SAR TEST REPORT

HCT CO., LTD

EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with WLAN, Bluetooth and NFC		
FCC ID:	A3LGTN7100	Model:	GT-N7100T
Date of Issue:	Oct. 26, 2012		
Test report No.:	HCTA1210FS06		
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.** 129, Samsung-ro, Yeongtong-gu Suwon-si, Gyeonggi-do, 443-742 Korea, Republic of		
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	Hotspot
	GSM850	0.124	0.237	0.665
	GSM1900	0.087	0.285	0.901
	WCDMA850	0.126	0.235	0.235
	WCDMA1900	0.135	0.388	0.388
	802.11b	0.021	0.019	0.019
	802.11a/n	0.049	0.244	0.244
Simultaneous SAR per KDB 690783 D01		0.173	0.632	0.920

Signature

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Manager of SAR Part

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1. INTRODUCTION

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

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

SAR Definition

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

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

Figure 2. SAR Mathematical Equation

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

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

where:

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

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

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC OET Bulletin 65 Supplement C 01-01, IEEE Standard 1528-2003 & IEEE 1528a-2005 and the following published KDB procedures.

-. 248227 D01 SAR Measurement Procedures for 802.11 a/b/g Transmittiers

-. 447498 D01 General RF Exposure Guidance v04

-. 450824 D01 SAR Prob Cal and Ver Meas v01r01

-. 450824 D02 Dipole SAR Validation Verification v01

-. 648474 D01 SAR Handsets Multi Xmiter and Ant, v01r05

-. 865664 SAR measurement Requirements for 3 to 6 GHz

-. 941225 D01 SAR test for 3G devices v02

-. 941225 D06 Hotspot SAR v01

3. DESCRIPTION OF DEVICE

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

EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with WLAN, Bluetooth and NFC
FCC ID:	A3LGTN7100
Model:	GT-N7100T
Trade Name	SAMSUNG Electronics Co., Ltd.
Application Type	Permissive Change Class II
Mode(s) of Operation	GSM850/GSM1900 /WCDMA850/ WCDMA1900/802.11b/g/n
Tx Frequency	824.20 - 848.80 MHz (GSM850) / 1 850.20 – 1 909.80 MHz (GSM1900) 826.4~846.6 MHz (WCDMA850) / 1 852.4 – 1 907.6 MHz (WCDMA1900) 2 412- 2 462 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) 871.4 - 891.6 MHz (WCDMA850) / 1 932.4 – 1 987.6 MHz (WCDMA1900) 2 412- 2 462 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	Oct. 19, 2012 ~ Oct. 25, 2012
Antenna Type	Integral Antenna
GPRS	Multislot Class: 33, Mode Class: B
Key Feature(s)	This device supports Mobile Hotspot

4. DESCRIPTION OF TEST EQUIPMENT

4.1 SAR MEASUREMENT SETUP

These measurements are performed using the DASY4 automated dosimetric assessment system. It is made by Schmid & Partner Engineering AG (SPEAG) in Zurich, Switzerland. It consists of high precision robotics system (Staubli), robot controller, Pentium III computer, near-field probe, probe alignment sensor, and the generic twin phantom containing the brain equivalent material. The robot is a six-axis industrial robot performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF) (see Figure.4.1).

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

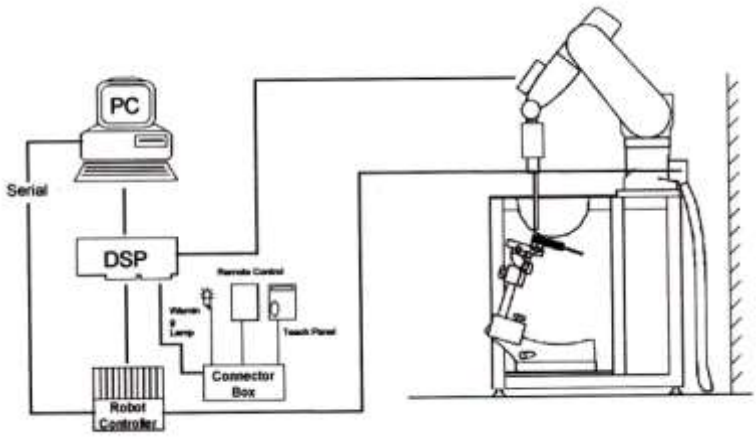


Figure 4.1 HCT SAR Lab. Test Measurement Set-up

The DAE4 consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer. The system is described in detail in.

4.2 DASY E-FIELD PROBE SYSTEM

4.2.1 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 μW/g to > 100 mW/g;
Range Linearity:	± 0.2 dB
Surface Detection	± 0.2 mm repeatability in air and clear liquids over diffuse reflecting surfaces.
Dimensions	Overall length: 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 4.2 Photograph of the probe and the Phantom

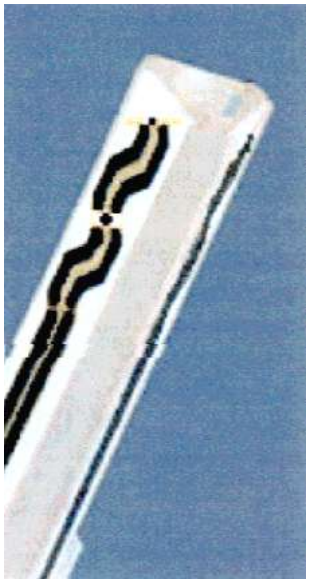


Figure 4.3 ET3DV6 E-field Probe

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

4.3 PROBE CALIBRATION PROCESS

4.3.1 E-Probe Calibration

Each probe is calibrated according to a dosimetric assessment procedure with an accuracy better than ± 10 %. The spherical isotropy was evaluated with the proper procedure and found to be better than ± 0.25 dB. The sensitivity parameters (NormX, NormY, NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe is tested.

The free space E-field from amplified probe outputs is determined in a test chamber. This is performed in a TEM cell for frequencies bellow 1 GHz, and in a waveguide above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees.

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue. The measured free space E-field in the medium correlates to temperature rise in a dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

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

where:

Δt = exposure time (30 seconds),

C = heat capacity of tissue (brain or muscle),

ΔT = temperature increase due to RF exposure.

SAR is proportional to $\Delta T / \Delta t$, the initial rate of tissue heating, before thermal diffusion takes place. Now it's possible to quantify the electric field in the simulated tissue by equating the thermally derived SAR to the E- field;

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

where:

σ = simulated tissue conductivity,

ρ = Tissue density (1.25 g/cm³ for brain tissue)

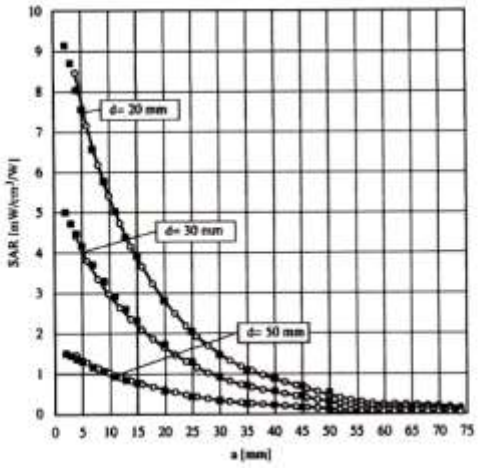


Figure 4.4 E-Field and Temperature measurements at 900 MHz

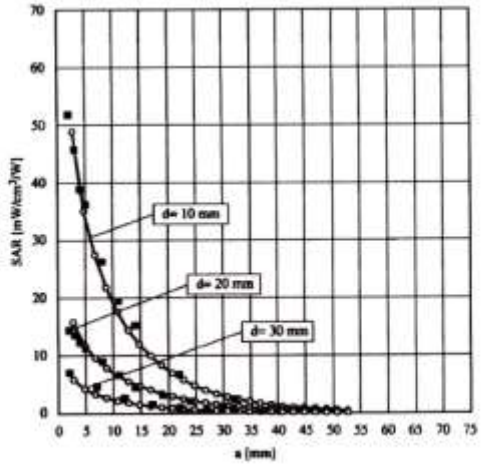


Figure 4.5 E-Field and temperature measurements at 1.8 GHz

4.3.2 Data Extrapolation

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

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

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

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

E-field probes:

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

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

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

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

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

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

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

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

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

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

4.4 SAM Phantom

Figure 4.6 SAM Phantom

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

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

Figure 4.6 MFP V5.1 Triple Modular Phantom

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

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

4.5 Device Holder for Transmitters

Figure 4.7 Device Holder

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

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

4.6 Brain & Muscle Simulating Mixture Characterization

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

Ingredients (% by weight)	Frequency (MHz)											
	750		835		915		1 900		2 450		5200-5800	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	41.2	51.7	41.45	52.4	41.05	56.0	54.9	40.4	62.7	73.2	65.52	78.66
Salt (NaCl)	1.4	1.0	1.45	1.4	1.35	0.76	0.18	0.5	0.5	0.04	0.0	0.0
Sugar	57	47.2	56.0	45.0	56.5	41.76	0.0	58.0	0.0	0.0	0.0	0.0
HEC	0.2	0.0	1.0	1.0	1.0	1.21	0.0	1.0	0.0	0.0	0.0	0.0
Bactericide	0.2	0.1	0.1	0.1	0.1	0.27	0.0	0.1	0.0	0.0	0.0	0.0
Triton X-100	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0	17.24	10.67
DGBE	0.00	0.0	0.0	0.0	0.0	0.0	44.92	0.0	0.0	26.7	0.0	0.0
Diethylene glycol hexyl ether											17.24	10.67

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

Table 4.1 Composition of the Tissue Equivalent Matter

4.7 SAR TEST EQUIPMENT

Manufacturer	Type / Model	S/N	Calib. Date	Calib.Interval	Calib.Due
SPEAG	SAM Phantom	-	N/A	N/A	N/A
Staubli	Robot RX90L	F01/5K09A1/A/01	N/A	N/A	N/A
Staubli	Robot ControllerCS7MB	F99/5A82A1/C/01	N/A	N/A	N/A
HP	Pavilion t000_puffer	KRJ51201TV	N/A	N/A	N/A
SPEAG	Light Alignment Sensor	265	N/A	N/A	N/A
Staubli	Teach Pendant (Joystick)	D221340.01	N/A	N/A	N/A
SPEAG	DAE4	869	Sep. 18, 2012	Annual	Sep. 18, 2013
SPEAG	E-Field Probe ET3DV6	1609	Mar. 19, 2012	Annual	Mar. 19, 2013
SPEAG	DAE3	466	Feb. 21, 2012	Annual	Feb. 21, 2013
SPEAG	E-Field Probe EX3DV4	3863	July. 13, 2012	Annual	July. 13, 2013
SPEAG	Validation Dipole D835V2	441	May. 16, 2012	Annual	May. 16, 2013
SPEAG	Validation Dipole D1900V2	5d032	July. 20, 2012	Annual	July. 20, 2013
SPEAG	Validation Dipole D2450V2	743	Aug. 23, 2012	Annual	Aug. 23, 2013
SPEAG	Validation Dipole D5GHzV2	1107	Aug. 20, 2012	Annual	Aug. 20, 2013
Agilent	Power Meter(F) E4419B	MY41291386	Nov. 04, 2011	Annual	Nov. 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.

5. SAR MEASUREMENT PROCEDURE

The evaluation was performed with the following procedure:

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

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

3. Around this point, a volume of 32 mm x 32 mm x 30 mm was assessed by measuring 5 x 5 x 7 points. On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

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

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

5. Per KDB pub. 865664 FCC SAR Measurement requirement, a minimum volume of 24 mm x 24 mm x 20 mm was assessed by measuring 7 x 7 x 11 points for 5GHz testing.

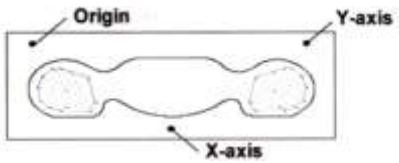


Figure 5.1 SAR Measurement Point in Area Scan

6. DESCRIPTION OF TEST POSITION

6.1 HEAD POSITION

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

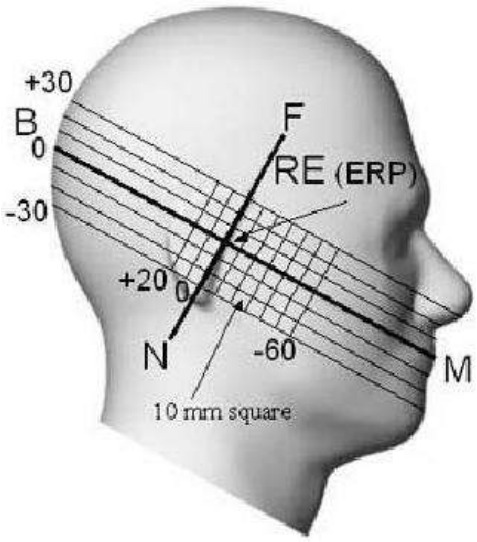


Figure 6.1 Side view of the phantom

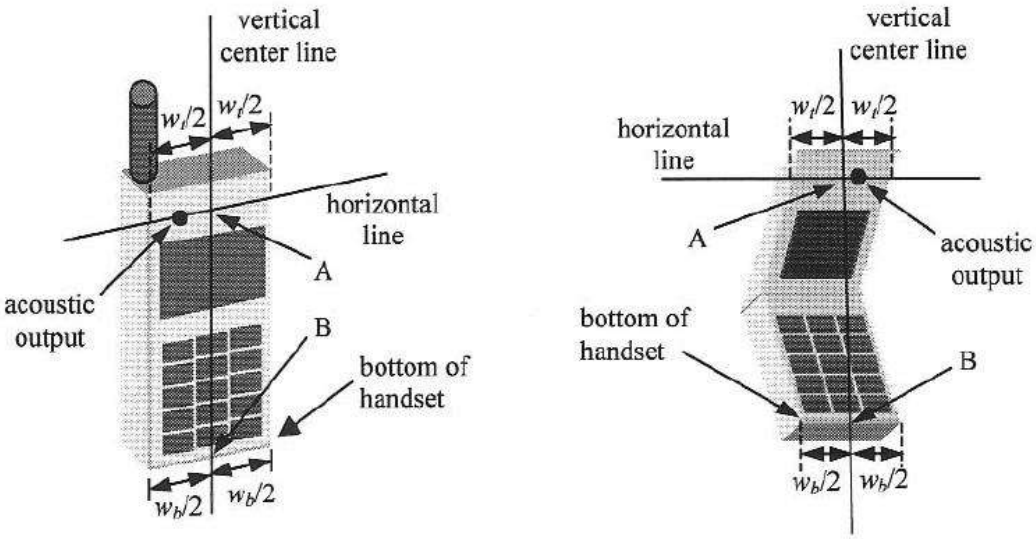


Figure 6.2 Handset vertical and horizontal reference lines

6.2 Body Holster/Belt Clip Configurations

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration. A device with a headset output is tested with a headset connected to the device. Body dielectric parameters are used.

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

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

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

"See the Test SET-UP Photo"

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

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

7. MEASUREMENT UNCERTAINTY

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

Table 7.1 Uncertainty (800 MHz- 2450 MHz)

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

Table 7.2 Uncertainty (5000-5900 MHz)

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

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

Table 8.1 Safety Limits for Partial Body Exposure

NOTES:

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

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

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

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

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e.as a result of employment or occupation).

9. SYSTEM VERIFICATION

9.1 Tissue Verification

Freq. [MHz]	Date	Liquid	Liquid Temp.[°C]	Parameters	Target Value	Measured Value	Deviation [%]	Limit [%]
835	Oct. 22, 2012	Head	21.2	ε r	41.5	40.4	- 2.65	± 5
				σ	0.90	0.918	+ 2.00	± 5
835		Body		ε r	55.2	53.3	- 3.44	± 5
				σ	0.97	0.996	+ 2.68	± 5
1 900	Oct. 23, 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	51.8	- 2.81	± 5
				σ	1.52	1.54	+ 1.32	± 5
2 450	Oct. 19, 2012	Head	21.1	ε r	39.2	39.9	+ 1.79	± 5
				σ	1.80	1.83	+ 1.67	± 5
2 450		Body		ε r	52.7	53.6	+ 1.71	± 5
				σ	1.95	1.94	- 0.51	± 5
5 200	Oct. 24, 2012	Head	21.1	ε r	36.0	35.8	- 0.56	± 5
				σ	4.66	4.55	- 2.36	± 5
5 200	Oct. 25, 2012	Body	21.3	ε r	49.0	47.4	- 3.27	± 5
				σ	5.3	5.23	- 1.32	± 5
5 500	Oct. 24, 2012	Head	21.1	ε r	35.6	34.9	- 1.97	± 5
				σ	4.96	4.9	- 1.21	± 5
5 500	Oct. 25, 2012	Body	21.3	ε r	48.6	46.5	- 4.32	± 5
				σ	5.65	5.59	- 1.06	± 5
5 800	Oct. 24, 2012	Head	21.1	ε r	35.3	34.1	- 3.40	± 5
				σ	5.27	5.32	+ 0.95	± 5
5 800	Oct. 25, 2012	Body	21.3	ε r	48.2	46.1	- 4.36	± 5
				σ	6.00	6.16	+ 2.67	± 5

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

9.2 System Validation

Prior to assessment, the system is verified to the ± 10 % of the specifications at 835 MHz /1 900 MHz/ 2 450 MHz 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	Oct. 22, 2012	1630	Head	21.4	21.2	9.43	0.943	9.43	0.00	± 10
835			Body			9.50	0.978	9.78	+ 2.95	± 10
1 900	Oct. 23, 2012		Head	21.4	21.2	39.0	4.05	40.5	+ 3.85	± 10
1 900			Body			39.9	3.97	39.7	- 0.50	± 10
2 450	Oct. 19, 2012		Head	21.3	21.1	52.7	5.11	51.1	- 3.04	± 10
2 450			Body			51.2	5.04	50.4	- 1.56	± 10
5 200	Oct. 24, 2012	3863	Head	21.3	21.1	78.9	7.95	79.5	- 0.75	± 10
5 200	Oct. 25, 2012		Body	21.5	21.3	75.8	7.46	74.6	+ 1.61	± 10
5 500	Oct. 24, 2012		Head	21.3	21.1	82.2	8.21	82.1	+ 0.12	± 10
5 500	Oct. 25, 2012		Body	21.5	21.3	78.5	7.96	79.6	- 1.38	± 10
5 800	Oct. 24, 2012		Head	21.3	21.1	77.6	7.98	79.8	- 2.76	± 10
5 800	Oct. 25, 2012		Body	21.5	21.3	74.6	7.44	74.4	+ 0.27	± 10

9.3 System Validation Procedure

SAR measurement was prior to assessment, the system is verified to the ± 10 % of the specifications at each frequency band by using the system validation kit. (Graphic Plots Attached)
- Cabling the system, using the validation kit equipments.
- Generate about 100 mW Input Level from the Signal generator to the Dipole Antenna.
- Dipole Antenna was placed below the Flat phantom.
- The measured one-gram SAR at the surface of the phantom above the dipole feed-point should be within 10 % of the target reference value.
- The results are normalized to 1 W input power.

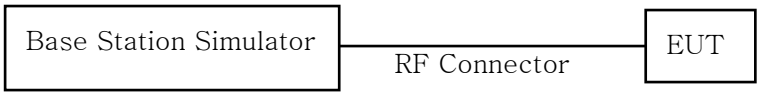
Note;
SAR Verification was performed according to the FCC KDB 450824.

10. RF CONDUCTED POWER MEASUREMENT

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

10.1 GSM

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



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

- GSM voice: Head SAR
- GPRS Multi-slots : 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	32.89	32.91	32.91	32.87	30.05	26.57	26.54	26.52	23.58
	190	32.80	32.80	32.81	32.79	29.98	26.55	26.53	26.51	23.49
	251	32.74	32.75	32.74	32.72	29.88	26.46	26.43	26.43	23.47
GSM 1900	512	29.26	29.23	29.25	29.23	26.25	25.29	25.28	25.26	22.45
	661	29.37	29.36	29.36	29.35	26.37	25.38	25.37	25.37	22.56
	810	29.58	29.57	29.56	29.56	26.61	25.59	25.59	25.57	22.80

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	23.86	23.88	26.89	28.61	27.04	17.54	20.52	22.26	20.57
	190	23.77	23.77	26.79	28.53	26.97	17.52	20.51	22.25	20.48
	251	23.71	23.72	26.72	28.46	26.87	17.43	20.41	22.17	20.46
GSM 1900	512	20.23	20.20	23.23	24.97	23.24	16.26	19.26	21.00	19.44
	661	20.34	20.33	23.34	25.09	23.36	16.35	19.35	21.11	19.55
	810	20.55	20.54	23.54	25.30	23.60	16.56	19.57	21.31	19.79

Note:

Time slot average factor is as follows:

1 Tx slot = 9.03 dB, Frame-Average output power = Burst-Average output power – 9.03 dB

2 Tx slot = 6.02 dB, Frame-Average output power = Burst-Average output power – 6.02 dB

3 Tx slot = 4.26 dB, Frame-Average output power = Burst-Average output power – 4.26 dB

4 Tx slot = 3.01 dB, Frame-Average output power = Burst-Average output power – 3.01 dB

10.2 WCDMA

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

10.2.1 Output Power Verification

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

10.2.2 Head SAR Measurements

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

10.2.3 Body SAR Measurement

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

10.2.4 Handsets with Release 5 HSDPA

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

Sub-Test 1 Setup for Release 5 HSDPA

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

Note 1: Δ_{ACK}, Δ_{NACK} and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$
Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15.
Note 3: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d = 15/15.

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]						MPR Target
			4132	Power reduction (dB)	4183	Power reduction (dB)	4233	Power reduction (dB)	
99	WCDMA	12.2 kbps RMC	23.11		22.83		22.78		-
99	WCDMA	12.2 kbps AMR	23.07		22.78		22.73		
5	HSDPA	Subtest 1	23.10		22.83		22.77		0
5		Subtest 2	22.36	0.74	22.08	0.75	22.02	0.75	0
5		Subtest 3	22.11	0.99	21.82	1.01	21.77	1	0.5
5		Subtest 4	21.85	1.25	21.57	1.26	21.51	1.26	0.5
6	HSUPA	Subtest 1	22.31		22.04		22.00		0
6		Subtest 2	20.24	2.07	20.00	2.04	20.01	1.99	2
6		Subtest 3	21.08	1.23	20.82	1.22	20.77	1.23	1
6		Subtest 4	20.45	1.86	20.20	1.84	20.18	1.82	2
6		Subtest 5	22.34	-0.03	22.33	-0.29	22.27	-0.27	0

3GPP Release Version	Mode	3GPP 34.121 Subtest	PCS Band [dBm]						MPR Target
			9262	Power reduction (dB)	9400	Power reduction (dB)	9538	Power reduction (dB)	
99	WCDMA	12.2 kbps RMC	22.04		22.18		22.12		-
99	WCDMA	12.2 kbps AMR	21.96		22.13		22.15		
5	HSDPA	Subtest 1	22.08		22.20		22.16		0
5		Subtest 2	21.85	0.23	21.98	0.22	21.97	0.19	0
5		Subtest 3	21.68	0.4	21.79	0.41	21.82	0.34	0.5
5		Subtest 4	21.45	0.63	21.57	0.63	21.55	0.61	0.5
6	HSUPA	Subtest 1	21.30		21.24		21.48		0
6		Subtest 2	20.07	1.23	20.21	1.03	20.21	1.27	2
6		Subtest 3	20.93	0.37	21.02	0.22	21.00	0.48	1
6		Subtest 4	20.32	0.98	20.39	0.85	20.42	1.06	2
6		Subtest 5	21.31	-0.01	21.46	-0.22	21.51	-0.03	0

WCDMA Average Conducted output powers

10.3 WiFi

10.3.1 SAR Testing for 802.11b/g/n modes

General Device Setup

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

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

Frequency Channel Configurations

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

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

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

802.11 Test Channels per FCC Requirements

Band	Channel	Conducted Power (dBm)			
		Data Rate (Mbps)			
		1	2	5.5	11
IEEE 802.11b	1	15.64	15.59	15.56	15.30
	6	14.90	14.87	14.88	14.63
	11	15.65	15.55	15.49	15.22

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	12.46	12.30	12.09	11.90	11.71	11.33	10.97	10.82
	6	12.25	12.19	12.02	11.85	11.64	11.28	10.88	10.81
	11	12.49	12.20	12.17	11.83	11.64	11.28	10.98	10.86

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	12.30	11.98	11.76	11.52	11.23	10.85	10.77	10.65
	6	12.15	11.91	11.72	11.51	11.18	10.85	10.77	10.60
	11	12.09	11.94	11.69	11.55	11.21	10.89	10.71	10.59

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	12.89	12.79	12.71	12.54	12.34	11.97	11.69	11.58
802.11a	5200	40	12.68	12.55	12.53	12.43	12.15	12.36	12.25	11.99
802.11a	5220	44	12.71	12.65	12.63	12.55	12.25	12.13	12.03	11.95
802.11a	5240	48	12.86	12.77	12.75	12.63	12.55	12.41	12.35	12.20
802.11a	5260	52	12.58	12.43	12.44	12.35	12.25	12.10	12.00	11.95
802.11a	5280	56	12.43	12.36	12.33	12.10	12.03	11.93	11.95	11.85
802.11a	5300	60	12.46	12.33	12.32	12.15	12.10	12.00	11.93	11.85
802.11a	5320	64	12.54	12.43	12.40	12.35	12.25	12.11	12.03	11.85
802.11a	5500	100	11.95	11.92	11.83	11.75	11.63	11.52	11.43	11.33
802.11a	5520	104	12.09	12.05	12.03	11.95	11.85	11.73	11.65	11.35
802.11a	5540	108	12.14	12.11	12.09	12.05	11.93	11.97	11.85	11.82
802.11a	5560	112	11.97	11.85	11.74	11.63	11.54	11.36	11.10	11.03
802.11a	5580	116	12.06	12.03	11.93	11.98	11.95	11.85	11.73	11.65
802.11a	5660	132	12.10	12.05	12.03	11.93	11.83	11.77	11.43	11.35
802.11a	5680	136	12.14	12.05	11.93	11.83	11.77	11.65	11.35	11.25
802.11a	5700	140	12.27	12.11	12.10	12.03	11.95	11.93	11.85	11.74
802.11a	5745	149	12.54	12.43	12.33	12.22	12.10	11.93	11.88	11.75
802.11a	5765	153	12.26	12.11	12.03	11.93	11.85	11.74	11.65	11.61
802.11a	5785	157	12.44	12.31	12.22	12.11	12.03	11.93	11.84	11.77
802.11a	5805	161	12.66	12.52	12.43	12.30	12.15	11.98	11.90	11.85
802.11a	5825	165	12.62	12.53	12.43	12.30	12.00	11.95	11.83	11.77

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	12.88	12.77	12.65	12.55	12.43	12.20	12.15	12.10
802.11n	5200	40	12.62	12.35	12.22	12.10	12.00	11.93	11.85	11.74
802.11n	5220	44	12.79	12.66	12.52	12.43	12.33	12.10	11.95	11.85
802.11n	5240	48	12.80	12.74	12.46	12.33	12.10	11.95	11.85	11.74
802.11n	5260	52	12.60	12.52	12.43	12.33	12.11	12.03	11.95	11.83
802.11n	5280	56	12.39	12.21	12.10	12.00	11.59	11.48	11.38	11.25
802.11n	5300	60	12.46	12.33	12.31	12.15	12.10	12.03	11.95	11.85
802.11n	5320	64	12.54	12.43	12.33	12.25	12.10	11.96	11.85	11.74
802.11n	5500	100	11.89	11.74	11.61	11.55	11.40	11.32	11.22	11.03
802.11n	5520	104	12.00	11.98	11.74	11.63	11.53	11.40	11.25	11.03
802.11n	5540	108	12.12	12.03	11.83	11.74	11.63	11.43	11.32	11.20
802.11n	5560	112	11.87	11.77	11.63	11.60	11.52	11.43	11.22	11.10
802.11n	5580	116	11.88	11.77	11.65	11.43	11.25	11.11	11.10	10.89
802.11n	5660	132	11.93	11.88	11.74	11.63	11.50	11.43	11.32	11.25
802.11n	5680	136	12.04	12.00	11.95	11.84	11.73	11.60	11.54	11.38
802.11n	5700	140	12.07	12.03	11.93	11.85	11.74	11.63	11.55	11.40
802.11n	5745	149	12.33	12.20	12.10	12.00	11.83	11.77	11.65	11.54
802.11n	5765	153	12.04	12.00	11.95	11.83	11.74	11.63	11.55	11.38
802.11n	5785	157	12.26	12.15	12.00	12.95	11.83	11.63	11.50	11.43
802.11n	5805	161	12.32	12.20	12.05	12.03	11.83	11.80	11.70	11.63
802.11n	5825	165	12.44	12.35	12.22	12.10	11.93	11.88	11.74	11.70

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	5190	38	11.50	11.38	11.25	11.20	11.03	10.95	10.88	10.74
802.11n	5230	46	11.64	11.55	11.43	11.35	11.22	11.10	10.93	10.88
802.11n	5270	54	11.15	11.10	11.03	11.00	10.93	10.83	10.80	10.75
802.11n	5310	62	11.13	11.10	10.99	10.85	10.74	10.63	10.55	10.41
802.11n	5510	102	10.86	10.77	10.63	10.42	10.22	1015	10.10	10.02
802.11n	5550	110	10.93	10.85	10.77	10.60	10.45	10.33	10.21	10.22
802.11n	5670	134	11.41	11.33	11.25	11.10	10.93	10.88	10.74	10.65
802.11n	5755	151	12.91	12.88	12.70	12.61	12.43	12.33	12.25	12.13
802.11n	5795	159	12.90	12.88	12.74	12.65	12.43	12.22	12.11	12.03

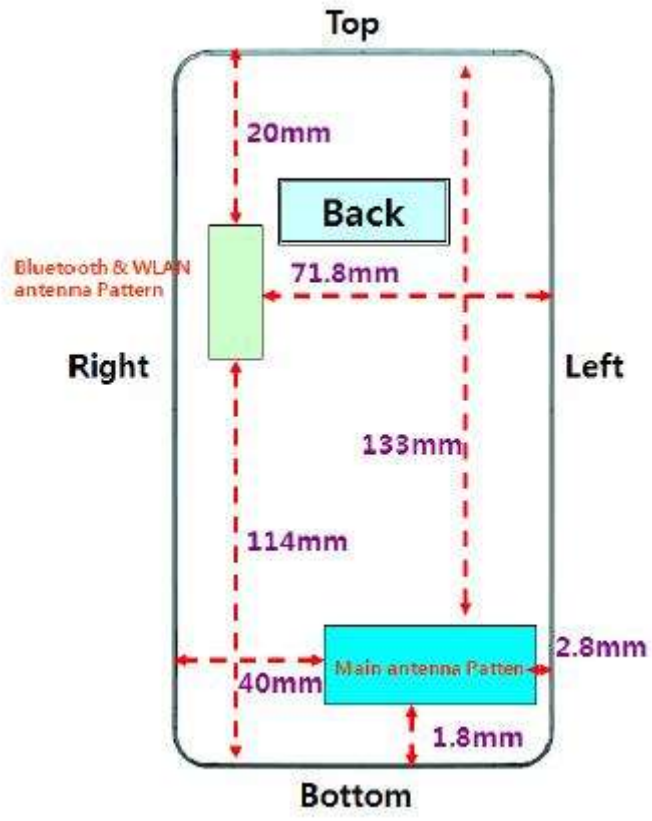
Note;
SAR testing was performed according to the FCC KDB 248227.

11. SAR Test configuration & Antenna Information

11.1 SAR Test configurations

Mode	Back	Front	Left	Right	Bottom	Top
850 GPRS	Yes	Yes	Yes	No	Yes	No
1900 GPRS	Yes	Yes	Yes	No	Yes	No
WCDMA850	Yes	Yes	Yes	No	Yes	No
WCDMA1900	Yes	Yes	Yes	No	Yes	No
WLAN	Yes	Yes	No	Yes	No	Yes

11.2 Antenna and Device Information



[Rear side View]

Note;

WLAN and BT transmitters cannot transmit simultaneously.

Please see the separate Antenna distance document.

12. SAR Considerations for Multiple Transmitters and Antennas

12.1 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	Routine evaluation required	SAR not required: Unlicensed only ○ when stand-alone 1-g SAR is not required and antenna is ≥ 5 cm from other antennas Licensed & Unlicensed ○ 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: Licensed & Unlicensed 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	When there is no simultaneous transmission – ○ output ≤ 60/f: SAR not required ○ output > 60/f: stand-alone SAR required When there is simultaneous transmission – Stand-alone SAR not required when ○ output ≤ 2·P_{Ref} and antenna is ≥ 5.0 cm from other antennas ○ output ≤ P_{Ref} and antenna is ≥ 2.5 cm from other antennas ○ output ≤ P_{Ref} and antenna is < 2.5 cm from other antennas, each with either output power ≤ P_{Ref} or 1-g SAR < 1.2 W/kg Otherwise stand-alone SAR is required When stand-alone SAR is required ○ 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	Flat phantom SAR required ○ 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: A3LGTN7100

BT Max. RF output power: (7.98 mW)

12.2 SAR Summation Scenario

Simultaneous Transmission Summation for Held to Ear (2.4 GHz WLAN)

Simultaneous TX	configuration	GSM850 SAR(W/kg)	2.4GHz WIFI SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	GSM1900 SAR(W/kg)	2.4GHz WIFI SAR (W/kg)	∑SAR (W/kg)
Head SAR	Left Cheek	0.122	0.021	0.143	Head SAR	Left Cheek	0.087	0.021	0.108
	Left Tilt	0.074	0.020	0.094		Left Tilt	0.040	0.020	0.060
	Right Cheek	0.124	0.015	0.139		Right Cheek	0.083	0.015	0.098
	Right Tilt	0.079	0.012	0.091		Right Tilt	0.059	0.012	0.071
Simultaneous TX	configuration	WCDMA850 SAR(W/kg)	2.4GHz WIFI SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	WCDMA1900 SAR(W/kg)	2.4GHz WIFI SAR (W/kg)	∑SAR (W/kg)
Head SAR	Left Cheek	0.123	0.021	0.144	Head SAR	Left Cheek	0.131	0.021	0.152
	Left Tilt	0.074	0.020	0.094		Left Tilt	0.073	0.020	0.093
	Right Cheek	0.126	0.015	0.141		Right Cheek	0.135	0.015	0.150
	Right Tilt	0.078	0.012	0.090		Right Tilt	0.124	0.012	0.136

Simultaneous Transmission Summation for Held to Ear (5.2 GHz WLAN)

Simultaneous TX	configuration	GSM850 SAR(W/kg)	5.2GHz WIFI SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	GSM1900 SAR(W/kg)	5.2GHz WIFI SAR (W/kg)	∑SAR (W/kg)
Head SAR	Left Cheek	0.122	0.001	0.123	Head SAR	Left Cheek	0.087	0.001	0.088
	Left Tilt	0.074	0.000	0.074		Left Tilt	0.040	0.000	0.040
	Right Cheek	0.124	0.001	0.125		Right Cheek	0.083	0.001	0.084
	Right Tilt	0.079	0.001	0.080		Right Tilt	0.059	0.001	0.060
Simultaneous TX	configuration	WCDMA850 SAR(W/kg)	5.2GHz WIFI SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	WCDMA1900 SAR(W/kg)	5.2GHz WIFI SAR (W/kg)	∑SAR (W/kg)
Head SAR	Left Cheek	0.123	0.001	0.124	Head SAR	Left Cheek	0.131	0.001	0.132
	Left Tilt	0.074	0.000	0.074		Left Tilt	0.073	0.000	0.073
	Right Cheek	0.126	0.001	0.127		Right Cheek	0.135	0.001	0.136
	Right Tilt	0.078	0.001	0.079		Right Tilt	0.124	0.001	0.125

Simultaneous Transmission Summation for Held to Ear (5.3 GHz WLAN)

Simultaneous TX	configuration	GSM850 SAR(W/kg)	5.3GHz WIFI SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	GSM1900 SAR(W/kg)	5.3GHz WIFI SAR (W/kg)	∑SAR (W/kg)
Head SAR	Left Cheek	0.122	0.001	0.123	Head SAR	Left Cheek	0.087	0.001	0.088
	Left Tilt	0.074	0.012	0.086		Left Tilt	0.040	0.012	0.052
	Right Cheek	0.124	0.029	0.153		Right Cheek	0.083	0.029	0.112
	Right Tilt	0.079	0.049	0.128		Right Tilt	0.059	0.049	0.108
Simultaneous TX	configuration	WCDMA850 SAR(W/kg)	5.3GHz WIFI SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	WCDMA1900 SAR(W/kg)	5.3GHz WIFI SAR (W/kg)	∑SAR (W/kg)
Head SAR	Left Cheek	0.123	0.001	0.124	Head SAR	Left Cheek	0.131	0.001	0.132
	Left Tilt	0.074	0.012	0.086		Left Tilt	0.073	0.012	0.085
	Right Cheek	0.126	0.029	0.155		Right Cheek	0.135	0.029	0.164
	Right Tilt	0.078	0.049	0.127		Right Tilt	0.124	0.049	0.173

Simultaneous Transmission Summation for Held to Ear (5.5 GHz WLAN)

Simultaneous TX	configuration	GSM850 SAR(W/kg)	5.5GHz WIFI SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	GSM1900 SAR(W/kg)	5.5GHz WIFI SAR (W/kg)	∑SAR (W/kg)
Head SAR	Left Cheek	0.122	0.014	0.136	Head SAR	Left Cheek	0.087	0.014	0.101
	Left Tilt	0.074	0.007	0.081		Left Tilt	0.040	0.007	0.047
	Right Cheek	0.124	0.002	0.126		Right Cheek	0.083	0.002	0.085
	Right Tilt	0.079	0.021	0.100		Right Tilt	0.059	0.021	0.080
Simultaneous TX	configuration	WCDMA850 SAR(W/kg)	5.5GHz WIFI SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	WCDMA1900 SAR(W/kg)	5.5GHz WIFI SAR (W/kg)	∑SAR (W/kg)
Head SAR	Left Cheek	0.123	0.014	0.137	Head SAR	Left Cheek	0.131	0.014	0.145
	Left Tilt	0.074	0.007	0.081		Left Tilt	0.073	0.007	0.080
	Right Cheek	0.126	0.002	0.128		Right Cheek	0.135	0.002	0.137
	Right Tilt	0.078	0.021	0.099		Right Tilt	0.124	0.021	0.145

Simultaneous Transmission Summation for Held to Ear (5.8 GHz 802.11n)

Simultaneous TX	configuration	GSM850 SAR(W/kg)	5.8GHz WIFI SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	GSM1900 SAR(W/kg)	5.8GHz WIFI SAR (W/kg)	∑SAR (W/kg)
Head SAR	Left Cheek	0.122	0.004	0.126	Head SAR	Left Cheek	0.087	0.004	0.091
	Left Tilt	0.074	0.001	0.075		Left Tilt	0.040	0.001	0.041
	Right Cheek	0.124	0.000	0.124		Right Cheek	0.083	0.000	0.083
	Right Tilt	0.079	0.001	0.080		Right Tilt	0.059	0.001	0.060
Simultaneous TX	configuration	WCDMA850 SAR(W/kg)	5.8GHz WIFI SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	WCDMA1900 SAR(W/kg)	5.8GHz WIFI SAR (W/kg)	∑SAR (W/kg)
Head SAR	Left Cheek	0.123	0.004	0.127	Head SAR	Left Cheek	0.131	0.004	0.135
	Left Tilt	0.074	0.001	0.075		Left Tilt	0.073	0.001	0.074
	Right Cheek	0.126	0.000	0.126		Right Cheek	0.135	0.000	0.135
	Right Tilt	0.078	0.001	0.079		Right Tilt	0.124	0.001	0.125

Simultaneous Transmission Summation for Held to Ear (5.8 GHz 802.11a)

Simultaneous TX	configuration	GSM850 SAR(W/kg)	5.8GHz WIFI SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	GSM1900 SAR(W/kg)	5.8GHz WIFI SAR (W/kg)	∑SAR (W/kg)
Head SAR	Left Cheek	0.122	0.024	0.146	Head SAR	Left Cheek	0.087	0.024	0.111
	Left Tilt	0.074	0.028	0.102		Left Tilt	0.040	0.028	0.068
	Right Cheek	0.124	0.009	0.133		Right Cheek	0.083	0.009	0.092
	Right Tilt	0.079	0.019	0.098		Right Tilt	0.059	0.019	0.078
Simultaneous TX	configuration	WCDMA850 SAR(W/kg)	5.8GHz WIFI SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	WCDMA1900 SAR(W/kg)	5.8GHz WIFI SAR (W/kg)	∑SAR (W/kg)
Head SAR	Left Cheek	0.123	0.024	0.147	Head SAR	Left Cheek	0.131	0.024	0.155
	Left Tilt	0.074	0.028	0.102		Left Tilt	0.073	0.028	0.101
	Right Cheek	0.126	0.009	0.135		Right Cheek	0.135	0.009	0.144
	Right Tilt	0.078	0.019	0.097		Right Tilt	0.124	0.019	0.143

Simultaneous Transmission Summation for Voice and 2.4GHz WLAN (Body-Worn 1cm)

Simultaneous TX	configuration	GPRS850 SAR(W/kg)	2.4GHz WIFI SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	GPRS1900 SAR(W/kg)	2.4GHz WIFI SAR (W/kg)	∑SAR (W/kg)
Body SAR	Back	0.237	0.019	0.256	Body SAR	Back	0.285	0.019	0.304
Simultaneous TX	configuration	WCDMA850 SAR(W/kg)	2.4GHz WIFI SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	WCDMA1900 SAR(W/kg)	2.4GHz WIFI SAR (W/kg)	∑SAR (W/kg)
Body SAR	Back	0.233	0.019	0.252	Body SAR	Back	0.388	0.019	0.407

Simultaneous Transmission Summation for Voice and 5.2GHz WLAN (Body-Worn 1cm)

Simultaneous TX	configuration	GPRS850 SAR(W/kg)	5.2GHz WIFI SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	GPRS1900 SAR(W/kg)	5.2GHz WIFI SAR (W/kg)	∑SAR (W/kg)
Body SAR	Back	0.237	0.058	0.295	Body SAR	Back	0.285	0.058	0.343
Simultaneous TX	configuration	WCDMA850 SAR(W/kg)	5.2GHz WIFI SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	WCDMA1900 SAR(W/kg)	5.2GHz WIFI SAR (W/kg)	∑SAR (W/kg)
Body SAR	Back	0.233	0.058	0.291	Body SAR	Back	0.388	0.058	0.446

Simultaneous Transmission Summation for Voice and 5.3GHz WLAN (Body-Worn 1cm)

Simultaneous TX	configuration	GPRS850 SAR(W/kg)	5.3GHz WIFI SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	GPRS1900 SAR(W/kg)	5.3GHz WIFI SAR (W/kg)	∑SAR (W/kg)
Body SAR	Back	0.237	0.072	0.309	Body SAR	Back	0.285	0.072	0.357
Simultaneous TX	configuration	WCDMA850 SAR(W/kg)	5.3GHz WIFI SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	WCDMA1900 SAR(W/kg)	5.3GHz WIFI SAR (W/kg)	∑SAR (W/kg)
Body SAR	Back	0.233	0.072	0.305	Body SAR	Back	0.388	0.072	0.460

Simultaneous Transmission Summation for Voice and 5.5GHz WLAN (Body-Worn 1cm)

Simultaneous TX	configuration	GPRS850 SAR(W/kg)	5.5GHz WIFI SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	GPRS1900 SAR(W/kg)	5.5GHz WIFI SAR (W/kg)	∑SAR (W/kg)
Body SAR	Back	0.237	0.216	0.453	Body SAR	Back	0.285	0.216	0.501
Simultaneous TX	configuration	WCDMA850 SAR(W/kg)	5.5GHz WIFI SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	WCDMA1900 SAR(W/kg)	5.5GHz WIFI SAR (W/kg)	∑SAR (W/kg)
Body SAR	Back	0.233	0.216	0.449	Body SAR	Back	0.388	0.216	0.604

Simultaneous Transmission Summation for Voice and 5.8GHz 802.11n (Body-Worn 1cm)									
Simultaneous TX	configuration	GPRS850 SAR(W/kg)	5.8GHz WIFI SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	GPRS1900 SAR(W/kg)	5.8GHz WIFI SAR (W/kg)	∑SAR (W/kg)
Body SAR	Back	0.237	0.244	0.481	Body SAR	Back	0.285	0.244	0.529
Simultaneous TX	configuration	WCDMA850 SAR(W/kg)	5.8GHz WIFI SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	WCDMA1900 SAR(W/kg)	5.8GHz WIFI SAR (W/kg)	∑SAR (W/kg)
Body SAR	Back	0.233	0.244	0.477	Body SAR	Back	0.388	0.244	0.632

Simultaneous Transmission Summation for Voice and 5.8GHz 802.11a (Body-Worn 1cm)

Simultaneous TX	configuration	GPRS850 SAR(W/kg)	5.8GHz WIFI SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	GPRS1900 SAR(W/kg)	5.8GHz WIFI SAR (W/kg)	∑SAR (W/kg)
Body SAR	Back	0.237	0.118	0.355	Body SAR	Back	0.285	0.118	0.403
Simultaneous TX	configuration	WCDMA850 SAR(W/kg)	5.8GHz WIFI SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	WCDMA1900 SAR(W/kg)	5.8GHz WIFI SAR (W/kg)	∑SAR (W/kg)
Body SAR	Back	0.233	0.118	0.351	Body SAR	Back	0.388	0.118	0.506

Simultaneous Transmission Summation for Hotspot (1cm)

Simultaneous TX	configuration	GPRS850 SAR(W/kg)	2.4GHz WIFI SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	GPRS1900 SAR(W/kg)	2.4GHz WIFI SAR (W/kg)	∑SAR (W/kg)
Body SAR	Back	0.665	0.019	0.684	Body SAR	Back	0.901	0.019	0.920
	Front	0.343	0.005	0.348		Front	0.654	0.005	0.659
	Left	0.359	-	0.359		Left	0.344	-	0.344
	Right	-	0.017	0.017		Right	-	0.017	0.017
	Bottom	0.658	-	0.658		Bottom	0.648	-	0.648
	Top	-	0.008	0.008		Top	-	0.008	0.008
Simultaneous TX	configuration	WCDMA850 SAR(W/kg)	2.4GHz WIFI SAR (W/kg)	∑SAR (W/kg)	Simultaneous TX	configuration	WCDMA1900 SAR(W/kg)	2.4GHz WIFI SAR (W/kg)	∑SAR (W/kg)
Body SAR	Back	0.233	0.019	0.252	Body SAR	Back	0.388	0.019	0.407
	Front	0.220	0.005	0.225		Front	0.336	0.005	0.341
	Left	0.131	-	0.131		Left	0.188	-	0.188
	Right	-	0.017	0.017		Right	-	0.017	0.017
	Bottom	0.235	-	0.235		Bottom	0.359	-	0.359
	Top	-	0.008	0.008		Top	-	0.008	0.008

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.

12.3 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 $2*P_{ref}$, the BT antenna is more than 5 cm from the other antenna, therefore, a stand-alone BT SAR evaluation is not required.

13. SAR TEST DATA SUMMARY

13.1 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	32.80	-0.173	Standard	Left Ear	0.122
			32.80	-0.027	Standard	Left Tilt 15°	0.074
			32.80	0.175	Standard	Right Ear	0.124
			32.80	0.04	Standard	Right Tilt 15°	0.079
ANSI/ IEEE C95.1 - 1992– Safety Limit **Spatial Peak** **Uncontrolled Exposure/ General Population**						**Head** **1.6 W/kg (mW/g)** Averaged over 1 gram	

NOTES:

1 The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.
6 Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
7 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).

13.2 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	29.37	-0.015	Standard	Left Ear	0.087
			29.37	-0.017	Standard	Left Tilt 15°	0.04
			29.37	0.165	Standard	Right Ear	0.083
			29.37	-0.058	Standard	Right Tilt 15°	0.059
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						**Head 1.6 W/kg (mW/g)** Averaged over 1 gram	

NOTES:

1 The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.
6 Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
7 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).

13.3 Measurement Results (WCDMA850 Head SAR)

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Battery	Phantom Position	SAR(mW/g)
MHz	Channel						
836.6	4183 (Mid)	WCDMA850	22.83	-0.09	Standard	Left Ear	0.123
836.6	4183 (Mid)	WCDMA850	22.83	-0.014	Standard	Left Tilt 15°	0.074
836.6	4183 (Mid)	WCDMA850	22.83	0.026	Standard	Right Ear	0.126
836.6	4183 (Mid)	WCDMA850	22.83	-0.002	Standard	Right Tilt 15°	0.078
ANSI/ IEEE C95.1 - 2005– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						**Head 1.6 W/kg (mW/g)** Averaged over 1 gram	

NOTES:

1 The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.
6 Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
7 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).
8 WCDMA Mode was tested under RMC 12.2 kbps and HSDPA Inactive.

13.4 Measurement Results (WCDMA1900 Head SAR)

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Battery	Phantom Position	SAR(mW/g)
MHz	Channel						
1 880.0	9400 (Mid)	WCDMA1900	22.18	-0.064	Standard	Left Ear	0.131
1 880.0	9400 (Mid)	WCDMA1900	22.18	0.016	Standard	Left Tilt 15°	0.073
1 880.0	9400 (Mid)	WCDMA1900	22.18	-0.072	Standard	Right Ear	0.135
1 880.0	9400 (Mid)	WCDMA1900	22.18	-0.02	Standard	Right Tilt 15°	0.124
ANSI/ IEEE C95.1 - 2005– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						**Head 1.6 W/kg (mW/g)** Averaged over 1 gram	

NOTES:

1 The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.
6 Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
7 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).
8 WCDMA Mode was tested under RMC 12.2 kbps and HSDPA Inactive.

13.5 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	15.65	-0.08	Standard	Left Ear	1	0.021
			15.65	0.047	Standard	Left Tilt 15°	1	0.02
			15.65	-0.08	Standard	Right Ear	1	0.015
			15.65	0.05	Standard	Right Tilt 15	1	0.012
ANSI/ IEEE C95.1 - 1992– Safety Limit **Spatial Peak** **Uncontrolled Exposure/ General Population**						**Head** **1.6 W/kg (mW/g)** Averaged over 1 gram		

NOTES:

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

13.6 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							
5700	140	802.11a	12.27	0.09	Standard	Left Ear	6Mbps	0.014
5700	140	802.11a	12.27	0.09	Standard	Left Tilt 15°	6Mbps	0.00699
5700	140	802.11a	12.27	-0.08	Standard	Right Ear	6Mbps	0.00238
5700	140	802.11a	12.27	-0.08	Standard	Right Tilt 15	6Mbps	0.021
5180	36	802.11a	12.89	0.09	Standard	Left Ear	6Mbps	0.0011
5180	36	802.11a	12.89	0.07	Standard	Left Tilt 15°	6Mbps	0.000443
5180	36	802.11a	12.89	0.06	Standard	Right Ear	6Mbps	0.00125
5180	36	802.11a	12.89	-0.04	Standard	Right Tilt 15	6Mbps	0.00139
5260	52	802.11a	12.58	0.004	Standard	Left Ear	6Mbps	0.000605
5260	52	802.11a	12.58	-0.04	Standard	Left Tilt 15°	6Mbps	0.012
5260	52	802.11a	12.58	-0.056	Standard	Right Ear	6Mbps	0.029
5260	52	802.11a	12.58	-0.03	Standard	Right Tilt 15	6Mbps	0.049
5805	161	802.11a	12.06	0.095	Standard	Left Ear	6Mbps	0.024
5805	161	802.11a	12.06	0.02	Standard	Left Tilt 15°	6Mbps	0.028
5805	161	802.11a	12.06	0.050	Standard	Right Ear	6Mbps	0.00893
5805	161	802.11a	12.06	0.03	Standard	Right Tilt 15	6Mbps	0.019
5755	151	802.11n	12.91	0.005	Standard	Left Ear	MCS0	0.00383
5755	151	802.11n	12.91	-0.04	Standard	Left Tilt 15°	MCS0	0.00116
5755	151	802.11n	12.91	-0.07	Standard	Right Ear	MCS0	0.00036
5755	151	802.11n	12.91	0.05	Standard	Right Tilt 15	MCS0	0.00134
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						**Head 1.6 W/kg (mW/g) **Averaged over 1 gram		

NOTES:

1 The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.
6 Test Signal Call Mode ☒ Manual Test cord ☐ Base Station Simulator
7 Highest average RF output power channel for the lowest data rate were selected for SAR testing. IEEE 802.11(including 802.11n) SAR testing is required when the conducted powers are equal to or greater than 0.25 dB than the conducted powers in IEEE 802.11a.
8 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.

13.7 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)	GSM850	32.79	-0.077	Rear	1.0 cm	0.237
836.6	190 (Mid)	GPRS 3Tx	32.79	-0.027	Rear	1.0 cm	0.665
836.6	190 (Mid)	GPRS 3Tx	32.79	-0.079	Front	1.0 cm	0.343
836.6	190 (Mid)	GPRS 3Tx	32.79	-0.043	Left	1.0 cm	0.359
836.6	190 (Mid)	GPRS 3Tx	32.79	0.008	bottom	1.0 cm	0.658
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:

1 The test data reported are the worst-case SAR value with the antenna-body position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.
6 Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
7 Test Configuration ☐ With Holster ☒ Without Holster
8 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).
9 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.

13.8 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)	GSM1900	29.37	0.158	Rear	1.0 cm	0.285
1850.2	512(Low)	GPRS 3Tx	29.23	0.093	Rear	1.0 cm	0.815
1 880.0	661 (Mid)	GPRS 3Tx	29.35	0.062	Rear	1.0 cm	0.861
1 909.8	810(High)	GPRS 3Tx	29.56	-0.046	Rear	1.0 cm	0.901
1 880.0	661 (Mid)	GPRS 3Tx	29.35	0.009	Front	1.0 cm	0.654
1 880.0	661 (Mid)	GPRS 3Tx	29.35	-0.097	Left	1.0 cm	0.344
1 880.0	661 (Mid)	GPRS 3Tx	29.35	0.015	bottom	1.0 cm	0.648
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:

1 The test data reported are the worst-case SAR value with the antenna-body position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].

2 All modes of operation were investigated and the worst-case are reported.

3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.

4 Tissue parameters and temperatures are listed on the SAR plot.

5 Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.

6 Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator

7 Test Configuration ☐ With Holster ☒ Without Holster

8 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).

9 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.

13.9 Measurement Results (WCDMA850 Hotspot SAR)

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Configuration	Phantom Position	SAR(mW/g)
MHz	Channel						
836.6	4183 (Mid)	WCDMA850	22.83	-0.011	Rear	1.0 cm	0.233
836.6	4183 (Mid)	WCDMA850	22.83	-0.116	Front	1.0 cm	0.22
836.6	4183 (Mid)	WCDMA850	22.83	-0.021	Left	1.0 cm	0.131
836.6	4183 (Mid)	WCDMA850	22.83	-0.001	Bottom	1.0 cm	0.235
ANSI/ IEEE C95.1 - 2005– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population					**Body 1.6 W/kg (mW/g) Averaged over 1 gram**		

1 The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.
6 Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
7 Test Configuration ☐ With Holster ☒ Without Holster
8 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).
9 WCDMA Mode was tested under RMC 12.2 kbps and HSDPA Inactive.

13.10 Measurement Results (WCDMA1900 Hotspot SAR)

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Configuration	Separation Distance	SAR(mW/g)
MHz	Channel						
1 880.0	9400 (Mid)	WCDMA1900	22.18	0.053	Rear	1.0 cm	0.388
1 880.0	9400 (Mid)	WCDMA1900	22.18	-0.113	Front	1.0 cm	0.336
1 880.0	9400 (Mid)	WCDMA1900	22.18	0.041	Left	1.0 cm	0.188
1 880.0	9400 (Mid)	WCDMA1900	22.18	0.002	Bottom	1.0 cm	0.359
ANSI/ IEEE C95.1 - 2005– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						**Body 1.6 W/kg (mW/g)** Averaged over 1 gram	

1 The test data reported are the worst-case SAR value with the antenna-Body position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.
6 Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
7 Test Configuration ☐ With Holster ☒ Without Holster
8 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).
9 WCDMA Mode was tested under RMC 12.2 kbps and HSDPA Inactive.

13.11 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	15.65	-0.026	Rear	1.0 cm	1 Mbps	0.019
		802.11b	15.65	-0.063	Front	1.0 cm	1 Mbps	0.00536
		802.11b	15.65	-0.178	Right	1.0 cm	1 Mbps	0.017
		802.11b	15.65	-0.062	Top	1.0 cm	1 Mbps	0.00811
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:

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

13.12 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							
5700	140	802.11a	12.27	0.07	Rear	1.0 cm	6Mbps	0.216
5180	36	802.11a	12.89	0.06	Rear	1.0 cm	6Mbps	0.058
5260	52	802.11a	12.58	0.08	Rear	1.0 cm	6Mbps	0.072
5805	161	802.11a	12.66	0.09	Rear	1.0 cm	6Mbps	0.118
5755	151	802.11n	12.91	-0.04	Rear	1.0 cm	MCS0	0.244
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:

1 The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].

2 All modes of operation were investigated and the worst-case are reported.

3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.

4 Tissue parameters and temperatures are listed on the SAR plot.

5 Battery Type ☒ Standard ☐ Extended ☐ Slim
Batteries are fully charged for all readings.

6 Test Signal Call Mode ☒ Manual Test cord ☐ Base Station Simulator

7 Highest average RF output power channel for the lowest data rate were selected for SAR testing. IEEE 802.11(including 802.11n) SAR testing is required when the conducted powers are equal to or greater than 0.25 dB than the conducted powers in IEEE 802.11a.

8 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.

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	33.0	32.80	0.124	0.130
Rear	GPRS850	190	836.6	33.0	32.79	0.665	0.698
Left Ear	GSM1900	661	1 880.0	30.0	29.37	0.087	0.101
Rear	GPRS1900	810	1 909.8	29.5	29.56	0.901	0.889
Right Ear	WCDMA850	4183	836.6	23.5	22.83	0.126	0.147
Bottom	WCDMA850	4183	836.6	23.5	22.83	0.235	0.274
Right Ear	WCDMA1900	9400	1 880.0	22.5	22.18	0.135	0.145
Rear	WCDMA1900	9400	1 880.0	22.5	22.18	0.388	0.418

15. CONCLUSION

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

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

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Attachment 1. – SAR Test Plots

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.2 ℃
Ambient Temperature: 21.4 ℃
Test Date: Oct.22, 2012

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.919 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

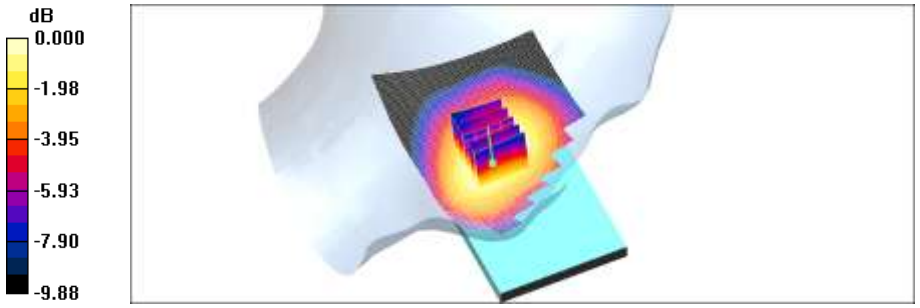
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.36, 6.36, 6.36); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 1800/1900 Phantom; Type: SAM

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

Maximum value of SAR (interpolated) = 0.128 mW/g

Left Touch 190/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.50 V/m; Power Drift = -0.173 dB
Peak SAR (extrapolated) = 0.157 W/kg
SAR(1 g) = 0.122 mW/g; SAR(10 g) = 0.089 mW/g

Maximum value of SAR (measured) = 0.128 mW/g



0 dB = 0.128mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.2 ℃
Ambient Temperature: 21.4 ℃
Test Date: Oct.22, 2012

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.919 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

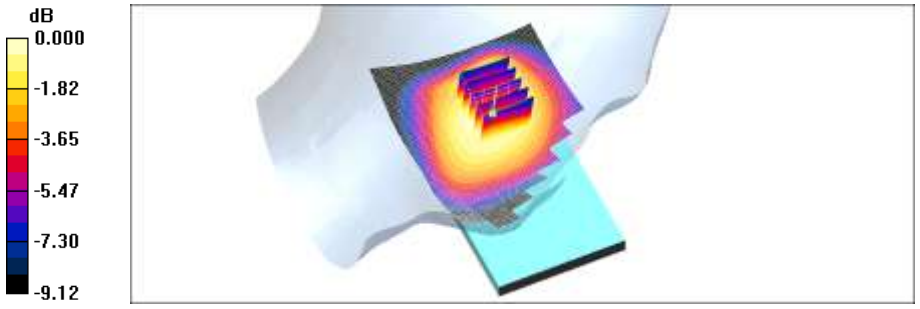
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.36, 6.36, 6.36); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 1800/1900 Phantom; Type: SAM

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

Maximum value of SAR (interpolated) = 0.078 mW/g

Left tilt 190/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.50 V/m; Power Drift = -0.027 dB
Peak SAR (extrapolated) = 0.090 W/kg
SAR(1 g) = 0.074 mW/g; SAR(10 g) = 0.055 mW/g

Maximum value of SAR (measured) = 0.077 mW/g



0 dB = 0.077mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.2 ℃
Ambient Temperature: 21.4 ℃
Test Date: Oct.22, 2012

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

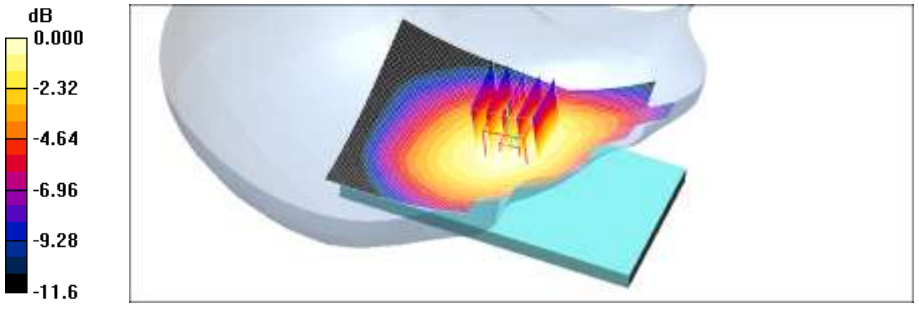
Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.919 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.36, 6.36, 6.36); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 1800/1900 Phantom; Type: SAM

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

Maximum value of SAR (interpolated) = 0.132 mW/g

Right Touch 190/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.04 V/m; Power Drift = 0.175 dB
Peak SAR (extrapolated) = 0.155 W/kg
SAR(1 g) = 0.124 mW/g; SAR(10 g) = 0.092 mW/g
aximum value of SAR (measured) = 0.132 mW/g



0 dB = 0.132mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.22, 2012

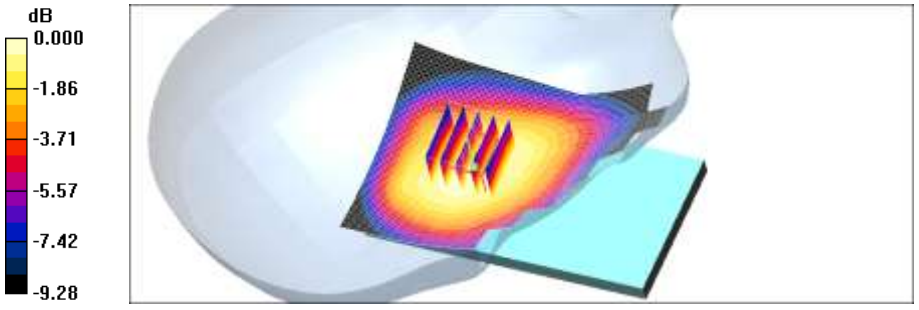
DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.919 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.36, 6.36, 6.36); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 1800/1900 Phantom; Type: SAM

Right tilt 190/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.083 mW/g

Right tilt 190/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.58 V/m; Power Drift = 0.040 dB
Peak SAR (extrapolated) = 0.096 W/kg
SAR(1 g) = 0.079 mW/g; SAR(10 g) = 0.059 mW/g
Maximum value of SAR (measured) = 0.083 mW/g



0 dB = 0.083mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.2 ℃
Ambient Temperature: 21.4 ℃
Test Date: Oct.23, 2012

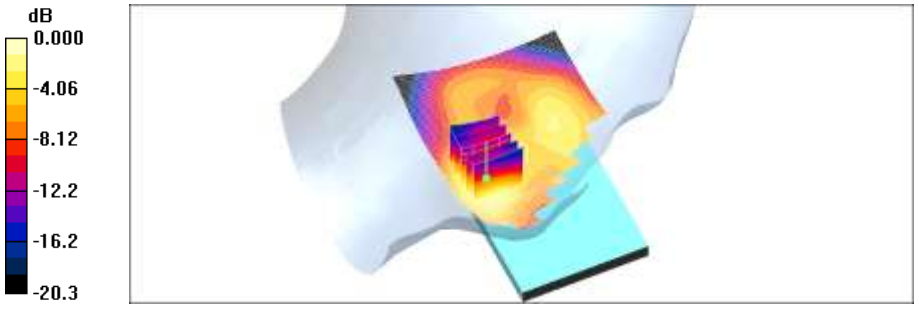
DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.35 mho/m; ε_r = 40.9; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(5.26, 5.26, 5.26); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 835/900 Phamtom ; Type: SAM

Left Touch 661/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.094 mW/g

Left Touch 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.91 V/m; Power Drift = -0.015 dB
Peak SAR (extrapolated) = 0.135 W/kg
SAR(1 g) = 0.087 mW/g; SAR(10 g) = 0.051 mW/g
Maximum value of SAR (measured) = 0.095 mW/g



0 dB = 0.095mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.2 ℃
Ambient Temperature: 21.4 ℃
Test Date: Oct.23, 2012

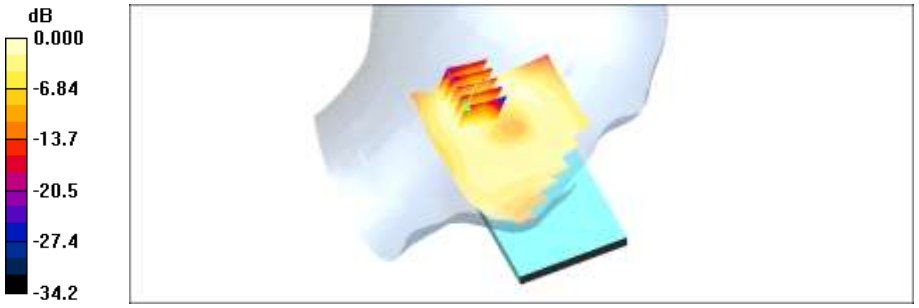
DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.35 mho/m; ε_r = 40.9; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(5.26, 5.26, 5.26); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 835/900 Phamtom ; Type: SAM

Left tilt 661/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.048 mW/g

Left tilt 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.62 V/m; Power Drift = -0.017 dB
Peak SAR (extrapolated) = 0.064 W/kg
SAR(1 g) = 0.040 mW/g; SAR(10 g) = 0.023 mW/g
Maximum value of SAR (measured) = 0.044 mW/g



0 dB = 0.044mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.23, 2012

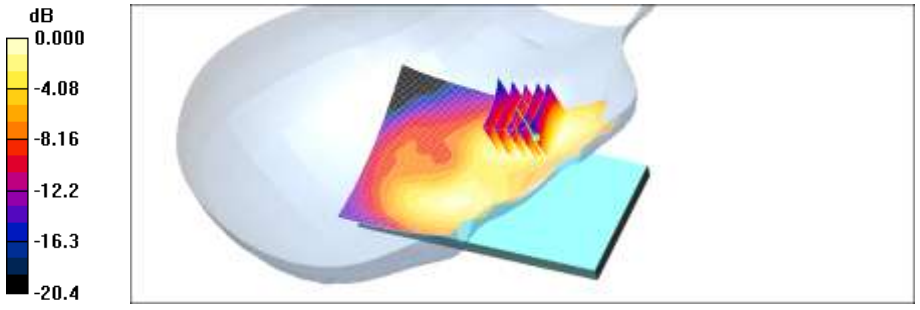
DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.35 mho/m; ε_r = 40.9; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(5.26, 5.26, 5.26); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 835/900 Phamtom ; Type: SAM

Right Touch 661/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.096 mW/g

Right Touch 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.12 V/m; Power Drift = 0.165 dB
Peak SAR (extrapolated) = 0.119 W/kg
SAR(1 g) = 0.083 mW/g; SAR(10 g) = 0.051 mW/g
Maximum value of SAR (measured) = 0.091 mW/g



0 dB = 0.091mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.2 ℃
Ambient Temperature: 21.4 ℃
Test Date: Oct.23, 2012

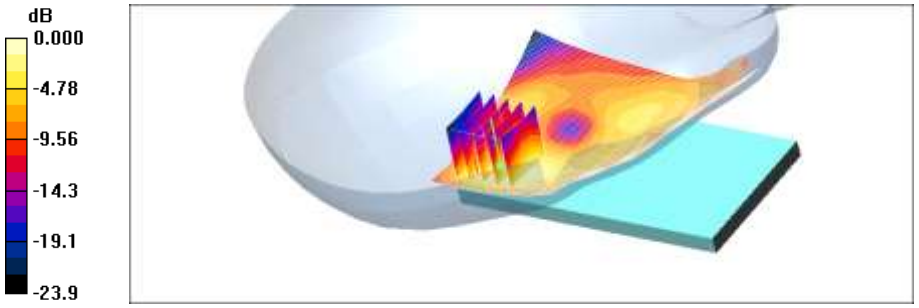
DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.35 mho/m; ε_r = 40.9; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(5.26, 5.26, 5.26); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 835/900 Phamtom ; Type: SAM

Right tilt 661/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.064 mW/g

Right tilt 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.69 V/m; Power Drift = -0.058 dB
Peak SAR (extrapolated) = 0.093 W/kg
SAR(1 g) = 0.059 mW/g; SAR(10 g) = 0.033 mW/g
Maximum value of SAR (measured) = 0.065 mW/g



0 dB = 0.065mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.22, 2012

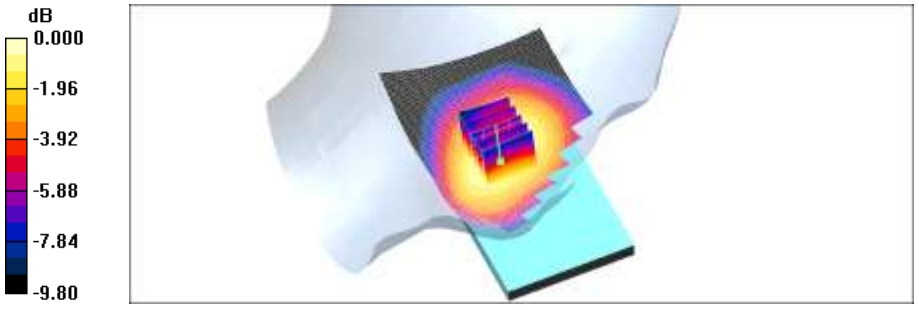
DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

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

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.36, 6.36, 6.36); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 1800/1900 Phantom; Type: SAM

Left Touch 4183/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.128 mW/g

Left Touch 4183/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.62 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.157 W/kg
SAR(1 g) = 0.123 mW/g; SAR(10 g) = 0.090 mW/g.
Maximum value of SAR (measured) = 0.128 mW/g



0 dB = 0.128mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.2 ℃
Ambient Temperature: 21.4 ℃
Test Date: Oct.22, 2012

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

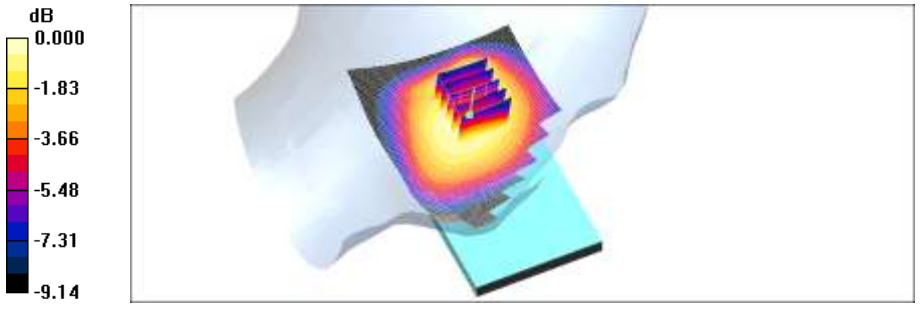
Communication System: WCDMA850; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.919 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.36, 6.36, 6.36); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 1800/1900 Phantom; Type: SAM

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

Maximum value of SAR (interpolated) = 0.078 mW/g

Left tilt 4183/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.64 V/m; Power Drift = -0.014 dB
Peak SAR (extrapolated) = 0.090 W/kg
SAR(1 g) = 0.074 mW/g; SAR(10 g) = 0.055 mW/g



0 dB = 0.078mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.22, 2012

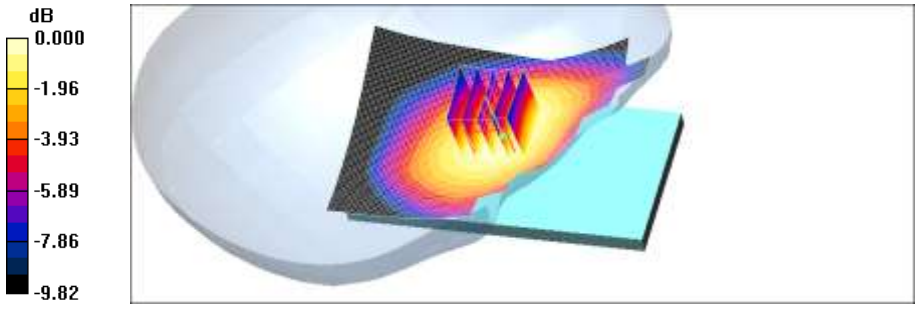
DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

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

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.36, 6.36, 6.36); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 1800/1900 Phantom; Type: SAM

Right Touch 4183/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.133 mW/g

Right Touch 4183/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.15 V/m; Power Drift = 0.026 dB
Peak SAR (extrapolated) = 0.157 W/kg
SAR(1 g) = 0.126 mW/g; SAR(10 g) = 0.094 mW/g
Maximum value of SAR (measured) = 0.133 mW/g



0 dB = 0.133mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.22, 2012

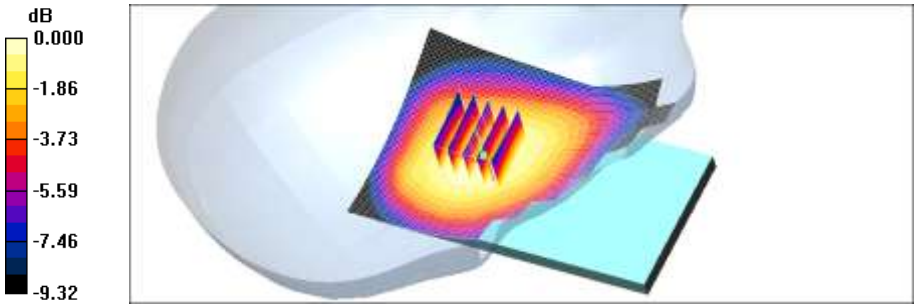
DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

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

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.36, 6.36, 6.36); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 1800/1900 Phantom; Type: SAM

Right tilt 4183/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.082 mW/g

Right tilt 4183/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.59 V/m; Power Drift = -0.002 dB
Peak SAR (extrapolated) = 0.095 W/kg
SAR(1 g) = 0.078 mW/g; SAR(10 g) = 0.059 mW/g
Maximum value of SAR (measured) = 0.082 mW/g



0 dB = 0.082mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.2 ℃
Ambient Temperature: 21.4 ℃
Test Date: Oct.23, 2012

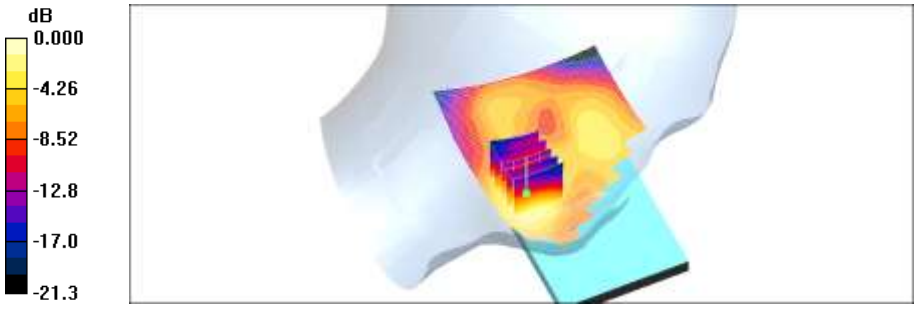
DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: WCDMA1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.35 mho/m; ε_r = 40.9; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(5.26, 5.26, 5.26); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 835/900 Phamtom ; Type: SAM

Left Touch 9400/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.145 mW/g

Left Touch 9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.12 V/m; Power Drift = -0.064 dB
Peak SAR (extrapolated) = 0.210 W/kg
SAR(1 g) = 0.131 mW/g; SAR(10 g) = 0.075 mW/g
Maximum value of SAR (measured) = 0.143 mW/g



0 dB = 0.143mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.2 ℃
Ambient Temperature: 21.4 ℃
Test Date: Oct.23, 2012

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: WCDMA1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.35 mho/m; ε_r = 40.9; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(5.26, 5.26, 5.26); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 835/900 Phamtom ; Type: SAM

Left tilt 9400/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.087 mW/g

Left tilt 9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.69 V/m; Power Drift = 0.016 dB
Peak SAR (extrapolated) = 0.118 W/kg
SAR(1 g) = 0.073 mW/g; SAR(10 g) = 0.041 mW/g
Maximum value of SAR (measured) = 0.079 mW/g

0 dB = 0.079mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.23, 2012

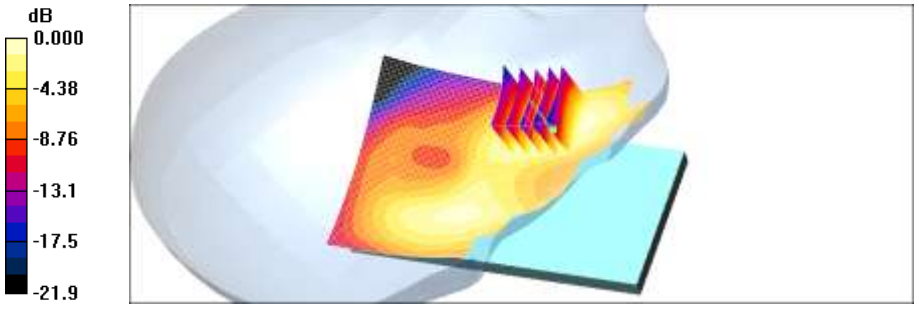
DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: WCDMA1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.35 mho/m; ε_r = 40.9; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(5.26, 5.26, 5.26); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 835/900 Phamtom ; Type: SAM

Right Touch 9400/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.157 mW/g

Right Touch 9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.50 V/m; Power Drift = -0.072 dB
Peak SAR (extrapolated) = 0.200 W/kg
SAR(1 g) = 0.135 mW/g; SAR(10 g) = 0.081 mW/g
Maximum value of SAR (measured) = 0.148 mW/g



0 dB = 0.148mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.23, 2012

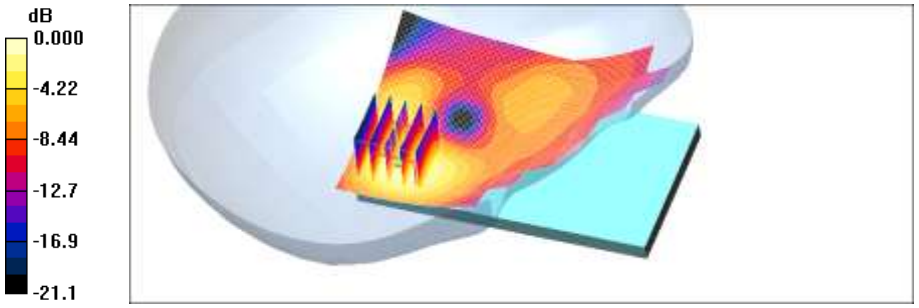
DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: WCDMA1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.35 mho/m; ε_r = 40.9; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(5.26, 5.26, 5.26); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 835/900 Phamtom ; Type: SAM

Right tilt 9400/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.131 mW/g

Right tilt 9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.04 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.202 W/kg
SAR(1 g) = 0.124 mW/g; SAR(10 g) = 0.068 mW/g
Maximum value of SAR (measured) = 0.137 mW/g



0 dB = 0.137mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.1 ℃
Ambient Temperature: 21.3 ℃
Test Date: Oct.19, 2012

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

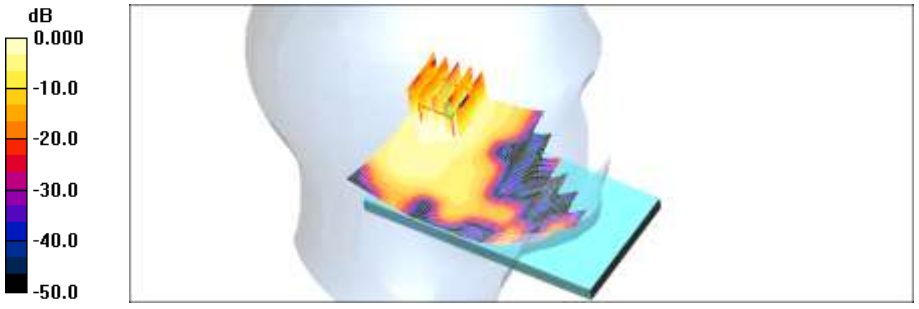
Communication System: 2450MHz FCC; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2462 MHz; σ = 1.85 mho/m; ε_r = 39.8; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.52, 4.52, 4.52); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 835/900 Phamtom ; Type: SAM

802.11b Left Touch 1Mbps 11ch/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.024 mW/g

802.11b Left Touch 1Mbps 11ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.39 V/m; Power Drift = -0.080 dB
Peak SAR (extrapolated) = 0.045 W/kg
SAR(1 g) = 0.021 mW/g; SAR(10 g) = 0.011 mW/g
Maximum value of SAR (measured) = 0.024 mW/g



0 dB = 0.024mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Oct.19, 2012

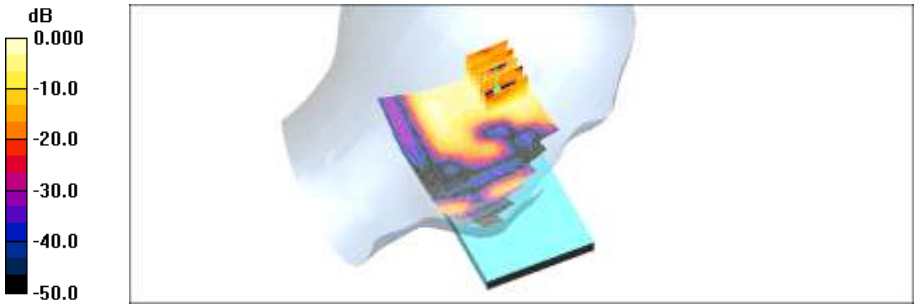
DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: 2450MHz FCC; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2462 MHz; σ = 1.85 mho/m; ε_r = 39.8; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.52, 4.52, 4.52); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 835/900 Phamtom ; Type: SAM

802.11b Left tilt 1Mbps 11ch/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.023 mW/g

802.11b Left tilt 1Mbps 11ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.29 V/m; Power Drift = 0.047 dB
Peak SAR (extrapolated) = 0.040 W/kg
SAR(1 g) = 0.020 mW/g; SAR(10 g) = 0.00977 mW/g
Maximum value of SAR (measured) = 0.022 mW/g



0 dB = 0.022mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Oct.19, 2012

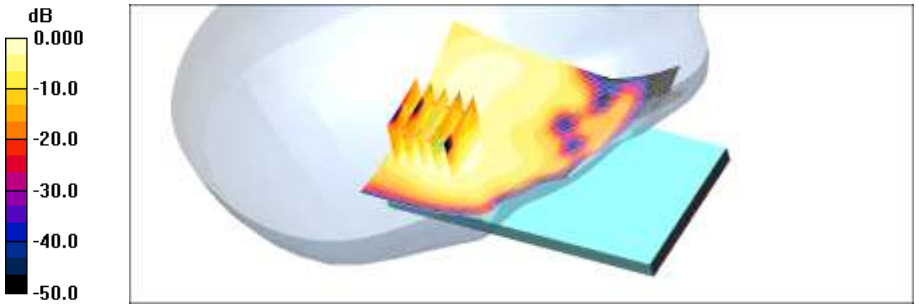
DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: 2450MHz FCC; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2462 MHz; σ = 1.85 mho/m; ε_r = 39.8; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.52, 4.52, 4.52); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 835/900 Phamtom ; Type: SAM

802.11b Right Touch 1Mbps 11ch/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.015 mW/g

802.11b Right Touch 1Mbps 11ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.32 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.030 W/kg
SAR(1 g) = 0.015 mW/g; SAR(10 g) = 0.00786 mW/g
Maximum value of SAR (measured) = 0.016 mW/g



0 dB = 0.016mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Oct.19, 2012

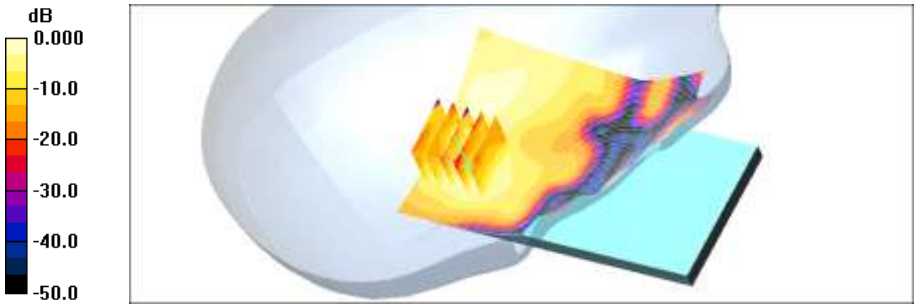
DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: 2450MHz FCC; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2462 MHz; σ = 1.85 mho/m; ε_r = 39.8; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.52, 4.52, 4.52); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 835/900 Phamtom ; Type: SAM

802.11b Right tilt 1Mbps 11ch/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.013 mW/g

802.11b Right tilt 1Mbps 11ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.19 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.025 W/kg
SAR(1 g) = 0.012 mW/g; SAR(10 g) = 0.006 mW/g
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/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.1 ℃
Ambient Temperature: 21.3 ℃
Test Date: Oct.24, 2012

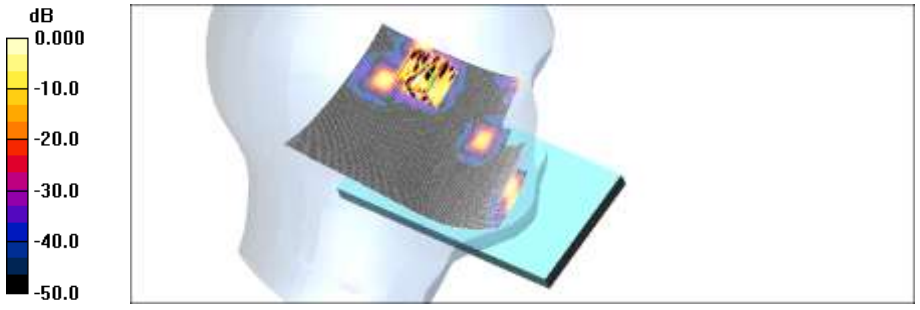
DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

Communication System: WIFI 5GHz; Frequency: 5700 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5700 MHz; σ = 5.16 mho/m; ε_r = 34.5; ρ = 1000 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(4.56, 4.56, 4.56); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 800/900 Phantom; Type: SAM

802.11a Left touch 140ch 6Mbps/Area Scan (101x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.038 mW/g

802.11a Left touch 140ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.000 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.324 W/kg
SAR(1 g) = 0.014 mW/g; SAR(10 g) = 0.0018 mW/g
aximum value of SAR (measured) = 0.018 mW/g



0 dB = 0.018mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.1 ℃
Ambient Temperature: 21.3 ℃
Test Date: Oct.24, 2012

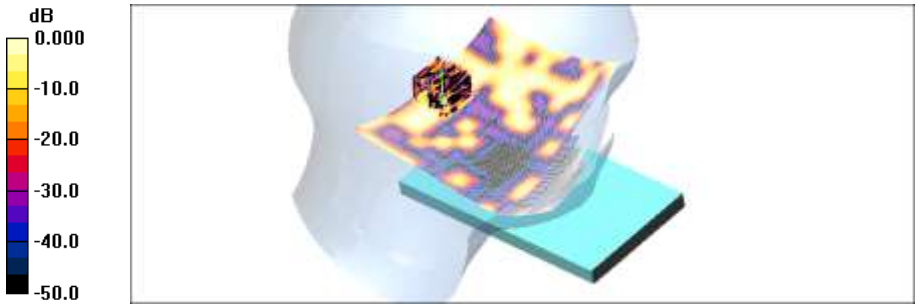
DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

Communication System: WIFI 5GHz; Frequency: 5700 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5700 MHz; σ = 5.16 mho/m; ε_r = 34.5; ρ = 1000 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(4.56, 4.56, 4.56); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 800/900 Phantom; Type: SAM

802.11a Left tilt 140ch 6Mbps/Area Scan (121x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.035 mW/g

802.11a Left tilt 140ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.000 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.145 W/kg
SAR(1 g) = 0.00699 mW/g; SAR(10 g) = 0.000733 mW/g
aximum value of SAR (measured) = 0.018 mW/g



0 dB = 0.018mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Oct.24, 2012

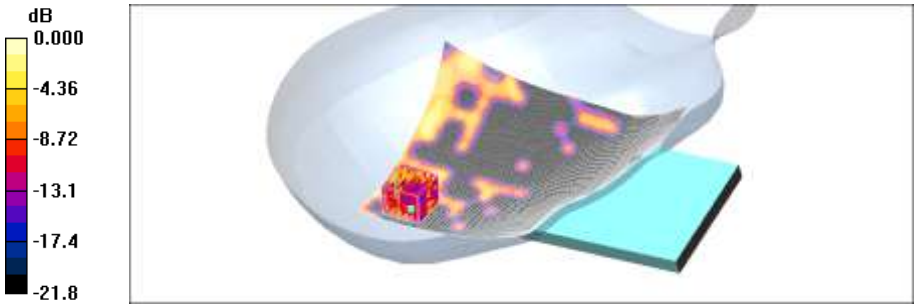
DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

Communication System: WIFI 5GHz; Frequency: 5700 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5700 MHz; σ = 5.16 mho/m; ε_r = 34.5; ρ = 1000 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(4.56, 4.56, 4.56); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 800/900 Phantom; Type: SAM

Right touch 802.11a 140ch 6Mbps/Area Scan (121x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.203 mW/g

Right touch 802.11a 140ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.96 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.157 W/kg
SAR(1 g) = 0.00238 mW/g; SAR(10 g) = 0.000301 mW/g
Maximum value of SAR (measured) = 0.155 mW/g



0 dB = 0.155mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.1 ℃
Ambient Temperature: 21.3 ℃
Test Date: Oct.24, 2012

DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

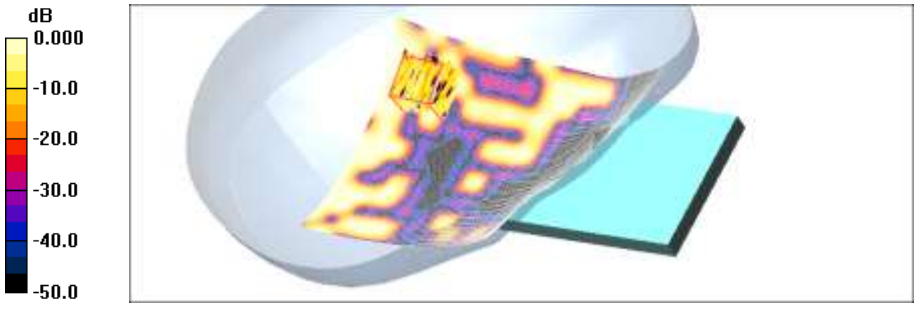
Communication System: WIFI 5GHz; Frequency: 5700 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5700 MHz; σ = 5.16 mho/m; ε_r = 34.5; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.56, 4.56, 4.56); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 800/900 Phantom; Type: SAM

Right tilt 802.11a 140ch 6Mbps/Area Scan (121x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.086 mW/g

Right tilt 802.11a 140ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.88 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.267 W/kg
SAR(1 g) = 0.021 mW/g; SAR(10 g) = 0.00705 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/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.1 ℃
Ambient Temperature: 21.3 ℃
Test Date: Oct.24, 2012

DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

Communication System: WIFI 5GHz; Frequency: 5180 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5180 MHz; σ = 4.53 mho/m; ε_r = 35.7; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

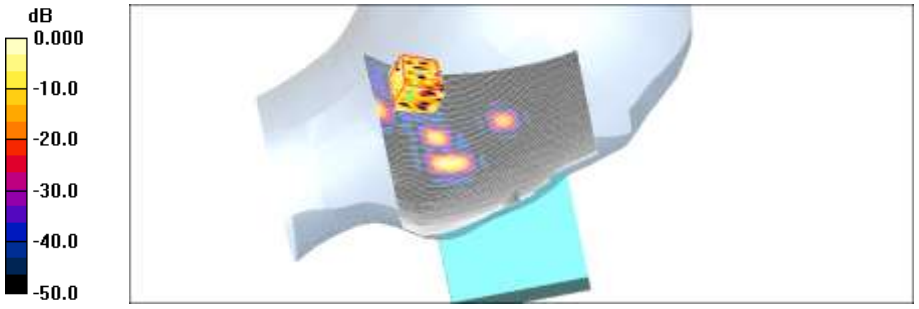
DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.96, 4.96, 4.96); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 800/900 Phantom; Type: SAM

802.11a Left touch 36ch 6Mbps/Area Scan (121x161x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.030 mW/g

802.11a Left touch 36ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.000 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.069 W/kg
SAR(1 g) = 0.0011 mW/g; SAR(10 g) = 0.000302 mW/g

Maximum value of SAR (measured) = 0.069 mW/g



0 dB = 0.069mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.1 ℃
Ambient Temperature: 21.3 ℃
Test Date: Oct.24, 2012

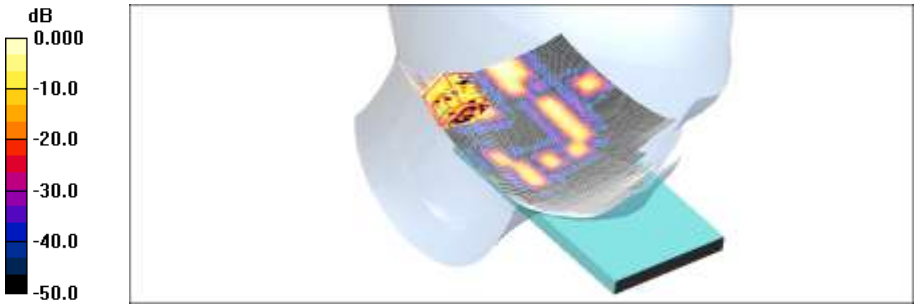
DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

Communication System: WIFI 5GHz; Frequency: 5180 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5180 MHz; σ = 4.53 mho/m; ε_r = 35.7; ρ = 1000 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(4.96, 4.96, 4.96); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 800/900 Phantom; Type: SAM

802.11a Left tilt 36ch 6Mbps/Area Scan (121x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.046 mW/g

802.11a Left tilt 36ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.000 V/m; Power Drift = 0.07dB
Peak SAR (extrapolated) = 0.053 W/kg
SAR(1 g) = 0.000443 mW/g; SAR(10 g) = 0.000126 mW/g
Maximum value of SAR (measured) = 0.044 mW/g



0 dB = 0.044mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.1 ℃
Ambient Temperature: 21.3 ℃
Test Date: Oct.24, 2012

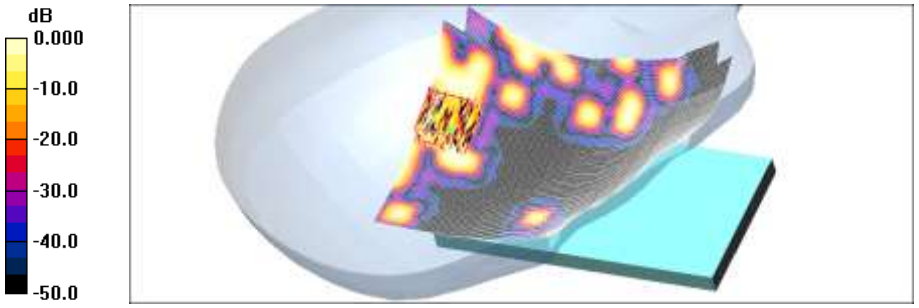
DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

Communication System: WIFI 5GHz; Frequency: 5180 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5180 MHz; σ = 4.53 mho/m; ε_r = 35.7; ρ = 1000 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(4.96, 4.96, 4.96); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 800/900 Phantom; Type: SAM

802.11a Right touch 36ch 6Mbps/Area Scan (121x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.046 mW/g

802.11a Right touch 36ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.718 V/m; Power Drift = 0.060 dB
Peak SAR (extrapolated) = 0.058 W/kg
SAR(1 g) = 0.00125 mW/g; SAR(10 g) = 0.000269 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/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.1 ℃
Ambient Temperature: 21.3 ℃
Test Date: Oct.24, 2012

DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

Communication System: WIFI 5GHz; Frequency: 5180 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5180 MHz; σ = 4.53 mho/m; ε_r = 35.7; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

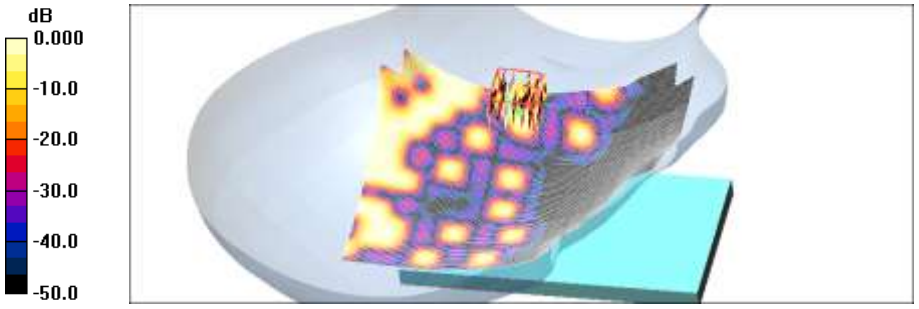
DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.96, 4.96, 4.96); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 800/900 Phantom; Type: SAM

802.11a Right tilt 36ch 6Mbps/Area Scan (121x161x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.043 mW/g

802.11a Right tilt 36ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.896 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.040 W/kg
SAR(1 g) = 0.00139 mW/g; SAR(10 g) = 0.000378 mW/g

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/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.1 ℃
Ambient Temperature: 21.3 ℃
Test Date: Oct.24, 2012

DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

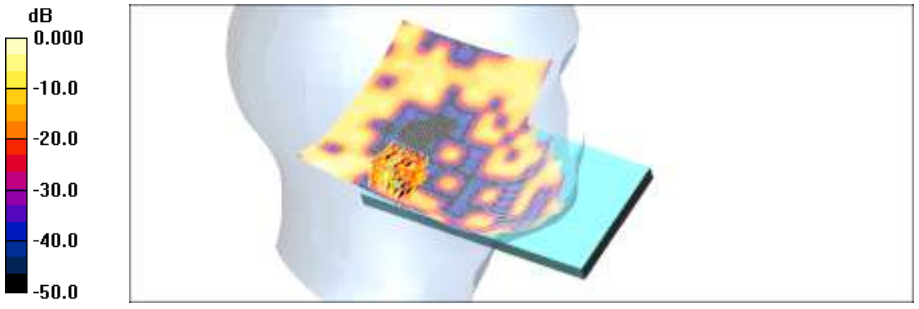
Communication System: WIFI 5GHz; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5260 MHz; σ = 4.61 mho/m; ε_r = 35.4; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.79, 4.79, 4.79); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 800/900 Phantom; Type: SAM

802.11a Left touch 52ch 6Mbps/Area Scan (121x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.089 mW/g

802.11a Left touch 52ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.000 V/m; Power Drift = 0.004 dB
Peak SAR (extrapolated) = 0.099 W/kg
SAR(1 g) = 0.000605 mW/g; SAR(10 g) = 6.82e-005 mW/g

aximum value of SAR (measured) = 0.099 mW/g



0 dB = 0.099mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.1 ℃
Ambient Temperature: 21.3 ℃
Test Date: Oct.24, 2012

DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

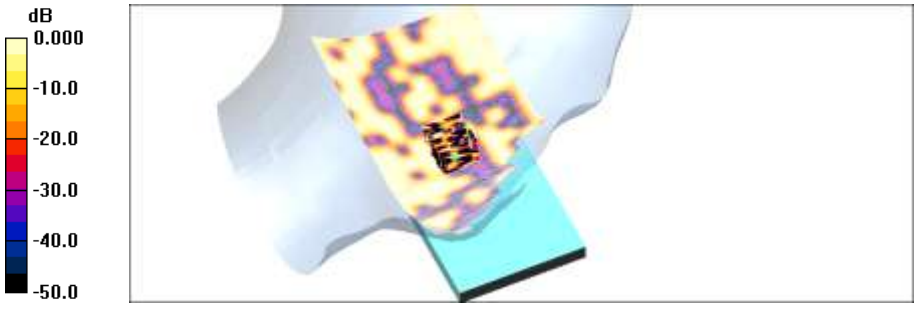
Communication System: WIFI 5GHz; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5260 MHz; σ = 4.61 mho/m; ε_r = 35.4; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.79, 4.79, 4.79); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 800/900 Phantom; Type: SAM

802.11a Left tilt 52ch 6Mbps/Area Scan (101x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.037 mW/g

802.11a Left tilt 52ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.905 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.157 W/kg
SAR(1 g) = 0.012 mW/g; SAR(10 g) = 0.00287 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/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.1 ℃
Ambient Temperature: 21.3 ℃
Test Date: Oct.24, 2012

DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

Communication System: WIFI 5GHz; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5260 MHz; σ = 4.61 mho/m; ε_r = 35.4; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

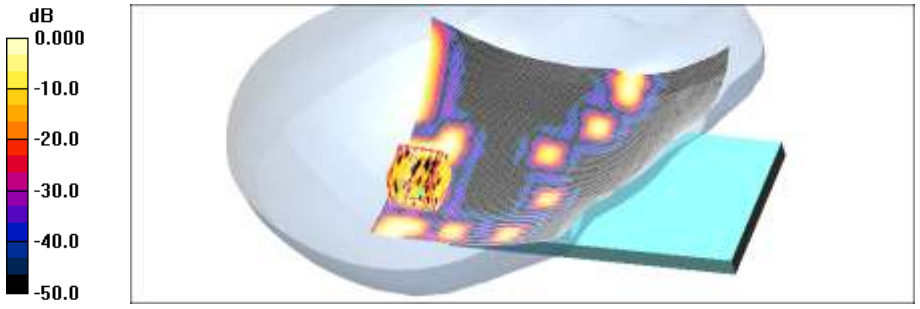
DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.79, 4.79, 4.79); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 800/900 Phantom; Type: SAM

802.11a Right touch 52 ch 6 Mbps/Area Scan (121x161x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.090 mW/g

802.11a Right touch 52 ch 6 Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.31 V/m; Power Drift = -0.056 dB
Peak SAR (extrapolated) = 0.360 W/kg
SAR(1 g) = 0.029 mW/g; SAR(10 g) = 0.00799 mW/g

aximum value of SAR (measured) = 0.035 mW/g



0 dB = 0.035mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.1 ℃
Ambient Temperature: 21.3 ℃
Test Date: Oct.24, 2012

DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

Communication System: WIFI 5GHz; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5260 MHz; σ = 4.61 mho/m; ε_r = 35.4; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

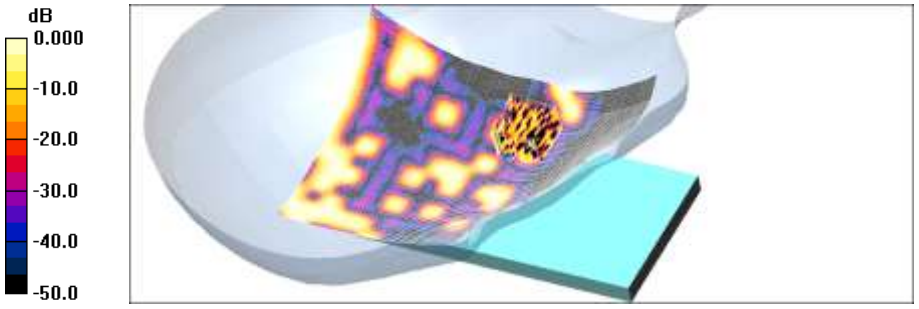
DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.79, 4.79, 4.79); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 800/900 Phantom; Type: SAM

802.11a Right tilt 52 ch 6 Mbps/Area Scan (121x161x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.043 mW/g

802.11a Right tilt 52 ch 6 Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.15 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.546 W/kg
SAR(1 g) = 0.049 mW/g; SAR(10 g) = 0.00916 mW/g

aximum value of SAR (measured) = 0.022 mW/g



0 dB = 0.022mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.1 ℃
Ambient Temperature: 21.3 ℃
Test Date: Oct.24, 2012

DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

Communication System: WIFI 5GHz; Frequency: 5805 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5805 MHz; σ = 5.33 mho/m; ε_r = 34.1; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

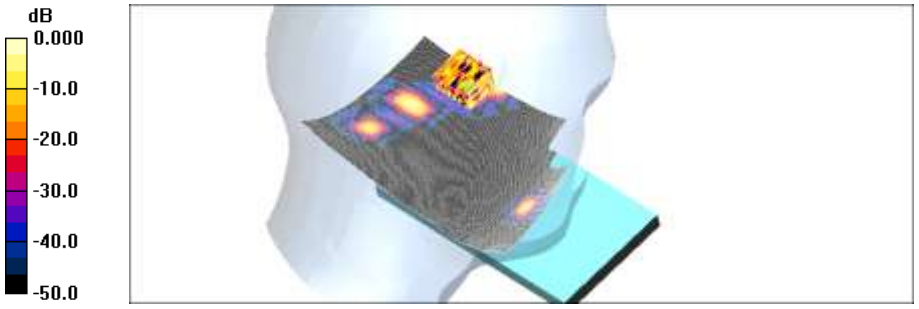
DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.61, 4.61, 4.61); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 800/900 Phantom; Type: SAM

Left Touch 802.11a 161ch 6Mbps/Area Scan (101x161x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.033 mW/g

Left Touch 802.11a 161ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.13 V/m; Power Drift = 0.095 dB
Peak SAR (extrapolated) = 0.294 W/kg
SAR(1 g) = 0.024 mW/g; SAR(10 g) = 0.0076 mW/g

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



0 dB = 0.052mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.1 ℃
Ambient Temperature: 21.3 ℃
Test Date: Oct.24, 2012

DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

Communication System: WIFI 5GHz; Frequency: 5805 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5805 MHz; σ = 5.33 mho/m; ε_r = 34.1; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

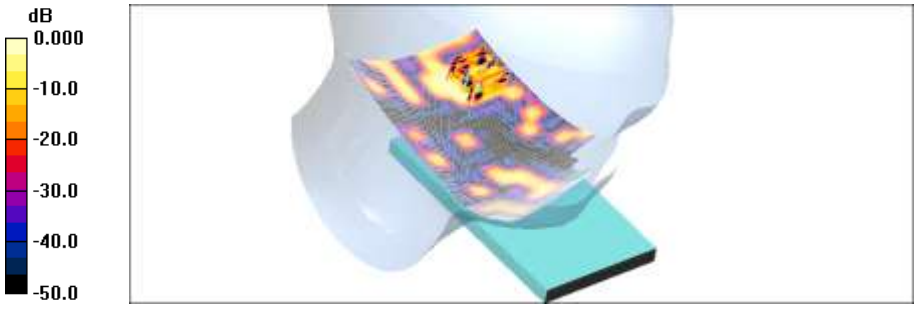
DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.61, 4.61, 4.61); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 800/900 Phantom; Type: SAM

Left Tilt 802.11a 161ch 6Mbps/Area Scan (101x161x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.068 mW/g

Left Tilt 802.11a 161ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.000 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.326 W/kg
SAR(1 g) = 0.028 mW/g; SAR(10 g) = 0.011 mW/g

aximum value of SAR (measured) = 0.068 mW/g



0 dB = 0.068mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.1 ℃
Ambient Temperature: 21.3 ℃
Test Date: Oct.24, 2012

DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

Communication System: WIFI 5GHz; Frequency: 5805 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5805 MHz; σ = 5.33 mho/m; ε_r = 34.1; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

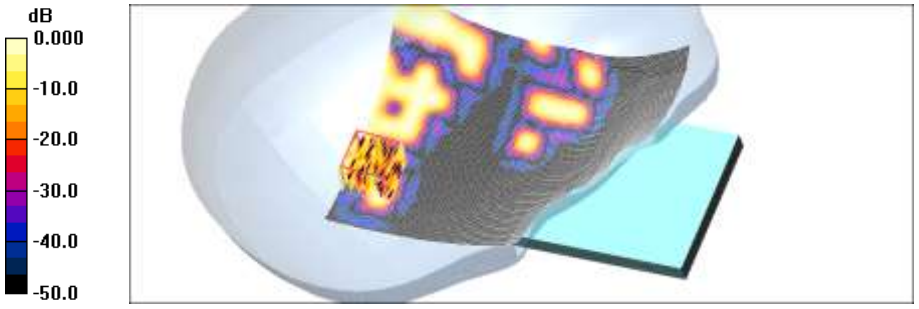
DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.61, 4.61, 4.61); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 800/900 Phantom; Type: SAM

Right touch 802.11a 161ch 6Mbps/Area Scan (121x161x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.050 mW/g

Right touch 802.11a 161ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.000 V/m; Power Drift = 0.050 dB
Peak SAR (extrapolated) = 0.151 W/kg
SAR(1 g) = 0.00893 mW/g; SAR(10 g) = 0.00207 mW/g

aximum value of SAR (measured) = 0.049 mW/g



0 dB = 0.049mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.1 ℃
Ambient Temperature: 21.3 ℃
Test Date: Oct.24, 2012

DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

Communication System: WIFI 5GHz; Frequency: 5805 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5805 MHz; σ = 5.33 mho/m; ε_r = 34.1; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

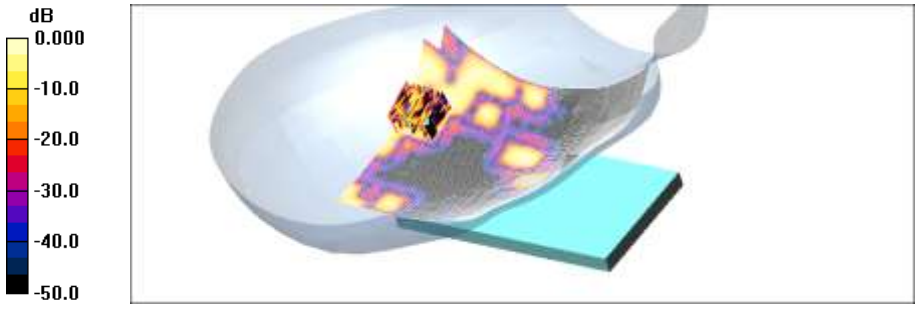
DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.61, 4.61, 4.61); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 800/900 Phantom; Type: SAM

Right tilt 802.11a 161ch 6Mbps/Area Scan (121x161x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.027 mW/g

Right tilt 802.11a 161ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.000 V/m; Power Drift =0.03 dB
Peak SAR (extrapolated) = 0.219 W/kg
SAR(1 g) = 0.019 mW/g; SAR(10 g) = 0.00705 mW/g

aximum value of SAR (measured) = 0.035 mW/g



0 dB = 0.035mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.1 ℃
Ambient Temperature: 21.3 ℃
Test Date: Oct.24, 2012

DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

Communication System: WIFI 5GHz; Frequency: 5755 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5755 MHz; σ = 5.26 mho/m; ε_r = 34.2; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

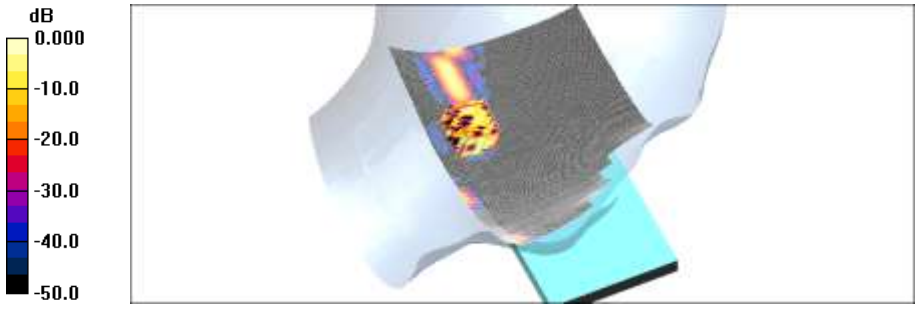
DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.61, 4.61, 4.61); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 800/900 Phantom; Type: SAM

Left Touch 802.11n 151ch HT40/Area Scan (121x161x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.027 mW/g

Left Touch 802.11n 151ch HT40/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.000 V/m; Power Drift = 0.0050 dB
Peak SAR (extrapolated) = 0.091 W/kg
SAR(1 g) = 0.00383 mW/g; SAR(10 g) = 0.00105 mW/g

aximum value of SAR (measured) = 0.056 mW/g



0 dB = 0.056mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.1 ℃
Ambient Temperature: 21.3 ℃
Test Date: Oct.24, 2012

DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

Communication System: WIFI 5GHz; Frequency: 5755 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5755 MHz; σ = 5.26 mho/m; ε_r = 34.2; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

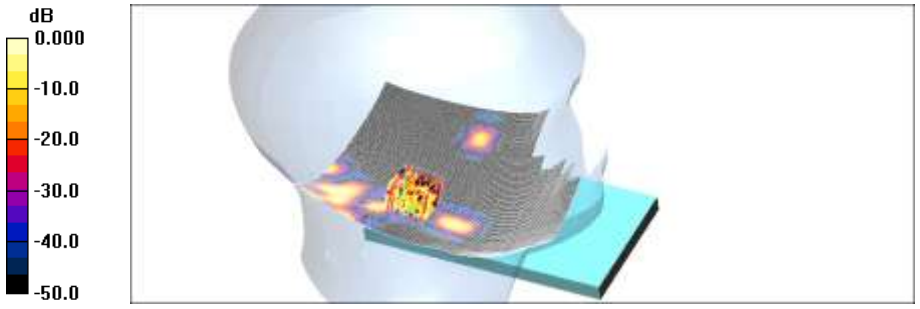
DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.61, 4.61, 4.61); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 800/900 Phantom; Type: SAM

Left Tilt 802.11n 151ch HT40/Area Scan (121x161x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.043 mW/g

Left Tilt 802.11n 151ch HT40/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.163 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.074 W/kg
SAR(1 g) = 0.00116 mW/g; SAR(10 g) = 0.000217 mW/g

aximum value of SAR (measured) = 0.074 mW/g



0 dB = 0.074mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.1 ℃
Ambient Temperature: 21.3 ℃
Test Date: Oct.24, 2012

DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

Communication System: WIFI 5GHz; Frequency: 5755 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5755 MHz; σ = 5.26 mho/m; ε_r = 34.2; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

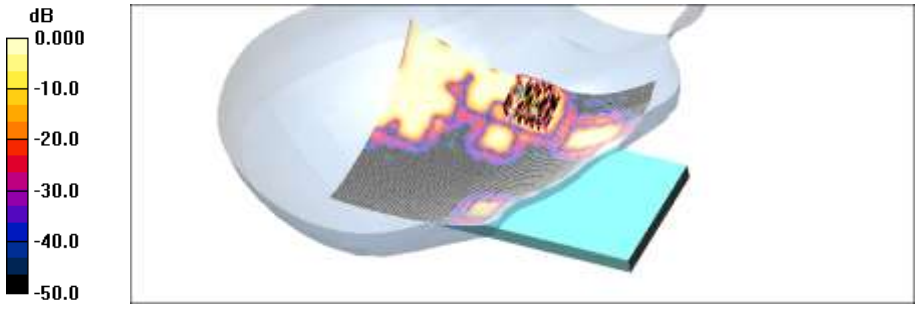
DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.61, 4.61, 4.61); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 800/900 Phantom; Type: SAM

Right touch 802.11n 151ch HT40/Area Scan (121x161x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.024 mW/g

Right touch 802.11n 151ch HT40/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.769 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.027 W/kg
SAR(1 g) = 0.00036 mW/g; SAR(10 g) = 4.42e-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/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.1 ℃
Ambient Temperature: 21.3 ℃
Test Date: Oct.24, 2012

DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

Communication System: WIFI 5GHz; Frequency: 5755 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5755 MHz; σ = 5.26 mho/m; ε_r = 34.2; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

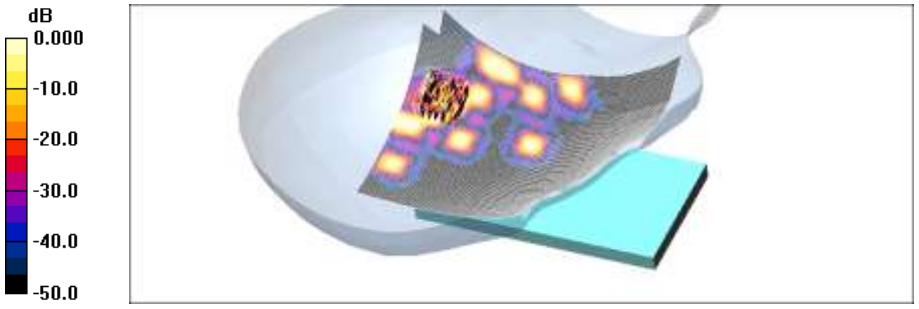
DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.61, 4.61, 4.61); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 800/900 Phantom; Type: SAM

Right tilt 802.11n 151ch HT40/Area Scan (121x161x1): Measurement grid: dx=10mm, dy=10mm

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

Right tilt 802.11n 151ch HT40/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.000 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.045 W/kg
SAR(1 g) = 0.00134 mW/g; SAR(10 g) = 0.000255 mW/g

aximum 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/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.22, 2012
Separation Distance:	1.0 cm

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.998 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

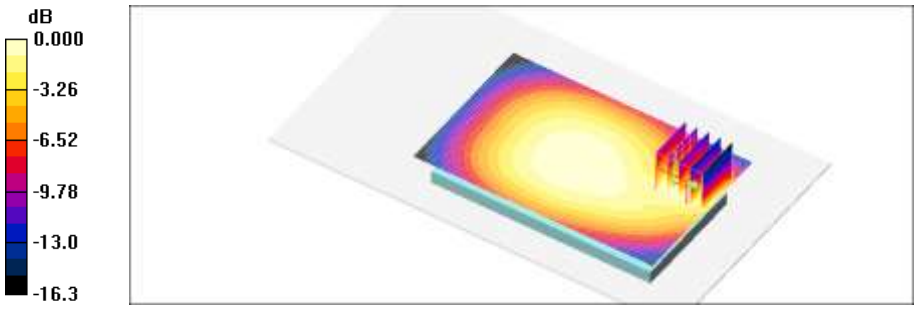
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body-worn Rear 190/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.241 mW/g

Body-worn Rear 190/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.3 V/m; Power Drift = -0.077 dB
Peak SAR (extrapolated) = 0.412 W/kg
SAR(1 g) = 0.237 mW/g; SAR(10 g) = 0.138 mW/g

aximum value of SAR (measured) = 0.244 mW/g



0 dB = 0.244mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.22, 2012
Separation Distance:	1.0 cm

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:2.77
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.998 mho/m; ε_r = 53.2; ρ = 1000 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 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body Rear 190 3Tx/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

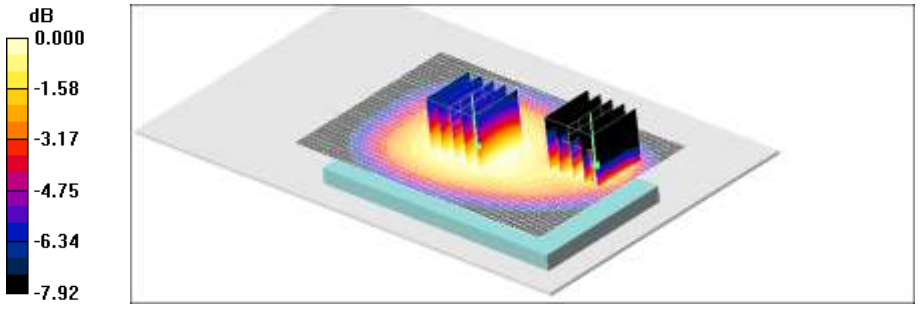
Maximum value of SAR (interpolated) = 0.680 mW/g

Body Rear 190 3Tx/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.9 V/m; Power Drift = -0.027 dB
Peak SAR (extrapolated) = 1.15 W/kg
SAR(1 g) = 0.665 mW/g; SAR(10 g) = 0.390 mW/g

Maximum value of SAR (measured) = 0.745 mW/g

Body Rear 190 3Tx/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.9 V/m; Power Drift = -0.027 dB
Peak SAR (extrapolated) = 0.769 W/kg
SAR(1 g) = 0.635 mW/g; SAR(10 g) = 0.484 mW/g

Maximum value of SAR (measured) = 0.670 mW/g



0 dB = 0.670mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.22, 2012
Separation Distance:	1.0 cm

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:2.77
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.998 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

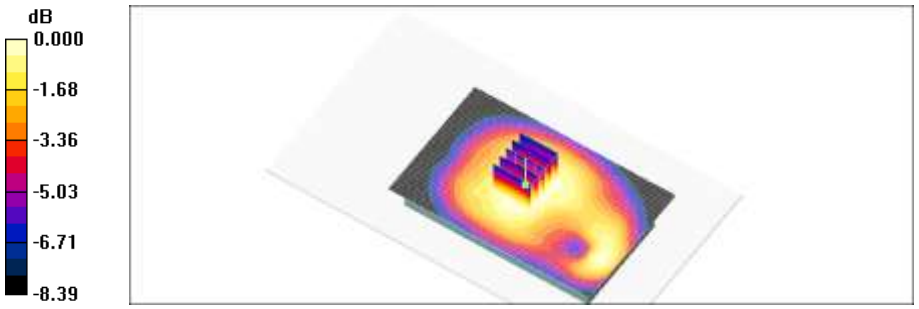
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body Front 190 3Tx/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.356 mW/g

Body Front 190 3Tx/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.8 V/m; Power Drift = -0.079 dB
Peak SAR (extrapolated) = 0.427 W/kg
SAR(1 g) = 0.343 mW/g; SAR(10 g) = 0.261 mW/g

Maximum value of SAR (measured) = 0.361 mW/g



0 dB = 0.361mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.22, 2012
Separation Distance:	1.0 cm

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:2.77
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.998 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

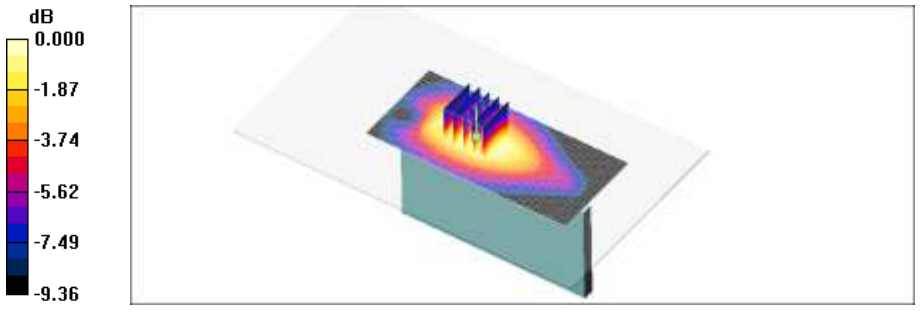
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body Left 190 3Tx/Area Scan (51x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.384 mW/g

Body Left 190 3Tx/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.5 V/m; Power Drift = -0.043 dB
Peak SAR (extrapolated) = 0.469 W/kg
SAR(1 g) = 0.359 mW/g; SAR(10 g) = 0.247 mW/g

Maximum value of SAR (measured) = 0.388 mW/g



0 dB = 0.388mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.22, 2012
Separation Distance:	1.0 cm

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:2.77
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.998 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

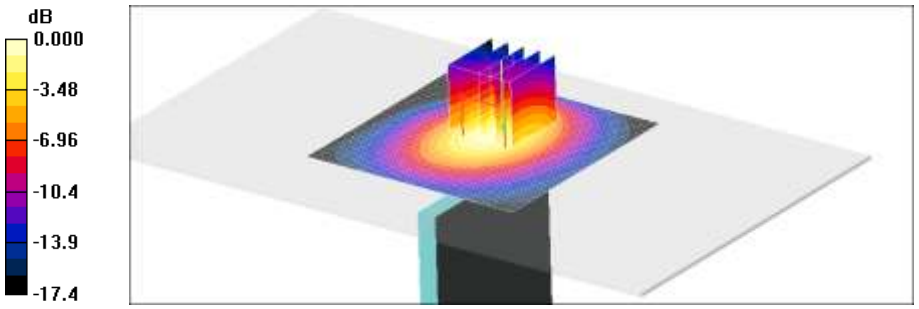
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body Bottom 190 3Tx/Area Scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.751 mW/g

Body Bottom 190 3Tx/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.3 V/m; Power Drift = 0.008 dB
Peak SAR (extrapolated) = 1.32 W/kg
SAR(1 g) = 0.658 mW/g; SAR(10 g) = 0.379 mW/g

aximum value of SAR (measured) = 0.733 mW/g



0 dB = 0.733mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.23, 2012
Separation Distance:	1.0 cm

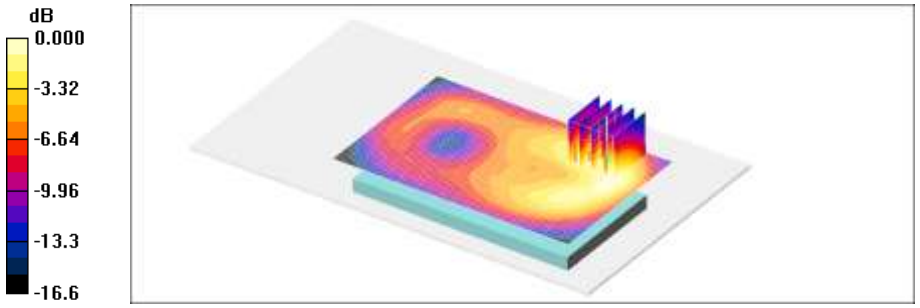
DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:2.77
Medium parameters used: f = 1880 MHz; σ = 1.52 mho/m; ε_r = 51.9; ρ = 1000 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 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body-worn Rear 661/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.302 mW/g

Body-worn Rear 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.32 V/m; Power Drift = 0.158 dB
Peak SAR (extrapolated) = 0.423 W/kg
SAR(1 g) = 0.285 mW/g; SAR(10 g) = 0.170 mW/g
Maximum value of SAR (measured) = 0.310 mW/g



0 dB = 0.310mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.23, 2012
Separation Distance:	1.0 cm

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: GSM 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:2.77
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.49 mho/m; ε_r = 51.9; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

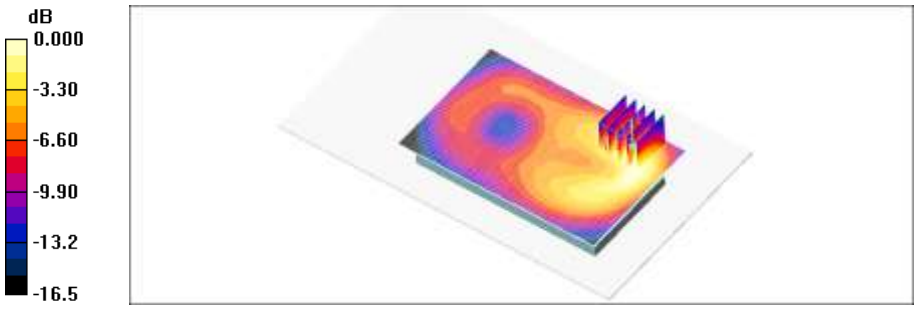
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body Rear 512 3Tx/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.869 mW/g

Body Rear 512 3Tx/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.32 V/m; Power Drift = 0.093 dB
Peak SAR (extrapolated) = 1.25 W/kg
SAR(1 g) = 0.815 mW/g; SAR(10 g) = 0.477 mW/g

Maximum value of SAR (measured) = 0.891 mW/g



0 dB = 0.891mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.23, 2012
Separation Distance:	1.0 cm

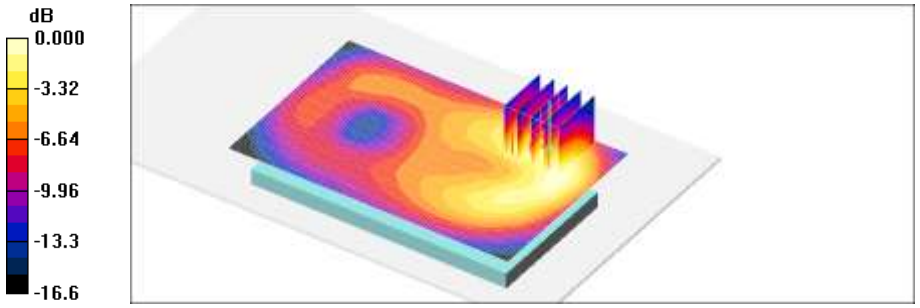
DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:2.77
Medium parameters used: f = 1880 MHz; σ = 1.52 mho/m; ε_r = 51.9; ρ = 1000 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 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body Rear 661 3Tx/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.914 mW/g

Body Rear 661 3Tx/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.60 V/m; Power Drift = 0.062 dB
Peak SAR (extrapolated) = 1.31 W/kg
SAR(1 g) = 0.861 mW/g; SAR(10 g) = 0.506 mW/g
Maximum value of SAR (measured) = 0.950 mW/g



0 dB = 0.950mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.23, 2012
Separation Distance:	1.0 cm

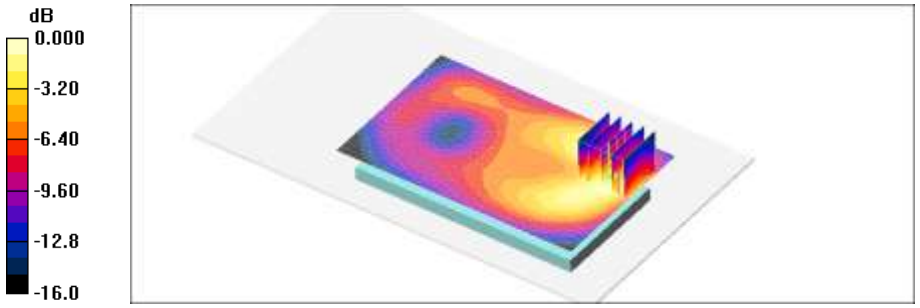
DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: GSM 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:2.77
Medium parameters used: f = 1910 MHz; σ = 1.55 mho/m; ε_r = 51.8; ρ = 1000 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 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body Rear 810 3Tx/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.02 mW/g

Body Rear 810 3Tx/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.41 V/m; Power Drift = -0.046 dB
Peak SAR (extrapolated) = 1.38 W/kg
SAR(1 g) = 0.901 mW/g; SAR(10 g) = 0.531 mW/g
Maximum value of SAR (measured) = 1.00 mW/g



0 dB = 1.00mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.23, 2012
Separation Distance:	1.0 cm

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

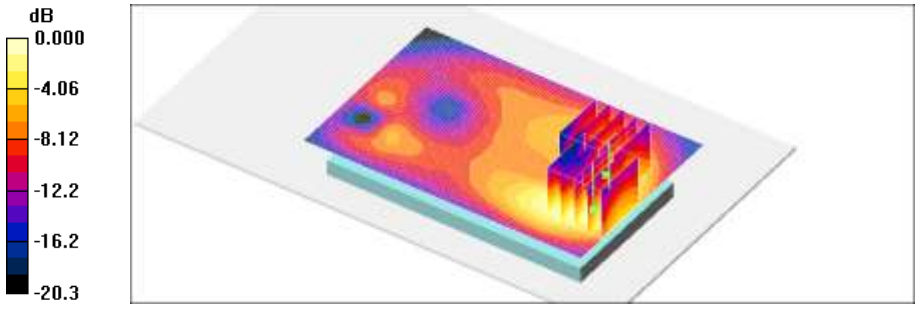
Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:2.77
Medium parameters used: f = 1880 MHz; σ = 1.52 mho/m; ε_r = 51.9; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body Front 661 3Tx/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.796 mW/g

Body Front 661 3Tx/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.06 V/m; Power Drift = 0.009 dB
Peak SAR (extrapolated) = 1.08 W/kg
SAR(1 g) = 0.654 mW/g; SAR(10 g) = 0.365 mW/g
aximum value of SAR (measured) = 0.727 mW/g

Body Front 661 3Tx/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.06 V/m; Power Drift = 0.009 dB
Peak SAR (extrapolated) = 0.994 W/kg
SAR(1 g) = 0.654 mW/g; SAR(10 g) = 0.381 mW/g
Maximum value of SAR (measured) = 0.707 mW/g



0 dB = 0.707mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.23, 2012
Separation Distance:	1.0 cm

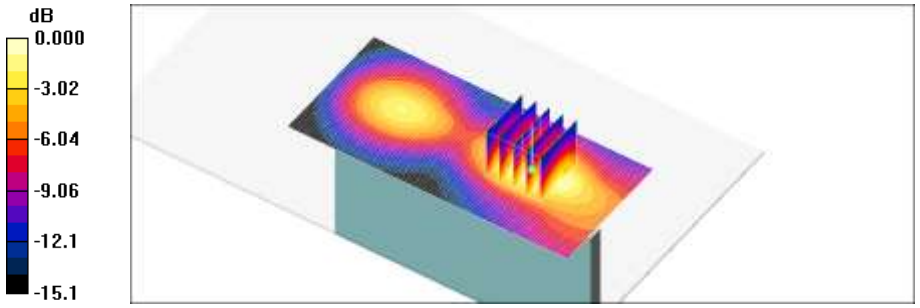
DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:2.77
Medium parameters used: f = 1880 MHz; σ = 1.52 mho/m; ε_r = 51.9; ρ = 1000 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 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body Left 661 3Tx/Area Scan (51x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.387 mW/g

Body Left 661 3Tx/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.2 V/m; Power Drift = -0.097 dB
Peak SAR (extrapolated) = 0.521 W/kg
SAR(1 g) = 0.344 mW/g; SAR(10 g) = 0.204 mW/g
Maximum value of SAR (measured) = 0.374 mW/g



0 dB = 0.374mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.23, 2012
Separation Distance:	1.0 cm

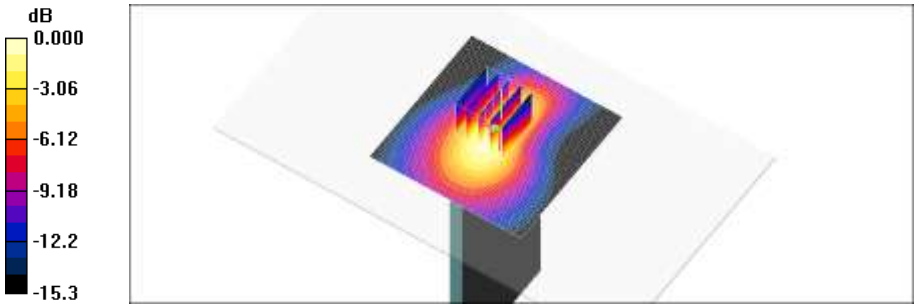
DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:2.77
Medium parameters used: f = 1880 MHz; σ = 1.52 mho/m; ε_r = 51.9; ρ = 1000 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 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body Bottom 661 3Tx/Area Scan (71x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.721 mW/g

Body Bottom 661 3Tx/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.7 V/m; Power Drift = 0.015 dB
Peak SAR (extrapolated) = 1.00 W/kg
SAR(1 g) = 0.648 mW/g; SAR(10 g) = 0.384 mW/g
Maximum value of SAR (measured) = 0.710 mW/g



0 dB = 0.710mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.22, 2012
Separation Distance:	1.0 cm

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: WCDMA850; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.998 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

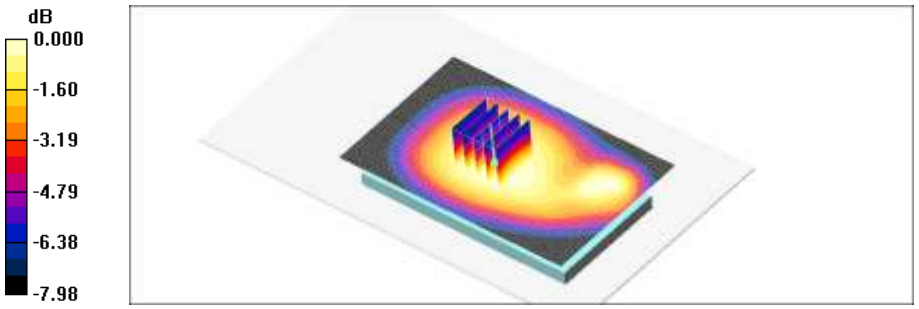
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body Rear 4183/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.249 mW/g

Body Rear 4183/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.7 V/m; Power Drift = -0.011 dB
Peak SAR (extrapolated) = 0.284 W/kg
SAR(1 g) = 0.233 mW/g; SAR(10 g) = 0.178 mW/g

Maximum value of SAR (measured) = 0.246 mW/g



0 dB = 0.246mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.22, 2012
Separation Distance:	1.0 cm

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: WCDMA850; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.998 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

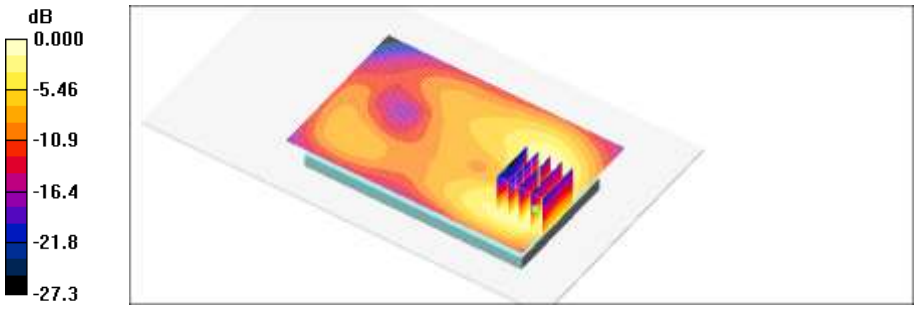
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body Front 4183/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.241 mW/g

Body Front 4183/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.54 V/m; Power Drift = -0.116 dB
Peak SAR (extrapolated) = 0.539 W/kg
SAR(1 g) = 0.220 mW/g; SAR(10 g) = 0.107 mW/g

Maximum value of SAR (measured) = 0.260 mW/g



0 dB = 0.260mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.22, 2012
Separation Distance:	1.0 cm

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: WCDMA850; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.998 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

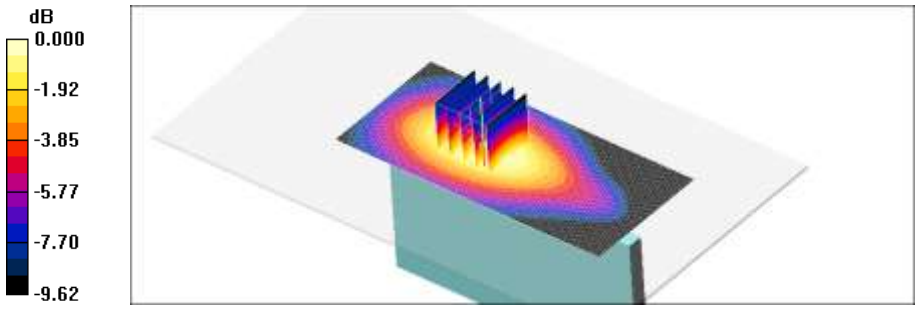
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body Left 4183/Area Scan (51x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.142 mW/g

Body Left 4183/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.4 V/m; Power Drift = -0.021 dB
Peak SAR (extrapolated) = 0.177 W/kg
SAR(1 g) = 0.131 mW/g; SAR(10 g) = 0.090 mW/g

Maximum value of SAR (measured) = 0.142 mW/g



0 dB = 0.142mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.22, 2012
Separation Distance:	1.0 cm

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: WCDMA850; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.998 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

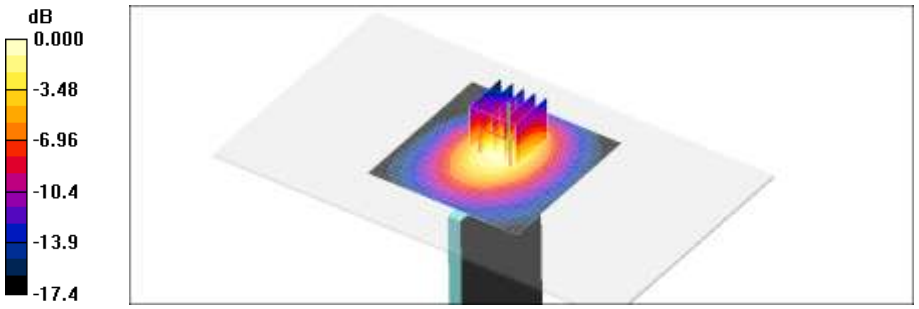
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body Bottom 4183/Area Scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.273 mW/g

Body Bottom 4183/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.2 V/m; Power Drift = -0.001 dB
Peak SAR (extrapolated) = 0.477 W/kg
SAR(1 g) = 0.235 mW/g; SAR(10 g) = 0.136 mW/g

aximum value of SAR (measured) = 0.262 mW/g



0 dB = 0.262mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.23, 2012
Separation Distance:	1.0 cm

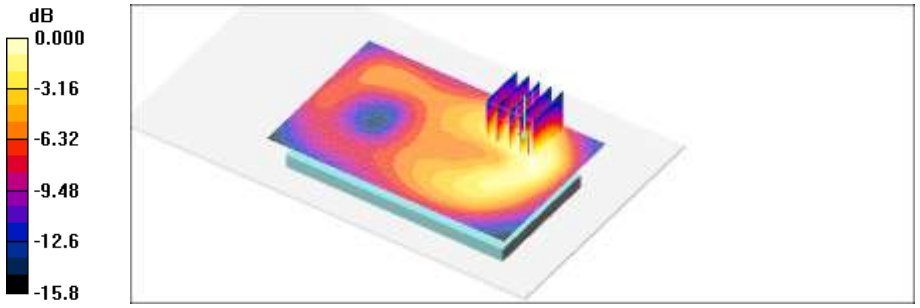
DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: WCDMA1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.52 mho/m; ε_r = 51.9; ρ = 1000 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 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body Rear 9400/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.414 mW/g

Body Rear 9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.95 V/m; Power Drift = 0.053 dB
Peak SAR (extrapolated) = 0.590 W/kg
SAR(1 g) = 0.388 mW/g; SAR(10 g) = 0.230 mW/g
Maximum value of SAR (measured) = 0.424 mW/g



0 dB = 0.424mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.23, 2012
Separation Distance:	1.0 cm

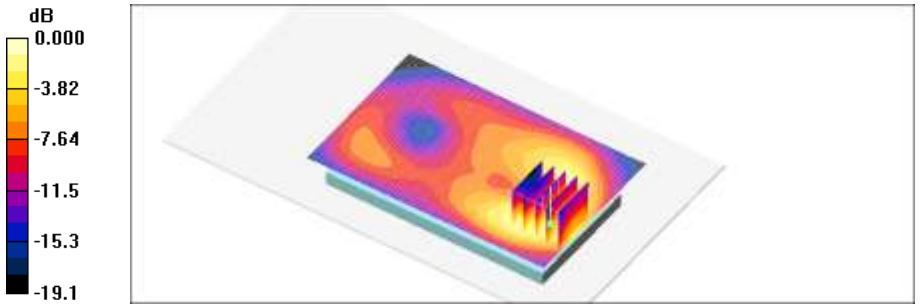
DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: WCDMA1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.52 mho/m; ε_r = 51.9; ρ = 1000 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 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body Front 9400/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.410 mW/g

Body Front 9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.79 V/m; Power Drift = -0.113 dB
Peak SAR (extrapolated) = 0.554 W/kg
SAR(1 g) = 0.336 mW/g; SAR(10 g) = 0.188 mW/g
aximum value of SAR (measured) = 0.377 mW/g



0 dB = 0.377mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.23, 2012
Separation Distance:	1.0 cm

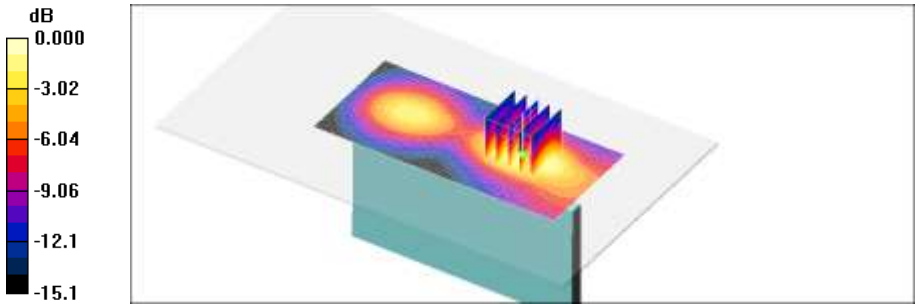
DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: WCDMA1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.52 mho/m; ε_r = 51.9; ρ = 1000 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 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body Left 9400/Area Scan (51x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.211 mW/g

Body Left 9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.54 V/m; Power Drift = 0.041 dB
Peak SAR (extrapolated) = 0.285 W/kg
SAR(1 g) = 0.188 mW/g; SAR(10 g) = 0.113 mW/g
Maximum value of SAR (measured) = 0.207 mW/g



0 dB = 0.207mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.23, 2012
Separation Distance:	1.0 cm

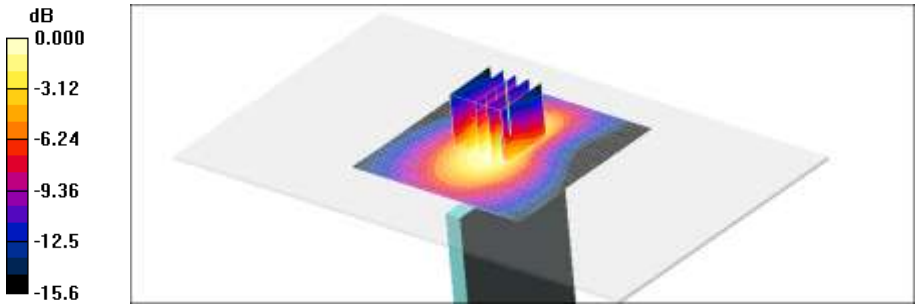
DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: WCDMA1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.52 mho/m; ε_r = 51.9; ρ = 1000 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 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body Bottom 9400/Area Scan (71x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.396 mW/g

Body Bottom 9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.9 V/m; Power Drift = 0.002 dB
Peak SAR (extrapolated) = 0.556 W/kg
SAR(1 g) = 0.359 mW/g; SAR(10 g) = 0.213 mW/g
Maximum value of SAR (measured) = 0.396 mW/g



0 dB = 0.396mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Oct.19, 2012
Separation Distance:	1.0 cm

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: 2450MHz FCC; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2462 MHz; σ = 1.95 mho/m; ε_r = 53.6; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

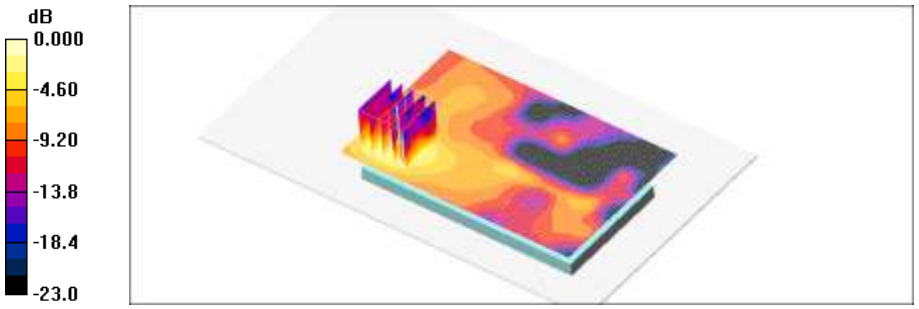
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.01, 4.01, 4.01); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

802.11b Body Rear 1Mbps 11ch/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

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

802.11b Body Rear 1Mbps 11ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.06 V/m; Power Drift = -0.026 dB
Peak SAR (extrapolated) = 0.048 W/kg
SAR(1 g) = 0.019 mW/g; SAR(10 g) = 0.00956 mW/g

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/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Oct.19, 2012
Separation Distance:	1.0 cm

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: 2450MHz FCC; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2462 MHz; σ = 1.95 mho/m; ε_r = 53.6; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

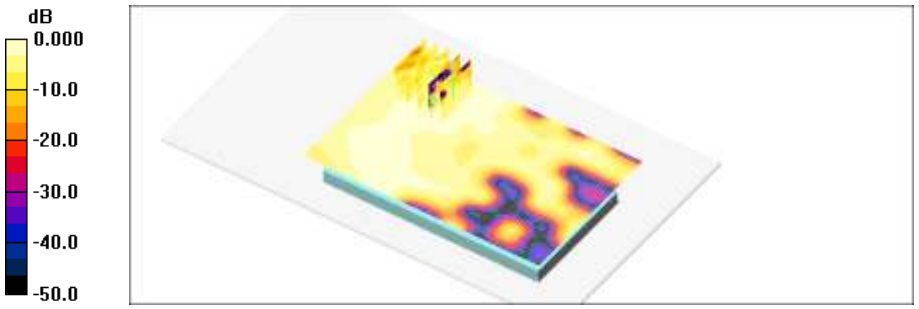
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.01, 4.01, 4.01); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

802.11b Body Front 1Mbps 11ch/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

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

802.11b Body Front 1Mbps 11ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.711 V/m; Power Drift = -0.063 dB
Peak SAR (extrapolated) = 0.026 W/kg
SAR(1 g) = 0.00536 mW/g; SAR(10 g) = 0.00212 mW/g

aximum value of SAR (measured) = 0.004 mW/g



0 dB = 0.004mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Oct.19, 2012
Separation Distance:	1.0 cm

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: 2450MHz FCC; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2462 MHz; σ = 1.95 mho/m; ε_r = 53.6; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

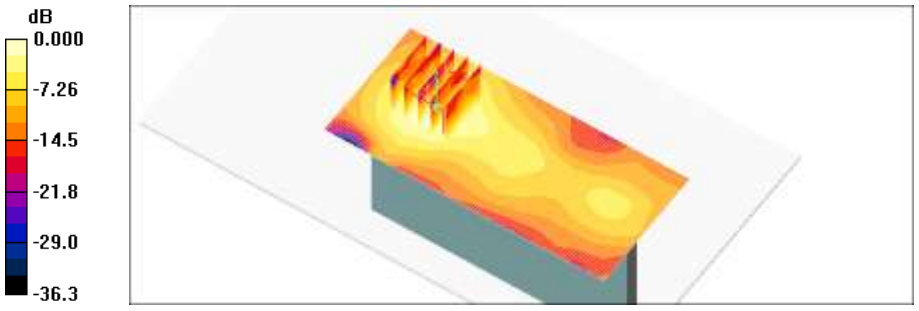
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.01, 4.01, 4.01); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

802.11b Body Right 1Mbps 11ch/Area Scan (51x111x1): Measurement grid: dx=15mm, dy=15mm

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

802.11b Body Right 1Mbps 11ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.92 V/m; Power Drift = -0.178 dB
Peak SAR (extrapolated) = 0.035 W/kg
SAR(1 g) = 0.017 mW/g; SAR(10 g) = 0.00814 mW/g

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/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Oct.19, 2012
Separation Distance:	1.0 cm

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

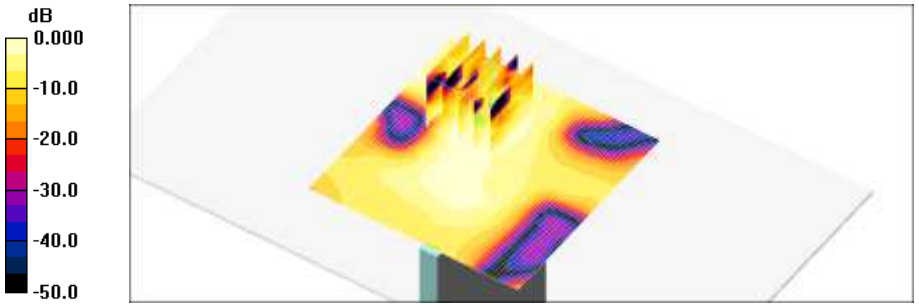
Communication System: 2450MHz FCC; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2462 MHz; σ = 1.95 mho/m; ε_r = 53.6; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.01, 4.01, 4.01); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

802.11b Body Top 1Mbps 11ch/Area Scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

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

802.11b Body Top 1Mbps 11ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.64 V/m; Power Drift = -0.062 dB
Peak SAR (extrapolated) = 0.016 W/kg
SAR(1 g) = 0.00811 mW/g; SAR(10 g) = 0.00403 mW/g
aximum 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/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Oct.24, 2012
Separation Distance:	1.0 cm

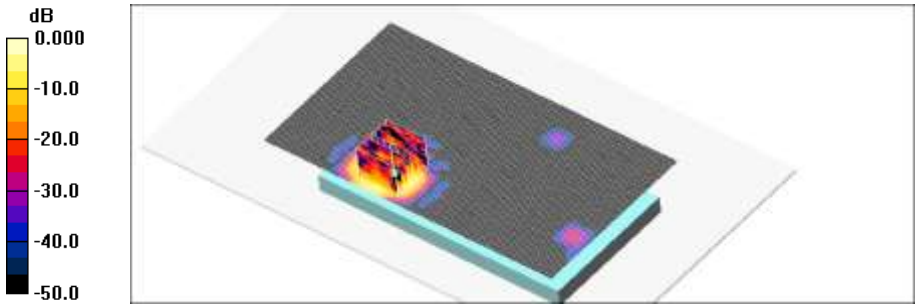
DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

Communication System: WIFI 5GHz; Frequency: 5700 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5700 MHz; σ = 5.96 mho/m; ε_r = 46.3; ρ = 1000 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(3.66, 3.66, 3.66); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WIFI 5GHz Body Rear 140ch 6Mbps/Area Scan (181x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.520 mW/g

WIFI 5GHz Body Rear 140ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.000 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.909 W/kg
SAR(1 g) = 0.216 mW/g; SAR(10 g) = 0.056 mW/g
aximum value of SAR (measured) = 0.483 mW/g



0 dB = 0.483mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Oct.24, 2012
Separation Distance:	1.0 cm

DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

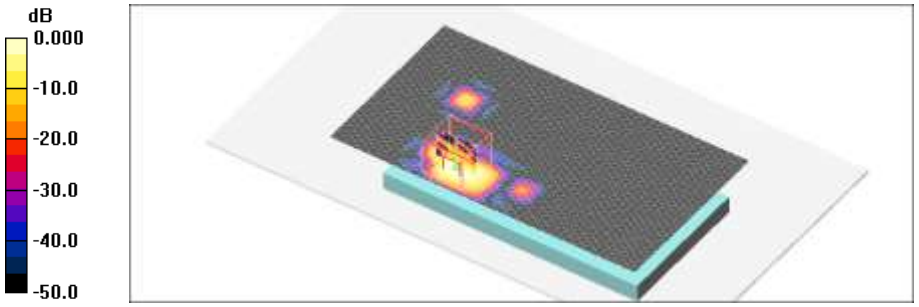
Communication System: WIFI 5GHz; Frequency: 5180 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5180 MHz; σ = 5.2 mho/m; ε_r = 47.5; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.35, 4.35, 4.35); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WIFI 5GHz Body Rear 36ch 6Mbps/Area Scan (181x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.284 mW/g

WIFI 5GHz Body Rear 36ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.513 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.250 W/kg
SAR(1 g) = 0.058 mW/g; SAR(10 g) = 0.013 mW/g

Maximum value of SAR (measured) = 0.132 mW/g



0 dB = 0.132mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Oct.24, 2012
Separation Distance:	1.0 cm

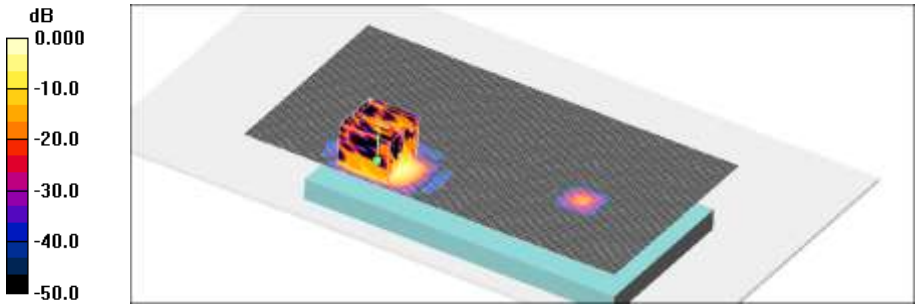
DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

Communication System: WIFI 5GHz; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5260 MHz; σ = 5.29 mho/m; ε_r = 47.5; ρ = 1000 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(4.1, 4.1, 4.1); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WIFI 5GHz Body Rear 52ch 6Mbps/Area Scan (181x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.448 mW/g

WIFI 5GHz Body Rear 52ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.000 V/m; Power Drift = 0.080 dB
Peak SAR (extrapolated) = 0.331 W/kg
SAR(1 g) = 0.072 mW/g; SAR(10 g) = 0.017 mW/g
aximum value of SAR (measured) = 0.160 mW/g



0 dB = 0.160mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Oct.24, 2012
Separation Distance:	1.0 cm

DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

Communication System: WIFI 5GHz; Frequency: 5805 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5805 MHz; σ = 6.18 mho/m; ε_r = 46.1; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

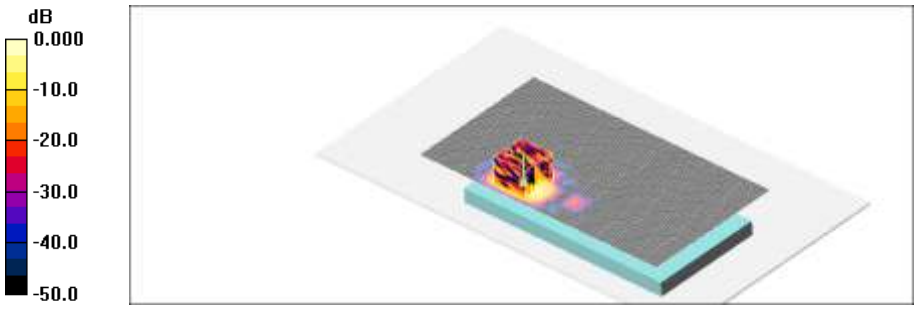
DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(3.81, 3.81, 3.81); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WIFI 5GHz Body Rear 161ch 6Mbps/Area Scan (181x101x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.428 mW/g

WIFI 5GHz Body Rear 161ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.000 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.547 W/kg
SAR(1 g) = 0.118 mW/g; SAR(10 g) = 0.031 mW/g

Maximum value of SAR (measured) = 0.272 mW/g



0 dB = 0.272mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Oct.24, 2012
Separation Distance:	1.0 cm

DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

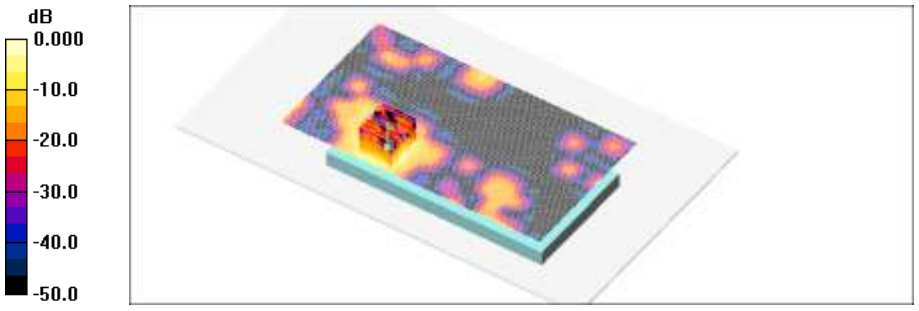
Communication System: WIFI 5GHz; Frequency: 5755 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5755 MHz; σ = 6.21 mho/m; ε_r = 46; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(3.81, 3.81, 3.81); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WIFI 5GHz 802.11n Body Rear 151ch HT40/Area Scan (181x101x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.492 mW/g

WIFI 5GHz 802.11n Body Rear 151ch HT40/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.04 V/m; Power Drift = -0.040 dB
Peak SAR (extrapolated) = 1.03 W/kg
SAR(1 g) = 0.244 mW/g; SAR(10 g) = 0.068 mW/g
aximum value of SAR (measured) = 0.525 mW/g



0 dB = 0.525mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.2 ℃
Ambient Temperature: 21.4 ℃
Test Date: Oct.22, 2012

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.919 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.36, 6.36, 6.36); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 1800/1900 Phantom; Type: SAM

Right Touch 190/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.132 mW/g

Right Touch 190/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.04 V/m; Power Drift = 0.175 dB
Peak SAR (extrapolated) = 0.155 W/kg
SAR(1 g) = 0.124 mW/g; SAR(10 g) = 0.092 mW/g
Maximum value of SAR (measured) = 0.132 mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.22, 2012
Separation Distance:	1.0 cm

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:2.77
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.998 mho/m; ε_r = 53.2; ρ = 1000 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 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body Rear 190 3Tx/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

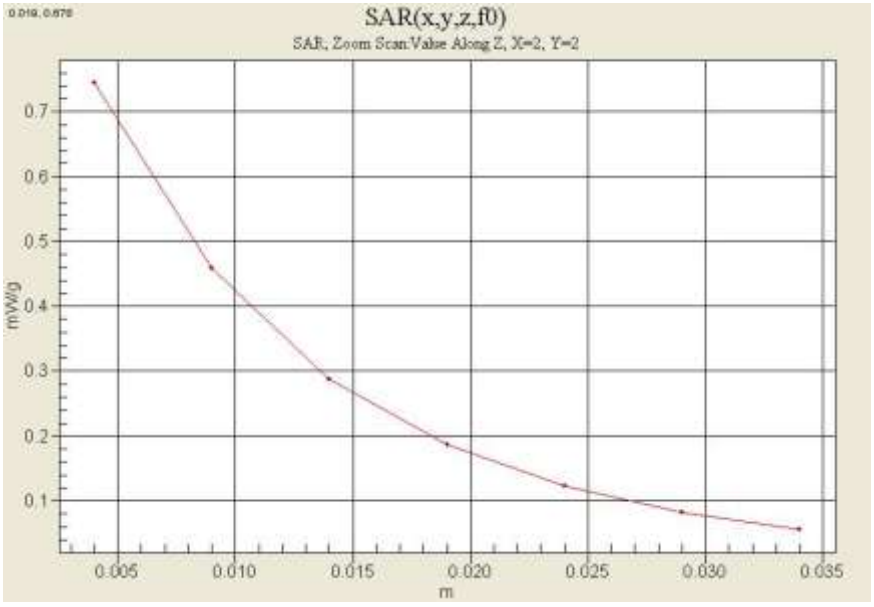
Maximum value of SAR (interpolated) = 0.680 mW/g

Body Rear 190 3Tx/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.9 V/m; Power Drift = -0.027 dB
Peak SAR (extrapolated) = 1.15 W/kg
SAR(1 g) = 0.665 mW/g; SAR(10 g) = 0.390 mW/g

Maximum value of SAR (measured) = 0.745 mW/g

Body Rear 190 3Tx/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.9 V/m; Power Drift = -0.027 dB
Peak SAR (extrapolated) = 0.769 W/kg
SAR(1 g) = 0.635 mW/g; SAR(10 g) = 0.484 mW/g

Maximum value of SAR (measured) = 0.670 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.2 ℃
Ambient Temperature: 21.4 ℃
Test Date: Oct.23, 2012

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.35 mho/m; ε_r = 40.9; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(5.26, 5.26, 5.26); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 835/900 Phamtom ; Type: SAM

Left Touch 661/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.094 mW/g

Left Touch 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.91 V/m; Power Drift = -0.015 dB
Peak SAR (extrapolated) = 0.135 W/kg
SAR(1 g) = 0.087 mW/g; SAR(10 g) = 0.051 mW/g
Maximum value of SAR (measured) = 0.095 mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.23, 2012
Separation Distance:	1.0 cm

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: GSM 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:2.77
Medium parameters used: f = 1910 MHz; σ = 1.55 mho/m; ε_r = 51.8; ρ = 1000 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 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body Rear 810 3Tx/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.02 mW/g

Body Rear 810 3Tx/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.41 V/m; Power Drift = -0.046 dB
Peak SAR (extrapolated) = 1.38 W/kg
SAR(1 g) = 0.901 mW/g; SAR(10 g) = 0.531 mW/g
Maximum value of SAR (measured) = 1.00 mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.2 ℃
Ambient Temperature: 21.4 ℃
Test Date: Oct.22, 2012

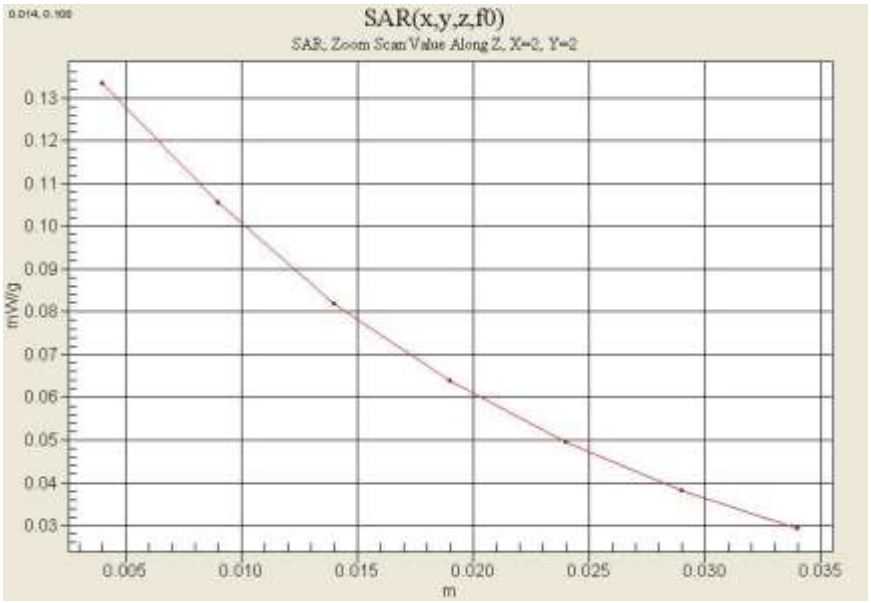
DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

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

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.36, 6.36, 6.36); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 1800/1900 Phantom; Type: SAM

Right Touch 4183/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.133 mW/g

Right Touch 4183/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.15 V/m; Power Drift = 0.026 dB
Peak SAR (extrapolated) = 0.157 W/kg
SAR(1 g) = 0.126 mW/g; SAR(10 g) = 0.094 mW/g
Maximum value of SAR (measured) = 0.133 mW/g



Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.22, 2012
Separation Distance:	1.0 cm

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: WCDMA850; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.998 mho/m; ε_r = 53.2; ρ = 1000 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 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body Bottom 4183/Area Scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.273 mW/g

Body Bottom 4183/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.2 V/m; Power Drift = -0.001 dB
Peak SAR (extrapolated) = 0.477 W/kg
SAR(1 g) = 0.235 mW/g; SAR(10 g) = 0.136 mW/g

Maximum value of SAR (measured) = 0.262 mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.2 ℃
Ambient Temperature: 21.4 ℃
Test Date: Oct.23, 2012

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: WCDMA1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.35 mho/m; ε_r = 40.9; ρ = 1000 kg/m^3
Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(5.26, 5.26, 5.26); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 835/900 Phamtom ; Type: SAM

Right Touch 9400/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.157 mW/g

Right Touch 9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.50 V/m; Power Drift = -0.072 dB
Peak SAR (extrapolated) = 0.200 W/kg
SAR(1 g) = 0.135 mW/g; SAR(10 g) = 0.081 mW/g
Maximum value of SAR (measured) = 0.148 mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Oct.23, 2012
Separation Distance:	1.0 cm

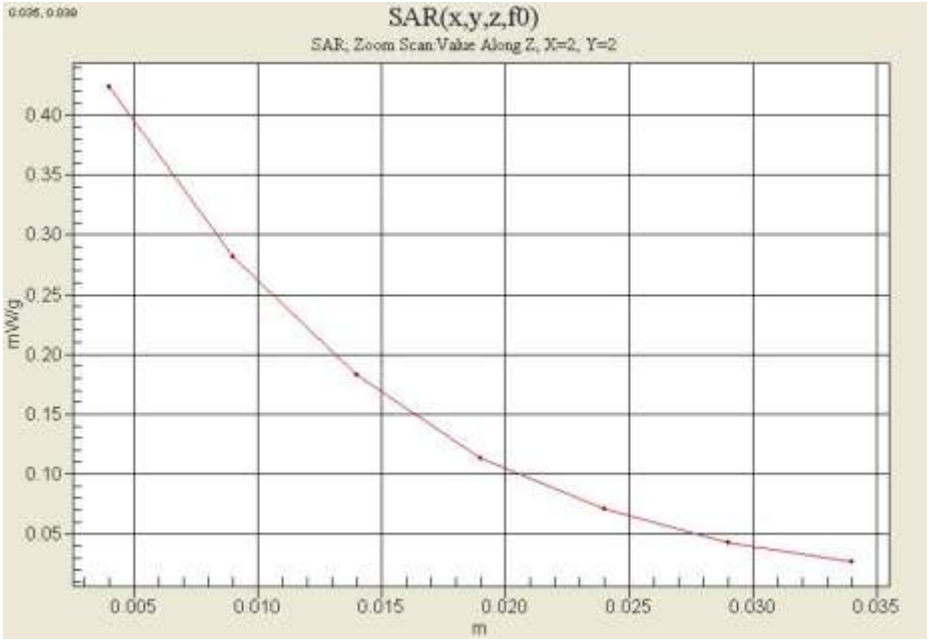
DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: WCDMA1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.52 mho/m; ε_r = 51.9; ρ = 1000 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 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Body Rear 9400/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.414 mW/g

Body Rear 9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.95 V/m; Power Drift = 0.053 dB
Peak SAR (extrapolated) = 0.590 W/kg
SAR(1 g) = 0.388 mW/g; SAR(10 g) = 0.230 mW/g
Maximum value of SAR (measured) = 0.424 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.1 ℃
Ambient Temperature: 21.3 ℃
Test Date: Oct.19, 2012

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: 2450MHz FCC; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2462 MHz; σ = 1.85 mho/m; ε_r = 39.8; ρ = 1000 kg/m^3
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.52, 4.52, 4.52); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 835/900 Phamtom ; Type: SAM

802.11b Left Touch 1Mbps 11ch/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.024 mW/g

802.11b Left Touch 1Mbps 11ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.39 V/m; Power Drift = -0.080 dB
Peak SAR (extrapolated) = 0.045 W/kg
SAR(1 g) = 0.021 mW/g; SAR(10 g) = 0.011 mW/g
Maximum value of SAR (measured) = 0.024 mW/g

Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.1 ℃
Ambient Temperature: 21.3 ℃
Test Date: Oct.19, 2012
Separation Distance: 1.0 cm

DUT: GT-N7100T; Type: bar; Serial: FJ-284-A

Communication System: 2450MHz FCC; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2462 MHz; σ = 1.95 mho/m; ε_r = 53.6; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

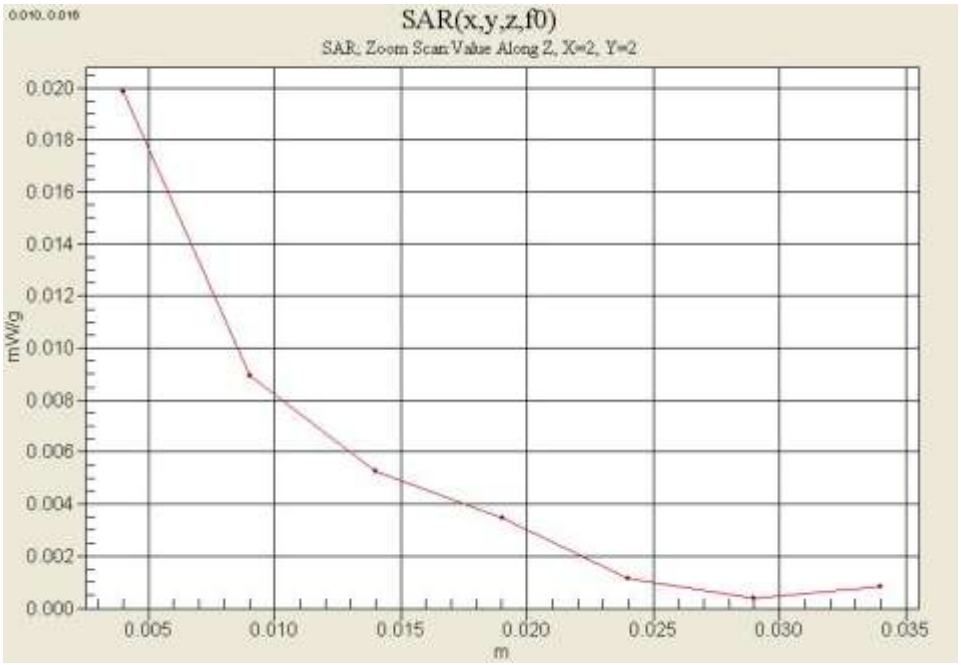
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.01, 4.01, 4.01); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

802.11b Body Rear 1Mbps 11ch/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

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

802.11b Body Rear 1Mbps 11ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.06 V/m; Power Drift = -0.026 dB
Peak SAR (extrapolated) = 0.048 W/kg
SAR(1 g) = 0.019 mW/g; SAR(10 g) = 0.00956 mW/g

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



Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Oct.24, 2012
Separation Distance:	1.0 cm

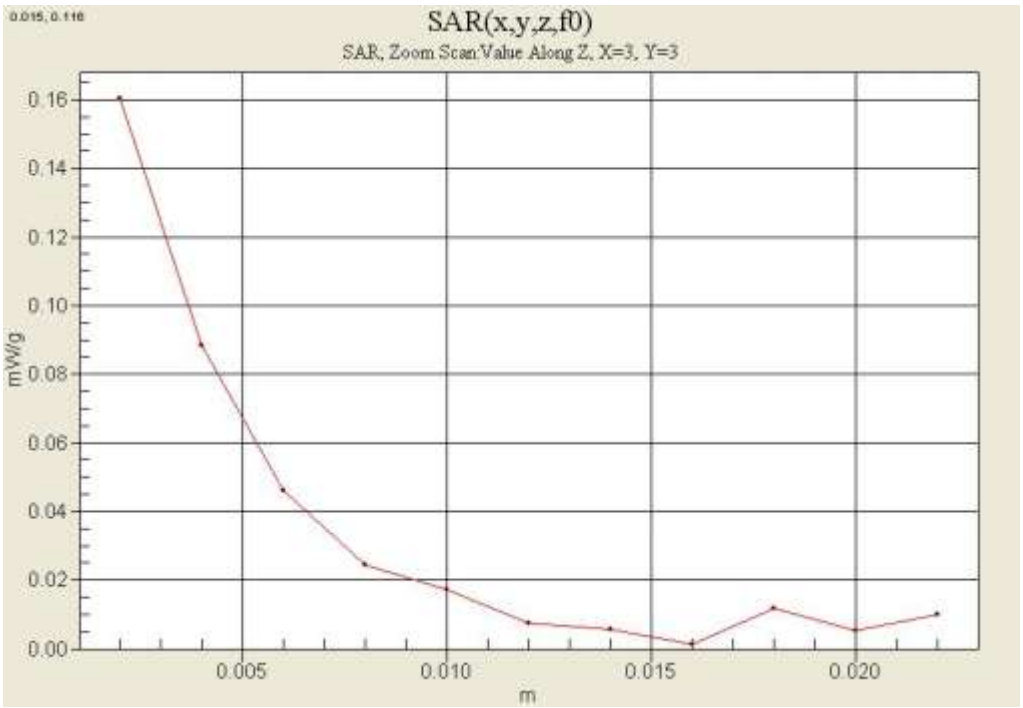
DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

Communication System: WIFI 5GHz; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5260 MHz; σ = 5.29 mho/m; ε_r = 47.5; ρ = 1000 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(4.1, 4.1, 4.1); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WIFI 5GHz Body Rear 52ch 6Mbps/Area Scan (181x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.448 mW/g

WIFI 5GHz Body Rear 52ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.000 V/m; Power Drift = 0.080 dB
Peak SAR (extrapolated) = 0.331 W/kg
SAR(1 g) = 0.072 mW/g; SAR(10 g) = 0.017 mW/g
aximum value of SAR (measured) = 0.160 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature: 21.1 ℃
Ambient Temperature: 21.3 ℃
Test Date: Oct.24, 2012
Separation Distance: 1.0 cm

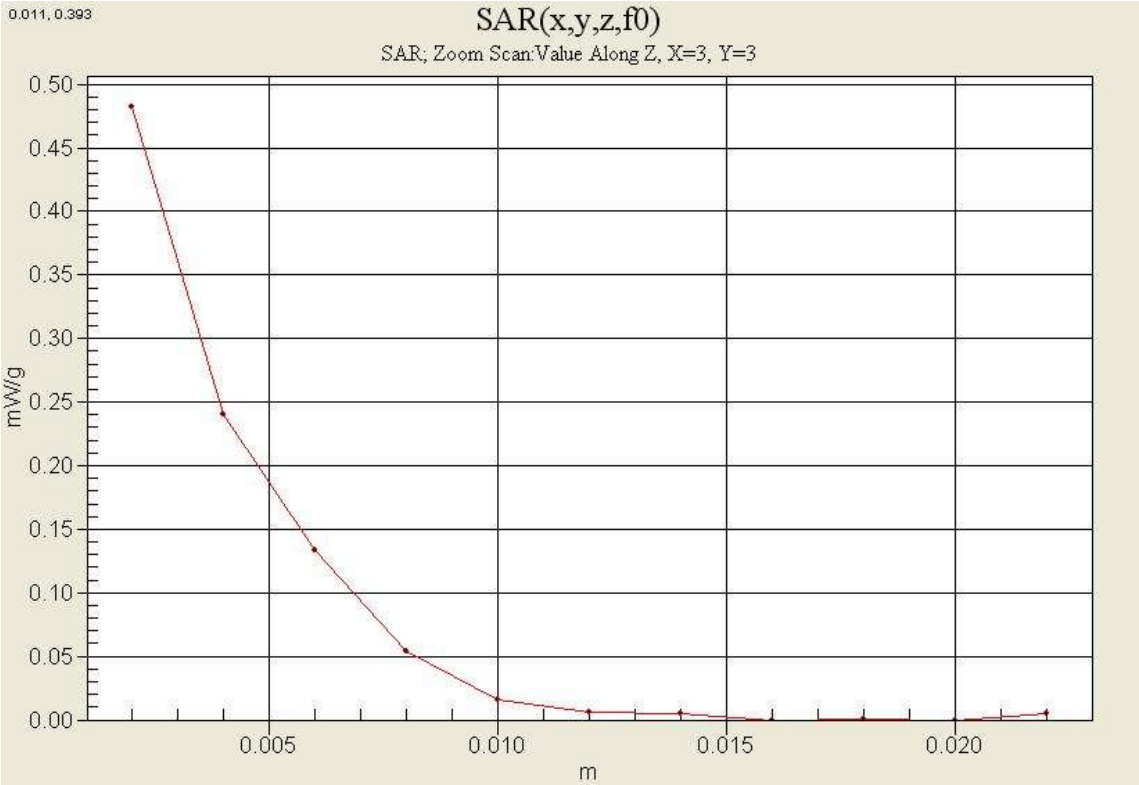
DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

Communication System: WIFI 5GHz; Frequency: 5700 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5700 MHz; σ = 5.96 mho/m; ε_r = 46.3; ρ = 1000 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(3.66, 3.66, 3.66); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WIFI 5GHz Body Rear 140ch 6Mbps/Area Scan (181x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.520 mW/g

WIFI 5GHz Body Rear 140ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.000 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.909 W/kg
SAR(1 g) = 0.216 mW/g; SAR(10 g) = 0.056 mW/g
aximum value of SAR (measured) = 0.483 mW/g



Test Laboratory:	HCT CO., LTD
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA Mobile Phone with Bluetooth and NFC
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Oct.24, 2012
Separation Distance:	1.0 cm

DUT: GT-N7100T; Type: bar; Serial: FJ-284-C

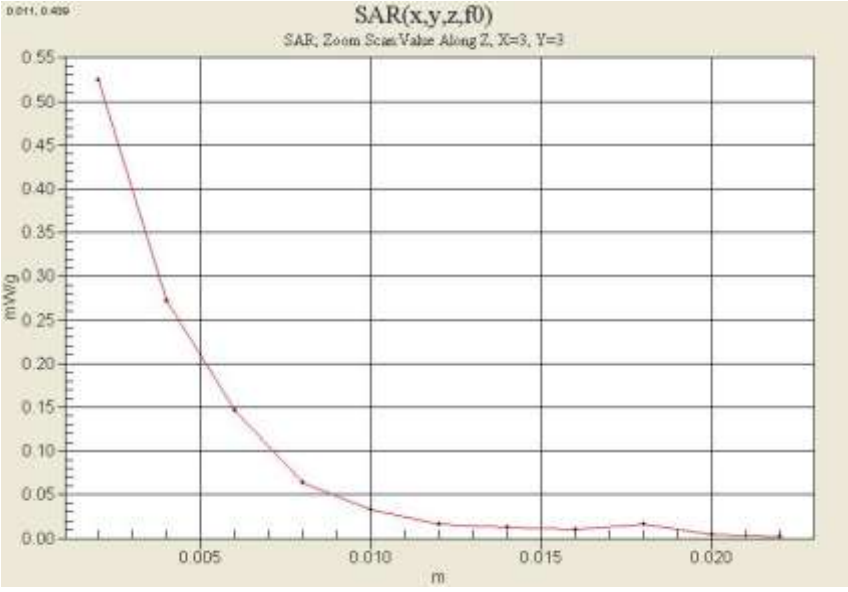
Communication System: WIFI 5GHz; Frequency: 5755 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5755 MHz; σ = 6.21 mho/m; ε_r = 46; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(3.81, 3.81, 3.81); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WIFI 5GHz 802.11n Body Rear 151ch HT40/Area Scan (181x101x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.492 mW/g

WIFI 5GHz 802.11n Body Rear 151ch HT40/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.04 V/m; Power Drift = -0.040 dB
Peak SAR (extrapolated) = 1.03 W/kg
SAR(1 g) = 0.244 mW/g; SAR(10 g) = 0.068 mW/g
Maximum value of SAR (measured) = 0.525 mW/g



Attachment 2. – Dipole Validation Plots

■ Validation Data (835 MHz Head)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	21.2 ℃
Test Date:	Oct.22, 2012

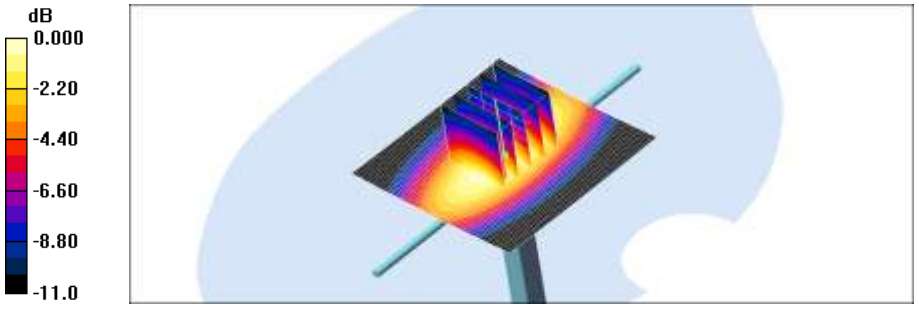
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:441

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.918 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.36, 6.36, 6.36); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: SAM 1800/1900 MHz; Type: SAM

Validation 835MHz/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.03 mW/g

Validation 835MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 34.7 V/m; Power Drift = 0.005 dB
Peak SAR (extrapolated) = 1.40 W/kg
SAR(1 g) = 0.943 mW/g; SAR(10 g) = 0.607 mW/g
Maximum value of SAR (measured) = 1.02 mW/g



0 dB = 1.02mW/g

■ Validation Data (835 MHz Body)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	21.2 ℃
Test Date:	Oct.22, 2012

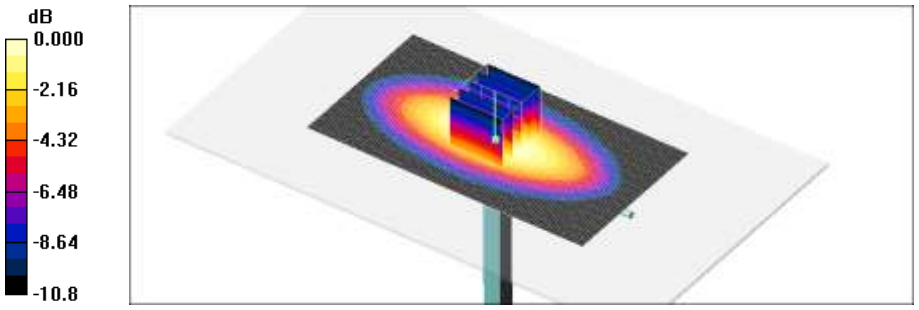
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:441

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.996 mho/m; ε_r = 53.3; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Validation 835 MHz/Area Scan (111x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.06 mW/g

Validation 835 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 33.8 V/m; Power Drift = -0.015 dB
Peak SAR (extrapolated) = 1.42 W/kg
SAR(1 g) = 0.978 mW/g; SAR(10 g) = 0.636 mW/g
Maximum value of SAR (measured) = 1.06 mW/g



0 dB = 1.06mW/g

■ Validation Data (1 900 MHz Head)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	21.2 ℃
Test Date:	Oct.23, 2012

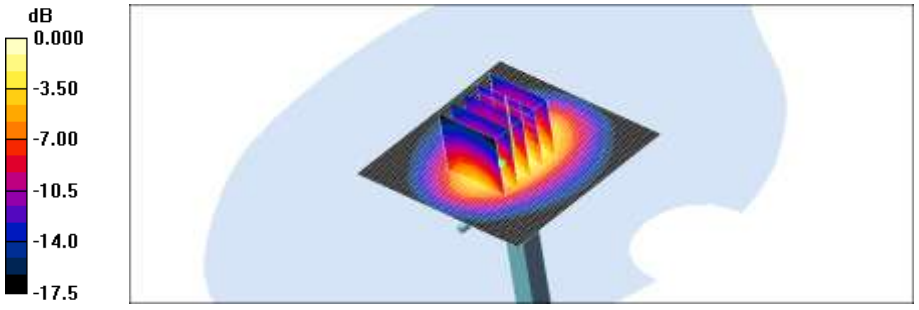
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 – SN:5d032

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.37 mho/m; ε_r = 40.9; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(5.26, 5.26, 5.26); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: SAM 835/900 MHz; Type: SAM

Dipole 1900MHz Validation/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 4.53 mW/g

Dipole 1900MHz Validation/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 61.2 V/m; Power Drift = -0.006 dB
Peak SAR (extrapolated) = 6.49 W/kg
SAR(1 g) = 4.05 mW/g; SAR(10 g) = 2.29 mW/g
aximum value of SAR (measured) = 4.49 mW/g



0 dB = 4.49mW/g

■ Validation Data (1 900 MHz Body)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	21.2 ℃
Test Date:	Oct.23, 2012

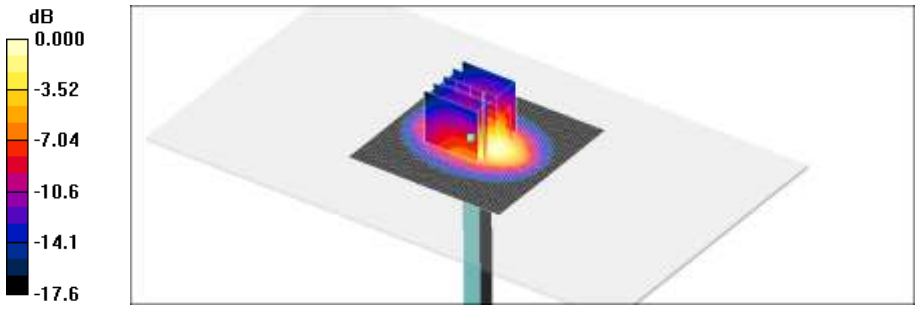
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d032

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.54 mho/m; ε_r = 51.8; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

Validation1900 MHz/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 4.62 mW/g

Validation1900 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 57.8 V/m; Power Drift = -0.031 dB
Peak SAR (extrapolated) = 6.31 W/kg
SAR(1 g) = 3.97 mW/g; SAR(10 g) = 2.17 mW/g
aximum value of SAR (measured) = 4.46 mW/g



0 dB = 4.46mW/g

■ Validation Data (2 450 MHz Head)

Test Laboratory: HCT CO., LTD

Input Power 100 mW (20 dBm)

Liquid Temp: 21.1 ℃

Test Date: Oct.19, 2012

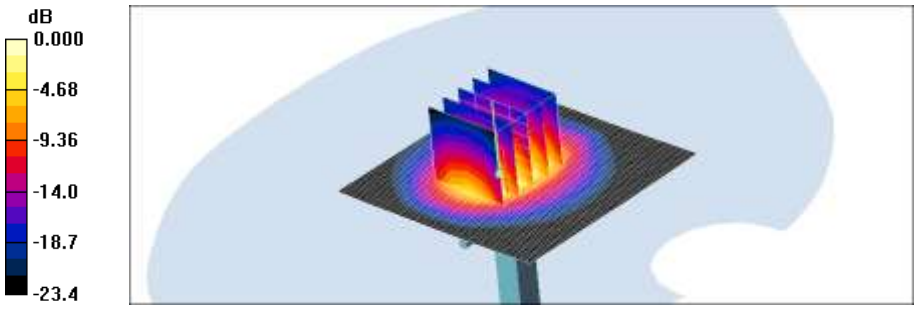
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:743

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.83 mho/m; ε_r = 39.9; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.52, 4.52, 4.52); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: SAM 1800/1900 MHz; Type: SAM

Validation 2450MHz/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 6.10 mW/g

Validation 2450MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 58.6 V/m; Power Drift = 0.005 dB
Peak SAR (extrapolated) = 11.8 W/kg
SAR(1 g) = 5.11 mW/g; SAR(10 g) = 2.32 mW/g
Maximum value of SAR (measured) = 5.60 mW/g



0 dB = 5.60mW/g

■ Validation Data (2 450 MHz Body)

Test Laboratory: HCT CO., LTD

Input Power 100 mW (20 dBm)

Liquid Temp: 21.1 ℃

Test Date: Oct.19, 2012

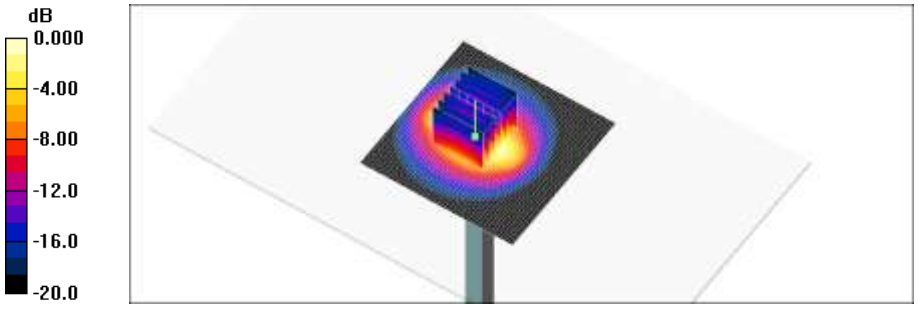
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:743

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.94 mho/m; ε_r = 53.6; ρ = 1000 kg/m^3
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.01, 4.01, 4.01); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

Validation 2450MHz/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 6.01 mW/g

Validation 2450MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.5 V/m; Power Drift = -0.020 dB
Peak SAR (extrapolated) = 12.5 W/kg
SAR(1 g) = 5.04 mW/g; SAR(10 g) = 2.41 mW/g
Maximum value of SAR (measured) = 5.38 mW/g



0 dB = 5.38mW/g

■ Validation Data (5.2GHz Head)

Test Laboratory: HCT CO., LTD

Input Power 100 mW (20 dBm)

Liquid Temp: 21.1 ℃

Test Date: Oct.24, 2012

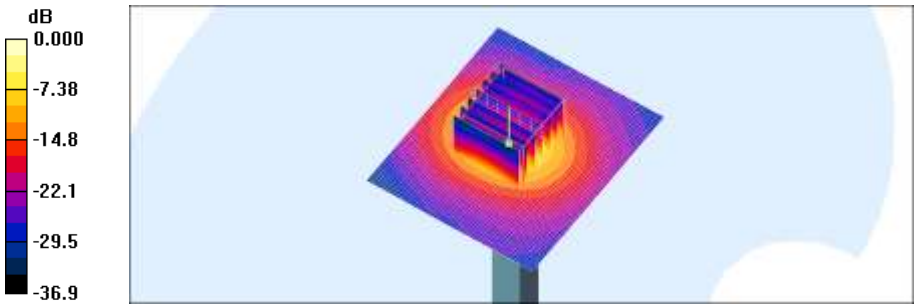
DUT: Dipole 5GHz; Type: D5000V2; Serial: D5000V2 - SN:1107

Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 4.55 mho/m; ε_r = 35.8; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.96, 4.96, 4.96); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: SAM 1800/1900 MHz; Type: SAM

Validation 5200MHz/Area Scan (61x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 9.44 mW/g

Validation 5200MHz/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 42.4 V/m; Power Drift = 0.046 dB
Peak SAR (extrapolated) = 33.5 W/kg
SAR(1 g) = 7.95 mW/g; SAR(10 g) = 2.22 mW/g
aximum value of SAR (measured) = 16.0 mW/g



0 dB = 16.0mW/g

■ Validation Data (5.2GHz Head)

Test Laboratory: HCT CO., LTD

Input Power 100 mW (20 dBm)

Liquid Temp: 21.1 ℃

Test Date: Oct.24, 2012

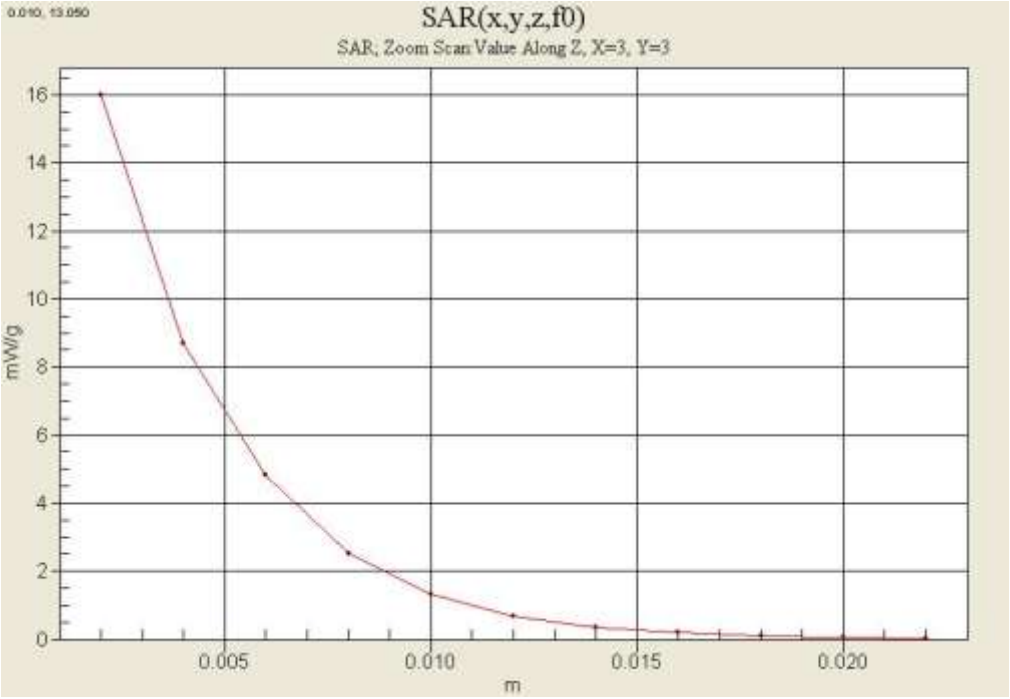
DUT: Dipole 5GHz; Type: D5000V2; Serial: D5000V2 - SN:1107

Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 4.55 mho/m; ε_r = 35.8; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3863; ConvF(4.96, 4.96, 4.96); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: SAM 1800/1900 MHz; Type: SAM

Validation 5200MHz/Area Scan (61x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 9.44 mW/g

Validation 5200MHz/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 42.4 V/m; Power Drift = 0.046 dB
Peak SAR (extrapolated) = 33.5 W/kg
SAR(1 g) = 7.95 mW/g; SAR(10 g) = 2.22 mW/g
Maximum value of SAR (measured) = 16.0 mW/g



■ Validation Data (5.5GHz Head)

Test Laboratory: HCT CO., LTD

Input Power 100 mW (20 dBm)

Liquid Temp: 21.1 ℃

Test Date: Oct.24, 2012

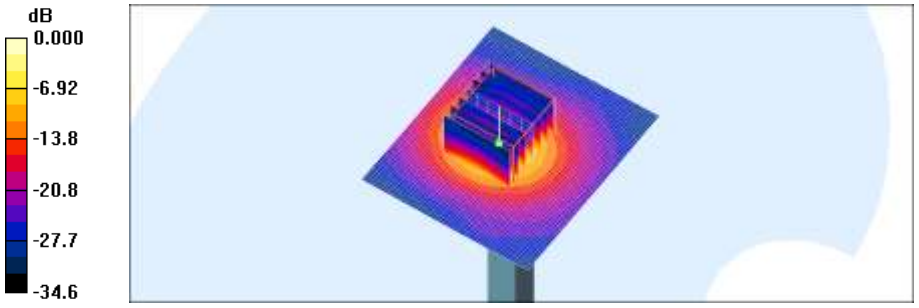
DUT: Dipole 5GHz; Type: D5000V2; Serial: D5000V2 – SN:1107

Communication System: CW; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5500 MHz; σ = 4.9 mho/m; ε_r = 34.9; ρ = 1000 kg/m^3
Phantom section: Flat 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)Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: SAM 1800/1900 MHz; Type: SAM

Validation 5500MHz/Area Scan (61x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 9.85 mW/g

Validation 5500MHz/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 38.8 V/m; Power Drift = 0.080 dB
Peak SAR (extrapolated) = 37.2 W/kg
SAR(1 g) = 8.21 mW/g; SAR(10 g) = 2.26 mW/g
aximum value of SAR (measured) = 17.3 mW/g



0 dB = 17.3mW/g

■ Validation Data (5.5GHz Head)

Test Laboratory: HCT CO., LTD

Input Power 100 mW (20 dBm)

Liquid Temp: 21.1 ℃

Test Date: Oct.24, 2012

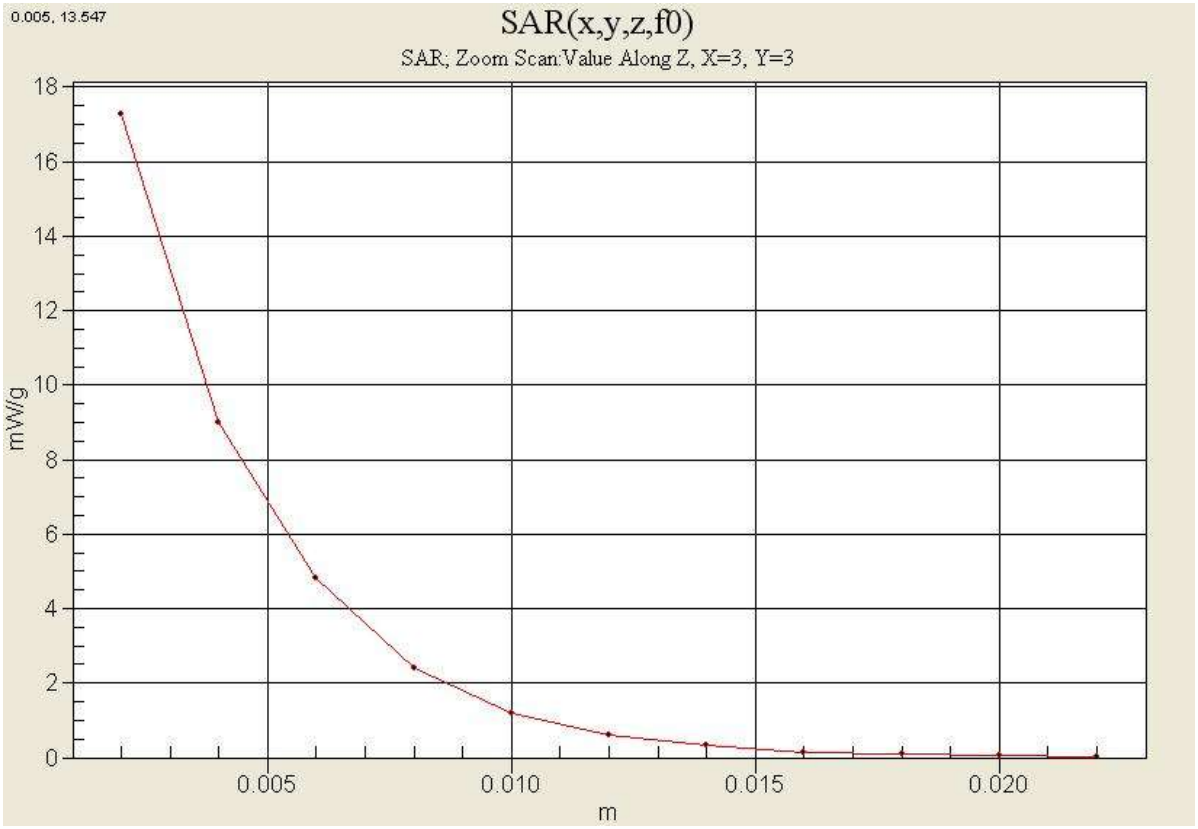
DUT: Dipole 5GHz; Type: D5000V2; Serial: D5000V2 - SN:1107

Communication System: CW; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5500 MHz; σ = 4.9 mho/m; ε_r = 34.9; ρ = 1000 kg/m^3
Phantom section: Flat 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)Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: SAM 1800/1900 MHz; Type: SAM

Validation 5500MHz/Area Scan (61x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 9.85 mW/g

Validation 5500MHz/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 38.8 V/m; Power Drift = 0.080 dB
Peak SAR (extrapolated) = 37.2 W/kg
SAR(1 g) = 8.21 mW/g; SAR(10 g) = 2.26 mW/g
aximum value of SAR (measured) = 17.3 mW/g



■ Validation Data (5.8GHz Head)

Test Laboratory: HCT CO., LTD

Input Power 100 mW (20 dBm)

Liquid Temp: 21.1 ℃

Test Date: Oct.24, 2012

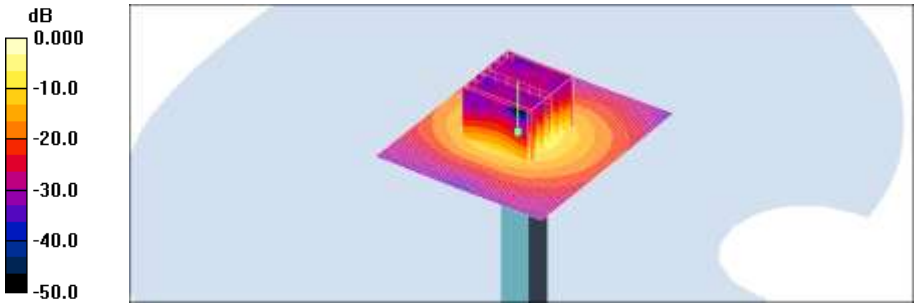
DUT: Dipole 5GHz; Type: D5000V2; Serial: D5000V2 – SN:1107

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5800 MHz; σ = 5.32 mho/m; ε_r = 34.1; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 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: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: SAM 1800/1900 MHz; Type: SAM

Validation 5800MHz/Area Scan (61x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 8.93 mW/g

Validation 5800MHz/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 38.0 V/m; Power Drift = 0.033 dB
Peak SAR (extrapolated) = 37.1 W/kg
SAR(1 g) = 7.98 mW/g; SAR(10 g) = 2.22 mW/g
aximum value of SAR (measured) = 15.9 mW/g



0 dB = 15.9mW/g

■ Validation Data (5.8GHz Head)

Test Laboratory: HCT CO., LTD

Input Power 100 mW (20 dBm)

Liquid Temp: 21.1 ℃

Test Date: Oct.24, 2012

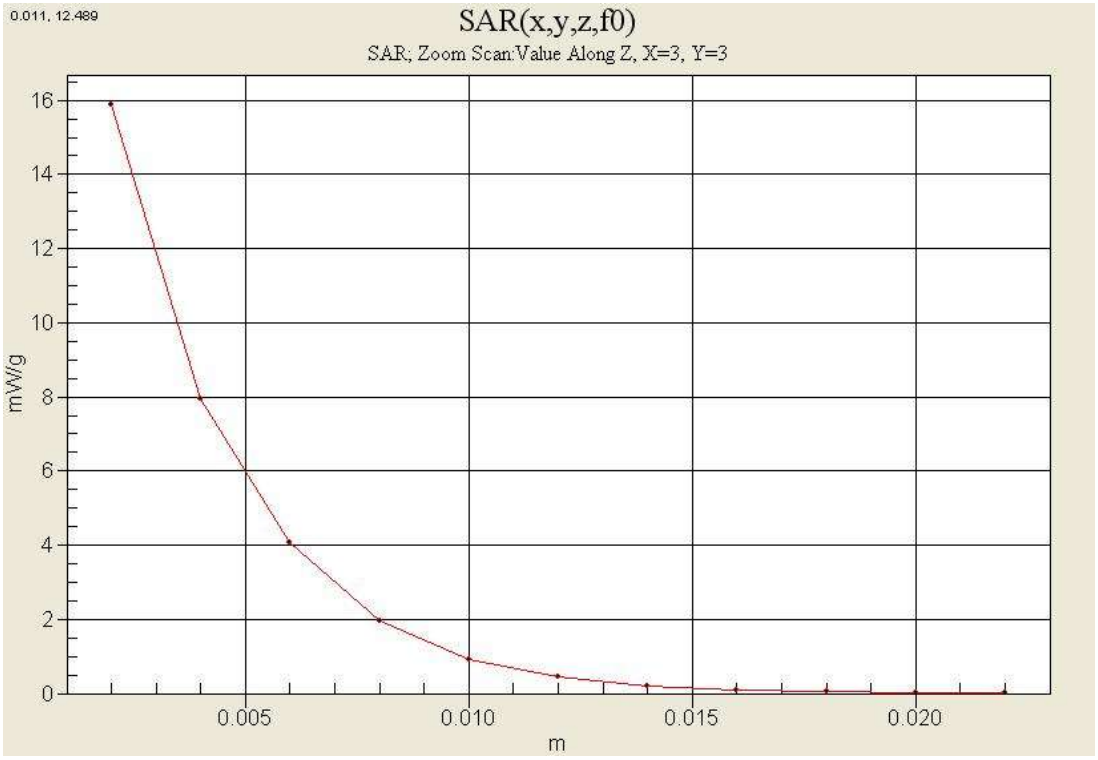
DUT: Dipole 5GHz; Type: D5000V2; Serial: D5000V2 – SN:1107

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5800 MHz; σ = 5.32 mho/m; ε_r = 34.1; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 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: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: SAM 1800/1900 MHz; Type: SAM

Validation 5800MHz/Area Scan (61x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 8.93 mW/g

Validation 5800MHz/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 38.0 V/m; Power Drift = 0.033 dB
Peak SAR (extrapolated) = 37.1 W/kg
SAR(1 g) = 7.98 mW/g; SAR(10 g) = 2.22 mW/g
aximum value of SAR (measured) = 15.9 mW/g



■ Validation Data (5.2GHz Body)

Test Laboratory: HCT CO., LTD

Input Power 100 mW (20 dBm)

Liquid Temp: 21.3 ℃

Test Date: Oct.25, 2012

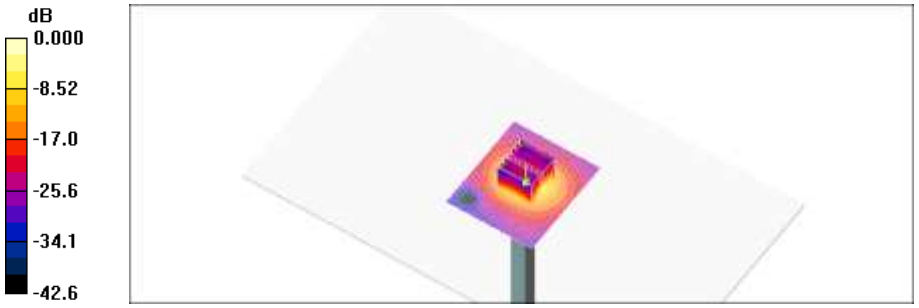
DUT: Dipole 5GHz; Type: D5000V2; Serial: D5000V2 - SN:1107

Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.23 mho/m; ε_r = 47.4; ρ = 1000 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(4.35, 4.35, 4.35); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

Validation 5200MHz/Area Scan (61x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 8.54 mW/g

Validation 5200MHz/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 38.4 V/m; Power Drift = -0.029 dB
Peak SAR (extrapolated) = 31.1 W/kg
SAR(1 g) = 7.46 mW/g; SAR(10 g) = 2.12 mW/g
aximum value of SAR (measured) = 15.4 mW/g



0 dB = 15.4mW/g

■ Validation Data (5.5GHzBody)

Test Laboratory: HCT CO., LTD

Input Power 100 mW (20 dBm)

Liquid Temp: 21.3 ℃

Test Date: Oct.25, 2012

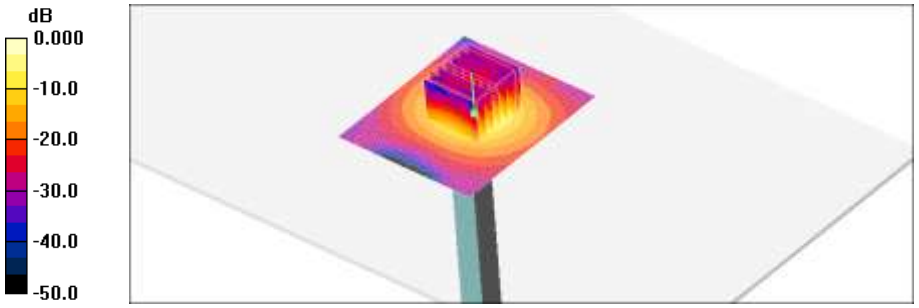
DUT: Dipole 5GHz; Type: D5000V2; Serial: D5000V2 - SN:1107

Communication System: CW; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5500 MHz; σ = 5.59 mho/m; ε_r = 46.5; ρ = 1000 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(3.91, 3.91, 3.91); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

Validation 5500MHz/Area Scan (61x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 8.83 mW/g

Validation 5500MHz/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 38.0 V/m; Power Drift = 0.019 dB
Peak SAR (extrapolated) = 34.2 W/kg
SAR(1 g) = 7.96 mW/g; SAR(10 g) = 2.26 mW/g
Maximum value of SAR (measured) = 16.6 mW/g



0 dB = 16.6mW/g

■ Validation Data (5.8GHzBody)

Test Laboratory: HCT CO., LTD

Input Power 100 mW (20 dBm)

Liquid Temp: 21.3 ℃

Test Date: Oct.25, 2012

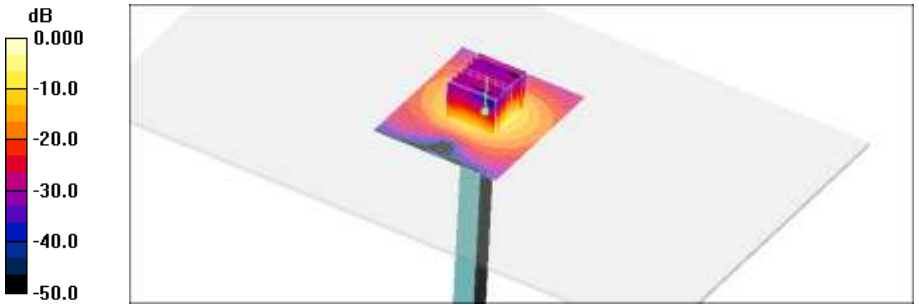
DUT: Dipole 5GHz; Type: D5000V2; Serial: D5000V2 - SN:1107

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5800 MHz; σ = 6.16 mho/m; ε_r = 46.1; ρ = 1000 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: 4mm (Mechanical Surface Detection)Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

Validation 5800MHz/Area Scan (61x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 8.33 mW/g

Validation 5800MHz/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 35.1 V/m; Power Drift = -0.007 dB
Peak SAR (extrapolated) = 32.4 W/kg
SAR(1 g) = 7.44 mW/g; SAR(10 g) = 2.1 mW/g
Maximum value of SAR (measured) = 15.8 mW/g



0 dB = 15.8mW/g

■ Dielectric Parameter (835 MHz Head)

Title	GT-N7100
SubTitle	835MHz
Test Date	Oct.22, 2012

Frequency	e'	e''
800000000.0000	40.7352	19.8817
805000000.0000	40.6737	19.8696
810000000.0000	40.6206	19.8448
815000000.0000	40.5711	19.8301
820000000.0000	40.5338	19.8178
825000000.0000	40.4784	19.7946
830000000.0000	40.4575	19.7782
835000000.0000	40.4113	19.7636
840000000.0000	40.3677	19.7172
845000000.0000	40.3151	19.6737
850000000.0000	40.2573	19.6840
855000000.0000	40.2065	19.6410
860000000.0000	40.1807	19.6119
865000000.0000	40.0881	19.5610
870000000.0000	40.0515	19.5613
875000000.0000	40.0010	19.5453
880000000.0000	39.9261	19.5113
885000000.0000	39.8489	19.4835
890000000.0000	39.7812	19.4685
895000000.0000	39.7355	19.4227
900000000.0000	39.6788	19.4053

■ Dielectric Parameter (835 MHz Body)

Title	GT-N7100
SubTitle	835MHz
Test Date	Oct.22, 2012

Frequency	e'	e''
800000000.0000	53.4146	21.7896
805000000.0000	53.4249	21.7271
810000000.0000	53.3745	21.6353
815000000.0000	53.3345	21.6193
820000000.0000	53.3296	21.5576
825000000.0000	53.2937	21.5016
830000000.0000	53.2344	21.4711
835000000.0000	53.2519	21.4519
840000000.0000	53.2121	21.4094
845000000.0000	53.1735	21.3832
850000000.0000	53.1407	21.4150
855000000.0000	53.0979	21.4014
860000000.0000	53.0364	21.3787
865000000.0000	53.0160	21.4055
870000000.0000	52.9636	21.4440
875000000.0000	52.8889	21.4480
880000000.0000	52.8598	21.4563
885000000.0000	52.8869	21.4432
890000000.0000	52.8775	21.4437
895000000.0000	52.8573	21.3590
900000000.0000	52.8407	21.3780

■ Dielectric Parameter (1 900 MHz Head)

Title	GT-N7100
SubTitle	1 900MHz
Test Date	Oct.23, 2012

Frequency	e'	e''
1800000000.0000	41.1992	12.6308
1810000000.0000	41.1659	12.6617
1820000000.0000	41.1176	12.6990
1830000000.0000	41.0869	12.7141
1840000000.0000	41.0382	12.7502
1850000000.0000	41.0154	12.7787
1860000000.0000	40.9822	12.8065
1870000000.0000	40.9472	12.8482
1880000000.0000	40.9076	12.8604
1890000000.0000	40.8808	12.9009
1900000000.0000	40.8520	12.9150
1910000000.0000	40.7988	12.9544
1920000000.0000	40.7551	12.9734
1930000000.0000	40.7157	13.0060
1940000000.0000	40.6861	13.0579
1950000000.0000	40.6544	13.0781
1960000000.0000	40.6265	13.1005
1970000000.0000	40.5744	13.1203
1980000000.0000	40.5574	13.1556
1990000000.0000	40.5143	13.1701
2000000000.0000	40.4659	13.2053

■ Dielectric Parameter (1 900 MHz Body)

Title	GT-N7100
SubTitle	1 900MHz
Test Date	Oct.23, 2012

Frequency	e'	e''
1850000000.0000	51.9332	14.4633
1855000000.0000	51.9291	14.4712
1860000000.0000	51.9022	14.4957
1865000000.0000	51.8999	14.5093
1870000000.0000	51.8765	14.5297
1875000000.0000	51.8754	14.5267
1880000000.0000	51.8694	14.5308
1885000000.0000	51.8612	14.5384
1890000000.0000	51.8471	14.5470
1895000000.0000	51.8270	14.5564
1900000000.0000	51.8037	14.5550
1905000000.0000	51.7953	14.5799
1910000000.0000	51.7789	14.5851
1915000000.0000	51.7733	14.5946
1920000000.0000	51.7519	14.6038
1925000000.0000	51.7278	14.6134
1930000000.0000	51.7089	14.6315
1935000000.0000	51.7115	14.6422
1940000000.0000	51.7047	14.6353
1945000000.0000	51.6671	14.6503
1950000000.0000	51.6608	14.6591

■ Dielectric Parameter (2 450 MHz Head)

Title	GT-N7100
SubTitle	2 450MHz
Test Date	Oct.19, 2012

Frequency	e'	e''
2400000000.0000	40.1873	13.3500
2405000000.0000	40.1734	13.3567
2410000000.0000	40.1449	13.3759
2415000000.0000	40.1280	13.3852
2420000000.0000	40.1068	13.3728
2425000000.0000	40.0814	13.3783
2430000000.0000	40.0297	13.3926
2435000000.0000	40.0038	13.4101
2440000000.0000	39.9754	13.4243
2445000000.0000	39.9382	13.4348
2450000000.0000	39.9017	13.4393
2455000000.0000	39.8675	13.4589
2460000000.0000	39.8414	13.4941
2465000000.0000	39.8164	13.5172
2470000000.0000	39.8127	13.5386
2475000000.0000	39.8025	13.5715
2480000000.0000	39.7914	13.5967
2485000000.0000	39.7908	13.6239
2490000000.0000	39.7958	13.6633
2495000000.0000	39.8163	13.6689
2500000000.0000	39.8022	13.6799

■ Dielectric Parameter (2 450 MHz Body)

Title	GT-N7100
SubTitle	2 450MHz
Test Date	Oct.19, 2012

Frequency	e'	e''
2400000000.0000	53.8496	14.0291
2405000000.0000	53.8384	14.0460
2410000000.0000	53.8146	14.0561
2415000000.0000	53.7949	14.0689
2420000000.0000	53.7518	14.0934
2425000000.0000	53.7467	14.1106
2430000000.0000	53.7376	14.1216
2435000000.0000	53.7024	14.1364
2440000000.0000	53.6665	14.1444
2445000000.0000	53.6433	14.1908
2450000000.0000	53.6295	14.2088
2455000000.0000	53.6188	14.2230
2460000000.0000	53.5973	14.2521
2465000000.0000	53.5618	14.2765
2470000000.0000	53.5519	14.2902
2475000000.0000	53.5359	14.3283
2480000000.0000	53.5243	14.3605
2485000000.0000	53.5245	14.3807
2490000000.0000	53.4880	14.3999
2495000000.0000	53.4773	14.4317
2500000000.0000	53.4641	14.4470

■ Dielectric Parameter (5GHz Head)

Title	GT-N7100
SubTitle	5GHz
Test Date	Oct.24, 2012

Frequency	e'	e''
5000000000.0000	35.9371	15.2655
5050000000.0000	35.9391	15.6216
5100000000.0000	35.9074	15.3854
5150000000.0000	35.5895	15.7610
5200000000.0000	35.7772	15.7211
5250000000.0000	35.4208	15.6884
5300000000.0000	35.4464	16.0130
5350000000.0000	35.4216	15.7559
5400000000.0000	35.1281	16.0180
5450000000.0000	35.2550	15.9950
5500000000.0000	34.9285	16.0203
5550000000.0000	34.8899	16.1885
5600000000.0000	34.7952	16.1094
5650000000.0000	34.5541	16.2668
5700000000.0000	34.4813	16.2841
5750000000.0000	34.2380	16.4215
5800000000.0000	34.1193	16.4959
5850000000.0000	33.9819	16.5796
5900000000.0000	33.7907	16.7282
5950000000.0000	33.7411	16.7937
6000000000.0000	33.5456	16.8631

■ Dielectric Parameter (5GHz Body)

Title	GT-N7100
SubTitle	5GHz
Test Date	Oct.25, 2012

Frequency	e'	e''
5000000000.0000	47.9033	17.8318
5050000000.0000	48.0385	17.7107
5100000000.0000	47.6683	17.8494
5150000000.0000	47.7740	17.9762
5200000000.0000	47.3880	18.0781
5250000000.0000	47.5727	18.0490
5300000000.0000	46.9776	18.1571
5350000000.0000	47.4662	18.2478
5400000000.0000	46.6923	18.1204
5450000000.0000	47.1893	18.6355
5500000000.0000	46.5359	18.2582
5550000000.0000	46.7820	18.9175
5600000000.0000	46.4567	18.5259
5650000000.0000	46.4115	19.1292
5700000000.0000	46.2500	18.7874
5750000000.0000	46.0166	19.4194
5800000000.0000	46.1405	19.0855
5850000000.0000	45.6334	19.5524
5900000000.0000	46.0620	19.4992
5950000000.0000	45.3424	19.6487
6000000000.0000	45.8872	19.8985

Attachment 3. – Probe Calibration Data

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client HCT (Dymstec) Certificate No: ET3-1609_Mar12

CALIBRATION CERTIFICATE

Object ET3DV6 - SN:1609

Calibration procedure(s) QA CAL-01.v8, QA CAL-12.v7, QA CAL-23.v4, QA CAL-25.v4
Calibration procedure for dosimetric E-field probes

Calibration date: March 19, 2012

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	31-Mar-11 (No. 217-01372)	Apr-12
Power sensor E4412A	MY41498087	31-Mar-11 (No. 217-01372)	Apr-12
Reference 3 dB Attenuator	SN: S5054 (3c)	29-Mar-11 (No. 217-01369)	Apr-12
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Reference 30 dB Attenuator	SN: S5129 (30b)	29-Mar-11 (No. 217-01370)	Apr-12
Reference Probe ES3DV2	SN: 3013	29-Dec-11 (No. ES3-3013_Dec11)	Dec-12
DAE4	SN: 654	3-May-11 (No. DAE4-654_May11)	May-12
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-11)	In house check: Apr-13
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: March 19, 2012

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z, VRx,y,z: A, B, C* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Probe ET3DV6

SN:1609

Manufactured: July 27, 2001
Calibrated: March 19, 2012

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: ET3DV6 - SN:1609

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	2.01	1.81	1.82	± 10.1 %
DCP (mV)[B]	97.7	97.4	98.1	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc[E] (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	112.2	±2.2 %
			Y	0.00	0.00	1.00	107.9	
			Z	0.00	0.00	1.00	109.9	

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: ET3DV6 - SN:1609

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
450	43.5	0.87	7.32	7.32	7.32	0.21	2.26	± 13.4 %
750	41.9	0.89	6.68	6.68	6.68	0.39	2.46	± 12.0 %
835	41.5	0.90	6.36	6.36	6.36	0.32	2.79	± 12.0 %
900	41.5	0.97	6.25	6.25	6.25	0.33	3.00	± 12.0 %
1450	40.5	1.20	5.48	5.48	5.48	0.44	3.00	± 12.0 %
1750	40.1	1.37	5.50	5.50	5.50	0.74	2.42	± 12.0 %
1900	40.0	1.40	5.26	5.26	5.26	0.80	2.18	± 12.0 %
1950	40.0	1.40	5.04	5.04	5.04	0.80	2.09	± 12.0 %
2450	39.2	1.80	4.52	4.52	4.52	0.80	1.90	± 12.0 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

DASY/EASY - Parameters of Probe: ET3DV6 - SN:1609

Calibration Parameter Determined in Body Tissue Simulating Media

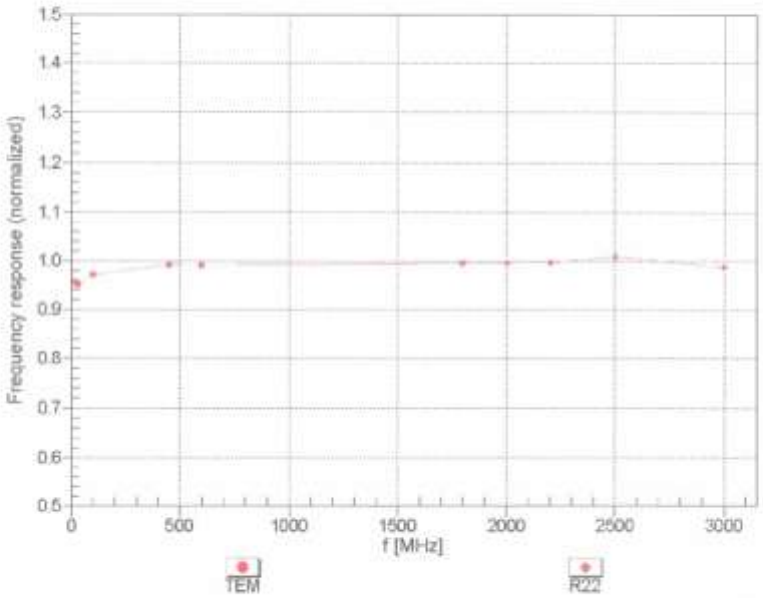
f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
450	56.7	0.94	7.73	7.73	7.73	0.15	2.32	± 13.4 %
750	55.5	0.96	6.38	6.38	6.38	0.29	3.00	± 12.0 %
835	55.2	0.97	6.24	6.24	6.24	0.39	2.51	± 12.0 %
1750	53.4	1.49	4.80	4.80	4.80	0.80	2.57	± 12.0 %
1900	53.3	1.52	4.55	4.55	4.55	0.80	2.50	± 12.0 %
2450	52.7	1.95	4.01	4.01	4.01	0.70	1.23	± 12.0 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

ET3DV6– SN:1609 March 19, 2012

Frequency Response of E-Field

(TEM-Cell:ifi110 EXX, Waveguide: R22)



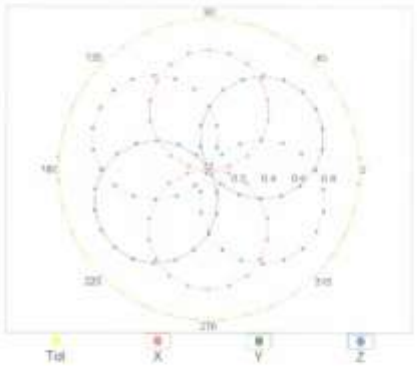
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

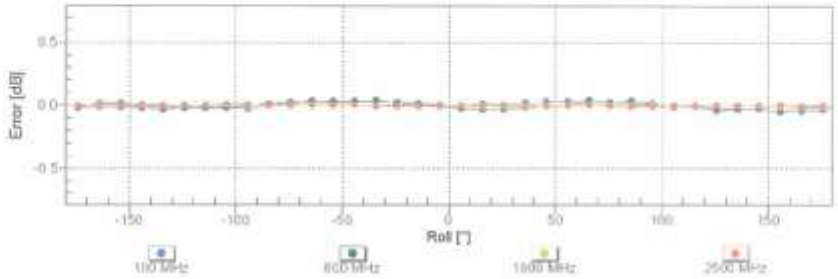
ET3DV6– SN:1609 March 19, 2012

Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM

f=1800 MHz,R22

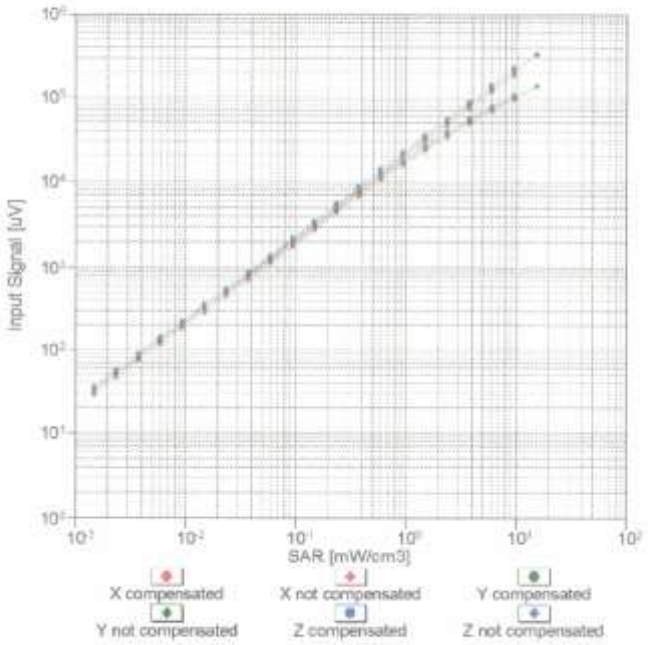


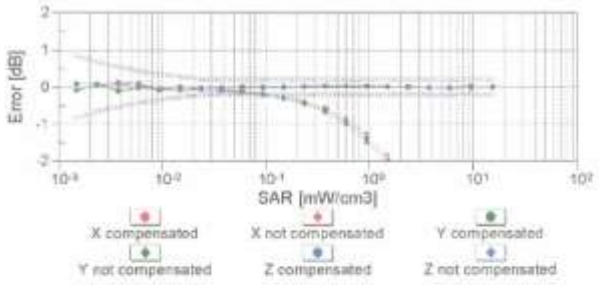


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

ET3DV6– SN:1609 March 19, 2012

Dynamic Range f(SAR_{head})
(TEM cell , f = 900 MHz)



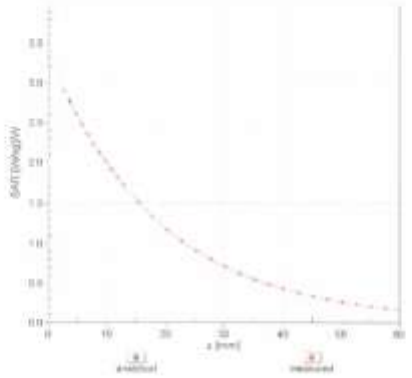


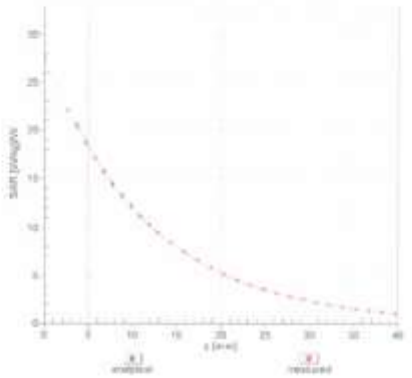
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

ET3DV6– SN:1609 March 19, 2012

Conversion Factor Assessment

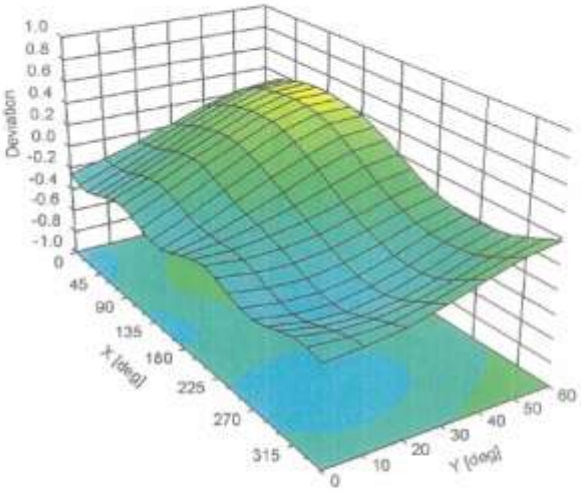
f = 835 MHz,WGLS R9 (H_convF) f = 1900 MHz,WGLS R22 (H_convF)





Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

Certificate No: ET3-1609_Mar12 Page 10 of 11

DASY/EASY - Parameters of Probe: ET3DV6 - SN:1609

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	Not applicable
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	6.8 mm
Probe Tip to Sensor X Calibration Point	2.7 mm
Probe Tip to Sensor Y Calibration Point	2.7 mm
Probe Tip to Sensor Z Calibration Point	2.7 mm
Recommended Measurement Distance from Surface	4 mm

Probe EX3DV4

SN:3863

Manufactured: February 2, 2012
Calibrated: July 13, 2012

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3863

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm (μV/(V/m)^2)^A	0.36	0.36	0.45	± 10.1 %
DCP (mV)^B	103.0	100.6	98.8	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc^E (k=2)
0	CW	0.00	X	0.00	0.00	1.00	138.3	±2.2 %
			Y	0.00	0.00	1.00	134.3	
			Z	0.00	0.00	1.00	115.9	

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

A The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
B Numerical linearization parameter: uncertainty not required.
E Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3863

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	41.9	0.89	9.53	9.53	9.53	0.48	0.80	± 12.0 %
835	41.5	0.90	9.30	9.30	9.30	0.73	0.63	± 12.0 %
900	41.5	0.97	8.96	8.96	8.96	0.25	1.20	± 12.0 %
1750	40.1	1.37	8.46	8.46	8.46	0.10	0.50	± 12.0 %
1900	40.0	1.40	8.22	8.22	8.22	0.79	0.59	± 12.0 %
1950	40.0	1.40	7.79	7.79	7.79	0.25	1.02	± 12.0 %
2450	39.2	1.80	7.19	7.19	7.19	0.49	0.74	± 12.0 %
5200	36.0	4.66	4.96	4.96	4.96	0.40	1.80	± 13.1 %
5300	35.9	4.76	4.79	4.79	4.79	0.38	1.80	± 13.1 %
5500	35.6	4.96	4.66	4.66	4.66	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.56	4.56	4.56	0.38	1.80	± 13.1 %
5800	35.3	5.27	4.61	4.61	4.61	0.40	1.80	± 13.1 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3863

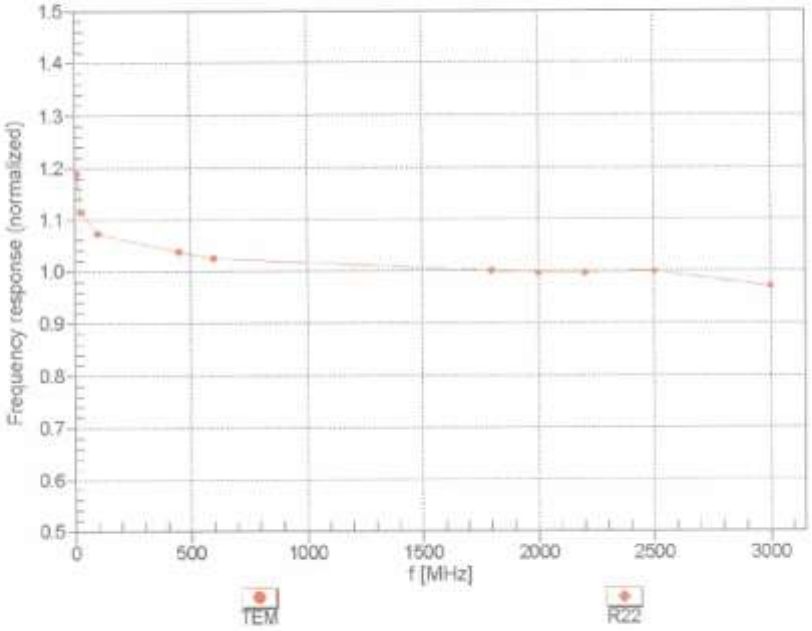
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	55.5	0.96	9.35	9.35	9.35	0.28	1.11	± 12.0 %
835	55.2	0.97	9.25	9.25	9.25	0.37	0.91	± 12.0 %
1750	53.4	1.49	7.80	7.80	7.80	0.42	0.86	± 12.0 %
1900	53.3	1.52	7.46	7.46	7.46	0.24	1.19	± 12.0 %
2450	52.7	1.95	7.00	7.00	7.00	0.80	0.50	± 12.0 %
5200	49.0	5.30	4.35	4.35	4.35	0.45	1.90	± 13.1 %
5300	48.9	5.42	4.10	4.10	4.10	0.48	1.90	± 13.1 %
5500	48.6	5.65	3.91	3.91	3.91	0.50	1.90	± 13.1 %
5600	48.5	5.77	3.66	3.66	3.66	0.55	1.90	± 13.1 %
5800	48.2	6.00	3.81	3.81	3.81	0.58	1.90	± 13.1 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

EX3DV4- SN:3863 July 13, 2012

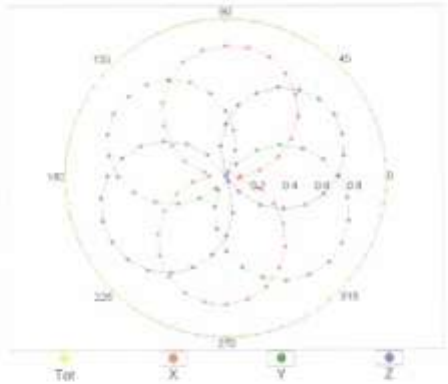
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



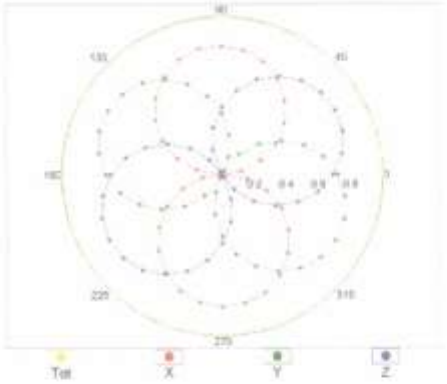
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

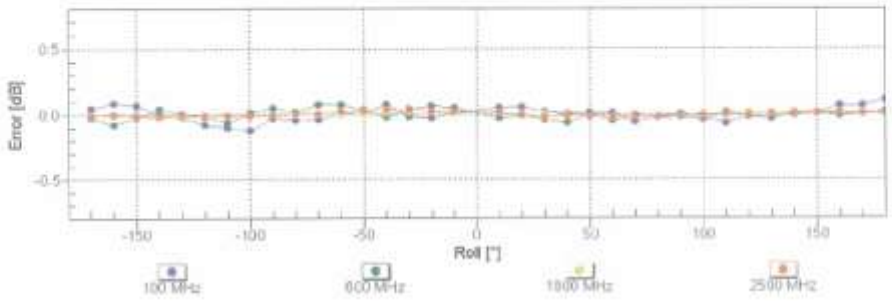
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



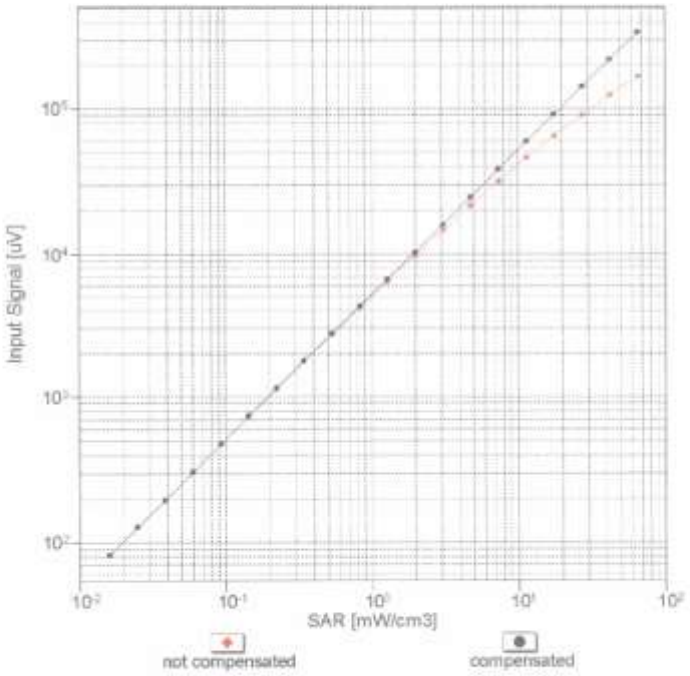
f=1800 MHz,R22

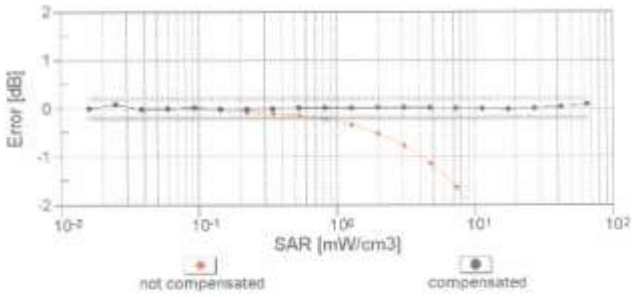




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})
(TEM cell , f = 900 MHz)



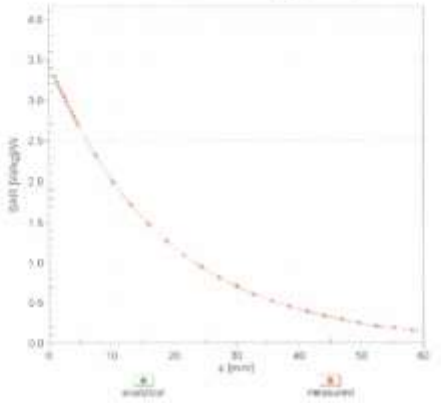


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

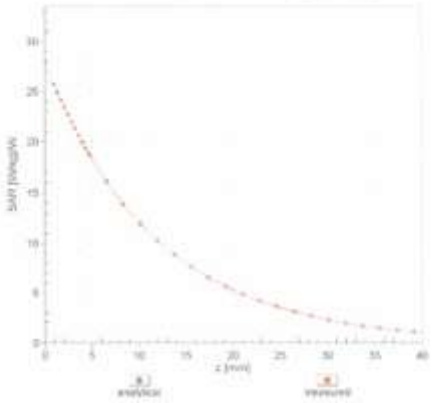
EX3DV4– SN:3863 July 13, 2012

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

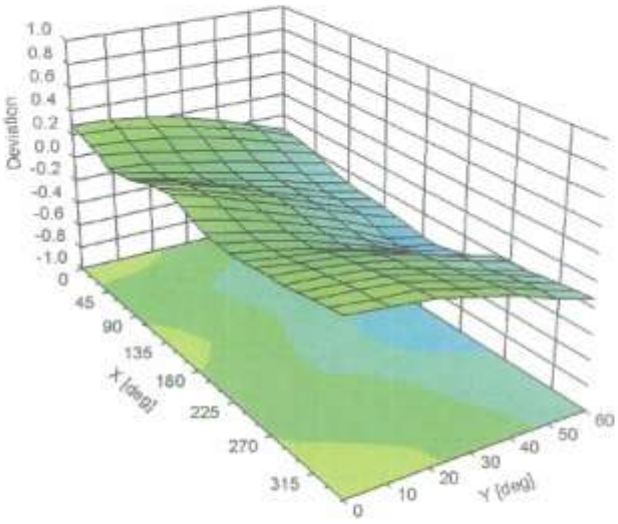


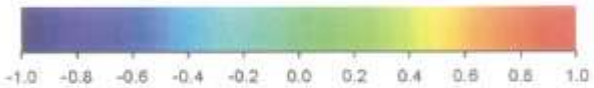
f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz





Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3863

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	110
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	2 mm

Attachment 4. – Dipole Calibration Data

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client HCT (Dymstec) Certificate No: D835V2-441_May12

CALIBRATION CERTIFICATE

Object D835V2 - SN: 441

Calibration procedure(s) QA CAL-05.v8
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: May 16, 2012

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	05-Oct-11 (No. 217-01451)	Oct-12
Power sensor HP 8481A	US37292783	05-Oct-11 (No. 217-01451)	Oct-12
Reference 20 dB Attenuator	SN: 5058 (20k)	27-Mar-12 (No. 217-01530)	Apr-13
Type-N mismatch combination	SN: 5047.2 / 06327	27-Mar-12 (No. 217-01533)	Apr-13
Reference Probe ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

	Name	Function	Signature
Calibrated by:	Israe El-Naouq	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: May 16, 2012

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.1
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.6 ± 6 %	0.89 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	---	---

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.35 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**9.43 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.54 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**6.18 mW /g ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.3 ± 6 %	1.00 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	---	---

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.44 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**9.50 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.60 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**6.27 mW / g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.1 Ω - 5.8 jΩ
Return Loss	- 24.6 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.0 Ω - 8.1 jΩ
Return Loss	- 21.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.372 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	March 09, 2001

DASY5 Validation Report for Head TSL

Date: 16.05.2012

Test Laboratory: SPEAG, Zurich, Switzerland

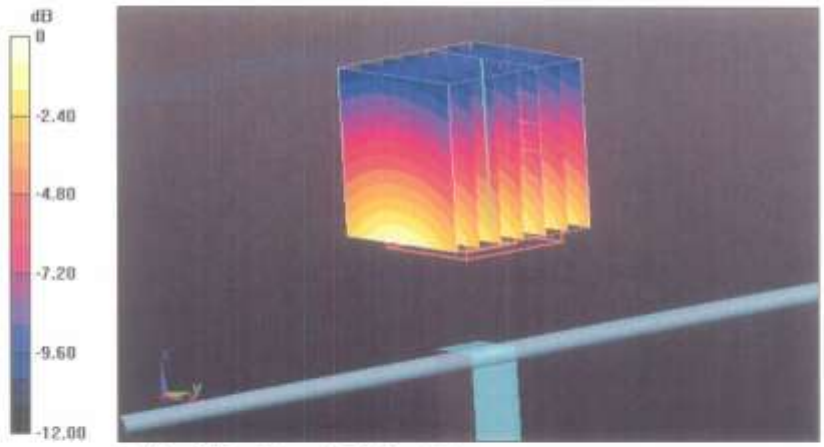
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 441

Communication System: CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.89 mho/m; ε_r = 40.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

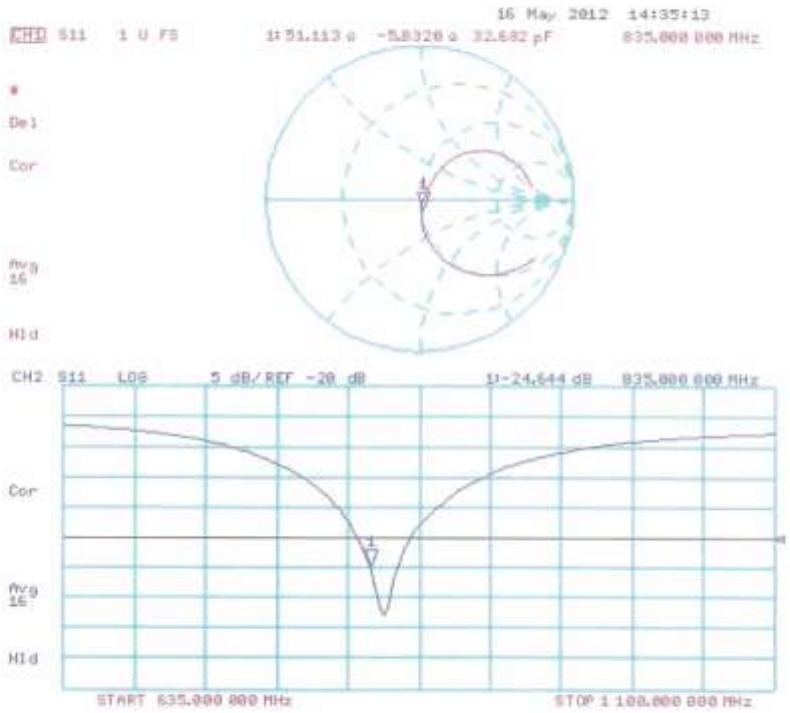
- Probe: ES3DV3 - SN3205; ConvF(6.07, 6.07, 6.07); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm 2/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57.129 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 3.474 mW/g
SAR(1 g) = 2.35 mW/g; SAR(10 g) = 1.54 mW/g
Maximum value of SAR (measured) = 2.73 mW/g



0 dB = 2.73 mW/g = 8.72 dB mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 16.05.2012

Test Laboratory: SPEAG, Zurich, Switzerland

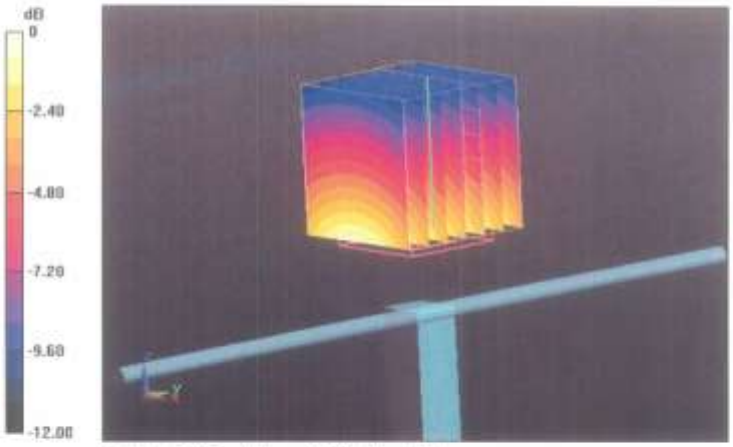
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 441

Communication System: CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 1 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

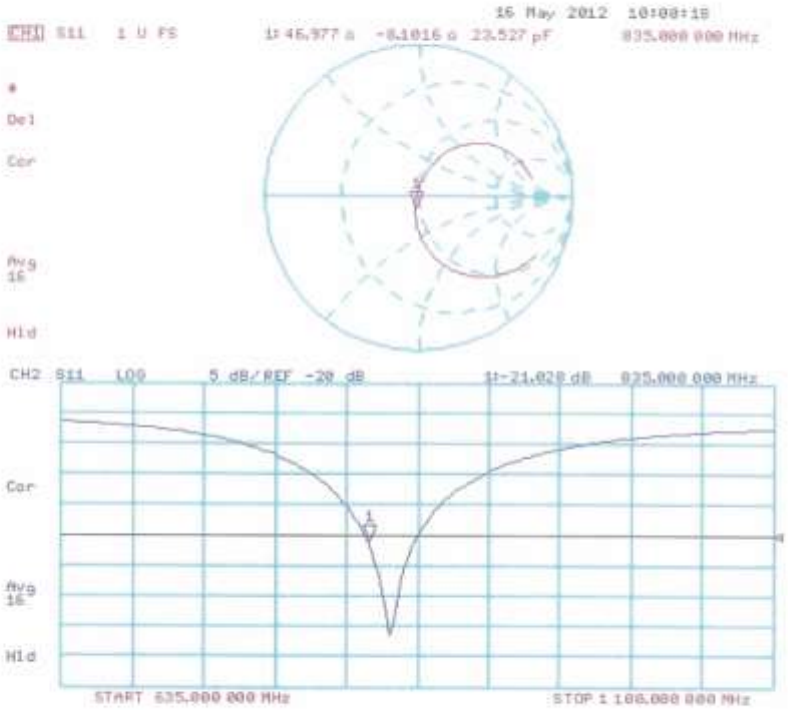
- Probe: ES3DV3 - SN3205; ConvF(6.02, 6.02, 6.02); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.054 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 3.533 mW/g
SAR(1 g) = 2.44 mW/g; SAR(10 g) = 1.6 mW/g
Maximum value of SAR (measured) = 2.82 mW/g



0 dB = 2.82 mW/g = 9.00 dB mW/g

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 108

Client HCT (Dymstec)

Certificate No: D1900V2-5d032_Jul12

CALIBRATION CERTIFICATE

Object D1900V2 - SN: 5d032

Calibration procedure(s) QA CAL-05.v8
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: July 20, 2012

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	05-Oct-11 (No. 217-01451)	Oct-12
Power sensor HP 8481A	US37292783	05-Oct-11 (No. 217-01451)	Oct-12
Reference 20 dB Attenuator	SN: 5058 (20k)	27-Mar-12 (No. 217-01530)	Apr-13
Type-N mismatch combination	SN: 5047.2 / 06327	27-Mar-12 (No. 217-01533)	Apr-13
Reference Probe ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	27-Jun-12 (No. DAE4-601_Jun12)	Jun-13

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

	Name	Function	Signature
Calibrated by:	Dimce Iliev	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: July 20, 2012

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Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.1
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.9 ± 6 %	1.38 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	---	---

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.68 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**39.0 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.11 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**20.5 mW /g ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.6 ± 6 %	1.52 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	---	---

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	10.0 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**39.9 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.30 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**21.2 mW / g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.0 Ω + 3.1 jΩ
Return Loss	- 30.1 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.2 Ω + 3.7 jΩ
Return Loss	- 25.2 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.194 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	March 17, 2003

DASY5 Validation Report for Head TSL

Date: 20.07.2012

Test Laboratory: SPEAG, Zurich, Switzerland

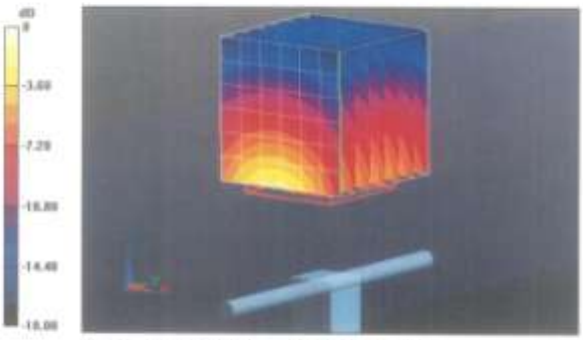
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d032

Communication System: CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.38 mho/m; ε_r = 39.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

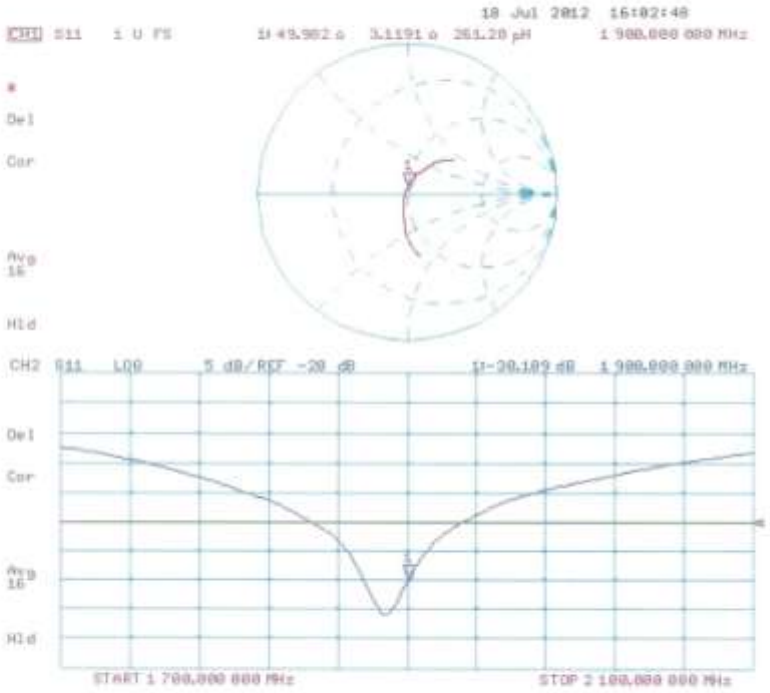
- Probe: ES3DV3 - SN3205; ConvF(5.01, 5.01, 5.01); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.864 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 17.209 mW/g
SAR(1 g) = 9.68 mW/g; SAR(10 g) = 5.11 mW/g
Maximum value of SAR (measured) = 12.1 mW/g



0 dB = 12.1 mW/g = 21.66 dB mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 20.07.2012

Test Laboratory: SPEAG, Zurich, Switzerland

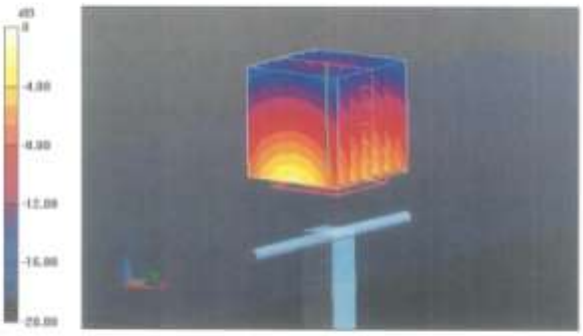
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d032

Communication System: CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.52 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

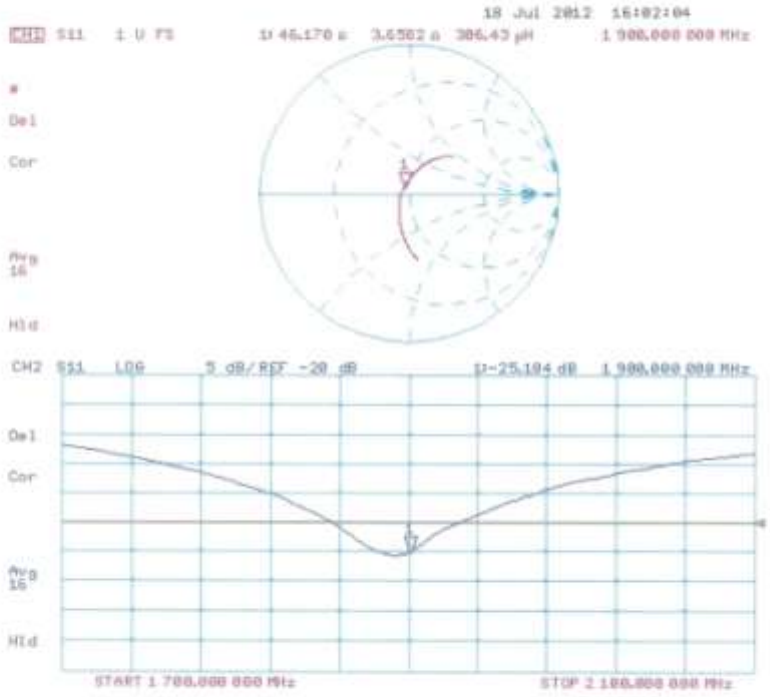
- Probe: ES3DV3 - SN3205; ConvF(4.62, 4.62, 4.62); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.470 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 17.332 mW/g
SAR(1 g) = 10 mW/g; SAR(10 g) = 5.3 mW/g
Maximum value of SAR (measured) = 12.6 mW/g



0 dB = 12.6 mW/g = 22.01 dB mW/g

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 108

Client HCT (Dymstec)

Certificate No: D2450V2-743_Aug12

CALIBRATION CERTIFICATE

Object	D2450V2 - SN: 743
Calibration procedure(s)	QA CAL-05.v8 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	August 23, 2012

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	05-Oct-11 (No. 217-01451)	Oct-12
Power sensor HP 8481A	US37292783	05-Oct-11 (No. 217-01451)	Oct-12
Reference 20 dB Attenuator	SN: 5058 (20k)	27-Mar-12 (No. 217-01530)	Apr-13
Type-N mismatch combination	SN: 5047.2 / 06327	27-Mar-12 (No. 217-01533)	Apr-13
Reference Probe ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	27-Jun-12 (No. DAE4-601_Jun12)	Jun-13

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

	Name	Function	Signature
Calibrated by:	Israa El-Naouq	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 23, 2012

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: D2450V2-743_Aug12 Page 1 of 8

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Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.2 ± 6 %	1.81 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.2 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**52.7 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.18 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**24.7 mW /g ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	51.3 ± 6 %	1.99 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.0 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**51.2 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.10 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**24.2 mW / g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	54.0 Ω + 4.7 jΩ
Return Loss	- 24.6 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	50.9 Ω + 6.5 jΩ
Return Loss	- 23.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.158 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 01, 2003

DASY5 Validation Report for Head TSL

Date: 23.08.2012

Test Laboratory: SPEAG, Zurich, Switzerland

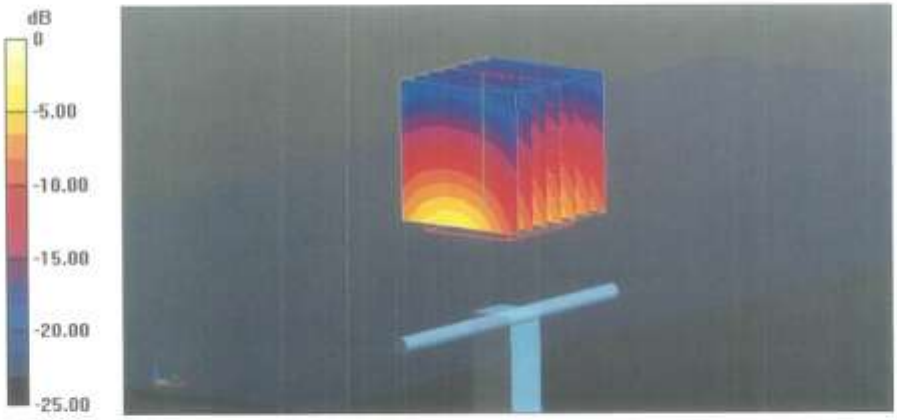
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 743

Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.81 mho/m; ε_r = 39.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

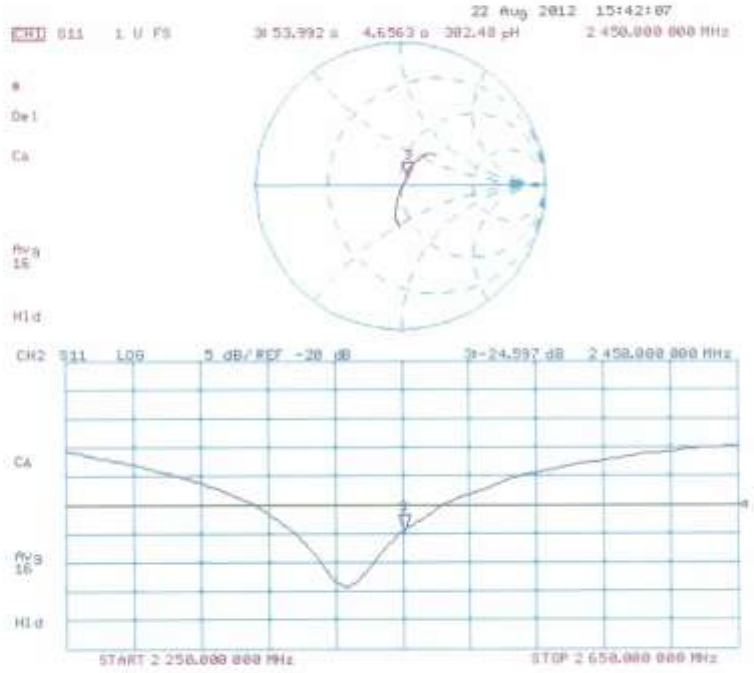
- Probe: ES3DV3 - SN3205; ConvF(4.45, 4.45, 4.45); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.2(969); SEMCAD X 14.6.6(6824)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 98.554 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 26.584 mW/g
SAR(1 g) = 13.2 mW/g; SAR(10 g) = 6.18 mW/g
Maximum value of SAR (measured) = 16.5 W/kg



0 dB = 16.5 W/kg = 24.35 dB W/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 22.08.2012

Test Laboratory: SPEAG, Zurich, Switzerland

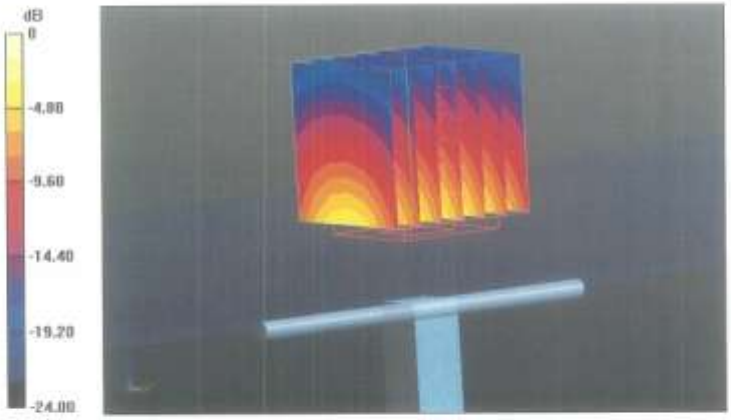
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 743

Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.99 mho/m; ε_r = 51.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

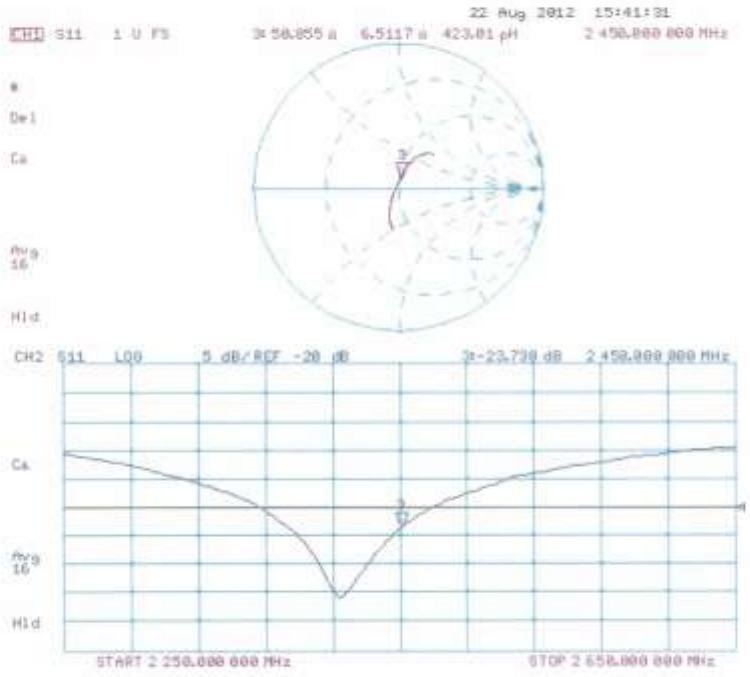
- Probe: ES3DV3 - SN3205; ConvF(4.26, 4.26, 4.26); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.2(969); SEMCAD X 14.6.6(6824)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.699 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 26.489 mW/g
SAR(1 g) = 13 mW/g; SAR(10 g) = 6.1 mW/g
Maximum value of SAR (measured) = 16.9 W/kg



0 dB = 16.9 W/kg = 24.56 dB W/kg

Impedance Measurement Plot for Body TSL



Calibration Laboratory of
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Accreditation No.: SCS 108

Client HCT (Dymstec)

Certificate No: D5GHzV2-1107_Aug12

CALIBRATION CERTIFICATE

Object	D5GHzV2 - SN: 1107
Calibration procedure(s)	QA CAL-22.v1 Calibration procedure for dipole validation kits between 3-6 GHz
Calibration date:	August 20, 2012

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	05-Oct-11 (No. 217-01451)	Oct-12
Power sensor HP 8481A	US37292783	05-Oct-11 (No. 217-01451)	Oct-12
Reference 20 dB Attenuator	SN: 5058 (20k)	27-Mar-12 (No. 217-01530)	Apr-13
Type-N mismatch combination	SN: 5047.2 / 06327	27-Mar-12 (No. 217-01533)	Apr-13
Reference Probe EX3DV4	SN: 3503	30-Dec-11 (No. EX3-3503_Dec11)	Dec-12
DAE4	SN: 601	27-Jun-12 (No. DAE4-601_Jun12)	Jun-13

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

	Name	Function	Signature
Calibrated by:	Israe El-Naouq	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 21, 2012

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

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Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEC 62209-2, "Evaluation of Human Exposure to Radio Frequency Fields from Handheld and Body-Mounted Wireless Communication Devices in the Frequency Range of 30 MHz to 6 GHz: Human models, Instrumentation, and Procedures"; Part 2: "Procedure to determine the Specific Absorption Rate (SAR) for including accessories and multiple transmitters", March 2010

b) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

c) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5200 MHz ± 1 MHz 5500 MHz ± 1 MHz 5800 MHz ± 1 MHz	

Head TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	36.0	4.66 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.2 ± 6 %	4.49 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	---	---

SAR result with Head TSL at 5200 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7.93 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**78.9 mW /g ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.28 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**22.6 mW /g ± 19.5 % (k=2)**

Head TSL parameters at 5500 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.6	4.96 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.8 ± 6 %	4.77 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	---	---

SAR result with Head TSL at 5500 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.27 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**82.2 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.35 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**23.3 mW / g ± 19.5 % (k=2)**

Head TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.3	5.27 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.4 ± 6 %	5.08 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	---	---

SAR result with Head TSL at 5800 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7.81 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**77.6 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.22 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**22.0 mW / g ± 19.5 % (k=2)**

Body TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	49.0	5.30 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	47.1 ± 6 %	5.42 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5200 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.64 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**75.8 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.15 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**21.3 mW / g ± 19.5 % (k=2)**

Body TSL parameters at 5500 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.6	5.65 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.6 ± 6 %	5.79 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5500 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.91 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**78.5 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.21 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**21.9 mW / g ± 19.5 % (k=2)**

Body TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.2	6.00 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.1 ± 6 %	6.20 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	---	---

SAR result with Body TSL at 5800 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.52 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**74.6 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.09 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**20.7 mW / g ± 19.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL at 5200 MHz

Impedance, transformed to feed point	48.8 Ω - 9.8 jΩ
Return Loss	- 20.0 dB

Antenna Parameters with Head TSL at 5500 MHz

Impedance, transformed to feed point	50.8 Ω - 5.0 jΩ
Return Loss	- 26.0 dB

Antenna Parameters with Head TSL at 5800 MHz

Impedance, transformed to feed point	54.3 Ω - 6.0 jΩ
Return Loss	- 23.0 dB

Antenna Parameters with Body TSL at 5200 MHz

Impedance, transformed to feed point	49.0 Ω - 9.1 jΩ
Return Loss	- 20.7 dB

Antenna Parameters with Body TSL at 5500 MHz

Impedance, transformed to feed point	51.7 Ω - 4.2 jΩ
Return Loss	- 27.0 dB

Antenna Parameters with Body TSL at 5800 MHz

Impedance, transformed to feed point	55.9 Ω - 5.2 jΩ
Return Loss	- 22.6 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.195 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	March 11, 2011

DASY5 Validation Report for Head TSL

Date: 20.08.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1107

Communication System: CW; Frequency: 5200 MHz, Frequency: 5500 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5200 MHz; σ = 4.49 mho/m; ε_r = 35.2; ρ = 1000 kg/m^3 , Medium parameters used: f = 5500 MHz; σ = 4.77 mho/m; ε_r = 34.8; ρ = 1000 kg/m^3 , Medium parameters used: f = 5800 MHz; σ = 5.08 mho/m; ε_r = 34.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

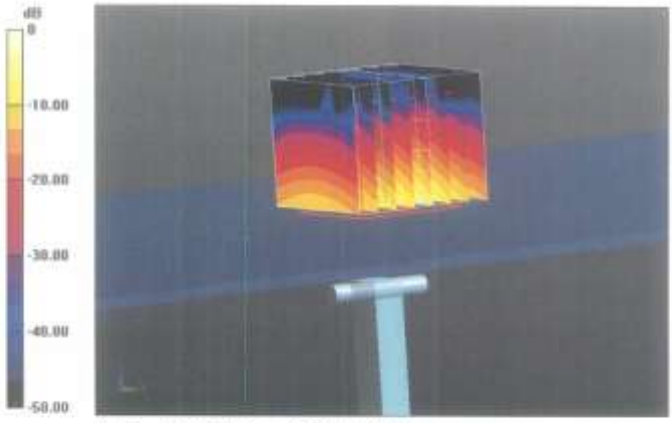
DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.41, 5.41, 5.41); Calibrated: 30.12.2011, ConvF(4.91, 4.91, 4.91); Calibrated: 30.12.2011, ConvF(4.81, 4.81, 4.81); Calibrated: 30.12.2011;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.2(969); SEMCAD X 14.6.6(6824)

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 64.687 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 29.009 mW/g
SAR(1 g) = 7.93 mW/g; SAR(10 g) = 2.28 mW/g
Maximum value of SAR (measured) = 18.3 W/kg

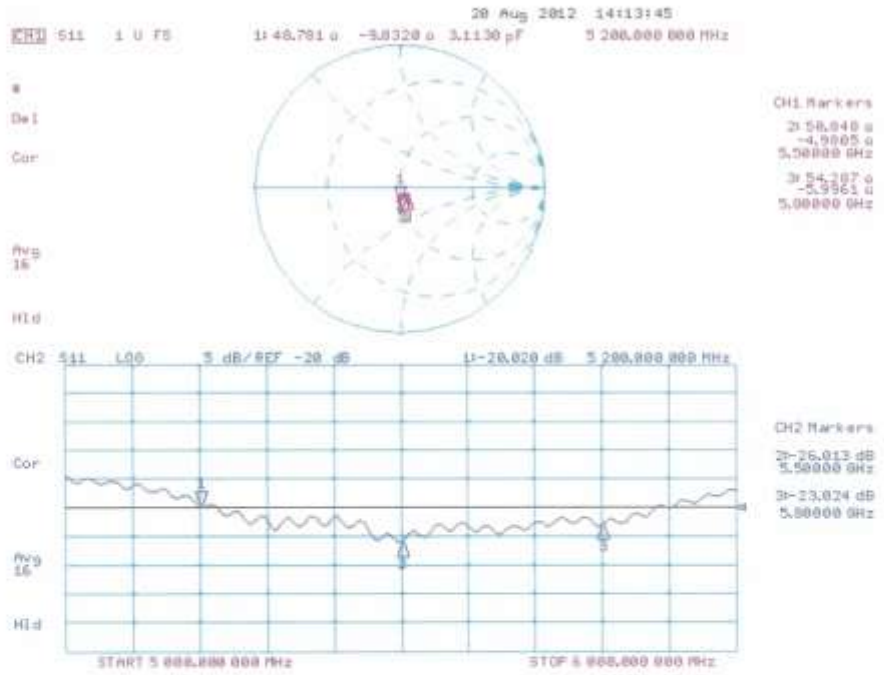
Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5500 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 64.108 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 32.253 mW/g
SAR(1 g) = 8.27 mW/g; SAR(10 g) = 2.35 mW/g
Maximum value of SAR (measured) = 19.5 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 60.743 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 32.139 mW/g
SAR(1 g) = 7.81 mW/g; SAR(10 g) = 2.22 mW/g
Maximum value of SAR (measured) = 19.0 W/kg



0 dB = 19.0 W/kg = 25.58 dB W/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 20.08.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1107

Communication System: CW; Frequency: 5200 MHz, Frequency: 5500 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5200 MHz; σ = 5.42 mho/m; ε_r = 47.1; ρ = 1000 kg/m^3 , Medium parameters used: f = 5500 MHz; σ = 5.79 mho/m; ε_r = 46.6; ρ = 1000 kg/m^3 , Medium parameters used: f = 5800 MHz; σ = 6.2 mho/m; ε_r = 46.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

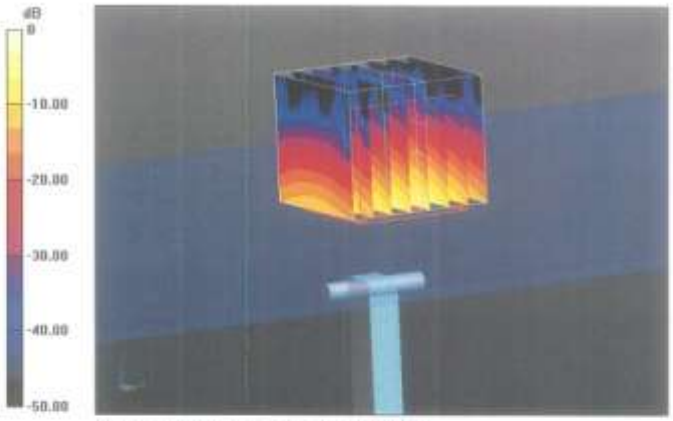
DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(4.91, 4.91, 4.91); Calibrated: 30.12.2011, ConvF(4.43, 4.43, 4.43); Calibrated: 30.12.2011, ConvF(4.38, 4.38, 4.38); Calibrated: 30.12.2011;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.2(969); SEMCAD X 14.6.6(6824)

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 58.635 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 29.565 mW/g
SAR(1 g) = 7.64 mW/g; SAR(10 g) = 2.15 mW/g
Maximum value of SAR (measured) = 17.9 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5500 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 58.287 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 33.410 mW/g
SAR(1 g) = 7.91 mW/g; SAR(10 g) = 2.21 mW/g
Maximum value of SAR (measured) = 19.2 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 55.000 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 34.148 mW/g
SAR(1 g) = 7.52 mW/g; SAR(10 g) = 2.09 mW/g
Maximum value of SAR (measured) = 18.6 W/kg



0 dB = 18.6 W/kg = 25.39 dB W/kg

Impedance Measurement Plot for Body TSL