

## SAR Test Report

Product Name : Cellphone TV

Model No. : ECG300

Applicant : Starmarket S.A.

Address : Av Juan Tanca Marengo Km 4 1/2 CC Saibaba lc 22

Date of Receipt : Mar. 02, 2011

Date of Test : Mar. 04, 2011

Issued Date : Mar. 05, 2011

Report No. : 112S146R-HP-US-P03V01

Report Version : V1.0

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# Test Report Certification

Issued Date: Mar. 05, 2011

Report No: 112S146R-HP-US-P03V01



Product Name : Cellphone TV

Applicant : Starmarket S.A.

Address : Av Juan Tanca Marengo Km 4 1/2 CC Saibaba lc 22

Manufacturer : Easybuy China LTD.

Address : Rm. 1413-1415, 14F, WanDe Building, ShenNan Millde Rd., FuTian Dist., Shen Zhen

Model No. : ECG300

Trade Name : Ring

EUT Voltage : DC 3.7V

Applicable Standard : FCC Oet65 Supplement C June 2001  
IEEE Std. 1528-2003,47CFR § 2.1093

Test Result : Max. SAR Measurement (1g)  
Head: 1.120 W/kg  
Body: 0.806 W/kg

Performed Location : Suzhou EMC Laboratory  
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## 1. General Information

### 1.1. EUT Description

|                                  |                                                                                                                          |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Product Name                     | Cellphone TV                                                                                                             |
| Trade Name                       | Ring                                                                                                                     |
| Model No.                        | ECG300                                                                                                                   |
| HW Version                       | MT5192_QFN68                                                                                                             |
| Tx Frequency Range               | GSM 850: 824~849MHz<br>PCS 1900: 1850~1910MHz                                                                            |
| Rx Frequency Range               | GSM 850: 869~894MHz<br>PCS 1900: 1930~1990MHz                                                                            |
| Antenna Type                     | Internal                                                                                                                 |
| GPRS Class                       | Class 12                                                                                                                 |
| Type of Modulation               | GMSK for GSM&GPRS                                                                                                        |
| Device Category                  | Portable                                                                                                                 |
| Peak Antenna Gain                | -1.4dBi for GSM850<br>-0.8dBi for PCS1900                                                                                |
| Max. Output Power<br>(Conducted) | GSM850: 33.09 <SIM 1><br>PCS1900: 29.98 <SIM 1>                                                                          |
| Max. Output Power<br>(Radiated)  | GSM850: 30.04 - ERP<br>PCS1900: 29.12 - EIRP                                                                             |
| Headset Model Number             | ECG300                                                                                                                   |
| Battery                          | Brand Name: Ring<br>Model Name: BL-4C<br>Rated Voltage and Capacitance: 900 mAh<br>Manufacturer Name: Easybuy China LTD. |

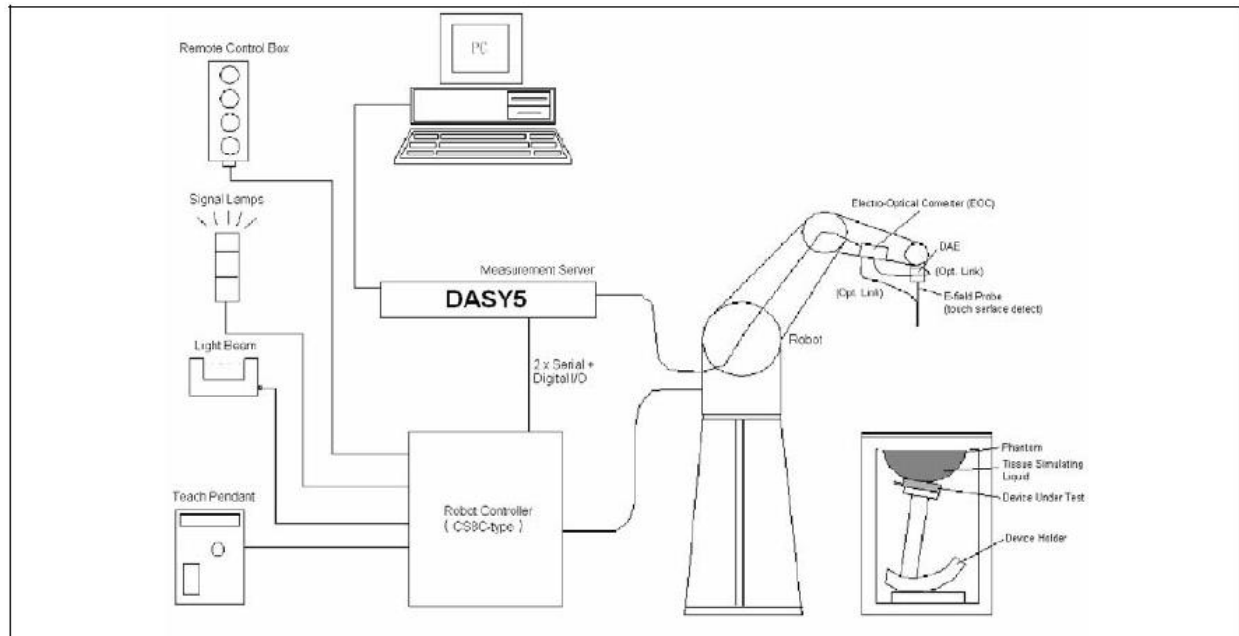
### 1.2. Test Environment

Ambient conditions in the laboratory:

| Items            | Required | Actual  |
|------------------|----------|---------|
| Temperature (°C) | 18-25    | 21.3± 2 |
| Humidity (%RH)   | 30-70    | 52      |

## 2. SAR Measurement System

### 2.1. DASY5 System Description



The DASY5 system for performing compliance tests consists of the following items:

- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

### **2.1.1. Applications**

Predefined procedures and evaluations for automated compliance testing with all worldwide standards, e.g., IEEE 1528, OET 65, IEC 62209-1, IEC 62209-2, EN 50360, EN 50383 and others.

### **2.1.2. Area Scans**

Area scans are defined prior to the measurement process being executed with a user defined variable spacing between each measurement point (integral) allowing low uncertainty measurements to be conducted. Scans defined for FCC applications utilize a  $10\text{mm}^2$  step integral, with 1mm interpolation used to locate the peak SAR area used for zoom scan assessments.

When an Area Scan has measured all reachable points, it computes the field maxima found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE 1528-2003, EN 50361 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan).

### **2.1.3. Zoom Scan (Cube Scan Averaging)**

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. A density of  $1000\text{ kg/m}^3$  is used to represent the head and body tissue density and not the phantom liquid density, in order to be consistent with the definition of the liquid dielectric properties, i.e. the side length of the 1 g cube is 10mm, with the side length of the 10 g cube 21,5mm.

The zoom scan integer steps can be user defined so as to reduce uncertainty, but normal practice for typical test applications utilize a physical step of  $7\times 7\times 7$  (5mmx5mmx5mm) providing a volume of 30mm in the X & Y axis, and 30mm in the Z axis.

### **2.1.4. Uncertainty of Inter-/Extrapolation and Averaging**

In order to evaluate the uncertainty of the interpolation, extrapolation and averaged SAR calculation algorithms of the Postprocessor, DASY5 allows the generation of measurement grids which are artificially predefined by analytically based test functions. Therefore, the grids of area scans and zoom scans can be filled with uncertainty test data, according to the SAR benchmark functions of IEEE 1528. The three analytical functions shown in equations as below are used to describe the possible range of the expected SAR distributions for the tested handsets. The field gradients are covered by the spatially flat distribution f1, the spatially steep distribution f3 and f2 accounts for H-field cancellation on the phantom/tissue surface.



$$f_1(x, y, z) = Ae^{-\frac{z}{2a}} \cos^2 \left( \frac{\pi}{2} \frac{\sqrt{x'^2 + y'^2}}{5a} \right)$$

$$f_2(x, y, z) = Ae^{-\frac{z}{a}} \frac{a^2}{a^2 + x'^2} \left( 3 - e^{-\frac{2z}{a}} \right) \cos^2 \left( \frac{\pi}{2} \frac{y'}{3a} \right)$$

$$f_3(x, y, z) = A \frac{a^2}{\frac{a^2}{4} + x'^2 + y'^2} \left( e^{-\frac{2z}{a}} + \frac{a^2}{2(a + 2z)^2} \right)$$

## 2.2. DASY5 E-Field Probe

The SAR measurement is conducted with the dosimetric probe 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.

SPEAG conducts the probe calibration in compliance with international and national standards (e.g. IEEE 1528, EN 62209-1, IEC 62209, etc.) under ISO 17025. The calibration data are in Appendix D.

### 2.2.1. Isotropic E-Field Probe Specification

| Model         | EX3DV4                                                                                                                                                                                                     |                                                                                       |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Construction  | Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)                                                      |                                                                                       |
| Frequency     | 10 MHz to 6 GHz<br>Linearity: $\pm 0.2$ dB (30 MHz to 6 GHz)                                                                                                                                               |  |
| Directivity   | $\pm 0.3$ dB in HSL (rotation around probe axis)<br>$\pm 0.5$ dB in tissue material (rotation normal to probe axis)                                                                                        |                                                                                       |
| Dynamic Range | 10 $\mu$ W/g to 100 mW/g<br>Linearity: $\pm 0.2$ dB (noise: typically $< 1$ $\mu$ W/g)                                                                                                                     |                                                                                       |
| Dimensions    | Overall length: 330 mm (Tip: 20 mm)<br>Tip diameter: 2.5 mm (Body: 12 mm)<br>Typical distance from probe tip to dipole centers: 1 mm                                                                       |                                                                                       |
| Application   | High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%. |                                                                                       |

### 2.3. Boundary Detection Unit and Probe Mounting Device

The DASY probes use a precise connector and an additional holder for the probe, consisting of a plastic tube and a flexible silicon ring to center the probe. The connector at the DAE is flexibly mounted and held in the default position with magnets and springs. Two switching systems in the connector mount detect frontal and lateral probe collisions and trigger the necessary software response.



### 2.4. DATA Acquisition Electronics (DAE) and Measurement Server

The data acquisition electronics (DAE) 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 input impedance of the DAE4 is 200M Ohm; the inputs are symmetrical and floating. Common mode rejection is above 80dB.



The DASY5 measurement server is based on a PC/104 CPU board with a 400MHz intel ULV Celeron, 128MB chipdisk and 128MB RAM. The necessary circuits for communication with the DAE electronics box, as well as the 16 bit AD converter system for optical detection and digital I/O interface are contained on the DASY5 I/O board, which is directly connected to the PC/104 bus of the CPU board.



## 2.5. Robot

The DASY5 system uses the high precision robots TX90 XL type out of the newer series from Stäubli SA (France). For the 6-axis controller DASY5 system, the CS8C robot controller version from Stäubli is used.

The XL robot series have many features that are important for our application:

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



## 2.6. Light Beam Unit

The light beam switch allows automatic "tooling" of the probe. During the process, the actual position of the probe tip with respect to the robot arm is measured, as well as the probe length and the horizontal probe offset. The software then corrects all movements, such that the robot coordinates are valid for the probe tip.

The repeatability of this process is better than 0.1 mm. If a position has been taught with an aligned probe, the same position will be reached with another aligned probe within 0.1 mm, even if the other probe has different dimensions. During probe rotations, the probe tip will keep its actual position.



## 2.7. Device Holder

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 center for both scales is the ear reference point (EPR).

Thus the device needs no repositioning when changing the angles.

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



## 2.8. 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.

### 3. Tissue Simulating Liquid

#### 3.1. The composition of the tissue simulating liquid

| INGREDIENT<br>(% Weight) | 835MHz<br>Head | 835MHz<br>Body | 1900MHz<br>Head | 1900MHz<br>Body |
|--------------------------|----------------|----------------|-----------------|-----------------|
| <b>Water</b>             | 40.45          | 52.4           | 54.90           | 40.5            |
| <b>Salt</b>              | 1.45           | 1.40           | 0.18            | 0.50            |
| <b>Sugar</b>             | 57.6           | 45.0           | 0.00            | 58.0            |
| <b>HEC</b>               | 0.40           | 1.00           | 0.00            | 0.50            |
| <b>Preventol</b>         | 0.10           | 0.20           | 0.00            | 0.50            |
| <b>DGBE</b>              | 0.00           | 0.00           | 44.92           | 0.00            |

### 3.2. Tissue Calibration Result

The dielectric parameters of the liquids were verified prior to the SAR evaluation using DASY5 Dielectric Probe Kit and Agilent Vector Network Analyzer E5071C

| Head Tissue Simulant Measurement |                                 |                         |                      |                   |
|----------------------------------|---------------------------------|-------------------------|----------------------|-------------------|
| Frequency [MHz]                  | Description                     | Dielectric Parameters   |                      | Tissue Temp. [°C] |
|                                  |                                 | $\epsilon_r$            | $\sigma$ [s/m]       |                   |
| 835 MHz                          | Reference result<br>± 5% window | 41.50<br>39.43 to 43.58 | 0.90<br>0.86 to 0.95 | N/A               |
|                                  | 04-Mar-2011                     | 41.40                   | 0.92                 | 21.0              |

| Body Tissue Simulant Measurement |                                 |                         |                      |                   |
|----------------------------------|---------------------------------|-------------------------|----------------------|-------------------|
| Frequency [MHz]                  | Description                     | Dielectric Parameters   |                      | Tissue Temp. [°C] |
|                                  |                                 | $\epsilon_r$            | $\sigma$ [s/m]       |                   |
| 835 MHz                          | Reference result<br>± 5% window | 55.20<br>52.44 to 57.96 | 0.97<br>0.92 to 1.02 | N/A               |
|                                  | 04-Mar-2011                     | 54.20                   | 0.99                 | 21.0              |

| Head Tissue Simulant Measurement |                                 |                        |                      |                   |
|----------------------------------|---------------------------------|------------------------|----------------------|-------------------|
| Frequency [MHz]                  | Description                     | Dielectric Parameters  |                      | Tissue Temp. [°C] |
|                                  |                                 | $\epsilon_r$           | $\sigma$ [s/m]       |                   |
| 1900 MHz                         | Reference result<br>± 5% window | 40.0<br>38.00 to 42.00 | 1.40<br>1.33 to 1.47 | N/A               |
|                                  | 04-Mar-2011                     | 39.10                  | 1.45                 | 21.2              |

| Body Tissue Simulant Measurement |                                 |                         |                      |                   |
|----------------------------------|---------------------------------|-------------------------|----------------------|-------------------|
| Frequency [MHz]                  | Description                     | Dielectric Parameters   |                      | Tissue Temp. [°C] |
|                                  |                                 | $\epsilon_r$            | $\sigma$ [s/m]       |                   |
| 1900 MHz                         | Reference result<br>± 5% window | 53.30<br>50.64 to 55.97 | 1.52<br>1.44 to 1.60 | N/A               |
|                                  | 04-Mar-2011                     | 53.00                   | 1.55                 | 21.2              |

### 3.3. Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations described in Reference [12] and extrapolated according to the head parameters specified in P1528.

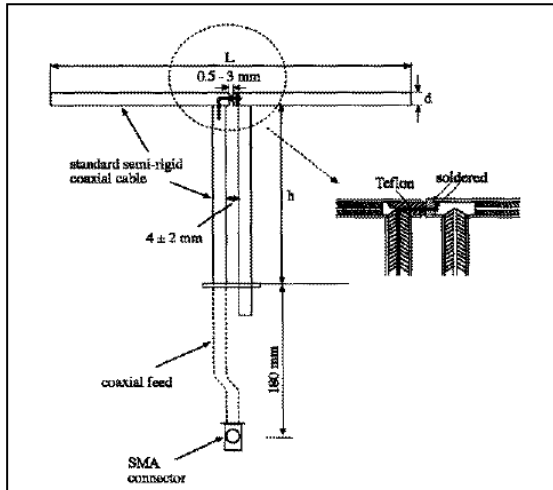
| Target Frequency   | Head         |                | Body         |                |
|--------------------|--------------|----------------|--------------|----------------|
| (MHz)              | $\epsilon_r$ | $\sigma$ (S/m) | $\epsilon_r$ | $\sigma$ (S/m) |
| 150                | 52.3         | 0.76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

( $\epsilon_r$  = relative permittivity,  $\sigma$  = conductivity and  $\rho$  = 1000 kg/m<sup>3</sup>)

## 4. SAR Measurement Procedure

### 4.1. SAR System Validation

#### 4.1.1. Validation Dipoles



The dipoles used is based on the IEEE-1528 standard, and is complied with mechanical and electrical specifications in line with the requirements of both IEEE and FCC Supplement C. the table below provides details for the mechanical and electrical specifications for the dipoles.

| Frequency | L (mm) | h (mm) | d (mm) |
|-----------|--------|--------|--------|
| 835MHz    | 165.0  | 900    | 3.6    |
| 1900MHz   | 68.0   | 39.5   | 3.6    |



#### 4.1.2. Validation Result

| System Performance Check at 835MHz &1900MHz for Head     |                                  |                        |                        |                   |
|----------------------------------------------------------|----------------------------------|------------------------|------------------------|-------------------|
| Validation Kit: D835V2-SN 4d094                          |                                  |                        |                        |                   |
| Frequency [MHz]                                          | Description                      | SAR [w/kg] 1g          | SAR [w/kg] 10g         | Tissue Temp. [°C] |
| 835 MHz                                                  | Reference result<br>± 10% window | 9.70<br>8.73 to 10.67  | 6.30<br>5.67 to 6.93   | N/A               |
|                                                          | 04-Mar-2011                      | 10.04                  | 6.52                   | 21.0              |
| Validation Kit: D1900V2-SN 5d121                         |                                  |                        |                        |                   |
| Frequency [MHz]                                          | Description                      | SAR [w/kg] 1g          | SAR [w/kg] 10g         | Tissue Temp. [°C] |
| 1900 MHz                                                 | Reference result<br>± 10% window | 39.8<br>35.82 to 43.78 | 21.1<br>18.99 to 23.21 | N/A               |
|                                                          | 04-Mar-2011                      | 42.00                  | 21.32                  | 21.0              |
| Note: All SAR values are normalized to 1W forward power. |                                  |                        |                        |                   |
| System Performance Check at 835MHz &1900MHz for Body     |                                  |                        |                        |                   |
| Validation Kit: D835V2-SN 4d094                          |                                  |                        |                        |                   |
| Frequency [MHz]                                          | Description                      | SAR [w/kg] 1g          | SAR [w/kg] 10g         | Tissue Temp. [°C] |
| 835 MHz                                                  | Reference result<br>± 10% window | 9.90<br>8.91 to 10.89  | 6.53<br>5.88 to 7.18   | N/A               |
|                                                          | 04-Mar-2011                      | 10.36                  | 6.68                   | 21.0              |
| Validation Kit: D1900V2-SN 5d121                         |                                  |                        |                        |                   |
| Frequency [MHz]                                          | Description                      | SAR [w/kg] 1g          | SAR [w/kg] 10g         | Tissue Temp. [°C] |
| 1900 MHz                                                 | Reference result<br>± 10% window | 41.4<br>37.26 to 45.54 | 22.3<br>20.07 to 24.53 | N/A               |
|                                                          | 04-Mar-2011                      | 39.60                  | 20.28                  | 21.0              |
| Note: All SAR values are normalized to 1W forward power. |                                  |                        |                        |                   |

## 4.2. SAR Measurement Procedure

The ALSAS-10U calculates SAR using the following equation,

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

$\sigma$ : represents the simulated tissue conductivity

$\rho$ : represents the tissue density

The EUT is set to transmit at the required power in line with product specification, at each frequency relating to the LOW, MID, and HIGH channel settings.

Pre-scans are made on the device to establish the location for the transmitting antenna, using a large area scan in either air or tissue simulation fluid.

The EUT is placed against the Universal Phantom where the maximum area scan dimensions are larger than the physical size of the resonating antenna. When the scan size is not large enough to cover the peak SAR distribution, it is modified by either extending the area scan size in both the X and Y directions, or the device is shifted within the predefined area.

The area scan is then run to establish the peak SAR location (interpolated resolution set at  $1\text{mm}^2$ ) which is then used to orient the center of the zoom scan. The zoom scan is then executed and the 1g and 10g averages are derived from the zoom scan volume (interpolated resolution set at  $1\text{mm}^3$ ).

## 5. SAR Exposure Limits

SAR assessments have been made in line with the requirements of IEEE-1528, FCC Supplement C, and comply with ANSI/IEEE C95.1-1992 “Uncontrolled Environments” limits. These limits apply to a location which is deemed as “Uncontrolled Environment” which can be described as a situation where the general public may be exposed to an RF source with no prior knowledge or control over their exposure.

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

| Type Exposure                                            | Uncontrolled Environment Limit |
|----------------------------------------------------------|--------------------------------|
| Spatial Peak SAR (1g cube tissue for brain or body)      | 1.60 W/kg                      |
| Spatial Average SAR (whole body)                         | 0.08 W/kg                      |
| Spatial Peak SAR (10g for hands, feet, ankles and wrist) | 4.00 W/kg                      |

## 6. Test Equipment List

| Instrument                           | Manufacturer | Model No.     | Serial No.      | Last Calibration | Next Calibration |
|--------------------------------------|--------------|---------------|-----------------|------------------|------------------|
| Stäubli Robot TX60L                  | Stäubli      | TX60L         | F10/5C90A1/A/01 | Mar.02.2010      | only once        |
| Controller                           | Stäubli      | SP1           | S-0034          | Mar.02.2010      | only once        |
| Dipole Validation Kits               | SPEAG        | D835V2        | 4d094           | Mar.15.2010      | Mar.15.2012      |
| Dipole Validation Kits               | SPEAG        | D1900V2       | 5d121           | Mar.09.2010      | Mar.09.2012      |
| SAM Twin Phantom                     | Speag        | SAM           | TP-1561/1562    | N/A              | N/A              |
| Device Holder                        | Speag        | SD 000 H01 HA | N/A             | N/A              | N/A              |
| Data Acquisition Electronic          | Speag        | DAE4          | 1220            | Dec.03.2010      | Dec.03. 2011     |
| E-Field Probe                        | Speag        | EX3DV4        | 3710            | Mar.05.2010      | Mar.05.2011      |
| SAR Software                         | Speag        | DASY5         | V5.2 Build 162  | N/A              | N/A              |
| Power Amplifier                      | Mini-Circuit | ZVA-183-S+    | N657400950      | N/A              | N/A              |
| Directional Coupler                  | Agilent      | 778D          | 20160           | N/A              | N/A              |
| Universal Radio Communication Tester | R&S          | CMU 200       | 117088          | Jul.12. 2010     | Jul.12. 2011     |
| Vector Network                       | Agilent      | E5071C        | MY48367267      | Apr.10.2010      | Apr.10.2011      |
| Signal Generator                     | Agilent      | E4438C        | MY49070163      | Apr.10.2010      | Apr.10.2011      |
| Power Meter                          | Anritsu      | ML2495A       | 0905006         | Jan.06.2011      | Jan.06.2012      |
| Wide Bandwidth Sensor                | Anritsu      | MA2411B       | 0846014         | Jan.06.2011      | Jan.06.2012      |

## 7. Measurement Uncertainty

| DASY5 Uncertainty                |               |             |            |         |          |                |                 |                       |
|----------------------------------|---------------|-------------|------------|---------|----------|----------------|-----------------|-----------------------|
| Error Description                | Uncert. value | Prob. Dist. | Div.       | (ci) 1g | (ci) 10g | Std. Unc. (1g) | Std. Unc. (10g) | (vi) V <sub>eff</sub> |
| <b>Measurement System</b>        |               |             |            |         |          |                |                 |                       |
| Probe Calibration                | ±5.5%         | N           | 1          | 1       | 1        | ±5.5%          | ±5.5%           | ∞                     |
| Axial Isotropy                   | ±4.7%         | R           | $\sqrt{3}$ | 0.7     | 0.7      | ±1.9%          | ±1.9%           | ∞                     |
| Hemispherical Isotropy           | ±9.6%         | R           | $\sqrt{3}$ | 0.7     | 0.7      | ±3.9%          | ±3.9%           | ∞                     |
| Boundary Effects                 | ±1.0%         | R           | $\sqrt{3}$ | 1       | 1        | ±0.6%          | ±0.6%           | ∞                     |
| Linearity                        | ±4.7%         | R           | $\sqrt{3}$ | 1       | 1        | ±2.7%          | ±2.7%           | ∞                     |
| System Detection Limits          | ±1.0%         | R           | $\sqrt{3}$ | 1       | 1        | ±0.6%          | ±0.6%           | ∞                     |
| Readout Electronics              | ±0.3%         | N           | 1          | 1       | 1        | ±0.3%          | ±0.3%           | ∞                     |
| Response Time                    | ±0.8%         | R           | $\sqrt{3}$ | 1       | 1        | ±0.5%          | ±0.5%           | ∞                     |
| Integration Time                 | ±2.6%         | R           | $\sqrt{3}$ | 1       | 1        | ±1.5%          | ±1.5%           | ∞                     |
| RF Ambient Noise                 | ±3.0%         | R           | $\sqrt{3}$ | 1       | 1        | ±1.7%          | ±1.7%           | ∞                     |
| RF Ambient Reflections           | ±3.0%         | R           | $\sqrt{3}$ | 1       | 1        | ±1.7%          | ±1.7%           | ∞                     |
| Probe Positioner                 | ±0.4%         | R           | $\sqrt{3}$ | 1       | 1        | ±0.2%          | ±0.2%           | ∞                     |
| Probe Positioning                | ±2.9%         | R           | $\sqrt{3}$ | 1       | 1        | ±1.7%          | ±1.7%           | ∞                     |
| Max. SAR Eval.                   | ±1.0%         | R           | $\sqrt{3}$ | 1       | 1        | ±0.6%          | ±0.6%           | ∞                     |
| <b>Test Sample Related</b>       |               |             |            |         |          |                |                 |                       |
| Device Positioning               | ±2.9%         | N           | 1          | 1       | 1        | ±2.9%          | ±2.9%           | 145                   |
| Device Holder                    | ±3.6%         | N           | 1          | 1       | 1        | ±3.6%          | ±3.6%           | 5                     |
| Power Drift                      | ±5.0%         | R           | $\sqrt{3}$ | 1       | 1        | ±2.9%          | ±2.9%           | ∞                     |
| <b>Phantom and Setup</b>         |               |             |            |         |          |                |                 |                       |
| Phantom Uncertainty              | ±4.0%         | R           | $\sqrt{3}$ | 1       | 1        | ±2.3%          | ±2.3%           | ∞                     |
| Liquid Conductivity (target)     | ±5.0%         | R           | $\sqrt{3}$ | 0.64    | 0.43     | ±1.8%          | ±1.2%           | ∞                     |
| Liquid Conductivity (meas.)      | ±2.5%         | N           | 1          | 0.64    | 0.43     | ±1.6%          | ±1.1%           | ∞                     |
| Liquid Permittivity (target)     | ±5.0%         | R           | $\sqrt{3}$ | 0.6     | 0.49     | ±1.7%          | ±1.4%           | ∞                     |
| Liquid Permittivity (meas.)      | ±2.5%         | N           | 1          | 0.6     | 0.49     | ±1.5%          | ±1.2%           | ∞                     |
| <b>Combined Std. Uncertainty</b> |               |             |            |         |          | ±10.7%         | ±10.5%          | 387                   |
| <b>Expanded STD Uncertainty</b>  |               |             |            |         |          | ±21.5%         | ±21.0%          |                       |

## 8. Conducted Power Measurement

| Mode                  | Frequency (MHz) | Output Power (dBm) | Path Loss (dB) | Result (dBm) |
|-----------------------|-----------------|--------------------|----------------|--------------|
| Maximum Power (SIM 1) |                 |                    |                |              |
| GSM850                | 824.2           | 32.39              | 0.7            | <b>33.09</b> |
|                       | 836.6           | 32.34              | 0.7            | 33.04        |
|                       | 848.8           | 32.32              | 0.7            | 33.02        |
| PCS1900               | 1850.2          | 28.98              | 1.0            | <b>29.98</b> |
|                       | 1880.0          | 28.96              | 1.0            | 29.96        |
|                       | 1909.8          | 28.93              | 1.0            | 29.93        |
| GPRS850 2slot         | 824.2           | 31.69              | 0.7            | 32.39        |
|                       | 836.6           | 31.67              | 0.7            | 32.37        |
|                       | 848.8           | 31.67              | 0.7            | 32.37        |
| GPRS850 3slot         | 824.2           | 29.97              | 0.7            | 30.67        |
|                       | 836.6           | 29.94              | 0.7            | 30.64        |
|                       | 848.8           | 29.97              | 0.7            | 30.67        |
| GPRS850 4slot         | 824.2           | 28.87              | 0.7            | 29.57        |
|                       | 836.6           | 28.82              | 0.7            | 29.52        |
|                       | 848.8           | 28.89              | 0.7            | 29.59        |
| GPRS1900 2slot        | 1850.2          | 28.07              | 1.0            | 29.07        |
|                       | 1880.0          | 28.06              | 1.0            | 29.06        |
|                       | 1909.8          | 28.06              | 1.0            | 29.06        |
| GPRS1900 3slot        | 1850.2          | 26.14              | 1.0            | 27.14        |
|                       | 1880.0          | 26.10              | 1.0            | 27.10        |
|                       | 1909.8          | 26.11              | 1.0            | 27.11        |
| GPRS1900 4slot        | 1850.2          | 24.97              | 1.0            | 25.97        |
|                       | 1880.0          | 24.96              | 1.0            | 25.96        |
|                       | 1909.8          | 24.98              | 1.0            | 25.98        |
| Maximum Power (SIM 2) |                 |                    |                |              |
| GSM850                | 836.6           | 32.27              | 0.7            | 32.97        |
| PCS1900               | 1880.0          | 28.91              | 1.0            | 29.91        |

Note: All SAR testing was done in SIM 1.

## **9. Test Results**

### **9.1. SAR Test Results Summary**

#### **9.1.1. Test position and configuration**

Head SAR was performed with the device configured in the positions according to IEEE1528, and Body SAR was performed with the device 15mm from the phantom. Body SAR was also performed with the headset attached and without.

#### **9.1.2. Body SAR without Headset**

Testing without the headset was performed at the position and channels that resulted in the highest body SAR. This testing was performed with GPRS transmitting with 4 uplink timeslots. This operation mode represents the maximum SAR situation, when downloading data via GPRS and listening to music by headset. SAR without the headset attached was significantly higher than with the headset, and also was verified several times and confirmed, so the final test data shown were the worst case without headset.

In the Body SAR test result table, body-worn means display of device down, body-front means display of device up.

#### **9.1.3. GPRS Operation Mode**

This is a multislots class 12 device capable of 2/3/4 uplink timeslots. During the head SAR test, the device was transmitting with 1 uplink timeslot; during the body SAR test, it was transmitting with 4 uplink timeslots. Additionally, this device doesn't support dual transfer mode (DTM).

#### **9.1.4. Referenced Documents**

FCC KDB 447498 D01 V04 and KDB 941225 D03 V01

### 9.1.5. Test Result

|                                    |                  |           |       |                           |                     |               |              |
|------------------------------------|------------------|-----------|-------|---------------------------|---------------------|---------------|--------------|
|                                    |                  |           |       |                           |                     |               |              |
| SAR MEASUREMENT                    |                  |           |       |                           |                     |               |              |
| Ambient Temperature (°C) : 21.5 ±2 |                  |           |       | Relative Humidity (%): 54 |                     |               |              |
| Liquid Temperature (°C) : 21.0 ±2  |                  |           |       | Depth of Liquid (cm):>15  |                     |               |              |
| Product: Cellphone TV              |                  |           |       |                           |                     |               |              |
| Test Mode: GSM850 <SIM 1>          |                  |           |       |                           |                     |               |              |
| Test Position Head                 | Antenna Position | Frequency |       | Conducted Power (dBm)     | Power Drift (<±0.2) | SAR 1g (W/kg) | Limit (W/kg) |
|                                    |                  | Channel   | MHz   |                           |                     |               |              |
| Left-Cheek                         | Fixed            | 128       | 824.2 | 33.09                     | 0.013               | 0.770         | 1.6          |
| Left-Cheek                         | Fixed            | 189       | 836.6 | 33.04                     | -0.001              | 0.718         | 1.6          |
| Left-Cheek                         | Fixed            | 251       | 848.8 | 33.02                     | -0.004              | 0.589         | 1.6          |
| Left-Tilted                        | Fixed            | 189       | 836.6 | 33.04                     | 0.106               | 0.395         | 1.6          |
| Right-Cheek                        | Fixed            | 128       | 824.2 | 33.09                     | -0.026              | 0.700         | 1.6          |
| Right-Cheek                        | Fixed            | 189       | 836.6 | 33.04                     | -0.008              | 0.645         | 1.6          |
| Right-Cheek                        | Fixed            | 251       | 848.8 | 33.02                     | -0.063              | 0.549         | 1.6          |
| Right-Tilted                       | Fixed            | 189       | 836.6 | 33.04                     | 0.115               | 0.426         | 1.6          |
| Test Mode: GSM850 <SIM 2>          |                  |           |       |                           |                     |               |              |
| Left-Cheek                         | Fixed            | 189       | 836.6 | 32.97                     | -0.011              | 0.679         | 1.6          |
|                                    |                  |           |       |                           |                     |               |              |



|                                    |                     |           |       |                           |                        |                  |                 |
|------------------------------------|---------------------|-----------|-------|---------------------------|------------------------|------------------|-----------------|
|                                    |                     |           |       |                           |                        |                  |                 |
| SAR MEASUREMENT                    |                     |           |       |                           |                        |                  |                 |
| Ambient Temperature (°C) : 21.5 ±2 |                     |           |       | Relative Humidity (%): 54 |                        |                  |                 |
| Liquid Temperature (°C) : 21.0 ±2  |                     |           |       | Depth of Liquid (cm):>15  |                        |                  |                 |
| Product: Cellphone TV              |                     |           |       |                           |                        |                  |                 |
| Test Mode: GSM850                  |                     |           |       |                           |                        |                  |                 |
| Test Position<br>Body              | Antenna<br>Position | Frequency |       | Conducted<br>Power (dBm)  | Power Drift<br>(<±0.2) | SAR 1g<br>(W/kg) | Limit<br>(W/kg) |
|                                    |                     | Channel   | MHz   |                           |                        |                  |                 |
| Body-worn                          | Fixed               | 128       | 824.2 | 33.09                     | -0.037                 | 0.261            | 1.6             |
| Body-worn                          | Fixed               | 189       | 836.6 | 33.04                     | 0.147                  | 0.270            | 1.6             |
| Body-worn                          | Fixed               | 251       | 848.8 | 33.02                     | -0.053                 | 0.235            | 1.6             |
| Body-front                         | Fixed               | 189       | 836.6 | 33.04                     | -0.073                 | 0.146            | 1.6             |
| Test Mode: GPRS850 2slot           |                     |           |       |                           |                        |                  |                 |
| Body-worn                          | Fixed               | 128       | 824.2 | 32.39                     | 0.057                  | 0.806            | 1.6             |
| Body-worn                          | Fixed               | 189       | 836.6 | 32.37                     | -0.018                 | 0.724            | 1.6             |
| Body-worn                          | Fixed               | 251       | 848.8 | 32.37                     | 0.052                  | 0.538            | 1.6             |
| Body-front                         | Fixed               | 189       | 836.6 | 32.37                     | -0.158                 | 0.637            | 1.6             |
| Body-worn<br>(with headset)        | Fixed               | 189       | 836.6 | 32.37                     | -0.020                 | 0.327            | 1.6             |
| Test Mode: GPRS850 3slot           |                     |           |       |                           |                        |                  |                 |
| Body-worn                          | Fixed               | 189       | 836.6 | 30.64                     | 0.012                  | 0.590            | 1.6             |
| Test Mode: GPRS850 4slot           |                     |           |       |                           |                        |                  |                 |
| Body-worn                          | Fixed               | 189       | 836.6 | 29.52                     | -0.100                 | 0.492            | 1.6             |
|                                    |                     |           |       |                           |                        |                  |                 |

|                                    |                  |           |        |                           |                     |               |              |
|------------------------------------|------------------|-----------|--------|---------------------------|---------------------|---------------|--------------|
|                                    |                  |           |        |                           |                     |               |              |
| SAR MEASUREMENT                    |                  |           |        |                           |                     |               |              |
| Ambient Temperature (°C) : 21.5 ±2 |                  |           |        | Relative Humidity (%): 52 |                     |               |              |
| Liquid Temperature (°C) : 21.0 ±2  |                  |           |        | Depth of Liquid (cm):>15  |                     |               |              |
| Product: Cellphone TV              |                  |           |        |                           |                     |               |              |
| Test Mode: PCS1900 <SIM 1>         |                  |           |        |                           |                     |               |              |
| Test Position Head                 | Antenna Position | Frequency |        | Conducted Power (dBm)     | Power Drift (<±0.2) | SAR 1g (W/kg) | Limit (W/kg) |
|                                    |                  | Channel   | MHz    |                           |                     |               |              |
| Left-Cheek                         | Fixed            | 512       | 1850.2 | 29.98                     | -0.107              | 0.857         | 1.6          |
| Left-Cheek                         | Fixed            | 661       | 1880.0 | 29.96                     | -0.090              | 0.822         | 1.6          |
| Left-Cheek                         | Fixed            | 810       | 1909.8 | 29.93                     | -0.072              | 0.704         | 1.6          |
| Left-Tilted                        | Fixed            | 661       | 1880.0 | 29.96                     | 0.108               | 0.281         | 1.6          |
| Right-Cheek                        | Fixed            | 512       | 1850.2 | 29.98                     | -0.125              | 1.120         | 1.6          |
| Right-Cheek                        | Fixed            | 661       | 1880.0 | 29.96                     | 0.077               | 1.100         | 1.6          |
| Right-Cheek                        | Fixed            | 810       | 1909.8 | 29.93                     | 0.016               | 0.932         | 1.6          |
| Right-Tilted                       | Fixed            | 661       | 1880.0 | 29.96                     | 0.010               | 0.282         | 1.6          |
| Test Mode: PCS1900 <SIM 2>         |                  |           |        |                           |                     |               |              |
| Right-Cheek                        | Fixed            | 661       | 1880.0 | 29.91                     | 0.077               | 0.993         | 1.6          |
|                                    |                  |           |        |                           |                     |               |              |

|                                    |                     |           |        |                           |                        |                  |                 |
|------------------------------------|---------------------|-----------|--------|---------------------------|------------------------|------------------|-----------------|
| SAR MEASUREMENT                    |                     |           |        |                           |                        |                  |                 |
| Ambient Temperature (°C) : 21.5 ±2 |                     |           |        | Relative Humidity (%): 52 |                        |                  |                 |
| Liquid Temperature (°C) : 21.0 ±2  |                     |           |        | Depth of Liquid (cm):>15  |                        |                  |                 |
| Product: Cellphone TV              |                     |           |        |                           |                        |                  |                 |
| Test Mode: PCS1900                 |                     |           |        |                           |                        |                  |                 |
| Test Position<br>Body              | Antenna<br>Position | Frequency |        | Conducted<br>Power (dBm)  | Power Drift<br>(<±0.2) | SAR 1g<br>(W/kg) | Limit<br>(W/kg) |
|                                    |                     | Channel   | MHz    |                           |                        |                  |                 |
| Body-worn                          | Fixed               | 512       | 1850.2 | 29.98                     | 0.045                  | 0.328            | 1.6             |
| Body-worn                          | Fixed               | 661       | 1880.0 | 29.96                     | 0.070                  | 0.307            | 1.6             |
| Body-worn                          | Fixed               | 810       | 1909.8 | 29.93                     | -0.004                 | 0.262            | 1.6             |
| Body-front                         | Fixed               | 661       | 1880.0 | 29.96                     | -0.002                 | 0.188            | 1.6             |
| Test Mode: GPRS1900 2slot          |                     |           |        |                           |                        |                  |                 |
| Body-worn                          | Fixed               | 512       | 1850.2 | 29.07                     | -0.021                 | 0.630            | 1.6             |
| Body-worn                          | Fixed               | 661       | 1880.0 | 29.06                     | 0.027                  | 0.668            | 1.6             |
| Body-worn                          | Fixed               | 810       | 1909.8 | 29.06                     | 0.030                  | 0.584            | 1.6             |
| Body-front                         | Fixed               | 661       | 1880.0 | 29.06                     | -0.020                 | 0.488            | 1.6             |
| Body-worn<br>(with headset)        | Fixed               | 661       | 1880.0 | 29.06                     | 0.010                  | 0.446            | 1.6             |
| Test Mode: GPRS1900 3slot          |                     |           |        |                           |                        |                  |                 |
| Body-worn                          | Fixed               | 661       | 1880.0 | 27.10                     | 0.014                  | 0.563            | 1.6             |
| Test Mode: GPRS1900 4slot          |                     |           |        |                           |                        |                  |                 |
| Body-worn                          | Fixed               | 661       | 1880.0 | 25.96                     | -0.076                 | 0.492            | 1.6             |
|                                    |                     |           |        |                           |                        |                  |                 |

## Appendix A. SAR System Validation Data

Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

System Check Head 835MHz

**DUT: Dipole 835 MHz D835V2; Type: D835V2**

Communication System: CW; Communication System Band: D835 (835.0 MHz); Duty Cycle: 1:1;

Frequency: 835 MHz; Medium parameters used:  $f = 835$  MHz;  $\sigma = 0.92$  mho/m;  $\epsilon_r = 41.4$ ;  $\rho = 1000$  kg/m<sup>3</sup> ;

Phantom section: Flat Section ; Input Power=250mW

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.83, 8.83, 8.83); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

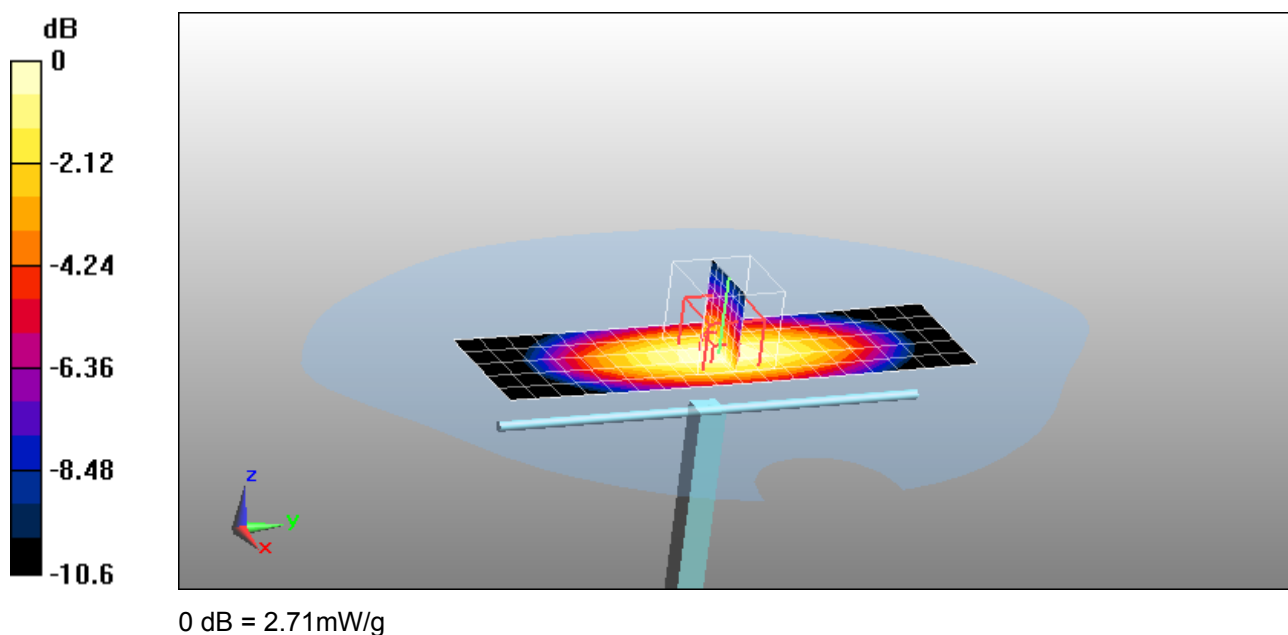
**Configuration/System Check GSM850 Head/Area Scan (6x19x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 2.59 mW/g

**Configuration/System Check GSM850 Head/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm, Reference Value = 54.6 V/m; Power Drift = 0.001 dB

Peak SAR (extrapolated) = 3.83 W/kg

**SAR(1 g) = 2.51 mW/g; SAR(10 g) = 1.63 mW/g** Maximum value of SAR (measured) = 2.71 mW/g



Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

System Check Body 835MHz

**DUT: Dipole 835 MHz D835V2; Type: D835V2**

Communication System: CW; Communication System Band: D835 (835.0 MHz); Duty Cycle: 1:1;

Frequency: 835 MHz; Medium parameters used:  $f = 835$  MHz;  $\sigma = 0.99$  mho/m;  $\epsilon_r = 54.2$ ;  $\rho = 1000$  kg/m<sup>3</sup> ;

Phantom section: Flat Section ; Input Power=250mW

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.95, 8.95, 8.95); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

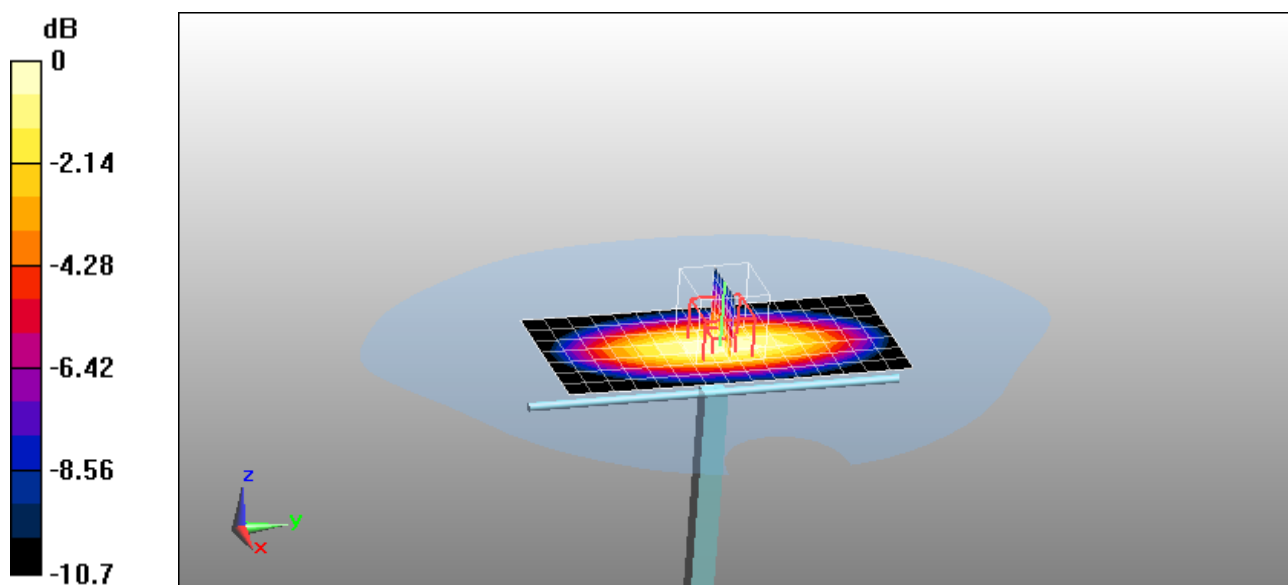
**Configuration/System Check GSM835 Body/Area Scan (8x16x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 2.65 mW/g

**Configuration/System Check GSM835 Body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm, Reference Value = 53.2 V/m; Power Drift = 0.017 dB

Peak SAR (extrapolated) = 3.94 W/kg

**SAR(1 g) = 2.59 mW/g; SAR(10 g) = 1.67 mW/g** Maximum value of SAR (measured) = 2.8 mW/g



0 dB = 2.8mW/g

Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

System Check Head 1900MHz

**DUT: Dipole 1900 MHz D1900V2; Type: D1900V2**

Communication System: CW; Communication System Band: D1900 (1900.0 MHz); Duty Cycle: 1:1;

Frequency: 1900 MHz; Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.45$  mho/m;  $\epsilon_r = 39.1$ ;  $\rho = 1000$  kg/m<sup>3</sup> ;

Phantom section: Flat Section ; Input Power=250mW

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.69, 7.69, 7.69); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

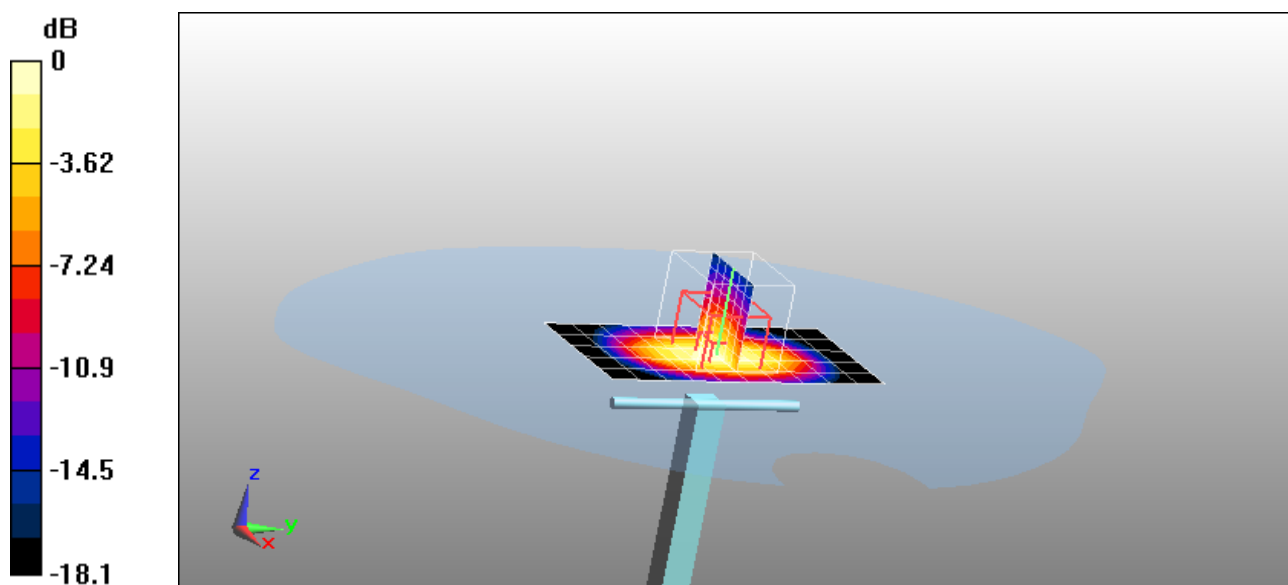
**Configuration/System Check PCS1900 Head/Area Scan (6x11x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 10.8 mW/g

**Configuration/System Check PCS1900 Head/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm, Reference Value = 89.9 V/m; Power Drift = -0.018 dB

Peak SAR (extrapolated) = 20.2 W/kg

**SAR(1 g) = 10.5 mW/g; SAR(10 g) = 5.33 mW/g** Maximum value of SAR (measured) = 11.8 mW/g



0 dB = 11.8mW/g

Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

System Check Body 1900MHz

**DUT: Dipole 1900 MHz D1900V2; Type: D1900V2**

Communication System: CW; Communication System Band: D1900 (1900.0 MHz); Duty Cycle: 1:1;

Frequency: 1900 MHz; Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.55$  mho/m;  $\epsilon_r = 53$ ;  $\rho = 1000$  kg/m<sup>3</sup> ;

Phantom section: Flat Section ; Input Power=250mW

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

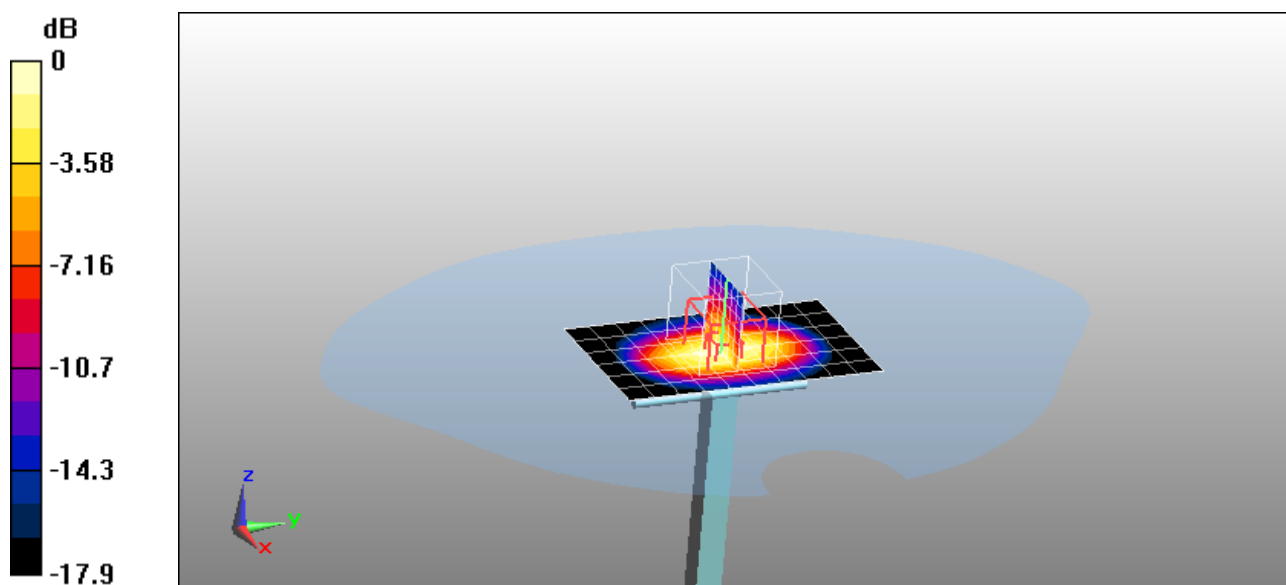
- Probe: EX3DV4 - SN3710; ConvF(7.71, 7.71, 7.71); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

**Configuration/System Check PCS1900 Body/Area Scan (7x11x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 11.2 mW/g

**Configuration/System Check PCS1900 Body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm, Reference Value = 84.8 V/m; Power Drift = -0.027 dB

Peak SAR (extrapolated) = 18.5 W/kg

**SAR(1 g) = 9.9 mW/g; SAR(10 g) = 5.07 mW/g** Maximum value of SAR (measured) = 11.2 mW/g


## Appendix B. SAR measurement Data

Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GSM850 Low Left-Touch

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:8.3; Frequency: 824.2 MHz; Medium parameters used:  $f = 824.2$  MHz;  $\sigma = 0.9$  mho/m;  $\epsilon_r = 41.5$ ;  $\rho = 1000$  kg/m<sup>3</sup> ; Phantom section: Left Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.83, 8.83, 8.83); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

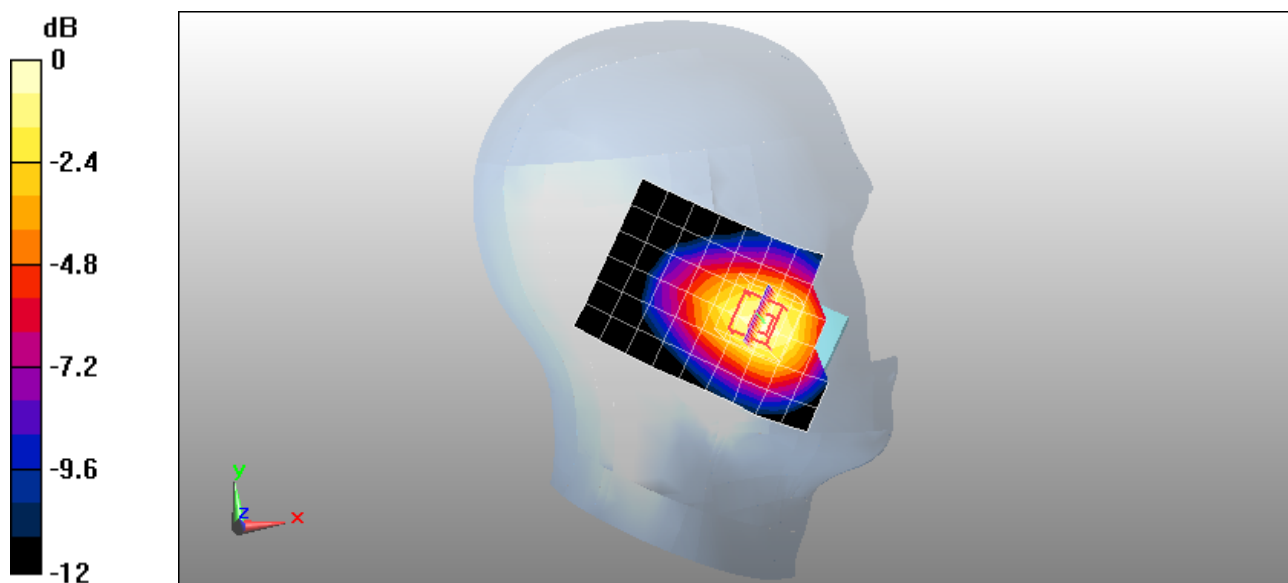
**Configuration/GSM850 Low Left-Touch/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.825 mW/g

**Configuration/GSM850 Low Left-Touch/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 10.5 V/m; Power Drift = 0.013 dB

Peak SAR (extrapolated) = 1.04 W/kg

**SAR(1 g) = 0.770 mW/g; SAR(10 g) = 0.528 mW/g** Maximum value of SAR (measured) = 0.823 mW/g



0 dB = 0.823mW/g



Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GSM850 Mid Left-Touch

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:8.3; Frequency: 836.6 MHz; Medium parameters used:  $f = 836.6$  MHz;  $\sigma = 0.92$  mho/m;  $\epsilon_r = 41.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>; Phantom section: Left Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.83, 8.83, 8.83); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

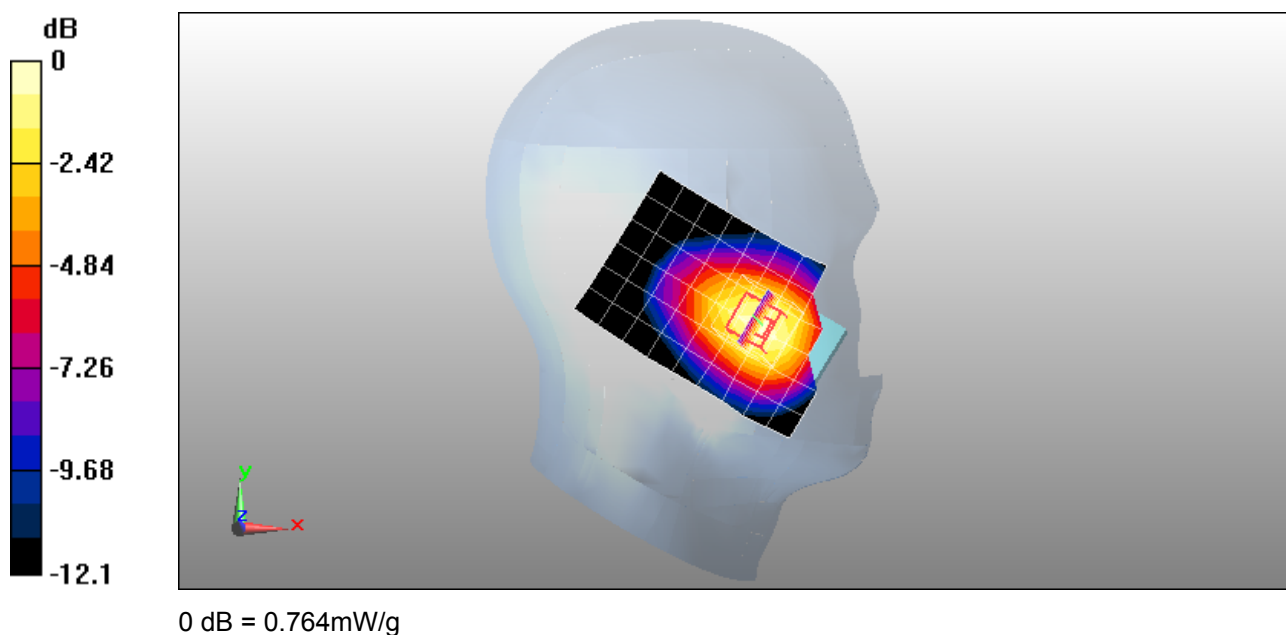
**Configuration/GSM850 Mid Left-Touch/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.771 mW/g

**Configuration/GSM850 Mid Left-Touch/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 10.1 V/m; Power Drift = -0.001 dB

Peak SAR (extrapolated) = 0.965 W/kg

**SAR(1 g) = 0.718 mW/g; SAR(10 g) = 0.494 mW/g** Maximum value of SAR (measured) = 0.764 mW/g



Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GSM850 High Left-Touch

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:8.3; Frequency: 848.6 MHz; Medium parameters used:  $f = 848.6$  MHz;  $\sigma = 0.93$  mho/m;  $\epsilon_r = 41.2$ ;  $\rho = 1000$  kg/m<sup>3</sup> ; Phantom section: Left Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

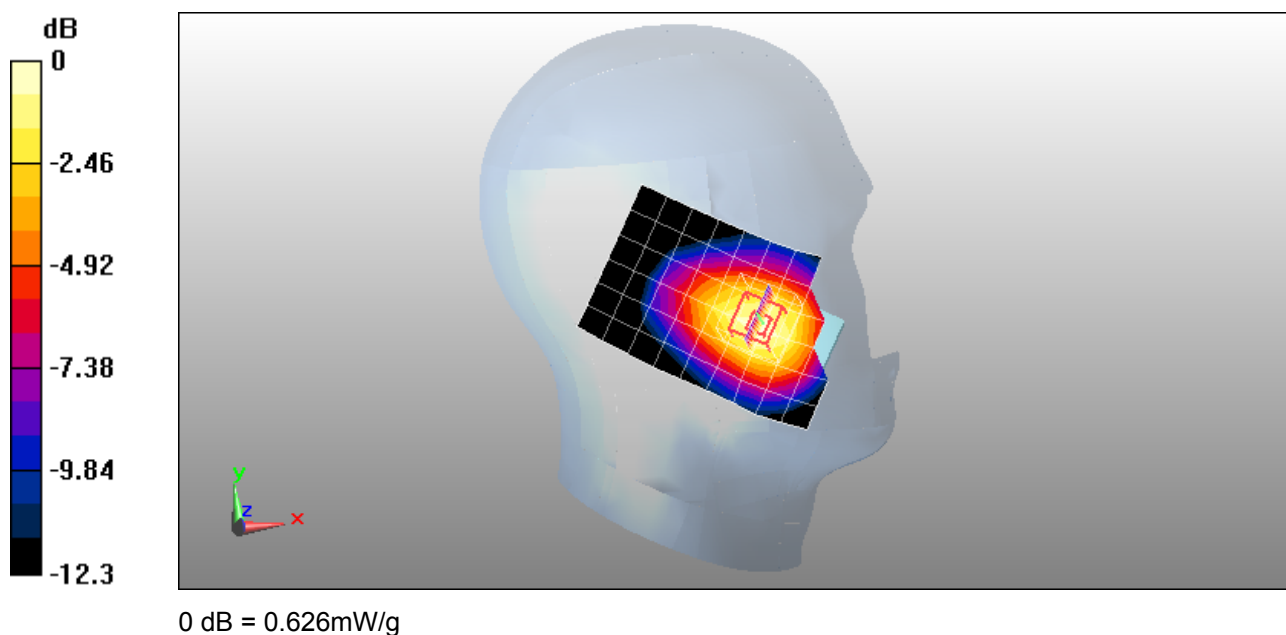
- Probe: EX3DV4 - SN3710; ConvF(8.83, 8.83, 8.83); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

**Configuration/GSM850 High Left-Touch/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.625 mW/g

**Configuration/GSM850 High Left-Touch/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 9.03 V/m; Power Drift = -0.004 dB

Peak SAR (extrapolated) = 0.794 W/kg

**SAR(1 g) = 0.589 mW/g; SAR(10 g) = 0.403 mW/g** Maximum value of SAR (measured) = 0.626 mW/g


Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GSM850 Mid Left-Tilt

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:8.3; Frequency: 836.6 MHz; Medium parameters used:  $f = 836.6$  MHz;  $\sigma = 0.92$  mho/m;  $\epsilon_r = 41.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>; Phantom section: Left Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.83, 8.83, 8.83); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

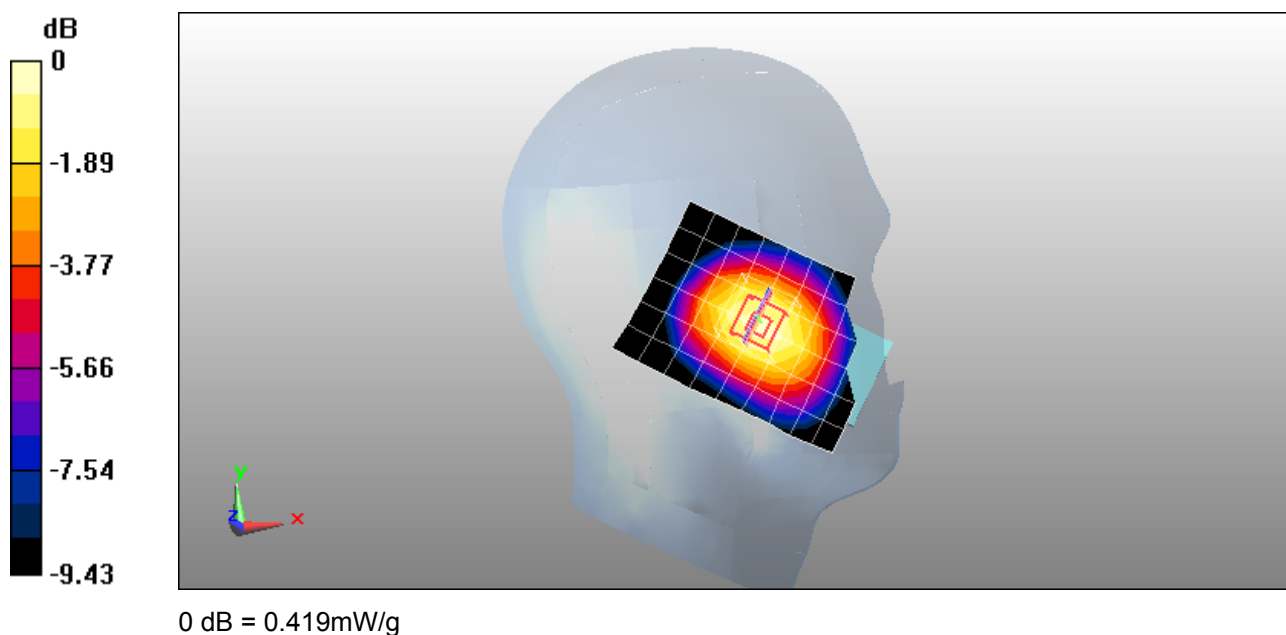
**Configuration/GSM850 Mid Left-Tilt/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.414 mW/g

**Configuration/GSM850 Mid Left-Tilt/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 14.2 V/m; Power Drift = 0.106 dB

Peak SAR (extrapolated) = 0.519 W/kg

**SAR(1 g) = 0.395 mW/g; SAR(10 g) = 0.285 mW/g** Maximum value of SAR (measured) = 0.419 mW/g



Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GSM850 Low Right-Touch

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:8.3; Frequency: 824.2 MHz; Medium parameters used:  $f = 824.2$  MHz;  $\sigma = 0.9$  mho/m;  $\epsilon_r = 41.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>; Phantom section: Right Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

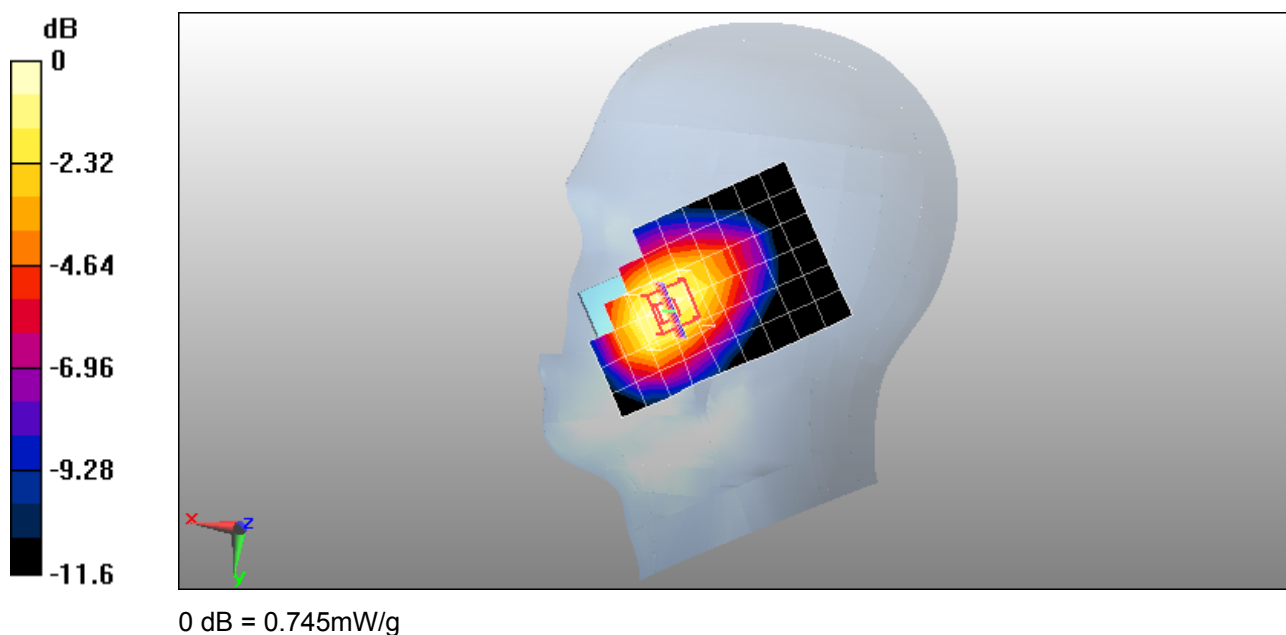
- Probe: EX3DV4 - SN3710; ConvF(8.83, 8.83, 8.83); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

**Configuration/GSM850 Low Right-Touch/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.750 mW/g

**Configuration/GSM850 Low Right-Touch/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 10.4 V/m; Power Drift = -0.026 dB

Peak SAR (extrapolated) = 1 W/kg

**SAR(1 g) = 0.700 mW/g; SAR(10 g) = 0.470 mW/g** Maximum value of SAR (measured) = 0.745 mW/g


Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GSM850 Mid Right-Touch

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:8.3; Frequency: 836.6 MHz; Medium parameters used:  $f = 836.6$  MHz;  $\sigma = 0.92$  mho/m;  $\epsilon_r = 41.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>; Phantom section: Right Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.83, 8.83, 8.83); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

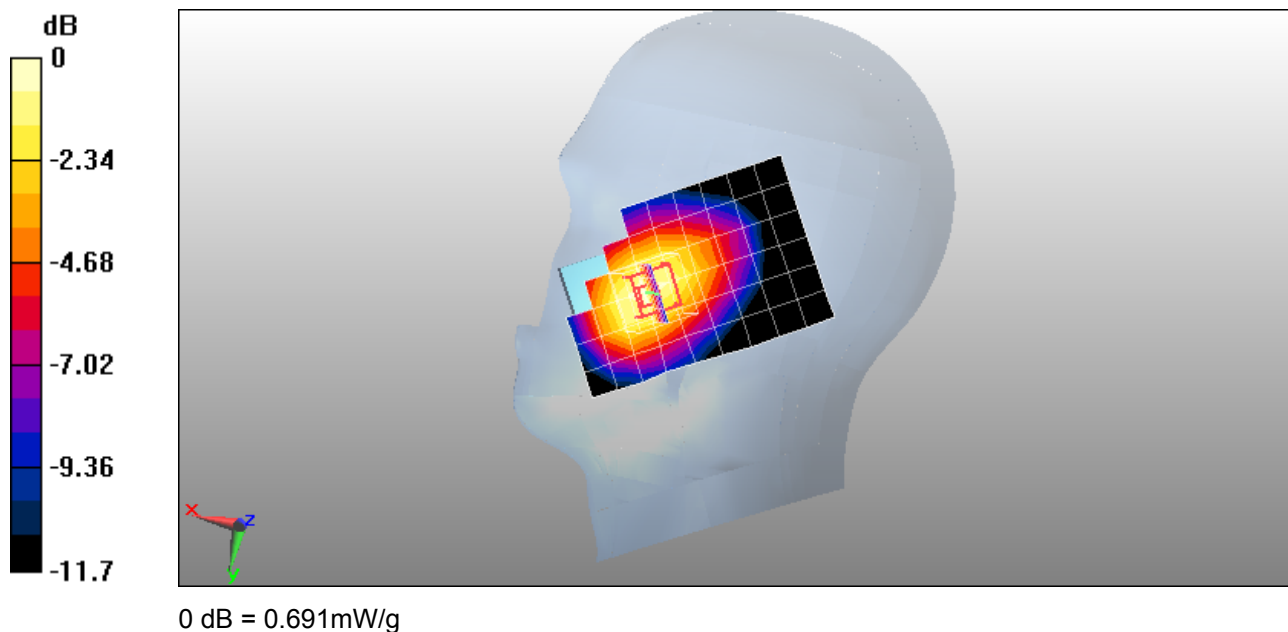
**Configuration/GSM850 Mid Right-Touch/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.691 mW/g

**Configuration/GSM850 Mid Right-Touch/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 9.75 V/m; Power Drift = -0.008 dB

Peak SAR (extrapolated) = 0.936 W/kg

**SAR(1 g) = 0.645 mW/g; SAR(10 g) = 0.431 mW/g** Maximum value of SAR (measured) = 0.691 mW/g



Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GSM850 High Right-Touch

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:8.3; Frequency: 848.6 MHz; Medium parameters used:  $f = 848.6$  MHz;  $\sigma = 0.93$  mho/m;  $\epsilon_r = 41.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>; Phantom section: Right Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.83, 8.83, 8.83); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

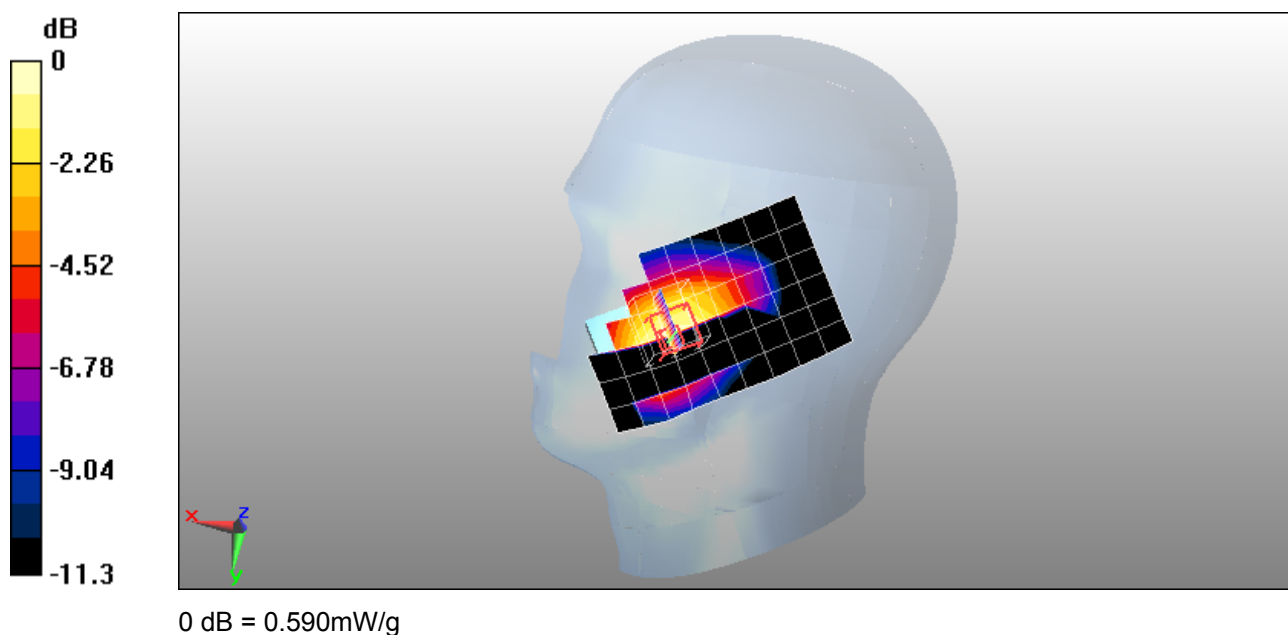
**Configuration/GSM850 High Right-Touch/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.586 mW/g

**Configuration/GSM850 High Right-Touch/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 8.87 V/m; Power Drift = -0.063 dB

Peak SAR (extrapolated) = 0.776 W/kg

**SAR(1 g) = 0.549 mW/g; SAR(10 g) = 0.369 mW/g** Maximum value of SAR (measured) = 0.590 mW/g



Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GSM850 Mid Right-Tilt

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:8.3; Frequency: 836.6 MHz; Medium parameters used:  $f = 836.6$  MHz;  $\sigma = 0.92$  mho/m;  $\epsilon_r = 41.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>; Phantom section: Right Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

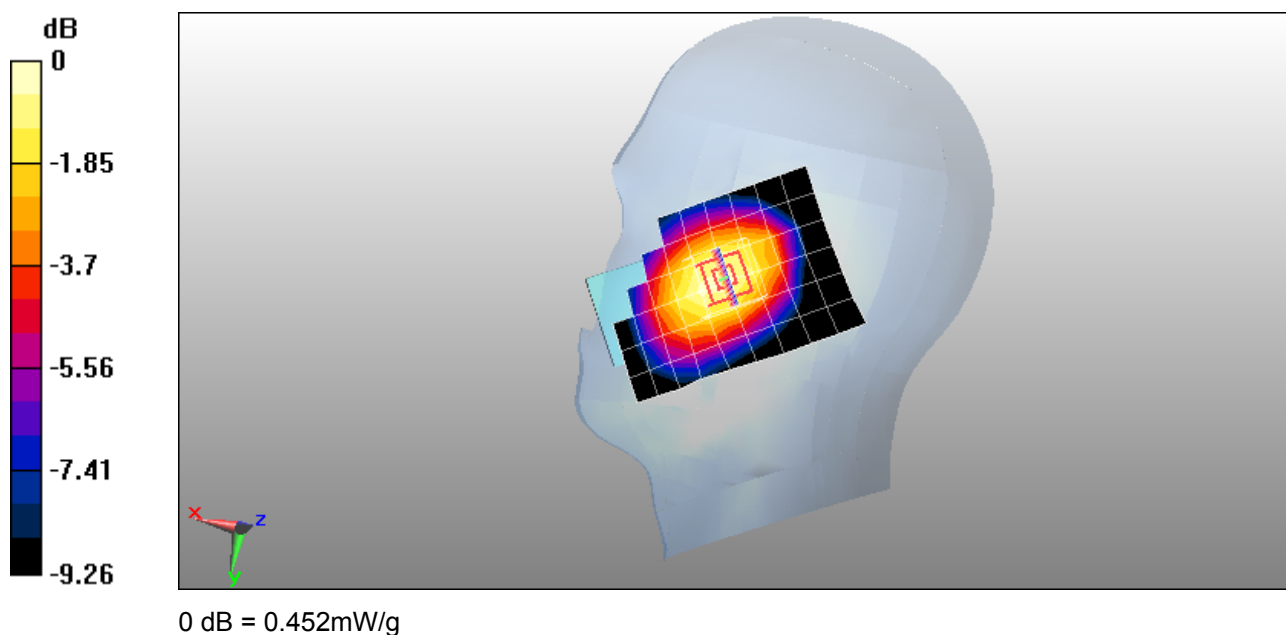
- Probe: EX3DV4 - SN3710; ConvF(8.83, 8.83, 8.83); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

**Configuration/GSM850 Mid Right-Tilt/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.445 mW/g

**Configuration/GSM850 Mid Right-Tilt/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 14.2 V/m; Power Drift = 0.115 dB

Peak SAR (extrapolated) = 0.559 W/kg

**SAR(1 g) = 0.426 mW/g; SAR(10 g) = 0.306 mW/g** Maximum value of SAR (measured) = 0.452 mW/g


Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GSM 850 Low Body-Back

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:8.3; Frequency: 824.2 MHz; Medium parameters used:  $f = 824.2$  MHz;  $\sigma = 0.98$  mho/m;  $\epsilon_r = 54.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>; Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.95, 8.95, 8.95); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

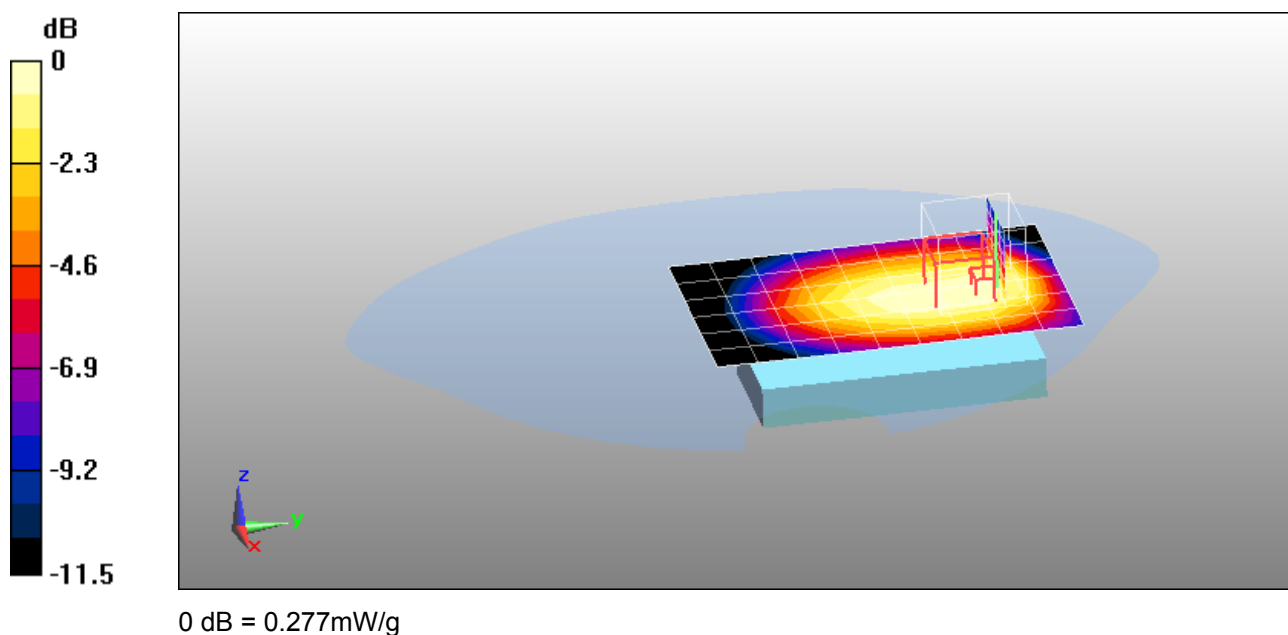
**Configuration/GSM 850 Low Body-Back/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.270 mW/g

**Configuration/GSM 850 Low Body-Back/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 7.91 V/m; Power Drift = -0.037 dB

Peak SAR (extrapolated) = 0.380 W/kg

**SAR(1 g) = 0.261 mW/g; SAR(10 g) = 0.188 mW/g** Maximum value of SAR (measured) = 0.277 mW/g





Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GSM 850 Mid Body-Back

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:8.3; Frequency: 836.6 MHz; Medium parameters used:  $f = 836.6$  MHz;  $\sigma = 0.99$  mho/m;  $\epsilon_r = 54.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>; Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.95, 8.95, 8.95); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

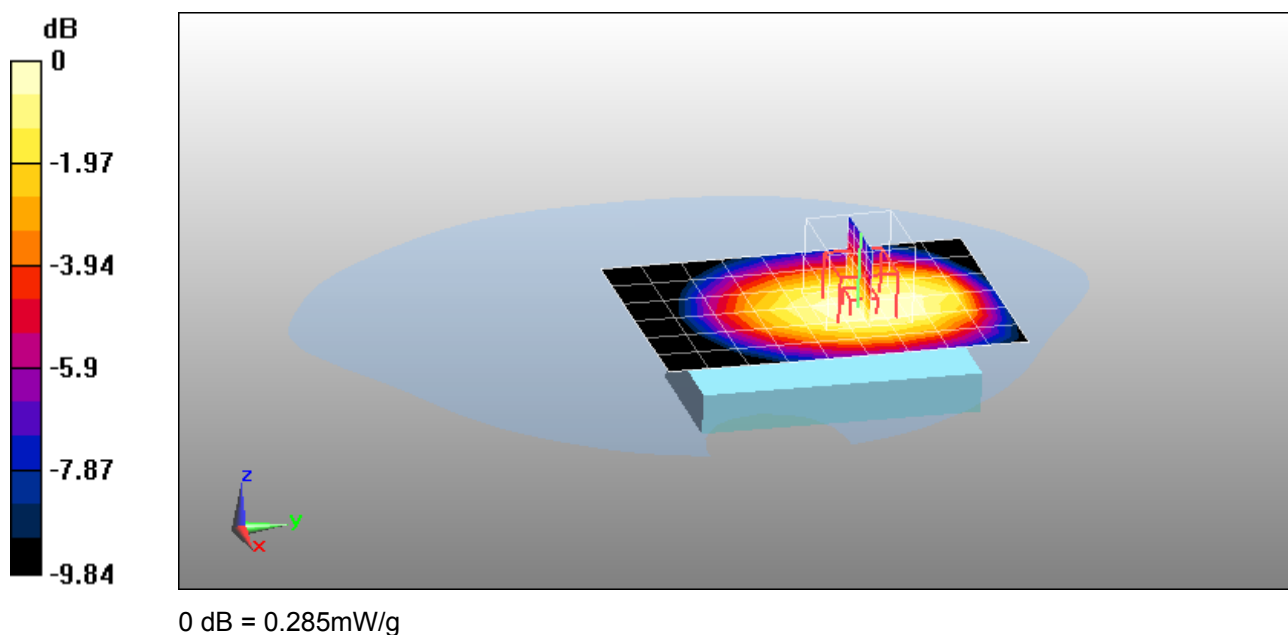
**Configuration/GSM 850 Mid Body-Back/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.274 mW/g

**Configuration/GSM 850 Mid Body-Back/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 7.87 V/m; Power Drift = 0.147 dB

Peak SAR (extrapolated) = 0.357 W/kg

**SAR(1 g) = 0.270 mW/g; SAR(10 g) = 0.198 mW/g** Maximum value of SAR (measured) = 0.285 mW/g



Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GSM 850 High Body-Back

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:8.3; Frequency: 848.6 MHz; Medium parameters used:  $f = 848.6$  MHz;  $\sigma = 1$  mho/m;  $\epsilon_r = 54.1$ ;  $\rho = 1000$  kg/m<sup>3</sup> ; Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

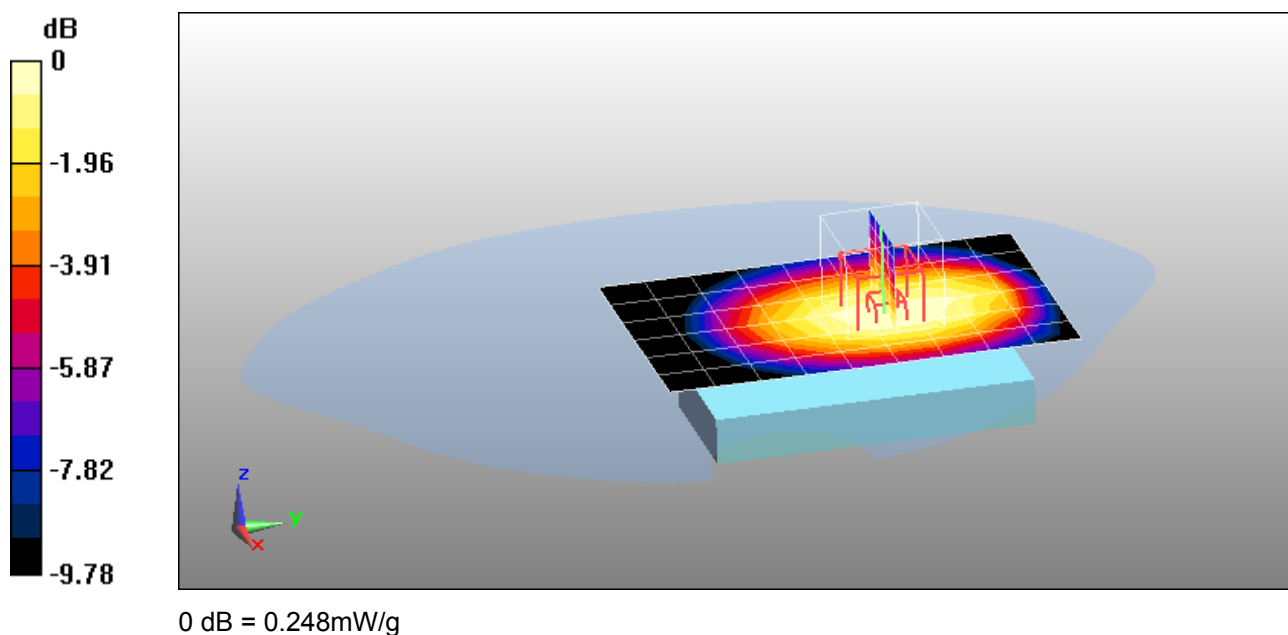
- Probe: EX3DV4 - SN3710; ConvF(8.95, 8.95, 8.95); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

**Configuration/GSM 850 High Body-Back/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.239 mW/g

**Configuration/GSM 850 High Body-Back/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 7.5 V/m; Power Drift = -0.053 dB

Peak SAR (extrapolated) = 0.310 W/kg

**SAR(1 g) = 0.235 mW/g; SAR(10 g) = 0.171 mW/g** Maximum value of SAR (measured) = 0.248 mW/g


Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GSM 850 Mid Body-Front

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:8.3; Frequency: 836.6 MHz; Medium parameters used:  $f = 836.6$  MHz;  $\sigma = 0.99$  mho/m;  $\epsilon_r = 54.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>; Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.95, 8.95, 8.95); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

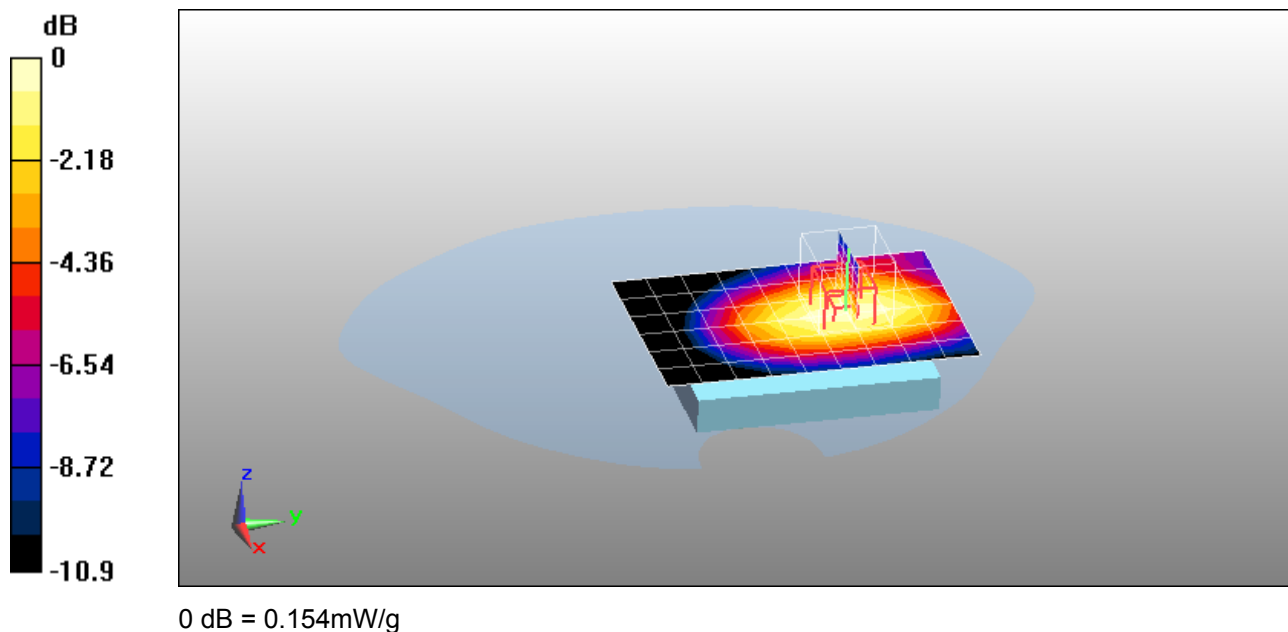
**Configuration/GSM 850 Mid Body-Front/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.157 mW/g

**Configuration/GSM 850 Mid Body-Front/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 4.9 V/m; Power Drift = -0.073 dB

Peak SAR (extrapolated) = 0.198 W/kg

**SAR(1 g) = 0.146 mW/g; SAR(10 g) = 0.102 mW/g** Maximum value of SAR (measured) = 0.154 mW/g



Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GPRS 850 Low Body-Back(2up)

**DUT: Cellphone TV; Type: ECG300**

Communication System: GPRS/EGPRS-2 Slot; Communication System Band: GSM 850; Duty Cycle: 1:4.1;

Frequency: 824.2 MHz; Medium parameters used:  $f = 824.2$  MHz;  $\sigma = 0.98$  mho/m;  $\epsilon_r = 54.4$ ;  $\rho = 1000$

kg/m<sup>3</sup> ; Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.95, 8.95, 8.95); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

**Configuration/GPRS 850 Low Body-Back/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

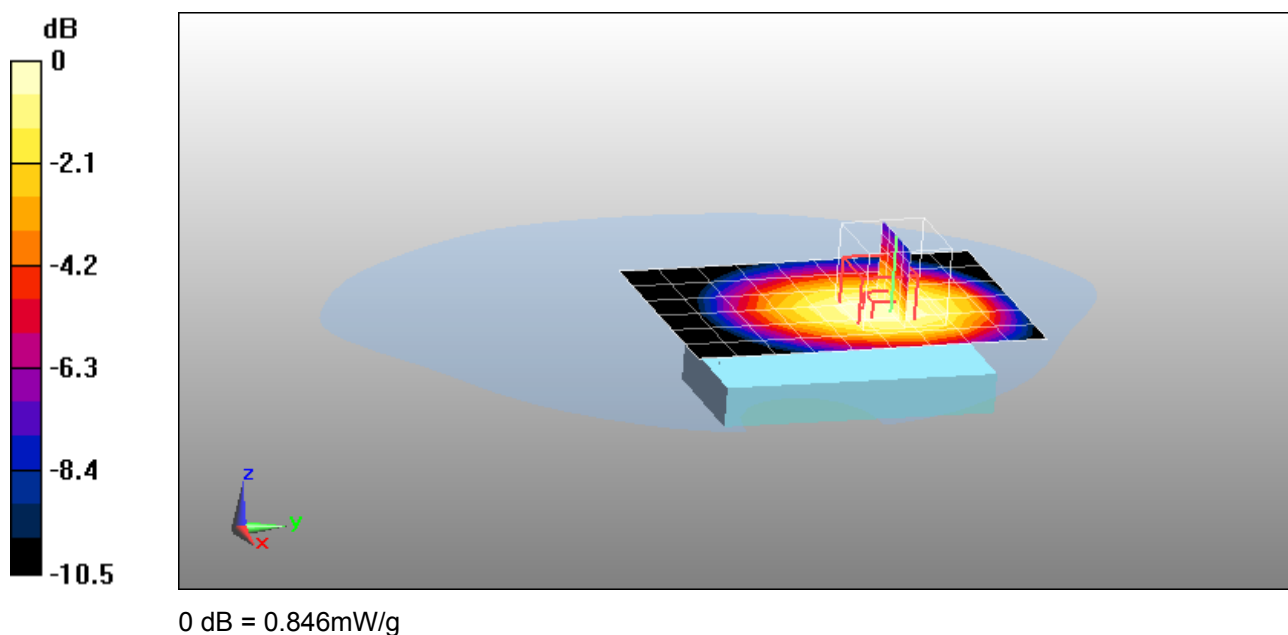
Maximum value of SAR (measured) = 0.816 mW/g

**Configuration/GPRS 850 Low Body-Back/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm,

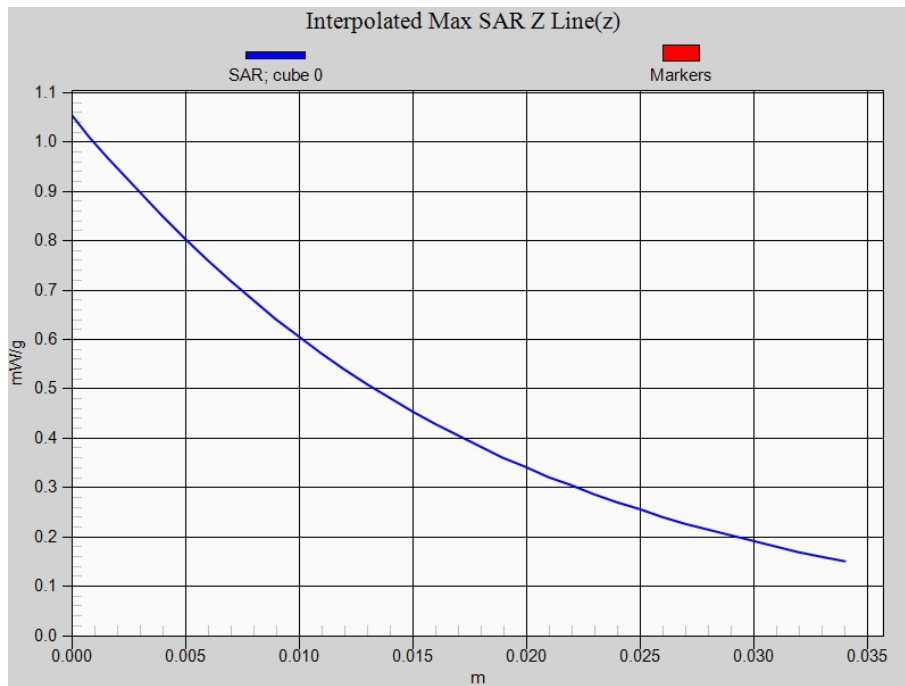
dy=8mm, dz=5mm, Reference Value = 13.2 V/m; Power Drift = 0.057 dB

Peak SAR (extrapolated) = 1.05 W/kg

**SAR(1 g) = 0.806 mW/g; SAR(10 g) = 0.587 mW/g** Maximum value of SAR (measured) = 0.846 mW/g



# Z-Axis Plot



Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GPRS 850 Mid Body-Back(2up)

**DUT: Cellphone TV; Type: ECG300**

Communication System: GPRS/EGPRS-2 Slot; Communication System Band: GSM 850; Duty Cycle: 1:4.1;

Frequency: 836.6 MHz; Medium parameters used:  $f = 836.6$  MHz;  $\sigma = 0.99$  mho/m;  $\epsilon_r = 54.2$ ;  $\rho = 1000$

kg/m<sup>3</sup> ; Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.95, 8.95, 8.95); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

**Configuration/GPRS 850 Mid Body-Back/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

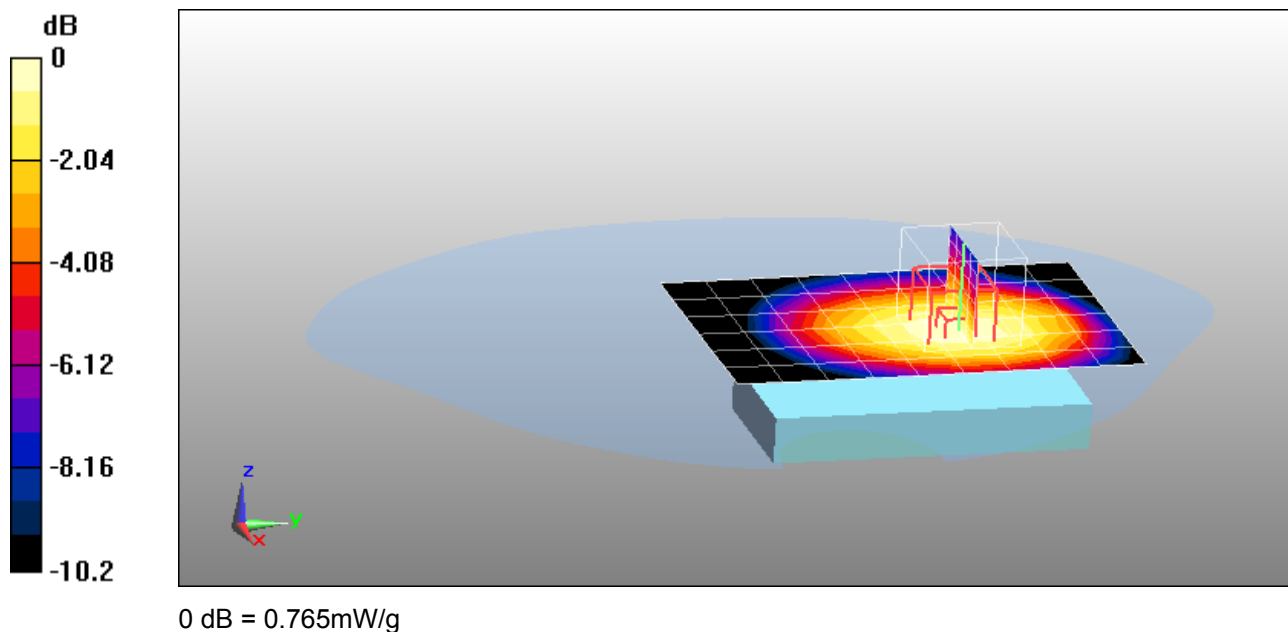
Maximum value of SAR (measured) = 0.726 mW/g

**Configuration/GPRS 850 Mid Body-Back/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm,

dy=8mm, dz=5mm, Reference Value = 12.8 V/m; Power Drift = -0.018 dB

Peak SAR (extrapolated) = 0.951 W/kg

**SAR(1 g) = 0.724 mW/g; SAR(10 g) = 0.526 mW/g** Maximum value of SAR (measured) = 0.765 mW/g



Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GPRS 850 High Body-Back(2up)

**DUT: Cellphone TV; Type: ECG300**

Communication System: GPRS/EGPRS-2 Slot; Communication System Band: GSM 850; Duty Cycle: 1:4.1;

Frequency: 848.6 MHz; Medium parameters used:  $f = 848.6$  MHz;  $\sigma = 1$  mho/m;  $\epsilon_r = 54.1$ ;  $\rho = 1000$  kg/m<sup>3</sup> ;

Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.95, 8.95, 8.95); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

**Configuration/GPRS 850 High Body-Back/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

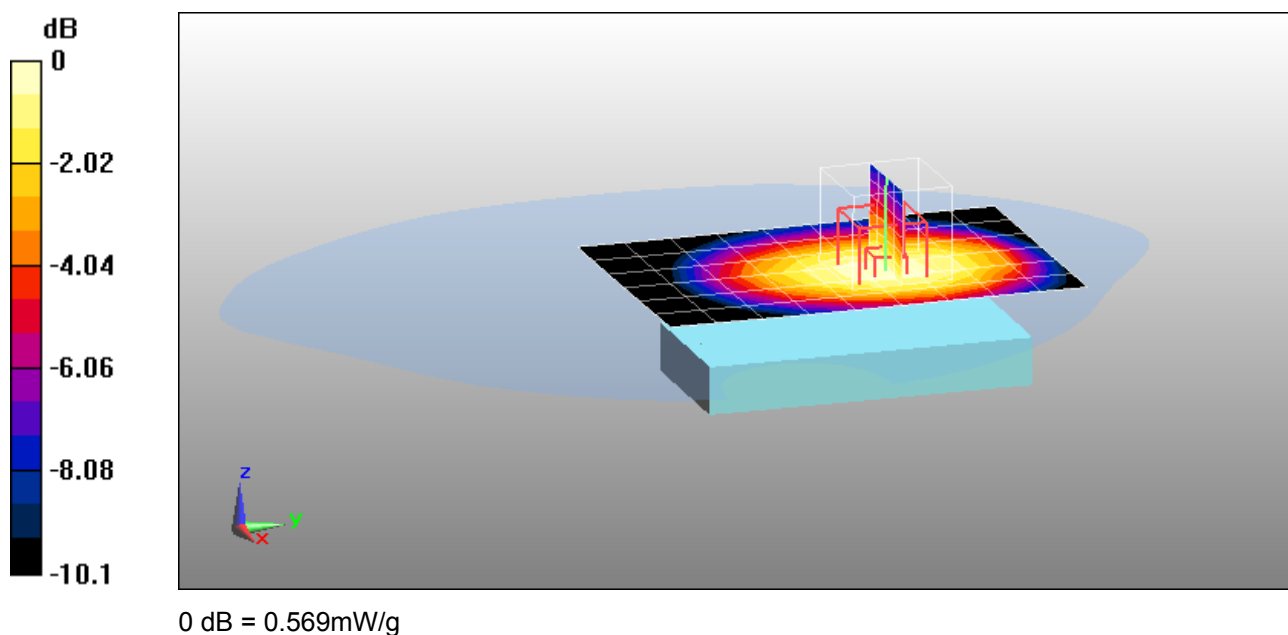
Maximum value of SAR (measured) = 0.534 mW/g

**Configuration/GPRS 850 High Body-Back/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm,

dy=8mm, dz=5mm, Reference Value = 10.9 V/m; Power Drift = 0.052 dB

Peak SAR (extrapolated) = 0.724 W/kg

**SAR(1 g) = 0.538 mW/g; SAR(10 g) = 0.389 mW/g** Maximum value of SAR (measured) = 0.569 mW/g



Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GPRS 850 Mid Body-Front(2up)

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:4.1; Frequency: 836.6 MHz; Medium parameters used:  $f = 836.6$  MHz;  $\sigma = 0.99$  mho/m;  $\epsilon_r = 54.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>; Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.95, 8.95, 8.95); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

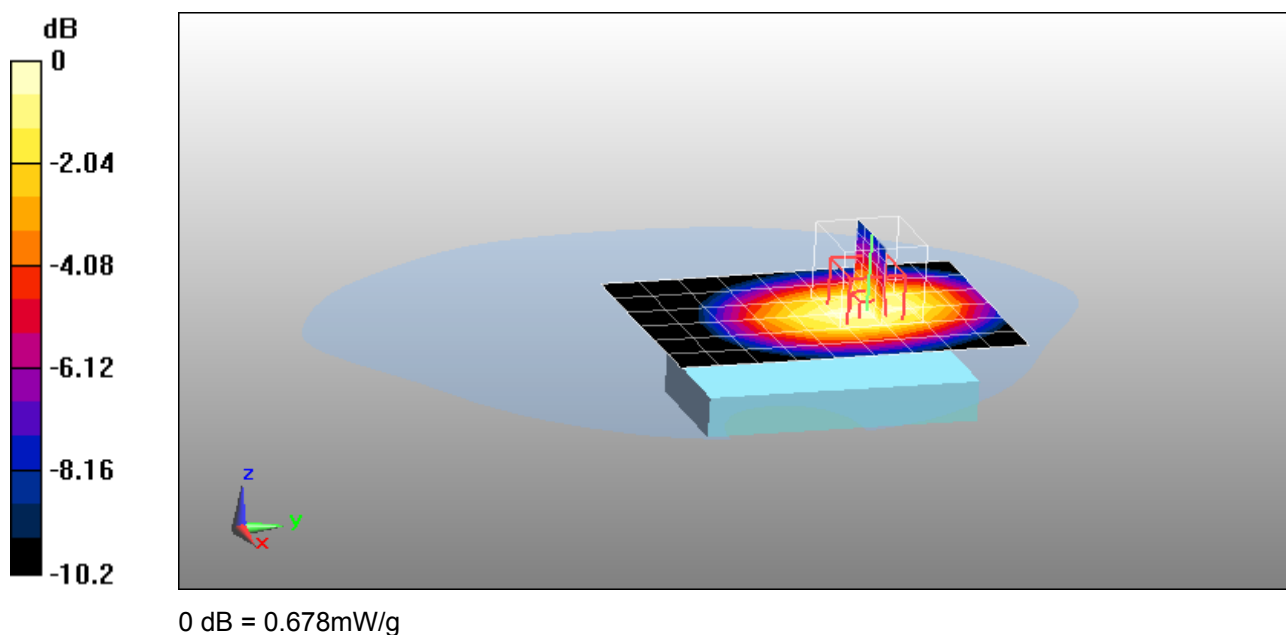
**Configuration/GPRS 850 Mid Body-Front/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

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

**Configuration/GPRS 850 Mid Body-Front/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 9.72 V/m; Power Drift = -0.158 dB

Peak SAR (extrapolated) = 0.870 W/kg

**SAR(1 g) = 0.637 mW/g; SAR(10 g) = 0.447 mW/g** Maximum value of SAR (measured) = 0.678 mW/g





Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GPRS 850 Mid Body-Back(3up)

**DUT: Cellphone TV; Type: ECG300**

Communication System: GPRS/EGPRS-3 Slot; Communication System Band: GSM 850; Duty Cycle: 1:2.0;

Frequency: 836.6 MHz; Medium parameters used:  $f = 836.6$  MHz;  $\sigma = 0.99$  mho/m;  $\epsilon_r = 54.2$ ;  $\rho = 1000$ 

kg/m<sup>3</sup> ; Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.95, 8.95, 8.95); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

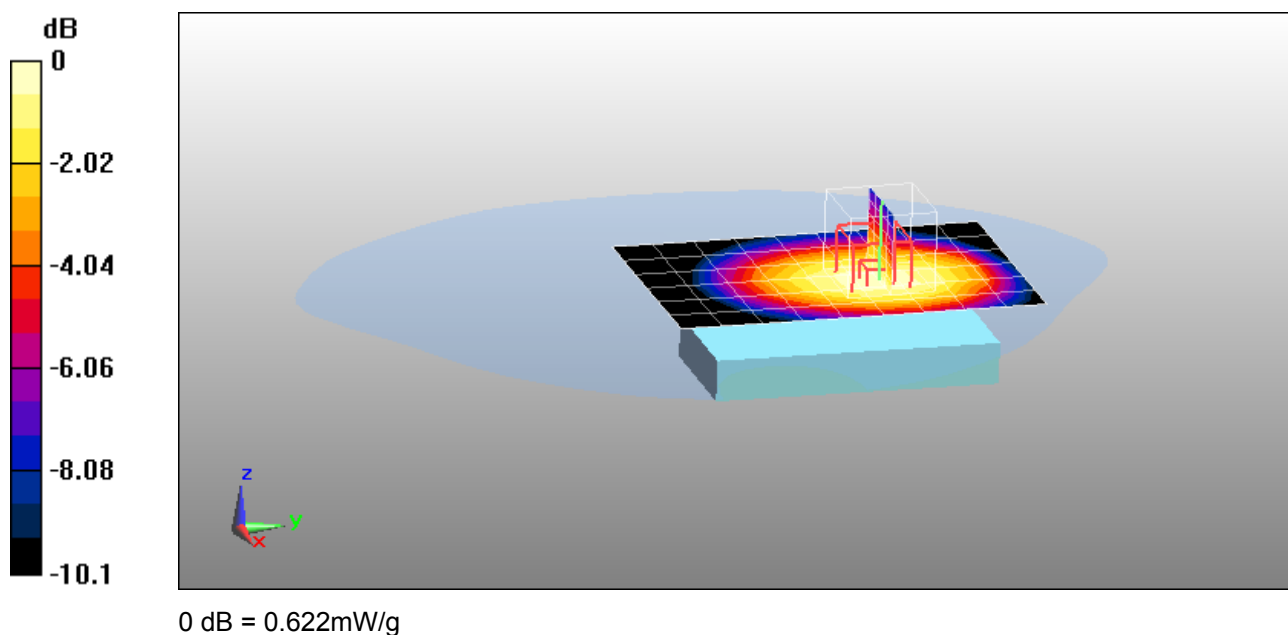
**Configuration/GPRS 850 Mid Body-Back/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.590 mW/g

**Configuration/GPRS 850 Mid Body-Back/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm,

dy=8mm, dz=5mm, Reference Value = 11.3 V/m; Power Drift = 0.012 dB

Peak SAR (extrapolated) = 0.790 W/kg

**SAR(1 g) = 0.590 mW/g; SAR(10 g) = 0.429 mW/g** Maximum value of SAR (measured) = 0.622 mW/g


Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GPRS 850 Mid Body-Back(4up)

**DUT: Cellphone TV; Type: ECG300**

Communication System: GPRS/EGPRS-4 Slot; Communication System Band: GSM 850; Duty Cycle: 1:1.0;

Frequency: 836.6 MHz; Medium parameters used:  $f = 836.6$  MHz;  $\sigma = 0.99$  mho/m;  $\epsilon_r = 54.2$ ;  $\rho = 1000$ 

kg/m<sup>3</sup> ; Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.95, 8.95, 8.95); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

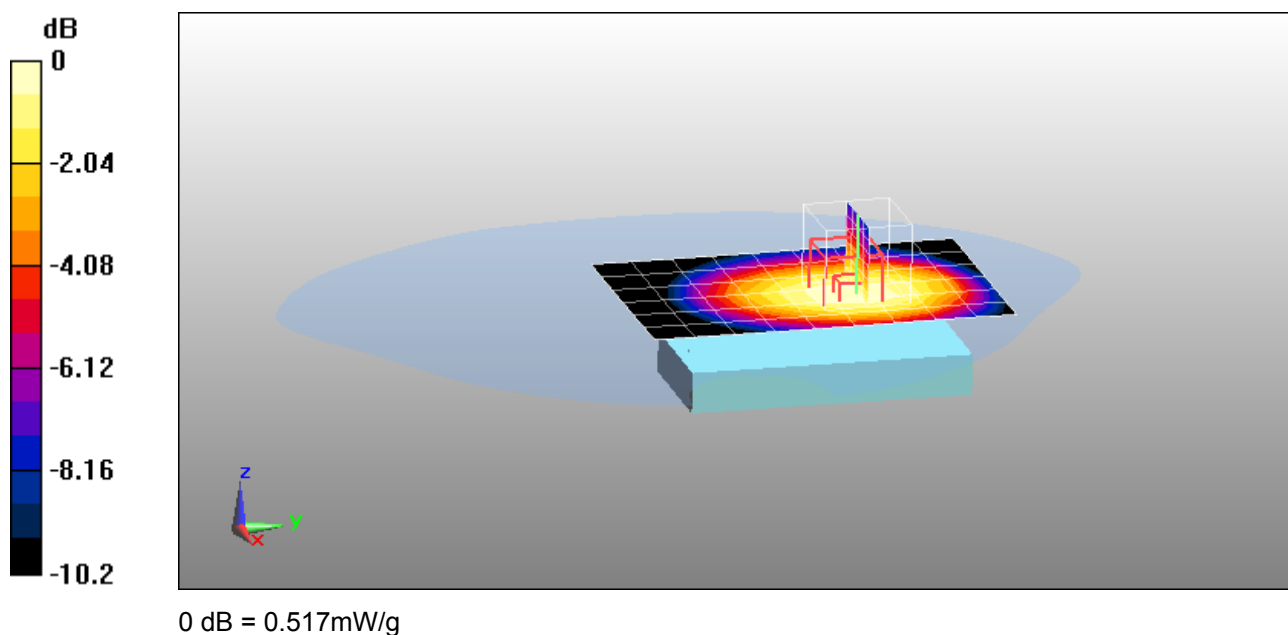
**Configuration/GPRS 850 Mid Body-Back/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.502 mW/g

**Configuration/GPRS 850 Mid Body-Back/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm,

dy=8mm, dz=5mm, Reference Value = 10.5 V/m; Power Drift = -0.100 dB

Peak SAR (extrapolated) = 0.649 W/kg

**SAR(1 g) = 0.492 mW/g; SAR(10 g) = 0.358 mW/g** Maximum value of SAR (measured) = 0.517 mW/g


Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GPRS 850 Mid Body-Back(2up) (With Headset)

**DUT: Cellphone TV; Type: ECG300**

Communication System: GPRS/EGPRS-2 Slot; Communication System Band: GSM 850; Duty Cycle: 1:4.1;

Frequency: 836.6 MHz; Medium parameters used:  $f = 836.6$  MHz;  $\sigma = 0.99$  mho/m;  $\epsilon_r = 54.2$ ;  $\rho = 1000$

kg/m<sup>3</sup> ; Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.95, 8.95, 8.95); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

**Configuration/GPRS 850 Mid Body-Back/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

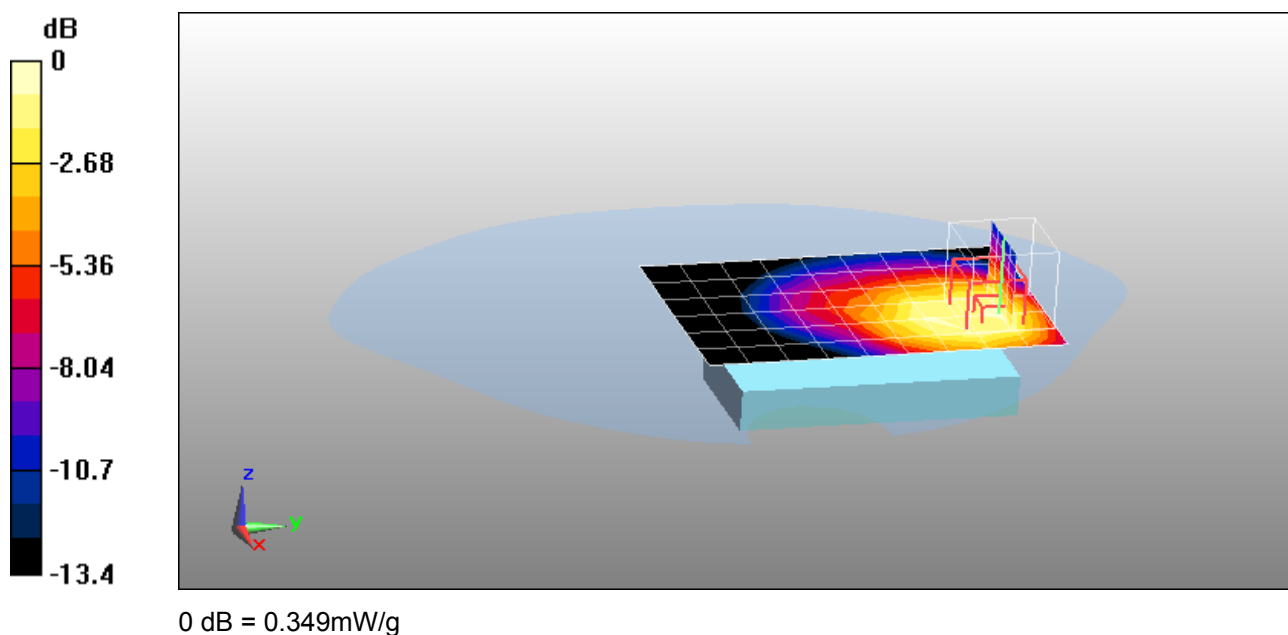
Maximum value of SAR (measured) = 0.330 mW/g

**Configuration/GPRS 850 Mid Body-Back/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm,

dy=8mm, dz=5mm, Reference Value = 4.34 V/m; Power Drift = -0.020 dB

Peak SAR (extrapolated) = 0.530 W/kg

**SAR(1 g) = 0.327 mW/g; SAR(10 g) = 0.200 mW/g** Maximum value of SAR (measured) = 0.349 mW/g



Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GSM850 Mid Left-Touch &lt;SIM 2&gt;

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:8.3; Frequency: 836.6 MHz; Medium parameters used:  $f = 836.6$  MHz;  $\sigma = 0.92$  mho/m;  $\epsilon_r = 41.4$ ;  $\rho = 1000$  kg/m<sup>3</sup> ; Phantom section: Left Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

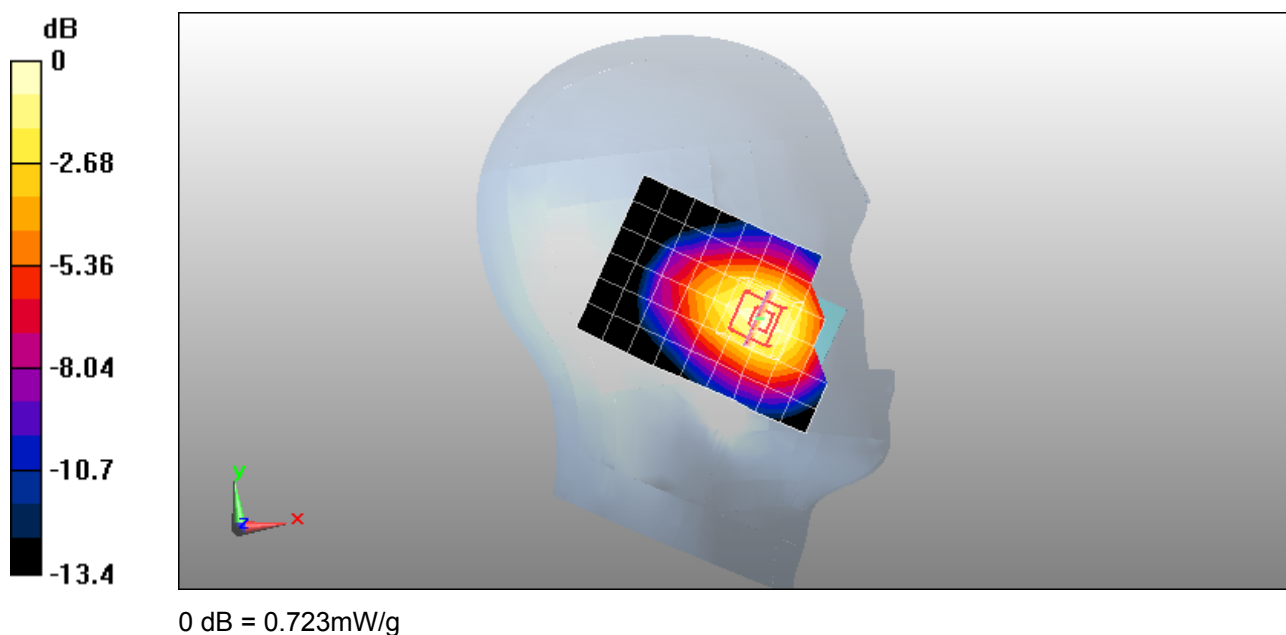
- Probe: EX3DV4 - SN3710; ConvF(8.83, 8.83, 8.83); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

**Configuration/GSM850 Mid Left-Touch/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.729 mW/g

**Configuration/GSM850 Mid Left-Touch/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 9.7 V/m; Power Drift = -0.011 dB

Peak SAR (extrapolated) = 0.912 W/kg

**SAR(1 g) = 0.679 mW/g; SAR(10 g) = 0.467 mW/g** Maximum value of SAR (measured) = 0.723 mW/g


Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

PCS1900 Low Left-Touch

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Duty Cycle: 1:8.3; Frequency: 1850.2 MHz; Medium parameters used:  $f = 1850.2$  MHz;  $\sigma = 1.41$  mho/m;  $\epsilon_r = 39.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>; Phantom section: Left Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.69, 7.69, 7.69); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

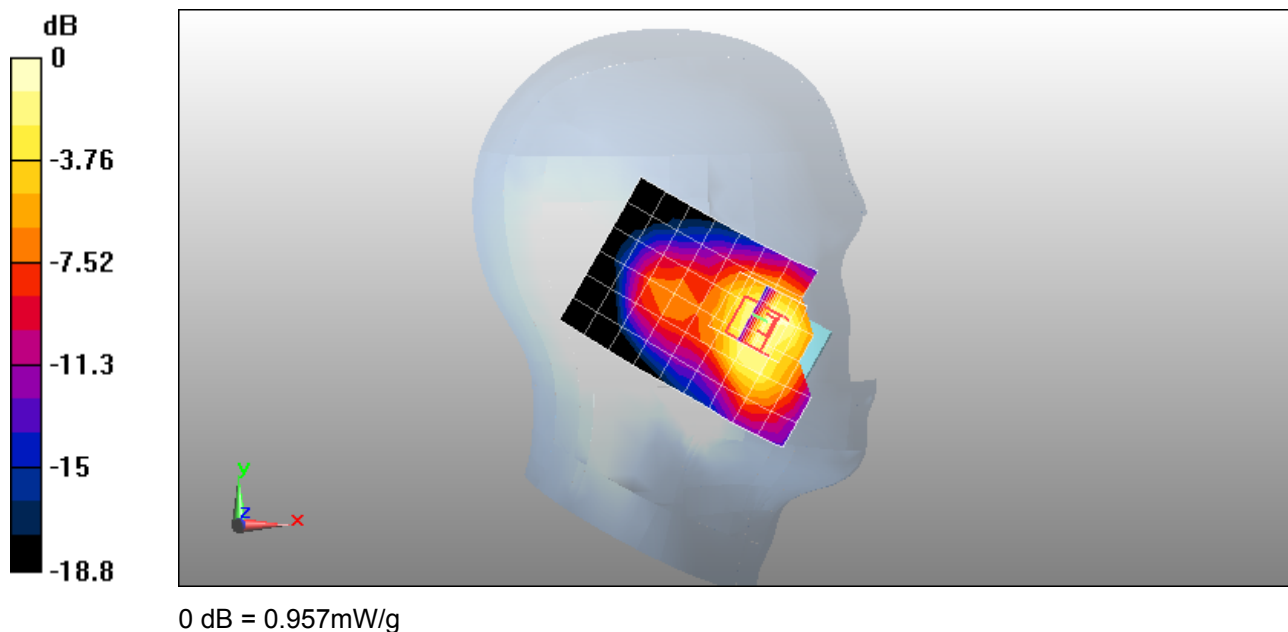
**Configuration/PCS1900 Low Right-Touch/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.820 mW/g

**Configuration/PCS1900 Low Right-Touch/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 9.65 V/m; Power Drift = -0.107 dB

Peak SAR (extrapolated) = 1.42 W/kg

**SAR(1 g) = 0.857 mW/g; SAR(10 g) = 0.498 mW/g** Maximum value of SAR (measured) = 0.957 mW/g



Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

PCS1900 Mid Left-Touch

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Duty Cycle: 1:8.3; Frequency: 1880 MHz; Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.43$  mho/m;  $\epsilon_r =$

39.2;  $\rho = 1000$  kg/m<sup>3</sup> ; Phantom section: Left Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.69, 7.69, 7.69); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

**Configuration/PCS1900 Mid Right-Touch/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

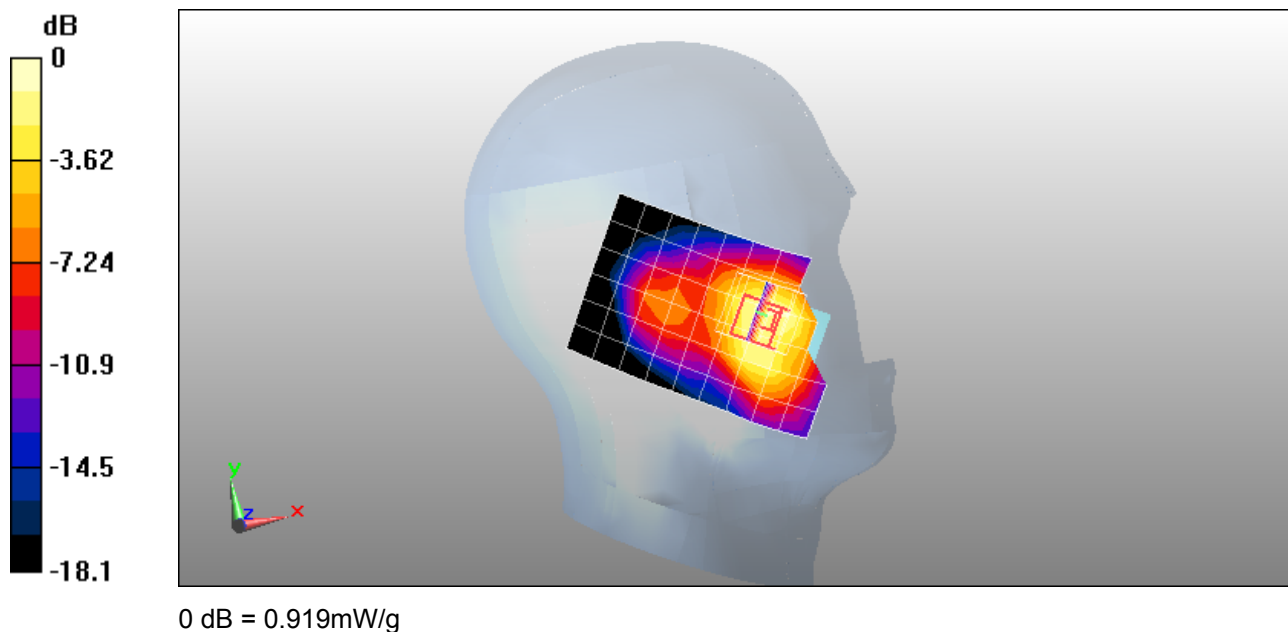
Maximum value of SAR (measured) = 0.802 mW/g

**Configuration/PCS1900 Mid Right-Touch/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm,

dy=8mm, dz=5mm, Reference Value = 10.1 V/m; Power Drift = -0.090 dB

Peak SAR (extrapolated) = 1.37 W/kg

**SAR(1 g) = 0.822 mW/g; SAR(10 g) = 0.476 mW/g** Maximum value of SAR (measured) = 0.919 mW/g



Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

PCS1900 High Left-Touch

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Duty Cycle: 1:8.3; Frequency: 1909.8 MHz; Medium parameters used:  $f = 1909.8$  MHz;  $\sigma = 1.45$  mho/m;  $\epsilon_r = 39.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>; Phantom section: Left Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

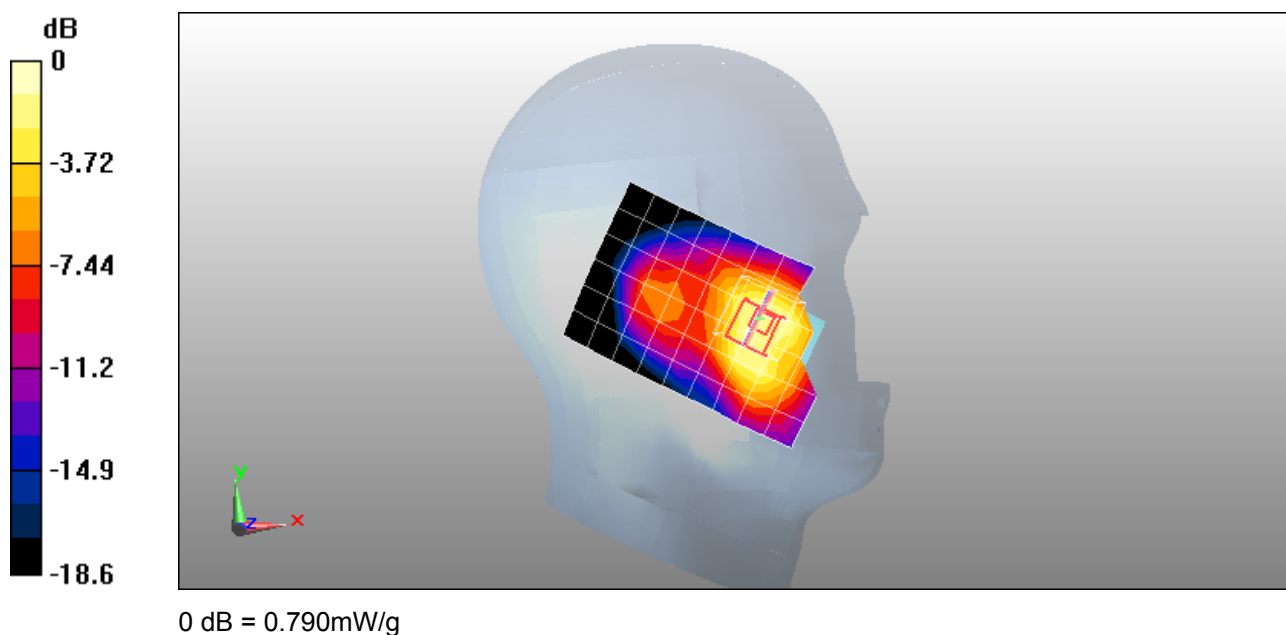
- Probe: EX3DV4 - SN3710; ConvF(7.69, 7.69, 7.69); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

**Configuration/PCS1900 High Right-Touch/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.658 mW/g

**Configuration/PCS1900 High Right-Touch/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 9.25 V/m; Power Drift = -0.072 dB

Peak SAR (extrapolated) = 1.18 W/kg

**SAR(1 g) = 0.704 mW/g; SAR(10 g) = 0.406 mW/g** Maximum value of SAR (measured) = 0.790 mW/g



Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

PCS1900 Mid Left-Tilt

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Duty Cycle: 1:8.3; Frequency: 1880 MHz; Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.43$  mho/m;  $\epsilon_r =$

39.2;  $\rho = 1000$  kg/m<sup>3</sup> ; Phantom section: Left Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.69, 7.69, 7.69); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

**Configuration/PCS1900 Mid Right-Tilt/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

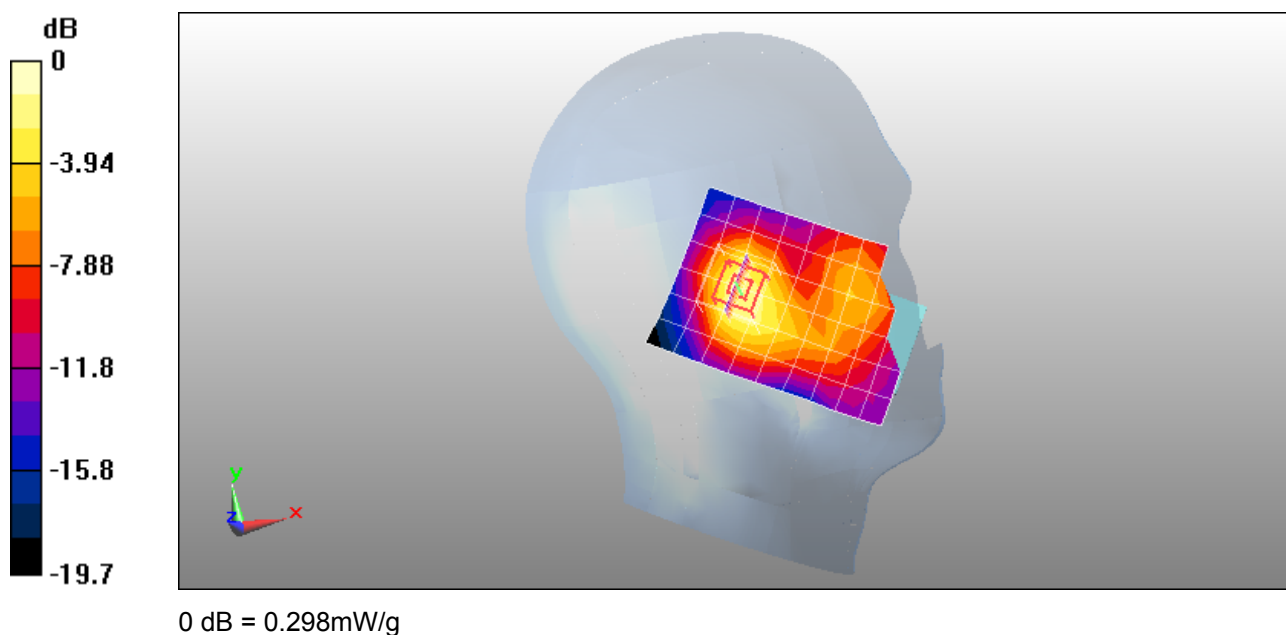
Maximum value of SAR (measured) = 0.241 mW/g

**Configuration/PCS1900 Mid Right-Tilt/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm,

dy=8mm, dz=5mm, Reference Value = 11.8 V/m; Power Drift = 0.108 dB

Peak SAR (extrapolated) = 0.453 W/kg

**SAR(1 g) = 0.281 mW/g; SAR(10 g) = 0.162 mW/g** Maximum value of SAR (measured) = 0.298 mW/g





Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

PCS1900 Low Right-Touch

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Duty Cycle: 1:8.3; Frequency: 1850.2 MHz; Medium parameters used:  $f = 1850.2$  MHz;  $\sigma = 1.41$  mho/m;  $\epsilon_r = 39.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>; Phantom section: Right Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.69, 7.69, 7.69); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

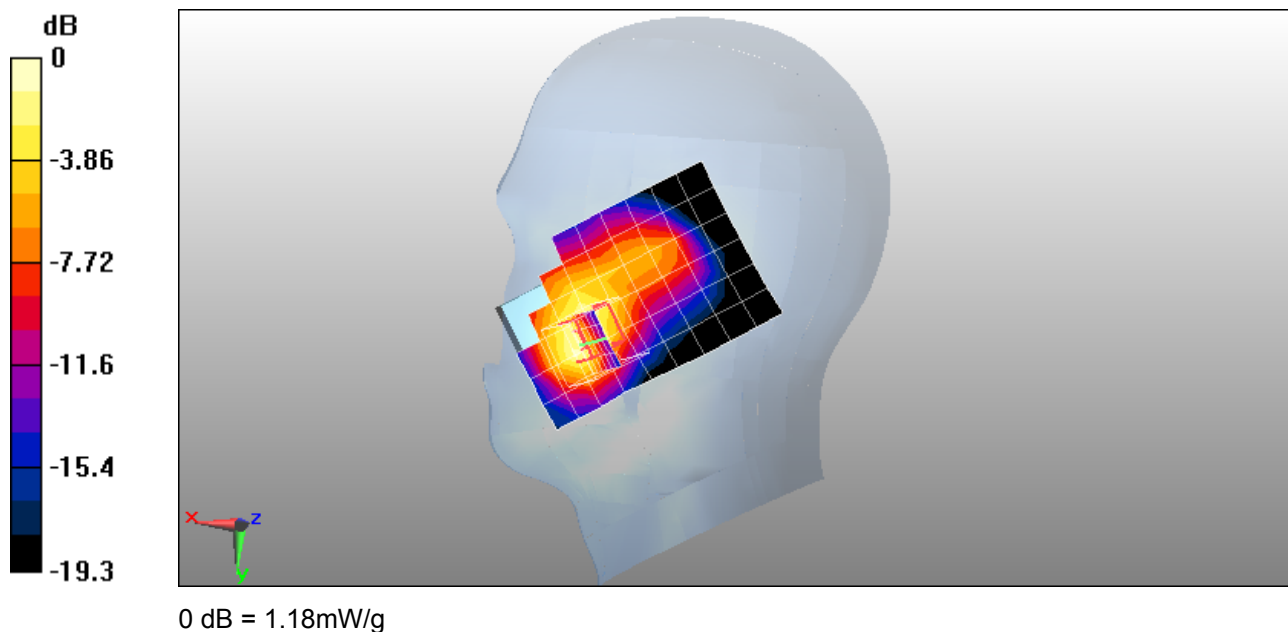
**Configuration/PCS1900 Low Right-Touch/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.976 mW/g

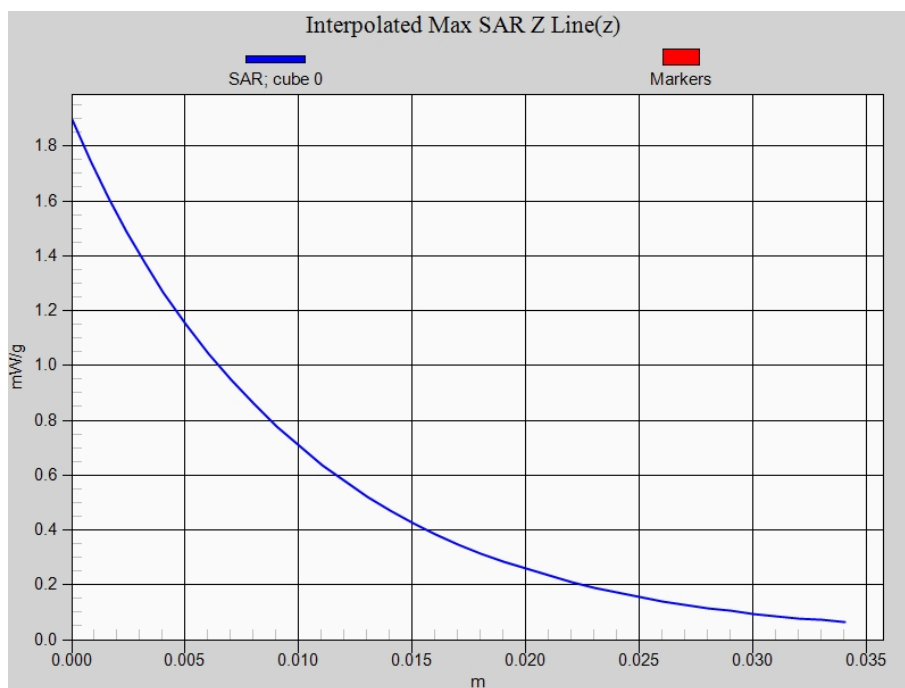
**Configuration/PCS1900 Low Right-Touch/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 9.4 V/m; Power Drift = -0.125 dB

Peak SAR (extrapolated) = 1.9 W/kg

**SAR(1 g) = 1.12 mW/g; SAR(10 g) = 0.602 mW/g** Maximum value of SAR (measured) = 1.18 mW/g



# Z-Axis Plot



Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

PCS1900 Mid Right-Touch

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Duty Cycle: 1:8.3; Frequency: 1880 MHz; Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.43$  mho/m;  $\epsilon_r =$ 

39.2;  $\rho = 1000$  kg/m<sup>3</sup> ; Phantom section: Right Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.69, 7.69, 7.69); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

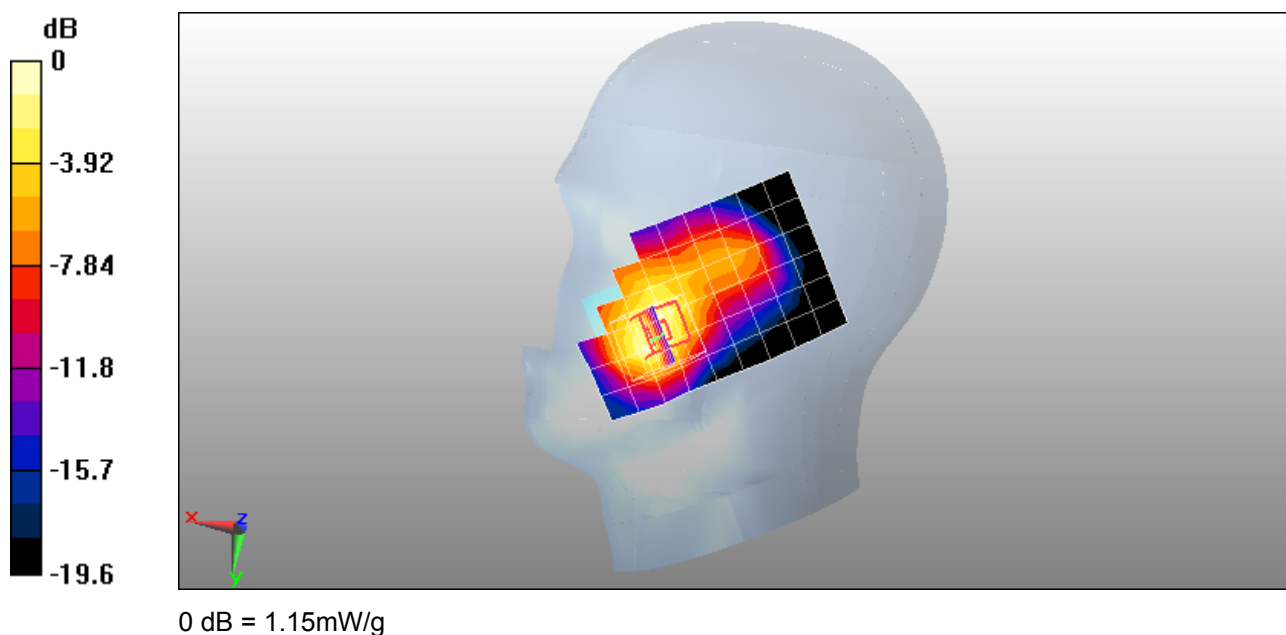
**Configuration/PCS1900 Mid Right-Touch/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.942 mW/g

**Configuration/PCS1900 Mid Right-Touch/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm,

dy=8mm, dz=5mm, Reference Value = 9.04 V/m; Power Drift = 0.077 dB

Peak SAR (extrapolated) = 1.89 W/kg

**SAR(1 g) = 1.1 mW/g; SAR(10 g) = 0.584 mW/g** Maximum value of SAR (measured) = 1.15 mW/g


Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

PCS1900 High Right-Touch

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Duty Cycle: 1:8.3; Frequency: 1909.8 MHz; Medium parameters used:  $f = 1909.8$  MHz;  $\sigma = 1.45$  mho/m;  $\epsilon_r = 39.1$ ;  $\rho = 1000$  kg/m<sup>3</sup> ; Phantom section: Right Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

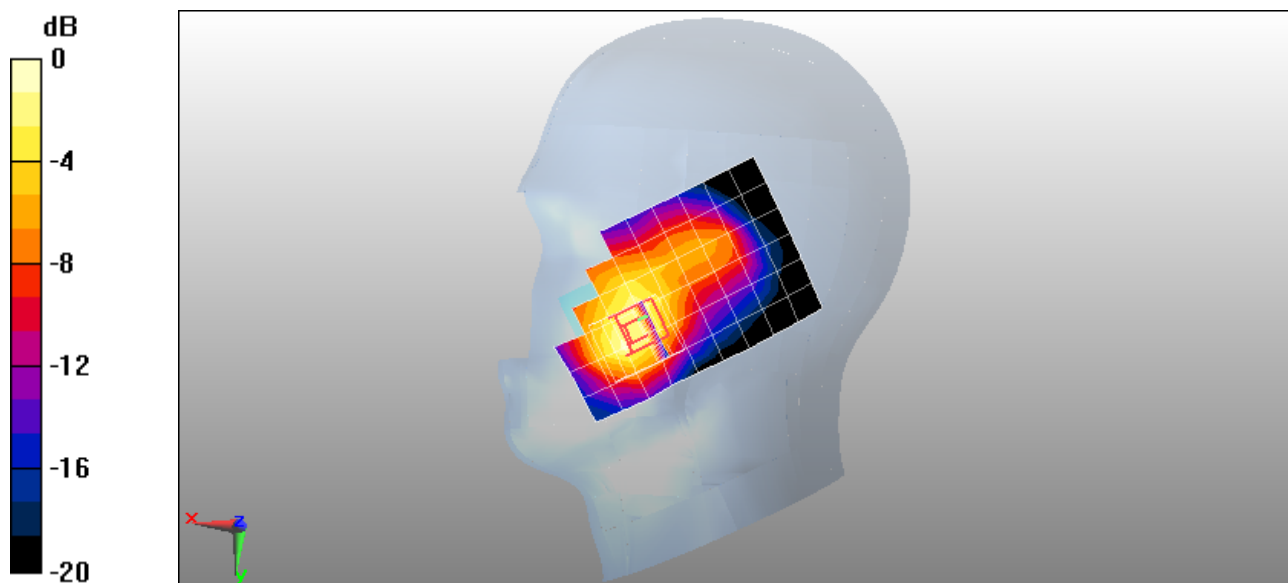
- Probe: EX3DV4 - SN3710; ConvF(7.69, 7.69, 7.69); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

**Configuration/PCS1900 High Right-Touch/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.822 mW/g

**Configuration/PCS1900 High Right-Touch/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 8.39 V/m; Power Drift = 0.016 dB

Peak SAR (extrapolated) = 1.62 W/kg

**SAR(1 g) = 0.932 mW/g; SAR(10 g) = 0.485 mW/g** Maximum value of SAR (measured) = 0.960 mW/g


0 dB = 0.960mW/g

Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

PCS1900 Mid Right-Tilt

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Duty Cycle: 1:8.3; Frequency: 1880 MHz; Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.43$  mho/m;  $\epsilon_r =$ 

39.2;  $\rho = 1000$  kg/m<sup>3</sup> ; Phantom section: Right Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.69, 7.69, 7.69); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

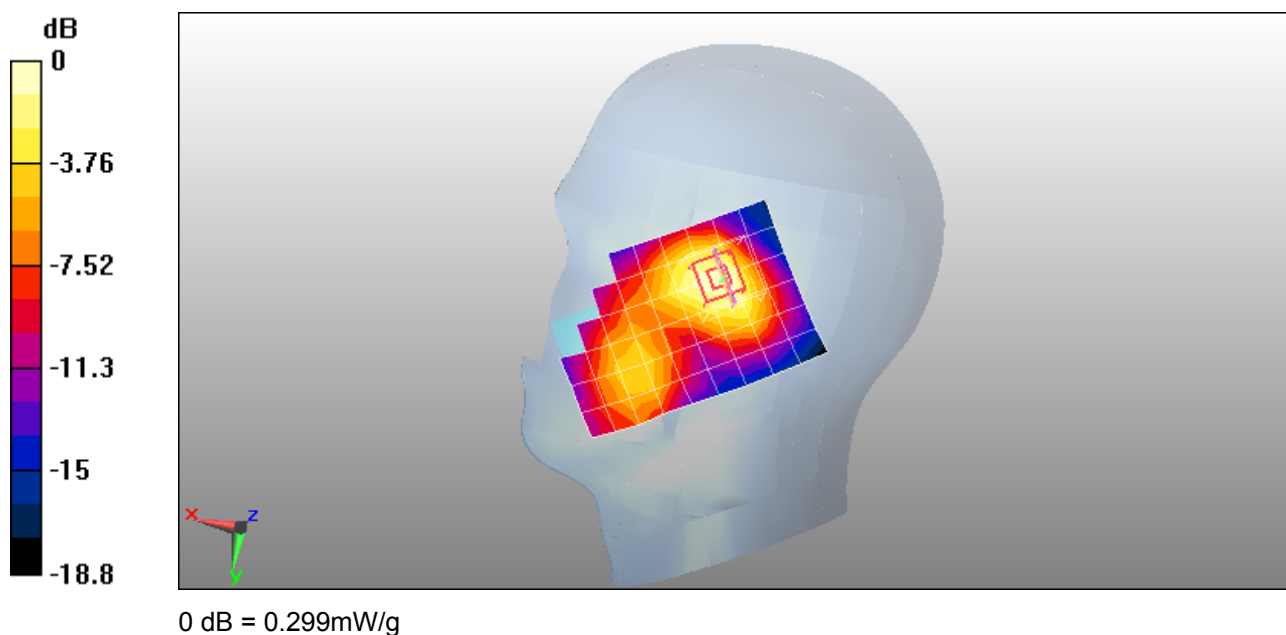
**Configuration/PCS1900 Mid Right-Tilt/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.277 mW/g

**Configuration/PCS1900 Mid Right-Tilt/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm,

dy=8mm, dz=5mm, Reference Value = 11.2 V/m; Power Drift = 0.010 dB

Peak SAR (extrapolated) = 0.457 W/kg

**SAR(1 g) = 0.282 mW/g; SAR(10 g) = 0.166 mW/g** Maximum value of SAR (measured) = 0.299 mW/g


Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

PCS 1900 Low Body-Back

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Duty Cycle: 1:8.3; Frequency: 1850.2 MHz; Medium parameters used:  $f = 1850.2$  MHz;  $\sigma = 1.5$  mho/m;  $\epsilon_r = 53.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>; Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.71, 7.71, 7.71); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

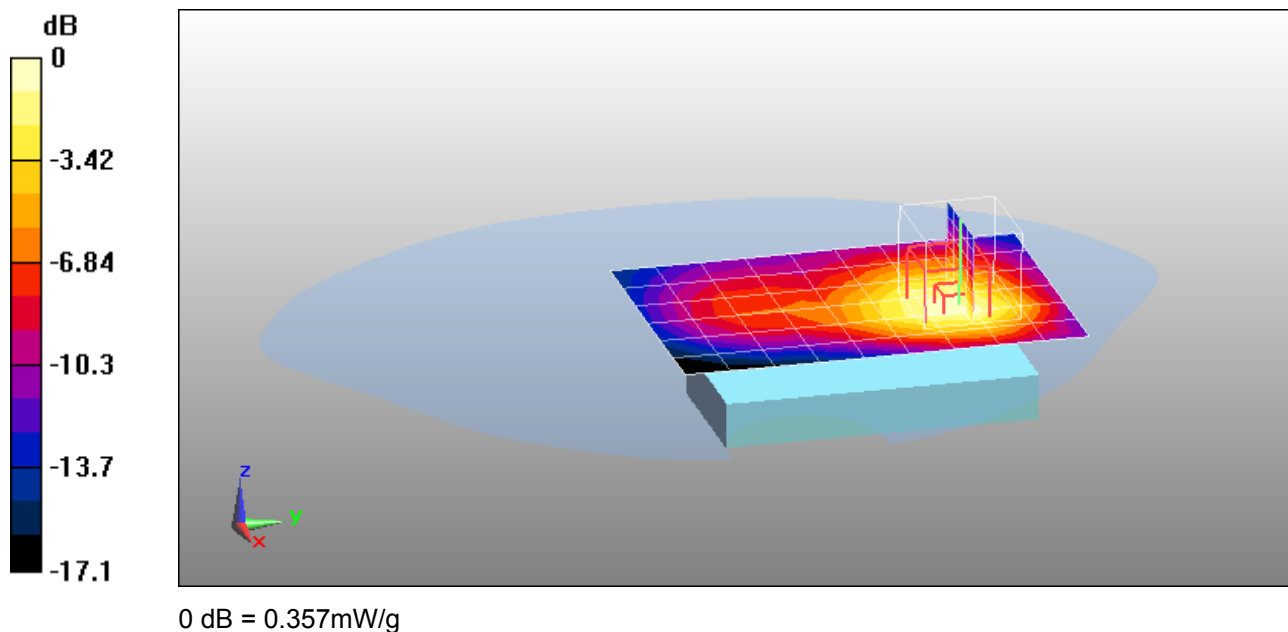
**Configuration/PCS 1900 Low Body-Back/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.327 mW/g

**Configuration/PCS 1900 Low Body-Back/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 6.58 V/m; Power Drift = 0.045 dB

Peak SAR (extrapolated) = 0.545 W/kg

**SAR(1 g) = 0.328 mW/g; SAR(10 g) = 0.192 mW/g** Maximum value of SAR (measured) = 0.357 mW/g



Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

PCS 1900 Mid Body-Back

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Duty Cycle: 1:8.3; Frequency: 1880 MHz; Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.53$  mho/m;  $\epsilon_r =$ 

53.1;  $\rho = 1000$  kg/m<sup>3</sup> ; Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.71, 7.71, 7.71); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

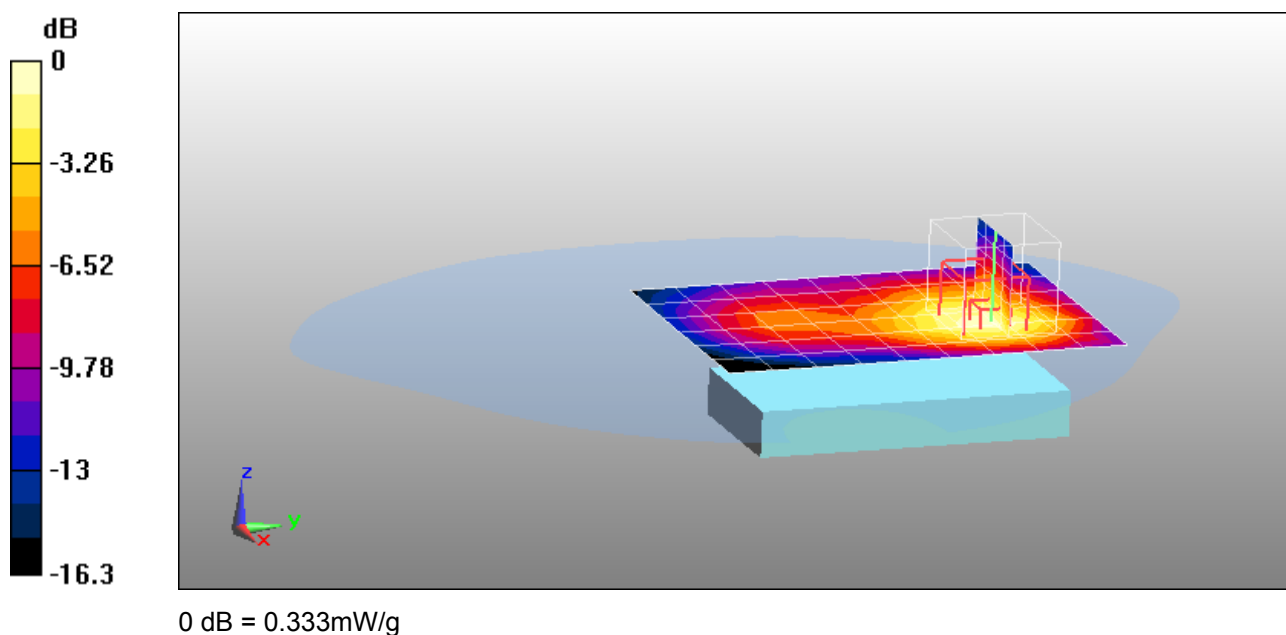
**Configuration/PCS 1900 Mid Body-Back/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.316 mW/g

**Configuration/PCS 1900 Mid Body-Back/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm,

dy=8mm, dz=5mm, Reference Value = 6.82 V/m; Power Drift = 0.070 dB

Peak SAR (extrapolated) = 0.508 W/kg

**SAR(1 g) = 0.307 mW/g; SAR(10 g) = 0.180 mW/g** Maximum value of SAR (measured) = 0.333 mW/g


Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

PCS 1900 High Body-Back

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Duty Cycle: 1:8.3; Frequency: 1909.8 MHz; Medium parameters used:  $f = 1909.8$  MHz;  $\sigma = 1.56$  mho/m;  $\epsilon_r = 53$ ;  $\rho = 1000$  kg/m<sup>3</sup> ; Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

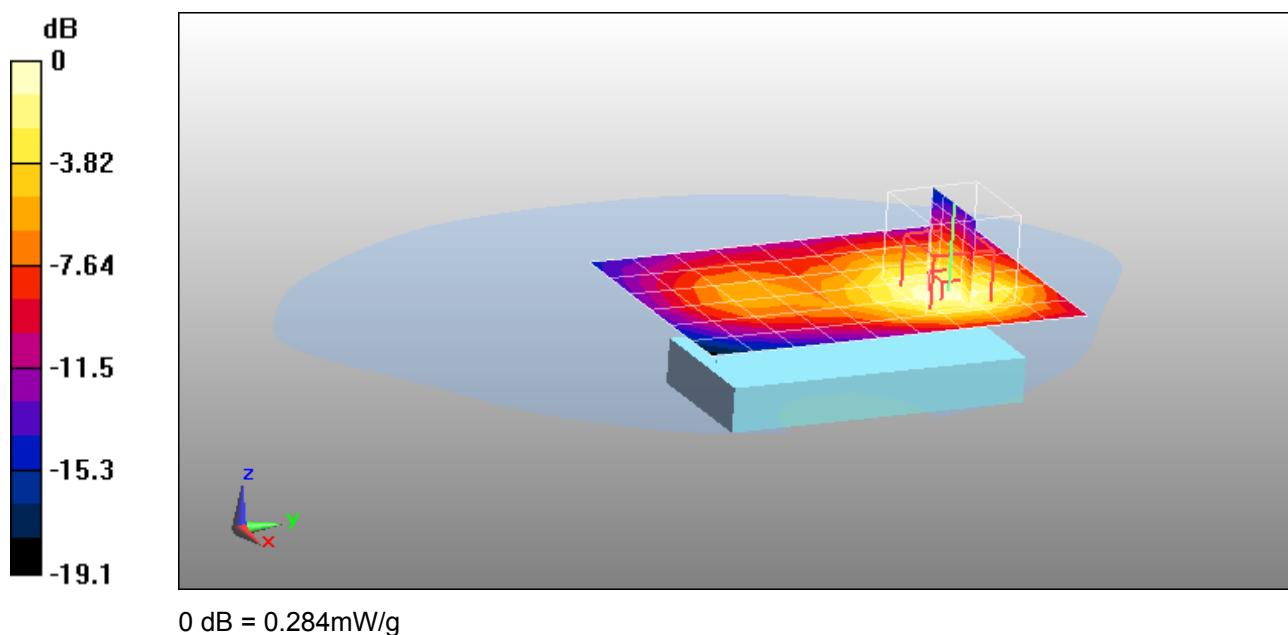
- Probe: EX3DV4 - SN3710; ConvF(7.71, 7.71, 7.71); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

**Configuration/PCS 1900 High Body-Back/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.278 mW/g

**Configuration/PCS 1900 High Body-Back/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 6.57 V/m; Power Drift = -0.004 dB

Peak SAR (extrapolated) = 0.445 W/kg

**SAR(1 g) = 0.262 mW/g; SAR(10 g) = 0.151 mW/g** Maximum value of SAR (measured) = 0.284 mW/g




Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

PCS 1900 Mid Body-Front

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Duty Cycle: 1:8.3; Frequency: 1880 MHz; Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.53$  mho/m;  $\epsilon_r =$

53.1;  $\rho = 1000$  kg/m<sup>3</sup> ; Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.71, 7.71, 7.71); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

**Configuration/PCS 1900 Mid Body-Front/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

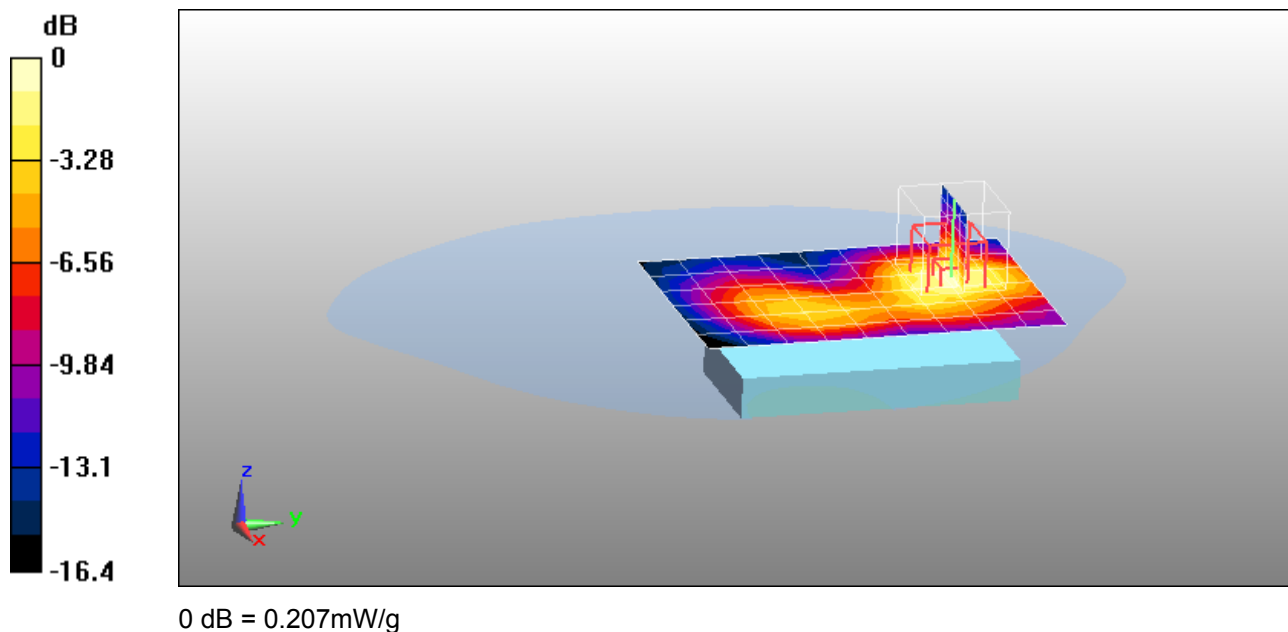
Maximum value of SAR (measured) = 0.182 mW/g

**Configuration/PCS 1900 Mid Body-Front/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm,

dy=8mm, dz=5mm, Reference Value = 6.02 V/m; Power Drift = -0.002 dB

Peak SAR (extrapolated) = 0.325 W/kg

**SAR(1 g) = 0.188 mW/g; SAR(10 g) = 0.106 mW/g** Maximum value of SAR (measured) = 0.207 mW/g



Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GPRS 1900 Low Body-Back(2up)

**DUT: Cellphone TV; Type: ECG300**

Communication System: GPRS/EGPRS-2 Slot; Communication System Band: PCS 1900; Duty Cycle: 1:4.1;

Frequency: 1850.2 MHz; Medium parameters used:  $f = 1850.2$  MHz;  $\sigma = 1.5$  mho/m;  $\epsilon_r = 53.2$ ;  $\rho = 1000$

kg/m<sup>3</sup> ; Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.71, 7.71, 7.71); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

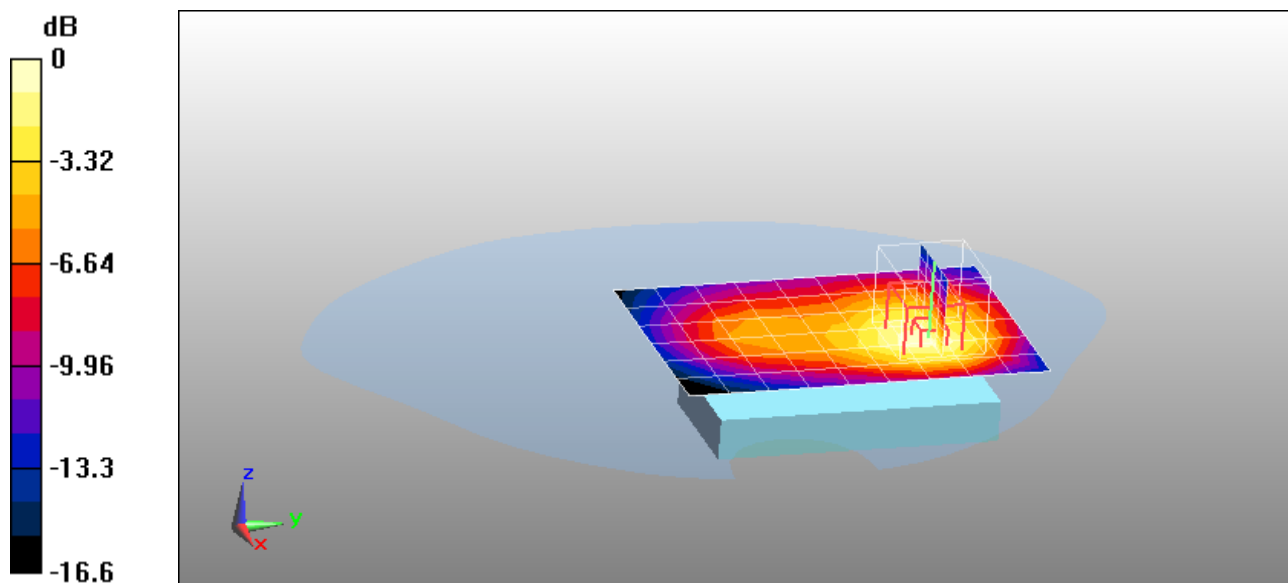
**Configuration/GPRS1900 Low Body-Back/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.635 mW/g

**Configuration/GPRS1900 Low Body-Back/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 10.6 V/m; Power Drift = -0.021 dB

Peak SAR (extrapolated) = 1.05 W/kg

**SAR(1 g) = 0.630 mW/g; SAR(10 g) = 0.370 mW/g** Maximum value of SAR (measured) = 0.685 mW/g



0 dB = 0.685mW/g

Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GPRS 1900 Mid Body-Back(2up)

**DUT: Cellphone TV; Type: ECG300**

Communication System: GPRS/EGPRS-2 Slot; Communication System Band: PCS 1900; Duty Cycle: 1:4.1;

Frequency: 1880 MHz; Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.53$  mho/m;  $\epsilon_r = 53.1$ ;  $\rho = 1000$  kg/m<sup>3</sup> ;

Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.71, 7.71, 7.71); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

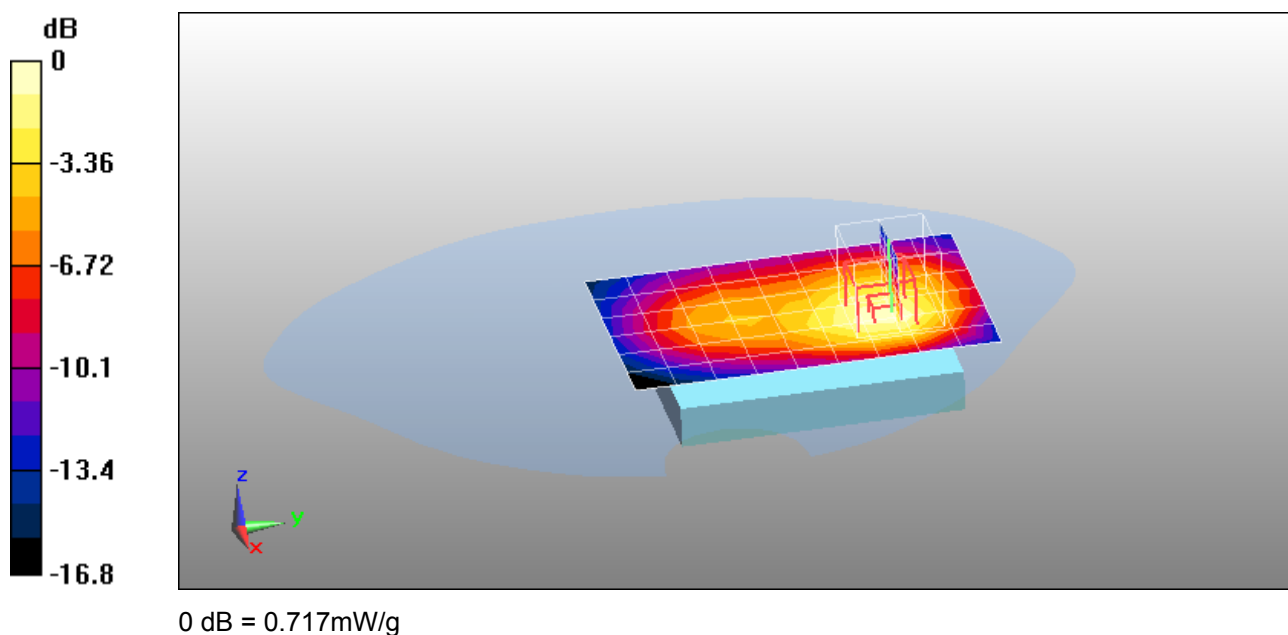
**Configuration/GPRS1900 Mid Body-Back/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

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

**Configuration/GPRS1900 Mid Body-Back/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm,

dy=8mm, dz=5mm, Reference Value = 10.9 V/m; Power Drift = 0.027 dB

Peak SAR (extrapolated) = 1.11 W/kg

**SAR(1 g) = 0.668 mW/g; SAR(10 g) = 0.392 mW/g** Maximum value of SAR (measured) = 0.717 mW/g


Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GPRS 1900 High Body-Back(2up)

**DUT: Cellphone TV; Type: ECG300**

Communication System: GPRS/EGPRS-2 Slot; Communication System Band: PCS 1900; Duty Cycle: 1:4.1;

Frequency: 1909.8 MHz; Medium parameters used:  $f = 1909.8$  MHz;  $\sigma = 1.56$  mho/m;  $\epsilon_r = 53$ ;  $\rho = 1000$

kg/m<sup>3</sup> ; Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.71, 7.71, 7.71); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

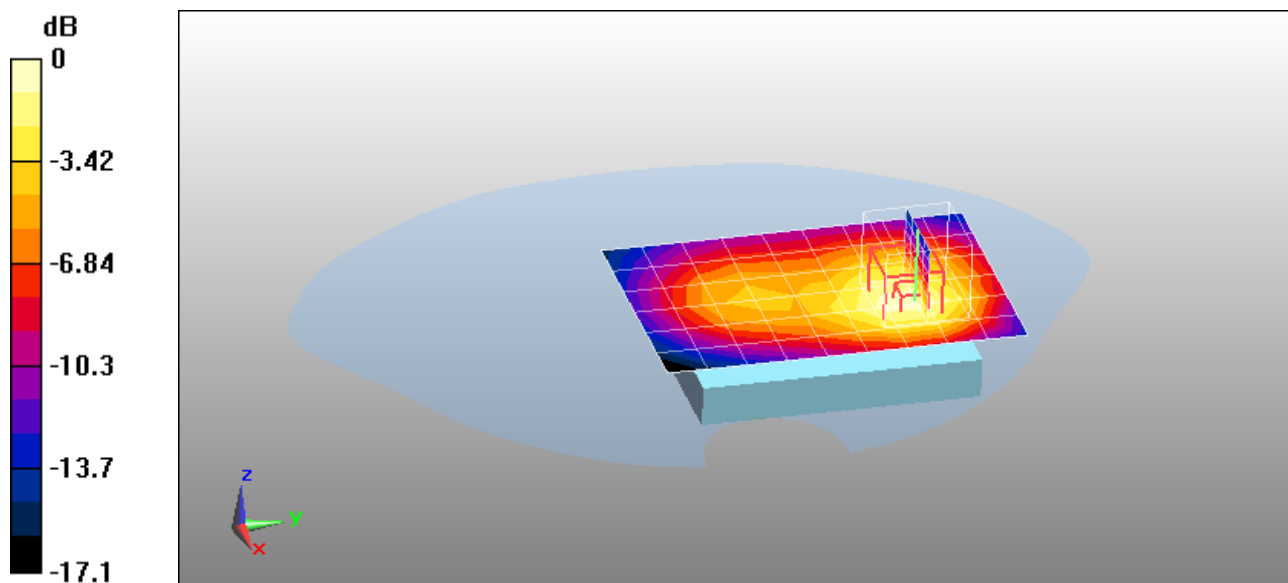
**Configuration/GPRS1900 High Body-Back/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.594 mW/g

**Configuration/GPRS1900 High Body-Back/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 10.7 V/m; Power Drift = 0.030 dB

Peak SAR (extrapolated) = 0.992 W/kg

**SAR(1 g) = 0.584 mW/g; SAR(10 g) = 0.339 mW/g** Maximum value of SAR (measured) = 0.631 mW/g



0 dB = 0.631mW/g

Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GPRS 1900 Mid Body-Front(2up)

**DUT: Cellphone TV; Type: ECG300**

Communication System: GPRS/EGPRS-2 Slot; Communication System Band: PCS 1900; Duty Cycle: 1:4.1;

Frequency: 1880 MHz; Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.53$  mho/m;  $\epsilon_r = 53.1$ ;  $\rho = 1000$  kg/m<sup>3</sup> ;

Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.71, 7.71, 7.71); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

**Configuration/GPRS1900 Mid Body-Front/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

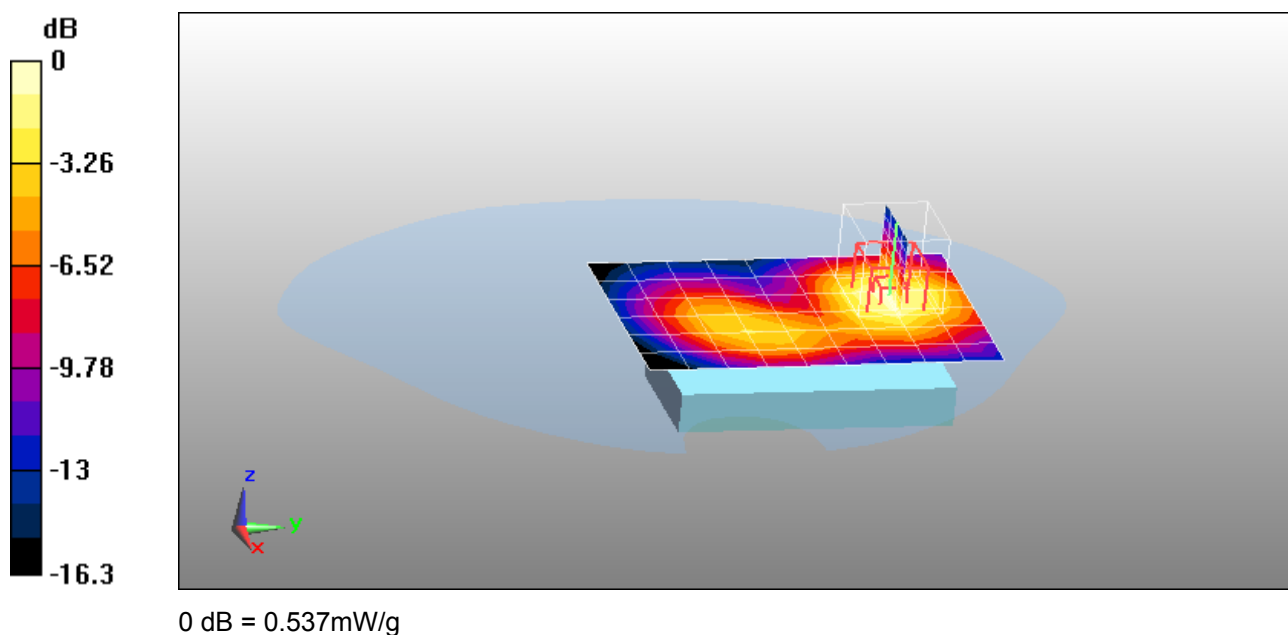
Maximum value of SAR (measured) = 0.508 mW/g

**Configuration/GPRS1900 Mid Body-Front/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm,

dy=8mm, dz=5mm, Reference Value = 10.3 V/m; Power Drift = -0.020 dB

Peak SAR (extrapolated) = 0.825 W/kg

**SAR(1 g) = 0.488 mW/g; SAR(10 g) = 0.279 mW/g** Maximum value of SAR (measured) = 0.537 mW/g



Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GPRS 1900 Mid Body-Back(3up)

**DUT: Cellphone TV; Type: ECG300**

Communication System: GPRS/EGPRS-3 Slot; Communication System Band: PCS1900; Duty Cycle: 1:2.0;

Frequency: 1880 MHz; Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.53$  mho/m;  $\epsilon_r = 53.1$ ;  $\rho = 1000$  kg/m<sup>3</sup> ;

Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.71, 7.71, 7.71); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

**Configuration/GPRS1900 Mid Body-Back/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

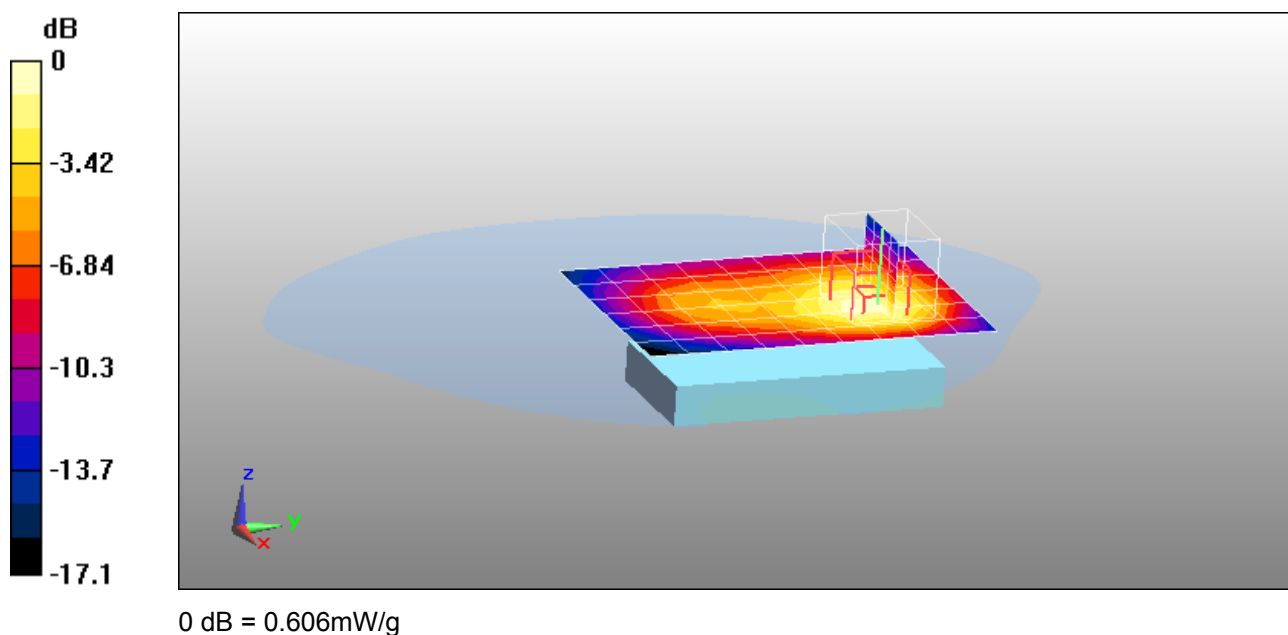
Maximum value of SAR (measured) = 0.570 mW/g

**Configuration/GPRS1900 Mid Body-Back/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm,

dy=8mm, dz=5mm, Reference Value = 10.1 V/m; Power Drift = 0.014 dB

Peak SAR (extrapolated) = 0.941 W/kg

**SAR(1 g) = 0.563 mW/g; SAR(10 g) = 0.329 mW/g** Maximum value of SAR (measured) = 0.606 mW/g



Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GPRS 1900 Mid Body-Back(4up)

**DUT: Cellphone TV; Type: ECG300**

Communication System: GPRS/EGPRS-4 Slot; Communication System Band: PCS1900; Duty Cycle: 1:1.0;

Frequency: 1880 MHz; Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.53$  mho/m;  $\epsilon_r = 53.1$ ;  $\rho = 1000$  kg/m<sup>3</sup> ;

Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.71, 7.71, 7.71); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

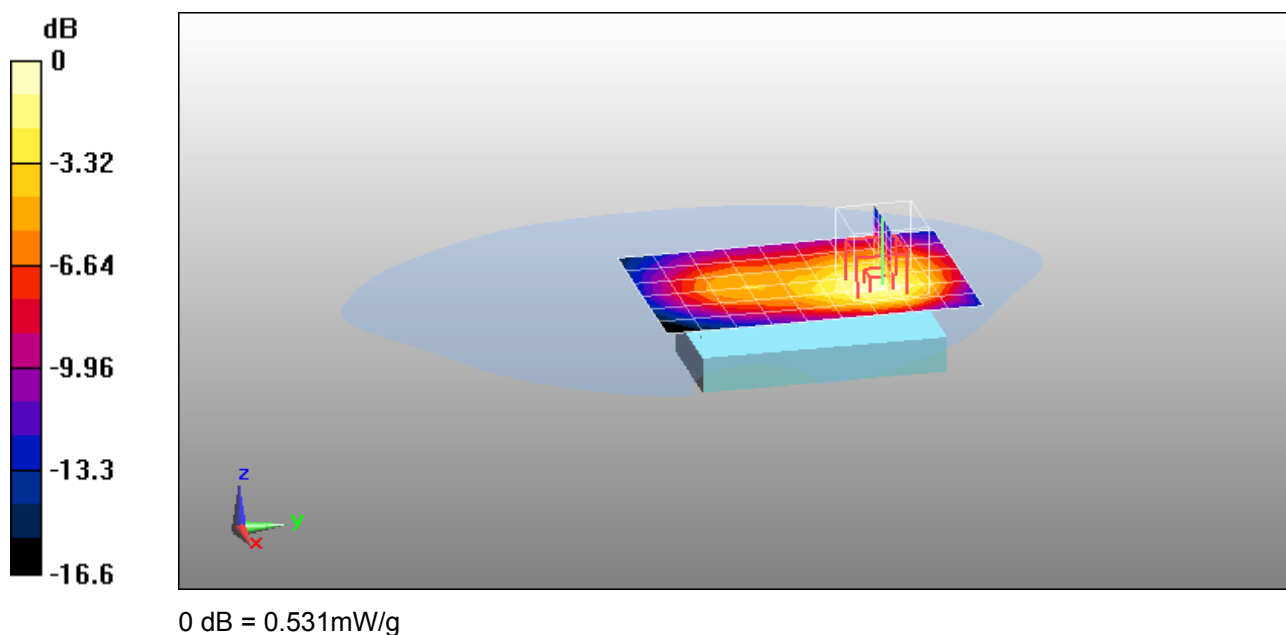
**Configuration/GPRS1900 Mid Body-Back/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.492 mW/g

**Configuration/GPRS1900 Mid Body-Back/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm,

dy=8mm, dz=5mm, Reference Value = 9.55 V/m; Power Drift = -0.076 dB

Peak SAR (extrapolated) = 0.807 W/kg

**SAR(1 g) = 0.492 mW/g; SAR(10 g) = 0.291 mW/g** Maximum value of SAR (measured) = 0.531 mW/g


Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

GPRS 1900 Mid Body-Back(2up) (With Headset)

**DUT: Cellphone TV; Type: ECG300**

Communication System: GPRS/EGPRS-2 Slot; Communication System Band: PCS 1900; Duty Cycle: 1:4.1;

Frequency: 1880 MHz; Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.53$  mho/m;  $\epsilon_r = 53.1$ ;  $\rho = 1000$  kg/m<sup>3</sup> ;

Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.71, 7.71, 7.71); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

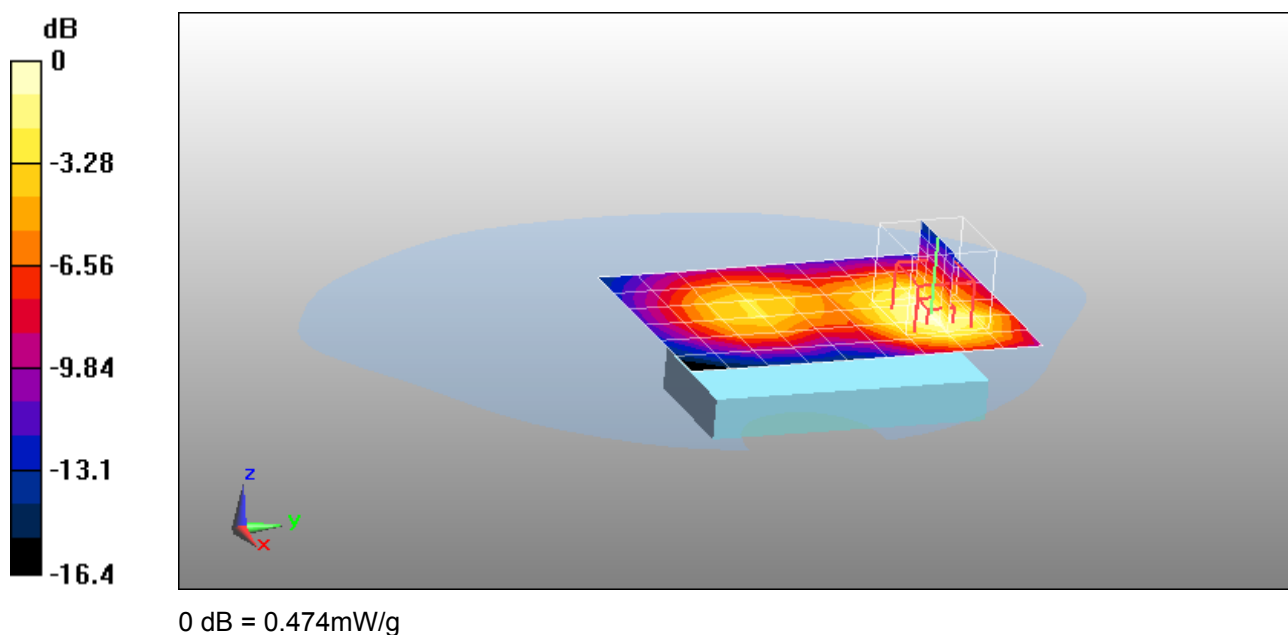
**Configuration/GPRS1900 Mid Body-Back/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.476 mW/g

**Configuration/GPRS1900 Mid Body-Back/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm,

dy=8mm, dz=5mm, Reference Value = 10.2 V/m; Power Drift = 0.010 dB

Peak SAR (extrapolated) = 0.763 W/kg

**SAR(1 g) = 0.446 mW/g; SAR(10 g) = 0.255 mW/g** Maximum value of SAR (measured) = 0.474 mW/g




Date/Time: 04-Mar-2011

Test Laboratory: QuieTek Lab

PCS1900 Mid Right-Touch &lt;SIM 2&gt;

**DUT: Cellphone TV; Type: ECG300**

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Duty Cycle: 1:8.3; Frequency: 1880 MHz; Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.43$  mho/m;  $\epsilon_r =$ 

39.2;  $\rho = 1000$  kg/m<sup>3</sup> ; Phantom section: Right Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.69, 7.69, 7.69); Calibrated: 2010/3/5
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 2010/12/3
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

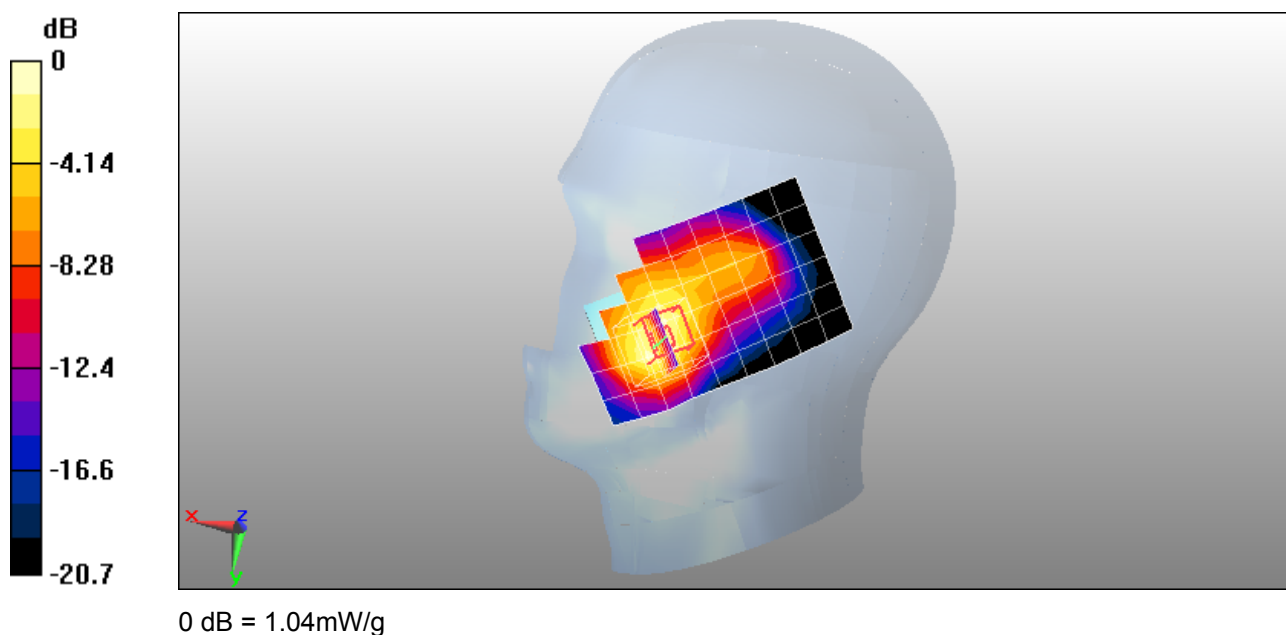
**Configuration/PCS1900 Mid Right-Touch/Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.850 mW/g

**Configuration/PCS1900 Mid Right-Touch/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm,

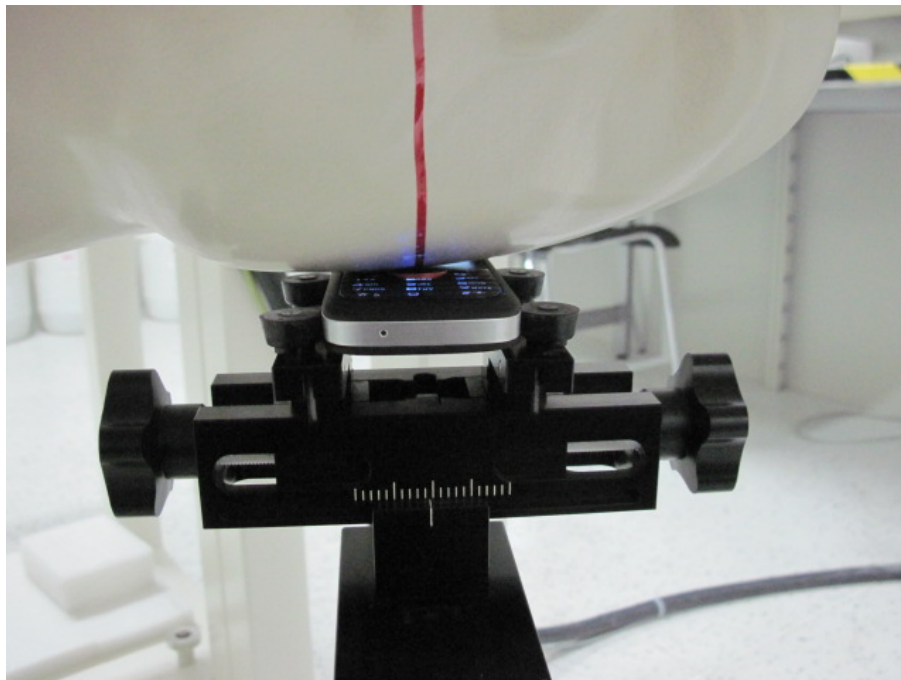
dy=8mm, dz=5mm, Reference Value = 8.87 V/m; Power Drift = 0.077 dB

Peak SAR (extrapolated) = 1.7 W/kg

**SAR(1 g) = 0.993 mW/g; SAR(10 g) = 0.527 mW/g** Maximum value of SAR (measured) = 1.04 mW/g


## Appendix C. Test Setup Photographs & EUT Photographs

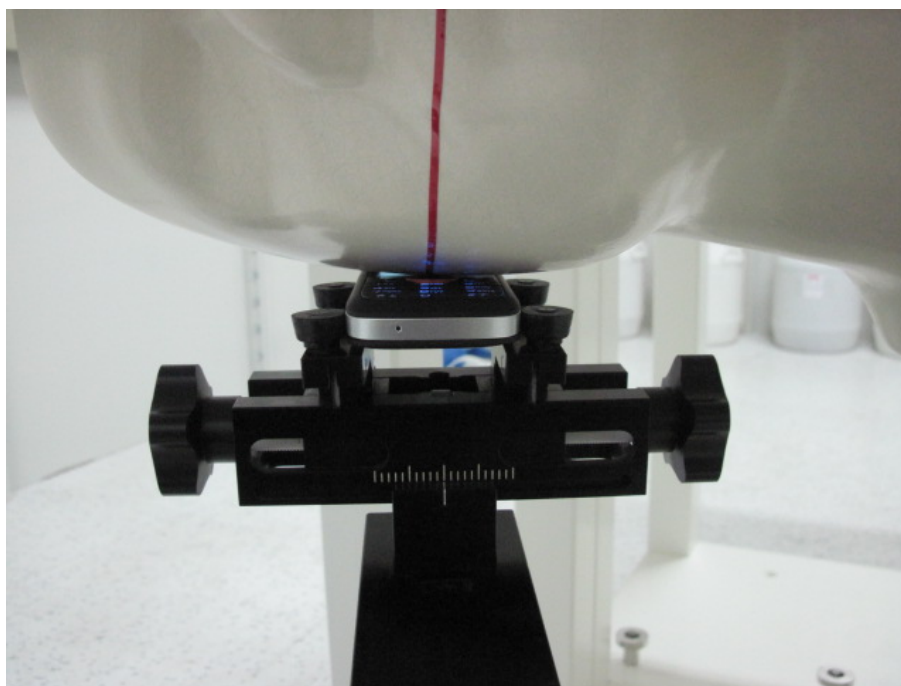
### Test Setup Photographs



Left-Cheek Touch



Left-Tilt 15°



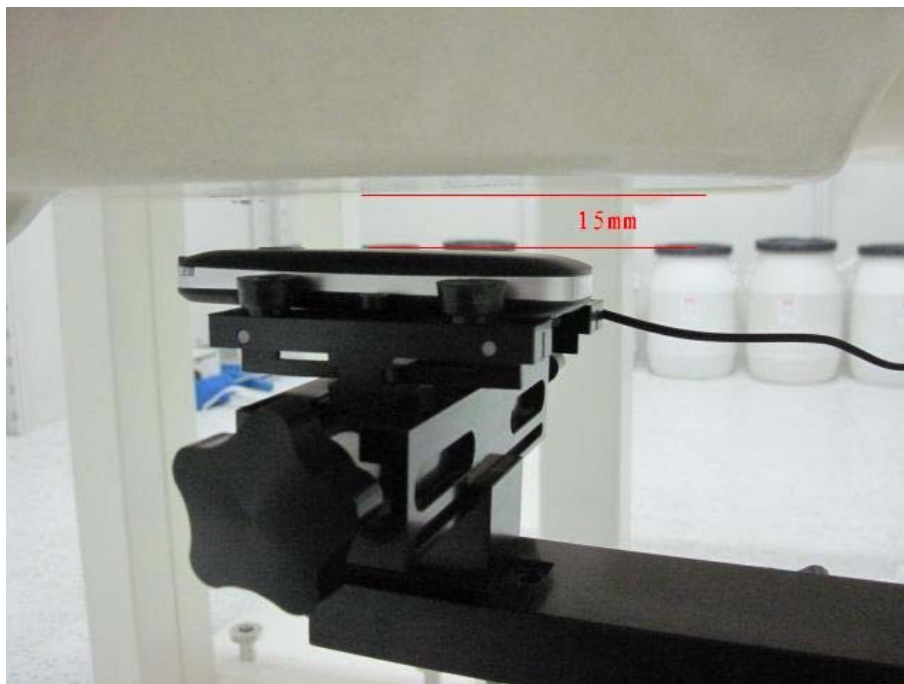
Right-Cheek Touch



Right-Tilt 15°



Body SAR back 15mm



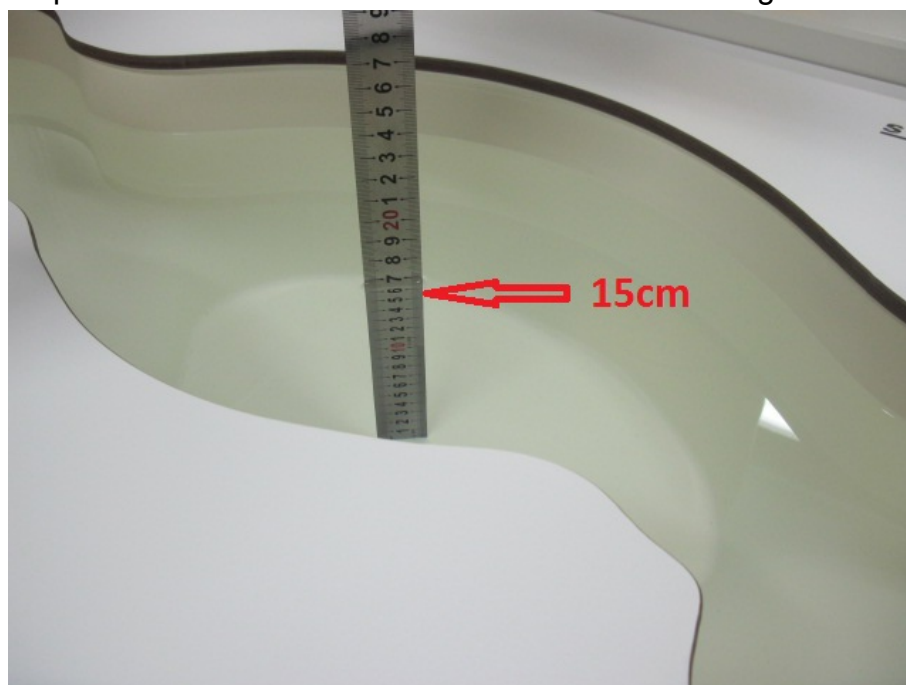
Body SAR Back 15mm with Headset



Body SAR Front 15mm

### Depth of the liquid in the phantom – Zoom in

Note: The position used in the measurements were according to IEEE 1528 - 2003





**EUT Photographs**

## Appendix D. Probe Calibration Data

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



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

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

Accreditation No.: SCS 108

Client **Quietek (Auden)**

Certificate No: **EX3-3710\_Mar10**

### CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:3710**

Calibration procedure(s) **QA CAL-01.v6, QA CAL-14.v3, QA CAL-23.v3 and QA CAL-25.v2  
Calibration procedure for dosimetric E-field probes**

Calibration date: **March 5, 2010**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).  
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature ( $22 \pm 3$ )°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards          | ID #            | Cal Date (Certificate No.)     | Scheduled Calibration |
|----------------------------|-----------------|--------------------------------|-----------------------|
| Power meter E4419B         | GB41293874      | 1-Apr-09 (No. 217-01030)       | Apr-10                |
| Power sensor E4412A        | MY41495277      | 1-Apr-09 (No. 217-01030)       | Apr-10                |
| Power sensor E4412A        | MY41498087      | 1-Apr-09 (No. 217-01030)       | Apr-10                |
| Reference 3 dB Attenuator  | SN: S5054 (3c)  | 31-Mar-09 (No. 217-01026)      | Mar-10                |
| Reference 20 dB Attenuator | SN: S5086 (20b) | 31-Mar-09 (No. 217-01028)      | Mar-10                |
| Reference 30 dB Attenuator | SN: S5129 (30b) | 31-Mar-09 (No. 217-01027)      | Mar-10                |
| Reference Probe ES3DV2     | SN: 3013        | 30-Dec-09 (No. ES3-3013_Dec09) | Dec-10                |
| DAE4                       | SN: 660         | 29-Sep-09 (No. DAE4-660_Sep09) | Sep-10                |

| Secondary Standards       | ID #         | Check Date (in house)             | Scheduled Check        |
|---------------------------|--------------|-----------------------------------|------------------------|
| RF generator HP 8648C     | US3642U01700 | 4-Aug-99 (in house check Oct-09)  | In house check: Oct-11 |
| Network Analyzer HP 8753E | US37390585   | 18-Oct-01 (in house check Oct-09) | In house check: Oct10  |

|                |               |                   |           |
|----------------|---------------|-------------------|-----------|
|                | Name          | Function          | Signature |
| Calibrated by: | Katja Pokovic | Technical Manager |           |
| Approved by:   | Niels Kuster  | Quality Manager   |           |

Issued: March 5, 2010

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

Certificate No: EX3-3710\_Mar10

Page 1 of 11

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



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

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

Accreditation No.: **SCS 108**

## Glossary:

|                          |                                                                                                                                                         |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| TSL                      | tissue simulating liquid                                                                                                                                |
| NORM <sub>x,y,z</sub>    | sensitivity in free space                                                                                                                               |
| ConvF                    | sensitivity in TSL / NORM <sub>x,y,z</sub>                                                                                                              |
| DCP                      | diode compression point                                                                                                                                 |
| CF                       | crest factor (1/duty_cycle) of the RF signal                                                                                                            |
| A, B, C                  | modulation dependent linearization parameters                                                                                                           |
| Polarization $\varphi$   | $\varphi$ rotation around probe axis                                                                                                                    |
| Polarization $\vartheta$ | $\vartheta$ rotation around an axis that is in the plane normal to probe axis (at measurement center),<br>i.e., $\vartheta = 0$ is normal to probe axis |

## Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

## Methods Applied and Interpretation of Parameters:

- NORM<sub>x,y,z</sub>**: Assessed for E-field polarization  $\vartheta = 0$  ( $f \leq 900$  MHz in TEM-cell;  $f > 1800$  MHz: R22 waveguide). NORM<sub>x,y,z</sub> are only intermediate values, i.e., the uncertainties of NORM<sub>x,y,z</sub> does not effect the E<sup>2</sup>-field uncertainty inside TSL (see below *ConvF*).
- NORM(f)<sub>x,y,z</sub>** = NORM<sub>x,y,z</sub> \* *frequency\_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- DCPx,y,z**: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- Ax,y,z; Bx,y,z; Cx,y,z; VRx,y,z**: A, B, C are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for  $f \leq 800$  MHz) and inside waveguide using analytical field distributions based on power measurements for  $f > 800$  MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM<sub>x,y,z</sub> \* *ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from  $\pm 50$  MHz to  $\pm 100$  MHz.
- Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.



EX3DV4 SN:3710

March 5, 2010

# Probe EX3DV4

## SN:3710

|               |               |
|---------------|---------------|
| Manufactured: | July 21, 2009 |
| Calibrated:   | March 5, 2010 |

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

EX3DV4 SN:3710

March 5, 2010

## DASY - Parameters of Probe: EX3DV4 SN:3710

### Basic Calibration Parameters

|                                       | Sensor X | Sensor Y | Sensor Z | Unc (k=2) |
|---------------------------------------|----------|----------|----------|-----------|
| Norm ( $\mu V/(V/m)^2$ ) <sup>A</sup> | 0.48     | 0.58     | 0.60     | ± 10.1%   |
| DCP (mV) <sup>B</sup>                 | 90.8     | 94.4     | 91.8     |           |

### Modulation Calibration Parameters

| UID   | Communication System Name | PAR  |   | A<br>dB | B<br>dBuV | C    | VR<br>mV | Unc <sup>E</sup><br>(k=2) |
|-------|---------------------------|------|---|---------|-----------|------|----------|---------------------------|
| 10000 | CW                        | 0.00 | X | 0.00    | 0.00      | 1.00 | 300      | ± 1.5%                    |
|       |                           |      | Y | 0.00    | 0.00      | 1.00 | 300      |                           |
|       |                           |      | Z | 0.00    | 0.00      | 1.00 | 300      |                           |

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

<sup>A</sup> The uncertainties of NormX,Y,Z do not affect the E<sup>2</sup>-field uncertainty inside TSL (see Pages 5 and 6)

<sup>B</sup> Numerical linearization parameter: uncertainty not required.

<sup>E</sup> Uncertainty is determined using the maximum deviation from linear response applying recatangular distribution and is expressed for the square of the field value.

EX3DV4 SN:3710

March 5, 2010

## DASY - Parameters of Probe: EX3DV4 SN:3710

### Calibration Parameter Determined in Head Tissue Simulating Media

| f [MHz] | Validity [MHz] <sup>c</sup> | Permittivity | Conductivity | ConvF X | ConvF Y | ConvF Z | Alpha | Depth Unc (k=2) |
|---------|-----------------------------|--------------|--------------|---------|---------|---------|-------|-----------------|
| 835     | ± 50 / ± 100                | 41.5 ± 5%    | 0.90 ± 5%    | 8.83    | 8.83    | 8.83    | 0.68  | 0.64 ± 11.0%    |
| 900     | ± 50 / ± 100                | 41.5 ± 5%    | 0.97 ± 5%    | 8.73    | 8.73    | 8.73    | 0.83  | 0.58 ± 11.0%    |
| 1810    | ± 50 / ± 100                | 40.0 ± 5%    | 1.40 ± 5%    | 7.69    | 7.69    | 7.69    | 0.62  | 0.63 ± 11.0%    |
| 1950    | ± 50 / ± 100                | 40.0 ± 5%    | 1.40 ± 5%    | 7.35    | 7.35    | 7.35    | 0.70  | 0.60 ± 11.0%    |
| 2450    | ± 50 / ± 100                | 39.2 ± 5%    | 1.80 ± 5%    | 6.96    | 6.96    | 6.96    | 0.46  | 0.75 ± 11.0%    |
| 2600    | ± 50 / ± 100                | 39.0 ± 5%    | 1.96 ± 5%    | 6.88    | 6.88    | 6.88    | 0.31  | 0.92 ± 11.0%    |
| 3500    | ± 50 / ± 100                | 37.9 ± 5%    | 2.91 ± 5%    | 6.64    | 6.64    | 6.64    | 0.33  | 1.18 ± 13.1%    |
| 5200    | ± 50 / ± 100                | 36.0 ± 5%    | 4.66 ± 5%    | 4.92    | 4.92    | 4.92    | 0.40  | 1.90 ± 13.1%    |
| 5300    | ± 50 / ± 100                | 35.9 ± 5%    | 4.76 ± 5%    | 4.60    | 4.60    | 4.60    | 0.40  | 1.90 ± 13.1%    |
| 5500    | ± 50 / ± 100                | 35.6 ± 5%    | 4.96 ± 5%    | 4.42    | 4.42    | 4.42    | 0.50  | 1.90 ± 13.1%    |
| 5600    | ± 50 / ± 100                | 35.5 ± 5%    | 5.07 ± 5%    | 4.42    | 4.42    | 4.42    | 0.40  | 1.90 ± 13.1%    |
| 5800    | ± 50 / ± 100                | 35.3 ± 5%    | 5.27 ± 5%    | 4.26    | 4.26    | 4.26    | 0.50  | 1.90 ± 13.1%    |

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

EX3DV4 SN:3710

March 5, 2010

## DASY - Parameters of Probe: EX3DV4 SN:3710

### Calibration Parameter Determined in Body Tissue Simulating Media

| f [MHz] | Validity [MHz] <sup>c</sup> | Permittivity | Conductivity | ConvF X | ConvF Y | ConvF Z | Alpha | Depth Unc (k=2) |
|---------|-----------------------------|--------------|--------------|---------|---------|---------|-------|-----------------|
| 835     | ± 50 / ± 100                | 55.2 ± 5%    | 0.97 ± 5%    | 8.95    | 8.95    | 8.95    | 0.84  | 0.62 ± 11.0%    |
| 900     | ± 50 / ± 100                | 55.0 ± 5%    | 1.05 ± 5%    | 8.80    | 8.80    | 8.80    | 0.65  | 0.69 ± 11.0%    |
| 1810    | ± 50 / ± 100                | 53.3 ± 5%    | 1.52 ± 5%    | 7.71    | 7.71    | 7.71    | 0.57  | 0.72 ± 11.0%    |
| 1950    | ± 50 / ± 100                | 53.3 ± 5%    | 1.52 ± 5%    | 7.45    | 7.45    | 7.45    | 0.38  | 0.87 ± 11.0%    |
| 2450    | ± 50 / ± 100                | 52.7 ± 5%    | 1.95 ± 5%    | 7.00    | 7.00    | 7.00    | 0.32  | 0.95 ± 11.0%    |
| 2600    | ± 50 / ± 100                | 52.5 ± 5%    | 2.16 ± 5%    | 6.90    | 6.90    | 6.90    | 0.47  | 0.79 ± 11.0%    |
| 3500    | ± 50 / ± 100                | 51.3 ± 5%    | 3.31 ± 5%    | 6.19    | 6.19    | 6.19    | 0.31  | 1.44 ± 13.1%    |
| 5200    | ± 50 / ± 100                | 49.0 ± 5%    | 5.30 ± 5%    | 4.13    | 4.13    | 4.13    | 0.50  | 1.90 ± 13.1%    |
| 5300    | ± 50 / ± 100                | 48.5 ± 5%    | 5.42 ± 5%    | 3.91    | 3.91    | 3.91    | 0.55  | 1.90 ± 13.1%    |
| 5500    | ± 50 / ± 100                | 48.6 ± 5%    | 5.65 ± 5%    | 3.81    | 3.81    | 3.81    | 0.55  | 1.90 ± 13.1%    |
| 5600    | ± 50 / ± 100                | 48.5 ± 5%    | 5.77 ± 5%    | 3.58    | 3.58    | 3.58    | 0.60  | 1.90 ± 13.1%    |
| 5800    | ± 50 / ± 100                | 48.2 ± 5%    | 6.00 ± 5%    | 3.97    | 3.97    | 3.97    | 0.60  | 1.90 ± 13.1%    |

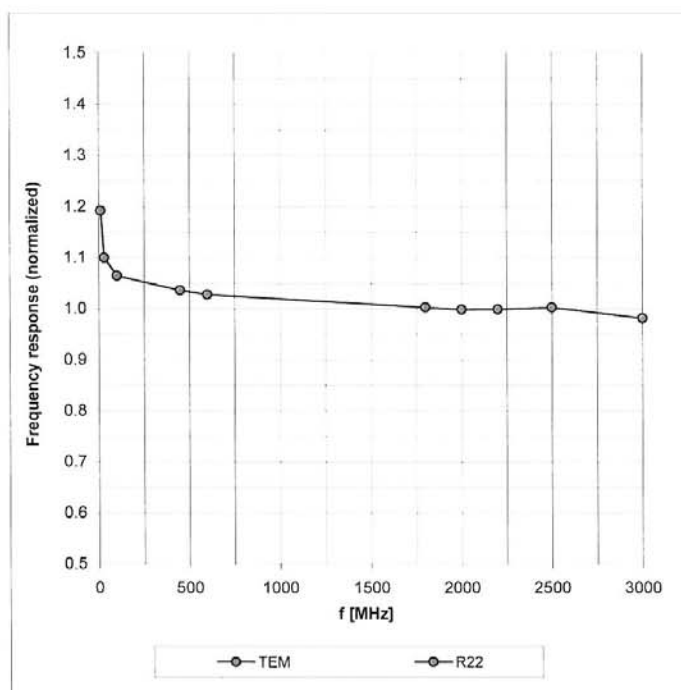
<sup>c</sup> The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

EX3DV4 SN:3710

March 5, 2010

## Frequency Response of E-Field

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

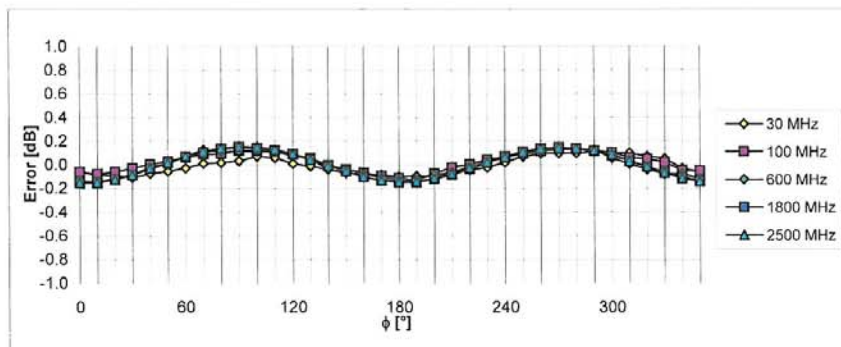
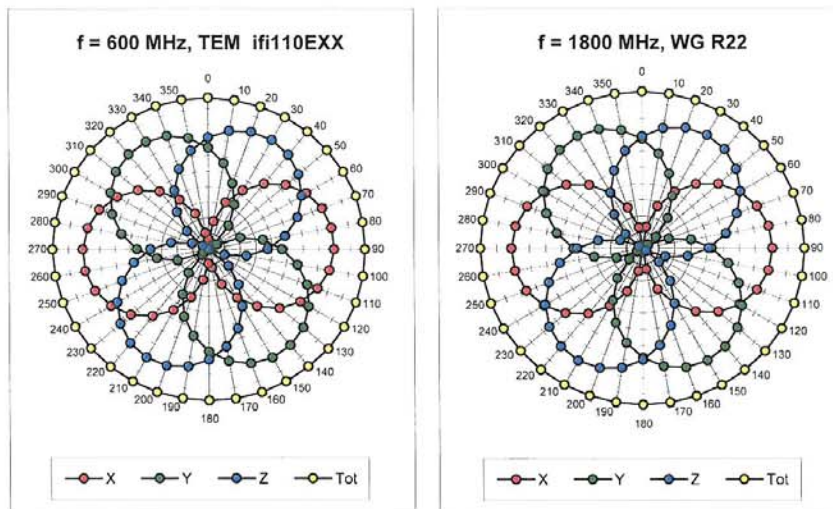


Uncertainty of Frequency Response of E-field:  $\pm 6.3\%$  ( $k=2$ )

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March 5, 2010

# Receiving Pattern ( $\phi$ ), $\vartheta = 0^\circ$

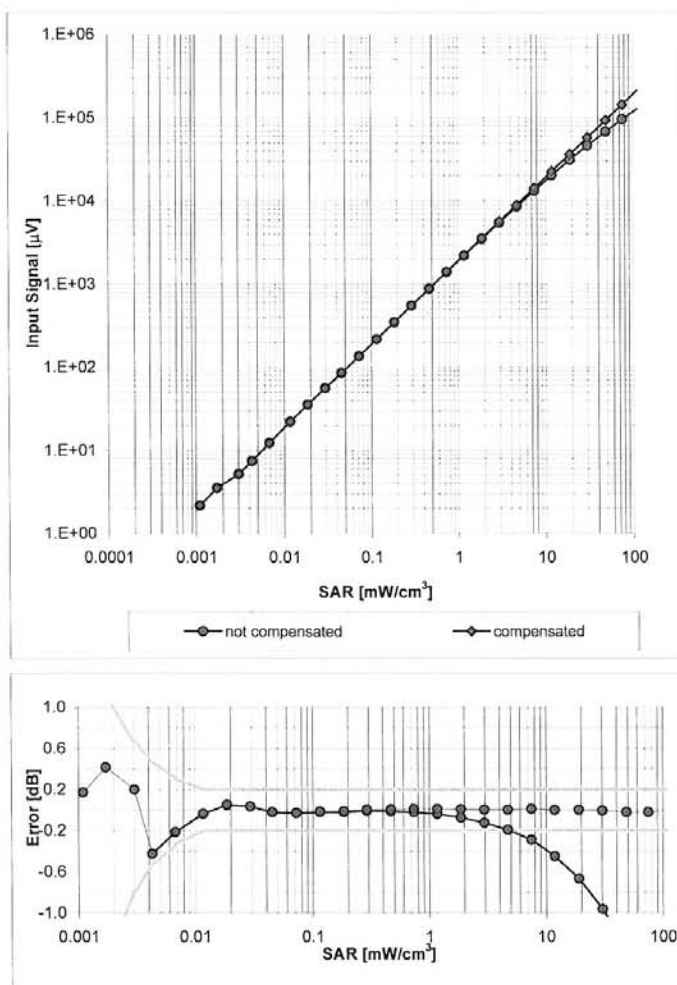


Uncertainty of Axial Isotropy Assessment:  $\pm 0.5\%$  ( $k=2$ )

EX3DV4 SN:3710

March 5, 2010

# Dynamic Range $f(\text{SAR}_{\text{head}})$ (Waveguide R22, $f = 1800 \text{ MHz}$ )

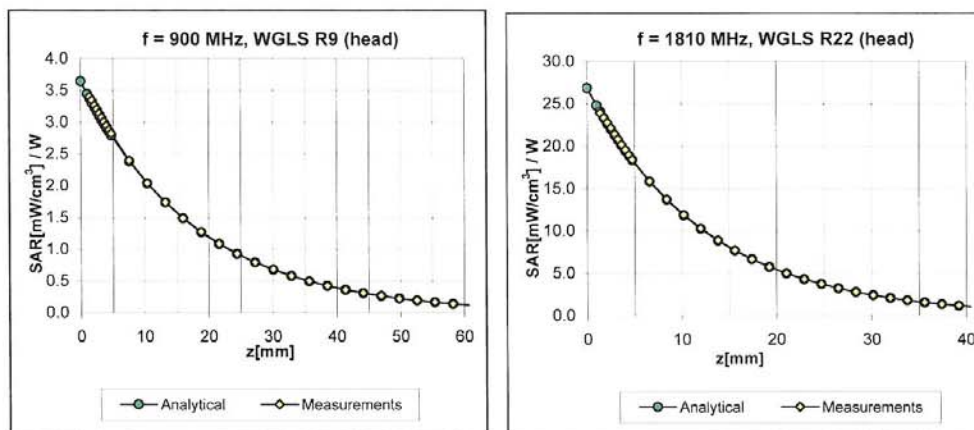


Uncertainty of Linearity Assessment:  $\pm 0.6\%$  ( $k=2$ )

EX3DV4 SN:3710

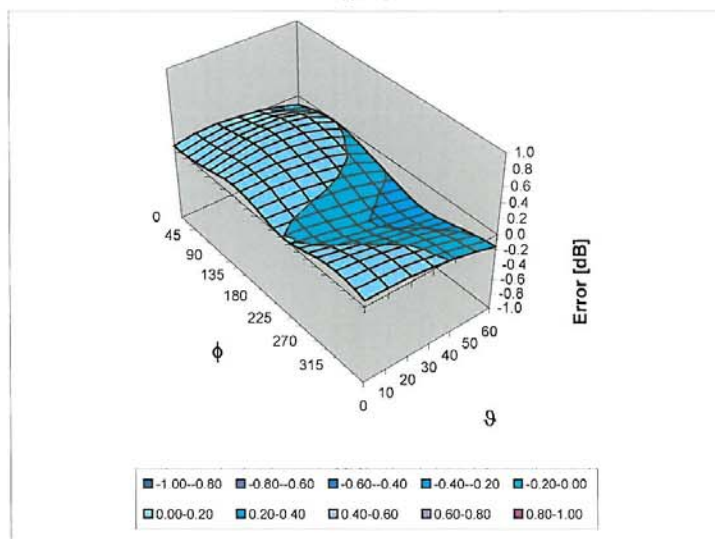
March 5, 2010

## Conversion Factor Assessment



## Deviation from Isotropy in HSL

Error ( $\phi$ ,  $\theta$ ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment:  $\pm 2.6\%$  ( $k=2$ )



EX3DV4 SN:3710

March 5, 2010

## Other Probe Parameters

|                                               |                |
|-----------------------------------------------|----------------|
| Sensor Arrangement                            | Triangular     |
| Connector Angle (°)                           | Not applicable |
| Mechanical Surface Detection Mode             | enabled        |
| Optical Surface Detection Mode                | disabled       |
| Probe Overall Length                          | 337 mm         |
| Probe Body Diameter                           | 10 mm          |
| Tip Length                                    | 9 mm           |
| Tip Diameter                                  | 2.5 mm         |
| Probe Tip to Sensor X Calibration Point       | 1 mm           |
| Probe Tip to Sensor Y Calibration Point       | 1 mm           |
| Probe Tip to Sensor Z Calibration Point       | 1 mm           |
| Recommended Measurement Distance from Surface | 2 mm           |

## Appendix E. Dipole Calibration Data

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



**S** Schweizerischer Kalibrierdienst  
**C** Service suisse d'étalonnage  
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Accreditation No.: **SCS 108**

Client **Quietek (Auden)**

Certificate No: **D835V2-4d094\_Mar10**

### CALIBRATION CERTIFICATE

Object **D835V2 - SN: 4d094**

Calibration procedure(s) **QA CAL-05.v7**  
**Calibration procedure for dipole validation kits**

Calibration date: **March 15, 2010**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).  
 The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature ( $22 \pm 3$ )°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards           | ID #               | Cal Date (Certificate No.)        | Scheduled Calibration  |
|-----------------------------|--------------------|-----------------------------------|------------------------|
| Power meter EPM-442A        | GB37480704         | 06-Oct-09 (No. 217-01086)         | Oct-10                 |
| Power sensor HP 8481A       | US37292783         | 06-Oct-09 (No. 217-01086)         | Oct-10                 |
| Reference 20 dB Attenuator  | SN: 5086 (20g)     | 31-Mar-09 (No. 217-01025)         | Mar-10                 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 31-Mar-09 (No. 217-01029)         | Mar-10                 |
| Reference Probe ES3DV3      | SN: 3205           | 26-Jun-09 (No. ES3-3205_Jun09)    | Jun-10                 |
| DAE4                        | SN: 601            | 02-Mar-10 (No. DAE4-601_Mar10)    | Mar-11                 |
| Secondary Standards         | ID #               | Check Date (in house)             | Scheduled Check        |
| Power sensor HP 8481A       | MY41092317         | 18-Oct-02 (in house check Oct-09) | In house check: Oct-11 |
| RF generator R&S SMT-06     | 100005             | 4-Aug-99 (in house check Oct-09)  | In house check: Oct-11 |
| Network Analyzer HP 8753E   | US37390585 S4206   | 18-Oct-01 (in house check Oct-09) | In house check: Oct-10 |

|                |                     |                                   |               |
|----------------|---------------------|-----------------------------------|---------------|
| Calibrated by: | Name<br>Dimce Iliev | Function<br>Laboratory Technician | Signature<br> |
| Approved by:   | Katja Pokovic       | Technical Manager                 |               |

Issued: March 15, 2010

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

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 Zeughausstrasse 43, 8004 Zurich, Switzerland



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**S** Servizio svizzero di taratura  
**S** Swiss Calibration Service

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 The Swiss Accreditation Service is one of the signatories to the EA  
 Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

## Glossary:

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

## Calibration is Performed According to the Following Standards:

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

## Additional Documentation:

- DASY4/5 System Handbook

## Methods Applied and Interpretation of Parameters:

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

### Measurement Conditions

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

|                              |                           |             |
|------------------------------|---------------------------|-------------|
| DASY Version                 | DASY5                     | V5.2        |
| Extrapolation                | Advanced Extrapolation    |             |
| Phantom                      | Modular Flat Phantom V4.9 |             |
| Distance Dipole Center - TSL | 15 mm                     | with Spacer |
| Zoom Scan Resolution         | dx, dy, dz = 5 mm         |             |
| Frequency                    | 835 MHz $\pm$ 1 MHz       |             |

### Head TSL parameters

The following parameters and calculations were applied.

|                                  | Temperature         | Permittivity   | Conductivity         |
|----------------------------------|---------------------|----------------|----------------------|
| Nominal Head TSL parameters      | 22.0 °C             | 41.5           | 0.90 mho/m           |
| Measured Head TSL parameters     | (22.0 $\pm$ 0.2) °C | 42.9 $\pm$ 6 % | 0.91 mho/m $\pm$ 6 % |
| Head TSL temperature during test | (21.5 $\pm$ 0.2) °C | ----           | ----                 |

### SAR result with Head TSL

| SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL | Condition          |                                |
|-------------------------------------------------------|--------------------|--------------------------------|
| SAR measured                                          | 250 mW input power | 2.43 mW / g                    |
| SAR normalized                                        | normalized to 1W   | 9.72 mW / g                    |
| SAR for nominal Head TSL parameters                   | normalized to 1W   | 9.70 mW / g $\pm$ 17.0 % (k=2) |

| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL | condition          |                                |
|---------------------------------------------------------|--------------------|--------------------------------|
| SAR measured                                            | 250 mW input power | 1.58 mW / g                    |
| SAR normalized                                          | normalized to 1W   | 6.32 mW / g                    |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 6.30 mW / g $\pm$ 16.5 % (k=2) |

### Body TSL parameters

The following parameters and calculations were applied.

|                                  | Temperature     | Permittivity | Conductivity     |
|----------------------------------|-----------------|--------------|------------------|
| Nominal Body TSL parameters      | 22.0 °C         | 55.2         | 0.97 mho/m       |
| Measured Body TSL parameters     | (22.0 ± 0.2) °C | 55.3 ± 6 %   | 1.01 mho/m ± 6 % |
| Body TSL temperature during test | (21.3 ± 0.2) °C | ----         | ----             |

### SAR result with Body TSL

| SAR averaged over 1 cm <sup>3</sup> (1 g) of Body TSL | Condition          |                            |
|-------------------------------------------------------|--------------------|----------------------------|
| SAR measured                                          | 250 mW input power | 2.55 mW / g                |
| SAR normalized                                        | normalized to 1W   | 10.2 mW / g                |
| SAR for nominal Body TSL parameters                   | normalized to 1W   | 9.90 mW / g ± 17.0 % (k=2) |

| SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL | condition          |                            |
|---------------------------------------------------------|--------------------|----------------------------|
| SAR measured                                            | 250 mW input power | 1.67 mW / g                |
| SAR normalized                                          | normalized to 1W   | 6.68 mW / g                |
| SAR for nominal Body TSL parameters                     | normalized to 1W   | 6.53 mW / g ± 16.5 % (k=2) |



## Appendix

### Antenna Parameters with Head TSL

|                                      |                                |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 52.2 $\Omega$ - 2.7 j $\Omega$ |
| Return Loss                          | - 29.4 dB                      |

### Antenna Parameters with Body TSL

|                                      |                                |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 48.0 $\Omega$ - 4.8 j $\Omega$ |
| Return Loss                          | - 25.5 dB                      |

### General Antenna Parameters and Design

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.388 ns |
|----------------------------------|----------|

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

|                 |                    |
|-----------------|--------------------|
| Manufactured by | SPEAG              |
| Manufactured on | September 15, 2009 |

## DASY5 Validation Report for Head TSL

Date/Time: 08.03.2010 10:52:27

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d094**

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

Medium: HSL900

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.91 \text{ mho/m}$ ;  $\epsilon_r = 42.7$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.04, 6.04, 6.04); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

**Pin=250 mW /d=15mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement**

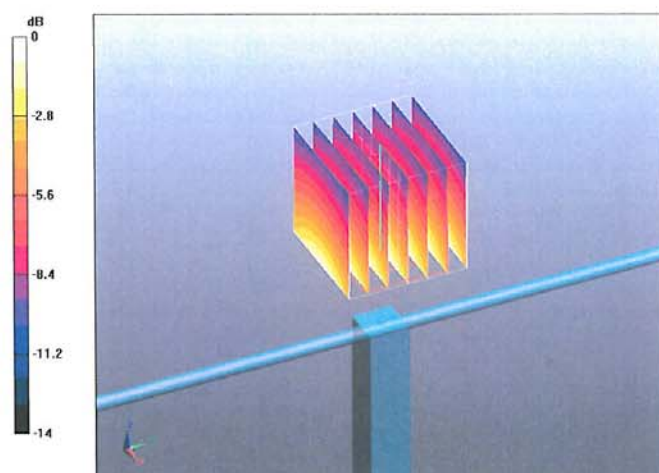
grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 57.3 V/m; Power Drift = 0.00297 dB

Peak SAR (extrapolated) = 3.65 W/kg

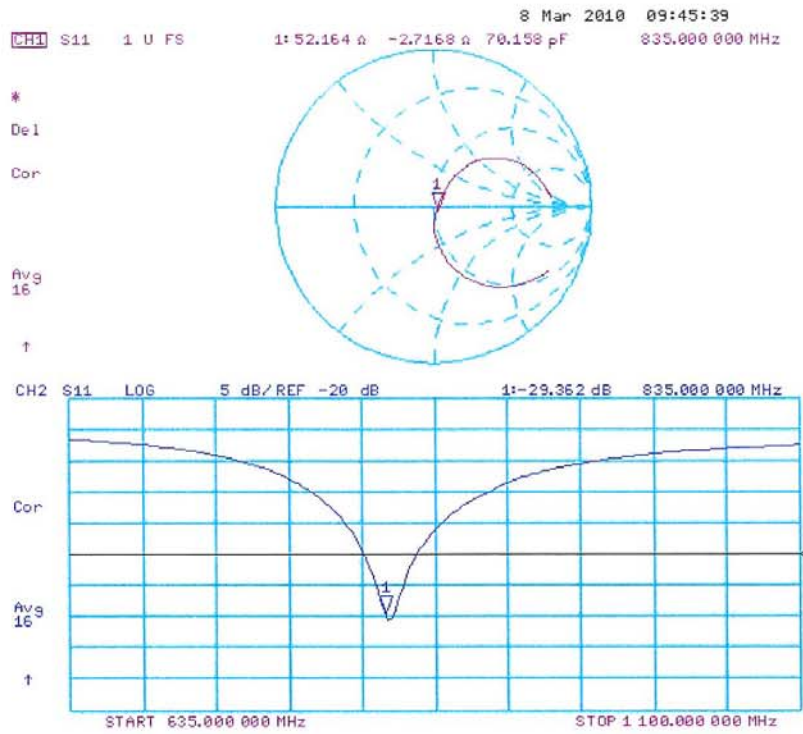
**SAR(1 g) = 2.43 mW/g; SAR(10 g) = 1.58 mW/g**

Maximum value of SAR (measured) = 2.84 mW/g



0 dB = 2.84mW/g

# Impedance Measurement Plot for Head TSL





## DASY5 Validation Report for Body

Date/Time: 15.03.2010 11:52:53

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d094**

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

Medium: MSL900

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 1.01 \text{ mho/m}$ ;  $\epsilon_r = 55.3$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.97, 5.97, 5.97); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

**Pin250 mW /d=15mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement**

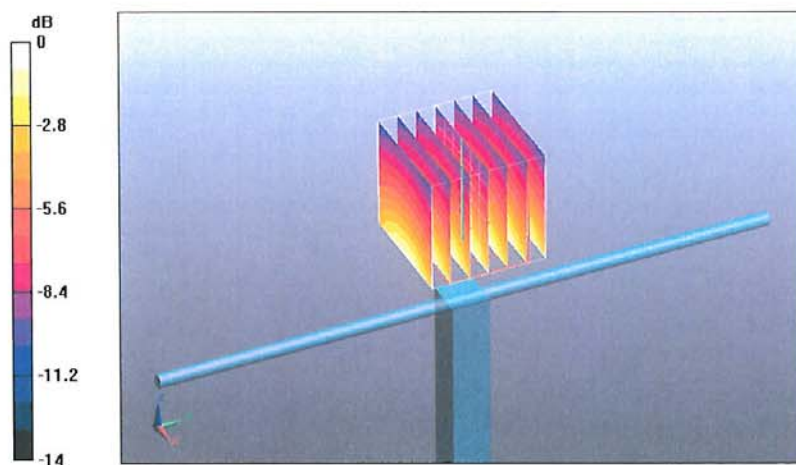
grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 55.9 V/m; Power Drift = -0.00975 dB

Peak SAR (extrapolated) = 3.77 W/kg

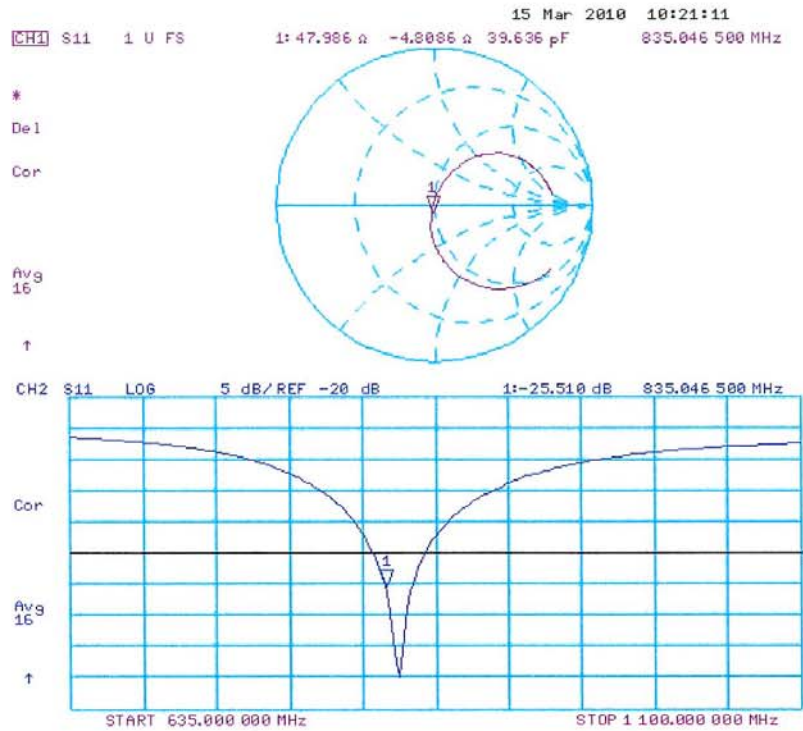
**SAR(1 g) = 2.55 mW/g; SAR(10 g) = 1.67 mW/g**

Maximum value of SAR (measured) = 2.98 mW/g



0 dB = 2.98mW/g

# Impedance Measurement Plot for Body TSL



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Accreditation No.: **SCS 108**

Client **Quietek (Auden)**

Certificate No: **D1900V2-5d121\_Mar10**

## CALIBRATION CERTIFICATE

Object **D1900V2 - SN: 5d121**

Calibration procedure(s) **QA CAL-05.v7**  
**Calibration procedure for dipole validation kits**

Calibration date: **March 23, 2010**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).  
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature  $(22 \pm 3)^{\circ}\text{C}$  and humidity  $< 70\%$ .

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards           | ID #               | Cal Date (Certificate No.)        | Scheduled Calibration  |
|-----------------------------|--------------------|-----------------------------------|------------------------|
| Power meter EPM-442A        | GB37480704         | 06-Oct-09 (No. 217-01086)         | Oct-10                 |
| Power sensor HP 8481A       | US37292783         | 06-Oct-09 (No. 217-01086)         | Oct-10                 |
| Reference 20 dB Attenuator  | SN: 5086 (20g)     | 31-Mar-09 (No. 217-01025)         | Mar-10                 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 31-Mar-09 (No. 217-01029)         | Mar-10                 |
| Reference Probe ES3DV3      | SN: 3205           | 26-Jun-09 (No. ES3-3205_Jun09)    | Jun-10                 |
| DAE4                        | SN: 601            | 02-Mar-10 (No. DAE4-601_Mar10)    | Mar-11                 |
| Secondary Standards         | ID #               | Check Date (in house)             | Scheduled Check        |
| Power sensor HP 8481A       | MY41092317         | 18-Oct-02 (in house check Oct-09) | In house check: Oct-11 |
| RF generator R&S SMT-06     | 100005             | 4-Aug-99 (in house check Oct-09)  | In house check: Oct-11 |
| Network Analyzer HP 8753E   | US37390585 S4206   | 18-Oct-01 (in house check Oct-09) | In house check: Oct-10 |

Calibrated by: **Dimce Iliev** **Laboratory Technician**

Signature

Approved by: **Katja Pokovic** **Technical Manager**

Issued: March 23, 2010

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

Certificate No: D1900V2-5d121\_Mar10

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Accreditation No.: **SCS 108**

## Glossary:

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

## Calibration is Performed According to the Following Standards:

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

## Additional Documentation:

- DASY4/5 System Handbook

## Methods Applied and Interpretation of Parameters:

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



### Measurement Conditions

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

|                              |                           |             |
|------------------------------|---------------------------|-------------|
| DASY Version                 | DASY5                     | V5.2        |
| Extrapolation                | Advanced Extrapolation    |             |
| Phantom                      | Modular Flat Phantom V5.0 |             |
| Distance Dipole Center - TSL | 10 mm                     | with Spacer |
| Zoom Scan Resolution         | dx, dy, dz = 5 mm         |             |
| Frequency                    | 1900 MHz $\pm$ 1 MHz      |             |

### Head TSL parameters

The following parameters and calculations were applied.

|                                  | Temperature         | Permittivity   | Conductivity         |
|----------------------------------|---------------------|----------------|----------------------|
| Nominal Head TSL parameters      | 22.0 °C             | 40.0           | 1.40 mho/m           |
| Measured Head TSL parameters     | (22.0 $\pm$ 0.2) °C | 41.1 $\pm$ 6 % | 1.45 mho/m $\pm$ 6 % |
| Head TSL temperature during test | (21.5 $\pm$ 0.2) °C | ----           | ----                 |

### SAR result with Head TSL

| SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL | Condition          |                                                 |
|-------------------------------------------------------|--------------------|-------------------------------------------------|
| SAR measured                                          | 250 mW input power | 10.1 mW / g                                     |
| SAR normalized                                        | normalized to 1W   | 40.4 mW / g                                     |
| SAR for nominal Head TSL parameters                   | normalized to 1W   | <b>39.8 mW /g <math>\pm</math> 17.0 % (k=2)</b> |

| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL | condition          |                                                 |
|---------------------------------------------------------|--------------------|-------------------------------------------------|
| SAR measured                                            | 250 mW input power | 5.30 mW / g                                     |
| SAR normalized                                          | normalized to 1W   | 21.2 mW / g                                     |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | <b>21.1 mW /g <math>\pm</math> 16.5 % (k=2)</b> |

### Body TSL parameters

The following parameters and calculations were applied.

|                                  | Temperature     | Permittivity | Conductivity     |
|----------------------------------|-----------------|--------------|------------------|
| Nominal Body TSL parameters      | 22.0 °C         | 53.3         | 1.52 mho/m       |
| Measured Body TSL parameters     | (22.0 ± 0.2) °C | 54.9 ± 6 %   | 1.58 mho/m ± 6 % |
| Body TSL temperature during test | (21.5 ± 0.2) °C | ----         | ----             |

### SAR result with Body TSL

| SAR averaged over 1 cm <sup>3</sup> (1 g) of Body TSL | Condition          |                            |
|-------------------------------------------------------|--------------------|----------------------------|
| SAR measured                                          | 250 mW input power | 10.5 mW / g                |
| SAR normalized                                        | normalized to 1W   | 42.0 mW / g                |
| SAR for nominal Body TSL parameters                   | normalized to 1W   | 41.4 mW / g ± 17.0 % (k=2) |

| SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL | condition          |                            |
|---------------------------------------------------------|--------------------|----------------------------|
| SAR measured                                            | 250 mW input power | 5.60 mW / g                |
| SAR normalized                                          | normalized to 1W   | 22.4 mW / g                |
| SAR for nominal Body TSL parameters                     | normalized to 1W   | 22.3 mW / g ± 16.5 % (k=2) |

## Appendix

### Antenna Parameters with Head TSL

|                                      |                             |
|--------------------------------------|-----------------------------|
| Impedance, transformed to feed point | $50.6 \Omega + 7.4 j\Omega$ |
| Return Loss                          | - 22.7 dB                   |

### Antenna Parameters with Body TSL

|                                      |                             |
|--------------------------------------|-----------------------------|
| Impedance, transformed to feed point | $46.1 \Omega + 7.1 j\Omega$ |
| Return Loss                          | - 21.5 dB                   |

### General Antenna Parameters and Design

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.205 ns |
|----------------------------------|----------|

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

|                 |                 |
|-----------------|-----------------|
| Manufactured by | SPEAG           |
| Manufactured on | August 25, 2009 |

## DASY5 Validation Report for Head TSL

Date/Time: 23.03.2010 12:23:06

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d121**

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

Medium: HSL U11 BB

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.45$  mho/m;  $\epsilon_r = 41.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.09, 5.09, 5.09); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

**Pin=250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement**

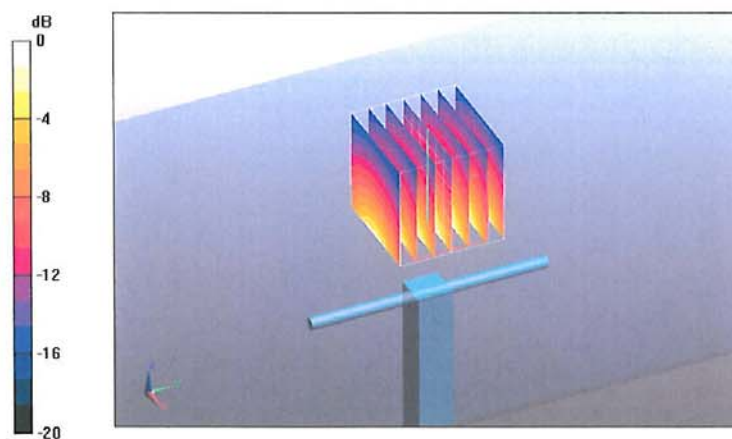
grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 97.6 V/m; Power Drift = 0.00658 dB

Peak SAR (extrapolated) = 18.5 W/kg

**SAR(1 g) = 10.1 mW/g; SAR(10 g) = 5.3 mW/g**

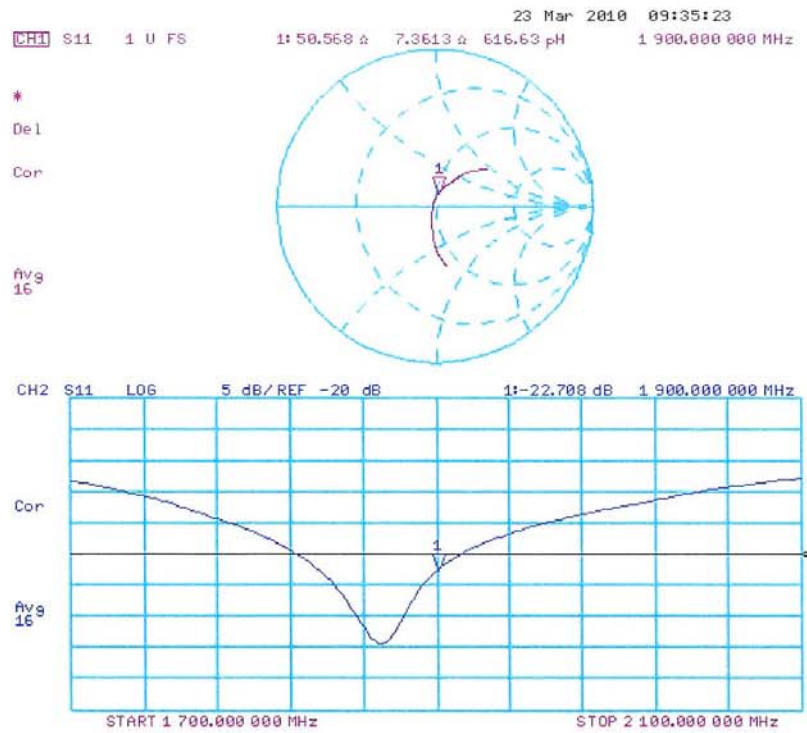
Maximum value of SAR (measured) = 12.8 mW/g



0 dB = 12.8mW/g



# Impedance Measurement Plot for Head TSL



## DASY5 Validation Report for Body

Date/Time: 17.03.2010 13:29:09

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d121**

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

Medium: MSL U11 BB

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.58$  mho/m;  $\epsilon_r = 55$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.59, 4.59, 4.59); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

**Pin250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement**

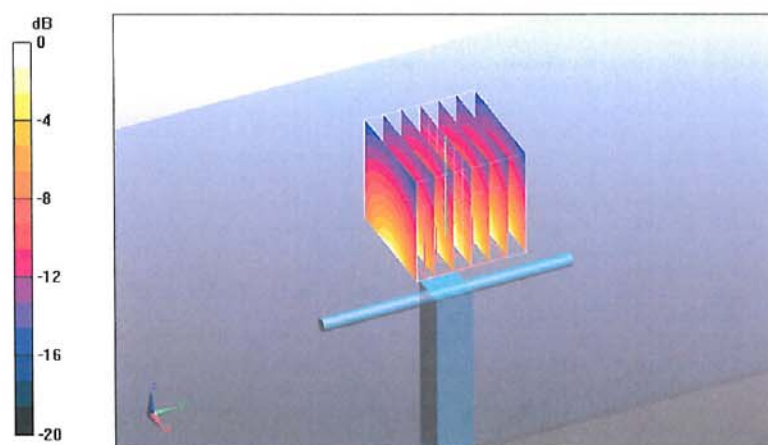
grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 97 V/m; Power Drift = 0.00345 dB

Peak SAR (extrapolated) = 17.6 W/kg

**SAR(1 g) = 10.5 mW/g; SAR(10 g) = 5.6 mW/g**

Maximum value of SAR (measured) = 13.3 mW/g



0 dB = 13.3mW/g

## Appendix F. DAE Calibration Data

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Accreditation No.: **SCS 108**

Client **Quietek (Auden)**

Certificate No: **DAE4-1220\_Dec10**

## CALIBRATION CERTIFICATE

Object **DAE4 - SD 000 D04 BJ - SN: 1220**

Calibration procedure(s) **QA CAL-06.v22**  
**Calibration procedure for the data acquisition electronics (DAE)**

Calibration date: **December 3, 2010**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).  
 The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards             | ID #               | Cal Date (Certificate No.) | Scheduled Calibration  |
|-------------------------------|--------------------|----------------------------|------------------------|
| Keithley Multimeter Type 2001 | SN: 0810278        | 28-Sep-10 (No:10376)       | Sep-11                 |
| Secondary Standards           | ID #               | Check Date (in house)      | Scheduled Check        |
| Calibrator Box V1.1           | SE UMS 006 AB 1004 | 07-Jun-10 (in house check) | In house check: Jun-11 |

|                |                              |                                     |               |
|----------------|------------------------------|-------------------------------------|---------------|
| Calibrated by: | Name<br><b>Eric Hainfeld</b> | Function<br><b>Technician</b>       | Signature<br> |
| Approved by:   | Name<br><b>Fin Bomholt</b>   | Function<br><b>R&amp;D Director</b> | Signature<br> |

Issued: December 3, 2010

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Accreditation No.: **SCS 108**

## Glossary

DAE data acquisition electronics  
 Connector angle information used in DASY system to align probe sensor X to the robot coordinate system.

## Methods Applied and Interpretation of Parameters

- *DC Voltage Measurement*: Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- *Connector angle*: The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
  - *DC Voltage Measurement Linearity*: Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
  - *Common mode sensitivity*: Influence of a positive or negative common mode voltage on the differential measurement.
  - *Channel separation*: Influence of a voltage on the neighbor channels not subject to an input voltage.
  - *AD Converter Values with inputs shorted*: Values on the internal AD converter corresponding to zero input voltage
  - *Input Offset Measurement*: Output voltage and statistical results over a large number of zero voltage measurements.
  - *Input Offset Current*: Typical value for information; Maximum channel input offset current, not considering the input resistance.
  - *Input resistance*: Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
  - *Low Battery Alarm Voltage*: Typical value for information. Below this voltage, a battery alarm signal is generated.
  - *Power consumption*: Typical value for information. Supply currents in various operating modes.

### DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB = 6.1μV , full range = -100...+300 mV

Low Range: 1LSB = 61nV , full range = -1.....+3mV

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| Calibration Factors | X                    | Y                    | Z                    |
|---------------------|----------------------|----------------------|----------------------|
| High Range          | 405.229 ± 0.1% (k=2) | 404.950 ± 0.1% (k=2) | 404.184 ± 0.1% (k=2) |
| Low Range           | 3.97007 ± 0.7% (k=2) | 3.98601 ± 0.7% (k=2) | 3.99287 ± 0.7% (k=2) |

### Connector Angle

|                                           |               |
|-------------------------------------------|---------------|
| Connector Angle to be used in DASY system | 177.5 ° ± 1 ° |
|-------------------------------------------|---------------|



## Appendix

### 1. DC Voltage Linearity

| High Range        | Reading ( $\mu\text{V}$ ) | Difference ( $\mu\text{V}$ ) | Error (%) |
|-------------------|---------------------------|------------------------------|-----------|
| Channel X + Input | 200002.4                  | 1.22                         | 0.00      |
| Channel X + Input | 20001.01                  | 0.91                         | 0.00      |
| Channel X - Input | -19997.57                 | 2.63                         | -0.01     |
| Channel Y + Input | 200008.1                  | -2.52                        | -0.00     |
| Channel Y + Input | 19998.92                  | -1.38                        | -0.01     |
| Channel Y - Input | -20001.39                 | -1.29                        | 0.01      |
| Channel Z + Input | 200011.1                  | 1.59                         | 0.00      |
| Channel Z + Input | 19998.31                  | -1.89                        | -0.01     |
| Channel Z - Input | -20000.79                 | -0.99                        | 0.00      |

| Low Range         | Reading ( $\mu\text{V}$ ) | Difference ( $\mu\text{V}$ ) | Error (%) |
|-------------------|---------------------------|------------------------------|-----------|
| Channel X + Input | 1999.8                    | -0.22                        | -0.01     |
| Channel X + Input | 199.68                    | -0.32                        | -0.16     |
| Channel X - Input | -200.45                   | -0.25                        | 0.12      |
| Channel Y + Input | 1999.6                    | -0.27                        | -0.01     |
| Channel Y + Input | 199.03                    | -1.07                        | -0.54     |
| Channel Y - Input | -200.66                   | -0.76                        | 0.38      |
| Channel Z + Input | 2000.0                    | -0.04                        | -0.00     |
| Channel Z + Input | 198.94                    | -1.26                        | -0.63     |
| Channel Z - Input | -201.36                   | -1.46                        | 0.73      |

### 2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

|           | Common mode Input Voltage (mV) | High Range Average Reading ( $\mu\text{V}$ ) | Low Range Average Reading ( $\mu\text{V}$ ) |
|-----------|--------------------------------|----------------------------------------------|---------------------------------------------|
| Channel X | 200                            | 10.60                                        | 8.62                                        |
|           | - 200                          | -7.59                                        | -9.45                                       |
| Channel Y | 200                            | -9.68                                        | -9.86                                       |
|           | - 200                          | 9.01                                         | 8.51                                        |
| Channel Z | 200                            | 12.06                                        | 12.10                                       |
|           | - 200                          | -13.84                                       | -14.49                                      |

### 3. Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

|           | Input Voltage (mV) | Channel X ( $\mu\text{V}$ ) | Channel Y ( $\mu\text{V}$ ) | Channel Z ( $\mu\text{V}$ ) |
|-----------|--------------------|-----------------------------|-----------------------------|-----------------------------|
| Channel X | 200                | -                           | 2.85                        | -0.96                       |
| Channel Y | 200                | 1.60                        | -                           | 3.41                        |
| Channel Z | 200                | 2.29                        | -1.66                       | -                           |

#### 4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

|           | High Range (LSB) | Low Range (LSB) |
|-----------|------------------|-----------------|
| Channel X | 15905            | 14404           |
| Channel Y | 16020            | 13780           |
| Channel Z | 15698            | 14978           |

#### 5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Input 10M $\Omega$

|           | Average ( $\mu$ V) | min. Offset ( $\mu$ V) | max. Offset ( $\mu$ V) | Std. Deviation ( $\mu$ V) |
|-----------|--------------------|------------------------|------------------------|---------------------------|
| Channel X | -0.06              | -1.34                  | 1.46                   | 0.43                      |
| Channel Y | -0.85              | -2.00                  | 0.10                   | 0.32                      |
| Channel Z | -0.99              | -2.44                  | 0.46                   | 0.44                      |

#### 6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

#### 7. Input Resistance (Typical values for information)

|           | Zeroing (kOhm) | Measuring (MOhm) |
|-----------|----------------|------------------|
| Channel X | 200            | 200              |
| Channel Y | 200            | 200              |
| Channel Z | 200            | 200              |

#### 8. Low Battery Alarm Voltage (Typical values for information)

| Typical values | Alarm Level (VDC) |
|----------------|-------------------|
| Supply (+ Vcc) | +7.9              |
| Supply (- Vcc) | -7.6              |

#### 9. Power Consumption (Typical values for information)

| Typical values | Switched off (mA) | Stand by (mA) | Transmitting (mA) |
|----------------|-------------------|---------------|-------------------|
| Supply (+ Vcc) | +0.01             | +6            | +14               |
| Supply (- Vcc) | -0.01             | -8            | -9                |