

# SAR TEST REPORT

|                               |                                                                                                                    |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------|
| <b>Equipment Under Test :</b> | GSM 850&PCS1900MHz MOBILE PHONE                                                                                    |
| <b>Model No. :</b>            | C65a                                                                                                               |
| <b>Market name:</b>           | OT-E805a                                                                                                           |
| <b>FCC ID:</b>                | RAD051                                                                                                             |
| <b>Applicant :</b>            | T&A Mobile Phones                                                                                                  |
| <b>Address of Applicant :</b> | 3/F,B2 Block, Digital Technology Yard,<br>Gaoxin Nan Qi Road,Nan Shan District,<br>Shenzhen, Guangdong, P.R. China |
| <b>Date of Receipt :</b>      | 2006.10.07                                                                                                         |
| <b>Date of Test :</b>         | 2006.10.12 – 2006.10.19                                                                                            |
| <b>Date of Issue :</b>        | 2006.10.25                                                                                                         |

## Standards

### FCC OET Bulletin 65 supplement C, ANSI/IEEE C95.1, C95.3, IEEE 1528-2003

In the configuration tested, the EUT complied with the standards specified above.

#### Remarks:

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS-CSTC Shanghai GSM Lab or testing done by SGS-CSTC Shanghai GSM Lab must approve SGS Shanghai GSM Lab in connection with distribution or use of the product described in this report in writing.

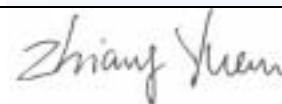
Tested by :



Date :

2006.10.25

Approved by :



Date :

2006.10.25

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## 1. General Information

### 1.1 Test Laboratory

GSM Lab  
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Zip code: 200233  
Telephone: +86 (0) 21 6495 1616  
Fax: +86 (0) 21 6495 3679  
Internet: <http://www.cn.sgs.com>

### 1.2 Details of Applicant

Name: T&A Mobile Phones  
Address: 3/F,B2 Block, Digital Technology Yard,  
Gaoxin Nan Qi Road,Nan Shan District,  
Shenzhen, Guangdong, P.R. China

### 1.3 Description of EUT(s)

|                            |                               |                   |
|----------------------------|-------------------------------|-------------------|
| Brand name                 | ALCATEL                       |                   |
| Model No.                  | C65a                          |                   |
| Market Name                | OT-E805a                      |                   |
| Serial No.                 | IMEI: 011041000000340         |                   |
| Sample Status              | Production                    |                   |
| Battery Type               | Lithium-Ion                   |                   |
| Antenna Type               | Inner Antenna                 |                   |
| Operation Mode             | GSM850/PCS1900                |                   |
| Modulation Mode            | GMSK                          |                   |
| Frequency range            | GSM850                        | Tx: 824~849 MHz   |
|                            |                               | Rx: 869~894 MHz   |
|                            | PCS1900                       | Tx: 1850~1910 MHz |
|                            |                               | Rx: 1930~1990 MHz |
| Maximum RF Conducted Power | GSM850: 33dBm, PCS1900: 30dBm |                   |

#### **1.4 Test Environment**

Ambient temperature: 22.0° C

Tissue Simulating Liquid: 22° C

Relative Humidity: 45%~55%

#### **1.5 Operation Configuration**

Configuration 1: GSM 850, LeftHandSide Cheek & 15 ° Tilt Position

Configuration 2: GSM 850, RightHandSide Cheek & 15 ° Tilt Position

Configuration 3: GSM 850, BodyWorn (1.5cm between EUT and phantom)

Configuration 4: GSM 1900, LeftHandSide Cheek & 15 ° Tilt Position

Configuration 5: GSM 1900, RightHandSide Cheek & 15 ° Tilt Position

Configuration 6: GSM 1900, BodyWorn (1.5cm between EUT and phantom)

#### **1.6 The SAR Measurement System**

A photograph of the SAR measurement System is given in Fig.a.

This SAR Measurement System uses a Computer-controlled 3-D stepper motor system (Speag Dasy 4 professional system). A Model ET3DV6 1705 E-field probe is used to determine the internal electric fields. The SAR can be obtained from the equation  $SAR = \sigma (|E_i|^2) / \rho$  where  $\sigma$  and  $\rho$  are the conductivity and mass density of the tissue-simulant.

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

- A standard high precision 6-axis robot (Stabile RX family) with controller, teach pendant and software. An arm extension for accommodation the data acquisition electronics (DAE).
- A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.

- [illegible]

- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows 2000.
- DASY4 software.
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom enabling testing left-hand, right-hand and body-worn usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.

- Validation dipole kits allowing validating the proper functioning of the system.

### 1.7 SAR System Verification

The microwave circuit arrangement for system verification is sketched in Fig. b. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within  $\pm 10\%$  from the target SAR values. These tests were done at 900MHz and 1900MHz. The tests were conducted on the same days as the measurement of the DUT. The obtained results from the system accuracy verification are displayed in the table 1 (SAR values are normalized to 1W forward power delivered to the dipole). During the tests, the ambient temperature of the laboratory was in the range 22°C, the relative humidity was in the range 60% and the liquid depth above the ear reference points was above 15 cm in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.

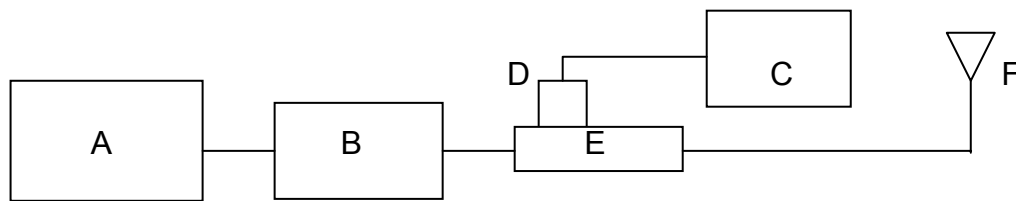


Fig. b the microwave circuit arrangement used for SAR system verification

- A. Agilent Model E4438C Signal Generator
- B. Mini-Circuit Model ZHL-42 Preamplifier
- C. Agilent Model E4416A Power Meter
- D. Agilent Model 8481H Power Sensor
- E. HT CP6100 20N Dual directional coupler
- F. Reference dipole antenna



| Validation Kit   | Frequency MHz | Target SAR 1g (250mW) | Target SAR 10g (250mW) | Measured SAR 1g | Measured SAR 10g | Measured Date |
|------------------|---------------|-----------------------|------------------------|-----------------|------------------|---------------|
| ET3DV6<br>SN1705 | 850<br>Head   | 2.6                   | 1.67                   | 2.48            | 1.57             | 2006-10-12    |
| ET3DV6<br>SN1705 | 850<br>Body   | 2.69                  | 1.74                   | 2.77            | 1.75             | 2006-10-19    |
| ET3DV6<br>SN1705 | 1900<br>Head  | 9.89                  | 5.16                   | 9.63            | 5.05             | 2006-10-16    |
| ET3DV6<br>SN1705 | 1900<br>Body  | 9.81                  | 5.22                   | 9.62            | 5.14             | 2006-10-18    |

Table1. Result System Validation

### 1.8 Tissue Simulant Fluid for the Frequency Band 850MHz and 1900MHZ

The dielectric properties for this body-simulant fluid were measured by using the HP Model 85070D Dielectric Probe (rates frequency band 200 MHz to 20 GHz) in conjunction with Agilent E5071B Network Analyzer (300 KHz-8500 MHz). The Conductivity ( $\sigma$ ) and Permittivity ( $\rho$ ) are listed in Table 2. For the SAR measurement given in this report. The temperature variation of the Tissue Simulant Fluid was 22°C.

| Frequency (MHz) | Tissue Type | Limit/Measured       | Permittivity ( $\rho$ ) | Conductivity ( $\sigma$ ) | Simulated Tissue Temp (°C) |
|-----------------|-------------|----------------------|-------------------------|---------------------------|----------------------------|
| 850             | Head        | Measured, 2006-10-12 | 41.85                   | 0.916                     | 22.5                       |
|                 |             | Recommended Limit    | 41.5±5%                 | 0.97±5%                   | 20-24                      |
|                 | Body        | Measured, 2006-10-19 | 54.66                   | 0.959                     | 22.5                       |
|                 |             | Recommended Limit    | 55.0±5%                 | 1.05±5%                   | 20-24                      |
| 1900            | Head        | Measured, 2006-10-16 | 38.53                   | 1.443                     | 22.3                       |
|                 |             | Recommended Limit    | 40.0±5%                 | 1.40±5%                   | 20-24                      |
|                 | Body        | Measured, 2006-10-18 | 53.55                   | 1.564                     | 22.6                       |
|                 |             | Recommended Limit    | 53.3±5%                 | 1.52±5%                   | 20-24                      |

Table 2. Dielectric parameters for the Frequency Band 850MHz&amp;1900MHZ

### **1.9 Test Standards and Limits**

According to FCC 47 CFR §2.1093(d) the limits to be used for evaluation are based generally on criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (SAR) in Section 4.2 of "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3KHz to 300GHz," ANSI/IEEE C95.1-1992, Copyright 1992 by the Institute of Electrical & Electronics Engineers, Inc., New York, New York 10071.

| <b>Human Exposure</b>       | <b>Uncontrolled Environment<br/>General Population</b> |
|-----------------------------|--------------------------------------------------------|
| Spatial Peak SAR<br>(Brain) | 1.60 mW/g<br>(averaged over a mass of 1g)              |

Table3. RF Exposure Limits

Notes:

1. Uncontrolled environments are defined as locations where there is potential exposure of individuals who have no knowledge or control of their potential exposure.

## 2. Summary of Results

| Frequency Band(MHz) | EUT position                      | Conducted Output Power (dBm) | 1g Avg. (mW/g) | Power Drift | Amb. Temp (°C) | Verdict |
|---------------------|-----------------------------------|------------------------------|----------------|-------------|----------------|---------|
| GSM 850             | LeftHandSide Cheek, Low Channel   | 32.0                         | 1.03           | -0.114      | 22             | PASS    |
|                     | LeftHandSide Cheek, Mid Channel   | 32.0                         | 1.09           | -0.187      | 22             | PASS    |
|                     | LeftHandSide Cheek, High Channel  | 31.9                         | 0.793          | -0.010      | 22             | PASS    |
|                     | LeftHandSide Tilt, Low Channel    | 32.0                         | 0.684          | -0.095      | 22             | PASS    |
|                     | LeftHandSide Tilt, Mid Channel    | 32.0                         | 0.789          | -0.111      | 22             | PASS    |
|                     | LeftHandSide Tilt, High Channel   | 31.9                         | 0.536          | -0.077      | 22             | PASS    |
|                     | RightHandSide Cheek, Low Channel  | 32.0                         | 1.06           | -0.078      | 22             | PASS    |
|                     | RightHandSide Cheek, Mid Channel  | 32.0                         | 1.12           | 0.014       | 22             | PASS    |
|                     | RightHandSide Cheek, High Channel | 31.9                         | 0.800          | -0.012      | 22             | PASS    |
|                     | RightHandSide Tilt, Low Channel   | 32.0                         | 0.764          | -0.125      | 22             | PASS    |
|                     | RightHandSide Tilt, Mid Channel   | 32.0                         | 0.863          | -0.094      | 22             | PASS    |
|                     | RightHandSide Tilt, High Channel  | 31.9                         | 0.582          | 0.045       | 22             | PASS    |
|                     | BodyWorn, Low Channel             | 32.0                         | 0.722          | -0.111      | 22             | PASS    |
|                     | BodyWorn, Mid Channel             | 32.0                         | 0.574          | -0.028      | 22             | PASS    |
|                     | BodyWorn, High Channel            | 31.9                         | 0.443          | -0.020      | 22             | PASS    |
| GSM 1900            | LeftHandSide Cheek, Low Channel   | 29.5                         | 0.384          | -0.057      | 22             | PASS    |
|                     | LeftHandSide Cheek, Mid Channel   | 29.8                         | 0.443          | -0.133      | 22             | PASS    |
|                     | LeftHandSide Cheek, High Channel  | 29.5                         | 0.382          | 0.029       | 22             | PASS    |
|                     | LeftHandSide Tilt, Low Channel    | 29.5                         | 0.525          | 0.013       | 22             | PASS    |
|                     | LeftHandSide Tilt, Mid Channel    | 29.8                         | 0.614          | -0.033      | 22             | PASS    |
|                     | LeftHandSide Tilt, High Channel   | 29.5                         | 0.544          | 0.014       | 22             | PASS    |

|  |                                   |      |       |        |    |      |
|--|-----------------------------------|------|-------|--------|----|------|
|  | RightHandSide Cheek, Low Channel  | 29.5 | 0.534 | 0.010  | 22 | PASS |
|  | RightHandSide Cheek, Mid Channel  | 29.8 | 0.648 | -0.048 | 22 | PASS |
|  | RightHandSide Cheek, High Channel | 29.5 | 0.597 | 0.001  | 22 | PASS |
|  | RightHandSide Tilt, Low Channel   | 29.5 | 0.608 | 0.002  | 22 | PASS |
|  | RightHandSide Tilt, Mid Channel   | 29.8 | 0.757 | -0.015 | 22 | PASS |
|  | RightHandSide Tilt, High Channel  | 29.5 | 0.678 | 0.037  | 22 | PASS |
|  | BodyWorn, Low Channel             | 29.5 | 0.372 | -0.163 | 22 | PASS |
|  | BodyWorn, Mid Channel             | 29.8 | 0.521 | -0.013 | 22 | PASS |
|  | BodyWorn, High Channel            | 29.5 | 0.535 | 0.025  | 22 | PASS |

## Maximum Values

| Frequency Band(MHz) | EUT position                     | Conducted Output Power (dBm) | 1g Average (W/Kg) | Power Drift (dB) | Amb. Temp (°C) | Verdict |
|---------------------|----------------------------------|------------------------------|-------------------|------------------|----------------|---------|
| 850                 | LeftHandSide Cheek, Mid Channel  | 32.0                         | 1.09              | -0.187           | 22             | PASS    |
|                     | RightHandSide Cheek, Mid Channel | 32.0                         | 1.12              | 0.014            | 22             | PASS    |
|                     | BodyWorn, Low Channel            | 32.0                         | 0.722             | -0.111           | 22             | PASS    |
| 1900                | LeftHandSide Tilt, Mid Channel   | 29.8                         | 0.614             | -0.033           | 22             | PASS    |
|                     | RightHandSide Tilt, Mid Channel  | 29.8                         | 0.757             | -0.015           | 22             | PASS    |
|                     | BodyWorn, High Channel           | 29.5                         | 0.535             | 0.025            | 22             | PASS    |

Note:

1. In GSM850 band, the low, middle and high channels are CH128/824.2MHz, CH189/836.4MHz and CH251/848.8MHz separately.
2. In PCS1900 band, the low, middle and high channels are CH512/1805.2MHz, CH661/1880.0MHz and CH810/1909.8MHz separately.
3. For the Bodyworn measurements the sample was only placed with the antenna toward the phantom since this position delivers the highest SAR values.
4. For the Bodyworn measurements, the distance from the sample to the phantom is 1.5 cm.

### 3. Instruments List

| Instrument                               | Model          | Serial number   | NO.         | Date of last Calibration |
|------------------------------------------|----------------|-----------------|-------------|--------------------------|
| Desktop PC                               | COMPAQ EVO     | N/A             | GSM-SAR-025 | N/A                      |
| Dasy 4 software                          | V 4.6 build 23 | N/A             | GSM-SAR-001 | N/A                      |
| Probe                                    | ET3DV6         | 1705            | GSM-SAR-034 | 2005.10.24               |
| DAE                                      | DAE3           | 516             | GSM-SAR-023 | 2006.03.08               |
| Phantom                                  | SAM 12         | TP-1283         | GSM-SAR-005 | N/A                      |
| Robot                                    | RX90L          | F03/5V32A1/A01  | GSM-SAR-008 | N/A                      |
| Dielectric probe kit                     | 85070D         | US01440168      | GSM-SAR-016 | 2005.12.19               |
| Agilent network analyzer                 | E5071B         | MY42100549      | GSM-SAR-007 | 2005.12.19               |
| Agilent signal generator                 | E4438          | 14438CATO-19719 | GSM-SAR-008 | 2005.12.19               |
| Mini-Circuits preamplifier               | ZHL-42         | D041905         | GSM-SAR-033 | 2006.04.19               |
| Agilent power meter                      | E4416A         | GB41292095      | GSM-SAR-010 | 2005.12.19               |
| Agilent power sensor                     | 8481H          | MY41091234      | GSM-SAR-011 | 2005.12.19               |
| HT CP6100 20N Coupling                   | 6100           | SCP301480120    | GSM-SAR-012 | 2005.12.19               |
| R&S Universal radio communication tester | CMU200         | 103633          | GSM-AUD-002 | 2005.12.20               |

## 4. Measurements

### 4.1 LeftHandSide-Cheek-GSM850-Low

Date/Time: 2006-10-12 14:39:58

Test Laboratory: SGS-GSM

GSM850-LeftHandSide-Cheek-Low

DUT: GSM10105244B; Type: Head; Serial: 011041000000340

Communication System: GSM850-GSM Mode; Frequency: 824.2 MHz; Duty Cycle: 1:8.3

Medium: HSL850-Head Medium parameters used:  $f = 824.2$  MHz;  $\sigma = 0.872$  mho/m;  $\epsilon_r = 41.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.81, 4.81, 4.81); Calibrated: 2005-10-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Cheek position - Low/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

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

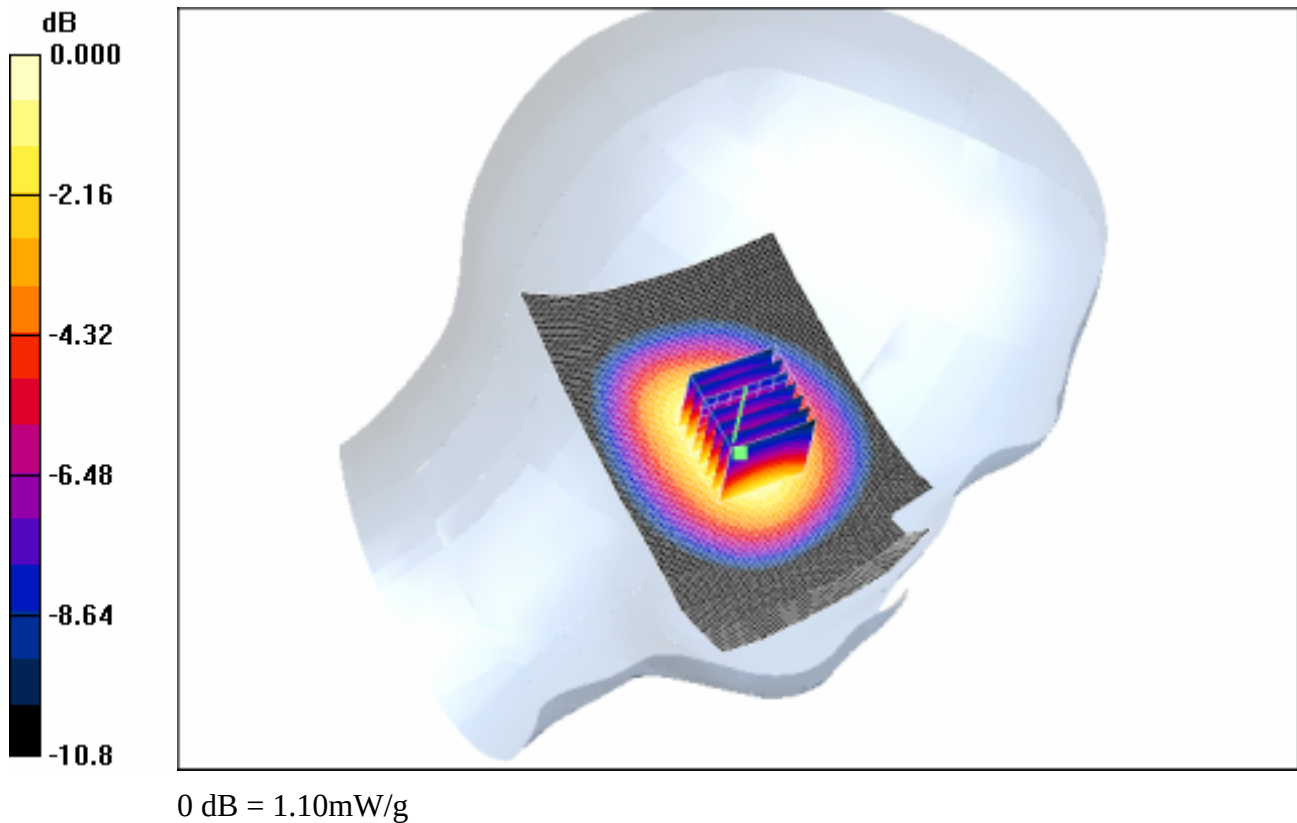
**Cheek position - Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 32.1 V/m; Power Drift = -0.114 dB

Peak SAR (extrapolated) = 1.37 W/kg

**SAR(1 g) = 1.03 mW/g; SAR(10 g) = 0.708 mW/g**

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



#### 4.2 LeftHandSide-Cheek-GSM850-Middle

Date/Time: 2006-10-12 13:39:52

Test Laboratory: SGS-GSM

GSM850-LeftHandSide-Cheek-Middle

DUT: GSM10105244B; Type: Head; Serial: 011041000000340

Communication System: GSM850-GSM Mode; Frequency: 836.4 MHz; Duty Cycle: 1:8.3

Medium: HSL850-Head Medium parameters used:  $f = 836.4 \text{ MHz}$ ;  $\sigma = 0.886 \text{ mho/m}$ ;  $\epsilon_r = 41.9$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.81, 4.81, 4.81); Calibrated: 2005-10-24

- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Cheek position - Mid/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.20 mW/g

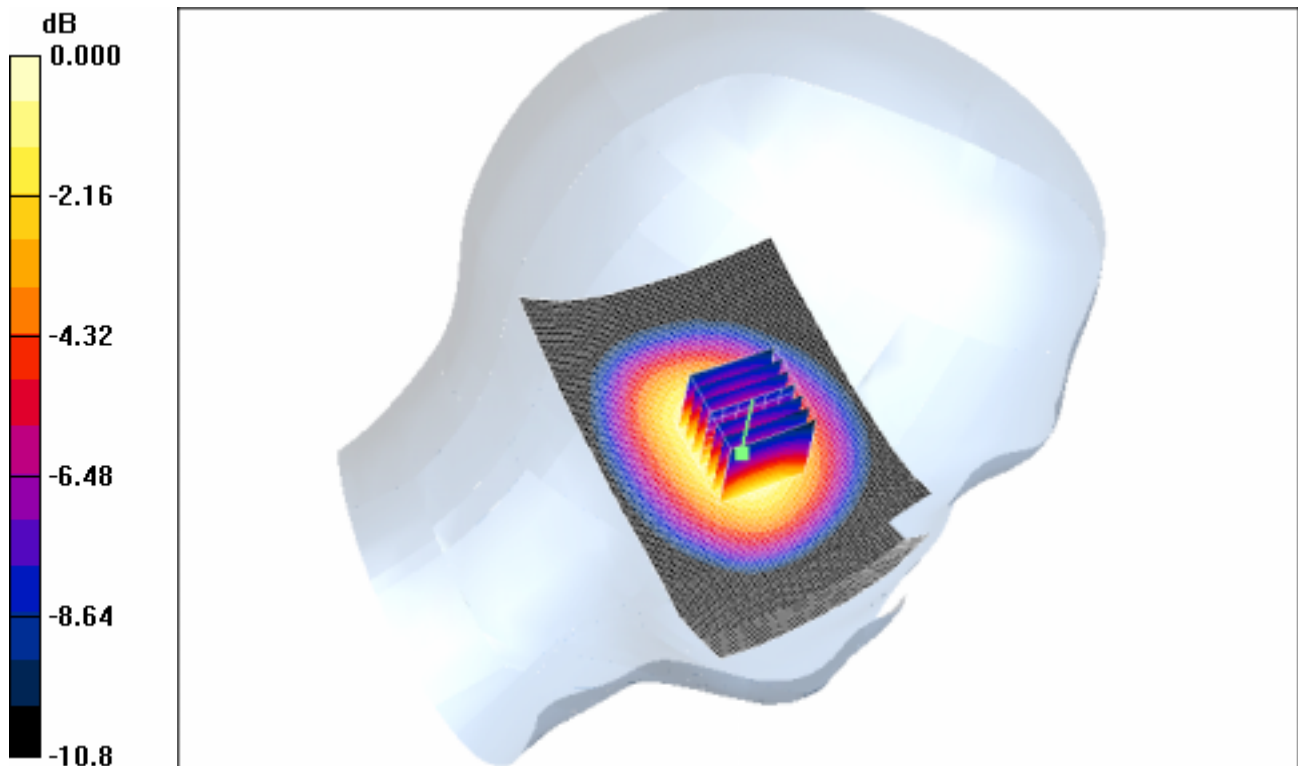
**Cheek position - Mid/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 33.6 V/m; Power Drift = -0.187 dB

Peak SAR (extrapolated) = 1.44 W/kg

**SAR(1 g) = 1.09 mW/g; SAR(10 g) = 0.754 mW/g**

Maximum value of SAR (measured) = 1.16 mW/g



0 dB = 1.16mW/g



#### **4.3 LeftHandSide-Cheek-GSM850-High**

Date/Time: 2006-10-12 15:15:32

Test Laboratory: SGS-GSM

#### **GSM850-LeftHandSide-Cheek-High**

DUT: GSM10105244B; Type: Head; Serial: 011041000000340

Communication System: GSM850-GSM Mode; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: HSL850-Head Medium parameters used:  $f = 848.8$  MHz;  $\sigma = 0.9$  mho/m;  $\epsilon_r = 42$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.81, 4.81, 4.81); Calibrated: 2005-10-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Cheek position - High/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.843 mW/g

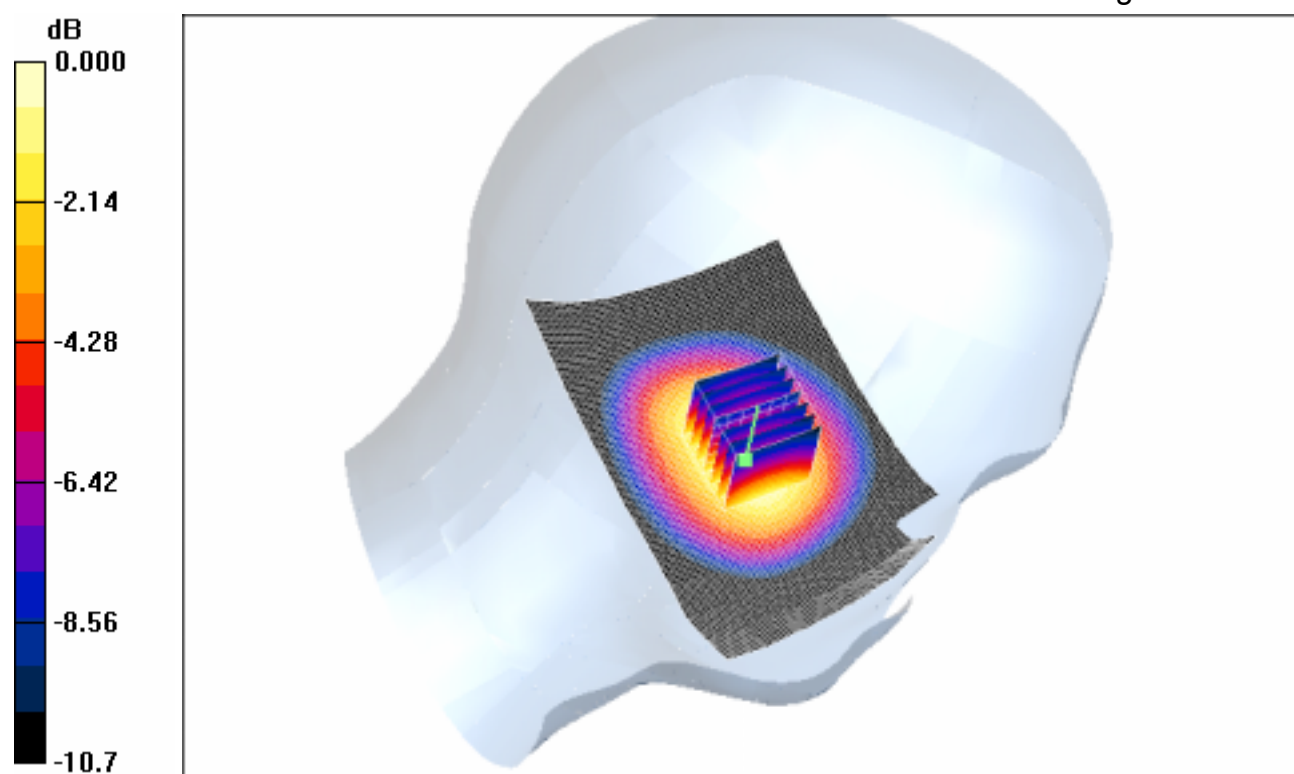
**Cheek position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 27.0 V/m; Power Drift = -0.010 dB

Peak SAR (extrapolated) = 1.06 W/kg

**SAR(1 g) = 0.793 mW/g; SAR(10 g) = 0.545 mW/g**

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



0 dB = 0.853mW/g

#### 4.4 LeftHandSide-Tilt-GSM850-Low

Date/Time: 2006-10-12 16:32:32

Test Laboratory: SGS-GSM

#### GSM850-LeftHandSide-Tilt-Low

DUT: GSM10105244B; Type: Head; Serial: 011041000000340

Communication System: GSM850-GSM Mode; Frequency: 824.2 MHz; Duty Cycle: 1:8.3

Medium: HSL850-Head Medium parameters used:  $f = 824.2$  MHz;  $\sigma = 0.872$  mho/m;  $\epsilon_r = 41.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.81, 4.81, 4.81); Calibrated: 2005-10-24

- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Tilt position - Low/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.767 mW/g

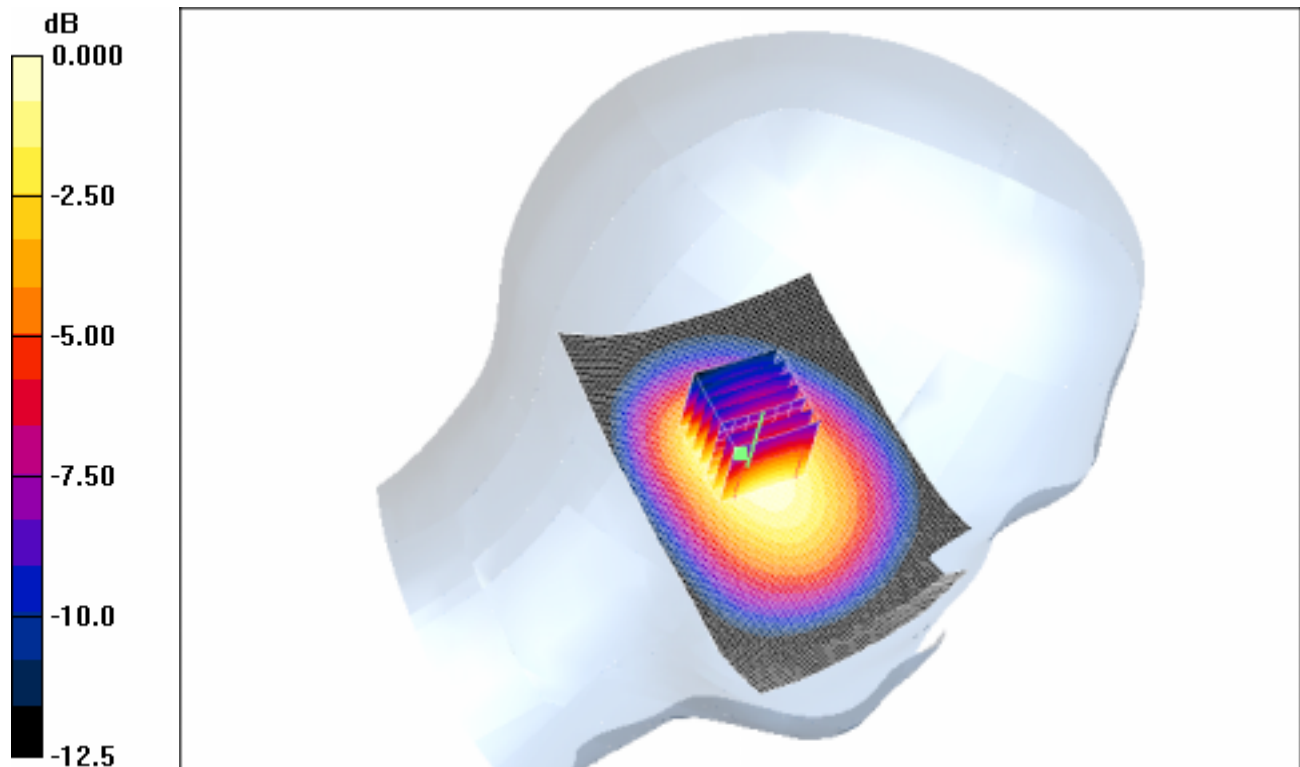
**Tilt position - Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 28.8 V/m; Power Drift = -0.095 dB

Peak SAR (extrapolated) = 0.929 W/kg

**SAR(1 g) = 0.684 mW/g; SAR(10 g) = 0.470 mW/g**

Maximum value of SAR (measured) = 0.738 mW/g



0 dB = 0.738mW/g

#### **4.5 LeftHandSide-Tilt-GSM850-Middle**

Date/Time: 2006-10-12 16:07:06

Test Laboratory: SGS-GSM

#### **GSM850-LeftHandSide-Tilt-Middle**

**DUT: GSM10105244B; Type: Head; Serial: 011041000000340**

Communication System: GSM850-GSM Mode; Frequency: 836.4 MHz; Duty Cycle: 1:8.3

Medium: HSL850-Head Medium parameters used:  $f = 836.4 \text{ MHz}$ ;  $\sigma = 0.886 \text{ mho/m}$ ;  $\epsilon_r = 41.9$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.81, 4.81, 4.81); Calibrated: 2005-10-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Tilt position - Middle/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.894 mW/g

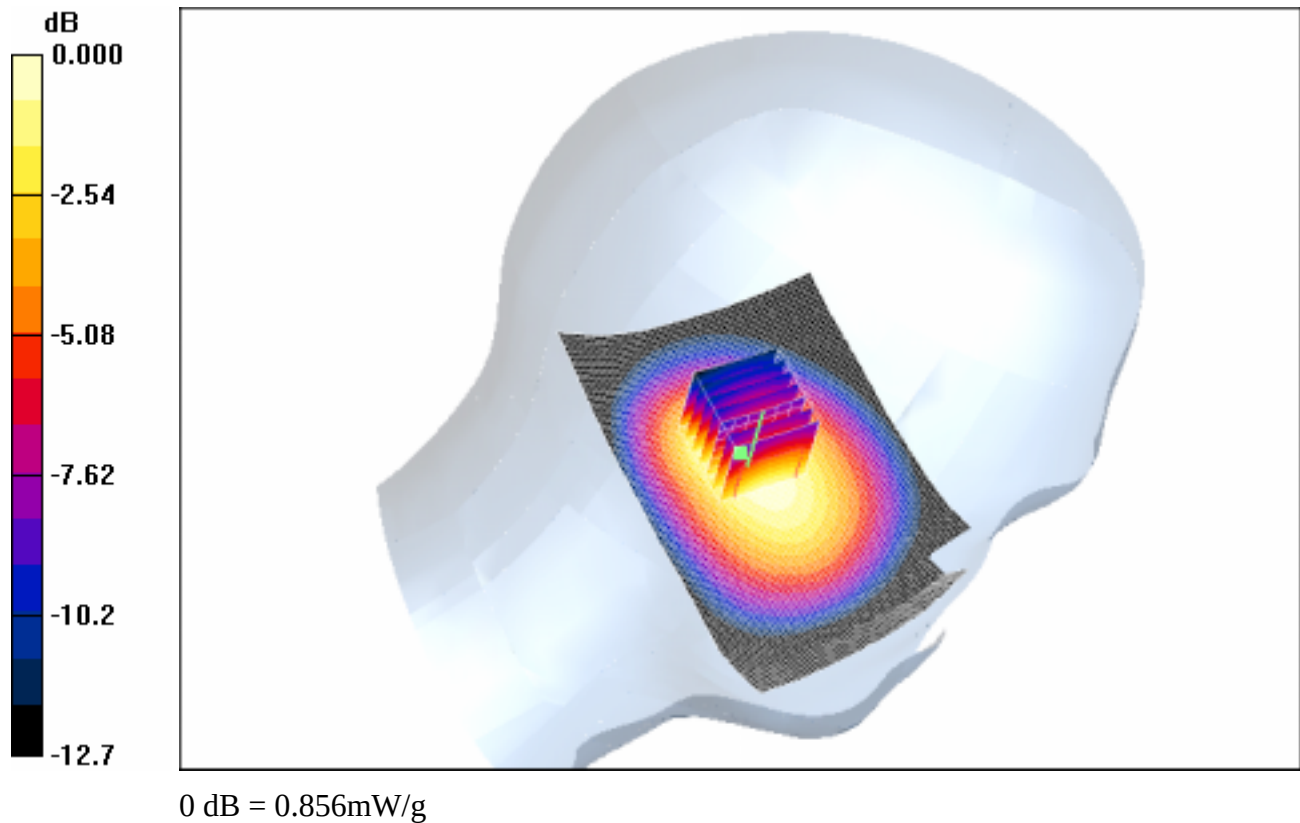
**Tilt position - Middle/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 30.7 V/m; Power Drift = -0.111 dB

Peak SAR (extrapolated) = 1.06 W/kg

**SAR(1 g) = 0.789 mW/g; SAR(10 g) = 0.543 mW/g**

Maximum value of SAR (measured) = 0.856 mW/g



#### 4.6 LeftHandSide-Tilt-GSM850-High

Date/Time: 2006-10-12 15:42:15

Test Laboratory: SGS-GSM

#### GSM850-LeftHandSide-Tilt-High

DUT: GSM10105244B; Type: Head; Serial: 011041000000340

Communication System: GSM850-GSM Mode; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: HSL850-Head Medium parameters used:  $f = 848.8 \text{ MHz}$ ;  $\sigma = 0.9 \text{ mho/m}$ ;  $\epsilon_r = 42$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.81, 4.81, 4.81); Calibrated: 2005-10-24

- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Tilt position - High/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.595 mW/g

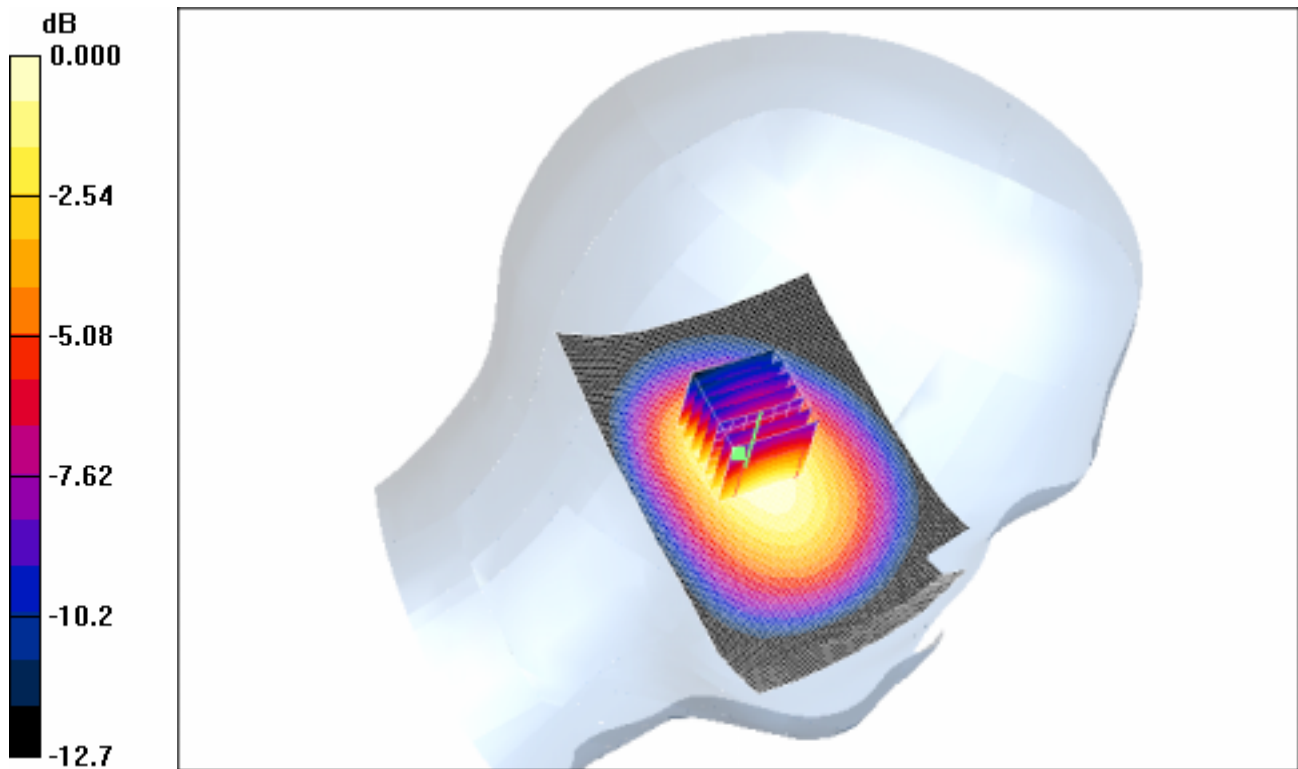
**Tilt position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 25.0 V/m; Power Drift = -0.077 dB

Peak SAR (extrapolated) = 0.711 W/kg

**SAR(1 g) = 0.536 mW/g; SAR(10 g) = 0.368 mW/g**

Maximum value of SAR (measured) = 0.576 mW/g



0 dB = 0.576mW/g

#### **4.7 RightHandSide-Cheek-GSM850-Low**

Date/Time: 2006-10-12 10:30:48

Test Laboratory: SGS-GSM

#### **GSM850-RightHandSide-Cheek-Low**

DUT: GSM10105244B; Type: Head; Serial: 011041000000340

Communication System: GSM850-GSM Mode; Frequency: 824.2 MHz; Duty Cycle: 1:8.3

Medium: HSL850-Head Medium parameters used:  $f = 824.2$  MHz;  $\sigma = 0.872$  mho/m;  $\epsilon_r = 41.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.81, 4.81, 4.81); Calibrated: 2005-10-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Cheek position - Low/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.16 mW/g

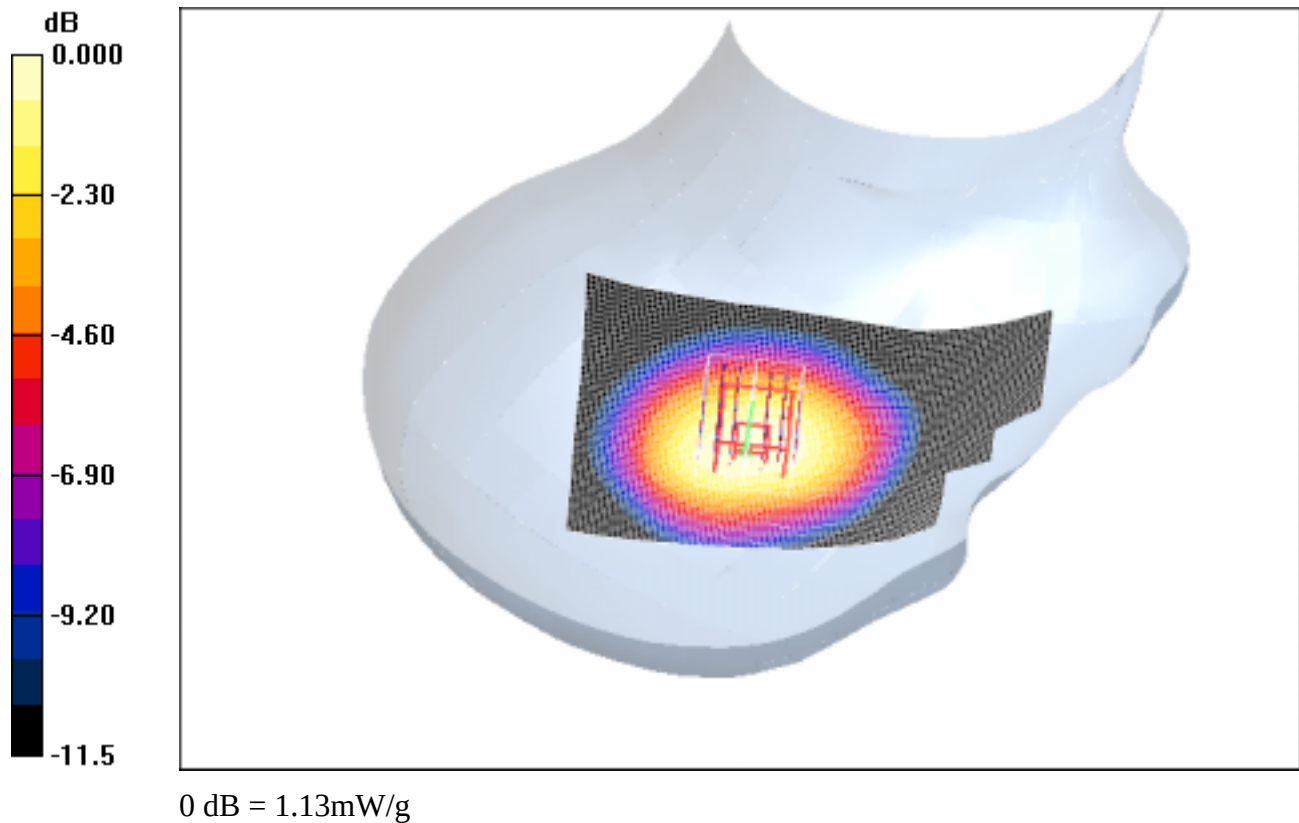
**Cheek position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 33.9 V/m; Power Drift = -0.078 dB

Peak SAR (extrapolated) = 1.46 W/kg

**SAR(1 g) = 1.06 mW/g; SAR(10 g) = 0.720 mW/g**

Maximum value of SAR (measured) = 1.13 mW/g



#### 4.8 RightHandSide-Cheek-GSM850-Middle

Date/Time: 2006-10-12 10:04:46

Test Laboratory: SGS-GSM

#### GSM850-RightHandSide-Cheek-Middle

DUT: GSM10105244B; Type: Head; Serial: 011041000000340

Communication System: GSM850-GSM Mode; Frequency: 836.4 MHz; Duty Cycle: 1:8.3

Medium: HSL850-Head Medium parameters used:  $f = 836.4 \text{ MHz}$ ;  $\sigma = 0.886 \text{ mho/m}$ ;  $\epsilon_r = 41.9$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.81, 4.81, 4.81); Calibrated: 2005-10-24



- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Cheek position - Middle/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.24 mW/g

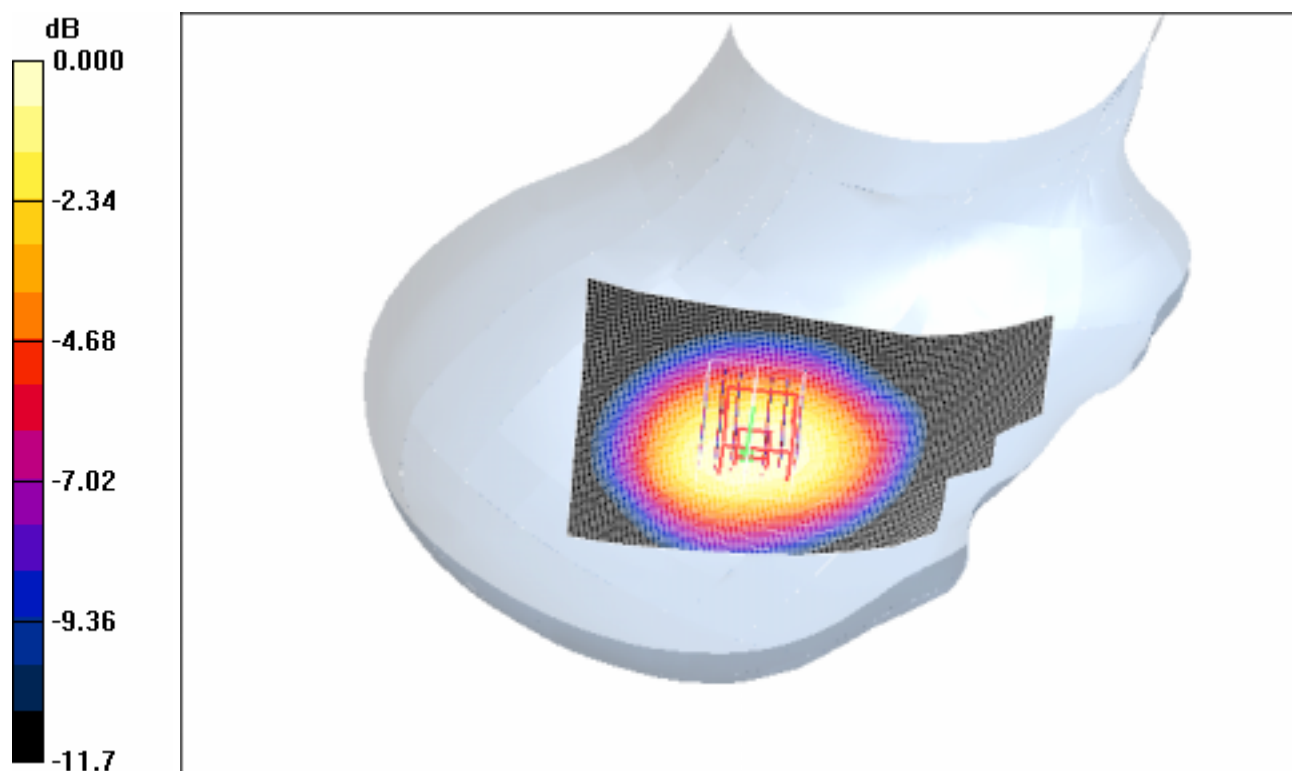
**Cheek position - Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 34.2 V/m; Power Drift = 0.014 dB

Peak SAR (extrapolated) = 1.53 W/kg

**SAR(1 g) = 1.12 mW/g; SAR(10 g) = 0.768 mW/g**

Maximum value of SAR (measured) = 1.20 mW/g



0 dB = 1.20mW/g

#### **4.9 RightHandSide-Cheek-GSM850-High**

Date/Time: 2006-10-12 11:07:07

Test Laboratory: SGS-GSM

#### **GSM850-RightHandSide-Cheek-High**

DUT: GSM10105244B; Type: Head; Serial: 011041000000340

Communication System: GSM850-GSM Mode; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: HSL850-Head Medium parameters used:  $f = 848.8 \text{ MHz}$ ;  $\sigma = 0.9 \text{ mho/m}$ ;  $\epsilon_r = 42$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.81, 4.81, 4.81); Calibrated: 2005-10-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Cheek position - High/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.874 mW/g

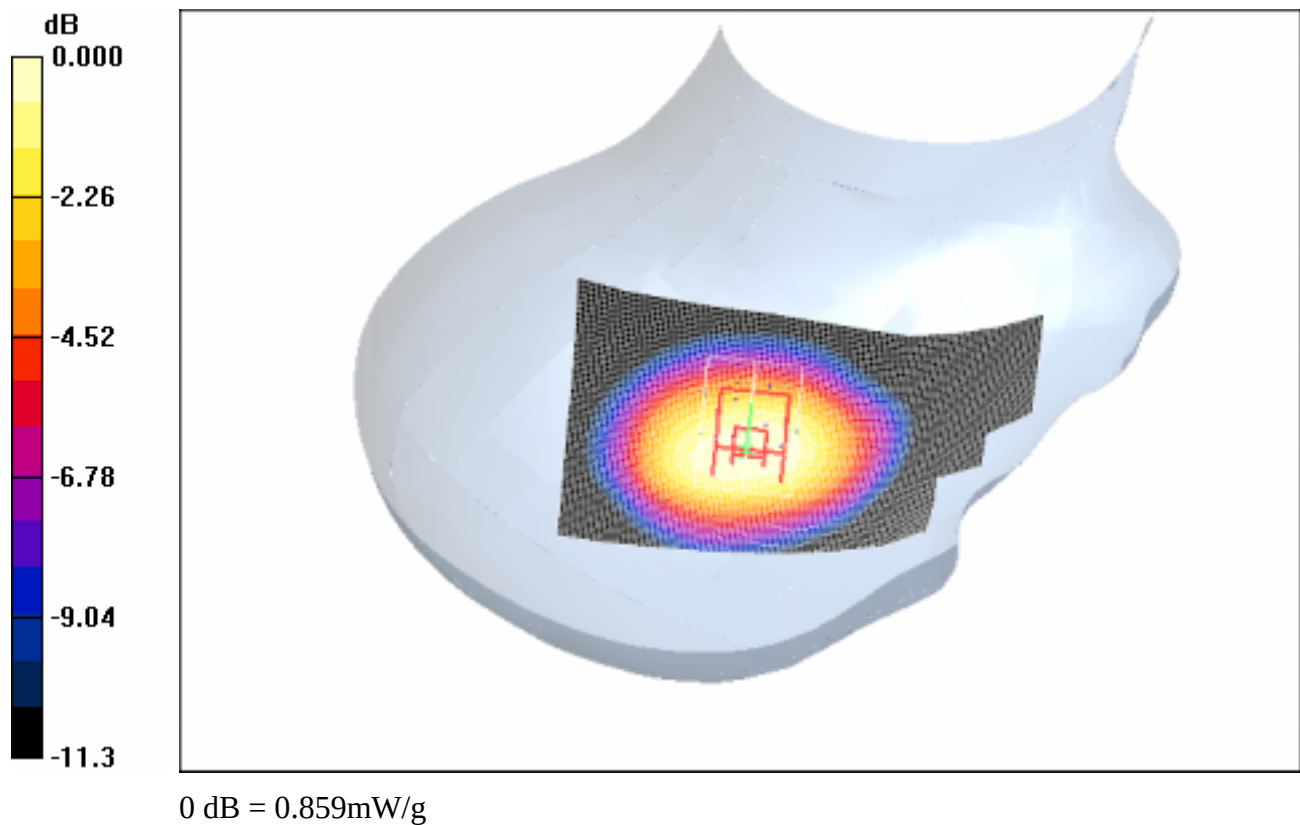
**Cheek position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 28.7 V/m; Power Drift = -0.012 dB

Peak SAR (extrapolated) = 1.08 W/kg

**SAR(1 g) = 0.800 mW/g; SAR(10 g) = 0.548 mW/g**

Maximum value of SAR (measured) = 0.859 mW/g



#### **4.10 RightHandSide-Tilt-GSM850-Low**

Date/Time: 2006-10-12 12:21:10

Test Laboratory: SGS-GSM

#### **GSM850-RightHandSide-Tilt-Low**

DUT: GSM10105244B; Type: Head; Serial: 011041000000340

Communication System: GSM850-GSM Mode; Frequency: 824.2 MHz; Duty Cycle: 1:8.3

Medium: HSL850-Head Medium parameters used:  $f = 824.2 \text{ MHz}$ ;  $\sigma = 0.872 \text{ mho/m}$ ;  $\epsilon_r = 41.9$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.81, 4.81, 4.81); Calibrated: 2005-10-24

- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Tilt position - Low/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.872 mW/g

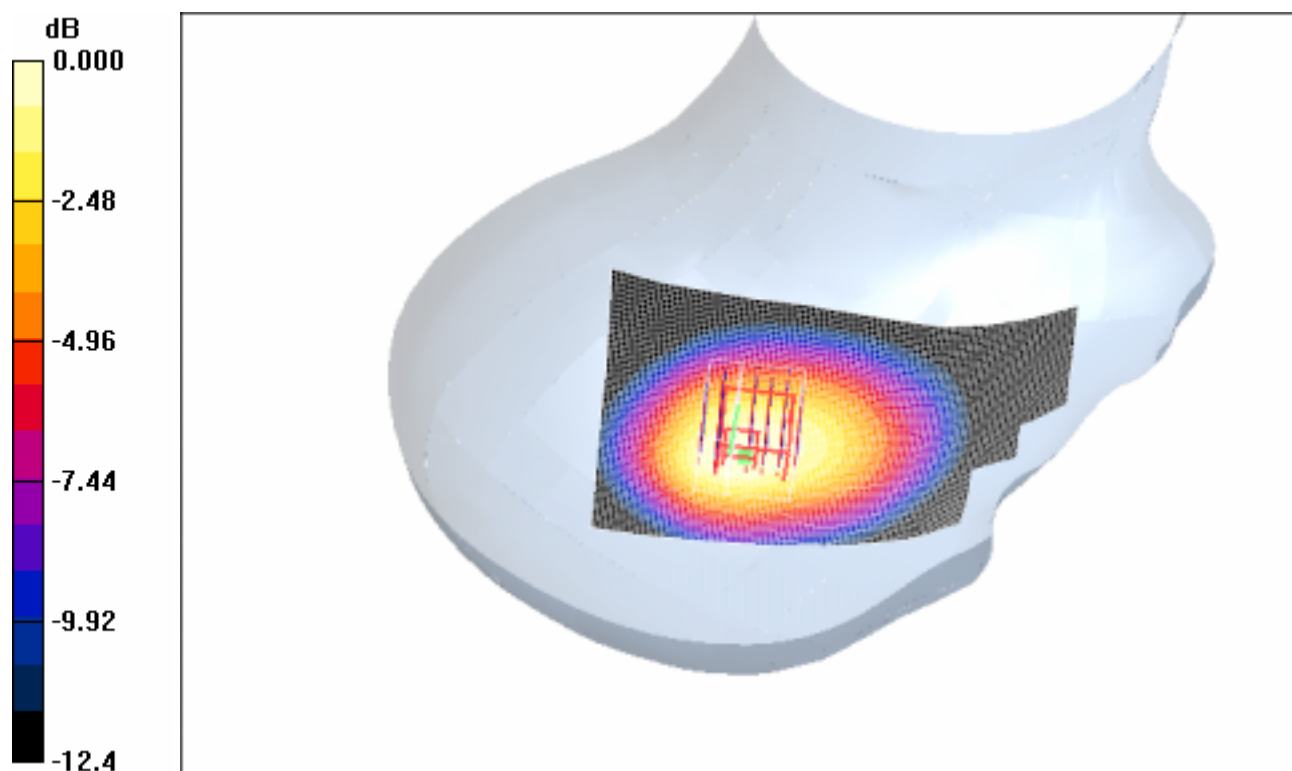
**Tilt position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 29.7 V/m; Power Drift = -0.125 dB

Peak SAR (extrapolated) = 1.13 W/kg

**SAR(1 g) = 0.764 mW/g; SAR(10 g) = 0.506 mW/g**

Maximum value of SAR (measured) = 0.821 mW/g



0 dB = 0.821mW/g

#### **4.11 RightHandSide-Tilt-GSM850-Middle**

Date/Time: 2006-10-12 11:34:37

Test Laboratory: SGS-GSM

#### **GSM850-RightHandSide-Tilt-Middle**

DUT: GSM10105244B; Type: Head; Serial: 011041000000340

Communication System: GSM850-GSM Mode; Frequency: 836.4 MHz; Duty Cycle: 1:8.3

Medium: HSL850-Head Medium parameters used:  $f = 836.4 \text{ MHz}$ ;  $\sigma = 0.886 \text{ mho/m}$ ;  $\epsilon_r = 41.9$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.81, 4.81, 4.81); Calibrated: 2005-10-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Tilt position - Middle/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.958 mW/g

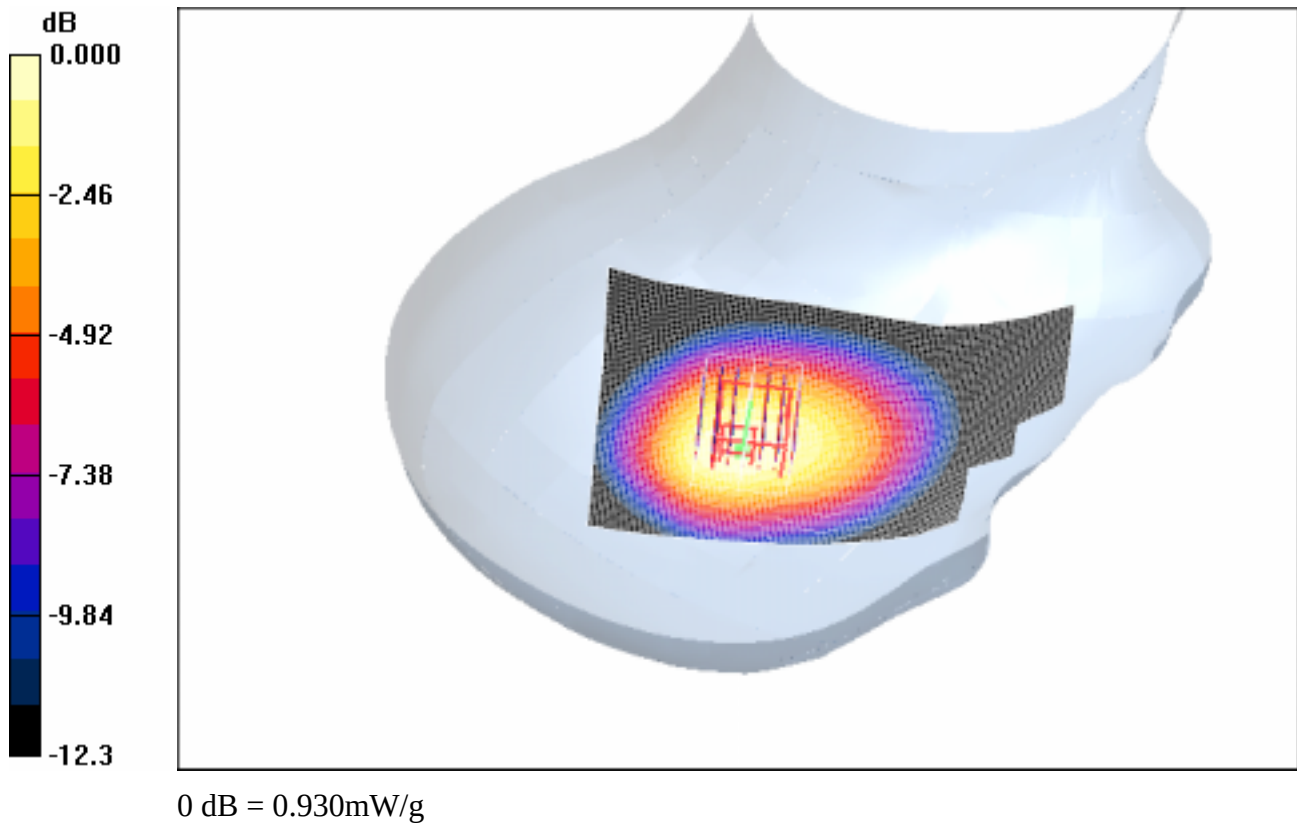
**Tilt position - Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 31.7 V/m; Power Drift = -0.094 dB

Peak SAR (extrapolated) = 1.27 W/kg

**SAR(1 g) = 0.863 mW/g; SAR(10 g) = 0.572 mW/g**

Maximum value of SAR (measured) = 0.930 mW/g



#### 4.12 RightHandSide-Tilt-GSM850-High

Date/Time: 2006-10-12 13:02:50

Test Laboratory: SGS-GSM

GSM850-RightHandSide-Tilt-High

DUT: GSM10105244B; Type: Head; Serial: 011041000000340

Communication System: GSM850-GSM Mode; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: HSL850-Head Medium parameters used:  $f = 848.8 \text{ MHz}$ ;  $\sigma = 0.9 \text{ mho/m}$ ;  $\epsilon_r = 42$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.81, 4.81, 4.81); Calibrated: 2005-10-24

- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Tilt position - High/Area Scan (61x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.647 mW/g

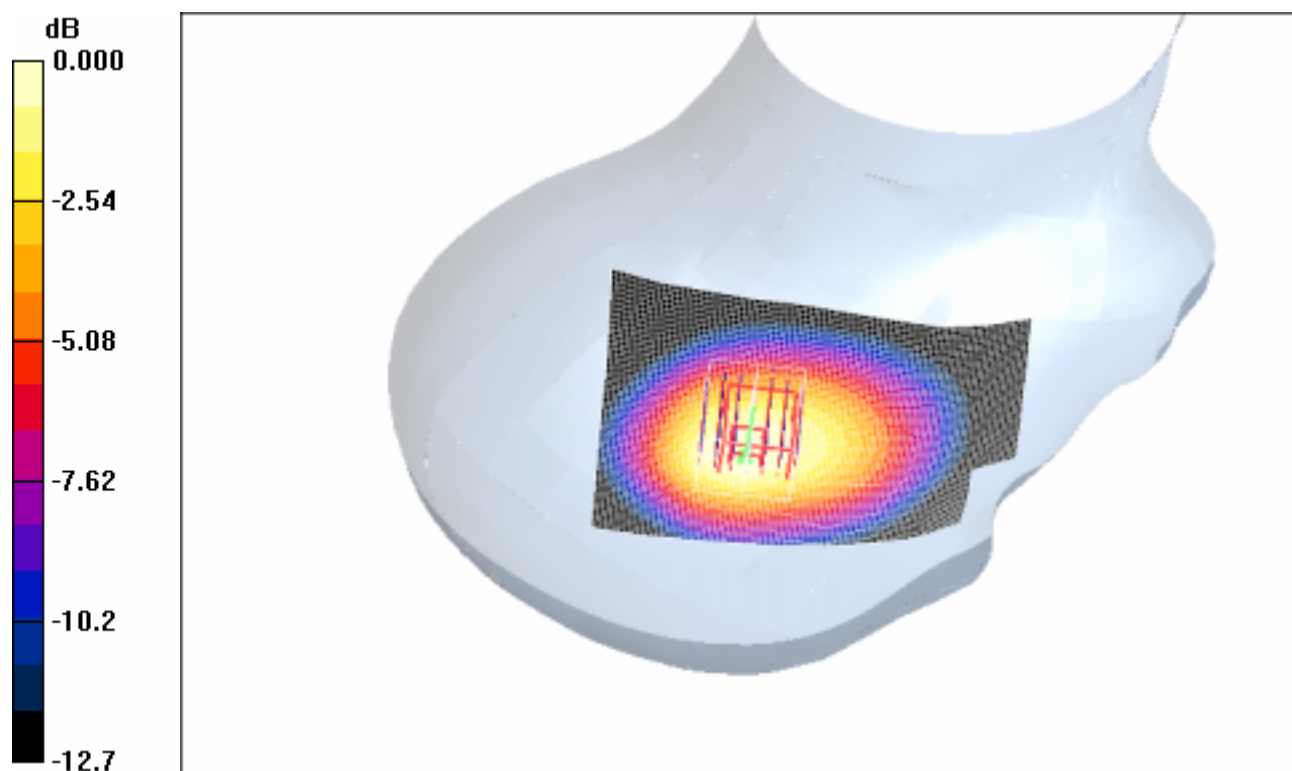
**Tilt position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 25.4 V/m; Power Drift = 0.045 dB

Peak SAR (extrapolated) = 0.847 W/kg

**SAR(1 g) = 0.582 mW/g; SAR(10 g) = 0.386 mW/g**

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



0 dB = 0.630mW/g

#### **4.13 Body-Worn-GSM850-Low**

Date/Time: 2006-10-19 16:47:37

Test Laboratory: SGS-GSM

#### **GSM850-Body-Worn-Low-1.5cm**

DUT: GSM10105244B; Type: Head; Serial: 011041000000340

Communication System: GSM850-GSM Mode; Frequency: 824.2 MHz; Duty Cycle: 1:8.3

Medium: 850-Body Medium parameters used:  $f = 824.2$  MHz;  $\sigma = 0.929$  mho/m;  $\epsilon_r = 54.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(5.99, 5.99, 5.99); Calibrated: 2005-10-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Body Worn - Low/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.838 mW/g

**Body Worn - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

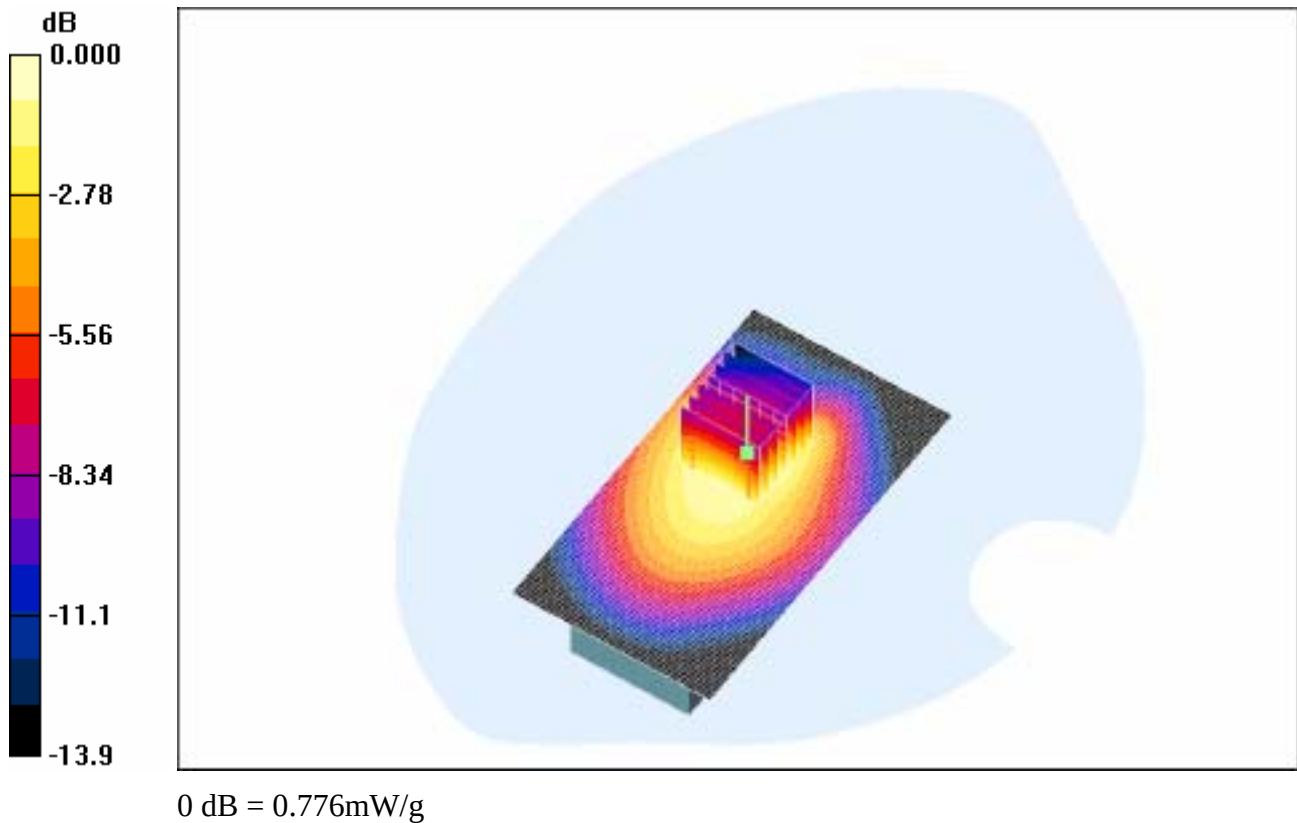
Reference Value = 24.5 V/m; Power Drift = -0.111 dB

Peak SAR (extrapolated) = 1.12 W/kg

**SAR(1 g) = 0.722 mW/g; SAR(10 g) = 0.476 mW/g**

Maximum value of SAR (measured) = 0.776 mW/g





#### 4.14 Body-Worn-GSM850-Middle

Date/Time: 2006-10-19 17:14:24

Test Laboratory: SGS-GSM

GSM850-Body-Worn-Middle-1.5cm

DUT: GSM10105244B; Type: Head; Serial: 011041000000340

Communication System: GSM850-GSM Mode; Frequency: 836.4 MHz; Duty Cycle: 1:8.3

Medium: 850-Body Medium parameters used:  $f = 836.4 \text{ MHz}$ ;  $\sigma = 0.943 \text{ mho/m}$ ;  $\epsilon_r = 54.7$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(5.99, 5.99, 5.99); Calibrated: 2005-10-24

- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Body Worn - Middle/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.657 mW/g

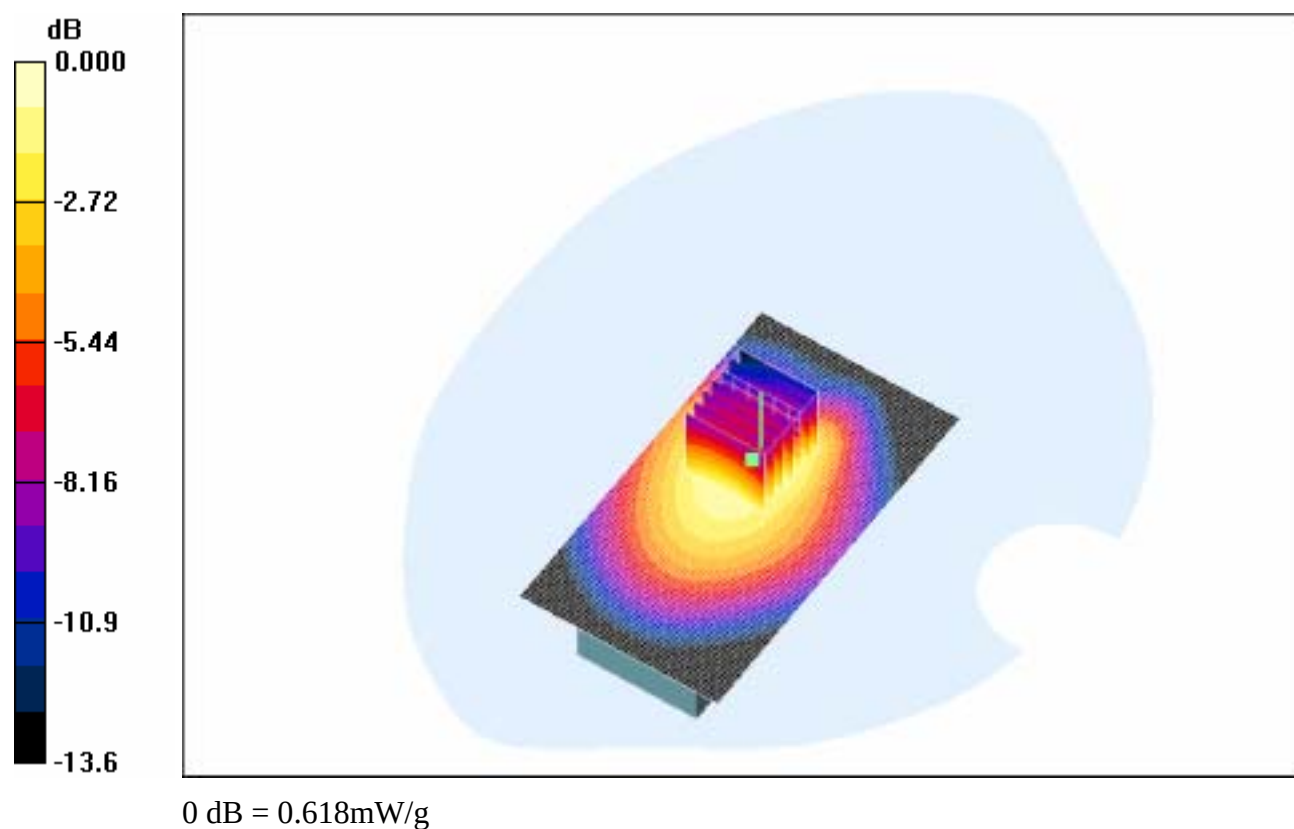
**Body Worn - Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 21.3 V/m; Power Drift = -0.028 dB

Peak SAR (extrapolated) = 0.915 W/kg

**SAR(1 g) = 0.574 mW/g; SAR(10 g) = 0.375 mW/g**

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



#### **4.15 Body-Worn-GSM850-High**

Date/Time: 2006-10-19 17:39:53

Test Laboratory: SGS-GSM

#### **GSM850-Body-Worn-High-1.5cm**

DUT: GSM10105244B; Type: Head; Serial: 011041000000340

Communication System: GSM850-GSM Mode; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: 850-Body Medium parameters used:  $f = 848.8 \text{ MHz}$ ;  $\sigma = 0.956 \text{ mho/m}$ ;  $\epsilon_r = 54.7$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(5.99, 5.99, 5.99); Calibrated: 2005-10-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Body Worn - High/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.503 mW/g

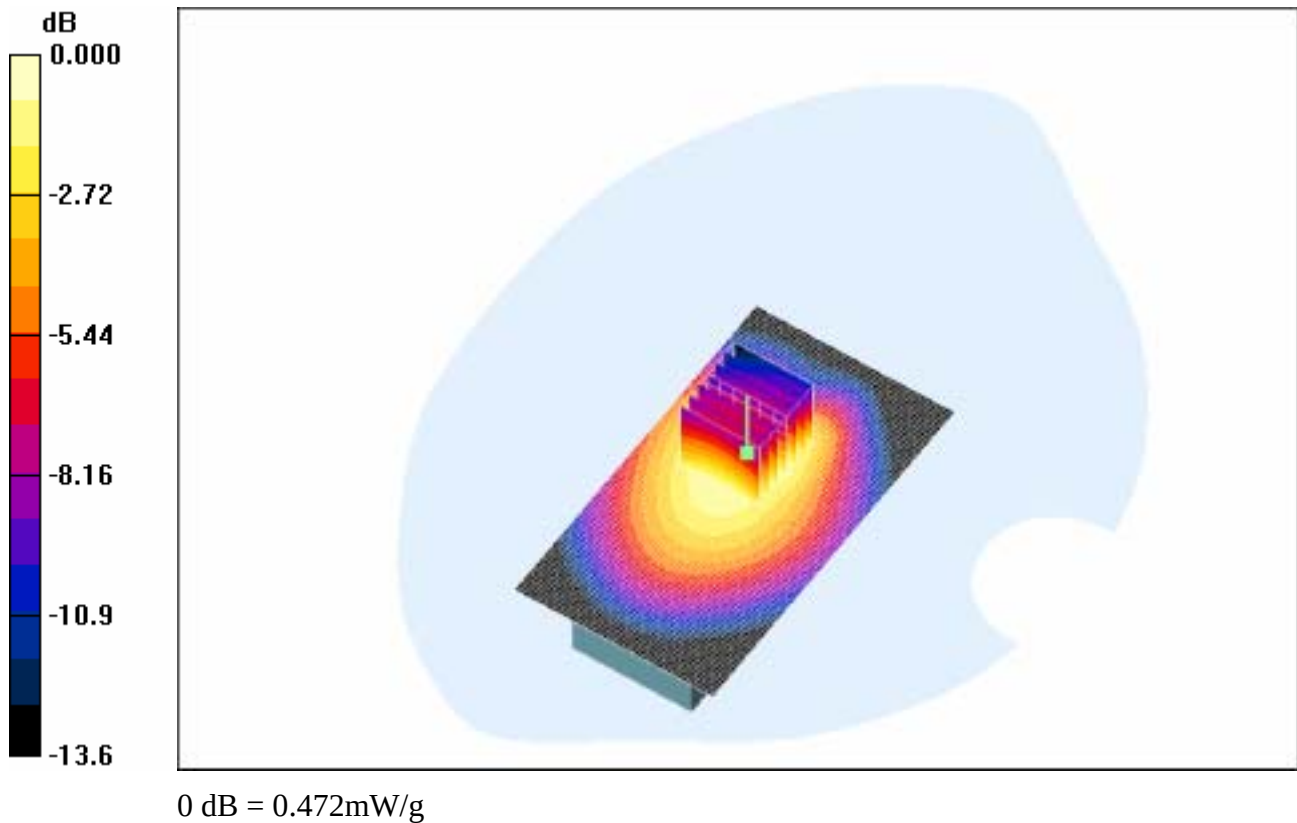
**Body Worn - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 18.4 V/m; Power Drift = -0.020 dB

Peak SAR (extrapolated) = 0.692 W/kg

**SAR(1 g) = 0.443 mW/g; SAR(10 g) = 0.289 mW/g**

Maximum value of SAR (measured) = 0.472 mW/g



#### **4.16 LeftHandSide-Cheek-PCS1900-Low**

Date/Time: 2006-10-16 14:33:11

Test Laboratory: SGS-GSM

PCS1900-LeftHandSide-Cheek-Low

DUT: GSM10105244B; Type: Head; Serial: 011041000000340

Communication System: PCS1900-GSM Mode; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3

Medium: HSL1900-Head Medium parameters used:  $f = 1850.2 \text{ MHz}$ ;  $\sigma = 1.41 \text{ mho/m}$ ;  $\epsilon_r = 38.7$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.81, 4.81, 4.81); Calibrated: 2005-10-24

- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Cheek position - Low/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.413 mW/g

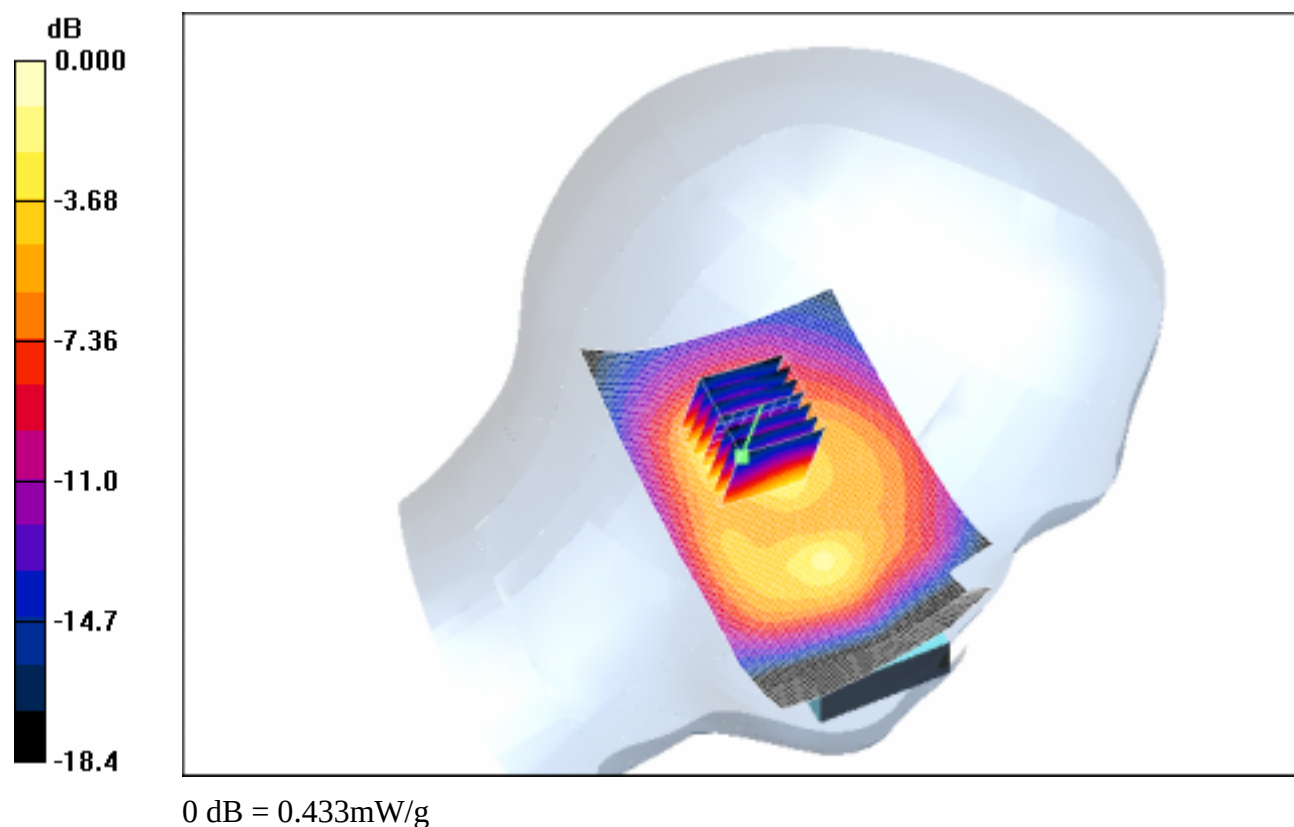
**Cheek position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 16.9 V/m; Power Drift = -0.057 dB

Peak SAR (extrapolated) = 0.678 W/kg

**SAR(1 g) = 0.384 mW/g; SAR(10 g) = 0.195 mW/g**

Maximum value of SAR (measured) = 0.433 mW/g



#### **4.17 LeftHandSide-Cheek-PCS1900-Middle**

Date/Time: 2006-10-16 14:05:16

Test Laboratory: SGS-GSM

#### **PCS1900-LeftHandSide-Cheek-Middle**

**DUT: GSM10105244B; Type: Head; Serial: 011041000000340**

Communication System: PCS1900-GSM Mode; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium: HSL1900-Head Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.44$  mho/m;  $\epsilon_r = 38.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.81, 4.81, 4.81); Calibrated: 2005-10-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Cheek position - Middle/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.481 mW/g

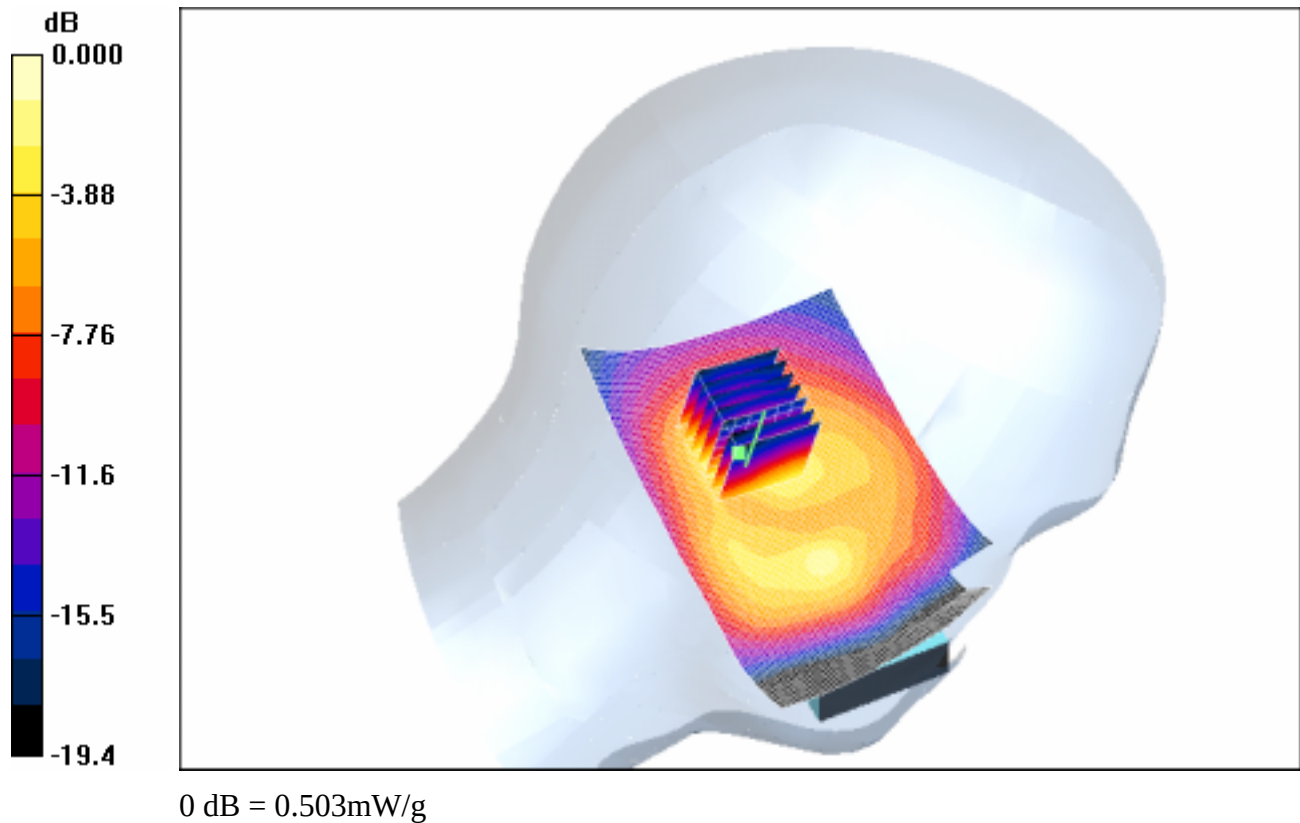
**Cheek position - Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 18.1 V/m; Power Drift = -0.133 dB

Peak SAR (extrapolated) = 0.793 W/kg

**SAR(1 g) = 0.443 mW/g; SAR(10 g) = 0.224 mW/g**

Maximum value of SAR (measured) = 0.503 mW/g



#### **4.18 LeftHandSide-Cheek-PCS1900-High**

Date/Time: 2006-10-16 14:57:33

Test Laboratory: SGS-GSM

PCS1900-LeftHandSide-Cheek-High

DUT: GSM10105244B; Type: Head; Serial: 011041000000340

Communication System: PCS1900-GSM Mode; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3

Medium: HSL1900-Head Medium parameters used:  $f = 1909.8 \text{ MHz}$ ;  $\sigma = 1.47 \text{ mho/m}$ ;  $\epsilon_r = 38.4$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.81, 4.81, 4.81); Calibrated: 2005-10-24

- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Cheek position - High/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.403 mW/g

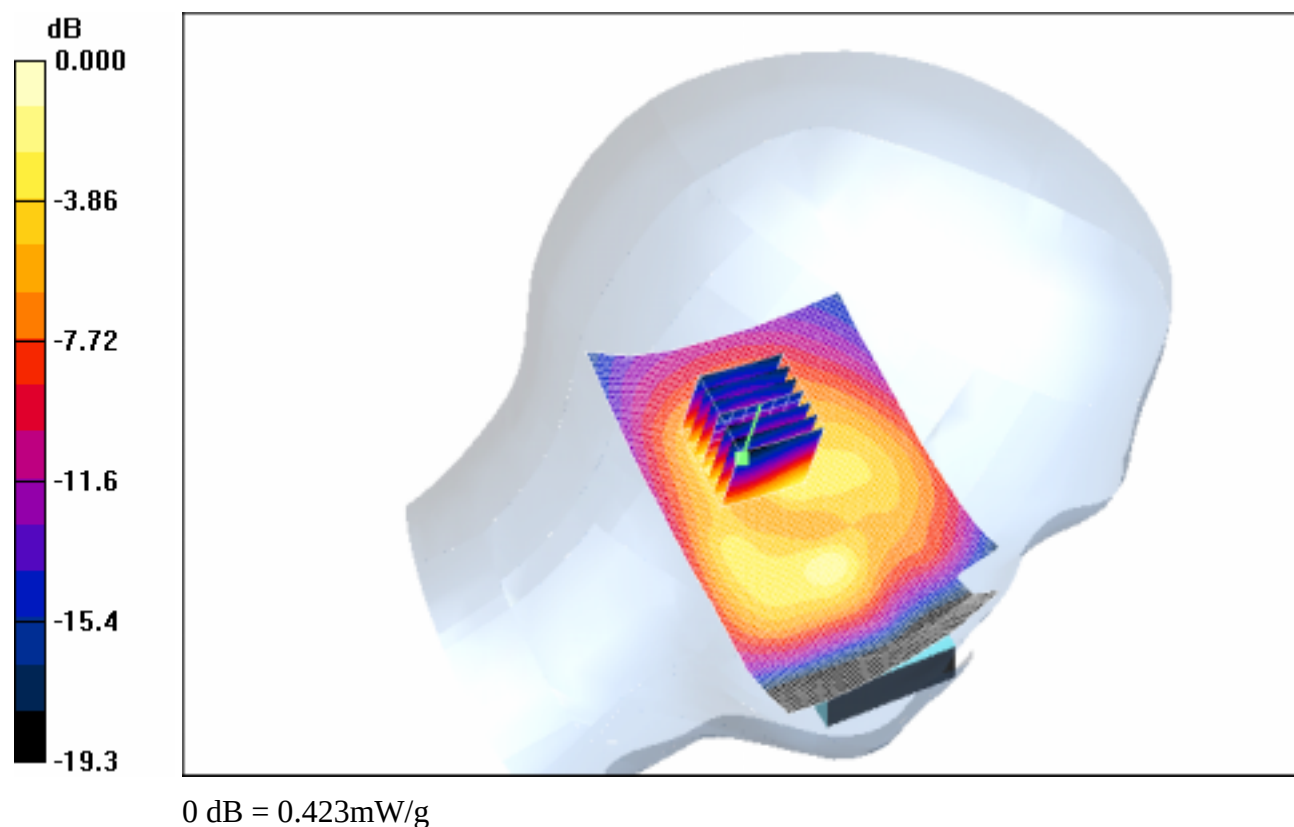
**Cheek position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 16.0 V/m; Power Drift = 0.029 dB

Peak SAR (extrapolated) = 0.704 W/kg

**SAR(1 g) = 0.382 mW/g; SAR(10 g) = 0.191 mW/g**

Maximum value of SAR (measured) = 0.423 mW/g





#### **4.19 LeftHandSide-Tilt-PCS1900-Low**

Date/Time: 2006-10-16 15:57:28

Test Laboratory: SGS-GSM

#### **PCS1900-LeftHandSide-Tilt-Low**

DUT: GSM10105244B; Type: Head; Serial: 011041000000340

Communication System: PCS1900-GSM Mode; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3

Medium: HSL1900-Head Medium parameters used:  $f = 1850.2 \text{ MHz}$ ;  $\sigma = 1.41 \text{ mho/m}$ ;  $\epsilon_r = 38.7$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.81, 4.81, 4.81); Calibrated: 2005-10-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Tilt position - Low/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.595 mW/g

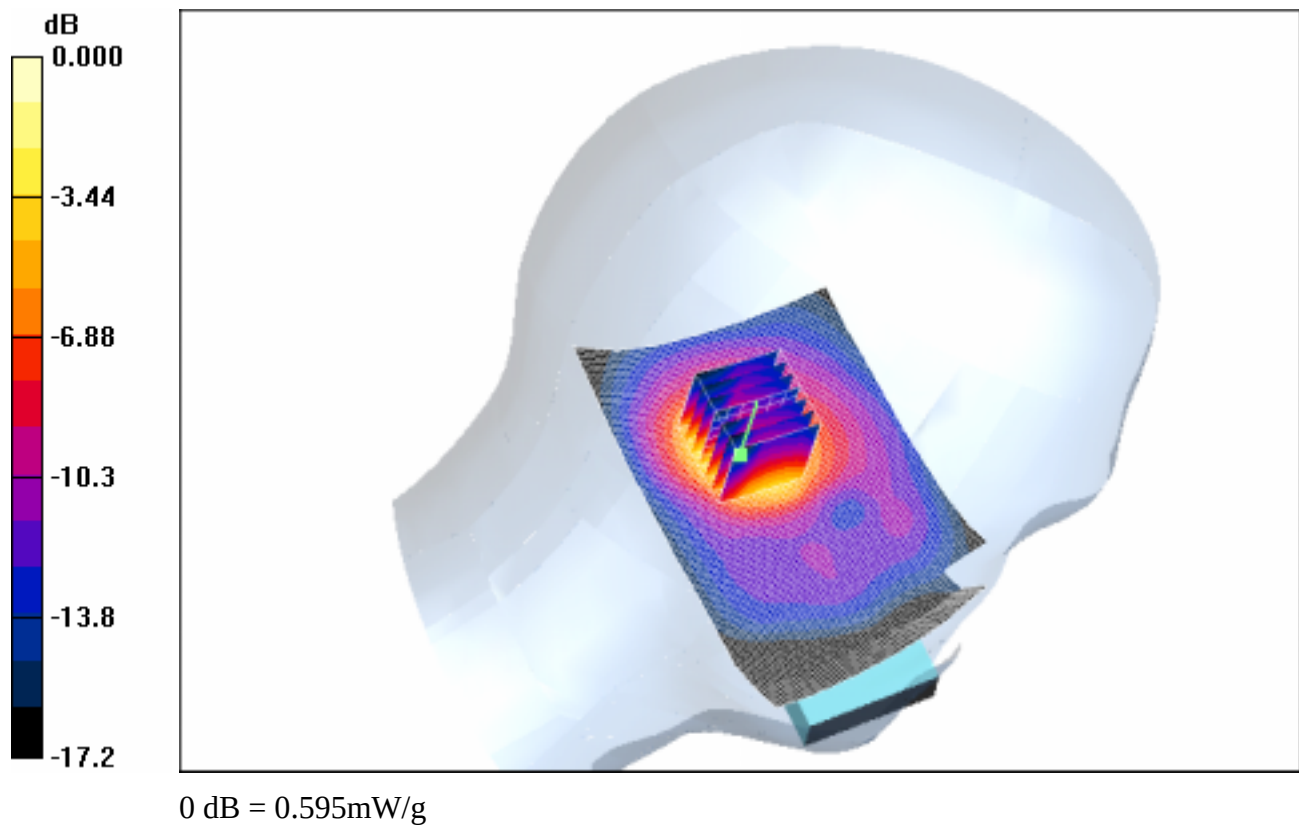
**Tilt position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19.9 V/m; Power Drift = 0.013 dB

Peak SAR (extrapolated) = 0.911 W/kg

**SAR(1 g) = 0.525 mW/g; SAR(10 g) = 0.274 mW/g**

Maximum value of SAR (measured) = 0.595 mW/g



#### **4.20 LeftHandSide-Tilt-PCS1900-Middle**

Date/Time: 2006-10-16 16:24:45

Test Laboratory: SGS-GSM

PCS1900-LeftHandSide-Tilt-Middle

DUT: GSM10105244B; Type: Head; Serial: 011041000000340

Communication System: PCS1900-GSM Mode; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium: HSL1900-Head Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.44$  mho/m;  $\epsilon_r = 38.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.81, 4.81, 4.81); Calibrated: 2005-10-24

- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Tilt position - Middle/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.709 mW/g

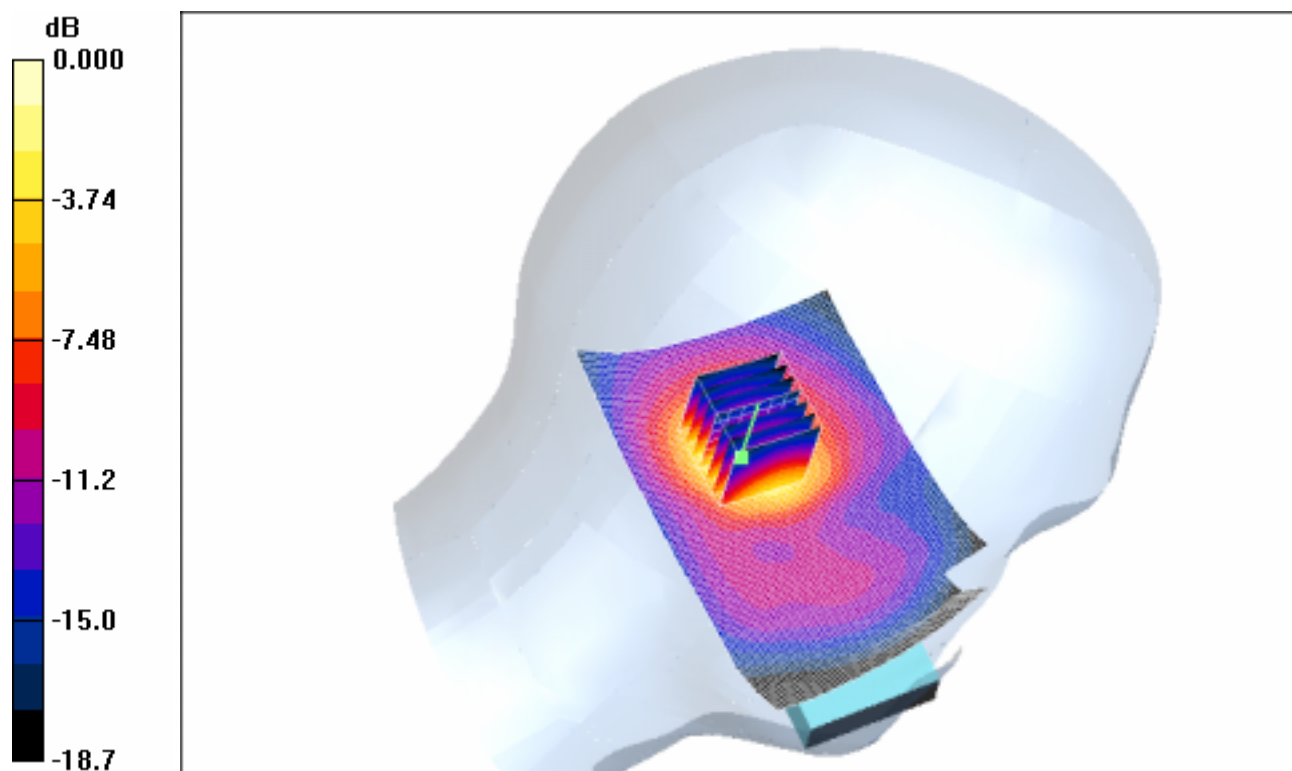
**Tilt position - Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 21.0 V/m; Power Drift = -0.033 dB

Peak SAR (extrapolated) = 1.12 W/kg

**SAR(1 g) = 0.614 mW/g; SAR(10 g) = 0.306 mW/g**

Maximum value of SAR (measured) = 0.696 mW/g



0 dB = 0.696mW/g

#### **4.21 LeftHandSide-Tilt-PCS1900-High**

Date/Time: 2006-10-16 15:31:41

Test Laboratory: SGS-GSM

#### **PCS1900-LeftHandSide-Tilt-High**

DUT: GSM10105244B; Type: Head; Serial: 011041000000340

Communication System: PCS1900-GSM Mode; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3

Medium: HSL1900-Head Medium parameters used:  $f = 1909.8$  MHz;  $\sigma = 1.47$  mho/m;  $\epsilon_r = 38.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.81, 4.81, 4.81); Calibrated: 2005-10-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Tilt position - High/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

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

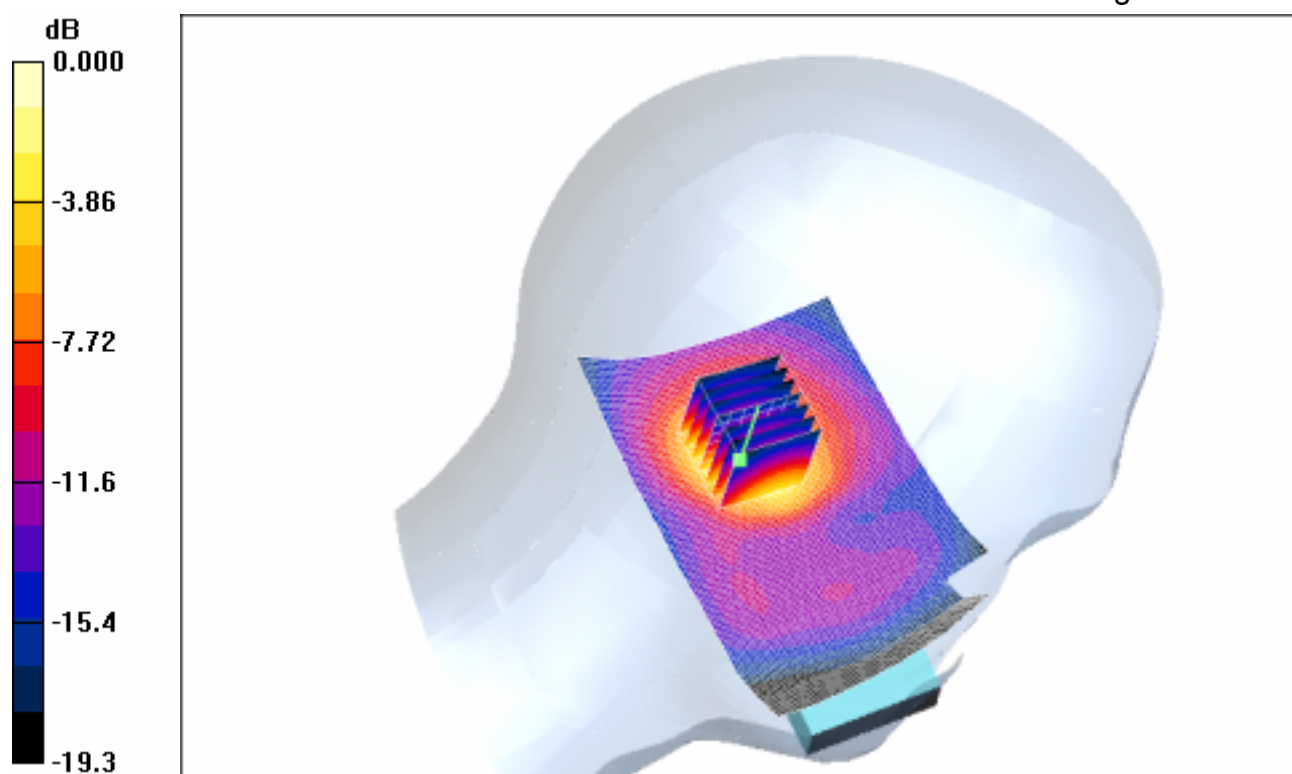
**Tilt position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 20.1 V/m; Power Drift = 0.014 dB

Peak SAR (extrapolated) = 0.994 W/kg

**SAR(1 g) = 0.544 mW/g; SAR(10 g) = 0.270 mW/g**

Maximum value of SAR (measured) = 0.614 mW/g



0 dB = 0.614mW/g

#### **4.22 RightHandSide-Cheek-PCS1900-Low**

Date/Time: 2006-10-16 10:43:31

Test Laboratory: SGS-GSM

**PCS1900-RightHandSide-Cheek-Low**

**DUT: GSM10105244B; Type: Head; Serial: 011041000000340**

Communication System: PCS1900-GSM Mode; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3

Medium: HSL1900-Head Medium parameters used:  $f = 1850.2 \text{ MHz}$ ;  $\sigma = 1.41 \text{ mho/m}$ ;  $\epsilon_r = 38.7$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.81, 4.81, 4.81); Calibrated: 2005-10-24

- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Cheek position - Low/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.561 mW/g

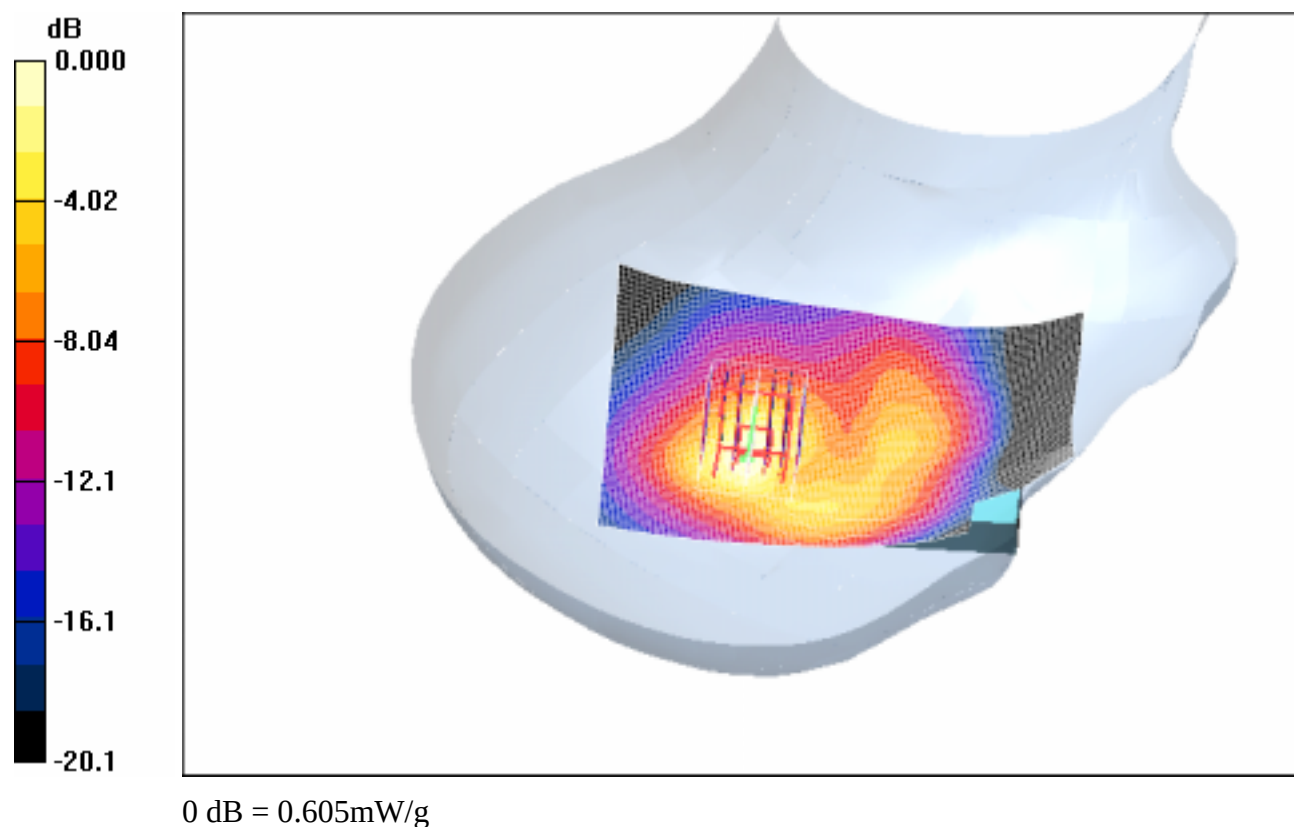
**Cheek position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19.5 V/m; Power Drift = 0.010 dB

Peak SAR (extrapolated) = 0.984 W/kg

**SAR(1 g) = 0.534 mW/g; SAR(10 g) = 0.258 mW/g**

Maximum value of SAR (measured) = 0.605 mW/g



#### **4.23 RightHandSide-Cheek-PCS1900-Middle**

Date/Time: 2006-10-16 10:19:17

Test Laboratory: SGS-GSM

#### **PCS1900-RightHandSide-Cheek-Middle**

DUT: GSM10105244B; Type: Head; Serial: 011041000000340

Communication System: PCS1900-GSM Mode; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium: HSL1900-Head Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.44$  mho/m;  $\epsilon_r = 38.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.81, 4.81, 4.81); Calibrated: 2005-10-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Cheek position - Middle/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.682 mW/g

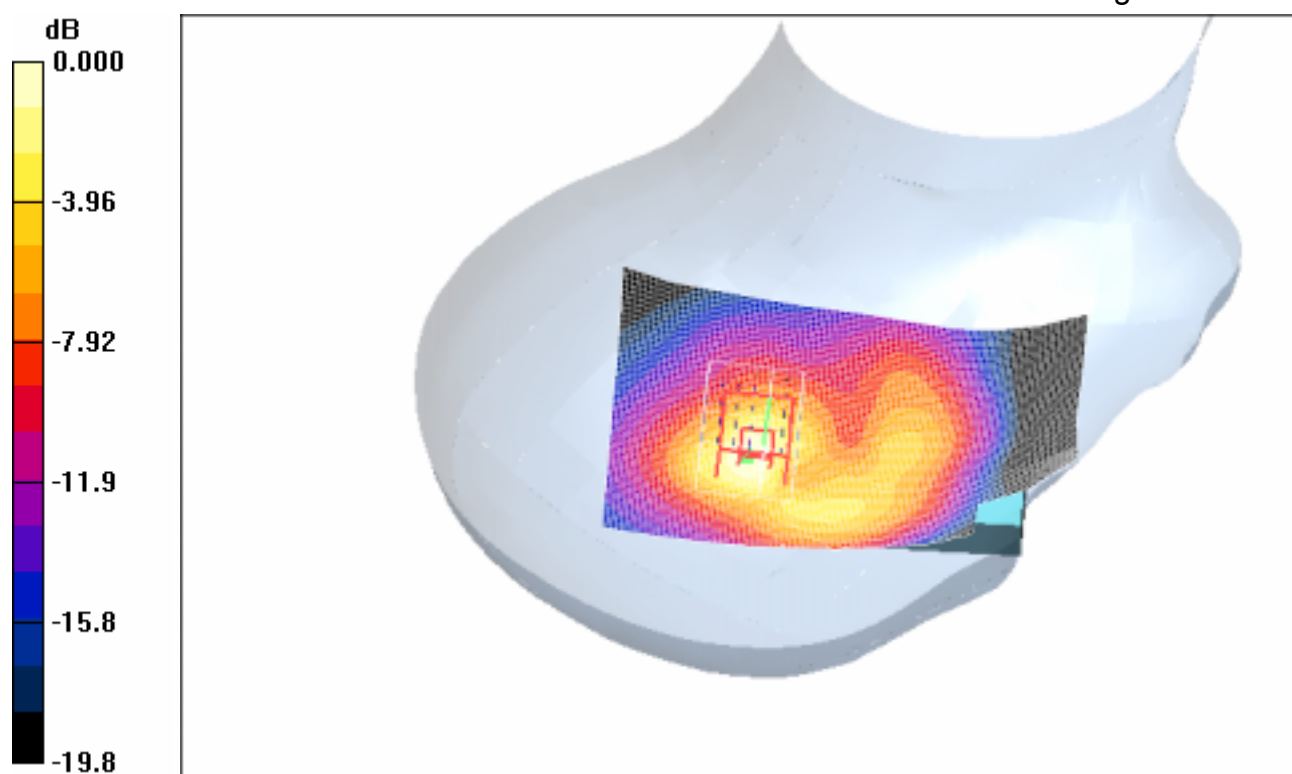
**Cheek position - Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 21.5 V/m; Power Drift = -0.048 dB

Peak SAR (extrapolated) = 1.21 W/kg

**SAR(1 g) = 0.648 mW/g; SAR(10 g) = 0.311 mW/g**

Maximum value of SAR (measured) = 0.728 mW/g



0 dB = 0.728mW/g

#### 4.24 RightHandSide-Cheek-PCS1900-High

Date/Time: 2006-10-16 11:17:51

Test Laboratory: SGS-GSM

PCS1900-RightHandSide-Cheek-High

DUT: GSM10105244B; Type: Head; Serial: 011041000000340

Communication System: PCS1900-GSM Mode; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3

Medium: HSL1900-Head Medium parameters used:  $f = 1909.8$  MHz;  $\sigma = 1.47$  mho/m;  $\epsilon_r = 38.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.81, 4.81, 4.81); Calibrated: 2005-10-24



- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Cheek position - High/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.606 mW/g

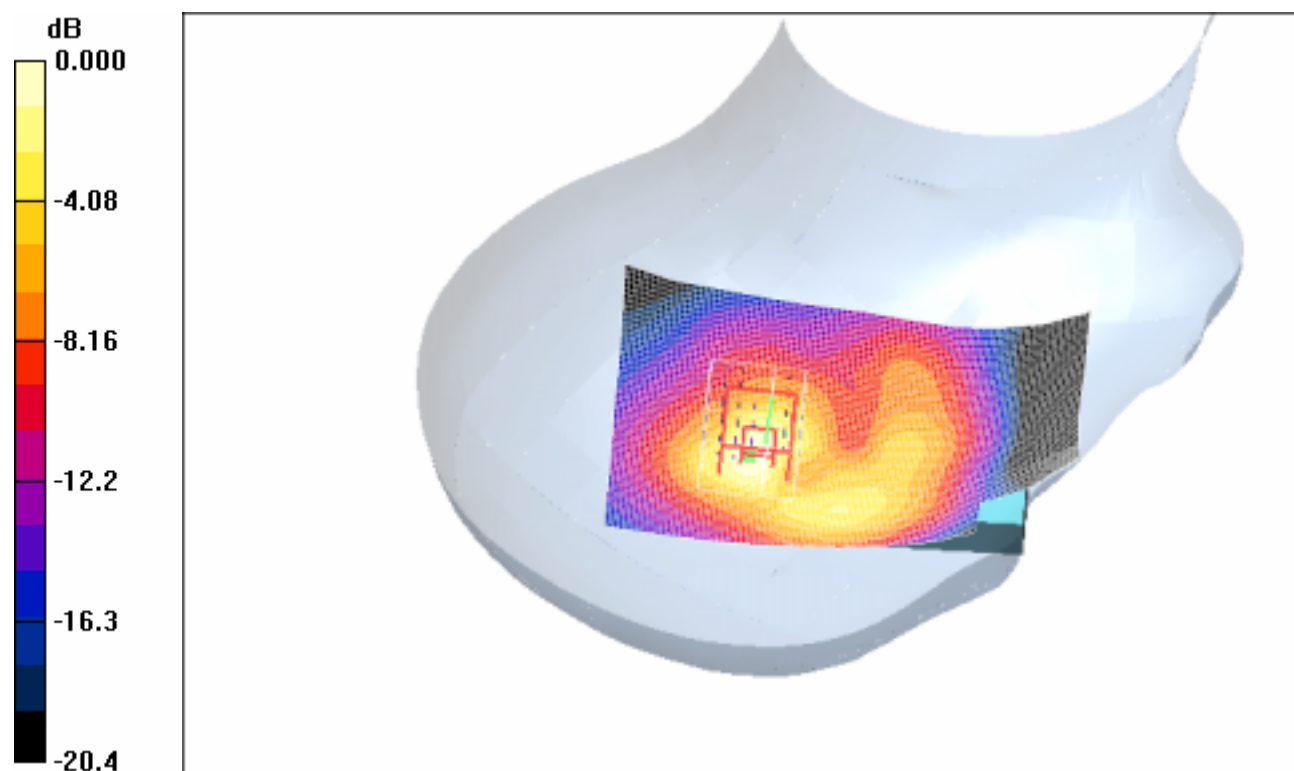
**Cheek position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 20.2 V/m; Power Drift = 0.001 dB

Peak SAR (extrapolated) = 1.14 W/kg

**SAR(1 g) = 0.597 mW/g; SAR(10 g) = 0.283 mW/g**

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



0 dB = 0.678mW/g

#### **4.25 RightHandSide-Tilt-PCS1900-Low**

Date/Time: 2006-10-16 13:03:31

Test Laboratory: SGS-GSM

#### **PCS1900-RightHandSide-Tilt-Low**

DUT: GSM10105244B; Type: Head; Serial: 011041000000340

Communication System: PCS1900-GSM Mode; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3

Medium: HSL1900-Head Medium parameters used:  $f = 1850.2$  MHz;  $\sigma = 1.41$  mho/m;  $\epsilon_r = 38.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.81, 4.81, 4.81); Calibrated: 2005-10-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Tilt position - Low/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.730 mW/g

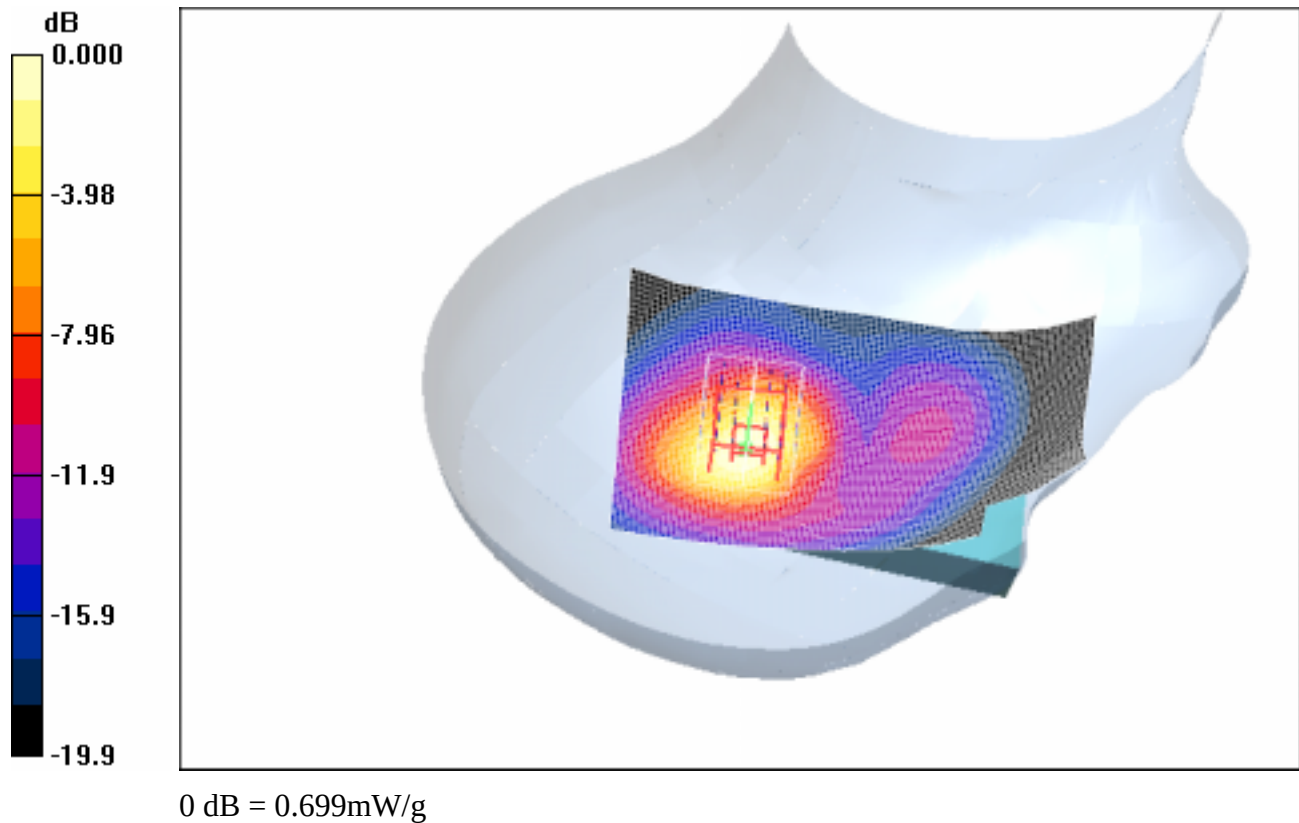
**Tilt position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 22.3 V/m; Power Drift = 0.002 dB

Peak SAR (extrapolated) = 1.13 W/kg

**SAR(1 g) = 0.608 mW/g; SAR(10 g) = 0.301 mW/g**

Maximum value of SAR (measured) = 0.699 mW/g



#### **4.26 RightHandSide-Tilt-PCS1900-Middle**

Date/Time: 2006-10-16 12:24:01

Test Laboratory: SGS-GSM

#### **PCS1900-RightHandSide-Tilt-Middle**

DUT: GSM10105244B; Type: Head; Serial: 011041000000340

Communication System: PCS1900-GSM Mode; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium: HSL1900-Head Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.44$  mho/m;  $\epsilon_r = 38.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.81, 4.81, 4.81); Calibrated: 2005-10-24

- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Tilt position - Middle/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.911 mW/g

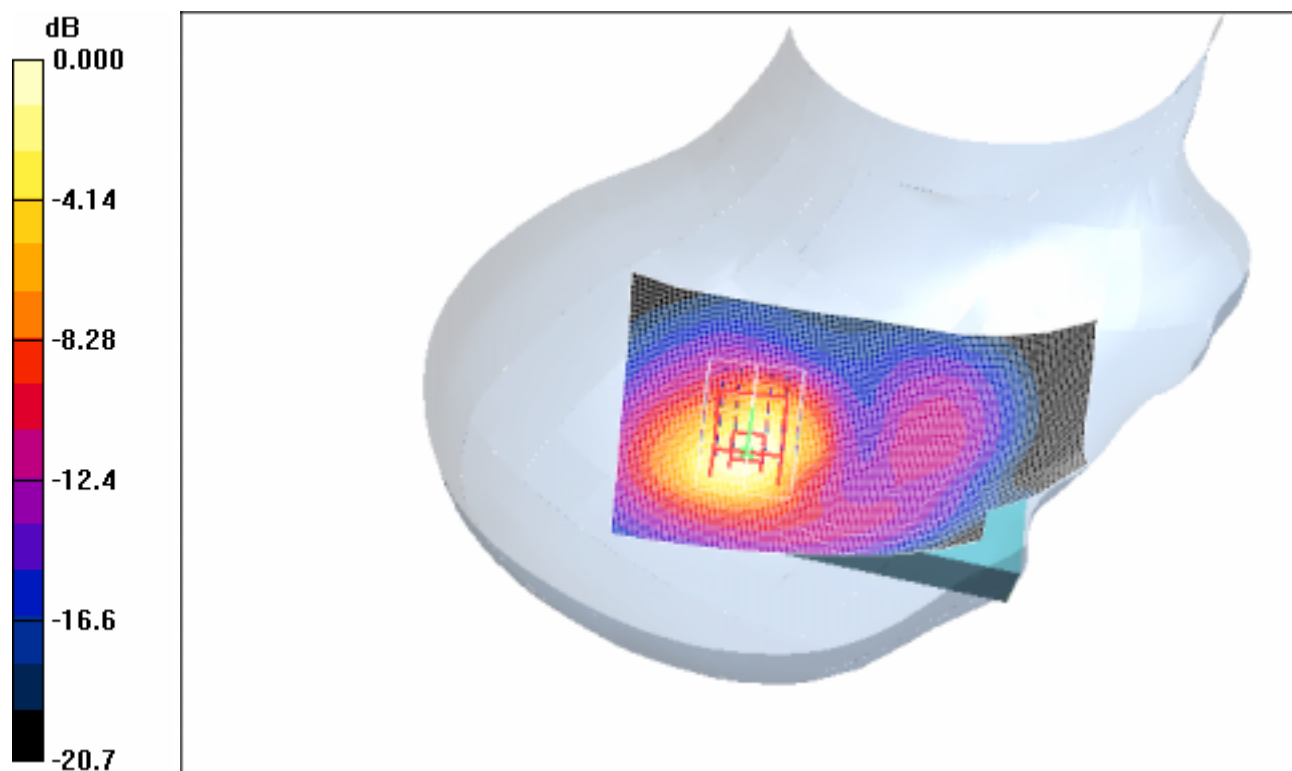
**Tilt position - Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 24.6 V/m; Power Drift = -0.015 dB

Peak SAR (extrapolated) = 1.42 W/kg

**SAR(1 g) = 0.757 mW/g; SAR(10 g) = 0.371 mW/g**

Maximum value of SAR (measured) = 0.866 mW/g



0 dB = 0.866mW/g

#### **4.27 RightHandSide-Tilt-PCS1900-High**

Date/Time: 2006-10-16 13:36:48

Test Laboratory: SGS-GSM

#### **PCS1900-RightHandSide-Tilt-High**

**DUT: GSM10105244B; Type: Head; Serial: 011041000000340**

Communication System: PCS1900-GSM Mode; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3

Medium: HSL1900-Head Medium parameters used:  $f = 1909.8 \text{ MHz}$ ;  $\sigma = 1.47 \text{ mho/m}$ ;  $\epsilon_r = 38.4$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.81, 4.81, 4.81); Calibrated: 2005-10-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Tilt position - High/Area Scan (61x101x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) =  $0.805 \text{ mW/g}$

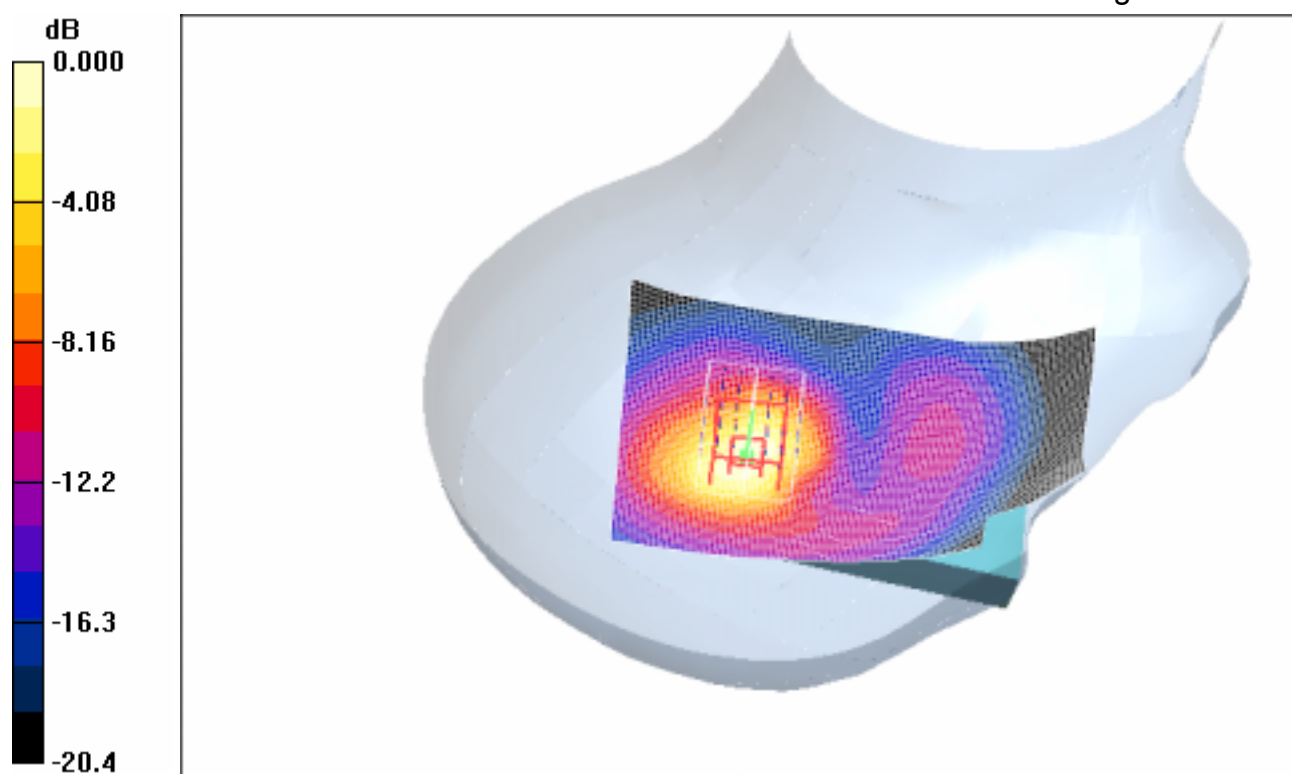
**Tilt position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $23.0 \text{ V/m}$ ; Power Drift =  $0.037 \text{ dB}$

Peak SAR (extrapolated) =  $1.30 \text{ W/kg}$

**SAR(1 g) =  $0.678 \text{ mW/g}$ ; SAR(10 g) =  $0.330 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.762 \text{ mW/g}$



0 dB = 0.762mW/g

#### **4.28 Body-Worn-PCS1900-Low**

Date/Time: 2006-10-18 9:02:53

Test Laboratory: SGS-GSM

**PCS1900-Body-Worn-Low-1.5cm**

**DUT: GSM10105244B; Type: Head; Serial: 011041000000340**

Communication System: PCS1900-GSM Mode; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3

Medium: 1900-Body Medium parameters used:  $f = 1850.2$  MHz;  $\sigma = 1.51$  mho/m;  $\epsilon_r = 53.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.19, 4.19, 4.19); Calibrated: 2005-10-24

- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Body Worn - Low/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.430 mW/g

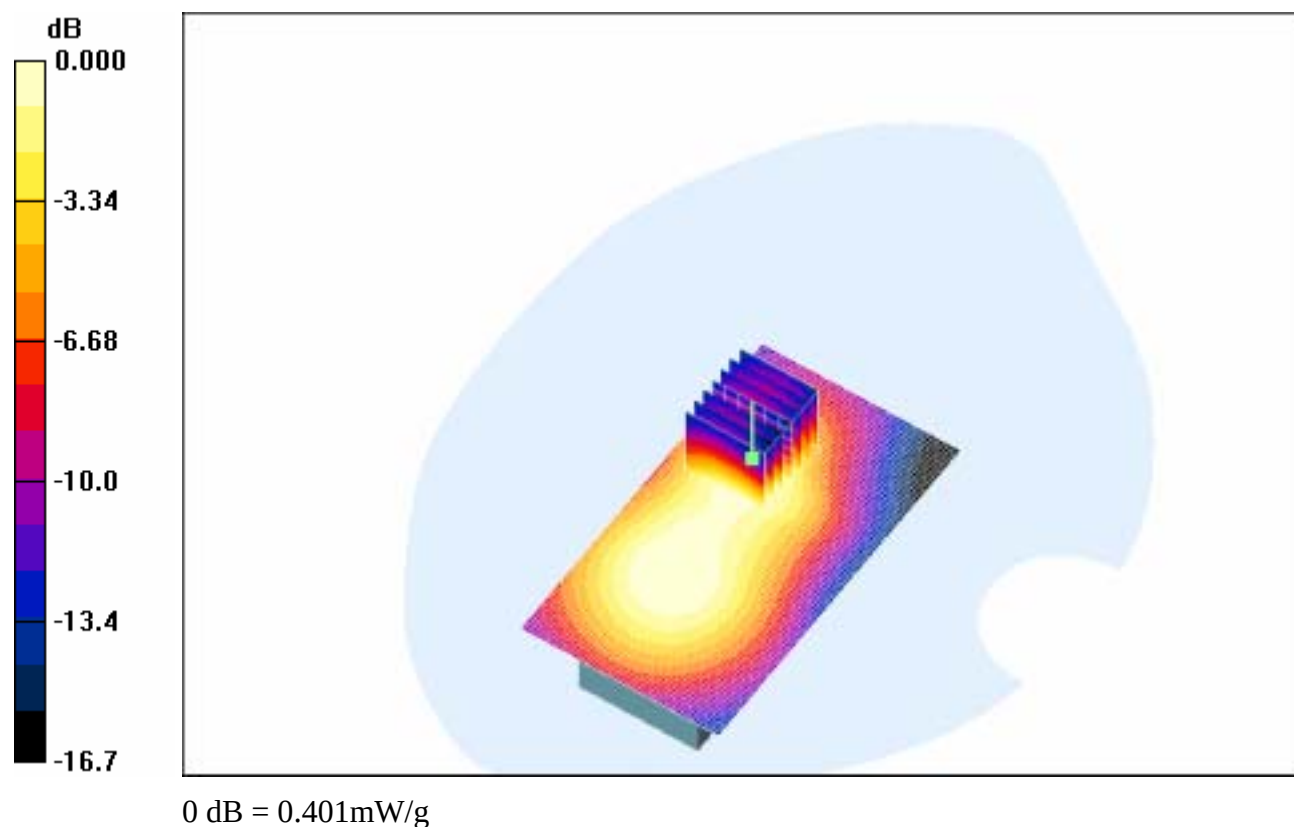
**Body Worn - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 12.6 V/m; Power Drift = -0.163 dB

Peak SAR (extrapolated) = 0.624 W/kg

**SAR(1 g) = 0.372 mW/g; SAR(10 g) = 0.219 mW/g**

Maximum value of SAR (measured) = 0.401 mW/g



#### **4.29 Body-Worn-PCS1900-Middle**

Date/Time: 2006-10-18 9:25:04

Test Laboratory: SGS-GSM

#### **PCS1900-Body-Worn-Middle-1.5cm**

DUT: GSM10105244B; Type: Head; Serial: 011041000000340

Communication System: PCS1900-GSM Mode; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium: 1900-Body Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.55$  mho/m;  $\epsilon_r = 53.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.19, 4.19, 4.19); Calibrated: 2005-10-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Body Worn - Middle/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.557 mW/g

**Body Worn - Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

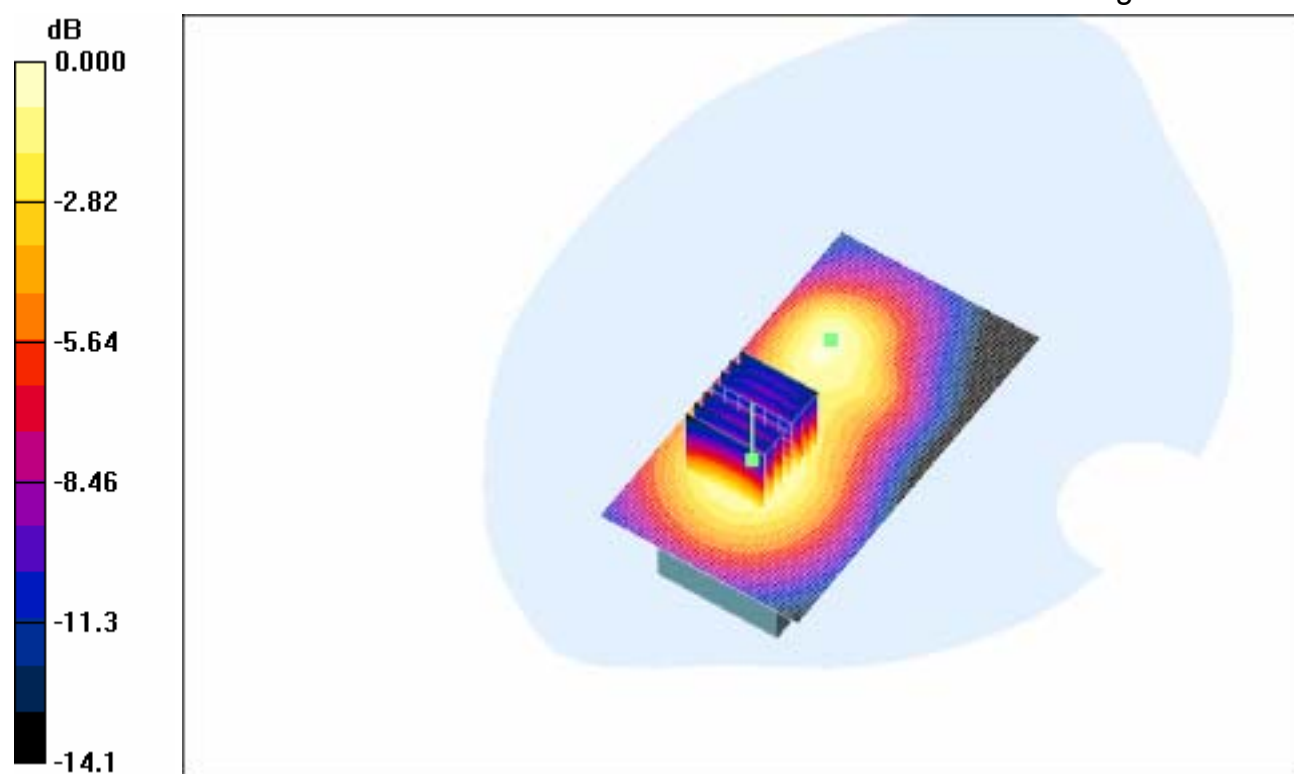
Reference Value = 13.6 V/m; Power Drift = -0.013 dB

Peak SAR (extrapolated) = 0.795 W/kg

**SAR(1 g) = 0.521 mW/g; SAR(10 g) = 0.328 mW/g**

Maximum value of SAR (measured) = 0.563 mW/g





0 dB = 0.563mW/g

#### 4.30 Body-Worn-PCS1900-High

Date/Time: 2006-10-18 9:46:34

Test Laboratory: SGS-GSM

PCS1900-Body-Worn-High-1.5cm

DUT: GSM10105244B; Type: Head; Serial: 011041000000340

Communication System: PCS1900-GSM Mode; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3

Medium: 1900-Body Medium parameters used:  $f = 1909.8$  MHz;  $\sigma = 1.59$  mho/m;  $\epsilon_r = 53.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1705; ConvF(4.19, 4.19, 4.19); Calibrated: 2005-10-24

- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn516; Calibrated: 2006-3-8
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Body Worn - High/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.575 mW/g

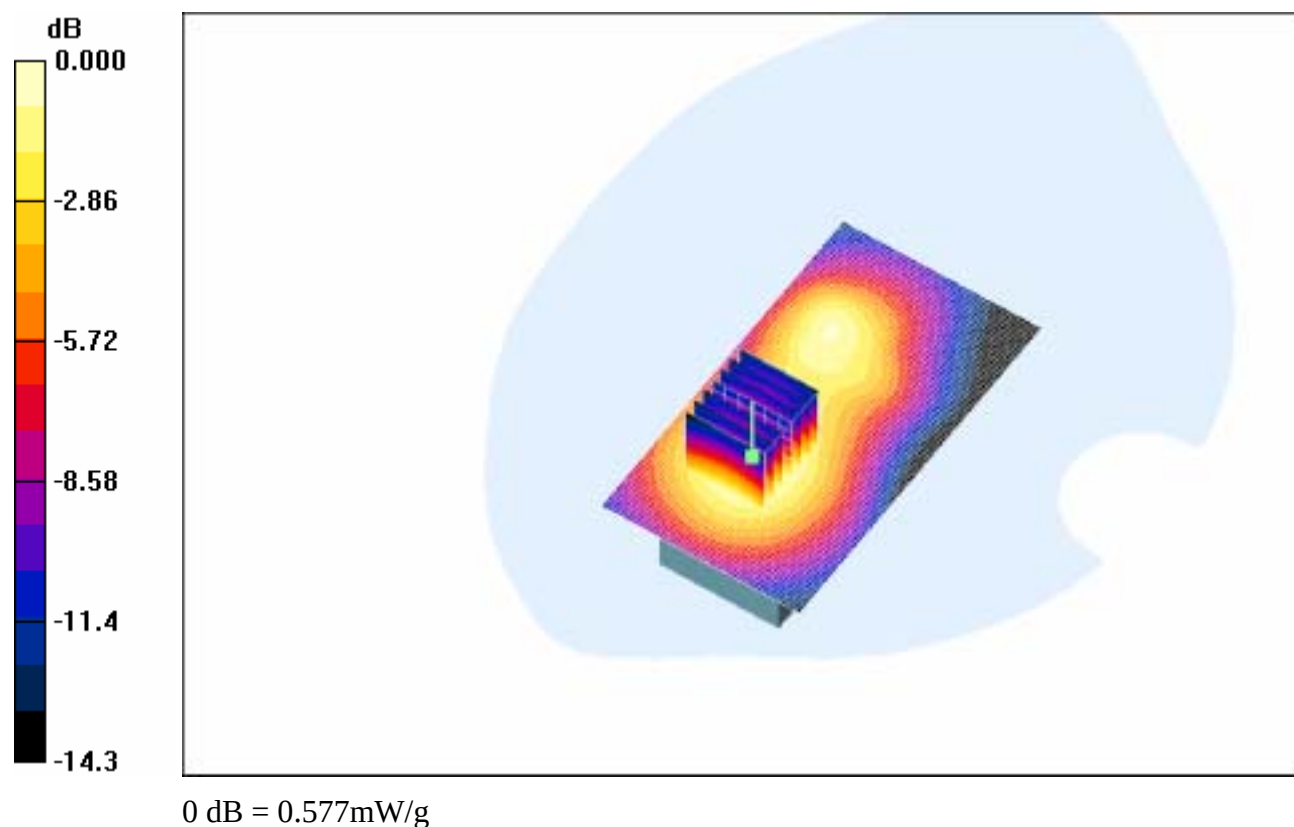
**Body Worn - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 13.3 V/m; Power Drift = 0.025 dB

Peak SAR (extrapolated) = 0.819 W/kg

**SAR(1 g) = 0.535 mW/g; SAR(10 g) = 0.336 mW/g**

Maximum value of SAR (measured) = 0.577 mW/g



## Appendix

### 1. Photographs of Test Setup

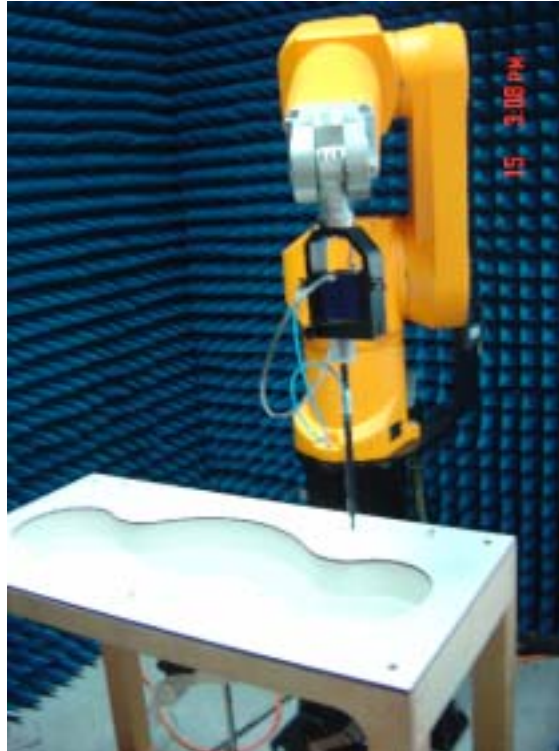


Fig.1 Photograph of the SAR measurement System

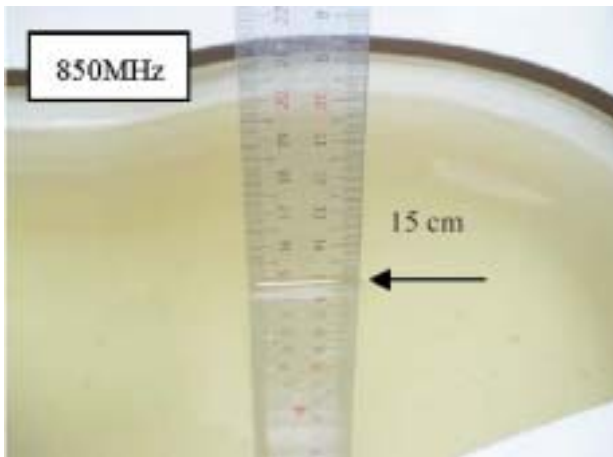


Fig.2 Photograph of the Tissue Simulant  
Fluid Liquid depth 15cm  
for Left-Head Side

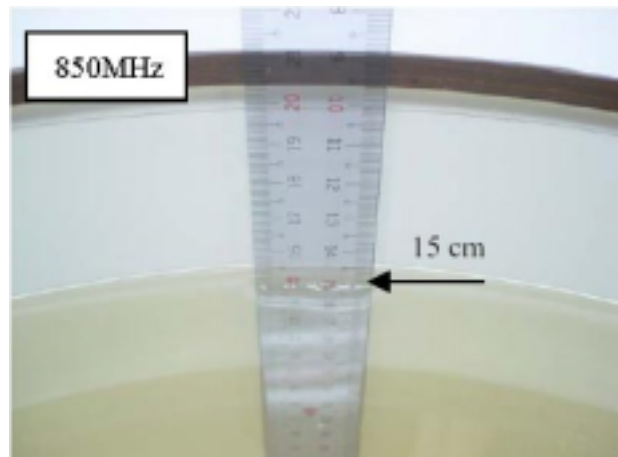


Fig.3 Photograph of the Tissue Simulant  
Liquid depth 15cm for Body-Worn

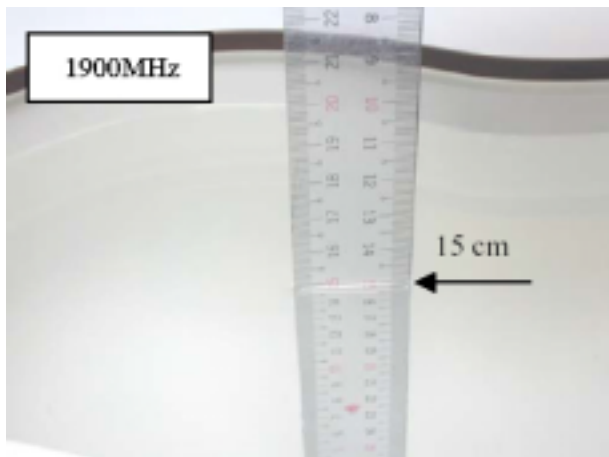


Fig.4 Photograph of the Tissue Simulant  
Fluid Liquid depth 15cm  
for Right-Head Side

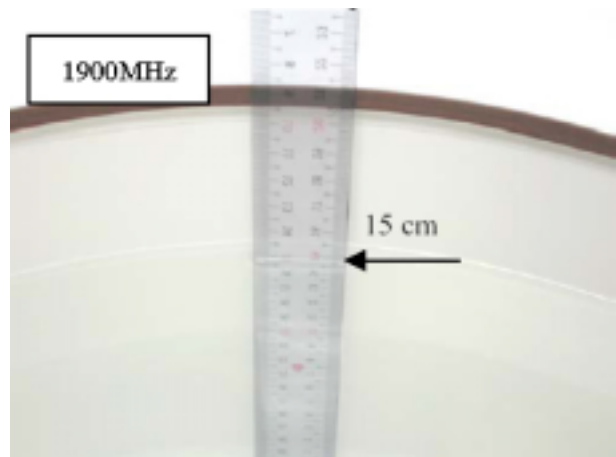


Fig.5 Photograph of the Tissue Simulant  
Liquid depth 15cm for Body-Worn

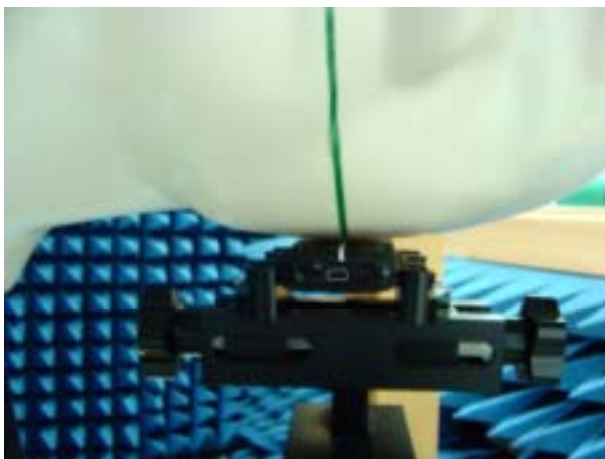


Fig.6 Photograph of the Left Hand Side Cheek status

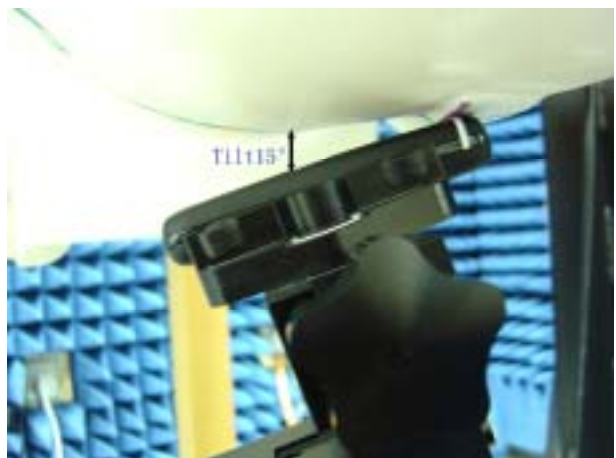


Fig.7 Photograph of the Left Hand Side Tilt status



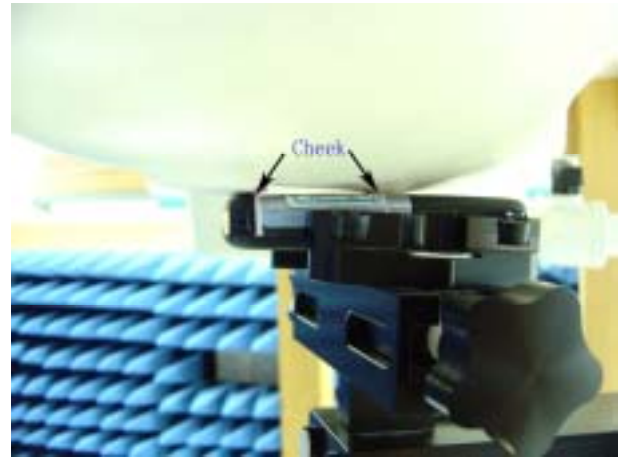
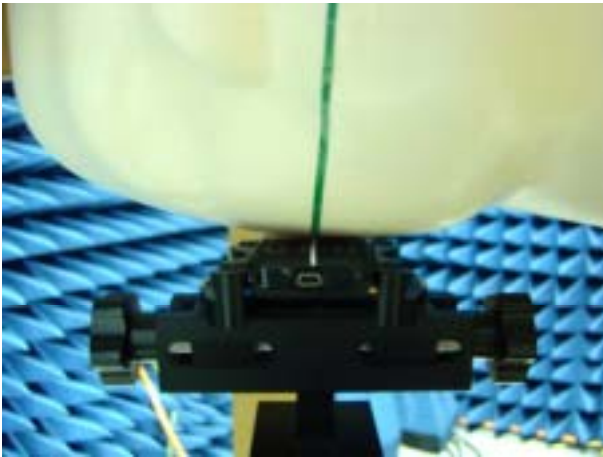


Fig.8 Photograph of the Right Hand Side Cheek status

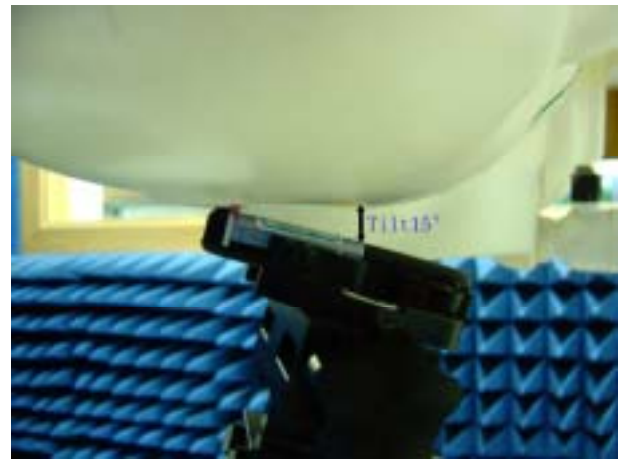
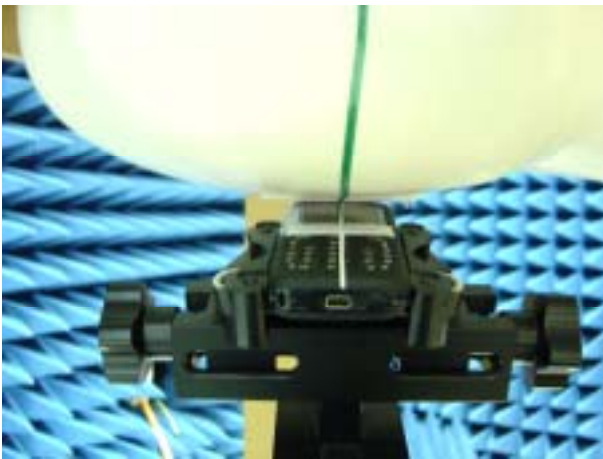


Fig.9 Photograph of the Right Hand Side Tilt status

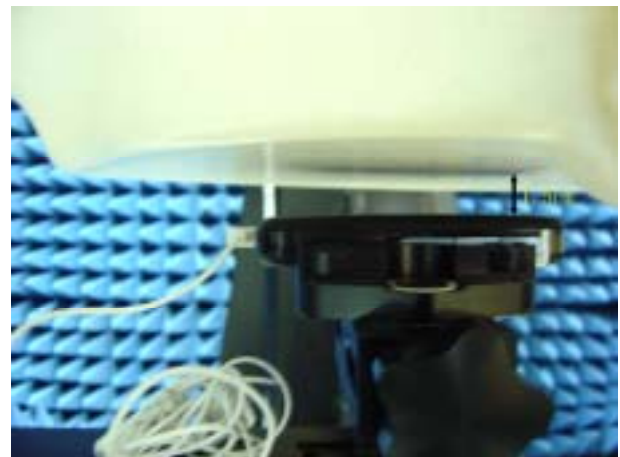
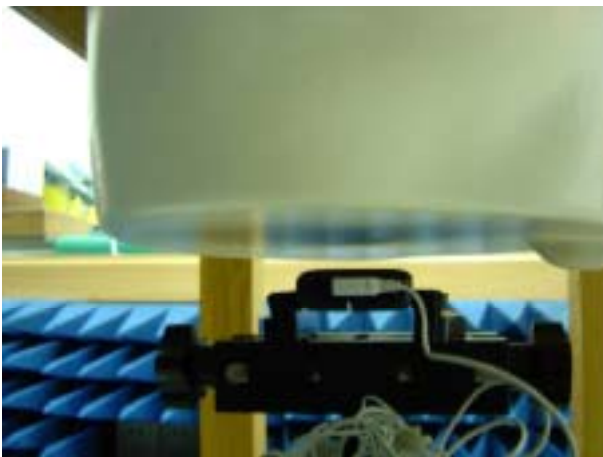


Fig.10 Photograph of the BodyWorn status

## 2. Photographs of the EUT



Fig.11 Front View



Fig.12 Back View

## 3. Photographs of the battery

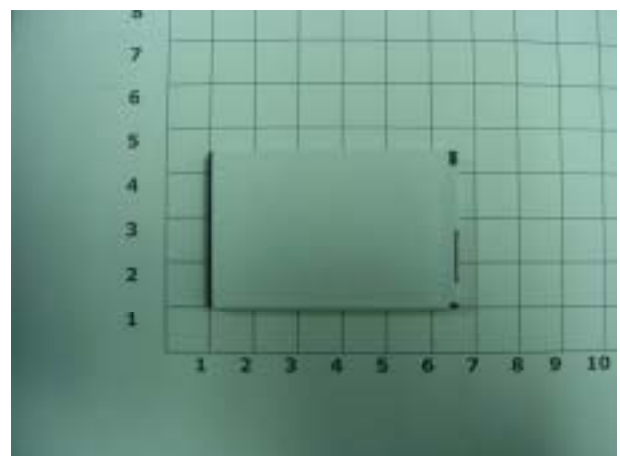


Fig.13 Front view of battery

Fig.14 Back view of battery

**4. Photograph of the charger**



Fig.15 Charger

**5. Probe Calibration certification**

Calibration Laboratory of  
Schmid & Partner  
Engineering AG  
Zughauserstrasse 43, 8894 Zurich, Switzerland



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

Accredited by the Swiss Federal Office of Metrology and Accreditation  
The Swiss Accreditation Service is one of the signatories to the EA  
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client: **MTT**Certificate No: **ET3-1705\_Oct05****CALIBRATION CERTIFICATE**

Object: **ET3DV6 - SN-1705**

Calibration procedure(s): **QA CAL-01.v5**  
Calibration procedure for dosimetric E-field probes

Calibration date: **October 24, 2005**

Condition of the calibrated item: **In Tolerance**

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

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

Calibration Equipment used (MATE critical for calibration):

| Primary Standards          | ID #            | Cal Date (Calibrated by, Certificate No.) | Scheduled Calibration |
|----------------------------|-----------------|-------------------------------------------|-----------------------|
| Power meter E4416B         | QB41263874      | 3-May-05 (METAS, No. 251-00499)           | May-06                |
| Power sensor E4412A        | MY41455277      | 3-May-05 (METAS, No. 251-00499)           | May-06                |
| Power sensor E4412A        | MY41455067      | 3-May-05 (METAS, No. 251-00499)           | May-06                |
| Reference 3 dB Attenuator  | SN: 55054 (3x)  | 11-Aug-05 (METAS, No. 251-00499)          | Aug-06                |
| Reference 20 dB Attenuator | SN: 55056 (20x) | 3-May-05 (METAS, No. 251-00499)           | May-06                |
| Reference 30 dB Attenuator | SN: 55129 (30x) | 11-Aug-05 (METAS, No. 251-00500)          | Aug-06                |
| Reference Probe ES3DV2     | SN: 3013        | 7-Jan-05 (SPEAG, No. ES3-3013_Jan05)      | Jan-06                |
| DAE4                       | SN: 654         | 29-Nov-04 (SPEAG, No. DAE4-654_Nov04)     | Nov-05                |

| Secondary Standards       | ID #         | Check Date (in house)                    | Scheduled Check        |
|---------------------------|--------------|------------------------------------------|------------------------|
| RF generator HP 8648C     | US3642501700 | 4-Aug-05 (SPEAG, in house check Dec-03)  | In house check: Dec-05 |
| Network Analyser HP 8733E | US37360565   | 18-Oct-01 (SPEAG, in house check Nov-04) | In house check: Nov-05 |

|                | Name          | Function              | Signature |
|----------------|---------------|-----------------------|-----------|
| Calibrated by: | Mico Vetterli | Laboratory Technician |           |
| Approved by:   | Kelja Pokovic | Technical Manager     |           |

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



## 6. Uncertainty analysis

| Error Description               | Tol.<br>(± %) | Prob.<br>dist. | Div. | (c <sub>i</sub> )<br>(1g) | (c <sub>i</sub> )<br>(10g) | Std. unc. (± %) |      | (v <sub>i</sub> ) |
|---------------------------------|---------------|----------------|------|---------------------------|----------------------------|-----------------|------|-------------------|
| Measurement System              |               |                |      |                           |                            |                 |      |                   |
| Probe Calibration               | 4.8           | N              | 1    | 1                         | 1                          | 4.8             | 4.8  | ∞                 |
| Axial Isotropy                  | 4.7           | R              | √3   | 1                         | 1                          | 2.7             | 2.7  | ∞                 |
| Hemispherical Isotropy          | 0             | R              | √3   | 1                         | 1                          | 0               | 0    | ∞                 |
| Boundary Effects                | 1.0           | R              | √3   | 1                         | 1                          | 0.6             | 0.6  | ∞                 |
| Linearity                       | 4.7           | R              | √3   | 1                         | 1                          | 2.7             | 2.7  | ∞                 |
| System Detection Limit          | 1.0           | R              | √3   | 1                         | 1                          | 0.6             | 0.6  | ∞                 |
| Readout Electronics             | 1.0           | N              | 1    | 1                         | 1                          | 1.0             | 1.0  | ∞                 |
| Response Time                   | 0             | R              | √3   | 1                         | 1                          | 0               | 0    | ∞                 |
| Integration Time                | 0             | R              | √3   | 1                         | 1                          | 0               | 0    | ∞                 |
| RF Ambient Conditions           | 3.0           | R              | √3   | 1                         | 1                          | 1.7             | 1.7  | ∞                 |
| Probe Positioner                | 0.4           | R              | √3   | 1                         | 1                          | 0.2             | 0.2  | ∞                 |
| Probe Positioning               | 2.9           | R              | √3   | 1                         | 1                          | 1.7             | 1.7  | ∞                 |
| Algorithms for Max. SAR Eval.   | 1.0           | R              | √3   | 1                         | 1                          | 0.6             | 0.6  | ∞                 |
| Dipole                          |               |                |      |                           |                            |                 |      |                   |
| Dipole Axis to Liquid Distance  | 2.0           | R              | √3   | 1                         | 1                          | 1.2             | 1.2  | ∞                 |
| Input power and SAR drift meas. | 4.7           | R              | √3   | 1                         | 1                          | 2.7             | 2.7  | ∞                 |
| Phantom and Tissue Param.       |               |                |      |                           |                            |                 |      |                   |
| Phantom Uncertainty             | 4.0           | R              | √3   | 1                         | 1                          | 2.3             | 2.3  | ∞                 |
| Liquid Conductivity (target)    | 5.0           | R              | √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              | √3   | 0.6                       | 0.49                       | 1.7             | 1.4  | ∞                 |
| Liquid Permittivity (meas.)     | 2.5           | N              | 1    | 0.6                       | 0.49                       | 1.5             | 1.2  | ∞                 |
| Combined Standard Uncertainty   |               |                |      |                           |                            | 8.4             | 8.1  | ∞                 |
| Coverage Factor for 95%         |               | kp=2           |      |                           |                            |                 |      |                   |
| Expanded Uncertainty            |               |                |      |                           |                            | 16.8            | 16.2 |                   |

Dasy4 Uncertainty Budget

## 7. Phantom description

**Schmid & Partner  
Engineering AG**

Zeughausstrasse 43, 8004 Zurich, Switzerland, Phone +41 1 245 97 00, Fax +41 1 245 97 79

**Certificate of conformity / First Article Inspection**

|                       |                                                                          |
|-----------------------|--------------------------------------------------------------------------|
| Item                  | SAM Twin Phantom V4.0                                                    |
| Type No               | QD 000 P40 CA                                                            |
| Series No             | TP-1150 and higher                                                       |
| Manufacturer / Origin | Untersee Composites<br>Hauptstr. 69<br>CH-8559 Frutzwilen<br>Switzerland |

**Tests**

The series production process used allows the limitation to test of first articles. Complete tests were made on the pre-series Type No. QD 000 P40 AA, Serial No. TP-1001 and on the series first article Type No. QD 000 P40 BA, Serial No. TP-1006. Certain parameters have been retested using further series units (called samples).

| Test                 | Requirement                                                                             | Details                                                             | Units tested                |
|----------------------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------|-----------------------------|
| Shape                | Compliance with the geometry according to the CAD model.                                | ITIS CAD File (*)                                                   | First article, Samples      |
| Material thickness   | Compliant with the requirements according to the standards                              | 2mm +/- 0.2mm in specific areas                                     | First article, Samples      |
| Material parameters  | Dielectric parameters for required frequencies                                          | 200 MHz - 3 GHz<br>Relative permittivity < 5<br>Loss tangent < 0.05 | Material sample<br>TP 104-5 |
| Material resistivity | The material has been tested to be compatible with the liquids defined in the standards | Liquid type HSL 1800 and others according to the standard.          | Pre-series, First article   |

**Standards**

[1] CENELEC EN 50361

[2] IEEE P1528-200x draft 6.5

[3] IEC PT 62209 draft 0.9

(\*) The ITIS CAD file is derived from [2] and is also within the tolerance requirements of the shapes of [1] and [3].

**Conformity**

Based on the sample tests above, we certify that this item is in compliance with the uncertainty requirements of SAR measurements specified in standard [1] and draft standards [2] and [3].

Date

28.02.2002

Signature / Stamp

*F. Bommelt***Schmid & Partner  
Engineering AG**Zeughausstrasse 43, CH-8004 Zurich  
Tel. +41 1 245 97 00, Fax +41 1 245 97 79*Volker Kappeler***The end**