBm)	Meas. (dBm)	10-g Meas. (W/kg)	10-g Scaled (W/kg)	Plot No.
LTE Main L/M Ant	Extremity	QPSK	0	Back	23230	782.0	1	25	24.5	23.4	0.904	1.165	
							25	0	23.5	22.5	0.706	0.889	
				Front	23230	782.0	1	25	24.5	23.4	0.852	1.098	
							25	0	23.5	22.5	0.663	0.835	
				Edge Right	23230	782.0	1	25	24.5	23.4	0.674	0.868	
							25	0	23.5	22.5	0.531	0.668	
				Edge Bottom	23230	782.0	1	25	24.5	23.4	0.156	0.201	
							25	0	23.5	22.5	0.122	0.154	
				Edge Left	23230	782.0	1	25	24.5	23.4	0.942	**1.214**	6
							25	0	23.5	22.5	0.736	0.927	

10.4. LTE Band 14 (10MHz Bandwidth)

Antenna	RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB Offset	TuP Limit (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
LTE Main L/M Ant	Body-worn w / Magnetic Mount	QPSK	0	Back	23330	793.0	1	25	24.5	23.3	0.881	**1.161**	7
							25	0	23.5	22.4	0.728	0.938	
							50	0	23.5	22.3	0.622	0.820	
	Body-worn w / Wing Clip Mount	QPSK	0	Back	23330	793.0	1	25	24.5	23.3	0.633	0.834	
							25	0	23.5	22.4	0.569	0.733	
Antenna	RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB Offset	TuP Limit (dBm)	Meas. (dBm)	10-g Meas. (W/kg)	10-g Scaled (W/kg)	Plot No.
LTE Main L/M Ant	Extremity	QPSK	0	Back	23330	793.0	1	25	24.5	23.3	0.890	**1.173**	8
							25	0	23.5	22.4	0.715	0.921	
				Front	23330	793.0	1	25	24.5	23.3	0.817	1.077	
							25	0	23.5	22.4	0.662	0.853	
				Edge Right	23330	793.0	1	25	24.5	23.3	0.616	0.812	
							25	0	23.5	22.4	0.503	0.648	
				Edge Bottom	23330	793.0	1	25	24.5	23.3	0.165	0.218	
							25	0	23.5	22.4	0.133	0.171	
				Edge Left	23330	793.0	1	25	24.5	23.3	0.803	1.059	
							25	0	23.5	22.4	0.644	0.830	

10.5. LTE Band 25 (20MHz Bandwidth)

Antenna	RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB Offset	TuP Limit (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
LTE Main L/M Ant	Body-worn w / Magnetic Mount	QPSK	0	Back	26365	1882.5	1	49	24.5	23.7	0.606	**0.729**	9
							50	24	23.5	22.8	0.493	0.579	
	Body-worn w / Wing Clip Mount	QPSK	0	Back	26365	1882.5	1	49	24.5	23.7	0.431	0.518	
							50	24	23.5	22.8	0.338	0.397	

Antenna	RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB Offset	TuP Limit (dBm)	Meas. (dBm)	10-g Meas. (W/kg)	10-g Scaled (W/kg)	Plot No.
LTE Main L/M Ant	Extremity	QPSK	0	Back	26365	1882.5	1	49	24.5	23.7	0.969	1.165	
							50	24	23.5	22.8	0.796	0.935	
				Front	26140	1860.0	1	49	24.5	23.7	1.79	**2.15**	10
					26365	1882.5	1	49	24.5	23.7	1.78	2.14	
							50	24	23.5	22.8	1.43	1.68	
					26590	1905.0	1	0	24.5	23.6	1.73	2.13	
				Edge Right	26365	1882.5	1	49	24.5	23.7	0.451	0.542	
							50	24	23.5	22.8	0.363	0.426	
				Edge Bottom	26365	1882.5	1	49	24.5	23.7	1.43	1.72	
							50	24	23.5	22.8	1.14	1.34	
				Edge Left	26365	1882.5	1	49	24.5	23.7	0.709	0.852	
							50	24	23.5	22.8	0.572	0.672	

10.6. LTE Band 26 (15MHz Bandwidth)

Antenna	RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB Offset	TuP Limit (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
LTE Main L/M Ant	Body-worn w / Magnetic Mount	QPSK	0	Back	26865	831.5	1	0	24.5	23.6	0.693	**0.853**	11
							36	0	23.5	22.6	0.608	0.748	
	Body-worn w / Wing Clip Mount	QPSK	0	Back	26865	831.5	1	0	24.5	23.6	0.542	0.667	
							36	0	23.5	22.6	0.457	0.562	

Antenna	RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB Offset	TuP Limit (dBm)	Meas. (dBm)	10-g Meas. (W/kg)	10-g Scaled (W/kg)	Plot No.
LTE Main L/M Ant	Extremity	QPSK	0	Back	26865	831.5	1	0	24.5	23.6	0.824	**1.014**	12
							36	0	23.5	22.6	0.699	0.860	
				Front	26865	831.5	1	0	24.5	23.6	0.755	0.929	
							36	0	23.5	22.6	0.612	0.753	
				Edge Right	26865	831.5	1	0	24.5	23.6	0.574	0.706	
							36	0	23.5	22.6	0.476	0.586	
				Edge Bottom	26865	831.5	1	0	24.5	23.6	0.157	0.193	
							36	0	23.5	22.6	0.137	0.169	
				Edge Left	26865	831.5	1	0	24.5	23.6	0.701	0.862	
							36	0	23.5	22.6	0.582	0.716	

10.7. LTE Band 30 (10MHz Bandwidth)

Antenna	RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB Offset	TuP Limit (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
LTE Main H Ant	Body-worn w/ Magnetic Mount	QPSK	0	Back	27710	2310.0	1	49	23.3	23.1	0.526	**0.551**	13
							25	12	22.3	22.1	0.392	0.410	
	Body-worn w/ Wing Clip Mount	QPSK	0	Back	27710	2310.0	1	49	23.3	23.1	0.326	0.341	
							25	12	22.3	22.1	0.245	0.257	

Antenna	RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB Offset	TuP Limit (dBm)	Meas. (dBm)	10-g Meas. (W/kg)	10-g Scaled (W/kg)	Plot No.
LTE Main H Ant	Extremity	QPSK	0	Back	27710	2310.0	1	49	23.3	23.1	0.861	**0.902**	14
							25	12	22.3	22.1	0.675	0.707	
				Front	27710	2310.0	1	49	23.3	23.1	0.621	0.650	
							25	12	22.3	22.1	0.416	0.436	
				Edge Bottom	27710	2310.0	1	49	23.3	23.1	0.296	0.310	
							25	12	22.3	22.1	0.221	0.231	
				Edge Left	27710	2310.0	1	49	23.3	23.1	0.812	0.850	
							25	12	22.3	22.1	0.633	0.663	

10.8. LTE Band 66 (20MHz Bandwidth)

Antenna	RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB Offset	TuP Limit (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
LTE Main L/M Ant	Body-worn w/ Magnetic Mount	QPSK	0	Back	132072	1720.0	1	49	23.7	23.0	0.657	0.772	
					132322	1745.0	1	49	23.7	22.8	0.693	**0.853**	15
							50	0	22.7	21.7	0.528	0.665	
					132572	1770.0	1	49	23.7	22.9	0.611	0.735	
	Body-worn w/ Wing Clip Mount	QPSK	0	Back	132322	1745.0	1	49	23.7	22.8	0.390	0.480	
							50	0	22.7	21.7	0.294	0.370	

Antenna	RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB Offset	TuP Limit (dBm)	Meas. (dBm)	10-g Meas. (W/kg)	10-g Scaled (W/kg)	Plot No.
LTE Main L/M Ant	Extremity	QPSK	0	Back	132322	1745.0	1	49	23.7	22.8	1.02	1.25	
							50	0	22.7	21.7	0.793	0.998	
				Front	132322	1745.0	1	49	23.7	22.8	1.28	1.57	
							50	0	22.7	21.7	0.985	1.240	
				Edge Right	132322	1745.0	1	49	23.7	22.8	0.216	0.266	
							50	0	22.7	21.7	0.170	0.214	
				Edge Bottom	132072	1720.0	1	49	23.7	23.0	2.88	3.38	
							50	0	22.7	22.0	2.36	2.77	
							100	0	22.7	21.9	2.40	2.89	
					132322	1745.0	1	49	23.7	22.8	2.77	**3.41**	16
							50	0	22.7	21.7	2.31	2.91	
					132572	1770.0	1	49	23.7	22.9	2.49	2.99	
							50	0	22.7	21.9	2.04	2.45	
				Edge Left	132322	1745.0	1	49	23.7	22.8	0.686	0.844	
							50	0	22.7	21.7	0.559	0.704	

DUT Holder Perturbations for LTE Band 66

When the highest reported SAR of an antenna is > 1.2 W/kg (1g) or 3 W/kg (10g), test device holder perturbation verification is required using the highest SAR configuration.

Antenna	RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	TuP Limit (dBm)	Meas. (dBm)	Original SAR (W/kg)		with Foam SAR (W/kg)		Delta %
											10-g Meas.	10-g Scaled	10-g Meas.	10-g Scaled	
LTE Main L/M Ant	Extremity	QPSK	0	Edge Bottom	132322	1745	1	49	23.7	22.8	2.77	3.41	2.62	3.22	-5.4%

Conclusion:

Test Device Holder has little to no effect on SAR measurement.

10.9. Wi-Fi (DTS Band)

When the 802.11b reported SAR of the highest measured maximum output power channel is ≤ 0.8 W/kg, no further SAR testing is required. If SAR is > 0.8 W/kg and ≤ 1.2 W/kg, SAR is required for the next highest measured output power channel. If SAR is > 1.2 W/kg, SAR is required for the third channel.

Antenna	RF Exposure Conditons	Mode	Dist. (mm)	Duty Cycle (%)	Test Position	Ch No.	Freq. (MHz)	TuP Limit (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
WiFi/BT Ant	Body-worn w / Magnetic Mount	802.11b	0	99.20%	Back	6	2437.0	19.0	18.1	0.132	**0.164**	17
	Body-worn w / Wing Clip Mount	802.11b	0	99.20%	Back	6	2437.0	19.0	18.1	0.077	0.095	

Antenna	RF Exposure Conditons	Mode	Dist. (mm)	Duty Cycle (%)	Test Position	Ch No.	Freq. (MHz)	TuP Limit (dBm)	Meas. (dBm)	10-g Meas. (W/kg)	10-g Scaled (W/kg)	Plot No.
WiFi/BT Ant	Extremity	802.11b	0	99.20%	Back	6	2437.0	19.0	18.1	0.182	0.226	
					Front	6	2437.0	19.0	18.1	0.408	0.506	
					Edge Right	6	2437.0	19.0	18.1	0.434	**0.538**	18
					Edge Bottom	6	2437.0	19.0	18.1	0.111	0.138	

Notes:

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.

Adjusted SAR for OFDM Modes

RF Exposure Condition	Antenna	DSSS Max. Power		OFDM Max. Power		Reported 1g SAR for DSSS (W/kg)	Adjusted 1g SAR for OFDM (W/kg)
		dBm	mW	dBm	mW		
Body-worn	WiFi/BT Ant	19.0	79	18.5	71	0.164	0.146
RF Exposure Condition	Antenna	DSSS Max. Power		OFDM Max. Power		Reported 10g SAR for DSSS (W/kg)	Adjusted 10g SAR for OFDM (W/kg)
		dBm	mW	dBm	mW		
Extremity	WiFi/BT Ant	19.0	79	18.5	71	0.538	0.479

Notes:

SAR testing is not required for OFDM mode(s) since the adjusted SAR is ≤ 1.2 W/kg (1g) or 3 W/kg (10g).

10.10. Wi-Fi (U-NII Band)

UNII-1 & 2A

When the specified maximum output power is the same for both UNII band I and UNII band 2A, begin SAR measurement in UNII band 2A; and if the highest *reported* SAR for UNII band 2A is

- ≤ 1.2 W/kg, SAR is not required for UNII band I
- > 1.2 W/kg, both bands should be tested independently for SAR.

Antenna	RF Exposure Conditons	Mode	Dist. (mm)	Duty Cycle (%)	Test Position	Ch No.	Freq. (MHz)	TuP Limit (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
WiFi/BT Ant	Body-worn w/ Magnetic Mount	802.11n HT40	0	96.26%	Back	62	5310.0	17.0	15.8	0.141	0.193	
	Body-worn w/ Wing Clip Mount	802.11n HT40	0	96.26%	Back	62	5310.0	17.0	15.8	0.223	**0.305**	19
Antenna	RF Exposure Conditons	Mode	Dist. (mm)	Duty Cycle (%)	Test Position	Ch No.	Freq. (MHz)	TuP Limit (dBm)	Meas. (dBm)	10-g Meas. (W/kg)	10-g Scaled (W/kg)	Plot No.
WiFi/BT Ant	Extremity	802.11n HT40	0	96.26%	Back	62	5310.0	17.0	15.8	0.184	0.252	
					Front	62	5310.0	17.0	15.8	0.274	0.375	
					Edge Right	62	5310.0	17.0	15.8	1.35	**1.85**	20
					Edge Bottom	62	5310.0	17.0	15.8	0.014	0.019	

Adjusted SAR for UNII-1 & 2A

RF Exposure Condition	Antenna	UNII-2A Max. Power		UNII-1 Max. Power		Reported 1g SAR for UNII-2A (W/kg)	Adjusted 1g SAR for UNII-1 (W/kg)
		dBm	mW	dBm	mW		
Body-worn	WiFi/BT Ant	17.0	50	17.0	50	0.305	0.305
RF Exposure Condition	Antenna	UNII-2A Max. Power		UNII-1 Max. Power		Reported 10g SAR for UNII-2A (W/kg)	Adjusted 10g SAR for UNII-1 (W/kg)
		dBm	mW	dBm	mW		
Extremity	WiFi/BT Ant	17.0	50	17.0	50	1.849	1.849

Notes:

SAR testing is not required for UNII-1 since the adjusted SAR is ≤ 1.2 W/kg (1g) or 3 W/kg (10g).

UNII-2C

Antenna	RF Exposure Conditons	Mode	Dist. (mm)	Duty Cycle (%)	Test Position	Ch No.	Freq. (MHz)	TuP Limit (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
WiFi/BT Ant	Body-worn w/ Magnetic Mount	802.11a	0	98.19%	Back	144	5720.0	17.0	15.1	0.097	0.153	
	Body-worn w/ Wing Clip Mount	802.11a	0	98.19%	Back	144	5720.0	17.0	15.1	0.111	**0.175**	21
Antenna	RF Exposure Conditons	Mode	Dist. (mm)	Duty Cycle (%)	Test Position	Ch No.	Freq. (MHz)	TuP Limit (dBm)	Meas. (dBm)	10-g Meas. (W/kg)	10-g Scaled (W/kg)	Plot No.
WiFi/BT Ant	Extremity	802.11a	0	98.19%	Back	144	5720.0	17.0	15.1	0.113	0.178	
					Front	144	5720.0	17.0	15.1	0.182	0.287	
					Edge Right	144	5720.0	17.0	15.1	0.909	**1.434**	22
					Edge Bottom	144	5720.0	17.0	15.1	0.011	0.017	

UNII-3

Antenna	RF Exposure Conditons	Mode	Dist. (mm)	Duty Cycle (%)	Test Position	Ch No.	Freq. (MHz)	TuP Limit (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
WiFi/BT Ant	Body-worn w / Magnetic Mount	802.11n HT40	0	93.14%	Back	151	5755.0	14.75	13.6	0.063	**0.088**	23
	Body-worn w / Wing Clip Mount	802.11n HT40	0	93.14%	Back	151	5755.0	14.75	13.6	0.055	0.077	
Antenna	RF Exposure Conditons	Mode	Dist. (mm)	Duty Cycle (%)	Test Position	Ch No.	Freq. (MHz)	TuP Limit (dBm)	Meas. (dBm)	10-g Meas. (W/kg)	10-g Scaled (W/kg)	Plot No.
WiFi/BT Ant	Extremity	802.11n HT40	0	93.14%	Back	151	5755.0	14.75	13.6	0.061	0.085	
					Front	151	5755.0	14.75	13.6	0.126	0.176	
					Edge Right	151	5755.0	14.75	13.6	0.567	**0.793**	24
					Edge Bottom	151	5755.0	14.75	13.6	0.011	0.015	

10.11. Bluetooth

Antenna	RF Exposure Conditons	Mode	Dist. (mm)	Test Position	Ch No.	Freq. (MHz)	TuP Limit (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
WiFi/BT Ant	Body-worn w / Magnetic Mount	GFSK	0	Back	78	2480.0	10.8	9.5	0.012	**0.016**	25
	Body-worn w / Wing Clip Mount	GFSK	0	Back	78	2480.0	10.8	9.5	0.008	0.011	
Antenna	RF Exposure Conditons	Mode	Dist. (mm)	Test Position	Ch No.	Freq. (MHz)	TuP Limit (dBm)	Meas. (dBm)	10-g Meas. (W/kg)	10-g Scaled (W/kg)	Plot No.
WiFi/BT Ant	Extremity	GFSK	0	Back	78	2480.0	10.8	9.5	0.015	0.020	
				Front	78	2480.0	10.8	9.5	0.038	0.051	
				Edge Right	78	2480.0	10.8	9.5	0.067	**0.090**	26
				Edge Bottom	78	2480.0	10.8	9.5	0.014	0.019	

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.

Body-worn Exposure Condition (1g)

Frequency Band (MHz)	Air Interface	RF Exposure Conditions	Test Position	Repeated SAR (Yes/No)	Highest Measured SAR (W/kg)	First Repeated	
						Measured SAR (W/kg)	Largest to Smallest SAR Ratio
700	LTE Band 14	Body-worn w/ Magnetic Mount	Back	Yes	0.881	0.863	1.02

Note(s):

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

Extremity Exposure Condition (10g)

Frequency Band (MHz)	Air Interface	RF Exposure Conditions	Test Position	Repeated SAR (Yes/No)	Highest Measured SAR (W/kg)	First Repeated	
						Measured SAR (W/kg)	Largest to Smallest SAR Ratio
1700	LTE Band 66	Extremity	Edge Bottom	Yes	2.88	2.86	1.01

Note(s):

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

12. Simultaneous Transmission Conditions

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

Notes:

1. DTS Radio cannot transmit simultaneously with Bluetooth Radio.
2. DTS Radio cannot transmit simultaneously with U-NII Radio.
3. U-NII Radio cannot transmit simultaneously with Bluetooth Radio.

12.1. 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)

12.1.1. 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.

12.2. Sum of the SAR for LTE Main L/M Ant & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)				∑ 1-g SAR (W/kg)		
		WWAN	DTS	NII	DSS	1+2	1+3	1+4
		LTE Main L/M Ant	WiFi/BT Ant	WiFi/BT Ant	WiFi/BT Ant			
		1	2	3	4			
Body-worn w/ Magentic Mount	Back	1.161	0.164	0.193	0.016	**1.325**	**1.354**	**1.177**
Body-worn w/ Wing Clip Mount	Back	0.834	0.095	0.305	0.011	0.929	1.139	0.845

RF Exposure conditions	Test Position	Standalone SAR (W/kg)				∑ 10-g SAR (W/kg)		
		WWAN	DTS	NII	DSS	1+2	1+3	1+4
		LTE Main L/M Ant	WiFi/BT Ant	WiFi/BT Ant	WiFi/BT Ant			
		1	2	3	4			
Extremity	Back	1.25	0.226	0.252	0.020	1.481	1.507	1.275
	Front	2.15	0.506	0.375	0.051	2.658	2.527	2.203
	Edge Right	0.868	0.538	1.85	0.090	1.406	2.717	0.958
	Edge Bottom	3.41	0.138	0.019	0.019	**3.546**	**3.427**	**3.427**
	Edge Left	1.214				1.214	1.214	1.214

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the sum of the 1-g and 10-g SAR is < 1.6 W/kg (1g) or 4 W/kg (10g), respectively.

12.3. Sum of the SAR for LTE Main H Ant & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)				∑ 1-g SAR (W/kg)		
		WWAN	DTS	NII	DSS	1+2	1+3	1+4
		LTE Main H Ant	WiFi/BT Ant	WiFi/BT Ant	WiFi/BT Ant			
		1	2	3	4			
Body-worn w/ Magentic Mount	Back	0.551	0.164	0.193	0.016	0.715	0.744	0.567
Body-worn w/ Wing Clip Mount	Back	0.355	0.095	0.305	0.011	0.450	0.660	0.366

RF Exposure conditions	Test Position	Standalone SAR (W/kg)				∑ 10-g SAR (W/kg)		
		WWAN	DTS	NII	DSS	1+2	1+3	1+4
		LTE Main H Ant	WiFi/BT Ant	WiFi/BT Ant	WiFi/BT Ant			
		1	2	3	4			
Extremity	Back	0.942	0.226	0.252	0.020	1.168	1.194	0.962
	Front	0.882	0.506	0.375	0.051	1.388	1.257	0.933
	Edge Right		0.538	1.85	0.090	0.538	1.849	0.090
	Edge Bottom	0.432	0.138	0.019	0.019	0.570	0.451	0.451
	Edge Left	1.90				1.90	1.90	1.90

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the sum of the 1-g and 10-g SAR is < 1.6 W/kg (1g) or 4 W/kg (10g), respectively.

Appendixes

Refer to separated files for the following appendixes.

Appendix A: SAR Setup Photos

Appendix B: SAR System Check Plots

Appendix C: SAR Highest Test Plots

Appendix D: SAR Tissue Ingredients

Appendix E: SAR Probe Certificates

Appendix F: SAR Dipole Certificates

END OF REPORT