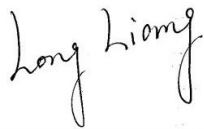


FCC SAR Test Report

APPLICANT : Motorola Mobility LLC
EQUIPMENT : Mobile Cellular Phone
BRAND NAME : Motorola
MODEL NAME : XT2025-1
FCC ID : IHDT56YE1
STANDARD : FCC 47 CFR PART 2 (2.1093)
ANSI/IEEE C95.1-1992
IEEE 1528-2013

The product was received on May 14, 2019 and testing was started from May 23, 2019 and completed on Jun. 06, 2019. We, Sporton International (Shenzhen) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has 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 (Shenzhen) Inc., the test report shall not be reproduced except in full.



Reviewed by: Long Liang / Supervisor



Approved by: Johnny Chen / Manager



Sporton International (ShenZhen) Inc.

**1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055
People's Republic of China**



Table of Contents

1. Statement of Compliance 4
2. Administration Data 5
3. Guidance Applied..... 5
4. Equipment Under Test (EUT) Information..... 6
4.1 General Information 6
4.2 General LTE SAR Test and Reporting Considerations 8
5. RF Exposure Limits.....10
5.1 Uncontrolled Environment.....10
5.2 Controlled Environment.....10
6. Specific Absorption Rate (SAR).....11
6.1 Introduction 11
6.2 SAR Definition..... 11
7. System Description and Setup12
7.1 E-Field Probe13
7.2 Data Acquisition Electronics (DAE)13
7.3 Phantom.....14
7.4 Device Holder.....15
8. Measurement Procedures16
8.1 Spatial Peak SAR Evaluation16
8.2 Power Reference Measurement.....17
8.3 Area Scan17
8.4 Zoom Scan.....18
8.5 Volume Scan Procedures.....18
8.6 Power Drift Monitoring.....18
9. Test Equipment List19
10. System Verification20
10.1 Tissue Simulating Liquids.....20
10.2 Tissue Verification21
10.3 System Performance Check Results.....22
11. RF Exposure Positions23
11.1 Ear and handset reference point23
11.2 Definition of the cheek position.....24
11.3 Definition of the tilt position.....25
11.4 Body Worn Accessory26
11.5 Wireless Router.....26
12. Conducted RF Output Power (Unit: dBm).....27
13. Antenna Location65
14. SAR Test Results66
14.1 Head SAR68
14.2 Hotspot SAR71
14.3 Body Worn Accessory SAR.....75
14.4 Product specific 10g SAR80
15.1 Repeated SAR Measurement82
16. Simultaneous Transmission Analysis.....83
16.1 Head Exposure Conditions84
16.2 Hotspot Exposure Conditions.....85
16.3 Body-Worn Accessory Exposure Conditions87
16.4 SPLSR Evaluation and Analysis.....88
17. Uncertainty Assessment93
18. References95
Appendix A. Plots of System Performance Check
Appendix B. Plots of High SAR Measurement
Appendix C. DASYS Calibration Certificate
Appendix D. Test Setup Photos



1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Mobility LLC, Mobile Cellular Phone, XT2025-1**, are as follows.

Highest Standalone SAR Summary						Highest Simultaneous Transmission 1g SAR (W/kg)
Equipment Class	Frequency Band		Head (Separation 0mm)	Hotspot (Separation 5mm)	Body-worn (Separation 5mm)	
			1g SAR (W/kg)			
Licensed	GSM	GSM850	0.42	1.14	1.14	1.50
		GSM1900	<0.10	0.56	0.75	
	WCDMA	Band V	0.26	0.57	0.57	
		Band IV	0.21	1.20	1.23	
		Band II	0.15	1.01	1.28	
	LTE	LTE Band 5	0.25	0.59	0.59	
		LTE Band 4	0.19	1.33	1.02	
		LTE Band 2	0.14	1.25	1.28	
LTE Band 7		0.14	1.42	1.42		
DTS	WLAN	2.4GHz WLAN	1.23	0.69	0.62	1.49
DSS	Bluetooth	Bluetooth	0.15	<0.10	<0.10	1.50
Date of Testing:			2019/05/23~2019/06/06			

Equipment Class	Frequency Band	Highest Standalone SAR Summary	
		Product Specific (Separation 0mm)	
		10g SAR (W/kg)	
Licensed	GSM1900	0.95	
	WCDMA IV	3.09	
	WCDMA II	1.37	
	LTE Band 4	2.81	
	LTE Band 2	1.33	
	LTE Band 7	1.84	
Date of Testing:		2019/05/23~2019/06/06	

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR, 4.0 W/kg for Product Specific 10g SAR) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications



2. Administration Data

Sporton International (Shenzhen) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Testing Laboratory			
Test Firm	Sporton International (Shenzhen) Inc.		
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	SAR 01	CN1256	421272

Applicant	
Company Name	Motorola Mobility LLC
Address	222 W,Merchandise Mart Plaza,Chicago,IL60654 USA

3. Guidance Applied

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

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



4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT2025-1
FCC ID	IHDT56YE1
IMEI Code	SIM1:354170100021032 SIM2:354170100026080IHDT56YE1
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+(16QAM uplink is not supported) LTE: QPSK, 16QAM WLAN 2.4GHz 802.11b/g/n HT20 Bluetooth BR/EDR/LE
HW Version	V1.2
SW Version	PTA29.29
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
<p>Remark:</p> <ol style="list-style-type: none"> This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation. This device does not support DTM operation and support GRPS/EGRPS mode up to multi-slot class 12. 802.11n-HT40 is not supported in 2.4GHz WLAN. This device WLAN 2.4GHz supports hotspot operation and Bluetooth support tethering applications. There are four types of EUT, the differences between them are for memory, sample 1/2 is 2+32GB capacity and sample 3/4 is 4+64GB capacity. And sample 1/4 is dual SIM card, sample 2/3 is single SIM card. After pre-scan, we found test result of the sample that dual SIM (sample 1) was the worst, so we chose dual SIM card mobile to perform all tests. For memory capacity has no effect on SAR distribution, no need to consider it. For dual SIM card mobile has two SIM slots and supports dual SIM dual standby. The WWAN radio transmission will be enabled by either one SIM at a time (single active). After pre-scan two SIM cards power, we found test result of the SIM1 was the worse, so we chose SIM1 slot to perform all tests. The mechanism will be used to determine next to ear voice communication or hotspot enable and to set different power accordingly for Cellular transmitter. The device has three power level management for different RF exposure conditions as following, <p>Head Mode</p> Once a voice call or VoLTE call (through WWAN bearer) or OTT VoIP call (through cellular data) is established and audio is actively routed through the earpiece receiver (earpiece is ON), > WWAN (Head) Power table is used. <p>Hotspot mode</p> When the voice call or VoLTE call (through WWAN bearer) or OTT VoIP call (through cellular data) is NOT established or when the voice call or VoLTE call (through WWAN bearer) or OTT VoIP call (through cellular data) is established but audio is not actively routed through the earpiece receiver (earpiece is OFF), and Hotspot feature 	



(either WiFi tethering or BT tethering) is enabled

- WWAN (Hotspot) Power table is used.

Body worn /Extremity

When the voice call or VoLTE call (through WWAN bearer) or OTT VoIP call (through cellular data) is NOT established or when the voice call or VoLTE call (through WWAN bearer) or OTT VoIP call (through cellular data) is established but audio is not actively routed through the earpiece receiver (earpiece is OFF), and Hotspot feature (either WiFi tethering or BT tethering) is disabled

- WWAN (Body worn /Extremity) Power table is used.



4.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05																																																															
FCC ID	IHDT56YE1																																																														
Equipment Name	Mobile Cellular Phone																																																														
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz																																																														
Channel Bandwidth	LTE Band 2: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 4: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 5: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 7: 5MHz, 10MHz, 15MHz, 20MHz																																																														
Uplink Modulations used	QPSK / 16QAM																																																														
LTE Voice / Data requirements	Voice and Data																																																														
LTE Release Version	R11, Cat 4																																																														
CA Support	Not Supported																																																														
LTE MPR permanently built-in by design	Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3																																																														
	<table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th> <th rowspan="2">MPR (dB)</th> </tr> <tr> <th>1.4 MHz</th> <th>3.0 MHz</th> <th>5 MHz</th> <th>10 MHz</th> <th>15 MHz</th> <th>20 MHz</th> </tr> </thead> <tbody> <tr> <td>QPSK</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 3</td> </tr> <tr> <td>256 QAM</td> <td colspan="6" style="text-align: center;">≥ 1</td> <td>≤ 5</td> </tr> </tbody> </table>	Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})						MPR (dB)	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1	16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1	16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2	64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3	256 QAM	≥ 1						≤ 5
	Modulation		Channel bandwidth / Transmission bandwidth (N _{RB})							MPR (dB)																																																					
		1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz																																																								
	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1																																																							
	16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1																																																							
	16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2																																																							
	64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2																																																							
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3																																																								
256 QAM	≥ 1						≤ 5																																																								
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.																																																														



Transmission (H, M, L) channel numbers and frequencies in each LTE band												
LTE Band 2												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900
LTE Band 4												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745
LTE Band 5												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829				
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5				
H	20643	848.3	20635	847.5	20625	846.5	20600	844				
LTE Band 7												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510				
M	21100	2535	21100	2535	21100	2535	21100	2535				
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560				



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

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

6. Specific Absorption Rate (SAR)

6.1 Introduction

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

6.2 SAR Definition

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

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

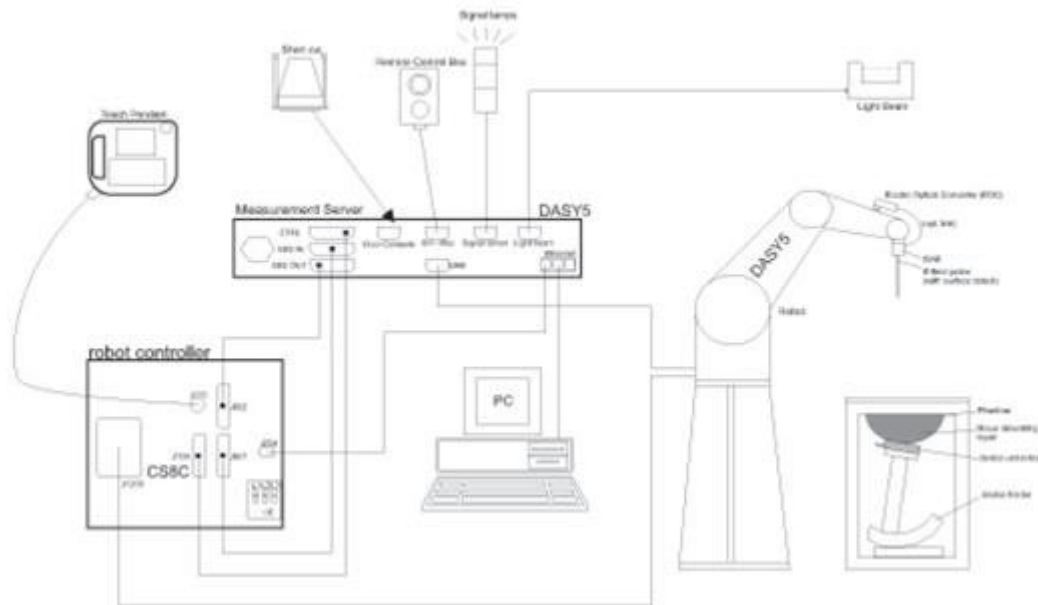
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

7. System Description and Setup

The DASY system used for performing compliance tests consists of the following items:




- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP or Win7 and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

7.1 E-Field Probe

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

<ES3DV3 Probe>

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

7.2 Data Acquisition Electronics (DAE)

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


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



Photo of DAE


7.3 Phantom

<SAM Twin Phantom>

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

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

<ELI Phantom>

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

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

7.4 Device Holder

<Mounting Device for Hand-Held Transmitter>

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



Mounting Device for Hand-Held Transmitters



Mounting Device Adaptor for Wide-Phones

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

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



Mounting Device for Laptops

8. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

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

<SAR measurement>

- (a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
- (b) Place the EUT in the positions as 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 D01v01r04 SAR measurement 100 MHz to 6 GHz.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: $\Delta x_{Area}, \Delta y_{Area}$	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

8.4 Zoom Scan

Zoom scans are used 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 shoes base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

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

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

8.5 Volume Scan Procedures

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

8.6 Power Drift Monitoring

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



9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	835MHz System Validation Kit	D835V2	4d162	Dec. 05, 2018	Dec. 04, 2019
SPEAG	1750MHz System Validation Kit	D1750V2	1137	Jul. 30, 2018	Jul. 29, 2019
SPEAG	1900MHz System Validation Kit	D1900V2	5d182	Dec. 07, 2018	Dec. 06, 2019
SPEAG	2450MHz System Validation Kit	D2450V2	736	Aug. 31, 2018	Aug. 30, 2019
SPEAG	2600MHz System Validation Kit	D2600V2	1070	Dec. 07, 2018	Dec. 06, 2019
SPEAG	Data Acquisition Electronics	DAE4	715	Jan. 23, 2019	Jan. 22, 2020
SPEAG	Dosimetric E-Field Probe	ES3DV3	3191	Jan. 29, 2019	Jan. 28, 2020
SPEAG	SAM Twin Phantom	QD 000 P40 CD	TP-1671	NCR	NCR
Anritsu	Radio communication analyzer	MT8820C	6201300653	Jul. 18, 2018	Jul. 17, 2019
Anritsu	Radio communication analyzer	MT8821C	6201588572	Dec. 22, 2018	Dec. 21, 2019
Anritsu	Radio communication analyzer	MT8821C	6201692204	Dec. 22, 2018	Dec. 21, 2019
Agilent	Wireless Communication Test Set	E5515C	MY50267224	Sep. 11, 2018	Sep. 10, 2019
Agilent	Network Analyzer	E5071C	MY46523671	Oct. 18, 2018	Oct. 17, 2019
Speag	Dielectric Assessment KIT	DAK-3.5	1071	Nov. 20, 2018	Nov. 19, 2019
Agilent	Signal Generator	N5181A	MY50145381	Dec. 22, 2018	Dec. 21, 2019
Anritsu	Power Sensor	MA2411B	1306099	Jul. 30, 2018	Jul. 29, 2019
Anritsu	Power Meter	ML2495A	1349001	Jul. 26, 2018	Jul. 25, 2019
Anritsu	Power Sensor	MA2411B	1207253	Dec. 22, 2018	Dec. 21, 2019
Anritsu	Power Meter	ML2495A	1218010	Dec. 22, 2018	Dec. 21, 2019
R&S	CBT BLUETOOTH TESTER	CBT	100963	Dec. 22, 2018	Dec. 21, 2019
R&S	Spectrum Analyzer	FSP7	100818	Jul. 18, 2018	Jul. 17, 2019
LKM electronic	Hygrometer	DTM3000	3241	Aug. 10, 2018	Aug. 09, 2019
Anymetre	Thermo-Hygrometer	JR593	2015030904	Apr. 22, 2019	Apr. 21, 2020
ARRA	Power Divider	A3200-2	N/A	Note	
PASTERNAK	Dual Directional Coupler	PE2214-10	N/A	Note	
Agilent	Dual Directional Coupler	778D	50422	Note	
MCL	Attenuation1	BW-S10W5	N/A	Note	
Weinschel	Attenuation2	3M-20	N/A	Note	
Zhongjilianhe	Attenuation3	MVE2214-03	N/A	Note	
mini-circuits	Amplifier	ZVE-3W-83+	599201528	Note	
BONN	POWER AMPLIFIER	BLMA 0830-3	087193A	Note	
BONN	POWER AMPLIFIER	BLMA 2060-2	087193B	Note	

Note:

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 Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 10.1. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 10.2.

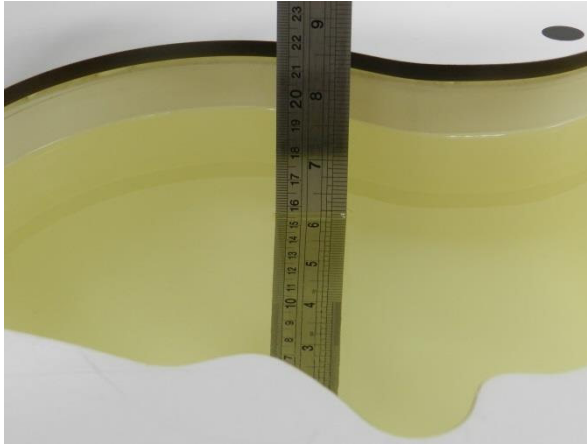


Fig 10.1 Photo of Liquid Height for Head SAR

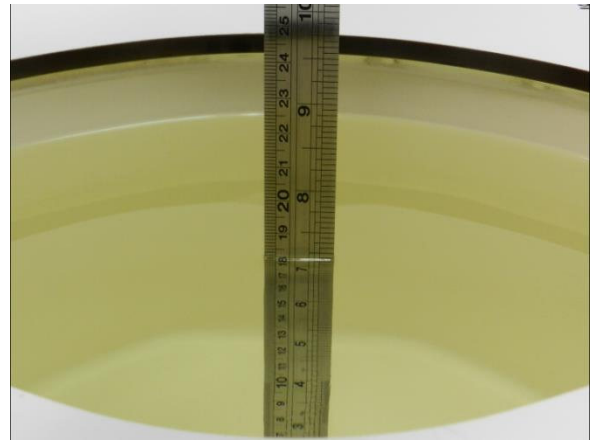


Fig 10.2 Photo of Liquid Height for Body SAR

10.2 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								
835	40.3	57.9	0.2	1.4	0.2	0	0.90	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								
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
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

<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
835	Head	22.5	0.910	42.910	0.90	41.50	1.11	3.40	±5	2019/5/24
1750	Head	22.6	1.404	40.106	1.37	40.10	2.48	0.01	±5	2019/5/23
1900	Head	22.6	1.445	40.021	1.40	40.00	3.21	0.05	±5	2019/5/23
2450	Head	22.7	1.834	39.654	1.80	39.20	1.89	1.16	±5	2019/5/27
2600	Head	22.7	1.992	40.445	1.96	39.00	1.63	3.71	±5	2019/5/29
835	Body	22.4	1.011	56.243	0.97	55.20	4.23	1.89	±5	2019/5/24
1750	Body	22.5	1.529	52.044	1.49	53.40	2.62	-2.54	±5	2019/5/25
1900	Body	22.4	1.525	54.504	1.52	53.30	0.33	2.26	±5	2019/6/6
2450	Body	22.5	1.949	51.667	1.95	52.70	-0.05	-1.96	±5	2019/5/26
2600	Body	22.5	2.192	50.732	2.16	52.50	1.48	-3.37	±5	2019/5/26

10.3 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.

<1g SAR>

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 (%)
2019/5/24	835	Head	250	4d162	3191	715	2.58	9.61	10.32	7.39
2019/5/23	1750	Head	250	1137	3191	715	9.84	36.50	39.36	7.84
2019/5/23	1900	Head	250	5d182	3191	715	10.60	39.60	42.4	7.07
2019/5/27	2450	Head	250	736	3191	715	13.60	52.70	54.4	3.23
2019/5/29	2600	Head	250	1070	3191	715	14.40	58.10	57.6	-0.86
2019/5/24	835	Body	250	4d162	3191	715	2.61	9.70	10.44	7.63
2019/5/25	1750	Body	250	1137	3191	715	9.91	37.00	39.64	7.14
2019/6/6	1900	Body	250	5d182	3191	715	10.50	39.90	42	5.26
2019/5/26	2450	Body	250	736	3191	715	13.30	51.50	53.2	3.30
2019/5/26	2600	Body	250	1070	3191	715	14.70	54.60	58.8	7.69

<10g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2019/5/25	1750	Body	250	1137	3191	715	5.41	20.30	21.64	6.60
2019/6/6	1900	Body	250	5d182	3191	715	5.51	20.90	22.04	5.45
2019/5/26	2600	Body	250	1070	3191	715	6.58	24.60	26.32	6.99

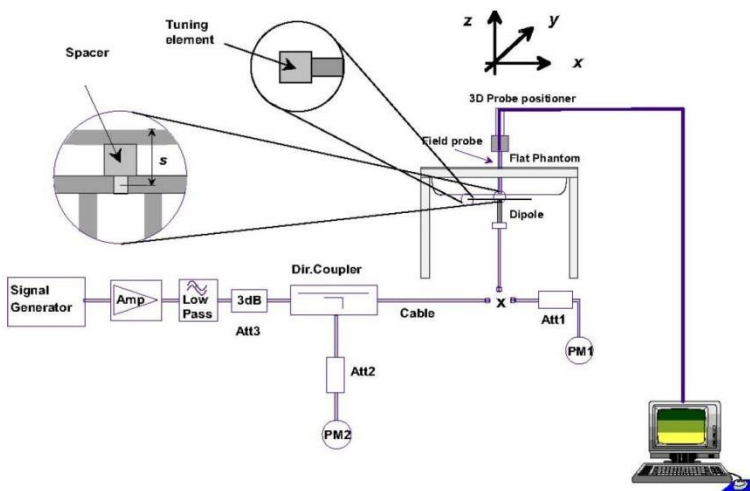


Fig 10.3.1 System Performance Check Setup



Fig 10.3.2 Setup Photo

11. RF Exposure Positions

11.1 Ear and handset reference point

Figure 11.1.1 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 11.1.2 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 11.1.3). 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 11.1.2. The ear truncation is introduced to preclude the ear lobe from interfering with handset tilt, which could lead to unstable positioning at the cheek.

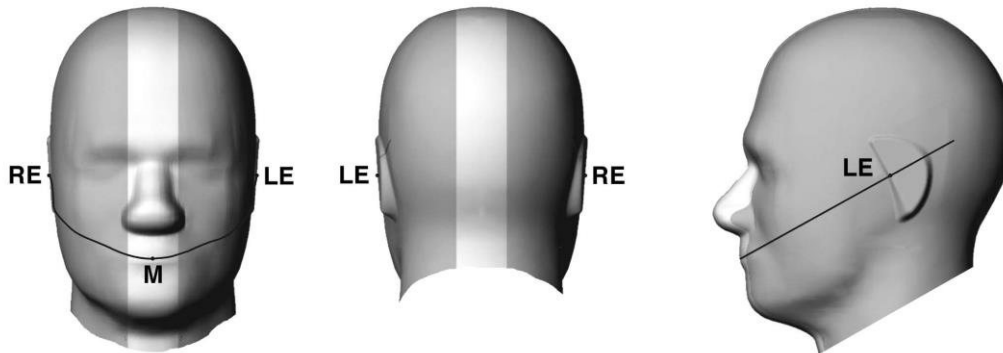


Fig 11.1.1 Front, back, and side views of SAM twin phantom

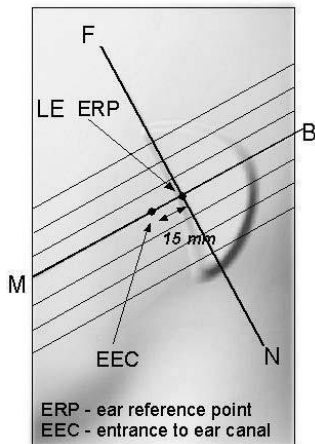


Fig 11.1.2 Close-up side view of phantom showing the ear region.

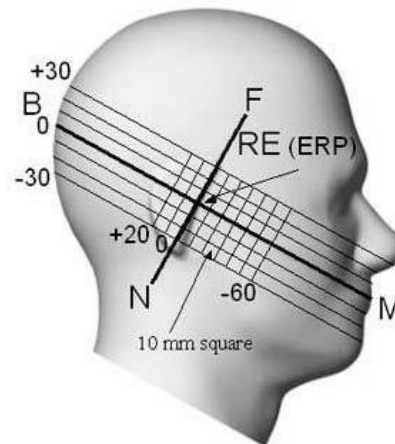


Fig 11.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

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 11.2.1 and Figure 11.2.2), 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 11.2.1). 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 11.2.2), 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 11.2.3), 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 11.2.3. The actual rotation angles should be documented in the test report.

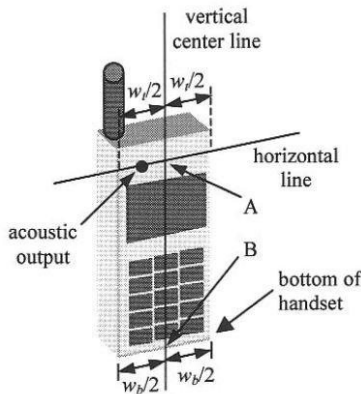


Fig 11.2.1 Handset vertical and horizontal reference lines—"fixed case"

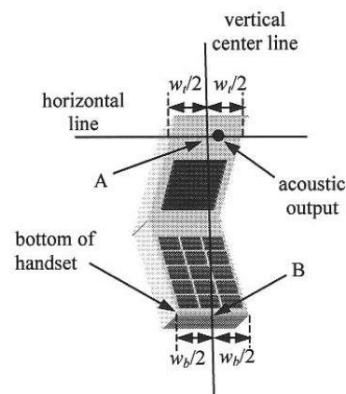


Fig 11.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

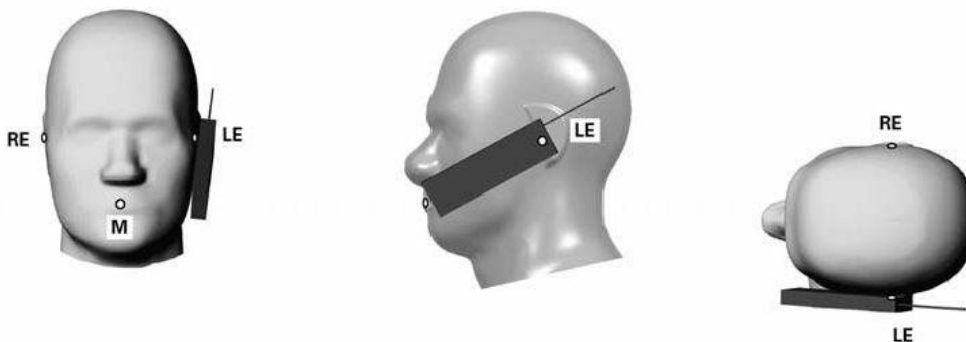


Fig 11.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

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 11.3.1. 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

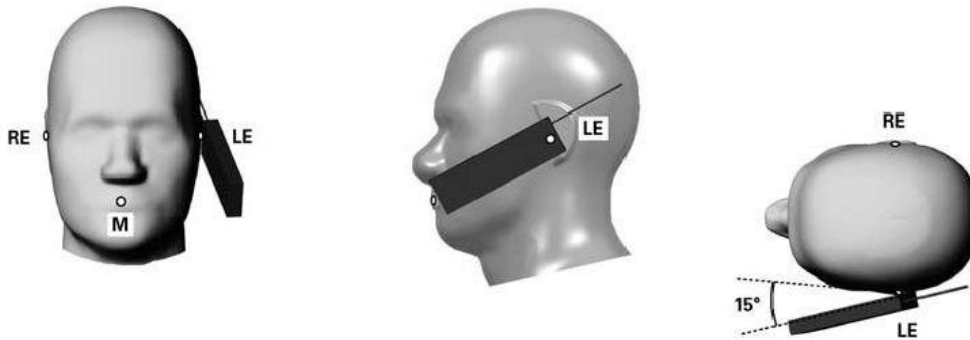


Fig 11.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

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 11.4). Per KDB648474 D04v01r03, body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB 447498 D01v06 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for body-worn accessory, measured without a headset connected to the handset is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

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.

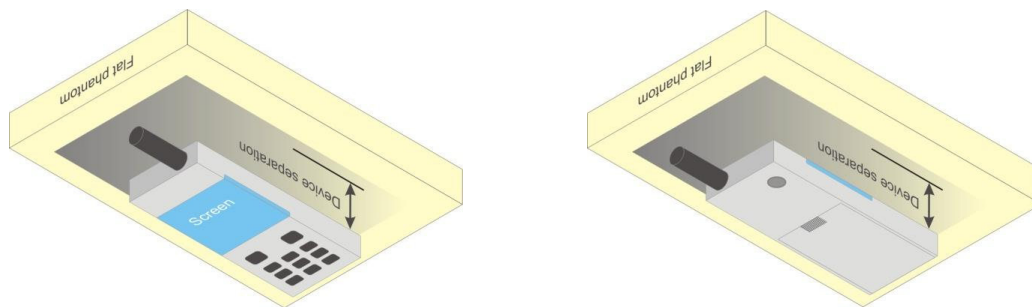


Fig 11.4 Body Worn Position

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 KDB Publication 941225 D06 v02r01 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10mm from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges, determined from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

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

12. Conducted RF Output Power (Unit: dBm)

<GSM Conducted Power>

General Note:

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

< WWAN (Head) Power Table >

GSM850 Tx Channel	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	32.92	33.15	32.90	34.00	23.92	24.15	23.90	25.00
GPRS 1 Tx slot	32.90	33.12	32.86	34.00	23.90	24.12	23.86	25.00
GPRS 2 Tx slots	31.88	32.10	31.87	33.00	25.88	26.10	25.87	27.00
GPRS 3 Tx slots	29.77	30.00	29.78	31.00	25.51	25.74	25.52	26.74
GPRS 4 Tx slots	28.65	28.88	28.66	30.00	25.65	25.88	25.66	27.00
EDGE 1 Tx slot	27.02	26.92	26.98	28.00	18.02	17.92	17.98	19.00
EDGE 2 Tx slots	26.04	26.04	26.02	27.00	20.04	20.04	20.02	21.00
EDGE 3 Tx slots	23.93	24.00	23.89	25.00	19.67	19.74	19.63	20.74
EDGE 4 Tx slots	22.84	22.94	22.98	24.00	19.84	19.94	19.98	21.00
GSM1900								
	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
Tx Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot	30.58	30.49	30.13	31.00	21.58	21.49	21.13	22.00
GPRS 1 Tx slot	30.55	30.45	30.09	31.00	21.55	21.45	21.09	22.00
GPRS 2 Tx slots	29.46	29.37	29.00	30.00	23.46	23.37	23.00	24.00
GPRS 3 Tx slots	27.35	27.26	26.91	28.00	23.09	23.00	22.65	23.74
GPRS 4 Tx slots	26.29	26.20	25.89	27.00	23.29	23.20	22.89	24.00
EDGE 1 Tx slot	25.88	25.94	26.16	27.00	16.88	16.94	17.16	18.00
EDGE 2 Tx slots	24.98	25.02	25.12	26.00	18.98	19.02	19.12	20.00
EDGE 3 Tx slots	22.96	23.11	23.12	24.00	18.70	18.85	18.86	19.74
EDGE 4 Tx slots	21.97	22.02	22.09	23.00	18.97	19.02	19.09	20.00

Remark: The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.

The calculated method are shown as below:

- Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB
- Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB
- Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB
- Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB



< WWAN (Hotspot) Power Table >

GSM1900 Tx Channel	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot	26.25	26.14	26.00	27.00	17.25	17.14	17.00	18.00
GPRS 1 Tx slot	26.23	26.11	25.98	27.00	17.23	17.11	16.98	18.00
GPRS 2 Tx slots	23.33	23.17	23.04	24.00	17.33	17.17	17.04	18.00
GPRS 3 Tx slots	21.58	21.38	21.33	22.00	17.32	17.12	17.07	17.74
GPRS 4 Tx slots	20.28	20.08	20.01	21.00	17.28	17.08	17.01	18.00
EDGE 1 Tx slot	21.98	21.91	21.82	22.00	12.98	12.91	12.82	13.00
EDGE 2 Tx slots	18.95	18.88	18.78	19.00	12.95	12.88	12.78	13.00
EDGE 3 Tx slots	17.27	17.04	16.93	18.00	13.01	12.78	12.67	13.74
EDGE 4 Tx slots	15.85	15.65	15.58	17.00	12.85	12.65	12.58	14.00

Remark: The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.

The calculated method are shown as below:

- Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB
- Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB
- Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB
- Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB

< WWAN (Body worn /Extremity) Power Table >

GSM1900 Tx Channel	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot	28.28	28.13	27.96	29.00	19.28	19.13	18.96	20.00
GPRS 1 Tx slot	28.26	28.09	27.92	29.00	19.26	19.09	18.92	20.00
GPRS 2 Tx slots	25.33	25.20	25.09	26.00	19.33	19.20	19.09	20.00
GPRS 3 Tx slots	23.59	23.44	23.33	24.00	19.33	19.18	19.07	19.74
GPRS 4 Tx slots	22.30	22.16	22.05	23.00	19.30	19.16	19.05	20.00
EDGE 1 Tx slot	24.18	24.01	23.98	25.00	15.18	15.01	14.98	16.00
EDGE 2 Tx slots	21.20	20.97	20.85	22.00	15.20	14.97	14.85	16.00
EDGE 3 Tx slots	19.24	19.02	18.92	20.00	14.98	14.76	14.66	15.74
EDGE 4 Tx slots	17.89	17.66	17.50	19.00	14.89	14.66	14.50	16.00

Remark: The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.

The calculated method are shown as below:

- Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB
- Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB
- Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB
- Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB

<WCDMA Conducted Power>

1. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
2. The procedures in KDB 941225 D01v03r01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode(s) to determine SAR test exclusion.

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: $\Delta_{ACK}, \Delta_{NACK}$ 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 DPDCH, 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-TFCl
 - viii. Confirm that E-TFCl is equal to the target E-TFCl of 75 for sub-test 1, and other subtest's E-TFCl
- 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} (Note1)	β_{ec}	β_{ed} (Note 4) (Note 5)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	E-TFCl
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	$\beta_{ed1}: 47/15$ $\beta_{ed2}: 47/15$	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	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

Note 1: For sub-test 1 to 4, Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$. For sub-test 5, Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 5/15$ with $\beta_{hs} = 5/15 * \beta_c$.

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: 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 5: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 6: For subtests 2, 3 and 4, UE may perform E-DPDCH power scaling at max power which could results in slightly smaller MPR values.

Setup Configuration

DC-HSDPA 3GPP release 8 Setup Configuration:

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

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

C.8.1.12 Fixed Reference Channel Definition H-Set 12

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

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

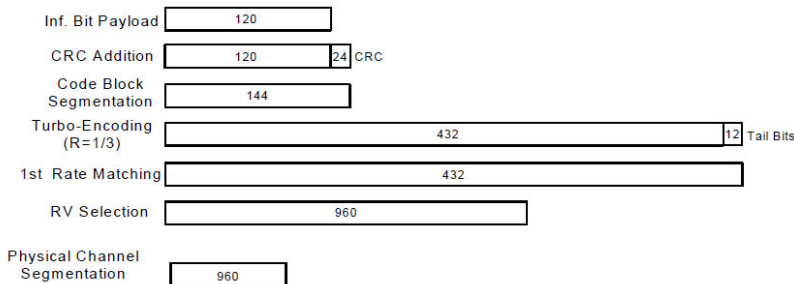


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration



<WCDMA Conducted Power>

General Note:

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. 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, and according to the following RF output power, the output power results of the secondary modes (HSUPA, HSDPA/ DC-HSDPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA/ DC-HSDPA.

< WWAN (Head) Power Table >

Band		WCDMA Band II			Tune-up Limit (dBm)	WCDMA Band IV			Tune-up Limit (dBm)	WCDMA Band V			Tune-up Limit (dBm)
Tx Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	22.90	22.95	23.02	24.00	22.79	22.83	22.76	24.00	23.12	23.07	23.08	24.00
3GPP Rel 99	RMC 12.2Kbps	22.92	22.99	23.04	24.00	22.80	22.85	22.79	24.00	23.15	23.10	23.09	24.00
3GPP Rel 6	HSDPA Subtest-1	21.82	21.93	21.92	23.00	21.67	21.74	21.70	23.00	22.18	22.12	22.13	23.00
3GPP Rel 6	HSDPA Subtest-2	21.68	21.84	21.88	23.00	21.60	21.64	21.64	23.00	22.12	22.02	22.00	23.00
3GPP Rel 6	HSDPA Subtest-3	21.20	21.37	21.40	22.50	21.15	21.14	21.14	22.50	21.60	21.56	21.49	22.50
3GPP Rel 6	HSDPA Subtest-4	21.24	21.37	21.32	22.50	21.05	21.11	21.11	22.50	21.61	21.48	21.51	22.50
3GPP Rel 8	DC-HSDPA Subtest-1	21.82	21.91	21.95	23.00	21.60	21.64	21.68	23.00	22.09	22.10	22.08	23.00
3GPP Rel 8	DC-HSDPA Subtest-2	21.80	21.95	21.89	23.00	21.62	21.60	21.62	23.00	22.13	22.08	22.11	23.00
3GPP Rel 8	DC-HSDPA Subtest-3	21.41	21.43	21.49	22.50	21.18	21.23	21.20	22.50	21.64	21.58	21.49	22.50
3GPP Rel 8	DC-HSDPA Subtest-4	21.39	21.38	21.40	22.50	21.15	21.18	21.21	22.50	21.61	21.52	21.52	22.50
3GPP Rel 6	HSUPA Subtest-1	19.83	19.96	19.99	21.00	19.66	19.72	19.69	21.00	20.22	20.11	20.08	21.00
3GPP Rel 6	HSUPA Subtest-2	19.78	19.90	19.99	21.00	19.63	19.68	19.68	21.00	20.18	20.10	20.04	21.00
3GPP Rel 6	HSUPA Subtest-3	20.81	20.92	20.90	22.00	20.66	20.72	20.69	22.00	21.18	21.11	21.09	22.00
3GPP Rel 6	HSUPA Subtest-4	19.29	19.41	19.45	20.00	19.09	19.23	19.22	20.00	19.71	19.51	19.60	20.00
3GPP Rel 6	HSUPA Subtest-5	20.70	20.80	20.80	22.00	20.70	20.60	20.60	22.00	21.10	21.00	21.00	22.00



< WWAN (Hotspot) Power Table >

Band		WCDMA Band II			Tune-up Limit (dBm)	WCDMA Band IV			Tune-up Limit (dBm)
Tx Channel		9262	9400	9538		1312	1413	1513	
Rx Channel		9662	9800	9938		1537	1638	1738	
Frequency (MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6	
3GPP Rel 99	AMR 12.2Kbps	18.19	18.12	18.26	19.00	17.68	17.82	17.80	19.00
3GPP Rel 99	RMC 12.2Kbps	18.21	18.14	18.31	19.00	17.74	17.84	17.81	19.00
3GPP Rel 6	HSDPA Subtest-1	18.28	18.17	18.03	19.00	17.72	17.55	17.80	19.00
3GPP Rel 6	HSDPA Subtest-2	18.23	18.08	18.00	19.00	17.68	17.67	17.70	19.00
3GPP Rel 6	HSDPA Subtest-3	17.69	17.59	17.44	18.50	17.17	17.21	17.23	18.50
3GPP Rel 6	HSDPA Subtest-4	17.70	17.58	17.49	18.50	17.13	17.16	17.27	18.50
3GPP Rel 8	DC-HSDPA Subtest-1	18.21	18.16	18.19	19.00	17.68	17.70	17.65	19.00
3GPP Rel 8	DC-HSDPA Subtest-2	18.19	18.18	18.16	19.00	17.65	17.68	17.63	19.00
3GPP Rel 8	DC-HSDPA Subtest-3	17.58	17.48	17.63	18.50	17.13	17.21	17.18	18.50
3GPP Rel 8	DC-HSDPA Subtest-4	17.61	17.52	17.60	18.50	17.10	17.16	17.14	18.50
3GPP Rel 6	HSUPA Subtest-1	16.42	16.37	16.32	17.00	16.12	16.21	16.08	17.00
3GPP Rel 6	HSUPA Subtest-2	16.23	16.18	16.05	17.00	16.01	16.10	16.00	17.00
3GPP Rel 6	HSUPA Subtest-3	17.32	17.14	17.05	18.00	17.05	17.09	17.10	18.00
3GPP Rel 6	HSUPA Subtest-4	15.82	15.66	15.59	16.00	15.50	15.55	15.58	16.00
3GPP Rel 6	HSUPA Subtest-5	17.30	17.10	17.00	18.00	17.00	16.90	17.00	18.00



< WWAN (Body worn /Extremity) Power Table >

Band		WCDMA Band II			Tune-up Limit (dBm)	WCDMA Band IV			Tune-up Limit (dBm)
Tx Channel		9262	9400	9538		1312	1413	1513	
Rx Channel		9662	9800	9938		1537	1638	1738	
Frequency (MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6	
3GPP Rel 99	AMR 12.2Kbps	20.16	20.10	20.18	21.00	22.02	22.05	22.01	23.00
3GPP Rel 99	RMC 12.2Kbps	20.18	20.13	20.21	21.00	22.04	22.06	22.03	23.00
3GPP Rel 6	HSDPA Subtest-1	20.19	20.18	20.16	21.00	21.73	21.86	21.80	23.00
3GPP Rel 6	HSDPA Subtest-2	20.15	20.07	19.95	21.00	21.66	21.72	21.70	23.00
3GPP Rel 6	HSDPA Subtest-3	19.73	19.57	19.45	20.50	21.22	21.23	21.20	22.50
3GPP Rel 6	HSDPA Subtest-4	19.63	19.53	19.47	20.50	21.17	21.19	21.16	22.50
3GPP Rel 8	DC-HSDPA Subtest-1	20.17	20.20	20.17	21.00	21.70	21.72	21.71	23.00
3GPP Rel 8	DC-HSDPA Subtest-2	20.15	20.16	20.15	21.00	21.69	21.68	21.69	23.00
3GPP Rel 8	DC-HSDPA Subtest-3	19.69	19.61	19.57	20.50	21.24	21.18	21.23	22.50
3GPP Rel 8	DC-HSDPA Subtest-4	19.58	19.60	19.55	20.50	21.20	21.15	21.18	22.50
3GPP Rel 6	HSUPA Subtest-1	18.28	18.19	18.02	19.00	20.08	20.10	20.06	21.00
3GPP Rel 6	HSUPA Subtest-2	18.32	18.19	17.95	19.00	20.09	20.09	20.04	21.00
3GPP Rel 6	HSUPA Subtest-3	19.26	19.18	19.05	20.00	21.08	21.08	21.03	22.00
3GPP Rel 6	HSUPA Subtest-4	17.75	17.67	17.55	18.00	19.55	19.63	19.60	20.00
3GPP Rel 6	HSUPA Subtest-5	19.30	19.10	18.90	20.00	20.60	20.70	20.60	22.00



<LTE Conducted Power>

General Note:

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

< WWAN (Head) Power Table >

<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	22.78	22.92	22.90	24	0
20	QPSK	1	49	22.96	23.24	23.09		
20	QPSK	1	99	22.79	22.90	22.87		
20	QPSK	50	0	22.12	22.37	22.23	23	1
20	QPSK	50	24	22.01	22.25	22.15		
20	QPSK	50	50	22.04	22.15	22.13		
20	QPSK	100	0	22.02	22.23	22.12		
20	16QAM	1	0	21.93	22.02	22.05	23	1
20	16QAM	1	49	22.11	22.19	22.07		
20	16QAM	1	99	21.86	21.97	21.90		
20	16QAM	50	0	21.04	21.11	21.33	22	2
20	16QAM	50	24	21.05	21.11	21.23		
20	16QAM	50	50	21.03	21.09	21.14		
20	16QAM	100	0	21.08	21.11	21.15		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	22.99	23.05	22.99	24	0
15	QPSK	1	37	23.02	22.96	23.17		
15	QPSK	1	74	22.85	23.01	23.05		
15	QPSK	36	0	22.07	22.20	22.24	23	1
15	QPSK	36	20	22.07	22.14	22.16		
15	QPSK	36	39	22.03	22.18	22.15		
15	QPSK	75	0	22.06	22.17	22.27		
15	16QAM	1	0	22.20	22.14	22.05	23	1
15	16QAM	1	37	22.16	22.20	22.08		
15	16QAM	1	74	22.12	22.12	22.00		
15	16QAM	36	0	21.05	21.11	21.20	22	2
15	16QAM	36	20	21.03	21.04	21.18		
15	16QAM	36	39	21.06	21.03	21.16		
15	16QAM	75	0	21.03	21.12	21.19		



Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	23.15	22.99	23.14	24	0
10	QPSK	1	25	23.07	23.22	23.20		
10	QPSK	1	49	23.03	23.13	23.05		
10	QPSK	25	0	22.05	22.13	22.30	23	1
10	QPSK	25	12	22.12	22.15	22.18		
10	QPSK	25	25	22.08	22.18	22.23		
10	QPSK	50	0	22.17	22.20	22.22	23	1
10	16QAM	1	0	22.24	22.61	22.62		
10	16QAM	1	25	22.33	22.60	22.67		
10	16QAM	1	49	22.09	22.56	22.65	22	2
10	16QAM	25	0	21.16	21.10	21.21		
10	16QAM	25	12	21.21	21.14	21.19		
10	16QAM	25	25	21.13	21.12	21.17	22	2
10	16QAM	50	0	21.08	21.17	21.23		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	22.94	23.01	23.14	24	0
5	QPSK	1	12	23.16	23.16	23.20		
5	QPSK	1	24	22.94	23.00	23.14		
5	QPSK	12	0	22.01	22.20	22.21	23	1
5	QPSK	12	7	22.11	22.23	22.22		
5	QPSK	12	13	22.16	22.14	22.29		
5	QPSK	25	0	22.11	22.08	22.18	23	1
5	16QAM	1	0	22.45	22.57	22.43		
5	16QAM	1	12	22.62	22.68	22.54		
5	16QAM	1	24	22.47	22.51	22.55	22	2
5	16QAM	12	0	21.02	21.12	21.16		
5	16QAM	12	7	21.04	21.21	21.14		
5	16QAM	12	13	21.13	21.17	21.15	22	2
5	16QAM	25	0	21.08	21.14	21.19		



Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	22.98	22.99	23.12	24	0
3	QPSK	1	8	23.12	23.19	23.17		
3	QPSK	1	14	22.94	23.00	23.05		
3	QPSK	8	0	22.01	22.20	22.18	23	1
3	QPSK	8	4	22.10	22.17	22.21		
3	QPSK	8	7	22.06	22.16	22.20		
3	QPSK	15	0	22.01	22.19	22.22	23	1
3	16QAM	1	0	22.27	22.32	22.39		
3	16QAM	1	8	22.39	22.40	22.48		
3	16QAM	1	14	22.31	22.33	22.40	22	2
3	16QAM	8	0	21.02	21.24	21.24		
3	16QAM	8	4	21.04	21.18	21.33		
3	16QAM	8	7	20.95	21.21	21.24		
3	16QAM	15	0	21.07	21.17	21.21		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	22.91	22.91	23.03	24	0
1.4	QPSK	1	3	23.01	23.01	23.07		
1.4	QPSK	1	5	22.85	22.85	23.01		
1.4	QPSK	3	0	23.02	23.02	23.23		
1.4	QPSK	3	1	23.14	23.14	23.09		
1.4	QPSK	3	3	23.01	23.01	23.06	23	1
1.4	QPSK	6	0	22.04	22.04	22.21		
1.4	16QAM	1	0	22.45	22.45	22.22	23	1
1.4	16QAM	1	3	22.46	22.46	22.44		
1.4	16QAM	1	5	22.36	22.36	22.30		
1.4	16QAM	3	0	22.12	22.12	22.28		
1.4	16QAM	3	1	22.18	22.18	22.36		
1.4	16QAM	3	3	22.04	22.04	22.24	22	2
1.4	16QAM	6	0	21.29	21.29	21.32		



<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	22.95	22.91	22.87	24	0
20	QPSK	1	49	23.24	23.21	23.19		
20	QPSK	1	99	22.98	22.93	22.88		
20	QPSK	50	0	22.20	22.16	22.14	23	1
20	QPSK	50	24	22.15	22.09	22.07		
20	QPSK	50	50	22.08	22.04	22.01		
20	QPSK	100	0	22.16	22.08	22.05		
20	16QAM	1	0	22.17	22.19	22.14	23	1
20	16QAM	1	49	22.39	22.37	22.37		
20	16QAM	1	99	22.01	22.03	21.91		
20	16QAM	50	0	21.07	21.13	21.15	22	2
20	16QAM	50	24	21.11	21.10	21.09		
20	16QAM	50	50	21.06	21.01	21.02		
20	16QAM	100	0	21.03	21.05	21.05		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	23.02	23.04	23.01	24	0
15	QPSK	1	37	23.19	23.15	23.17		
15	QPSK	1	74	22.91	22.94	22.85		
15	QPSK	36	0	22.12	22.13	22.11	23	1
15	QPSK	36	20	22.11	22.09	22.09		
15	QPSK	36	39	22.08	22.06	22.03		
15	QPSK	75	0	22.09	22.08	22.04		
15	16QAM	1	0	22.28	22.27	22.25	23	1
15	16QAM	1	37	22.43	22.37	22.47		
15	16QAM	1	74	22.16	22.15	22.06		
15	16QAM	36	0	21.04	21.06	21.06	22	2
15	16QAM	36	20	21.06	21.06	21.05		
15	16QAM	36	39	21.03	21.01	20.99		
15	16QAM	75	0	21.06	21.06	21.04		



Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	23.05	23.04	23.03	24	0
10	QPSK	1	25	23.09	23.10	23.09		
10	QPSK	1	49	22.97	22.92	22.89		
10	QPSK	25	0	22.06	22.11	22.09	23	1
10	QPSK	25	12	22.08	22.07	22.05		
10	QPSK	25	25	22.10	22.03	22.00		
10	QPSK	50	0	22.11	22.08	22.07	23	1
10	16QAM	1	0	22.30	22.30	22.31		
10	16QAM	1	25	22.35	22.33	22.36		
10	16QAM	1	49	22.23	22.19	22.12	22	2
10	16QAM	25	0	21.04	21.09	21.08		
10	16QAM	25	12	21.07	21.04	21.02		
10	16QAM	25	25	21.10	21.03	20.97	22	2
10	16QAM	50	0	21.09	21.05	21.06		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	22.99	23.01	22.96	24	0
5	QPSK	1	12	23.15	23.17	23.11		
5	QPSK	1	24	22.96	22.95	22.89		
5	QPSK	12	0	22.05	22.06	22.00	23	1
5	QPSK	12	7	22.07	22.05	22.00		
5	QPSK	12	13	22.08	22.04	21.99		
5	QPSK	25	0	22.06	22.04	21.99	23	1
5	16QAM	1	0	22.23	22.25	22.23		
5	16QAM	1	12	22.42	22.37	22.39		
5	16QAM	1	24	22.20	22.19	22.12	22	2
5	16QAM	12	0	21.01	21.00	20.97		
5	16QAM	12	7	21.04	21.02	20.98		
5	16QAM	12	13	21.06	21.00	20.97	22	2
5	16QAM	25	0	21.03	21.01	20.97		



Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	23.03	23.02	22.97	24	0
3	QPSK	1	8	23.16	23.14	23.08		
3	QPSK	1	14	23.01	22.98	22.93		
3	QPSK	8	0	22.04	22.05	21.97	23	1
3	QPSK	8	4	22.05	22.04	21.97		
3	QPSK	8	7	22.03	22.04	21.95		
3	QPSK	15	0	22.04	22.03	21.97		
3	16QAM	1	0	22.28	22.26	22.24	23	1
3	16QAM	1	8	22.32	22.33	22.28		
3	16QAM	1	14	22.24	22.22	22.16		
3	16QAM	8	0	21.07	21.05	21.02	22	2
3	16QAM	8	4	21.08	21.06	21.00		
3	16QAM	8	7	21.07	21.05	20.98		
3	16QAM	15	0	21.02	21.00	20.95		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	22.95	22.93	22.88	24	0
1.4	QPSK	1	3	23.07	23.04	22.99		
1.4	QPSK	1	5	22.93	22.95	22.89		
1.4	QPSK	3	0	23.06	23.06	22.97		
1.4	QPSK	3	1	23.11	23.10	23.03		
1.4	QPSK	3	3	23.10	23.08	23.00		
1.4	QPSK	6	0	22.06	22.05	21.99	23	1
1.4	16QAM	1	0	22.22	22.18	22.12	23	1
1.4	16QAM	1	3	22.33	22.28	22.24		
1.4	16QAM	1	5	22.22	22.18	22.12		
1.4	16QAM	3	0	22.02	22.04	21.95		
1.4	16QAM	3	1	22.06	22.09	22.01		
1.4	16QAM	3	3	22.06	22.06	21.97		
1.4	16QAM	6	0	21.10	21.11	21.05	22	2



<LTE Band 5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	23.03	23.06	23.02	24	0
10	QPSK	1	25	23.10	23.12	23.06		
10	QPSK	1	49	23.05	23.09	23.03		
10	QPSK	25	0	22.20	22.21	22.11	23	1
10	QPSK	25	12	22.15	22.18	22.11		
10	QPSK	25	25	22.11	22.17	22.04		
10	QPSK	50	0	22.14	22.15	22.11	23	1
10	16QAM	1	0	22.18	22.28	22.21		
10	16QAM	1	25	22.34	22.33	22.21		
10	16QAM	1	49	22.25	22.16	22.05	22	2
10	16QAM	25	0	21.12	21.17	21.13		
10	16QAM	25	12	21.14	21.15	21.12		
10	16QAM	25	25	21.15	21.18	21.06	22	2
10	16QAM	50	0	21.17	21.18	21.14		
10	16QAM	50	0	21.17	21.18	21.14		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	22.97	22.96	22.94	24	0
5	QPSK	1	12	23.10	23.11	23.05		
5	QPSK	1	24	22.99	22.93	22.89		
5	QPSK	12	0	22.00	22.03	22.01	23	1
5	QPSK	12	7	22.09	22.07	22.02		
5	QPSK	12	13	22.09	22.06	21.98		
5	QPSK	25	0	22.07	22.06	22.00	23	1
5	16QAM	1	0	22.17	22.18	22.11		
5	16QAM	1	12	22.39	22.34	22.19		
5	16QAM	1	24	22.22	22.16	22.02	22	2
5	16QAM	12	0	21.07	21.10	21.02		
5	16QAM	12	7	21.12	21.13	21.03		
5	16QAM	12	13	21.11	21.12	21.01	22	2
5	16QAM	25	0	21.12	21.11	21.02		



Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	23.00	22.97	22.96	24	0
3	QPSK	1	8	23.10	23.08	23.06		
3	QPSK	1	14	23.02	22.99	22.91		
3	QPSK	8	0	22.03	22.00	21.96	23	1
3	QPSK	8	4	22.08	22.04	21.96		
3	QPSK	8	7	22.04	22.01	21.92		
3	QPSK	15	0	22.04	22.05	21.97	23	1
3	16QAM	1	0	22.22	22.19	22.11		
3	16QAM	1	8	22.37	22.27	22.19		
3	16QAM	1	14	22.23	22.19	22.10	22	2
3	16QAM	8	0	21.11	21.11	21.05		
3	16QAM	8	4	21.15	21.14	21.03		
3	16QAM	8	7	21.14	21.12	21.03	22	2
3	16QAM	15	0	21.06	21.09	21.02		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	22.96	22.92	22.87	24	0
1.4	QPSK	1	3	23.05	23.01	22.95		
1.4	QPSK	1	5	22.99	22.91	22.86		
1.4	QPSK	3	0	23.07	23.03	22.96		
1.4	QPSK	3	1	23.10	23.06	23.00		
1.4	QPSK	3	3	23.06	23.03	22.98	23	1
1.4	QPSK	6	0	22.07	22.03	21.98		
1.4	16QAM	1	0	22.14	22.12	22.03	23	1
1.4	16QAM	1	3	22.21	22.22	22.11		
1.4	16QAM	1	5	22.16	22.10	22.01		
1.4	16QAM	3	0	21.99	21.98	21.90		
1.4	16QAM	3	1	22.06	22.02	21.94		
1.4	16QAM	3	3	22.02	21.98	21.90	22	2
1.4	16QAM	6	0	21.16	21.12	21.07		



<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	22.87	22.91	23.00	24	0
20	QPSK	1	49	23.15	23.21	23.33		
20	QPSK	1	99	22.92	23.03	23.14		
20	QPSK	50	0	21.95	22.07	22.16	23	1
20	QPSK	50	24	22.06	22.15	22.23		
20	QPSK	50	50	22.12	22.19	22.27		
20	QPSK	100	0	22.04	22.12	22.21	23	1
20	16QAM	1	0	22.05	22.06	22.15		
20	16QAM	1	49	22.30	22.36	22.44		
20	16QAM	1	99	22.10	22.18	22.28	22	2
20	16QAM	50	0	20.96	21.05	21.16		
20	16QAM	50	24	21.06	21.13	21.23		
20	16QAM	50	50	21.10	21.17	21.26	22	2
20	16QAM	100	0	21.02	21.11	21.19		
Channel				20825	21100	21375		
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	22.95	22.97	23.09	24	0
15	QPSK	1	37	23.11	23.18	23.30		
15	QPSK	1	74	22.97	23.08	23.16		
15	QPSK	36	0	22.05	22.13	22.22	23	1
15	QPSK	36	20	22.08	22.17	22.26		
15	QPSK	36	39	22.13	22.19	22.28		
15	QPSK	75	0	22.07	22.17	22.25	23	1
15	16QAM	1	0	22.24	22.19	22.30		
15	16QAM	1	37	22.38	22.43	22.57		
15	16QAM	1	74	22.24	22.34	22.41	22	2
15	16QAM	36	0	21.04	21.08	21.19		
15	16QAM	36	20	21.07	21.14	21.22		
15	16QAM	36	39	21.12	21.18	21.26	22	2
15	16QAM	75	0	21.07	21.14	21.23		



Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	22.97	23.03	23.17	24	0
10	QPSK	1	25	23.06	23.14	23.27		
10	QPSK	1	49	22.99	23.10	23.21		
10	QPSK	25	0	22.04	22.12	22.22	23	1
10	QPSK	25	12	22.04	22.15	22.24		
10	QPSK	25	25	22.10	22.18	22.25		
10	QPSK	50	0	22.08	22.20	22.26	23	1
10	16QAM	1	0	22.22	22.27	22.35		
10	16QAM	1	25	22.30	22.35	22.48		
10	16QAM	1	49	22.25	22.32	22.45	22	2
10	16QAM	25	0	21.06	21.13	21.24		
10	16QAM	25	12	21.06	21.13	21.26		
10	16QAM	25	25	21.10	21.18	21.28	22	2
10	16QAM	50	0	21.08	21.17	21.27		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	22.98	23.07	23.17	24	0
5	QPSK	1	12	23.09	23.21	23.26		
5	QPSK	1	24	22.97	23.08	23.21		
5	QPSK	12	0	22.03	22.13	22.27	23	1
5	QPSK	12	7	22.09	22.18	22.30		
5	QPSK	12	13	22.11	22.17	22.28		
5	QPSK	25	0	22.07	22.16	22.28	23	1
5	16QAM	1	0	22.26	22.25	22.42		
5	16QAM	1	12	22.41	22.45	22.58		
5	16QAM	1	24	22.24	22.29	22.44	22	2
5	16QAM	12	0	21.06	21.12	21.23		
5	16QAM	12	7	21.12	21.15	21.28		
5	16QAM	12	13	21.14	21.16	21.30	22	2
5	16QAM	25	0	21.09	21.15	21.26		



< WWAN (Hotspot) Power Table >

<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	19.01	19.04	18.88	20	0
20	QPSK	1	49	19.23	19.27	19.18		
20	QPSK	1	99	18.89	18.91	18.78		
20	QPSK	50	0	19.17	19.25	19.15	20	0
20	QPSK	50	24	19.18	19.24	19.12		
20	QPSK	50	50	19.16	19.18	19.03		
20	QPSK	100	0	19.17	19.19	19.08		
20	16QAM	1	0	19.19	19.05	19.01	20	0
20	16QAM	1	49	19.17	19.16	19.18		
20	16QAM	1	99	19.03	18.98	18.92		
20	16QAM	50	0	19.21	19.18	19.10	20	0
20	16QAM	50	24	19.23	19.11	19.04		
20	16QAM	50	50	19.23	19.12	18.96		
20	16QAM	100	0	19.23	19.12	19.01		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	19.19	19.06	18.99	20	0
15	QPSK	1	37	19.21	19.25	19.11		
15	QPSK	1	74	19.10	19.00	18.94		
15	QPSK	36	0	19.17	19.18	19.12	20	0
15	QPSK	36	20	19.25	19.17	19.12		
15	QPSK	36	39	19.24	19.15	19.06		
15	QPSK	75	0	19.19	19.19	19.12		
15	16QAM	1	0	19.20	19.18	19.14	20	0
15	16QAM	1	37	19.23	19.22	19.23		
15	16QAM	1	74	19.17	19.12	19.05		
15	16QAM	36	0	19.21	19.12	19.04	20	0
15	16QAM	36	20	19.20	19.10	19.03		
15	16QAM	36	39	19.20	19.08	18.96		
15	16QAM	75	0	19.23	19.14	19.04		



Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	19.22	19.07	18.97	20	0
10	QPSK	1	25	19.17	19.17	19.07		
10	QPSK	1	49	19.13	19.05	18.97		
10	QPSK	25	0	19.20	19.21	19.19	20	0
10	QPSK	25	12	19.18	19.15	19.11		
10	QPSK	25	25	19.22	19.16	19.05		
10	QPSK	50	0	19.23	19.17	19.13	20	0
10	16QAM	1	0	19.20	19.20	19.10		
10	16QAM	1	25	19.17	19.24	19.17		
10	16QAM	1	49	19.17	19.12	19.08	20	0
10	16QAM	25	0	19.25	19.14	19.13		
10	16QAM	25	12	19.23	19.11	19.04		
10	16QAM	25	25	19.17	19.11	18.98	20	0
10	16QAM	50	0	19.17	19.13	19.07		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	19.20	19.08	18.99	20	0
5	QPSK	1	12	19.21	19.21	19.12		
5	QPSK	1	24	19.15	19.04	18.96		
5	QPSK	12	0	19.26	19.16	19.08	20	0
5	QPSK	12	7	19.20	19.16	19.07		
5	QPSK	12	13	19.26	19.13	19.03		
5	QPSK	25	0	19.18	19.17	19.07	20	0
5	16QAM	1	0	19.21	19.18	19.08		
5	16QAM	1	12	19.26	19.21	19.23		
5	16QAM	1	24	19.19	19.15	19.06	20	0
5	16QAM	12	0	19.19	19.08	18.98		
5	16QAM	12	7	19.23	19.09	19.00		
5	16QAM	12	13	19.20	19.07	18.95	20	0
5	16QAM	25	0	19.23	19.10	19.01		



Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	19.23	19.11	19.02	20	0
3	QPSK	1	8	19.19	19.05	18.99		
3	QPSK	1	14	19.21	19.09	19.01		
3	QPSK	8	0	19.23	19.12	19.05	20	0
3	QPSK	8	4	19.17	19.15	19.06		
3	QPSK	8	7	19.24	19.12	19.02		
3	QPSK	15	0	19.26	19.15	19.05	20	0
3	16QAM	1	0	19.22	19.21	19.09		
3	16QAM	1	8	19.26	19.17	19.05		
3	16QAM	1	14	19.23	19.18	19.10	20	0
3	16QAM	8	0	19.22	19.12	19.00		
3	16QAM	8	4	19.26	19.14	19.02		
3	16QAM	8	7	19.24	19.11	18.99		
3	16QAM	15	0	19.20	19.10	18.97		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	19.15	19.00	18.89	20	0
1.4	QPSK	1	3	19.22	19.08	19.00		
1.4	QPSK	1	5	19.14	19.01	18.91		
1.4	QPSK	3	0	19.23	19.11	19.00		
1.4	QPSK	3	1	19.18	19.15	19.06		
1.4	QPSK	3	3	19.24	19.12	19.00		
1.4	QPSK	6	0	19.26	19.13	19.01	20	0
1.4	16QAM	1	0	19.25	19.10	18.99	20	0
1.4	16QAM	1	3	19.21	19.18	19.06		
1.4	16QAM	1	5	19.24	19.12	19.01		
1.4	16QAM	3	0	19.15	19.03	18.90		
1.4	16QAM	3	1	19.21	19.07	18.95		
1.4	16QAM	3	3	19.17	19.05	18.89		
1.4	16QAM	6	0	19.26	19.15	18.99	20	0



<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	19.09	19.10	19.13		
20	QPSK	1	49	19.25	19.34	19.37	20	0
20	QPSK	1	99	19.00	19.09	19.12		
20	QPSK	50	0	18.92	19.13	19.17		
20	QPSK	50	24	18.98	19.06	19.12		
20	QPSK	50	50	18.98	18.99	19.05		
20	QPSK	100	0	18.96	19.05	19.10		
20	16QAM	1	0	18.98	19.09	19.09		
20	16QAM	1	49	19.21	19.31	19.28	20	0
20	16QAM	1	99	18.89	18.98	18.99		
20	16QAM	50	0	18.94	19.10	19.16		
20	16QAM	50	24	18.99	19.06	19.12		
20	16QAM	50	50	18.99	19.02	19.09		
20	16QAM	100	0	18.99	19.03	19.10		
Channel				20025	20175	20325		
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	18.80	18.94	18.95	20	0
15	QPSK	1	37	18.99	19.05	19.09		
15	QPSK	1	74	18.74	18.88	18.86		
15	QPSK	36	0	18.91	19.06	19.09	20	0
15	QPSK	36	20	18.94	19.04	19.07		
15	QPSK	36	39	18.90	18.99	19.01		
15	QPSK	75	0	18.89	19.01	19.05		
15	16QAM	1	0	19.12	19.22	19.25		
15	16QAM	1	37	19.33	19.33	19.32		
15	16QAM	1	74	19.10	19.18	19.16		
15	16QAM	36	0	18.92	19.03	19.10		
15	16QAM	36	20	18.94	19.02	19.05		
15	16QAM	36	39	18.89	18.98	19.01	20	0
15	16QAM	75	0	18.92	19.01	19.04		



Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	18.85	18.95	18.99	20	0
10	QPSK	1	25	18.90	18.99	19.01		
10	QPSK	1	49	18.83	18.85	18.92		
10	QPSK	25	0	18.87	19.06	19.04	20	0
10	QPSK	25	12	18.91	19.01	19.07		
10	QPSK	25	25	18.94	18.95	18.98		
10	QPSK	50	0	18.94	19.02	19.03	20	0
10	16QAM	1	0	19.13	19.21	19.27		
10	16QAM	1	25	19.20	19.28	19.30		
10	16QAM	1	49	19.09	19.17	19.18	20	0
10	16QAM	25	0	18.92	19.04	19.03		
10	16QAM	25	12	18.92	19.04	19.06		
10	16QAM	25	25	19.00	18.99	19.04	20	0
10	16QAM	50	0	18.98	19.02	19.08		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	18.77	18.90	18.90	20	0
5	QPSK	1	12	18.87	19.04	19.05		
5	QPSK	1	24	18.76	18.86	18.85		
5	QPSK	12	0	18.81	18.97	18.99	20	0
5	QPSK	12	7	18.86	19.00	18.99		
5	QPSK	12	13	18.84	18.97	18.96		
5	QPSK	25	0	18.82	18.96	18.95	20	0
5	16QAM	1	0	19.09	19.18	19.20		
5	16QAM	1	12	19.20	19.32	19.33		
5	16QAM	1	24	19.07	19.16	19.12	20	0
5	16QAM	12	0	18.85	18.98	18.97		
5	16QAM	12	7	18.88	19.00	19.00		
5	16QAM	12	13	18.85	18.97	18.95	20	0
5	16QAM	25	0	18.86	19.00	18.98		



Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	18.78	18.93	18.92	20	0
3	QPSK	1	8	18.90	19.06	19.02		
3	QPSK	1	14	18.74	18.90	18.90		
3	QPSK	8	0	18.79	18.95	18.96	20	0
3	QPSK	8	4	18.83	18.96	18.95		
3	QPSK	8	7	18.79	18.93	18.92		
3	QPSK	15	0	18.81	18.95	18.95	20	0
3	16QAM	1	0	19.10	19.23	19.21		
3	16QAM	1	8	19.21	19.32	19.29		
3	16QAM	1	14	19.02	19.18	19.14	20	0
3	16QAM	8	0	18.86	19.04	19.00		
3	16QAM	8	4	18.87	19.03	19.01		
3	16QAM	8	7	18.86	19.01	18.97	20	0
3	16QAM	15	0	18.85	18.97	18.97		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	18.74	18.84	18.83	20	0
1.4	QPSK	1	3	18.85	18.98	18.96		
1.4	QPSK	1	5	18.73	18.85	18.83		
1.4	QPSK	3	0	18.84	18.94	18.93		
1.4	QPSK	3	1	18.88	19.00	18.99		
1.4	QPSK	3	3	18.87	18.98	18.95		
1.4	QPSK	6	0	18.84	18.98	18.95	20	0
1.4	16QAM	1	0	19.01	19.15	19.11	20	0
1.4	16QAM	1	3	19.11	19.29	19.23		
1.4	16QAM	1	5	18.98	19.15	19.11		
1.4	16QAM	3	0	18.86	18.98	18.94		
1.4	16QAM	3	1	18.88	19.02	18.98		
1.4	16QAM	3	3	18.87	18.99	18.94		
1.4	16QAM	6	0	18.92	19.03	19.03	20	0



<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	20.04	20.19	20.33	21	0
20	QPSK	1	49	20.11	20.33	20.50		
20	QPSK	1	99	20.07	20.24	20.37		
20	QPSK	50	0	20.10	20.14	20.21	21	0
20	QPSK	50	24	20.14	20.22	20.31		
20	QPSK	50	50	20.18	20.27	20.40		
20	QPSK	100	0	20.09	20.20	20.26	21	0
20	16QAM	1	0	19.87	20.12	20.27		
20	16QAM	1	49	20.14	20.43	20.44		
20	16QAM	1	99	19.93	20.29	20.42	21	0
20	16QAM	50	0	19.84	20.14	20.21		
20	16QAM	50	24	19.94	20.24	20.29		
20	16QAM	50	50	19.98	20.29	20.31	21	0
20	16QAM	100	0	19.88	20.20	20.25		
Channel				20825	21100	21375		
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	19.72	19.95	20.07	21	0
15	QPSK	1	37	19.90	20.17	20.26		
15	QPSK	1	74	19.79	20.08	20.21		
15	QPSK	36	0	19.81	20.10	20.19	21	0
15	QPSK	36	20	19.87	20.14	20.23		
15	QPSK	36	39	19.92	20.19	20.28		
15	QPSK	75	0	19.86	20.14	20.23	21	0
15	16QAM	1	0	19.95	20.15	20.25		
15	16QAM	1	37	20.17	20.37	20.45		
15	16QAM	1	74	20.02	20.30	20.43	21	0
15	16QAM	36	0	19.83	20.07	20.15		
15	16QAM	36	20	19.90	20.11	20.19		
15	16QAM	36	39	19.92	20.15	20.27	21	0
15	16QAM	75	0	19.87	20.14	20.21		



Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	19.73	19.99	20.12	21	0
10	QPSK	1	25	19.78	20.08	20.21		
10	QPSK	1	49	19.78	20.10	20.24		
10	QPSK	25	0	19.75	20.10	20.19	21	0
10	QPSK	25	12	19.77	20.11	20.23		
10	QPSK	25	25	19.86	20.17	20.28		
10	QPSK	50	0	19.84	20.14	20.25	21	0
10	16QAM	1	0	19.97	20.22	20.29		
10	16QAM	1	25	20.05	20.31	20.45		
10	16QAM	1	49	20.01	20.31	20.47	21	0
10	16QAM	25	0	19.80	20.11	20.19		
10	16QAM	25	12	19.80	20.13	20.22		
10	16QAM	25	25	19.90	20.19	20.28	21	0
10	16QAM	50	0	19.84	20.16	20.25		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	19.67	19.99	20.12	21	0
5	QPSK	1	12	19.87	20.16	20.38		
5	QPSK	1	24	19.69	20.04	20.20		
5	QPSK	12	0	19.72	20.09	20.25	21	0
5	QPSK	12	7	19.82	20.14	20.28		
5	QPSK	12	13	19.83	20.14	20.29		
5	QPSK	25	0	19.79	20.09	20.26	21	0
5	16QAM	1	0	19.93	20.22	20.35		
5	16QAM	1	12	20.12	20.40	20.48		
5	16QAM	1	24	19.95	20.29	20.42	21	0
5	16QAM	12	0	19.74	20.09	20.23		
5	16QAM	12	7	19.84	20.13	20.28		
5	16QAM	12	13	19.84	20.15	20.28	21	0
5	16QAM	25	0	19.82	20.13	20.26		



< WWAN (Body worn /Extremity) Power Table >

<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	20.15	20.16	19.96	21	0
20	QPSK	1	49	20.29	20.36	20.22		
20	QPSK	1	99	19.97	19.99	19.91		
20	QPSK	50	0	20.31	20.34	20.28	21	0
20	QPSK	50	24	20.32	20.33	20.21		
20	QPSK	50	50	20.30	20.32	20.10		
20	QPSK	100	0	20.30	20.32	20.18		
20	16QAM	1	0	20.34	20.19	20.12	21	0
20	16QAM	1	49	20.27	20.31	20.27		
20	16QAM	1	99	20.16	20.08	20.10		
20	16QAM	50	0	20.30	20.27	20.19	21	0
20	16QAM	50	24	20.29	20.20	20.14		
20	16QAM	50	50	20.29	20.20	20.01		
20	16QAM	100	0	20.27	20.22	20.11		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	20.26	20.12	20.06	21	0
15	QPSK	1	37	20.26	20.21	20.17		
15	QPSK	1	74	20.10	20.03	20.04		
15	QPSK	36	0	20.35	20.26	20.21	21	0
15	QPSK	36	20	20.26	20.23	20.16		
15	QPSK	36	39	20.34	20.21	20.15		
15	QPSK	75	0	20.25	20.26	20.17		
15	16QAM	1	0	20.28	20.27	20.22	21	0
15	16QAM	1	37	20.34	20.27	20.33		
15	16QAM	1	74	20.32	20.21	20.19		
15	16QAM	36	0	20.30	20.19	20.14	21	0
15	16QAM	36	20	20.32	20.18	20.09		
15	16QAM	36	39	20.28	20.17	20.08		
15	16QAM	75	0	20.32	20.21	20.11		



Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	20.29	20.14	20.05	21	0
10	QPSK	1	25	20.35	20.19	20.12		
10	QPSK	1	49	20.19	20.12	20.06		
10	QPSK	25	0	20.35	20.24	20.19	21	0
10	QPSK	25	12	20.35	20.20	20.14		
10	QPSK	25	25	20.28	20.19	20.13		
10	QPSK	50	0	20.29	20.27	20.19	21	0
10	16QAM	1	0	20.29	20.25	20.20		
10	16QAM	1	25	20.35	20.32	20.27		
10	16QAM	1	49	20.30	20.23	20.20	21	0
10	16QAM	25	0	20.34	20.21	20.16		
10	16QAM	25	12	20.27	20.18	20.11		
10	16QAM	25	25	20.26	20.17	20.09		
10	16QAM	50	0	20.28	20.23	20.14		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	20.25	20.08	20.00	21	0
5	QPSK	1	12	20.28	20.23	20.20		
5	QPSK	1	24	20.21	20.09	20.02		
5	QPSK	12	0	20.32	20.15	20.08	21	0
5	QPSK	12	7	20.34	20.18	20.14		
5	QPSK	12	13	20.33	20.18	20.08		
5	QPSK	25	0	20.34	20.19	20.10		
5	16QAM	1	0	20.35	20.25	20.17	21	0
5	16QAM	1	12	20.25	20.27	20.35		
5	16QAM	1	24	20.34	20.25	20.21		
5	16QAM	12	0	20.29	20.12	20.03	21	0
5	16QAM	12	7	20.33	20.14	20.10		
5	16QAM	12	13	20.31	20.12	20.05		
5	16QAM	25	0	20.35	20.18	20.11		



Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	20.28	20.11	20.03	21	0
3	QPSK	1	8	20.25	20.08	20.02		
3	QPSK	1	14	20.27	20.10	20.06		
3	QPSK	8	0	20.32	20.14	20.08	21	0
3	QPSK	8	4	20.34	20.16	20.10		
3	QPSK	8	7	20.31	20.13	20.06		
3	QPSK	15	0	20.33	20.14	20.10	21	0
3	16QAM	1	0	20.30	20.30	20.18		
3	16QAM	1	8	20.35	20.22	20.18		
3	16QAM	1	14	20.27	20.28	20.23	21	0
3	16QAM	8	0	20.32	20.16	20.10		
3	16QAM	8	4	20.34	20.16	20.11		
3	16QAM	8	7	20.31	20.14	20.09		
3	16QAM	15	0	20.27	20.11	20.07		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	20.24	20.06	20.00	21	0
1.4	QPSK	1	3	20.33	20.15	20.09		
1.4	QPSK	1	5	20.23	20.05	20.00		
1.4	QPSK	3	0	20.33	20.15	20.08		
1.4	QPSK	3	1	20.28	20.21	20.14		
1.4	QPSK	3	3	20.34	20.15	20.08	21	0
1.4	QPSK	6	0	20.25	20.18	20.12		
1.4	16QAM	1	0	20.31	20.21	20.17	21	0
1.4	16QAM	1	3	20.30	20.28	20.25		
1.4	16QAM	1	5	20.33	20.20	20.17		
1.4	16QAM	3	0	20.29	20.10	20.04		
1.4	16QAM	3	1	20.34	20.15	20.09		
1.4	16QAM	3	3	20.31	20.11	20.04	21	0
1.4	16QAM	6	0	20.29	20.20	20.13		



<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	22.17	22.27	22.30	23	0
20	QPSK	1	49	22.25	22.45	22.57		
20	QPSK	1	99	22.20	22.39	22.42		
20	QPSK	50	0	22.27	22.43	22.52	23	0
20	QPSK	50	24	22.25	22.44	22.51		
20	QPSK	50	50	22.24	22.35	22.41		
20	QPSK	100	0	22.21	22.38	22.46	23	0
20	16QAM	1	0	22.24	22.43	22.47		
20	16QAM	1	49	22.49	22.23	22.50		
20	16QAM	1	99	22.16	22.36	22.35	22	1
20	16QAM	50	0	21.16	21.41	21.49		
20	16QAM	50	24	21.25	21.42	21.47		
20	16QAM	50	50	21.22	21.34	21.39	22	1
20	16QAM	100	0	21.20	21.35	21.43		
Channel				20025	20175	20325		
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	22.08	22.30	22.34	23	0
15	QPSK	1	37	22.28	22.46	22.55		
15	QPSK	1	74	22.07	22.25	22.27		
15	QPSK	36	0	22.18	22.41	22.47	23	0
15	QPSK	36	20	22.24	22.40	22.45		
15	QPSK	36	39	22.19	22.39	22.41		
15	QPSK	75	0	22.17	22.39	22.43	23	0
15	16QAM	1	0	22.35	22.55	22.51		
15	16QAM	1	37	22.51	22.24	22.25		
15	16QAM	1	74	22.33	22.54	22.50	22	1
15	16QAM	36	0	21.11	21.40	21.45		
15	16QAM	36	20	21.16	21.38	21.42		
15	16QAM	36	39	21.13	21.33	21.39	22	1
15	16QAM	75	0	21.12	21.36	21.43		



Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	22.11	22.32	22.38	23	0
10	QPSK	1	25	22.17	22.38	22.42		
10	QPSK	1	49	22.11	22.27	22.30		
10	QPSK	25	0	22.17	22.45	22.46	23	0
10	QPSK	25	12	22.18	22.40	22.45		
10	QPSK	25	25	22.26	22.37	22.38		
10	QPSK	50	0	22.24	22.44	22.45	23	0
10	16QAM	1	0	22.36	22.56	22.14		
10	16QAM	1	25	22.42	22.12	22.15		
10	16QAM	1	49	22.36	22.50	22.53	22	1
10	16QAM	25	0	21.15	21.43	21.46		
10	16QAM	25	12	21.16	21.38	21.45		
10	16QAM	25	25	21.23	21.37	21.38	22	1
10	16QAM	50	0	21.20	21.39	21.44		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	22.10	22.33	22.33	23	0
5	QPSK	1	12	22.23	22.43	22.45		
5	QPSK	1	24	22.07	22.29	22.30		
5	QPSK	12	0	22.15	22.41	22.42	23	0
5	QPSK	12	7	22.17	22.42	22.43		
5	QPSK	12	13	22.18	22.39	22.39		
5	QPSK	25	0	22.16	22.41	22.39	23	0
5	16QAM	1	0	22.35	22.55	22.48		
5	16QAM	1	12	22.45	22.29	22.22		
5	16QAM	1	24	22.33	22.52	22.53	22	1
5	16QAM	12	0	21.10	21.38	21.38		
5	16QAM	12	7	21.12	21.37	21.39		
5	16QAM	12	13	21.13	21.36	21.34	22	1
5	16QAM	25	0	21.13	21.37	21.36		



Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	22.12	22.35	22.35	23	0
3	QPSK	1	8	22.18	22.41	22.47		
3	QPSK	1	14	22.07	22.30	22.33		
3	QPSK	8	0	22.13	22.34	22.38	23	0
3	QPSK	8	4	22.16	22.37	22.37		
3	QPSK	8	7	22.12	22.35	22.36		
3	QPSK	15	0	22.13	22.35	22.38	23	0
3	16QAM	1	0	22.38	22.55	22.48		
3	16QAM	1	8	22.46	22.16	22.22		
3	16QAM	1	14	22.31	22.55	22.48	22	1
3	16QAM	8	0	21.13	21.40	21.39		
3	16QAM	8	4	21.16	21.40	21.37		
3	16QAM	8	7	21.11	21.37	21.36		
3	16QAM	15	0	21.08	21.35	21.35		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	22.05	22.27	22.26	23	0
1.4	QPSK	1	3	22.13	22.34	22.37		
1.4	QPSK	1	5	22.06	22.27	22.27		
1.4	QPSK	3	0	22.15	22.35	22.37		
1.4	QPSK	3	1	22.18	22.40	22.41		
1.4	QPSK	3	3	22.15	22.40	22.40	23	0
1.4	QPSK	6	0	22.15	22.37	22.37	23	0
1.4	16QAM	1	0	22.26	22.52	22.50		
1.4	16QAM	1	3	22.36	22.53	22.51		
1.4	16QAM	1	5	22.29	22.52	22.52		
1.4	16QAM	3	0	22.13	22.35	22.35		
1.4	16QAM	3	1	22.15	22.39	22.37		
1.4	16QAM	3	3	22.15	22.34	22.36	22	1
1.4	16QAM	6	0	21.20	21.41	21.43		



<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	20.04	20.19	20.33	21	0
20	QPSK	1	49	20.11	20.33	20.50		
20	QPSK	1	99	20.07	20.24	20.37		
20	QPSK	50	0	20.10	20.14	20.21	21	0
20	QPSK	50	24	20.14	20.22	20.31		
20	QPSK	50	50	20.18	20.27	20.40		
20	QPSK	100	0	20.09	20.20	20.26	21	0
20	16QAM	1	0	19.87	20.12	20.27		
20	16QAM	1	49	20.14	20.43	20.44		
20	16QAM	1	99	19.93	20.29	20.42	21	0
20	16QAM	50	0	19.84	20.14	20.21		
20	16QAM	50	24	19.94	20.24	20.29		
20	16QAM	50	50	19.98	20.29	20.31	21	0
20	16QAM	100	0	19.88	20.20	20.25		
Channel				20825	21100	21375		
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	19.72	19.95	20.07	21	0
15	QPSK	1	37	19.90	20.17	20.26		
15	QPSK	1	74	19.79	20.08	20.21		
15	QPSK	36	0	19.81	20.10	20.19	21	0
15	QPSK	36	20	19.87	20.14	20.23		
15	QPSK	36	39	19.92	20.19	20.28		
15	QPSK	75	0	19.86	20.14	20.23	21	0
15	16QAM	1	0	19.95	20.15	20.25		
15	16QAM	1	37	20.17	20.37	20.45		
15	16QAM	1	74	20.02	20.30	20.43	21	0
15	16QAM	36	0	19.83	20.07	20.15		
15	16QAM	36	20	19.90	20.11	20.19		
15	16QAM	36	39	19.92	20.15	20.27	21	0
15	16QAM	75	0	19.87	20.14	20.21		



Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	19.73	19.99	20.12	21	0
10	QPSK	1	25	19.78	20.08	20.21		
10	QPSK	1	49	19.78	20.10	20.24		
10	QPSK	25	0	19.75	20.10	20.19	21	0
10	QPSK	25	12	19.77	20.11	20.23		
10	QPSK	25	25	19.86	20.17	20.28		
10	QPSK	50	0	19.84	20.14	20.25	21	0
10	16QAM	1	0	19.97	20.22	20.29		
10	16QAM	1	25	20.05	20.31	20.45		
10	16QAM	1	49	20.01	20.31	20.47	21	0
10	16QAM	25	0	19.80	20.11	20.19		
10	16QAM	25	12	19.80	20.13	20.22		
10	16QAM	25	25	19.90	20.19	20.28	21	0
10	16QAM	50	0	19.84	20.16	20.25		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	19.67	19.99	20.12	21	0
5	QPSK	1	12	19.87	20.16	20.38		
5	QPSK	1	24	19.69	20.04	20.20		
5	QPSK	12	0	19.72	20.09	20.25	21	0
5	QPSK	12	7	19.82	20.14	20.28		
5	QPSK	12	13	19.83	20.14	20.29		
5	QPSK	25	0	19.79	20.09	20.26	21	0
5	16QAM	1	0	19.93	20.22	20.35		
5	16QAM	1	12	20.12	20.40	20.48		
5	16QAM	1	24	19.95	20.29	20.42	21	0
5	16QAM	12	0	19.74	20.09	20.23		
5	16QAM	12	7	19.84	20.13	20.28		
5	16QAM	12	13	19.84	20.15	20.28	21	0
5	16QAM	25	0	19.82	20.13	20.26		

<WLAN Conducted Power>

General Note:

1. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration must be determined for each standalone and aggregated frequency band, according to the transmission mode configuration with the highest maximum output power specified for production units to perform SAR measurements. If the same highest maximum output power applies to different combinations of channel bandwidths, modulations and data rates, additional procedures are applied to determine which test configurations require SAR measurement. When applicable, an initial test position may be applied to reduce the number of SAR measurements required for next to the ear, UMPC mini-tablet or hotspot mode configurations with multiple test positions.
2. 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).
3. 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.
4. 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 ≤ 0.4 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 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.
 - c. 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.



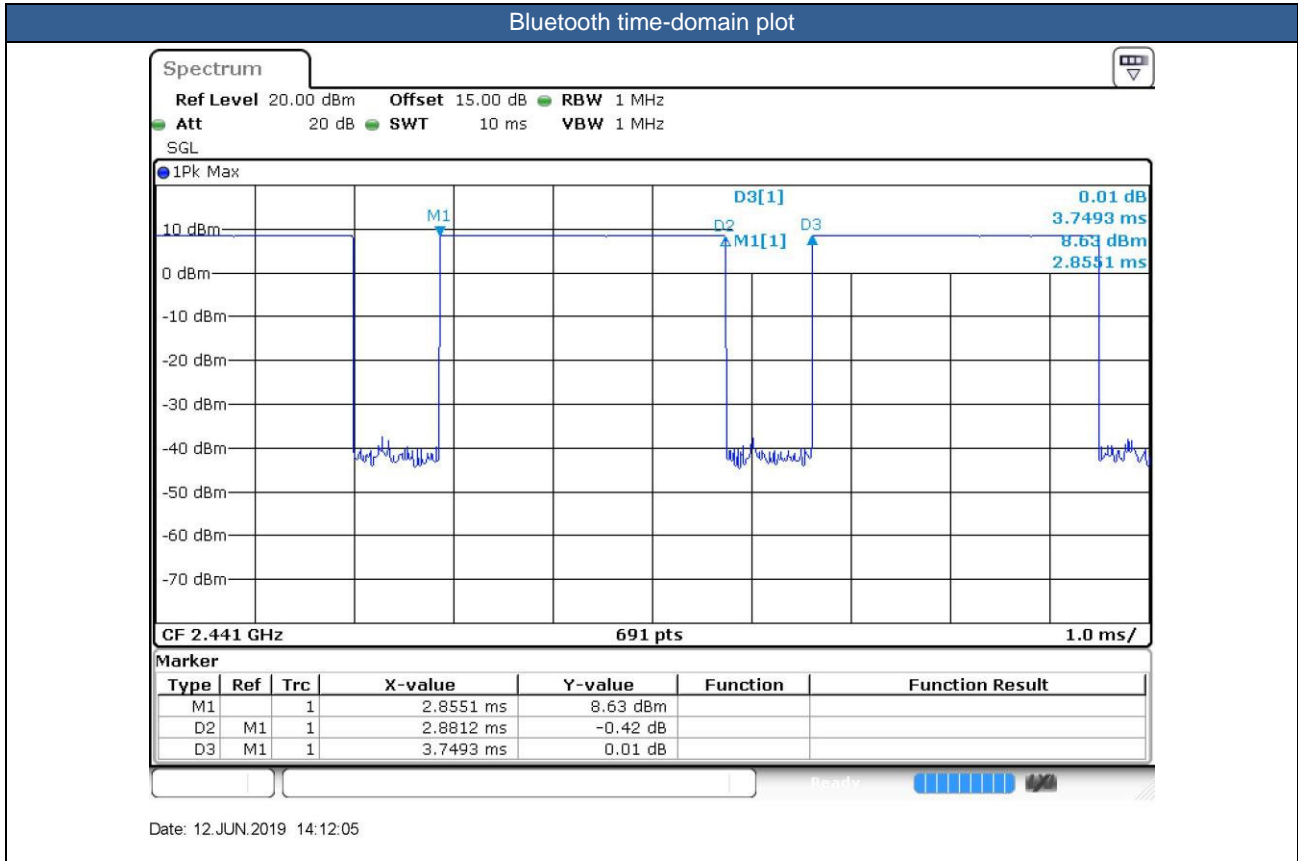
<2.4GHz WLAN>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	19.20	19.50	100.00
		6	2437	19.00	19.50	
		11	2462	18.70	19.50	
	802.11g 6Mbps	1	2412	18.60	19.00	97.18
		6	2437	18.50	19.00	
		11	2462	16.60	17.00	
	802.11n-HT20 MCS0	1	2412	17.60	18.00	96.57
		6	2437	17.70	18.00	
		11	2462	15.90	16.50	

<2.4GHz Bluetooth>

General Note:

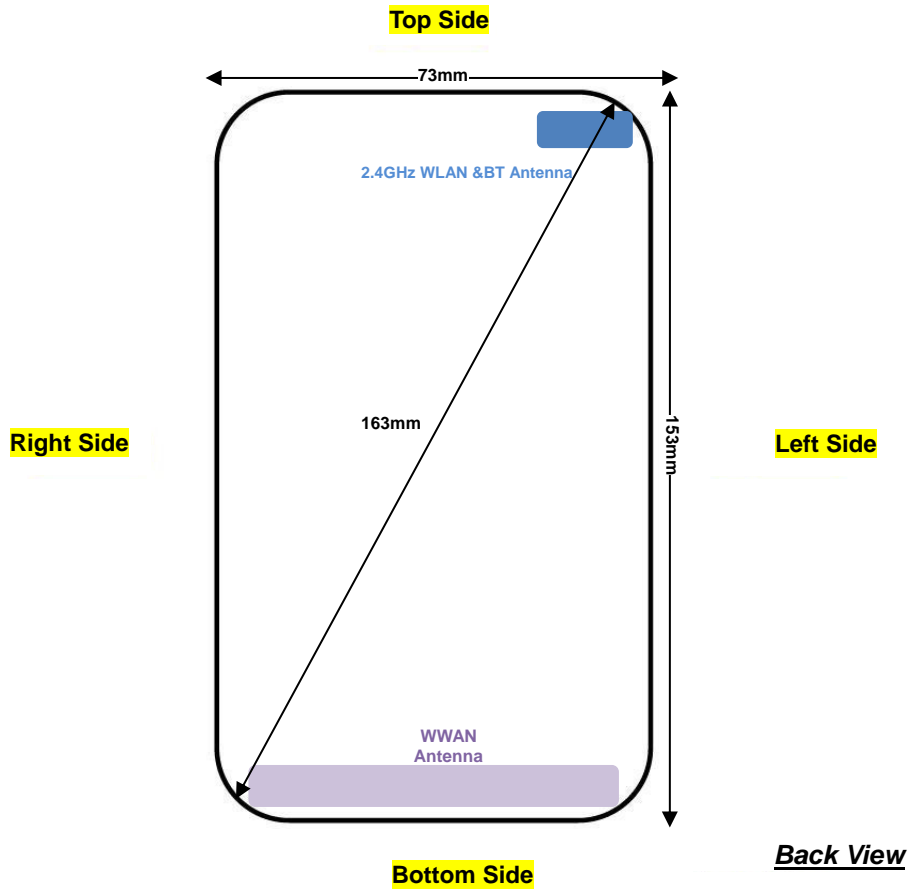
1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps, due to its highest average power.
2. The Bluetooth duty cycle is 76.85% as following figure, according to 2016 Oct. TCB workshop for Bluetooth SAR scaling need further consideration and the theoretical duty cycle is 83.3%, therefore the actual duty cycle will be scaled up to the theoretical value of Bluetooth reported SAR calculation.



Mode	Channel	Frequency (MHz)	Average power (dBm)	
				1Mbps
BR/EDR	CH 00	2402		9.20
	CH 39	2441		8.10
	CH 78	2480		8.00
Tune-up limit (dBm)				10.00

Mode	Channel	Frequency (MHz)	Average power (dBm)	
				GFSK
v4.0 with LE	CH 00	2402		-3.70
	CH 19	2440		-3.50
	CH 39	2480		-4.30
Tune-up limit (dBm)				-2.50

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
Bluetooth & 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
Bluetooth & WLAN	Yes	Yes	Yes	No	No	Yes

General Note:

Referring to KDB 941225 D06 v02r01, when the overall device length and width are ≥ 9cm*5cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge.



14. SAR Test Results

General Note:

- Per KDB 447498 D01v06, 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: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
 - For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
- Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥ 0.8 W/kg.
- Per KDB648474 D04v01r03, when the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.
- Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, when hotspot mode applies, 10-g product specific SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold, for this device WWAN transmitter scaled to maximum output power is higher than 1.2W/kg of GSM1900,WCDMA B2/B4, and LTE B2/B4/B7, therefore product specific SAR is necessary.
- The mechanism will be used to determine next to ear voice communication or hotspot enable and to set different power accordingly for Cellular transmitter.

The device has three power level management for different RF exposure conditions as following,

Head Mode

Once a voice call or VoLTE call (through WWAN bearer) or OTT VoIP call (through cellular data) is established and audio is actively routed through the earpiece receiver (earpiece is ON),

- WWAN (Head) Power table is used.

Hotspot mode

When the voice call or VoLTE call (through WWAN bearer) or OTT VoIP call (through cellular data) is NOT established or when the voice call or VoLTE call (through WWAN bearer) or OTT VoIP call (through cellular data) is established but audio is not actively routed through the earpiece receiver (earpiece is OFF), and Hotspot feature (either WiFi tethering or BT tethering) is enabled

- WWAN (Hotspot) Power table is used.

Body worn /Extremity

When the voice call or VoLTE call (through WWAN bearer) or OTT VoIP call (through cellular data) is NOT established or when the voice call or VoLTE call (through WWAN bearer) or OTT VoIP call (through cellular data) is established but audio is not actively routed through the earpiece receiver (earpiece is OFF), and Hotspot feature (either WiFi tethering or BT tethering) is disabled

- WWAN (Body worn /Extremity) Power table is used.

GSM Note:

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

WCDMA Note:

- Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
- Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA/DC-HSDPA is $\leq 1/4$ 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, and according to the following RF output power, the output power results of the secondary modes (HSUPA, HSDPA, DC-HSDPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA/DC-HSDPA.

LTE Note:

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is $>$ not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is $>$ not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4 / B5 / the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

WLAN/Bluetooth Note:

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
2. 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.
3. 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.
4. During SAR testing the WLAN transmission was verified using a spectrum analyzer.



14.1 Head SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS(4 Tx slot)	Right Cheek	189	836.4	28.88	30.00	1.294	0.06	0.303	0.392
	GSM850	GPRS(4 Tx slot)	Right Tilted	189	836.4	28.88	30.00	1.294	0.02	0.147	0.190
01	GSM850	GPRS(4 Tx slot)	Left Cheek	189	836.4	28.88	30.00	1.294	0.07	0.323	0.418
	GSM850	GPRS(4 Tx slot)	Left Tilted	189	836.4	28.88	30.00	1.294	0.03	0.146	0.189
02	GSM1900	GPRS(4 Tx slot)	Right Cheek	512	1850.2	26.29	27.00	1.178	-0.06	0.064	0.075
	GSM1900	GPRS(4 Tx slot)	Right Tilted	512	1850.2	26.29	27.00	1.178	-0.01	0.032	0.038
	GSM1900	GPRS(4 Tx slot)	Left Cheek	512	1850.2	26.29	27.00	1.178	0.03	0.032	0.037
	GSM1900	GPRS(4 Tx slot)	Left Tilted	512	1850.2	26.29	27.00	1.178	0.02	0.040	0.047

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA V	RMC 12.2Kbps	Right Cheek	4132	826.4	23.15	24.00	1.216	-0.13	0.209	0.254
	WCDMA V	RMC 12.2Kbps	Right Tilted	4132	826.4	23.15	24.00	1.216	0.02	0.102	0.124
03	WCDMA V	RMC 12.2Kbps	Left Cheek	4132	826.4	23.15	24.00	1.216	0.07	0.212	0.258
	WCDMA V	RMC 12.2Kbps	Left Tilted	4132	826.4	23.15	24.00	1.216	0.09	0.105	0.128
04	WCDMA IV	RMC 12.2Kbps	Right Cheek	1413	1732.6	22.85	24.00	1.303	0.11	0.162	0.211
	WCDMA IV	RMC 12.2Kbps	Right Tilted	1413	1732.6	22.85	24.00	1.303	0.04	0.082	0.107
	WCDMA IV	RMC 12.2Kbps	Left Cheek	1413	1732.6	22.85	24.00	1.303	-0.06	0.094	0.122
	WCDMA IV	RMC 12.2Kbps	Left Tilted	1413	1732.6	22.85	24.00	1.303	0.03	0.111	0.145
05	WCDMA II	RMC 12.2Kbps	Right Cheek	9538	1907.6	23.04	24.00	1.247	0.05	0.121	0.151
	WCDMA II	RMC 12.2Kbps	Right Tilted	9538	1907.6	23.04	24.00	1.247	0.02	0.081	0.101
	WCDMA II	RMC 12.2Kbps	Left Cheek	9538	1907.6	23.04	24.00	1.247	0.04	0.099	0.123
	WCDMA II	RMC 12.2Kbps	Left Tilted	9538	1907.6	23.04	24.00	1.247	0.05	0.115	0.143



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	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 5	10M	QPSK	1	25	Right Cheek	20525	836.5	23.12	24.00	1.225	0.08	0.205	0.251
	LTE Band 5	10M	QPSK	1	25	Right Tilted	20525	836.5	23.12	24.00	1.225	0.01	0.105	0.129
06	LTE Band 5	10M	QPSK	1	25	Left Cheek	20525	836.5	23.12	24.00	1.225	-0.11	0.207	0.253
	LTE Band 5	10M	QPSK	1	25	Left Tilted	20525	836.5	23.12	24.00	1.225	0.09	0.087	0.107
	LTE Band 5	10M	QPSK	25	0	Right Cheek	20525	836.5	22.21	23.00	1.199	0.08	0.165	0.198
	LTE Band 5	10M	QPSK	25	0	Right Tilted	20525	836.5	22.21	23.00	1.199	0.04	0.087	0.104
	LTE Band 5	10M	QPSK	25	0	Left Cheek	20525	836.5	22.21	23.00	1.199	0.01	0.168	0.202
	LTE Band 5	10M	QPSK	25	0	Left Tilted	20525	836.5	22.21	23.00	1.199	0.09	0.072	0.086
07	LTE Band 4	20M	QPSK	1	49	Right Cheek	20175	1732.5	23.21	24.00	1.199	0.03	0.154	0.185
	LTE Band 4	20M	QPSK	1	49	Right Tilted	20175	1732.5	23.21	24.00	1.199	-0.01	0.082	0.099
	LTE Band 4	20M	QPSK	1	49	Left Cheek	20175	1732.5	23.21	24.00	1.199	0.04	0.092	0.111
	LTE Band 4	20M	QPSK	1	49	Left Tilted	20175	1732.5	23.21	24.00	1.199	0.11	0.105	0.126
	LTE Band 4	20M	QPSK	50	0	Right Cheek	20175	1732.5	22.16	23.00	1.213	0.02	0.116	0.141
	LTE Band 4	20M	QPSK	50	0	Right Tilted	20175	1732.5	22.16	23.00	1.213	0.09	0.060	0.073
	LTE Band 4	20M	QPSK	50	0	Left Cheek	20175	1732.5	22.16	23.00	1.213	-0.13	0.074	0.089
	LTE Band 4	20M	QPSK	50	0	Left Tilted	20175	1732.5	22.16	23.00	1.213	0.04	0.078	0.095
08	LTE Band 2	20M	QPSK	1	49	Right Cheek	18900	1880	23.24	24.00	1.191	-0.17	0.116	0.138
	LTE Band 2	20M	QPSK	1	49	Right Tilted	18900	1880	23.24	24.00	1.191	0.01	0.056	0.067
	LTE Band 2	20M	QPSK	1	49	Left Cheek	18900	1880	23.24	24.00	1.191	0.09	0.075	0.089
	LTE Band 2	20M	QPSK	1	49	Left Tilted	18900	1880	23.24	24.00	1.191	0.04	0.072	0.085
	LTE Band 2	20M	QPSK	50	0	Right Cheek	18900	1880	22.37	23.00	1.156	0.09	0.080	0.092
	LTE Band 2	20M	QPSK	50	0	Right Tilted	18900	1880	22.37	23.00	1.156	0.01	0.041	0.047
	LTE Band 2	20M	QPSK	50	0	Left Cheek	18900	1880	22.37	23.00	1.156	0.06	0.053	0.061
	LTE Band 2	20M	QPSK	50	0	Left Tilted	18900	1880	22.37	23.00	1.156	0.02	0.050	0.058
09	LTE Band 7	20M	QPSK	1	49	Right Cheek	21350	2560	23.33	24.00	1.167	0.14	0.119	0.139
	LTE Band 7	20M	QPSK	1	49	Right Tilted	21350	2560	23.33	24.00	1.167	0.02	0.049	0.057
	LTE Band 7	20M	QPSK	1	49	Left Cheek	21350	2560	23.33	24.00	1.167	0.09	0.072	0.084
	LTE Band 7	20M	QPSK	1	49	Left Tilted	21350	2560	23.33	24.00	1.167	0.01	0.038	0.044
	LTE Band 7	20M	QPSK	50	50	Right Cheek	21350	2560	22.27	23.00	1.183	0.04	0.093	0.109
	LTE Band 7	20M	QPSK	50	50	Right Tilted	21350	2560	22.27	23.00	1.183	0.02	0.033	0.039
	LTE Band 7	20M	QPSK	50	50	Left Cheek	21350	2560	22.27	23.00	1.183	0.08	0.058	0.068
	LTE Band 7	20M	QPSK	50	50	Left Tilted	21350	2560	22.27	23.00	1.183	0.11	0.034	0.040



<WLAN SAR>

Plot No.	Band	Mode	Test Position	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	1	2412	19.20	19.50	1.072	100	1.000	0.02	1.060	1.136
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	1	2412	19.20	19.50	1.072	100	1.000	0.06	0.824	0.883
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	1	2412	19.20	19.50	1.072	100	1.000	0.18	0.520	0.557
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	1	2412	19.20	19.50	1.072	100	1.000	0.04	0.625	0.670
10	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	6	2437	19.00	19.50	1.122	100	1.000	-0.03	1.100	1.234
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	11	2462	18.70	19.50	1.202	100	1.000	-0.05	1.000	1.202
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	6	2437	19.00	19.50	1.122	100	1.000	0.01	0.825	0.926

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	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)
11	Bluetooth	DH5 1Mbps	Right Cheek	0	2402	9.20	10.00	1.202	76.85	1.084	0.04	0.117	0.152
	Bluetooth	DH5 1Mbps	Right Tilted	0	2402	9.20	10.00	1.202	76.85	1.084	0.09	0.082	0.107
	Bluetooth	DH5 1Mbps	Left Cheek	0	2402	9.20	10.00	1.202	76.85	1.084	0.13	0.056	0.074
	Bluetooth	DH5 1Mbps	Left Tilted	0	2402	9.20	10.00	1.202	76.85	1.084	0.02	0.067	0.087



14.2 Hotspot SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS(4 Tx slot)	Front	5	189	836.4	28.88	30	1.294	0.01	0.459	0.594
	GSM850	GPRS(4 Tx slot)	Back	5	189	836.4	28.88	30	1.294	0.13	0.790	1.022
	GSM850	GPRS(4 Tx slot)	Left Side	5	189	836.4	28.88	30	1.294	0.04	0.401	0.519
	GSM850	GPRS(4 Tx slot)	Right Side	5	189	836.4	28.88	30	1.294	0.09	0.414	0.536
	GSM850	GPRS(4 Tx slot)	Bottom Side	5	189	836.4	28.88	30	1.294	0.02	0.184	0.238
	GSM850	GPRS(4 Tx slot)	Back	5	128	824.2	28.65	30	1.365	0.08	0.684	0.933
12	GSM850	GPRS(4 Tx slot)	Back	5	251	848.8	28.66	30	1.361	0.09	0.836	1.138
	GSM1900	GPRS(4 Tx slot)	Front	5	512	1850.2	20.28	21	1.180	0.09	0.274	0.323
	GSM1900	GPRS(4 Tx slot)	Back	5	512	1850.2	20.28	21	1.180	0.02	0.431	0.509
	GSM1900	GPRS(4 Tx slot)	Left Side	5	512	1850.2	20.28	21	1.180	0.06	0.023	0.028
	GSM1900	GPRS(4 Tx slot)	Right Side	5	512	1850.2	20.28	21	1.180	0.08	0.015	0.017
13	GSM1900	GPRS(4 Tx slot)	Bottom Side	5	512	1850.2	20.28	21	1.180	-0.05	0.473	0.558

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA V	RMC 12.2Kbps	Front	5	4132	826.4	23.15	24	1.216	-0.03	0.299	0.364
14	WCDMA V	RMC 12.2Kbps	Back	5	4132	826.4	23.15	24	1.216	0.03	0.471	0.573
	WCDMA V	RMC 12.2Kbps	Left Side	5	4132	826.4	23.15	24	1.216	0.04	0.293	0.356
	WCDMA V	RMC 12.2Kbps	Right Side	5	4132	826.4	23.15	24	1.216	0.09	0.291	0.354
	WCDMA V	RMC 12.2Kbps	Bottom Side	5	4132	826.4	23.15	24	1.216	0.01	0.090	0.110
	WCDMA IV	RMC 12.2Kbps	Front	5	1413	1732.6	17.84	19	1.306	0.06	0.339	0.443
	WCDMA IV	RMC 12.2Kbps	Back	5	1413	1732.6	17.84	19	1.306	0.02	0.325	0.425
	WCDMA IV	RMC 12.2Kbps	Left Side	5	1413	1732.6	17.84	19	1.306	-0.13	0.048	0.063
	WCDMA IV	RMC 12.2Kbps	Right Side	5	1413	1732.6	17.84	19	1.306	0.09	0.067	0.088
15	WCDMA IV	RMC 12.2Kbps	Bottom Side	5	1413	1732.6	17.84	19	1.306	0.06	0.917	1.198
	WCDMA IV	RMC 12.2Kbps	Bottom Side	5	1312	1712.4	17.74	19	1.337	0.01	0.854	1.141
	WCDMA IV	RMC 12.2Kbps	Bottom Side	5	1513	1752.6	17.81	19	1.315	0.14	0.850	1.118
	WCDMA II	RMC 12.2Kbps	Front	5	9538	1907.6	18.31	19	1.172	0.11	0.458	0.537
	WCDMA II	RMC 12.2Kbps	Back	5	9538	1907.6	18.31	19	1.172	0.03	0.665	0.780
	WCDMA II	RMC 12.2Kbps	Left Side	5	9538	1907.6	18.31	19	1.172	0.03	0.024	0.028
	WCDMA II	RMC 12.2Kbps	Right Side	5	9538	1907.6	18.31	19	1.172	0.09	0.049	0.057
16	WCDMA II	RMC 12.2Kbps	Bottom Side	5	9538	1907.6	18.31	19	1.172	0.06	0.859	1.007
	WCDMA II	RMC 12.2Kbps	Bottom Side	5	9262	1852.4	18.21	19	1.199	0.02	0.626	0.751
	WCDMA II	RMC 12.2Kbps	Bottom Side	5	9400	1880	18.14	19	1.219	0.05	0.738	0.900



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
17	LTE Band 5	10M	QPSK	1	25	Front	5	20525	836.5	23.12	24	1.225	0.09	0.301	0.369
	LTE Band 5	10M	QPSK	1	25	Back	5	20525	836.5	23.12	24	1.225	0.05	0.485	0.594
	LTE Band 5	10M	QPSK	1	25	Left Side	5	20525	836.5	23.12	24	1.225	0.04	0.290	0.355
	LTE Band 5	10M	QPSK	1	25	Right Side	5	20525	836.5	23.12	24	1.225	-0.08	0.283	0.347
	LTE Band 5	10M	QPSK	1	25	Bottom Side	5	20525	836.5	23.12	24	1.225	0.11	0.098	0.120
18	LTE Band 5	10M	QPSK	25	0	Front	5	20525	836.5	22.21	23	1.199	-0.01	0.243	0.291
	LTE Band 5	10M	QPSK	25	0	Back	5	20525	836.5	22.21	23	1.199	0.09	0.391	0.469
	LTE Band 5	10M	QPSK	25	0	Left Side	5	20525	836.5	22.21	23	1.199	0.03	0.235	0.282
	LTE Band 5	10M	QPSK	25	0	Right Side	5	20525	836.5	22.21	23	1.199	0.08	0.231	0.277
	LTE Band 5	10M	QPSK	25	0	Bottom Side	5	20525	836.5	22.21	23	1.199	0.02	0.078	0.093
	LTE Band 4	20M	QPSK	1	49	Front	5	20175	1732.5	19.34	20	1.164	0.02	0.423	0.492
	LTE Band 4	20M	QPSK	1	49	Back	5	20175	1732.5	19.34	20	1.164	0.06	0.383	0.446
	LTE Band 4	20M	QPSK	1	49	Left Side	5	20175	1732.5	19.34	20	1.164	0.13	0.060	0.070
	LTE Band 4	20M	QPSK	1	49	Right Side	5	20175	1732.5	19.34	20	1.164	-0.04	0.105	0.122
	LTE Band 4	20M	QPSK	1	49	Bottom Side	5	20175	1732.5	19.34	20	1.164	0.01	1.060	1.234
	LTE Band 4	20M	QPSK	50	0	Front	5	20175	1732.5	19.13	20	1.222	0.02	0.449	0.549
	LTE Band 4	20M	QPSK	50	0	Back	5	20175	1732.5	19.13	20	1.222	0.09	0.387	0.473
	LTE Band 4	20M	QPSK	50	0	Left Side	5	20175	1732.5	19.13	20	1.222	-0.02	0.073	0.089
LTE Band 4	20M	QPSK	50	0	Right Side	5	20175	1732.5	19.13	20	1.222	0.05	0.101	0.123	
LTE Band 4	20M	QPSK	50	0	Bottom Side	5	20175	1732.5	19.13	20	1.222	0.14	1.090	1.332	
LTE Band 4	20M	QPSK	100	0	Bottom Side	5	20175	1732.5	19.05	20	1.245	0.02	1.060	1.319	
19	LTE Band 2	20M	QPSK	1	49	Front	5	18900	1880	19.27	20	1.183	0.07	0.529	0.626
	LTE Band 2	20M	QPSK	1	49	Back	5	18900	1880	19.27	20	1.183	0.04	0.638	0.755
	LTE Band 2	20M	QPSK	1	49	Left Side	5	18900	1880	19.27	20	1.183	0.01	0.029	0.034
	LTE Band 2	20M	QPSK	1	49	Right Side	5	18900	1880	19.27	20	1.183	0.16	0.045	0.053
	LTE Band 2	20M	QPSK	1	49	Bottom Side	5	18900	1880	19.27	20	1.183	-0.03	0.822	0.972
	LTE Band 2	20M	QPSK	1	49	Bottom Side	5	18700	1860	19.23	20	1.194	0.04	0.752	0.898
	LTE Band 2	20M	QPSK	1	49	Bottom Side	5	19100	1900	19.18	20	1.208	0.09	0.966	1.167
	LTE Band 2	20M	QPSK	50	0	Front	5	18900	1880	19.25	20	1.189	-0.03	0.526	0.625
	LTE Band 2	20M	QPSK	50	0	Back	5	18900	1880	19.25	20	1.189	0.09	0.670	0.796
	LTE Band 2	20M	QPSK	50	0	Left Side	5	18900	1880	19.25	20	1.189	0.02	0.031	0.037
	LTE Band 2	20M	QPSK	50	0	Right Side	5	18900	1880	19.25	20	1.189	0.08	0.042	0.050
	LTE Band 2	20M	QPSK	50	0	Bottom Side	5	18900	1880	19.25	20	1.189	0.05	0.832	0.989
	LTE Band 2	20M	QPSK	50	0	Bottom Side	5	18700	1860	19.17	20	1.211	0.01	0.790	0.956
	LTE Band 2	20M	QPSK	50	0	Bottom Side	5	19100	1900	19.15	20	1.216	-0.04	1.030	1.253
	LTE Band 2	20M	QPSK	100	0	Bottom Side	5	18900	1880	19.19	20	1.205	0.08	0.888	1.070



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 7	20M	QPSK	1	49	Front	5	21350	2560	20.5	21	1.122	0.04	0.655	0.735
	LTE Band 7	20M	QPSK	1	49	Back	5	21350	2560	20.5	21	1.122	0.08	1.130	1.268
	LTE Band 7	20M	QPSK	1	49	Left Side	5	21350	2560	20.5	21	1.122	0.01	0.088	0.099
	LTE Band 7	20M	QPSK	1	49	Right Side	5	21350	2560	20.5	21	1.122	0.05	0.143	0.160
	LTE Band 7	20M	QPSK	1	49	Bottom Side	5	21350	2560	20.5	21	1.122	-0.03	0.907	1.018
	LTE Band 7	20M	QPSK	1	49	Back	5	21100	2535	20.33	21	1.167	0.06	1.080	1.260
20	LTE Band 7	20M	QPSK	1	49	Back	5	20850	2510	20.11	21	1.227	-0.12	1.160	1.424
	LTE Band 7	20M	QPSK	1	49	Bottom Side	5	21100	2535	20.33	21	1.167	0.01	0.939	1.096
	LTE Band 7	20M	QPSK	1	49	Bottom Side	5	20850	2510	20.11	21	1.227	0.05	1.070	1.313
	LTE Band 7	20M	QPSK	50	50	Front	5	21350	2560	20.4	21	1.148	0.01	0.652	0.749
	LTE Band 7	20M	QPSK	50	50	Back	5	21350	2560	20.4	21	1.148	0.06	1.160	1.332
	LTE Band 7	20M	QPSK	50	50	Left Side	5	21350	2560	20.4	21	1.148	0.12	0.088	0.101
	LTE Band 7	20M	QPSK	50	50	Right Side	5	21350	2560	20.4	21	1.148	0.02	0.146	0.168
	LTE Band 7	20M	QPSK	50	50	Bottom Side	5	21350	2560	20.4	21	1.148	0.07	0.933	1.071
	LTE Band 7	20M	QPSK	50	50	Back	5	21100	2535	20.27	21	1.183	0.05	1.090	1.290
	LTE Band 7	20M	QPSK	50	50	Back	5	20850	2510	20.18	21	1.208	0.01	1.110	1.341
	LTE Band 7	20M	QPSK	50	50	Bottom Side	5	21100	2535	20.27	21	1.183	0.09	0.945	1.118
	LTE Band 7	20M	QPSK	50	50	Bottom Side	5	20850	2510	20.18	21	1.208	0.15	1.080	1.304
	LTE Band 7	20M	QPSK	100	0	Back	5	21350	2560	20.26	21	1.186	0.02	1.160	1.375
	LTE Band 7	20M	QPSK	100	0	Bottom Side	5	21350	2560	20.26	21	1.186	0.06	1.020	1.209



<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	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	5	1	2412	19.2	19.5	1.072	100	1.000	0.08	0.430	0.461
	WLAN2.4GHz	802.11b 1Mbps	Back	5	1	2412	19.2	19.5	1.072	100	1.000	0.03	0.581	0.623
	WLAN2.4GHz	802.11b 1Mbps	Left Side	5	1	2412	19.2	19.5	1.072	100	1.000	-0.03	0.552	0.591
	WLAN2.4GHz	802.11b 1Mbps	Right Side	5	1	2412	19.2	19.5	1.072	100	1.000	0.05	0.086	0.092
21	WLAN2.4GHz	802.11b 1Mbps	Top Side	5	1	2412	19.2	19.5	1.072	100	1.000	-0.13	0.647	0.693

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	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)
	Bluetooth	DH5 1Mbps	Front	5	0	2402	9.2	10	1.202	76.85	1.084	0.02	0.044	0.058
	Bluetooth	DH5 1Mbps	Back	5	0	2402	9.2	10	1.202	76.85	1.084	-0.06	0.060	0.078
	Bluetooth	DH5 1Mbps	Left Side	5	0	2402	9.2	10	1.202	76.85	1.084	0.05	0.051	0.067
	Bluetooth	DH5 1Mbps	Right Side	5	0	2402	9.2	10	1.202	76.85	1.084	0.11	0.006	0.008
22	Bluetooth	DH5 1Mbps	Top Side	5	0	2402	9.2	10	1.202	76.85	1.084	0.07	0.067	0.087

14.3 Body Worn Accessory SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS(4 Tx slot)	Front	5	189	836.4	28.88	30	1.294	0.01	0.459	0.594
	GSM850	GPRS(4 Tx slot)	Back	5	189	836.4	28.88	30	1.294	0.13	0.790	1.022
	GSM850	GPRS(4 Tx slot)	Back	5	128	824.2	28.65	30	1.365	0.08	0.684	0.933
23	GSM850	GPRS(4 Tx slot)	Back	5	251	848.8	28.66	30	1.361	0.09	0.836	1.138
	GSM1900	GPRS(4 Tx slot)	Front	5	512	1850.2	22.3	23	1.175	0.13	0.436	0.512
24	GSM1900	GPRS(4 Tx slot)	Back	5	512	1850.2	22.3	23	1.175	-0.09	0.636	0.747



<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Headset	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA V	RMC 12.2Kbps	Front	5	-	4132	826.4	23.15	24	1.216	-0.03	0.299	0.364
25	WCDMA V	RMC 12.2Kbps	Back	5	-	4132	826.4	23.15	24	1.216	0.03	0.471	0.573
	WCDMA IV	RMC 12.2Kbps	Front	5	-	1413	1732.6	22.06	23	1.242	0.09	0.840	1.043
	WCDMA IV	RMC 12.2Kbps	Back	5	-	1413	1732.6	22.06	23	1.242	0.02	0.853	1.059
26	WCDMA IV	RMC 12.2Kbps	Front	5	-	1312	1712.4	22.04	23	1.247	-0.14	0.986	1.230
	WCDMA IV	RMC 12.2Kbps	Front	5	-	1513	1752.6	22.03	23	1.250	0.03	0.861	1.076
	WCDMA IV	RMC 12.2Kbps	Back	5	-	1312	1712.4	22.04	23	1.247	-0.02	0.961	1.199
	WCDMA IV	RMC 12.2Kbps	Back	5	-	1513	1752.6	22.03	23	1.250	0.06	0.788	0.985
	WCDMA IV	RMC 12.2Kbps	Front	5	Headset	1312	1712.4	22.04	23	1.247	0.04	0.930	1.160
	WCDMA IV	RMC 12.2Kbps	Front	5	Headset	1413	1732.6	22.06	23	1.242	-0.01	0.886	1.100
	WCDMA IV	RMC 12.2Kbps	Front	5	Headset	1513	1752.6	22.03	23	1.250	0.06	0.828	1.035
	WCDMA II	RMC 12.2Kbps	Front	5	-	9538	1907.6	20.21	21	1.199	0.06	0.595	0.714
27	WCDMA II	RMC 12.2Kbps	Back	5	-	9538	1907.6	20.21	21	1.199	-0.07	1.070	1.283
	WCDMA II	RMC 12.2Kbps	Back	5	-	9400	1880	20.13	21	1.222	0.05	0.921	1.125
	WCDMA II	RMC 12.2Kbps	Back	5	-	9262	1852.4	20.18	21	1.208	0.04	0.812	0.981
	WCDMA II	RMC 12.2Kbps	Back	5	Headset	9538	1907.6	20.21	21	1.199	0.09	1.050	1.259
	WCDMA II	RMC 12.2Kbps	Back	5	Headset	9400	1880	20.13	21	1.222	0.01	0.997	1.218
	WCDMA II	RMC 12.2Kbps	Back	5	Headset	9262	1852.4	20.18	21	1.208	0.08	0.936	1.131



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Headset	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 5	10M	QPSK	1	25	Front	5	-	20525	836.5	23.12	24	1.225	0.09	0.301	0.369
28	LTE Band 5	10M	QPSK	1	25	Back	5	-	20525	836.5	23.12	24	1.225	0.05	0.485	0.594
	LTE Band 5	10M	QPSK	25	0	Front	5	-	20525	836.5	22.21	23	1.199	-0.01	0.243	0.291
	LTE Band 5	10M	QPSK	25	0	Back	5	-	20525	836.5	22.21	23	1.199	0.09	0.391	0.469
	LTE Band 4	20M	QPSK	1	49	Front	5	-	20175	1732.5	22.45	23	1.135	0.13	0.840	0.953
	LTE Band 4	20M	QPSK	1	49	Back	5	-	20175	1732.5	22.45	23	1.135	0.02	0.880	0.999
	LTE Band 4	20M	QPSK	50	0	Front	5	-	20175	1732.5	22.43	23	1.140	0.06	0.849	0.968
29	LTE Band 4	20M	QPSK	50	0	Back	5	-	20175	1732.5	22.43	23	1.140	0.04	0.895	1.021
	LTE Band 4	20M	QPSK	100	0	Front	5	-	20175	1732.5	22.38	23	1.153	0.11	0.821	0.947
	LTE Band 4	20M	QPSK	100	0	Back	5	-	20175	1732.5	22.38	23	1.153	-0.05	0.874	1.008
	LTE Band 2	20M	QPSK	1	49	Front	5	-	18900	1880	20.36	21	1.159	0.06	0.660	0.765
	LTE Band 2	20M	QPSK	1	49	Back	5	-	18900	1880	20.36	21	1.159	0.09	0.883	1.023
	LTE Band 2	20M	QPSK	1	49	Back	5	-	18700	1860	20.29	21	1.178	0.12	0.817	0.962
	LTE Band 2	20M	QPSK	1	49	Back	5	-	19100	1900	20.22	21	1.197	-0.05	0.918	1.099
	LTE Band 2	20M	QPSK	50	0	Front	5	-	18900	1880	20.34	21	1.164	0.07	0.652	0.759
	LTE Band 2	20M	QPSK	50	0	Back	5	-	18900	1880	20.34	21	1.164	0.01	0.881	1.026
	LTE Band 2	20M	QPSK	50	0	Back	5	-	18700	1860	20.31	21	1.172	0.06	0.837	0.981
30	LTE Band 2	20M	QPSK	50	0	Back	5	-	19100	1900	20.28	21	1.180	-0.05	1.080	1.275
	LTE Band 2	20M	QPSK	50	0	Back	5	Headset	19100	1900	20.28	21	1.180	0.08	0.949	1.120
	LTE Band 2	20M	QPSK	50	0	Back	5	Headset	18700	1860	20.31	21	1.172	0.03	0.817	0.958
	LTE Band 2	20M	QPSK	50	0	Back	5	Headset	18900	1880	20.34	21	1.164	0.04	0.857	0.998
	LTE Band 2	20M	QPSK	100	0	Back	5	-	18900	1880	20.32	21	1.169	0.09	0.899	1.051



FCC SAR Test Report

Report No. : FA951427

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Headset	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	1	49	Front	5	-	21350	2560	20.5	21	1.122	0.04	0.655	0.735
	LTE Band 7	20M	QPSK	1	49	Back	5	-	21350	2560	20.5	21	1.122	0.08	1.130	1.268
	LTE Band 7	20M	QPSK	1	49	Back	5	-	21100	2535	20.33	21	1.167	0.06	1.080	1.260
31	LTE Band 7	20M	QPSK	1	49	Back	5	-	20850	2510	20.11	21	1.227	-0.12	1.160	1.424
	LTE Band 7	20M	QPSK	1	49	Back	5	Headset	20850	2510	20.11	21	1.227	0.06	1.140	1.399
	LTE Band 7	20M	QPSK	1	49	Back	5	Headset	21100	2535	20.33	21	1.167	-0.06	1.110	1.295
	LTE Band 7	20M	QPSK	1	49	Back	5	Headset	21350	2560	20.5	21	1.122	0.01	1.110	1.245
	LTE Band 7	20M	QPSK	50	50	Front	5	-	21350	2560	20.4	21	1.148	0.01	0.652	0.749
	LTE Band 7	20M	QPSK	50	50	Back	5	-	21350	2560	20.4	21	1.148	0.06	1.160	1.332
	LTE Band 7	20M	QPSK	50	50	Back	5	-	21100	2535	20.27	21	1.183	0.05	1.090	1.290
	LTE Band 7	20M	QPSK	50	50	Back	5	-	20850	2510	20.18	21	1.208	0.01	1.110	1.341
	LTE Band 7	20M	QPSK	50	50	Back	5	Headset	20850	2510	20.18	21	1.208	0.09	1.090	1.317
	LTE Band 7	20M	QPSK	50	50	Back	5	Headset	21100	2535	20.27	21	1.183	-0.03	1.170	1.384
	LTE Band 7	20M	QPSK	50	50	Back	5	Headset	21350	2560	20.4	21	1.148	0.09	1.200	1.378
	LTE Band 7	20M	QPSK	100	0	Back	5	-	21350	2560	20.26	21	1.186	0.02	1.160	1.375
	LTE Band 7	20M	QPSK	100	0	Back	5	Headset	21350	2560	20.26	21	1.186	0.05	1.180	1.399



<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	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	5	1	2412	19.2	19.5	1.072	100	1.000	0.08	0.430	0.461
32	WLAN2.4GHz	802.11b 1Mbps	Back	5	1	2412	19.2	19.5	1.072	100	1.000	0.03	0.581	0.623

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	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)
	Bluetooth	DH5 1Mbps	Front	5	0	2402	9.2	10	1.202	76.85	1.084	0.02	0.044	0.058
33	Bluetooth	DH5 1Mbps	Back	5	0	2402	9.2	10	1.202	76.85	1.084	-0.06	0.060	0.078

14.4 Product specific 10g SAR
<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	GSM1900	GPRS(4 Tx slot)	Back	0	512	1850.2	22.3	23	1.175	0.01	0.708	0.832
34	GSM1900	GPRS(4 Tx slot)	Bottom Side	0	512	1850.2	22.3	23	1.175	-0.03	0.809	0.950

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	WCDMA IV	RMC 12.2Kbps	Front	0	1413	1732.6	22.06	23	1.242	0.01	1.200	1.490
	WCDMA IV	RMC 12.2Kbps	Back	0	1413	1732.6	22.06	23	1.242	0.12	1.120	1.391
	WCDMA IV	RMC 12.2Kbps	Bottom Side	0	1413	1732.6	22.06	23	1.242	0.09	2.390	2.968
35	WCDMA IV	RMC 12.2Kbps	Bottom Side	0	1312	1712.4	22.04	23	1.247	-0.06	2.480	3.094
	WCDMA IV	RMC 12.2Kbps	Bottom Side	0	1513	1752.6	22.03	23	1.250	-0.08	2.150	2.688
	WCDMA II	RMC 12.2Kbps	Front	0	9538	1907.6	20.21	21	1.199	0.08	0.715	0.858
	WCDMA II	RMC 12.2Kbps	Back	0	9538	1907.6	20.21	21	1.199	0.12	0.806	0.967
36	WCDMA II	RMC 12.2Kbps	Bottom Side	0	9538	1907.6	20.21	21	1.199	-0.01	1.140	1.367



< LTE SAR >

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	LTE Band 4	20M	QPSK	1	49	Front	0	20175	1732.5	22.45	23	1.135	0.06	1.190	1.351
	LTE Band 4	20M	QPSK	1	49	Bottom Side	0	20175	1732.5	22.45	23	1.135	0.02	2.340	2.656
	LTE Band 4	20M	QPSK	50	0	Front	0	20175	1732.5	22.43	23	1.140	0.01	1.210	1.380
37	LTE Band 4	20M	QPSK	50	0	Bottom Side	0	20175	1732.5	22.43	23	1.140	0.14	2.460	2.805
	LTE Band 4	20M	QPSK	100	0	Bottom Side	0	20175	1732.5	22.38	23	1.153	0.04	2.410	2.780
	LTE Band 2	20M	QPSK	1	49	Back	0	18900	1880	20.36	21	1.159	0.01	0.903	1.046
	LTE Band 2	20M	QPSK	1	49	Bottom Side	0	18900	1880	20.36	21	1.159	0.04	1.130	1.309
	LTE Band 2	20M	QPSK	50	0	Back	0	18900	1880	20.34	21	1.164	0.02	0.934	1.087
38	LTE Band 2	20M	QPSK	50	0	Bottom Side	0	18900	1880	20.34	21	1.164	0.07	1.140	1.327
	LTE Band 7	20M	QPSK	1	49	Front	0	21350	2560	20.5	21	1.122	0.03	0.996	1.118
	LTE Band 7	20M	QPSK	1	49	Back	0	21350	2560	20.5	21	1.122	0.08	1.520	1.705
	LTE Band 7	20M	QPSK	1	49	Bottom Side	0	21350	2560	20.5	21	1.122	0.06	0.957	1.074
	LTE Band 7	20M	QPSK	50	50	Front	0	21350	2560	20.4	21	1.148	0.05	1.030	1.183
39	LTE Band 7	20M	QPSK	50	50	Back	0	21350	2560	20.4	21	1.148	0.03	1.600	1.837
	LTE Band 7	20M	QPSK	50	50	Bottom Side	0	21350	2560	20.4	21	1.148	0.09	0.987	1.133

15.1 Repeated SAR Measurement

<1g SAR>

No.	Band	Mode	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Headset	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	WLAN2.4GHz	802.11b 1Mbps					Right Cheek	0		6	2437	19.00	19.50	1.122	-0.03	1.100	1	1.234
2nd	WLAN2.4GHz	802.11b 1Mbps					Right Cheek	0		6	2437	19.00	19.50	1.122	0.02	0.982	1.120	1.102
1st	GSM850	GPRS(4 Tx slot)					Back	5		251	848.8	28.66	30	1.361	0.09	0.836	1	1.138
2nd	GSM850	GPRS(4 Tx slot)					Back	5		251	848.8	28.66	30	1.361	0.05	0.827	1.011	1.126
1st	LTE Band 4		20	QPSK	50	0	Bottom Side	5		20175	1732.5	19.13	20	1.222	0.14	1.090	1	1.332
2nd	LTE Band 4		20	QPSK	5	0	Bottom Side	5		20175	1732.5	19.13	20	1.222	0.06	1.070	1.019	1.307
1st	LTE Band 2		20	QPSK	5	0	Back	5		19100	1900	20.28	21	1.180	-0.05	1.080	1	1.275
2nd	LTE Band 2		20	QPSK	5	0	Back	5		19100	1900	20.28	21	1.180	-0.02	1.020	1.059	1.204
1st	LTE Band 7		20	QPSK	5	50	Back	5	Headset	21350	2560	20.4	21	1.148	0.09	1.200	1	1.378
2nd	LTE Band 7		20	QPSK	5	50	Back	5	Headset	21350	2560	20.4	21	1.148	0.03	1.180	1.017	1.355

<10g SAR>

No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Ratio	Reported 10g SAR (W/kg)
1st	WCDMA IV	RMC 12.2Kbps	Bottom Side	0	Reduced	1312	1712.4	22.04	23	1.247	1.000	-0.06	2.480	1	3.094
2nd	WCDMA IV	RMC 12.2Kbps	Bottom Side	0	Reduced	1312	1712.4	22.04	23	1.247	1.000	0.01	2.300	1.078	2.869

General Note:

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

16. Simultaneous Transmission Analysis

Simultaneous Transmission Configurations	Portable Handset			Product specific 10g SAR
	Head	Body-worn	Hotspot	
GSM Voice + WLAN2.4GHz	Yes	Yes		Yes
GPRS/EDGE + WLAN2.4GHz	Yes	Yes	Yes	Yes
WCDMA + WLAN2.4GHz	Yes	Yes	Yes	Yes
LTE + WLAN2.4GHz	Yes	Yes	Yes	Yes
GSM Voice + Bluetooth	Yes	Yes		Yes
GPRS/EDGE + Bluetooth	Yes	Yes	Yes	Yes
WCDMA + Bluetooth	Yes	Yes	Yes	Yes
LTE + Bluetooth	Yes	Yes	Yes	Yes

General Note:

1. This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), and LTE supports VoLTE function.
2. EUT will choose each GSM, WCDMA and LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
3. This device WLAN 2.4GHz supports hotspot operation and Bluetooth support tethering applications.
4. WLAN 2.4GHz and Bluetooth share the same antenna so can't transmit simultaneously.
5. Chose the worse zoom scan SAR of WLAN2.4GHz SAR respectively for co-located with WWAN analysis.
6. For Bluetooth SAR testing only perform the worst position of WLAN, so other position use this SAR value to do co-located with WWAN analysis.
7. All licensed modes share the same antenna part and cannot transmit simultaneously.
8. The reported SAR summation is calculated based on the same configuration and test position
9. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
 - i) 1g Scalar SAR summation < 1.6W/kg and 10g Scalar SAR summation < 4.0W/kg.
 - ii) $SPLSR = (SAR1 + SAR2)^{1.5} / (\text{min. separation distance, mm})$, 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.
 - iii) If $SPLSR \leq 0.04$ for 1g SAR, $SPLSR \leq 0.10$ for 10g SAR simultaneously transmission SAR measurement is not necessary.
 - iv) Simultaneously transmission SAR measurement, and the reported multi-band 1g SAR < 1.6W/kg and 10g SAR < 4.0W/kg.
 - v) The SPLSR calculated results please refer to section 16.4.



16.1 Head Exposure Conditions

WWAN Band		Exposure Position	1	2	3	1+2			1+3 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN	Bluetooth	Summed 1g SAR (W/kg)	SPLSR	Case No	
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)				
GSM	GSM850	Right Cheek	0.392	1.234	0.152	1.63	0.04	#01	0.54
		Right Tilted	0.19	0.926	0.107	1.12			0.30
		Left Cheek	0.418	0.557	0.074	0.98			0.49
		Left Tilted	0.189	0.67	0.087	0.86			0.28
	GSM1900	Right Cheek	0.075	1.234	0.152	1.31			0.23
		Right Tilted	0.038	0.926	0.107	0.96			0.15
		Left Cheek	0.037	0.557	0.074	0.59			0.11
		Left Tilted	0.047	0.67	0.087	0.72			0.13
WCDMA	WCDMA II	Right Cheek	0.151	1.234	0.152	1.39			0.30
		Right Tilted	0.101	0.926	0.107	1.03			0.21
		Left Cheek	0.123	0.557	0.074	0.68			0.20
		Left Tilted	0.143	0.67	0.087	0.81			0.23
	WCDMA IV	Right Cheek	0.211	1.234	0.152	1.45			0.36
		Right Tilted	0.107	0.926	0.107	1.03			0.21
		Left Cheek	0.122	0.557	0.074	0.68			0.20
		Left Tilted	0.145	0.67	0.087	0.82			0.23
	WCDMA V	Right Cheek	0.254	1.234	0.152	1.49			0.41
		Right Tilted	0.124	0.926	0.107	1.05			0.23
		Left Cheek	0.258	0.557	0.074	0.82			0.33
		Left Tilted	0.128	0.67	0.087	0.80			0.22
LTE	LTE Band 2	Right Cheek	0.138	1.234	0.152	1.37			0.29
		Right Tilted	0.067	0.926	0.107	0.99			0.17
		Left Cheek	0.089	0.557	0.074	0.65			0.16
		Left Tilted	0.085	0.67	0.087	0.76			0.17
	LTE Band 4	Right Cheek	0.185	1.234	0.152	1.42			0.34
		Right Tilted	0.099	0.926	0.107	1.03			0.21
		Left Cheek	0.111	0.557	0.074	0.67			0.19
		Left Tilted	0.126	0.67	0.087	0.80			0.21
	LTE Band 5	Right Cheek	0.251	1.234	0.152	1.49			0.40
		Right Tilted	0.129	0.926	0.107	1.06			0.24
		Left Cheek	0.253	0.557	0.074	0.81			0.33
		Left Tilted	0.107	0.67	0.087	0.78			0.19
	LTE Band 7	Right Cheek	0.139	1.234	0.152	1.37			0.29
		Right Tilted	0.057	0.926	0.107	0.98			0.16
		Left Cheek	0.084	0.557	0.074	0.64			0.16
		Left Tilted	0.044	0.67	0.087	0.71			0.13



16.2 Hotspot Exposure Conditions

WWAN Band		Exposure Position	1	2	3	1+2		1+3 Summed 1g SAR (W/kg)	
			WWAN	2.4GHz WLAN	Bluetooth	Summed 1g SAR (W/kg)	SPLSR		Case No
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)				
GSM	GSM850	Front	0.594	0.461	0.058	1.06			0.65
		Back	1.138	0.623	0.078	1.76	0.02	#02	1.22
		Left side	0.519	0.591	0.067	1.11			0.59
		Right side	0.536	0.092	0.008	0.63			0.54
		Bottom side	0.238			0.24			0.24
	GSM1900	Front	0.323	0.461	0.058	0.78			0.38
		Back	0.509	0.623	0.078	1.13			0.59
		Left side	0.028	0.591	0.067	0.62			0.10
		Right side	0.017	0.092	0.008	0.11			0.03
		Bottom side	0.558			0.56			0.56
WCDMA	WCDMA II	Front	0.537	0.461	0.058	1.00			0.60
		Back	0.78	0.623	0.078	1.40			0.86
		Left side	0.028	0.591	0.067	0.62			0.10
		Right side	0.057	0.092	0.008	0.15			0.07
		Bottom side	1.007			1.01			1.01
	WCDMA IV	Front	0.443	0.461	0.058	0.90			0.50
		Back	0.425	0.623	0.078	1.05			0.50
		Left side	0.063	0.591	0.067	0.65			0.13
		Right side	0.088	0.092	0.008	0.18			0.10
		Bottom side	1.198			1.20			1.20
	WCDMA V	Front	0.364	0.461	0.058	0.83			0.42
		Back	0.573	0.623	0.078	1.20			0.65
		Left side	0.356	0.591	0.067	0.95			0.42
		Right side	0.354	0.092	0.008	0.45			0.36
		Bottom side	0.11			0.11			0.11
LTE	LTE Band 2	Front	0.626	0.461	0.058	1.09			0.68
		Back	0.796	0.623	0.078	1.42			0.87
		Left side	0.037	0.591	0.067	0.63			0.10
		Right side	0.053	0.092	0.008	0.15			0.06
		Bottom side	1.253			1.25			1.25



WWAN Band		Exposure Position	1	2	3	1+2		1+3 Summed 1g SAR (W/kg)	
			WWAN	2.4GHz WLAN	Bluetooth	Summed 1g SAR (W/kg)	SPLSR		Case No
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)				
LTE	LTE Band 4	Front	0.549	0.461	0.058	1.01			0.61
		Back	0.473	0.623	0.078	1.10			0.55
		Left side	0.089	0.591	0.067	0.68			0.16
		Right side	0.123	0.092	0.008	0.22			0.13
		Bottom side	1.332			1.33			1.33
	LTE Band 5	Front	0.369	0.461	0.058	0.83			0.43
		Back	0.594	0.623	0.078	1.22			0.67
		Left side	0.355	0.591	0.067	0.95			0.42
		Right side	0.347	0.092	0.008	0.44			0.36
		Bottom side	0.12			0.12			0.12
	LTE Band 7	Front	0.749	0.461	0.058	1.21			0.81
		Back	1.424	0.623	0.078	2.05	0.02	#03	1.50
		Left side	0.101	0.591	0.067	0.69			0.17
		Right side	0.168	0.092	0.008	0.26			0.18
		Bottom side	1.313			1.31			1.31



16.3 Body-Worn Accessory Exposure Conditions

WWAN Band		Exposure Position	1	2	3	1+2			1+3 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN	Bluetooth	Summed 1g SAR (W/kg)	SPLSR	Case No	
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)				
GSM	GSM850	Front	0.594	0.461	0.058	1.06			0.65
		Back	1.138	0.623	0.078	1.76	0.02	#02	1.22
	GSM1900	Front	0.512	0.461	0.058	0.97			0.57
		Back	0.747	0.623	0.078	1.37			0.83
WCDMA	WCDMA II	Front	0.714	0.461	0.058	1.18			0.77
		Back	1.283	0.623	0.078	1.91	0.02	#04	1.36
		Back with Headset	1.259			1.26			1.26
	WCDMA IV	Front	1.230	0.461	0.058	1.69	0.01	#05	1.29
		Back	1.199	0.623	0.078	1.82	0.02	#06	1.28
		Front with Headset	1.160			1.16			1.16
	WCDMA V	Front	0.364	0.461	0.058	0.83			0.42
Back		0.573	0.623	0.078	1.20			0.65	
LTE	LTE Band 2	Front	0.765	0.461	0.058	1.23			0.82
		Back	1.275	0.623	0.078	1.90	0.02	#07	1.35
		Back with Headset	1.120			1.12			1.12
	LTE Band 4	Front	0.968	0.461	0.058	1.43			1.03
		Back	1.021	0.623	0.078	1.64	0.01	#08	1.10
	LTE Band 5	Front	0.369	0.461	0.058	0.83			0.43
		Back	0.594	0.623	0.078	1.22			0.67
	LTE Band 7	Front	0.749	0.461	0.058	1.21			0.81
		Back	1.424	0.623	0.078	2.05	0.02	#03	1.50
		Back with Headset	1.399			1.40			1.40

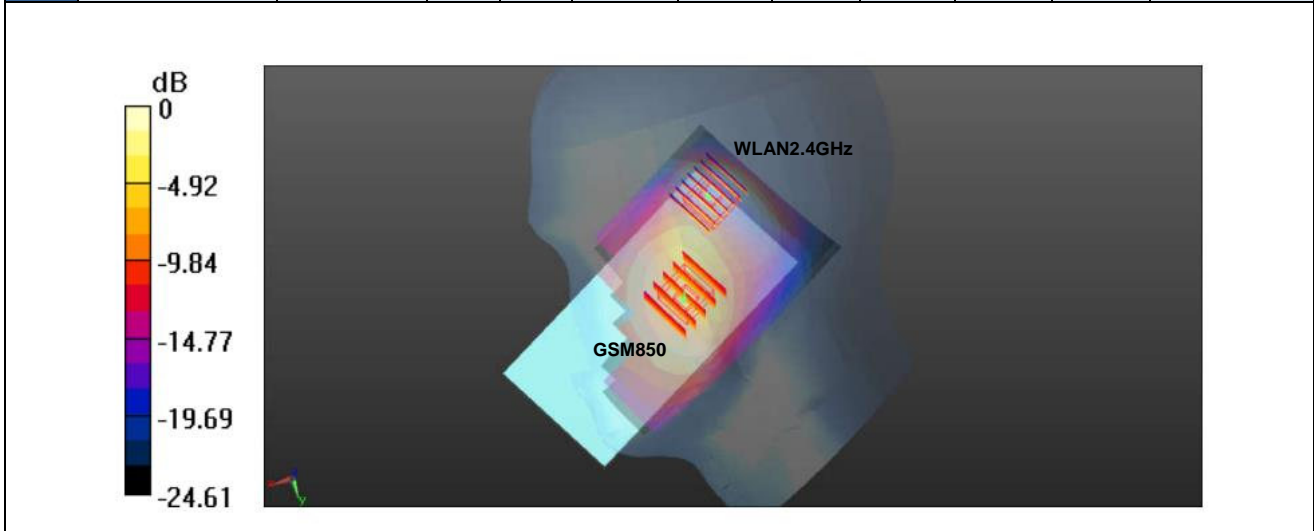
Test Engineer : Changlin Huang, Bin He, Mengming Dai

16.4 SPLSR Evaluation and Analysis

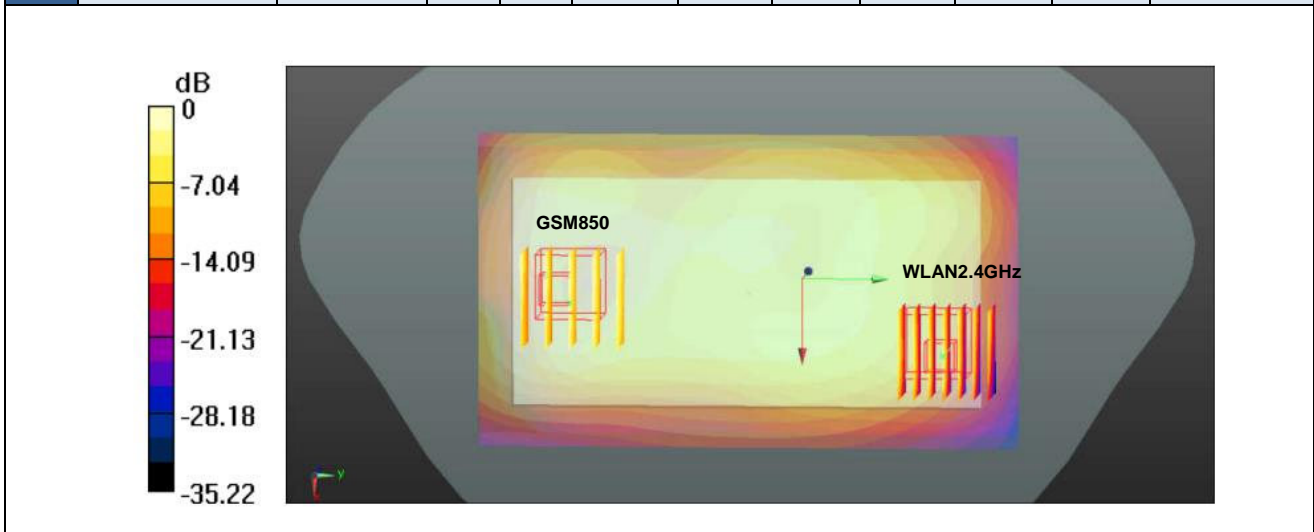
General Note:

- When standalone SAR is measured for both antennas in the pair, the peak location separation distance is computed by the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$, where (x1, y1, z1) and (x2, y2, z2) are the coordinates in the area scans or extrapolated peak SAR locations in the zoom scans, as appropriate.
- $SPLSR = (SAR1 + SAR2)1.5 / (\text{min. separation distance, mm})$. If $SPLSR \leq 0.04$ for 1g SAR, $SPLSR \leq 0.10$ for 10g SAR, simultaneously transmission SAR measurement is not necessary.

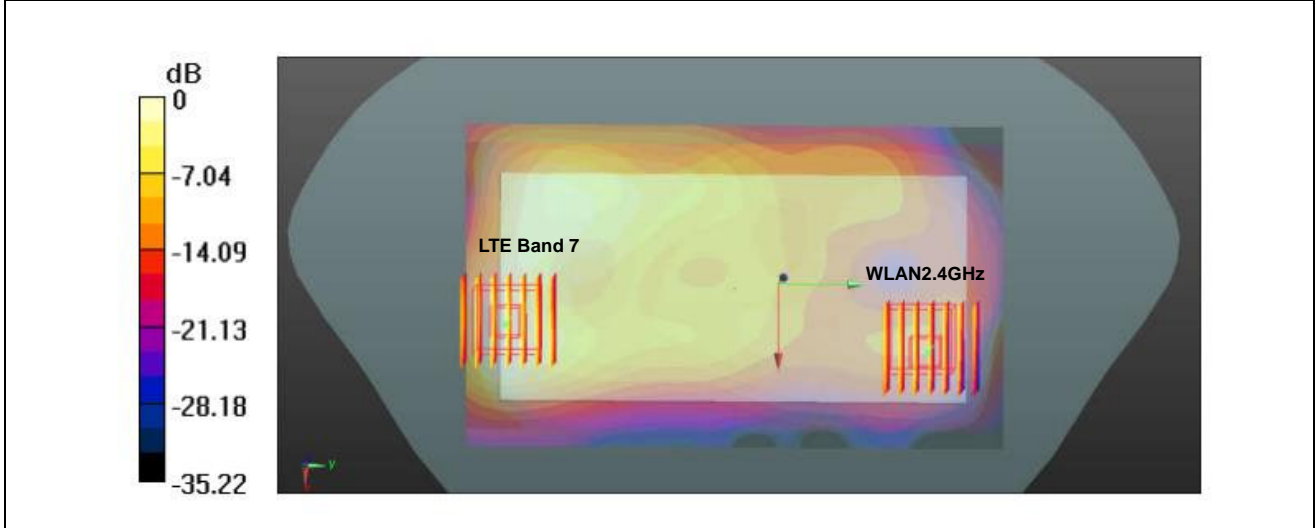
Case #01	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	GSM850	Right Cheek	0.392	0	0.0589	-0.275	-0.173	59.2	1.63	0.04	Not required
	WLAN2.4GHz		1.234	0	0.0289	-0.326	-0.172				



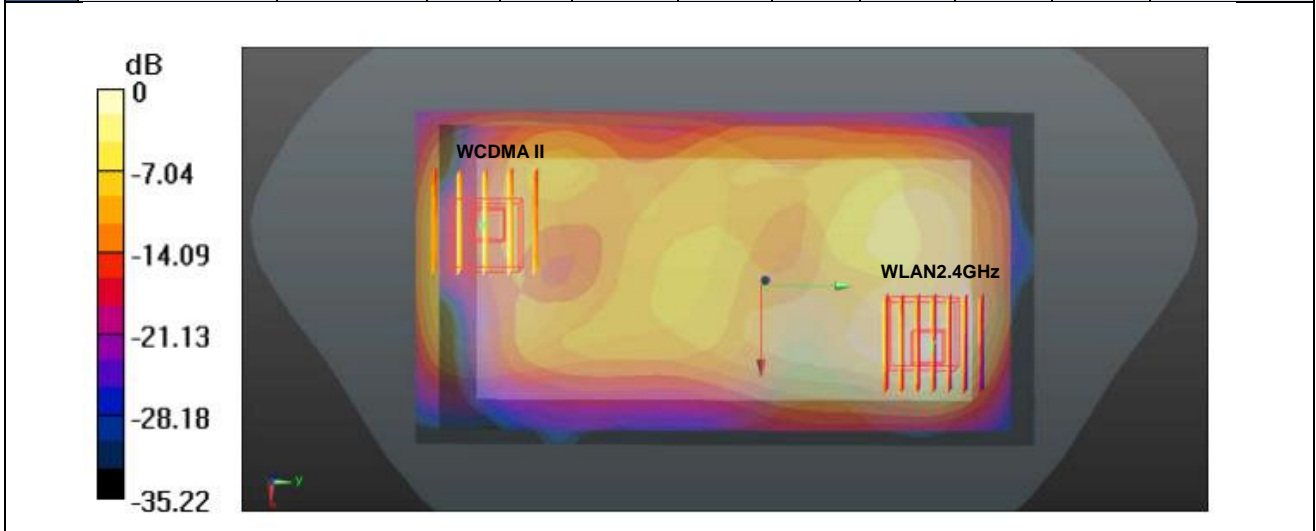
Case #02	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	GSM850	Back	1.138	5	-0.0205	-0.068	-0.205	135.2	1.76	0.02	Not required
	WLAN2.4GHz		0.623	5	0.0046	0.0648	-0.204				



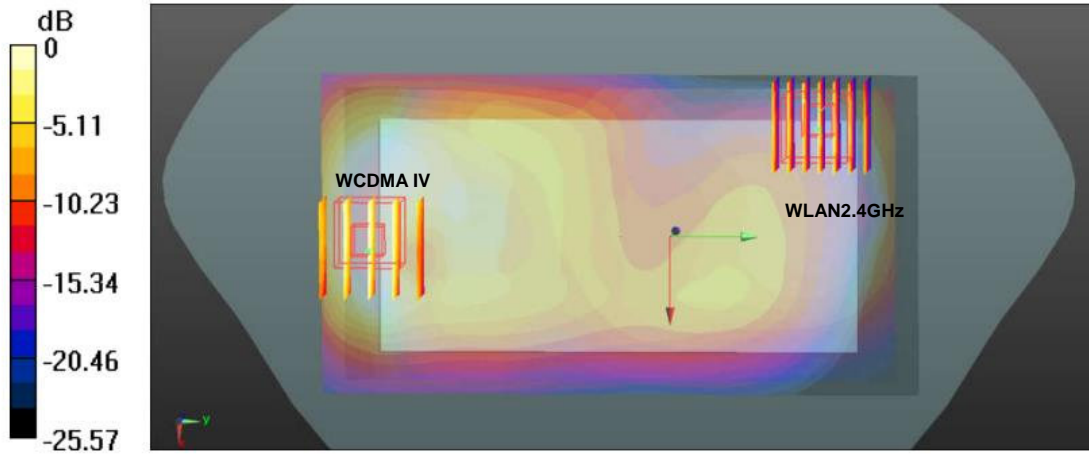
Case #03	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 7				WLAN2.4GHz	X	Y				
	LTE Band 7	Back	1.424	5	-0.0038	-0.0768	-0.204	141.8	2.05	0.02	Not required
	WLAN2.4GHz		0.623	5	0.0046	0.0648	-0.204				



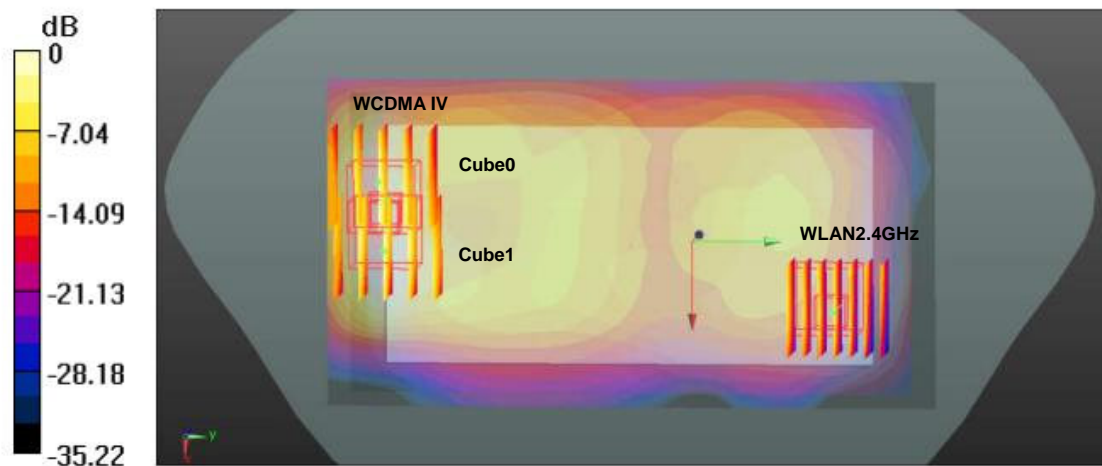
Case #04	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA II				WLAN2.4GHz	X	Y				
	WCDMA II	Back	1.283	5	-0.0335	-0.0765	-0.205	146.3	1.91	0.02	Not required
	WLAN2.4GHz		0.623	5	0.0046	0.0648	-0.204				



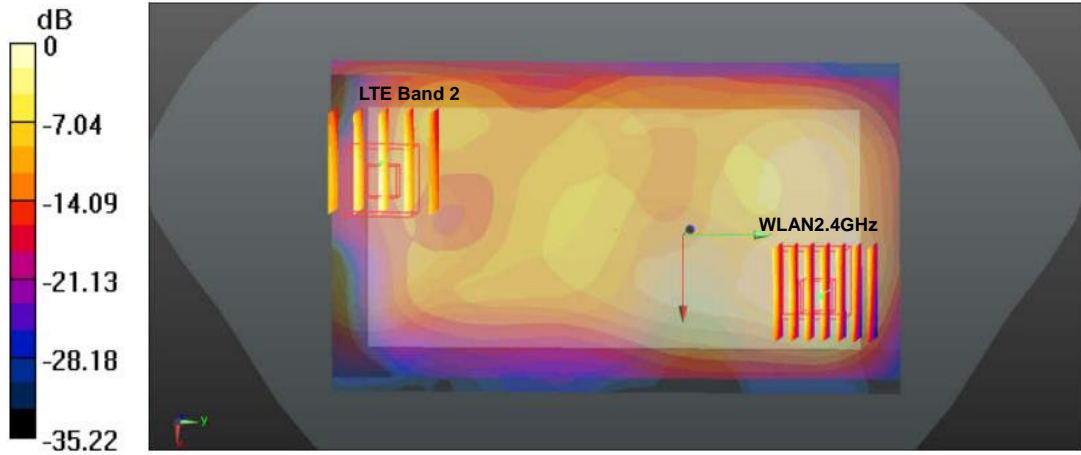
Case #05	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA IV	Front	1.23	5	-0.011	-0.0825	-0.204	154.3	1.69	0.01	Not required
	WLAN2.4GHz		0.461	5	-0.0568	0.0648	-0.204				



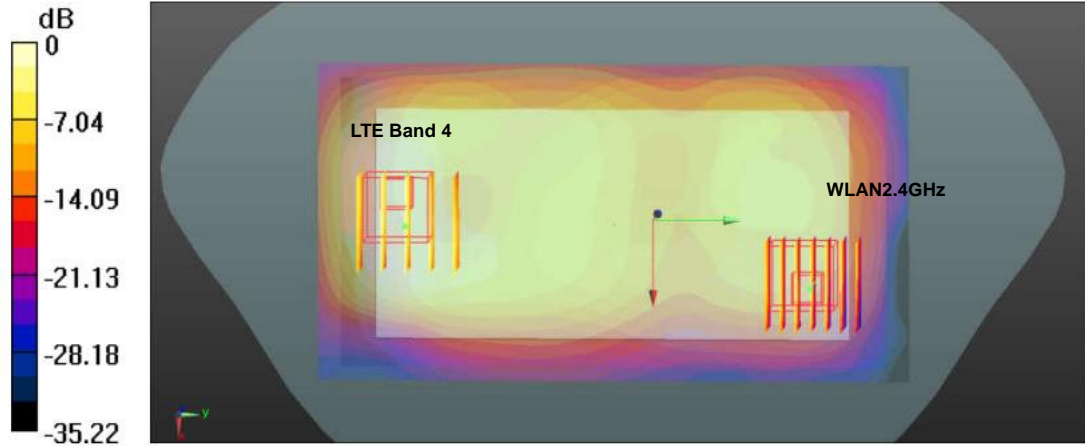
Case #06	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA IV(Cube0)	Back	1.199	5	-0.03	-0.0795	-0.204	148.4	1.82	0.02	Not required
	WLAN2.4GHz		0.623	5	0.0046	0.0648	-0.204				
	WCDMA IV(Cube1)	Back	0.999	5	-0.0285	-0.081	-0.204	149.5	1.62	0.01	Not required
	WLAN2.4GHz		0.623	5	0.0046	0.0648	-0.204				



Case #07	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 2	Back	1.275	5	-0.0365	-0.075	-0.205	145.7	1.90	0.02	Not required
	WLAN2.4GHz		0.623	5	0.0046	0.0648	-0.204				



Case #08	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 4	Back	1.016	5	0.0332	-0.323	-0.172	390.2	1.64	0.01	Not required
	WLAN2.4GHz		0.623	5	0.0046	0.0648	-0.204				



17. 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/ κ ^(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) κ is the coverage factor

Table 17.1. Standard Uncertainty for Assumed Distribution

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

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

Error Description	Uncertainty Value (±%)	Probability	Divisor	(Ci) 1g	(Ci) 10g	Standard Uncertainty (1g) (±%)	Standard Uncertainty (10g) (±%)
Measurement System							
Probe Calibration	6.0	N	1	1	1	6.0	6.0
Axial Isotropy	4.7	R	1.732	0.7	0.7	1.9	1.9
Hemispherical Isotropy	9.6	R	1.732	0.7	0.7	3.9	3.9
Boundary Effects	1.0	R	1.732	1	1	0.6	0.6
Linearity	4.7	R	1.732	1	1	2.7	2.7
System Detection Limits	1.0	R	1.732	1	1	0.6	0.6
Modulation Response	3.1	R	1.732	1	1	1.8	1.8
Readout Electronics	0.3	N	1	1	1	0.3	0.3
Response Time	0.0	R	1.732	1	1	0.0	0.0
Integration Time	2.6	R	1.732	1	1	1.5	1.5
RF Ambient Noise	3.0	R	1.732	1	1	1.7	1.7
RF Ambient Reflections	3.0	R	1.732	1	1	1.7	1.7
Probe Positioner	0.4	R	1.732	1	1	0.2	0.2
Probe Positioning	2.9	R	1.732	1	1	1.7	1.7
Max. SAR Eval.	2.0	R	1.732	1	1	1.2	1.2
Test Sample Related							
Device Positioning	3.4	N	1	1	1	3.4	3.4
Device Holder	3.4	N	1	1	1	3.4	3.4
Power Drift	5.0	R	1.732	1	1	2.9	2.9
Power Scaling	0.0	R	1.732	1	1	0.0	0.0
Phantom and Setup							
Phantom Uncertainty	6.1	R	1.732	1	1	3.5	3.5
SAR correction	0.0	R	1.732	1	0.84	0.0	0.0
Liquid Conductivity Repeatability	0.1	N	1	0.78	0.71	0.1	0.1
Liquid Conductivity (target)	5.0	R	1.732	0.78	0.71	2.3	2.0
Liquid Conductivity (mea.)	2.5	R	1.732	0.78	0.71	1.1	1.0
Temp. unc. - Conductivity	3.4	R	1.732	0.78	0.71	1.5	1.4
Liquid Permittivity Repeatability	0.10	N	1	0.23	0.26	0.0	0.0
Liquid Permittivity (target)	5.0	R	1.732	0.23	0.26	0.7	0.8
Liquid Permittivity (mea.)	2.5	R	1.732	0.23	0.26	0.3	0.4
Temp. unc. - Permittivity	0.59	R	1.732	0.23	0.26	0.1	0.1
Combined Std. Uncertainty						11.5%	11.4%
Coverage Factor for 95 %						K=2	K=2
Expanded STD Uncertainty						22.9%	22.8%

Table 17.2. Uncertainty Budget for frequency range 300 MHz to 3 GHz

18. References

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



Appendix A. Plots of System Performance Check

The plots are shown as follows.

System Check_Head_835MHz

DUT: D835V2-SN:4d162

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL_835_190524 Medium parameters used: $f = 835$ MHz; $\sigma = 0.91$ S/m; $\epsilon_r = 42.91$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C; Liquid Temperature : 22.5 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3191; ConvF(6.38, 6.38, 6.38); Calibrated: 2019.01.29;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn715; Calibrated: 2019.01.23
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 3.03 W/kg

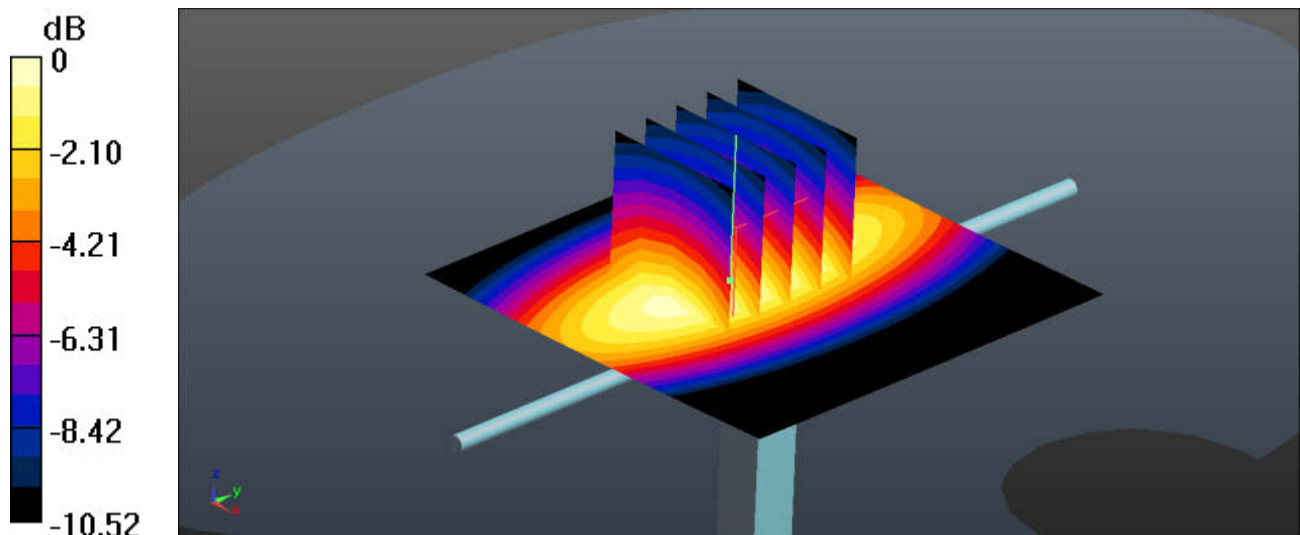
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 56.36 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 3.91 W/kg

SAR(1 g) = 2.58 W/kg; SAR(10 g) = 1.69 W/kg

Maximum value of SAR (measured) = 3.10 W/kg



0 dB = 3.03 W/kg

System Check_Head_1750MHz

DUT: D1750V2-SN:1137

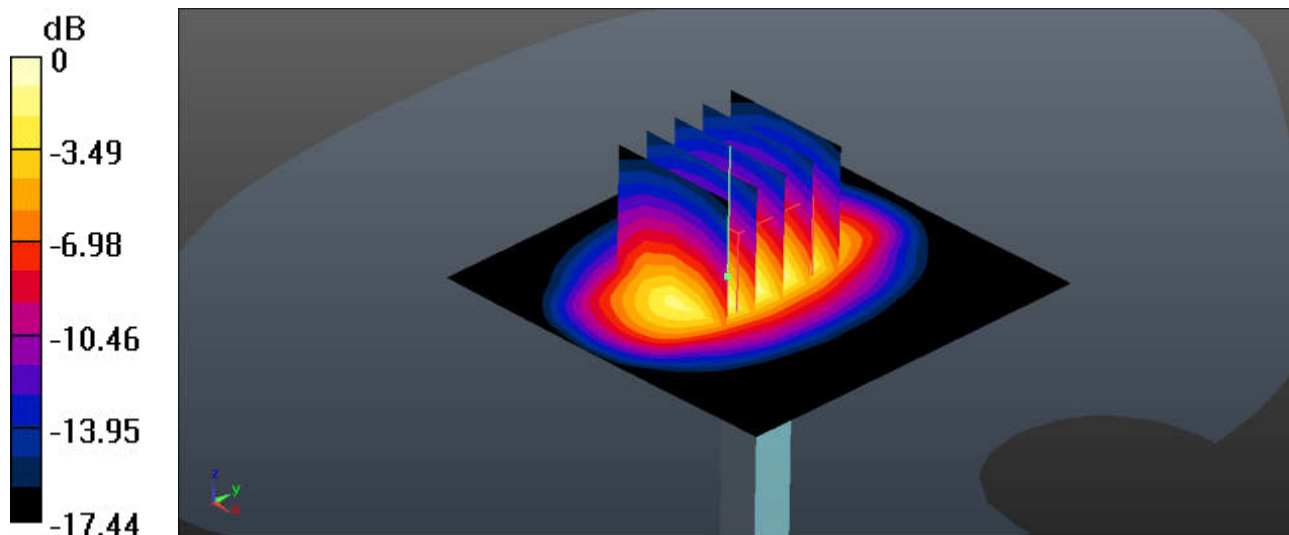
Communication System: UID 0, CW (0); Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: HSL_1750_190523 Medium parameters used: $f = 1750$ MHz; $\sigma = 1.404$ S/m; $\epsilon_r = 40.106$; $\rho = 1000$ kg/m³
Ambient Temperature : 23.4 °C; Liquid Temperature : 22.6 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3191; ConvF(5.51, 5.51, 5.51); Calibrated: 2019.01.29;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn715; Calibrated: 2019.01.23
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 12.6 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 88.02 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 17.9 W/kg
SAR(1 g) = 9.84 W/kg; SAR(10 g) = 5.22 W/kg
Maximum value of SAR (measured) = 12.4 W/kg



0 dB = 12.6 W/kg

System Check_Head_1900MHz

DUT: D1900V2-SN:5d182

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL_1900_190523 Medium parameters used: $f = 1900$ MHz; $\sigma = 1.445$ S/m; $\epsilon_r = 40.021$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.5 °C; Liquid Temperature : 22.6 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3191; ConvF(5.28, 5.28, 5.28); Calibrated: 2019.01.29;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn715; Calibrated: 2019.01.23
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 13.6 W/kg

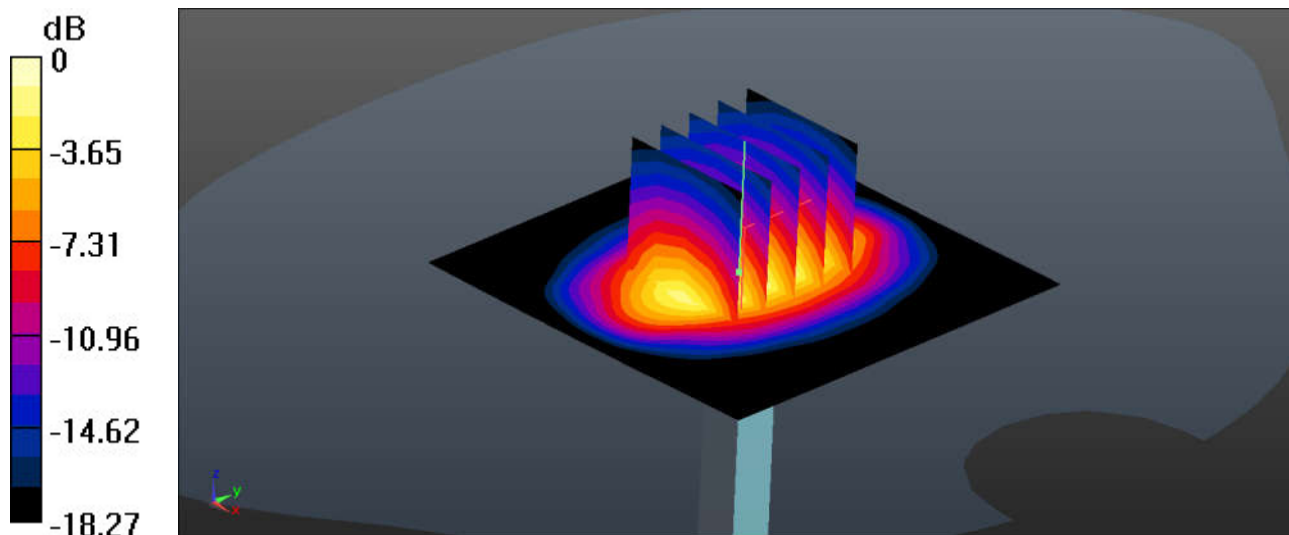
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 100.0 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 19.7 W/kg

SAR(1 g) = 10.6 W/kg; SAR(10 g) = 5.47 W/kg

Maximum value of SAR (measured) = 13.6 W/kg



System Check_Head_2450MHz

DUT: D2450V2-SN:736

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: HSL_2450_190527 Medium parameters used: $f = 2450$ MHz; $\sigma = 1.834$ S/m; $\epsilon_r = 39.654$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.5 °C; Liquid Temperature : 22.7 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3191; ConvF(4.69, 4.69, 4.69); Calibrated: 2019.01.29;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn715; Calibrated: 2019.01.23
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (81x81x1): Interpolated grid: dx=12mm, dy=12mm

Maximum value of SAR (interpolated) = 18.1 W/kg

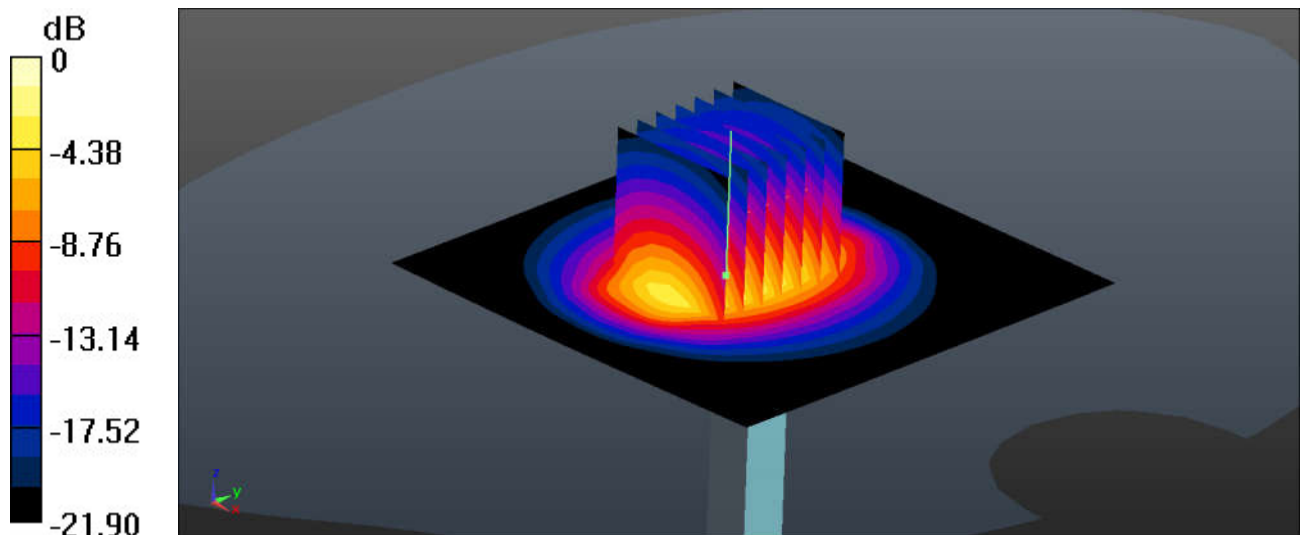
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 96.79 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 27.6 W/kg

SAR(1 g) = 13.6 W/kg; SAR(10 g) = 6.3 W/kg

Maximum value of SAR (measured) = 18.0 W/kg



0 dB = 18.1 W/kg

System Check_Head_2600MHz

DUT: D2600V2-SN:1070

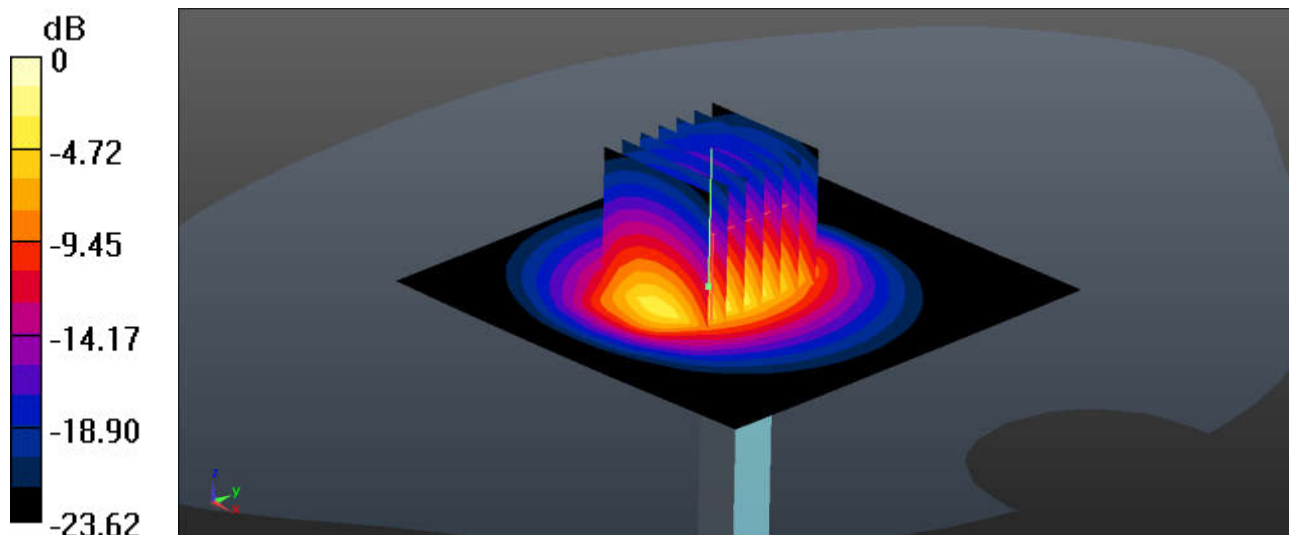
Communication System: UID 0, CW (0); Frequency: 2600 MHz; Duty Cycle: 1:1
 Medium: HSL_2600_190529 Medium parameters used: $f = 2600$ MHz; $\sigma = 1.992$ S/m; $\epsilon_r = 40.445$; $\rho = 1000$ kg/m³
 Ambient Temperature : 23.6 °C; Liquid Temperature : 22.7 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3191; ConvF(4.47, 4.47, 4.47); Calibrated: 2019.01.29;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn715; Calibrated: 2019.01.23
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (81x81x1): Interpolated grid: dx=12mm, dy=12mm
 Maximum value of SAR (interpolated) = 19.3 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 90.95 V/m; Power Drift = 0.04 dB
 Peak SAR (extrapolated) = 31.1 W/kg
SAR(1 g) = 14.4 W/kg; SAR(10 g) = 6.34 W/kg
 Maximum value of SAR (measured) = 19.4 W/kg



0 dB = 19.3 W/kg

System Check_Body_835MHz

DUT: D835V2-SN:4d162

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: MSL_835_190524 Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 1.011 \text{ S/m}$; $\epsilon_r = 56.243$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature : $23.5 \text{ }^\circ\text{C}$; Liquid Temperature : $22.4 \text{ }^\circ\text{C}$

DASY5 Configuration:

- Probe: ES3DV3 - SN3191; ConvF(6.17, 6.17, 6.17); Calibrated: 2019.01.29;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn715; Calibrated: 2019.01.23
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 3.28 W/kg

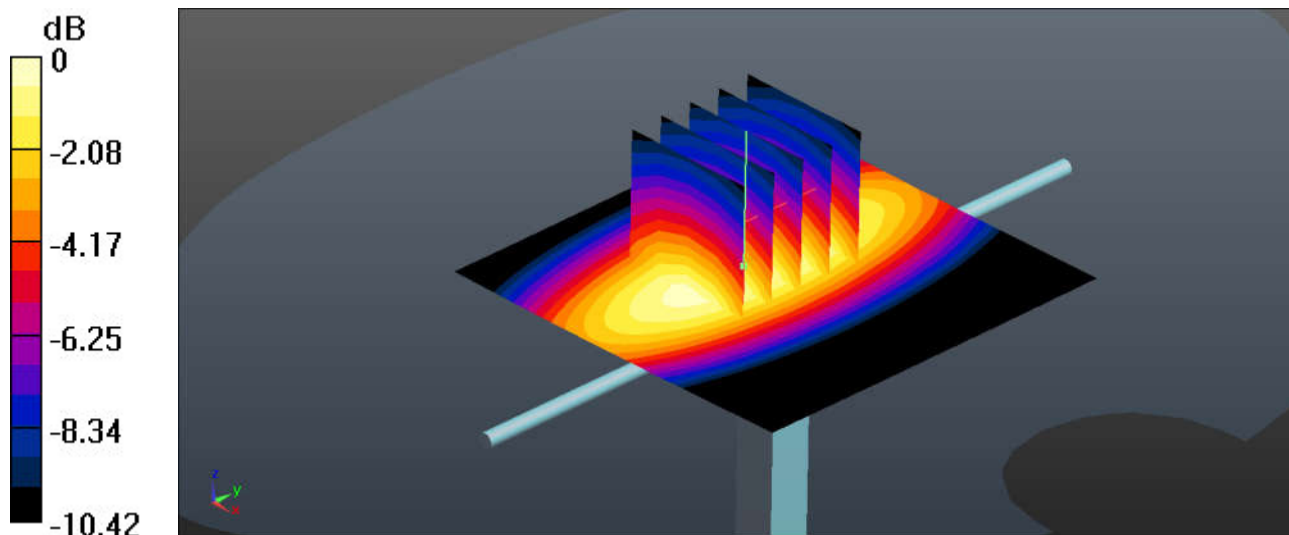
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 54.25 V/m ; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 4.10 W/kg

SAR(1 g) = 2.61 W/kg ; SAR(10 g) = 1.74 W/kg

Maximum value of SAR (measured) = 3.29 W/kg



0 dB = 3.28 W/kg

System Check_Body_1750MHz

DUT: D1750V2-SN:1137

Communication System: UID 0, CW (0); Frequency: 1750 MHz;Duty Cycle: 1:1

Medium: MSL_1750_190525 Medium parameters used: $f = 1750$ MHz; $\sigma = 1.529$ S/m; $\epsilon_r = 52.044$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.7 °C ; Liquid Temperature : 22.5 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3191; ConvF(5.2, 5.2, 5.2); Calibrated: 2019.01.29;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn715; Calibrated: 2019.01.23
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 13.4 W/kg

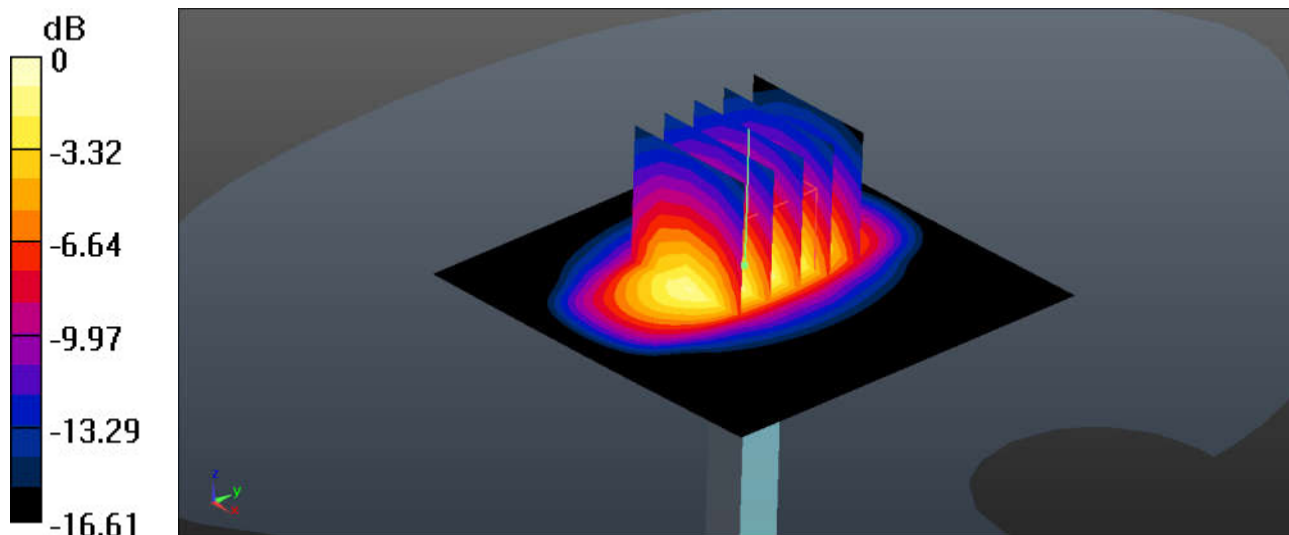
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 77.75 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 17.5 W/kg

SAR(1 g) = 9.91 W/kg; SAR(10 g) = 5.41 W/kg

Maximum value of SAR (measured) = 12.8 W/kg



0 dB = 13.4 W/kg

System Check_Body_1900MHz

DUT: D1900V2-SN:5d182

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: MSL_1900_190606 Medium parameters used: $f = 1900$ MHz; $\sigma = 1.525$ S/m; $\epsilon_r = 54.504$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.6 °C; Liquid Temperature : 22.4 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3191; ConvF(4.94, 4.94, 4.94); Calibrated: 2019.01.29;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn715; Calibrated: 2019.01.23
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 13.3 W/kg

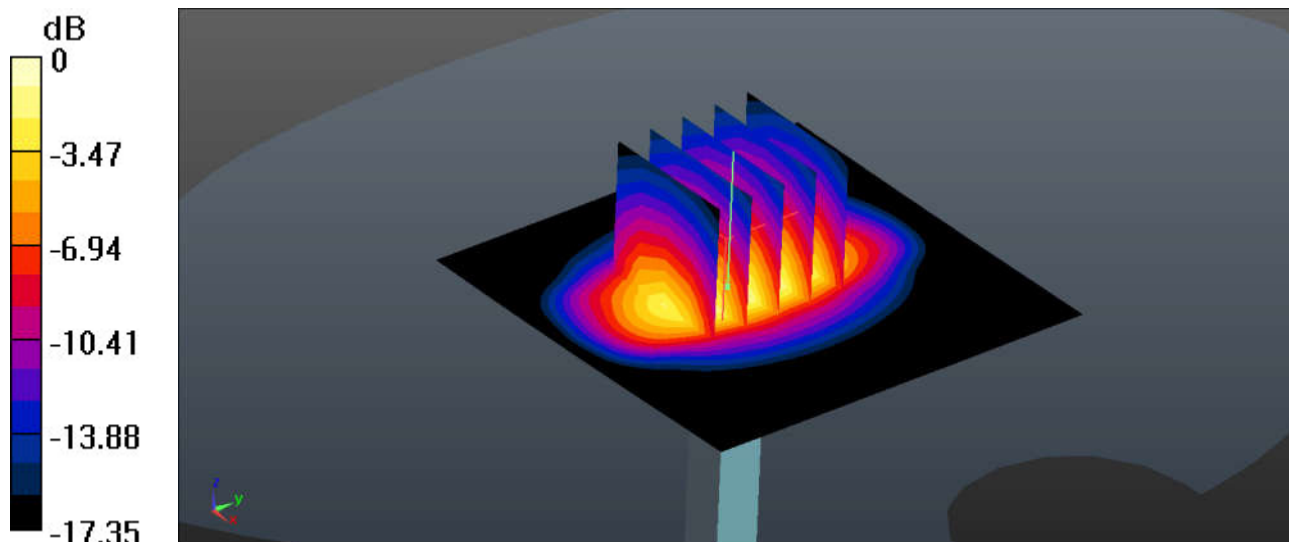
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 87.11 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 18.2 W/kg

SAR(1 g) = 10.5 W/kg; SAR(10 g) = 5.51 W/kg

Maximum value of SAR (measured) = 13.3 W/kg



0 dB = 13.3 W/kg

System Check_Body_2450MHz

DUT: D2450V2-SN:736

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: MSL_2450_190526 Medium parameters used: $f = 2450$ MHz; $\sigma = 1.949$ S/m; $\epsilon_r = 51.667$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.6 °C ; Liquid Temperature : 22.5 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3191; ConvF(4.56, 4.56, 4.56); Calibrated: 2019.01.29;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn715; Calibrated: 2019.01.23
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (81x81x1): Interpolated grid: dx=12mm, dy=12mm

Maximum value of SAR (interpolated) = 17.9 W/kg

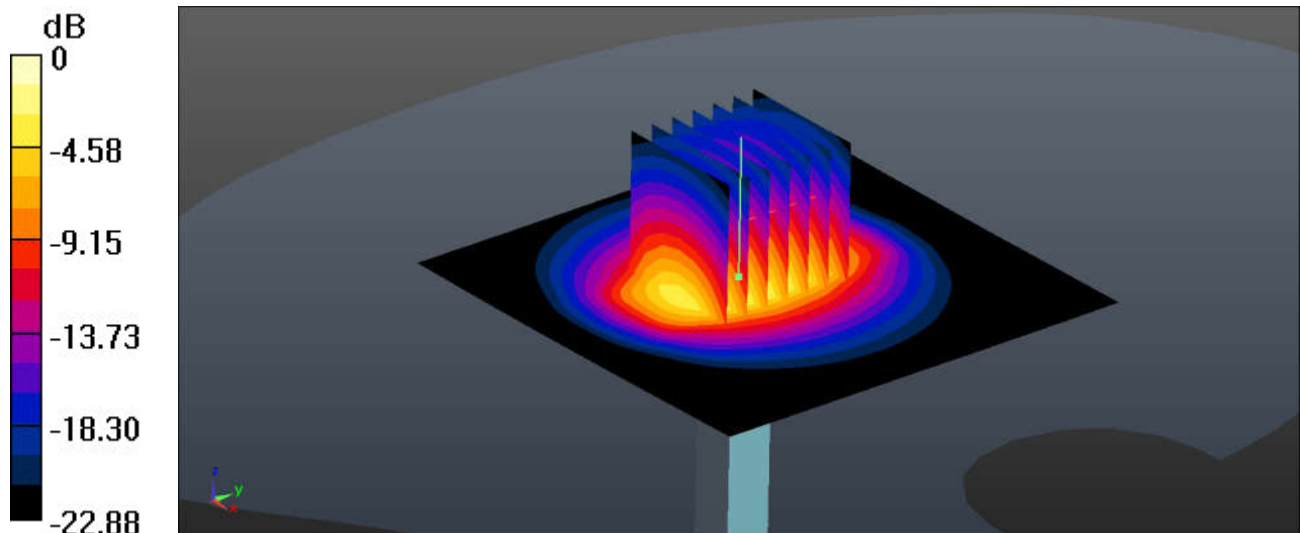
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 83.69 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 28.6 W/kg

SAR(1 g) = 13.3 W/kg; SAR(10 g) = 6.01 W/kg

Maximum value of SAR (measured) = 17.9 W/kg



0 dB = 17.9 W/kg

System Check_Body_2600MHz

DUT: D2600V2-SN:1070

Communication System: UID 0, CW (0); Frequency: 2600 MHz; Duty Cycle: 1:1

Medium: MSL_2600_190526 Medium parameters used: $f = 2600$ MHz; $\sigma = 2.192$ S/m; $\epsilon_r = 50.732$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.7 °C ; Liquid Temperature : 22.5 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3191; ConvF(4.38, 4.38, 4.38); Calibrated: 2019.01.29;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn715; Calibrated: 2019.01.23
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (81x81x1): Interpolated grid: dx=12mm, dy=12mm

Maximum value of SAR (interpolated) = 20.4 W/kg

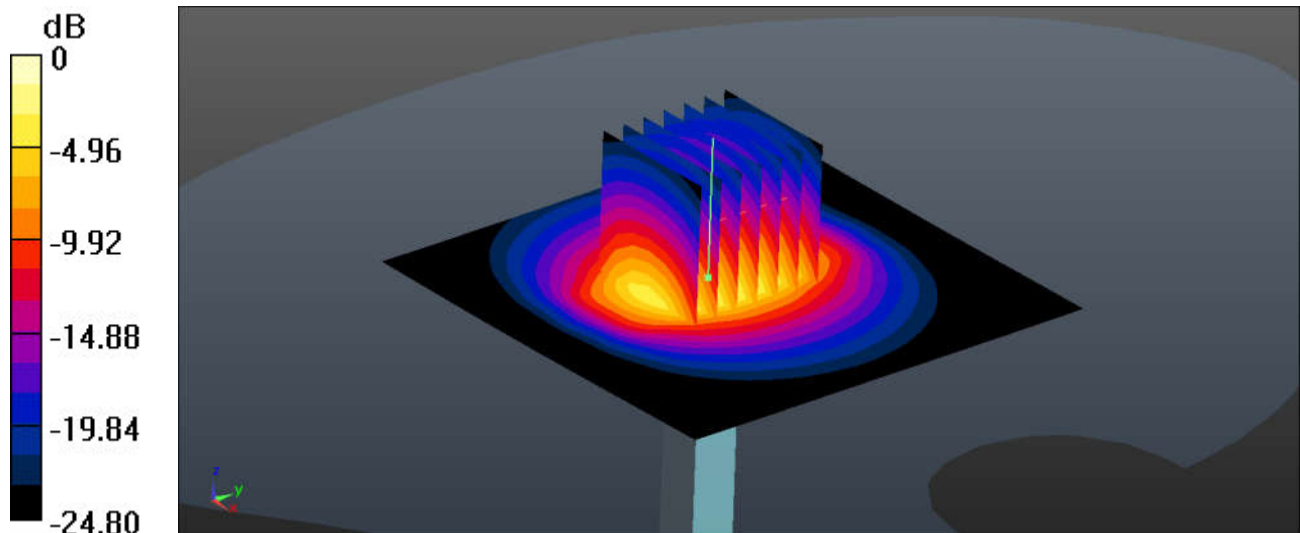
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 84.12 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 34.1 W/kg

SAR(1 g) = 14.7 W/kg; SAR(10 g) = 6.58 W/kg

Maximum value of SAR (measured) = 20.6 W/kg



0 dB = 20.4 W/kg



Appendix B. Plots of High SAR Measurement

The plots are shown as follows.

01_GSM850_GPRS(4 Tx slot)_Left Cheek_Ch189

Communication System: UID 0, GPRS/EDGE12 (0); Frequency: 836.4 MHz; Duty Cycle: 1:2.08
Medium: HSL_835_190524 Medium parameters used: $f = 836.4$ MHz; $\sigma = 0.912$ S/m; $\epsilon_r = 42.893$; $\rho = 1000$ kg/m³
Ambient Temperature : 23.4 °C; Liquid Temperature : 22.5 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3191; ConvF(6.38, 6.38, 6.38); Calibrated: 2019.01.29;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn715; Calibrated: 2019.01.23
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch189/Area Scan (71x121x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.348 W/kg

Ch189/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.947 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.398 W/kg
SAR(1 g) = 0.323 W/kg; SAR(10 g) = 0.247 W/kg
Maximum value of SAR (measured) = 0.353 W/kg

