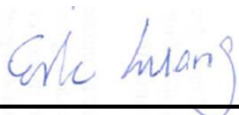


FCC SAR Test Report

APPLICANT : Motorola Mobility, LLC
EQUIPMENT : Mobile Cellular Phone
BRAND NAME : Motorola
MODEL NAME : 4036
FCC ID : IHDT56UA1
STANDARD : FCC 47 CFR Part 2 (2.1093)
ANSI/IEEE C95.1-1992
IEEE 1528-2003

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.)



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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA552083A	Rev. 01	Initial issue of report	Jul. 08, 2015



1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Mobility, LLC, Mobile Cellular Phone, 4036** are as follows.

Equipment Class	Frequency Band	Highest SAR Summary			Highest Simultaneous Transmission 1g SAR (W/kg)
		Head (Separation 0mm)	Body-worn (Separation 15mm)	Wireless Router (Separation 10mm)	
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	
PCE	GSM850	0.37	0.60	0.78	1.58
	GSM1900	0.10	0.66	0.79	
	WCDMA Band V	0.34	0.48	0.67	
	WCDMA Band II	0.21	1.05	0.93	
	CDMA 2000 BC0	0.43	0.62	0.71	
	CDMA 2000 BC1	0.19	1.13	0.65	
	LTE Band 13	0.36	0.55	0.65	
	LTE Band 5	0.35	0.49	0.78	
	LTE Band 4	0.25	1.01	0.89	
	LTE Band 2	0.21	1.08	0.99	
	LTE Band 7	0.19	0.85	0.90	
DTS	2.4GHz WLAN	1.13	0.12	0.23	1.40
NII	5.2GHz WLAN	1.19		0.15	1.58
	5.3GHz WLAN	1.38	0.13		
	5.5GHz WLAN	1.37	0.17		
	5.8GHz WLAN	1.35	0.17	0.24	
DSS	Bluetooth	0.08	0.01	0.01	1.13
Date of Testing:		2015/06/06 ~ 2015/07/05			

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) 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 1528-2003.

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 1528-2003
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r03
- FCC KDB 865664 D02 SAR Reporting v01r01
- FCC KDB 447498 D01 General RF Exposure Guidance v05r02
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r02
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r01
- FCC KDB 941225 D01 3G SAR Procedures v03
- FCC KDB 941225 D05 SAR for LTE Devices v02r03
- FCC KDB 941225 D05A Rel.10 LTE SAR Test Guidance v01r01
- FCC KDB 941225 D06 Hotspot Mode SAR v02



4. Equipment Under Test (EUT)

4.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Cellular Phone
Brand Name	Motorola
Model Name	4036
FCC ID	IHDT56UA1
IMEI Code	990005740080255
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz CDMA2000 BC0: 824.7 MHz ~ 848.31 MHz CDMA 2000 BC1: 1851.25 MHz ~ 1908.75 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 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(Rel.0)/1xEv-Do(Rev.A) • LTE: QPSK, 16QAM • 802.11a/b/g/n/ac HT20/HT40/VHT20/VHT40/VHT80 • Bluetooth v3.0 with EDR , Bluetooth v4.0 with 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 body-adjacent exposure configurations during a mobile hotspot session, reduced power limits are enforced on the GSM1900, WCDMA B2, CDMA BC1 and LTE B2 / B4 / B7 transmitter. More detailed information which can be referred to "operational description". 3. This device utilizes dynamic antenna tuning on the main antenna in the low frequency band. Please refer to the operational description (Exhibit 12) for functionality description, and FCC the pre-test KDB inquiry (Exhibit 12A) for test guidance. Test results for this specific condition are labeled as Triggered in the Antenna Tuner column contained in the section14 of the report.	



4.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r03																																																		
FCC ID		IHDT56UA1																																																
Equipment Name		Mobile Cellular Phone																																																
Operating Frequency Range of each LTE transmission band		LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 05: 824.7 MHz ~ 848.3 MHz LTE Band 04: 1710.7 MHz ~ 1754.3 MHz LTE Band 02: 1850.7 MHz ~ 1909.3 MHz LTE Band 07: 2502.5 MHz ~ 2567.5 MHz																																																
Channel Bandwidth		LTE Band 13: 5MHz, 10MHz LTE Band 05:1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 04:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 02:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 07: 5MHz, 10MHz, 15MHz, 20MHz																																																
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="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (RB)</th><th rowspan="2">MPR (dB)</th></tr><tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr><tr><td>QPSK</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 1</td></tr><tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr><tr><td>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr></table>			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 / B7 power reduction applied to satisfy SAR compliance.																																																
LTE Carrier Aggregation Combinations		Inter-Band and Intra-Band possible combinations as below page and the detail power verification please referred to page40.																																																
LTE Carrier Aggregation Additional Information		This device does not support full CA features on 3GPP Release 10. Is supports a maximum of 2 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 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									
LTE Band 5												
	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	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		
H	20643	848.3	20635	847.5	20625	846.5	20600	844				
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 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 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		
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560				

LTE Carrier Aggregation Combinations															
Inter-Band Combinations												Intra-Band Combinations			
(PCC) B2	(SCC) B4	(PCC) B4	(SCC) B2	(PCC) B2	(SCC) B5	(PCC) B5	(SCC) B2	(PCC) B2	(SCC) B13	(PCC) B13	(SCC) B2	Non contiguous		Non contiguous	
												(PCC) B2	(SCC) B2	(PCC) B4	(SCC) B74
20M + 20M		20M + 20M		20M + 10M		10M + 20M		20M + 10M		10M + 20M		20M + 20M		20M + 20M	
20M + 15M		20M + 15M		20M + 5M		10M + 15M		20M + 5M		10M + 15M		20M + 15M		20M + 15M	
20M + 10M		20M + 10M		15M + 10M		10M + 10M		15M + 10M		10M + 10M		20M + 10M		20M + 10M	
20M + 5M		20M + 5M		15M + 5M		10M + 5M		15M + 5M		10M + 5M		20M + 5M		20M + 5M	
15M + 20M		15M + 20M		10M + 10M		5M + 20M		10M + 10M		5M + 20M		15M + 20M		15M + 20M	
15M + 15M		15M + 15M		10M + 5M		5M + 15M		10M + 5M		5M + 15M		15M + 15M		15M + 15M	
15M + 10M		15M + 10M		5M + 10M		5M + 10M		5M + 10M		5M + 10M		15M + 10M		15M + 10M	
15M + 5M		15M + 5M		5M + 5M		5M + 5M		5M + 5M		5M + 5M		15M + 5M		15M + 5M	
10M + 20M		10M + 20M										10M + 20M		10M + 20M	
10M + 15M		10M + 15M		(PCC) B4	(SCC) B5	(PCC) B5	(SCC) B4	(PCC) B4	(SCC) B13	(PCC) B13	(SCC) B4	10M + 15M		10M + 15M	
10M + 10M		10M + 10M										10M + 10M		10M + 10M	
10M + 5M		10M + 5M										10M + 5M		10M + 5M	
5M + 20M		5M + 20M										20M + 10M		10M + 20M	
5M + 15M		5M + 15M		20M + 5M		10M + 15M		20M + 5M		10M + 15M		5M + 15M		5M + 15M	
5M + 10M		5M + 10M		15M + 10M		10M + 10M		15M + 10M		10M + 10M		5M + 10M		5M + 10M	
5M + 5M		5M + 5M		15M + 5M		10M + 5M		15M + 5M		10M + 5M		5M + 5M		5M + 5M	
3M + 20M		3M + 20M		10M + 10M		5M + 20M		10M + 10M		5M + 20M					
3M + 15M		3M + 15M		10M + 5M		5M + 15M		10M + 5M		5M + 15M					
3M + 10M		3M + 10M		5M + 10M		5M + 10M		5M + 10M		5M + 10M					
3M + 5M		3M + 5M		5M + 5M		5M + 5M		5M + 5M		5M + 5M					
1.4M + 20M		1.4M + 20M													
1.4M + 15M		1.4M + 15M													
1.4M + 10M		1.4M + 10M													
1.4M + 5M		1.4M + 5M													

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:

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

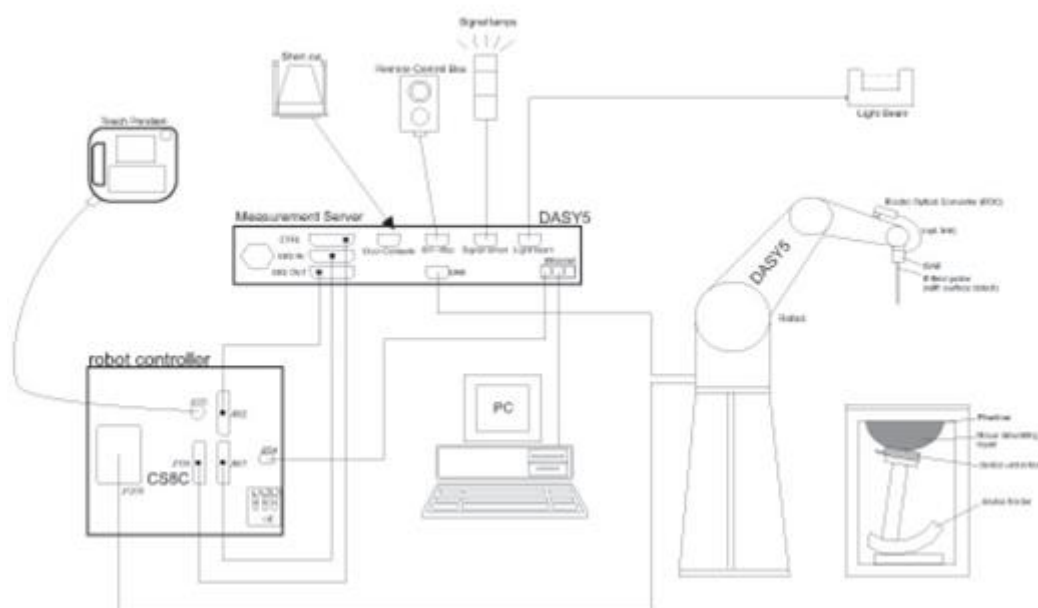
SAR is expressed in units of Watts per kilogram (W/kg)

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

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.

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 Appendix D 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 dB0) 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 D01v01r03 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 D01v01r03 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 to 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	1132	Jan. 06, 2015	Jan. 05, 2016
SPEAG	835MHz System Validation Kit	D835V2	499	Mar. 20, 2015	Mar. 19, 2016
SPEAG	1750MHz System Validation Kit	D1750V2	1068	Nov. 14, 2014	Nov. 13, 2015
SPEAG	1900MHz System Validation Kit	D1900V2	5d041	Mar. 24, 2015	Mar. 23, 2016
SPEAG	2450MHz System Validation Kit	D2450V2	924	Nov. 19, 2014	Nov. 18, 2015
SPEAG	2600MHz System Validation Kit	D2600V2	1070	Nov. 19, 2014	Nov. 18, 2015
SPEAG	5GHz System Validation Kit	D5GHzV2	1006	Sep. 25, 2014	Sep. 24, 2015
SPEAG	Data Acquisition Electronics	DAE4	1388	Sep. 24, 2014	Sep. 23, 2015
SPEAG	Data Acquisition Electronics	DAE3	577	Oct. 06, 2014	Oct. 05, 2015
SPEAG	Data Acquisition Electronics	DAE4	1279	Jul. 23, 2014	Jul. 22, 2015
SPEAG	Data Acquisition Electronics	DAE3	495	May. 22, 2015	May. 21, 2016
SPEAG	Data Acquisition Electronics	DAE4	916	Dec. 29, 2014	Dec. 28, 2015
SPEAG	Data Acquisition Electronics	DAE4	1399	Nov. 13, 2014	Nov. 12, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3697	Sep. 29, 2014	Sep. 28, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3931	Sep. 25, 2014	Sep. 24, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3954	Nov. 21, 2014	Nov. 20, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3925	May. 27, 2015	May. 26, 2016
SPEAG	Dosimetric E-Field Probe	EX3DV4	3578	Mar. 31, 2015	Mar. 30, 2016
SPEAG	Dosimetric E-Field Probe	EX3DV4	3955	Nov. 21, 2014	Nov. 20, 2015
Wisewind	Thermometer	ETP-101	TM560	Oct. 21, 2014	Oct. 20, 2015
WonDer	Thermometer	WD-5015	TM685	Oct. 21, 2014	Oct. 20, 2015
Wisewind	Thermometer	HTC-1	TM642	Oct. 21, 2014	Oct. 20, 2015
Wisewind	Thermometer	HTC-1	TM281	Oct. 21, 2014	Oct. 20, 2015
H.M.IRIS	Thermometer	TH-08	TM658	Oct. 21, 2014	Oct. 20, 2015
Wisewind	Thermometer	ETP-101	TM225	Oct. 21, 2014	Oct. 20, 2015
Anritsu	Radio Communication Analyzer	MT8820C	6201074414	Feb. 06, 2015	Feb. 05, 2016
Anritsu	Radio Communication Analyzer	MT8820C	6201341952	Dec. 11, 2014	Dec. 10, 2015
Agilent	Wireless Communication Test Set	E5515C	GB46311322	Mar. 05, 2015	Mar. 04, 2016
Agilent	Wireless Communication Test Set	E5515C	MY50266977	May. 14, 2015	May. 13, 2016
Anritsu	BT Base Station	MT8852B	1350002	Dec. 12, 2014	Dec. 11, 2015
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Agilent	Signal Generator	N5181A	MY50145381	Dec. 11, 2014	Dec. 10, 2015
Agilent	ENA Network Analyzer	E5071C	MY46316648	Feb. 11, 2015	Feb. 10, 2016
SPEAG	Dielectric Probe Kit	DAK-3.5	1138	Nov. 18, 2014	Nov. 17, 2015
Anritsu	Power Meter	ML2495A	1349001	Dec. 03, 2014	Dec. 02, 2015
Anritsu	Power Sensor	MA2411B	1306099	Dec. 03, 2014	Dec. 02, 2015
R&S	Spectrum Analyzer	FSP 7	101131	Jul. 10, 2014	Jul. 09, 2015
Agilent	Dual Directional Coupler	778D	50422	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	22.2	0.890	42.026	0.89	41.90	0.00	0.30	±5	2015/6/15
750	HSL	22.5	0.900	43.493	0.89	41.90	1.12	3.80	±5	2015/7/5
750	MSL	22.4	0.968	57.868	0.96	55.50	0.83	4.27	±5	2015/6/7
750	MSL	22.5	0.968	57.889	0.96	55.50	0.83	4.30	±5	2015/7/5
835	HSL	22.4	0.896	41.887	0.90	41.50	-0.44	0.93	±5	2015/6/15
835	HSL	22.5	0.910	42.052	0.90	41.50	1.11	1.33	±5	2015/7/5
835	MSL	22.5	0.977	53.183	0.97	55.20	0.72	-3.65	±5	2015/6/6
835	MSL	22.5	0.985	56.534	0.97	55.20	1.55	2.42	±5	2015/7/5
1750	HSL	22.2	1.358	39.730	1.37	40.10	-0.88	-0.92	±5	2015/6/15
1750	HSL	22.5	1.365	39.886	1.37	40.10	-0.36	-0.53	±5	2015/7/5
1750	MSL	22.4	1.467	53.945	1.49	53.40	-1.54	1.02	±5	2015/6/10
1750	MSL	22.4	1.453	53.187	1.49	53.40	-2.48	-0.40	±5	2015/6/14
1900	HSL	22.4	1.419	41.233	1.40	40.00	1.36	3.08	±5	2015/6/14
1900	MSL	22.5	1.521	53.218	1.52	53.30	0.07	-0.15	±5	2015/6/7
1900	MSL	22.6	1.547	53.165	1.52	53.30	1.78	-0.25	±5	2015/6/8
1900	MSL	22.3	1.544	53.760	1.52	53.30	1.58	0.86	±5	2015/6/11
2450	HSL	22.3	1.848	38.132	1.80	39.20	2.67	-2.72	±5	2015/6/24
2450	MSL	22.3	2.001	52.296	1.95	52.70	2.62	-0.77	±5	2015/6/23
2600	HSL	22.3	2.007	37.833	1.96	39.00	2.40	-2.99	±5	2015/6/16
2600	MSL	22.2	2.204	52.121	2.16	52.50	2.04	-0.72	±5	2015/6/8
2600	MSL	22.5	2.223	51.884	2.16	52.50	2.92	-1.17	±5	2015/6/12
5200	HSL	22.2	4.473	35.997	4.66	36.00	-4.01	-0.01	±5	2015/7/1
5200	HSL	22.4	4.534	36.219	4.66	36.00	-2.70	0.61	±5	2015/7/3
5200	MSL	22.5	5.314	48.218	5.30	49.00	0.26	-1.60	±5	2015/7/3
5200	MSL	22.5	5.430	48.007	5.30	49.00	2.45	-2.03	±5	2015/7/4
5300	HSL	22.2	4.576	35.854	4.76	35.90	-3.87	-0.13	±5	2015/7/1
5300	HSL	22.4	4.638	36.076	4.76	35.90	-2.56	0.49	±5	2015/7/3
5300	MSL	22.5	5.456	48.037	5.42	48.90	0.66	-1.76	±5	2015/7/3
5600	HSL	22.2	4.981	36.439	5.07	35.50	-1.76	2.65	±5	2015/7/2
5600	HSL	22.4	4.921	35.653	5.07	35.50	-2.94	0.43	±5	2015/7/3
5600	MSL	22.5	5.958	47.205	5.77	48.50	3.26	-2.67	±5	2015/7/4
5800	HSL	22.2	5.196	36.157	5.27	35.30	-1.40	2.43	±5	2015/7/2
5800	HSL	22.4	5.123	35.444	5.27	35.30	-2.79	0.41	±5	2015/7/3
5800	MSL	22.5	6.203	46.981	6.00	48.20	3.38	-2.53	±5	2015/7/4

**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 (%)
2015/6/15	750	HSL	250	D750V3-1132	EX3DV4 - SN3931	DAE3 Sn577	2.04	7.94	8.16	2.77
2015/7/5	750	HSL	250	D750V3-1132	EX3DV4 - SN3954	DAE4 Sn1279	2.10	7.94	8.40	5.79
2015/6/7	750	MSL	250	D750V3-1132	EX3DV4 - SN3578	DAE4 Sn916	2.05	8.46	8.20	-3.07
2015/7/5	750	MSL	250	D750V3-1132	EX3DV4 - SN3954	DAE4 Sn1279	2.06	8.46	8.24	-2.60
2015/6/15	835	HSL	250	D835V2-499	EX3DV4 - SN3931	DAE3 Sn577	2.39	9.20	9.56	3.91
2015/7/5	835	HSL	250	D835V2-499	EX3DV4 - SN3954	DAE4 Sn1279	2.14	9.20	8.56	-6.96
2015/6/6	835	MSL	250	D835V2-499	EX3DV4 - SN3955	DAE4 Sn1399	2.29	9.30	9.16	-1.51
2015/7/5	835	MSL	250	D835V2-499	EX3DV4 - SN3954	DAE4 Sn1279	2.53	9.30	10.12	8.82
2015/6/15	1750	HSL	250	D1750V2-1068	EX3DV4 - SN3931	DAE3 Sn577	9.37	36.80	37.48	1.85
2015/7/5	1750	HSL	250	D1750V2-1068	EX3DV4 - SN3954	DAE4 Sn1279	8.60	36.80	34.40	-6.52
2015/6/10	1750	MSL	250	D1750V2-1068	EX3DV4 - SN3697	DAE4 Sn1388	9.21	38.00	36.84	-3.05
2015/6/14	1750	MSL	250	D1750V2-1068	EX3DV4 - SN3931	DAE3 Sn577	8.86	38.00	35.44	-6.74
2015/6/14	1900	HSL	250	D1900V2-5d041	EX3DV4 - SN3931	DAE3 Sn577	10.00	40.00	40.00	0.00
2015/6/7	1900	MSL	250	D1900V2-5d041	EX3DV4 - SN3955	DAE4 Sn1399	9.64	39.80	38.56	-3.12
2015/6/8	1900	MSL	250	D1900V2-5d041	EX3DV4 - SN3578	DAE4 Sn916	9.38	39.80	37.52	-5.73
2015/6/11	1900	MSL	250	D1900V2-5d041	EX3DV4 - SN3697	DAE4 Sn1388	9.70	39.80	38.80	-2.51
2015/6/24	2450	HSL	250	D2450V2-924	EX3DV4 - SN3931	DAE3 Sn577	13.00	51.90	52.00	0.19
2015/6/23	2450	MSL	250	D2450V2-924	EX3DV4 - SN3931	DAE3 Sn577	13.70	51.40	54.80	6.61
2015/6/16	2600	HSL	250	D2600V2-1070	EX3DV4 - SN3931	DAE3 Sn577	14.20	56.90	56.80	-0.18
2015/6/8	2600	MSL	250	D2600V2-1070	EX3DV4 - SN3578	DAE4 Sn916	14.30	55.30	57.20	3.44
2015/6/12	2600	MSL	250	D2600V2-1070	EX3DV4 - SN3697	DAE4 Sn1388	14.80	55.30	59.20	7.05
2015/7/1	5200	HSL	100	D5GHzV2-1006	EX3DV4 - SN3955	DAE4 Sn1399	8.10	81.10	81.00	-0.12
2015/7/3	5200	HSL	100	D5GHzV2-1006	EX3DV4 - SN3925	DAE3 Sn495	7.67	81.10	76.70	-5.43
2015/7/3	5200	MSL	100	D5GHzV2-1006	EX3DV4 - SN3955	DAE4 Sn1399	8.28	77.50	82.80	6.84
2015/7/4	5200	MSL	100	D5GHzV2-1006	EX3DV4 - SN3925	DAE3 Sn495	7.66	77.50	76.60	-1.16
2015/7/1	5300	HSL	100	D5GHzV2-1006	EX3DV4 - SN3955	DAE4 Sn1399	8.82	86.60	88.20	1.85
2015/7/3	5300	HSL	100	D5GHzV2-1006	EX3DV4 - SN3925	DAE3 Sn495	8.01	86.60	80.10	-7.51
2015/7/3	5300	MSL	100	D5GHzV2-1006	EX3DV4 - SN3955	DAE4 Sn1399	7.38	80.00	73.80	-7.75
2015/7/2	5600	HSL	100	D5GHzV2-1006	EX3DV4 - SN3955	DAE4 Sn1399	9.03	85.80	90.30	5.24
2015/7/3	5600	HSL	100	D5GHzV2-1006	EX3DV4 - SN3925	DAE3 Sn495	8.72	85.80	87.20	1.63
2015/7/4	5600	MSL	100	D5GHzV2-1006	EX3DV4 - SN3954	DAE4 Sn1279	8.23	85.20	82.30	-3.40
2015/7/2	5800	HSL	100	D5GHzV2-1006	EX3DV4 - SN3955	DAE4 Sn1399	8.47	82.90	84.70	2.17
2015/7/3	5800	HSL	100	D5GHzV2-1006	EX3DV4 - SN3925	DAE3 Sn495	8.14	82.90	81.40	-1.81
2015/7/4	5800	MSL	100	D5GHzV2-1006	EX3DV4 - SN3954	DAE4 Sn1279	7.92	78.40	79.20	1.02

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.

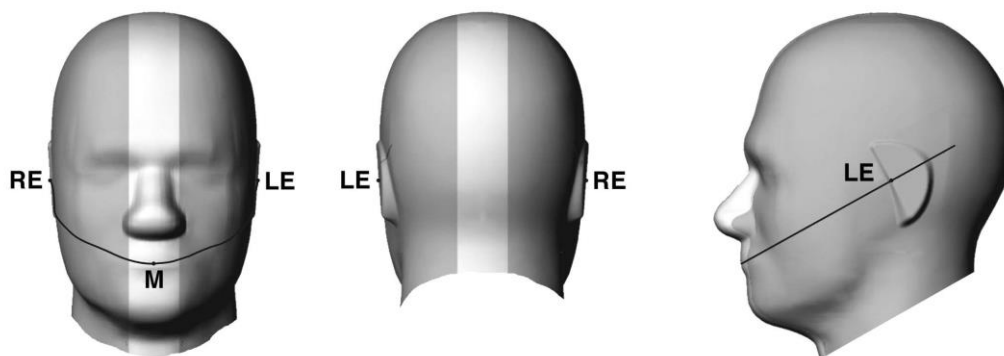


Fig 9.1.1 Front, back, and side views of SAM twin phantom

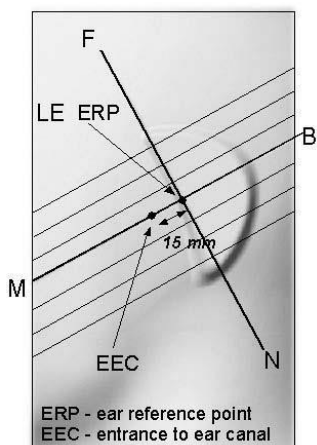


Fig 9.1.2 Close-up side view of phantom showing the ear region.

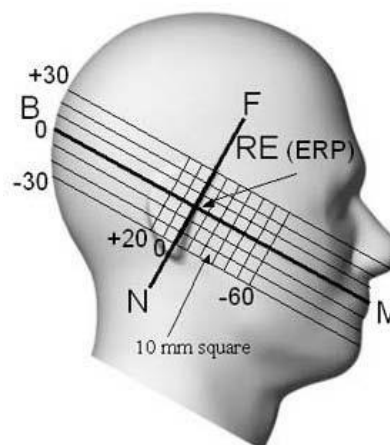


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

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.

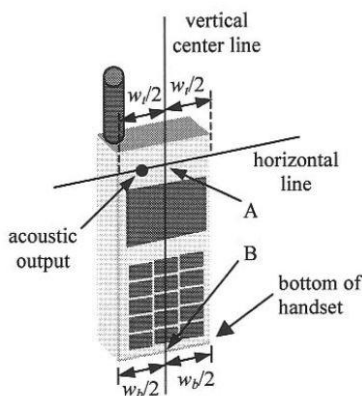


Fig 9.2.1 Handset vertical and horizontal reference lines—"fixed case"

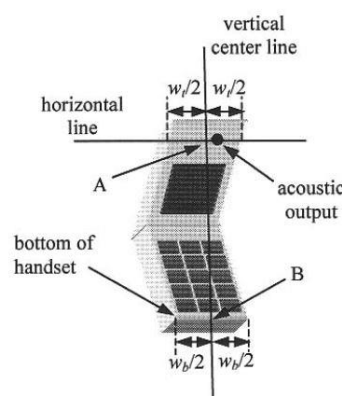


Fig 9.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

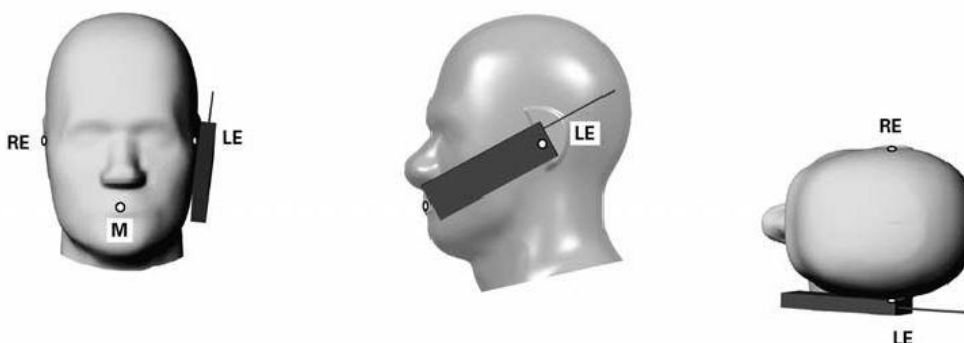


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

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

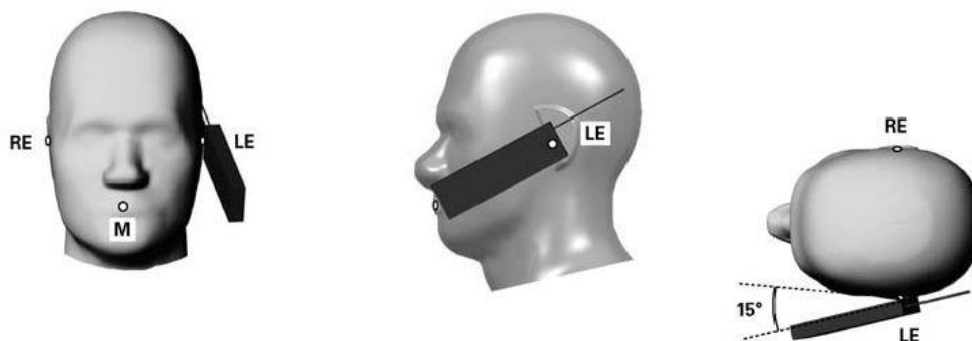


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

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 KDB 648474 D04v01r02, 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 D01v05r02 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.

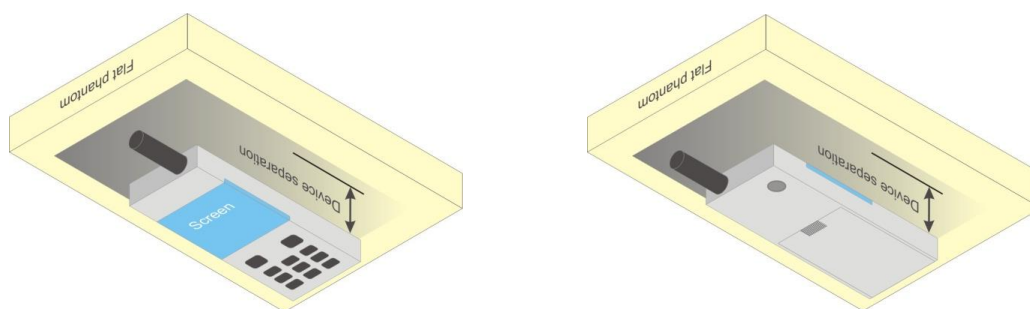


Fig 9.4 Body Worn Position

11.5 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 HDB Publication 941225 D06 v02 where SAR test considerations for handsets ($L \times W \geq 9 \text{ cm} \times 5 \text{ cm}$) 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 D01v05r02 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 D01v05r02, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03, considering the possibility of e.g. 3rd party VoIP operation for Head and body-worn SAR test reduction for GSM and GPRS and 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 EUT was set in GPRS (4Tx slots) for GSM850/GSM1900.
3. Per KDB 941225 D01v03, for Hotspot SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance, for modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested, therefore, the EUT was set in GPRS (4Tx slots) for GSM850/GSM1900.

Band 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 (GMSK, 1 Tx slot)	32.97	33.02	33.01	33.50	23.97	24.02	24.01	24.50
GPRS (GMSK, 1 Tx slot)	33.03	33.04	33.02	33.50	24.03	24.04	24.02	24.50
GPRS (GMSK, 2 Tx slots)	29.38	29.48	29.64	31.00	23.38	23.48	23.64	25.00
GPRS (GMSK, 3 Tx slots)	27.30	27.38	27.35	29.25	23.04	23.12	23.09	24.99
GPRS (GMSK, 4 Tx slots)	26.02	26.01	26.17	28.00	23.02	23.01	23.17	25.00
EDGE (8PSK, 1 Tx slot)	26.75	26.85	26.92	28.00	17.75	17.85	17.92	19.00
EDGE (8PSK, 2 Tx slots)	24.23	24.35	24.46	25.50	18.23	18.35	18.46	19.50
EDGE (8PSK, 3 Tx slots)	23.58	23.68	23.74	23.75	19.32	19.42	19.48	19.49
EDGE (8PSK, 4 Tx slots)	21.96	22.01	22.18	22.50	18.96	19.01	19.18	19.50

Band 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 (GMSK, 1 Tx slot)	29.74	29.78	29.77	30.50	20.74	20.78	20.77	21.50
GPRS (GMSK, 1 Tx slot)	29.73	29.77	29.76	30.50	20.73	20.77	20.76	21.50
GPRS (GMSK, 2 Tx slots)	26.50	26.51	26.46	28.00	20.50	20.51	20.46	22.00
GPRS (GMSK, 3 Tx slots)	24.51	24.50	24.52	26.25	20.25	20.24	20.26	21.99
GPRS (GMSK, 4 Tx slots)	23.10	23.11	23.22	25.00	20.10	20.11	20.22	22.00
EDGE (8PSK, 1 Tx slot)	25.70	25.57	25.55	27.00	16.70	16.57	16.55	18.00
EDGE (8PSK, 2 Tx slots)	24.66	24.55	24.56	26.00	18.66	18.55	18.56	20.00
EDGE (8PSK, 3 Tx slots)	21.55	21.49	21.58	22.75	17.29	17.23	17.32	18.49
EDGE (8PSK, 4 Tx slots)	20.13	20.05	20.08	21.50	17.13	17.05	17.08	18.50

<Additional Request Test Channel>

Band GSM850	Burst Average Power (dBm)	Tune-up Limit (dBm)	Frame-Average Power (dBm)	Tune-up Limit (dBm)
TX Channel	231		231	
Frequency (MHz)	844.8		844.8	
GPRS (GMSK, 4 Tx slots)	26.02	28.00	23.02	25.00

<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 D01 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

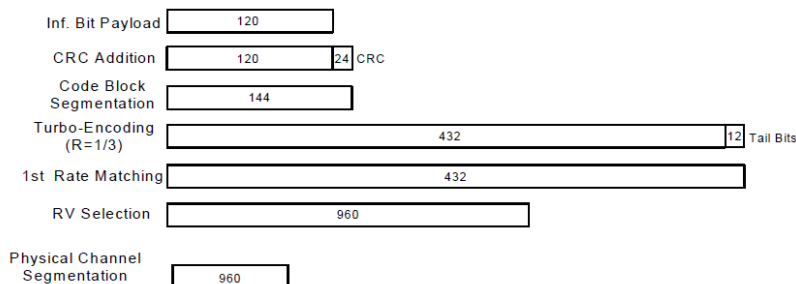
DC-HSDPA 3GPP release 8 Setup Configuration:

- 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 D01v03, SAR for Head / Hotspot / Body-worn exposure is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03, 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.

Band			WCDMA V			Tune-up Limit (dBm)	WCDMA II			Tune-up Limit (dBm)
TX Channel			4132	4182	4233		9262	9400	9538	
Rx Channel			4357	4407	4458		9662	9800	9938	
Frequency (MHz)			826.4	836.4	846.6		1852.4	1880	1907.6	
MPR (dB)	3GPP Rel 99	AMR 12.2Kbps	22.50	22.48	22.53	24.00	22.96	22.94	23.56	24.00
	3GPP Rel 99	RMC 12.2Kbps	22.52	22.50	22.54	24.00	22.99	22.98	23.59	24.00
0	3GPP Rel 6	HSDPA Subtest-1	21.55	21.02	21.22	23.00	21.70	21.73	22.02	23.00
0	3GPP Rel 6	HSDPA Subtest-2	21.54	21.01	21.20	23.00	21.69	21.72	22.01	23.00
0.5	3GPP Rel 6	HSDPA Subtest-3	21.09	20.53	20.77	22.50	21.25	21.37	21.62	22.50
0.5	3GPP Rel 6	HSDPA Subtest-4	21.05	20.52	20.76	22.50	21.20	21.29	21.61	22.50
0	3GPP Rel 8	DC-HSDPA Subtest-1	21.53	21.01	21.20	23.00	21.68	21.71	22.00	23.00
0	3GPP Rel 8	DC-HSDPA Subtest-2	21.51	21.00	21.17	23.00	21.64	21.70	21.98	23.00
0.5	3GPP Rel 8	DC-HSDPA Subtest-3	21.04	20.51	20.75	22.50	21.22	21.33	21.60	22.50
0.5	3GPP Rel 8	DC-HSDPA Subtest-4	21.03	20.50	20.73	22.50	21.17	21.26	21.58	22.50
0	3GPP Rel 6	HSUPA Subtest-1	21.20	21.00	21.08	23.00	21.51	21.60	21.62	23.00
2	3GPP Rel 6	HSUPA Subtest-2	20.21	19.71	20.31	21.00	20.71	20.60	20.85	21.00
1	3GPP Rel 6	HSUPA Subtest-3	20.45	20.03	20.33	22.00	20.64	20.71	20.94	22.00
2	3GPP Rel 6	HSUPA Subtest-4	20.55	19.93	20.83	21.00	20.97	20.80	20.99	21.00
0	3GPP Rel 6	HSUPA Subtest-5	21.18	21.00	21.10	23.00	21.25	21.32	21.80	23.00

<Additional Request Test Channel>

Band		WCDMA V	Tune-up Limit (dBm)
TX Channel		4217	
Rx Channel		4442	
Frequency (MHz)		843.4	
3GPP Rel 99	RMC 12.2Kbps	22.49	24.00

<CDMA2000 Conducted Power>
General Note:

1. Per KDB 941225 D01v03, SAR for head exposure is measured in RC3 with the handset configured to transmit at full rate in SO55.
2. Per KDB 941225 D01v03, 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 D01v03, 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.

Band	CDMA2000 BC0			Tune-up Limit (dBm)	CDMA2000 BC1			Tune-up Limit (dBm)
	TX Channel	1013	384		25	600	1175	
Frequency (MHz)		824.7	836.52	848.31	1851.25	1880	1908.75	
1xRTT RC1 SO55		23.97	24.08	24.13	25.00	23.89	23.78	23.70
1xRTT RC3 SO55		23.96	24.06	24.10	25.00	23.88	23.76	23.68
1xRTT RC3 SO32(+ F-SCH)		23.93	24.03	24.10	25.00	23.85	23.77	23.65
1xRTT RC3 SO32(+SCH)		23.92	24.06	24.11	25.00	23.87	23.78	23.67
1xEVDO RTAP 153.6Kbps		23.99	24.10	24.15	25.00	23.90	23.80	23.73
1xEVDO RETAP 4096Bits		23.80	23.94	23.98	25.00	23.70	23.65	23.52

<Additional Request Test Channel>

Band	CDMA2000 BC0	Tune-up Limit (dBm)
TX Channel	644	
Frequency (MHz)	844.32	
1xRTT RC3 SO55	24.08	25.00
1xRTT RC3 SO32(+ F-SCH)	24.06	25.00

<2.4GHz Bluetooth>
General Note:

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps, due to its highest average power.
2. The duty factor is selected theoretical 83.3% perform Bluetooth SAR testing.

Mode	Channel	Frequency (MHz)	Average power (dBm)			Tune-up Limit
			1Mbps	2Mbps	3Mbps	
v3.0 with EDR	CH 00	2402	8.74	5.58	5.62	9.00
	CH 39	2441	9.96	6.85	6.90	10.00
	CH 78	2480	7.25	3.95	4.01	8.00

Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-up Limit
			GFSK	
v4.0 with LE	CH 00	2402	0.22	1.00
	CH 19	2440	1.29	2.00
	CH 39	2480	-0.13	1.00

**<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 D05v02r03, 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 D05v02r03, 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 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r03, 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 D05v02r03, 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 D05v02r03, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r03, 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 D05v02r03, smaller bandwidth SAR testing is not required.

<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	22.70			24	0
10	QPSK	1	24	22.53				
10	QPSK	1	49	22.59				
10	QPSK	25	0	21.65			23	1
10	QPSK	25	12	21.63				
10	QPSK	25	24	21.61				
10	QPSK	50	0	21.77				
10	16QAM	1	0	22.07			23	1
10	16QAM	1	24	21.87				
10	16QAM	1	49	21.89				
10	16QAM	25	0	20.61			22	2
10	16QAM	25	12	20.66				
10	16QAM	25	24	20.58				
10	16QAM	50	0	20.70				
Channel				23205	23230	23255	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				779.5	782	784.5		
5	QPSK	1	0	22.61	22.62	22.67	24	0
5	QPSK	1	12	22.57	22.53	22.58		
5	QPSK	1	24	22.60	22.57	22.59		
5	QPSK	12	0	21.62	21.68	21.79	23	1
5	QPSK	12	6	21.59	21.65	21.84		
5	QPSK	12	11	21.63	21.62	21.82		
5	QPSK	25	0	21.65	21.68	21.84		
5	16QAM	1	0	22.02	21.90	22.05	23	1
5	16QAM	1	12	21.83	21.77	22.04		
5	16QAM	1	24	21.84	21.88	22.04		
5	16QAM	12	0	20.67	20.70	20.76	22	2
5	16QAM	12	6	20.61	20.67	20.83		
5	16QAM	12	11	20.65	20.61	20.78		
5	16QAM	25	0	20.69	20.61	20.87		



<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	24	0
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	22.39	22.45	22.30		
10	QPSK	1	24	22.32	22.17	22.26	23	1
10	QPSK	1	49	22.17	22.22	22.23		
10	QPSK	25	0	21.38	21.43	21.33		
10	QPSK	25	12	21.31	21.25	21.29		
10	QPSK	25	24	21.29	21.25	21.30	23	1
10	QPSK	50	0	21.39	21.40	21.34		
10	16QAM	1	0	21.59	21.69	21.60		
10	16QAM	1	24	21.58	21.45	21.57		
10	16QAM	1	49	21.40	21.48	21.49	22	2
10	16QAM	25	0	20.37	20.26	20.28		
10	16QAM	25	12	20.32	20.23	20.30		
10	16QAM	25	24	20.23	20.20	20.28		
10	16QAM	50	0	20.38	20.24	20.34	24	0
Channel				20425	20525	20625		
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	22.44	22.29	22.33	24	0
5	QPSK	1	12	22.30	22.16	22.26		
5	QPSK	1	24	22.27	22.20	22.30		
5	QPSK	12	0	21.36	21.19	21.32	23	1
5	QPSK	12	6	21.33	21.12	21.29		
5	QPSK	12	11	21.26	21.18	21.35		
5	QPSK	25	0	21.26	21.12	21.33		
5	16QAM	1	0	21.57	21.41	21.54	23	1
5	16QAM	1	12	21.50	21.32	21.47		
5	16QAM	1	24	21.49	21.37	21.50		
5	16QAM	12	0	20.37	20.12	20.34	22	2
5	16QAM	12	6	20.41	20.07	20.31		
5	16QAM	12	11	20.36	20.08	20.33		
5	16QAM	25	0	20.36	20.11	20.44		
Channel				20415	20525	20635	24	0
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	22.36	22.28	22.35		
3	QPSK	1	7	22.34	22.25	22.32	23	1
3	QPSK	1	14	22.30	22.12	22.33		
3	QPSK	8	0	21.36	21.17	21.35		
3	QPSK	8	4	21.39	21.08	21.35		
3	QPSK	8	7	21.33	21.09	21.33	23	1
3	QPSK	15	0	21.32	21.08	21.32		
3	16QAM	1	0	21.65	21.43	21.54		
3	16QAM	1	7	21.55	21.41	21.45	23	1
3	16QAM	1	14	21.49	21.28	21.47		
3	16QAM	8	0	20.41	20.19	20.37		
3	16QAM	8	4	20.45	20.14	20.36	22	2
3	16QAM	8	7	20.36	20.15	20.35		
3	16QAM	15	0	20.33	20.09	20.33		



Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	22.37	22.25	22.40	24	0
1.4	QPSK	1	2	22.31	22.22	22.36		
1.4	QPSK	1	5	22.24	22.21	22.39		
1.4	QPSK	3	0	22.32	22.16	22.32		
1.4	QPSK	3	1	22.36	22.18	22.36		
1.4	QPSK	3	2	22.36	22.14	22.38		
1.4	QPSK	6	0	21.24	21.02	21.34	23	1
1.4	16QAM	1	0	21.55	21.21	21.55	23	1
1.4	16QAM	1	2	21.53	21.29	21.54		
1.4	16QAM	1	5	21.47	21.26	21.45		
1.4	16QAM	3	0	21.28	21.03	21.38		
1.4	16QAM	3	1	21.33	21.09	21.41		
1.4	16QAM	3	2	21.34	21.10	21.43		
1.4	16QAM	6	0	20.34	20.03	20.40	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	23.06	23.18	23.13		
20	QPSK	1	49	22.45	22.51	22.49	24	0
20	QPSK	1	99	22.47	22.50	22.43		
20	QPSK	50	0	21.78	21.82	21.80		
20	QPSK	50	24	21.54	21.51	21.50	23	1
20	QPSK	50	49	21.52	21.50	21.46		
20	QPSK	100	0	21.60	21.63	21.59		
20	16QAM	1	0	22.55	22.55	22.51	23	1
20	16QAM	1	49	21.58	21.64	21.64		
20	16QAM	1	99	21.75	21.79	21.71		
20	16QAM	50	0	20.83	20.74	20.75	22	2
20	16QAM	50	24	20.48	20.48	20.45		
20	16QAM	50	49	20.47	20.48	20.44		
20	16QAM	100	0	20.64	20.58	20.53		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	22.94	22.99	22.97		
15	QPSK	1	37	22.53	22.40	22.35	24	0
15	QPSK	1	74	22.51	22.42	22.36		
15	QPSK	36	0	21.76	21.63	21.63		
15	QPSK	36	18	21.47	21.50	21.43	23	1
15	QPSK	36	37	21.44	21.42	21.38		
15	QPSK	75	0	21.58	21.52	21.54		
15	16QAM	1	0	22.26	22.29	22.26	23	1
15	16QAM	1	37	21.77	21.75	21.66		
15	16QAM	1	74	21.77	21.68	21.66		
15	16QAM	36	0	20.73	20.59	20.60	22	2
15	16QAM	36	18	20.42	20.43	20.38		
15	16QAM	36	37	20.38	20.32	20.27		
15	16QAM	75	0	20.58	20.48	20.49		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	22.69	22.71	22.76		
10	QPSK	1	24	22.35	22.36	22.34	24	0
10	QPSK	1	49	22.27	22.32	22.31		
10	QPSK	25	0	21.53	21.58	21.49		
10	QPSK	25	12	21.40	21.42	21.39	23	1
10	QPSK	25	24	21.40	21.39	21.25		
10	QPSK	50	0	21.44	21.44	21.37		
10	16QAM	1	0	21.93	21.94	21.97	23	1
10	16QAM	1	24	21.63	21.65	21.59		
10	16QAM	1	49	21.54	21.58	21.55		
10	16QAM	25	0	20.49	20.53	20.42	22	2
10	16QAM	25	12	20.38	20.41	20.43		
10	16QAM	25	24	20.35	20.40	20.28		
10	16QAM	50	0	20.36	20.48	20.41		

Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	22.49	22.53	22.42	24	0
5	QPSK	1	12	22.29	22.46	22.24		
5	QPSK	1	24	22.33	22.34	22.32		
5	QPSK	12	0	21.47	21.49	21.38	23	1
5	QPSK	12	6	21.47	21.41	21.32		
5	QPSK	12	11	21.42	21.46	21.34		
5	QPSK	25	0	21.32	21.46	21.27	23	1
5	16QAM	1	0	21.80	21.79	21.71		
5	16QAM	1	12	21.57	21.72	21.50		
5	16QAM	1	24	21.59	21.60	21.55	22	2
5	16QAM	12	0	20.48	20.45	20.32		
5	16QAM	12	6	20.46	20.40	20.30		
5	16QAM	12	11	20.41	20.41	20.29	22	2
5	16QAM	25	0	20.34	20.43	20.22		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	22.42	22.44	22.29	24	0
3	QPSK	1	7	22.38	22.57	22.42		
3	QPSK	1	14	22.30	22.38	22.29		
3	QPSK	8	0	21.41	21.41	21.37	23	1
3	QPSK	8	4	21.24	21.47	21.33		
3	QPSK	8	7	21.37	21.44	21.28		
3	QPSK	15	0	21.35	21.47	21.31	23	1
3	16QAM	1	0	21.64	21.68	21.56		
3	16QAM	1	7	21.61	21.85	21.71		
3	16QAM	1	14	21.43	21.64	21.58	22	2
3	16QAM	8	0	20.39	20.42	20.38		
3	16QAM	8	4	20.44	20.51	20.37		
3	16QAM	8	7	20.43	20.45	20.28	22	2
3	16QAM	15	0	20.36	20.46	20.32		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	22.31	22.36	22.44	24	0
1.4	QPSK	1	2	22.35	22.40	22.41		
1.4	QPSK	1	5	22.27	22.40	22.30		
1.4	QPSK	3	0	22.29	22.38	22.31		
1.4	QPSK	3	1	22.27	22.41	22.25		
1.4	QPSK	3	2	22.28	22.50	22.42		
1.4	QPSK	6	0	21.24	21.28	21.34	23	1
1.4	16QAM	1	0	21.52	21.58	21.52	23	1
1.4	16QAM	1	2	21.53	21.65	21.66		
1.4	16QAM	1	5	21.47	21.63	21.57		
1.4	16QAM	3	0	21.32	21.37	21.28		
1.4	16QAM	3	1	21.30	21.40	21.41		
1.4	16QAM	3	2	21.31	21.50	21.42		
1.4	16QAM	6	0	20.29	20.35	20.37	22	2



<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	22.99	23.04	23.05	24	0
20	QPSK	1	49	22.35	22.37	22.37		
20	QPSK	1	99	22.44	22.42	22.40		
20	QPSK	50	0	21.70	21.80	21.73	23	1
20	QPSK	50	24	21.43	21.48	21.51		
20	QPSK	50	49	21.36	21.49	21.35		
20	QPSK	100	0	21.44	21.60	21.65		
20	16QAM	1	0	22.38	22.48	22.40	23	1
20	16QAM	1	49	21.54	21.59	21.63		
20	16QAM	1	99	21.60	21.74	21.62		
20	16QAM	50	0	20.72	20.78	20.70	22	2
20	16QAM	50	24	20.38	20.47	20.55		
20	16QAM	50	49	20.35	20.44	20.35		
20	16QAM	100	0	20.42	20.57	20.61		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	22.87	22.97	22.97	24	0
15	QPSK	1	37	22.40	22.39	22.55		
15	QPSK	1	74	22.26	22.38	22.41		
15	QPSK	36	0	21.49	21.65	21.75	23	1
15	QPSK	36	18	21.35	21.42	21.56		
15	QPSK	36	37	21.23	21.37	21.40		
15	QPSK	75	0	21.35	21.47	21.64		
15	16QAM	1	0	22.16	22.29	22.34	23	1
15	16QAM	1	37	21.70	21.64	21.73		
15	16QAM	1	74	21.56	21.66	21.72		
15	16QAM	36	0	20.52	20.63	20.65	22	2
15	16QAM	36	18	20.32	20.39	20.51		
15	16QAM	36	37	20.21	20.39	20.38		
15	16QAM	75	0	20.35	20.42	20.60		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	22.64	22.61	22.70	24	0
10	QPSK	1	24	22.34	22.44	22.49		
10	QPSK	1	49	22.21	22.40	22.45		
10	QPSK	25	0	21.51	21.49	21.64	23	1
10	QPSK	25	12	21.42	21.50	21.54		
10	QPSK	25	24	21.29	21.39	21.51		
10	QPSK	50	0	21.50	21.48	21.55		
10	16QAM	1	0	21.90	21.88	22.00	23	1
10	16QAM	1	24	21.63	21.67	21.74		
10	16QAM	1	49	21.48	21.65	21.66		
10	16QAM	25	0	20.48	20.45	20.63	22	2
10	16QAM	25	12	20.41	20.47	20.51		
10	16QAM	25	24	20.23	20.35	20.43		
10	16QAM	50	0	20.43	20.45	20.52		



Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	22.46	22.44	22.48	24	0
5	QPSK	1	12	22.32	22.42	22.41		
5	QPSK	1	24	22.25	22.39	22.35		
5	QPSK	12	0	21.41	21.50	21.45	23	1
5	QPSK	12	6	21.33	21.44	21.44		
5	QPSK	12	11	21.34	21.49	21.38		
5	QPSK	25	0	21.31	21.47	21.39	23	1
5	16QAM	1	0	21.71	21.68	21.69		
5	16QAM	1	12	21.56	21.65	21.63		
5	16QAM	1	24	21.50	21.59	21.57	22	2
5	16QAM	12	0	20.43	20.48	20.42		
5	16QAM	12	6	20.37	20.44	20.41		
5	16QAM	12	11	20.33	20.46	20.33	22	2
5	16QAM	25	0	20.32	20.44	20.40		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	22.40	22.49	22.48	24	0
3	QPSK	1	7	22.39	22.48	22.46		
3	QPSK	1	14	22.31	22.41	22.36		
3	QPSK	8	0	21.37	21.43	21.39	23	1
3	QPSK	8	4	21.32	21.39	21.39		
3	QPSK	8	7	21.34	21.43	21.35		
3	QPSK	15	0	21.33	21.41	21.39	23	1
3	16QAM	1	0	21.75	21.78	21.72		
3	16QAM	1	7	21.69	21.69	21.64		
3	16QAM	1	14	21.53	21.59	21.55	22	2
3	16QAM	8	0	20.41	20.45	20.44		
3	16QAM	8	4	20.43	20.48	20.46		
3	16QAM	8	7	20.38	20.48	20.40	22	2
3	16QAM	15	0	20.36	20.41	20.36		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	22.44	22.52	22.48	24	0
1.4	QPSK	1	2	22.39	22.48	22.45		
1.4	QPSK	1	5	22.32	22.44	22.37		
1.4	QPSK	3	0	22.38	22.45	22.42	23	1
1.4	QPSK	3	1	22.43	22.50	22.36		
1.4	QPSK	3	2	22.34	22.40	22.35		
1.4	QPSK	6	0	21.31	21.38	21.37	23	1
1.4	16QAM	1	0	21.65	21.68	21.65		
1.4	16QAM	1	2	21.58	21.64	21.58		
1.4	16QAM	1	5	21.51	21.64	21.55	23	1
1.4	16QAM	3	0	21.37	21.43	21.40		
1.4	16QAM	3	1	21.42	21.46	21.44		
1.4	16QAM	3	2	21.41	21.48	21.43	22	2
1.4	16QAM	6	0	20.41	20.45	20.42		



<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Measured Power			Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	22.78	22.46	22.43	24	0
20	QPSK	1	49	22.53	22.38	22.27		
20	QPSK	1	99	22.12	22.12	22.01		
20	QPSK	50	0	21.73	21.60	21.45	23	1
20	QPSK	50	24	21.69	21.45	21.47		
20	QPSK	50	49	21.42	21.33	21.35		
20	QPSK	100	0	21.52	21.40	21.45	23	1
20	16QAM	1	0	21.97	21.68	21.71		
20	16QAM	1	49	21.80	21.66	21.53		
20	16QAM	1	99	21.27	21.18	21.24	22	2
20	16QAM	50	0	20.70	20.61	20.45		
20	16QAM	50	24	20.69	20.42	20.46		
20	16QAM	50	49	20.37	20.28	20.37	22	2
20	16QAM	100	0	20.53	20.34	20.37		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	22.65	22.48	22.55	24	0
15	QPSK	1	37	22.63	22.47	22.39		
15	QPSK	1	74	22.29	22.16	22.15		
15	QPSK	36	0	21.70	21.49	21.52	23	1
15	QPSK	36	18	21.63	21.40	21.50		
15	QPSK	36	37	21.49	21.29	21.37		
15	QPSK	75	0	21.66	21.38	21.47	23	1
15	16QAM	1	0	21.99	21.73	21.71		
15	16QAM	1	37	21.91	21.64	21.64		
15	16QAM	1	74	21.56	21.41	21.42	22	2
15	16QAM	36	0	20.68	20.48	20.48		
15	16QAM	36	18	20.62	20.39	20.45		
15	16QAM	36	37	20.47	20.27	20.36	22	2
15	16QAM	75	0	20.63	20.34	20.40		
Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	22.66	22.40	22.34	24	0
10	QPSK	1	24	22.64	22.32	22.33		
10	QPSK	1	49	22.31	22.07	22.13		
10	QPSK	25	0	21.70	21.46	21.35	23	1
10	QPSK	25	12	21.68	21.34	21.42		
10	QPSK	25	24	21.54	21.30	21.31		
10	QPSK	50	0	21.64	21.35	21.38	23	1
10	16QAM	1	0	21.92	21.71	21.63		
10	16QAM	1	24	21.90	21.58	21.62		
10	16QAM	1	49	21.61	21.38	21.39	22	2
10	16QAM	25	0	20.69	20.40	20.28		
10	16QAM	25	12	20.69	20.35	20.37		
10	16QAM	25	24	20.54	20.28	20.27	22	2
10	16QAM	50	0	20.63	20.29	20.33		



Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	22.77	22.41	22.38	24	0
5	QPSK	1	12	22.66	22.32	22.37		
5	QPSK	1	24	22.58	22.27	22.28		
5	QPSK	12	0	21.77	21.38	21.40	23	1
5	QPSK	12	6	21.69	21.36	21.41		
5	QPSK	12	11	21.64	21.40	21.36		
5	QPSK	25	0	21.64	21.31	21.36	23	1
5	16QAM	1	0	21.98	21.65	21.61		
5	16QAM	1	12	21.87	21.54	21.59		
5	16QAM	1	24	21.78	21.49	21.49	22	2
5	16QAM	12	0	20.74	20.35	20.35		
5	16QAM	12	6	20.68	20.32	20.36		
5	16QAM	12	11	20.59	20.32	20.32	22	2
5	16QAM	25	0	20.65	20.30	20.33		



LTE Carrier Aggregation Conducted Power

General Note:

- i. According to KDB941225 D05A v01, Uplink maximum output power measurement with downlink carrier aggregation active should be measured, using the highest output channel measured without downlink carrier aggregation, to confirm that uplink maximum output power with downlink carrier aggregation active remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output measured without downlink carrier aggregation active.
- ii. Uplink maximum output power with downlink carrier aggregation active does not show more than ¼ dB higher than the maximum output power without downlink carrier aggregation active, therefore SAR evaluation with downlink carrier aggregation active can be excluded.
- iii. The device only supports downlink carrier aggregation. Uplink carrier aggregation is not supported. Power measurements were performed with two DL carriers for the Release 8 configuration that had the highest output power across all bandwidths, channels and RB configuration for each band.
- iv. During the carrier aggregation conducted power measurements we have attention to throughput traffic to make sure all the power measurement is corrected.

Configure	PCC						SCC				Measured Power	
	LTE Band	BW (MHz)	Freq. (MHz)	Channel	UL# RB	UL RB Offset	LTE Band	BW (MHz)	Freq. (MHz)	Channel	LTE Rel 10 Tx.Power(dBm)	LTE Rel 8 Tx.Power(dBm)
Inter-Band	Band 2	20M	1860	18700	1	0	Band 4	20M	1732.5	20175	22.98	22.99
	Band 2	20M	1880	18900	1	0	Band 4	20M	1732.5	20175	23.00	23.04
	Band 2	20M	1900	19100	1	0	Band 4	20M	1732.5	20175	23.03	23.05
	Band 4	20M	1720	20050	1	0	Band 2	20M	1880	18900	23.05	23.06
	Band 4	20M	1732.5	20175	1	0	Band 2	20M	1880	18900	23.15	23.18
	Band 4	20M	1745	20300	1	0	Band 2	20M	1880	18900	23.11	23.13
	Band 2	20M	1860	18700	1	0	Band 5	10M	836.5	20525	22.98	22.99
	Band 2	20M	1880	18900	1	0	Band 5	10M	836.5	20525	23.00	23.04
	Band 2	20M	1900	19100	1	0	Band 5	10M	836.5	20525	23.03	23.05
	Band 5	10M	829	20450	1	0	Band 2	20M	1880	18900	22.35	22.39
	Band 5	10M	836.5	20525	1	0	Band 2	20M	1880	18900	22.44	22.45
	Band 5	10M	844	20600	1	0	Band 2	20M	1880	18900	22.28	22.30
	Band 2	20M	1860	18700	1	0	Band 13	10M	782	23230	22.98	22.99
	Band 2	20M	1880	18900	1	0	Band 13	10M	782	23230	23.00	23.04
	Band 2	20M	1900	19100	1	0	Band 13	10M	782	23230	23.03	23.05
	Band 13	10M	782	23230	1	0	Band 2	20M	1880	18900	22.68	22.70
	Band 13	10M	782	23230	1	0	Band 2	20M	1880	18900	22.68	22.70
	Band 13	10M	782	23230	1	0	Band 2	20M	1880	18900	22.68	22.70
	Band 4	20M	1720	20050	1	0	Band 5	10M	836.5	20525	23.05	23.06
	Band 4	20M	1732.5	20175	1	0	Band 5	10M	836.5	20525	23.15	23.18
	Band 4	20M	1745	20300	1	0	Band 5	10M	836.5	20525	23.11	23.13
	Band 5	10M	829	20450	1	0	Band 4	20M	1732.5	20175	22.35	22.39
	Band 5	10M	836.5	20525	1	0	Band 4	20M	1732.5	20175	22.44	22.45
	Band 5	10M	844	20600	1	0	Band 4	20M	1732.5	20175	22.28	22.30
	Band 4	20M	1720	20050	1	0	Band 13	10M	782	23230	23.05	23.06
	Band 4	20M	1732.5	20175	1	0	Band 13	10M	782	23230	23.15	23.18
	Band 4	20M	1745	20300	1	0	Band 13	10M	782	23230	23.11	23.13
	Band 13	10M	782	23230	1	0	Band 4	20M	1732.5	20175	22.68	22.70
	Band 13	10M	782	23230	1	0	Band 4	20M	1732.5	20175	22.68	22.70
	Band 13	10M	782	23230	1	0	Band 4	20M	1732.5	20175	22.68	22.70
Intra-Band	Band 4	20M	1720	20050	1	0	Band 4	20M	1732.5	20175	23.05	23.06
	Band 4	20M	1720	20050	1	0	Band 4	20M	1745	20300	23.05	23.06
	Band 4	20M	1732.5	20175	1	0	Band 4	20M	1720	20050	23.15	23.18
	Band 4	20M	1732.5	20175	1	0	Band 4	20M	1745	20300	23.15	23.18
	Band 4	20M	1745	20300	1	0	Band 4	20M	1720	20050	23.11	23.13
	Band 4	20M	1745	20300	1	0	Band 4	20M	1732.5	20175	23.11	23.13
	Band 2	20M	1860	18700	1	0	Band 2	20M	1880	18900	22.98	22.09
	Band 2	20M	1860	18700	1	0	Band 2	20M	1900	19100	22.98	22.99
	Band 2	20M	1880	18900	1	0	Band 2	20M	1860	18700	23.00	23.04
	Band 2	20M	1880	18900	1	0	Band 2	20M	1900	19100	23.00	23.04
	Band 2	20M	1900	19100	1	0	Band 2	20M	1860	18700	23.03	23.05
	Band 2	20M	1900	19100	1	0	Band 2	20M	1880	18900	23.03	23.05

<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 D01v02r01, 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 D01v02r01, 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.

<2.4GHz WLAN Antenna 1>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN Antenna 1	802.11b	CH 1	2412	1Mbps	18.32	18.50	99.23
		CH 6	2437		17.92	18.50	
		CH 11	2462		18.21	18.50	
	802.11g	CH 1	2412	6Mbps	16.84	17.50	95.59
		CH 6	2437		16.59	17.50	
		CH 11	2462		16.85	17.50	
	802.11n-HT20	CH 1	2412	MCS0	16.72	17.00	94.71
		CH 6	2437		16.55	17.00	
		CH 11	2462		15.39	17.00	
	802.11ac-VHT20	CH 1	2412	MCS0	16.80	17.00	94.71
		CH 6	2437		16.46	17.00	
		CH 11	2462		15.44	17.00	

<2.4GHz WLAN Antenna 2>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN Antenna 2	802.11b	CH 1	2412	1Mbps	18.29	18.50	99.04
		CH 6	2437		18.28	18.50	
		CH 11	2462		18.05	18.50	
	802.11g	CH 1	2412	6Mbps	16.95	17.50	95.03
		CH 6	2437		16.96	17.50	
		CH 11	2462		16.22	17.50	
	802.11n-HT20	CH 1	2412	MCS0	16.71	17.00	94.71
		CH 6	2437		16.75	17.00	
		CH 11	2462		15.59	17.00	
	802.11ac-VHT20	CH 1	2412	MCS0	16.68	17.00	94.74
		CH 6	2437		16.84	17.00	
		CH 11	2462		15.51	17.00	

<2.4GHz WLAN Antenna 1+2>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN Antenna 1+2	802.11b	CH 1	2412	1Mbps	21.34	21.50	99.04
		CH 6	2437		21.13	21.50	
		CH 11	2462		21.33	21.50	
	802.11g	CH 1	2412	6Mbps	19.95	20.50	94.85
		CH 6	2437		19.78	20.50	
		CH 11	2462		19.15	20.50	
	802.11n-HT20	CH 1	2412	MCS0	19.82	20.00	91.18
		CH 6	2437		19.84	20.00	
		CH 11	2462		18.61	20.00	
	802.11ac-VHT20	CH 1	2412	MCS0	19.82	20.00	94.49
		CH 6	2437		19.64	20.00	
		CH 11	2462		18.38	20.00	

<5GHz WLAN Antenna 1>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN Antenna 1	802.11a	CH 36	5180	6Mbps	12.96	13.50	97.01
		CH 40	5200		12.94	13.50	
		CH 44	5220		12.92	13.50	
		CH 48	5240		12.89	13.50	
	802.11n-HT20	CH 36	5180	MCS0	12.50	13.50	95.05
		CH 40	5200		12.46	13.50	
		CH 44	5220		12.38	13.50	
		CH 48	5240		12.29	13.50	
	802.11n-HT40	CH 38	5190	MCS0	11.83	12.50	90.48
		CH 46	5230		12.17	12.50	
	802.11ac-VHT20	CH 36	5180	MCS0	12.58	13.50	95.10
		CH 40	5200		12.56	13.50	
		CH 44	5220		12.51	13.50	
		CH 48	5240		12.45	13.50	
	802.11ac-VHT40	CH 38	5190	MCS0	10.97	12.50	90.57
		CH 46	5230		12.20	12.50	
	802.11ac-VHT80	CH 42	5210	MCS0	9.24	11.00	82.98

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN Antenna 1	802.11a	CH 52	5260	6Mbps	12.94	13.50	97.01
		CH 56	5280		12.62	13.50	
		CH 60	5300		13.43	13.50	
		CH 64	5320		13.47	13.50	
	802.11n-HT20	CH 52	5260	MCS0	12.45	13.50	95.05
		CH 56	5280		12.60	13.50	
		CH 60	5300		12.77	13.50	
		CH 64	5320		12.73	13.50	
	802.11n-HT40	CH 54	5270	MCS0	12.25	12.50	90.48
		CH 62	5310		12.46	12.50	
	802.11ac-VHT20	CH 52	5260	MCS0	12.52	13.50	95.10
		CH 56	5280		12.68	13.50	
		CH 60	5300		12.88	13.50	
		CH 64	5320		12.84	13.50	
	802.11ac-VHT40	CH 54	5270	MCS0	12.15	12.50	90.57
		CH 62	5310		12.16	12.50	
	802.11ac-VHT80	CH 58	5290	MCS0	10.96	11.00	82.98

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN Antenna 1	802.11a	CH 100	5500	6Mbps	13.49	13.50	97.01
		CH 116	5580		12.90	13.50	
		CH 124	5620		13.33	13.50	
		CH 132	5660		13.43	13.50	
		CH 144	5720		13.00	13.50	
	802.11n-HT20	CH 100	5500	MCS0	12.79	13.50	95.05
		CH 116	5580		12.51	13.50	
		CH 124	5620		12.48	13.50	
		CH 132	5660		12.40	13.50	
		CH 144	5720		13.20	13.50	
	802.11n-HT40	CH 102	5510	MCS0	10.01	11.00	90.48
		CH 110	5550		12.13	12.50	
		CH 126	5630		11.66	12.50	
		CH 134	5670		11.67	12.50	
		CH 142	5710		12.55	13.00	
	802.11ac-VHT20	CH 100	5500	MCS0	12.58	13.50	95.10
		CH 116	5580		12.24	13.50	
		CH 124	5620		12.21	13.50	
		CH 132	5660		12.18	13.50	
		CH 144	5720		12.93	13.50	
	802.11ac-VHT40	CH 102	5510	MCS0	9.83	11.00	90.57
		CH 110	5550		12.13	12.50	
		CH 126	5630		11.67	12.50	
		CH 134	5670		11.67	12.50	
		CH 142	5710		12.55	13.00	
	802.11ac-VHT80	CH 106	5530	MCS0	9.26	11.00	82.98
		CH 122	5610		10.82	11.00	
		CH 138	5690		11.53	12.00	

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN Antenna 1	802.11a	CH 149	5745	MCS0	13.49	13.50	97.01
		CH 157	5785		13.42	13.50	
		CH 165	5825		13.45	13.50	
	802.11n-HT20	CH 149	5745	MCS0	12.38	13.50	95.05
		CH 157	5785		12.65	13.50	
		CH 165	5825		12.66	13.50	
	802.11n-HT40	CH 151	5755	MCS0	10.01	10.50	90.48
		CH 159	5795		12.04	12.50	
	802.11ac-VHT20	CH 149	5745	MCS0	12.36	13.50	95.10
		CH 157	5785		12.67	13.50	
		CH 165	5825		12.44	13.50	
	802.11ac-VHT40	CH 151	5755	MCS0	8.90	10.50	90.57
		CH 159	5795		12.03	12.50	
	802.11ac-VHT80	CH 155	5775	MCS0	9.68	10.50	82.98

<5GHz WLAN Antenna 2>

2.4GHz WLAN Antenna 2	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11b	CH 1	2412	1Mbps	18.32	18.50	99.23
		CH 6	2437		17.92	18.50	
		CH 11	2462		18.21	18.50	
	802.11g	CH 1	2412	6Mbps	16.84	17.50	95.59
		CH 6	2437		16.59	17.50	
		CH 11	2462		16.85	17.50	
	802.11n-HT20	CH 1	2412	MCS0	16.72	17.00	94.71
		CH 6	2437		16.55	17.00	
		CH 11	2462		15.39	17.00	
	802.11ac-VHT20	CH 1	2412	MCS0	16.80	17.00	94.71
		CH 6	2437		16.46	17.00	
		CH 11	2462		15.44	17.00	

5.3GHz WLAN Antenna 2	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a	CH 52	5260	6Mbps	14.25	14.50	95.41
		CH 56	5280		14.49	14.50	
		CH 60	5300		13.85	14.50	
		CH 64	5320		13.83	14.50	
	802.11n-HT20	CH 52	5260	MCS0	13.73	14.50	95.05
		CH 56	5280		13.84	14.50	
		CH 60	5300		13.97	14.50	
		CH 64	5320		13.86	14.50	
	802.11n-HT40	CH 54	5270	MCS0	13.57	14.00	90.48
		CH 62	5310		13.74	14.00	
	802.11ac-VHT20	CH 52	5260	MCS0	13.96	14.50	95.10
		CH 56	5280		14.05	14.50	
		CH 60	5300		14.15	14.50	
		CH 64	5320		14.01	14.50	
	802.11ac-VHT40	CH 54	5270	MCS0	13.40	14.00	91.43
		CH 62	5310		13.11	14.00	
	802.11ac-VHT80	CH 58	5290	MCS0	12.53	13.00	82.98

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN Antenna 2	802.11a	CH 100	5500	6Mbps	13.90	15.00	95.41
		CH 116	5580		14.59	15.00	
		CH 124	5620		14.02	15.00	
		CH 132	5660		14.02	15.00	
		CH 144	5720		15.79	16.50	
	802.11n-HT20	CH 100	5500	MCS0	14.08	15.00	95.05
		CH 116	5580		13.96	15.00	
		CH 124	5620		14.64	15.00	
		CH 132	5660		14.64	15.00	
		CH 144	5720		15.47	16.50	
	802.11n-HT40	CH 102	5510	MCS0	11.25	12.00	90.48
		CH 110	5550		13.63	15.00	
		CH 126	5630		13.58	15.00	
		CH 134	5670		13.54	15.00	
		CH 142	5710		14.96	16.00	
	802.11ac-VHT20	CH 100	5500	MCS0	14.09	15.00	95.10
		CH 116	5580		14.01	15.00	
		CH 124	5620		14.01	15.00	
		CH 132	5660		14.02	15.00	
		CH 144	5720		15.45	16.50	
	802.11ac-VHT40	CH 102	5510	MCS0	11.22	12.00	91.43
		CH 110	5550		13.47	15.00	
		CH 126	5630		14.21	15.00	
		CH 134	5670		14.23	15.00	
		CH 142	5710		14.94	15.00	
	802.11ac-VHT80	CH 106	5530	MCS0	11.31	12.00	82.98
		CH 122	5610		12.76	13.00	
		CH 138	5690		13.70	14.00	

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN Antenna 2	802.11a	CH 149	5745	MCS0	14.24	15.00	95.41
		CH 157	5785		14.12	15.00	
		CH 165	5825		13.72	15.00	
	802.11n-HT20	CH 149	5745	MCS0	14.59	15.00	95.05
		CH 157	5785		14.35	15.00	
		CH 165	5825		14.14	15.00	
	802.11n-HT40	CH 151	5755	MCS0	12.38	13.00	90.48
		CH 159	5795		13.74	14.50	
	802.11ac-VHT20	CH 149	5745	MCS0	14.56	15.00	95.10
		CH 157	5785		14.32	15.00	
		CH 165	5825		14.07	15.00	
	802.11ac-VHT40	CH 151	5755	MCS0	11.37	12.00	91.43
		CH 159	5795		13.75	14.50	
	802.11ac-VHT80	CH 155	5775	MCS0	11.41	12.00	82.98

<5GHz WLAN Antenna 1+2>

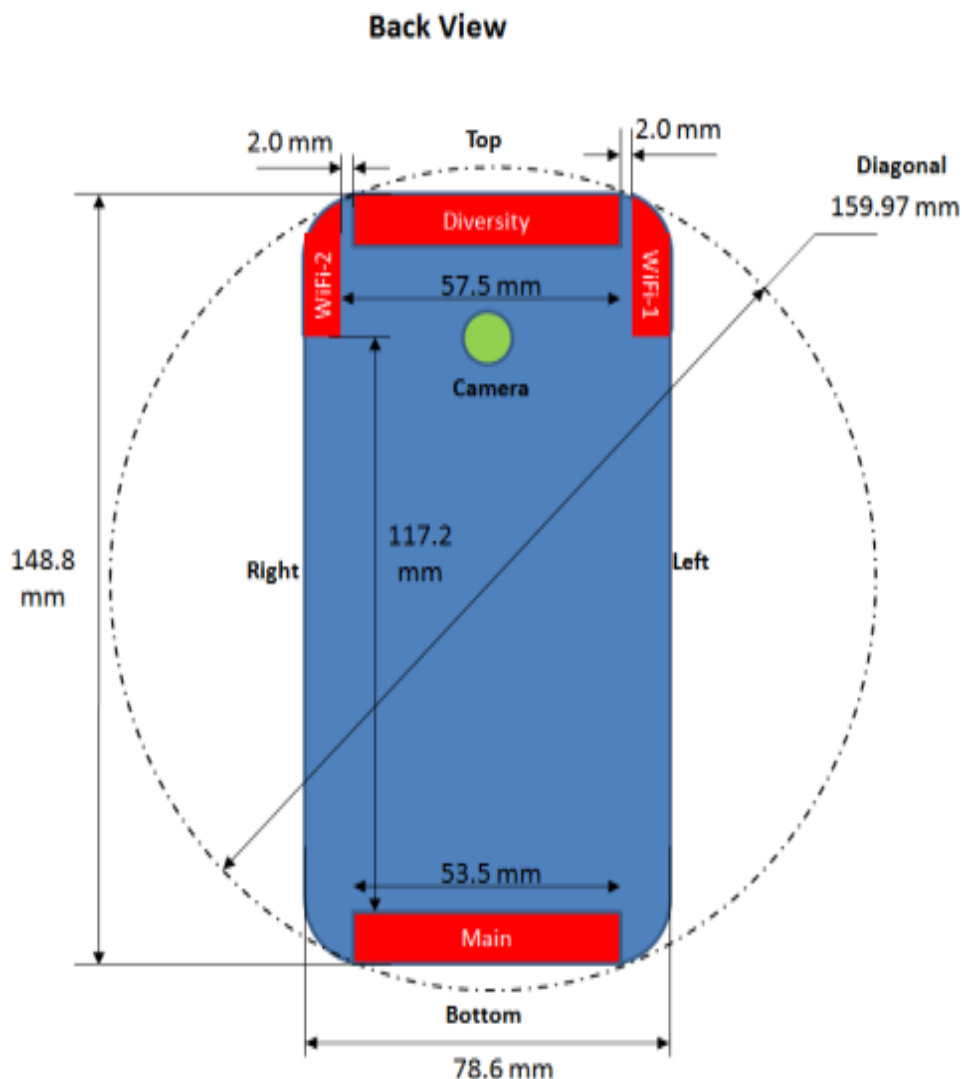
	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN Antenna 1+2	802.11a	CH 36	5180	6Mbps	16.25	17.00	95.37
		CH 40	5200		16.23	17.00	
		CH 44	5220		16.22	17.00	
		CH 48	5240		16.18	17.00	
	802.11n-HT20	CH 36	5180	MCS0	16.32	17.00	90.83
		CH 40	5200		16.33	17.00	
		CH 44	5220		16.35	17.00	
		CH 48	5240		16.32	17.00	
	802.11n-HT40	CH 38	5190	MCS0	15.40	16.00	83.00
		CH 46	5230		16.00	16.00	
	802.11ac-VHT20	CH 36	5180	MCS0	16.24	17.00	95.10
		CH 40	5200		16.26	17.00	
		CH 44	5220		16.29	17.00	
		CH 48	5240		16.18	17.00	
	802.11ac-VHT40	CH 38	5190	MCS0	14.24	15.50	90.48
		CH 46	5230		15.93	16.50	
	802.11ac-VHT80	CH 42	5210	MCS0	12.66	14.50	82.98

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN Antenna 1+2	802.11a	CH 52	5260	6Mbps	16.14	17.00	95.37
		CH 56	5280		16.27	17.00	
		CH 60	5300		16.64	17.00	
		CH 64	5320		16.59	17.00	
	802.11n-HT20	CH 52	5260	MCS0	16.40	17.00	90.83
		CH 56	5280		16.58	17.00	
		CH 60	5300		16.68	17.00	
		CH 64	5320		16.64	17.00	
	802.11n-HT40	CH 54	5270	MCS0	15.97	16.00	83.00
		CH 62	5310		15.98	16.00	
	802.11ac-VHT20	CH 52	5260	MCS0	16.32	17.00	95.10
		CH 56	5280		16.48	17.00	
		CH 60	5300		16.62	17.00	
		CH 64	5320		16.60	17.00	
	802.11ac-VHT40	CH 54	5270	MCS0	15.98	16.00	90.48
		CH 62	5310		15.53	16.00	
	802.11ac-VHT80	CH 58	5290	MCS0	14.83	15.00	82.98

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN Antenna 1+2	802.11a	CH 100	5500	6Mbps	16.68	17.00	95.37
		CH 116	5580		16.27	17.00	
		CH 124	5620		16.10	17.00	
		CH 132	5660		16.06	17.00	
		CH 144	5720		17.93	18.00	
	802.11n-HT20	CH 100	5500	MCS0	16.48	17.00	90.83
		CH 116	5580		16.29	17.00	
		CH 124	5620		16.29	17.00	
		CH 132	5660		16.30	17.00	
		CH 144	5720		17.76	18.00	
	802.11n-HT40	CH 102	5510	MCS0	13.49	14.50	83.00
		CH 110	5550		16.03	16.50	
		CH 126	5630		15.94	16.50	
		CH 134	5670		15.87	16.50	
		CH 142	5710		17.21	17.50	
	802.11ac-VHT20	CH 100	5500	MCS0	16.44	17.00	95.10
		CH 116	5580		16.26	17.00	
		CH 124	5620		16.24	17.00	
		CH 132	5660		16.22	17.00	
		CH 144	5720		17.61	18.00	
	802.11ac-VHT40	CH 102	5510	MCS0	13.37	14.50	90.48
		CH 110	5550		15.98	16.50	
		CH 126	5630		16.18	16.50	
		CH 134	5670		16.20	16.50	
		CH 142	5710		16.99	17.00	
	802.11ac-VHT80	CH 106	5530	MCS0	12.94	14.50	82.98
		CH 122	5610		14.99	15.00	
		CH 138	5690		15.82	16.00	

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN Antenna 1+2	802.11a	CH 149	5745	MCS0	16.89	17.00	95.37
		CH 157	5785		16.74	17.00	
		CH 165	5825		16.54	17.00	
	802.11n-HT20	CH 149	5745	MCS0	16.77	17.00	90.83
		CH 157	5785		16.71	17.00	
		CH 165	5825		16.49	17.00	
	802.11n-HT40	CH 151	5755	MCS0	14.22	14.50	83.00
		CH 159	5795		16.13	16.50	
	802.11ac-VHT20	CH 149	5745	MCS0	16.66	17.00	95.10
		CH 157	5785		16.64	17.00	
		CH 165	5825		16.43	17.00	
	802.11ac-VHT40	CH 151	5755	MCS0	13.08	14.00	90.48
		CH 159	5795		15.99	16.50	
	802.11ac-VHT80	CH 155	5775	MCS0	13.53	14.00	82.98

13. Antenna Location



Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Main	≤ 25mm	≤ 25mm	> 25mm	≤ 25mm	≤ 25mm	≤ 25mm
BT&WLAN	≤ 25mm	≤ 25mm	≤ 25mm	> 25mm	≤ 25mm	≤ 25mm

Positions for SAR tests; Hotspot mode						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Main	Yes	Yes	No	Yes	Yes	Yes
BT&WLAN	Yes	Yes	Yes	No	Yes	Yes

General Note:

- Referring to KDB 941225 D06 v02, when the overall device length and width are $\geq 9\text{cm} \times 5\text{cm}$, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge

14. SAR Test Results

General Note:

- Per KDB 447498 D01v05r02, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
 - 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.
 - 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)"
 - For WWAN / Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
 - For WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
- Per KDB 447498 D01v05r02, 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
- Per KDB 648474 D04v01r02, 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.
- Per KDB 648474 D04v01r02, 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 extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.

GSM Note:

- Per KDB 941225 D01v03, considering the possibility of e.g. 3rd party VoIP operation for Head and body-worn SAR test reduction for GSM and GPRS and 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 EUT was set in GPRS (4Tx slots) for GSM850/GSM1900.
- Per KDB 941225 D01v03, for Hotspot SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance, for modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested, therefore, the EUT was set in GPRS (4Tx slots) for GSM850/GSM1900.

UMTS Note:

- Per KDB 941225 D01v03, SAR for head / Hotspot / Body-worn exposure is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
- Per KDB 941225 D01v03, 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 ≤ ¼ 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.

CMDA Note:

- Per KDB 941225 D01v03, SAR for head exposure is measured in RC3 with the handset configured to transmit at full rate in SO55.
- Per KDB 941225 D01v03, 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.
- Per KDB 941225 D01v03, for Body-worn accessory SAR is measured in RC3 with the handset configured in TDSC/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 D05v02r03, 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 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r03, 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 D05v02r03, 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 D05v02r03, 16QAM SAR testing is not required.
5. Per KDB 941225 D05v02r03, 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 D05v02r03, smaller bandwidth SAR testing is not required.

WLAN Note:

1. Per KDB 248227 D01v02r01, 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 D01v02r01, for U-NII-1 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 D01v02r01, 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.

**14.1 Head SAR****<GSM SAR>**

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna Tuner	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)
01	GSM850	GPRS (4 Tx slots)	Right Cheek	0mm	non-Tigger	251	848.8	26.17	28.00	1.524	-0.04	0.245	0.373
	GSM850	GPRS (4 Tx slots)	Right Cheek	0mm	Tigger	231	844.8	26.02	28.00	1.578	-0.06	0.159	0.251
	GSM850	GPRS (4 Tx slots)	Right Tilted	0mm	non-Tigger	251	848.8	26.17	28.00	1.524	-0.05	0.121	0.184
	GSM850	GPRS (4 Tx slots)	Left Cheek	0mm	non-Tigger	251	848.8	26.17	28.00	1.524	-0.06	0.172	0.262
	GSM850	GPRS (4 Tx slots)	Left Tilted	0mm	non-Tigger	251	848.8	26.17	28.00	1.524	-0.08	0.119	0.181
	GSM1900	GPRS (4 Tx slots)	Right Cheek	0mm	non-Tigger	810	1909.8	23.22	25.00	1.507	-0.1	0.038	0.057
	GSM1900	GPRS (4 Tx slots)	Right Tilted	0mm	non-Tigger	810	1909.8	23.22	25.00	1.507	-0.12	0.032	0.048
02	GSM1900	GPRS (4 Tx slots)	Left Cheek	0mm	non-Tigger	810	1909.8	23.22	25.00	1.507	-0.12	0.064	0.096
	GSM1900	GPRS (4 Tx slots)	Left Tilted	0mm	non-Tigger	810	1909.8	23.22	25.00	1.507	0.19	0.020	0.030

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna Tuner	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 V	RMC 12.2Kbps	Right Cheek	0mm	non-Tigger	4233	846.6	22.54	24.00	1.400	-0.14	0.246	0.344
	WCDMA V	RMC12.2Kbps	Right Cheek	0mm	Tigger	4217	843.4	22.49	24.00	1.416	-0.05	0.123	0.174
	WCDMA V	RMC 12.2Kbps	Right Tilted	0mm	non-Tigger	4233	846.6	22.54	24.00	1.400	-0.1	0.118	0.165
	WCDMA V	RMC 12.2Kbps	Left Cheek	0mm	non-Tigger	4233	846.6	22.54	24.00	1.400	-0.11	0.159	0.223
	WCDMA V	RMC 12.2Kbps	Left Tilted	0mm	non-Tigger	4233	846.6	22.54	24.00	1.400	-0.03	0.101	0.141
	WCDMA II	RMC 12.2Kbps	Right Cheek	0mm	non-Tigger	9538	1907.6	23.59	24.00	1.099	-0.06	0.130	0.143
	WCDMA II	RMC 12.2Kbps	Right Tilted	0mm	non-Tigger	9538	1907.6	23.59	24.00	1.099	0.18	0.093	0.102
04	WCDMA II	RMC 12.2Kbps	Left Cheek	0mm	non-Tigger	9538	1907.6	23.59	24.00	1.099	-0.09	0.192	0.211
	WCDMA II	RMC 12.2Kbps	Left Tilted	0mm	non-Tigger	9538	1907.6	23.59	24.00	1.099	0.02	0.057	0.063

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna Tuner	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	CDMA2000 BC0	1xRTT RC3 SO55	Right Cheek	0mm	non-Tigger	777	848.31	24.10	25.00	1.230	-0.08	0.346	0.426
	CDMA2000 BC0	1xRTT RC3 SO55	Right Cheek	0mm	Tigger	644	844.32	24.08	25.00	1.236	-0.07	0.145	0.179
	CDMA2000 BC0	1xRTT RC3 SO55	Right Tilted	0mm	non-Tigger	777	848.31	24.10	25.00	1.230	-0.04	0.159	0.196
	CDMA2000 BC0	1xRTT RC3 SO55	Left Cheek	0mm	non-Tigger	777	848.31	24.10	25.00	1.230	-0.05	0.226	0.278
	CDMA2000 BC0	1xRTT RC3 SO55	Left Tilted	0mm	non-Tigger	777	848.31	24.10	25.00	1.230	-0.04	0.155	0.191
	CDMA2000 BC1	1xRTT RC3 SO55	Right Cheek	0mm	non-Tigger	25	1851.25	23.88	25.00	1.294	-0.12	0.125	0.162
	CDMA2000 BC1	1xRTT RC3 SO55	Right Tilted	0mm	non-Tigger	25	1851.25	23.88	25.00	1.294	0.09	0.060	0.078
06	CDMA2000 BC1	1xRTT RC3 SO55	Left Cheek	0mm	non-Tigger	25	1851.25	23.88	25.00	1.294	-0.03	0.147	0.190
	CDMA2000 BC1	1xRTT RC3 SO55	Left Tilted	0mm	non-Tigger	25	1851.25	23.88	25.00	1.294	0.07	0.042	0.054



<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna Tuner	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 13	10M	QPSK	1RB	0Offset	Right Cheek	0mm	non-Tigger	23230	782	22.70	24.00	1.349	-0.1	0.269	0.363
	LTE Band 13	10M	QPSK	1RB	0offset	Right Cheek	0mm	Tigger	23230	782	22.70	24.00	1.349	0.06	0.076	0.103
	LTE Band 13	10M	QPSK	25RB	0Offset	Right Cheek	0mm	non-Tigger	23230	782	21.65	23.00	1.365	0.08	0.145	0.198
	LTE Band 13	10M	QPSK	1RB	0Offset	Right Tilted	0mm	non-Tigger	23230	782	22.70	24.00	1.349	0.19	0.148	0.200
	LTE Band 13	10M	QPSK	25RB	0Offset	Right Tilted	0mm	non-Tigger	23230	782	21.65	23.00	1.365	0.16	0.080	0.109
	LTE Band 13	10M	QPSK	1RB	0Offset	Left Cheek	0mm	non-Tigger	23230	782	22.70	24.00	1.349	-0.03	0.203	0.274
	LTE Band 13	10M	QPSK	25RB	0Offset	Left Cheek	0mm	non-Tigger	23230	782	21.65	23.00	1.365	0.14	0.109	0.149
	LTE Band 13	10M	QPSK	1RB	0Offset	Left Tilted	0mm	non-Tigger	23230	782	22.70	24.00	1.349	0.07	0.143	0.193
	LTE Band 13	10M	QPSK	25RB	0Offset	Left Tilted	0mm	non-Tigger	23230	782	21.65	23.00	1.365	0.04	0.078	0.106
08	LTE Band 5	10M	QPSK	1RB	0Offset	Right Cheek	0mm	non-Tigger	20525	836.5	22.45	24.00	1.429	-0.09	0.244	0.349
	LTE Band 5	10M	QPSK	1RB	0offset	Right Cheek	0mm	Tigger	20525	836.5	22.45	24.00	1.429	0.07	0.076	0.109
	LTE Band 5	10M	QPSK	25RB	0Offset	Right Cheek	0mm	non-Tigger	20525	836.5	21.43	23.00	1.435	-0.1	0.137	0.197
	LTE Band 5	10M	QPSK	1RB	0Offset	Right Tilted	0mm	non-Tigger	20525	836.5	22.45	24.00	1.429	0.03	0.127	0.181
	LTE Band 5	10M	QPSK	25RB	0Offset	Right Tilted	0mm	non-Tigger	20525	836.5	21.43	23.00	1.435	-0.04	0.073	0.105
	LTE Band 5	10M	QPSK	1RB	0Offset	Left Cheek	0mm	non-Tigger	20525	836.5	22.45	24.00	1.429	0.14	0.173	0.247
	LTE Band 5	10M	QPSK	25RB	0Offset	Left Cheek	0mm	non-Tigger	20525	836.5	21.43	23.00	1.435	0.12	0.100	0.144
	LTE Band 5	10M	QPSK	1RB	0Offset	Left Tilted	0mm	non-Tigger	20525	836.5	22.45	24.00	1.429	0.11	0.117	0.167
	LTE Band 5	10M	QPSK	25RB	0Offset	Left Tilted	0mm	non-Tigger	20525	836.5	21.43	23.00	1.435	0.14	0.067	0.096
	LTE Band 4	20M	QPSK	1RB	0Offset	Right Cheek	0mm	non-Tigger	20175	1732.5	23.18	24.00	1.208	0.19	0.115	0.139
	LTE Band 4	20M	QPSK	1RB	0offset	Right Cheek	0mm	Tigger	20175	1732.5	23.18	24.00	1.208	-0.06	0.064	0.077
	LTE Band 4	20M	QPSK	50RB	0Offset	Right Cheek	0mm	non-Tigger	20175	1732.5	21.82	23.00	1.312	0.18	0.075	0.098
	LTE Band 4	20M	QPSK	1RB	0Offset	Right Tilted	0mm	non-Tigger	20175	1732.5	23.18	24.00	1.208	-0.1	0.062	0.075
	LTE Band 4	20M	QPSK	50RB	0Offset	Right Tilted	0mm	non-Tigger	20175	1732.5	21.82	23.00	1.312	0.15	0.031	0.041
09	LTE Band 4	20M	QPSK	1RB	0Offset	Left Cheek	0mm	non-Tigger	20175	1732.5	23.18	24.00	1.208	-0.16	0.206	0.249
	LTE Band 4	20M	QPSK	50RB	0Offset	Left Cheek	0mm	non-Tigger	20175	1732.5	21.82	23.00	1.312	-0.12	0.101	0.133
	LTE Band 4	20M	QPSK	1RB	0Offset	Left Tilted	0mm	non-Tigger	20175	1732.5	23.18	24.00	1.208	-0.07	0.061	0.074
	LTE Band 4	20M	QPSK	50RB	0Offset	Left Tilted	0mm	non-Tigger	20175	1732.5	21.82	23.00	1.312	-0.04	0.032	0.042
	LTE Band 2	20M	QPSK	1RB	0offset	Right Cheek	0mm	non-Tigger	19100	1900	23.05	24.00	1.245	-0.11	0.106	0.132
	LTE Band 2	20M	QPSK	50RB	0offset	Right Cheek	0mm	non-Tigger	18900	1880	21.80	23.00	1.318	-0.15	0.076	0.100
	LTE Band 2	20M	QPSK	1RB	0offset	Right Tilted	0mm	non-Tigger	19100	1900	23.05	24.00	1.245	-0.16	0.069	0.086
	LTE Band 2	20M	QPSK	50RB	0offset	Right Tilted	0mm	non-Tigger	18900	1880	21.80	23.00	1.318	0.14	0.045	0.059
10	LTE Band 2	20M	QPSK	1RB	0offset	Left Cheek	0mm	non-Tigger	19100	1900	23.05	24.00	1.245	-0.16	0.170	0.212
	LTE Band 2	20M	QPSK	50RB	0offset	Left Cheek	0mm	non-Tigger	18900	1880	21.80	23.00	1.318	-0.13	0.129	0.170
	LTE Band 2	20M	QPSK	1RB	0offset	Left Tilted	0mm	non-Tigger	19100	1900	23.05	24.00	1.245	0.04	0.044	0.055
	LTE Band 2	20M	QPSK	50RB	0offset	Left Tilted	0mm	non-Tigger	18900	1880	21.80	23.00	1.318	0.14	0.033	0.044
11	LTE Band 7	20M	QPSK	1RB	0Offset	Right Cheek	0mm	non-Tigger	20850	2510	22.78	24.00	1.324	-0.18	0.146	0.193
	LTE Band 7	20M	QPSK	50RB	0Offset	Right Cheek	0mm	non-Tigger	20850	2510	21.73	23.00	1.340	-0.18	0.113	0.151
	LTE Band 7	20M	QPSK	1RB	0Offset	Right Tilted	0mm	non-Tigger	20850	2510	22.78	24.00	1.324	0.11	0.064	0.085
	LTE Band 7	20M	QPSK	50RB	0Offset	Right Tilted	0mm	non-Tigger	20850	2510	21.73	23.00	1.340	0.07	0.049	0.066
	LTE Band 7	20M	QPSK	1RB	0Offset	Left Cheek	0mm	non-Tigger	20850	2510	22.78	24.00	1.324	0.11	0.078	0.103
	LTE Band 7	20M	QPSK	50RB	0Offset	Left Cheek	0mm	non-Tigger	20850	2510	21.73	23.00	1.340	-0.04	0.062	0.083
	LTE Band 7	20M	QPSK	1RB	0Offset	Left Tilted	0mm	non-Tigger	20850	2510	22.78	24.00	1.324	0.14	0.018	0.024
	LTE Band 7	20M	QPSK	50RB	0Offset	Left Tilted	0mm	non-Tigger	20850	2510	21.73	23.00	1.340	0.13	0.007	0.010

**<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)
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 1	1	2412	18.32	18.50	1.042	99.23	1.008	-0.08	0.564	0.593
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 1	1	2412	18.32	18.50	1.042	99.23	1.008	-0.02	0.329	0.346
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 1	1	2412	18.32	18.50	1.042	99.23	1.008	-0.01	0.179	0.188
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 1	1	2412	18.32	18.50	1.042	99.23	1.008	-0.02	0.174	0.183
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 2	1	2412	18.29	18.50	1.050	99.04	1.010	-0.06	0.541	0.573
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 2	1	2412	18.29	18.50	1.050	99.04	1.010	-0.07	0.490	0.519
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 2	1	2412	18.29	18.50	1.050	99.04	1.010	-0.17	1.060	1.124
12	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 2	6	2437	18.28	18.50	1.052	99.04	1.010	-0.1	1.060	1.126
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 2	1	2412	18.29	18.50	1.050	99.04	1.010	-0.13	0.751	0.796
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	36	5180	12.96	13.50	1.132	97.01	1.031	-0.13	0.910	1.062
13	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	40	5200	12.94	13.50	1.138	97.01	1.031	-0.1	1.010	1.185
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 1	36	5180	12.96	13.50	1.132	97.01	1.031	-0.16	0.532	0.621
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 1	36	5180	12.96	13.50	1.132	97.01	1.031	0.13	0.455	0.531
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 1	36	5180	12.96	13.50	1.132	97.01	1.031	0.1	0.148	0.173
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 2	44	5220	14.20	14.50	1.071	95.41	1.048	0.07	0.102	0.114
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 2	44	5220	14.20	14.50	1.071	95.41	1.048	0.01	0.061	0.068
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 2	44	5220	14.20	14.50	1.071	95.41	1.048	-0.13	0.335	0.376
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 2	44	5220	14.20	14.50	1.071	95.41	1.048	-0.13	0.134	0.150
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	64	5320	13.47	13.50	1.007	97.01	1.031	-0.13	1.160	1.204
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	60	5300	13.43	13.50	1.016	97.01	1.031	-0.12	1.280	1.341
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	52	5260	12.94	13.50	1.137	97.01	1.031	-0.11	1.120	1.313
14	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	56	5280	12.62	13.50	1.225	97.01	1.031	-0.12	1.090	1.376
	WLAN5GHz	802.11n-HT40 MCS0	Right Cheek	0mm	Ant 1	62	5310	12.46	12.50	1.008	90.48	1.105	-0.13	1.080	1.203
	WLAN5GHz	802.11n-HT40 MCS0	Right Cheek	0mm	Ant 1	54	5270	12.25	12.50	1.058	90.48	1.105	-0.16	0.930	1.087
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 1	64	5320	13.47	13.50	1.007	97.01	1.031	0.07	0.641	0.665
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 1	64	5320	13.47	13.50	1.007	97.01	1.031	0.17	0.498	0.517
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 1	64	5320	13.47	13.50	1.007	97.01	1.031	0.13	0.372	0.386
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 2	56	5280	14.49	14.50	1.002	95.41	1.048	0.04	0.140	0.147
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 2	56	5280	14.49	14.50	1.002	95.41	1.048	0.18	0.088	0.092
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 2	56	5280	14.49	14.50	1.002	95.41	1.048	-0.08	0.339	0.356
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 2	56	5280	14.49	14.50	1.002	95.41	1.048	-0.01	0.144	0.151
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	100	5500	13.49	13.50	1.002	97.01	1.031	-0.16	1.290	1.333
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	132	5660	13.43	13.50	1.016	97.01	1.031	-0.18	1.300	1.362
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	124	5620	13.33	13.50	1.040	97.01	1.031	-0.18	1.270	1.362
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	144	5720	13.00	13.50	1.122	97.01	1.031	-0.18	1.150	1.330
15	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	116	5580	12.90	13.50	1.148	97.01	1.031	-0.18	1.160	1.373
	WLAN5GHz	802.11n-HT40 MCS0	Right Cheek	0mm	Ant 1	142	5710	12.55	13.00	1.108	90.48	1.105	-0.02	0.857	1.049
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 1	100	5500	13.49	13.50	1.002	97.01	1.031	-0.15	0.791	0.817
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 1	132	5660	13.43	13.50	1.016	97.01	1.031	-0.11	0.797	0.835
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 1	100	5500	13.49	13.50	1.002	97.01	1.031	0.16	0.679	0.702
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 1	100	5500	13.49	13.50	1.002	97.01	1.031	0.01	0.648	0.670

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)
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	149	5745	13.49	13.50	1.002	97.01	1.031	-0.14	1.180	1.219
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	165	5825	13.45	13.50	1.012	97.01	1.031	-0.03	0.906	0.945
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 1	149	5745	13.49	13.50	1.002	97.01	1.031	-0.09	0.666	0.688
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 1	149	5745	13.49	13.50	1.002	97.01	1.031	0.13	0.655	0.677
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 1	149	5745	13.49	13.50	1.002	97.01	1.031	0.13	0.342	0.353
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 2	149	5745	14.24	15.00	1.191	95.41	1.048	0.11	0.574	0.717
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 2	149	5745	14.24	15.00	1.191	95.41	1.048	-0.07	0.068	0.085
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 2	149	5745	14.24	15.00	1.191	95.41	1.048	-0.1	0.933	1.165
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 2	157	5785	14.12	15.00	1.225	95.41	1.048	-0.1	0.951	1.221
16	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 2	165	5825	13.72	15.00	1.343	95.41	1.048	-0.08	0.961	1.352
	WLAN5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 2	159	5795	13.74	14.50	1.190	90.48	1.105	-0.15	0.780	1.026
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 2	149	5745	14.24	15.00	1.191	95.41	1.048	-0.07	0.454	0.567

<Bluetooth 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)
17	Bluetooth	1Mbps	Right Cheek	0mm	39	2441	9.96	10.00	1.009	-0.03	0.078	0.079
	Bluetooth	1Mbps	Right Tilted	0mm	39	2441	9.96	10.00	1.009	-0.05	0.046	0.046
	Bluetooth	1Mbps	Left Cheek	0mm	39	2441	9.96	10.00	1.009	-0.07	0.025	0.025
	Bluetooth	1Mbps	Left Tilted	0mm	39	2441	9.96	10.00	1.009	-0.05	0.021	0.021

14.2 Hotspot SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	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)
18	GSM850	GPRS (4 Tx slots)	Front	10mm	OFF	251	848.8	26.17	28.00	1.524	0.09	0.511	0.779
	GSM850	GPRS (4 Tx slots)	Back	10mm	OFF	251	848.8	26.17	28.00	1.524	-0.12	0.462	0.704
	GSM850	GPRS (4 Tx slots)	Left Side	10mm	OFF	251	848.8	26.17	28.00	1.524	-0.06	0.135	0.206
	GSM850	GPRS (4 Tx slots)	Right Side	10mm	OFF	251	848.8	26.17	28.00	1.524	-0.06	0.436	0.664
	GSM850	GPRS (4 Tx slots)	Bottom Side	10mm	OFF	251	848.8	26.17	28.00	1.524	-0.15	0.434	0.661
	GSM1900	GPRS (4 Tx slots)	Front	10mm	ON	810	1909.8		20.00	1.000	0.01	0.360	0.360
	GSM1900	GPRS (4 Tx slots)	Back	10mm	ON	810	1909.8		20.00	1.000	0.08	0.424	0.424
	GSM1900	GPRS (4 Tx slots)	Left Side	10mm	ON	810	1909.8		20.00	1.000	0.12	0.016	0.016
	GSM1900	GPRS (4 Tx slots)	Right Side	10mm	ON	810	1909.8		20.00	1.000	0.14	0.037	0.037
19	GSM1900	GPRS (4 Tx slots)	Bottom Side	10mm	ON	810	1909.8		20.00	1.000	-0.05	0.785	0.785

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	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)
20	WCDMA V	RMC 12.2Kbps	Front	10mm	OFF	4233	846.6	22.54	24.00	1.400	0	0.477	0.668
	WCDMA V	RMC 12.2Kbps	Back	10mm	OFF	4233	846.6	22.54	24.00	1.400	-0.1	0.421	0.589
	WCDMA V	RMC 12.2Kbps	Left Side	10mm	OFF	4233	846.6	22.54	24.00	1.400	-0.11	0.125	0.175
	WCDMA V	RMC 12.2Kbps	Right Side	10mm	OFF	4233	846.6	22.54	24.00	1.400	-0.06	0.373	0.522
	WCDMA V	RMC 12.2Kbps	Bottom Side	10mm	OFF	4233	846.6	22.54	24.00	1.400	-0.14	0.431	0.603
	WCDMA II	RMC 12.2Kbps	Front	10mm	ON	9538	1907.6		18.00	1.000	0.01	0.464	0.464
	WCDMA II	RMC 12.2Kbps	Back	10mm	ON	9538	1907.6		18.00	1.000	0.06	0.510	0.510
	WCDMA II	RMC 12.2Kbps	Left Side	10mm	ON	9538	1907.6		18.00	1.000	0.09	0.070	0.070
	WCDMA II	RMC 12.2Kbps	Right Side	10mm	ON	9538	1907.6		18.00	1.000	0.02	0.039	0.039
21	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	ON	9538	1907.6		18.00	1.000	-0.02	0.930	0.930
	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	ON	9262	1852.4		18.00	1.000	-0.08	0.650	0.650
	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	ON	9400	1880		18.00	1.000	-0.09	0.857	0.857

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	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)
22	CDMA2000 BC0	RTAP 153.6Kbps	Front	10mm	OFF	777	848.31	24.15	25.00	1.216	0.03	0.583	0.709
	CDMA2000 BC0	RTAP 153.6Kbps	Back	10mm	OFF	777	848.31	24.15	25.00	1.216	-0.05	0.452	0.550
	CDMA2000 BC0	RTAP 153.6Kbps	Left Side	10mm	OFF	777	848.31	24.15	25.00	1.216	-0.01	0.102	0.124
	CDMA2000 BC0	RTAP 153.6Kbps	Right Side	10mm	OFF	777	848.31	24.15	25.00	1.216	-0.03	0.352	0.428
	CDMA2000 BC0	RTAP 153.6Kbps	Bottom Side	10mm	OFF	777	848.31	24.15	25.00	1.216	-0.06	0.457	0.556
	CDMA2000 BC1	RTAP 153.6Kbps	Front	10mm	ON	25	1851.25		17.50	1.000	-0.02	0.340	0.340
	CDMA2000 BC1	RTAP 153.6Kbps	Back	10mm	ON	25	1851.25		17.50	1.000	0.04	0.367	0.367
	CDMA2000 BC1	RTAP 153.6Kbps	Left Side	10mm	ON	25	1851.25		17.50	1.000	0.07	0.023	0.023
	CDMA2000 BC1	RTAP 153.6Kbps	Right Side	10mm	ON	25	1851.25		17.50	1.000	0.04	0.029	0.029
23	CDMA2000 BC1	RTAP 153.6Kbps	Bottom Side	10mm	ON	25	1851.25		17.50	1.000	-0.15	0.646	0.646

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	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)
24	LTE Band 13	10M	QPSK	1RB	0offset	Front	10mm	OFF	23230	782	22.70	24.00	1.349	-0.03	0.480	0.648
	LTE Band 13	10M	QPSK	25RB	0offset	Front	10mm	OFF	23230	782	21.65	23.00	1.365	0.09	0.282	0.385
	LTE Band 13	10M	QPSK	1RB	0offset	Back	10mm	OFF	23230	782	22.70	24.00	1.349	-0.02	0.442	0.596
	LTE Band 13	10M	QPSK	25RB	0offset	Back	10mm	OFF	23230	782	21.65	23.00	1.365	-0.02	0.254	0.347
	LTE Band 13	10M	QPSK	1RB	0offset	Left Side	10mm	OFF	23230	782	22.70	24.00	1.349	-0.04	0.278	0.375
	LTE Band 13	10M	QPSK	25RB	0offset	Left Side	10mm	OFF	23230	782	21.65	23.00	1.365	0.05	0.155	0.212
	LTE Band 13	10M	QPSK	1RB	0offset	Right Side	10mm	OFF	23230	782	22.70	24.00	1.349	-0.06	0.456	0.615
	LTE Band 13	10M	QPSK	25RB	0offset	Right Side	10mm	OFF	23230	782	21.65	23.00	1.365	0	0.258	0.352
	LTE Band 13	10M	QPSK	1RB	0offset	Bottom Side	10mm	OFF	23230	782	22.70	24.00	1.349	-0.13	0.317	0.428
	LTE Band 13	10M	QPSK	25RB	0offset	Bottom Side	10mm	OFF	23230	782	21.65	23.00	1.365	-0.18	0.183	0.250



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	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)
25	LTE Band 5	10M	QPSK	1RB	0offset	Front	10mm	OFF	20525	836.5	22.45	24.00	1.429	0.02	0.543	0.776
	LTE Band 5	10M	QPSK	25RB	0offset	Front	10mm	OFF	20525	836.5	21.43	23.00	1.435	0.02	0.302	0.434
	LTE Band 5	10M	QPSK	1RB	0offset	Back	10mm	OFF	20525	836.5	22.45	24.00	1.429	0	0.412	0.589
	LTE Band 5	10M	QPSK	25RB	0offset	Back	10mm	OFF	20525	836.5	21.43	23.00	1.435	-0.06	0.230	0.330
	LTE Band 5	10M	QPSK	1RB	0offset	Left Side	10mm	OFF	20525	836.5	22.45	24.00	1.429	-0.06	0.152	0.217
	LTE Band 5	10M	QPSK	25RB	0offset	Left Side	10mm	OFF	20525	836.5	21.43	23.00	1.435	-0.06	0.084	0.121
	LTE Band 5	10M	QPSK	1RB	0offset	Right Side	10mm	OFF	20525	836.5	22.45	24.00	1.429	-0.1	0.380	0.543
	LTE Band 5	10M	QPSK	25RB	0offset	Right Side	10mm	OFF	20525	836.5	21.43	23.00	1.435	-0.08	0.215	0.309
	LTE Band 5	10M	QPSK	1RB	0offset	Bottom Side	10mm	OFF	20525	836.5	22.45	24.00	1.429	-0.13	0.402	0.574
	LTE Band 5	10M	QPSK	25RB	0offset	Bottom Side	10mm	OFF	20525	836.5	21.43	23.00	1.435	-0.12	0.225	0.323
	LTE Band 4	20M	QPSK	1RB	0offset	Front	10mm	ON	20175	1732.5		17.50	1.000	-0.03	0.454	0.454
	LTE Band 4	20M	QPSK	50RB	0offset	Front	10mm	ON	20175	1732.5		17.50	1.000	0.05	0.408	0.408
	LTE Band 4	20M	QPSK	1RB	0offset	Back	10mm	ON	20175	1732.5		17.50	1.000	-0.05	0.491	0.491
	LTE Band 4	20M	QPSK	50RB	0offset	Back	10mm	ON	20175	1732.5		17.50	1.000	0.06	0.443	0.443
	LTE Band 4	20M	QPSK	1RB	0offset	Left Side	10mm	ON	20175	1732.5		17.50	1.000	0.11	0.070	0.070
	LTE Band 4	20M	QPSK	50RB	0offset	Left Side	10mm	ON	20175	1732.5		17.50	1.000	0.16	0.021	0.021
	LTE Band 4	20M	QPSK	1RB	0offset	Right Side	10mm	ON	20175	1732.5		17.50	1.000	0.17	0.061	0.061
	LTE Band 4	20M	QPSK	50RB	0offset	Right Side	10mm	ON	20175	1732.5		17.50	1.000	0.19	0.019	0.019
	LTE Band 4	20M	QPSK	1RB	0offset	Bottom Side	10mm	ON	20175	1732.5		17.50	1.000	-0.09	0.849	0.849
	LTE Band 4	20M	QPSK	1RB	0offset	Bottom Side	10mm	ON	20050	1720		17.50	1.000	-0.09	0.783	0.783
26	LTE Band 4	20M	QPSK	1RB	0offset	Bottom Side	10mm	ON	20300	1745		17.50	1.000	-0.06	0.894	0.894
	LTE Band 4	20M	QPSK	50RB	0offset	Bottom Side	10mm	ON	20175	1732.5		17.50	1.000	0.01	0.775	0.775
	LTE Band 4	20M	QPSK	100RB	0offset	Bottom Side	10mm	ON	20175	1732.5		17.50	1.000	-0.09	0.748	0.748
	LTE Band 2	20M	QPSK	1RB	0offset	Front	10mm	ON	19100	1900		18.00	1.000	0.1	0.475	0.475
	LTE Band 2	20M	QPSK	50RB	0offset	Front	10mm	ON	18900	1880		18.00	1.000	0.05	0.431	0.431
	LTE Band 2	20M	QPSK	1RB	0offset	Back	10mm	ON	19100	1900		18.00	1.000	0.04	0.671	0.671
	LTE Band 2	20M	QPSK	50RB	0offset	Back	10mm	ON	18900	1880		18.00	1.000	0.06	0.602	0.602
	LTE Band 2	20M	QPSK	1RB	0offset	Left Side	10mm	ON	19100	1900		18.00	1.000	0.08	0.079	0.079
	LTE Band 2	20M	QPSK	50RB	0offset	Left Side	10mm	ON	18900	1880		18.00	1.000	0.03	0.069	0.069
	LTE Band 2	20M	QPSK	1RB	0offset	Right Side	10mm	ON	19100	1900		18.00	1.000	0.03	0.073	0.073
	LTE Band 2	20M	QPSK	50RB	0offset	Right Side	10mm	ON	18900	1880		18.00	1.000	0.13	0.041	0.041
27	LTE Band 2	20M	QPSK	1RB	0offset	Bottom Side	10mm	ON	19100	1900		18.00	1.000	-0.13	0.985	0.985
	LTE Band 2	20M	QPSK	1RB	0offset	Bottom Side	10mm	ON	18700	1860		18.00	1.000	-0.08	0.721	0.721
	LTE Band 2	20M	QPSK	1RB	0offset	Bottom Side	10mm	ON	18900	1880		18.00	1.000	-0.12	0.877	0.877
	LTE Band 2	20M	QPSK	50RB	0offset	Bottom Side	10mm	ON	18900	1880		18.00	1.000	-0.12	0.834	0.834
	LTE Band 2	20M	QPSK	50RB	0offset	Bottom Side	10mm	ON	18700	1860		18.00	1.000	-0.13	0.693	0.693
	LTE Band 2	20M	QPSK	50RB	0offset	Bottom Side	10mm	ON	19100	1900		18.00	1.000	-0.14	0.908	0.908
	LTE Band 2	20M	QPSK	100RB	0offset	Bottom Side	10mm	ON	19100	1900		18.00	1.000	0.06	0.924	0.924



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	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 7	20M	QPSK	1RB	0offset	Front	10mm	ON	20850	2510		18.00	1.000	0.1	0.375	0.375
	LTE Band 7	20M	QPSK	50RB	0offset	Front	10mm	ON	20850	2510		18.00	1.000	0.15	0.370	0.370
	LTE Band 7	20M	QPSK	1RB	0offset	Back	10mm	ON	20850	2510		18.00	1.000	0.1	0.424	0.424
	LTE Band 7	20M	QPSK	50RB	0offset	Back	10mm	ON	20850	2510		18.00	1.000	-0.03	0.425	0.425
	LTE Band 7	20M	QPSK	1RB	0offset	Left Side	10mm	ON	20850	2510		18.00	1.000	0.14	0.142	0.142
	LTE Band 7	20M	QPSK	50RB	0offset	Left Side	10mm	ON	20850	2510		18.00	1.000	0.16	0.161	0.161
	LTE Band 7	20M	QPSK	1RB	0offset	Right Side	10mm	ON	20850	2510		18.00	1.000	0.1	0.080	0.080
	LTE Band 7	20M	QPSK	50RB	0offset	Right Side	10mm	ON	20850	2510		18.00	1.000	0.19	0.076	0.076
	LTE Band 7	20M	QPSK	1RB	0offset	Bottom Side	10mm	ON	20850	2510		18.00	1.000	0.08	0.888	0.888
	LTE Band 7	20M	QPSK	1RB	0offset	Bottom Side	10mm	ON	21100	2535		18.00	1.000	0.02	0.838	0.838
	LTE Band 7	20M	QPSK	1RB	0offset	Bottom Side	10mm	ON	21350	2560		18.00	1.000	-0.02	0.768	0.768
28	LTE Band 7	20M	QPSK	50RB	0offset	Bottom Side	10mm	ON	20850	2510		18.00	1.000	-0.04	0.902	0.902
	LTE Band 7	20M	QPSK	50RB	0offset	Bottom Side	10mm	ON	21100	2535		18.00	1.000	0	0.850	0.850
	LTE Band 7	20M	QPSK	50RB	24offset	Bottom Side	10mm	ON	21350	2560		18.00	1.000	-0.02	0.782	0.782
	LTE Band 7	20M	QPSK	100RB	0offset	Bottom Side	10mm	ON	20850	2510		18.00	1.000	-0.02	0.857	0.857

<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)
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 1	1	2412	18.32	18.50	1.042	99.23	1.008	-0.07	0.090	0.095
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 1	1	2412	18.32	18.50	1.042	99.23	1.008	-0.09	0.116	0.122
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 1	1	2412	18.32	18.50	1.042	99.23	1.008	-0.07	0.059	0.062
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 1	1	2412	18.32	18.50	1.042	99.23	1.008	-0.07	0.006	0.006
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 1	1	2412	18.32	18.50	1.042	99.23	1.008	-0.06	0.130	0.137
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 2	1	2412	18.29	18.50	1.050	99.04	1.010	-0.09	0.185	0.196
29	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 2	1	2412	18.29	18.50	1.050	99.04	1.010	-0.07	0.214	0.227
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 2	1	2412	18.29	18.50	1.050	99.04	1.010	-0.08	0.009	0.010
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 2	1	2412	18.29	18.50	1.050	99.04	1.010	-0.08	0.096	0.102
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 2	1	2412	18.29	18.50	1.050	99.04	1.010	-0.08	0.191	0.202
30	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 1	36	5180	12.96	13.50	1.132	97.01	1.031	-0.05	0.131	0.153
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 1	36	5180	12.96	13.50	1.132	97.01	1.031	-0.04	0.014	0.016
	WLAN5GHz	802.11a 6Mbps	Left Side	10mm	Ant 1	36	5180	12.96	13.50	1.132	97.01	1.031	-0.15	0.035	0.041
	WLAN5GHz	802.11a 6Mbps	Right Side	10mm	Ant 1	36	5180	12.96	13.50	1.132	97.01	1.031	0.05	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Top Side	10mm	Ant 1	36	5180	12.96	13.50	1.132	97.01	1.031	-0.06	0.042	0.049
	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 2	44	5220	14.20	14.50	1.071	95.41	1.048	0.12	0.021	0.024
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 2	44	5220	14.20	14.50	1.071	95.41	1.048	-0.11	0.011	0.012
	WLAN5GHz	802.11a 6Mbps	Left Side	10mm	Ant 2	44	5220	14.20	14.50	1.071	95.41	1.048	0	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Right Side	10mm	Ant 2	44	5220	14.20	14.50	1.071	95.41	1.048	-0.17	0.010	0.011
	WLAN5GHz	802.11a 6Mbps	Top Side	10mm	Ant 2	44	5220	14.20	14.50	1.071	95.41	1.048	0	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 1	149	5745	13.49	13.50	1.002	97.01	1.031	-0.01	0.213	0.220
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 1	149	5745	13.49	13.50	1.002	97.01	1.031	-0.02	0.138	0.143
	WLAN5GHz	802.11a 6Mbps	Left Side	10mm	Ant 1	149	5745	13.49	13.50	1.002	97.01	1.031	0.09	0.051	0.053
	WLAN5GHz	802.11a 6Mbps	Right Side	10mm	Ant 1	149	5745	13.49	13.50	1.002	97.01	1.031	-0.15	0.006	0.006
	WLAN5GHz	802.11a 6Mbps	Top Side	10mm	Ant 1	149	5745	13.49	13.50	1.002	97.01	1.031	0.04	0.061	0.063
31	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 2	149	5745	14.24	15.00	1.191	95.41	1.048	-0.17	0.189	0.236
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 2	149	5745	14.24	15.00	1.191	95.41	1.048	0.02	0.075	0.094
	WLAN5GHz	802.11a 6Mbps	Left Side	10mm	Ant 2	149	5745	14.24	15.00	1.191	95.41	1.048	0	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Right Side	10mm	Ant 2	149	5745	14.24	15.00	1.191	95.41	1.048	-0.02	0.081	0.101
	WLAN5GHz	802.11a 6Mbps	Top Side	10mm	Ant 2	149	5745	14.24	15.00	1.191	95.41	1.048	0.1	0.080	0.100

<Bluetooth 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)
	Bluetooth	1Mbps	Front	10mm	39	2441	9.96	10.00	1.009	-0.05	0.012	0.012
	Bluetooth	1Mbps	Back	10mm	39	2441	9.96	10.00	1.009	-0.09	0.011	0.011
	Bluetooth	1Mbps	Left Side	10mm	39	2441	9.96	10.00	1.009	0.05	0.004	0.004
	Bluetooth	1Mbps	Right Side	10mm	39	2441	9.96	10.00	1.009	-0.02	0.001	0.001
32	Bluetooth	1Mbps	Top Side	10mm	39	2441	9.96	10.00	1.009	-0.05	0.014	0.014

14.3 Body Worn Accessory SAR
<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna Tuner	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)
33	GSM850	GPRS (4 Tx slots)	Front	15mm	non-Tigger	251	848.8	26.17	28.00	1.524	-0.06	0.395	0.602
	GSM850	GPRS (4 Tx slots)	Front	15mm	Tigger	231	844.8	26.02	28.00	1.578	0.03	0.225	0.355
	GSM850	GPRS (4 Tx slots)	Back	15mm	non-Tigger	251	848.8	26.17	28.00	1.524	-0.03	0.330	0.503
	GSM1900	GPRS (4 Tx slots)	Front	15mm	non-Tigger	810	1909.8	23.22	25.00	1.507	-0.04	0.363	0.547
34	GSM1900	GPRS (4 Tx slots)	Back	15mm	non-Tigger	810	1909.8	23.22	25.00	1.507	0.02	0.435	0.655

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna Tuner	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)
35	WCDMA V	RMC 12.2Kbps	Front	15mm	non-Tigger	4233	846.6	22.54	24.00	1.400	-0.01	0.343	0.480
	WCDMA V	RMC12.2Kbps	Front	15mm	Tigger	4217	843.4	22.49	24.00	1.416	-0.01	0.188	0.266
	WCDMA V	RMC 12.2Kbps	Back	15mm	non-Tigger	4233	846.6	22.54	24.00	1.400	0	0.291	0.407
	WCDMA II	RMC 12.2Kbps	Front	15mm	non-Tigger	9538	1907.6	23.59	24.00	1.099	-0.01	0.898	0.987
	WCDMA II	RMC 12.2Kbps	Front	15mm	non-Tigger	9262	1852.4	22.99	24.00	1.262	-0.04	0.557	0.703
	WCDMA II	RMC 12.2Kbps	Front	15mm	non-Tigger	9400	1880	22.98	24.00	1.265	-0.06	0.732	0.926
36	WCDMA II	RMC 12.2Kbps	Back	15mm	non-Tigger	9538	1907.6	23.59	24.00	1.099	0	0.957	1.052
	WCDMA II	RMC 12.2Kbps	Back	15mm	non-Tigger	9262	1852.4	22.99	24.00	1.262	-0.02	0.573	0.723
	WCDMA II	RMC 12.2Kbps	Back	15mm	non-Tigger	9400	1880	22.98	24.00	1.265	-0.02	0.777	0.983

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna Tuner	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)
37	CDMA2000 BC0	1xRTT RC3 SO32	Front	15mm	non-Tigger	777	848.31	24.10	25.00	1.230	0.04	0.506	0.623
	CDMA2000 BC0	1xRTT RC3 SO32	Front	15mm	Tigger	644	844.32	24.06	25.00	1.242	-0.02	0.222	0.276
	CDMA2000 BC0	1xRTT RC3 SO32	Back	15mm	non-Tigger	777	848.31	24.10	25.00	1.230	-0.01	0.347	0.427
	CDMA2000 BC1	1xRTT RC3 SO32	Front	15mm	non-Tigger	25	1851.25	23.85	25.00	1.303	0.02	0.764	0.996
	CDMA2000 BC1	1xRTT RC3 SO32	Front	15mm	non-Tigger	600	1880	23.77	25.00	1.327	-0.01	0.777	1.031
38	CDMA2000 BC1	1xRTT RC3 SO32	Front	15mm	non-Tigger	1175	1908.75	23.65	25.00	1.365	0.02	0.826	1.127
	CDMA2000 BC1	1xRTT RC3 SO32	Back	15mm	non-Tigger	25	1851.25	23.85	25.00	1.303	0.02	0.575	0.749



<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna Tuner	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)
39	LTE Band 13	10M	QPSK	1RB	0offset	Front	15mm	non-Tigger	23230	782	22.70	24.00	1.349	0.01	0.407	0.549
	LTE Band 13	10M	QPSK	1RB	0offset	Front	15mm	Tigger	23230	782	22.70	24.00	1.349	-0.02	0.334	0.451
	LTE Band 13	10M	QPSK	25RB	0offset	Front	15mm	non-Tigger	23230	782	21.65	23.00	1.365	-0.04	0.228	0.311
	LTE Band 13	10M	QPSK	1RB	0offset	Back	15mm	non-Tigger	23230	782	22.70	24.00	1.349	-0.02	0.388	0.523
	LTE Band 13	10M	QPSK	25RB	0offset	Back	15mm	non-Tigger	23230	782	21.65	23.00	1.365	-0.03	0.220	0.300
40	LTE Band 5	10M	QPSK	1RB	0offset	Front	15mm	non-Tigger	20525	836.5	22.45	24.00	1.429	-0.01	0.342	0.489
	LTE Band 5	10M	QPSK	1RB	0offset	Front	15mm	Tigger	20525	836.5	22.45	24.00	1.429	-0.05	0.158	0.226
	LTE Band 5	10M	QPSK	25RB	0offset	Front	15mm	non-Tigger	20525	836.5	21.43	23.00	1.435	0.02	0.194	0.278
	LTE Band 5	10M	QPSK	1RB	0offset	Back	15mm	non-Tigger	20525	836.5	22.45	24.00	1.429	-0.01	0.317	0.453
	LTE Band 5	10M	QPSK	25RB	0offset	Back	15mm	non-Tigger	20525	836.5	21.43	23.00	1.435	0.01	0.179	0.257
	LTE Band 4	20M	QPSK	1RB	0offset	Front	15mm	non-Tigger	20175	1732.5	23.18	24.00	1.208	-0.1	0.683	0.825
	LTE Band 4	20M	QPSK	1RB	0offset	Front	15mm	non-Tigger	20050	1720	23.06	24.00	1.242	-0.06	0.662	0.822
	LTE Band 4	20M	QPSK	1RB	0offset	Front	15mm	non-Tigger	20300	1745	23.13	24.00	1.222	-0.09	0.688	0.841
	LTE Band 4	20M	QPSK	50RB	0offset	Front	15mm	non-Tigger	20175	1732.5	21.82	23.00	1.312	-0.06	0.395	0.518
	LTE Band 4	20M	QPSK	100RB	0offset	Front	15mm	non-Tigger	20175	1732.5	21.63	23.00	1.371	-0.06	0.375	0.514
	LTE Band 4	20M	QPSK	1RB	0offset	Back	15mm	non-Tigger	20175	1732.5	23.18	24.00	1.208	0.03	0.803	0.970
	LTE Band 4	20M	QPSK	1RB	0offset	Back	15mm	non-Tigger	20050	1720	23.06	24.00	1.242	-0.1	0.778	0.966
41	LTE Band 4	20M	QPSK	1RB	0offset	Back	15mm	non-Tigger	20300	1745	23.13	24.00	1.222	-0.06	0.827	1.010
	LTE Band 4	20M	QPSK	50RB	0offset	Back	15mm	non-Tigger	20175	1732.5	21.82	23.00	1.312	-0.03	0.457	0.600
	LTE Band 4	20M	QPSK	100RB	0offset	Back	15mm	non-Tigger	20175	1732.5	21.63	23.00	1.371	-0.12	0.450	0.617
42	LTE Band 2	20M	QPSK	1RB	0offset	Front	15mm	non-Tigger	19100	1900	23.05	24.00	1.245	-0.03	0.866	1.078
	LTE Band 2	20M	QPSK	1RB	0offset	Front	15mm	non-Tigger	18700	1860	22.99	24.00	1.262	-0.02	0.703	0.887
	LTE Band 2	20M	QPSK	1RB	0offset	Front	15mm	non-Tigger	18900	1880	23.04	24.00	1.247	-0.05	0.862	1.075
	LTE Band 2	20M	QPSK	50RB	0offset	Front	15mm	non-Tigger	18900	1880	21.80	23.00	1.318	-0.04	0.630	0.831
	LTE Band 2	20M	QPSK	50RB	0offset	Front	15mm	non-Tigger	18700	1860	21.70	23.00	1.349	-0.04	0.534	0.720
	LTE Band 2	20M	QPSK	50RB	0offset	Front	15mm	non-Tigger	19100	1900	21.73	23.00	1.340	-0.04	0.634	0.849
	LTE Band 2	20M	QPSK	100RB	0offset	Front	15mm	non-Tigger	19100	1900	21.65	23.00	1.365	-0.03	0.633	0.864
	LTE Band 2	20M	QPSK	1RB	0offset	Back	15mm	non-Tigger	19100	1900	23.05	24.00	1.245	0.18	0.863	1.074
	LTE Band 2	20M	QPSK	1RB	0offset	Back	15mm	non-Tigger	18700	1860	22.99	24.00	1.262	-0.04	0.676	0.853
	LTE Band 2	20M	QPSK	1RB	0offset	Back	15mm	non-Tigger	18900	1880	23.04	24.00	1.247	-0.02	0.830	1.035
	LTE Band 2	20M	QPSK	50RB	0offset	Back	15mm	non-Tigger	18900	1880	21.80	23.00	1.318	-0.06	0.621	0.819
	LTE Band 2	20M	QPSK	50RB	0offset	Back	15mm	non-Tigger	18700	1860	21.70	23.00	1.349	-0.06	0.513	0.692
	LTE Band 2	20M	QPSK	50RB	0offset	Back	15mm	non-Tigger	19100	1900	21.73	23.00	1.340	-0.04	0.601	0.805
	LTE Band 2	20M	QPSK	100RB	0offset	Back	15mm	non-Tigger	19100	1900	21.65	23.00	1.365	0.06	0.608	0.830
	LTE Band 7	20M	QPSK	1RB	0offset	Front	15mm	non-Tigger	20850	2510	22.78	24.00	1.324	-0.12	0.595	0.788
	LTE Band 7	20M	QPSK	50RB	0offset	Front	15mm	non-Tigger	20850	2510	21.73	23.00	1.340	-0.14	0.443	0.593
43	LTE Band 7	20M	QPSK	1RB	0offset	Back	15mm	non-Tigger	20850	2510	22.78	24.00	1.324	-0.07	0.640	0.848
	LTE Band 7	20M	QPSK	1RB	0offset	Back	15mm	non-Tigger	21100	2535	22.46	24.00	1.426	-0.09	0.554	0.790
	LTE Band 7	20M	QPSK	1RB	0offset	Back	15mm	non-Tigger	21350	2560	22.43	24.00	1.435	-0.09	0.528	0.758
	LTE Band 7	20M	QPSK	50RB	0offset	Back	15mm	non-Tigger	20850	2510	21.73	23.00	1.340	-0.09	0.520	0.697
	LTE Band 7	20M	QPSK	100RB	0offset	Back	15mm	non-Tigger	20850	2510	21.52	23.00	1.406	-0.1	0.489	0.688

<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)
	WLAN2.4GHz	802.11b 1Mbps	Front	15mm	Ant 1	1	2412	18.32	18.50	1.042	99.23	1.008	-0.16	0.048	0.050
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Ant 1	1	2412	18.32	18.50	1.042	99.23	1.008	-0.07	0.059	0.062
	WLAN2.4GHz	802.11b 1Mbps	Front	15mm	Ant 2	1	2412	18.29	18.50	1.050	99.04	1.010	-0.18	0.094	0.100
44	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Ant 2	1	2412	18.29	18.50	1.050	99.04	1.010	-0.12	0.112	0.119
45	WLAN5GHz	802.11a 6Mbps	Front	15mm	Ant 1	64	5320	13.47	13.50	1.007	97.01	1.031	-0.08	0.120	0.125
	WLAN5GHz	802.11a 6Mbps	Back	15mm	Ant 1	64	5320	13.47	13.50	1.007	97.01	1.031	0.09	0.019	0.020
	WLAN5GHz	802.11a 6Mbps	Front	15mm	Ant 2	56	5280	14.49	14.50	1.002	95.41	1.048	0.04	0.014	0.015
	WLAN5GHz	802.11a 6Mbps	Back	15mm	Ant 2	56	5280	14.49	14.50	1.002	95.41	1.048	0.03	0.008	0.009
46	WLAN5GHz	802.11a 6Mbps	Front	15mm	Ant 1	100	5500	13.49	13.50	1.002	97.01	1.031	-0.07	0.164	0.169
	WLAN5GHz	802.11a 6Mbps	Back	15mm	Ant 1	100	5500	13.49	13.50	1.002	97.01	1.031	0.17	0.046	0.048
	WLAN5GHz	802.11a 6Mbps	Front	15mm	Ant 2	144	5720	15.79	16.50	1.178	95.41	1.048	-0.14	0.122	0.151
	WLAN5GHz	802.11a 6Mbps	Back	15mm	Ant 2	144	5720	15.79	16.50	1.178	95.41	1.048	0.15	0.059	0.073
47	WLAN5GHz	802.11a 6Mbps	Front	15mm	Ant 1	149	5745	13.49	13.50	1.002	97.01	1.031	-0.15	0.166	0.172
	WLAN5GHz	802.11a 6Mbps	Back	15mm	Ant 1	149	5745	13.49	13.50	1.002	97.01	1.031	0.02	0.094	0.097
	WLAN5GHz	802.11a 6Mbps	Front	15mm	Ant 2	149	5745	14.24	15.00	1.191	95.41	1.048	-0.06	0.133	0.166
	WLAN5GHz	802.11a 6Mbps	Back	15mm	Ant 2	149	5745	14.24	15.00	1.191	95.41	1.048	0.15	0.060	0.075

<Bluetooth 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)
	Bluetooth	1Mbps	Front	15mm	39	2441	9.96	10.00	1.009	-0.02	0.001	0.001
48	Bluetooth	1Mbps	Back	15mm	39	2441	9.96	10.00	1.009	-0.05	0.006	0.006

14.4 Repeated SAR Measurement

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	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	LTE Band 4	20M	QPSK	1RB	0offset	Bottom Side	10mm	ON	20300	1745		17.50	1.000	-0.06	0.894	-	0.894
2nd	LTE Band 4	20M	QPSK	1RB	0offset	Bottom Side	10mm	ON	20300	1745		17.50	1.000	-0.03	0.851	1.05	0.851
1st	LTE Band 2	20M	QPSK	1RB	0offset	Bottom Side	10mm	ON	19100	1900		18.00	1.000	-0.13	0.985	-	0.985
2nd	LTE Band 2	20M	QPSK	1RB	0offset	Bottom Side	10mm	ON	19100	1900		18.00	1.000	0.01	0.977	1.01	0.977
1st	LTE Band 7	20M	QPSK	50RB	0offset	Bottom Side	10mm	ON	20850	2510		18.00	1.000	-0.04	0.902	-	0.902
2nd	LTE Band 7	20M	QPSK	50RB	0offset	Bottom Side	10mm	ON	20850	2510		18.00	1.000	-0.01	0.878	1.03	0.878

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)	Ratio	Reported 1g SAR (W/kg)
1st	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 2	6	2437	18.28	18.50	1.052	99.04	1.010	-0.1	1.060	-	1.126
2nd	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 2	6	2437	18.28	18.50	1.052	99.04	1.010	-0.19	1.060	1.00	1.126
1st	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	40	5200	12.94	13.50	1.138	97.01	1.031	-0.1	1.010	-	1.185
2nd	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	40	5200	12.94	13.50	1.138	97.01	1.031	-0.1	0.950	1.12	1.114
1st	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	60	5300	13.43	13.50	1.016	97.01	1.031	-0.12	1.280	-	1.341
2nd	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	60	5300	13.43	13.50	1.016	97.01	1.031	-0.12	1.190	1.06	1.247
1st	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	132	5660	13.43	13.50	1.016	97.01	1.031	-0.18	1.300	-	1.362
2nd	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	132	5660	13.43	13.50	1.016	97.01	1.031	-0.18	1.280	1.02	1.341
1st	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	149	5745	13.49	13.50	1.002	97.01	1.031	-0.14	1.180	-	1.219
2nd	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	149	5745	13.49	13.50	1.002	97.01	1.031	-0.07	1.130	1.04	1.168

General Note:

1. Per KDB 865664 D01v01r03, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥ 0.8 W/kg.
2. Per KDB 865664 D01v01r03, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR < 1.45 W/kg, only one repeated measurement is required.
3. The ratio is the difference in percentage between original and repeated *measured SAR*.
4. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

15. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Portable Handset			Note
		Head	Body-worn	Wireless Router	
1.	GSM(Voice) + WLAN2.4GHz(data)	Yes	Yes		
2.	WCDMA(Voice) + WLAN2.4GHz(data)	Yes	Yes		
3.	CDMA(Voice) + WLAN2.4GHz(data)	Yes	Yes		
4.	LTE(Voice) + WLAN2.4GHz(data)	Yes	Yes		
5.	GSM(Voice) + Bluetooth(data)	Yes	Yes		
6.	WCDMA(Voice) + Bluetooth(data)	Yes	Yes		
7.	CDMA(Voice) + Bluetooth(data)	Yes	Yes		
8.	LTE(Voice) + Bluetooth(data)	Yes	Yes		
9.	GSM(Voice) + WLAN5GHz(data)	Yes	Yes		
10.	WCDMA(Voice) + WLAN5GHz(data)	Yes	Yes		
11.	CDMA(Voice) + WLAN5GHz(data)	Yes	Yes		
12.	LTE(Voice) + WLAN5GHz(data)	Yes	Yes		
13.	GPRS/EDGE(Data) + WLAN2.4GHz(data)	Yes	Yes	Yes	2.4GHz Hotspot
14.	WCDMA(Data) + WLAN2.4GHz(data)	Yes	Yes	Yes	2.4GHz Hotspot
15.	CDMA(Data) + WLAN2.4GHz(data)	Yes	Yes	Yes	2.4GHz Hotspot
16.	LTE(Data) + WLAN2.4GHz(data)	Yes	Yes	Yes	2.4GHz Hotspot
17.	GPRS/EDGE(Data) + Bluetooth(data)	Yes	Yes	Yes	Bluetooth Tethering
18.	WCDMA(Data) + Bluetooth(data)	Yes	Yes	Yes	Bluetooth Tethering
19.	CDMA(Data) + Bluetooth(data)	Yes	Yes	Yes	Bluetooth Tethering
20.	LTE(Data) + Bluetooth(data)	Yes	Yes	Yes	Bluetooth Tethering
21.	GPRS/EDGE(data) + WLAN5GHz(data)	Yes	Yes	Yes	5GHz Hotspot
22.	WCDMA(data) + WLAN5GHz(data)	Yes	Yes	Yes	5GHz Hotspot
23.	CDMA(data) + WLAN5GHz(data)	Yes	Yes	Yes	5GHz Hotspot
24.	LTE(data) + WLAN5GHz(data)	Yes	Yes	Yes	5GHz Hotspot

General Note:

- This device supported VoIP in EGPRS, WCDMA, LTE (e.g. 3rd party VoIP).
- 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 5 GHz WLAN reported SAR for each configuration was used for SAR summation, regardless of whether the WLAN channel has WiFi Direct and Hotspot capability. Therefore, the following summations represent the absolute worst cases for simultaneous transmission with 5 GHz WLAN.
- 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.
- WLAN RF exposure assessment of MIMO mode simultaneous transmission exclusion analysis was performed with SAR test results of each antenna in SISO mode. Therefore SPLSR calculation was choose worst case with SAR test results of each antenna in SISO mode perform evaluation.
- The Scaled SAR summation is calculated based on the same configuration and test position.
- Per KDB 447498 D01v05r02, 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.
 - The SPLSR calculated results please refer to section 15.4



15.1 Head Exposure Conditions

WWAN Band		Exposure Position	1	2	3	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	SPLSR	Case No
			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	0.373	0.593	0.573	0.97	0.95		
		Right Tilted	0.184	0.346	0.519	0.53	0.70		
		Left Cheek	0.262	0.188	1.126	0.45	1.39		
		Left Tilted	0.181	0.183	0.796	0.36	0.98		
	GSM1900	Right Cheek	0.057	0.593	0.573	0.65	0.63		
		Right Tilted	0.048	0.346	0.519	0.39	0.57		
		Left Cheek	0.096	0.188	1.126	0.28	1.22		
		Left Tilted	0.030	0.183	0.796	0.21	0.83		
WCDMA	WCDMA V	Right Cheek	0.344	0.593	0.573	0.94	0.92		
		Right Tilted	0.165	0.346	0.519	0.51	0.68		
		Left Cheek	0.223	0.188	1.126	0.41	1.35		
		Left Tilted	0.141	0.183	0.796	0.32	0.94		
	WCDMA II	Right Cheek	0.143	0.593	0.573	0.74	0.72		
		Right Tilted	0.102	0.346	0.519	0.45	0.62		
		Left Cheek	0.211	0.188	1.126	0.40	1.34		
		Left Tilted	0.063	0.183	0.796	0.25	0.86		
CDMA	CDMA2000 BC0	Right Cheek	0.426	0.593	0.573	1.02	1.00		
		Right Tilted	0.196	0.346	0.519	0.54	0.72		
		Left Cheek	0.278	0.188	1.126	0.47	1.40		
		Left Tilted	0.191	0.183	0.796	0.37	0.99		
	CDMA2000 BC1	Right Cheek	0.162	0.593	0.573	0.76	0.74		
		Right Tilted	0.078	0.346	0.519	0.42	0.60		
		Left Cheek	0.190	0.188	1.126	0.38	1.32		
		Left Tilted	0.054	0.183	0.796	0.24	0.85		
LTE	LTE Band 13	Right Cheek	0.363	0.593	0.573	0.96	0.94		
		Right Tilted	0.200	0.346	0.519	0.55	0.72		
		Left Cheek	0.274	0.188	1.126	0.46	1.40		
		Left Tilted	0.193	0.183	0.796	0.38	0.99		
	LTE Band 5	Right Cheek	0.349	0.593	0.573	0.94	0.92		
		Right Tilted	0.181	0.346	0.519	0.53	0.70		
		Left Cheek	0.247	0.188	1.126	0.44	1.37		
		Left Tilted	0.167	0.183	0.796	0.35	0.96		
	LTE Band 4	Right Cheek	0.139	0.593	0.573	0.73	0.71		
		Right Tilted	0.075	0.346	0.519	0.42	0.59		
		Left Cheek	0.249	0.188	1.126	0.44	1.38		
		Left Tilted	0.074	0.183	0.796	0.26	0.87		
	LTE Band 2	Right Cheek	0.132	0.593	0.573	0.73	0.71		
		Right Tilted	0.086	0.346	0.519	0.43	0.61		
		Left Cheek	0.212	0.188	1.126	0.40	1.34		
		Left Tilted	0.055	0.183	0.796	0.24	0.85		
	LTE Band 7	Right Cheek	0.193	0.593	0.573	0.79	0.77		
		Right Tilted	0.085	0.346	0.519	0.43	0.60		
		Left Cheek	0.103	0.188	1.126	0.29	1.23		
		Left Tilted	0.024	0.183	0.796	0.21	0.82		



WWAN Band		Exposure Position	1	5	1+5 Summed 1g SAR (W/kg)	SPLSR	Case No
			WWAN	5GHz WLAN ANT 1			
			1g SAR (W/kg)	1g SAR (W/kg)			
GSM	GSM850	Right Cheek	0.373	1.376	1.75	0.030	Case 1
		Right Tilted	0.184	0.835	1.02		
		Left Cheek	0.262	0.702	0.96		
		Left Tilted	0.181	0.670	0.85		
	GSM1900	Right Cheek	0.057	1.376	1.43		
		Right Tilted	0.048	0.835	0.88		
		Left Cheek	0.096	0.702	0.80		
		Left Tilted	0.030	0.670	0.70		
WCDMA	WCDMA V	Right Cheek	0.344	1.376	1.72	0.030	Case 2
		Right Tilted	0.165	0.835	1.00		
		Left Cheek	0.223	0.702	0.93		
		Left Tilted	0.141	0.670	0.81		
	WCDMA II	Right Cheek	0.143	1.376	1.52		
		Right Tilted	0.102	0.835	0.94		
		Left Cheek	0.211	0.702	0.91		
		Left Tilted	0.063	0.670	0.73		
CDMA	CDMA2000 BC0	Right Cheek	0.426	1.376	1.80	0.030	Case 3
		Right Tilted	0.196	0.835	1.03		
		Left Cheek	0.278	0.702	0.98		
		Left Tilted	0.191	0.670	0.86		
	CDMA2000 BC1	Right Cheek	0.162	1.376	1.54		
		Right Tilted	0.078	0.835	0.91		
		Left Cheek	0.190	0.702	0.89		
		Left Tilted	0.054	0.670	0.72		
LTE	LTE Band 13	Right Cheek	0.363	1.376	1.74	0.030	Case 4
		Right Tilted	0.200	0.835	1.04		
		Left Cheek	0.274	0.702	0.98		
		Left Tilted	0.193	0.670	0.86		
	LTE Band 5	Right Cheek	0.349	1.376	1.73	0.030	Case 5
		Right Tilted	0.181	0.835	1.02		
		Left Cheek	0.247	0.702	0.95		
		Left Tilted	0.167	0.670	0.84		
	LTE Band 4	Right Cheek	0.139	1.376	1.52		
		Right Tilted	0.075	0.835	0.91		
		Left Cheek	0.249	0.702	0.95		
		Left Tilted	0.074	0.670	0.74		
	LTE Band 2	Right Cheek	0.132	1.376	1.51		
		Right Tilted	0.086	0.835	0.92		
		Left Cheek	0.212	0.702	0.91		
		Left Tilted	0.055	0.670	0.73		
	LTE Band 7	Right Cheek	0.193	1.376	1.57		
		Right Tilted	0.085	0.835	0.92		
		Left Cheek	0.103	0.702	0.81		
		Left Tilted	0.024	0.670	0.69		



WWAN Band		Exposure Position	1	6	1+6 Summed 1g SAR (W/kg)	SPLSR	Case No
			WWAN	5GHz WLAN ANT 2			
			1g SAR (W/kg)	1g SAR (W/kg)			
GSM	GSM850	Right Cheek	0.373	0.717	1.09		
		Right Tilted	0.184	0.196	0.38		
		Left Cheek	0.262	1.358	1.62	0.040	Case 6
		Left Tilted	0.181	0.610	0.79		
	GSM1900	Right Cheek	0.057	0.717	0.77		
		Right Tilted	0.048	0.196	0.24		
		Left Cheek	0.096	1.358	1.45		
		Left Tilted	0.030	0.610	0.64		
WCDMA	WCDMA V	Right Cheek	0.344	0.717	1.06		
		Right Tilted	0.165	0.196	0.36		
		Left Cheek	0.223	1.358	1.58		
		Left Tilted	0.141	0.610	0.75		
	WCDMA II	Right Cheek	0.143	0.717	0.86		
		Right Tilted	0.102	0.196	0.30		
		Left Cheek	0.211	1.358	1.57		
		Left Tilted	0.063	0.610	0.67		
CDMA	CDMA2000 BC0	Right Cheek	0.426	0.717	1.14		
		Right Tilted	0.196	0.196	0.39		
		Left Cheek	0.278	1.358	1.64	0.040	Case 7
		Left Tilted	0.191	0.610	0.80		
	CDMA2000 BC1	Right Cheek	0.162	0.717	0.88		
		Right Tilted	0.078	0.196	0.27		
		Left Cheek	0.190	1.358	1.55		
		Left Tilted	0.054	0.610	0.66		
LTE	LTE Band 13	Right Cheek	0.363	0.717	1.08		
		Right Tilted	0.200	0.196	0.40		
		Left Cheek	0.274	1.358	1.63	0.040	Case 8
		Left Tilted	0.193	0.610	0.80		
	LTE Band 5	Right Cheek	0.349	0.717	1.07		
		Right Tilted	0.181	0.196	0.38		
		Left Cheek	0.247	1.358	1.61	0.040	Case 9
		Left Tilted	0.167	0.610	0.78		
	LTE Band 4	Right Cheek	0.139	0.717	0.86		
		Right Tilted	0.075	0.196	0.27		
		Left Cheek	0.249	1.358	1.61	0.020	Case 10
		Left Tilted	0.074	0.610	0.68		
	LTE Band 2	Right Cheek	0.132	0.717	0.85		
		Right Tilted	0.086	0.196	0.28		
		Left Cheek	0.212	1.358	1.57		
		Left Tilted	0.055	0.610	0.67		
	LTE Band 7	Right Cheek	0.193	0.717	0.91		
		Right Tilted	0.085	0.196	0.28		
		Left Cheek	0.103	1.358	1.46		
		Left Tilted	0.024	0.610	0.63		



WWAN Band		Exposure Position	1	4	1+4 Summed 1g SAR (W/kg)	SPLSR	Case No
			WWAN 1g SAR (W/kg)	2.4GHz Bluetooth 1g SAR (W/kg)			
GSM	GSM850	Right Cheek	0.373	0.079	0.45		
		Right Tilted	0.184	0.046	0.23		
		Left Cheek	0.262	0.025	0.29		
		Left Tilted	0.181	0.021	0.20		
	GSM1900	Right Cheek	0.057	0.079	0.14		
		Right Tilted	0.048	0.046	0.09		
		Left Cheek	0.096	0.025	0.12		
		Left Tilted	0.030	0.021	0.05		
WCDMA	WCDMA V	Right Cheek	0.344	0.079	0.42		
		Right Tilted	0.165	0.046	0.21		
		Left Cheek	0.223	0.025	0.25		
		Left Tilted	0.141	0.021	0.16		
	WCDMA II	Right Cheek	0.143	0.079	0.22		
		Right Tilted	0.102	0.046	0.15		
		Left Cheek	0.211	0.025	0.24		
		Left Tilted	0.063	0.021	0.08		
CDMA	CDMA2000 BC0	Right Cheek	0.426	0.079	0.51		
		Right Tilted	0.196	0.046	0.24		
		Left Cheek	0.278	0.025	0.30		
		Left Tilted	0.191	0.021	0.21		
	CDMA2000 BC1	Right Cheek	0.162	0.079	0.24		
		Right Tilted	0.078	0.046	0.12		
		Left Cheek	0.190	0.025	0.22		
		Left Tilted	0.054	0.021	0.08		
LTE	LTE Band 13	Right Cheek	0.363	0.079	0.44		
		Right Tilted	0.200	0.046	0.25		
		Left Cheek	0.274	0.025	0.30		
		Left Tilted	0.193	0.021	0.21		
	LTE Band 5	Right Cheek	0.349	0.079	0.43		
		Right Tilted	0.181	0.046	0.23		
		Left Cheek	0.247	0.025	0.27		
		Left Tilted	0.167	0.021	0.19		
	LTE Band 4	Right Cheek	0.139	0.079	0.22		
		Right Tilted	0.075	0.046	0.12		
		Left Cheek	0.249	0.025	0.27		
		Left Tilted	0.074	0.021	0.10		
	LTE Band 2	Right Cheek	0.132	0.079	0.21		
		Right Tilted	0.086	0.046	0.13		
		Left Cheek	0.212	0.025	0.24		
		Left Tilted	0.055	0.021	0.08		
	LTE Band 7	Right Cheek	0.193	0.079	0.27		
		Right Tilted	0.085	0.046	0.13		
		Left Cheek	0.103	0.025	0.13		
		Left Tilted	0.024	0.021	0.05		

Exposure Position	2	3	5	6	2+3 Summed 1g SAR (W/kg)	5+6 Summed 1g SAR (W/kg)	SPLSR	Case No
	2.4GHz WLAN ANT 1 1g SAR (W/kg)	2.4GHz WLAN ANT 2 1g SAR (W/kg)	5GHz WLAN ANT 1 1g SAR (W/kg)	5GHz WLAN ANT 2 1g SAR (W/kg)				
Right Cheek	0.593	0.573	1.376	0.717	1.17	2.09	0.040	Case 11
Right Tilted	0.346	0.519	0.835	0.196	0.87	1.03		
Left Cheek	0.188	1.126	0.702	1.358	1.31	2.06	0.040	Case 12
Left Tilted	0.183	0.796	0.670	0.610	0.98	1.28		

15.2 Hotspot Exposure Conditions

WWAN Band		Exposure Position	1	2	3	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	0.779	0.095	0.196	1.07
		Back	0.704	0.122	0.227	1.05
		Left side	0.206	0.062	0.010	0.28
		Right side	0.664	0.006	0.102	0.77
		Top side		0.137	0.202	0.34
		Bottom side	0.661			0.66
	GSM1900	Front	0.360	0.095	0.196	0.65
		Back	0.424	0.122	0.227	0.77
		Left side	0.016	0.062	0.010	0.09
		Right side	0.037	0.006	0.102	0.15
		Top side		0.137	0.202	0.34
		Bottom side	0.785			0.79
WCDMA	WCDMA V	Front	0.668	0.095	0.196	0.96
		Back	0.589	0.122	0.227	0.94
		Left side	0.175	0.062	0.010	0.25
		Right side	0.522	0.006	0.102	0.63
		Top side		0.137	0.202	0.34
		Bottom side	0.603			0.60
	WCDMA II	Front	0.464	0.095	0.196	0.76
		Back	0.510	0.122	0.227	0.86
		Left side	0.070	0.062	0.010	0.14
		Right side	0.039	0.006	0.102	0.15
		Top side		0.137	0.202	0.34
		Bottom side	0.930			0.93
CDMA	CDMA2000 BC0	Front	0.709	0.095	0.196	1.00
		Back	0.550	0.122	0.227	0.90
		Left side	0.124	0.062	0.010	0.20
		Right side	0.428	0.006	0.102	0.54
		Top side		0.137	0.202	0.34
		Bottom side	0.556			0.56
	CDMA2000 BC1	Front	0.340	0.095	0.196	0.63
		Back	0.367	0.122	0.227	0.72
		Left side	0.023	0.062	0.010	0.10
		Right side	0.029	0.006	0.102	0.14
		Top side		0.137	0.202	0.34
		Bottom side	0.646			0.65



WWAN Band		Exposure Position	1	2	3	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 13	Front	0.648	0.095	0.196	0.94
		Back	0.596	0.122	0.227	0.95
		Left side	0.375	0.062	0.010	0.45
		Right side	0.615	0.006	0.102	0.72
		Top side		0.137	0.202	0.34
		Bottom side	0.428			0.43
	LTE Band 5	Front	0.776	0.095	0.196	1.07
		Back	0.589	0.122	0.227	0.94
		Left side	0.217	0.062	0.010	0.29
		Right side	0.543	0.006	0.102	0.65
		Top side		0.137	0.202	0.34
		Bottom side	0.574			0.57
	LTE Band 4	Front	0.454	0.095	0.196	0.75
		Back	0.491	0.122	0.227	0.84
		Left side	0.070	0.062	0.010	0.14
		Right side	0.061	0.006	0.102	0.17
		Top side		0.137	0.202	0.34
		Bottom side	0.894			0.89
	LTE Band 2	Front	0.475	0.095	0.196	0.77
		Back	0.671	0.122	0.227	1.02
		Left side	0.079	0.062	0.010	0.15
		Right side	0.073	0.006	0.102	0.18
		Top side		0.137	0.202	0.34
		Bottom side	0.985			0.99
	LTE Band 7	Front	0.375	0.095	0.196	0.67
		Back	0.425	0.122	0.227	0.77
		Left side	0.161	0.062	0.010	0.23
		Right side	0.080	0.006	0.102	0.19
		Top side		0.137	0.202	0.34
		Bottom side	0.902			0.90



WWAN Band		Exposure Position	1	5	6	1+5+6 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	0.779	0.220	0.236	1.24
		Back	0.704	0.143	0.094	0.94
		Left side	0.206	0.053	0.001	0.26
		Right side	0.664	0.006	0.101	0.77
		Top side		0.063	0.100	0.16
		Bottom side	0.661			0.66
	GSM1900	Front	0.360	0.220	0.236	0.82
		Back	0.424	0.143	0.094	0.66
		Left side	0.016	0.053	0.001	0.07
		Right side	0.037	0.006	0.101	0.14
		Top side		0.063	0.100	0.16
		Bottom side	0.785			0.79
WCDMA	WCDMA V	Front	0.668	0.220	0.236	1.12
		Back	0.589	0.143	0.094	0.83
		Left side	0.175	0.053	0.001	0.23
		Right side	0.522	0.006	0.101	0.63
		Top side		0.063	0.100	0.16
		Bottom side	0.603			0.60
	WCDMA II	Front	0.464	0.220	0.236	0.92
		Back	0.510	0.143	0.094	0.75
		Left side	0.070	0.053	0.001	0.12
		Right side	0.039	0.006	0.101	0.15
		Top side		0.063	0.100	0.16
		Bottom side	0.930			0.93
CDMA	CDMA2000 BC0	Front	0.709	0.220	0.236	1.17
		Back	0.550	0.143	0.094	0.79
		Left side	0.124	0.053	0.001	0.18
		Right side	0.428	0.006	0.101	0.54
		Top side		0.063	0.100	0.16
		Bottom side	0.556			0.56
	CDMA2000 BC1	Front	0.340	0.220	0.236	0.80
		Back	0.367	0.143	0.094	0.60
		Left side	0.023	0.053	0.001	0.08
		Right side	0.029	0.006	0.101	0.14
		Top side		0.063	0.100	0.16
		Bottom side	0.646			0.65



WWAN Band		Exposure Position	1	5	6	1+5+6 Summed 1g SAR (W/kg)
			WWAN 1g SAR (W/kg)	5GHz WLAN ANT 1 1g SAR (W/kg)	5GHz WLAN ANT 2 1g SAR (W/kg)	
LTE	LTE Band 13	Front	0.648	0.220	0.236	1.10
		Back	0.596	0.143	0.094	0.83
		Left side	0.375	0.053	0.001	0.43
		Right side	0.615	0.006	0.101	0.72
		Top side		0.063	0.100	0.16
		Bottom side	0.428			0.43
	LTE Band 5	Front	0.776	0.220	0.236	1.23
		Back	0.589	0.143	0.094	0.83
		Left side	0.217	0.053	0.001	0.27
		Right side	0.543	0.006	0.101	0.65
		Top side		0.063	0.100	0.16
		Bottom side	0.574			0.57
	LTE Band 4	Front	0.454	0.220	0.236	0.91
		Back	0.491	0.143	0.094	0.73
		Left side	0.070	0.053	0.001	0.12
		Right side	0.061	0.006	0.101	0.17
		Top side		0.063	0.100	0.16
		Bottom side	0.894			0.89
	LTE Band 2	Front	0.475	0.220	0.236	0.93
		Back	0.671	0.143	0.094	0.91
		Left side	0.079	0.053	0.001	0.13
		Right side	0.073	0.006	0.101	0.18
		Top side		0.063	0.100	0.16
		Bottom side	0.985			0.99
	LTE Band 7	Front	0.375	0.220	0.236	0.83
		Back	0.425	0.143	0.094	0.66
		Left side	0.161	0.053	0.001	0.22
		Right side	0.080	0.006	0.101	0.19
		Top side		0.063	0.100	0.16
		Bottom side	0.902			0.90

WWAN Band		Exposure Position	1	4	1+4 Summed 1g SAR (W/kg)
			WWAN	2.4GHz Bluetooth	
			1g SAR (W/kg)	1g SAR (W/kg)	
GSM	GSM850	Front	0.779	0.012	0.79
		Back	0.704	0.011	0.72
		Left side	0.206	0.004	0.21
		Right side	0.664	0.001	0.67
		Top side		0.014	0.01
		Bottom side	0.661		0.66
	GSM1900	Front	0.360	0.012	0.37
		Back	0.424	0.011	0.44
		Left side	0.016	0.004	0.02
		Right side	0.037	0.001	0.04
		Top side		0.014	0.01
		Bottom side	0.785		0.79
WCDMA	WCDMA V	Front	0.668	0.012	0.68
		Back	0.589	0.011	0.60
		Left side	0.175	0.004	0.18
		Right side	0.522	0.001	0.52
		Top side		0.014	0.01
		Bottom side	0.603		0.60
	WCDMA II	Front	0.464	0.012	0.48
		Back	0.510	0.011	0.52
		Left side	0.070	0.004	0.07
		Right side	0.039	0.001	0.04
		Top side		0.014	0.01
		Bottom side	0.930		0.93
CDMA	CDMA2000 BC0	Front	0.709	0.012	0.72
		Back	0.550	0.011	0.56
		Left side	0.124	0.004	0.13
		Right side	0.428	0.001	0.43
		Top side		0.014	0.01
		Bottom side	0.556		0.56
	CDMA2000 BC1	Front	0.340	0.012	0.35
		Back	0.367	0.011	0.38
		Left side	0.023	0.004	0.03
		Right side	0.029	0.001	0.03
		Top side		0.014	0.01
		Bottom side	0.646		0.65

WWAN Band		Exposure Position	1	4	1+4 Summed 1g SAR (W/kg)
			WWAN	2.4GHz Bluetooth	
			1g SAR (W/kg)	1g SAR (W/kg)	
LTE	LTE Band 13	Front	0.648	0.012	0.66
		Back	0.596	0.011	0.61
		Left side	0.375	0.004	0.38
		Right side	0.615	0.001	0.62
		Top side		0.014	0.01
		Bottom side	0.428		0.43
	LTE Band 5	Front	0.776	0.012	0.79
		Back	0.589	0.011	0.60
		Left side	0.217	0.004	0.22
		Right side	0.543	0.001	0.54
		Top side		0.014	0.01
		Bottom side	0.574		0.57
	LTE Band 4	Front	0.454	0.012	0.47
		Back	0.491	0.011	0.50
		Left side	0.070	0.004	0.07
		Right side	0.061	0.001	0.06
		Top side		0.014	0.01
		Bottom side	0.894		0.89
	LTE Band 2	Front	0.475	0.012	0.49
		Back	0.671	0.011	0.68
		Left side	0.079	0.004	0.08
		Right side	0.073	0.001	0.07
		Top side		0.014	0.01
		Bottom side	0.985		0.99
	LTE Band 7	Front	0.375	0.012	0.39
		Back	0.425	0.011	0.44
		Left side	0.161	0.004	0.17
		Right side	0.080	0.001	0.08
		Top side		0.014	0.01
		Bottom side	0.902		0.90



15.3 Body-Worn Accessory Exposure Conditions

WWAN Band		Exposure Position	1	2	3	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	0.602	0.050	0.100	0.75
		Back	0.503	0.062	0.119	0.68
	GSM1900	Front	0.547	0.050	0.100	0.70
		Back	0.655	0.062	0.119	0.84
WCDMA	WCDMA V	Front	0.480	0.050	0.100	0.63
		Back	0.407	0.062	0.119	0.59
	WCDMA II	Front	0.987	0.050	0.100	1.14
		Back	1.052	0.062	0.119	1.23
CDMA	CDMA2000 BC0	Front	0.623	0.050	0.100	0.77
		Back	0.427	0.062	0.119	0.61
	CDMA2000 BC1	Front	1.127	0.050	0.100	1.28
		Back	0.749	0.062	0.119	0.93
LTE	LTE Band 13	Front	0.549	0.050	0.100	0.70
		Back	0.523	0.062	0.119	0.70
	LTE Band 5	Front	0.489	0.050	0.100	0.64
		Back	0.453	0.062	0.119	0.63
	LTE Band 4	Front	0.841	0.050	0.100	0.99
		Back	1.010	0.062	0.119	1.19
	LTE Band 2	Front	1.078	0.050	0.100	1.23
		Back	1.074	0.062	0.119	1.26
	LTE Band 7	Front	0.788	0.050	0.100	0.94
		Back	0.848	0.062	0.119	1.03

WWAN Band		Exposure Position	1	5	6	1+5+6 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	0.602	0.172	0.166	0.94
		Back	0.503	0.097	0.075	0.68
	GSM1900	Front	0.547	0.172	0.166	0.89
		Back	0.655	0.097	0.075	0.83
WCDMA	WCDMA V	Front	0.480	0.172	0.166	0.82
		Back	0.407	0.097	0.075	0.58
	WCDMA II	Front	0.987	0.172	0.166	1.33
		Back	1.052	0.097	0.075	1.22
CDMA	CDMA2000 BC0	Front	0.623	0.172	0.166	0.96
		Back	0.427	0.097	0.075	0.60
	CDMA2000 BC1	Front	1.127	0.172	0.166	1.47
		Back	0.749	0.097	0.075	0.92
LTE	LTE Band 13	Front	0.549	0.172	0.166	0.89
		Back	0.523	0.097	0.075	0.70
	LTE Band 5	Front	0.489	0.172	0.166	0.83
		Back	0.453	0.097	0.075	0.63
	LTE Band 4	Front	0.841	0.172	0.166	1.18
		Back	1.010	0.097	0.075	1.18
	LTE Band 2	Front	1.078	0.172	0.166	1.42
		Back	1.074	0.097	0.075	1.25
	LTE Band 7	Front	0.788	0.172	0.166	1.13
		Back	0.848	0.097	0.075	1.02



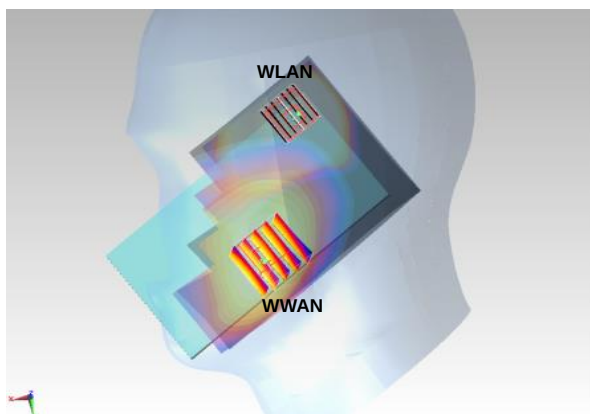
WWAN Band		Exposure Position	1	4	1+4 Summed 1g SAR (W/kg)
			WWAN	2.4GHz Bluetooth	
			1g SAR (W/kg)	1g SAR (W/kg)	
GSM	GSM850	Front	0.602	0.001	0.60
		Back	0.503	0.006	0.51
	GSM1900	Front	0.547	0.001	0.55
		Back	0.655	0.006	0.66
WCDMA	WCDMA V	Front	0.480	0.001	0.48
		Back	0.407	0.006	0.41
	WCDMA II	Front	0.987	0.001	0.99
		Back	1.052	0.006	1.06
CDMA	CDMA2000 BC0	Front	0.623	0.001	0.62
		Back	0.427	0.006	0.43
	CDMA2000 BC1	Front	1.127	0.001	1.13
		Back	0.749	0.006	0.76
LTE	LTE Band 13	Front	0.549	0.001	0.55
		Back	0.523	0.006	0.53
	LTE Band 5	Front	0.489	0.001	0.49
		Back	0.453	0.006	0.46
	LTE Band 4	Front	0.841	0.001	0.84
		Back	1.010	0.006	1.02
	LTE Band 2	Front	1.078	0.001	1.08
		Back	1.074	0.006	1.08
	LTE Band 7	Front	0.788	0.001	0.79
		Back	0.848	0.006	0.85

15.4 SPLSR Evaluation and Analysis

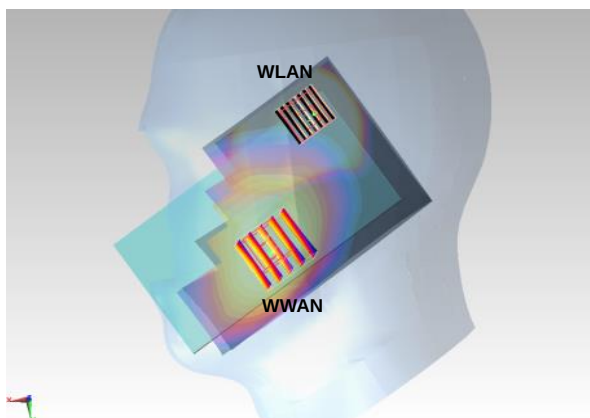
General Note:

1. $SPLSR = (SAR_1 + SAR_2)^{1.5} / (min. \text{ separation distance, mm})$. If $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary

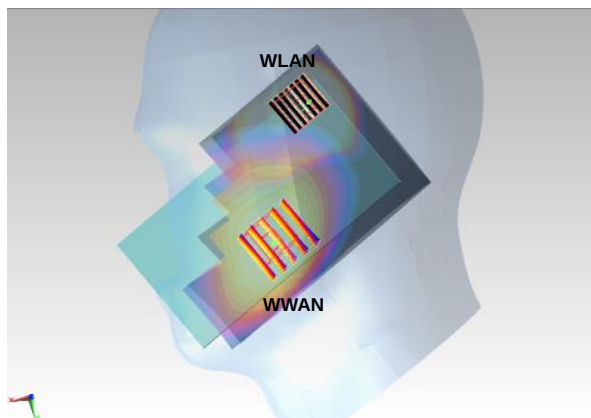
Case 1	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM850	Right Cheek	0.373	0mm	X	Y	Z	90.9	1.75	0.03	Not required
	5GHz ANT 1		1.376	0mm	0.0355	-0.33	-0.174				



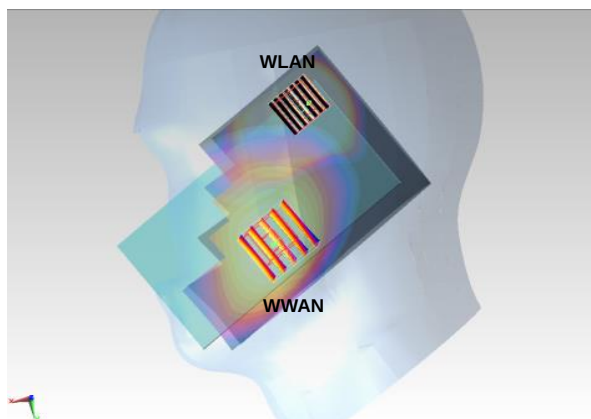
Case 2	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA V	Right Cheek	0.344	0mm	X	Y	Z	76.5	1.72	0.03	Not required
	5GHz ANT 1		1.376	0mm	0.0355	-0.33	-0.174				



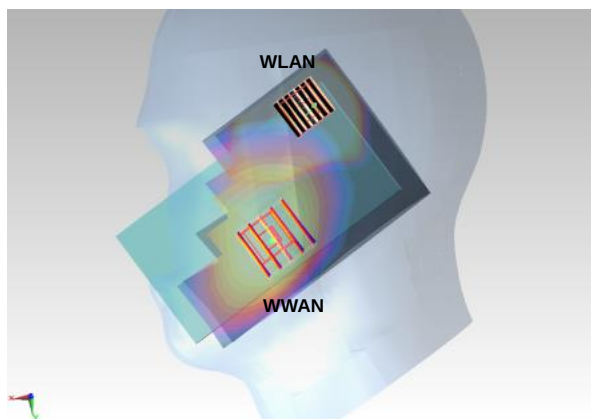
Case 3	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	CDMA BC0	Right Cheek	0.426	0mm	X	Y	Z	81.2	1.80	0.03	Not required
	5GHz ANT 1		1.376	0mm	0.0355	-0.33	-0.174				



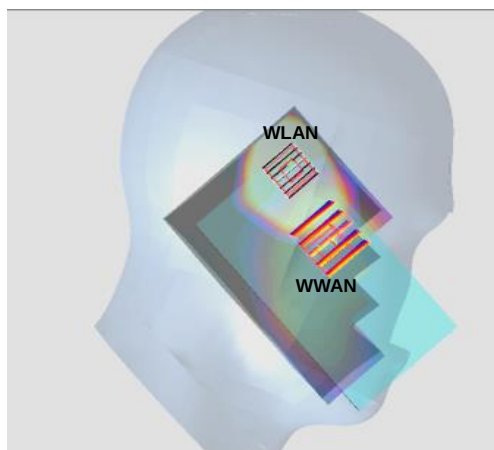
Case 4	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE 13	Right Cheek	0.363	0mm	X	Y	Z	75.0	1.74	0.03	Not required
	5GHz ANT 1		1.376	0mm	0.0355	-0.33	-0.174				



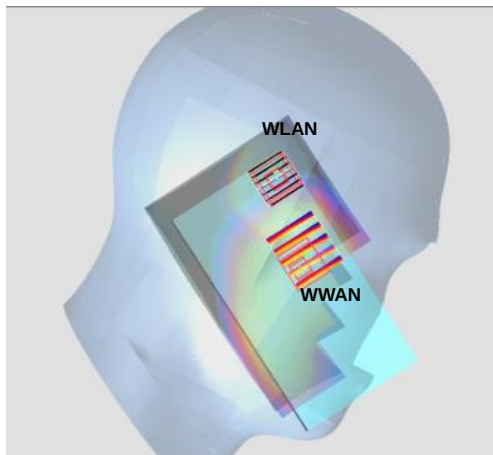
Case 5	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE 5	Right Cheek	0.349	0mm	X	Y	Z	74.5	1.73	0.03	Not required
	5GHz ANT 1		1.376	0mm	0.0355	-0.33	-0.174				



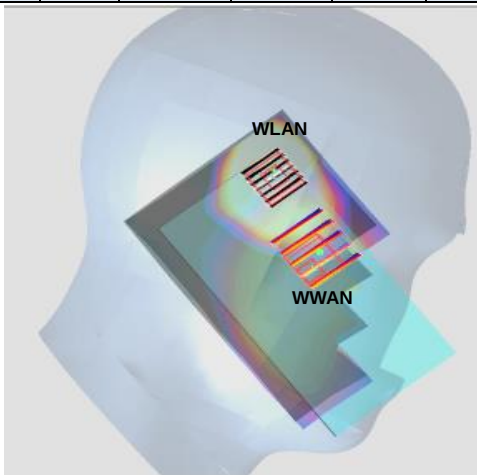
Case 6	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM850	Left Cheek	0.262	0mm	X	Y	Z	52.1	1.62	0.04	Not required
	5GHz ANT 2		1.358	0mm	0.0318	0.328	-0.173				



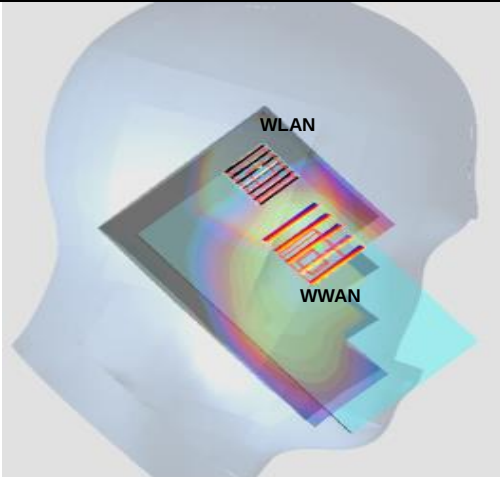
Case 7	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	CDMA BC0	Left Cheek	0.274	0mm	X	Y	Z	58.7	1.63	0.04	Not required
	5GHz ANT 2		1.358	0mm	0.0318	0.328	-0.173				



Case 8	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE 13	Left Cheek	0.274	0mm	X	Y	Z	58.7	1.63	0.04	Not required
	5GHz ANT 2		1.358	0mm	0.0318	0.328	-0.173				



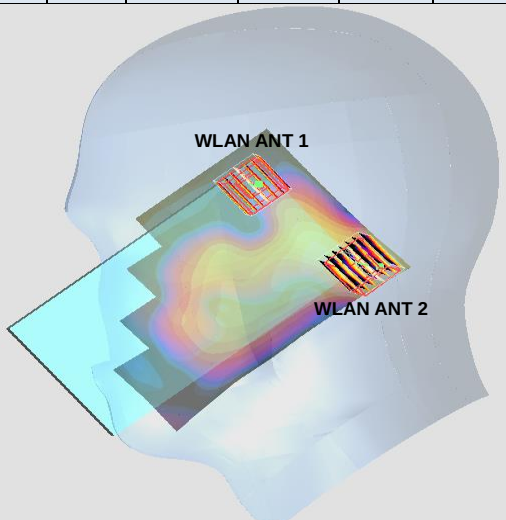
Case 9	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE 5	Left Cheek	0.247	0mm	X	Y	Z	57.9	1.61	0.04	Not required
	5GHz ANT 2		1.358	0mm	0.0318	0.328	-0.173				



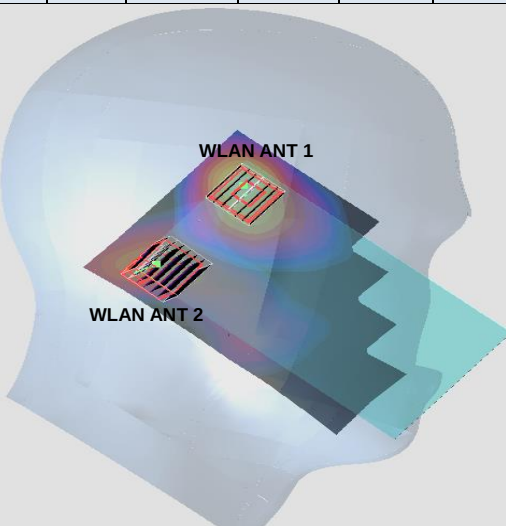
Case 10	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE 4	Left Cheek	0.249	0mm	X	Y	Z	91.8	1.61	0.02	Not required
	5GHz ANT 2		1.358	0mm	0.0318	0.328	-0.173				



Case 11	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	5GHz ANT 1	Right Cheek	1.376	0mm	0.0348	-0.333	-0.174	72.9	2.09	0.04	Not required
	5GHz ANT 2		0.717	0mm	-0.012	-0.278	-0.164				



Case 12	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	5GHz ANT 1	Left Cheek	0.702	0mm	-0.00788	0.275	-0.163	67.0	2.06	0.04	Not required
	5GHz ANT 2		1.358	0mm	0.0318	0.328	-0.173				



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16. 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 16.1. 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 Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)
Measurement System							
Probe Calibration	6.0	Normal	1	1	1	± 6.0 %	± 6.0 %
Axial Isotropy	4.7	Rectangular	√3	0.7	0.7	± 1.9 %	± 1.9 %
Hemispherical Isotropy	9.6	Rectangular	√3	0.7	0.7	± 3.9 %	± 3.9 %
Boundary Effects	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Linearity	4.7	Rectangular	√3	1	1	± 2.7 %	± 2.7 %
System Detection Limits	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Readout Electronics	0.3	Normal	1	1	1	± 0.3 %	± 0.3 %
Response Time	0.8	Rectangular	√3	1	1	± 0.5 %	± 0.5 %
Integration Time	2.6	Rectangular	√3	1	1	± 1.5 %	± 1.5 %
RF Ambient Noise	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
RF Ambient Reflections	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Probe Positioner	0.4	Rectangular	√3	1	1	± 0.2 %	± 0.2 %
Probe Positioning	2.9	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Max. SAR Eval.	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Test Sample Related							
Device Positioning	2.9	Normal	1	1	1	± 2.9 %	± 2.9 %
Device Holder	3.6	Normal	1	1	1	± 3.6 %	± 3.6 %
Power Drift	5.0	Rectangular	√3	1	1	± 2.9 %	± 2.9 %
Phantom and Setup							
Phantom Uncertainty	4.0	Rectangular	√3	1	1	± 2.3 %	± 2.3 %
Liquid Conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	± 1.8 %	± 1.2 %
Liquid Conductivity (Meas.)	2.5	Normal	1	0.64	0.43	± 1.6 %	± 1.1 %
Liquid Permittivity (Target)	5.0	Rectangular	√3	0.6	0.49	± 1.7 %	± 1.4 %
Liquid Permittivity (Meas.)	2.5	Normal	1	0.6	0.49	± 1.5 %	± 1.2 %
Combined Standard Uncertainty						± 11.0 %	± 10.8 %
Coverage Factor for 95 %						K=2	
Expanded Uncertainty						± 22.0 %	± 21.5 %

Table 16.2. Uncertainty Budget for frequency range 300 MHz to 3 GHz

Error Description	Uncertainty Value (±%)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)
Measurement System							
Probe Calibration	6.55	Normal	1	1	1	± 6.55 %	± 6.55 %
Axial Isotropy	4.7	Rectangular	√3	0.7	0.7	± 1.9 %	± 1.9 %
Hemispherical Isotropy	9.6	Rectangular	√3	0.7	0.7	± 3.9 %	± 3.9 %
Boundary Effects	2.0	Rectangular	√3	1	1	± 1.2 %	± 1.2 %
Linearity	4.7	Rectangular	√3	1	1	± 2.7 %	± 2.7 %
System Detection Limits	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Readout Electronics	0.3	Normal	1	1	1	± 0.3 %	± 0.3 %
Response Time	0.8	Rectangular	√3	1	1	± 0.5 %	± 0.5 %
Integration Time	2.6	Rectangular	√3	1	1	± 1.5 %	± 1.5 %
RF Ambient Noise	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
RF Ambient Reflections	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Probe Positioner	0.8	Rectangular	√3	1	1	± 0.5 %	± 0.5 %
Probe Positioning	9.9	Rectangular	√3	1	1	± 5.7 %	± 5.7 %
Max. SAR Eval.	4.0	Rectangular	√3	1	1	± 2.3 %	± 2.3 %
Test Sample Related							
Device Positioning	2.9	Normal	1	1	1	± 2.9 %	± 2.9 %
Device Holder	3.6	Normal	1	1	1	± 3.6 %	± 3.6 %
Power Drift	5.0	Rectangular	√3	1	1	± 2.9 %	± 2.9 %
Phantom and Setup							
Phantom Uncertainty	4.0	Rectangular	√3	1	1	± 2.3 %	± 2.3 %
Liquid Conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	± 1.8 %	± 1.2 %
Liquid Conductivity (Meas.)	2.5	Normal	1	0.64	0.43	± 1.6 %	± 1.1 %
Liquid Permittivity (Target)	5.0	Rectangular	√3	0.6	0.49	± 1.7 %	± 1.4 %
Liquid Permittivity (Meas.)	2.5	Normal	1	0.6	0.49	± 1.5 %	± 1.2 %
Combined Standard Uncertainty						± 12.8 %	± 12.6 %
Coverage Factor for 95 %						K=2	
Expanded Uncertainty						± 25.6 %	± 25.2 %

Table 16.3. Uncertainty Budget for frequency range 3 GHz to 6 GHz

17. 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. 1528-2003, "Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- [4] SPEAG DASY System Handbook
- [5] FCC KDB 248227 D01 v02r01, "SAR Guidance for IEEE 802.11 (WiFi) Transmitters", Jun 2015.
- [6] FCC KDB 447498 D01 v05r02, "Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies", Feb 2014
- [7] FCC KDB 648474 D04 v01r02, "SAR Evaluation Considerations for Wireless Handsets", Dec 2013.
- [8] FCC KDB 941225 D01 v03, "3G SAR MEAUREMENT PROCEDURES", Oct 2014
- [9] FCC KDB 941225 D05 v02r03, "SAR Evaluation Considerations for LTE Devices", Dec 2013
- [10] FCC KDB 941225 D05A v01r01, "Rel. 10 LTE SAR Test Guidance and KDB Inquiries", Aug 2014
- [11] FCC KDB 941225 D06 v02, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2014.
- [12] FCC KDB 865664 D01 v01r03, "SAR Measurement Requirements for 100 MHz to 6 GHz", Feb 2014.
- [13] FCC KDB 865664 D02 v01r01, "RF Exposure Compliance Reporting and Documentation Considerations" May 2013.