SAR TEST REPORT

HCT CO., LTD

EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
FCC ID:	ZNFL04E
Model:	L-04E
Date of Issue:	Jan.4, 2013
Test report No.:	HCTA1301FS01
Test Laboratory:	**HCT CO., LTD.** 105-1, Jangam-ri, Majang-myeon, Icheon-si, Gyeonggi-do, Korea 467-811 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 FCC OET Bulletin 65(Edition 97-01), Supplement C (Edition 01-01) 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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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 2. 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 OET Bulletin 65 Supplement C 01-01, IEEE Standard 1528-2003 & IEEE 1528a-2005 and the following published KDB procedures.

-. 447498 D01 General RF Exposure Guidance v05

-. 450824 D01 SAR Prob Cal and Ver Meas v01r01

-. 450824 D02 Dipole SAR Validation Verification v01

-. 648474 D04 SAR Handsets Multi Xmiter and Ant v01

-. 865664 D01 SAR measurement 100 MHz to 6 GHz v01

-. 865664 D02 SAR Reporting v01

-. 941225 D01 SAR test for 3G devices v02

-. 941225 D02 Guidance for 3GPP R6 and R7 HSPA v02v01

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).

EUT Type	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)		
FCC ID:	ZNFL04E	Model:	L-04E
Trade Name	LG Electronics, MobileComm U.S.A., Inc.		
Application Type	Certification		
Mode(s) of Operation	GSM850/GSM1900/WCDMA850/802.11a/b/g/n		
Tx Frequency	824.20 - 848.80 MHz (GSM850) /1 850.20 – 1 909.80 MHz (GSM1900) 826.4 - 846.6 MHz (WCDMA850)/ 2 412- 2 462 MHz (802.11b/g/n) 802.11a/n: 5180-5240MHz/ 5260-5320 MHz/ 5500-5700 MHz/ 5745-5825 MHz		
Rx Frequency	869.20 - 893.80 MHz (GSM850)/ 1 930.20 – 1 989.80 MHz (GSM1900) 871.4 - 891.6 MHz (WCDMA850)/2 412- 2 462 MHz (802.11b/g/n) 802.11a/n: 5180-5240MHz/ 5260-5320 MHz/ 5500-5700 MHz/ 5745-5825 MHz		
Production Unit or Identical Prototype	Prototype		

\Max SAR

Band	Tx Frequency (MHz)	Equipment Class	Reported 1g SAR (W/kg)		
			Head	Body-worn	Hotspot
GSM850	824.20 - 848.80	PCE	0.390	0.481	0.481
GSM1900	1 850.20 - 1 909.80	PCE	< 0.1	0.235	0.235
WCDMA850	826.4 - 846.6	PCE	0.316	0.288	0.307
802.11b	2 412- 2 462	DTS	0.606	< 0.1	< 0.1
802.11a	5 180 – 5 240	UNII	< 0.1	-	-
802.11a	5 260 – 5 320	UNII	< 0.1	-	-
802.11a	5 500 – 5 700	UNII	< 0.1	< 0.1	-
802.11a	5 745 – 5 825	DTS	< 0.1	< 0.1	-
Bluetooth	2 402 - 2 480	DSS	-	-	-
Simultaneous SAR per KDB 690783 D01			0.996	0.801	0.741

Date(s) of Tests	Dec. 24, 2012 ~ Dec. 27, 2012
Antenna Type	Integral Antenna
GPRS	Multislot Class: 12, Mode Class: B
Key Feature(s)	This device support Mobile Hotspot. But, Hotspot is not supported with 5GHz WiFi.

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.4.1).

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.

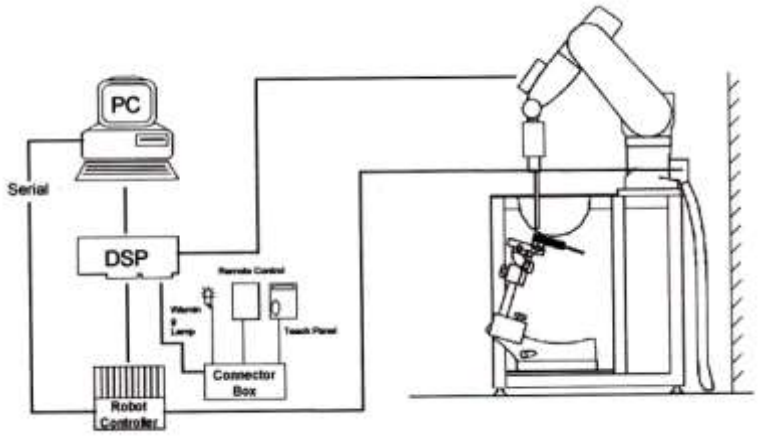


Figure 4.1 HCT SAR Lab. Test Measurement Set-up

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 DASY4 E-FIELD PROBE SYSTEM

4.2.1 ET3DV6 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

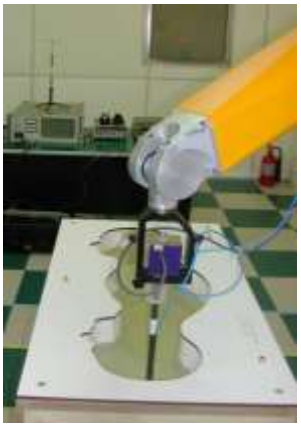


Figure 4.2 Photograph of the probe and the Phantom

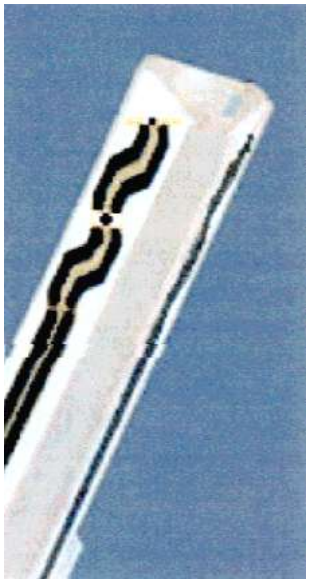


Figure 4.3 ET3DV6 E-field Probe

The SAR measurements were conducted with the dosimetric probe ET3DV6, designed in the classical triangular configuration [5] 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 mortifier 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 2 nd 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)

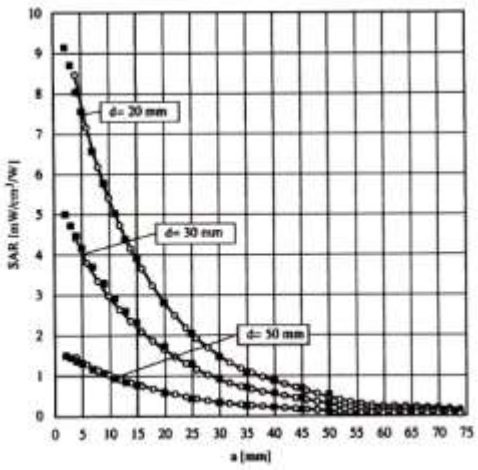


Figure 4.4 E-Field and Temperature measurements at 900 MHz

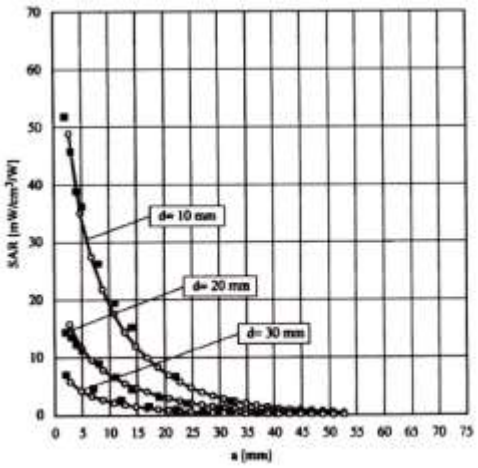


Figure 4.5 E-Field and temperature measurements at 1.8 GHz

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;

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

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 point (DASY parameter)

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

E-field probes:

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

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):

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

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

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

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.

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

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 4.6 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 3.6 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 4.7 Device Holder

4.6 Brain & Muscle Simulating Mixture Characterization

The brain and muscle mixtures consist of a viscous gel using hydrox-ethyl cellulose (HEC) gelling agent and saline solution (see Table 3.1). Preservation with a bacteriacide is added and visual inspection is made to make sure air bubbles are not trapped during the mixing process. The mixture is calibrated to obtain proper dielectric constant (permittivity) and conductivity of the desired tissue. The mixture characterizations used for the brain and muscle tissue simulating liquids are according to the data by C. Gabriel and G. Hartsgrove.

Ingredients (% by weight)	Frequency (MHz)											
	750		835		915		1 900		2 450		5200-5800	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	41.2	51.7	41.45	52.4	41.05	56.0	54.9	40.4	62.7	73.2	65.52	78.66
Salt (NaCl)	1.4	1.0	1.45	1.4	1.35	0.76	0.18	0.5	0.5	0.04	0.0	0.0
Sugar	57	47.2	56.0	45.0	56.5	41.76	0.0	58.0	0.0	0.0	0.0	0.0
HEC	0.2	0.0	1.0	1.0	1.0	1.21	0.0	1.0	0.0	0.0	0.0	0.0
Bactericide	0.2	0.1	0.1	0.1	0.1	0.27	0.0	0.1	0.0	0.0	0.0	0.0
Triton X-100	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0	17.24	10.67
DGBE	0.00	0.0	0.0	0.0	0.0	0.0	44.92	0.0	0.0	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
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	479	Aug. 28, 2012	Annual	Aug. 28, 2013
SPEAG	DAE3	466	Feb. 21, 2012	Annual	Feb. 21, 2013
SPEAG	DAE4	869	Sep 18, 2012	Annual	Sep 18, 2013
SPEAG	E-Field Probe EX3DV4	3797	Nov. 22, 2012	Annual	Nov. 22, 2013
SPEAG	E-Field Probe EX3DV4	3863	July 13, 2012	Annual	July 13, 2013
SPEAG	E-Field Probe ET3DV6	1609	Mar 19, 2012	Annual	Mar 19, 2013
SPEAG	Validation Dipole D835V2	441	May 16, 2012	Annual	May 16, 2013
SPEAG	Validation Dipole D1900V2	5d032	July 20, 2012	Annual	July 20, 2013
SPEAG	Validation Dipole D2450V2	743	Aug. 23, 2012	Annual	Aug. 23, 2013
SPEAG	Validation Dipole D5GHzV2	1107	Aug. 20, 2012	Annual	Aug. 20, 2013
Agilent	Power Meter(F) E4419B	MY41291386	Nov. 04, 2011	Annual	Nov. 02, 2013
Agilent	Power Sensor(G) 8481	MY41090870	Nov. 04, 2011	Annual	Nov. 02, 2013
HP	Dielectric Probe Kit 85070C	00721521	N/A	N/A	N/A
HP	Dual Directional Coupler 778D	16072	Nov. 02, 2012	Annual	Nov. 02, 2013
Agilent	Base Station CMU200	110740	July 23, 2012	Annual	July 23, 2013
HP	Base Station E5515C	GB44400269	Feb. 10, 2012	Annual	Feb. 10, 2013
HP	Signal Generator 8664A	3744A02069	Nov. 02, 2012	Annual	Nov. 02, 2013
TESCOM	TC-3000C / BLUETOOTH	3000C000276	Jul. 11, 2012	Annual	Jul. 11, 2013

NOTE:

The E-field probe was calibrated by SPEAG, by the waveguide technique procedure. Dipole Validation 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.

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.

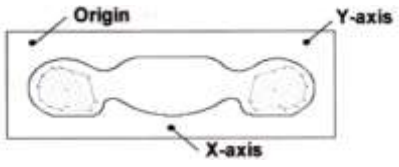


Figure 5.1 SAR Measurement Point in Area Scan

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.

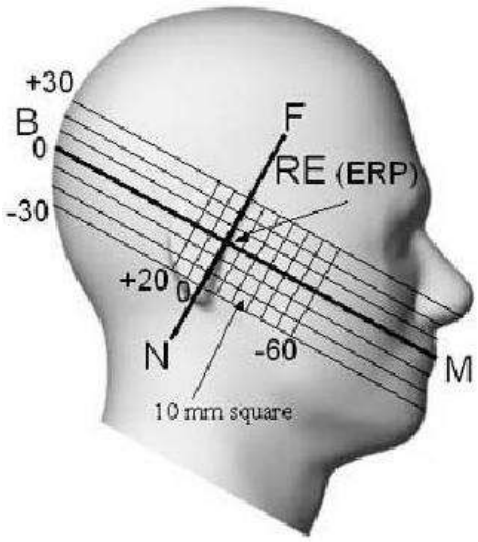


Figure 6.1 Side view of the phantom

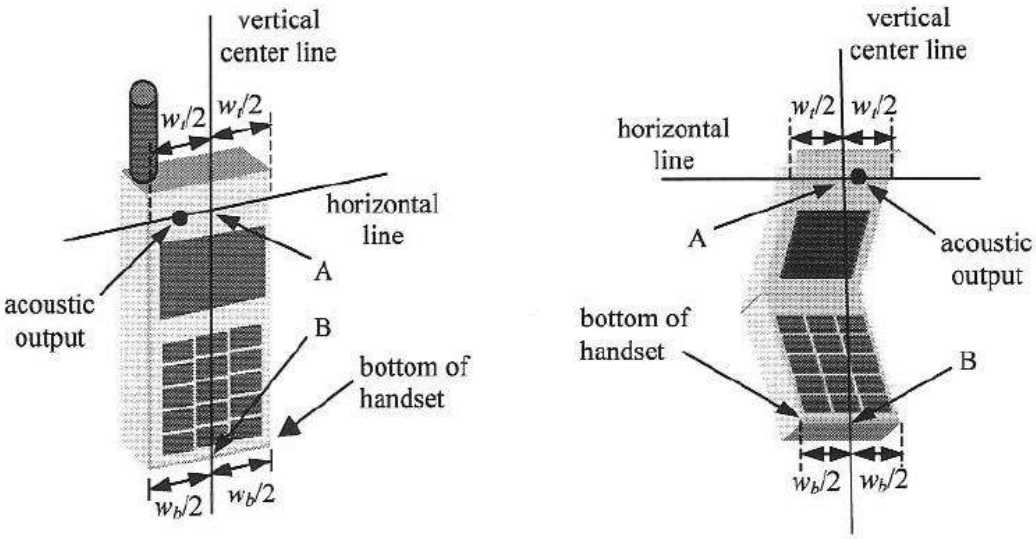


Figure 6.2 Handset vertical and horizontal reference lines

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 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.

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- 2450 MHz)

Error Description	Tol (± %)	Prob. dist.	Div.	c_i	Standard Uncertainty (± %)	v_{eff}
1. Measurement System						
Probe Calibration	6.55	N	1	1	6.55	∞
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 (5000-5900 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. SYSTEM VERIFICATION

9.1 Tissue Verification

Freq. [MHz]	Date	Liquid	Liquid Temp.[°C]	Parameters	Target Value	Measured Value	Deviation [%]	Limit [%]
835	Dec.24,2012	Head	21.0	ε r	41.5	40.4	- 2.65	± 5
				σ	0.90	0.917	+ 1.89	± 5
835		Body		ε r	55.2	53	- 3.99	± 5
				σ	0.97	0.987	+ 1.75	± 5
1 900	Dec.26,2012	Head	21.3	ε r	40.0	40.9	+ 2.25	± 5
				σ	1.40	1.37	- 2.14	± 5
1 900		Body		ε r	53.3	52	- 2.44	± 5
				σ	1.52	1.55	+ 1.97	± 5
2 450	Dec.26,2012	Head	21.3	ε r	39.2	38.2	- 2.55	± 5
				σ	1.80	1.85	+ 2.78	± 5
2 450	Dec.26,2012	Body		ε r	52.7	53.2	+ 0.95	± 5
				σ	1.95	1.94	- 0.51	± 5
2 450	Dec.28,2012	Head	21.3	ε r	39.2	38.5	- 1.79	± 5
				σ	1.80	1.85	+ 2.78	± 5
5200	Dec.27,2012	Head	21.2	ε r	36.0	35.8	- 0.56	± 5
				σ	4.66	4.55	- 2.36	± 5
5 800	Dec.27,2012	Head	21.2	ε r	35.3	34.2	- 3.12	± 5
				σ	5.27	5.28	+ 0.19	± 5
5 800		Body		ε r	48.2	46.2	- 4.15	± 5
				σ	6.00	6.18	+ 3.00	± 5

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

9.2 System Validation

Prior to assessment, the system is verified to the ± 10 % of the specifications at 835 MHz /1 900 MHz/ 2 450 MHz/ 5 GHz by using the system validation kit. (Graphic Plots Attached)

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	Dec.24,2012	1609	441	Head	21.2	21.0	9.43	0.938	9.38	- 0.53	± 10
835				Body			9.50	0.982	9.82	+ 3.37	± 10
1 900	Dec.26,2012		5d032	Head	21.5	21.3	39.0	3.81	38.1	- 2.31	± 10
1 900				Body			39.9	3.82	38.2	- 4.26	± 10
2 450	Dec.26,2012	3863	743	Head	21.5	21.3	52.7	5.24	52.4	- 0.57	± 10
2 450				Body			51.2	5.2	52	+ 1.56	± 10
2 450	Dec.28,2012	3797	743	Head	21.5	21.3	52.7	5.15	51.5	- 2.28	± 10
5 200	Dec.27,2012	3863	1107	Head	21.4	21.2	78.9	7.94	79.4	+ 0.63	± 10
5 800				Head			77.6	7.76	77.6	0.00	± 10
5 800				Body			74.6	7.48	74.8	+ 0.27	± 10

9.3 System Validation 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 validation kit. (Graphic Plots Attached)
- Cabling the system, using the validation 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.

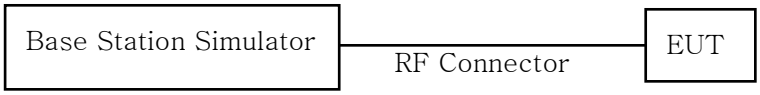
Note;
SAR Verification was performed according to the FCC KDB 450824.

10. 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.

10.1 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.

GSM850

Target Power : 32.0 dBm
Tune-up Tolerance : -1.5dB/ +0.7dB

GSM1900

Target Power : 29.5 dBm
Tune-up Tolerance : -1.5dB/ +0.7dB

GSM Conducted output powers (Burst-Average)

Band	Channel	Voice	GPRS(GMSK) Data – CS1			
		GSM (dBm)	GPRS 1 TX Slot (dBm)	GPRS 2 TX Slot (dBm)	GPRS 3 TX Slot (dBm)	GPRS 4 TX Slot (dBm)
GSM 850	128	32.60	32.60	30.26	28.41	27.69
	190	32.64	32.62	30.37	28.23	27.22
	251	32.59	32.53	30.40	28.35	27.33
GSM 1900	512	30.11	30.11	28.01	27.03	25.64
	661	30.01	30.01	27.93	26.94	25.53
	810	29.95	29.96	27.92	26.93	25.41

GSM Conducted output powers (Frame-Average)

Band	Channel	Voice	GPRS(GMSK) Data – CS1			
		GSM (dBm)	GPRS 1 TX Slot (dBm)	GPRS 2 TX Slot (dBm)	GPRS 3 TX Slot (dBm)	GPRS 4 TX Slot (dBm)
GSM 850	128	23.57	23.57	24.24	24.15	24.68
	190	23.61	23.59	24.35	23.97	24.21
	251	23.56	23.5	24.38	24.09	24.32
GSM 1900	512	21.08	21.08	21.99	22.77	22.63
	661	20.98	20.98	21.91	22.68	22.52
	810	20.92	20.93	21.9	22.67	22.4

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

10.2 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.

10.2.1 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”.

10.2.2 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.

10.2.3 Body SAR Measurement

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

10.2.4 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.

10.2.5 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.

WCDMA850

Target Power : 23.0 dBm

Tune-up Tolerance : -1.5dB/ +0.7dB

WCDMA Average Conducted output powers

3GPP Release Version	WCDMA850 Mode	3GPP 34.121 Subtest	Cellular Band [dBm]						MPR Target
			UL 4132 DL 4357	Power reduction (dB)	UL 4183 DL 4408	Power reduction (dB)	UL 4233 DL 4458	Power reduction (dB)	
99	WCDMA	12.2 kbps RMC	23.55		23.56		23.58		-
99	WCDMA	12.2 kbps AMR	23.60		23.65		23.67		
5	HSDPA	Subtest 1	23.68	0.00	23.69	0.00	23.69	0.00	0
5		Subtest 2	23.64	-0.04	23.69	0.00	23.68	-0.01	0
5		Subtest 3	23.14	-0.54	23.20	-0.49	23.22	-0.47	-0.5
5		Subtest 4	23.14	-0.54	23.19	-0.50	23.22	-0.47	-0.5
6	HSUPA	Subtest 1	23.25	0.00	23.33	0.00	23.28	0.00	0
6		Subtest 2	21.55	-1.70	21.49	-1.84	21.50	-1.78	-2
6		Subtest 3	22.16	-1.09	22.32	-1.01	22.06	-1.22	-1
6		Subtest 4	21.29	-1.96	21.42	-1.91	21.39	-1.89	-2
6		Subtest 5	23.30	0.05	23.39	0.06	23.29	0.01	0

10.3 WiFi

10.3.1 SAR Testing for 802.11a/b/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		
802.11 b/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

2.4GHz

802.11b : 14.30 dBm
802.11g : 11.40 dBm
802.11n : 11.00 dBm

Tune-up Tolerance : -1.5dB/ +0.7dB

Band	Channel	Conducted Power (dBm)			
		Data Rate (Mbps)			
		1	2	5.5	11
IEEE 802.11b	1	14.77	14.73	14.68	14.50
	6	14.92	14.75	14.77	14.69
	11	14.84	14.83	14.81	14.65

Average IEEE 802.11b Conducted output power

Band	Channel	Conducted Power (dBm)							
		Data Rate (Mbps)							
		6	9	12	18	24	36	48	54
IEEE 802.11g	1	11.71	11.51	11.44	11.26	11.09	10.73	10.54	10.36
	6	11.84	11.76	11.64	11.49	11.31	10.93	10.61	10.55
	11	11.75	11.60	11.52	11.33	11.08	10.79	10.54	10.41

Average IEEE 802.11g Conducted output power

Band	Channel	Conducted Power (dBm)							
		Data Rate (Mbps)							
		6.5	13	19.5	26	39	52	58.5	65
IEEE 802.11n (HT-20)	1	11.45	11.25	11.05	10.89	10.57	10.30	10.17	10.10
	6	11.51	11.28	11.17	11.02	10.61	10.38	10.32	10.24
	11	11.37	11.16	10.90	10.75	10.50	10.28	10.18	10.08

Average IEEE 802.11n Conducted output power

WLAN 5GHz Conducted Powers

5.2GHz

802.11a : 9.10 dBm
802.11n (20MHz BW) : 9.00 dBm
802.11n (40MHz BW) : 9.40 dBm

5.3GHz

802.11a : 9.20 dBm
802.11n (20MHz BW) : 9.10 dBm
802.11n (40MHz BW) : 9.60 dBm

5.5GHz

802.11a : 10.34 dBm
802.11n (20MHz BW) : 10.40 dBm
802.11n (40MHz BW) : 10.00 dBm

5.8GHz

802.11a : 10.40 dBm
802.11n (20MHz BW) : 10.40 dBm
802.11n (40MHz BW) : 10.40 dBm

Tune-up Tolerance : -1.5dB/ +0.7dB

802.11 a

Mode	Freq [MHz]	Channel	conducted Power [dBm]							
			Data Rate [Mbps]							
			6	9	12	18	24	36	48	54
802.11a	5180	36	9.56	9.44	9.34	9.17	9.00	8.60	8.31	8.13
802.11a	5200	40	9.41	9.30	9.20	8.93	8.79	8.46	8.06	7.90
802.11a	5220	44	9.50	9.32	9.20	8.99	8.81	8.48	8.12	7.96
802.11a	5240	48	9.51	9.39	9.21	9.10	8.86	8.50	8.14	7.98
802.11a	5260	52	9.66	9.37	9.22	8.92	8.84	8.50	8.19	8.01
802.11a	5280	56	9.50	9.35	9.24	9.10	8.95	8.61	8.22	8.14
802.11a	5300	60	9.48	9.34	9.22	9.16	9.01	8.69	8.37	8.25
802.11a	5320	64	9.63	9.54	9.45	9.17	8.99	8.67	8.46	8.24
802.11a	5500	100	10.23	10.12	10.07	9.77	9.66	9.36	9.01	8.93
802.11a	5520	104	10.31	10.18	10.07	9.27	9.48	9.27	8.97	8.57
802.11a	5540	108	10.45	10.22	10.14	9.63	9.62	9.33	9.08	8.91
802.11a	5560	112	10.51	10.36	10.25	9.97	9.68	9.40	9.19	9.06
802.11a	5580	116	10.64	10.48	10.38	10.23	9.88	9.67	9.34	9.18
802.11a	5600	120	10.77	10.61	10.51	10.41	10.09	9.80	9.48	9.33
802.11a	5620	124	10.75	10.56	10.47	10.40	10.21	9.99	9.59	9.40
802.11a	5640	128	10.85	10.66	10.54	10.39	10.22	10.03	9.65	9.44
802.11a	5660	132	10.89	10.72	10.60	10.44	10.32	10.11	9.73	9.57
802.11a	5680	136	10.93	10.81	10.75	10.52	10.36	10.15	9.79	9.60
802.11a	5700	140	11.04	10.96	10.82	10.75	10.48	10.13	9.82	9.64
802.11a	5745	149	10.85	10.67	10.60	10.40	10.19	9.84	9.52	9.41
802.11a	5765	153	10.77	10.65	10.56	10.41	10.22	9.84	9.51	9.39
802.11a	5785	157	10.72	10.65	10.53	10.35	10.15	9.81	9.53	9.38
802.11a	5805	161	10.66	10.58	10.49	10.30	10.04	9.82	9.47	9.34
802.11a	5825	165	10.48	10.42	10.31	10.06	9.87	9.70	9.38	9.32

802.11 n

Mode	Freq [MHz]	Channel	conducted Power [dBm]							
			Data Rate [Mbps]							
			6	9	12	18	24	36	48	54
802.11n	5180	36	9.52	9.30	9.07	8.88	8.52	8.24	8.12	7.98
802.11n	5200	40	9.18	9.04	8.84	8.63	8.27	8.00	7.84	7.71
802.11n	5220	44	9.24	9.16	8.94	8.71	8.38	8.15	7.96	7.80
802.11n	5240	48	9.33	9.27	8.98	8.83	8.49	8.18	8.08	7.93
802.11n	5260	52	9.50	9.28	9.06	8.88	8.49	8.22	8.07	7.92
802.11n	5280	56	9.52	9.36	9.11	8.94	8.60	8.48	8.25	8.09
802.11n	5300	60	9.59	9.40	9.08	8.92	8.53	8.48	8.29	8.17
802.11n	5320	64	9.66	9.48	9.25	9.05	8.71	8.37	8.24	8.17
802.11n	5500	100	10.34	10.11	9.91	9.68	9.34	8.78	8.86	8.68
802.11n	5520	104	10.31	10.10	9.95	9.71	9.42	9.03	8.85	8.62
802.11n	5540	108	10.38	10.13	9.96	9.77	9.50	9.16	8.92	8.71
802.11n	5560	112	10.43	10.19	9.98	9.75	9.53	9.17	8.99	8.75
802.11n	5580	116	10.46	10.24	10.03	9.86	9.58	9.23	9.13	8.94
802.11n	5600	120	10.56	10.34	10.08	9.95	9.63	9.31	9.18	9.09
802.11n	5620	124	10.62	10.38	10.11	10.00	9.77	9.57	9.24	9.11
802.11n	5640	128	10.67	10.41	10.19	10.06	9.80	9.55	9.27	9.13
802.11n	5660	132	10.73	10.47	10.22	10.09	9.79	9.53	9.30	9.18
802.11n	5680	136	10.88	10.56	10.30	10.14	9.83	9.68	9.45	9.27
802.11n	5700	140	11.04	10.82	10.57	10.41	10.12	9.81	9.68	9.59
802.11n	5745	149	10.81	10.59	10.38	10.18	9.83	9.51	9.45	9.34
802.11n	5765	153	10.75	10.51	10.32	10.07	9.77	9.51	9.42	9.33
802.11n	5785	157	10.69	10.46	10.28	10.02	9.66	9.44	9.26	9.28
802.11n	5805	161	10.65	10.43	10.22	10.03	9.62	9.41	9.27	9.22
802.11n	5825	165	10.65	10.41	10.23	10.05	9.74	9.41	9.29	9.21

40 MHz

802.11n Mode

Mode	Freq [MHz]	Channel	conducted Power [dBm]							
			Data Rate [Mbps]							
			13.5	27	40.5	54	81	108	121.5	135
802.11n	5755	151	10.66	9.93	9.66	9.35	8.77	8.45	8.33	8.21
802.11n	5795	159	11.05	10.63	10.26	9.97	9.45	9.03	8.94	8.76
802.11n	5190	38	9.90	9.51	9.17	8.86	8.38	8.00	7.81	7.66
802.11n	5230	46	10.01	9.58	9.25	8.96	8.49	8.05	7.97	7.77
802.11n	5270	54	10.14	9.73	9.34	9.02	8.57	8.13	8.03	7.81
802.11n	5310	62	10.25	9.77	9.42	9.02	8.48	8.11	7.95	7.79
802.11n	5510	102	10.29	9.88	9.51	9.22	8.80	8.38	8.22	8.03
802.11n	5590	118	10.53	10.11	9.77	9.40	8.90	8.52	8.39	8.19
802.11n	5670	134	10.63	10.17	9.92	9.57	9.16	8.85	8.71	8.53

Note;
SAR testing was performed according to the FCC KDB 248227.

10.3 Bluetooth

GFSK : 10.5dBm

8DPSK : 10.5dBm

π /4DQPSK : 10dBm

Power Tolerance: + 0.7dB/ - 1.5dB

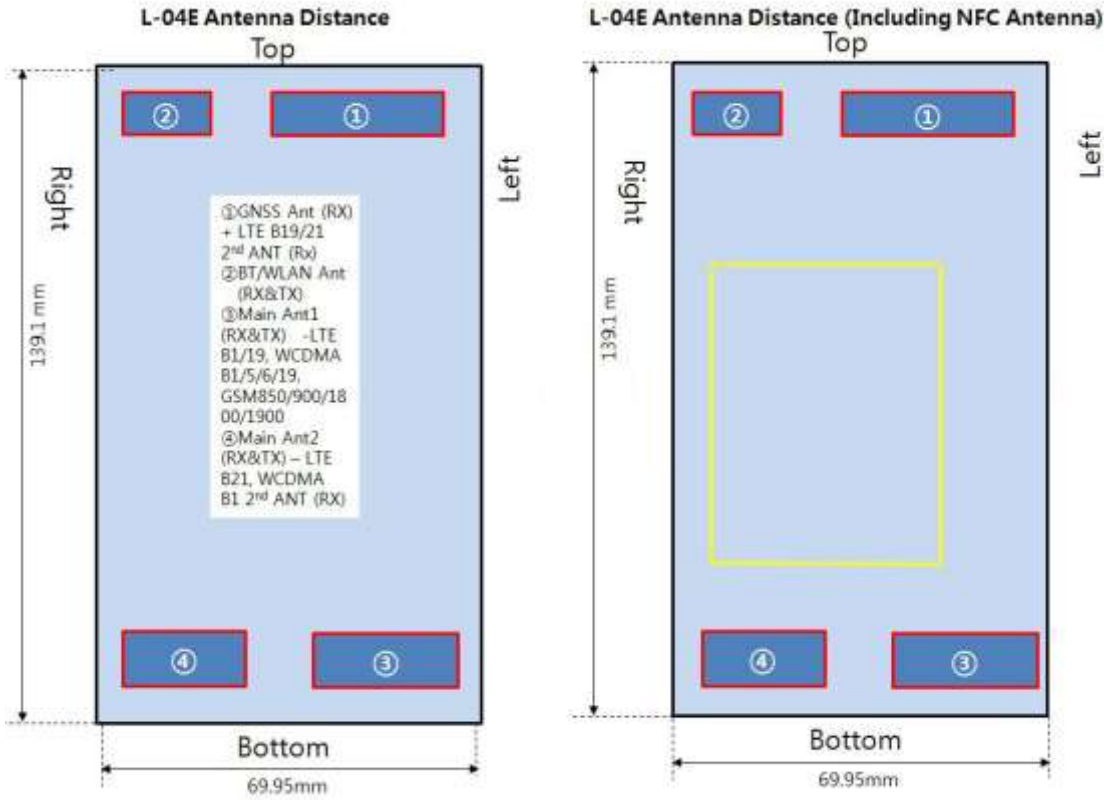
Band	Channel	Frequency (MHz)	Conducted Average Power (dBm)
			Mode
			GFSK
Bluetooth	0	2402	10.62

11. SAR Test configuration & Antenna Information

11.1 SAR Test configurations

Mode	Back	Front	Left	Right	Bottom	Top
850 GPRS	Yes	Yes	Yes	No	Yes	No
1900 GPRS	Yes	Yes	Yes	No	Yes	No
WCDMA850	Yes	Yes	Yes	No	Yes	No
2.4 GHz WLAN	Yes	Yes	No	Yes	No	Yes
5 GHz WLAN	Yes	Yes	No	No	No	No

11.2 Antenna and Device Information



[Back side View]

Note;

Per FCC KDB Publication 941225 D06, we performed the SAR testing at 1 cm from the top & bottom surfaces and also from side edges with a transmitting antenna ≤ 2.5 cm from an edge.

12. SAR TEST DATA SUMMARY

12.1 Measurement Results (GSM850 Head SAR)

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Battery	Phantom Position	Measured SAR(mW/g)	Scaled SAR(mW/g)	Plot No.
MHz	Channel								
836.6	190 (Mid)	GSM850	32.64	-0.058	Standard	Left Ear	0.385	0.390	1
			32.64	-0.131	Standard	Left Tilt 15°	0.195	0.198	2
			32.64	-0.103	Standard	Right Ear	0.269	0.273	3
			32.64	-0.054	Standard	Right Tilt 15°	0.174	0.176	4
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						**Head 1.6 W/kg (mW/g) **Averaged over 1 gram			

NOTES:

1 The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.
6 Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
7 According to KDB 447498, Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz.

12.2 Measurement Results (GSM1900 Head SAR)

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Battery	Phantom Position	Measured SAR(mW/g)	Scaled SAR(mW/g)	Plot No.
MHz	Channel								
1 880.0	661 (Mid)	GSM1900	30.01	-0.084	Standard	Left Ear	0.065	0.068	5
			30.01	-0.010	Standard	Left Tilt 15°	0.031	0.032	6
			30.01	0.082	Standard	Right Ear	0.046	0.048	7
			30.01	-0.002	Standard	Right Tilt 15°	0.027	0.028	8
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						**Head 1.6 W/kg (mW/g)** Averaged over 1 gram			

NOTES:

1 The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.
6 Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
7 According to KDB 447498, Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz.

12.3 Measurement Results (WCDMA850 Head SAR)

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Battery	Phantom Position	Measured SAR(mW/g)	Scaled SAR(mW/g)	Plot No.
MHz	Channel								
836.6	4183 (Mid)	WCDMA850	23.56	-0.007	Standard	Left Ear	0.306	0.316	9
			23.56	0.015	Standard	Left Tilt 15°	0.145	0.150	10
			23.56	-0.142	Standard	Right Ear	0.248	0.256	11
			23.56	0.165	Standard	Right Tilt 15°	0.167	0.172	12
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						**Head 1.6 W/kg (mW/g) **Averaged over 1 gram			

NOTES:

1 The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.
6 Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
7 According to KDB 447498, Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz.
8 WCDMA Mode was tested under RMC 12.2 kbps and HSPA Inactive.

12.4 Measurement Results (802.11b/g/n Head)

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Battery	Phantom Position	Data Rate	Measured SAR(mW/g)	Scaled SAR(mW/g)	Plot No.
MHz	Channel									
2 437	6 (Mid)	802.11b	14.92	-0.034	Standard	Left Ear	1Mbps	0.595	0.606	13
			14.92	-0.072	Standard	Left Tilt 15°	1Mbps	0.550	0.560	14
			14.92	-0.162	Standard	Right Ear	1Mbps	0.461	0.470	15
			14.92	0.051	Standard	Right Tilt 15	1Mbps	0.396	0.403	16
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						**Head 1.6 W/kg (mW/g) **Averaged over 1 gram				

NOTES:

1 The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.
6 Test Signal Call Mode ☒ Manual Test cord ☐ Base Station Simulator
7 IEEE 802.11g(including 802.11n) SAR testing is required when the conducted powers are equal to or greater than 0.25 dB Than the conducted powers in IEEE 802.11b.
8 For 2.4GHz WLAN, Highest average power channel for the lowest data rate was selected for SAR evaluation based on KDB 248227. Other channels are not necessary because 1g-average SAR < 0.8 W/Kg and peak SAR < 1.6W/Kg per KDB 248227.

12.5 Measurement Results (802.11a/n 5GHz Head SAR)

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Battery	Phantom Position	Data Rate	Measured SAR(mW/g)	Scaled SAR(mW/g)	Plot No.
MHz	Channel									
5 180	36	802.11a	9.56	0.143	Standard	Left Ear	6Mbps	0.012	0.013	21
5 180	36	802.11a	9.56	0.114	Standard	Left Tilt 15°	6Mbps	0.00827	0.00874	22
5 180	36	802.11a	9.56	-0.053	Standard	Right Ear	6Mbps	0.00717	0.00758	23
5 180	36	802.11a	9.56	0.050	Standard	Right Tilt 15	6Mbps	0.00364	0.00385	24
5 260	52	802.11a	9.66	0.107	Standard	Left Ear	6Mbps	0.00736	0.00778	25
5 260	52	802.11a	9.66	0.042	Standard	Left Tilt 15°	6Mbps	0.00341	0.00360	26
5 260	52	802.11a	9.66	0.097	Standard	Right Ear	6Mbps	0.00395	0.00417	27
5 260	52	802.11a	9.66	0.084	Standard	Right Tilt 15	6Mbps	0.00882	0.00932	28
5 700	140	802.11a	11.04	0.108	Standard	Left Ear	6Mbps	0.038	0.038	29
5 700	140	802.11a	11.04	0.092	Standard	Left Tilt 15°	6Mbps	0.00167	0.00167	30
5 700	140	802.11a	11.04	0.148	Standard	Right Ear	6Mbps	0.030	0.030	31
5 700	140	802.11a	11.04	0.165	Standard	Right Tilt 15	6Mbps	0.044	0.044	32
5 745	149	802.11a	10.85	0.122	Standard	Left Ear	6Mbps	0.081	0.086	33
5 745	149	802.11a	10.85	0.090	Standard	Left Tilt 15°	6Mbps	0.055	0.058	34
5 745	149	802.11a	10.85	-0.157	Standard	Right Ear	6Mbps	0.056	0.059	35
5 745	149	802.11a	10.85	0.143	Standard	Right Tilt 15	6Mbps	0.044	0.047	36

ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population	Head 1.6 W/kg (mW/g) Averaged over 1 gram

NOTES:

1 The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.
6 Test Signal Call Mode ☒ Manual Test cord ☐ Base Station Simulator
7 Highest average RF output power channel for the lowest data rate were selected for SAR testing. IEEE 802.11(including 802.11n) SAR testing is required when the conducted powers are equal to or greater than 0.25 dB than the conducted powers in IEEE 802.11a.
8 When Hotspot is enabled, 5 GHz Bands are disabled
9 For 5GHz WLAN, Highest average power channel for the lowest data rate was selected for SAR evaluation based on KDB 248227. Other channels are not necessary because 1g-average SAR < 0.8 W/Kg and peak SAR < 1.6W/Kg per KDB 248227.

12.6 Measurement Results (GSM850 Hotspot SAR)

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Configuration	Separation Distance	Measured SAR(mW/g)	Scaled SAR(mW/g)	Plot No.
MHz	Channel								
836.6	190 (Mid)	GPRS 4Tx	27.22	-0.161	Rear	1.0 cm	0.422	0.471	37
			27.22	0.013	Front	1.0 cm	0.375	0.419	38
			27.22	-0.038	Left	1.0 cm	0.431	0.481	39
			27.22	-0.034	Bottom	1.0 cm	0.368	0.411	40
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						**Head 1.6 W/kg (mW/g) **Averaged over 1 gram			

NOTES:

1 The test data reported are the worst-case SAR value with the antenna-body position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.
6 Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
7 Test Configuration ☐ With Holster ☒ Without Holster
8 According to KDB 447498, Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz.
9 For body SAR testing, the EUT was set in GPRS multi-slot class12 with 4uplink slots for GSM850 due to maximum source-based time-averaged output power.
According to the KDB 941225 D03 SAR test reduction GSM/GPRS/EDGE, the maximum output power configuration were chosen for Body SAR testing.

12.7 Measurement Results (GSM1900 Hotspot SAR)

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Configuration	Separation Distance	Measured SAR(mW/g)	Scaled SAR(mW/g)	Plot No.
MHz	Channel								
1 880	661 (Mid)	GPRS 3Tx	26.94	-0.006	Rear	1.0 cm	0.221	0.235	41
			26.94	-0.008	Front	1.0 cm	0.149	0.158	42
			26.94	-0.011	Left	1.0 cm	0.168	0.178	43
			26.94	0.084	Bottom	1.0 cm	0.126	0.134	44
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						**Head 1.6 W/kg (mW/g)** Averaged over 1 gram			

NOTES:

1 The test data reported are the worst-case SAR value with the antenna-body position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.
6 Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
7 Test Configuration ☐ With Holster ☒ Without Holster
8 According to KDB 447498, Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz.
9 For body SAR testing, the EUT was set in GPRS multi-slot class12 with 3uplink slots for GSM1900 due to maximum source-based time-averaged output power.
According to the KDB 941225 D03 SAR test reduction GSM/GPRS/EDGE, the maximum output power configuration were chosen for Body SAR testing.

12.8 Measurement Results (WCDMA850 Hotspot SAR)

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Configuration	Separation Distance	Measured SAR(mW/g)	Scaled SAR(mW/g)	Plot No.
MHz	Channel								
836.6	4183 (Mid)	WCDMA850	23.56	-0.062	Rear	1.0 cm	0.279	0.288	45
			23.56	0.017	Front	1.0 cm	0.190	0.196	46
			23.56	0.067	Left	1.0 cm	0.281	0.290	47
			23.56	-0.016	Bottom	1.0 cm	0.297	0.307	48
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						**Head 1.6 W/kg (mW/g)** Averaged over 1 gram			

NOTES:

1 The test data reported are the worst-case SAR value with the antenna-Body position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.
6 Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
7 Test Configuration ☐ With Holster ☒ Without Holster
8 According to KDB 447498, Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz.
9 WCDMA Mode was tested under RMC 12.2 kbps and HSPA Inactive.

12.9 Measurement Results (802.11b/g/n Hotspot SAR)

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Configuration	Data Rate	Measured SAR(mW/g)	Scaled SAR(mW/g)	Plot No.
MHz	Channel								
2 437	6 (Mid)	802.11b	14.92	0.056	Rear	1Mbps	0.071	0.072	49
			14.92	0.011	Front	1Mbps	0.075	0.076	50
			14.92	0.160	Right	1Mbps	0.00681	0.00694	51
			14.92	0.128	Top	1Mbps	0.038	0.039	52
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						**Head 1.6 W/kg (mW/g)** Averaged over 1 gram			

NOTES:

1 The test data reported are the worst-case SAR value with the antenna-body position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.
6 Test Signal Call Mode ☒ Manual Test code ☐ Base Station Simulator
7 IEEE 802.11g(including 802.11n) SAR testing is required when the conducted powers are equal to or greater than 0.25 dB Than the conducted powers in IEEE 802.11b.
8 For 2.4GHz WLAN, Highest average power channel for the lowest data rate was selected for SAR evaluation based on KDB 248227. Other channels are not necessary because 1g-average SAR < 0.8 W/Kg and peak SAR < 1.6W/Kg per KDB 248227.

12.10 Measurement Results (802.11a/n 5GHz Body-Worn)

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Configuration	Data Rate	Measured SAR(mW/g)	Scaled SAR(mW/g)	Plot No.
MHz	Channel								
5 700	140	802.11a	11.04	0.064	Rear	6Mbps	0.090	0.090	53
5 700	140	802.11a	11.04	-0.083	Front	6Mbps	0.045	0.045	54
5 745	149	802.11a	10.85	0.103	Rear	6Mbps	0.090	0.095	55
5 745	149	802.11a	10.85	-0.151	Front	6Mbps	6.86e-005	7.27e-005	56
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						**Head 1.6 W/kg (mW/g) Averaged over 1 gram**			

NOTES:

1 The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.
6 Test Signal Call Mode ☒ Manual Test cord ☐ Base Station Simulator
7 Highest average RF output power channel for the lowest data rate were selected for SAR testing. IEEE 802.11(including 802.11n) SAR testing is required when the conducted powers are equal to or greater than 0.25 dB than the conducted powers in IEEE 802.11a.
8 When Hotspot is enabled, 5 GHz Bands are disabled
9 For 5GHz WLAN, Highest average power channel for the lowest data rate was selected for SAR evaluation based on KDB 248227. Other channels are not necessary because 1g-average SAR < 0.8 W/Kg and peak SAR < 1.6W/Kg per KDB 248227.

13. SAR Summation Scenario

	Position	Applicable Combination	Note
Simultaneous Transmission	Head	GSM850 Voice + 2.4 GHz WiFi	
		GSM1900 Voice + 2.4 GHz WiFi	
		WCDMA850 Voice + 2.4 GHz WiFi	
		GSM850 Voice + 5 GHz WiFi	WIFI Direct
		GSM1900 Voice + 5 GHz WiFi	WIFI Direct
		WCDMA850 Voice + 5 GHz WiFi	WIFI Direct
	Hotspot	GPRS850 Data + 2.4 GHz WiFi	
		GPRS1900 Data + 2.4 GHz WiFi	
		WCDMA850 Data + 2.4 GHz WiFi	
		GPRS850 Data + 2.4 GHz Bluetooth	
		GPRS1900 Data + 2.4 GHz Bluetooth	
		WCDMA850 Data + 2.4 GHz Bluetooth	
	Body-worn	GSM850 Voice + 2.4 GHz WiFi	
		GSM1900 Voice + 2.4 GHz WiFi	
		WCDMA850 Voice + 2.4 GHz WiFi	
		GSM850 Voice + 5 GHz WiFi	WIFI Direct
		GSM1900 Voice + 5 GHz WiFi	WIFI Direct
		WCDMA850 Voice + 5 GHz WiFi	WIFI Direct
		GSM850 Voice + 2.4 GHz Bluetooth	
		GSM1900 Voice + 2.4 GHz Bluetooth	
		WCDMA850 Voice + 2.4 GHz Bluetooth	
* BT and WLAN are not simultaneous transmission.			

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

$$\text{.Estimated SAR} = \frac{\sqrt{f(GHz)}}{7.5} * \frac{(\text{Max Power of channel,mW})}{\text{Min.Separation Distance}}$$

. Mode	Frequency	Maximum Allowed Power	Separation Distance (Body)	Estimated SAR (Body)
	[MHz]	[mW]	[mm]	[W/kg]
Bluetooth	2402	13.18	10	0.27
5GHz WiFi	5180	10.23	10	0.31
5GHz WiFi	5260	10.72	10	0.33

Note: Held-to ear configurations are not applicable to Bluetooth operations and therefore were not considered for simultaneous transmission.

Simultaneous Transmission Summation for Held to Ear

Simultaneous TX	configuration	GSM850 Scaled SAR(W/kg)	2.4 GHz WIFI Scaled SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	GSM850 Scaled SAR(W/kg)	5 GHz WIFI Scaled SAR (W/kg)	∑SAR (W/kg)
Head SAR	Left Cheek	0.39	0.606	0.996	Head SAR	Left Cheek	0.39	0.086	0.476
	Left Tilt	0.198	0.56	0.758		Left Tilt	0.198	0.058	0.256
	Right Cheek	0.273	0.47	0.743		Right Cheek	0.273	0.059	0.332
	Right Tilt	0.176	0.403	0.579		Right Tilt	0.176	0.047	0.223
Simultaneous TX	configuration	GSM1900 Scaled SAR(W/kg)	2.4 GHz WIFI Scaled SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	GSM1900 Scaled SAR(W/kg)	5 GHz WIFI Scaled SAR (W/kg)	∑SAR (W/kg)
Head SAR	Left Cheek	0.068	0.606	0.674	Head SAR	Left Cheek	0.068	0.086	0.154
	Left Tilt	0.032	0.56	0.592		Left Tilt	0.032	0.058	0.090
	Right Cheek	0.048	0.47	0.518		Right Cheek	0.048	0.059	0.107
	Right Tilt	0.028	0.403	0.431		Right Tilt	0.028	0.047	0.075
Simultaneous TX	configuration	WCDMA850 Scaled SAR(W/kg)	2.4 GHz WIFI Scaled SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	WCDMA850 Scaled SAR(W/kg)	5GHz WIFI Scaled SAR (W/kg)	∑SAR (W/kg)
Head SAR	Left Cheek	0.316	0.606	0.922	Head SAR	Left Cheek	0.316	0.086	0.402
	Left Tilt	0.15	0.56	0.710		Left Tilt	0.15	0.058	0.208
	Right Cheek	0.256	0.47	0.726		Right Cheek	0.256	0.059	0.315
	Right Tilt	0.172	0.403	0.575		Right Tilt	0.172	0.047	0.219

Simultaneous Transmission Summation for Body-Worn (1cm)

Simultaneous TX	configuration	GSM850 Scaled SAR(W/kg)	2.4 GHz WIFI Scaled SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	WCDMA850 Scaled SAR(W/kg)	2.4 GHz WIFI Scaled SAR (W/kg)	∑SAR (W/kg)
Body SAR	Back	0.471	0.072	0.543	Body SAR	Back	0.288	0.072	0.360
	Front	0.419	0.076	0.495		Front	0.196	0.076	0.272
Simultaneous TX	configuration	GSM1900 Scaled SAR(W/kg)	2.4 GHz WIFI Scaled SAR (W/kg)	∑SAR (W/kg)					
Body SAR	Back	0.235	0.072	0.307					
	Front	0.158	0.076	0.234					
Simultaneous TX	configuration	GSM850 Scaled SAR(W/kg)	5 GHz WIFI Estimated SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	WCDMA850 Scaled SAR(W/kg)	5 GHz WIFI Estimated SAR (W/kg)	∑SAR (W/kg)
Body SAR	Back	0.471	0.33	0.801	Body SAR	Back	0.288	0.33	0.618
	Front	0.419	0.33	0.749		Front	0.196	0.33	0.526
Simultaneous TX	configuration	GSM1900 Scaled SAR(W/kg)	5 GHz WIFI Estimated SAR (W/kg)	∑SAR (W/kg)					
Body SAR	Back	0.235	0.33	0.565					
	Front	0.158	0.33	0.488					
Simultaneous TX	configuration	GSM850 Scaled SAR(W/kg)	BT Estimated SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	WCDMA850 Scaled SAR(W/kg)	BT Estimated SAR (W/kg)	∑SAR (W/kg)
Body SAR	Back	0.471	0.27	0.741	Body SAR	Back	0.288	0.27	0.558
	Front	0.419	0.27	0.689		Front	0.196	0.27	0.466
Simultaneous TX	configuration	GSM1900 Scaled SAR(W/kg)	BT Estimated SAR (W/kg)	∑SAR (W/kg)					
Body SAR	Back	0.235	0.27	0.505					
	Front	0.158	0.27	0.428					

Simultaneous Transmission Summation for Hotspot (1cm)

Simultaneous TX	configuration	GSM850 Scaled SAR(W/kg)	2.4GHz WIFI Scaled SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	GSM1900 Scaled SAR(W/kg)	2.4GHz WIFI Scaled SAR (W/kg)	∑SAR (W/kg)
Body SAR	Back	0.471	0.072	0.543	Body SAR	Back	0.235	0.072	0.307
	Front	0.419	0.076	0.495		Front	0.158	0.076	0.234
	Left	0.481	-	0.481		Left	0.178	-	0.178
	Right	-	0.00694	0.007		Right	-	0.00694	0.007
	Bottom	0.411	-	0.411		Bottom	0.134	-	0.134
	Top	-	0.039	0.039		Top	-	0.039	0.039

Simultaneous TX	configuration	WCDMA850 Scaled SAR(W/kg)	2.4GHz WIFI Scaled SAR (W/kg)	∑SAR (W/kg)
Body SAR	Back	0.288	0.072	0.360
	Front	0.196	0.076	0.272
	Left	0.29	-	0.290
	Right	-	0.00694	0.007
	Bottom	0.307	-	0.307
	Top	-	0.039	0.039

Simultaneous TX	configuration	GSM850 Scaled SAR(W/kg)	BT Estimated SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	GSM1900 Scaled SAR(W/kg)	BT Estimated SAR (W/kg)	∑SAR (W/kg)
Body SAR	Back	0.471	0.27	0.741	Body SAR	Back	0.235	0.27	0.505
	Front	0.419	0.27	0.689		Front	0.158	0.27	0.428
	Left	0.481	0.27	0.751		Left	0.178	0.27	0.448
	Right	-	0.27	0.270		Right	-	0.27	0.270
	Bottom	0.411	0.27	0.681		Bottom	0.134	0.27	0.404
	Top	-	0.27	0.270		Top	-	0.27	0.270

Simultaneous TX	configuration	WCDMA850 Scaled SAR(W/kg)	BT Estimated SAR (W/kg)	∑SAR (W/kg)
Body SAR	Back	0.288	0.27	0.558
	Front	0.196	0.27	0.466
	Left	0.29	0.27	0.560
	Right	-	0.27	0.270
	Bottom	0.307	0.27	0.577
	Top	-	0.27	0.270

Note;

- Body-Worn SAR : Although body-worn accessory conditions are typically for voice configurations, the GPRS slot frame averaged output power was more conservative and was included for the body-worn accessory SAR assessment.

- The EUT front body-worn configuration is provided to cover any potential accessory that will position the EUT in this manner.

13.1 Simultaneous Transmission Conclusion

The above numerical summed SAR was below the SAR limit. Therefore, the above analysis is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit. No volumetric SAR summation is required per FCC KDB Publication 648474.

The above tables represent the worst-case simultaneous transmission scenarios possibility with this device.

Per FCC KDB 447498 D01v05, Bluetooth Body SAR and 5GHz WLAN(5180~5240, 5260~5350) Body SAR were not required based on the maximum conducted power and the Bluetooth antenna to user separation distance.

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

. Mode	Frequency	Maximum Allowed Power	Separation Distance	≤ 3.0
	[MHz]	[mW]	[mm]	
Bluetooth	2402	13.18	10	2.04
5GHz WiFi	5180	10.23	10	2.33
5GHz WiFi	5260	10.72	10	2.46

14. 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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Attachment 1. – SAR Test Plots

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.0 ℃
Ambient Temperature:	21.2 ℃
Test Date:	Dec.24, 2012
Plot NO.	1

DUT: L-04E; 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 = 0.919 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.36, 6.36, 6.36); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: SAM 835/900 MHz; Type: SAM

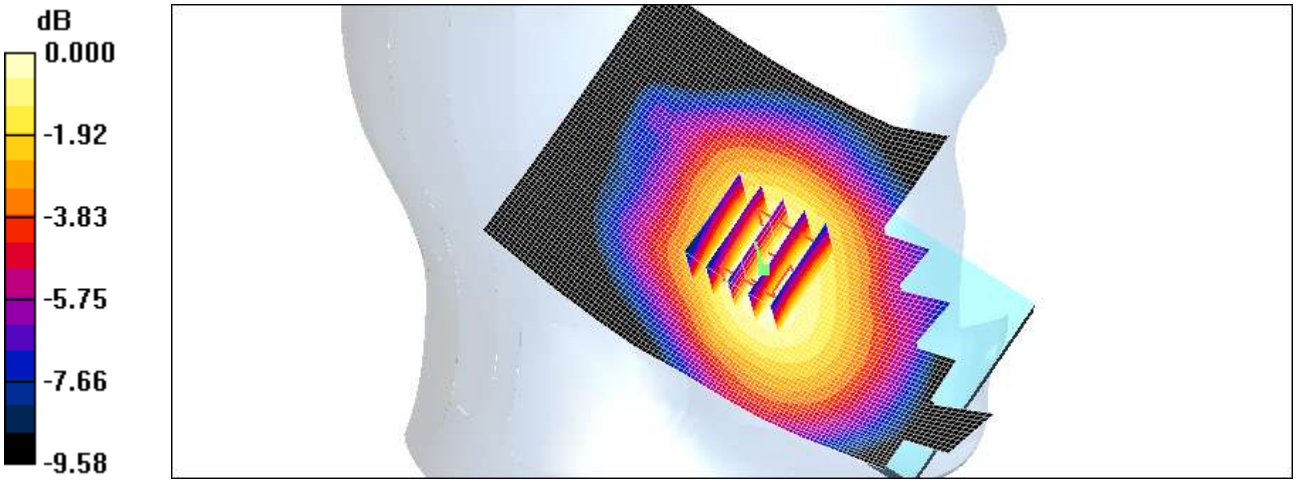
GSM850 Left touch 190/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.407 mW/g

GSM850 Left touch 190/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 8.35 V/m; Power Drift = -0.058 dB
Peak SAR (extrapolated) = 0.494 W/kg
SAR(1 g) = 0.385 mW/g; SAR(10 g) = 0.286 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.408 mW/g



0 dB = 0.408mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.0 ℃
Ambient Temperature:	21.2 ℃
Test Date:	Dec.24, 2012
Plot NO.	2

DUT: L-04E; 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 = 0.919 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.36, 6.36, 6.36); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: SAM 835/900 MHz; Type: SAM

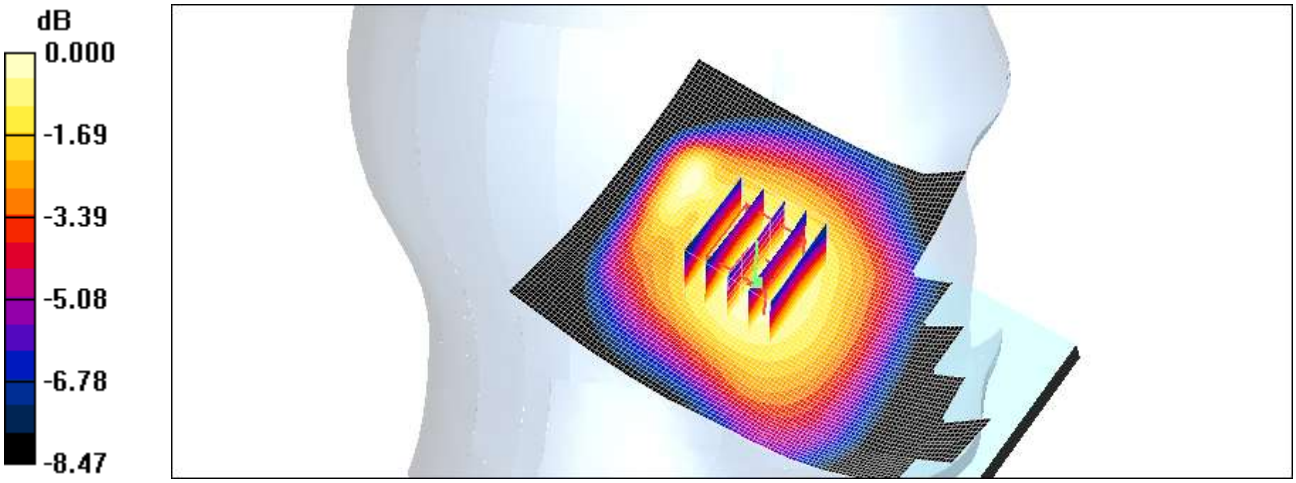
GSM850 Left tilt 190/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.205 mW/g

GSM850 Left tilt 190/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.9 V/m; Power Drift = -0.131 dB
Peak SAR (extrapolated) = 0.238 W/kg
SAR(1 g) = 0.195 mW/g; SAR(10 g) = 0.149 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.207 mW/g



0 dB = 0.207mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.0 ℃
Ambient Temperature:	21.2 ℃
Test Date:	Dec.24, 2012
Plot NO.	3

DUT: L-04E; 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 = 0.919 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.36, 6.36, 6.36); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: SAM 835/900 MHz; Type: SAM

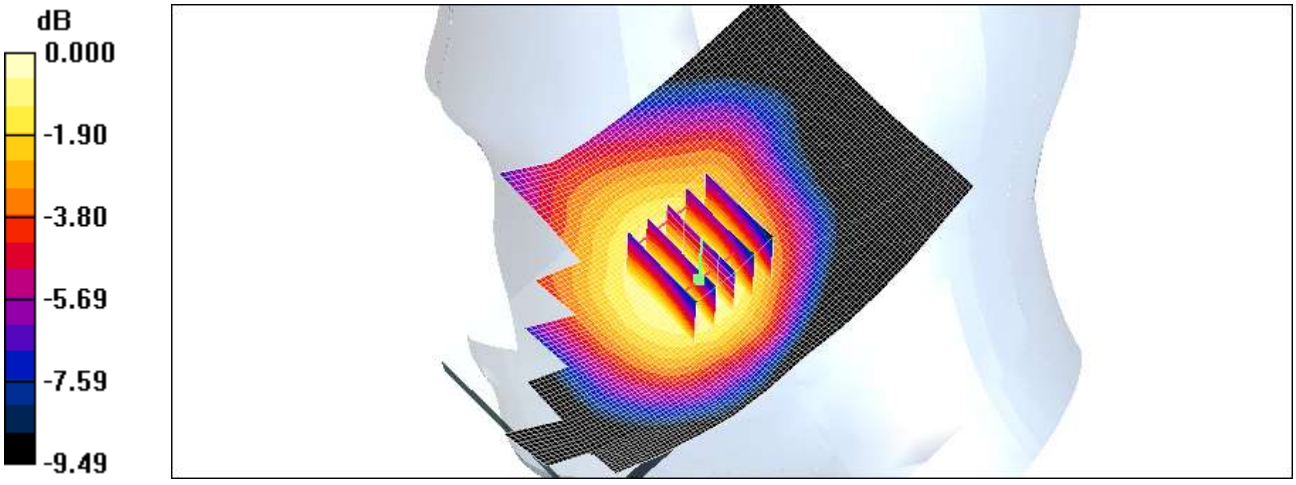
GSM850 Right touch 190/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.291 mW/g

GSM850 Right touch 190/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.39 V/m; Power Drift = -0.103 dB
Peak SAR (extrapolated) = 0.328 W/kg
SAR(1 g) = 0.269 mW/g; SAR(10 g) = 0.204 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
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 and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.0 ℃
Ambient Temperature:	21.2 ℃
Test Date:	Dec.24, 2012
Plot NO.	4

DUT: L-04E; 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 = 0.919 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.36, 6.36, 6.36); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: SAM 835/900 MHz; Type: SAM

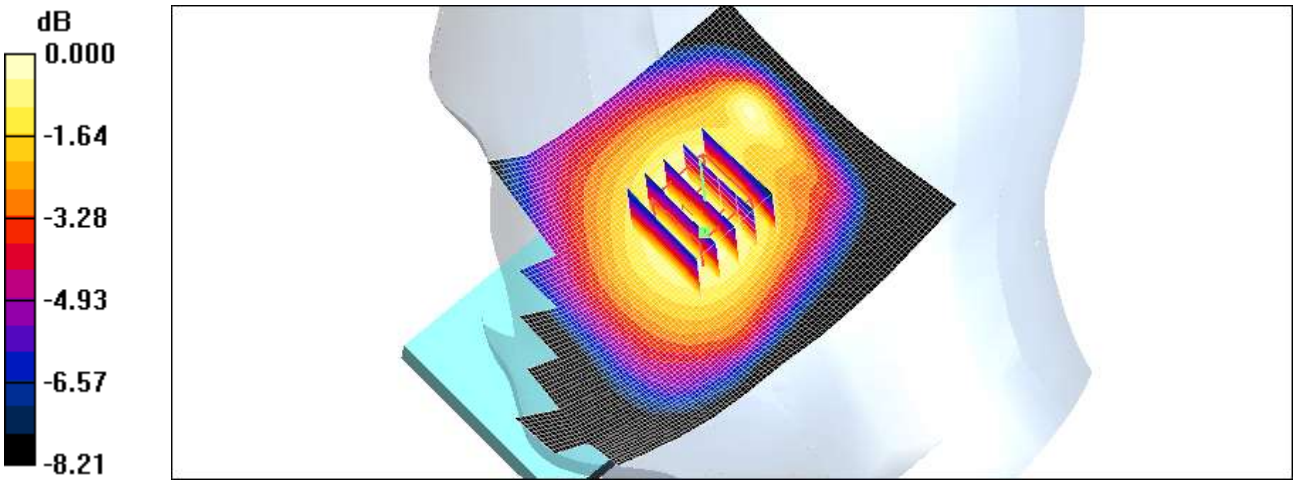
GSM850 Right tilt 190/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.179 mW/g

GSM850 Right tilt 190/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.7 V/m; Power Drift = -0.054 dB
Peak SAR (extrapolated) = 0.210 W/kg
SAR(1 g) = 0.174 mW/g; SAR(10 g) = 0.133 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.184 mW/g



0 dB = 0.184mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Dec.26, 2012
Plot NO.	5

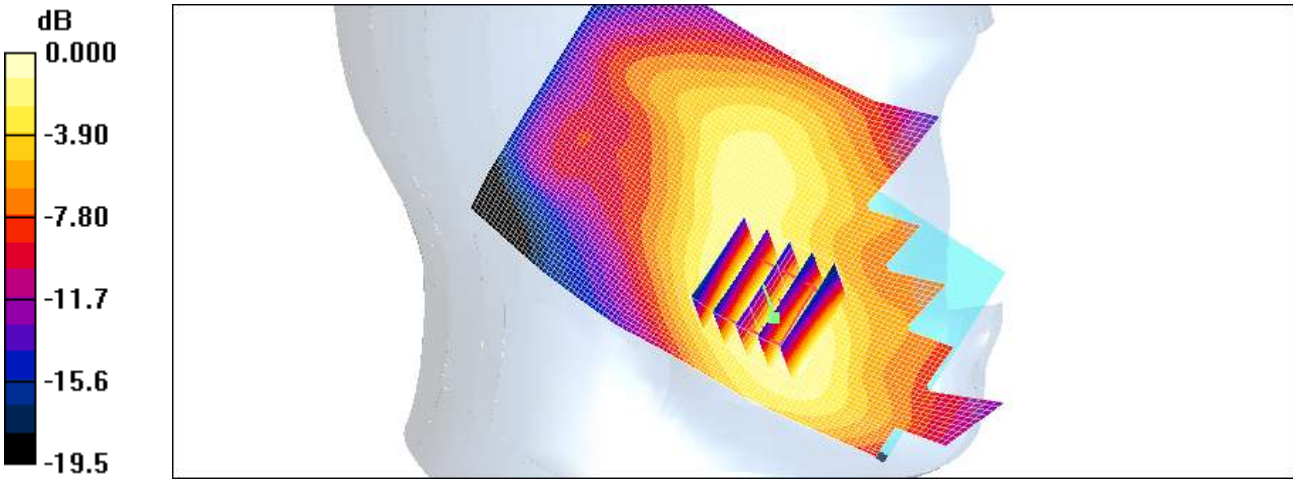
DUT: L04E; Type: bar; Serial: #1

Communication System: GSM1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.35 mho/m; ε_r = 40.9; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(5.26, 5.26, 5.26); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: SAM 1800/1900 MHz; Type: SAM

GSM1900 Left touch 661/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.074 mW/g

GSM1900 Left touch 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.95 V/m; Power Drift = -0.084 dB
Peak SAR (extrapolated) = 0.105 W/kg
SAR(1 g) = 0.065 mW/g; SAR(10 g) = 0.038 mW/g
Maximum value of SAR (measured) = 0.072 mW/g



0 dB = 0.072mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Dec.26, 2012
Plot NO.	6

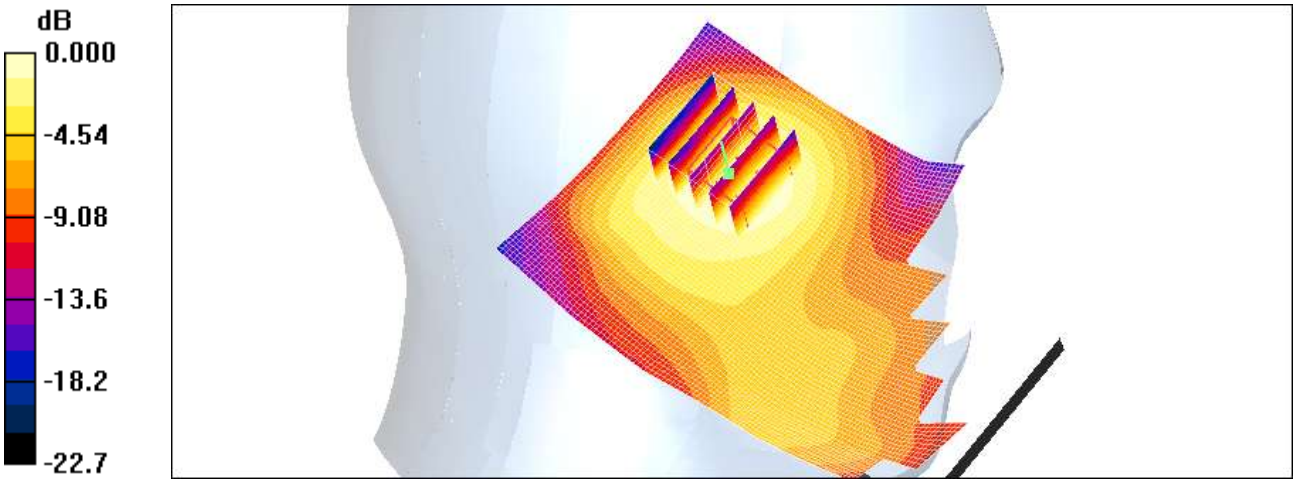
DUT: L-04E; Type: bar; Serial: #1

Communication System: GSM1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.35 mho/m; ε_r = 40.9; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(5.26, 5.26, 5.26); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: SAM 1800/1900 MHz; Type: SAM

GSM1900 Left tilt 661/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.034 mW/g

GSM1900 Left tilt 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.97 V/m; Power Drift = -0.010 dB
Peak SAR (extrapolated) = 0.049 W/kg
SAR(1 g) = 0.031 mW/g; SAR(10 g) = 0.018 mW/g
Maximum value of SAR (measured) = 0.033 mW/g



0 dB = 0.033mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Dec.26, 2012
Plot NO.	7

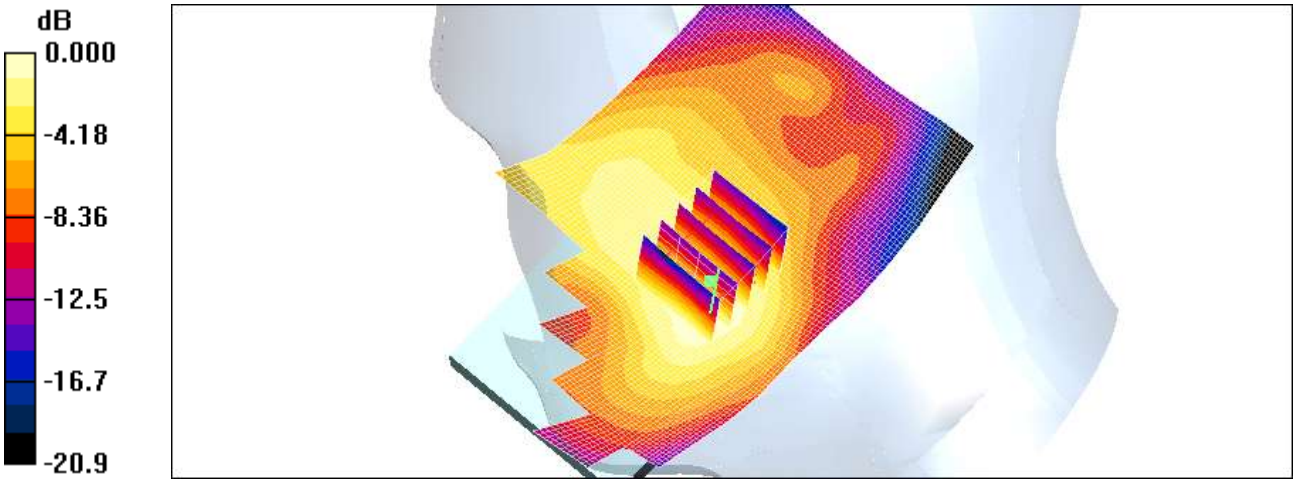
DUT: L-04E; Type: bar; Serial: #1

Communication System: GSM1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.35 mho/m; ε_r = 40.9; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(5.26, 5.26, 5.26); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: SAM 1800/1900 MHz; Type: SAM

GSM1900 Right touch 661/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.051 mW/g

GSM1900 Right touch 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.72 V/m; Power Drift = 0.082 dB
Peak SAR (extrapolated) = 0.074 W/kg
SAR(1 g) = 0.046 mW/g; SAR(10 g) = 0.028 mW/g
Maximum value of SAR (measured) = 0.050 mW/g



0 dB = 0.050mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Dec.26, 2012
Plot NO.	8

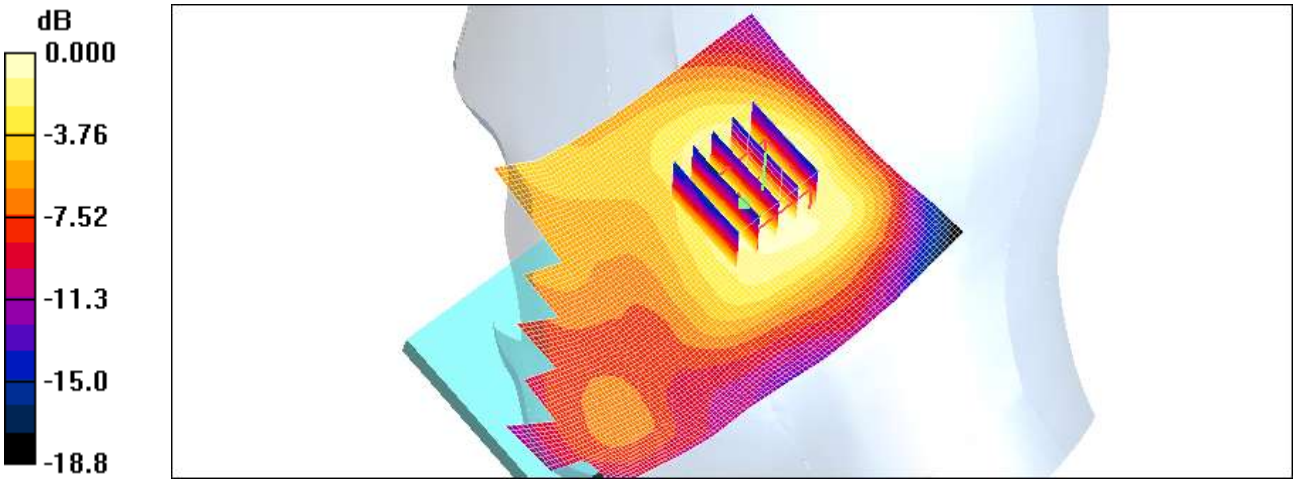
DUT: L-04E; Type: bar; Serial: #1

Communication System: GSM1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.35 mho/m; ε_r = 40.9; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(5.26, 5.26, 5.26); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: SAM 1800/1900 MHz; Type: SAM

GSM1900 Right tilt 661/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.027 mW/g

GSM1900 Right tilt 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.24 V/m; Power Drift = -0.002 dB
Peak SAR (extrapolated) = 0.045 W/kg
SAR(1 g) = 0.027 mW/g; SAR(10 g) = 0.016 mW/g
Maximum value of SAR (measured) = 0.029 mW/g



0 dB = 0.029mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.0 ℃
Ambient Temperature:	21.2 ℃
Test Date:	Dec.24, 2012
Plot NO.	9

DUT: L-04E; Type: bar; Serial: #1

Communication System: WCDMA850; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.919 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.36, 6.36, 6.36); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: SAM 835/900 MHz; Type: SAM

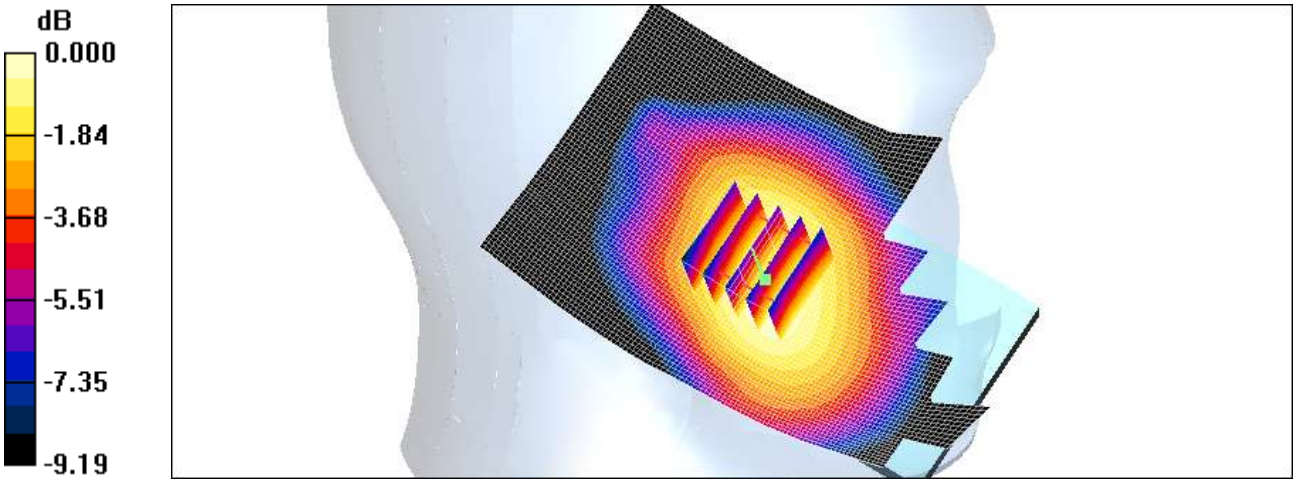
WCDMA850 Left touch 4183/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.323 mW/g

WCDMA850 Left touch 4183/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.60 V/m; Power Drift = -0.007 dB
Peak SAR (extrapolated) = 0.390 W/kg
SAR(1 g) = 0.306 mW/g; SAR(10 g) = 0.230 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.321 mW/g



0 dB = 0.321mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.0 ℃
Ambient Temperature:	21.2 ℃
Test Date:	Dec.24, 2012
Plot NO.	10

DUT: L-04E; Type: bar; Serial: #1

Communication System: WCDMA850; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.919 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.36, 6.36, 6.36); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: SAM 835/900 MHz; Type: SAM

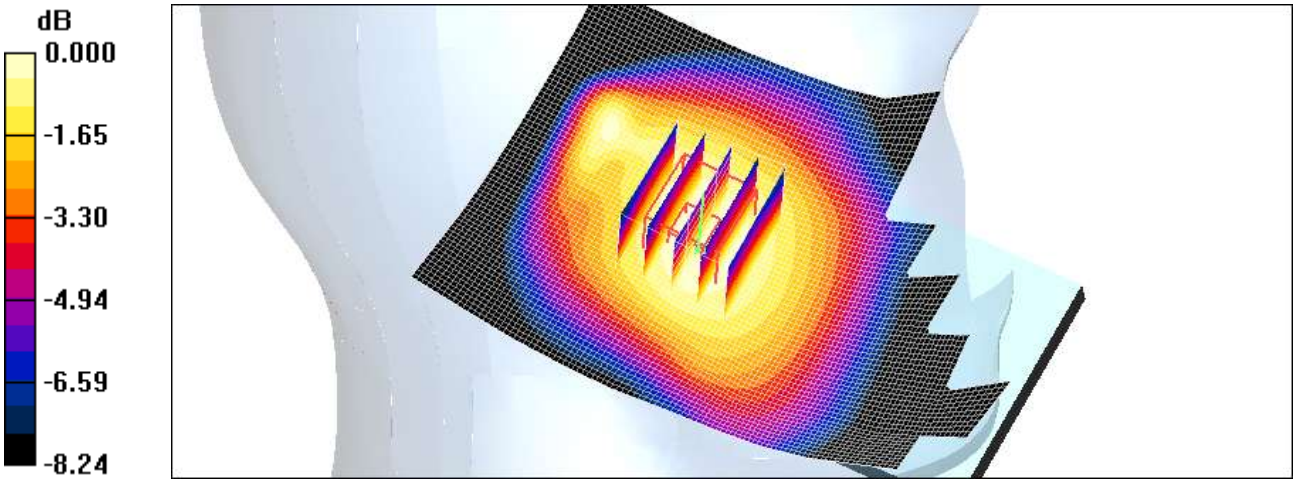
WCDMA850 Left tilt 4183/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.151 mW/g

WCDMA850 Left tilt 4183/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.34 V/m; Power Drift = 0.015 dB
Peak SAR (extrapolated) = 0.174 W/kg
SAR(1 g) = 0.145 mW/g; SAR(10 g) = 0.112 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.152 mW/g



0 dB = 0.152mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.0 ℃
Ambient Temperature:	21.2 ℃
Test Date:	Dec.24, 2012
Plot NO.	11

DUT: L-04E; Type: bar; Serial: #1

Communication System: WCDMA850; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.919 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.36, 6.36, 6.36); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: SAM 835/900 MHz; Type: SAM

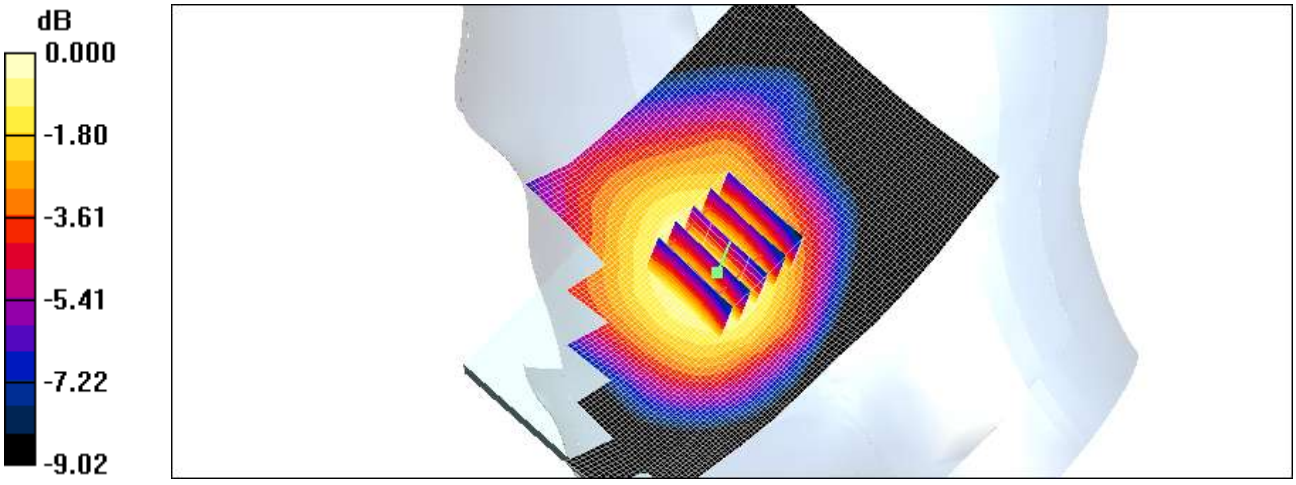
WCDMA850 Right touch 4183/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.270 mW/g

WCDMA850 Right touch 4183/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.80 V/m; Power Drift = -0.142 dB
Peak SAR (extrapolated) = 0.303 W/kg
SAR(1 g) = 0.248 mW/g; SAR(10 g) = 0.188 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.262 mW/g



0 dB = 0.262mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.0 ℃
Ambient Temperature:	21.2 ℃
Test Date:	Dec.24, 2012
Plot NO.	12

DUT: L-04E; Type: bar; Serial: #1

Communication System: WCDMA850; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.919 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.36, 6.36, 6.36); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: SAM 835/900 MHz; Type: SAM

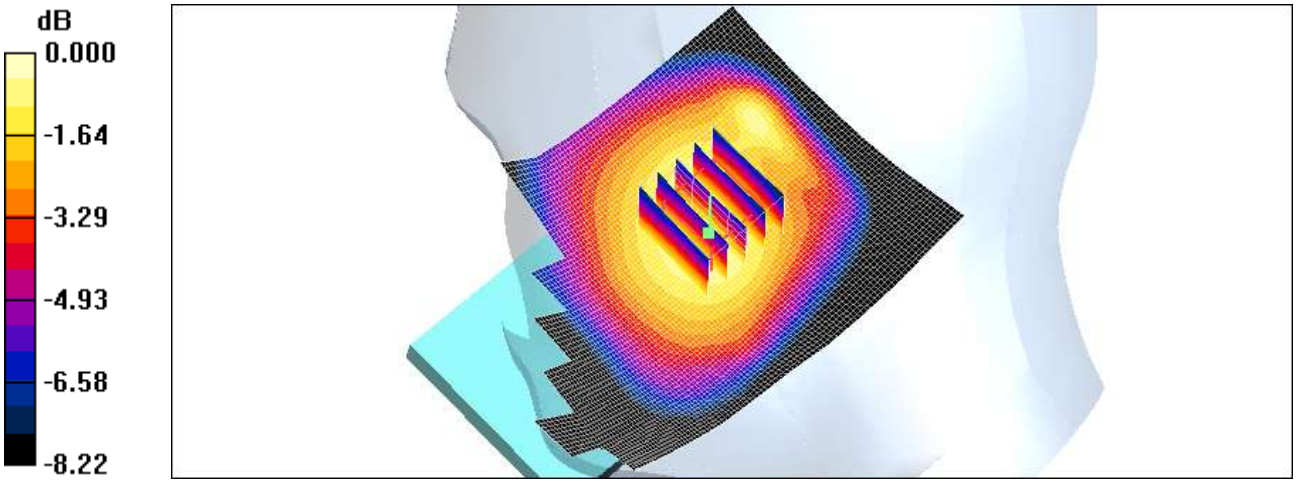
WCDMA850 Right tilt 4183/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.169 mW/g

WCDMA850 Right tilt 4183/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.3 V/m; Power Drift = 0.165 dB
Peak SAR (extrapolated) = 0.201 W/kg
SAR(1 g) = 0.167 mW/g; SAR(10 g) = 0.125 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.182 mW/g



0 dB = 0.182mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Dec.26, 2012
Plot NO.	13

DUT: L-04E; Type: bar; Serial: #1

Communication System: 2450MHz FCC; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.83 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(7.19, 7.19, 7.19); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 835/900 Phamtom ; Type: SAM

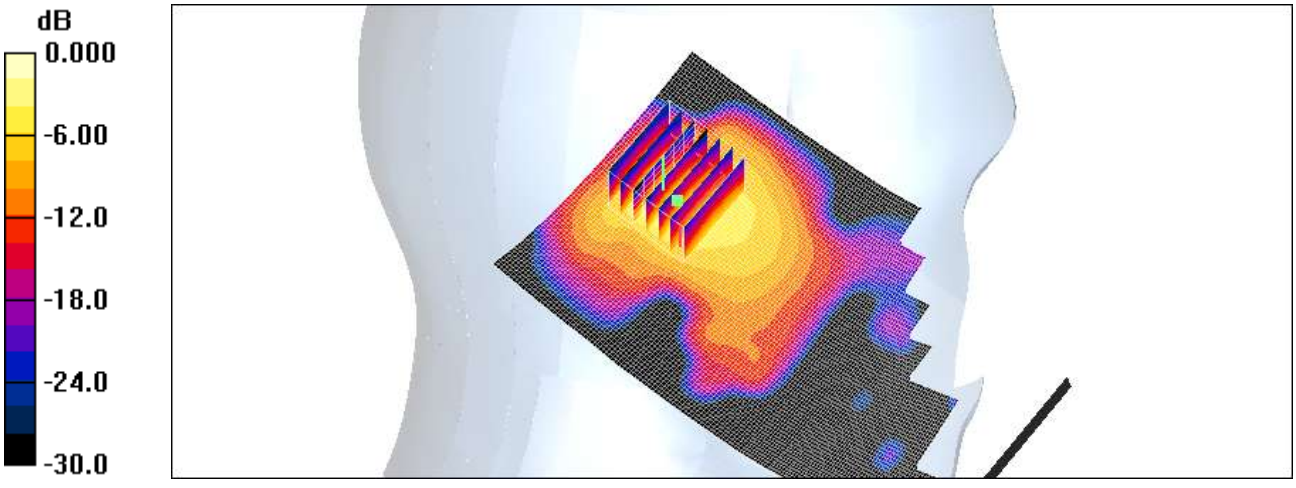
802.11b Left Touch 1Mbps 6ch/Area Scan (81x141x1): Measurement grid: dx=12mm, dy=12mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.884 mW/g

802.11b Left Touch 1Mbps 6ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 16.4 V/m; Power Drift = -0.034 dB
Peak SAR (extrapolated) = 1.53 W/kg
SAR(1 g) = 0.595 mW/g; SAR(10 g) = 0.234 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.971 mW/g



0 dB = 0.971mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Dec.26, 2012
Plot NO.	14

DUT: L-04E; Type: bar; Serial: #1

Communication System: 2450MHz FCC; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.83 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(7.19, 7.19, 7.19); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 835/900 Phamtom ; Type: SAM

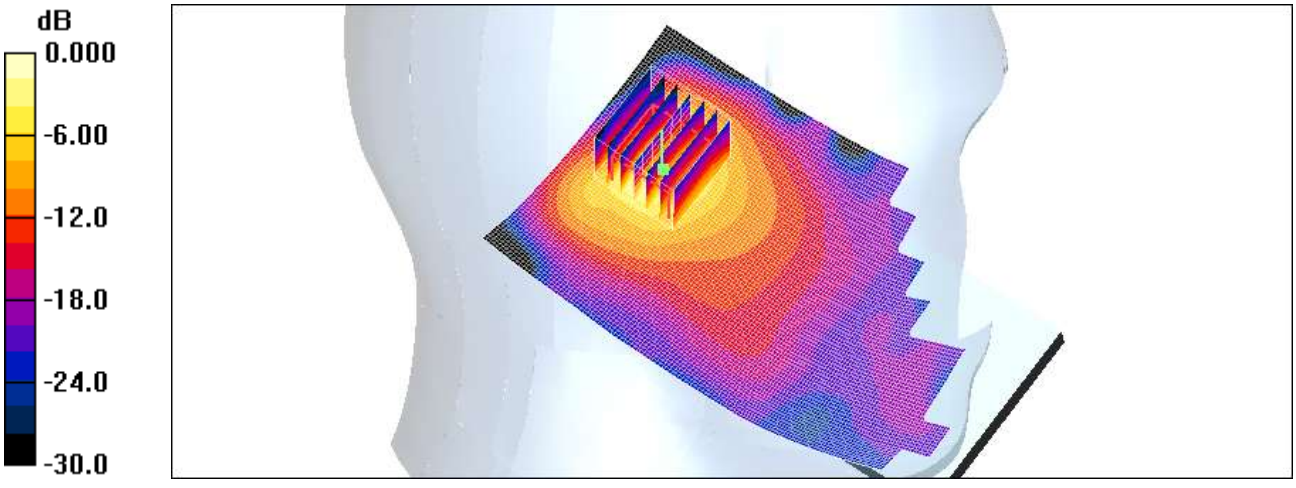
802.11b Left tilt 1Mbps 6ch/Area Scan (81x141x1): Measurement grid: dx=12mm, dy=12mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.870 mW/g

802.11b Left tilt 1Mbps 6ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 16.3 V/m; Power Drift = -0.072 dB
Peak SAR (extrapolated) = 1.46 W/kg
SAR(1 g) = 0.550 mW/g; SAR(10 g) = 0.212 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.883 mW/g



0 dB = 0.883mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Dec.26, 2012
Plot NO.	15

DUT: L-04E; Type: bar; Serial: #1

Communication System: 2450MHz FCC; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.83 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(7.19, 7.19, 7.19); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 835/900 Phamtom ; Type: SAM

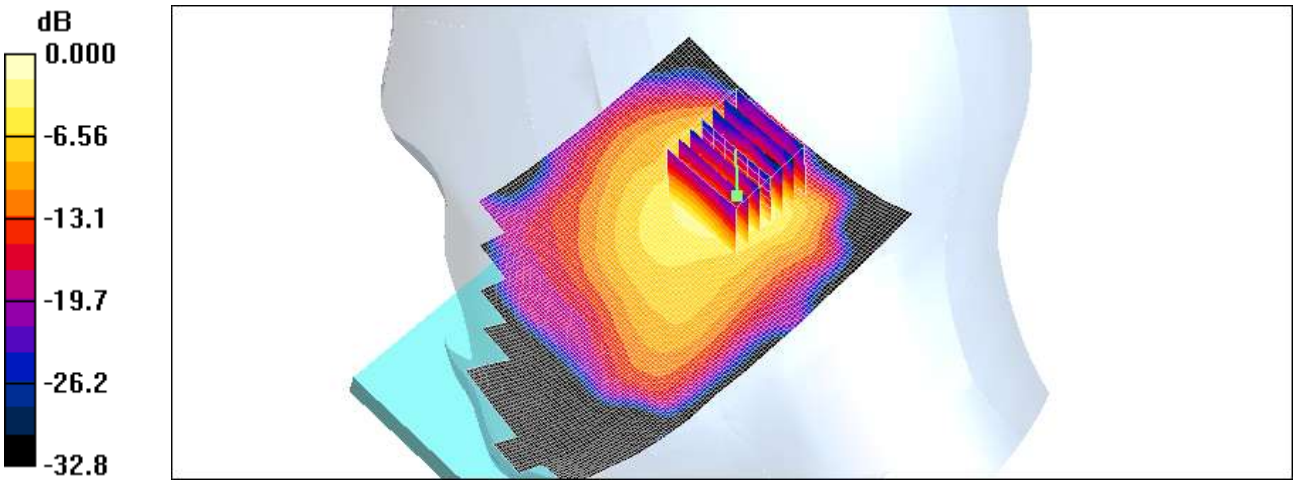
802.11b Right Touch 1Mbps 6ch/Area Scan (81x141x1): Measurement grid: dx=12mm, dy=12mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.728 mW/g

802.11b Right Touch 1Mbps 6ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 16.5 V/m; Power Drift = -0.162 dB
Peak SAR (extrapolated) = 1.07 W/kg
SAR(1 g) = 0.461 mW/g; SAR(10 g) = 0.195 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.761 mW/g



0 dB = 0.761mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Dec.26, 2012
Plot NO.	16

DUT: L-04E; Type: bar; Serial: #1

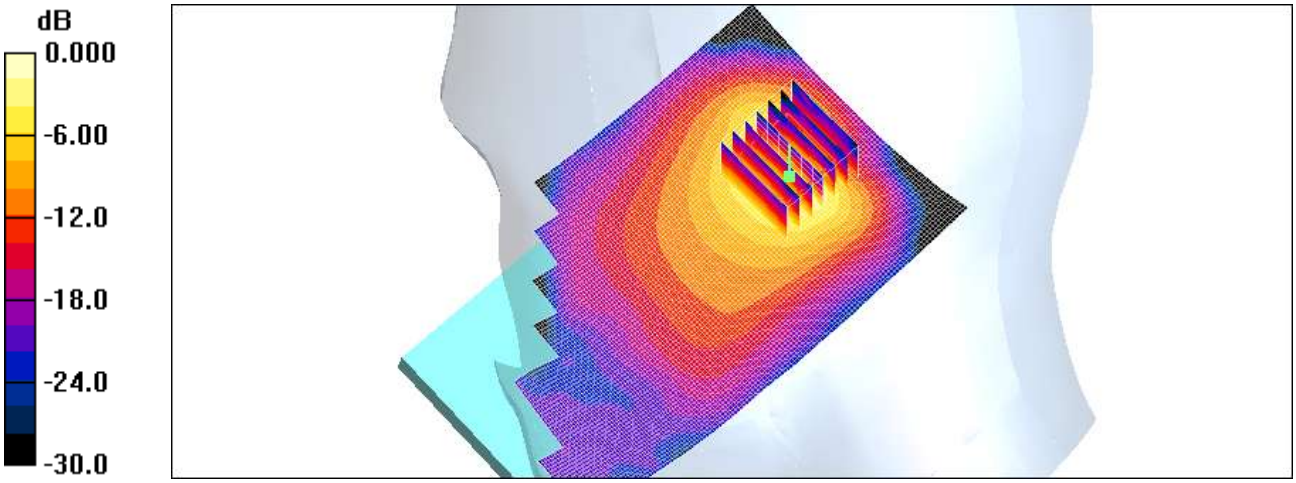
Communication System: 2450MHz FCC; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.83 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(7.19, 7.19, 7.19); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 835/900 Phamtom ; Type: SAM

802.11b Right tilt 1Mbps 6ch/Area Scan (81x141x1): Measurement grid: dx=12mm, dy=12mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.592 mW/g

802.11b Right tilt 1Mbps 6ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.9 V/m; Power Drift = 0.051 dB
Peak SAR (extrapolated) = 0.935 W/kg
SAR(1 g) = 0.396 mW/g; SAR(10 g) = 0.164 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.638 mW/g



0 dB = 0.638mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Dec.27, 2012
Plot NO.	21

DUT: L-04E; Type: bar; Serial: #1

Communication System: WIFI 5GHz; Frequency: 5180 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5180 MHz; σ = 4.53 mho/m; ε_r = 35.8; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

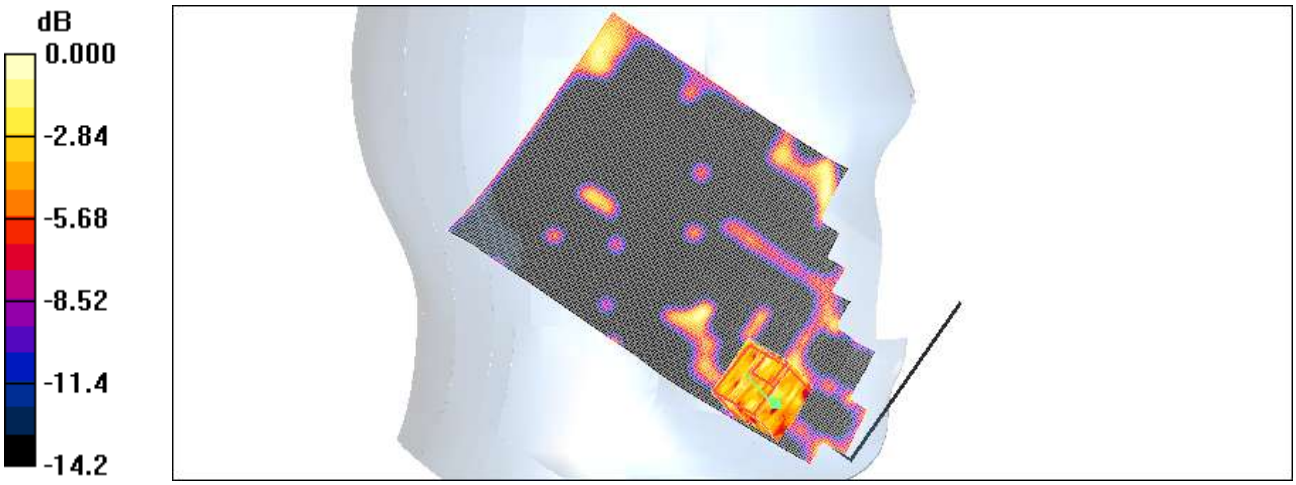
DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.96, 4.96, 4.96); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 800/900 Phantom; Type: SAM

WIFI 5GHz Left touch 36ch 6Mbps/Area Scan (101x171x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.031 mW/g

WIFI 5GHz Left touch 36ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.17 V/m; Power Drift = 0.143 dB
Peak SAR (extrapolated) = 0.032 W/kg
SAR(1 g) = 0.012 mW/g; SAR(10 g) = 0.0095 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.028 mW/g



0 dB = 0.028mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Dec.27, 2012
Plot NO.	22

DUT: L-04E; Type: bar; Serial: #1

Communication System: WIFI 5GHz; Frequency: 5180 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5180 MHz; σ = 4.53 mho/m; ε_r = 35.8; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

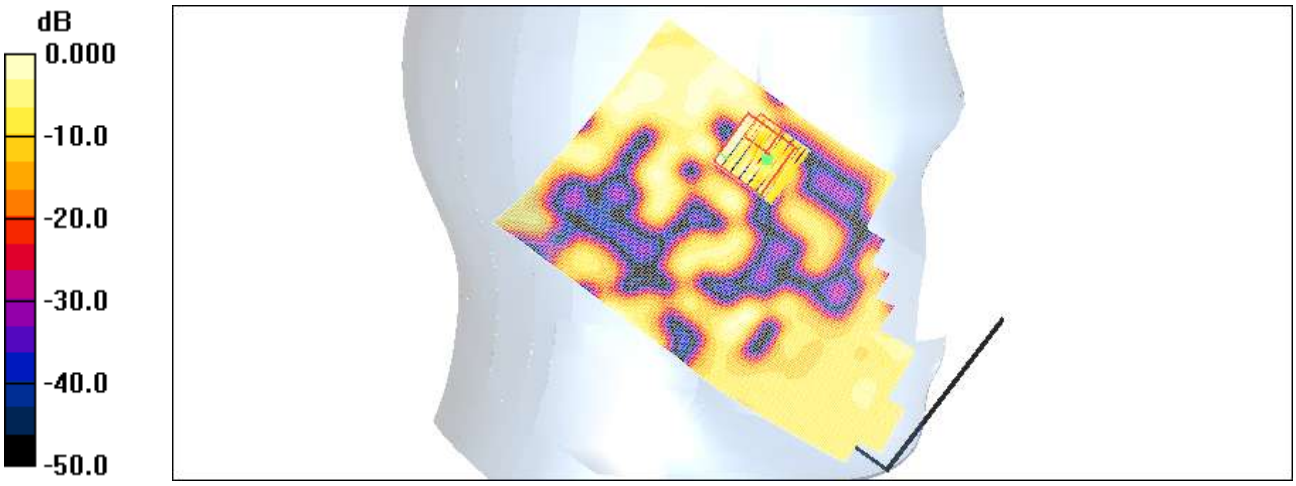
DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.96, 4.96, 4.96); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 800/900 Phantom; Type: SAM

WIFI 5GHz Left tilt 36ch 6Mbps/Area Scan (101x171x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.045 mW/g

WIFI 5GHz Left tilt 36ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.60 V/m; Power Drift = 0.114 dB
Peak SAR (extrapolated) = 0.146 W/kg
SAR(1 g) = 0.00827 mW/g; SAR(10 g) = 0.00449 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.057 mW/g



0 dB = 0.057mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Dec.27, 2012
Plot NO.	23

DUT: L-04E; Type: bar; Serial: #1

Communication System: WIFI 5GHz; Frequency: 5180 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5180 MHz; σ = 4.53 mho/m; ε_r = 35.8; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

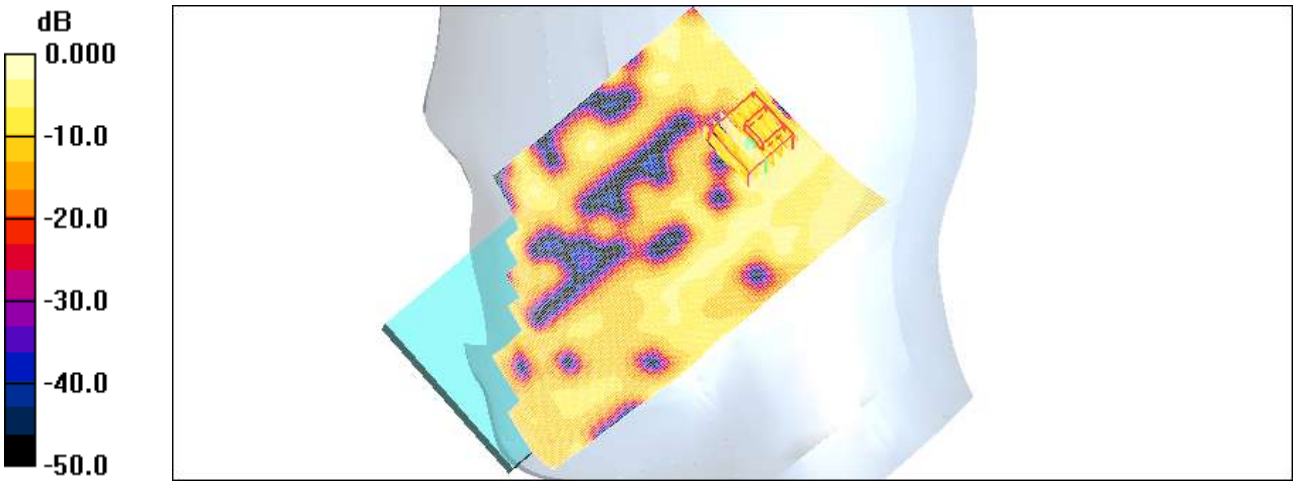
DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.96, 4.96, 4.96); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 800/900 Phantom; Type: SAM

WIFI 5GHz Right touch 36ch 6Mbps/Area Scan (101x171x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.053 mW/g

WIFI 5GHz Right touch 36ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.16 V/m; Power Drift = -0.053 dB
Peak SAR (extrapolated) = 0.119 W/kg
SAR(1 g) = 0.00717 mW/g; SAR(10 g) = 0.00328 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.119 mW/g



0 dB = 0.119mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Dec.27, 2012
Plot NO.	24

DUT: L-04E; Type: bar; Serial: #1

Communication System: WIFI 5GHz; Frequency: 5180 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5180 MHz; σ = 4.53 mho/m; ε_r = 35.8; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

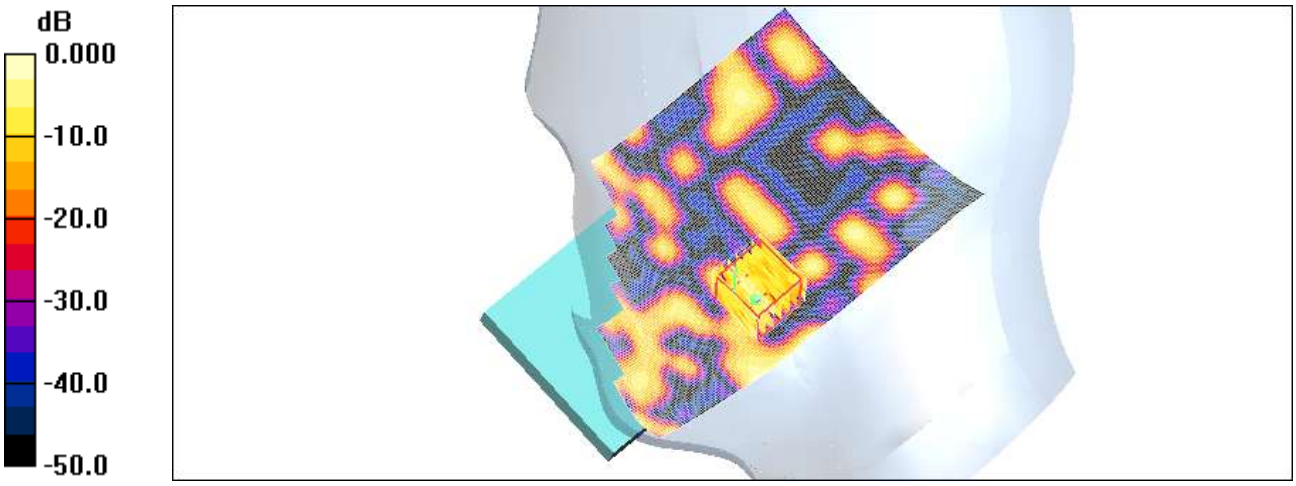
DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.96, 4.96, 4.96); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 800/900 Phantom; Type: SAM

WIFI 5GHz Right tilt 36ch 6Mbps/Area Scan (101x171x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.057 mW/g

WIFI 5GHz Right tilt 36ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.770 V/m; Power Drift = 0.050 dB
Peak SAR (extrapolated) = 0.068 W/kg
SAR(1 g) = 0.00364 mW/g; SAR(10 g) = 0.000798 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.068 mW/g



0 dB = 0.068mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Dec.27, 2012
Plot NO.	25

DUT: L-04E; Type: bar; Serial: #1

Communication System: WIFI 5GHz; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5260 MHz; σ = 4.61 mho/m; ε_r = 35.5; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

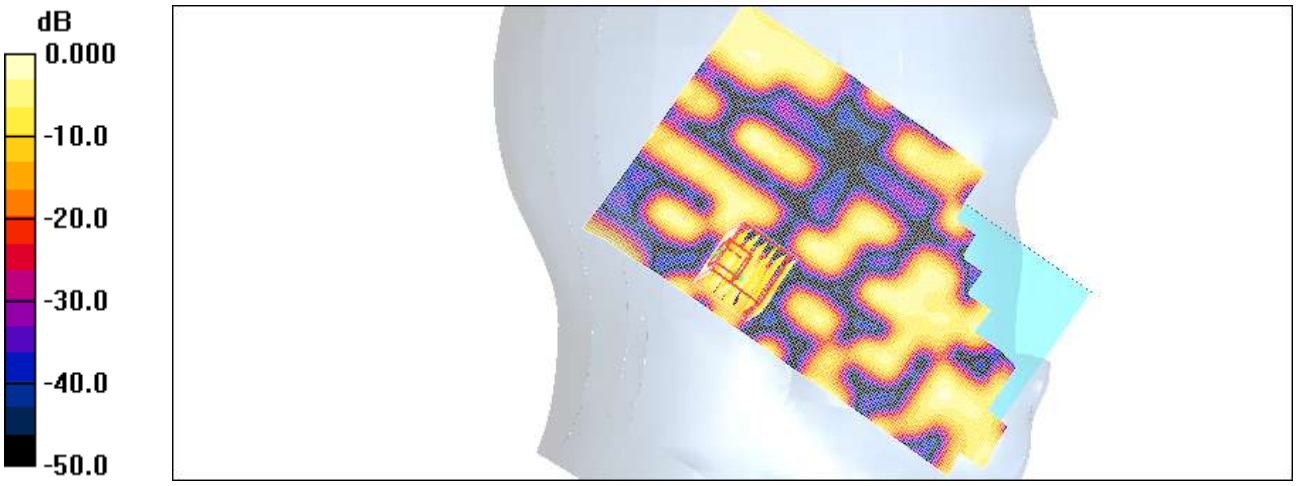
DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.96, 4.96, 4.96); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 800/900 Phantom; Type: SAM

WIFI 5GHz Left Touch 52ch 6Mbps/Area Scan (101x171x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.046 mW/g

WIFI 5GHz Left Touch 52ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.39 V/m; Power Drift = 0.107 dB
Peak SAR (extrapolated) = 0.051 W/kg
SAR(1 g) = 0.00736 mW/g; SAR(10 g) = 0.00372 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.041 mW/g



0 dB = 0.041mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Dec.27, 2012
Plot NO.	26

DUT: L-04E; Type: bar; Serial: #1

Communication System: WIFI 5GHz; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5260 MHz; σ = 4.61 mho/m; ε_r = 35.5; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

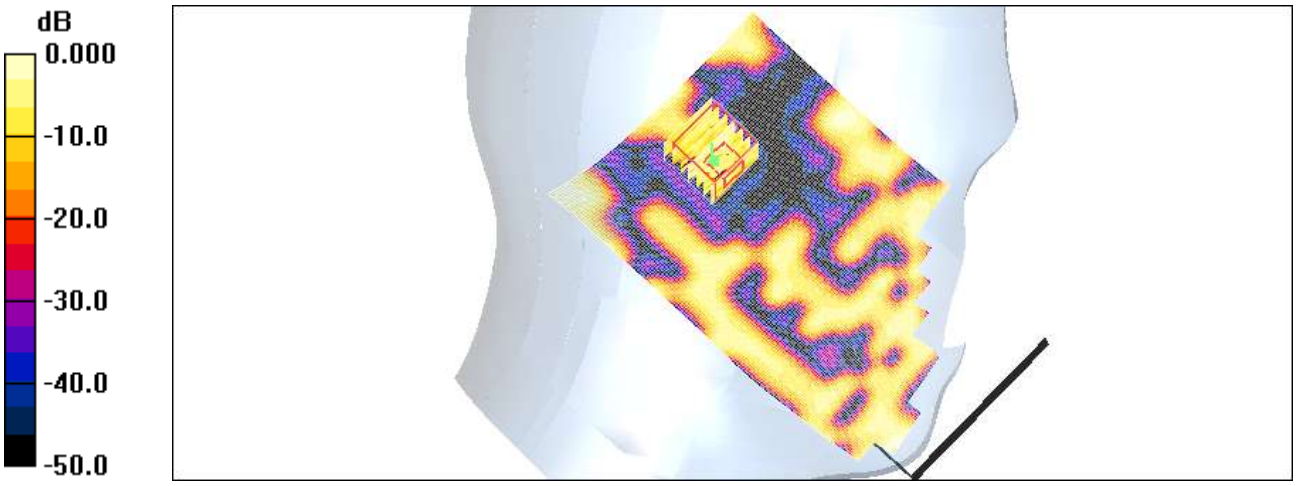
DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.96, 4.96, 4.96); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 800/900 Phantom; Type: SAM

WIFI 5GHz Left tilt 52ch 6Mbps/Area Scan (101x171x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.029 mW/g

WIFI 5GHz Left tilt 52ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.10 V/m; Power Drift = 0.042 dB
Peak SAR (extrapolated) = 0.022 W/kg
SAR(1 g) = 0.00341 mW/g; SAR(10 g) = 0.0014 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.028 mW/g



0 dB = 0.028mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Dec.27, 2012
Plot NO.	27

DUT: L-04E; Type: bar; Serial: #1

Communication System: WIFI 5GHz; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5260 MHz; σ = 4.61 mho/m; ε_r = 35.5; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

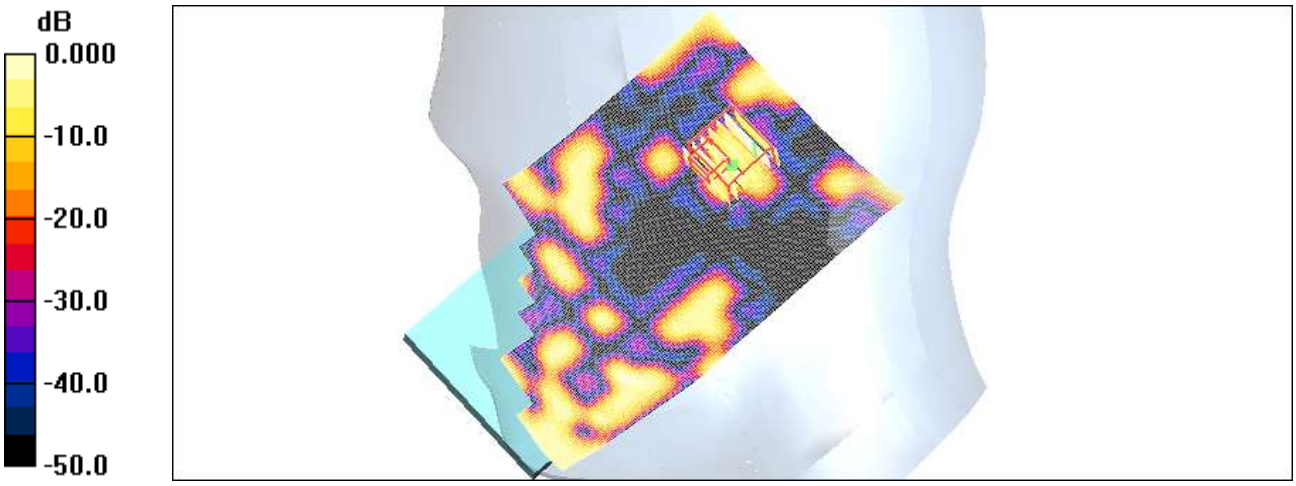
DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.96, 4.96, 4.96); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 800/900 Phantom; Type: SAM

WIFI 5GHz Right Touch 52ch 6Mbps/Area Scan (101x171x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.026 mW/g

WIFI 5GHz Right Touch 52ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.166 V/m; Power Drift = 0.097 dB
Peak SAR (extrapolated) = 0.025 W/kg
SAR(1 g) = 0.00395 mW/g; SAR(10 g) = 0.00163 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.025 mW/g



0 dB = 0.025mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Dec.27, 2012
Plot NO.	28

DUT: L-04E; Type: bar; Serial: #1

Communication System: WIFI 5GHz; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5260 MHz; σ = 4.61 mho/m; ε_r = 35.5; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

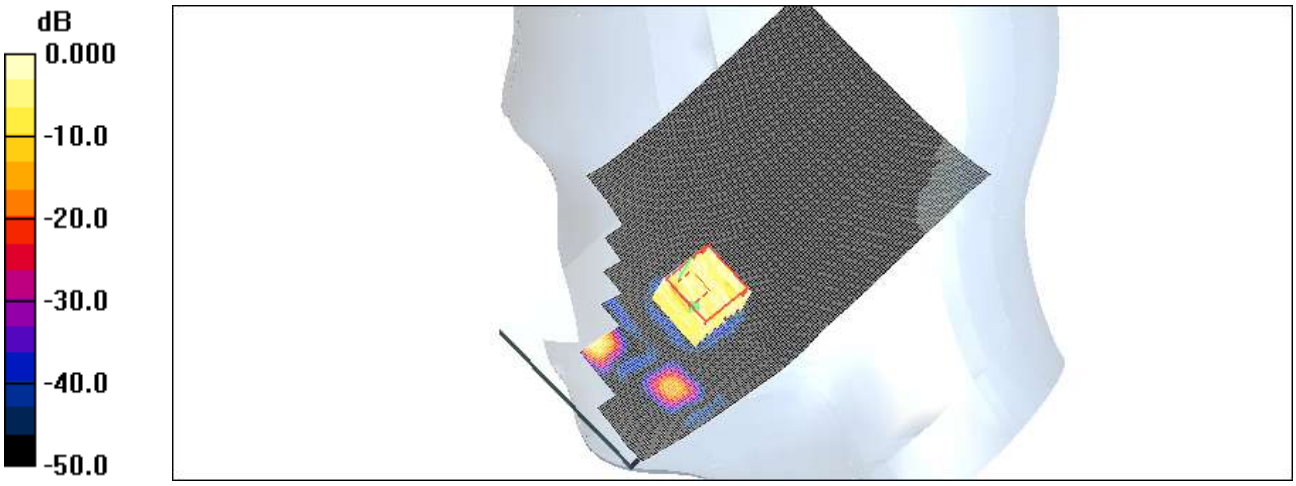
DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.96, 4.96, 4.96); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 800/900 Phantom; Type: SAM

WIFI 5GHz Right tilt 52ch 6Mbps/Area Scan (101x171x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.016 mW/g

WIFI 5GHz Right tilt 52ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.14 V/m; Power Drift = 0.084 dB
Peak SAR (extrapolated) = 0.042 W/kg
SAR(1 g) = 0.00882 mW/g; SAR(10 g) = 0.0055 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.022 mW/g



0 dB = 0.022mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Dec.27, 2012
Plot NO.	29

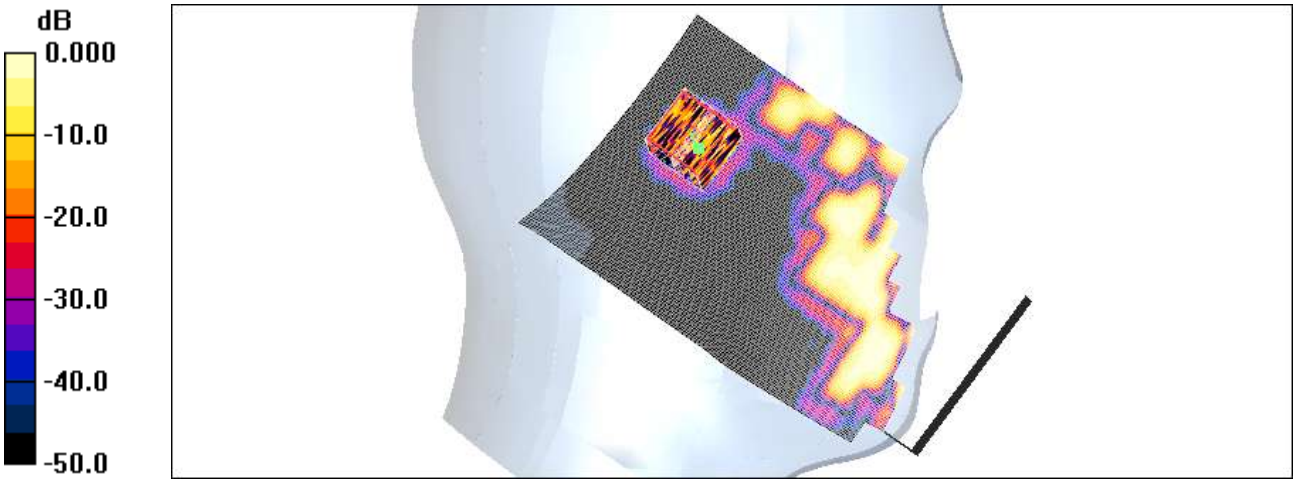
DUT: L-04E; Type: bar; Serial: #1

Communication System: WIFI 5GHz; Frequency: 5700 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5700 MHz; σ = 5.12 mho/m; ε_r = 34.6; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.61, 4.61, 4.61); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 800/900 Phantom; Type: SAM

WIFI 5GHz Left touch 140ch 6Mbps/Area Scan (101x171x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.083 mW/g

WIFI 5GHz Left touch 140ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.42 V/m; Power Drift = 0.108 dB
Peak SAR (extrapolated) = 0.512 W/kg
SAR(1 g) = 0.038 mW/g; SAR(10 g) = 0.00554 mW/g
Maximum value of SAR (measured) = 0.090 mW/g



0 dB = 0.090mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Dec.27, 2012
Plot NO.	30

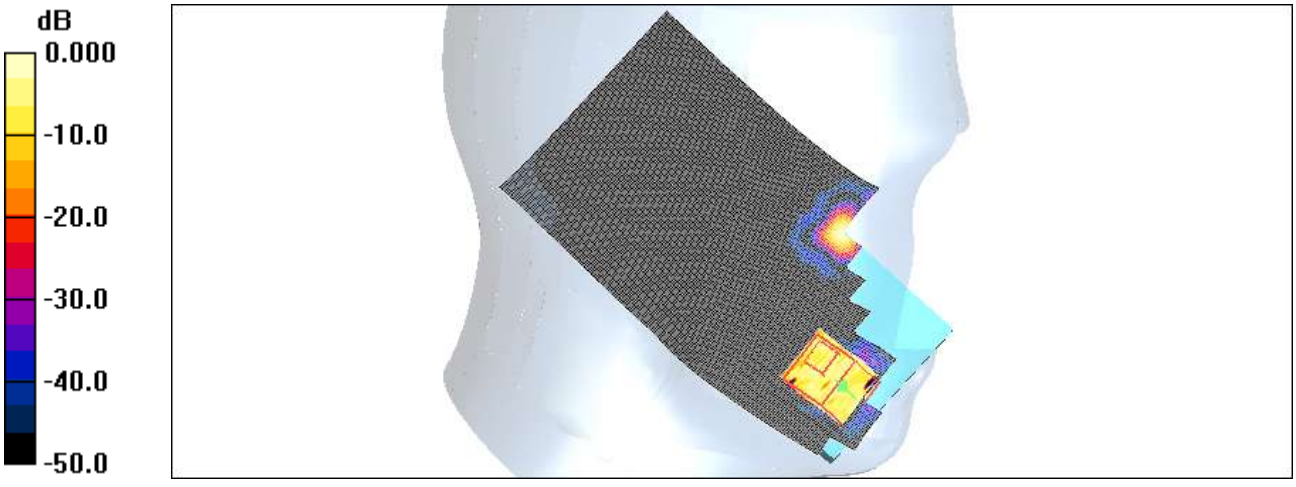
DUT: L-04E; Type: bar; Serial: #1

Communication System: WIFI 5GHz; Frequency: 5700 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5700 MHz; σ = 5.12 mho/m; ε_r = 34.6; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.61, 4.61, 4.61); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 800/900 Phantom; Type: SAM

WIFI 5GHz Left tilt 140ch 6Mbps/Area Scan (101x171x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.132 mW/g

WIFI 5GHz Left tilt 140ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.83 V/m; Power Drift = 0.092 dB
Peak SAR (extrapolated) = 0.122 W/kg
SAR(1 g) = 0.00167 mW/g; SAR(10 g) = 0.000411 mW/g
Maximum value of SAR (measured) = 0.122 mW/g



0 dB = 0.122mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Dec.27, 2012
Plot NO.	31

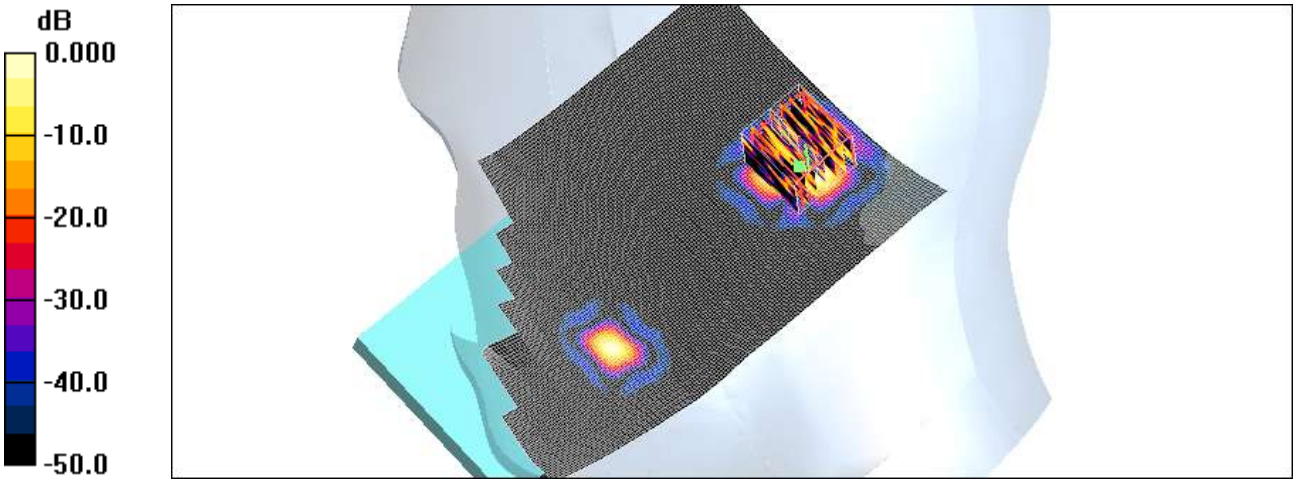
DUT: L-04E; Type: bar; Serial: #1

Communication System: WIFI 5GHz; Frequency: 5700 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5700 MHz; σ = 5.12 mho/m; ε_r = 34.6; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.61, 4.61, 4.61); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 800/900 Phantom; Type: SAM

WIFI 5GHz Right touch 140ch 6Mbps/Area Scan (101x171x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.106 mW/g

WIFI 5GHz Right touch 140ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.612 V/m; Power Drift = 0.148 dB
Peak SAR (extrapolated) = 0.409 W/kg
SAR(1 g) = 0.030 mW/g; SAR(10 g) = 0.005 mW/g
Maximum value of SAR (measured) = 0.058 mW/g



0 dB = 0.058mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Dec.27, 2012
Plot NO.	32

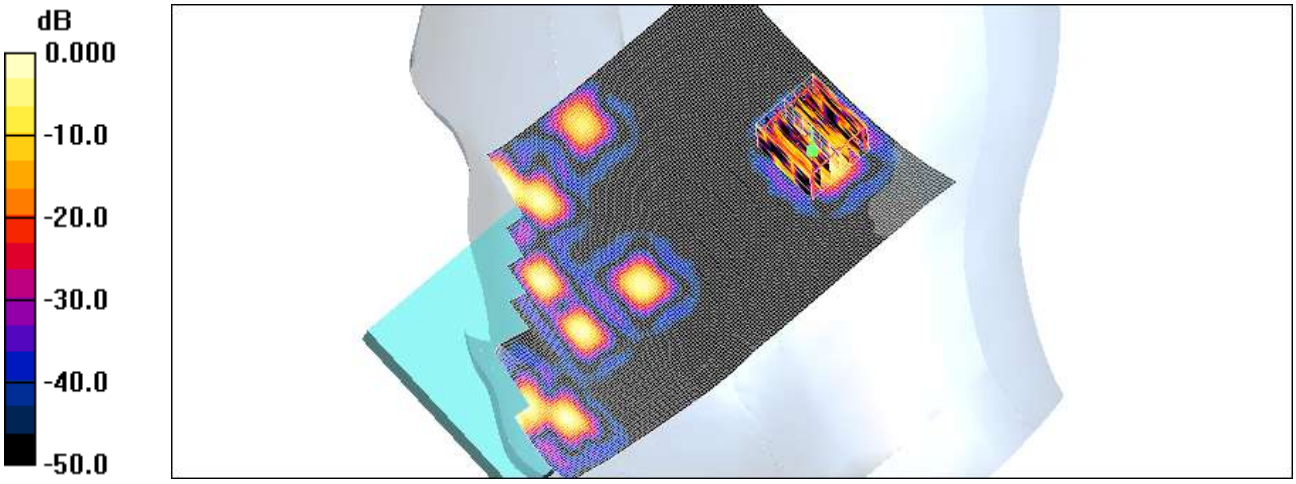
DUT: L-04E; Type: bar; Serial: #1

Communication System: WIFI 5GHz; Frequency: 5700 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5700 MHz; σ = 5.12 mho/m; ε_r = 34.6; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.61, 4.61, 4.61); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 800/900 Phantom; Type: SAM

WIFI 5GHz Right tilt 140ch 6Mbps/Area Scan (101x171x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.065 mW/g

WIFI 5GHz Right tilt 140ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.267 V/m; Power Drift = 0.165 dB
Peak SAR (extrapolated) = 0.548 W/kg
SAR(1 g) = 0.044 mW/g; SAR(10 g) = 0.00968 mW/g
Maximum value of SAR (measured) = 0.065 mW/g



0 dB = 0.065mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Dec.27, 2012
Plot NO.	33

DUT: L-04E; Type: bar; Serial: #1

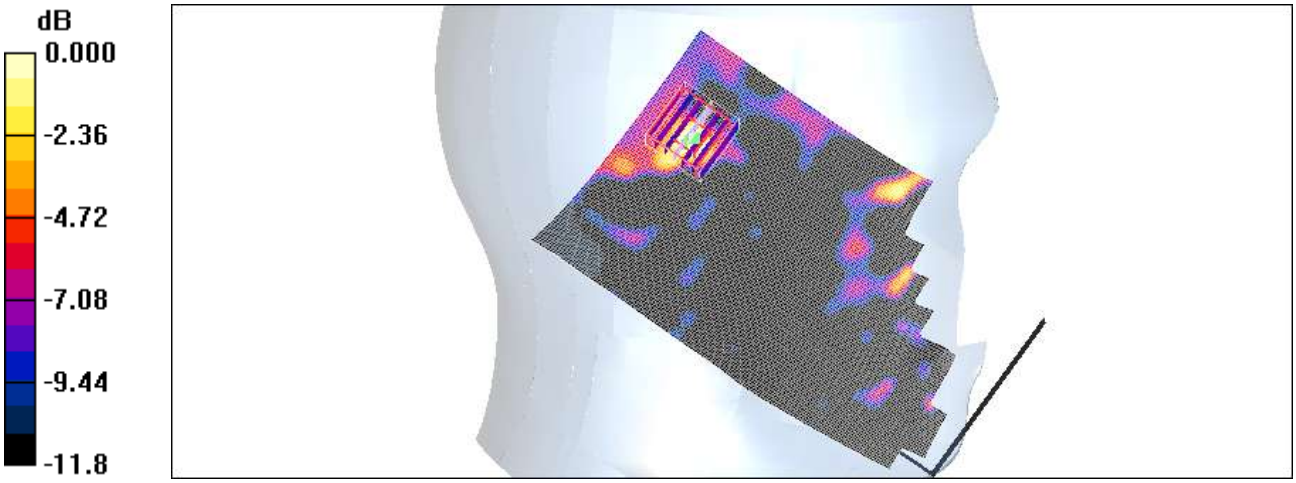
Communication System: WIFI 5GHz; Frequency: 5745 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5745 MHz; σ = 5.21 mho/m; ε_r = 34.4; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.61, 4.61, 4.61); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 800/900 Phantom; Type: SAM

WIFI 5GHz Left touch 149ch 6Mbps/Area Scan (101x171x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.173 mW/g

WIFI 5GHz Left touch 149ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.10 V/m; Power Drift = 0.122 dB
Peak SAR (extrapolated) = 0.502 W/kg
SAR(1 g) = 0.081 mW/g; SAR(10 g) = 0.035 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.151 mW/g



0 dB = 0.151mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Dec.27, 2012
Plot NO.	34

DUT: L-04E; Type: bar; Serial: #1

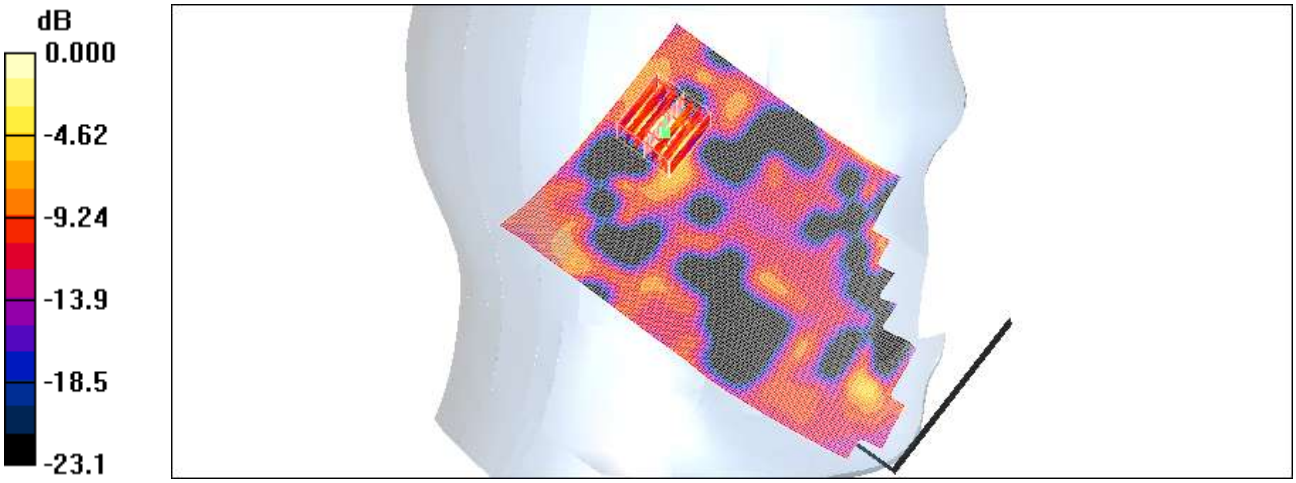
Communication System: WIFI 5GHz; Frequency: 5745 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5745 MHz; σ = 5.21 mho/m; ε_r = 34.4; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.61, 4.61, 4.61); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 800/900 Phantom; Type: SAM

WIFI 5GHz Left tilt 149ch 6Mbps/Area Scan (101x171x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.203 mW/g

WIFI 5GHz Left tilt 149ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.75 V/m; Power Drift = 0.090 dB
Peak SAR (extrapolated) = 0.277 W/kg
SAR(1 g) = 0.055 mW/g; SAR(10 g) = 0.014 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.146 mW/g



0 dB = 0.146mW/g