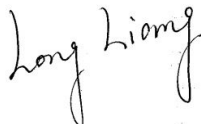


FCC SAR Test Report

APPLICANT : Bullitt Group
EQUIPMENT : Rugged Smart Phone
BRAND NAME : CAT
MODEL NAME : S42
FCC ID : ZL5S42E
STANDARD : FCC 47 CFR PART 2 (2.1093)
ANSI/IEEE C95.1-1992
IEEE 1528-2013

The product was received on Dec. 23, 2019 and testing was started from Mar. 22, 2020 and completed on Apr. 15, 2020. 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



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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA9D2309-01	Rev. 01	Initial issue of report	May 01, 2020

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Bullitt Group, Rugged Smart Phone, S42**, are as follows.

Highest Standalone 1g SAR Summary						Highest Simultaneous Transmission 1g SAR (W/kg)
Equipment Class	Frequency Band		Head (Separation 0mm)	Hotspot (Separation 10mm)	Body-worn (Separation 10mm)	
			1g SAR (W/kg)			
Licensed	GSM	GSM850	0.84	0.45	0.45	1.54
		GSM1900	0.98	0.63	0.63	
	WCDMA	Band V	0.90	0.34	0.34	
		Band IV	1.10	1.07	1.07	
		Band II	1.11	1.05	1.05	
	LTE	Band 5	0.83	0.36	0.36	
		Band 4	1.08	1.08	1.08	
		Band 2	0.85	1.09	1.09	
		Band 7	0.97	1.07	1.07	
DTS	WLAN	2.4GHz WLAN	0.64	0.18	0.18	1.54
NII		5GHz WLAN	0.55	0.44	0.44	1.53
DSS	Bluetooth	Bluetooth	0.14	<0.10	<0.10	1.19
Highest 10g SAR Summary						
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg) (Separation 0mm)			
NII	WLAN	5GHz WLAN	0.84			
Date of Testing:			2020/3/22~2020/4/15			

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

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.	FCC Designation No.	FCC Test Firm Registration No.
	CN1256	421272

Applicant	
Company Name	Bullitt Group
Address	One Valpy, Valpy Street, Reading, Berkshire, England RG1 1AR

Manufacturer	
Company Name	Bullitt Group
Address	One Valpy, Valpy Street, Reading, Berkshire, England RG1 1AR

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 D05A Rel.10 LTE SAR Test Guidance v01r02
- FCC KDB 941225 D06 Hotspot Mode SAR v02r01



4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	Rugged Smart Phone
Brand Name	CAT
Model Name	S42
FCC ID	ZL5S42E
IMEI Code	SIM1: 354401110002989 SIM2: 354401110009984
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 WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5805 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+ LTE: QPSK, 16QAM, 64QAM WLAN 2.4GHz : 802.11b/g/n HT20 WLAN 5GHz : 802.11a/n/ac HT20/HT40/VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE NFC:ASK
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Production Unit
Remark: 802.11n-HT40 is not supported in 2.4GHz WLAN. - WLAN operation in 5600 MHz ~ 5650 MHz is notched. - 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. - This device WLAN 2.4GHz supports hotspot operation and Bluetooth support tethering applications. - This device 2.4GHz WLAN/5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WiFi Direct (GC/GO), and 5.3GHz / 5.5GHz supports WiFi Direct (GC only). - 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. - This device has two WWAN transmit antennas. WWAN bottom antenna is located at the bottom edge of the device, and WWAN top antenna is located at the top edge of the device which can refer to antenna location chapter. Top and Bottom antenna support the same WWAN frequency bands, and they can't transmit simultaneously. - ACC((Accelerative) sensor implanted and when the mobile phone get stressed by accelerative forces, ACC sensor would detect the change of the coordinate axis and CPU calculates results and system will invoke correspondent power table. - For WWAN Top antenna, when the phone is in talking mode and receiver worked, then power reduction will be implemented immediately at GSM850/1900, WCDMA Band II/IV/V and LTE Band 2/4/5/7. - When the phone is in talking mode and receiver not worked, then receiver off power will be implemented immediately	



- at WCDMA band II/IV, LTE band 4/7 for bottom antenna and LTE band 7 for top antenna.
12. When hotspot mode is enabled, power reduction will be activated to limit the maximum power of WCDMA band II/IV, LTE band 4/7 for bottom antenna and LTE band 7 for top antenna.

4.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05																																																																													
FCC ID	ZL5S42E																																																																												
Equipment Name	Rugged Smart 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 / 64QAM																																																																												
LTE Voice / Data requirements	Voice and Data																																																																												
LTE Release Version	R11, Cat 6																																																																												
CA Support	Yes, Downlink																																																																												
LTE MPR permanently built-in by design	<table><tr><th colspan="8">Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3</th></tr><tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th><th rowspan="2">MPR (dB)</th></tr><tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr><tr><td>QPSK</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 1</td></tr><tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr><tr><td>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr><tr><td>64 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 2</td></tr><tr><td>64 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 3</td></tr><tr><td>256 QAM</td><td colspan="6">≥ 1</td><td>≤ 5</td></tr></table>							Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3								Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})						MPR (dB)	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1	16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1	16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2	64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3	256 QAM	≥ 1						≤ 5
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QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1																																																																						
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1																																																																						
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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.																																																																												
Power reduction applied to satisfy SAR compliance	Yes, 1. For WWAN Top antenna, when the phone is in talking mode and receiver worked, the EUT will invoke corresponding work scenarios power level. 2. When hotspot mode is enabled, power reduction will be activated to limit the maximum power of WCDMA band II/IV, LTE band 4/7 for bottom antenna and LTE band 7 for top antenna.																																																																												
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations and the detail power verification please referred to section 13.																																																																												
LTE Carrier Aggregation Additional Information	1. This device supports Carrier Aggregation on downlink only for inter and intra band, Uplink CA is not supported. 2. This device supports maximum of 2 carriers in the downlink. Additional following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICl, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA																																																																												

Transmission (H, M, L) channel numbers and frequencies in each LTE band												
LTE Band 2												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900
LTE Band 4												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745
LTE Band 5												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829				
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5				
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:

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

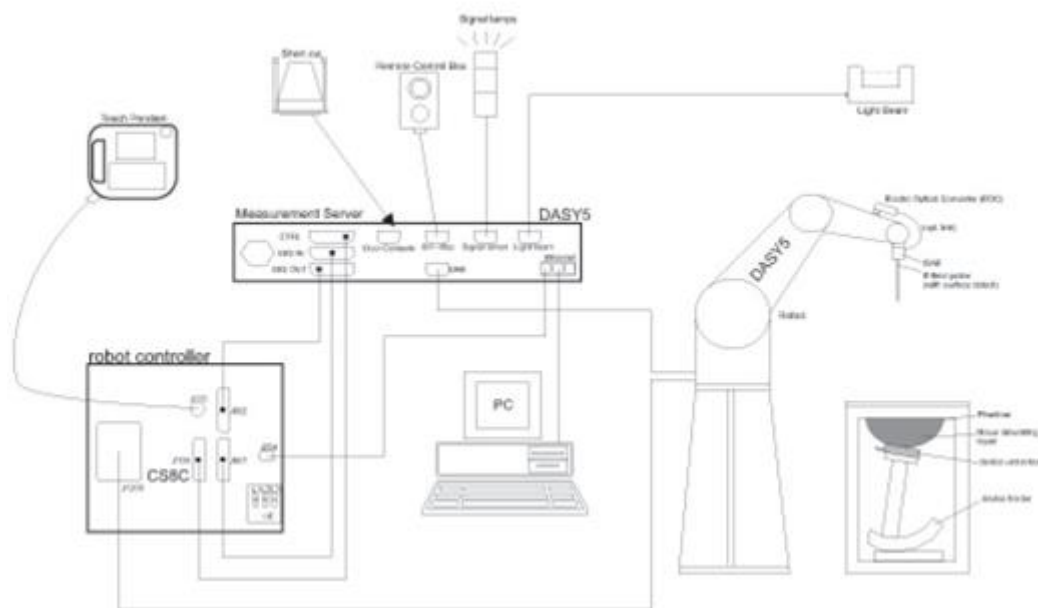
SAR is expressed in units of Watts per kilogram (W/kg)

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

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.

<EX3DV4 Probe>

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

7.2 Data Acquisition Electronics (DAE)

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

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



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	$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
Maximum area scan spatial resolution: Δx_{Area} , Δy_{Area}	≤ 2 GHz: ≤ 15 mm $2 - 3$ GHz: ≤ 12 mm	$3 - 4$ GHz: ≤ 12 mm $4 - 6$ GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be $\leq$ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

8.4 Zoom Scan

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

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

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

8.5 Volume Scan Procedures

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

8.6 Power Drift Monitoring

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

9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	835MHz System Validation Kit	D835V2	4d162	Dec. 05, 2018	Dec. 04, 2021
SPEAG	1750MHz System Validation Kit	D1750V2	1137	Jul. 30, 2018	Jul. 29, 2021
SPEAG	1900MHz System Validation Kit	D1900V2	5d182	Dec. 07, 2018	Dec. 06, 2021
SPEAG	2450MHz System Validation Kit	D2450V2	924	Apr. 15, 2019	Apr. 14, 2022
SPEAG	2600MHz System Validation Kit	D2600V2	1070	Dec. 07, 2018	Dec. 06, 2021
SPEAG	5000MHz System Validation Kit	D5GHzV2	1167	Aug. 03, 2018	Aug. 02, 2021
SPEAG	Data Acquisition Electronics	DAE4	1356	Oct. 16, 2019	Oct. 15, 2020
SPEAG	Dosimetric E-Field Probe	EX3DV4	7577	Feb. 03, 2020	Feb. 02, 2021
SPEAG	SAM Twin Phantom	QD 000 P40 CD	TP-1576	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CD	TP-1575	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio communication analyzer	MT8820C	6201300653	Jul. 22, 2019	Jul. 21, 2020
Anritsu	Radio communication analyzer	MT8821C	6201588572	Dec. 26, 2019	Dec. 25, 2020
Agilent	Wireless Communication Test Set	E5515C	MY50267224	Jul. 22, 2019	Jul. 21, 2020
SPEAG	Dielectric Assessment KIT	DAK-3.5	1071	Oct. 28, 2019	Oct. 27, 2020
Agilent	Signal Generator	N5181A	MY50145381	Dec. 26, 2019	Dec. 25, 2020
Anritsu	Power Sensor	MA2411B	1306099	Jul. 22, 2019	Jul. 21, 2020
Anritsu	Power Meter	ML2495A	1349001	Jul. 22, 2019	Jul. 21, 2020
Anritsu	Power Sensor	MA2411B	1207253	Dec. 26, 2019	Dec. 25, 2020
Anritsu	Power Meter	ML2495A	1218010	Dec. 26, 2019	Dec. 25, 2020
R&S	CBT BLUETOOTH TESTER	CBT	100963	Dec. 26, 2019	Dec. 25, 2020
R&S	Spectrum Analyzer	FSP7	100818	Jul. 22, 2019	Jul. 21, 2020
LKM electronic	Hygrometer	DTM3000	3241	Jul. 25, 2019	Jul. 24, 2020
Anymetre	Thermo-Hygrometer	JR593	2015030904	Apr. 22, 2019	Apr. 21, 2020
ARRA	Power Divider	A3200-2	N/A	Note 1	
PASTERNAK	Dual Directional Coupler	PE2214-10	N/A	Note 1	
Agilent	Dual Directional Coupler	778D	50422	Note 1	
AR	Amplifier	5S1G4	0333096	Note 1	
mini-circuits	Amplifier	ZVE-3W-83+	599201528	Note 1	
MCL	Attenuation1	BW-S10W5	N/A	Note 1	
Weinschel	Attenuation2	3M-20	N/A	Note 1	
Zhongjilianhe	Attenuation3	MVE2214-03	N/A	Note 1	

Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check source.
2. Referring to KDB 865664 D01v01r04, the dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval.
3. The justification data of dipole can be found in appendix C. The return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration.

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.

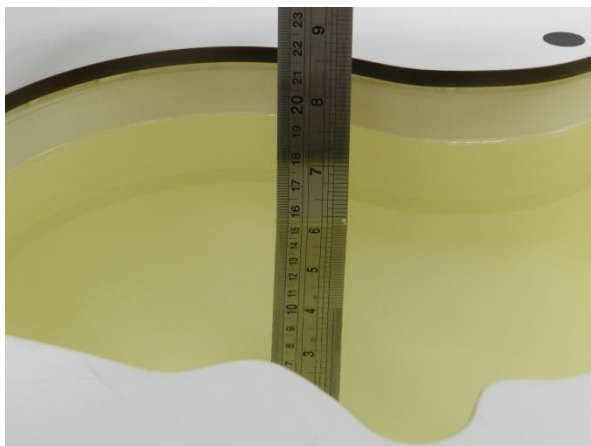


Fig 10.1 Photo of Liquid Height for Head SAR



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

Simulating Liquid for 5GHz, Manufactured by SPEAG

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

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Liquid Temp. (°C)	Conductivity (σ)	Permittivity (ϵ_r)	Conductivity Target (σ)	Permittivity Target (ϵ_r)	Delta (σ) (%)	Delta (ϵ_r) (%)	Limit (%)	Date
835	22.4	0.902	40.749	0.90	41.50	0.22	-1.81	±5	2020/3/22
1750	22.5	1.385	39.563	1.37	40.10	1.09	-1.34	±5	2020/3/27
1750	22.7	1.402	41.374	1.37	40.10	2.34	3.18	±5	2020/4/10
1900	22.6	1.449	39.097	1.40	40.00	3.50	-2.26	±5	2020/3/28
1900	22.6	1.448	39.145	1.40	40.00	3.43	-2.14	±5	2020/4/11
2450	22.7	1.810	37.626	1.80	39.20	0.56	-4.02	±5	2020/3/29
2450	22.7	1.829	40.081	1.80	39.20	1.61	2.25	±5	2020/4/15
2600	22.9	2.053	38.335	1.96	39.00	4.74	-1.71	±5	2020/3/26
2600	22.5	2.056	37.587	1.96	39.00	4.90	-3.62	±5	2020/4/9
5250	22.7	4.767	36.980	4.71	35.95	1.21	2.87	±5	2020/4/2
5250	22.6	4.748	36.881	4.71	35.95	0.81	2.59	±5	2020/4/12
5600	22.8	4.954	35.793	5.07	35.50	-2.29	0.83	±5	2020/4/1
5600	22.8	5.182	36.105	5.07	35.50	2.21	1.70	±5	2020/4/13
5750	22.9	5.119	35.497	5.22	35.35	-1.93	0.42	±5	2020/4/3
5750	22.4	5.357	35.815	5.22	35.35	2.62	1.32	±5	2020/4/15

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)	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 (%)
2020/3/22	835	250	4d162	7577	1356	2.53	9.61	10.12	5.31
2020/3/27	1750	250	1137	7577	1356	9.46	36.50	37.84	3.67
2020/4/10	1750	250	1137	7577	1356	9.64	36.50	38.56	5.64
2020/3/28	1900	250	5d182	7577	1356	10.60	39.60	42.4	7.07
2020/4/11	1900	250	5d182	7577	1356	10.50	39.60	42	6.06
2020/3/29	2450	250	924	7577	1356	12.80	52.10	51.2	-1.73
2020/4/15	2450	250	924	7577	1356	13.20	52.10	52.8	1.34
2020/3/26	2600	250	1070	7577	1356	14.90	58.10	59.6	2.58
2020/4/9	2600	250	1070	7577	1356	15.30	58.10	61.2	5.34
2020/4/2	5250	100	1167	7577	1356	7.89	77.00	78.9	2.47
2020/4/12	5250	100	1167	7577	1356	7.95	77.00	79.5	3.25
2020/4/1	5600	100	1167	7577	1356	8.35	80.80	83.5	3.34
2020/4/13	5600	100	1167	7577	1356	7.85	80.80	78.5	-2.85
2020/4/3	5750	100	1167	7577	1356	7.77	76.90	77.7	1.04
2020/4/15	5750	100	1167	7577	1356	8.16	76.90	81.6	6.11

<10g SAR>

Date	Frequency (MHz)	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 (%)
2020/4/2	5250	100	1167	7577	1356	2.03	22.00	20.3	-7.73
2020/4/12	5250	100	1167	7577	1356	2.22	22.00	22.2	0.91
2020/4/1	5600	100	1167	7577	1356	2.15	23.20	21.5	-7.33
2020/4/13	5600	100	1167	7577	1356	2.13	23.20	21.3	-8.19

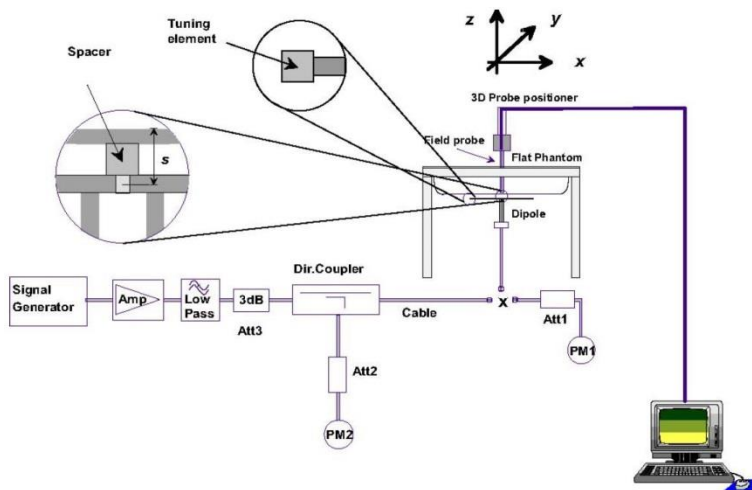


Fig 10.3.1 System Performance Check Setup



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.

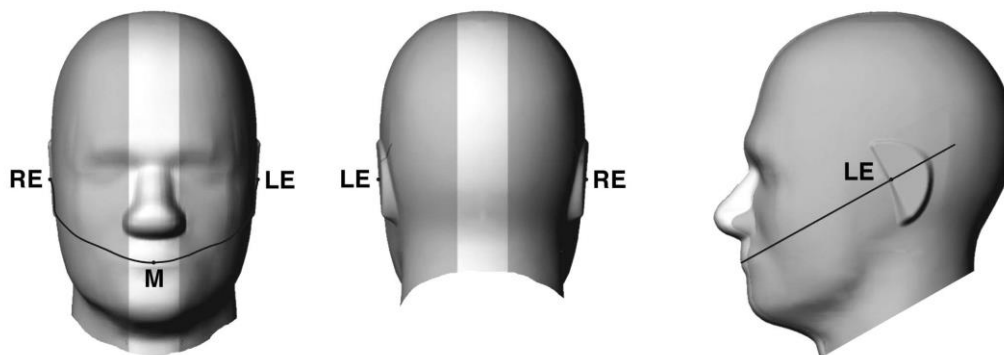


Fig 11.1.1 Front, back, and side views of SAM twin phantom

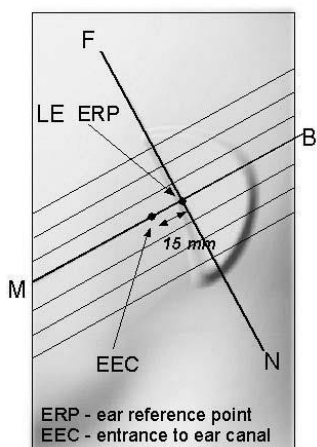


Fig 11.1.2 Close-up side view of phantom showing the ear region.

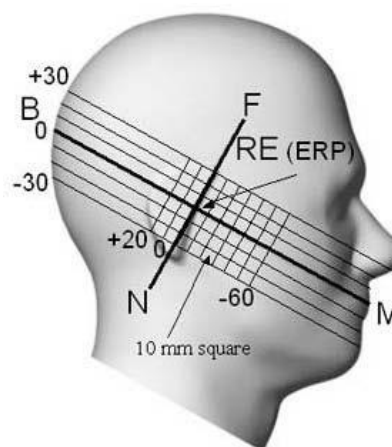


Fig 11.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

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.

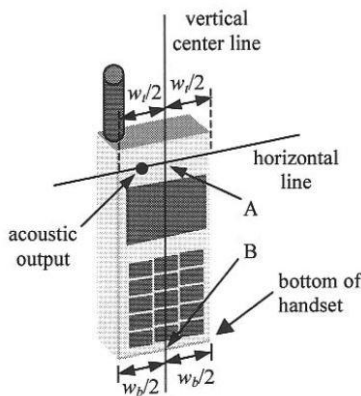


Fig 11.2.1 Handset vertical and horizontal reference lines—"fixed case"

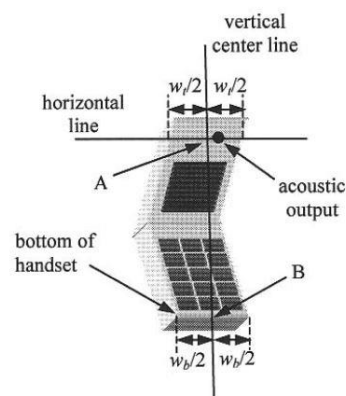


Fig 11.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

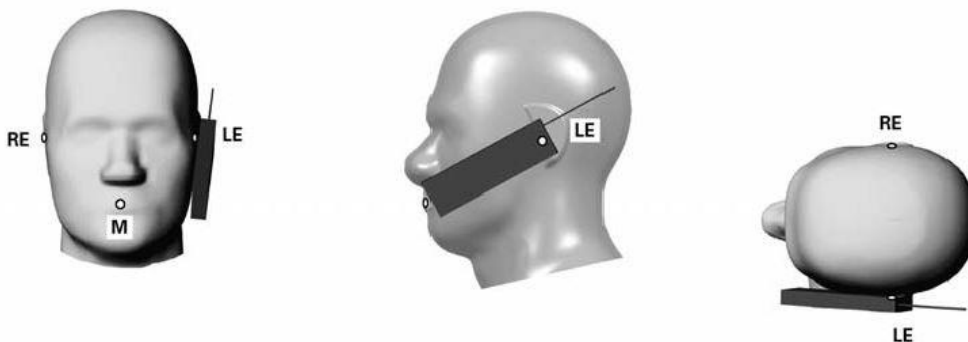


Fig 11.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

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

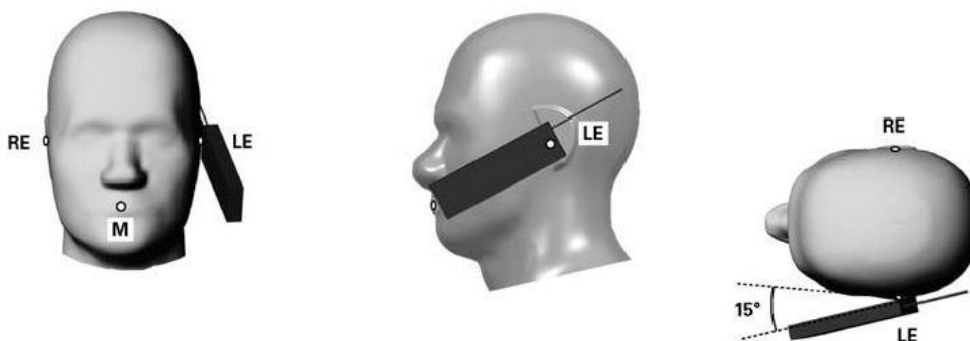


Fig 11.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

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 $> 1.2 \text{ W/kg}$, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a handset attached to the handset.

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

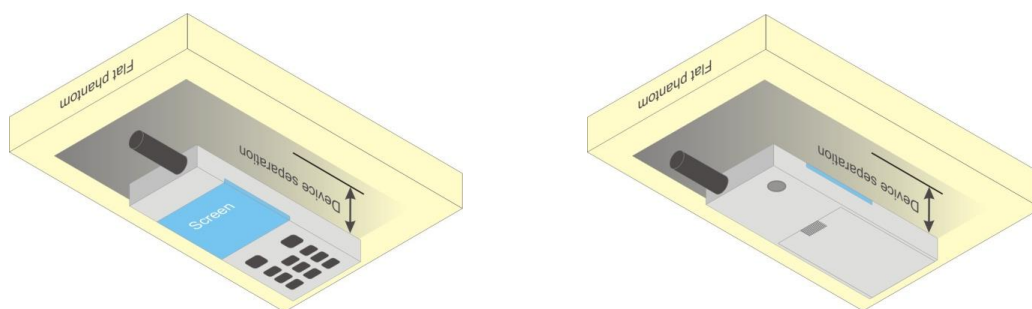


Fig 11.4 Body Worn Position

11.5 Product Specific 10g SAR Exposure

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

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

11.6 Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 v02r01 where SAR test considerations for handsets ($L \times W \geq 9$ 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)

The detailed conducted power table can refer to Appendix E.

<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.

<WCDMA Conducted Power>

1. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
2. The procedures in KDB 941225 D01v03r01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode(s) to determine SAR test exclusion.
3. For HSPA+ devices supporting 16 QAM in the uplink, power measurements procedure is according to the configurations in Table C.11.1.4 of 3GPP TS 34.121-1.
4. For DC-HSDPA, the device was configured according to the H-Set 12, Fixed Reference Channel (FRC) configuration in Table C.8.1.12 of 3GPP TS 34.121-1, with the primary and the secondary serving HS-DSCH Cell enabled during the power measurement.

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

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

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

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note 1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and $\Delta_{NACK} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$, and $\Delta_{CQI} = 24/15$ with $\beta_{HS} = 24/15 * \beta_c$.

Note 3: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{HS}/\beta_c = 24/15$. For all other combinations of 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-TFCI
 - viii. Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI
- d. The transmitted maximum output power was recorded.

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

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note 1)	β_{ec}	β_{ed} (Note 4) (Note 5)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/25	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1} : 47/15 β_{ed2} : 47/15	4	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 $\beta_d/\beta_c = 12/15$, $\beta_{hs}/\beta_c = 24/15$. 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 Cycle 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

HSPA+ 3GPP release 7 (uplink category 7) 16QAM, 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 = 5.2E:HSPA+:UL with 16QAM
 - 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, C11.1.4, quoted from the TS 34.121-1 s5.2E
 - iii. Set Channel Params
 - iv. Set Cell Power = -86 dBm
 - v. Set Channel Type = HSPA
 - vi. Set UE Target Power =21 dBm
 - vii. Power Ctrl Mode= All Up Bits
 - viii. Set Manual Uplink DPCH Bc/Bd = Manual
 - ix. Set Manual Uplink DPCH Bc and Bd=15,15(for 34.121-1 v8.10.0 table C11.1.4 sub-test 1)
 - x. Set HSPA Conn DL Channel Levels
 - xi. Set HS-SCCH Configs
 - xii. Set RB Test Mode Setup
 - xiii. Set Common HSUPA Parameters
 - xiv. Set Serving Grant
 - xv. Confirm that E-TFCI is equal to the target E-TFCI of 105 for sub-test 1, and other subtest's E-TFCI
- d. The transmitted maximum output power was recorded.

Table C.11.1.4: β values for transmitter characteristics tests with HS-DPCCH and E-DCH with 16QAM

Sub-test	β_c (Note 3)	β_d	β_{HS} (Note 1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	β_{ed1} : 30/15 β_{ed2} : 30/15	β_{ed3} : 24/15 β_{ed4} : 24/15	3.5	2.5	14	105	105

Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$.

Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).

Note 3: DPDCH is not configured, therefore the β_c is set to 1 and $\beta_d = 0$ by default.

Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signaled to use the extrapolation algorithm.

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 / HSPA+ is $\leq \frac{1}{4}$ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA / HSPA+ to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA / HSPA+) are less than $\frac{1}{4}$ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+.

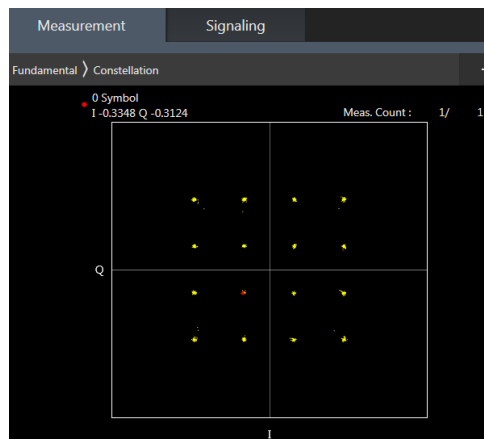
<LTE Conducted Power>

General Note:

1. Anritsu MT8821C 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 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.
9. According to 2017 TCB workshop, for 64QAM and 16QAM should be verified by checking the signal constellation with a call box to avoid incorrect maximum power levels due to MPR and other requirements associated with signal modulation, and the following figure is taken from the "Fundamental Measurement >> Modulation Analysis >> constellation" mode of the device connect to the MT8821C base station, therefore, the device 64QAM and 16QAM signal modulation are correct.



64QAM



16QAM

<LTE Carrier Aggregation>
General Note:

1. This device supports Carrier Aggregation on downlink only for inter and intra band, Uplink CA is not supported. For the device supports combination bands and configurations are according to 3GPP.
2. In applying the existing power measurement procedures of KDB 941225 D05A for DL CA SAR test exclusion, only the subset with the largest number of combinations of frequency bands and CCs in each row need combination, and for this device that all the configurations were choose to power measurement.
3. All permutations exist. No restrictions on Pcell & Scell combinations.

Index	2CC
2CC #1	CA_2A-5A
2CC #2	CA_2A-7A
2CC #3	CA_4A-5A
2CC #4	CA_4A-7A
2CC #5	CA_5A-7A
2CC #6	CA_2C
2CC #7	CA_5B
2CC #8	CA_7B
2CC #9	CA_7C
2CC #10	CA_2A-2A
2CC #11	CA_5A-5A
2CC #12	CA_7A-7A

LTE Carrier Aggregation Conducted Power (Downlink)

General Note:

- i. According to KDB941225 D05A v01r02, uplink maximum output power measurement with downlink carrier aggregation active should be measured, using the highest output channel measured without downlink carrier aggregation, to confirm that uplink maximum output power with downlink carrier aggregation active remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output measured without downlink carrier aggregation active.
- ii. Uplink maximum output power with downlink carrier aggregation active does not show more than ¼ dB higher than the maximum output power without downlink carrier aggregation active, therefore SAR evaluation with downlink carrier aggregation active can be excluded.
- iii. For power measurement were control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.
- iv. Selected highest measured power when downlink carrier aggregation is inactive for conducted power comparison with downlink carrier aggregation is active, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive.
- v. For Intra-band, contiguous CA, the downlink channels selected to perform the uplink power measurement must satisfy 3GPP channel spacing (5.4.1A of 3GPP TS 36.521 or equivalent) and channel bandwidth (5.4.2A) requirements.

$$\text{Nominal channel spacing} = \left\lceil \frac{BW_{\text{Channel}(1)} + BW_{\text{Channel}(2)} - 0.1|BW_{\text{Channel}(1)} - BW_{\text{Channel}(2)}|}{0.6} \right\rceil 0.3 \text{ [MHz]}$$

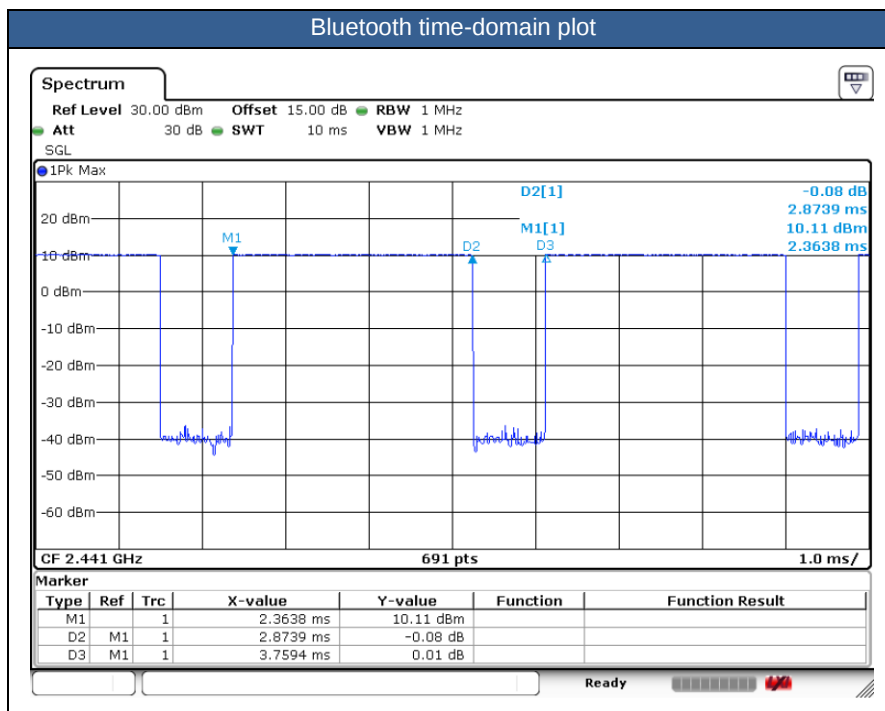
<WLAN Conducted Power>**General Note:**

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.

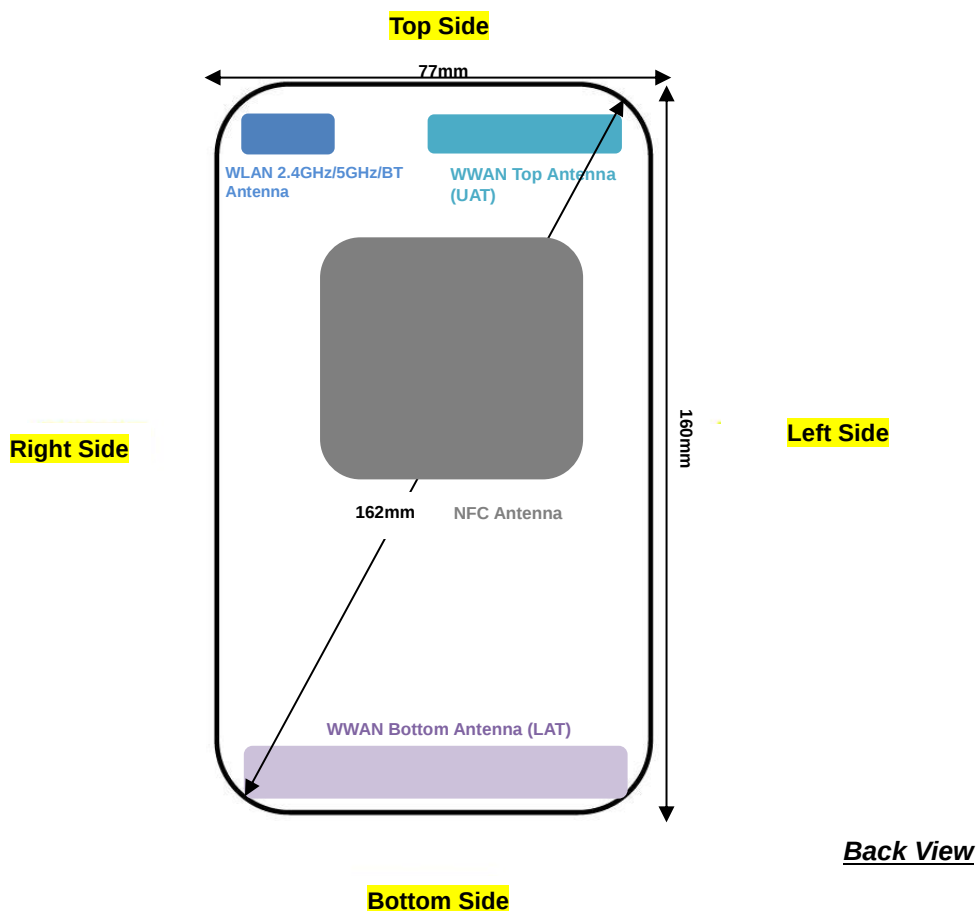
<2.4GHz Bluetooth>

General Note:

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps, due to its highest average power.
2. The Bluetooth duty cycle is 76.45% 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.



13. Antenna Location



Antenna	Support Band
WWAN Top Antenna (UAT)	GSM: 850 / 1900 WCDMA: B2 / B4 / B5 LTE: B2 / B4 / B5 / B7
WWAN Bottom Antenna (LAT)	GSM: 850 / 1900 WCDMA: B2 / B4 / B5 LTE: B2 / B4 / B5 / B7
WLAN 2.4GHz/5GHz/BT Antenna	WLAN 2.4GHz WLAN 5GHz Bluetooth
NFC Antenna	NFC

Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Top Antenna(UAT)	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm
WWAN Bottom Antenna(LAT)	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm	≤ 25mm
WLAN 2.4GHz/5GHz/BT	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	>25mm

Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Top Antenna(UAT)	Yes	Yes	Yes	No	Yes	Yes
WWAN Bottom Antenna(LAT)	Yes	Yes	No	Yes	Yes	Yes
WLAN 2.4GHz/5GHz/BT	Yes	Yes	Yes	No	Yes	No

General Note:

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

14. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
 - a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
 - b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
 - c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
 - d. For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
2. Per KDB 648474 D04v01r03, when the reported SAR for a body-worn accessory measured without a headset connected to the handset is ≤ 1.2 W/kg, SAR testing with a headset connected to the handset is not required.
3. This device has two WWAN transmit antennas. WWAN bottom antenna is located at the bottom edge of the device, and WWAN top antenna is located at the top edge of the device which can refer to antenna location chapter. Top and Bottom antenna support the same WWAN frequency bands, and they can't transmit simultaneously.
4. ACC(Accelerative) sensor implanted and when the mobile phone get stressed by accelerative forces, ACC sensor would detect the change of the coordinate axis and CPU calculates results and system will invoke correspondent power table.
5. For WWAN Top antenna, when the phone is in talking mode and receiver worked, the EUT will invoke corresponding work scenarios power level.
6. For WWAN Top antenna, when the phone is in talking mode and receiver worked, then power reduction will be implemented immediately at GSM850/1900, WCDMA Band II/IV/V and LTE Band 2/4/5/7.
7. When the phone is in talking mode and receiver not worked, then receiver off power will be implemented immediately at WCDMA band II/IV, LTE band 4/7 for bottom antenna and LTE band 7 for top antenna.
8. When hotspot mode is enabled, power reduction will be activated to limit the maximum power of WCDMA band II/IV, LTE band 4/7 for bottom antenna and LTE band 7 for top antenna.
9. 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. Although hotspot reduced power, extremity power invoke receiver off power and with the same power level of hotspot reduced power. So, in this report all the hotspot mode results including scaled power SAR are < 1.2W/kg.
10. For 5.3GHz / 5.5GHz WLAN product specific SAR is necessary too, due to an overall diagonal dimension is > 16cm.
11. UAT means top antenna, LAT means bottom antenna.

GSM Note:

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

WCDMA 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 / HSPA+ is $\leq \frac{1}{4}$ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA / HSPA+ to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA / HSPA+) are less than $\frac{1}{4}$ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+.

LTE Note:

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

WLAN/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.
5. Bluetooth and WLAN share the same antenna, with similar work frequency, so for Bluetooth SAR testing, we chose the worst position of WLAN to perform.



14.1 Head SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
01	GSM850_UAT	GPRS(4 Tx slots)	Right Cheek	Reduced	128	824.2	24.34	25.00	1.164	0.12	0.638	0.743
	GSM850_UAT	GPRS(4 Tx slots)	Right Tilted	Reduced	128	824.2	24.34	25.00	1.164	0.01	0.550	0.640
	GSM850_UAT	GPRS(4 Tx slots)	Left Cheek	Reduced	128	824.2	24.34	25.00	1.164	0.13	0.718	0.836
	GSM850_UAT	GPRS(4 Tx slots)	Left Tilted	Reduced	128	824.2	24.34	25.00	1.164	0.15	0.689	0.802
	GSM850_UAT	GPRS(4 Tx slots)	Left Cheek	Reduced	189	836.4	24.31	25.00	1.172	0.01	0.701	0.822
	GSM850_UAT	GPRS(4 Tx slots)	Left Cheek	Reduced	251	848.8	24.25	25.00	1.189	-0.03	0.675	0.802
	GSM850_UAT	GPRS(4 Tx slots)	Left Tilted	Reduced	189	836.4	24.31	25.00	1.172	0.05	0.620	0.727
	GSM850_UAT	GPRS(4 Tx slots)	Left Tilted	Reduced	251	848.8	24.25	25.00	1.189	0.04	0.660	0.784
	GSM850_LAT	GPRS(4 Tx slots)	Right Cheek	Full	128	824.2	27.17	28.00	1.211	0.12	0.330	0.399
	GSM850_LAT	GPRS(4 Tx slots)	Right Tilted	Full	128	824.2	27.17	28.00	1.211	0.01	0.148	0.179
	GSM850_LAT	GPRS(4 Tx slots)	Left Cheek	Full	128	824.2	27.17	28.00	1.211	0.04	0.248	0.300
	GSM850_LAT	GPRS(4 Tx slots)	Left Tilted	Full	128	824.2	27.17	28.00	1.211	0.08	0.176	0.213
02	GSM1900_UAT	GPRS(4 Tx slots)	Right Cheek	Reduced	512	1850.2	21.98	23.00	1.265	0.06	0.689	0.871
	GSM1900_UAT	GPRS(4 Tx slots)	Right Tilted	Reduced	512	1850.2	21.98	23.00	1.265	0.01	0.676	0.855
	GSM1900_UAT	GPRS(4 Tx slots)	Left Cheek	Reduced	512	1850.2	21.98	23.00	1.265	0.05	0.552	0.698
	GSM1900_UAT	GPRS(4 Tx slots)	Left Tilted	Reduced	512	1850.2	21.98	23.00	1.265	0.03	0.527	0.667
	GSM1900_UAT	GPRS(4 Tx slots)	Right Cheek	Reduced	661	1880	21.97	23.00	1.268	0.01	0.710	0.900
	GSM1900_UAT	GPRS(4 Tx slots)	Right Cheek	Reduced	810	1909.8	21.95	23.00	1.274	-0.01	0.686	0.874
	GSM1900_UAT	GPRS(4 Tx slots)	Right Tilted	Reduced	661	1880	21.97	23.00	1.268	0.1	0.698	0.885
	GSM1900_UAT	GPRS(4 Tx slots)	Right Tilted	Reduced	810	1909.8	21.95	23.00	1.274	0.13	0.766	0.976
	GSM1900_LAT	GPRS(4 Tx slots)	Right Cheek	Full	512	1850.2	23.43	25.00	1.435	0.04	0.096	0.138
	GSM1900_LAT	GPRS(4 Tx slots)	Right Tilted	Full	512	1850.2	23.43	25.00	1.435	0.1	0.083	0.119
	GSM1900_LAT	GPRS(4 Tx slots)	Left Cheek	Full	512	1850.2	23.43	25.00	1.435	0.12	0.091	0.131
	GSM1900_LAT	GPRS(4 Tx slots)	Left Tilted	Full	512	1850.2	23.43	25.00	1.435	0.01	0.087	0.125



<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
03	WCDMA V_UAT	RMC 12.2Kbps	Right Cheek	Reduced	4132	826.4	22.22	23.00	1.197	0.02	0.680	0.814
	WCDMA V_UAT	RMC 12.2Kbps	Right Tilted	Reduced	4132	826.4	22.22	23.00	1.197	0.01	0.502	0.601
	WCDMA V_UAT	RMC 12.2Kbps	Left Cheek	Reduced	4132	826.4	22.22	23.00	1.197	0.09	0.755	0.904
	WCDMA V_UAT	RMC 12.2Kbps	Left Tilted	Reduced	4132	826.4	22.22	23.00	1.197	0.01	0.704	0.843
	WCDMA V_UAT	RMC 12.2Kbps	Right Cheek	Reduced	4182	836.4	22.08	23.00	1.236	0.03	0.653	0.807
	WCDMA V_UAT	RMC 12.2Kbps	Right Cheek	Reduced	4233	846.6	22.11	23.00	1.227	0.14	0.516	0.633
	WCDMA V_UAT	RMC 12.2Kbps	Left Cheek	Reduced	4182	836.4	22.08	23.00	1.236	0.03	0.720	0.890
	WCDMA V_UAT	RMC 12.2Kbps	Left Cheek	Reduced	4233	846.6	22.11	23.00	1.227	0.06	0.657	0.806
	WCDMA V_UAT	RMC 12.2Kbps	Left Tilted	Reduced	4182	836.4	22.08	23.00	1.236	0.01	0.699	0.864
	WCDMA V_UAT	RMC 12.2Kbps	Left Tilted	Reduced	4233	846.6	22.11	23.00	1.227	0.05	0.651	0.799
	WCDMA V_LAT	RMC 12.2Kbps	Right Cheek	Full	4132	826.4	23.02	24.00	1.253	0.01	0.263	0.330
	WCDMA V_LAT	RMC 12.2Kbps	Right Tilted	Full	4132	826.4	23.02	24.00	1.253	-0.01	0.134	0.168
	WCDMA V_LAT	RMC 12.2Kbps	Left Cheek	Full	4132	826.4	23.02	24.00	1.253	0.06	0.201	0.252
	WCDMA V_LAT	RMC 12.2Kbps	Left Tilted	Full	4132	826.4	23.02	24.00	1.253	0.06	0.132	0.165
	WCDMA IV_UAT	RMC 12.2Kbps	Right Cheek	Reduced	1413	1732.6	20.25	21.00	1.189	0.08	0.887	1.054
	WCDMA IV_UAT	RMC 12.2Kbps	Right Tilted	Reduced	1413	1732.6	20.25	21.00	1.189	0.07	0.865	1.028
04	WCDMA IV_UAT	RMC 12.2Kbps	Left Cheek	Reduced	1413	1732.6	20.25	21.00	1.189	-0.12	0.756	0.899
	WCDMA IV_UAT	RMC 12.2Kbps	Left Tilted	Reduced	1413	1732.6	20.25	21.00	1.189	0.12	0.730	0.868
	WCDMA IV_UAT	RMC 12.2Kbps	Right Cheek	Reduced	1312	1712.4	20.23	21.00	1.194	0.13	0.925	1.104
	WCDMA IV_UAT	RMC 12.2Kbps	Right Cheek	Reduced	1513	1752.6	20.24	21.00	1.191	0.06	0.904	1.077
	WCDMA IV_UAT	RMC 12.2Kbps	Right Tilted	Reduced	1312	1712.4	20.23	21.00	1.194	0.01	0.806	0.962
	WCDMA IV_UAT	RMC 12.2Kbps	Right Tilted	Reduced	1513	1752.6	20.24	21.00	1.191	0.05	0.786	0.936
	WCDMA IV_UAT	RMC 12.2Kbps	Left Cheek	Reduced	1312	1712.4	20.23	21.00	1.194	0.03	0.702	0.838
	WCDMA IV_UAT	RMC 12.2Kbps	Left Cheek	Reduced	1513	1752.6	20.24	21.00	1.191	0.01	0.690	0.822
	WCDMA IV_UAT	RMC 12.2Kbps	Left Tilted	Reduced	1312	1712.4	20.23	21.00	1.194	-0.01	0.710	0.848
	WCDMA IV_UAT	RMC 12.2Kbps	Left Tilted	Reduced	1513	1752.6	20.24	21.00	1.191	0.13	0.705	0.840
	WCDMA IV_LAT	RMC 12.2Kbps	Right Cheek	Full	1413	1732.6	23.40	24.00	1.148	0.12	0.075	0.086
	WCDMA IV_LAT	RMC 12.2Kbps	Right Tilted	Full	1413	1732.6	23.40	24.00	1.148	0.06	0.068	0.078
	WCDMA IV_LAT	RMC 12.2Kbps	Left Cheek	Full	1413	1732.6	23.40	24.00	1.148	0.06	0.067	0.077
	WCDMA IV_LAT	RMC 12.2Kbps	Left Tilted	Full	1413	1732.6	23.40	24.00	1.148	0.08	0.064	0.073
	WCDMA II_UAT	RMC 12.2Kbps	Right Cheek	Reduced	9262	1852.4	17.41	19.00	1.442	0.16	0.683	0.985
	WCDMA II_UAT	RMC 12.2Kbps	Right Tilted	Reduced	9262	1852.4	17.41	19.00	1.442	0.07	0.654	0.943
05	WCDMA II_UAT	RMC 12.2Kbps	Left Cheek	Reduced	9262	1852.4	17.41	19.00	1.442	0.05	0.531	0.766
	WCDMA II_UAT	RMC 12.2Kbps	Left Tilted	Reduced	9262	1852.4	17.41	19.00	1.442	0.05	0.552	0.796
	WCDMA II_UAT	RMC 12.2Kbps	Right Cheek	Reduced	9400	1880	17.38	19.00	1.452	0.07	0.701	1.018
	WCDMA II_UAT	RMC 12.2Kbps	Right Cheek	Reduced	9538	1907.6	17.39	19.00	1.449	0.1	0.750	1.087
	WCDMA II_UAT	RMC 12.2Kbps	Right Tilted	Reduced	9400	1880	17.38	19.00	1.452	0.06	0.700	1.016
	WCDMA II_UAT	RMC 12.2Kbps	Right Tilted	Reduced	9538	1907.6	17.39	19.00	1.449	0.11	0.768	1.113
	WCDMA II_LAT	RMC 12.2Kbps	Right Cheek	Full	9262	1852.4	22.58	24.00	1.387	0.13	0.060	0.083
	WCDMA II_LAT	RMC 12.2Kbps	Right Tilted	Full	9262	1852.4	22.58	24.00	1.387	0.13	0.046	0.064
	WCDMA II_LAT	RMC 12.2Kbps	Left Cheek	Full	9262	1852.4	22.58	24.00	1.387	0.11	0.049	0.068
	WCDMA II_LAT	RMC 12.2Kbps	Left Tilted	Full	9262	1852.4	22.58	24.00	1.387	0.04	0.047	0.065



<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
06	LTE Band 5_UAT	10M	QPSK	1	25	Right Cheek	Reduced	20525	836.5	22.19	23.00	1.205	-0.12	0.600	0.723
	LTE Band 5_UAT	10M	QPSK	1	25	Right Tilted	Reduced	20525	836.5	22.19	23.00	1.205	0.06	0.558	0.672
	LTE Band 5_UAT	10M	QPSK	1	25	Left Cheek	Reduced	20525	836.5	22.19	23.00	1.205	0.07	0.685	0.825
	LTE Band 5_UAT	10M	QPSK	1	25	Left Tilted	Reduced	20525	836.5	22.19	23.00	1.205	0.08	0.675	0.813
	LTE Band 5_UAT	10M	QPSK	25	25	Right Cheek	Reduced	20525	836.5	21.20	22.00	1.202	0.05	0.481	0.578
	LTE Band 5_UAT	10M	QPSK	25	25	Right Tilted	Reduced	20525	836.5	21.20	22.00	1.202	0.08	0.433	0.521
	LTE Band 5_UAT	10M	QPSK	25	25	Left Cheek	Reduced	20525	836.5	21.20	22.00	1.202	0.05	0.563	0.677
	LTE Band 5_UAT	10M	QPSK	25	25	Left Tilted	Reduced	20525	836.5	21.20	22.00	1.202	0.04	0.456	0.548
	LTE Band 5_UAT	10M	QPSK	50	0	Left Cheek	Reduced	20525	836.5	21.15	22.00	1.216	0.09	0.556	0.676
	LTE Band 5_UAT	10M	QPSK	50	0	Left Tilted	Reduced	20525	836.5	21.15	22.00	1.216	0.08	0.445	0.541
07	LTE Band 5_LAT	10M	QPSK	1	25	Right Cheek	Full	20525	836.5	22.91	24.00	1.285	0.05	0.245	0.315
	LTE Band 5_LAT	10M	QPSK	1	25	Right Tilted	Full	20525	836.5	22.91	24.00	1.285	0.08	0.132	0.170
	LTE Band 5_LAT	10M	QPSK	1	25	Left Cheek	Full	20525	836.5	22.91	24.00	1.285	0.12	0.195	0.251
	LTE Band 5_LAT	10M	QPSK	1	25	Left Tilted	Full	20525	836.5	22.91	24.00	1.285	0.07	0.126	0.162
	LTE Band 5_LAT	10M	QPSK	25	25	Right Cheek	Full	20525	836.5	21.96	23.00	1.271	0.05	0.169	0.215
	LTE Band 5_LAT	10M	QPSK	25	25	Right Tilted	Full	20525	836.5	21.96	23.00	1.271	0.12	0.106	0.135
	LTE Band 5_LAT	10M	QPSK	25	25	Left Cheek	Full	20525	836.5	21.96	23.00	1.271	0.05	0.150	0.191
	LTE Band 5_LAT	10M	QPSK	25	25	Left Tilted	Full	20525	836.5	21.96	23.00	1.271	0.05	0.099	0.126
	LTE Band 4_UAT	20M	QPSK	1	49	Right Cheek	Reduced	20175	1732.5	19.51	20.50	1.256	0.01	0.859	1.079
	LTE Band 4_UAT	20M	QPSK	1	49	Right Tilted	Reduced	20175	1732.5	19.51	20.50	1.256	0.13	0.782	0.982
	LTE Band 4_UAT	20M	QPSK	1	49	Left Cheek	Reduced	20175	1732.5	19.51	20.50	1.256	0.1	0.637	0.800
	LTE Band 4_UAT	20M	QPSK	1	49	Left Tilted	Reduced	20175	1732.5	19.51	20.50	1.256	0.08	0.612	0.769
	LTE Band 4_UAT	20M	QPSK	50	0	Right Cheek	Reduced	20175	1732.5	18.42	19.50	1.282	0.11	0.665	0.853
	LTE Band 4_UAT	20M	QPSK	50	0	Right Tilted	Reduced	20175	1732.5	18.42	19.50	1.282	0.09	0.564	0.723
	LTE Band 4_UAT	20M	QPSK	50	0	Left Cheek	Reduced	20175	1732.5	18.42	19.50	1.282	0.13	0.501	0.642
	LTE Band 4_UAT	20M	QPSK	50	0	Left Tilted	Reduced	20175	1732.5	18.42	19.50	1.282	0.06	0.493	0.632
	LTE Band 4_UAT	20M	QPSK	100	0	Right Cheek	Reduced	20175	1732.5	18.45	19.50	1.274	0.06	0.642	0.818
	LTE Band 4_UAT	20M	QPSK	100	0	Right Tilted	Reduced	20175	1732.5	18.45	19.50	1.274	0.09	0.576	0.734
	LTE Band 4_UAT	20M	QPSK	100	0	Left Cheek	Reduced	20175	1732.5	18.45	19.50	1.274	0.13	0.510	0.649
	LTE Band 4_LAT	20M	QPSK	1	49	Right Cheek	Full	20175	1732.5	23.27	24.00	1.183	0.12	0.072	0.085
	LTE Band 4_LAT	20M	QPSK	1	49	Right Tilted	Full	20175	1732.5	23.27	24.00	1.183	0.11	0.064	0.076
	LTE Band 4_LAT	20M	QPSK	1	49	Left Cheek	Full	20175	1732.5	23.27	24.00	1.183	0.13	0.068	0.080
	LTE Band 4_LAT	20M	QPSK	1	49	Left Tilted	Full	20175	1732.5	23.27	24.00	1.183	0.07	0.057	0.067
	LTE Band 4_LAT	20M	QPSK	50	0	Right Cheek	Full	20175	1732.5	22.25	23.00	1.189	0.11	0.058	0.069
	LTE Band 4_LAT	20M	QPSK	50	0	Right Tilted	Full	20175	1732.5	22.25	23.00	1.189	0.08	0.051	0.061
	LTE Band 4_LAT	20M	QPSK	50	0	Left Cheek	Full	20175	1732.5	22.25	23.00	1.189	0.11	0.053	0.063
	LTE Band 4_LAT	20M	QPSK	50	0	Left Tilted	Full	20175	1732.5	22.25	23.00	1.189	0.09	0.049	0.058



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
08	LTE Band 2_UAT	20M	QPSK	1	49	Right Cheek	Reduced	19100	1900	17.66	19.00	1.361	0.05	0.626	0.852
	LTE Band 2_UAT	20M	QPSK	1	49	Right Tilted	Reduced	19100	1900	17.66	19.00	1.361	0.1	0.615	0.837
	LTE Band 2_UAT	20M	QPSK	1	49	Left Cheek	Reduced	19100	1900	17.66	19.00	1.361	0.12	0.559	0.761
	LTE Band 2_UAT	20M	QPSK	1	49	Left Tilted	Reduced	19100	1900	17.66	19.00	1.361	0.06	0.550	0.749
	LTE Band 2_UAT	20M	QPSK	1	49	Right Cheek	Reduced	18700	1860	17.46	19.00	1.426	0.03	0.592	0.844
	LTE Band 2_UAT	20M	QPSK	1	49	Right Cheek	Reduced	18900	1880	17.52	19.00	1.406	0.07	0.599	0.842
	LTE Band 2_UAT	20M	QPSK	1	49	Right Tilted	Reduced	18700	1860	17.46	19.00	1.426	0.03	0.593	0.845
	LTE Band 2_UAT	20M	QPSK	1	49	Right Tilted	Reduced	18900	1880	17.52	19.00	1.406	0.02	0.583	0.820
	LTE Band 2_UAT	20M	QPSK	50	0	Right Cheek	Reduced	19100	1900	16.57	18.00	1.390	0.12	0.492	0.684
	LTE Band 2_UAT	20M	QPSK	50	0	Right Tilted	Reduced	19100	1900	16.57	18.00	1.390	0.06	0.480	0.667
	LTE Band 2_UAT	20M	QPSK	50	0	Left Cheek	Reduced	19100	1900	16.57	18.00	1.390	0.08	0.432	0.600
	LTE Band 2_UAT	20M	QPSK	50	0	Left Tilted	Reduced	19100	1900	16.57	18.00	1.390	0.08	0.436	0.606
	LTE Band 2_UAT	20M	QPSK	100	0	Right Cheek	Reduced	19100	1900	16.51	18.00	1.409	0.06	0.502	0.707
	LTE Band 2_UAT	20M	QPSK	100	0	Right Tilted	Reduced	19100	1900	16.51	18.00	1.409	0.03	0.492	0.693
	LTE Band 2_LAT	20M	QPSK	1	49	Right Cheek	Full	19100	1900	22.69	24.00	1.352	0.08	0.075	0.101
	LTE Band 2_LAT	20M	QPSK	1	49	Right Tilted	Full	19100	1900	22.69	24.00	1.352	0.12	0.046	0.062
	LTE Band 2_LAT	20M	QPSK	1	49	Left Cheek	Full	19100	1900	22.69	24.00	1.352	0.09	0.079	0.107
	LTE Band 2_LAT	20M	QPSK	1	49	Left Tilted	Full	19100	1900	22.69	24.00	1.352	0.08	0.052	0.070
	LTE Band 2_LAT	20M	QPSK	50	0	Right Cheek	Full	19100	1900	21.51	23.00	1.409	0.05	0.060	0.085
	LTE Band 2_LAT	20M	QPSK	50	0	Right Tilted	Full	19100	1900	21.51	23.00	1.409	0.03	0.041	0.058
	LTE Band 2_LAT	20M	QPSK	50	0	Left Cheek	Full	19100	1900	21.51	23.00	1.409	0.1	0.060	0.085
	LTE Band 2_LAT	20M	QPSK	50	0	Left Tilted	Full	19100	1900	21.51	23.00	1.409	0.12	0.044	0.062
	LTE Band 7_UAT	20M	QPSK	1	49	Right Cheek	Reduced	21350	2560	16.58	17.50	1.236	0.09	0.766	0.947
	LTE Band 7_UAT	20M	QPSK	1	49	Right Tilted	Reduced	21350	2560	16.58	17.50	1.236	0.08	0.753	0.931
	LTE Band 7_UAT	20M	QPSK	1	49	Left Cheek	Reduced	21350	2560	16.58	17.50	1.236	0.03	0.407	0.503
	LTE Band 7_UAT	20M	QPSK	1	49	Left Tilted	Reduced	21350	2560	16.58	17.50	1.236	0.03	0.430	0.531
	LTE Band 7_UAT	20M	QPSK	1	49	Right Cheek	Reduced	20850	2510	16.25	17.50	1.334	0.07	0.711	0.948
	LTE Band 7_UAT	20M	QPSK	1	49	Right Cheek	Reduced	21100	2535	16.39	17.50	1.291	0.06	0.660	0.852
09	LTE Band 7_UAT	20M	QPSK	1	49	Right Tilted	Reduced	20850	2510	16.25	17.50	1.334	-0.04	0.724	0.965
	LTE Band 7_UAT	20M	QPSK	1	49	Right Tilted	Reduced	21100	2535	16.39	17.50	1.291	0.1	0.671	0.866
	LTE Band 7_UAT	20M	QPSK	50	24	Right Cheek	Reduced	21350	2560	15.39	16.50	1.291	0.06	0.681	0.879
	LTE Band 7_UAT	20M	QPSK	50	24	Right Tilted	Reduced	21350	2560	15.39	16.50	1.291	0.05	0.579	0.748
	LTE Band 7_UAT	20M	QPSK	50	24	Left Cheek	Reduced	21350	2560	15.39	16.50	1.291	0.07	0.324	0.418
	LTE Band 7_UAT	20M	QPSK	50	24	Left Tilted	Reduced	21350	2560	15.39	16.50	1.291	0.09	0.345	0.445
	LTE Band 7_UAT	20M	QPSK	50	24	Right Cheek	Reduced	20850	2510	15.19	16.50	1.352	0.03	0.682	0.922
	LTE Band 7_UAT	20M	QPSK	50	24	Right Cheek	Reduced	21100	2535	15.33	16.50	1.309	0.1	0.624	0.817
	LTE Band 7_UAT	20M	QPSK	100	0	Right Cheek	Reduced	21350	2560	15.35	16.50	1.303	0.08	0.669	0.872
	LTE Band 7_UAT	20M	QPSK	100	0	Right Tilted	Reduced	21350	2560	15.35	16.50	1.303	0.13	0.595	0.775
	LTE Band 7_LAT	20M	QPSK	1	49	Right Cheek	Full	21350	2560	22.72	24.00	1.343	0.05	0.084	0.113
	LTE Band 7_LAT	20M	QPSK	1	49	Right Tilted	Full	21350	2560	22.72	24.00	1.343	0.13	0.041	0.055
	LTE Band 7_LAT	20M	QPSK	1	49	Left Cheek	Full	21350	2560	22.72	24.00	1.343	0.05	0.067	0.090
	LTE Band 7_LAT	20M	QPSK	1	49	Left Tilted	Full	21350	2560	22.72	24.00	1.343	0.06	0.052	0.070
	LTE Band 7_LAT	20M	QPSK	50	24	Right Cheek	Full	21350	2560	21.66	23.00	1.361	0.11	0.065	0.088
	LTE Band 7_LAT	20M	QPSK	50	24	Right Tilted	Full	21350	2560	21.66	23.00	1.361	0.09	0.034	0.046
	LTE Band 7_LAT	20M	QPSK	50	24	Left Cheek	Full	21350	2560	21.66	23.00	1.361	0.08	0.054	0.074
	LTE Band 7_LAT	20M	QPSK	50	24	Left Tilted	Full	21350	2560	21.66	23.00	1.361	0.06	0.036	0.049

<WLAN2.4G 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	11	2462	14.40	16.00	1.445	100	1.000	0.11	0.279	0.403
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	11	2462	14.40	16.00	1.445	100	1.000	0.17	0.122	0.176
10	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	11	2462	14.40	16.00	1.445	100	1.000	-0.08	0.441	0.637
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	11	2462	14.40	16.00	1.445	100	1.000	0.13	0.167	0.241

<WLAN5G 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)
	WLAN5.3GHz	802.11a 6Mbps	Right Cheek	52	5260	18.57	20.00	1.390	100	1.000	0.04	0.098	0.136
	WLAN5.3GHz	802.11a 6Mbps	Right Tilted	52	5260	18.57	20.00	1.390	100	1.000	0.05	0.093	0.129
11	WLAN5.3GHz	802.11a 6Mbps	Left Cheek	52	5260	18.57	20.00	1.390	100	1.000	-0.15	0.101	0.140
	WLAN5.3GHz	802.11a 6Mbps	Left Tilted	52	5260	18.57	20.00	1.390	100	1.000	0.16	0.089	0.124
	WLAN5.5GHz	802.11a 6Mbps	Right Cheek	116	5580	18.45	20.00	1.429	100	1.000	0.06	0.199	0.284
	WLAN5.5GHz	802.11a 6Mbps	Right Tilted	116	5580	18.45	20.00	1.429	100	1.000	0.05	0.217	0.310
12	WLAN5.5GHz	802.11a 6Mbps	Left Cheek	116	5580	18.45	20.00	1.429	100	1.000	0.14	0.261	0.373
	WLAN5.5GHz	802.11a 6Mbps	Left Tilted	116	5580	18.45	20.00	1.429	100	1.000	0.1	0.204	0.291
	WLAN5.8GHz	802.11a 6Mbps	Right Cheek	157	5785	15.12	16.50	1.374	100	1.000	0.11	0.268	0.368
	WLAN5.8GHz	802.11a 6Mbps	Right Tilted	157	5785	15.12	16.50	1.374	100	1.000	0.09	0.263	0.361
	WLAN5.8GHz	802.11a 6Mbps	Left Tilted	157	5785	15.12	16.50	1.374	100	1.000	0.12	0.299	0.411
13	WLAN5.8GHz	802.11a 6Mbps	Left Cheek	157	5785	15.12	16.50	1.374	100	1.000	-0.03	0.398	0.547

<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)
	Bluetooth	1Mbps	Right Cheek	0	2402	9.80	11.00	1.318	76.45	1.090	0.09	0.050	0.072
	Bluetooth	1Mbps	Right Tilted	0	2402	9.80	11.00	1.318	76.45	1.090	0.1	0.056	0.081
14	Bluetooth	1Mbps	Left Cheek	0	2402	9.80	11.00	1.318	76.45	1.090	0.06	0.095	0.137
	Bluetooth	1Mbps	Left Tilted	0	2402	9.80	11.00	1.318	76.45	1.090	0.04	0.068	0.097



14.2 Hotspot SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850_UAT	GPRS(4 Tx slots)	Front	10	Full	128	824.2	27.17	28.00	1.211	-0.07	0.319	0.386
15	GSM850_UAT	GPRS(4 Tx slots)	Back	10	Full	128	824.2	27.17	28.00	1.211	-0.04	0.371	0.449
	GSM850_UAT	GPRS(4 Tx slots)	Left Side	10	Full	128	824.2	27.17	28.00	1.211	0.09	0.242	0.293
	GSM850_UAT	GPRS(4 Tx slots)	Right Side	10	Full	128	824.2	27.17	28.00	1.211	-0.04	0.211	0.255
	GSM850_UAT	GPRS(4 Tx slots)	Top Side	10	Full	128	824.2	27.17	28.00	1.211	0.07	0.244	0.295
	GSM850_LAT	GPRS(4 Tx slots)	Front	10	Full	128	824.2	27.17	28.00	1.211	0.03	0.290	0.351
	GSM850_LAT	GPRS(4 Tx slots)	Back	10	Full	128	824.2	27.17	28.00	1.211	0.01	0.368	0.446
	GSM850_LAT	GPRS(4 Tx slots)	Left Side	10	Full	128	824.2	27.17	28.00	1.211	0.1	0.192	0.232
	GSM850_LAT	GPRS(4 Tx slots)	Right Side	10	Full	128	824.2	27.17	28.00	1.211	-0.04	0.311	0.376
	GSM850_LAT	GPRS(4 Tx slots)	Bottom Side	10	Full	128	824.2	27.17	28.00	1.211	0.05	0.159	0.192
	GSM1900_UAT	GPRS(4 Tx slots)	Front	10	Full	512	1850.2	23.43	25.00	1.435	-0.04	0.330	0.474
	GSM1900_UAT	GPRS(4 Tx slots)	Back	10	Full	512	1850.2	23.43	25.00	1.435	0.05	0.271	0.389
	GSM1900_UAT	GPRS(4 Tx slots)	Left Side	10	Full	512	1850.2	23.43	25.00	1.435	0.09	0.145	0.208
	GSM1900_UAT	GPRS(4 Tx slots)	Right Side	10	Full	512	1850.2	23.43	25.00	1.435	0.02	0.049	0.070
	GSM1900_UAT	GPRS(4 Tx slots)	Top Side	10	Full	512	1850.2	23.43	25.00	1.435	-0.08	0.301	0.432
	GSM1900_LAT	GPRS(4 Tx slots)	Front	10	Full	512	1850.2	23.43	25.00	1.435	-0.06	0.202	0.290
16	GSM1900_LAT	GPRS(4 Tx slots)	Back	10	Full	512	1850.2	23.43	25.00	1.435	0.09	0.442	0.634
	GSM1900_LAT	GPRS(4 Tx slots)	Left Side	10	Full	512	1850.2	23.43	25.00	1.435	0.05	0.043	0.062
	GSM1900_LAT	GPRS(4 Tx slots)	Right Side	10	Full	512	1850.2	23.43	25.00	1.435	-0.07	0.025	0.036
	GSM1900_LAT	GPRS(4 Tx slots)	Bottom Side	10	Full	512	1850.2	23.43	25.00	1.435	0.08	0.202	0.290



<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA V_UAT	RMC 12.2Kbps	Front	10	Full	4132	826.4	23.02	24.00	1.253	-0.01	0.193	0.242
	WCDMA V_UAT	RMC 12.2Kbps	Back	10	Full	4132	826.4	23.02	24.00	1.253	-0.06	0.244	0.306
	WCDMA V_UAT	RMC 12.2Kbps	Left Side	10	Full	4132	826.4	23.02	24.00	1.253	-0.1	0.166	0.208
	WCDMA V_UAT	RMC 12.2Kbps	Right Side	10	Full	4132	826.4	23.02	24.00	1.253	-0.02	0.178	0.223
	WCDMA V_UAT	RMC 12.2Kbps	Top Side	10	Full	4132	826.4	23.02	24.00	1.253	-0.05	0.137	0.172
	WCDMA V_LAT	RMC 12.2Kbps	Front	10	Full	4132	826.4	23.02	24.00	1.253	-0.09	0.193	0.242
17	WCDMA V_LAT	RMC 12.2Kbps	Back	10	Full	4132	826.4	23.02	24.00	1.253	-0.07	0.269	0.337
	WCDMA V_LAT	RMC 12.2Kbps	Left Side	10	Full	4132	826.4	23.02	24.00	1.253	-0.02	0.131	0.164
	WCDMA V_LAT	RMC 12.2Kbps	Right Side	10	Full	4132	826.4	23.02	24.00	1.253	0.08	0.268	0.336
	WCDMA V_LAT	RMC 12.2Kbps	Bottom Side	10	Full	4132	826.4	23.02	24.00	1.253	-0.15	0.112	0.140
	WCDMA IV_UAT	RMC 12.2Kbps	Front	10	Full	1413	1732.6	23.40	24.00	1.148	0.04	0.656	0.753
	WCDMA IV_UAT	RMC 12.2Kbps	Back	10	Full	1413	1732.6	23.40	24.00	1.148	-0.07	0.362	0.416
	WCDMA IV_UAT	RMC 12.2Kbps	Left Side	10	Full	1413	1732.6	23.40	24.00	1.148	-0.05	0.201	0.231
	WCDMA IV_UAT	RMC 12.2Kbps	Right Side	10	Full	1413	1732.6	23.40	24.00	1.148	0.02	0.067	0.077
	WCDMA IV_UAT	RMC 12.2Kbps	Top Side	10	Full	1413	1732.6	23.40	24.00	1.148	0.02	0.257	0.295
	WCDMA IV_LAT	RMC 12.2Kbps	Front	10	Reduced	1413	1732.6	21.73	22.50	1.194	0.09	0.308	0.368
	WCDMA IV_LAT	RMC 12.2Kbps	Back	10	Reduced	1413	1732.6	21.73	22.50	1.194	0.1	0.857	1.023
	WCDMA IV_LAT	RMC 12.2Kbps	Left Side	10	Reduced	1413	1732.6	21.73	22.50	1.194	0.07	0.020	0.024
	WCDMA IV_LAT	RMC 12.2Kbps	Right Side	10	Reduced	1413	1732.6	21.73	22.50	1.194	0.03	0.050	0.060
	WCDMA IV_LAT	RMC 12.2Kbps	Bottom Side	10	Reduced	1413	1732.6	21.73	22.50	1.194	0.07	0.420	0.501
18	WCDMA IV_LAT	RMC 12.2Kbps	Back	10	Reduced	1312	1712.4	21.65	22.50	1.216	0.06	0.880	1.070
	WCDMA IV_LAT	RMC 12.2Kbps	Back	10	Reduced	1513	1752.6	21.66	22.50	1.213	-0.12	0.809	0.982
	WCDMA II_UAT	RMC 12.2Kbps	Front	10	Full	9262	1852.4	22.58	24.00	1.387	-0.03	0.622	0.863
	WCDMA II_UAT	RMC 12.2Kbps	Back	10	Full	9262	1852.4	22.58	24.00	1.387	-0.03	0.617	0.856
	WCDMA II_UAT	RMC 12.2Kbps	Left Side	10	Full	9262	1852.4	22.58	24.00	1.387	-0.06	0.042	0.058
	WCDMA II_UAT	RMC 12.2Kbps	Right Side	10	Full	9262	1852.4	22.58	24.00	1.387	-0.09	0.029	0.040
	WCDMA II_UAT	RMC 12.2Kbps	Top Side	10	Full	9262	1852.4	22.58	24.00	1.387	-0.03	0.359	0.498
	WCDMA II_UAT	RMC 12.2Kbps	Front	10	Full	9400	1880	22.54	24.00	1.400	0.17	0.603	0.844
	WCDMA II_UAT	RMC 12.2Kbps	Front	10	Full	9538	1907.6	22.51	24.00	1.409	-0.09	0.614	0.865
	WCDMA II_UAT	RMC 12.2Kbps	Back	10	Full	9400	1880	22.54	24.00	1.400	-0.01	0.536	0.750
	WCDMA II_UAT	RMC 12.2Kbps	Back	10	Full	9538	1907.6	22.51	24.00	1.409	0.16	0.563	0.793
	WCDMA II_LAT	RMC 12.2Kbps	Front	10	Reduced	9262	1852.4	22.08	23.50	1.387	0.07	0.389	0.539
19	WCDMA II_LAT	RMC 12.2Kbps	Back	10	Reduced	9262	1852.4	22.08	23.50	1.387	-0.05	0.757	1.050
	WCDMA II_LAT	RMC 12.2Kbps	Left Side	10	Reduced	9262	1852.4	22.08	23.50	1.387	0.1	0.081	0.112
	WCDMA II_LAT	RMC 12.2Kbps	Right Side	10	Reduced	9262	1852.4	22.08	23.50	1.387	0.02	0.092	0.128
	WCDMA II_LAT	RMC 12.2Kbps	Bottom Side	10	Reduced	9262	1852.4	22.08	23.50	1.387	0.08	0.400	0.555
	WCDMA II_LAT	RMC 12.2Kbps	Back	10	Reduced	9400	1880	22.00	23.50	1.413	-0.02	0.673	0.951
	WCDMA II_LAT	RMC 12.2Kbps	Back	10	Reduced	9538	1907.6	22.06	23.50	1.393	-0.05	0.556	0.775



<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 5_UAT	10M	QPSK	1	25	Front	10	Full	20525	836.5	22.91	24.00	1.285	0.01	0.205	0.263
	LTE Band 5_UAT	10M	QPSK	1	25	Back	10	Full	20525	836.5	22.91	24.00	1.285	0.07	0.246	0.316
	LTE Band 5_UAT	10M	QPSK	1	25	Left Side	10	Full	20525	836.5	22.91	24.00	1.285	-0.03	0.166	0.213
	LTE Band 5_UAT	10M	QPSK	1	25	Right Side	10	Full	20525	836.5	22.91	24.00	1.285	0.05	0.168	0.216
	LTE Band 5_UAT	10M	QPSK	1	25	Top Side	10	Full	20525	836.5	22.91	24.00	1.285	0.09	0.141	0.181
	LTE Band 5_UAT	10M	QPSK	25	25	Front	10	Full	20525	836.5	21.96	23.00	1.271	-0.03	0.125	0.159
	LTE Band 5_UAT	10M	QPSK	25	25	Back	10	Full	20525	836.5	21.96	23.00	1.271	0.03	0.210	0.267
	LTE Band 5_UAT	10M	QPSK	25	25	Left Side	10	Full	20525	836.5	21.96	23.00	1.271	0.06	0.142	0.180
	LTE Band 5_UAT	10M	QPSK	25	25	Right Side	10	Full	20525	836.5	21.96	23.00	1.271	-0.05	0.139	0.177
	LTE Band 5_UAT	10M	QPSK	25	25	Top Side	10	Full	20525	836.5	21.96	23.00	1.271	-0.02	0.124	0.158
	LTE Band 5_LAT	10M	QPSK	1	25	Front	10	Full	20525	836.5	22.91	24.00	1.285	-0.02	0.190	0.244
20	LTE Band 5_LAT	10M	QPSK	1	25	Back	10	Full	20525	836.5	22.91	24.00	1.285	0.02	0.280	0.360
	LTE Band 5_LAT	10M	QPSK	1	25	Left Side	10	Full	20525	836.5	22.91	24.00	1.285	0.06	0.105	0.135
	LTE Band 5_LAT	10M	QPSK	1	25	Right Side	10	Full	20525	836.5	22.91	24.00	1.285	-0.05	0.219	0.281
	LTE Band 5_LAT	10M	QPSK	1	25	Bottom Side	10	Full	20525	836.5	22.91	24.00	1.285	-0.03	0.121	0.156
	LTE Band 5_LAT	10M	QPSK	25	25	Front	10	Full	20525	836.5	21.96	23.00	1.271	0.01	0.163	0.207
	LTE Band 5_LAT	10M	QPSK	25	25	Back	10	Full	20525	836.5	21.96	23.00	1.271	0.13	0.227	0.288
	LTE Band 5_LAT	10M	QPSK	25	25	Left Side	10	Full	20525	836.5	21.96	23.00	1.271	0.05	0.093	0.118
	LTE Band 5_LAT	10M	QPSK	25	25	Right Side	10	Full	20525	836.5	21.96	23.00	1.271	-0.05	0.197	0.250
	LTE Band 5_LAT	10M	QPSK	25	25	Bottom Side	10	Full	20525	836.5	21.96	23.00	1.271	-0.09	0.113	0.144
	LTE Band 4_UAT	20M	QPSK	1	49	Front	10	Full	20175	1732.5	23.27	24.00	1.183	-0.02	0.794	0.939
	LTE Band 4_UAT	20M	QPSK	1	49	Back	10	Full	20175	1732.5	23.27	24.00	1.183	0.07	0.467	0.552
	LTE Band 4_UAT	20M	QPSK	1	49	Left Side	10	Full	20175	1732.5	23.27	24.00	1.183	0.07	0.214	0.253
	LTE Band 4_UAT	20M	QPSK	1	49	Right Side	10	Full	20175	1732.5	23.27	24.00	1.183	-0.06	0.064	0.076
	LTE Band 4_UAT	20M	QPSK	1	49	Top Side	10	Full	20175	1732.5	23.27	24.00	1.183	-0.09	0.459	0.543
	LTE Band 4_UAT	20M	QPSK	50	0	Front	10	Full	20175	1732.5	22.25	23.00	1.189	-0.07	0.476	0.566
	LTE Band 4_UAT	20M	QPSK	50	0	Back	10	Full	20175	1732.5	22.25	23.00	1.189	-0.01	0.307	0.365
	LTE Band 4_UAT	20M	QPSK	50	0	Left Side	10	Full	20175	1732.5	22.25	23.00	1.189	0.04	0.201	0.239
	LTE Band 4_UAT	20M	QPSK	50	0	Right Side	10	Full	20175	1732.5	22.25	23.00	1.189	0.01	0.032	0.038
	LTE Band 4_UAT	20M	QPSK	50	0	Top Side	10	Full	20175	1732.5	22.25	23.00	1.189	-0.03	0.453	0.538
	LTE Band 4_UAT	20M	QPSK	100	0	Front	10	Full	20175	1732.5	22.29	23.00	1.178	0.19	0.459	0.541
	LTE Band 4_LAT	20M	QPSK	1	49	Front	10	Reduced	20175	1732.5	21.70	22.50	1.202	-0.08	0.308	0.370
21	LTE Band 4_LAT	20M	QPSK	1	49	Back	10	Reduced	20175	1732.5	21.70	22.50	1.202	0.04	0.898	1.080
	LTE Band 4_LAT	20M	QPSK	1	49	Left Side	10	Reduced	20175	1732.5	21.70	22.50	1.202	-0.11	0.049	0.059
	LTE Band 4_LAT	20M	QPSK	1	49	Right Side	10	Reduced	20175	1732.5	21.70	22.50	1.202	0.06	0.056	0.067
	LTE Band 4_LAT	20M	QPSK	1	49	Bottom Side	10	Reduced	20175	1732.5	21.70	22.50	1.202	0.1	0.402	0.483
	LTE Band 4_LAT	20M	QPSK	50	0	Front	10	Reduced	20175	1732.5	20.57	21.50	1.239	0.07	0.246	0.305
	LTE Band 4_LAT	20M	QPSK	50	0	Back	10	Reduced	20175	1732.5	20.57	21.50	1.239	0.05	0.723	0.896
	LTE Band 4_LAT	20M	QPSK	50	0	Left Side	10	Reduced	20175	1732.5	20.57	21.50	1.239	0.09	0.036	0.045
	LTE Band 4_LAT	20M	QPSK	50	0	Right Side	10	Reduced	20175	1732.5	20.57	21.50	1.239	-0.12	0.028	0.035
	LTE Band 4_LAT	20M	QPSK	50	0	Bottom Side	10	Reduced	20175	1732.5	20.57	21.50	1.239	0.01	0.331	0.410
	LTE Band 4_LAT	20M	QPSK	100	0	Back	10	Reduced	20175	1732.5	20.53	21.50	1.250	0.08	0.726	0.908



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 2_UAT	20M	QPSK	1	49	Front	10	Full	19100	1900	22.69	24.00	1.352	0.08	0.649	0.877
	LTE Band 2_UAT	20M	QPSK	1	49	Back	10	Full	19100	1900	22.69	24.00	1.352	-0.01	0.543	0.734
	LTE Band 2_UAT	20M	QPSK	1	49	Left Side	10	Full	19100	1900	22.69	24.00	1.352	-0.08	0.239	0.323
	LTE Band 2_UAT	20M	QPSK	1	49	Right Side	10	Full	19100	1900	22.69	24.00	1.352	-0.06	0.017	0.023
	LTE Band 2_UAT	20M	QPSK	1	49	Top Side	10	Full	19100	1900	22.69	24.00	1.352	0.07	0.348	0.471
	LTE Band 2_UAT	20M	QPSK	1	49	Front	10	Full	18700	1860	22.68	24.00	1.355	0.05	0.628	0.851
	LTE Band 2_UAT	20M	QPSK	1	49	Front	10	Full	18900	1880	22.51	24.00	1.409	0.04	0.616	0.868
	LTE Band 2_UAT	20M	QPSK	50	0	Front	10	Full	19100	1900	21.51	23.00	1.409	0.09	0.471	0.664
	LTE Band 2_UAT	20M	QPSK	50	0	Back	10	Full	19100	1900	21.51	23.00	1.409	-0.04	0.422	0.595
	LTE Band 2_UAT	20M	QPSK	50	0	Left Side	10	Full	19100	1900	21.51	23.00	1.409	-0.03	0.212	0.299
	LTE Band 2_UAT	20M	QPSK	50	0	Right Side	10	Full	19100	1900	21.51	23.00	1.409	-0.06	0.015	0.021
	LTE Band 2_UAT	20M	QPSK	50	0	Top Side	10	Full	19100	1900	21.51	23.00	1.409	0.01	0.263	0.371
	LTE Band 2_UAT	20M	QPSK	100	0	Front	10	Full	19100	1900	21.45	23.00	1.429	-0.11	0.466	0.666
	LTE Band 2_LAT	20M	QPSK	1	49	Front	10	Full	19100	1900	22.69	24.00	1.352	-0.03	0.502	0.679
	LTE Band 2_LAT	20M	QPSK	1	49	Back	10	Full	19100	1900	22.69	24.00	1.352	-0.03	0.707	0.956
	LTE Band 2_LAT	20M	QPSK	1	49	Left Side	10	Full	19100	1900	22.69	24.00	1.352	-0.05	0.255	0.345
	LTE Band 2_LAT	20M	QPSK	1	49	Right Side	10	Full	19100	1900	22.69	24.00	1.352	-0.03	0.095	0.128
	LTE Band 2_LAT	20M	QPSK	1	49	Bottom Side	10	Full	19100	1900	22.69	24.00	1.352	0.09	0.282	0.381
22	LTE Band 2_LAT	20M	QPSK	1	49	Back	10	Full	18700	1860	22.68	24.00	1.355	0.11	0.806	1.092
	LTE Band 2_LAT	20M	QPSK	1	49	Back	10	Full	18900	1880	22.51	24.00	1.409	-0.1	0.735	1.036
	LTE Band 2_LAT	20M	QPSK	50	0	Front	10	Full	19100	1900	21.51	23.00	1.409	-0.1	0.390	0.550
	LTE Band 2_LAT	20M	QPSK	50	0	Back	10	Full	19100	1900	21.51	23.00	1.409	0.03	0.578	0.815
	LTE Band 2_LAT	20M	QPSK	50	0	Left Side	10	Full	19100	1900	21.51	23.00	1.409	0.06	0.196	0.276
	LTE Band 2_LAT	20M	QPSK	50	0	Right Side	10	Full	19100	1900	21.51	23.00	1.409	-0.07	0.078	0.110
	LTE Band 2_LAT	20M	QPSK	50	0	Bottom Side	10	Full	19100	1900	21.51	23.00	1.409	-0.08	0.231	0.326
	LTE Band 2_LAT	20M	QPSK	50	0	Back	10	Full	18700	1860	21.37	23.00	1.455	0.07	0.492	0.716
	LTE Band 2_LAT	20M	QPSK	50	0	Back	10	Full	18900	1880	21.45	23.00	1.429	0.08	0.466	0.666
	LTE Band 2_LAT	20M	QPSK	100	0	Back	10	Full	19100	1900	21.45	23.00	1.429	-0.06	0.551	0.787



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 7_UAT	20M	QPSK	1	49	Front	10	Reduced	21350	2560	19.51	20.50	1.256	0.08	0.333	0.418
	LTE Band 7_UAT	20M	QPSK	1	49	Back	10	Reduced	21350	2560	19.51	20.50	1.256	-0.06	0.803	1.009
	LTE Band 7_UAT	20M	QPSK	1	49	Left Side	10	Reduced	21350	2560	19.51	20.50	1.256	0.09	0.224	0.281
	LTE Band 7_UAT	20M	QPSK	1	49	Right Side	10	Reduced	21350	2560	19.51	20.50	1.256	0.12	0.036	0.045
	LTE Band 7_UAT	20M	QPSK	1	49	Top Side	10	Reduced	21350	2560	19.51	20.50	1.256	0.17	0.382	0.480
23	LTE Band 7_UAT	20M	QPSK	1	49	Back	10	Reduced	20850	2510	19.40	20.50	1.289	0.07	0.833	1.074
	LTE Band 7_UAT	20M	QPSK	1	49	Back	10	Reduced	21100	2535	19.50	20.50	1.259	0.08	0.810	1.020
	LTE Band 7_UAT	20M	QPSK	50	24	Front	10	Reduced	21350	2560	18.42	19.50	1.282	0.12	0.286	0.367
	LTE Band 7_UAT	20M	QPSK	50	24	Back	10	Reduced	21350	2560	18.42	19.50	1.282	-0.15	0.640	0.821
	LTE Band 7_UAT	20M	QPSK	50	24	Left Side	10	Reduced	21350	2560	18.42	19.50	1.282	0.05	0.180	0.231
	LTE Band 7_UAT	20M	QPSK	50	24	Right Side	10	Reduced	21350	2560	18.42	19.50	1.282	-0.1	0.028	0.036
	LTE Band 7_UAT	20M	QPSK	50	24	Top Side	10	Reduced	21350	2560	18.42	19.50	1.282	-0.05	0.301	0.386
	LTE Band 7_UAT	20M	QPSK	50	24	Back	10	Reduced	20850	2510	18.24	19.50	1.337	0.08	0.656	0.877
	LTE Band 7_UAT	20M	QPSK	50	24	Back	10	Reduced	21100	2535	18.35	19.50	1.303	0.04	0.651	0.848
	LTE Band 7_UAT	20M	QPSK	100	0	Back	10	Reduced	21350	2560	18.37	19.50	1.297	0.12	0.635	0.824
	LTE Band 7_LAT	20M	QPSK	1	49	Front	10	Reduced	21350	2560	20.09	21.00	1.233	-0.03	0.356	0.439
	LTE Band 7_LAT	20M	QPSK	1	49	Back	10	Reduced	21350	2560	20.09	21.00	1.233	0.09	0.858	1.058
	LTE Band 7_LAT	20M	QPSK	1	49	Left Side	10	Reduced	21350	2560	20.09	21.00	1.233	-0.07	0.033	0.041
	LTE Band 7_LAT	20M	QPSK	1	49	Right Side	10	Reduced	21350	2560	20.09	21.00	1.233	0.14	0.163	0.201
	LTE Band 7_LAT	20M	QPSK	1	49	Bottom Side	10	Reduced	21350	2560	20.09	21.00	1.233	0.16	0.233	0.287
	LTE Band 7_LAT	20M	QPSK	1	49	Back	10	Reduced	20850	2510	19.89	21.00	1.291	0.07	0.814	1.051
	LTE Band 7_LAT	20M	QPSK	1	49	Back	10	Reduced	21100	2535	20.01	21.00	1.256	0.13	0.836	1.050
	LTE Band 7_LAT	20M	QPSK	50	24	Front	10	Reduced	21350	2560	19.03	20.00	1.250	0.05	0.291	0.364
	LTE Band 7_LAT	20M	QPSK	50	24	Back	10	Reduced	21350	2560	19.03	20.00	1.250	0.11	0.682	0.853
	LTE Band 7_LAT	20M	QPSK	50	24	Left Side	10	Reduced	21350	2560	19.03	20.00	1.250	0.06	0.026	0.033
	LTE Band 7_LAT	20M	QPSK	50	24	Right Side	10	Reduced	21350	2560	19.03	20.00	1.250	-0.17	0.116	0.145
	LTE Band 7_LAT	20M	QPSK	50	24	Bottom Side	10	Reduced	21350	2560	19.03	20.00	1.250	0.1	0.184	0.230
	LTE Band 7_LAT	20M	QPSK	50	24	Back	10	Reduced	20850	2510	18.73	20.00	1.340	0.08	0.616	0.825
	LTE Band 7_LAT	20M	QPSK	50	24	Back	10	Reduced	21100	2535	18.93	20.00	1.279	-0.1	0.641	0.820
	LTE Band 7_LAT	20M	QPSK	100	0	Back	10	Reduced	21350	2560	18.99	20.00	1.262	-0.07	0.677	0.854

<WLAN2.4G 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	10	11	2462	14.40	16.00	1.445	100	1.000	0.08	0.094	0.136
24	WLAN2.4GHz	802.11b 1Mbps	Back	10	11	2462	14.40	16.00	1.445	100	1.000	-0.03	0.126	0.182
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10	11	2462	14.40	16.00	1.445	100	1.000	0.04	0.012	0.017
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10	11	2462	14.40	16.00	1.445	100	1.000	0.02	0.083	0.120
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10	11	2462	14.40	16.00	1.445	100	1.000	0.07	0.040	0.058

<WLAN5G 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)
	WLAN5.2GHz	802.11a 6Mbps	Front	10	48	5240	18.41	19.50	1.285	100	1.000	-0.11	0.022	0.028
	WLAN5.2GHz	802.11a 6Mbps	Left Side	10	48	5240	18.41	19.50	1.285	100	1.000	0.06	0.013	0.016
	WLAN5.2GHz	802.11a 6Mbps	Right Side	10	48	5240	18.41	19.50	1.285	100	1.000	0.08	0.084	0.108
	WLAN5.2GHz	802.11a 6Mbps	Top Side	10	48	5240	18.41	19.50	1.285	100	1.000	0.03	0.100	0.128
25	WLAN5.2GHz	802.11a 6Mbps	Back	10	48	5240	18.41	19.50	1.285	100	1.000	0.07	0.344	0.442
	WLAN5.8GHz	802.11a 6Mbps	Front	10	157	5785	15.12	16.50	1.374	100	1.000	0.09	0.066	0.091
26	WLAN5.8GHz	802.11a 6Mbps	Back	10	157	5785	15.12	16.50	1.374	100	1.000	0.06	0.159	0.218
	WLAN5.8GHz	802.11a 6Mbps	Left Side	10	157	5785	15.12	16.50	1.374	100	1.000	0.05	0.063	0.087
	WLAN5.8GHz	802.11a 6Mbps	Right Side	10	157	5785	15.12	16.50	1.374	100	1.000	0.01	0.085	0.117
	WLAN5.8GHz	802.11a 6Mbps	Top Side	10	157	5785	15.12	16.50	1.374	100	1.000	-0.02	0.131	0.180

<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	1Mbps	Front	10	0	2402	9.80	11.00	1.318	76.45	1.090	0.08	0.022	0.032
27	Bluetooth	1Mbps	Back	10	0	2402	9.80	11.00	1.318	76.45	1.090	0.01	0.031	0.044
	Bluetooth	1Mbps	Right Side	10	0	2402	9.80	11.00	1.318	76.45	1.090	-0.04	0.003	0.005
	Bluetooth	1Mbps	Left Side	10	0	2402	9.80	11.00	1.318	76.45	1.090	-0.14	0.020	0.028
	Bluetooth	1Mbps	Top Side	10	0	2402	9.80	11.00	1.318	76.45	1.090	0.01	0.008	0.011

**14.3 Body Worn Accessory SAR****<GSM SAR>**

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850_UAT	GPRS(4 Tx slots)	Front	10	Full	128	824.2	27.17	28.00	1.211	-0.07	0.319	0.386
28	GSM850_UAT	GPRS(4 Tx slots)	Back	10	Full	128	824.2	27.17	28.00	1.211	-0.04	0.371	0.449
	GSM850_LAT	GPRS(4 Tx slots)	Front	10	Full	128	824.2	27.17	28.00	1.211	0.03	0.290	0.351
	GSM850_LAT	GPRS(4 Tx slots)	Back	10	Full	128	824.2	27.17	28.00	1.211	0.01	0.368	0.446
	GSM1900_UAT	GPRS(4 Tx slots)	Front	10	Full	512	1850.2	23.43	25.00	1.435	-0.04	0.330	0.474
	GSM1900_UAT	GPRS(4 Tx slots)	Back	10	Full	512	1850.2	23.43	25.00	1.435	0.05	0.271	0.389
	GSM1900_LAT	GPRS(4 Tx slots)	Front	10	Full	512	1850.2	23.43	25.00	1.435	-0.06	0.202	0.290
29	GSM1900_LAT	GPRS(4 Tx slots)	Back	10	Full	512	1850.2	23.43	25.00	1.435	0.09	0.442	0.634

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA V_UAT	RMC 12.2Kbps	Front	10	Full	4132	826.4	23.02	24.00	1.253	-0.01	0.193	0.242
	WCDMA V_UAT	RMC 12.2Kbps	Back	10	Full	4132	826.4	23.02	24.00	1.253	-0.06	0.244	0.306
	WCDMA V_LAT	RMC 12.2Kbps	Front	10	Full	4132	826.4	23.02	24.00	1.253	-0.09	0.193	0.242
30	WCDMA V_LAT	RMC 12.2Kbps	Back	10	Full	4132	826.4	23.02	24.00	1.253	-0.07	0.269	0.337
	WCDMA IV_UAT	RMC 12.2Kbps	Front	10	Full	1413	1732.6	23.40	24.00	1.148	0.04	0.656	0.753
	WCDMA IV_UAT	RMC 12.2Kbps	Back	10	Full	1413	1732.6	23.40	24.00	1.148	-0.07	0.362	0.416
	WCDMA IV_LAT	RMC 12.2Kbps	Front	10	Reduced	1413	1732.6	21.73	22.50	1.194	0.09	0.308	0.368
	WCDMA IV_LAT	RMC 12.2Kbps	Back	10	Reduced	1413	1732.6	21.73	22.50	1.194	0.1	0.857	1.023
31	WCDMA IV_LAT	RMC 12.2Kbps	Back	10	Reduced	1312	1712.4	21.65	22.50	1.216	0.06	0.880	1.070
	WCDMA IV_LAT	RMC 12.2Kbps	Back	10	Reduced	1513	1752.6	21.66	22.50	1.213	-0.12	0.809	0.982
	WCDMA II_UAT	RMC 12.2Kbps	Front	10	Full	9262	1852.4	22.58	24.00	1.387	-0.03	0.622	0.863
	WCDMA II_UAT	RMC 12.2Kbps	Back	10	Full	9262	1852.4	22.58	24.00	1.387	-0.03	0.617	0.856
	WCDMA II_UAT	RMC 12.2Kbps	Front	10	Full	9400	1880	22.54	24.00	1.400	0.17	0.603	0.844
	WCDMA II_UAT	RMC 12.2Kbps	Front	10	Full	9538	1907.6	22.51	24.00	1.409	-0.09	0.614	0.865
	WCDMA II_UAT	RMC 12.2Kbps	Back	10	Full	9400	1880	22.54	24.00	1.400	-0.01	0.536	0.750
	WCDMA II_UAT	RMC 12.2Kbps	Back	10	Full	9538	1907.6	22.51	24.00	1.409	0.16	0.563	0.793
	WCDMA II_LAT	RMC 12.2Kbps	Front	10	Reduced	9262	1852.4	22.08	23.50	1.387	0.07	0.389	0.539
32	WCDMA II_LAT	RMC 12.2Kbps	Back	10	Reduced	9262	1852.4	22.08	23.50	1.387	-0.05	0.757	1.050
	WCDMA II_LAT	RMC 12.2Kbps	Back	10	Reduced	9400	1880	22.00	23.50	1.413	-0.02	0.673	0.951
	WCDMA II_LAT	RMC 12.2Kbps	Back	10	Reduced	9538	1907.6	22.06	23.50	1.393	-0.05	0.556	0.775



<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 5_UAT	10M	QPSK	1	25	Front	10	Full	20525	836.5	22.91	24.00	1.285	0.01	0.205	0.263
	LTE Band 5_UAT	10M	QPSK	1	25	Back	10	Full	20525	836.5	22.91	24.00	1.285	0.07	0.246	0.316
	LTE Band 5_UAT	10M	QPSK	25	25	Front	10	Full	20525	836.5	21.96	23.00	1.271	-0.03	0.125	0.159
	LTE Band 5_UAT	10M	QPSK	25	25	Back	10	Full	20525	836.5	21.96	23.00	1.271	0.03	0.210	0.267
	LTE Band 5_LAT	10M	QPSK	1	25	Front	10	Full	20525	836.5	22.91	24.00	1.285	-0.02	0.190	0.244
33	LTE Band 5_LAT	10M	QPSK	1	25	Back	10	Full	20525	836.5	22.91	24.00	1.285	0.02	0.280	0.360
	LTE Band 5_LAT	10M	QPSK	25	25	Front	10	Full	20525	836.5	21.96	23.00	1.271	0.01	0.163	0.207
	LTE Band 5_LAT	10M	QPSK	25	25	Back	10	Full	20525	836.5	21.96	23.00	1.271	0.13	0.227	0.288
	LTE Band 4_UAT	20M	QPSK	1	49	Front	10	Full	20175	1732.5	23.27	24.00	1.183	-0.02	0.794	0.939
	LTE Band 4_UAT	20M	QPSK	1	49	Back	10	Full	20175	1732.5	23.27	24.00	1.183	0.07	0.467	0.552
	LTE Band 4_UAT	20M	QPSK	50	0	Front	10	Full	20175	1732.5	22.25	23.00	1.189	-0.07	0.476	0.566
	LTE Band 4_UAT	20M	QPSK	50	0	Back	10	Full	20175	1732.5	22.25	23.00	1.189	-0.01	0.307	0.365
	LTE Band 4_UAT	20M	QPSK	100	0	Front	10	Full	20175	1732.5	22.29	23.00	1.178	0.19	0.459	0.541
	LTE Band 4_LAT	20M	QPSK	1	49	Front	10	Reduced	20175	1732.5	21.70	22.50	1.202	-0.08	0.308	0.370
34	LTE Band 4_LAT	20M	QPSK	1	49	Back	10	Reduced	20175	1732.5	21.70	22.50	1.202	0.04	0.898	1.080
	LTE Band 4_LAT	20M	QPSK	50	0	Front	10	Reduced	20175	1732.5	20.57	21.50	1.239	0.07	0.246	0.305
	LTE Band 4_LAT	20M	QPSK	50	0	Back	10	Reduced	20175	1732.5	20.57	21.50	1.239	0.05	0.723	0.896
	LTE Band 4_LAT	20M	QPSK	100	0	Back	10	Reduced	20175	1732.5	20.53	21.50	1.250	0.08	0.726	0.908
	LTE Band 2_UAT	20M	QPSK	1	49	Front	10	Full	19100	1900	22.69	24.00	1.352	0.08	0.649	0.877
	LTE Band 2_UAT	20M	QPSK	1	49	Back	10	Full	19100	1900	22.69	24.00	1.352	-0.01	0.543	0.734
	LTE Band 2_UAT	20M	QPSK	1	49	Front	10	Full	18700	1860	22.68	24.00	1.355	0.05	0.628	0.851
	LTE Band 2_UAT	20M	QPSK	1	49	Front	10	Full	18900	1880	22.51	24.00	1.409	0.04	0.616	0.868
	LTE Band 2_UAT	20M	QPSK	50	0	Front	10	Full	19100	1900	21.51	23.00	1.409	0.09	0.471	0.664
	LTE Band 2_UAT	20M	QPSK	50	0	Back	10	Full	19100	1900	21.51	23.00	1.409	-0.04	0.422	0.595
	LTE Band 2_UAT	20M	QPSK	100	0	Front	10	Full	19100	1900	21.45	23.00	1.429	-0.11	0.466	0.666
	LTE Band 2_LAT	20M	QPSK	1	49	Front	10	Full	19100	1900	22.69	24.00	1.352	-0.03	0.502	0.679
	LTE Band 2_LAT	20M	QPSK	1	49	Back	10	Full	19100	1900	22.69	24.00	1.352	-0.03	0.707	0.956
35	LTE Band 2_LAT	20M	QPSK	1	49	Back	10	Full	18700	1860	22.68	24.00	1.355	0.11	0.806	1.092
	LTE Band 2_LAT	20M	QPSK	1	49	Back	10	Full	18900	1880	22.51	24.00	1.409	-0.1	0.735	1.036
	LTE Band 2_LAT	20M	QPSK	50	0	Front	10	Full	19100	1900	21.51	23.00	1.409	-0.1	0.390	0.550
	LTE Band 2_LAT	20M	QPSK	50	0	Back	10	Full	19100	1900	21.51	23.00	1.409	0.03	0.578	0.815
	LTE Band 2_LAT	20M	QPSK	50	0	Back	10	Full	18700	1860	21.37	23.00	1.455	0.07	0.492	0.716
	LTE Band 2_LAT	20M	QPSK	50	0	Back	10	Full	18900	1880	21.45	23.00	1.429	0.08	0.466	0.666
	LTE Band 2_LAT	20M	QPSK	100	0	Back	10	Full	19100	1900	21.45	23.00	1.429	-0.06	0.551	0.787

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 7_UAT	20M	QPSK	1	49	Front	10	Reduced	21350	2560	19.51	20.50	1.256	0.08	0.333	0.418
	LTE Band 7_UAT	20M	QPSK	1	49	Back	10	Reduced	21350	2560	19.51	20.50	1.256	-0.06	0.803	1.009
36	LTE Band 7_UAT	20M	QPSK	1	49	Back	10	Reduced	20850	2510	19.40	20.50	1.289	0.07	0.833	1.074
	LTE Band 7_UAT	20M	QPSK	1	49	Back	10	Reduced	21100	2535	19.50	20.50	1.259	0.08	0.810	1.020
	LTE Band 7_UAT	20M	QPSK	50	24	Front	10	Reduced	21350	2560	18.42	19.50	1.282	0.12	0.286	0.367
	LTE Band 7_UAT	20M	QPSK	50	24	Back	10	Reduced	21350	2560	18.42	19.50	1.282	-0.15	0.640	0.821
	LTE Band 7_UAT	20M	QPSK	50	24	Back	10	Reduced	20850	2510	18.24	19.50	1.337	0.08	0.656	0.877
	LTE Band 7_UAT	20M	QPSK	50	24	Back	10	Reduced	21100	2535	18.35	19.50	1.303	0.04	0.651	0.848
	LTE Band 7_UAT	20M	QPSK	100	0	Back	10	Reduced	21350	2560	18.37	19.50	1.297	0.12	0.635	0.824
	LTE Band 7_LAT	20M	QPSK	1	49	Front	10	Reduced	21350	2560	20.09	21.00	1.233	-0.03	0.356	0.439
	LTE Band 7_LAT	20M	QPSK	1	49	Back	10	Reduced	21350	2560	20.09	21.00	1.233	0.09	0.858	1.058
	LTE Band 7_LAT	20M	QPSK	1	49	Back	10	Reduced	20850	2510	19.89	21.00	1.291	0.07	0.814	1.051
	LTE Band 7_LAT	20M	QPSK	1	49	Back	10	Reduced	21100	2535	20.01	21.00	1.256	0.13	0.836	1.050
	LTE Band 7_LAT	20M	QPSK	50	24	Front	10	Reduced	21350	2560	19.03	20.00	1.250	0.05	0.291	0.364
	LTE Band 7_LAT	20M	QPSK	50	24	Back	10	Reduced	21350	2560	19.03	20.00	1.250	0.11	0.682	0.853
	LTE Band 7_LAT	20M	QPSK	50	24	Back	10	Reduced	20850	2510	18.73	20.00	1.340	0.08	0.616	0.825
	LTE Band 7_LAT	20M	QPSK	50	24	Back	10	Reduced	21100	2535	18.93	20.00	1.279	-0.1	0.641	0.820
	LTE Band 7_LAT	20M	QPSK	100	0	Back	10	Reduced	21350	2560	18.99	20.00	1.262	-0.07	0.677	0.854

<WLAN2.4G 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	10	11	2462	14.40	16.00	1.445	100	1.000	0.08	0.094	0.136
37	WLAN2.4GHz	802.11b 1Mbps	Back	10	11	2462	14.40	16.00	1.445	100	1.000	-0.03	0.126	0.182

<WLAN5G 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)
	WLAN5.2GHz	802.11a 6Mbps	Front	10	48	5240	18.41	19.50	1.285	100	1.000	-0.11	0.022	0.028
38	WLAN5.2GHz	802.11a 6Mbps	Back	10	48	5240	18.41	19.50	1.285	100	1.000	0.07	0.344	0.442
	WLAN5.3GHz	802.11a 6Mbps	Front	10	52	5260	18.57	20.00	1.390	100	1.000	0.05	0.047	0.066
39	WLAN5.3GHz	802.11a 6Mbps	Back	10	52	5260	18.57	20.00	1.390	100	1.000	0.09	0.137	0.190
	WLAN5.5GHz	802.11a 6Mbps	Front	10	116	5580	18.45	20.00	1.429	100	1.000	-0.06	0.088	0.126
40	WLAN5.5GHz	802.11a 6Mbps	Back	10	116	5580	18.45	20.00	1.429	100	1.000	0.03	0.164	0.234
	WLAN5.8GHz	802.11a 6Mbps	Front	10	157	5785	15.12	16.50	1.374	100	1.000	0.09	0.066	0.091
41	WLAN5.8GHz	802.11a 6Mbps	Back	10	157	5785	15.12	16.50	1.374	100	1.000	0.06	0.159	0.218

<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	1Mbps	Front	10	0	2402	9.80	11.00	1.318	76.45	1.090	0.08	0.022	0.032
42	Bluetooth	1Mbps	Back	10	0	2402	9.80	11.00	1.318	76.45	1.090	0.01	0.031	0.044

14.4 Product specific 10g SAR

<WLAN5G 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 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	WLAN5.3GHz	802.11a 6Mbps	Front	0	52	5260	18.57	20.00	1.390	100	1.000	0.06	0.123	0.171
46	WLAN5.3GHz	802.11a 6Mbps	Back	0	52	5260	18.57	20.00	1.390	100	1.000	0.06	0.307	0.427
	WLAN5.3GHz	802.11a 6Mbps	Left Side	0	52	5260	18.57	20.00	1.390	100	1.000	0.04	0.017	0.024
	WLAN5.3GHz	802.11a 6Mbps	Right Side	0	52	5260	18.57	20.00	1.390	100	1.000	0.03	0.116	0.161
	WLAN5.3GHz	802.11a 6Mbps	Top Side	0	52	5260	18.57	20.00	1.390	100	1.000	0.07	0.175	0.243
	WLAN5.5GHz	802.11a 6Mbps	Front	0	116	5580	18.45	20.00	1.429	100	1.000	-0.05	0.183	0.261
47	WLAN5.5GHz	802.11a 6Mbps	Back	0	116	5580	18.45	20.00	1.429	100	1.000	-0.08	0.590	0.843
	WLAN5.5GHz	802.11a 6Mbps	Left Side	0	116	5580	18.45	20.00	1.429	100	1.000	0.04	0.007	0.010
	WLAN5.5GHz	802.11a 6Mbps	Right Side	0	116	5580	18.45	20.00	1.429	100	1.000	0.04	0.068	0.097
	WLAN5.5GHz	802.11a 6Mbps	Top Side	0	116	5580	18.45	20.00	1.429	100	1.000	0.06	0.339	0.484

14.5 Repeated SAR Measurement

No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	WCDMA IV_UAT	-	-	-	-	RMC 12.2Kbps	Right Cheek	0	Reduced	1312	1712.4	20.23	21.00	1.194	0.13	0.925	1	1.104
2nd	WCDMA IV_UAT	-	-	-	-	RMC 12.2Kbps	Right Cheek	0	Reduced	1312	1712.4	20.23	21.00	1.194	0.06	0.917	1.009	1.095
1st	LTE Band 2_LAT	20M	QPSK	1	49	-	Back	10	Full	18700	1860	22.68	24.00	1.355	0.11	0.806	1	1.092
2nd	LTE Band 2_LAT	20M	QPSK	1	49	-	Back	10	Full	18700	1860	22.68	24.00	1.355	0.04	0.801	1.006	1.086
1st	LTE Band 7_LAT	20M	QPSK	1	49	-	Back	10	Reduced	21350	2560	20.09	21.00	1.233	0.09	0.858	1	1.058
2nd	LTE Band 7_LAT	20M	QPSK	1	49	-	Back	10	Reduced	21350	2560	20.09	21.00	1.233	0.11	0.849	1.011	1.047

General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥ 0.8 W/kg.
2. Per KDB 865664 D01v01r04, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR < 1.45 W/kg, only one repeated measurement is required.
3. The ratio is the difference in percentage between original and repeated *measured SAR*.
4. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

15. Simultaneous Transmission Analysis

No.	Simultaneous Transmission Configurations	Portable Handset			
		Head	Body-worn	Hotspot	Product specific
1.	GSM Voice + Bluetooth	Yes	Yes		Yes
2.	GPRS/EDGE + Bluetooth	Yes	Yes	Yes	Yes
3.	WCDMA + Bluetooth	Yes	Yes	Yes	Yes
4.	LTE + Bluetooth	Yes	Yes	Yes	Yes
5.	GSM Voice + 2.4GHz WLAN	Yes	Yes		Yes
6.	GPRS/EDGE + 2.4GHz WLAN	Yes	Yes	Yes	Yes
7.	WCDMA + 2.4GHz WLAN	Yes	Yes	Yes	Yes
8.	LTE + 2.4GHz WLAN	Yes	Yes	Yes	Yes
9.	GSM Voice + WLAN5.3/5.5GHz	Yes	Yes		Yes
10.	GPRS/EDGE + WLAN5.3/5.5GHz	Yes	Yes		Yes
11.	WCDMA + WLAN5.3/5.5GHz	Yes	Yes		Yes
12.	LTE + WLAN5.3/5.5GHz	Yes	Yes		Yes
13.	GSM Voice + WLAN5.2/5.8GHz	Yes	Yes		Yes
14.	GPRS/EDGE + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes
15.	WCDMA + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes
16.	LTE + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes

General Note:

- This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), and LTE supports VoLTE function.
- EUT will choose each GSM, WCDMA and LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
- This device WLAN 2.4GHz supports hotspot operation and Bluetooth support tethering applications.
- WLAN 2.4GHz and Bluetooth share the same antenna so can't transmit simultaneously.
- WLAN 5GHz and Bluetooth can't transmit simultaneously.
- EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment.
- All licensed modes share the same antenna part and cannot transmit simultaneously.
- The reported SAR summation is calculated based on the same configuration and test position
- Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
 - Scalar SAR summation < 1.6W/kg.
 - $SPLSR = (SAR1 + SAR2)^{1.5} / (\min. \text{ separation distance, mm})$, and the peak separation distance is determined from the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$, where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
 - If $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary.
 - Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.

15.1 Head Exposure Conditions

WWAN Band		Exposure Position	1	2	4	6	1+2	1+4	1+6
			WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth	Summed	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
GSM	GSM850_UAT	Right Cheek	0.743	0.403	0.368	0.072	1.15	1.11	0.82
		Right Tilted	0.640	0.176	0.361	0.081	0.82	1.00	0.72
		Left Cheek	0.836	0.637	0.547	0.137	1.47	1.38	0.97
		Left Tilted	0.802	0.241	0.411	0.097	1.04	1.21	0.90
	GSM1900_UAT	Right Cheek	0.900	0.403	0.368	0.072	1.30	1.27	0.97
		Right Tilted	0.976	0.176	0.361	0.081	1.15	1.34	1.06
		Left Cheek	0.698	0.637	0.547	0.137	1.34	1.25	0.84
		Left Tilted	0.667	0.241	0.411	0.097	0.91	1.08	0.76
WCDMA	WCDMA V_UAT	Right Cheek	0.814	0.403	0.368	0.072	1.22	1.18	0.89
		Right Tilted	0.601	0.176	0.361	0.081	0.78	0.96	0.68
		Left Cheek	0.904	0.637	0.547	0.137	1.54	1.45	1.04
		Left Tilted	0.864	0.241	0.411	0.097	1.11	1.28	0.96
	WCDMA IV_UAT	Right Cheek	1.104	0.403	0.368	0.072	1.51	1.47	1.18
		Right Tilted	1.028	0.176	0.361	0.081	1.20	1.39	1.11
		Left Cheek	0.899	0.637	0.547	0.137	1.54	1.45	1.04
		Left Tilted	0.868	0.241	0.411	0.097	1.11	1.28	0.97
	WCDMA II_UAT	Right Cheek	1.087	0.403	0.368	0.072	1.49	1.46	1.16
		Right Tilted	1.113	0.176	0.361	0.081	1.29	1.47	1.19
		Left Cheek	0.766	0.637	0.547	0.137	1.40	1.31	0.90
		Left Tilted	0.796	0.241	0.411	0.097	1.04	1.21	0.89
LTE	LTE Band 5_UAT	Right Cheek	0.723	0.403	0.368	0.072	1.13	1.09	0.80
		Right Tilted	0.672	0.176	0.361	0.081	0.85	1.03	0.75
		Left Cheek	0.825	0.637	0.547	0.137	1.46	1.37	0.96
		Left Tilted	0.813	0.241	0.411	0.097	1.05	1.22	0.91
	LTE Band 4_UAT	Right Cheek	1.079	0.403	0.368	0.072	1.48	1.45	1.15
		Right Tilted	0.982	0.176	0.361	0.081	1.16	1.34	1.06
		Left Cheek	0.800	0.637	0.547	0.137	1.44	1.35	0.94
		Left Tilted	0.769	0.241	0.411	0.097	1.01	1.18	0.87
	LTE Band 2_UAT	Right Cheek	0.852	0.403	0.368	0.072	1.26	1.22	0.92
		Right Tilted	0.845	0.176	0.361	0.081	1.02	1.21	0.93
		Left Cheek	0.761	0.637	0.547	0.137	1.40	1.31	0.90
		Left Tilted	0.749	0.241	0.411	0.097	0.99	1.16	0.85
	LTE Band 7_UAT	Right Cheek	0.948	0.403	0.368	0.072	1.35	1.32	1.02
		Right Tilted	0.965	0.176	0.361	0.081	1.14	1.33	1.05
		Left Cheek	0.503	0.637	0.547	0.137	1.14	1.05	0.64
		Left Tilted	0.531	0.241	0.411	0.097	0.77	0.94	0.63



WWAN Band		Exposure Position	1	2	4	6	1+2	1+4	1+6
			WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth	Summed	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
GSM	GSM850_LAT	Right Cheek	0.399	0.403	0.368	0.072	0.80	0.77	0.47
		Right Tilted	0.179	0.176	0.361	0.081	0.36	0.54	0.26
		Left Cheek	0.300	0.637	0.547	0.137	0.94	0.85	0.44
		Left Tilted	0.213	0.241	0.411	0.097	0.45	0.62	0.31
	GSM1900_LAT	Right Cheek	0.138	0.403	0.368	0.072	0.54	0.51	0.21
		Right Tilted	0.119	0.176	0.361	0.081	0.30	0.48	0.20
		Left Cheek	0.131	0.637	0.547	0.137	0.77	0.68	0.27
		Left Tilted	0.125	0.241	0.411	0.097	0.37	0.54	0.22
WCDMA	WCDMA V_LAT	Right Cheek	0.330	0.403	0.368	0.072	0.73	0.70	0.40
		Right Tilted	0.168	0.176	0.361	0.081	0.34	0.53	0.25
		Left Cheek	0.252	0.637	0.547	0.137	0.89	0.80	0.39
		Left Tilted	0.165	0.241	0.411	0.097	0.41	0.58	0.26
	WCDMA IV_LAT	Right Cheek	0.086	0.403	0.368	0.072	0.49	0.45	0.16
		Right Tilted	0.078	0.176	0.361	0.081	0.25	0.44	0.16
		Left Cheek	0.077	0.637	0.547	0.137	0.71	0.62	0.21
		Left Tilted	0.073	0.241	0.411	0.097	0.31	0.48	0.17
	WCDMA II_LAT	Right Cheek	0.083	0.403	0.368	0.072	0.49	0.45	0.16
		Right Tilted	0.064	0.176	0.361	0.081	0.24	0.43	0.15
		Left Cheek	0.068	0.637	0.547	0.137	0.71	0.62	0.21
		Left Tilted	0.065	0.241	0.411	0.097	0.31	0.48	0.16
LTE	LTE Band 5_LAT	Right Cheek	0.315	0.403	0.368	0.072	0.72	0.68	0.39
		Right Tilted	0.170	0.176	0.361	0.081	0.35	0.53	0.25
		Left Cheek	0.251	0.637	0.547	0.137	0.89	0.80	0.39
		Left Tilted	0.162	0.241	0.411	0.097	0.40	0.57	0.26
	LTE Band 4_LAT	Right Cheek	0.085	0.403	0.368	0.072	0.49	0.45	0.16
		Right Tilted	0.076	0.176	0.361	0.081	0.25	0.44	0.16
		Left Cheek	0.080	0.637	0.547	0.137	0.72	0.63	0.22
		Left Tilted	0.067	0.241	0.411	0.097	0.31	0.48	0.16
	LTE Band 2_LAT	Right Cheek	0.101	0.403	0.368	0.072	0.50	0.47	0.17
		Right Tilted	0.062	0.176	0.361	0.081	0.24	0.42	0.14
		Left Cheek	0.107	0.637	0.547	0.137	0.74	0.65	0.24
		Left Tilted	0.070	0.241	0.411	0.097	0.31	0.48	0.17
	LTE Band 7_LAT	Right Cheek	0.113	0.403	0.368	0.072	0.52	0.48	0.19
		Right Tilted	0.055	0.176	0.361	0.081	0.23	0.42	0.14
		Left Cheek	0.090	0.637	0.547	0.137	0.73	0.64	0.23
		Left Tilted	0.070	0.241	0.411	0.097	0.31	0.48	0.17

15.2 Hotspot Exposure Conditions

WWAN Band		Exposure Position	1	2	4	6	1+2	1+4	1+6
			WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth	Summed	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
GSM	GSM850_UAT	Front	0.386	0.136	0.091	0.032	0.52	0.48	0.42
		Back	0.449	0.182	0.442	0.044	0.63	0.89	0.49
		Left side	0.293	0.017	0.087	0.028	0.31	0.38	0.32
		Right side	0.255	0.120	0.117	0.005	0.38	0.37	0.26
		Top side	0.295	0.058	0.180	0.011	0.35	0.48	0.31
	GSM1900_UAT	Front	0.474	0.136	0.091	0.032	0.61	0.57	0.51
		Back	0.389	0.182	0.442	0.044	0.57	0.83	0.43
		Left side	0.208	0.017	0.087	0.028	0.23	0.30	0.24
		Right side	0.070	0.120	0.117	0.005	0.19	0.19	0.08
		Top side	0.432	0.058	0.180	0.011	0.49	0.61	0.44
WCDMA	WCDMA V_UAT	Front	0.242	0.136	0.091	0.032	0.38	0.33	0.27
		Back	0.306	0.182	0.442	0.044	0.49	0.75	0.35
		Left side	0.208	0.017	0.087	0.028	0.23	0.30	0.24
		Right side	0.223	0.120	0.117	0.005	0.34	0.34	0.23
		Top side	0.172	0.058	0.180	0.011	0.23	0.35	0.18
	WCDMA IV_UAT	Front	0.753	0.136	0.091	0.032	0.89	0.84	0.79
		Back	0.416	0.182	0.442	0.044	0.60	0.86	0.46
		Left side	0.231	0.017	0.087	0.028	0.25	0.32	0.26
		Right side	0.077	0.120	0.117	0.005	0.20	0.19	0.08
		Top side	0.295	0.058	0.180	0.011	0.35	0.48	0.31
	WCDMA II_UAT	Front	0.865	0.136	0.091	0.032	1.00	0.96	0.90
		Back	0.856	0.182	0.442	0.044	1.04	1.30	0.90
		Left side	0.058	0.017	0.087	0.028	0.08	0.15	0.09
		Right side	0.040	0.120	0.117	0.005	0.16	0.16	0.05
		Top side	0.498	0.058	0.180	0.011	0.56	0.68	0.51
LTE	LTE Band 5_UAT	Front	0.263	0.136	0.091	0.032	0.40	0.35	0.30
		Back	0.316	0.182	0.442	0.044	0.50	0.76	0.36
		Left side	0.213	0.017	0.087	0.028	0.23	0.30	0.24
		Right side	0.216	0.120	0.117	0.005	0.34	0.33	0.22
		Top side	0.181	0.058	0.180	0.011	0.24	0.36	0.19
	LTE Band 4_UAT	Front	0.939	0.136	0.091	0.032	1.08	1.03	0.97
		Back	0.552	0.182	0.442	0.044	0.73	0.99	0.60
		Left side	0.253	0.017	0.087	0.028	0.27	0.34	0.28
		Right side	0.076	0.120	0.117	0.005	0.20	0.19	0.08
		Top side	0.543	0.058	0.180	0.011	0.60	0.72	0.55
	LTE Band	Front	0.877	0.136	0.091	0.032	1.01	0.97	0.91

	2_UAT	Back	0.734	0.182	0.442	0.044	0.92	1.18	0.78
		Left side	0.323	0.017	0.087	0.028	0.34	0.41	0.35
		Right side	0.023	0.120	0.117	0.005	0.14	0.14	0.03
		Top side	0.471	0.058	0.180	0.011	0.53	0.65	0.48
	LTE Band 7_UAT	Front	0.418	0.136	0.091	0.032	0.55	0.51	0.45
		Back	1.074	0.182	0.442	0.044	1.26	1.52	1.12
		Left side	0.281	0.017	0.087	0.028	0.30	0.37	0.31
		Right side	0.045	0.120	0.117	0.005	0.17	0.16	0.05
		Top side	0.480	0.058	0.180	0.011	0.54	0.66	0.49

WWAN Band		Exposure Position	1	2	4	6	1+2	1+4	1+6
			WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth	Summed	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
GSM	GSM850_LAT	Front	0.351	0.136	0.091	0.032	0.49	0.44	0.38
		Back	0.446	0.182	0.442	0.044	0.63	0.89	0.49
		Left side	0.232	0.017	0.087	0.028	0.25	0.32	0.26
		Right side	0.376	0.120	0.117	0.005	0.50	0.49	0.38
		Top side		0.058	0.180	0.011	0.06	0.18	0.01
		Bottom side	0.192				0.19	0.19	0.19
	GSM1900_LAT	Front	0.290	0.136	0.091	0.032	0.43	0.38	0.32
		Back	0.634	0.182	0.442	0.044	0.82	1.08	0.68
		Left side	0.062	0.017	0.087	0.028	0.08	0.15	0.09
		Right side	0.036	0.120	0.117	0.005	0.16	0.15	0.04
		Top side		0.058	0.180	0.011	0.06	0.18	0.01
		Bottom side	0.290				0.29	0.29	0.29
WCDMA	WCDMA V_LAT	Front	0.242	0.136	0.091	0.032	0.38	0.33	0.27
		Back	0.337	0.182	0.442	0.044	0.52	0.78	0.38
		Left side	0.164	0.017	0.087	0.028	0.18	0.25	0.19
		Right side	0.336	0.120	0.117	0.005	0.46	0.45	0.34
		Top side		0.058	0.180	0.011	0.06	0.18	0.01
		Bottom side	0.140				0.14	0.14	0.14
	WCDMA IV_LAT	Front	0.368	0.136	0.091	0.032	0.50	0.46	0.40
		Back	1.070	0.182	0.442	0.044	1.25	1.51	1.11
		Left side	0.024	0.017	0.087	0.028	0.04	0.11	0.05
		Right side	0.060	0.120	0.117	0.005	0.18	0.18	0.07
		Top side		0.058	0.180	0.011	0.06	0.18	0.01
		Bottom side	0.501				0.50	0.50	0.50
	WCDMA II_LAT	Front	0.539	0.136	0.091	0.032	0.68	0.63	0.57
		Back	1.050	0.182	0.442	0.044	1.23	1.49	1.09
		Left side	0.112	0.017	0.087	0.028	0.13	0.20	0.14
		Right side	0.128	0.120	0.117	0.005	0.25	0.25	0.13
		Top side		0.058	0.180	0.011	0.06	0.18	0.01
		Bottom side	0.555				0.56	0.56	0.56
LTE	LTE Band 5_LAT	Front	0.244	0.136	0.091	0.032	0.38	0.34	0.28
		Back	0.360	0.182	0.442	0.044	0.54	0.80	0.40
		Left side	0.135	0.017	0.087	0.028	0.15	0.22	0.16
		Right side	0.281	0.120	0.117	0.005	0.40	0.40	0.29
		Top side		0.058	0.180	0.011	0.06	0.18	0.01
		Bottom side	0.156				0.16	0.16	0.16
	LTE Band 4_LAT	Front	0.370	0.136	0.091	0.032	0.51	0.46	0.40
		Back	1.080	0.182	0.442	0.044	1.26	1.52	1.12

		Left side	0.059	0.017	0.087	0.028	0.08	0.15	0.09
		Right side	0.067	0.120	0.117	0.005	0.19	0.18	0.07
		Top side		0.058	0.180	0.011	0.06	0.18	0.01
		Bottom side	0.483				0.48	0.48	0.48
	LTE Band 2_LAT	Front	0.679	0.136	0.091	0.032	0.82	0.77	0.71
		Back	1.092	0.182	0.442	0.044	1.27	1.53	1.14
		Left side	0.345	0.017	0.087	0.028	0.36	0.43	0.37
		Right side	0.128	0.120	0.117	0.005	0.25	0.25	0.13
		Top side		0.058	0.180	0.011	0.06	0.18	0.01
		Bottom side	0.381				0.38	0.38	0.38
	LTE Band 7_LAT	Front	0.439	0.136	0.091	0.032	0.58	0.53	0.47
		Back	1.058	0.182	0.442	0.044	1.24	1.50	1.10
		Left side	0.041	0.017	0.087	0.028	0.06	0.13	0.07
		Right side	0.201	0.120	0.117	0.005	0.32	0.32	0.21
		Top side		0.058	0.180	0.011	0.06	0.18	0.01
		Bottom side	0.287				0.29	0.29	0.29

15.3 Body-Worn Accessory Exposure Conditions

WWAN Band		Exposure Position	1	2	4	6	1+2	1+4	1+6
			WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth	Summed	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
GSM	GSM850_UAT	Front	0.386	0.136	0.126	0.032	0.52	0.51	0.42
		Back	0.449	0.182	0.234	0.044	0.63	0.68	0.49
	GSM1900_UAT	Front	0.474	0.136	0.126	0.032	0.61	0.60	0.51
		Back	0.389	0.182	0.234	0.044	0.57	0.62	0.43
WCDMA	WCDMA V_UAT	Front	0.242	0.136	0.126	0.032	0.38	0.37	0.27
		Back	0.306	0.182	0.234	0.044	0.49	0.54	0.35
	WCDMA IV_UAT	Front	0.753	0.136	0.126	0.032	0.89	0.88	0.79
		Back	0.416	0.182	0.234	0.044	0.60	0.65	0.46
	WCDMA II_UAT	Front	0.865	0.136	0.126	0.032	1.00	0.99	0.90
		Back	0.856	0.182	0.234	0.044	1.04	1.09	0.90
LT E	LTE Band 5_UAT	Front	0.263	0.136	0.126	0.032	0.40	0.39	0.30
		Back	0.316	0.182	0.234	0.044	0.50	0.55	0.36
	LTE Band 4_UAT	Front	0.939	0.136	0.126	0.032	1.08	1.07	0.97
		Back	0.552	0.182	0.234	0.044	0.73	0.79	0.60
	LTE Band 2_UAT	Front	0.877	0.136	0.126	0.032	1.01	1.00	0.91
		Back	0.734	0.182	0.234	0.044	0.92	0.97	0.78
	LTE Band 7_UAT	Front	0.418	0.136	0.126	0.032	0.55	0.54	0.45
		Back	1.074	0.182	0.234	0.044	1.26	1.31	1.12

WWAN Band		Exposure Position	1	2	4	6	1+2	1+4	1+6
			WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth	Summed	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
GSM	GSM850_LAT	Front	0.351	0.136	0.126	0.032	0.49	0.48	0.38
		Back	0.446	0.182	0.234	0.044	0.63	0.68	0.49
	GSM1900_LAT	Front	0.290	0.136	0.126	0.032	0.43	0.42	0.32
		Back	0.634	0.182	0.234	0.044	0.82	0.87	0.68
WCDMA	WCDMA V_LAT	Front	0.242	0.136	0.126	0.032	0.38	0.37	0.27
		Back	0.337	0.182	0.234	0.044	0.52	0.57	0.38
	WCDMA IV_LAT	Front	0.368	0.136	0.126	0.032	0.50	0.49	0.40
		Back	1.070	0.182	0.234	0.044	1.25	1.30	1.11
	WCDMA II_LAT	Front	0.539	0.136	0.126	0.032	0.68	0.67	0.57
		Back	1.050	0.182	0.234	0.044	1.23	1.28	1.09
LTE	LTE Band 5_LAT	Front	0.244	0.136	0.126	0.032	0.38	0.37	0.28
		Back	0.360	0.182	0.234	0.044	0.54	0.59	0.40
	LTE Band 4_LAT	Front	0.370	0.136	0.126	0.032	0.51	0.50	0.40
		Back	1.080	0.182	0.234	0.044	1.26	1.31	1.12
	LTE Band 2_LAT	Front	0.679	0.136	0.126	0.032	0.82	0.81	0.71
		Back	1.092	0.182	0.234	0.044	1.27	1.33	1.14
	LTE Band 7_LAT	Front	0.439	0.136	0.126	0.032	0.58	0.57	0.47
		Back	1.058	0.182	0.234	0.044	1.24	1.29	1.10

Test Engineer : Changlin Huang, Bin He, Mengming Dai

16. Uncertainty Assessment

Per KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be $\leq 30\%$, for a confidence interval of $k = 2$. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. For this device, the highest measured 1-g SAR is less 1.5W/kg and highest measured 10-g SAR is less 3.75W/kg. Therefore, the measurement uncertainty table is not required in this report.

17. References

- [1] FCC 47 CFR Part 2 "Frequency Allocations and Radio Treaty Matters; General Rules and Regulations"
- [2] ANSI/IEEE Std. C95.1-1992, "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz", September 1992
- [3] IEEE Std. 1528-2013, "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 D05A v01r02, "Rel. 10 LTE SAR Test Guidance and KDB Inquiries", Oct 2015
- [13] FCC KDB 941225 D06 v02r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2015.

-----THE END-----



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_200322 Medium parameters used: $f = 835$ MHz; $\sigma = 0.902$ S/m; $\epsilon_r = 40.749$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C; Liquid Temperature : 22.4 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(9.69, 9.69, 9.69); Calibrated: 03/02/2020;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- 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) = 3.33 W/kg

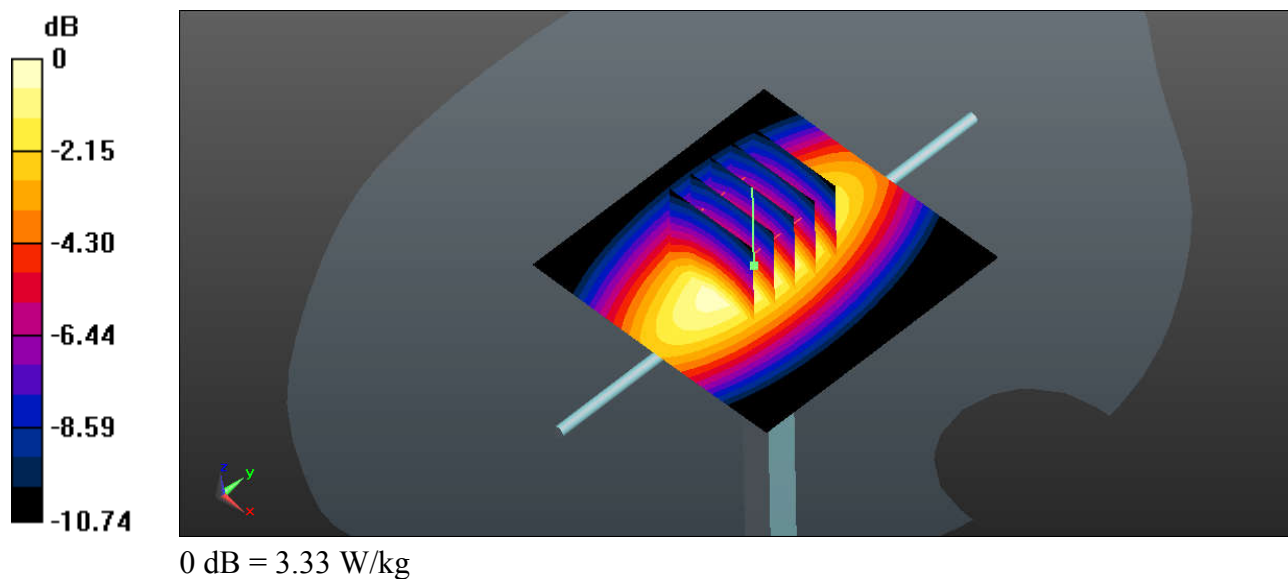
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 61.17 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 3.93 W/kg

SAR(1 g) = 2.53 W/kg; SAR(10 g) = 1.62 W/kg

Maximum value of SAR (measured) = 3.33 W/kg



System Check_Head_1750MHz**DUT: D1750V2-SN:1137**

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

Medium: HSL_1750_200327 Medium parameters used: $f = 1750$ MHz; $\sigma = 1.385$ S/m; $\epsilon_r = 39.563$; $\rho = 1000$ kg/m³

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

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(8.62, 8.62, 8.62); Calibrated: 03/02/2020;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- 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) = 13.7 W/kg

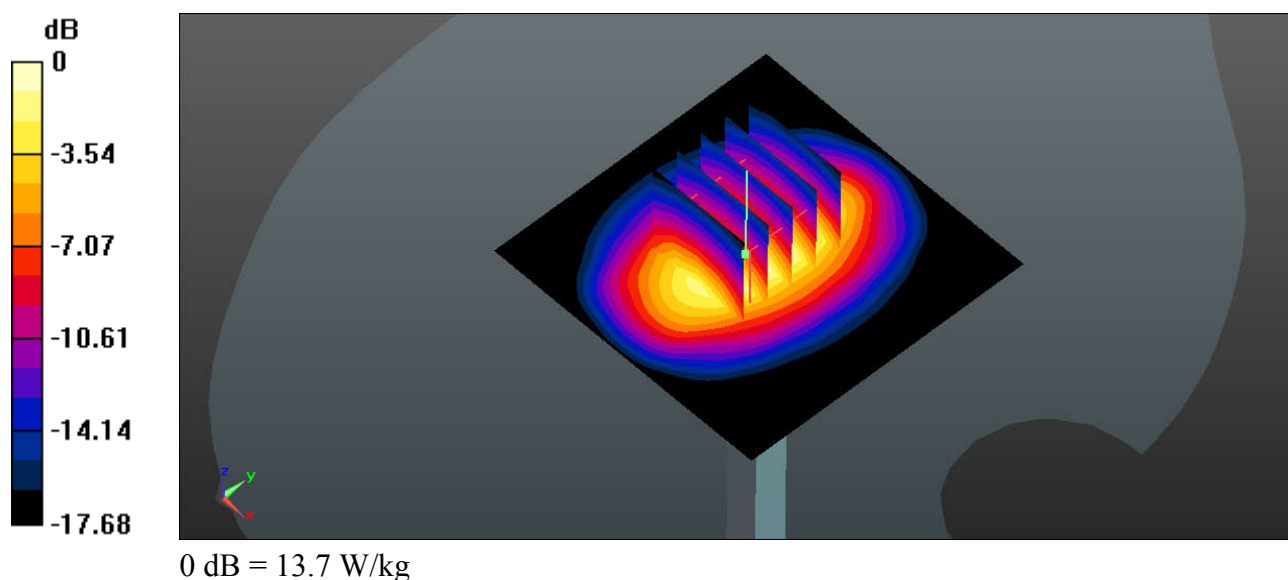
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 99.87 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 17.5 W/kg

SAR(1 g) = 9.46 W/kg; SAR(10 g) = 5.01 W/kg

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



System Check_Head_1750MHz**DUT: D1750V2-SN:1137**

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

Medium: HSL_1750_200410 Medium parameters used: $f = 1750$ MHz; $\sigma = 1.402$ S/m; $\epsilon_r = 41.374$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C; Liquid Temperature : 22.7 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(8.62, 8.62, 8.62); Calibrated: 03/02/2020;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- 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) = 13.9 W/kg

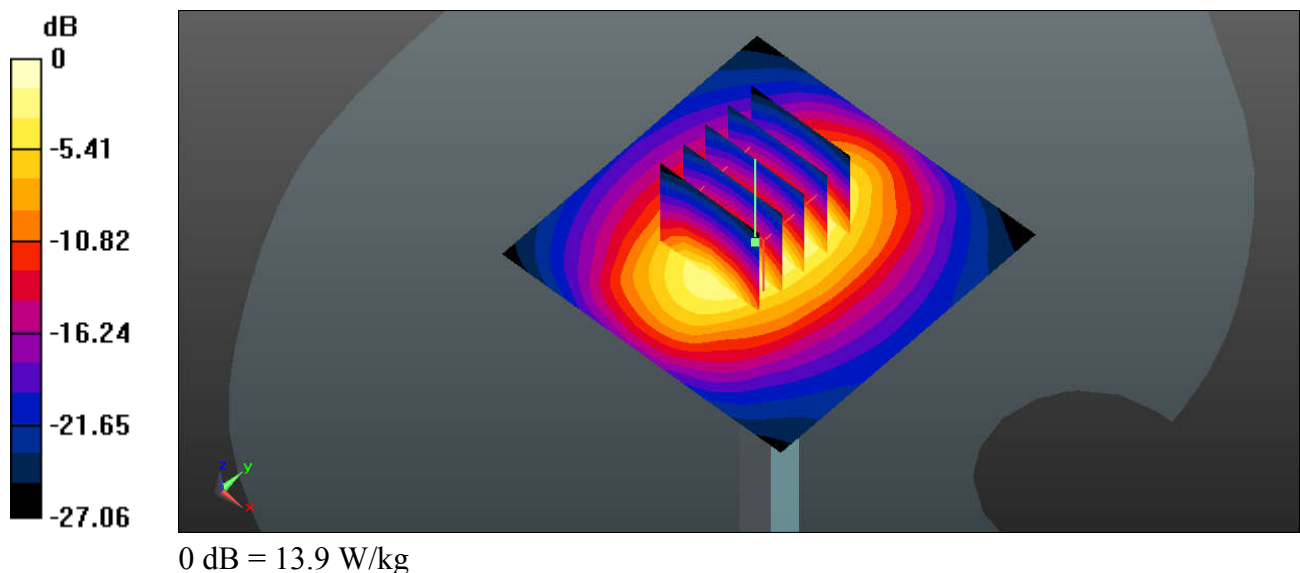
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 99.87 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 17.8 W/kg

SAR(1 g) = 9.64 W/kg; SAR(10 g) = 5.09 W/kg

Maximum value of SAR (measured) = 13.7 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_200328 Medium parameters used: $f = 1900$ MHz; $\sigma = 1.449$ S/m; $\epsilon_r = 39.097$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C; Liquid Temperature : 22.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(8.34, 8.34, 8.34); Calibrated: 03/02/2020;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- 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) = 15.9 W/kg

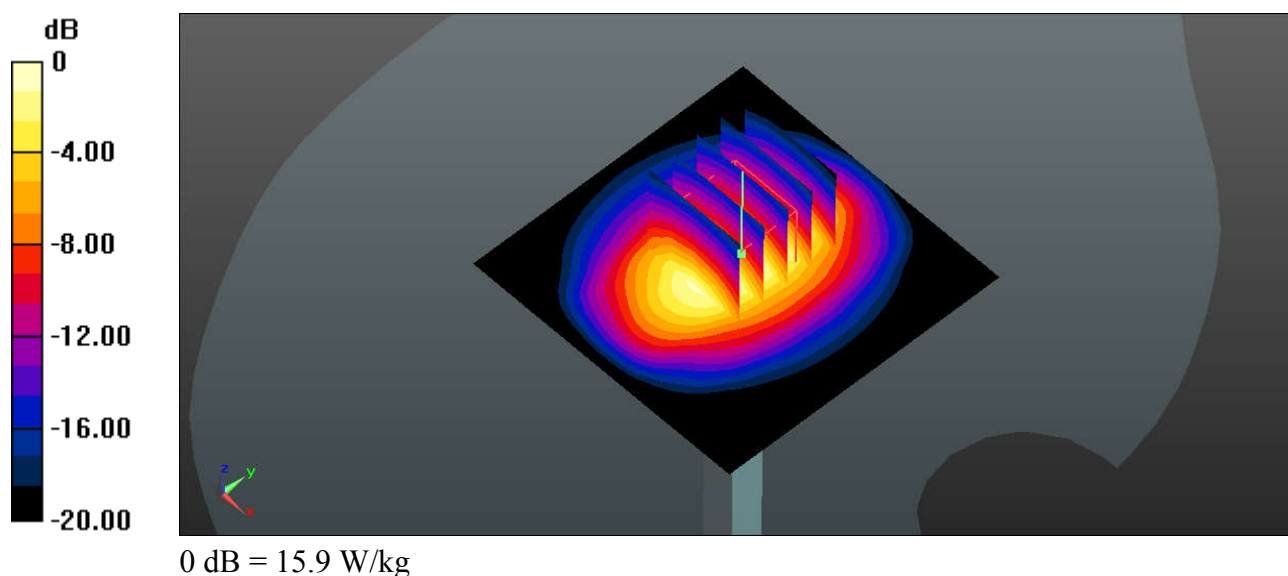
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 103.4 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 20.5 W/kg

SAR(1 g) = 10.6 W/kg; SAR(10 g) = 5.38 W/kg

Maximum value of SAR (measured) = 15.3 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_200411 Medium parameters used: $f = 1900$ MHz; $\sigma = 1.448$ S/m; $\epsilon_r = 39.145$; $\rho = 1000$ kg/m³

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

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(8.34, 8.34, 8.34); Calibrated: 03/02/2020;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- 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) = 15.9 W/kg

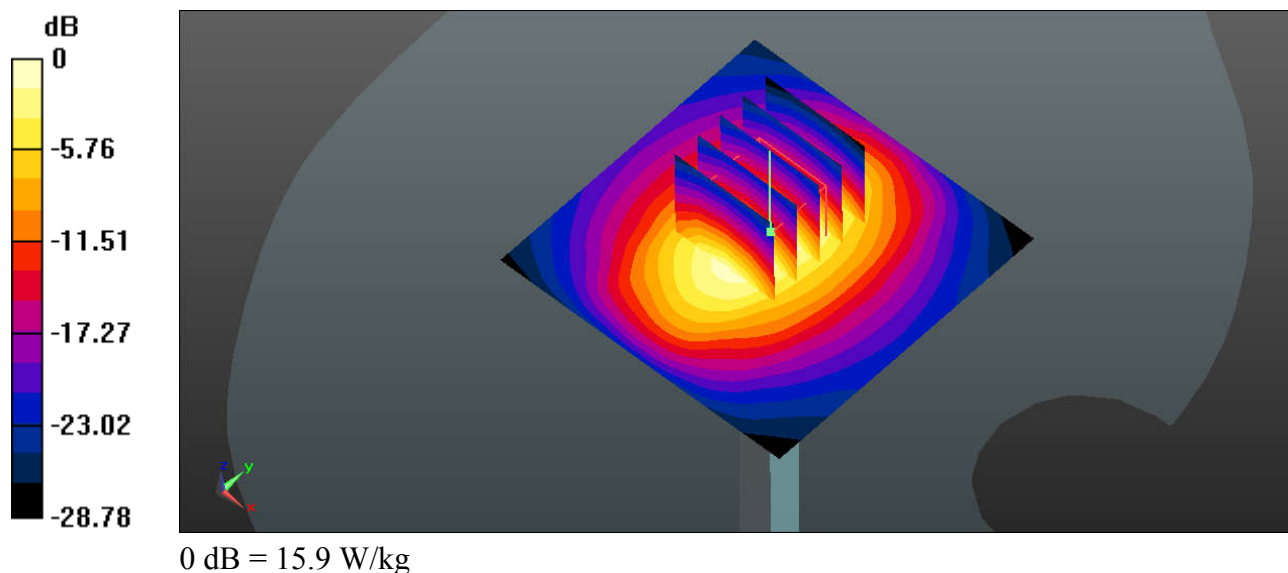
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 103.4 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 20.5 W/kg

SAR(1 g) = 10.5 W/kg; SAR(10 g) = 5.48 W/kg

Maximum value of SAR (measured) = 15.3 W/kg



System Check_Head_2450MHz**DUT: D2450V2-SN:924**

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

Medium: HSL_2450_200329 Medium parameters used: $f = 2450$ MHz; $\sigma = 1.81$ S/m; $\epsilon_r = 37.626$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C; Liquid Temperature : 22.7 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(7.8, 7.8, 7.8); Calibrated: 03/02/2020;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Left); Type: QD000P40CC; Serial: TP:1576
- 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) = 19.8 W/kg

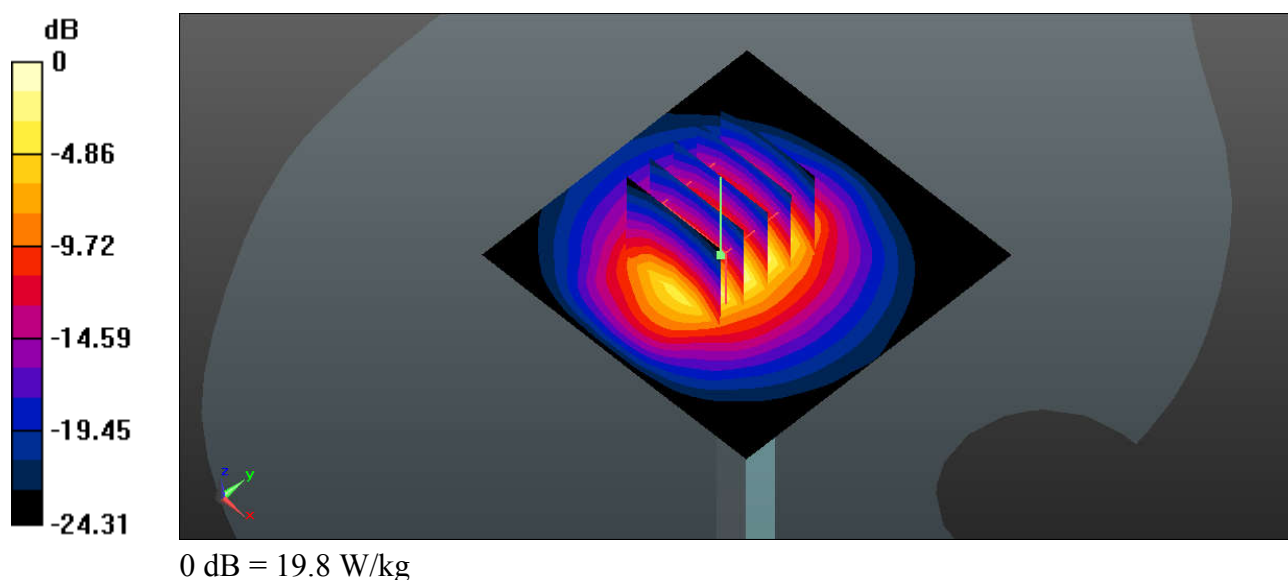
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 83.59 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 26.9 W/kg

SAR(1 g) = 12.8 W/kg; SAR(10 g) = 5.97 W/kg

Maximum value of SAR (measured) = 19.7 W/kg



System Check_Head_2450MHz**DUT: D2450V2-SN:924**

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

Medium: HSL_2450_200415 Medium parameters used: $f = 2450$ MHz; $\sigma = 1.829$ S/m; $\epsilon_r = 40.081$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C; Liquid Temperature : 22.7 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(7.8, 7.8, 7.8); Calibrated: 03/02/2020;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Left); Type: QD000P40CC; Serial: TP:1576
- 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) = 17.8 W/kg

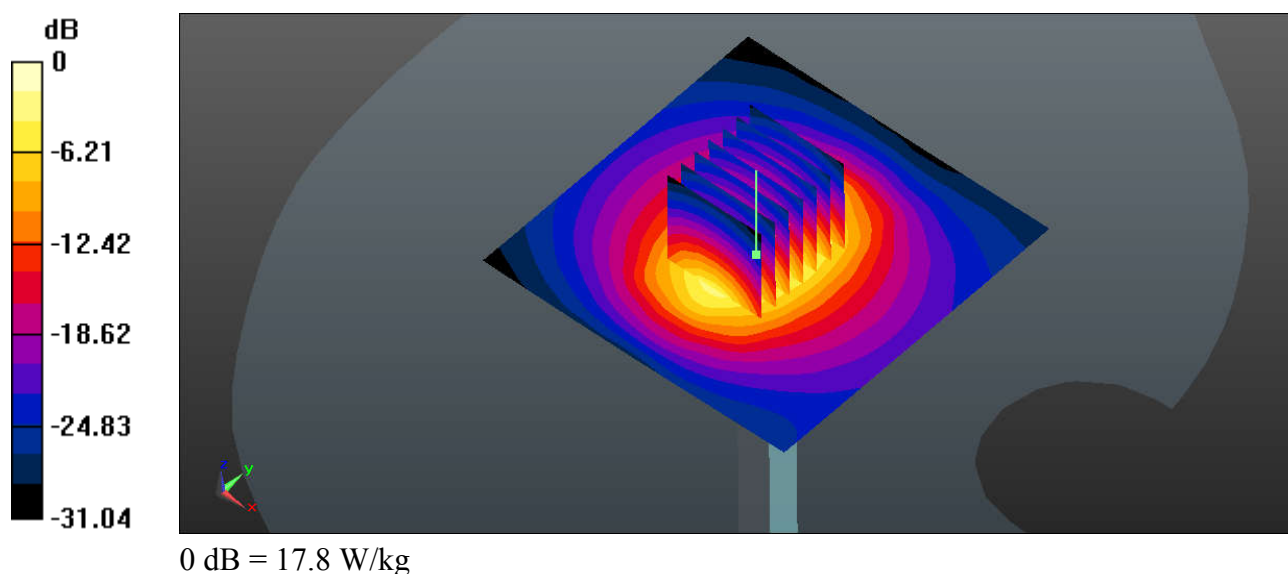
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 101.7 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 26.7 W/kg

SAR(1 g) = 13.2 W/kg; SAR(10 g) = 6.08 W/kg

Maximum value of SAR (measured) = 17.4 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_200326 Medium parameters used: $f = 2600$ MHz; $\sigma = 2.053$ S/m; $\epsilon_r = 38.335$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C; Liquid Temperature : 22.9 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(7.51, 7.51, 7.51); Calibrated: 03/02/2020;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Left); Type: QD000P40CC; Serial: TP:1576
- 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) = 23.8 W/kg

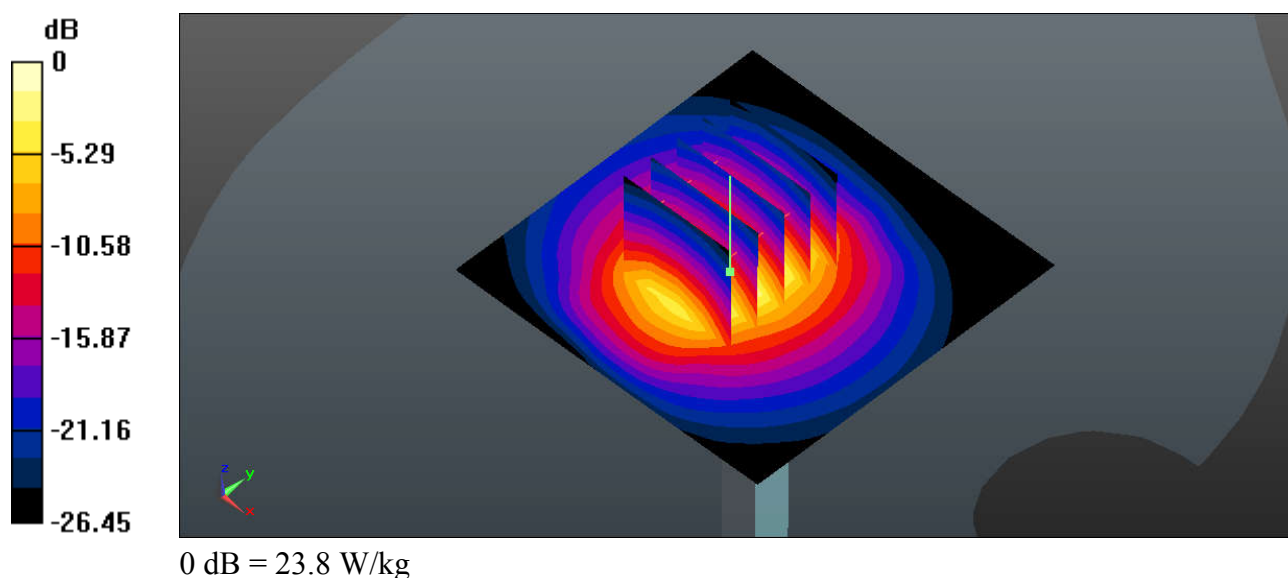
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 101.1 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 34.5 W/kg

SAR(1 g) = 14.9 W/kg; SAR(10 g) = 6.26 W/kg

Maximum value of SAR (measured) = 24.2 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_200409 Medium parameters used: $f = 2600$ MHz; $\sigma = 2.056$ S/m; $\epsilon_r = 37.587$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.5 °C; Liquid Temperature : 22.5 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(7.51, 7.51, 7.51); Calibrated: 03/02/2020;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- 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) = 21.2 W/kg

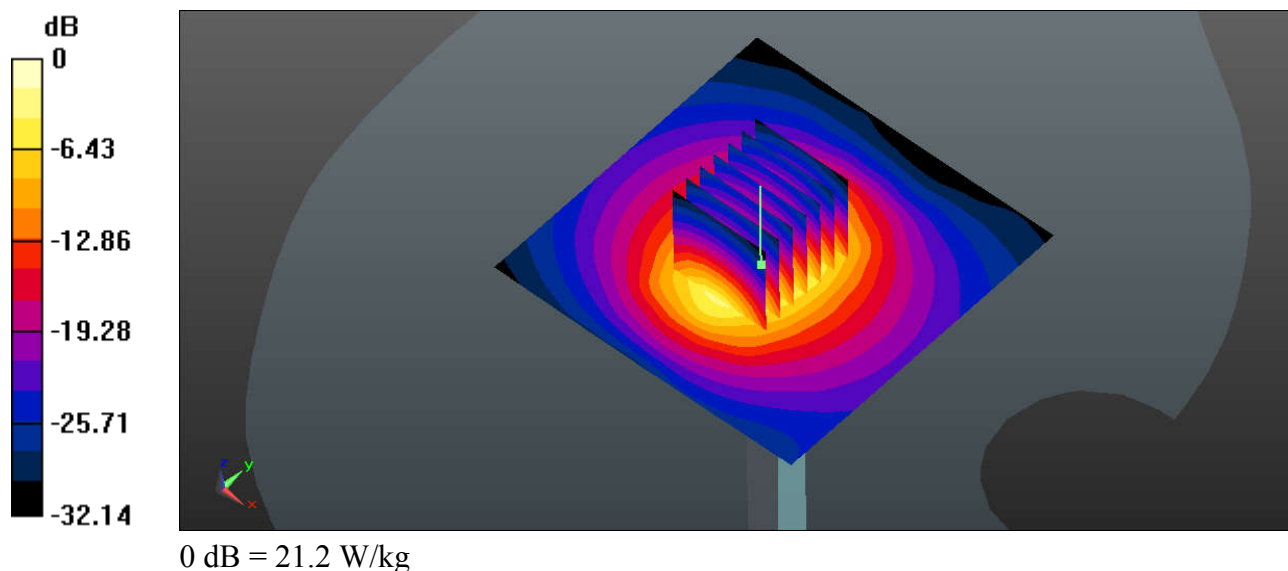
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 101.6 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 32.3 W/kg

SAR(1 g) = 15.3 W/kg; SAR(10 g) = 6.79 W/kg

Maximum value of SAR (measured) = 20.5 W/kg



System Check_Head_5250MHz**DUT: D5GHzV2-SN:1167**

Communication System: UID 0, CW (0); Frequency: 5250 MHz; Duty Cycle: 1:1

Medium: HSL_5250_200402 Medium parameters used: $f = 5250$ MHz; $\sigma = 4.767$ S/m; $\epsilon_r = 36.98$; $\rho = 1000$ kg/m³

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

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(5.14, 5.14, 5.14); Calibrated: 03/02/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Left); Type: QD000P40CC; Serial: TP:1576
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 19.4 W/kg

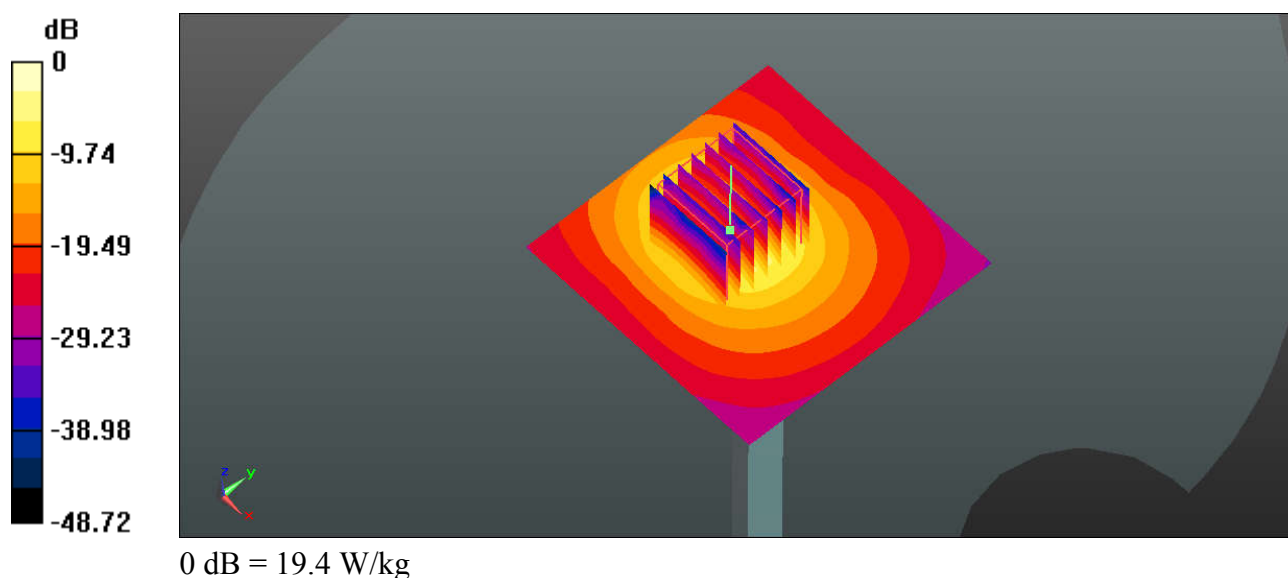
Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 45.69 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 31.5 W/kg

SAR(1 g) = 7.89 W/kg; SAR(10 g) = 2.03 W/kg

Maximum value of SAR (measured) = 19.6 W/kg



System Check_Head_5250MHz**DUT: D5GHzV2-SN:1167**

Communication System: UID 0, CW (0); Frequency: 5250 MHz; Duty Cycle: 1:1

Medium: HSL_5250_200412 Medium parameters used: $f = 5250$ MHz; $\sigma = 4.748$ S/m; $\epsilon_r = 36.881$; $\rho = 1000$ kg/m³

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

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(5.14, 5.14, 5.14); Calibrated: 03/02/2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 19.3 W/kg

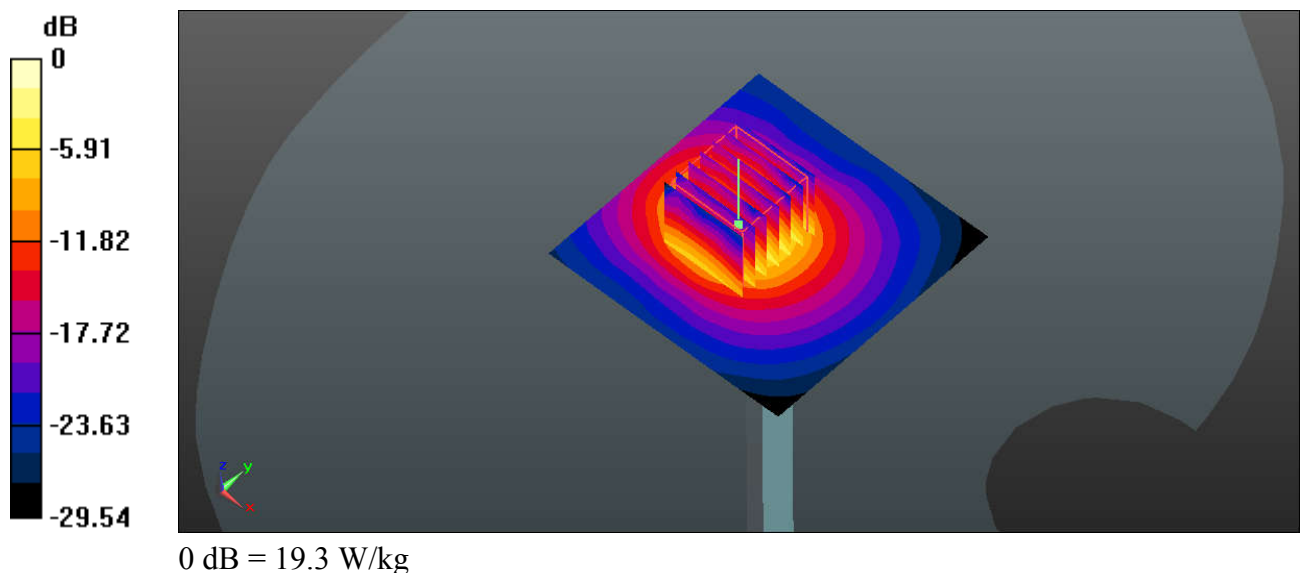
Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 45.69 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 31.4 W/kg

SAR(1 g) = 7.95 W/kg; SAR(10 g) = 2.22 W/kg

Maximum value of SAR (measured) = 19.5 W/kg



System Check_Head_5600MHz**DUT: D5GHzV2-SN:1167**

Communication System: UID 0, CW (0); Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: HSL_5600_200401 Medium parameters used: $f = 5600$ MHz; $\sigma = 4.954$ S/m; $\epsilon_r = 35.793$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.5 °C; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(4.56, 4.56, 4.56); Calibrated: 03/02/2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Left); Type: QD000P40CC; Serial: TP:1576
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10(7331)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 21.4 W/kg

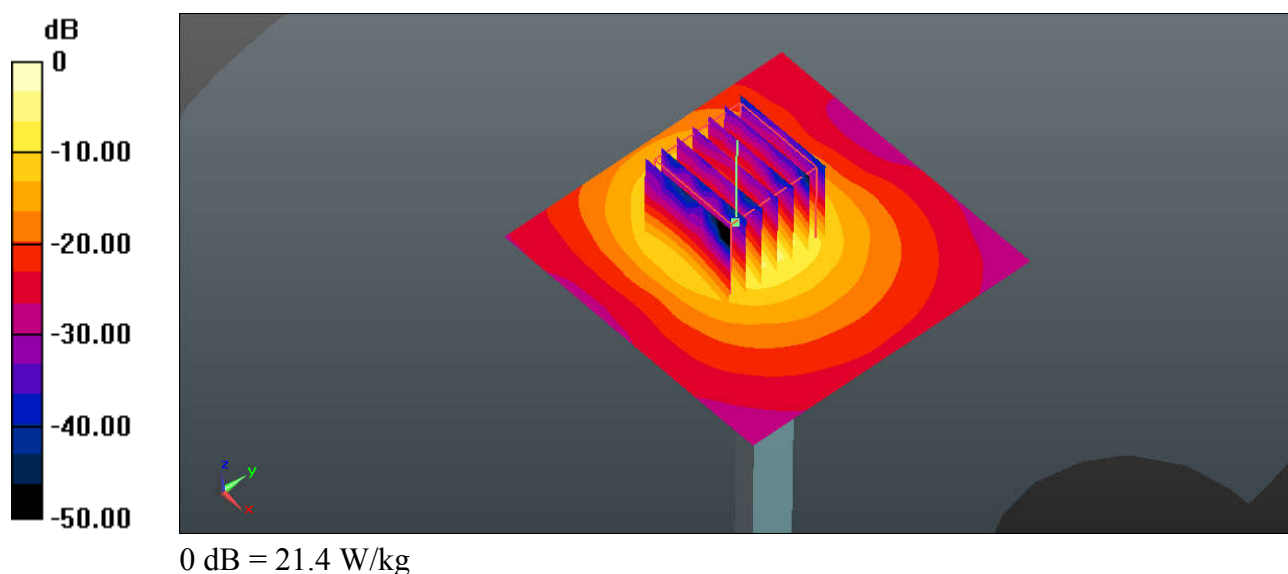
Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 47.56 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 36.0 W/kg

SAR(1 g) = 8.35 W/kg; SAR(10 g) = 2.15 W/kg

Maximum value of SAR (measured) = 21.1 W/kg



System Check_Head_5600MHz**DUT: D5GHzV2-SN:1167**

Communication System: UID 0, CW (0); Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: HSL_5600_200413 Medium parameters used: $f = 5600$ MHz; $\sigma = 5.182$ S/m; $\epsilon_r = 36.105$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(4.56, 4.56, 4.56); Calibrated: 03/02/2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 22.4 W/kg

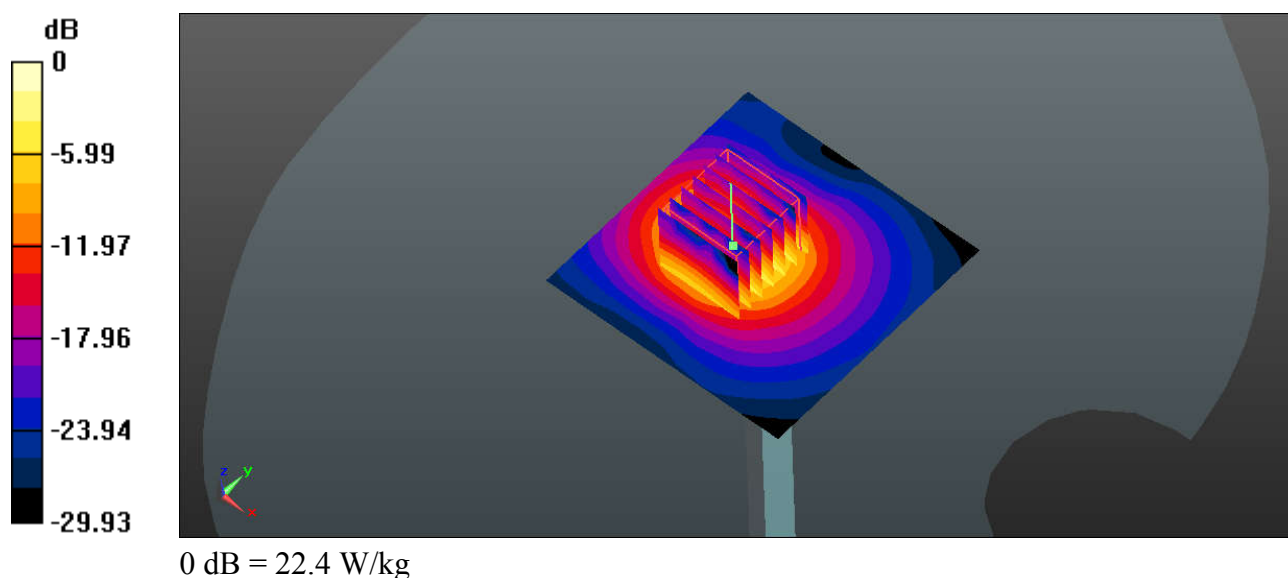
Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 47.56 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 37.7 W/kg

SAR(1 g) = 7.85 W/kg; SAR(10 g) = 2.13 W/kg

Maximum value of SAR (measured) = 22.1 W/kg



System Check_Head_5750MHz**DUT: D5GHzV2-SN:1167**

Communication System: UID 0, CW (0); Frequency: 5750 MHz; Duty Cycle: 1:1

Medium: HSL_5750_200403 Medium parameters used: $f = 5750$ MHz; $\sigma = 5.119$ S/m; $\epsilon_r = 35.497$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.5 °C; Liquid Temperature : 22.9 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(4.78, 4.78, 4.78); Calibrated: 03/02/2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Left); Type: QD000P40CC; Serial: TP:1576
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 19.7 W/kg

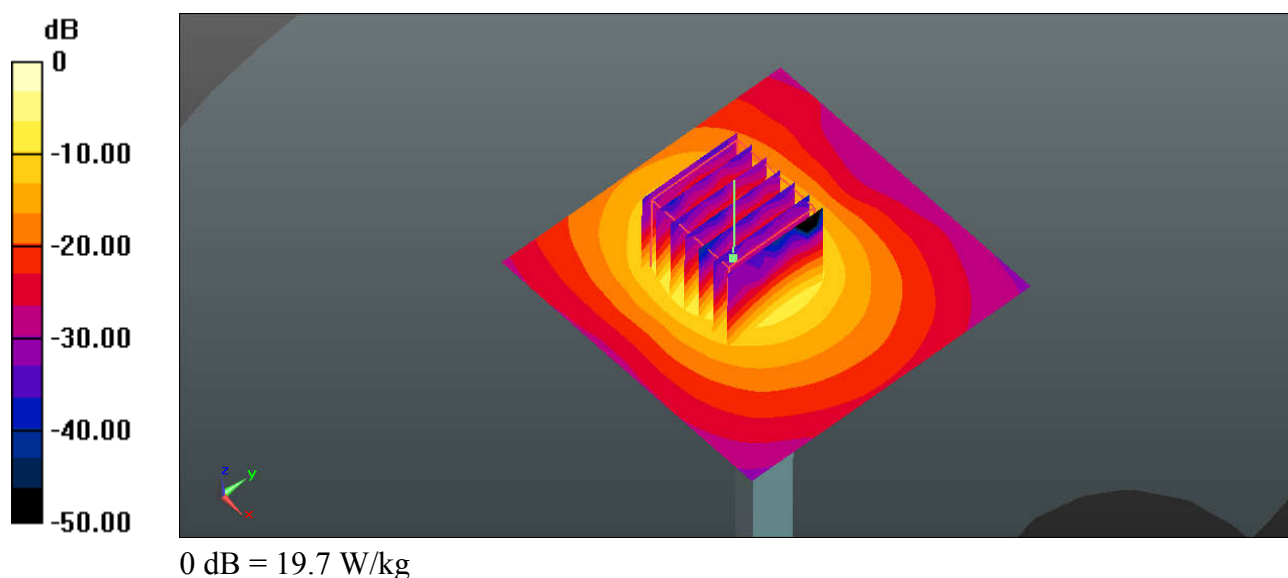
Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 50.71 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 35.1 W/kg

SAR(1 g) = 7.77 W/kg; SAR(10 g) = 2.02 W/kg

Maximum value of SAR (measured) = 20.5 W/kg



System Check_Head_5750MHz**DUT: D5GHzV2-SN:1167**

Communication System: UID 0, CW (0); Frequency: 5750 MHz; Duty Cycle: 1:1

Medium: HSL_5750_200415 Medium parameters used: $f = 5750$ MHz; $\sigma = 5.357$ S/m; $\epsilon_r = 35.815$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C; Liquid Temperature : 22.4 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(4.78, 4.78, 4.78); Calibrated: 03/02/2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 21.5 W/kg

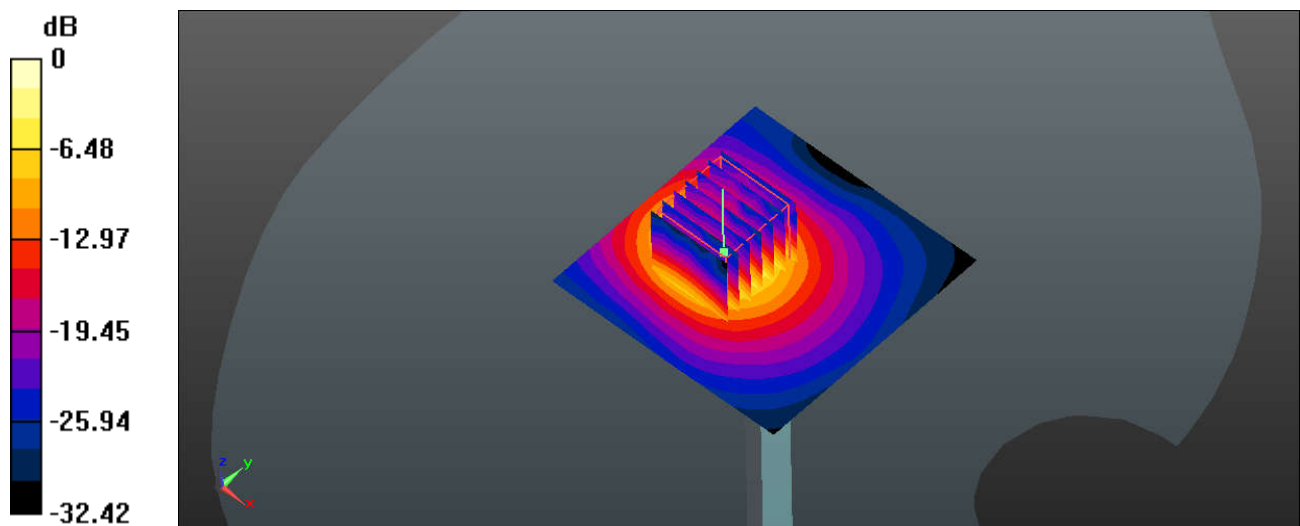
Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 36.34 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 39.0 W/kg

SAR(1 g) = 8.16 W/kg; SAR(10 g) = 2.23 W/kg

Maximum value of SAR (measured) = 22.5 W/kg



0 dB = 21.5 W/kg



Appendix B. Plots of High SAR Measurement

The plots are shown as follows.

01_GSM850_GPRS (4TX slots)_Left Cheek_Ch128

Communication System: UID 0, GPRS/EGPRS(4UP) (0); Frequency: 824.2 MHz; Duty Cycle: 1:2.08
Medium: HSL_835_200322 Medium parameters used: $f = 824.2$ MHz; $\sigma = 0.892$ S/m; $\epsilon_r = 40.852$;

$\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C; Liquid Temperature : 22.4 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(9.69, 9.69, 9.69); Calibrated: 03/02/2020;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch128/Area Scan (71x121x1): Interpolated grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.842 W/kg

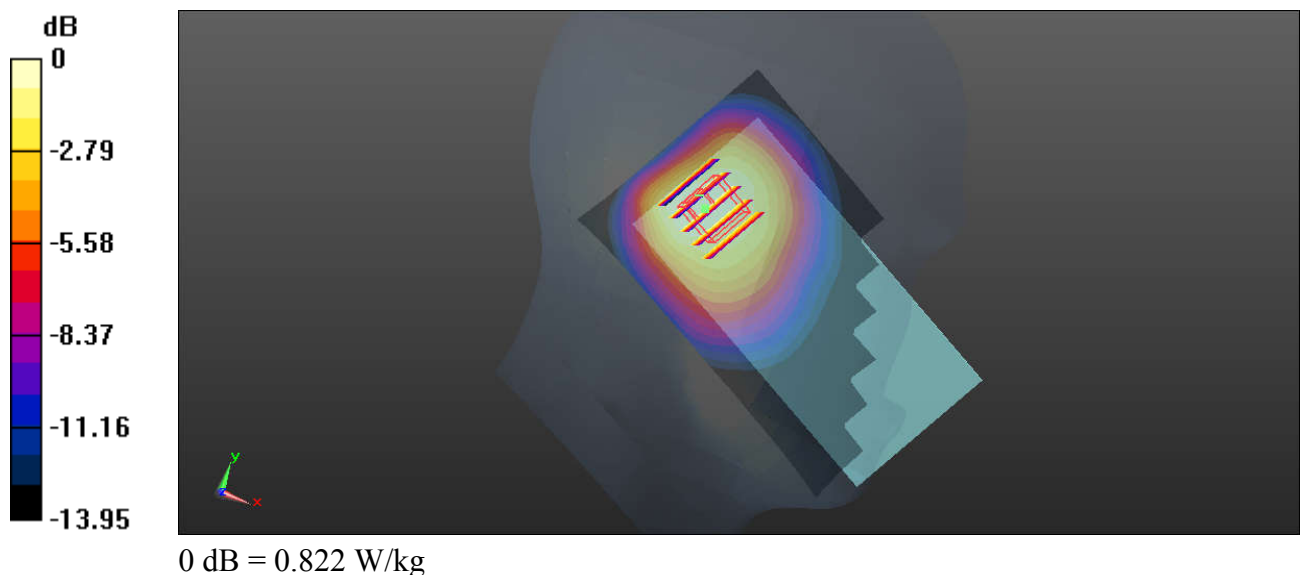
Ch128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 30.40 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 1.11 W/kg

SAR(1 g) = 0.718 W/kg; SAR(10 g) = 0.483 W/kg

Maximum value of SAR (measured) = 0.822 W/kg



02_GSM1900_GPRS (4TX slots)_Right Tiltde_Ch810

Communication System: UID 0, GPRS/EGPRS(4UP) (0); Frequency: 1909.8 MHz; Duty Cycle: 1:2.08
Medium: HSL_1900_200328 Medium parameters used: $f = 1909.8$ MHz; $\sigma = 1.459$ S/m; $\epsilon_r = 39.062$;

$\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C; Liquid Temperature : 22.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(8.34, 8.34, 8.34); Calibrated: 03/02/2020;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch810/Area Scan (71x121x1): Interpolated grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.965 W/kg

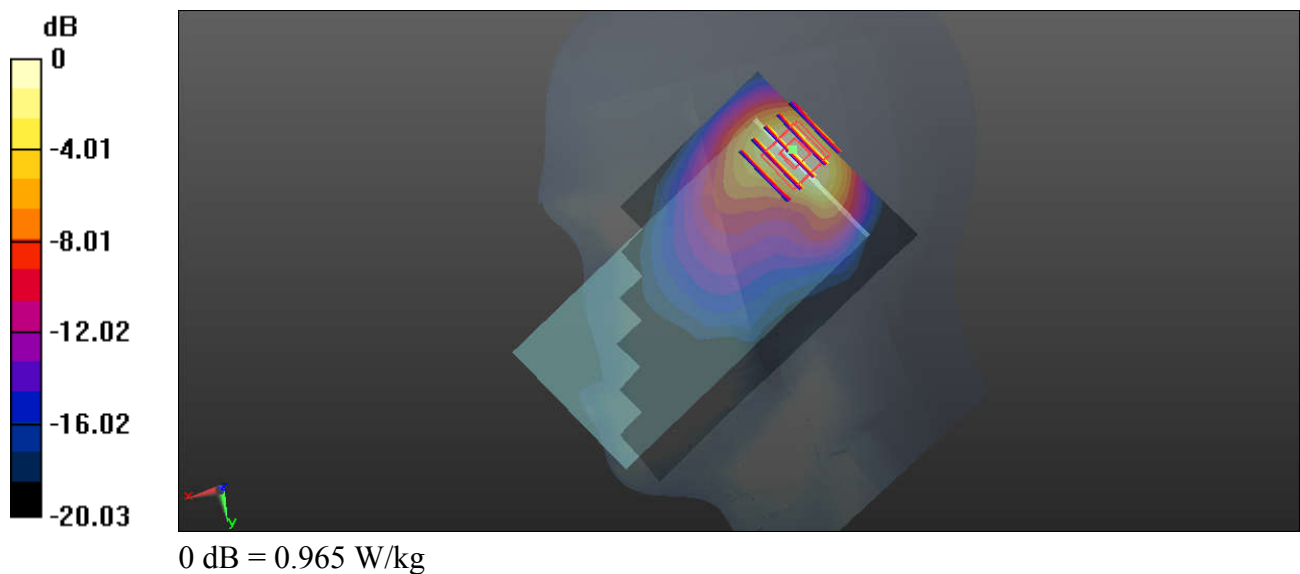
Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 15.16 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 1.45 W/kg

SAR(1 g) = 0.766 W/kg; SAR(10 g) = 0.387 W/kg

Maximum value of SAR (measured) = 0.987 W/kg



03_WCDMA V_RMC 12.2Kbps_Left Cheek_Ch4132

Communication System: UID 0, WCDMA (0); Frequency: 826.4 MHz; Duty Cycle: 1:1
Medium: HSL_835_200322 Medium parameters used: $f = 826.4$ MHz; $\sigma = 0.894$ S/m; $\epsilon_r = 40.831$;
 $\rho = 1000$ kg/m³
Ambient Temperature : 23.4 °C; Liquid Temperature : 22.4 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(9.69, 9.69, 9.69); Calibrated: 03/02/2020;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch4132/Area Scan (71x121x1): Interpolated grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.916 W/kg

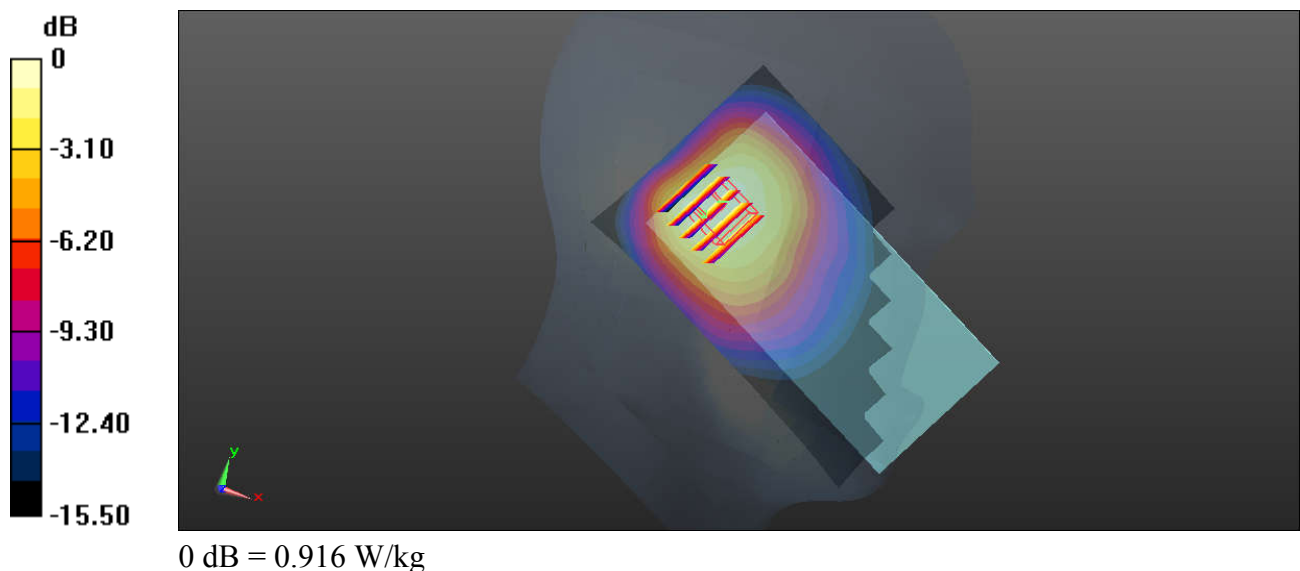
Ch4132/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 30.39 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 1.23 W/kg

SAR(1 g) = 0.755 W/kg; SAR(10 g) = 0.503 W/kg

Maximum value of SAR (measured) = 0.854 W/kg



04_WCDMA IV_RMC 12.2Kbps_Right Cheek_Ch1312

Communication System: UID 0, WCDMA (0); Frequency: 1712.4 MHz; Duty Cycle: 1:1
Medium: HSL_1750_200327 Medium parameters used: $f = 1712.4$ MHz; $\sigma = 1.355$ S/m; $\epsilon_r = 39.948$;

$\rho = 1000$ kg/m³

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

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(8.62, 8.62, 8.62); Calibrated: 03/02/2020;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch1312/Area Scan (71x121x1): Interpolated grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.15 W/kg

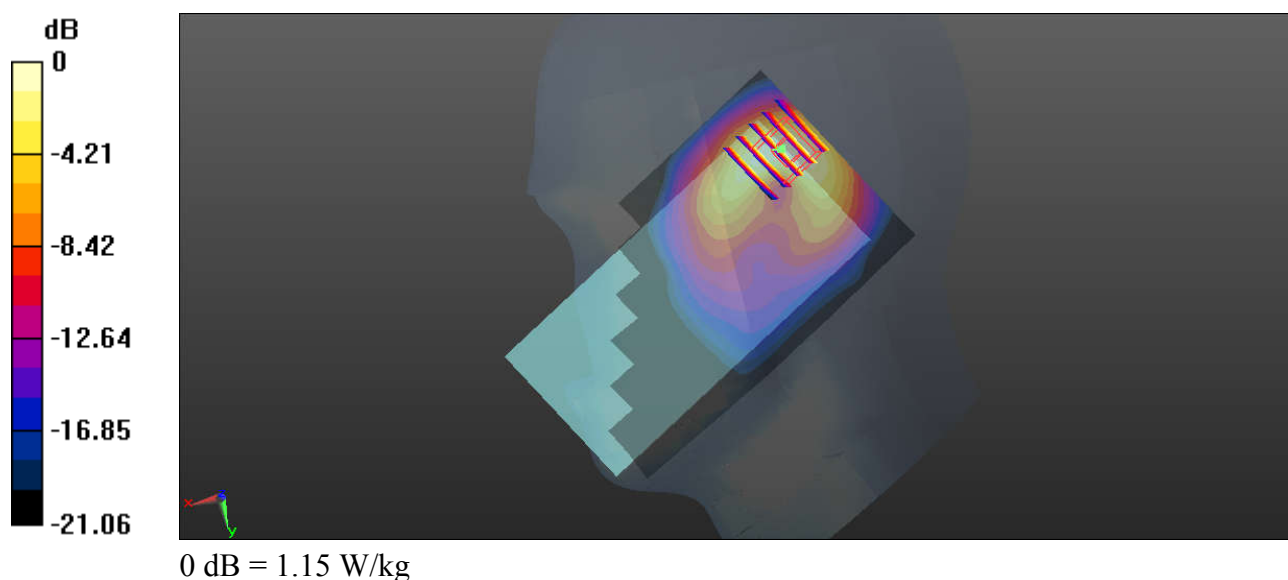
Ch1312/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.73 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 1.85 W/kg

SAR(1 g) = 0.925 W/kg; SAR(10 g) = 0.448 W/kg

Maximum value of SAR (measured) = 1.20 W/kg



05_WCDMA II_RMC 12.2Kbps_Right Tilted_Ch9538

Communication System: UID 0, WCDMA (0); Frequency: 1907.6 MHz; Duty Cycle: 1:1
Medium: HSL_1900_200328 Medium parameters used: $f = 1907.6$ MHz; $\sigma = 1.457$ S/m; $\epsilon_r = 39.066$;

$\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C; Liquid Temperature : 22.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(8.34, 8.34, 8.34); Calibrated: 03/02/2020;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch9538/Area Scan (71x121x1): Interpolated grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.965 W/kg

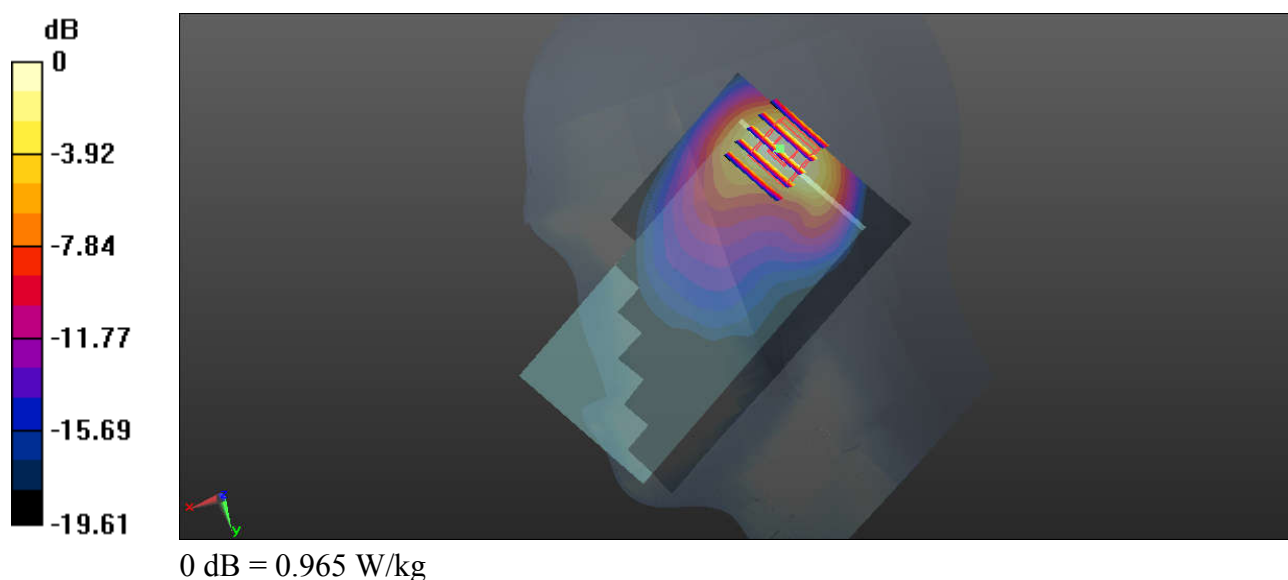
Ch9538/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 14.61 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 1.45 W/kg

SAR(1 g) = 0.768 W/kg; SAR(10 g) = 0.388 W/kg

Maximum value of SAR (measured) = 1.00 W/kg



06_LTE Band 5_10M_QPSK_1RB_25Offset_Left Cheek_Ch20525

Communication System: UID 0, FDD-LTE(QPSK_10M_1RB) (0); Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: HSL_835_200322 Medium parameters used: $f = 836.5$ MHz; $\sigma = 0.903$ S/m; $\epsilon_r = 40.74$;

$$\rho = 1000 \text{ kg/m}^3$$

Ambient Temperature : 23.4 °C; Liquid Temperature : 22.4 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(9.69, 9.69, 9.69); Calibrated: 03/02/2020;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch20525/Area Scan (71x121x1): Interpolated grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.822 W/kg

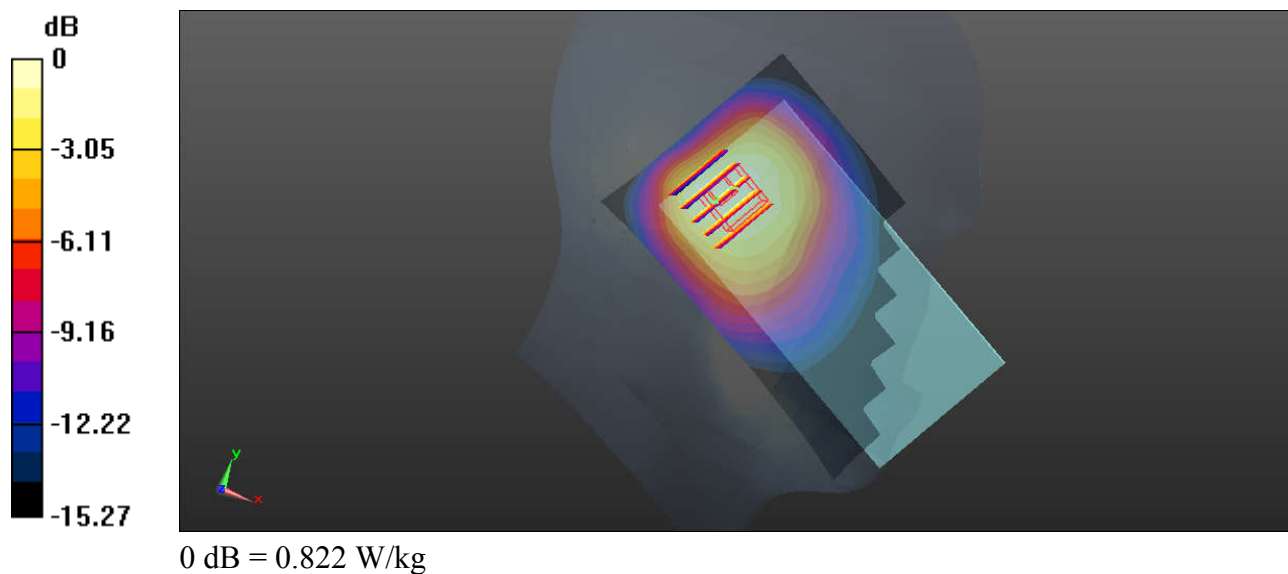
Ch20525/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 28.73 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 1.08 W/kg

SAR(1 g) = 0.685 W/kg; SAR(10 g) = 0.462 W/kg

Maximum value of SAR (measured) = 0.772 W/kg



07_LTE Band 4_20M_QPSK_1RB_49Offset_Right Cheek_Ch20175

Communication System: UID 0, FDD-LTE(QPSK_20M_1RB) (0); Frequency: 1732.5 MHz; Duty Cycle: 1:1
Medium: HSL_1750_200327 Medium parameters used: $f = 1732.5$ MHz; $\sigma = 1.37$ S/m; $\epsilon_r = 39.669$;

$\rho = 1000$ kg/m³

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

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(8.62, 8.62, 8.62); Calibrated: 03/02/2020;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch20175/Area Scan (71x121x1): Interpolated grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.07 W/kg

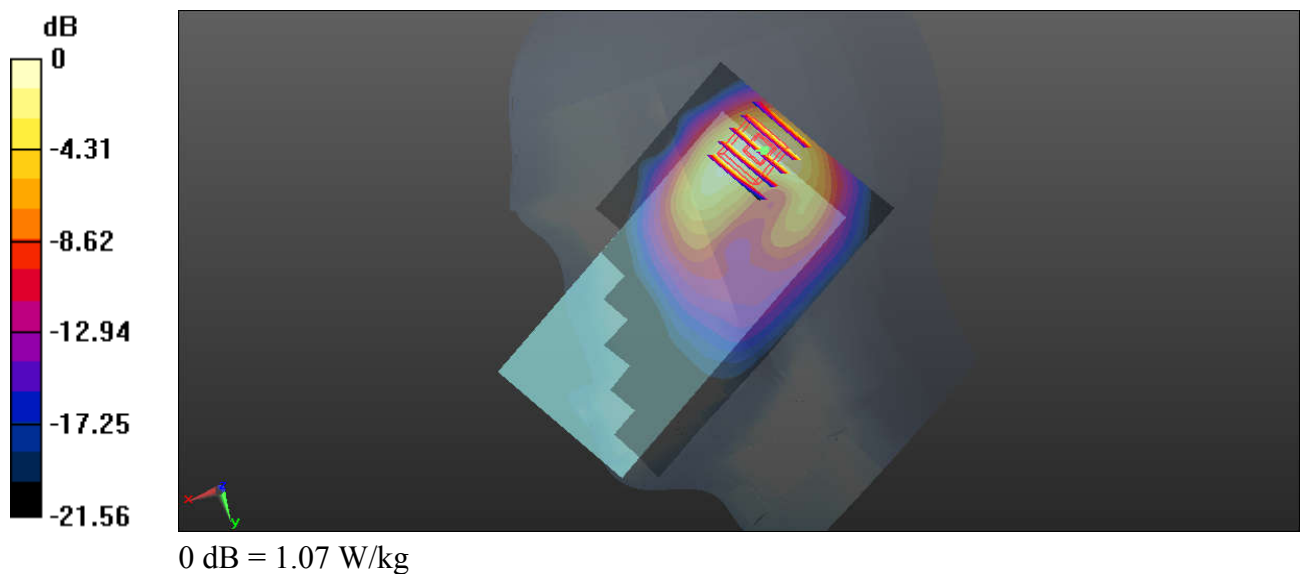
Ch20175/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.53 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 1.66 W/kg

SAR(1 g) = 0.859 W/kg; SAR(10 g) = 0.430 W/kg

Maximum value of SAR (measured) = 1.12 W/kg



08_LTE Band 2_20M_QPSK_1RB_49Offset_Right Cheek_Ch19100

Communication System: UID 0, FDD-LTE(QPSK_20M_1RB) (0); Frequency: 1900 MHz; DutyCycle: 1:1
Medium: HSL_1900_200328 Medium parameters used: $f = 1900$ MHz; $\sigma = 1.449$ S/m; $\epsilon_r = 39.097$;

$\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C; Liquid Temperature : 22.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(8.34, 8.34, 8.34); Calibrated: 03/02/2020;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch19100/Area Scan (71x121x1): Interpolated grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.818 W/kg

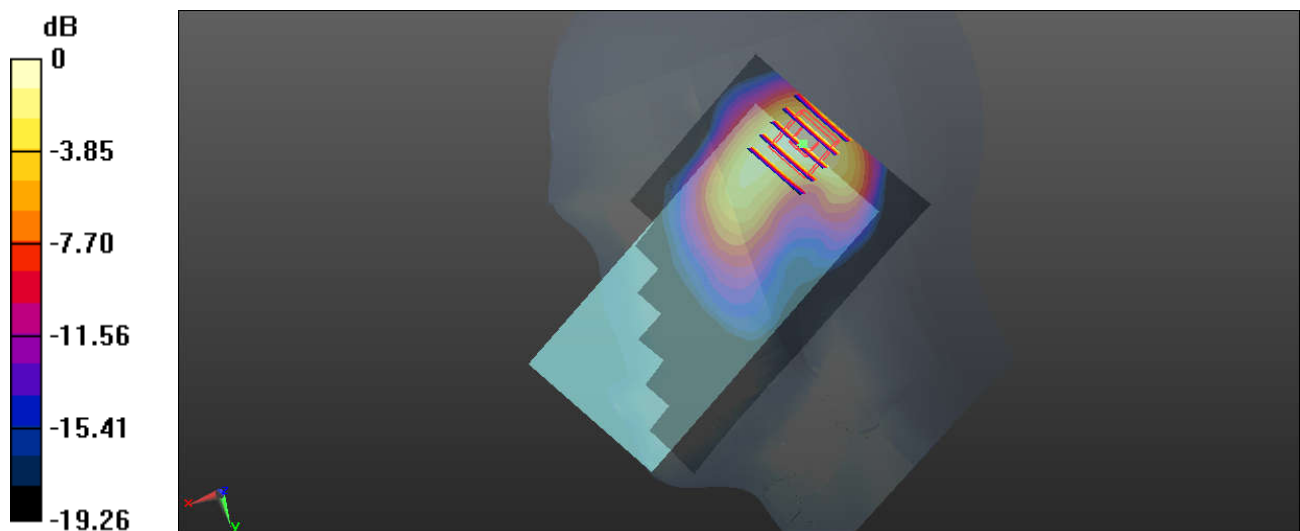
Ch19100/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.88 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 1.19 W/kg

SAR(1 g) = 0.626 W/kg; SAR(10 g) = 0.321 W/kg

Maximum value of SAR (measured) = 0.803 W/kg



0 dB = 0.818 W/kg

09_LTE Band 7_20M_QPSK_1RB_49Offset_Right Tilted_Ch20850

Communication System: UID 0, FDD-LTE(QPSK_20M_1RB) (0); Frequency: 2510 MHz;DutyCycle: 1:1
Medium: HSL_2600_200326 Medium parameters used: $f = 2510$ MHz; $\sigma = 1.948$ S/m; $\epsilon_r = 38.667$;

$\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C; Liquid Temperature : 22.9 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(7.51, 7.51, 7.51); Calibrated: 03/02/2020;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Left); Type: QD000P40CC; Serial: TP:1576
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch20850/Area Scan (81x91x1): Interpolated grid: dx=12mm, dy=12mm

Maximum value of SAR (interpolated) = 0.827 W/kg

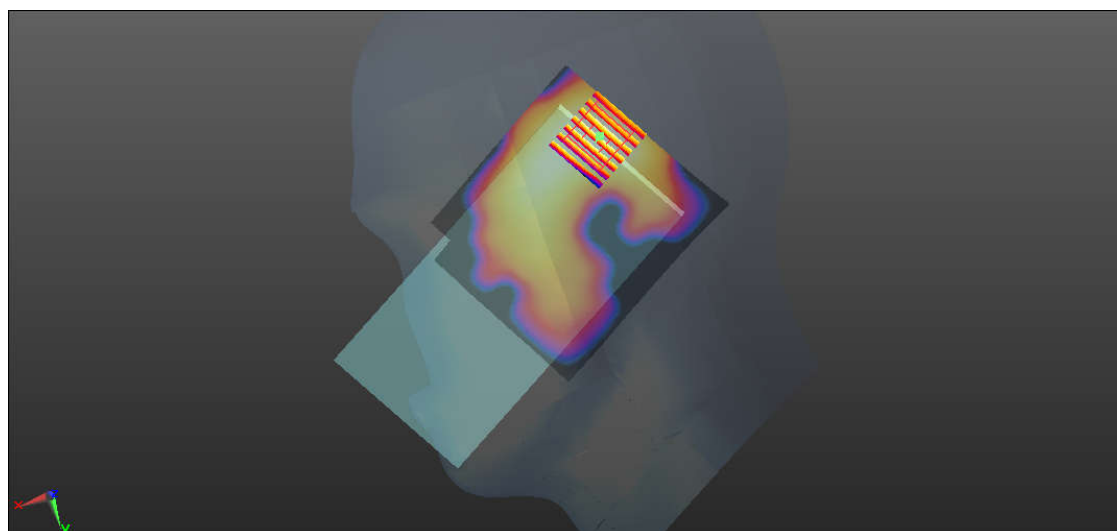
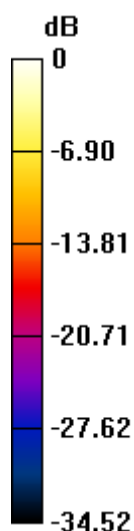
Ch20850/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.543 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 1.47 W/kg

SAR(1 g) = 0.724 W/kg; SAR(10 g) = 0.314 W/kg

Maximum value of SAR (measured) = 0.812 W/kg



0 dB = 0.827 W/kg

10_WLAN2.4GHz_802.11b 1Mbps_Left Cheek_Ch11

Communication System: UID 0, 802.11b/g/n 2.45GHz (0); Frequency: 2462 MHz; Duty Cycle: 1:1
Medium: HSL_2450_200329 Medium parameters used: $f = 2462$ MHz; $\sigma = 1.824$ S/m; $\epsilon_r = 37.585$;

$\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C; Liquid Temperature : 22.7 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(7.8, 7.8, 7.8); Calibrated: 03/02/2020;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Left); Type: QD000P40CC; Serial: TP:1576
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch11/Area Scan (81x81x1): Interpolated grid: dx=12mm, dy=12mm

Maximum value of SAR (interpolated) = 0.542 W/kg

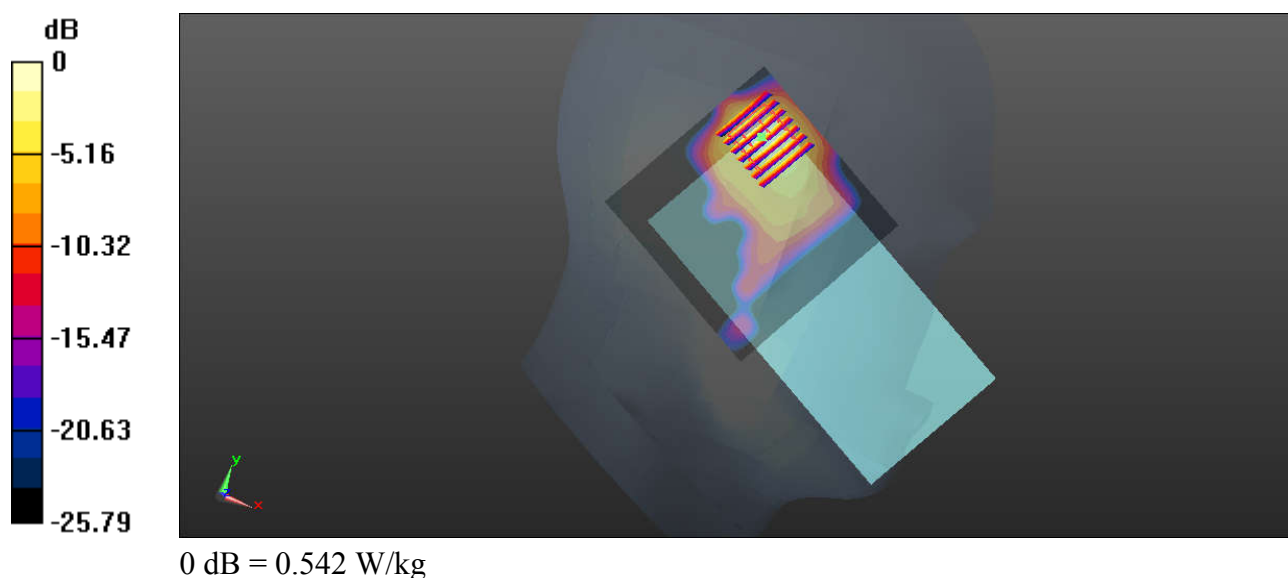
Ch11/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.045 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 1.10 W/kg

SAR(1 g) = 0.441 W/kg; SAR(10 g) = 0.189 W/kg

Maximum value of SAR (measured) = 0.595 W/kg



11_WLAN5.3GHz_802.11a 6Mbps_Left Cheek_Ch52

Communication System: UID 0, WIFI (0); Frequency: 5260 MHz; Duty Cycle: 1:1

Medium: HSL_5250_200402 Medium parameters used: $f = 5260$ MHz; $\sigma = 4.613$ S/m; $\epsilon_r = 36.201$; $\rho = 1000$ kg/m³

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

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(5.14, 5.14, 5.14); Calibrated: 03/02/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Left); Type: QD000P40CC; Serial: TP:1576
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch52/Area Scan (91x111x1): Interpolated grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.247 W/kg

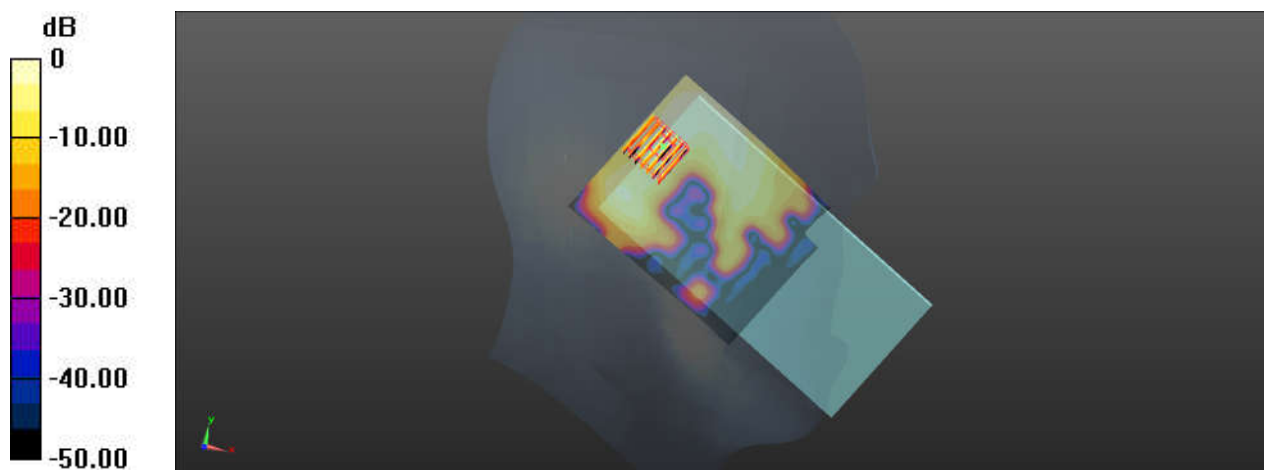
Ch52/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 5.125 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 0.396 W/kg

SAR(1 g) = 0.101 W/kg; SAR(10 g) = 0.032 W/kg

Maximum value of SAR (measured) = 0.243 W/kg



0 dB = 0.243 W/kg = -6.14 dBW/kg

12_WLAN5.5GHz_802.11a 6Mbps_Left Cheek_Ch116

Communication System: UID 0, WIFI (0); Frequency: 5580 MHz; Duty Cycle: 1:1
Medium: HSL_5600_200401 Medium parameters used: $f = 5580$ MHz; $\sigma = 4.945$ S/m; $\epsilon_r = 35.86$;
 $\rho = 1000$ kg/m³
Ambient Temperature : 23.5 °C ; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(4.56, 4.56, 4.56); Calibrated: 03/02/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Left); Type: QD000P40CC; Serial: TP:1576
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch116/Area Scan (91x111x1): Interpolated grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.669 W/kg

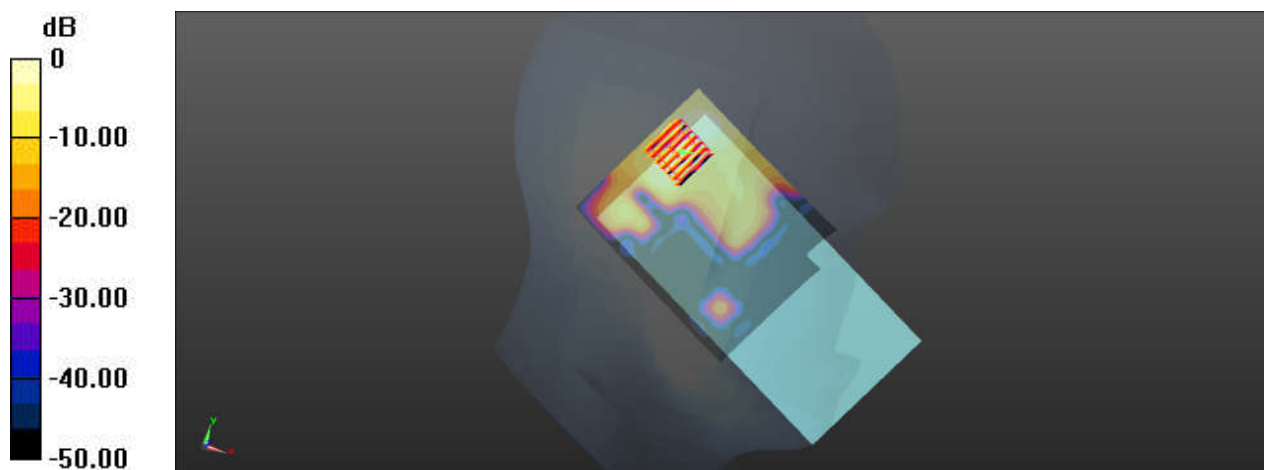
Ch116/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 5.199 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 1.20 W/kg

SAR(1 g) = 0.261 W/kg; SAR(10 g) = 0.076 W/kg

Maximum value of SAR (measured) = 0.651 W/kg



0 dB = 0.651 W/kg

13_WLAN5.8GHz_802.11a 6Mbps_Left Cheek_Ch157

Communication System: UID 0, WIFI (0); Frequency: 5785 MHz; Duty Cycle: 1:1

Medium: HSL_5750_200403 Medium parameters used: $f = 5785$ MHz; $\sigma = 5.181$ S/m; $\epsilon_r = 35.469$;

$\rho = 1000$ kg/m³

Ambient Temperature : 23.5 °C; Liquid Temperature : 22.9 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(4.78, 4.78, 4.78); Calibrated: 03/02/2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1356; Calibrated: 16/10/2019
- Phantom: SAM with CRP v4.0(Left); Type: QD000P40CC; Serial: TP:1576
- Measurement SW:DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10(7331)

Ch157/Area Scan (91x111x1): Interpolated grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.865 W/kg

Ch157/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 7.101 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 1.90 W/kg

SAR(1 g) = 0.398 W/kg; SAR(10 g) = 0.120 W/kg

Maximum value of SAR (measured) = 1.02 W/kg

