# Specific Absorption Rate (SAR) Test Report

for

**Palm, Inc.**

on the

**Smartphone**

| | | |
|---|---|---|
| Report No. | : | FA811107-02-A |
| Trade Name | : | Palm |
| Model Name | : | T850UNA |
| FCC ID | : | O8F-SKYG |
| IC ID | : | 3905-SKYG |
| Date of Testing | : | Jun. 12 ~ 24, 2008 |
| Date of Report | : | Jun. 27, 2008 |
| Date of Review | : | Jun. 27, 2008 |

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- Report Version: Rev. 02

***SPORTON International Inc.***
***No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.***

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# 1. Statement of Compliance

The Specific Absorption Rate (SAR) maximum results found during testing for the Palm, Inc. Smartphone Palm T850UNA are as follows (with expanded uncertainty 21.9%):

**<Standalone SAR>**

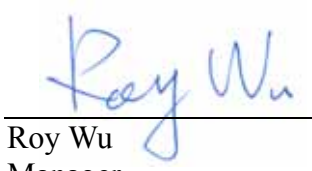
| Position | GSM850 (W/kg) | GSM1900 (W/Kg) | WCDMA Band V (W/kg) | WCDMA Band II (W/kg) |
|---|---|---|---|---|
| Head | 0.775 | 0.602 | 0.7 | 1.5 |
| Body | 1.25 | 0.527 | 0.687 | 0.608 |

**<Volume Scan SAR>**

| DUT Configuration | Position | Mode | Channel | Multi Band 1g SAR (W/kg) |
|---|---|---|---|---|
| Smartphone 1 + Battery 1 | Right Cheek | WCDMA Band II (RMC 12.2K) | 9538 (High) | 1.46 |
| | | 802.11b | 11 (High) | |
| Smartphone 2 + Battery 1 | Bottom with 1.5cm Gap | GSM850 (GPRS10) | 189 (Mid) | 1.3 |
| | | 802.11b | 11 (High) | |

They are in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits specified in RSS-102 Issued 2 (2005), 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.52, Hwa-Ya 1st RD., Hwa Ya Technology Park, Kwei-Shan Hsiang, TaoYuan Hsien, Taiwan, R.O.C.
**Telephone Number :** 886-3-327-3456
**Fax Number :** 886-3-328-4978

## 2.2 Detail of Applicant

**Company Name :** Palm, Inc.
**Address :** 950 W. Maude Ave. Sunnyvale, CA 94085

## 2.3 Detail of Manufacturer

**Company Name :** Palm, Inc.
**Address :** 950 W. Maude Ave. Sunnyvale, CA 94085

## 2.4 Application Details

**Date of reception of application:** Mar. 21, 2008
**Start of test :** Apr. 04, 2008
**End of test :** Jun. 24, 2008

# 3. General Information

## 3.1 Description of Device Under Test (DUT)

| Product Feature & Specification | |
|---|---|
| **DUT Type :** | Smartphone |
| **Trade Name :** | Palm |
| **Model Name :** | T850UNA |
| **FCC ID :** | O8F-SKYG |
| **IC ID :** | 3905-SKYG |
| **Tx Frequency :** | GSM850 : 824 MHz ~ 849 MHz<br>PCS1900 : 1850 MHz ~ 1910 MHz<br>WCDMA Band V : 824 MHz ~ 849 MHz<br>WCDMA Band II : 1850 MHz ~ 1910 MHz |
| **Rx Frequency :** | GSM850 : 869 MHz ~ 894 MHz<br>PCS1900 : 1930 MHz ~ 1990 MHz<br>WCDMA Band V : 869 MHz ~ 894 MHz<br>WCDMA Band II : 1930 MHz ~ 1990 MHz |
| **Maximum Output Power to Antenna :** | GSM850 : 32.72 dBm (GSM) / 32.66 dBm (GPRS10) / 27.22 dBm (EDGE10)<br>PCS1900 : 29.28 dBm (GSM) / 29.25 dBm (GPRS10) / 25.78 dBm (EDGE10)<br>WCDMA Band V : 22.83 dBm(12.2kbps) / 21.77 dBm(12.2K + HSDPA)<br>WCDMA Band II : 22.57 dBm(12.2kbps) / 21.16 dBm(12.2K + HSDPA) |
| **Type of Antenna Connector :** | N/A |
| **Antenna Type :** | GSM / WCDMA : PIFA Antenna |
| **Type of Modulation :** | GSM / GPRS : GMSK<br>EDGE : 8PSK<br>WCDMA / HSDPA : QPSK |
| **DUT Stage :** | Identical Prototype |
| **Application Type :** | Certification |

### 3.2 Basic Description of Device under Test

| | | |
|---|---|---|
| **Smartphone 1** | | LCD Panel 1 + Photo Camera 1 |
| **Smartphone 2** | | LCD Panel 2 + Photo Camera 2 |
| **AC/DC Adapter** | **Brand Name / Model No.** | Palm / 3387WW(PMG0501000P) |
| | **Type No.** | 157-10107-00 |
| | **Power Rating** | I/P: 100-240Vac, 47-63Hz;<br>O/P: 5 Vdc,1000mA |
| **Battery 1** | **Brand Name** | Palm |
| | **Model No.** | 157-10105-00 |
| | **P/N** | 35H00114-00M |
| | **Power Rating** | 3.7Vdc, 1500mAh |
| | **Type** | Li-ion |
| **Battery 2** | **Brand Name** | Palm |
| | **Model No.** | 157-10105-00 |
| | **P/N** | 35H00114-01M |
| | **Power Rating** | 3.7Vdc, 1500mAh |
| | **Type** | Li-ion |
| **Battery 3** | **Brand Name** | Palm |
| | **Model No.** | 157-10105-00 |
| | **P/N** | 35H00114-02M |
| | **Power Rating** | 3.7Vdc, 1500mAh |
| | **Type** | Li-ion |
| **Earphone** | **Brand Name / Model No.** | Palm / 3363WW, P/N: 180-10611-00 |
| | **Signal Line Type** | 0.9 meter non-shielded cable without ferrite core |
| **USB Cable** | **Brand Name / Model No.** | Palm / 3403WW, P/N: 163-10274-00 |
| | **Signal Line Type** | 1.8 meter non-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 Photos

Please refer to Appendix D

### 3.4 Applied Standards

The Specific Absorption Rate (SAR) testing specification, method and procedure for this Smartphone is in accordance with the following standards:

RSS-102 Issued 2 (2005),
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.
KDB 648474 D01 v01r03

### 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 | HSL_850 | MSL_850 | MSL_850 | MSL_850 |
|---|---|---|---|---|---|
| Date | Jun. 13, 2008 | Jun. 18, 2008 | Jun. 13, 2008 | Jun. 18, 2008 | Jun. 20, 2008 |
| Ambient Temperature (°C) | 20-24℃ | | | | |
| Tissue simulating liquid temperature (°C) | 21.1°C | 21.5°C | 21.6°C | 21.7°C | 21.7°C |
| Humidity (%) | <60% | | | | |

| Item | HSL_1900 | HSL_1900 | HSL_1900 | MSL_1900 | MSL_1900 |
|---|---|---|---|---|---|
| Date | Jun. 13, 2008 | Jun. 15, 2008 | Jun. 18, 2008 | Jun. 12, 2008 | Jun. 18, 2008 |
| Ambient Temperature (°C) | 20-24℃ | | | | |
| Tissue simulating liquid temperature (°C) | 21.5°C | 21.4°C | 21.4°C | 21.6°C | 21.6°C |
| Humidity (%) | <60% | | | | |

| Item | HSL_2450 | MSL_2450 | - | - | - |
|---|---|---|---|---|---|
| Date | Jun. 24, 2008 | Jun. 24, 2008 | - | - | - |
| Ambient Temperature (°C) | 20-24℃ | | | | |
| Tissue simulating liquid temperature (°C) | 21.5°C | 21.4°C | - | - | - |
| Humidity (%) | <60% | | | | |

### *3.6.2 Test Configuration*

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

For head SAR testing, EUT is in GSM or WCDMA link mode. In GSM link mode, its crest factor is 8.3. In WCDMA link mode, it crest factor is 1. For body SAR testing, EUT is in GPRS/EDGE or WCDMA/HSDPA link mode. In GPRS/EDGE link mode, its crest factor is 4, because EUT is GPRS/EDGE class 10 device. In WCDMA/HSDPA link mode, its crest factor is 1.

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

FCC revised KDB 648474 on June 23, 2008. According KDB 648474, the simultaneous transmission SAR (volume scan) was required, because the summation of SAR is large than 1.6W/kg and SAR to peak location separation ratio is large than 0.3. The worst configuration on worst SAR position is used for the volume scan. The FCC rule please refer to figure 3.1.

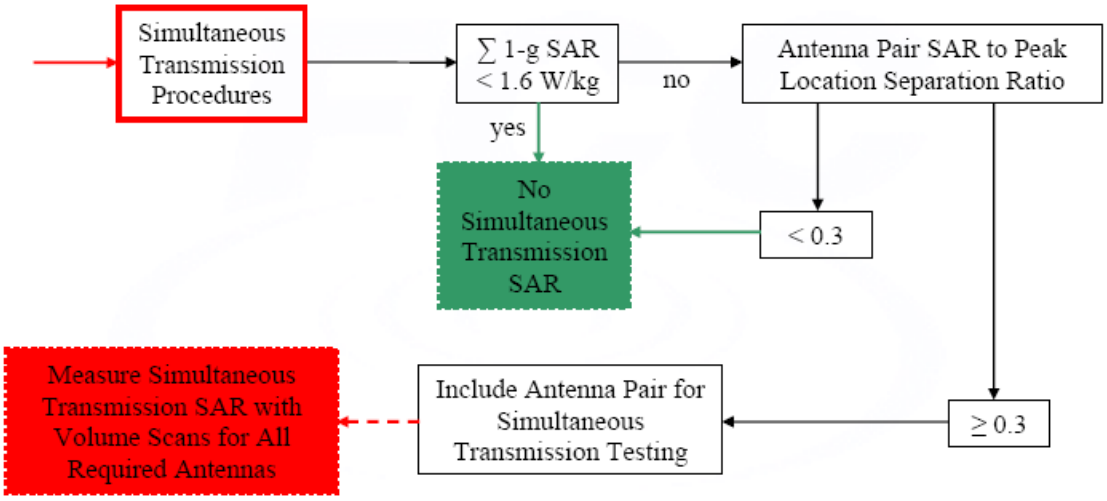



**Fig. 3.1 KDB 648474 Simultaneous Transmission SAR Procedures for a Cell Phone**

# 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. ρ ). 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 head capacity, $\delta T$ is the temperature rise and $\delta t$ the exposure duration,

or related to the electrical field in the tissue by

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

, where $\sigma$ is the conductivity of the tissue, $\rho$ is the mass density of the tissue and $\boldsymbol{E}$ is the rms electrical field strength.

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

# 5. SAR Measurement Setup

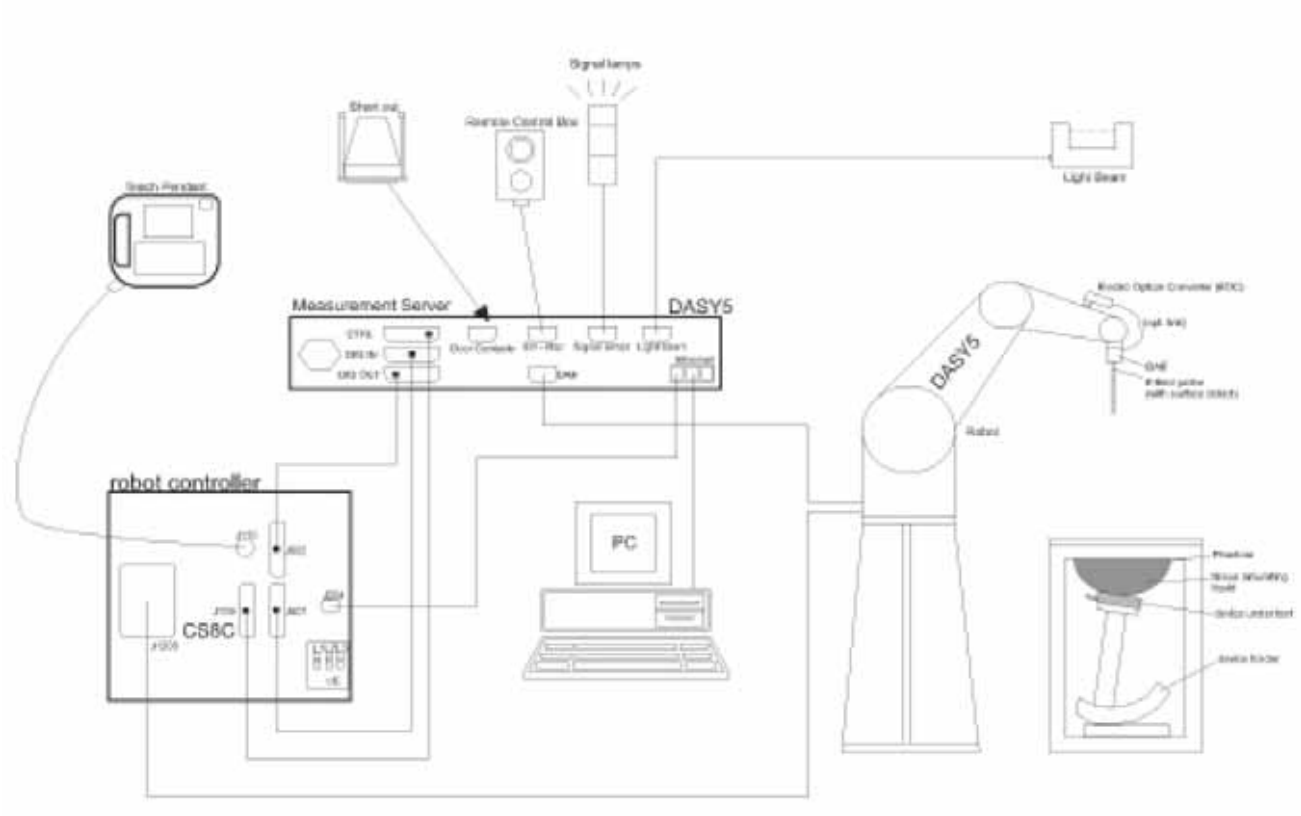



**Fig. 5.1 DASY5 System**

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
- Remove control with teach pendant and additional circuitry for robot safety such as warming 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<br>Built-in optical fiber for surface detection system<br>Built-in shielding against static charges<br>PEEK enclosure material (resistant to organic solvents) |
| **Frequency** | 10 MHz to 3 GHz |
| **Directivity** | ± 0.2 dB in brain tissue (rotation around probe axis)<br>± 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<br>Tip length: 16mm<br>Body diameter: 12mm<br>Tip diameter: 6.8mm<br>Distance from probe tip to dipole centers: 2.7mm |
| **Application** | General dosimetry up to 3GHz<br>Compliance tests for mobile phones and Wireless LAN<br>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 sn1787**

| | | | | |
|---|---|---|---|---|
| **Sensitivity** | X axis : 1.63 μV | | Y axis : 1.66 μV | Z axis : 2.08 μV |
| **Diode compression point** | X axis : 92 mV | | Y axis : 96 mV | Z axis : 91 mV |
| **Conversion factor (Head / Body)** | **Frequency (MHz)** | **X axis** | **Y axis** | **Z axis** |
| | 800~1000 | 6.58 / 6.10 | 6.58 / 6.10 | 6.58 / 6.10 |
| | 1710~1910 | 5.16 / 4.68 | 5.16 / 4.68 | 5.16 / 4.68 |
| | 1900~2100 | 4.80 / 4.30 | 4.80 / 4.30 | 4.80 / 4.30 |
| | 2350~2550 | 4.50 / 4.02 | 4.50 / 4.02 | 4.50 / 4.02 |
| **Boundary effect (Head / Body)** | **Frequency (MHz)** | **Alpha** | **Depth** | |
| | 800~1000 | 0.32 / 0.36 | 2.42 / 2.52 | |
| | 1710~1910 | 0.50 / 0.61 | 2.61 / 2.56 | |
| | 1900~2100 | 0.55 / 0.60 | 2.45 / 2.40 | |
| | 2350~2550 | 0.67 / 0.65 | 1.81 / 2.15 | |

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 DAE3 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 CS7MB robot controller version from Stäubli is used. The TX 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 chipset 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

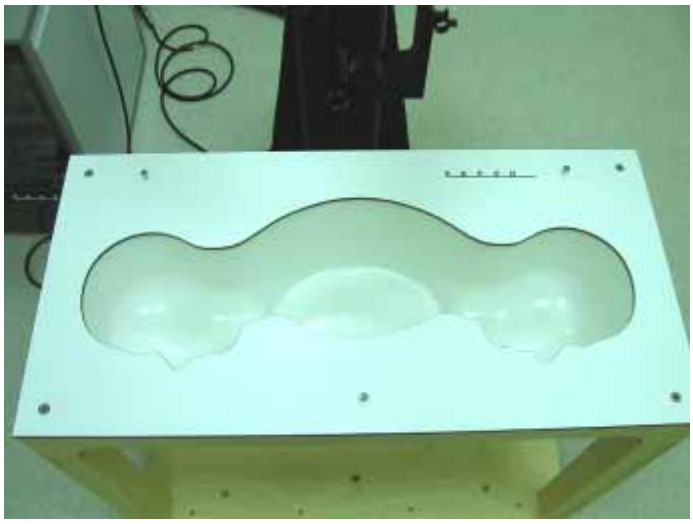


**Fig. 5.3 Top View of Twin Phantom**

**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 ±0.5mm would produce a SAR uncertainty of ± 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 $\varepsilon_r$ =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 .DA4. 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-less 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 | σ |
| | - Density | ρ |

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the 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 :

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

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

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

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

**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)
μ 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
***Etot*** = total field strength in V/m
σ = conductivity in [mho/m] or [Siemens/m]
ρ = equivalent tissue density in g/cm$^3$

＊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/cm$^2$
***$E_{tot}$*** = 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 | 1787 | Aug. 28, 2007 | Aug. 28, 2008 |
| SPEAG | 835MHz System Validation Kit | D835V2 | 499 | Mar. 17, 2008 | Mar. 17, 2010 |
| SPEAG | 1900MHz System Validation Kit | D1900V2 | 5d041 | Mar. 28, 2008 | Mar. 28, 2010 |
| SPEAG | 2450MHz System Validation Kit | D2450V2 | 736 | Jul. 12, 2007 | Jul. 12, 2009 |
| SPEAG | Data Acquisition Electronics | DAE4 | 778 | Sep. 17, 2007 | Sep. 17, 2008 |
| SPEAG | Device Holder | N/A | N/A | NCR | NCR |
| SPEAG | Phantom | QD 000 P40 C | TP-1303 | NCR | NCR |
| SPEAG | Phantom | QD 000 P40 C | TP-1383 | 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 V12.4 Build 52 | N/A | NCR | NCR |
| SPEAG | Measurement Server | SE UMS 001 BA | 1021 | NCR | NCR |
| Agilent | ENA Series Network Analyzer | E5071B | MY42403579 | Apr. 09, 2008 | Apr. 08, 2009 |
| 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 $H_20$), resistivity ≧16MΩ- 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 for frequency band 850MHz and 1900 MHz.

| Ingredient | HSL-850 | MSL-850 | HSL-1900 | MSL-1900 |
|---|---|---|---|---|
| **Water** | 532.98 g | 631.68 g | 552.42 g | 716.56 g |
| **Cellulose** | 0 g | 0 g | 0 g | 0 g |
| **Salt** | 18.3 g | 11.72 g | 3.06 g | 4.0 g |
| **Preventol D-7** | 2.4 g | 1.2 g | 0 g | 0 g |
| **Sugar** | 766.0 g | 600.0 g | 0 g | 0 g |
| **DGMBE** | 0 g | 0 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) |
| **Dielectric Parameters at 22°** | f = 835 MHz<br>$\varepsilon_r$= 41.5±5%,<br>$\sigma$ = 0.90±5% S/m | f=835 MHz<br>$\varepsilon_r$ = 55.2±5%,<br>$\sigma$ = 0.97±5% S/m | f= 1900 MHz<br>$\varepsilon_r$= 40.0±5%,<br>$\sigma$= 1.4±5% S/m | f= 1900 MHz<br>$\varepsilon_r$= 53.3±5 %,<br>$\sigma$= 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.

| Band | Position | Frequency (MHz) | Permittivity ($\varepsilon_r$) | Conductivity ($\sigma$) | Measurement Date |
|---|---|---|---|---|---|
| GSM850 | Head | 824.2 | 40.5 | 0.895 | Jun. 13, 2008 |
| | | 836.4 | 40.5 | 0.906 | |
| | | 848.8 | 40.3 | 0.915 | |
| | | 824.2 | 40.7 | 0.898 | Jun. 18, 2008 |
| | | 836.4 | 40.6 | 0.909 | |
| | | 848.8 | 40.4 | 0.919 | |
| | Body | 824.2 | 56.3 | 0.967 | Jun. 13, 2008 |
| | | 836.4 | 56.3 | 0.978 | |
| | | 848.8 | 56.1 | 0.988 | |
| | | 824.2 | 56.3 | 0.955 | Jun. 18, 2008 |
| | | 836.4 | 56.3 | 0.967 | |
| | | 848.8 | 56.1 | 0.976 | |
| | | 824.2 | 56.3 | 0.979 | Jun. 20, 2008 |
| | | 836.4 | 56.3 | 0.991 | |
| | | 848.8 | 56.1 | 1.000 | |
| GSM1900 | Head | 1850.2 | 38.6 | 1.41 | Jun. 13, 2008 |
| | | 1880.0 | 38.5 | 1.44 | |
| | | 1909.8 | 38.4 | 1.46 | |
| | | 1850.2 | 39.1 | 1.37 | Jun. 18, 2008 |
| | | 1880.0 | 39.0 | 1.40 | |
| | | 1909.8 | 38.9 | 1.43 | |
| | Body | 1850.2 | 51.2 | 1.47 | Jun. 12, 2008 |
| | | 1880.0 | 51.1 | 1.50 | |
| | | 1909.8 | 51.0 | 1.53 | |
| | | 1850.2 | 51.6 | 1.47 | Jun. 18, 2008 |
| | | 1880.0 | 51.5 | 1.49 | |
| | | 1909.8 | 51.4 | 1.53 | |
| WCDMA Band V | Head | 826.4 | 40.5 | 0.897 | Jun. 13, 2008 |
| | | 836.4 | 40.5 | 0.906 | |
| | | 846.6 | 40.3 | 0.914 | |
| | | 826.4 | 40.7 | 0.900 | Jun. 18, 2008 |
| | | 836.4 | 40.6 | 0.910 | |
| | | 846.6 | 40.5 | 0.917 | |
| | Body | 826.4 | 56.3 | 0.969 | Jun. 13, 2008 |
| | | 836.4 | 56.3 | 0.978 | |
| | | 846.6 | 56.1 | 0.987 | |
| | | 826.4 | 56.4 | 0.947 | Jun. 18, 2008 |
| | | 836.4 | 56.3 | 0.957 | |
| | | 846.6 | 56.2 | 0.975 | |

| | | | | | |
|---|---|---|---|---|---|
| WCDMA Band II | Head | 1852.4 | 38.6 | 1.41 | Jun. 13, 2008 |
| | | 1880.0 | 38.5 | 1.44 | |
| | | 1907.6 | 38.4 | 1.46 | |
| | | 1852.4 | 38.6 | 1.41 | Jun. 15, 2008 |
| | | 1880.0 | 38.5 | 1.44 | |
| | | 1907.6 | 38.4 | 1.46 | |
| | | 1852.4 | 39.1 | 1.38 | Jun. 18, 2008 |
| | | 1880.0 | 39.0 | 1.40 | |
| | | 1907.6 | 38.9 | 1.43 | |
| | Body | 1852.4 | 51.2 | 1.47 | Jun. 13, 2008 |
| | | 1880.0 | 51.1 | 1.50 | |
| | | 1907.6 | 51.0 | 1.53 | |
| | | 1852.4 | 51.6 | 1.47 | Jun. 18, 2008 |
| | | 1880.0 | 51.5 | 1.49 | |
| | | 1907.6 | 51.4 | 1.53 | |
| 802.11b/g | Head | 2412 | 37.9 | 1.81 | Jun. 24, 2008 |
| | | 2437 | 37.8 | 1.83 | |
| | | 2462 | 37.7 | 1.86 | |
| | Body | 2412 | 53.9 | 1.89 | Jun. 24, 2008 |
| | | 2437 | 53.8 | 1.92 | |
| | | 2462 | 53.7 | 1.95 | |

**Table 6.2 Measuring Results for Simulating Liquid**

The measuring data are consistent with $\varepsilon_r = 41.5 \pm 5\%$ and $\sigma = 0.9 \pm 5\%$ for head SAR of GSM850 and WCDMA Band V, $\varepsilon_r = 55.2 \pm 5\%$ and $\sigma = 0.97 \pm 5\%$ for body SAR of GSM850 and WCDMA Band V, $\varepsilon_r = 40.0 \pm 5\%$ and $\sigma = 1.4 \pm 5\%$ for head SAR of GSM1900 and WCDMA Band II, and $\varepsilon_r = 53.3 \pm 5\%$ and $\sigma = 1.52 \pm 5\%$ for body SAR of GSM1900 and WCDMA Band II.

# 7. Uncertainty Assessment

The component of uncertainly may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainly 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) | $1/\sqrt{3}$ | $1/\sqrt{6}$ | $1/\sqrt{2}$ |

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

(b) $\kappa$ 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 835 MHz, 1900 MHz and 2450 MHz. 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:

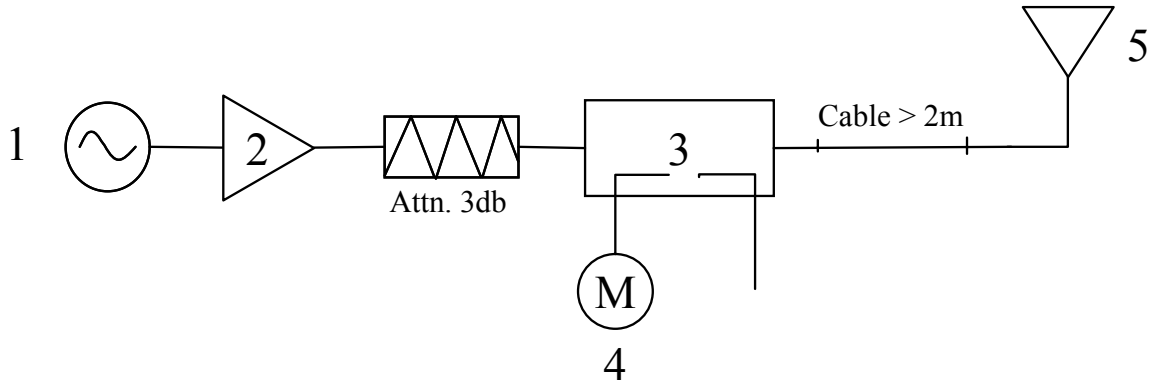



**Fig. 8.1 System Setup for System Evaluation**

1. Signal Generator
2. Amplifier
3. Directional Coupler
4. Power Meter
5. 835 MHz or 1900 MHz or 2450 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.

| Frequency | Position | SAR | Target (W/kg) | Measurement Data (W/kg) | Variation | Measurement Date |
|---|---|---|---|---|---|---|
| 835 MHz | Head | SAR (1g) | 9.16 | 9.34 | 2.0 % | Jun. 13, 2008 |
| | | SAR (10g) | 6.0 | 6.11 | 1.8 % | |
| | | SAR (1g) | 9.16 | 9.72 | 6.1 % | Jun. 18, 2008 |
| | | SAR (10g) | 6.0 | 6.34 | 5.7 % | |
| | Body | SAR (1g) | 9.52 | 9.38 | -1.5 % | Jun. 13, 2008 |
| | | SAR (10g) | 6.37 | 6.17 | -3.1 % | |
| | | SAR (1g) | 9.52 | 9.02 | -5.3 % | Jun. 18, 2008 |
| | | SAR (10g) | 6.37 | 5.93 | -6.9 % | |
| | | SAR (1g) | 9.52 | 9.61 | 0.9 % | Jun. 20, 2008 |
| | | SAR (10g) | 6.37 | 6.33 | -0.6 % | |
| 1900 MHz | Head | SAR (1g) | 39.5 | 40.9 | 3.5 % | Jun. 13, 2008 |
| | | SAR (10g) | 20.6 | 21.4 | 3.9 % | |
| | | SAR (1g) | 39.5 | 38.2 | -3.3 % | Jun. 15, 2008 |
| | | SAR (10g) | 20.6 | 19.9 | -3.4 % | |
| | | SAR (1g) | 39.5 | 37.6 | -4.8 % | Jun. 18, 2008 |
| | | SAR (10g) | 20.6 | 19.5 | -5.3 % | |
| | Body | SAR (1g) | 40.1 | 37.9 | -5.5 % | Jun. 12, 2008 |
| | | SAR (10g) | 21.3 | 20.2 | -5.2 % | |
| | | SAR (1g) | 40.1 | 39.6 | -1.2 % | Jun. 18, 2008 |
| | | SAR (10g) | 21.3 | 21.1 | -0.9 % | |
| 2450 MHz | Head | SAR (1g) | 52.7 | 55.8 | 5.9 % | Jun. 24, 2008 |
| | | SAR (10g) | 24.5 | 26.2 | 6.9 % | |
| | Body | SAR (1g) | 52.5 | 51.1 | -2.7 % | Jun. 24, 2008 |
| | | SAR (10g) | 24.4 | 24.5 | 0.4 % | |

**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, Face with 1.5cm Gap and Bottom with 1.5cm Gap 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 front face or rear face and the flat phantom to 1.5 cm.

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

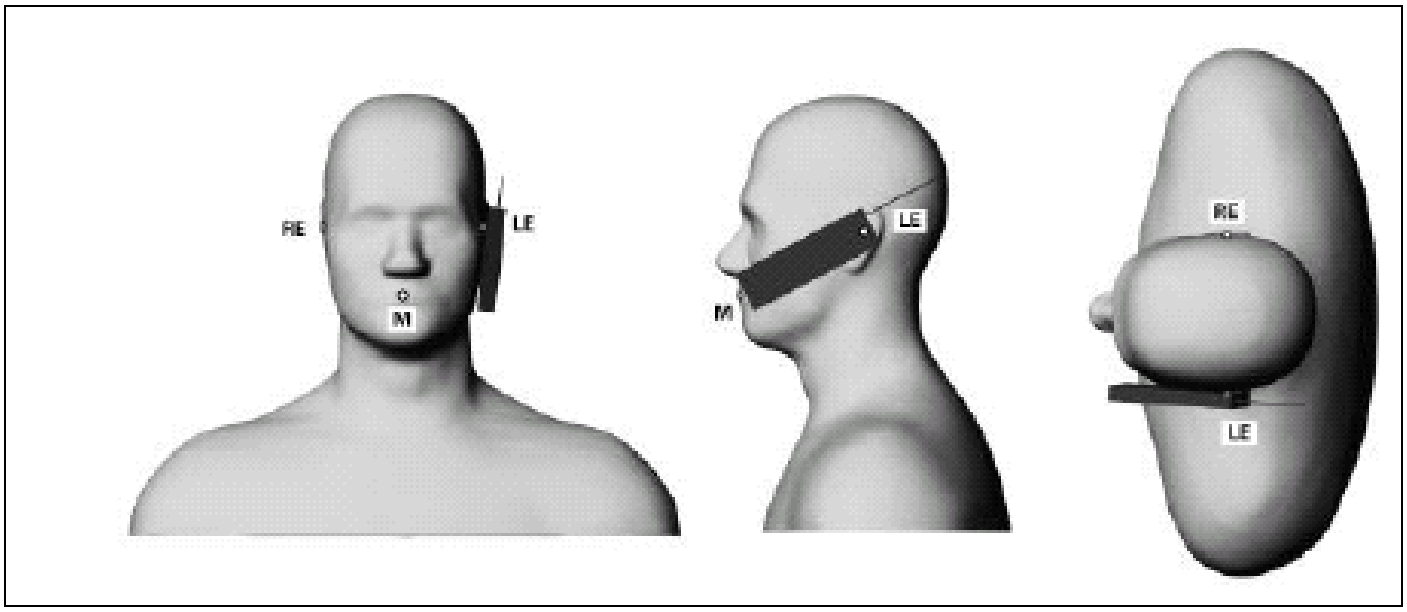



**Fig. 9.1 Phone Position 1, "Cheek" or "Touch" Position. The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the plane for phone positioning, are indicated.**

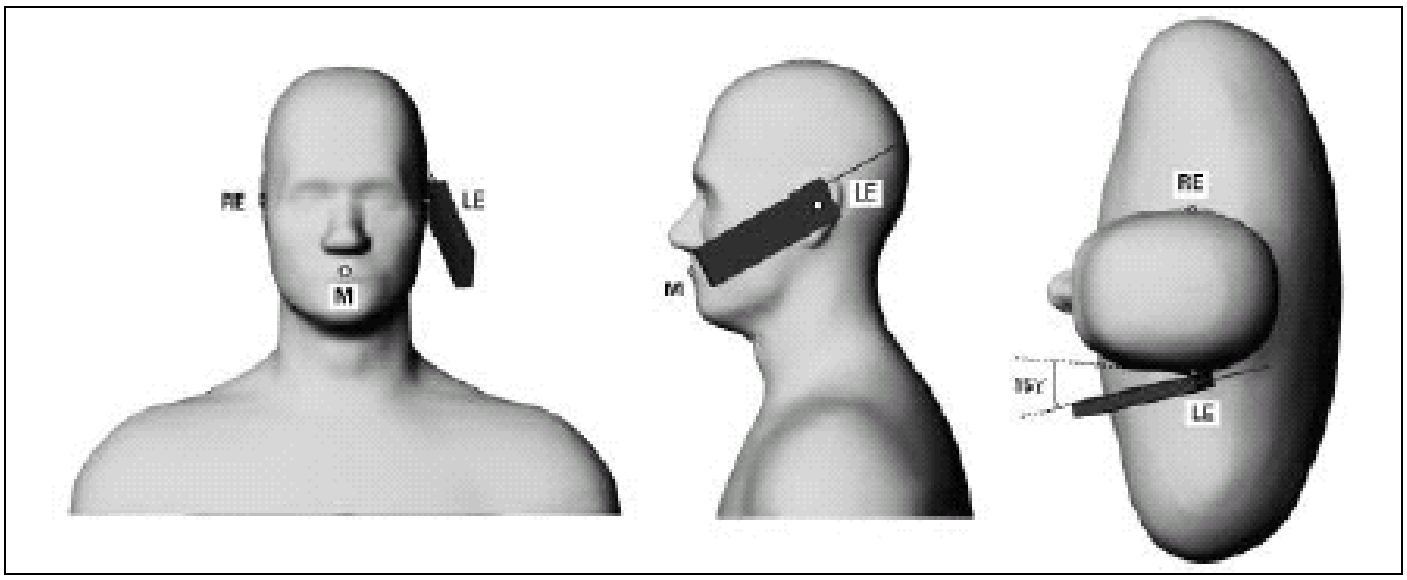



**Fig. 9.2 Phone Position 2, "Tilted Position". The reference point for the right ear (RE), left ear (LE) and mouth (M), which define the plane for phone positioning, are indicated.**

# 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 middle channel on each testing position
- Finding out the largest SAR result on these testing positions of each band
- Measuring output power and SAR results for the low and high channels in this worst case 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 Volume Scan Method*

- Choose the worst mode of dominant transmitter on each band.
- Scan dominant transmitter and 2nd transmitter in their suitable simulating liquid by covering 2 transmitter hot area.
- Use SEMCAD postprocessor to combine and subsequently superpose these measurement data then calculate the multiband SAR value.

# 11. SAR Test Results

## 11.1 Conducted Power

| Band | GSM 850 | | | PCS 1900 | | |
|---|---|---|---|---|---|---|
| Channel | 128 | 189 | 251 | 512 | 661 | 810 |
| GSM | 32.55 | 32.67 | 32.72 | 29.28 | 29.28 | 29.06 |
| GPRS 8 | 32.50 | 32.66 | 32.70 | 29.28 | 29.28 | 29.08 |
| GPRS 10 | 32.50 | 32.64 | 32.66 | 29.25 | 29.24 | 29.00 |
| EDGE 8 | 27.15 | 27.24 | 27.30 | 25.88 | 25.83 | 25.64 |
| EDGE 10 | 27.10 | 27.17 | 27.22 | 25.78 | 25.75 | 25.51 |

| Band | WCDMA Band V | | | WCDMA Band II | | |
|---|---|---|---|---|---|---|
| Channel | 4132 | 4182 | 4233 | 9262 | 9400 | 9538 |
| 12.2K | 22.58 | 22.83 | 22.64 | 22.57 | 22.47 | 22.42 |
| 12.2K+HSDPA | 21.44 | 21.77 | 21.49 | 21.05 | 21.01 | 21.16 |

## 11.2 Test Results for Head

| Position | Band | Mode | Ch. | Freq. (MHz) | Modulation Type | Battery | Smartphone | Measured 1g SAR (W/kg) | Power Drift (dB) | Limit (W/kg) | Result | App. Plot |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RC | GSM 850 | GSM | 189 | 836.4 | GMSK | 1 | 1 | 0.66 | -0.019 | 1.6 | Pass | - |
| RT | GSM 850 | GSM | 189 | 836.4 | GMSK | 1 | 1 | 0.541 | -0.062 | 1.6 | Pass | 2 |
| LC | GSM 850 | GSM | 189 | 836.4 | GMSK | 1 | 1 | 0.565 | -0.032 | 1.6 | Pass | 3 |
| LT | GSM 850 | GSM | 189 | 836.4 | GMSK | 1 | 1 | 0.449 | -0.11 | 1.6 | Pass | 4 |
| RC | GSM 850 | GSM | 128 | 824.2 | GMSK | 1 | 1 | 0.382 | -0.091 | 1.6 | Pass | - |
| RC | GSM 850 | GSM | 251 | 848.8 | GMSK | 1 | 1 | 0.751 | 0.02 | 1.6 | Pass | - |
| RC | GSM 850 | GSM | 251 | 848.8 | GMSK | 1 | 2 | 0.664 | -0.095 | 1.6 | Pass | - |
| RC | GSM 850 | GSM | 251 | 848.8 | GMSK | 2 | 1 | 0.671 | -0.171 | 1.6 | Pass | - |
| **RC** | **GSM 850** | GSM | **251** | **848.8** | **GMSK** | **3** | **1** | **0.775** | **0.064** | **1.6** | **Pass** | **1** |
| RC | GSM 1900 | GSM | 661 | 1880.0 | GMSK | 1 | 1 | 0.448 | -0.13 | 1.6 | Pass | - |
| RT | GSM 1900 | GSM | 661 | 1880.0 | GMSK | 1 | 1 | 0.346 | -0.071 | 1.6 | Pass | 6 |
| LC | GSM 1900 | GSM | 661 | 1880.0 | GMSK | 1 | 1 | 0.32 | -0.082 | 1.6 | Pass | 7 |
| LT | GSM 1900 | GSM | 661 | 1880.0 | GMSK | 1 | 1 | 0.327 | -0.065 | 1.6 | Pass | 8 |
| RC | GSM 1900 | GSM | 512 | 1850.2 | GMSK | 1 | 1 | 0.424 | -0.06 | 1.6 | Pass | - |
| RC | GSM 1900 | GSM | 810 | 1909.8 | GMSK | 1 | 1 | 0.55 | -0.019 | 1.6 | Pass | - |
| RC | GSM 1900 | GSM | 810 | 1909.8 | GMSK | 1 | 2 | 0.468 | -0.061 | 1.6 | Pass | - |
| RC | GSM 1900 | GSM | 810 | 1909.8 | GMSK | 2 | 1 | 0.517 | 0.044 | 1.6 | Pass | - |
| **RC** | **GSM 1900** | GSM | **810** | **1909.8** | **GMSK** | **3** | **1** | **0.602** | **-0.103** | **1.6** | **Pass** | **5** |

| Position | Band | Mode | Ch. | Freq. (MHz) | Modulation Type | Battery | Smartphone | Measured 1g SAR (W/kg) | Power Drift (dB) | Limit (W/kg) | Result | App. Plot |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RC | WCDMA 850 | 12.2K | 4182 | 836.4 | QPSK | 1 | 1 | 0.47 | -0.013 | 1.6 | Pass | - |
| RT | WCDMA 850 | 12.2K | 4182 | 836.4 | QPSK | 1 | 1 | 0.387 | -0.08 | 1.6 | Pass | 10 |
| LC | WCDMA 850 | 12.2K | 4182 | 836.4 | QPSK | 1 | 1 | 0.393 | -0.12 | 1.6 | Pass | 11 |
| LT | WCDMA 850 | 12.2K | 4182 | 836.4 | QPSK | 1 | 1 | 0.321 | -0.021 | 1.6 | Pass | 12 |
| RC | WCDMA 850 | 12.2K | 4132 | 826.4 | QPSK | 1 | 1 | 0.373 | 0.033 | 1.6 | Pass | - |
| RC | WCDMA 850 | 12.2K | 4233 | 846.6 | QPSK | 1 | 1 | 0.65 | -0.161 | 1.6 | Pass | - |
| RC | WCDMA 850 | 12.2K | 4233 | 846.6 | QPSK | 1 | 2 | 0.579 | -0.112 | 1.6 | Pass | - |
| RC | WCDMA 850 | 12.2K | 4233 | 846.6 | QPSK | 2 | 1 | 0.58 | -0.125 | 1.6 | Pass | - |
| **RC** | **WCDMA 850** | 12.2K | **4233** | **846.6** | **QPSK** | **3** | **1** | **0.7** | **0.031** | **1.6** | **Pass** | **9** |
| RC | WCDMA 1900 | 12.2K | 9400 | 1880.0 | QPSK | 1 | 1 | 1.12 | -0.071 | 1.6 | Pass | - |
| RT | WCDMA 1900 | 12.2K | 9400 | 1880.0 | QPSK | 1 | 1 | 0.878 | -0.079 | 1.6 | Pass | - |
| LC | WCDMA 1900 | 12.2K | 9400 | 1880.0 | QPSK | 1 | 1 | 0.735 | 0.045 | 1.6 | Pass | 15 |
| LT | WCDMA 1900 | 12.2K | 9400 | 1880.0 | QPSK | 1 | 1 | 0.767 | -0.035 | 1.6 | Pass | 16 |
| RC | WCDMA 1900 | 12.2K | 9400 | 1880.0 | QPSK | 1 | 2 | 0.975 | 0.032 | 1.6 | Pass | - |
| RC | WCDMA 1900 | 12.2K | 9400 | 1880.0 | QPSK | 2 | 1 | 1.19 | 0.083 | 1.6 | Pass | - |
| RC | WCDMA 1900 | 12.2K | 9400 | 1880.0 | QPSK | 3 | 1 | 1.11 | -0.084 | 1.6 | Pass | - |
| RC | WCDMA 1900 | 12.2K | 9262 | 1852.4 | QPSK | 2 | 1 | 0.622 | -0.092 | 1.6 | Pass | - |
| **RC** | **WCDMA 1900** | **12.2K** | **9538** | **1907.6** | **QPSK** | **2** | **1** | **1.5** | **0.181** | **1.6** | **Pass** | **13** |
| RT | WCDMA 1900 | 12.2K | 9262 | 1852.4 | QPSK | 2 | 1 | 0.504 | -0.025 | 1.6 | Pass | - |
| RT | WCDMA 1900 | 12.2K | 9538 | 1907.6 | QPSK | 2 | 1 | 1.13 | 0.023 | 1.6 | Pass | 14 |
| RC | WCDMA 1900 | 12.2K | 9262 | 1852.4 | QPSK | 2 | 1 | 0.637 | -0.017 | 1.6 | Pass | - |
| RC | WCDMA 1900 | 12.2K | 9538 | 1907.6 | QPSK | 2 | 1 | 1.38 | 0.034 | 1.6 | Pass | - |

## 11.3 Test Results for Body

| Test Mode | Band | Mode | Ch. | Freq. (MHz) | Modulation Type | Battery | Smartphone | Measured 1g SAR (W/kg) | Power Drift (dB) | Limit (W/kg) | Result | App. Plot |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Face with 1.5cm Gap | GSM850 | GPRS10 | 189 | 836.4 | GMSK | 1 | 1 | 0.246 | -0.082 | 1.6 | Pass | 17 |
| Bottom with 1.5cm Gap | GSM850 | GPRS10 | 189 | 836.4 | GMSK | 1 | 1 | 0.805 | -0.164 | 1.6 | Pass | - |
| Bottom with 1.5cm Gap | GSM850 | EDGE10 | 189 | 836.4 | 8PSK | 1 | 1 | 0.332 | -0.132 | 1.6 | Pass | - |
| **Bottom with 1.5cm Gap** | **GSM850** | **GPRS10** | **189** | **836.4** | **GMSK** | **1** | **2** | **1.25** | **-0.000819** | **1.6** | **Pass** | **18** |
| Bottom with 1.5cm Gap | GSM850 | GPRS10 | 189 | 836.4 | GMSK | 2 | 2 | 1.13 | -0.049 | 1.6 | Pass | - |
| Bottom with 1.5cm Gap | GSM850 | GPRS10 | 189 | 836.4 | GMSK | 3 | 2 | 1.11 | -0.184 | 1.6 | Pass | - |
| Bottom with 1.5cm Gap | GSM850 | GPRS10 | 128 | 824.2 | GMSK | 1 | 2 | 1.16 | -0.145 | 1.6 | Pass | - |
| Bottom with 1.5cm Gap | GSM850 | GPRS10 | 251 | 848.8 | GMSK | 1 | 2 | 1.14 | -0.183 | 1.6 | Pass | - |
| Face with 1.5cm Gap | GSM1900 | GPRS10 | 661 | 1880.0 | GMSK | 1 | 1 | 0.17 | -0.149 | 1.6 | Pass | 19 |
| Bottom with 1.5cm Gap | GSM1900 | GPRS10 | 661 | 1850.2 | GMSK | 1 | 1 | 0.512 | 0.162 | 1.6 | Pass | - |
| Bottom with 1.5cm Gap | GSM1900 | EDGE10 | 661 | 1850.2 | 8PSK | 1 | 1 | 0.24 | -0.027 | 1.6 | Pass | - |
| **Bottom with 1.5cm Gap** | **GSM1900** | **GPRS10** | **512** | **1850.2** | **GMSK** | **1** | **1** | **0.527** | **-0.142** | **1.6** | **Pass** | **20** |
| Bottom with 1.5cm Gap | GSM1900 | GPRS10 | 810 | 1909.8 | GMSK | 1 | 1 | 0.366 | -0.029 | 1.6 | Pass | - |
| Bottom with 1.5cm Gap | GSM1900 | GPRS10 | 512 | 1850.2 | GMSK | 1 | 2 | 0.428 | -0.167 | 1.6 | Pass | - |
| Bottom with 1.5cm Gap | GSM1900 | GPRS10 | 512 | 1850.2 | GMSK | 2 | 1 | 0.419 | -0.029 | 1.6 | Pass | - |
| Bottom with 1.5cm Gap | GSM1900 | GPRS10 | 512 | 1850.2 | GMSK | 3 | 1 | 0.494 | 0.177 | 1.6 | Pass | - |
| Face with 1.5cm Gap | WCDMA 850 | 12.2K | 4182 | 836.4 | QPSK | 1 | 1 | 0.131 | 0.147 | 1.6 | Pass | 21 |
| Bottom with 1.5cm Gap | WCDMA 850 | 12.2K | 4182 | 836.4 | QPSK | 1 | 1 | 0.529 | -0.071 | 1.6 | Pass | - |
| Bottom with 1.5cm Gap | WCDMA 850 | HSDPA | 4182 | 836.4 | QPSK | 1 | 1 | 0.45 | -0.137 | 1.6 | Pass | - |
| Bottom with 1.5cm Gap | WCDMA 850 | 12.2K | 4132 | 826.4 | QPSK | 1 | 1 | 0.501 | -0.108 | 1.6 | Pass | - |
| **Bottom with 1.5cm Gap** | **WCDMA 850** | **12.2K** | **4233** | **846.6** | **QPSK** | **1** | **1** | **0.687** | **-0.105** | **1.6** | **Pass** | **22** |
| Bottom with 1.5cm Gap | WCDMA 850 | 12.2K | 4233 | 846.6 | QPSK | 1 | 2 | 0.487 | -0.1 | 1.6 | Pass | - |
| Bottom with 1.5cm Gap | WCDMA 850 | 12.2K | 4233 | 846.6 | QPSK | 2 | 1 | 0543 | 0.039 | 1.6 | Pass | - |
| Bottom with 1.5cm Gap | WCDMA 850 | 12.2K | 4233 | 846.6 | QPSK | 3 | 1 | 0.537 | -0.104 | 1.6 | Pass | - |
| Face with 1.5cm Gap | WCDMA 1900 | 12.2K | 9400 | 1880.0 | QPSK | 1 | 1 | 0.276 | -0.092 | 1.6 | Pass | 23 |
| Bottom with 1.5cm Gap | WCDMA 1900 | 12.2K | 9400 | 1880.0 | QPSK | 1 | 1 | 0.38 | 0..057 | 1.6 | Pass | - |
| Bottom with 1.5cm Gap | WCDMA 1900 | HSDPA | 9400 | 1880.0 | QPSK | 1 | 1 | 0.377 | 0.094 | 1.6 | Pass | - |
| Bottom with 1.5cm Gap | WCDMA 1900 | 12.2K | 9263 | 1852.4 | QPSK | 1 | 1 | 0.317 | 0.186 | 1.6 | Pass | - |
| Bottom with 1.5cm Gap | WCDMA 1900 | 12.2K | 9538 | 1907.6 | QPSK | 1 | 1 | 0.51 | 0.082 | 1.6 | Pass | - |
| Bottom with 1.5cm Gap | WCDMA 1900 | 12.2K | 9538 | 1907.6 | QPSK | 1 | 2 | 0.592 | -0.114 | 1.6 | Pass | - |
| Bottom with 1.5cm Gap | WCDMA 1900 | 12.2K | 9538 | 1907.6 | QPSK | 2 | 2 | 0.461 | -0.13 | 1.6 | Pass | - |
| **Bottom with 1.5cm Gap** | **WCDMA 1900** | **12.2K** | **9538** | **1907.6** | **QPSK** | **3** | **2** | **0.608** | **-0.097** | **1.6** | **Pass** | **24** |

## *11.4 Volume Scan*

| DUT Configuration | Position | Mode | Channel | Power Drift (dB) | Measured 1g SAR (W/kg) | Multi Band 1g SAR (W/kg) | Limit (W/kg) | Result | App. Plot |
|---|---|---|---|---|---|---|---|---|---|
| Smartphone 1 + Battery 1 | Right Cheek | WCDMA 1900 (RMC 12.2K) | 9538 (High) | 0.122 | 1.38 | **1.46** | 1.6 | Pass | 25 |
| | | 802.11b | 11 (High) | -0.119 | 0.145 | | | | 26 |
| | | | | | | | | | 27 |
| Smartphone 2 + Battery 1 | Bottom with 1.5cm Gap | GSM 850 (GPRS 10) | 189 (Mid) | -0.041 | 1.27 | **1.3** | 1.6 | Pass | 28 |
| | | 802.11b | 11 (High) | -0.14 | 0.097 | | | | 29 |
| | | | | | | | | | 30 |

Remark :

1. The worst configuration on worst position is used for the volume scan.
2. Test Engineer：A-Rod, Eric Huang, Jason Wang and Robert Liu.

## 12. References


[1] FCC 47 CFR Part 2 "Frequency Allocations and Radio Treaty Matters; General Rules and Regulations"

[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

[3] Supplement C (Edition 01-01) to OET Bulletin 65 (Edition 97-01), "Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to RF Emissions", June 2001

[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

[8] RSS-102 Issued 2, "Radio Frequency Exposure Compliance of Radio Communication Apparatus (All Frequency Bands)", November 2005

# *Appendix A - System Performance Check Data*

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/13

**System Check_Head_835MHz**

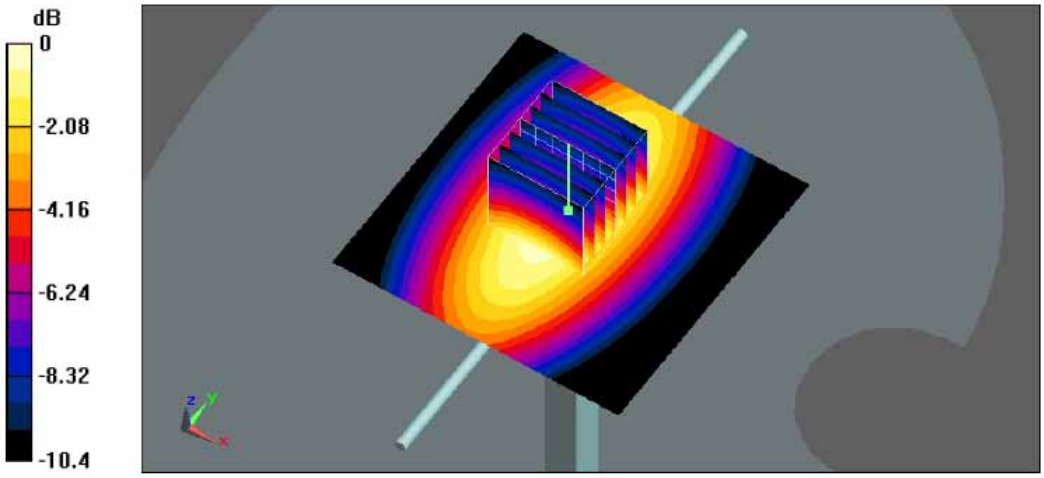
**DUT: Dipole 835 MHz**

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_850 Medium parameters used: f = 835 MHz; $\sigma$ = 0.904 mho/m; $\varepsilon_r$ = 40.5; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.0 ℃; Liquid Temperature : 21.1 ℃

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-A; Type: QD 000 P40 C; Serial: TP-1303
- 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) = 1 mW/g

**Pin=100mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 34.1 V/m; Power Drift = 0.040 dB
Peak SAR (extrapolated) = 1.39 W/kg
**SAR(1 g) = 0.934 mW/g; SAR(10 g) = 0.611 mW/g**
Maximum value of SAR (measured) = 1.01 mW/g




0 dB = 1.01mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/18

**System Check_Head_835MHz**

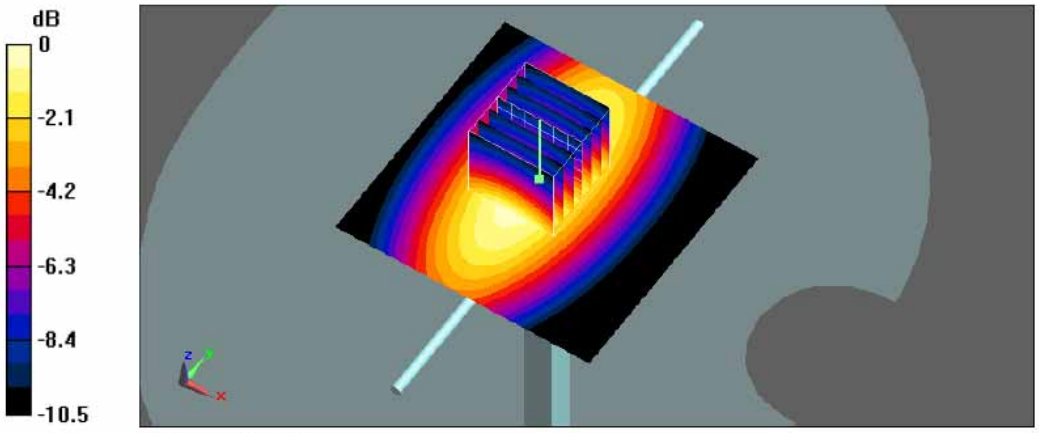
**DUT: Dipole 835 MHz**

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_850 Medium parameters used: f = 835 MHz; $\sigma$ = 0.908 mho/m; $\varepsilon_r$ = 40.6; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.5 ℃; Liquid Temperature : 21.5 ℃

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-B; Type: QD 000 P40 C; Serial: TP-1383
- 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) = 1.04 mW/g

**Pin=100mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 34.1 V/m; Power Drift = 0.036 dB
Peak SAR (extrapolated) = 1.45 W/kg
**SAR(1 g) = 0.972 mW/g; SAR(10 g) = 0.634 mW/g**
Maximum value of SAR (measured) = 1.05 mW/g




0 dB = 1.05mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/13

**System Check_Body_835MH**

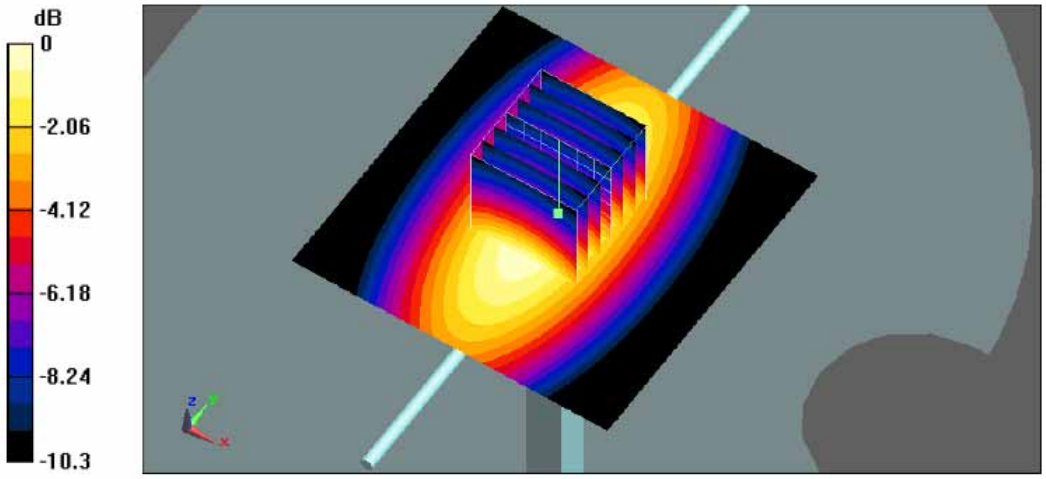
**DUT: Dipole 835 MHz**

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: MSL_850 Medium parameters used: f = 835 MHz; $\sigma$ = 0.977 mho/m; $\varepsilon_r$ = 56.3; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.4 ℃; Liquid Temperature : 21.6 ℃

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 (61x61x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.02 mW/g

**Pin=100mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 33.5 V/m; Power Drift = -0.00884 dB
Peak SAR (extrapolated) = 1.33 W/kg
**SAR(1 g) = 0.938 mW/g; SAR(10 g) = 0.617 mW/g**
Maximum value of SAR (measured) = 1.02 mW/g




0 dB = 1.02mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/18

**System Check_Body_835MHz**

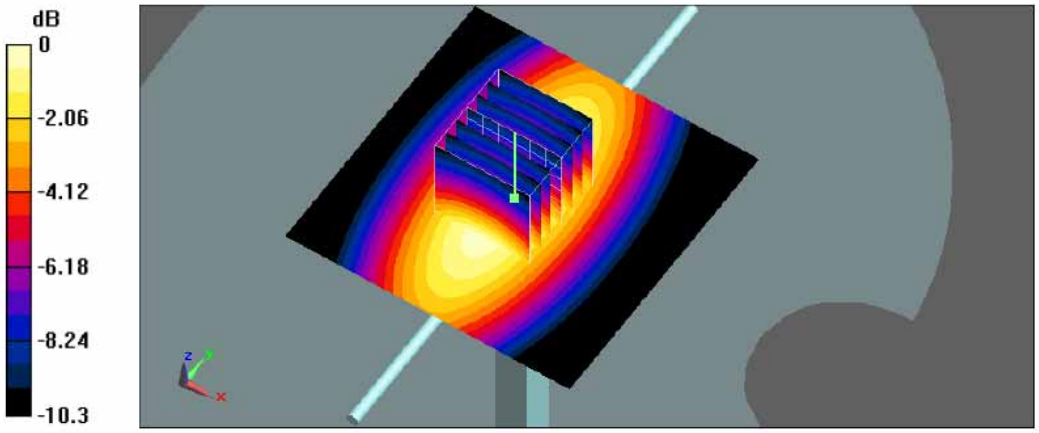
**DUT: Dipole 835 MHz**

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: MSL_850 Medium parameters used: f = 835 MHz; $\sigma$ = 0.965 mho/m; $\varepsilon_r$ = 56.3; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.5 ℃; Liquid Temperature : 21.7 ℃

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-B; Type: QD 000 P40 C; Serial: TP-1383
- 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) = 0.981 mW/g

**Pin=100mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 33 V/m; Power Drift = -0.017 dB
Peak SAR (extrapolated) = 1.29 W/kg
**SAR(1 g) = 0.902 mW/g; SAR(10 g) = 0.593 mW/g**
Maximum value of SAR (measured) = 0.980 mW/g




0 dB = 0.980mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/20

**System Check_Body_835MHz**

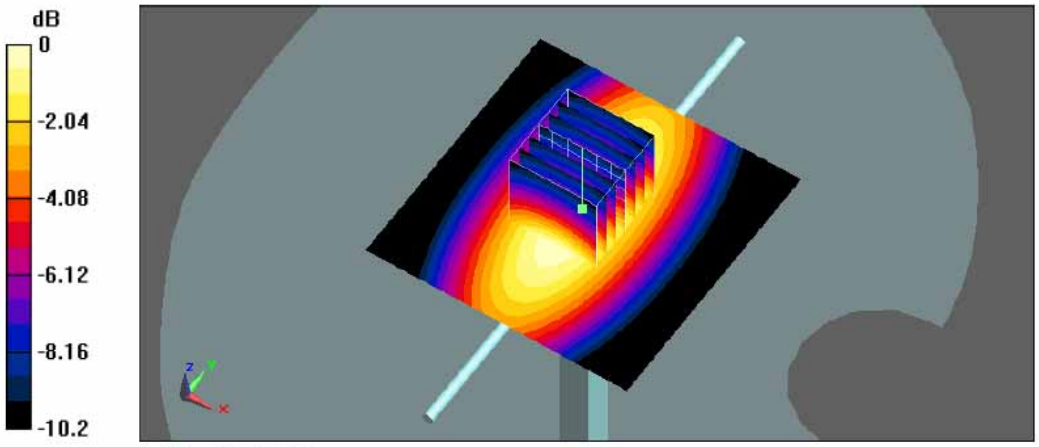
**DUT: Dipole 835 MHz**

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: MSL_850 Medium parameters used: f = 835 MHz; $\sigma$ = 0.989 mho/m; $\varepsilon_r$ = 56.3; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.5 ℃; Liquid Temperature : 21.7 ℃

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-B; Type: QD 000 P40 C; Serial: TP-1383
- 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) = 1.05 mW/g

**Pin=100mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 33.8 V/m; Power Drift = -0.042 dB
Peak SAR (extrapolated) = 1.36 W/kg
**SAR(1 g) = 0.961 mW/g; SAR(10 g) = 0.633 mW/g**
Maximum value of SAR (measured) = 1.04 mW/g




0 dB = 1.04mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/13

**System Check_Head_1900MHz**

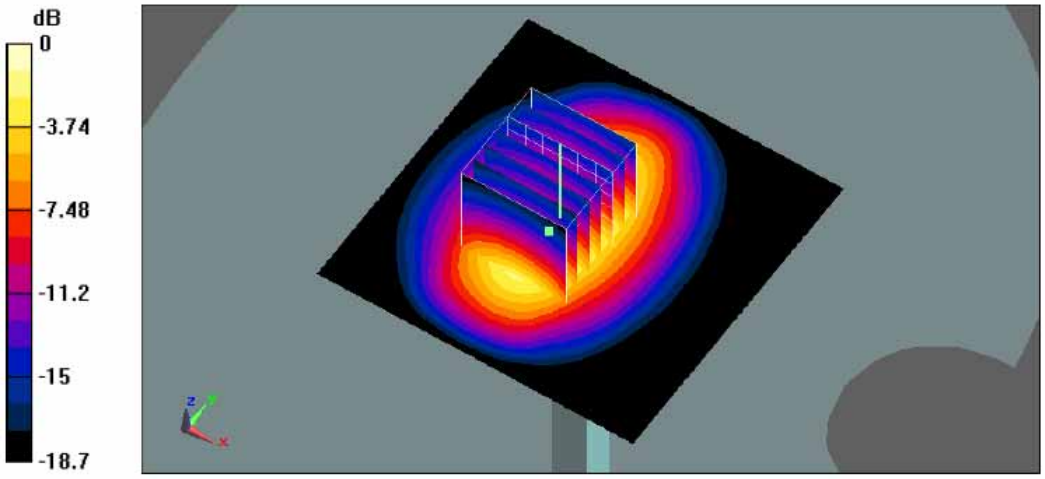
**DUT: Dipole 1900 MHz**

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1900 MHz; $\sigma$ = 1.45 mho/m; $\varepsilon_r$ = 38.4; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.5 ℃; Liquid Temperature : 21.5 ℃

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-A; Type: QD 000 P40 C; Serial: TP-1303
- 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) = 5.01 mW/g

**Pin=100mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.6 V/m; Power Drift = 0.043 dB
Peak SAR (extrapolated) = 7.36 W/kg
**SAR(1 g) = 4.09 mW/g; SAR(10 g) = 2.14 mW/g**
Maximum value of SAR (measured) = 4.56 mW/g




0 dB = 4.56mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/15

**System Check_Head_1900MHz**

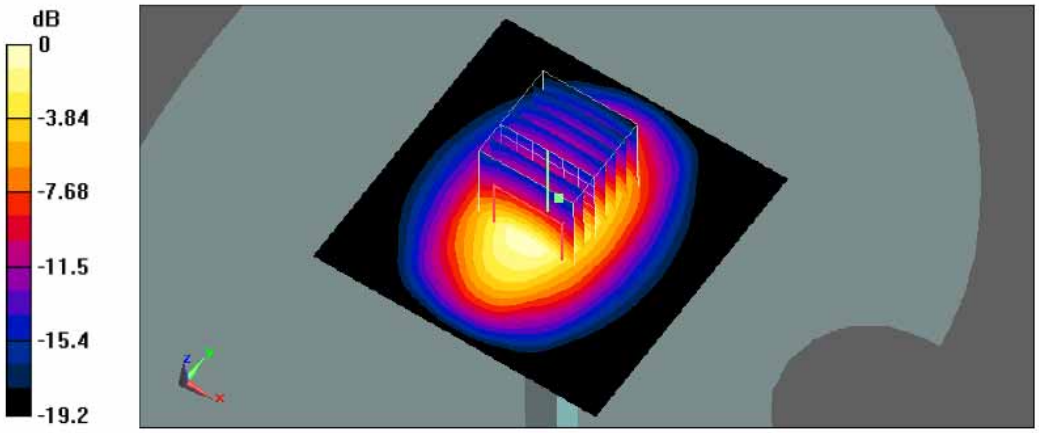
**DUT: Dipole 1900 MHz**

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1900 MHz; $\sigma$ = 1.45 mho/m; $\varepsilon_r$ = 38.4; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.8 ℃; Liquid Temperature : 21.4 ℃

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 (61x61x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 4.5 mW/g

**Pin=100mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57.1 V/m; Power Drift = -0.015 dB
Peak SAR (extrapolated) = 6.88 W/kg
**SAR(1 g) = 3.82 mW/g; SAR(10 g) = 1.99 mW/g**
Maximum value of SAR (measured) = 4.28 mW/g




0 dB = 4.28mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/18

**System Check_Head_1900MHz**

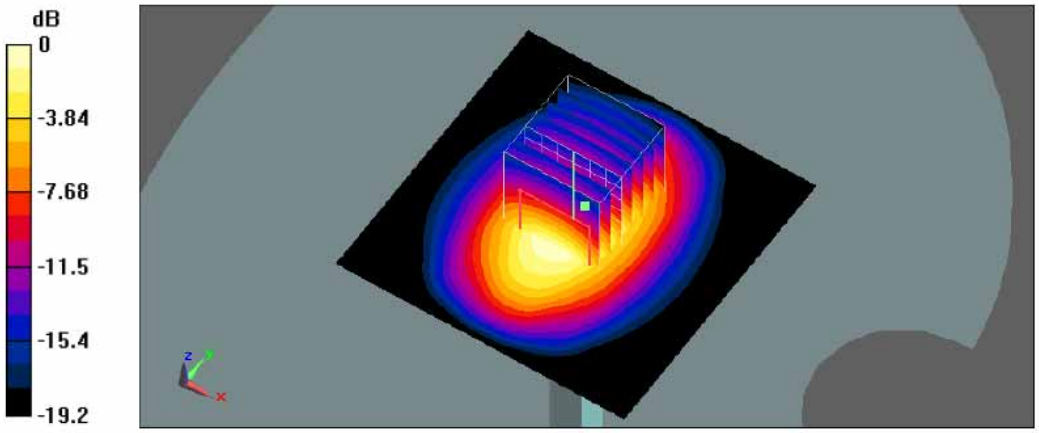
**DUT: Dipole 1900 MHz**

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1900 MHz; $\sigma$ = 1.42 mho/m; $\varepsilon_r$ = 38.9; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.4 ℃; Liquid Temperature : 21.4 ℃

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-A; Type: QD 000 P40 C; Serial: TP-1303
- 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) = 4.41 mW/g

**Pin=100mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57.1 V/m; Power Drift = -0.035 dB
Peak SAR (extrapolated) = 6.8 W/kg
**SAR(1 g) = 3.76 mW/g; SAR(10 g) = 1.95 mW/g**
Maximum value of SAR (measured) = 4.25 mW/g




0 dB = 4.25mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/12

**System Check_Body_1900MHz**

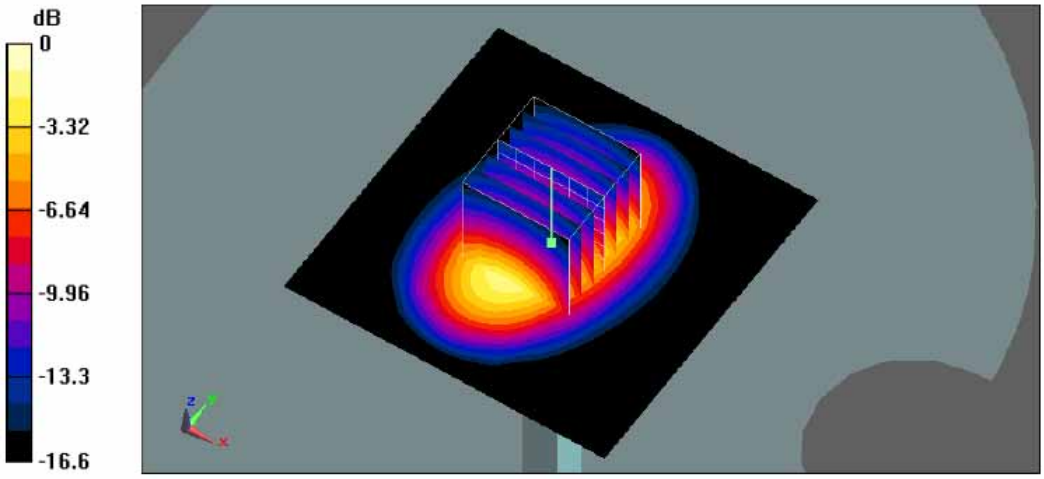
**DUT: Dipole 1900 MHz**

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900 Medium parameters used: f = 1900 MHz; $\sigma$ = 1.52 mho/m; $\varepsilon_r$ = 51; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.4 ℃; Liquid Temperature : 21.6 ℃

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) = 4.36 mW/g

**Pin=100mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.7 V/m; Power Drift = -0.034 dB
Peak SAR (extrapolated) = 6.49 W/kg
**SAR(1 g) = 3.79 mW/g; SAR(10 g) = 2.02 mW/g**
Maximum value of SAR (measured) = 4.29 mW/g




0 dB = 4.29mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/18

**System Check_Body_1900MHz**

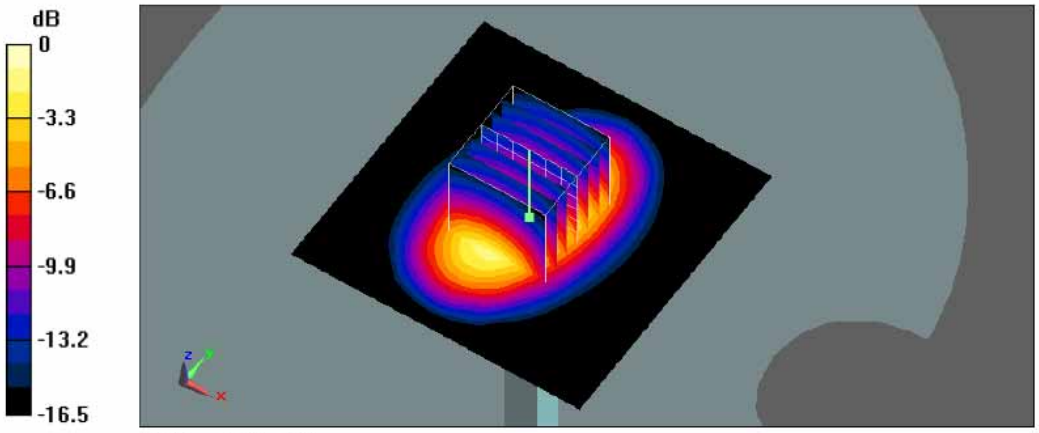
**DUT: Dipole 1900 MHz**

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900 Medium parameters used: f = 1900 MHz; $\sigma$ = 1.52 mho/m; $\varepsilon_r$ = 51.4; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.5 ℃; Liquid Temperature : 21.6 ℃

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-A; Type: QD 000 P40 C; Serial: TP-1303
- 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) = 4.6 mW/g

**Pin=100mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57.9 V/m; Power Drift = -0.015 dB
Peak SAR (extrapolated) = 6.78 W/kg
**SAR(1 g) = 3.96 mW/g; SAR(10 g) = 2.11 mW/g**
Maximum value of SAR (measured) = 4.48 mW/g



0 dB = 4.48mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/24

**System Check_Head_2450MHz**

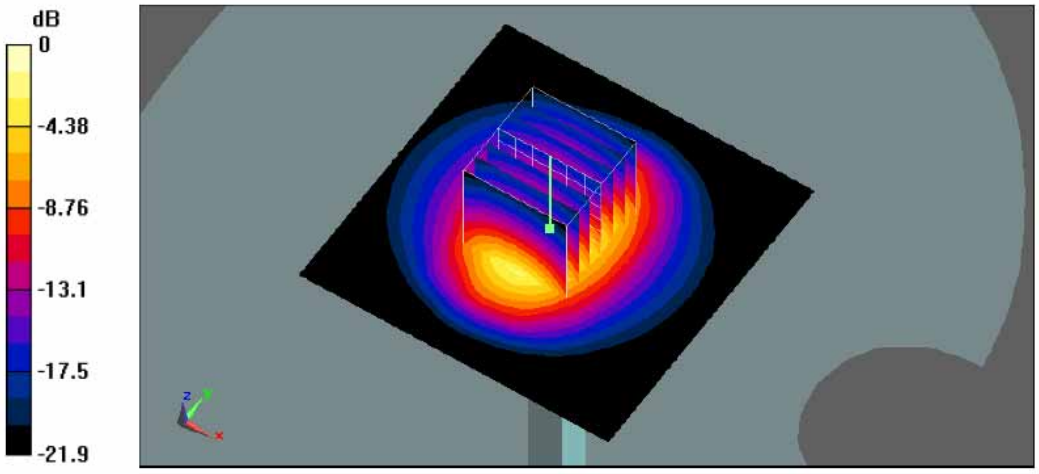
**DUT: Dipole 2450 MHz**

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL_2450 Medium parameters used: f = 2450 MHz; $\sigma$ = 1.84 mho/m; $\varepsilon_r$ = 37.8; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.5 ℃; Liquid Temperature : 21.5 ℃

DASY5 Configuration:
- Probe: ET3DV6 - SN1788; ConvF(4.58, 4.58, 4.58); 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) = 6.56 mW/g

**Pin=100mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 61.7 V/m; Power Drift = 0.00771 dB
Peak SAR (extrapolated) = 11.4 W/kg
**SAR(1 g) = 5.58 mW/g; SAR(10 g) = 2.62 mW/g**
Maximum value of SAR (measured) = 6.35 mW/g




0 dB = 6.35mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/24

**System Check_Body_2450MHz**

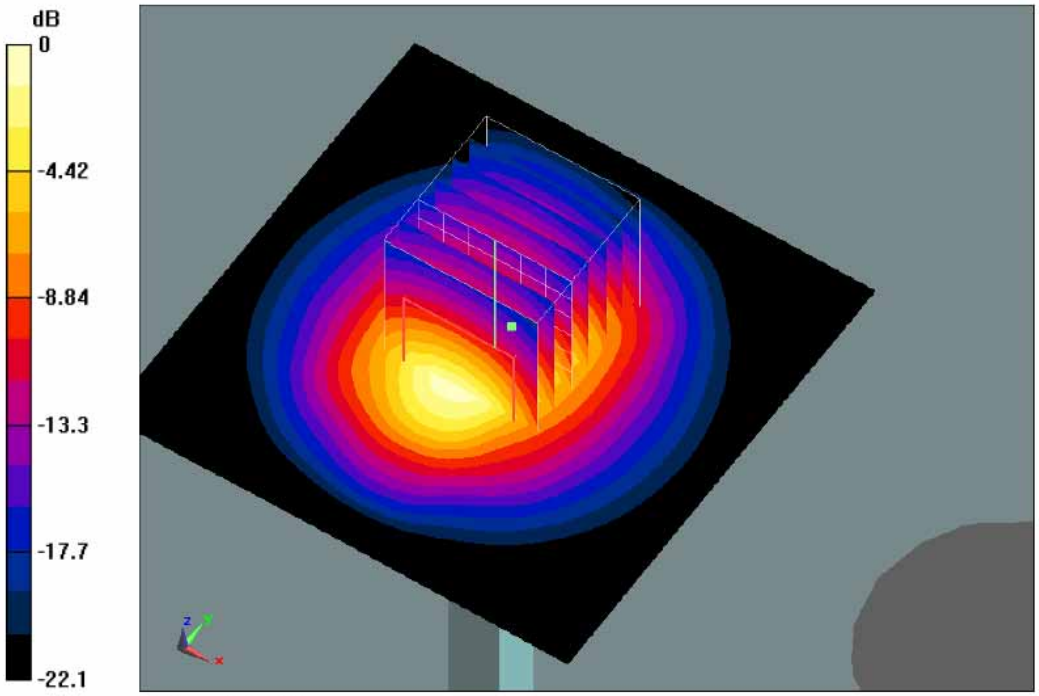
**DUT: Dipole 2450 MHz**

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: MSL_2450 Medium parameters used: f = 2450 MHz; $\sigma$ = 1.93 mho/m; $\varepsilon_r$ = 53.8; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.6 ℃; Liquid Temperature : 21.4 ℃

DASY5 Configuration:
- Probe: ET3DV6 - SN1788; ConvF(4.17, 4.17, 4.17); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM-A; Type: QD 000 P40 C; Serial: TP-1303
- 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) = 5.91 mW/g

**Pin=100mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 58.8 V/m; Power Drift = -0.041 dB
Peak SAR (extrapolated) = 10.2 W/kg
**SAR(1 g) = 5.11 mW/g; SAR(10 g) = 2.45 mW/g**
Maximum value of SAR (measured) = 5.8 mW/g




0 dB = 5.8mW/g

# *Appendix B - SAR Measurement Data*

**<Plot 1>**

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/18

**Right Cheek_GSM850 Ch251_Battery 3_PDA 1**

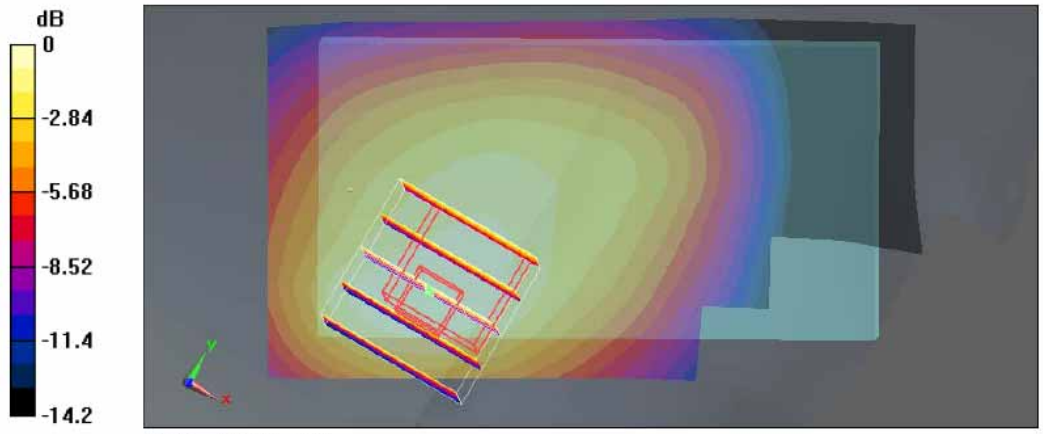
**DUT: 811107-02**

Communication System: GSM850; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium: HSL_850 Medium parameters used: f = 849 MHz; $\sigma$ = 0.919 mho/m; $\varepsilon_r$ = 40.4; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.4 ℃; Liquid Temperature : 21.5 ℃

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-B; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

**Ch251/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.866 mW/g

**Ch251/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.6 V/m; Power Drift = 0.064 dB
Peak SAR (extrapolated) = 1.33 W/kg
**SAR(1 g) = 0.775 mW/g; SAR(10 g) = 0.492 mW/g**
Maximum value of SAR (measured) = 0.809 mW/g




0 dB = 0.809mW/g

## <Plot 2>

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/13

**Right Tilted_GSM850 Ch189_Battery1_PDA1**

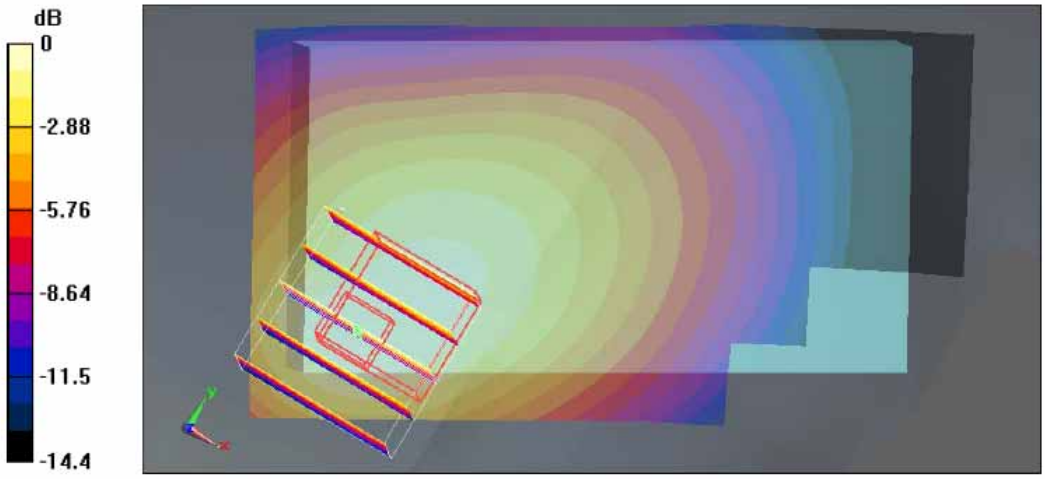
**DUT: 807722**

Communication System: GSM850; Frequency: 836.4 MHz;Duty Cycle: 1:8.3
Medium: HSL_850 Medium parameters used : f = 836.4 MHz; $\sigma$ = 0.906 mho/m; $\varepsilon_r$ = 40.5; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 21.9 ℃; Liquid Temperature : 21.1 ℃

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-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

**Ch189/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.630 mW/g

**Ch189/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.3 V/m; Power Drift = -0.062 dB
Peak SAR (extrapolated) = 0.945 W/kg
**SAR(1 g) = 0.541 mW/g; SAR(10 g) = 0.348 mW/g**
Maximum value of SAR (measured) = 0.580 mW/g




0 dB = 0.580mW/g

## <Plot 3>

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/13

**Left Cheek_GSM850 Ch189_Battery1_PDA1**

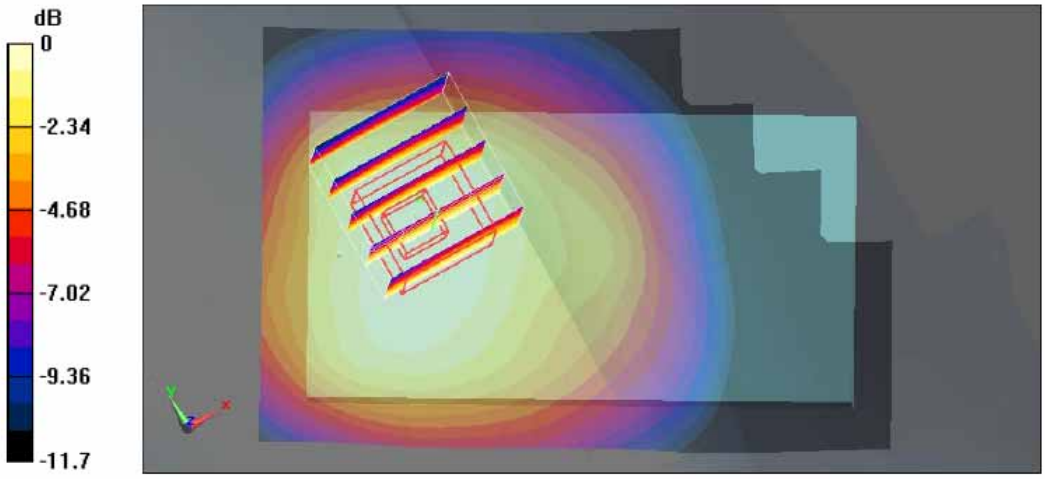
**DUT: 807722**

Communication System: GSM850; Frequency: 836.4 MHz;Duty Cycle: 1:8.3
Medium: HSL_850 Medium parameters used : f = 836.4 MHz; $\sigma$ = 0.906 mho/m; $\varepsilon_r$ = 40.5; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.0 ℃; Liquid Temperature : 21.1 ℃

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-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

**Ch189/Area Scan (61x91x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.613 mW/g

**Ch189/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.6 V/m; Power Drift = -0.032 dB
Peak SAR (extrapolated) = 0.740 W/kg
**SAR(1 g) = 0.565 mW/g; SAR(10 g) = 0.412 mW/g**
Maximum value of SAR (measured) = 0.588 mW/g




0 dB = 0.588mW/g

## <Plot 4>

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/13

**Left Tilted_GSM850 Ch189_Battery1_PDA1**

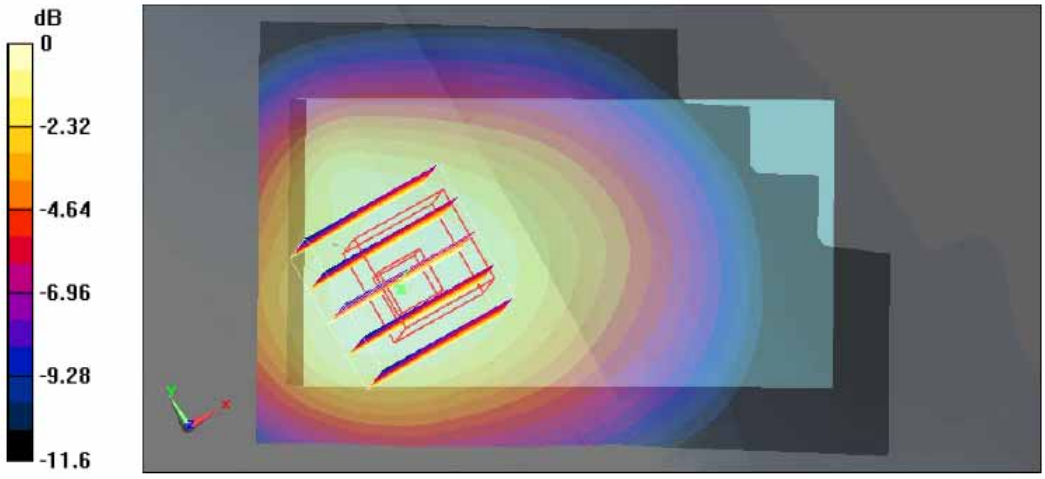
**DUT: 807722**

Communication System: GSM850; Frequency: 836.4 MHz;Duty Cycle: 1:8.3
Medium: HSL_850 Medium parameters used : f = 836.4 MHz; $\sigma$ = 0.906 mho/m; $\varepsilon_r$ = 40.5; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.0 ℃; Liquid Temperature : 21.1 ℃

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-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

**Ch189/Area Scan (61x91x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.483 mW/g

**Ch189/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.8 V/m; Power Drift = -0.110 dB
Peak SAR (extrapolated) = 0.635 W/kg
**SAR(1 g) = 0.449 mW/g; SAR(10 g) = 0.321 mW/g**
Maximum value of SAR (measured) = 0.477 mW/g




0 dB = 0.477mW/g

## <Plot 5>

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/18

**Right Cheek_GSM1900 Ch810_Battery 3_PDA 1**

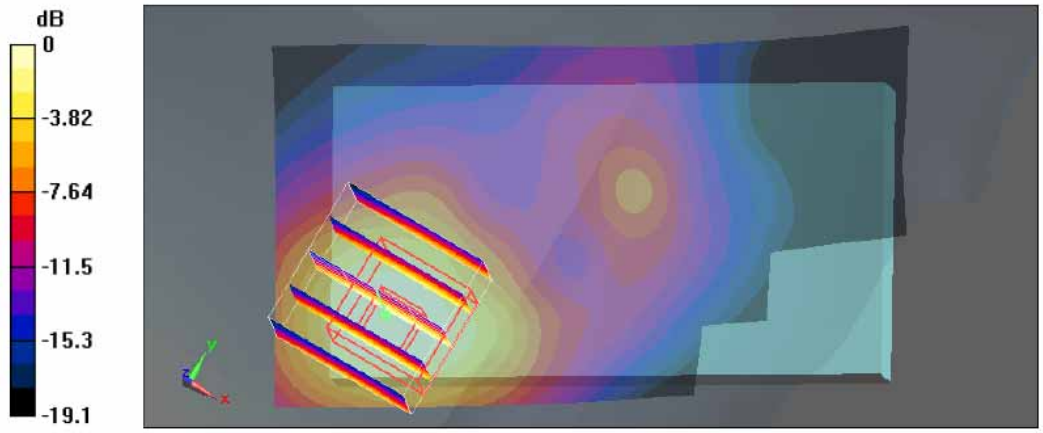
**DUT: 811107-02**

Communication System: PCS; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: HSL_1900 Medium parameters used: f = 1910 MHz; $\sigma$ = 1.43 mho/m; $\varepsilon_r$ = 38.9; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.4 ℃; Liquid Temperature : 21.4 ℃

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-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

**Ch810/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.697 mW/g

**Ch810/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.2 V/m; Power Drift = -0.103 dB
Peak SAR (extrapolated) = 1.04 W/kg
**SAR(1 g) = 0.602 mW/g; SAR(10 g) = 0.327 mW/g**
Maximum value of SAR (measured) = 0.647 mW/g




0 dB = 0.647mW/g

## <Plot 6>

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/13

**Right Tilted_GSM1900 Ch661_Battery1_PDA1**

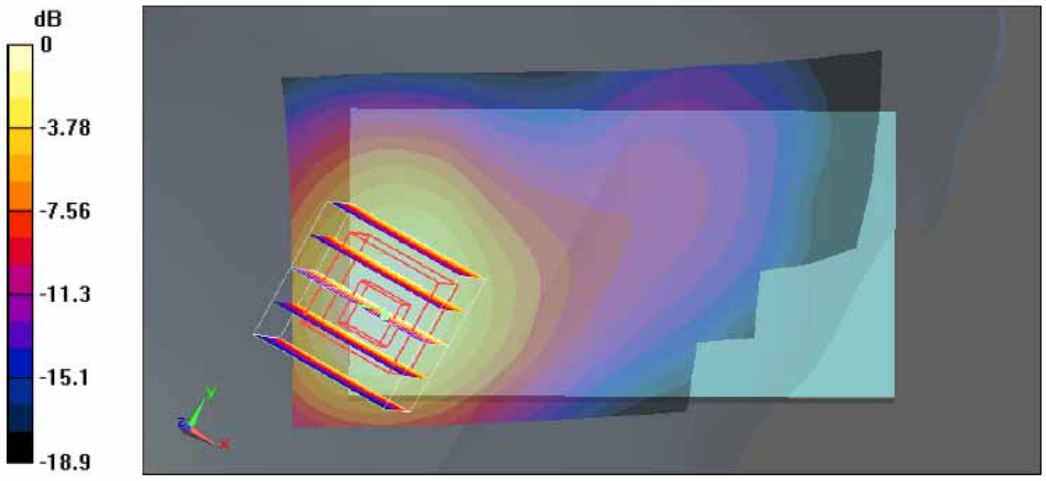
**DUT: 807722**

Communication System: PCS; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: HSL_1900 Medium parameters used: f = 1880 MHz; $\sigma$ = 1.44 mho/m; $\varepsilon_r$ = 38.5; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.4 ℃; Liquid Temperature : 21.5 ℃

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-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

**Ch661/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.381 mW/g

**Ch661/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.8 V/m; Power Drift = -0.071 dB
Peak SAR (extrapolated) = 0.603 W/kg
**SAR(1 g) = 0.346 mW/g; SAR(10 g) = 0.190 mW/g**
Maximum value of SAR (measured) = 0.379 mW/g




0 dB = 0.379mW/g

## <Plot 7>

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/13

**Left Cheek_GSM1900 Ch661_Battery1_PDA1**

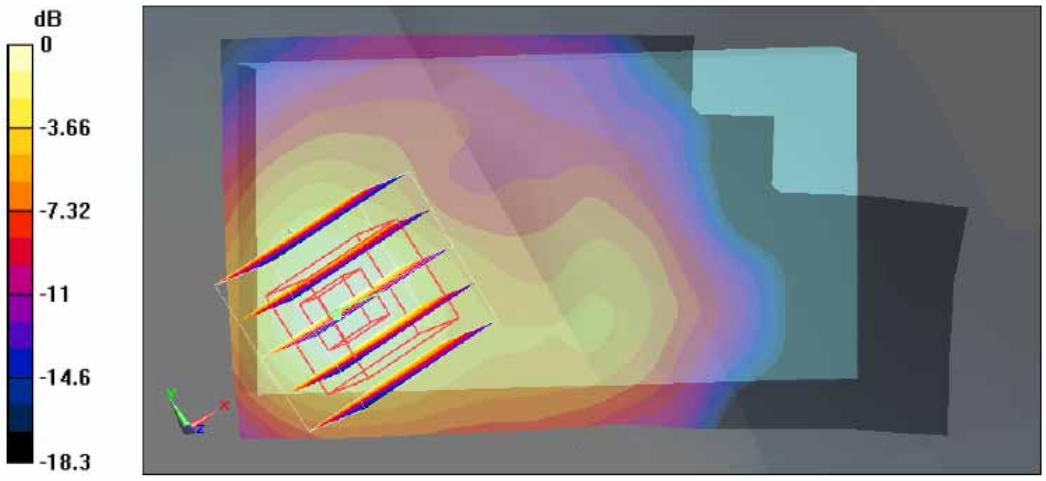
**DUT: 807722**

Communication System: PCS; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: HSL_1900 Medium parameters used: f = 1880 MHz; $\sigma$ = 1.44 mho/m; $\varepsilon_r$ = 38.5; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.5 ℃; Liquid Temperature : 21.5 ℃

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-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

**Ch661/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.349 mW/g

**Ch661/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.3 V/m; Power Drift = -0.082 dB
Peak SAR (extrapolated) = 0.509 W/kg
**SAR(1 g) = 0.320 mW/g; SAR(10 g) = 0.181 mW/g**
Maximum value of SAR (measured) = 0.352 mW/g




0 dB = 0.352mW/g

## <Plot 8>

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/13

**Left Tilted_GSM1900 Ch661_Battery1_PDA1**

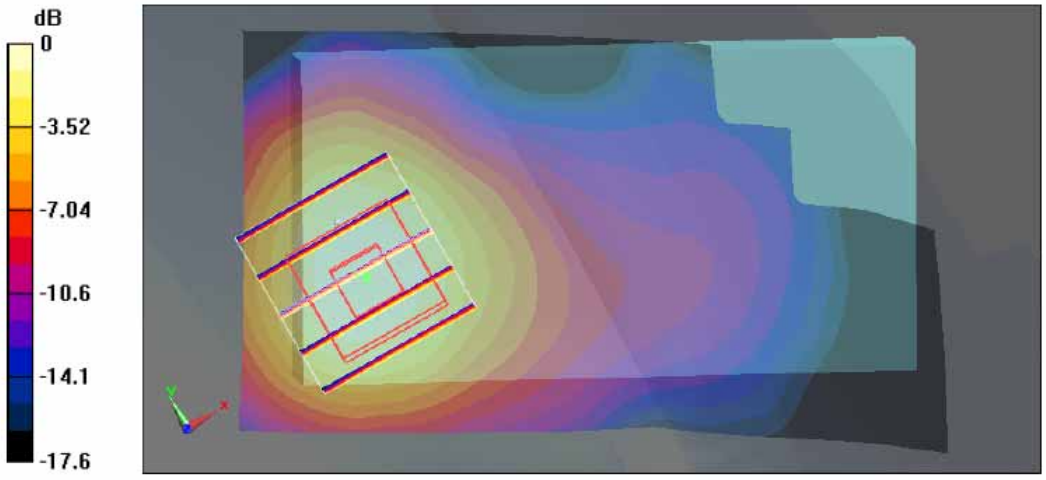
**DUT: 807722**

Communication System: PCS; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: HSL_1900 Medium parameters used: f = 1880 MHz; $\sigma$ = 1.44 mho/m; $\varepsilon_r$ = 38.5; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.4 ℃; Liquid Temperature : 21.5 ℃

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-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

**Ch661/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.358 mW/g

**Ch661/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.6 V/m; Power Drift = -0.065 dB
Peak SAR (extrapolated) = 0.509 W/kg
**SAR(1 g) = 0.327 mW/g; SAR(10 g) = 0.188 mW/g**
Maximum value of SAR (measured) = 0.357 mW/g




0 dB = 0.357mW/g

## <Plot 9>

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/18

**Right Cheek_WCDMA850 Ch4233_Battery 3_PDA 1**

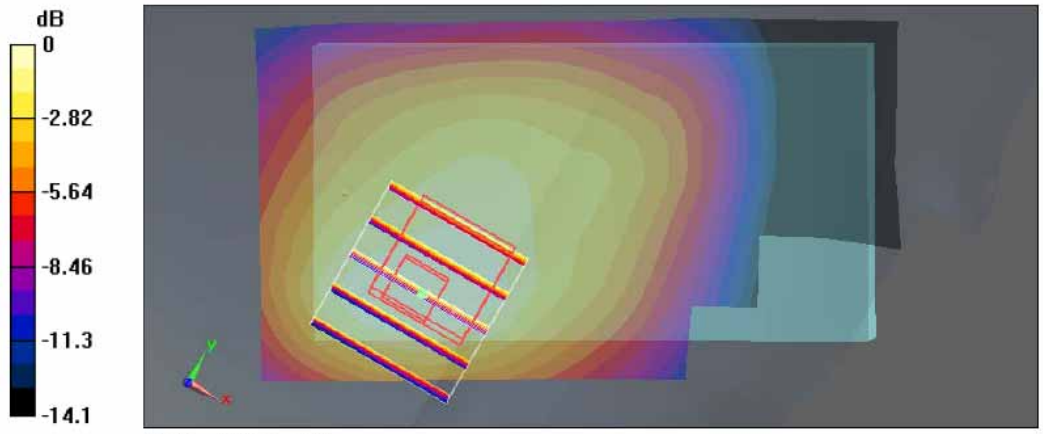
**DUT: 811107-02**

Communication System: WCDMA; Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium: HSL_850 Medium parameters used: f = 847 MHz; $\sigma$ = 0.917 mho/m; $\varepsilon_r$ = 40.5; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.5 ℃; Liquid Temperature : 21.5 ℃

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-B; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

**Ch4233/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.805 mW/g

**Ch4233/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.3 V/m; Power Drift = 0.031 dB
Peak SAR (extrapolated) = 1.18 W/kg
**SAR(1 g) = 0.700 mW/g; SAR(10 g) = 0.448 mW/g**
Maximum value of SAR (measured) = 0.751 mW/g




0 dB = 0.751mW/g

## <Plot 10>

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/13

**Right Tilted_WCDMA850 Ch4182_Battery1_PDA1**

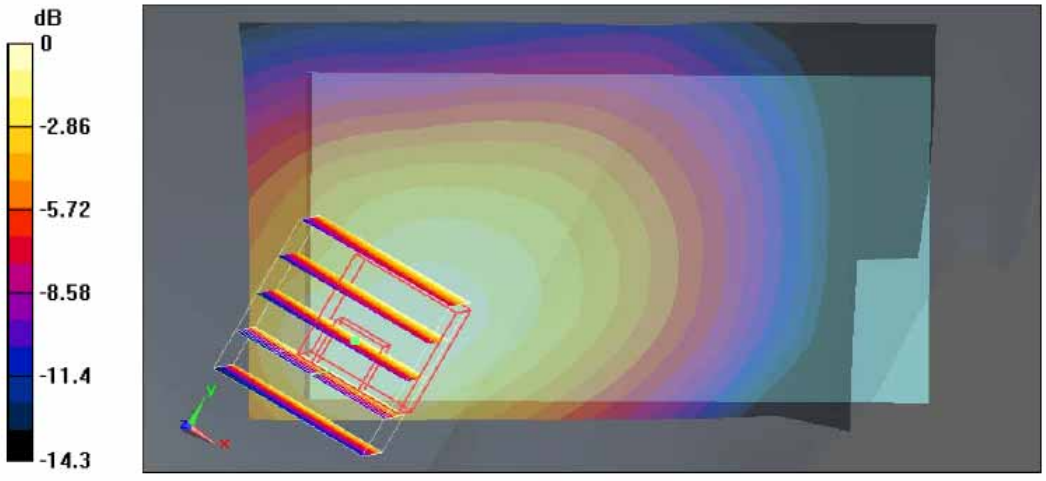
**DUT: 807722**

Communication System: WCDMA; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: HSL_850 Medium parameters used : f = 836.4 MHz; $\sigma$ = 0.906 mho/m; $\varepsilon_r$ = 40.5; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.0 ℃; Liquid Temperature : 21.1 ℃

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-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

**Ch4182/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.432 mW/g

**Ch4182/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.2 V/m; Power Drift = -0.080 dB
Peak SAR (extrapolated) = 0.680 W/kg
**SAR(1 g) = 0.387 mW/g; SAR(10 g) = 0.248 mW/g**
Maximum value of SAR (measured) = 0.408 mW/g




0 dB = 0.408mW/g

## <Plot 11>

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/13

**Left Cheek_WCDMA850 Ch4182_Battery1_PDA1**

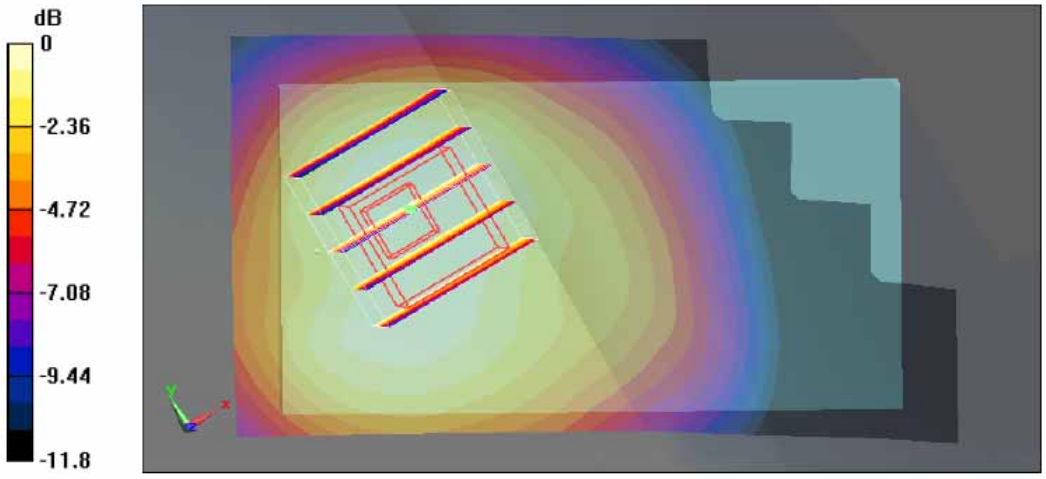
**DUT: 807722**

Communication System: WCDMA; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: HSL_850 Medium parameters used : f = 836.4 MHz; $\sigma$ = 0.906 mho/m; $\varepsilon_r$ = 40.5; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 21.9 ℃; Liquid Temperature : 21.1 ℃

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-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

**Ch4182/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.447 mW/g

**Ch4182/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.6 V/m; Power Drift = -0.120 dB
Peak SAR (extrapolated) = 0.548 W/kg
**SAR(1 g) = 0.393 mW/g; SAR(10 g) = 0.286 mW/g**
Maximum value of SAR (measured) = 0.410 mW/g




0 dB = 0.410mW/g

## <Plot 12>

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/13

**Left Tilted_WCDMA850 Ch4182_Battery1_PDA1**

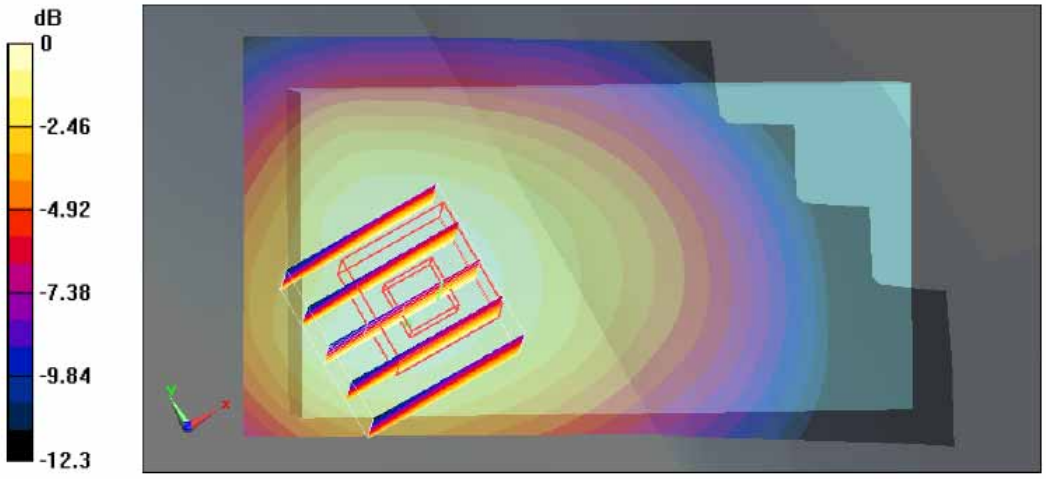
**DUT: 807722**

Communication System: WCDMA; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: HSL_850 Medium parameters used : f = 836.4 MHz; $\sigma$ = 0.906 mho/m; $\varepsilon_r$ = 40.5; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 21.9 ℃; Liquid Temperature : 21.1 ℃

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-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

**Ch4182/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.342 mW/g

**Ch4182/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.8 V/m; Power Drift = -0.021 dB
Peak SAR (extrapolated) = 0.452 W/kg
**SAR(1 g) = 0.321 mW/g; SAR(10 g) = 0.225 mW/g**
Maximum value of SAR (measured) = 0.338 mW/g




0 dB = 0.338mW/g

## <Plot 13>

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/13

**Right Cheek_WCDMA1900 Ch9538_Battery1_PDA1**

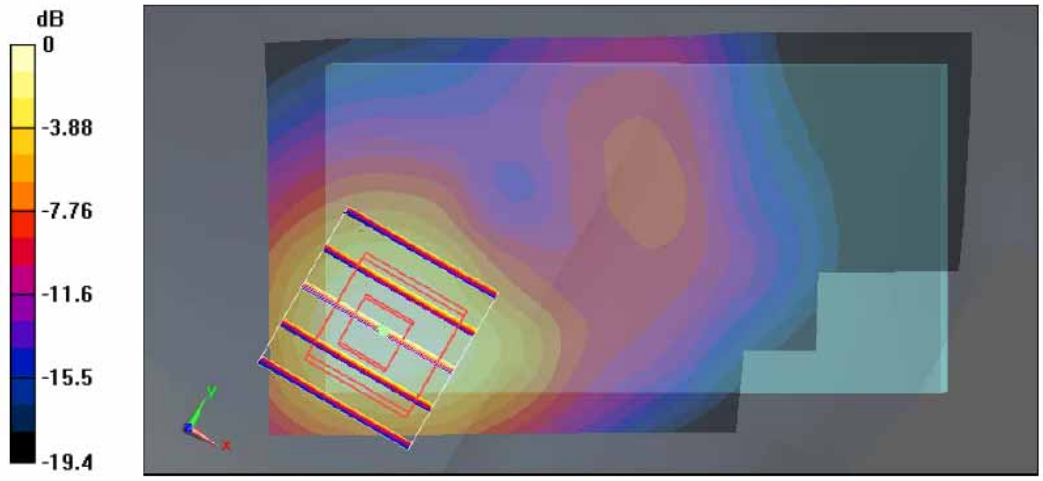
**DUT: 807722**

Communication System: WCDMA; Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1908 MHz; $\sigma$ = 1.46 mho/m; $\varepsilon_r$ = 38.4; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.5 ℃; Liquid Temperature : 21.5 ℃

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-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

**Ch9538/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.72 mW/g

**Ch9538/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.5 V/m; Power Drift = 0.181 dB
Peak SAR (extrapolated) = 2.69 W/kg
**SAR(1 g) = 1.5 mW/g; SAR(10 g) = 0.793 mW/g**
Maximum value of SAR (measured) = 1.64 mW/g




0 dB = 1.64mW/g

## <Plot 14>

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/13

**Right Tilted_WCDMA1900 Ch9538_Battery1_PDA1**

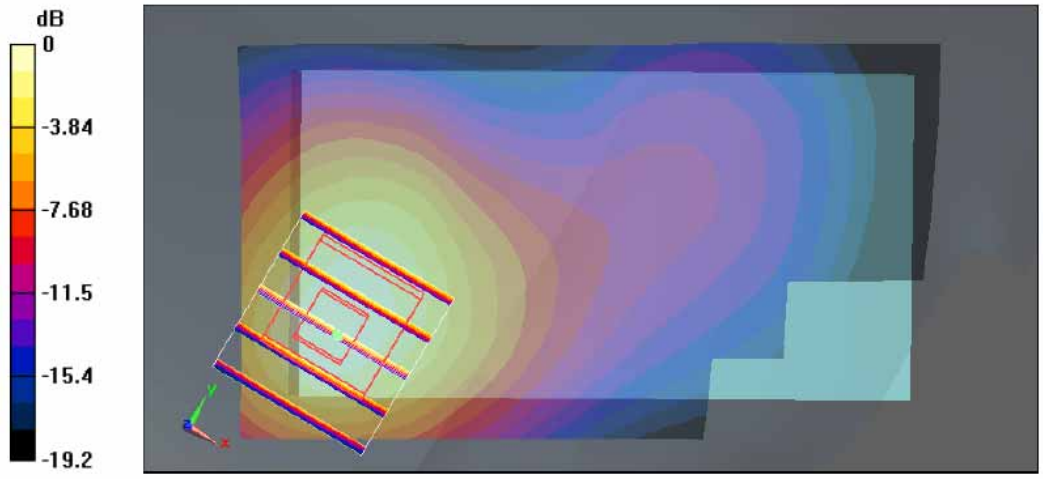
**DUT: 807722**

Communication System: WCDMA; Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1908 MHz; $\sigma$ = 1.46 mho/m; $\varepsilon_r$ = 38.4; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.6 ℃; Liquid Temperature : 21.5 ℃

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-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

**Ch9538/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.27 mW/g

**Ch9538/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.1 V/m; Power Drift = 0.023 dB
Peak SAR (extrapolated) = 1.99 W/kg
**SAR(1 g) = 1.13 mW/g; SAR(10 g) = 0.614 mW/g**
Maximum value of SAR (measured) = 1.25 mW/g




0 dB = 1.25mW/g

## <Plot 15>

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/13

**Left Cheek_WCDMA1900 Ch9400_Battery1_PDA1**

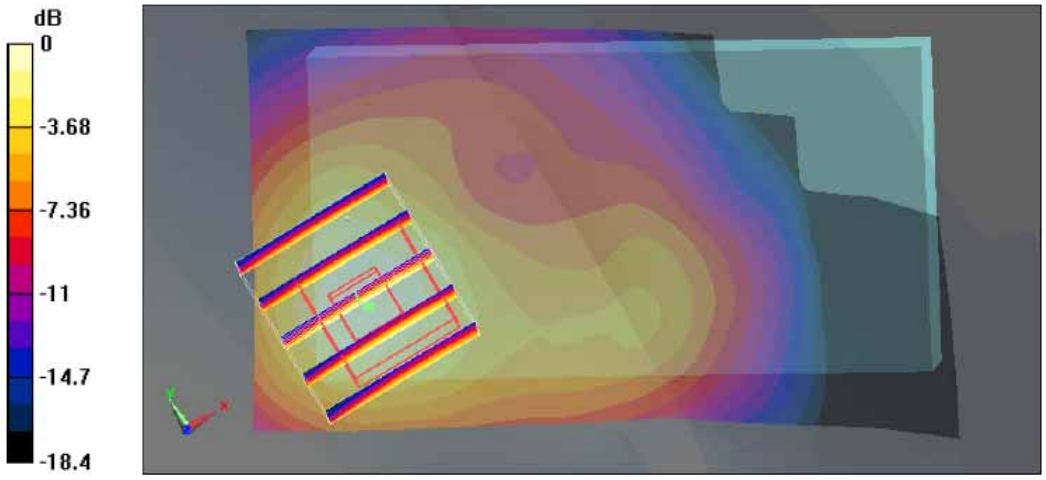
**DUT: 807722**

Communication System: WCDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1880 MHz; $\sigma$ = 1.44 mho/m; $\varepsilon_r$ = 38.5; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.6 ℃; Liquid Temperature : 21.5 ℃

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-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

**Ch9400/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.804 mW/g

**Ch9400/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.9 V/m; Power Drift = 0.045 dB
Peak SAR (extrapolated) = 1.18 W/kg
**SAR(1 g) = 0.735 mW/g; SAR(10 g) = 0.415 mW/g**
Maximum value of SAR (measured) = 0.820 mW/g




0 dB = 0.820mW/g

## <Plot 16>

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/13

**Left Tilted_WCDMA1900 Ch9400_Battery1_PDA1**

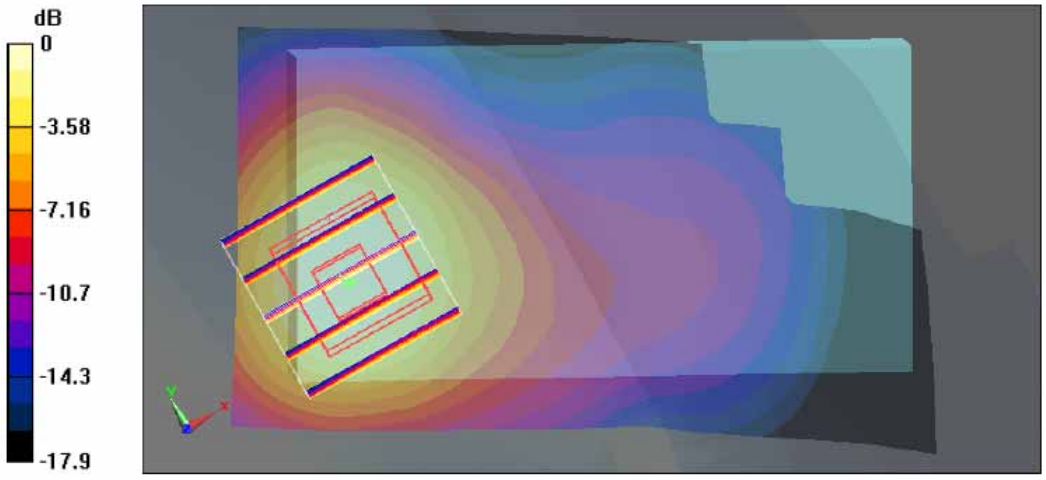
**DUT: 807722**

Communication System: WCDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1880 MHz; $\sigma$ = 1.44 mho/m; $\varepsilon_r$ = 38.5; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.6 ℃; Liquid Temperature : 21.5 ℃

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-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

**Ch9400/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.860 mW/g

**Ch9400/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.6 V/m; Power Drift = -0.035 dB
Peak SAR (extrapolated) = 1.2 W/kg
**SAR(1 g) = 0.767 mW/g; SAR(10 g) = 0.440 mW/g**
Maximum value of SAR (measured) = 0.847 mW/g




0 dB = 0.847mW/g

## <Plot 17>

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/13

**Body_GSM850 Ch189_Face with 1.5cm_GPRS10_Battery1_PDA1**

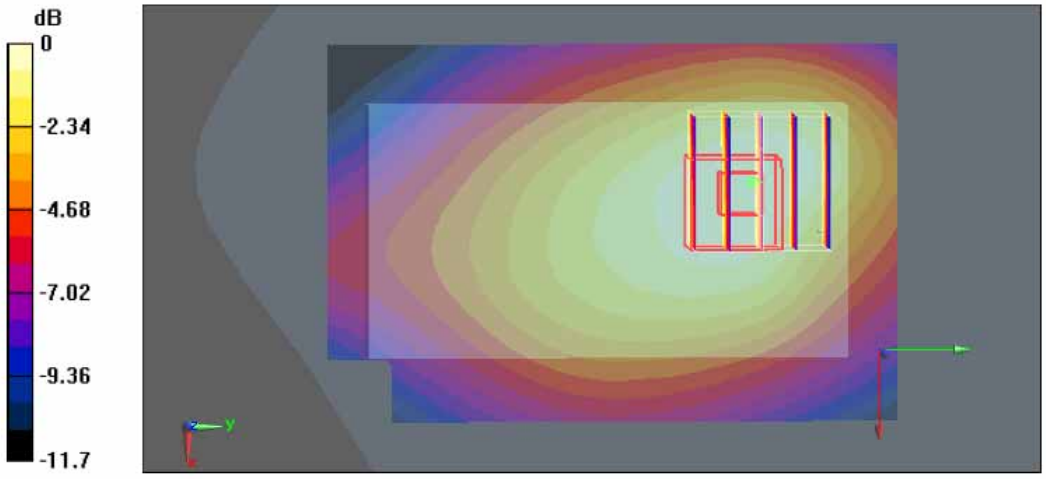
**DUT: 807722**

Communication System: GSM850; Frequency: 836.4 MHz;Duty Cycle: 1:4
Medium: MSL_850 Medium parameters used: f = 836.4 MHz; $\sigma$ = 0.978 mho/m; $\varepsilon_r$ = 56.3; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.4 ℃; Liquid Temperature : 21.6 ℃

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

**Ch189/Area Scan (61x91x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.272 mW/g

**Ch189/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.7 V/m; Power Drift = -0.082 dB
Peak SAR (extrapolated) = 0.340 W/kg
**SAR(1 g) = 0.246 mW/g; SAR(10 g) = 0.174 mW/g**
Maximum value of SAR (measured) = 0.260 mW/g




0 dB = 0.260mW/g

## <Plot 18>

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/18

**Body_GSM850 Ch189_Bottom with 1.5cm_GPRS10_Battery 1_PDA 2**

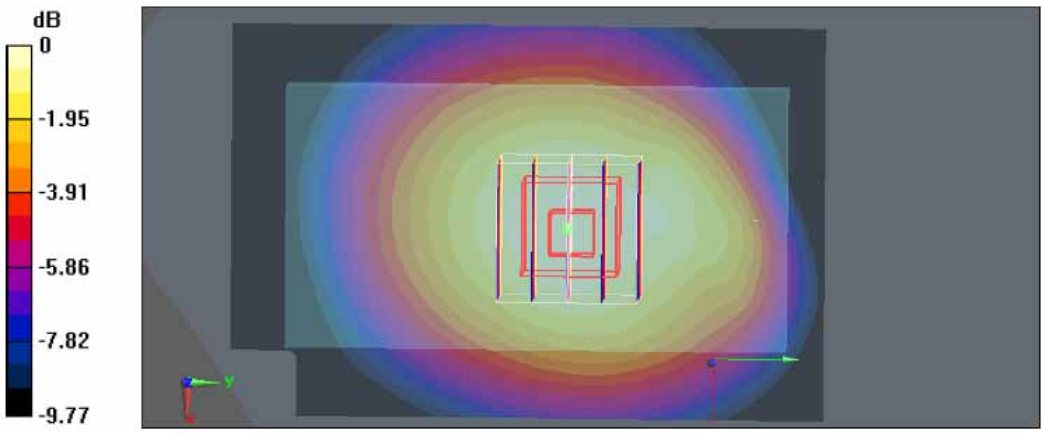
**DUT: 811107-02**

Communication System: GSM850; Frequency: 836.4 MHz;Duty Cycle: 1:4
Medium: MSL_850 Medium parameters used: f = 836.4 MHz; $\sigma$ = 0.967 mho/m; $\varepsilon_r$ = 56.3; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.6 ℃; Liquid Temperature : 21.7 ℃

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-B; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

**Ch189/Area Scan (61x91x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.32 mW/g

**Ch189/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.4 V/m; Power Drift = -0.000819 dB
Peak SAR (extrapolated) = 1.62 W/kg
**SAR(1 g) = 1.25 mW/g; SAR(10 g) = 0.916 mW/g**
Maximum value of SAR (measured) = 1.32 mW/g




0 dB = 1.32mW/g

## <Plot 19>

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/12

**Body_GSM1900 Ch661_Face with 1.5cm_GPRS10_Battery1_PDA1**

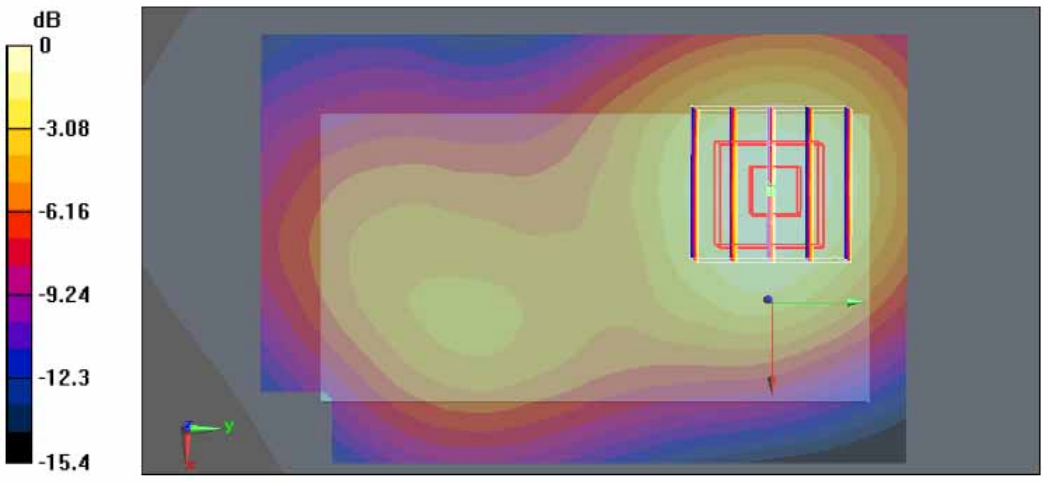
**DUT: 807722**

Communication System: PCS; Frequency: 1880 MHz;Duty Cycle: 1:4
Medium: MSL_1900 Medium parameters used: f = 1880 MHz; $\sigma$ = 1.5 mho/m; $\varepsilon_r$ = 51.1; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.3 ℃; Liquid Temperature : 21.6 ℃

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

**Ch661/Area Scan (61x91x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.185 mW/g

**Ch661/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.61 V/m; Power Drift = -0.149 dB
Peak SAR (extrapolated) = 0.256 W/kg
**SAR(1 g) = 0.170 mW/g; SAR(10 g) = 0.106 mW/g**
Maximum value of SAR (measured) = 0.184 mW/g




0 dB = 0.184mW/g

## <Plot 20>

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/12

**Body_GSM1900 Ch512_Bottom with 1.5cm_GPRS10_Battery1_PDA1**

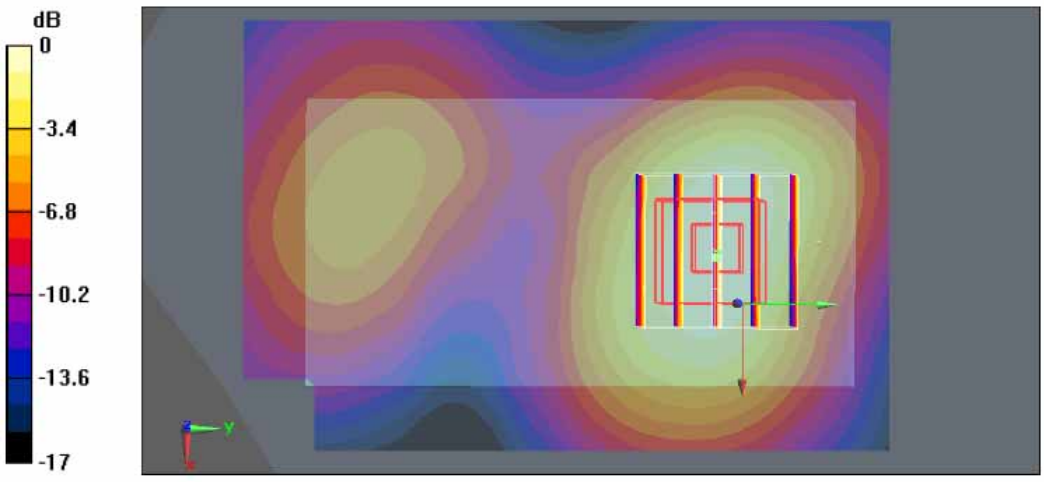
**DUT: 807722**

Communication System: PCS; Frequency: 1850.2 MHz;Duty Cycle: 1:4
Medium: MSL_1900 Medium parameters used: f = 1850.2 MHz; $\sigma$ = 1.47 mho/m; $\varepsilon_r$ = 51.2; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.3 ℃; Liquid Temperature : 21.6 ℃

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

**Ch512/Area Scan (61x91x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.599 mW/g

**Ch512/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.2 V/m; Power Drift = -0.142 dB
Peak SAR (extrapolated) = 0.826 W/kg
**SAR(1 g) = 0.527 mW/g; SAR(10 g) = 0.321 mW/g**
Maximum value of SAR (measured) = 0.570 mW/g




0 dB = 0.570mW/g

## <Plot 21>

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/13

**Body_WCDMA850 Ch4182_Face with 1.5cm_RMC12.2K_Battery1_PDA1**

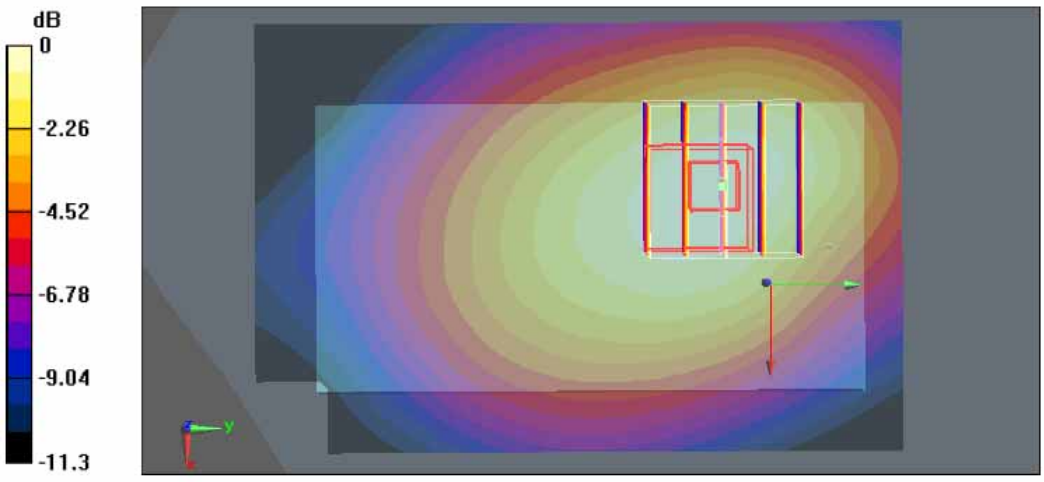
**DUT: 807722**

Communication System: WCDMA Band 5; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: MSL_850 Medium parameters used: f = 836.4 MHz; $\sigma$ = 0.978 mho/m; $\varepsilon_r$ = 56.3; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.4 ℃; Liquid Temperature : 21.6 ℃

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

**Ch4182/Area Scan (61x91x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.137 mW/g

**Ch4182/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.59 V/m; Power Drift = 0.147 dB
Peak SAR (extrapolated) = 0.178 W/kg
**SAR(1 g) = 0.131 mW/g; SAR(10 g) = 0.092 mW/g**
Maximum value of SAR (measured) = 0.139 mW/g




0 dB = 0.139mW/g

**<Plot 22>**

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/13

**Body_WCDMA850 Ch4233_Bottom with 1.5cm_RMC12.2K_Battery1_PDA1**

**DUT: 807722**

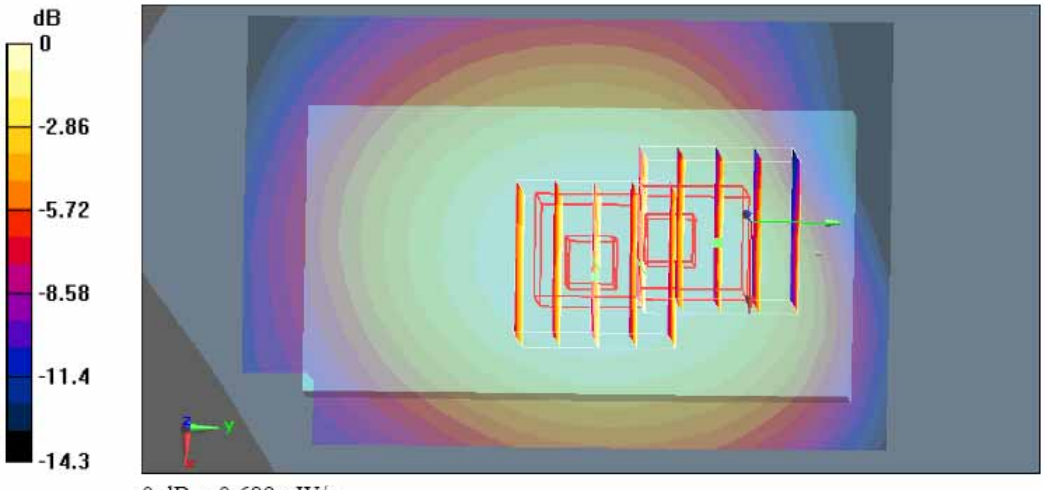
Communication System: WCDMA Band 5; Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium: MSL_850 Medium parameters used: f = 847 MHz; $\sigma$ = 0.987 mho/m; $\varepsilon_r$ = 56.1; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：22.5℃; Liquid Temperature：21.6 ℃

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

**Ch4233/Area Scan (61x91x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.762 mW/g

**Ch4233/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.1 V/m; Power Drift = -0.105 dB
Peak SAR (extrapolated) = 0.891 W/kg
**SAR(1 g) = 0.687 mW/g; SAR(10 g) = 0.498 mW/g**
Maximum value of SAR (measured) = 0.728 mW/g

**Ch4233/Zoom Scan (5x5x7)/Cube 1:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.1 V/m; Power Drift = -0.105 dB
Peak SAR (extrapolated) = 0.841 W/kg
**SAR(1 g) = 0.627 mW/g; SAR(10 g) = 0.431 mW/g**
Maximum value of SAR (measured) = 0.689 mW/g




0 dB = 0.689mW/g

**<Plot 23>**

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/13

**Body_WCDMA1900 Ch9400_Face with 1.5cm_RMC12.2K**

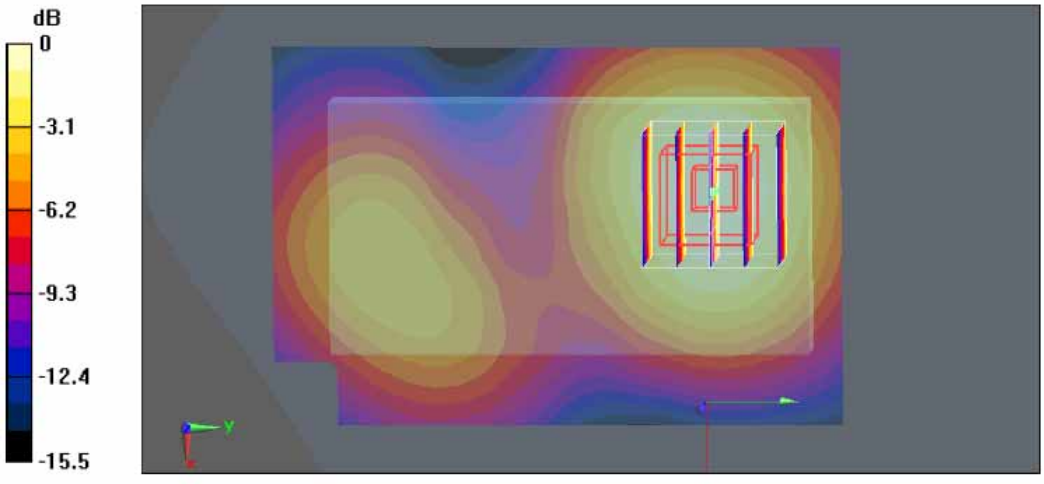
**DUT: 807722**

Communication System: WCDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: MSL_1900 Medium parameters used: f = 1880 MHz; $\sigma$ = 1.5 mho/m; $\varepsilon_r$ = 51.1; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.4 ℃; Liquid Temperature : 21.6 ℃

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

**Ch9400/Area Scan (61x91x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.300 mW/g

**Ch9400/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.4 V/m; Power Drift = -0.092 dB
Peak SAR (extrapolated) = 0.418 W/kg
**SAR(1 g) = 0.276 mW/g; SAR(10 g) = 0.174 mW/g**
Maximum value of SAR (measured) = 0.298 mW/g




0 dB = 0.298mW/g

## <Plot 24>

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/18

**Body_WCDMA1900 Ch9538_Bottom with 1.5cm_RMC12.2k_Battery3_PDA2**

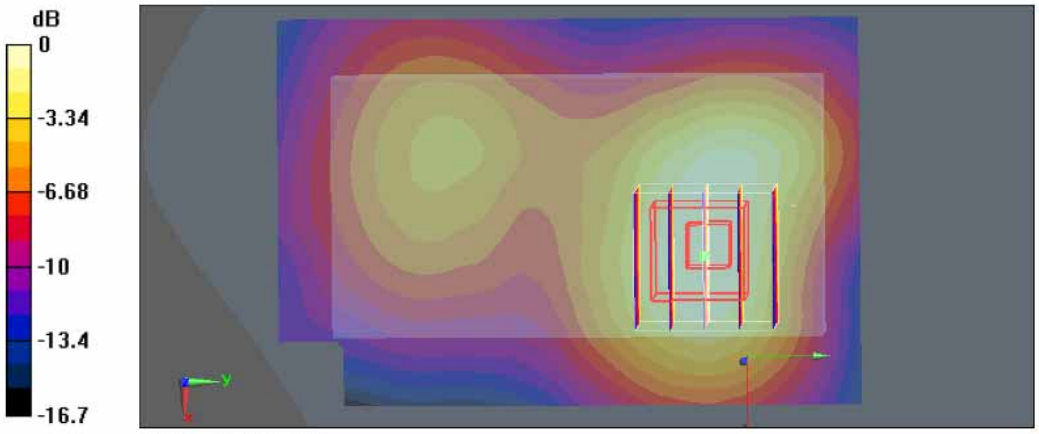
**DUT: 811107-02**

Communication System: WCDMA Band 2; Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium: MSL_1900 Medium parameters used: f = 1908 MHz; $\sigma$ = 1.53 mho/m; $\varepsilon_r$ = 51.4; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.5 ℃; Liquid Temperature : 21.6 ℃

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-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

**Ch9538/Area Scan (61x91x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.698 mW/g

**Ch9538/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.4 V/m; Power Drift = -0.097 dB
Peak SAR (extrapolated) = 1.01 W/kg
**SAR(1 g) = 0.608 mW/g; SAR(10 g) = 0.362 mW/g**
Maximum value of SAR (measured) = 0.654 mW/g




0 dB = 0.654mW/g

**<Plot 25>**

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/15

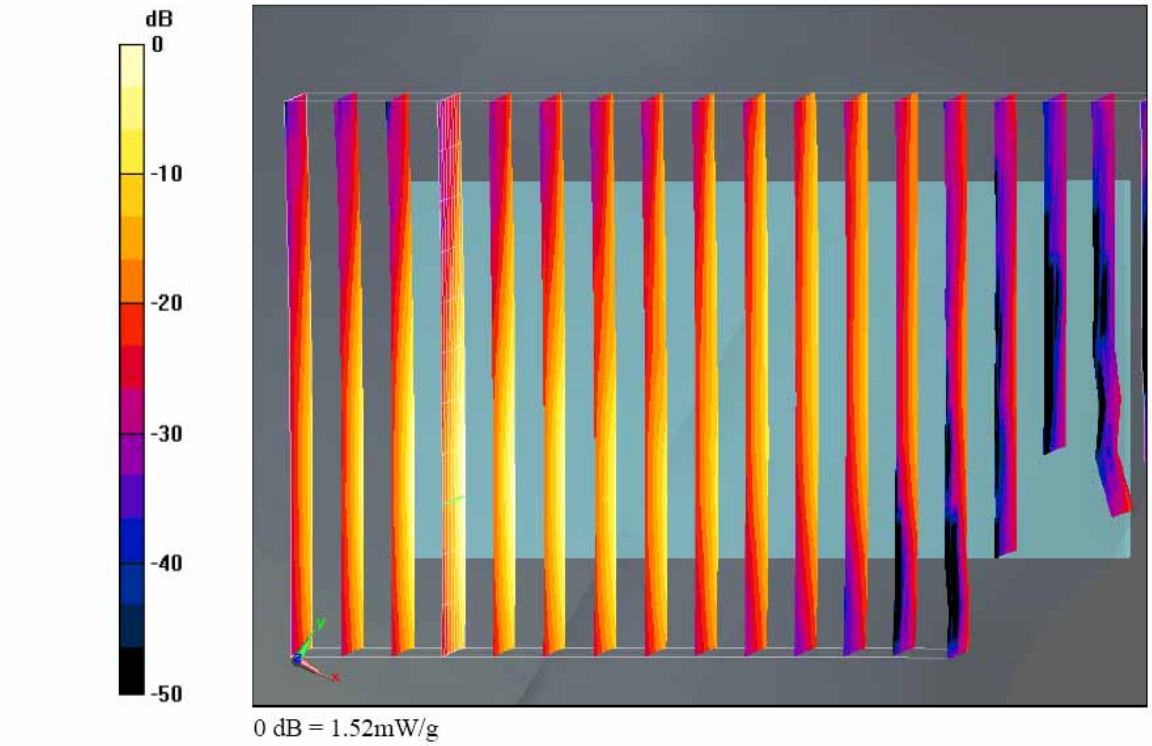
**Right Cheek_WCDMA1900 Ch9538_Volume**

**DUT: 811107-02**

Communication System: WCDMA; Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1908 MHz; $\sigma$ = 1.46 mho/m; $\varepsilon_r$ = 38.4; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.8 ℃; Liquid Temperature : 21.4 ℃

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

**Ch9538/Volume Scan (12x18x10):** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.7 V/m; Power Drift = 0.122 dB
Peak SAR (extrapolated) = 2.38 W/kg
**SAR(1 g) = 1.38 mW/g; SAR(10 g) = 0.752 mW/g**
Total Absorbed Power = 0.0341298 W
Maximum value of SAR (measured) = 1.52 mW/g




0 dB = 1.52mW/g

## <Plot 26>

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/24

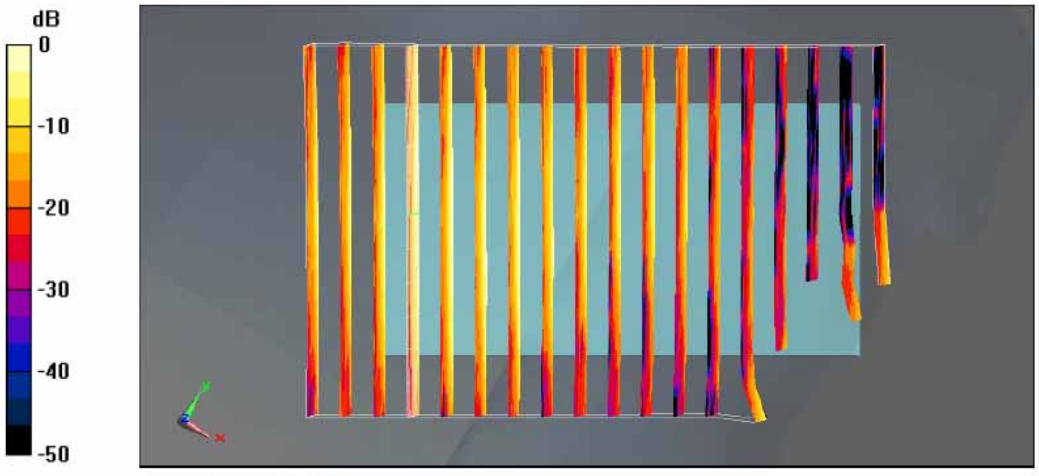
**Right Cheek_802.11b Ch11_Volume**

**DUT: 811107-02**

Communication System: 802.11b ; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: HSL_2450 Medium parameters used: f = 2462 MHz; $\sigma$ = 1.86 mho/m; $\varepsilon_r$ = 37.7; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：22.5 ℃； Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ET3DV6 - SN1788; ConvF(4.58, 4.58, 4.58); 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

**Ch11/Volume Scan (12x18x10):** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.85 V/m; Power Drift = -0.119 dB
Peak SAR (extrapolated) = 0.228 W/kg
**SAR(1 g) = 0.145 mW/g; SAR(10 g) = 0.079 mW/g**
Total Absorbed Power = 0.0041689 W
Maximum value of SAR (measured) = 0.158 mW/g




0 dB = 0.158mW/g

## <Plot 27>

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/24

**Right Cheek_802.11b Ch11_Volume**
**DUT: 811107-02**

Communication System: 802.11b ; Frequency: 2462 MHz; Duty Cycle: 1:1
Medium: HSL_2450 Medium parameters used: f = 2462 MHz; $\sigma$ = 1.86 mho/m; $\varepsilon_r$ = 37.7; $\rho$ = 1000 kg/m$^3$
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC)

- Probe: ET3DV6 - SN1788; ConvF(4.58, 4.58, 4.58); 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

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Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/15

**Right Cheek_WCDMA1900 Ch9538_Volume**
**DUT: 811107-02**
Communication System: WCDMA; Frequency: 1907.6 MHz; Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1908 MHz; $\sigma$ = 1.46 mho/m; $\varepsilon_r$ = 38.4; $\rho$ = 1000 kg/m$^3$
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC)

- 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

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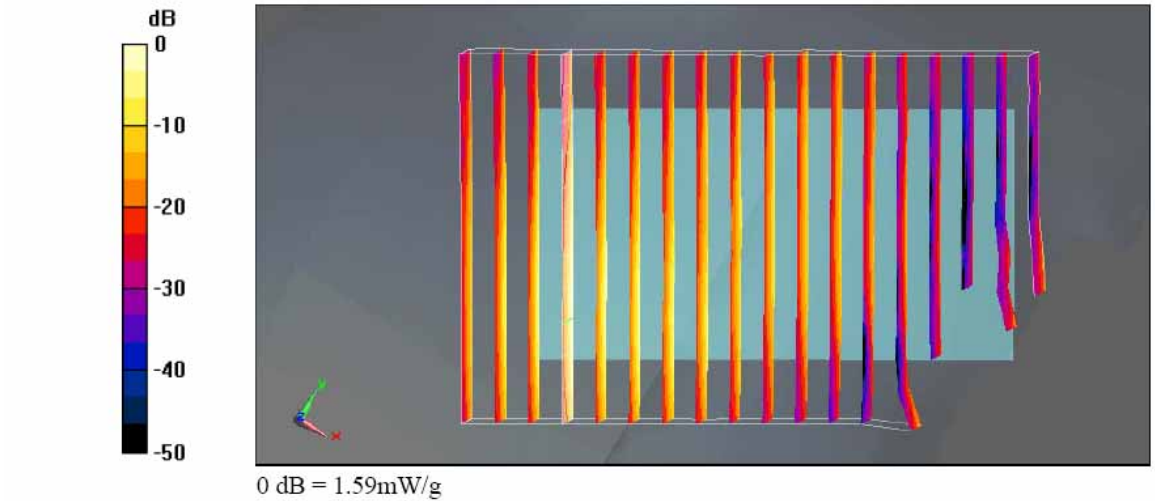
**Multi Band Result:**
**SAR(1 g) = 1.46 mW/g; SAR(10 g) = 0.805 mW/g**
Maximum value of SAR (measured) = 1.59 mW/g




0 dB = 1.59mW/g

## <Plot 28>

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/20

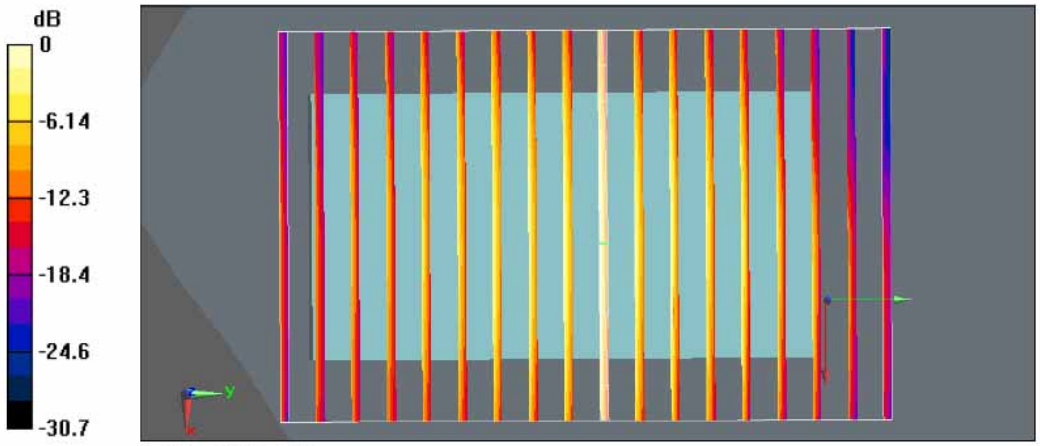
**Body_GSM850 Ch189_Bottom with 1.5cm Gap_GPRS10_Volume**

**DUT: 811107-02**

Communication System: GSM850; Frequency: 836.4 MHz;Duty Cycle: 1:4
Medium: MSL_850 Medium parameters used: f = 836.4 MHz; $\sigma$ = 0.991 mho/m; $\varepsilon_r$ = 56.3; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.5 ℃; Liquid Temperature : 21.7 ℃

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-B; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

**Ch189/Volume Scan (12x18x10):** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25 V/m; Power Drift = -0.041 dB
Peak SAR (extrapolated) = 1.62 W/kg
**SAR(1 g) = 1.27 mW/g; SAR(10 g) = 0.920 mW/g**
Total Absorbed Power = 0.12767 W
Maximum value of SAR (measured) = 1.35 mW/g




0 dB = 1.35mW/g

## <Plot 29>

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/24

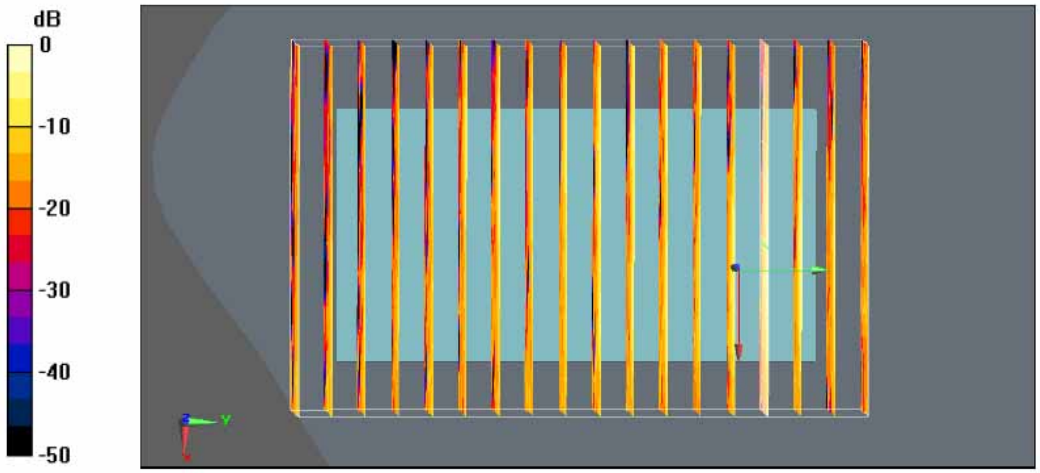
**Body_802.11b Ch11_Bottom with 1.5cm Gap_Volume**

**DUT: 811107-01**

Communication System: 802.11b ; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: MSL_2450 Medium parameters used: f = 2462 MHz; $\sigma$ = 1.95 mho/m; $\varepsilon_r$ = 53.7; $\rho$ = 1000 kg/m$^3$
Ambient Temperature : 22.5 ℃; Liquid Temperature : 21.4 ℃

DASY5 Configuration:
- Probe: ET3DV6 - SN1788; ConvF(4.17, 4.17, 4.17); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

**Ch11/Volume Scan (12x18x10):** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.19 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 0.171 W/kg
**SAR(1 g) = 0.097 mW/g; SAR(10 g) = 0.051 mW/g**
Total Absorbed Power = 0.00320645 W
Maximum value of SAR (measured) = 0.103 mW/g




0 dB = 0.103mW/g

## <Plot 30>

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/20

**Body_GSM850 Ch189_Bottom with 1.5cm Gap_GPRS10_Volume**
**DUT: 811107-02**
Communication System: GSM850; Frequency: 836.4 MHz; Duty Cycle: 1:4
Medium: MSL_850 Medium parameters used: f = 836.4 MHz; $\sigma$ = 0.991 mho/m; $\varepsilon_r$ = 56.3; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

- 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

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Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/6/24

**Body_802.11b Ch11_Bottom with 1.5cm Gap_Volume**
**DUT: 811107-02**
Communication System: 802.11b ; Frequency: 2462 MHz; Duty Cycle: 1:1
Medium: MSL_2450 Medium parameters used: f = 2462 MHz; $\sigma$ = 1.95 mho/m; $\varepsilon_r$ = 53.7; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

- Probe: ET3DV6 - SN1788; ConvF(4.17, 4.17, 4.17); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: SAM-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY5, V5.0 Build 91

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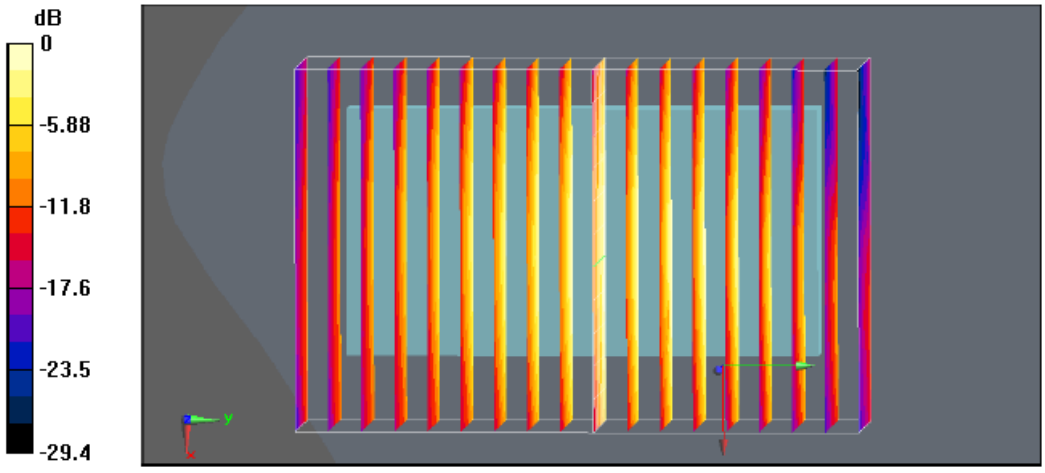
**Multi Band Result:**
**SAR(1 g) = 1.3 mW/g; SAR(10 g) = 0.940 mW/g**
Maximum value of SAR (measured) = 1.39 mW/g



0 dB = 1.39mW/g