SAR TEST REPORT

HCT CO., LTD

EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
FCC ID:	ZNFD956
Model:	LG-D956
Additional Model:	D956, LGD956, LG-D951, D951, LGD951
Date of Issue:	Jan. 10, 2014
Test report No.:	HCTA1312FS02-03
Test Laboratory:	**HCT CO., LTD.** 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea TEL: +82 31 645 6300 FAX: +82 31 645 6401
Applicant :	**LG Electronics, MobileComm U.S.A., Inc.** 1000 Sylvan Avenue, Englewood Cliffs NJ 07632
Testing has been carried out in accordance with:	RSS-102 Issue 4; Health Canada Safety Code 6 47CFR §2.1093 ANSI/ IEEE C95.1 – 1992 IEEE 1528-2003
Test result:	The tested device complies with the requirements in respect of all parameters subject to the test. The test results and statements relate only to the items tested. The test report shall not be reproduced except in full, without written approval of the laboratory.
Signature	Report prepared by : Young –Soo Jang Test Engineer of SAR Part Approved by : Jae-Sang So Manager of SAR Part

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Revision History

Rev.	Issue DATE	DESCRIPTION
HCTA1312FS02	Dec. 27, 2013	Initial Issue
HCTA1312FS02-01	Jan. 07, 2014	Sec. 3: was revised. Page 33 WCDMA Average Conducted Output Power Table title was revised. Sec. 13.3-1 and Sec 13.3-2 typo(Seperation Distance) : was revised. Sec. 11.4.1 typo: was revised. Sec. 15.1 5 GHz WIFI table : was revised. Sec. 15.3 : was revised. Attachment 1 Plot 9, Plot 10 typo : was revised. Attachment 1 Plot 10 : was revised.(Input hightest SAR data plot in Sec. 13.2-1)
HCTA1312FS02-02	Jan. 08, 2014	Sec. 11.3.5 typo: was revised.
HCTA1312FS02-03	Jan. 10, 2014	Sec.3 , Sec. 13.1-5 and Sec 15.1 typo: was revised.

1. INTRODUCTION

The FCC has adopted the guidelines for evaluating the environmental effects of radio frequency radiation in ET Docket 93-62 on Aug. 6, 1996 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices.

The safety limits used for the environmental evaluation measurements are based on the criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (SAR) in IEEE/ANSI C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz. 1992 by the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017. The measurement procedure described in IEEE/ANSI C95.3-1992 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave is used for guidance in measuring SAR due to the RF radiation exposure from the Equipment Under Test (EUT). These criteria for SAR evaluation are similar to those recommended by the National Council on Radiation Protection and Measurements (NCRP) in Biological Effects and Exposure Criteria for Radio frequency Electromagnetic Fields," NCRP Report No. 86 NCRP, 1986, Bethesda, MD 20814. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards.

SAR Definition

Specific Absorption Rate (SAR) is defined as the time derivative of the incremental electromagnetic energy (d*W*) absorbed by (dissipated in) an incremental mass (d*m*) contained in a volume element (d*V*) of a given density (*r*). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body.

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

Figure 1. SAR Mathematical Equation

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

$$SAR = \sigma E^2 / \rho$$

Where:
σ = conductivity of the tissue-simulant material (S/m)
ρ = mass density of the tissue-simulant material (kg/m^3)
E = Total RMS electric field strength (V/m)

NOTE: The primary factors that control rate of energy absorption were found to be the wavelength of the incident field in relations to the dimensions and geometry of the irradiated organism, the orientation of the organism in relation to the polarity of field vectors, the presence of reflecting surfaces, and whether conductive contact is made by the organism with a ground plane.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC KDB Procedure, IEEE Standard 1528-2003 & IEEE 1528a-2005 and the following published KDB procedures.

- FCC KDB Publication 941225 D01 SAR test for 3G devices v02
- FCC KDB Publication 941225 D02 HSPA and 1x Advanced v02r02
- FCC KDB Publication 941225 D03 SAR Test Reduction GSM GPRS EDGE v01
- FCC KDB Publication 941225 D05 SAR for LTE Devices v02r03
- FCC KDB Publication 941225 D06 Hot Spot SAR v01r01
- FCC KDB Publication 248227 D01v01r02(SAR Considerationa for 802.11 Devices)
- FCC KDB Publication 447498 D01v05r01 (General SAR Guidance)
- FCC KDB Publication 648474 D04 Handset SAR v01r02
- FCC KDB Publication 865664 D01 SAR measurement 100 MHz to 6 GHz v01r02
- FCC KDB Publication 865664 D02 SAR Reporting v01r01
- April 2013 TCB Workshop Notes (IEEE 802.11ac)

3. DESCRIPTION OF DEVICE

Environmental evaluation measurements of specific absorption rate (SAR) distributions in emulated human head and body tissues exposed to radio frequency (RF) radiation from wireless portable devices for compliance with the rules and regulations of the U.S. Federal Communications Commission (FCC).

<table>
<tr><td>EUT Type</td><td colspan="6">Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID</td></tr>
<tr><td>FCC ID:</td><td colspan="6">ZNFD956</td></tr>
<tr><td>Model:</td><td colspan="6">LG-D956</td></tr>
<tr><td>Additional Model:</td><td colspan="6">D956, LGD956, LG-D951, D951, LGD951</td></tr>
<tr><td>Trade Name</td><td colspan="6">LG Electronics, MobileComm U.S.A., Inc.</td></tr>
<tr><td>Application Type</td><td colspan="6">Certification</td></tr>
<tr><td>Mode(s) of Operation</td><td colspan="6">GSM850 / GSM1900 / WCDMA850 / WCDMA1900 / LTE7 / 802.11a/b/g/n/ac</td></tr>
<tr><td>Tx Frequency</td><td colspan="6">824.20 - 848.80 MHz (GSM850) / 1 850.20 – 1 909.80 MHz (GSM1900)
826.4 - 846.6 MHz (WCDMA850) / 1 852.4 – 1 907.6 MHz (WCDMA1900) / 2 502.5 – 2 567.5 (LTE 7)
2 412- 2 462 MHz (802.11b/g/n/ac) / 5 180-5 825MHz(802.a/n/ac)</td></tr>
<tr><td>Production Unit or Identical Prototype</td><td colspan="6">Prototype</td></tr>
<tr><td rowspan="16">Max SAR</td><td rowspan="2">Band</td><td rowspan="2">Tx Frequency (MHz)</td><td rowspan="2">Equipment Class</td><td colspan="3">Reported 1g SAR (W/Kg)</td></tr>
<tr><td>Head</td><td>Body-worn</td><td>Hotspot</td></tr>
<tr><td>GSM850</td><td>824.2 - 848.8</td><td>PCE</td><td>0.51</td><td>0.41</td><td>0.62</td></tr>
<tr><td>GSM1900</td><td>1 850.2 -1 909.8</td><td>PCE</td><td>0.32</td><td>0.54</td><td>0.80</td></tr>
<tr><td>WCDMA 850</td><td>826.4 - 846.6</td><td>PCE</td><td>0.44</td><td>0.46</td><td>0.50</td></tr>
<tr><td>WCDMA 1900</td><td>1 852.4 – 1 907.6</td><td>PCE</td><td>0.41</td><td>0.97</td><td>1.19</td></tr>
<tr><td>LTE 7</td><td>2 502.5 – 2 567.5</td><td>PCE</td><td>0.93</td><td>1.05</td><td>1.19</td></tr>
<tr><td>802.11b</td><td>2 412.0 - 2 462.0</td><td>DTS</td><td>0.46</td><td>0.17</td><td>0.17</td></tr>
<tr><td>802.11a</td><td>5 745 - 5 825</td><td>DTS</td><td>0.44</td><td>0.07</td><td>0.07</td></tr>
<tr><td>802.11a</td><td>5 180 - 5 240</td><td>UNII</td><td>0.22</td><td>0.20</td><td></td></tr>
<tr><td>802.11a</td><td>5 260 - 5 320</td><td>UNII</td><td>0.35</td><td>0.23</td><td></td></tr>
<tr><td>802.11a</td><td>5 500 - 5 700</td><td>UNII</td><td>0.27</td><td>0.14</td><td></td></tr>
<tr><td>Bluetooth</td><td>2 402 – 2 480</td><td>DSS/DTS</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td colspan="3">Simultaneous SAR per KDB 690783 D01</td><td>1.39</td><td>1.28</td><td>1.29</td></tr>
<tr><td colspan="6">Hand SAR for Phablet</td></tr>
<tr><td>Band</td><td>Tx Frequency (MHz)</td><td colspan="2">Equipment Class</td><td colspan="2">Reported 10g SAR (W/Kg)</td></tr>
<tr><td>802.11a</td><td>5 180 - 5 240</td><td colspan="2">UNII</td><td colspan="2">0.34</td></tr>
<tr><td>802.11a</td><td>5 260 - 5 320</td><td colspan="2">UNII</td><td colspan="2">0.29</td></tr>
<tr><td>802.11a</td><td>5 500 - 5 700</td><td colspan="2">UNII</td><td colspan="2">0.17</td></tr>
<tr><td>Date(s) of Tests</td><td colspan="6">Nov.28, 2013 ~ Dec.10, 2013</td></tr>
<tr><td>Antenna Type</td><td colspan="6">Integral Antenna</td></tr>
<tr><td>GPRS</td><td colspan="6">Multislot Class: 12</td></tr>
<tr><td>Key Feature(s)</td><td colspan="6">This device supports Mobile Hotspot.</td></tr>
</table>

Note : Separation distance of 0.8 mm was considered because this is the closest distance between the outer of the device and user. Please see the Operational description for further information.

3.1 KDB 941225 LTE information

<table>
<tr><td>Frequency Range:</td><td>Band 7: 2 502.5 MHz – 2 567.5 MHz</td></tr>
<tr><td>Channel Bandwidth:</td><td>Band 7 5 MHz, 10 MHz</td></tr>
<tr><td>Channel Number & Frequency:</td><td>
<table>
<tr><th colspan="8">Band 7</th></tr>
<tr><th colspan="2">5 MHz</th><th colspan="2">10 MHz</th><th colspan="2">15 MHz</th><th colspan="2">20 MHz</th></tr>
<tr><th>Ch.</th><th>Freq. (MHz)</th><th>Ch.</th><th>Freq. (MHz)</th><th>Ch.</th><th>Freq. (MHz)</th><th>Ch.</th><th>Freq. (MHz)</th></tr>
<tr><td>20775</td><td>2 502.5</td><td>20800</td><td>2 505</td><td>20825</td><td>2 507.5</td><td>20850</td><td>2 510</td></tr>
<tr><td>21100</td><td>2 535</td><td>21100</td><td>2 535</td><td>21100</td><td>2 535</td><td>21100</td><td>2 535</td></tr>
<tr><td>21425</td><td>2 567.5</td><td>21400</td><td>2 565</td><td>21375</td><td>2 562.5</td><td>21350</td><td>2 560</td></tr>
</table>
</td></tr>
<tr><td>UE Category & Uplink Modulation</td><td>UE Category 3 QPSK, 16QAM</td></tr>
<tr><td>Description of the LTE Transmitter & antenna</td><td>This model have two Tx antennas.
-, One is for GSM and WCDMA and LTE. It can not transmit simultaneously.
- The other is for BT & WLAN. It can not transmit simultaneously.
Please find the section 12</td></tr>
<tr><td>LTE voice/data requirements</td><td>Data Only,
LTE voice is available via VoIP. Considering the users may install 3rd party software
to enable VoIP, LTE Head SAR is also evaluated.</td></tr>
<tr><td>Identify if MPR is optional or mendatory
optional or mendatory</td><td>The EUT incorporates MPR as per 3GPP TS36.101.
The MPR is permanently built-in by design as a mandatory.
A-MPR is not implemented.
During SAR testing, A-MPR was disabled by setting NS=01 on the R&S CMW500.</td></tr>
<tr><td rowspan="2">Maximum average conducted output power(dBm)
Identify all other U.S. wireless operating modes, device exposure configurations and frequency bands</td><td>See section 11.3 RF output power measurements in the SAR report.</td></tr>
<tr><td>-. GSM850/1900, WCDMA850/1900 and LTE Band 7
: Head & Body SAR are required.</td></tr>
<tr><td>Maximum average conducted output power for other wireless mode and frequency</td><td>See section 11 RF output power measurements in the SAR report.</td></tr>
<tr><td>Simultaneous Transmission</td><td>This device supports simultaneous transmission. Please find the section</td></tr>
<tr><td>Power reduction explanation</td><td>This device doesn't implements power reduction.</td></tr>
<tr><td>Description of the test equipment,</td><td>LTE SAR Testing was performed using a CMW500.</td></tr>
</table>

4. DESCRIPTION OF TEST EQUIPMENT

4.1 SAR MEASUREMENT SETUP

These measurements are performed using the DASY4 automated dosimetric assessment system. It is made by Schmid & Partner Engineering AG (SPEAG) in Zurich, Switzerland. It consists of high precision robotics system (Staubli), robot controller, Pentium III computer, near-field probe, probe alignment sensor, and the generic twin phantom containing the brain equivalent material. The robot is a six-axis industrial robot performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF) (see Figure.3.1).

A cell controller system contains the power supply, robot controller, teach pendant (Joystick), and remote control, is used to drive the robot motors. The PC consists of the HP Pentium IV 3.0 GHz computer with Windows XP system and SAR Measurement Software DASY4, A/D interface card, monitor, mouse, and keyboard. The Staubli Robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the PC plug-in card.

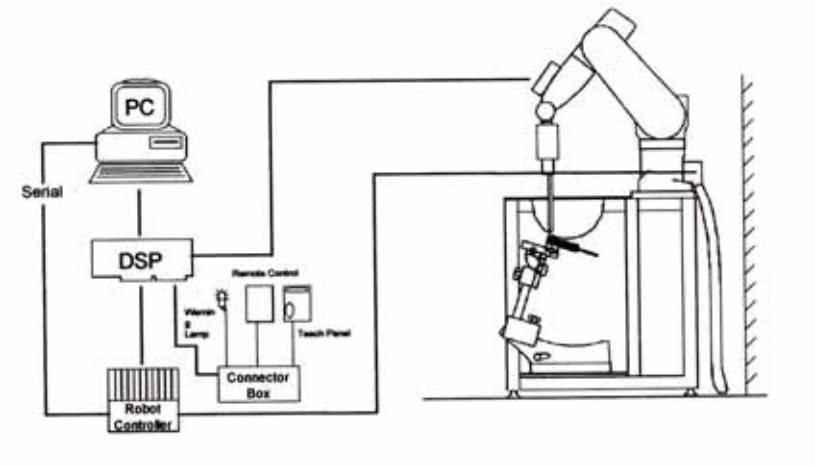


Figure 2. HCT SAR Lab. Test Measurement Set-up

The DAE4 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 PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer. The system is described in detail in.

4.2 DASY E-FIELD PROBE SYSTEM

4.1 ET3DV6 Probe Specification

Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection System Built-in shielding against static charges
Calibration	In air from 10 MHz to 2.5 GHz In brain and muscle simulating tissue at Frequencies of 450 MHz, 900 MHz and 1.8 GHz (accuracy: 8 %)
Frequency	10 MHz to > 3 GHz; Linearity: ± 0.2 dB (30 MHz to 3 GHz)
Directivity	± 0.2 dB in brain tissue (rotation around probe axis) ± 0.4 dB in brain tissue (rotation normal probe axis)
Dynamic	5 μW/g to > 100 mW/g;
Range Linearity:	± 0.2 dB
Surface Detection	± 0.2 mm repeatability in air and clear liquids over diffuse reflecting surfaces.
Dimensions	Overall length: 330 mm Tip length: 16 mm Body diameter: 12 mm Tip diameter: 6.8 mm Distance from probe tip to dipole centers: 2.7 mm
Application	General dissymmetry up to 3 GHz Compliance tests of WCDMA/LTE Phones Fast automatic scanning in arbitrary phantoms

Figure 3. Photograph of the probe and the Phantom

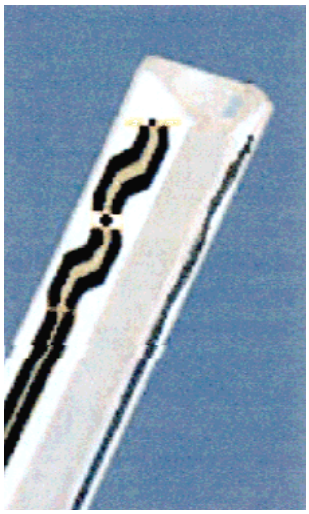


Figure 4. ET3DV6 E-field Probe

The SAR measurements were conducted with the dosimetric probe ET3DV6, designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe is constructed using the thick film technique; with printed resistive lines on ceramic substrates. The probe is equipped with an optical multifiber line ending at the front of the probe tip. It is connected to the EOC box on the robot arm and provides an automatic detection of the phantom surface. Half of the fibers are connected to a pulsed infrared transmitter, the other half to a synchronized receiver. As the probe approaches the surface, the reflection from the surface produces a coupling from the transmitting to the receiving fibers. This reflection increases first during the approach, reaches a maximum and then decreases. If the probe is flatly touching the surface, the coupling is zero. The distance of the coupling maximum to the surface is independent of the surface reflectivity and largely independent of the surface to probe angle. The DASY4 software reads the reflection during a software approach and looks for the maximum using a 2nd order fitting. The approach is stopped at reaching the maximum.

4.2.1 EX3DV4 Probe Specification

Construction	Symmetrical design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	Basic Broad Band Calibration in air Conversion Factors (CF) for HSL 900 and HSL 1810 Additional CF for other liquids and frequencies upon request
Frequency	10 MHz to 4 GHz; Linearity: ± 0.2 dB (30 MHz to 4 GHz)
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.3 dB in tissue material (rotation normal to probe axis)
Dynamic Range	5 μW/g to > 100 mW/g; Linearity: ± 0.2 dB
Dimensions	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 3.9 mm (Body: 12 mm) Distance from probe tip to dipole centers: 2.0 mm
Application	General dosimetry up to 4 GHz Dosimetry in strong gradient fields Compliance tests of mobile phones

Figure 5. Photograph of the probe and the Phantom

Figure 6. EX3DV4 E-field Probe

The SAR measurements were conducted with the dosimetric probe EX3DV4, designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe is constructed using the thick film technique; with printed resistive lines on ceramic substrates. The probe is equipped with an optical multifiber line ending at the front of the probe tip. It is connected to the EOC box on the robot arm and provides an automatic detection of the phantom surface. Half of the fibers are connected to a pulsed infrared transmitter, the other half to a synchronized receiver. As the probe approaches the surface, the reflection from the surface produces a coupling from the transmitting to the receiving fibers. This reflection increases first during the approach, reaches a maximum and then decreases. If the probe is flatly touching the surface, the coupling is zero. The distance of the coupling maximum to the surface is independent of the surface reflectivity and largely independent of the surface to probe angle. The DASY4 software reads the reflection during a software approach and looks for the maximum using a 2nd order fitting. The approach is stopped at reaching the maximum.

4.3 PROBE CALIBRATION PROCESS

4.3.1 E-Probe Calibration

Each probe is calibrated according to a dosimetric assessment procedure with an accuracy better than ± 10 %. The spherical isotropy was evaluated with the proper procedure and found to be better than ± 0.25 dB. The sensitivity parameters (NormX, NormY, NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe is tested.
The free space E-field from amplified probe outputs is determined in a test chamber. This is performed in a TEM cell for frequencies bellow 1 GHz, and in a waveguide above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees.
E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue. The measured free space E-field in the medium correlates to temperature rise in a dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

$$SAR = C\frac{\Delta T}{\Delta t}$$

where:
Δt = exposure time (30 seconds),
C = heat capacity of tissue (brain or muscle),
ΔT = temperature increase due to RF exposure.
SAR is proportional to $\Delta T/\Delta t$, the initial rate of tissue heating, before thermal diffusion takes place.
Now it's possible to quantify the electric field in the simulated tissue by equating the thermally derived SAR to the E-field;

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

where:
σ = simulated tissue conductivity,
ρ = Tissue density (1.25 g/cm^3 for brain tissue)

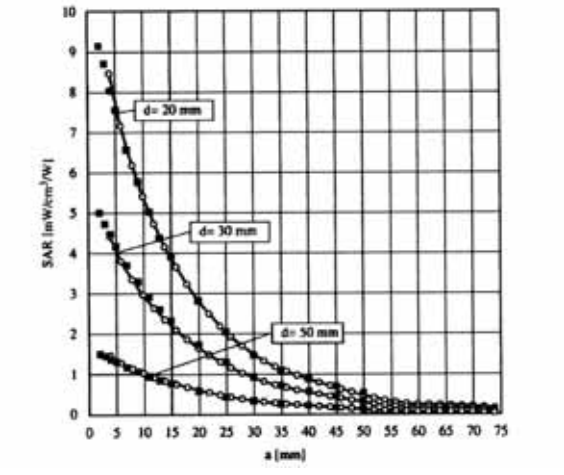


Figure 7. E-Field and Temperature measurements at 900 MHz

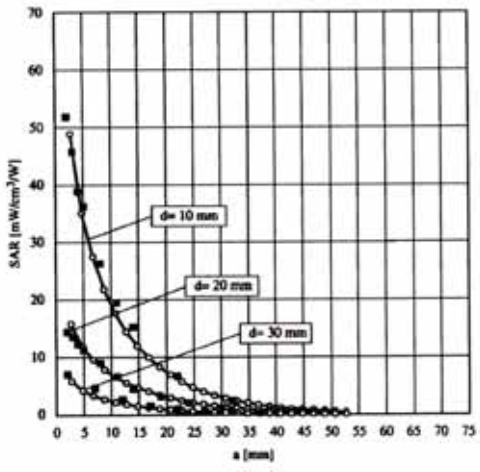


Figure 8. E-Field and temperature measurements at 1.8 GHz

4.3.2 Data Extrapolation

The DASY4 software automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics. If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given like below;

$$\boldsymbol{V_i = U_i + U_i^2 \cdot \frac{cf}{dcp_i}}$$

with

V_i = compensated signal of channel i (i=x,y,z)
U_i = input signal of channel i (i=x,y,z)
cf = crest factor of exciting field (DASY parameter)
dcp_i = diode compression poing (DASY parameter)

From the compensated input signals the primary field data for each channel can be evaluated:

E-field probes:

$$\boldsymbol{E_i = \sqrt{\frac{V_i}{Norm_i \cdot ConvF}}}$$

with

V_i = compensated signal of channel i (i=x,y,z)
$Norm_i$ = sensor sensitivity of channel i (i=x,y,z)
$\mu V/(V/m)^2$ for E-field probes
$ConvF$ = sensitivity of enhancement in solution
E_i = electric field strength of channel i in V/m

The RSS value of the field components gives the total field strength (Hermetian magnitude):

$$\boldsymbol{E_{tot} = E_x^2 + E_y^2 + E_z^2}$$

The primary field data are used to calculate the derived field units.

$$\boldsymbol{SAR = E_{tot}^2 \cdot \frac{\sigma}{\rho \cdot 1000}}$$

with

SAR = local specific absorption rate in W/g
E_{tot} = total field strength in V/m
σ = conductivity in [mho/m] or [Siemens/m]
ρ = equivalent tissue density in g/cm^3

The power flow density is calculated assuming the excitation field to be a free space field.

$$\boldsymbol{P_{pwe} = \frac{E_{tot}^2}{3770}}$$

with

P_{pwe} = equivalent power density of a plane wave in w/cm^2
E_{tot} = total electric field strength in V/m

4.4 SAM Phantom

The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.

Figure 9. SAM Phantom

Shell Thickness	2.0 mm ± 0.2 mm (6 ± 0.2 mm at ear point)
Filling Volume	about 25 L
Dimensions	810 mm x 1 000 mm x 500 mm (H x L x W)

Triple Modular Phantom consists of tree identical modules which can be installed and removed separately without emptying the liquid. It includes three reference points for phantom installation. Covers prevent evaporation of the liquid. Phantom material is resistant to DGBE based tissue simulating liquids. The MFP V5.1 will be delivered including wooden support only (**non**-standard SPEAG support).
Applicable for system performance check from 700 MHz to 6 GHz (MFP V5.1C) or 800 MHz - 6 GHz (MFP V5.1A) as well as dosimetric evaluations for body-worn operation.

Figure 10. MFP V5.1 Triple Modular Phantom

Shell Thickness	2.0 mm ± 0.2 mm
Filling Volume	approx. 9.2 L
Dimensions	830 mm x 500 mm (L x W)

4.5 Device Holder for Transmitters

In combination with the SAM Phantom V 4.0, the Mounting Device (POM) enables the rotation of the mounted transmitter in spherical coordinates whereby the rotation points is the ear opening. The devices can be easily, accurately, and repeatable positioned according to the FCC and CENELEC specifications. The device holder can be locked at different phantom locations (left head, right head, flat phantom).

Note: A simulating human hand is not used due to the complex anatomical and geometrical structure of the hand that may produced infinite number of configurations. To produce the Worst-case condition (the hand absorbs antenna output power), the hand is omitted during the tests.

Figure 11. Device Holder

4.6 Tissue Simulating Mixture Characterization

The mixture is characterized to obtain proper dielectric constant (permittivity) and conductivity of the tissue of interest. The tissue dielectric parameters recommended in IEEE 1528 and IEC 62209 have been used as targets for the compositions, and are to mach within 5%, per the FCC recommendations .

Ingredients (% by weight)	Frequency (MHz)							
	835		1 900		2 450 ~ 2 700		5 200 - 5 800	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body
Water	40.45	53.06	54.9	70.17	71.88	73.2	65.52	78.66
Salt (NaCl)	1.45	0.94	0.18	0.39	0.16	0.1	0.0	0.0
Sugar	57.0	44.9	0.0	0	0.0	0.0	0.0	0.0
HEC	1.0	1.0	0.0	0	0.0	0.0	0.0	0.0
Bactericide	0.1	0.1	0.0	0	0.0	0.0	0.0	0.0
Triton X-100	0.0	0.0	0.0	0.0	19.97	0.0	17.24	10.67
DGBE	0.0	0.0	44.92	29.44	7.99	26.7	0.0	0.0
Diethylene glycol hexyl ether	-	-	-	-	-	-	17.24	10.67

Salt:	99 % Pure Sodium Chloride	Sugar:	98 % Pure Sucrose
Water:	De-ionized, 16M resistivity	HEC:	Hydroxyethyl Cellulose
DGBE:	99 % Di(ethylene glycol) butyl ether,[2-(2-butoxyethoxy) ethanol]		
Triton X-100(ultra pure):	Polyethylene glycol mono[4-(1,1,3,3-tetramethylbutyl)phenyl] ether		

Table 4.1 Composition of the Tissue Equivalent Matter

4.7 SAR TEST EQUIPMENT

Manufacturer	Type / Model	S/N	Calib. Date	Calib.Interval	Calib.Due
SPEAG	SAM Phantom	-	N/A	N/A	N/A
SPEAG	Triple Modular Phantom	-	N/A	N/A	N/A
Staubli	Robot RX90L	F01/5K09A1/A/01	N/A	N/A	N/A
Staubli	Robot ControllerCS7MB	F99/5A82A1/C/01	N/A	N/A	N/A
HP	Pavilion t000_puffer	KRJ51201TV	N/A	N/A	N/A
SPEAG	Light Alignment Sensor	265	N/A	N/A	N/A
Staubli	Teach Pendant (Joystick)	D221340.01	N/A	N/A	N/A
SPEAG	DAE4	648	Apr. 24, 2013	Annual	Apr. 24, 2014
SPEAG	DAE4	652	Mar. 21, 2013	Annual	Mar. 21, 2014
SPEAG	E-Field Probe EX3DV6	1798	Apr. 29, 2013	Annual	Apr. 29, 2014
SPEAG	E-Field Probe EX3DV4	3903	Mar. 18, 2013	Annual	Mar. 18, 2014
SPEAG	E-Field Probe EX3DV4	3863	Jul. 31, 2013	Annual	Jul. 31, 2014
SPEAG	Dipole D835V2	441	Apr. 25, 2013	Annual	Apr. 25, 2014
SPEAG	Dipole D1900V2	5d032	Jul. 29, 2013	Annual	Jul. 29, 2014
SPEAG	Dipole D2450V2	743	Aug. 23, 2013	Annual	Aug. 23, 2014
SPEAG	Dipole D2600V2	1015	May. 02, 2013	Annual	May. 02, 2014
SPEAG	Dipole D5GHzV2	1107	Feb. 21, 2013	Annual	Feb. 21, 2014
Agilent	Power Meter(F) E4419B	MY41291386	Nov. 01, 2013	Annual	Nov. 01, 2014
Agilent	Power Sensor(G) 8481	MY41090680	Oct. 30, 2013	Annual	Oct. 30, 2014
HP	Dielectric Probe Kit 85070C	00721521	CBT		
HP	Dual Directional Coupler 778D	16072	Oct. 31, 2013	Annual	Oct. 31, 2014
Agilent	Base Station E5515C	GB44400269	Feb. 10, 2013	Annual	Feb. 10, 2014
HP	Signal Generator 8664A	3744A02069	Nov. 04, 2013	Annual	Nov. 04, 2014
Hewlett Packard	11636B/Power Divider	11377	Nov. 10. 2013	Annual	Nov. 11. 2014
Agilent	N9020A/ SIGNAL ANALYZER	MY51110020	Apr. 25, 2013	Annual	Apr. 25, 2014
TESCOM	TC-3000C / BLUETOOTH	3000C000276	Apr. 24, 2013	Annual	Apr. 24, 2014
HP	Network Analyzer 8753ES	JP39240221	Mar. 26, 2013	Annual	Mar. 26, 2014

NOTE:
1. The E-field probe was calibrated by SPEAG, by the waveguide technique procedure. Dipole Verification measurement is performed by HCT Lab. before each test. The brain/body simulating material is calibrated by HCT using the dielectric probe system and network analyzer to determine the conductivity and permittivity
(dielectric constant) of the brain/body-equivalent material.
2. CBT(Calibrating Before Testing). Prior to testing, the dielectric probe kit was calibrated via the network analyzer, with the specified procedure(calibrated in pure water) and calibration kit(standard) short circuit, before the dielectric measurement. The specific procedure and calibration kit are provided by Agilent

5. SAR MEASUREMENT PROCEDURE

The evaluation was performed with the following procedure:

1. The SAR value at a fixed location above the ear point was measured and was used as a reference value for assessing the power drop.

2. The SAR distribution at the exposed side of the head was measured at a distance of 3.9 mm from the inner surface of the shell. The area covered the entire dimension of the head and the horizontal grid spacing was 15 mm x 15 mm. Based on this data, the area of the maximum absorption was determined by spline interpolation.

3. Around this point, a volume of 32 mm x 32 mm x 30 mm was assessed by measuring 5 x 5 x 7 points. On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:
   a. The data at the surface were extrapolated, since the center of the dipoles is 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.2 mm. The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip.
   b. The maximum interpolated value was searched with a straight-forward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g or 10 g) were computed using the 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the "Not a knot" condition (in x, y, and z directions. The volume was integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the average.
   c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

4. The SAR value, at the same location as procedure #1, was re-measured. If the value changed by more than 5 %, the evaluation is repeated.

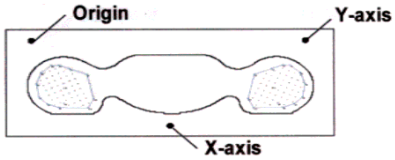


Figure 12. SAR Measurement Point in Area Scan

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s).
The measurement grid within an Area Scan is defined by the grid extend, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan is performed around the hightest E-field value to determine the averaged SASR-distribution over 10g.
Area scan and zoom scan resolution setting follow KDB 865664 D01v01 quoted below

			≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}			≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
			When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

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

* When zoom scan is required and the *reported* SAR from the area scan based *1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

6. DESCRIPTION OF TEST POSITION

6.1 HEAD POSITION

The device was placed in a normal operating position with the Point A on the device, as illustrated in following drawing, aligned with the location of the RE(ERP) on the phantom. With the ear-piece pressed against the head, the vertical center line of the body of the handset was aligned with an imaginary plane consisting of the RE, LE and M. While maintaining these alignments, the body of the handset was gradually moved towards the cheek until any point on the mouth-piece or keypad contacted the cheek. This is a cheek/touch position. For ear/tilt position, while maintain the device aligned with the BM and FN lines, the device was pivot against ERP back for 15º or until the device antenna touch the phantom. Please refer to IEEE 1528-2003 illustration below.

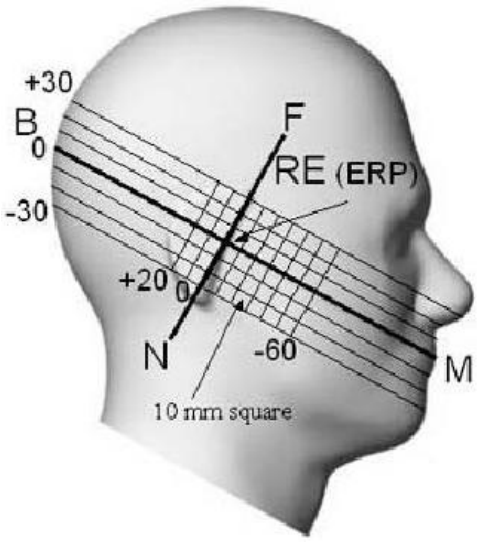


Figure 13. Side view of the phantom

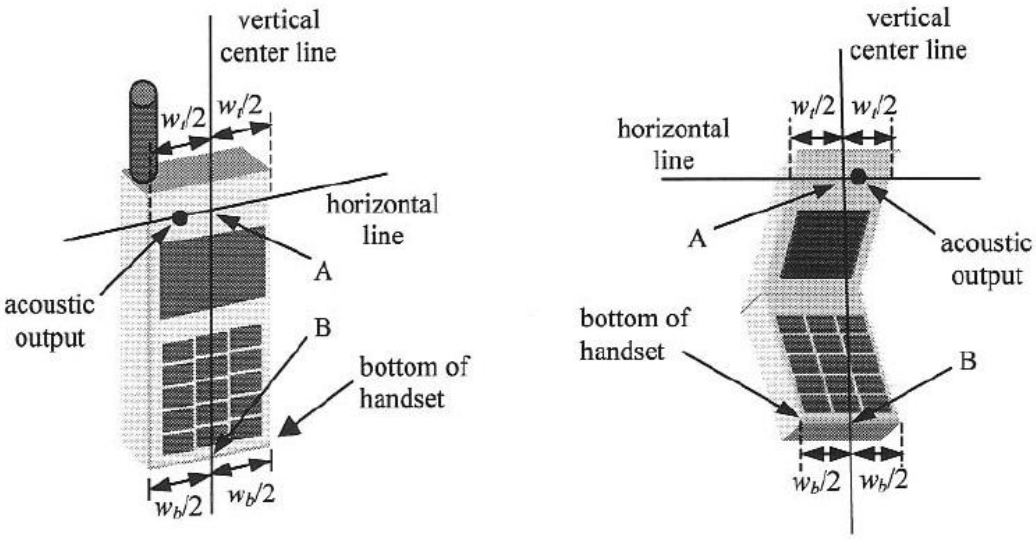


Figure 14. Handset vertical and horizontal reference lines

6.2 Body Holster/Belt Clip Configurations

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. A device with a headset output is tested with a headset connected to the device. Body dielectric parameters are used.

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

Body-worn accessories may not always be supplied or available as options for some Devices intended to be authorized for body-worn use. In this case, a test configuration with a separation distance between the back of the device and the flat phantom is used.

Since this EUT does not supply any body worn accessory to the end user a distance of 0.8 cm and 1.0 cm from the EUT back surface to the liquid interface is configured for the generic test.

"See the Test SET-UP Photo"

Transmitters that are designed to operate in front of a person’s face, as in push-to-talk configurations, are tested for SAR compliance with the front of the device positioned to face the flat phantom. For devices that are carried next to the body such as a shoulder, waist or chest-worn transmitters, SAR compliance is tested with the accessory(ies), Including headsets and microphones, attached to the device and positioned against a flat phantom in a normal use configuration.

In all cases SAR measurements are performed to investigate the worst-case positioning. Worstcase positioning is then documented and used to perform Body SAR testing.

6.3 Extremity Exposure Configurations

Devices that are designed or intended for use on extremities or mainly operated in extremity only exposure conditions; i.e., hands, wrists, feet and ankles, may require extremity SAR evaluation. When the device also operates in close proximity to the user's body, SAR compliance for the body is also required. The 1-g body and 10-g extremity SAR Exclusion Thresholds found in KDB Publication 447498 D01v05 should be applied to determine SAR test requirements.

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 minitablets that support voice calls next to the ear, the phablets procedures outlined in KDB Publication 6484474 D04 v01r01DR04 should be applied to evaluate SAR compliance. A device marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance. In addition to the normally required head and body-worn accessory SAR test procedures required for handsets, the UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna ≥ 25 mm from that surface or edge, in direct contact with the phantom, for 10-g SAR. The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g SAR > 1.2W/kg.

7. MEASUREMENT UNCERTAINTY

Error Description	Tol (± %)	Prob. dist.	Div.	c_i	Standard Uncertainty (± %)	v_{eff}
1. Measurement System						
Probe Calibration	6.00	N	1	1	6.00	∞
Axial Isotropy	4.70	R	1.73	0.7	1.90	∞
Hemispherical Isotropy	9.60	R	1.73	0.7	3.88	∞
Boundary Effects	1.00	R	1.73	1	0.58	∞
Linearity	4.70	R	1.73	1	2.71	∞
System Detection Limits	1.00	R	1.73	1	0.58	∞
Readout Electronics	0.30	N	1.00	1	0.30	∞
Response Time	0.8	R	1.73	1	0.46	∞
Integration Time	2.6	R	1.73	1	1.50	∞
RF Ambient Conditions	3.00	R	1.73	1	1.73	∞
Probe Positioner	0.40	R	1.73	1	0.23	∞
Probe Positioning	2.90	R	1.73	1	1.67	∞
Max SAR Eval	1.00	R	1.73	1	0.58	∞
2.Test Sample Related						
Device Positioning	2.90	N	1.00	1	2.90	145
Device Holder	3.60	N	1.00	1	3.60	5
Power Drift	5.00	R	1.73	1	2.89	∞
3.Phantom and Setup						
Phantom Uncertainty	4.00	R	1.73	1	2.31	∞
Liquid Conductivity(target)	5.00	R	1.73	0.64	1.85	∞
Liquid Conductivity(meas.)	2.07	N	1	0.64	1.32	9
Liquid Permitivity(target)	5.00	R	1.73	0.6	1.73	∞
Liquid Permitivity(meas.)	5.02	N	1	0.6	3.01	9
Combind Standard Uncertainty					11.13	
Coverage Factor for 95 %					$k=2$	
Expanded STD Uncertainty					22.25	

Table 7.1 Uncertainty (800 MHz- 2 600 MHz)

Error Description	Tol (± %)	Prob. dist.	Div.	c_i	Standard Uncertainty (± %)	v_{eff}
1. Measurement System						
Probe Calibration	6.55	N	1	1	6.00	∞
Axial Isotropy	4.70	R	1.73	0.7	1.90	∞
Hemispherical Isotropy	9.60	R	1.73	0.7	3.88	∞
Boundary Effects	1.00	R	1.73	1	0.58	∞
Linearity	4.70	R	1.73	1	2.71	∞
System Detection Limits	1.00	R	1.73	1	0.58	∞
Readout Electronics	0.30	N	1.00	1	0.30	∞
Response Time	0.8	R	1.73	1	0.46	∞
Integration Time	2.6	R	1.73	1	1.50	∞
RF Ambient Conditions	3.00	R	1.73	1	1.73	∞
Probe Positioner	0.40	R	1.73	1	0.23	∞
Probe Positioning	2.90	R	1.73	1	1.67	∞
Max SAR Eval	1.00	R	1.73	1	0.58	∞
2.Test Sample Related						
Device Positioning	2.90	N	1.00	1	2.90	145
Device Holder	3.60	N	1.00	1	3.60	5
Power Drift	5.00	R	1.73	1	2.89	∞
3.Phantom and Setup						
Phantom Uncertainty	4.00	R	1.73	1	2.31	∞
Liquid Conductivity(target)	5.00	R	1.73	0.64	1.85	∞
Liquid Conductivity(meas.)	2.07	N	1	0.64	1.32	9
Liquid Permitivity(target)	5.00	R	1.73	0.6	1.73	∞
Liquid Permitivity(meas.)	5.02	N	1	0.6	3.01	9
Combind Standard Uncertainty					11.43	
Coverage Factor for 95 %					*k*=2	
Expanded STD Uncertainty					22.86	

Table 7.2 Uncertainty (5 000 – 5 900 MHz)

8. ANSI/ IEEE C95.1 - 1992 RF EXPOSURE LIMITS

HUMAN EXPOSURE	UNCONTROLLED ENVIRONMENT General Population (W/kg) or (mW/g)	CONTROLLED ENVIRONMENT Occupational (W/kg) or (mW/g)
SPATIAL PEAK SAR * (Brain)	1.60	8.00
SPATIAL AVERAGE SAR ** (Whole Body)	0.08	0.40
SPATIAL PEAK SAR *** (Hands / Feet / Ankle / Wrist)	4.00	20.00

Table 8.1 Safety Limits for Partial Body Exposure

NOTES:

* The Spatial Peak value of the SAR averaged over any 1 g of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

** The Spatial Average value of the SAR averaged over the whole-body.

*** The Spatial Peak value of the SAR averaged over any 10 g of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

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).

9. SAR SYSTEM VALIDATION

Per FCC KCB 865664 D02v01, SAR system validation status should be document to confirm measurement accuracy. The SAR systems (including SAR probes, system components and software versions) used for this device were validated against its performance specifications prior to the SAR measurements. Reference dipoles were used with the required tissue- equivalent media for system validation, according to the procedures outlined in IEEE 1528-2003 and FCC KDB 865664 D01 v01. Since SAR probe calibrations are frequency dependent, each probe calibration point was validated at a frequency within the valid frequency range of the probe calibration point, using the system that normally operates with the probe for routine SAR measurements and according to the required tissue-equivalent media.

A tabulated summary of the system validation status including the validation date(s), measurement frequencies, SAR probes and tissue dielectric parameters has been included.

SAR System #	Probe	probe Type	Probe Calibration Point		Dipole	Date	Dielectric Parameters		CW Validation			Modulation Validation		
							Measured Permittivity	Measured Conductivity	Sensitivity	Probe Linearity	Probe Isortopy	MOD. Type	Duty Factor	PAR
6	1798	ET3DV6	Head	835	441	May.06,2013	42.01	0.92	PASS	PASS	PASS	GMSK	PASS	N/A
6	1798	ET3DV6	Head	1900	5d032	Aug.07,2013	39.8	1.4	PASS	PASS	PASS	GMSK	PASS	N/A
6	1798	ET3DV6	Body	835	441	May.06,2013	55.88	0.99	PASS	PASS	PASS	GMSK	PASS	N/A
6	1798	ET3DV6	Body	1800	2d007	May.09,2013	51.9	1.54	PASS	PASS	PASS	N/A	N/A	N/A
5	3903	EX3DV4	Head	2450	743	Sep.2,2013	38.91	1.81	PASS	PASS	PASS	OFDM	N/A	PASS
5	3903	EX3DV4	Head	2600	1015	May.13,2013	38.3	1.97	PASS	PASS	PASS	N/A	N/A	N/A
5	3903	EX3DV4	Body	2450	743	Sep.03,2013	52.32	1.96	PASS	PASS	PASS	OFDM	N/A	PASS
5	3903	EX3DV4	Body	2600	1015	May.13,2013	53.4	2.11	PASS	PASS	PASS	N/A	N/A	N/A
1	3863	EX3DV4	Head	5200	1107	Aug.09,2013	36.7	4.69	PASS	PASS	PASS	OFDM	N/A	PASS
1	3863	EX3DV4	Head	5300	1107	Aug.09,2013	36.48	4.78	PASS	PASS	PASS	OFDM	N/A	PASS
1	3863	EX3DV4	Head	5500	1107	Aug.09,2013	35.9	5.12	PASS	PASS	PASS	OFDM	N/A	PASS
1	3863	EX3DV4	Head	5600	1107	Aug.09,2013	35.55	5.11	PASS	PASS	PASS	OFDM	N/A	PASS
1	3863	EX3DV4	Head	5800	1107	Aug.09,2013	35.2	5.28	PASS	PASS	PASS	OFDM	N/A	PASS
1	3863	EX3DV4	Body	5200	1107	Aug.09,2013	49.53	5.37	PASS	PASS	PASS	OFDM	N/A	PASS
1	3863	EX3DV4	Body	5300	1107	Aug.09,2013	49.49	5.48	PASS	PASS	PASS	OFDM	N/A	PASS
1	3863	EX3DV4	Body	5500	1107	Aug.09,2013	49.25	5.61	PASS	PASS	PASS	OFDM	N/A	PASS
1	3863	EX3DV4	Body	5600	1107	Aug.09,2013	48.79	5.88	PASS	PASS	PASS	OFDM	N/A	PASS
1	3863	EX3DV4	Body	5800	1107	Aug.09,2013	48.31	6.18	PASS	PASS	PASS	OFDM	N/A	PASS

SAR System Validation Summary 1g

SAR System #	Probe	probe Type	Probe Calibration Point		Dipole	Date	Dielectric Parameters		CW Validation			Modulation Validation		
							Measured Permittivity	Measured Conductivity	Sensitivity	Probe Linearity	Probe Isortopy	MOD. Type	Duty Factor	PAR
1	3863	EX3DV4	Body	5200	1107	Oct.07,2013	49.75	5.19	PASS	PASS	PASS	OFDM	N/A	PASS
1	3863	EX3DV4	Body	5300	1107	Oct.07,2013	49.63	5.37	PASS	PASS	PASS	OFDM	N/A	PASS
1	3863	EX3DV4	Body	5500	1107	Oct.07,2013	49.37	5.64	PASS	PASS	PASS	OFDM	N/A	PASS
1	3863	EX3DV4	Body	5600	1107	Oct.07,2013	48.91	5.84	PASS	PASS	PASS	OFDM	N/A	PASS
1	3863	EX3DV4	Body	5800	1107	Oct.07,2013	48.48	6.15	PASS	PASS	PASS	OFDM	N/A	PASS

SAR System Validation Summary – Extremity SAR Considerations

Note;

All measurement were performed using probes calibrated for CW signal only. Modulations in the table bove represent test configurations for which the measurement system has been validated per FCC KDB Publication 865664 D01v01r01. SAR system were validated for modulated signals with a periodic duty cycle, such as GMSK, or with a high peak to average ratio (>5 dB), such as OFDM according to KDB 865664.

10. SYSTEM VERIFICATION

10.1 Tissue Verification

Freq. [MHz]	Date	Probe	Dipole	Liquid	Liquid Temp. [°C]	Parameters	Target Value	Measured Value	Deviation [%]	Limit [%]
835	Nov. 28, 2013	1798	441	Head	20.2	ε r	41.5	42	+ 1.20	± 5
						σ	0.90	0.874	- 2.89	± 5
835	Nov. 29, 2013	1798		Body	20.3	ε r	55.2	54.1	- 1.99	± 5
						σ	0.97	0.968	- 0.21	± 5
1 900	Dec. 02, 2013	1798	5d032	Head	20.7	ε r	40.0	38.8	- 3.00	± 5
						σ	1.40	1.38	- 1.43	± 5
1 900	Dec. 03, 2013	1798		Body	20.1	ε r	53.3	52.2	- 2.06	± 5
						σ	1.52	1.47	- 3.29	± 5
2 450	Dec. 04, 2013	3903	743	Head	20.4	ε r	39.2	39.8	+ 1.53	± 5
						σ	1.80	1.78	- 1.11	± 5
2 450	Dec. 04, 2013	3903		Body	20.4	ε r	52.7	51.7	- 1.90	± 5
						σ	1.95	1.9	- 2.56	± 5
2 600	Dec. 05, 2013	3903	1015	Head	20.2	ε r	39.0	38.5	- 1.28	± 5
						σ	1.96	2.04	+ 4.08	± 5
2 600	Dec. 06, 2013	3903		Body	20.6	ε r	52.5	54.3	+ 3.43	± 5
						σ	2.16	2.2	+ 1.85	± 5
5 200	Dec. 09, 2013	3863	1107	Head	20.3	ε_r	36	34.8	- 3.33	± 5
						σ	4.66	4.61	- 1.07	± 5
5 300	Dec. 09, 2013	3863		Head	20.3	ε_r	35.9	34.5	- 3.90	± 5
						σ	4.76	4.73	- 0.63	± 5
5 500	Dec. 09, 2013	3863		Head	20.3	ε_r	35.6	34.1	- 4.21	± 5
						σ	4.96	4.97	+ 0.20	± 5
5 600	Dec. 09, 2013	3863		Head	20.3	ε_r	35.5	33.8	- 4.79	± 5
						σ	5.07	5.1	+ 0.59	± 5
5 800	Dec. 09, 2013	3863		Head	20.3	ε_r	35.3	33.7	- 4.53	± 5
						σ	5.27	5.35	+ 1.52	± 5
5 200	Dec. 10, 2013	3863		Body	20.1	ε_r	49.01	48.2	- 1.65	± 5
						σ	5.3	5.15	- 2.83	± 5
5 300	Dec. 10, 2013	3863		Body	20.1	ε_r	48.85	47.9	- 1.94	± 5
						σ	5.42	5.32	- 1.85	± 5
5 500	Dec. 10, 2013	3863		Body	20.1	ε_r	48.6	47.3	- 2.67	± 5
						σ	5.65	5.65	+ 0.00	± 5
5 600	Dec. 10, 2013	3863		Body	20.1	ε_r	48.44	47.1	- 2.77	± 5
						σ	5.77	5.81	+ 0.69	± 5
5 800	Dec. 10, 2013	3863		Body	20.1	ε_r	48.2	46.6	- 3.32	± 5
						σ	6.00	6.14	+ 2.33	± 5

The Tissue dielectronic parameters were measured prior to the SAR evaluation using an Agilent 85070C Dielectronic Probe Kit and Agilent Network Analyzer.

10.2 System Verification

Prior to assessment, the system is verified to the ± 10 % of the specifications at 835 MHz / 1 900 MHz / 2 450 MHz / 2 600 MHz / 5 200 MHz / 5 300 MHz / 5 500 MHz / 5 600 MHz / 5 800 MHz by using the system Verification kit. (Graphic Plots Attached)

System Verification Results

Freq. [MHz]	Date	Probe (SN)	Dipole (SN)	Liquid	Amb. Temp. [°C]	Liquid Temp. [°C]	1 W Target SAR_{1g} (SPEAG) (mW/g)	Measured SAR_{1g} (mW/g)	1 W Normalized SAR_{1g} (mW/g)	Deviation [%]	Limit [%]
835	Nov. 28, 2013	1798	441	Head	20.4	20.2	9.68	0.992	9.92	+ 2.48	± 10
835	Nov. 29, 2013			Body	20.5	20.3	9.69	0.963	9.63	- 0.62	± 10
1 900	Dec. 02, 2013		5d032	Head	20.9	20.7	40.1	3.98	39.8	- 0.75	± 10
1 900	Dec. 03, 2013			Body	20.3	20.1	40.5	4	40	- 1.23	± 10
2 450	Dec. 04, 2013	3903	743	Head	20.6	20.4	52.8	5.33	53.3	+ 0.95	± 10
2 450	Dec. 04, 2013	3903		Body	20.6	20.4	50.5	5.05	50.5	+ 0.00	± 10
2 600	Dec. 05, 2013	3903	1015	Head	20.4	20.2	57.8	5.75	57.5	- 0.52	± 10
2 600	Dec. 06, 2013	3903		Body	20.8	20.6	57.1	5.52	55.2	- 3.33	± 10
5 200	Dec. 09, 2013	3863	1107	Head	20.5	20.3	80.1	8.08	80.8	+ 0.87	± 10
5 300	Dec. 09, 2013	3863		Head	20.5	20.3	81.0	7.82	78.2	- 3.46	± 10
5 500	Dec. 09, 2013	3863		Head	20.5	20.3	80.0	8.03	80.3	+ 0.37	± 10
5 600	Dec. 09, 2013	3863		Head	20.5	20.3	84.4	8.46	84.6	+ 0.24	± 10
5 800	Dec. 09, 2013	3863		Head	20.5	20.3	78.3	7.77	77.7	- 0.77	± 10
5 200	Dec. 10, 2013	3863		Body	20.3	20.1	74.3	7.38	73.8	- 0.67	± 10
5 300	Dec. 10, 2013	3863		Body	20.3	20.1	76.0	7.87	78.7	+ 3.55	± 10
5 500	Dec. 10, 2013	3863		Body	20.3	20.1	78.4	7.57	75.7	- 3.44	± 10
5 600	Dec. 10, 2013	3863		Body	20.3	20.1	81.0	8.2	82	+ 1.23	± 10
5 800	Dec. 10, 2013	3863		Body	20.3	20.1	74.3	7.4	74	- 0.40	± 10

System Verification Results – Extremity SAR

Freq. [MHz]	Date	Probe (SN)	Dipole (SN)	Liquid	Amb. Temp. [°C]	Liquid Temp. [°C]	1 W Target SAR_{10g} (SPEAG) (mW/g)	Measured SAR_{10g} (mW/g)	1 W Normalized SAR_{10g} (mW/g)	Deviation [%]	Limit [%]
5 200	Dec. 10, 2013	3863	1107	Body	20.3	20.1	20.8	2.1	21	+ 0.96	± 10
5 300	Dec. 10, 2013			Body	20.3	20.1	21.3	2.22	22.2	+ 4.23	± 10
5 500	Dec. 10, 2013			Body	20.3	20.1	21.7	2.14	21.4	- 1.38	± 10
5 600	Dec. 10, 2013			Body	20.3	20.1	22.3	2.32	23.2	+ 4.04	± 10
5 800	Dec. 10, 2013			Body	20.3	20.1	20.4	2.09	20.9	+ 2.45	± 10

10.3 System Verification Procedure

SAR measurement was prior to assessment, the system is verified to the ± 10 % of the specifications at each frequency band by using the system Verification kit. (Graphic Plots Attached)

- Cabling the system, using the Verification kit equipments.
- Generate about 100 mW Input Level from the Signal generator to the Dipole Antenna.
- Dipole Antenna was placed below the Flat phantom.
- The measured one-gram SAR at the surface of the phantom above the dipole feed-point should be within 10 % of the target reference value.
- The results are normalized to 1 W input power.

11. RF CONDUCTED POWER MEASUREMENT

Power measurements were performed using a base station simulator under digital average power.
The handset was placed into a simulated call using a base station simulator in a shielded chamber.
Such test signals offer a consistent means for testing SAR and are recommended for evaluation SAR
SAR measurements were taken with a fully charged battery. In order to verify that the device was tested
and maintained at full power, this was configured with the base station simulator. The SAR measurement
Software calculates a reference point at the start and end of the test to check for power drifts. If conducted
Power deviations of more then 5 % occurred, the tests were repeated.

11.1 Output Power Specifications.

This device operates using the following maximum output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB publication 447498 D01v05.

GSM

GSM850	GSM1900
Target Power : 33.2 dBm	Target Power : 30.2 dBm
GPRS850	PCS1900
GPRS 1tx : 33.2 dBm/ EGPRS 1tx : 26.7 dBm	GPRS 1tx : 30.2 dBm/ EGPRS 1tx : 25.7 dBm
GPRS 2tx : 31.2 dBm/ EGPRS 2tx : 25.2 dBm	GPRS 2tx : 28.7 dBm/ EGPRS 2tx : 24.2 dBm
GPRS 3tx : 29.7 dBm/ EGPRS 3tx : 23.2 dBm	GPRS 3tx : 26.7 dBm/ EGPRS 3tx : 22.7 dBm
GPRS 4tx : 28.2 dBm/ EGPRS 4tx : 21.7 dBm	GPRS 4tx : 25.2 dBm/ EGPRS 4tx : 21.2 dBm
Tune-up Tolerance : -1.5 dB/ +0.5 dB	

WCDMA

WCDMA850	WCDMA1900
Target Power : 24.2 dBm	Target Power : 23.2 dBm
Tune-up Tolerance : -1.5 dB/ +0.5 dB	

LTE

LTE Band 7
Target Power : 22.5 dBm
Tune-up Tolerance : -1.5 dB/ +0.5 dB

Wifi

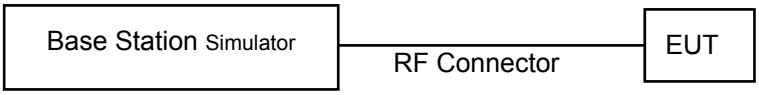
Wifi (Average Power)	Mode / Band									
	2.4 GHz				5 GHz					
	802.11 b	802.11 g	802.11 n	802.11ac	802.11 a	802.11 n (20MHz)	802.11 n (40MHz)	802.11ac (20MHz)	802.11ac (40MHz)	802.11ac (80MHz)
Maximum	16.5dBm	12.5dBm	12.5dBm	12dBm	13dBm	12dBm	11dBm	11dBm	10dBm	10dBm
Nominal	15.5dBm	11.5dBm	11.5dBm	11dBm	12dBm	11dBm	10dBm	10dBm	9dBm	9dBm

BT.

Bluetooth (Average Power)	Mode / Band			
	1 Mbps (GFSK)	2 Mbps (DPSK)	3 Mbos(8DPSK)	LE
Maximum	9 dBm	8 dBm	8 dBm	4 dBm
Nominal	7.5 dBm	6.5 dBm	6.5 dBm	2.5 dBm

11.2 GSM

Conducted output power measurements were performed using a base station simulator under digital average power.



SAR Test for WWAN were performed with a base station simulator Agilent E5515C. Communication between the device and the emulator was established by air link. Set base station emulator to allow DUT to radiate maximum output power during all tests. Please refer to the below worst case SAR operation setup.

- GSM voice: Head SAR
- GPRS Multi-slots : Body SAR with GPRS Multi-slot Class12 with CS 1 (GMSK)

Note;
CS1/MCS7 coding scheme was used in GPRS/EDGE output power measurements and SAR Testing, as a condition where GMSK/8PSK modulation was ensured. Investigation has shown that CS1 - CS4/ MCS5 – MCS9 settings do not have any impact on the output levels in the GPRS/EDGE modes.

GSM Conducted output powers (Burst-Average)

Band	Channel	Voice	GPRS(GMSK) Data – CS1				EDGE Data			
		GSM (dBm)	GPRS 1 TX Slot (dBm)	GPRS 2 TX Slot (dBm)	GPRS 3 TX Slot (dBm)	GPRS 4 TX Slot (dBm)	EDGE 1 TX Slot (dBm)	EDGE 2 TX Slot (dBm)	EDGE 3 TX Slot (dBm)	EDGE 4 TX Slot (dBm)
GSM 850	128	32.88	32.79	31.49	29.66	27.68	26.16	24.29	22.67	21.03
	190	32.76	32.70	31.45	29.48	27.58	26.05	24.2	22.56	20.88
	251	32.62	32.60	31.25	29.44	27.48	25.89	24.06	22.42	20.68
GSM 1900	512	29.74	29.81	27.97	26.20	24.64	24.69	23.07	21.97	20.24
	661	29.58	29.67	27.86	26.16	24.58	24.65	22.95	21.85	20.08
	810	29.71	29.75	27.95	26.15	24.70	24.68	23.06	21.96	20.19

GSM Conducted output powers (Frame-Average)

Band	Channel	Voice	GPRS(GMSK) Data – CS1				EDGE Data			
		GSM (dBm)	GPRS 1 TX Slot (dBm)	GPRS 2 TX Slot (dBm)	GPRS 3 TX Slot (dBm)	GPRS 4 TX Slot (dBm)	EDGE 1 TX Slot (dBm)	EDGE 2 TX Slot (dBm)	EDGE 3 TX Slot (dBm)	EDGE 4 TX Slot (dBm)
GSM 850	128	23.85	23.76	25.47	25.40	24.67	17.13	18.27	18.41	18.02
	190	23.73	23.67	25.43	25.22	24.57	17.02	18.18	18.30	17.87
	251	23.59	23.57	25.23	25.18	24.47	16.86	18.04	18.16	17.67
GSM 1900	512	20.71	20.78	21.95	21.94	21.63	15.66	17.05	17.71	17.23
	661	20.55	20.64	21.84	21.90	21.57	15.62	16.93	17.59	17.07
	810	20.68	20.72	21.93	21.89	21.69	15.65	17.04	17.70	17.18

Note:
Time slot average factor is as follows:
1 Tx slot = 9.03 dB, Frame-Average output power = Burst-Average output power – 9.03 dB
2 Tx slot = 6.02 dB, Frame-Average output power = Burst-Average output power – 6.02 dB
3 Tx slot = 4.26 dB, Frame-Average output power = Burst-Average output power – 4.26 dB
4 Tx slot = 3.01 dB, Frame-Average output power = Burst-Average output power – 3.01 dB

11.3 WCDMA

Body SAR is not required for handsets with HSDPA capabilities when the maximum average output of each RF channel with HSDPA active is less than ¼ dB higher than that measured without HSDPA using 12.2 kbps RMC and the maximum SAR for 12.2 kbps RMC is ≤ 75 % of the SAR limit. Otherwise, SAR is Measured for HSDPA, using an FRC with H-Set 1 in Sub-test 1 and a 12.2 kbps RMC configured in Test Loop Mode 1, using the highest body SAR configuration in 12.2 kbps RMC without HSDPA, on the maximum output channel with the body exposure configuration that results in the highest SAR in 12.2 kbps RMC for that RF channel.

11.3.1 Output Power Verification

Maximum output power is verified on the High, Middle and Low channels according to the general descriptions in section 5.2 of 3 GPP TS 34.121, using the appropriate RMC or AMR with TPC(transmit power control) set to all "1s".

11.3.2 Head SAR Measurements

SAR for head exposure configurations is measured using the 12.2 kbps RMC with TPC bits configured to all "1s". SAR in AMR configurations is not required when the maximum average output of each RF channel for 12.2 kbps AMR is less than ¼ dB higher than that measured in 12.2 kbps RMC. Otherwise, SAR is measured on the maximum output channel in 12.2 AMR with a 3.4 kbps SRB (signaling radio bearer using the exposure configuration that results in the highest SAR for that RF channel in 12.2 RMC.

11.3.3 Body SAR Measurement

SAR for body exposure configurations is measured using the 12.2 kbps RMC with the TPC bits all "1s".

11.3.4 Handsets with Release 5 HSDPA

Body SAR is not required for handsets with HSDPA capabilities when the maximum average output of each RF channel with HSDPA active is less than ¼ dB higher than that measured without HSDPA using 12.2 kbps RMC and the maximum SAR for 12.2 kbps RMC is ≤ 75 % of the SAR limit. Otherwise, SAR is Measured for HSDPA, using an FRC with H-Set 1 in Sub-test 1 and a 12.2 kbps RMC configured in Test Loop Mode 1, using the highest body SAR configuration in 12.2 kbps RMC without HSDPA, on the maximum output channel with the body exposure configuration that results in the highest SAR in 12.2 kbps RMC for that RF channel.

Sub-Test 1 Setup for Release 5 HSDPA

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

Note 1: Δ_{ACK}, Δ_{NACK} and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$
Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15.
Note 3: 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 signaled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d = 15/15.

11.3.5 Handsets with Release 6 HSPA (HSDPA/HSUPA)

Body SAR is not required for handsets with HSPA capabilities when the maximum average output of each RF channel with HSUPA/HSDPA active is less than ¼ dB higher than that measured without HSUPA/HSDPA using 12.2 kbps RMC and the maximum SAR for 12.2 kbps RMC is ≤ 75 % of the SAR limit. Body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set 1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 with power control algorithm 2, according to the highest body SAR configuration in 12.1 kbps RMC without HSPA. When VOIP is applicable for head exposure, SAR is not required when the maximum output of each RF channel with HSPA is less than ¼ dB higher than that measured using 12.2 kbps RMC; otherwise, the same HSPA configuration used for body measurement should be used to test for head exposure.

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs}[1]	β_{ec}	β_{ed}	β_{ed} (SF)	β_{ed} (codes)	CM[2] (dB)	MPR (dB)	AG[4] Index	E-TFCI
1	11/15[3]	15/15[3]	64	11/15[3]	22/15	209/225	1039/225	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[4]	15/15[4]	64	15/15[4]	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK}, Δ_{NACK} and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$.
Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_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 signaled gain factors for the reference TFC (TF1, TF1) to β_c = 10/15 and β_d = 15/15.
Note 4: For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to β_c = 14/15 and β_d = 15/15.
Note 5: Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g.
Note 6: β_{ed} can not be set directly; it is set by Absolute Grant Value.

GPP Release Version	Mode	3GPP 34.121	Cellular Band [dBm]			MPR
		Subtest	UL 4132 DL 4357	UL 4183 DL 4408	UL 4233 DL 4458	
99	WCDMA	12.2 kbps RMC	24.16	24.12	24.26	-
99	WCDMA	12.2 kbps AMR	24.13	24.16	24.29	
5	HSDPA	Subtest 1	23.00	23.06	23.16	0
5		Subtest 2	22.94	23.06	23.15	0
5		Subtest 3	22.48	22.59	22.68	-0.5
5		Subtest 4	22.47	22.61	22.68	-0.5
6	HSUPA	Subtest 1	22.58	22.30	22.65	0
6		Subtest 2	21.83	21.90	22.04	-2
6		Subtest 3	21.79	21.24	21.95	-1
6		Subtest 4	22.23	22.20	22.13	-2
6		Subtest 5	22.28	22.29	22.60	0

3GPP Release Version	Mode	3GPP 34.121	PCS Band [dBm]			MPR
		Subtest	UL 9262 DL 9662	UL 9400 DL 9800	UL 9538 DL 9938	
99	WCDMA	12.2 kbps RMC	23.01	23.00	23.07	-
99	WCDMA	12.2 kbps AMR	23.01	22.93	23.00	
5	HSDPA	Subtest 1	22.05	22.00	22.04	0
5		Subtest 2	21.96	21.91	22.03	0
5		Subtest 3	21.49	21.46	21.52	-0.5
5		Subtest 4	21.48	21.47	21.50	-0.5
6	HSUPA	Subtest 1	21.46	21.70	21.30	0
6		Subtest 2	20.54	20.40	20.14	-2
6		Subtest 3	20.06	19.91	19.93	-1
6		Subtest 4	20.75	21.09	21.00	-2
6		Subtest 5	21.16	21.34	20.96	0

WCDMA Average Conducted output powers

11.3 LTE

SAR testing was performed according to the FCC KDB 941225 D05v03 publication.
This DUT is developed base on MPR. The MPR is mandatory.
The device will not operate with any other MPR setting than that stated in the table as indicated.
SAR Testing was performed using a CMW500. UE transmits with Maximum output power during SAR testing.
A-MPR has been disabled for all SAR tests by setting NS=01 on the R&S CMW500.

Bandwidth	UL Channel	UL Freq.(MHz)	Modulation	RB Size	RB Offset	Max.Average Power (dBm)	Target MPR (dB)	Measured Power reduction (dB)
5 MHz	20775	2502.5	QPSK	1	0	22.41	0	0.00
				1	12	22.41	0	0.00
				1	24	22.44	0	-0.03
				12	0	21.34	1	1.07
				12	6	21.39	1	1.02
				12	11	21.37	1	1.04
				25	0	21.38	1	1.03
			16QAM	1	0	21.58	1	0.83
				1	12	21.57	1	0.84
				1	24	21.57	1	0.84
				12	0	20.53	2	1.88
				12	11	20.51	2	1.90
				12	6	20.52	2	1.89
				25	0	20.48	2	1.93
5 MHz	21100	2535	QPSK	1	0	22.33	0	0.04
				1	12	22.37	0	0.00
				1	24	22.33	0	0.04
				12	0	21.29	1	1.08
				12	6	21.35	1	1.02
				12	11	21.33	1	1.04
				25	0	21.30	1	1.07
			16QAM	1	0	21.67	1	0.70
				1	12	21.68	1	0.69
				1	24	21.73	1	0.64
				12	0	20.38	2	1.99
				12	11	20.41	2	1.96
				12	6	20.40	2	1.97
				25	0	20.31	2	2.06
5 MHz	21425	2567.5	QPSK	1	0	22.21	0	0.00
				1	12	22.25	0	-0.04
				1	24	22.32	0	-0.11
				12	0	21.18	1	1.03
				12	6	21.24	1	0.97
				12	11	21.24	1	0.97
				25	0	21.23	1	0.98
			16QAM	1	0	21.36	1	0.85
				1	12	21.37	1	0.84
				1	24	21.42	1	0.79
				12	0	20.30	2	1.91
				12	11	20.34	2	1.87
				12	6	20.36	2	1.85
				25	0	20.29	2	1.92

Bandwidth	UL Channel	UL Freq.(MHz)	Modulation	RB Size	RB Offset	Max.Average Power (dBm)	Target MPR (dB)	Measured Power reduction (dB)
10MHz	20800	2505	QPSK	1	0	22.48	0	-0.03
				1	24	22.46	0	-0.01
				1	49	22.45	0	0.00
				25	0	21.38	1	1.07
				25	12	21.36	1	1.09
				12	24	21.36	1	1.09
				50	0	21.28	1	1.17
			16QAM	1	0	21.50	1	0.95
				1	24	21.57	1	0.88
				1	49	21.56	1	0.89
				25	0	20.48	2	1.97
				25	12	20.49	2	1.96
				25	24	20.42	2	2.03
				50	0	20.37	2	2.08
10MHz	21100	2535	QPSK	1	0	22.21	0	0.12
				1	12	22.28	0	0.05
				1	24	22.33	0	0.00
				25	0	21.30	1	1.03
				25	12	21.29	1	1.04
				25	24	21.37	1	0.96
				25	0	21.26	1	1.07
			16QAM	1	0	21.21	1	1.12
				1	24	21.24	1	1.09
				1	49	21.23	1	1.10
				25	0	20.40	2	1.93
				25	12	20.43	2	1.90
				25	24	20.48	2	1.85
				50	0	20.41	2	1.92
10MHz	21400	2565	QPSK	1	0	22.19	0	-0.09
				1	24	22.10	0	0.00
				1	49	22.23	0	-0.13
				25	0	21.22	1	0.88
				25	12	21.16	1	0.94
				25	24	21.18	1	0.92
				50	0	21.19	1	0.91
			16QAM	1	0	20.88	1	1.22
				1	24	20.74	1	1.36
				1	49	20.82	1	1.28
				25	0	20.27	2	1.83
				25	12	20.19	2	1.91
				25	24	20.23	2	1.87
				50	0	20.21	2	1.89

Bandwidth	UL Channel	UL Freq.(MHz)	Modulation	RB Size	RB Offset	Max.Average Power (dBm)	Target MPR (dB)	Measured Power reduction (dB)
15NHz	20825	2507.5	QPSK	1	0	22.41	0	-0.03
				1	37	22.40	0	-0.02
				1	74	22.38	0	0.00
				36	0	21.27	1	1.11
				36	18	21.28	1	1.10
				36	38	21.35	1	1.03
				75	0	21.22	1	1.16
			16QAM	1	0	21.47	1	0.91
				1	37	21.46	1	0.92
				1	74	21.51	1	0.87
				36	0	20.44	2	1.94
				36	18	20.41	2	1.97
				36	38	20.44	2	1.94
				75	0	20.32	2	2.06
15MHz	21100	2535	QPSK	1	0	22.18	0	0.16
				1	37	22.34	0	0.00
				1	74	22.31	0	0.03
				36	0	21.19	1	1.15
				36	18	21.29	1	1.05
				36	38	21.30	1	1.04
				75	0	21.24	1	1.10
			16QAM	1	0	21.19	1	1.15
				1	37	21.32	1	1.02
				1	74	21.34	1	1.00
				36	0	20.29	2	2.05
				36	18	20.32	2	2.02
				36	38	20.28	2	2.06
				75	0	20.27	2	2.07
15MHz	21375	2562.5	QPSK	1	0	22.32	0	-0.16
				1	37	22.16	0	0.00
				1	74	22.25	0	-0.09
				36	0	21.14	1	1.02
				36	18	21.17	1	0.99
				36	38	21.10	1	1.06
				75	0	21.14	1	1.02
			16QAM	1	0	21.45	1	0.71
				1	37	21.33	1	0.83
				1	74	21.37	1	0.79
				36	0	20.30	2	1.86
				36	18	20.24	2	1.92
				36	38	20.22	2	1.94
				75	0	20.20	2	1.96

Bandwidth	UL Channel	UL Freq.(MHz)	Modulation	RB Size	RB Offset	Max.Average Power (dBm)	Target MPR (dB)	Measured Power reduction (dB)
20MHz	20850	2510	QPSK	1	0	22.66	0	0.01
				1	49	22.73	0	-0.06
				1	99	22.67	0	0.00
				50	0	21.27	1	1.02
				50	25	21.36	1	0.93
				50	49	21.24	1	1.05
				100	0	21.26	1	1.03
			16QAM	1	0	20.86	1	1.43
				1	49	20.79	1	1.50
				1	99	20.72	1	1.57
				50	0	20.38	2	1.91
				50	25	20.46	2	1.83
				50	49	20.39	2	1.90
				100	0	20.36	2	1.93
20MHz	21100	2535	QPSK	1	0	22.44	0	0.24
				1	49	22.68	0	0.00
				1	99	22.74	0	-0.08
				50	0	21.15	1	1.19
				50	25	21.24	1	1.10
				50	49	21.29	1	1.05
				100	0	21.22	1	1.12
			16QAM	1	0	20.92	1	1.42
				1	49	21.11	1	1.23
				1	99	21.23	1	1.11
				50	0	20.29	2	2.05
				50	25	20.39	2	1.95
				50	49	20.45	2	1.89
				100	0	20.32	2	2.02
20MHz	21350	2560	QPSK	1	0	22.72	0	-0.21
				1	49	22.45	0	0.00
				1	99	22.53	0	-0.03
				50	0	21.16	1	1.03
				50	25	21.11	1	1.08
				50	49	21.09	1	1.10
				100	0	21.12	1	1.07
			16QAM	1	0	21.52	1	0.67
				1	49	21.35	1	0.84
				1	99	21.34	1	0.85
				50	0	20.23	2	1.96
				50	25	20.15	2	2.04
				50	49	20.10	2	2.09
				100	0	20.17	2	2.02

Note;
The EUT enables maximum power reduction in accordance with 3GPP 36.101. The MPR settings are configured during the manufacture process and are not configurable by the network, carrier, or end user.

11.4 WiFi

11.4.1 SAR Testing for 802.11b/g/n modes

General Device Setup

Normal Network operating configurations are not suitable for measuring the SAR of 802.11 a/b/g transmitters. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipset based test mode software to ensure the results are consistent and reliable.

Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in test mode for SAR measurements must be identical to those programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters. The test frequencies should correspond to actual channel frequencies defined for domestic use. SAR for devices with switched diversity should be measured with only one antenna transmitting at a time during each SAR measurement, according to a fixed modulation and data rate. The same data pattern should be used for all measurements.

Frequency Channel Configurations

802.11 a/b/g and 4.9 GHz operating modes are tested independently according to the service requirements in each frequency band. 802.11 b/g modes are tested on channels 1, 6 and 11.802.11a is tested for UNII operations on channels 36 and 48 in the 5.15-5.25 GHz band; channels 52 and 64 in the 5.25-5.35 GHz band; Channels 104, 116, 124 and 136 in the 5.470-5.725 GHz band; and channels 149 and 161 in the 5.8 GHz band. When 5.8 GHz § 15.247 is also available, channels 149, 157 and 165 should be tested instead of the UNII channels. 4.9 GHz is tested on channels 1, 10 and 5 or 6, whichever has the higher output power, for 5 MHz channels; channels 11,15 and 19 for 10 MHz channels; and channels 21 and 25 for 20 MHz channels.

These are referred to as the “default test channels”. 802.11g mode was evaluated only if the output power was 0.25 dB higher than the 802.11b mode.

Mode		GHz	Channel	Turbo Channel	“Default Test Channels”			
					§15.247		UNII	
					802.11b	802.11g		
802.11b/g		2.412	1#		√	∇		
		2.437	6	6	√	∇		
		2.462	11#		√	∇		
802.11a	UNII	5.18	36				√	
		5.20	40	42 (5.21 GHz)				*
		5.22	44					*
		5.24	48	50 (5.25 GHz)			√	
		5.26	52				√	
		5.28	56	58 (5.29 GHz)				*
		5.30	60					*
		5.32	64				√	
		5.500	100	Unknown				*
		5.520	104				√	
		5.540	108					*
		5.560	112					*
		5.580	116				√	
		5.600	120					*
		5.620	124				√	
		5.640	128					*
		5.660	132					*
		5.680	136				√	
		5.700	140					*
	UNII or §15.247	5.745	149		√		√	
		5.765	153	152 (5.76 GHz)		*		*
		5.785	157		√			*
		5.805	161	160 (5.80 GHz)		*	√	
	§15.247	5.825	165		√			

802.11 Test Channels per FCC Requirements

IEEE 802.11b Average RF Power

Mode	Freq. [MHz]	Channel	802.11b (2.4 GHz) Conducted Power [dBm]			
			Data Rate (Mbps)			
			1	2	5.5	11
802.11b	2412	1	15.31	15.35	15.30	15.36
	2437	6	15.93	16.02	16.00	15.99
	2462	11	15.86	15.82	15.84	15.88

IEEE 802.11g Average RF Power

Mode	Freq. [MHz]	Channel	802.11g (2.4 GHz) Conducted Power [dBm]							
			Data Rate (Mbps)							
			6	9	12	18	24	36	48	54
802.11g	2412	1	11.64	11.67	11.54	11.72	11.61	11.66	11.84	11.74
	2437	6	12.32	12.29	12.33	12.36	12.38	12.34	12.48	12.28
	2462	1	12.19	12.20	12.16	12.18	12.20	12.21	12.35	12.24

IEEE 802.11n Average RF Power

Mode	Freq. [MHz]	Channel	802.11n (2.4 GHz) Conducted Power [dBm]							
			Data Rate (Mbps)							
			6.5	13	19.5	26	39	52	58.5	65
802.11n	2412	1	11.46	11.60	11.52	11.62	11.68	11.81	11.77	11.88
	2437	6	12.16	12.24	12.32	12.35	12.41	12.51	12.40	12.46
	2462	1	12.12	12.07	12.18	12.12	12.22	12.29	12.26	12.38

IEEE 802.11ac Average RF Power

Mode	Freq. [MHz]	Channel	802.11ac (2.4 GHz) Conducted Power [dBm]								
			Data Rate (Mbps)								
			6.5	13	19.5	26	39	52	58.5	65	78
802.11ac	2412	1	10.51	10.75	10.55	10.82	10.65	10.69	10.93	10.88	10.79
	2437	6	11.34	11.32	11.40	11.25	11.55	11.39	11.40	11.44	11.43
	2462	1	11.29	11.23	11.24	11.31	11.11	11.21	11.21	11.52	11.53

IEEE 802.11a Average RF Power– 20 MHz Bandwidth

Mode	Freq. [MHz]	Channel	802.11a (5 GHz) Conducted Power [dBm]							
			Data Rate (Mbps)							
			6	9	12	18	24	36	48	54
802.11a	5180	36	11.82	11.63	11.58	11.69	11.56	11.62	11.64	11.60
	5200	40	11.74	11.62	11.65	11.70	11.76	11.55	11.58	11.49
	5220	44	11.42	11.38	11.20	11.02	10.89	10.45	10.18	9.98
	5240	48	11.59	11.53	11.41	11.41	11.41	11.45	11.63	11.38
	5260	52	11.95	11.86	11.86	11.80	11.79	11.77	11.81	11.77
	5280	56	11.62	11.42	11.15	11.01	10.87	10.56	10.43	10.24
	5300	60	11.71	11.74	11.77	11.80	11.55	11.62	11.76	11.66
	5320	64	11.75	11.63	11.69	11.61	11.50	11.61	11.74	11.65
	5500	100	11.54	11.64	11.60	11.71	11.73	11.69	11.74	11.47
	5520	104	11.28	11.08	10.89	10.78	10.54	10.23	10.02	9.96
	5540	108	11.22	11.08	10.98	10.78	10.56	10.32	10.18	10.01
	5560	112	11.18	11.01	10.87	10.64	10.47	10.28	10.11	10.02
	5580	116	11.60	11.41	11.40	11.54	11.72	11.45	11.71	11.45
	5660	132	11.05	10.89	10.68	10.51	10.37	10.15	10.02	9.87
	5680	136	11.02	10.89	10.74	10.54	10.24	10.02	9.98	9.75
	5700	140	10.98	10.75	10.57	10.24	10.02	9.98	9.75	9.68
	5720	144	11.06	11.05	11.05	11.24	11.24	11.09	11.28	11.01
	5745	149	11.36	11.41	11.43	11.50	11.50	11.44	11.50	11.43
	5765	153	10.87	10.61	10.48	10.24	10.11	10.01	9.84	9.65
	5785	157	11.23	11.29	11.34	11.40	11.28	11.24	11.38	11.29
	5805	161	10.81	10.64	10.45	10.24	10.05	9.87	9.68	9.52
	5825	165	11.06	11.16	11.16	11.24	11.13	11.07	11.22	11.16

IEEE 802.11n Average RF Power – 20 MHz Bandwidth

Mode	Freq. [MHz]	Channel	20 MHz BW 802.11n (5 GHz) Conducted Power [dBm]							
			Data Rate (Mbps)							
			6.5	13	19.5	26	39	52	58.5	65
802.11n	5180	36	10.75	10.80	10.73	10.57	10.66	10.87	10.75	10.66
	5200	40	10.70	10.58	10.57	10.64	10.77	10.72	10.69	10.76
	5220	44	10.46	10.24	10.05	9.85	9.75	9.45	9.21	9.08
	5240	48	10.68	10.54	10.51	10.48	10.53	10.60	10.72	10.58
	5260	52	10.94	10.97	10.92	10.96	10.79	10.86	10.96	10.95
	5280	56	10.68	10.41	10.24	10.02	9.85	9.69	9.42	9.23
	5300	60	10.93	10.73	10.87	10.85	10.84	10.82	10.80	10.86
	5320	64	10.93	10.72	10.79	10.84	10.77	10.69	10.78	10.78
	5500	100	10.75	10.76	10.87	10.77	10.84	10.75	10.75	10.78
	5520	104	10.5	9.89	9.75	9.63	9.49	9.28	9.18	9.1
	5540	108	10.03	9.85	9.71	9.56	9.28	9.15	9.08	9.03
	5560	112	10.05	9.91	9.82	9.67	9.52	9.34	9.02	8.97
	5580	116	10.68	10.68	10.70	10.60	10.61	10.74	10.65	10.82
	5660	132	10.01	9.89	9.72	9.59	9.41	9.24	9.06	8.85
	5680	136	9.99	9.82	9.56	9.35	9.24	9.03	8.92	8.8
	5700	140	9.98	9.82	9.67	9.51	9.42	9.21	9.01	8.77
	5720	144	10.14	10.28	10.16	10.24	10.22	10.38	10.25	10.30
	5745	149	10.33	10.44	10.53	10.57	10.61	10.67	10.45	10.49
	5765	153	9.86	9.54	9.24	9.12	9.02	8.95	8.74	8.67
	5785	157	10.35	10.33	10.44	10.46	10.47	10.47	10.45	10.30
	5805	161	9.76	9.57	9.34	9.12	9.01	8.87	8.74	8.61
	5825	165	10.12	10.24	10.24	10.32	10.33	10.40	10.20	10.18

IEEE 802.11ac Average RF Power – 20 MHz Bandwidth

Mode	Freq. [MHz]	Channel	802.11ac (5 GHz) Conducted Power [dBm]								
			Data Rate (Mbps)								
			6.5	13	19.5	26	39	52	58.5	65	78
802.11ac	5180	36	9.87	9.93	9.66	9.77	9.76	9.83	9.89	9.72	9.79
	5200	40	9.92	9.94	9.73	9.95	9.91	9.68	9.75	9.83	9.80
	5220	44	9.61	9.48	9.31	9.02	8.85	8.56	8.34	8.05	7.92
	5240	48	9.61	9.51	9.60	9.67	9.57	9.82	9.72	9.53	9.59
	5260	52	9.92	10.03	10.17	10.11	9.91	9.94	10.09	10.08	9.98
	5280	56	9.58	9.42	9.28	9.12	8.98	8.78	8.65	8.41	8.2
	5300	60	10.11	9.95	9.98	10.06	9.91	10.06	9.91	9.91	9.88
	5320	64	10.01	9.98	9.98	10.04	9.93	9.82	9.90	9.98	10.06
	5500	100	10.01	9.91	10.07	9.98	10.00	9.97	10.00	10.01	9.91
	5520	104	9.64	9.45	9.21	9.12	8.89	8.65	8.44	8.15	8.02
	5540	108	9.54	9.35	9.18	9.08	8.85	8.59	8.25	8.02	7.99
	5560	112	9.42	9.28	9.07	8.89	8.68	8.47	8.24	7.98	7.89
	5580	116	9.60	9.75	9.81	9.90	9.84	9.85	9.86	9.83	9.78
	5660	132	9.21	9.11	9.01	8.87	8.64	8.23	8.01	7.98	7.71
	5680	136	9.18	8.95	8.78	8.62	8.47	8.24	8.01	7.86	7.68
	5700	140	9.14	9.04	8.85	8.57	8.25	8.14	7.97	7.78	7.54
	5720	144	9.28	9.42	9.42	9.35	9.45	9.38	9.40	9.46	9.24
	5745	149	9.46	9.54	9.46	9.41	9.47	9.54	9.58	9.48	9.43
	5765	153	9.09	8.89	8.71	8.56	8.34	8.12	7.89	7.71	7.51
	5785	157	9.26	9.31	9.40	9.37	9.35	9.38	9.39	9.33	9.34
	5805	161	9.01	8.89	8.72	8.52	8.24	8.02	7.85	7.65	7.42
	5825	165	9.16	9.17	9.10	9.17	9.22	9.26	9.16	9.13	9.18

IEEE 802.11n Average RF Power – 40 MHz Bandwidth

Mode	Freq. [MHz]	Channel	40 MHz BW 802.11n (5 GHz) Conducted Power [dBm]							
			Data Rate (Mbps)							
			13.5	27	40.5	54	81	108	121.5	135
802.11n	5190	38	10.66	10.34	10.79	10.30	10.67	10.67	10.66	10.64
	5230	46	10.13	10.52	10.12	10.21	10.50	10.43	10.44	10.02
	5270	54	10.92	10.63	10.99	10.69	10.99	10.94	10.97	10.92
	5310	62	10.28	10.66	10.83	10.31	10.26	10.65	10.93	10.21
	5510	102	10.55	10.48	10.48	10.55	10.72	10.35	10.43	10.46
	5550	110	10.69	10.53	10.61	10.54	10.70	10.69	10.57	10.49
	5670	134	9.67	9.24	8.98	8.78	8.51	8.34	8.01	7.82
	5710	142	9.71	9.93	9.94	9.73	9.89	9.74	9.61	9.92
	5755	151	9.42	9.37	9.37	9.26	9.42	9.25	9.30	9.34
	5795	159	9.65	9.78	9.68	8.98	9.45	9.62	9.31	8.85

IEEE 802.11ac Average RF Power – 40 MHz Bandwidth

Mode	Freq. [MHz]	Channel	40 MHz BW 802.11ac (5 GHz) Conducted Power [dBm]									
			Data Rate (Mbps)									
			13.5	27	40.5	54	81	108	121.5	135	162	180
802.11ac	5190	38	9.42	9.43	9.74	9.77	9.80	9.53	9.34	9.71	9.39	9.41
	5230	46	9.56	9.20	9.28	9.52	9.52	9.39	9.15	9.23	9.58	9.51
	5270	54	9.99	9.99	9.98	9.93	9.64	9.83	9.95	9.93	9.58	9.97
	5310	62	9.83	9.82	9.26	9.32	9.73	9.91	9.73	9.31	9.22	9.32
	5510	102	9.61	9.45	9.39	9.36	9.51	9.55	9.39	9.48	9.40	9.46
	5550	110	9.90	9.77	9.62	9.80	9.80	9.97	9.62	9.77	9.84	9.63
	5670	134	8.64	8.34	8.02	7.87	7.58	7.24	7.01	6.89	6.54	6.32
	5710	142	8.77	9.01	9.01	8.77	8.73	8.95	8.99	8.98	9.00	8.72
	5755	151	8.59	8.42	8.55	8.53	8.52	8.57	8.53	8.47	8.37	8.29
	5795	159	8.73	8.15	8.65	8.08	8.74	8.33	8.69	8.06	8.02	8.64

IEEE 802.11ac Average RF Power – 80 MHz Bandwidth

Mode	Freq. [MHz]	Channel	80 MHz BW 802.11ac (5 GHz) Conducted Power [dBm]									
			Data Rate (Mbps)									
			29.3	58.5	87.8	117	175.5	234	263.3	292.5	351	390
802.11ac	5210	42	9.52	9.39	9.45	9.47	9.42	9.40	9.40	9.47	9.50	9.49
	5290	58	9.34	9.29	9.34	9.32	9.33	9.38	9.42	9.41	9.43	9.35
	5530	106	9.79	9.87	9.74	9.84	9.81	9.82	9.73	9.84	9.82	9.79
	5690	138	8.93	8.94	8.97	8.99	8.99	9.00	8.95	8.98	8.95	8.90
	5775	155	8.74	8.77	8.75	8.72	8.71	8.71	8.76	8.74	8.82	8.76

11.5 Test Exclusions Applied

11.5.1 BT

Per FCC KDB Publication 648474 D03-D04, this device is considered a “phablet” since its diagonal distance, 170.1 mm, is greater than 160 mm. Therefore hand SAR tests are required. Because wireless router operations are not supported for 5 GHz NII WIFI, hand SAR was evaluated for 5 GHz NII WIFI. However, hand SAR was not evaluated for 2.4 GHz WIFI and 5 GHz DTS WIFI since Hotspot SAR for 2.4 GHz WIFI and 5 GHz DTS WIFI were < 1.2 W/kg.”

Per FCC KDB 447498 D01v05, The SAR exclusion threshold for distance < 50mm is defined by the following equation:

$$\frac{Max\ Power\ of\ Channel(mW)}{Test\ \ Separation\ Distance\ (mm)} * \sqrt{Frequency(GHz)} \leq 3.0$$

. Mode	Frequency	Maximum Allowed Power	Separatuin Distance	≤ 3.0
	[MHz]	[mW]	[mm]	
Bluetooth	2441	8	10	1.25

Based on the maximum conducted power of Bluetooth and antenna to use separation distance, Bluetooth SAR was not required [(8/10)*√2.441] = 1.25 < 3.0.
Bluetooth LE SAR was not required [(3/10)*√2.441] = 0.47 < 3.0.

This device contains transmitters that may operate simultaneously. Therefore simultaneous transmission analysis is required. Per FCC KDB 447498 D01v05 IV.C.1iii, simultaneous transmission SAR test exclusion may be applied when the sum of the 1-g SAR for all the simultaneous transmitting antennas in a specific a physical test configuration is ≤ 1.6W/kg. When standalone SAR is not required to be measured per FCC KDB 447498 D01v05 4.3.22, the following equation must be used to estimate the standalone 1-g SAR for simultaneous transmission assessment involving that transmitter

$$Estimated\ SAR = \frac{\sqrt{f(GHZ)}}{7.5} * \frac{(Max\ Power\ of\ channel\ mW)}{Min\ Seperation\ Distance}.$$

. Mode	Frequency	Maximum Allowed Power	Separatuin Distance (Body)	Estimated SAR (Body)
	[MHz]	[mW]	[mm]	[W/kg]
Bluetooth	2441	8	10	0.17

Note : Held-to ear configurations are not applicable to Bluetooth operations and therefore were not considered for simultaneous transmission. The Estimated SAR results were determined according to FCC KDB447498 D01v05

Note: Bluetooth LE conducted Power is not calculated on the SAR test exclusions table. Because Bluetooth LE conducted power is lower than Bluetooth conducted Power.

11.5.2 Licenced Transmitter(s)

GSM/GPRS/EDGE DTM is not supported for US bands. Therefore, the GMS Voice modes in this report do not transmit simultaneously with GPRS/EDGE Data.

Justification for reduced test configurations per KDB 941225 D03v01: The source-based time-averaged output power was evaluated for all multi-slot operations. The multi-slot configuration with the highest frame averaged output power was evaluated for SAR.

This device is only capable of QPSK HSUPA in the uplink. Therefore, no additional SAR tests are required beyond that descrived for device with HSUPA in KDB 941225 D01v02.

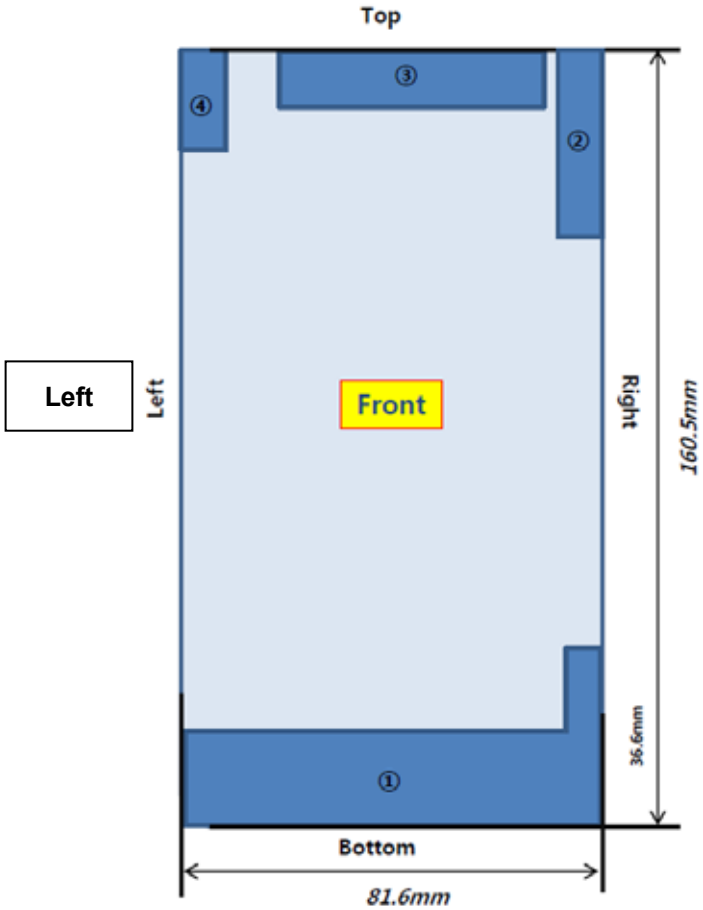
Per FCC KDB Publication 648474 D04 Handset SAR v01r01, since the device is a paablet and all hotspot SAR was < 1.2 W/kg, hand SAR was not required for licensed transmitters.

12. SAR Test configuration & Antenna Information

12.1 Mobile Hotspot sides for SAR Testing configurations

Mode	Rear	Front	Left	Right	Bottom	Top
GSM 850	Yes	Yes	Yes	Yes	Yes	No
GSM 1 900	Yes	Yes	Yes	Yes	Yes	No
WCDMA 850	Yes	Yes	Yes	Yes	Yes	No
WCDMA 1 900	Yes	Yes	Yes	Yes	Yes	No
LTE band 7	Yes	Yes	Yes	Yes	Yes	No
2.4 GHz WLAN	Yes	Yes	Yes	No	No	Yes
5 GHz WLAN	Yes	Yes	Yes	No	No	Yes

12.2 Antenna and Device Information



Antenna	Mode	Band
①	GSM	G850 Tx, Rx
	GSM	EGSM Tx, Rx
	GSM	GSM1800 Tx, Rx
	GSM	GSM1900 Tx, Rx
	WCDMA	Band 1 Tx, Rx
	WCDMA	Band 2 Tx, Rx
	WCDMA	Band 5 Tx, Rx
	LTE	Band 7 Tx, Rx
②	GNSS	1.574~1.6GHz
	LTE	Band 7 2nd Rx
③	WCDMA	Band 1 2nd Rx
	WCDMA	Band 2 2nd Rx
	WCDMA	Band 5 2nd Rx
④	Bluetooth	2.4GHz
	Wi-Fi	2.4GHz/5GHz

Note;

1. Per FCC KDB Publication 941225 D06v01, we performed the SAR testing at 0.8 cm and 1.0 cm from the top & bottom surfaces and also from side edges with a transmitting antenna ≤ 2.5 cm from an edge.
*Please see the D956_Antenna distance for futher information.

13. SAR TEST DATA SUMMARY

13.1-1 Measurement Results (GSM850 Head SAR)

Frequency		Mode	Power (dBm)		Power Drift (dB)	Battery	Phantom Position	Measured SAR(mW/g)	Scaling Facor	Scaled SAR(mW/g)	Plot No.
MHz	Ch.		Tune-Up Limit	Conducted Power							
836.6	190	GSM850	33.7	32.76	-0.179	Standard	Left Ear	0.329	1.242	0.409	-
836.6	190		33.7	32.76	-0.144	Standard	Left Tilt	0.129	1.242	0.160	-
836.6	190		33.7	32.76	-0.064	Standard	Right Ear	0.200	1.242	0.248	-
836.6	190		33.7	32.76	-0.007	Standard	Right Tilt	0.116	1.242	0.144	-
836.6	190	GPRS 2Tx	31.7	31.45	-0.138	Standard	Left Ear	0.481	1.059	**0.510**	1
836.6	190		31.7	31.45	-0.165	Standard	Left Tilt	0.153	1.059	0.162	-
836.6	190		31.7	31.45	-0.080	Standard	Right Ear	0.353	1.059	0.374	-
836.6	190		31.7	31.45	-0.031	Standard	Right Tilt	0.155	1.059	0.164	-
ANSI/ IEEE C95.1 - 1992– Safety Limit **Spatial Peak** **Uncontrolled Exposure/ General Population**							**Head** **1.6 W/kg (mW/g)** Averaged over 1 gram				

13.1-2 Measurement Results (GSM1900 Head SAR)

Frequency		Mode	Power (dBm)		Power Drift (dB)	Battery	Phantom Position	Measured SAR(mW/g)	Scaling Facor	Scaled SAR(mW/g)	Plot No.
MHz	Ch.		Tune-Up Limit	Conducted Power							
1 880.0	661	GSM 1900	30.7	29.58	-0.131	Standard	Left Ear	0.167	1.294	0.216	-
1 880.0	661		30.7	29.58	0.035	Standard	Left Tilt	0.082	1.294	0.106	-
1 880.0	661		30.7	29.58	-0.134	Standard	Right Ear	0.157	1.294	0.203	-
1 880.0	661		30.7	29.58	0.135	Standard	Right Tilt	0.072	1.294	0.093	-
1 880.0	661	GPRS 2Tx	29.2	27.86	0.006	Standard	Left Ear	0.234	1.361	**0.319**	2
1 880.0	661		29.2	27.86	0.103	Standard	Left Tilt	0.072	1.361	0.098	-
1 880.0	661		29.2	27.86	-0.157	Standard	Right Ear	0.196	1.361	0.267	-
1 880.0	661		29.2	27.86	-0.051	Standard	Right Tilt	0.087	1.361	0.118	-
ANSI/ IEEE C95.1 - 1992– Safety Limit **Spatial Peak** **Uncontrolled Exposure/ General Population**							**Head** **1.6 W/kg (mW/g)** Averaged over 1 gram				

13.1-3 Measurement Results (WCDMA850 Head SAR)

Frequency		Mode	Power (dBm)		Power Drift (dB)	Battery	Phantom Position	Measured SAR(mW/g)	Scaling Facor	Scaled SAR(mW/g)	Plot No.
MHz	Channel		Tune-Up Limit	Conducted Power							
836.6	4183	WCDMA 850	24.7	24.12	-0.006	Standard	Left Ear	0.387	1.143	**0.442**	3
836.6	4183		24.7	24.12	0.100	Standard	Left Tilt	0.184	1.143	0.210	-
836.6	4183		24.7	24.12	-0.113	Standard	Right Ear	0.277	1.143	0.317	-
836.6	4183		24.7	24.12	0.042	Standard	Right Tilt	0.170	1.143	0.194	-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							**Head 1.6 W/kg (mW/g) Averaged over 1 gram**				

13.1-4 Measurement Results (WCDMA1900 Head SAR)

Frequency		Mode	Power (dBm)		Power Drift (dB)	Battery	Phantom Position	Measured SAR (mW/g)	Scaling Facor	Scaled SAR (mW/g)	Plot No.
MHz	Channel		Tune-Up Limit	Conducted Power							
1 880.0	9400	WCDMA 1900	23.7	23.00	-0.046	Standard	Left Ear	0.347	1.175	**0.408**	4
1 880.0	9400		23.7	23.00	0.000	Standard	Left Tilt	0.103	1.175	0.121	-
1 880.0	9400		23.7	23.00	0.148	Standard	Right Ear	0.286	1.175	0.336	-
1 880.0	9400		23.7	23.00	-0.142	Standard	Right Tilt	0.177	1.175	0.208	-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							**Head 1.6 W/kg (mW/g) Averaged over 1 gram**				

13.1-5 Measurement Results (LTE Band 7 20MHz Head SAR)

Frequency		Mode	Power (dBm)		Power Drift (dB)	Battery	Phantom Position	RB Size	RB Offset	Measured SAR (mW/g)	Scaling Facor	Scaled SAR (mW/g)	Plot No
MHz	ch.		Tune-Up Limit	Conducted Power									
2 535	21100	QPSK	23.0	22.74	-0.100	Standard	Left Ear	1	99	0.411	1.062	0.436	-
2 510	20850		23.0	21.36	0.012	Standard	Left Ear	50	25	0.281	1.159	0.326	-
2 535	21100		23.0	22.74	0.163	Standard	Left Tilt 15°	1	99	0.461	1.062	0.489	-
2 510	20850		23.0	21.36	0.083	Standard	Left Tilt 15°	50	25	0.332	1.159	0.385	-
2 510	20850		23.0	22.73	0.197	Standard	Right Ear	1	49	0.682	1.064	0.726	-
2 535	21100		23.0	22.74	0.064	Standard	Right Ear	1	99	0.826	1.062	0.877	-
2 560	21350		23.0	22.72	0.125	Standard	Right Ear	1	0	0.875	1.067	0.933	5
2 510	20850		23.0	21.36	0.032	Standard	Right Ear	50	25	0.607	1.159	0.703	-
2 510	20850		23.0	21.26	0.142	Standard	Right Ear	100	0	0.540	1.186	0.640	-
2 535	21100		23.0	22.74	-0.122	Standard	Right Tilt 15°	1	99	0.247	1.062	0.262	-
2 510	20850		23.0	21.36	-0.046	Standard	Right Tilt 15°	50	25	0.201	1.159	0.233	-
ANSI/ IEEE C95.1 1992 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population								**Head 1.6 W/kg (mW/g) Averaged over 1 gram**					

13.1-6 Measurement Results (DTS Head SAR)

Frequency		Mode	Power (dBm)		Power Drift (dB)	Battery	Phantom Position	Data Rate	Measured SAR(mW/g)	Scaling Facor	Scaled SAR(mW/g)	Plot No.
MHz	Ch.		Tune-Up Limit	Conducted Power								
2 437	6	802.11b	16.5	15.93	-0.040	Standard	Left Ear	1Mbps	0.151	1.140	0.172	-
			16.5	15.93	0.153	Standard	Left Tilt	1Mbps	0.121	1.140	0.138	-
			16.5	15.93	0.108	Standard	Right Ear	1Mbps	0.403	1.140	**0.460**	6
			16.5	15.93	0.154	Standard	Right Tilt	1Mbps	0.277	1.140	0.316	-
5 745	149	802.11a	13.0	11.36	-0.132	Standard	Left Ear	6Mbps	0.299	1.459	0.436	-
			13.0	11.36	0.141	Standard	Left Tilt	6Mbps	0.079	1.459	0.115	-
			13.0	11.36	0.151	Standard	Right Ear	6Mbps	0.303	1.459	0.442	-
			13.0	11.36	0.176	Standard	Right Tilt	6Mbps	0.124	1.459	0.181	-
5 775	155	802.11ac	10.0	8.74	0.143	Standard	Right Ear	29.3Mbps	0.315	1.337	0.421	7
ANSI/ IEEE C95.1 - 1992– Safety Limit **Spatial Peak** **Uncontrolled Exposure/ General Population**							**Head** **1.6 W/kg (mW/g)** Averaged over 1 gram					

13.1-7 Measurement Results (NII Head SAR)

Frequency		Mode	Power (dBm)		Power Drift (dB)	Battery	Phantom Position	Data Rate	Measured SAR (mW/g)	Scaling Facor	Scaled SAR (mW/g)	Plot No.
MHz	Ch		Tune-Up Limit	Conducted Power								
5 180	36	802.11a	13.0	11.82	-0.067	Standard	Left Ear	6Mbps	0.060	1.312	0.079	-
5 180	36	802.11a	13.0	11.82	0.116	Standard	Left Tilt	6Mbps	0.047	1.312	0.062	-
5 180	36	802.11a	13.0	11.82	0.142	Standard	Right Ear	6Mbps	0.166	1.312	0.218	-
5 180	36	802.11a	13.0	11.82	0.142	Standard	Right Tilt	6Mbps	0.109	1.312	0.143	-
5 210	42	802.11ac	10.0	9.52	-0.130	Standard	Right Ear	29.3Mbps	0.147	1.117	0.164	-
5 260	52	802.11a	13.0	11.95	0.112	Standard	Left Ear	6Mbps	0.044	1.274	0.056	-
5 260	52	802.11a	13.0	11.95	0.170	Standard	Left Tilt	6Mbps	0.040	1.274	0.051	-
5 260	52	802.11a	13.0	11.95	0.120	Standard	Right Ear	6Mbps	0.271	1.274	0.345	8
5 260	52	802.11a	13.0	11.95	0.132	Standard	Right Tilt	6Mbps	0.216	1.274	0.275	-
5 290	58	802.11ac	10.0	9.34	0.117	Standard	Right Ear	29.3Mbps	0.133	1.164	0.155	-
5 500	100	802.11a	13.0	11.54	-0.157	Standard	Left Ear	6Mbps	0.062	1.400	0.087	-
5 500	100	802.11a	13.0	11.54	0.142	Standard	Left Tilt	6Mbps	0.082	1.400	0.115	-
5 500	100	802.11a	13.0	11.54	0.183	Standard	Right Ear	6Mbps	0.196	1.400	0.274	-
5 500	100	802.11a	13.0	11.54	0.170	Standard	Right Tilt	6Mbps	0.157	1.400	0.220	-
5 530	106	802.11ac	10.0	9.79	0.141	Standard	Right Ear	29.3Mbps	0.093	1.050	0.098	-
5 690	138	802.11ac	10.0	8.93	0.167	Standard	Right Ear	29.3Mbps	0.023	1.279	0.029	-
ANSI/ IEEE C95.1 - 1992– Safety Limit **Spatial Peak** **Uncontrolled Exposure/ General Population**							**Head** **1.6 W/kg (mW/g)** Averaged over 1 gram					

13.2-1 Measurement Results (GSM850 Hotspot SAR)

Frequency		Mode	Power (dBm)		Power Drift (dB)	Configuration	Separation Distance	Measured SAR(mW/g)	Scaling Facor	Scaled SAR(mW/g)	Plot No.
MHz	Ch.		Tune-Up Limit	Conducted Power							
836.6	190	GPRS 2Tx	31.7	31.45	-0.066	Rear	0.8 cm	0.477	1.059	**0.505**	9
836.6	190		31.7	31.45	-0.092	Front	0.8 cm	0.569	1.059	0.603	-
836.6	190		31.7	31.45	-0.042	Left	1.0 cm	0.582	1.059	**0.616**	10
836.6	190		31.7	31.45	-0.086	Right	1.0 cm	0.494	1.059	0.523	-
836.6	190		31.7	31.45	-0.023	Bottom	1.0 cm	0.280	1.059	0.297	-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							**Body 1.6 W/kg (mW/g) **Averaged over 1 gram				

13. 2-2 Measurement Results (GSM1900 Hotspot SAR)

Frequency		Mode	Power (dBm)		Power Drift (dB)	Configuration	Separation Distance	Measured SAR (mW/g)	Scaling Facor	Scaled SAR (mW/g)	Plot No.
MHz	Ch.		Tune-Up Limit	Conducted Power							
1 880.0	661	GPRS 2Tx	29.2	27.86	0.130	Rear	0.8 cm	0.507	1.361	**0.690**	11
1 880.0	661		29.2	27.86	-0.092	Front	0.8 cm	0.586	1.361	**0.798**	12
1 880.0	661		29.2	27.86	0.048	Left	1.0 cm	0.116	1.361	0.158	-
1 880.0	661		29.2	27.86	-0.025	Right	1.0 cm	0.108	1.361	0.147	-
1 880.0	661		29.2	27.86	-0.067	Bottom	1.0 cm	0.363	1.361	0.494	-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							**Body 1.6 W/kg (mW/g) **Averaged over 1 gram				

13. 2-3 Measurement Results (WCDMA850 Hotspot SAR)

Frequency		Mode	Power (dBm)		Power Drift (dB)	Configuration	Separation Distance	Measured SAR(mW/g)	Scaling Facor	Scaled SAR(mW/g)	Plot No.
MHz	Ch.		Tune-Up Limit	Conducted Power							
836.6	4183	WCDMA850	24.7	24.12	-0.061	Rear	0.8 cm	0.403	1.143	**0.461**	13
836.6	4183		24.7	24.12	0.026	Front	0.8 cm	0.440	1.143	**0.503**	14
836.6	4183		24.7	24.12	-0.125	Left	1.0 cm	0.325	1.143	0.371	-
836.6	4183		24.7	24.12	-0.090	Right	1.0 cm	0.206	1.143	0.235	-
836.6	4183		24.7	24.12	-0.089	Bottom	1.0 cm	0.178	1.143	0.203	-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							**Body 1.6 W/kg (mW/g) **Averaged over 1 gram				

13. 2-4 Measurement Results (WCDMA1900 Hotspot SAR)

Frequency		Mode	Power (dBm)		Power Drift (dB)	Configuration	Separation Distance	Measured SAR(mW/g)	Scaling Facor	Scaled SAR(mW/g)	Plot No.
MHz	Ch.		Tune-Up Limit	Conducted Power							
1 852.4	9262	WCDMA 1900	23.7	23.01	-0.020	Rear	0.8 cm	0.821	1.172	**0.962**	15
1 880.0	9400		23.7	23.00	-0.036	Rear	0.8 cm	0.782	1.175	0.919	**-**
1 907.6	9538		23.7	23.07	-0.043	Rear	0.8 cm	0.756	1.156	0.874	**-**
1 852.4	9262		23.7	23.01	-0.073	Front	0.8 cm	0.914	1.172	1.071	-
1 880.0	9400		23.7	23.00	-0.016	Front	0.8 cm	1.01	1.175	**1.187**	16
1 907.6	9538		23.7	23.07	0.037	Front	0.8 cm	0.909	1.156	1.051	-
1 880.0	9400		23.7	23.00	-0.100	Left	1.0 cm	0.207	1.175	0.243	-
1 880.0	9400		23.7	23.00	-0.082	Right	1.0 cm	0.168	1.175	0.197	-
1 880.0	9400		23.7	23.00	-0.031	Bottom	1.0 cm	0.579	1.175	0.680	-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							**0.093Body 1.6 W/kg (mW/g) **Averaged over 1 gram				

13.2-5 Measurement Results (LTE Band7 20MHz Hotspot SAR)

Frequency		Mode	Power (dBm)		Power Drift (dB)	Configuration	RB Size	RB Offset	Separation Distance	Measured SAR (mW/g)	Scaling Facor	Scaled SAR (mW/g)	Plot No.
MHz	ch.		Tune-Up Limit	Conducted Power									
2 510	20850	QPSK	23.0	22.73	0.024	Rear	1	49	0.8 cm	0.988	1.064	1.051	17
2 535	21100	QPSK	23.0	22.74	0.008	Rear	1	99	0.8 cm	0.946	1.062	1.004	-
2 560	21350	QPSK	23.0	22.72	-0.006	Rear	1	0	0.8 cm	0.933	1.067	0.995	-
2 510	20850	QPSK	23.0	21.36	0.021	Rear	50	25	0.8 cm	0.705	1.159	0.817	-
2 535	21100	QPSK	23.0	21.29	0.045	Rear	50	49	0.8 cm	0.582	1.178	0.685	-
2 560	21350	QPSK	23.0	21.16	0.036	Rear	50	0	0.8 cm	0.535	1.213	0.649	-
2 510	20850	QPSK	23.0	21.26	0.046	Rear	100	0	0.8 cm	0.699	1.186	0.829	
2 510	20850	QPSK	23.0	22.73	-0.060	Front	1	49	0.8 cm	1.11	1.064	1.181	-
2 535	21100	QPSK	23.0	22.74	0.152	Front	1	99	0.8 cm	1.12	1.062	1.189	18
2 560	21350	QPSK	23.0	22.72	0.043	Front	1	0	0.8 cm	0.967	1.067	1.031	-
2 510	20850	QPSK	23.0	21.36	0.081	Front	50	25	0.8 cm	0.865	1.159	1.002	-
2 535	21100	QPSK	23.0	21.29	0.003	Front	50	49	0.8 cm	0.767	1.178	0.903	-
2 560	21350	QPSK	23.0	21.26	-0.142	Front	50	0	0.8 cm	0.752	1.186	0.892	-
2 510	20850	QPSK	23.0	21.26	-0.024	Front	100	0	0.8 cm	0.871	1.186	1.033	-
2 535	21100	QPSK	23.0	22.74	-0.158	Left	1	99	1.0 cm	0.041	1.062	0.044	-
2 510	20850	QPSK	23.0	21.36	0.137	Left	50	25	1.0 cm	0.047	1.159	0.054	-
2 535	21100	QPSK	23.0	22.74	-0.021	Right	1	99	1.0 cm	0.424	1.062	0.450	-
2 510	20850	QPSK	23.0	21.36	0.006	Right	50	25	1.0 cm	0.365	1.159	0.423	-
2 510	20850	QPSK	23.0	22.73	-0.059	Bottom	1	49	1.0 cm	0.693	1.064	0.737	-
2 535	21100	QPSK	23.0	22.74	-0.042	Bottom	1	99	1.0 cm	0.734	1.062	0.779	-
2 560	21350	QPSK	23.0	22.72	-0.003	Bottom	1	0	1.0 cm	0.721	1.067	0.769	-
2 510	20850	QPSK	23.0	21.36	-0.075	Bottom	50	25	1.0 cm	0.522	1.159	0.605	-
2 510	20850	QPSK	23.0	21.26	-0.019	Bottom	100	0	1.0 cm	0.520	1.186	0.617	-
ANSI/ IEEE C95.1 1992 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population										**Body 1.6 W/kg (mW/g) Averaged over 1 gram**			

13. 2-6 Measurement Results (WLAN Hotspot SAR)

Frequency		Mode	Power (dBm)		Power Drift (dB)	Configuration	Data Rate	Separation Distance	Measured SAR (mW/g)	Scaling Facor	Scaled SAR (mW/g)	Plot No.
MHz	Ch		Tune-Up Limit	Conducted Power								
2 437	6	802.11b	16.5	15.93	0.114	Rear	1Mbps	0.8 cm	0.149	1.140	**0.170**	19
			16.5	15.93	-0.105	Front	1Mbps	0.8 cm	0.086	1.140	0.098	-
			16.5	15.93	-0.101	Left	1Mbps	1.0 cm	0.105	1.140	0.120	-
			16.5	15.93	0.026	Top	1Mbps	1.0 cm	0.020	1.140	0.023	-
5 745	149	802.11a	13.0	11.36	0.133	Rear	6Mbps	0.8 cm	0.045	1.459	0.066	20
			13.0	11.36	0.118	Front	6Mbps	0.8 cm	0.034	1.459	0.050	-
			13.0	11.36	0.195	Left	6Mbps	1.0 cm	0.035	1.459	0.051	-
			13.0	11.36	-0.128	Top	6Mbps	1.0 cm	0.025	1.459	0.036	-
5 775	155	802.11ac	10.0	8.74	0.100	Rear	29.3Mbps	1.0 cm	0.0015	1.337	0.002	-
ANSI/ IEEE C95.1 - 1992– Safety Limit **Spatial Peak** **Uncontrolled Exposure/ General Population**							**Body** **1.6 W/kg (mW/g)** Averaged over 1 gram					

13.3-1 Measurement Results (WLAN Body-worn SAR)

Frequency		Mode	Power (dBm)		Power Drift (dB)	Configuration	Data Rate	Separation Distance	Measured SAR (mW/g)	Scaling Facor	Scaled SAR (mW/g)	Plot No.
MHz	Ch.		Tune-Up Limit	Conducted Power								
2 437	6	802.11b	16.5	15.93	0.114	Rear	1Mbps	0.8 cm	0.149	1.140	0.170	19
5 745	149	802.11a	13.0	11.36	0.133	Rear	6Mbps	0.8 cm	0.045	1.459	0.066	20
5 775	155	802.11ac	10.0	8.74	0.100	Rear	29.3Mbps	0.8 cm	0.0015	1.337	0.002	-
ANSI/ IEEE C95.1 - 1992– Safety Limit **Spatial Peak** **Uncontrolled Exposure/ General Population**							**Body** **1.6 W/kg (mW/g)** Averaged over 1 gram					

13.3-2 Measurement Results (Nll Body-worn SAR)

Frequency		Mode	Power (dBm)		Power Drift (dB)	Configuration	Data Rate	Separation Distance	Measured SAR (mW/g)	Scaling Facor	Scaled SAR (mW/g)	Plot No.
MHz	Ch		Tune-Up Limit	Conducted Power								
5 180	36	802.11a	13.0	11.82	-0.148	Rear	6Mbps	0.8 cm	0.153	1.312	0.201	21
5 210	42	802.11ac	10.0	9.52	0.116	Rear	29.3Mbps	0.8 cm	0.065	1.117	0.073	-
5 260	52	802.11a	13.0	11.95	-0.124	Rear	6Mbps	0.8 cm	0.180	1.274	0.229	22
5 290	58	802.11ac	10.0	9.34	0.105	Rear	29.3Mbps	0.8 cm	0.093	1.164	0.108	-
5 500	100	802.11a	13.0	11.54	0.157	Rear	6Mbps	0.8 cm	0.099	1.400	0.139	23
5 530	106	802.11ac	10.0	9.79	-0.118	Rear	29.3Mbps	0.8 cm	0.050	1.050	0.052	-
5 690	138	802.11ac	10.0	8.93	-0.134	Rear	29.3Mbps	0.8 cm	0.037	1.279	0.047	-
ANSI/ IEEE C95.1 - 1992– Safety Limit **Spatial Peak** **Uncontrolled Exposure/ General Population**							**Body** **1.6 W/kg (mW/g)** Averaged over 1 gram					

13.3-3 Measurement Results (Body-worn SAR)

Frequency		Mode	Power (dBm)		Power Drift (dB)	Configuration	Separation Distance	Measured SAR (mW/g)	Scaling Facor	Scaled SAR (mW/g)	Plot No.
MHz	Ch.		Tune-Up Limit	Conducted Power							
836.6	190	GSM850	33.7	32.76	0.051	Rear	**0.8 cm**	**0.333**	1.242	0.413	24
1 880.0	661	GSM1900	30.7	29.58	-0.047	Rear	0.8 cm	0.417	1.294	0.540	25
836.6	4183	WCDMA 850	24.7	24.12	-0.061	Rear	0.8 cm	0.403	1.143	0.461	13
1 880.0	9400	WCDMA 1900	23.7	23.00	-0.020	Rear	0.8 cm	0.821	1.175	0.965	15
2 510	20850	LTE 7	23.0	22.73	0.024	Rear	0.8 cm	0.988	1.064	1.051	17
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							**Body 1.6 W/kg (mW/g) **Averaged over 1 gram				

13.4-1 Measurement Results (NII Hand SAR)

Frequency		Mode	Power (dBm)		Power Drift (dB)	Configuration	Data Rate	Separation Distance	Measured SAR (mW/g)	Scaling Facor	Scaled SAR (mW/g)	Plot No.
MHz	Ch.		Tune-Up Limit	Conducted Power								
5 180	36	802.11a	13.0	11.82	0.175	Rear	6Mbps	0 cm	0.154	1.312	0.202	-
5 180	36	802.11a	13.0	11.82	0.140	Front	6Mbps	0 cm	0.115	1.312	0.151	-
5 180	36	802.11a	13.0	11.82	0.159	Left	6Mbps	0 cm	0.259	1.312	0.340	26
5 180	36	802.11a	13.0	11.82	0.125	Top	6Mbps	0 cm	0.112	1.312	0.147	-
5 210	42	802.11ac	10.0	9.52	0.147	Left	29.3Mbps	0 cm	0.117	1.117	0.131	-
5 260	52	802.11a	13.0	11.95	-0.153	Rear	6Mbps	0 cm	0.206	1.274	0.262	-
5 260	52	802.11a	13.0	11.95	0.179	Front	6Mbps	0 cm	0.128	1.274	0.163	-
5 260	52	802.11a	13.0	11.95	0.195	Left	6Mbps	0 cm	0.231	1.274	0.294	-
5 260	52	802.11a	13.0	11.95	0.111	Top	6Mbps	0 cm	0.126	1.274	0.160	-
5 290	58	802.11ac	10.0	9.34	0.080	Left	29.3Mbps	0 cm	0.106	1.164	0.123	-
5 500	100	802.11a	13.0	11.54	0.193	Rear	6Mbps	0 cm	0.118	1.400	0.165	-
5 500	100	802.11a	13.0	11.54	0.162	Front	6Mbps	0 cm	0.102	1.400	0.143	-
5 500	100	802.11a	13.0	11.54	0.177	Left	6Mbps	0 cm	0.063	1.400	0.088	-
5 500	100	802.11a	13.0	11.54	0.123	Top	6Mbps	0 cm	0.094	1.400	0.132	-
5 530	106	802.11ac	10.0	9.79	0.119	Left	29.3Mbps	0 cm	0.064	1.050	0.067	-
5 690	138	802.11ac	10.0	8.93	-0.123	Left	29.3Mbps	0 cm	0.063	1.279	0.081	-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							**Body 2.0 W/kg (mW/g) **Averaged over 10 gram					

13.5 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2003, FCC KDB Procedure.
2. Batteries are fully charged at the beginning of the SAR measurements. A standard battery was used for all SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB 447498 D01v05.
6. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 10 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance.
7. Per FCC KDB 648474 D04v02, SAR was evaluated without a headset connected to the device. Since the standalone reported SAR was ≤ 1.2 W/kg, no additional SAR evaluation using a headset cable were required.
8. Per FCC KDB 865664 D01v01, variability SAR tests were not performed since the measured SAR results for all frequency bands were less than 0.8 W/kg. Please see Section 14 for variability analysis information.
9. 1g SAR : For Back side, the device was tested at a distance of 8 mm at the center of the device. For Front side, the device was tested at a distance of 8mm from the outer ends of the device. The remaining surface or edges within 25 mm of Tx antenna were tested at a distance of 10 mm.

   10g SAR: For Back side, the device was test at a distance of 0 mm at the center. If the 10g SAR > 2.5 W/kg, the device was additionally tested bottom end touching the phantom as well as the top end touching the phantom. For Front side, the device was tested at a distance of 0 mm at the outer ends of the device. The remaining surface or edge within 25 mm of a Tx antenna were tested at a distance of 0mm.

GSM/GPRS Test Notes:

1. Body-Worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn SAR.
2. Justification for reduced test configurations per KDB 941225 D03v01: The source-based time-averaged output power was evaluated for all multi-slot operations. The multi-slot configuration with the highest frame averaged output power was evaluated for SAR.
3. Per FCC KDB 447498 D01v05, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is 1/2 dB, instead of the middle channel, the highest output power channel must be used.

UMTS Notes:

1. UMTS mode in Body SAR was tested under RMC 12.2 kbps with HSPA inactive per KDB 941225 D01v02. HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg.
2. Per FCC KDB 447498 D01v05, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the channel highest output power channel was used.

LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Evaluation Consideration for LTE Devices in FCC KDB 941125 D05v02r01. The general test procedures used for testing can be found in Section 8.4.4.
2. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 2.5 under Table 6.2.3-1.
3. A-MPR was diabled for all SAR tests by setting NS=01 on the base station simulator.

WLAN Notes:

1. Justification for reduced test configurations for WIFI channels per KDB 248227 D01v01r02 and Oct. 2012 FCC/TCB Meeting Notes for 2.4 GHz WIFI: Highest average RF output power channel for the lowest data rate was selected for SAR evaluation in 802.11b. Other IEEE 802.11 modes (including 802.11 g/n) were not investigated since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of IEEE 802.11b mode.
2. Justification for reduced test configurations for WIFI channels per KDB 248227 D01v01r02 and Oct. 2012 FCC/TCB Meeting Notes for 5 GHz WIFI: Highest average RF output power channel for the lowest data rate was selected for SAR evaluation in 802.11a. Other IEEE 802.11 modes (including 802.11 n 20MHz and 40 MHz bandwidths) were not investigated since the average output power over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data of IEEE 802.11a mode.
3. Per Apr. 2013 TCB Workshop notes, full SAR test for all IEEE 802.11 ac configurations were not required because the average output power was not more than 0.25 dB higher than IEEE 802.11 a mode. IEEE 802.11 ac was evaluated for the highest IEEE 802.11 a configuration in each 5 GHz band and exposure condition.
4. When wireless router is enabled, 5.2, 5.3 and 5.5 GHz bands are disabled.
5. This device can operate in the 2.4 GHz and 5.8 GHz bands using WIFI Direct Go capability. Per FCC KDB 941225, 5.8 GHz WIFI Direct Go is evaluated for SAR using wireless router SAR evaluation procedures.
6. Since the maximum extrapolated peak SAR of the zoom scan for the maximum output channel was ≤ 1.6 W/kg and the reported 1g averaged SAR was < 0.8 W/kg, SAR testing on other default channels was not required.
7. Per FCC KDB Publication 648474 D03-D04, this device is considered a “phablet” since its diagonal distance, 170.1 mm, is greater than 160 mm. Therefore hand SAR tests are required. Because wireless router operations are not supported for 5 GHz NII WIFI, hand SAR was evaluated for 5 GHz NII WIFI. However, hand SAR was not evaluated for 2.4 GHz WIFI and 5 GHz DTS WIFI since Hotspot SAR for 2.4 GHz WIFI and 5 GHz DTS WIFI were < 1.2 W/kg.”
8. 5GHz Wifi Direct GO is supported in the 5.8 Ghz band only. The manufacturer expects 5.8 GHz Wifi Direct GO may be used similar to wireless router usage. Therefore, 5.8 GHz Wifi Direct GO was evaluated for SAR similar to wireless router SAR procedures in FCC KDB Publication 941225.

14. SAR Measurement Variability and Uncertainty

In accordance with published RF Exposure KDB procedure 865664 D01 SAR measurement 100 MHz to 6 GHz v01. These additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.
2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

Frequency		Modulation	Battery	Configuration	Original SAR(mW/g)	Repeated SAR(mW/g)	Largest to Smallest SAR Ratio	Plot No.
MHz	Channel							
1 880.0	9400	WCDMA1900	Standard	Front	1.01	0.984	1.03	27
2 510.0	20850	LTE Band 7	Standard	Front	1.12	1.03	1.09	28

Note(s):
1. Second Repeated Measurement is not required since the ratio of the largest to smallest SAR for the original and first repeated measurement is not > 1.20.
2. Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg.

15. SAR Summation Scenario

	Position	Applicable Combination	Note
Simultaneous Transmission	Head	GSM 850 Voice/Data + 2.4 GHz WiFi	
		GSM 1900 Voice/Data + 2.4 GHz WiFi	
		WCDMA850 Voice/Data + 2.4 GHz WiFi	
		WCDMA1900 Voice/Data + 2.4 GHz WiFi	
		LTE Band 7 Voice/Data + 2.4 GHz WiFi	
		GSM 850 Voice/Data + 5 GHz WiFi	
		GSM 1900 Voice/Data + 5 GHz WiFi	
		WCDMA850 Voice/Data +5 GHz WiFi	
		WCDMA1900 Voice/Data +5 GHz WiFi	
		LTE Band 7 Voice/Data +5 GHz WiFi	
	Hotspot	GPRS 850 Voice/Data + 2.4 GHz WiFi	
		GPRS 1900 Voice/Data + 2.4 GHz WiFi	
		WCDMA850 Voice/Data + 2.4 GHz WiFi	
		WCDMA1900 Voice/Data + 2.4 GHz WiFi	
		LTE Band 7 Voice/Data + 2.4 GHz WiFi	
		GPRS 850 Voice/Data + 5 GHz WiFi	Wifi Direct GO
		GPRS 1900 Voice/Data + 5 GHz WiFi	
		WCDMA850 Voice/Data + 5 GHz WiFi	
		WCDMA1900 Voice/Data + 5 GHz WiFi	
		LTE Band 7 Voice/Data + 5 GHz WiFi	
	Body-worn	GSM 850 Voice/Data + 2.4 GHz WiFi	
		GSM 1900 Voice/Data + 2.4 GHz WiFi	
		WCDMA850 Voice/Data + 2.4 GHz WiFi	
		WCDMA1900 Voice/Data + 2.4 GHz WiFi	
		LTE Band 7 Voice/Data + 2.4 GHz WiFi	
		GSM 850 Voice/Data + 5 GHz WiFi	
		GSM 1900 Voice/Data + 5 GHz WiFi	
		WCDMA850 Voice/Data + 5 GHz WiFi	
		WCDMA1900 Voice/Data + 5 GHz WiFi	
		LTE Band 7 Voice/Data + 5 GHz WiFi	
		GSM 850 Voice + 2.4 GHz Bluetooth	
		GSM 1900 Voice + 2.4 GHz Bluetooth	
		WCDMA850 Voice/Data + 2.4 GHz Bluetooth	
		WCDMA1900 Voice/Data 2.4 GHz Bluetooth	
		LTE Band 7 Voice/Data 2.4 GHz Bluetooth	
* BT and WLAN are not simultaneous transmission.			

15.1 Simultaneous Transmission Summation for Head

Simultaneous Transmission Summation with 2.4 GHz WIFI

Band	configuration	Scaled SAR (W/kg)	2.4 GHz WIFI Scaled SAR (W/kg)	∑ 1-g SAR (W/kg)
GSM 850	Left Cheek	0.409	0.172	0.581
	Left Tilt	0.160	0.138	0.298
	Right Cheek	0.248	0.460	0.708
	Right Tilt	0.144	0.316	0.460
GPRS 850	Left Cheek	0.510	0.172	0.682
	Left Tilt	0.162	0.138	0.300
	Right Cheek	0.374	0.460	0.834
	Right Tilt	0.164	0.316	0.480
GSM 1900	Left Cheek	0.216	0.172	0.388
	Left Tilt	0.106	0.138	0.244
	Right Cheek	0.203	0.460	0.663
	Right Tilt	0.093	0.316	0.409
GPRS 1900	Left Cheek	0.319	0.172	0.491
	Left Tilt	0.098	0.138	0.236
	Right Cheek	0.267	0.460	0.727
	Right Tilt	0.118	0.316	0.434
WCDMA 850	Left Cheek	0.442	0.172	0.614
	Left Tilt	0.210	0.138	0.348
	Right Cheek	0.317	0.460	0.777
	Right Tilt	0.194	0.316	0.510
WCDMA 1900	Left Cheek	0.408	0.172	0.580
	Left Tilt	0.121	0.138	0.259
	Right Cheek	0.336	0.460	0.796
	Right Tilt	0.208	0.316	0.524
LTE 7	Left Cheek	0.436	0.172	0.608
	Left Tilt	0.489	0.138	0.627
	Right Cheek	0.933	0.460	1.393
	Right Tilt	0.262	0.316	0.578

Simultaneous Transmission Summation with 5 GHz WIFI

Band	configuration	Scaled SAR (W/kg)	5 GHz WIFI Scaled SAR (W/kg)	∑ 1-g SAR (W/kg)
GSM850	Left Cheek	0.409	0.436	0.845
	Left Tilt	0.160	0.115	0.275
	Right Cheek	0.248	0.442	0.690
	Right Tilt	0.144	0.275	0.419
GPRS 850	Left Cheek	0.510	0.436	0.946
	Left Tilt	0.162	0.115	0.277
	Right Cheek	0.374	0.442	0.816
	Right Tilt	0.164	0.275	0.439
GSM 1900	Left Cheek	0.216	0.436	0.652
	Left Tilt	0.106	0.115	0.221
	Right Cheek	0.203	0.442	0.645
	Right Tilt	0.093	0.275	0.368
GPRS 1900	Left Cheek	0.319	0.436	0.755
	Left Tilt	0.098	0.115	0.213
	Right Cheek	0.267	0.442	0.709
	Right Tilt	0.118	0.275	0.393
WCDMA 850	Left Cheek	0.442	0.436	0.878
	Left Tilt	0.210	0.115	0.325
	Right Cheek	0.317	0.442	0.759
	Right Tilt	0.194	0.275	0.469
WCDMA 1900	Left Cheek	0.408	0.436	0.844
	Left Tilt	0.121	0.115	0.236
	Right Cheek	0.336	0.442	0.778
	Right Tilt	0.208	0.275	0.483
LTE 7	Left Cheek	0.436	0.436	0.872
	Left Tilt	0.489	0.115	0.604
	Right Cheek	0.933	0.442	1.375
	Right Tilt	0.262	0.275	0.537

15.2 Simultaneous Transmission Summation for Body-Worn

Simultaneous Transmission Summation with 2.4 GHz WIFI (1 cm)

Band	configuration	Scaled SAR (W/kg)	2.4 GHz WIFI Scaled SAR (W/kg)	∑ 1-g SAR (W/kg)
GSM 850	Rear	0.413	0.170	0.583
GSM 1900	Rear	0.540	0.170	0.710
WCDMA850	Rear	0.461	0.170	0.631
WCDMA1900	Rear	0.965	0.170	1.135
LTE 7	Rear	1.051	0.170	1.221

Simultaneous Transmission Summation with 5 GHz WIFI (1 cm)

Band	configuration	Scaled SAR (W/kg)	5 GHz WIFI Scaled SAR (W/kg)	∑ 1-g SAR (W/kg)
GSM 850	Rear	0.413	0.229	0.642
GSM 1900	Rear	0.540	0.229	0.769
WCDMA850	Rear	0.461	0.229	0.690
WCDMA1900	Rear	0.965	0.229	1.194
LTE 7	Rear	1.051	0.229	1.280

Simultaneous Transmission Summation with Bluetooth (1 cm)

Band	configuration	Scaled SAR (W/kg)	BT SAR (W/kg)	∑ 1-g SAR (W/kg)
GSM 850	Rear	0.413	0.17	0.583
GSM 1900	Rear	0.540	0.17	0.710
WCDMA850	Rear	0.461	0.17	0.631
WCDMA1900	Rear	0.965	0.17	1.135
LTE 7	Rear	1.051	0.17	1.221

15.3 Simultaneous Transmission Summation for Hotspot

Simultaneous Transmission Summation with 2.4 GHz WIFI (1 cm)

Band	configuration	Scaled SAR (W/kg)	2.4 GHz WIFI Scaled SAR (W/kg)	∑ 1-g SAR (W/kg)
GSM 850	Rear	0.505	0.170	0.675
	Front	0.603	0.098	0.701
	Left	0.616	0.120	0.736
	Right	0.523		0.523
	Bottom	0.297		0.297
	Top		0.023	0.023
GSM 1900	Rear	0.690	0.170	0.860
	Front	0.798	0.098	0.896
	Left	0.158	0.120	0.278
	Right	0.147		0.147
	Bottom	0.494		0.494
	Top		0.023	0.023
WCDMA 850	Rear	0.461	0.170	0.631
	Front	0.503	0.098	0.601
	Left	0.371	0.120	0.491
	Right	0.235		0.235
	Bottom	0.203		0.203
	Top		0.023	0.023
WCDMA 1900	Rear	0.962	0.170	1.132
	Front	1.187	0.098	1.285
	Left	0.243	0.120	0.363
	Right	0.197		0.197
	Bottom	0.680		0.680
	Top		0.023	0.023
LTE 7	Rear	1.051	0.170	1.221
	Front	1.189	0.098	1.287
	Left	0.054	0.120	0.174
	Right	0.450		0.450
	Bottom	0.779		0.779
	Top		0.023	0.023

Simultaneous Transmission Summation with 5.8 GHz DTS Wifi (1 cm)

Band	configuration	Scaled SAR (W/kg)	5 GHz WIFI Scaled SAR (W/kg)	∑ 1-g SAR (W/kg)
GSM 850	Rear	0.505	0.066	0.571
	Front	0.603	0.050	0.653
	Left	0.616	0.051	0.667
	Right	0.523		0.523
	Bottom	0.297		0.297
	Top		0.036	0.036
GSM 1900	Rear	0.690	0.066	0.756
	Front	0.798	0.050	0.848
	Left	0.158	0.051	0.209
	Right	0.147		0.147
	Bottom	0.494		0.494
	Top		0.036	0.036
WCDMA 850	Rear	0.461	0.066	0.527
	Front	0.503	0.050	0.553
	Left	0.371	0.051	0.422
	Right	0.235		0.235
	Bottom	0.203		0.203
	Top		0.036	0.036
WCDMA 1900	Rear	0.962	0.066	1.028
	Front	1.187	0.050	1.237
	Left	0.243	0.051	0.294
	Right	0.197		0.197
	Bottom	0.680		0.680
	Top		0.036	0.036
LTE 7	Rear	1.051	0.066	1.117
	Front	1.189	0.050	1.239
	Left	0.054	0.051	0.105
	Right	0.423		0.423
	Bottom	0.779		0.779
	Top		0.036	0.036

15.4 Simultaneous Transmission Conclusion

The above numerical summed SAR results for all the worst-case simultaneous transmission conditions were below the SAR limit. Therefore, the above analysis is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit. And therefore no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D01v05

16. CONCLUSION

The SAR measurement indicates that the EUT complies with the RF radiation exposure limits of the ANSI/ IEEE C95.1 1992.

These measurements are taken to simulate the RF effects exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests.

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[21] SAR Evaluation of Handsets with Multiple Transmitters and Antennas #648474.

[22] SAR Measurement Procedure for 802.11 a/b/g Transmitters #KDB 248227.

Attachment 1. – SAR Test Plots

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.2 ℃
Ambient Temperature:	20.4 ℃
Test Date:	Nov.28, 2013
Plot No.	1

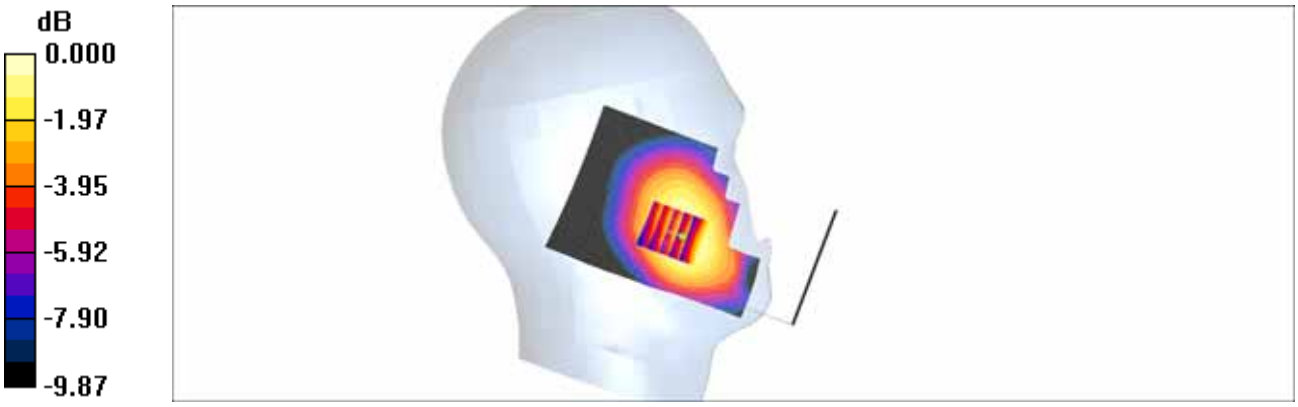
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:4.15
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.876 mho/m; ε_r = 42; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: ET3DV6 - SN1798; ConvF(6.64, 6.64, 6.64); Calibrated: 2013-04-29
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: SAM 835/900 MHz; Type: SAM

GSM850 Left touch GPRS 2Tx 190/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.490 mW/g

GSM850 Left touch GPRS 2Tx 190/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.64 V/m; Power Drift = -0.138 dB
Peak SAR (extrapolated) = 0.653 W/kg
SAR(1 g) = 0.481 mW/g; SAR(10 g) = 0.355 mW/g
Maximum value of SAR (measured) = 0.496 mW/g



0 dB = 0.496mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.7 ℃
Ambient Temperature:	20.9 ℃
Test Date:	Dec.02, 2013
Plot No.	2

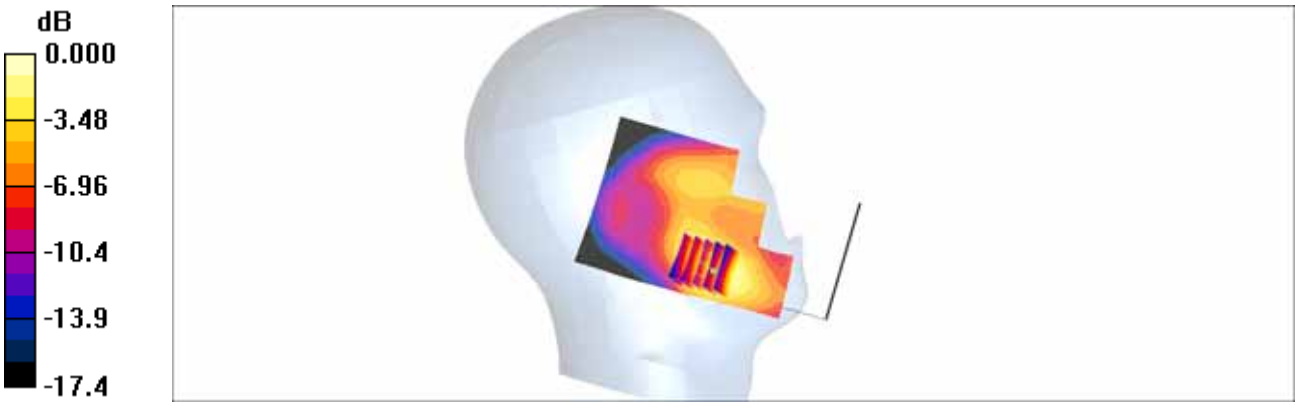
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 1880 MHz; σ = 1.36 mho/m; ε_r = 38.9; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: ET3DV6 - SN1798; ConvF(5.29, 5.29, 5.29); Calibrated: 2013-04-29
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: SAM 1800/1900 MHz; Type: SAM

GSM1900 GPRS 2Tx Left touch 661/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.253 mW/g

GSM1900 GPRS 2Tx Left touch 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.05 V/m; Power Drift = 0.006 dB
Peak SAR (extrapolated) = 0.343 W/kg
SAR(1 g) = 0.234 mW/g; SAR(10 g) = 0.143 mW/g
Maximum value of SAR (measured) = 0.254 mW/g



0 dB = 0.254mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.2 ℃
Ambient Temperature:	20.4 ℃
Test Date:	Nov.28, 2013
Plot No.	3

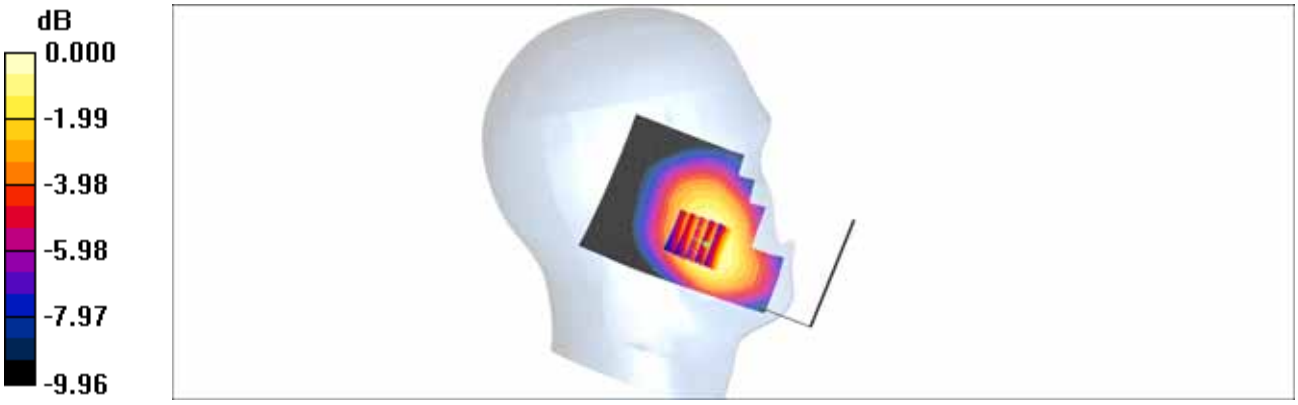
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: WCDMA850; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.876 mho/m; ε_r = 42; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: ET3DV6 - SN1798; ConvF(6.64, 6.64, 6.64); Calibrated: 2013-04-29
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: SAM 835/900 MHz; Type: SAM

WCDMA850 Left touch 4183/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.405 mW/g

WCDMA850 Left touch 4183/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.84 V/m; Power Drift = -0.006 dB
Peak SAR (extrapolated) = 0.500 W/kg
SAR(1 g) = 0.387 mW/g; SAR(10 g) = 0.291 mW/g
Maximum value of SAR (measured) = 0.410 mW/g



0 dB = 0.410mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.7 ℃
Ambient Temperature:	20.9 ℃
Test Date:	Dec.02, 2013
Plot No.	4

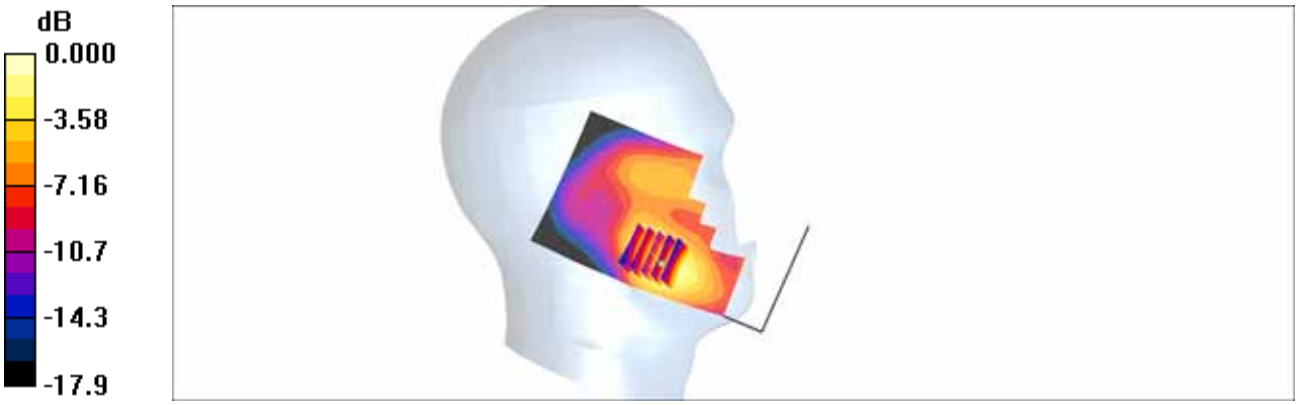
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: WCDMA1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.36 mho/m; ε_r = 38.9; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: ET3DV6 - SN1798; ConvF(5.29, 5.29, 5.29); Calibrated: 2013-04-29
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: SAM 1800/1900 MHz; Type: SAM

WCDMA1900 Left touch 9400ch/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.370 mW/g

WCDMA1900 Left touch 9400ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.94 V/m; Power Drift = -0.046 dB
Peak SAR (extrapolated) = 0.508 W/kg
SAR(1 g) = 0.347 mW/g; SAR(10 g) = 0.209 mW/g
Maximum value of SAR (measured) = 0.387 mW/g



0 dB = 0.387mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.2 ℃
Ambient Temperature:	20.4 ℃
Test Date:	Dec.05, 2013
Plot No.	5

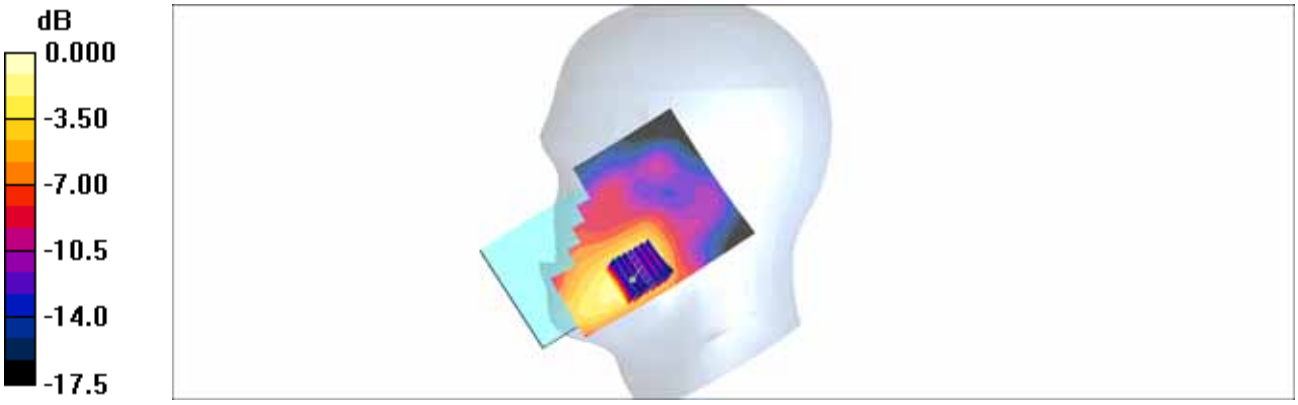
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: LTE Band 7; Frequency: 2560 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2560 MHz; σ = 1.99 mho/m; ε_r = 38.7; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3903; ConvF(7.23, 7.23, 7.23); Calibrated: 2013-03-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2013-03-21
- Phantom: 835/900 Phamtom ; Type: SAM

LTE Band7 Right touch QPSK 20MHz 1RB 0offset 21350ch/Area Scan (91x141x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 1.23 mW/g

LTE Band7 Right touch QPSK 20MHz 1RB 0offset 21350ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.23 V/m; Power Drift = 0.125 dB
Peak SAR (extrapolated) = 1.64 W/kg
SAR(1 g) = 0.875 mW/g; SAR(10 g) = 0.470 mW/g
Maximum value of SAR (measured) = 1.24 mW/g



0 dB = 1.24mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.4 ℃
Ambient Temperature:	20.6 ℃
Test Date:	Dec.04, 2013
Plot No.	6

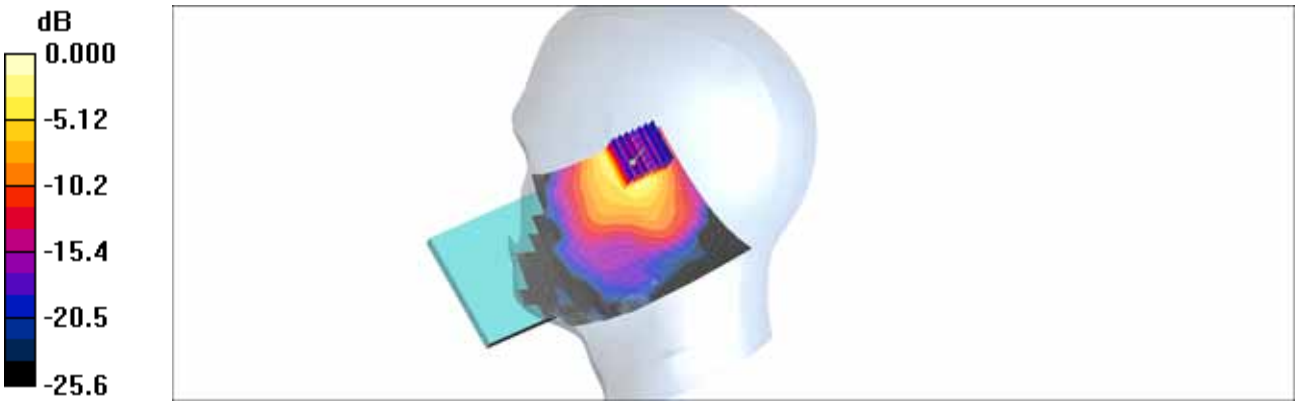
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: 2450MHz FCC; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.77 mho/m; ε_r = 39.8; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3903; ConvF(7.43, 7.43, 7.43); Calibrated: 2013-03-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2013-03-21
- Phantom: 835/900 Phamtom ; Type: SAM

802.11b Right Touch 1Mbps 6/Area Scan (91x151x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.640 mW/g

802.11b Right Touch 1Mbps 6/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.29 V/m; Power Drift = 0.108 dB
Peak SAR (extrapolated) = 0.890 W/kg
SAR(1 g) = 0.403 mW/g; SAR(10 g) = 0.188 mW/g
Maximum value of SAR (measured) = 0.617 mW/g



0 dB = 0.617mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.3 ℃
Ambient Temperature:	20.5 ℃
Test Date:	Dec.09, 2013
Plot No.	7

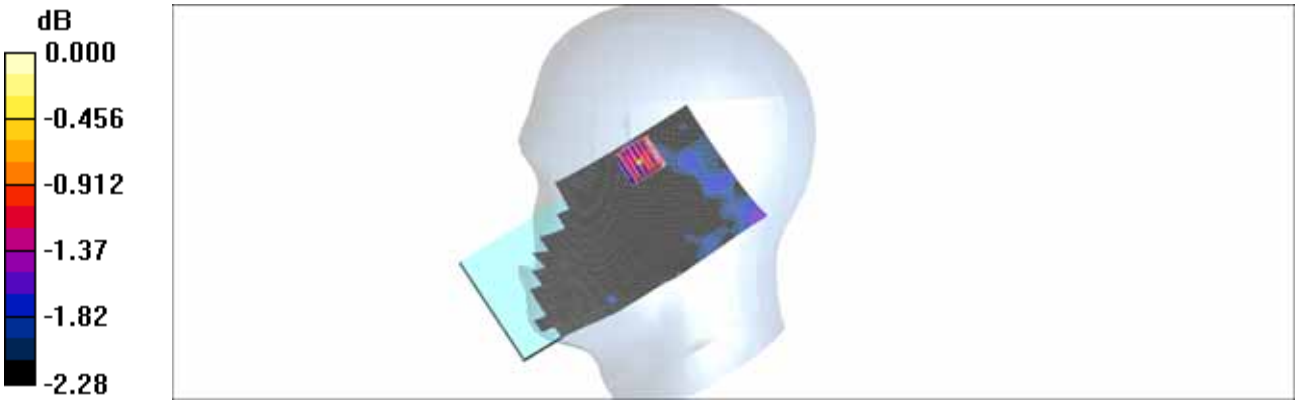
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: WIFI 5GHz; Frequency: 5775 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5775 MHz; σ = 5.31 mho/m; ε_r = 33.7; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.7, 4.7, 4.7); Calibrated: 2013-07-31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: 1800/1900 Phantom; Type: SAM

802.11ac 80MHz Right touch 155ch MCS0/Area Scan (101x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.298 mW/g

802.11ac 80MHz Right touch 155ch MCS0/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 6.53 V/m; Power Drift = 0.143 dB
Peak SAR (extrapolated) = 0.779 W/kg
SAR(1 g) = 0.315 mW/g; SAR(10 g) = 0.287 mW/g
Maximum value of SAR (measured) = 0.382 mW/g



0 dB = 0.382mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.3 ℃
Ambient Temperature:	20.5 ℃
Test Date:	Dec.09, 2013
Plot No.	8

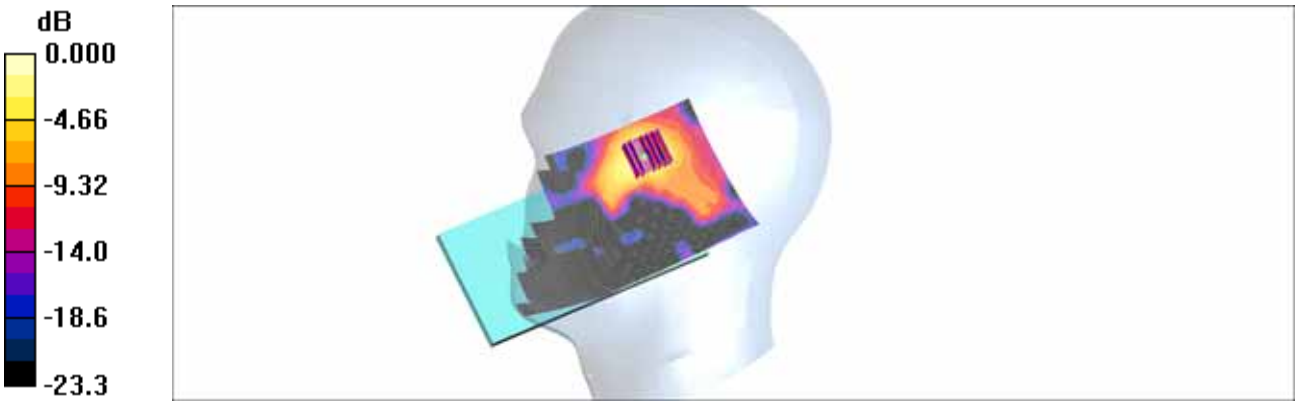
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: WIFI 5GHz; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5260 MHz; σ = 4.68 mho/m; ε_r = 34.7; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.83, 4.83, 4.83); Calibrated: 2013-07-31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: 1800/1900 Phantom; Type: SAM

802.11a Right Touch 52ch 6Mbps/Area Scan (101x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.505 mW/g

802.11a Right Touch 52ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.75 V/m; Power Drift = 0.120 dB
Peak SAR (extrapolated) = 1.07 W/kg
SAR(1 g) = 0.271 mW/g; SAR(10 g) = 0.107 mW/g
Maximum value of SAR (measured) = 0.519 mW/g



0 dB = 0.519mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.3 ℃
Ambient Temperature:	20.5 ℃
Test Date:	Nov.29, 2013
Plot No.	9

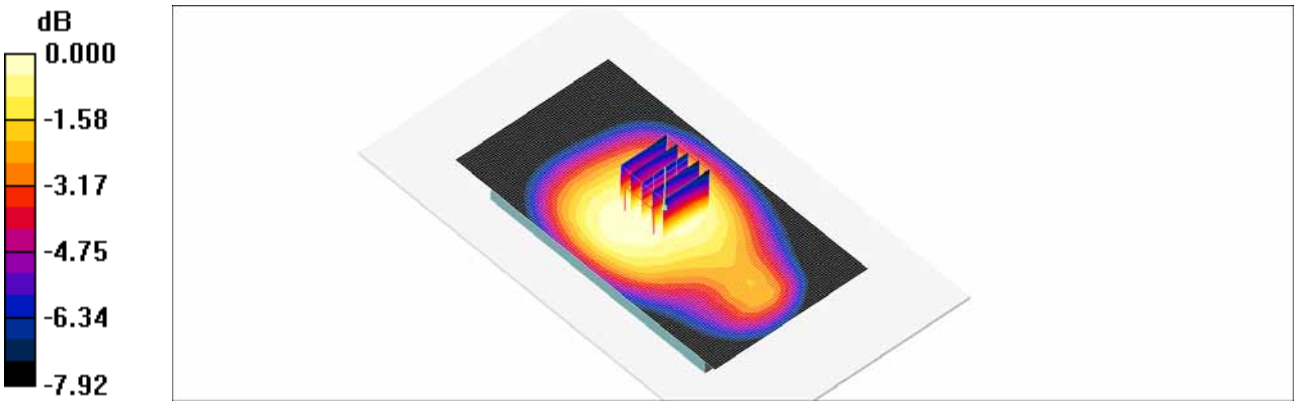
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:4.15
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.969 mho/m; ε_r = 54.1; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: ET3DV6 - SN1798; ConvF(6.46, 6.46, 6.46); Calibrated: 2013-04-29
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

GSM850 Body Rear GPRS 2Tx 190/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.505 mW/g

GSM850 Body Rear GPRS 2Tx 190/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.5 V/m; Power Drift = -0.066 dB
Peak SAR (extrapolated) = 0.591 W/kg
SAR(1 g) = 0.477 mW/g; SAR(10 g) = 0.369 mW/g
Maximum value of SAR (measured) = 0.499 mW/g



0 dB = 0.499mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.3 ℃
Ambient Temperature:	20.5 ℃
Test Date:	Nov.29, 2013
Plot No.	10

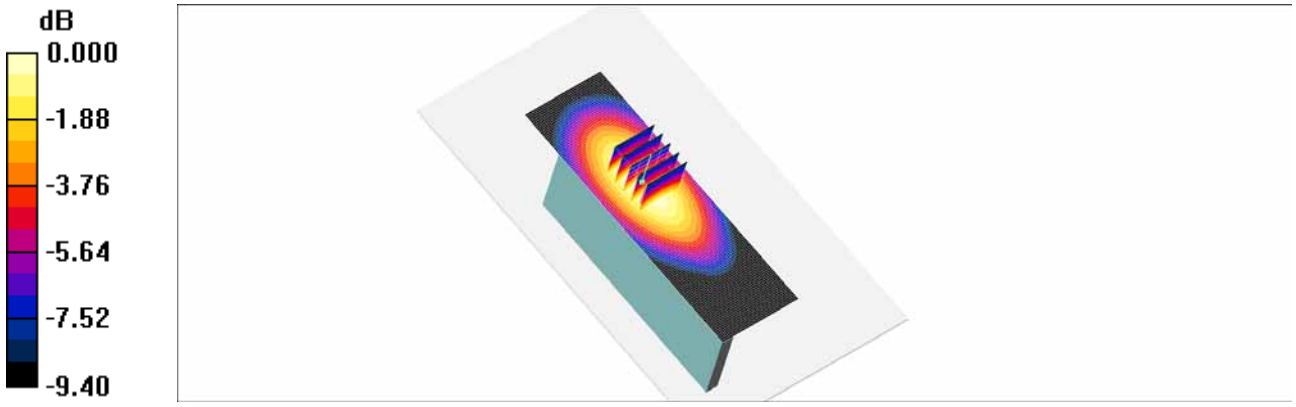
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:4.15
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.969 mho/m; ε_r = 54.1; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: ET3DV6 - SN1798; ConvF(6.46, 6.46, 6.46); Calibrated: 2013-04-29
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

GSM850 Body Left side GPRS 2Tx 190/Area Scan (41x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.623 mW/g

GSM850 Body Left side GPRS 2Tx 190/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.3 V/m; Power Drift = -0.042 dB
Peak SAR (extrapolated) = 0.798 W/kg
SAR(1 g) = 0.582 mW/g; SAR(10 g) = 0.400 mW/g
Maximum value of SAR (measured) = 0.625 mW/g



0 dB = 0.625mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.1 ℃
Ambient Temperature:	20.3 ℃
Test Date:	Dec.03, 2013
Plot No.	11

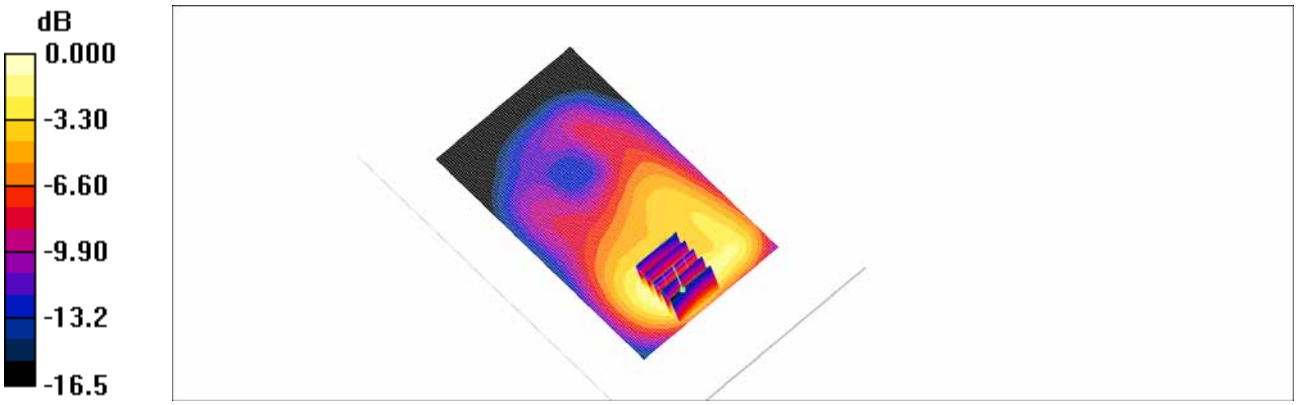
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 1880 MHz; σ = 1.45 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: ET3DV6 - SN1798; ConvF(4.7, 4.7, 4.7); Calibrated: 2013-04-29
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

GSM1900 Body Rear GPRS 2Tx 661/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.537 mW/g

GSM1900 Body Rear GPRS 2Tx 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.10 V/m; Power Drift = 0.130 dB
Peak SAR (extrapolated) = 0.797 W/kg
SAR(1 g) = 0.507 mW/g; SAR(10 g) = 0.301 mW/g
Maximum value of SAR (measured) = 0.559 mW/g



0 dB = 0.559mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.1 ℃
Ambient Temperature:	20.3 ℃
Test Date:	Dec.03, 2013
Plot No.	12

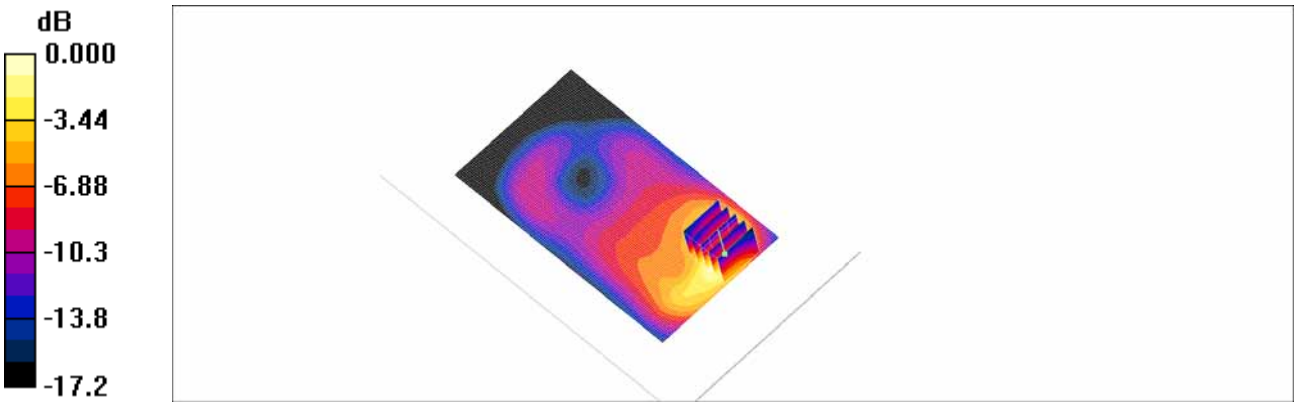
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 1880 MHz; σ = 1.45 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: ET3DV6 - SN1798; ConvF(4.7, 4.7, 4.7); Calibrated: 2013-04-29
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

GSM1900 Body Front GPRS 2Tx 661/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.672 mW/g

GSM1900 Body Front GPRS 2Tx 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.58 V/m; Power Drift = -0.092 dB
Peak SAR (extrapolated) = 0.975 W/kg
SAR(1 g) = 0.586 mW/g; SAR(10 g) = 0.330 mW/g
Maximum value of SAR (measured) = 0.668 mW/g



0 dB = 0.668mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.3 ℃
Ambient Temperature:	20.5 ℃
Test Date:	Nov.29, 2013
Plot No.	13

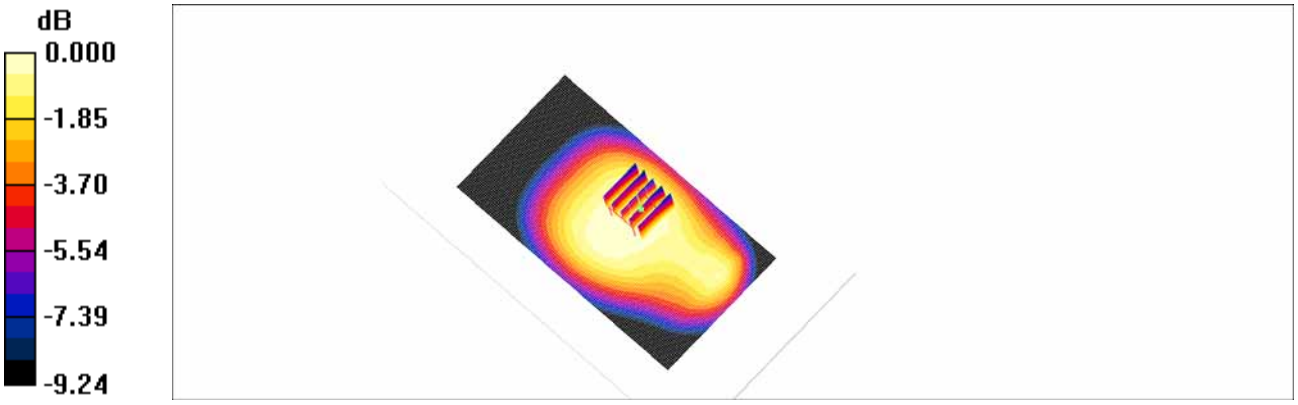
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: WCDMA850; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.969 mho/m; ε_r = 54.1; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: ET3DV6 - SN1798; ConvF(6.46, 6.46, 6.46); Calibrated: 2013-04-29
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WCDMA850 Body Rear 4183/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.431 mW/g

WCDMA850 Body Rear 4183/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.5 V/m; Power Drift = -0.061 dB
Peak SAR (extrapolated) = 0.509 W/kg
SAR(1 g) = 0.403 mW/g; SAR(10 g) = 0.311 mW/g
Maximum value of SAR (measured) = 0.422 mW/g



0 dB = 0.422mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.3 ℃
Ambient Temperature:	20.5 ℃
Test Date:	Nov.29, 2013
Plot No.	14

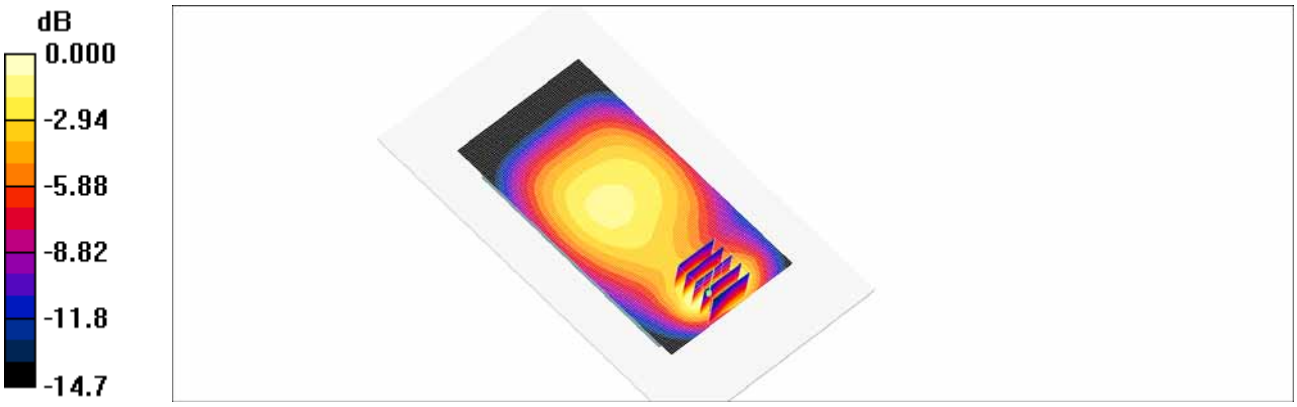
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: WCDMA850; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.969 mho/m; ε_r = 54.1; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: ET3DV6 - SN1798; ConvF(6.46, 6.46, 6.46); Calibrated: 2013-04-29
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WCDMA850 Body Front 4183/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.502 mW/g

WCDMA850 Body Front 4183/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.8 V/m; Power Drift = 0.026 dB
Peak SAR (extrapolated) = 0.723 W/kg
SAR(1 g) = 0.440 mW/g; SAR(10 g) = 0.259 mW/g
Maximum value of SAR (measured) = 0.485 mW/g



0 dB = 0.485mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.1 ℃
Ambient Temperature:	20.3 ℃
Test Date:	Dec.03, 2013
Plot No.	15

DUT: LG-D956; Type: Bar; Serial: #1

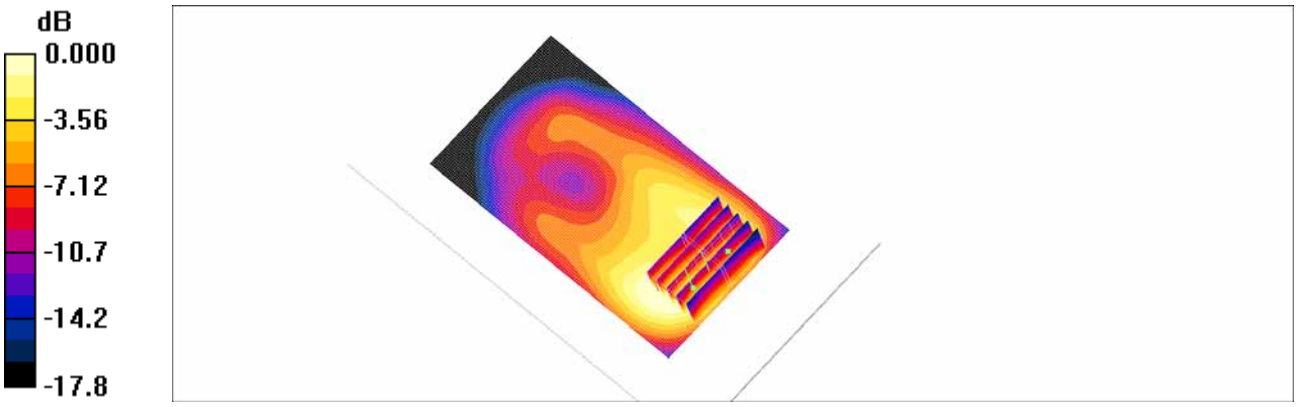
Communication System: WCDMA1900; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.42 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: ET3DV6 - SN1798; ConvF(4.7, 4.7, 4.7); Calibrated: 2013-04-29
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WCDMA1900 Body Rear 9262ch/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.882 mW/g

WCDMA1900 Body Rear 9262ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.1 V/m; Power Drift = -0.020 dB
Peak SAR (extrapolated) = 1.24 W/kg
SAR(1 g) = 0.821 mW/g; SAR(10 g) = 0.499 mW/g
Maximum value of SAR (measured) = 0.907 mW/g

WCDMA1900 Body Rear 9262ch/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.1 V/m; Power Drift = -0.020 dB
Peak SAR (extrapolated) = 0.975 W/kg
SAR(1 g) = 0.580 mW/g; SAR(10 g) = 0.347 mW/g
Maximum value of SAR (measured) = 0.731 mW/g



0 dB = 0.731mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.1 ℃
Ambient Temperature:	20.3 ℃
Test Date:	Dec.03, 2013
Plot No.	16

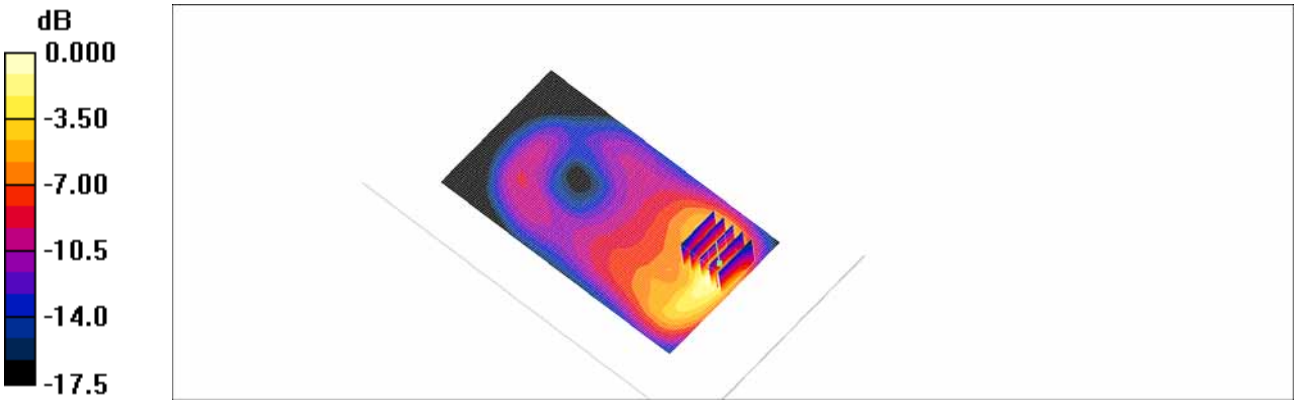
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: WCDMA1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.45 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: ET3DV6 - SN1798; ConvF(4.7, 4.7, 4.7); Calibrated: 2013-04-29
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WCDMA1900 Body Front 9400ch/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.12 mW/g

WCDMA1900 Body Front 9400ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.07 V/m; Power Drift = -0.016 dB
Peak SAR (extrapolated) = 1.67 W/kg
SAR(1 g) = 1.01 mW/g; SAR(10 g) = 0.559 mW/g
Maximum value of SAR (measured) = 1.16 mW/g



0 dB = 1.16mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.6 ℃
Ambient Temperature:	20.8 ℃
Test Date:	Dec.06, 2013
Plot No.	17

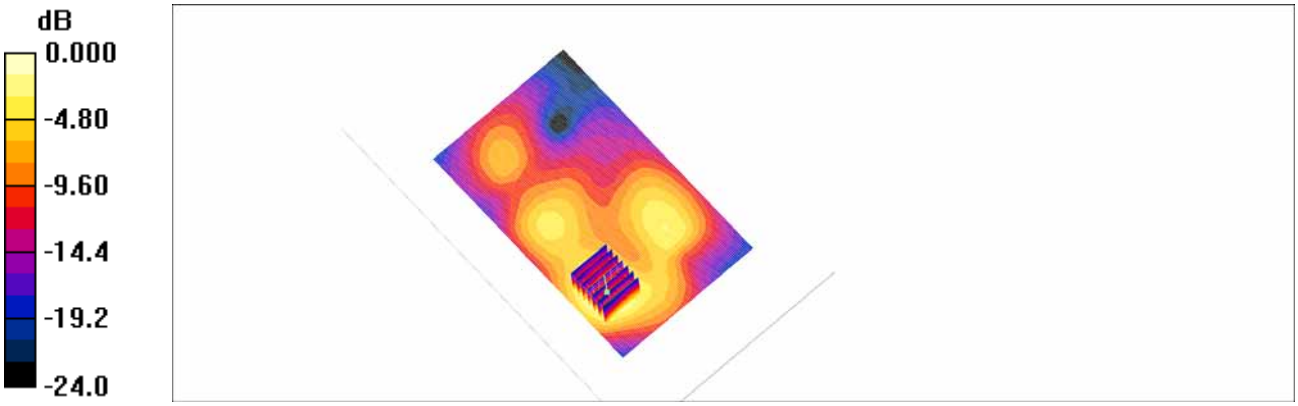
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: LTE Band 7; Frequency: 2510 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2510 MHz; σ = 2.08 mho/m; ε_r = 54.5; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3903; ConvF(6.89, 6.89, 6.89); Calibrated: 2013-03-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2013-03-21
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

LTE Band7 Body Rear QPSK 20MHz 1RB 49offset 20850/Area Scan (91x151x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 1.48 mW/g

LTE Band7 Body Rear QPSK 20MHz 1RB 49offset 20850/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.32 V/m; Power Drift = 0.024 dB
Peak SAR (extrapolated) = 2.00 W/kg
SAR(1 g) = 0.988 mW/g; SAR(10 g) = 0.500 mW/g
Maximum value of SAR (measured) = 1.45 mW/g



0 dB = 1.45mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.6 ℃
Ambient Temperature:	20.8 ℃
Test Date:	Dec.06, 2013
Plot No.	18

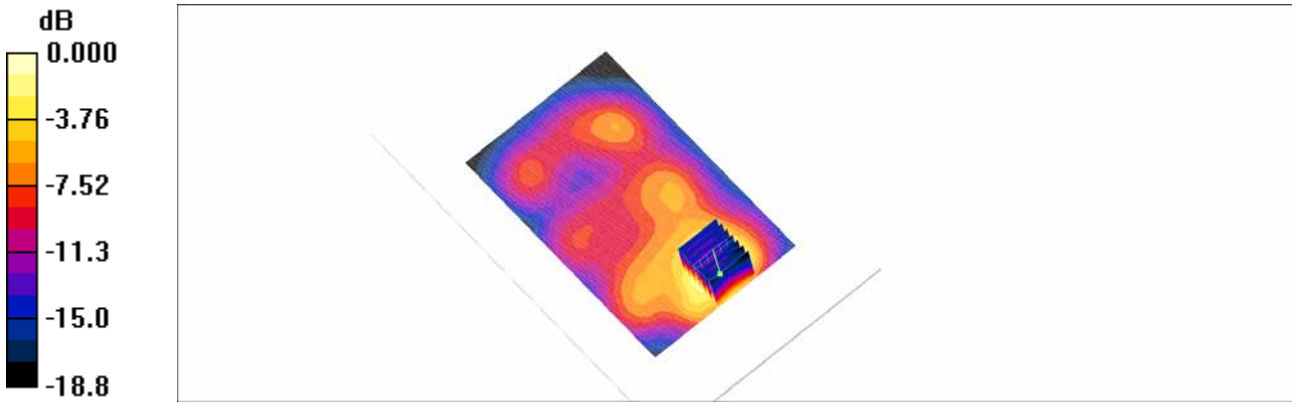
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: LTE Band 7; Frequency: 2535 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2535 MHz; σ = 2.11 mho/m; ε_r = 54.5; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3903; ConvF(6.89, 6.89, 6.89); Calibrated: 2013-03-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2013-03-21
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

LTE Band7 Body Front QPSK 20MHz 1RB 99offset 21100/Area Scan (91x151x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 1.69 mW/g

LTE Band7 Body Front QPSK 20MHz 1RB 99offset 21100/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.2 V/m; Power Drift = 0.152 dB
Peak SAR (extrapolated) = 2.20 W/kg
SAR(1 g) = 1.12 mW/g; SAR(10 g) = 0.585 mW/g
Maximum value of SAR (measured) = 1.63 mW/g



0 dB = 1.63mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.4 ℃
Ambient Temperature:	20.6 ℃
Test Date:	Dec.04, 2013
Plot No.	19

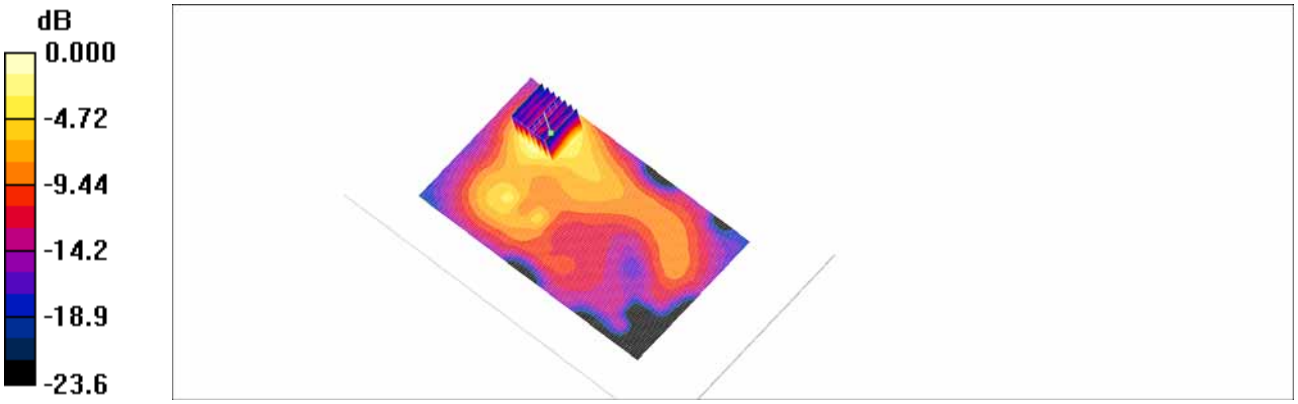
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: 2450MHz FCC; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.88 mho/m; ε_r = 51.8; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3903; ConvF(7.14, 7.14, 7.14); Calibrated: 2013-03-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2013-03-21
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WIFI2450 Body rear 1Mbps 6ch/Area Scan (91x161x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.223 mW/g

WIFI2450 Body rear 1Mbps 6ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.10 V/m; Power Drift = 0.114 dB
Peak SAR (extrapolated) = 0.305 W/kg
SAR(1 g) = 0.149 mW/g; SAR(10 g) = 0.073 mW/g
Maximum value of SAR (measured) = 0.224 mW/g



0 dB = 0.224mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.1 ℃
Ambient Temperature:	20.3 ℃
Test Date:	Dec.10, 2013
Plot No.	20

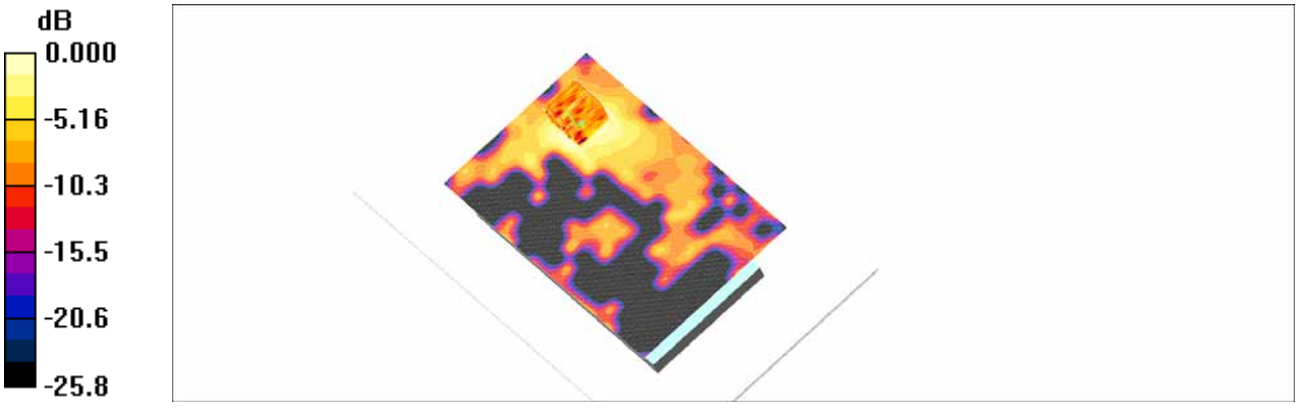
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: WIFI 5GHz; Frequency: 5745 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5745 MHz; σ = 6.06 mho/m; ε_r = 46.7; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(3.95, 3.95, 3.95); Calibrated: 2013-07-31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

802.11a Body Rear 149ch 6Mbps/Area Scan (111x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.102 mW/g

802.11a Body Rear 149ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.62 V/m; Power Drift = 0.133 dB
Peak SAR (extrapolated) = 0.170 W/kg
SAR(1 g) = 0.045 mW/g; SAR(10 g) = 0.021 mW/g
Maximum value of SAR (measured) = 0.105 mW/g



0 dB = 0.105mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.1 ℃
Ambient Temperature:	20.3 ℃
Test Date:	Dec.10, 2013
Plot No.	21

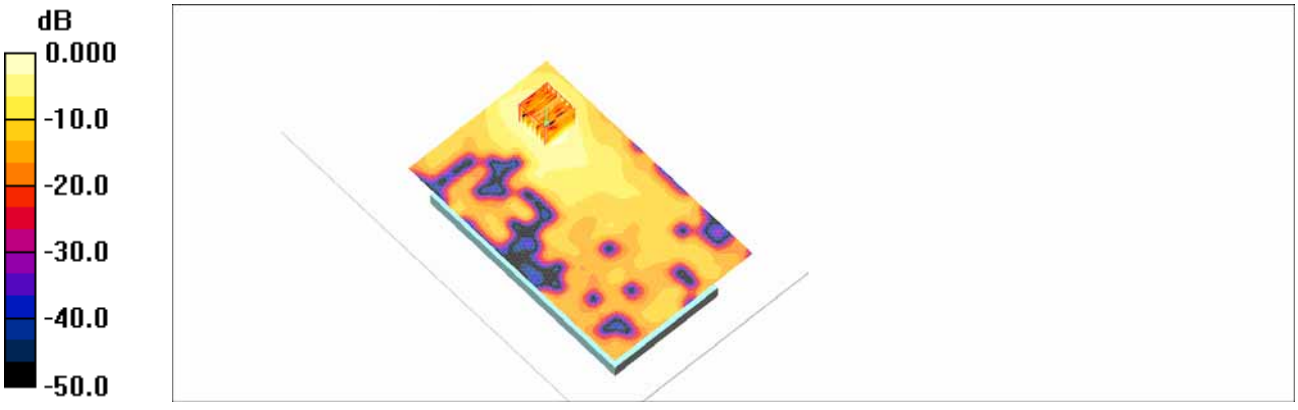
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: WIFI 5GHz; Frequency: 5180 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5180 MHz; σ = 5.12 mho/m; ε_r = 48.2; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.49, 4.49, 4.49); Calibrated: 2013-07-31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

802.11a Body Rear 36ch 6Mbps/Area Scan (111x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.263 mW/g

802.11a Body Rear 36ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.55 V/m; Power Drift = -0.148 dB
Peak SAR (extrapolated) = 0.655 W/kg
SAR(1 g) = 0.153 mW/g; SAR(10 g) = 0.055 mW/g
Maximum value of SAR (measured) = 0.282 mW/g



0 dB = 0.282mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.1 ℃
Ambient Temperature:	20.3 ℃
Test Date:	Dec.10, 2013
Plot No.	22

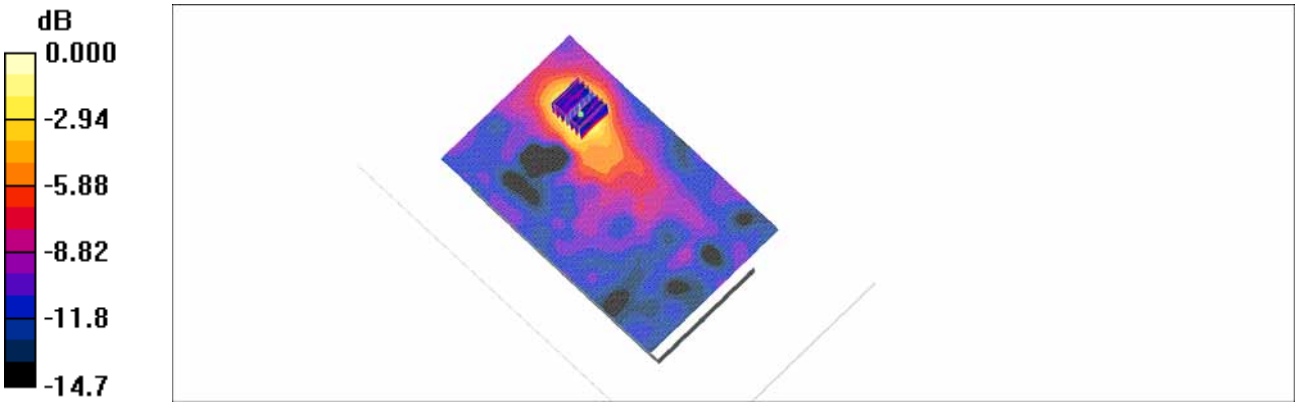
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: WIFI 5GHz; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5260 MHz; σ = 5.26 mho/m; ε_r = 48; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.14, 4.14, 4.14); Calibrated: 2013-07-31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

802.11a Body Rear 52ch 6Mbps/Area Scan (111x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.318 mW/g

802.11a Body Rear 52ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.63 V/m; Power Drift = -0.124 dB
Peak SAR (extrapolated) = 0.709 W/kg
SAR(1 g) = 0.180 mW/g; SAR(10 g) = 0.080 mW/g
Maximum value of SAR (measured) = 0.317 mW/g



0 dB = 0.317mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.1 ℃
Ambient Temperature:	20.3 ℃
Test Date:	Dec.10, 2013
Plot No.	23

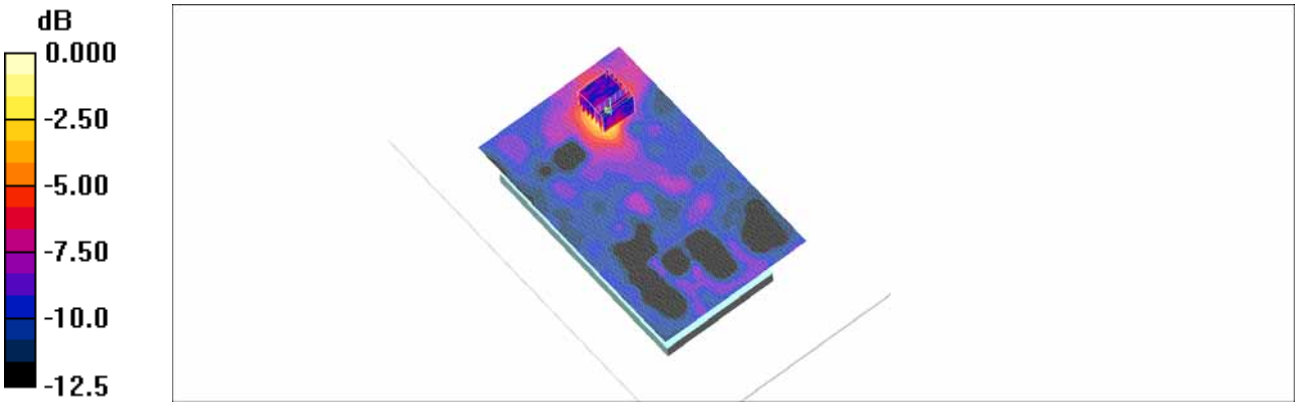
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: WIFI 5GHz; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5500 MHz; σ = 5.65 mho/m; ε_r = 47.3; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(3.91, 3.91, 3.91); Calibrated: 2013-07-31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

802.11a Body Rear 100ch 6Mbps/Area Scan (111x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.185 mW/g

802.11a Body Rear 100ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.98 V/m; Power Drift = 0.157 dB
Peak SAR (extrapolated) = 0.528 W/kg
SAR(1 g) = 0.099 mW/g; SAR(10 g) = 0.044 mW/g
Maximum value of SAR (measured) = 0.206 mW/g



0 dB = 0.206mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.3 ℃
Ambient Temperature:	20.5 ℃
Test Date:	Nov.29, 2013
Plot No.	24

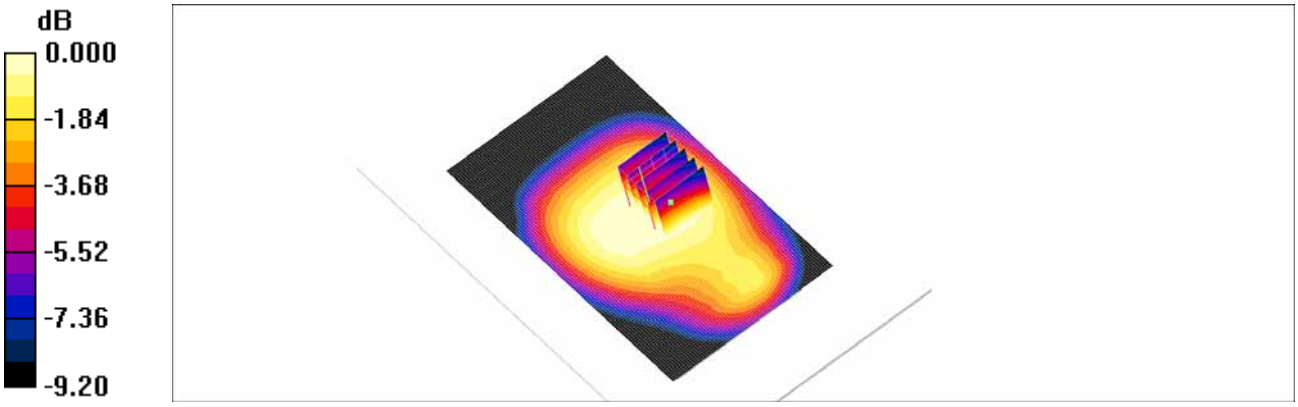
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.969 mho/m; ε_r = 54.1; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: ET3DV6 - SN1798; ConvF(6.46, 6.46, 6.46); Calibrated: 2013-04-29
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

GSM850 Body Worn Rear 190/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.352 mW/g

GSM850 Body Worn Rear 190/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.3 V/m; Power Drift = 0.051 dB
Peak SAR (extrapolated) = 0.416 W/kg
SAR(1 g) = 0.333 mW/g; SAR(10 g) = 0.256 mW/g
Maximum value of SAR (measured) = 0.349 mW/g



0 dB = 0.349mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.1 ℃
Ambient Temperature:	20.3 ℃
Test Date:	Dec.03, 2013
Plot No.	25

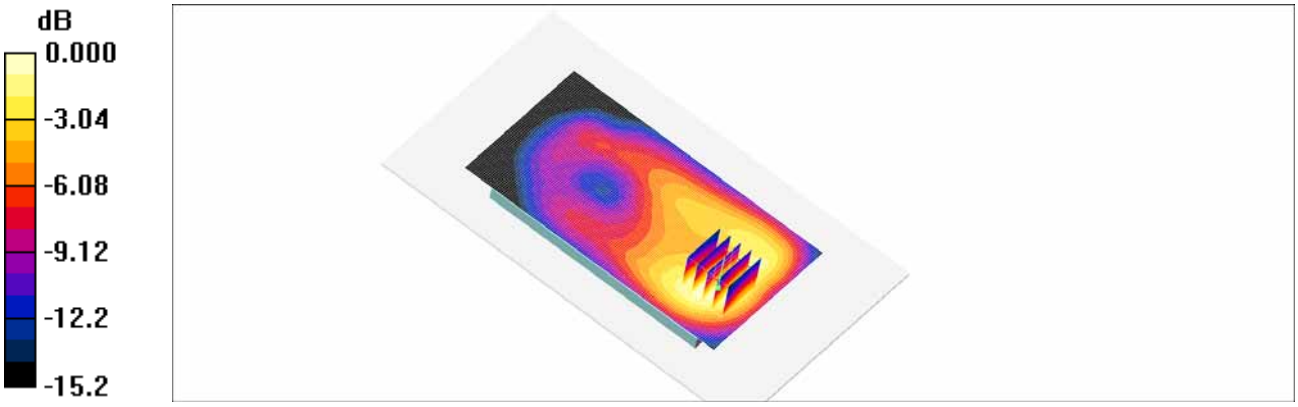
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.45 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: ET3DV6 - SN1798; ConvF(4.7, 4.7, 4.7); Calibrated: 2013-04-29
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

GSM1900 Body Worn Rear 661/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.435 mW/g

GSM1900 Body Worn Rear 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.85 V/m; Power Drift = -0.047 dB
Peak SAR (extrapolated) = 0.637 W/kg
SAR(1 g) = 0.417 mW/g; SAR(10 g) = 0.248 mW/g
Maximum value of SAR (measured) = 0.443 mW/g



0 dB = 0.443mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.1 ℃
Ambient Temperature:	20.3 ℃
Test Date:	Dec.10, 2013
Plot No.	26

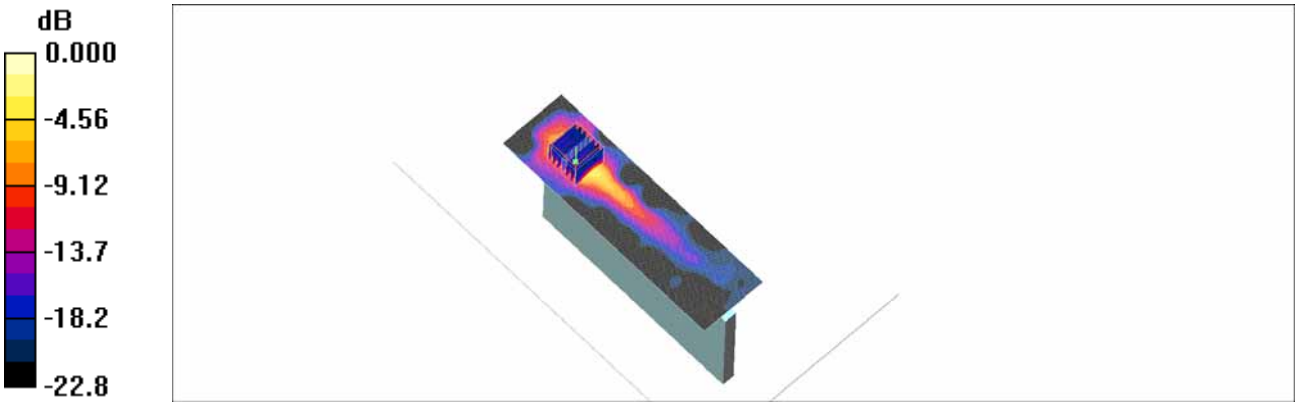
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: WIFI 5GHz; Frequency: 5180 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5180 MHz; σ = 5.12 mho/m; ε_r = 48.2; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.49, 4.49, 4.49); Calibrated: 2013-07-31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

802.11a Hand SAR Left Side 36ch 6Mbps/Area Scan (51x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.50 mW/g

802.11a Hand SAR Left Side 36ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.71 V/m; Power Drift = 0.159 dB
Peak SAR (extrapolated) = 4.65 W/kg
SAR(1 g) = 0.896 mW/g; SAR(10 g) = 0.259 mW/g
Maximum value of SAR (measured) = 1.99 mW/g



0 dB = 1.99mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.1 ℃
Ambient Temperature:	20.3 ℃
Test Date:	Dec.03, 2013
Plot No.	27

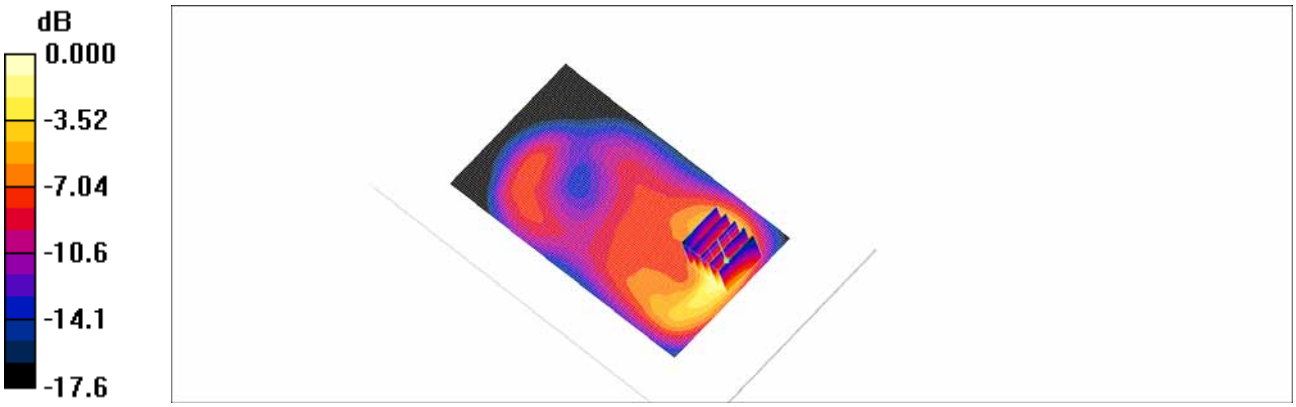
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: WCDMA1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.45 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: ET3DV6 - SN1798; ConvF(4.7, 4.7, 4.7); Calibrated: 2013-04-29
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WCDMA850 Body Front 9400ch/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.05 mW/g

WCDMA850 Body Front 9400ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.6 V/m; Power Drift = 0.090 dB
Peak SAR (extrapolated) = 1.63 W/kg
SAR(1 g) = 0.984 mW/g; SAR(10 g) = 0.537 mW/g
Maximum value of SAR (measured) = 1.15 mW/g



0 dB = 1.15mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA and LTE phone with Bluetooth, WLAN and RFID
Liquid Temperature:	20.6 ℃
Ambient Temperature:	20.8 ℃
Test Date:	Dec.06, 2013
Plot No.	28

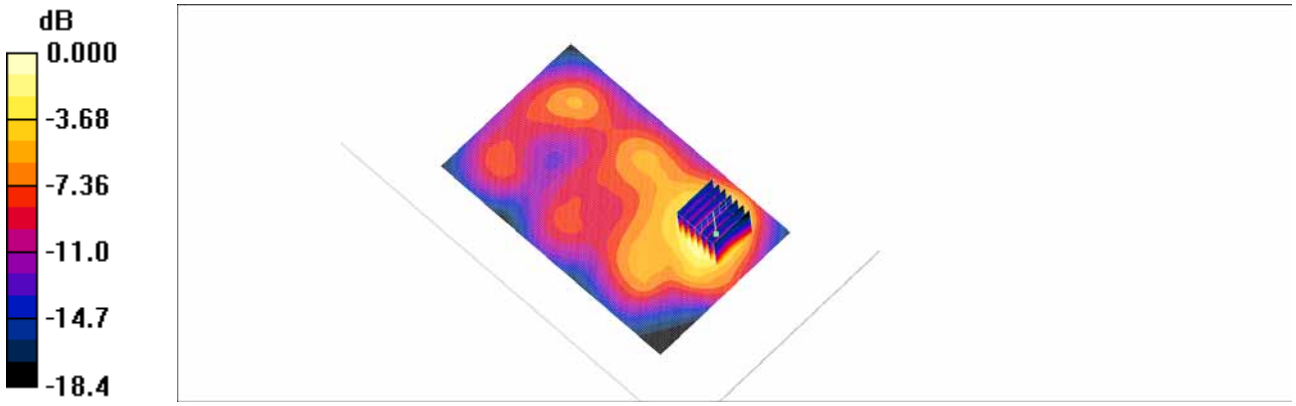
DUT: LG-D956; Type: Bar; Serial: #1

Communication System: LTE Band 7; Frequency: 2535 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2535 MHz; σ = 2.11 mho/m; ε_r = 54.5; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3903; ConvF(6.89, 6.89, 6.89); Calibrated: 2013-03-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2013-03-21
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

LTE Band7 Body Front QPSK 20MHz 1RB 99offset 21100/Area Scan (91x151x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 1.53 mW/g

LTE Band7 Body Front QPSK 20MHz 1RB 99offset 21100/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.78 V/m; Power Drift = -0.102 dB
Peak SAR (extrapolated) = 2.02 W/kg
SAR(1 g) = 1.03 mW/g; SAR(10 g) = 0.536 mW/g
Maximum value of SAR (measured) = 1.48 mW/g



0 dB = 1.48mW/g

Attachment 2. – Dipole Verification Plots

■ Verification Data (835 MHz Head)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	20.2 ℃
Test Date:	Nov.28, 2013

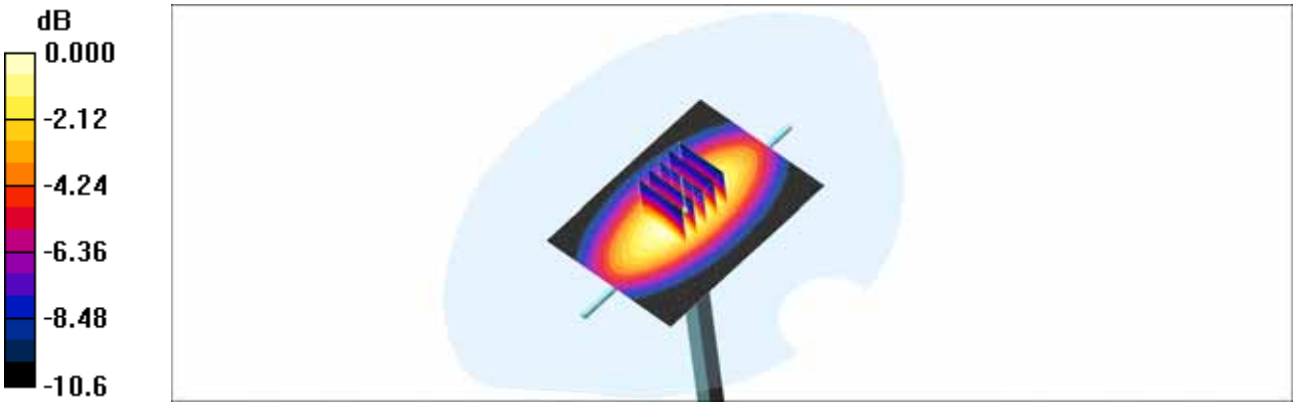
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:441

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.874 mho/m; ε_r = 42; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: ET3DV6 - SN1798; ConvF(6.64, 6.64, 6.64); Calibrated: 2013-04-29
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: 1800/1900 Phantom; Type: SAM

Verification 835 MHz/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.10 mW/g

Verification 835 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 36.5 V/m; Power Drift = -0.114 dB
Peak SAR (extrapolated) = 1.47 W/kg
SAR(1 g) = 0.992 mW/g; SAR(10 g) = 0.649 mW/g
Maximum value of SAR (measured) = 1.07 mW/g



0 dB = 1.07mW/g

■ Verification Data (835 MHz Body)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	20.3 ℃
Test Date:	Nov.29, 2013

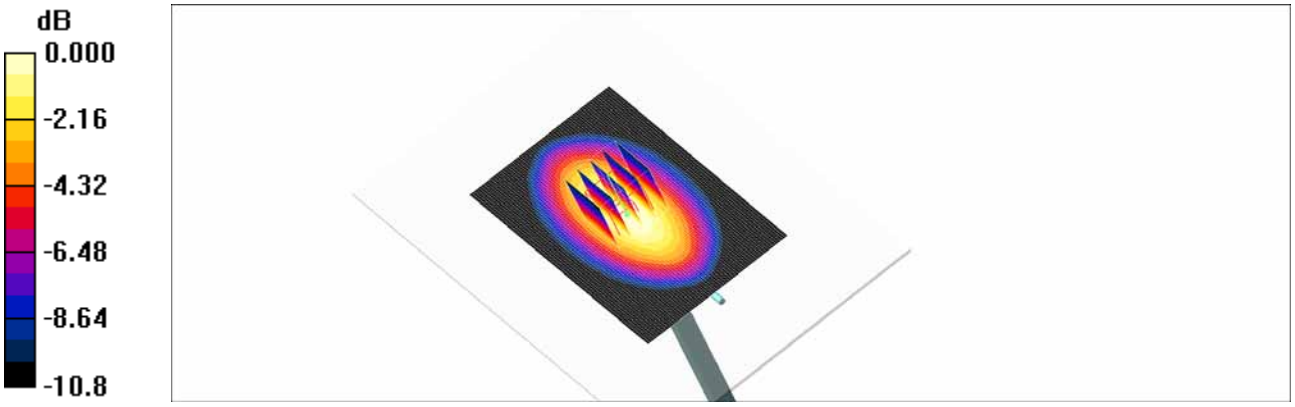
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:441

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.968 mho/m; ε_r = 54.1; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: ET3DV6 - SN1798; ConvF(6.46, 6.46, 6.46); Calibrated: 2013-04-29
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Verification 835 MHz/Area Scan (111x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.04 mW/g

Verification 835 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 34.2 V/m; Power Drift = -0.064 dB
Peak SAR (extrapolated) = 1.42 W/kg
SAR(1 g) = 0.963 mW/g; SAR(10 g) = 0.625 mW/g
Maximum value of SAR (measured) = 1.04 mW/g



0 dB = 1.04mW/g

■ Verification Data (1 900 MHz Head)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	20.7 ℃
Test Date:	Dec.02, 2013

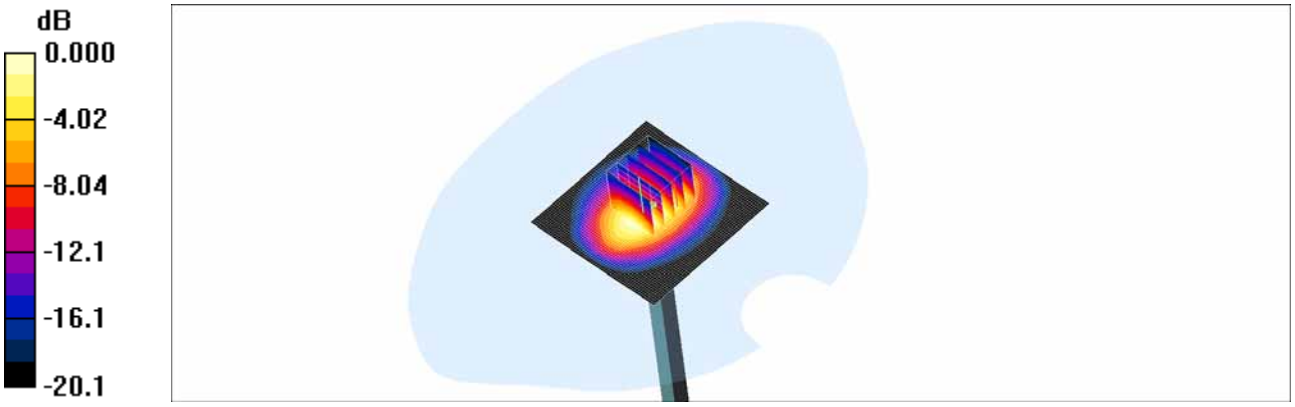
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d032

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.38 mho/m; ε_r = 38.8; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: ET3DV6 - SN1798; ConvF(5.29, 5.29, 5.29); Calibrated: 2013-04-29
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: SAM 1800/1900 MHz; Type: SAM

Dipole 1900MHz Verification/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 4.78 mW/g

Dipole 1900MHz Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 59.8 V/m; Power Drift = -0.008 dB
Peak SAR (extrapolated) = 6.92 W/kg
SAR(1 g) = 3.98 mW/g; SAR(10 g) = 2.05 mW/g
Maximum value of SAR (measured) = 4.42 mW/g



0 dB = 4.42mW/g

■ Verification Data (1 900 MHz Body)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	20.1 ℃
Test Date:	Dec.03, 2013

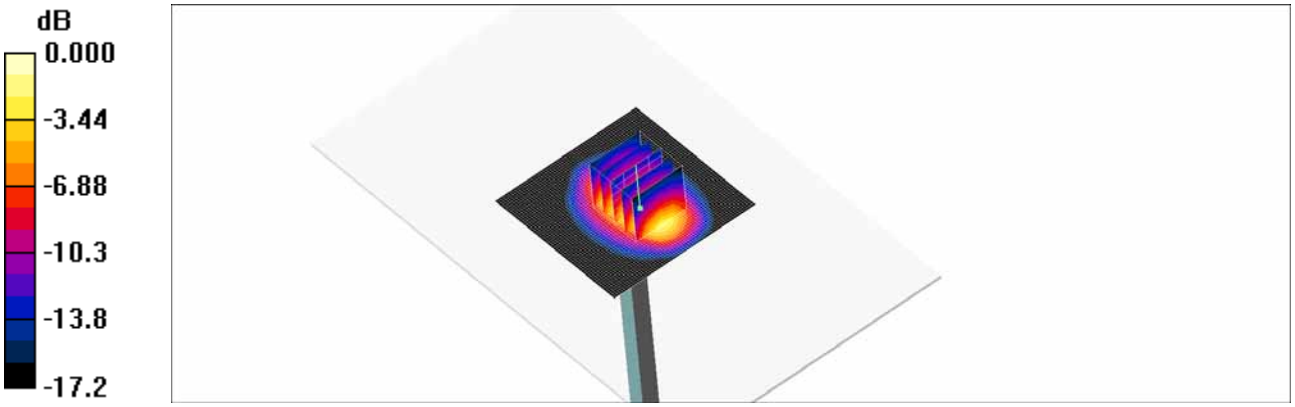
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d032

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.47 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: ET3DV6 - SN1798; ConvF(4.7, 4.7, 4.7); Calibrated: 2013-04-29
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

Verification 1900 MHz/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 5.15 mW/g

Verification 1900 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 56.8 V/m; Power Drift = -0.011 dB
Peak SAR (extrapolated) = 6.54 W/kg
SAR(1 g) = 4 mW/g; SAR(10 g) = 2.15 mW/g
Maximum value of SAR (measured) = 4.52 mW/g



0 dB = 4.52mW/g

■ Verification Data (2 450 MHz Head)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	20.4 ℃
Test Date:	Dec.04, 2013

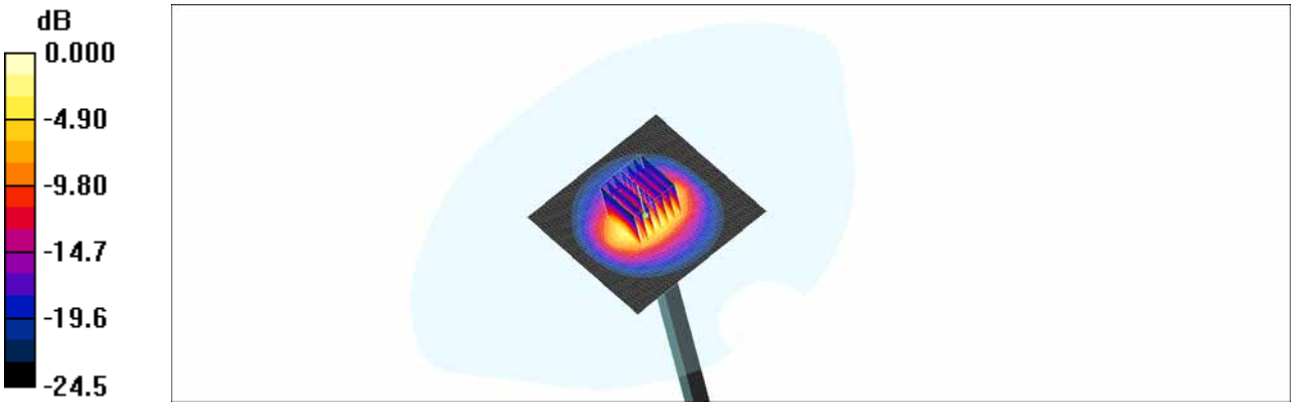
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:743

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.78 mho/m; ε_r = 39.8; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3903; ConvF(7.43, 7.43, 7.43); Calibrated: 2013-03-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2013-03-21
- Phantom: 835/900 Phamtom ; Type: SAM

Verification 2450MHz/Area Scan (81x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 8.45 mW/g

Verification 2450MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 58.6 V/m; Power Drift = -0.018 dB
Peak SAR (extrapolated) = 11.9 W/kg
SAR(1 g) = 5.33 mW/g; SAR(10 g) = 2.37 mW/g
Maximum value of SAR (measured) = 8.42 mW/g



0 dB = 8.42mW/g

■ Verification Data (2 450 MHz Body)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	20.4 ℃
Test Date:	Dec.04, 2013

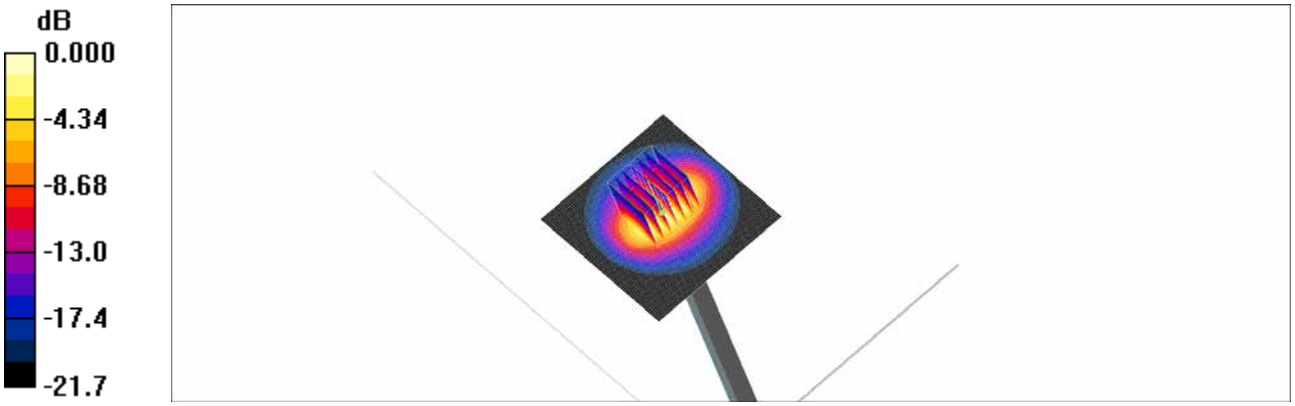
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:743

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.9 mho/m; ε_r = 51.7; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3903; ConvF(7.14, 7.14, 7.14); Calibrated: 2013-03-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2013-03-21
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

Verification 2450MHz/Area Scan (81x71x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 5.75 mW/g

Verification 2450MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.7 V/m; Power Drift = 0.054 dB
Peak SAR (extrapolated) = 10.4 W/kg
SAR(1 g) = 5.05 mW/g; SAR(10 g) = 2.36 mW/g
Maximum value of SAR (measured) = 5.72 mW/g



0 dB = 5.72mW/g

■ Verification Data (2 600 MHz Head)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	20.2 ℃
Test Date:	Dec.05, 2013

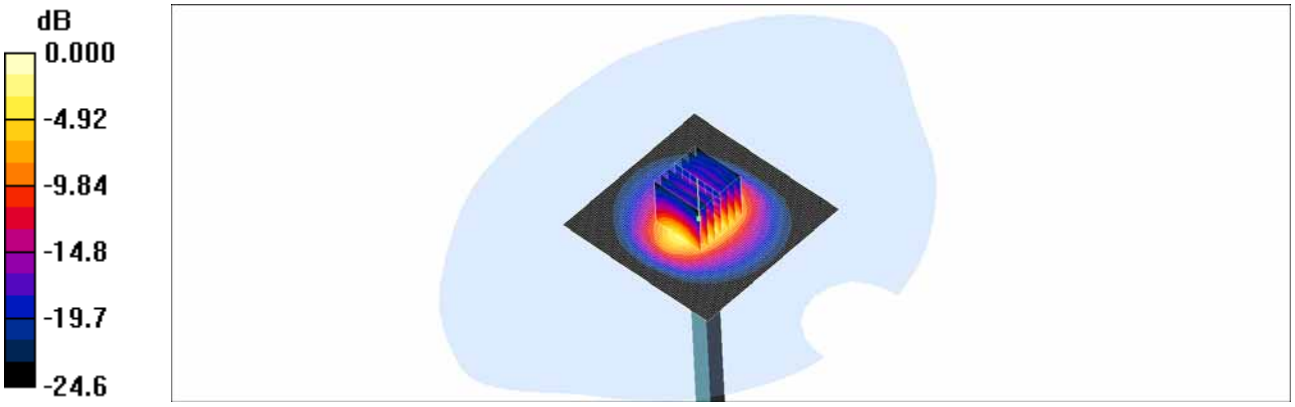
DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN:1015

Communication System: CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2600 MHz; σ = 2.04 mho/m; ε_r = 38.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3903; ConvF(7.23, 7.23, 7.23); Calibrated: 2013-03-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2013-03-21
- Phantom: 835/900 Phamtom ; Type: SAM

Verification 2600MHz/Area Scan (81x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 9.10 mW/g

Verification 2600MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.9 V/m; Power Drift = -0.011 dB
Peak SAR (extrapolated) = 12.8 W/kg
SAR(1 g) = 5.75 mW/g; SAR(10 g) = 2.55 mW/g
Maximum value of SAR (measured) = 9.11 mW/g



0 dB = 9.11mW/g

■ Verification Data (2 600 MHz Body)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	20.6 ℃
Test Date:	Dec.06, 2013

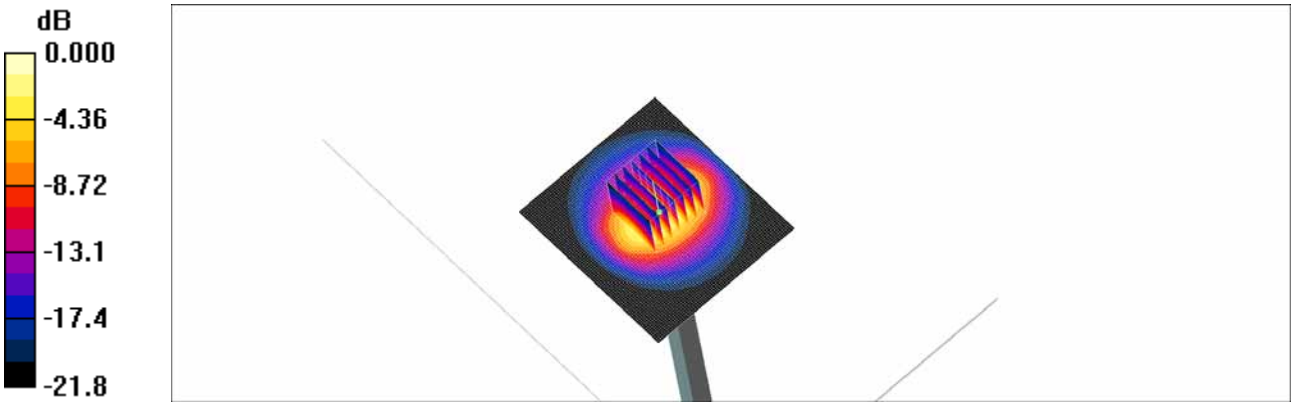
DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN:1015

Communication System: CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2600 MHz; σ = 2.2 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3903; ConvF(6.89, 6.89, 6.89); Calibrated: 2013-03-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2013-03-21
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

Verification 2600MHz/Area Scan (81x71x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 6.70 mW/g

Verification 2600MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.4 V/m; Power Drift = -0.157 dB
Peak SAR (extrapolated) = 11.6 W/kg
SAR(1 g) = 5.52 mW/g; SAR(10 g) = 2.55 mW/g
Maximum value of SAR (measured) = 6.27 mW/g



0 dB = 6.27mW/g

■ Verification Data (5 200 MHz Head)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	20.3 ℃
Test Date:	Dec.09, 2013

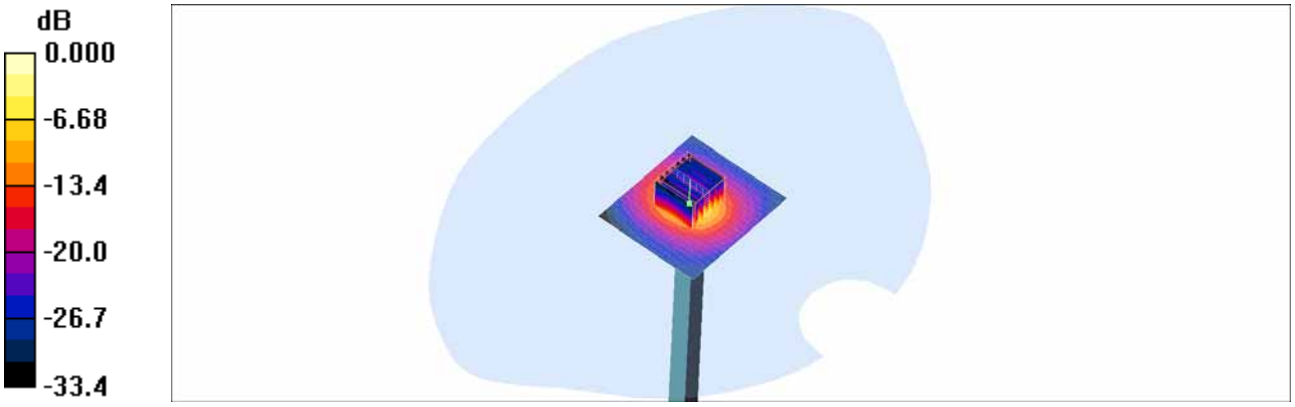
DUT: Dipole 5GHz; Type: D5000V2; Serial: D5000V2 - SN:1107

Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 4.61 mho/m; ε_r = 34.8; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(5.11, 5.11, 5.11); Calibrated: 2013-07-31
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: SAM 1800/1900 MHz; Type: SAM

Verification5200MHz/Area Scan (61x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 9.43 mW/g

Verification5200MHz/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 42.0 V/m; Power Drift = 0.043 dB
Peak SAR (extrapolated) = 34.9 W/kg
SAR(1 g) = 8.08 mW/g; SAR(10 g) = 2.26 mW/g
Maximum value of SAR (measured) = 16.4 mW/g



0 dB = 16.4mW/g

■ Verification Data (5 200 MHz Body)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	20.1 ℃
Test Date:	Dec.10, 2013

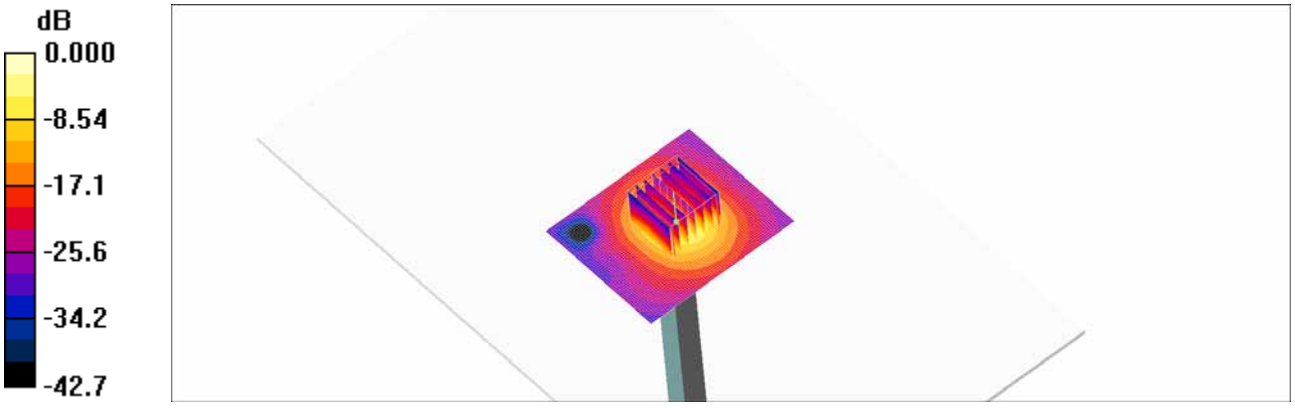
DUT: Dipole 5GHz; Type: D5000V2; Serial: D5000V2 - SN:1107

Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.15 mho/m; ε_r = 48.2; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.49, 4.49, 4.49); Calibrated: 2013-07-31
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

Verification 5200MHz/Area Scan (61x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 8.40 mW/g

Verification 5200MHz/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 38.2 V/m; Power Drift = -0.029 dB
Peak SAR (extrapolated) = 31.4 W/kg
SAR(1 g) = 7.38 mW/g; SAR(10 g) = 2.1 mW/g
Maximum value of SAR (measured) = 15.2 mW/g



0 dB = 15.2mW/g

■ Verification Data (5 300 MHz Head)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	20.3 ℃
Test Date:	Dec.09, 2013

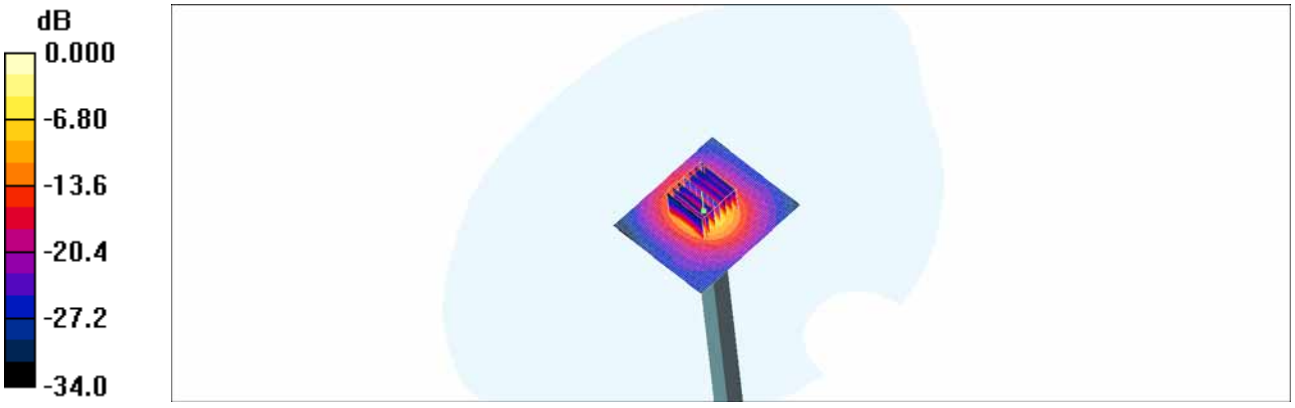
DUT: Dipole 5GHz; Type: D5000V2; Serial: D5000V2 - SN:1107

Communication System: CW; Frequency: 5300 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5300 MHz; σ = 4.73 mho/m; ε_r = 34.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.83, 4.83, 4.83); Calibrated: 2013-07-31
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: SAM 1800/1900 MHz; Type: SAM

Verification 5300MHz/Area Scan (61x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 9.22 mW/g

Verification 5300MHz/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 40.9 V/m; Power Drift = 0.058 dB
Peak SAR (extrapolated) = 33.1 W/kg
SAR(1 g) = 7.82 mW/g; SAR(10 g) = 2.19 mW/g
Maximum value of SAR (measured) = 15.7 mW/g



0 dB = 15.7mW/g

■ Verification Data (5 300 MHz Body)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	20.1 ℃
Test Date:	Dec.10, 2013

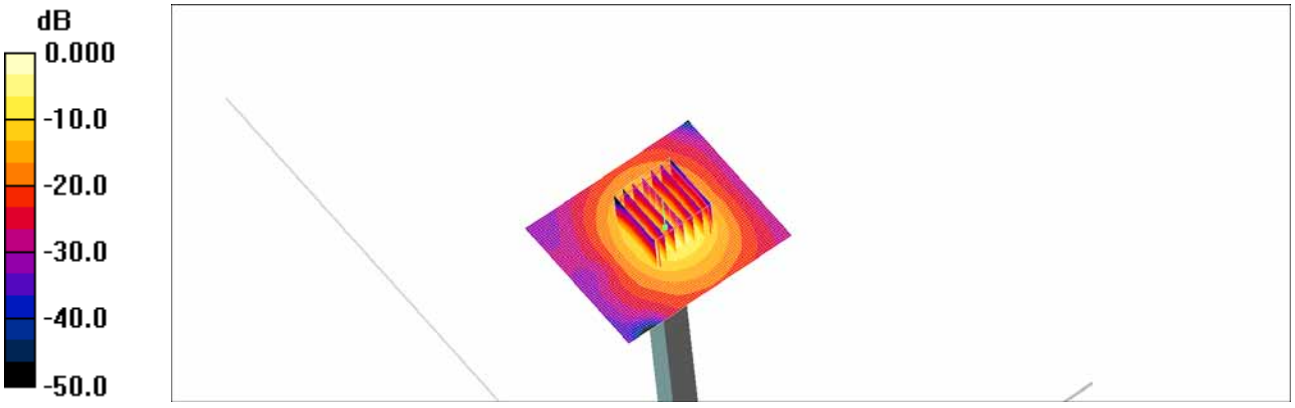
DUT: Dipole 5GHz; Type: D5000V2; Serial: D5000V2 - SN:1107

Communication System: CW; Frequency: 5300 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5300 MHz; σ = 5.32 mho/m; ε_r = 47.9; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.14, 4.14, 4.14); Calibrated: 2013-07-31
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

Verification 5300MHz/Area Scan (61x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 8.92 mW/g

Verification 5300MHz/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 39.0 V/m; Power Drift = 0.018 dB
Peak SAR (extrapolated) = 33.9 W/kg
SAR(1 g) = 7.87 mW/g; SAR(10 g) = 2.22 mW/g
Maximum value of SAR (measured) = 16.2 mW/g



0 dB = 16.2mW/g

■ Verification Data (5 500 MHz Head)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	20.3 ℃
Test Date:	Dec.09, 2013

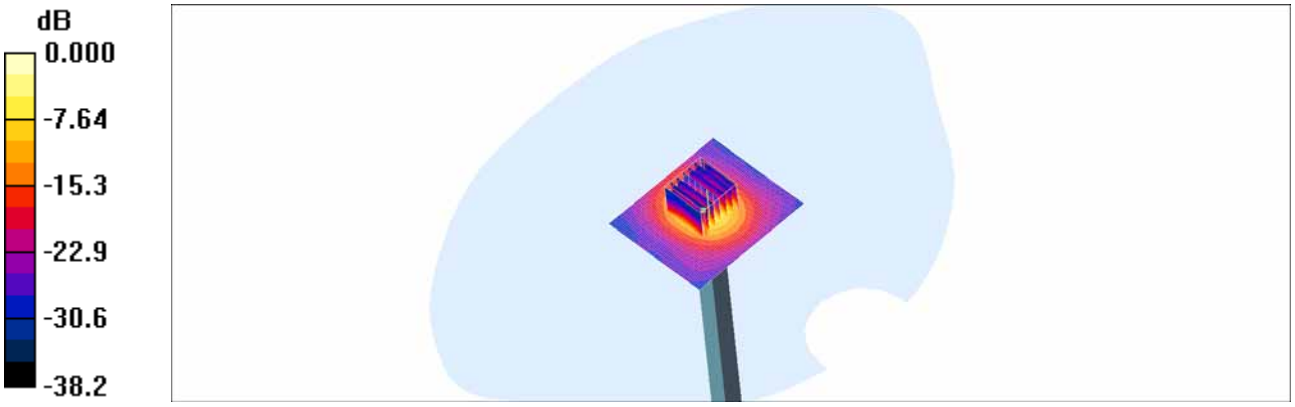
DUT: Dipole 5GHz; Type: D5000V2; Serial: D5000V2 - SN:1107

Communication System: CW; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5500 MHz; σ = 4.97 mho/m; ε_r = 34.1; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.81, 4.81, 4.81); Calibrated: 2013-07-31
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: SAM 1800/1900 MHz; Type: SAM

Verification 5500MHz/Area Scan (61x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 9.60 mW/g

Verification 5500MHz/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 40.0 V/m; Power Drift = 0.033 dB
Peak SAR (extrapolated) = 36.3 W/kg
SAR(1 g) = 8.03 mW/g; SAR(10 g) = 2.22 mW/g
Maximum value of SAR (measured) = 15.9 mW/g



0 dB = 15.9mW/g

■ Verification Data (5 500 MHz Body)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	20.1 ℃
Test Date:	Dec.10, 2013

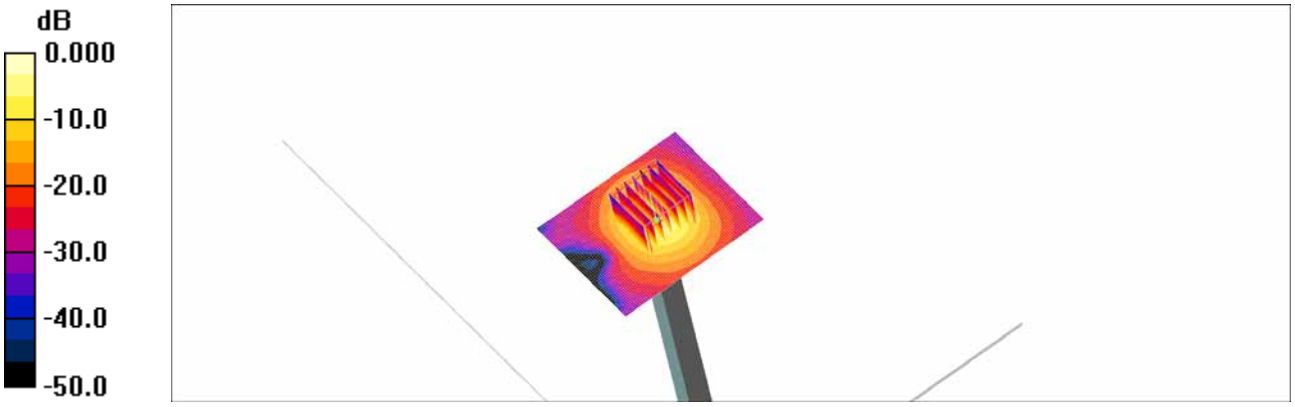
DUT: Dipole 5GHz; Type: D5000V2; Serial: D5000V2 - SN:1107

Communication System: CW; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5500 MHz; σ = 5.65 mho/m; ε_r = 47.3; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(3.91, 3.91, 3.91); Calibrated: 2013-07-31
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

Verification 5500MHz/Area Scan (61x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 8.64 mW/g

Verification 5500MHz/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 37.1 V/m; Power Drift = 0.012 dB
Peak SAR (extrapolated) = 33.1 W/kg
SAR(1 g) = 7.57 mW/g; SAR(10 g) = 2.14 mW/g
Maximum value of SAR (measured) = 16.3 mW/g



0 dB = 16.3mW/g

■ Verification Data (5 600 MHz Head)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	20.3 ℃
Test Date:	Dec.09, 2013

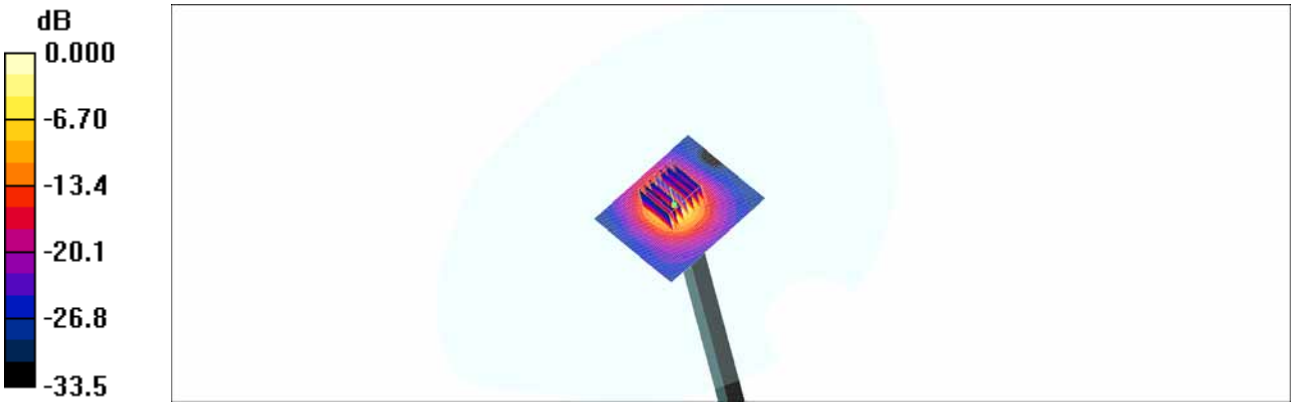
DUT: Dipole 5GHz; Type: D5000V2; Serial: D5000V2 - SN:1107

Communication System: CW; Frequency: 5600 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5600 MHz; σ = 5.1 mho/m; ε_r = 33.8; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.44, 4.44, 4.44); Calibrated: 2013-07-31
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: SAM 1800/1900 MHz; Type: SAM

Verification5600MHz/Area Scan (61x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 10.1 mW/g

Verification5600MHz/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 40.4 V/m; Power Drift = -0.175 dB
Peak SAR (extrapolated) = 35.9 W/kg
SAR(1 g) = 8.46 mW/g; SAR(10 g) = 2.34 mW/g
Maximum value of SAR (measured) = 17.3 mW/g



0 dB = 17.3mW/g

■ Verification Data (5 600 MHz Body)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	20.1 ℃
Test Date:	Dec.10, 2013

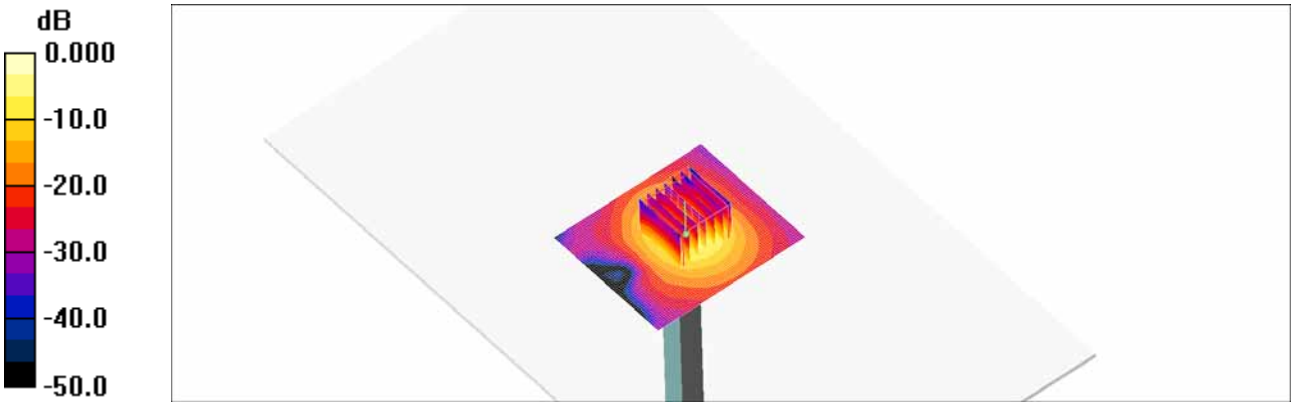
DUT: Dipole 5GHz; Type: D5000V2; Serial: D5000V2 - SN:1107

Communication System: CW; Frequency: 5600 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5600 MHz; σ = 5.81 mho/m; ε_r = 47.1; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(3.6, 3.6, 3.6); Calibrated: 2013-07-31
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

Verification 5600MHz/Area Scan (61x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 9.56 mW/g

Verification 5600MHz/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 38.7 V/m; Power Drift = 0.012 dB
Peak SAR (extrapolated) = 34.4 W/kg
SAR(1 g) = 8.2 mW/g; SAR(10 g) = 2.32 mW/g
Maximum value of SAR (measured) = 17.6 mW/g



0 dB = 17.6mW/g

■ Verification Data (5 800 MHz Head)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	20.3 ℃
Test Date:	Dec.09, 2013

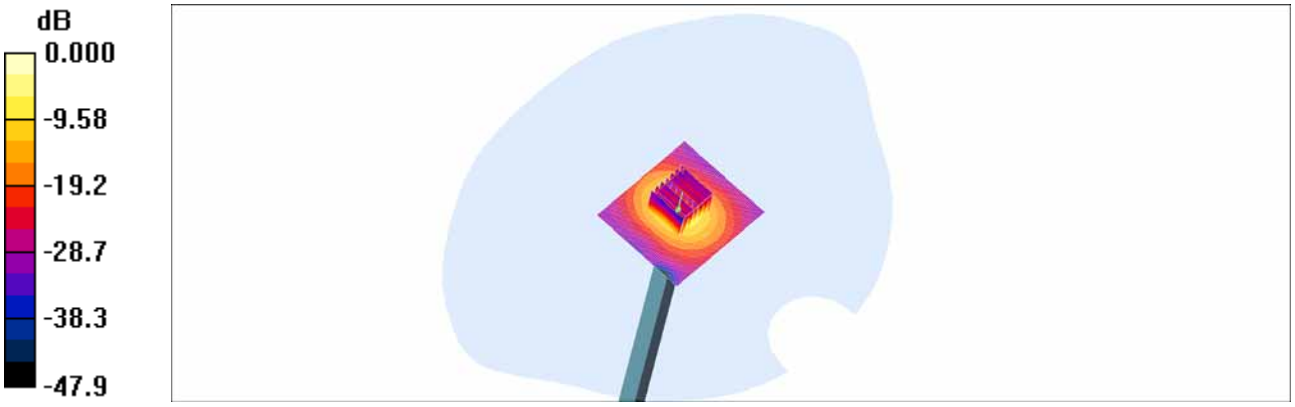
DUT: Dipole 5GHz; Type: D5000V2; Serial: D5000V2 - SN:1107

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5800 MHz; σ = 5.35 mho/m; ε_r = 33.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.7, 4.7, 4.7); Calibrated: 2013-07-31
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: SAM 1800/1900 MHz; Type: SAM

Verification 5800MHz/Area Scan (61x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 8.68 mW/g

Verification 5800MHz/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 38.1 V/m; Power Drift = -0.010 dB
Peak SAR (extrapolated) = 35.6 W/kg
SAR(1 g) = 7.77 mW/g; SAR(10 g) = 2.18 mW/g
Maximum value of SAR (measured) = 15.6 mW/g



0 dB = 15.6mW/g

■ Verification Data (5 800 MHz Body)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	20.1 ℃
Test Date:	Dec.10, 2013

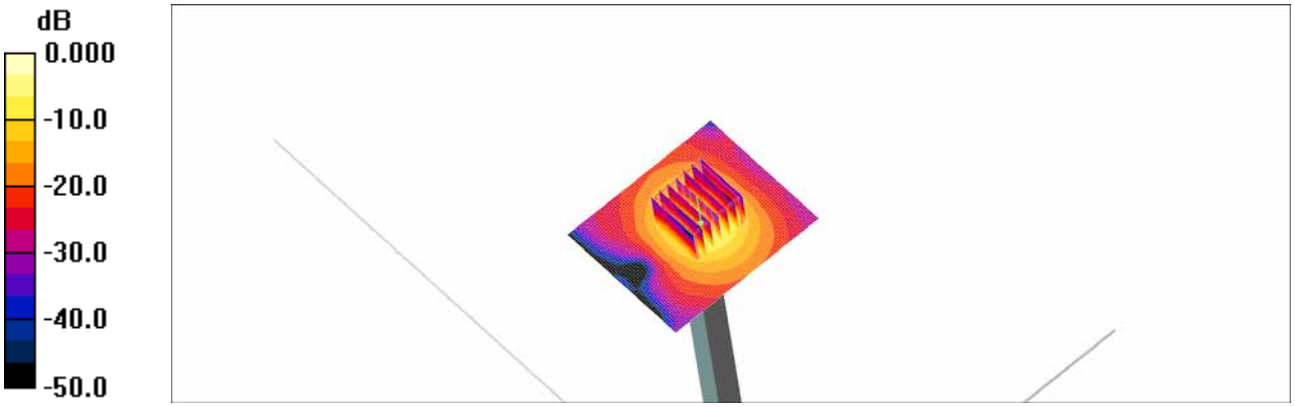
DUT: Dipole 5GHz; Type: D5000V2; Serial: D5000V2 - SN:1107

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5800 MHz; σ = 6.14 mho/m; ε_r = 46.6; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(3.95, 3.95, 3.95); Calibrated: 2013-07-31
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2013-04-24
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

Verification 5800MHz/Area Scan (61x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 8.24 mW/g

Verification 5800MHz/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 34.8 V/m; Power Drift = -0.007 dB
Peak SAR (extrapolated) = 32.8 W/kg
SAR(1 g) = 7.4 mW/g; SAR(10 g) = 2.09 mW/g
Maximum value of SAR (measured) = 15.6 mW/g



0 dB = 15.6mW/g