

SAR TEST REPORT

HCT CO., LTD

EUT Type:	850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN		
FCC ID:	A3LGTN7102	Model:	GT-N7102
Date of Issue:	Oct.05, 2012		
Test report No.:	HCTA1210FS10		
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 :	SAMSUNG Electronics Co., Ltd. 416 Maetan3-Dong, YeongTong-Gu, Suwon-Si, Gyeonggi-Do, Korea, 443-742		
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.		
Max SAR	Band	1g SAR (W/kg)	
		Head	Body-worn
	GSM850	0.102	0.093
	GSM1900	0.059	0.282
	802.11b	0.000495	0.00109
	802.11a/n	0.000862	0.567
			Hotspot
			0.124
			-
Simultaneous SAR per KDB 690783 D01		0.102	0.849
			0.283
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 (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dV) of a given density (ρ). 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. 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:	850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
FCC ID:	A3LGTN7102
Model:	GT-N7102
Trade Name	SAMSUNG Electronics Co., Ltd.
Application Type	Certification
Mode(s) of Operation	GSM850/ GSM1900/ 802.11b/g/n
Tx Frequency	824.20 - 848.80 MHz (GSM850) 1 850.20 – 1 909.80 MHz (GSM1900) 2 412 – 2462 MHz (WLAN) 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) 2 412 – 2462 MHz (WLAN) 802.11a/n: 5180-5240MHz/ 5260-5320 MHz/ 5500-5700 MHz/ 5745-5825 MHz
FCC Classification	Licensed Portable Transmitter Held to Ear (PCE)
Production Unit or Identical Prototype	Prototype
Date(s) of Tests	Sep.24, 2012 ~ Sep.28, 2012
Antenna Type	Integral Antenna
GPRS	Multislot Class: 33, Mode Class: B
Key Feature(s)	This device support Mobile Hotspot.

3. DESCRIPTION OF TEST EQUIPMENT

3.1 SAR MEASUREMENT SETUP

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

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

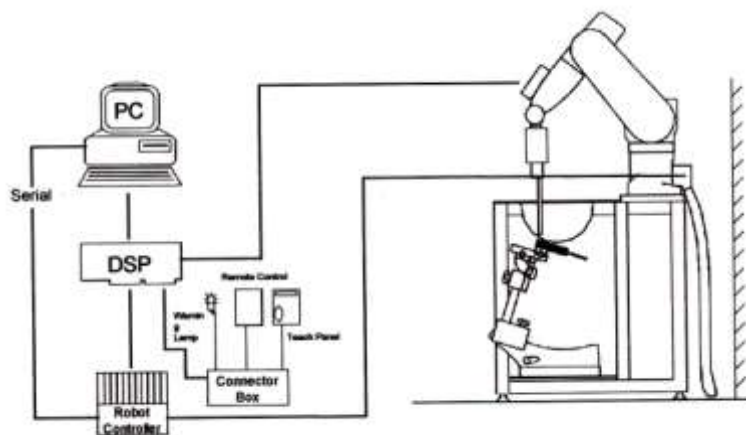


Figure 3.1 HCT SAR Lab. Test Measurement Set-up

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.

3.2 DASY E-FIELD PROBE SYSTEM

3.2.1 ET3DV6 Probe Specification

Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection System Built-in shielding against static charges
Calibration	In air from 10 MHz to 2.5 GHz In brain and muscle simulating tissue at Frequencies of 450 MHz, 900 MHz and 1.8 GHz (accuracy: 8 %)
Frequency	10 MHz to > 3 GHz; Linearity: ± 0.2 dB (30 MHz to 3 GHz)
Directivity	± 0.2 dB in brain tissue (rotation around probe axis) ± 0.4 dB in brain tissue (rotation normal probe axis)
Dynamic	5 μ W/g to > 100 mW/g;
Range Linearity:	± 0.2 dB
Surface Detection	± 0.2 mm repeatability in air and clear liquids over diffuse reflecting surfaces.
Dimensions	Overall length: 337 mm Tip length: 16 mm Body diameter: 12 mm Tip diameter: 6.8 mm Distance from probe tip to dipole centers: 2.7 mm
Application	General dissymmetry up to 3 GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms



Figure 3.2 Photograph of the probe and the Phantom

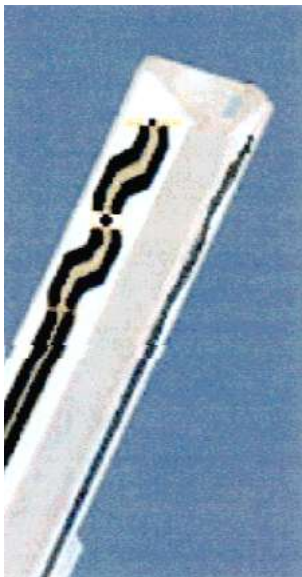


Figure 3.3 ET3DV6 E-field Probe

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

3.3 PROBE CALIBRATION PROCESS

3.3.1 E-Probe Calibration

Each probe is calibrated according to a dosimetric assessment procedure with an accuracy better than $\pm 10 \%$. 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 below 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/cm³ for brain tissue)

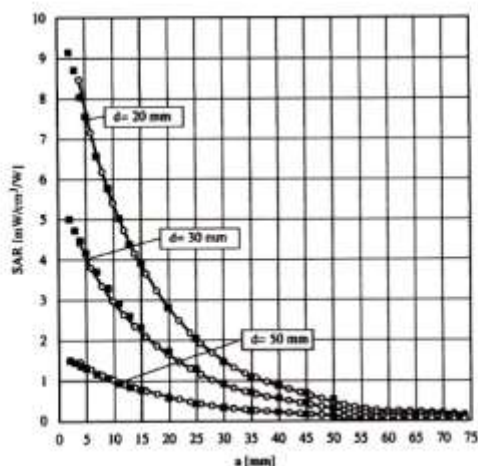


Figure 3.4 E-Field and Temperature measurements at 900 MHz

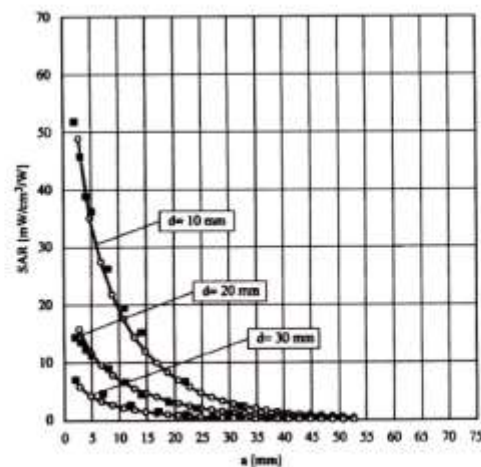


Figure 3.5 E-Field and temperature measurements at 1.8 GHz

3.3.2 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/cm³

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

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

with P_{free} = equivalent power density of a plane wave in W/cm²
 E_{tot} = total electric field strength in V/m

3.4 Phantoms

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 3.6 SAM Phantom

Shell Thickness	2.0 mm $\pm$ 0.2 mm (6 $\pm$ 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 three 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 $\pm$ 0.2 mm
Filling Volume	approx. 9.2 L
Dimensions	830 mm x 500 mm (L x W)



3.5 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 repeatably 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 produce infinite number of configurations. To produce the Worst-case condition (the hand absorbs antenna output power), the hand is omitted during the tests.



Figure 3.7 Device Holder

3.6 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 bactericide 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 3.1 Composition of the Tissue Equivalent Matter

3.7 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. 29, 2011	Annual	Aug. 29, 2012
SPEAG	DAE3	466	Feb. 21, 2012	Annual	Feb. 21, 2013
SPEAG	E-Field Probe EX3DV4	3863	July 13, 2012	Annual	July 13, 2013
SPEAG	E-Field Probe ET3DV6	1630	Nov. 18, 2011	Annual	Nov. 18, 2012
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. 04, 2012
Agilent	Power Sensor(G) 8481	MY41090870	Nov. 04, 2011	Annual	Nov. 04, 2012
HP	Dielectric Probe Kit 85070C	00721521	N/A	N/A	N/A
HP	Dual Directional Coupler 778D	16072	Nov. 04, 2011	Annual	Nov. 04, 2012
Agilent	Base Station E5515C	GB44400269	Feb. 10, 2012	Annual	Feb. 10, 2013
HP	Signal Generator E4438C	MY42082646	Nov. 11, 2011	Annual	Nov. 11, 2012
HP	Network Analyzer 8753ES	JP39240221	Apr. 3, 2012	Annual	Apr. 3, 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 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-equivalent material.

4. 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.

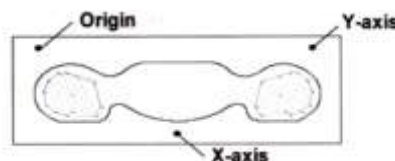


Figure 4.1 SAR Measurement Point in Area Scan

5. DESCRIPTION OF TEST POSITION

5.1 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 15° or until the device antenna touch the phantom. Please refer to IEEE 1528-2003 illustration below.

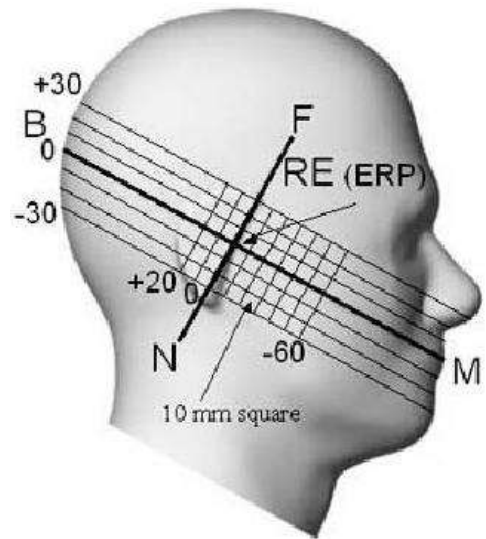


Figure 5.1 Side view of the phantom

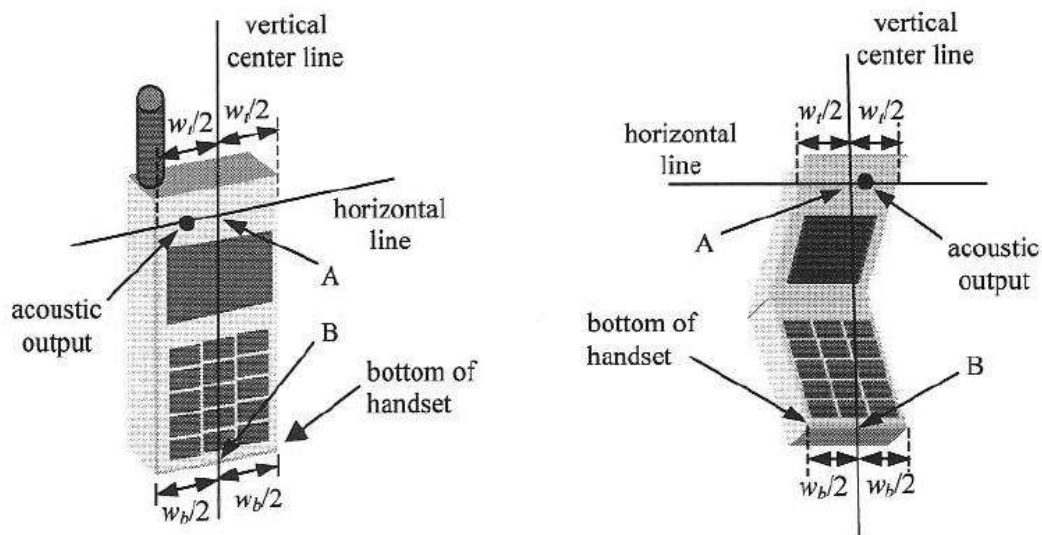


Figure 5.2 Handset vertical and horizontal reference lines

5.2 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.

6. 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 Permittivity(target)	5.00	R	1.73	0.6	1.73	∞
Liquid Permittivity(meas.)	5.02	N	1	0.6	3.01	9
Combine Standard Uncertainty					11.13	
Coverage Factor for 95 %					$k=2$	
Expanded STD Uncertainty					22.25	

Table 6.1 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 Permittivity(target)	5.00	R	1.73	0.6	1.73	∞
Liquid Permittivity(meas.)	5.02	N	1	0.6	3.01	9
Combine Standard Uncertainty					11.43	
Coverage Factor for 95 %					$k = 2$	
Expanded STD Uncertainty					22.86	

Table 6.2 Uncertainty (5000-5900 MHz)

7. 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 7.1 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).

8. SYSTEM VERIFICATION

8.1 Tissue Verification

Freq. [MHz]	Date	Liquid	Liquid Temp.[°C]	Parameters	Target Value	Measured Value	Deviation [%]	Limit [%]
835	Sep. 24, 2012	Head	21.2	ϵ_r	41.5	40.4	- 2.65	± 5
σ				0.90	0.917	+ 1.89	± 5	
835		Body		ϵ_r	55.2	54.3	- 1.63	± 5
				σ	0.97	1.01	+ 4.12	± 5
1 900	Sep. 25, 2012	Head	21.2	ϵ_r	40.0	40.9	+ 2.25	± 5
σ				1.40	1.37	- 2.14	± 5	
1 900		Body		ϵ_r	53.3	52.3	- 1.88	± 5
				σ	1.52	1.55	+ 1.97	± 5
2 450	Sep. 26, 2012	Head	21.1	ϵ_r	39.2	40.3	+ 2.81	± 5
σ				1.80	1.83	+ 1.67	± 5	
2 450		Body		ϵ_r	52.7	51.7	- 1.90	± 5
				σ	1.95	1.96	+ 0.51	± 5
5 200	Sep. 27, 2012	Head	21.2	ϵ_r	36.0	36.4	+ 1.11	± 5
		σ		4.66	4.48	- 3.86	± 5	
5 200	Sep. 28, 2012	Body		ϵ_r	49.0	47.4	- 3.27	± 5
				σ	5.3	5.24	- 1.13	± 5
5 500	Sep. 27, 2012	Head	21.2	ϵ_r	35.6	35.7	+ 0.28	± 5
		σ		4.96	4.81	- 3.02	± 5	
5 500	Sep. 28, 2012	Body		ϵ_r	48.6	46.5	- 4.32	± 5
				σ	5.65	5.59	- 1.06	± 5
5 800	Sep. 27, 2012	Head	21.2	ϵ_r	35.3	34.9	- 1.13	± 5
		σ		5.27	5.22	- 0.95	± 5	
5 800	Sep. 28, 2012	Body		ϵ_r	48.2	46.1	- 4.36	± 5
				σ	6.00	6.16	+ 2.67	± 5

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

8.2 System Validation

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

Freq. [MHz]	Date	Probe (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	Sep. 24, 2012	1630	Head	21.4	21.2	9.43	0.921	9.21	- 2.33	± 10
835			Body			9.50	0.961	9.61	+ 1.16	± 10
1 900	Sep. 25, 2012		Head	21.4	21.2	39.0	3.74	37.4	- 4.10	± 10
1 900			Body			39.9	3.89	38.9	- 2.51	± 10
2 450	Sep. 26, 2012		Head	21.3	21.1	52.7	5.39	53.9	+ 2.28	± 10
2 450			Body			51.2	5.07	50.7	- 0.98	± 10
5 200	Sep. 27, 2012	3863	Head	21.4	21.2	80.3	7.84	78.4	- 2.37	± 10
5 200	Sep. 28, 2012		Body			77.2	7.5	75	- 2.85	± 10
5 500	Sep. 27, 2012		Head	21.4	21.2	87.8	8.65	86.5	- 1.48	± 10
5 500	Sep. 28, 2012		Body			81.6	7.98	79.8	- 2.21	± 10
5 800	Sep. 27, 2012		Head	21.4	21.2	78.9	7.83	78.3	- 0.76	± 10
5 800	Sep. 28, 2012		Body			76.9	7.47	74.7	- 2.86	± 10

8.3 System Validation Procedure

SAR measurement was prior to assessment, the system is verified to the $\pm 10\%$ 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.

9. 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 than 5 % occurred, the tests were repeated.

9.1 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 : GPRS850/1900 Body SAR with GPRS Multi-slot Class33, 4Tx with CS 1 (GMSK)

Note;

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

GSM Conducted output powers (Burst-Average)

Band	Channel	Voice	GPRS(GMSK) Data – CS1				EDGE(8PSK) Data – MCS7			
		GSM (dBm)	GPRS 1 TX Slot (dBm)	GPRS 2 TX Slot (dBm)	GPRS 3 TX Slot (dBm)	GPRS 4 TX Slot (dBm)	EDGE 1 TX Slot (dBm)	EDGE 2 TX Slot (dBm)	EDGE 3 TX Slot (dBm)	EDGE 4 TX Slot (dBm)
GSM 850	128	32.17	32.18	30.20	28.64	27.10	26.34	26.30	26.29	23.34
	190	32.21	32.20	30.20	28.63	27.10	26.34	26.30	26.28	23.35
	251	32.17	32.15	30.21	28.64	27.11	26.35	26.31	26.29	23.35
GSM 1900	512	29.07	29.13	28.13	26.13	25.11	25.22	25.32	25.34	22.41
	661	29.18	29.23	28.25	26.28	25.28	25.32	25.45	25.48	22.58
	810	29.11	29.15	28.17	26.22	25.22	25.27	25.41	25.41	22.50

GSM Conducted output powers (Frame-Average)

Band	Channel	Voice	GPRS(GMSK) Data – CS1				EDGE(8PSK) Data – MCS7			
		GSM (dBm)	GPRS 1 TX Slot (dBm)	GPRS 2 TX Slot (dBm)	GPRS 3 TX Slot (dBm)	GPRS 4 TX Slot (dBm)	EDGE 1 TX Slot (dBm)	EDGE 2 TX Slot (dBm)	EDGE 3 TX Slot (dBm)	EDGE 4 TX Slot (dBm)
GSM 850	128	23.14	23.15	24.18	24.38	24.09	17.31	20.28	22.03	20.33
	190	23.18	23.17	24.18	24.37	24.09	17.31	20.28	22.02	20.34
	251	23.14	23.12	24.19	24.38	24.1	17.32	20.29	22.03	20.34
GSM 1900	512	20.04	20.1	22.11	21.87	22.1	16.19	19.3	21.08	19.4
	661	20.15	20.2	22.23	22.02	22.27	16.29	19.43	21.22	19.57
	810	20.08	20.12	22.15	21.96	22.21	16.24	19.39	21.15	19.49

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

9.2 WiFi

9.2.1 SAR Testing for 802.11b/g/n modes

General Device Setup

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

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

Frequency Channel Configurations

80.11 a/b/g and 4.9 GHz operating modes are tested independently according to the service requirements in each frequency band. 80.211 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	42 (5.21 GHz)			✓	
		5.20	40					*
		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		✓			

Band	Channel	Conducted Power (dBm)			
		Data Rate (Mbps)			
		1	2	5.5	11
IEEE 802.11b	1	17.29	17.32	17.72	17.23
	6	17.65	17.64	17.55	17.32
	11	17.81	17.76	18.05	17.68

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	14.31	14.12	14.02	13.81	13.61	13.21	12.84	12.69
	6	14.08	13.84	13.77	13.54	13.31	12.81	12.55	12.43
	11	14.33	14.16	14.09	13.88	13.61	13.27	12.90	12.73

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	14.20	13.94	13.66	13.47	13.14	12.83	12.71	12.65
	6	13.88	13.53	13.33	13.11	12.72	12.47	12.34	12.23
	11	14.27	13.94	13.69	13.52	13.20	12.91	12.73	12.64

Average IEEE 802.11n Conducted output power

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

WLAN 5GHz Conducted Powers

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	13.73	13.55	13.48	13.28	13.08	12.72	12.37	12.25
802.11a	5200	40	13.51	13.27	13.21	13.03	12.80	12.39	12.10	12.01
802.11a	5220	44	14.44	14.39	14.21	14.00	13.76	13.43	13.10	12.99
802.11a	5240	48	13.52	13.31	13.31	13.06	12.91	12.54	12.18	12.02
802.11a	5260	52	14.61	14.53	14.42	14.15	13.93	13.58	13.29	13.15
802.11a	5280	56	13.92	13.80	13.62	13.43	13.19	12.87	12.56	12.43
802.11a	5300	60	13.71	13.47	13.38	13.14	12.99	12.62	12.28	12.18
802.11a	5320	64	14.65	14.53	14.45	14.20	14.04	13.62	13.31	13.17
802.11a	5500	100	14.45	14.29	14.15	13.88	13.72	13.31	13.03	12.93
802.11a	5520	104	13.64	13.50	13.40	13.24	13.01	12.65	12.30	12.23
802.11a	5540	108	13.85	13.67	13.60	13.34	13.17	12.80	12.47	12.31
802.11a	5560	112	13.81	13.70	13.58	13.38	13.17	12.78	12.45	12.33
802.11a	5580	116	13.93	13.82	13.64	13.41	13.20	12.86	12.52	12.38
802.11a	5660	120	13.70	13.67	13.56	13.29	13.07	12.68	12.40	12.31
802.11a	5620	124	13.91	13.80	13.66	13.45	13.23	12.86	12.58	12.45
802.11a	5640	128	13.84	13.71	13.60	13.38	13.14	12.77	12.48	12.41
802.11a	5660	132	13.79	13.75	13.60	13.36	13.16	12.78	12.49	12.30
802.11a	5680	136	13.81	13.72	13.62	13.36	13.17	12.78	12.48	12.37
802.11a	5700	140	13.91	13.87	13.79	13.55	13.37	12.99	12.65	12.49
802.11a	5745	149	14.65	14.59	14.45	14.25	14.08	13.67	13.38	13.29
802.11a	5765	153	13.57	13.44	13.32	13.12	12.87	12.44	12.12	12.06
802.11a	5785	157	14.63	14.46	14.36	14.24	14.06	13.72	13.41	13.27
802.11a	5805	161	13.50	13.35	13.23	13.05	12.85	12.45	11.54	11.29
802.11a	5825	165	14.49	14.37	14.32	14.11	13.95	13.57	13.36	13.18

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	11.49	11.24	11.09	10.90	10.47	10.14	10.09	10.00
802.11n	5200	40	11.25	11.01	10.81	10.55	10.28	9.96	9.87	9.64
802.11n	5220	44	11.41	11.18	10.95	10.74	10.40	10.10	10.01	9.86
802.11n	5240	48	11.18	10.87	10.66	10.44	10.08	9.81	9.62	9.51
802.11n	5260	52	11.10	10.82	10.64	10.41	10.11	9.79	9.70	9.54
802.11n	5280	56	11.43	11.14	10.94	10.80	10.39	10.15	10.06	9.95
802.11n	5300	60	11.10	10.81	10.61	10.41	10.08	9.74	9.66	9.49
802.11n	5320	64	10.97	10.72	10.49	10.27	9.94	9.63	9.54	9.39
802.11n	5500	100	11.20	10.96	10.76	10.56	10.22	9.91	9.77	9.66
802.11n	5520	104	10.64	10.37	10.14	9.92	9.53	9.31	9.09	8.96
802.11n	5540	108	10.67	10.47	10.23	10.05	9.72	9.36	9.27	9.18
802.11n	5560	112	10.80	10.56	10.36	10.14	9.83	9.52	9.30	9.26
802.11n	5580	116	10.81	10.51	10.34	10.16	9.81	9.48	9.38	9.21
802.11n	5660	120	11.59	11.40	11.19	11.00	10.66	10.32	10.28	10.10
802.11n	5620	124	10.89	10.61	10.41	10.21	9.87	9.51	9.42	9.21
802.11n	5640	128	10.77	10.60	10.33	10.14	9.81	9.51	9.41	9.24
802.11n	5660	132	10.70	10.52	10.30	10.07	9.71	9.47	9.32	9.14
802.11n	5680	136	10.74	10.54	10.27	10.12	9.80	9.46	9.34	9.25
802.11n	5700	140	10.87	10.65	10.43	10.25	9.94	9.59	9.47	9.35
802.11n	5745	149	11.12	10.85	10.62	10.43	10.09	9.72	9.65	9.57
802.11n	5765	153	11.30	11.06	10.76	10.61	10.37	10.01	9.84	9.75
802.11n	5785	157	10.90	10.74	10.55	10.26	9.93	9.72	9.55	9.35
802.11n	5805	161	11.05	10.85	10.56	10.41	10.08	9.85	9.74	9.55
802.11n	5825	165	10.83	10.57	10.43	10.25	9.94	9.62	9.41	9.33

40 MHz

Conducted Output Power Measurements

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	11.23	10.77	10.42	10.16	9.74	9.25	9.17	8.96
802.11n	5795	159	11.05	10.59	10.21	9.92	9.51	9.07	8.93	8.80
802.11n	5190	38	11.36	10.97	10.55	10.29	9.77	9.35	9.37	9.09
802.11n	5230	46	11.28	10.88	10.55	10.23	9.75	9.33	9.18	9.05
802.11n	5270	54	11.31	10.88	10.53	10.23	9.73	9.34	9.22	9.05
802.11n	5310	62	11.24	10.88	10.48	10.14	9.69	9.31	9.14	8.96
802.11n	5510	102	11.38	11.02	10.70	10.37	9.95	9.52	9.44	9.17
802.11n	5590	118	10.81	10.32	9.96	9.70	9.24	8.79	8.72	8.58
802.11n	5670	134	10.85	10.43	10.05	9.83	9.33	8.91	8.76	8.57

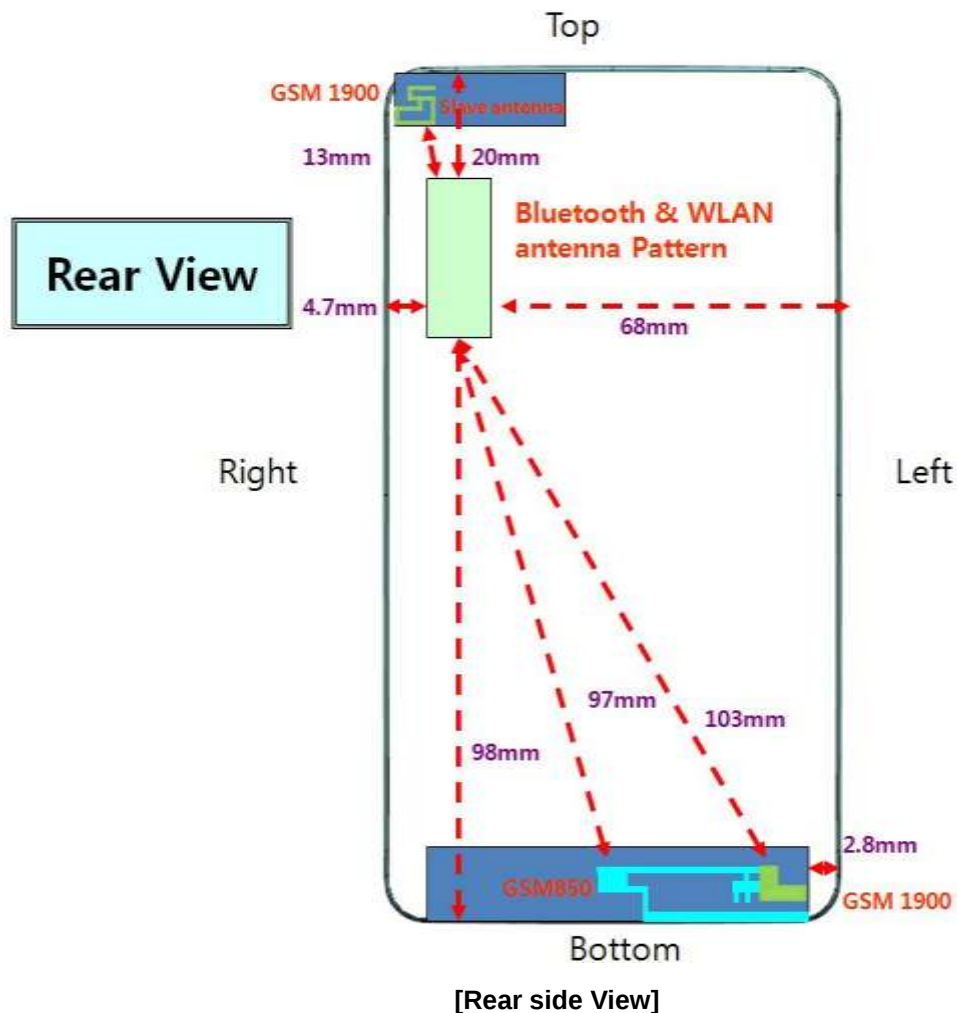
Note;
SAR testing was performed according to the FCC KDB 248227.

10. SAR Test configuration & Antenna Information

10.1 SAR Test configurations

Mode	Back	Front	Left	Right	Bottom	Top
850 GPRS	Yes	Yes	Yes	Yes	Yes	No
1900 GPRS	Yes	Yes	Yes	Yes	Yes	No
WLAN	Yes	Yes	No	Yes	No	Yes

10.2 Antenna and Device Information



Note;

Please see the separate Antenna distance document.

11. SAR Considerations for Multiple Transmitters and Antennas

11.1 SAR Evaluation Considerations

These procedures were followed according to FCC "SAR Evaluation Considerations for Handsets with Multiple Transmitters and Antennas", May 2008. The procedures are applicable to phones with built-in unlicensed transmitters, such as 802.11 a/b/g and Bluetooth devices.

	2.45	5.15 - 5.35	5.47 - 5.85	GHz
P_{Ref}	12	6	5	mW
Device output power should be rounded to the nearest mW to compare with values specified in this				

Table. 11.1 Output Power Thresholds for Unlicensed Transmitters

	Individual Transmitter	Simultaneous Transmission
Licensed Transmitters	<u>Routine evaluation required</u>	SAR not required: <u>Unlicensed only</u> - when stand-alone 1-g SAR is not required and antenna is ≥ 5 cm from other antennas <u>Licensed & Unlicensed</u> - when the sum of the 1-g SAR is < 1.6 W/kg for all simultaneous transmitting antennas - when SAR to peak location separation ratio of simultaneous transmitting antenna pair is < 0.3 SAR required: <u>Licensed & Unlicensed</u> antenna pairs with SAR to peak location separation ratio ≥ 0.3 ; test is only required for the configuration that results in the highest SAR in stand-alone configuration for each wireless mode and exposure condition Note: simultaneous transmission exposure conditions for head and body can be different for different style phones; therefore, different test requirements may apply
Unlicensed Transmitters	<u>When there is no simultaneous transmission –</u> - output ≤ 60 f: SAR not required - output > 60 f: stand-alone SAR required <u>When there is simultaneous transmission –</u> <u>Stand-alone SAR not required when</u> - output $\leq 2 \cdot P_{Ref}$ and antenna is ≥ 5.0 cm from other antennas - output $\leq P_{Ref}$ and antenna is ≥ 2.5 cm from other antennas - output $\leq P_{Ref}$ and antenna is < 2.5 cm from other antennas, each with either output power $\leq P_{Ref}$ or 1-g SAR < 1.2 W/kg <u>Otherwise stand-alone SAR is required</u> <u>When stand-alone SAR is required</u> - test SAR on highest output channel for each wireless mode and exposure condition - if SAR for highest output channel is $> 50\%$ of SAR limit, evaluate all channels according to normal procedures	
Jaw, Mouth and Nose	<u>Flat phantom SAR required</u> - when measurement is required in tight regions of SAM and it is not feasible or the results can be questionable due to probe tilt, calibration, positioning and orientation issues - position rectangular and clam-shell phones according to flat phantom procedures and conduct SAR measurements for these specific locations	When simultaneous transmission SAR testing is required, contact the FCC Laboratory for interim guidance.

SAR Evaluation Requirements for Multiple Transmitters Handsets

FCC ID: A3LGTN7102

BT Max. RF output power: (6.12 mW)

11.2 SAR Summation Scenario

Simultaneous Transmission Summation for Held to Ear

Simultaneous TX	configuration	GSM850 SAR(W/kg)	2.4 GHz WIFI SAR (W/kg)	Σ SAR (W/kg)	Simultaneous TX	configuration	GSM850 SAR(W/kg)	5 GHz WIFI SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Left Cheek	0.036	0.000495	0.036	Head SAR	Left Cheek	0.036	0.000862	0.037
	Left Tilt	0.019	0.000442	0.019		Left Tilt	0.019	0	0.019
	Right Cheek	0.102	0.000298	0.102		Right Cheek	0.102	0	0.102
	Right Tilt	0.035	0.000386	0.035		Right Tilt	0.035	0.000901	0.036
Simultaneous TX	configuration	GSM1900 SAR(W/kg)	2.4 GHz WIFI SAR (W/kg)	Σ SAR (W/kg)	Simultaneous TX	configuration	GSM1900 SAR(W/kg)	5 GHz WIFI SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Left Cheek	0.059	0.000495	0.059	Head SAR	Left Cheek	0.059	0.000862	0.060
	Left Tilt	0.025	0.000442	0.025		Left Tilt	0.025	0	0.025
	Right Cheek	0.055	0.000298	0.055		Right Cheek	0.055	0	0.055
	Right Tilt	0.039	0.000386	0.039		Right Tilt	0.039	0.000901	0.040

Simultaneous Transmission Summation for Body-Worn (1cm)

Simultaneous TX	configuration	GPRS850 SAR(W/kg)	2.4 GHz WIFI SAR (W/kg)	Σ SAR (W/kg)	Simultaneous TX	configuration	GPRS850 SAR(W/kg)	5 GHz WIFI SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.093	0.00109	0.094	Body SAR	Back	0.093	0.567	0.660
	Front	0.043	0.00225	0.045		Front	0.043	0.00159	0.045
Simultaneous TX	configuration	GPRS1900 SAR(W/kg)	2.4 GHz WIFI SAR (W/kg)	Σ SAR (W/kg)	Simultaneous TX	configuration	GPRS1900 SAR(W/kg)	5 GHz WIFI SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.282	0.00109	0.283	Body SAR	Back	0.282	0.567	0.849
	Front	0.183	0.000242	0.183		Front	0.183	0.000242	0.183

Simultaneous Transmission Summation for Hotspot (1cm)

Simultaneous TX	configuration	GPRS850 SAR(W/kg)	2.4GHz WIFI SAR (W/kg)	Σ SAR (W/kg)	Simultaneous TX	configuration	GPRS1900 SAR(W/kg)	2.4GHz WIFI SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.093	0.00109	0.094	Body SAR	Back	0.282	0.00109	0.283
	Front	0.043	0.000242	0.043		Front	0.183	0.000242	0.183
	Left	0.049	-	0.049		Left	0.115	-	0.115
	Right	0.038	0.124	0.162		Right	0.048	0.124	0.172
	Bottom	0.051	-	0.051		Bottom	0.228	-	0.228
	Top	-	0.035	0.035		Top	-	0.035	0.035

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.

11.3 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. The conducted output power level of the BT transmitter is less than $2 \cdot P_{\text{ref}}$, the BT antenna is more than 5 cm from the other antenna, therefore, a stand-alone BT SAR evaluation is not required.

12. SAR TEST DATA SUMMARY

12.1 Measurement Results (GSM850 Head SAR)

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Battery	Phantom Position	SAR(mW/g)
MHz	Channel						
836.6	190 (Mid)	GSM850	32.21	-0.188	Standard	Left Ear	0.036
			32.21	0.007	Standard	Left Tilt 15°	0.019
			32.21	-0.047	Standard	Right Ear	0.102
			32.21	0.143	Standard	Right Tilt 15°	0.035
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:

- 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].
- All modes of operation were investigated and the worst-case are reported.
- Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
- Tissue parameters and temperatures are listed on the SAR plot.
- Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.
- Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
- Justification for reduced test configurations: per FCC/OET Supplement C (July, 2001), if the SAR measured at the middle channel for each test configuration (Left, right, cheek/touch, tilt/ear, extended and retracted) is at least 3.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s).

12.2 Measurement Results (GSM1900 Head SAR)

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Battery	Phantom Position	SAR(mW/g)
MHz	Channel						
1 880.0	661 (Mid)	GSM1900	29.18	0.067	Standard	Left Ear	0.059
			29.18	-0.037	Standard	Left Tilt 15°	0.025
			29.18	-0.131	Standard	Right Ear	0.055
			29.18	-0.117	Standard	Right Tilt 15°	0.039
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:

- 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].
- All modes of operation were investigated and the worst-case are reported.
- Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
- Tissue parameters and temperatures are listed on the SAR plot.
- Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.
- Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
- Justification for reduced test configurations: per FCC/OET Supplement C (July, 2001), if the SAR measured at the middle channel for each test configuration (Left, right, cheek/touch, tilt/ear, extended and retracted) is at least 3.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s).

12.3 Measurement Results (802.11b Head SAR)

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Battery	Phantom Position	Data Rate (Mbps)	SAR(mW/g)
MHz	Channel							
2 462	11 (High)	802.11b	17.81	-0.05	Standard	Left Ear	1	0.000495
			17.81	0.007	Standard	Left Tilt 15°	1	0.000442
			17.81	-0.032	Standard	Right Ear	1	0.000298
			17.81	0.096	Standard	Right Tilt 15	1	0.000386
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:

- 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].
- All modes of operation were investigated and the worst-case are reported.
- Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
- Tissue parameters and temperatures are listed on the SAR plot.
- Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.
- Test Signal Call Mode ☒ Manual Test cord ☐ Base Station Simulator
- 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.
- 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.

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

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Battery	Phantom Position	Data Rate	SAR(mW/g)
MHz	Channel							
5 220	44	802.11a	14.44	0.007	Standard	Left Ear	6Mbps	0.000862
5 220	44	802.11a	14.44	0	Standard	Left Tilt 15°	6Mbps	0
5 220	44	802.11a	14.44	0	Standard	Right Ear	6Mbps	0
5 220	44	802.11a	14.44	0.075	Standard	Right Tilt 15	6Mbps	0.000901
5 320	64	802.11a	14.65	0	Standard	Left Ear	6Mbps	0
5 320	64	802.11a	14.65	0	Standard	Left Tilt 15°	6Mbps	0
5 320	64	802.11a	14.65	0	Standard	Right Ear	6Mbps	0
5 320	64	802.11a	14.65	0	Standard	Right Tilt 15	6Mbps	0
5 500	100	802.11a	14.45	0	Standard	Left Ear	6Mbps	0
5 500	100	802.11a	14.45	0	Standard	Left Tilt 15°	6Mbps	0
5 500	100	802.11a	14.45	0	Standard	Right Ear	6Mbps	0
5 500	100	802.11a	14.45	0	Standard	Right Tilt 15	6Mbps	0
5 745	149	802.11a	14.65	-0.0001	Standard	Left Ear	6Mbps	0.000116
5 745	149	802.11a	14.65	0	Standard	Left Tilt 15°	6Mbps	0
5 745	149	802.11a	14.65	0	Standard	Right Ear	6Mbps	0
5 745	149	802.11a	14.65	0.001	Standard	Right Tilt 15	6Mbps	0.000112
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:

- 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].
- All modes of operation were investigated and the worst-case are reported.
- Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
- Tissue parameters and temperatures are listed on the SAR plot.
- Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.
- Test Signal Call Mode ☒ Manual Test cord ☐ Base Station Simulator
- 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.
- For 5 GHz 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 (GSM850 Hotspot SAR)

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Configuration	Separation Distance	SAR(mW/g)
MHz	Channel						
836.6	190 (Mid)	GPRS 3Tx	28.63	0.009	Rear	1.0 cm	0.093
836.6	190 (Mid)	GPRS 3Tx	28.63	0.023	Front	1.0 cm	0.043
836.6	190 (Mid)	GPRS 3Tx	28.63	-0.094	Left	1.0 cm	0.049
836.6	190 (Mid)	GPRS 3Tx	28.63	-0.029	Right	1.0 cm	0.038
836.6	190 (Mid)	GPRS 3Tx	28.63	-0.054	bottom	1.0 cm	0.051
ANSI/ IEEE C95.1 - 1992- Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						Body 1.6 W/kg (mW/g) Averaged over 1 gram	

NOTES:

- 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].
- All modes of operation were investigated and the worst-case are reported.
- Measured Depth of Simulating Tissue is 15.0 cm $\pm$ 0.2 cm.
- Tissue parameters and temperatures are listed on the SAR plot.
- Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.
- Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
- Test Configuration ☐ With Holster ☒ Without Holster
- Justification for reduced test configurations: per FCC/OET Supplement C (July, 2001), if the SAR measured at the middle channel for each test configuration (Left, right, cheek/touch, tilt/ear, extended and retracted) is at least 3.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s).
- For body SAR testing, the EUT was set in GPRS multi-slot class33 with 3uplink 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.

12.6 Measurement Results (GSM1900 Hotspot SAR)

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Configuration	Separation Distance	SAR(mW/g)
MHz	Channel						
1 880.0	661 (Mid)	GPRS 3Tx	26.28	-0.184	Rear	1.0 cm	0.282
1 880.0	661 (Mid)	GPRS 3Tx	26.28	-0.145	Front	1.0 cm	0.183
1 880.0	661 (Mid)	GPRS 3Tx	26.28	-0.043	Left	1.0 cm	0.115
1 880.0	661 (Mid)	GPRS 3Tx	26.28	0.007	Right	1.0 cm	0.048
1 880.0	661 (Mid)	GPRS 3Tx	26.28	-0.066	bottom	1.0 cm	0.228
ANSI/ IEEE C95.1 - 1992- Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						Body 1.6 W/kg (mW/g) Averaged over 1 gram	

NOTES:

- 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].
- All modes of operation were investigated and the worst-case are reported.
- Measured Depth of Simulating Tissue is 15.0 cm $\pm$ 0.2 cm.
- Tissue parameters and temperatures are listed on the SAR plot.
- Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.
- Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
- Test Configuration ☐ With Holster ☒ Without Holster
- Justification for reduced test configurations: per FCC/OET Supplement C (July, 2001), if the SAR measured at the middle channel for each test configuration (Left, right, cheek/touch, tilt/ear, extended and retracted) is at least 3.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s).
- For body SAR testing, the EUT was set in GPRS multi-slot class33 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.

12.7 Measurement Results (802.11b Hotspot SAR)

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Configuration	Separation Distance	Data Rate	SAR(mW/g)
MHz	Channel							
2 462	11 (High)	802.11b	17.81	-0.05	Rear	1.0 cm	1 Mbps	0.00109
		802.11b	17.81	0.03	Front	1.0 cm	1 Mbps	0.000242
		802.11b	17.81	0.034	Right	1.0 cm	1 Mbps	0.124
		802.11b	17.81	0.021	Top	1.0 cm	1 Mbps	0.035
ANSI/ IEEE C95.1 1992 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						Body 1.6 W/kg (mW/g) Averaged over 1 gram		

NOTES:

- 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].
- All modes of operation were investigated and the worst-case are reported.
- Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
- Tissue parameters and temperatures are listed on the SAR plot.
- Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.
- Test Signal Call Mode ☒ Manual Test code ☐ Base Station Simulator
- 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.
- 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.

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

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Configuration	Separation Distance	Data Rate	SAR(mW/g)
MHz	Channel							
5 220	44	802.11a	14.44	0.01	Rear	1.0 cm	6Mbps	0.176
5 220	44	802.11a	14.44	0.001	Front	1.0 cm	6Mbps	1.49e-005
5 320	64	802.11a	14.65	0.09	Rear	1.0 cm	6Mbps	0.190
5 320	64	802.11a	14.65	0.009	Front	1.0 cm	6Mbps	8.13e-006
5 500	100	802.11a	14.45	0.08	Rear	1.0 cm	6Mbps	0.195
5 500	100	802.11a	14.45	0.009	Front	1.0 cm	6Mbps	0.00159
5 745	149	802.11a	14.65	0.001	Rear	1.0 cm	6Mbps	0.567
5 785	157	802.11a	14.63	0.009	Rear	1.0 cm	6Mbps	0.511
5 825	165	802.11a	14.49	0.008	Rear	1.0 cm	6Mbps	0.553
5 745	149	802.11a	14.65	-0.011	Front	1.0 cm	6Mbps	8.53e-005
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						Body 1.6 W/kg (mW/g) Averaged over 1 gram		

NOTES:

- 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].
- All modes of operation were investigated and the worst-case are reported.
- Measured Depth of Simulating Tissue is 15.0 cm $\pm$ 0.2 cm.
- Tissue parameters and temperatures are listed on the SAR plot.
- Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.
- Test Signal Call Mode ☒ Manual Test cord ☐ Base Station Simulator
- 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.
- For 5 GHz 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.
- Per FCC KDB Publication 941225 D06, when the same wireless modes and device transmission configurations are required for body-worn accessories and hotspot mode(2.4GHz WLAN), it is not necessary to additionally test body-worn accessory SAR for the same device orientation. Therefore, the hotspot data for the back side configuration additionally shows body-worn compliance at the same distance.

13. 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.

14. Scaled SAR Values to the Maximum tune-up tolerances

The following measured results were scaled to the maximum tune-up tolerances, according to the output power of the channel tested for the highest measured results in each frequency band

Test Configuration	Mode	Ch #	Freq (MHz)	Power(dBm)		SAR(W/kg)	
				Max. Tune-up limit	Measured	Measured	Scaled
Right Ear	GSM850	190	836.6	32.5	32.21	0.102	0.109
Rear	GPRS850	190	836.6	29.0	28.63	0.093	0.101
Left Ear	GSM1900	661	1 880.0	29.5	29.18	0.059	0.064
Rear	GPRS1900	810	1 880.0	26.5	26.28	0.282	0.297
Left Ear	802.11b	11	2 462	18.0	17.81	0.000495	0.000517
Body Right	802.11b	11	2 462	18.0	17.81	0.124	0.130
Right	802.11a	44	5 220	15.0	14.44	0.000901	0.001025
Rear	802.11a	149	5 745	15.0	14.65	0.567	0.615

15. REFERENCES

- [1] Federal Communications Commission, OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01), Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields, July 2001.
- [2] IEEE Standards Coordinating Committee 34 – IEEE Std. 1528-2003, IEE Recommended Practice or Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body from Wireless Communications Devices.
- [3] Federal Communications Commission, ET Docket 93-62, Guidelines for Evaluating the Environmental Effects of Radio frequency Radiation, Aug. 1996.
- [4] ANSI/IEEE C95.1 - 1991, American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 300 kHz to 100 GHz, New York: IEEE, Aug. 1992
- [5] ANSI/IEEE C95.3 - 1991, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave, New York: IEEE, 1992.
- [6] NCRP, National Council on Radiation Protection and Measurements, Biological Effects and Exposure Criteria for Radio Frequency Electromagnetic Fields, NCRP Report No. 86, 1986. Reprinted Feb. 1995.
- [7] T. Schmid, O. Egger, N. Kuster, Automated E-field scanning system for dosimetric assessments, IEEE Transaction on Microwave Theory and Techniques, vol. 44, Jan. 1996, pp. 105-113.
- [8] K. Pokovic, T. Schmid, N. Kuster, Robust setup for precise calibration of E-field probes in tissue simulating liquids at mobile communications frequencies, ICECOM97, Oct. 1997, pp. 120-124.
- [9] K. Pokovic, T. Schmid, and N. Kuster, E-field Probe with improved isotropy in brain simulating liquids, Proceedings of the ELMAR, Zadar, Croatia, June 23-25, 1996, pp. 172-175.
- [10] Schmid & Partner Engineering AG, Application Note: Data Storage and Evaluation, June 1998, p2.
- [11] V. Hombach, K. Meier, M. Burkhardt, E. Kuhn, N. Kuster, The Dependence of EM Energy Absorption upon Human Head Modeling at 900 MHz, IEEE Transaction on Microwave Theory and Techniques, vol. 44 no. 10, Oct. 1996, pp. 1865-1873.
- [12] N. Kuster and Q. Balzano, Energy absorption mechanism by biological bodies in the near field of dipole antennas above 300 MHz, IEEE Transaction on Vehicular Technology, vol. 41, no. 1, Feb. 1992, pp. 17-23.
- [13] G. Hartsgrrove, A. Kraszewski, A. Surowiec, Simulated Biological Materials for Electromagnetic Radiation Absorption Studies, University of Ottawa, Bioelectro magnetics, Canada: 1987, pp. 29-36.
- [14] Q. Balzano, O. Garay, T. Manning Jr., Electromagnetic Energy Exposure of Simulated Users of Portable Cellular Telephones, IEEE Transactions on Vehicular Technology, vol. 44, no.3, Aug. 1995.
- [15] W. Gander, Computer mathematick, Birkhaeuser, Basel, 1992.
- [16] W.H. Press, S.A. Teukolsky, W.T. Vetterling, and B.P. Flannery, Numerical Recepies in C, The Art of Scientific Computing, Second edition, Cambridge University Press, 1992.
- [17] Federal Communications Commission, OET Bulletin 65, Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields. Supplement C, Dec. 1997.
- [18] N. Kuster, R. Kastle, T. Schmid, Dosimetric evaluation of mobile communications equipment with known precision, IEEE Transaction on Communications, vol. E80-B, no. 5, May 1997, pp. 645-652.
- [19] CENELEC CLC/SC111B, European Prestandard (prENV 50166-2), Human Exposure to Electromagnetic Fields High-frequency: 10 kHz-300 GHz, Jan. 1995.
- [20] Prof. Dr. Niels Kuster, ETH, EidgenØssische Technische Hoschschule ZØrich, Dosimetric Evaluation of the Cellular Phone.
- [21] SAR Evaluation of Handsets with Multiple Transmitters and Antennas #648474.
- [22] SAR Measurement Procedure for 802.11 a/b/g Transmitters #KDB 248227.

Attachment 1. – SAR Test Plots

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 24, 2012

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.919$ mho/m; $\epsilon_r = 40.4$; $\rho = 1000$ kg/m³
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(6.27, 6.27, 6.27); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: SAM 835/900 MHz; Type: SAM

Left Touch 190/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.038 mW/g

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

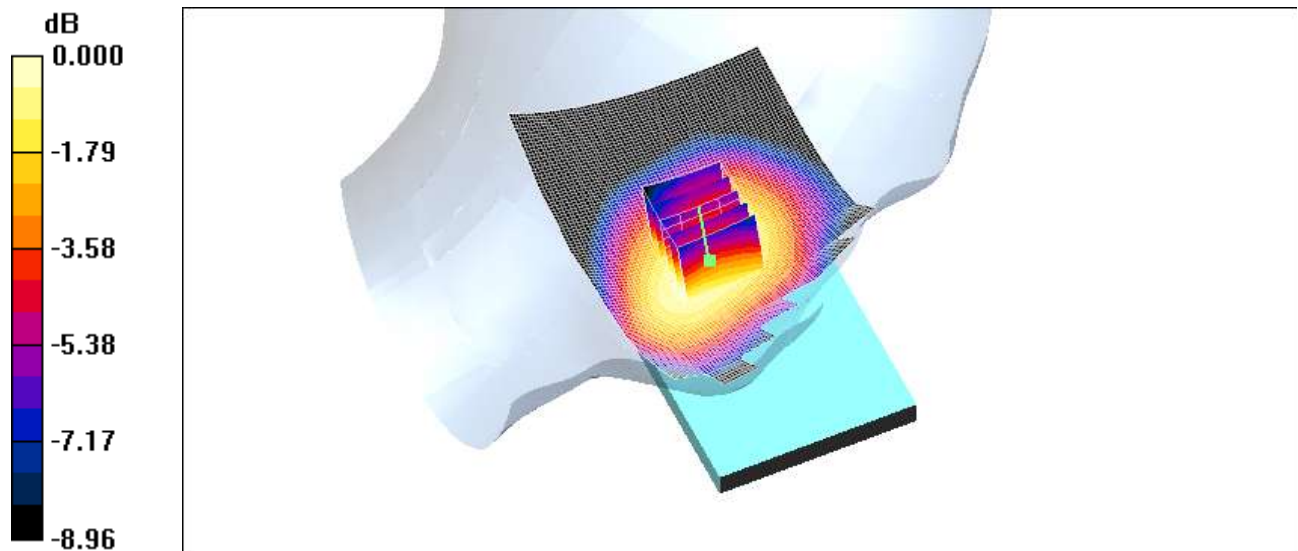
Reference Value = 1.90 V/m; Power Drift = -0.188 dB

Peak SAR (extrapolated) = 0.043 W/kg

SAR(1 g) = 0.036 mW/g; SAR(10 g) = 0.028 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.038 mW/g



0 dB = 0.038mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 24, 2012

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.919$ mho/m; $\epsilon_r = 40.4$; $\rho = 1000$ kg/m³
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(6.27, 6.27, 6.27); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: SAM 835/900 MHz; Type: SAM

Left Tilt 190/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.020 mW/g

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

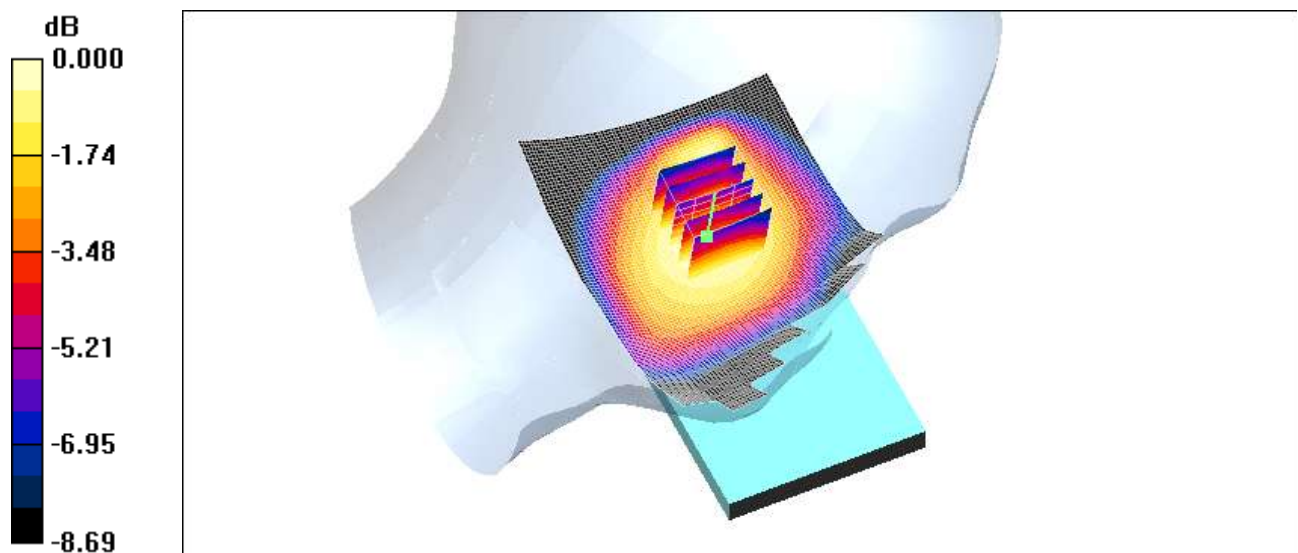
Reference Value = 3.34 V/m; Power Drift = 0.007 dB

Peak SAR (extrapolated) = 0.022 W/kg

SAR(1 g) = 0.019 mW/g; SAR(10 g) = 0.015 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.020 mW/g



0 dB = 0.020mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 24, 2012

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.919$ mho/m; $\epsilon_r = 40.4$; $\rho = 1000$ kg/m³

Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(6.27, 6.27, 6.27); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: SAM 835/900 MHz; Type: SAM

Right Touch 190/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.111 mW/g

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

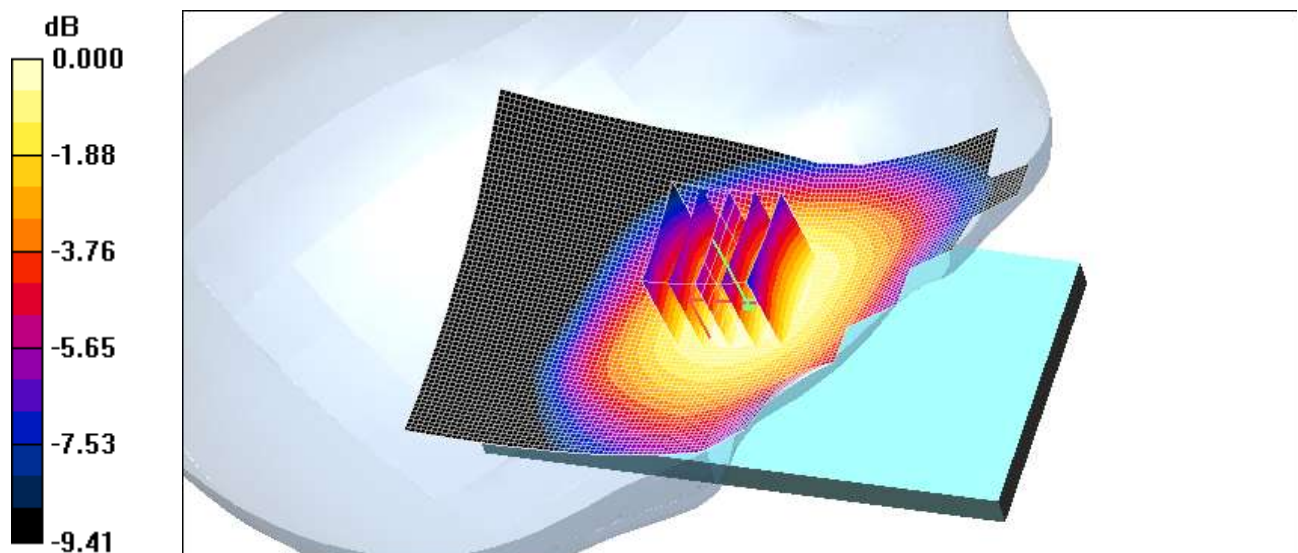
Reference Value = 4.93 V/m; Power Drift = -0.047 dB

Peak SAR (extrapolated) = 0.124 W/kg

SAR(1 g) = 0.102 mW/g; SAR(10 g) = 0.079 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.107 mW/g



0 dB = 0.107mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 24, 2012

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.919$ mho/m; $\epsilon_r = 40.4$; $\rho = 1000$ kg/m³
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(6.27, 6.27, 6.27); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: SAM 835/900 MHz; Type: SAM

Right Tilt 190/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.037 mW/g

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

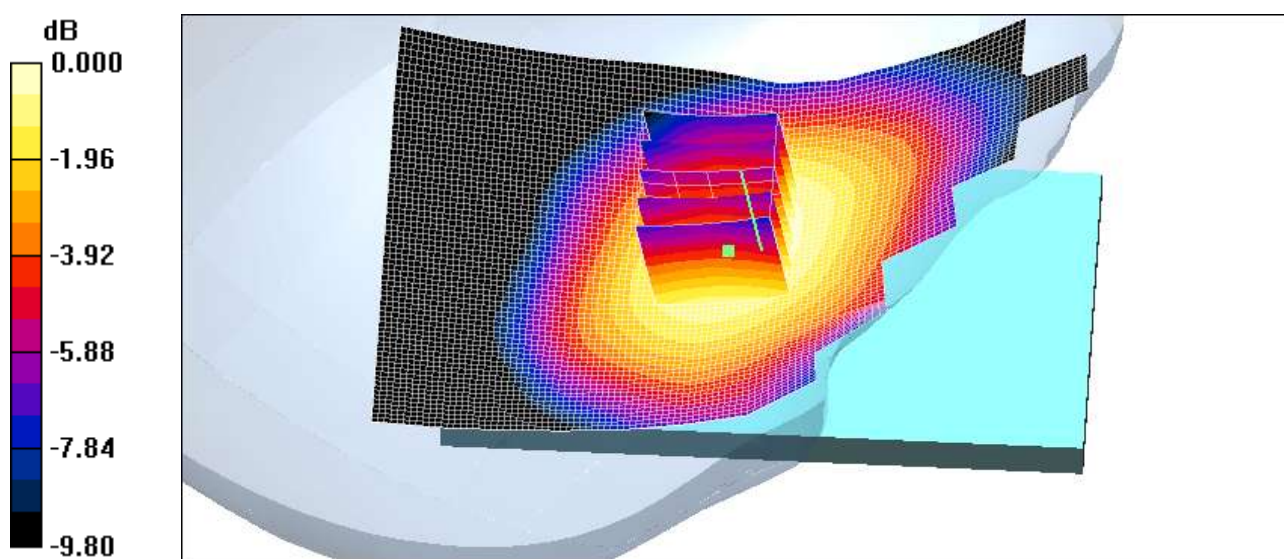
Reference Value = 1.53 V/m; Power Drift = 0.143 dB

Peak SAR (extrapolated) = 0.042 W/kg

SAR(1 g) = 0.035 mW/g; SAR(10 g) = 0.027 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.036 mW/g



0 dB = 0.036mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 25, 2012

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

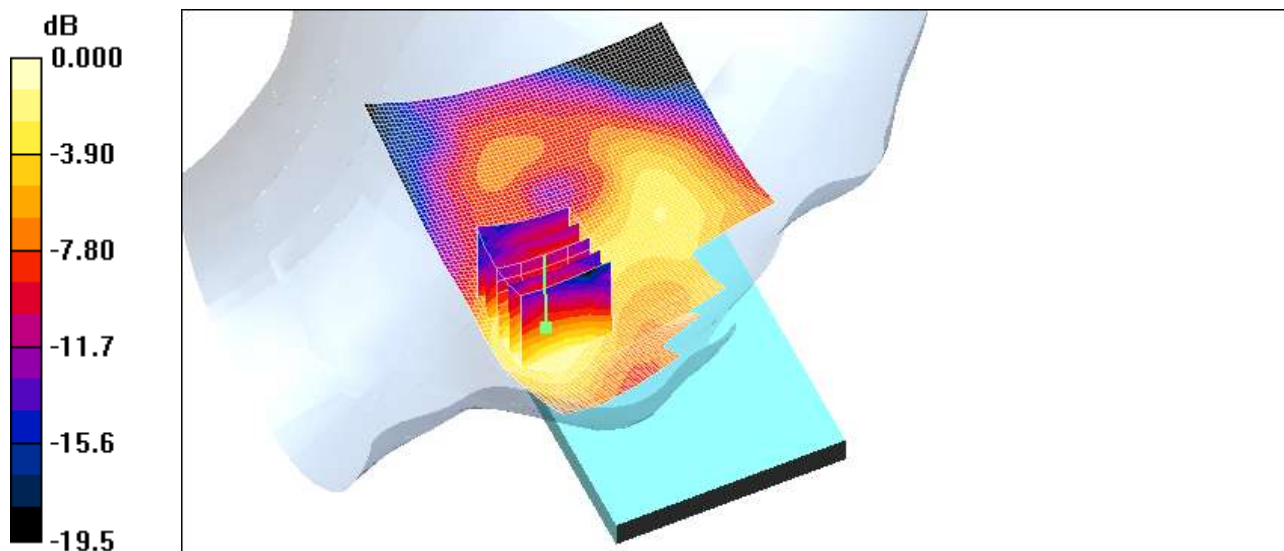
Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.35 \text{ mho/m}$; $\epsilon_r = 40.9$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(5.17, 5.17, 5.17); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 800/900 Phantom; Type: SAM

Left Touch 661/Area Scan (71x121x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (interpolated) = 0.065 mW/g

Left Touch 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 2.84 V/m; Power Drift = 0.067 dB
Peak SAR (extrapolated) = 0.092 W/kg
SAR(1 g) = 0.059 mW/g; SAR(10 g) = 0.035 mW/g
Maximum value of SAR (measured) = 0.064 mW/g



0 dB = 0.064mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 25, 2012

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

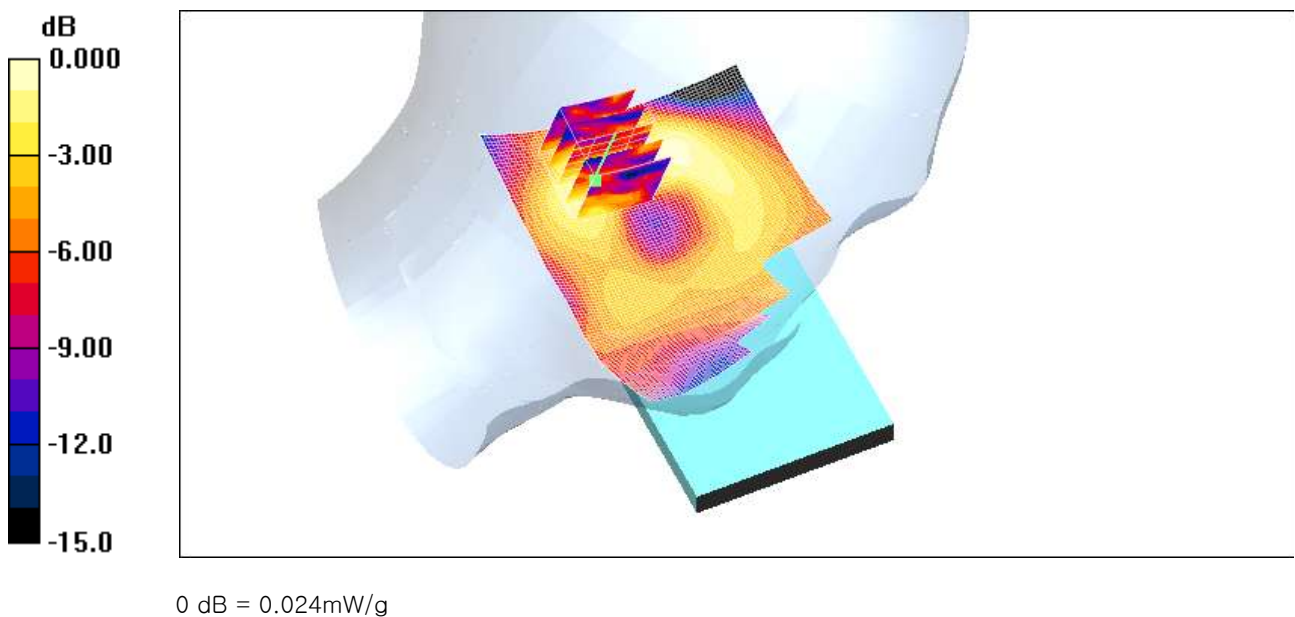
Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.35 \text{ mho/m}$; $\epsilon_r = 40.9$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(5.17, 5.17, 5.17); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 800/900 Phantom; Type: SAM

Left Tilt 661/Area Scan (71x121x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (interpolated) = 0.025 mW/g

Left Tilt 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 4.14 V/m; Power Drift = -0.037 dB
Peak SAR (extrapolated) = 0.068 W/kg
SAR(1 g) = 0.025 mW/g; SAR(10 g) = 0.013 mW/g
Maximum value of SAR (measured) = 0.024 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 25, 2012

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

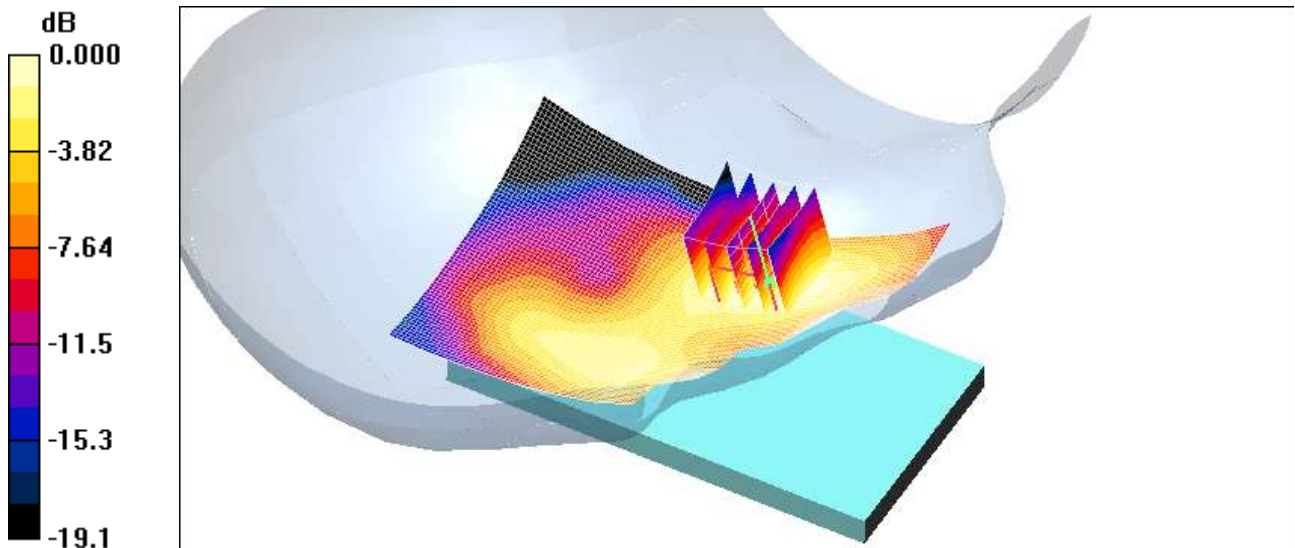
Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.35 \text{ mho/m}$; $\epsilon_r = 40.9$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(5.17, 5.17, 5.17); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 800/900 Phantom; Type: SAM

Right touch 661/Area Scan (71x121x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (interpolated) = 0.064 mW/g

Right touch 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 2.62 V/m; Power Drift = -0.131 dB
Peak SAR (extrapolated) = 0.084 W/kg
SAR(1 g) = 0.055 mW/g; SAR(10 g) = 0.034 mW/g
Maximum value of SAR (measured) = 0.060 mW/g



0 dB = 0.060mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 25, 2012

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

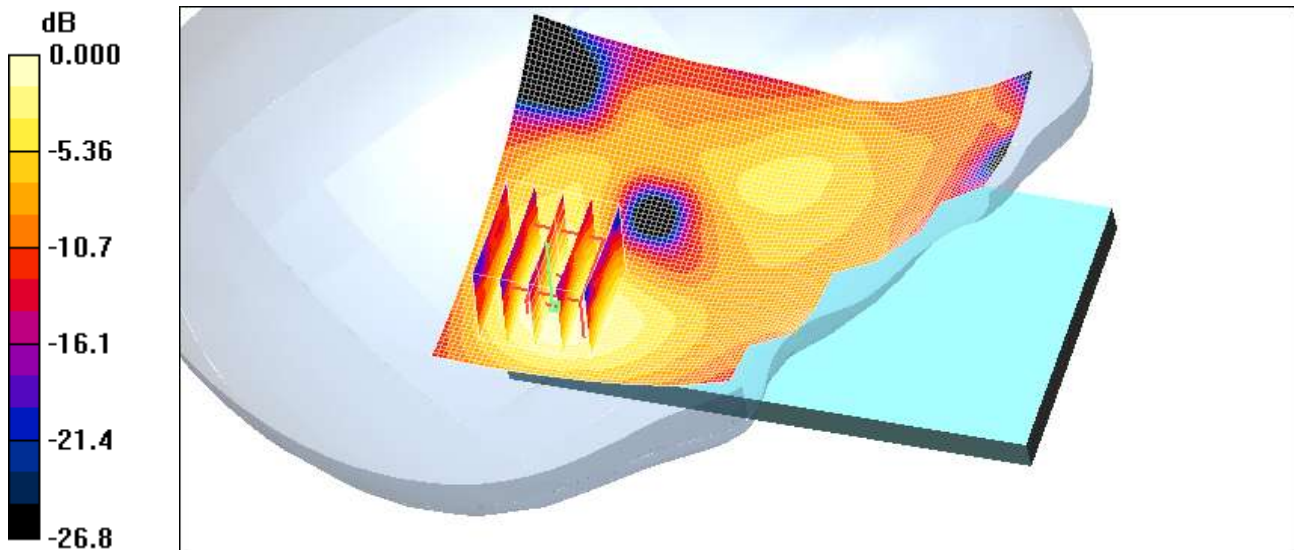
Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.35$ mho/m; $\epsilon_r = 40.9$; $\rho = 1000$ kg/m³
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(5.17, 5.17, 5.17); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 800/900 Phantom; Type: SAM

Right tilt 661/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.043 mW/g

Right tilt 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.85 V/m; Power Drift = -0.117 dB
Peak SAR (extrapolated) = 0.063 W/kg
SAR(1 g) = 0.039 mW/g; SAR(10 g) = 0.023 mW/g
Maximum value of SAR (measured) = 0.043 mW/g



0 dB = 0.043mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.1 °C
Ambient Temperature: 21.3 °C
Test Date: Sep. 26, 2012

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: 2450MHz FCC; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 2462 \text{ MHz}$; $\sigma = 1.85 \text{ mho/m}$; $\epsilon_r = 40.2$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(4.57, 4.57, 4.57); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 1800/1900 Phantom; Type: SAM

Left Touch 11/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.034 mW/g

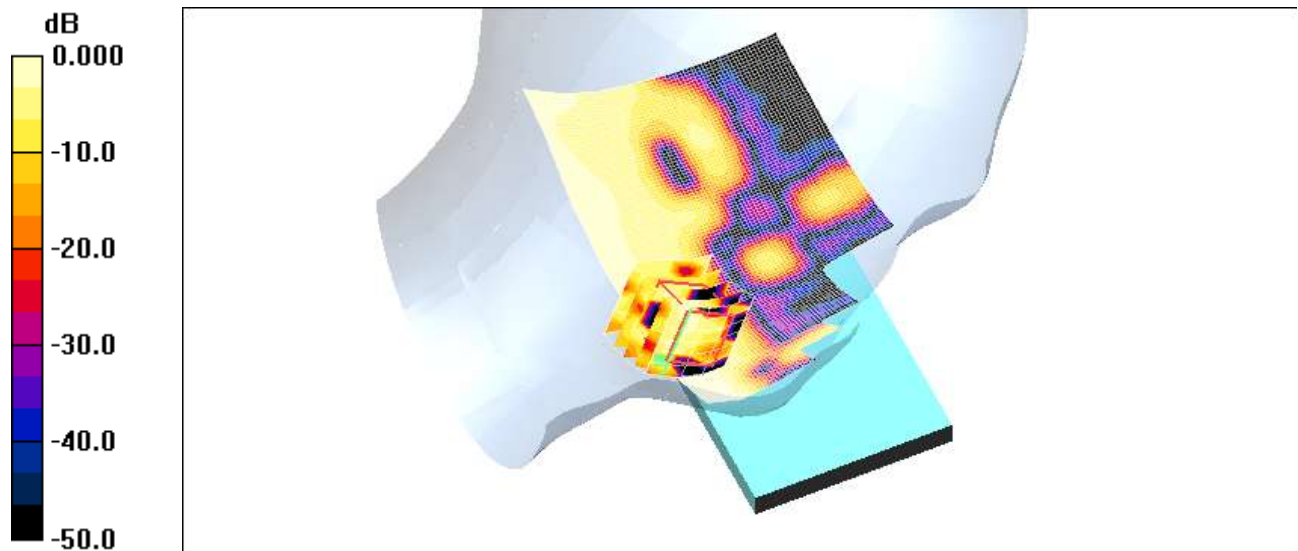
Left Touch 11/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.82 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.006 W/kg

SAR(1 g) = 0.000495 mW/g; SAR(10 g) = 0.000116 mW/g

Maximum value of SAR (measured) = 0.007 mW/g



0 dB = 0.007mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.1 °C
Ambient Temperature: 21.3 °C
Test Date: Sep. 26, 2012

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: 2450MHz FCC; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 2462 \text{ MHz}$; $\sigma = 1.85 \text{ mho/m}$; $\epsilon_r = 40.2$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(4.57, 4.57, 4.57); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 1800/1900 Phantom; Type: SAM

Left Tilt 11/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.006 mW/g

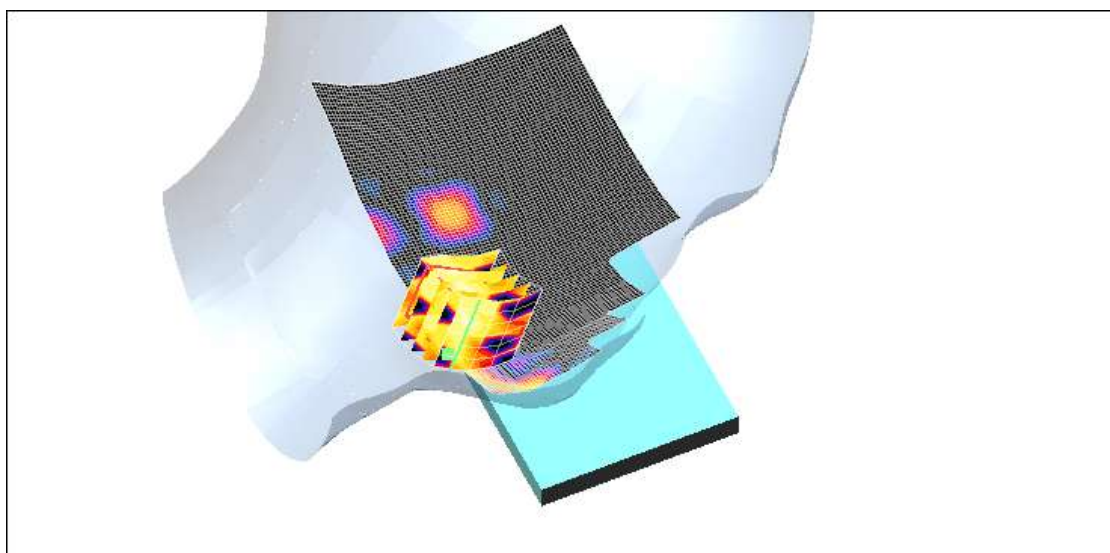
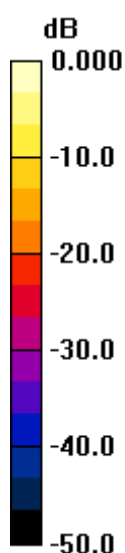
Left Tilt 11/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.000 V/m; Power Drift = 0.007 dB

Peak SAR (extrapolated) = 0.009 W/kg

SAR(1 g) = 0.000442 mW/g; SAR(10 g) = 0.000132 mW/g

Maximum value of SAR (measured) = 0.009 mW/g



0 dB = 0.009mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.1 °C
Ambient Temperature: 21.3 °C
Test Date: Sep. 26, 2012

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: 2450MHz FCC; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 2462 \text{ MHz}$; $\sigma = 1.85 \text{ mho/m}$; $\epsilon_r = 40.2$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(4.57, 4.57, 4.57); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 1800/1900 Phantom; Type: SAM

Right Touch 11/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.001 mW/g

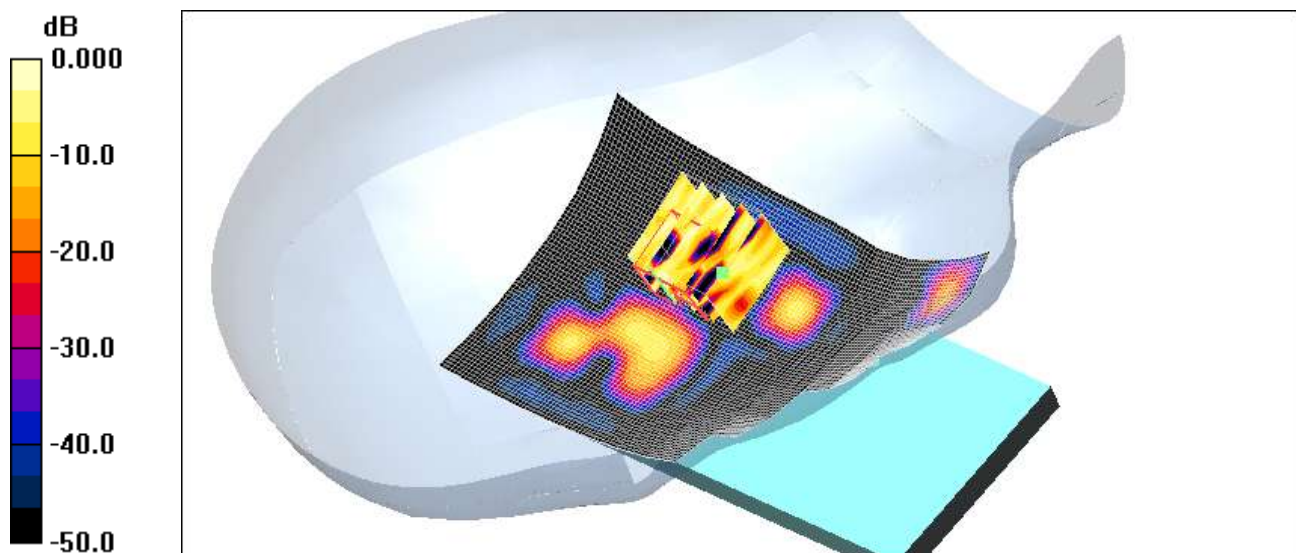
Right Touch 11/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.546 V/m; Power Drift = -0.032 dB

Peak SAR (extrapolated) = 0.006 W/kg

SAR(1 g) = 0.000298 mW/g; SAR(10 g) = 7.66e-005 mW/g

Maximum value of SAR (measured) = 0.006 mW/g



0 dB = 0.006mW/g

Test Laboratory: HCT CO., LTD
 EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
 Liquid Temperature: 21.1 °C
 Ambient Temperature: 21.3 °C
 Test Date: Sep. 26, 2012

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: 2450MHz FCC; Frequency: 2462 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 2462 \text{ MHz}$; $\sigma = 1.85 \text{ mho/m}$; $\epsilon_r = 40.2$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(4.57, 4.57, 4.57); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 1800/1900 Phantom; Type: SAM

Right Tilt 11/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.002 mW/g

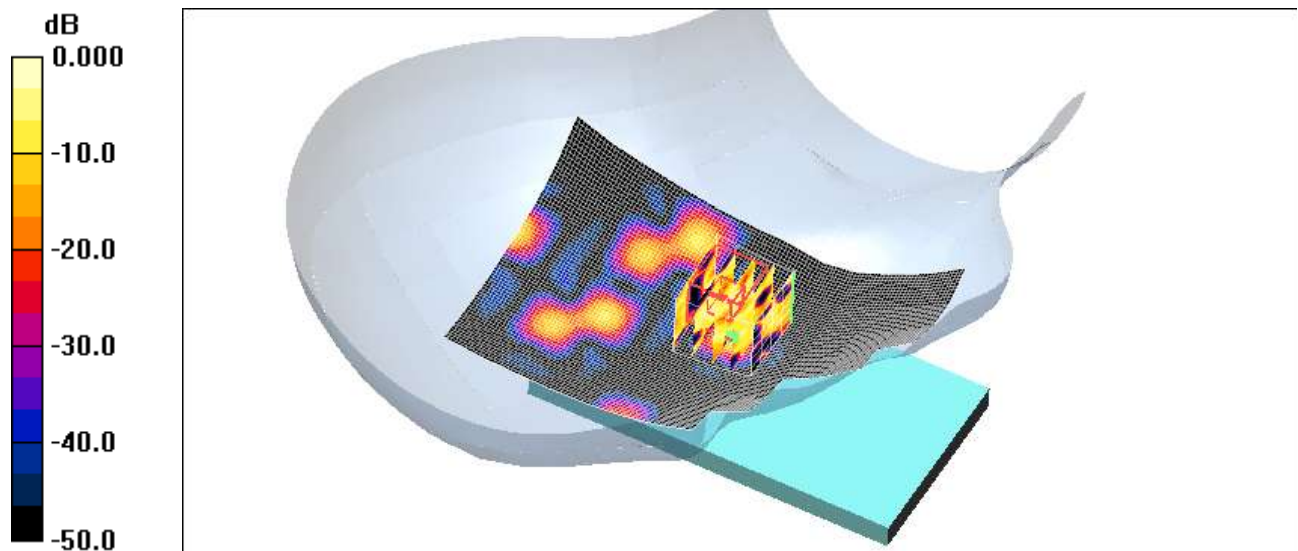
Right Tilt 11/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.533 V/m; Power Drift = 0.096 dB

Peak SAR (extrapolated) = 0.010 W/kg

SAR(1 g) = 0.000386 mW/g; SAR(10 g) = 8.48e-005 mW/g

Maximum value of SAR (measured) = 0.010 mW/g



0 dB = 0.010mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 27, 2012

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: WIFI 5GHz; Frequency: 5220 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 5220$ MHz; $\sigma = 4.49$ mho/m; $\epsilon_r = 36.3$; $\rho = 1000$ kg/m³
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 80; 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: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: 800/900 Phantom; Type: SAM

802.11a Left touch 44ch 6Mbps/Area Scan (101x181x1): Measurement grid: dx=10mm, dy=10mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.000 mW/g

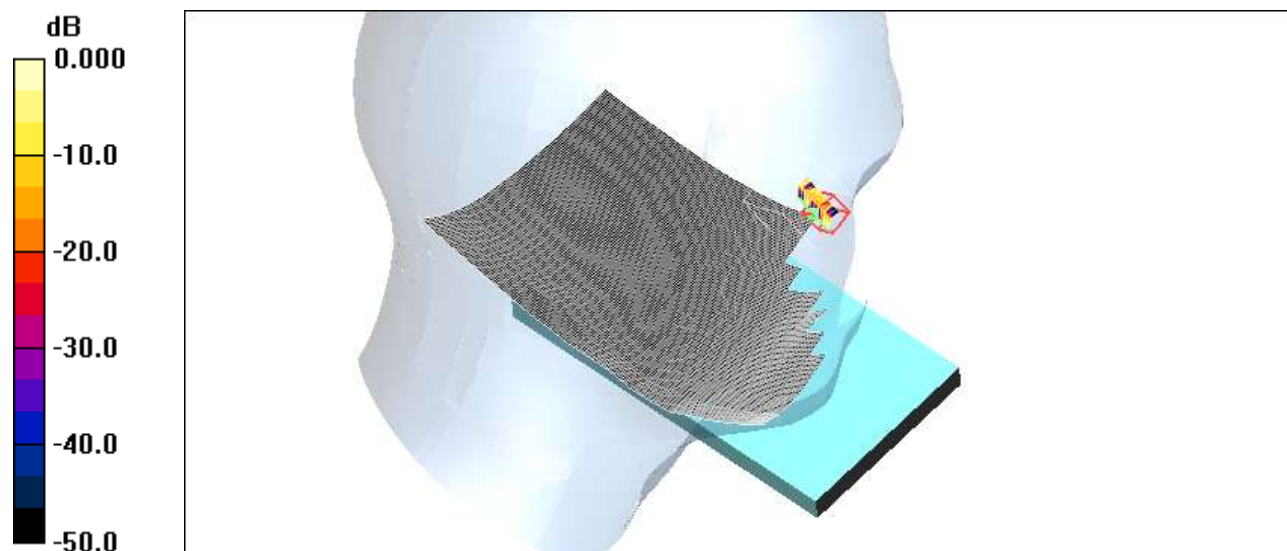
802.11a Left touch 44ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.000 V/m; Power Drift = 0.007 dB

Peak SAR (extrapolated) = 0.020 W/kg

SAR(1 g) = 0.000862 mW/g; SAR(10 g) = n.a.

Maximum value of SAR (measured) = 0.012 mW/g



0 dB = 0.012mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 27, 2012

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: WIFI 5GHz; Frequency: 5220 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 5220$ MHz; $\sigma = 4.49$ mho/m; $\epsilon_r = 36.3$; $\rho = 1000$ kg/m³
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

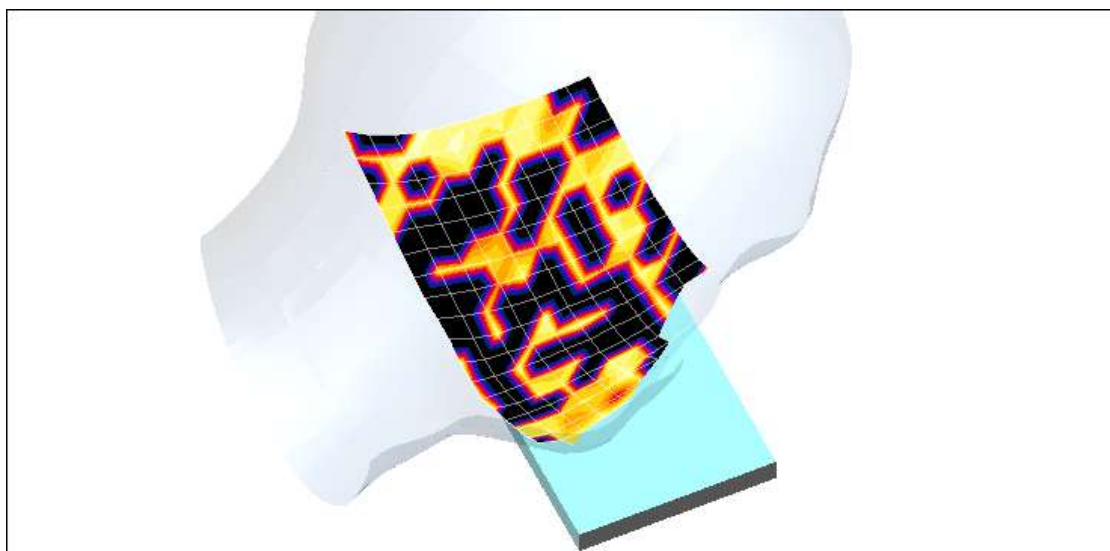
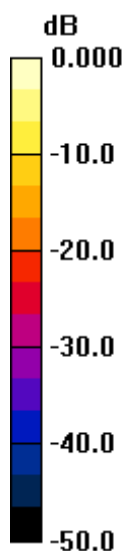
DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(4.96, 4.96, 4.96); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: 800/900 Phantom; Type: SAM

802.11a Left tilt 44ch 6Mbps/Area Scan (11x19x1): Measurement grid: dx=10mm, dy=10mm

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.010 mW/g



0 dB = 0.010mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 27, 2012

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: WIFI 5GHz; Frequency: 5220 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 5220$ MHz; $\sigma = 4.49$ mho/m; $\epsilon_r = 36.3$; $\rho = 1000$ kg/m³
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

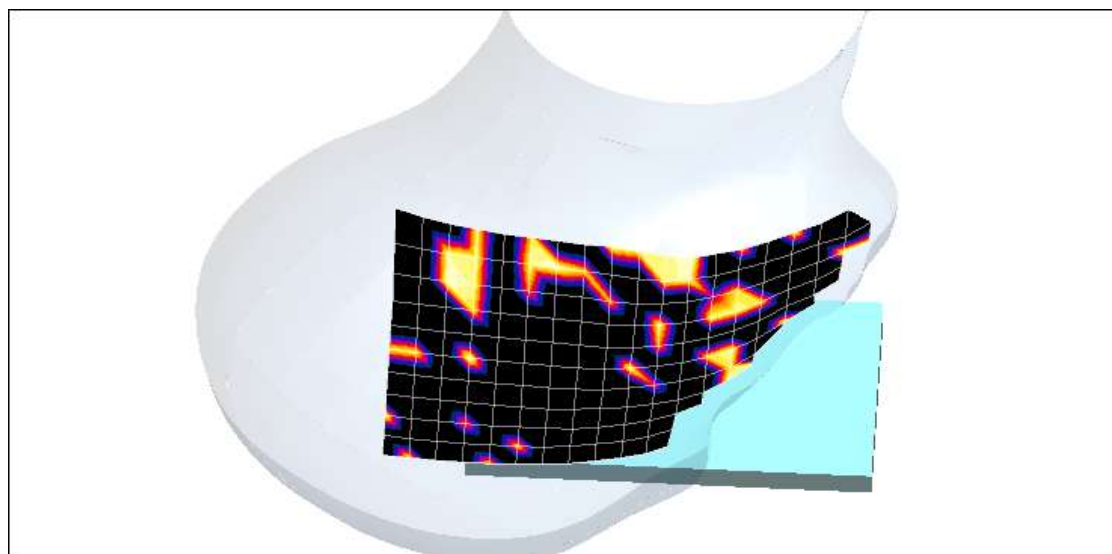
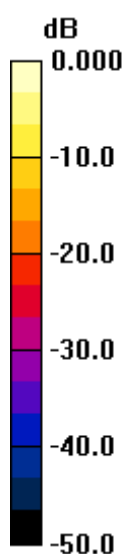
DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(4.96, 4.96, 4.96); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: 800/900 Phantom; Type: SAM

802.11a Right touch 44ch 6Mbps/Area Scan (11x20x1): Measurement grid: dx=10mm, dy=10mm

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.006 mW/g



0 dB = 0.006mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 27, 2012

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: WIFI 5GHz; Frequency: 5220 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 5220$ MHz; $\sigma = 4.49$ mho/m; $\epsilon_r = 36.3$; $\rho = 1000$ kg/m³
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 80; 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: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: 800/900 Phantom; Type: SAM

802.11a Right tilt 44ch 6Mbps/Area Scan (101x191x1): Measurement grid: dx=10mm, dy=10mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.009 mW/g

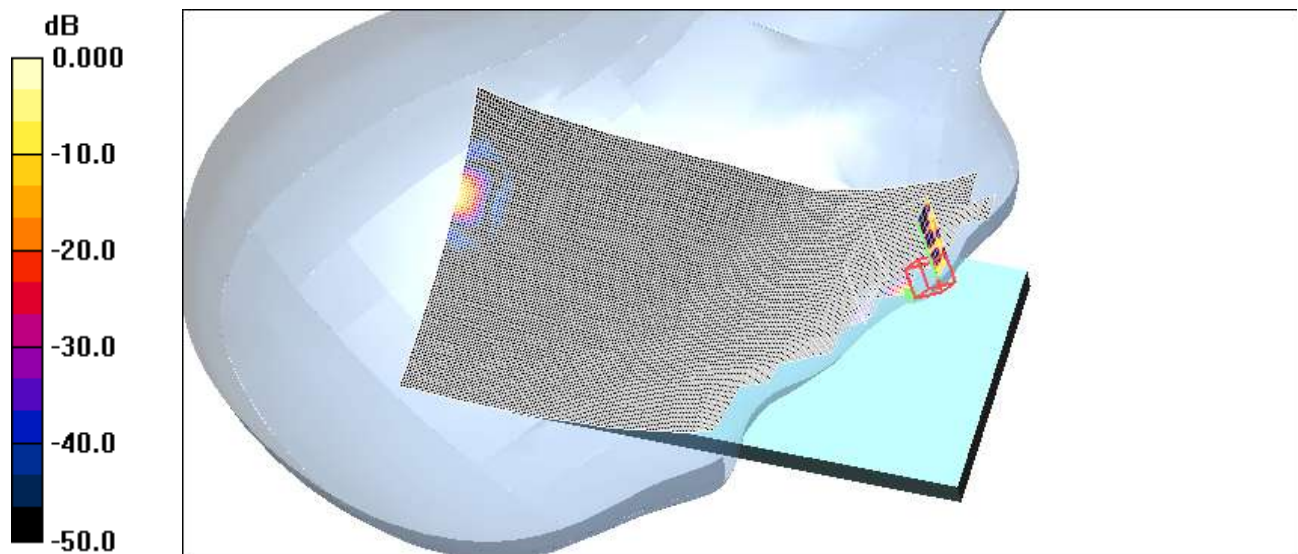
802.11a Right tilt 44ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.825 V/m; Power Drift = -0.075 dB

Peak SAR (extrapolated) = 0.192 W/kg

SAR(1 g) = 0.000901 mW/g; SAR(10 g) = n.a.

Maximum value of SAR (measured) = 0.017 mW/g



0 dB = 0.017mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 27, 2012

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: WIFI 5GHz; Frequency: 5320 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 5320$ MHz; $\sigma = 4.62$ mho/m; $\epsilon_r = 36.1$; $\rho = 1000$ kg/m³
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

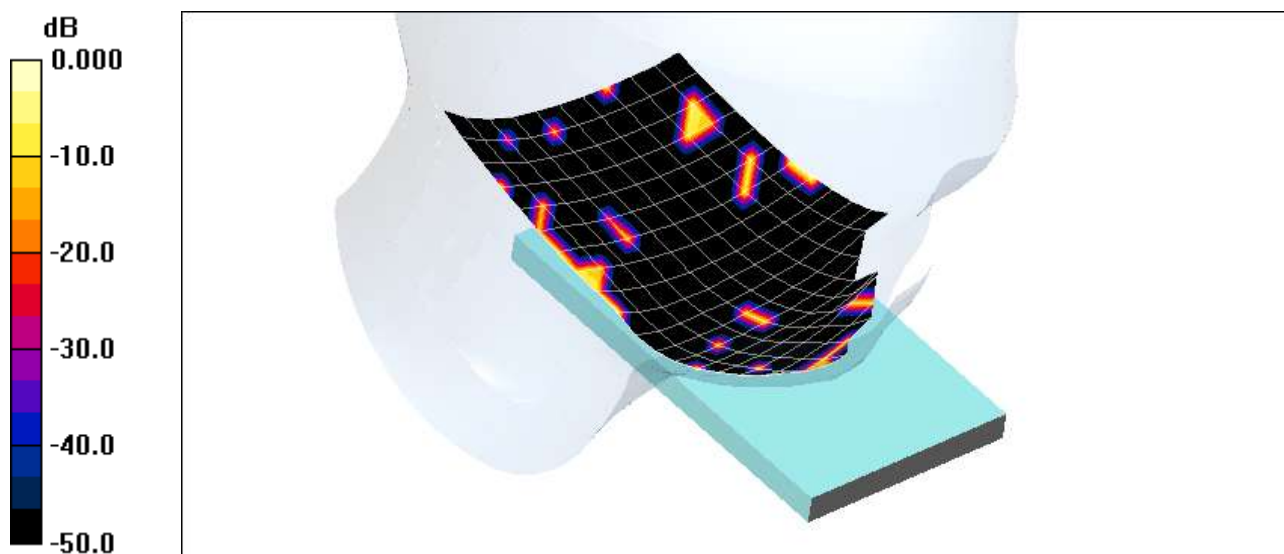
DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(4.79, 4.79, 4.79); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: 800/900 Phantom; Type: SAM

802.11a Left touch 64ch 6Mbps/Area Scan (11x20x1): Measurement grid: dx=10mm, dy=10mm

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.013 mW/g



0 dB = 0.013mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 27, 2012

DUT: GT-N7102; **Type:** bar; **Serial:** FJ-254-C

Communication System: WIFI 5GHz; **Frequency:** 5320 MHz; **Duty Cycle:** 1:1
Medium parameters used (interpolated): $f = 5320 \text{ MHz}$; $\sigma = 4.62 \text{ mho/m}$; $\epsilon_r = 36.1$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Left Section ; **Measurement SW:** DASY4, V4.7 Build 80; **Postprocessing SW:** SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(4.79, 4.79, 4.79); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: 800/900 Phantom; Type: SAM

802.11a Left tilt 64ch 6Mbps/Area Scan (101x191x1): Measurement grid: dx=10mm, dy=10mm

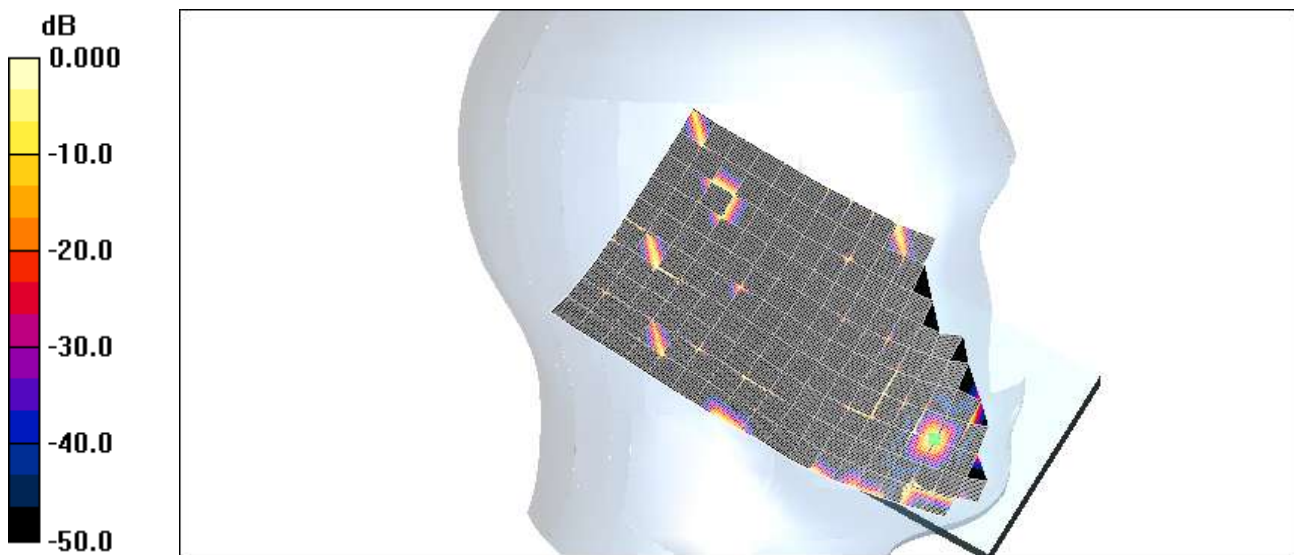
[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.002 mW/g

802.11a Left tilt 64ch 6Mbps/Area Scan (11x20x1): Measurement grid: dx=10mm, dy=10mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.006 mW/g



0 dB = 0.006mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 27, 2012

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: WIFI 5GHz; Frequency: 5320 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 5320$ MHz; $\sigma = 4.62$ mho/m; $\epsilon_r = 36.1$; $\rho = 1000$ kg/m³
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

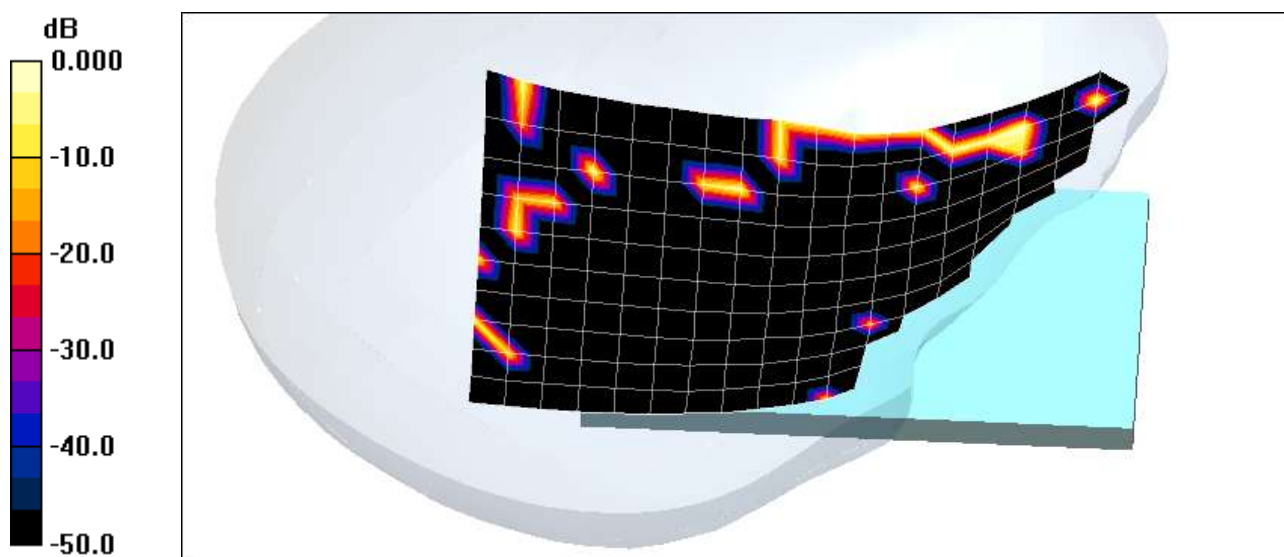
DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(4.79, 4.79, 4.79); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: 800/900 Phantom; Type: SAM

802.11a Right touch 64ch 6Mbps/Area Scan (11x20x1): Measurement grid: dx=10mm, dy=10mm

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.007 mW/g



0 dB = 0.007mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 27, 2012

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: WIFI 5GHz; Frequency: 5320 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 5320$ MHz; $\sigma = 4.62$ mho/m; $\epsilon_r = 36.1$; $\rho = 1000$ kg/m³
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

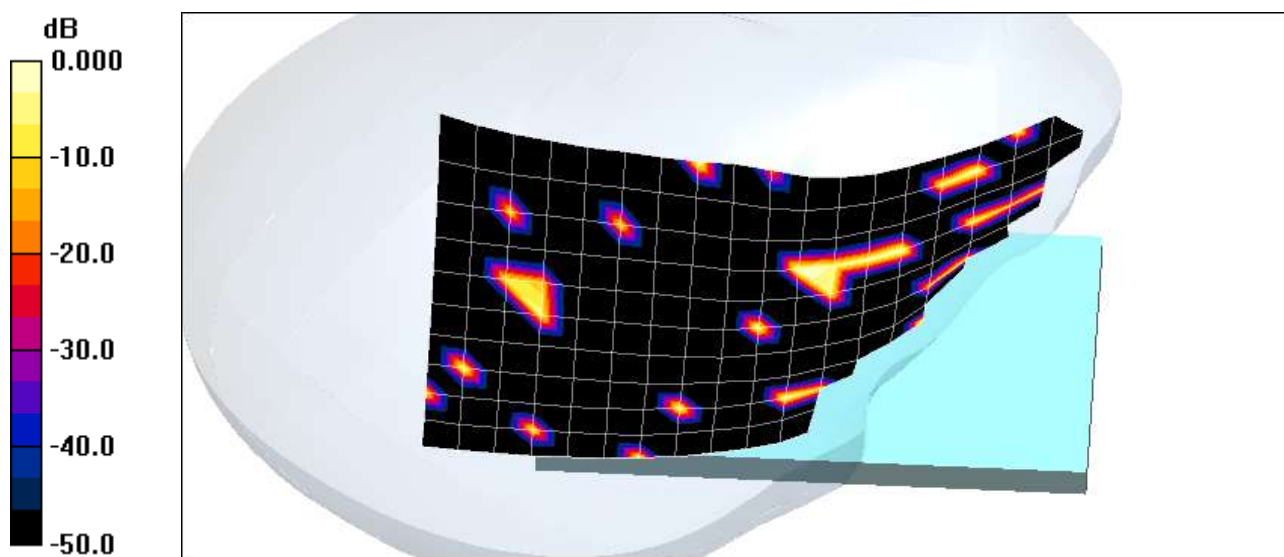
DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(4.79, 4.79, 4.79); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: 800/900 Phantom; Type: SAM

802.11a Right tilt 64ch 6Mbps/Area Scan (11x20x1): Measurement grid: dx=10mm, dy=10mm

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.007 mW/g



0 dB = 0.007mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 28, 2012

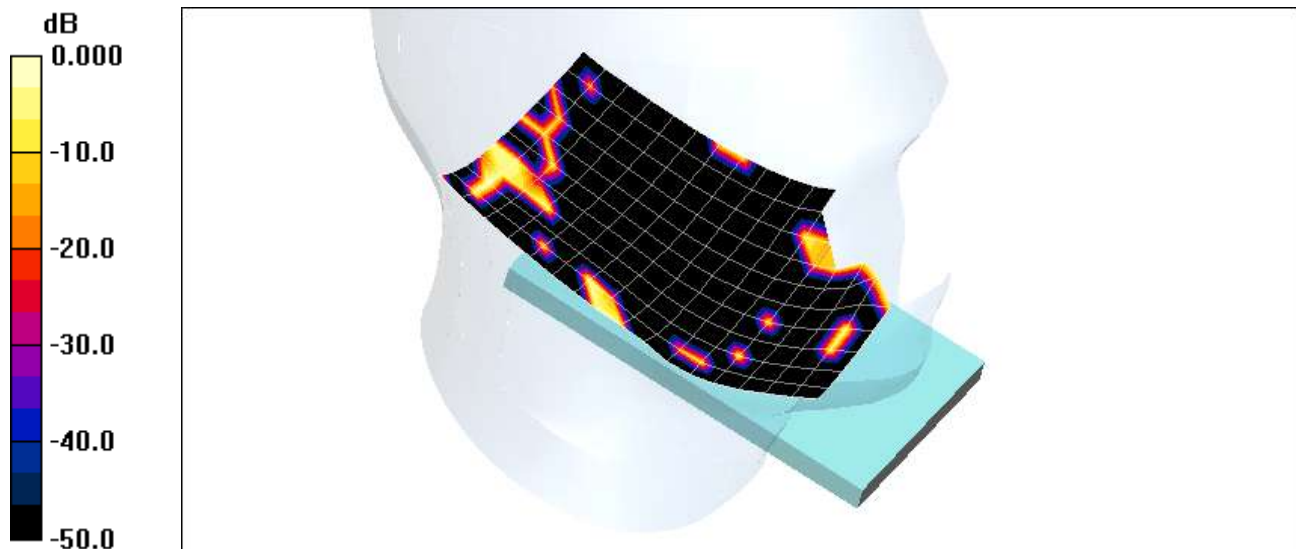
DUT: GT-N7102; **Type:** bar; **Serial:** FJ-254-C

Communication System: WIFI 5GHz; **Frequency:** 5500 MHz; **Duty Cycle:** 1:1
Medium parameters used: $f = 5500 \text{ MHz}$; $\sigma = 4.81 \text{ mho/m}$; $\epsilon_r = 35.7$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Left Section ; **Measurement SW:** DASY4, V4.7 Build 80; **Postprocessing SW:** SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(4.66, 4.66, 4.66); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: 800/900 Phantom; Type: SAM

802.11a Left touch 100ch 6Mbps/Area Scan (11x17x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$
Maximum value of SAR (measured) = 0.009 mW/g



0 dB = 0.009mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 28, 2012

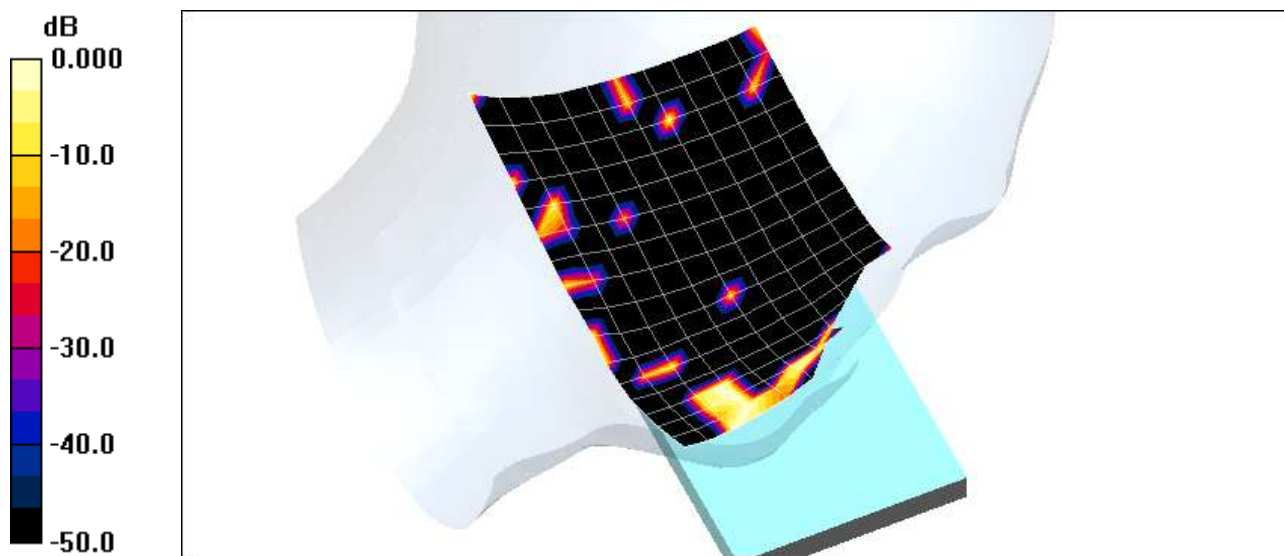
DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: WIFI 5GHz; Frequency: 5500 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 5500$ MHz; $\sigma = 4.81$ mho/m; $\epsilon_r = 35.7$; $\rho = 1000$ kg/m³
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(4.66, 4.66, 4.66); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: 800/900 Phantom; Type: SAM

802.11a Left tilt 100ch 6Mbps/Area Scan (11x17x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.014 mW/g



0 dB = 0.014mW/g

Test Laboratory: HCT CO., LTD
 EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
 Liquid Temperature: 21.2 °C
 Ambient Temperature: 21.4 °C
 Test Date: Sep. 28, 2012

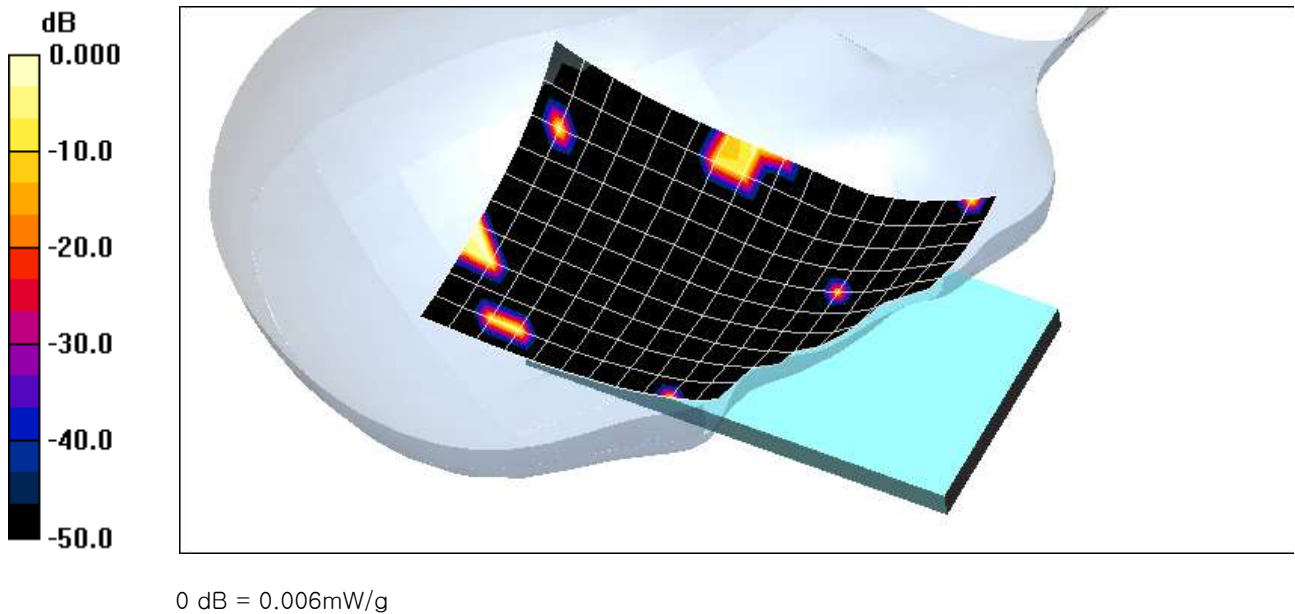
DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: WIFI 5GHz; Frequency: 5500 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 5500 \text{ MHz}$; $\sigma = 4.81 \text{ mho/m}$; $\epsilon_r = 35.7$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(4.66, 4.66, 4.66); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: 800/900 Phantom; Type: SAM

Right touch 802.11a 100ch 6Mbps/Area Scan (11x17x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$
 Maximum value of SAR (measured) = 0.006 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 28, 2012

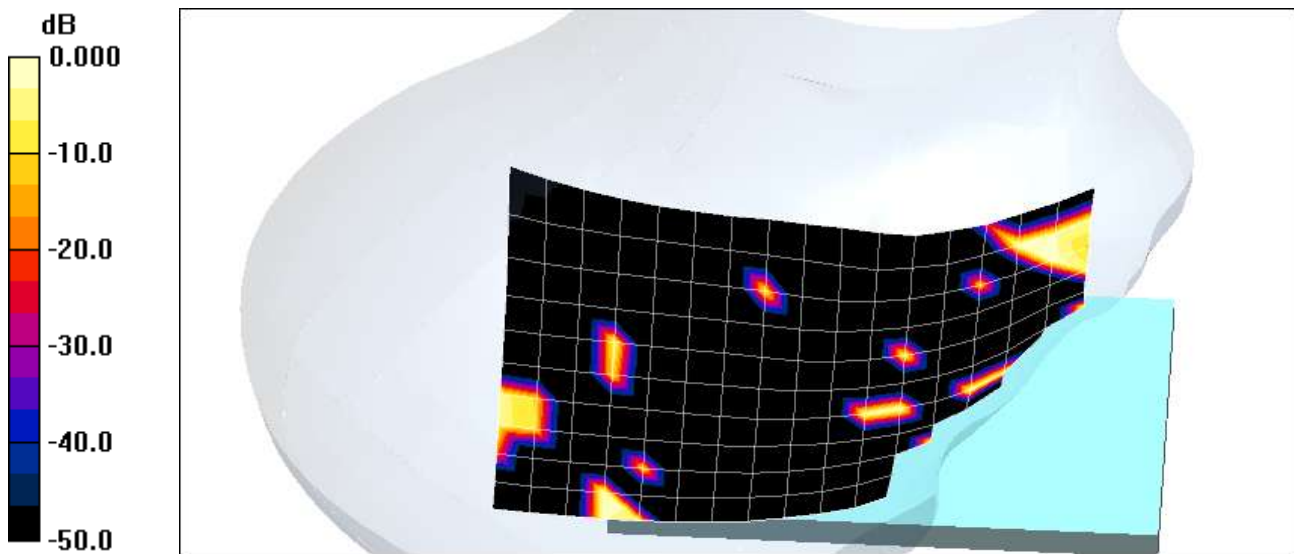
DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: WIFI 5GHz; Frequency: 5500 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 5500 \text{ MHz}$; $\sigma = 4.81 \text{ mho/m}$; $\epsilon_r = 35.7$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(4.66, 4.66, 4.66); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: 800/900 Phantom; Type: SAM

Right tilt 802.11a 100ch 6Mbps/Area Scan (11x17x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$
Maximum value of SAR (measured) = 0.006 mW/g



0 dB = 0.006mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 28, 2012

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: WIFI 5GHz; Frequency: 5745 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 5745$ MHz; $\sigma = 5.13$ mho/m; $\epsilon_r = 35$; $\rho = 1000$ kg/m³
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 80; 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: 4mm (Mechanical Surface Detection) Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn912; Calibrated: 2011-11-17
- Phantom: 800/900 Phantom; Type: SAM

Left touch 802.11a 149ch 6Mbps/Area Scan (101x161x1): Measurement grid: dx=10mm, dy=10mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.049 mW/g

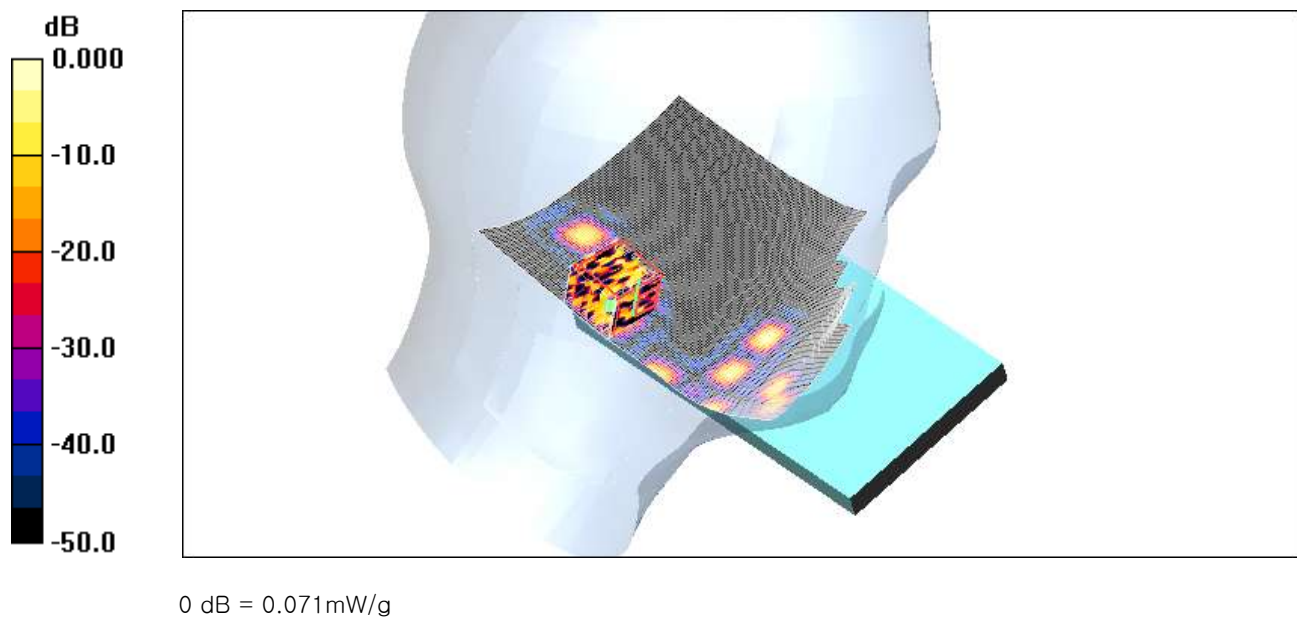
Left touch 802.11a 149ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 1.87 V/m; Power Drift = -0.0001 dB

Peak SAR (extrapolated) = 0.064 W/kg

SAR(1 g) = 0.000116 mW/g; SAR(10 g) = 1.14e-005 mW/g

Maximum value of SAR (measured) = 0.071 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 28, 2012

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: WIFI 5GHz; Frequency: 5745 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 5745$ MHz; $\sigma = 5.13$ mho/m; $\epsilon_r = 35$; $\rho = 1000$ kg/m³
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

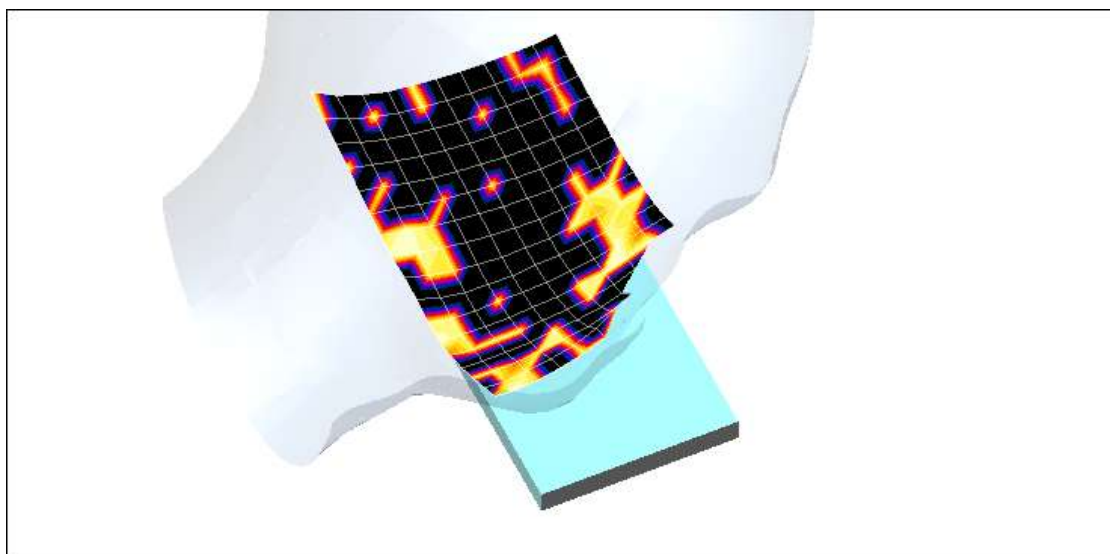
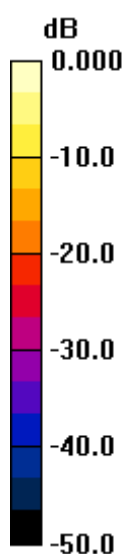
DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(4.61, 4.61, 4.61); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn912; Calibrated: 2011-11-17
- Phantom: 800/900 Phantom; Type: SAM

Left tilt 802.11a 149ch 6Mbps/Area Scan (11x17x1): Measurement grid: dx=10mm, dy=10mm

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.009 mW/g



0 dB = 0.009mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 28, 2012

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: WIFI 5GHz; Frequency: 5745 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 5745$ MHz; $\sigma = 5.13$ mho/m; $\epsilon_r = 35$; $\rho = 1000$ kg/m³
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

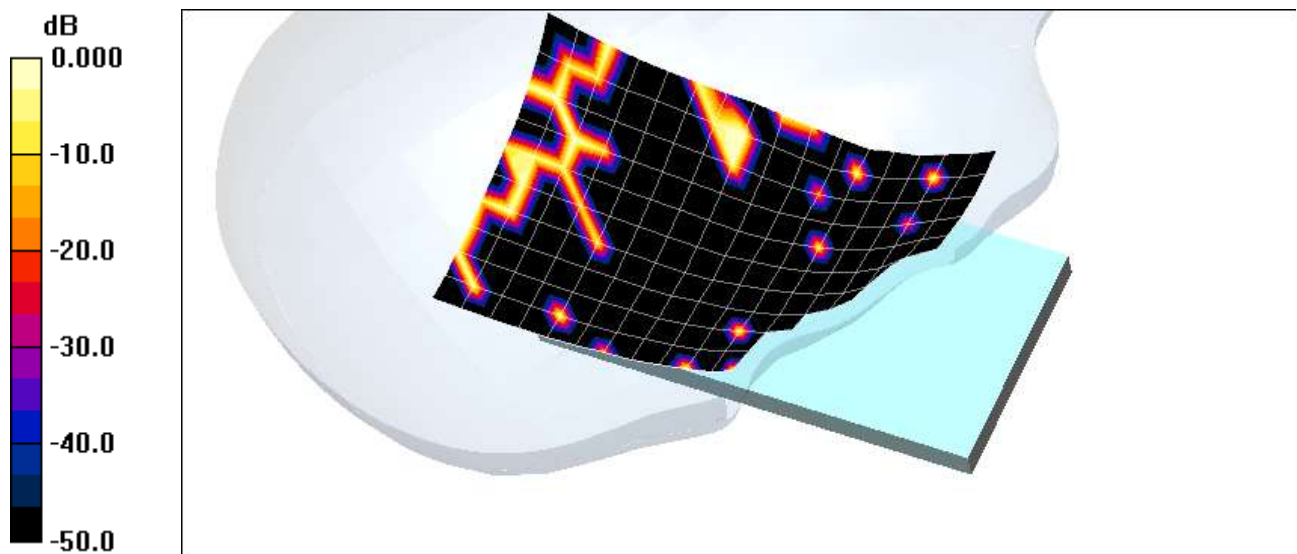
DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(4.61, 4.61, 4.61); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn912; Calibrated: 2011-11-17
- Phantom: 800/900 Phantom; Type: SAM

Right touch 802.11a 149ch 6Mbps/Area Scan (11x17x1): Measurement grid: dx=10mm, dy=10mm

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.005 mW/g



0 dB = 0.005mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 28, 2012

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: WIFI 5GHz; Frequency: 5745 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 5745 \text{ MHz}$; $\sigma = 5.13 \text{ mho/m}$; $\epsilon_r = 35$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 80; 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: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn912; Calibrated: 2011-11-17
- Phantom: 800/900 Phantom; Type: SAM

Right tilt 802.11a 149ch 6Mbps/Area Scan (101x161x1): Measurement grid: dx=10mm, dy=10mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.007 mW/g

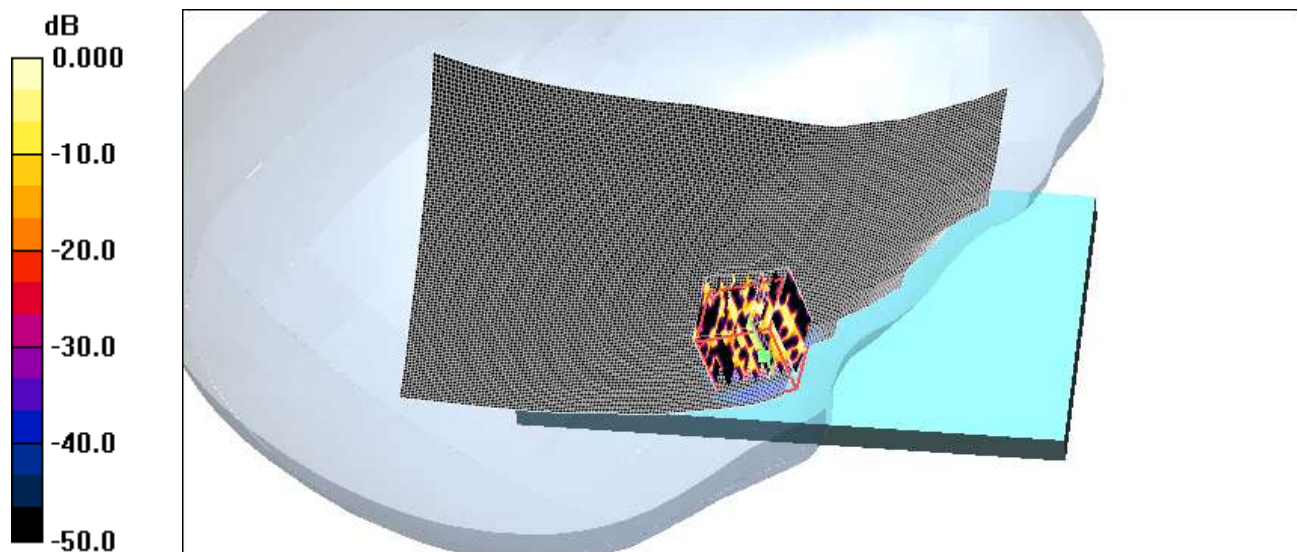
Right tilt 802.11a 149ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.000 V/m; Power Drift = 0.001 dB

Peak SAR (extrapolated) = 0.005 W/kg

SAR(1 g) = 0.000112 mW/g; SAR(10 g) = 2.05e-005 mW/g

Maximum value of SAR (measured) = 0.011 mW/g



0 dB = 0.011mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 24, 2012
Separation Distance 1.0 cm

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:2.77
Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 54.3$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(6.27, 6.27, 6.27); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body rear 190 3Tx/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.100 mW/g

Body rear 190 3Tx/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

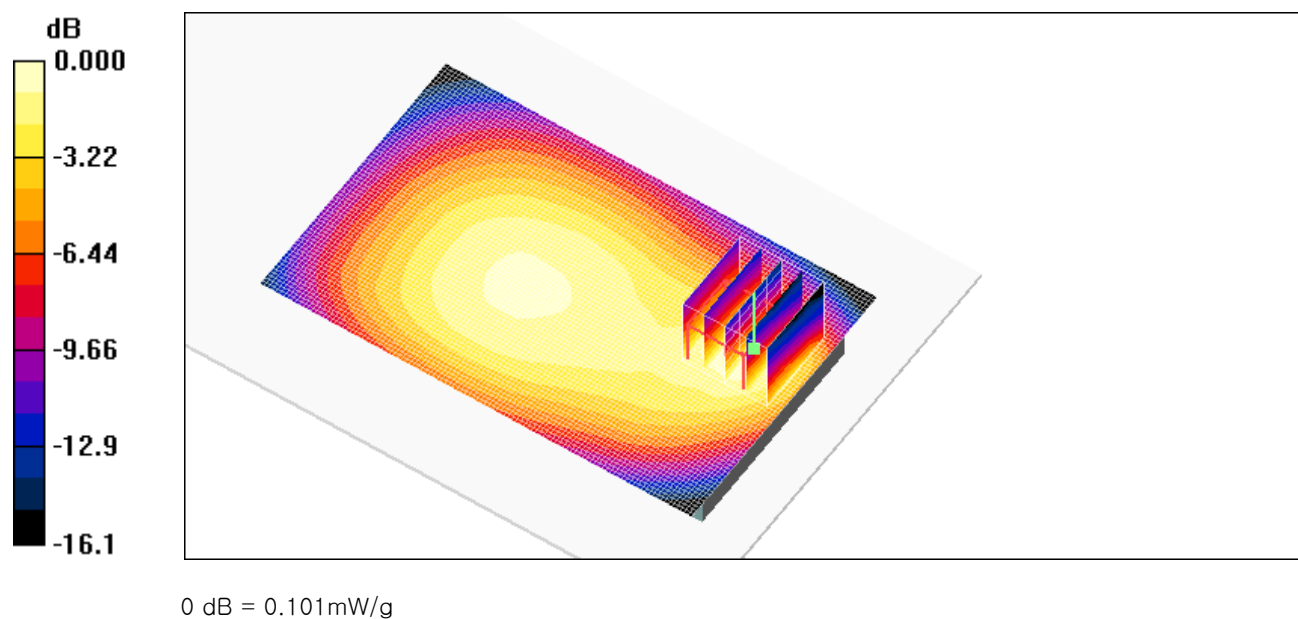
Reference Value = 8.48 V/m; Power Drift = 0.009 dB

Peak SAR (extrapolated) = 0.192 W/kg

SAR(1 g) = 0.093 mW/g; SAR(10 g) = 0.054 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.101 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 24, 2012
Separation Distance 1.0 cm

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:2.77
Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 54.3$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(6.27, 6.27, 6.27); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body front 190 3Tx/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.048 mW/g

Body front 190 3Tx/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

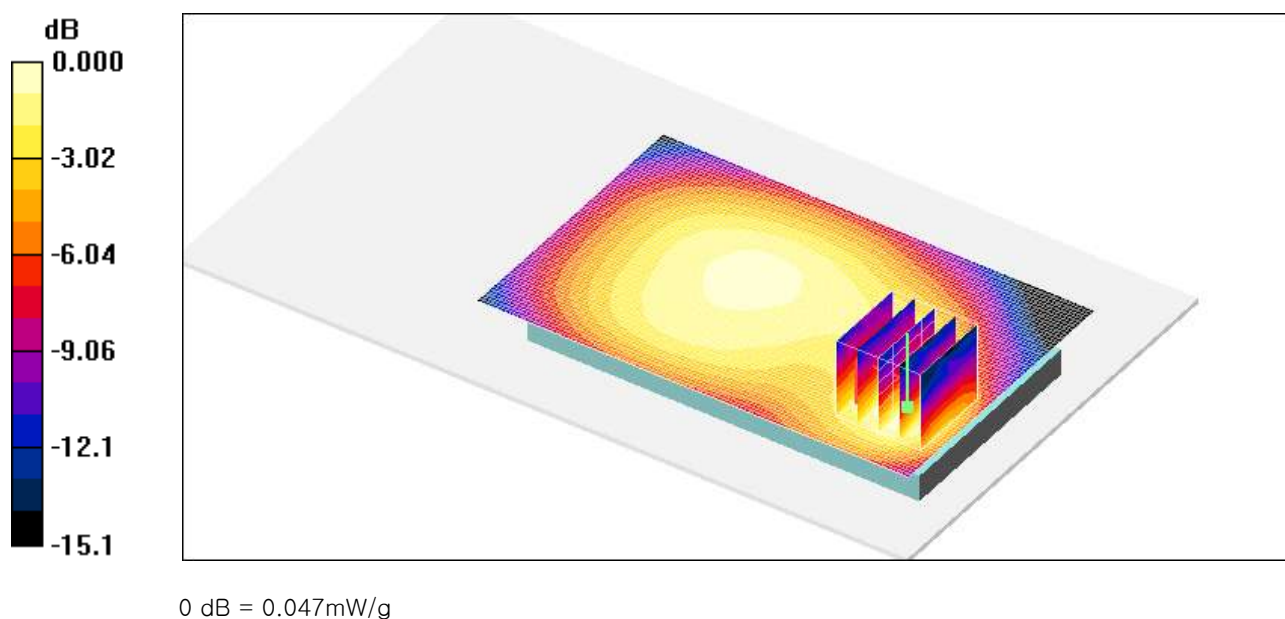
Reference Value = 5.69 V/m; Power Drift = 0.023 dB

Peak SAR (extrapolated) = 0.072 W/kg

SAR(1 g) = 0.043 mW/g; SAR(10 g) = 0.026 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.047 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 24, 2012
Separation Distance 1.0 cm

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:2.77
Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 54.3$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(6.27, 6.27, 6.27); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body left 190 3Tx/Area Scan (31x121x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.052 mW/g

Body left 190 3Tx/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

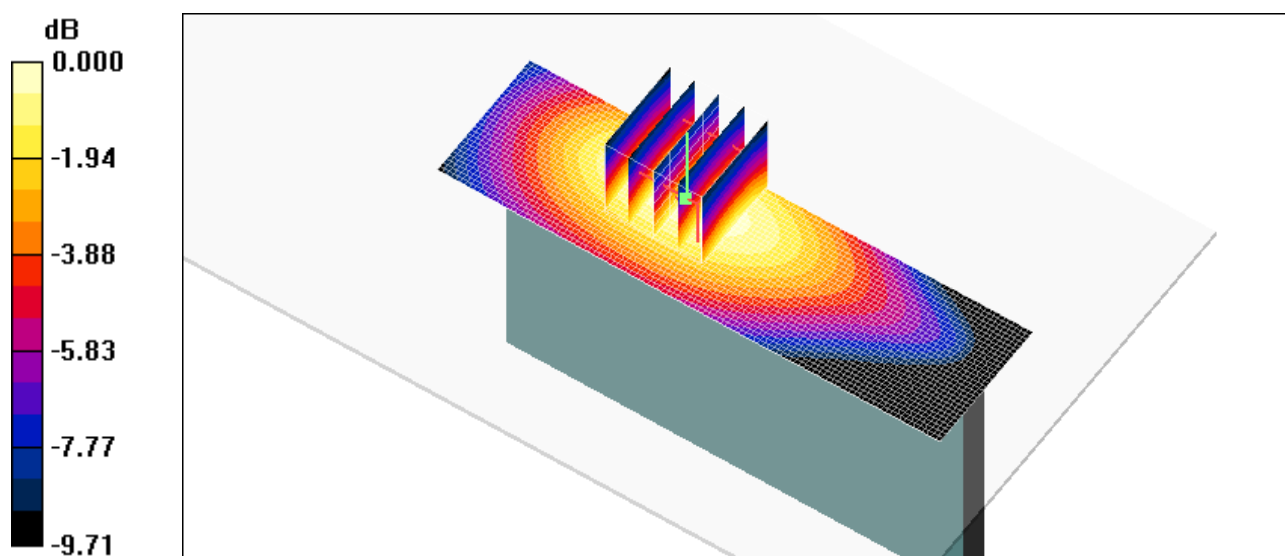
Reference Value = 6.79 V/m; Power Drift = -0.094 dB

Peak SAR (extrapolated) = 0.065 W/kg

SAR(1 g) = 0.049 mW/g; SAR(10 g) = 0.033 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.053 mW/g



0 dB = 0.053mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 24, 2012
Separation Distance 1.0 cm

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:2.77
Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 54.3$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(6.27, 6.27, 6.27); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body right 190 3Tx/Area Scan (31x121x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.040 mW/g

Body right 190 3Tx/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

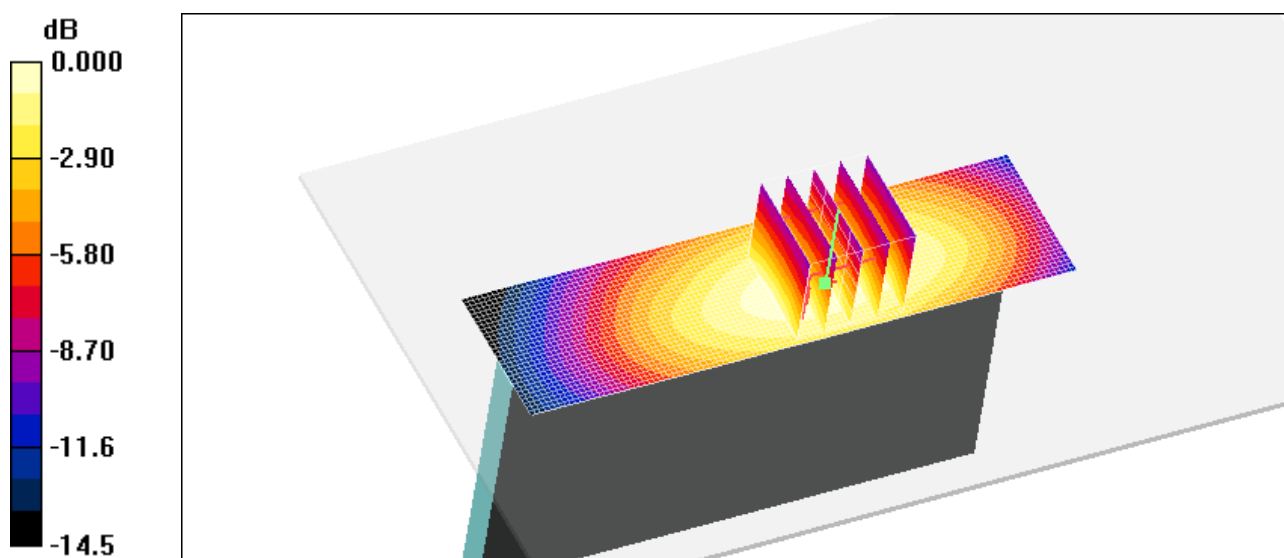
Reference Value = 6.15 V/m; Power Drift = -0.029 dB

Peak SAR (extrapolated) = 0.052 W/kg

SAR(1 g) = 0.038 mW/g; SAR(10 g) = 0.026 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: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 24, 2012
Separation Distance 1.0 cm

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:2.77
Medium parameters used (interpolated): $f = 836.6 \text{ MHz}$; $\sigma = 1.01 \text{ mho/m}$; $\epsilon_r = 54.3$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(6.27, 6.27, 6.27); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body bottom 190 3Tx/Area Scan (31x81x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.057 mW/g

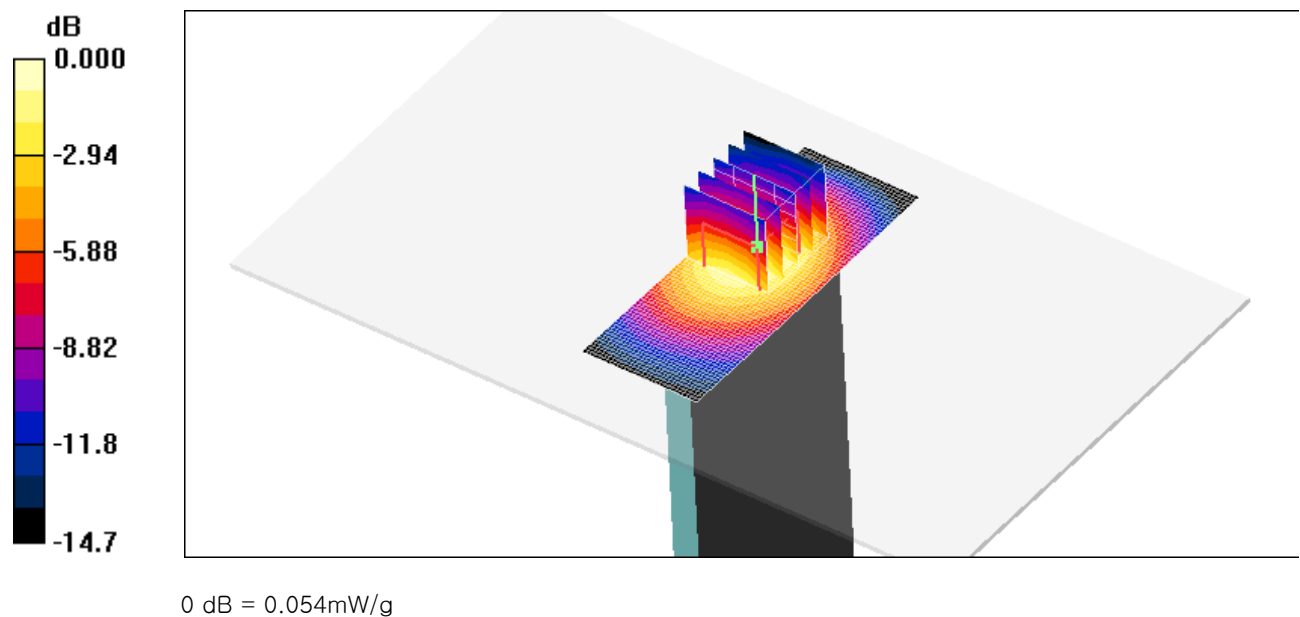
Body bottom 190 3Tx/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.09 V/m; Power Drift = -0.054 dB

Peak SAR (extrapolated) = 0.089 W/kg

SAR(1 g) = 0.051 mW/g; SAR(10 g) = 0.030 mW/g

Maximum value of SAR (measured) = 0.054 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 25, 2012
Separation Distance 1.0 cm

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

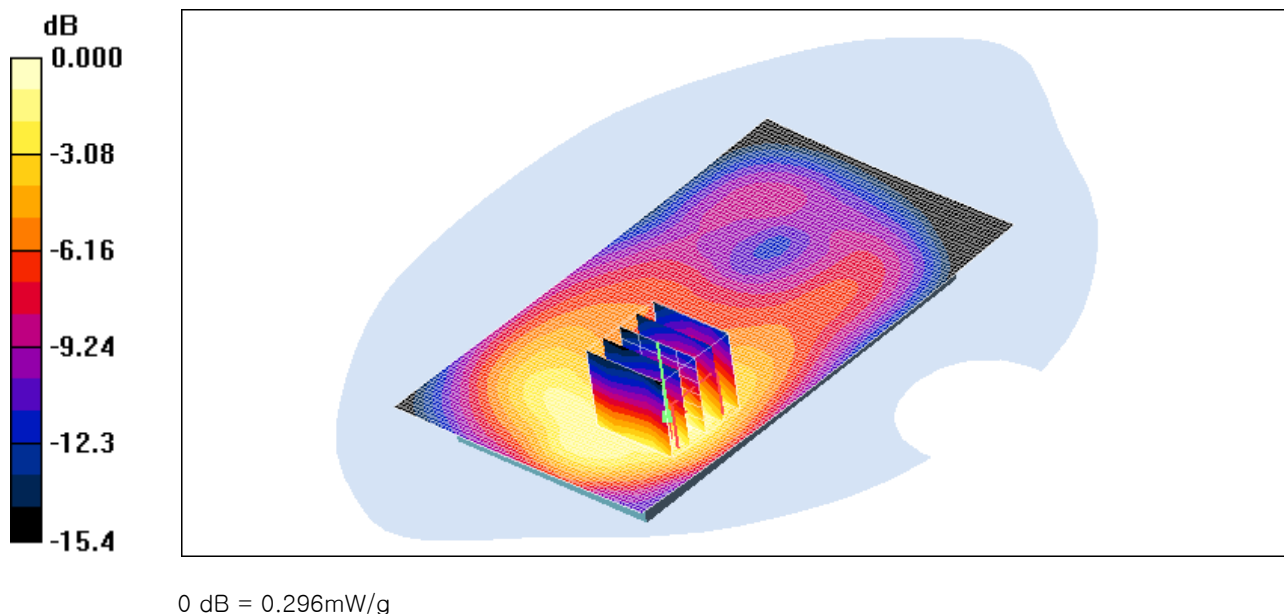
Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:2.075
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 52.3$; $\rho = 1000$ kg/m³
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(4.75, 4.75, 4.75); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: SAM 1800/1900 MHz; Type: SAM

Body rear 661 4Tx/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.289 mW/g

Body rear 661 4Tx/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.25 V/m; Power Drift = -0.184 dB
Peak SAR (extrapolated) = 0.459 W/kg
SAR(1 g) = 0.282 mW/g; SAR(10 g) = 0.162 mW/g
Maximum value of SAR (measured) = 0.296 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 25, 2012
Separation Distance 1.0 cm

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

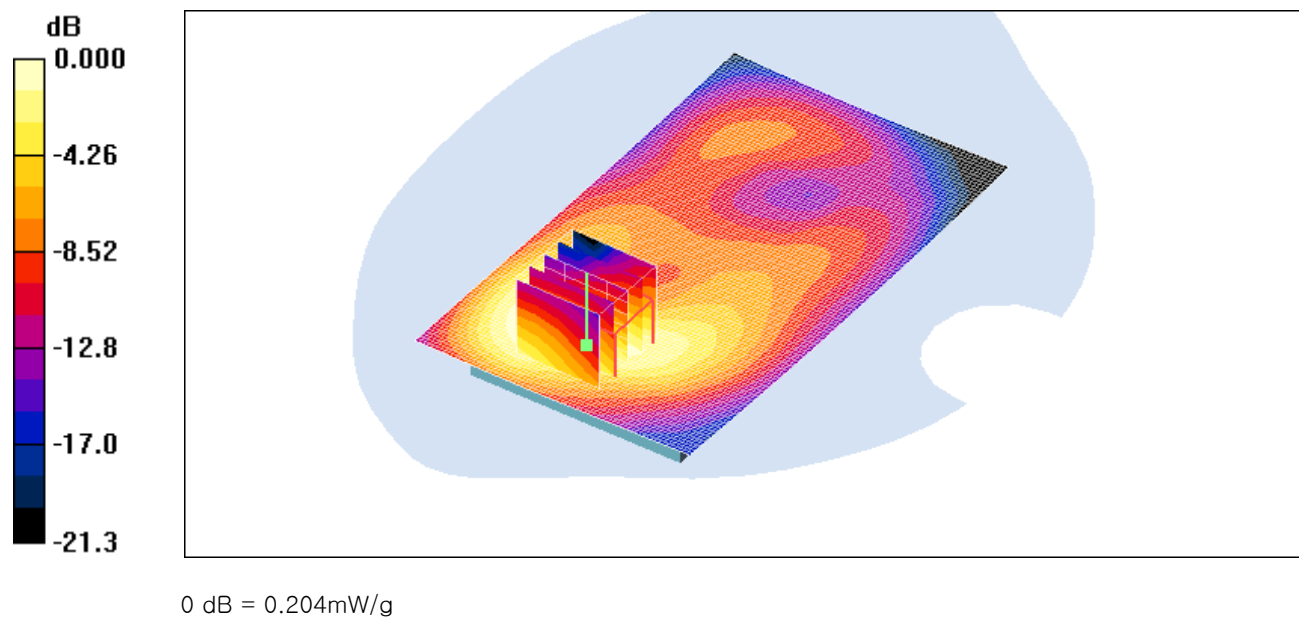
Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:2.075
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 52.3$; $\rho = 1000$ kg/m³
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(4.75, 4.75, 4.75); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: SAM 1800/1900 MHz; Type: SAM

Body front 661 4Tx/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.202 mW/g

Body front 661 4Tx/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.47 V/m; Power Drift = -0.145 dB
Peak SAR (extrapolated) = 0.300 W/kg
SAR(1 g) = 0.183 mW/g; SAR(10 g) = 0.105 mW/g
Maximum value of SAR (measured) = 0.204 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 25, 2012
Separation Distance 1.0 cm

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

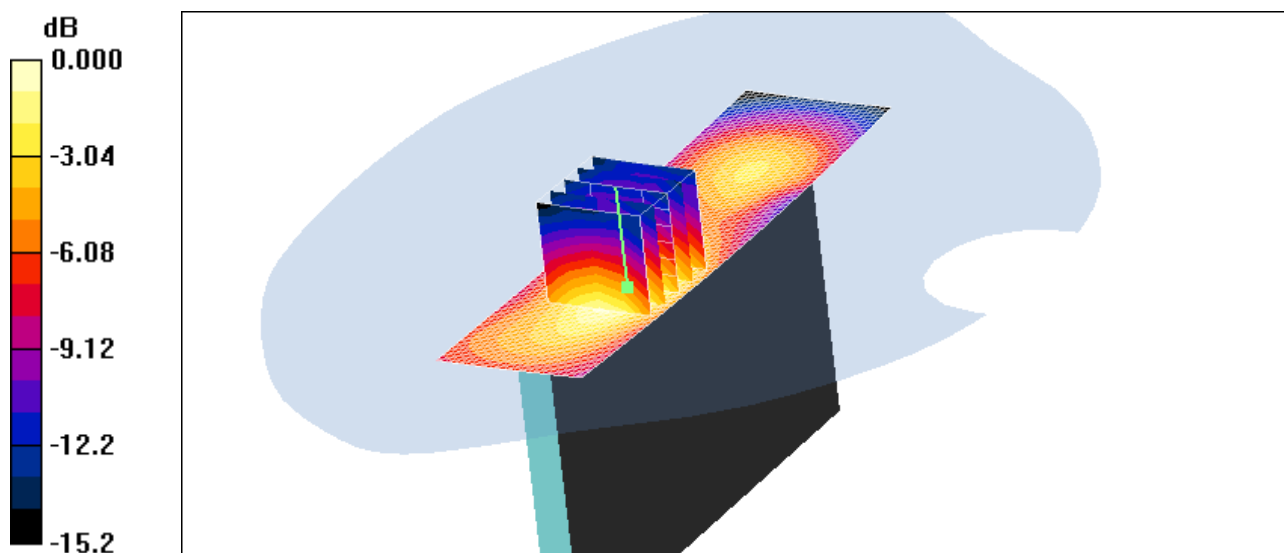
Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:2.075
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 52.3$; $\rho = 1000$ kg/m³
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(4.75, 4.75, 4.75); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: SAM 1800/1900 MHz; Type: SAM

Body left 661 4Tx/Area Scan (31x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.128 mW/g

Body left 661 4Tx/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.93 V/m; Power Drift = -0.043 dB
Peak SAR (extrapolated) = 0.178 W/kg
SAR(1 g) = 0.115 mW/g; SAR(10 g) = 0.069 mW/g
Maximum value of SAR (measured) = 0.125 mW/g



0 dB = 0.125mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 25, 2012
Separation Distance 1.0 cm

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

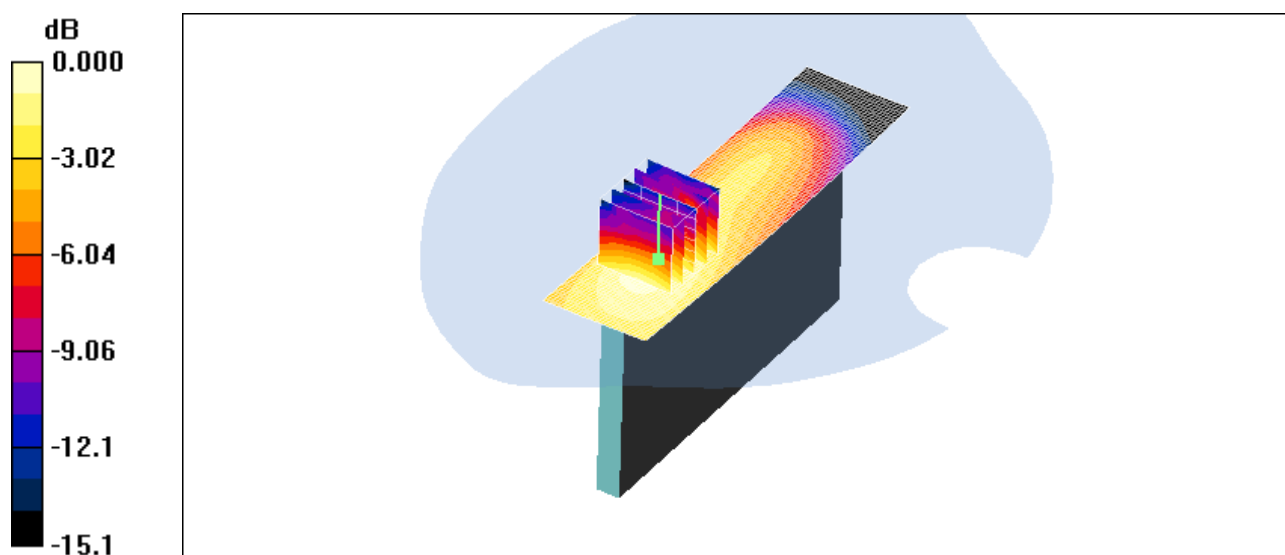
Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:2.075
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 52.3$; $\rho = 1000$ kg/m³
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(4.75, 4.75, 4.75); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: SAM 1800/1900 MHz; Type: SAM

Body right 661 4Tx/Area Scan (31x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.052 mW/g

Body right 661 4Tx/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.56 V/m; Power Drift = 0.007 dB
Peak SAR (extrapolated) = 0.074 W/kg
SAR(1 g) = 0.048 mW/g; SAR(10 g) = 0.030 mW/g
Maximum value of SAR (measured) = 0.052 mW/g



Test Laboratory: HCT CO., LTD
 EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
 Liquid Temperature: 21.2 °C
 Ambient Temperature: 21.4 °C
 Test Date: Sep. 25, 2012
 Separation Distance 1.0 cm

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:2.075
 Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.53 \text{ mho/m}$; $\epsilon_r = 52.3$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(4.75, 4.75, 4.75); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: SAM 1800/1900 MHz; Type: SAM

Body bottom 661 4Tx/Area Scan (31x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.253 mW/g

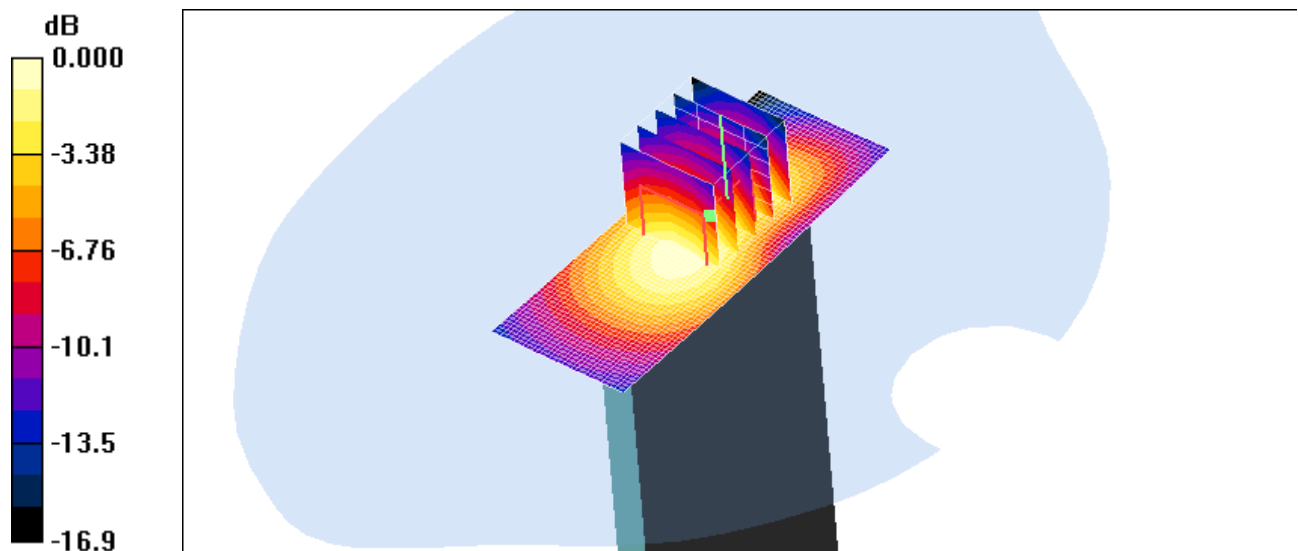
Body bottom 661 4Tx/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.8 V/m; Power Drift = -0.066 dB

Peak SAR (extrapolated) = 0.394 W/kg

SAR(1 g) = 0.228 mW/g; SAR(10 g) = 0.137 mW/g

Maximum value of SAR (measured) = 0.254 mW/g



0 dB = 0.254mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.1 °C
Ambient Temperature: 21.3 °C
Test Date: Sep. 26, 2012
Separation Distance 1.0 cm

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: 2450MHz FCC; Frequency: 2462 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 2462$ MHz; $\sigma = 1.98$ mho/m; $\epsilon_r = 51.7$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(4.3, 4.3, 4.3); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body rear 11ch 1Mbps/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.003 mW/g

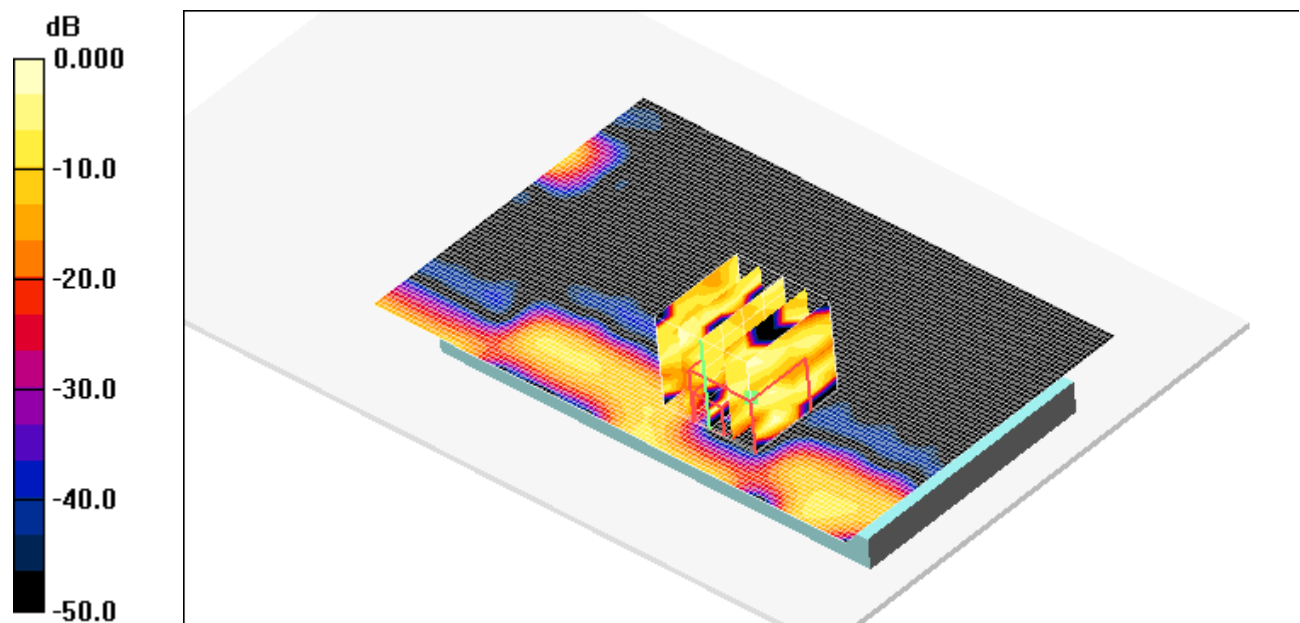
Body rear 11ch 1Mbps/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.56 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.016 W/kg

SAR(1 g) = 0.00109 mW/g; SAR(10 g) = 0.000163 mW/g

Maximum value of SAR (measured) = 0.016 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.1 °C
Ambient Temperature: 21.3 °C
Test Date: Sep. 26, 2012
Separation Distance 1.0 cm

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: 2450MHz FCC; Frequency: 2462 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 2462$ MHz; $\sigma = 1.98$ mho/m; $\epsilon_r = 51.7$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(4.3, 4.3, 4.3); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body front 11ch 1Mbps/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.005 mW/g

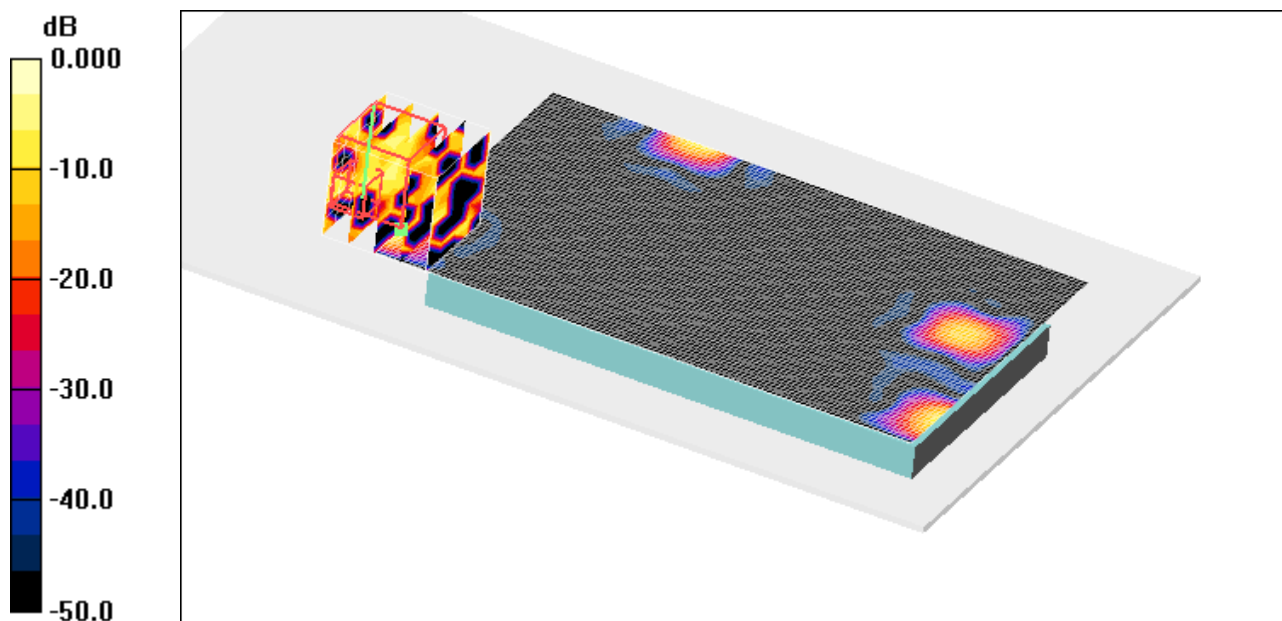
Body front 11ch 1Mbps/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.215 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.012 W/kg

SAR(1 g) = 0.000242 mW/g; SAR(10 g) = 6.17e-005 mW/g

Maximum value of SAR (measured) = 0.012 mW/g



0 dB = 0.012mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.1 °C
Ambient Temperature: 21.3 °C
Test Date: Sep. 26, 2012
Separation Distance 1.0 cm

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: 2450MHz FCC; Frequency: 2462 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 2462$ MHz; $\sigma = 1.98$ mho/m; $\epsilon_r = 51.7$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(4.3, 4.3, 4.3); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body right 11ch 1Mbps/Area Scan (31x121x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.130 mW/g

Body right 11ch 1Mbps/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

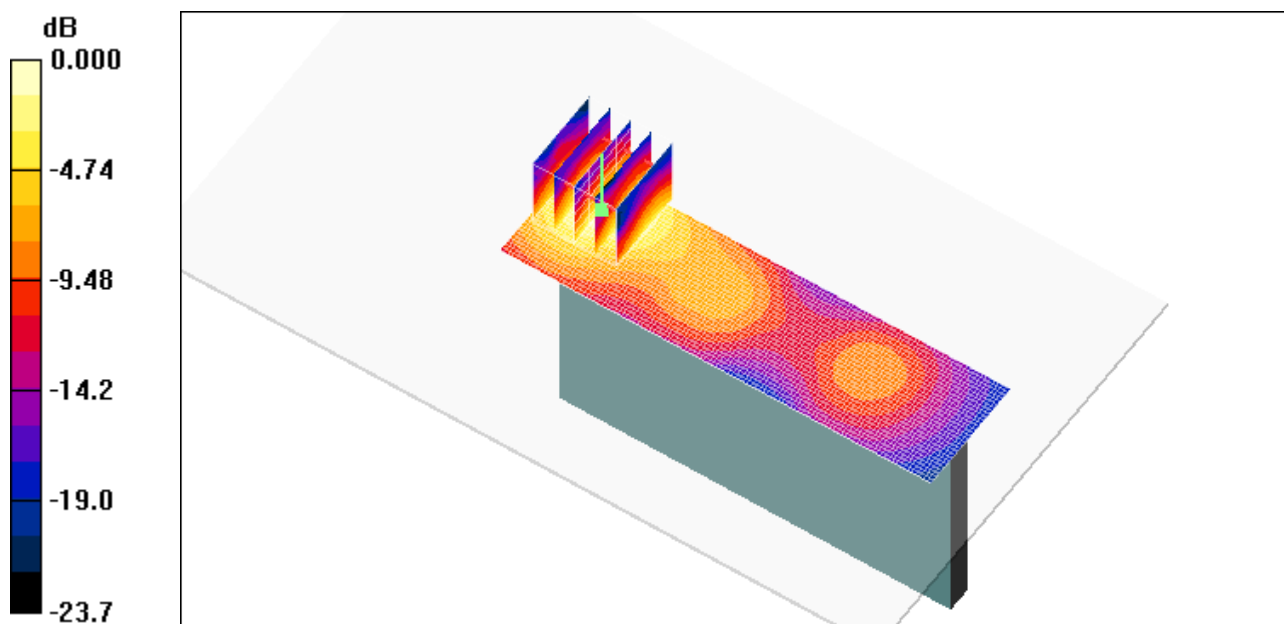
Reference Value = 3.70 V/m; Power Drift = 0.034 dB

Peak SAR (extrapolated) = 0.292 W/kg

SAR(1 g) = 0.124 mW/g; SAR(10 g) = 0.059 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.134 mW/g



0 dB = 0.134mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.1 °C
Ambient Temperature: 21.3 °C
Test Date: Sep. 26, 2012
Separation Distance 1.0 cm

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: 2450MHz FCC; **Frequency:** 2462 MHz; **Duty Cycle:** 1:1
Medium parameters used (interpolated): $f = 2462$ MHz; $\sigma = 1.98$ mho/m; $\epsilon_r = 51.7$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; **Measurement SW:** DASY4, V4.7 Build 71; **Postprocessing SW:** SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(4.3, 4.3, 4.3); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body top 11ch 1Mbps/Area Scan (31x81x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.044 mW/g

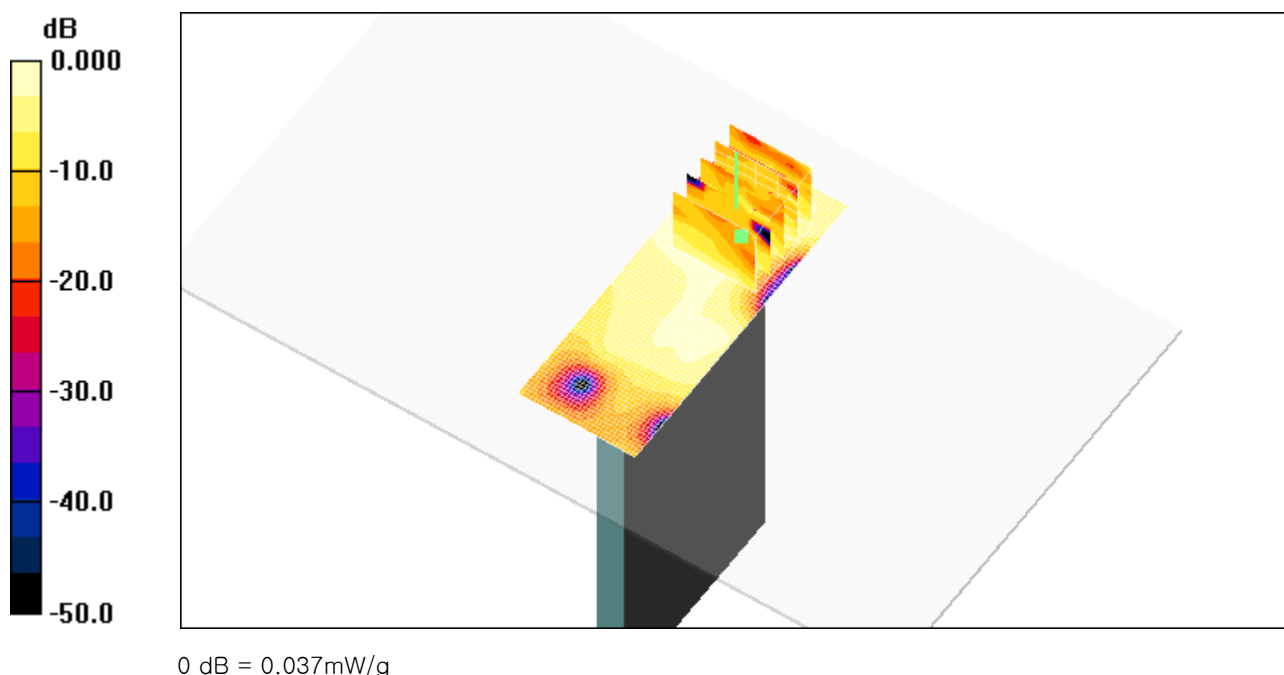
Body top 11ch 1Mbps/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.79 V/m; Power Drift = 0.021 dB

Peak SAR (extrapolated) = 0.107 W/kg

SAR(1 g) = 0.035 mW/g; SAR(10 g) = 0.016 mW/g

Maximum value of SAR (measured) = 0.037 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 27, 2012
Separation Distance 1.0 cm

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: WIFI 5GHz; Frequency: 5220 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 5220$ MHz; $\sigma = 5.26$ mho/m; $\epsilon_r = 47.5$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(4.35, 4.35, 4.35); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WIFI 5GHz Body Rear 44ch 6Mbps/Area Scan (181x101x1): Measurement grid: dx=10mm, dy=10mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.332 mW/g

WIFI 5GHz Body Rear 44ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

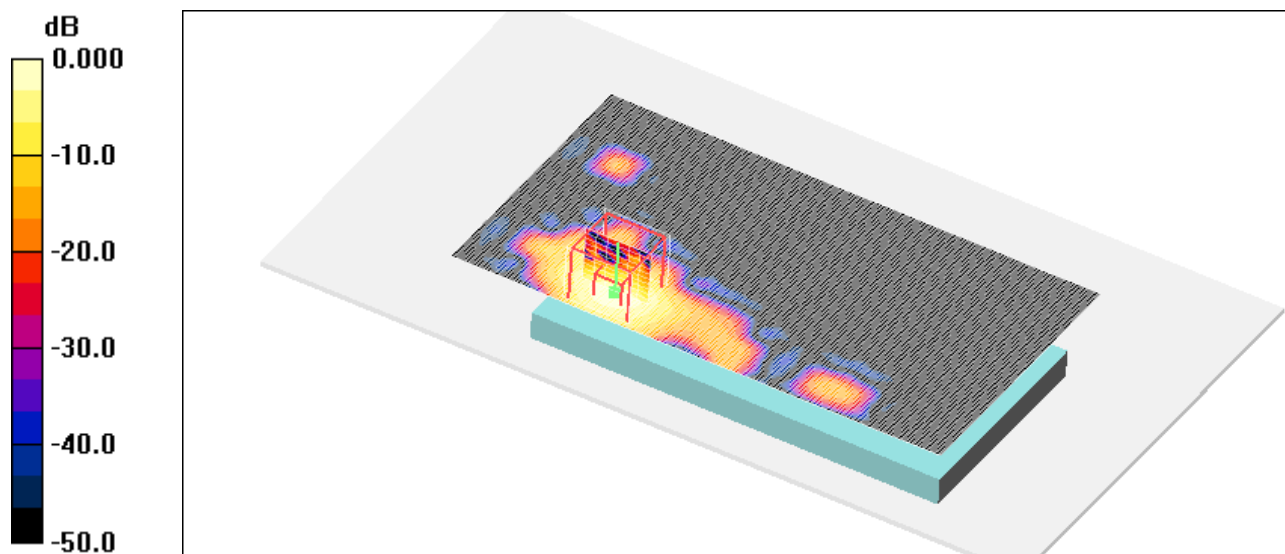
Reference Value = 0.000 V/m; Power Drift = 0.010 dB

Peak SAR (extrapolated) = 0.651 W/kg

SAR(1 g) = 0.176 mW/g; SAR(10 g) = 0.048 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.370 mW/g



0 dB = 0.370mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 27, 2012
Separation Distance 1.0 cm

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: WIFI 5GHz; Frequency: 5220 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 5220$ MHz; $\sigma = 5.26$ mho/m; $\epsilon_r = 47.5$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(4.35, 4.35, 4.35); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WIFI 5GHz Body Front 44ch 6Mbps/Area Scan (181x131x1): Measurement grid: dx=10mm, dy=10mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.010 mW/g

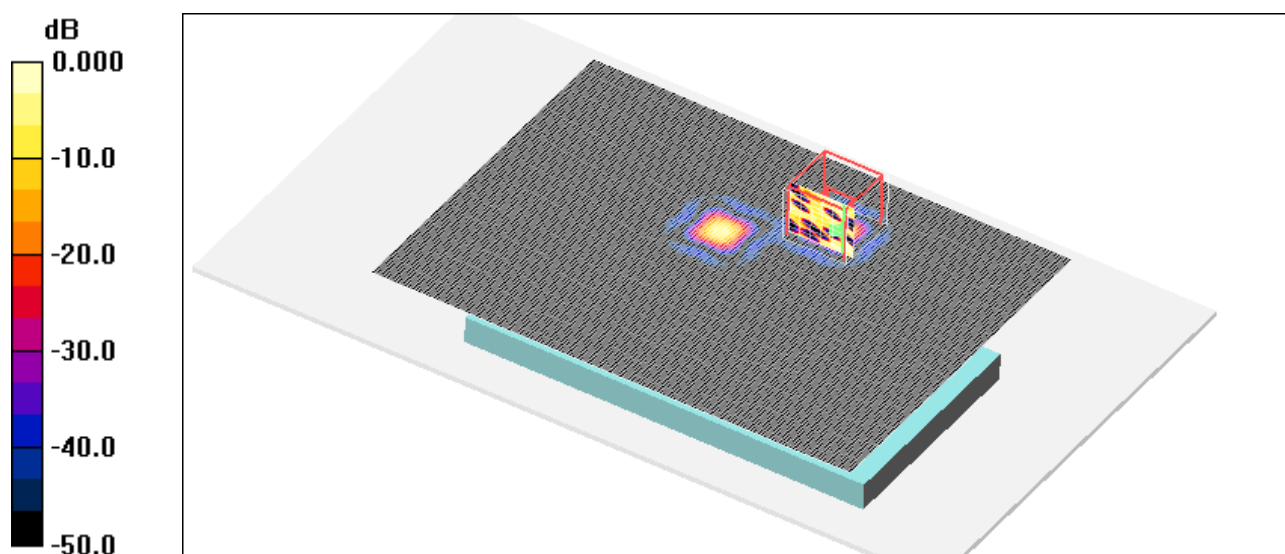
WIFI 5GHz Body Front 44ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.000 V/m; Power Drift = 0.001 dB

Peak SAR (extrapolated) = 0.001 W/kg

SAR(1 g) = 1.49e-005 mW/g; SAR(10 g) = 1.5e-006 mW/g

Maximum value of SAR (measured) = 0.012 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 27, 2012
Separation Distance 1.0 cm

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: WIFI 5GHz; Frequency: 5320 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 5320$ MHz; $\sigma = 5.39$ mho/m; $\epsilon_r = 47.2$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(4.1, 4.1, 4.1); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WIFI 5GHz BodyRear 64ch 6Mbps/Area Scan (181x101x1): Measurement grid: dx=10mm, dy=10mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.390 mW/g

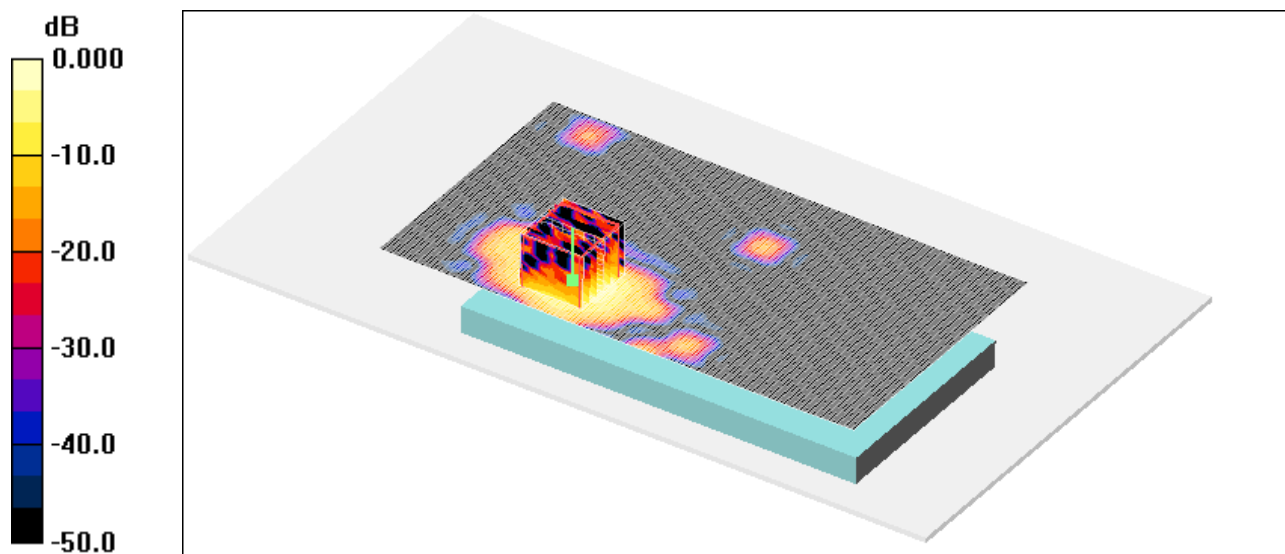
WIFI 5GHz BodyRear 64ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.489 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.832 W/kg

SAR(1 g) = 0.190 mW/g; SAR(10 g) = 0.050 mW/g

Maximum value of SAR (measured) = 0.400 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 27, 2012
Separation Distance 1.0 cm

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: WIFI 5GHz; Frequency: 5320 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 5320$ MHz; $\sigma = 5.39$ mho/m; $\epsilon_r = 47.2$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(4.1, 4.1, 4.1); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WIFI 5GHz Body Front 64ch 6Mbps/Area Scan (181x131x1): Measurement grid: dx=10mm, dy=10mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.009 mW/g

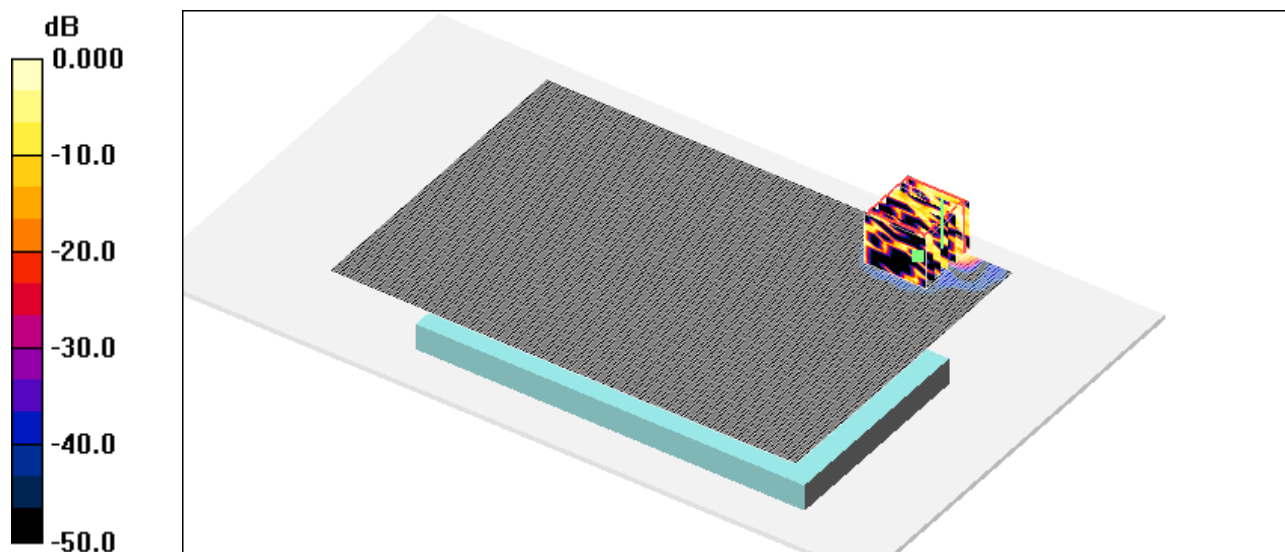
WIFI 5GHz Body Front 64ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.053 V/m; Power Drift = 0.009 dB

Peak SAR (extrapolated) = 0.006 W/kg

SAR(1 g) = 8.13e-006 mW/g; SAR(10 g) = 1.16e-006 mW/g

Maximum value of SAR (measured) = 0.014 mW/g



0 dB = 0.014mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 28, 2012
Separation Distance 1.0 cm

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

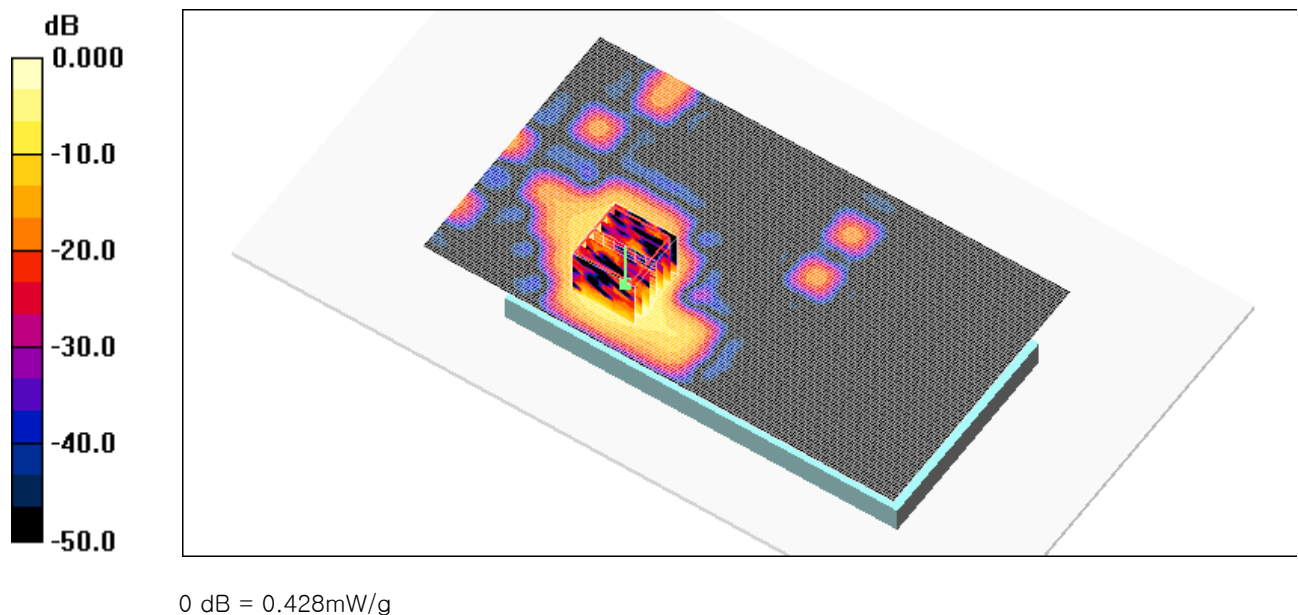
Communication System: WIFI 5GHz; Frequency: 5500 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 5500$ MHz; $\sigma = 5.59$ mho/m; $\epsilon_r = 46.5$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(3.91, 3.91, 3.91); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WIFI 5GHz Body Rear 100ch 6Mbps/Area Scan (181x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.401 mW/g

WIFI 5GHz Body Rear 100ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.628 V/m; Power Drift = 0.080 dB
Peak SAR (extrapolated) = 0.766 W/kg
SAR(1 g) = 0.195 mW/g; SAR(10 g) = 0.052 mW/g
Maximum value of SAR (measured) = 0.428 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 28, 2012
Separation Distance 1.0 cm

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

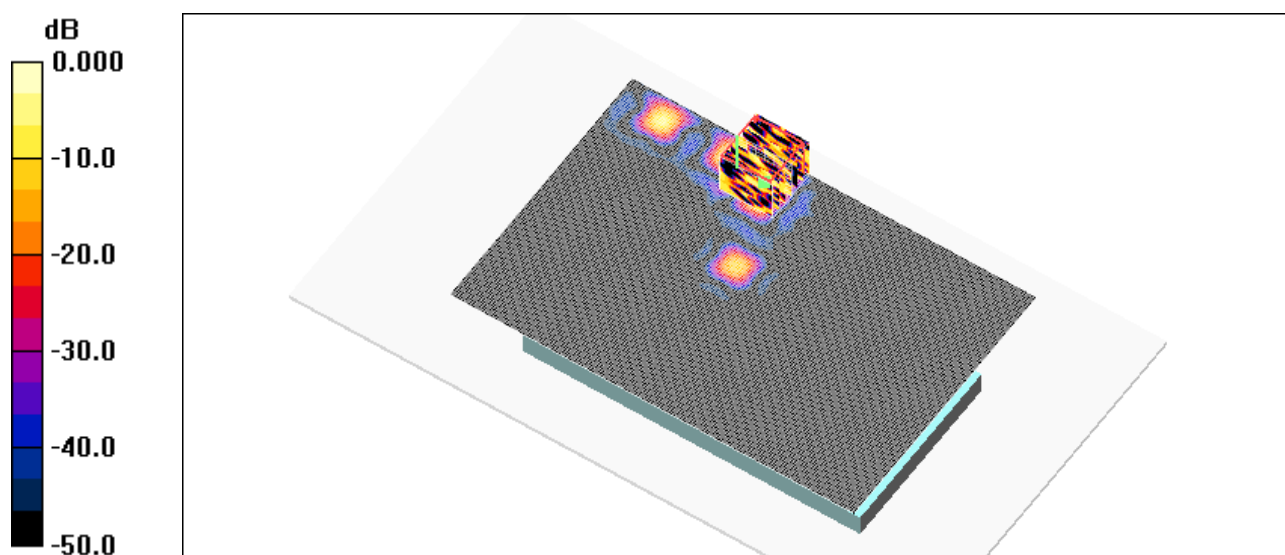
Communication System: WIFI 5GHz; Frequency: 5500 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 5500$ MHz; $\sigma = 5.59$ mho/m; $\epsilon_r = 46.5$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(3.91, 3.91, 3.91); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WIFI 5GHz Body Front 100ch 6Mbps/Area Scan (181x131x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.018 mW/g

WIFI 5GHz Body Front 100ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.000 V/m; Power Drift = 0.009 dB
Peak SAR (extrapolated) = 0.043 W/kg
SAR(1 g) = 0.00159 mW/g; SAR(10 g) = 0.000261 mW/g
Maximum value of SAR (measured) = 0.021 mW/g



0 dB = 0.021mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 28, 2012
Separation Distance 1.0 cm

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: WIFI 5GHz; Frequency: 5745 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 5745$ MHz; $\sigma = 6.18$ mho/m; $\epsilon_r = 46$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(3.81, 3.81, 3.81); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WIFI 5GHz Body Rear 149ch 6Mbps/Area Scan (181x101x1): Measurement grid: dx=10mm, dy=10mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 1.15 mW/g

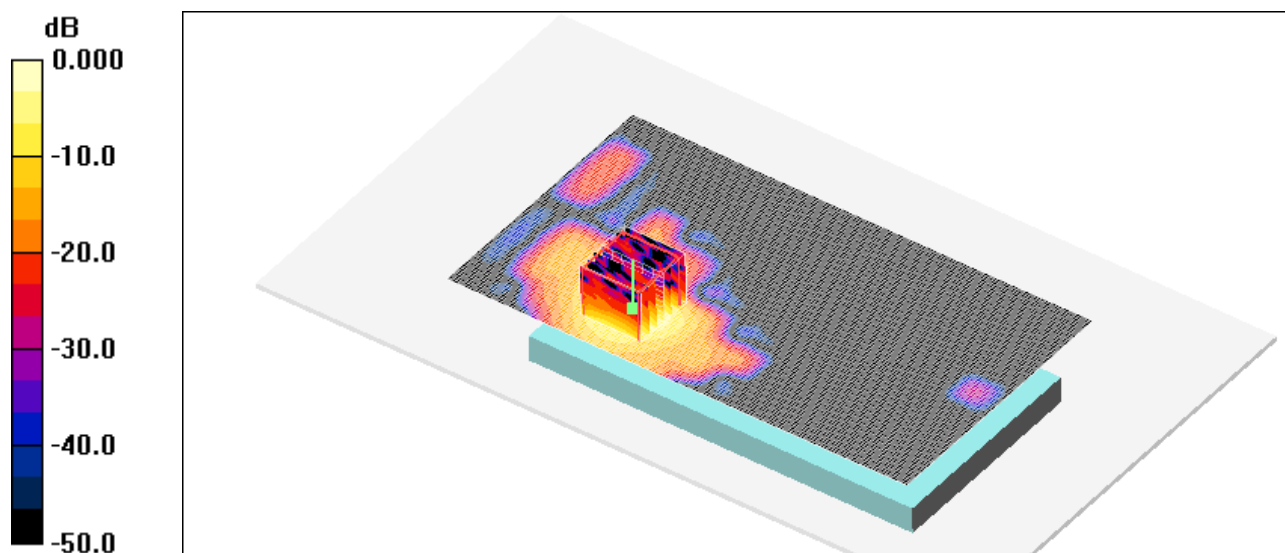
WIFI 5GHz Body Rear 149ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.000 V/m; Power Drift = 0.001 dB

Peak SAR (extrapolated) = 2.42 W/kg

SAR(1 g) = 0.567 mW/g; SAR(10 g) = 0.158 mW/g

Maximum value of SAR (measured) = 1.22 mW/g



0 dB = 1.22mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 28, 2012
Separation Distance 1.0 cm

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: WIFI 5GHz; Frequency: 5785 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 5785$ MHz; $\sigma = 6.17$ mho/m; $\epsilon_r = 46.1$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(3.81, 3.81, 3.81); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WIFI 5GHz Body Rear 157ch 6Mbps/Area Scan (181x101x1): Measurement grid: dx=10mm, dy=10mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 1.04 mW/g

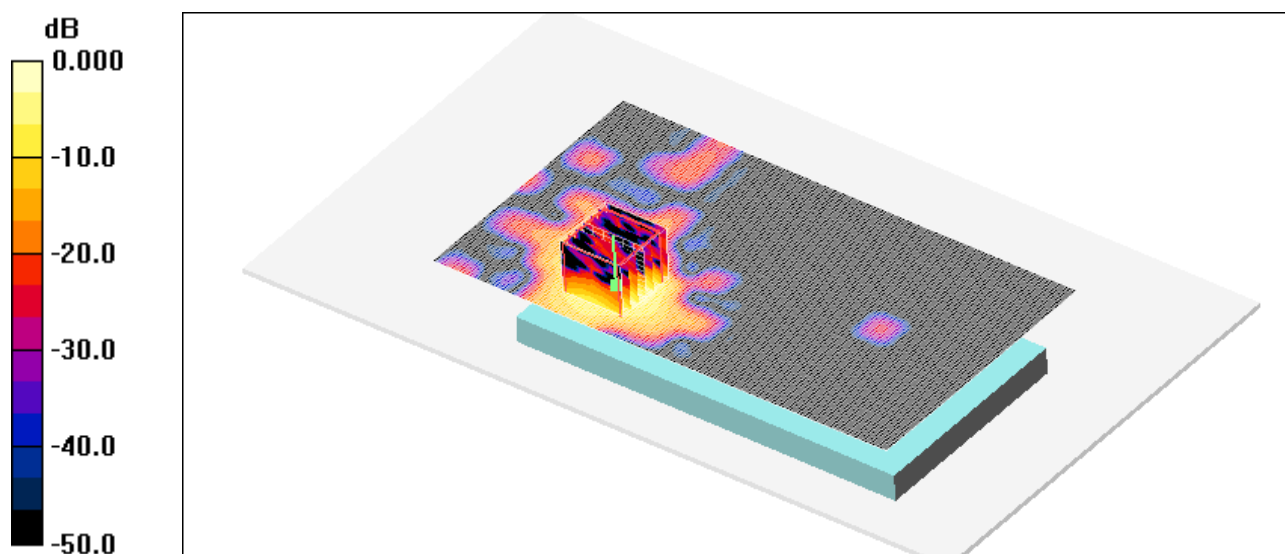
WIFI 5GHz Body Rear 157ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.000 V/m; Power Drift = 0.009 dB

Peak SAR (extrapolated) = 2.12 W/kg

SAR(1 g) = 0.511 mW/g; SAR(10 g) = 0.138 mW/g

Maximum value of SAR (measured) = 1.09 mW/g



0 dB = 1.09mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 28, 2012
Separation Distance 1.0 cm

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: WIFI 5GHz; Frequency: 5825 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 5825$ MHz; $\sigma = 6.26$ mho/m; $\epsilon_r = 45.9$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(3.81, 3.81, 3.81); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WIFI 5GHz Body Rear 165ch 6Mbps/Area Scan (181x101x1): Measurement grid: dx=10mm, dy=10mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 1.07 mW/g

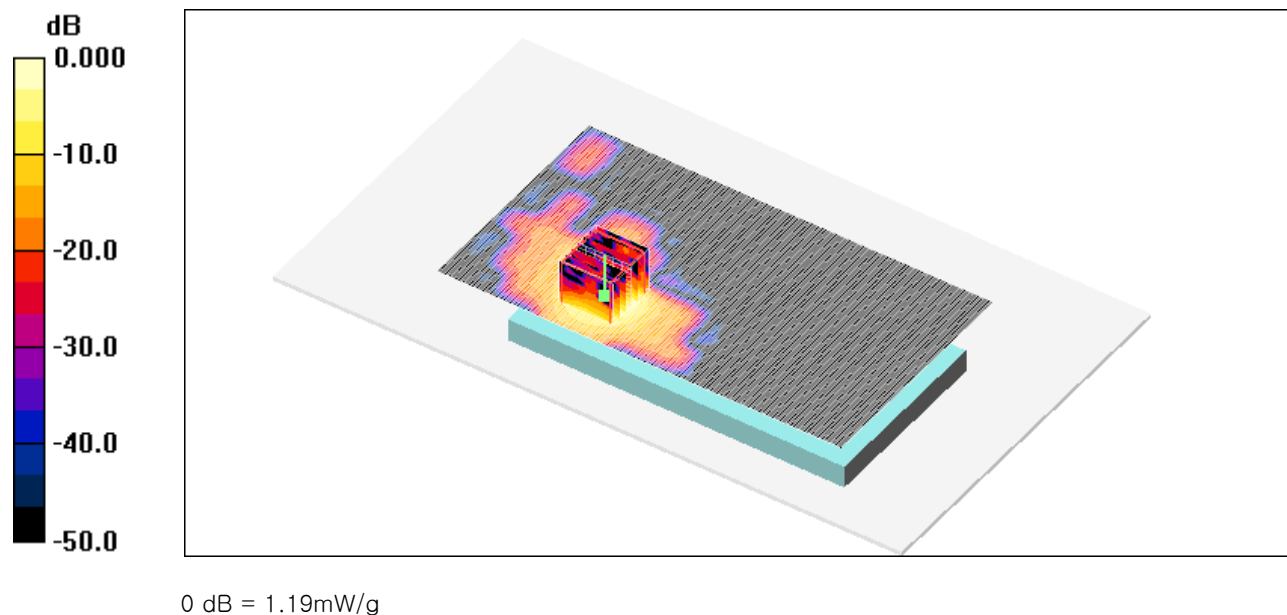
WIFI 5GHz Body Rear 165ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.000 V/m; Power Drift = 0.008 dB

Peak SAR (extrapolated) = 2.44 W/kg

SAR(1 g) = 0.553 mW/g; SAR(10 g) = 0.151 mW/g

Maximum value of SAR (measured) = 1.19 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 28, 2012
Separation Distance 1.0 cm

DUT: GT-N7102; **Type:** bar; **Serial:** FJ-254-C

Communication System: WIFI 5GHz; **Frequency:** 5745 MHz; **Duty Cycle:** 1:1
Medium parameters used (interpolated): $f = 5745 \text{ MHz}$; $\sigma = 6.18 \text{ mho/m}$; $\epsilon_r = 46$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Center Section ; **Measurement SW:** DASY4, V4.7 Build 80; **Postprocessing SW:** SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(3.81, 3.81, 3.81); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WIFI 5GHz Body Front 149ch 6Mbps/Area Scan (181x131x1): Measurement grid: dx=10mm, dy=10mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.015 mW/g

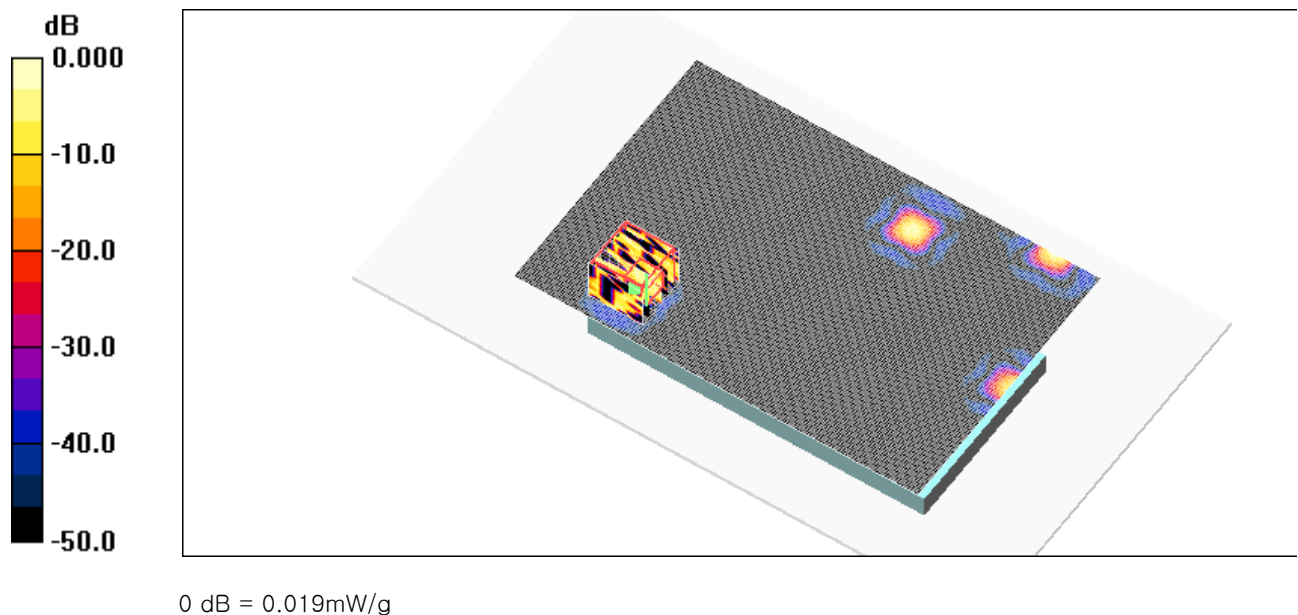
WIFI 5GHz Body Front 149ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 1.10 V/m; Power Drift = -0.011 dB

Peak SAR (extrapolated) = 0.019 W/kg

SAR(1 g) = 8.53e-005 mW/g; SAR(10 g) = 2.07e-005 mW/g

Maximum value of SAR (measured) = 0.019 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 24, 2012

DUT: GT-N7102; **Type:** bar; **Serial:** FJ-254-C

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.919$ mho/m; $\epsilon_r = 40.4$; $\rho = 1000$ kg/m³
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(6.27, 6.27, 6.27); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: SAM 835/900 MHz; Type: SAM

Left Touch 190/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.038 mW/g

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

Reference Value = 1.90 V/m; Power Drift = -0.188 dB

Peak SAR (extrapolated) = 0.043 W/kg

SAR(1 g) = 0.036 mW/g; SAR(10 g) = 0.028 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.038 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 24, 2012
Separation Distance 1.0 cm

DUT: GT-N7102; **Type:** bar; **Serial:** FJ-254-C

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:2.77
Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 54.3$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(6.27, 6.27, 6.27); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body rear 190 3Tx/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.100 mW/g

Body rear 190 3Tx/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 8.48 V/m; Power Drift = 0.009 dB

Peak SAR (extrapolated) = 0.192 W/kg

SAR(1 g) = 0.093 mW/g; SAR(10 g) = 0.054 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.101 mW/g



Test Laboratory: HCT CO., LTD
 EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
 Liquid Temperature: 21.2 °C
 Ambient Temperature: 21.4 °C
 Test Date: Sep. 25, 2012

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

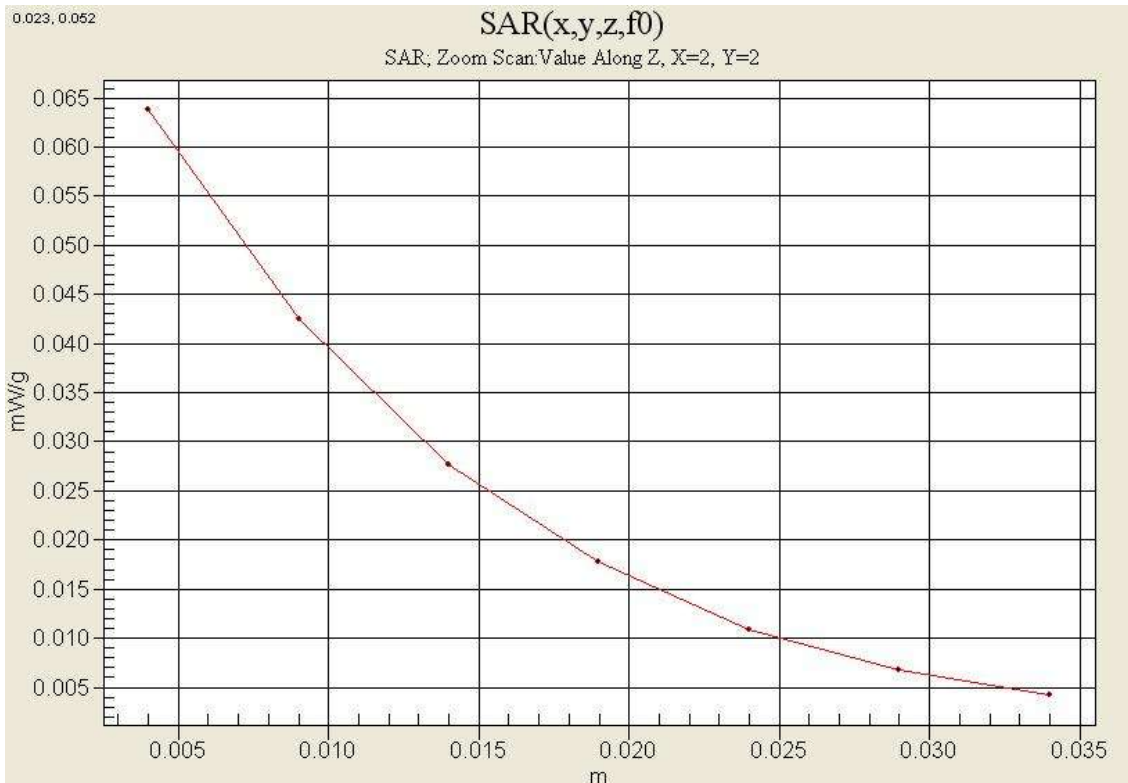
Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3
 Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.35 \text{ mho/m}$; $\epsilon_r = 40.9$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(5.17, 5.17, 5.17); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 800/900 Phantom; Type: SAM

Left Touch 661/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.065 mW/g

Left Touch 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
 Reference Value = 2.84 V/m; Power Drift = 0.067 dB
 Peak SAR (extrapolated) = 0.092 W/kg
SAR(1 g) = 0.059 mW/g; SAR(10 g) = 0.035 mW/g
 Maximum value of SAR (measured) = 0.064 mW/g



Test Laboratory: HCT CO., LTD
 EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
 Liquid Temperature: 21.2 °C
 Ambient Temperature: 21.4 °C
 Test Date: Sep. 25, 2012
 Separation Distance: 1.0 cm

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

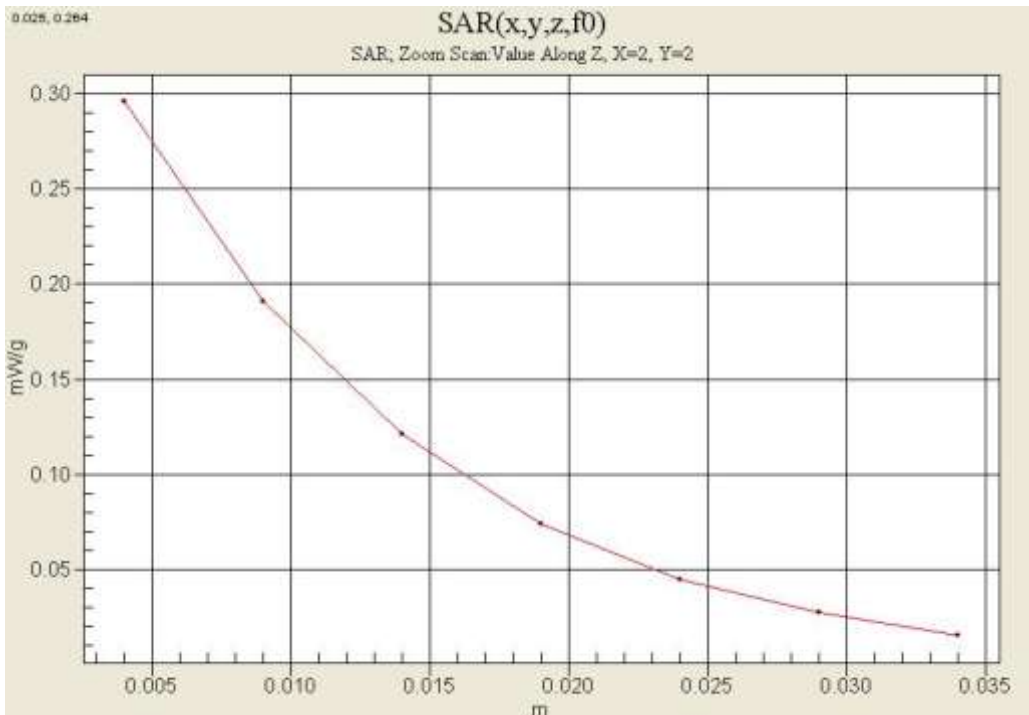
Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:2.075
 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 52.3$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(4.75, 4.75, 4.75); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: SAM 1800/1900 MHz; Type: SAM

Body rear 661 4Tx/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.289 mW/g

Body rear 661 4Tx/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
 Reference Value = 6.25 V/m; Power Drift = -0.184 dB
 Peak SAR (extrapolated) = 0.459 W/kg
SAR(1 g) = 0.282 mW/g; SAR(10 g) = 0.162 mW/g
 Maximum value of SAR (measured) = 0.296 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.1 °C
Ambient Temperature: 21.3 °C
Test Date: Sep. 26, 2012

DUT: GT-N7102; Type: bar; Serial: FJ-254-C

Communication System: 2450MHz FCC; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 2462 \text{ MHz}$; $\sigma = 1.98 \text{ mho/m}$; $\epsilon_r = 51.7$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(4.3, 4.3, 4.3); Calibrated: 2011-11-18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body right 11ch 1Mbps/Area Scan (31x121x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.130 mW/g

Body right 11ch 1Mbps/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 3.70 V/m; Power Drift = 0.034 dB

Peak SAR (extrapolated) = 0.292 W/kg

SAR(1 g) = 0.124 mW/g; SAR(10 g) = 0.059 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.134 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Sep. 28, 2012
Separation Distance 1.0 cm

DUT: GT-N7102; **Type:** bar; **Serial:** FJ-254-C

Communication System: WIFI 5GHz; **Frequency:** 5745 MHz; **Duty Cycle:** 1:1
Medium parameters used (interpolated): $f = 5745$ MHz; $\sigma = 6.18$ mho/m; $\epsilon_r = 46$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; **Measurement SW:** DASY4, V4.7 Build 80; **Postprocessing SW:** SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(3.81, 3.81, 3.81); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WIFI 5GHz Body Rear 149ch 6Mbps/Area Scan (181x101x1): Measurement grid: dx=10mm, dy=10mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 1.15 mW/g

WIFI 5GHz Body Rear 149ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.000 V/m; Power Drift = 0.001 dB

Peak SAR (extrapolated) = 2.42 W/kg

SAR(1 g) = 0.567 mW/g; SAR(10 g) = 0.158 mW/g

Maximum value of SAR (measured) = 1.22 mW/g

