



Specific Absorption Rate (SAR) Test Report
for
ZTE CORPORATION
on the
ZTE C78 CDMA1X Digital Mobile Phone

Report No. : FA830102
Trade Name : ZTE
Model Name : ZTE C78
FCC ID : Q78-ZTEC78
Date of Testing : Mar. 7 and 9~11, 2008
Date of Report : Mar. 31, 2008
Date of Review : Mar. 31, 2008

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SPORTON International Inc.

No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.



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1. Statement of Compliance

The Specific Absorption Rate (SAR) maximum results found during testing for the ZTE CORPORATION ZTE C78 CDMA1X Digital Mobile Phone ZTE ZTE C78 are as follows (with expanded uncertainty 21.9%):

Position	CDMA2000 Cellular (W/kg)	CDMA2000 AWS (W/Kg)	CDMA2000 PCS (W/Kg)
Head	0.994	0.122	0.985
Body	0.679	0.026	0.227

The co-location of CDMA2000 and Bluetooth were also checked. They are in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1999 and had been tested in accordance with the measurement methods and procedures specified in OET Bulletin 65 Supplement C (Edition 01-01).

Approved by

Roy Wu
Manager



2. Administration Data

2.1 Testing Laboratory

Company Name : Sporton International Inc.
Department : Antenna Design/SAR
Address : No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.
Telephone Number : 86-0512- 5790-0158
Fax Number : 86-0512- 5790-0958

2.2 Detail of Applicant

Company Name : ZTE CORPORATION
Address : ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

2.3 Detail of Manufacturer

Company Name : ZTE CORPORATION
Address : ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

2.4 Application Details

Date of reception of application: Mar. 01, 2008
Start of test : Mar. 07, 2008
End of test : Mar. 11, 2008



3. General Information

3.1 Description of Device Under Test (DUT)

DUT Type :	ZTE C78 CDMA1X Digital Mobile Phone
Trade Name :	ZTE
Model Name :	ZTE C78
FCC ID :	Q78-ZTEC78
Tx Frequency :	CDMA2000 Cellular : 824 ~ 849 MHz CDMA2000 AWS : 1710 ~ 1755 MHz CDMA2000 PCS : 1850 ~ 1910 MHz Bluetooth : 2400 ~ 2483.5 MHz
Rx Frequency :	CDMA2000 Cellular : 869 ~ 894 MHz CDMA2000 AWS : 2110 ~ 2155 MHz CDMA2000 PCS : 1930 ~ 1990 MHz Bluetooth : 2400 ~ 2483.5 MHz
Maximum Output Power to Antenna :	<CDMA2000 Cellular> FCH_RC1 : 23.99 dBm FCH_RC3 : 23.99 dBm FCH+SCH_RC3 : 23.98 dBm <CDMA2000 AWS> FCH_RC1 : 24.05 dBm FCH_RC3 : 23.96 dBm FCH+SCH_RC3 : 24.06 dBm <CDMA2000 PCS> FCH_RC1 : 24.18 dBm FCH_RC3 : 24.22 dBm FCH+SCH_RC3 : 24.19 dBm
Type of Modulation :	QPSK
Antenna Type :	Fixed Internal
DUT Stage :	Production Unit
Application Type :	Certification

3.2 Basic Description of Equipment under Test

Equipment		ZTE C78 CDMA1X Digital Mobile Phone
Trade Name		ZTE
Model Name		ZTE C78
FCC ID		Q78-ZTEC78
AC Adapter	Brand Name	ZTE
	Model Name	STC-A22O50U5-C
	Power Rating	I/P:100-240Vac, 50-60Hz; O/P:5.0Vdc, 700mA
	AC Power Cord Type	1.8 meter non-shielded cable without ferrite core
Battery	Brand Name	ZTE
	Model Name	Li3709T42P3h553447
	Rating	3.7Vdc, 900mAh
	Type	Li-ion
Earphone	Brand Name	ZTE
	Model Name	P500
	Signal Line Type	1.2 meter non-shielded cable without ferrite core
USB Cable	Brand Name	ZTE
	Model Name	ZX676.12.3012JA.A
	Signal Line Type	1.2 meter shielded cable without ferrite core

Remark: Above EUT's information was declared by manufacturer. Please refer to the specifications of manufacturer or User's Manual for more detailed features description.



3.3 Product Photo

Please refer to Appendix D



3.4 Applied Standards

The Specific Absorption Rate (SAR) testing specification, method and procedure for this ZTE C78 CDMA1X Digital Mobile Phone is in accordance with the following standards:

47 CFR Part 2 (2.1093),

IEEE C95.1-1999,

IEEE C95.3-2002,

IEEE P1528-2003, and

OET Bulletin 65 Supplement C (Edition 01-01)

Preliminary Guidance for Reviewing Applications for Certification of 3G Device. May 2006.

SAR Measurement Procedures for 3G Devices. June 2006.



3.5 Device Category and SAR Limits

This device belongs to portable device category because its radiating structure is allowed to be used within 20 centimeters of the body of the user.

Limit for General Population/Uncontrolled exposure should be applied for this device, it is 1.6 W/kg as averaged over any 1 gram of tissue.

3.6 Test Conditions

3.6.1 Ambient Condition

Item	HSL_850	MSL_850	HSL_1800	MSL_1800	HSL_1900	MSL_1900
Date	Mar. 07, 2008	Jan. 17, 2008	Jan. 12, 2008	Jan. 16, 2008	Mar. 09, 2008	Jan. 16, 2008
Ambient Temperature (°C)	20-24					
Tissue simulating liquid temperature (°C)	21.7	21.3	21.5	21.1	21.4	21
Humidity (%)	<60 %					

3.6.2 Test Configuration

The device was controlled by using a base station emulator R&S CMU200. Communication between the device and the emulator was established by air link. The distance between the DUT and the antenna of the emulator is larger than 50 cm and the output power radiated from the emulator antenna is at least 30 dB smaller than the output power of DUT.

Measurements were performed on the lowest, middle, and highest channel for each testing position for head SAR testing. Measurements were performed only on the middle channel if the SAR is below 3 dB of limit for body SAR testing.

The DUT was set from the emulator to radiate maximum output power during all tests.

For head and body SAR testing, EUT is in CDMA2000 link mode and its crest factor is 1.

4. Specific Absorption Rate (SAR)

4.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

4.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density.

). The equation description is as below:

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

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

SAR measurement can be either related to the temperature elevation in tissue by

$$\mathbf{SAR} = C \frac{\delta T}{\delta t}$$

, where C is the specific heat capacity, δT is the temperature rise and δt the exposure duration,

or related to the electrical field in the tissue by

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

, where σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the rms electrical field strength.

However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

5. SAR Measurement Setup

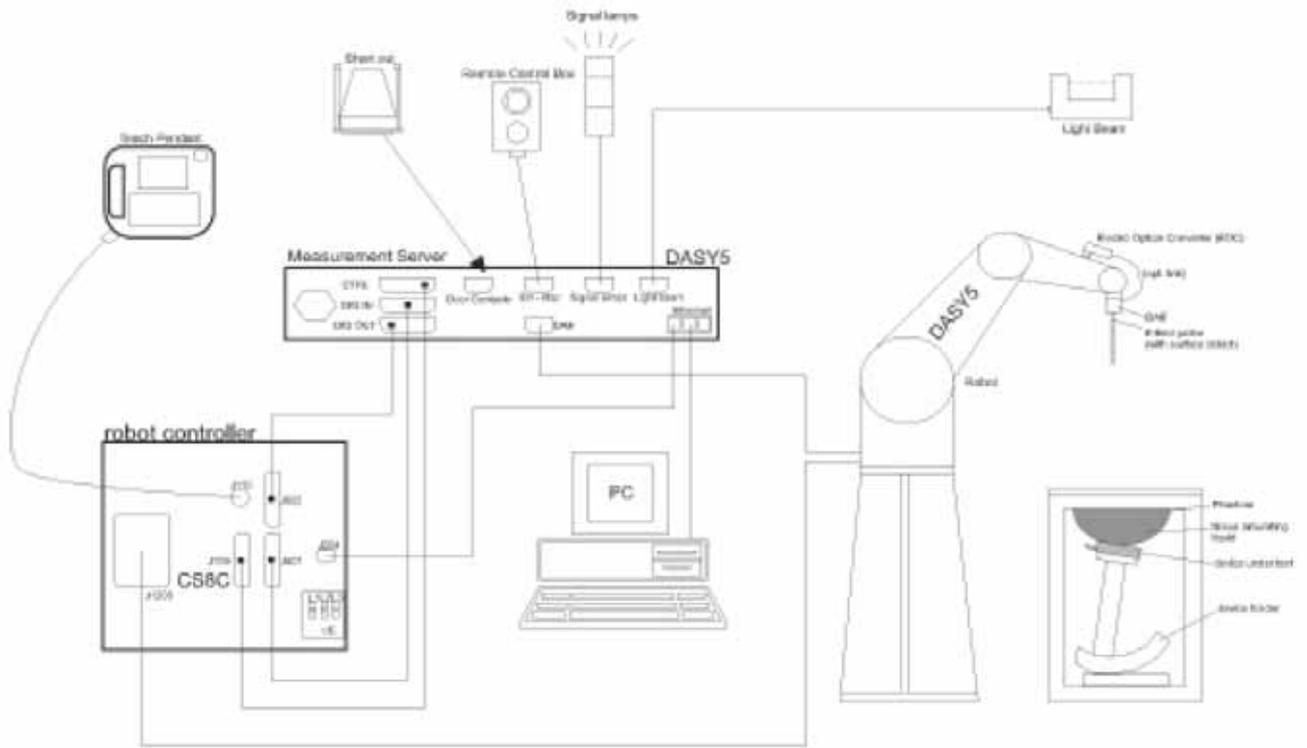


Fig. 5.1 DASY5 System

The DASY5 system for performance compliance tests is illustrated above graphically. This system consists of the following items:

- A standard high precision 6-axis robot with controller, a teach pendant and software
- A data acquisition electronic (DAE) attached to the robot arm extension
- A dosimetric probe equipped with an optical surface detector system
- The electro-optical converter (ECO) performs the conversion between optical and electrical signals
- A measurement server performs the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the accuracy of the probe positioning
- A computer operating Windows XP
- DASY5 software
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom
- A device holder
- Tissue simulating liquid
- Dipole for evaluating the proper functioning of the system

Some of the components are described in details in the following sub-sections.

5.1 DASY5 E-Field Probe System

The SAR measurement is conducted with the dosimetric probe ET3DV6 (manufactured by SPEAG). The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. This probe has a built in optical surface detection system to prevent from collision with phantom.

5.1.1 ET3DV6 E-Field Probe Specification

<ET3DV6>

Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection system Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents)
Frequency	10 MHz to 3 GHz
Directivity	± 0.2 dB in brain tissue (rotation around probe axis) ± 0.4 dB in brain tissue (rotation perpendicular to probe axis)
Dynamic Range	5 µ W/g to 100mW/g; Linearity: ±0.2dB
Surface Detection	± 0.2 mm repeatability in air and clear liquids on reflecting surface
Dimensions	Overall length: 330mm Tip length: 16mm Body diameter: 12mm Tip diameter: 6.8mm Distance from probe tip to dipole centers: 2.7mm
Application	General dosimetry up to 3GHz Compliance tests for mobile phones and Wireless LAN Fast automatic scanning in arbitrary phantoms



Fig. 5.2 Probe Setup on Robot

5.1.2 ET3DV6 E-Field Probe Calibration

Each probe needs to be calibrated according to a dosimetric assessment procedure with accuracy better than ± 10%. The spherical isotropy shall be evaluated and within ± 0.25dB. The sensitivity parameters (NormX, NormY, and NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested. The calibration data are as below:

➤ **ET3DV6 sn1788**

Sensitivity	X axis : 1.72 μ V	Y axis : 1.66 μ V	Z axis : 1.70 μ V	
Diode compression point	X axis : 91 mV	Y axis : 93 mV	Z axis : 94 mV	
Conversion factor (Head / Body)	Frequency (MHz)	X axis	Y axis	Z axis
	800~1000	6.54 / 6.37	6.54 / 6.37	6.54 / 6.37
	1710~1910	5.28 / 4.75	5.28 / 4.75	5.28 / 4.75
Boundary effect (Head / Body)	Frequency (MHz)	Alpha	Depth	
	800~1000	0.22 / 0.28	3.28 / 2.94	
	1710~1910	0.59 / 0.63	2.15 / 2.39	

NOTE:

- The probe parameters have been calibrated by the SPEAG.

5.2 DATA Acquisition Electronics (DAE)

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.

The mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection.

The input impedance of the DAE is 200M Ohm; the inputs are symmetrical and floating. Common mode rejection is above 80dB.

5.3 Robot

The DASY5 system uses the high precision robots TX90 XL type out of the newer series from Stäubli SA (France). For the 6-axis controller DASY5 system, the CS8C robot controller version from Stäubli is used. The XL robot series have many features that are important for our application:

- High precision (repeatability 0.02 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)
- 6-axis controller

5.4 Measurement Server

The DASY5 measurement server is based on a PC/104 CPU board with
400 MHz CPU
128 MB chipdisk and
128 MB RAM.

Communication with
the DAE3 electronic box
the 16-bit AD-converter system for optical detection and digital I/O interface.

The measurement server performs all the real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operations.

5.5 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 head
- Right head
- Flat phantom

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.

A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters.

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 liquid
- *Glycol based liquids

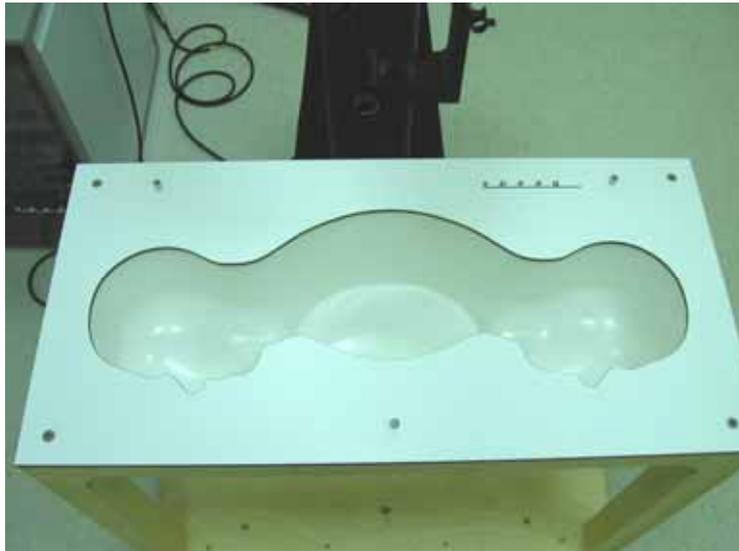


Fig. 5.3 Top View of Twin Phantom



Fig. 5.4 Bottom View of Twin Phantom

5.6 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 5 mm distance, a positioning uncertainty of $\pm 0.5\text{mm}$ would produce a SAR uncertainty of $\pm 20\%$. An accurate device position is therefore crucial for accurate and repeatable measurement. The position in which the devices must be measured, are defined by the standards.

The DASY5 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 centers for both scales is the ear reference point (EPR).

Thus the device needs no repositioning when changing the angles.

The DASY5 device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity $\epsilon_r = 3$ and loss tangent $\delta = 0.02$. 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.



Fig. 5.5 Device Holder

5.7 Data Storage and Evaluation

5.7.1 Data Storage

The DASY5 software stores the assessed data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all the necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files with the extension .DA5. The post-processing software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of erroneous parameter settings. For example, if a measurement has been performed with an incorrect crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be reevaluated.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type (e.g., [V/m], [A/m], [mW/g]). Some of these units are not available in certain situations or give meaningless results, e.g., a SAR-output in a non-lossy media, will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

5.7.2 Data Evaluation

The DASY5 post-processing 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	Norm _i , a _{i0} , a _{i1} , a _{i2}
	- Conversion factor	ConvF _i
	- Diode compression point	dcp _i
Device parameters :	- Frequency	f
	- Crest factor	cf
Media parameters :	- Conductivity	
	- Density	

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 DASY5 components. In the direct measuring mode of the multi-meter 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 $V_i =$ compensated signal of channel i ($i = x, y, z$)
 $U_i =$ input signal of channel i ($i = x, y, z$)
 $cf =$ crest factor of exciting field (DASY parameter)
 $dcp_i =$ diode compression point (DASY parameter)

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

$$\text{E-field probes : } E_i = \sqrt{\frac{V_i}{Norm_i ConvF}}$$

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

with $V_i =$ compensated signal of channel i ($i = x, y, z$)
 $Norm_i =$ sensor sensitivity of channel i ($i = x, y, z$)
 $\mu V/(V/m)^2$ for E-field Probes
 $ConvF =$ sensitivity enhancement in solution
 $a_{ij} =$ sensor sensitivity factors for H-field probes
 $f =$ carrier frequency [GHz]
 $E_i =$ electric field strength of channel i in V/m
 $H_i =$ magnetic field strength of channel i in A/m

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.

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

with $SAR =$ local specific absorption rate in mW/g
 $E_{tot} =$ total field strength in V/m
 $=$ conductivity in [mho/m] or [Siemens/m]
 $=$ equivalent tissue density in g/cm³

* Note that the density is set to 1, to account for actual head tissue density rather than the density of the tissue simulating liquid.

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



$$P_{pwe} = \frac{E_{tot}^2}{3770} \quad \text{or} \quad P_{pwe} = H_{tot}^2 \cdot 37.7$$

with P_{pwe} = equivalent power density of a plane wave in mW/cm²
 E_{tot} = total electric field strength in V/m
 H_{tot} = total magnetic field strength in A/m



5.8 Test Equipment List

Manufacture	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	Dosimetric E-Filed Probe	ET3DV6	1788	Sep. 26, 2007	Sep. 26, 2008
SPEAG	835MHz System Validation Kit	D835V2	499	Mar. 15, 2006	Mar. 15, 2008
SPEAG	1800MHz System Validation Kit	D1800V2	2d076	Jul. 10, 2007	Jul. 10, 2009
SPEAG	1900MHz System Validation Kit	D1900V2	5d041	Mar. 21, 2006	Mar. 21, 2008
SPEAG	Data Acquisition Electronics	DAE3	577	Nov. 16, 2007	Nov. 16, 2008
SPEAG	Device Holder	N/A	N/A	NCR	NCR
SPEAG	ELI4 Phantom	QD 0VA 001 BB	1029	NCR	NCR
SPEAG	Twin Phantom	QD 000 P40 CB	TP-1446	NCR	NCR
SPEAG	Robot	Staubli TX90 XL	F07/554JA1/A/01	NCR	NCR
SPEAG	Software	DASY5 V5.0 Build 91	N/A	NCR	NCR
SPEAG	Software	SEMCAD X V12.4 Build 52	N/A	NCR	NCR
SPEAG	Measurement Server	SE UMS 011 AA	1014	NCR	NCR
Agilent	ENA Series Network Analyzer	E5071B	MY42403579	Mar. 29, 2007	Mar. 29, 2008
Agilent	Wireless Communication Test Set	E5515C	GB46311322	Dec. 22, 2006	Dec. 22, 2008
Agilent	Dielectric Probe Kit	85070D	US01440205	NCR	NCR
Agilent	Dual Directional Coupler	778D	50422	NCR	NCR
Agilent	Power Amplifier	8449B	3008A01917	NCR	NCR
Agilent	Power Meter	E4416A	GB41292344	Feb. 21, 2008	Feb. 20, 2009
Agilent	Power Sensor	E9327A	US40441548	Feb. 21, 2008	Feb. 20, 2009

Table 5.1 Test Equipment List

6. Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY5, the phantom must be filled with around 25 liters of homogeneous tissue simulating liquid. The liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is (head SAR) or from the flat phantom to the liquid top surface (body SAR) is 15.2cm.

The following ingredients for tissue simulating liquid are used:

- **Water:** deionized water (pure H₂O), resistivity 16M - as basis for the liquid
- **Sugar:** refined sugar in crystals, as available in food shops – to reduce relative permittivity
- **Salt:** pure NaCl – to increase conductivity
- **Cellulose:** Hydroxyethyl-cellulose, medium viscosity (75-125 mPa.s, 2% in water, 20°C), CAS#54290-to increase viscosity and to keep sugar in solution.
- **Preservative:** Preventol D-7 Bayer AG, D-51368 Leverkusen, CAS#55965-84-9- to prevent the spread of bacteria and molds.
- **DGMBE:** Deithlenglycol-monobuthyl ether (DGMBE), Fluka Chemie GmbH, CAS#112-34-5 – to reduce relative permittivity.

Table 6.1 gives the recipes for one liter of head and body tissue simulating liquid.

Ingredient	HSL-850	MSL_850	HSL-1800	MSL-1800	HSL-1900	MSL-1900
Water	532.98 g	631.68 g	552.42 g	716.56 g	552.42 g	716.56 g
Cellulose	0 g	0 g	0 g	0 g	0 g	0 g
Salt	18.3 g	11.72 g	3.06 g	4.0 g	3.06 g	4.0 g
Preventol D-7	2.4 g	1.2 g	0 g	0 g	0 g	0 g
Sugar	766.0 g	600.0 g	0 g	0 g	0 g	0 g
DGMBE	0 g	0 g	444.52 g	300.67 g	444.52 g	300.67 g
Total amount	1 liter (1.3 kg)	1 liter (1.3 kg)	1 liter (1.0 kg)	1 liter (1.0 kg)	1 liter (1.0 kg)	1 liter (1.0 kg)
Dielectric Parameters at 22°	f = 835 MHz ε _r = 41.5±5%, σ = 0.90±5% S/m	f=835 MHz ε _r = 55.2±5%, σ = 0.97±5% S/m	f= 1800 MHz ε _r = 40.0±5%, σ = 1.4±5% S/m	f= 1800 MHz ε _r = 53.3±5 %, σ = 1.52±5% S/m	f= 1900 MHz ε _r = 40.0±5%, σ = 1.4±5% S/m	f= 1900 MHz ε _r = 53.3±5 %, σ = 1.52±5% S/m

Table 6.1 Recipes for Tissue Simulating Liquid

The dielectric parameters of the liquids were verified prior to the SAR evaluation using an Agilent 85070D Dielectric Probe Kit and an Agilent Network Analyzer.

Table 6.2 shows the measuring results for head and muscle simulating liquid.

Bands	Position	Frequency (MHz)	Permittivity (ϵ_r)	Conductivity (σ)	Measurement Date
CDMA2000 Cellular 850 (824 ~ 849 MHz)	Head	824.70	40.9	0.904	Mar. 07, 2008
		836.52	40.9	0.915	
		848.31	40.7	0.923	
	Body	824.70	56.3	0.956	Mar. 11, 2008
		836.52	56.3	0.967	
		848.31	56.1	0.976	
CDMA2000 AWS 1700 (1710 ~ 1755 MHz)	Head	1711.25	38.9	1.35	Mar. 09, 2008
		1732.50	38.9	1.36	
		1753.75	38.7	1.38	
	Body	1711.25	52.4	1.49	Mar. 10, 2008
		1732.50	52.6	1.52	
		1753.75	52.6	1.54	
CDMA2000 PCS 1900 (1850 ~ 1910 MHz)	Head	1851.25	38.8	1.37	Mar. 09, 2008
		1880.00	38.7	1.40	
		1908.75	38.6	1.43	
	Body	1851.25	50.9	1.47	Mar. 10, 2008
		1880.00	50.9	1.50	
		1908.75	50.8	1.53	

Table 6.2 Measuring Results for Muscle Simulating Liquid

The measuring data are consistent with $\epsilon_r = 41.5 \pm 5\%$ and $\sigma = 0.90 \pm 5\%$ for head Cellular band, $\epsilon_r = 55.2 \pm 5\%$ and $\sigma = 0.97 \pm 5\%$ for body Cellular band, $\epsilon_r = 40.0 \pm 5\%$ and $\sigma = 1.40 \pm 5\%$ for head AWS and PCS band and $\epsilon_r = 53.3 \pm 5\%$ and $\sigma = 1.52 \pm 5\%$ for body AWS and PCS band.

7. Uncertainty Assessment

The component of uncertainty may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainty by the statistical analysis of a series of observations is termed a Type A evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience and knowledge of the behavior and properties of relevant materials and instruments, manufacture’s specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in Table 7.1

Uncertainty Distributions	Normal	Rectangular	Triangular	U-shape
Multiplying factor^(a)	1/k ^(b)	1/ 3	1/ 6	1/ 2

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity

(b) is the coverage factor

Table 7.1 Multiplying Factions for Various Distributions

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual “root-sum-squares” (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY5 uncertainty Budget is showed in Table 7.2.



Error Description	Uncertainty Value ± %	Probability Distribution	Divisor	Ci (1g)	Standard Unc. (1g)	vi or Veff
Measurement Equipment						
Probe Calibration	±5.9 %	Normal	1	1	±5.9 %	∞
Axial Isotropy	±4.7 %	Rectangular	√3	0.7	±1.9 %	∞
Hemispherical Isotropy	±9.6 %	Rectangular	√3	0.7	±3.9 %	∞
Boundary Effects	±1.0 %	Rectangular	√3	1	±0.6 %	∞
Linearity	±4.7 %	Rectangular	√3	1	±2.7 %	∞
System Detection Limits	±1.0 %	Rectangular	√3	1	±0.6 %	∞
Readout Electronics	±0.3 %	Normal	1	1	±0.3 %	∞
Response Time	±0.8 %	Rectangular	√3	1	±0.5 %	∞
Integration Time	±2.6 %	Rectangular	√3	1	±1.5 %	∞
RF Ambient Noise	±3.0 %	Rectangular	√3	1	±1.7 %	∞
RF Ambient Reflections	±3.0 %	Rectangular	√3	1	±1.7 %	∞
Probe Positioner	±0.4 %	Rectangular	√3	1	±0.2 %	∞
Probe Positioning	±2.9 %	Rectangular	√3	1	±1.7 %	∞
Max. SAR Eval.	±1.0 %	Rectangular	√3	1	±0.6 %	∞
Test Sample Related						
Device Positioning	±2.9 %	Normal	1	1	±2.9	145
Device Holder	±3.6 %	Normal	1	1	±3.6	5
Power Drift	±5.0 %	Rectangular	√3	1	±2.9	∞
Phantom and Setup						
Phantom Uncertainty	±4.0 %	Rectangular	√3	1	±2.3	∞
Liquid Conductivity (target)	±5.0 %	Rectangular	√3	0.64	±1.8	∞
Liquid Conductivity (meas.)	±2.5 %	Normal	1	0.64	±1.6	∞
Liquid Permittivity (target)	±5.0 %	Rectangular	√3	0.6	±1.7	∞
Liquid Permittivity (meas.)	±2.5 %	Normal	1	0.6	±1.5	∞
Combined Standard Uncertainty					±10.9	387
Coverage Factor for 95 %		K=2				
Expanded uncertainty (Coverage factor = 2)					±21.9	

Table 7.2 Uncertainty Budget of DASY5

8. SAR Measurement Evaluation

Each DASY5 system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the DASY5 software, enable the user to conduct the system performance check and system validation. System validation kit includes a dipole, tripod holder to fix it underneath the flat phantom and a corresponding distance holder.

8.1 Purpose of System Performance Check

The system performance check verifies that the system operates within its specifications. System and operator errors can be detected and corrected. It is recommended that the system performance check be performed prior to any usage of the system in order to guarantee reproducible results. The system performance check uses normal SAR measurements in a simplified setup with a well characterized source. This setup was selected to give a high sensitivity to all parameters that might fail or vary over time. The system check does not intend to replace the calibration of the components, but indicates situations where the system uncertainty is exceeded due to drift or failure.

8.2 System Setup

In the simplified setup for system evaluation, the DUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave which comes from a signal generator at frequency 835MHz, 1800MHz and 1900MHz. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The equipment setup is shown below:

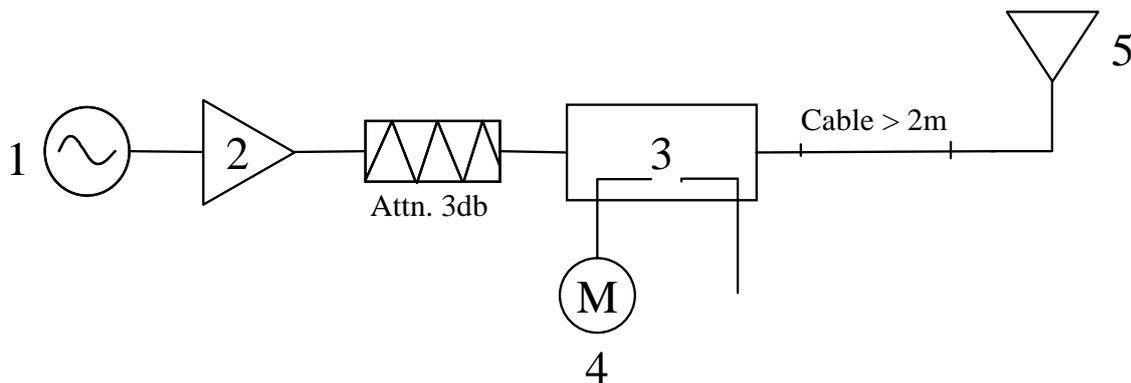


Fig. 8.1 System Evaluation Setup

1. Signal Generator
2. Amplifier
3. Directional Coupler
4. Power Meter
5. 835 MHz or 1800 MHz or 1900 MHz Dipole

The output power on dipole port must be calibrated to 20dBm (100mW) before dipole is connected.



Fig 8.2 Dipole Setup



8.3 Validation Results

Comparing to the original SAR value provided by SPEAG, the validation data should be within its specification of 10 %. Table 8.1 shows the target SAR and measured SAR after normalized to 1W input power.

Band	Position	SAR	Target (W/kg)	Measurement data (W/kg)	Variation	Measurement Date
Cellular (835MHz)	Head	SAR (1g)	9.24	9.13	-1.2 %	Mar. 07, 2008
		SAR (10g)	6.07	6.06	-0.2 %	
	Body	SAR (1g)	9.91	9.67	-2.4 %	Mar. 11, 2008
		SAR (10g)	6.55	6.38	-2.6 %	
AWS (1800MHz)	Head	SAR (1g)	37.2	40	7.5 %	Mar. 09, 2008
		SAR (10g)	20	20.9	4.5 %	
	Body	SAR (1g)	38.5	39.5	2.6 %	Mar. 10, 2008
		SAR (10g)	20.9	21.1	1.0 %	
PCS (1900MHz)	Head	SAR (1g)	38.4	39.9	3.9 %	Mar. 09, 2008
		SAR (10g)	20.5	21.3	3.9 %	
	Body	SAR (1g)	41.1	40.4	-1.7 %	Mar. 10, 2008
		SAR (10g)	21.8	21.4	-1.8 %	

Table 8.1 Target and Measurement Data Comparison

The table above indicates the system performance check can meet the variation criterion.

9. Description for DUT Testing Position

This DUT was tested in 6 different positions. They are right cheek, right tilted, left cheek, left tilted, body worn with front face and body worn with rear face as illustrated below:

- 1) “Cheek Position”
 - i) To position the device with the vertical center line of the body of the device and the horizontal line crossing the center piece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane containing the three ear and mouth reference point (M, RE and LE) and align the center of the ear piece with the line RE-LE.
 - ii) To move the device towards the phantom with the ear piece aligned with the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with the ear, move the bottom of the phone until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost (see Fig. 9.1).

- 2) “Tilted Position”
 - i) To position the device in the “cheek” position described above.
 - ii) While maintaining the device the reference plane described above and pivoting against the ear, move it outward away from the mouth by an angle of 15 degrees or until contact with the ear is lost (see Fig. 9.2).

- 3) “Body Worn”
 - i) To position the device parallel to the phantom surface.
 - ii) To adjust the phone parallel to the flat phantom.
 - iii) To adjust the distance between the EUT surface and the flat phantom to 1.5 cm.

Remark: Please refer to Appendix E for the test setup photo.

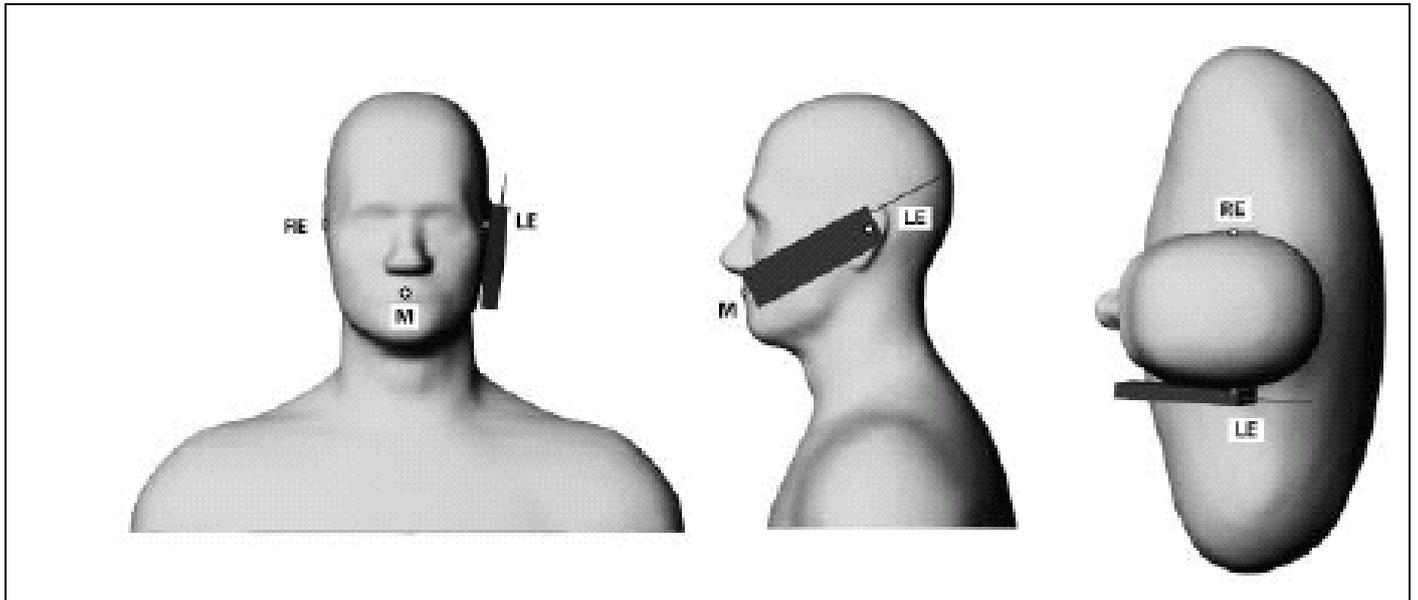


Fig. 9.1 Phone Position 1, “Cheek” or “Touch” Position. The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the plane for phone positioning, are indicated.

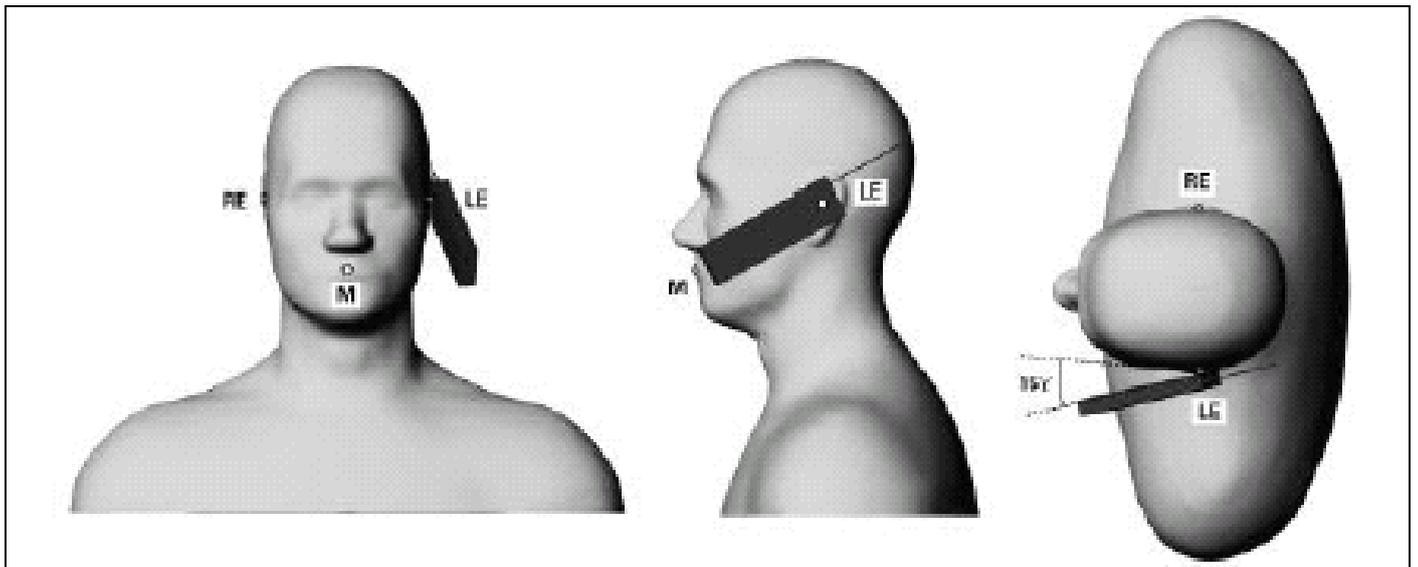


Fig. 9.2 Phone Position 2, “Tilted Position”. The reference point for the right ear (RE), left ear (LE) and mouth (M), which define the plane for phone positioning, are indicated.

10. Measurement Procedures

The measurement procedures are as follows:

- Linking DUT with base station emulator CMU200 in middle channel
- Setting CMU200 to allow DUT to radiate maximum output power
- Measuring output power through RF cable and power meter
- Placing the DUT in the positions described in the last section
- Setting scan area, grid size and other setting on the DASY5 software
- Taking data for the lowest, middle, and highest channel on each testing position

According to the IEEE P1528 draft standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

- Power reference measurement
- Area scan
- Zoom scan
- Power reference measurement

10.1 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the IEEE1528-2003 standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY5 software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

Base on the Draft: SCC-34, SC-2, WG-2-Computational Dosimetry, IEEE P1528/D1.2 (Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques), a new algorithm has been implemented. The spatial-peak SAR can be computed over any required mass.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose , the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

- extraction of the measured data (grid and values) from the Zoom Scan
- calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
- generation of a high-resolution mesh within the measured volume

- interpolation of all measured values form the measurement grid to the high-resolution grid
- extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
- calculation of the averaged SAR within masses of 1g and 10g



10.2 Scan Procedures

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan measures 5x5x7 points with step size 8, 8 and 5 mm. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 1 g.

10.3 SAR Averaged Methods

In DASY5, the interpolation and extrapolation are both based on the modified Quadratic Shepard's method. The interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation.

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5 mm.

10.4 FCC 3G Policy

Sample pre-testing of the various modes were performed and chose the worst case as part of subset testing justification.



11. SAR Test Results

11.1 Right Cheek

Band	Mode	Chan.	Freq (MHz)	Modulation Type	Conducted Power (dBm)	Power Drift (dB)	Measured 1g SAR (W/kg)	Limit (W/kg)	Results
CDMA2000 Cellular	FCH RC1	1013	824.70	QPSK	23.99	-0.173	0.642	1.6	Pass
		384	836.52	QPSK	23.73	0.00936	0.802	1.6	Pass
		777	848.31	QPSK	23.9	-0.143	0.581	1.6	Pass
	FCH RC3	1013	824.70	QPSK	23.99	-0.03	0.645	1.6	Pass
		384	836.52	QPSK	23.82	0.068	0.83	1.6	Pass
		777	848.31	QPSK	23.97	0.015	0.584	1.6	Pass
CDMA2000 AWS	FCH RC1	25	1711.25	QPSK	23.98	-	-	-	-
		450	1732.50	QPSK	24.05	-0.102	0.033	1.6	Pass
		875	1753.75	QPSK	23.95	-	-	-	-
	FCH RC3	25	1711.25	QPSK	23.88	-	-	-	-
		450	1732.50	QPSK	23.96	-0.199	0.032	1.6	Pass
		875	1753.75	QPSK	23.89	-	-	-	-
CDMA2000 PCS	FCH RC1	25	1851.25	QPSK	24.16	-	-	-	-
		600	1880.00	QPSK	23.75	-0.16	0.591	1.6	Pass
		1175	1908.75	QPSK	24.18	-	-	-	-
	FCH RC3	25	1851.25	QPSK	24.08	-	-	-	-
		600	1880.00	QPSK	23.69	0.032	0.599	1.6	Pass
		1175	1908.75	QPSK	24.22	-	-	-	-

11.2 Right Tilted

Band	Mode	Chan.	Freq (MHz)	Modulation Type	Conducted Power (dBm)	Power Drift (dB)	Measured 1g SAR (W/kg)	Limit (W/kg)	Results
CDMA2000 Cellular	FCH RC3	1013	824.70	QPSK	23.99	-	-	-	-
		384	836.52	QPSK	23.82	0.042	0.474	1.6	Pass
		777	848.31	QPSK	23.97	-	-	-	-
CDMA2000 AWS	FCH RC1	25	1711.25	QPSK	23.98	-	-	-	-
		450	1732.50	QPSK	24.05	-0.111	0.00834	1.6	Pass
		875	1753.75	QPSK	23.95	-	-	-	-
CDMA2000 PCS	FCH RC3	25	1851.25	QPSK	24.08	-	-	-	-
		600	1880.00	QPSK	23.69	0.093	0.218	1.6	Pass
		1175	1908.75	QPSK	24.22	-	-	-	-



11.3 Left Cheek

Band	Mode	Chan.	Freq (MHz)	Modulation Type	Conducted Power (dBm)	Power Drift (dB)	Measured 1g SAR (W/kg)	Limit (W/kg)	Results
CDMA2000 Cellular	FCH RC3	1013	824.70	QPSK	23.99	-0.019	0.755	1.6	Pass
		384	836.52	QPSK	23.82	0.025	0.994	1.6	Pass
		777	848.31	QPSK	23.97	-0.041	0.695	1.6	Pass
	FCH RC3 with BT on	384	836.52	QPSK	23.82	-0.182	0.967	1.6	Pass
CDMA2000 AWS	FCH RC1	25	1711.25	QPSK	23.98	-0.115	0.0363	1.6	Pass
		450	1732.50	QPSK	24.05	0.188	0.056	1.6	Pass
		875	1753.75	QPSK	23.95	-0.06	0.122	1.6	Pass
	FCH RC1 with BT on	875	1753.75	QPSK	23.95	-0.138	0.097	1.6	Pass
CDMA2000 PCS	FCH RC3	25	1851.25	QPSK	24.08	0.059	0.827	1.6	Pass
		600	1880.00	QPSK	23.69	-0.125	0.844	1.6	Pass
		1175	1908.75	QPSK	24.22	-0.128	0.806	1.6	Pass
	FCH RC3 with BT on	1175	1908.75	QPSK	24.22	0.154	0.985	1.6	Pass

11.4 Left Tilted

Band	Mode	Chan.	Freq (MHz)	Modulation Type	Conducted Power (dBm)	Power Drift (dB)	Measured 1g SAR (W/kg)	Limit (W/kg)	Results
CDMA2000 Cellular	FCH RC3	1013	824.70	QPSK	23.99	-	-	-	-
		384	836.52	QPSK	23.82	0.038	0.505	1.6	Pass
		777	848.31	QPSK	23.97	-	-	-	-
CDMA2000 AWS	FCH RC1	25	1711.25	QPSK	23.98	-	-	-	-
		450	1732.50	QPSK	24.05	0.144	0.00844	1.6	Pass
		875	1753.75	QPSK	23.95	-	-	-	-
CDMA2000 PCS	FCH RC3	25	1851.25	QPSK	24.08	-	-	-	-
		600	1880.00	QPSK	23.69	0.067	0.209	1.6	Pass
		1175	1908.75	QPSK	24.22	-	-	-	-



11.5 Front face with 1.5cm Gap

Band	Mode	Chan.	Freq (MHz)	Modulation Type	Conducted Power (dBm)	Power Drift (dB)	Measured 1g SAR (W/kg)	Limit (W/kg)	Results
CDMA2000 Cellular	FCH RC1	1013	824.70	QPSK	23.99	-	-	-	-
		384	836.52	QPSK	23.73	0.047	0.624	1.6	Pass
		777	848.31	QPSK	23.9	-	-	-	-
	FCH RC3	1013	824.70	QPSK	23.99	-	-	-	-
		384	836.52	QPSK	23.82	-0.132	0.643	1.6	Pass
		777	848.31	QPSK	23.97	-	-	-	-
	FCH + SCH RC3	1013	824.70	QPSK	23.98	-0.153	0.484	1.6	Pass
		384	836.52	QPSK	23.75	0.069	0.649	1.6	Pass
		777	848.31	QPSK	23.9	-0.054	0.506	1.6	Pass
	FCH + SCH RC3 with BT on	384	836.52	QPSK	23.75	0.039	0.679	1.6	Pass
CDMA2000 AWS	FCH RC1	25	1711.25	QPSK	23.98	-	-	-	-
		450	1732.50	QPSK	24.05	-0.117	0.016	1.6	Pass
		875	1753.75	QPSK	23.95	-	-	-	-
	FCH RC3	25	1711.25	QPSK	23.88	-0.182	0.012	1.6	Pass
		450	1732.50	QPSK	23.96	-0.168	0.016	1.6	Pass
		875	1753.75	QPSK	23.89	-0.024	0.026	1.6	Pass
	FCH RC3 with BT on	875	1753.75	QPSK	23.89	-0.131	0.024	1.6	Pass
	FCH + SCH RC3	25	1711.25	QPSK	23.84	-	-	-	-
		450	1732.50	QPSK	24.06	-0.125	0.016	1.6	Pass
		875	1753.75	QPSK	24	-	-	-	-
CDMA2000 PCS	FCH RC1	25	1851.25	QPSK	24.08	-	-	-	-
		600	1880.00	QPSK	23.69	-0.124	0.218	1.6	Pass
		1175	1908.75	QPSK	24.22	-	-	-	-
	FCH RC3	25	1851.25	QPSK	24.08	-	-	-	-
		600	1880.00	QPSK	23.69	-0.126	0.226	1.6	Pass
		1175	1908.75	QPSK	24.22	-	-	-	-
	FCH + SCH RC3	25	1851.25	QPSK	24.12	0.031	0.21	1.6	Pass
		600	1880.00	QPSK	23.74	-0.1	0.227	1.6	Pass
		1175	1908.75	QPSK	24.19	-0.197	0.174	1.6	Pass
	FCH + SCH RC3 with BT on	600	1880.00	QPSK	23.74	-0.04	0.209	1.6	Pass



11.6 Rear face with 1.5cm Gap

Band	Mode	Chan.	Freq (MHz)	Modulation Type	Conducted Power (dBm)	Power Drift (dB)	Measured 1g SAR (W/kg)	Limit (W/kg)	Results
CDMA2000 Cellular	FCH RC1	1013	824.70	QPSK	23.99	-	-	-	-
		384	836.52	QPSK	23.73	-0.156	0.618	1.6	Pass
		777	848.31	QPSK	23.9	-	-	-	-
CDMA2000 AWS	FCH RC1	25	1711.25	QPSK	23.98	-	-	-	-
		450	1732.50	QPSK	24.05	-0.18	0.00704	1.6	Pass
		875	1753.75	QPSK	23.95	-	-	-	-
CDMA2000 PCS	FCH RC1	25	1851.25	QPSK	24.16	-	-	-	-
		600	1880.00	QPSK	23.75	-0.017	0.164	1.6	Pass
		1175	1908.75	QPSK	24.18	-	-	-	-

Test Engineer : Jason Wang, Robert Liu



12. Reference

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- [2] IEEE Std. P1528-2003, “Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, April 21, 2003
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- [4] IEEE Std. C95.3-2002, “IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields-RF and Microwave”, 2002
- [5] IEEE Std. C95.1-1999, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, 1999
- [6] Robert J. Renka, “Multivariate Interpolation Of Large Sets Of Scattered Data”, University of North Texas ACM Transactions on Mathematical Software, vol. 14, no. 2, June 1988, pp. 139-148
- [7] DASY5 System Handbook

Appendix A - System Performance Check Data

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/7

System Check_Head_850MHz

DUT: Dipole 835 MHz

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL_850 Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.913 \text{ mho/m}$; $\epsilon_r = 40.9$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature : 22.4 °C; Liquid Temperature : 21.7 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(6.54, 6.54, 6.54); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Pin=100mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.988 mW/g

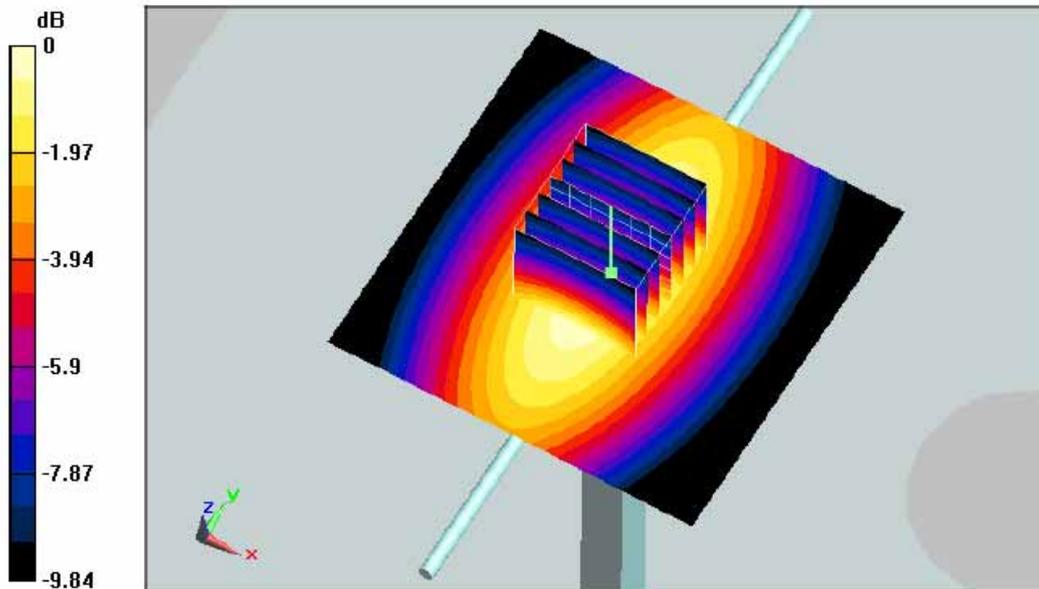
Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 34 V/m; Power Drift = 0.017 dB

Peak SAR (extrapolated) = 1.34 W/kg

SAR(1 g) = 0.913 mW/g; SAR(10 g) = 0.606 mW/g

Maximum value of SAR (measured) = 0.982 mW/g



0 dB = 0.982mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/9

System Check_Head_1800MHz

DUT: Dipole 1800 MHz

Communication System: CW; Frequency: 1800 MHz; Duty Cycle: 1:1

Medium: HSL_1800 Medium parameters used: $f = 1800 \text{ MHz}$; $\sigma = 1.44 \text{ mho/m}$; $\epsilon_r = 38.3$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature : 22.5 °C; Liquid Temperature : 21.5 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.28, 5.28, 5.28); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Pin=100mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 4.59 mW/g

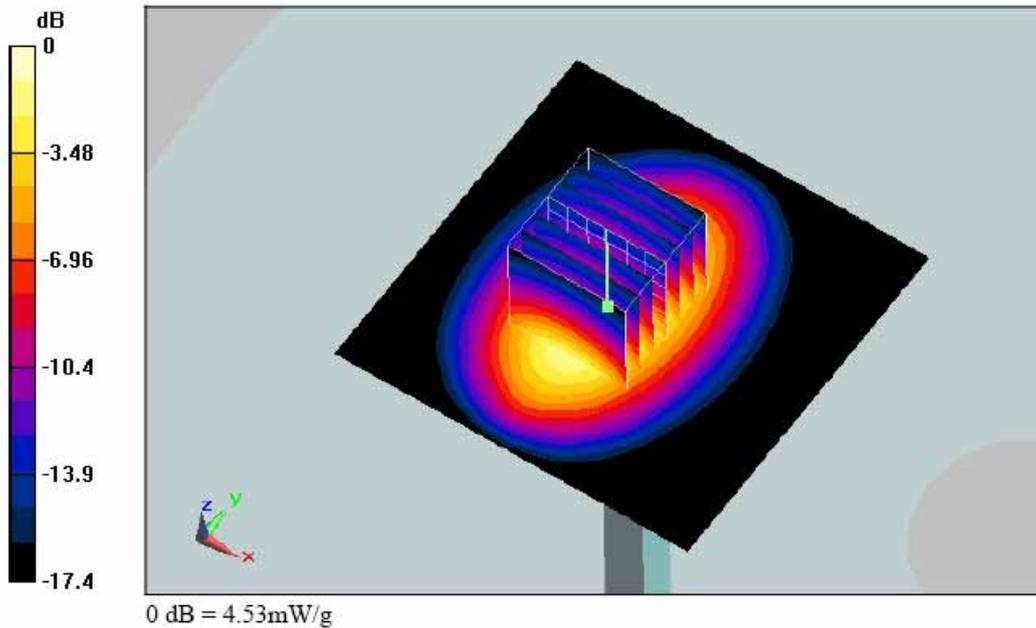
Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 56.5 V/m; Power Drift = 0.00792 dB

Peak SAR (extrapolated) = 7.21 W/kg

SAR(1 g) = 4 mW/g; SAR(10 g) = 2.09 mW/g

Maximum value of SAR (measured) = 4.53 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/9

System Check_Head_1900MHz

DUT: Dipole 1900 MHz

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL_1900 Medium parameters used: $f = 1900$ MHz; $\sigma = 1.42$ mho/m; $\epsilon_r = 38.6$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.6 °C; Liquid Temperature : 21.4 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.28, 5.28, 5.28); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Pin=100mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 4.59 mW/g

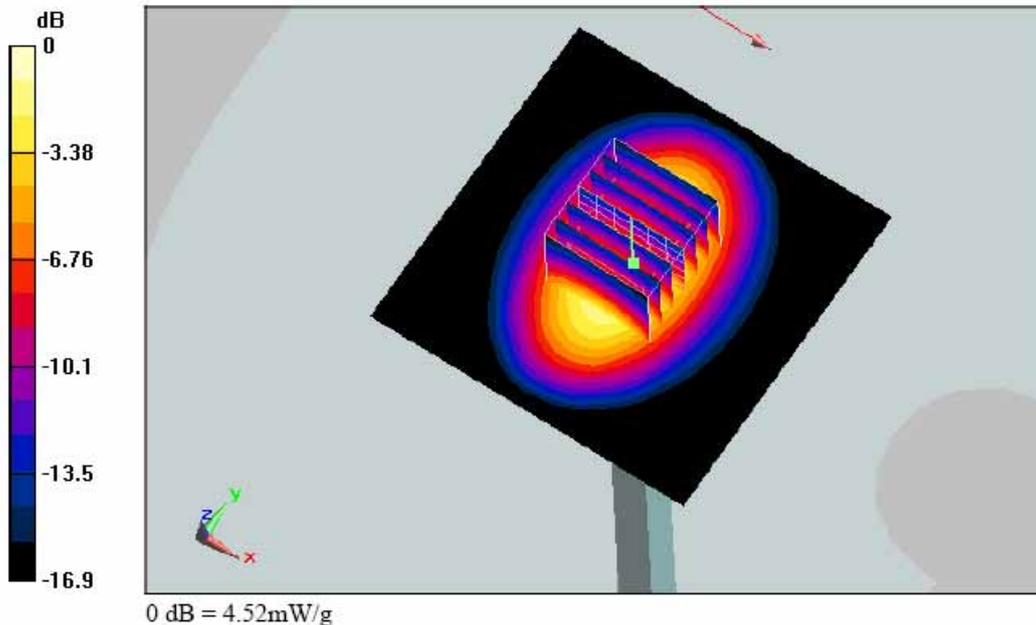
Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 59.2 V/m; Power Drift = 0.019 dB

Peak SAR (extrapolated) = 6.96 W/kg

SAR(1 g) = 3.99 mW/g; SAR(10 g) = 2.13 mW/g

Maximum value of SAR (measured) = 4.52 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/11

System Check_Body_835MHz

DUT: Dipole 835 MHz

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: MSL_850 Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.965 \text{ mho/m}$; $\epsilon_r = 56.3$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature : 22.7 °C; Liquid Temperature : 21.3 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(6.37, 6.37, 6.37); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Pin=100mW/Area Scan (41x41x1): Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.947 mW/g

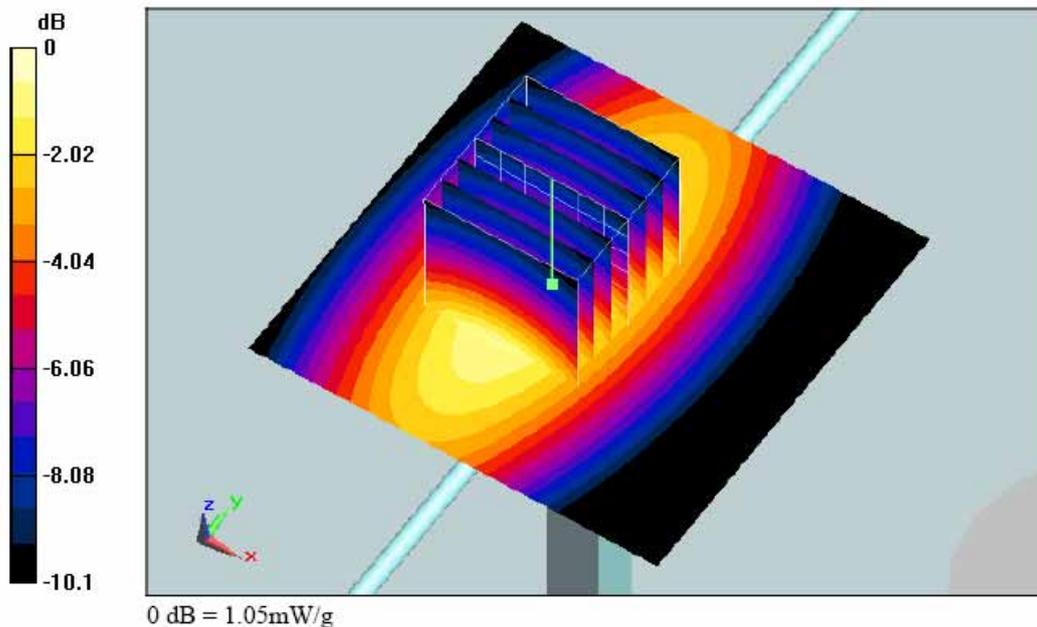
Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 31.1 V/m; Power Drift = -0.023 dB

Peak SAR (extrapolated) = 1.39 W/kg

SAR(1 g) = 0.967 mW/g; SAR(10 g) = 0.638 mW/g

Maximum value of SAR (measured) = 1.05 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/10

System Check_Body_1800MHz

DUT: Dipole 1800 MHz

Communication System: CW; Frequency: 1800 MHz; Duty Cycle: 1:1

Medium: MSL_1800 Medium parameters used: $f = 1800 \text{ MHz}$; $\sigma = 1.58 \text{ mho/m}$; $\epsilon_r = 52.2$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature : 22.4 °C; Liquid Temperature : 21.1 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.75, 4.75, 4.75); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Pin=100mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 4.91 mW/g

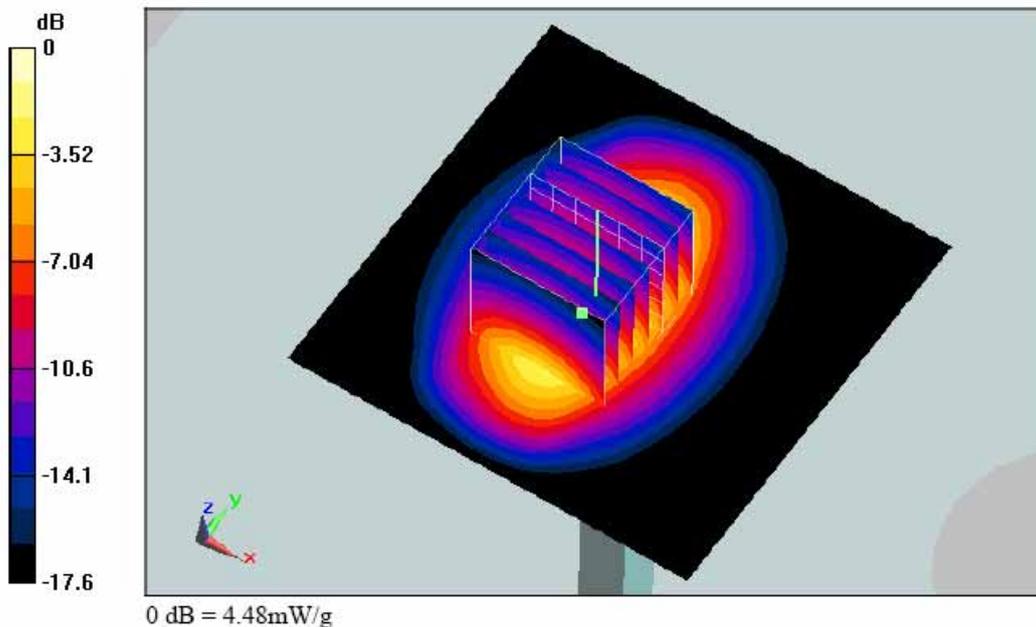
Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 52.9 V/m; Power Drift = -0.123 dB

Peak SAR (extrapolated) = 6.71 W/kg

SAR(1 g) = 3.95 mW/g; SAR(10 g) = 2.11 mW/g

Maximum value of SAR (measured) = 4.48 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/10

System Check_Body_1900MHz

DUT: Dipole 1900 MHz

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: MSL_1900 Medium parameters used: $f = 1900 \text{ MHz}$; $\sigma = 1.52 \text{ mho/m}$; $\epsilon_r = 50.8$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature : 21.8 °C; Liquid Temperature : 21.0 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.75, 4.75, 4.75); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Pin=100mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 4.73 mW/g

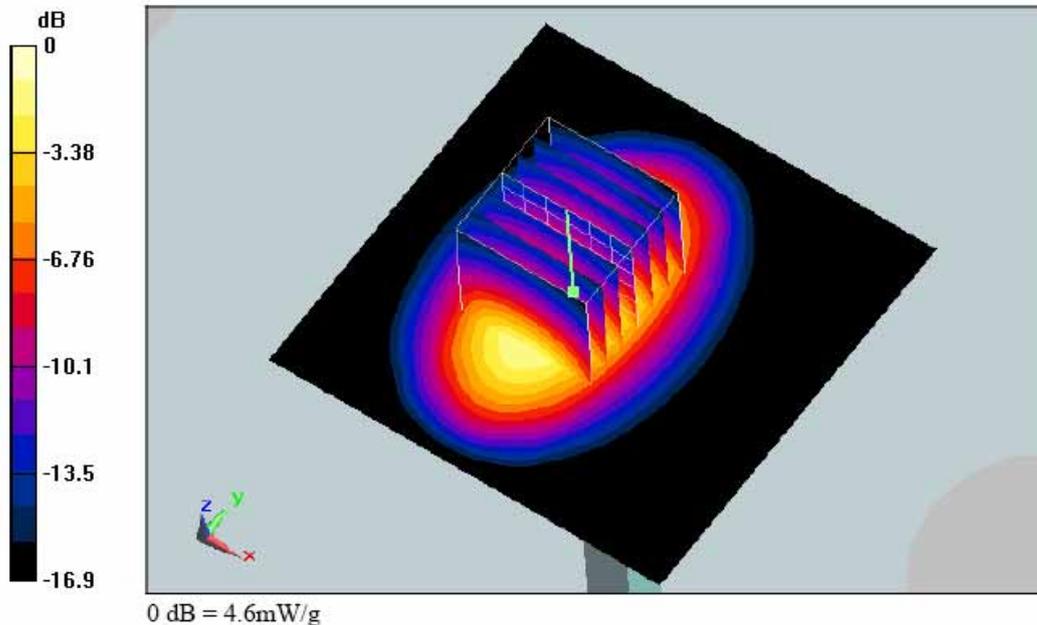
Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 52.7 V/m; Power Drift = -0.00983 dB

Peak SAR (extrapolated) = 6.97 W/kg

SAR(1 g) = 4.04 mW/g; SAR(10 g) = 2.14 mW/g

Maximum value of SAR (measured) = 4.6 mW/g



Appendix B - SAR Measurement Data

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/7

Right Cheek_CDMA850 Ch384_RC1

DUT: 830102

Communication System: CDMA ; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: HSL_850 Medium parameters used: $f = 837$ MHz; $\sigma = 0.915$ mho/m; $\epsilon_r = 40.9$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.4 °C; Liquid Temperature : 21.7 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(6.54, 6.54, 6.54); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch384/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.853 mW/g

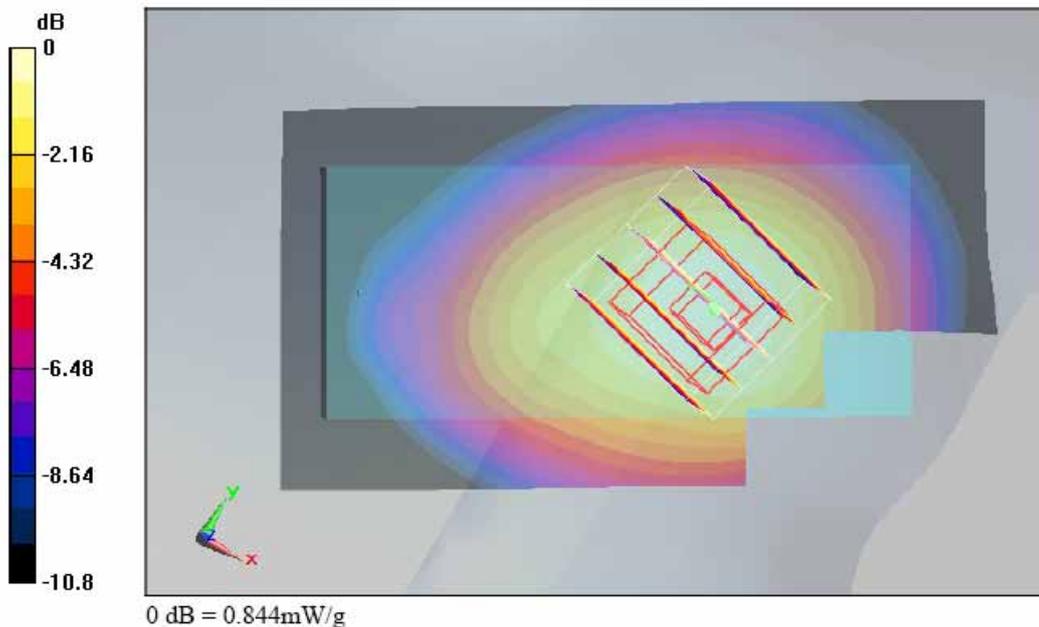
Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.7 V/m; Power Drift = 0.00936 dB

Peak SAR (extrapolated) = 1.09 W/kg

SAR(1 g) = 0.802 mW/g; SAR(10 g) = 0.563 mW/g

Maximum value of SAR (measured) = 0.844 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/7

Right Cheek_CDMA850 Ch384_RC3**DUT: 830102**

Communication System: CDMA ; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: HSL_850 Medium parameters used: $f = 837$ MHz; $\sigma = 0.915$ mho/m; $\epsilon_r = 40.9$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.6 °C; Liquid Temperature : 21.7 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(6.54, 6.54, 6.54); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch384/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.863 mW/g

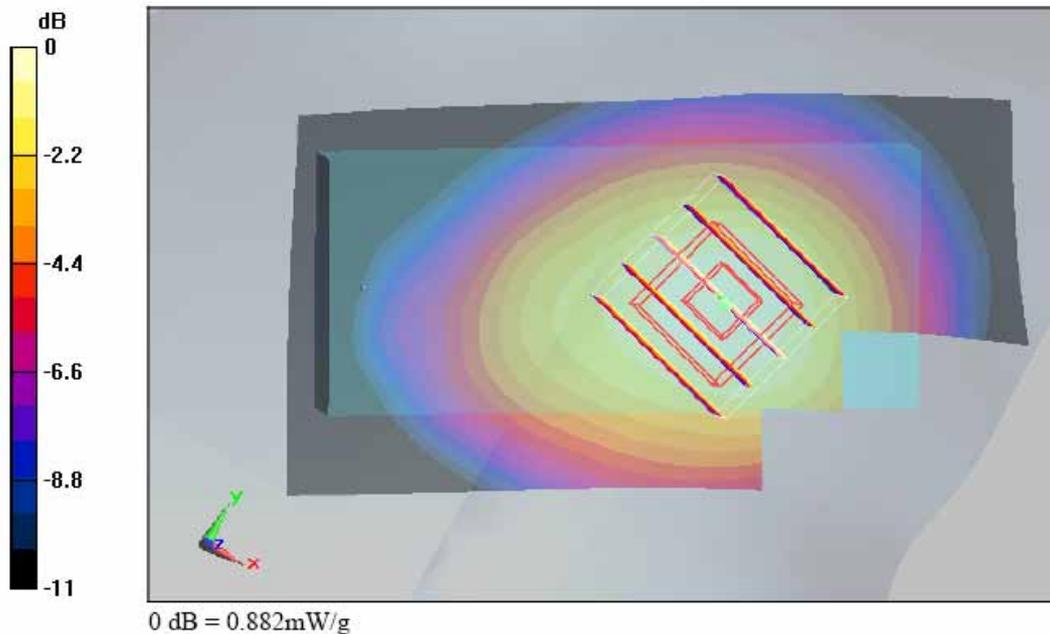
Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.8 V/m; Power Drift = 0.068 dB

Peak SAR (extrapolated) = 1.11 W/kg

SAR(1 g) = 0.830 mW/g; SAR(10 g) = 0.581 mW/g

Maximum value of SAR (measured) = 0.882 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/7

Right Tilted_CDMA850 Ch384_RC3

DUT: 830102

Communication System: CDMA ; Frequency: 836.49 MHz; Duty Cycle: 1:1

Medium: HSL_850 Medium parameters used: $f = 836.49$ MHz; $\sigma = 0.914$ mho/m; $\epsilon_r = 40.9$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.3 °C; Liquid Temperature : 21.7 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(6.54, 6.54, 6.54); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch384/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.493 mW/g

Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.2 V/m; Power Drift = 0.042 dB

Peak SAR (extrapolated) = 0.611 W/kg

SAR(1 g) = 0.474 mW/g; SAR(10 g) = 0.347 mW/g

Maximum value of SAR (measured) = 0.506 mW/g

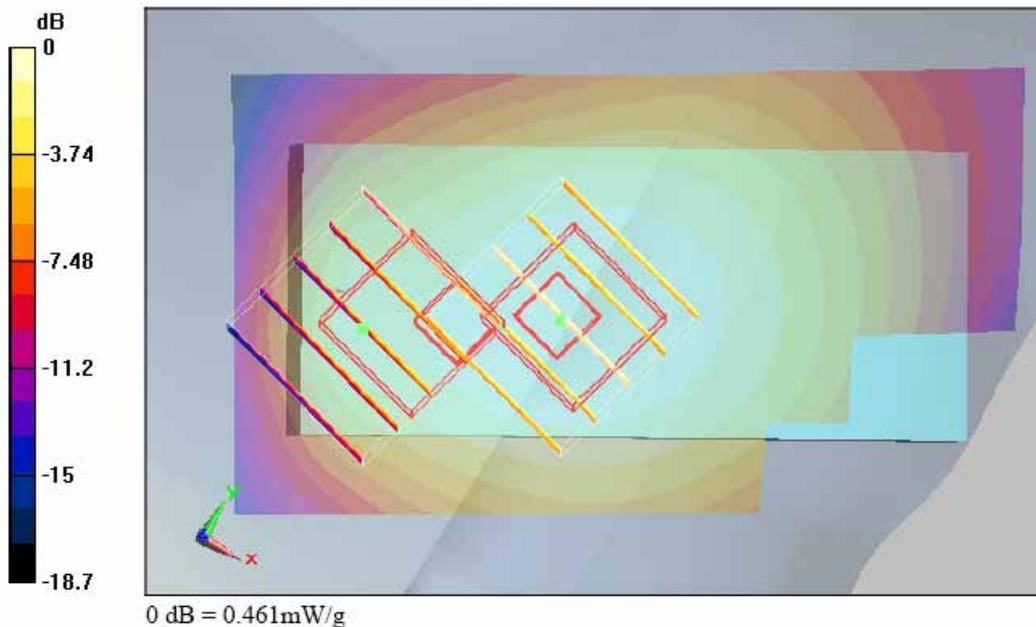
Ch384/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.2 V/m; Power Drift = 0.042 dB

Peak SAR (extrapolated) = 0.565 W/kg

SAR(1 g) = 0.375 mW/g; SAR(10 g) = 0.230 mW/g

Maximum value of SAR (measured) = 0.461 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/7

Left Check_CDMA850 Ch384_RC3

DUT: 830102

Communication System: CDMA ; Frequency: 836.49 MHz;Duty Cycle: 1:1

Medium: HSL_850 Medium parameters used: $f = 836.49$ MHz; $\sigma = 0.914$ mho/m; $\epsilon_r = 40.9$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.3 °C; Liquid Temperature : 21.7 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(6.54, 6.54, 6.54); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch384/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.05 mW/g

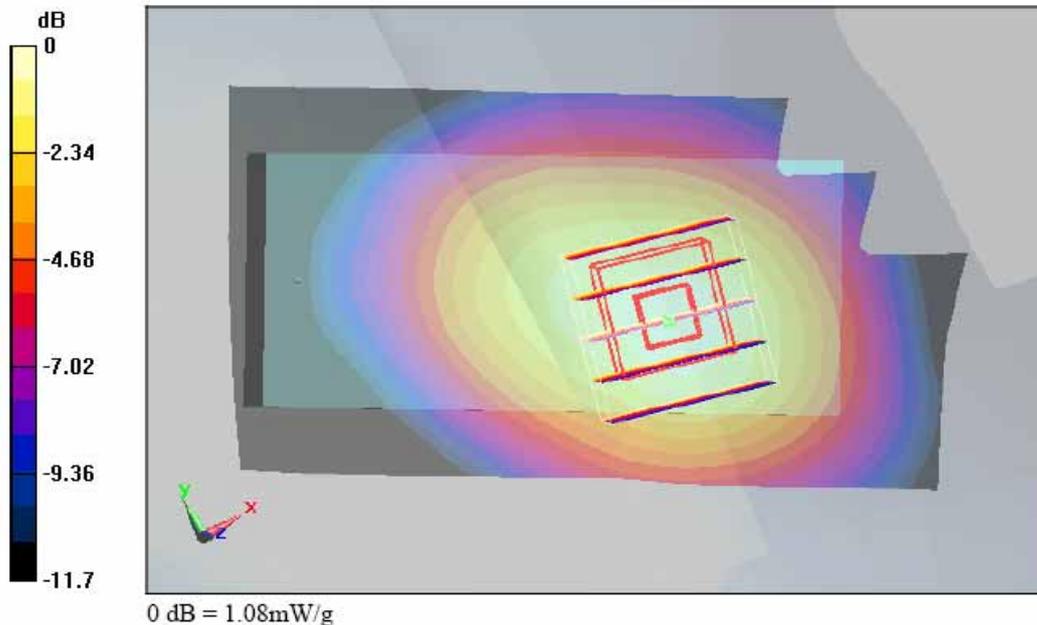
Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11 V/m; Power Drift = 0.025 dB

Peak SAR (extrapolated) = 1.46 W/kg

SAR(1 g) = 0.994 mW/g; SAR(10 g) = 0.665 mW/g

Maximum value of SAR (measured) = 1.08 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/7

Left Tilted_CDMA850 Ch384_RC3

DUT: 830102

Communication System: CDMA ; Frequency: 836.52 MHz;Duty Cycle: 1:1

Medium: HSL_850 Medium parameters used: $f = 837$ MHz; $\sigma = 0.915$ mho/m; $\epsilon_r = 40.9$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.4 °C; Liquid Temperature : 21.7 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(6.54, 6.54, 6.54); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch384/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.538 mW/g

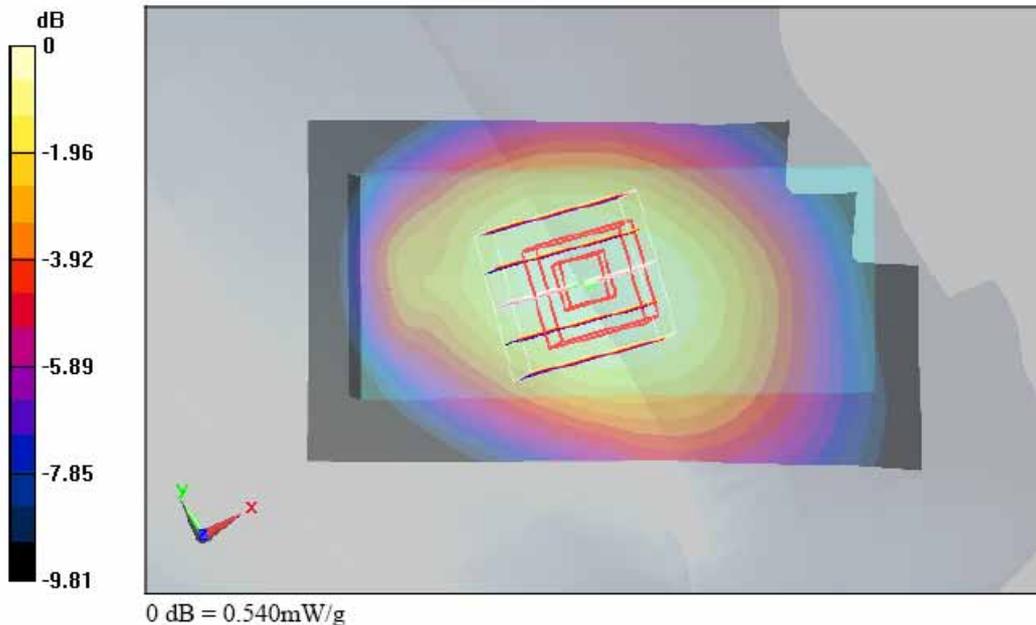
Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 16.2 V/m; Power Drift = 0.038 dB

Peak SAR (extrapolated) = 0.641 W/kg

SAR(1 g) = 0.505 mW/g; SAR(10 g) = 0.372 mW/g

Maximum value of SAR (measured) = 0.540 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/7

Left Check_CDMA850 Ch384_RC3_Bluetooth

DUT: 830102

Communication System: CDMA ; Frequency: 836.52 MHz;Duty Cycle: 1:1

Medium: HSL_850 Medium parameters used: $f = 837$ MHz; $\sigma = 0.915$ mho/m; $\epsilon_r = 40.9$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.3 °C ; Liquid Temperature : 21.7 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(6.54, 6.54, 6.54); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch384/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.03 mW/g

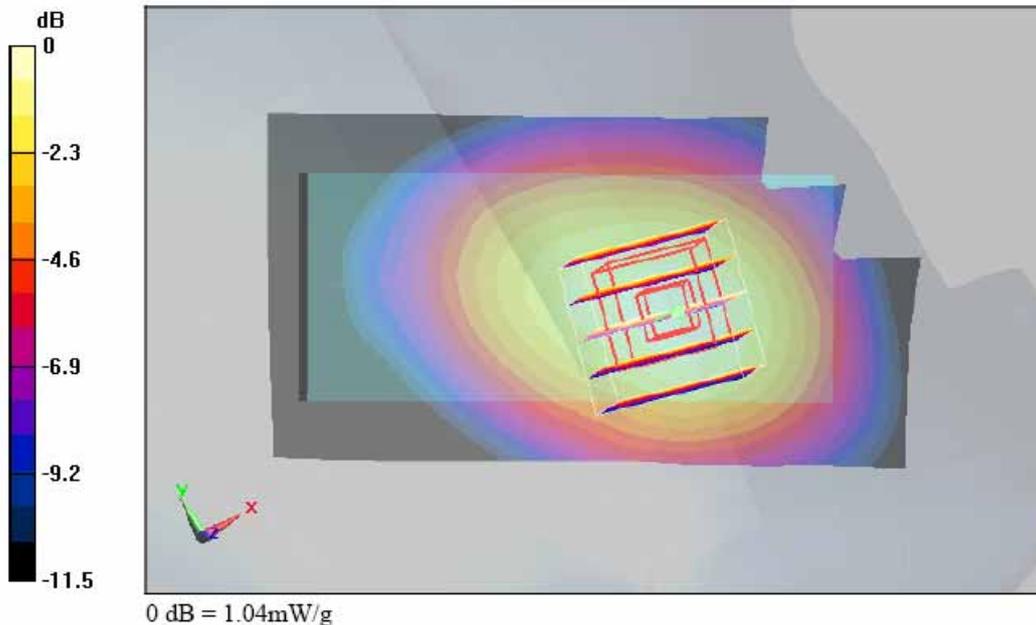
Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11 V/m; Power Drift = -0.182 dB

Peak SAR (extrapolated) = 1.44 W/kg

SAR(1 g) = 0.967 mW/g; SAR(10 g) = 0.649 mW/g

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



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/9

Right Cheek_CDMA1700 Ch450_RC1**DUT: 830102**

Communication System: CDMA ; Frequency: 1732.5 MHz;Duty Cycle: 1:1

Medium: HSL_1800 Medium parameters used : $f = 1732.5$ MHz; $\sigma = 1.36$ mho/m; $\epsilon_r = 38.9$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.5 °C ; Liquid Temperature : 21.5 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.28, 5.28, 5.28); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch450/Area Scan (41x91x1): Measurement grid: dx=15mm, dy=15mm

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

Ch450/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.15 V/m; Power Drift = -0.102 dB

Peak SAR (extrapolated) = 0.043 W/kg

SAR(1 g) = 0.033 mW/g; SAR(10 g) = 0.022 mW/g

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

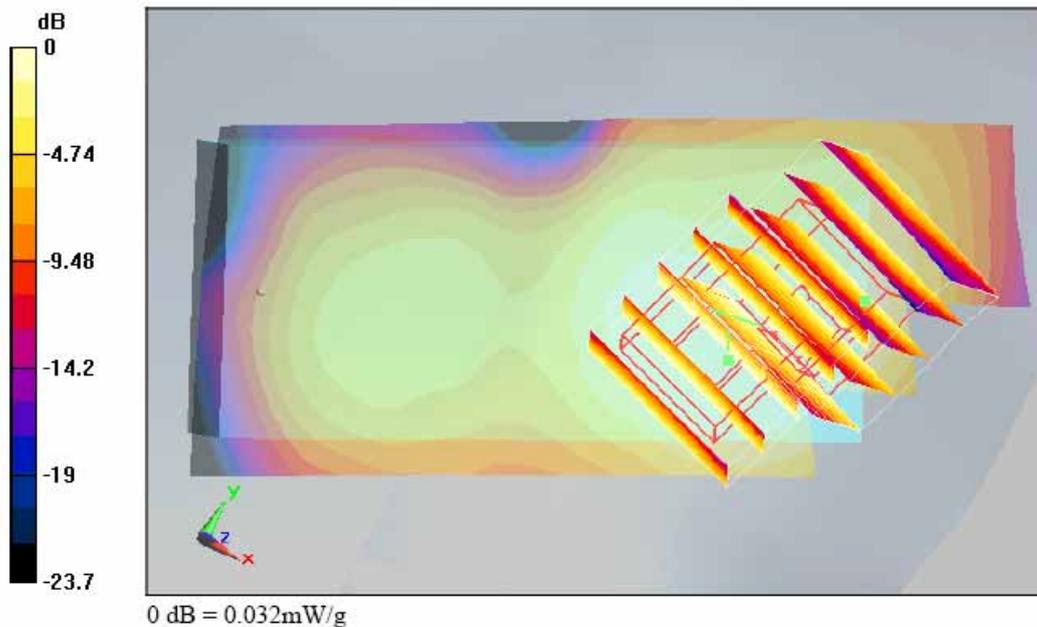
Ch450/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.15 V/m; Power Drift = -0.102 dB

Peak SAR (extrapolated) = 0.042 W/kg

SAR(1 g) = 0.026 mW/g; SAR(10 g) = 0.017 mW/g

Maximum value of SAR (measured) = 0.032 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/9

Right Tilted_CDMA1700 Ch450_RC1**DUT: 830102**

Communication System: CDMA ; Frequency: 1732.5 MHz;Duty Cycle: 1:1

Medium: HSL_1800 Medium parameters used : $f = 1732.5$ MHz; $\sigma = 1.36$ mho/m; $\epsilon_r = 38.9$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.4 °C ; Liquid Temperature : 21.5 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.28, 5.28, 5.28); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch450/Area Scan (41x91x1): Measurement grid: dx=15mm, dy=15mm

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

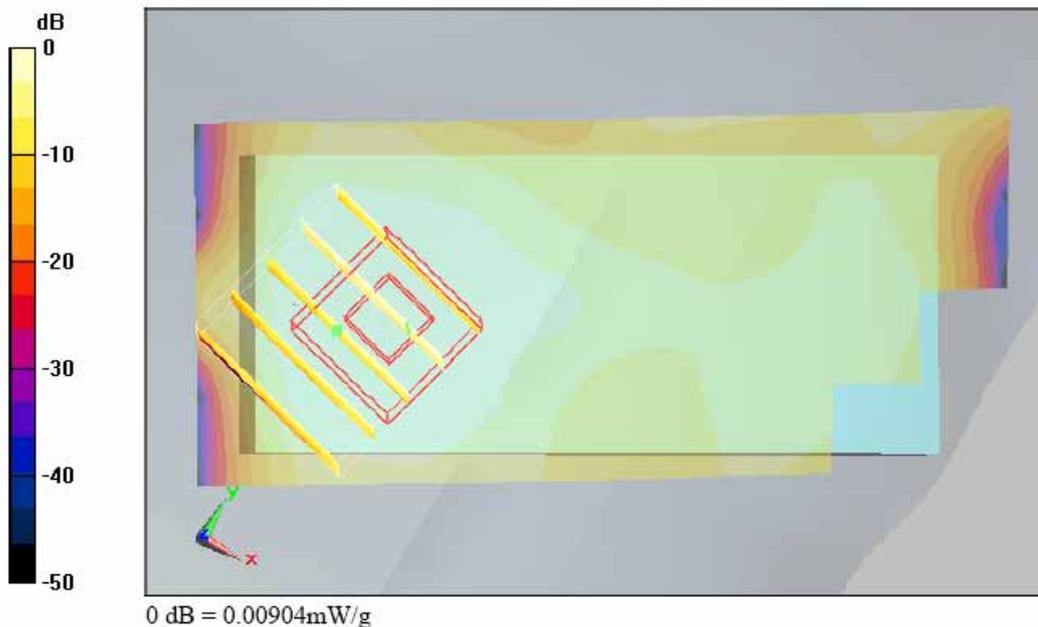
Ch450/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.21 V/m; Power Drift = -0.111 dB

Peak SAR (extrapolated) = 0.013 W/kg

SAR(1 g) = 0.00834 mW/g; SAR(10 g) = 0.00516 mW/g

Maximum value of SAR (measured) = 0.00904 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/9

Left Cheek_CDMA1700 Ch875_RC1

DUT: 830102

Communication System: CDMA ; Frequency: 1753.75 MHz;Duty Cycle: 1:1

Medium: HSL_1800 Medium parameters used: $f = 1754$ MHz; $\sigma = 1.38$ mho/m; $\epsilon_r = 38.7$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.5 °C; Liquid Temperature : 21.5 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.28, 5.28, 5.28); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch875/Area Scan (41x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.121 mW/g

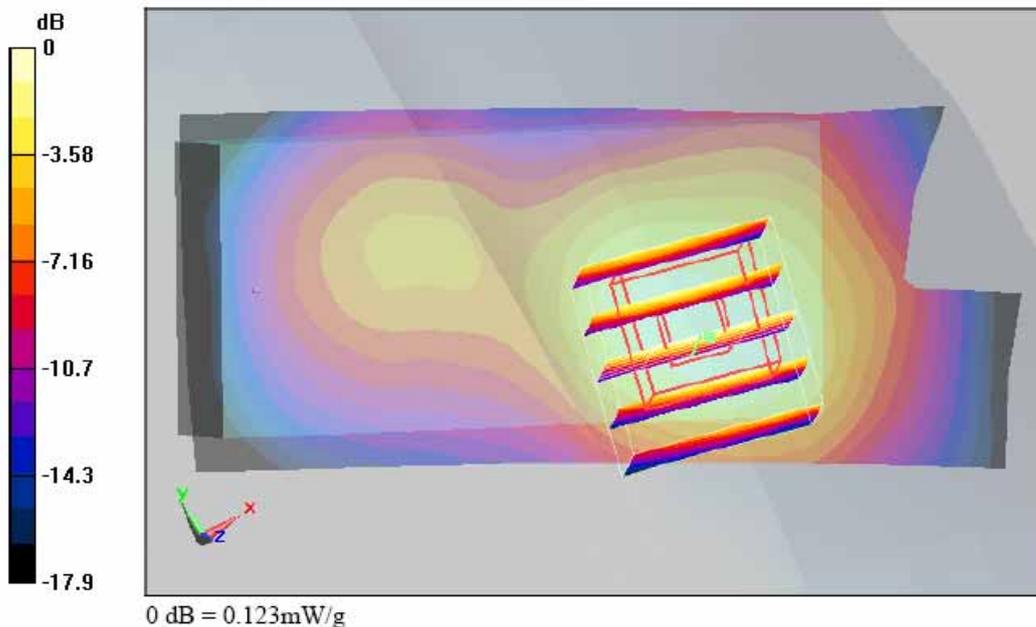
Ch875/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.26 V/m; Power Drift = -0.060 dB

Peak SAR (extrapolated) = 0.162 W/kg

SAR(1 g) = 0.112 mW/g; SAR(10 g) = 0.068 mW/g

Maximum value of SAR (measured) = 0.123 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/9

Left Tilted_CDMA1700 Ch450_RC1

DUT: 830102

Communication System: CDMA ; Frequency: 1732.5 MHz;Duty Cycle: 1:1

Medium: HSL_1800 Medium parameters used : $f = 1732.5$ MHz; $\sigma = 1.36$ mho/m; $\epsilon_r = 38.9$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.4 °C ; Liquid Temperature : 21.5 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.28, 5.28, 5.28); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch450/Area Scan (41x91x1): Measurement grid: dx=15mm, dy=15mm

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

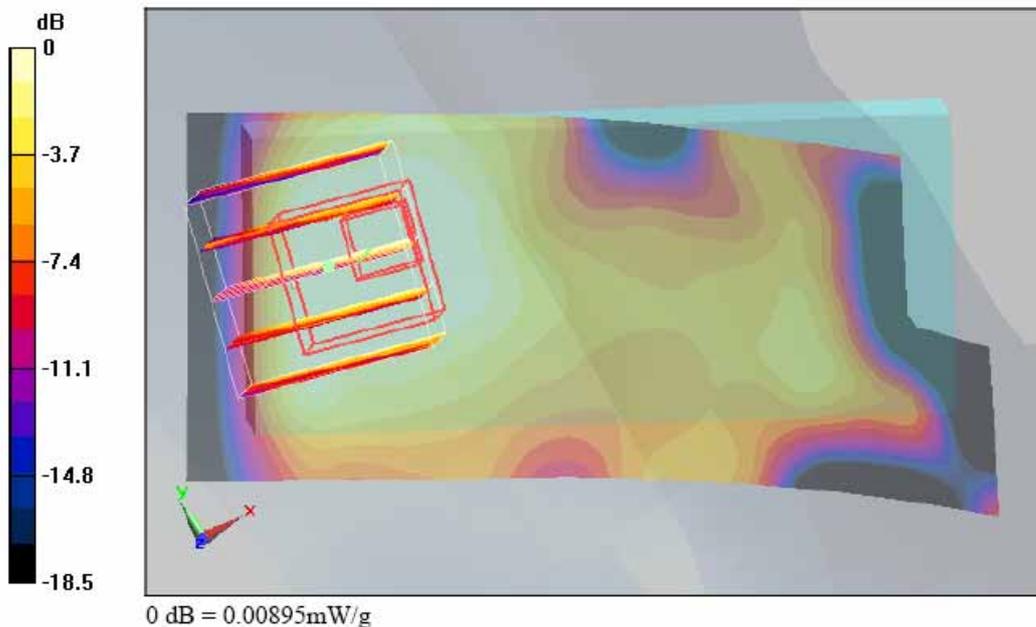
Ch450/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.99 V/m; Power Drift = 0.144 dB

Peak SAR (extrapolated) = 0.016 W/kg

SAR(1 g) = 0.00844 mW/g; SAR(10 g) = 0.00507 mW/g

Maximum value of SAR (measured) = 0.00895 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/9

Left Cheek_CDMA1700 Ch875_RCI_Bluetooth

DUT: 830102

Communication System: CDMA ; Frequency: 1753.75 MHz;Duty Cycle: 1:1

Medium: HSL_1800 Medium parameters used: f = 1754 MHz; $\sigma = 1.38$ mho/m; $\epsilon_r = 38.7$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.5°C; Liquid Temperature : 21.5 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.28, 5.28, 5.28); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch875/Area Scan (41x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.108 mW/g

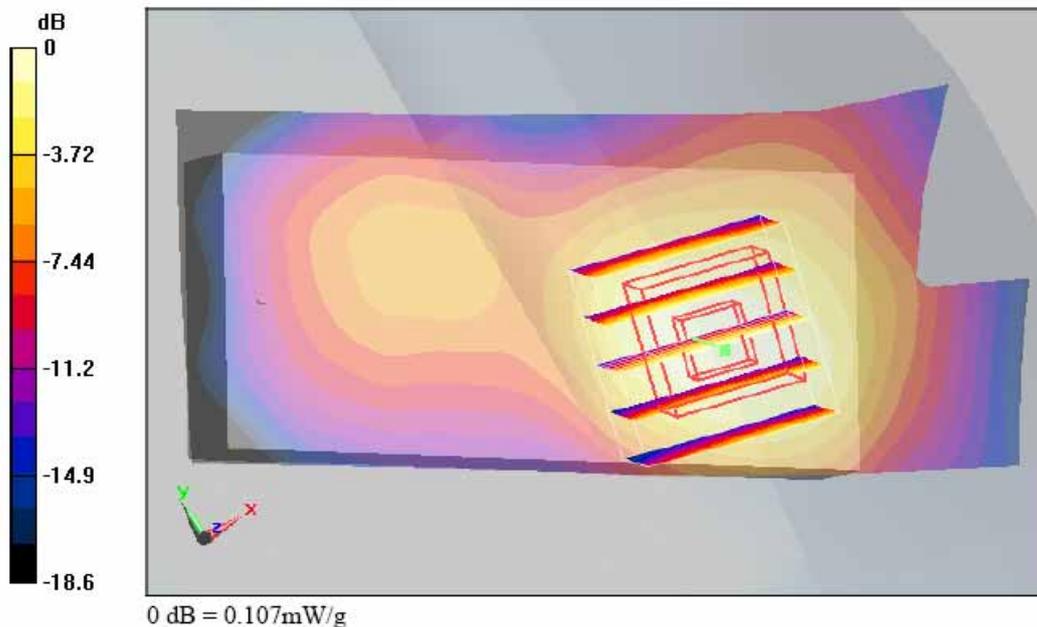
Ch875/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.23 V/m; Power Drift = -0.138 dB

Peak SAR (extrapolated) = 0.137 W/kg

SAR(1 g) = 0.097 mW/g; SAR(10 g) = 0.059 mW/g

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



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/9

Right Cheek_CDMA1700 Ch450_RC3

DUT: 830102

Communication System: CDMA ; Frequency: 1732.5 MHz;Duty Cycle: 1:1

Medium: HSL_1800 Medium parameters used : $f = 1732.5$ MHz; $\sigma = 1.36$ mho/m; $\epsilon_r = 38.9$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.5 °C; Liquid Temperature : 21.5 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.28, 5.28, 5.28); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch450/Area Scan (41x91x1): Measurement grid: dx=15mm, dy=15mm

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

Ch450/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.14 V/m; Power Drift = -0.199 dB

Peak SAR (extrapolated) = 0.042 W/kg

SAR(1 g) = 0.032 mW/g; SAR(10 g) = 0.021 mW/g

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

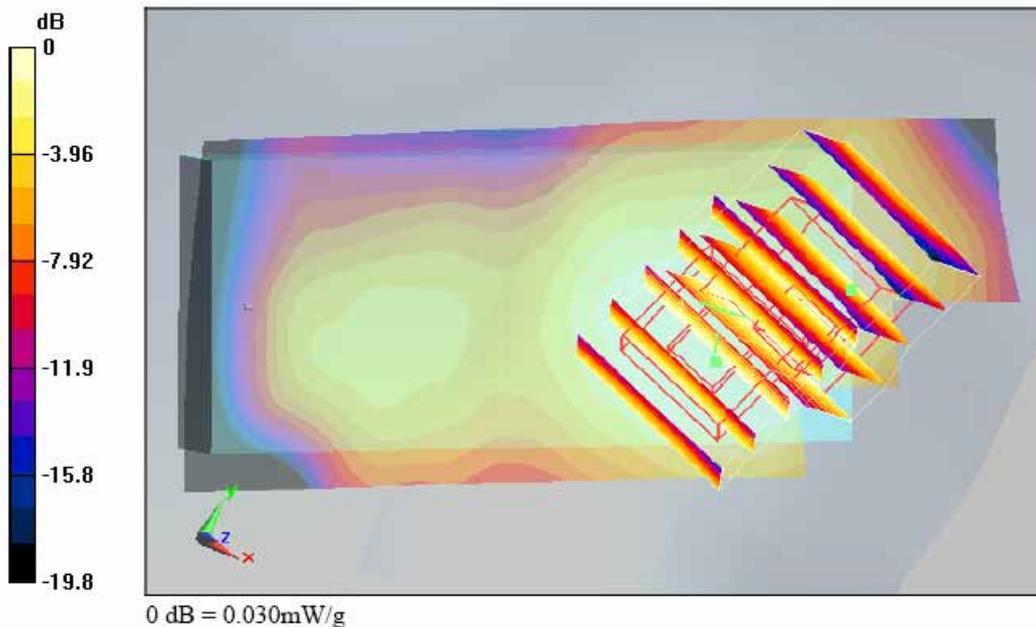
Ch450/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.14 V/m; Power Drift = -0.199 dB

Peak SAR (extrapolated) = 0.040 W/kg

SAR(1 g) = 0.026 mW/g; SAR(10 g) = 0.016 mW/g

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



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/9

Right Chick_CDMA1900 Ch600_RC1

DUT: 830102

Communication System: CDMA ; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: HSL_1900 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.4$ mho/m; $\epsilon_r = 38.7$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.6 °C ; Liquid Temperature : 21.4 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.28, 5.28, 5.28); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch600/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

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

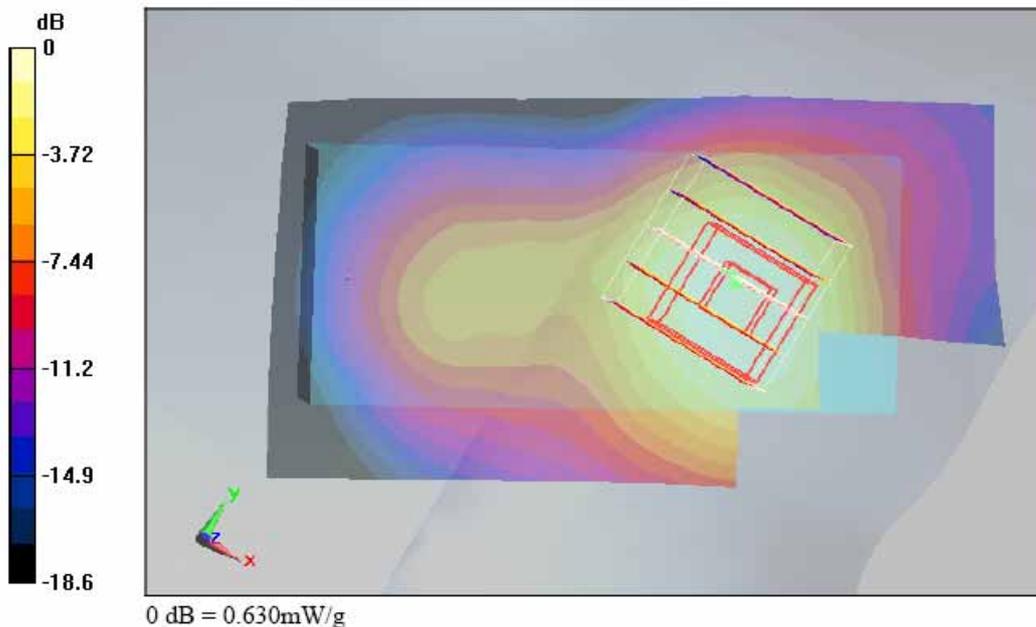
Ch600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.38 V/m; Power Drift = -0.160 dB

Peak SAR (extrapolated) = 0.794 W/kg

SAR(1 g) = 0.591 mW/g; SAR(10 g) = 0.383 mW/g

Maximum value of SAR (measured) = 0.630 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/9

Right Check_CDMA1900 Ch600_RC3

DUT: 830102

Communication System: CDMA ; Frequency: 1880 MHz;Duty Cycle: 1:1

Medium: HSL_1900 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.4$ mho/m; $\epsilon_r = 38.7$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.5 °C; Liquid Temperature : 21.4 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.28, 5.28, 5.28); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch600/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.701 mW/g

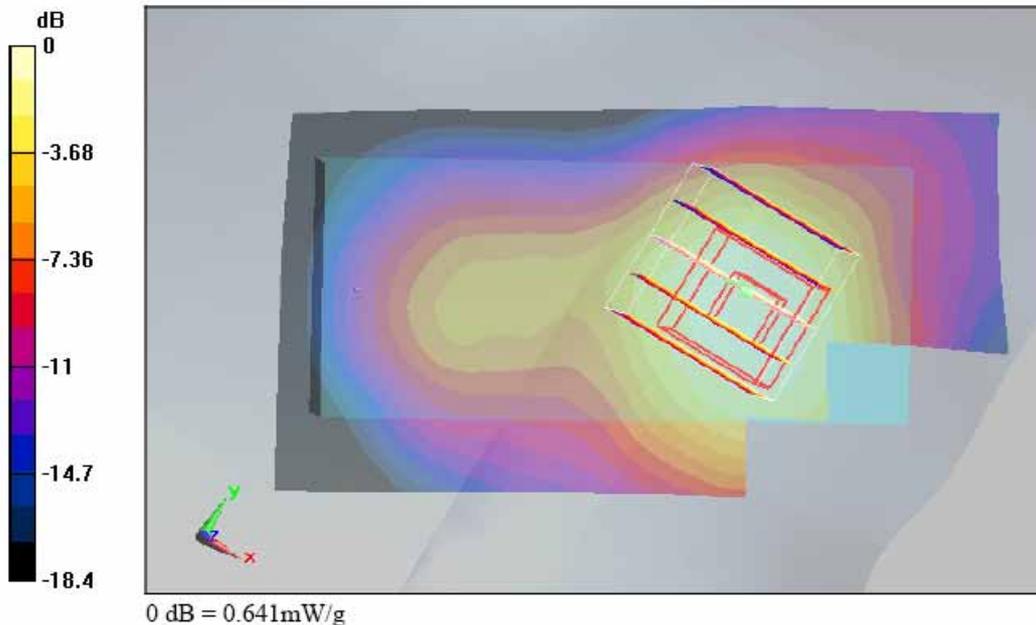
Ch600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.28 V/m; Power Drift = 0.032 dB

Peak SAR (extrapolated) = 0.800 W/kg

SAR(1 g) = 0.599 mW/g; SAR(10 g) = 0.389 mW/g

Maximum value of SAR (measured) = 0.641 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/9

Right Tilted_CDMA1900 Ch600_RC3

DUT: 830102

Communication System: CDMA ; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: HSL_1900 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.4$ mho/m; $\epsilon_r = 38.7$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.3 °C; Liquid Temperature : 21.4 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.28, 5.28, 5.28); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch600/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.147 mW/g

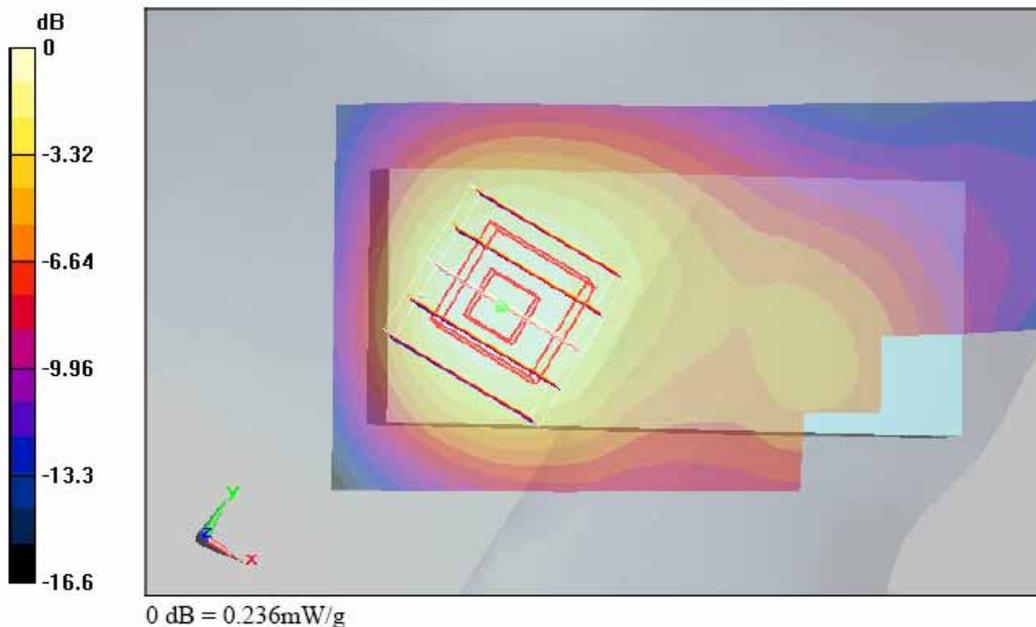
Ch600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.8 V/m; Power Drift = 0.093 dB

Peak SAR (extrapolated) = 0.309 W/kg

SAR(1 g) = 0.218 mW/g; SAR(10 g) = 0.137 mW/g

Maximum value of SAR (measured) = 0.236 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/9

Left Check_CDMA1900 Ch600_RC3

DUT: 830102

Communication System: CDMA ; Frequency: 1880 MHz;Duty Cycle: 1:1

Medium: HSL_1900 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.4$ mho/m; $\epsilon_r = 38.7$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.6 °C ; Liquid Temperature : 21.4 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.28, 5.28, 5.28); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch600/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.952 mW/g

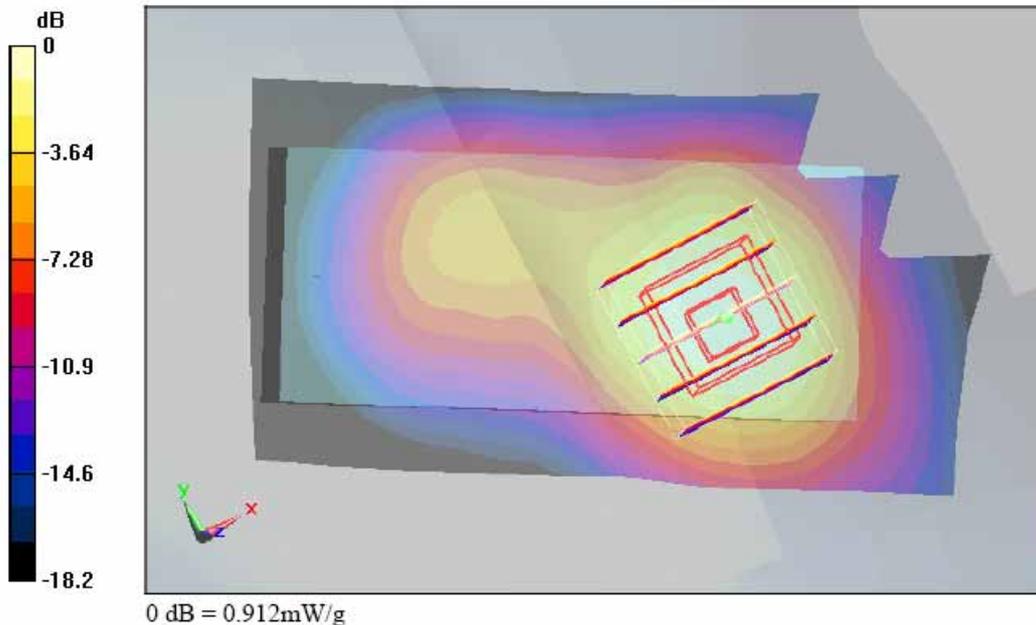
Ch600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 6.82 V/m; Power Drift = -0.125 dB

Peak SAR (extrapolated) = 1.31 W/kg

SAR(1 g) = 0.844 mW/g; SAR(10 g) = 0.494 mW/g

Maximum value of SAR (measured) = 0.912 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/9

Left Tilted_CDMA1900 Ch600_RC3

DUT: 830102

Communication System: CDMA ; Frequency: 1880 MHz;Duty Cycle: 1:1

Medium: HSL_1900 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.4$ mho/m; $\epsilon_r = 38.7$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.3 °C; Liquid Temperature : 21.4 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.28, 5.28, 5.28); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch600/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.236 mW/g

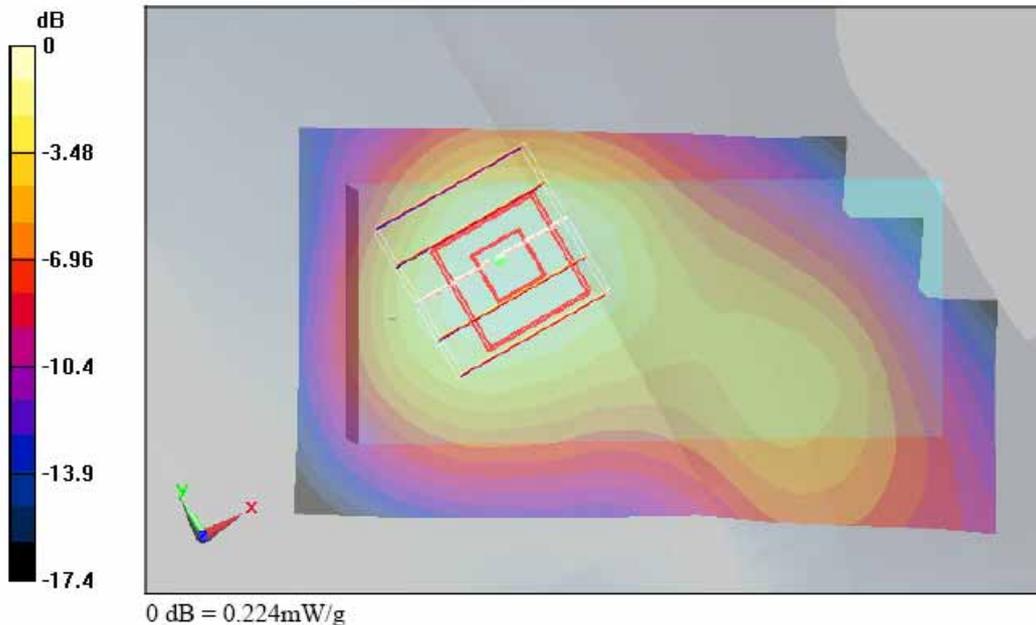
Ch600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 8.43 V/m; Power Drift = 0.067 dB

Peak SAR (extrapolated) = 0.295 W/kg

SAR(1 g) = 0.209 mW/g; SAR(10 g) = 0.133 mW/g

Maximum value of SAR (measured) = 0.224 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/9

Left Check_CDMA1900 Ch600_RC3_Bluetooth

DUT: 830102

Communication System: CDMA ; Frequency: 1880 MHz;Duty Cycle: 1:1

Medium: HSL_1900 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.4$ mho/m; $\epsilon_r = 38.7$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.5 °C; Liquid Temperature : 21.4 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.28, 5.28, 5.28); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch600/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

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

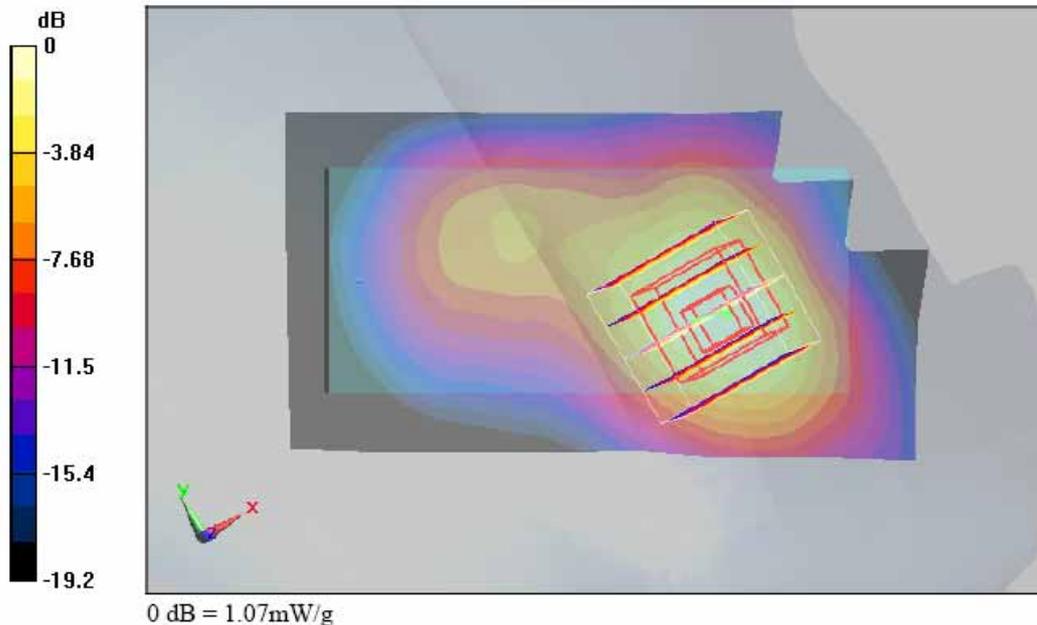
Ch600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 6.03 V/m; Power Drift = 0.154 dB

Peak SAR (extrapolated) = 1.55 W/kg

SAR(1 g) = 0.985 mW/g; SAR(10 g) = 0.567 mW/g

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



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/11

Body_CDMA850 Ch384_Front Face with 1.5cm Gap_1X-RTT_RC1**DUT: 830102**

Communication System: CDMA ; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: MSL_850 Medium parameters used: $f = 837$ MHz; $\sigma = 0.967$ mho/m; $\epsilon_r = 56.3$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.7 °C; Liquid Temperature : 21.3 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(6.37, 6.37, 6.37); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch384/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.654 mW/g

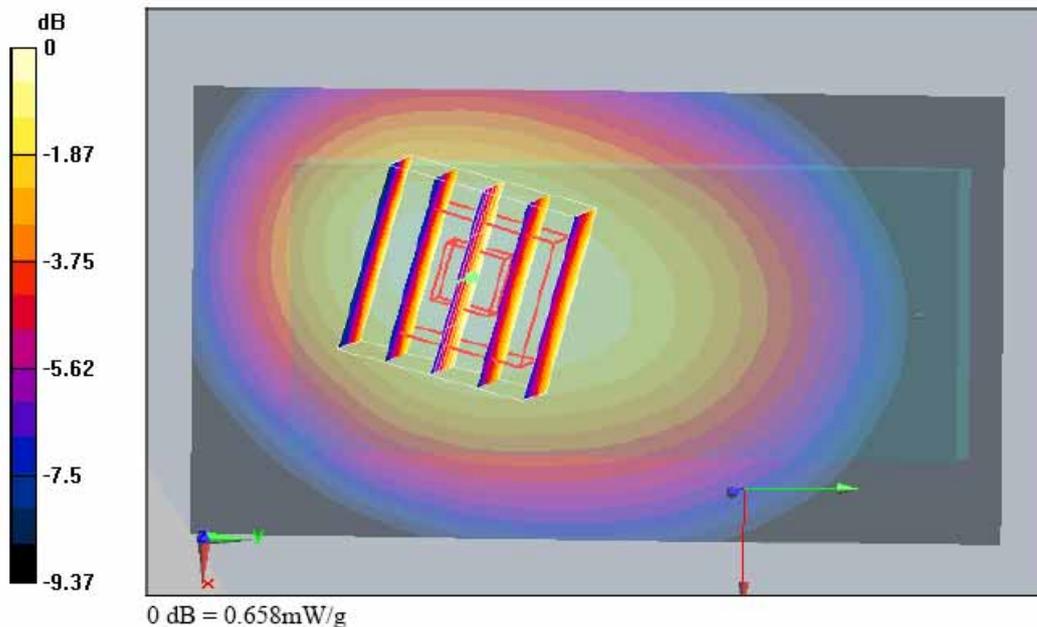
Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.2 V/m; Power Drift = 0.047 dB

Peak SAR (extrapolated) = 0.816 W/kg

SAR(1 g) = 0.624 mW/g; SAR(10 g) = 0.455 mW/g

Maximum value of SAR (measured) = 0.658 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/11

Body_CDMA850 Ch384_Front Face with 1.5cm Gap_IX-RTT_RC3

DUT: 830102

Communication System: CDMA ; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: MSL_850 Medium parameters used: $f = 837$ MHz; $\sigma = 0.967$ mho/m; $\epsilon_r = 56.3$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.7 °C; Liquid Temperature : 21.3 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(6.37, 6.37, 6.37); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch384/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

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

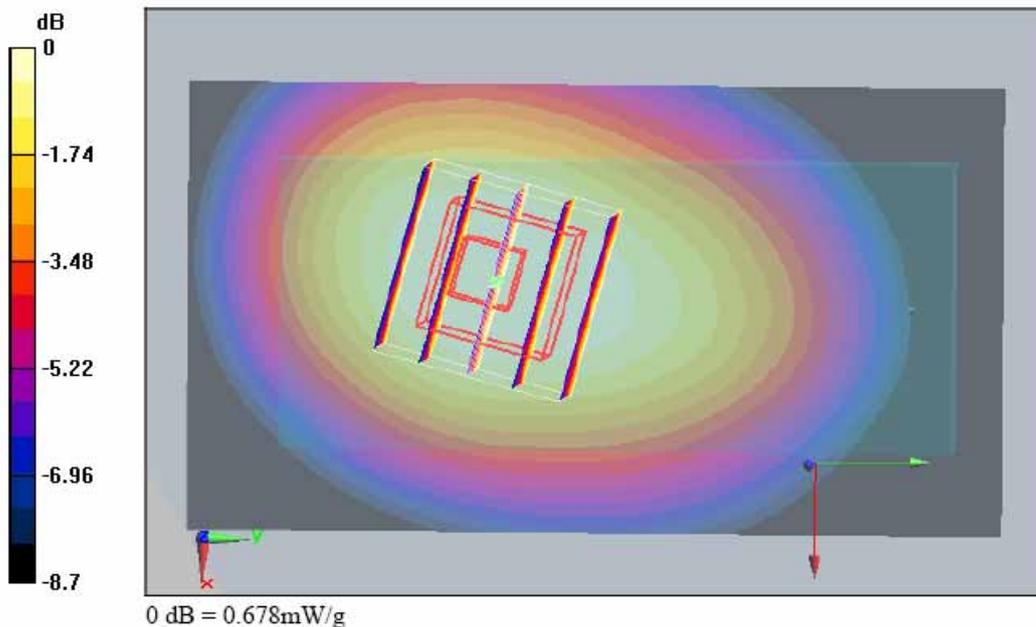
Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.4 V/m; Power Drift = -0.132 dB

Peak SAR (extrapolated) = 0.809 W/kg

SAR(1 g) = 0.643 mW/g; SAR(10 g) = 0.475 mW/g

Maximum value of SAR (measured) = 0.678 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/11

Body_CDMA850 Ch384_Front Face with 1.5cm Gap_1X-RTT_FCH+SCH_RC3

DUT: 830102

Communication System: CDMA ; Frequency: 836.52 MHz;Duty Cycle: 1:1

Medium: MSL_850 Medium parameters used: $f = 837$ MHz; $\sigma = 0.967$ mho/m; $\epsilon_r = 56.3$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.6 °C; Liquid Temperature : 21.3 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(6.37, 6.37, 6.37); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch384/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm

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

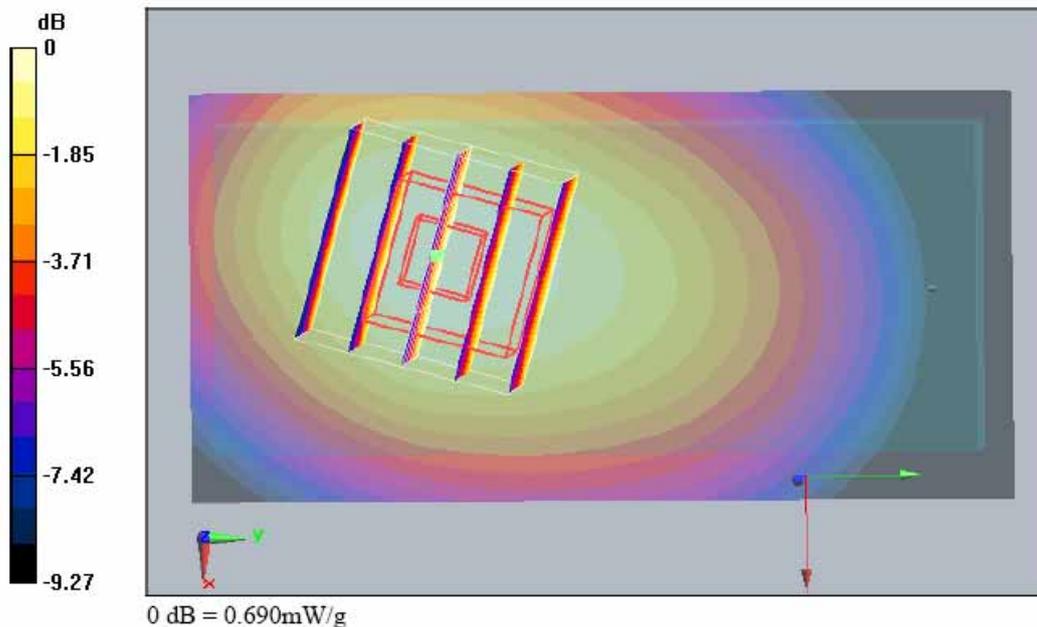
Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.8 V/m; Power Drift = 0.069 dB

Peak SAR (extrapolated) = 0.811 W/kg

SAR(1 g) = 0.649 mW/g; SAR(10 g) = 0.480 mW/g

Maximum value of SAR (measured) = 0.690 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/11

Body_CDMA850 Ch384_Front Face with 1.5cm Gap_1X-RTT_FCH+SCH_RC3_Bluetooth

DUT: 830102

Communication System: CDMA ; Frequency: 836.52 MHz;Duty Cycle: 1:1

Medium: MSL_850 Medium parameters used: $f = 837$ MHz; $\sigma = 0.967$ mho/m; $\epsilon_r = 56.3$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.7 °C; Liquid Temperature : 21.3 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(6.37, 6.37, 6.37); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch384/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.731 mW/g

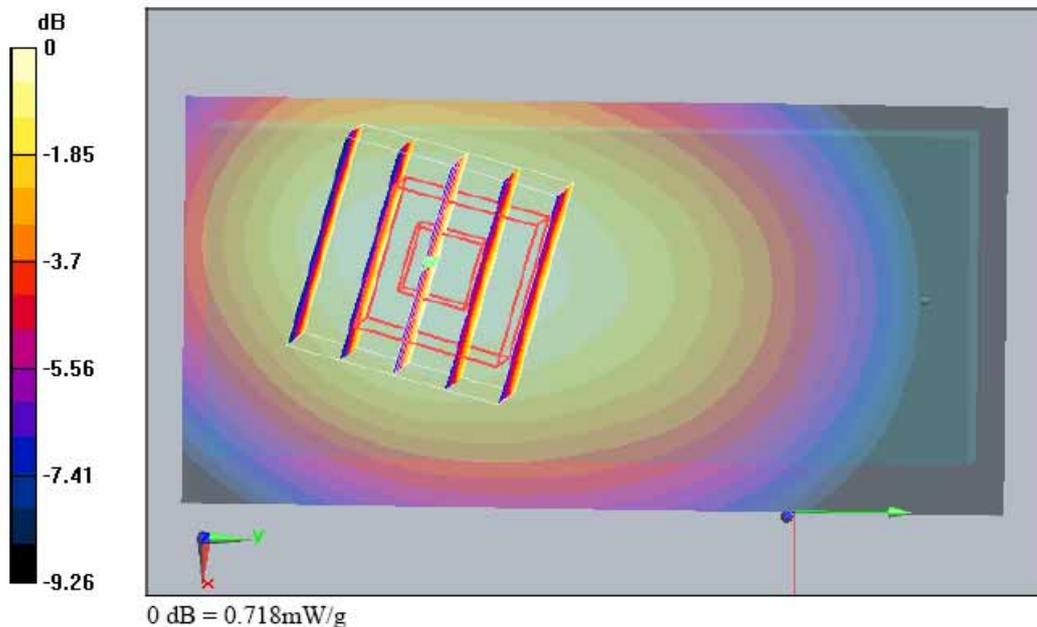
Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11 V/m; Power Drift = 0.039 dB

Peak SAR (extrapolated) = 0.846 W/kg

SAR(1 g) = 0.679 mW/g; SAR(10 g) = 0.503 mW/g

Maximum value of SAR (measured) = 0.718 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/11

Body_CDMA850 Ch384_Rear Face with 1.5cm Gap_1X-RTT_RC1

DUT: 830102

Communication System: CDMA ; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: MSL_850 Medium parameters used: $f = 837$ MHz; $\sigma = 0.967$ mho/m; $\epsilon_r = 56.3$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.7 °C; Liquid Temperature : 21.3 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(6.37, 6.37, 6.37); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch384/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.676 mW/g

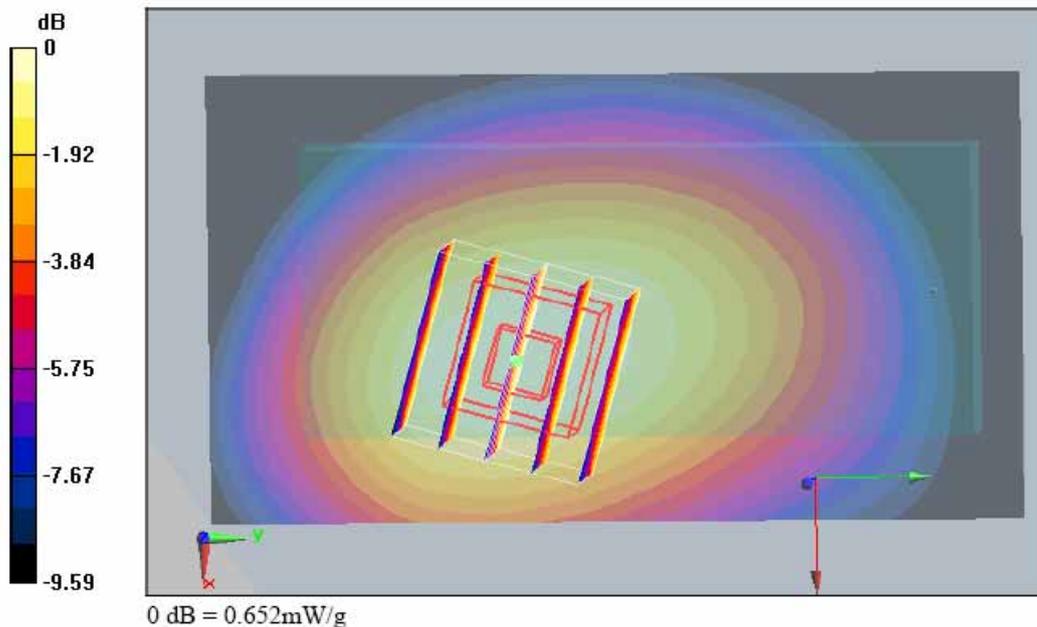
Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.1 V/m; Power Drift = -0.156 dB

Peak SAR (extrapolated) = 0.795 W/kg

SAR(1 g) = 0.618 mW/g; SAR(10 g) = 0.452 mW/g

Maximum value of SAR (measured) = 0.652 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/10

Body_CDMA1700 Ch450_Front Face with 1.5cm Gap_IX-RTT_RC1**DUT: 830102**

Communication System: CDMA ; Frequency: 1732.5 MHz;Duty Cycle: 1:1

Medium: MSL_1800 Medium parameters used: $f = 1732.5$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.4 °C; Liquid Temperature : 21.1 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.75, 4.75, 4.75); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch450/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

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

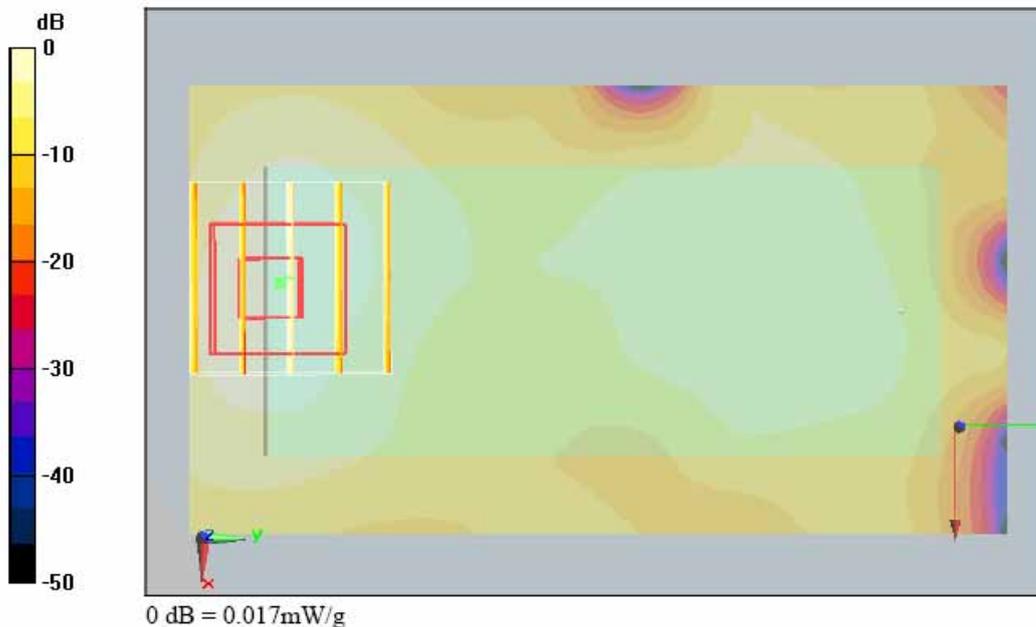
Ch450/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.36 V/m; Power Drift = -0.117 dB

Peak SAR (extrapolated) = 0.027 W/kg

SAR(1 g) = 0.016 mW/g; SAR(10 g) = 0.00842 mW/g

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



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/10

Body_CDMA1700 Ch875_Front Face with 1.5cm Gap_IX-RTT_RC3**DUT: 830102**

Communication System: CDMA ; Frequency: 1753.75 MHz; Duty Cycle: 1:1

Medium: MSL_1800 Medium parameters used: $f = 1754$ MHz; $\sigma = 1.54$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.4 °C ; Liquid Temperature : 21.1 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.75, 4.75, 4.75); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch875/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

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

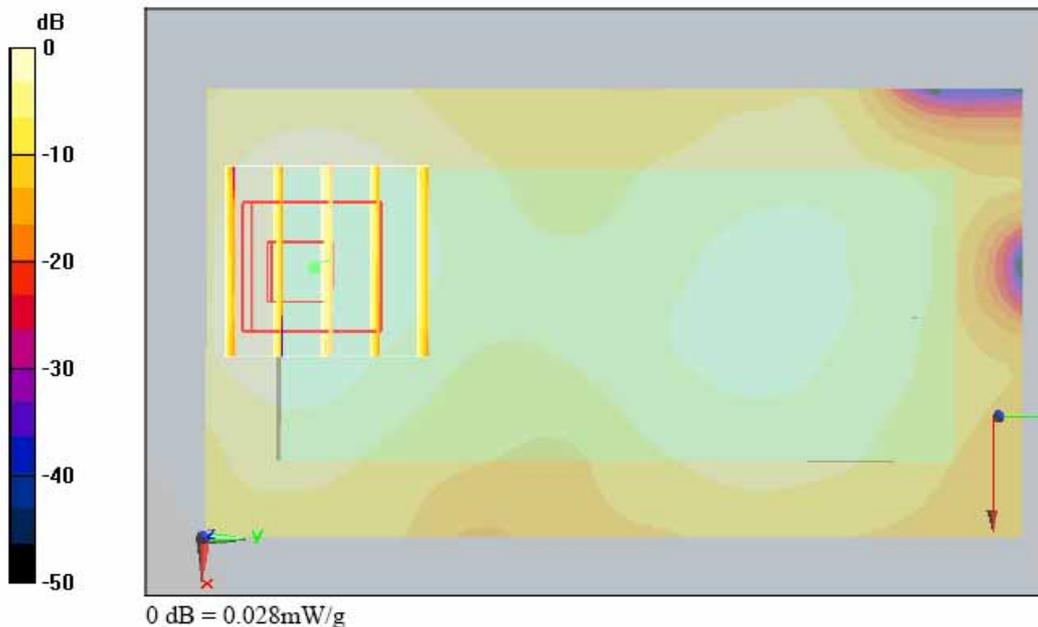
Ch875/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.19 V/m; Power Drift = -0.024 dB

Peak SAR (extrapolated) = 0.044 W/kg

SAR(1 g) = 0.026 mW/g; SAR(10 g) = 0.015 mW/g

Maximum value of SAR (measured) = 0.028 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/10

Body_CDMA1700 Ch450_Front Face with 1.5cm Gap_IX-RTT_FCH+SCH_RC3

DUT: 830102

Communication System: CDMA ; Frequency: 1732.5 MHz;Duty Cycle: 1:1

Medium: MSL_1800 Medium parameters used: $f = 1732.5$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.4 °C; Liquid Temperature : 21.1 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.75, 4.75, 4.75); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch450/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.018 mW/g

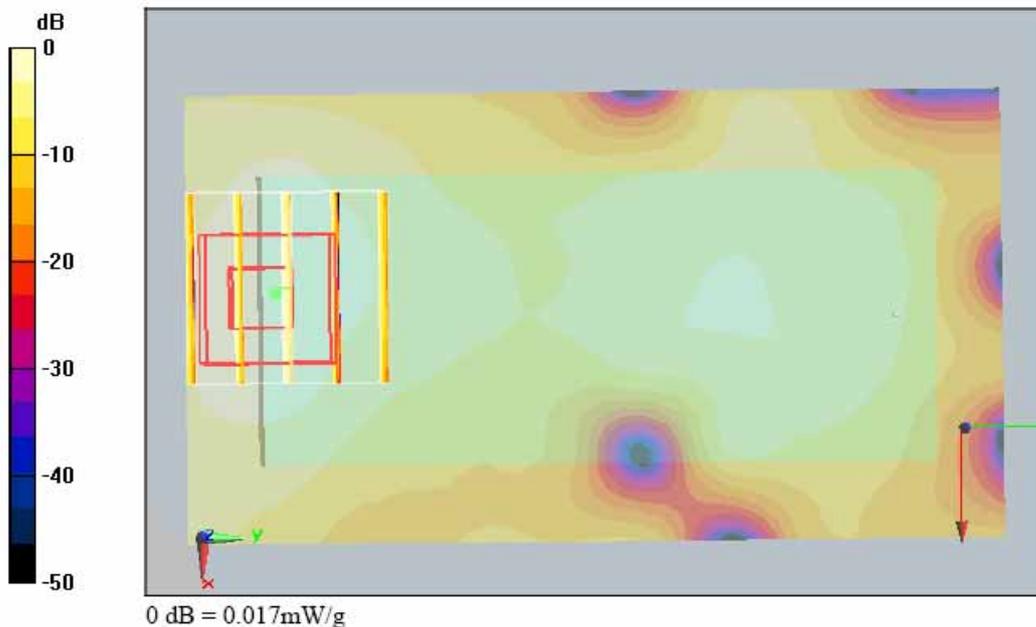
Ch450/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.39 V/m; Power Drift = -0.125 dB

Peak SAR (extrapolated) = 0.026 W/kg

SAR(1 g) = 0.016 mW/g; SAR(10 g) = 0.00842 mW/g

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



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/10

Body_CDMA1700 Ch875_Front Face with 1.5cm Gap_IX-RTT_RC3_Bluetooth**DUT: 830102**

Communication System: CDMA ; Frequency: 1753.75 MHz; Duty Cycle: 1:1

Medium: MSL_1800 Medium parameters used: $f = 1754$ MHz; $\sigma = 1.54$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.4 °C ; Liquid Temperature : 21.1 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.75, 4.75, 4.75); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch875/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

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

Ch875/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.11 V/m; Power Drift = -0.131 dB

Peak SAR (extrapolated) = 0.040 W/kg

SAR(1 g) = 0.024 mW/g; SAR(10 g) = 0.014 mW/g

Maximum value of SAR (measured) = 0.025 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/10

Body_CDMA1700 Ch450_Rear Face with 1.5cm Gap_1X-RTT_RC1

DUT: 830102

Communication System: CDMA ; Frequency: 1732.5 MHz;Duty Cycle: 1:1

Medium: MSL_1800 Medium parameters used: $f = 1732.5$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.4 °C; Liquid Temperature : 21.1 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.75, 4.75, 4.75); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch450/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.0097 mW/g

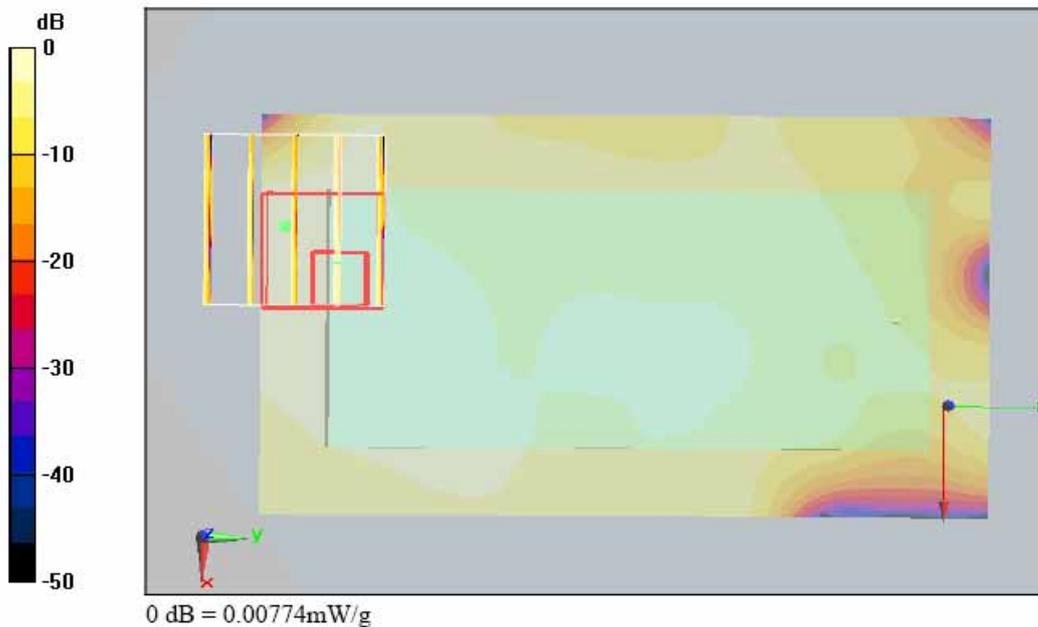
Ch450/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.896 V/m; Power Drift = -0.180 dB

Peak SAR (extrapolated) = 0.012 W/kg

SAR(1 g) = 0.00704 mW/g; SAR(10 g) = 0.00378 mW/g

Maximum value of SAR (measured) = 0.00774 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/10

Body_CDMA1900 Ch600_Front Face with 1.5cm Gap_IX-RTT_RC1**DUT: 830102**

Communication System: CDMA ; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: MSL_1900 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 50.9$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.8 °C ; Liquid Temperature : 21.0 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.75, 4.75, 4.75); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch600/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.250 mW/g

Ch600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.85 V/m; Power Drift = -0.124 dB

Peak SAR (extrapolated) = 0.353 W/kg

SAR(1 g) = 0.218 mW/g; SAR(10 g) = 0.129 mW/g

Maximum value of SAR (measured) = 0.232 mW/g

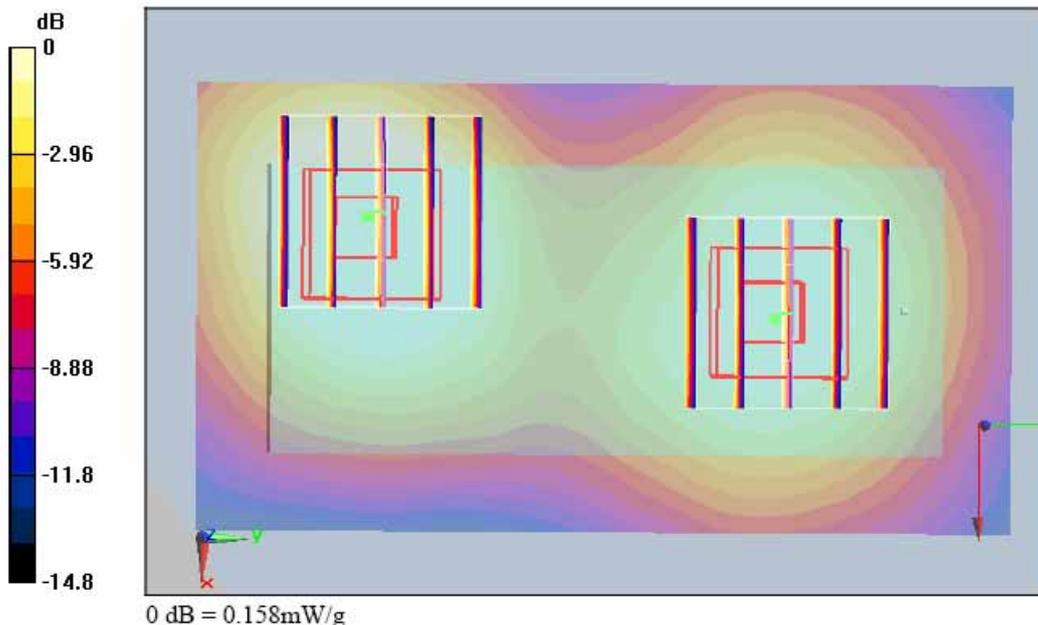
Ch600/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.85 V/m; Power Drift = -0.124 dB

Peak SAR (extrapolated) = 0.218 W/kg

SAR(1 g) = 0.147 mW/g; SAR(10 g) = 0.093 mW/g

Maximum value of SAR (measured) = 0.158 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/10

Body_CDMA1900 Ch600_Front Face with 1.5cm Gap_IX-RTT_RC3

DUT: 830102

Communication System: CDMA ; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: MSL_1900 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 50.9$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.8 °C ; Liquid Temperature : 21.0 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.75, 4.75, 4.75); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch600/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.258 mW/g

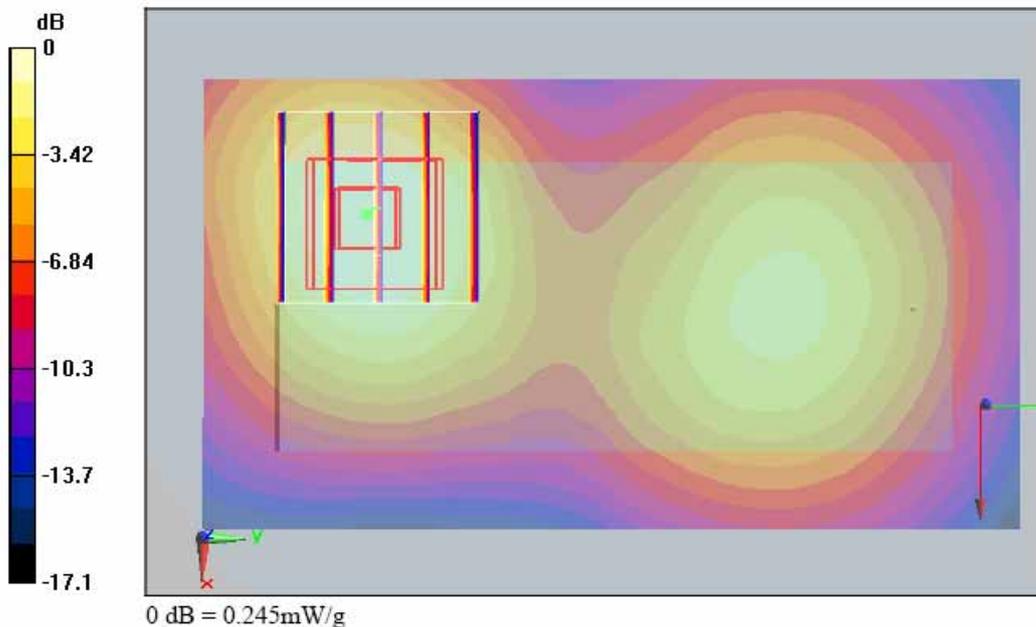
Ch600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.41 V/m; Power Drift = -0.126 dB

Peak SAR (extrapolated) = 0.364 W/kg

SAR(1 g) = 0.226 mW/g; SAR(10 g) = 0.134 mW/g

Maximum value of SAR (measured) = 0.245 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/10

Body_CDMA1900 Ch600_Front Face with 1.5cm Gap_1X-RTT_FCH+SCH_RC3

DUT: 830102

Communication System: CDMA ; Frequency: 1880 MHz;Duty Cycle: 1:1

Medium: MSL_1900 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 50.9$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.9 °C; Liquid Temperature : 21.0 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.75, 4.75, 4.75); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch600/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.257 mW/g

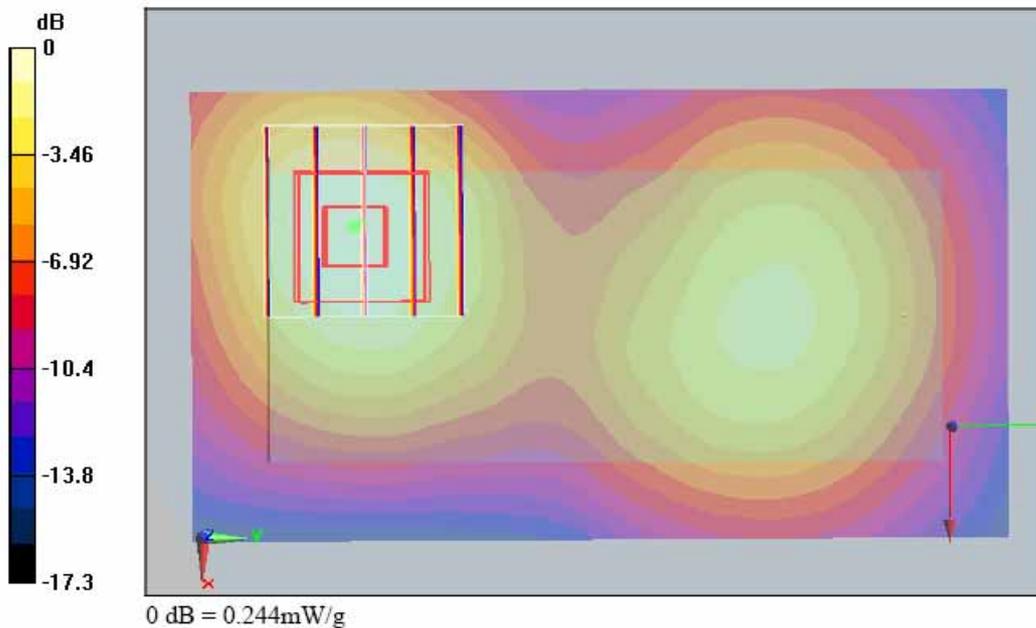
Ch600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.34 V/m; Power Drift = -0.100 dB

Peak SAR (extrapolated) = 0.363 W/kg

SAR(1 g) = 0.227 mW/g; SAR(10 g) = 0.134 mW/g

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



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/10

Body_CDMA1900 Ch600_Front Face with 1.5cm Gap_IX-RTT_FCH+SCH_RC3_Bluetooth

DUT: 830102

Communication System: CDMA ; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: MSL_1900 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 50.9$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.8 °C ; Liquid Temperature : 21.0 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.75, 4.75, 4.75); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch600/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.233 mW/g

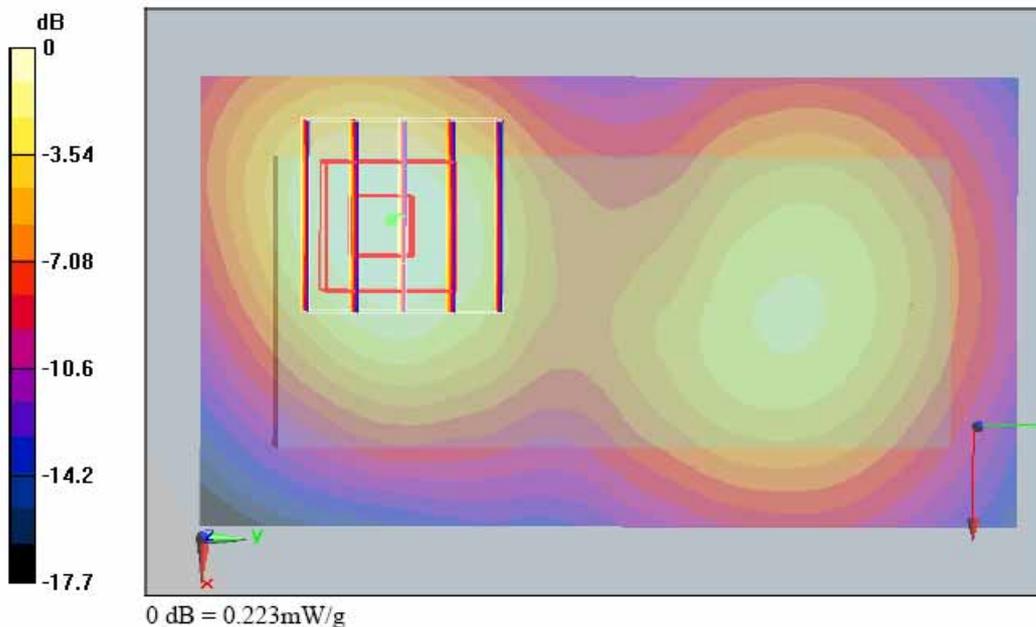
Ch600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.36 V/m; Power Drift = -0.040 dB

Peak SAR (extrapolated) = 0.339 W/kg

SAR(1 g) = 0.209 mW/g; SAR(10 g) = 0.123 mW/g

Maximum value of SAR (measured) = 0.223 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/10

Body_CDMA1900 Ch600_Rear Face with 1.5cm Gap_1X-RTT_RC1**DUT: 830102**

Communication System: CDMA ; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: MSL_1900 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 50.9$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.8 °C ; Liquid Temperature : 21.0 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.75, 4.75, 4.75); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch600/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.181 mW/g

Ch600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 6.55 V/m; Power Drift = -0.017 dB

Peak SAR (extrapolated) = 0.254 W/kg

SAR(1 g) = 0.164 mW/g; SAR(10 g) = 0.103 mW/g

Maximum value of SAR (measured) = 0.174 mW/g

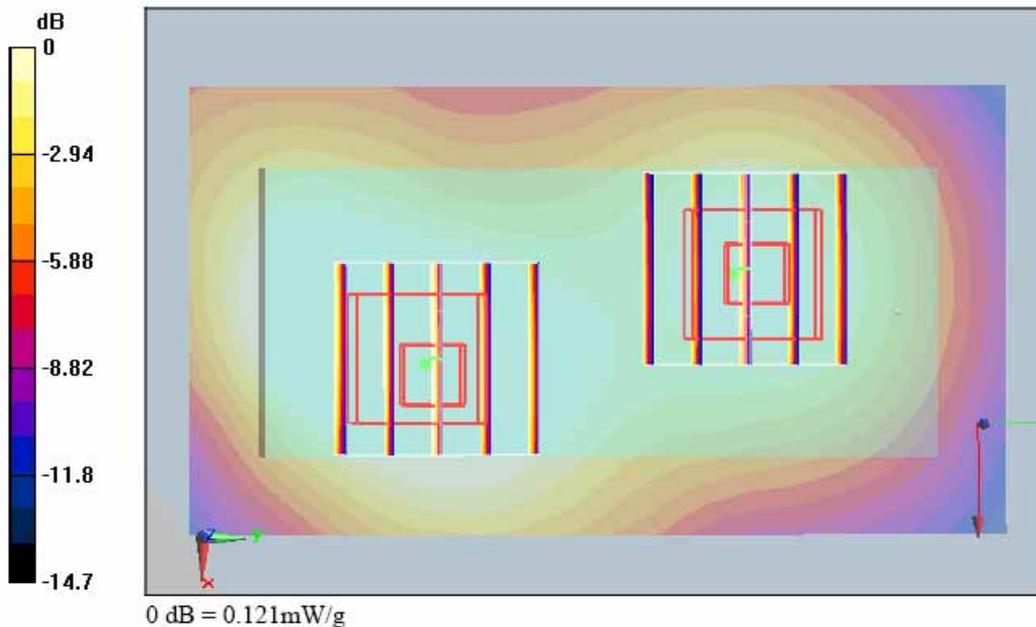
Ch600/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 6.55 V/m; Power Drift = -0.017 dB

Peak SAR (extrapolated) = 0.184 W/kg

SAR(1 g) = 0.113 mW/g; SAR(10 g) = 0.071 mW/g

Maximum value of SAR (measured) = 0.121 mW/g





Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/7

Left Check_CDMA850 Ch384_RC3_2D

DUT: 830102

Communication System: CDMA ; Frequency: 836.49 MHz;Duty Cycle: 1:1

Medium: HSL_850 Medium parameters used : f = 836.49 MHz; $\sigma = 0.914$ mho/m; $\epsilon_r = 40.9$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.3 °C; Liquid Temperature : 21.7 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(6.54, 6.54, 6.54); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch384/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.05 mW/g

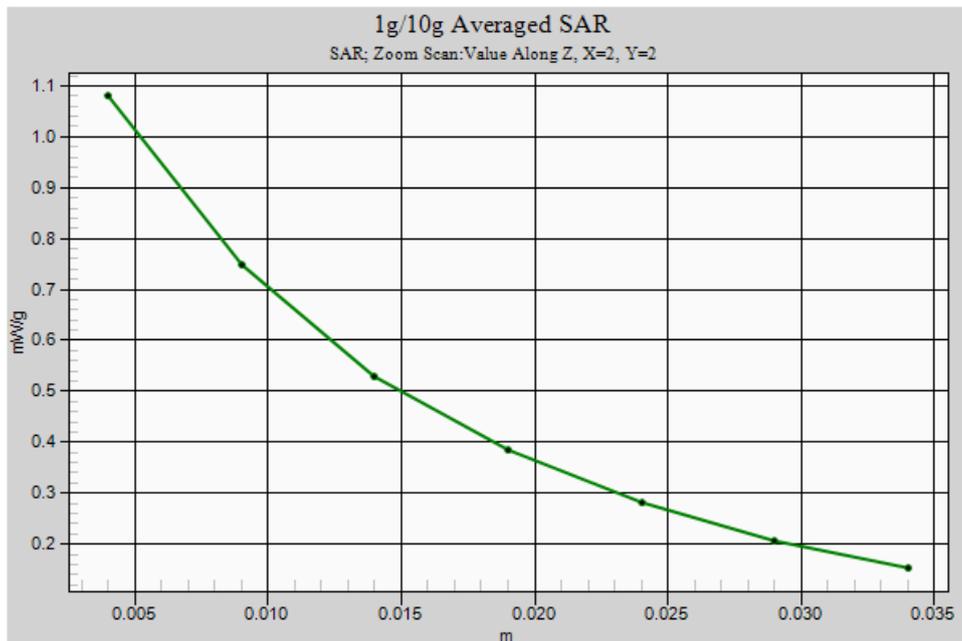
Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11 V/m; Power Drift = 0.025 dB

Peak SAR (extrapolated) = 1.46 W/kg

SAR(1 g) = 0.994 mW/g; SAR(10 g) = 0.665 mW/g

Maximum value of SAR (measured) = 1.08 mW/g





Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/9

Left Cheek_CDMA1700 Ch875_RC1_2D

DUT: 830102

Communication System: CDMA ; Frequency: 1753.75 MHz;Duty Cycle: 1:1

Medium: HSL_1800 Medium parameters used: $f = 1754$ MHz; $\sigma = 1.38$ mho/m; $\epsilon_r = 38.7$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.5 °C ; Liquid Temperature : 21.5 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.28, 5.28, 5.28); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch875/Area Scan (41x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.121 mW/g

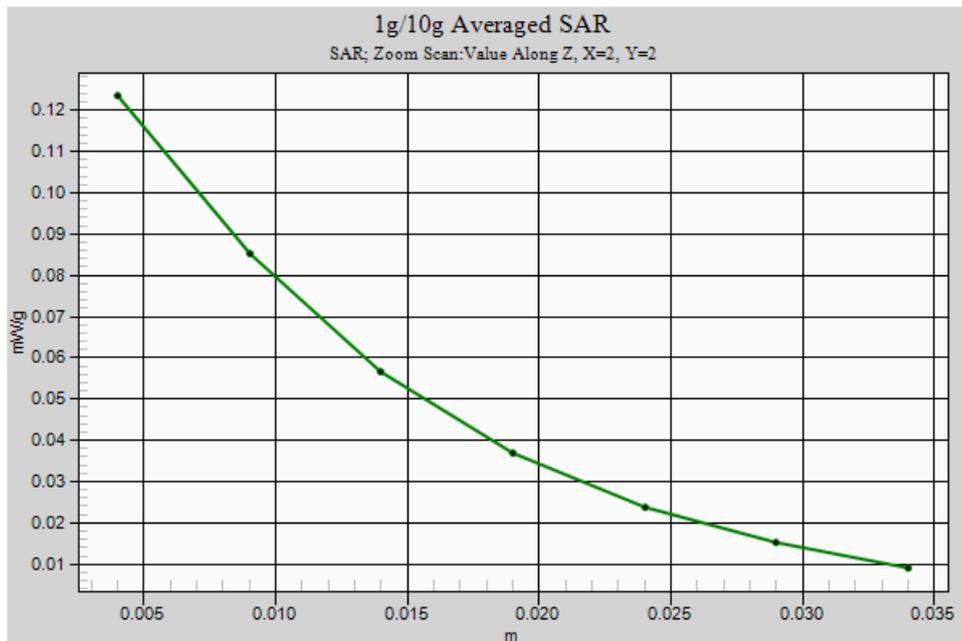
Ch875/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.26 V/m; Power Drift = -0.060 dB

Peak SAR (extrapolated) = 0.162 W/kg

SAR(1 g) = 0.112 mW/g; SAR(10 g) = 0.068 mW/g

Maximum value of SAR (measured) = 0.123 mW/g





Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/9

Left Check_CDMA1900 Ch600_RC3_Bluetooth_2D

DUT: 830102

Communication System: CDMA ; Frequency: 1880 MHz;Duty Cycle: 1:1

Medium: HSL_1900 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.4$ mho/m; $\epsilon_r = 38.7$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.5 °C; Liquid Temperature : 21.4 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.28, 5.28, 5.28); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch600/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

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

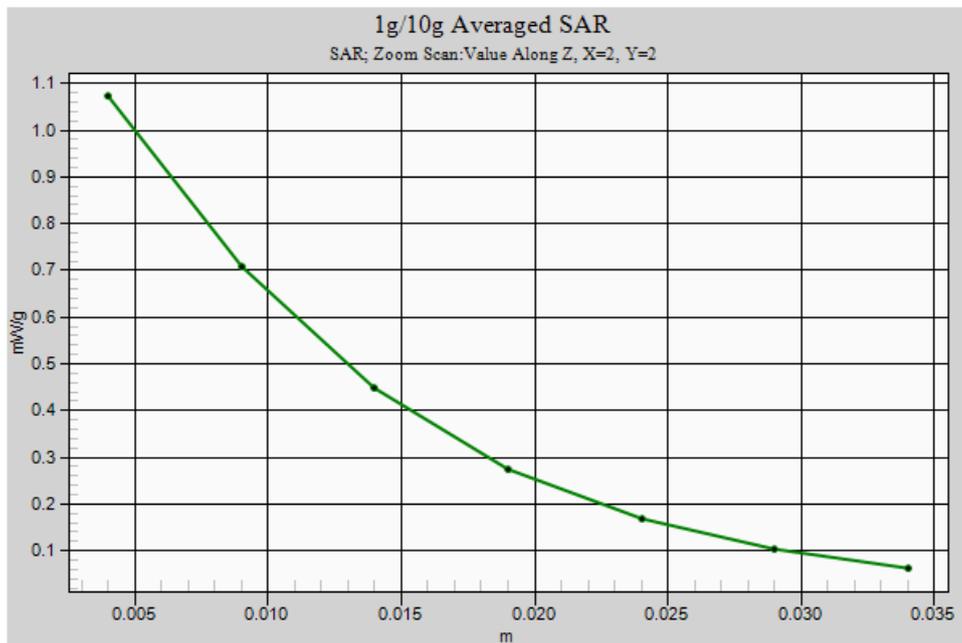
Ch600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 6.03 V/m; Power Drift = 0.154 dB

Peak SAR (extrapolated) = 1.55 W/kg

SAR(1 g) = 0.985 mW/g; SAR(10 g) = 0.567 mW/g

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





Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/11

Body_CDMA850 Ch384_Front Face with 1.5cm Gap_1X-RTT_FCH+SCH_RC3_Bluetooth_2D

DUT: 830102

Communication System: CDMA ; Frequency: 836.52 MHz;Duty Cycle: 1:1

Medium: MSL_850 Medium parameters used: $f = 837$ MHz; $\sigma = 0.967$ mho/m; $\epsilon_r = 56.3$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.7 °C; Liquid Temperature : 21.3 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(6.37, 6.37, 6.37); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch384/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.731 mW/g

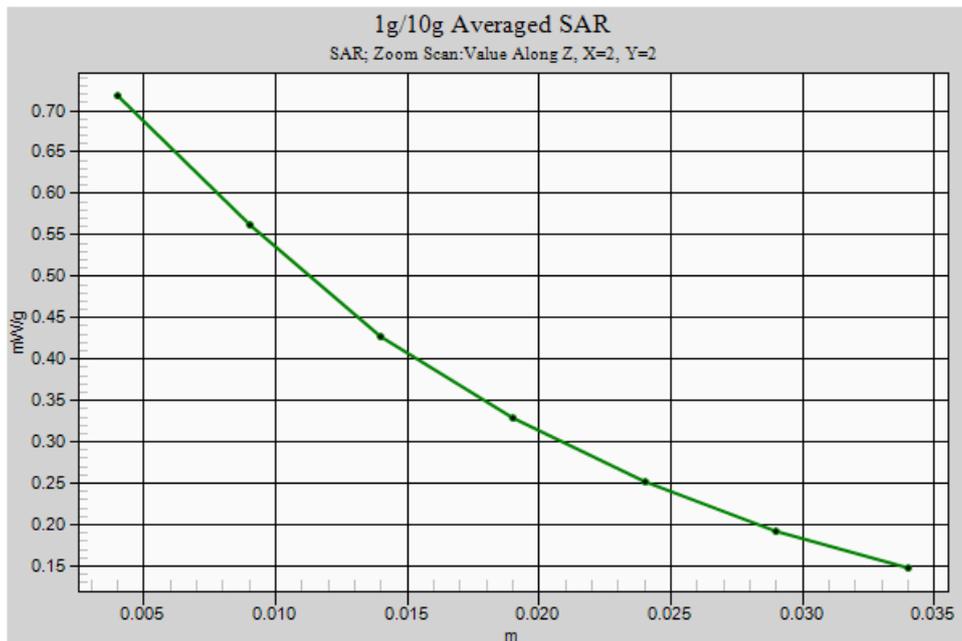
Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11 V/m; Power Drift = 0.039 dB

Peak SAR (extrapolated) = 0.846 W/kg

SAR(1 g) = 0.679 mW/g; SAR(10 g) = 0.503 mW/g

Maximum value of SAR (measured) = 0.718 mW/g





Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/10

Body_CDMA1700 Ch875_Front Face with 1.5cm Gap_1X-RTT_RC3_2D

DUT: 830102

Communication System: CDMA ; Frequency: 1753.75 MHz; Duty Cycle: 1:1

Medium: MSL_1800 Medium parameters used: $f = 1754$ MHz; $\sigma = 1.54$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.4°C; Liquid Temperature : 21.1

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.75, 4.75, 4.75); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch875/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

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

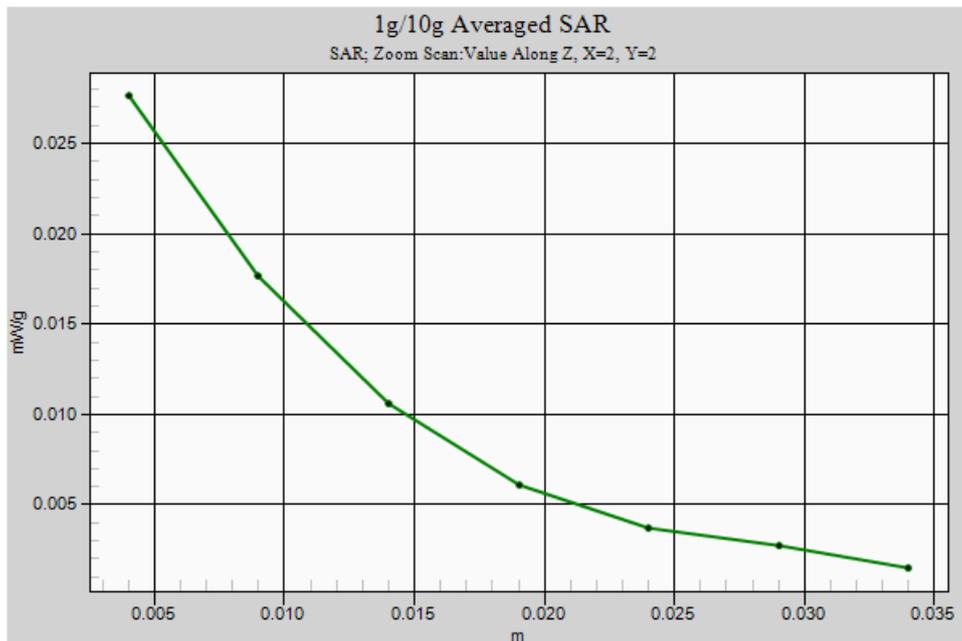
Ch875/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.19 V/m; Power Drift = -0.024 dB

Peak SAR (extrapolated) = 0.044 W/kg

SAR(1 g) = 0.026 mW/g; SAR(10 g) = 0.015 mW/g

Maximum value of SAR (measured) = 0.028 mW/g





Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/10

Body_CDMA1900 Ch600_Front Face with 1.5cm Gap_1X-RTT_FCH+SCH_RC3_2D

DUT: 830102

Communication System: CDMA ; Frequency: 1880 MHz;Duty Cycle: 1:1

Medium: MSL_1900 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 50.9$; $\rho = 1000$ kg/m³

Ambient Temperature : 21.9 °C ; Liquid Temperature : 21.0 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.75, 4.75, 4.75); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1446
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch600/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.257 mW/g

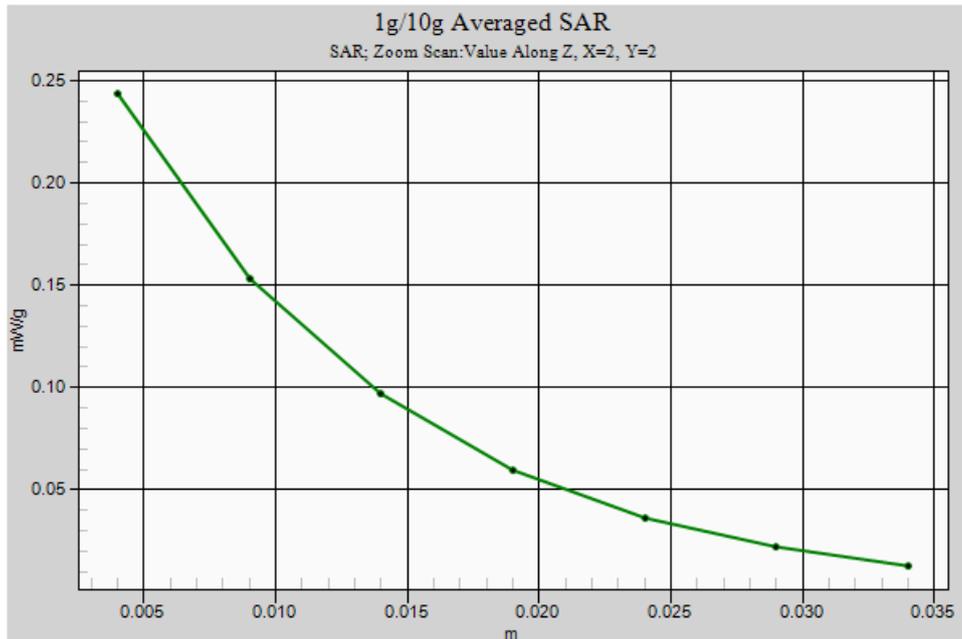
Ch600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.34 V/m; Power Drift = -0.100 dB

Peak SAR (extrapolated) = 0.363 W/kg

SAR(1 g) = 0.227 mW/g; SAR(10 g) = 0.134 mW/g

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





Appendix C – Calibration Data

Calibration Laboratory of Schmid & Partner Engineering AG



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

Accredited by the Swiss Federal Office of Metrology and Accreditation
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 Sporton (Auden)

Certificate No: D835V2-499_Mar06

CALIBRATION CERTIFICATE

Object: D835V2 - SN: 499
Calibration procedure(s): QA CAL-05.v6
Calibration date: March 15, 2006
Condition of the calibrated item: In Tolerance

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).

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)

Table with 4 columns: Primary Standards, ID #, Cal Date (Calibrated by, Certificate No.), Scheduled Calibration. Lists equipment like Power meter EPM-442A, Reference 20 dB Attenuator, etc.

Calibrated by: Judith Müller, Laboratory Technician
Approved by: Katja Pokovic, Technical Manager

Issued: March 16, 2006

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



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 Federal Office of Metrology and Accreditation
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) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001
- c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

- d) DASY4 System Handbook

Methods Applied and Interpretation of Parameters:

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

Measurement Conditions

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

DASY Version	DASY4	V4.7
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V4.9	
Distance Dipole Center - TSL	15 mm	with Spacer
Area Scan resolution	dx, dy = 15 mm	
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	42.1 ± 6 %	0.94mho/m ± 6 %
Head TSL temperature during test	(22.2 ± 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	2.35 mW / g
SAR normalized	normalized to 1W	9.40 mW / g
SAR for nominal Head TSL parameters ¹	normalized to 1W	9.24 mW / g ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.53 mW / g
SAR normalized	normalized to 1W	6.12 mW / g
SAR for nominal Head TSL parameters ¹	normalized to 1W	6.07 mW / g ± 16.5 % (k=2)

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