SAR TEST REPORT

HCT CO., LTD

EUT Type:	USB Modem		
FCC ID:	XHG-U210		
Model:	U210	Trade Name	Diffon corporation
Date of Issue:	Aug.04, 2009		
Test report No.:	HCT-IA0907-2001		
Test Laboratory:	**HCT CO., LTD.** SAN 136-1, AMI-RI, BUBAL-EUP, ICHEON-SI, KYOUNGKI-DO, 467-701, KOREA TEL: +82 31 639 8565 FAX: +82 31 639 8525		
Applicant :	**Diffon corporation** Digital Tower Aston 1505, 505-15 Gasan, Geumcheon, Seoul, Korea Tel: +82-2-2082-8222 Fax: +82-2-2082-8922		
Testing has been carried out in accordance with:	47CFR §2.1093 FCC OET Bulletin 65(Edition 97-01), Supplement C (Edition 01-01) ANSI/ IEEE C95.1 – 2005 IEEE 1528-2003		
Test result:	The tested device complies with the requirements in respect of all parameters subject to the test. The test results and statements relate only to the items tested. The test report shall not be reproduced except in full, without written approval of the laboratory.		
Signature	Report prepared by : Sun-Hee Kim Test Engineer of SAR Part	Approved by : Jae-Sang So Manager of SAR Part	

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1. INTRODUCTION

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

The safety limits used for the environmental evaluation measurements are based on the criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (SAR) in IEEE/ANSI C95.1-2005 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. 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	USB Modem
FCC ID	XHG-U210
Model(s)	U210
Trade Name	Diffon corporation
Serial Number(s)	#1
Application Type	Certification
Modulation(s)	CDMA835/AWS1700/PCS1900
Tx Frequency	824.70 – 848.31 MHz (CDMA) 1 711.25 – 1 753.75 MHz (AWS CDMA) 1 851.25 – 1 908.75 MHz (PCS CDMA)
Rx Frequency	869.70 – 893.31 MHz (CDMA) 2 111.25 – 2 153.75 MHz (AWS CDMA) 1 931.25 – 1 988.75 MHz (PCS CDMA)
FCC Classification	PCS Licensed Transmitter (PCB)
Production Unit or Identical Prototype	Prototype
Max SAR	0.611 W/kg CDMA835 EVDO Body SAR / 1.10 W/kg AWS1700 EVDO Body SAR / 1.18 W/kg PCS1900 EVDO Body SAR /
Date(s) of Tests	Aug. 1, 2009 ~ Aug. 3, 2009
Antenna Type	Intenna

3. DESCRIPTION OF TEST EQUIPMENT

3.1 SAR MEASUREMENT SETUP

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

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

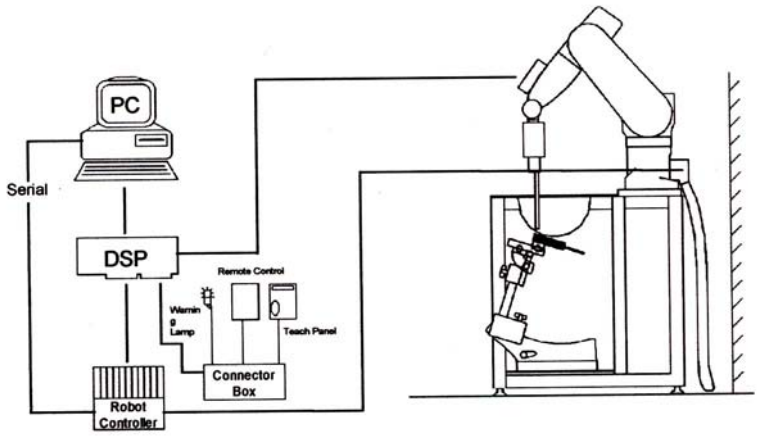

Figure 3.1 HCT SAR Lab. Test Measurement Set-up

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

3.2 DASY E-FIELD PROBE SYSTEM

3.2.1 ET3DV6 Probe Specification

Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection System Built-in shielding against static charges
Calibration	In air from 10 MHz to 2.5 GHz In brain and muscle simulating tissue at Frequencies of 450 MHz, 900 MHz and 1.8 GHz (accuracy: 8 %)
Frequency	10 MHz to > 6 GHz; Linearity: ± 0.2 dB (30 MHz to 3 GHz)
Directivity	± 0.2 dB in brain tissue (rotation around probe axis) ± 0.4 dB in brain tissue (rotation normal probe axis)
Dynamic	5 μW/g to > 100 mW/g;
Range Linearity:	± 0.2 dB
Surface Detection	± 0.2 mm repeatability in air and clear liquids over diffuse reflecting surfaces.
Dimensions	Overall length: 330 mm Tip length: 16 mm Body diameter: 12 mm Tip diameter: 6.8 mm Distance from probe tip to dipole centers: 2.7 mm
Application	General dissymmetry up to 3 GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms

Figure 3.2 Photograph of the probe and the Phantom

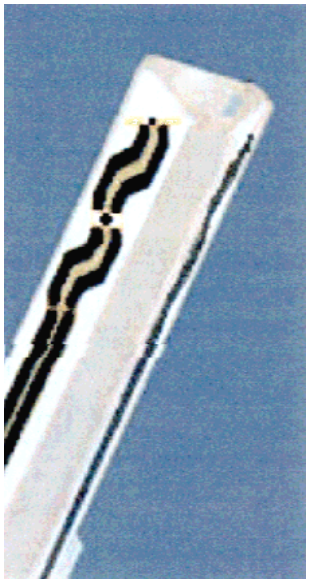

Figure 3.3 ET3DV6 E-field Probe

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

3.3 PROBE CALIBRATION PROCESS

3.3.1 E-Probe Calibration

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

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

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

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

where:

Δt = exposure time (30 seconds),

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

ΔT = temperature increase due to RF exposure.

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

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

where:

σ = simulated tissue conductivity,

ρ = Tissue density (1.25 g/cm^3 for brain tissue)

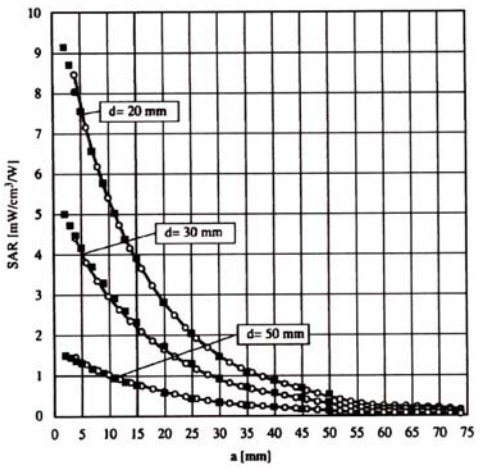

Figure 3.4 E-Field and Temperature measurements at 900 MHz

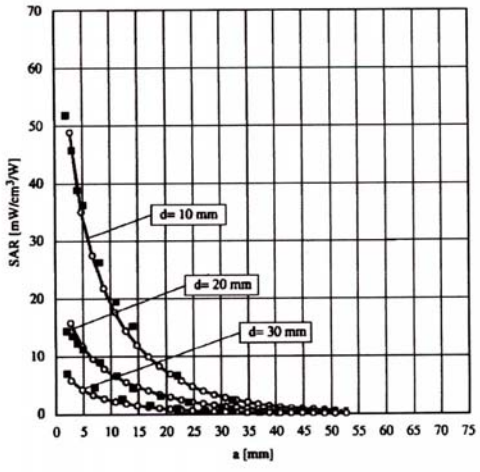

Figure 3.5 E-Field and temperature measurements at 1.8 GHz

3.3.2 Data Extrapolation

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

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

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

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

E-field probes:

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

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

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

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

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

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

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

3.4 SAM Phanto

The SAM Phantom is constructed of a fiberglass shell integrated in a wooden table. The shape of the shell is based on data from an anatomical study designed to determine the maximum exposure in at least 90 % of all users. 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 the evaporation of the liquid. Reference markings on the Phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points in the robot.

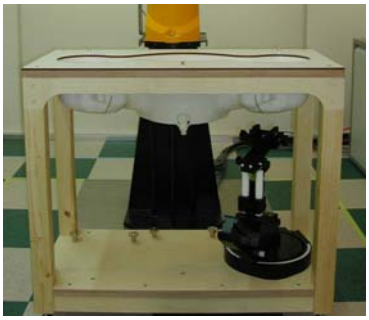

Figure 3.6 SAM Phantom

Shell Thickness	2.0 mm
Filling Volume	about 30 L
Dimensions	810 mm x 1 000 mm x 500 mm (H x L x W)

3.5 Device Holder for Transmitters

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

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

Figure 3.7 Device Holder

3.6 Brain & Muscle Simulating Mixture Characterization

The brain and muscle mixtures consist of a viscous gel using hydrox-ethyl cellulose (HEC) gelling agent and saline solution (see Table 3.1). Preservation with a 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)									
	450		835		915		1 900		2 450	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	38.56	51.16	41.45	52.4	41.05	56.0	54.9	40.4	62.7	73.2
Salt (NaCl)	3.95	1.49	1.45	1.4	1.35	0.76	0.18	0.5	0.5	0.04
Sugar	56.32	46.78	56.0	45.0	56.5	41.76	0.0	58.0	0.0	0.0
HEC	0.98	0.52	1.0	1.0	1.0	1.21	0.0	1.0	0.0	0.0
Bactericide	0.19	0.05	0.1	0.1	0.1	0.27	0.0	0.1	0.0	0.0
Triton X-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0
DGBE	0.0	0.0	0.0	0.0	0.0	0.0	44.92	0.0	0.0	26.7

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

Table 3.1 Composition of the Tissue Equivalent Matter

3.7 SAR TEST EQUIPMENT

Manufacturer	Type / Model	S/N	Calib. Date	Calib.Interval	Calib.Due
SPEAG	SAM Phantom	-	N/A	N/A	N/A
Staubli	Robot RX90L	F01/5K09A1/A/01	N/A	N/A	N/A
Staubli	Robot ControllerCS7MB	F99/5A82A1/C/01	N/A	N/A	N/A
HP	Pavilion t000_puffer	KRJ51201TV	N/A	N/A	N/A
SPEAG	Light Alignment Sensor	265	N/A	N/A	N/A
Staubli	Teach Pendant (Joystick)	D221340.01	N/A	N/A	N/A
SPEAG	DAE3	446	May 22, 2009	Annual	May 22, 2010
SPEAG	DAE4	869	Sept. 03, 2008	Annual	Sept. 03, 2009
SPEAG	E-Field Probe ET3DV6	1630	Aug. 25, 2008	Annual	Aug. 25, 2009
SPEAG	E-Field Probe ET3DV6	1631	Jun. 24, 2009	Annual	Jun. 24, 2010
SPEAG	E-Field Probe ET3DV6	1609	Mar. 17, 2009	Annual	Mar. 17, 2010
SPEAG	Validation Dipole D450V2	1007	July 15, 2008	Biennial	July 15, 2010
SPEAG	Validation Dipole D835V2	441	May 25, 2009	Annual	May 25, 2010
SPEAG	Validation Dipole D900V2	130	Aug. 25, 2008	Annual	Aug. 25, 2009
SPEAG	Validation Dipole D1800V2	2d007	May 20, 2008	Biennial	May 20, 2010
SPEAG	Validation Dipole D1900V2	5d032	July 20, 2009	Annual	July 20, 2010
SPEAG	Validation Dipole D2450V2	743	Aug. 27, 2008	Biennial	Aug. 27, 2010
Agilent	Power Meter(F) E4419B	MY41291386	Nov. 05, 2008	Annual	Nov. 05, 2009
Agilent	Power Sensor(G) 8481	MY41090870	Nov. 05, 2008	Annual	Nov. 05, 2009
HP	Dielectric Probe Kit 85070C	00721521	N/A	N/A	N/A
HP	Dual Directional Coupler	16072	Nov. 05, 2008	Annual	Nov. 05, 2009
R&S	Base Station CMU200	110740	July 26, 2009	Annual	July 26, 2010
Agilent	Base Station E5515C	GB44400269	Feb. 10, 2009	Annual	Feb. 10, 2010
HP	Signal Generator E4438C	MY42082646	Dec. 24, 2008	Annual	Dec. 24, 2009
HP	Network Analyzer 8753C	3310J01394	Dec. 04, 2008	Annual	Dec. 04, 2009
Tescom	TC-3000/ Bluetooth	3000A490112	Jan. 09, 2009	Annual	Jan. 09, 2010

NOTE:

The E-field probe was calibrated by SPEAG, by the waveguide technique procedure. Dipole Validation measurement is performed by HCT Lab. before each test. The brain simulating material is calibrated by HCT using the dielectric probe system and network analyzer to determine the conductivity and permittivity (dielectric constant) of the brain-equivalent material.

4. SAR MEASUREMENT PROCEDURE

The evaluation was performed with the following procedure:

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

2. The SAR distribution at the exposed side of the head was measured at a distance of 3.9 mm from the inner surface of the shell. The area covered the entire dimension of the head and the horizontal grid spacing was 20 mm x 20 mm. Based on this data, the area of the maximum absorption was determined by spline interpolation.

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

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

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

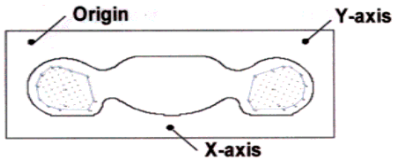

Figure 4.1 SAR Measurement Point in Area Scan

5. DESCRIPTION OF TEST POSITION

5.1 HEAD POSITION

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

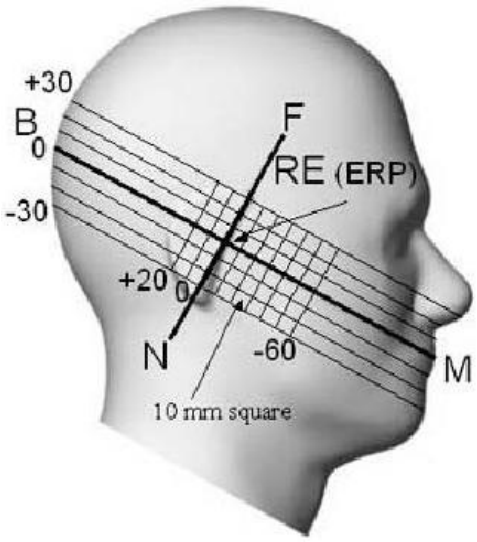

Figure 5.1 Side view of the phantom

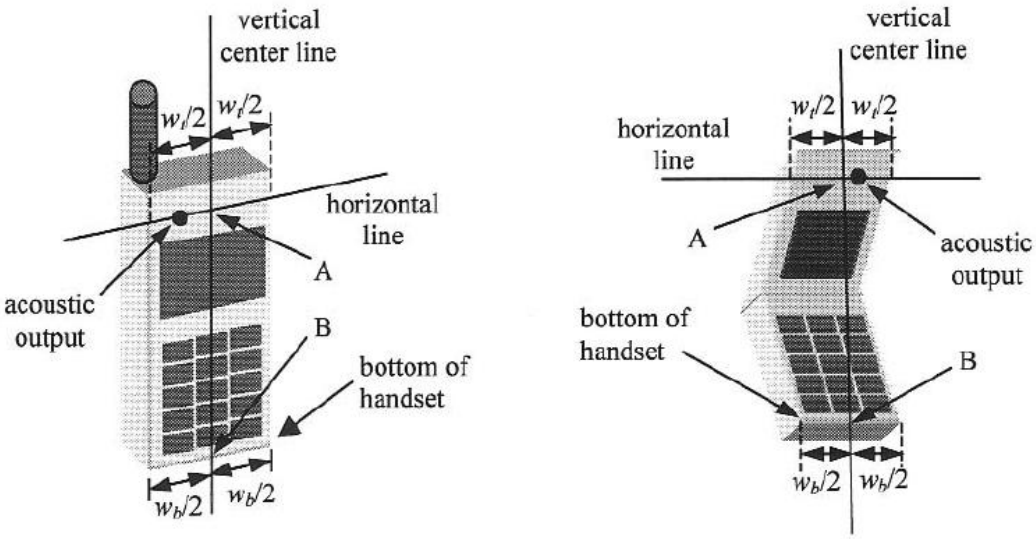

Figure 5.2 Handset vertical and horizontal reference lines

5.2 Body Holster/Belt Clip Configurations

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

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

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

Since this EUT does not supply any body worn accessory to the end user a distance of 5 mm 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.

5.3 Test Configurations

According to KDB 447498, the device that can be connected to a host through a cable must be tested with the device positioned in all applicable orientations against the flat phantom. And a separation distance ≤ 0.5 cm is required for USB-dongle transmitters.

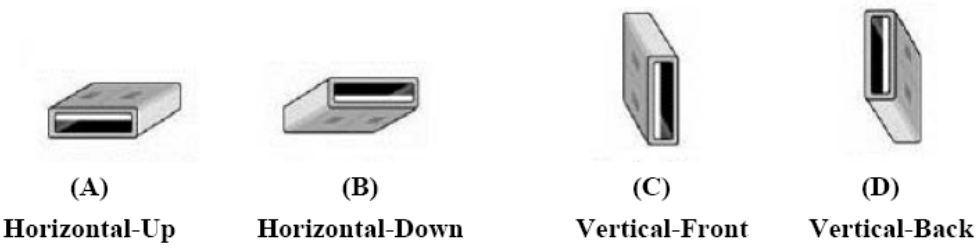

Figure 5.3 USB Connector Orientations Implemented on Laptop Computers

Therefore, the EUT was tested in following orientations;

1) Configuration 1: EUT was tested with the direct-connection to the host device with Horizontal-Up (A), and separation distance between EUT and Phantom is 5 mm.

2) Configuration 2: EUT was connected to the host device with Horizontal-Down (B) using a USB cable, and separation distance between EUT and Phantom is 5 mm.

3) Configuration 3: EUT was connected to the host device with Vertical-Front (C) using a USB cable, and separation distance between EUT and Phantom is 5 mm.

4) Configuration 4: EUT was tested with the direct-connection to the host device with Vertical-Back (D), and separation distance between EUT and Phantom is 5 mm.

5) Configuration 5: Top side of the EUT was tested with the direct-connection to the host device, and separation distance between EUT and Phantom is 5 mm.

Note;

The used USB cable length is less than 12 inch.

This USB cable was used to operate this unit in the highest RF performance capability for SAR testing.

6. MEASUREMENT UNCERTAINTY

Measurement uncertainties in SAR measurements are difficult to quantify due to several variables including biological, physiological, and environmental. However, we estimate the measurement uncertainties in SAR to be less than 15 % - 25 %.

According to ANSI/IEEE C95.3, the overall uncertainties are difficult to assess and will vary with the type of meter and usage situation. However, accuracy's of 1 dB to ± 3 dB can be expected in practice, with greater uncertainties in near-field situations and at higher frequencies (shorter wavelengths), or areas where large reflecting objects are present. Under optimum measurement conditions, SAR measurement uncertainties of at least ± 2 dB can be expected.

According to CENELEC, typical worst-case uncertainty of field measurements is 5 dB. For well-defined modulation characteristics the uncertainty can be reduced to ± 3 dB.

Error Description	Uncertainty value [%]	Probability Distribution	Divisor	ci	ci^2	Standard Uncertainty [%]	Stand Uncert^2	(Stand Uncert^2) X (ci^2)	Vi & Veff
1. Measurement System									
Probe Calibration	5.5	Normal	1.00	1	1	5.50	30.25	30.25	∞
Axial Isotropy	4.7	Rectangular	1.73	0.7	0.49	2.71	7.36	3.61	∞
Hemispherical Isotropy	9.6	Rectangular	1.73	0.7	0.49	5.54	30.72	15.05	∞
Linearity	4.7	Rectangular	1.73	1	1	2.71	7.36	7.36	∞
System Detection limits	1.0	Rectangular	1.73	1	1	0.58	0.33	0.33	∞
Boundary effect	1.0	Rectangular	1.73	1	1	0.58	0.33	0.33	∞
Response time	0.8	Rectangular	1.73	1	1	0.46	0.21	0.21	∞
RF Ambient conditions	3.0	Rectangular	1.73	1	1	1.73	3.00	3.00	∞
Readout Electronics	0.3	Normal	1.00	1	1	0.30	0.09	0.09	∞
Integration time	2.6	Rectangular	1.73	1	1	1.50	2.25	2.25	∞
Probe positioner	0.4	Rectangular	1.73	1	1	0.23	0.05	0.05	∞
Probe positionering	2.9	Rectangular	1.73	1	1	1.67	2.80	2.80	∞
Maximum SAR evaluation	1.0	Rectangular	1.73	1	1	0.58	0.33	0.33	∞
2.Test Sample Related						Sub Total		65.69	
Device Positioning	1.8	Normal	1.00	1	1	1.81	3.28	3.28	9
Device Holder	3.6	Normal	1.00	1	1	3.60	12.96	12.96	∞
Power Drift	5.0	Rectangular	1.73	1	1	2.89	8.33	8.33	∞
3. Phantom and Setup						Sub Total		24.57	
Phantom Uncertainty	4.0	Rectangular	1.73	1	1	2.31	5.33	5.33	∞
Liquid conductivity (target)	5.0	Rectangular	1.73	0.5	0.25	2.89	8.33	2.08	∞
Liquid conductivity (measurement error)	2.5	Normal	1.00	0.5	0.25	2.50	6.25	1.56	∞
Liquid permittivity (target)	5.0	Rectangular	1.73	0.5	0.25	2.89	8.33	2.08	∞
Liquid permittivity (measurement error)	2.5	Normal	1.00	0.5	0.25	2.50	6.25	1.56	∞
						Sub Total		12.63	
Combined standard uncertainty [%]						**10.14**		102.88	-
Expanded uncertainty [*k*=2, approximately confidence level 95 %]						**± 20.28 %**			

Table 6.1 Breakdown of Errors

7. ANSI/ IEEE C95.1 - 2005 RF EXPOSURE LIMITS

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

Table 7.1 Safety Limits for Partial Body Exposure

NOTES:

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

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

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

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

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

8. SYSTEM VERIFICATION

8.1 Tissue Verification

Freq. [MHz]	Date	Liquid	Liquid Temp.[°C]	Parameters	Target Value	Measured Value	Deviation [%]	Limit [%]
835	Aug.01, 2009	Head	21.3	ε r	41.5	41.1	- 0.96	± 5
				σ	0.90	0.876	- 2.67	± 5
835	Aug.01, 2009	Body	21.3	ε r	55.2	53.9	- 2.36	± 5
				σ	0.97	0.99	+ 2.06	± 5
1 800	Aug.01, 2009	Head	21.3	ε r	40.0	38.9	- 2.75	± 5
				σ	1.40	1.41	+ 0.71	± 5
1 800	Aug.01, 2009	Body	21.3	ε r	53.3	53.6	+ 0.56	± 5
				σ	1.52	1.51	- 0.66	± 5
1 900	Aug.03, 2009	Head	21.2	ε r	40.0	39.5	- 1.25	± 5
				σ	1.40	1.41	+ 0.71	± 5
1 900	Aug.03, 2009	Body	21.2	ε r	53.3	51.9	- 2.63	± 5
				σ	1.52	1.50	- 1.32	± 5

8.2 System Validation

Prior to assessment, the system is verified to the ± 10 % of the specifications 835 MHz/1 800 MHz/1 900 MHz by using the system validation kit. (Graphic Plots Attached)

* Input Power: 100 mW

Freq. [MHz]	Date	Liquid	Liquid Temp. [°C]	SAR Average	Target Value (SPEAG) (mW/g)	Measured Value (mW/g)	Deviation [%]	Limit [%]
835	Aug.01, 2009	Head	21.3	1 g	9.56	0.994	+ 3.97	± 10
1 800	Aug.01, 2009	Head	21.3	1 g	38.9	3.99	+ 2.57	± 10
1 900	Aug.03, 2009	Head	21.2	1 g	40.5	4.1	+ 1.23	± 10

9. 3G MEASUREMENT PROCEDURES

9.1 Procedures Used To Establish Test Signal

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 evaluating 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.

9.2 SAR Measurement Conditions for CDMA2000 1x

These procedures were followed according to FCC "SAR Measurement Procedures for 3G Devices", May 2006.

9.2.1 Output Power Verification

See 3GPP2 C.S0011/TIA-98-E as recommended by "SAR Measurement Procedures for 3G Devices", May 2006. Maximum output power is verified on the High, Middle and Low channels according to procedures defined in section 4.4.5.2 of 3GPP2 C.S0011/TIA-98-E. SO55 tests were measured with power control bits in “All Up” condition.

1. If the mobile station supports Reverse TCH RC 1 and Forward TCH RC 1, set up a call using Fundamental Channel Test Mode 1 (RC=1/1) with 9 600 bps data rate only.
2. Under RC1, C.S0011 Table 4.4.5.2-1 (Table 9.1) parameters were applied.
3. If the MS supports the RC 3 Reverse FCH, RC3 Reverse SCH0 and demodulation of RC 3, 4, or 5, set up a call using Supplemental Channel Test Mode 3 (RC 3/3) with 9 600 bps Fundamental Channel and 9 600 bps SCH0 data rate Channel and 9 600 bps SCH0 data rate.
4. Under RC3, C.S0011 Table 4.4.5.2-2(Table 9.2) was applied.
5. FCHs were configured at full rate for maximum SAR with “All Up” power control bits.

Parameters for Max. Power for RC1

Parameter	Units	Value
$\hat{I}_{or}$	dBm/1.23 MHz	-104
$\frac{\text{Pilot } E_c}{I_{or}}$	dB	-7
$\frac{\text{Traffic } E_c}{I_{or}}$	dB	-7.4

Table. 9.1

Parameters for Max. Power for RC3

Parameter	Units	Value
$\hat{I}_{or}$	dBm/1.23 MHz	-86
$\frac{\text{Pilot } E_c}{I_{or}}$	dB	-7
$\frac{\text{Traffic } E_c}{I_{or}}$	dB	-7.4

Table. 9.2

9.2.2 Head SAR Measurement

SAR for head exposure configurations is measured in RC3 with the DUT configured to transmit at full rate using Loopback Service Option SO55. SAR for RC1 is not required when the maximum average output of each channel is less than ¼ dB higher than that measured in RC3. Otherwise, SAR is measured on the maximum output channel in RC1 using the exposure configuration that results in the highest SAR for that channel in RC3.

9.2.3 Body SAR Measurement

SAR for body exposure configurations is measured in RC3 with the DUT configured to transmit at full rate on FCH with all other code channels disabled using TDSO / SO32. SAR for multiple code channels (FCH + SCHn) is not required when the maximum average output of each RF channel is less than ¼ dB higher than that measured with FCH only. Otherwise, SAR is measured on the maximum output channel (FCH + SCHn) with FCH at full rate and SCH0 enabled at 9 600 bps using the exposure configuration that results in the highest SAR for that channel with FCH only. When multiple code channels are enabled, the DUT output may shift by more than 0.5 dB and lead to higher SAR drifts and SCH dropouts.

Body SAR in RC1 is not required when the maximum average output of each channel is less than ¼ dB higher than that measured in RC3. Otherwise, SAR is measured on the maximum output channel in RC1; with Loopback Service Option SO55, at full rate, using the body exposure configuration that results in the highest SAR for that channel in RC3.

9.2.4 Handsets with EV-DO

For handsets with Ev-Do capabilities, when the maximum average output of each channel in Rev. 0 is less than ¼ dB higher than that measured in RC3 (1x RTT), body SAR for Ev-Do is not required. Otherwise, SAR for Rev. 0 is measured on the maximum output channel at 153.6 kbps using the body exposure configuration that results in the highest SAR for that channel in RC3. SAR for Rev. A is not required when the maximum average output of each channel is less than that measured in Rev. 0 or less than ¼ dB higher than that measured in RC3. Otherwise, SAR is measured on the maximum output channel for Rev. A using a Reverse Data Channel payload size of 4 096 bits and a Termination Target of 16 slots defined for Subtype 2 Physical Layer configurations. A Forward Traffic Channel data rate corresponding to the 2-slot version of 307.2 kbps with the ACK Channel transmitting in all slots should be configured in the downlink for both Rev. 0 and Rev. A.

Average Output Power Measurement with USB cable for FCC ID: XHG-U210

Band	Channel	SO2	SO2	SO55	SO55	TDSO SO32	1xEvDO Rev.0	1xEvDO Rev.0	1xEvDO Rev.A	1xEvDO Rev.A
		RC1/1 (dBm)	RC3/3 (dBm)	RC1/1 (dBm)	RC3/3 (dBm)	RC3/3 (dBm)	(FTAP)	(RTAP)	(FETAP)	(RETAP)
CDMA	1013	23.37	23.41	23.41	23.40	23.47	23.47	23.46	23.25	23.23
	384	23.73	23.77	23.79	23.75	23.78	23.70	23.81	23.51	23.55
	777	23.32	23.32	23.37	23.30	23.40	23.42	23.41	23.23	23.22
PCS	25	23.91	23.81	23.90	23.89	23.86	23.84	23.85	23.71	23.76
	600	24.13	24.07	24.15	24.03	24.24	23.95	24.03	23.88	23.89
	1175	23.68	23.67	23.78	23.71	23.72	23.68	23.73	23.62	23.60
AWS	25	23.73	23.67	23.75	23.66	23.64	23.53	23.63	23.53	23.49
	450	24.01	23.93	24.02	23.87	23.89	23.84	23.80	23.76	23.76
	875	23.87	23.78	23.90	23.80	23.79	23.86	23.84	23.67	23.69

10. SAR TEST DATA SUMMARY

10.1 Measurement Results (CDMA835 Body SAR)

Frequency		Modulation	Conducted Power (dBm)		Configuration	Separation Distance	Antenna Type	SAR(mW/g)
MHz	Channel		Begin	End				
836.52	384 (Mid)	EVDO	23.81	23.67	Horizontal up	5 mm	Intenna	0.611
836.52	384 (Mid)	EVDO	23.81	23.90	Horizontal down	5 mm	Intenna	0.344
836.52	384 (Mid)	EVDO	23.81	23.91	Vertical front	5 mm	Intenna	0.272
836.52	384 (Mid)	EVDO	23.81	23.92	Vertical back	5 mm	Intenna	0.248
836.52	384 (Mid)	EVDO	23.81	23.75	Top	5 mm	Intenna	0.261
ANSI/ IEEE C95.1 2005 – 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 All side of the EUT were tested and the worst-case side is reported.
8 Test Configuration ☐ With Holster ☒ Without Holster
9 EVDO Body SAR was tested under EVDO Rev.0 RTAP.
10 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).

10.2 Measurement Results (AWS1700 Body SAR)

Frequency		Modulation	Conducted Power (dBm)		Configuration	Separation Distance	Antenna Type	SAR(mW/g)
MHz	Channel		Begin	End				
1 711.25	25 (Low)	EVDO	23.63	23.57	Horizontal up	5 mm	Intenna	0.991
1 732.5	450 (Mid)	EVDO	23.80	23.82	Horizontal up	5 mm	Intenna	1.10
1 753.75	875 (High)	EVDO	23.84	23.71	Horizontal up	5 mm	Intenna	1.06
1 732.5	450 (Mid)	EVDO	23.80	23.79	Horizontal down	5 mm	Intenna	0.747
1 732.5	450 (Mid)	EVDO	23.80	23.61	Vertical front	5 mm	Intenna	0.176
1 732.5	450 (Mid)	EVDO	23.80	23.90	Vertical back	5 mm	Intenna	0.560
1 732.5	450 (Mid)	EVDO	23.80	23.75	Top	5 mm	Intenna	0.482
ANSI/ IEEE C95.1 2005 – 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 All side of the phone were tested and the worst-case side is reported.
8 Test Configuration ☐ With Holster ☒ Without Holster
9 EVDO Body SAR was tested under EVDO Rev.0 RTAP.

10.3 Measurement Results (PCS1900 Body SAR)

Frequency		Modulation	Conducted Power (dBm)		Configuration	Separation Distance	Antenna Type	SAR(mW/g)
MHz	Channel		Begin	End				
1 851.25	25(Low)	EVDO	23.85	23.77	Horizontal up	5 mm	Intenna	1.11
1 880.00	600(Middle)	EVDO	24.03	23.88	Horizontal up	5 mm	Intenna	1.18
1 908.75	1175(High)	EVDO	23.73	23.68	Horizontal up	5 mm	Intenna	0.887
1 851.25	25(Low)	EVDO	23.85	23.89	Horizontal down	5 mm	Intenna	0.934
1 880.00	600(Middle)	EVDO	24.03	24.09	Horizontal down	5 mm	Intenna	0.841
1 908.75	1175(High)	EVDO	23.73	23.80	Horizontal down	5 mm	Intenna	0.826
1 880.00	600(Middle)	EVDO	23.85	23.80	Vertical front	5 mm	Intenna	0.261
1 880.00	600(Middle)	EVDO	24.03	24.17	Vertical back	5 mm	Intenna	0.583
1 880.00	600(Middle)	EVDO	23.73	23.78	Top	5 mm	Intenna	0.552
ANSI/ IEEE C95.1 2005 – 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 All side of the phone were tested and the worst-case side is reported.
8 Test Configuration ☐ With Holster ☒ Without Holster
9 EVDO Body SAR was tested under EVDO Rev.0 RTAP.

11. CONCLUSION

The SAR measurement indicates that the EUT complies with the RF radiation exposure limits of the ANSI/ IEEE C95.1 2005.

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:	Dual-Band CDMA Phone(CDMA/PCS CDMA)
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Aug.01, 2009

DUT: U210; Type: Bar; Serial: #1

Communication System: CDMA 835MHz FCC; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.52 MHz; σ = 0.995 mho/m; ε_r = 54; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 176

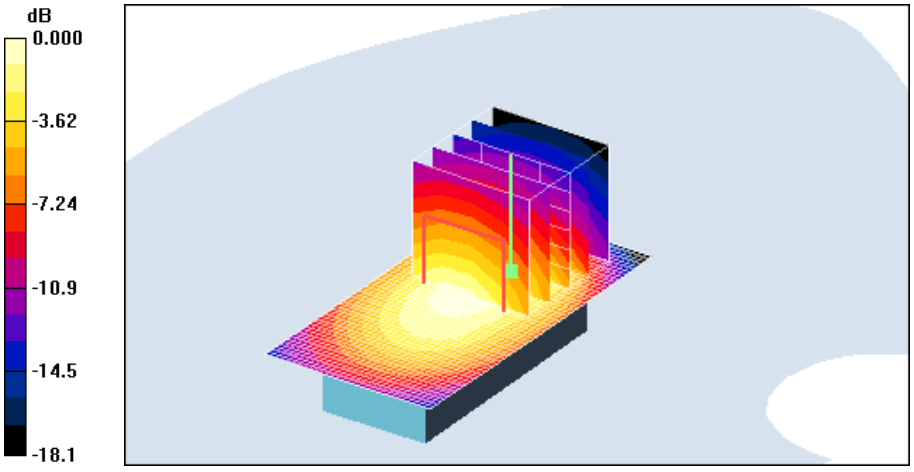
DASY4 Configuration:
- Probe: ET3DV6 - SN1631; ConvF(5.91, 5.91, 5.91); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: SAM 835/900 MHz; Type: SAM

CDMA Body 384/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.683 mW/g

CDMA Body 384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.6 V/m; Power Drift = -0.136 dB
Peak SAR (extrapolated) = 1.49 W/kg
SAR(1 g) = 0.611 mW/g; SAR(10 g) = 0.348 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
aximum value of SAR (measured) = 0.664 mW/g



0 dB = 0.664mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Dual-Band CDMA Phone(CDMA/PCS CDMA)
Liquid Temperature: 21.3 ℃
Ambient Temperature: 21.5 ℃
Test Date: Aug.01, 2009

DUT: U210; Type: Bar; Serial: #1

Communication System: CDMA 835MHz FCC; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.52 MHz; σ = 0.995 mho/m; ε_r = 54; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 176

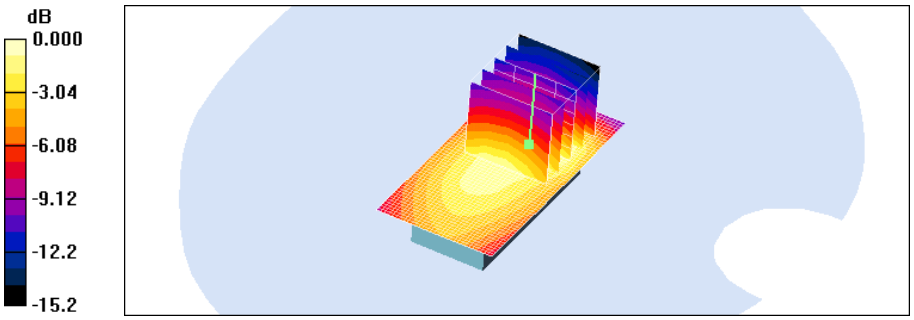
DASY4 Configuration:
- Probe: ET3DV6 - SN1631; ConvF(5.91, 5.91, 5.91); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: 835/900 Phamtom ; Type: SAM

CDMA Body 384/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.369 mW/g

CDMA Body 384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.4 V/m; Power Drift = 0.089 dB
Peak SAR (extrapolated) = 0.596 W/kg
SAR(1 g) = 0.344 mW/g; SAR(10 g) = 0.209 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.375 mW/g



0 dB = 0.375mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Dual-Band CDMA Phone(CDMA/PCS CDMA)
Liquid Temperature: 21.3 ℃
Ambient Temperature: 21.5 ℃
Test Date: Aug.01, 2009

DUT: U210; Type: side; Serial: #1

Communication System: CDMA 835MHz FCC; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.52 MHz; σ = 0.995 mho/m; ε_r = 54; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 176

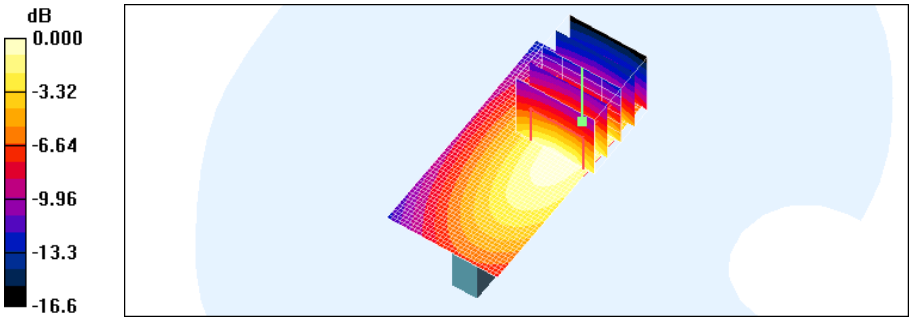
DASY4 Configuration:
- Probe: ET3DV6 - SN1631; ConvF(5.91, 5.91, 5.91); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: 835/900 Phamtom ; Type: SAM

CDMA Body 384/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.327 mW/g

CDMA Body 384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.5 V/m; Power Drift = 0.096 dB
Peak SAR (extrapolated) = 0.552 W/kg
SAR(1 g) = 0.272 mW/g; SAR(10 g) = 0.158 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
aximum value of SAR (measured) = 0.302 mW/g



0 dB = 0.302mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Dual-Band CDMA Phone(CDMA/PCS CDMA)
Liquid Temperature: 21.3 ℃
Ambient Temperature: 21.5 ℃
Test Date: Aug.01, 2009

DUT: U210; Type: side; Serial: #1

Communication System: CDMA 835MHz FCC; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.52 MHz; σ = 0.995 mho/m; ε_r = 54; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 176

DASY4 Configuration:
- Probe: ET3DV6 - SN1631; ConvF(5.91, 5.91, 5.91); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: 835/900 Phamtom ; Type: SAM

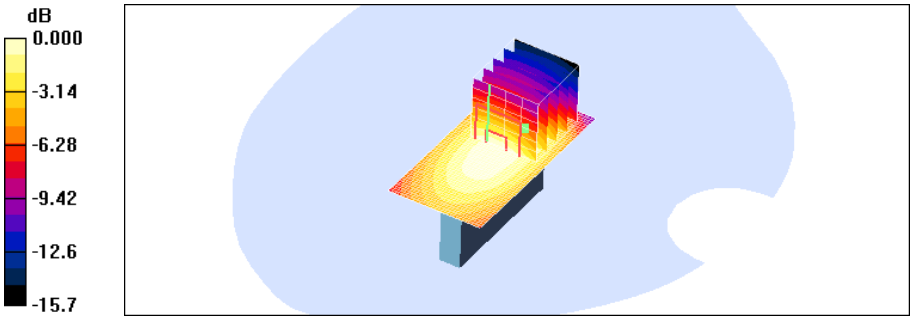
CDMA Body 384/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm

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

CDMA Body 384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.3 V/m; Power Drift = 0.110 dB
Peak SAR (extrapolated) = 0.487 W/kg
SAR(1 g) = 0.248 mW/g; SAR(10 g) = 0.155 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.263 mW/g



0 dB = 0.263mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Dual-Band CDMA Phone(CDMA/PCS CDMA)
Liquid Temperature: 21.3 ℃
Ambient Temperature: 21.5 ℃
Test Date: Aug.01, 2009

DUT: U210; Type: Top; Serial: #1

Communication System: CDMA 835MHz FCC; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.52 MHz; σ = 0.995 mho/m; ε_r = 54; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 176

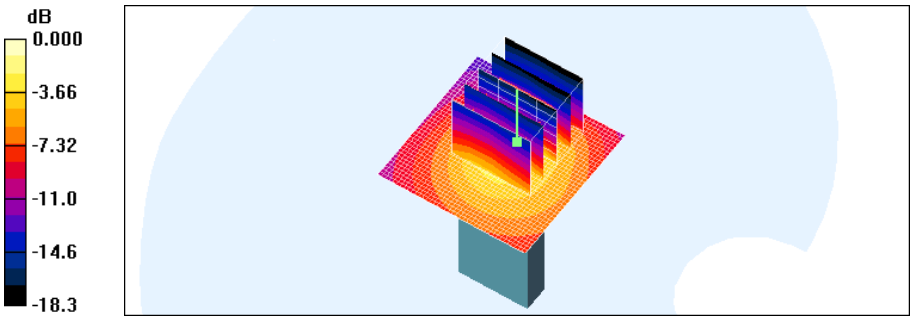
DASY4 Configuration:
- Probe: ET3DV6 - SN1631; ConvF(5.91, 5.91, 5.91); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: 835/900 Phamtom ; Type: SAM

CDMA Body 384/Area Scan (41x41x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.224 mW/g

CDMA Body 384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.6 V/m; Power Drift = -0.856 dB
Peak SAR (extrapolated) = 0.899 W/kg
SAR(1 g) = 0.261 mW/g; SAR(10 g) = 0.107 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.285 mW/g



0 dB = 0.285mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Dual-Band CDMA Phone(CDMA/PCS CDMA)
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Aug.01, 2009

DUT: U210; Type: Bar; Serial: #1

Communication System: AWS 1700 MHz FCC; Frequency: 1711.25 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1711.25 MHz; σ = 1.42 mho/m; ε_r = 53.9; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 176

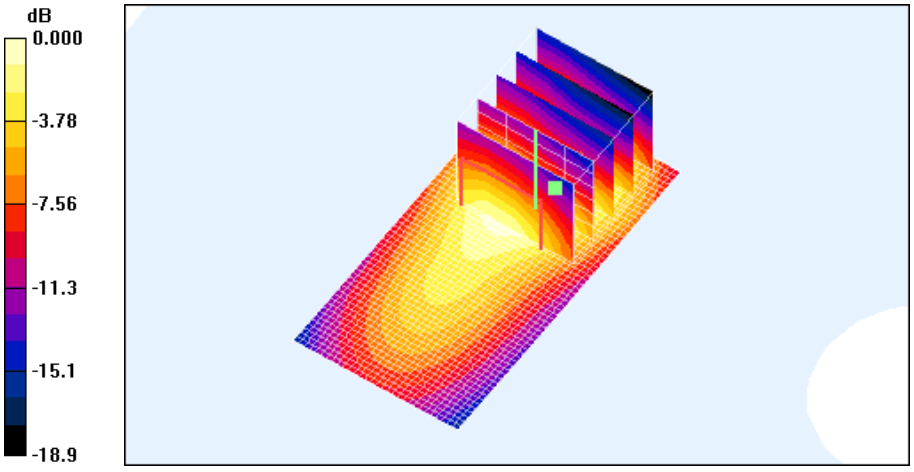
DASY4 Configuration:
- Probe: ET3DV6 - SN1631; ConvF(4.67, 4.67, 4.67); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: SAM 1800/1900 MHz; Type: SAM

AWS Body 25/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.23 mW/g

AWS Body 25/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.6 V/m; Power Drift = -0.063 dB
Peak SAR (extrapolated) = 1.50 W/kg
SAR(1 g) = 0.991 mW/g; SAR(10 g) = 0.582 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
aximum value of SAR (measured) = 1.09 mW/g



0 dB = 1.09mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Dual-Band CDMA Phone(CDMA/PCS CDMA)
Liquid Temperature: 21.3 ℃
Ambient Temperature: 21.5 ℃
Test Date: Aug.01, 2009

DUT: U210; Type: Bar; Serial: #1

Communication System: AWS 1700 MHz FCC; Frequency: 1732.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.44 mho/m; ε_r = 53.8; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 176

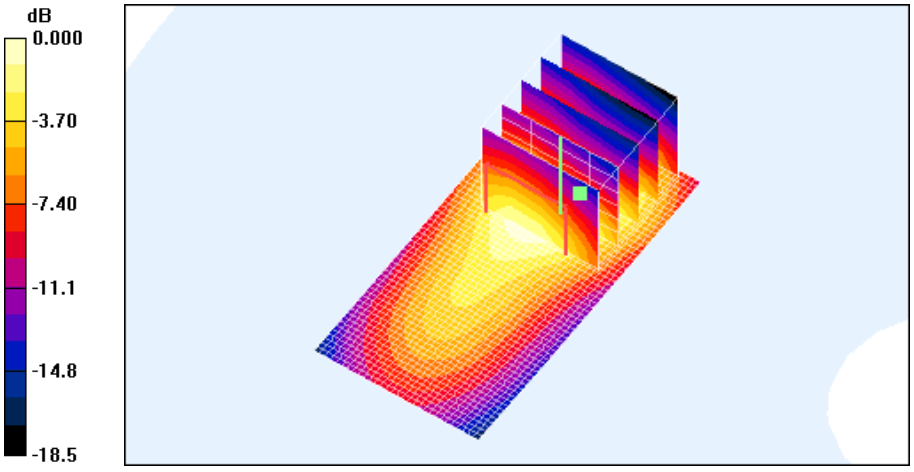
DASY4 Configuration:
- Probe: ET3DV6 - SN1631; ConvF(4.67, 4.67, 4.67); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: SAM 1800/1900 MHz; Type: SAM

AWS Body 450/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.39 mW/g

AWS Body 450/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.3 V/m; Power Drift = 0.021 dB
Peak SAR (extrapolated) = 1.64 W/kg
SAR(1 g) = 1.1 mW/g; SAR(10 g) = 0.642 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
aximum value of SAR (measured) = 1.21 mW/g



0 dB = 1.21mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Dual-Band CDMA Phone(CDMA/PCS CDMA)
Liquid Temperature: 21.3 ℃
Ambient Temperature: 21.5 ℃
Test Date: Aug.01, 2009

DUT: U210; Type: Bar; Serial: #1

Communication System: AWS 1700 MHz FCC; Frequency: 1753.75 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1753.75 MHz; σ = 1.47 mho/m; ε_r = 53.8; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 176

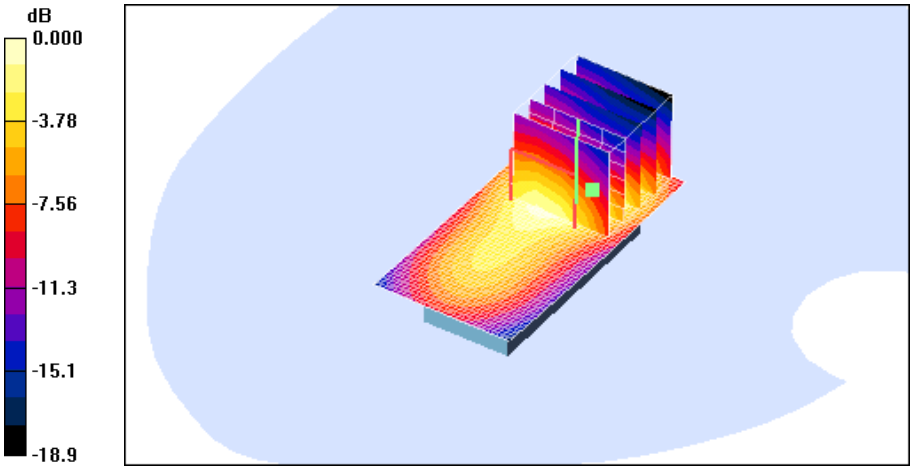
DASY4 Configuration:
- Probe: ET3DV6 - SN1631; ConvF(4.67, 4.67, 4.67); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: SAM 1800/1900 MHz; Type: SAM

AWS Body 875/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.35 mW/g

AWS Body 875/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 30.9 V/m; Power Drift = -0.128 dB
Peak SAR (extrapolated) = 1.66 W/kg
SAR(1 g) = 1.06 mW/g; SAR(10 g) = 0.612 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
aximum value of SAR (measured) = 1.16 mW/g



0 dB = 1.16mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Dual-Band CDMA Phone(CDMA/PCS CDMA)
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Aug.01, 2009

DUT: U210; Type: Bar; Serial: #1

Communication System: AWS 1700 MHz FCC; Frequency: 1732.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.44 mho/m; ε_r = 53.8; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 176

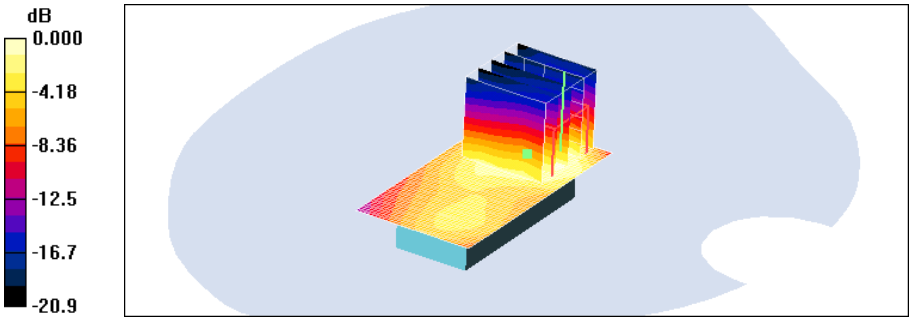
DASY4 Configuration:
- Probe: ET3DV6 - SN1631; ConvF(4.67, 4.67, 4.67); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: 1800/1900 Phantom; Type: SAM

AWS Body 450/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.874 mW/g

AWS Body 450/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.1 V/m; Power Drift = -0.014 dB
Peak SAR (extrapolated) = 1.49 W/kg
SAR(1 g) = 0.747 mW/g; SAR(10 g) = 0.365 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.881 mW/g



0 dB = 0.881mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Dual-Band CDMA Phone(CDMA/PCS CDMA)
Liquid Temperature: 21.3 ℃
Ambient Temperature: 21.5 ℃
Test Date: Aug.01, 2009

DUT: U210; Type: side; Serial: #1

Communication System: AWS 1700 MHz FCC; Frequency: 1732.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.44 mho/m; ε_r = 53.8; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 176

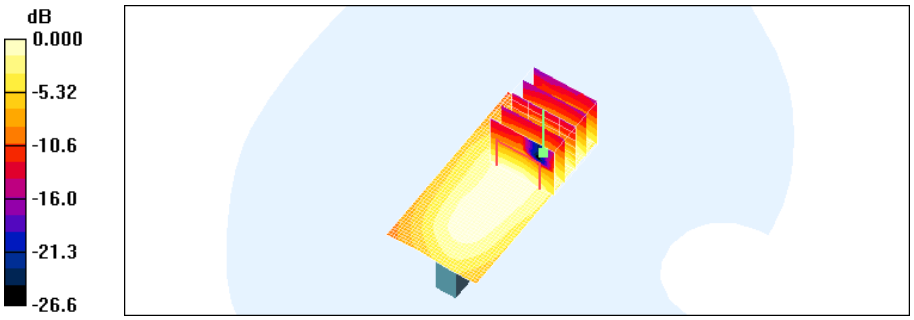
DASY4 Configuration:
- Probe: ET3DV6 - SN1631; ConvF(4.67, 4.67, 4.67); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: 1800/1900 Phantom; Type: SAM

AWS Body 450/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.208 mW/g

AWS Body 450/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.7 V/m; Power Drift = -0.188 dB
Peak SAR (extrapolated) = 0.272 W/kg
SAR(1 g) = 0.176 mW/g; SAR(10 g) = 0.103 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.197 mW/g



0 dB = 0.197mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Dual-Band CDMA Phone(CDMA/PCS CDMA)
Liquid Temperature: 21.3 ℃
Ambient Temperature: 21.5 ℃
Test Date: Aug.01, 2009

DUT: U210; Type: side; Serial: #1

Communication System: AWS 1700 MHz FCC; Frequency: 1732.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.44 mho/m; ε_r = 53.8; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 176

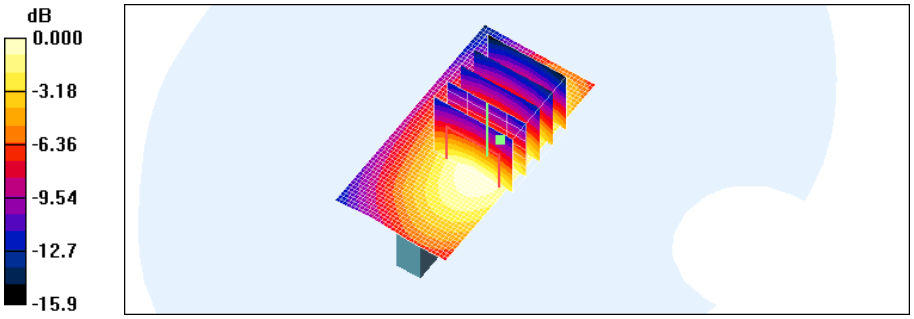
DASY4 Configuration:
- Probe: ET3DV6 - SN1631; ConvF(4.67, 4.67, 4.67); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: 1800/1900 Phantom; Type: SAM

AWS Body 450/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.633 mW/g

AWS Body 450/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.4 V/m; Power Drift = 0.103 dB
Peak SAR (extrapolated) = 0.727 W/kg
SAR(1 g) = 0.560 mW/g; SAR(10 g) = 0.353 mW/g

Maximum value of SAR (measured) = 0.616 mW/g



0 dB = 0.616mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Dual-Band CDMA Phone(CDMA/PCS CDMA)
Liquid Temperature: 21.3 ℃
Ambient Temperature: 21.5 ℃
Test Date: Aug.01, 2009

DUT: U210; Type: Top; Serial: #1

Communication System: AWS 1700 MHz FCC; Frequency: 1732.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.44 mho/m; ε_r = 53.8; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 176

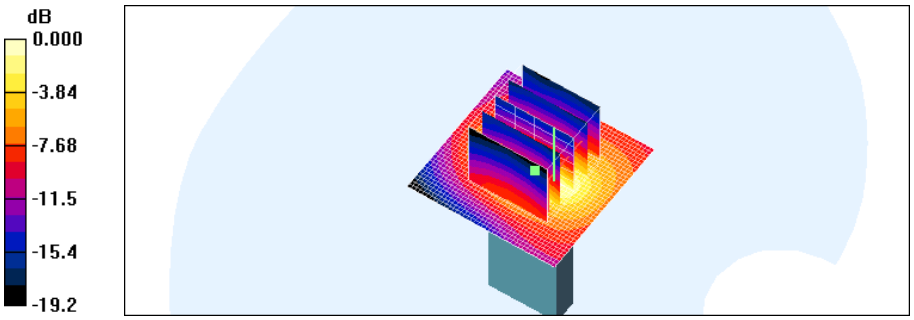
DASY4 Configuration:
- Probe: ET3DV6 - SN1631; ConvF(4.67, 4.67, 4.67); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: 1800/1900 Phantom; Type: SAM

AWS Body 450/Area Scan (41x41x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.565 mW/g

AWS Body 450/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.7 V/m; Power Drift = -0.047 dB
Peak SAR (extrapolated) = 0.890 W/kg
SAR(1 g) = 0.482 mW/g; SAR(10 g) = 0.223 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.578 mW/g



0 dB = 0.578mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Dual-Band CDMA Phone(CDMA/PCS CDMA)
Liquid Temperature: 21.2 ℃
Ambient Temperature: 21.4 ℃
Test Date: Aug.03, 2009

DUT: U210; Type: Bar; Serial: #1

Communication System: PCS 1900; Frequency: 1851.25 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1851.25 MHz; σ = 1.45 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 176

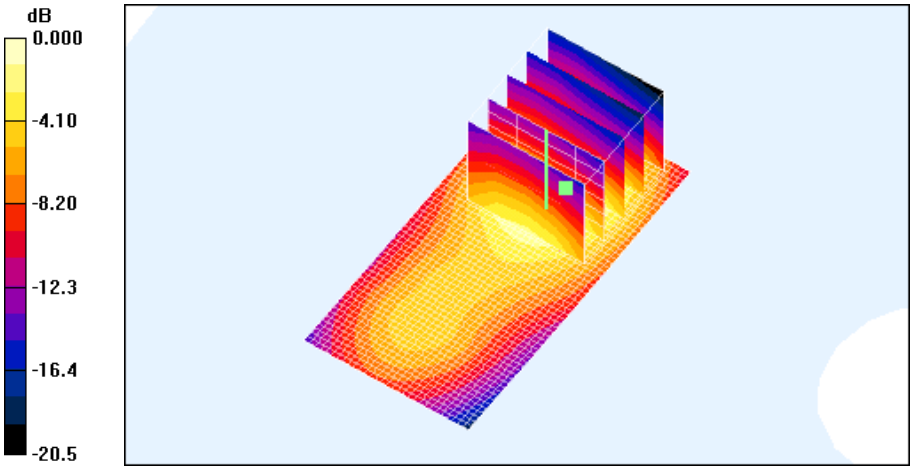
DASY4 Configuration:
- Probe: ET3DV6 - SN1631; ConvF(4.48, 4.48, 4.48); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: SAM 1800/1900 MHz; Type: SAM

PCS Body 25/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.30 mW/g

PCS Body 25/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.8 V/m; Power Drift = -0.083 dB
Peak SAR (extrapolated) = 1.80 W/kg
SAR(1 g) = 1.11 mW/g; SAR(10 g) = 0.600 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.19 mW/g



0 dB = 1.19mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Dual-Band CDMA Phone(CDMA/PCS CDMA)
Liquid Temperature: 21.2 ℃
Ambient Temperature: 21.4 ℃
Test Date: Aug.03, 2009

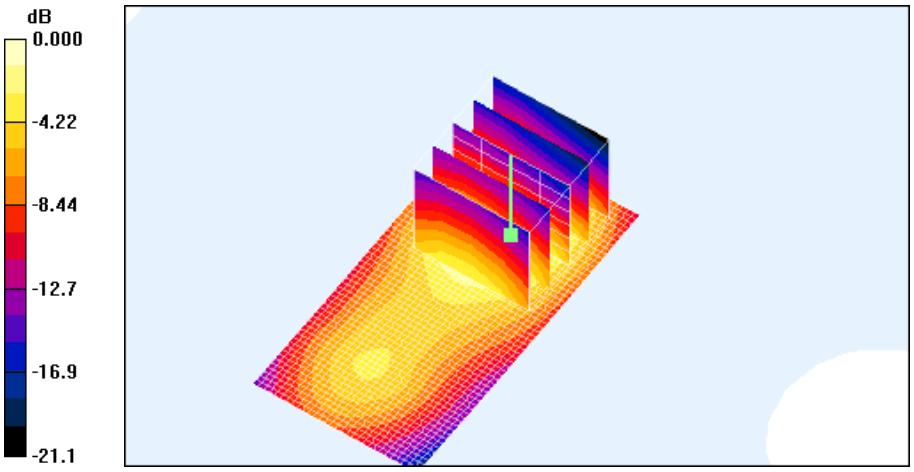
DUT: U210; Type: Bar; Serial: #1

Communication System: PCS 1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.48 mho/m; ε_r = 52.1; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 176

DASY4 Configuration:
- Probe: ET3DV6 - SN1631; ConvF(4.48, 4.48, 4.48); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: SAM 1800/1900 MHz; Type: SAM

PCS Body 600/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.41 mW/g

PCS Body 600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 32.5 V/m; Power Drift = -0.146 dB
Peak SAR (extrapolated) = 1.91 W/kg
SAR(1 g) = 1.18 mW/g; SAR(10 g) = 0.633 mW/g
Maximum value of SAR (measured) = 1.29 mW/g



0 dB = 1.29mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Dual-Band CDMA Phone(CDMA/PCS CDMA)
Liquid Temperature: 21.2 ℃
Ambient Temperature: 21.4 ℃
Test Date: Aug.03, 2009

DUT: U210; Type: Bar; Serial: #1

Communication System: PCS 1900; Frequency: 1908.75 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1908.75 MHz; σ = 1.52 mho/m; ε_r = 51.8; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 176

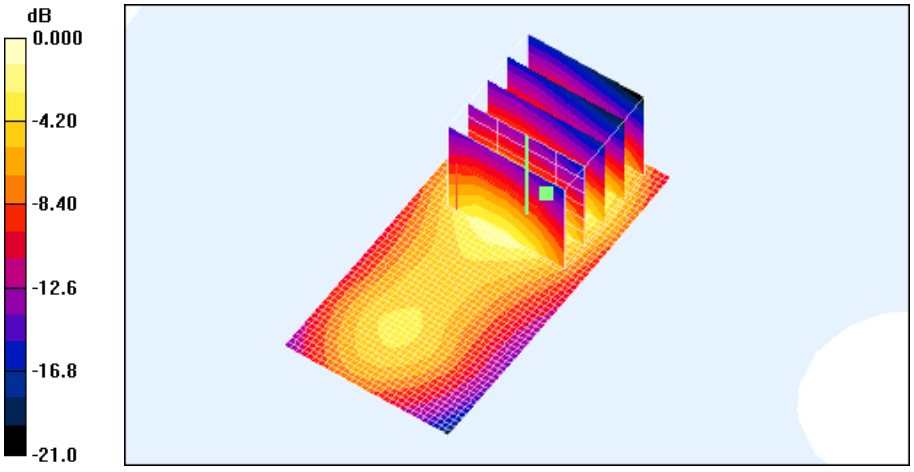
DASY4 Configuration:
- Probe: ET3DV6 - SN1631; ConvF(4.48, 4.48, 4.48); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: SAM 1800/1900 MHz; Type: SAM

PCS Body 1175/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.13 mW/g

PCS Body 1175/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.1 V/m; Power Drift = -0.053 dB
Peak SAR (extrapolated) = 1.45 W/kg
SAR(1 g) = 0.887 mW/g; SAR(10 g) = 0.480 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.965 mW/g



0 dB = 0.965mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Dual-Band CDMA Phone(CDMA/PCS CDMA)
Liquid Temperature: 21.2 ℃
Ambient Temperature: 21.4 ℃
Test Date: Aug.03, 2009

DUT: U210; Type: Bar; Serial: #1

Communication System: PCS 1900; Frequency: 1851.25 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1851.25 MHz; σ = 1.45 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 176

DASY4 Configuration:
- Probe: ET3DV6 - SN1631; ConvF(4.48, 4.48, 4.48); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: 1800/1900 Phantom; Type: SAM

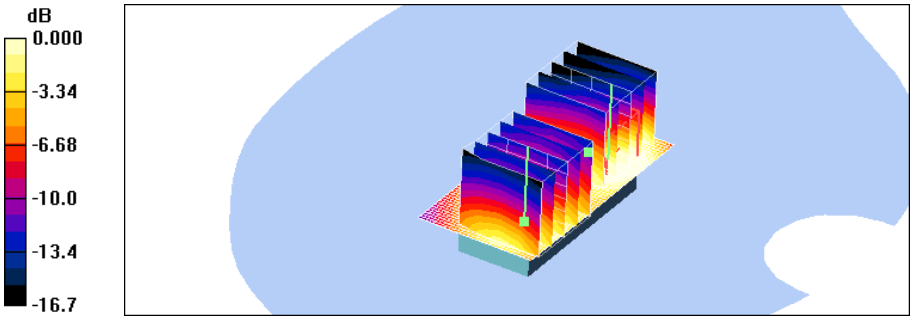
PCS Body 25/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.06 mW/g

PCS Body 25/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.0 V/m; Power Drift = 0.041 dB
Peak SAR (extrapolated) = 1.75 W/kg
SAR(1 g) = 0.934 mW/g; SAR(10 g) = 0.513 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.07 mW/g

PCS Body 25/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.0 V/m; Power Drift = 0.043 dB
Peak SAR (extrapolated) = 0.833 W/kg
SAR(1 g) = 0.594 mW/g; SAR(10 g) = 0.351 mW/g
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.654 mW/g



0 dB = 0.654mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Dual-Band CDMA Phone(CDMA/PCS CDMA)
Liquid Temperature: 21.2 ℃
Ambient Temperature: 21.4 ℃
Test Date: Aug.03, 2009

DUT: U210; Type: Bar; Serial: #1

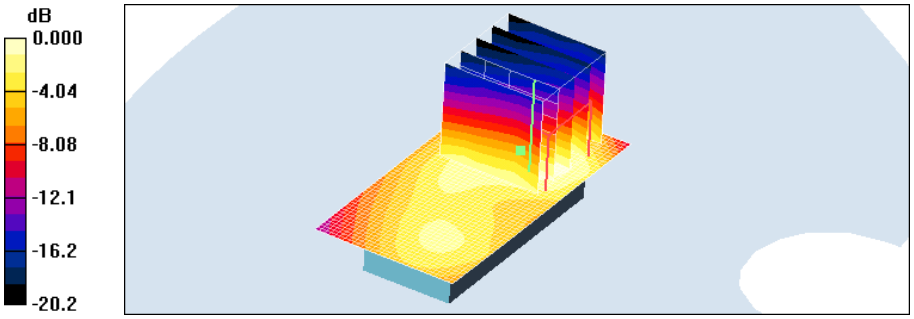
Communication System: PCS 1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.48 mho/m; ε_r = 52.1; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 176

DASY4 Configuration:
- Probe: ET3DV6 - SN1631; ConvF(4.48, 4.48, 4.48); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: 1800/1900 Phantom; Type: SAM

PCS Body 600/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.09 mW/g

PCS Body 600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.1 V/m; Power Drift = 0.057 dB
Peak SAR (extrapolated) = 1.64 W/kg
SAR(1 g) = 0.841 mW/g; SAR(10 g) = 0.451 mW/g

Maximum value of SAR (measured) = 0.956 mW/g



0 dB = 0.956mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Dual-Band CDMA Phone(CDMA/PCS CDMA)
Liquid Temperature: 21.2 ℃
Ambient Temperature: 21.4 ℃
Test Date: Aug.03, 2009

DUT: U210; Type: Bar; Serial: #1

Communication System: PCS 1900; Frequency: 1908.75 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1908.75 MHz; σ = 1.52 mho/m; ε_r = 51.8; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 176

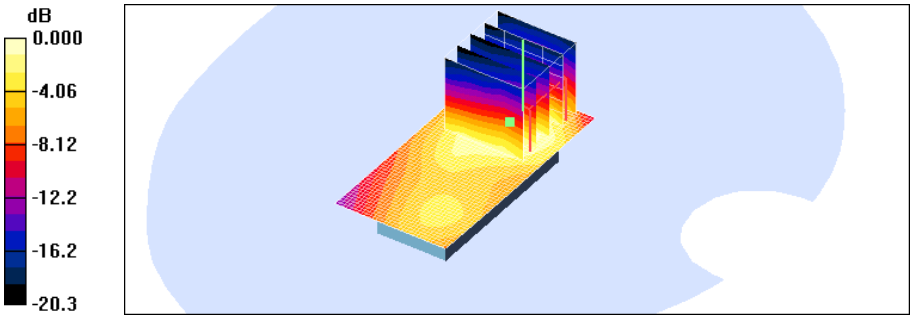
DASY4 Configuration:
- Probe: ET3DV6 - SN1631; ConvF(4.48, 4.48, 4.48); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: 1800/1900 Phantom; Type: SAM

PCS Body 1175/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.09 mW/g

PCS Body 1175/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.2 V/m; Power Drift = -0.071 dB
Peak SAR (extrapolated) = 1.65 W/kg
SAR(1 g) = 0.826 mW/g; SAR(10 g) = 0.410 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.980 mW/g



0 dB = 0.980mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Dual-Band CDMA Phone(CDMA/PCS CDMA)
Liquid Temperature: 21.2 ℃
Ambient Temperature: 21.4 ℃
Test Date: Aug.03, 2009

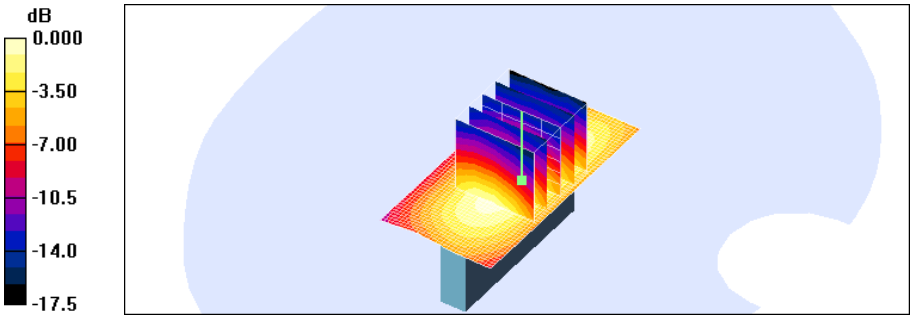
DUT: U210; Type: side; Serial: #1

Communication System: PCS 1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.48 mho/m; ε_r = 52.1; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 176

DASY4 Configuration:
- Probe: ET3DV6 - SN1631; ConvF(4.48, 4.48, 4.48); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: 1800/1900 Phantom; Type: SAM

PCS Body 600/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.323 mW/g

PCS Body 600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.0 V/m; Power Drift = -0.044 dB
Peak SAR (extrapolated) = 0.385 W/kg
SAR(1 g) = 0.261 mW/g; SAR(10 g) = 0.146 mW/g
Maximum value of SAR (measured) = 0.293 mW/g



0 dB = 0.293mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	Dual-Band CDMA Phone(CDMA/PCS CDMA)
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug.03, 2009

DUT: U210; Type: side; Serial: #1

Communication System: PCS 1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.48 mho/m; ε_r = 52.1; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 176

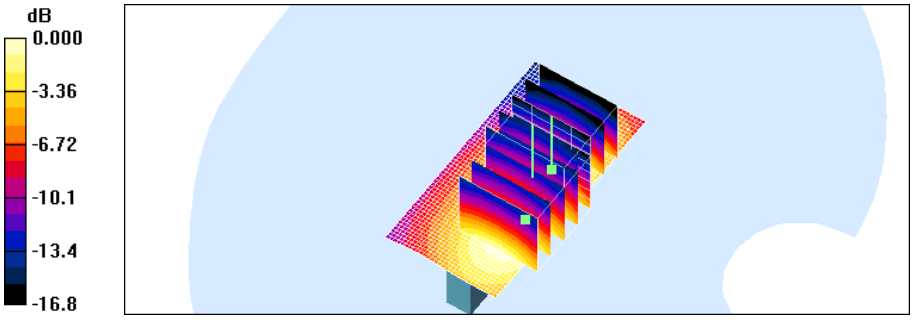
DASY4 Configuration:
- Probe: ET3DV6 - SN1631; ConvF(4.48, 4.48, 4.48); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: 1800/1900 Phantom; Type: SAM

PCS Body 600/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.685 mW/g

PCS Body 600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.1 V/m; Power Drift = 0.139 dB
Peak SAR (extrapolated) = 0.940 W/kg
SAR(1 g) = 0.583 mW/g; SAR(10 g) = 0.336 mW/g

Maximum value of SAR (measured) = 0.640 mW/g

PCS Body 600/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.1 V/m; Power Drift = 0.139 dB
Peak SAR (extrapolated) = 0.844 W/kg
SAR(1 g) = 0.577 mW/g; SAR(10 g) = 0.348 mW/g
Maximum value of SAR (measured) = 0.645 mW/g



0 dB = 0.645mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Dual-Band CDMA Phone(CDMA/PCS CDMA)
Liquid Temperature: 21.2 ℃
Ambient Temperature: 21.4 ℃
Test Date: Aug.03, 2009

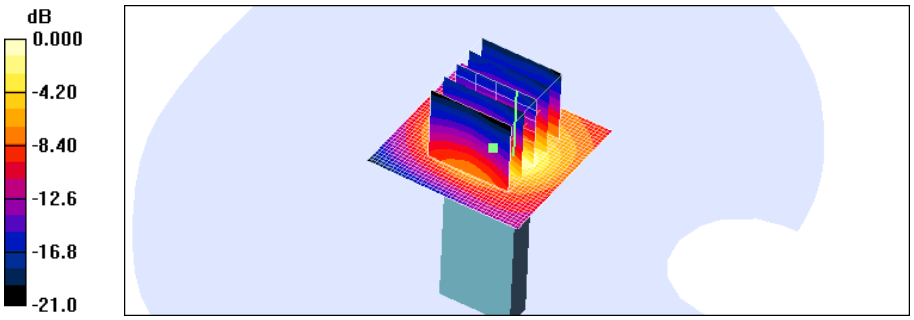
DUT: U210; Type: Top; Serial: #1

Communication System: PCS 1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.48 mho/m; ε_r = 52.1; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 176

DASY4 Configuration:
- Probe: ET3DV6 - SN1631; ConvF(4.48, 4.48, 4.48); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: 1800/1900 Phantom; Type: SAM

PCS Body 600/Area Scan (41x41x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.615 mW/g

PCS Body 600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.0 V/m; Power Drift = 0.047 dB
Peak SAR (extrapolated) = 1.15 W/kg
SAR(1 g) = 0.552 mW/g; SAR(10 g) = 0.241 mW/g
Maximum value of SAR (measured) = 0.625 mW/g



0 dB = 0.625mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Dual-Band CDMA Phone(CDMA/PCS CDMA)
Liquid Temperature: 21.3 ℃
Ambient Temperature: 21.5 ℃
Test Date: Aug.01, 2009

DUT: U210; Type: Bar; Serial: #1

Communication System: CDMA 835MHz FCC; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.52 MHz; σ = 0.995 mho/m; ε_r = 54; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 176

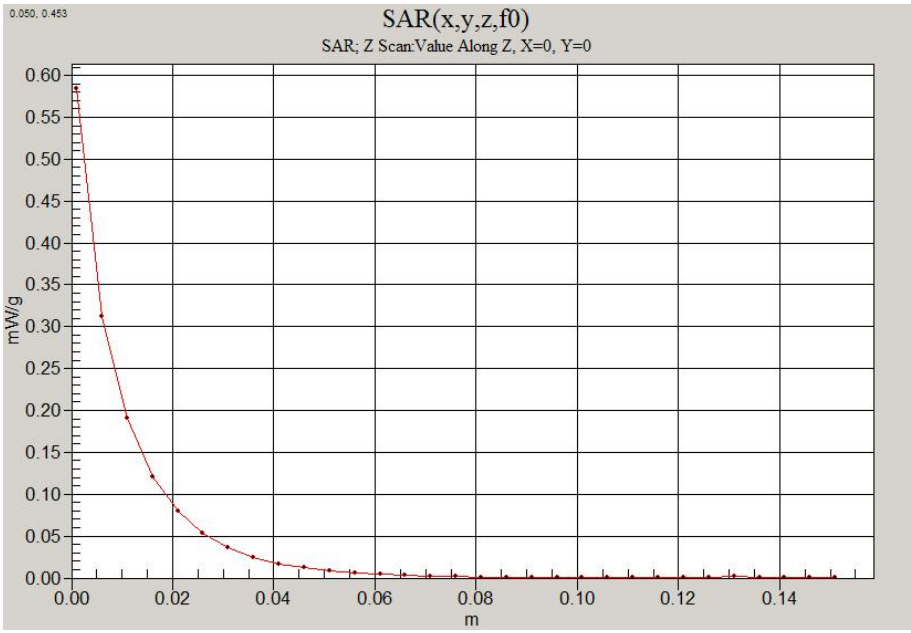
DASY4 Configuration:
- Probe: ET3DV6 - SN1631; ConvF(5.91, 5.91, 5.91); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: SAM 835/900 MHz; Type: SAM

CDMA Body 384/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.683 mW/g

CDMA Body 384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.6 V/m; Power Drift = -0.136 dB
Peak SAR (extrapolated) = 1.49 W/kg
SAR(1 g) = 0.611 mW/g; SAR(10 g) = 0.348 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
aximum value of SAR (measured) = 0.664 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: Dual-Band CDMA Phone(CDMA/PCS CDMA)
Liquid Temperature: 21.3 ℃
Ambient Temperature: 21.5 ℃
Test Date: Aug.01, 2009

DUT: U210; Type: Bar; Serial: #1

Communication System: AWS 1700 MHz FCC; Frequency: 1732.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.44 mho/m; ε_r = 53.8; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 176

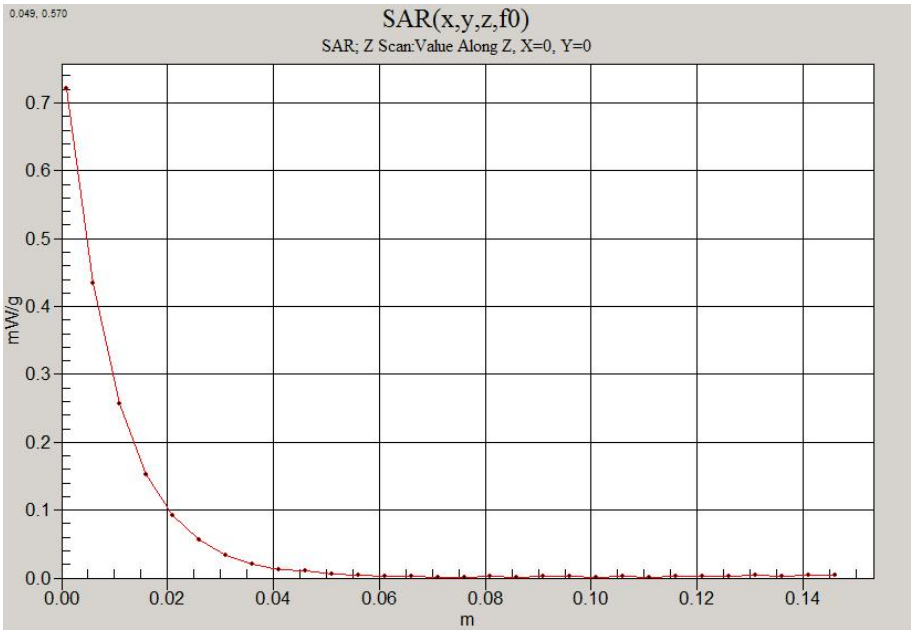
DASY4 Configuration:
- Probe: ET3DV6 - SN1631; ConvF(4.67, 4.67, 4.67); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: SAM 1800/1900 MHz; Type: SAM

AWS Body 450/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.39 mW/g

AWS Body 450/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.3 V/m; Power Drift = 0.021 dB
Peak SAR (extrapolated) = 1.64 W/kg
SAR(1 g) = 1.1 mW/g; SAR(10 g) = 0.642 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
aximum value of SAR (measured) = 1.21 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: Dual-Band CDMA Phone(CDMA/PCS CDMA)
Liquid Temperature: 21.2 ℃
Ambient Temperature: 21.4 ℃
Test Date: Aug.03, 2009

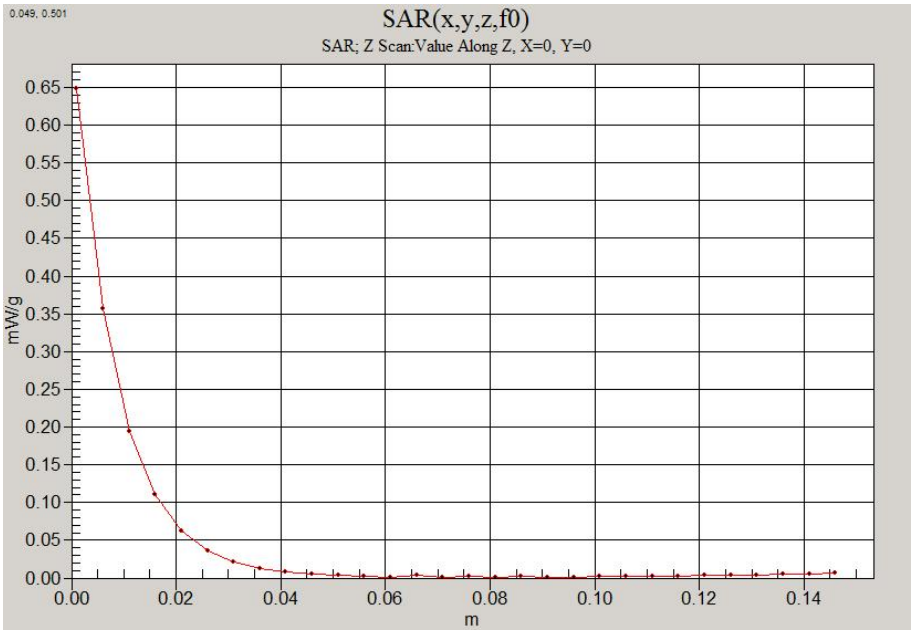
DUT: U210; Type: Bar; Serial: #1

Communication System: PCS 1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.48 mho/m; ε_r = 52.1; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 176

DASY4 Configuration:
- Probe: ET3DV6 - SN1631; ConvF(4.48, 4.48, 4.48); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: SAM 1800/1900 MHz; Type: SAM

PCS Body 600/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.41 mW/g

PCS Body 600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 32.5 V/m; Power Drift = -0.146 dB
Peak SAR (extrapolated) = 1.91 W/kg
SAR(1 g) = 1.18 mW/g; SAR(10 g) = 0.633 mW/g
Maximum value of SAR (measured) = 1.29 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: 21.3 ℃

Test Date: Aug.01, 2009

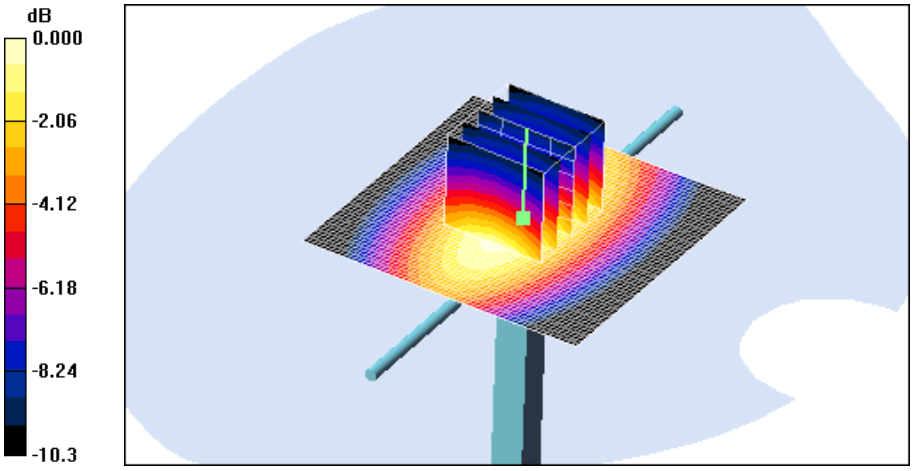
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:441

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.876 mho/m; ε_r = 41.1; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 176

DASY4 Configuration:
- Probe: ET3DV6 - SN1631; ConvF(5.83, 5.83, 5.83); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: SAM 835/900 MHz; Type: SAM

Validation 835MHz/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.07 mW/g

Validation 835MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 36.5 V/m; Power Drift = -0.051 dB
Peak SAR (extrapolated) = 1.42 W/kg
SAR(1 g) = 0.994 mW/g; SAR(10 g) = 0.659 mW/g
Maximum value of SAR (measured) = 1.08 mW/g



0 dB = 1.08mW/g

■ Validation Data (1800 MHz Head)

Test Laboratory: HCT CO., LTD

Input Power 100 mW (20 dBm)

Liquid Temp: 21.3 ℃

Test Date: Aug.01, 2009

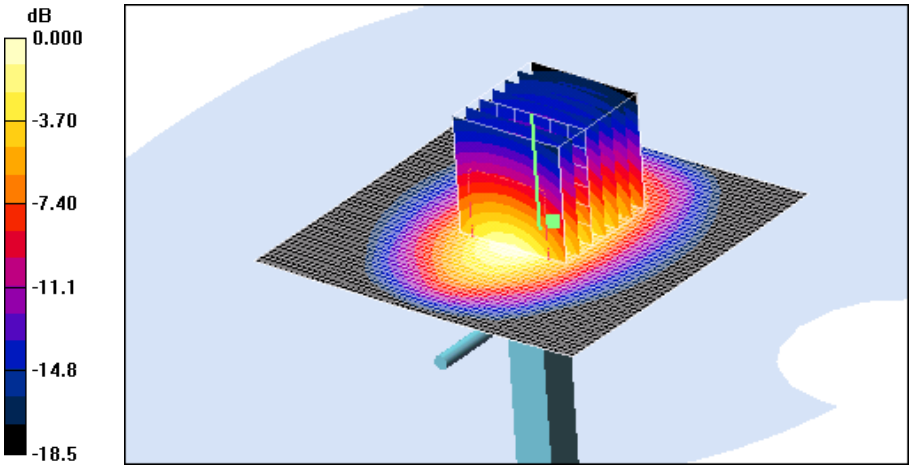
DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN:2d007

Communication System: CW; Frequency: 1800 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1800 MHz; σ = 1.41 mho/m; ε_r = 38.9; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 176

DASY4 Configuration:
- Probe: ET3DV6 - SN1631; ConvF(5.3, 5.3, 5.3); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: SAM 1800/1900 MHz; Type: SAM

Dipole 1800MHz Validation/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 4.73 mW/g

Dipole 1800MHz Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 61.0 V/m; Power Drift = -0.029 dB
Peak SAR (extrapolated) = 6.65 W/kg
SAR(1 g) = 3.99 mW/g; SAR(10 g) = 2.11 mW/g
Maximum value of SAR (measured) = 4.53 mW/g



0 dB = 4.53mW/g

■ Validation Data (1900 MHz Head)

Test Laboratory: HCT CO., LTD

Input Power 100 mW (20 dBm)

Liquid Temp: 21.2 ℃

Test Date: Aug.03, 2009

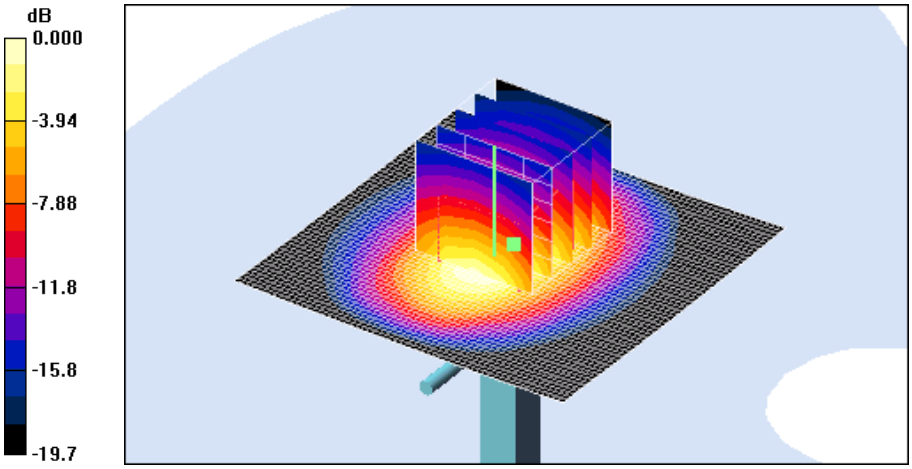
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 – SN:5d032

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.41 mho/m; ε_r = 39.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 176

DASY4 Configuration:
- Probe: ET3DV6 – SN1631; ConvF(5.07, 5.07, 5.07); Calibrated: 2009-06-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2009-05-22
- Phantom: SAM 1800/1900 MHz; Type: SAM

Dipole 1900MHz Validation/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 4.82 mW/g

Dipole 1900MHz Validation/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 61.3 V/m; Power Drift = 0.001 dB
Peak SAR (extrapolated) = 6.77 W/kg
SAR(1 g) = 4.1 mW/g; SAR(10 g) = 2.15 mW/g
Maximum value of SAR (measured) = 4.58 mW/g



0 dB = 4.58mW/g

■ Dielectric Parameter (835 MHz Head)

Title	U210
SubTitle	CDMA835(Head)
Test Date	Aug.01, 2009

Frequency	e'	e''
800000000	41.5447	18.9169
805000000	41.4367	18.8770
810000000	41.3655	18.8494
815000000	41.3235	18.8464
820000000	41.2805	18.8172
825000000	41.2057	18.8235
830000000	41.1410	18.8430
835000000	41.1204	18.8659
840000000	41.1321	18.8901
845000000	41.0853	18.8886
850000000	41.0489	18.8843
855000000	40.9534	18.8865
860000000	40.9809	18.8848
865000000	40.9493	18.8895
870000000	40.8930	18.8405
875000000	40.8829	18.8796
880000000	40.8155	18.8746
885000000	40.7079	18.7965
890000000	40.6631	18.8107
895000000	40.5888	18.7889
900000000	40.5113	18.7192

■ Dielectric Parameter (835 MHz Body)

Title	U210
SubTitle	CDMA835(Body)
Test Date	Aug.01, 2009

Frequency	e'	e''
800000000	54.2293	21.4942
805000000	54.2322	21.4892
810000000	54.1613	21.4651
815000000	54.1266	21.5071
820000000	54.0999	21.4898
825000000	54.0064	21.4856
830000000	54.0392	21.4581
835000000	53.9728	21.4002
840000000	53.9490	21.3660
845000000	53.9102	21.3484
850000000	53.8734	21.3629
855000000	53.8322	21.3627
860000000	53.7618	21.3248
865000000	53.6530	21.2965
870000000	53.5939	21.2823
875000000	53.4621	21.2426
880000000	53.4030	21.2080
885000000	53.3023	21.2005
890000000	53.2366	21.1430
895000000	53.1474	21.1583
900000000	53.1209	21.1025

■ Dielectric Parameter (1800 MHz Head)

Title	U210
SubTitle	AWS1700(Head)
Test Date	Aug.01, 2009

Frequency	e'	e''
1700000000	39.3230	13.9925
1710000000	39.2880	14.0259
1720000000	39.2958	14.0444
1730000000	39.2403	14.0427
1740000000	39.2461	14.0001
1750000000	39.2149	13.9942
1760000000	39.1601	13.9991
1770000000	39.0788	14.0565
1780000000	38.9706	14.0808
1790000000	38.8745	14.1018
1800000000	38.8646	14.1273
1810000000	38.8322	14.2207
1820000000	38.7730	14.2661
1830000000	38.7738	14.3032
1840000000	38.7416	14.3235
1850000000	38.7479	14.3207
1860000000	38.7528	14.3096
1870000000	38.7281	14.3224
1880000000	38.6712	14.3640
1890000000	38.5920	14.4253
1900000000	38.5197	14.4469

■ Dielectric Parameter (1800 MHz Body)

Title	U210
SubTitle	AWS1700 (Body)
Test Date	Aug.01, 2009

Frequency	e'	e''
1700000000	53.9066	14.8380
1710000000	53.8944	14.8995
1720000000	53.8587	14.9207
1730000000	53.8427	14.9629
1740000000	53.8146	15.0191
1750000000	53.7804	15.0432
1760000000	53.7593	15.0231
1770000000	53.7194	15.0488
1780000000	53.6827	15.0759
1790000000	53.6602	15.1170
1800000000	53.5872	15.1316
1810000000	53.5485	15.1577
1820000000	53.5329	15.2120
1830000000	53.5018	15.2505
1840000000	53.5061	15.2764
1850000000	53.4847	15.3251
1860000000	53.4827	15.3640
1870000000	53.4264	15.4225
1880000000	53.3915	15.4287
1890000000	53.3757	15.4659
1900000000	53.3484	15.4806

■ Dielectric Parameter (1900 MHz Head)

Title	U210
SubTitle	PCS1900(Head)
Test Date	Aug.03, 2009

Frequency	e'	e''
1800000000	39.9013	13.0606
1810000000	39.8503	13.0784
1820000000	39.8134	13.0877
1830000000	39.7873	13.1418
1840000000	39.7410	13.1661
1850000000	39.6923	13.1651
1860000000	39.6345	13.1670
1870000000	39.6331	13.2234
1880000000	39.5280	13.2647
1890000000	39.5170	13.2971
1900000000	39.4659	13.3670
1910000000	39.4131	13.3995
1920000000	39.3570	13.4017
1930000000	39.3173	13.4734
1940000000	39.2892	13.4698
1950000000	39.2478	13.4985
1960000000	39.2028	13.5063
1970000000	39.1761	13.5227
1980000000	39.1299	13.5698
1990000000	39.0732	13.5422
2000000000	38.9731	13.5964

■ Dielectric Parameter (1900 MHz Body)

Title	U210
SubTitle	PCS1900(Body)
Test Date	Aug.03, 2009

Frequency	e'	e''
1800000000	52.6071	13.7455
1810000000	52.5551	13.8438
1820000000	52.5031	13.9099
1830000000	52.4284	13.9637
1840000000	52.3747	14.0141
1850000000	52.2986	14.0488
1860000000	52.2354	14.0835
1870000000	52.1453	14.1139
1880000000	52.0646	14.1726
1890000000	51.9568	14.2025
1900000000	51.8932	14.2474
1910000000	51.8426	14.3205
1920000000	51.8126	14.3861
1930000000	51.7984	14.4627
1940000000	51.7526	14.5218
1950000000	51.7467	14.5947
1960000000	51.6465	14.6406
1970000000	51.6018	14.6823
1980000000	51.5895	14.6727
1990000000	51.5133	14.7378
2000000000	51.4587	14.7404