SAR EVALUATION REPORT

For

Motion Computing Incorporated

8601 Ranch Road 2222 Building 2

Austin, TX 78730, USA

FCC ID: Q3QHWNVWUNDP-1

IC: 4587A-NVWUNDP1

Report Type: Original Report	**Product Type:** Tablet PC with WWAN Module

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Report Number:	R0901082-SAR
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Summary of Test Results

Rule Part(s):	CFR 47 §2.1093; IC RSS-102
Test Procedure(s):	FCC OET Bulletin 65 C; IEEE 1528-2003
Device Category: **Exposure Category:**	Portable Device General Population/Uncontrolled Exposure
Device Type:	Tablet PC with WWLAN Module
Modulation Type:	GMSK/QPSK/WCDMA
TX Frequency Range:	824.2~848.8 MHz (GPRS) 824.2~848.8 MHz (EDGE) 824.7~848.31 MHz (CDMA) 826.4~846.6 MHz (WCDMA/HSPA) 1850.2~1909.8 MHz (GPRS) 1850.2~1909.8 MHz (EDGE) 1851.25~1908.75 MHz (CDMA) 1852.4~1907.6 MHz (WCDMA/HSPA)
Maximum Conducted Power Tested:	32.63 dBm (Cellular Band, GPRS) 27.25 dBm (Cellular Band, EDGE) 24.64 dBm (Cellular Band, CDMA) 24.21 dBm (Cellular Band, WCDMA/HSPA) 29.41 dBm (PCS Band, GPRS) 25.96 dBm (PCS Band, EDGE) 24.41 dBm (PCS Band, CDMA) 24.32 dBm (PCS Band, WCDMA/HSPA)
Antenna Type(s) Tested:	Integral Antenna
Battery Type (s) Tested:	Li-ion Battery 24 Vdc, 1.7A
Max. SAR Measured:	0.339 W/Kg, Body Tissue GPRS, Cellular Band
	0.527W/Kg, Body Tissue CDMA, Cellular Band
	0.537 W/Kg, Body Tissue WCDMA Cellular Band
	0.223 W/Kg, Body Tissue GPRS, PCS Band
	0.860 W/Kg, Body Tissue CDMA, PCS Band
	0.831 W/Kg, Body Tissue WCDMA, PCS Band

This wireless device has been shown to be capable of compliance for localized specific absorption rate (SAR) for General Population/Uncontrolled Exposure limits specified in ANSI/IEEE Standards and has been tested in accordance with the measurement procedures specified in FCC OET 65 Supplement C.

The results and statements contained in this report pertain only to the device(s) evaluated.

EUT Photo

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REFERENCE, STANDARDS, AND GUILDELINES

FCC:

The Report and Order requires routine SAR evaluation prior to equipment authorization of portable transmitter devices, including portable telephones. For consumer products, the applicable limit is 1.6 mW/g as recommended by the ANSI/IEEE standard C95.1-1992 [6] for an uncontrolled environment (Paragraph 65). According to the Supplement C of OET Bulletin 65 "Evaluating Compliance with FCC Guide-lines for Human Exposure to Radio frequency Electromagnetic Fields", released on Jun 29, 2001 by the FCC, the device should be evaluated at maximum output power (radiated from the antenna) under "worst-case" conditions for normal or intended use, incorporating normal antenna operating positions, device peak performance frequencies and positions for maximum RF energy coupling.

This report describes the methodology and results of experiments performed on wireless data terminal. The objective was to determine if there is RF radiation and if radiation is found, what is the extent of radiation with respect to safety limits? SAR (Specific Absorption Rate) is the measure of RF exposure determined by the amount of RF energy absorbed by human body (or its parts) – to determine how the RF energy couples to the body or head which is a primary health concern for body worn devices. The limit below which the exposure to RF is considered safe by regulatory bodies in North America is 1.6 mW/g average over 1 gram of tissue mass.

CE:

The CE requires routine SAR evaluation prior to equipment authorization of portable transmitter devices, including portable telephones. For consumer products, the applicable limit is 2 mW/g as recommended by the EN50360 for an uncontrolled environment. According to the Standard, the device should be evaluated at maximum output power (radiated from the antenna) under "worst-case" conditions for normal or intended use, incorporating normal antenna operating positions, device peak performance frequencies and positions for maximum RF energy coupling.

This report describes the methodology and results of experiments performed on wireless data terminal. The objective was to determine if there is RF radiation and if radiation is found, what is the extent of radiation with respect to safety limits? SAR (Specific Absorption Rate) is the measure of RF exposure determined by the amount of RF energy absorbed by human body (or its parts) – to determine how the RF energy couples to the body or head which is a primary health concern for body worn devices. The limit below which the exposure to RF is considered safe by regulatory bodies in Europe is 2 mW/g average over 10 gram of tissue mass.

The test configurations were laid out on a specially designed test fixture to ensure the reproducibility of measurements. Each configuration was scanned for SAR. Analysis of each scan was carried out to characterize the above effects in the device.

SAR Limits

FCC Limit (1g Tissue)

EXPOSURE LIMITS	SAR (W/kg)	
	(General Population / Uncontrolled Exposure Environment)	(Occupational / Controlled Exposure Environment)
Spatial Average (averaged over the whole body)	0.08	0.4
Spatial Peak (averaged over any 1 g of tissue)	1.60	8.0
Spatial Peak (hands/wrists/feet/ankles averaged over 10 g)	4.0	20.0

CE Limit (10g Tissue)

EXPOSURE LIMITS	SAR (W/kg)	
	(General Population / Uncontrolled Exposure Environment)	(Occupational / Controlled Exposure Environment)
Spatial Average (averaged over the whole body)	0.08	0.4
Spatial Peak (averaged over any 1 g of tissue)	2.0	10
Spatial Peak (hands/wrists/feet/ankles averaged over 10 g)	4.0	20.0

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

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

General Population/Uncontrolled environments Spatial Peak limit 1.6 W/kg (FCC) & 2 W/kg (CE) applied to the EUT.

EUT DESCRIPTION

The *Motion Computing Inc's* product, model J3400 (T008a) or the "EUT" as referred to in this report, is a Tablet PC and operates in the same manner as any laptop or mobile computing device with GSM/CDMA/WCDMA, Bluetooth and 802.11 a/b/g/n modules.

The EUT measures approximately 324 mm (L) × 232 mm (W) × 25.4 mm (H), weight 4.1 lbs. (with two standard batteries).

EUT Technical Specification:

Item	Description
Modulation	GSM850: GSMK CDMA835: QPSK/OQPSK WCDMA835: WCDMA PCS1900: GMSK CDMA1900: QPSK/OQPSK WCDMA1900: WCDMA
Frequency Range	GSM850: 824~849 MHz (Tx) 869~894 MHz (Rx) CDMA835: 824~849 MHz (Tx) 869~894 MHz (Rx) WCDMA835: 824~849 MHz (Tx) 869~894 MHz (Rx) PCS1900: 1850~1910 MHz (Tx) 1930~1990 MHz (Rx) CDMA1900: 1850~1910 MHz (Tx) 1930~1990 MHz (Rx) WCDMA1900: 1850~1910 MHz (Tx) 1930~1990 MHz (Rx)
Output Power:	32.63 dBm (Cellular Band, GPRS) 27.25 dBm (Cellular Band, EDGE) 24.64 dBm (Cellular Band, CDMA) 24.21 dBm (Cellular Band, WCDMA/HSPA) 29.41 dBm (PCS Band, GPRS) 25.96 dBm (PCS Band, EDGE) 24.41 dBm (PCS Band, CDMA) 24.32 dBm (PCS Band, WCDMA/HSPA)
Dimensions (L*W*H)	324 mm (L)× 232 mm (W)×25.4 mm (H)
Power Source	Lithium-ion battery with 60WHr capacity
Weight	4.1 lbs.
Normal Operation	Body-worn

**The data gathered are from a typical production sample provided by the manufacturer, serial number: B2085 assigned by BACL.*

FACILITIES AND ACCREDITATION

The test site used by Bay Area Compliance Laboratories Corp. (BACL) to collect data is located at 1274 Anvilwood Ave, Sunnyvale, California 94089, USA.

BACL is a National Institute of Standards and Technology (NIST) accredited laboratory under the National Voluntary Laboratory Accredited Program (Lab Code 200167-0).

Lab Code: 200167-0

The current scope of accreditations can be found at: http://ts.nist.gov/Standards/scopes/2001670.htm

DESCRIPTION OF TEST SYSTEM

These measurements were performed with the automated near-field scanning system DASY4 from Schmid & Partner Engineering AG (SPEAG) which is the fourth generation of the system shown in the figure hereinafter:

The system is based on a high precision robot (working range greater than 0.9m), which positions the probes with a positional repeatability of better than ±0.02mm. Special E- and H-field probes have been developed for measurements close to material discontinuity, the sensors of which are directly loaded with a Schottky diode and connected via highly resistive lines to the data acquisition unit.

The SAR measurements were conducted with the dosimetric probe ET3DV6 SN: 1604 (manufactured by SPEAG), designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe has been calibrated according to the procedure with accuracy of better than ±10%. The spherical isotropy was evaluated with the procedure and found to be better than ±0.25dB.

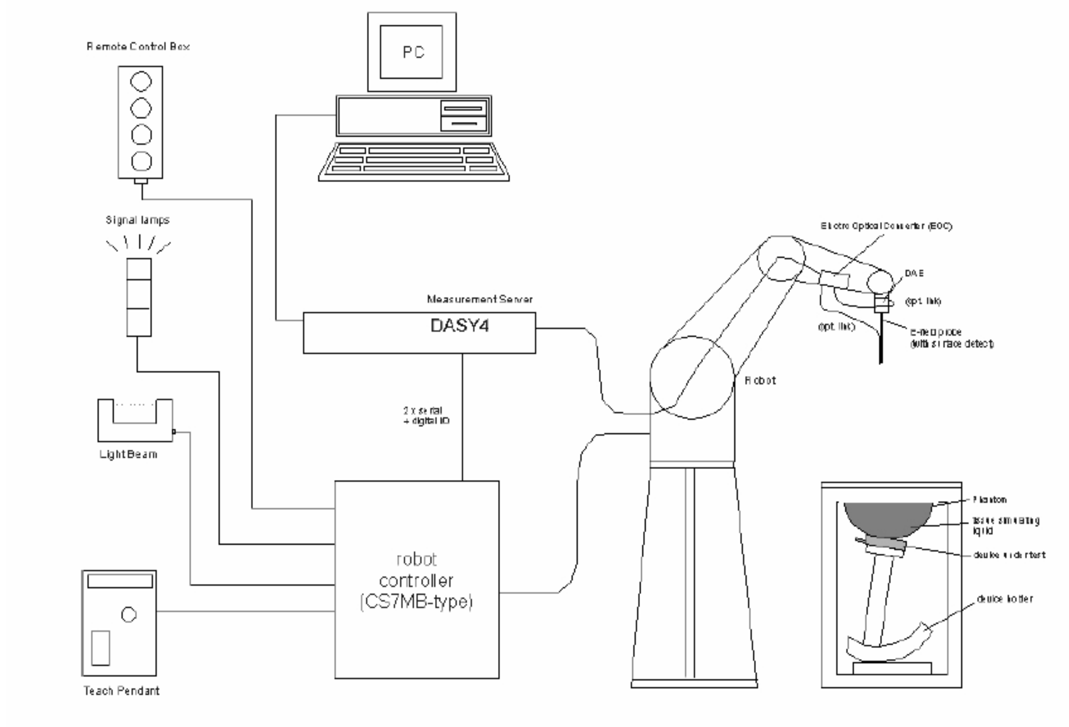
The phantom used was the Generic Twin Phantom". The ear was simulated as a spacer of 4 mm thickness between the earpiece of the phone and the tissue simulating liquid. The Tissue simulation liquid used for each test is in according with the FCC OET65 supplement C as listed below.

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

IEEE SCC-34/SC-2 P1528 Recommended Tissue Dielectric Parameters

Frequency (MHz)	**Head Tissue**		**Body Tissue**	
	εr	**Ơ (S/m)**	**εr**	**Ơ (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

Measurement System Diagram



The DASY4 system for performing compliance tests consists of the following items:

- A standard high precision 6-axis robot (Stäubli RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to the DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows 2000 or Windows XP.

• DASY4 software.

• Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.

• The SAM twin phantom enabling testing left-hand and right-hand usage.

• The device holder for handheld mobile phones.

• Tissue simulating liquid mixed according to the given recipes.

• Validation dipole kits allowing system validation.

System Components

• DASY4 Measurement Server
• Data Acquisition Electronics
• Probes
• Light Beam Unit
• Medium
• SAM Twin Phantom
• Device Holder for SAM Twin Phantom
• System Validation Kits
• Robot

DASY4 Measurement Server

The DASY4 measurement server is based on a PC/104 CPU board with a 166MHz low-power Pentium, 32MB chip disk and 64MB RAM. The necessary circuits for communication with either the DAE4 (or DAE3) electronic box as well as the 16-bit AD-converter system for optical detection and digital I/O interface are contained on the DASY4 I/O-board, which is directly connected to the PC/104 bus of the CPU board.

The measurement server performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation. The PC-operating system cannot interfere with these time critical processes. All connections are supervised by a watchdog, and disconnection of any of the cables to the measurement server will automatically disarm the robot and disable all program-controlled robot movements. Furthermore, the measurement server is equipped with two expansion slots which are reserved for future applications. Please note that the expansion slots do not have a standardized pin out and therefore only the expansion cards provided by SPEAG can be inserted. Expansion cards from any other supplier could seriously damage the measurement server.

Data Acquisition Electronics

The data acquisition electronics DAE3 consists of a highly sensitive electrometer grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.

Probes

The DASY system can support many different probe types.

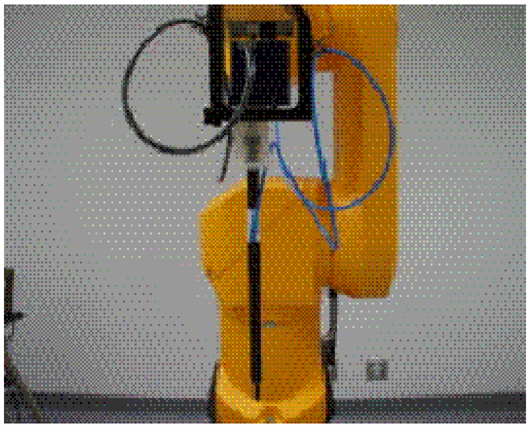
Dosimetric Probes: These probes are specially designed and calibrated for use in liquids with high permittivities. They should not be used in air, since the spherical isotropy in air is poor (±2 dB). The dosimetric probes have special calibrations in various liquids at different frequencies.

Free Space Probes: These are electric and magnetic field probes specially designed for measurements in free space. The z-sensor is aligned to the probe axis and the rotation angle of the x-sensor is specified. This allows the DASY system to automatically align the probe to the measurement grid for field component measurement. The free space probes are generally not calibrated in liquid. (The H-field probes can be used in liquids without any change of parameters.)

Temperature Probes: Small and sensitive temperature probes for general use. They use a completely different parameter set and different evaluation procedures. Temperature rise features allow direct SAR evaluations with these probes.

ET3DV6 Probe Specification

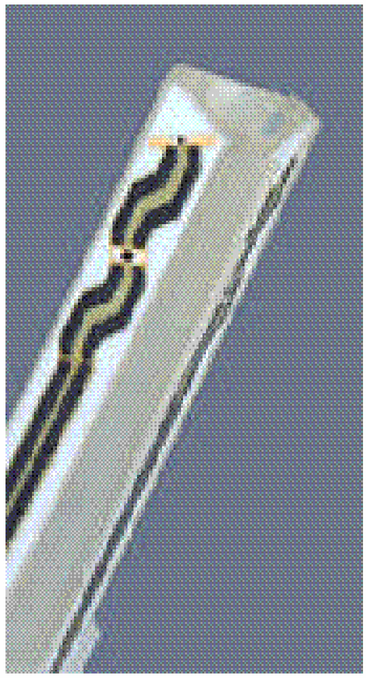
Construction Symmetrical design with triangular core
Built-in optical fiber for surface detection System
Built-in shielding against static charges
Calibration In air from 10 MHz to 2.5 GHz
In brain and muscle simulating tissue at
Frequencies of 450 MHz, 900 MHz and
1.8 GHz (accuracy ± 8%)
Frequency 10 MHz to > 6 GHz; Linearity: ± 0.2 dB
(30 MHz to 3 GHz)
Directivity ± 0.2 dB in brain tissue (rotation around
probe axis)
± 0.4 dB in brain tissue (rotation normal probe axis)
Dynamic 5 mW/g to > 100 mW/g;
Range Linearity: ± 0.2 dB
Surface ± 0.2 mm repeatability in air and clear liquids
Detection over diffuse reflecting surfaces.
Dimensions Overall length: 330 mm
Tip length: 16 mm



Photograph of the probe

Body diameter: 12 mm
Tip diameter: 6.8 mm
Distance from probe tip to dipole centers: 2.7 mm
Application General dosimetric up to 3 GHz
Compliance tests of mobile phones
Fast automatic scanning in arbitrary phantoms

The SAR measurements were conducted with the dosimetric probe ET3DV6 designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe is constructed using the thick film technique; with printed resistive lines on ceramic substrates. The probe is equipped with an optical multi-fiber line ending at the front of the probe tip. It is connected to the EOC box on the robot arm and provides an automatic detection of the phantom surface. Half of the fibers are connected to a pulsed infrared transmitter, the other half to a synchronized receiver. As the probe approaches the surface, the reflection from the surface produces a coupling from the transmitting to the receiving fibers. This reflection increases first during the approach, reaches 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 DASY3 software reads the reflection during a software approach and looks for the maximum using a 2nd order fitting. The approach is stopped when reaching the maximum.



Inside view of ET3DV6 E-field Probe

E-Field Probe Calibration Process

Each probe is calibrated according to a dosimetric assessment procedure described in [6] with accuracy better than +/- 10%. The spherical isotropy was evaluated with the procedure described in [7] and found to be better than +/-0.25dB. The sensitivity parameters (NormX, NormY, NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested.

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

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

Data Evaluation

The DASY4 postprocessing software (SEMCAD) automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

Probe parameters:	- Sensitivity	Normi, ai0, ai1, ai2
	- Conversion factor	ConvFi
	- Diode compression point	dcpi

Device parameters: - Frequency f
- Crest factor cf

Media parameters: - Conductivity σ
- Density ρ

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY components. In the direct measuring mode of the multimeter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics. If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given as:

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

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

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

$$\text{E} - \text{fieldprobes :} \qquad E_i = \sqrt{\frac{V_i}{Norm_i \cdot ConvF}}$$

$$\text{H} - \text{fieldprobes :} \qquad H_i = \sqrt{V_i} \cdot \frac{a_{i0} + a_{i1} f + a_{i2} f^2}{f}$$

With Vi = compensated signal of channel i (i =x, y, z)
$Norm_i$ = sensor sensitivity of channel i (i =x, y, z)
$\mu V/(V/m)^2$ for E-field probes
ConF = sensitivity enhancement in solution
a_{ij} = sensor sensitivity factors for H-field probes
f = carrier frequency [GHz]
Ei = electric field strenggy of channel i in V/m
H_i = diode compression point (DASY parameter)

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

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

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

$$SAR = E_{tot}^2 \cdot \frac{\sigma}{\rho \cdot 1'000}$$

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

Note that the density is normally set to 1, to account for actual brain density rather than the density of the simulation liquid.

Light Beam Unit

The light beam switch allows automatic "tooling" of the probe. During the process, the actual position of the probe tip with respect to the robot arm is measured, as well as the probe length and the horizontal probe offset. The software then corrects all movements, so that the robot coordinates are valid for the probe tip. The repeatability of this process is better than 0.1 mm. If a position has been taught with an aligned probe, the same position will be reached with another aligned probe within 0.1 mm, even if the other probe has different dimensions. During probe rotations, the probe tip will keep its actual position.

Medium

Parameters

The parameters of the tissue simulating liquid strongly influence the SAR in the liquid. The parameters for the different frequencies are defined in the corresponding compliance standards (e.g., EN 50361, IEEE 1528-2003).

Parameter measurements

Several measurement systems are available for measuring the dielectric parameters of liquids:

- The open coax test method (e.g., HP85070 dielectric probe kit) is easy to use, but has only moderate acuracy. It is calibrated with open, short, and deionized water and the calibrations a critical process.

- The transmission line method (e.g., model 1500T from DAMASKOS, INC.) measures the transmission and reflection in a liquid filled high precision line. It needs standard two port calibration and is probably more accurate than the open coax method.

- The reflection line method measures the reflection in a liquid filled shorted precision lined.The method is not suitable for these liquids because of its low sensitivity.

- The slotted line method scans the field magnitude and phase along a liquid filled line. The evaluation is straight forward and only needs a simple response calibration. The method is very accurate, but can only be used in high loss liquids and at frequencies above 100 to 200MHz. Cleaning the line can be tedious.

SAM Twin Phantom

The SAM twin phantom is a fiberglass shell phantom with 2mm shell thickness (except the ear region where shell thickness increases to 6mm). It has three measurement areas:

• Left hand
• Right hand
• Flat phantom

The phantom table comes in two sizes: A 100 x 50 x 85 cm (L x W x H) table for use with free standing robots (DASY4 professional system option) or as a second phantom and a 100 x 75 x 85 cm(L x W x H) table with reinforcements for table mounted robots (DASY4 compact system option) .
The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. Only one device holder is necessary if two phantoms are used (e.g., for different liquids) A white cover is provided to tap the phantom during o_-periods to prevent water evaporation and changes in the liquid parameters. Free space scans of devices on the cover are possible. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

The phantom can be used with the following tissue simulating liquids:

• Water-sugar based liquids can be left permanently in the phantom. Always cover the liquid if the system is not used, otherwise the parameters will change due to water evaporation.

• Glycol based liquids should be used with care. As glycol is a softener for most plastics, the liquid should be taken out of the phantom and the phantom should be dried when the system is not used (desirable at least once a week).

• Do not use other organic solvents without previously testing the phantom's compatibility.

Device Holder for SAM Twin Phantom

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source in 5mm distance, a positioning uncertainty of ±0.5mm would produce a SAR uncertainty of ±20%. An accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions, in which the devices must be measured, are defined by the standards.

The DASY device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation center for both scales is the ear reference point ERP). Thus the device needs no repositioning when changing the angles.


The DASY device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity "=3 and loss tangent _=0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

System Validation Kits

Each DASY system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the DASY software, enable the user to conduct the system performance check and system validation. For that purpose a well defined SAR distribution in the flat section of the SAM twin phantom is produced.

System validation kit includes a dipole, tripod holder to fix it underneath the flat phantom and a corresponding distance holder. Dipoles are available for the variety of frequencies between 300MHz and 6 GHz (dipoles for other frequencies or media and other calibration conditions are available upon request).

The dipoles are highly symmetric and matched at the center frequency for the specified liquid and distance to the flat phantom (or flat section of the SAM-twin phantom). The accurate distance between the liquid surface and the dipole center is achieved with a distance holder that snaps on the dipole.

Robot

The DASY4 system uses the high precision industrial robots RX60L, RX90 and RX90L, as well as the RX60BL and RX90BL types out of the newer series from Stäubli SA (France). The RX robot series offers many features that are important for our application:

• High precision (repeatability 0.02mm)
• High reliability (industrial design)
• Low maintenance costs (virtually maintenance-free due to direct drive gears; no belt drives)
• Jerk-free straight movements (brushless synchronous motors; no stepper motors)
• Low ELF interference (the closed metallic construction shields against motor control fields)

For the newly delivered DASY4 systems as well as for the older DASY3 systems delivered since 1999, the CS7MB robot controller version from Stäubli is used. Previously delivered systems have either a CS7 or CS7M controller; the differences to the CS7MB are mainly in the hardware, but some procedures in the robot software from Stäubli are also not completely the same. The following descriptions about robot hard- and software correspond to CS7MB controller with software version 13.1 (edit S5). The actual commands, procedures and configurations, also including details in hardware, might differ if an older robot controller is in use. In this case please also refer to the Stäubli manuals for further information.

EQUIPMENT LIST AND CALIBRATION

Equipments List & Calibration Info

Type / Model	Cal. Due Date	S/N:
DASY4 Professional Dosimetric System	N/A	N/A
Robot RX60L	N/A	CS7MBSP / 467
Robot Controller	N/A	F01/5J72A1/A/01
Dell Computer Dimension 3000	N/A	N/A
SPEAG EDC3	N/A	N/A
SPEAG DAE3	2008-11-22	456
DASY4 Measurement Server	N/A	1176
SPEAG E-Field Probe ET3DV6	2009-09-23	1604
Antenna, Dipole, D900V2	2009-11-11	122
Antenna, Dipole, ALS-D-1900-S-2	2009-09-01	210-00710
SPEAG Generic Twin Phantom	N/A	N/A
Brain Equivalent Matter (835 MHz)	Each Time	N/A
Muscle Equivalent Matter (835 MHz)	Each Time	N/A
Brain Equivalent Matter (1900 MHz)	Each Time	N/A
Muscle Equivalent Matter (1900 MHz)	Each Time	N/A
Agilent, Spectrum Analyzer E4446A	2009-05-19	US44300386
Microwave Amp. 8349A	N/A	2644A02662
Power Meter Agilent E4419B	2009-10-10	MY4121511
Power Sensor Agilent E4412A	2009-10-10	MY41497252
Agilent E5515C	2009-08-08	GB44051221
Dielectric Probe Kit HP85070A	N/A	US99360201
Agilent, Signal Generator, 8648C	2009-09-18	3347M00143
Amplifier, ST181-20	N/A	E012-0101
Antenna, Horn SAS-200/571	2009-04-20	A052704

SAR MEASUREMENT SYSTEM VERIFICATION

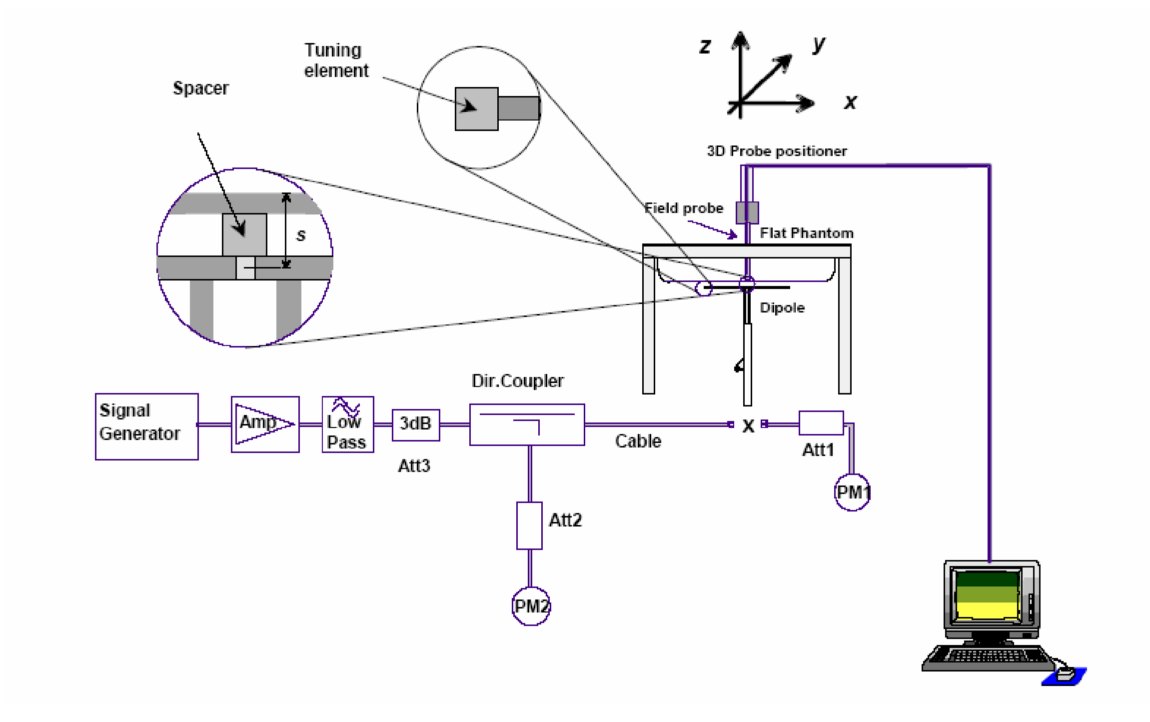
System Accuracy Verification

Prior to the assessment, the system validation kit was used to test whether the system was operating within its specifications of ±10%. The validation results are tabulated below. And also the corresponding SAR plot is attached as well in the SAR plots files.

IEEE P1528 recommended reference value for head

Frequency (MHz)	1 g SAR (W/Kg)	10 g SAR (W/Kg)	Local SAR at surface (above feed point)	Local SAR at surface (v=2cm offset from feed point)
300	3.0	2.0	4.4	2.1
450	4.9	3.3	7.2	3.2
835	9.5	6.2	14.1	4.9
900	10.8	6.9	16.4	5.4
1450	29.0	16.0	50.2	6.5
1800	38.1	19.8	69.5	6.8
1900	39.7	20.5	72.1	6.6
2000	41.1	21.1	74.6	6.5
2450	52.4	24.0	104.2	7.7
3000	63.8	25.7	140.2	9.5

System Setup Block Diagram

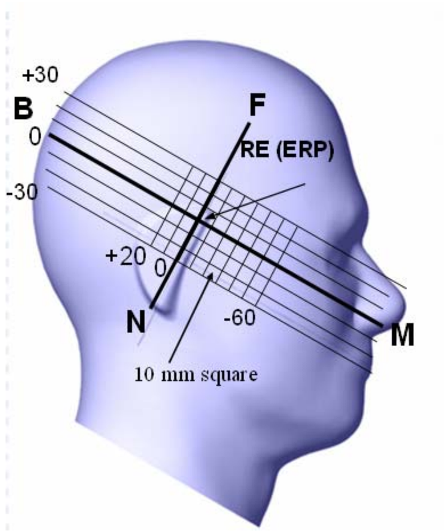


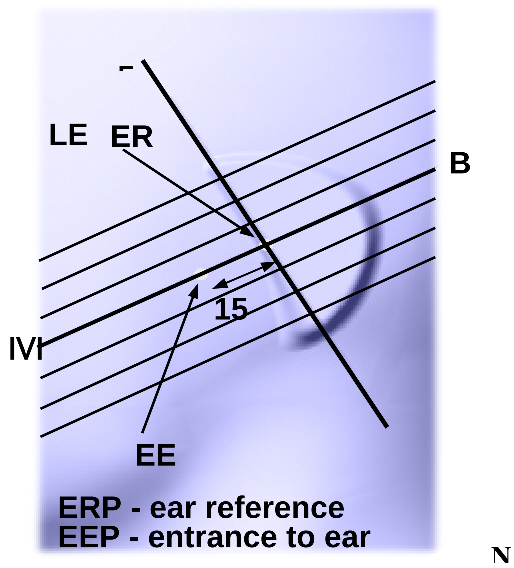
EUT TEST STRATEGY AND METHODOLOGY

Test Positions for Device Operating Next to a Person's Ear

This category includes most wireless handsets with fixed, retractable or internal antennas located toward the top half of the device, with or without a foldout, sliding or similar keypad cover. The handset should have its earpiece located within the upper ¼ of the device, either along the centerline or off-centered, as perceived by its users. This type of handset should be positioned 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". The "test device reference point" should be located at the same level as the center of the earpiece region. The "vertical centerline" should bisect the front surface of the handset at its top and bottom edges. An "ear reference point" is located on the outer surface of the head phantom on each ear spacer. It is located 1.5 cm above the center of the ear canal entrance in the "phantom reference plane" defined by the three lines joining the center of each "ear reference point" (left and right) and the tip of the mouth.

A handset should be initially positioned with the earpiece region pressed against the ear spacer of a head phantom. For the SCC-34/SC-2 head phantom, the device should be positioned parallel to the "N-F" line defined along the base of the ear spacer that contains the "ear reference point". For interim head phantoms, the device should be positioned parallel to the cheek for maximum RF energy coupling. The "test device reference point" is aligned to the "ear reference point" on the head phantom and the "vertical centerline" is aligned to the "phantom reference plane". This is called the "initial ear position". While maintaining these three alignments, the body of the handset is gradually adjusted to each of the following positions for evaluating SAR:





Cheek/Touch Position

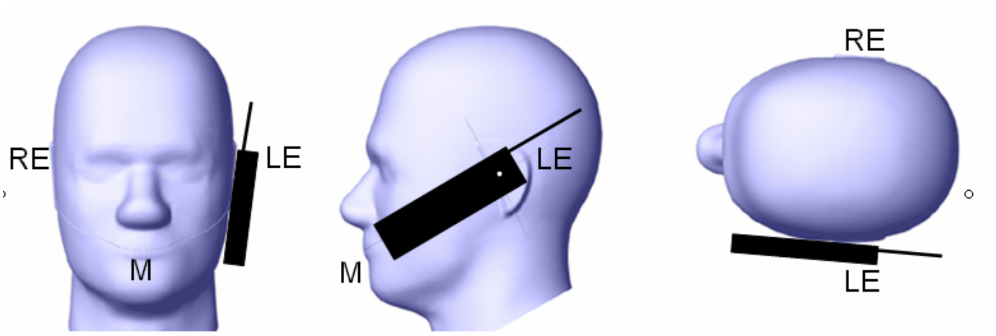
The device is brought toward the mouth of the head phantom by pivoting against the "ear reference point" or along the "N-F" line for the SCC-34/SC-2 head phantom.

This test position is established:

- o When any point on the display, keypad or mouthpiece portions of the handset is in contact with the phantom.
- o (or) When any portion of a foldout, sliding or similar keypad cover opened to its intended self-adjusting normal use position is in contact with the cheek or mouth of the phantom.

For existing head phantoms – when the handset loses contact with the phantom at the pivoting point, rotation should continue until the device touches the cheek of the phantom or breaks its last contact from the ear spacer.

Check /Touch Position



Ear/Tilt Position

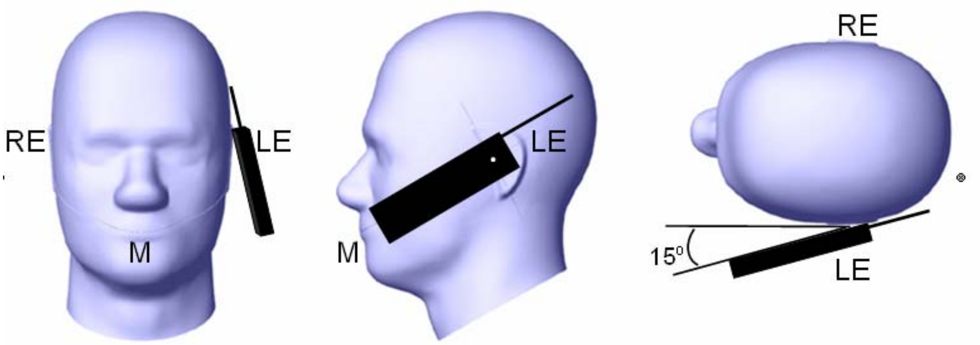
With the handset aligned in the "Cheek/Touch Position":

1) If the earpiece of the handset is not in full contact with the phantom's ear spacer (in the "Cheek/Touch position") and the peak SAR location for the "Cheek/Touch" position is located at the ear spacer region or corresponds to the earpiece region of the handset, the device should be returned to the "initial ear position" by rotating it away from the mouth until the earpiece is in full contact with the ear spacer.

2) (otherwise) The handset should be moved (translated) away from the cheek perpendicular to the line passes through both "ear reference points" (note: one of these ear reference points may not physically exist on a split head model) for approximate 2-3 cm. While it is in this position, the device handset is tilted away from the mouth with respect to the "test device reference point" until the inside angle between the vertical centerline on the front surface of the phone and the horizontal line passing through the ear reference point is by 15 80°. After the tilt, it is then moved (translated) back toward the head perpendicular to the line passes through both "ear reference points" until the device touches the phantom or the ear spacer. If the antenna touches the head first, the positioning process should be repeated with a tilt angle less than 15 80° so that the device and its antenna would touch the phantom simultaneously. This test position may require a device holder or positioner to achieve the translation and tilting with acceptable positioning repeatability.

If a device is also designed to transmit with its keypad cover closed for operating in the head position, such positions should also be considered in the SAR evaluation. The device should be tested on the left and right side of the head phantom in the "Cheek/Touch" and "Ear/Tilt" positions. When applicable, each configuration should be tested with the antenna in its fully extended and fully retracted positions. These test configurations should be tested at the high, middle and low frequency channels of each operating mode; for example, AMPS, CDMA, and TDMA. If the SAR measured at the middle channel for each test configuration (left, right, Cheek/Touch, Tile/Ear, extended and retracted) is at least 2.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s). If the transmission band of the test device is less than 10 MHz, testing at the high and low frequency channels is optional.

Ear /Tilt 15^o Position



Test positions for body-worn and other configurations

Body-worn operating configurations should be tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in normal use configurations. Devices with a headset output should be tested with a headset connected to the device. When multiple accessories that do not contain metallic components are supplied with the device, the device may be tested with only the accessory that dictates the closest spacing to the body. When multiple accessories that contain metallic components are supplied with the device, the device must be tested with each accessory that contains a unique metallic component. If multiple accessories share an identical metallic component (e.g., the same metallic belt-clip used with different holsters with no other metallic components), only the accessory that dictates the closest spacing to the body must be tested.

Body-worn accessories may not always be supplied or available as options for some devices that are intended to be authorized for body-worn use. A separation distance of 1.5 cm between the back of the device and a flat phantom is recommended for testing body-worn SAR compliance under such circumstances. Other separation distances may be used, but they should not exceed 2.5 cm. 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.

SAR Evaluation Procedure

The evaluation was performed with the following procedure:

Step 1: Measurement of the SAR value at a fixed location above the ear point or central position was used as a reference value for assessing the power drop. The SAR at this point is measured at the start of the test and then again at the end of the testing.

Step 2: The SAR distribution at the exposed side of the head was measured at a distance of 4 mm from the inner surface of the shell. The area covered the entire dimension of the head or EUT and the horizontal grid spacing was 15 mm x 15 mm. Based on these data, the area of the maximum absorption was determined by line interpolation. The first Area Scan covers the entire dimension of the EUT to ensure that the hotspot was correctly identified.

Step 3: Around this point, a volume of 30 mm x 30 mm x 21 mm was assessed by measuring 5 x 5 x 7 points. On the basis of this data set, the spatial peak SAR value was evaluated under the following procedure:

1. The data at the surface were extrapolated, since the center of the dipoles is 1.2 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.3 mm. The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip.

2. The maximum interpolated value was searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g or 10 g) were computed by the 3D-Spline interpolation algorithm. The 3D-Spline is composed of three one dimensional splines with the “Not a knot"-condition (in x, y and z-directions). The volume was integrated with the trapezoidal-algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the averages.

3. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

Step 4: Re-measurement of the SAR value at the same location as in Step 1. If the value changed by more than 5%, the evaluation was repeated.

DASY4 SAR Evaluation Procedure

Step 1: Power Reference Measurement

The Power Reference Measurement and Power Drift Measurement jobs are useful jobs for monitoring the power drift of the device under test in the batch process. Both jobs measure the field at a specified reference position, at a selectable distance from the phantom surface. The reference position can be either the selected section's grid reference point or a user point in this section. The reference job projects the selected point onto the phantom surface, orients the probe perpendicularly to the surface, and approaches the surface using the selected detection method. The Minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. By default, the Minimum distance of probe sensors to surface is 4mm. This distance can be modified by the user, but cannot be smaller than the Distance of sensor calibration points to probe tip as defined in the probe properties (for example, 2.7mm for an ET3DV6 probe type).

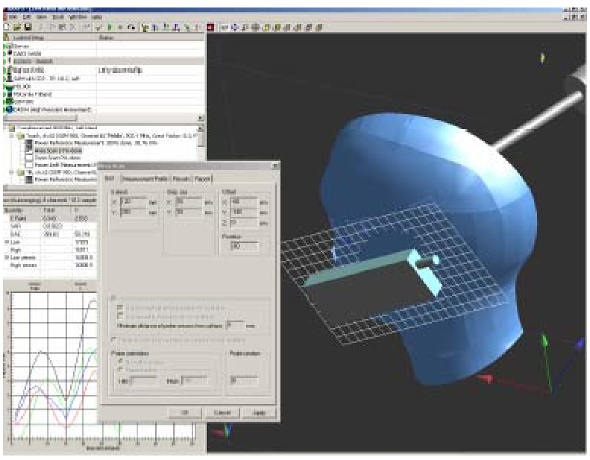
Step 2: Area Scan

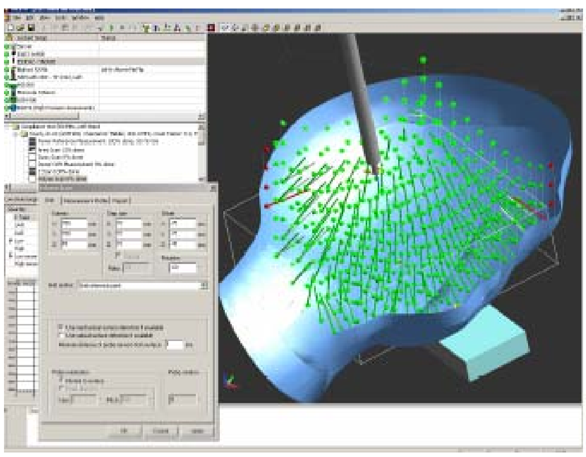
The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a finer measurement around the hot spot. The sophisticated interpolation routines implemented in DASY4 software can find the maximum locations even in relatively coarse grids.

The scanning area is defined by an editable grid. This grid is anchored at the grid reference point of the selected section in the phantom. When the Area Scan's property sheet is brought-up, grid settings can be edited by a user.

When an Area Scan has measured all reachable points, it computes the field maxima found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE 1528-2003, EN 50361 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan). If only one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of Zoom Scans has to be increased accordingly.

After measurement is completed, all maxima and their coordinates are listed in the Results property page. The maximum selected in the list is highlighted in the 3-D view. For the secondary maxima returned from an Area Scan, the user can specify a lower limit (peak SAR value), in addition to the Find secondary maxima within x dB condition. Only the primary maximum and any secondary maxima within x dB from the primary maximum and above this limit will be measured.





Step 3: Zoom Scan

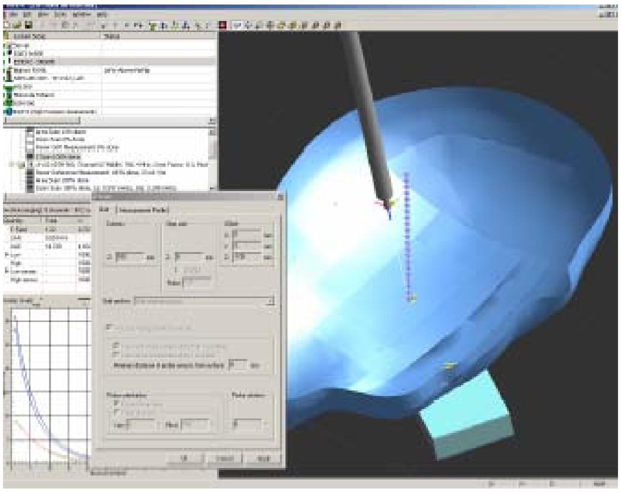
Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The default Zoom Scan measures 5 x 5 x 7 points within a cube whose base faces are centered around the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the Zoom Scan evaluates the averaged SAR for 1 g and 10 g and displays these values next to the job's label.

Step 4: Power drift measurement

The Power Drift Measurement job measures the field at the same location as the most recent power reference measurement job within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. Several drift measurements are possible for one reference measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

Step 5: Z-Scan

The Z Scan job measures points along a vertical straight line. The line runs along the Z axis of a one-dimensional grid. A user can anchor the grid to the section reference point, to any defined user point or to the current probe location. As with any other grids, the local Z axis of the anchor location establishes the Z axis of the grid.



FCC 3G MEASUREMENT PROCEDURES

Power measurements were performed using a base station simulator under average power.

Procedures Used to Establish RF Signal for SAR

The following procedures are applicable to HSDPA data devices operating under 3GPP Release 5. Body exposure conditions are typically applicable to these devices, including handsets and data modems operating in various electronics devices. HSDPA operates in conjunction with WCDMA and requires an active DPCCH. The default test configuration is to measure SAR in WCDMA and requires without HSDPA, with an established radio link between the DUT and communication test set using a 12.2kbps RMC configured in Test Loop Mode 1; and test HSDPA within FRC and a 12.2 kbps RMC using highest SAR configuration in WCDMA. SAR is selectively confirmed for other physical channels configurations according to output power, exposure conditions and device operating capabilities. Maximum output power is verified according to 3GPP TS 23.121 (Release 5) and SAR must be measured according to these maximum output conditions.

The device was placed into a simulated call using a base station simulator in a shielded chamber. Such test signals offer a consistent means for testing SAR and recommended for evaluating SAR [4]. SAR measurements were taken with a fully charged battery. In order to verify that the device was tested and maintained at full power, this was configured with the base station simulator. The SAR measurement software calculates a reference point at the start and end of the test to check for power drifts. If conducted power deviations of more that 5% occurred, the test were repeated.

SAR Measurement Conditions for HSDPA Data Devices

Output Power Verification

Maximum output power is verified on the High, Middle and Low channels according to the general descriptions in section 5.2 of 3GPP TS 34.121 (release 5), using the appropriate RMC with TPC (Transmit Power Control) set to all “1s”. Results for all applicable physical channel configurations (DPCCH, DPDCHn and spreading codes, HS-DPCCH) are tabulated in the test report. All configurations that are not supported by the DUT or cannot be measured due to technical or equipment limitations is identified.

Body SAR Measurements

SAR body exposure configuration is measured using 12.2 kbps RMC with the TPC bits configured for all “1s”. SAR for other spreading codes and multiple DPDCHn, when supported by the DUT, are not required when the maximum average outputs of each RF channel, for each spreading code and DPDCHn configuration, are less than ¼ dB higher than those measured in 12.2 RMC. Otherwise, SAR is measured on the maximum output channel with an applicable RMS configuration that results in the highest SAR with 12.2 RMC. When more that 2 DPDCHn are supported by the DUT, it may be necessary to configure additional DPDCHn for DUT using FTM (Factory Test Mode) with parameters similar to those used in 384 kbps and 768 kbps RMC. In addition, body SAR is also measured in HSDPA with an FRC, together with a 12.2 kbps RMC configured in Test Loop Mode 1, using the highest body SAR configuration in 12.2 kbps RMC without HSDPA.

The H-set used in FRC for HSDPA should be configured according to the UE category of a test device. The number of HS-DSCH/HSDSCHs, HARQ processes, minimum inter-TTI interval, transport block sizes and RV coding sequence are defined by the applicable H-set. To maintain a consistent test configuration and stable transmission conditions, QPSK is used in the FRC for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 2 ms to maintain a constant rate of active CQI slots. DPCCH and DPDCH gain factors of βc=9 and βd=15, and power offset parameters of ACK = NACK = 5 and CQI = 2 should be used. The CQI value is determined by the UE category, transport block size, number of HS-PDSCHs and modulation used in the FRC.

SAR Measurement Conditions for CDMA2000

The following procedures were followed according to FCC "SAR Measurements Procedures for 3G Devices" v02, October 2007.

Output Power Verification

See 3GPP2 C.S0011/TIA-98-E as recommended by "SAR Measurement Procedures for 3G Devices", June 2006. Maximum output power is verified on the High, Middle and 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 (MS) supports Reverse TCH RC 1 and Forward TCH RC 1, set up a call using Fundamental Channel Test Mode 1 (RC=1/1) with 9600 bps data rate only.
2. Under RC1, C.S0011 Table 4.4.5.2-1, Table 13-1 parameters were applied
3. If the MS supports the RC3 Reverse FCH, RC3 Reverse SCH0 and demodulation of RC 3,4, or 5, set up a call using Supplemental Channel Test Mode 3 (RC 3/3) with 9600 bps Fundamental Channel and 9600 bps SCH0 data rate.
4. Under RC3, C.S0011 Table 4.4.5.2-2, Table 13-2 was applied.
5. FCHs were configured at full rate for maximum SAR with "All Up" power control bits.

Table 4.4.5.2-1: Parameters for Maximum Power for RC1

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

Table 4.4.5.2-2: Parameters for Maximum Power for RC3

Parameter	Units	Value
$\frac{\text{Pilot } E_c}{I_{or}}$	dB	-7
$\frac{\text{Traffic } E_c}{I_{or}}$	dB	-7.4

Body SAR Measurements

SAR is measured using FTAP/RTAP and FETAP/RETAP respectively for Rev 0 and Rev. A devices. The AT is tested with a Reverse Data Channel rate of 153.6 kbps in Subtype 0/1 Physical Layer configurations; and a Reverse Data Channel payload size of 4096 bits and Termination Target of 16 slots in Subtype 2 Physical Layer Configurations. Both FTAP and FETAP are configured with a Forward Traffic Channel data rate corresponding to the 2-slot version of 307.2 kbps with the ACK Channel transmitting in all slots. AT power control should be in All Bits Up conditions for TAP/ETAP.

Body SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0. SAR for Subtype 2 Physical Layer configurations is not required for Rev. A when the maximum average output of each RF channels is less than that measured in Subtype 0/1 Physical layer configurations. Otherwise, SAR is measured on the maximum output channel for Rev. A using the exposure configuration that results in the highest SAR for that RF channels in Rev 0. Head SAR is required for EV-DO devices that support operations next to the ear; for example, with VOIP, using Subtype 2 Physical Layer configurations according to the required handset test configurations.

1x RTT Support

For EV-DO devices that also support 1xRTT voice and/or data operations, SAR is not required for 1xRTT when the maximum average output of each channel is less than ¼ dB higher than that measured in Subtype 0/1 Physical Layer configurations for Rev. 0. Otherwise, the 'Body SAR Measurements' procedures in the 'CDMA-2000 1x Handsets' section should be applied

Base Station Simulator Settings

1) FOR CDMA 2000 1xEV-DO

Measure the power at Channels 1013, 384 and 777 for US Cellular band; Channels 25, 600 and 1175 for US PCS band.

1xRTT

Use CDMA2000 Rev 6 protocol in the Agilent 8960.

Method of measurement is according to TIA/EIA-98-F section 4.4.5.2

1xEV-DO

1) Use 1xEV-DO Rel 0 Protocol in the Agilent 8960 with the following settings:

a. FTAP
   - FTAP Rate = 307.2 kbps (2 Slot, QPSK)

b. RTAP
   - RTAP Rate = 9.6 kbps, 19.2 kbps, 38.4 kbps, 76.8 kbps and 153.6 kbps

2) Use 1xEV-DO Rev A protocol in the Agilent 8960 with the following settings:

a. FETAP
   - FETAP Rate to 307.2 kbps (2 Slot, QPSK)

b. RETAP
   - RTAP Rate = 153.6 kbps (Subtype 0)
     = 409.6 kbps (Subtype 2)

2) For WCDMA/HSDPA/HSUPA

Configure the Agilent 8960 to support all WCDMA tests with respect to the 3GPP TS 34.121.
Measure the Maximum Output Power at Channels 4132, 4182 and 4233 for US cellular band; Channels 9262, 9400 and 9538 for US PCS band.

Release 99

Method of measurements is according to 3GPP TS 34.121 sections 5.2.4

HSDPA Release 6

Method of measurements is according to 3GPP TS 34.121 section 5.2AA.4

HSUPA Release 6

Method of measurement is according to 3GPP TS 34.121 section 5.2B.4

3) For GSM/GPRS/EDGE

Configure the Agilent 8960 to support GMSK and 8PSK call respectively, and set one timeslot transmission for GMSK GPRS and 8PSK EDGE. Measure and record power outputs for both modulations at Channels 128, 190 and 251 for GSM 850 band; Channels 512, 661 and 810 for US PCS 1900 band.

Conducted Output Power Verification Results

1) CDMA 1xRTT, 1xEV-DO Rev 0 and 1xEV-DO Rev A

Mode	Radio Configuration		Cellular Channels			PCS Channels		
			CH 1013 (dBm)	CH 384 (dBm)	CH 777 (dBm)	CH 25 (dBm)	CH 600 (dBm)	CH 1175 (dBm)
1xRTT	RC1	S02	24.35	24.41	24.20	24.19	24.12	24.00
	RC1	S055	24.32	24.37	24.17	24.21	24.24	23.97
	RC2	S09	24.33	24.45	24.31	24.15	24.10	24.00
	RC2	S055	24.24	24.39	24.27	24.09	24.11	23.99
	RC3	S02	24.37	24.50	24.33	24.24	24.19	24.02
	RC3	S055	**24.39**	**24.57**	**24.38**	**24.31**	**24.30**	**24.08**
	RC4	S02	24.34	24.49	24.37	24.18	24.20	23.96
	RC4	S055	24.38	24.27	24.35	24.22	24.23	24.02
	RC5	S09	24.36	24.42	24.29	24.19	24.14	24.01
	RC5	S055	24.33	24.41	24.18	24.2	24.17	23.98
1xEV-DO Rel 0	FTAP Rate = 307.2 kbps (2 slot QPSK)	RTAP Rate = 9.6 kbps	24.39	24.43	24.40	24.21	24.26	23.90
		RTAP Rate = 19.2 kbps	24.37	24.40	24.33	24.11	24.13	23.84
		RTAP Rate = 38.4 kbps	24.41	24.39	24.28	24.19	24.22	23.88
		RTAP Rate = 76.8 kbps	24.38	24.42	24.36	24.22	24.20	23.81
		RTAP Rate = 153.6 kbps	**24.56**	**24.64**	**24.51**	**24.41**	**24.38**	**23.92**
1xEV-DO Rev A	FETAP Rate = 307.2kbps (2 slot, ACK Channel is Transmitted at all the slots)	Subtype 0: RETAP payload size=1536 bits	24.41	24.54	24.36	24.33	24.44	24.17
		Subtype 2: RETAP payload size=4096 bits	24.35	24.53	24.20	24.30	24.39	24.12

Note: SAR is not required for 1xRTT since the maximum average output power of each RF channel is less than ¼ dB higher than that measured in Subtype 0 Physical Layer configurations for Rev 0.

2) WCDMA/HSDPA/HSUPA

Mode	3GPP Sub test	Band V Channels			Band II Channels			MPR
		CH 4132 (dBm)	CH 4182 (dBm)	CH 4233 (dBm)	CH 9262 (dBm)	CH 9400 (dBm)	CH 9538 (dBm)	
Rel 99	1	24.14	24.21	24.12	24.15	24.32	24.16	
Rel 6 HSDPA	1	23.98	24.19	24.13	24.19	24.12	24.01	0
	2	23.82	23.99	23.98	24.14	24.03	24	0
	3	23.28	23.67	23.56	23.57	23.73	23.46	0.5
	4	23.27	23.66	23.49	23.45	23.58	23.39	0.5
Rel 6 HSUPA	1	23.79	24.03	23.81	24.02	24.01	23.97	0
	2	22.16	22.12	21.99	22.42	22.51	22.38	2
	3	22.68	22.79	22.56	22.87	22.91	22.69	1
	4	22.08	22.11	21.98	21.92	22.18	22.11	2
	5	23.97	23.99	23.85	24.09	24.13	24.01	0

Note: HSPA Body SAR is not required for this device since the maximum average output power of each RF channel with HSPA active is lower than that measured without HSPA (Release 99)+ ¼ dB

3) GPRS/EDGE

Mode	Modulation	Cellular Channels			PCS Channels		
		CH 128 (dBm)	CH 190 (dBm)	CH 251 (dBm)	CH 512 (dBm)	CH 661 (dBm)	CH 810 (dBm)
GPRS	GMSK	32.63	32.48	32.23	29.41	29.26	29.35
EDGE	8PSK	27.25	27.22	27.08	25.96	25.80	25.88

SAR MEASUREMENT RESULTS

This page summarizes the results of the performed dosimetric evaluation. The plots with the corresponding SAR distributions, which reveal information about the location of the maximum SAR with respect to the device, could be found in Appendix E.

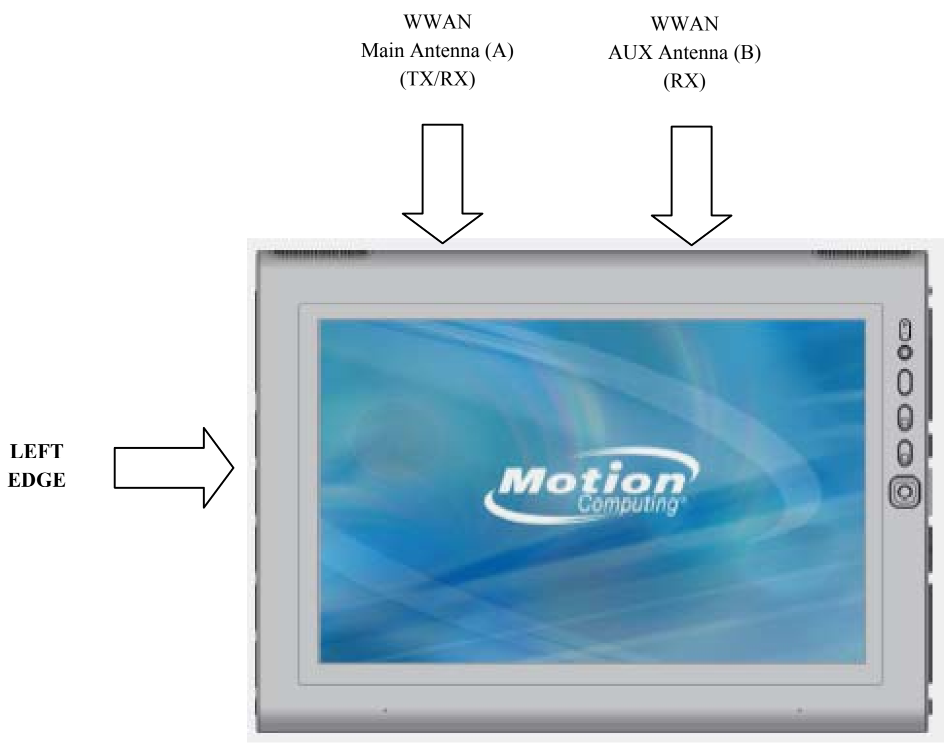
SAR Test Data

Environmental Conditions

Temperature:	18 °C
Relative Humidity:	69 %
ATM Pressure:	102.5 kPa

** Testing was performed by Jimmy Nguyen on 2009-02-04 to 2009-02-23*

WWAN Antenna Location



Cellular Band, GPRS

Body Position Left Edge Touched and Back Touched Flat Phantom

Position	Separation [mm]	Antenna	Channel	Frequency [MHz]	Liquid	Phantom	Measured 1 g SAR (W/Kg)	Limit (W/kg)	Ref. Plot
Back Touch	0	A	Mid	836.6	Body	Flat	0.339	1.6	1
Left Edge	0	A	Mid	836.6	Body	Flat	0.058	1.6	2

Cellular Band, EV-DO Rev. 0

Body Position Left Edge Touched and Back Touched Flat Phantom

Position	Separation [mm]	Antenna	Channel	Frequency [MHz]	Liquid	Phantom	Measured 1 g SAR (W/Kg)	Limit (W/kg)	Ref. Plot
Back Touch	0	A	Mid	836.52	Body	Flat	0.454	1.6	3
Left Edge	0	A	Mid	836.52	Body	Flat	0.088	1.6	4

Cellular Band, EV-DO Rev. A

Body Position Left Edge Touched and Back Touched Flat Phantom

Position	Separation [mm]	Antenna	Channel	Frequency [MHz]	Liquid	Phantom	Measured 1 g SAR (W/Kg)	Limit (W/kg)	Ref. Plot
Back Touch	0	A	Mid	836.52	Body	Flat	0.527	1.6	5
Left Edge	0	A	Mid	836.52	Body	Flat	0.101	1.6	6

Cellular Band, WCDMA

Body Position Left Edge Touched and Back Touched Flat Phantom

Position	Separation [mm]	Antenna	Channel	Frequency [MHz]	Liquid	Phantom	Measured 1 g SAR (W/Kg)	Limit (W/kg)	Ref. Plot
Back Touch	0	A	Mid	1880.0	Body	Flat	0.537	1.6	7
Left Edge	0	A	Mid	1880.0	Body	Flat	0.095	1.6	8

PCS 1900 Band, GPRS

Body Position Left Edge Touched and Back Touched Flat Phantom

Position	Separation [mm]	Antenna	Channel	Frequency [MHz]	Liquid	Phantom	Measured 1 g SAR (W/Kg)	Limit (W/kg)	Ref. Plot
Back Touch	0	A	Mid	1880.0	Body	Flat	0.223	1.6	9
Left Edge	0	A	Mid	1880.0	Body	Flat	0.055	1.6	10

PCS Band, EV-DO Rev.0

Body Position Left Edge Touched and Back Touched Flat Phantom

Position	Separation [mm]	Antenna	Channel	Frequency [MHz]	Liquid	Phantom	Measured 1 g SAR (W/Kg)	Limit (W/kg)	Ref. Plot
Back Touch	0	A	Low	1851.25	Body	Flat	0.781	1.6	11
Back Touch	0	A	Mid	1880.0	Body	Flat	0.860	1.6	12
Back Touch	0	A	High	1908.75	Body	Flat	0.727	1.6	13
Left Edge	0	A	Mid	1880.0	Body	Flat	0.212	1.6	14

PCS Band, EV-DO Rev. A

Body Position Left Edge Touched and Back Touched Flat Phantom

Position	Separation [mm]	Antenna	Channel	Frequency [MHz]	Liquid	Phantom	Measured 1 g SAR (W/Kg)	Limit (W/kg)	Ref. Plot
Back Touch	0	A	Low	1851.25	Body	Flat	0.632	1.6	15
Back Touch	0	A	Mid	1880.0	Body	Flat	0.810	1.6	16
Back Touch	0	A	High	1908.75	Body	Flat	0.713	1.6	17
Left Edge	0	A	Mid	1880.0	Body	Flat	0.202	1.6	18

PCS Band, WCDMA

Body Position Left Edge Touched and Back Touched Flat Phantom

Position	Separation [mm]	Antenna	Channel	Frequency [MHz]	Liquid	Phantom	Measured 1 g SAR (W/Kg)	Limit (W/kg)	Ref. Plot
Back Touch	0	A	Low	1852.4	Body	Flat	0.760	1.6	19
Back Touch	0	A	Mid	1880.0	Body	Flat	0.831	1.6	20
Back Touch	0	A	High	1907.5	Body	Flat	0.824	1.6	21
Left Edge	0	A	Mid	1880.0	Body	Flat	0.193	1.6	22

APPENDIX A – MEASUREMENT UNCERTAINTY

The uncertainty budget has been determined for the DASY4 measurement system and is given in the following Table.

SASY4 Uncertainty Budget According to IEEE 1528								
Error Description	Uncertainty Value	Prob. Dist.	Div.	(c i) 1g	(c i) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(v i) veff
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 %	± 2.6 %	5
Power Drift	± 5.0 %	R		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 (Target)	± 2.5 %	N	1	0.6	0.49	± 1.5 %	± 1.0 %	∝
Combined Std. Uncertainty	-	-	-	-	-	± 10.8 %	± 10.6 %	330
Expanded STD Uncertainty	-	-	-	-	-	± 21.6 %	± 21.1 %	-

SASY4 Uncertainty Budget According to CENELEC EN 50361								
Error Description	Uncertainty Value	Prob. Dist.	Div.	(c i) 1g	(c i) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(v i) veff
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 %	∝
Spherical Isotropy	± 9.6 %	R	$\sqrt{3}$	0.7	0.7	± 3.9 %	± 3.9 %	∝
Probe Linearity	± 4.7 %	R	$\sqrt{3}$	1	1	± 2.7 %	± 0.6 %	∝
Detection Limits	± 1.0 %	R	$\sqrt{3}$	1	1	± 0.6 %	± 2.7 %	∝
Boundary Effects	± 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 %	N	1	1	1	± 0.8 %	± 0.5 %	∝
Noise	± 0.0 %	N	1	1	1	± 0.0 %	± 1.5 %	∝
Integration Time	± 2.6 %	N	1	1	1	± 2.6 %	± 1.7 %	∝
Mechanical Constraints								
Scanning System	± 0.4 %	R	$\sqrt{3}$	1	1	± 0.2 %	± 1.7 %	∝
Phantom Shell	± 4.0 %	R	$\sqrt{3}$	1	1	± 2.3 %	± 0.6 %	∝
Probe Positioning	± 2.9 %	R	$\sqrt{3}$	1	1	± 1.7 %	± 2.9 %	∝
Device Positioning	± 2.9 %	N	1	1	1	± 2.9 %	± 2.6 %	145
Physical Parameters								
Liquid Conductivity (Target)	± 5.0 %	R	$\sqrt{3}$	0.7	0.5	± 2.0 %	± 1.2 %	∝
Liquid Conductivity (meas.)	± 4.3 %	R	$\sqrt{3}$	0.7	0.5	± 1.7 %	± 1.1 %	∝
Liquid Permittivity (Target)	± 5.0 %	R	$\sqrt{3}$	0.6	0.5	± 1.7 %	± 1.4 %	∝
Liquid Permittivity (Target)	± 4.3 %	R	$\sqrt{3}$	0.6	0.5	± 1.5 %	± 1.0 %	∝
Power Drift	± 5.0 %	R	$\sqrt{3}$	1	1	± 2.9 %	± 10.6 %	∝
RF Ambient Conditions	± 3.0 %	R	$\sqrt{3}$	1	1	± 1.7 %	± 21.1 %	∝
Post-Processing								
Extrap. and Integration	± 1.0 %	R	$\sqrt{3}$	1	1	± 0.6 %	± 2.3 %	∝
Combined Std. Uncertainty	-	-	-	-	-	± 10.9 %	± 10.6 %	18125
Expanded Std. Uncertainty	-	-	-	-	-	± 21.7 %	± 12.1 %	-

APPENDIX B – PROBE CALIBRATION CERTIFICATES

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

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

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

Accreditation No.: **SCS 108**

Client **BACL**

Certificate No: **ET3-1604_Sep08**

CALIBRATION CERTIFICATE

Object	ET3DV6 - SN:1604
Calibration procedure(s)	QA CAL-01.v6 and QA CAL-23.v3 Calibration procedure for dosimetric E-field probes
Calibration date:	September 23, 2008
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 (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	1-Apr-08 (No. 217-00788)	Apr-09
Power sensor E4412A	MY41495277	1-Apr-08 (No. 217-00788)	Apr-09
Power sensor E4412A	MY41498087	1-Apr-08 (No. 217-00788)	Apr-09
Reference 3 dB Attenuator	SN: S5054 (3c)	1-Jul-08 (No. 217-00865)	Jul-09
Reference 20 dB Attenuator	SN: S5086 (20b)	31-Mar-08 (No. 217-00787)	Apr-09
Reference 30 dB Attenuator	SN: S5129 (30b)	1-Jul-08 (No. 217-00866)	Jul-09
Reference Probe ES3DV2	SN: 3013	2-Jan-08 (No. ES3-3013_Jan08)	Jan-09
DAE4	SN: 660	9-Sep-08 (No. DAE4-660_Sep08)	Sep-09

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-07)	In house check: Oct-08

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

Issued: September 23, 2008

Certificate No: ET3-1604_Sep08 Page 1 of 9

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

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

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

Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	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.

Probe ET3DV6

SN:1604

Manufactured:	July 30, 2001
Last calibrated:	August 28, 2007
Recalibrated:	September 23, 2008

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

DASY - Parameters of Probe: ET3DV6 SN:1604

Sensitivity in Free Space[A]

NormX	**1.93** ± 10.1%	$\mu V/(V/m)^2$
NormY	**1.84** ± 10.1%	$\mu V/(V/m)^2$
NormZ	**1.89** ± 10.1%	$\mu V/(V/m)^2$

Diode Compression[B]

DCP X	**91** mV
DCP Y	**89** mV
DCP Z	**90** 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		**3.7 mm**	**4.7 mm**
SAR_{be} [%]	Without Correction Algorithm	10.0	6.0
SAR_{be} [%]	With Correction Algorithm	0.8	0.3

TSL 1810 MHz Typical SAR gradient: 10 % per mm

Sensor Center to Phantom Surface Distance		**3.7 mm**	**4.7 mm**
SAR_{be} [%]	Without Correction Algorithm	10.6	6.5
SAR_{be} [%]	With Correction Algorithm	0.9	0.6

Sensor Offset

Probe Tip to Sensor Center **2.7** 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%.

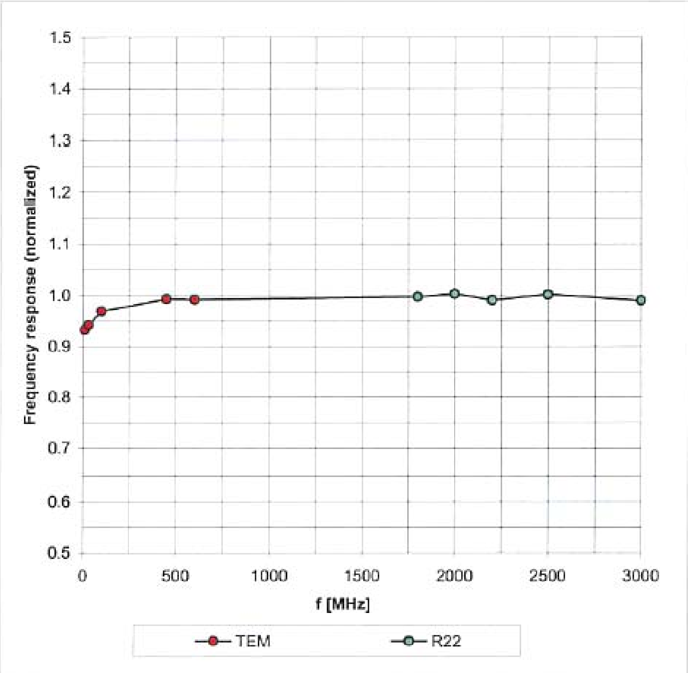
[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Page 8).

[B] Numerical linearization parameter: uncertainty not required.

ET3DV6 SN:1604 September 23, 2008

Frequency Response of E-Field

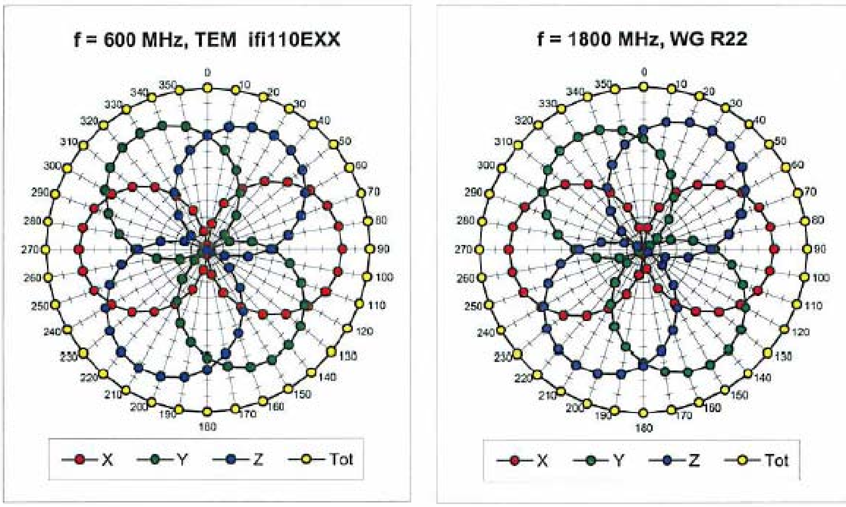
(TEM-Cell:ifi110 EXX, Waveguide: R22)

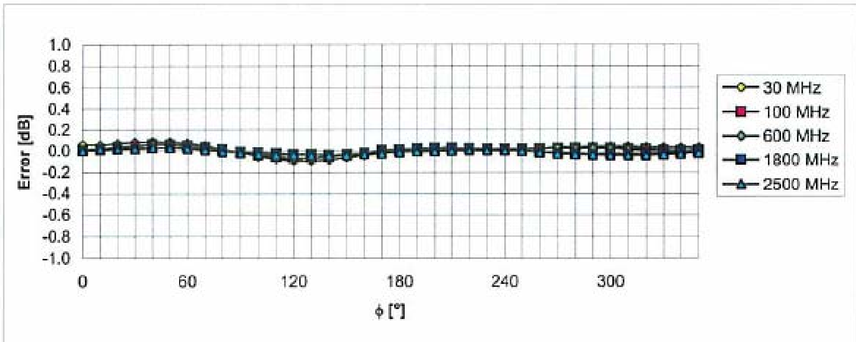


Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

ET3DV6 SN:1604 September 23, 2008

Receiving Pattern (ϕ), ϑ = 0°



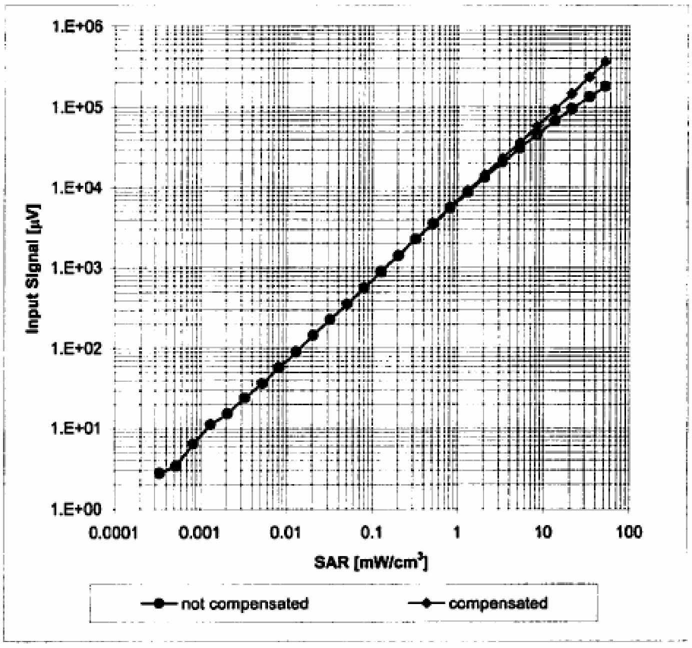


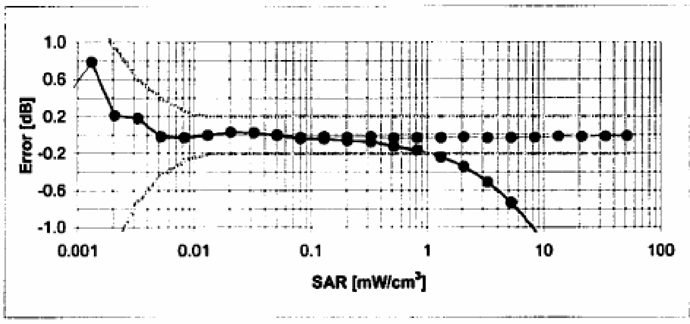
Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

ET3DV6 SN:1604 **September 23, 2008**

Dynamic Range f(SAR_{head})

(Waveguide R22, f = 1800 MHz)



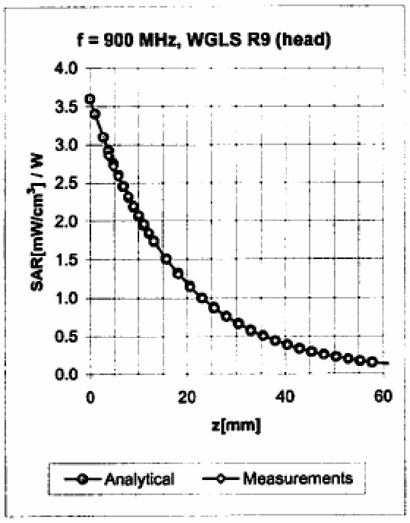


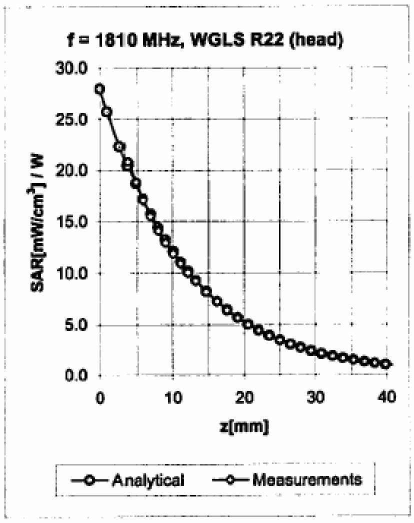
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Certificate No: ET3-1604_Sep08 Page 7 of 9

ET3DV6 SN:1604 September 23, 2008

Conversion Factor Assessment





f [MHz]	Validity [MHz][C]	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF	Uncertainty
835	± 50 / ± 100	Head	41.5 ± 5%	0.90 ± 5%	0.59	2.21	6.46	± 11.0% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.58	2.28	6.23	± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.65	2.01	5.30	± 11.0% (k=2)
1900	± 50 / ± 101	Head	40.0 ± 5%	1.40 ± 5%	0.76	1.75	5.18	± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.85	1.55	4.59	± 11.0% (k=2)
835	± 50 / ± 100	Body	55.2 ± 5%	0.97 ± 5%	0.58	2.33	6.23	± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.59	2.29	6.08	± 11.0% (k=2)
1810	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.69	2.04	4.64	± 11.0% (k=2)
1900	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.88	1.61	4.52	± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.80	1.60	3.94	± 11.0% (k=2)

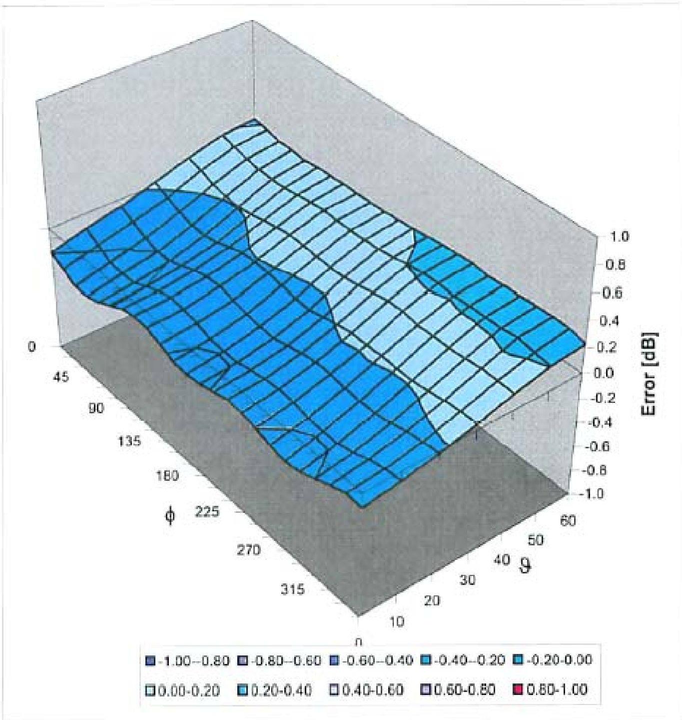
[C] The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

Certificate No: ET3-1604_Sep08 Page 8 of 9

ET3DV6 SN:1604 **September 23, 2008**

Deviation from Isotropy in HSL

Error (ϕ, ϑ), f = 900 MHz



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

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APPENDIX C – DIPOLE CALIBRATION CERTIFICATES

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

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

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

Accreditation No.: **SCS 108**

Client **BACL** Certificate No: **D900V2-122_Nov08**

CALIBRATION CERTIFICATE

Object	D900V2 - SN: 122
Calibration procedure(s)	QA CAL-05.v7 Calibration procedure for dipole validation kits
Calibration date:	November 11, 2008
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 (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	08-Oct-08 (No. 217-00898)	Oct-09
Power sensor HP 8481A	US37292783	08-Oct-08 (No. 217-00898)	Oct-09
Reference 20 dB Attenuator	SN: 5086 (20g)	01-Jul-08 (No. 217-00864)	Jul-09
Type-N mismatch combination	SN: 5047.2 / 06327	01-Jul-08 (No. 217-00867)	Jul-09
Reference Probe ES3DV2	SN: 3025	28-Apr-08 (No. ES3-3025_Apr08)	Apr-09
DAE4	SN: 601	14-Mar-08 (No. DAE4-601_Mar08)	Mar-09

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-07)	In house check: Oct-09
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-08)	In house check: Oct-09

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: November 12, 2008

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

Certificate No: D900V2-122_Nov08 Page 1 of 6

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

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

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

Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

Measurement Conditions

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

DASY Version	DASY5	V5.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V4.9	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	900 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	0.97 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.6 ± 6 %	0.95 mho/m ± 6 %
Head TSL temperature during test	(22.1 ± 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	2.73 mW / g
SAR normalized	normalized to 1W	10.9 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**10.8 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.76 mW / g
SAR normalized	normalized to 1W	7.04 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**6.94 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	50.3 Ω - 7.9 jΩ
Return Loss	- 22.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.411 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	July 04, 2001

DASY5 Validation Report for Head TSL

Date/Time: 11.11.2008 09:40:30

Test Laboratory: SPEAG, Zurich, Switzerland

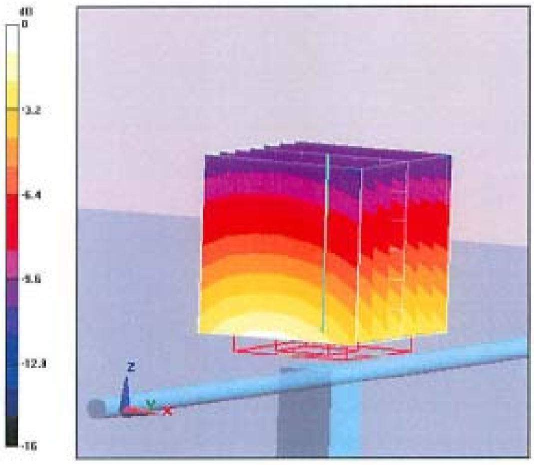
DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN:122

Communication System: CW-900; Frequency: 900 MHz; Duty Cycle: 1:1
Medium: HSL 900 MHz
Medium parameters used: f = 900 MHz; σ = 0.95 mho/m; ε_r = 39.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV2 - SN3025; ConvF(5.78, 5.78, 5.78); Calibrated: 28.04.2008
- Sensor-Surface: 3.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 14.03.2008
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

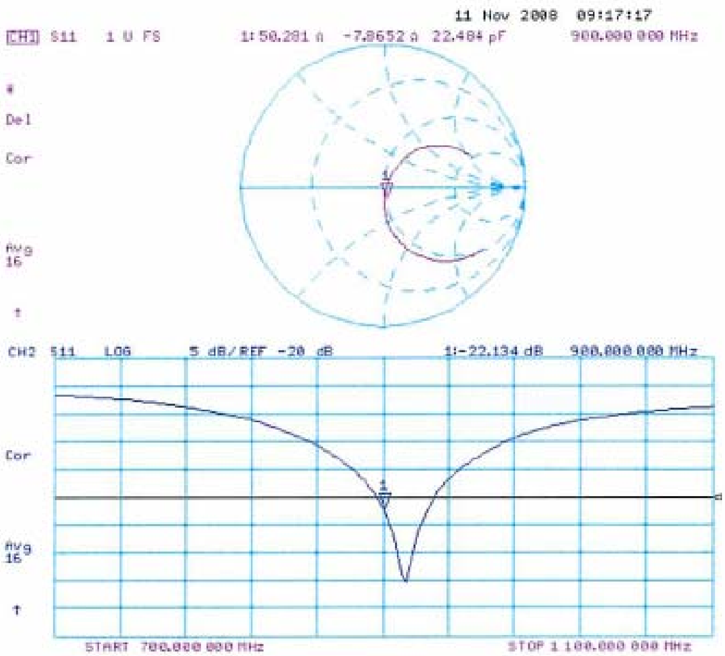
Pin=250mW; dip=15mm; dist=3.4mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 58.2 V/m; Power Drift = 0.025 dB
Peak SAR (extrapolated) = 4.06 W/kg
SAR(1 g) = 2.73 mW/g; SAR(10 g) = 1.76 mW/g
Maximum value of SAR (measured) = 3.09 mW/g



0 dB = 3.09mW/g

Certificate No: D900V2-122_Nov08 Page 5 of 6

Impedance Measurement Plot for Head TSL



Certificate No: D900V2-122_Nov08 Page 6 of 6

NCL CALIBRATION LABORATORIES

Calibration File No: DC-920
Project Number: BACL-ALSAS10U-5323

CERTIFICATE OF CALIBRATION

It is certified that the equipment identified below has been calibrated in the **NCL CALIBRATION LABORATORIES** by qualified personnel following recognized procedures and using transfer standards traceable to NRC/NIST.

Validation Dipole

Manufacturer: APREL Laboratories
Part number: ALS-D-1900-S-2
Frequency: 1900 MHz
Serial No: 210-00710

Customer: Bay Area Compliance Laboratory

Calibrated: 1st September 2008
Released on: 1st September 2008

This Calibration Certificate is Incomplete Unless Accompanied with the Calibration Results Summary

Released By: ______________________

NCL CALIBRATION LABORATORIES
51 SPECTRUM WAY
NEPEAN, ONTARIO
CANADA K2R 1E6
Division of APREL Lab.
TEL: (613) 820-4988
FAX: (613) 820-4162

NCL Calibration Laboratories
Division of APREL Laboratories.

Conditions

Dipole 210-00710 was new and taken from stock prior to calibration.

Ambient Temperature of the Laboratory: 22 °C +/- 0.5°C
Temperature of the Tissue: 21 °C +/- 0.5°C

We the undersigned attest that to the best of our knowledge the calibration of this device has been accurately conducted and that all information contained within this report has been reviewed for accuracy.

Stuart Nicol

C. Teodorian

This page has been reviewed for content and attested to by signature within this document.

NCL Calibration Laboratories
Division of APREL Laboratories.

Calibration Results Summary

The following results relate the Calibrated Dipole and should be used as a quick reference for the user.

Mechanical Dimensions

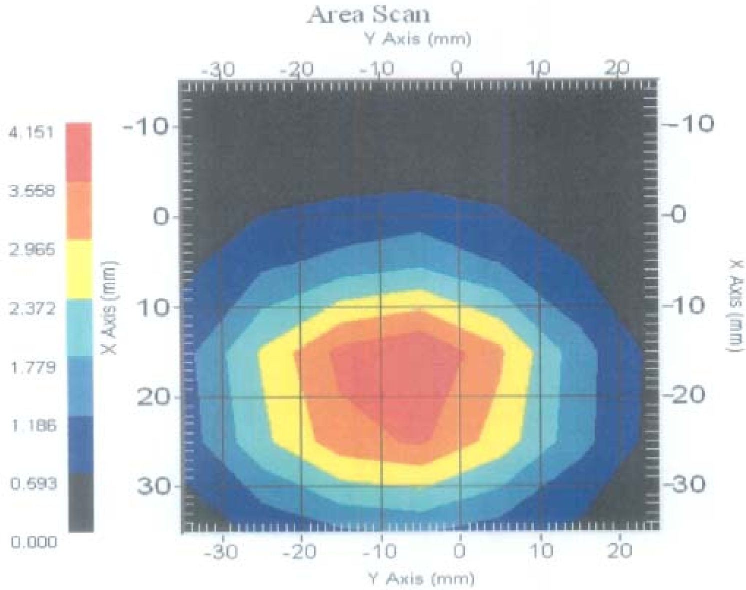
Length: 67.1 mm
Height: 38.9 mm

Electrical Specification

SWR: 1.059 U
Return Loss: -30.831 dB
Impedance: 50.914 Ω

System Validation Results

Frequency	1 Gram	10 Gram	Peak
1900 MHz	38.7	20.5	69.7



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NCL Calibration Laboratories
Division of APREL Laboratories.

Introduction

This Calibration Report has been produced in line with the SSI Dipole Calibration Procedure SSI-TP-018-ALSAS. The results contained within this report are for Validation Dipole 210-00710. The calibration routine consisted of a three-step process. Step 1 was a mechanical verification of the dipole to ensure that it meets the mechanical specifications. Step 2 was an Electrical Calibration for the Validation Dipole, where the SWR, Impedance, and the Return loss were assessed. Step 3 involved a System Validation using the ALSAS-10U, along with APREL E-020 130 MHz to 26 GHz E-Field Probe Serial Number 212.

References

SSI-TP-018-ALSAS Dipole Calibration Procedure
SSI-TP-016 Tissue Calibration Procedure
IEEE 1528 "Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques"

Conditions

Dipole 210-00710 was new taken from stock.

Ambient Temperature of the Laboratory: 22 °C +/- 0.5°C
Temperature of the Tissue: 20 °C +/- 0.5°C

NCL Calibration Laboratories
Division of APREL Laboratories.

Dipole Calibration Results

Mechanical Verification

APREL Length	APREL Height	Measured Length	Measured Height
68.0 mm	39.5 mm	67.1mm	38.9 mm

Tissue Validation

Head Tissue 1900 MHz	Measured
Dielectric constant, ε_r	40.03
Conductivity, σ [S/m]	1.38

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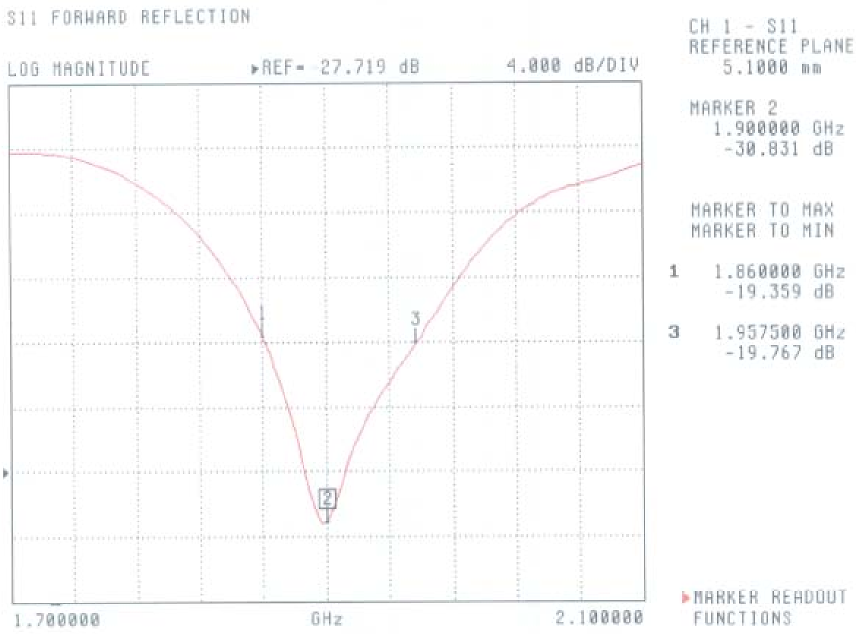
Electrical Calibration

Test	Result
S11 R/L	-30.831 dB
SWR	1.059 U
Impedance	50.914 Ω

The Following Graphs are the results as displayed on the Vector Network Analyzer.

S11 Parameter Return Loss



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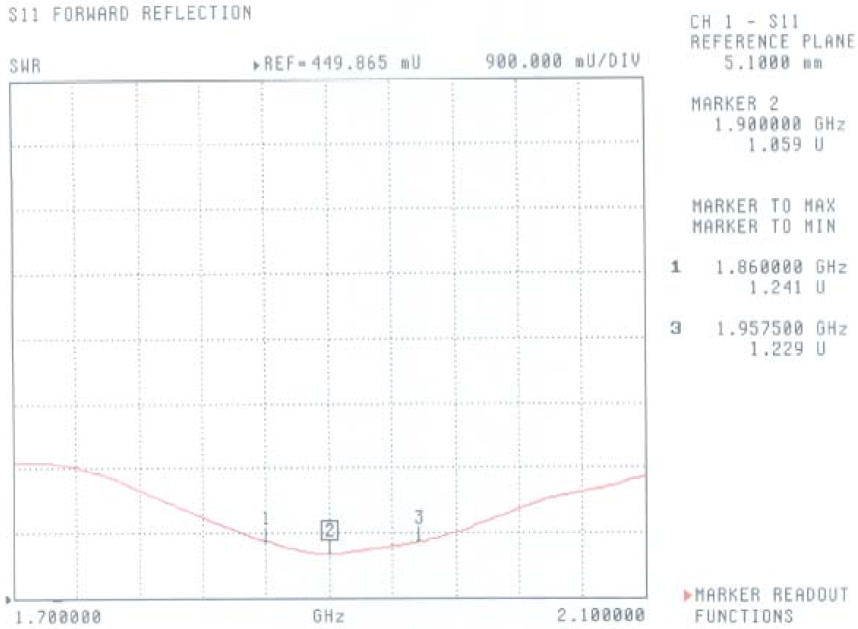
SWR



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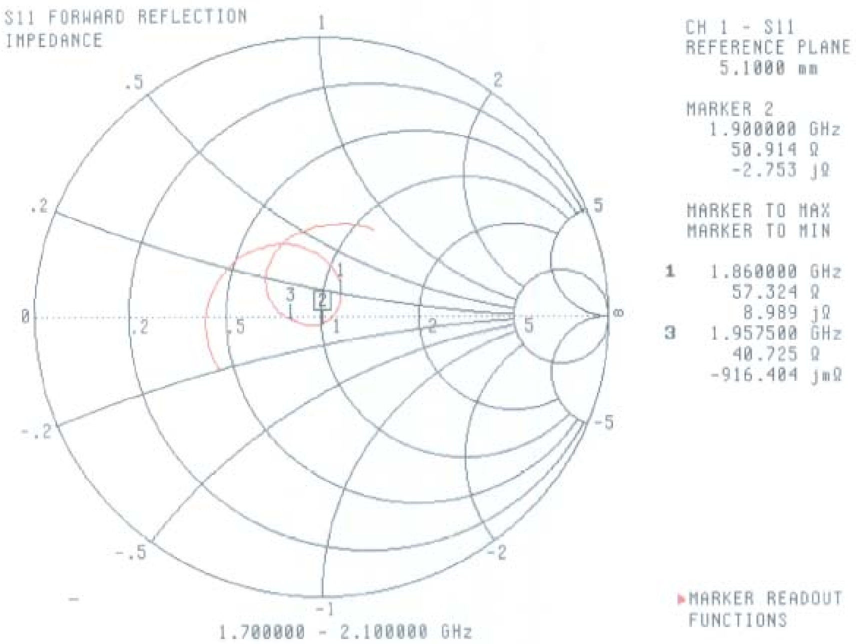
Smith Chart Dipole Impedance



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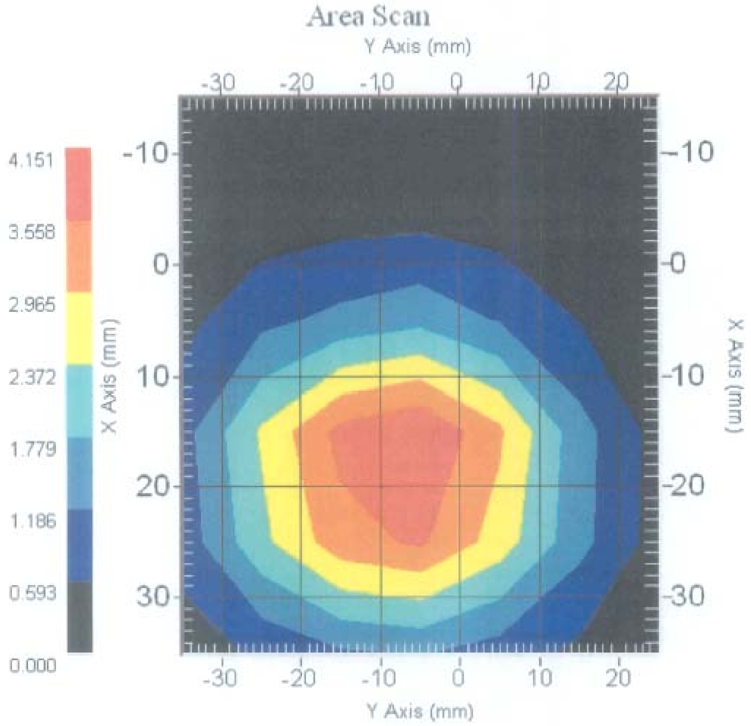
System Validation Results Using the Electrically Calibrated Dipole

Head Tissue Frequency	1 Gram	10 Gram	Peak Above Feed Point
1900 MHz	38.7	20.5	69.7



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Test Equipment

The test equipment used during Probe Calibration, manufacturer, model number and, current calibration status are listed and located on the main APREL server R:\NCL\Calibration Equipment\Instrument List 2007.

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APPENDIX D - TEST SYSTEM VERIFICATIONS SCANS

Liquid and System Validation

2009-02-09-2009-02-25

Simulant	Freq. [MHz]	Parameters	Liquid Temp [ºC]	Target Value	Measured Value	Deviation [%]	Limits [%]
Head	835	εr	22	41.5	41.6	0.24	±5
		σ	22	0.90	0.89	-1.11	±5
		1g SAR	22	9.5	8.92	-6.11	±10

εr = relative permittivity, σ = conductivity and ρ=1000 kg/m3

Simulant	Freq. [MHz]	Parameters	Liquid Temp [ºC]	Target Value	Measured Value	Deviation [%]	Limits [%]
Head	1900	εr	22	40.0	39.9	-0.25	±5
		σ	22	1.40	1.38	-1.43	±5
		1g SAR	22	39.7	42.0	5.79	±10

εr = relative permittivity, σ = conductivity and ρ=1000 kg/m3

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)

System Performance Check 835 MHz Head

Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN: 122

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; $\sigma = 0.89$ mho/m; $\varepsilon_r = 41.6$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section

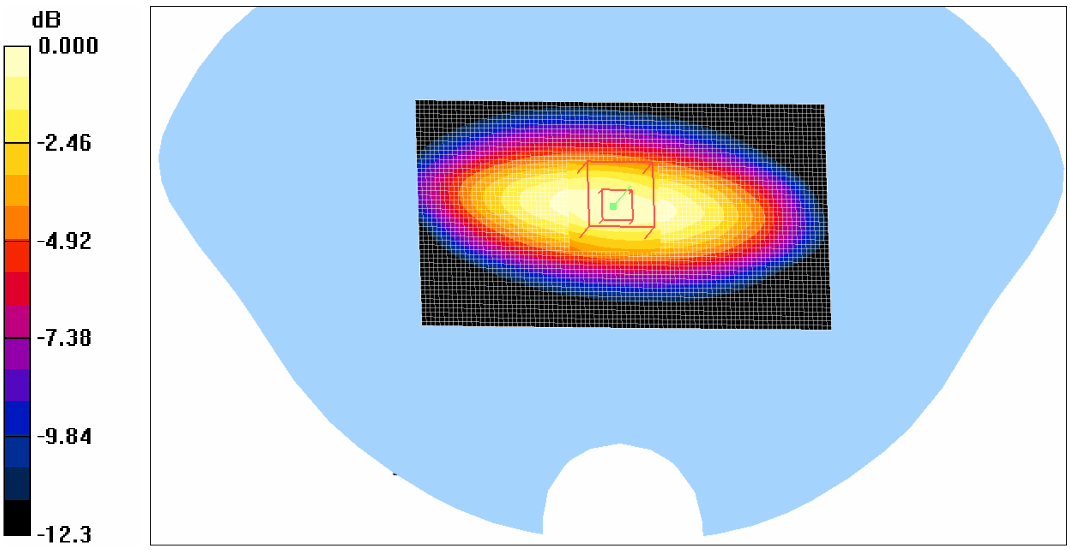
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.46, 6.46, 6.46); Calibrated: 9/23/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/8/2007
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 71; Post processing SW: SEMCAD, V1.8 Build 184

d =15 mm, Pin = 0.5W/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 4.92 mW/g

d =15 mm, Pin = 0.5W/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 77.4 V/m; Power Drift = -0.172 dB
Peak SAR (extrapolated) = 7.27 W/kg

SAR (1 g) = 4.46 mW/g; SAR (10 g) = 2.97 mW/g
Maximum value of SAR (measured) = 4.87 mW/g



0 dB = 4.87 mW/g

835 MHz System Validation

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)

System Performance Check 1900 MHz Head

Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 210-00710

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; $\sigma = 1.38$ mho/m; $\varepsilon_r = 39.9$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section

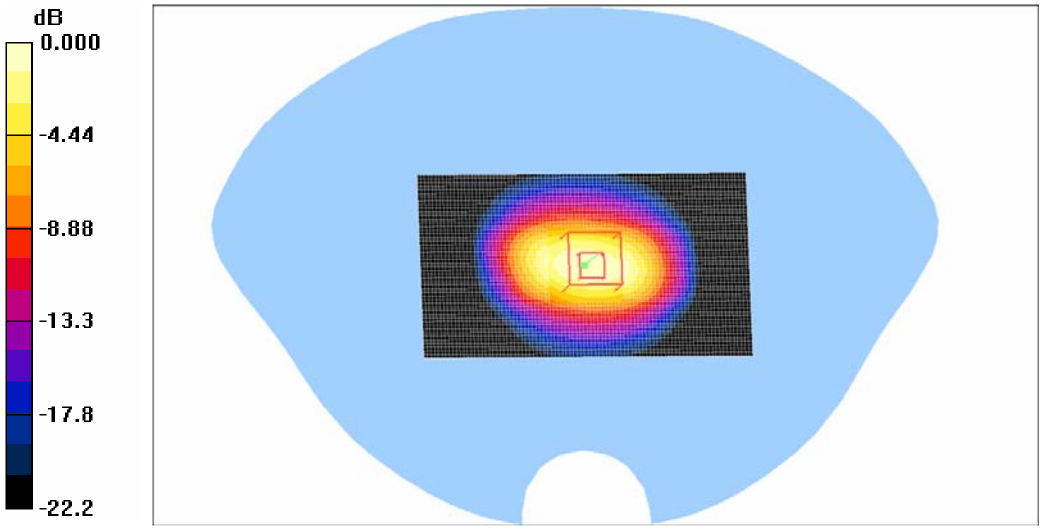
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(5.18, 5.18, 5.18); Calibrated: 9/23/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/8/2007
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 71; Post processing SW: SEMCAD, V1.8 Build 184

d =10 mm, Pin = 0.5W/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 26.8 mW/g

d =10 mm, Pin = 0.5W/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 134.7 V/m; Power Drift = -0.025 dB
Peak SAR (extrapolated) = 47.7 W/kg

SAR (1 g) = 21 mW/g; SAR (10 g) = 9.74 mW/g
Maximum value of SAR (measured) = 23.3 mW/g



0 dB = 23.3 mW/g

1900 MHz System Validation

APPENDIX E – EUT SCAN RESULTS

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)

EUT Back Touch to Flat Phantom (Middle Channel)

Motion Computing; Type: Laptop Computer; Serial: B2085

Communication System: GSM 835; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium parameters used: f = 836.6 MHz; σ = 0.97 mho/m; ε_r = 56.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

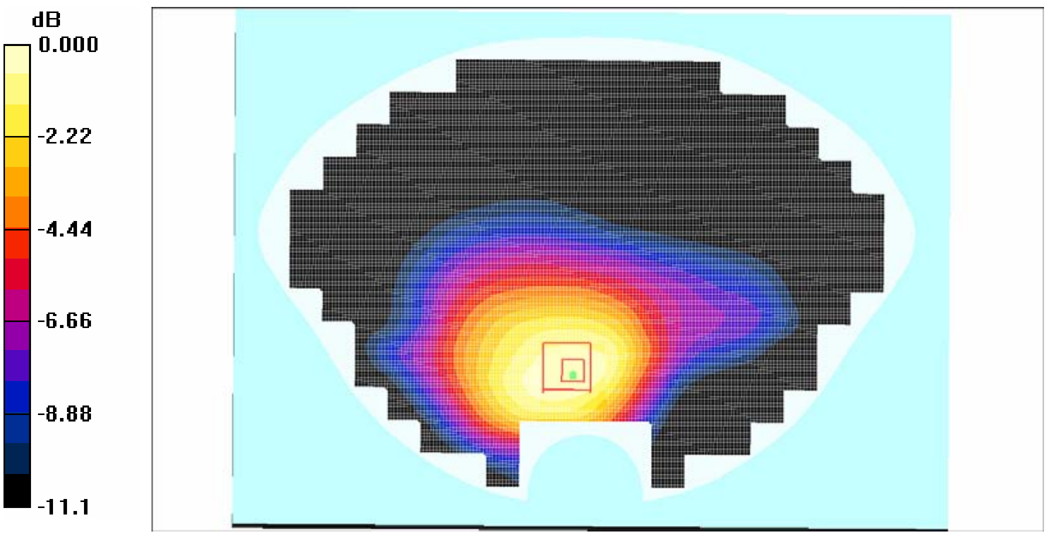
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.23, 6.23, 6.23); Calibrated: 9/23/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/8/2007
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 71; Post processing SW: SEMCAD, V1.8 Build 184

EUT Back Touch to Flat Phantom/Area Scan (171x241x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.371 mW/g

EUT Back Touch to Flat Phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.4 V/m; Power Drift = -0.129 dB
Peak SAR (extrapolated) = 0.433 W/kg

SAR (1 g) = 0.339 mW/g; SAR (10 g) = 0.239 mW/g
Maximum value of SAR (measured) = 0.365 mW/g



0 dB = 0.365 mW/g

Plot# 1

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)

EUT Left Side Touch to Flat Phantom (Middle Channel)

Motion Computing; Type: Laptop Computer; Serial: B2085

Communication System: GSM 835; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium parameters used: f = 836.6 MHz; σ = 0.97 mho/m; ε_r = 56.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

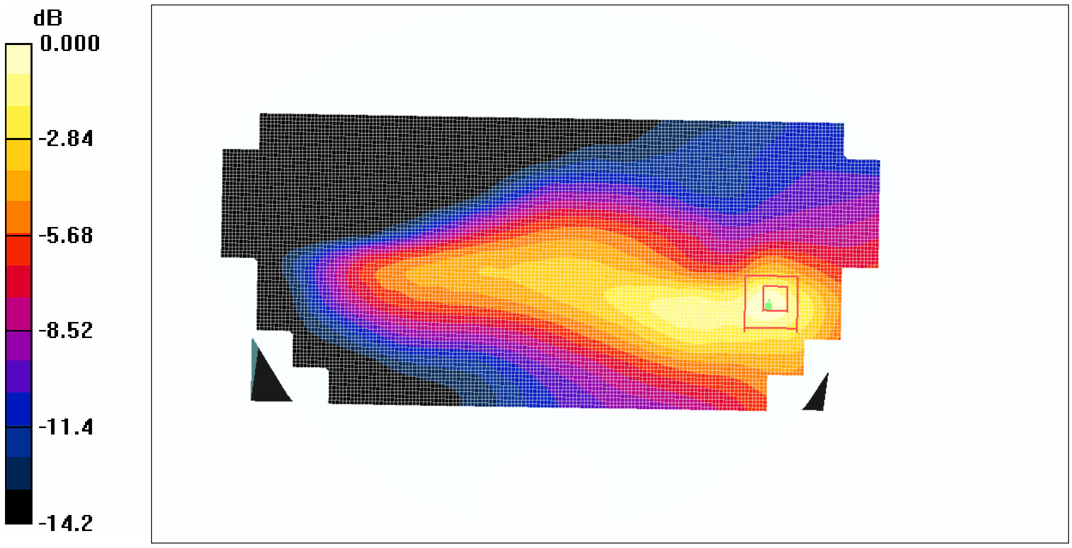
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.23, 6.23, 6.23); Calibrated: 9/23/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/8/2007
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 71; Post processing SW: SEMCAD, V1.8 Build 184

EUT Left Side Touch to Flat Phantom/Area Scan (81x241x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.064 mW/g

EUT Left Side Touch to Flat Phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.66 V/m; Power Drift = -0.151 dB
Peak SAR (extrapolated) = 0.127 W/kg

SAR (1 g) = 0.058 mW/g; SAR (10 g) = 0.030 mW/g
Maximum value of SAR (measured) = 0.062 mW/g



0 dB = 0.062 mW/g

Plot# 2

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)

EUT Back Touch to Flat Phantom (Middle Channel)

Motion Computing; Type: Laptop Computer; Serial: B2085

Communication System: CDMA-EVDO-Rev.0 835; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium parameters used: f = 836.52 MHz; σ = 0.97 mho/m; ε_r = 56.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

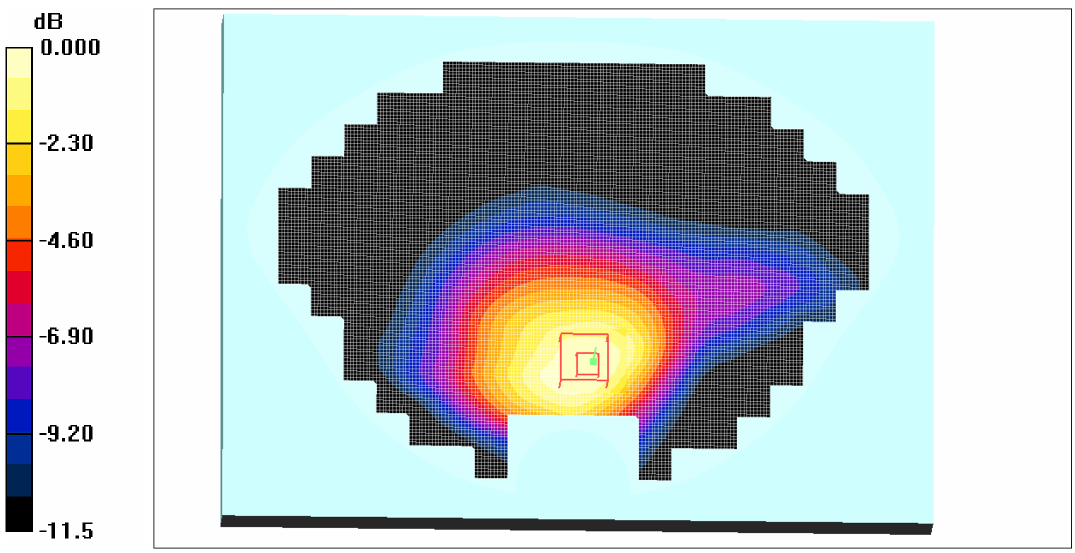
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.23, 6.23, 6.23); Calibrated: 9/23/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/8/2007
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 71; Post processing SW: SEMCAD, V1.8 Build 184

EUT Left Side Touch to Flat Phantom/Area Scan (171x241x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.498 mW/g

EUT Left Side Touch to Flat Phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.6 V/m; Power Drift = -0.122 dB
Peak SAR (extrapolated) = 0.623 W/kg

SAR (1 g) = 0.454 mW/g; SAR (10 g) = 0.314 mW/g
Maximum value of SAR (measured) = 0.484 mW/g



0 dB = 0.484 mW/g

Plot# 3

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)

EUT Left side Touch to Flat Phantom (Middle Channel)

Motion Computing; Type: Laptop Computer; Serial: B2085

Communication System: CDMA-EVDO-Rev.0 835; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium parameters used: f = 836.52 MHz; σ = 0.97 mho/m; ε_r = 56.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

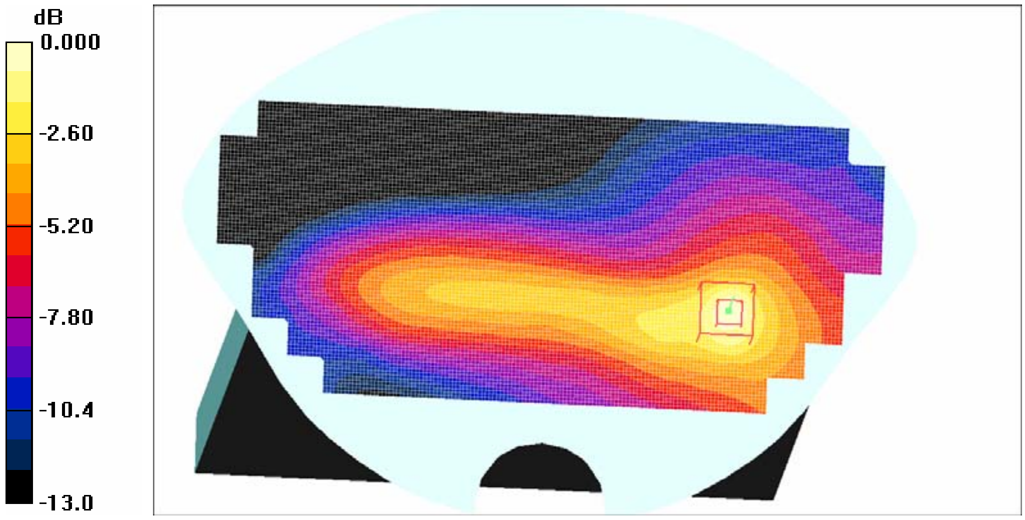
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.23, 6.23, 6.23); Calibrated: 9/23/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/8/2007
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 71; Post processing SW: SEMCAD, V1.8 Build 184

EUT Left Side Touch to Flat Phantom/Area Scan (81x241x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.094 mW/g

EUT Left Side Touch to Flat Phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.43 V/m; Power Drift = -0.143 dB
Peak SAR (extrapolated) = 0.174 W/kg

SAR (1 g) = 0.088 mW/g; SAR (10 g) = 0.049 mW/g
Maximum value of SAR (measured) = 0.096 mW/g



0 dB = 0.096 mW/g

Plot# 4

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)

EUT Back Touch to Flat Phantom (Middle Channel)

Motion Computing; Type: Laptop Computer; Serial: B2085

Communication System: CDMA-EVDO-Rev.A 835; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium parameters used: f = 836.52 MHz; σ = 0.97 mho/m; ε_r = 56.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

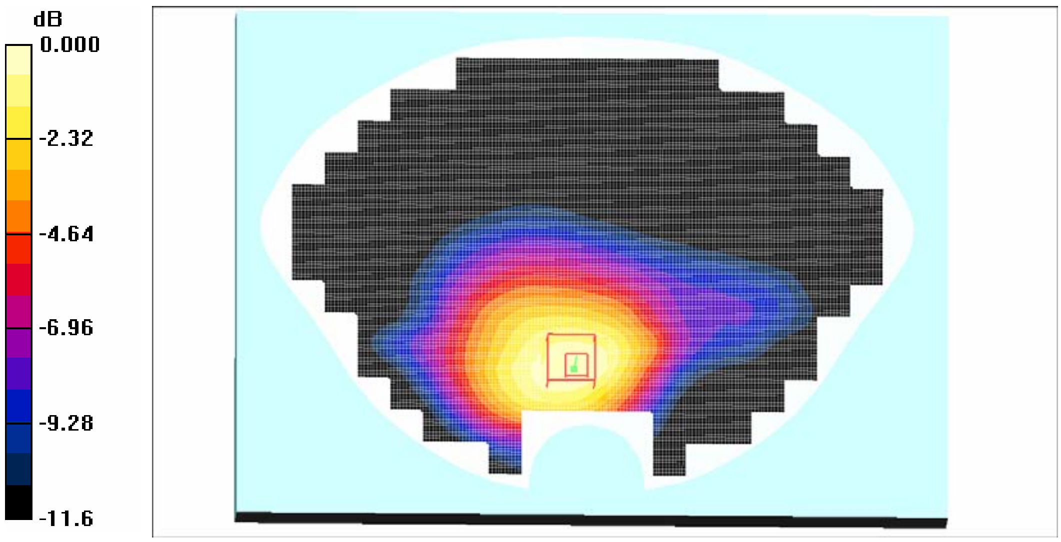
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.23, 6.23, 6.23); Calibrated: 9/23/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/8/2007
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 71; Post processing SW: SEMCAD, V1.8 Build 184

EUT Back Touch to Flat Phantom/Area Scan (171x241x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.570 mW/g

EUT Back Touch to Flat Phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.4 V/m; Power Drift = -0.045 dB
Peak SAR (extrapolated) = 0.726 W/kg

SAR (1 g) = 0.527 mW/g; SAR (10 g) = 0.360 mW/g
Maximum value of SAR (measured) = 0.574 mW/g



0 dB = 0.574 mW/g

Plot# 5

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)

EUT Left side Touch to Flat Phantom (Middle Channel)

Motion Computing; Type: Laptop Computer; Serial: B2085

Communication System: CDMA-EVDO-Rev. A 835; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium parameters used: f = 836.52 MHz; σ = 0.97 mho/m; ε_r = 56.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

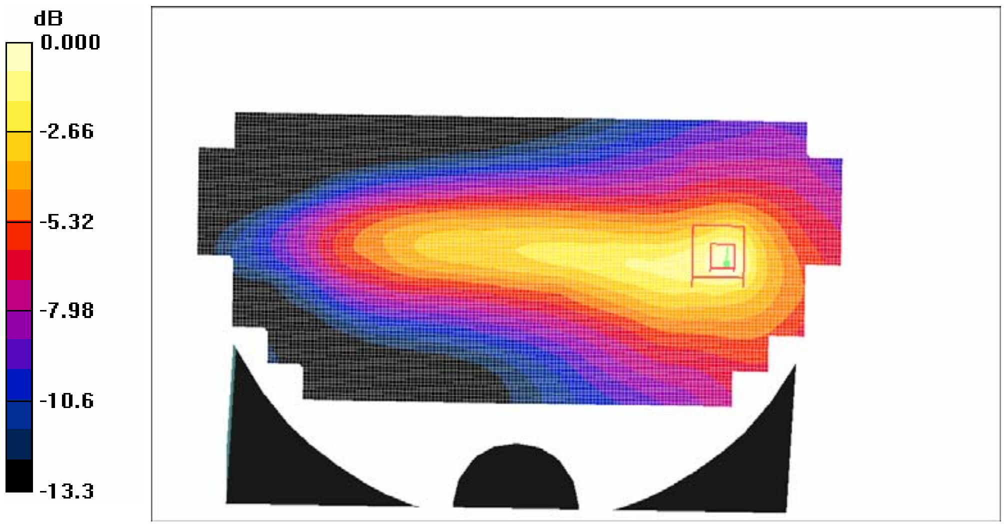
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.23, 6.23, 6.23); Calibrated: 9/23/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/8/2007
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 71; Post processing SW: SEMCAD, V1.8 Build 184

EUT Left Side Touch to Flat Phantom/Area Scan (81x241x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.107 mW/g

EUT Left Side Touch to Flat Phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.26 V/m; Power Drift = -0.297 dB
Peak SAR (extrapolated) = 0.221 W/kg

SAR (1 g) = 0.101 mW/g; SAR (10 g) = 0.056 mW/g
Maximum value of SAR (measured) = 0.108 mW/g



0 dB = 0.108 mW/g

Plot# 6

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)
EUT Back Touch to Flat Phantom (Middle Channel)
Motion Computing; Type: Laptop Computer; Serial: B2085

Communication System: WCDMA 835; Frequency: 836.4 MHz; Duty Cycle: 1:1
Medium parameters used: f = 836.4 MHz; σ = 0.97 mho/m; ε_r = 56.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

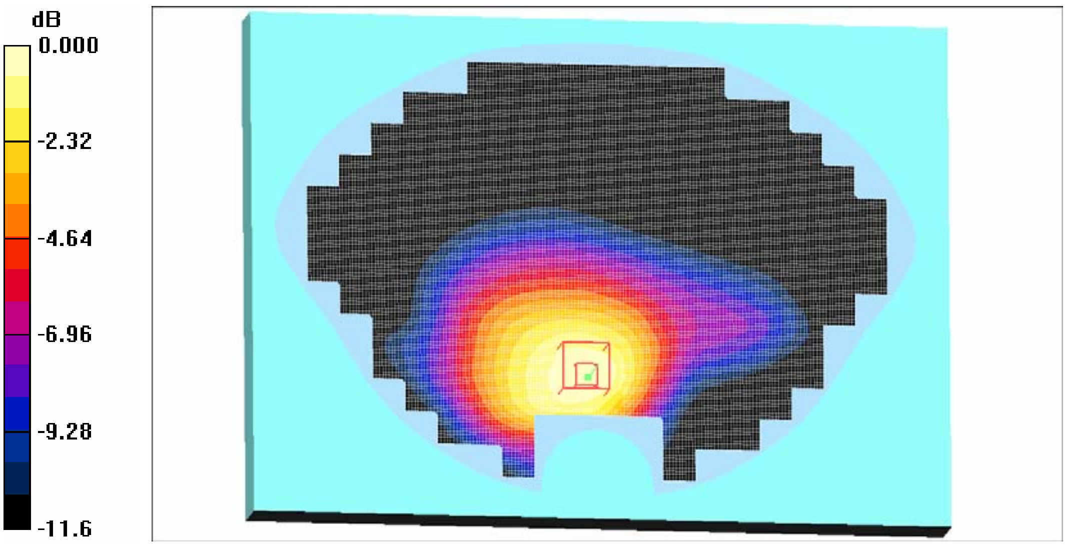
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.23, 6.23, 6.23); Calibrated: 9/23/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/8/2007
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 71; Post processing SW: SEMCAD, V1.8 Build 184

EUT Back Touch to Flat Phantom/Area Scan (171x241x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.574 mW/g

EUT Back Touch to Flat Phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.1 V/m; Power Drift = -0.112 dB
Peak SAR (extrapolated) = 0.732 W/kg

SAR (1 g) = 0.537 mW/g; SAR (10 g) = 0.367 mW/g
Maximum value of SAR (measured) = 0.572 mW/g



0 dB = 0.572 mW/g

Plot# 7

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)
EUT Left Side Touch to Flat Phantom (Middle Channel)
Motion Computing; Type: Laptop Computer; Serial: B2085

Communication System: WCDMA 835; Frequency: 836.4 MHz; Duty Cycle: 1:1
Medium parameters used: f = 836.4 MHz; σ = 0.97 mho/m; ε_r = 56.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

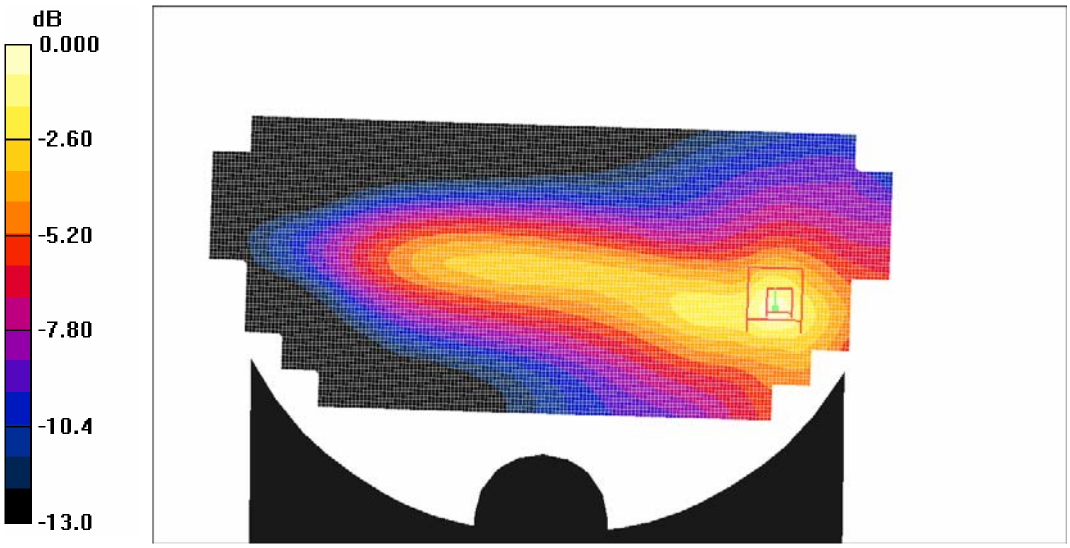
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.23, 6.23, 6.23); Calibrated: 9/23/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/8/2007
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 71; Post processing SW: SEMCAD, V1.8 Build 184

EUT Left Side Touch to Flat Phantom/Area Scan (81x241x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.097 mW/g

EUT Left Side Touch to Flat Phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.73 V/m; Power Drift = 0.025 dB
Peak SAR (extrapolated) = 0.199 W/kg

SAR (1 g) = 0.095 mW/g; SAR (10 g) = 0.052 mW/g
Maximum value of SAR (measured) = 0.104 mW/g



0 dB = 0.104 mW/g

Plot# 8

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)
EUT Back Touch to Flat Phantom (Middle Channel)
Motion Computing; Type: Laptop Computer; Serial: B2085

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.57 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

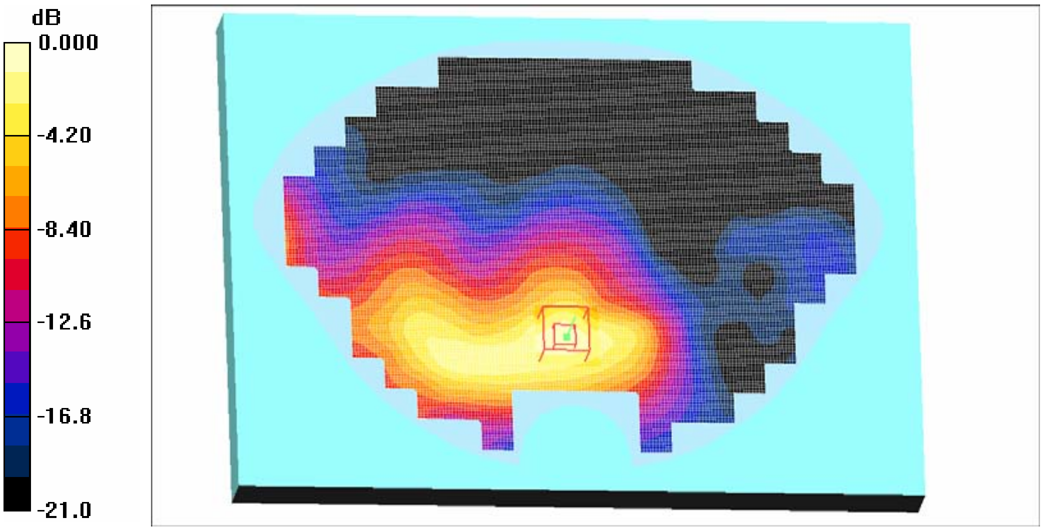
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.52, 4.52, 4.52); Calibrated: 9/23/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/8/2007
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 71; Post processing SW: SEMCAD, V1.8 Build 184

EUT Back Touch to Flat Phantom/Area Scan (171x241x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.223 mW/g

EUT Back Touch to Flat Phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.15 V/m; Power Drift = -0.618 dB
Peak SAR (extrapolated) = 0.517 W/kg

SAR (1 g) = 0.223 mW/g; SAR (10 g) = 0.107 mW/g
Maximum value of SAR (measured) = 0.243 mW/g



0 dB = 0.243 mW/g

Plot# 9

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)
EUT Left Side Touch to Flat Phantom (Middle Channel)
Motion Computing; Type: Laptop Computer; Serial: B2085

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.57 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

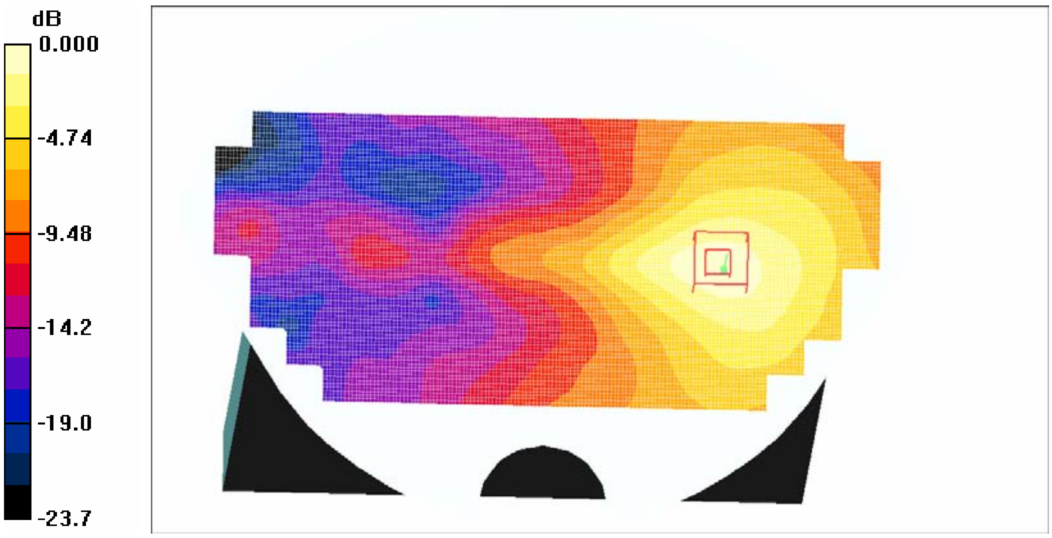
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.52, 4.52, 4.52); Calibrated: 9/23/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/8/2007
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 71; Post processing SW: SEMCAD, V1.8 Build 184

EUT Left Side Touch to Flat Phantom/Area Scan (81x241x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.057 mW/g

EUT Left Side Touch to Flat Phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.55 V/m; Power Drift = 0.114 dB
Peak SAR (extrapolated) = 0.126 W/kg

SAR (1 g) = 0.055 mW/g; SAR (10 g) = 0.028 mW/g
Maximum value of SAR (measured) = 0.059 mW/g



0 dB = 0.059 mW/g

Plot# 10

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)
EUT Back Touch to Flat Phantom (Low Channel)
Motion Computing; Type: Laptop Computer; Serial: B2085

Communication System: CDMA-EVDO-Rev.0 1900MHz; Frequency: 1851.25 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1851.25 MHz; σ = 1.57 mho/m; ε_r = 51.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

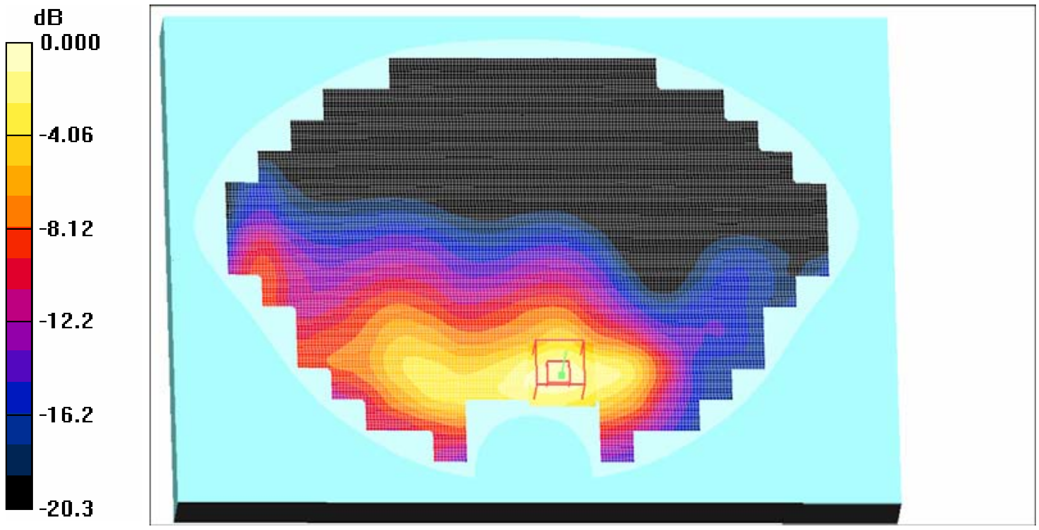
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.52, 4.52, 4.52); Calibrated: 9/23/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/8/2007
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 71; Post processing SW: SEMCAD, V1.8 Build 184

EUT Back Touch to Flat Phantom/Area Scan (171x241x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.857 mW/g

EUT Back Touch to Flat Phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.91 V/m; Power Drift = -0.132 dB
Peak SAR (extrapolated) = 1.67 W/kg

SAR (1 g) = 0.781 mW/g; SAR (10 g) = 0.393 mW/g
Maximum value of SAR (measured) = 0.864 mW/g



0 dB = 0.864 mW/g

Plot# 11

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)
EUT Back Touch to Flat Phantom (Middle Channel)
Motion Computing; Type: Laptop Computer; Serial: B2085

Communication System: CDMA-EVDO-Rev.0 1900MHz; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; $\sigma = 1.57$ mho/m; $\varepsilon_r = 51.1$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section

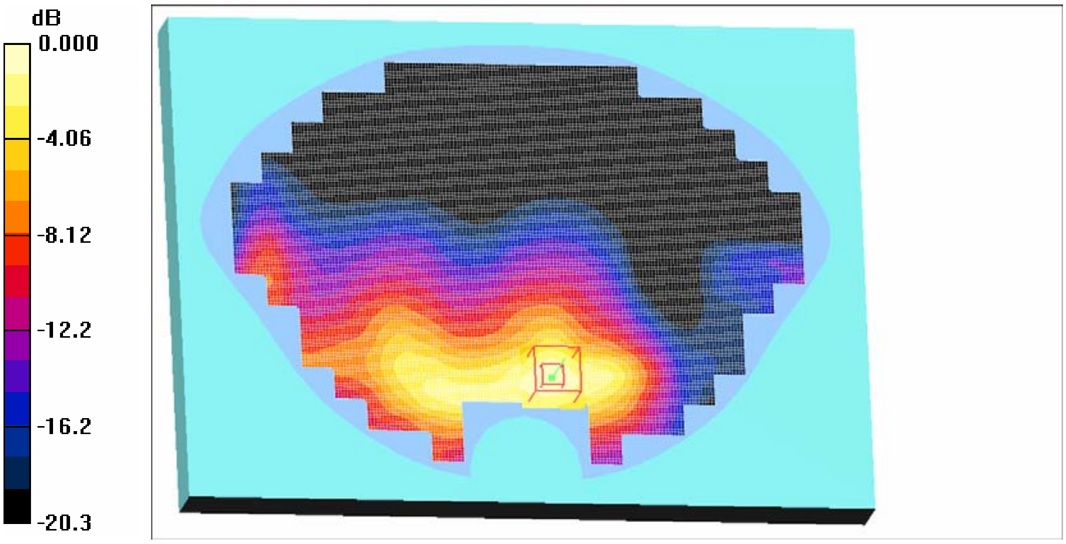
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.52, 4.52, 4.52); Calibrated: 9/23/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/8/2007
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 71; Post processing SW: SEMCAD, V1.8 Build 184

EUT Back Touch to Flat Phantom/Area Scan (171x241x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.962 mW/g

EUT Back Touch to Flat Phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.38 V/m; Power Drift = -0.022 dB
Peak SAR (extrapolated) = 1.85 W/kg

SAR (1 g) = 0.860 mW/g; SAR (10 g) = 0.434 mW/g
Maximum value of SAR (measured) = 0.948 mW/g



0 dB = 0.948 mW/g

Plot# 12

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)
EUT Back Touch to Flat Phantom (High Channel)
Motion Computing; Type: Laptop Computer; Serial: B2085

Communication System: CDMA-EVDO-Rev.0 1900MHz; Frequency: 1908.75 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1908.75 MHz; σ = 1.62 mho/m; ε_r = 51.3; ρ = 1000 kg/m^3
Phantom section: Flat Section

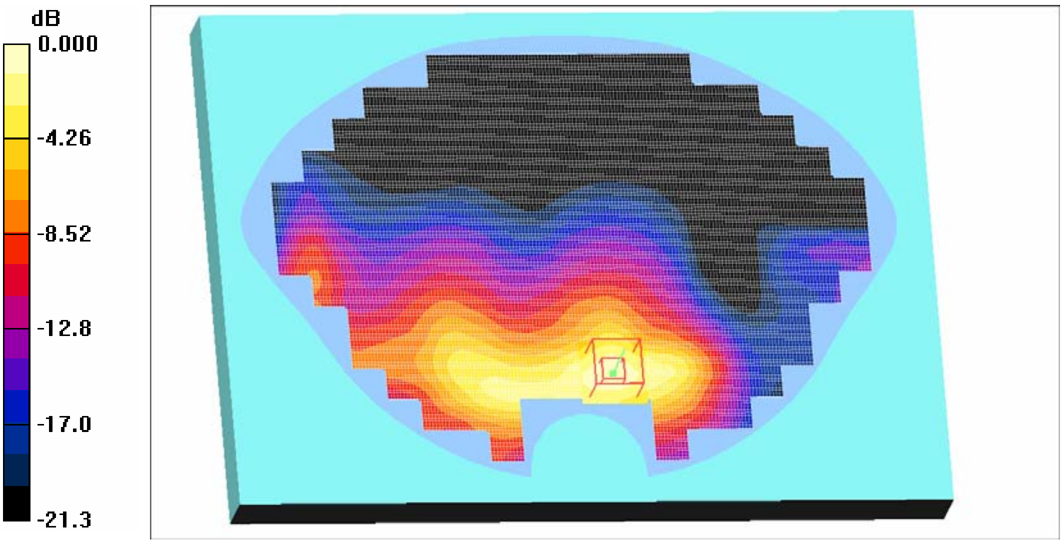
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.52, 4.52, 4.52); Calibrated: 9/23/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/8/2007
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 71; Post processing SW: SEMCAD, V1.8 Build 184

EUT Back Touch to Flat Phantom/Area Scan (171x241x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.774 mW/g

EUT Back Touch to Flat Phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.64 V/m; Power Drift = -0.129 dB
Peak SAR (extrapolated) = 1.55 W/kg

SAR (1 g) = 0.727 mW/g; SAR (10 g) = 0.367 mW/g
Maximum value of SAR (measured) = 0.792 mW/g



0 dB = 0.792 mW/g

Plot# 13

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)

EUT Left Side Touch to Flat Phantom (Middle Channel)

Motion Computing; Type: Laptop Computer; Serial: B2085

Communication System: CDMA-EVDO-Rev.0 1900MHz; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.57 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

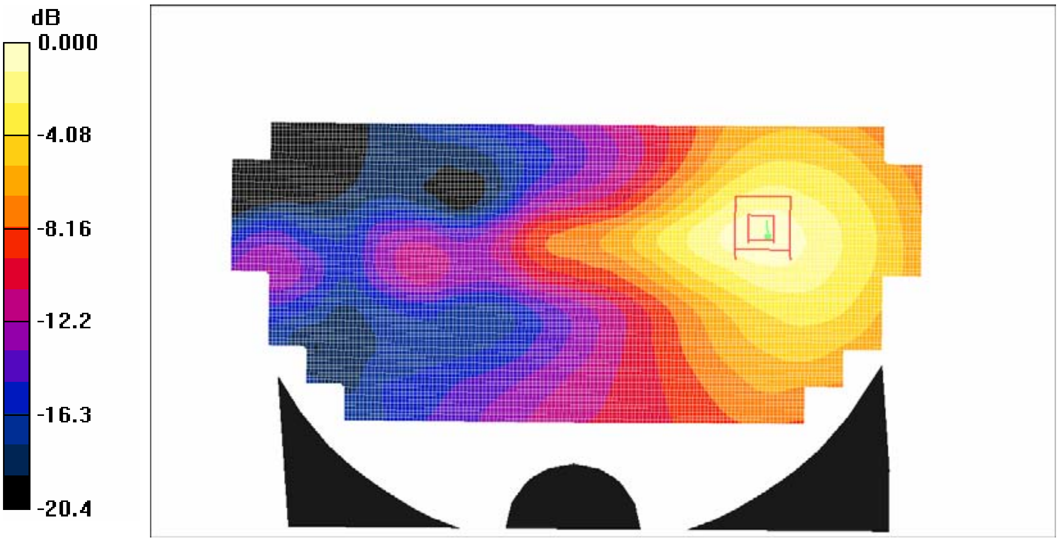
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.52, 4.52, 4.52); Calibrated: 9/23/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/8/2007
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 71; Post processing SW: SEMCAD, V1.8 Build 184

EUT Left Side Touch to Flat Phantom/Area Scan (81x241x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.217 mW/g

EUT Left Side Touch to Flat Phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.22 V/m; Power Drift = -0.078 dB
Peak SAR (extrapolated) = 0.498 W/kg

SAR (1 g) = 0.212 mW/g; SAR (10 g) = 0.110 mW/g
Maximum value of SAR (measured) = 0.222 mW/g



0 dB = 0.222 mW/g

Plot# 14

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)

EUT Back Touch to Flat Phantom (Low Channel)

Motion Computing; Type: Laptop Computer; Serial: B2085

Communication System: CDMA-EVDO-Rev.A 1900MHz; Frequency: 1851.25 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1851.25 MHz; σ = 1.53 mho/m; ε_r = 51.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

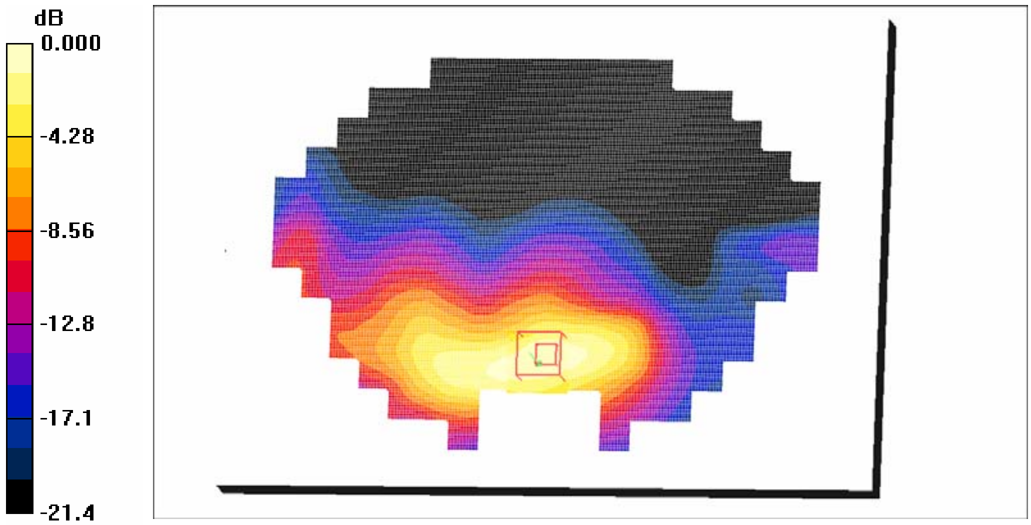
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.52, 4.52, 4.52); Calibrated: 9/23/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/8/2007
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 71; Post processing SW: SEMCAD, V1.8 Build 184

EUT Back Touch to Flat Phantom/Area Scan (171x241x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.665 mW/g

EUT Back Touch to Flat Phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.44 V/m; Power Drift = 0.021 dB
Peak SAR (extrapolated) = 1.40 W/kg

SAR (1 g) = 0.632 mW/g; SAR (10 g) = 0.324 mW/g
Maximum value of SAR (measured) = 0.684 mW/g



0 dB = 0.684 mW/g

Plot# 15

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)
EUT Back Touch to Flat Phantom (Middle Channel)
Motion Computing; Type: Laptop Computer; Serial: B2085

Communication System: CDMA-EVDO-Rev.A 1900MHz; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.57 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

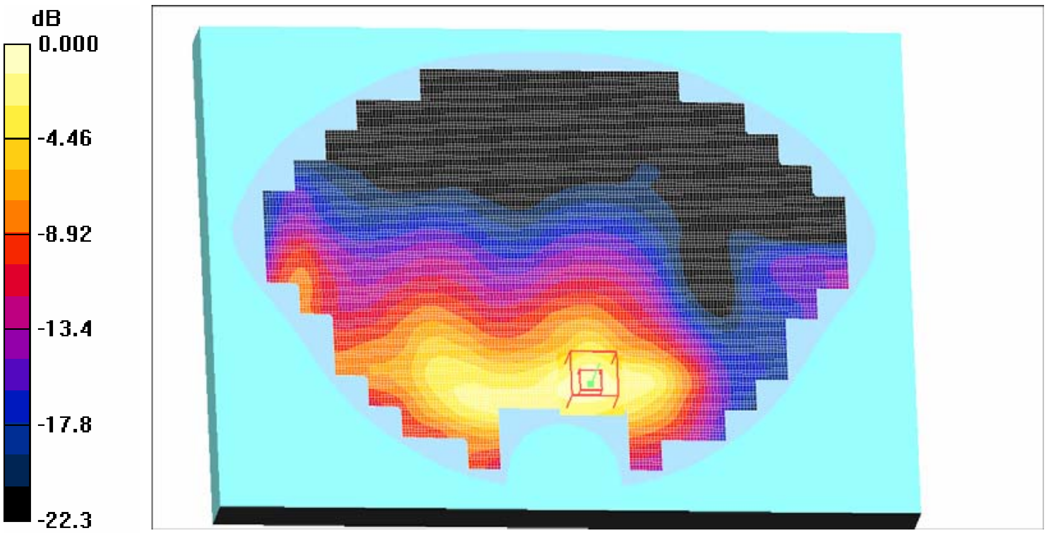
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.52, 4.52, 4.52); Calibrated: 9/23/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/8/2007
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 71; Post processing SW: SEMCAD, V1.8 Build 184

EUT Back Touch to Flat Phantom/Area Scan (171x241x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.879 mW/g

EUT Back Touch to Flat Phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.40 V/m; Power Drift = -0.464 dB
Peak SAR (extrapolated) = 1.87 W/kg

SAR (1 g) = 0.810 mW/g; SAR (10 g) = 0.406 mW/g
Maximum value of SAR (measured) = 0.862 mW/g



0 dB = 0.862 mW/g

Plot# 16

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)

EUT Back Touch to Flat Phantom (High Channel)

Motion Computing; Type: Laptop Computer; Serial: B2085

Communication System: CDMA-EVDO-Rev.A 1900MHz; Frequency: 1908.75 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1908.75 MHz; σ = 1.6 mho/m; ε_r = 51; ρ = 1000 kg/m^3
Phantom section: Flat Section

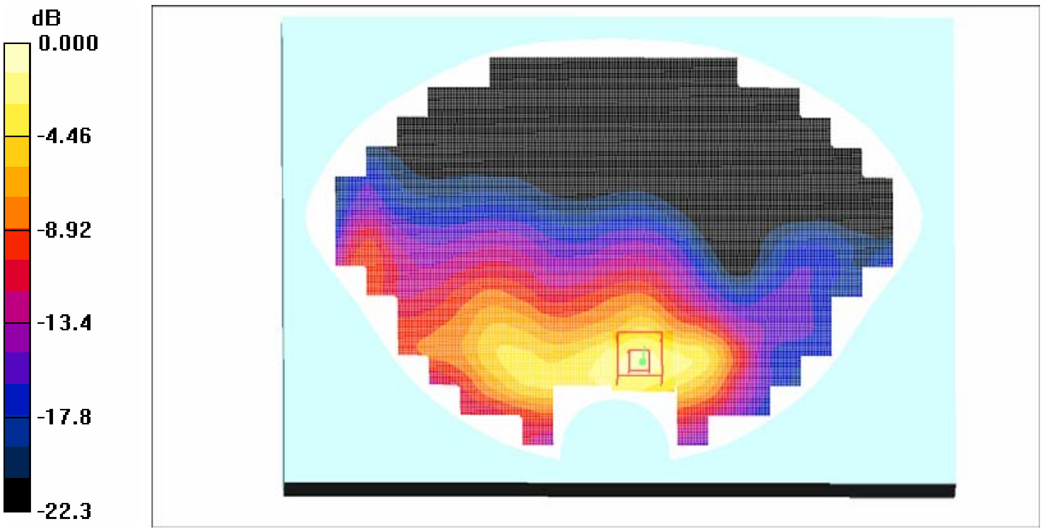
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.52, 4.52, 4.52); Calibrated: 9/23/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/8/2007
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 71; Post processing SW: SEMCAD, V1.8 Build 184

EUT Back Touch to Flat Phantom/Area Scan (171x241x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.747 mW/g

EUT Back Touch to Flat Phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.30 V/m; Power Drift = -0.038 dB
Peak SAR (extrapolated) = 1.59 W/kg

SAR (1 g) = 0.713 mW/g; SAR (10 g) = 0.429
Maximum value of SAR (measured) = 0.759 mW/g



0 dB = 0.759 mW/g

Plot# 17

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)
EUT Left Side Touch to Flat Phantom (Middle Channel)
Motion Computing; Type: Laptop Computer; Serial: B2085

Communication System: CDMA-EVDO-Rev.A -1900MHz; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.57 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

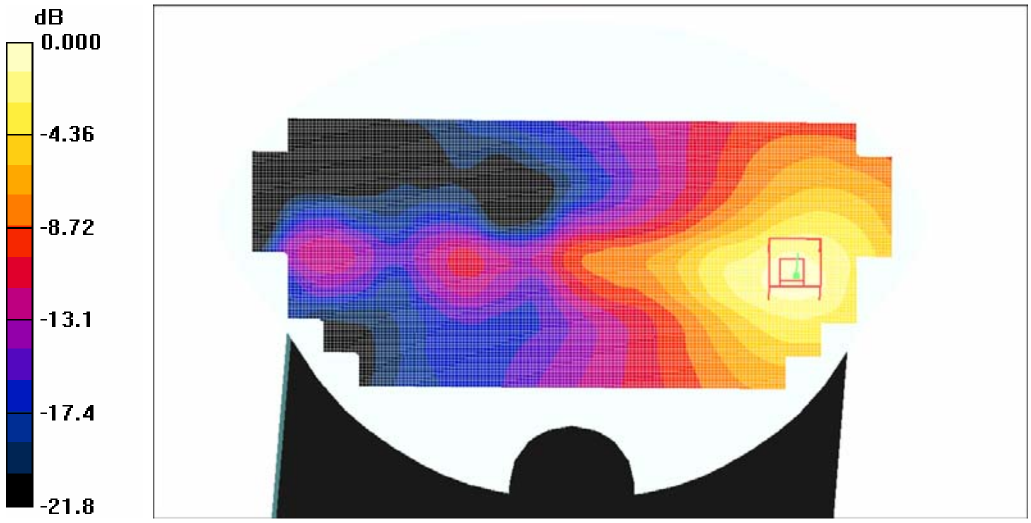
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.52, 4.52, 4.52); Calibrated: 9/23/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/8/2007
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 71; Post processing SW: SEMCAD, V1.8 Build 184

EUT Left Side Touch to Flat Phantom/Area Scan (81x241x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.186 mW/g

EUT Left Side Touch to Flat Phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.90 V/m; Power Drift = 0.252 dB
Peak SAR (extrapolated) = 0.488 W/kg

SAR (1 g) = 0.202 mW/g; SAR (10 g) = 0.102 mW/g
Maximum value of SAR (measured) = 0.217 mW/g



0 dB = 0.217 mW/g

Plot# 18

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)
EUT Back Touch to Flat Phantom (Low Channel)
Motion Computing; Type: Laptop Computer; Serial: B2085

Communication System: WCDMA-1900MHz; Frequency: 1852.6 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1852.6 MHz; σ = 1.57 mho/m; ε_r = 51.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

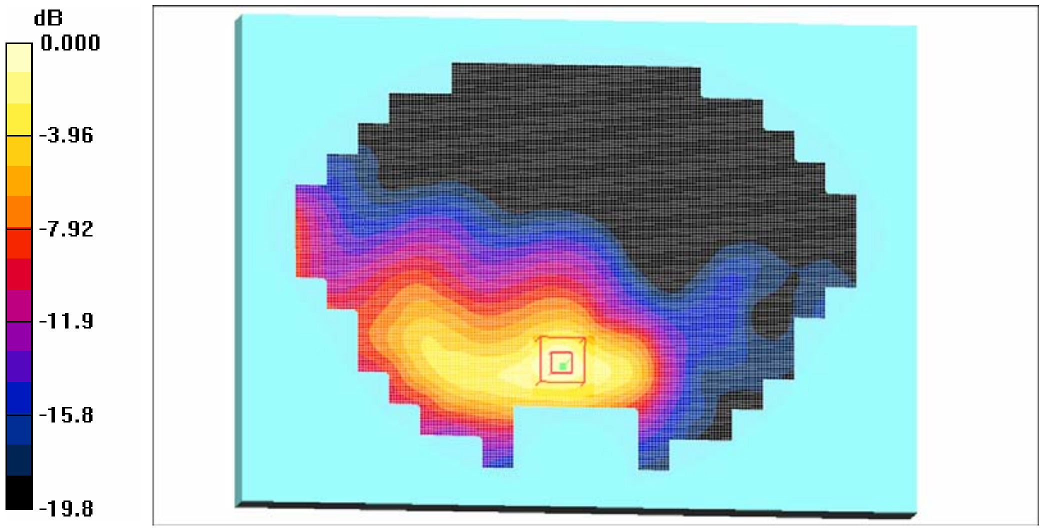
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.52, 4.52, 4.52); Calibrated: 9/23/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/8/2007
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 71; Post processing SW: SEMCAD, V1.8 Build 184

EUT Back Touch to Flat Phantom/Area Scan (171x241x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.668 mW/g

EUT Back Touch to Flat Phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.73 V/m; Power Drift = 0.205 dB
Peak SAR (extrapolated) = 1.66 W/kg

SAR (1 g) = 0.760 mW/g; SAR (10 g) = 0.375 mW/g
Maximum value of SAR (measured) = 0.828 mW/g



0 dB = 0.828 mW/g

Plot# 19

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)
EUT Back Touch to Flat Phantom (Middle Channel)
Motion Computing; Type: Laptop Computer; Serial: B2085

Communication System: WCDMA-1900MHz; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.57 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

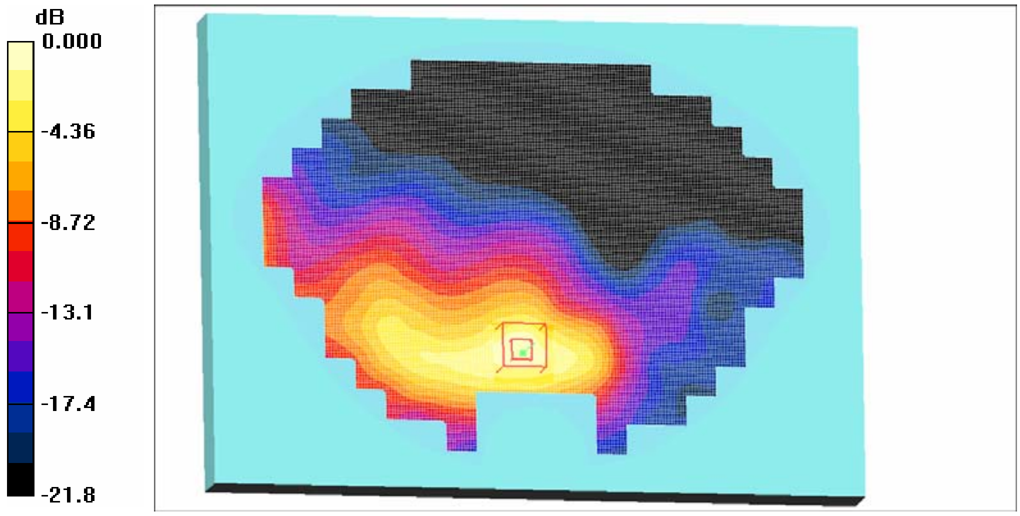
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.52, 4.52, 4.52); Calibrated: 9/23/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/8/2007
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 71; Post processing SW: SEMCAD, V1.8 Build 184

EUT Back Touch to Flat Phantom/Area Scan (171x241x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.849 mW/g

EUT Back Touch to Flat Phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.59 V/m; Power Drift = -0.070 dB
Peak SAR (extrapolated) = 1.88 W/kg

SAR (1 g) = 0.831 mW/g; SAR (10 g) = 0.406 mW/g
Maximum value of SAR (measured) = 0.902 mW/g



0 dB = 0.902 mW/g

Plot# 20

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)
EUT Back Touch to Flat Phantom (High Channel)
Motion Computing; Type: Laptop Computer; Serial: B2085

Communication System: WCDMA-1900MHz; Frequency: 1907.4 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1907.4 MHz; σ = 1.6 mho/m; ε_r = 51; ρ = 1000 kg/m^3
Phantom section: Flat Section

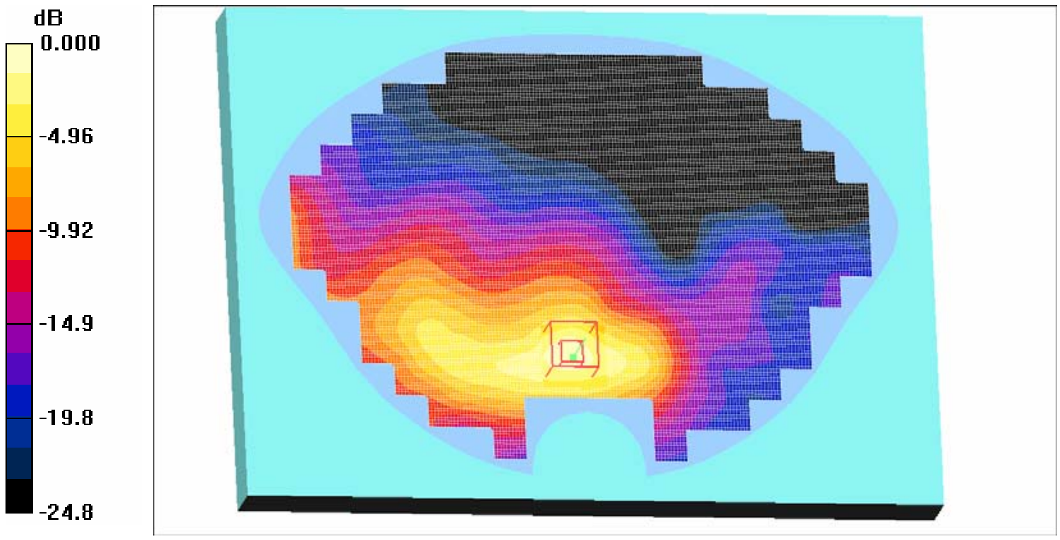
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.52, 4.52, 4.52); Calibrated: 9/23/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/8/2007
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 71; Post processing SW: SEMCAD, V1.8 Build 184

EUT Back Touch to Flat Phantom/Area Scan (171x241x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.741 mW/g

EUT Back Touch to Flat Phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.87 V/m; Power Drift = -0.515 dB
Peak SAR (extrapolated) = 1.83 W/kg

SAR (1 g) = 0.824 mW/g; SAR (10 g) = 0.408 mW/g
Maximum value of SAR (measured) = 0.902 mW/g



0 dB = 0.928mW/g

Plot# 21

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)

EUT Left Side Touch to Flat Phantom (Middle Channel)

Motion Computing; Type: Laptop Computer; Serial: B2085

Communication System: WCDMA-1900MHz; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.57 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

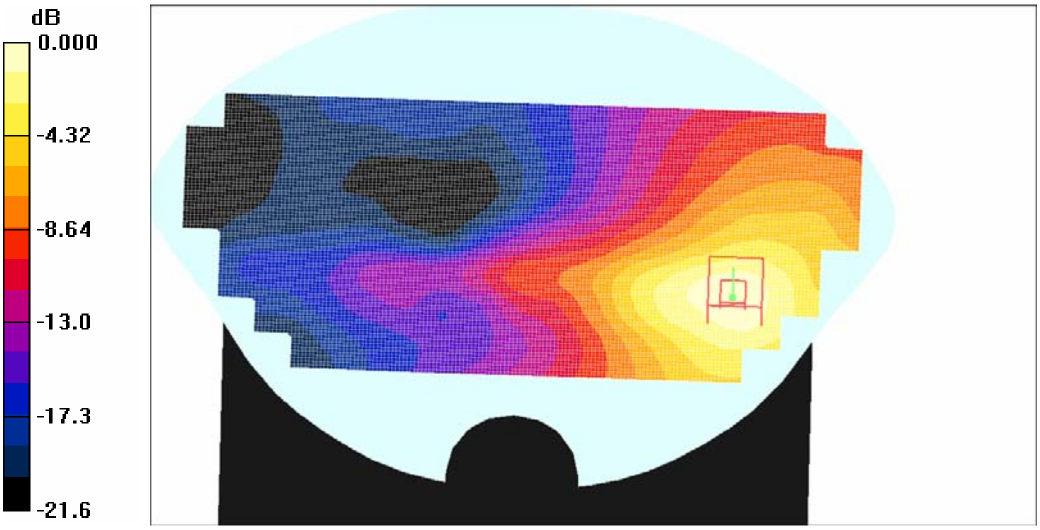
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.52, 4.52, 4.52); Calibrated: 9/23/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/8/2007
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 71; Post processing SW: SEMCAD, V1.8 Build 184

EUT Left Side Touch to Flat Phantom/Area Scan (81x241x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.200 mW/g

EUT Left Side Touch to Flat Phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.57 V/m; Power Drift = 0.311 dB
Peak SAR (extrapolated) = 0.460 W/kg

SAR (1 g) = 0.193 mW/g; SAR (10 g) = 0.099 mW/g
Maximum value of SAR (measured) = 0.207 mW/g

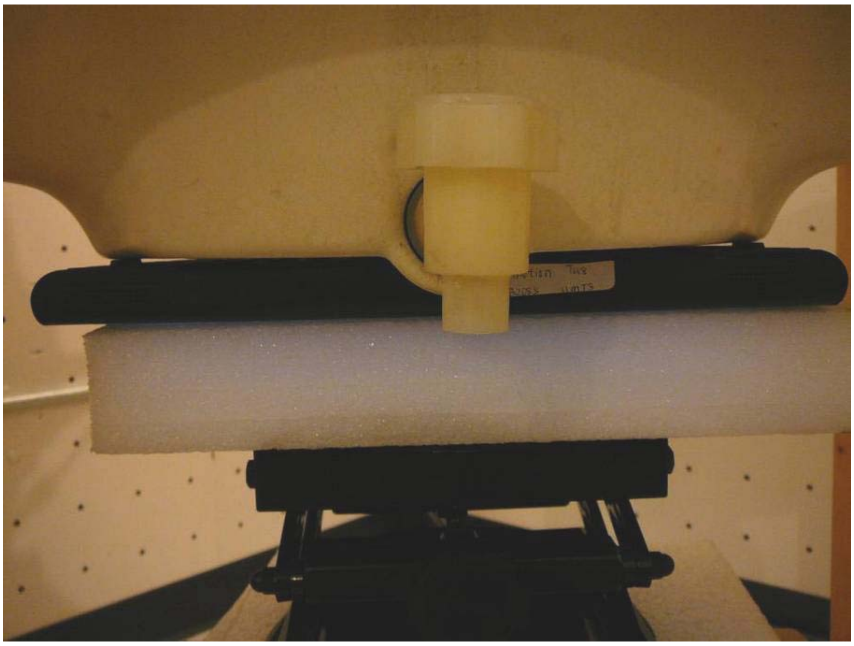


0 dB = 0.207 mW/g

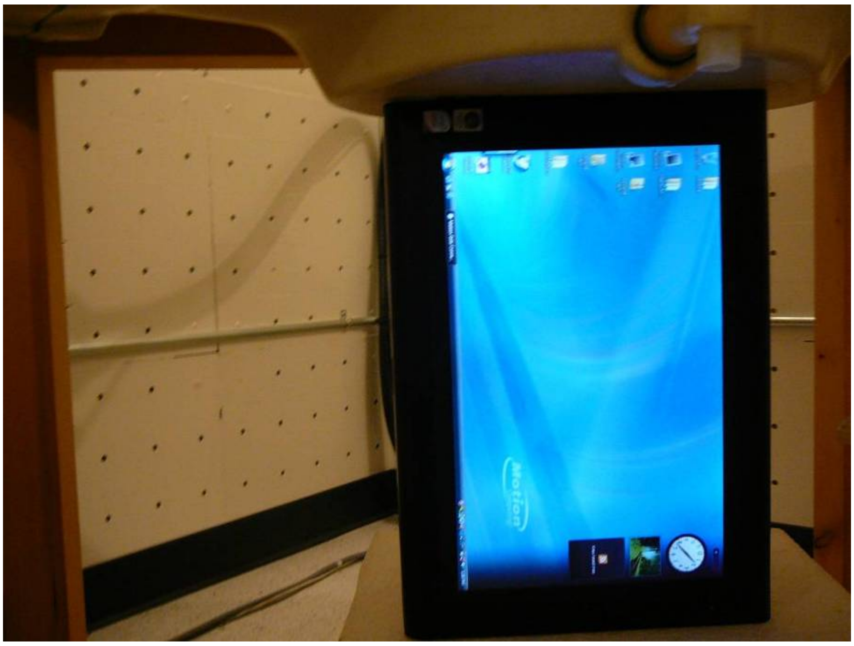
Plot# 22

APPENDIX F – TEST SETUP PHOTOS

EUT- Back Touch to Flat Phantom Setup Photo

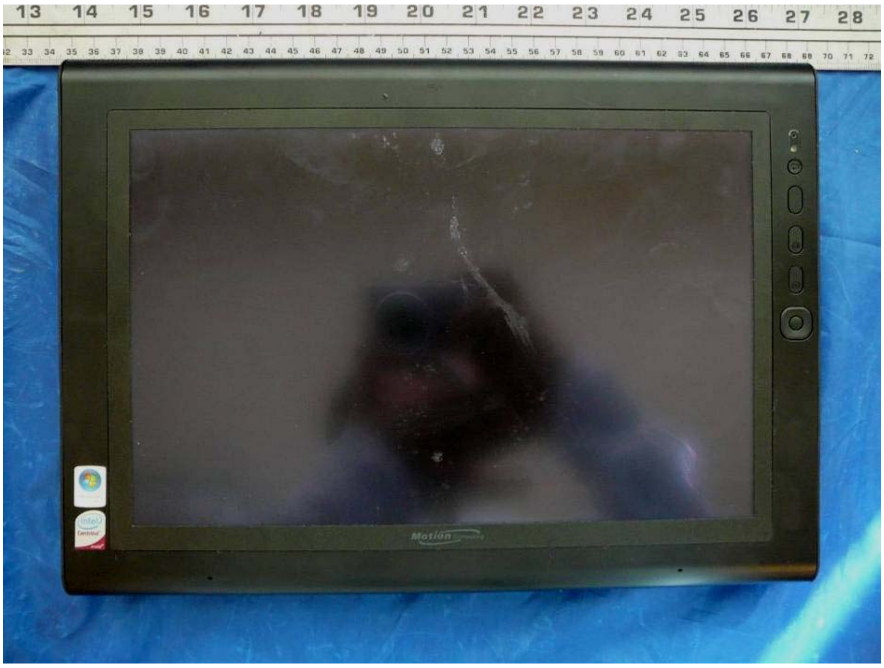


EUT- Left Side Touch Flat Phantom Setup Photo



APPENDIX G – EUT PHOTOS

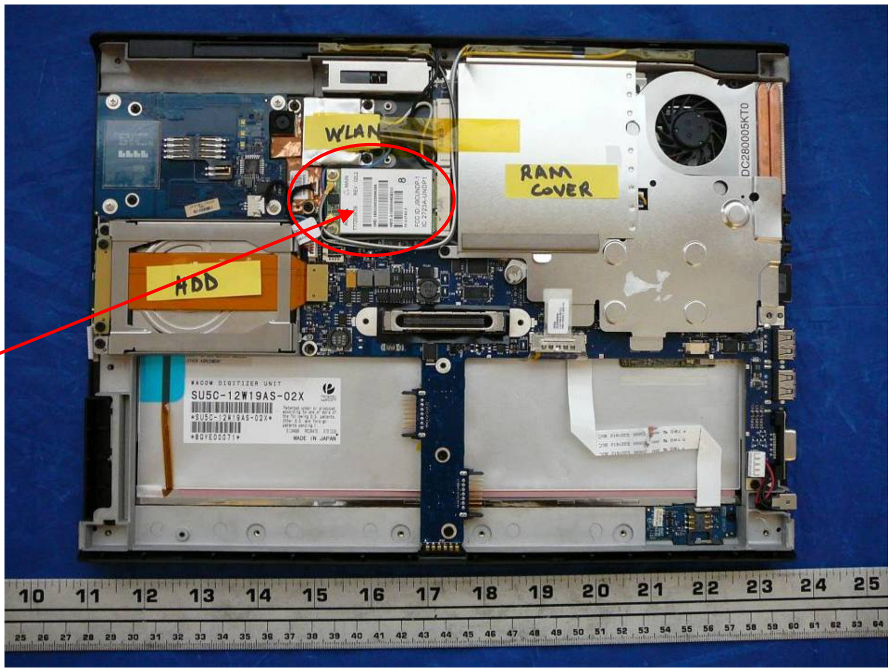
T008 - Top View



T008 - Bottom View

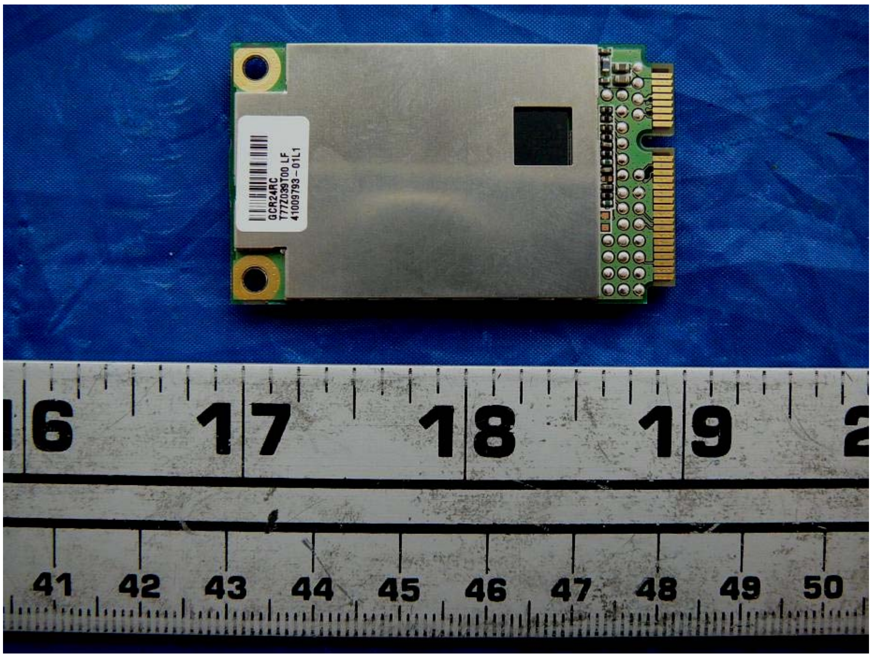
T008 – Battery off View

WWAN Module built in T008



WWAN Module

WWAN Module



T008 – Charger

APPENDIX H - INFORMATIVE REFERENCES

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[9] Volker Hombach, Klaus Meier, Michael Burkhardt, Eberhard K. uhn, and Niels Kuster, \The depen-dence of EM energy absorption upon human head modeling at 900 MHz", IEEE Transactions on Microwave Theory and Techniques, vol. 44, no. 10, pp. 1865-1873, Oct. 1996.

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******* End of Report *******