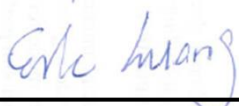


FCC SAR Test Report

APPLICANT : Motorola Mobility, LLC
EQUIPMENT : Mobile Cellular Phone
BRAND NAME : Motorola
MODEL NAME : 6574
FCC ID : IHDT56VB2
STANDARD : FCC 47 CFR Part 2 (2.1093)
ANSI/IEEE C95.1-1992
IEEE 1528-2013

We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and had been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.



Reviewed by: Eric Huang / Deputy Manager



Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan (R.O.C.)



Table of Contents

1. Statement of Compliance	4
2. Administration Data	5
3. Guidance Standard	5
4. Equipment Under Test (EUT) Information.....	6
4.1 General Information	6
4.2 General LTE SAR Test and Reporting Considerations	7
5. RF Exposure Limits.....	9
5.1 Uncontrolled Environment.....	9
5.2 Controlled Environment.....	9
6. Specific Absorption Rate (SAR).....	10
6.1 Introduction	10
6.2 SAR Definition.....	10
7. System Description and Setup	11
7.1 E-Field Probe	12
7.2 Data Acquisition Electronics (DAE)	12
7.3 Phantom.....	13
7.4 Device Holder.....	14
8. Measurement Procedures	15
8.1 Spatial Peak SAR Evaluation.....	15
8.2 Power Reference Measurement.....	16
8.3 Area Scan	16
8.4 Zoom Scan.....	17
8.5 Volume Scan Procedures.....	18
8.6 Power Drift Monitoring.....	18
9. Test Equipment List.....	19
10. System Verification	20
10.1 Tissue Verification	20
10.2 System Performance Check Results.....	29
11. RF Exposure Positions	31
11.1 Ear and handset reference point	31
11.2 Definition of the cheek position.....	32
11.3 Definition of the tilt position.....	33
11.4 Body Worn Accessory	33
11.5 Product Specific device	34
11.6 Wireless Router.....	34
12. Conducted RF Output Power (Unit: dBm).....	35
13. Bluetooth Exclusions Applied	79
14. Antenna Location	80
15. SAR Test Results	81
15.1 Head SAR	83
15.2 Hotspot SAR	86
15.3 Product Specific SAR.....	90
15.4 Body Worn Accessory SAR.....	91
15.5 Repeated SAR Measurement	93
16. Simultaneous Transmission Analysis.....	94
16.1 Head Exposure Conditions	95
16.2 Hotspot Exposure Conditions.....	97
16.3 Product Specific Conditions	101
16.4 Body-Worn Accessory Exposure Conditions	102
17. Supplemental tuner tests results.....	104
17.1 Supplemental Head SAR results.....	104
17.2 Supplemental Body SAR results	105
18. Uncertainty Assessment	106
19. References.....	109
Appendix A. Plots of System Performance Check	
Appendix B. Plots of High SAR Measurement	
Appendix C. DASY Calibration Certificate	

Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA640145	Rev. 01	Initial issue of report	Jun. 14, 2016

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for Motorola Mobility, LLC, Mobile Cellular Phone, 6574, are as follows.

Equipment Class	Frequency Band	Highest SAR Summary				Highest Simultaneous Transmission 1g SAR (W/kg)
		Head (Separation 0mm)	Body-worn (Separation 10mm)	Hotspot (Separation 10mm)	Product Specific (Separation 0mm)	
		1g SAR (W/kg)			10g SAR (W/kg)	
Licensed	GSM850	0.254	0.752	0.752		1.549
	GSM1900	0.346	0.794	0.858		
	WCDMA II	0.537	0.977	1.167	3.368	
	WCDMA V	0.303	0.932	0.932		
	CDMA BC0	0.298	1.136	1.129		
	CDMA BC1	0.510	1.085	1.073	3.132	
	LTE Band 2	0.541	1.095	1.095	3.171	
	LTE Band 4	0.298	1.003	1.059	3.717	
	LTE Band 5	0.396	1.133	1.133		
	LTE Band 7	0.383	1.062	1.062		
	LTE Band 13	0.547	1.095	1.095		
DTS	2.4GHz WLAN	0.776	0.316	0.316		1.425
NII	5GHz WLAN	0.572	0.314	0.128	1.085	1.549
Date of Testing:		2016/4/21 ~ 2016/6/10				

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body, 4.0 W/kg for Product Specific) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications

2. Administration Data

Testing Laboratory	
Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978

Applicant	
Company Name	Motorola Mobility, LLC
Address	222 W Merchandise Mart Plaza, Suite 1800, Chicago, IL 60654, United States

Manufacturer	
Company Name	Motorola Mobility, LLC
Address	222 W Merchandise Mart Plaza, Suite 1800, Chicago, IL 60654, United States

3. Guidance Standard

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards:

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r03
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D05A Rel.10 LTE SAR Test Guidance v01r02
- FCC KDB 941225 D06 Hotspot Mode SAR v02r01

4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Cellular Phone
Brand Name	Motorola
Model Name	6574
FCC ID	IHDT56VB2
IMEI Code	354108070053916
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz CDMA2000 BC0: 824.7 MHz ~ 848.31 MHz CDMA 2000 BC1: 1851.25 MHz ~ 1908.75 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 13: 777 MHz ~ 787 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5720 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC: 13.56 MHz
Mode	· GSM/GPRS/EGPRS · RMC/AMR 12.2Kbps · HSDPA · HSUPA · DC-HSDPA · CDMA2000 : 1xRTT/1xEv-Do(Rev.0)/1xEv-Do(Rev.A) · LTE: QPSK, 16QAM · 802.11a/b/g/n/ac HT20/HT40/VHT20/VHT40/VHT80 · Bluetooth with EDR / LE · NFC:ASK
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Identical Prototype
Remark: 1. This device 2.4GHz / 5.2GHz / 5.8GHz WLAN supports Hotspot operation and WiFi Direct (Group Client / Group Owner), and 5.3GHz / 5.5GHz WLAN supports WiFi Direct (Group Client). 2. While operating in “Front” and “Back” configuration by end user, the device will limit different maximum output powers on the GSM850, WCDMA B2 / B5, CDMA BC0 / BC1 and LTE B2 / B4 / B5 / B7 / B13 transmitter and detail descriptions of the power reduction mechanism are included in the operational description. 3. While operating in body-adjacent exposure configuration during a mobile hotspot session, the device will reduced output powers on the GSM850, WCDMA B2 / B5, CDMA BC0 / BC1 and LTE B2 / B4 / B5 / B7 / B13 transmitter and detail descriptions of the power reduction mechanism are included in the operational description. 4. The device utilizes independent power reduction mechanisms for SAR compliance for the WLAN transmitter for held-to-are exposure conditions and detail descriptions of the power reduction mechanism are included in the operational description. 5. This device implements antenna tuning techniques for several WWAN (cellular) operating modes and frequencies for the purpose of improving antenna efficiency over a broad range of frequencies. Specifically, these techniques are employed in the GSM, WCDMA, CDMA and LTE modes. In this report SAR was measured according to the normally required SAR configurations with the tuner active and worst tune state (auto tune) was used for SAR testing. The detail descriptions of the antenna tuner are included in the operational description and supplemental data for additional information on section17.	

4.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05																																																										
FCC ID	IHDT56VB2																																																									
Equipment Name	Mobile Cellular Phone																																																									
Operating Frequency Range of each LTE transmission band	LTE Band 02: 1850 MHz ~ 1910 MHz LTE Band 04: 1710 MHz ~ 1755 MHz LTE Band 05: 824 MHz ~ 849 MHz LTE Band 07: 2500 MHz ~ 2570 MHz LTE Band 13: 777 MHz ~ 787 MHz																																																									
Channel Bandwidth	LTE Band 02:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 04:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 05:1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 07: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 13: 5MHz, 10MHz																																																									
uplink modulations used	QPSK, and 16QAM																																																									
LTE Voice / Data requirements	Voice and Data																																																									
LTE MPR permanently built-in by design	<table><tr><th colspan="8">Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3</th></tr><tr><th rowspan="3">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (RB)</th><th rowspan="3">MPR (dB)</th></tr><tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr><tr><td>QPSK</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 1</td></tr><tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr><tr><td>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr></table>												Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3								Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1	16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1	16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3																																																										
Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)																																																			
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz																																																				
	QPSK	> 5	> 4	> 8	> 12	> 16		> 18	≤ 1																																																	
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1																																																			
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2																																																			
LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)																																																									
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.																																																									
Power reduction applied to satisfy SAR compliance	Yes, when operating in hotspot mode that LTE B2 / B4 / B5 / B7 / B13 power reduction applied to satisfy SAR compliance.																																																									
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations and the detail power verification please referred to page61.																																																									
LTE Carrier Aggregation Additional Information	This device supports a maximum of 3 carriers in the downlink only. All uplink communications are identical to the Release 8 Specifications. Uplink communications are done on the PCC. Due to carrier capability, only the combinations listed above are supported. The following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.																																																									
Transmission (H, M, L) channel numbers and frequencies in each LTE band																																																										
LTE Band 2																																																										
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz																																															
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)																																														
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860																																														
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880																																														
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900																																														



LTE Band 4												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745
LTE Band 5												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829				
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844				
LTE Band 7												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510				
M	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560				
LTE Band 13												
	Bandwidth 5 MHz					Bandwidth 10 MHz						
	Channel #		Freq.(MHz)			Channel #				Freq.(MHz)		
L	23205		779.5			23230				782		
M	23230		782									
H	23255		784.5									

5. RF Exposure Limits

5.1 Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

5.2 Controlled Environment

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. The exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	20.0

Limits for General Population/Uncontrolled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

1. Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

6. Specific Absorption Rate (SAR)

6.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

6.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$SAR = \frac{d}{dt} \left(\frac{dW}{dm} \right) = \frac{d}{dt} \left(\frac{dW}{\rho dv} \right)$$

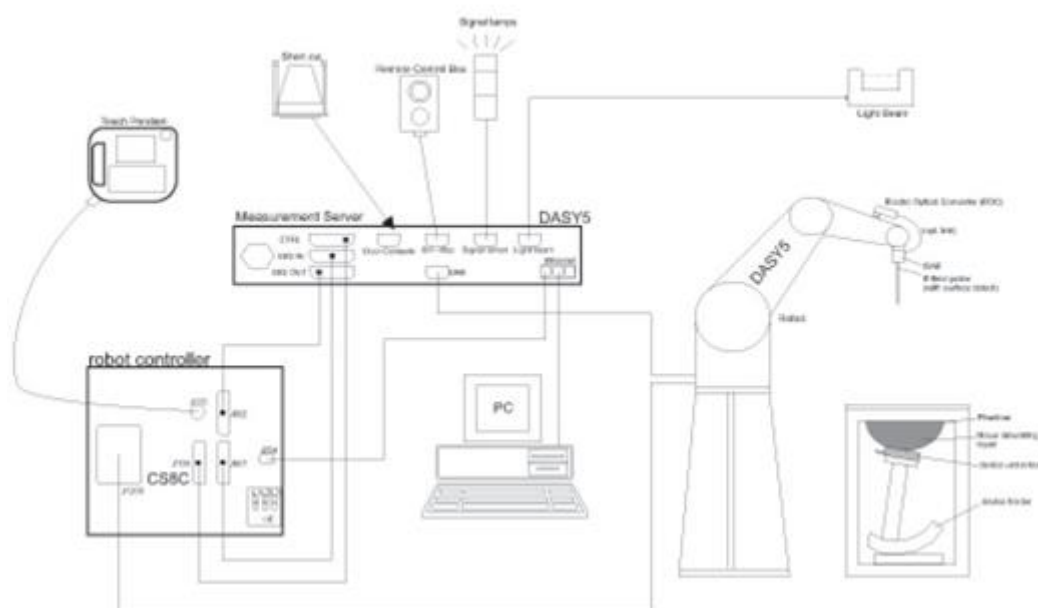
SAR is expressed in units of Watts per kilogram (W/kg)

$$SAR = \frac{\sigma |E|^2}{\rho}$$

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

7. System Description and Setup

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 WinXP or Win7 and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

7.1 E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by SPEAG). The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. This probe has a built in optical surface detection system to prevent from collision with phantom.

<ES3DV3 Probe>

Construction	Symmetric design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz – 4 GHz; Linearity: ± 0.2 dB (30 MHz – 4 GHz)	
Directivity	± 0.2 dB in TSL (rotation around probe axis) ± 0.3 dB in TSL (rotation normal to probe axis)	
Dynamic Range	5 μ W/g – >100 mW/g; Linearity: ± 0.2 dB	
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 3.9 mm (body: 12 mm) Distance from probe tip to dipole centers: 3.0 mm	

<EX3DV4 Probe>

Construction	Symmetric design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz – >6 GHz Linearity: ± 0.2 dB (30 MHz – 6 GHz)	
Directivity	± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)	
Dynamic Range	10 μ W/g – >100 mW/g Linearity: ± 0.2 dB (noise: typically <1 μ W/g)	
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 2.5 mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	

7.2 Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.

The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.



Fig 5.1 Photo of DAE

7.3 Phantom

<SAM Twin Phantom>

Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm	
Filling Volume	Approx. 25 liters	
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet	
Measurement Areas	Left Hand, Right Hand, Flat Phantom	

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

<ELI Phantom>

Shell Thickness	2 ± 0.2 mm (sagging: <1%)	
Filling Volume	Approx. 30 liters	
Dimensions	Major ellipse axis: 600 mm Minor axis: 400 mm	

The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

7.4 Device Holder

<Mounting Device for Hand-Held Transmitter>

In combination with the Twin SAM V5.0/V5.0c or ELI phantoms, the Mounting Device for Hand-Held Transmitters enables rotation of the mounted transmitter device to specified spherical coordinates. At the heads, the rotation axis is at the ear opening. Transmitter devices can be easily and accurately positioned according to IEC 62209-1, IEEE 1528, FCC, or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat). And upgrade kit to Mounting Device to enable easy mounting of wider devices like big smart-phones, e-books, small tablets, etc. It holds devices with width up to 140 mm.



Mounting Device for Hand-Held Transmitters



Mounting Device Adaptor for Wide-Phones

<Mounting Device for Laptops and other Body-Worn Transmitters>

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the mounting device in place of the phone positioned. The extension is fully compatible with the SAM Twin and ELI phantoms.



Mounting Device for Laptops

8. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

- (a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
- (b) Read the WWAN RF power level from the base station simulator.
- (c) For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band
- (d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/BT output power

<SAR measurement>

- (a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
- (b) Place the EUT in the positions as Exhibit 7C_SAR Setup Photo demonstrates.
- (c) Set scan area, grid size and other setting on the DASY software.
- (d) Measure SAR results for the highest power channel on each testing position.
- (e) Find out the largest SAR result on these testing positions of each band
- (f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

- (a) Power reference measurement
- (b) Area scan
- (c) Zoom scan
- (d) Power drift measurement

8.1 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

- (a) Extraction of the measured data (grid and values) from the Zoom Scan
- (b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
- (c) Generation of a high-resolution mesh within the measured volume
- (d) Interpolation of all measured values from the measurement grid to the high-resolution grid
- (e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
- (f) Calculation of the averaged SAR within masses of 1g and 10g

8.2 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. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

8.3 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 found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

Area scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
Maximum area scan spatial resolution: 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 $\leq$ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

8.4 Zoom Scan

Zoom scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10 gram 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 gram and 10 gram and displays these values next to the job's label.

Zoom scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

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

8.5 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

8.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5%, the SAR will be retested.



9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1012	May. 28, 2015	May. 27, 2016
SPEAG	835MHz System Validation Kit	D835V2	499	Mar. 21, 2016	Mar. 20, 2017
SPEAG	1750MHz System Validation Kit	D1750V2	1068	Nov. 23, 2015	Nov. 22, 2016
SPEAG	1900MHz System Validation Kit	D1900V2	5d041	Oct. 22, 2015	Oct. 21, 2016
SPEAG	2450MHz System Validation Kit	D2450V2	736	Aug. 20, 2015	Aug. 19, 2016
SPEAG	2600MHz System Validation Kit	D2600V2	1008	Aug. 19, 2015	Aug. 18, 2016
SPEAG	5GHz System Validation Kit	D5GHzV2	1128	Jul. 20, 2015	Jul. 19, 2016
SPEAG	5GHz System Validation Kit	D5GHzV2	1006	Oct. 06, 2015	Oct. 05, 2016
SPEAG	Data Acquisition Electronics	DAE3	360	Oct. 15, 2015	Oct. 14, 2016
SPEAG	Data Acquisition Electronics	DAE3	577	Sep. 24, 2015	Sep. 23, 2016
SPEAG	Data Acquisition Electronics	DAE4	1399	Nov. 23, 2015	Nov. 22, 2016
SPEAG	Data Acquisition Electronics	DAE3	495	May. 27, 2016	May. 26, 2017
SPEAG	Dosimetric E-Field Probe	ES3DV3	3270	Sep. 28, 2015	Sep. 27, 2016
SPEAG	Dosimetric E-Field Probe	EX3DV4	3931	Oct. 01, 2015	Sep. 30, 2016
SPEAG	Dosimetric E-Field Probe	EX3DV4	3955	Nov. 24, 2015	Nov. 23, 2016
SPEAG	Dosimetric E-Field Probe	EX3DV4	3925	May. 26, 2016	May. 25, 2017
WonDer	Thermometer	WD-5015	TM642	Oct. 16, 2015	Oct. 15, 2016
WonDer	Thermometer	WD-5015	TM281	Oct. 16, 2015	Oct. 15, 2016
Wisewind	Thermometer	HTC-1	TM225	Oct. 16, 2015	Oct. 15, 2016
Anritsu	Radio Communication Analyzer	MT8820C	6201341950	Dec. 18, 2015	Dec. 17, 2016
Agilent	Wireless Communication Test Set	E5515C	MY50266977	May. 14, 2015	May. 13, 2016
SPEAG	Device Holder	N/A	N/A	N/A	N/A
R&S	Signal Generator	MG3710A	6201502524	Dec. 18, 2015	Dec. 17, 2016
Agilent	ENA Network Analyzer	E5071C	MY46316648	Jan. 12, 2016	Jan. 11, 2017
SPEAG	Dielectric Probe Kit	DAK-3.5	1126	Jul. 21, 2015	Jul. 20, 2016
LINE SEIKI	Digital Thermometer	LKMelectronic	DTM3000SPEZIAL/90900	Aug. 26, 2015	Aug. 25, 2016
Anritsu	Power Meter	ML2495A	1419002	May. 13, 2015	May. 12, 2016
Anritsu	Power Sensor	MA2411B	1339124	May. 13, 2015	May. 12, 2016
Agilent	Spectrum Analyzer	E4408B	MY44211028	Aug. 24, 2015	Aug. 23, 2016
ATM	Dual Directional Coupler	C122H-10	P610410z-02	Note 1	
Woken	Attenuator 1	WK0602-XX	N/A	Note 1	
PE	Attenuator 2	PE7005-10	N/A	Note 1	
PE	Attenuator 3	PE7005- 3	N/A	Note 1	
AR	Power Amplifier	5S1G4M2	0328767	Note 1	
Mini-Circuits	Power Amplifier	ZVE-3W	162601250	Note 1	

General Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check source.

10. System Verification

10.1 Tissue Verification

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (ϵ_r)
For Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
900	40.3	57.9	0.2	1.4	0.2	0	0.97	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0
For Body								
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
900	50.8	48.2	0	0.9	0.1	0	1.05	55.0
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7
2600	68.1	0	0	0.1	0	31.8	2.16	52.5

Simulating Liquid for 5GHz, Manufactured by SPEAG

Ingredients	(% by weight)
Water	64~78%
Mineral oil	11~18%
Emulsifiers	9~15%
Additives and Salt	2~3%

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (°C)	Conductivity (σ)	Permittivity (ϵ_r)	Conductivity Target (σ)	Permittivity Target (ϵ_r)	Delta (σ) (%)	Delta (ϵ_r) (%)	Limit (%)	Date
750	HSL	22.3	0.891	42.888	0.89	41.90	0.11	2.36	±5	2016/4/23
750	MSL	22.6	0.956	55.600	0.96	55.50	-0.42	0.18	±5	2016/4/21
750	MSL	22.3	0.957	55.600	0.96	55.50	-0.31	0.18	±5	2016/4/28
835	HSL	22.4	0.884	40.727	0.90	41.50	-1.78	-1.86	±5	2016/4/23
835	MSL	22.6	0.991	57.500	0.97	55.20	2.16	4.17	±5	2016/4/21
835	MSL	22.3	0.978	57.100	0.97	55.20	0.82	3.44	±5	2016/4/27
1750	HSL	22.5	1.370	40.500	1.37	40.10	0.00	1.00	±5	2016/4/23
1750	MSL	22.4	1.470	55.000	1.49	53.40	-1.34	3.00	±5	2016/4/22
1750	MSL	22.3	1.440	52.700	1.49	53.40	-3.36	-1.31	±5	2016/4/26
1900	HSL	22.5	1.430	41.100	1.40	40.00	2.14	2.75	±5	2016/4/22
1900	MSL	22.4	1.550	54.100	1.52	53.30	1.97	1.50	±5	2016/4/22
1900	MSL	22.3	1.510	52.900	1.52	53.30	-0.66	-0.75	±5	2016/4/26
2450	HSL	22.4	1.765	38.710	1.80	39.20	-1.94	-1.25	±5	2016/4/24
2450	MSL	22.5	1.952	52.910	1.95	52.70	0.10	0.40	±5	2016/4/24
2600	HSL	22.3	1.940	38.197	1.96	39.00	-1.02	-2.06	±5	2016/4/24
2600	MSL	22.5	2.160	54.000	2.16	52.50	0.00	2.86	±5	2016/4/22
2600	MSL	22.5	2.135	53.381	2.16	52.50	-1.16	1.68	±5	2016/4/24
5250	HSL	22.5	4.612	36.805	4.71	35.95	-2.08	2.38	±5	2016/4/23
5250	MSL	22.4	5.384	46.865	5.36	48.95	0.45	-4.26	±5	2016/4/26
5300	HSL	22.6	4.713	35.508	4.76	35.90	-0.99	-1.09	±5	2016/6/10
5300	MSL	22.6	5.590	49.161	5.42	48.90	3.14	0.53	±5	2016/6/10
5600	HSL	22.5	4.968	36.317	5.07	35.50	-2.01	2.30	±5	2016/4/23
5600	HSL	22.6	4.992	35.112	5.07	35.50	-1.54	-1.09	±5	2016/6/10
5600	MSL	22.4	5.808	46.264	5.77	48.50	0.66	-4.61	±5	2016/4/27
5600	MSL	22.3	5.775	46.163	5.77	48.50	0.09	-4.82	±5	2016/4/28
5600	MSL	22.6	5.975	48.656	5.77	48.50	3.55	0.32	±5	2016/6/10
5750	HSL	22.5	5.126	36.120	5.22	35.35	-1.80	2.18	±5	2016/4/23
5750	MSL	22.3	5.973	45.970	5.94	48.28	0.56	-4.78	±5	2016/4/28



<Tissue Dielectric Parameter Check for Low / Middle / High Frequencies>

General Note:

The tissue measure results for low / middle / high frequencies list below, the results were used in the Dasy SAR system to perform interpolation to determine the dielectric parameters on the SAR test device. The SAR test plots may slightly difference between the tables below due to the digit rounding in the software calculated.

CH	Frequency (MHz)	Liquid Type	Conductivity (σ)	Permittivity (ϵ_r)	Conductivity Target (σ)	Permittivity Target (ϵ_r)	Delta (σ) (%)	Delta (ϵ_r) (%)	Limit (%)	Date
23230	782	Body	0.987	55.300	0.964	55.387	2.81	-0.18	±5	Apr. 21, 2016
20450	829	Body	0.985	57.520	0.970	55.220	1.55	4.20	±5	Apr. 21, 2016
20525	836.5	Body	0.992	57.450	0.970	55.200	2.27	4.08	±5	Apr. 21, 2016
20600	844	Body	0.999	57.380	0.980	55.170	1.94	3.95	±5	Apr. 21, 2016
1013	824.7	Body	0.981	57.560	0.970	55.240	1.13	4.28	±5	Apr. 21, 2016
384	836.52	Body	0.992	57.450	0.970	55.200	2.27	4.08	±5	Apr. 21, 2016
777	848.31	Body	1.004	57.340	0.990	55.160	1.41	3.88	±5	Apr. 21, 2016
4132	826.4	Body	0.982	57.540	0.970	55.230	1.24	4.24	±5	Apr. 21, 2016
4182	836.4	Body	0.992	57.450	0.970	55.200	2.27	4.08	±5	Apr. 21, 2016
4233	846.6	Body	1.002	57.350	0.980	55.160	2.24	3.89	±5	Apr. 21, 2016
128	824.2	Body	0.980	57.560	0.970	55.240	1.03	4.28	±5	Apr. 21, 2016
189	836.4	Body	0.992	57.450	0.970	55.200	2.27	4.08	±5	Apr. 21, 2016
251	848.8	Body	1.004	57.340	0.990	55.160	1.41	3.88	±5	Apr. 21, 2016
20050	1720	Body	1.438	55.080	1.470	53.460	-2.18	2.95	±5	Apr. 22, 2016
20175	1732.5	Body	1.452	55.050	1.480	53.430	-1.89	3.09	±5	Apr. 22, 2016
20300	1745	Body	1.467	55.020	1.490	53.410	-1.54	3.03	±5	Apr. 22, 2016
18700	1860	Body	1.496	54.330	1.520	53.300	-1.58	1.93	±5	Apr. 22, 2016
18900	1880	Body	1.522	54.250	1.520	53.300	0.13	1.78	±5	Apr. 22, 2016
19100	1900	Body	1.548	54.150	1.520	53.300	1.84	1.59	±5	Apr. 22, 2016
25	1851.25	Body	1.485	54.350	1.520	53.300	-2.30	1.97	±5	Apr. 22, 2016
600	1880	Body	1.522	54.250	1.520	53.300	0.13	1.78	±5	Apr. 22, 2016
1175	1908.75	Body	1.559	54.110	1.520	53.300	2.57	1.52	±5	Apr. 22, 2016
9262	1852.4	Body	1.487	54.350	1.520	53.300	-2.17	1.97	±5	Apr. 22, 2016
9400	1880	Body	1.522	54.250	1.520	53.300	0.13	1.78	±5	Apr. 22, 2016
9538	1907.6	Body	1.557	54.110	1.520	53.300	2.43	1.52	±5	Apr. 22, 2016
512	1850.2	Body	1.484	54.350	1.520	53.300	-2.37	1.97	±5	Apr. 22, 2016
661	1880	Body	1.522	54.250	1.520	53.300	0.13	1.78	±5	Apr. 22, 2016
810	1909.8	Body	1.560	54.100	1.520	53.300	2.63	1.50	±5	Apr. 22, 2016
20850	2510	Body	2.033	54.275	2.034	52.620	0.14	3.19	±5	Apr. 22, 2016
21100	2535	Body	2.067	54.204	2.069	52.587	-0.13	3.05	±5	Apr. 22, 2016
21350	2560	Body	2.102	54.127	2.104	52.553	0.08	2.90	±5	Apr. 22, 2016
18700	1860	Head	1.390	41.262	1.400	40.000	-0.70	3.16	±5	Apr. 22, 2016
18900	1880	Head	1.410	41.179	1.400	40.000	0.68	2.95	±5	Apr. 22, 2016
19100	1900	Head	1.430	41.101	1.400	40.000	2.14	2.75	±5	Apr. 22, 2016

Table of Low/Middle/High Channel for Liquid Validation



CH	Frequency (MHz)	Liquid Type	Conductivity (σ)	Permittivity (ϵ_r)	Conductivity Target (σ)	Permittivity Target (ϵ_r)	Delta (σ) (%)	Delta (ϵ_r) (%)	Limit (%)	Date
25	1851.25	Head	1.382	41.293	1.400	40.000	-1.31	3.23	±5	Apr. 22, 2016
600	1880	Head	1.410	41.179	1.400	40.000	0.68	2.95	±5	Apr. 22, 2016
1175	1908.75	Head	1.439	41.067	1.400	40.000	2.79	2.67	±5	Apr. 22, 2016
9262	1852.4	Head	1.383	41.288	1.400	40.000	-1.23	3.22	±5	Apr. 22, 2016
9400	1880	Head	1.410	41.179	1.400	40.000	0.68	2.95	±5	Apr. 22, 2016
9538	1907.6	Head	1.438	41.072	1.400	40.000	2.71	2.68	±5	Apr. 22, 2016
512	1850.2	Head	1.381	41.297	1.400	40.000	-1.39	3.24	±5	Apr. 22, 2016
661	1880	Head	1.410	41.179	1.400	40.000	0.68	2.95	±5	Apr. 22, 2016
810	1909.8	Head	1.440	41.064	1.400	40.000	2.86	2.66	±5	Apr. 22, 2016
20050	1720	Head	1.341	40.639	1.356	40.149	-1.38	1.34	±5	Apr. 23, 2016
20175	1732.5	Head	1.354	40.592	1.362	40.129	-0.41	1.23	±5	Apr. 23, 2016
20300	1745	Head	1.367	40.535	1.368	40.108	-0.18	1.08	±5	Apr. 23, 2016
128	824.2	Head	0.873	40.803	0.899	41.551	-3.00	-1.92	±5	Apr. 23, 2016
189	836.4	Head	0.887	40.626	0.902	41.500	-1.48	-2.11	±5	Apr. 23, 2016
251	848.8	Head	0.898	40.421	0.915	41.500	-1.28	-2.60	±5	Apr. 23, 2016
4132	826.4	Head	0.881	40.815	0.899	41.540	-2.16	-1.65	±5	Apr. 23, 2016
4182	836.4	Head	0.887	40.626	0.902	41.500	-1.48	-2.11	±5	Apr. 23, 2016
4233	846.6	Head	0.893	40.528	0.912	41.500	-1.84	-2.34	±5	Apr. 23, 2016
1013	824.7	Head	0.876	40.800	0.899	41.548	-2.63	-1.69	±5	Apr. 23, 2016
384	836.52	Head	0.887	40.632	0.902	41.500	-1.44	-2.09	±5	Apr. 23, 2016
777	848.31	Head	0.898	40.418	0.914	41.500	-1.35	-2.61	±5	Apr. 23, 2016
23230	782	Head	0.919	42.452	0.894	42.145	3.29	0.84	±5	Apr. 23, 2016
20450	829	Head	0.883	40.690	0.900	41.530	-1.89	-1.95	±5	Apr. 23, 2016
20525	836.5	Head	0.887	40.630	0.900	41.500	-1.44	-2.10	±5	Apr. 23, 2016
20600	844	Head	0.897	40.570	0.910	41.500	-1.43	-2.24	±5	Apr. 23, 2016
36	5180	Head	4.544	36.890	4.639	36.023	-2.07	2.47	±5	Apr. 23, 2016
38	5190	Head	4.552	36.881	4.650	36.012	-2.11	2.45	±5	Apr. 23, 2016
40	5200	Head	4.561	36.864	4.660	36.000	-2.13	2.40	±5	Apr. 23, 2016
42	5210	Head	4.571	36.846	4.670	35.990	-2.12	2.35	±5	Apr. 23, 2016
44	5220	Head	4.583	36.829	4.680	35.980	-2.08	2.30	±5	Apr. 23, 2016
46	5230	Head	4.595	36.812	4.690	35.970	-2.02	2.26	±5	Apr. 23, 2016
48	5240	Head	4.607	36.811	4.700	35.960	-1.98	2.25	±5	Apr. 23, 2016
52	5260	Head	4.619	36.782	4.720	35.940	-2.14	2.46	±5	Apr. 23, 2016
54	5270	Head	4.632	36.760	4.730	35.930	-2.07	2.39	±5	Apr. 23, 2016
56	5280	Head	4.644	36.746	4.740	35.920	-2.02	2.36	±5	Apr. 23, 2016
58	5290	Head	4.654	36.741	4.750	35.910	-2.02	2.34	±5	Apr. 23, 2016
60	5300	Head	4.663	36.729	4.760	35.900	-2.05	2.31	±5	Apr. 23, 2016
62	5310	Head	4.671	36.708	4.770	35.887	-2.08	2.25	±5	Apr. 23, 2016
64	5320	Head	4.683	36.691	4.781	35.873	-2.03	2.20	±5	Apr. 23, 2016
100	5500	Head	4.862	36.460	4.967	35.633	-2.18	2.42	±5	Apr. 23, 2016
102	5510	Head	4.870	36.451	4.977	35.620	-2.20	2.39	±5	Apr. 23, 2016
104	5520	Head	4.879	36.431	4.987	35.607	-2.22	2.33	±5	Apr. 23, 2016
106	5530	Head	4.891	36.413	4.998	35.593	-2.18	2.28	±5	Apr. 23, 2016

Table of Low/Middle/High Channel for Liquid Validation



CH	Frequency (MHz)	Liquid Type	Conductivity (σ)	Permittivity (ϵ_r)	Conductivity Target (σ)	Permittivity Target (ϵ_r)	Delta (σ) (%)	Delta (ϵ_r) (%)	Limit (%)	Date
108	5540	Head	4.904	36.398	5.008	35.580	-2.12	2.24	±5	Apr. 23, 2016
110	5550	Head	4.917	36.383	5.018	35.567	-2.06	2.20	±5	Apr. 23, 2016
112	5560	Head	4.927	36.382	5.029	35.553	-2.05	2.20	±5	Apr. 23, 2016
116	5580	Head	4.942	36.347	5.049	35.527	-2.14	2.38	±5	Apr. 23, 2016
120	5600	Head	4.968	36.317	5.070	35.500	-2.01	2.30	±5	Apr. 23, 2016
122	5610	Head	4.978	36.308	5.080	35.490	-2.01	2.28	±5	Apr. 23, 2016
124	5620	Head	4.987	36.296	5.090	35.480	-2.02	2.24	±5	Apr. 23, 2016
126	5630	Head	4.997	36.278	5.100	35.470	-2.02	2.19	±5	Apr. 23, 2016
128	5640	Head	5.009	36.264	5.110	35.460	-1.97	2.15	±5	Apr. 23, 2016
132	5660	Head	5.034	36.239	5.130	35.440	-1.88	2.37	±5	Apr. 23, 2016
134	5670	Head	5.041	36.238	5.140	35.430	-1.92	2.37	±5	Apr. 23, 2016
136	5680	Head	5.048	36.220	5.150	35.420	-1.98	2.32	±5	Apr. 23, 2016
138	5690	Head	5.059	36.195	5.160	35.410	-1.96	2.25	±5	Apr. 23, 2016
140	5700	Head	5.073	36.179	5.170	35.400	-1.87	2.20	±5	Apr. 23, 2016
142	5710	Head	5.084	36.171	5.180	35.390	-1.85	2.18	±5	Apr. 23, 2016
144	5720	Head	5.094	36.164	5.190	35.380	-1.85	2.16	±5	Apr. 23, 2016
149	5745	Head	5.120	36.127	5.215	35.355	-1.92	2.05	±5	Apr. 23, 2016
151	5755	Head	5.132	36.112	5.225	35.345	-1.88	2.30	±5	Apr. 23, 2016
153	5765	Head	5.144	36.104	5.235	35.335	-1.83	2.28	±5	Apr. 23, 2016
155	5775	Head	5.151	36.104	5.245	35.325	-1.89	2.28	±5	Apr. 23, 2016
157	5785	Head	5.157	36.087	5.255	35.315	-1.96	2.23	±5	Apr. 23, 2016
159	5795	Head	5.168	36.061	5.265	35.305	-1.94	2.16	±5	Apr. 23, 2016
161	5805	Head	5.182	36.043	5.275	35.295	-1.86	2.11	±5	Apr. 23, 2016
165	5825	Head	5.203	36.027	5.296	35.275	-1.83	2.06	±5	Apr. 23, 2016
1	2412	Head	1.724	38.856	1.766	39.268	-2.59	-1.13	±5	Apr. 24, 2016
3	2422	Head	1.736	38.814	1.775	39.250	-2.50	-0.99	±5	Apr. 24, 2016
6	2437	Head	1.752	38.761	1.788	39.223	-2.14	-1.12	±5	Apr. 24, 2016
9	2452	Head	1.767	38.702	1.802	39.197	-1.83	-1.27	±5	Apr. 24, 2016
11	2462	Head	1.779	38.667	1.813	39.184	-1.71	-1.36	±5	Apr. 24, 2016
1	2412	Body	1.902	53.000	1.914	52.751	-0.40	0.38	±5	Apr. 24, 2016
3	2422	Body	1.917	52.971	1.923	52.737	-0.15	0.51	±5	Apr. 24, 2016
6	2437	Body	1.937	52.939	1.938	52.717	-0.14	0.45	±5	Apr. 24, 2016
9	2452	Body	1.955	52.904	1.953	52.697	0.24	0.39	±5	Apr. 24, 2016
11	2462	Body	1.967	52.879	1.967	52.684	-0.17	0.34	±5	Apr. 24, 2016
20850	2510	Head	1.832	38.518	1.864	39.120	-1.51	-1.49	±5	Apr. 24, 2016
21100	2535	Head	1.861	38.422	1.891	39.087	-1.54	-1.73	±5	Apr. 24, 2016
21350	2560	Head	1.890	38.331	1.917	39.053	-1.58	-1.97	±5	Apr. 24, 2016
20850	2510	Body	2.008	53.653	2.034	52.620	-1.09	2.00	±5	Apr. 24, 2016
21100	2535	Body	2.045	53.570	2.069	52.587	-1.19	1.84	±5	Apr. 24, 2016
21350	2560	Body	2.080	53.509	2.104	52.553	-0.96	1.73	±5	Apr. 24, 2016
18700	1860	Body	1.469	53.080	1.520	53.300	-3.36	-0.41	±5	Apr. 26, 2016
18900	1880	Body	1.491	53.010	1.520	53.300	-1.91	-0.54	±5	Apr. 26, 2016
19100	1900	Body	1.515	52.910	1.520	53.300	-0.33	-0.73	±5	Apr. 26, 2016

Table of Low/Middle/High Channel for Liquid Validation



CH	Frequency (MHz)	Liquid Type	Conductivity (σ)	Permittivity (ϵ_r)	Conductivity Target (σ)	Permittivity Target (ϵ_r)	Delta (σ) (%)	Delta (ϵ_r) (%)	Limit (%)	Date
25	1851.25	Body	1.458	53.090	1.520	53.300	-4.08	-0.39	±5	Apr. 26, 2016
600	1880	Body	1.491	53.010	1.520	53.300	-1.91	-0.54	±5	Apr. 26, 2016
1175	1908.75	Body	1.525	52.870	1.520	53.300	0.33	-0.81	±5	Apr. 26, 2016
9262	1852.4	Body	1.460	53.090	1.520	53.300	-3.95	-0.39	±5	Apr. 26, 2016
9400	1880	Body	1.491	53.010	1.520	53.300	-1.91	-0.54	±5	Apr. 26, 2016
9538	1907.6	Body	1.523	52.880	1.520	53.300	0.20	-0.79	±5	Apr. 26, 2016
512	1850.2	Body	1.457	53.100	1.520	53.300	-4.14	-0.38	±5	Apr. 26, 2016
661	1880	Body	1.491	53.010	1.520	53.300	-1.91	-0.54	±5	Apr. 26, 2016
810	1909.8	Body	1.526	52.870	1.520	53.300	0.39	-0.81	±5	Apr. 26, 2016
25	1851.25	Body	1.458	53.094	1.520	53.300	-4.06	-0.39	±5	Apr. 26, 2016
600	1880	Body	1.491	53.005	1.520	53.300	-1.88	-0.55	±5	Apr. 26, 2016
1175	1908.75	Body	1.525	52.874	1.520	53.300	0.32	-0.80	±5	Apr. 26, 2016
18700	1860	Body	1.469	53.077	1.520	53.300	-3.37	-0.42	±5	Apr. 26, 2016
18900	1880	Body	1.491	53.005	1.520	53.300	-1.88	-0.55	±5	Apr. 26, 2016
19100	1900	Body	1.515	52.914	1.520	53.300	-0.35	-0.72	±5	Apr. 26, 2016
20050	1720	Body	1.412	52.720	1.474	53.456	-3.92	-1.46	±5	Apr. 26, 2016
20175	1732.5	Body	1.424	52.696	1.481	53.433	-3.78	-1.32	±5	Apr. 26, 2016
20300	1745	Body	1.435	52.667	1.487	53.409	-3.71	-1.37	±5	Apr. 26, 2016
128	824.2	Body	0.968	57.200	0.970	55.240	-0.21	3.62	±5	Apr. 27, 2016
189	836.4	Body	0.980	57.090	0.970	55.200	1.03	3.42	±5	Apr. 27, 2016
251	848.8	Body	0.992	56.970	0.990	55.160	0.20	3.21	±5	Apr. 27, 2016
4132	826.4	Body	0.970	57.180	0.970	55.230	0.00	3.59	±5	Apr. 27, 2016
4182	836.4	Body	0.980	57.090	0.970	55.200	1.03	3.42	±5	Apr. 27, 2016
4233	846.6	Body	0.990	56.990	0.980	55.160	1.02	3.24	±5	Apr. 27, 2016
20450	829	Body	0.972	57.161	0.969	55.221	0.24	3.55	±5	Apr. 27, 2016
20525	836.5	Body	0.980	57.087	0.972	55.195	1.02	3.42	±5	Apr. 27, 2016
20600	844	Body	0.987	57.011	0.981	55.172	0.74	3.28	±5	Apr. 27, 2016
23230	782	Body	0.988	55.305	0.964	55.684	2.92	-0.71	±5	Apr. 28, 2016
36	5180	Body	5.301	46.966	5.276	49.027	0.40	-4.15	±5	Apr. 26, 2016
38	5190	Body	5.312	46.959	5.288	49.013	0.41	-4.17	±5	Apr. 26, 2016
40	5200	Body	5.321	46.944	5.300	49.000	0.39	-4.20	±5	Apr. 26, 2016
42	5210	Body	5.333	46.923	5.312	48.990	0.44	-4.24	±5	Apr. 26, 2016
44	5220	Body	5.347	46.903	5.323	48.980	0.51	-4.28	±5	Apr. 26, 2016
46	5230	Body	5.362	46.883	5.335	48.970	0.60	-4.32	±5	Apr. 26, 2016
48	5240	Body	5.375	46.881	5.346	48.960	0.47	-4.32	±5	Apr. 26, 2016
52	5260	Body	5.395	46.842	5.370	48.940	0.46	-4.21	±5	Apr. 26, 2016
54	5270	Body	5.410	46.822	5.381	48.930	0.57	-4.25	±5	Apr. 26, 2016
56	5280	Body	5.426	46.812	5.393	48.920	0.67	-4.27	±5	Apr. 26, 2016
58	5290	Body	5.438	46.805	5.404	48.910	0.71	-4.28	±5	Apr. 26, 2016
60	5300	Body	5.450	46.799	5.416	48.900	0.55	-4.30	±5	Apr. 26, 2016
62	5310	Body	5.459	46.779	5.428	48.787	0.54	-4.14	±5	Apr. 26, 2016
64	5320	Body	5.473	46.761	5.439	48.673	0.60	-3.98	±5	Apr. 26, 2016

Table of Low/Middle/High Channel for Liquid Validation

CH	Frequency (MHz)	Liquid Type	Conductivity (σ)	Permittivity (ϵ_r)	Conductivity Target (σ)	Permittivity Target (ϵ_r)	Delta (σ) (%)	Delta (ϵ_r) (%)	Limit (%)	Date
100	5500	Body	5.676	46.423	5.650	48.600	0.47	-4.48	±5	Apr. 27, 2016
102	5510	Body	5.689	46.419	5.661	48.590	0.50	-4.49	±5	Apr. 27, 2016
104	5520	Body	5.699	46.405	5.673	48.580	0.51	-4.52	±5	Apr. 27, 2016
106	5530	Body	5.712	46.388	5.685	48.570	0.57	-4.55	±5	Apr. 27, 2016
108	5540	Body	5.725	46.369	5.696	48.560	0.43	-4.59	±5	Apr. 27, 2016
110	5550	Body	5.740	46.346	5.708	48.550	0.53	-4.64	±5	Apr. 27, 2016
112	5560	Body	5.753	46.338	5.720	48.540	0.57	-4.46	±5	Apr. 27, 2016
116	5580	Body	5.775	46.292	5.743	48.520	0.61	-4.55	±5	Apr. 27, 2016
120	5600	Body	5.808	46.264	5.770	48.500	0.66	-4.61	±5	Apr. 27, 2016
122	5610	Body	5.822	46.261	5.778	48.485	0.72	-4.62	±5	Apr. 27, 2016
124	5620	Body	5.833	46.253	5.790	48.470	0.74	-4.63	±5	Apr. 27, 2016
126	5630	Body	5.845	46.239	5.801	48.455	0.77	-4.66	±5	Apr. 27, 2016
128	5640	Body	5.857	46.225	5.813	48.440	0.82	-4.49	±5	Apr. 27, 2016
132	5660	Body	5.883	46.187	5.837	48.410	0.74	-4.57	±5	Apr. 27, 2016
134	5670	Body	5.893	46.177	5.848	48.395	0.74	-4.59	±5	Apr. 27, 2016
136	5680	Body	5.902	46.153	5.860	48.380	0.72	-4.64	±5	Apr. 27, 2016
138	5690	Body	5.918	46.126	5.872	48.365	0.81	-4.70	±5	Apr. 27, 2016
140	5700	Body	5.936	46.107	5.883	48.350	0.95	-4.74	±5	Apr. 27, 2016
142	5710	Body	5.951	46.101	5.895	48.335	1.04	-4.55	±5	Apr. 27, 2016
144	5720	Body	5.964	46.100	5.907	48.320	0.92	-4.56	±5	Apr. 27, 2016
1013	824.7	Body	0.970	57.244	0.969	55.236	-0.04	3.70	±5	Apr. 27, 2016
384	836.52	Body	0.981	57.135	0.972	55.195	1.08	3.51	±5	Apr. 27, 2016
777	848.31	Body	0.992	57.020	0.986	55.159	0.25	3.30	±5	Apr. 27, 2016
100	5500	Body	5.649	46.322	5.650	48.600	-0.02	-4.69	±5	Apr. 28, 2016
102	5510	Body	5.662	46.312	5.661	48.590	0.04	-4.71	±5	Apr. 28, 2016
104	5520	Body	5.675	46.297	5.673	48.580	0.09	-4.74	±5	Apr. 28, 2016
106	5530	Body	5.690	46.286	5.685	48.570	0.18	-4.76	±5	Apr. 28, 2016
108	5540	Body	5.704	46.274	5.696	48.560	0.07	-4.79	±5	Apr. 28, 2016
110	5550	Body	5.717	46.263	5.708	48.550	0.13	-4.81	±5	Apr. 28, 2016
112	5560	Body	5.727	46.260	5.720	48.540	0.12	-4.62	±5	Apr. 28, 2016
116	5580	Body	5.743	46.209	5.743	48.520	0.06	-4.72	±5	Apr. 28, 2016
120	5600	Body	5.775	46.163	5.770	48.500	0.08	-4.82	±5	Apr. 28, 2016
122	5610	Body	5.790	46.153	5.778	48.485	0.18	-4.84	±5	Apr. 28, 2016
124	5620	Body	5.804	46.143	5.790	48.470	0.24	-4.86	±5	Apr. 28, 2016
126	5630	Body	5.818	46.133	5.801	48.455	0.31	-4.88	±5	Apr. 28, 2016
128	5640	Body	5.833	46.124	5.813	48.440	0.39	-4.70	±5	Apr. 28, 2016
132	5660	Body	5.857	46.110	5.837	48.410	0.30	-4.73	±5	Apr. 28, 2016

Table of Low/Middle/High Channel for Liquid Validation



CH	Frequency (MHz)	Liquid Type	Conductivity (σ)	Permittivity (ϵ_r)	Conductivity Target (σ)	Permittivity Target (ϵ_r)	Delta (σ) (%)	Delta (ϵ_r) (%)	Limit (%)	Date
134	5670	Body	5.864	46.103	5.848	48.395	0.23	-4.75	±5	Apr. 28, 2016
136	5680	Body	5.871	46.074	5.860	48.380	0.18	-4.81	±5	Apr. 28, 2016
138	5690	Body	5.884	46.043	5.872	48.365	0.24	-4.87	±5	Apr. 28, 2016
140	5700	Body	5.899	46.019	5.883	48.350	0.32	-4.92	±5	Apr. 28, 2016
142	5710	Body	5.914	46.003	5.895	48.335	0.41	-4.76	±5	Apr. 28, 2016
144	5720	Body	5.930	45.989	5.907	48.320	0.34	-4.78	±5	Apr. 28, 2016
149	5745	Body	5.967	45.973	5.936	48.283	0.45	-4.82	±5	Apr. 28, 2016
151	5755	Body	5.980	45.968	5.947	48.268	0.51	-4.83	±5	Apr. 28, 2016
153	5765	Body	5.991	45.964	5.959	48.253	0.53	-4.84	±5	Apr. 28, 2016
155	5775	Body	5.997	45.955	5.971	48.238	0.45	-4.66	±5	Apr. 28, 2016
157	5785	Body	6.002	45.925	5.982	48.223	0.38	-4.72	±5	Apr. 28, 2016
159	5795	Body	6.015	45.891	5.994	48.208	0.41	-4.79	±5	Apr. 28, 2016
161	5805	Body	6.031	45.863	6.000	48.200	0.52	-4.85	±5	Apr. 28, 2016
165	5825	Body	6.063	45.838	6.000	48.200	1.05	-4.90	±5	Apr. 28, 2016
52	5260	Head	4.674	35.57	4.720	35.94	-0.97	-0.92	±5	Jun. 10, 2016
54	5270	Head	4.686	35.55	4.730	35.93	-0.93	-0.97	±5	Jun. 10, 2016
56	5280	Head	4.696	35.53	4.740	35.92	-0.93	-1.03	±5	Jun. 10, 2016
58	5290	Head	4.705	35.52	4.750	35.91	-0.95	-1.06	±5	Jun. 10, 2016
60	5300	Head	4.713	35.51	4.760	35.90	-0.99	-1.09	±5	Jun. 10, 2016
62	5310	Head	4.720	35.49	4.770	35.89	-1.05	-1.14	±5	Jun. 10, 2016
64	5320	Head	4.732	35.47	4.780	35.87	-1.00	-1.20	±5	Jun. 10, 2016
100	5500	Head	4.894	35.25	4.970	35.63	-1.53	-0.98	±5	Jun. 10, 2016
102	5510	Head	4.902	35.24	4.980	35.62	-1.57	-1.01	±5	Jun. 10, 2016
104	5520	Head	4.911	35.22	4.990	35.61	-1.58	-1.07	±5	Jun. 10, 2016
106	5530	Head	4.923	35.20	5.000	35.59	-1.54	-1.12	±5	Jun. 10, 2016
108	5540	Head	4.935	35.19	5.010	35.58	-1.50	-1.15	±5	Jun. 10, 2016
110	5550	Head	4.947	35.17	5.020	35.57	-1.45	-1.21	±5	Jun. 10, 2016
112	5560	Head	4.957	35.18	5.030	35.55	-1.45	-1.18	±5	Jun. 10, 2016
116	5580	Head	4.969	35.14	5.050	35.53	-1.60	-1.01	±5	Jun. 10, 2016
120	5600	Head	4.992	35.11	5.070	35.50	-1.54	-1.10	±5	Jun. 10, 2016
122	5610	Head	5.002	35.10	5.080	35.49	-1.54	-1.13	±5	Jun. 10, 2016
124	5620	Head	5.010	35.09	5.090	35.48	-1.57	-1.15	±5	Jun. 10, 2016
126	5630	Head	5.019	35.07	5.100	35.47	-1.59	-1.21	±5	Jun. 10, 2016
128	5640	Head	5.032	35.05	5.110	35.46	-1.53	-1.27	±5	Jun. 10, 2016
132	5660	Head	5.055	35.03	5.130	35.44	-1.46	-1.05	±5	Jun. 10, 2016
134	5670	Head	5.062	35.03	5.140	35.43	-1.52	-1.05	±5	Jun. 10, 2016
136	5680	Head	5.068	35.02	5.150	35.42	-1.59	-1.07	±5	Jun. 10, 2016
138	5690	Head	5.077	34.99	5.160	35.41	-1.61	-1.16	±5	Jun. 10, 2016
140	5700	Head	5.088	34.98	5.170	35.40	-1.59	-1.19	±5	Jun. 10, 2016
142	5710	Head	5.100	34.97	5.180	35.39	-1.54	-1.21	±5	Jun. 10, 2016
144	5720	Head	5.107	34.96	5.190	35.38	-1.60	-1.24	±5	Jun. 10, 2016

Table of Low/Middle/High Channel for Liquid Validation

CH	Frequency (MHz)	Liquid Type	Conductivity (σ)	Permittivity (ϵ_r)	Conductivity Target (σ)	Permittivity Target (ϵ_r)	Delta (σ) (%)	Delta (ϵ_r) (%)	Limit (%)	Date
52	5260	Body	5.539	49.23	5.370	48.94	3.15	0.67	± 5	Jun. 10, 2016
54	5270	Body	5.549	49.23	5.380	48.93	3.14	0.67	± 5	Jun. 10, 2016
56	5280	Body	5.564	49.20	5.390	48.92	3.23	0.61	± 5	Jun. 10, 2016
58	5290	Body	5.579	49.18	5.400	48.91	3.31	0.57	± 5	Jun. 10, 2016
60	5300	Body	5.590	49.16	5.420	48.90	3.14	0.53	± 5	Jun. 10, 2016
62	5310	Body	5.601	49.14	5.430	48.79	3.15	0.70	± 5	Jun. 10, 2016
64	5320	Body	5.616	49.12	5.440	48.67	3.24	0.86	± 5	Jun. 10, 2016
100	5500	Body	5.842	48.83	5.650	48.60	3.40	0.47	± 5	Jun. 10, 2016
102	5510	Body	5.853	48.81	5.660	48.59	3.41	0.43	± 5	Jun. 10, 2016
104	5520	Body	5.865	48.78	5.670	48.58	3.44	0.37	± 5	Jun. 10, 2016
106	5530	Body	5.882	48.76	5.690	48.57	3.37	0.33	± 5	Jun. 10, 2016
108	5540	Body	5.898	48.75	5.700	48.56	3.47	0.31	± 5	Jun. 10, 2016
110	5550	Body	5.914	48.73	5.710	48.55	3.57	0.27	± 5	Jun. 10, 2016
112	5560	Body	5.926	48.73	5.720	48.54	3.60	0.47	± 5	Jun. 10, 2016
116	5580	Body	5.948	48.70	5.740	48.52	3.62	0.41	± 5	Jun. 10, 2016
120	5600	Body	5.975	48.66	5.770	48.50	3.55	0.33	± 5	Jun. 10, 2016
122	5610	Body	5.988	48.64	5.780	48.49	3.60	0.29	± 5	Jun. 10, 2016
124	5620	Body	6.000	48.62	5.790	48.47	3.63	0.25	± 5	Jun. 10, 2016
126	5630	Body	6.014	48.60	5.800	48.46	3.69	0.21	± 5	Jun. 10, 2016
128	5640	Body	6.029	48.58	5.810	48.44	3.77	0.37	± 5	Jun. 10, 2016
132	5660	Body	6.058	48.55	5.840	48.41	3.73	0.31	± 5	Jun. 10, 2016
134	5670	Body	6.073	48.55	5.850	48.40	3.81	0.31	± 5	Jun. 10, 2016
136	5680	Body	6.082	48.54	5.860	48.38	3.79	0.29	± 5	Jun. 10, 2016
138	5690	Body	6.096	48.52	5.870	48.37	3.85	0.25	± 5	Jun. 10, 2016
140	5700	Body	6.110	48.50	5.880	48.35	3.91	0.21	± 5	Jun. 10, 2016
142	5710	Body	6.122	48.49	5.900	48.34	3.76	0.39	± 5	Jun. 10, 2016
144	5720	Body	6.134	48.47	5.910	48.32	3.79	0.35	± 5	Jun. 10, 2016

Table of Low/Middle/High Channel for Liquid Validation

10.2 System Performance Check Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2016/4/23	750	HSL	250	D750V3-1012	EX3DV4 - SN3955	DAE4 Sn1399	2.14	8.22	8.56	4.14
2016/4/21	750	MSL	250	D750V3-1012	ES3DV3 - SN3270	DAE3 Sn360	2.32	8.61	9.28	7.78
2016/4/28	750	MSL	250	D750V3-1012	ES3DV3 - SN3270	DAE3 Sn360	2.33	8.61	9.32	8.25
2016/4/23	835	HSL	250	D835V2-499	EX3DV4 - SN3955	DAE4 Sn1399	2.38	9.14	9.52	4.16
2016/4/21	835	MSL	250	D835V2-499	ES3DV3 - SN3270	DAE3 Sn360	2.42	9.52	9.68	1.68
2016/4/27	835	MSL	250	D835V2-499	ES3DV3 - SN3270	DAE3 Sn360	2.39	9.52	9.56	0.42
2016/4/23	1750	HSL	250	D1750V2-1068	ES3DV3 - SN3270	DAE3 Sn360	9.47	36.80	37.88	2.93
2016/4/22	1750	MSL	250	D1750V2-1068	ES3DV3 - SN3270	DAE3 Sn360	8.47	35.70	33.88	-5.10
2016/4/26	1750	MSL	250	D1750V2-1068	ES3DV3 - SN3270	DAE3 Sn360	9.34	35.70	37.36	4.65
2016/4/22	1900	HSL	250	D1900V2-5d041	ES3DV3 - SN3270	DAE3 Sn360	10.10	39.80	40.40	1.51
2016/4/22	1900	MSL	250	D1900V2-5d041	ES3DV3 - SN3270	DAE3 Sn360	10.40	40.00	41.60	4.00
2016/4/26	1900	MSL	250	D1900V2-5d041	ES3DV3 - SN3270	DAE3 Sn360	10.10	40.00	40.40	1.00
2016/4/24	2450	HSL	250	D2450V2-736	EX3DV4 - SN3931	DAE3 Sn577	12.10	53.40	48.40	-9.36
2016/4/24	2450	MSL	250	D2450V2-736	EX3DV4 - SN3931	DAE3 Sn577	12.50	51.90	50.00	-3.66
2016/4/24	2600	HSL	250	D2600V2-1008	EX3DV4 - SN3955	DAE4 Sn1399	14.80	56.30	59.20	5.15
2016/4/22	2600	MSL	250	D2600V2-1008	ES3DV3 - SN3270	DAE3 Sn360	14.00	55.80	56.00	0.36
2016/4/24	2600	MSL	250	D2600V2-1008	EX3DV4 - SN3955	DAE4 Sn1399	14.10	55.80	56.40	1.08
2016/4/23	5250	HSL	100	D5GHzV2-1128-5250	EX3DV4 - SN3931	DAE3 Sn577	7.73	80.80	77.30	-4.33
2016/4/26	5250	MSL	100	D5GHzV2-1128-5250	EX3DV4 - SN3931	DAE3 Sn577	7.71	76.20	77.10	1.18
2016/6/10	5300	HSL	100	D5GHzV2-1006-5300	EX3DV4 - SN3925	DAE3 Sn495	8.65	84.50	86.5	2.37
2016/6/10	5300	MSL	100	D5GHzV2-1006-5300	EX3DV4 - SN3925	DAE3 Sn495	7.78	79.50	77.80	-2.14
2016/4/23	5600	HSL	100	D5GHzV2-1128-5600	EX3DV4 - SN3931	DAE3 Sn577	8.52	82.00	85.20	3.90
2016/6/10	5600	HSL	100	D5GHzV2-1006-5600	EX3DV4 - SN3925	DAE3 Sn495	8.80	84.80	88	3.77
2016/4/27	5600	MSL	100	D5GHzV2-1128-5600	EX3DV4 - SN3931	DAE3 Sn577	7.60	79.30	76.00	-4.16
2016/4/28	5600	MSL	100	D5GHzV2-1128-5600	EX3DV4 - SN3955	DAE4 Sn1399	7.66	79.30	76.60	-3.40
2016/6/10	5600	MSL	100	D5GHzV2-1006-5600	EX3DV4 - SN3925	DAE3 Sn495	7.70	82.30	77	-6.44
2016/4/23	5750	HSL	100	D5GHzV2-1128-5750	EX3DV4 - SN3931	DAE3 Sn577	7.95	79.70	79.50	-0.25
2016/4/28	5750	MSL	100	D5GHzV2-1128-5750	EX3DV4 - SN3955	DAE4 Sn1399	7.10	75.90	71.00	-6.46

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2016/4/22	1750	MSL	250	D1750V2-1068	ES3DV3 - SN3270	DAE3 Sn360	4.53	19.00	18.12	-4.63
2016/4/26	1750	MSL	250	D1750V2-1068	ES3DV3 - SN3270	DAE3 Sn360	5.07	19.00	20.28	6.74
2016/4/22	1900	MSL	250	D1900V2-5d041	ES3DV3 - SN3270	DAE3 Sn360	5.49	21.20	21.96	3.58
2016/4/26	1900	MSL	250	D1900V2-5d041	ES3DV3 - SN3270	DAE3 Sn360	5.29	21.20	21.16	-0.19
2016/4/26	5250	MSL	100	D5GHzV2-1128-5250	EX3DV4 - SN3931	DAE3 Sn577	2.14	21.40	21.40	0.00
2016/6/10	5300	MSL	100	D5GHzV2-1006-5300	EX3DV4 - SN3925	DAE3 Sn495	2.09	22.40	20.90	-6.70
2016/4/27	5600	MSL	100	D5GHzV2-1128-5600	EX3DV4 - SN3931	DAE3 Sn577	2.05	22.10	20.50	-7.24
2016/4/28	5600	MSL	100	D5GHzV2-1128-5600	EX3DV4 - SN3955	DAE4 Sn1399	2.12	22.10	21.20	-4.07
2016/6/10	5600	MSL	100	D5GHzV2-1006-5600	EX3DV4 - SN3925	DAE3 Sn495	2.08	23.00	20.80	-9.57

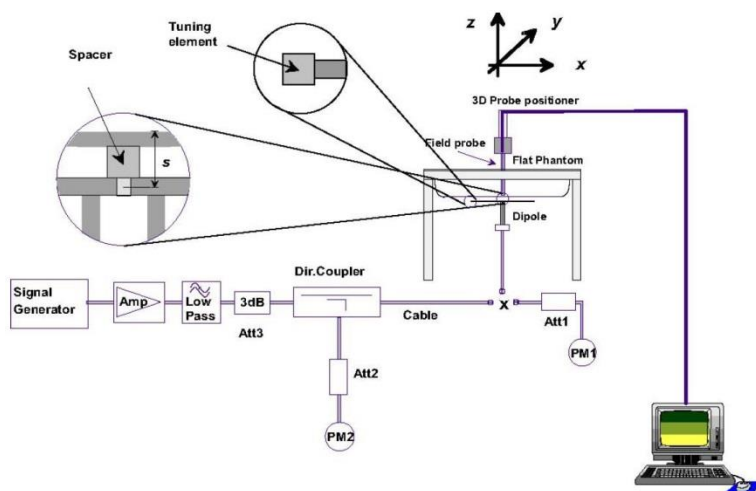


Fig 8.3.1 System Performance Check Setup



Fig 8.3.2 Setup Photo

11. RF Exposure Positions

11.1 Ear and handset reference point

Figure 9.1.1 shows the front, back, and side views of the SAM phantom. The center-of-mouth reference point is labeled "M," the left ear reference point (ERP) is marked "LE," and the right ERP is marked "RE." Each ERP is 15 mm along the B-M (back-mouth) line behind the entrance-to-ear-canal (EEC) point, as shown in Figure 9.1.2. The Reference Plane is defined as passing through the two ear reference points and point M. The line N-F (neck-front), also called the reference pivoting line, is normal to the Reference Plane and perpendicular to both a line passing through RE and LE and the B-M line (see Figure 9.1.3). Both N-F and B-M lines should be marked on the exterior of the phantom shell to facilitate handset positioning. Posterior to the N-F line the ear shape is a flat surface with 6 mm thickness at each ERP, and forward of the N-F line the ear is truncated, as illustrated in Figure 9.1.2. The ear truncation is introduced to preclude the ear lobe from interfering with handset tilt, which could lead to unstable positioning at the cheek.

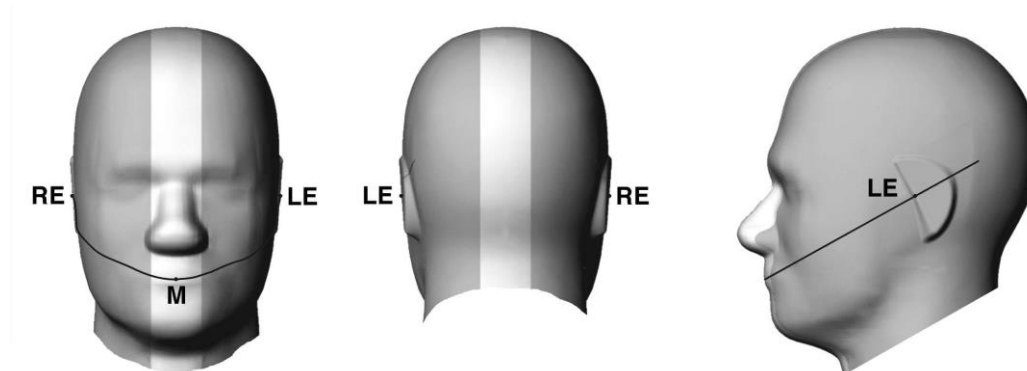


Fig 9.1.1 Front, back, and side views of SAM twin phantom

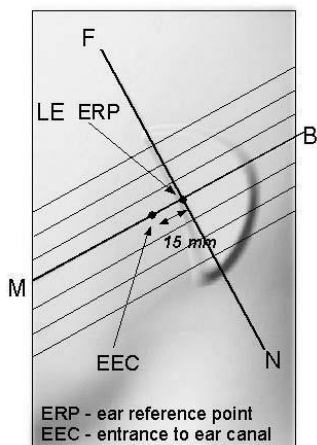


Fig 9.1.2 Close-up side view of phantom showing the ear region.

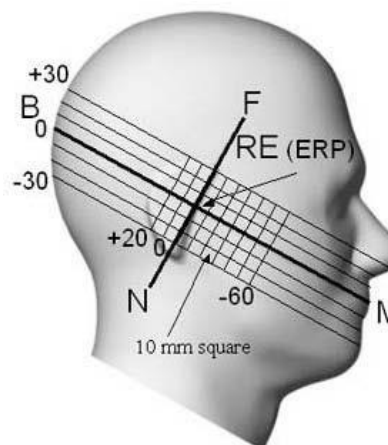


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

11.2 Definition of the cheek position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. Define two imaginary lines on the handset—the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset—the midpoint of the width w_t of the handset at the level of the acoustic output (point A in Figure 9.2.1 and Figure 9.2.2), and the midpoint of the width w_b of the bottom of the handset (point B). The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output (see Figure 9.2.1). The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset (see Figure 9.2.2), especially for clamshell handsets, handsets with flip covers, and other irregularly-shaped handsets.
3. Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 9.2.3), such that the plane defined by the vertical centerline and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.
4. Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP.
5. While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to the plane containing B-M and N-F lines, i.e., the Reference Plane.
6. Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.
7. While maintaining the vertical centerline in the Reference Plane, keeping point A on the line passing through RE and LE, and maintaining the handset contact with the pinna, rotate the handset about the N-F line until any point on the handset is in contact with a phantom point below the pinna on the cheek. See Figure 9.2.3. The actual rotation angles should be documented in the test report.

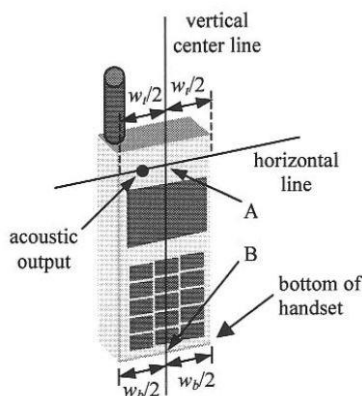


Fig 9.2.1 Handset vertical and horizontal reference lines—“fixed case”

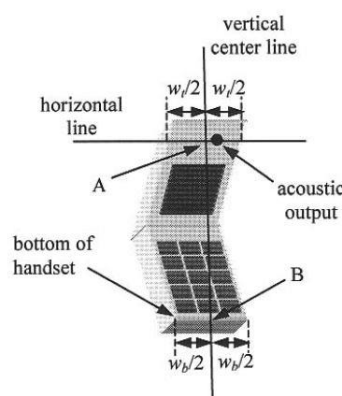


Fig 9.2.2 Handset vertical and horizontal reference lines—“clam-shell case”

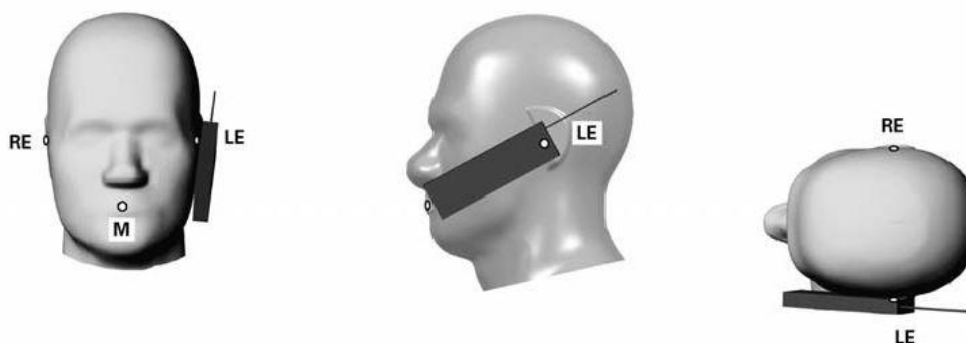


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

11.3 Definition of the tilt position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. While maintaining the orientation of the handset, move the handset away from the pinna along the line passing through RE and LE far enough to allow a rotation of the handset away from the cheek by 15°.
3. Rotate the handset around the horizontal line by 15°.
4. While maintaining the orientation of the handset, move the handset towards the phantom on the line passing through RE and LE until any part of the handset touches the ear. The tilt position is obtained when the contact point is on the pinna. See Figure 9.3.1. If contact occurs at any location other than the pinna, e.g., the antenna at the back of the phantom head, the angle of the handset should be reduced. In this case, the tilt position is obtained if any point on the handset is in contact with the pinna and a second point

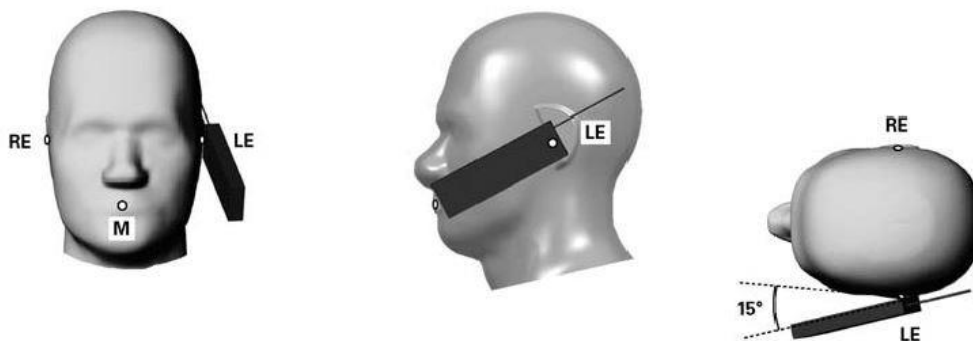


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

11.4 Body Worn Accessory

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 9.4). Per KDB648474 D04v01r03, body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB 447498 D01v06 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for body-worn accessory, measured without a headset connected to the handset is $< 1.2 \text{ W/kg}$, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a handset attached to the handset.

Accessories for body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are test with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-chip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

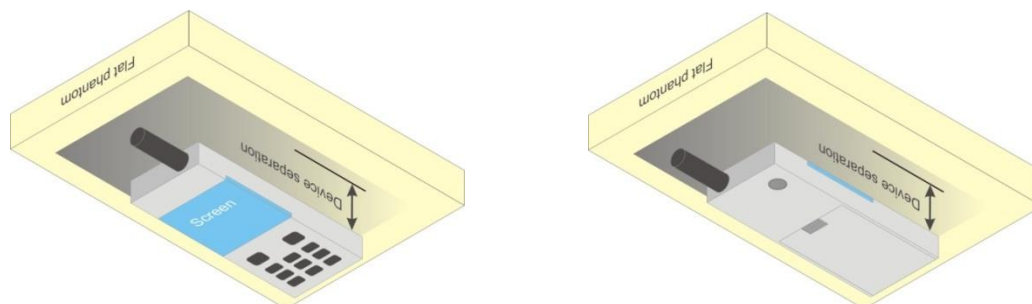


Fig 9.4 Body Worn Position

11.5 Product Specific device

For smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, According to KDB648474 D04v01r03, the following phablet procedures should be applied to evaluate SAR compliance for each applicable wireless modes and frequency band. Devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance

1. The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.
2. The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions.⁶ The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.

11.6 Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 v02r01 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10mm from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges, determined from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01v06 publication procedures. The "Portable Hotspot" feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

12. Conducted RF Output Power (Unit: dBm)

<GSM Conducted Power>

General Note:

1. Per KDB 447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS (4Tx slots) for GSM850/GSM1900 is considered as the primary mode.
3. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is $\leq \frac{1}{4}$ dB higher than the primary mode, SAR measurement is not required for the secondary mode

<Default Power Mode>

GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	33.04	33.12	33.13	33.50	24.04	24.12	24.13	24.50
GPRS 1 Tx slot	33.06	33.14	33.16	33.50	24.06	24.14	24.16	24.50
GPRS 2 Tx slots	29.34	29.44	29.40	30.50	23.34	23.44	23.40	24.50
GPRS 3 Tx slots	27.33	27.37	27.24	28.75	23.07	23.11	22.98	24.49
GPRS 4 Tx slots	25.81	25.86	25.71	27.50	22.81	22.86	22.71	24.50
EDGE 1 Tx slot	26.89	26.95	26.98	28.50	17.89	17.95	17.98	19.50
EDGE 2 Tx slots	26.66	26.71	26.74	28.50	20.66	20.71	20.74	22.50
EDGE 3 Tx slots	25.31	25.36	25.37	26.75	21.05	21.10	21.11	22.49
EDGE 4 Tx slots	23.83	23.89	23.93	25.50	20.83	20.89	20.93	22.50

GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot	29.90	29.93	30.41	30.50	20.90	20.93	21.41	21.50
GPRS 1 Tx slot	29.91	29.94	30.42	30.50	20.91	20.94	21.42	21.50
GPRS 2 Tx slots	26.70	26.74	26.85	27.50	20.70	20.74	20.85	21.50
GPRS 3 Tx slots	24.88	24.91	25.01	25.75	20.62	20.65	20.75	21.49
GPRS 4 Tx slots	23.44	23.40	23.61	24.50	20.44	20.40	20.61	21.50
EDGE 1 Tx slot	25.54	25.59	25.74	27.50	16.54	16.59	16.74	18.50
EDGE 2 Tx slots	25.38	25.43	25.62	27.50	19.38	19.43	19.62	21.50
EDGE 3 Tx slots	24.08	24.09	24.25	25.75	19.82	19.83	19.99	21.49
EDGE 4 Tx slots	22.72	22.79	22.98	24.50	19.72	19.79	19.98	21.50

<Near-body and Hotspot Mode>

GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	30.20	30.25	30.27	31.00	21.20	21.25	21.27	22.00
GPRS 1 Tx slot	30.20	30.31	30.29	31.00	21.20	21.31	21.29	22.00
GPRS 2 Tx slots	26.74	26.85	26.88	28.00	20.74	20.85	20.88	22.00
GPRS 3 Tx slots	24.75	24.85	24.80	26.25	20.49	20.59	20.54	21.99
GPRS 4 Tx slots	23.34	23.43	23.37	25.00	20.34	20.43	20.37	22.00
EDGE 1 Tx slot	26.73	26.81	26.86	28.00	17.73	17.81	17.86	19.00
EDGE 2 Tx slots	26.59	26.68	26.73	28.00	20.59	20.68	20.73	22.00
EDGE 3 Tx slots	25.14	25.20	25.25	26.25	20.88	20.94	20.99	21.99
EDGE 4 Tx slots	23.80	23.87	23.95	25.00	20.80	20.87	20.95	22.00

GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot	29.90	29.93	30.41	30.50	20.90	20.93	21.41	21.50
GPRS 1 Tx slot	29.91	29.94	30.42	30.50	20.91	20.94	21.42	21.50
GPRS 2 Tx slots	26.70	26.74	26.85	27.50	20.70	20.74	20.85	21.50
GPRS 3 Tx slots	24.88	24.91	25.01	25.75	20.62	20.65	20.75	21.49
GPRS 4 Tx slots	23.44	23.40	23.61	24.50	20.44	20.40	20.61	21.50
EDGE 1 Tx slot	25.54	25.59	25.74	27.50	16.54	16.59	16.74	18.50
EDGE 2 Tx slots	25.38	25.43	25.62	27.50	19.38	19.43	19.62	21.50
EDGE 3 Tx slots	24.08	24.09	24.25	25.75	19.82	19.83	19.99	21.49
EDGE 4 Tx slots	22.72	22.79	22.98	24.50	19.72	19.79	19.98	21.50

<WCDMA Conducted Power>

1. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
2. The procedures in KDB 941225 D01v03r01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode(s) to determine SAR test exclusion.
3. For DC-HSDPA, the device was configured according to the H-Set 12, Fixed Reference Channel (FRC) configuration in Table C.8.1.12 of 3GPP TS 34.121-1, with the primary and the secondary serving HS-DSCH Cell enabled during the power measurement.

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting:
 - i. Set Gain Factors (β_c and β_d) and parameters were set according to each
 - ii. Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
 - iii. Set RMC 12.2Kbps + HSDPA mode.
 - iv. Set Cell Power = -86 dBm
 - v. Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
 - vi. Select HSDPA Uplink Parameters
 - vii. Set Delta ACK, Delta NACK and Delta CQI = 8
 - viii. Set Ack-Nack Repetition Factor to 3
 - ix. Set CQI Feedback Cycle (k) to 4 ms
 - x. Set CQI Repetition Factor to 2
 - xi. Power Ctrl Mode = All Up bits
- d. The transmitted maximum output power was recorded.

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs} (Note 1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5
Note 1: Δ_{ACK}, Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$. Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and $\Delta_{NACK} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$, and $\Delta_{CQI} = 24/15$ with $\beta_{hs} = 24/15 * \beta_c$. Note 3: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases. Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$.							

Setup Configuration

HSUPA Setup Configuration:

- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting * :
 - i. Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
 - ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121
 - iii. Set Cell Power = -86 dBm
 - iv. Set Channel Type = 12.2k + HSPA
 - v. Set UE Target Power
 - vi. Power Ctrl Mode= Alternating bits
 - vii. Set and observe the E-TFCI
 - viii. Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI
- d. The transmitted maximum output power was recorded.

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note 1)	β_{ec}	β_{ed} (Note 5) (Note 6)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 6)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/25	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1} : 47/15 β_{ed2} : 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15 (Note 4)	15/15 (Note 4)	64	15/15 (Note 4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81
Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$. Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference. Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$. Note 4: For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 14/15$ and $\beta_d = 15/15$. Note 5: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g. Note 6: β_{ed} can not be set directly, it is set by Absolute Grant Value.													

Setup Configuration

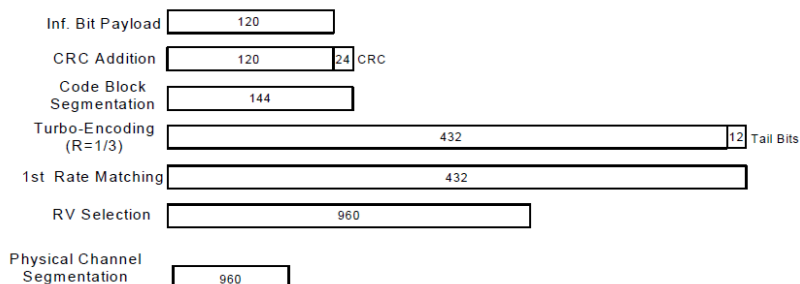
DC-HSDPA 3GPP release 8 Setup Configuration:

- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration below
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting:
 - i. Set RMC 12.2Kbps + HSDPA mode.
 - ii. Set Cell Power = -25 dBm
 - iii. Set HS-DSCH Configuration Type to FRC (H-set 12, QPSK)
 - iv. Select HSDPA Uplink Parameters
 - v. Set Gain Factors (β_c and β_d) and parameters were set according to each Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
 - a). Subtest 1: $\beta_c/\beta_d=2/15$
 - b). Subtest 2: $\beta_c/\beta_d=12/15$
 - c). Subtest 3: $\beta_c/\beta_d=15/8$
 - d). Subtest 4: $\beta_c/\beta_d=15/4$
 - vi. Set Delta ACK, Delta NACK and Delta CQI = 8
 - vii. Set Ack-Nack Repetition Factor to 3
 - viii. Set CQI Feedback Cycle (k) to 4 ms
 - ix. Set CQI Repetition Factor to 2
 - x. Power Ctrl Mode = All Up bits
- d. The transmitted maximum output power was recorded.

The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification. A summary of these settings are illustrated below:

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

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


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

<WCDMA Conducted Power>
General Note:

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is $\leq \frac{1}{4}$ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

<Default Power Mode>

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		4132	4182	4233	
Rx Channel		9662	9800	9938		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	23.01	22.92	23.20	24.00	23.10	23.05	23.08	24.00
3GPP Rel 99	RMC 12.2Kbps	23.04	22.94	23.23	24.00	23.13	23.08	23.10	24.00
3GPP Rel 6	HSDPA Subtest-1	22.09	22.01	22.23	23.00	22.23	22.15	22.21	23.00
3GPP Rel 6	HSDPA Subtest-2	22.09	22.00	22.20	23.00	22.22	22.16	22.20	23.00
3GPP Rel 6	HSDPA Subtest-3	21.61	21.51	21.74	22.50	21.75	21.67	21.76	22.50
3GPP Rel 6	HSDPA Subtest-4	21.61	21.50	21.72	22.50	21.76	21.67	21.75	22.50
3GPP Rel 8	DC-HSDPA Subtest-1	22.07	22.00	22.21	23.00	22.21	22.14	22.19	23.00
3GPP Rel 8	DC-HSDPA Subtest-2	22.06	21.98	22.18	23.00	22.20	22.15	22.18	23.00
3GPP Rel 8	DC-HSDPA Subtest-3	21.58	21.48	21.72	22.50	21.73	21.65	21.74	22.50
3GPP Rel 8	DC-HSDPA Subtest-4	21.58	21.48	21.70	22.50	21.74	21.65	21.73	22.50
3GPP Rel 6	HSUPA Subtest-1	21.95	21.83	22.05	23.00	22.07	21.97	22.02	23.00
3GPP Rel 6	HSUPA Subtest-2	20.04	19.98	20.11	21.00	20.11	20.07	20.08	21.00
3GPP Rel 6	HSUPA Subtest-3	20.95	20.84	21.16	22.00	21.07	20.96	21.01	22.00
3GPP Rel 6	HSUPA Subtest-4	20.09	20.05	20.18	21.00	20.10	20.03	20.01	21.00
3GPP Rel 6	HSUPA Subtest-5	21.96	21.87	22.18	23.00	22.06	22.02	21.98	23.00

<Near-body and Hotspot Mode>

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		4132	4182	4233	
Rx Channel		9662	9800	9938		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	22.12	22.04	22.28	23.00	19.67	19.59	19.65	20.50
3GPP Rel 99	RMC 12.2Kbps	22.12	22.04	22.28	23.00	19.67	19.59	19.65	20.50
3GPP Rel 6	HSDPA Subtest-1	21.02	20.91	21.14	22.00	18.53	18.47	18.53	19.50
3GPP Rel 6	HSDPA Subtest-2	21.00	20.90	21.11	22.00	18.51	18.43	18.50	19.50
3GPP Rel 6	HSDPA Subtest-3	20.35	20.41	20.62	21.50	17.88	17.97	17.99	19.00
3GPP Rel 6	HSDPA Subtest-4	20.33	20.43	20.55	21.50	17.87	17.94	17.95	19.00
3GPP Rel 8	DC-HSDPA Subtest-1	21.00	20.89	21.12	22.00	18.51	18.45	18.51	19.50
3GPP Rel 8	DC-HSDPA Subtest-2	20.98	20.88	21.09	22.00	18.49	18.41	18.48	19.50
3GPP Rel 8	DC-HSDPA Subtest-3	20.33	20.39	20.60	21.50	17.86	17.95	17.97	19.00
3GPP Rel 8	DC-HSDPA Subtest-4	20.31	20.41	20.53	21.50	17.85	17.92	17.93	19.00
3GPP Rel 6	HSUPA Subtest-1	21.02	20.90	21.15	22.00	18.51	18.44	18.50	19.50
3GPP Rel 6	HSUPA Subtest-2	19.01	18.93	19.10	20.00	16.66	16.55	16.50	17.50
3GPP Rel 6	HSUPA Subtest-3	20.00	19.94	20.11	21.00	17.55	17.44	17.51	18.50
3GPP Rel 6	HSUPA Subtest-4	19.02	18.93	19.09	20.00	16.61	16.50	16.44	17.50
3GPP Rel 6	HSUPA Subtest-5	20.95	20.83	20.58	22.00	18.54	18.53	18.52	19.50

<CDMA Conducted Power>
General Note:

1. Per KDB 941225 D01v03r01, SAR for head exposure is measured in RC3 with the handset configured to transmit at full rate in SO55.
2. Per KDB 941225 D01v03r01, in Hotspot mode EUT is treated as data device and SAR is tested with Ev-Do Rev 0 (RTAP 153.6kbps) as the primary mode.
3. Per KDB 941225 D01v03r01, for Body-worn accessory SAR is measured in RC3 with the handset configured in TDSO/SO32 to transmit at full rate on FCH only with all other code channels disabled. The body-worn accessory procedures in KDB Publication 447498 are applied. The 3G SAR test reduction procedure is applied to the multiple code channel configuration (FCH+SCH), with FCH only as the primary mode.

<Default Power Mode>

Band	CDMA2000 BC0			Tune-up Limit (dBm)	CDMA2000 BC1			Tune-up Limit (dBm)
TX Channel	1013	384	777		25	600	1175	
Frequency (MHz)	824.7	836.52	848.31		1851.25	1880	1908.75	
RC1 SO55	23.96	24.02	23.98	25.00	24.32	24.23	24.37	25.00
RC3 SO55	23.98	23.96	24.10	25.00	24.40	24.27	24.43	25.00
RC3 SO32(F+SCH)	23.96	24.01	24.17	25.00	24.36	24.38	24.55	25.00
RC3 SO32(+SCH)	24.03	24.00	24.06	25.00	24.37	24.27	24.44	25.00
RTAP 153.6Kbps	24.01	24.05	24.19	25.00	24.47	24.29	24.45	25.00
RETAP 4096Bits	23.83	23.91	23.92	25.00	24.40	24.28	24.56	25.00

<Near-body and Hotspot Mode>

Band	CDMA2000 BC0			Tune-up Limit (dBm)	CDMA2000 BC1			Tune-up Limit (dBm)
TX Channel	1013	384	777		25	600	1175	
Frequency (MHz)	824.7	836.52	848.31		1851.25	1880	1908.75	
RC1 SO55	21.33	21.36	21.32	22.50	23.21	23.14	23.25	24.00
RC3 SO55	21.29	21.36	21.41	22.50	23.06	22.99	23.31	24.00
RC3 SO32(F+SCH)	21.41	21.40	21.42	22.50	23.17	22.99	23.19	24.00
RC3 SO32(+SCH)	21.20	21.29	21.33	22.50	23.05	22.97	23.18	24.00
RTAP 153.6Kbps	21.36	21.55	21.56	22.50	23.18	23.23	23.36	24.00
RETAP 4096Bits	21.35	21.42	21.25	22.50	23.24	23.27	23.42	24.00

<LTE Conducted Power>**General Note:**

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B5 / B4 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, 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.



<Default Power Mode>

<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	22.87	22.87	22.80	24	0
20	QPSK	1	49	22.86	22.83	22.86		
20	QPSK	1	99	22.88	22.89	22.88		
20	QPSK	50	0	22.00	21.97	21.96	23	1
20	QPSK	50	24	22.01	22.28	22.04		
20	QPSK	50	50	21.92	21.95	22.02		
20	QPSK	100	0	22.01	22.04	22.03	23	1
20	16QAM	1	0	22.20	22.25	22.19		
20	16QAM	1	49	22.16	22.14	22.19		
20	16QAM	1	99	22.16	22.17	22.35	22	2
20	16QAM	50	0	20.96	20.93	20.93		
20	16QAM	50	24	20.84	21.25	20.97		
20	16QAM	50	50	20.87	20.91	20.98	22	2
20	16QAM	100	0	20.96	20.90	20.96		
Channel				18675	18900	19125		
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	22.72	22.76	22.86	24	0
15	QPSK	1	37	22.85	22.75	23.00		
15	QPSK	1	74	22.81	22.85	23.01		
15	QPSK	36	0	21.93	21.93	22.08	23	1
15	QPSK	36	20	21.88	21.93	22.07		
15	QPSK	36	39	21.88	21.97	22.08		
15	QPSK	75	0	21.91	21.96	22.07	23	1
15	16QAM	1	0	22.20	22.23	22.35		
15	16QAM	1	37	22.03	22.06	22.19		
15	16QAM	1	74	22.15	22.17	22.41	22	2
15	16QAM	36	0	20.87	20.88	21.00		
15	16QAM	36	20	20.87	21.11	21.01		
15	16QAM	36	39	20.78	20.88	21.01	22	2
15	16QAM	75	0	20.85	20.90	21.02		
Channel				18650	18900	19150		
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	23.10	23.18	23.18	24	0
10	QPSK	1	25	22.81	22.94	23.03		
10	QPSK	1	49	22.96	23.01	23.07		
10	QPSK	25	0	22.10	22.19	22.26	23	1
10	QPSK	25	12	21.93	22.02	22.18		
10	QPSK	25	25	21.94	21.99	22.12		
10	QPSK	50	0	22.07	22.06	22.18	23	1
10	16QAM	1	0	22.73	22.73	22.76		
10	16QAM	1	25	22.06	22.16	22.29		
10	16QAM	1	49	22.42	22.42	22.54	22	2
10	16QAM	25	0	21.06	21.13	21.22		
10	16QAM	25	12	20.90	20.99	21.14		
10	16QAM	25	25	20.89	20.92	21.08	22	2
10	16QAM	50	0	21.03	21.03	21.15		



Exhibit 11

Report No. : FA640145

Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	22.86	22.98	23.01	24	0
5	QPSK	1	12	22.91	22.96	23.02		
5	QPSK	1	24	22.90	22.96	22.99		
5	QPSK	12	0	21.94	22.04	22.09	23	1
5	QPSK	12	7	21.93	21.99	22.09		
5	QPSK	12	13	21.91	21.92	22.04		
5	QPSK	25	0	21.91	21.95	22.06		
5	16QAM	1	0	22.50	22.63	22.64	23	1
5	16QAM	1	12	22.41	22.46	22.55		
5	16QAM	1	24	22.27	22.45	22.38		
5	16QAM	12	0	20.94	21.04	21.09	22	2
5	16QAM	12	7	20.93	20.98	21.06		
5	16QAM	12	13	20.91	20.90	21.04		
5	16QAM	25	0	20.89	20.94	21.03		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	22.87	22.94	22.99	24	0
3	QPSK	1	8	22.20	23.06	23.07		
3	QPSK	1	14	22.80	22.86	22.90		
3	QPSK	8	0	22.97	22.00	22.03	23	1
3	QPSK	8	4	22.19	22.16	22.11		
3	QPSK	8	7	21.86	21.89	22.04		
3	QPSK	15	0	21.88	21.93	22.03		
3	16QAM	1	0	22.03	22.19	22.21	23	1
3	16QAM	1	8	22.29	22.34	22.36		
3	16QAM	1	14	22.41	22.60	22.41		
3	16QAM	8	0	20.94	21.00	21.09	22	2
3	16QAM	8	4	21.11	21.15	21.20		
3	16QAM	8	7	20.90	20.90	21.06		
3	16QAM	15	0	20.86	20.93	21.02		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	22.65	22.74	22.78	24	0
1.4	QPSK	1	3	22.94	23.07	23.10		
1.4	QPSK	1	5	22.73	22.88	22.88		
1.4	QPSK	3	0	22.83	22.90	22.98		
1.4	QPSK	3	1	22.93	22.97	23.03		
1.4	QPSK	3	3	22.96	23.00	23.04		
1.4	QPSK	6	0	21.81	21.86	21.97	23	1
1.4	16QAM	1	0	22.07	22.15	22.22	23	1
1.4	16QAM	1	3	22.12	22.36	22.32		
1.4	16QAM	1	5	22.03	22.14	22.17		
1.4	16QAM	3	0	21.88	21.99	22.04		
1.4	16QAM	3	1	22.09	22.05	22.02		
1.4	16QAM	3	3	22.12	21.99	22.22		
1.4	16QAM	6	0	20.86	20.93	21.02	22	2



<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	22.33	22.29	22.46		
20	QPSK	1	49	23.03	23.04	22.98	24	0
20	QPSK	1	99	22.38	22.31	22.45		
20	QPSK	50	0	21.71	21.77	21.76		
20	QPSK	50	24	21.70	21.13	21.70	23	1
20	QPSK	50	50	21.64	21.57	21.59		
20	QPSK	100	0	21.66	21.72	21.71		
20	16QAM	1	0	21.66	21.61	21.84	23	1
20	16QAM	1	49	21.97	21.98	22.10		
20	16QAM	1	99	21.61	21.52	21.68		
20	16QAM	50	0	20.66	20.64	20.68	22	2
20	16QAM	50	24	20.77	20.20	20.88		
20	16QAM	50	50	20.57	20.52	20.57		
20	16QAM	100	0	20.61	20.64	20.66		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	22.35	22.26	22.38		
15	QPSK	1	37	22.72	22.82	22.81	24	0
15	QPSK	1	74	22.39	22.35	22.45		
15	QPSK	36	0	21.74	21.69	21.86		
15	QPSK	36	20	21.74	21.69	21.91	23	1
15	QPSK	36	39	21.64	21.59	21.75		
15	QPSK	75	0	21.70	21.62	21.80		
15	16QAM	1	0	21.83	21.70	21.86	23	1
15	16QAM	1	37	21.89	21.84	22.06		
15	16QAM	1	74	21.76	21.65	21.80		
15	16QAM	36	0	20.65	20.60	20.77	22	2
15	16QAM	36	20	20.71	20.66	20.86		
15	16QAM	36	39	20.58	20.49	20.69		
15	16QAM	75	0	20.63	20.56	20.75		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	23.02	22.96	22.90		
10	QPSK	1	25	23.04	22.87	22.81	24	0
10	QPSK	1	49	23.18	23.06	23.03		
10	QPSK	25	0	22.12	21.95	21.86		
10	QPSK	25	12	22.07	21.83	21.84	23	1
10	QPSK	25	25	22.08	21.91	21.85		
10	QPSK	50	0	22.10	21.88	21.85		
10	16QAM	1	0	22.56	22.49	22.43	23	1
10	16QAM	1	25	22.23	22.08	21.98		
10	16QAM	1	49	22.54	22.51	22.45		
10	16QAM	25	0	21.06	20.90	20.80	22	2
10	16QAM	25	12	21.01	20.79	20.82		
10	16QAM	25	25	21.02	20.84	20.84		
10	16QAM	50	0	21.07	20.82	20.84		



Exhibit 11

Report No. : FA640145

Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	22.98	22.84	22.79	24	0
5	QPSK	1	12	23.08	22.77	22.81		
5	QPSK	1	24	23.08	22.75	22.80		
5	QPSK	12	0	22.11	21.85	21.79	23	1
5	QPSK	12	7	22.08	21.82	21.76		
5	QPSK	12	13	21.99	21.86	21.73		
5	QPSK	25	0	22.06	21.78	21.77		
5	16QAM	1	0	22.58	22.45	22.35	23	1
5	16QAM	1	12	22.61	22.25	22.27		
5	16QAM	1	24	22.37	22.08	22.04		
5	16QAM	12	0	21.15	20.84	20.83	22	2
5	16QAM	12	7	21.09	20.77	20.80		
5	16QAM	12	13	20.99	20.81	20.76		
5	16QAM	25	0	21.06	20.77	20.77		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	22.95	22.71	22.18	24	0
3	QPSK	1	8	23.13	22.94	22.89		
3	QPSK	1	14	22.92	22.76	22.73		
3	QPSK	8	0	22.10	21.81	21.77	23	1
3	QPSK	8	4	22.09	21.74	21.78		
3	QPSK	8	7	21.97	21.83	21.72		
3	QPSK	15	0	21.98	21.74	21.75		
3	16QAM	1	0	22.31	22.07	22.02	23	1
3	16QAM	1	8	22.40	21.88	22.02		
3	16QAM	1	14	22.70	21.80	22.07		
3	16QAM	8	0	21.15	20.81	20.83	22	2
3	16QAM	8	4	21.18	20.79	20.82		
3	16QAM	8	7	21.01	20.84	20.80		
3	16QAM	15	0	20.99	20.76	20.77		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	22.81	22.55	22.56	24	0
1.4	QPSK	1	3	23.12	22.96	22.90		
1.4	QPSK	1	5	22.92	22.72	22.67		
1.4	QPSK	3	0	22.96	22.76	22.77		
1.4	QPSK	3	1	23.09	22.77	22.79		
1.4	QPSK	3	3	23.13	22.74	22.80		
1.4	QPSK	6	0	21.96	21.69	21.69	23	1
1.4	16QAM	1	0	22.29	21.98	21.95	23	1
1.4	16QAM	1	3	22.46	22.01	22.00		
1.4	16QAM	1	5	22.20	22.01	21.89		
1.4	16QAM	3	0	22.04	21.78	21.78		
1.4	16QAM	3	1	22.22	21.92	21.80		
1.4	16QAM	3	3	22.18	21.90	21.80		
1.4	16QAM	6	0	21.06	20.74	20.77	22	2



<LTE Band 5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	22.82	23.00	22.98	24	0
10	QPSK	1	25	22.90	23.18	22.99		
10	QPSK	1	49	22.89	23.01	22.85		
10	QPSK	25	0	22.15	22.28	22.10	23	1
10	QPSK	25	12	22.02	22.27	22.05		
10	QPSK	25	25	22.14	22.23	21.94		
10	QPSK	50	0	22.12	22.13	22.05		
10	16QAM	1	0	22.30	22.42	22.39	23	1
10	16QAM	1	25	22.16	22.44	22.17		
10	16QAM	1	49	22.57	22.40	22.25		
10	16QAM	25	0	20.90	21.11	21.08	22	2
10	16QAM	25	12	20.97	21.22	21.01		
10	16QAM	25	25	21.08	21.16	20.89		
10	16QAM	50	0	21.04	21.08	20.99		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	22.71	23.19	22.97	24	0
5	QPSK	1	12	22.72	23.25	22.88		
5	QPSK	1	24	22.80	23.26	22.92		
5	QPSK	12	0	21.77	22.30	21.96	23	1
5	QPSK	12	7	21.77	22.30	21.97		
5	QPSK	12	13	21.83	22.21	21.95		
5	QPSK	25	0	21.74	22.28	21.92		
5	16QAM	1	0	22.25	22.79	22.49	23	1
5	16QAM	1	12	22.15	22.73	22.36		
5	16QAM	1	24	21.50	22.30	21.45		
5	16QAM	12	0	20.77	21.32	20.93	22	2
5	16QAM	12	7	20.76	21.31	20.99		
5	16QAM	12	13	20.80	21.22	21.00		
5	16QAM	25	0	20.75	21.27	20.97		
Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	22.65	22.43	22.85	24	0
3	QPSK	1	8	22.94	22.25	22.73		
3	QPSK	1	14	22.76	23.24	22.88		
3	QPSK	8	0	21.74	22.29	21.91	23	1
3	QPSK	8	4	21.84	22.38	21.75		
3	QPSK	8	7	21.84	22.29	21.89		
3	QPSK	15	0	21.80	22.29	21.89		
3	16QAM	1	0	22.08	22.50	22.23	23	1
3	16QAM	1	8	22.19	22.53	21.88		
3	16QAM	1	14	21.94	22.51	21.56		
3	16QAM	8	0	20.77	21.32	20.93	22	2
3	16QAM	8	4	20.84	21.38	20.68		
3	16QAM	8	7	20.87	21.30	20.90		
3	16QAM	15	0	20.79	21.32	21.01		



Exhibit 11

Report No. : FA640145

Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	22.70	23.13	22.83	24	0
1.4	QPSK	1	3	22.95	23.20	23.05		
1.4	QPSK	1	5	22.66	23.19	22.81		
1.4	QPSK	3	0	22.83	23.25	22.91		
1.4	QPSK	3	1	22.87	23.22	22.94		
1.4	QPSK	3	3	22.88	23.17	22.90		
1.4	QPSK	6	0	21.78	22.22	21.87	23	1
1.4	16QAM	1	0	22.02	22.56	22.25	23	1
1.4	16QAM	1	3	22.24	22.77	22.17		
1.4	16QAM	1	5	21.95	22.50	22.19		
1.4	16QAM	3	0	21.85	22.28	22.00		
1.4	16QAM	3	1	21.92	22.34	21.83		
1.4	16QAM	3	3	21.91	22.34	21.99		
1.4	16QAM	6	0	20.81	21.29	20.96	22	2



<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	22.23	22.29	22.35		
20	QPSK	1	49	22.30	22.27	22.44	24	0
20	QPSK	1	99	22.42	22.54	22.52		
20	QPSK	50	0	21.32	21.42	21.50		
20	QPSK	50	24	21.09	21.01	21.55	23	1
20	QPSK	50	50	21.43	21.59	21.56		
20	QPSK	100	0	21.42	21.60	21.59		
20	16QAM	1	0	21.57	21.70	21.72	23	1
20	16QAM	1	49	21.64	21.62	21.74		
20	16QAM	1	99	21.69	21.80	21.87		
20	16QAM	50	0	20.28	20.39	20.44	22	2
20	16QAM	50	24	20.21	20.43	20.53		
20	16QAM	50	50	20.41	20.54	20.48		
20	16QAM	100	0	20.40	20.42	20.53		
Channel				20825	21100	21375		
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	22.22	22.32	22.33		
15	QPSK	1	37	22.37	22.28	22.43	24	0
15	QPSK	1	74	22.45	22.51	22.56		
15	QPSK	36	0	21.34	21.44	21.52		
15	QPSK	36	20	21.47	21.28	21.55	23	1
15	QPSK	36	39	21.51	21.57	21.58		
15	QPSK	75	0	21.46	21.49	21.57		
15	16QAM	1	0	21.64	21.72	21.81	23	1
15	16QAM	1	37	21.54	21.58	21.71		
15	16QAM	1	74	21.74	21.84	21.95		
15	16QAM	36	0	20.28	20.39	20.43	22	2
15	16QAM	36	20	20.33	20.34	20.83		
15	16QAM	36	39	20.42	20.52	20.52		
15	16QAM	75	0	20.42	20.44	20.50		
Channel				20800	21100	21400		
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	22.52	22.62	22.65		
10	QPSK	1	25	22.25	22.33	22.38	24	0
10	QPSK	1	49	22.68	22.79	22.76		
10	QPSK	25	0	21.43	21.53	21.62		
10	QPSK	25	12	21.34	21.43	21.49	23	1
10	QPSK	25	25	21.39	21.60	21.60		
10	QPSK	50	0	21.43	21.55	21.57		
10	16QAM	1	0	22.09	22.17	22.14	23	1
10	16QAM	1	25	21.48	21.59	21.67		
10	16QAM	1	49	22.15	22.23	22.30		
10	16QAM	25	0	20.40	20.50	20.56	22	2
10	16QAM	25	12	20.31	20.43	20.48		
10	16QAM	25	25	20.36	20.56	20.59		
10	16QAM	50	0	20.38	20.49	20.55		



Exhibit 11

Report No. : FA640145

Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	22.26	22.34	22.41	24	0
5	QPSK	1	12	22.31	22.39	22.47		
5	QPSK	1	24	22.32	22.48	22.45		
5	QPSK	12	0	21.33	21.43	21.50	23	1
5	QPSK	12	7	21.33	21.42	21.52		
5	QPSK	12	13	21.30	21.38	21.49		
5	QPSK	25	0	21.29	21.39	21.49		
5	16QAM	1	0	21.83	21.93	22.05	23	1
5	16QAM	1	12	21.76	21.83	21.98		
5	16QAM	1	24	21.65	21.05	21.55		
5	16QAM	12	0	20.32	20.42	20.50	22	2
5	16QAM	12	7	20.30	20.39	20.48		
5	16QAM	12	13	20.29	20.38	20.46		
5	16QAM	25	0	20.29	20.38	20.47		



<LTE Band 13>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23230				
Frequency (MHz)				782				
10	QPSK	1	0	22.20			24	0
10	QPSK	1	25	22.36				
10	QPSK	1	49	22.46				
10	QPSK	25	0	21.55			23	1
10	QPSK	25	12	21.60				
10	QPSK	25	25	21.59				
10	QPSK	50	0	21.01				
10	16QAM	1	0	21.83			23	1
10	16QAM	1	25	21.68				
10	16QAM	1	49	21.93				
10	16QAM	25	0	20.55			22	2
10	16QAM	25	12	20.60				
10	16QAM	25	25	20.58				
10	16QAM	50	0	20.02				
Channel				23205	23230	23255	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				779.5	782	784.5		
5	QPSK	1	0	22.15	22.36	22.41	24	0
5	QPSK	1	12	22.38	22.40	22.36		
5	QPSK	1	24	22.40	22.40	22.39		
5	QPSK	12	0	21.50	21.55	21.68	23	1
5	QPSK	12	7	21.58	21.56	21.67		
5	QPSK	12	13	21.57	21.49	21.72		
5	QPSK	25	0	21.50	21.52	21.67	23	1
5	16QAM	1	0	21.51	21.87	22.40		
5	16QAM	1	12	21.84	21.73	21.92		
5	16QAM	1	24	21.70	21.82	22.52	22	2
5	16QAM	12	0	20.57	20.56	20.70		
5	16QAM	12	7	20.63	20.50	20.72		
5	16QAM	12	13	20.60	20.47	20.79		
5	16QAM	25	0	20.52	20.62	20.70		

<Near-body and Hotspot Mode>
<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	21.64	21.72	21.60		
20	QPSK	1	49	21.85	21.83	21.84	23	0
20	QPSK	1	99	21.91	21.90	22.05		
20	QPSK	50	0	21.89	21.90	21.88		
20	QPSK	50	24	21.86	21.88	21.96	23	0
20	QPSK	50	50	21.95	21.91	21.99		
20	QPSK	100	0	21.98	21.93	21.96		
20	16QAM	1	0	22.13	22.21	22.14	23	0
20	16QAM	1	49	22.12	22.07	22.13		
20	16QAM	1	99	22.17	22.18	22.39		
20	16QAM	50	0	20.91	20.87	20.86	22	1
20	16QAM	50	24	20.81	20.86	20.92		
20	16QAM	50	50	20.85	20.86	20.95		
20	16QAM	100	0	20.90	20.87	20.91		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	21.65	21.71	21.75		
15	QPSK	1	37	21.82	21.90	21.97	23	0
15	QPSK	1	74	21.94	21.98	22.09		
15	QPSK	36	0	22.02	21.99	22.09		
15	QPSK	36	20	21.93	22.00	22.10	23	0
15	QPSK	36	39	21.95	22.03	22.15		
15	QPSK	75	0	21.97	22.02	22.13		
15	16QAM	1	0	22.20	22.29	22.37	23	0
15	16QAM	1	37	22.09	22.15	22.19		
15	16QAM	1	74	22.25	22.36	22.41		
15	16QAM	36	0	20.95	20.90	21.03	22	1
15	16QAM	36	20	20.95	20.95	21.02		
15	16QAM	36	39	20.86	20.96	21.06		
15	16QAM	75	0	20.91	20.97	21.04		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	22.10	22.15	22.14		
10	QPSK	1	25	21.94	22.03	22.12	23	0
10	QPSK	1	49	22.11	22.13	22.21		
10	QPSK	25	0	22.18	22.24	22.29		
10	QPSK	25	12	22.01	22.09	22.20	23	0
10	QPSK	25	25	22.03	22.05	22.17		
10	QPSK	50	0	22.14	22.12	22.23		
10	16QAM	1	0	22.75	22.77	22.85	23	0
10	16QAM	1	25	22.19	22.25	22.35		
10	16QAM	1	49	22.59	22.51	22.70		
10	16QAM	25	0	21.14	21.18	21.25	22	1
10	16QAM	25	12	20.98	21.05	21.16		
10	16QAM	25	25	20.99	20.98	21.13		
10	16QAM	50	0	21.10	21.09	21.18		



Exhibit 11

Report No. : FA640145

Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	21.80	21.96	21.96	23	0
5	QPSK	1	12	21.99	22.02	22.11		
5	QPSK	1	24	22.04	22.06	22.11		
5	QPSK	12	0	21.99	22.07	22.12	23	0
5	QPSK	12	7	21.99	22.03	22.14		
5	QPSK	12	13	21.99	21.97	22.09		
5	QPSK	25	0	21.96	22.00	22.09		
5	16QAM	1	0	22.58	22.66	22.67	23	0
5	16QAM	1	12	22.46	22.50	22.61		
5	16QAM	1	24	22.72	22.42	22.48		
5	16QAM	12	0	20.97	21.07	21.14	22	1
5	16QAM	12	7	20.99	21.02	21.12		
5	16QAM	12	13	20.97	20.96	21.08		
5	16QAM	25	0	20.94	20.98	21.07		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	21.69	21.93	21.87	23	0
3	QPSK	1	8	22.32	22.40	22.33		
3	QPSK	1	14	22.03	22.11	22.17		
3	QPSK	8	0	22.07	22.14	22.20	23	0
3	QPSK	8	4	22.17	22.21	22.30		
3	QPSK	8	7	22.05	22.08	22.20		
3	QPSK	15	0	22.05	22.12	22.17		
3	16QAM	1	0	22.23	22.33	22.36	23	0
3	16QAM	1	8	22.54	22.64	22.61		
3	16QAM	1	14	22.62	22.64	22.61		
3	16QAM	8	0	21.11	21.17	21.27	22	1
3	16QAM	8	4	21.23	21.29	21.38		
3	16QAM	8	7	21.09	21.09	21.26		
3	16QAM	15	0	21.04	21.12	21.21		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	21.99	21.79	21.81	23	0
1.4	QPSK	1	3	22.19	22.31	22.26		
1.4	QPSK	1	5	21.97	22.09	22.04		
1.4	QPSK	3	0	22.05	22.14	22.16		
1.4	QPSK	3	1	22.17	22.20	22.28		
1.4	QPSK	3	3	22.21	22.23	22.21		
1.4	QPSK	6	0	22.01	22.07	22.06	23	0
1.4	16QAM	1	0	22.20	22.35	22.31	23	0
1.4	16QAM	1	3	22.36	22.51	22.37		
1.4	16QAM	1	5	22.19	22.35	22.26		
1.4	16QAM	3	0	22.09	22.13	22.14		
1.4	16QAM	3	1	22.13	22.11	22.11		
1.4	16QAM	3	3	22.17	22.33	22.17		
1.4	16QAM	6	0	21.07	21.08	21.12	22	1



<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	21.17	21.09	21.26		
20	QPSK	1	49	21.62	21.66	21.83	23	0
20	QPSK	1	99	21.37	21.31	21.45		
20	QPSK	50	0	21.65	21.65	21.69		
20	QPSK	50	24	21.72	21.70	21.92	23	0
20	QPSK	50	50	21.63	21.55	21.66		
20	QPSK	100	0	21.63	21.65	21.68		
20	16QAM	1	0	21.63	21.56	21.77	23	0
20	16QAM	1	49	21.92	21.89	21.99		
20	16QAM	1	99	21.58	21.51	21.70		
20	16QAM	50	0	20.62	20.60	20.64	22	1
20	16QAM	50	24	20.65	20.62	20.84		
20	16QAM	50	50	20.57	20.50	20.63		
20	16QAM	100	0	20.57	20.59	20.62		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	21.19	21.08	21.11		
15	QPSK	1	37	21.40	21.54	21.60	23	0
15	QPSK	1	74	21.37	21.35	21.33		
15	QPSK	36	0	21.69	21.62	21.72		
15	QPSK	36	20	21.81	21.66	21.77	23	0
15	QPSK	36	39	21.57	21.53	21.60		
15	QPSK	75	0	21.67	21.55	21.69		
15	16QAM	1	0	21.76	21.64	21.72	23	0
15	16QAM	1	37	21.80	21.83	21.92		
15	16QAM	1	74	21.62	21.67	21.67		
15	16QAM	36	0	20.60	20.54	20.63	22	1
15	16QAM	36	20	20.79	20.53	20.73		
15	16QAM	36	39	20.55	20.45	20.57		
15	16QAM	75	0	20.59	20.52	20.63		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	21.88	21.78	21.72		
10	QPSK	1	25	21.95	21.72	21.74	23	0
10	QPSK	1	49	22.12	22.03	22.01		
10	QPSK	25	0	22.00	21.89	21.79		
10	QPSK	25	12	22.00	21.77	21.79	23	0
10	QPSK	25	25	21.96	21.82	21.81		
10	QPSK	50	0	22.00	21.81	21.80		
10	16QAM	1	0	22.53	22.44	22.33	23	0
10	16QAM	1	25	22.16	21.95	21.95		
10	16QAM	1	49	22.51	22.42	22.41		
10	16QAM	25	0	21.00	20.82	20.75	22	1
10	16QAM	25	12	20.94	20.73	20.76		
10	16QAM	25	25	20.91	20.79	20.80		
10	16QAM	50	0	20.99	20.75	20.77		



Exhibit 11

Report No. : FA640145

Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	21.73	21.67	21.62	23	0
5	QPSK	1	12	21.95	21.71	21.79		
5	QPSK	1	24	21.96	21.79	21.79		
5	QPSK	12	0	21.95	21.82	21.78	23	0
5	QPSK	12	7	21.94	21.75	21.77		
5	QPSK	12	13	21.84	21.80	21.72		
5	QPSK	25	0	21.93	21.73	21.74		
5	16QAM	1	0	22.43	22.34	22.30	23	0
5	16QAM	1	12	22.48	22.22	22.23		
5	16QAM	1	24	22.93	22.08	21.94		
5	16QAM	12	0	20.98	20.78	20.79	22	1
5	16QAM	12	7	20.93	20.72	20.78		
5	16QAM	12	13	20.84	20.76	20.73		
5	16QAM	25	0	20.90	20.70	20.73		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	21.30	21.41	21.52	23	0
3	QPSK	1	8	22.06	21.72	21.91		
3	QPSK	1	14	21.86	21.72	21.71		
3	QPSK	8	0	21.96	21.74	21.73	23	0
3	QPSK	8	4	22.00	21.67	21.69		
3	QPSK	8	7	21.84	21.77	21.69		
3	QPSK	15	0	21.84	21.69	21.73		
3	16QAM	1	0	21.95	22.01	21.99	23	0
3	16QAM	1	8	22.41	21.93	21.93		
3	16QAM	1	14	22.43	21.59	21.82		
3	16QAM	8	0	20.99	20.76	20.78	22	1
3	16QAM	8	4	20.99	20.72	20.82		
3	16QAM	8	7	20.86	20.81	20.75		
3	16QAM	15	0	20.86	20.71	20.74		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	21.58	21.36	21.36	23	0
1.4	QPSK	1	3	22.15	21.87	21.86		
1.4	QPSK	1	5	21.82	21.71	21.62		
1.4	QPSK	3	0	21.87	21.72	21.73		
1.4	QPSK	3	1	21.90	21.76	21.74		
1.4	QPSK	3	3	22.07	21.74	21.87		
1.4	QPSK	6	0	21.83	21.64	21.65	23	0
1.4	16QAM	1	0	22.17	21.91	21.90	23	0
1.4	16QAM	1	3	22.30	21.96	21.93		
1.4	16QAM	1	5	22.09	21.96	21.88		
1.4	16QAM	3	0	21.90	21.73	21.72		
1.4	16QAM	3	1	21.95	21.75	21.82		
1.4	16QAM	3	3	21.95	21.72	21.90		
1.4	16QAM	6	0	20.91	20.68	20.73	22	1



<LTE Band 5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	19.41	19.36	19.41	21	0
10	QPSK	1	25	19.92	20.00	19.84		
10	QPSK	1	49	19.82	19.88	19.81		
10	QPSK	25	0	19.88	19.95	19.92	21	0
10	QPSK	25	12	19.99	19.96	19.99		
10	QPSK	25	25	19.93	19.95	19.98		
10	QPSK	50	0	19.90	19.87	19.94		
10	16QAM	1	0	20.31	20.20	20.23	21	0
10	16QAM	1	25	20.15	20.21	20.12		
10	16QAM	1	49	20.25	20.27	20.19		
10	16QAM	25	0	19.88	19.96	20.00	21	0
10	16QAM	25	12	20.01	19.99	20.05		
10	16QAM	25	25	20.03	20.03	19.96		
10	16QAM	50	0	19.95	19.85	19.93		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	19.43	19.40	19.40	21	0
5	QPSK	1	12	19.94	19.95	20.02		
5	QPSK	1	24	19.93	19.97	19.98		
5	QPSK	12	0	19.89	19.90	20.08	21	0
5	QPSK	12	7	19.97	19.94	20.06		
5	QPSK	12	13	20.00	19.88	20.07		
5	QPSK	25	0	19.92	19.92	20.01		
5	16QAM	1	0	20.40	20.46	20.42	21	0
5	16QAM	1	12	20.35	20.44	20.42		
5	16QAM	1	24	19.61	20.27	19.60		
5	16QAM	12	0	19.92	19.93	20.07	21	0
5	16QAM	12	7	19.98	19.97	20.06		
5	16QAM	12	13	20.01	19.91	20.05		
5	16QAM	25	0	19.96	19.93	20.02		
Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	19.07	19.29	19.34	21	0
3	QPSK	1	8	20.08	20.06	19.67		
3	QPSK	1	14	19.88	19.94	19.92		
3	QPSK	8	0	19.95	19.88	20.00	21	0
3	QPSK	8	4	19.98	19.94	19.81		
3	QPSK	8	7	19.91	19.92	19.96		
3	QPSK	15	0	19.87	19.91	19.95		
3	16QAM	1	0	20.07	20.14	20.32	21	0
3	16QAM	1	8	20.42	20.14	20.00		
3	16QAM	1	14	20.26	20.36	19.63		
3	16QAM	8	0	20.02	19.93	20.06	21	0
3	16QAM	8	4	20.17	20.00	19.80		
3	16QAM	8	7	19.98	19.96	20.01		
3	16QAM	15	0	19.91	19.96	20.04		

Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	19.84	19.38	19.41	21	0
1.4	QPSK	1	3	19.83	19.86	19.91		
1.4	QPSK	1	5	19.83	19.88	19.90		
1.4	QPSK	3	0	19.90	19.86	19.91		
1.4	QPSK	3	1	19.90	19.87	19.91		
1.4	QPSK	3	3	19.89	19.87	19.90		
1.4	QPSK	6	0	19.90	19.87	19.91	21	0
1.4	16QAM	1	0	20.16	20.18	20.21	21	0
1.4	16QAM	1	3	20.16	20.19	20.18		
1.4	16QAM	1	5	20.17	20.18	20.21		
1.4	16QAM	3	0	19.97	19.93	19.96		
1.4	16QAM	3	1	19.96	19.93	19.97		
1.4	16QAM	3	3	19.97	19.94	19.96		
1.4	16QAM	6	0	19.95	19.92	19.96	21	0



<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	22.09	22.16	22.22	23.5	0
20	QPSK	1	49	22.39	22.34	22.51		
20	QPSK	1	99	22.52	22.62	22.61		
20	QPSK	50	0	21.41	21.48	21.53	22.5	1
20	QPSK	50	24	21.51	21.66	21.60		
20	QPSK	50	50	21.49	21.52	21.57		
20	QPSK	100	0	21.50	21.54	21.66	22.5	1
20	16QAM	1	0	21.69	21.76	21.77		
20	16QAM	1	49	21.66	21.67	21.78		
20	16QAM	1	99	21.80	21.89	21.95	21.5	2
20	16QAM	50	0	20.34	20.44	20.47		
20	16QAM	50	24	20.46	20.48	20.57		
20	16QAM	50	50	20.48	20.60	20.56	21.5	2
20	16QAM	100	0	20.47	20.50	20.58		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	22.10	22.16	22.21	23.5	0
15	QPSK	1	37	22.44	22.38	22.53		
15	QPSK	1	74	22.52	22.58	22.67		
15	QPSK	36	0	21.39	21.47	21.55	22.5	1
15	QPSK	36	20	21.51	21.46	21.59		
15	QPSK	36	39	21.54	21.62	21.67		
15	QPSK	75	0	21.52	21.52	21.62	22.5	1
15	16QAM	1	0	21.69	21.75	21.81		
15	16QAM	1	37	21.66	21.62	21.72		
15	16QAM	1	74	21.84	21.89	21.96	21.5	2
15	16QAM	36	0	20.35	20.42	20.47		
15	16QAM	36	20	20.45	20.39	20.54		
15	16QAM	36	39	20.49	20.56	20.60	21.5	2
15	16QAM	75	0	20.47	20.45	20.56		
Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	22.42	22.49	22.55	23.5	0
10	QPSK	1	25	22.32	22.38	22.47		
10	QPSK	1	49	22.81	22.89	22.87		
10	QPSK	25	0	21.50	21.57	21.67	22.5	1
10	QPSK	25	12	21.41	21.50	21.58		
10	QPSK	25	25	21.47	21.66	21.69		
10	QPSK	50	0	21.50	21.58	21.65	22.5	1
10	16QAM	1	0	22.14	22.24	22.23		
10	16QAM	1	25	21.56	21.65	21.72		
10	16QAM	1	49	22.23	22.32	22.38	21.5	2
10	16QAM	25	0	20.46	20.55	20.63		
10	16QAM	25	12	20.37	20.48	20.53		
10	16QAM	25	25	20.42	20.62	20.66	21.5	2
10	16QAM	50	0	20.45	20.55	20.61		



Exhibit 11

Report No. : FA640145

Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	22.12	22.17	22.30	23.5	0
5	QPSK	1	12	22.37	22.44	22.55		
5	QPSK	1	24	22.37	22.53	22.56		
5	QPSK	12	0	21.37	21.43	21.54	22.5	1
5	QPSK	12	7	21.37	21.44	21.57		
5	QPSK	12	13	21.34	21.42	21.56		
5	QPSK	25	0	21.35	21.40	21.53		
5	16QAM	1	0	21.94	21.92	22.04	22.5	1
5	16QAM	1	12	21.79	21.85	22.03		
5	16QAM	1	24	21.17	21.89	21.94		
5	16QAM	12	0	20.37	20.43	20.57	21.5	2
5	16QAM	12	7	20.34	20.42	20.56		
5	16QAM	12	13	20.32	20.40	20.54		
5	16QAM	25	0	20.35	20.40	20.52		

<LTE Band 13>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23230				
Frequency (MHz)				782				
10	QPSK	1	0	19.03			21	0
10	QPSK	1	25	19.59				
10	QPSK	1	49	19.70				
10	QPSK	25	0	19.80			21	0
10	QPSK	25	12	19.85				
10	QPSK	25	25	19.90				
10	QPSK	50	0	19.00				
10	16QAM	1	0	19.98			21	0
10	16QAM	1	25	19.95				
10	16QAM	1	49	19.92				
10	16QAM	25	0	19.80				
10	16QAM	25	12	19.85			21	0
10	16QAM	25	25	19.87				
10	16QAM	50	0	19.00				
Channel				23205	23230	23255	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				779.5	782	784.5		
5	QPSK	1	0	19.05	19.32	19.33	21	0
5	QPSK	1	12	19.64	19.69	19.83		
5	QPSK	1	24	19.56	19.60	19.86		
5	QPSK	12	0	19.63	19.74	19.80	21	0
5	QPSK	12	7	19.74	19.72	19.90		
5	QPSK	12	13	19.68	19.79	19.81		
5	QPSK	25	0	19.64	19.77	19.74	21	0
5	16QAM	1	0	19.72	19.86	19.80		
5	16QAM	1	12	19.82	19.80	19.88		
5	16QAM	1	24	19.38	19.30	19.44	21	0
5	16QAM	12	0	19.70	19.77	19.79		
5	16QAM	12	7	19.77	19.70	19.89		
5	16QAM	12	13	19.71	19.76	19.85		
5	16QAM	25	0	19.66	19.82	19.76		

<LTE Rel. 10 Carrier Aggregation>

General Note:

1. This device supports LTE Rel.11 Cat9 and Aggregation on downlink only for inter and intra band, Uplink CA is not supported. For the device supports bands and bandwidths and configurations are provided as follow table was according to 3GPP.
2. All permutations exist. No restrictions on Pcell & SCell combinations.
3. Only supported intra-band non-contiguous CA, intra-band contiguous CA is not supported.

E-UTRA CA Configuration	E-UTRA Bands	5 MHz	10 MHz	15 MHz	20 MHz	Maximum aggregated bandwidth [MHz]	Bandwidth combination set
CA_2A-2A	2	Yes	Yes	Yes	Yes	40	0
CA_4A-4A	4	Yes	Yes	Yes	Yes	40	0
CA_2A-2A-5A	2	Yes	Yes	Yes	Yes	50	0
	5	Yes	Yes				
CA_2A-2A-13A	2	Yes	Yes	Yes	Yes	50	0
	13		Yes				
CA_2A-4A	2	Yes	Yes	Yes	Yes	40	2
	4	Yes	Yes	Yes	Yes		
CA_2A-5A	2	Yes	Yes	Yes	Yes	30	0
	5	Yes	Yes				
CA_2A-13A	2	Yes	Yes	Yes	Yes	30	0
	13		Yes				
CA_4A-4A-5A	4	Yes	Yes	Yes	Yes	50	0
	5	Yes	Yes				
CA_4A-4A-13A	4	Yes	Yes	Yes	Yes	50	0
	13		Yes				
CA_4A-5A	4	Yes	Yes	Yes	Yes	30	1
	5	Yes	Yes				
CA_4A-13A	4	Yes	Yes	Yes	Yes	30	0
	13		Yes				
CA_2A-4A-5A	2	Yes	Yes	Yes	Yes	50	0
	4	Yes	Yes	Yes	Yes		
	5	Yes	Yes				
CA_2A-4A-13A	2	Yes	Yes	Yes	Yes	50	0
	4	Yes	Yes	Yes	Yes		
	13		Yes				



<LTE Carrier Aggregation Conducted Power>

General Note:

1. According to KDB941225 D05A LTE Rel.10 KDB Inquiry Sheet v01r02 LTE CA conducted power requirement will base on below procedure for conducted power verification.
2. Selected highest measured power when downlink carrier aggregation is inactive for conducted power comparison with downlink carrier aggregation is active, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive.
3. For non-contiguous intra-band CA, the SCC selected to provide maximum separation from the PCC and must remain fully within the downlink transmission band.
4. For inter-band CA, the SCC selected highest bandwidth and near the middle of its transmission band.

<Default power mode for two CA power verification>

Configure		PCC						SCC						Power			
		LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Modulation	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	Modulation	DL# RB	DL RB Offset	LTE Rel 11 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
Inter-Band		Band 2	10M	1880	18900	QPSK	1	0	Band 4	20M	2132.5	2175	QPSK	1	0	23.16	23.18
		Band 4	10M	1715	20000	QPSK	1	49	Band 2	20M	1960	900	QPSK	1	99	23.14	23.18
		Band 2	10M	1880	18900	QPSK	1	0	Band 5	10M	881.5	2525	QPSK	1	0	23.15	23.18
		Band 5	5M	836.5	20525	QPSK	1	24	Band 2	20M	1960	900	QPSK	1	99	23.19	23.26
		Band 2	10M	1880	18900	QPSK	1	0	Band 13	10M	751	5230	QPSK	1	0	23.15	23.18
		Band 13	10M	782	23230	QPSK	1	49	Band 2	20M	1960	900	QPSK	1	99	22.38	22.46
		Band 4	10M	1715	20000	QPSK	1	49	Band 5	10M	881.5	2525	QPSK	1	49	23.19	23.18
		Band 5	5M	836.5	20525	QPSK	1	24	Band 4	20M	2132.5	2175	QPSK	1	99	23.20	23.26
		Band 4	10M	1715	20000	QPSK	1	49	Band 13	10M	751	5230	QPSK	1	49	23.11	23.18
		Band 13	10M	782	23230	QPSK	1	49	Band 4	20M	2132.5	2175	QPSK	1	99	22.35	22.46
Intra-Band	Non Contiguous	Band 2	10M	1880	18900	QPSK	1	0	Band 2	5M	1987.5	1175	QPSK	1	0	23.06	23.18
		Band 4	10M	1715	20000	QPSK	1	49	Band 4	5M	2152.5	2375	QPSK	1	24	23.14	23.18

<Near-body and Hotspot mode for two CA power verification>

Configure		PCC						SCC						Power			
		LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Modulation	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	Modulation	DL# RB	DL RB Offset	LTE Rel 11 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
Inter-Band		Band 2	10M	1905	19150	16QAM	1	0	Band 4	20M	2132.5	2175	16QAM	1	0	22.76	22.85
		Band 4	5M	1712.5	19975	16QAM	1	24	Band 2	20M	1960	900	16QAM	1	99	22.82	22.93
		Band 2	10M	1905	19150	16QAM	1	0	Band 5	10M	881.5	2525	16QAM	1	0	22.81	22.85
		Band 5	5M	836.5	20525	16QAM	1	0	Band 2	20M	1960	900	16QAM	1	0	20.32	20.46
		Band 2	10M	1905	19150	16QAM	1	0	Band 13	10M	751	5230	16QAM	1	0	22.78	22.85
		Band 13	10M	782	23230	16QAM	1	0	Band 2	20M	1960	900	16QAM	1	0	19.86	19.98
		Band 4	5M	1712.5	19975	16QAM	1	24	Band 5	10M	881.5	2525	16QAM	1	49	22.86	22.93
		Band 5	5M	836.5	20525	16QAM	1	0	Band 4	20M	2132.5	2175	16QAM	1	0	20.33	20.46
		Band 4	5M	1712.5	19975	16QAM	1	24	Band 13	10M	751	5230	16QAM	1	49	22.88	22.93
		Band 13	10M	782	23230	16QAM	1	0	Band 4	20M	2132.5	2175	16QAM	1	0	19.89	19.98
Intra-Band	Non Contiguous	Band 2	10M	1905	19150	16QAM	1	0	Band 2	5M	1932.5	625	16QAM	1	0	22.82	22.85
		Band 4	5M	1712.5	19975	16QAM	1	24	Band 4	5M	2152.5	2375	16QAM	1	24	22.92	22.93



<Default power mode for three CA power verification>

Configure		PCC							SCC1							SCC2							Power	
		LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	Mod.	DL# RB	DL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	Mod.	DL# RB	DL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
Inter-Band		Band 2	10M	1880	18900	QPSK	1	0	Band 4	20M	2132.5	2175	QPSK	1	0	Band 5	10M	881.5	2525	QPSK	1	0	23.14	23.18
		Band 4	10M	1715	20000	QPSK	1	49	Band 2	20M	1960	900	QPSK	1	99	Band 5	10M	881.5	2525	QPSK	1	49	23.12	23.18
		Band 5	5M	836.5	20525	QPSK	1	24	Band 4	20M	2132.5	2175	QPSK	1	99	Band 2	20M	1960	900	QPSK	1	99	23.23	23.26
		Band 2	10M	1880	18900	QPSK	1	0	Band 4	20M	2132.5	2175	QPSK	1	0	Band 13	10M	751	5230	QPSK	1	0	23.10	23.18
		Band 4	10M	1715	20000	QPSK	1	49	Band 2	20M	1960	900	QPSK	1	99	Band 13	10M	751	5230	QPSK	1	49	23.15	23.18
		Band 13	10M	782	23230	QPSK	1	49	Band 4	20M	2132.5	2175	QPSK	1	99	Band 2	20M	1960	900	QPSK	1	99	22.35	22.46
Intra-Band	Non-Contiguous	Band 2	10M	1880	18900	QPSK	1	0	Band 2	5M	1987.5	1175	QPSK	1	0	Band 5	10M	881.5	2525	QPSK	1	0	23.13	23.18
		Band 5	5M	836.5	20525	QPSK	1	24	Band 2	20M	1960	900	QPSK	1	99	Band 2	5M	1987.5	1175	QPSK	1	24	23.19	23.26
		Band 2	10M	1880	18900	QPSK	1	0	Band 2	5M	1987.5	1175	QPSK	1	0	Band 13	10M	751	5230	QPSK	1	0	23.12	23.18
		Band 13	10M	782	23230	QPSK	1	49	Band 2	20M	1960	900	QPSK	1	99	Band 2	5M	1987.5	1175	QPSK	1	24	22.38	22.46
		Band 4	10M	1715	20000	QPSK	1	49	Band 4	5M	2152.5	2375	QPSK	1	24	Band 5	10M	881.5	2525	QPSK	1	49	23.16	23.18
		Band 5	5M	836.5	20525	QPSK	1	24	Band 4	20M	2132.5	2175	QPSK	1	99	Band 4	5M	2152.5	2375	QPSK	1	24	23.19	23.26
		Band 4	10M	1715	20000	QPSK	1	49	Band 4	5M	2152.5	2375	QPSK	1	24	Band 13	10M	751	5230	QPSK	1	49	23.16	23.18
		Band 13	10M	782	23230	QPSK	1	49	Band 4	20M	2132.5	2175	QPSK	1	99	Band 4	5M	2152.5	2375	QPSK	1	24	22.35	22.46

<Near-body and Hotspot mode for three CA power verification>

Configure		PCC							SCC1							SCC2							Power	
		LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	Mod.	DL# RB	DL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	Mod.	DL# RB	DL RB Offset	LTE Rel 10 Tx. Power (dBm)	LTE Rel 8 Tx. Power (dBm)
Inter-Band		Band 2	10M	1905	19150	16QAM	1	0	Band 4	20M	2132.5	2175	16QAM	1	0	Band 5	10M	881.5	2525	16QAM	1	0	22.84	22.85
		Band 4	5M	1712.5	19975	16QAM	1	24	Band 2	20M	1960	900	16QAM	1	99	Band 5	10M	881.5	2525	16QAM	1	49	22.89	22.93
		Band 5	5M	836.5	20525	16QAM	1	0	Band 4	20M	2132.5	2175	16QAM	1	0	Band 2	20M	1960	900	16QAM	1	0	20.36	20.46
		Band 2	10M	1905	19150	16QAM	1	0	Band 4	20M	2132.5	2175	16QAM	1	0	Band 13	10M	751	5230	16QAM	1	0	22.83	22.85
		Band 4	5M	1712.5	19975	16QAM	1	24	Band 2	20M	1960	900	16QAM	1	99	Band 13	10M	751	5230	16QAM	1	49	22.89	22.93
		Band 13	10M	782	23230	16QAM	1	0	Band 4	20M	2132.5	2175	16QAM	1	0	Band 2	20M	1960	900	16QAM	1	0	19.86	19.98
Intra-Band	Non-Contiguous	Band 2	10M	1905	19150	16QAM	1	0	Band 2	5M	1932.5	625	16QAM	1	0	Band 5	10M	881.5	2525	16QAM	1	0	22.81	22.85
		Band 5	5M	836.5	20525	16QAM	1	0	Band 2	20M	1960	900	16QAM	1	0	Band 2	5M	1987.5	1175	16QAM	1	0	20.36	20.46
		Band 2	10M	1905	19150	16QAM	1	0	Band 2	5M	1932.5	625	16QAM	1	0	Band 13	10M	751	5230	16QAM	1	0	22.84	22.85
		Band 13	10M	782	23230	16QAM	1	0	Band 2	20M	1960	900	16QAM	1	0	Band 2	5M	1987.5	1175	16QAM	1	0	19.96	19.98
		Band 4	5M	1712.5	19975	16QAM	1	24	Band 4	5M	5M	2152.5	2375	1	24	Band 5	10M	881.5	2525	16QAM	1	49	22.91	22.93
		Band 5	5M	836.5	20525	16QAM	1	0	Band 4	20M	2132.5	2175	16QAM	1	0	Band 4	5M	2152.5	2375	16QAM	1	0	20.38	20.46
		Band 4	5M	1712.5	19975	16QAM	1	24	Band 4	5M	5M	2152.5	2375	1	24	Band 13	10M	751	5230	16QAM	1	49	22.91	22.93
		Band 13	10M	782	23230	16QAM	1	0	Band 4	20M	2132.5	2175	16QAM	1	0	Band 4	5M	2152.5	2375	16QAM	1	0	19.86	19.98

**<WLAN Conducted Power>****General Note:**

1. For WLAN SAR testing was performed on single antenna RF power in SISO mode is larger or equal to the single antenna RF power in MIMO mode, and for RF exposure assessment of MIMO mode simultaneous transmission exclusion analysis was performed with SAR test results of each antenna in SISO mode.
2. Per KDB 248227 D01v02r02, the simultaneous SAR provisions in KDB publication 447498 should be applied to determine simultaneous transmission SAR test exclusion for WiFi MIMO. If the sum of 1g single transmission chain SAR measurements is $< 1.6\text{W/kg}$ and SAR peak to location ratio < 0.04 , no additional SAR measurements for MIMO.
3. Per KDB 248227 D01v02r02, 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.
4. 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).
5. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, 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 for each frequency band.
6. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures.18 The initial test position procedure is described in the following:
 - a. When the reported SAR of the initial test position is $\leq 0.4\text{ W/kg}$, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
 - b. When the reported SAR of the test position is $> 0.4\text{ W/kg}$, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is $\leq 0.8\text{ W/kg}$ or all required test position are tested.
 - c. For all positions/configurations, when the reported SAR is $> 0.8\text{ W/kg}$, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is $\leq 1.2\text{ W/kg}$ or all required channels are tested.

<Default Power Mode>
<2.4GHz WLAN ANT 1>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN ANT 1	802.11b	CH 1	2412	1Mbps	18.04	19.0	99.04
		CH 6	2437		19.15	20.0	
		CH 11	2462		19.37	20.0	
	802.11g	CH 1	2412	6Mbps	16.50	18.5	94.50
		CH 6	2437		17.87	19.0	
		CH 11	2462		16.20	17.5	
	802.11n-HT20	CH 1	2412	MCS0	16.88	18.0	94.12
		CH 6	2437		17.77	18.5	
		CH 11	2462		16.11	17.5	
	802.11ac-VHT20	CH 1	2412	MCS0	16.78	18.0	94.12
		CH 6	2437		17.77	18.5	
		CH 11	2462		15.58	16.5	

<2.4GHz WLAN ANT 2>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN ANT 2	802.11b	CH 1	2412	1Mbps	14.05	15.0	99.04
		CH 6	2437		15.02	16.0	
		CH 11	2462		15.50	16.0	
	802.11g	CH 1	2412	6Mbps	12.50	14.5	94.50
		CH 6	2437		14.03	15.0	
		CH 11	2462		13.11	13.5	
	802.11n-HT20	CH 1	2412	MCS0	12.96	14.0	94.12
		CH 6	2437		13.84	14.5	
		CH 11	2462		12.93	13.5	
	802.11ac-VHT20	CH 1	2412	MCS0	12.76	14.0	94.12
		CH 6	2437		13.88	14.5	
		CH 11	2462		12.58	13.0	

<2.4GHz WLAN ANT 1+2>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN ANT 1+2	802.11b	CH 1	2412	1Mbps	18.92	20.0	99.04
		CH 6	2437		19.80	21.0	
		CH 11	2462		20.21	21.0	
	802.11g	CH 1	2412	6Mbps	17.44	19.0	94.50
		CH 6	2437		18.59	20.0	
		CH 11	2462		17.47	18.5	
	802.11n-HT20	CH 1	2412	MCS0	17.78	19.0	94.12
		CH 6	2437		18.41	19.5	
		CH 11	2462		17.22	18.0	
	802.11ac-VHT20	CH 1	2412	MCS0	17.78	18.3	94.12
		CH 6	2437		18.54	19.5	
		CH 11	2462		16.68	17.5	

<5GHz WLAN ANT1>

5.2GHz WLAN ANT 1	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a	CH 36	5180	6Mbps	16.57	18.0	94.95
		CH 40	5200		16.45	18.0	
		CH 44	5220		16.50	18.0	
		CH 48	5240		16.65	18.0	
	802.11n-HT20	CH 36	5180	MCS0	16.37	18.0	94.61
		CH 40	5200		16.31	18.0	
		CH 44	5220		16.29	17.5	
		CH 48	5240		16.46	17.5	
	802.11n-HT40	CH 38	5190	MCS0	13.56	15.5	89.62
		CH 46	5230		14.76	16.0	
	802.11ac-VHT20	CH 36	5180	MCS0	16.33	18.0	90.00
		CH 40	5200		16.24	18.0	
		CH 44	5220		16.22	18.0	
		CH 48	5240		16.43	18.0	
	802.11ac-VHT40	CH 38	5190	MCS0	13.60	15.0	89.62
		CH 46	5230		14.82	16.0	
	802.11ac-VHT80	CH 42	5210	MCS0	13.25	14.5	85.71

5.3GHz WLAN ANT 1	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a	CH 52	5260	6Mbps	16.79	18.0	94.95
		CH 56	5280		16.62	18.0	
		CH 60	5300		16.55	18.0	
		CH 64	5320		16.45	18.0	
	802.11n-HT20	CH 52	5260	MCS0	16.54	18.0	94.61
		CH 56	5280		16.25	18.0	
		CH 60	5300		16.26	18.0	
		CH 64	5320		16.25	17.5	
	802.11n-HT40	CH 54	5270	MCS0	14.90	16.0	89.62
		CH 62	5310		14.23	15.5	
	802.11ac-VHT20	CH 52	5260	MCS0	16.46	18.0	90.00
		CH 56	5280		16.23	18.0	
		CH 60	5300		16.16	18.0	
		CH 64	5320		16.22	17.5	
	802.11ac-VHT40	CH 54	5270	MCS0	14.94	16.0	89.62
		CH 62	5310		14.25	15.5	
	802.11ac-VHT80	CH 58	5290	MCS0	12.52	13.0	85.71

5.5GHz WLAN ANT 1	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a	CH 100	5500	6Mbps	16.77	18.0	94.95
		CH 116	5580		16.74	18.0	
		CH 124	5620		16.53	18.0	
		CH 132	5660		15.48	17.0	
		CH 140	5700		15.97	17.0	
		CH 144	5720		14.97	16.5	
	802.11n-HT20	CH 100	5500	MCS0	16.56	18.0	94.61
		CH 116	5580		16.62	18.0	
		CH 124	5620		16.41	18.0	
		CH 132	5660		16.23	18.0	
		CH 140	5700		15.95	17.5	
		CH 144	5720		14.72	16.5	
	802.11n-HT40	CH 102	5510	MCS0	14.00	15.0	89.62
		CH 110	5550		14.70	16.0	
		CH 126	5630		14.59	16.0	
		CH 134	5670		14.66	16.0	
		CH 142	5710		12.82	14.5	
	802.11ac-VHT20	CH 100	5500	MCS0	16.59	18.0	90.00
		CH 116	5580		16.46	18.0	
		CH 124	5620		16.36	18.0	
		CH 132	5660		16.11	18.0	
		CH 140	5700		15.87	17.5	
		CH 144	5720		14.42	16.0	
	802.11ac-VHT40	CH 102	5510	MCS0	13.98	15.0	89.62
		CH 110	5550		14.74	16.0	
		CH 126	5630		14.41	16.0	
		CH 134	5670		14.56	16.0	
		CH 142	5710		12.70	14.5	
	802.11ac-VHT80	CH 106	5530	MCS0	9.34	10.5	85.71
		CH 122	5610		14.65	16.0	
		CH 138	5690		13.68	15.5	

5.8GHz WLAN ANT 1	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a	CH 149	5745	MCS0	16.62	18.0	94.95
		CH 157	5785		16.11	17.5	
		CH 165	5825		16.15	17.5	
	802.11n-HT20	CH 149	5745	MCS0	16.51	18.0	94.61
		CH 157	5785		16.16	17.5	
		CH 165	5825		15.89	17.5	
	802.11n-HT40	CH 151	5755	MCS0	14.76	16.0	89.62
		CH 159	5795		14.60	16.0	
	802.11ac-VHT20	CH 149	5745	MCS0	16.72	18.0	90.00
		CH 157	5785		16.14	17.5	
		CH 165	5825		16.28	17.5	
	802.11ac-VHT40	CH 151	5755	MCS0	14.70	16.0	89.62
		CH 159	5795		14.48	16.0	
	802.11ac-VHT80	CH 155	5775	MCS0	13.64	15.5	85.71

<5GHz WLAN ANT2>

5.2GHz WLAN ANT 2	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a	CH 36	5180	6Mbps	16.42	17.5	94.50
		CH 40	5200		16.29	17.5	
		CH 44	5220		16.31	17.5	
		CH 48	5240		16.46	17.5	
	802.11n-HT20	CH 36	5180	MCS0	16.14	17.5	95.07
		CH 40	5200		16.21	17.5	
		CH 44	5220		16.14	17.0	
		CH 48	5240		16.22	17.0	
	802.11n-HT40	CH 38	5190	MCS0	13.76	15.0	90.48
		CH 46	5230		14.46	16.0	
	802.11ac-VHT20	CH 36	5180	MCS0	16.22	17.5	90.83
		CH 40	5200		16.18	18.0	
		CH 44	5220		16.00	17.5	
		CH 48	5240		16.32	17.5	
	802.11ac-VHT40	CH 38	5190	MCS0	13.77	15.0	89.62
		CH 46	5230		14.70	15.5	
	802.11ac-VHT80	CH 42	5210	MCS0	13.19	14.5	85.71

5.3GHz WLAN ANT 2	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a	CH 52	5260	6Mbps	16.47	17.5	94.50
		CH 56	5280		16.47	17.5	
		CH 60	5300		16.30	17.5	
		CH 64	5320		16.22	17.0	
	802.11n-HT20	CH 52	5260	MCS0	16.32	17.5	95.07
		CH 56	5280		16.09	17.5	
		CH 60	5300		16.03	17.0	
		CH 64	5320		15.98	17.0	
	802.11n-HT40	CH 54	5270	MCS0	14.50	15.5	90.48
		CH 62	5310		14.17	15.0	
	802.11ac-VHT20	CH 52	5260	MCS0	16.31	17.5	90.83
		CH 56	5280		16.20	17.5	
		CH 60	5300		16.11	17.5	
		CH 64	5320		16.07	17.0	
	802.11ac-VHT40	CH 54	5270	MCS0	14.71	15.5	89.62
		CH 62	5310		13.90	15.0	
	802.11ac-VHT80	CH 58	5290	MCS0	12.21	13.5	85.71

5.5GHz WLAN ANT 2	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a	CH 100	5500	6Mbps	16.64	18.0	94.50
		CH 116	5580		16.59	18.0	
		CH 124	5620		16.19	18.0	
		CH 132	5660		15.42	17.0	
		CH 140	5700		15.62	17.5	
		CH 144	5720		14.64	16.5	
	802.11n-HT20	CH 100	5500	MCS0	16.38	18.0	95.07
		CH 116	5580		16.39	18.0	
		CH 124	5620		16.26	18.0	
		CH 132	5660		16.12	18.0	
		CH 140	5700		15.40	17.0	
		CH 144	5720		14.29	16.0	
	802.11n-HT40	CH 102	5510	MCS0	13.59	15.0	90.48
		CH 110	5550		14.73	16.0	
		CH 126	5630		14.11	16.0	
		CH 134	5670		14.09	16.0	
		CH 142	5710		12.34	14.0	
	802.11ac-VHT20	CH 100	5500	MCS0	16.40	18.0	90.83
		CH 116	5580		16.35	18.0	
		CH 124	5620		16.21	18.0	
		CH 132	5660		15.83	17.5	
		CH 140	5700		15.76	17.5	
		CH 144	5720		14.36	16.0	
	802.11ac-VHT40	CH 102	5510	MCS0	13.68	15.0	89.62
		CH 110	5550		14.77	16.0	
		CH 126	5630		14.25	16.0	
		CH 134	5670		14.27	16.0	
		CH 142	5710		12.62	14.5	
	802.11ac-VHT80	CH 106	5530	MCS0	9.63	10.0	85.71
		CH 122	5610		14.52	16.0	
		CH 138	5690		13.27	15.0	

5.8GHz WLAN ANT 2	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a	CH 149	5745	MCS0	16.32	18.0	94.50
		CH 157	5785		16.11	17.5	
		CH 165	5825		15.70	17.5	
	802.11n-HT20	CH 149	5745	MCS0	15.67	17.5	95.07
		CH 157	5785		15.22	17.0	
		CH 165	5825		15.14	17.0	
	802.11n-HT40	CH 151	5755	MCS0	14.36	16.0	90.48
		CH 159	5795		13.89	15.5	
	802.11ac-VHT20	CH 149	5745	MCS0	16.40	17.5	90.83
		CH 157	5785		15.90	17.5	
		CH 165	5825		15.19	17.0	
	802.11ac-VHT40	CH 151	5755	MCS0	14.44	16.0	89.62
		CH 159	5795		14.08	16.0	
	802.11ac-VHT80	CH 155	5775	MCS0	13.57	15.5	85.71

<5GHz WLAN ANT1+2>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN ANT 1+2	802.11a	CH 36	5180	6Mbps	18.71	20.0	94.52
		CH 40	5200		18.88	20.0	
		CH 44	5220		18.82	20.0	
		CH 48	5240		18.85	20.0	
	802.11n-HT20	CH 36	5180	MCS0	18.68	20.0	95.07
		CH 40	5200		18.74	20.0	
		CH 44	5220		18.60	20.0	
		CH 48	5240		18.74	20.0	
	802.11n-HT40	CH 38	5190	MCS0	16.51	18.0	88.79
		CH 46	5230		17.12	18.5	
	802.11ac-VHT20	CH 36	5180	MCS0	18.73	20.0	89.91
		CH 40	5200		18.70	20.0	
		CH 44	5220		18.66	20.0	
		CH 48	5240		18.99	20.0	
	802.11ac-VHT40	CH 38	5190	MCS0	16.30	17.5	90.57
		CH 46	5230		17.04	18.5	
	802.11ac-VHT80	CH 42	5210	MCS0	15.82	17.5	85.71

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN ANT 1+2	802.11a	CH 52	5260	6Mbps	18.94	20.0	94.52
		CH 56	5280		18.84	20.0	
		CH 60	5300		18.68	20.0	
		CH 64	5320		18.66	20.0	
	802.11n-HT20	CH 52	5260	MCS0	18.73	19.5	95.07
		CH 56	5280		18.53	19.5	
		CH 60	5300		18.48	19.5	
		CH 64	5320		18.42	19.5	
	802.11n-HT40	CH 54	5270	MCS0	17.23	18.5	88.79
		CH 62	5310		16.83	17.5	
	802.11ac-VHT20	CH 52	5260	MCS0	18.75	19.5	89.91
		CH 56	5280		18.63	19.5	
		CH 60	5300		18.55	19.5	
		CH 64	5320		18.52	19.5	
	802.11ac-VHT40	CH 54	5270	MCS0	17.18	18.5	90.57
		CH 62	5310		16.72	17.5	
	802.11ac-VHT80	CH 58	5290	MCS0	15.18	16.5	85.71

5.5GHz WLAN ANT 1+2	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a	CH 100	5500	6Mbps	19.15	20.0	94.52
		CH 116	5580		19.08	20.0	
		CH 124	5620		18.86	20.0	
		CH 132	5660		18.59	20.0	
		CH 140	5700		18.40	19.5	
		CH 144	5720		17.00	19.0	
	802.11n-HT20	CH 100	5500	MCS0	19.00	19.5	95.07
		CH 116	5580		18.84	19.5	
		CH 124	5620		18.47	19.5	
		CH 132	5660		18.26	19.5	
		CH 140	5700		18.18	19.5	
		CH 144	5720		17.00	19.0	
	802.11n-HT40	CH 102	5510	MCS0	16.64	18.0	88.79
		CH 110	5550		17.09	18.5	
		CH 126	5630		16.96	18.5	
		CH 134	5670		16.96	18.5	
		CH 142	5710		15.32	17.0	
	802.11ac-VHT20	CH 100	5500	MCS0	18.97	20.0	89.91
		CH 116	5580		18.85	20.0	
		CH 124	5620		18.55	20.0	
		CH 132	5660		18.59	20.0	
		CH 140	5700		18.24	19.0	
		CH 144	5720		16.92	18.5	
	802.11ac-VHT40	CH 102	5510	MCS0	16.63	17.5	90.57
		CH 110	5550		17.06	18.5	
		CH 126	5630		16.97	18.5	
		CH 134	5670		16.84	18.5	
		CH 142	5710		15.34	16.0	
	802.11ac-VHT80	CH 106	5530	MCS0	12.36	13.0	85.71
		CH 122	5610		17.21	18.5	
		CH 138	5690		16.03	17.0	

5.8GHz WLAN ANT 1+2	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a	CH 149	5745	MCS0	18.93	19.5	94.52
		CH 157	5785		18.45	19.5	
		CH 165	5825		18.34	19.5	
	802.11n-HT20	CH 149	5745	MCS0	18.27	19.5	95.07
		CH 157	5785		17.86	19.5	
		CH 165	5825		18.31	19.5	
	802.11n-HT40	CH 151	5755	MCS0	17.12	18.5	88.79
		CH 159	5795		16.86	18.5	
	802.11ac-VHT20	CH 149	5745	MCS0	18.96	19.5	89.91
		CH 157	5785		18.51	19.5	
		CH 165	5825		18.28	19.5	
	802.11ac-VHT40	CH 151	5755	MCS0	17.09	18.5	90.57
		CH 159	5795		16.68	18.5	
	802.11ac-VHT80	CH 155	5775	MCS0	16.30	18.0	85.71

<At-Head Power Mode>
<2.4GHz WLAN ANT 1>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN ANT 1	802.11b	CH 1	2412	1Mbps	16.27	16.5	99.04
		CH 6	2437		16.46	16.5	
		CH 11	2462		16.23	16.5	
	802.11g	CH 1	2412	6Mbps	15.90	16.0	94.50
		CH 6	2437		15.99	16.0	
		CH 11	2462		16.00	16.0	
	802.11n-HT20	CH 1	2412	MCS0	15.59	16.0	94.12
		CH 6	2437		15.66	16.0	
		CH 11	2462		15.99	16.0	
	802.11ac-VHT20	CH 1	2412	MCS0	15.52	16.0	94.12
		CH 6	2437		15.55	16.0	
		CH 11	2462		15.58	16.0	

<2.4GHz WLAN ANT 2>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN ANT 2	802.11b	CH 1	2412	1Mbps	12.48	13.0	99.04
		CH 6	2437		12.96	13.0	
		CH 11	2462		12.81	13.0	
	802.11g	CH 1	2412	6Mbps	11.69	13.0	94.50
		CH 6	2437		12.18	13.0	
		CH 11	2462		13.00	13.0	
	802.11n-HT20	CH 1	2412	MCS0	11.87	13.0	94.12
		CH 6	2437		12.00	13.0	
		CH 11	2462		12.97	13.0	
	802.11ac-VHT20	CH 1	2412	MCS0	11.65	13.0	94.12
		CH 6	2437		12.02	13.0	
		CH 11	2462		12.58	13.0	

<2.4GHz WLAN ANT 1+2>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN ANT 1+2	802.11b	CH 1	2412	1Mbps	17.04	18.1	99.04
		CH 6	2437		17.48	18.1	
		CH 11	2462		17.98	18.1	
	802.11g	CH 1	2412	6Mbps	16.30	17.1	94.50
		CH 6	2437		16.81	17.8	
		CH 11	2462		17.43	17.8	
	802.11n-HT20	CH 1	2412	MCS0	16.22	17.1	94.12
		CH 6	2437		16.73	17.8	
		CH 11	2462		17.28	17.8	
	802.11ac-VHT20	CH 1	2412	MCS0	16.19	17.1	94.12
		CH 6	2437		16.75	17.8	
		CH 11	2462		16.68	17.8	

<5GHz WLAN ANT1>

5.2GHz WLAN ANT 1	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a	CH 36	5180	6Mbps	11.68	12.0	94.95
		CH 40	5200		11.60	12.0	
		CH 44	5220		10.27	12.0	
		CH 48	5240		11.28	12.0	
	802.11n-HT20	CH 36	5180	MCS0	11.65	12.0	94.61
		CH 40	5200		11.59	12.0	
		CH 44	5220		11.06	12.0	
		CH 48	5240		11.12	12.0	
	802.11n-HT40	CH 38	5190	MCS0	11.42	12.0	89.62
		CH 46	5230		10.93	12.0	
	802.11ac-VHT20	CH 36	5180	MCS0	11.70	12.0	90.00
		CH 40	5200		11.53	12.0	
		CH 44	5220		11.28	12.0	
		CH 48	5240		11.39	12.0	
	802.11ac-VHT40	CH 38	5190	MCS0	11.43	12.0	89.62
		CH 46	5230		10.91	12.0	
	802.11ac-VHT80	CH 42	5210	MCS0	11.01	12.0	85.71

5.3GHz WLAN ANT 1	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a	CH 52	5260	6Mbps	11.84	12.0	94.95
		CH 56	5280		11.53	12.0	
		CH 60	5300		10.46	12.0	
		CH 64	5320		10.00	10.0	
	802.11n-HT20	CH 52	5260	MCS0	11.41	12.0	94.61
		CH 56	5280		11.33	12.0	
		CH 60	5300		10.22	12.0	
		CH 64	5320		10.00	10.0	
	802.11n-HT40	CH 54	5270	MCS0	11.29	12.0	89.62
		CH 62	5310		10.00	12.0	
	802.11ac-VHT20	CH 52	5260	MCS0	11.59	12.0	90.00
		CH 56	5280		11.47	12.0	
		CH 60	5300		10.50	12.0	
		CH 64	5320		10.00	10.0	
	802.11ac-VHT40	CH 54	5270	MCS0	11.24	12.0	89.62
		CH 62	5310		10.00	12.0	
	802.11ac-VHT80	CH 58	5290	MCS0	11.41	12.0	85.71

5.5GHz WLAN ANT 1	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a	CH 100	5500	6Mbps	10.64	12.0	94.95
		CH 116	5580		10.99	12.0	
		CH 124	5620		11.12	12.0	
		CH 132	5660		10.89	12.0	
		CH 140	5700		10.07	12.0	
		CH 144	5720		11.22	12.0	
	802.11n-HT20	CH 100	5500	MCS0	10.49	12.0	94.61
		CH 116	5580		10.73	12.0	
		CH 124	5620		10.66	12.0	
		CH 132	5660		10.58	12.0	
		CH 140	5700		10.00	12.0	
		CH 144	5720		10.83	12.0	
	802.11n-HT40	CH 102	5510	MCS0	10.37	12.0	89.62
		CH 110	5550		10.11	12.0	
		CH 126	5630		10.21	12.0	
		CH 134	5670		10.31	12.0	
		CH 142	5710		11.82	12.0	
	802.11ac-VHT20	CH 100	5500	MCS0	10.70	12.0	90.00
		CH 116	5580		11.15	12.0	
		CH 124	5620		11.02	12.0	
		CH 132	5660		11.09	12.0	
		CH 140	5700		10.00	12.0	
		CH 144	5720		10.29	12.0	
	802.11ac-VHT40	CH 102	5510	MCS0	10.52	12.0	89.62
		CH 110	5550		10.11	12.0	
		CH 126	5630		10.31	12.0	
		CH 134	5670		10.25	12.0	
		CH 142	5710		11.87	12.0	
	802.11ac-VHT80	CH 106	5530	MCS0	9.34	9.5	85.71
		CH 122	5610		10.80	12.0	
		CH 138	5690		10.73	12.0	

5.8GHz WLAN ANT 1	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a	CH 149	5745	6Mbps	11.39	12.0	94.95
		CH 157	5785		11.07	12.0	
		CH 165	5825		11.21	12.0	
	802.11n-HT20	CH 149	5745	MCS0	11.10	12.0	94.61
		CH 157	5785		10.73	12.0	
		CH 165	5825		10.88	12.0	
	802.11n-HT40	CH 151	5755	MCS0	10.90	12.0	89.62
		CH 159	5795		10.85	12.0	
	802.11ac-VHT20	CH 149	5745	MCS0	11.29	12.0	90.00
		CH 157	5785		11.19	12.0	
		CH 165	5825		11.10	12.0	
	802.11ac-VHT40	CH 151	5755	MCS0	10.90	12.0	89.62
		CH 159	5795		10.71	12.0	
	802.11ac-VHT80	CH 155	5775	MCS0	11.12	12.0	85.71

<5GHz WLAN ANT2>

5.2GHz WLAN ANT 2	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a	CH 36	5180	6Mbps	11.77	12.0	94.95
		CH 40	5200		11.69	12.0	
		CH 44	5220		11.39	12.0	
		CH 48	5240		11.35	12.0	
	802.11n-HT20	CH 36	5180	MCS0	11.55	12.0	95.07
		CH 40	5200		11.47	12.0	
		CH 44	5220		11.33	12.0	
		CH 48	5240		11.28	12.0	
	802.11n-HT40	CH 38	5190	MCS0	11.34	12.0	90.48
		CH 46	5230		11.05	12.0	
	802.11ac-VHT20	CH 36	5180	MCS0	11.52	12.0	90.83
		CH 40	5200		11.36	12.0	
		CH 44	5220		11.32	12.0	
		CH 48	5240		11.42	12.0	
	802.11ac-VHT40	CH 38	5190	MCS0	11.54	12.0	89.62
		CH 46	5230		11.56	12.0	
	802.11ac-VHT80	CH 42	5210	MCS0	11.40	12.0	85.71

5.3GHz WLAN ANT 2	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a	CH 52	5260	6Mbps	11.33	12.0	94.95
		CH 56	5280		11.29	12.0	
		CH 60	5300		11.01	12.0	
		CH 64	5320		10.68	12.0	
	802.11n-HT20	CH 52	5260	MCS0	11.12	12.0	95.07
		CH 56	5280		11.02	12.0	
		CH 60	5300		10.74	12.0	
		CH 64	5320		10.51	12.0	
	802.11n-HT40	CH 54	5270	MCS0	11.09	12.0	90.48
		CH 62	5310		10.30	12.0	
	802.11ac-VHT20	CH 52	5260	MCS0	11.25	12.0	90.83
		CH 56	5280		10.97	12.0	
		CH 60	5300		10.80	12.0	
		CH 64	5320		10.65	12.0	
	802.11ac-VHT40	CH 54	5270	MCS0	11.21	12.0	89.62
		CH 62	5310		10.39	12.0	
	802.11ac-VHT80	CH 58	5290	MCS0	11.14	12.0	85.71

5.5GHz WLAN ANT 2	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a	CH 100	5500	6Mbps	11.08	12.0	94.95
		CH 116	5580		11.07	12.0	
		CH 124	5620		11.24	12.0	
		CH 132	5660		11.06	12.0	
		CH 140	5700		10.91	12.0	
		CH 144	5720		10.98	12.0	
	802.11n-HT20	CH 100	5500	MCS0	10.90	12.0	95.07
		CH 116	5580		10.75	12.0	
		CH 124	5620		10.76	12.0	
		CH 132	5660		10.46	12.0	
		CH 140	5700		10.34	12.0	
		CH 144	5720		11.13	12.0	
	802.11n-HT40	CH 102	5510	MCS0	10.88	12.0	90.48
		CH 110	5550		10.89	12.0	
		CH 126	5630		10.92	12.0	
		CH 134	5670		10.70	12.0	
		CH 142	5710		11.02	12.0	
	802.11ac-VHT20	CH 100	5500	MCS0	10.86	12.0	90.83
		CH 116	5580		10.94	12.0	
		CH 124	5620		11.02	12.0	
		CH 132	5660		10.83	12.0	
		CH 140	5700		10.58	12.0	
		CH 144	5720		10.92	12.0	
	802.11ac-VHT40	CH 102	5510	MCS0	10.87	12.0	89.62
		CH 110	5550		10.80	12.0	
		CH 126	5630		10.78	12.0	
		CH 134	5670		10.76	12.0	
		CH 142	5710		11.03	12.0	
	802.11ac-VHT80	CH 106	5530	MCS0	9.63	10.0	85.71
		CH 122	5610		10.76	12.0	
		CH 138	5690		10.68	12.0	

5.8GHz WLAN ANT 2	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a	CH 149	5745	6Mbps	11.25	12.0	94.50
		CH 157	5785		10.46	12.0	
		CH 165	5825		10.27	12.0	
	802.11n-HT20	CH 149	5745	MCS0	10.97	12.0	95.07
		CH 157	5785		10.24	12.0	
		CH 165	5825		10.01	12.0	
	802.11n-HT40	CH 151	5755	MCS0	10.96	12.0	90.48
		CH 159	5795		10.22	12.0	
	802.11ac-VHT20	CH 149	5745	MCS0	11.19	12.0	90.83
		CH 157	5785		10.45	12.0	
		CH 165	5825		10.01	12.0	
	802.11ac-VHT40	CH 151	5755	MCS0	11.07	12.0	89.62
		CH 159	5795		10.35	12.0	
	802.11ac-VHT80	CH 155	5775	MCS0	10.61	12.0	85.71

<5GHz WLAN ANT1+2>

5.2GHz WLAN ANT 1+2	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a	CH 36	5180	6Mbps	14.27	15.0	94.95
		CH 40	5200		13.92	15.0	
		CH 44	5220		13.82	15.0	
		CH 48	5240		13.94	15.0	
	802.11n-HT20	CH 36	5180	MCS0	14.01	15.0	95.07
		CH 40	5200		13.89	15.0	
		CH 44	5220		13.53	15.0	
		CH 48	5240		13.60	15.0	
	802.11n-HT40	CH 38	5190	MCS0	13.68	15.0	90.48
		CH 46	5230		13.65	15.0	
	802.11ac-VHT20	CH 36	5180	MCS0	13.88	15.0	90.83
		CH 40	5200		13.76	15.0	
		CH 44	5220		13.60	15.0	
		CH 48	5240		13.71	15.0	
	802.11ac-VHT40	CH 38	5190	MCS0	13.49	15.0	90.57
		CH 46	5230		13.51	15.0	
	802.11ac-VHT80	CH 42	5210	MCS0	13.77	15.0	85.71

5.3GHz WLAN ANT 1+2	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a	CH 52	5260	6Mbps	14.14	15.0	94.95
		CH 56	5280		13.89	15.0	
		CH 60	5300		13.63	15.0	
		CH 64	5320		13.22	14.1	
	802.11n-HT20	CH 52	5260	MCS0	13.85	15.0	95.07
		CH 56	5280		13.66	15.0	
		CH 60	5300		13.23	15.0	
		CH 64	5320		13.11	14.1	
	802.11n-HT40	CH 54	5270	MCS0	13.84	15.0	90.48
		CH 62	5310		13.36	15.0	
	802.11ac-VHT20	CH 52	5260	MCS0	14.00	15.0	90.83
		CH 56	5280		13.77	15.0	
		CH 60	5300		13.54	15.0	
		CH 64	5320		13.25	14.1	
	802.11ac-VHT40	CH 54	5270	MCS0	13.64	15.0	90.57
		CH 62	5310		13.48	15.0	
	802.11ac-VHT80	CH 58	5290	MCS0	13.87	15.0	85.71

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN ANT 1+2	802.11a	CH 100	5500	6Mbps	14.15	15.0	94.95
		CH 116	5580		14.23	15.0	
		CH 124	5620		14.33	15.0	
		CH 132	5660		14.21	15.0	
		CH 140	5700		13.15	15.0	
		CH 144	5720		14.41	15.0	
	802.11n-HT20	CH 100	5500	MCS0	14.07	15.0	95.07
		CH 116	5580		14.09	15.0	
		CH 124	5620		13.89	15.0	
		CH 132	5660		13.77	15.0	
		CH 140	5700		13.13	15.0	
		CH 144	5720		13.23	15.0	
	802.11n-HT40	CH 102	5510	MCS0	14.03	15.0	90.48
		CH 110	5550		13.67	15.0	
		CH 126	5630		13.71	15.0	
		CH 134	5670		13.11	15.0	
		CH 142	5710		13.06	15.0	
	802.11ac-VHT20	CH 100	5500	MCS0	14.15	15.0	90.83
		CH 116	5580		14.25	15.0	
		CH 124	5620		14.24	15.0	
		CH 132	5660		14.15	15.0	
		CH 140	5700		13.33	15.0	
		CH 144	5720		13.46	15.0	
	802.11ac-VHT40	CH 102	5510	MCS0	13.80	15.0	90.57
		CH 110	5550		13.62	15.0	
		CH 126	5630		13.52	15.0	
		CH 134	5670		13.14	15.0	
		CH 142	5710		13.26	15.0	
	802.11ac-VHT80	CH 106	5530	MCS0	12.36	12.8	85.71
		CH 122	5610		13.57	15.0	
		CH 138	5690		13.52	15.0	

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN ANT 1+2	802.11a	CH 149	5745	6Mbps	13.87	15.0	94.95
		CH 157	5785		13.27	15.0	
		CH 165	5825		13.06	15.0	
	802.11n-HT20	CH 149	5745	MCS0	13.75	15.0	95.07
		CH 157	5785		13.10	15.0	
		CH 165	5825		13.01	15.0	
	802.11n-HT40	CH 151	5755	MCS0	13.50	15.0	90.48
		CH 159	5795		13.19	15.0	
	802.11ac-VHT20	CH 149	5745	MCS0	13.90	15.0	90.83
		CH 157	5785		13.22	15.0	
		CH 165	5825		13.04	15.0	
	802.11ac-VHT40	CH 151	5755	MCS0	13.51	15.0	90.57
		CH 159	5795		13.03	15.0	
	802.11ac-VHT80	CH 155	5775	MCS0	13.36	15.0	85.71

13. Bluetooth Exclusions Applied

Mode Band	Average power(dBm)	
	Bluetooth-EDR	Bluetooth-LE
2.4GHz Bluetooth	10.0	2.0

Note:

- Per KDB 447498 D01v06, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:

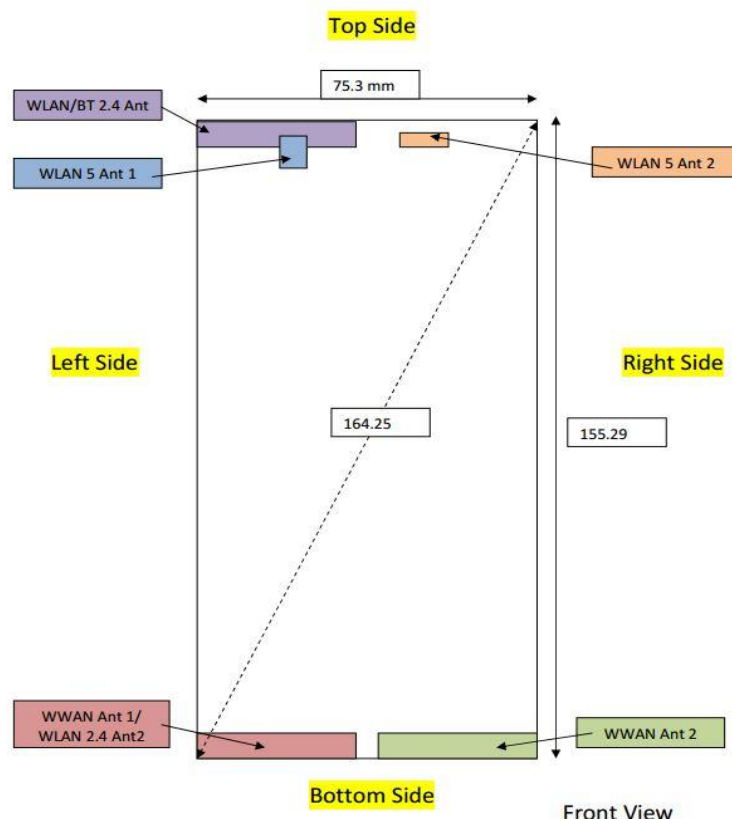
$$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$$
for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
 - f(GHz) is the RF channel transmit frequency in GHz
 - Power and distance are rounded to the nearest mW and mm before calculation
 - The result is rounded to one decimal place for comparison

Bluetooth Max Power (dBm)	Separation Distance (mm)	Frequency (GHz)	exclusion thresholds
10.0	10	2.48	1.57

Note:

Per KDB 447498 D01v06, when the minimum test separation distance is 10 mm, a distance of 10 mm is applied to determine SAR test exclusion. The test exclusion threshold is 1.57 which is ≤ 3 , SAR testing is not required.

14. Antenna Location



Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Ant	≤ 25mm	≤ 25mm	> 25mm	≤ 25mm	≤ 25mm	≤ 25mm
2.4GHz WLAN Ant1	≤ 25mm	≤ 25mm	≤ 25mm	> 25mm	> 25mm	≤ 25mm
2.4GHz WLAN Ant2	≤ 25mm	≤ 25mm	> 25mm	≤ 25mm	> 25mm	≤ 25mm
2.4GHz WLAN MIMO	≤ 25mm	≤ 25mm	≤ 25mm	≤ 25mm	> 25mm	≤ 25mm
5Hz WLAN Ant1	≤ 25mm	≤ 25mm	≤ 25mm	> 25mm	> 25mm	≤ 25mm
5Hz WLAN Ant2	≤ 25mm	≤ 25mm	≤ 25mm	> 25mm	≤ 25mm	> 25mm
5Hz WLAN MIMO	≤ 25mm	≤ 25mm	≤ 25mm	> 25mm	≤ 25mm	≤ 25mm

Positions for SAR tests; Hotspot mode						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Ant	Yes	Yes	No	Yes	Yes	Yes
2.4GHz WLAN Ant1	Yes	Yes	Yes	No	No	Yes
2.4GHz WLAN Ant2	Yes	Yes	No	Yes	No	Yes
2.4GHz WLAN MIMO	Yes	Yes	Yes	Yes	No	Yes
5Hz WLAN Ant1	Yes	Yes	Yes	No	No	Yes
5Hz WLAN Ant2	Yes	Yes	Yes	No	Yes	No
5Hz WLAN MIMO	Yes	Yes	Yes	No	Yes	Yes

General Note:

- Referring to KDB 941225 D06 v02r01, when the overall device length and width are > 9cm*5cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces.
- Since the device supports MIMO operated, when each chain transmits at the same time that right side can be exempt for 2.4GHz WLAN only, bottom side can be exempt for 5GHz WLAN only

15. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
 - a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
 - b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
 - c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
 - d. For WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
2. Per KDB 447498 D01v06, for each exposure position, 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
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥ 0.8 W/kg.
4. Per KDB 648474 D04v01r03, when the reported SAR for a body-worn accessory measured without a headset connected to the handset is ≤ 1.2 W/kg, SAR testing with a headset connected to the handset is not required.
5. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, when hotspot mode applies, 10-g product specific SAR for WWAN transmitter is required only for the edges according to "operational description" with hotspot mode 1-g reported SAR > 1.2 W/kg, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2W/kg SAR test reduction threshold, for this device only bottom side SAR for WWAN transmitter scaled to maximum output power is higher than 1.2W/kg of UMTS B2, CDMA BC1 and LTE B2 / B4, therefore product specific SAR is necessary. For 5.3GHz / 5.5GHz WLAN product specific SAR is necessary too, due to an overall diagonal dimension is > 16 cm.
6. While operating in "Front" and "Back" configuration by end user, the device will limit different maximum output powers on the GSM850, WCDMA B2 / B5, CDMA BC0 / BC1 and LTE B2 / B4 / B5 / B7 / B13 transmitter and detail descriptions of the power reduction mechanism are included in the operational description.
7. While operating in body-adjacent exposure configuration during a mobile hotspot session, the device will reduced output powers on the GSM850, WCDMA B2 / B5, CDMA BC0 / BC1 and LTE B2 / B4 / B5 / B7 / B13 transmitter and detail descriptions of the power reduction mechanism are included in the operational description.
8. The device utilizes independent power reduction mechanisms for SAR compliance for the WLAN transmitter for held-to-are exposure conditions and detail descriptions of the power reduction mechanism are included in the operational description.

GSM Note:

1. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS (4Tx slots) for GSM850/GSM1900 is considered as the primary mode.
2. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is $\leq \frac{1}{4}$ dB higher than the primary mode, SAR measurement is not required for the secondary mode.

**UMTS Note:**

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is $\leq \frac{1}{4}$ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

CDMA Note:

1. Per KDB 941225 D01v03r01, SAR for next to the ear head exposure is measured in RC3 with the handset configured to transmit at full rate in SO55.
2. Per KDB 941225 D01v03r01, in Hotspot mode EUT is treated as data device and SAR is tested with Ev-Do Rev 0 (RTAP 153.6kbps) as the primary mode.
3. Per KDB 941225 D01v03r01, for Body-worn accessory SAR is measured in RC3 with the handset configured in TDSO/SO32 to transmit at full rate on FCH only with all other code channels disabled. The body-worn accessory procedures in KDB Publication 447498 are applied. The 3G SAR test reduction procedure is applied to the multiple code channel configuration (FCH+SCH), with FCH only as the primary mode.

LTE Note:

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is $> \text{not } \frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is $> \text{not } \frac{1}{2}$ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4 / B5 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, 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.

WLAN Note:

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required 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.
2. Per KDB 248227 D01v02r02, for U-NII-1 Head and Body-worn SAR testing is not required when the U-NII-2A band highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band.
3. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
4. For all positions / configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
5. For WLAN SAR testing was performed on single antenna RF power in SISO mode is larger or equal to the single antenna RF power in MIMO mode, and for RF exposure assessment of MIMO mode simultaneous transmission exclusion analysis was performed with SAR test results of each antenna in SISO mode.
6. Per KDB 248227 D01v02r02, the simultaneous SAR provisions in KDB publication 447498 should be applied to determine simultaneous transmission SAR test exclusion for WiFi MIMO. If the sum of 1g single transmission chain SAR measurements is < 1.6 W/kg and SAR peak to location ratio < 0.04 , no additional SAR measurements for MIMO.
7. During SAR testing the WLAN transmission was verified using a spectrum analyzer.

15.1 Head SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS (4 Tx slots)	Right Cheek	0mm	189	836.4	25.86	27.50	1.459	0.07	0.148	0.216
	GSM850	GPRS (4 Tx slots)	Right Tilted	0mm	189	836.4	25.86	27.50	1.459	0.09	0.056	0.082
01	GSM850	GPRS (4 Tx slots)	Left Cheek	0mm	189	836.4	25.86	27.50	1.459	0.17	0.174	0.254
	GSM850	GPRS (4 Tx slots)	Left Tilted	0mm	189	836.4	25.86	27.50	1.459	-0.03	0.085	0.124
02	GSM1900	GPRS (4 Tx slots)	Right Cheek	0mm	810	1909.8	23.61	24.50	1.227	-0.113	0.282	0.346
	GSM1900	GPRS (4 Tx slots)	Right Tilted	0mm	810	1909.8	23.61	24.50	1.227	-0.064	0.082	0.101
	GSM1900	GPRS (4 Tx slots)	Left Cheek	0mm	810	1909.8	23.61	24.50	1.227	0.023	0.202	0.248
	GSM1900	GPRS (4 Tx slots)	Left Tilted	0mm	810	1909.8	23.61	24.50	1.227	-0.115	0.093	0.114

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
03	WCDMA II	RMC 12.2Kbps	Right Cheek	0mm	9538	1907.6	23.23	24.00	1.194	0.116	0.450	0.537
	WCDMA II	RMC 12.2Kbps	Right Tilted	0mm	9538	1907.6	23.23	24.00	1.194	-0.005	0.106	0.127
	WCDMA II	RMC 12.2Kbps	Left Cheek	0mm	9538	1907.6	23.23	24.00	1.194	-0.072	0.227	0.271
	WCDMA II	RMC 12.2Kbps	Left Tilted	0mm	9538	1907.6	23.23	24.00	1.194	-0.059	0.142	0.170
04	WCDMA V	RMC 12.2Kbps	Right Cheek	0mm	4132	826.4	23.13	24.00	1.222	-0.01	0.248	0.303
	WCDMA V	RMC 12.2Kbps	Right Tilted	0mm	4132	826.4	23.13	24.00	1.222	0.04	0.076	0.093
	WCDMA V	RMC 12.2Kbps	Left Cheek	0mm	4132	826.4	23.13	24.00	1.222	0.09	0.223	0.272
	WCDMA V	RMC 12.2Kbps	Left Tilted	0mm	4132	826.4	23.13	24.00	1.222	0.19	0.170	0.208

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
05	CDMA BC0	1xRTT RC3 SO55	Right Cheek	0mm	777	848.31	24.10	25.00	1.230	-0.07	0.242	0.298
	CDMA BC0	1xRTT RC3 SO55	Right Tilted	0mm	777	848.31	24.10	25.00	1.230	0.05	0.091	0.112
	CDMA BC0	1xRTT RC3 SO55	Left Cheek	0mm	777	848.31	24.10	25.00	1.230	0.01	0.240	0.295
	CDMA BC0	1xRTT RC3 SO55	Left Tilted	0mm	777	848.31	24.10	25.00	1.230	0.01	0.107	0.132
06	CDMA BC1	1xRTT RC3 SO55	Right Cheek	0mm	1175	1908.75	24.43	25.00	1.140	0.092	0.447	0.510
	CDMA BC1	1xRTT RC3 SO55	Right Tilted	0mm	1175	1908.75	24.43	25.00	1.140	0.011	0.151	0.172
	CDMA BC1	1xRTT RC3 SO55	Left Cheek	0mm	1175	1908.75	24.43	25.00	1.140	0.048	0.253	0.288
	CDMA BC1	1xRTT RC3 SO55	Left Tilted	0mm	1175	1908.75	24.43	25.00	1.140	-0.046	0.129	0.147



<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
07	LTE Band 2	20M	QPSK	1	99	Right Cheek	0mm	18900	1880	22.89	24.00	1.291	0.091	0.419	0.541
	LTE Band 2	20M	QPSK	50	24	Right Cheek	0mm	18900	1880	22.28	23.00	1.180	-0.055	0.295	0.348
	LTE Band 2	20M	QPSK	1	99	Right Tilted	0mm	18900	1880	22.89	24.00	1.291	-0.034	0.092	0.119
	LTE Band 2	20M	QPSK	50	24	Right Tilted	0mm	18900	1880	22.28	23.00	1.180	-0.102	0.069	0.081
	LTE Band 2	20M	QPSK	1	99	Left Cheek	0mm	18900	1880	22.89	24.00	1.291	0.005	0.226	0.292
	LTE Band 2	20M	QPSK	50	24	Left Cheek	0mm	18900	1880	22.28	23.00	1.180	-0.044	0.169	0.199
	LTE Band 2	20M	QPSK	1	99	Left Tilted	0mm	18900	1880	22.89	24.00	1.291	0.058	0.123	0.159
	LTE Band 2	20M	QPSK	50	24	Left Tilted	0mm	18900	1880	22.28	23.00	1.180	-0.019	0.086	0.102
	LTE Band 4	20M	QPSK	1	49	Right Cheek	0mm	20175	1732.5	23.04	24.00	1.247	0.036	0.238	0.297
	LTE Band 4	20M	QPSK	50	0	Right Cheek	0mm	20175	1732.5	21.77	23.00	1.327	0.072	0.148	0.196
	LTE Band 4	20M	QPSK	1	49	Right Tilted	0mm	20175	1732.5	23.04	24.00	1.247	-0.042	0.080	0.100
	LTE Band 4	20M	QPSK	50	0	Right Tilted	0mm	20175	1732.5	21.77	23.00	1.327	0.106	0.052	0.069
	LTE Band 4	20M	QPSK	1	49	Left Cheek	0mm	20175	1732.5	23.04	24.00	1.247	0.117	0.239	0.298
	LTE Band 4	20M	QPSK	50	0	Left Cheek	0mm	20175	1732.5	21.77	23.00	1.327	0.07	0.153	0.203
	LTE Band 4	20M	QPSK	1	49	Left Tilted	0mm	20175	1732.5	23.04	24.00	1.247	-0.051	0.053	0.066
	LTE Band 4	20M	QPSK	50	0	Left Tilted	0mm	20175	1732.5	21.77	23.00	1.327	-0.009	0.034	0.045
	LTE Band 5	10M	QPSK	1	25	Right Cheek	0mm	20525	836.5	23.18	24.00	1.208	0.05	0.271	0.327
	LTE Band 5	10M	QPSK	25	0	Right Cheek	0mm	20525	836.5	22.28	23.00	1.180	0.14	0.138	0.163
	LTE Band 5	10M	QPSK	1	25	Right Tilted	0mm	20525	836.5	23.18	24.00	1.208	-0.02	0.172	0.208
	LTE Band 5	10M	QPSK	25	0	Right Tilted	0mm	20525	836.5	22.28	23.00	1.180	0.15	0.088	0.104
	LTE Band 5	10M	QPSK	1	25	Left Cheek	0mm	20525	836.5	23.18	24.00	1.208	0.05	0.328	0.396
	LTE Band 5	10M	QPSK	25	0	Left Cheek	0mm	20525	836.5	22.28	23.00	1.180	0.05	0.164	0.194
	LTE Band 5	10M	QPSK	1	25	Left Tilted	0mm	20525	836.5	23.18	24.00	1.208	0.08	0.189	0.228
	LTE Band 5	10M	QPSK	25	0	Left Tilted	0mm	20525	836.5	22.28	23.00	1.180	0.07	0.098	0.116
10	LTE Band 7	20M	QPSK	1	99	Right Cheek	0mm	21100	2535	22.54	24.00	1.400	-0.05	0.274	0.383
	LTE Band 7	20M	QPSK	50	50	Right Cheek	0mm	21100	2535	21.59	23.00	1.384	0.01	0.184	0.255
	LTE Band 7	20M	QPSK	1	99	Right Tilted	0mm	21100	2535	22.54	24.00	1.400	-0.02	0.092	0.129
	LTE Band 7	20M	QPSK	50	50	Right Tilted	0mm	21100	2535	21.59	23.00	1.384	0.01	0.063	0.087
	LTE Band 7	20M	QPSK	1	99	Left Cheek	0mm	21100	2535	22.54	24.00	1.400	-0.1	0.223	0.312
	LTE Band 7	20M	QPSK	50	50	Left Cheek	0mm	21100	2535	21.59	23.00	1.384	0.05	0.145	0.201
	LTE Band 7	20M	QPSK	1	99	Left Tilted	0mm	21100	2535	22.54	24.00	1.400	0.16	0.080	0.112
	LTE Band 7	20M	QPSK	50	50	Left Tilted	0mm	21100	2535	21.59	23.00	1.384	0.02	0.052	0.072
11	LTE Band 13	10M	QPSK	1	49	Right Cheek	0mm	23230	782	22.46	24.00	1.426	-0.08	0.384	0.547
	LTE Band 13	10M	QPSK	25	12	Right Cheek	0mm	23230	782	21.60	23.00	1.380	-0.01	0.199	0.275
	LTE Band 13	10M	QPSK	1	49	Right Tilted	0mm	23230	782	22.46	24.00	1.426	-0.14	0.101	0.144
	LTE Band 13	10M	QPSK	25	12	Right Tilted	0mm	23230	782	21.60	23.00	1.380	0.14	0.053	0.073
	LTE Band 13	10M	QPSK	1	49	Left Cheek	0mm	23230	782	22.46	24.00	1.426	0.08	0.225	0.321
	LTE Band 13	10M	QPSK	25	12	Left Cheek	0mm	23230	782	21.60	23.00	1.380	-0.09	0.114	0.157
	LTE Band 13	10M	QPSK	1	49	Left Tilted	0mm	23230	782	22.46	24.00	1.426	0.02	0.078	0.111
	LTE Band 13	10M	QPSK	25	12	Left Tilted	0mm	23230	782	21.60	23.00	1.380	-0.03	0.032	0.044

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
12	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 1	6	2437	16.46	16.50	1.009	99.04	1.010	0.01	0.762	0.776
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 1	6	2437	16.46	16.50	1.009	99.04	1.010	-0.09	0.626	0.638
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 1	6	2437	16.46	16.50	1.009	99.04	1.010	-0.05	0.440	0.448
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 1	6	2437	16.46	16.50	1.009	99.04	1.010	-0.06	0.392	0.399
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 2	6	2437	12.96	13.00	1.009	99.04	1.010	-0.13	0.004	0.004
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 2	6	2437	12.96	13.00	1.009	99.04	1.010	0.12	0.001	0.001
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 2	6	2437	12.96	13.00	1.009	99.04	1.010	-0.01	0.010	0.010
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 2	6	2437	12.96	13.00	1.009	99.04	1.010	-0.17	0.001	0.001
13	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 1	58	5290	11.41	12.00	1.146	85.71	1.167	0.11	0.413	0.552
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 1	58	5290	11.41	12.00	1.146	85.71	1.167	-0.03	0.286	0.382
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 1	58	5290	11.41	12.00	1.146	85.71	1.167	0.11	0.281	0.376
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 1	58	5290	11.41	12.00	1.146	85.71	1.167	0.06	0.196	0.262
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 2	58	5290	11.14	12.00	1.219	85.71	1.167	0.01	0.013	0.018
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 2	58	5290	11.14	12.00	1.219	85.71	1.167	0	0.006	0.009
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 2	58	5290	11.14	12.00	1.219	85.71	1.167	0.18	0.054	0.077
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 2	58	5290	11.14	12.00	1.219	85.71	1.167	-0.16	0.022	0.031
14	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 1	122	5610	10.80	12.00	1.318	85.71	1.167	0.05	0.372	0.572
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 1	122	5610	10.80	12.00	1.318	85.71	1.167	0.12	0.243	0.374
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 1	122	5610	10.80	12.00	1.318	85.71	1.167	-0.12	0.215	0.331
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 1	122	5610	10.80	12.00	1.318	85.71	1.167	0.02	0.122	0.188
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 2	122	5610	10.76	12.00	1.331	85.71	1.167	-0.19	0.026	0.040
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 2	122	5610	10.76	12.00	1.331	85.71	1.167	0.12	0.024	0.037
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 2	122	5610	10.76	12.00	1.331	85.71	1.167	0.11	0.061	0.095
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 2	122	5610	10.76	12.00	1.331	85.71	1.167	0.13	0.050	0.078
15	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 1	155	5775	11.12	12.00	1.225	85.71	1.167	0.17	0.128	0.183
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 1	155	5775	11.12	12.00	1.225	85.71	1.167	-0.11	0.078	0.111
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 1	155	5775	11.12	12.00	1.225	85.71	1.167	0.07	0.075	0.107
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 1	155	5775	11.12	12.00	1.225	85.71	1.167	0.13	0.065	0.093
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 2	155	5775	10.61	12.00	1.377	85.71	1.167	0.03	0.074	0.119
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 2	155	5775	10.61	12.00	1.377	85.71	1.167	0.02	0.076	0.122
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 2	155	5775	10.61	12.00	1.377	85.71	1.167	-0.12	0.107	0.172
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 2	155	5775	10.61	12.00	1.377	85.71	1.167	0.01	0.091	0.146

15.2 Hotspot SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS (4 Tx slots)	Front	10mm	189	836.4	23.43	25.00	1.435	-0.093	0.432	0.620
16	GSM850	GPRS (4 Tx slots)	Back	10mm	189	836.4	23.43	25.00	1.435	-0.16	0.524	0.752
	GSM850	GPRS (4 Tx slots)	Left Side	10mm	189	836.4	23.43	25.00	1.435	0.005	0.204	0.293
	GSM850	GPRS (4 Tx slots)	Right Side	10mm	189	836.4	23.43	25.00	1.435	0.024	0.094	0.135
	GSM850	GPRS (4 Tx slots)	Bottom Side	10mm	189	836.4	23.43	25.00	1.435	-0.016	0.293	0.421
	GSM1900	GPRS (4 Tx slots)	Front	10mm	810	1909.8	23.61	24.50	1.227	0.016	0.543	0.666
	GSM1900	GPRS (4 Tx slots)	Back	10mm	810	1909.8	23.61	24.50	1.227	0.047	0.647	0.794
	GSM1900	GPRS (4 Tx slots)	Left Side	10mm	810	1909.8	23.61	24.50	1.227	0.085	0.189	0.232
	GSM1900	GPRS (4 Tx slots)	Right Side	10mm	810	1909.8	23.61	24.50	1.227	-0.183	0.281	0.345
17	GSM1900	GPRS (4 Tx slots)	Bottom Side	10mm	810	1909.8	23.61	24.50	1.227	0.053	0.699	0.858
	GSM1900	GPRS (4 Tx slots)	Bottom Side	10mm	512	1850.2	23.44	24.50	1.276	0.008	0.529	0.675
	GSM1900	GPRS (4 Tx slots)	Bottom Side	10mm	661	1880	23.40	24.50	1.288	0.073	0.618	0.796

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II	RMC 12.2Kbps	Front	10mm	9538	1907.6	22.28	23.00	1.180	0.066	0.772	0.911
	WCDMA II	RMC 12.2Kbps	Front	10mm	9262	1852.4	22.12	23.00	1.225	0.043	0.734	0.899
	WCDMA II	RMC 12.2Kbps	Front	10mm	9400	1880	22.04	23.00	1.247	0.122	0.729	0.909
	WCDMA II	RMC 12.2Kbps	Back	10mm	9538	1907.6	22.28	23.00	1.180	0.068	0.828	0.977
	WCDMA II	RMC 12.2Kbps	Back	10mm	9662	1852.4	22.12	23.00	1.225	0.068	0.762	0.933
	WCDMA II	RMC 12.2Kbps	Back	10mm	9400	1880	22.04	23.00	1.247	0.037	0.771	0.962
	WCDMA II	RMC 12.2Kbps	Left Side	10mm	9538	1907.6	22.28	23.00	1.180	-0.032	0.238	0.281
	WCDMA II	RMC 12.2Kbps	Right Side	10mm	9538	1907.6	22.28	23.00	1.180	-0.022	0.353	0.417
	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	9538	1907.6	22.28	23.00	1.180	-0.007	0.980	1.157
18	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	9262	1852.4	22.12	23.00	1.225	-0.001	0.953	1.167
	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	9400	1880	22.04	23.00	1.247	-0.07	0.931	1.161
	WCDMA V	RMC 12.2Kbps	Front	10mm	4233	846.6	19.67	20.50	1.211	0.004	0.573	0.694
	WCDMA V	RMC 12.2Kbps	Back	10mm	4132	826.4	19.59	20.50	1.233	0.054	0.740	0.912
19	WCDMA V	RMC 12.2Kbps	Back	10mm	4182	836.4	19.65	20.50	1.216	0	0.766	0.932
	WCDMA V	RMC 12.2Kbps	Back	10mm	4233	846.6	19.67	20.50	1.211	0.035	0.720	0.872
	WCDMA V	RMC 12.2Kbps	Left Side	10mm	4233	846.6	19.67	20.50	1.211	-0.034	0.265	0.321
	WCDMA V	RMC 12.2Kbps	Right Side	10mm	4233	846.6	19.67	20.50	1.211	0.014	0.150	0.182
	WCDMA V	RMC 12.2Kbps	Bottom Side	10mm	4233	846.6	19.67	20.50	1.211	-0.039	0.261	0.316

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	CDMA BC0	RTAP 153.6Kbps	Front	10mm	777	848.31	21.56	22.50	1.242	0.022	0.759	0.942
	CDMA BC0	RTAP 153.6Kbps	Front	10mm	384	836.52	21.55	22.50	1.245	0.023	0.723	0.900
	CDMA BC0	RTAP 153.6Kbps	Front	10mm	1013	824.7	21.36	22.50	1.300	-0.002	0.658	0.856
	CDMA BC0	RTAP 153.6Kbps	Back	10mm	777	848.31	21.56	22.50	1.242	0.044	0.878	1.090
20	CDMA BC0	RTAP 153.6Kbps	Back	10mm	384	836.52	21.55	22.50	1.245	0.034	0.907	1.129
	CDMA BC0	RTAP 153.6Kbps	Back	10mm	1013	824.7	21.36	22.50	1.300	0.019	0.862	1.121
	CDMA BC0	RTAP 153.6Kbps	Left Side	10mm	777	848.31	21.56	22.50	1.242	0.039	0.335	0.416
	CDMA BC0	RTAP 153.6Kbps	Right Side	10mm	777	848.31	21.56	22.50	1.242	0.025	0.177	0.220
	CDMA BC0	RTAP 153.6Kbps	Bottom Side	10mm	777	848.31	21.56	22.50	1.242	0.009	0.302	0.375
	CDMA BC1	RTAP 153.6Kbps	Front	10mm	1175	1908.75	23.36	24.00	1.159	-0.02	0.721	0.835
	CDMA BC1	RTAP 153.6Kbps	Front	10mm	25	1851.25	23.18	24.00	1.208	-0.056	0.748	0.903
	CDMA BC1	RTAP 153.6Kbps	Front	10mm	600	1880	23.23	24.00	1.194	-0.053	0.700	0.836
	CDMA BC1	RTAP 153.6Kbps	Back	10mm	1175	1908.75	23.36	24.00	1.159	-0.048	0.844	0.978
	CDMA BC1	RTAP 153.6Kbps	Back	10mm	25	1851.25	23.18	24.00	1.208	-0.039	0.848	1.024
	CDMA BC1	RTAP 153.6Kbps	Back	10mm	600	1880	23.23	24.00	1.194	-0.002	0.805	0.961
	CDMA BC1	RTAP 153.6Kbps	Left Side	10mm	1175	1908.75	23.36	24.00	1.159	0.025	0.259	0.300
	CDMA BC1	RTAP 153.6Kbps	Right Side	10mm	1175	1908.75	23.36	24.00	1.159	0.05	0.404	0.468
	CDMA BC1	RTAP 153.6Kbps	Bottom Side	10mm	1175	1908.75	23.36	24.00	1.159	-0.008	0.796	0.922
21	CDMA BC1	RTAP 153.6Kbps	Bottom Side	10mm	25	1851.25	23.18	24.00	1.208	-0.032	0.888	1.073
	CDMA BC1	RTAP 153.6Kbps	Bottom Side	10mm	600	1880	23.23	24.00	1.194	0.003	0.871	1.040

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 2	20M	QPSK	1	99	Front	10mm	19100	1900	22.05	23.00	1.245	-0.058	0.686	0.854
	LTE Band 2	20M	QPSK	1	99	Front	10mm	18700	1860	21.91	23.00	1.285	-0.145	0.646	0.830
	LTE Band 2	20M	QPSK	1	99	Front	10mm	18900	1880	21.90	23.00	1.288	0.15	0.655	0.844
	LTE Band 2	20M	QPSK	50	50	Front	10mm	19100	1900	21.99	23.00	1.262	0.06	0.526	0.664
	LTE Band 2	20M	QPSK	100	0	Front	10mm	18700	1860	21.98	23.00	1.265	0.144	0.547	0.692
22	LTE Band 2	20M	QPSK	1	99	Back	10mm	19100	1900	22.05	23.00	1.245	0.009	0.880	1.095
	LTE Band 2	20M	QPSK	1	99	Back	10mm	18700	1860	21.91	23.00	1.285	-0.072	0.848	1.090
	LTE Band 2	20M	QPSK	1	99	Back	10mm	18900	1880	21.90	23.00	1.288	0.071	0.849	1.094
	LTE Band 2	20M	QPSK	50	50	Back	10mm	19100	1900	21.99	23.00	1.262	-0.125	0.696	0.878
	LTE Band 2	20M	QPSK	50	50	Back	10mm	18700	1860	21.95	23.00	1.274	0.046	0.714	0.909
	LTE Band 2	20M	QPSK	50	50	Back	10mm	18900	1880	21.91	23.00	1.285	-0.003	0.691	0.888
	LTE Band 2	20M	QPSK	100	0	Back	10mm	18700	1860	21.98	23.00	1.265	0.006	0.723	0.914
	LTE Band 2	20M	QPSK	1	99	Left Side	10mm	19100	1900	22.05	23.00	1.245	0.045	0.235	0.292
	LTE Band 2	20M	QPSK	50	50	Left Side	10mm	19100	1900	21.99	23.00	1.262	-0.006	0.182	0.230
	LTE Band 2	20M	QPSK	1	99	Right Side	10mm	19100	1900	22.05	23.00	1.245	-0.118	0.358	0.446
	LTE Band 2	20M	QPSK	50	50	Right Side	10mm	19100	1900	21.99	23.00	1.262	-0.154	0.279	0.352
	LTE Band 2	20M	QPSK	1	99	Bottom Side	10mm	19100	1900	22.05	23.00	1.245	0.065	0.778	0.968
	LTE Band 2	20M	QPSK	1	99	Bottom Side	10mm	18700	1860	21.91	23.00	1.285	0.169	0.810	1.041
	LTE Band 2	20M	QPSK	1	99	Bottom Side	10mm	18900	1880	21.90	23.00	1.288	0.12	0.810	1.043
	LTE Band 2	20M	QPSK	50	50	Bottom Side	10mm	19100	1900	21.99	23.00	1.262	0.017	0.627	0.791
	LTE Band 2	20M	QPSK	100	0	Bottom Side	10mm	19100	1900	21.98	23.00	1.265	0.005	0.642	0.812



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 4	20M	QPSK	1	49	Front	10mm	20175	1732.5	21.66	23.00	1.361	-0.021	0.626	0.852
	LTE Band 4	20M	QPSK	50	24	Front	10mm	20175	1732.5	21.70	23.00	1.349	0.025	0.506	0.683
	LTE Band 4	20M	QPSK	100	0	Front	10mm	20175	1732.5	21.65	23.00	1.365	0.024	0.500	0.682
	LTE Band 4	20M	QPSK	1	49	Back	10mm	20175	1732.5	21.66	23.00	1.361	-0.012	0.737	1.003
	LTE Band 4	20M	QPSK	50	24	Back	10mm	20175	1732.5	21.70	23.00	1.349	0.002	0.656	0.885
	LTE Band 4	20M	QPSK	100	0	Back	10mm	20175	1732.5	21.65	23.00	1.365	0.016	0.652	0.890
	LTE Band 4	20M	QPSK	1	49	Left Side	10mm	20175	1732.5	21.66	23.00	1.361	0.007	0.158	0.215
	LTE Band 4	20M	QPSK	50	24	Left Side	10mm	20175	1732.5	21.70	23.00	1.349	0.012	0.129	0.174
	LTE Band 4	20M	QPSK	1	49	Right Side	10mm	20175	1732.5	21.66	23.00	1.361	-0.161	0.294	0.400
	LTE Band 4	20M	QPSK	50	24	Right Side	10mm	20175	1732.5	21.70	23.00	1.349	-0.188	0.239	0.322
23	LTE Band 4	20M	QPSK	1	49	Bottom Side	10mm	20175	1732.5	21.66	23.00	1.361	0.132	0.778	1.059
	LTE Band 4	20M	QPSK	50	24	Bottom Side	10mm	20175	1732.5	21.70	23.00	1.349	-0.007	0.631	0.851
	LTE Band 4	20M	QPSK	100	0	Bottom Side	10mm	20175	1732.5	21.65	23.00	1.365	-0.026	0.628	0.857
	LTE Band 5	10M	QPSK	1	25	Front	10mm	20525	836.5	20.00	21.00	1.259	-0.09	0.742	0.934
	LTE Band 5	10M	QPSK	25	12	Front	10mm	20525	836.5	19.96	21.00	1.271	-0.013	0.761	0.967
	LTE Band 5	10M	QPSK	50	0	Front	10mm	20525	836.5	19.87	21.00	1.297	0.001	0.704	0.913
	LTE Band 5	10M	QPSK	1	25	Back	10mm	20525	836.5	20.00	21.00	1.259	0.017	0.898	1.131
24	LTE Band 5	10M	QPSK	25	12	Back	10mm	20525	836.5	19.96	21.00	1.271	0.002	0.892	1.133
	LTE Band 5	10M	QPSK	50	0	Back	10mm	20525	836.5	19.87	21.00	1.297	0.018	0.872	1.131
	LTE Band 5	10M	QPSK	1	25	Left Side	10mm	20525	836.5	20.00	21.00	1.259	-0.16	0.294	0.370
	LTE Band 5	10M	QPSK	25	12	Left Side	10mm	20525	836.5	19.96	21.00	1.271	-0.044	0.299	0.380
	LTE Band 5	10M	QPSK	1	25	Right Side	10mm	20525	836.5	20.00	21.00	1.259	-0.184	0.153	0.193
	LTE Band 5	10M	QPSK	25	12	Right Side	10mm	20525	836.5	19.96	21.00	1.271	-0.093	0.155	0.197
	LTE Band 5	10M	QPSK	1	25	Bottom Side	10mm	20525	836.5	20.00	21.00	1.259	0.11	0.381	0.480
	LTE Band 5	10M	QPSK	25	12	Bottom Side	10mm	20525	836.5	19.96	21.00	1.271	-0.089	0.382	0.485
	LTE Band 7	20M	QPSK	1	99	Front	10mm	21100	2535	22.62	23.50	1.225	-0.01	0.708	0.867
	LTE Band 7	20M	QPSK	1	99	Front	10mm	20850	2510	22.52	23.50	1.253	-0.01	0.682	0.855
	LTE Band 7	20M	QPSK	1	99	Front	10mm	21350	2560	22.61	23.50	1.227	0.01	0.737	0.905
	LTE Band 7	20M	QPSK	50	24	Front	10mm	21100	2535	21.66	22.50	1.213	-0.13	0.415	0.504
	LTE Band 7	20M	QPSK	100	0	Front	10mm	21350	2560	21.66	22.50	1.213	-0.07	0.442	0.536
	LTE Band 7	20M	QPSK	1	99	Back	10mm	21100	2535	22.62	23.50	1.225	-0.03	0.811	0.993
	LTE Band 7	20M	QPSK	1	99	Back	10mm	20850	2510	22.52	23.50	1.253	-0.04	0.842	1.055
25	LTE Band 7	20M	QPSK	1	99	Back	10mm	21350	2560	22.61	23.50	1.227	-0.01	0.865	1.062
	LTE Band 7	20M	QPSK	50	24	Back	10mm	21100	2535	21.66	22.50	1.213	0	0.544	0.660
	LTE Band 7	20M	QPSK	100	0	Back	10mm	21350	2560	21.66	22.50	1.213	-0.04	0.568	0.689
	LTE Band 7	20M	QPSK	1	99	Left Side	10mm	21100	2535	22.62	23.50	1.225	-0.14	0.220	0.269
	LTE Band 7	20M	QPSK	50	24	Left Side	10mm	21100	2535	21.66	22.50	1.213	0.18	0.129	0.157
	LTE Band 7	20M	QPSK	1	99	Right Side	10mm	21100	2535	22.62	23.50	1.225	-0.04	0.089	0.109
	LTE Band 7	20M	QPSK	50	24	Right Side	10mm	21100	2535	21.66	22.50	1.213	0.09	0.063	0.076
	LTE Band 7	20M	QPSK	1	99	Bottom Side	10mm	21100	2535	22.62	23.50	1.225	0.165	0.691	0.846
	LTE Band 7	20M	QPSK	1	99	Bottom Side	10mm	20850	2510	22.52	23.50	1.253	0.052	0.698	0.875
	LTE Band 7	20M	QPSK	1	99	Bottom Side	10mm	21350	2560	22.61	23.50	1.227	0.031	0.755	0.927
	LTE Band 7	20M	QPSK	50	24	Bottom Side	10mm	21100	2535	21.66	22.50	1.213	0.17	0.478	0.580
	LTE Band 7	20M	QPSK	100	0	Bottom Side	10mm	21350	2560	21.66	22.50	1.213	-0.03	0.513	0.622

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 13	10M	QPSK	1	49	Front	10mm	23230	782	19.70	21.00	1.349	0.068	0.592	0.799
	LTE Band 13	10M	QPSK	25	25	Front	10mm	23230	782	19.90	21.00	1.288	0.008	0.687	0.885
	LTE Band 13	10M	QPSK	1	49	Back	10mm	23230	782	19.70	21.00	1.349	0.054	0.772	1.041
	LTE Band 13	10M	QPSK	25	25	Back	10mm	23230	782	19.90	21.00	1.288	0.021	0.798	1.028
26	LTE Band 13	10M	QPSK	50	0	Back	10mm	23230	782	19.00	21.00	1.585	-0.017	0.691	1.095
	LTE Band 13	10M	QPSK	1	49	Left Side	10mm	23230	782	19.70	21.00	1.349	0.092	0.067	0.090
	LTE Band 13	10M	QPSK	25	25	Left Side	10mm	23230	782	19.90	21.00	1.288	0.075	0.071	0.091
	LTE Band 13	10M	QPSK	1	49	Right Side	10mm	23230	782	19.70	21.00	1.349	-0.006	0.267	0.360
	LTE Band 13	10M	QPSK	25	25	Right Side	10mm	23230	782	19.90	21.00	1.288	-0.109	0.273	0.352
	LTE Band 13	10M	QPSK	1	49	Bottom Side	10mm	23230	782	19.70	21.00	1.349	0.001	0.246	0.332
	LTE Band 13	10M	QPSK	25	25	Bottom Side	10mm	23230	782	19.90	21.00	1.288	0.053	0.251	0.323

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
27	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 1	11	2462	19.37	20.00	1.156	99.04	1.010	-0.01	0.271	0.316
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 1	11	2462	19.37	20.00	1.156	99.04	1.010	-0.12	0.209	0.244
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 1	11	2462	19.37	20.00	1.156	99.04	1.010	-0.06	0.051	0.060
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 1	11	2462	19.37	20.00	1.156	99.04	1.010	0.13	0.007	0.008
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 1	11	2462	19.37	20.00	1.156	99.04	1.010	-0.03	0.137	0.160
	WLAN2.4GHz	802.11b 1Mbps	Bottom Side	10mm	Ant 1	11	2462	19.37	20.00	1.156	99.04	1.010	-0.14	0.003	0.004
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 2	11	2462	15.50	16.00	1.122	99.04	1.010	-0.1	0.032	0.036
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 2	11	2462	15.50	16.00	1.122	99.04	1.010	-0.1	0.040	0.045
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 2	11	2462	15.50	16.00	1.122	99.04	1.010	0.16	0.011	0.012
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 2	11	2462	15.50	16.00	1.122	99.04	1.010	0.16	0.002	0.002
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 2	11	2462	15.50	16.00	1.122	99.04	1.010	0.09	0.002	0.002
	WLAN2.4GHz	802.11b 1Mbps	Bottom Side	10mm	Ant 2	11	2462	15.50	16.00	1.122	99.04	1.010	0.11	0.032	0.036
28	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 1	48	5240	16.65	18.00	1.363	94.95	1.053	-0.12	0.089	0.128
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 1	48	5240	16.65	18.00	1.363	94.95	1.053	0.15	0.061	0.088
	WLAN5GHz	802.11a 6Mbps	Left Side	10mm	Ant 1	48	5240	16.65	18.00	1.363	94.95	1.053	-0.18	0.015	0.022
	WLAN5GHz	802.11a 6Mbps	Right Side	10mm	Ant 1	48	5240	16.65	18.00	1.363	94.95	1.053	0.12	0.016	0.023
	WLAN5GHz	802.11a 6Mbps	Top Side	10mm	Ant 1	48	5240	16.65	18.00	1.363	94.95	1.053	-0.1	0.021	0.030
	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 2	48	5240	16.46	17.50	1.272	94.50	1.058	0	0.029	0.039
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 2	48	5240	16.46	17.50	1.272	94.50	1.058	0	0.031	0.042
	WLAN5GHz	802.11a 6Mbps	Left Side	10mm	Ant 2	48	5240	16.46	17.50	1.272	94.50	1.058	0	0.001	0.002
	WLAN5GHz	802.11a 6Mbps	Right Side	10mm	Ant 2	48	5240	16.46	17.50	1.272	94.50	1.058	-0.13	0.009	0.012
	WLAN5GHz	802.11a 6Mbps	Top Side	10mm	Ant 2	48	5240	16.46	17.50	1.272	94.50	1.058	-0.17	0.010	0.013
29	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 1	149	5745	16.62	18.00	1.373	94.95	1.053	0.07	0.038	0.055
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 1	149	5745	16.62	18.00	1.373	94.95	1.053	0.08	0.030	0.043
	WLAN5GHz	802.11a 6Mbps	Left Side	10mm	Ant 1	149	5745	16.62	18.00	1.373	94.95	1.053	0.16	0.007	0.010
	WLAN5GHz	802.11a 6Mbps	Right Side	10mm	Ant 1	149	5745	16.62	18.00	1.373	94.95	1.053	0.03	0.004	0.006
	WLAN5GHz	802.11a 6Mbps	Top Side	10mm	Ant 1	149	5745	16.62	18.00	1.373	94.95	1.053	-0.19	0.011	0.016
	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 2	149	5745	16.32	17.00	1.171	94.50	1.058	0.03	0.020	0.025
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 2	149	5745	16.32	17.00	1.171	94.50	1.058	0.14	0.024	0.030
	WLAN5GHz	802.11a 6Mbps	Left Side	10mm	Ant 2	149	5745	16.32	17.00	1.171	94.50	1.058	0	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Right Side	10mm	Ant 2	149	5745	16.32	17.00	1.171	94.50	1.058	-0.12	0.003	0.004
	WLAN5GHz	802.11a 6Mbps	Top Side	10mm	Ant 2	149	5745	16.32	17.00	1.171	94.50	1.058	-0.16	0.012	0.015

15.3 Product Specific SAR

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
30	WCDMA II	RMC 12.2Kbps	Bottom Side	0mm	9262	1852.4	23.04	24.00	1.247	0.129	2.700	3.368
	WCDMA II	RMC 12.2Kbps	Bottom Side	0mm	9400	1880	22.94	24.00	1.276	0.102	2.480	3.166
	WCDMA II	RMC 12.2Kbps	Bottom Side	0mm	9538	1907.6	23.23	24.00	1.194	0.131	2.390	2.854

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	CDMA BC1	RTAP 153.6Kbps	Bottom Side	0mm	25	1851.25	24.47	25.00	1.130	0.042	2.770	3.130
31	CDMA BC1	RTAP 153.6Kbps	Bottom Side	0mm	600	1880	24.29	25.00	1.178	0.076	2.660	3.132

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	LTE Band 2	20M	QPSK	1	99	Bottom Side	0mm	18900	1880	22.89	24.00	1.291	0.1	2.350	3.034
32	LTE Band 2	20M	QPSK	1	99	Bottom Side	0mm	18700	1860	22.88	24.00	1.294	0.165	2.450	3.171
	LTE Band 2	20M	QPSK	1	99	Bottom Side	0mm	19100	1860	22.88	24.00	1.294	0.173	2.140	2.770
33	LTE Band 4	20M	QPSK	1	49	Bottom Side	0mm	20175	1732.5	23.04	24.00	1.247	0.124	2.980	3.717

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
34	WLAN5GHz	802.11a 6Mbps	Front	0mm	Ant 1	52	5260	16.79	18.00	1.320	94.95	1.053	0.11	0.535	0.744
	WLAN5GHz	802.11a 6Mbps	Back	0mm	Ant 1	52	5260	16.79	18.00	1.320	94.95	1.053	0.1	0.457	0.635
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	Ant 1	52	5260	16.79	18.00	1.320	94.95	1.053	-0.12	0.008	0.011
	WLAN5GHz	802.11a 6Mbps	Right Side	0mm	Ant 1	52	5260	16.79	18.00	1.320	94.95	1.053	0.1	0.010	0.013
	WLAN5GHz	802.11a 6Mbps	Top Side	0mm	Ant 1	52	5260	16.79	18.00	1.320	94.95	1.053	0.05	0.182	0.253
	WLAN5GHz	802.11a 6Mbps	Front	0mm	Ant 2	52	5260	16.47	17.50	1.269	94.50	1.058	0	0.320	0.430
	WLAN5GHz	802.11a 6Mbps	Back	0mm	Ant 2	52	5260	16.47	17.50	1.269	94.50	1.058	0	0.127	0.170
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	Ant 2	52	5260	16.47	17.50	1.269	94.50	1.058	0	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Right Side	0mm	Ant 2	52	5260	16.47	17.50	1.269	94.50	1.058	0	0.007	0.009
	WLAN5GHz	802.11a 6Mbps	Top Side	0mm	Ant 2	52	5260	16.47	17.50	1.269	94.50	1.058	0.15	0.031	0.042
35	WLAN5GHz	802.11a 6Mbps	Front	0mm	Ant 1	100	5500	16.77	18.00	1.326	94.95	1.053	-0.07	0.777	1.085
	WLAN5GHz	802.11a 6Mbps	Back	0mm	Ant 1	100	5500	16.77	18.00	1.326	94.95	1.053	0.14	0.505	0.705
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	Ant 1	100	5500	16.77	18.00	1.326	94.95	1.053	0.11	0.029	0.040
	WLAN5GHz	802.11a 6Mbps	Right Side	0mm	Ant 1	100	5500	16.77	18.00	1.326	94.95	1.053	0.07	0.018	0.025
	WLAN5GHz	802.11a 6Mbps	Top Side	0mm	Ant 1	100	5500	16.77	18.00	1.326	94.95	1.053	0.04	0.346	0.483
	WLAN5GHz	802.11a 6Mbps	Front	0mm	Ant 2	100	5500	16.64	18.00	1.369	94.50	1.058	-0.02	0.390	0.565
	WLAN5GHz	802.11a 6Mbps	Back	0mm	Ant 2	100	5500	16.64	18.00	1.369	94.50	1.058	0	0.170	0.246
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	Ant 2	100	5500	16.64	18.00	1.369	94.50	1.058	0	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Right Side	0mm	Ant 2	100	5500	16.64	18.00	1.369	94.50	1.058	-0.11	0.006	0.008
	WLAN5GHz	802.11a 6Mbps	Top Side	0mm	Ant 2	100	5500	16.64	18.00	1.369	94.50	1.058	0.12	0.040	0.058

15.4 Body Worn Accessory SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS (4 Tx slots)	Front	10mm	189	836.4	23.43	25.00	1.435	-0.093	0.432	0.620
36	GSM850	GPRS (4 Tx slots)	Back	10mm	189	836.4	23.43	25.00	1.435	-0.16	0.524	0.752
	GSM1900	GPRS (4 Tx slots)	Front	10mm	810	1909.8	23.61	24.50	1.227	0.016	0.543	0.666
37	GSM1900	GPRS (4 Tx slots)	Back	10mm	810	1909.8	23.61	24.50	1.227	0.047	0.647	0.794

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II	RMC 12.2Kbps	Front	10mm	9538	1907.6	22.28	23.00	1.180	0.066	0.772	0.911
	WCDMA II	RMC 12.2Kbps	Front	10mm	9262	1852.4	22.12	23.00	1.225	0.043	0.734	0.899
	WCDMA II	RMC 12.2Kbps	Front	10mm	9400	1880	22.04	23.00	1.247	0.122	0.729	0.909
38	WCDMA II	RMC 12.2Kbps	Back	10mm	9538	1907.6	22.28	23.00	1.180	0.068	0.828	0.977
	WCDMA II	RMC 12.2Kbps	Back	10mm	9662	1852.4	22.12	23.00	1.225	0.068	0.762	0.933
	WCDMA II	RMC 12.2Kbps	Back	10mm	9400	1880	22.04	23.00	1.247	0.037	0.771	0.962
	WCDMA V	RMC 12.2Kbps	Front	10mm	4233	846.6	19.67	20.50	1.211	0.004	0.573	0.694
	WCDMA V	RMC 12.2Kbps	Back	10mm	4132	826.4	19.59	20.50	1.233	0.054	0.740	0.912
39	WCDMA V	RMC 12.2Kbps	Back	10mm	4182	836.4	19.65	20.50	1.216	0	0.766	0.932
	WCDMA V	RMC 12.2Kbps	Back	10mm	4233	846.6	19.67	20.50	1.211	0.035	0.720	0.872

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	CDMA BC0	1xRTT RC3 SO32	Front	10mm	777	848.31	21.42	22.50	1.282	0.025	0.746	0.957
	CDMA BC0	1xRTT RC3 SO32	Front	10mm	384	836.52	21.40	22.50	1.288	0.05	0.733	0.944
	CDMA BC0	1xRTT RC3 SO32	Front	10mm	1013	824.7	21.41	22.50	1.285	0.008	0.703	0.904
	CDMA BC0	1xRTT RC3 SO32	Back	10mm	777	848.31	21.42	22.50	1.282	0.037	0.883	1.132
	CDMA BC0	1xRTT RC3 SO32	Back	10mm	384	836.52	21.40	22.50	1.288	0.03	0.881	1.135
40	CDMA BC0	1xRTT RC3 SO32	Back	10mm	1013	824.7	21.41	22.50	1.285	0.017	0.884	1.136
	CDMA BC1	1xRTT RC3 SO32	Front	10mm	1175	1908.75	23.19	24.00	1.205	-0.08	0.751	0.905
	CDMA BC1	1xRTT RC3 SO32	Front	10mm	25	1851.25	23.17	24.00	1.211	-0.104	0.744	0.901
	CDMA BC1	1xRTT RC3 SO32	Front	10mm	600	1880	22.99	24.00	1.262	-0.052	0.707	0.892
	CDMA BC1	1xRTT RC3 SO32	Back	10mm	1175	1908.75	23.19	24.00	1.205	0.017	0.838	1.010
	CDMA BC1	1xRTT RC3 SO32	Back	10mm	25	1851.25	23.17	24.00	1.211	0.03	0.835	1.011
41	CDMA BC1	1xRTT RC3 SO32	Back	10mm	600	1880	22.99	24.00	1.262	-0.006	0.860	1.085

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 2	20M	QPSK	1	99	Front	10mm	19100	1900	22.05	23.00	1.245	-0.058	0.686	0.854
	LTE Band 2	20M	QPSK	1	99	Front	10mm	18700	1860	21.91	23.00	1.285	-0.145	0.646	0.830
	LTE Band 2	20M	QPSK	1	99	Front	10mm	18900	1880	21.90	23.00	1.288	0.15	0.655	0.844
	LTE Band 2	20M	QPSK	50	50	Front	10mm	19100	1900	21.99	23.00	1.262	0.06	0.526	0.664
	LTE Band 2	20M	QPSK	100	0	Front	10mm	18700	1860	21.98	23.00	1.265	0.144	0.547	0.692
42	LTE Band 2	20M	QPSK	1	99	Back	10mm	19100	1900	22.05	23.00	1.245	0.009	0.880	1.095
	LTE Band 2	20M	QPSK	1	99	Back	10mm	18700	1860	21.91	23.00	1.285	-0.072	0.848	1.090
	LTE Band 2	20M	QPSK	1	99	Back	10mm	18900	1880	21.90	23.00	1.288	0.071	0.849	1.094
	LTE Band 2	20M	QPSK	50	50	Back	10mm	19100	1900	21.99	23.00	1.262	-0.125	0.696	0.878
	LTE Band 2	20M	QPSK	50	50	Back	10mm	18700	1860	21.95	23.00	1.274	0.046	0.714	0.909
	LTE Band 2	20M	QPSK	50	50	Back	10mm	18900	1880	21.91	23.00	1.285	-0.003	0.691	0.888
	LTE Band 2	20M	QPSK	100	0	Back	10mm	18700	1860	21.98	23.00	1.265	0.006	0.723	0.914
	LTE Band 4	20M	QPSK	1	49	Front	10mm	20175	1732.5	21.66	23.00	1.361	-0.021	0.626	0.852
	LTE Band 4	20M	QPSK	50	24	Front	10mm	20175	1732.5	21.70	23.00	1.349	0.025	0.506	0.683
	LTE Band 4	20M	QPSK	100	0	Front	10mm	20175	1732.5	21.65	23.00	1.365	0.024	0.500	0.682
43	LTE Band 4	20M	QPSK	1	49	Back	10mm	20175	1732.5	21.66	23.00	1.361	-0.012	0.737	1.003
	LTE Band 4	20M	QPSK	50	24	Back	10mm	20175	1732.5	21.70	23.00	1.349	0.002	0.656	0.885
	LTE Band 4	20M	QPSK	100	0	Back	10mm	20175	1732.5	21.65	23.00	1.365	0.016	0.652	0.890
	LTE Band 5	10M	QPSK	1	25	Front	10mm	20525	836.5	20.00	21.00	1.259	-0.09	0.742	0.934
	LTE Band 5	10M	QPSK	25	12	Front	10mm	20525	836.5	19.96	21.00	1.271	-0.013	0.761	0.967
	LTE Band 5	10M	QPSK	50	0	Front	10mm	20525	836.5	19.87	21.00	1.297	0.001	0.704	0.913
	LTE Band 5	10M	QPSK	1	25	Back	10mm	20525	836.5	20.00	21.00	1.259	0.017	0.898	1.131
44	LTE Band 5	10M	QPSK	25	12	Back	10mm	20525	836.5	19.96	21.00	1.271	0.002	0.892	1.133
	LTE Band 5	10M	QPSK	50	0	Back	10mm	20525	836.5	19.87	21.00	1.297	0.018	0.872	1.131
	LTE Band 7	20M	QPSK	1	99	Front	10mm	21100	2535	22.62	23.50	1.225	-0.01	0.708	0.867
	LTE Band 7	20M	QPSK	1	99	Front	10mm	20850	2510	22.52	23.50	1.253	-0.01	0.682	0.855
	LTE Band 7	20M	QPSK	1	99	Front	10mm	21350	2560	22.61	23.50	1.227	0.01	0.737	0.905
	LTE Band 7	20M	QPSK	50	24	Front	10mm	21100	2535	21.66	22.50	1.213	-0.13	0.415	0.504
	LTE Band 7	20M	QPSK	100	0	Front	10mm	21350	2560	21.66	22.50	1.213	-0.07	0.442	0.536
	LTE Band 7	20M	QPSK	1	99	Back	10mm	21100	2535	22.62	23.50	1.225	-0.03	0.811	0.993
	LTE Band 7	20M	QPSK	1	99	Back	10mm	20850	2510	22.52	23.50	1.253	-0.04	0.842	1.055
45	LTE Band 7	20M	QPSK	1	99	Back	10mm	21350	2560	22.61	23.50	1.227	-0.01	0.865	1.062
	LTE Band 7	20M	QPSK	50	24	Back	10mm	21100	2535	21.66	22.50	1.213	0	0.544	0.660
	LTE Band 7	20M	QPSK	100	0	Back	10mm	21350	2560	21.66	22.50	1.213	-0.04	0.568	0.689
	LTE Band 13	10M	QPSK	1	49	Front	10mm	23230	782	19.70	21.00	1.349	0.068	0.592	0.799
	LTE Band 13	10M	QPSK	25	25	Front	10mm	23230	782	19.90	21.00	1.288	0.008	0.687	0.885
	LTE Band 13	10M	QPSK	1	49	Back	10mm	23230	782	19.70	21.00	1.349	0.054	0.772	1.041
	LTE Band 13	10M	QPSK	25	25	Back	10mm	23230	782	19.90	21.00	1.288	0.021	0.798	1.028
46	LTE Band 13	10M	QPSK	50	0	Back	10mm	23230	782	19.00	21.00	1.585	-0.017	0.691	1.095

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
47	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 1	11	2462	19.37	20.00	1.156	99.04	1.010	-0.01	0.271	0.316
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 1	11	2462	19.37	20.00	1.156	99.04	1.010	-0.12	0.209	0.244
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 2	11	2462	15.50	16.00	1.122	99.04	1.010	-0.1	0.032	0.036
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 2	11	2462	15.50	16.00	1.122	99.04	1.010	-0.1	0.040	0.045
48	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 1	52	5260	16.79	18.00	1.320	94.95	1.053	0.11	0.150	0.208
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 1	52	5260	16.79	18.00	1.320	94.95	1.053	0.02	0.088	0.122
	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 2	52	5260	16.47	17.50	1.269	94.5	1.058	-0.14	0.034	0.046
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 2	52	5260	16.47	17.50	1.269	94.5	1.058	-0.01	0.025	0.034
49	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 1	100	5500	16.77	18.00	1.326	94.95	1.053	-0.03	0.225	0.314
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 1	100	5500	16.77	18.00	1.326	94.95	1.053	0.16	0.121	0.169
	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 2	100	5500	16.64	18.00	1.369	94.5	1.058	0.12	0.023	0.033
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 2	100	5500	16.64	18.00	1.369	94.5	1.058	-0.07	0.013	0.019
50	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 1	149	5745	16.62	18.00	1.373	94.95	1.053	0.07	0.038	0.055
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 1	149	5745	16.62	18.00	1.373	94.95	1.053	0.08	0.030	0.043
	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 2	149	5745	16.32	17.00	1.171	94.5	1.058	0.03	0.020	0.025
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 2	149	5745	16.32	17.00	1.171	94.5	1.058	0.14	0.024	0.030

15.5 Repeated SAR Measurement

No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	10mm	9538	1907.6	22.28	23.00	1.180	-0.007	0.980	-	1.157
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	10mm	9538	1907.6	22.28	23.00	1.180	0.115	0.911	1.05	1.075
1st	CDMA BC0	-	-	-	-	RTAP 153.6Kbps	Back	10mm	384	836.52	21.55	22.50	1.245	0.034	0.907	-	1.129
2nd	CDMA BC0	-	-	-	-	RTAP 153.6Kbps	Back	10mm	384	836.52	21.55	22.50	1.245	0.019	0.865	1.05	1.077
1st	LTE Band 7	20M	QPSK	1	99	-	Back	10mm	21350	2560	22.61	23.50	1.227	-0.01	0.865	-	1.062
2nd	LTE Band 7	20M	QPSK	1	99	-	Back	10mm	21350	2560	22.61	23.50	1.227	-0.01	0.807	1.07	0.991

No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Ratio	Reported 10g SAR (W/kg)
1st	CDMA BC1	-	-	-	-	RTAP 153.6Kbps	Bottom Side	0mm	25	1851.25	24.47	25.00	1.130	0.042	2.770	-	3.130
2nd	CDMA BC1	-	-	-	-	RTAP 153.6Kbps	Bottom Side	0mm	25	1851.25	24.47	25.00	1.130	0.082	2.760	1.01	3.118
1st	LTE Band 4	20M	QPSK	1	49	-	Bottom Side	0mm	20175	1732.5	23.04	24.00	1.247	0.124	2.980	-	3.717
2nd	LTE Band 4	20M	QPSK	1	49	-	Bottom Side	0mm	20175	1732.5	23.04	24.00	1.247	0.02	2.930	1.02	3.655

General Note:

- Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥ 0.8 W/kg.
- Per KDB 865664 D01v01r04, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR < 1.45 W/kg, only one repeated measurement is required.
- Per KDB 865664 D01v01r04, if the extremity repeated SAR is necessary, the same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.
- The ratio is the difference in percentage between original and repeated *measured* SAR.
- All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

16. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Portable Handset			
		Head	Body-worn	Hotspot	Product Specific
1.	GSM Voice + WLAN2.4GHz	Yes	Yes		Yes
2.	GPRS/EDGE + WLAN2.4GHz	Yes	Yes	Yes	Yes
3.	WCDMA + WLAN2.4GHz	Yes	Yes	Yes	Yes
4.	LTE + WLAN2.4GHz	Yes	Yes	Yes	Yes
5.	GSM Voice + Bluetooth		Yes		Yes
6.	GPRS/EDGE + Bluetooth		Yes		Yes
7.	WCDMA+ Bluetooth		Yes		Yes
8.	LTE + Bluetooth		Yes		Yes
9.	GSM Voice + WLAN5GHz	Yes	Yes		Yes
10.	GPRS/EDGE + WLAN5GHz	Yes	Yes	Yes	Yes
11.	WCDMA + WLAN5GHz	Yes	Yes	Yes	Yes
12.	LTE + WLAN5GHz	Yes	Yes	Yes	Yes
13.	GSM Voice + WLAN5GHz + Bluetooth		Yes		Yes
14.	GPRS/EDGE + WLAN5GHz + Bluetooth		Yes		Yes
15.	WCDMA + WLAN5GHz + Bluetooth		Yes		Yes
16.	LTE + WLAN5GHz + Bluetooth		Yes		Yes

General Note:

- This device 2.4GHz / 5.2GHz / 5.8GHz WLAN supports Hotspot operation and WiFi Direct (Group Client / Group Owner), and 5.3GHz / 5.5GHz WLAN supports WiFi Direct (Group Client).
- The worst case WLAN reported SAR for each configuration was used for SAR summation. Therefore, the following summations represent the absolute worst cases for simultaneous transmission with WLAN.
- For SAR testing was performed on single antenna RF power in SISO mode is larger or equal to the single antenna RF power in MIMO mode, and for RF exposure assessment of MIMO mode simultaneous transmission exclusion analysis was performed with SAR test results of each antenna in SISO mode.
- 2.4GHz WLAN and Bluetooth cannot transmit simultaneously.
- EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment.
- The Scaled SAR summation is calculated based on the same configuration and test position.
- Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
 - Scalar SAR summation < 1.6W/kg.
 - $SPLSR = (SAR1 + SAR2)^{1.5} / (\text{min. separation distance, mm})$, and the peak separation distance is determined from the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$, where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
 - If $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary.
 - Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.
- For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01v06 based on the formula below.
 - $[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g Product Specific SAR, the Bluetooth max power is 10dBm, The test exclusion threshold is 3.15 which is ≤ 7.5 , for Product Specific SAR testing is not required.
 - $(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm}) \cdot [\sqrt{f(\text{GHz})} / x] \text{ W/kg}$ for test separation distances $\leq 50 \text{ mm}$; where $x = 7.5$ for 1-g SAR, and $x = 18.75$ for 10-g SAR.
 - When the minimum separation distance is < 5mm, the distance is used 5mm to determine SAR test exclusion.
 - 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the test separation distances is > 50 mm.

Bluetooth Max Power	Exposure Position	Body-Worn (1g SAR W/kg)	Product Specific (10g SAR W/kg)
	Test separation	10 mm	5 mm
10 dBm	Estimated SAR (W/kg)	0.210 W/kg	0.168 (10g W/kg)



16.1 Head Exposure Conditions

WWAN Band		Exposure Position	1	2	3	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+2+3 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2			
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
GSM	GSM850	Right Cheek	0.216	0.776	0.004	0.992	0.220	0.996
		Right Tilted	0.082	0.638	0.001	0.720	0.083	0.721
		Left Cheek	0.254	0.448	0.010	0.702	0.264	0.712
		Left Tilted	0.124	0.399	0.001	0.523	0.125	0.524
	GSM1900	Right Cheek	0.346	0.776	0.004	1.122	0.350	1.126
		Right Tilted	0.101	0.638	0.001	0.739	0.102	0.740
		Left Cheek	0.248	0.448	0.010	0.696	0.258	0.706
		Left Tilted	0.114	0.399	0.001	0.513	0.115	0.514
WCDMA	WCDMA II	Right Cheek	0.537	0.776	0.004	1.313	0.541	1.317
		Right Tilted	0.127	0.638	0.001	0.765	0.128	0.766
		Left Cheek	0.271	0.448	0.010	0.719	0.281	0.729
		Left Tilted	0.170	0.399	0.001	0.569	0.171	0.570
	WCDMA V	Right Cheek	0.303	0.776	0.004	1.079	0.307	1.083
		Right Tilted	0.093	0.638	0.001	0.731	0.094	0.732
		Left Cheek	0.272	0.448	0.010	0.720	0.282	0.730
		Left Tilted	0.208	0.399	0.001	0.607	0.209	0.608
CDMA	CDMA BC0	Right Cheek	0.298	0.776	0.004	1.074	0.302	1.078
		Right Tilted	0.112	0.638	0.001	0.750	0.113	0.751
		Left Cheek	0.295	0.448	0.010	0.743	0.305	0.753
		Left Tilted	0.132	0.399	0.001	0.531	0.133	0.532
	CDMA BC1	Right Cheek	0.510	0.776	0.004	1.286	0.514	1.290
		Right Tilted	0.172	0.638	0.001	0.810	0.173	0.811
		Left Cheek	0.288	0.448	0.010	0.736	0.298	0.746
		Left Tilted	0.147	0.399	0.001	0.546	0.148	0.547
LTE	LTE Band 2	Right Cheek	0.541	0.776	0.004	1.317	0.545	1.321
		Right Tilted	0.119	0.638	0.001	0.757	0.120	0.758
		Left Cheek	0.292	0.448	0.010	0.740	0.302	0.750
		Left Tilted	0.159	0.399	0.001	0.558	0.160	0.559
	LTE Band 4	Right Cheek	0.297	0.776	0.004	1.073	0.301	1.077
		Right Tilted	0.100	0.638	0.001	0.738	0.101	0.739
		Left Cheek	0.298	0.448	0.010	0.746	0.308	0.756
		Left Tilted	0.066	0.399	0.001	0.465	0.067	0.466
	LTE Band 5	Right Cheek	0.327	0.776	0.004	1.103	0.331	1.107
		Right Tilted	0.208	0.638	0.001	0.846	0.209	0.847
		Left Cheek	0.396	0.448	0.010	0.844	0.406	0.854
		Left Tilted	0.228	0.399	0.001	0.627	0.229	0.628
	LTE Band 7	Right Cheek	0.383	0.776	0.004	1.159	0.387	1.163
		Right Tilted	0.129	0.638	0.001	0.767	0.130	0.768
		Left Cheek	0.312	0.448	0.010	0.760	0.322	0.770
		Left Tilted	0.112	0.399	0.001	0.511	0.113	0.512
	LTE Band 13	Right Cheek	0.547	0.776	0.004	1.323	0.551	1.327
		Right Tilted	0.144	0.638	0.001	0.782	0.145	0.783
		Left Cheek	0.321	0.448	0.010	0.769	0.331	0.779
		Left Tilted	0.111	0.399	0.001	0.510	0.112	0.511

WWAN Band		Exposure Position	1	4	5	1+4 Summed 1g SAR (W/kg)	1+5 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)
			WWAN	5GHz WLAN Ant 1	5GHz WLAN Ant 2			
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
GSM	GSM850	Right Cheek	0.216	0.572	0.119	0.788	0.335	0.907
		Right Tilted	0.082	0.382	0.122	0.464	0.204	0.586
		Left Cheek	0.254	0.376	0.172	0.630	0.426	0.802
		Left Tilted	0.124	0.262	0.146	0.386	0.270	0.532
	GSM1900	Right Cheek	0.346	0.572	0.119	0.918	0.465	1.037
		Right Tilted	0.101	0.382	0.122	0.483	0.223	0.605
		Left Cheek	0.248	0.376	0.172	0.624	0.420	0.796
		Left Tilted	0.114	0.262	0.146	0.376	0.260	0.522
WCDMA	WCDMA II	Right Cheek	0.537	0.572	0.119	1.109	0.656	1.228
		Right Tilted	0.127	0.382	0.122	0.509	0.249	0.631
		Left Cheek	0.271	0.376	0.172	0.647	0.443	0.819
		Left Tilted	0.170	0.262	0.146	0.432	0.316	0.578
	WCDMA V	Right Cheek	0.303	0.572	0.119	0.875	0.422	0.994
		Right Tilted	0.093	0.382	0.122	0.475	0.215	0.597
		Left Cheek	0.272	0.376	0.172	0.648	0.444	0.820
		Left Tilted	0.208	0.262	0.146	0.470	0.354	0.616
CDMA	CDMA BC0	Right Cheek	0.298	0.572	0.119	0.870	0.417	0.989
		Right Tilted	0.112	0.382	0.122	0.494	0.234	0.616
		Left Cheek	0.295	0.376	0.172	0.671	0.467	0.843
		Left Tilted	0.132	0.262	0.146	0.394	0.278	0.540
	CDMA BC1	Right Cheek	0.510	0.572	0.119	1.082	0.629	1.201
		Right Tilted	0.172	0.382	0.122	0.554	0.294	0.676
		Left Cheek	0.288	0.376	0.172	0.664	0.460	0.836
		Left Tilted	0.147	0.262	0.146	0.409	0.293	0.555
LTE	LTE Band 2	Right Cheek	0.541	0.572	0.119	1.113	0.660	1.232
		Right Tilted	0.119	0.382	0.122	0.501	0.241	0.623
		Left Cheek	0.292	0.376	0.172	0.668	0.464	0.840
		Left Tilted	0.159	0.262	0.146	0.421	0.305	0.567
	LTE Band 4	Right Cheek	0.297	0.572	0.119	0.869	0.416	0.988
		Right Tilted	0.100	0.382	0.122	0.482	0.222	0.604
		Left Cheek	0.298	0.376	0.172	0.674	0.470	0.846
		Left Tilted	0.066	0.262	0.146	0.328	0.212	0.474
	LTE Band 5	Right Cheek	0.327	0.572	0.119	0.899	0.446	1.018
		Right Tilted	0.208	0.382	0.122	0.590	0.330	0.712
		Left Cheek	0.396	0.376	0.172	0.772	0.568	0.944
		Left Tilted	0.228	0.262	0.146	0.490	0.374	0.636
	LTE Band 7	Right Cheek	0.383	0.572	0.119	0.955	0.502	1.074
		Right Tilted	0.129	0.382	0.122	0.511	0.251	0.633
		Left Cheek	0.312	0.376	0.172	0.688	0.484	0.860
		Left Tilted	0.112	0.262	0.146	0.374	0.258	0.520
	LTE Band 13	Right Cheek	0.547	0.572	0.119	1.119	0.666	1.238
		Right Tilted	0.144	0.382	0.122	0.526	0.266	0.648
		Left Cheek	0.321	0.376	0.172	0.697	0.493	0.869
		Left Tilted	0.111	0.262	0.146	0.373	0.257	0.519

16.2 Hotspot Exposure Conditions

WWAN Band		Exposure Position	1	2	3	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+2+3 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2			
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
GSM	GSM850	Front	0.620	0.316	0.036	0.936	0.656	0.972
		Back	0.752	0.244	0.045	0.996	0.797	1.041
		Left side	0.293	0.060	0.012	0.353	0.305	0.365
		Right side	0.135	0.008	0.002	0.143	0.137	0.145
		Top side		0.160	0.002	0.160	0.002	0.162
		Bottom side	0.421	0.004	0.036	0.425	0.457	0.461
	GSM1900	Front	0.666	0.316	0.036	0.982	0.702	1.018
		Back	0.794	0.244	0.045	1.038	0.839	1.083
		Left side	0.232	0.060	0.012	0.292	0.244	0.304
		Right side	0.345	0.008	0.002	0.353	0.347	0.355
		Top side		0.160	0.002	0.160	0.002	0.162
		Bottom side	0.858	0.004	0.036	0.862	0.894	0.898
WCDMA	WCDMA II	Front	0.911	0.316	0.036	1.227	0.947	1.263
		Back	0.977	0.244	0.045	1.221	1.022	1.266
		Left side	0.281	0.060	0.012	0.341	0.293	0.353
		Right side	0.417	0.008	0.002	0.425	0.419	0.427
		Top side		0.160	0.002	0.160	0.002	0.162
		Bottom side	1.167	0.004	0.036	1.171	1.203	1.207
	WCDMA V	Front	0.694	0.316	0.036	1.010	0.730	1.046
		Back	0.932	0.244	0.045	1.176	0.977	1.221
		Left side	0.321	0.060	0.012	0.381	0.333	0.393
		Right side	0.182	0.008	0.002	0.190	0.184	0.192
		Top side		0.160	0.002	0.160	0.002	0.162
		Bottom side	0.316	0.004	0.036	0.320	0.352	0.356
CDMA	CDMA BC0	Front	0.942	0.316	0.036	1.258	0.978	1.294
		Back	1.129	0.244	0.045	1.373	1.174	1.418
		Left side	0.416	0.060	0.012	0.476	0.428	0.488
		Right side	0.220	0.008	0.002	0.228	0.222	0.230
		Top side		0.160	0.002	0.160	0.002	0.162
		Bottom side	0.375	0.004	0.036	0.379	0.411	0.415
	CDMA BC1	Front	0.903	0.316	0.036	1.219	0.939	1.255
		Back	1.024	0.244	0.045	1.268	1.069	1.313
		Left side	0.300	0.060	0.012	0.360	0.312	0.372
		Right side	0.468	0.008	0.002	0.476	0.470	0.478
		Top side		0.160	0.002	0.160	0.002	0.162
		Bottom side	1.073	0.004	0.036	1.077	1.109	1.113

WWAN Band		Exposure Position	1	2	3	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+2+3 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2			
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
LTE	LTE Band 2	Front	0.854	0.316	0.036	1.170	0.890	1.206
		Back	1.095	0.244	0.045	1.339	1.140	1.384
		Left side	0.292	0.060	0.012	0.352	0.304	0.364
		Right side	0.446	0.008	0.002	0.454	0.448	0.456
		Top side		0.160	0.002	0.160	0.002	0.162
		Bottom side	1.043	0.004	0.036	1.047	1.079	1.083
	LTE Band 4	Front	0.852	0.316	0.036	1.168	0.888	1.204
		Back	1.003	0.244	0.045	1.247	1.048	1.292
		Left side	0.215	0.060	0.012	0.275	0.227	0.287
		Right side	0.400	0.008	0.002	0.408	0.402	0.410
		Top side		0.160	0.002	0.160	0.002	0.162
		Bottom side	1.059	0.004	0.036	1.063	1.095	1.099
	LTE Band 5	Front	0.967	0.316	0.036	1.283	1.003	1.319
		Back	1.133	0.244	0.045	1.377	1.178	1.422
		Left side	0.380	0.060	0.012	0.440	0.392	0.452
		Right side	0.197	0.008	0.002	0.205	0.199	0.207
		Top side		0.160	0.002	0.160	0.002	0.162
		Bottom side	0.485	0.004	0.036	0.489	0.521	0.525
	LTE Band 7	Front	0.905	0.316	0.036	1.221	0.941	1.257
		Back	1.062	0.244	0.045	1.306	1.107	1.351
		Left side	0.269	0.060	0.012	0.329	0.281	0.341
		Right side	0.109	0.008	0.002	0.117	0.111	0.119
		Top side		0.160	0.002	0.160	0.002	0.162
		Bottom side	0.927	0.004	0.036	0.931	0.963	0.967
	LTE Band 13	Front	0.885	0.316	0.036	1.201	0.921	1.237
		Back	1.095	0.244	0.045	1.339	1.140	1.384
		Left side	0.091	0.060	0.012	0.151	0.103	0.163
		Right side	0.360	0.008	0.002	0.368	0.362	0.370
		Top side		0.160	0.002	0.160	0.002	0.162
		Bottom side	0.332	0.004	0.036	0.336	0.368	0.372

WWAN Band		Exposure Position	1	4	5	1+4 Summed 1g SAR (W/kg)	1+5 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)
			WWAN	5GHz WLAN Ant 1	5GHz WLAN Ant 2			
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
GSM	GSM850	Front	0.620	0.128	0.039	0.748	0.659	0.787
		Back	0.752	0.088	0.042	0.840	0.794	0.882
		Left side	0.293	0.022	0.002	0.315	0.295	0.317
		Right side	0.135	0.023	0.012	0.158	0.147	0.170
		Top side		0.030	0.015	0.030	0.015	0.045
		Bottom side	0.421			0.421	0.421	0.421
	GSM1900	Front	0.666	0.128	0.039	0.794	0.705	0.833
		Back	0.794	0.088	0.042	0.882	0.836	0.924
		Left side	0.232	0.022	0.002	0.254	0.234	0.256
		Right side	0.345	0.023	0.012	0.368	0.357	0.380
		Top side		0.030	0.015	0.030	0.015	0.045
		Bottom side	0.858			0.858	0.858	0.858
WCDMA	WCDMA II	Front	0.911	0.128	0.039	1.039	0.950	1.078
		Back	0.977	0.088	0.042	1.065	1.019	1.107
		Left side	0.281	0.022	0.002	0.303	0.283	0.305
		Right side	0.417	0.023	0.012	0.440	0.429	0.452
		Top side		0.030	0.015	0.030	0.015	0.045
		Bottom side	1.167			1.167	1.167	1.167
	WCDMA V	Front	0.694	0.128	0.039	0.822	0.733	0.861
		Back	0.932	0.088	0.042	1.020	0.974	1.062
		Left side	0.321	0.022	0.002	0.343	0.323	0.345
		Right side	0.182	0.023	0.012	0.205	0.194	0.217
		Top side		0.030	0.015	0.030	0.015	0.045
		Bottom side	0.316			0.316	0.316	0.316
CDMA	CDMA BC0	Front	0.942	0.128	0.039	1.070	0.981	1.109
		Back	1.129	0.088	0.042	1.217	1.171	1.259
		Left side	0.416	0.022	0.002	0.438	0.418	0.440
		Right side	0.220	0.023	0.012	0.243	0.232	0.255
		Top side		0.030	0.015	0.030	0.015	0.045
		Bottom side	0.375			0.375	0.375	0.375
	CDMA BC1	Front	0.903	0.128	0.039	1.031	0.942	1.070
		Back	1.024	0.088	0.042	1.112	1.066	1.154
		Left side	0.300	0.022	0.002	0.322	0.302	0.324
		Right side	0.468	0.023	0.012	0.491	0.480	0.503
		Top side		0.030	0.015	0.030	0.015	0.045
		Bottom side	1.073			1.073	1.073	1.073

WWAN Band		Exposure Position	1	4	5	1+4 Summed 1g SAR (W/kg)	1+5 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)
			WWAN	5GHz WLAN Ant 1	5GHz WLAN Ant 2			
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
LTE	LTE Band 2	Front	0.854	0.128	0.039	0.982	0.893	1.021
		Back	1.095	0.088	0.042	1.183	1.137	1.225
		Left side	0.292	0.022	0.002	0.314	0.294	0.316
		Right side	0.446	0.023	0.012	0.469	0.458	0.481
		Top side		0.030	0.015	0.030	0.015	0.045
		Bottom side	1.043			1.043	1.043	1.043
	LTE Band 4	Front	0.852	0.128	0.039	0.980	0.891	1.019
		Back	1.003	0.088	0.042	1.091	1.045	1.133
		Left side	0.215	0.022	0.002	0.237	0.217	0.239
		Right side	0.400	0.023	0.012	0.423	0.412	0.435
		Top side		0.030	0.015	0.030	0.015	0.045
		Bottom side	1.059			1.059	1.059	1.059
	LTE Band 5	Front	0.967	0.128	0.039	1.095	1.006	1.134
		Back	1.133	0.088	0.042	1.221	1.175	1.263
		Left side	0.380	0.022	0.002	0.402	0.382	0.404
		Right side	0.197	0.023	0.012	0.220	0.209	0.232
		Top side		0.030	0.015	0.030	0.015	0.045
		Bottom side	0.485			0.485	0.485	0.485
	LTE Band 7	Front	0.905	0.128	0.039	1.033	0.944	1.072
		Back	1.062	0.088	0.042	1.150	1.104	1.192
		Left side	0.269	0.022	0.002	0.291	0.271	0.293
		Right side	0.109	0.023	0.012	0.132	0.121	0.144
		Top side		0.030	0.015	0.030	0.015	0.045
		Bottom side	0.927			0.927	0.927	0.927
	LTE Band 13	Front	0.885	0.128	0.039	1.013	0.924	1.052
		Back	1.095	0.088	0.042	1.183	1.137	1.225
		Left side	0.091	0.022	0.002	0.113	0.093	0.115
		Right side	0.360	0.023	0.012	0.383	0.372	0.395
		Top side		0.030	0.015	0.030	0.015	0.045
		Bottom side	0.332			0.332	0.332	0.332

16.3 Product Specific Conditions

Remark:

1. According to KDB 648474 D04v01r03, for WWAN / 2.4GHz WLAN SAR ("-") was excluded, due to Hotspot SAR was < 1.2W/kg.

WWAN Band	Exposure Position	1	2	3	4	5	6	1+4+5+6 Summed 1g SAR (W/kg)
		WWAN 10g SAR (W/kg)	2.4GHz WLAN Ant 1 10g SAR (W/kg)	2.4GHz WLAN Ant 2 10g SAR (W/kg)	5GHz WLAN Ant 1 10g SAR (W/kg)	5GHz WLAN Ant 2 10g SAR (W/kg)	Bluetooth Ant 1 Estimated 10g SAR (W/kg)	
WCDMA II	Front	-	-	-	1.085	0.565	0.168	1.818
	Back	-	-	-	0.705	0.467	0.168	1.340
	Left side	-	-	-	0.040	0.009	0.168	0.217
	Right side	-	-	-	0.025	0.019	0.168	0.212
	Top side	-	-	-	0.483	0.063	0.168	0.714
	Bottom side	3.368	-	-	-	-	0.168	3.536
CDMA BC1	Front	-	-	-	1.085	0.565	0.168	1.818
	Back	-	-	-	0.705	0.467	0.168	1.340
	Left side	-	-	-	0.040	0.009	0.168	0.217
	Right side	-	-	-	0.025	0.019	0.168	0.212
	Top side	-	-	-	0.483	0.063	0.168	0.714
	Bottom side	3.132	-	-	-	-	0.168	3.300
LTE Band 2	Front	-	-	-	1.085	0.565	0.168	1.818
	Back	-	-	-	0.705	0.467	0.168	1.340
	Left side	-	-	-	0.040	0.009	0.168	0.217
	Right side	-	-	-	0.025	0.019	0.168	0.212
	Top side	-	-	-	0.483	0.063	0.168	0.714
	Bottom side	3.171	-	-	-	-	0.168	3.339
LTE Band 4	Front	-	-	-	1.085	0.565	0.168	1.818
	Back	-	-	-	0.705	0.467	0.168	1.340
	Left side	-	-	-	0.040	0.009	0.168	0.217
	Right side	-	-	-	0.025	0.019	0.168	0.212
	Top side	-	-	-	0.483	0.063	0.168	0.714
	Bottom side	3.717	-	-	-	-	0.168	3.885



16.4 Body-Worn Accessory Exposure Conditions

WWAN Band		Exposure Position	1	2	3	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+2+3 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2			
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
GSM	GSM850	Front	0.620	0.316	0.036	0.936	0.656	0.972
		Back	0.752	0.244	0.045	0.996	0.797	1.041
	GSM1900	Front	0.666	0.316	0.036	0.982	0.702	1.018
		Back	0.794	0.244	0.045	1.038	0.839	1.083
WCDMA	WCDMA II	Front	0.911	0.316	0.036	1.227	0.947	1.263
		Back	0.977	0.244	0.045	1.221	1.022	1.266
	WCDMA V	Front	0.694	0.316	0.036	1.010	0.730	1.046
		Back	0.932	0.244	0.045	1.176	0.977	1.221
CDMA	CDMA BC0	Front	0.957	0.316	0.036	1.273	0.993	1.309
		Back	1.136	0.244	0.045	1.380	1.181	1.425
	CDMA BC1	Front	0.905	0.316	0.036	1.221	0.941	1.257
		Back	1.085	0.244	0.045	1.329	1.130	1.374
LTE	LTE Band 2	Front	0.854	0.316	0.036	1.170	0.890	1.206
		Back	1.095	0.244	0.045	1.339	1.140	1.384
	LTE Band 4	Front	0.852	0.316	0.036	1.168	0.888	1.204
		Back	1.003	0.244	0.045	1.247	1.048	1.292
	LTE Band 5	Front	0.967	0.316	0.036	1.283	1.003	1.319
		Back	1.133	0.244	0.045	1.377	1.178	1.422
	LTE Band 7	Front	0.905	0.316	0.036	1.221	0.941	1.257
		Back	1.062	0.244	0.045	1.306	1.107	1.351
	LTE Band 13	Front	0.885	0.316	0.036	1.201	0.921	1.237
		Back	1.095	0.244	0.045	1.339	1.140	1.384

WWAN Band		Exposure Position	1	4	5	1+4 Summed 1g SAR (W/kg)	1+5 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)
			WWAN	5GHz WLAN Ant 1	5GHz WLAN Ant 2			
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
GSM	GSM850	Front	0.620	0.314	0.046	0.934	0.666	0.980
		Back	0.752	0.169	0.034	0.921	0.786	0.955
	GSM1900	Front	0.666	0.314	0.046	0.980	0.712	1.026
		Back	0.794	0.169	0.034	0.963	0.828	0.997
WCDMA	WCDMA II	Front	0.911	0.314	0.046	1.225	0.957	1.271
		Back	0.977	0.169	0.034	1.146	1.011	1.180
	WCDMA V	Front	0.694	0.314	0.046	1.008	0.740	1.054
		Back	0.932	0.169	0.034	1.101	0.966	1.135
CDMA	CDMA BC0	Front	0.957	0.314	0.046	1.271	1.003	1.317
		Back	1.136	0.169	0.034	1.305	1.170	1.339
	CDMA BC1	Front	0.905	0.314	0.046	1.219	0.951	1.265
		Back	1.085	0.169	0.034	1.254	1.119	1.288
LTE	LTE Band 2	Front	0.854	0.314	0.046	1.168	0.900	1.214
		Back	1.095	0.169	0.034	1.264	1.129	1.298
	LTE Band 4	Front	0.852	0.314	0.046	1.166	0.898	1.212
		Back	1.003	0.169	0.034	1.172	1.037	1.206
	LTE Band 5	Front	0.967	0.314	0.046	1.281	1.013	1.327
		Back	1.133	0.169	0.034	1.302	1.167	1.336
	LTE Band 7	Front	0.905	0.314	0.046	1.219	0.951	1.265
		Back	1.062	0.169	0.034	1.231	1.096	1.265
	LTE Band 13	Front	0.885	0.314	0.046	1.199	0.931	1.245
		Back	1.095	0.169	0.034	1.264	1.129	1.298

WWAN Band		Exposure Position	1	4	5	6	1+4+5+6 Summed 1g SAR (W/kg)
			WWAN	5GHz WLAN Ant 1	5GHz WLAN Ant 2	Bluetooth Ant 1	
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)	
GSM	GSM850	Front	0.620	0.314	0.046	0.210	1.190
		Back	0.752	0.169	0.034	0.210	1.165
	GSM1900	Front	0.666	0.314	0.046	0.210	1.236
		Back	0.794	0.169	0.034	0.210	1.207
WCDMA	WCDMA II	Front	0.911	0.314	0.046	0.210	1.481
		Back	0.977	0.169	0.034	0.210	1.390
	WCDMA V	Front	0.694	0.314	0.046	0.210	1.264
		Back	0.932	0.169	0.034	0.210	1.345
CDMA	CDMA BC0	Front	0.957	0.314	0.046	0.210	1.527
		Back	1.136	0.169	0.034	0.210	1.549
	CDMA BC1	Front	0.905	0.314	0.046	0.210	1.475
		Back	1.085	0.169	0.034	0.210	1.498
LTE	LTE Band 2	Front	0.854	0.314	0.046	0.210	1.424
		Back	1.095	0.169	0.034	0.210	1.508
	LTE Band 4	Front	0.852	0.314	0.046	0.210	1.422
		Back	1.003	0.169	0.034	0.210	1.416
	LTE Band 5	Front	0.967	0.314	0.046	0.210	1.537
		Back	1.133	0.169	0.034	0.210	1.546
	LTE Band 7	Front	0.905	0.314	0.046	0.210	1.475
		Back	1.062	0.169	0.034	0.210	1.475
	LTE Band 13	Front	0.885	0.314	0.046	0.210	1.455
		Back	1.095	0.169	0.034	0.210	1.508



17. Supplemental tuner tests results

General Note:

1. The following test procedure was followed to demonstrate that the SAR results in this report represent the appropriate SAR test conditions. For bands with dynamic tuning implemented, SAR will be measured according to the required FCC SAR test procedures with the dynamic tuner active to allow the device to automatically tune to the antenna state for the respective RF exposure test configurations. Additional single point SAR time-sweep measurements will be evaluated for other tuner states to determine that the other tuner configurations would result in equivalent or lower SAR values. The additional tuner hardware has no influence to the antenna characteristics, other than impedance matching.
2. To evaluate all of the tuner states, the 144 tuner states are divided evenly among band, mode and exposure combinations so that at least one single point SAR measurement is measured in each configuration. Single point time-sweep measurements will be performed at the peak SAR location determined by the zoom scan of the configuration with the highest reported SAR for each combination. The tuner state will be established remotely so that the device is not moved for the entire series of single point SAR for the tuner states in each combination. The SAR probe will remain stationary at the same position throughout the entire series of single point measurements for each combination. The bands which are dynamically tuned are split into two separate antennas, so each antenna system will have its own test plan to cover the corresponding 144 tuner states.
3. The operational decryption contains more information about the design and implementation of the dynamic antenna tuning.

17.1 Supplemental Head SAR results

Operating Mode	Service/ Modulation	Freq. (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																			
									State																			
									Auto-Tune 74	Default 38	1	9	17	25	33	41	49	57	65	73	81	89	97	105	113	121	129	137
LTE B5	QPSK	836.5	20525	1	25	Left Cheek	0 mm	0.328	0.476	0.419	0.369	0.428	0.061	0.406	0.04	0.228	0.475	0.409	0.091	0.443	0.308	0.396	0.378	0.254	0.312	0.474	0.053	0.488
Operating Mode	Service/ Modulation	Freq. (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																			
									State																			
									Auto-Tune 109	Default 125	2	10	18	26	34	42	50	58	66	74	82	90	98	106	114	122	130	138
LTE B7	QPSK	2535	21100	1	99	Left Cheek	0 mm	0.223	0.34	0.336	0.02	0.026	0.109	0.114	0.023	0.05	0.156	0.152	0.233	0.185	0.191	0.274	0.225	0.311	0.241	0.285	0.225	0.304
Operating Mode	Service/ Modulation	Freq. (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																			
									State																			
									Auto-Tune 28	Default 38	3	11	19	27	35	43	51	59	67	75	83	91	99	107	115	123	131	139
CDMA BC0	1xRTT RC3 SO55	848.31	777	N/A	N/A	Left Cheek	0 mm	0.24	0.283	0.249	0.214	0.242	0.176	0.249	0.209	0.17	0.156	0.244	0.163	0.276	0.175	0.097	0.241	0.137	0.175	0.265	0.145	0.278
Operating Mode	Service/ Modulation	Freq. (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																			
									State																			
									Auto-Tune 74	Default 38	4	12	20	28	36	44	52	60	68	76	84	92	100	108	116	124	132	140
WCDMA B5	RMC12.2Kbps	826.4	4132	N/A	N/A	Left Cheek	0 mm	0.223	0.399	0.327	0.32	0.242	0.315	0.382	0.327	0.312	0.026	0.395	0.304	0.35	0.34	0.038	0.388	0.05	0.354	0.197	0.296	0.191
Operating Mode	Service/ Modulation	Freq. (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																			
									State																			
									Auto-Tune 76	Default 71	1	11	21	31	41	51	61	71	81	91	101	111	121	131	141			
LTE B13	QPSK	782	23230	1	49	Right Cheek	0 mm	0.384	0.473	0.312	0.186	0.356	0.301	0.192	0.429	0.262	0.171	0.313	0.174	0.413	0.108	0.307	0.161	0.378	0.098			
Operating Mode	Service/ Modulation	Freq. (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																			
									State																			
									Auto-Tune 29	Default 119	2	12	22	32	42	52	62	72	82	92	102	112	122	132	142			
LTE B2	QPSK	1880	18900	1	99	Right Cheek	0 mm	0.419	0.49	0.342	0.451	0.232	0.408	0.473	0.305	0.45	0.476	0.464	0.479	0.458	0.478	0.488	0.477	0.483	0.47			
Operating Mode	Service/ Modulation	Freq. (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																			
									State																			
									Auto-Tune 120	Default 119	3	13	23	33	43	53	63	73	83	93	103	113	123	133	143			
LTE B4	QPSK	1732.5	20175	1	49	Right Cheek	0 mm	0.238	0.359	0.18	0.242	0.092	0.2	0.267	0.125	0.255	0.31	0.271	0.319	0.257	0.343	0.311	0.355	0.32	0.347			
Operating Mode	Service/ Modulation	Freq. (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																			
									State																			
									Auto-Tune 14	Default 119	4	14	24	34	44	54	64	74	84	94	104	114	124	134	144			
CDMA BC1	1xRTT RC3 SO55	1908.75	1175	N/A	N/A	Right Cheek	0 mm	0.447	0.603	0.426	0.541	0.581	0.463	0.57	0.234	0.547	0.588	0.554	0.592	0.522	0.595	0.579	0.598	0.587	0.547			
Operating Mode	Service/ Modulation	Freq. (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																			
									State																			
									Auto-Tune 1	Default 119	5	15	25	35	45	55	64	75	85	95	105	115	125	135	1			
WCDMA B2	RMC 12.2Kbps	1907.6	9538	N/A	N/A	Right Cheek	0 mm	0.45	0.479	0.35	0.44	0.478	0.35	0.456	0.477	0.443	0.476	0.44	0.47	0.408	0.47	0.456	0.463	0.458	0.475			

**17.2 Supplemental Body SAR results**

Operating Mode	Service/Modulation	Freq. (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																			
									State																			
									Auto-Tune 28	Default 38	5	13	21	29	37	45	53	61	69	77	85	93	101	109	117	125	133	141
LTE B5	QPSK	836.5	20525	1	25	Back	10 mm	0.898	1.09	1.03	1.048	0.771	0.951	1.019	1.031	0.978	0.877	1.075	0.915	0.938	0.996	0.838	1.001	0.168	0.98	0.552	0.861	0.532
Operating Mode	Service/Modulation	Freq. (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																			
									State																			
									Auto-Tune 125	Default 125	6	14	22	30	38	46	54	62	70	78	86	94	102	110	118	126	134	142
LTE B7	QPSK	2560	21350	1	99	Back	10 mm	0.865	1.097	1.088	0.078	0.105	0.448	0.552	0.089	0.543	0.628	0.723	0.728	0.913	0.847	0.875	0.966	0.718	0.954	1.095	0.958	1.079
Operating Mode	Service/Modulation	Freq. (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																			
									State																			
									Auto-Tune 61	Default 38	7	15	23	31	39	47	55	63	71	79	87	95	103	111	119	127	135	143
CDMA BC0	RTAP 153.6Kbps	836.52	384	N/A	N/A	Back	10 mm	0.907	1.084	0.992	0.992	0.505	1.004	0.481	0.955	1.034	0.925	0.811	0.995	0.215	1.031	0.869	0.871	0.831	1.028	0.266	0.969	0.171
Operating Mode	Service/Modulation	Freq. (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																			
									State																			
									Auto-Tune 28	Default 38	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120	128	136	144
WCDMA B5	RMC 12.2Kbps	836.4	4182	N/A	N/A	Back	10 mm	0.766	0.966	0.906	0.903	0.298	0.916	0.25	0.768	0.943	0.875	0.457	0.915	0.101	0.886	0.814	0.646	0.751	0.932	0.194	0.888	0.081
Operating Mode	Service/Modulation	Freq. (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																			
									State																			
									Auto-Tune 9	Default 71	6	16	26	36	46	56	66	76	86	96	106	116	126	136	2			
LTE B13	QPSK	782	23230	1	49	Back	10 mm	0.772	0.832	0.662	0.651	0.459	0.451	0.613	0.428	0.819	0.499	0.812	0.571	0.277	0.445	0.749	0.453	0.503	0.451			
Operating Mode	Service/Modulation	Freq. (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																			
									State																			
									Auto-Tune 61	Default 119	7	17	27	37	47	57	67	77	87	97	107	117	127	137	3			
LTE B2	QPSK	1880	18900	1	99	Back	10 mm	0.849	0.988	0.681	0.744	0.871	0.437	0.826	0.943	0.763	0.946	0.793	0.943	0.615	0.977	0.858	0.985	0.835	0.852			
Operating Mode	Service/Modulation	Freq. (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																			
									State																			
									Auto-Tune 120	Default 119	8	18	28	38	48	58	68	78	88	98	108	118	128	138	4			
LTE B4	QPSK	1732.5	20175	1	49	Back	10 mm	0.737	0.805	0.438	0.456	0.572	0.215	0.541	0.653	0.455	0.662	0.472	0.675	0.747	0.744	0.517	0.774	0.473	0.537			
Operating Mode	Service/Modulation	Freq. (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																			
									State																			
									Auto-Tune 120	Default 119	9	19	29	39	49	59	69	79	89	99	109	119	129	139	5			
CDMA BC1	RTAP 153.6Kbps	1880	600	N/A	N/A	Back	10 mm	0.805	1.11	0.715	0.716	0.859	0.348	0.789	0.935	0.603	0.943	0.571	0.955	1.002	1.02	0.69	1.03	0.65	0.8			
Operating Mode	Service/Modulation	Freq. (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																			
									State																			
									Auto-Tune 45	Default 119	10	20	30	40	50	60	70	80	90	100	110	120	130	140	6			
WCDMA B2	RMC 12.2Kbps	1907.6	9538	N/A	N/A	Back	10 mm	0.828	1.151	0.802	0.76	0.97	1.067	0.888	1.05	0.6	1.05	1.084	1.065	1.067	1.092	1.125	1.117	1.032	0.909			

Test Engineer : Jerry Hu, Lawrence Chang, Galen Chang, Poa Chen, and Ken Li

18. Uncertainty Assessment

The component of uncertainty may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainty by the statistical analysis of a series of observations is termed a Type A evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture's specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in table below.

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi-plying Factor ^(a)	$1/k^{(b)}$	$1/\sqrt{3}$	$1/\sqrt{6}$	$1/\sqrt{2}$

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity

(b) k is the coverage factor

Table 18.1. Standard Uncertainty for Assumed Distribution

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual "root-sum-squares" (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.

Error Description	Uncertainty Value (±%)	Probability	Divisor	(Ci) 1g	(Ci) 10g	Standard Uncertainty (1g) (±%)	Standard Uncertainty (10g) (±%)
Measurement System							
Probe Calibration	6.0	N	1	1	1	6.0	6.0
Axial Isotropy	4.7	R	1.732	0.7	0.7	1.9	1.9
Hemispherical Isotropy	9.6	R	1.732	0.7	0.7	3.9	3.9
Boundary Effects	1.0	R	1.732	1	1	0.6	0.6
Linearity	4.7	R	1.732	1	1	2.7	2.7
System Detection Limits	1.0	R	1.732	1	1	0.6	0.6
Modulation Response	3.2	R	1.732	1	1	1.8	1.8
Readout Electronics	0.3	N	1	1	1	0.3	0.3
Response Time	0.0	R	1.732	1	1	0.0	0.0
Integration Time	2.6	R	1.732	1	1	1.5	1.5
RF Ambient Noise	3.0	R	1.732	1	1	1.7	1.7
RF Ambient Reflections	3.0	R	1.732	1	1	1.7	1.7
Probe Positioner	0.4	R	1.732	1	1	0.2	0.2
Probe Positioning	2.9	R	1.732	1	1	1.7	1.7
Max. SAR Eval.	2.0	R	1.732	1	1	1.2	1.2
Test Sample Related							
Device Positioning	3.0	N	1	1	1	3.0	3.0
Device Holder	3.6	N	1	1	1	3.6	3.6
Power Drift	5.0	R	1.732	1	1	2.9	2.9
Power Scaling	0.0	R	1.732	1	1	0.0	0.0
Phantom and Setup							
Phantom Uncertainty	6.1	R	1.732	1	1	3.5	3.5
SAR correction	0.0	R	1.732	1	0.84	0.0	0.0
Liquid Conductivity Repeatability	0.2	N	1	0.78	0.71	0.1	0.1
Liquid Conductivity (target)	5.0	R	1.732	0.78	0.71	2.3	2.0
Liquid Conductivity (mea.)	2.5	R	1.732	0.78	0.71	1.1	1.0
Temp. unc. - Conductivity	3.4	R	1.732	0.78	0.71	1.5	1.4
Liquid Permittivity Repeatability	0.15	N	1	0.23	0.26	0.0	0.0
Liquid Permittivity (target)	5.0	R	1.732	0.23	0.26	0.7	0.8
Liquid Permittivity (mea.)	2.5	R	1.732	0.23	0.26	0.3	0.4
Temp. unc. - Permittivity	0.83	R	1.732	0.23	0.26	0.1	0.1
Combined Std. Uncertainty						11.4%	11.4%
Coverage Factor for 95 %						K=2	K=2
Expanded STD Uncertainty						22.9%	22.7%

Table 18.2. Uncertainty Budget for frequency range 300 MHz to 3 GHz

Error Description	Uncertainty Value (±%)	Probability	Divisor	(Ci) 1g	(Ci) 10g	Standard Uncertainty (1g) (±%)	Standard Uncertainty (10g) (±%)
Measurement System							
Probe Calibration	7.0	N	1	1	1	7.0	7.0
Axial Isotropy	4.7	R	1.732	0.7	0.7	1.9	1.9
Hemispherical Isotropy	9.6	R	1.732	0.7	0.7	3.9	3.9
Boundary Effects	2.0	R	1.732	1	1	1.2	1.2
Linearity	4.7	R	1.732	1	1	2.7	2.7
System Detection Limits	1.0	R	1.732	1	1	0.6	0.6
Modulation Response	3.2	R	1.732	1	1	1.8	1.8
Readout Electronics	0.3	N	1	1	1	0.3	0.3
Response Time	0.0	R	1.732	1	1	0.0	0.0
Integration Time	2.6	R	1.732	1	1	1.5	1.5
RF Ambient Noise	3.0	R	1.732	1	1	1.7	1.7
RF Ambient Reflections	3.0	R	1.732	1	1	1.7	1.7
Probe Positioner	0.4	R	1.732	1	1	0.2	0.2
Probe Positioning	6.7	R	1.732	1	1	3.9	3.9
Max. SAR Eval.	4.0	R	1.732	1	1	2.3	2.3
Test Sample Related							
Device Positioning	3.0	N	1	1	1	3.0	3.0
Device Holder	3.6	N	1	1	1	3.6	3.6
Power Drift	5.0	R	1.732	1	1	2.9	2.9
Power Scaling	0.0	R	1.732	1	1	0.0	0.0
Phantom and Setup							
Phantom Uncertainty	6.6	R	1.732	1	1	3.8	3.8
SAR correction	0.0	R	1.732	1	0.84	0.0	0.0
Liquid Conductivity Repeatability	0.2	N	1	0.78	0.71	0.1	0.1
Liquid Conductivity (target)	5.0	R	1.732	0.78	0.71	2.3	2.0
Liquid Conductivity (mea.)	2.5	R	1.732	0.78	0.71	1.1	1.0
Temp. unc. - Conductivity	3.4	R	1.732	0.78	0.71	1.5	1.4
Liquid Permittivity Repeatability	0.15	N	1	0.23	0.26	0.0	0.0
Liquid Permittivity (target)	5.0	R	1.732	0.23	0.26	0.7	0.8
Liquid Permittivity (mea.)	2.5	R	1.732	0.23	0.26	0.3	0.4
Temp. unc. - Permittivity	0.83	R	1.732	0.23	0.26	0.1	0.1
Combined Std. Uncertainty						12.8%	12.7%
Coverage Factor for 95 %						K=2	K=2
Expanded STD Uncertainty						25.5%	25.4%

Table 18.3. Uncertainty Budget for frequency range 3 GHz to 6 GHz

19. References

- [1] FCC 47 CFR Part 2 "Frequency Allocations and Radio Treaty Matters; General Rules and Regulations"
- [2] ANSI/IEEE Std. C95.1-1992, "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz", September 1992
- [3] IEEE Std. 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", Sep 2013
- [4] SPEAG DASY System Handbook
- [5] FCC KDB 248227 D01 v02r02, "SAR Guidance for IEEE 802.11 (WiFi) Transmitters", Oct 2015.
- [6] FCC KDB 447498 D01 v06, "Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies", Oct 2015
- [7] FCC KDB 648474 D04 v01r03, "SAR Evaluation Considerations for Wireless Handsets", Oct 2015.
- [8] FCC KDB 941225 D01 v03r01, "3G SAR MEAUREMENT PROCEDURES", Oct 2015
- [9] FCC KDB 941225 D05 v02r05, "SAR Evaluation Considerations for LTE Devices", Dec 2015
- [10] FCC KDB 941225 D05A v01r02, "Rel. 10 LTE SAR Test Guidance and KDB Inquiries", Oct 2015
- [11] FCC KDB 941225 D06 v02r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2015.
- [12] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.
- [13] FCC KDB 865664 D02 v01r02, "RF Exposure Compliance Reporting and Documentation Considerations" Oct 2015.