Nemko

SAR Evaluation Report

FCC ID : TARCDC-650

Project Reference No. : NK2HR065

Product Type : Single Band CDMA 1x- EVDO Pcmcia Card Modem

Brand Name : C-motech

Model : CDC-650

Tested According to : IEEE Standard C95.1 / OET Bulletin 65 Supplement C

Tested Period : April. 16. 2007 to April. 19. 2007

Tested by	Seob Lee	[signature]	date	: April. 20. 2007
Verified by	Seonteag.Jin	[signature]	date	: April. 20. 2007

This test results are only related to the item tested.
This test report is only limited to the client company and the product.
This report must not be used by the client to claim product endorsement by any agency of the U.S. Government.

Lab Address : Nemko Korea Co., Ltd
300-2, Osan-Ri, Mohyeon-Myeon, Cheoin-Gu, Yongin-City, Gyeoggi-Do, Korea
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Contents of This Report

1.General Information

1.1 Applicant

Company Name:	C-motech. Co.,Ltd
Company Address:	8,9F BLD. Yongsan Bldg. Yoido-dog, Youngdungpo-gu, Seoul Korea (150-871)
Phone/Fax:	Phone: +82-2-369-9881 / +82-2-785-5740
Contact Name:	Byung-young Choi

1.2 Manufacturer

Company Name:	C-motech. Co.,Ltd
Company Address:	8,9F BLD. Yongsan Bldg. Yoido-dog, Youngdungpo-gu, Seoul Korea (150-871)
Phone/Fax:	Phone: +82-2-369-9881 / +82-2-785-5740
Contact Name:	Byung-young Choi

1.3 Description of Device

Category:	Single Band CDMA 1x-EVDO Pcmcia Card Modem
Model Name:	CDC-650
Brand Name:	C-motech
Serial Number:	00000001
Frequency of Operation	Tx : 824MHz ~ 849MHz, Rx : 869MHz ~ 894MHz
Power Output (Conducted)	0.288W (25.59dBm)
Type of Oscillation	PLL Synthesizer & VCTCXO (19.2MHz)
Modulation Method	OQPSK, QPSK
Bandwidth	1.23MHz
Modulation	Code Division Multiple Access (CDMA)
Operating Condition	0 to +50℃ 85%(at 50 °C), relative humidity (non-condensing)
Power Supply	+3.3VDC from Pcmcia Card slot
Antenna Gain	-2dBi
Dimensions	100mm x 54mm x 5mm
Weight	Approx. 58g
Remarks:	-

2. General Test Condition

2.1 Location

Nemko Korea
300-2, Osan-Ri, Mohyeon-Myeon, Cheoin-Gu, Yongin-City, Gyunggi-Do
Phone : 82-31-322-2333 , Fax : 82-31-322-2332

2.2 Operating Environment

Parameters	Recording during test	Accepted deviation
Ambient temperature	21 ± 2℃	15 ~ 30℃
Relative humidity	45 ± 15%	20 ~ 75%

2.3 Support Equipment

Equipment	Manufacturer	Model Name	Serial Number
Laptop	SAMSUNG	SENS X10 SE	184C93DY400118T
Laptop	SONY	PCG-6C7P	J000RJJ8
Laptop	SAMSUNG	SENS X20	955C93DY800185K

2.4 Test Frequency

Test Channel	Test Frequency (MHz)
1013	824.70
363	835.89
777	848.31

2.5 Position Information

Bottom Position **:** Laptop **-** Bottom side facing phantom, EUT

3. Description of Test Equipment

3.1 SAR Measurement Setup

Robotic System

Measurements are performed using the DASY4 automated dosimetric assessment system. Which is made by Schmid & Partner Engineering AG (SPEAG) in Zurich, Switzerland and consists of high precision robotics system (Stäubli), robot controller, measurement server, H/P computer, nearfield probe, probe alignment sensor, and the SAM 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 Fig. 3.1).

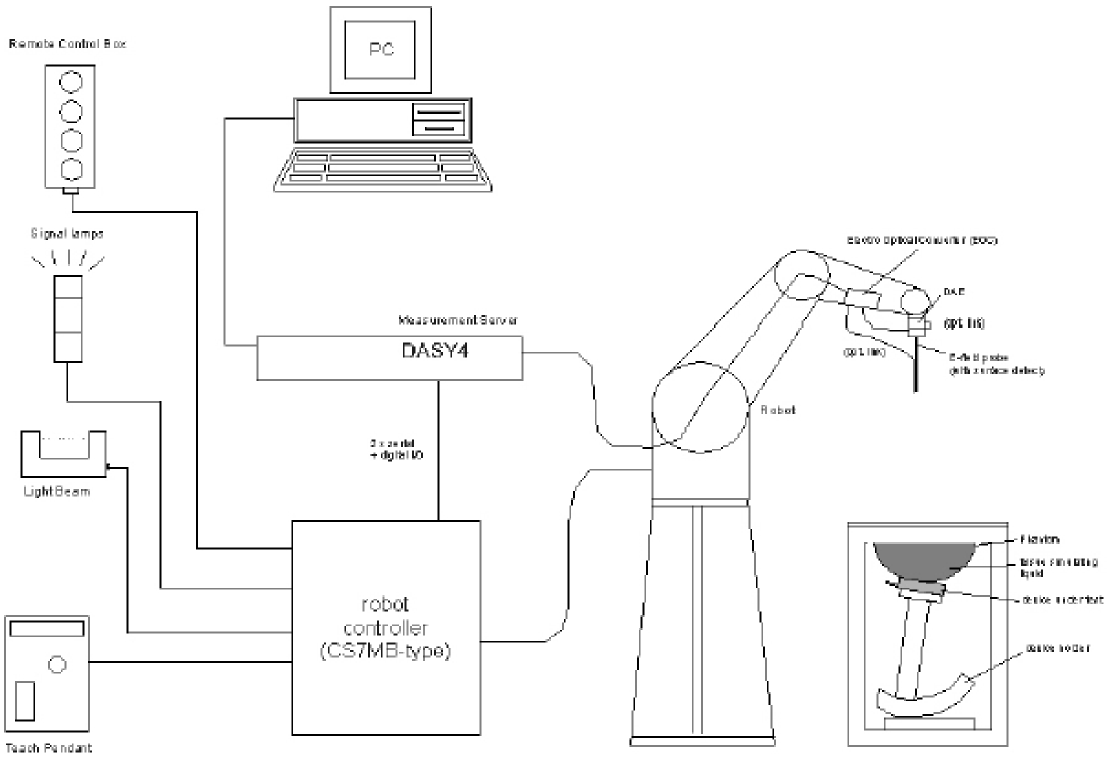


Figure 3.1 SAR Measurement System Setup

System Hardware

A cell controller system contains the power supply, robot controller, teach pendant (Joystick), and a remote control is used to drive the robot motors. The PC consists of the H/P computer with Windows XP system and SAR Measurement Software DASY4, LCD monitor, mouse and keyboard. The Stäubli Robot is connected to the cell controller to allow software manipulation of the robot.
A Data Acquisition Electronic (DAE) circuit that performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc.
This 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 measurement server.

System Electronics

The DAE4 consists of a highly sensitive electrometer-grade preamplifier with autozeroing, a channel and gain-switching multiplexer, a fast 16-bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server 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.

3.2 E-field Probe

The SAR measurement were conducted with the dosimetric probe ES3DV3, designed in the classical triangular configuration (see Fig.3.3) 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 multi-fiber line ending at the front of the probe tip (see Fig.3.4). 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 System 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 (see Fig.3.2). The approach is stopped at reaching the maximum.

Figure3.2 DAE System

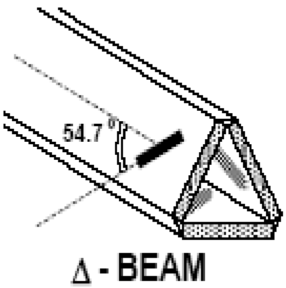


Figure 3.3 Triangular Probe Configuration

Figure 3.4 Probe Thick-Film Technique

Probe Specifications

Construction : Symmetrical design with triangular core
Interleaved sensors
Built-in shielding against static charges
PEEK enclosure material (resistant to organic DGBE)
Calibration : Basic Broad Band Calibration In air from 10 MHz to 3.0 GHz
In brain and muscle simulating tissue at Frequencies of HSL835, HSL1900 MHz, Calibration certificates please find attached.
Frequency : 10 MHz to > 6 GHz; Linearity: ±0.2 dB (30 MHz to 3 GHz)
Directivity ±0.2 dB in HSL (rotation around probe axis)
±0.3 dB in HSL (rotation normal to probe axis)
Dynamic Range 5μW/g to > 100mW/g; Linearity: ±0.2dB
Dimensions Overall length: 330mm (Tip : 20mm)
Tip diameter: 4.0mm (Body : 12mm)
Distance from probe tip to dipole centers: 2.0mm
Application General dosimetry up to 3 GHz
Compliance tests of mobile phones
Fast automatic scanning in arbitrary phantoms
Optical Surface Detection
± 0.2 mm repeatability in air and clear liquids over diffuse reflecting surfaces

3.3 SAM Phantom

The SAM Twin Phantom V4.0C 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.
(See Figure 3.5)

Figure 3.5 SAM Twin Phantom

Phantom Specification

Construction : The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528-200X, CENELEC 50361 and IEC 62209. 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 ± 0.2 mm
Filling Volume : Approx. 25 liters
Dimensions : Height; 830 mm; Length: 1000 mm; Width: 500 mm

3.4 Device Holder for Transmitters

In combination with the SAM Twin Phantom V4.0, the Mounting Device (see Fig. 3.6) enables the rotation of the mounted transmitter in spherical coordinates whereby the rotation point is the ear opening.
The device holder can be locked at different phantom locations (left head, right head, flat phantom).
* Note: A simulating human hand is not used due to the complex anatomical and geometrical structure of the hand that may produce infinite number of configurations .
To produce the worst-case condition (the hand absorbs antenna output power), the hand is omitted during the tests.

Figure 3.6 Device Holder

4. Measurement Procedure

EUT at the maximum power level is placed by a non metallic device holder in the above described positions at a shell phantom of a human being.
The distribution of the electric field strength *E* is measured in the tissue simulating liquid within the shell phantom.
For this miniaturized field probes with high sensitivity and low field disturbance are used.
Afterwards the corresponding SAR values are calculated with the known electrical conductivity σ and the mass density *p* of the tissue in the SEMCAD software.
The software is able to determine the averaged SAR values (averaging region 1g or 10g) for compliance testing.

The measurements are done by two scans: first a coarse scan determines the region of the maximum SAR, afterwards the averaged SAR is measured in a second scan within the sharp of a cube. The measurement times takes about 20 minutes.

The following steps are used for each test position:

STEP 1
Establish a call with the maximum output power with a base station simulator.
The connection between the mobile phone and the base station simulator is established via air interface.

STEP 2
Measurement of the local E-Field value at a fixed location (P1).
This value serves as a reference value for calculating a possible power drift.

STEP 3
Measurement of the SAR distribution with a grid spacing of 15mm × 15mm and a constant distance to the inner surface of the phantom.
Since the sensors cannot directly measure at the inner surface of the phantom.
Since the sensors can not directly measure at the inner phantom surface, the values between the sensors and the inner phantom surface are extrapolated. With this values the area of the maximum SAR is calculated by a interpolation scheme (combination of a least-square fitted function and a weighted average method). Additional peaks within 3dB of the maximum SAR are searched.

STEP 4
Around this points, a cube of 30mm×30mm×30mm is assessed by measuring 5×5×5 points.
With these data, the peak spatial-average SAR value can be calculated with the SEMCAD software.

STEP 5
The used extrapolation and interpolation routines are all based on the modified Quadratic Shepard's method [DASY4].

STEP 6
Repetition of the E-Field measurement at the fixed location(P1) and repetition of the whole procedure if the two results differ by more than ±0.22dB.

4.1 Head / Muscle Simulating Mixture Characterization

The brain mixture consists of a viscous gel using hydroxethyl-cellullose (HEC) gelling agent and saline solution. 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 head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 have been incorporated in the following table.

Ingredients (% by weight)	**Frequency (MHz)**									
	450		835		915		1900		2450	
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
Dielectric Constant	43.42	58.0	42.54	56.1	42.0	56.8	39.9	54.0	39.8	52.5
Conductivity (S/m)	0.85	0.83	0.91	0.95	1.0	1.07	1.42	1.45	1.88	1.78

Typical Composition of Ingredients for Liquid Tissue Phantoms

4.2 Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 have been incorporated in the following table.

Target Frequency	Head		Body	
(MHz)	ε_r	σ (S/m)	ε_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 – 2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5800	35.3	5.27	48.2	6.00

(ε_r = relative permittivity, σ = conductivity and ρ = 1000 kg/m^3)

4.3 FCC Limits for Specific Absorption Rate (SAR)

Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	20.0

Limits for General Population/Uncontrolled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

NOTE 1: See Section 1 for discussion of exposure categories.

NOTE 2: Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1 gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

NOTE 3: At frequencies above 6.0 GHz, SAR limits are not applicable and MPE limits for power density should be applied at 5 cm or more from the transmitting device.

Note 4: The time averaging criteria for field strength and power density do not apply to general population SAR limit of 47 CFR §2.1093.

5. Definition of Reference Points

5.1 EAR Reference Point

Figure 5.1 shows the front, back and side views of SAM. The point "M" is the reference point For the center of mouth, "LE" is the left ear reference point (ERP), and "RE" is the right ERP. The ERPs are 15 mm posterior to the entrance to ear canal (EEC) along the B-M line (Back-Mouth), as shown in Figure 5.2.

Figure 5.1 Front, back and side view of SAM

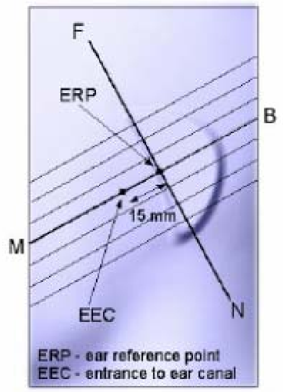


Figure 5.2 Close up side view

The plane passing through the two ear canals and M is defined as the Reference Plane. The line N-F (Neck-Front) perpendicular to the reference plane and passing through the RE(or LE) is called the Reference Pivoting Line (see Figure 5.3).
Line B-M is perpendicular to the N-F line. Both N-F and B-M Lines should be marked on the external phantom shell to Facilitate handset positioning. Posterior to the N-F line, the thickness of the phantom shell with the shape of an ear is a flat surface 6 mm thick at the ERPs.

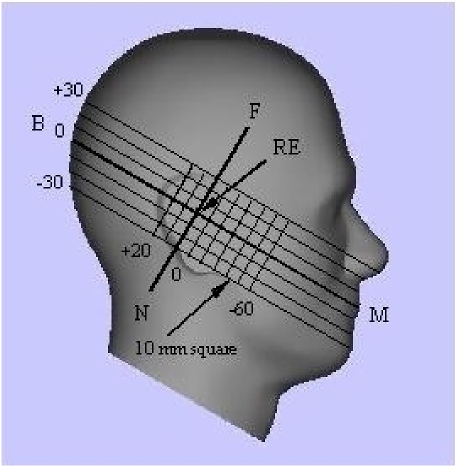


Figure 5.3 Side view of the Phantom showing relevant markings

5.2 Handset Reference Points

Two imaginary lines on the handset were established: the vertical centerline and the horizontal line. The test device was placed in a normal operating position with the "test device reference point" located along the "vertical centerline" on the front of the device aligned to the "ear reference point" (see Fig. 5.4).
The "test device reference point" was than located at the same level as the center of the eat reference point. The test device was positioned so that the "vertical centerline" was bisecting the front surface of the handset at it's tip and bottom edges, positioning the "ear reference point" on the outer surface of the both the left and right head phantoms on the ear reference point.

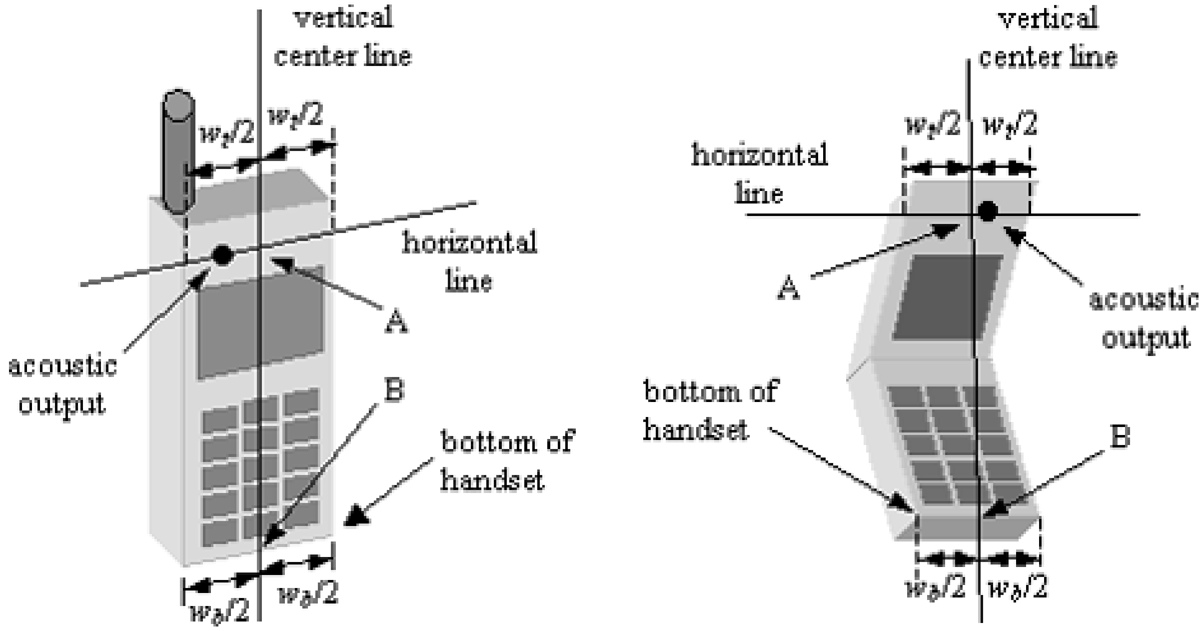


Figure 5.4 Handset vertical and horizontal reference lines

6. Test Configuration Positions

6.1 Cheek/Touch Position

Step 1

The test device was positioned with the handset close to the surface of the phantom such that point. A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 6.1), such that the plane defined by the vertical center line and the horizontal line of the phone is approximately parallel to the sagittal plane of the phantom.

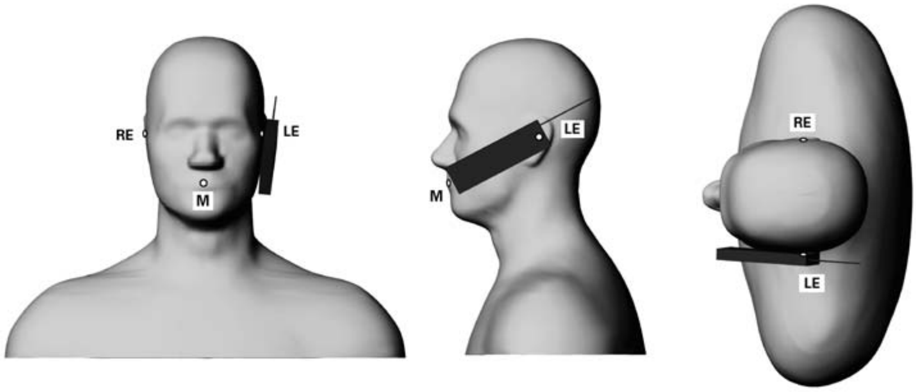


Figure 6.1 Front, Side and Top View of Cheek/Touch Position

Step 2

The handset was translated towards the phantom along the line passing through RE & LE until the handset touches the ear.

Step 3

While maintaining the handset in this plane, the handset was rotated around the LE-RE line Until the vertical centerline was in the plane normal to MB-NF including the line MB (reference plane).

Step 4

Rotate the handset around the vertical centerline until the phone (horizontal line) was symmetrical was respect to the line NF.

Step 5

While maintaining the vertical centerline in the reference plane, keeping point A on the line passing through RE and LE, and maintaining the phone contact with the ear, the handset was rotated about the line NF until any point on the handset made contact with a phantom point below the ear cheek.(See Figure 5.2)

6.2 EAR/Tilt 15° Position

With the test device aligned in the “Cheek/Touch Position”:

Step 1
Repeat steps 1 to 5 of 5.2 to place the device in the “Cheek/Touch Position”

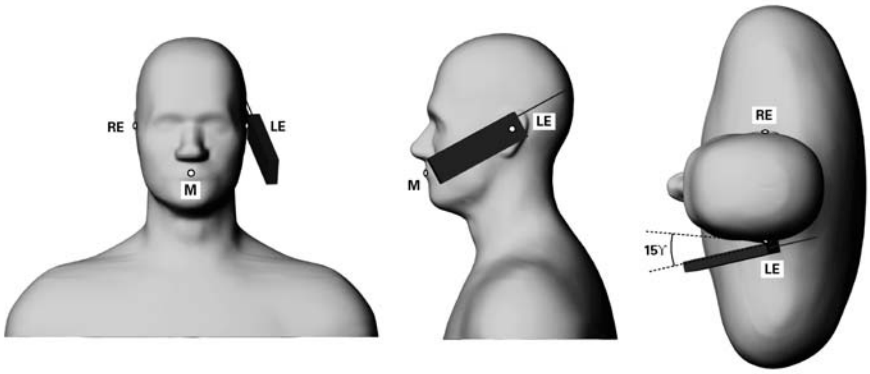


Figure 6.2 Front, side and Top View of Ear/Tilt 15° Position

Step 2
While maintaining the orientation of the phone, the phone was retracted parallel to the rference plane far enough to enable a rotation of the phone by 15 degree.

Step 3
The phone was then rotated around the horizontal line by 15 degree.

Step 4
While maintaining the orientation of the phone, the phone was moved parallel to the reference plane until any part of the phone touches the head.
(In this position, point A was located on the line RE-LE). The tilted position is obtained when the contact is on the pinna. If the contact was at any location other than the pinna, the angle of the phone would then be reduced.
The tilted position was obtained when any part of the phone was in contact of the ear as well as a second part of the phone was in contact with the head. (See Figure 6.2)

6.3 Body-worn and Other Configurations

6.3.1 Phantom Requirements

For body-worn and other configurations a flat phantom shall be used which is comprised of material with electrical properties similar to the corresponding tissues.

6.3.2 Test Position

The body-worn configurations shall be tested with the supplied accessories (belt-clips, holsters, etc.) attached to the device in normal use configuration. Devices with a headset output shall be tested with a connected headset. Since the Supplement C to OET Bulletin 65 was mainly issued for mobile phones it is only a guideline and therefore some requirements are not usable or practical for devices other than mobile phones.

6.3.3 Test to be Performed

For purpose of determining test requirements, accessories may be divided into two categories: those that do not contain metallic components and those that do. For multiple accessories that do not contain metallic components, the device may be tested only with that accessory which provides the closet spacing to the body.
For multiple accessories that contain metallic components, the device must be tested with each accessory that contains a unique metallic component. If multiple accessories share an identical metallic component, only the accessory that provides the closet spacing to the body must be tested.
If the manufacturer provides none body accessories, a separation distance of 1.5 cm between the back of the device and the flat phantom is recommended. Other separation distances may be used, but they shall not exceed 2.5cm. In these cases, the device may use body-worn accessories that provide a separation distance greater than that tested for the device provided however that the accessory contains no metallic components.
For devices with retractable antenna, the SAR test shall be performed with the antenna fully extended and fully retracted. Other factors that may affect the exposure shall also be tested. For example, optional antennas or optional battery packs which may significantly change the volume, lengths, flip open/closed, etc. of the device or any other accessories which might have the potential to considerably increase the peak spatial-average SAR value.
The SAR test shall be performed at the high, middle and low frequency channels of each operating mode. If the SAR measured at the middle channel for each test configuration is at least 3.0dB lower than the SAR limit, testing at the high and low channel is optional.

* In this test, This Device is with belt-clip but only used for the holster covering USB DONGLE connection part and this USB DONGLE can’t be attached to computer with this holster. So it’s impossible to perform test with the holster.

7. Measurement Uncertainty

DASY4 Uncertainty Budget
According to IEEE 1528 [1]

Error Description	Uncertainty value	Prob. Dist.	Div.	(c_i) 1g	(c_i) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(v_i) v_{eff}
Measurement System								
Probe Calibration	±5.9 %	N	1	1	1	±5.9 %	±5.9 %	∞
Axial Isotropy	±4.7 %	R	$\sqrt{3}$	0.7	0.7	±1.9 %	±1.9 %	∞
Hemispherical Isotropy	±9.6 %	R	$\sqrt{3}$	0.7	0.7	±3.9 %	±3.9 %	∞
Boundary Effects	±1.0 %	R	$\sqrt{3}$	1	1	±0.6 %	±0.6 %	∞
Linearity	±4.7 %	R	$\sqrt{3}$	1	1	±2.7 %	±2.7 %	∞
System Detection Limits	±1.0 %	R	$\sqrt{3}$	1	1	±0.6 %	±0.6 %	∞
Readout Electronics	±0.3 %	N	1	1	1	±0.3 %	±0.3 %	∞
Response Time	±0.8 %	R	$\sqrt{3}$	1	1	±0.5 %	±0.5 %	∞
Integration Time	±2.6 %	R	$\sqrt{3}$	1	1	±1.5 %	±1.5 %	∞
RF Ambient Conditions	±3.0 %	R	$\sqrt{3}$	1	1	±1.7 %	±1.7 %	∞
Probe Positioner	±0.4 %	R	$\sqrt{3}$	1	1	±0.2 %	±0.2 %	∞
Probe Positioning	±2.9 %	R	$\sqrt{3}$	1	1	±1.7 %	±1.7 %	∞
Max. SAR Eval.	±1.0 %	R	$\sqrt{3}$	1	1	±0.6 %	±0.6 %	∞
Test Sample Related								
Device Positioning	±2.9 %	N	1	1	1	±2.9 %	±2.9 %	145
Device Holder	±3.6 %	N	1	1	1	±3.6 %	±3.6 %	5
Power Drift	±5.0 %	R	$\sqrt{3}$	1	1	±2.9 %	±2.9 %	∞
Phantom and Setup								
Phantom Uncertainty	±4.0 %	R	$\sqrt{3}$	1	1	±2.3 %	±2.3 %	∞
Liquid Conductivity (target)	±5.0 %	R	$\sqrt{3}$	0.64	0.43	±1.8 %	±1.2 %	∞
Liquid Conductivity (meas.)	±2.5 %	N	1	0.64	0.43	±1.6 %	±1.1 %	∞
Liquid Permittivity (target)	±5.0 %	R	$\sqrt{3}$	0.6	0.49	±1.7 %	±1.4 %	∞
Liquid Permittivity (meas.)	±2.5 %	N	1	0.6	0.49	±1.5 %	±1.2 %	∞
Combined Std. Uncertainty						±10.8 %	±10.6 %	330
Expanded STD Uncertainty						**±21.6 %**	**±21.1 %**	

8. System Verification

8.1 Tissue Verification

For the measurement of the following parameters the HP 85070E dielectric probe kit is used, representing the open-ended slim form probe measurement procedure.
The measured values should be within ±5% of the recommended values given by the IEEE Standard C95.1 / OET Bulletin 65 Supplement C.

Table 8.1 Measured Tissue Parameters

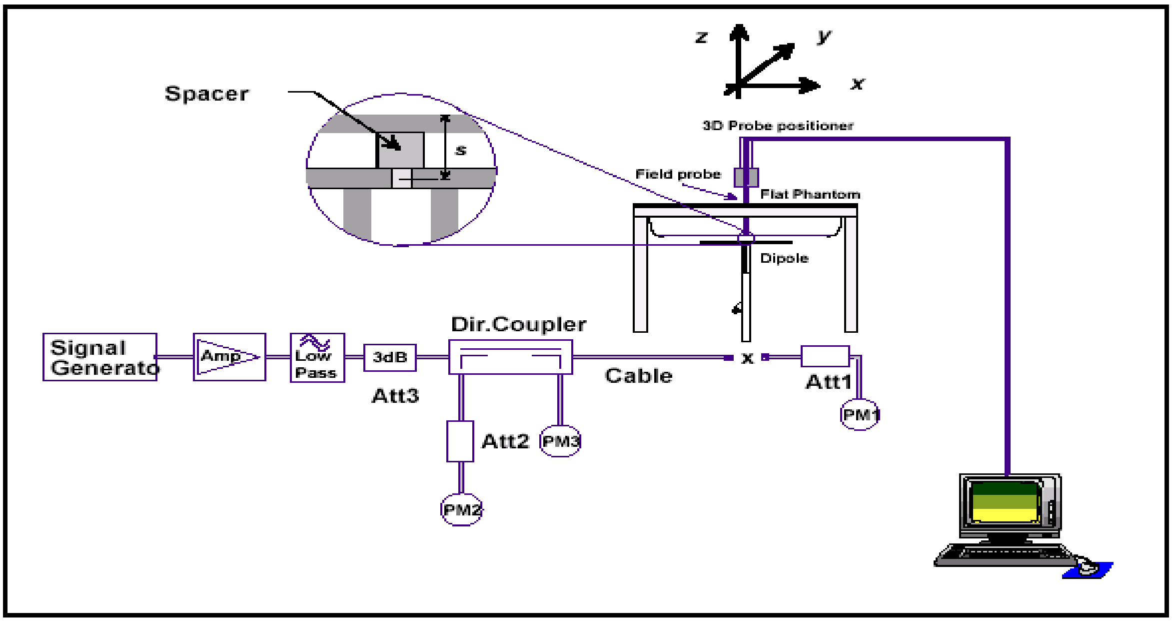
	Cellular Muscle	
Date	April 17, 2007	
Liquid Temperature(°C)	21.4 °C	
	Recommended Value	Measured Value
Dielectric Constant (ε)	55.2±2.76	**55.2**
Conductivity(σ)	0.97 ±0.048	**0.961**

8.2 Test System Validation

The simplified performance check was realized using the dipole validation kits.
The input power of the dipole antennas were 250mW and they were placed under the flat Part of the SAM phantoms.
The target and measured results are listed in the table 8.2

Table 8.2 System Validation Results

Tissue	Date	Liquid Temperature (°C)	Targeted SAR (mW/g)	Measured SAR (mW/g)	Deviation (%)
			1g	1g	1g
Cellular Muscle	April 17, 2007	21.4 °C	2.375	**2.41**	**1.47**



Dipole Validation Test Setup

8.3 Measurement Result of Test Data (Validation)

Date/Time: 2007-04-17 2:27:03

Test Laboratory: Nemko Korea File Name: TARCDC-650 CDMA Validation.da4

DUT: Dipole 835 MHz Type: D835V2 Serial: D835V2 - SN:4d017 Applicant Name: C-motech Co.,Ltd

Communication System: CW Frequency: 835 MHz

Duty Cycle: 1:1 Phantom section: Flat Section

Medium parameters used: f = 835 MHz; σ = 0.961 mho/m; ε_r = 55.2; ρ = 1000 kg/m^3

DASY4 Configuration:

Probe: ES3DV3 - SN3068; ConvF(5.62, 5.62, 5.62); Calibrated: 2007-03-20

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn672; Calibrated: 2007-04-04

Phantom: SAM Phantom; Type: SAM; Serial: TP-1358

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

TARCDC-650 CDMA Validation/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 2.57 mW/g

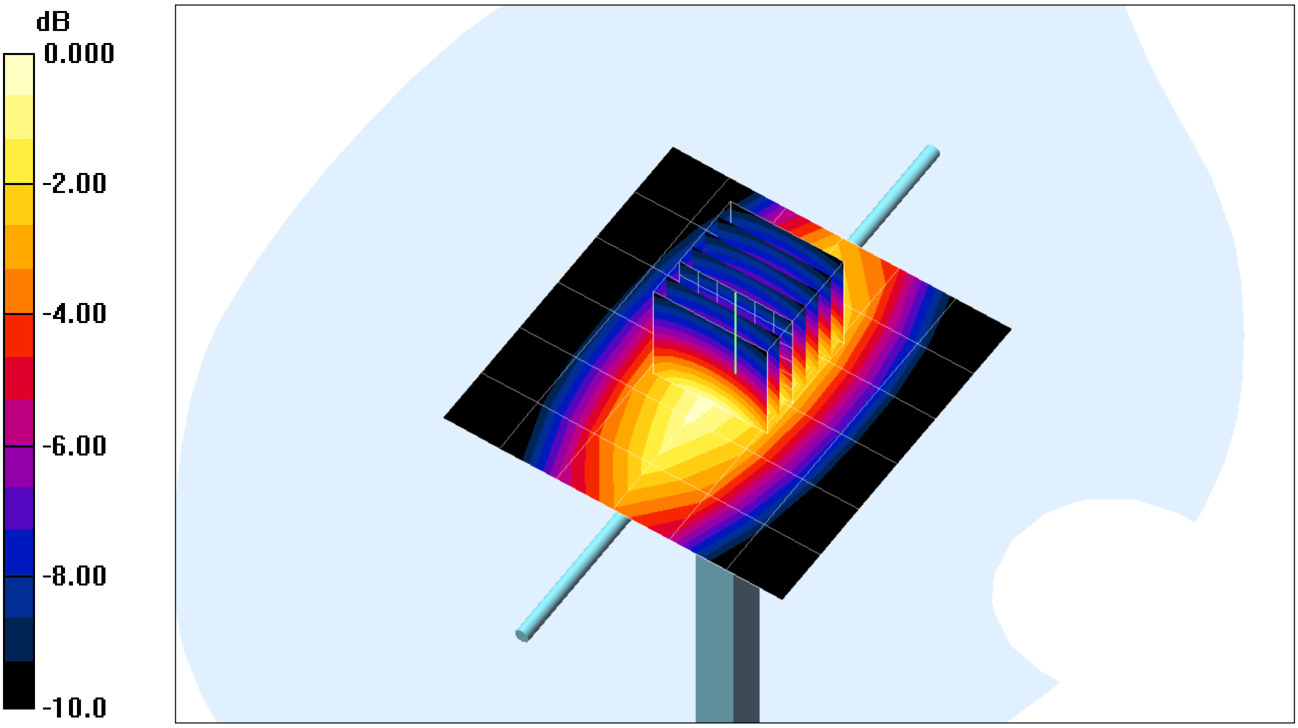
TARCDC-650 CDMA Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 52.5 V/m; Power Drift = 0.047 dB

Peak SAR (extrapolated) = 3.50 W/kg

SAR(1 g) = 2.41 mW/g; SAR(10 g) = 1.6 mW/g

Maximum value of SAR (measured) = 2.62 mW/g



0 dB = 2.62mW/g

9. Device Test Conditions

9.1 Procedures Used To Establish Test Signal

The handset was placed into simulated call mode using a base station simulator (MS protocol rev. number 6) 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.

9.2 SAR measurement Conditions for CDMA2000

The following 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, Low channels According to procedures 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 RC1 and Forward TCH RC 1, set-up a call using Fundamental Channel Test Mode 1 (RC 1/1) with 9600bps data rate only.
2. Under RC1, C.S0011 Table 4.4.5.2-1, Table 9-1 parameters were applied.
3. If the mobile station supports the RC3 Reverse FCH, RC3 Reverse SCH0 and demodulation of RC3, RC4, RC5, set-up a call using Supplemental Channel Test Mode 3 (RC 3/3) with 9600bps fundamental channel and 9600bps 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.

Table 9-1 Test Parameters for Maximum RF Output Power for RC 1

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 9-2 Test Parameters for Maximum RF Output Power for RC 3

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

9.2.2 Head SAR Measurements

SAR for head exposure configurations is measured in RC3 with the EUT 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 1/4dB 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 Measurements

SAR for body exposure configurations is measured in RC3 with the EUT configured to transmit at full rate on FCH with all other code channels disables 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 1/4dB 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 9600bps using the exposure configuration that results in the highest SAR for that channel with FCH only. When multiple code channels are enabled, the output may shift by more than 0.5dB and lead to higher SAR drifts and SCH dropouts.
Body SAR was measured using TDSO/SO32 with power control bits in the “ALL Up”.
Body SAR For RC1 is not required when the maximum average output of each channel is less than 1/4dB 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 the body exposure configuration that results in the highest SAR for that channel in RC3.

9.2.4 Handset with EV-DO

For handsets with EV-DO capabilities, when the maximum average output of each channel in Rev.0 is less than 1/4 dB higher than that measured in RC3, body SAR for EV-DO is not required. Otherwise, SAR for Rev.0 is measured on the maximum output channel at 153.6kbps 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 1/4 higher than that measured in RC3.
Otherwise, SAR is measured on the maximum output channel for Rev. A using reverse data channel payload size traffic channel data rate corresponding to the 2-slot version of 307.2kbps with the ASK channel transmitting in all slots should be configured in the downlink for both Rev.0 and Rev. A

Maximum Power Output Table for CDC-650

Band	CH	1x EV-DO FTAP (dBm)	1x EV-DO RTAP (dBm)	CDMA200 RC	SO2 Loopback (dBm)	SO55 Loopback (dBm)	TDSO SO32 Loopback (dBm)
Cellular	1013	24.59	24.18	RC1	24.22	24.24	-
				RC3	24.21	24.19	24.37
	363	24.56	24.02	RC1	24.06	24.08	-
				RC3	24.05	23.97	23.97
	777	24.34	23.90	RC1	23.89	23.89	-
				RC3	23.79	23.86	23.94

10. SAR Measurement Results

Procedures Used To Establish Test Signal

The device was placed into continuous transmit mode using a base station simulator. Such test signals offer a consistent means for testing SAR and are recommended for evaluating SAR

♦ **Maximum SAR (Cellular)**

Laptop	CH	Frequency (MHz)	Position	SAR Limit (W/kg)	Measured SAR (W/kg)	Result
SAMSUNG SENS X10 SE	363	835.89	Bottom/ ANT. OUT	1.6	**1.140**	**Passed**

11. SAR Data Summary

11.1 Laptop 1 [SAMSUNG SENS X10 SE]

Date of Test : April 17.2007 ~ April 18.2007
Mixture Type: Cellular Muscle
Tissue Depth: 15.2 Cm

Application	Frequency		Power Drift (dB)	Test Position	Antenna Position	1g SAR (W/kg)
	CH	Freq. (MHz)				
EV-DO	363	835.89	-0.070	Bottom	Horizontal / IN	**0.669**
	363	835.89	0.173	Bottom	Horizontal / OUT	**1.140**
	363	835.89	0.139	Bottom	Vertical / IN	**0.585**
	363	835.89	0.044	Bottom	Vertical / OUT	**0.604**
	1013	824.70	-0.019	Bottom	Horizontal / OUT	**0.821**
	777	848.31	-0.077	Bottom	Horizontal / OUT	**1.060**
CDMA2000 (1x RTT)	363	835.89	-0.097	Bottom	Horizontal / OUT	**0.825**

Notes:

1. The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration.
2. All modes of operation were investigated, and worst-case results are reported.
3. SAR Measurement System ■ DASY4
4. Phantom Configuration ☐ Left Head ■ Flat Phantom ☐ Right Head
5. SAR Configuration ☐ Head ■ Body ☐ Hand
6. Test Signal Call Mode ☐ Manu. Test Codes ■ Base Station Simulator

Date/Time: 2007-04-18 1:18:23

Test Laboratory: Nemko Korea File Name: SAMSUNG SENS X10 SE Bottom Position Ant In Horizontal CH363.da4

DUT: CDC-650 Type: PCMCIA Card Type Serial: 00000001 Applicant Name: C-motech Co., Ltd

Communication System: CDMA Frequency: 835.89 MHz

Duty Cycle: 1:1 Phantom section: Flat Section

Medium parameters used: f = 836 MHz; σ = 0.963 mho/m; ε_r = 55.2; ρ = 1000 kg/m^3

DASY4 Configuration:

Probe: ES3DV3 - SN3068; ConvF(5.62, 5.62, 5.62); Calibrated: 2007-03-20

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn672; Calibrated: 2007-04-04

Phantom: SAM Phantom; Type: SAM; Serial: TP-1358

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

SAMSUNG SENS X10 SE Bottom Position Ant In Horizontal CH363/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm

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

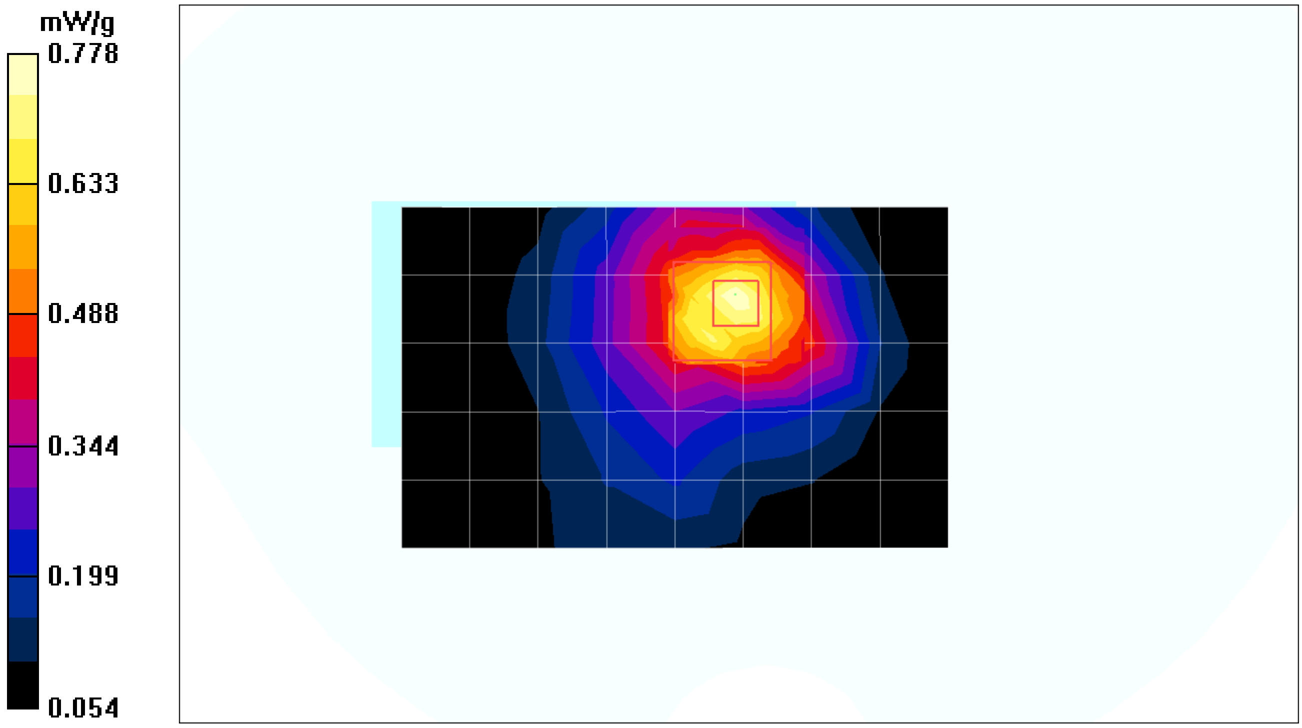
SAMSUNG SENS X10 SE Bottom Position Ant In Horizontal CH363/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 28.0 V/m; Power Drift = -0.070 dB

Peak SAR (extrapolated) = 0.918 W/kg

SAR(1 g) = 0.669 mW/g; SAR(10 g) = 0.434 mW/g

Maximum value of SAR (measured) = 0.778 mW/g



Date/Time: 2007-04-18 1:38:28

Test Laboratory: Nemko Korea File Name: SAMSUNG SENS X10 SE Bottom Position Ant Out Horizontal CH363.da4

DUT: CDC-650 Type: PCMCIA Card Type Serial: 00000001 Applicant Name: C-motech Co., Ltd

Communication System: CDMA Frequency: 835.89 MHz

Duty Cycle: 1:1 Phantom section: Flat Section

Medium parameters used: f = 836 MHz; σ = 0.963 mho/m; ε_r = 55.2; ρ = 1000 kg/m^3

DASY4 Configuration:

Probe: ES3DV3 - SN3068; ConvF(5.62, 5.62, 5.62); Calibrated: 2007-03-20

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn672; Calibrated: 2007-04-04

Phantom: SAM Phantom; Type: SAM; Serial: TP-1358

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

SAMSUNG SENS X10 SE Bottom Position Ant Out Horizontal CH363/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.02 mW/g

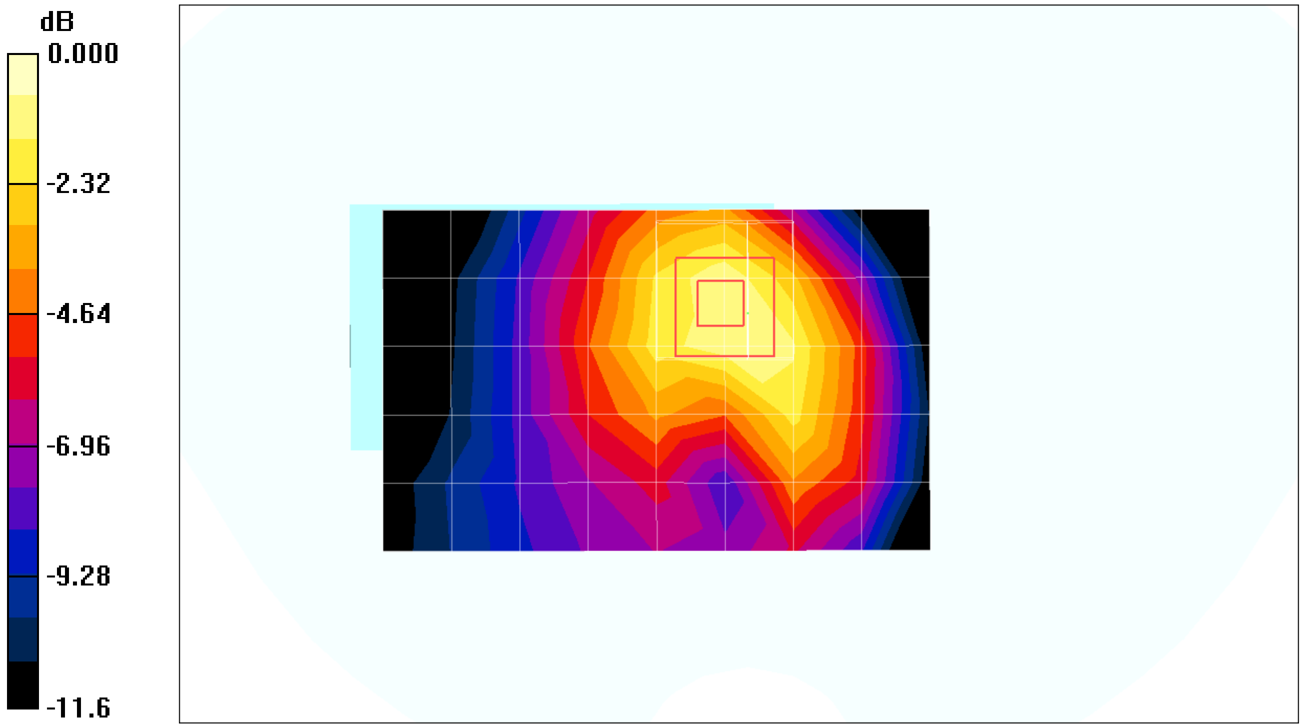
SAMSUNG SENS X10 SE Bottom Position Ant Out Horizontal CH363/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 33.8 V/m; Power Drift = 0.173 dB

Peak SAR (extrapolated) = 2.02 W/kg

SAR(1 g) = 1.14 mW/g; SAR(10 g) = 0.722 mW/g

Maximum value of SAR (measured) = 1.25 mW/g



0 dB = 1.25mW/g

Date/Time: 2007-04-18 1:38:28

Test Laboratory: Nemko Korea File Name: SAMSUNG SENS X10 SE Bottom Position Ant Out Horizontal CH363.da4

DUT: CDC-650 Type: PCMCIA Card Type Serial: 00000001 Applicant Name: C-motech Co., Ltd

Communication System: CDMA Frequency: 835.89 MHz

Duty Cycle: 1:1 Phantom section: Flat Section

Medium parameters used: f = 836 MHz; σ = 0.963 mho/m; ε_r = 55.2; ρ = 1000 kg/m^3

DASY4 Configuration:

Probe: ES3DV3 - SN3068; ConvF(5.62, 5.62, 5.62); Calibrated: 2007-03-20

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn672; Calibrated: 2007-04-04

Phantom: SAM Phantom; Type: SAM; Serial: TP-1358

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

SAMSUNG SENS X10 SE Bottom Position Ant Out Horizontal CH363/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.02 mW/g

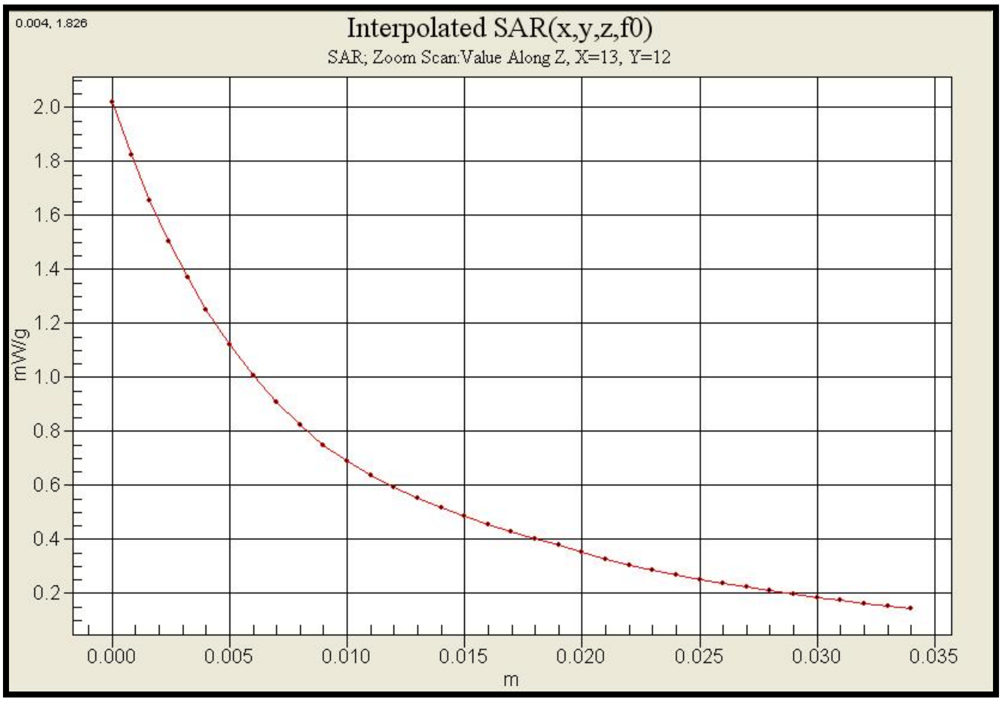
SAMSUNG SENS X10 SE Bottom Position Ant Out Horizontal CH363/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 33.8 V/m; Power Drift = 0.173 dB

Peak SAR (extrapolated) = 2.02 W/kg

SAR(1 g) = 1.14 mW/g; SAR(10 g) = 0.722 mW/g

Maximum value of SAR (measured) = 1.25 mW/g



Date/Time: 2007-04-18 3:58:20

Test Laboratory: Nemko Korea File Name: SAMSUNG SENS X10 SE Bottom Position Ant In Vertical CH363.da4

DUT: CDC-650 Type: PCMCIA Card Type Serial: 00000001 Applicant Name: C-motech Co., Ltd

Communication System: CDMA Frequency: 835.89 MHz

Duty Cycle: 1:1 Phantom section: Flat Section

Medium parameters used: f = 836 MHz; σ = 0.963 mho/m; ε_r = 55.2; ρ = 1000 kg/m^3

DASY4 Configuration:

Probe: ES3DV3 - SN3068; ConvF(5.62, 5.62, 5.62); Calibrated: 2007-03-20

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn672; Calibrated: 2007-04-04

Phantom: SAM Phantom; Type: SAM; Serial: TP-1358

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

SAMSUNG SENS X10 SE Bottom Position Ant In Vertical CH363/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.643 mW/g

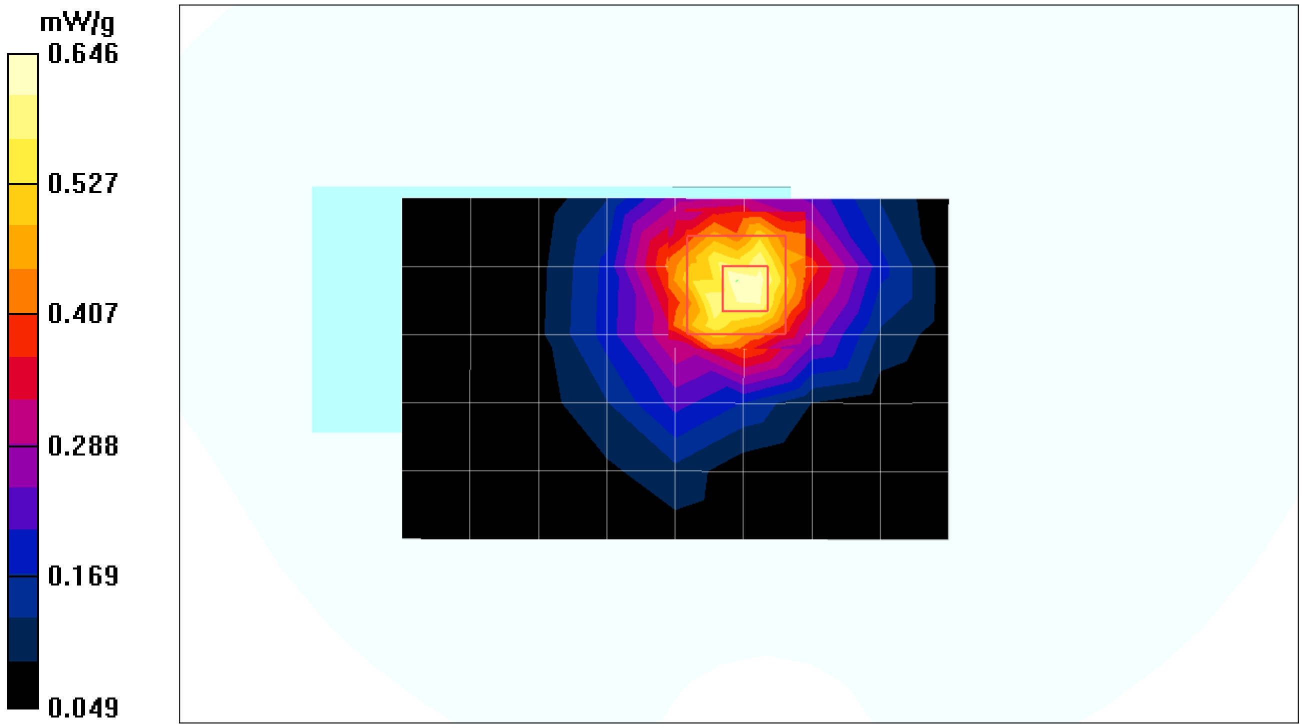
SAMSUNG SENS X10 SE Bottom Position Ant In Vertical CH363/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 24.5 V/m; Power Drift = 0.139 dB

Peak SAR (extrapolated) = 1.10 W/kg

SAR(1 g) = 0.585 mW/g; SAR(10 g) = 0.363 mW/g

Maximum value of SAR (measured) = 0.646 mW/g



Date/Time: 2007-04-18 3:37:47

Test Laboratory: Nemko Korea File Name: SAMSUNG SENS X10 SE Bottom Position Ant Out Vertical CH363.da4

DUT: CDC-650 Type: PCMCIA Card Type Serial: 00000001 Applicant Name: C-motech Co., Ltd

Communication System: CDMA Frequency: 835.89 MHz

Duty Cycle: 1:1 Phantom section: Flat Section

Medium parameters used: f = 836 MHz; σ = 0.963 mho/m; ε_r = 55.2; ρ = 1000 kg/m^3

DASY4 Configuration:

Probe: ES3DV3 - SN3068; ConvF(5.62, 5.62, 5.62); Calibrated: 2007-03-20

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn672; Calibrated: 2007-04-04

Phantom: SAM Phantom; Type: SAM; Serial: TP-1358

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

SAMSUNG SENS X10 SE Bottom Position Ant Out Vertical CH363/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.706 mW/g

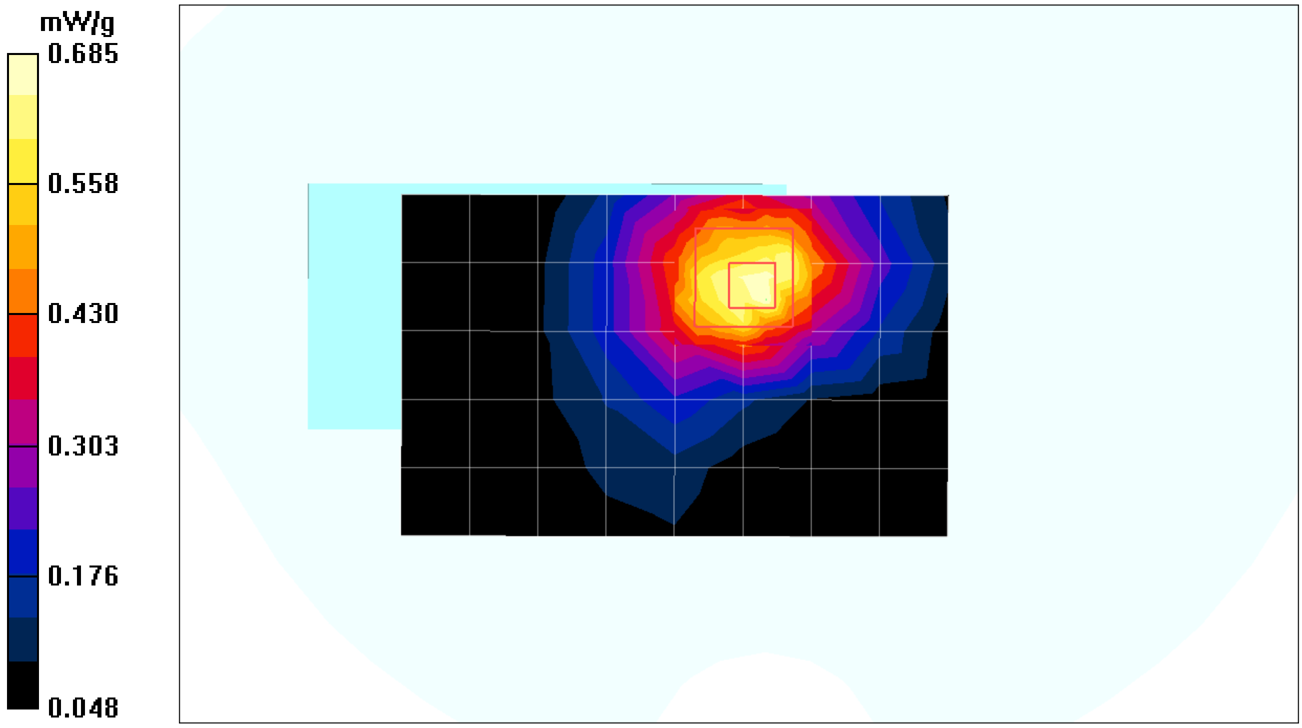
SAMSUNG SENS X10 SE Bottom Position Ant Out Vertical CH363/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 25.5 V/m; Power Drift = 0.044 dB

Peak SAR (extrapolated) = 0.948 W/kg

SAR(1 g) = 0.604 mW/g; SAR(10 g) = 0.381 mW/g

Maximum value of SAR (measured) = 0.685 mW/g



Date/Time: 2007-04-18 1:57:31

Test Laboratory: Nemko Korea File Name: SAMSUNG SENS X10 SE Bottom Position Ant Out Horizontal CH1013.da4

DUT: CDC-650 Type: PCMCIA Card Type Serial: 00000001 Applicant Name: C-motech Co., Ltd

Communication System: CDMA Frequency: 824.7 MHz

Duty Cycle: 1:1 Phantom section: Flat Section

Medium parameters used (interpolated): f = 824.7 MHz; σ = 0.948 mho/m; ε_r = 55.2; ρ = 1000 kg/m^3

DASY4 Configuration:

Probe: ES3DV3 - SN3068; ConvF(5.62, 5.62, 5.62); Calibrated: 2007-03-20

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn672; Calibrated: 2007-04-04

Phantom: SAM Phantom; Type: SAM; Serial: TP-1358

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

SAMSUNG SENS X10 SE Bottom Position Ant Out Horizontal CH1013/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.790 mW/g

SAMSUNG SENS X10 SE Bottom Position Ant Out Horizontal CH1013/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

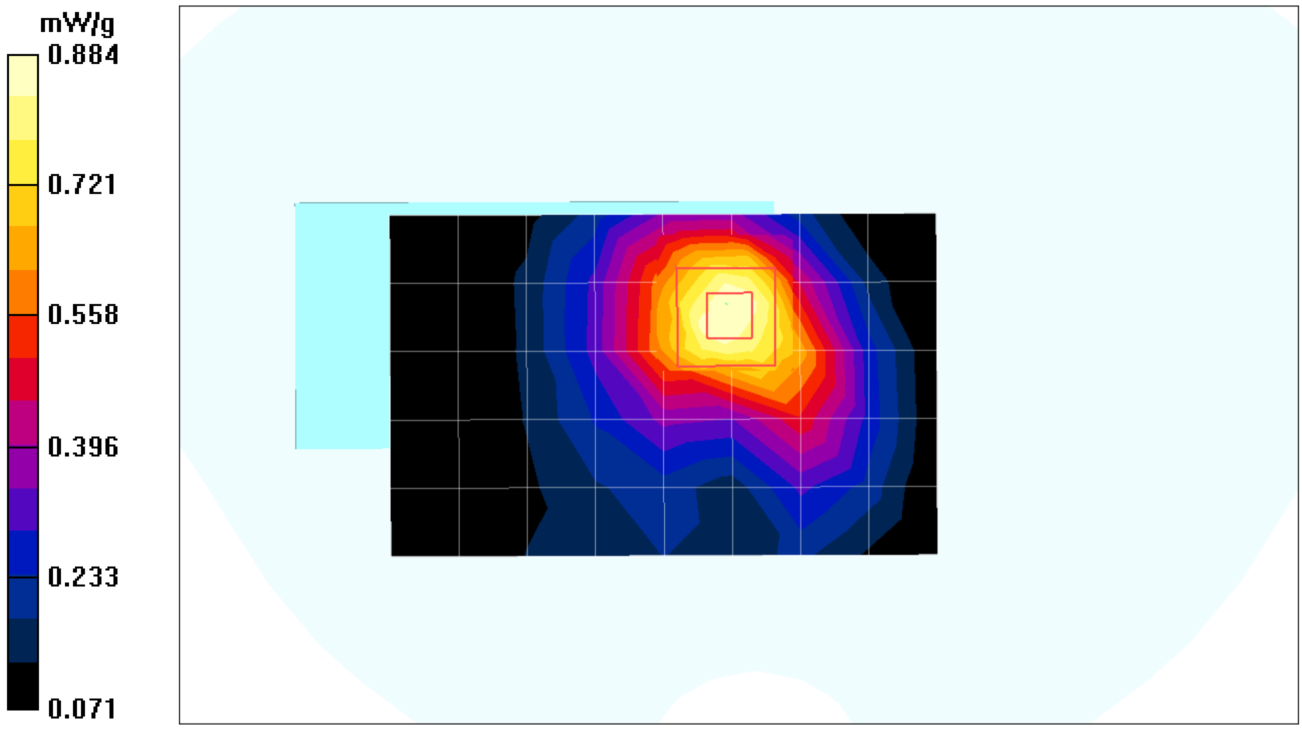
Reference Value = 30.0 V/m; Power Drift = -0.019 dB

Peak SAR (extrapolated) = 1.30 W/kg

SAR(1 g) = 0.821 mW/g; SAR(10 g) = 0.531 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.884 mW/g



Date/Time: 2007-04-18 3:19:35

Test Laboratory: Nemko Korea File Name: SAMSUNG SENS X10 SE Bottom Position Ant Out Horizontal CH777.da4

DUT: CDC-650 Type: PCMCIA Card Type Serial: 00000001 Applicant Name: C-motech Co., Ltd

Communication System: CDMA Frequency: 848.31 MHz

Duty Cycle: 1:1 Phantom section: Flat Section

Medium parameters used: f = 848.5 MHz; σ = 0.977 mho/m; ε_r = 55; ρ = 1000 kg/m^3

DASY4 Configuration:

Probe: ES3DV3 - SN3068; ConvF(5.62, 5.62, 5.62); Calibrated: 2007-03-20

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn672; Calibrated: 2007-04-04

Phantom: SAM Phantom; Type: SAM; Serial: TP-1358

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

SAMSUNG SENS X10 SE Bottom Position Ant Out Horizontal CH777/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.10 mW/g

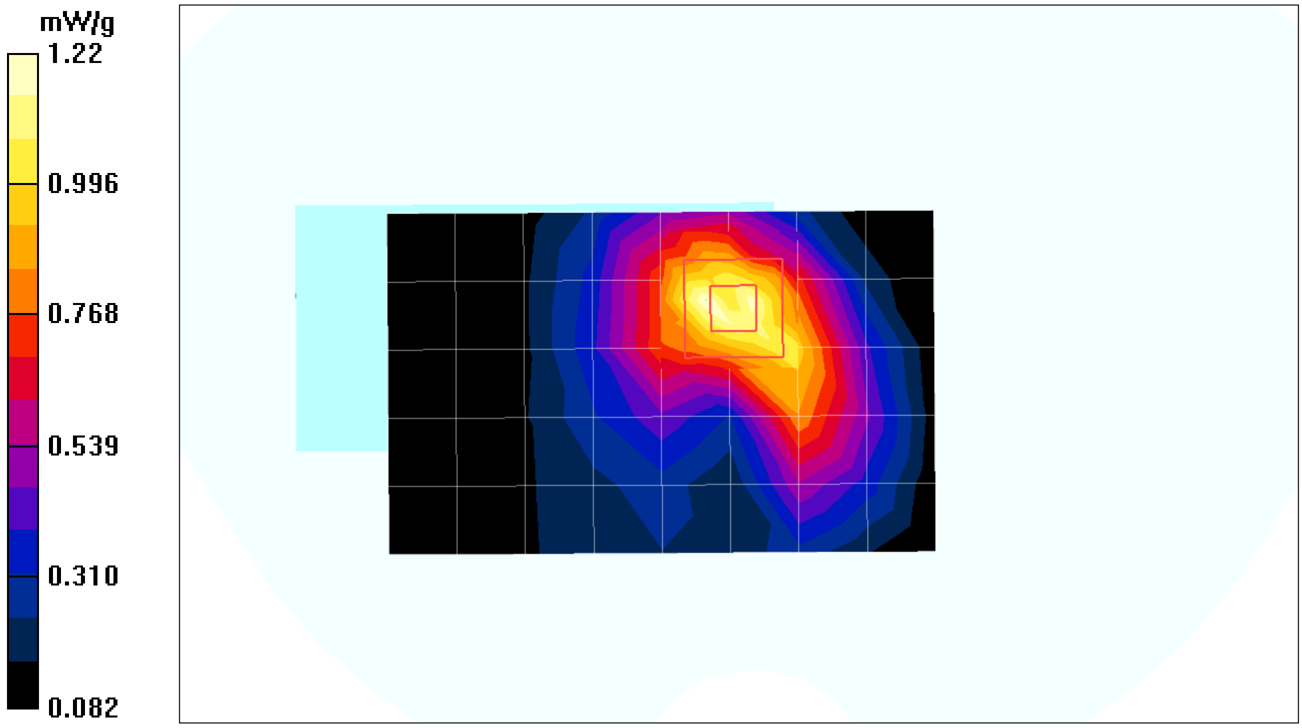
SAMSUNG SENS X10 SE Bottom Position Ant Out Horizontal CH777/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 33.5 V/m; Power Drift = -0.077 dB

Peak SAR (extrapolated) = 1.74 W/kg

SAR(1 g) = 1.06 mW/g; SAR(10 g) = 0.661 mW/g

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



Date/Time: 2007-04-18 4:47:47

Test Laboratory: Nemko Korea File Name: SAMSUNG SENS X10 SE Bottom Position Ant Out Horizontal (1x RTT) CH363.da4

DUT: CDC-650 Type: PCMCIA Card Type Serial: 00000001 Applicant Name: C-motech Co., Ltd

Communication System: CDMA Frequency: 835.89 MHz

Duty Cycle: 1:1 Phantom section: Flat Section

Medium parameters used: f = 836 MHz; σ = 0.963 mho/m; ε_r = 55.2; ρ = 1000 kg/m^3

DASY4 Configuration:

Probe: ES3DV3 - SN3068; ConvF(5.62, 5.62, 5.62); Calibrated: 2007-03-20

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn672; Calibrated: 2007-04-04

Phantom: SAM Phantom; Type: SAM; Serial: TP-1358

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

SAMSUNG SENS X10 SE Bottom Position Ant Out Horizontal (1x RTT) CH363/Area Scan (6x9x1):
Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.780 mW/g

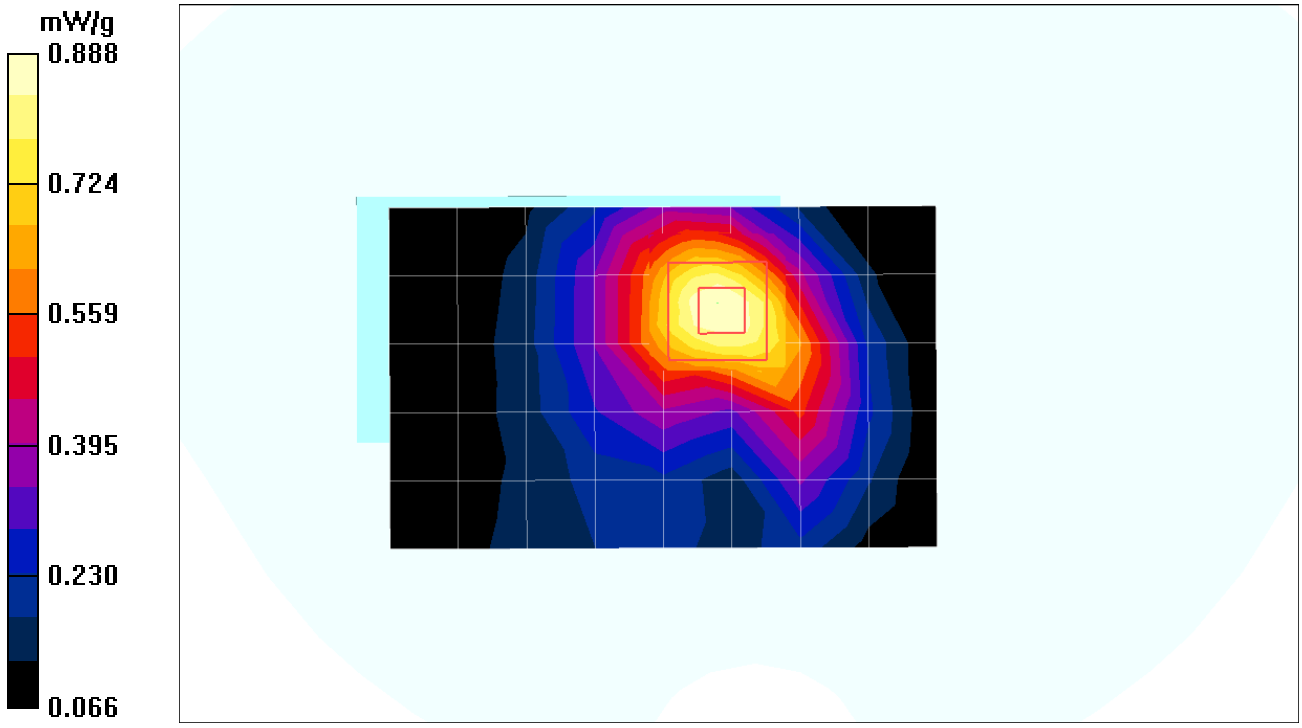
SAMSUNG SENS X10 SE Bottom Position Ant Out Horizontal (1x RTT) CH363/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 30.1 V/m; Power Drift = -0.097 dB

Peak SAR (extrapolated) = 1.22 W/kg

SAR(1 g) = 0.825 mW/g; SAR(10 g) = 0.528 mW/g

Maximum value of SAR (measured) = 0.888 mW/g



11.2 Laptop 2 [SONY PCG-6C7P]

Date of Test : April 17.2007 ~ April 18.2007
Mixture Type: Cellular Muscle
Tissue Depth: 15.2 Cm

Application	Frequency		Power Drift (dB)	Test Position	Antenna Position	1g SAR (W/kg)
	CH	Freq. (MHz)				
1x EV-DO	363	835.89	-0.109	Bottom	Horizontal / IN	**0.425**
	363	835.89	-0.030	Bottom	Horizontal / OUT	**0.653**
	363	835.89	-0.032	Bottom	Vertical / IN	**0.432**
	363	835.89	0.164	Bottom	Vertical / OUT	**0.376**
	1013	824.70	0.062	Bottom	Horizontal / OUT	**0.520**
	777	848.31	0.053	Bottom	Horizontal / OUT	**0.721**
CDMA2000 (1x RTT)	363	835.89	-0.127	Bottom	Horizontal / OUT	**0.561**

Notes:

1. The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration.
2. All modes of operation were investigated, and worst-case results are reported.
3. SAR Measurement System ■ DASY4
4. Phantom Configuration □ Left Head ■ Flat Phantom □ Right Head
5. SAR Configuration □ Head ■ Body □ Hand
6. Test Signal Call Mode □ Manu. Test Codes ■ Base Station Simulator

Date/Time: 2007-04-18 10:27:28

Test Laboratory: Nemko Korea File Name: SONY PCG-6C7P Bottom Position Ant In Horizontal CH363.da4

DUT: CDC-650 Type: PCMCIA Card Type Serial: 00000001 Applicant Name: C-motech Co., Ltd

Communication System: CDMA Frequency: 835.89 MHz

Duty Cycle: 1:1 Phantom section: Flat Section

Medium parameters used: f = 836 MHz; σ = 0.963 mho/m; ε_r = 55.2; ρ = 1000 kg/m^3

DASY4 Configuration:

Probe: ES3DV3 - SN3068; ConvF(5.62, 5.62, 5.62); Calibrated: 2007-03-20

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn672; Calibrated: 2007-04-04

Phantom: SAM Phantom; Type: SAM; Serial: TP-1358

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

SONY PCG-6C7P Bottom Position Ant In Horizontal CH363/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.434 mW/g

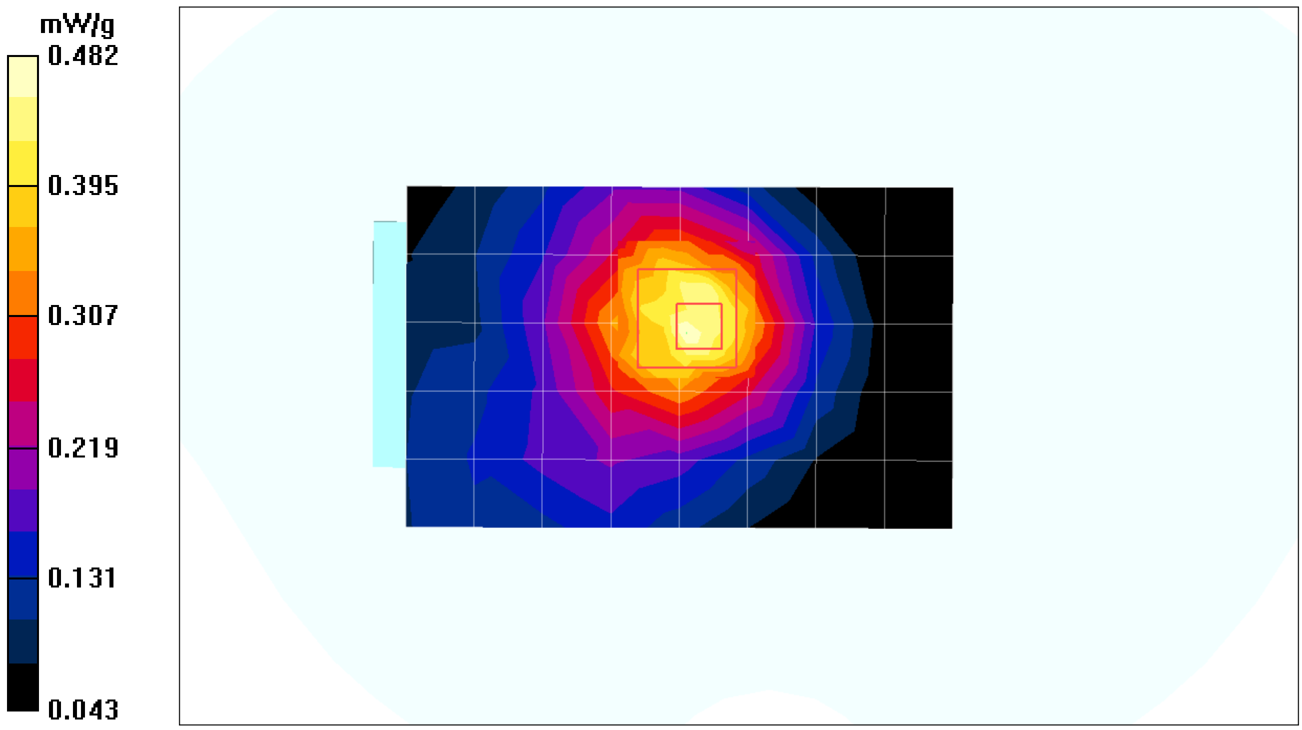
SONY PCG-6C7P Bottom Position Ant In Horizontal CH363/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.3 V/m; Power Drift = -0.109 dB

Peak SAR (extrapolated) = 0.635 W/kg

SAR(1 g) = 0.425 mW/g; SAR(10 g) = 0.286 mW/g

Maximum value of SAR (measured) = 0.482 mW/g



Date/Time: 2007-04-18 10:46:34

Test Laboratory: Nemko Korea File Name: SONY PCG-6C7P Bottom Position Ant Out Horizontal CH363.da4

DUT: CDC-650 Type: PCMCIA Card Type Serial: 00000001 Applicant Name: C-motech Co., Ltd

Communication System: CDMA Frequency: 835.89 MHz

Duty Cycle: 1:1 Phantom section: Flat Section

Medium parameters used: f = 836 MHz; σ = 0.963 mho/m; ε_r = 55.2; ρ = 1000 kg/m^3

DASY4 Configuration:

Probe: ES3DV3 - SN3068; ConvF(5.62, 5.62, 5.62); Calibrated: 2007-03-20

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn672; Calibrated: 2007-04-04

Phantom: SAM Phantom; Type: SAM; Serial: TP-1358

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

SONY PCG-6C7P Bottom Position Ant Out Horizontal CH363/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm

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

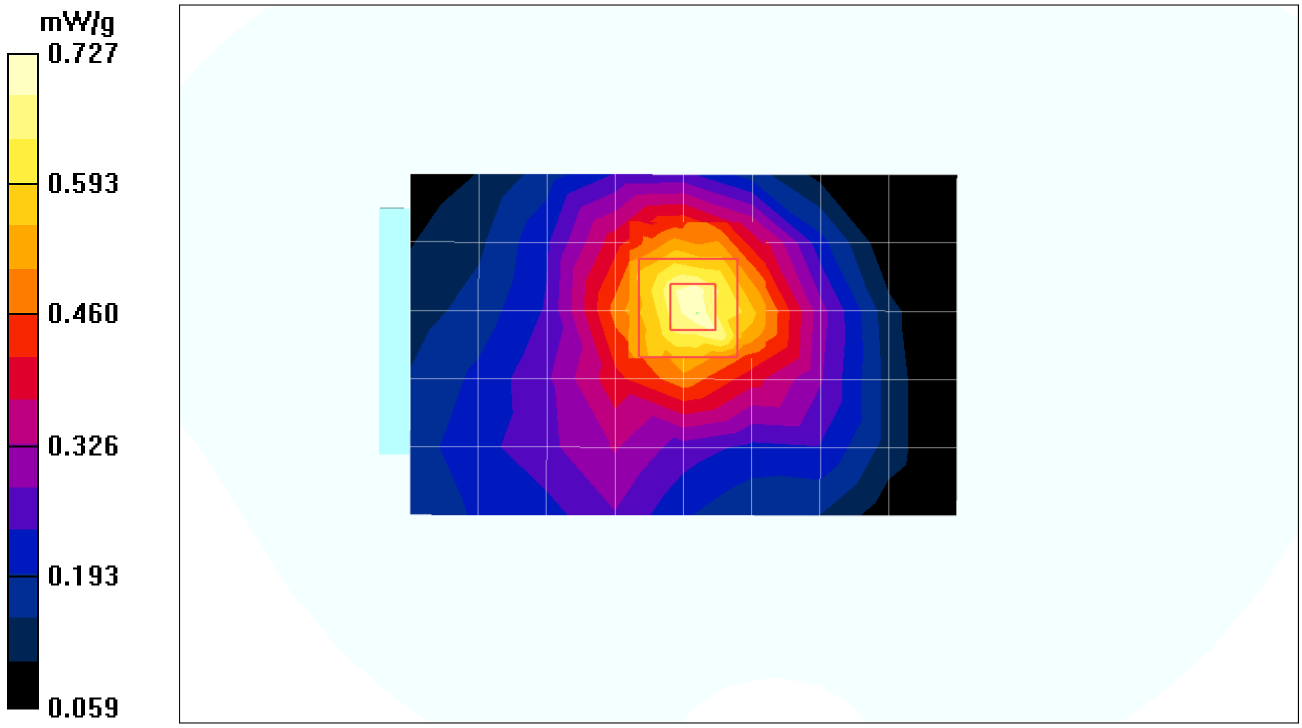
SONY PCG-6C7P Bottom Position Ant Out Horizontal CH363/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 22.0 V/m; Power Drift = -0.030 dB

Peak SAR (extrapolated) = 0.996 W/kg

SAR(1 g) = 0.653 mW/g; SAR(10 g) = 0.429 mW/g

Maximum value of SAR (measured) = 0.727 mW/g



Date/Time: 2007-04-18 11:40:50

Test Laboratory: Nemko Korea File Name: SONY PCG-6C7P Bottom Position Ant In Vertical CH363.da4

DUT: CDC-650 Type: PCMCIA Card Type Serial: 00000001 Applicant Name: C-motech Co., Ltd

Communication System: CDMA Frequency: 835.89 MHz

Duty Cycle: 1:1 Phantom section: Flat Section

Medium parameters used: f = 836 MHz; σ = 0.963 mho/m; ε_r = 55.2; ρ = 1000 kg/m^3

DASY4 Configuration:

Probe: ES3DV3 - SN3068; ConvF(5.62, 5.62, 5.62); Calibrated: 2007-03-20

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn672; Calibrated: 2007-04-04

Phantom: SAM Phantom; Type: SAM; Serial: TP-1358

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

SONY PCG-6C7P Bottom Position Ant In Vertical CH363/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.451 mW/g

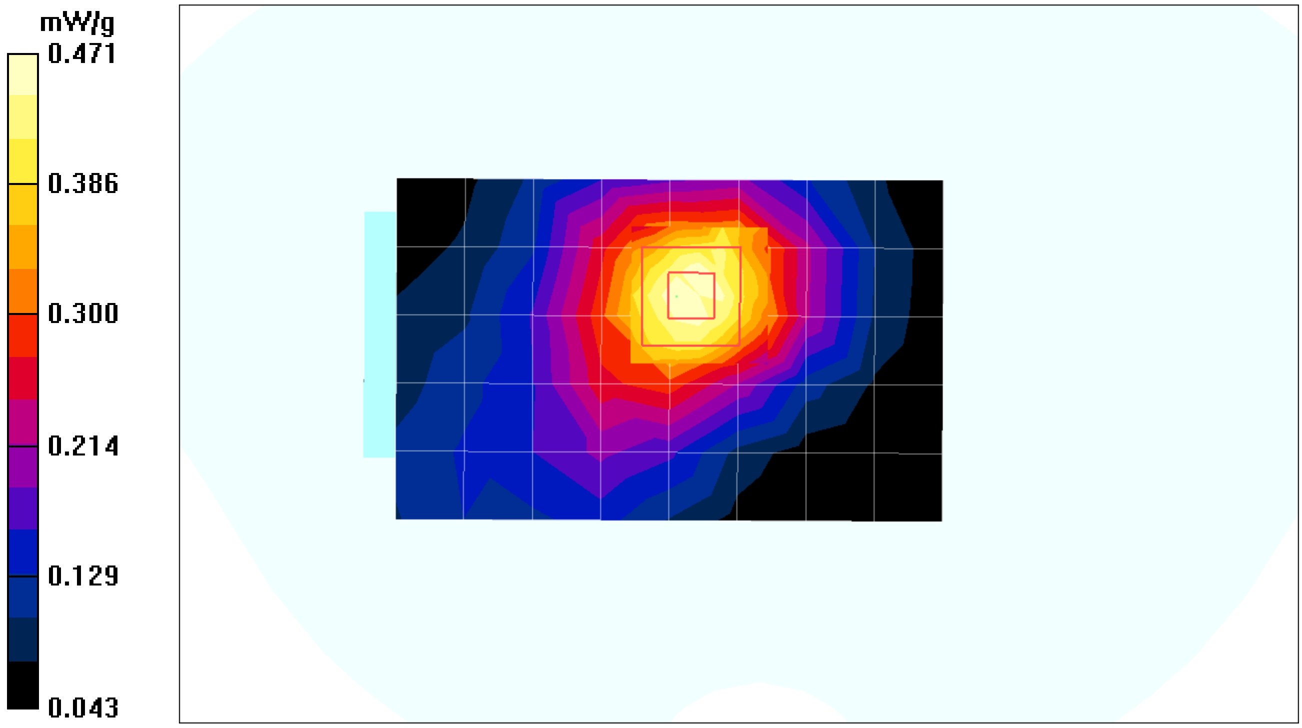
SONY PCG-6C7P Bottom Position Ant In Vertical CH363/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19.1 V/m; Power Drift = -0.032 dB

Peak SAR (extrapolated) = 0.612 W/kg

SAR(1 g) = 0.432 mW/g; SAR(10 g) = 0.293 mW/g

Maximum value of SAR (measured) = 0.471 mW/g



Date/Time: 2007-04-18 11:05:03

Test Laboratory: Nemko Korea File Name: SONY PCG-6C7P Bottom Position Ant Out Vertical CH363.da4

DUT: CDC-650 Type: PCMCIA Card Type Serial: 00000001 Applicant Name: C-motech Co., Ltd

Communication System: CDMA Frequency: 835.89 MHz

Duty Cycle: 1:1 Phantom section: Flat Section

Medium parameters used: f = 836 MHz; σ = 0.963 mho/m; ε_r = 55.2; ρ = 1000 kg/m^3

DASY4 Configuration:

Probe: ES3DV3 - SN3068; ConvF(5.62, 5.62, 5.62); Calibrated: 2007-03-20

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn672; Calibrated: 2007-04-04

Phantom: SAM Phantom; Type: SAM; Serial: TP-1358

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

SONY PCG-6C7P Bottom Position Ant Out Vertical CH363/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.347 mW/g

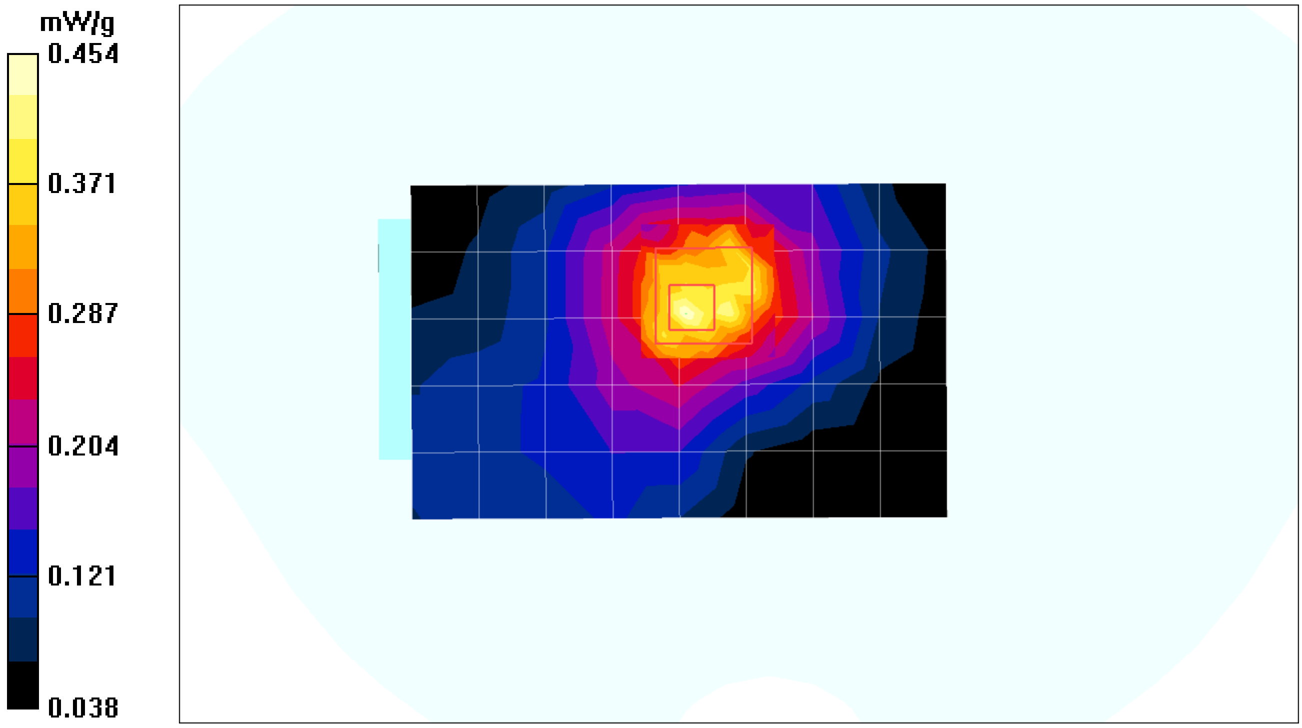
SONY PCG-6C7P Bottom Position Ant Out Vertical CH363/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 15.7 V/m; Power Drift = 0.164 dB

Peak SAR (extrapolated) = 0.589 W/kg

SAR(1 g) = 0.376 mW/g; SAR(10 g) = 0.251 mW/g

Maximum value of SAR (measured) = 0.454 mW/g



Date/Time: 2007-04-18 11:58:54

Test Laboratory: Nemko Korea File Name: SONY PCG-6C7P Bottom Position Ant Out Horizontal CH1013.da4

DUT: CDC-650 Type: PCMCIA Card Type Serial: 00000001 Applicant Name: C-motech Co., Ltd

Communication System: CDMA Frequency: 824.7 MHz

Duty Cycle: 1:1 Phantom section: Flat Section

Medium parameters used (interpolated): f = 824.7 MHz; σ = 0.948 mho/m; ε_r = 55.2; ρ = 1000 kg/m^3

DASY4 Configuration:

Probe: ES3DV3 - SN3068; ConvF(5.62, 5.62, 5.62); Calibrated: 2007-03-20

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn672; Calibrated: 2007-04-04

Phantom: SAM Phantom; Type: SAM; Serial: TP-1358

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

SONY PCG-6C7P Bottom Position Ant Out Horizontal CH1013/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.567 mW/g

SONY PCG-6C7P Bottom Position Ant Out Horizontal CH1013/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

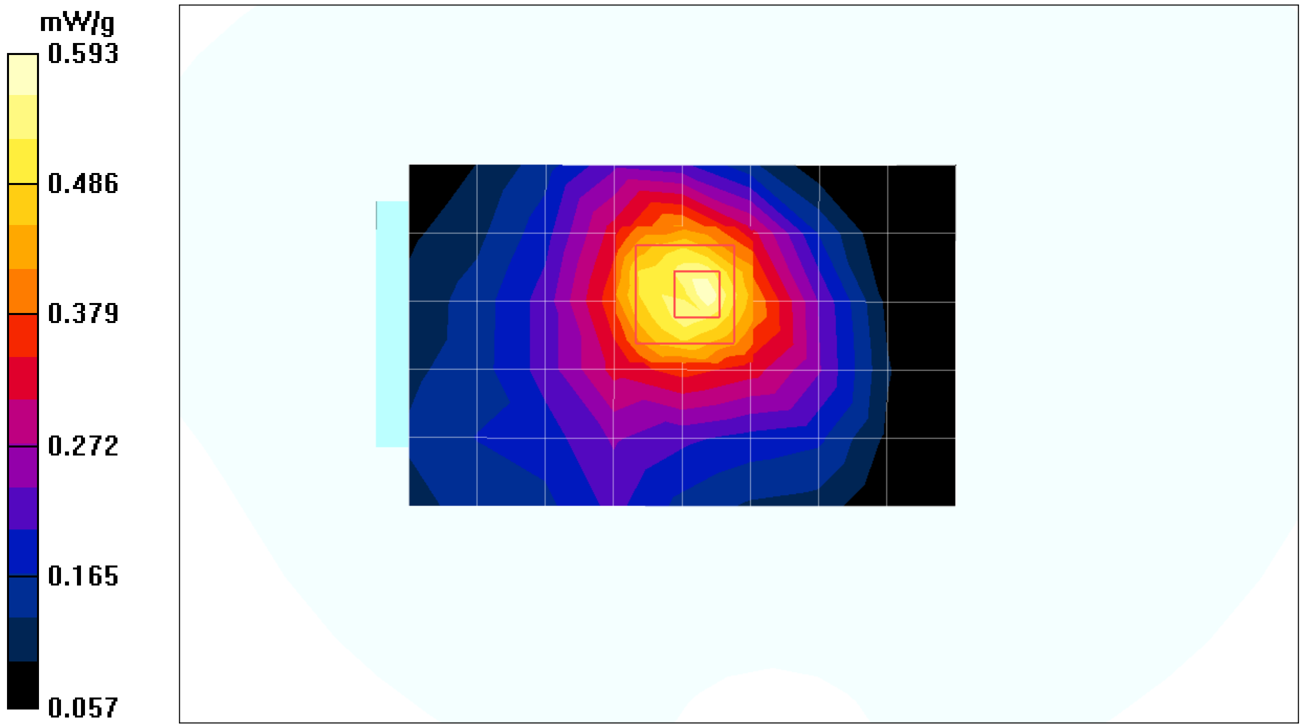
Reference Value = 19.9 V/m; Power Drift = 0.062 dB

Peak SAR (extrapolated) = 0.770 W/kg

SAR(1 g) = 0.520 mW/g; SAR(10 g) = 0.354 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.593 mW/g



Date/Time: 2007-04-18 12:18:29

Test Laboratory: Nemko Korea File Name: SONY PCG-6C7P Bottom Position Ant Out Horizontal CH777.da4

DUT: CDC-650 Type: PCMCIA Card Type Serial: 00000001 Applicant Name: C-motech Co., Ltd

Communication System: CDMA Frequency: 848.31 MHz

Duty Cycle: 1:1 Phantom section: Flat Section

Medium parameters used: f = 848.5 MHz; σ = 0.977 mho/m; ε_r = 55; ρ = 1000 kg/m^3

DASY4 Configuration:

Probe: ES3DV3 - SN3068; ConvF(5.62, 5.62, 5.62); Calibrated: 2007-03-20

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn672; Calibrated: 2007-04-04

Phantom: SAM Phantom; Type: SAM; Serial: TP-1358

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

SONY PCG-6C7P Bottom Position Ant Out Horizontal CH777/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.797 mW/g

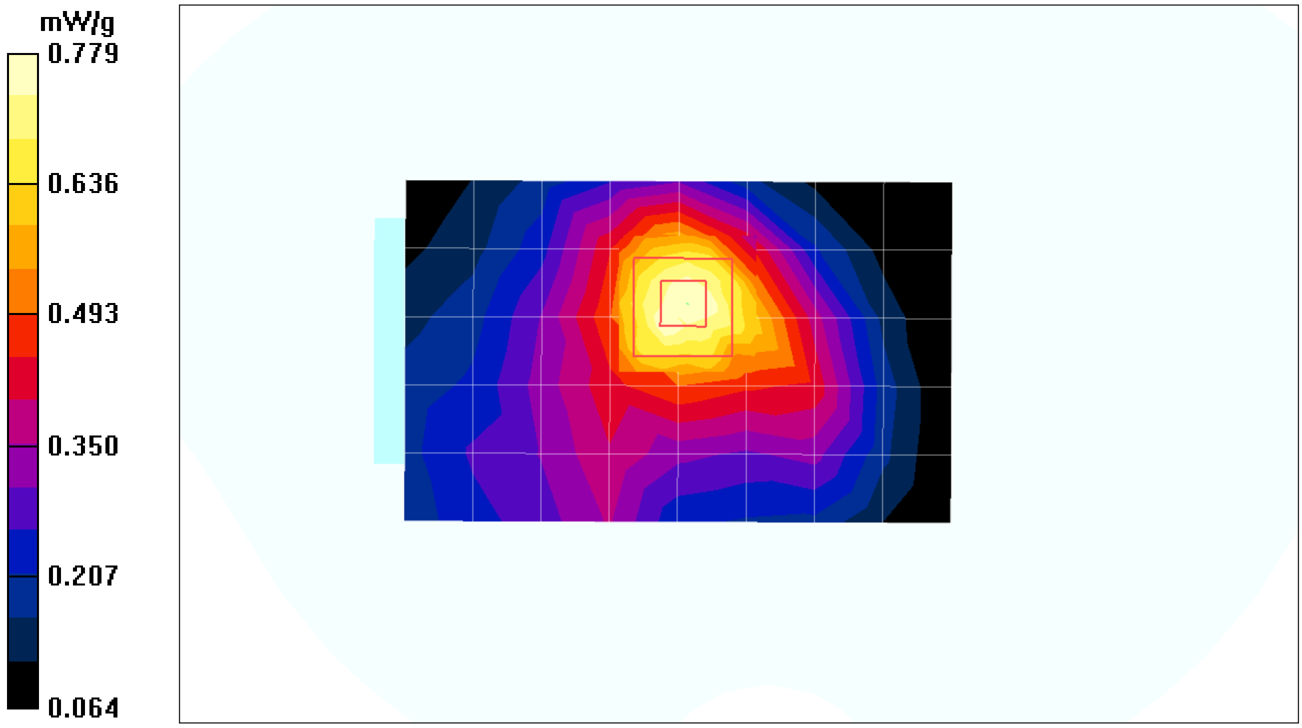
SONY PCG-6C7P Bottom Position Ant Out Horizontal CH777/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 24.3 V/m; Power Drift = 0.053 dB

Peak SAR (extrapolated) = 1.08 W/kg

SAR(1 g) = 0.721 mW/g; SAR(10 g) = 0.480 mW/g

Maximum value of SAR (measured) = 0.779 mW/g



Date/Time: 2007-04-18 12:18:29

Test Laboratory: Nemko Korea File Name: SONY PCG-6C7P Bottom Position Ant Out Horizontal CH777.da4

DUT: CDC-650 Type: PCMCIA Card Type Serial: 00000001 Applicant Name: C-motech Co., Ltd

Communication System: CDMA Frequency: 848.31 MHz

Duty Cycle: 1:1 Phantom section: Flat Section

Medium parameters used: f = 848.5 MHz; σ = 0.977 mho/m; ε_r = 55; ρ = 1000 kg/m^3

DASY4 Configuration:

Probe: ES3DV3 - SN3068; ConvF(5.62, 5.62, 5.62); Calibrated: 2007-03-20

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn672; Calibrated: 2007-04-04

Phantom: SAM Phantom; Type: SAM; Serial: TP-1358

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

SONY PCG-6C7P Bottom Position Ant Out Horizontal CH777/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.797 mW/g

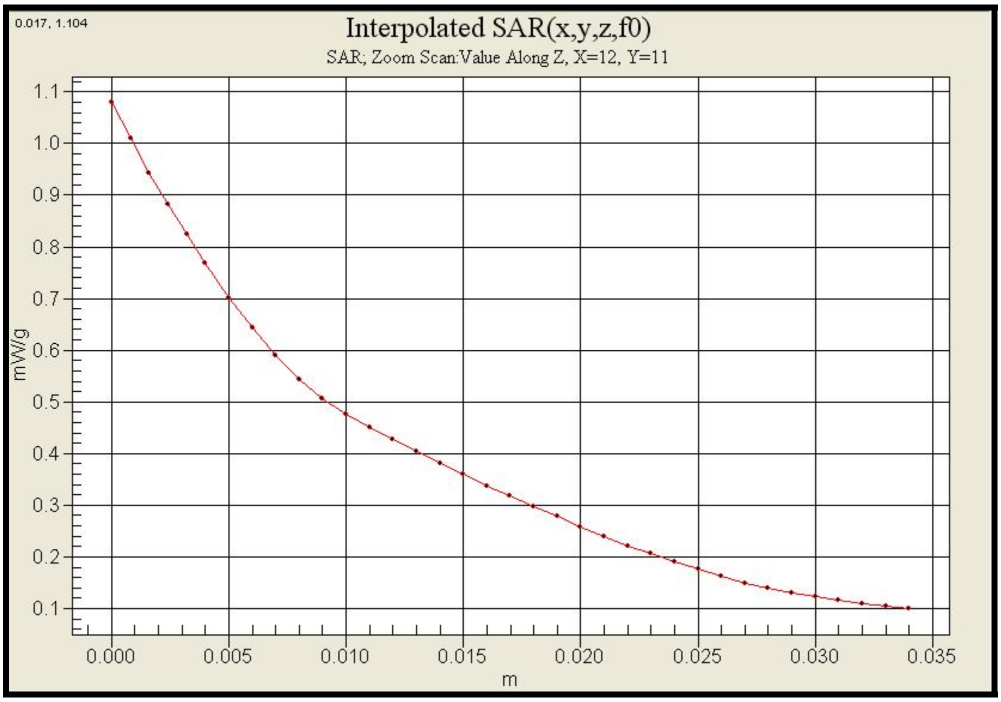
SONY PCG-6C7P Bottom Position Ant Out Horizontal CH777/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 24.3 V/m; Power Drift = 0.053 dB

Peak SAR (extrapolated) = 1.08 W/kg

SAR(1 g) = 0.721 mW/g; SAR(10 g) = 0.480 mW/g

Maximum value of SAR (measured) = 0.779 mW/g



Date/Time: 2007-04-18 5:49:39

Test Laboratory: Nemko Korea File Name: SONY PCG-6C7P Bottom Position Ant Out Horizontal (1x RTT) CH363.da4

DUT: CDC-650 Type: PCMCIA Card Type Serial: 00000001 Applicant Name: C-motech Co., Ltd

Communication System: CDMA Frequency: 835.89 MHz

Duty Cycle: 1:1 Phantom section: Flat Section

Medium parameters used: f = 836 MHz; σ = 0.963 mho/m; ε_r = 55.2; ρ = 1000 kg/m^3

DASY4 Configuration:

Probe: ES3DV3 - SN3068; ConvF(5.62, 5.62, 5.62); Calibrated: 2007-03-20

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn672; Calibrated: 2007-04-04

Phantom: SAM Phantom; Type: SAM; Serial: TP-1358

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

SONY PCG-6C7P Bottom Position Ant Out Horizontal (1x RTT) CH363/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.567 mW/g

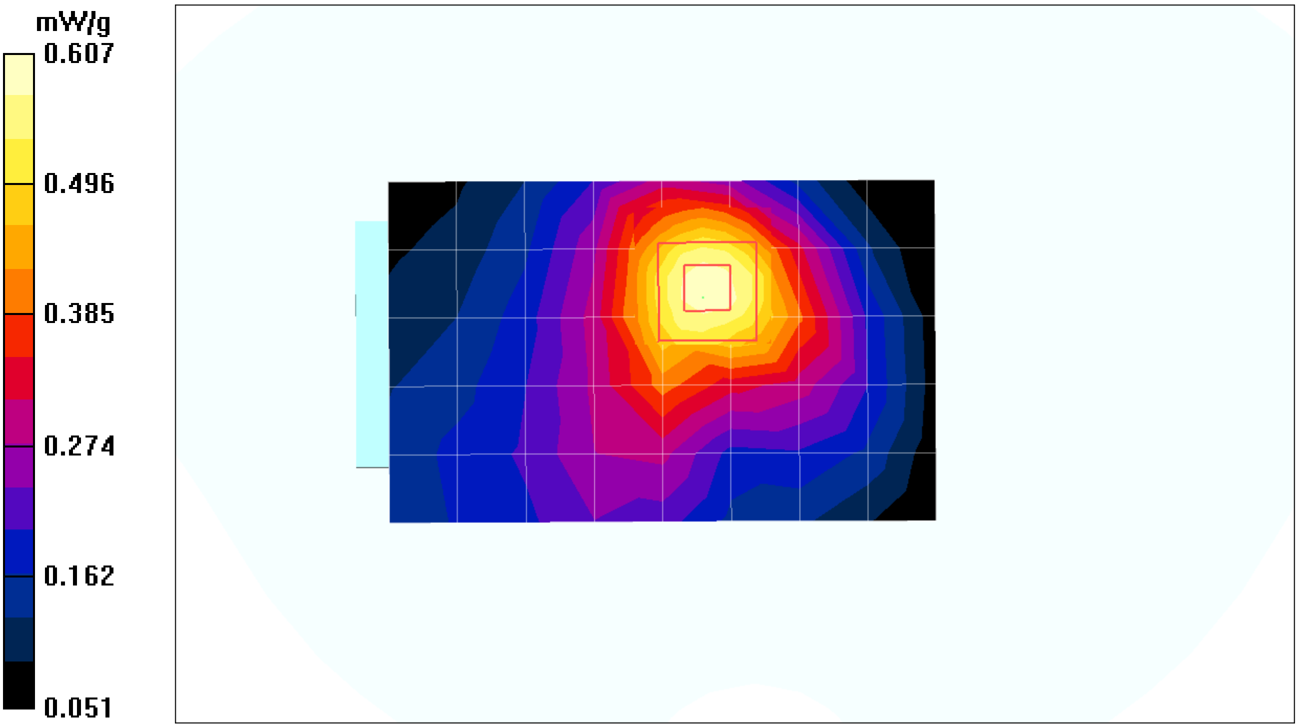
SONY PCG-6C7P Bottom Position Ant Out Horizontal (1x RTT) CH363/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 22.4 V/m; Power Drift = -0.127 dB

Peak SAR (extrapolated) = 0.782 W/kg

SAR(1 g) = 0.561 mW/g; SAR(10 g) = 0.377 mW/g

Maximum value of SAR (measured) = 0.607 mW/g



Nemko

11.3 Laptop 3 [SAMSUNG SENS X20]

Date of Test : April 17.2007 ~ April 18.2007
Mixture Type: Cellular Muscle
Tissue Depth: 15.2 Cm

Application	Frequency		Power Drift (dB)	Test Position	Antenna Position	1g SAR (W/kg)
	CH	Freq. (MHz)				
1x EV-DO	363	835.89	0.107	Bottom	Horizontal / IN	**0.574**
	363	835.89	0.184	Bottom	Horizontal / OUT	**0.759**
	363	835.89	0.169	Bottom	Vertical / IN	**0.417**
	363	835.89	-0.198	Bottom	Vertical / OUT	**0.444**
	1013	824.70	0.215	Bottom	Horizontal / OUT	**0.612**
	777	848.31	-0.011	Bottom	Horizontal / OUT	**0.667**
CDMA2000 (1x RTT)	363	835.89	0.122	Bottom	Horizontal / OUT	**0.658**

Notes:

1. The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration.
2. All modes of operation were investigated, and worst-case results are reported.
3. SAR Measurement System ■ DASY4
4. Phantom Configuration □ Left Head ■ Flat Phantom □ Right Head
5. SAR Configuration □ Head ■ Body □ Hand
6. Test Signal Call Mode □ Manu. Test Codes ■ Base Station Simulator

Date/Time: 2007-04-17 3:14:18

Test Laboratory: Nemko Korea File Name: SAMSUNG SENS X20 Bottom Position Ant In Horizontal CH363.da4

DUT: CDC-650 Type: PCMCIA Card Type Serial: 00000001 Applicant Name: C-motech Co.,Ltd

Communication System: CDMA Frequency: 835.89 MHz

Duty Cycle: 1:1 Phantom section: Flat Section

Medium parameters used: f = 836 MHz; σ = 0.963 mho/m; ε_r = 55.2; ρ = 1000 kg/m^3

DASY4 Configuration:

Probe: ES3DV3 - SN3068; ConvF(5.62, 5.62, 5.62); Calibrated: 2007-03-20

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn672; Calibrated: 2007-04-04

Phantom: SAM Phantom; Type: SAM; Serial: TP-1358

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

SAMSUNG SENS X20 Bottom Position Ant In Horizontal CH363/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.618 mW/g

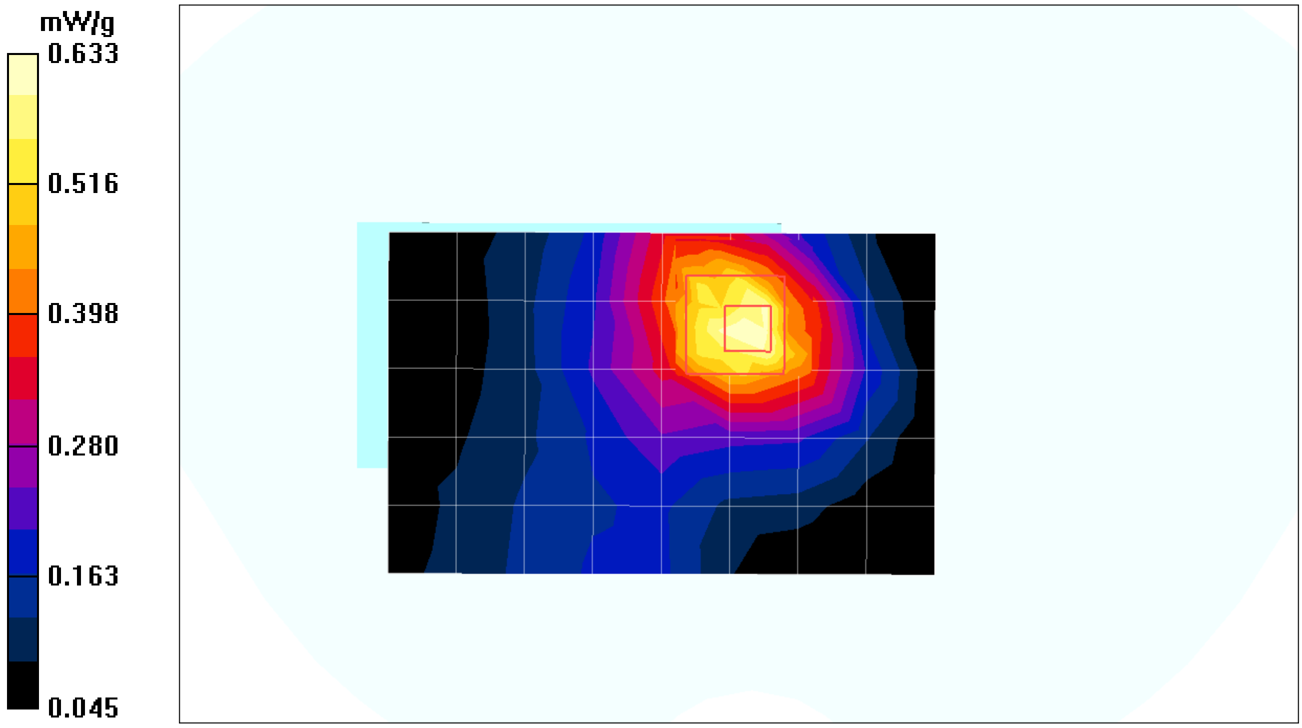
SAMSUNG SENS X20 Bottom Position Ant In Horizontal CH363/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 24.6 V/m; Power Drift = 0.107 dB

Peak SAR (extrapolated) = 0.982 W/kg

SAR(1 g) = 0.574 mW/g; SAR(10 g) = 0.370 mW/g

Maximum value of SAR (measured) = 0.633 mW/g



Date/Time: 2007-04-17 3:46:54

Test Laboratory: Nemko Korea File Name: SAMSUNG SENS X20 Bottom Position Ant Out Horizontal CH363.da4

DUT: CDC-650 Type: PCMCIA Card Type Serial: 00000001 Applicant Name: C-motech Co.,Ltd

Communication System: CDMA Frequency: 835.89 MHz

Duty Cycle: 1:1 Phantom section: Flat Section

Medium parameters used: f = 836 MHz; σ = 0.963 mho/m; ε_r = 55.2; ρ = 1000 kg/m^3

DASY4 Configuration:

Probe: ES3DV3 - SN3068; ConvF(5.62, 5.62, 5.62); Calibrated: 2007-03-20

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn672; Calibrated: 2007-04-04

Phantom: SAM Phantom; Type: SAM; Serial: TP-1358

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

SAMSUNG SENS X20 Bottom Position Ant Out Horizontal CH363/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.815 mW/g

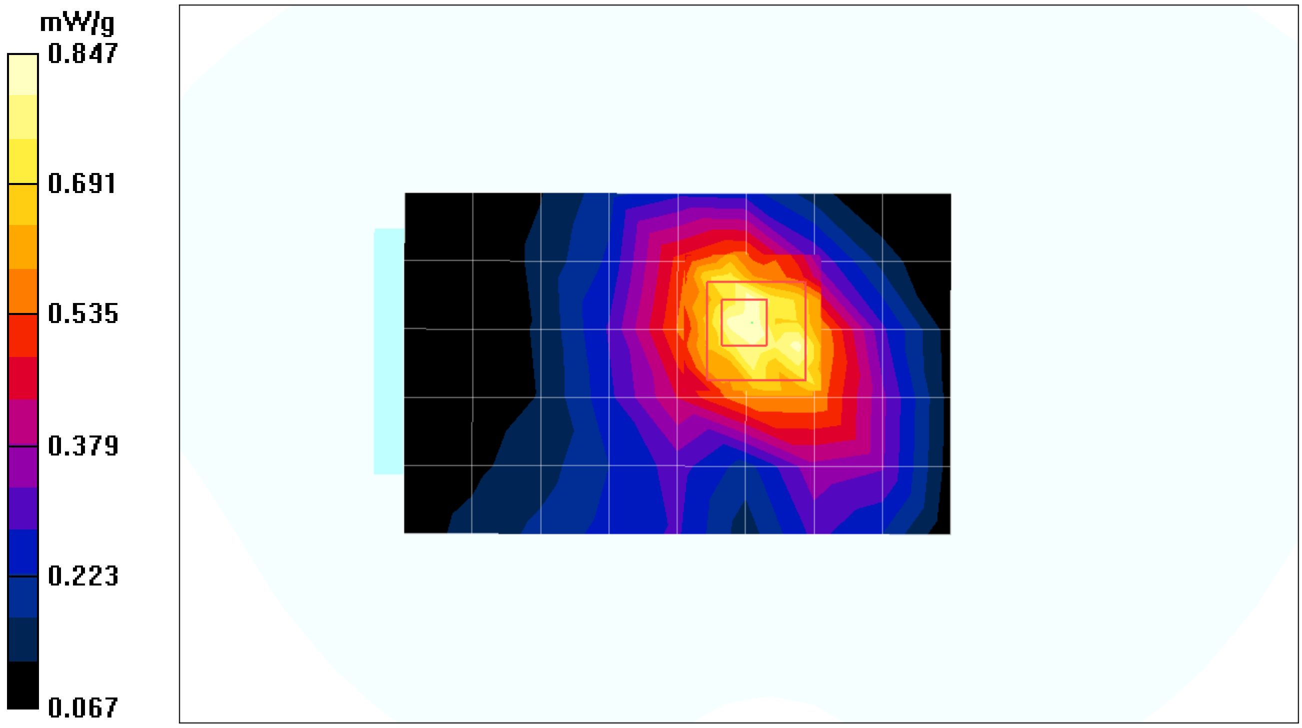
SAMSUNG SENS X20 Bottom Position Ant Out Horizontal CH363/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 27.9 V/m; Power Drift = 0.184 dB

Peak SAR (extrapolated) = 1.14 W/kg

SAR(1 g) = 0.759 mW/g; SAR(10 g) = 0.492 mW/g

Maximum value of SAR (measured) = 0.847 mW/g



Date/Time: 2007-04-17 3:46:54

Test Laboratory: Nemko Korea File Name: SAMSUNG SENS X20 Bottom Position Ant Out Horizontal CH363.da4

DUT: CDC-650 Type: PCMCIA Card Type Serial: 00000001 Applicant Name: C-motech Co.,Ltd

Communication System: CDMA Frequency: 835.89 MHz

Duty Cycle: 1:1 Phantom section: Flat Section

Medium parameters used: f = 836 MHz; σ = 0.963 mho/m; ε_r = 55.2; ρ = 1000 kg/m^3

DASY4 Configuration:

Probe: ES3DV3 - SN3068; ConvF(5.62, 5.62, 5.62); Calibrated: 2007-03-20

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn672; Calibrated: 2007-04-04

Phantom: SAM Phantom; Type: SAM; Serial: TP-1358

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

SAMSUNG SENS X20 Bottom Position Ant Out Horizontal CH363/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.815 mW/g

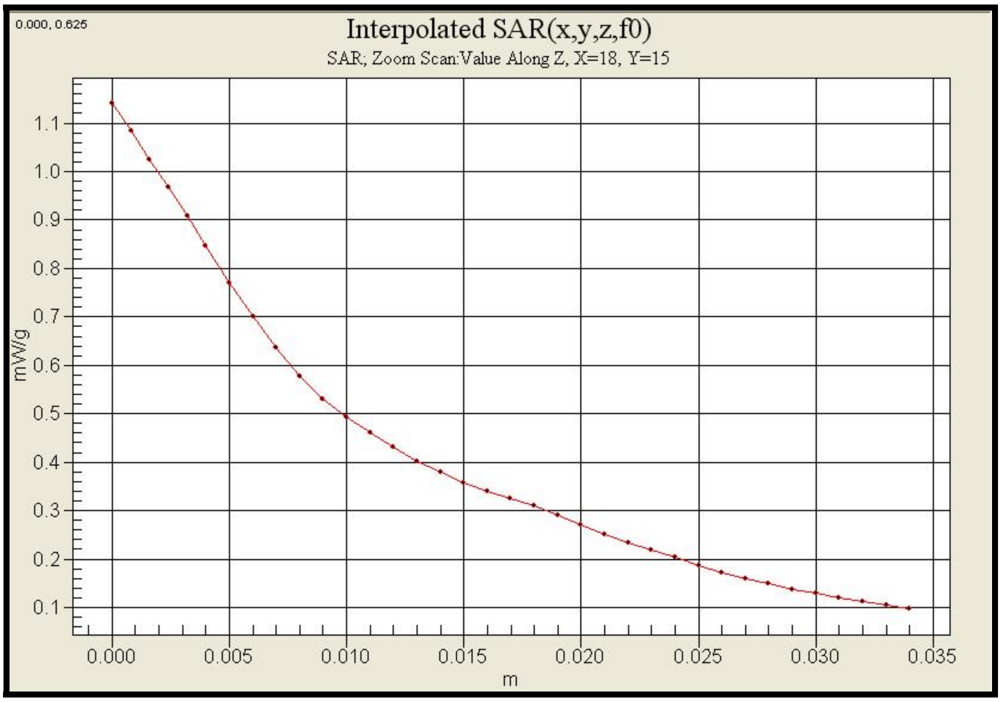
SAMSUNG SENS X20 Bottom Position Ant Out Horizontal CH363/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 27.9 V/m; Power Drift = 0.184 dB

Peak SAR (extrapolated) = 1.14 W/kg

SAR(1 g) = 0.759 mW/g; SAR(10 g) = 0.492 mW/g

Maximum value of SAR (measured) = 0.847 mW/g



Date/Time: 2007-04-17 4:06:34

Test Laboratory: Nemko Korea File Name: SAMSUNG SENS X20 Bottom Position Ant In Vertical CH363.da4

DUT: CDC-650 Type: PCMCIA Card Type Serial: 00000001 Applicant Name: C-motech Co.,Ltd

Communication System: CDMA Frequency: 835.89 MHz

Duty Cycle: 1:1 Phantom section: Flat Section

Medium parameters used: f = 836 MHz; σ = 0.963 mho/m; ε_r = 55.2; ρ = 1000 kg/m^3

DASY4 Configuration:

Probe: ES3DV3 - SN3068; ConvF(5.62, 5.62, 5.62); Calibrated: 2007-03-20

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn672; Calibrated: 2007-04-04

Phantom: SAM Phantom; Type: SAM; Serial: TP-1358

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

SAMSUNG SENS X20 Bottom Position Ant In Vertical CH363/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.431 mW/g

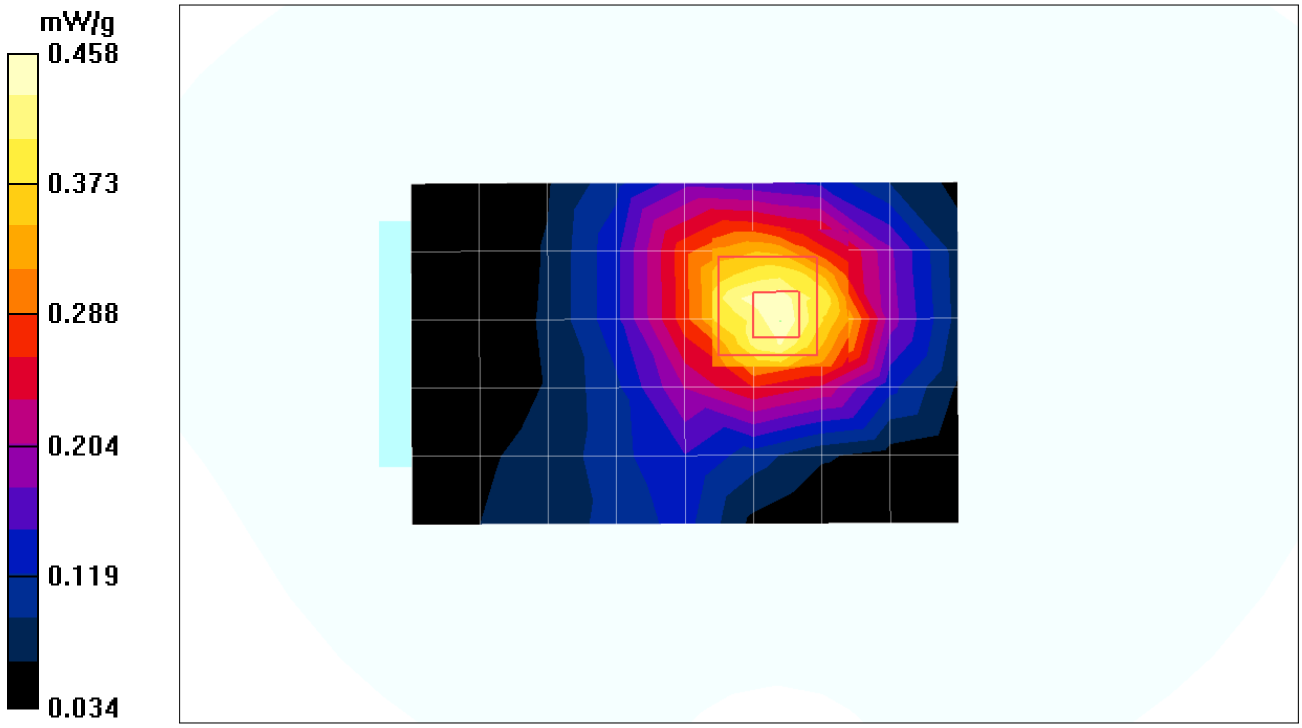
SAMSUNG SENS X20 Bottom Position Ant In Vertical CH363/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 20.9 V/m; Power Drift = 0.169 dB

Peak SAR (extrapolated) = 0.604 W/kg

SAR(1 g) = 0.417 mW/g; SAR(10 g) = 0.273 mW/g

Maximum value of SAR (measured) = 0.458 mW/g



Date/Time: 2007-04-17 4:54:21

Test Laboratory: Nemko Korea File Name: SAMSUNG SENS X20 Bottom Position Ant out Vertical CH363.da4

DUT: CDC-650 Type: PCMCIA Card Type Serial: 00000001 Applicant Name: C-motech Co.,Ltd

Communication System: CDMA Frequency: 835.89 MHz

Duty Cycle: 1:1 Phantom section: Flat Section

Medium parameters used: f = 836 MHz; σ = 0.963 mho/m; ε_r = 55.2; ρ = 1000 kg/m^3

DASY4 Configuration:

Probe: ES3DV3 - SN3068; ConvF(5.62, 5.62, 5.62); Calibrated: 2007-03-20

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn672; Calibrated: 2007-04-04

Phantom: SAM Phantom; Type: SAM; Serial: TP-1358

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

SAMSUNG SENS X20 Bottom Position Ant Out Vertical CH363/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm

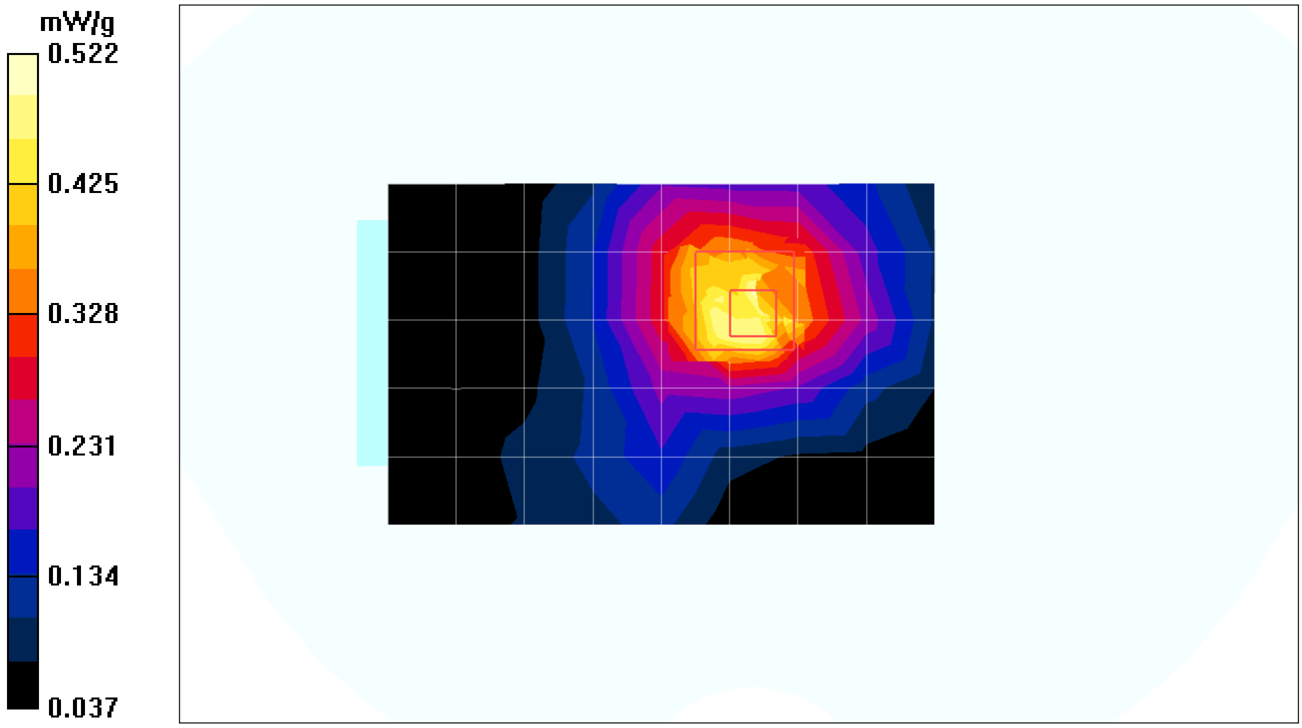
Maximum value of SAR (measured) = 0.522 mW/g

SAMSUNG SENS X20 Bottom Position Ant Out Vertical CH363/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 21.6 V/m; Power Drift = -0.198 dB

Peak SAR (extrapolated) = 0.716 W/kg

SAR(1 g) = 0.444 mW/g; SAR(10 g) = 0.289 mW/g



Date/Time: 2007-04-17 5:52:37

Test Laboratory: Nemko Korea File Name: SAMSUNG_SENS_X20_Bottom_Position_Ant_out_Horizontal CH1013.da4

DUT: CDC-650 Type: PCMCIA Card Type Serial: 00000001 Applicant Name: C-motech Co.,Ltd

Communication System: CDMA Frequency: 824.7 MHz

Duty Cycle: 1:1 Phantom section: Flat Section

Medium parameters used (interpolated): f = 824.7 MHz; σ = 0.948 mho/m; ε_r = 55.2; ρ = 1000 kg/m^3

DASY4 Configuration:

Probe: ES3DV3 - SN3068; ConvF(5.62, 5.62, 5.62); Calibrated: 2007-03-20

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn672; Calibrated: 2007-04-04

Phantom: SAM Phantom; Type: SAM; Serial: TP-1358

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

SAMSUNG SENS X20 Bottom Position Ant Out Horizontal CH1013/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.706 mW/g

SAMSUNG SENS X20 Bottom Position Ant Out Horizontal CH1013/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

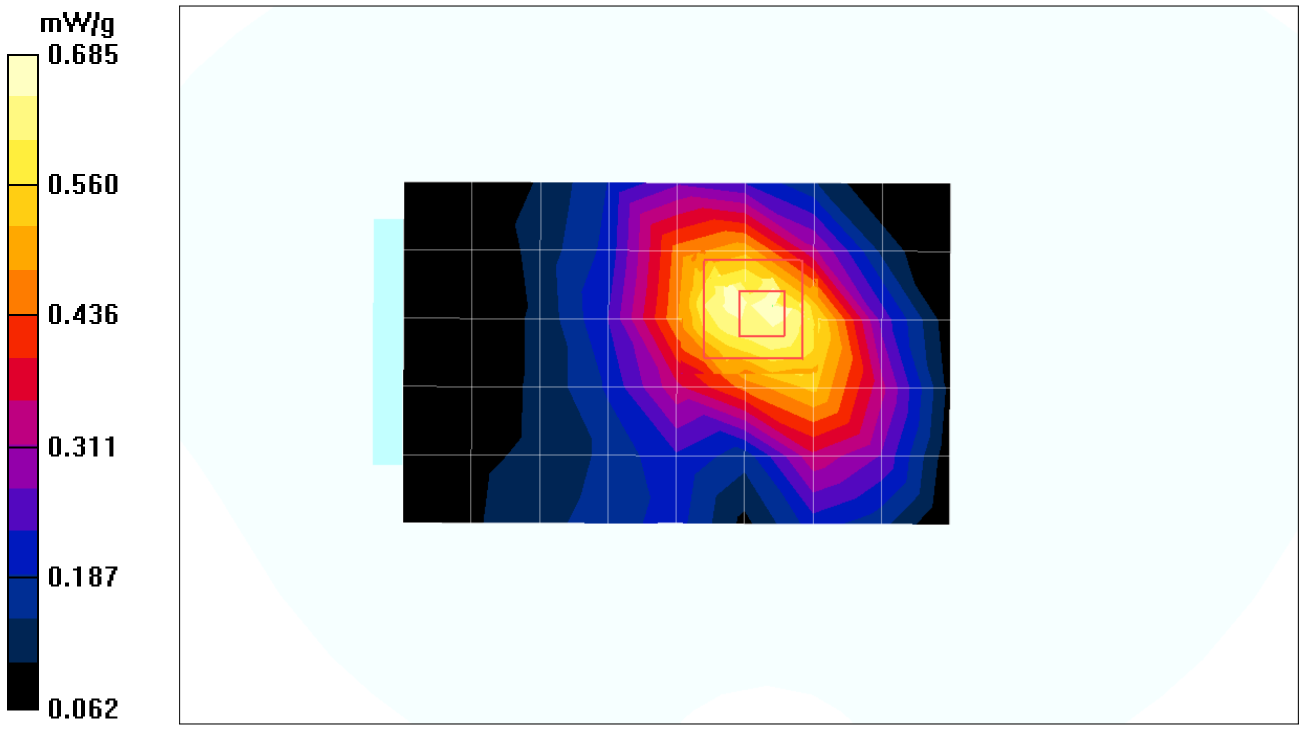
Reference Value = 26.5 V/m; Power Drift = 0.215 dB

Peak SAR (extrapolated) = 0.851 W/kg

SAR(1 g) = 0.612 mW/g; SAR(10 g) = 0.418 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.685 mW/g



Date/Time: 2007-04-17 6:11:29

Test Laboratory: Nemko Korea File Name: SAMSUNG SENS X20 Bottom Position Ant out Horizontal CH777.da4

DUT: CDC-650 Type: PCMCIA Card Type Serial: 00000001 Applicant Name: C-motech Co.,Ltd

Communication System: CDMA Frequency: 848.31 MHz

Duty Cycle: 1:1 Phantom section: Flat Section

Medium parameters used: f = 848.5 MHz; σ = 0.977 mho/m; ε_r = 55; ρ = 1000 kg/m^3

DASY4 Configuration:

Probe: ES3DV3 - SN3068; ConvF(5.62, 5.62, 5.62); Calibrated: 2007-03-20

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn672; Calibrated: 2007-04-04

Phantom: SAM Phantom; Type: SAM; Serial: TP-1358

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

SAMSUNG SENS X20 Bottom Position Ant Out Horizontal CH777/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.672 mW/g

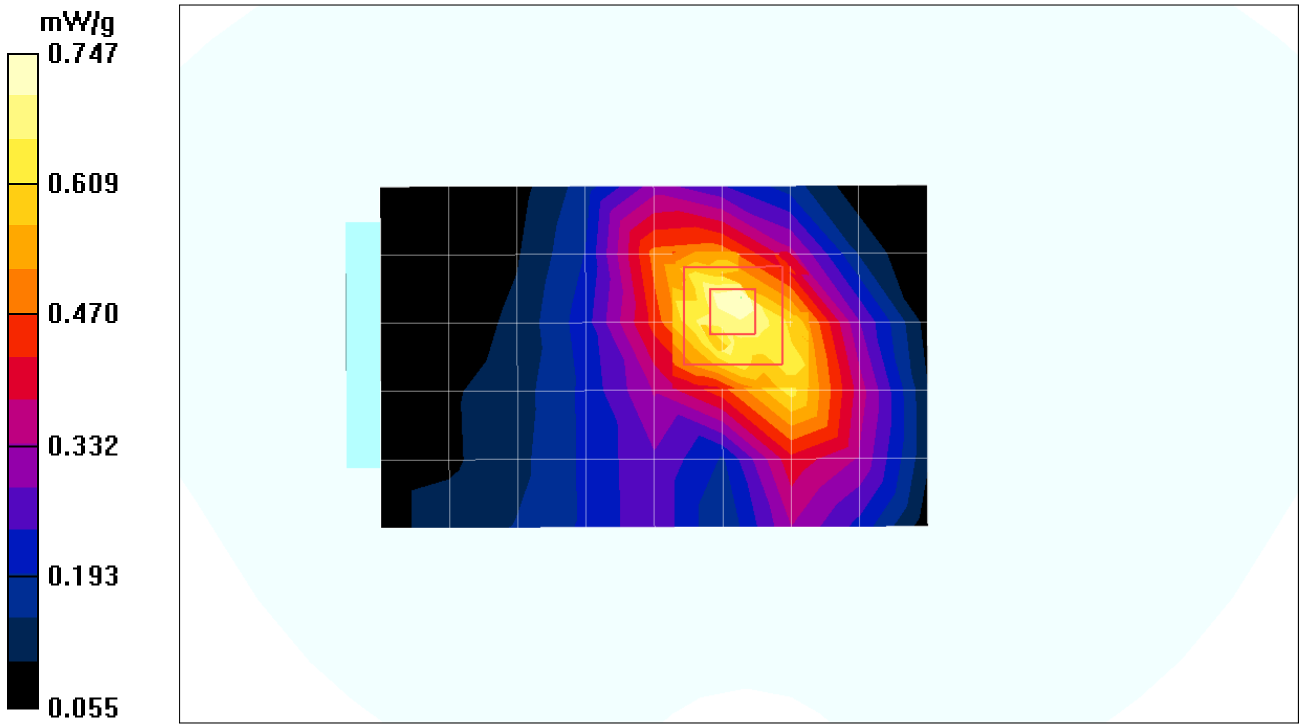
SAMSUNG SENS X20 Bottom Position Ant Out Horizontal CH777/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 27.3 V/m; Power Drift = -0.011 dB

Peak SAR (extrapolated) = 0.962 W/kg

SAR(1 g) = 0.667 mW/g; SAR(10 g) = 0.434 mW/g

Maximum value of SAR (measured) = 0.747 mW/g



Date/Time: 2007-04-18 5:21:10

Test Laboratory: Nemko Korea File Name: SAMSUNG SENS X20 Bottom Position Ant Out Horizontal (1x RTT) CH363.da4

DUT: CDC-650 Type: PCMCIA Card Type Serial: 00000001 Applicant Name: C-motech Co., Ltd

Communication System: CDMA Frequency: 835.89 MHz

Duty Cycle: 1:1 Phantom section: Flat Section

Medium parameters used: f = 836 MHz; σ = 0.963 mho/m; ε_r = 55.2; ρ = 1000 kg/m^3

DASY4 Configuration:

Probe: ES3DV3 - SN3068; ConvF(5.62, 5.62, 5.62); Calibrated: 2007-03-20

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn672; Calibrated: 2007-04-04

Phantom: SAM Phantom; Type: SAM; Serial: TP-1358

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

SAMSUNG SENS X20 Bottom Position Ant Out Horizontal (1x RTT) CH363/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.638 mW/g

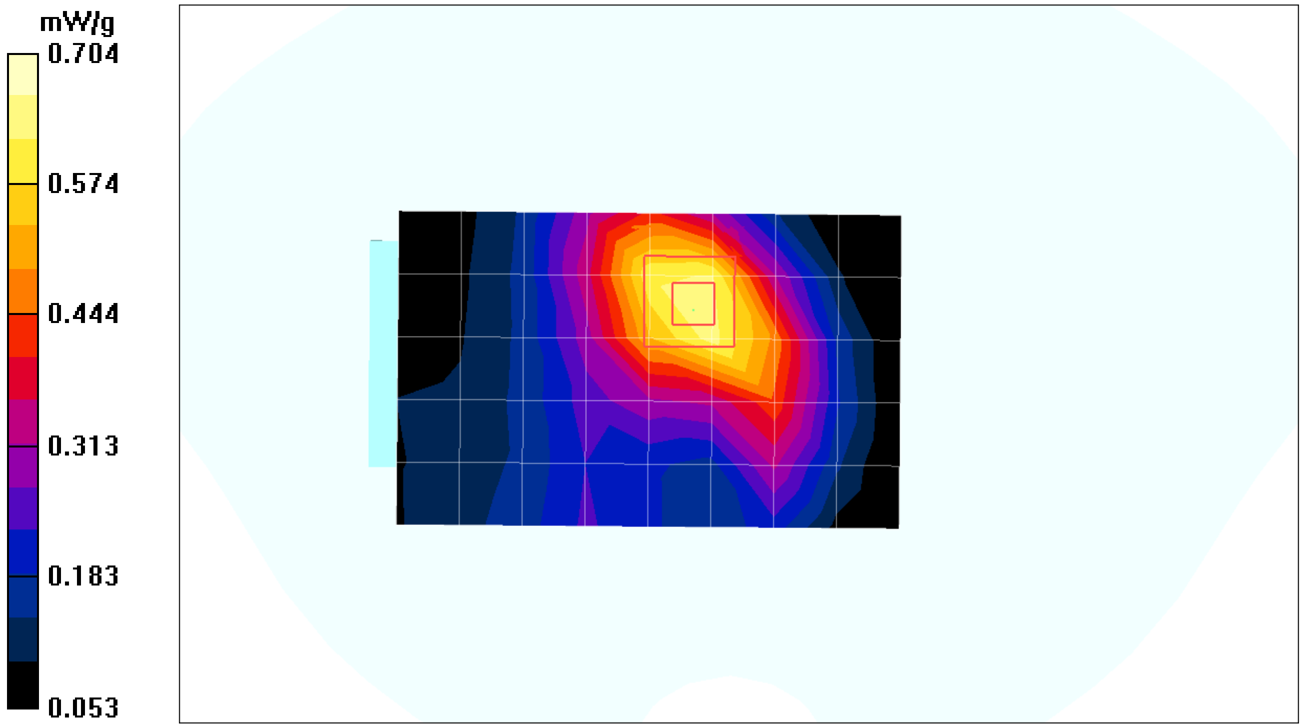
SAMSUNG SENS X20 Bottom Position Ant Out Horizontal (1x RTT) CH363/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 24.2 V/m; Power Drift = 0.122 dB

Peak SAR (extrapolated) = 0.949 W/kg

SAR(1 g) = 0.658 mW/g; SAR(10 g) = 0.431 mW/g

Maximum value of SAR (measured) = 0.704 mW/g



12. SAR Test Equipment

Table 12.1 Test Equipment Calibration

Description	Model	Serial No.	Calibration Date	Calibration Interval
Staubli Robot Unit	RX60L	F05/51E1A1/A/01	N/A	N/A
Data Acquisition Electronics	DAE4	672	April.04. 2007	1 year
E-Field Probe	ES3DV3	3068	April.20. 2007	1 year
Electro-Optical Converter	EOC3	398	N/A	N/A
SAM Twin Phantom V4.0C	TP-1358	SM 00 T02 DA	N/A	N/A
Validation Dipole Antenna	D835V2	4d017	February.20. 2006	2 year
Validation Dipole Antenna	D900V2	1d016	April.05. 2006	2 year
Validation Dipole Antenna	D1800V2	2d111	February.17. 2006	2 year
Validation Dipole Antenna	D1900V2	5d059	April.11. 2006	2 year
VSA Series Transmitter Tester	E4406A	US39480757	August.07.2006	1 year
PSA Series Spectrum Analyzer	E4440A	MY44022567	December.05.2006	1 year
Wireless Communications Test Set	8960 Series 10	GB43193659	June.09. 2006	1 year
Dielectric Probe Kit	85070E	MY44300121	N/A	N/A
Network Analyzer	8753ES	US39171172	March.06. 2007	1 year
Power Amplifier	NKRFSPA	NK00SP18	May.11. 2006	1 year
Power Meter	437B	2912U01687	December.05.2006	1 year
Power Sensor	8481A	3318A83210	August.14.2006	1 year
Power Meter	NRVS	835360/002	December.05.2006	1 year
Power Sensor	NRV-Z32	836019/028	December.05.2006	1 year
Series Signal Generator	E4436B	US39260598	December.05.2006	1 year

Note:

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

13. References

[1] IEEE 1528-2003, “Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques, December 2003

[2] EN 50361:2001, “Basic standard fields from mobile phones (200MHz – 3 GHz)”, July 2001

[3] IEC 62209 - 1, “Specific Absorption Rate (SAR) in the frequency range of 300 MHz to 3 GHz

[4] IEC 62209 - 2, Draft Version 0.9, “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”, December 2004

[5] OET Bulletin 65, Supplement C, “Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields”, Edition 01-01

[6] ANSI-PC63.19-2001, Draft 3.6, “American National Standard for Methods of Measurement of Compatibility between Wireless Communication Devices and Hearing Aids”, April 2005

Appendix A

SAR Definition

Specific Absorption Rate (SAR) is defined as the time derivative (rate) of the incremental energy (*dU*) absorbed by (dissipated in) an incremental mass (*dm*) contained in a volume element (*dV*) of a given density (*p*). It is also defined as the rate of RF energy absorption pet unit mass at a point in an absorbing body (see Fig. A.1).

$$SAR = \frac{d}{dt}\left(\frac{dU}{dm}\right) = \frac{d}{dt}\left(\frac{dU}{pdv}\right)$$

Figure A.1 SAR Mathematical Equation

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

$$\text{SAR} = \sigma E^2 / p$$

Where :

σ = conductivity of the tissue-simulant material (S/m)
p = mass density of the tissue-simulant material (kg/m3)
E = Total RMS electric field strength (V/m)

Note:
The primary factors that control rate or 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.

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Appendix B : Probe Calibration

Calibration Laboratory of
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Accreditation No.: SCS 108

Client Nemko (Dymstec)

Certificate No: ES3-3068_Mar07

CALIBRATION CERTIFICATE

Object	ES3DV3 - SN:3068
Calibration procedure(s)	QA CAL-01.v5 Calibration procedure for dosimetric E-field probes
Calibration date:	March 20, 2007
Condition of the calibrated item	In Tolerance

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 (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41495277	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41498087	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Reference 3 dB Attenuator	SN: S5054 (3c)	10-Aug-06 (METAS, No. 217-00592)	Aug-07
Reference 20 dB Attenuator	SN: S5086 (20b)	4-Apr-06 (METAS, No. 251-00558)	Apr-07
Reference 30 dB Attenuator	SN: S5129 (30b)	10-Aug-06 (METAS, No. 217-00593)	Aug-07
Reference Probe ES3DV2	SN: 3013	4-Jan-07 (SPEAG, No. ES3-3013_Jan07)	Jan-08
DAE4	SN: 654	21-Jun-06 (SPEAG, No. DAE4-654_Jun06)	Jun-07

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Oct-06)	In house check: Oct-07

	Name	Function	Signature
Calibrated by:	Katja Pokovic	Technical Manager	
Approved by:	Fin Bomholt	R&D Director	F. Bomholt

Issued: March 21, 2007

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: ES3-3068_Mar07 Page 1 of 9

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Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
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 effect 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 (no uncertainty required). DCP does not depend on frequency nor media.
- *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.

Certificate No: ES3-3068_Mar07 Page 2 of 9

Probe ES3DV3

SN:3068

Manufactured:	December 14, 2004
Last calibrated:	April 11, 2005
Recalibrated:	March 20, 2007

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

DASY - Parameters of Probe: ES3DV3 SN:3068

Sensitivity in Free Space[A]

NormX	**1.32** ± 10.1%	$\mu V/(V/m)^2$
NormY	**1.18** ± 10.1%	$\mu V/(V/m)^2$
NormZ	**1.18** ± 10.1%	$\mu V/(V/m)^2$

Diode Compression[B]

DCP X	**93** mV
DCP Y	**94** mV
DCP Z	**96** mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

TSL 900 MHz Typical SAR gradient: 5 % per mm

Sensor Center to Phantom Surface Distance		**3.0 mm**	**4.0 mm**
SAR_{be} [%]	Without Correction Algorithm	5.8	2.5
SAR_{be} [%]	With Correction Algorithm	0.0	0.2

TSL 1810 MHz Typical SAR gradient: 10 % per mm

Sensor Center to Phantom Surface Distance		**3.0 mm**	**4.0 mm**
SAR_{be} [%]	Without Correction Algorithm	7.9	4.7
SAR_{be} [%]	With Correction Algorithm	0.1	0.3

Sensor Offset

Probe Tip to Sensor Center **2.0** mm

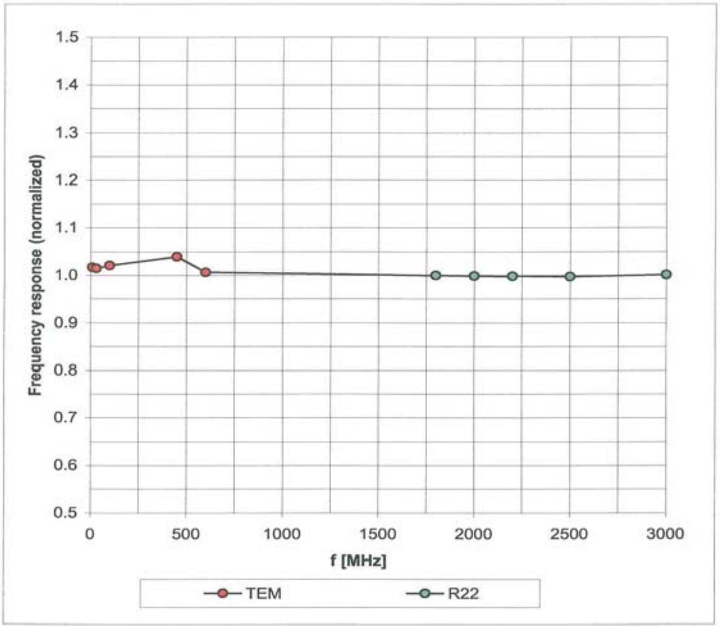
The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Page 8).
[B] Numerical linearization parameter: uncertainty not required.

ES3DV3 SN:3068 March 20, 2007

Frequency Response of E-Field

(TEM-Cell:ifi110 EXX, Waveguide: R22)

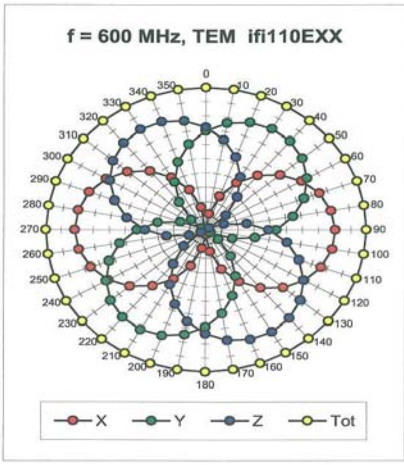


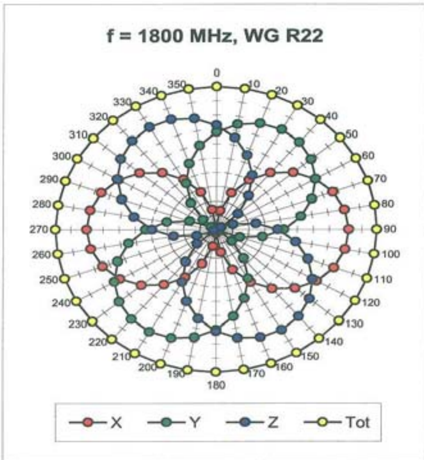
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

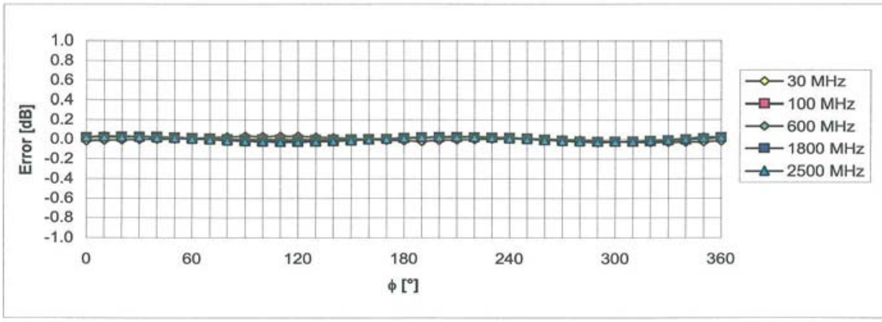
Certificate No: ES3-3068_Mar07 Page 5 of 9

ES3DV3 SN:3068 March 20, 2007

Receiving Pattern (φ), ϑ = 0°







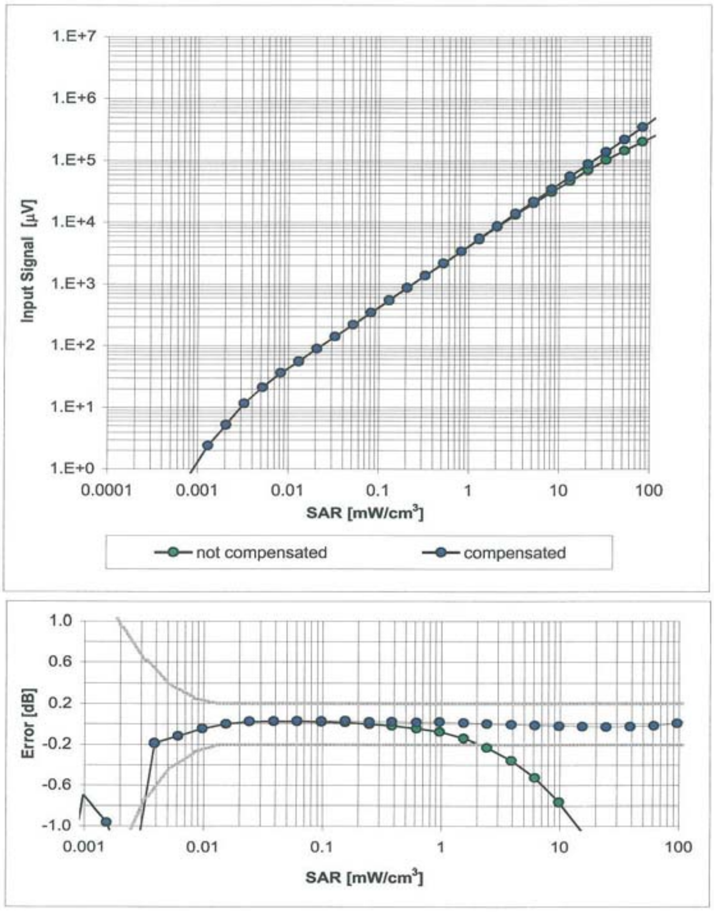
Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Certificate No: ES3-3068_Mar07 Page 6 of 9

ES3DV3 SN:3068 March 20, 2007

Dynamic Range f(SAR$_{head}$)

(Waveguide R22, f = 1800 MHz)

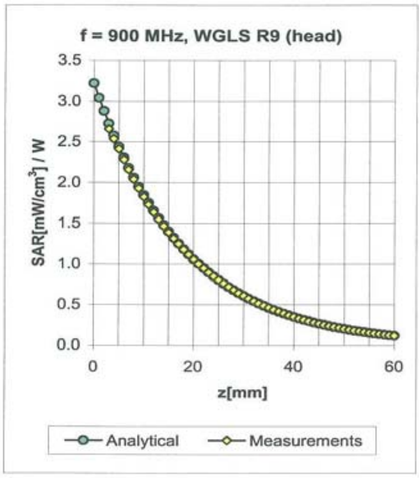


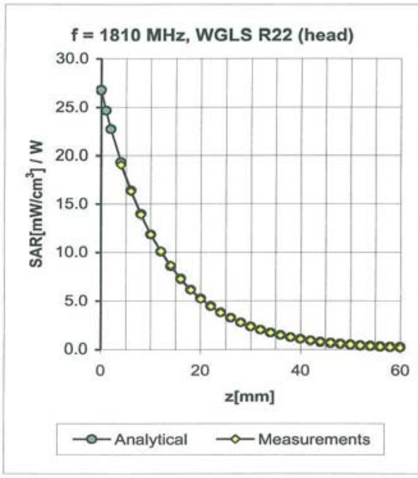
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Certificate No: ES3-3068_Mar07 Page 7 of 9

ES3DV3 SN:3068 March 20, 2007

Conversion Factor Assessment





f [MHz]	Validity [MHz][c]	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF	Uncertainty
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.92	1.27	5.73	± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.86	1.26	4.89	± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.76	1.35	4.34	± 11.8% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.80	1.30	5.62	± 11.0% (k=2)
1900	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.70	1.46	4.62	± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.80	1.20	4.06	± 11.8% (k=2)

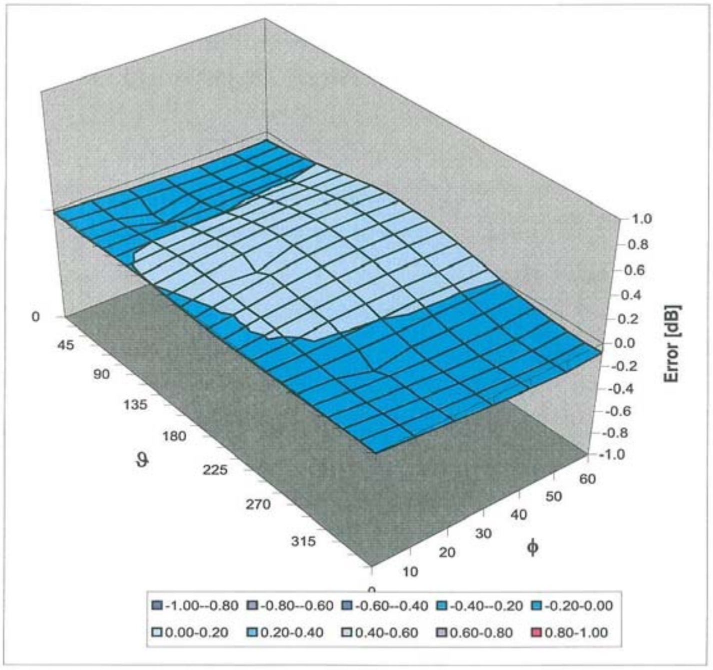
[c] The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

Certificate No: ES3-3068_Mar07 Page 8 of 9

ES3DV3 SN:3068 March 20, 2007

Deviation from Isotropy in HSL

Error (ϕ, ϑ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

Certificate No: ES3-3068_Mar07 Page 9 of 9

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Appendix C : Dipole Calibrations

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Accreditation No.: SCS 108

Client Nemko (Dymstec)

Certificate No: D835V2-4d017_Feb06

CALIBRATION CERTIFICATE

Object	D835V2 - SN: 4d017
Calibration procedure(s)	QA CAL-05.v6 Calibration procedure for dipole validation kits
Calibration date:	February 20, 2006
Condition of the calibrated item	In Tolerance

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 (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	04-Oct-05 (METAS, No. 251-00516)	Oct-06
Power sensor HP 8481A	US37292783	04-Oct-05 (METAS, No. 251-00516)	Oct-06
Reference 20 dB Attenuator	SN: 5086 (20g)	11-Aug-05 (METAS, No 251-00498)	Aug-06
Reference 10 dB Attenuator	SN: 5047.2 (10r)	11-Aug-05 (METAS, No 251-00498)	Aug-06
Reference Probe ET3DV6	SN 1507	28-Oct-05 (SPEAG, No. ET3-1507_Oct05)	Oct-06
DAE4	SN 601	15-Dec-05 (SPEAG, No. DAE4-601_Dec05)	Dec-06

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-05)	In house check: Oct-07
RF generator Agilent E4421B	MY41000675	11-May-05 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Nov-05)	In house check: Nov-06

	Name	Function	Signature
Calibrated by:	Mike Meili	Laboratory Technician	M. Meili
Approved by:	Katja Pokovic	Technical Manager	

Issued: February 21, 2006

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Certificate No: D835V2-4d017_Feb06 Page 1 of 6

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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) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001
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 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.

Certificate No: D835V2-4d017_Feb06 Page 2 of 6

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY4	V4.6
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V4.9	
Distance Dipole Center - TSL	15 mm	with Spacer
Area Scan resolution	dx, dy = 15 mm	
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	42.1 ± 6 %	0.95mho/m ± 6 %
Head TSL temperature during test	(22.4 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	condition	
SAR measured	250 mW input power	2.38 mW / g
SAR normalized	normalized to 1W	9.52 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**9.36 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 normalized	normalized to 1W	6.16 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**6.11 mW / g ± 16.5 % (k=2)**

[1] Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.5 Ω - 2.1 jΩ
Return Loss	- 29.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.389 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.
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	April 22, 2004

DASY4 Validation Report for Head TSL

Date/Time: 20.02.2006 17:15:40

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d017

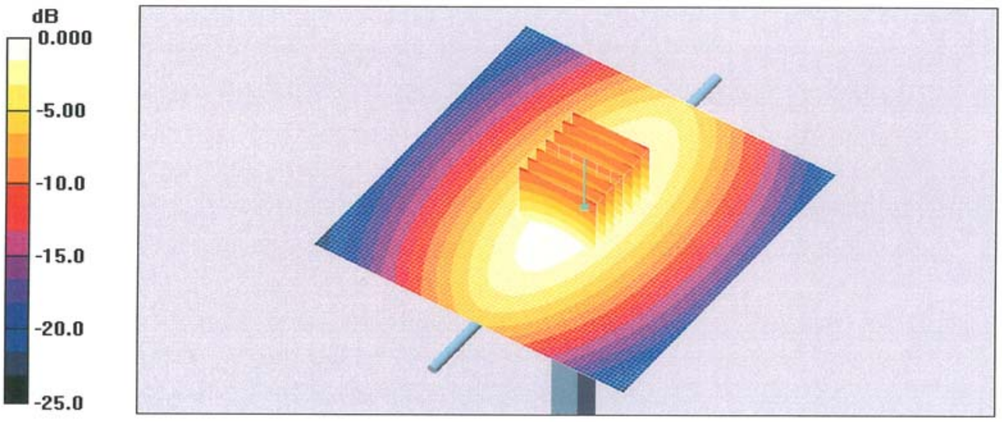
Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: HSL U10 BB;
Medium parameters used: f = 835 MHz; σ = 0.945 mho/m; ε_r = 42.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (HF); ConvF(6.09, 6.09, 6.09); Calibrated: 28.10.2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 15.12.2005
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA
- Measurement SW: DASY4, V4.6 Build 57; Postprocessing SW: SEMCAD, V1.8 Build 160

Pin = 250 mW; d = 10 mm/Area Scan (81x81x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.58 mW/g

Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.1 V/m; Power Drift = -0.011 dB
Peak SAR (extrapolated) = 3.59 W/kg
SAR(1 g) = 2.38 mW/g; SAR(10 g) = 1.54 mW/g
Maximum value of SAR (measured) = 2.58 mW/g



0 dB = 2.58mW/g

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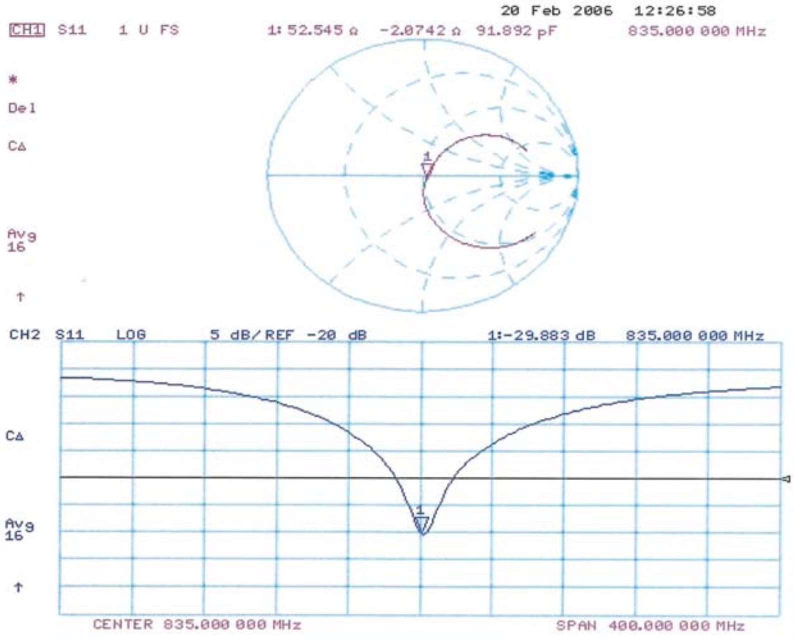
Impedance Measurement Plot for Head TSL



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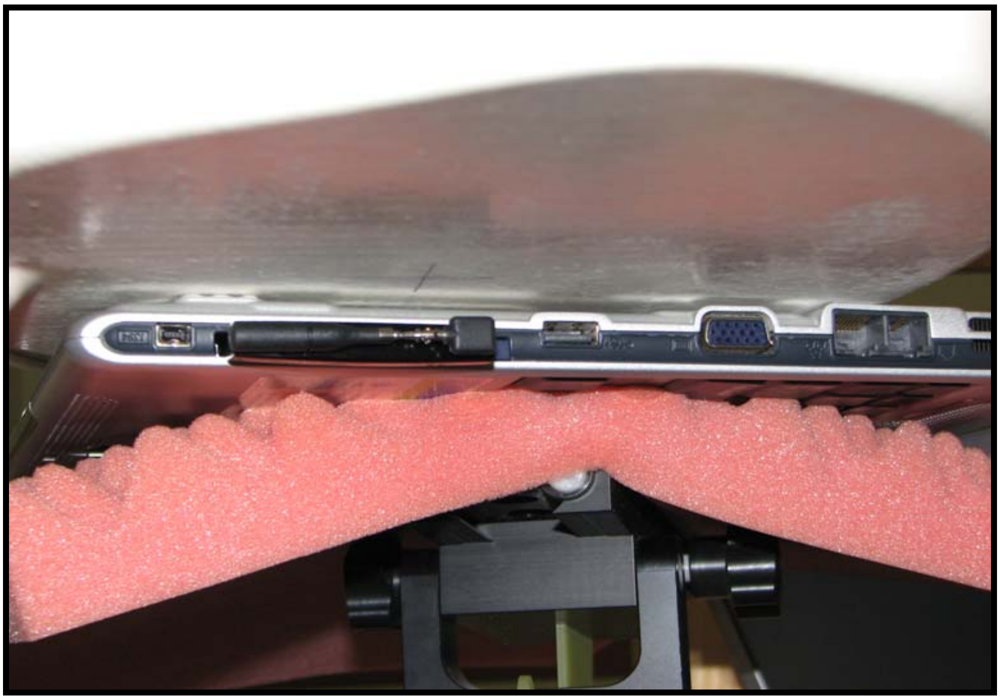
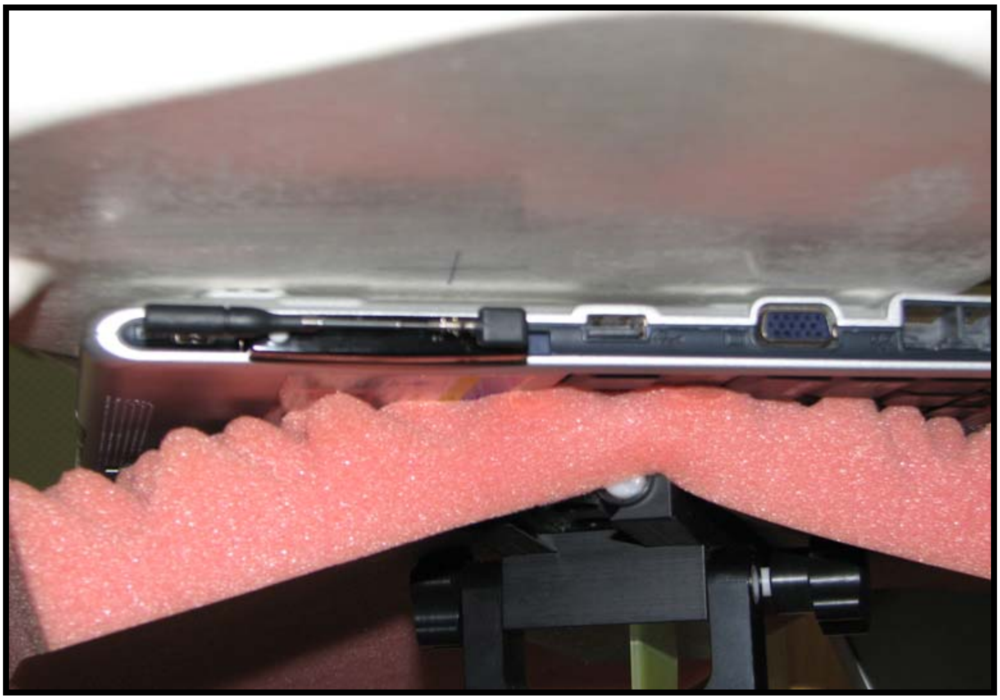
Appendix E : Test Position of EUT

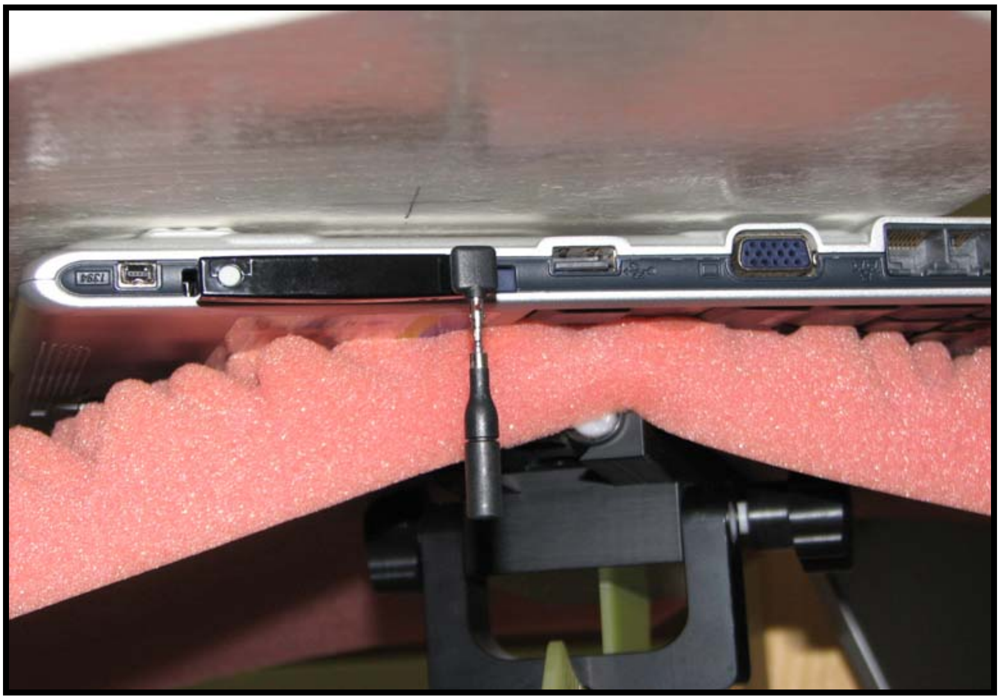
SAMSUNG SENS X10 SE Horizontal Antenna IN



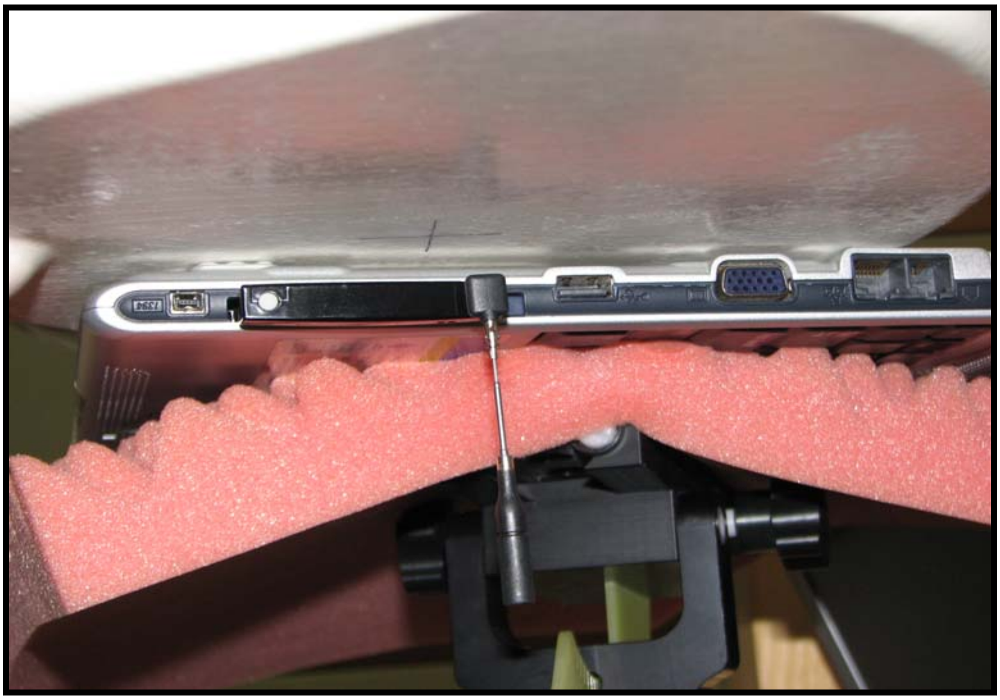
SAMSUNG SENS X10 SE Horizontal Antenna OUT



SAMSUNG SENS X10 SE Vertical Antenna IN



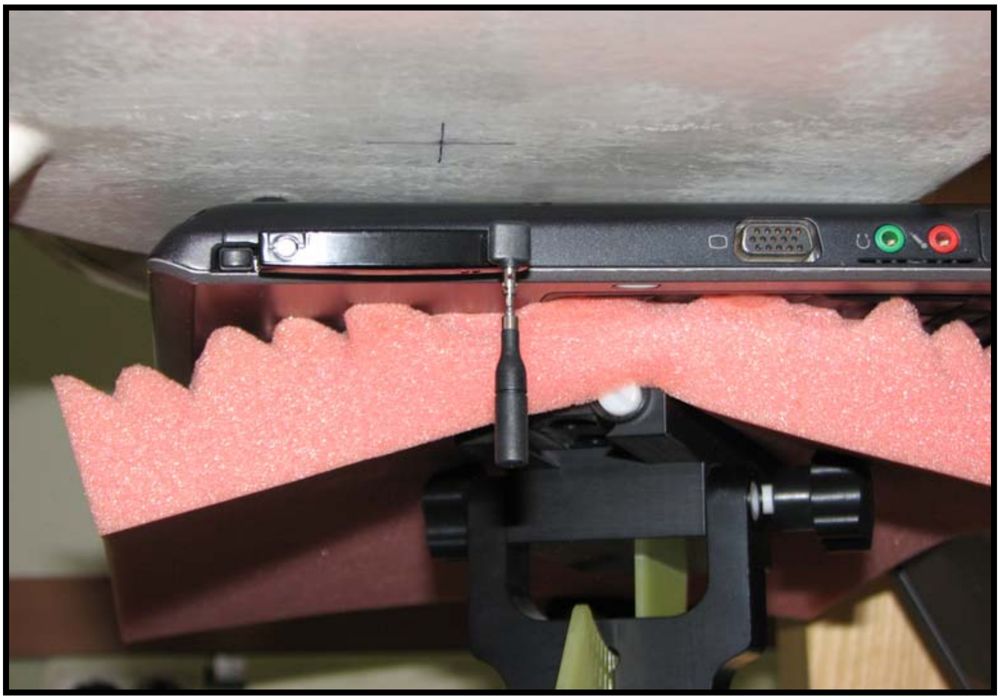
SAMSUNG SENS X10 SE Vertical Antenna OUT



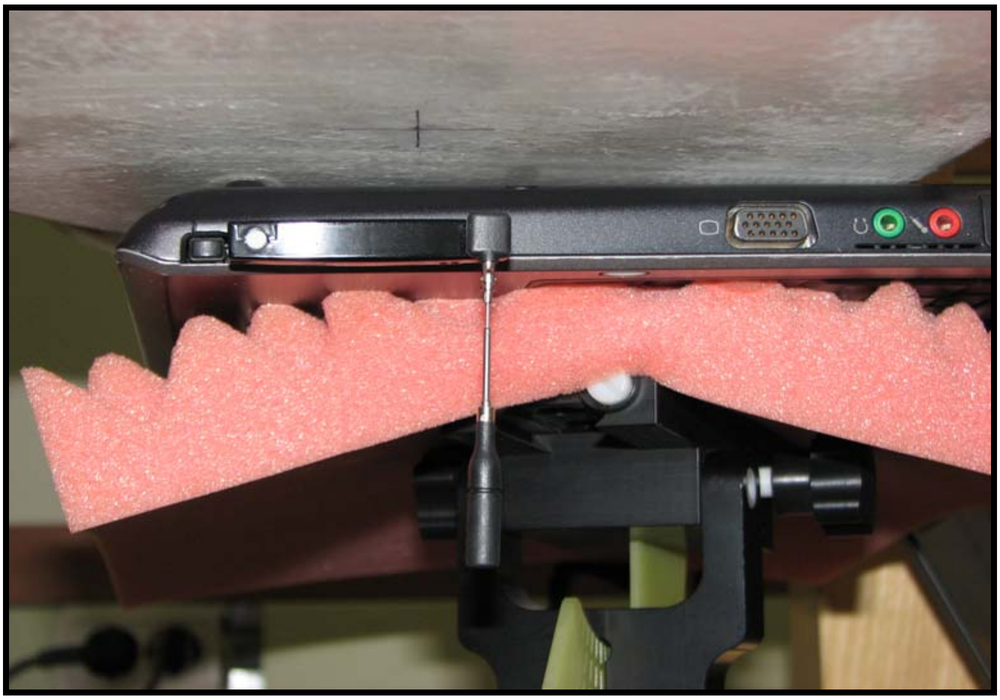
SONY PCG-6C7P Horizontal Antenna IN

SONY PCG-6C7P Horizontal Antenna OUT

SONY PCG-6C7P Vertical Antenna IN

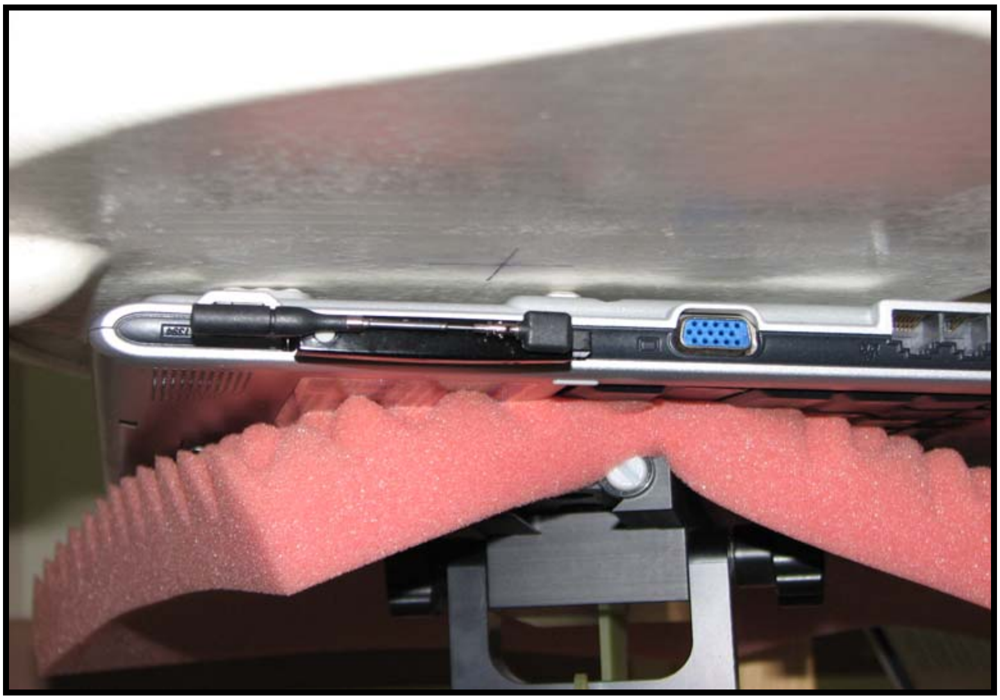


SONY PCG-6C7P Vertical Antenna OUT

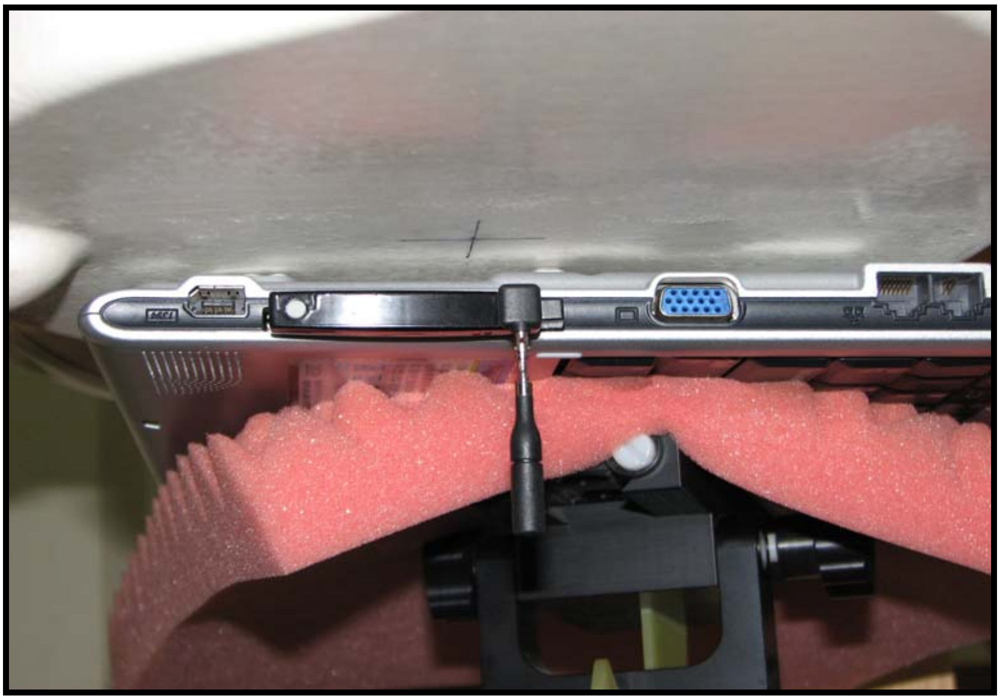


SAMSUNG SENS X20 Horizontal Antenna IN

SAMSUNG SENS X20 Horizontal Antenna OUT



SAMSUNG SENS X20 Vertical Antenna IN



SAMSUNG SENS X20 Vertical Antenna OUT