# SAR TEST REPORT

## No. 2013SAR00005

**For**

**TCT Mobile Limited**

**GSM quad bands mobile phone**

**Model name: Beetle Lite Edge 2SIM**

**Marketing name: ONE TOUCH 4005D**

**With**

**Hardware Version: vD15**

**Software Version: Proto**

**FCC ID: RAD320**

**Issued Date: 2013-03-06**

DAkkS
Deutsche
Akkreditierungsstelle
D-PL-12123-01-01

**Note:**

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of TMC Beijing.

**Test Laboratory:**

TMC Beijing, Telecommunication Metrology Center of MIIT

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## Revision Version

| Report Number | Revision | Date | Memo |
|---|---|---|---|
| 2013SAR00005 | 00 | 2013-01-29 | Initial creation of test report |
| 2013SAR00005 | 01 | 2013-02-27 | 1. Update and add some statements on page 6<br>2. Update the information in section 4.1<br>3. Modify the power tolerance for GPRS and EGPRS |
| 2013SAR00005 | 02 | 2013-03-06 | Update the statement on page 6 |

# TABLE OF CONTENT

# 1 Test Laboratory

## 1.1 Testing Location

| | |
|---|---|
| Company Name: | TMC Beijing, Telecommunication Metrology Center of MIIT |
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| Postal Code: | 100191 |
| Telephone: | +86-10-62304633 |
| Fax: | +86-10-62304793 |

## 1.2 Testing Environment

| | |
|---|---|
| Temperature: | 18°C~25 °C, |
| Relative humidity: | 30%~ 70% |
| Ground system resistance: | < 0.5 Ω |
| Ambient noise & Reflection: | < 0.012 W/kg |

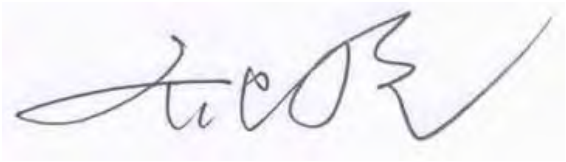
## 1.3 Project Data

| | |
|---|---|
| Project Leader: | Qi Dianyuan |
| Test Engineer: | Lin Xiaojun |
| Testing Start Date: | January 17, 2013 |
| Testing End Date: | January 20, 2013 |

## 1.4 Signature

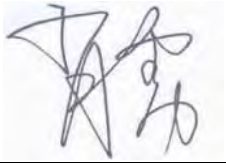
**Lin Xiaojun**

**(Prepared this test report)**



**Qi Dianyuan**

**(Reviewed this test report)**



**Xiao Li**

**Deputy Director of the laboratory**

**(Approved this test report)**

# 2 Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for TCT Mobile Limited GSM quad bands mobile phone Beetle Lite Edge 2SIM / ONE TOUCH 4005D are as follows:

**Table 2.1: Max. Reported SAR (1g)**

| Band | Position | Reported SAR 1g (W/Kg) |
|---|---|---|
| GSM 850 | Head | 0.57 |
| | Body | 1.01 |
| GSM 1900 | Head | 1.09 |
| | Body | 0.68 |
| Wi-Fi | Head | 0.25 |
| | Body | 0.33 |

The SAR values found for the Mobile Phone are below the maximum recommended levels of 1.6 W/Kg as averaged over any 1g tissue according to the ANSI C95.1-1999.

For body worn operation, this device has been tested and meets FCC RF exposure guidelines when used with any accessory that contains no metal and which provides a minimum separation distance of 10 mm between this device and the body of the user. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power output. It is performed with 1 SIM card and microSD card during all testing except the WiFi, because WiFi is measured under the testing mode .

The measurement together with the test system set-up is described in annex C of this test report. A detailed description of the equipment under test can be found in chapter 4 of this test report.
The maximum reported SAR value is obtained at the case of **(Table 2.1),** and the values are**: 1.09 W/kg (1g).**

**Table 2.2: The sum of reported SAR values**

| | **Position** | **GSM** | **WiFi** | **Sum** |
|---|---|---|---|---|
| **Maximum reported value for Head** | Left hand, Touch cheek | 0.67 | 0.25 | **0.92** |
| | Right hand, Touch cheek | 1.09 | 0.14 | **1.23** |
| **Maximum reported SAR value for Body** | Toward Ground | 1.01 | 0.33 | **1.34** |

According to the above table, the maximum sum of reported SAR values for GSM and WiFi is **1.34 W/kg (1g)**. The detail for simultaneous transmission consideration is described in chapter 13.

# 3 Client Information

## 3.1 Applicant Information

| | |
|---|---|
| Company Name: | TCT Mobile Limited |
| Address /Post: | 5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area Shanghai, P.R. China. 201203 |
| City: | ShangHai |
| Postal Code: | 201203 |
| Country: | P.R.China |
| Contact: | Gong Zhizhou |
| Email: | zhizhou.gong@jrdcom.com |
| Telephone: | 0086-21-61460890 |
| Fax: | 0086-21-61460602 |

## 3.2 Manufacturer Information

| | |
|---|---|
| Company Name: | TCT Mobile Limited |
| Address /Post: | 5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area Shanghai, P.R. China. 201203 |
| City: | ShangHai |
| Postal Code: | 201203 |
| Country: | P.R.China |
| Contact: | Gong Zhizhou |
| Email: | zhizhou.gong@jrdcom.com |
| Telephone: | 0086-21-61460890 |
| Fax: | 0086-21-61460602 |

# 4 Equipment Under Test (EUT) and Ancillary Equipment (AE)

## 4.1 About EUT

| | |
|---|---|
| Description: | GSM quad bands mobile phone |
| Model name: | Beetle Lite Edge 2SIM |
| Marketing name: | ONE TOUCH 4005D |
| Operating mode(s): | GSM 850/900/1800/1900, BT, WiFi |
| Tested Tx Frequency: | 825 – 848.8 MHz (GSM 850) |
| | 1850.2 – 1910 MHz (GSM 1900) |
| | 2412 – 2462 MHz (Wi-Fi) |
| GPRS Multislot Class: | 12 |
| GPRS capability Class: | B |
| EGPRS Multislot Class: | 12 |
| Test device Production information: | Production unit |
| Device type: | Portable device |
| Antenna type: | Integrated antenna |
| Accessories/Body-worn configurations: | Headset |
| Hotspot mode: | Support simultaneous transmission of hotspot and voice(or data) |
| Form factor: | 11.5cm × 6.2 cm |

## 4.2 Internal Identification of EUT used during the test

| EUT ID* | SN or IMEI | HW Version | SW Version |
|---|---|---|---|
| EUT1 | 869315010054023 / 869315010053884 | vD15 | Proto |

*EUT ID: is used to identify the test sample in the lab internally.

**Note:** It is performed to test SAR with the EUT (869315010054023) and conducted power with the EUT (869315010053884).

## 4.3 Internal Identification of AE used during the test

| AE ID* | Description | Model | SN | Manufacturer |
|---|---|---|---|---|
| AE1 | Battery | TLi014A1 | / | BYD |
| AE2 | Battery | TLiB50B | / | BAK |
| AE3 | Headset | CCB3160A11C2 | / | Lianyun |
| AE4 | Headset | CCB3160A11C4 | / | Meihao |
| AE5 | Headset | CCB3160A15C2 | / | Lianyun |
| AE6 | Headset | CCB3160A15C4 | / | Meihao |

*AE ID: is used to identify the test sample in the lab internally.

**Note:** AE3 and AE5 are the same, so they can use the same results. AE4 and AE6 are the same, so they can use the same results.

# 5 TEST METHODOLOGY

## 5.1 Applicable Limit Regulations

**ANSI C95.1–1999:** IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.

It specifies the maximum exposure limit of **1.6 W/kg** as averaged over any 1 gram of tissue for portable devices being used within 20 cm of the user in the uncontrolled environment.

## 5.2 Applicable Measurement Standards

**IEEE 1528–2003:** Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques.

**OET Bulletin 65 (Edition 97-01) and Supplement C(Edition 01-01):** Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits.

**KDB447498 D01: General RF Exposure Guidance v05:** Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies.

**KDB648474 D04 SAR Handsets Multi Xmiter and Ant v01:** SAR Evaluation Considerations for Wireless Handsets.

**865664 D01 SAR measurement 100 MHz to 6 GHz v01:** SAR Measurement Requirements for 100 MHz to 6 GHz

**865664 D02 SAR Reporting v01:** RF Exposure Compliance Reporting and Documentation Considerations

# 6 Specific Absorption Rate (SAR)

## 6.1 Introduction

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

## 6.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy ($dW$) absorbed by (dissipated in) an incremental mass ($dm$) contained in a volume element ($dv$) of a given density ($\rho$). The equation description is as below:

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

SAR is expressed in units of Watts per kilogram (W/kg)
SAR measurement can be either related to the temperature elevation in tissue by

$$SAR = c\left(\frac{\delta T}{\delta t}\right)$$

Where: C is the specific head capacity, $\delta T$ is the temperature rise and $\delta t$ is the exposure duration, or related to the electrical field in the tissue by

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

Where: $\sigma$ is the conductivity of the tissue, $\rho$ is the mass density of tissue and $E$ is the RMS electrical field strength.

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

# 7 Tissue Simulating Liquids

## 7.1 Targets for tissue simulating liquid

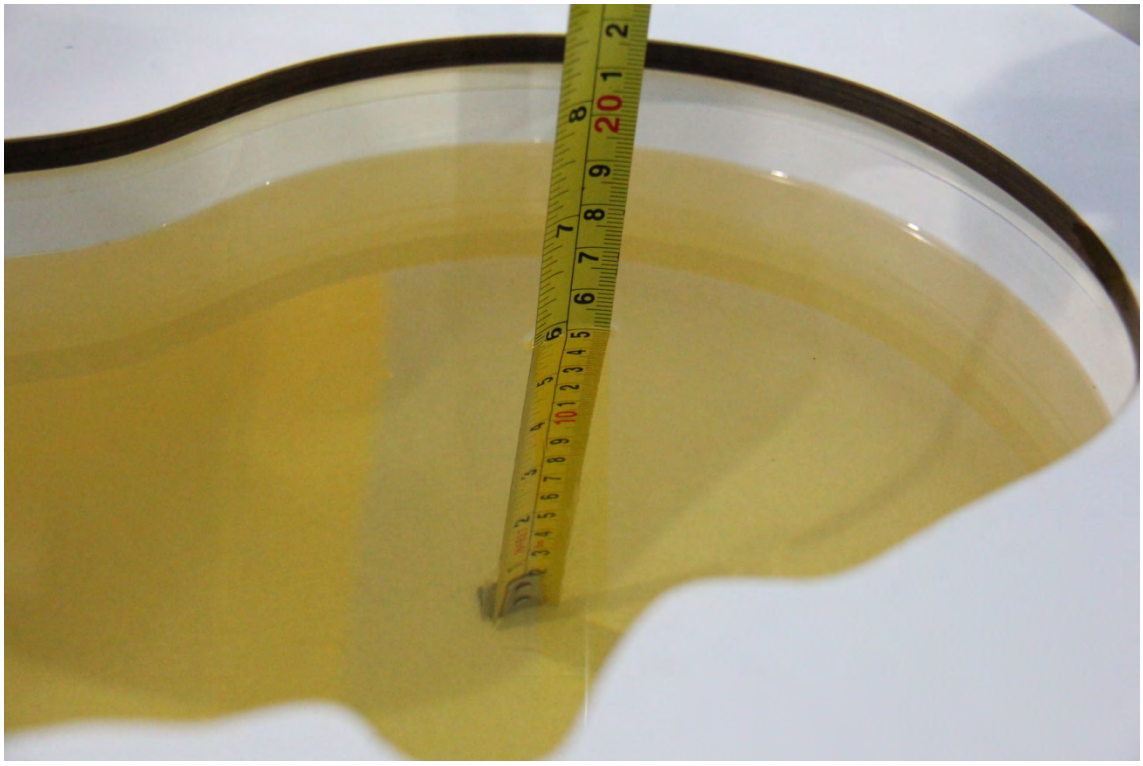
**Table 7.1: Targets for tissue simulating liquid**

| Frequency (MHz) | Liquid Type | Conductivity (σ) | ± 5% Range | Permittivity (ε) | ± 5% Range |
|---|---|---|---|---|---|
| 835 | Head | 0.90 | 0.86～0.95 | 41.5 | 39.4～43.6 |
| 835 | Body | 0.97 | 0.92～1.02 | 55.2 | 52.4～58.0 |
| 1900 | Head | 1.40 | 1.33～1.47 | 40.0 | 38.0～42.0 |
| 1900 | Body | 1.52 | 1.44～1.60 | 53.3 | 50.6～56.0 |
| 2450 | Head | 1.80 | 1.71～1.89 | 39.2 | 37.2～41.2 |
| 2450 | Body | 1.95 | 1.85～2.05 | 52.7 | 50.1～55.3 |

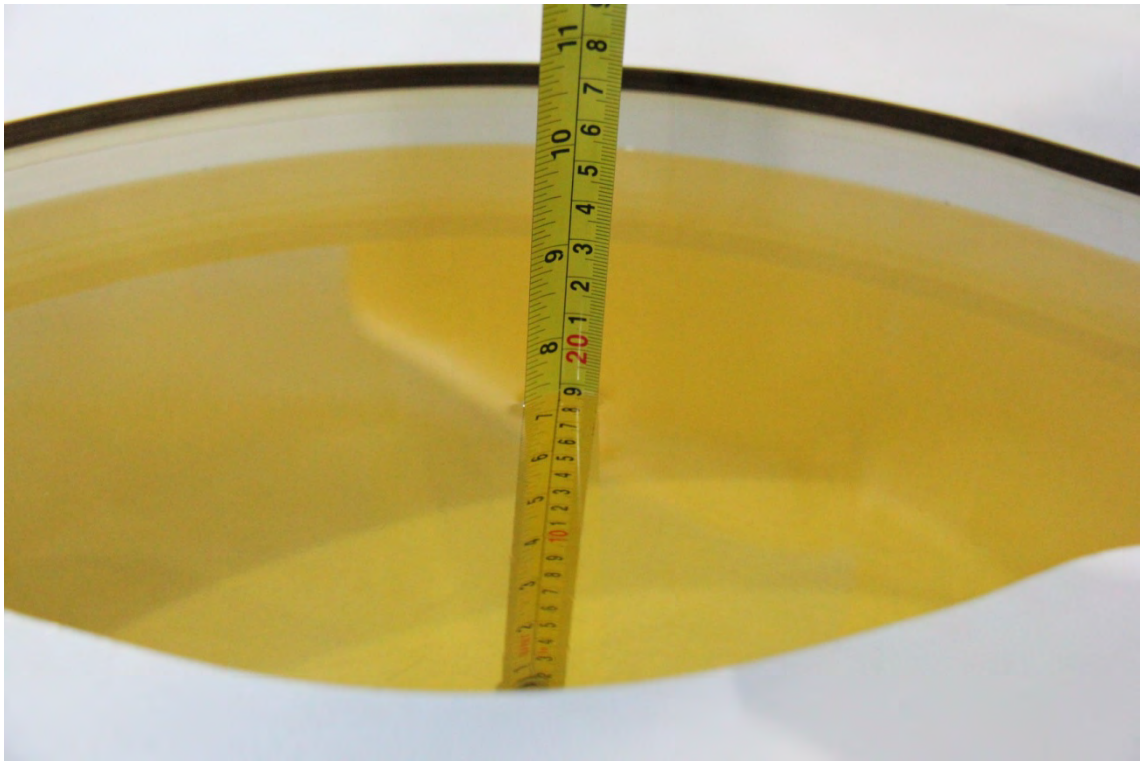
## 7.2 Dielectric Performance

**Table 7.2: Dielectric Performance of Tissue Simulating Liquid**

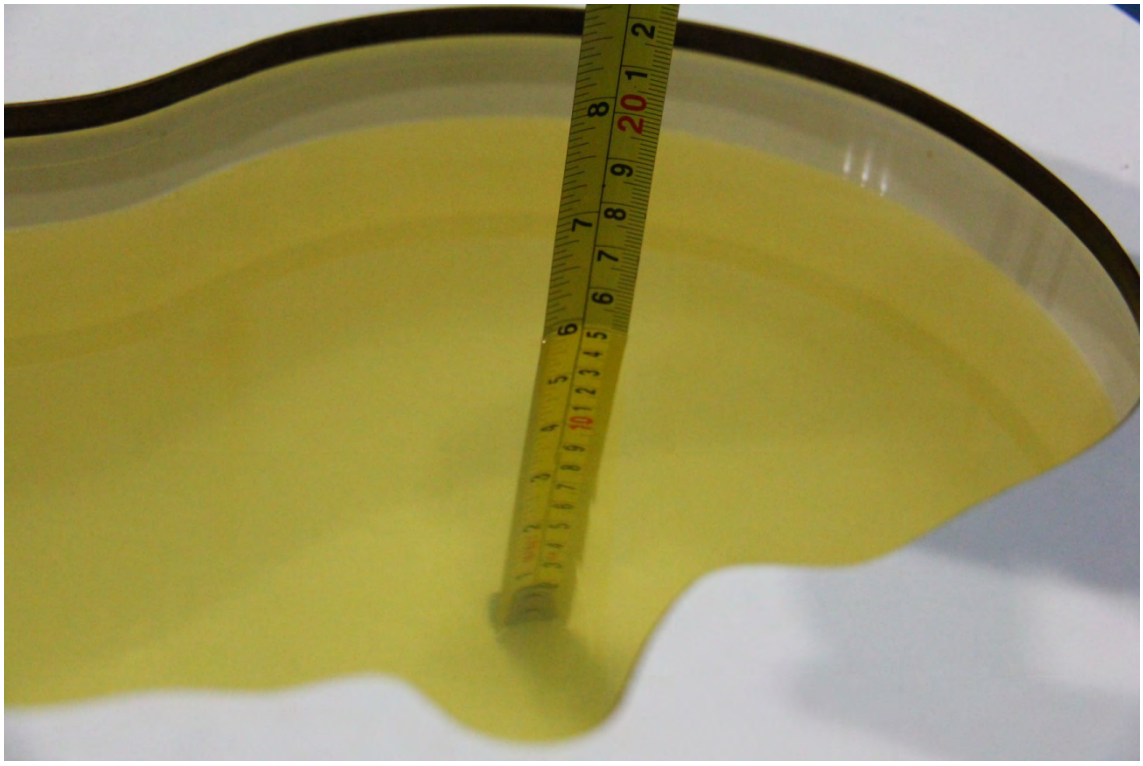
| Measurement Date (yyyy-mm-dd) | Type | Frequency | Permittivity ε | Drift (%) | Conductivity σ (S/m) | Drift (%) |
|---|---|---|---|---|---|---|
| 2013-01-18 | Head | 835 MHz | 40.83 | -1.61 | 0.882 | -2.00 |
| | Body | 835 MHz | 55.58 | 0.69 | 0.984 | 1.44 |
| 2013-01-20 | Head | 1900 MHz | 39.37 | -1.58 | 1.408 | 0.57 |
| | Body | 1900 MHz | 52.25 | -1.97 | 1.511 | -0.59 |
| 2013-01-17 | Head | 2450 MHz | 38.69 | -1.30 | 1.84 | 2.22 |
| | Body | 2450 MHz | 52.03 | -1.27 | 1.964 | 0.72 |



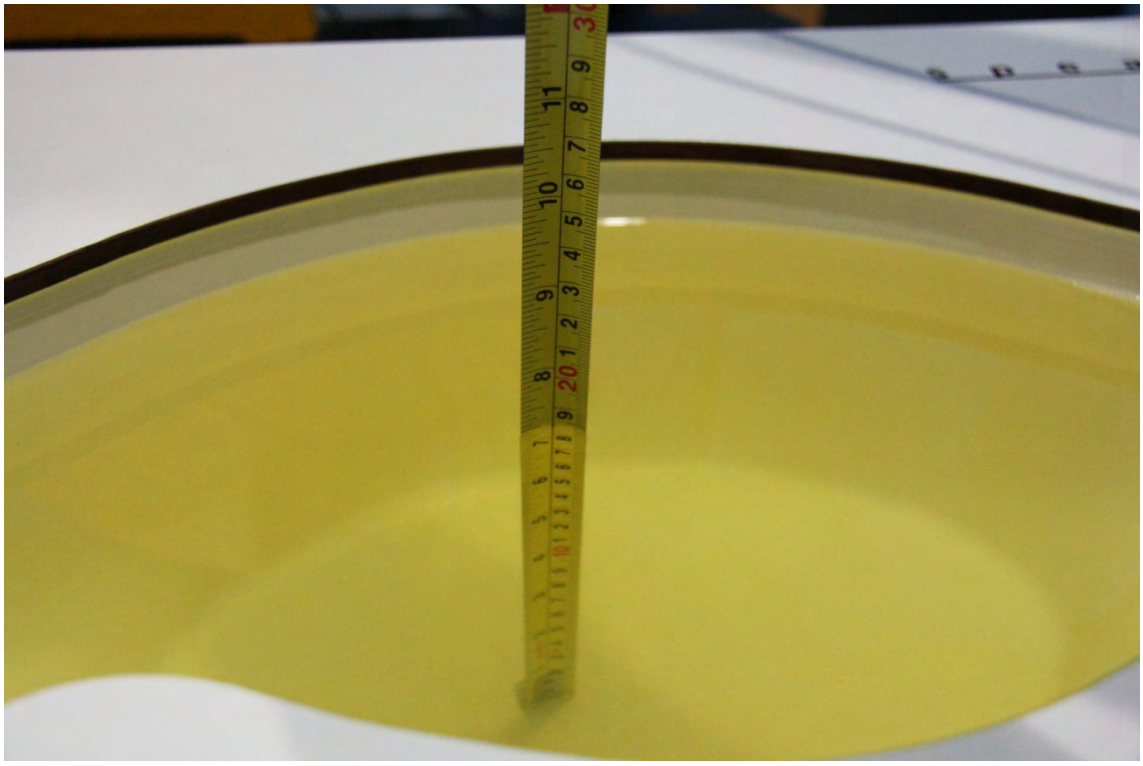
**Picture 7-1: Liquid depth in the Head Phantom (835 MHz)**



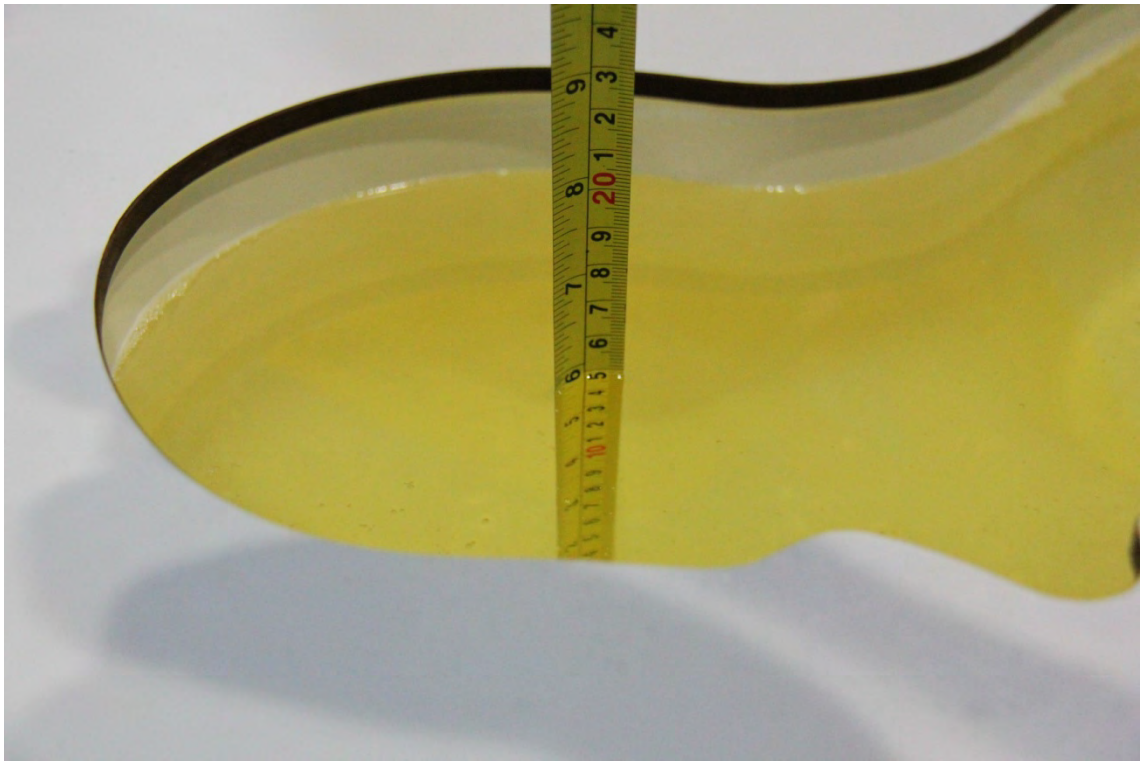
**Picture 7-2: Liquid depth in the Flat Phantom (835 MHz)**



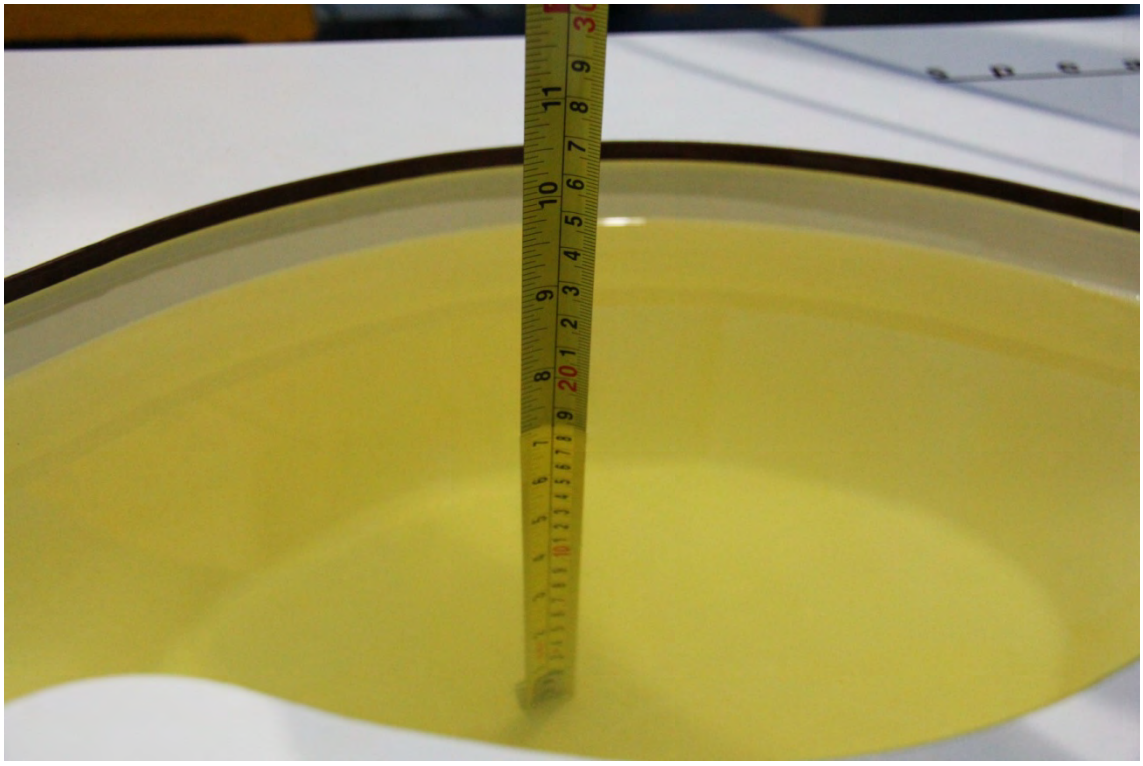
**Picture 7-3: Liquid depth in the Head Phantom (1900 MHz)**



**Picture 7-4 Liquid depth in the Flat Phantom (1900MHz)**



**Picture 7-5 Liquid depth in the Head Phantom (2450MHz)**

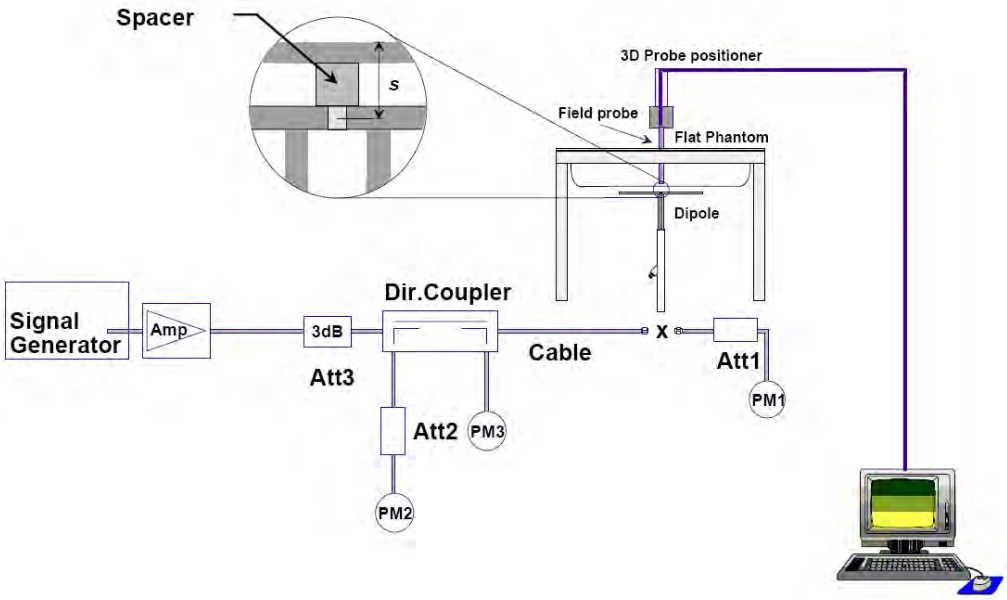


**Picture 7-6 Liquid depth in the Flat Phantom (2450MHz)**

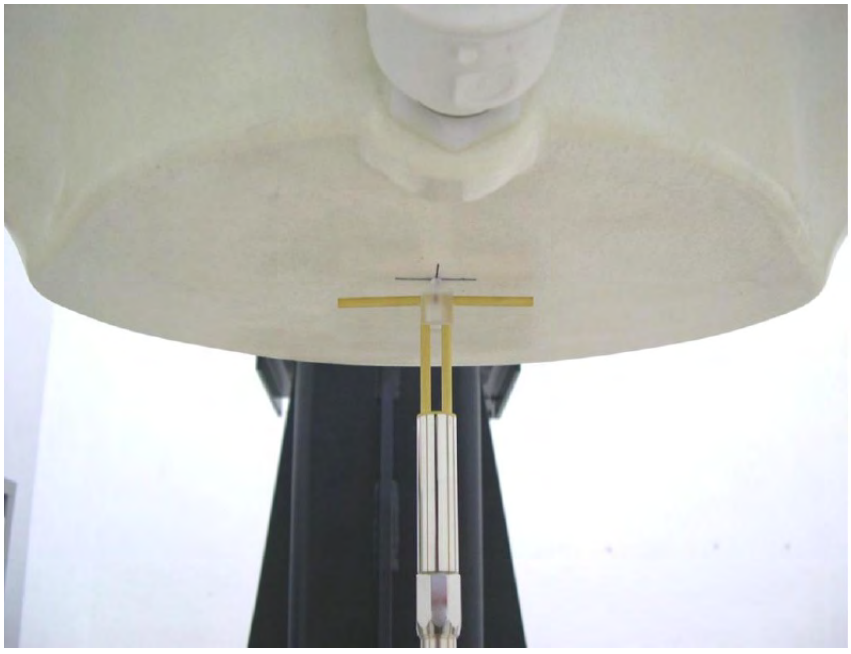
# 8 System verification

## 8.1 System Setup

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




**Picture 8.1 System Setup for System Evaluation**



**Picture 8.2 Photo of Dipole Setup**

## 8.2 System Verification

SAR system verification is required to confirm measurement accuracy, according to the tissue dielectric media, probe calibration points and other system operating parameters required for measuring the SAR of a test device. The system verification must be performed for each frequency band and within the valid range of each probe calibration point required for testing the device.

The system verification results are required that the area scan estimated 1-g SAR is within 3% of the zoom scan 1-g SAR. The details are presented in annex B.

**Table 8.1: System Verification of Head**

| Measurement Date (yyyy-mm-dd) | Frequency | Target value (W/kg) | | Measured value (W/kg) | | Deviation | |
|---|---|---|---|---|---|---|---|
| | | 10 g Average | 1 g Average | 10 g Average | 1 g Average | 10 g Average | 1 g Average |
| 2013-01-18 | 835 MHz | 6.07 | 9.30 | 6.16 | 9.64 | 1.48% | 3.66% |
| 2013-01-20 | 1900 MHz | 20.6 | 39.1 | 20.40 | 38.84 | -0.97% | -0.66% |
| 2013-01-17 | 2450 MHz | 24.4 | 52.4 | 23.60 | 52.00 | -3.28% | -0.76% |

**Table 8.2: System Verification of Body**

| Measurement Date (yyyy-mm-dd) | Frequency | Target value (W/kg) | | Measured value (W/kg) | | Deviation | |
|---|---|---|---|---|---|---|---|
| | | 10 g Average | 1 g Average | 10 g Average | 1 g Average | 10 g Average | 1 g Average |
| 2013-01-18 | 835 MHz | 6.20 | 9.36 | 6.24 | 9.48 | 0.65% | 1.28% |
| 2013-01-20 | 1900 MHz | 21.3 | 39.9 | 21.44 | 40.40 | 0.66% | 1.25% |
| 2013-01-17 | 2450 MHz | 23.6 | 50.4 | 23.68 | 51.20 | 0.34% | 1.59% |

# 9 Measurement Procedures

## 9.1 Tests to be performed

In order to determine the highest value of the peak spatial-average SAR of a handset, all device positions, configurations and operational modes shall be tested for each frequency band according to steps 1 to 3 below. A flowchart of the test process is shown in Picture 11.1.

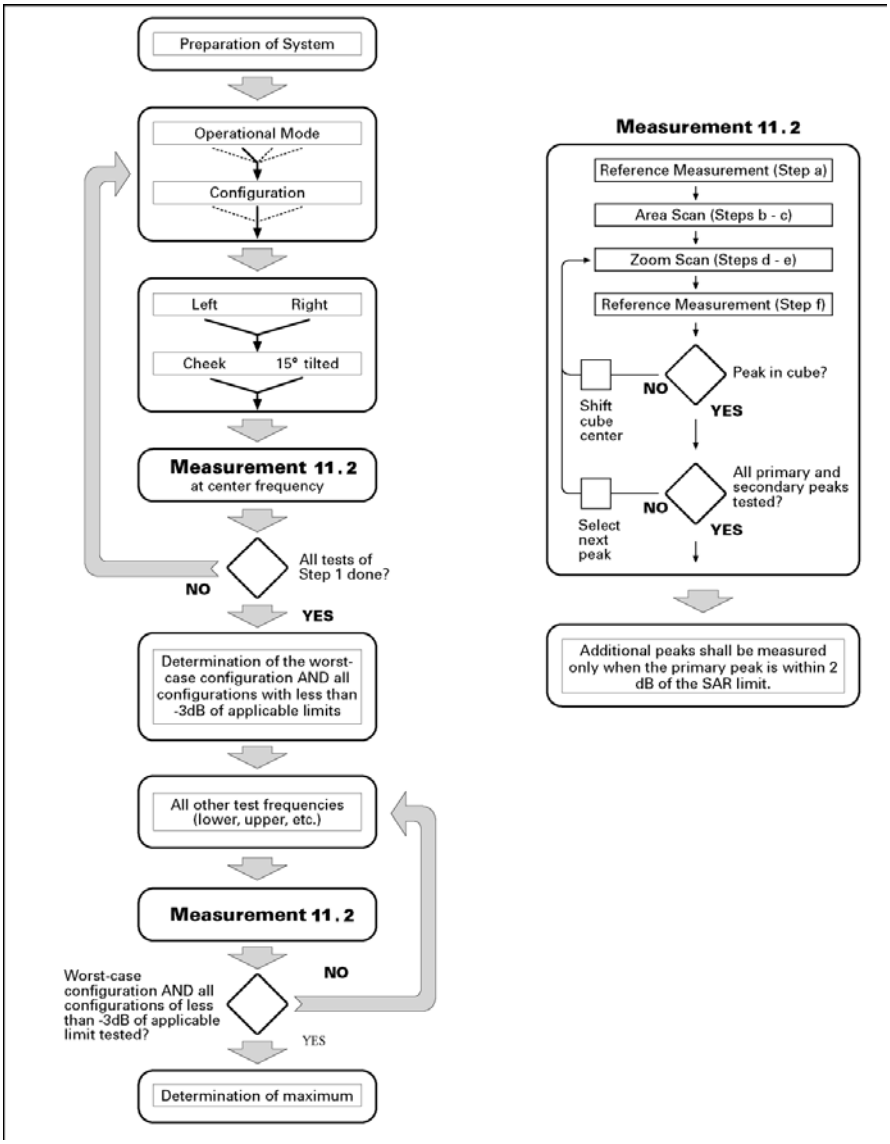
**Step 1**: The tests described in 11.2 shall be performed at the channel that is closest to the centre of the transmit frequency band ( $f_c$ ) for:

a) all device positions (cheek and tilt, for both left and right sides of the SAM phantom, as described in Chapter 8),
b) all configurations for each device position in a), e.g., antenna extended and retracted, and
c) all operational modes, e.g., analogue and digital, for each device position in a) and configuration in b) in each frequency band.

If more than three frequencies need to be tested according to 11.1 (i.e., $N_c$ > 3), then all frequencies, configurations and modes shall be tested for all of the above test conditions.

**Step 2**: For the condition providing highest peak spatial-average SAR determined in Step 1, perform all tests described in 11.2 at all other test frequencies, i.e., lowest and highest frequencies. In addition, for all other conditions (device position, configuration and operational mode) where the peak spatial-average SAR value determined in Step 1 is within 3 dB of the applicable SAR limit, it is recommended that all other test frequencies shall be tested as well.

**Step 3**: Examine all data to determine the highest value of the peak spatial-average SAR found in Steps 1 to 2.




**Picture 9.1 Block diagram of the tests to be performed**

## 9.2 General Measurement Procedure

The area and zoom scan resolutions specified in the table below must be applied to the SAR measurements and fully documented in SAR reports to qualify for TCB approval. Probe boundary effect error compensation is required for measurements with the probe tip closer than half a probe tip diameter to the phantom surface. Both the probe tip diameter and sensor offset distance must satisfy measurement protocols; to ensure probe boundary effect errors are minimized and the higher fields closest to the phantom surface can be correctly measured and extrapolated to the phantom surface for computing 1-g SAR. Tolerances of the post-processing algorithms must be verified by the test laboratory for the scan resolutions used in the SAR measurements, according to the reference distribution functions specified in IEEE Std 1528-2003. The results should be documented as part of the system validation records and may be requested to support test results when all the measurement parameters in the following table are not satisfied.

| | | | ≤ 3 GHz | > 3 GHz |
|---|---|---|---|---|
| Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface | | | 5 ± 1 mm | ½·δ·ln(2) ± 0.5 mm |
| Maximum probe angle from probe axis to phantom surface normal at the measurement location | | | 30° ± 1° | 20° ± 1° |
| Maximum area scan spatial resolution: $\Delta x_{Area}$, $\Delta y_{Area}$ | | | ≤ 2 GHz: ≤ 15 mm<br>2 – 3 GHz: ≤ 12 mm | 3 – 4 GHz: ≤ 12 mm<br>4 – 6 GHz: ≤ 10 mm |
| | | | When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device. | |
| Maximum zoom scan spatial resolution: $\Delta x_{Zoom}$, $\Delta y_{Zoom}$ | | | ≤ 2 GHz: ≤ 8 mm<br>2 – 3 GHz: ≤ 5 mm* | 3 – 4 GHz: ≤ 5 mm*<br>4 – 6 GHz: ≤ 4 mm* |
| Maximum zoom scan spatial resolution, normal to phantom surface | uniform grid: $\Delta z_{Zoom}(n)$ | | ≤ 5 mm | 3 – 4 GHz: ≤ 4 mm<br>4 – 5 GHz: ≤ 3 mm<br>5 – 6 GHz: ≤ 2 mm |
| | graded grid | $\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface | ≤ 4 mm | 3 – 4 GHz: ≤ 3 mm<br>4 – 5 GHz: ≤ 2.5 mm<br>5 – 6 GHz: ≤ 2 mm |
| | | $\Delta z_{Zoom}(n>1)$: between subsequent points | ≤ 1.5·$\Delta z_{Zoom}(n-1)$ | |
| Minimum zoom scan volume | x, y, z | | ≥ 30 mm | 3 – 4 GHz: ≥ 28 mm<br>4 – 5 GHz: ≥ 25 mm<br>5 – 6 GHz: ≥ 22 mm |

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the *reported* SAR from the area scan based *1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

## 9.3 Bluetooth & Wi-Fi Measurement Procedures for SAR

Normal network operating configurations are not suitable for measuring the SAR of 802.11 transmitters in general. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipset based test mode software to ensure that the results are consistent and reliable.

Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in a test mode for SAR measurements must be identical to those programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters. The test frequencies should correspond to actual channel frequencies defined for domestic use. SAR for devices with switched diversity should be measured with only one antenna transmitting at a time during each SAR measurement, according to a fixed modulation and data rate. The same data pattern should be used for all measurements.

### 9.4 Power Drift

To control the output power stability during the SAR test, DASY4 system calculates the power drift by measuring the E-field at the same location at the beginning and at the end of the measurement for each test position. These drift values can be found in Table 14.1 to Table 14.11 labeled as: (Power Drift [dB]). This ensures that the power drift during one measurement is within 5%.

## 10 Area Scan Based 1-g SAR

### 10.1 Requirement of KDB

According to the KDB447498 D01 v05, when the implementation is based the specific polynomial fit algorithm as presented at the 29th Bioelectromagnetics Society meeting (2007) and the estimated 1-g SAR is ≤ 1.2 W/kg, a zoom scan measurement is not required provided it is also not needed for any other purpose; for example, if the peak SAR location required for simultaneous transmission SAR test exclusion can be determined accurately by the SAR system or manually to discriminate between distinctive peaks and scattered noisy SAR distributions from area scans.

There must not be any warning or alert messages due to various measurement concerns identified by the SAR system; for example, noise in measurements, peaks too close to scan boundary, peaks are too sharp, spatial resolution and uncertainty issues etc. The SAR system verification must also demonstrate that the area scan estimated 1-g SAR is within 3% of the zoom scan 1-g SAR (See Annex B). When all the SAR results for each exposure condition in a frequency band and wireless mode are based on estimated 1-g SAR, the 1-g SAR for the highest SAR configuration must be determined by a zoom scan.

### 10.2 Fast SAR Algorithms

The approach is based on the area scan measurement applying a frequency dependent attenuation parameter. This attenuation parameter was empirically determined by analyzing a large number of phones. The MOTOROLA FAST SAR was developed and validated by the MOTOROLA Research Group in Ft. Lauderdale.

In the initial study, an approximation algorithm based on Linear fit was developed. The accuracy of the algorithm has been demonstrated across a broad frequency range (136-2450 MHz) and for both 1- and 10-g averaged SAR using a sample of 264 SAR measurements from 55 wireless handsets. For the sample size studied, the root-mean-squared errors of the algorithm are 1.2% and 5.8% for 1- and 10-g averaged SAR, respectively. The paper describing the algorithm in detail is expected to be published in August 2004 within the Special Issue of Transactions on MTT.

In the second step, the same research group optimized the fitting algorithm to an Polynomial fit whereby the frequency validity was extended to cover the range 30-6000MHz. Details of this study can be found in the BEMS 2007 Proceedings.

Both algorithms are implemented in DASY software.

# 11 Conducted Output Power

## 11.1 Manufacturing tolerance

**Table 11.1: GSM Speech**

| GSM 850 | | | |
|---|---|---|---|
| Channel | Channel 251 | Channel 190 | Channel 128 |
| Target (dBm) | 32.3 | 32.3 | 32.3 |
| Tolerance ±(dB) | 1 | 1 | 1 |
| GSM 1900 | | | |
| Channel | Channel 810 | Channel 661 | Channel 512 |
| Target (dBm) | 29.3 | 29.3 | 29.3 |
| Tolerance ±(dB) | 1 | 1 | 1 |

**Table 11.2: GPRS and EGPRS (GMSK Modulation)**

| GSM 850 GPRS | | | | |
|---|---|---|---|---|
| Channel | | **251** | **190** | **128** |
| 1 Txslot | Target (dBm) | 32.3 | 32.3 | 32.3 |
| | Tolerance ±(dB) | 1 | 1 | 1 |
| 2 Txslots | Target (dBm) | 30 | 30 | 30 |
| | Tolerance ±(dB) | 1 | 1 | 1 |
| 3Txslots | Target (dBm) | 28.3 | 28.3 | 28.3 |
| | Tolerance ±(dB) | 1 | 1 | 1 |
| 4 Txslots | Target (dBm) | 27.3 | 27.3 | 27.3 |
| | Tolerance ±(dB) | 1 | 1 | 1 |
| GSM 850 EGPRS | | | | |
| Channel | | **251** | **190** | **128** |
| 1 Txslot | Target (dBm) | 32.3 | 32.3 | 32.3 |
| | Tolerance ±(dB) | 1 | 1 | 1 |
| 2 Txslots | Target (dBm) | 30 | 30 | 30 |
| | Tolerance ±(dB) | 1 | 1 | 1 |
| 3Txslots | Target (dBm) | 28.3 | 28.3 | 28.3 |
| | Tolerance ±(dB) | 1 | 1 | 1 |
| 4 Txslots | Target (dBm) | 27.3 | 27.3 | 27.3 |
| | Tolerance ±(dB) | 1 | 1 | 1 |
| GSM 1900 GPRS | | | | |
| Channel | | **810** | **661** | **512** |
| 1 Txslot | Target (dBm) | 29.3 | 29.3 | 29.3 |
| | Tolerance ±(dB) | 1 | 1 | 1 |
| 2 Txslots | Target (dBm) | 27.3 | 27.3 | 27.3 |
| | Tolerance ±(dB) | 1 | 1 | 1 |
| 3Txslots | Target (dBm) | 25.5 | 25.5 | 25.5 |
| | Tolerance ±(dB) | 1 | 1 | 1 |

| | | | | |
|---|---|---|---|---|
| 4 Txslots | Target (dBm) | 24.2 | 24.2 | 24.2 |
| | Tolerance ±(dB) | 1 | 1 | 1 |
| GSM 1900 EGPRS | | | | |
| Channel | | **810** | **661** | **512** |
| 1 Txslot | Target (dBm) | 29.3 | 29.3 | 29.3 |
| | Tolerance ±(dB) | 1 | 1 | 1 |
| 2 Txslots | Target (dBm) | 27.3 | 27.3 | 27.3 |
| | Tolerance ±(dB) | 1 | 1 | 1 |
| 3Txslots | Target (dBm) | 25.5 | 25.5 | 25.5 |
| | Tolerance ±(dB) | 1 | 1 | 1 |
| 4 Txslots | Target (dBm) | 24.2 | 24.2 | 24.2 |
| | Tolerance ±(dB) | 1 | 1 | 1 |

**Table 11.3: WiFi**

| Mode | Channel | Target (dBm) | Tolerance ±(dB) |
|---|---|---|---|
| 802.11 b | 1 | 16.5 | 1 |
| | 6 | 16.5 | 1 |
| | 11 | 16.5 | 1 |

## 11.2 GSM Measurement result

During the process of testing, the EUT was controlled via Agilent Digital Radio Communication tester (E5515C) to ensure the maximum power transmission and proper modulation. This result contains conducted output power for the EUT. In all cases, the measured peak output power should be greater and within 5% than EMI measurement.

**Table 11.4: The conducted power measurement results for GSM850/1900**

| | | | |
|---|---|---|---|
| GSM 850MHZ | Conducted Power (dBm) | | |
| | Channel 251(848.8MHz) | Channel 190(836.6MHz) | Channel 128(824.2MHz) |
| | 33.08 | 33.17 | 33.25 |
| GSM 1900MHZ | Conducted Power (dBm) | | |
| | Channel 810(1909.8MHz) | Channel 661(1880MHz) | Channel 512(1850.2MHz) |
| | 29.93 | 29.90 | 29.85 |

**Table 11.5: The conducted power measurement results for GPRS and EGPRS**

| GSM 850 GPRS | Measured Power (dBm) | | | calculation | Averaged Power (dBm) | | |
|---|---|---|---|---|---|---|---|
| | **251** | **190** | **128** | | **251** | **190** | **128** |
| **1 Txslot** | 33.07 | 33.19 | 33.26 | -9.03dB | **24.04** | **24.16** | **24.23** |
| 2 Txslots | 29.51 | 29.61 | 29.66 | -6.02dB | 23.49 | 23.59 | 23.64 |
| 3Txslots | 27.75 | 27.84 | 27.90 | -4.26dB | 23.49 | 23.58 | 23.64 |
| 4 Txslots | 26.53 | 26.62 | 26.69 | -3.01dB | 23.52 | 23.61 | 23.68 |
| GSM 850 EGPRS | Measured Power (dBm) | | | calculation | Averaged Power (dBm) | | |
| | **251** | **190** | **128** | | **251** | **190** | **128** |
| **1 Txslot** | 33.08 | 33.19 | 33.28 | -9.03dB | **24.05** | **24.16** | **24.25** |
| 2 Txslots | 29.52 | 29.62 | 29.67 | -6.02dB | 23.50 | 23.60 | 23.65 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3Txslots | 27.77 | 27.84 | 27.91 | -4.26dB | 23.51 | 23.58 | 23.65 |
| 4 Txslots | 26.53 | 26.61 | 26.70 | -3.01dB | 23.52 | 23.60 | 23.69 |
| PCS1900 | Measured Power (dBm) | | | calculation | Averaged Power (dBm) | | |
| GPRS | **810** | **661** | **512** | | **810** | **661** | **512** |
| **1 Txslot** | 29.93 | 29.90 | 29.86 | -9.03dB | **20.90** | **20.87** | **20.83** |
| 2 Txslots | 26.63 | 26.59 | 26.57 | -6.02dB | 20.61 | 20.57 | 20.55 |
| 3Txslots | 24.84 | 24.79 | 24.74 | -4.26dB | 20.58 | 20.53 | 20.48 |
| 4 Txslots | 23.62 | 23.55 | 23.49 | -3.01dB | 20.61 | 20.54 | 20.48 |
| PCS1900 | Measured Power (dBm) | | | calculation | Averaged Power (dBm) | | |
| EGPRS | **810** | **661** | **512** | | **810** | **661** | **512** |
| **1 Txslot** | 29.93 | 29.90 | 29.86 | -9.03dB | **20.90** | **20.87** | **20.83** |
| 2 Txslots | 26.64 | 26.58 | 26.56 | -6.02dB | 20.62 | 20.56 | 20.54 |
| 3Txslots | 24.83 | 24.79 | 24.74 | -4.26dB | 20.57 | 20.53 | 20.48 |
| 4 Txslots | 23.62 | 23.56 | 23.49 | -3.01dB | 20.61 | 20.55 | 20.48 |

NOTES:

1) Division Factors

To average the power, the division factor is as follows:

1TX-slot = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB

2TX-slots = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB

3TX-slots = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB

4TX-slots = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.01dB

**According to the conducted power as above, the body measurements are performed with 1Txslots for GSM850 and GSM1900.**

**Note: According to the KDB941225 D03, "when SAR tests for EDGE or EGPRS mode is necessary, GMSK modulation should be used".**

## 11.3 Wi-Fi and BT Measurement result

The output power of BT antenna is as following:

| **Channel** | **Ch 0 (2402 MHz)** | **Ch 39 (2441 MHz)** | **Ch 78 (2480 MHz)** |
|---|---|---|---|
| Peak Conducted Output Power(dBm) | 6.23 | 7.00 | 8.35 |

The average conducted power for Wi-Fi is as following:

802.11b（dBm）

| Channel\data rate | 1Mbps | 2Mbps | 5.5Mbps | 11Mbps |
|---|---|---|---|---|
| 1 | 16.70 | 16.68 | 16.66 | 16.43 |
| 6 | 16.20 | 16.21 | 15.95 | 15.82 |
| 11 | 15.99 | 15.96 | 15.97 | 15.74 |

802.11g（dBm）

| Channel\data rate | 6Mbps | 9Mbps | 12Mbps | 18Mbps | 24Mbps | 36Mbps | 48Mbps | 54Mbps |
|---|---|---|---|---|---|---|---|---|
| 1 | 13.55 | 13.37 | 13.34 | 13.03 | 12.82 | 12.43 | 12.08 | 11.75 |
| 6 | 13.14 | 13.03 | 12.86 | 12.67 | 12.24 | 11.87 | 11.53 | 11.39 |
| 11 | 12.97 | 12.65 | 12.47 | 12.36 | 12.14 | 11.53 | 11.19 | 11.07 |

20M 802.11n（dBm）

| Channel\data rate | MCS0 | MCS1 | MCS2 | MCS3 | MCS4 | MCS5 | MCS6 | MCS7 |
|---|---|---|---|---|---|---|---|---|
| 1 | 11.45 | 11.20 | 10.97 | 10.74 | 10.37 | 10.07 | 9.94 | 9.80 |
| 6 | 11.05 | 10.76 | 10.59 | 10.36 | 10.02 | 9.49 | 9.36 | 9.11 |
| 11 | 10.96 | 10.71 | 10.47 | 10.02 | 9.66 | 9.35 | 9.25 | 9.15 |

The peak conducted power for Wi-Fi is as following:

802.11b（dBm）

| Channel\data rate | 1Mbps | 2Mbps | 5.5Mbps | 11Mbps |
|---|---|---|---|---|
| 1 | 20.11 | 20.50 | 21.90 | 23.48 |
| 6 | / | / | / | 22.87 |
| 11 | / | / | / | 22.55 |

802.11g（dBm）

| Channel\data rate | 6Mbps | 9Mbps | 12Mbps | 18Mbps | 24Mbps | 36Mbps | 48Mbps | 54Mbps |
|---|---|---|---|---|---|---|---|---|
| 1 | 22.13 | 22.17 | 21.91 | 21.93 | 22.49 | 22.47 | 22.34 | 22.37 |
| 6 | / | / | / | / | / | / | / | 20.09 |
| 11 | / | / | / | / | / | / | / | 21.69 |

802.11n（dBm）

| Channel\data rate | MCS0 | MCS1 | MCS2 | MCS3 | MCS4 | MCS5 | MCS6 | MCS7 |
|---|---|---|---|---|---|---|---|---|
| 1 | 20.34 | 20.16 | 20.11 | 20.68 | 20.43 | 20.45 | 20.51 | 20.48 |
| 6 | / | / | / | 20.17 | / | / | / | / |
| 11 | / | / | / | 19.97 | / | / | / | / |

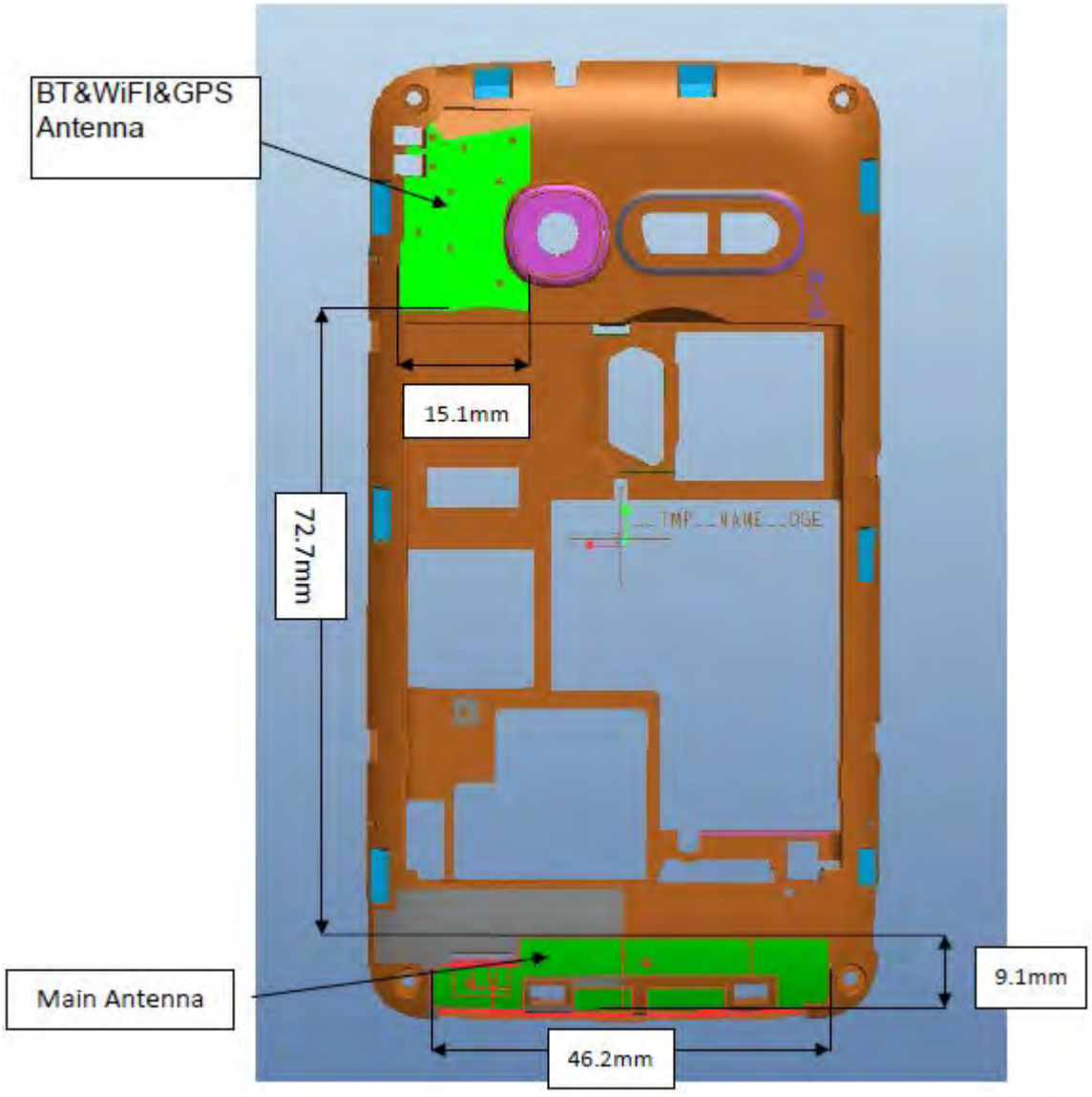
SAR is not required for 802.11g channels if the output power is less than 0.25dB higher than that measured on the corresponding 802.11b channels, and for each frequency band, testing at higher data rates and higher order modulations is not required when the maximum average output power for each of these configurations is less than 0.25dB higher than those measured at the lowest data rate. According to the above conducted power, the EUT should be tested for “802.11b, 1Mbps, channel 1”.

# 12 Simultaneous TX SAR Considerations

## 12.1 Introduction

The following procedures adopted from “FCC SAR Considerations for Cell Phones with Multiple Transmitters” are applicable to handsets with built-in unlicensed transmitters such as 802.11 a/b/g and Bluetooth devices which may simultaneously transmit with the licensed transmitter.
For this device, the BT and Wi-Fi can transmit simultaneous with other transmitters.

## 12.2 Transmit Antenna Separation Distances




**Picture 12.1 Antenna Locations**

## 12.3 Standalone SAR Test Exclusion Considerations

Standalone 1-g head or body SAR evaluation by measurement or numerical simulation is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied. The 1-g SAR test exclusion threshold for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR, where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

According to the KDB447498 appendix A, the SAR test exclusion threshold for 2450MHz at 10m test separation distances is 19mW.

**Appendix A**

**SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm**

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table.

| MHz | 5 | 10 | 15 | 20 | 25 | mm |
|---|---|---|---|---|---|---|
| 150 | 39 | 77 | 116 | 155 | 194 | SAR Test Exclusion Threshold (mW) |
| 300 | 27 | 55 | 82 | 110 | 137 | |
| 450 | 22 | 45 | 67 | 89 | 112 | |
| 835 | 16 | 33 | 49 | 66 | 82 | |
| 900 | 16 | 32 | 47 | 63 | 79 | |
| 1500 | 12 | 24 | 37 | 49 | 61 | |
| 1900 | 11 | 22 | 33 | 44 | 54 | |
| 2450 | 10 | 19 | 29 | 38 | 48 | |
| 3600 | 8 | 16 | 24 | 32 | 40 | |
| 5200 | 7 | 13 | 20 | 26 | 33 | |
| 5400 | 6 | 13 | 19 | 26 | 32 | |
| 5800 | 6 | 12 | 19 | 25 | 31 | |

**Picture 12.2 Power Thresholds**

# 13 Evaluation of Simultaneous

**Table 13.1: Summary of Transmitters**

| Band/Mode | F(GHz) | SAR test exclusion threshold (mW) | RF output power (mW) |
|---|---|---|---|
| Bluetooth | 2.441 | 19 | 6.84 |
| 2.4GHz WLAN 802.11 b | 2.45 | 19 | 46.77 |

According to the conducted power measurement result, we can draw the conclusion that: stand-alone SAR for WiFi should be performed. Then, simultaneous transmission SAR for WiFi is considered with measurement results of GSM and WiFi. Stand-alone SAR and simultaneous transmission SAR for Bluetooth should not be performed.

**Table 13.2: The sum of reported SAR values**

| | Position | GSM | WiFi | Sum |
|---|---|---|---|---|
| **Maximum reported value for Head** | Left hand, Touch cheek | 0.67 | 0.25 | **0.92** |
| | Right hand, Touch cheek | 1.09 | 0.14 | **1.23** |
| **Maximum reported SAR value for Body** | Toward Ground | 1.01 | 0.33 | **1.34** |

According to the above table, the sum of reported SAR values for GSM and WiFi ＜1.6W/kg. So the simultaneous transmission SAR is not required for WiFi transmitter.

# 14 SAR Test Result

It is determined by user manual for the distance between the EUT and the phantom bottom. The distance is 10mm and just applied to the condition of body worn accessory.
It is performed for all SAR measurements with area scan based 1-g SAR estimation. A zoom scan measurement is added when the estimated 1-g SAR is the highest measured SAR in each exposure configuration, wireless mode and frequency band combination or more than 1.2W/kg.

## 14.1 The evaluation of multi-batteries

We'll perform the head measurement in all bands with the primary battery depending on the evaluation of multi-batteries and retest on highest value point with other batteries. Then, repeat the measurement in the Body test.

**Table 14.1: The evaluation of multi-batteries for Head Test**

| Frequency | | Side | Test Position | Battery Type | SAR(1g) | Power Drift(dB) |
|---|---|---|---|---|---|---|
| MHz | Ch. | | | | (W/kg) | |
| 1850.2 | 512 | Right | Touch | TLi014A1 | 0.983 | -0.00 |
| 1850.2 | 512 | Right | Touch | TLiB50B | 0.978 | 0.00 |

Note: According to the values in the above table, the battery, TLi014A1, is the primary battery. We'll perform the head measurement with this battery and retest on highest value point with others.

**Table 14.2: The evaluation of multi-batteries for Body Test**

| Frequency | | Test Position | Spacing (mm) | Battery Type | SAR(1g) | Power Drift(dB) |
|---|---|---|---|---|---|---|
| MHz | Ch. | | | | (W/kg) | |
| 836.6 | 190 | Ground | 10 | TLi014A1 | 0.985 | -0.01 |
| 836.6 | 190 | Ground | 10 | TLiB50B | 0.886 | -0.11 |

Note: According to the values in the above table, the battery, TLi014A1, is the primary battery. We'll perform the Body measurement with this battery and retest on highest value point with others.

## 14.2 SAR Test Result

**Table 14.3: Duty Cycle**

| | Duty Cycle |
|---|---|
| Speech for GSM850/1900 | 1:8.3 |
| GPRS&EGPRS for GSM850/1900 | 1:8.3 |
| WiFi | 1:1 |

**Table 14.4: SAR Values (GSM 850 MHz Band - Head) with battery TLi014A1**

| Frequency | | Side | Test Position | Area or zoom scan | Conducted Power (dBm) | Measured SAR(10g) (W/kg) | Reported SAR(10g) (W/kg) | Measured SAR(1g) (W/kg) | Reported SAR(1g) (W/kg) | Power Drift (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| MHz | Ch. | | | | | | | | | |
| 848.8 | 251 | Left | Touch | Area | 33.08 | 0.407 | **0.43** | 0.544 | **0.57** | 0.14 |
| 836.6 | 190 | Left | Touch | Zoom | 33.17 | 0.329 | **0.34** | 0.480 | **0.49** | -0.02 |
| 824.2 | 128 | Left | Touch | Zoom | 33.25 | 0.312 | **0.32** | 0.456 | **0.46** | 0.16 |
| 848.8 | 251 | Left | Tilt | Zoom | 33.08 | 0.223 | **0.23** | 0.325 | **0.34** | 0.04 |
| 836.6 | 190 | Left | Tilt | Zoom | 33.17 | 0.205 | **0.21** | 0.298 | **0.31** | -0.10 |
| 824.2 | 128 | Left | Tilt | Zoom | 33.25 | 0.192 | **0.19** | 0.279 | **0.28** | 0.10 |
| 848.8 | 251 | Right | Touch | Zoom | 33.08 | 0.334 | **0.35** | 0.491 | **0.52** | 0.03 |
| 836.6 | 190 | Right | Touch | Area | 33.17 | 0.370 | **0.38** | 0.497 | **0.51** | 0.02 |
| 824.2 | 128 | Right | Touch | Zoom | 33.25 | 0.316 | **0.32** | 0.463 | **0.47** | -0.16 |
| 848.8 | 251 | Right | Tilt | Zoom | 33.08 | 0.206 | **0.22** | 0.299 | **0.31** | -0.04 |
| 836.6 | 190 | Right | Tilt | Zoom | 33.17 | 0.216 | **0.22** | 0.314 | **0.32** | 0.16 |
| 824.2 | 128 | Right | Tilt | Zoom | 33.25 | 0.199 | **0.20** | 0.288 | **0.29** | 0.06 |

**Table 14.5: SAR Values (GSM 850 MHz Band - Body) with battery TLi014A1**

| Frequency | | Mode (number of timeslots) | Test Position | Area or zoom scan | Conducted Power (dBm) | Measured SAR(10g) (W/kg) | Reported SAR(10g) (W/kg) | Measured SAR(1g) (W/kg) | Reported SAR(1g) (W/kg) | Power Drift (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| MHz | Ch. | | | | | | | | | |
| 836.6 | 190 | GPRS (1) | Phantom | Zoom | 33.19 | 0.447 | **0.46** | 0.612 | **0.63** | -0.05 |
| 848.8 | 251 | GPRS (1) | Ground | Area | 33.07 | 0.636 | **0.67** | 0.918 | **0.97** | -0.08 |
| 836.6 | 190 | GPRS (1) | Ground | Zoom | 33.19 | 0.714 | **0.73** | 0.985 | **1.01** | -0.01 |
| 824.2 | 128 | GPRS (1) | Ground | Area | 33.26 | 0.628 | **0.63** | 0.912 | **0.92** | 0.12 |
| 836.6 | 190 | GPRS (1) | Left | Zoom | 33.19 | 0.410 | **0.42** | 0.571 | **0.59** | 0.16 |
| 836.6 | 190 | GPRS (1) | Right | Zoom | 33.19 | 0.351 | **0.36** | 0.503 | **0.52** | -0.05 |
| 836.6 | 190 | GPRS (1) | Bottom | Zoom | 33.19 | 0.039 | **0.04** | 0.066 | **0.07** | 0.15 |
| 836.6 | 190 | EGPRS (1) | Ground | Area | 33.19 | 0.621 | **0.64** | 0.896 | **0.92** | -0.09 |
| 836.6 | 190 | Speech | Ground (Headset1) | Area | 33.17 | 0.623 | **0.64** | 0.902 | **0.93** | -0.08 |
| 836.6 | 190 | Speech | Ground (Headset2) | Area | 33.17 | 0.564 | **0.58** | 0.818 | **0.84** | -0.17 |

Note1: The distance between the EUT and the phantom bottom is 10mm.

Note2: The type of Headset1 is CCB3160A11C2, the type of Headset2 is CCB3160A11C4.

**Table 14.6: SAR Values (GSM 1900 MHz Band - Head) with battery TLi014A1**

| Frequency | | Side | Test Position | Area or zoom scan | Conducted Power (dBm) | Measured SAR(10g) (W/kg) | Reported SAR(10g) (W/kg) | Measured SAR(1g) (W/kg) | Reported SAR(1g) (W/kg) | Power Drift (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| MHz | Ch. | | | | | | | | | |
| 1909.8 | 810 | Left | Touch | Area | 29.93 | 0.270 | **0.29** | 0.460 | **0.50** | 0.04 |
| 1880 | 661 | Left | Touch | Area | 29.90 | 0.281 | **0.31** | 0.475 | **0.52** | 0.05 |
| 1850.2 | 512 | Left | Touch | Zoom | 29.85 | 0.371 | **0.41** | 0.605 | **0.67** | 0.04 |
| 1909.8 | 810 | Left | Tilt | Area | 29.93 | 0.137 | **0.15** | 0.248 | **0.27** | 0.01 |
| 1880 | 661 | Left | Tilt | Area | 29.90 | 0.154 | **0.17** | 0.274 | **0.30** | 0.01 |
| 1850.2 | 512 | Left | Tilt | Area | 29.85 | 0.148 | **0.16** | 0.261 | **0.29** | -0.05 |
| 1909.8 | 810 | Right | Touch | Area | 29.93 | 0.446 | **0.49** | 0.817 | **0.89** | -0.16 |
| 1880 | 661 | Right | Touch | Area | 29.90 | 0.494 | **0.54** | 0.904 | **0.99** | 0.01 |
| 1850.2 | 512 | Right | Touch | Zoom | 29.85 | 0.567 | **0.63** | 0.983 | **1.09** | -0.00 |
| 1909.8 | 810 | Right | Tilt | Area | 29.93 | 0.128 | **0.14** | 0.229 | **0.25** | 0.01 |
| 1880 | 661 | Right | Tilt | Area | 29.90 | 0.144 | **0.16** | 0.254 | **0.28** | -0.02 |
| 1850.2 | 512 | Right | Tilt | Area | 29.85 | 0.147 | **0.16** | 0.255 | **0.28** | 0.03 |

**Table 14.7: SAR Values (GSM 1900 MHz Band - Body) with battery TLi014A1**

| Frequency | | Mode (number of timeslots) | Test Position | Area or zoom scan | Conducted Power (dBm) | Measured SAR(10g) (W/kg) | Reported SAR(10g) (W/kg) | Measured SAR(1g) (W/kg) | Reported SAR(1g) (W/kg) | Power Drift (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| MHz | Ch. | | | | | | | | | |
| 1880 | 661 | GPRS (1) | Phantom | Zoom | 29.90 | 0.351 | **0.38** | 0.573 | **0.63** | -0.05 |
| 1909.8 | 810 | GPRS (1) | Ground | Area | 29.93 | 0.337 | **0.37** | 0.583 | **0.63** | -0.04 |
| 1880 | 661 | GPRS (1) | Ground | Area | 29.90 | 0.337 | **0.37** | 0.585 | **0.64** | -0.02 |
| 1850.2 | 512 | GPRS (1) | Ground | Zoom | 29.86 | 0.372 | **0.41** | 0.615 | **0.68** | -0.01 |
| 1880 | 661 | GPRS (1) | Left | Area | 29.90 | 0.057 | **0.06** | 0.101 | **0.11** | 0.03 |
| 1880 | 661 | GPRS (1) | Right | Area | 29.90 | 0.087 | **0.10** | 0.149 | **0.16** | 0.02 |
| 1880 | 661 | GPRS (1) | Bottom | Area | 29.90 | 0.183 | **0.20** | 0.315 | **0.35** | -0.07 |
| 1850.2 | 512 | EGPRS (1) | Ground | Area | 29.86 | 0.352 | **0.39** | 0.611 | **0.68** | -0.03 |
| 1850.2 | 512 | Speech | Ground (Headset1) | Area | 29.85 | 0.300 | **0.33** | 0.511 | **0.57** | -0.01 |
| 1850.2 | 512 | Speech | Ground (Headset2) | Area | 29.85 | 0.304 | **0.34** | 0.516 | **0.57** | 0.02 |

Note1: The distance between the EUT and the phantom bottom is 10mm.

Note2: The type of Headset1 is CCB3160A11C2, the type of Headset2 is CCB3160A11C4.

**Table 14.8: SAR Values (Wi-Fi 802.11b - Head) with battery TLi014A1**

| Frequency | | Side | Test Position | Area or zoom scan | Conducted Power (dBm) | Measured SAR(10g) (W/kg) | Reported SAR(10g) (W/kg) | Measured SAR(1g) (W/kg) | Reported SAR(1g) (W/kg) | Power Drift (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| MHz | Ch. | | | | | | | | | |
| 2412 | 1 | Left | Touch | Zoom | 16.70 | 0.107 | **0.13** | 0.204 | **0.25** | 0.17 |
| 2412 | 1 | Left | Tilt | Area | 16.70 | 0.053 | **0.06** | 0.105 | **0.13** | 0.12 |
| 2412 | 1 | Right | Touch | Zoom | 16.70 | 0.067 | **0.08** | 0.119 | **0.14** | 0.13 |
| 2412 | 1 | Right | Tilt | Area | 16.70 | 0.036 | **0.04** | 0.066 | **0.08** | 0.09 |

**Table 14.9: SAR Values (Wi-Fi 802.11b - Body) with battery TLi014A1**

| Frequency | | Test Position | Area or zoom scan | Conducted Power (dBm) | Measured SAR(10g) (W/kg) | Reported SAR(10g) (W/kg) | Measured SAR(1g) (W/kg) | Reported SAR(1g) (W/kg) | Power Drift (dB) |
|---|---|---|---|---|---|---|---|---|---|
| MHz | Ch. | | | | | | | | |
| 2412 | 1 | Phantom | Area | 16.70 | 0.023 | **0.03** | 0.042 | **0.05** | 0.04 |
| 2412 | 1 | Ground | Zoom | 16.70 | 0.122 | **0.15** | 0.278 | **0.33** | 0.19 |
| 2412 | 1 | Right | Area | 16.70 | 0.100 | **0.12** | 0.197 | **0.24** | 0.16 |
| 2412 | 1 | Top | Area | 16.70 | 0.021 | **0.03** | 0.041 | **0.05** | -0.10 |

Note1: The distance between the EUT and the phantom bottom is 10mm.

**Table 14.10: SAR Values (GSM 1900 MHz Band - Head) with battery TLiB05B**

| Frequency | | Side | Test Position | Area or zoom scan | Conducted Power (dBm) | Measured SAR(10g) (W/kg) | Reported SAR(10g) (W/kg) | Measured SAR(1g) (W/kg) | Reported SAR(1g) (W/kg) | Power Drift (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| MHz | Ch. | | | | | | | | | |
| 1850.2 | 512 | Right | Touch | Zoom | 29.85 | 0.566 | **0.63** | 0.978 | **1.08** | 0.00 |

**Table 14.11: SAR Values (GSM 850 MHz Band - Body) with battery TLiB05B**

| Frequency | | Mode (number of timeslots) | Test Position | Area or zoom scan | Conducted Power (dBm) | Measured SAR(10g) (W/kg) | Reported SAR(10g) (W/kg) | Measured SAR(1g) (W/kg) | Reported SAR(1g) (W/kg) | Power Drift (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| MHz | Ch. | | | | | | | | | |
| 836.6 | 190 | GPRS (1) | Ground | Zoom | 33.19 | 0.650 | **0.67** | 0.886 | **0.91** | -0.11 |

Note: The distance between the EUT and the phantom bottom is 10mm.

# 15 SAR Measurement Variability

SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium.

The following procedures are applied to determine if repeated measurements are required.

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.

2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.

3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).

4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

**Table 15.1: SAR Measurement Variability for Body GSM 850 (1g)**

| Frequency | | Test Position | Spacing (mm) | Original SAR (W/kg) | First Repeated SAR (W/kg) | The Ratio | Second Repeated SAR (W/kg) |
|---|---|---|---|---|---|---|---|
| MHz | Ch. | | | | | | |
| 836.6 | 190 | Ground | 10 | 0.985 | 0.954 | 1.03 | / |

**Table 15.2: SAR Measurement Variability for Head GSM 1900 (1g)**

| Frequency | | Side | Test Position | Original SAR (W/kg) | First Repeated SAR (W/kg) | The Ratio | Second Repeated SAR (W/kg) |
|---|---|---|---|---|---|---|---|
| MHz | Ch. | | | | | | |
| 1850.2 | 512 | Right | Touch | 0.983 | 0.982 | 1.00 | / |

# 16 Measurement Uncertainty

## 16.1 Measurement Uncertainty for Normal SAR Tests

| No. | Error Description | Type | Uncertainty value | Probably Distribution | Div. | (Ci) 1g | (Ci) 10g | Std. Unc. (1g) | Std. Unc. (10g) | Degree of freedom |
|---|---|---|---|---|---|---|---|---|---|---|
| **Measurement system** | | | | | | | | | | |
| 1 | Probe calibration | B | 5.5 | N | 1 | 1 | 1 | 5.5 | 5.5 | ∞ |
| 2 | Isotropy | B | 4.7 | R | $\sqrt{3}$ | 0.7 | 0.7 | 1.9 | 1.9 | ∞ |
| 3 | Boundary effect | B | 1.0 | R | $\sqrt{3}$ | 1 | 1 | 0.6 | 0.6 | ∞ |
| 4 | Linearity | B | 4.7 | R | $\sqrt{3}$ | 1 | 1 | 2.7 | 2.7 | ∞ |
| 5 | Detection limit | B | 1.0 | N | 1 | 1 | 1 | 0.6 | 0.6 | ∞ |
| 6 | Readout electronics | B | 0.3 | R | $\sqrt{3}$ | 1 | 1 | 0.3 | 0.3 | ∞ |
| 7 | Response time | B | 0.8 | R | $\sqrt{3}$ | 1 | 1 | 0.5 | 0.5 | ∞ |
| 8 | Integration time | B | 2.6 | R | $\sqrt{3}$ | 1 | 1 | 1.5 | 1.5 | ∞ |
| 9 | RF ambient conditions-noise | B | 0 | R | $\sqrt{3}$ | 1 | 1 | 0 | 0 | ∞ |
| 10 | RF ambient conditions-reflection | B | 0 | R | $\sqrt{3}$ | 1 | 1 | 0 | 0 | ∞ |
| 11 | Probe positioned mech. restrictions | B | 0.4 | R | $\sqrt{3}$ | 1 | 1 | 0.2 | 0.2 | ∞ |
| 12 | Probe positioning with respect to phantom shell | B | 2.9 | R | $\sqrt{3}$ | 1 | 1 | 1.7 | 1.7 | ∞ |
| 13 | Post-processing | B | 1.0 | R | $\sqrt{3}$ | 1 | 1 | 0.6 | 0.6 | ∞ |
| **Test sample related** | | | | | | | | | | |
| 14 | Test sample positioning | A | 3.3 | N | 1 | 1 | 1 | 3.3 | 3.3 | 71 |
| 15 | Device holder uncertainty | A | 3.4 | N | 1 | 1 | 1 | 3.4 | 3.4 | 5 |
| 16 | Drift of output power | B | 5.0 | R | $\sqrt{3}$ | 1 | 1 | 2.9 | 2.9 | ∞ |
| **Phantom and set-up** | | | | | | | | | | |
| 17 | Phantom uncertainty | B | 4.0 | R | $\sqrt{3}$ | 1 | 1 | 2.3 | 2.3 | ∞ |
| 18 | Liquid conductivity (target) | B | 5.0 | R | $\sqrt{3}$ | 0.64 | 0.43 | 1.8 | 1.2 | ∞ |
| 19 | Liquid conductivity (meas.) | A | 2.06 | N | 1 | 0.64 | 0.43 | 1.32 | 0.89 | 43 |
| 20 | Liquid permittivity (target) | B | 5.0 | R | $\sqrt{3}$ | 0.6 | 0.49 | 1.7 | 1.4 | ∞ |
| 21 | Liquid permittivity (meas.) | A | 1.6 | N | 1 | 0.6 | 0.49 | 1.0 | 0.8 | 521 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Combined standard uncertainty | $u_c' = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$ | | | | | 9.25 | 9.12 | 257 |
| Expanded uncertainty (confidence interval of 95 %) | $u_e = 2u_c$ | | | | | 18.5 | 18.2 | |

## 16.2 Measurement Uncertainty for Fast SAR Tests

| No. | Error Description | Type | Uncertainty value | Probably Distribution | Div. | (Ci) 1g | (Ci) 10g | Std. Unc. (1g) | Std. Unc. (10g) | Degree of freedom |
|---|---|---|---|---|---|---|---|---|---|---|
| **Measurement system** | | | | | | | | | | |
| 1 | Probe calibration | B | 5.5 | N | 1 | 1 | 1 | 5.5 | 5.5 | ∞ |
| 2 | Isotropy | B | 4.7 | R | $\sqrt{3}$ | 0.7 | 0.7 | 1.9 | 1.9 | ∞ |
| 3 | Boundary effect | B | 1.0 | R | $\sqrt{3}$ | 1 | 1 | 0.6 | 0.6 | ∞ |
| 4 | Linearity | B | 4.7 | R | $\sqrt{3}$ | 1 | 1 | 2.7 | 2.7 | ∞ |
| 5 | Detection limit | B | 1.0 | N | 1 | 1 | 1 | 0.6 | 0.6 | ∞ |
| 6 | Readout electronics | B | 0.3 | R | $\sqrt{3}$ | 1 | 1 | 0.3 | 0.3 | ∞ |
| 7 | Response time | B | 0.8 | R | $\sqrt{3}$ | 1 | 1 | 0.5 | 0.5 | ∞ |
| 8 | Integration time | B | 2.6 | R | $\sqrt{3}$ | 1 | 1 | 1.5 | 1.5 | ∞ |
| 9 | RF ambient conditions-noise | B | 0 | R | $\sqrt{3}$ | 1 | 1 | 0 | 0 | ∞ |
| 10 | RF ambient conditions-reflection | B | 0 | R | $\sqrt{3}$ | 1 | 1 | 0 | 0 | ∞ |
| 11 | Probe positioned mech. Restrictions | B | 0.4 | R | $\sqrt{3}$ | 1 | 1 | 0.2 | 0.2 | ∞ |
| 12 | Probe positioning with respect to phantom shell | B | 2.9 | R | $\sqrt{3}$ | 1 | 1 | 1.7 | 1.7 | ∞ |
| 13 | Post-processing | B | 1.0 | R | $\sqrt{3}$ | 1 | 1 | 0.6 | 0.6 | ∞ |
| 14 | Fast SAR z-Approximation | B | 7.0 | R | $\sqrt{3}$ | 1 | 1 | 4.0 | 4.0 | ∞ |
| **Test sample related** | | | | | | | | | | |
| 15 | Test sample positioning | A | 3.3 | N | 1 | 1 | 1 | 3.3 | 3.3 | 71 |
| 16 | Device holder uncertainty | A | 3.4 | N | 1 | 1 | 1 | 3.4 | 3.4 | 5 |
| 17 | Drift of output power | B | 5.0 | R | $\sqrt{3}$ | 1 | 1 | 2.9 | 2.9 | ∞ |
| **Phantom and set-up** | | | | | | | | | | |
| 18 | Phantom uncertainty | B | 4.0 | R | $\sqrt{3}$ | 1 | 1 | 2.3 | 2.3 | ∞ |
| 19 | Liquid conductivity (target) | B | 5.0 | R | $\sqrt{3}$ | 0.64 | 0.43 | 1.8 | 1.2 | ∞ |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 20 | Liquid conductivity (meas.) | A | 2.06 | N | 1 | 0.64 | 0.43 | 1.32 | 0.89 | 43 |
| 21 | Liquid permittivity (target) | B | 5.0 | R | $\sqrt{3}$ | 0.6 | 0.49 | 1.7 | 1.4 | ∞ |
| 22 | Liquid permittivity (meas.) | A | 1.6 | N | 1 | 0.6 | 0.49 | 1.0 | 0.8 | 521 |
| Combined standard uncertainty | | $u_c' = \sqrt{\sum_{i=1}^{22} c_i^2 u_i^2}$ | | | | | | 10.1 | 9.95 | 257 |
| Expanded uncertainty (confidence interval of 95 %) | | $u_e = 2u_c$ | | | | | | 20.2 | 19.9 | |

# 17 MAIN TEST INSTRUMENTS

**Table 17.1: List of Main Instruments**

| No. | Name | Type | Serial Number | Calibration Date | Valid Period |
|---|---|---|---|---|---|
| 01 | Network analyzer | E5071C | MY46110673 | February 14, 2012 | One year |
| 02 | Power meter | NRVD | 102083 | September 11, 2012 | One year |
| 03 | Power sensor | NRV-Z5 | 100542 | | |
| 04 | Signal Generator | E4438C | MY49070393 | November 13, 2012 | One Year |
| 05 | Amplifier | VTL5400 | 0505 | No Calibration Requested | |
| 06 | BTS | E5515C | MY50263375 | January 30, 2012 | One year |
| 07 | E-field Probe | SPEAG ES3DV3 | 3149 | April 24, 2012 | One year |
| 08 | DAE | SPEAG DAE4 | 771 | November 20, 2012 | One year |
| 09 | Dipole Validation Kit | SPEAG D835V2 | 443 | May 03, 2012 | One year |
| 10 | Dipole Validation Kit | SPEAG D1900V2 | 541 | May 09, 2012 | One year |
| 11 | Dipole Validation Kit | SPEAG D2450V2 | 853 | May 02, 2012 | One year |

***END OF REPORT BODY***

# ANNEX A GRAPH RESULTS

## 850 Left Cheek High

Date: 2013-1-18
Electronics: DAE4 Sn771
Medium: Head 835 MHz
Medium parameters used (interpolated): f = 848.8 MHz; $\sigma$ = 0.895 mho/m; $\varepsilon r$ = 40.648; $\rho$ = 1000 kg/$m^3$
Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C
Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.26, 6.26, 6.26)

**Cheek High/Area Scan (61x101x1):** Measurement grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.527 W/kg

**Cheek High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.784 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.675 W/kg
**SAR(1 g) = 0.544 W/kg; SAR(10 g) = 0.407 W/kg**
Maximum value of SAR (measured) = 0.572 W/kg

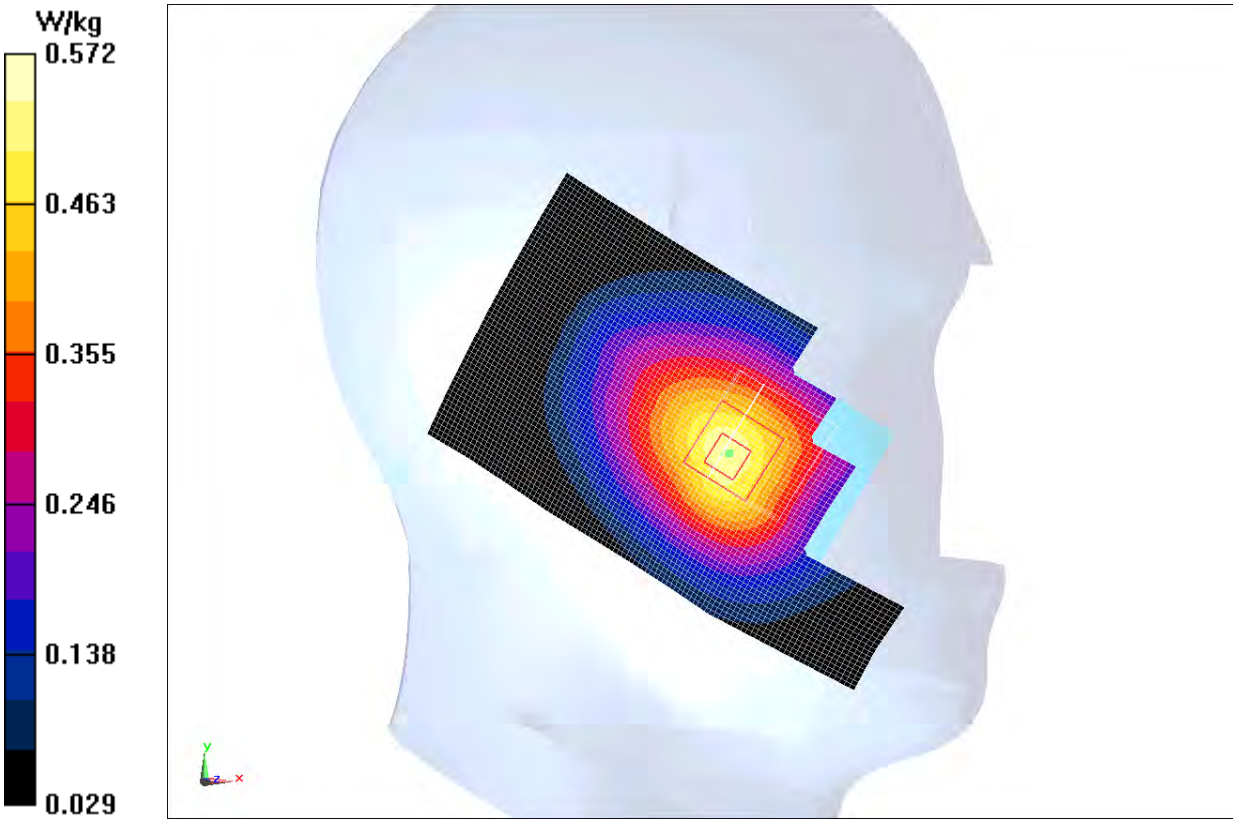



**Fig. 1 850MHz CH251**

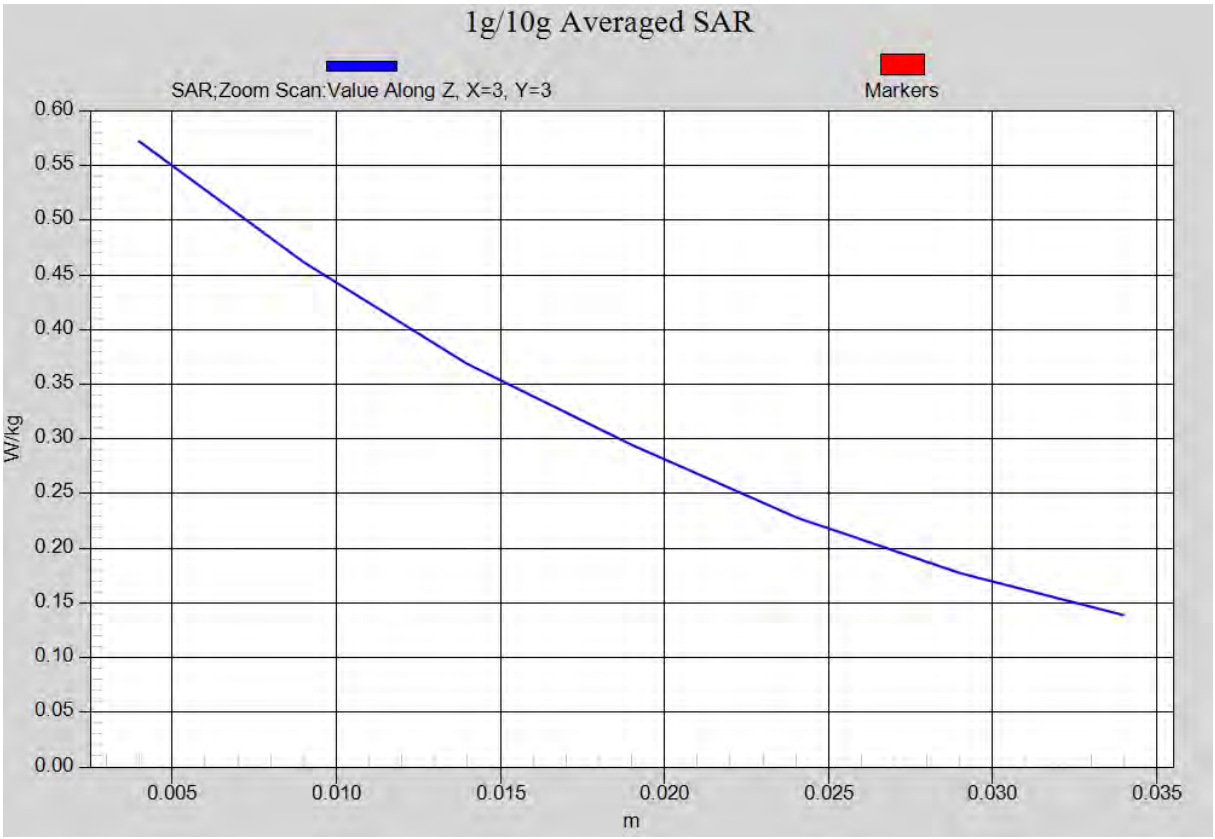



**Fig. 1-1 Z-Scan at power reference point (850 MHz CH251)**

**850 Left Cheek Middle**

Date: 2013-1-18
Electronics: DAE4 Sn771
Medium: Head 835 MHz
Medium parameters used (interpolated): f = 836.6 MHz; $\sigma$ = 0.883 mho/m; $\varepsilon r$ = 40.805; $\rho$ = 1000 kg/$m^3$
Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C
Communication System: GSM; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.26, 6.26, 6.26)

**Cheek Middle/Area Scan (61x101x1):** Measurement grid: dx=10 mm, dy=10 mm
Reference Value = 10.071 V/m; Power Drift = -0.02 dB
**Fast SAR: SAR(1 g) = 0.480 W/kg; SAR(10 g) = 0.329 W/kg**
Maximum value of SAR (interpolated) = 0.513 W/kg

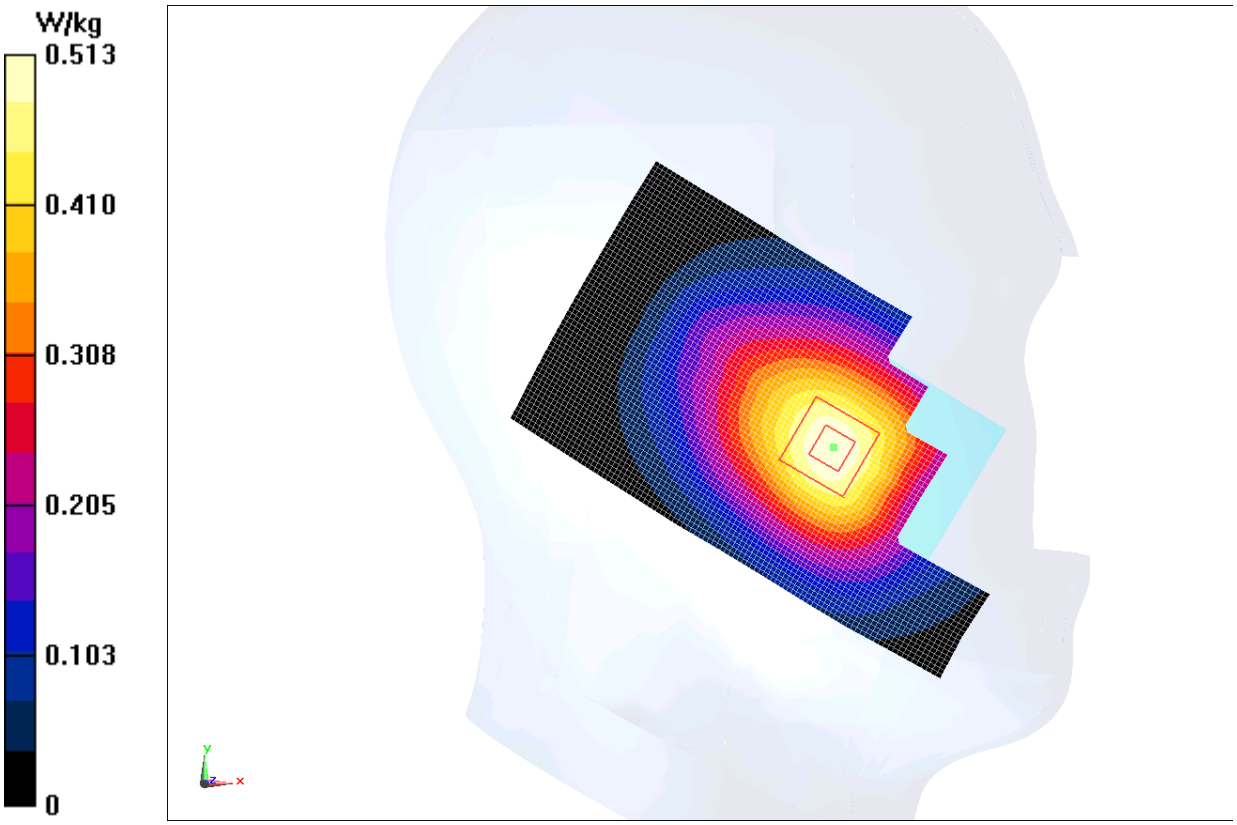



**Fig. 2 850 MHz CH190**

## 850 Left Cheek Low

Date: 2013-1-18
Electronics: DAE4 Sn771
Medium: Head 835 MHz
Medium parameters used: f = 825 MHz; $\sigma$ = 0.872 mho/m; $\varepsilon r$ = 40.945; $\rho$ = 1000 kg/m$^3$
Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C
Communication System: GSM; Frequency: 824.2 MHz;Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.26, 6.26, 6.26)

**Cheek Low/Area Scan (61x101x1):** Measurement grid: dx=10 mm, dy=10 mm
Reference Value = 8.695 V/m; Power Drift = 0.16 dB
**Fast SAR: SAR(1 g) = 0.456 W/kg; SAR(10 g) = 0.312 W/kg**
Maximum value of SAR (interpolated) = 0.488 W/kg

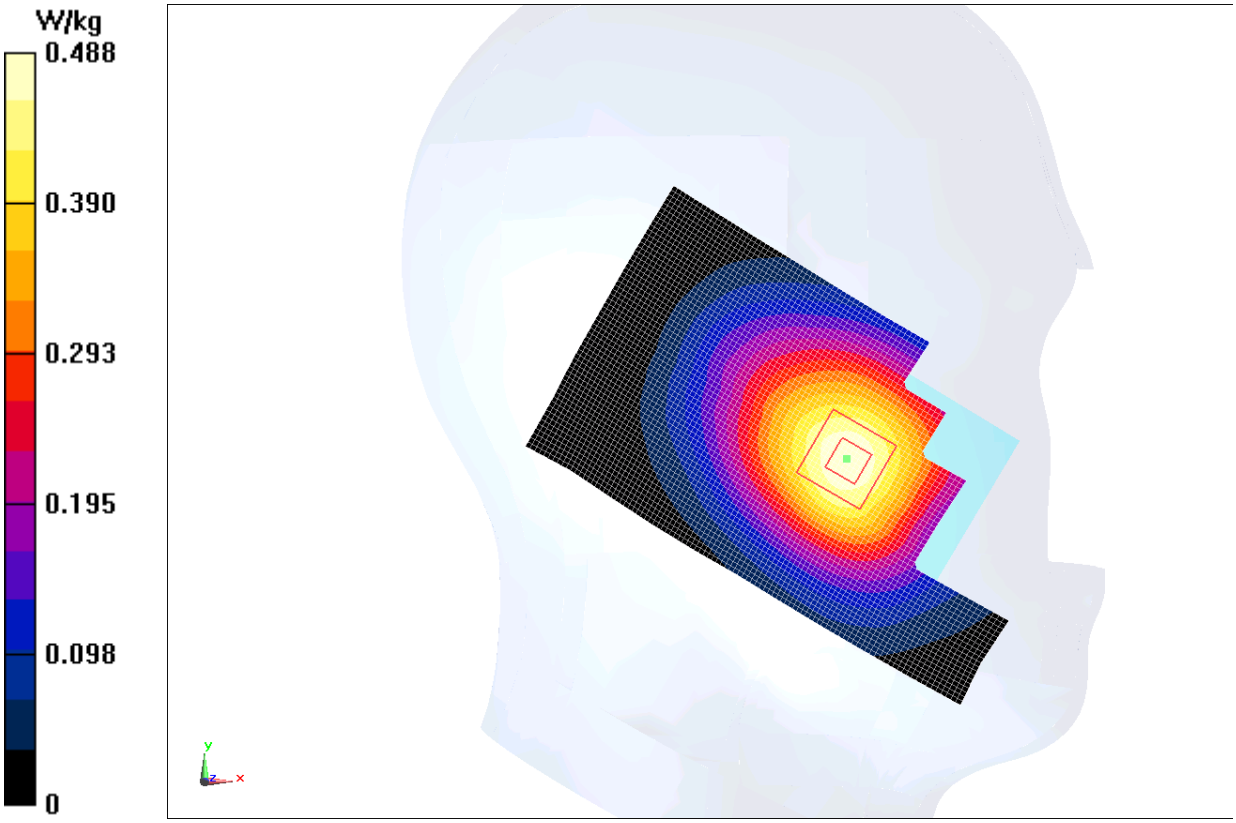



**Fig. 3 850 MHz CH128**

**850 Left Tilt High**

Date: 2013-1-18

Electronics: DAE4 Sn771

Medium: Head 835 MHz

Medium parameters used (interpolated): f = 848.8 MHz; $\sigma$ = 0.895 mho/m; $\varepsilon r$ = 40.648; $\rho$ = 1000 kg/$m^3$

Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C

Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3

Probe: ES3DV3 - SN3149 ConvF(6.26, 6.26, 6.26)

**Tilt High/Area Scan (61x101x1):** Measurement grid: dx=10 mm, dy=10 mm

Reference Value = 13.113 V/m; Power Drift = 0.04 dB

**Fast SAR: SAR(1 g) = 0.325 W/kg; SAR(10 g) = 0.223 W/kg**

Maximum value of SAR (interpolated) = 0.347 W/kg

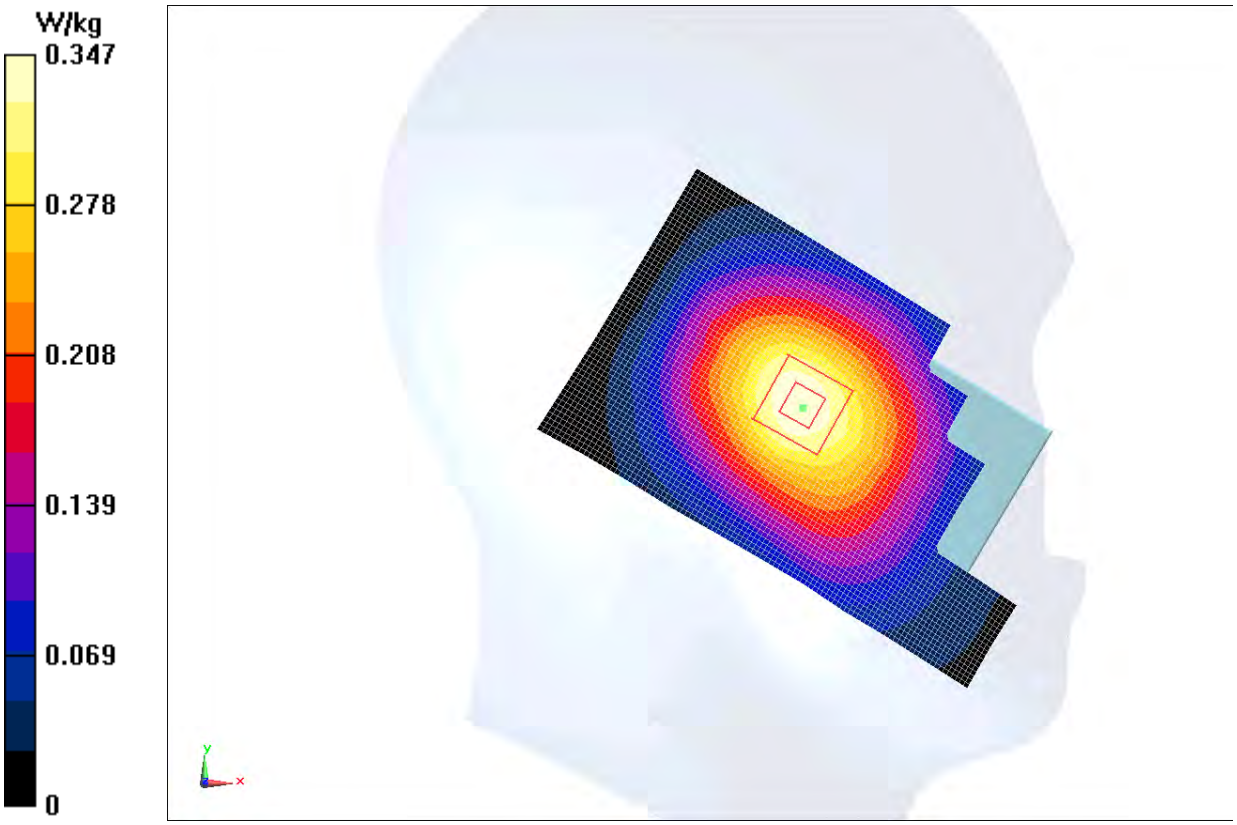



**Fig.4 850 MHz CH251**

**850 Left Tilt Middle**

Date: 2013-1-18

Electronics: DAE4 Sn771

Medium: Head 835 MHz

Medium parameters used (interpolated): f = 836.6 MHz; $\sigma$ = 0.883 mho/m; $\varepsilon r$ = 40.805; $\rho$ = 1000 kg/$m^3$

Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C

Communication System: GSM; Frequency: 836.6 MHz;Duty Cycle: 1:8.30042

Probe: ES3DV3 - SN3149 ConvF(6.26, 6.26, 6.26)

**Tilt Middle/Area Scan (61x101x1):** Measurement grid: dx=10 mm, dy=10 mm

Reference Value = 12.876 V/m; Power Drift = -0.10 dB

**Fast SAR: SAR(1 g) = 0.298 W/kg; SAR(10 g) = 0.205 W/kg**

Maximum value of SAR (interpolated) = 0.319 W/kg

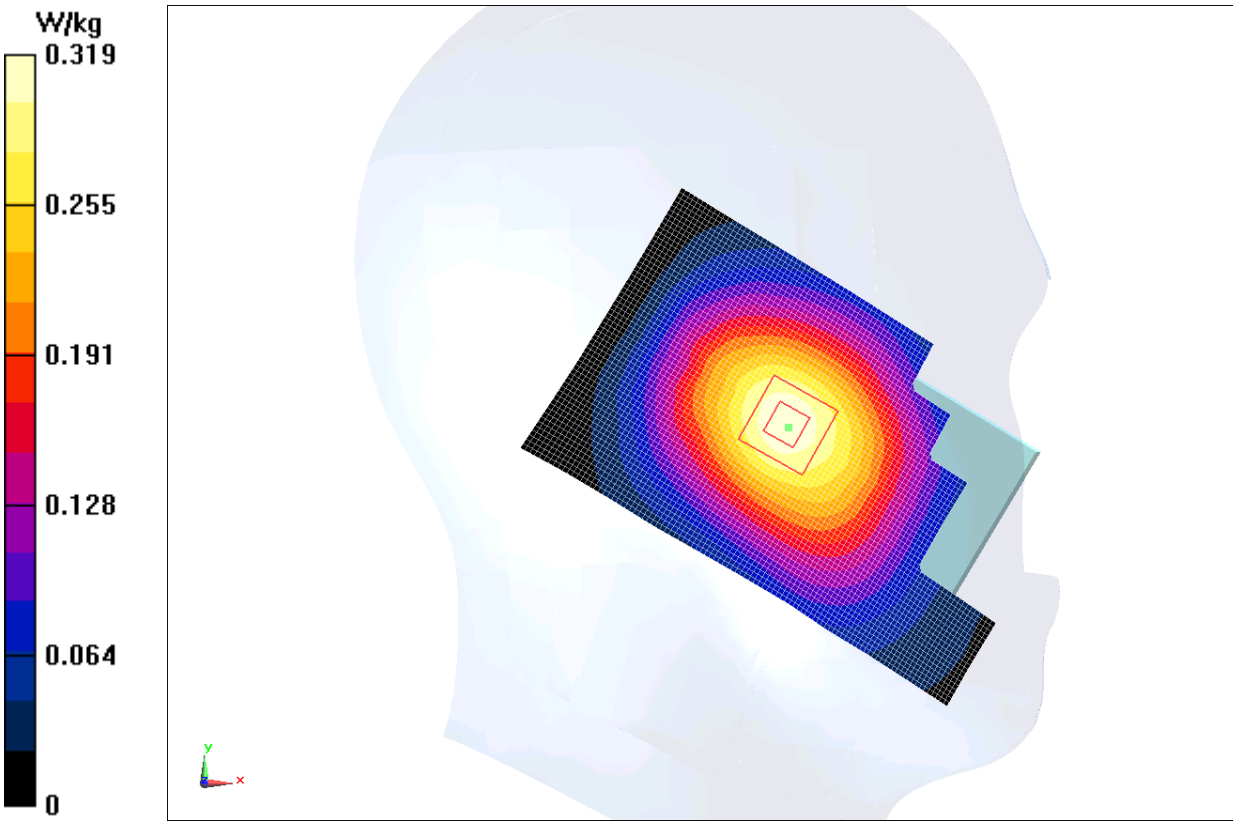



**Fig.5 850 MHz CH190**

**850 Left Tilt Low**

Date: 2013-1-18
Electronics: DAE4 Sn771
Medium: Head 835 MHz
Medium parameters used: f = 825 MHz; $\sigma$ = 0.872 mho/m; $\varepsilon r$ = 40.945; $\rho$ = 1000 kg/m$^3$
Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C
Communication System: GSM 850 Frequency: 824.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.26, 6.26, 6.26)

**Tilt Low/Area Scan (61x101x1):** Measurement grid: dx=10 mm, dy=10 mm
Reference Value = 12.618 V/m; Power Drift = 0.10 dB
**Fast SAR: SAR(1 g) = 0.279 W/kg; SAR(10 g) = 0.192 W/kg**
Maximum value of SAR (interpolated) = 0.299 W/kg

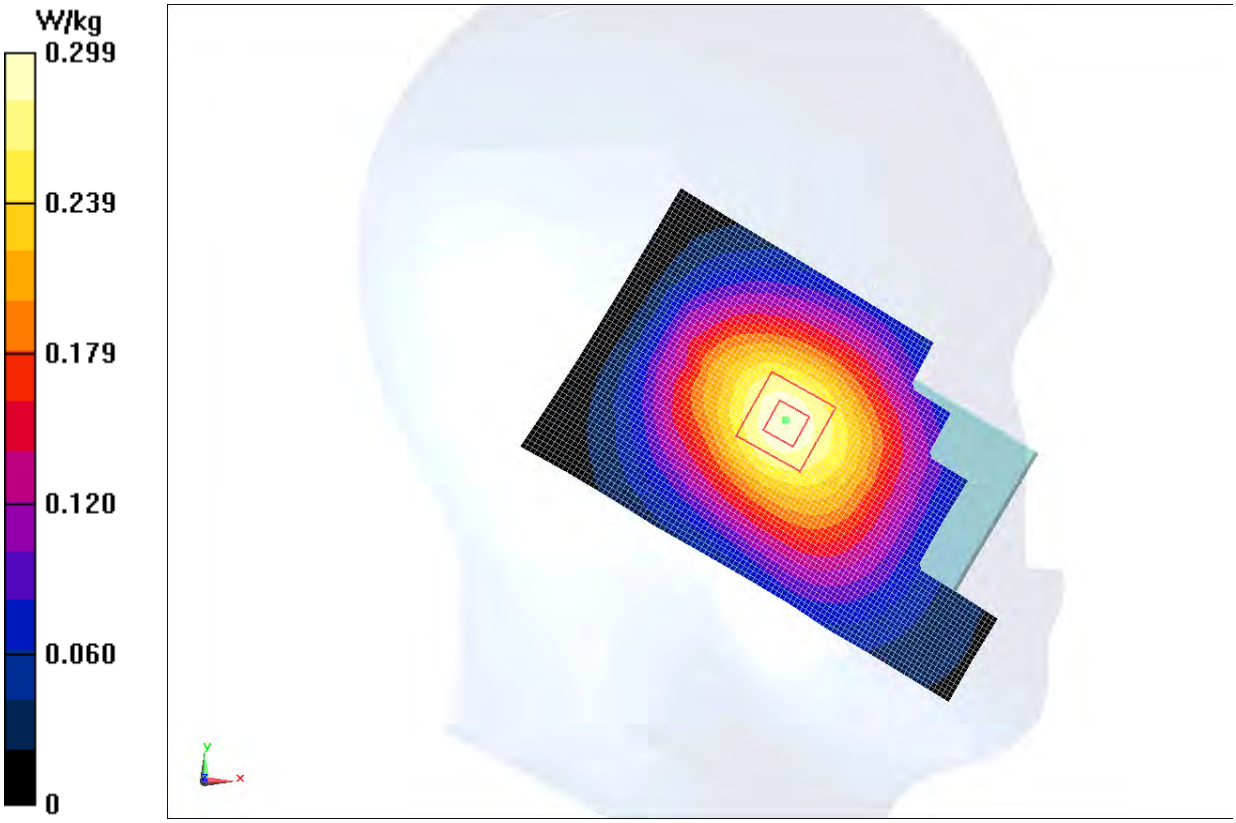



**Fig. 6 850 MHz CH128**

**850 Right Cheek High**

Date: 2013-1-18

Electronics: DAE4 Sn771

Medium: Head 835 MHz

Medium parameters used (interpolated): f = 848.8 MHz; $\sigma$ = 0.895 mho/m; $\varepsilon r$ = 40.648; $\rho$ = 1000 kg/$m^3$

Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C

Communication System: GSM; Frequency: 848.8 MHz;Duty Cycle: 1:8.30042

Probe: ES3DV3 - SN3149 ConvF(6.26, 6.26, 6.26)

**Cheek High/Area Scan (61x101x1):** Measurement grid: dx=10 mm, dy=10 mm

Reference Value = 7.727 V/m; Power Drift = 0.03 dB

**Fast SAR: SAR(1 g) = 0.491 W/kg; SAR(10 g) = 0.334 W/kg**

Maximum value of SAR (interpolated) = 0.527 W/kg

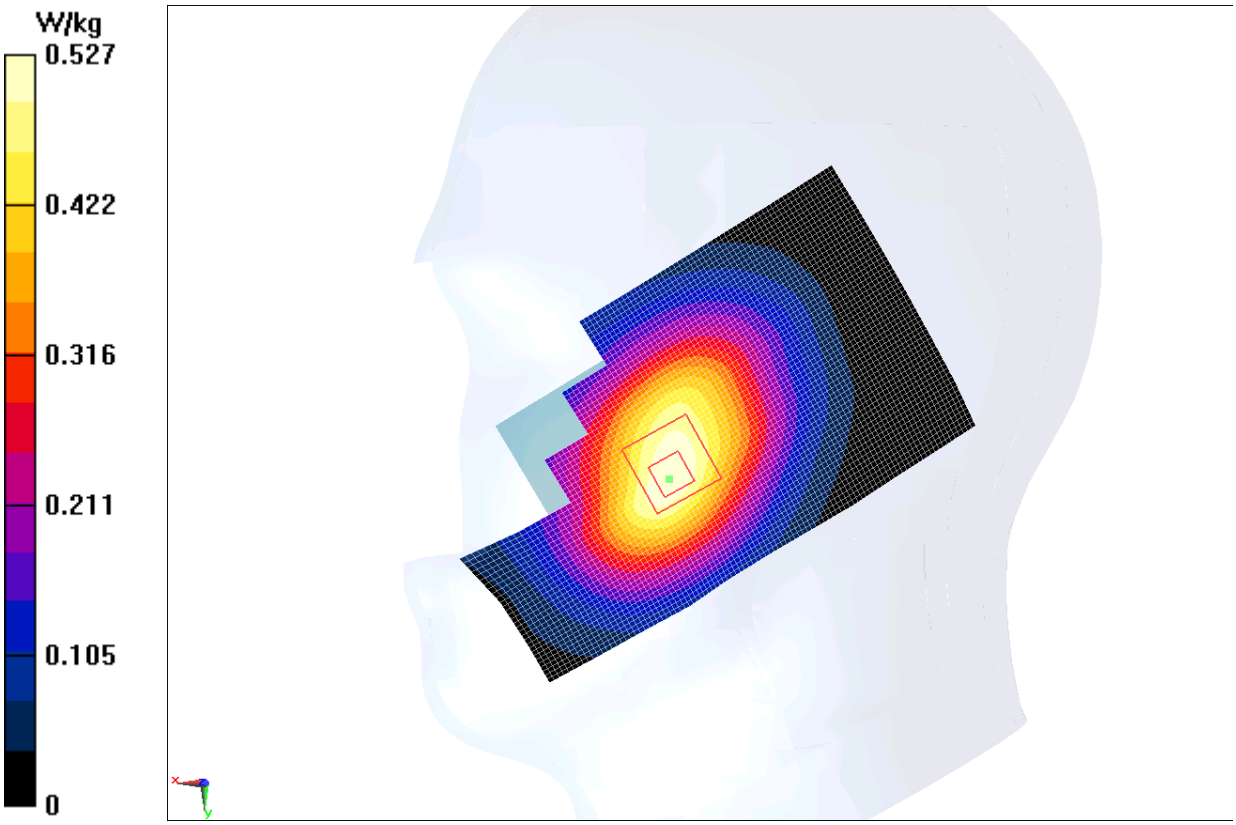



**Fig. 7 850 MHz CH251**

## 850 Right Cheek Middle

Date: 2013-1-18
Electronics: DAE4 Sn771
Medium: Head 835 MHz
Medium parameters used (interpolated): f = 836.6 MHz; $\sigma$ = 0.883 mho/m; $\varepsilon r$ = 40.805; $\rho$ = 1000 kg/$m^3$
Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C
Communication System: GSM; Frequency: 836.6 MHz;Duty Cycle: 1:8.30042
Probe: ES3DV3 - SN3149 ConvF(6.26, 6.26, 6.26)

**Cheek Middle/Area Scan (61x101x1):** Measurement grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.539 W/kg

**Cheek Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.168 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.678 W/kg
**SAR(1 g) = 0.497 W/kg; SAR(10 g) = 0.370 W/kg**
Maximum value of SAR (measured) = 0.522 W/kg

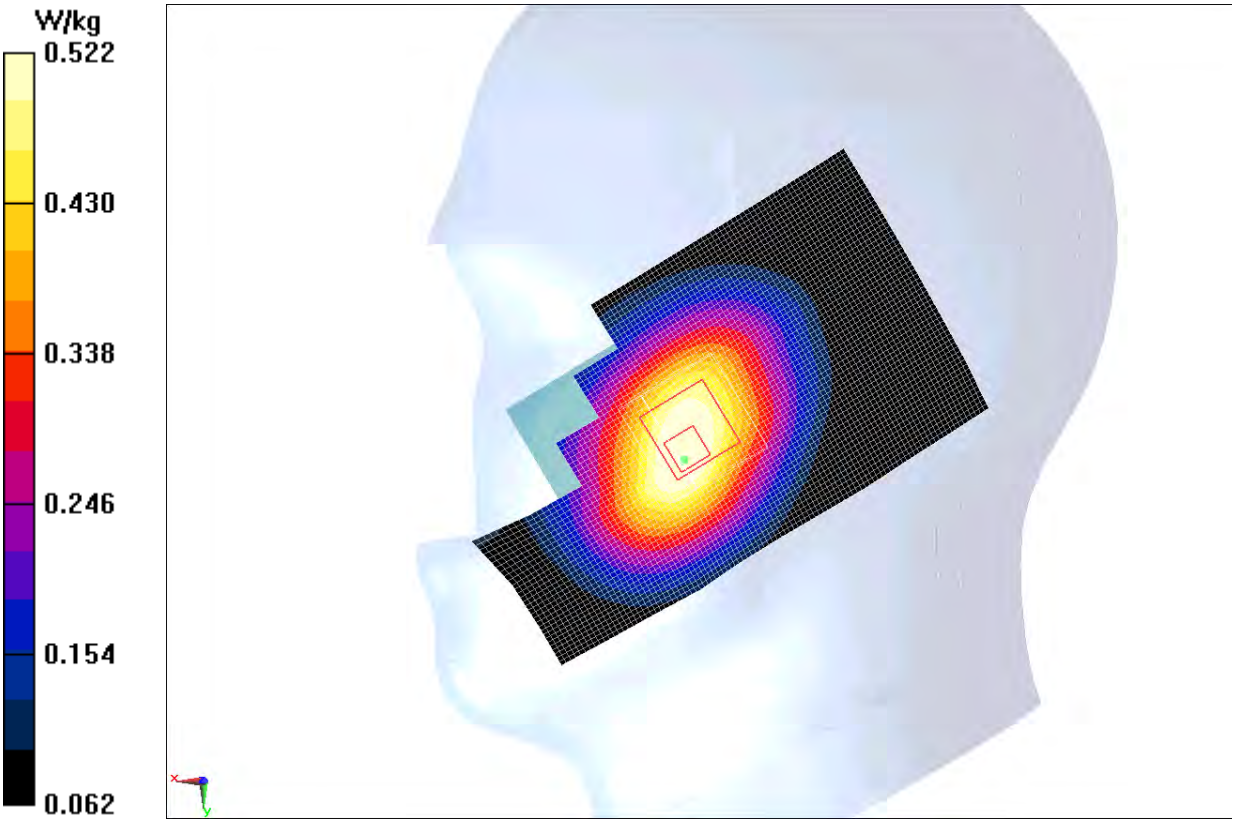



**Fig. 8 850 MHz CH190**

**850 Right Cheek Low**

Date: 2013-1-18
Electronics: DAE4 Sn771
Medium: Head 835 MHz
Medium parameters used: f = 825 MHz; $\sigma$ = 0.872 mho/m; $\varepsilon r$ = 40.945; $\rho$ = 1000 kg/m$^3$
Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C
Communication System: GSM; Frequency: 824.2 MHz;Duty Cycle: 1:8.30042
Probe: ES3DV3 - SN3149 ConvF(6.26, 6.26, 6.26)

**Cheek Low/Area Scan (61x101x1):** Measurement grid: dx=10 mm, dy=10 mm
Reference Value = 8.385 V/m; Power Drift = -0.16 dB
**Fast SAR: SAR(1 g) = 0.463 W/kg; SAR(10 g) = 0.316 W/kg**
Maximum value of SAR (interpolated) = 0.496 W/kg

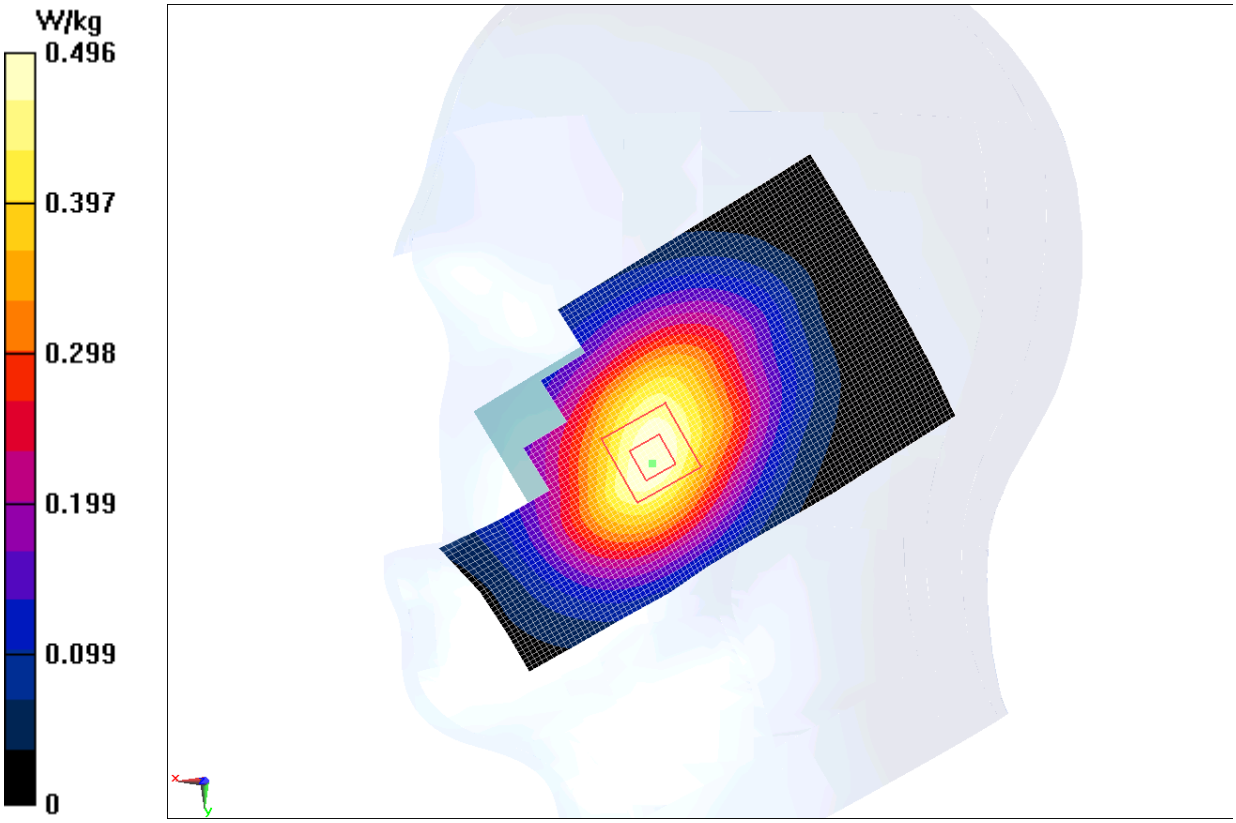



**Fig. 9 850 MHz CH128**

**850 Right Tilt High**

Date: 2013-1-18

Electronics: DAE4 Sn771

Medium: Head 835 MHz

Medium parameters used (interpolated): f = 848.8 MHz; $\sigma$ = 0.895 mho/m; $\varepsilon r$ = 40.648; $\rho$ = 1000 kg/$m^3$

Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C

Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3

Probe: ES3DV3 - SN3149 ConvF(6.26, 6.26, 6.26)

**Tilt High/Area Scan (61x101x1):** Measurement grid: dx=10 mm, dy=10 mm

Reference Value = 12.474 V/m; Power Drift = -0.04 dB

**Fast SAR: SAR(1 g) = 0.299 W/kg; SAR(10 g) = 0.206 W/kg**

Maximum value of SAR (interpolated) = 0.319 W/kg

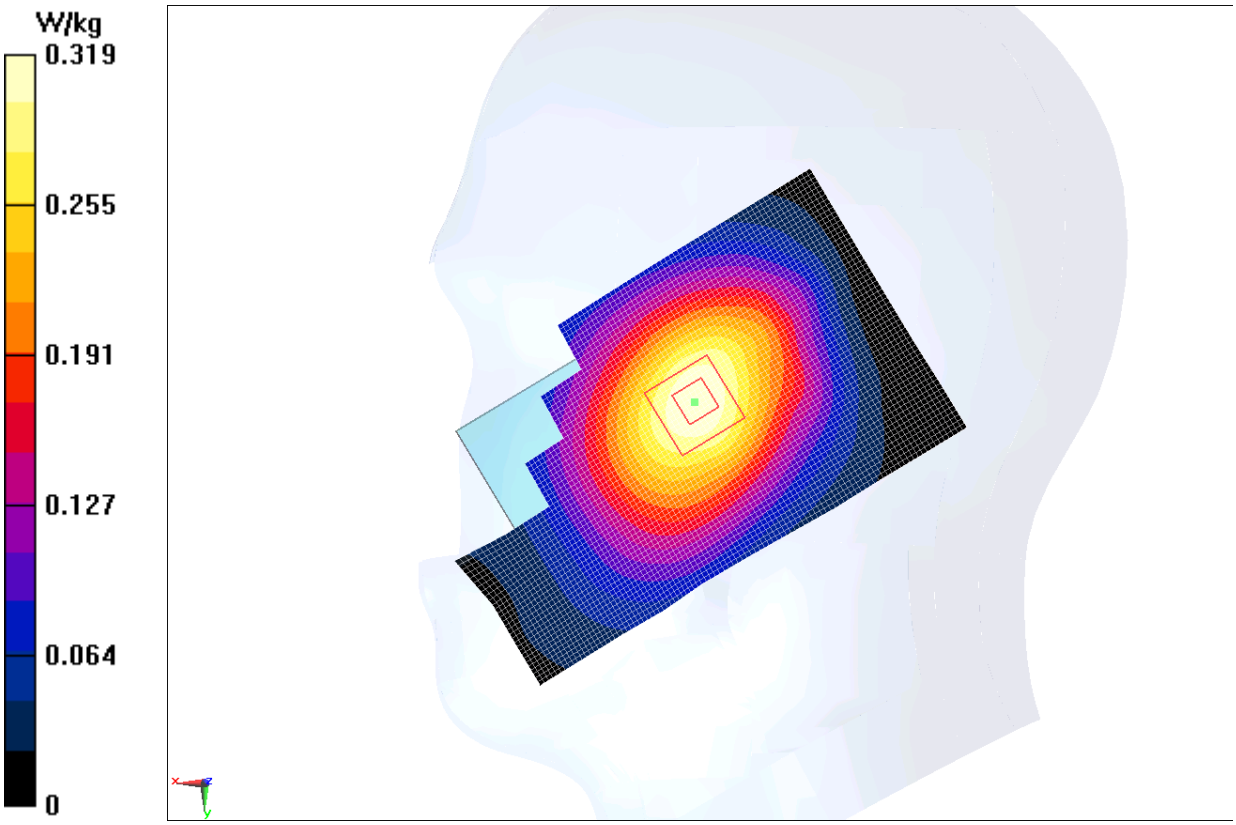



**Fig.10 850 MHz CH251**

**850 Right Tilt Middle**

Date: 2013-1-18

Electronics: DAE4 Sn771

Medium: Head 835 MHz

Medium parameters used (interpolated): f = 836.6 MHz; $\sigma$ = 0.883 mho/m; $\varepsilon r$ = 40.805; $\rho$ = 1000 kg/$m^3$

Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C

Communication System: GSM 850 Frequency: 836.6 MHz Duty Cycle: 1:8.3

Probe: ES3DV3 - SN3149 ConvF(6.26, 6.26, 6.26)

**Tilt Middle/Area Scan (61x101x1):** Measurement grid: dx=10 mm, dy=10 mm

Reference Value = 12.806 V/m; Power Drift = 0.16 dB

**Fast SAR: SAR(1 g) = 0.314 W/kg; SAR(10 g) = 0.216 W/kg**

Maximum value of SAR (interpolated) = 0.335 W/kg

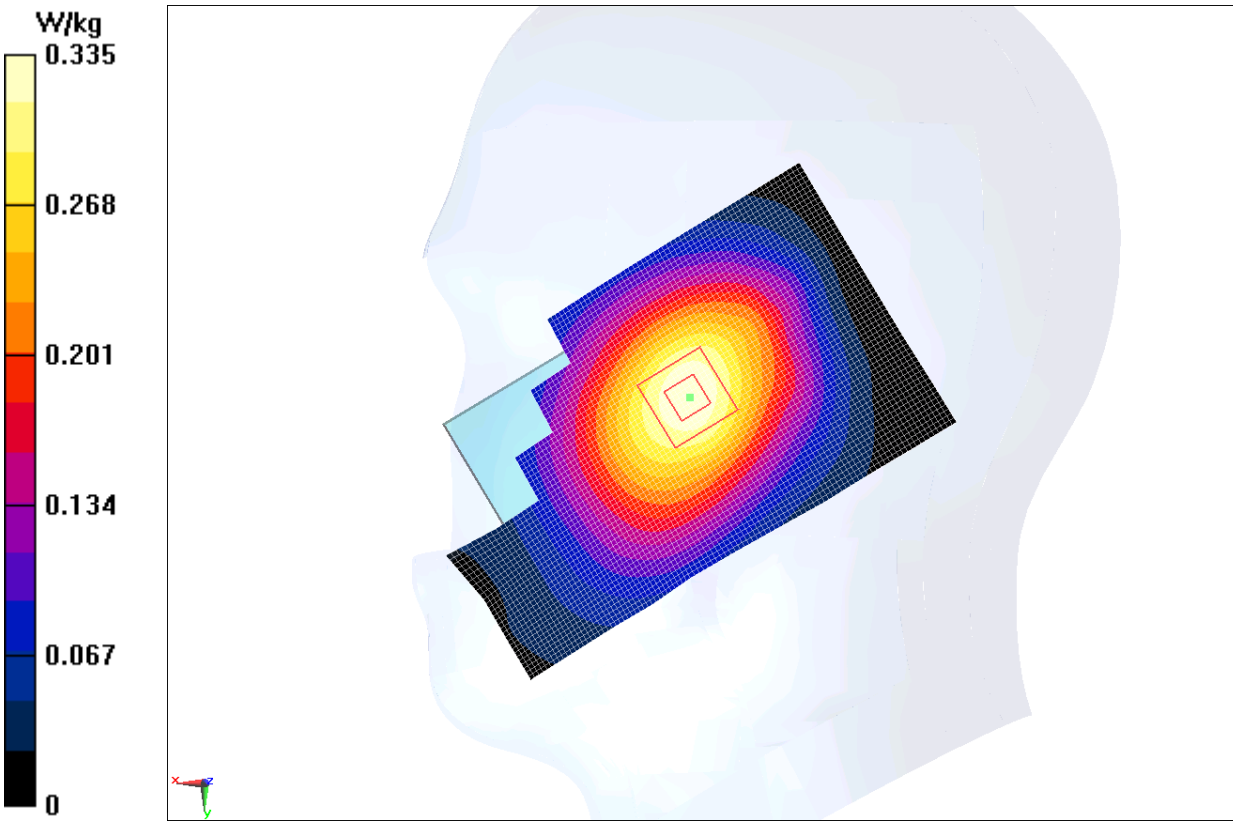



**Fig.11 850 MHz CH190**

**850 Right Tilt Low**
Date: 2013-1-18
Electronics: DAE4 Sn771
Medium: Head 835 MHz
Medium parameters used: f = 825 MHz; $\sigma$ = 0.872 mho/m; $\varepsilon r$ = 40.945; $\rho$ = 1000 kg/m$^3$
Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C
Communication System: GSM 850 Frequency: 824.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.26, 6.26, 6.26)

**Tilt Low/Area Scan (61x101x1):** Measurement grid: dx=10 mm, dy=10 mm
Reference Value = 12.658 V/m; Power Drift = 0.06 dB
**Fast SAR: SAR(1 g) = 0.288 W/kg; SAR(10 g) = 0.199 W/kg**
Maximum value of SAR (interpolated) = 0.306 W/kg

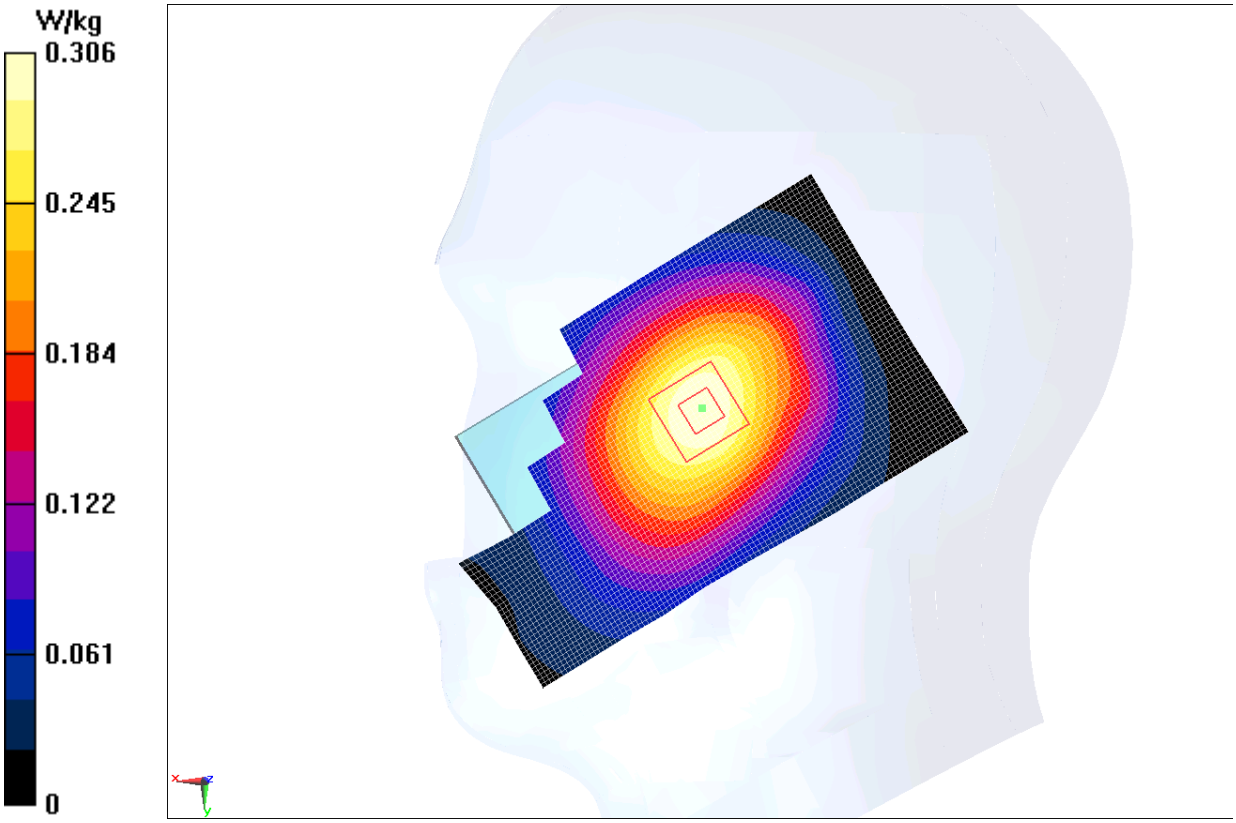



**Fig. 12 850 MHz CH128**

**850 Body Toward Phantom Middle with GPRS**

Date: 2013-1-18
Electronics: DAE4 Sn771
Medium: Body 835 MHz
Medium parameters used (interpolated): f = 836.6 MHz; $\sigma$ = 0.99 mho/m; $\varepsilon r$ = 55.567; $\rho$ = 1000 kg/$m^3$
Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C
Communication System: GSM 850 GPRS Frequency: 836.6 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

**Toward Phantom Middle/Area Scan (61x101x1):** Measurement grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.623 W/kg

**Toward Phantom Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 24.886 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.843 W/kg
**SAR(1 g) = 0.612 W/kg; SAR(10 g) = 0.447 W/kg**
Maximum value of SAR (measured) = 0.655 W/kg

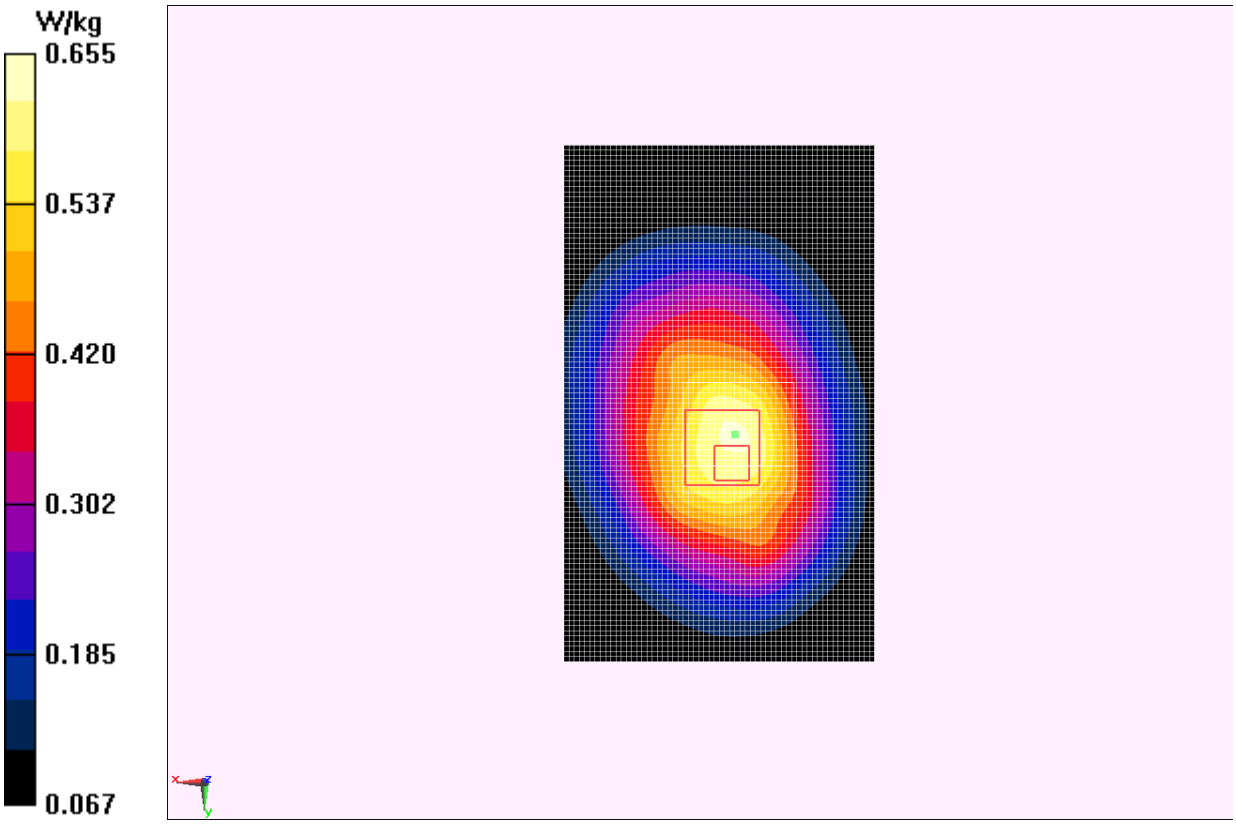



**Fig. 13 850 MHz CH190**

**850 Body Toward Ground High with GPRS**

Date: 2013-1-18

Electronics: DAE4 Sn771

Medium: Body 835 MHz

Medium parameters used (interpolated): f = 848.8 MHz; $\sigma$ = 1.003 mho/m; $\varepsilon r$ = 55.451; $\rho$ = 1000 kg/$m^3$

Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C

Communication System: GSM 850 GPRS Frequency: 848.8 MHz Duty Cycle: 1:8.3

Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

**Toward Ground High/Area Scan (61x101x1):** Measurement grid: dx=10 mm, dy=10 mm

Reference Value = 31.315 V/m; Power Drift = -0.08 dB

**Fast SAR: SAR(1 g) = 0.918 W/kg; SAR(10 g) = 0.636 W/kg**

Maximum value of SAR (interpolated) = 0.990 W/kg

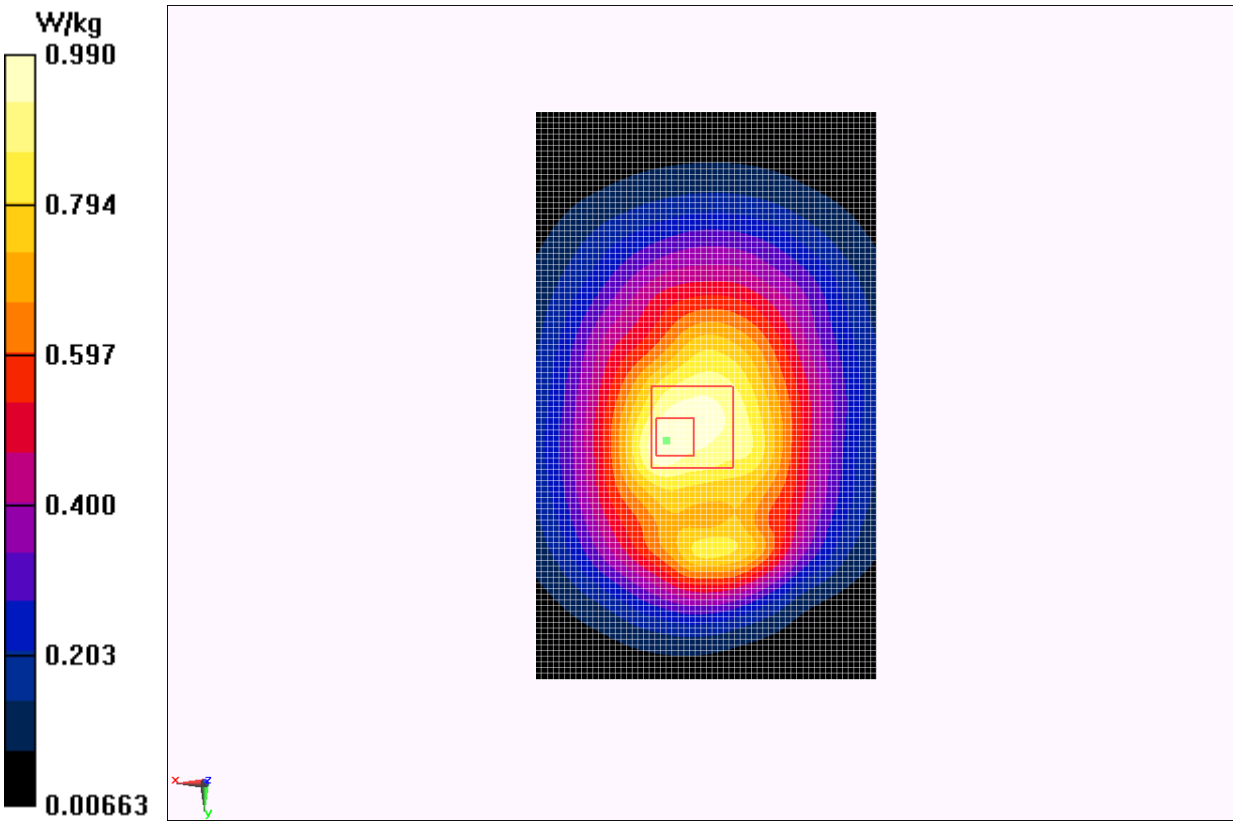



**Fig. 14 850 MHz CH251**

**850 Body Toward Ground Middle with GPRS**

Date: 2013-1-18
Electronics: DAE4 Sn771
Medium: Body 835 MHz
Medium parameters used (interpolated): f = 836.6 MHz; $\sigma$ = 0.99 mho/m; $\varepsilon r$ = 55.567; $\rho$ = 1000 kg/m$^3$
Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C
Communication System: GSM 850 GPRS Frequency: 836.6 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

**Toward Ground Middle/Area Scan (61x101x1):** Measurement grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.03 W/kg

**Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 31.981 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.28 W/kg
**SAR(1 g) = 0.985 W/kg; SAR(10 g) = 0.714 W/kg**
Maximum value of SAR (measured) = 1.05 W/kg
**Toward Ground Middle/Zoom Scan (7x7x7)/Cube 1:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 31.981 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.11 W/kg
**SAR(1 g) = 0.715 W/kg; SAR(10 g) = 0.511 W/kg**
Maximum value of SAR (measured) = 0.822 W/kg

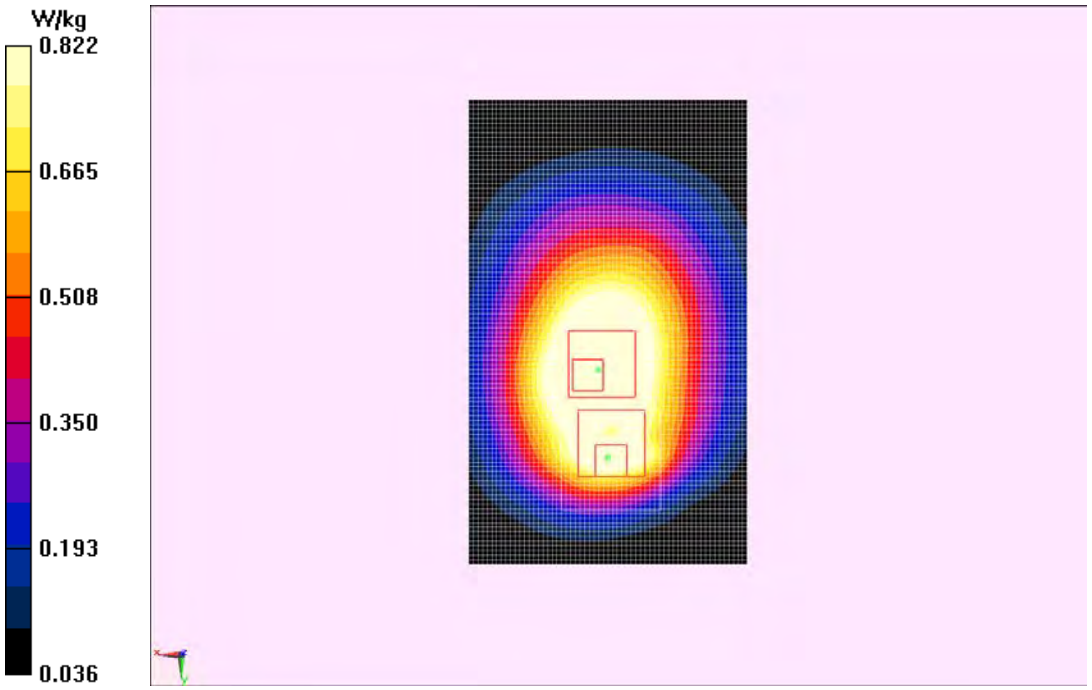



**Fig. 15 850 MHz CH190**

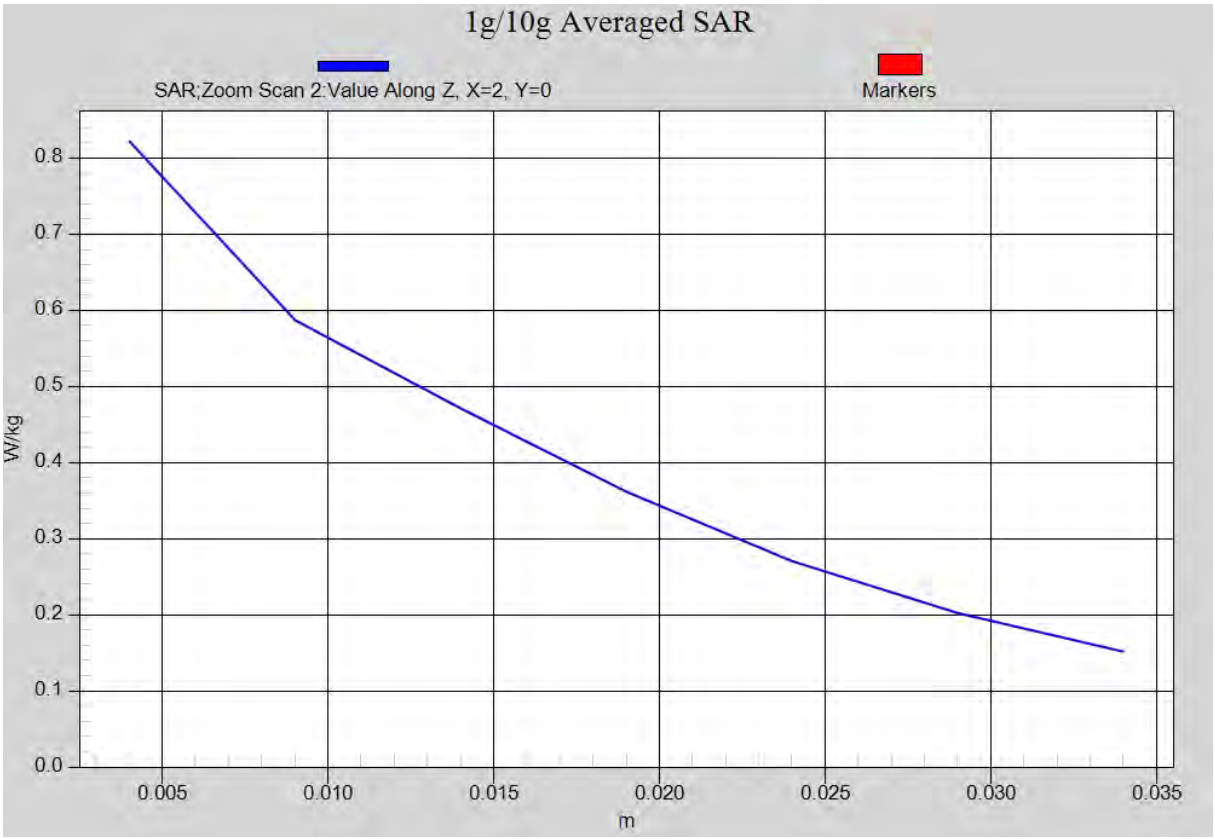



**Fig. 15-1 Z-Scan at power reference point (850 MHz CH190)**

**850 Body Toward Ground Low with GPRS**

Date: 2013-1-18
Electronics: DAE4 Sn771
Medium: Body 835 MHz
Medium parameters used: f = 825 MHz; $\sigma$ = 0.977 mho/m; $\varepsilon r$ = 55.694; $\rho$ = 1000 kg/m$^3$
Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C
Communication System: GSM 850 GPRS Frequency: 824.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

**Toward Ground Low/Area Scan (61x101x1):** Measurement grid: dx=10 mm, dy=10 mm
Reference Value = 31.139 V/m; Power Drift = 0.12 dB
**Fast SAR: SAR(1 g) = 0.912 W/kg; SAR(10 g) = 0.628 W/kg**
Maximum value of SAR (interpolated) = 0.980 W/kg

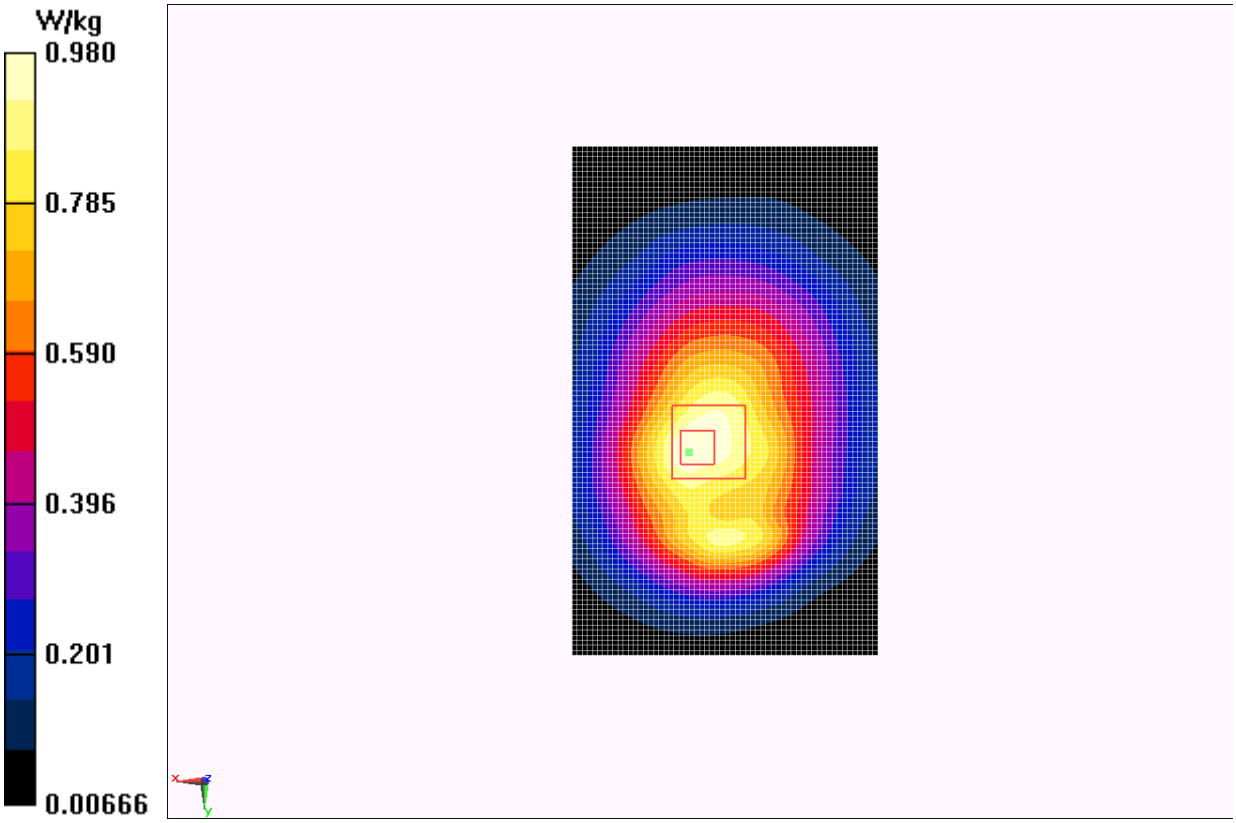



**Fig. 16 850 MHz CH128**

**850 Body Left Side Middle with GPRS**

Date: 2013-1-18
Electronics: DAE4 Sn771
Medium: Body 835 MHz
Medium parameters used (interpolated): f = 836.6 MHz; $\sigma$ = 0.99 mho/m; $\varepsilon r$ = 55.567; $\rho$ = 1000 kg/$m^3$
Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C
Communication System: GSM 850 GPRS Frequency: 836.6 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

**Left Side/Area Scan (61x101x1):** Measurement grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.648 W/kg

**Left Side/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 25.140 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.813 W/kg
**SAR(1 g) = 0.571 W/kg; SAR(10 g) = 0.410 W/kg**
Maximum value of SAR (measured) = 0.605 W/kg

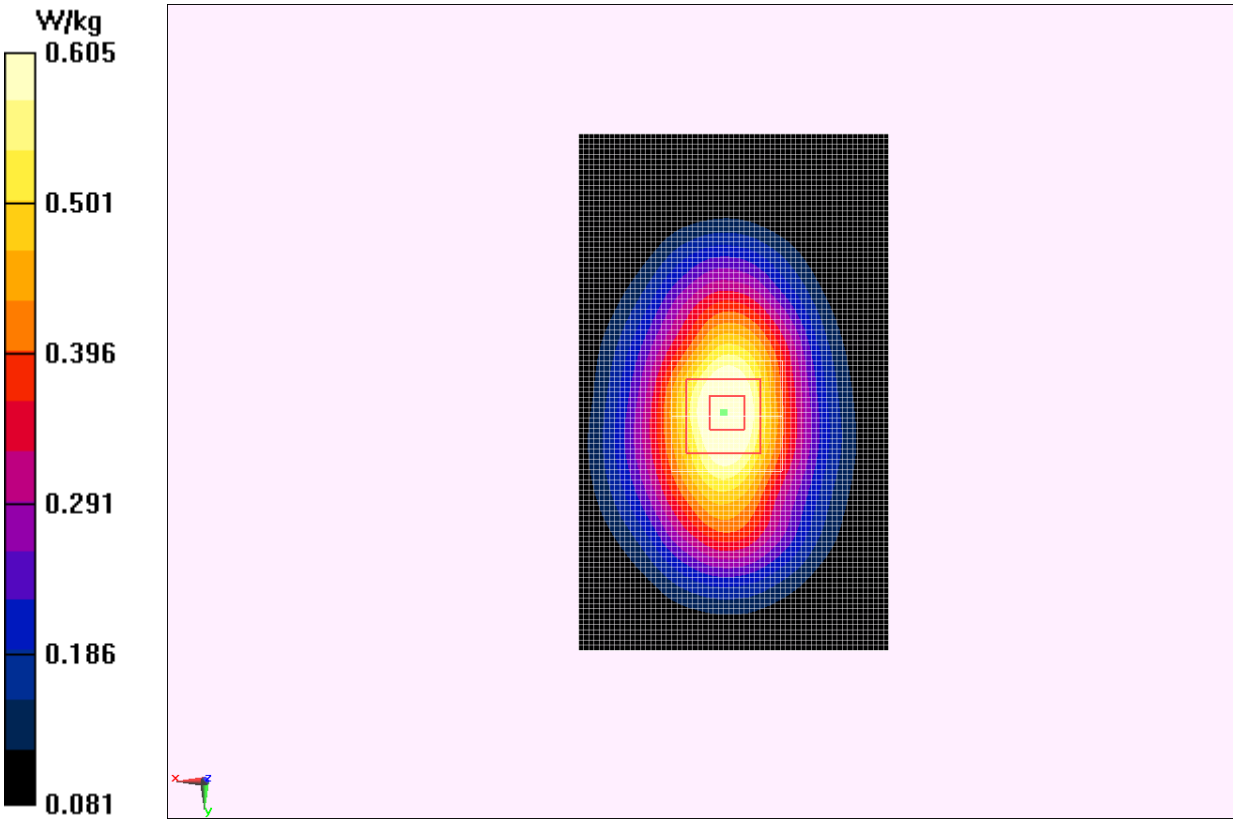



**Fig. 17 850 MHz CH190**

**850 Body Right Side Middle with GPRS**

Date: 2013-1-18
Electronics: DAE4 Sn771
Medium: Body 835 MHz
Medium parameters used (interpolated): f = 836.6 MHz; $\sigma$ = 0.99 mho/m; $\varepsilon r$ = 55.567; $\rho$ = 1000 kg/$m^3$
Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C
Communication System: GSM 850 GPRS Frequency: 836.6 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

**Right Side/Area Scan (61x101x1):** Measurement grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.534 W/kg

**Right Side/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 23.135 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.747 W/kg
**SAR(1 g) = 0.503 W/kg; SAR(10 g) = 0.351 W/kg**
Maximum value of SAR (measured) = 0.544 W/kg

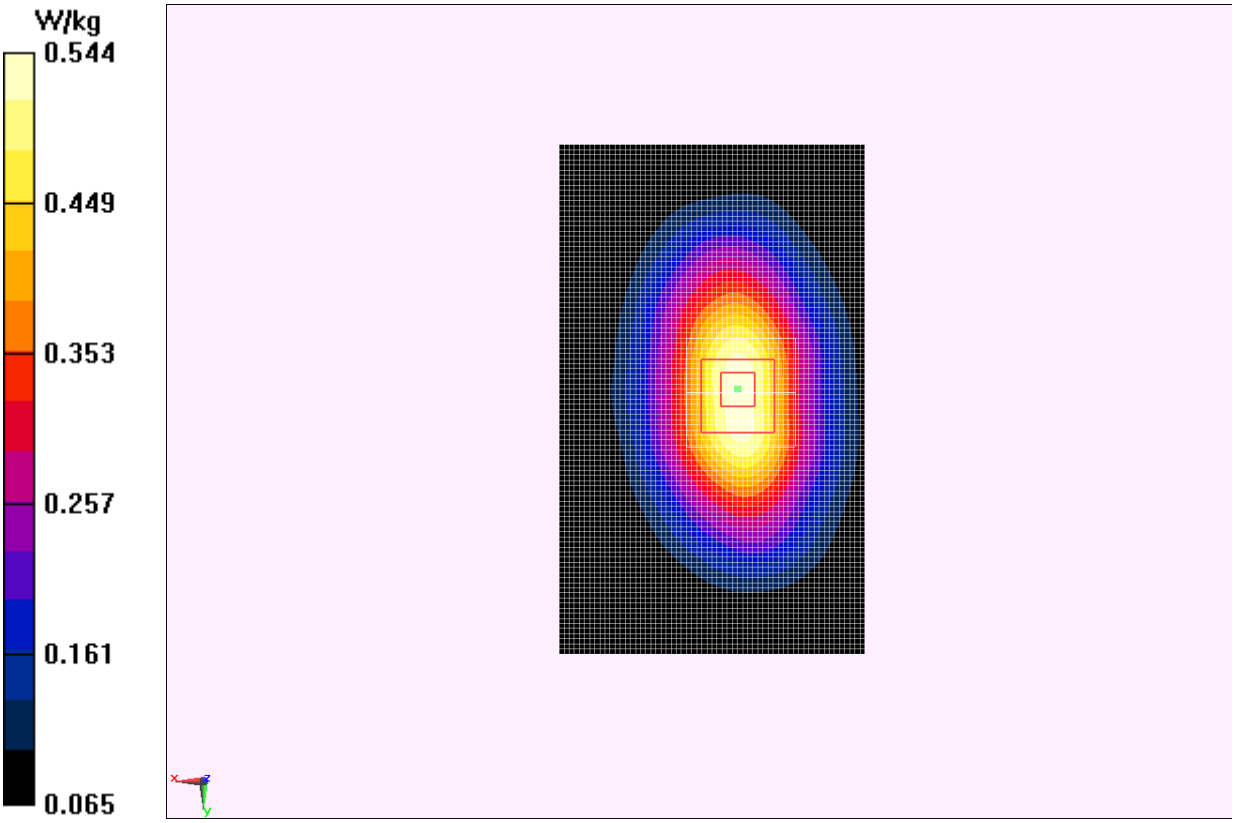



**Fig. 18 850 MHz CH190**

**850 Body Bottom Side Middle with GPRS**

Date: 2013-1-18
Electronics: DAE4 Sn771
Medium: Body 835 MHz
Medium parameters used (interpolated): f = 836.6 MHz; $\sigma$ = 0.99 mho/m; $\varepsilon r$ = 55.567; $\rho$ = 1000 kg/$m^3$
Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C
Communication System: GSM 850 GPRS Frequency: 836.6 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

**Bottom Side/Area Scan (61x101x1):** Measurement grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.0687 W/kg

**Bottom Side/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.544 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.111 W/kg
**SAR(1 g) = 0.066 W/kg; SAR(10 g) = 0.039 W/kg**
Maximum value of SAR (measured) = 0.0725 W/kg

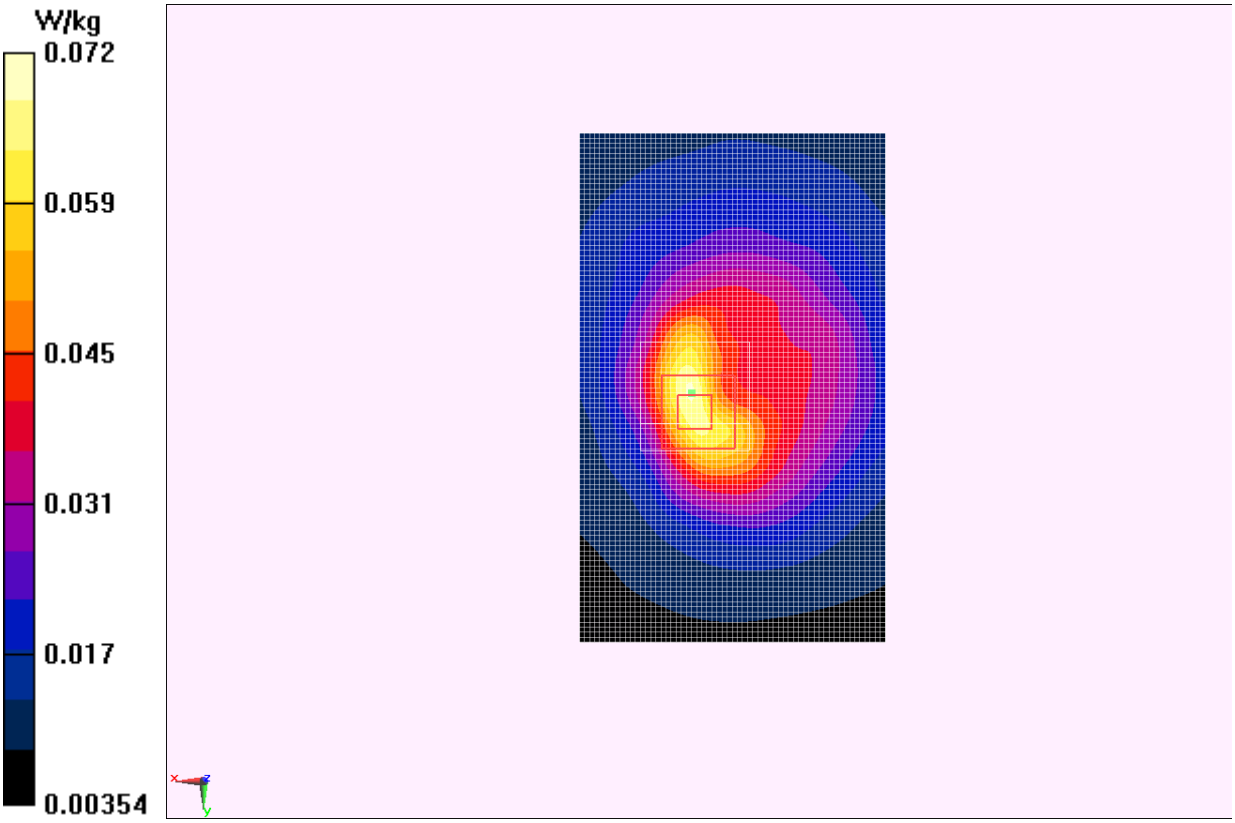



**Fig. 19 850 MHz CH190**

**850 Body Toward Ground Middle with EGPRS**

Date: 2013-1-18

Electronics: DAE4 Sn771

Medium: Body 835 MHz

Medium parameters used (interpolated): f = 836.6 MHz; $\sigma$ = 0.99 mho/m; $\varepsilon r$ = 55.567; $\rho$ = 1000 kg/$m^3$

Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C

Communication System: GSM 850 EGPRS Frequency: 836.6 MHz Duty Cycle: 1:8.3

Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

**Toward Ground Middle/Area Scan (61x101x1):** Measurement grid: dx=10 mm, dy=10 mm

Reference Value = 31.620 V/m; Power Drift = -0.09 dB

**Fast SAR: SAR(1 g) = 0.896 W/kg; SAR(10 g) = 0.621 W/kg**

Maximum value of SAR (interpolated) = 0.951 W/kg

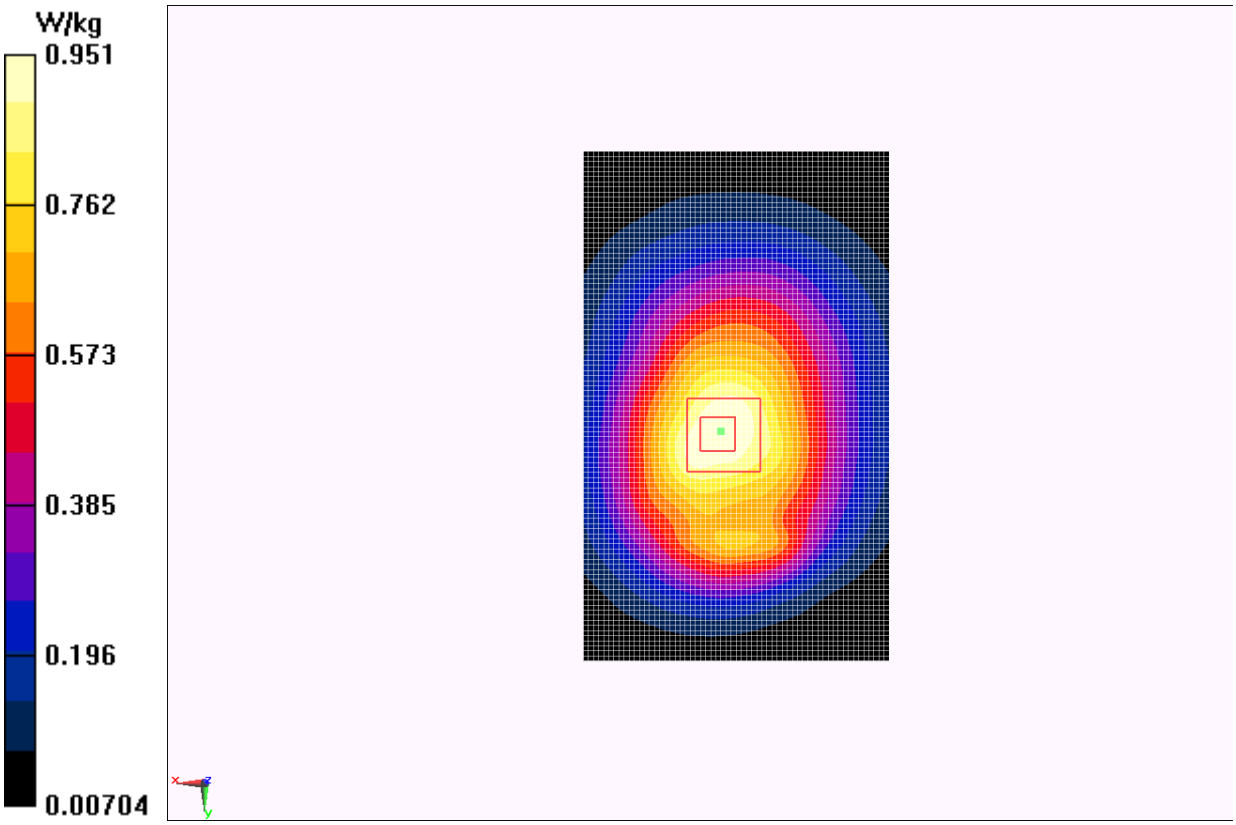



**Fig. 20 850 MHz CH190**

**850 Body Toward Ground Middle with Headset CCB3160A11C2**

Date: 2013-1-18

Electronics: DAE4 Sn771

Medium: Body 835 MHz

Medium parameters used (interpolated): f = 836.6 MHz; $\sigma$ = 0.99 mho/m; $\varepsilon r$ = 55.567; $\rho$ = 1000 kg/$m^3$

Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C

Communication System: GSM 850 Frequency: 836.6 MHz Duty Cycle: 1:8.3

Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

**Toward Ground Middle/Area Scan (61x101x1):** Measurement grid: dx=10 mm, dy=10 mm

Reference Value = 31.562 V/m; Power Drift = -0.08 dB

**Fast SAR: SAR(1 g) = 0.902 W/kg; SAR(10 g) = 0.623 W/kg**

Maximum value of SAR (interpolated) = 0.961 W/kg

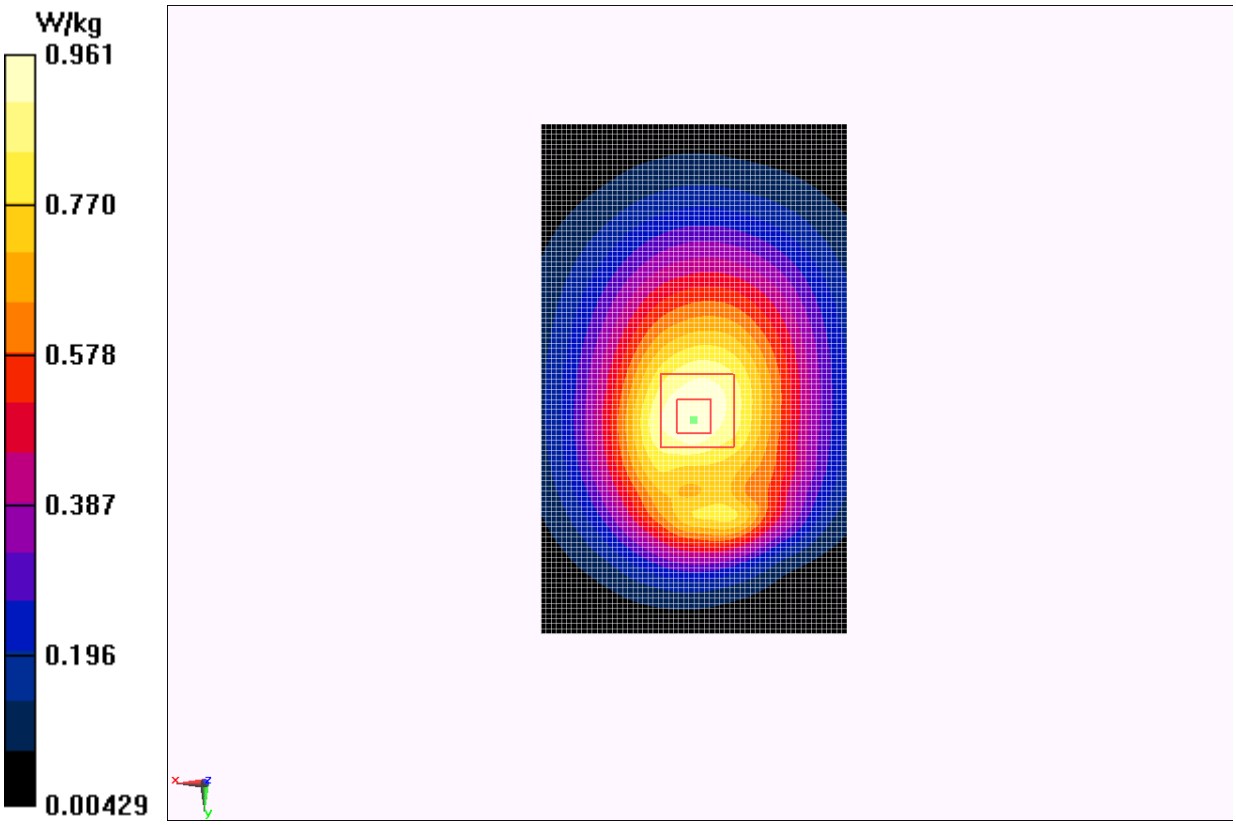



**Fig. 21 850 MHz CH190**

**850 Body Toward Ground Middle with Headset CCB3160A11C4**

Date: 2013-1-18

Electronics: DAE4 Sn771

Medium: Body 835 MHz

Medium parameters used (interpolated): f = 836.6 MHz; $\sigma$ = 0.99 mho/m; $\varepsilon r$ = 55.567; $\rho$ = 1000 kg/$m^3$

Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C

Communication System: GSM 850 Frequency: 836.6 MHz Duty Cycle: 1:8.3

Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

**Toward Ground Middle/Area Scan (61x101x1):** Measurement grid: dx=10 mm, dy=10 mm

Reference Value = 28.447 V/m; Power Drift = -0.17 dB

**Fast SAR: SAR(1 g) = 0.818 W/kg; SAR(10 g) = 0.564 W/kg**

Maximum value of SAR (interpolated) = 0.872 W/kg

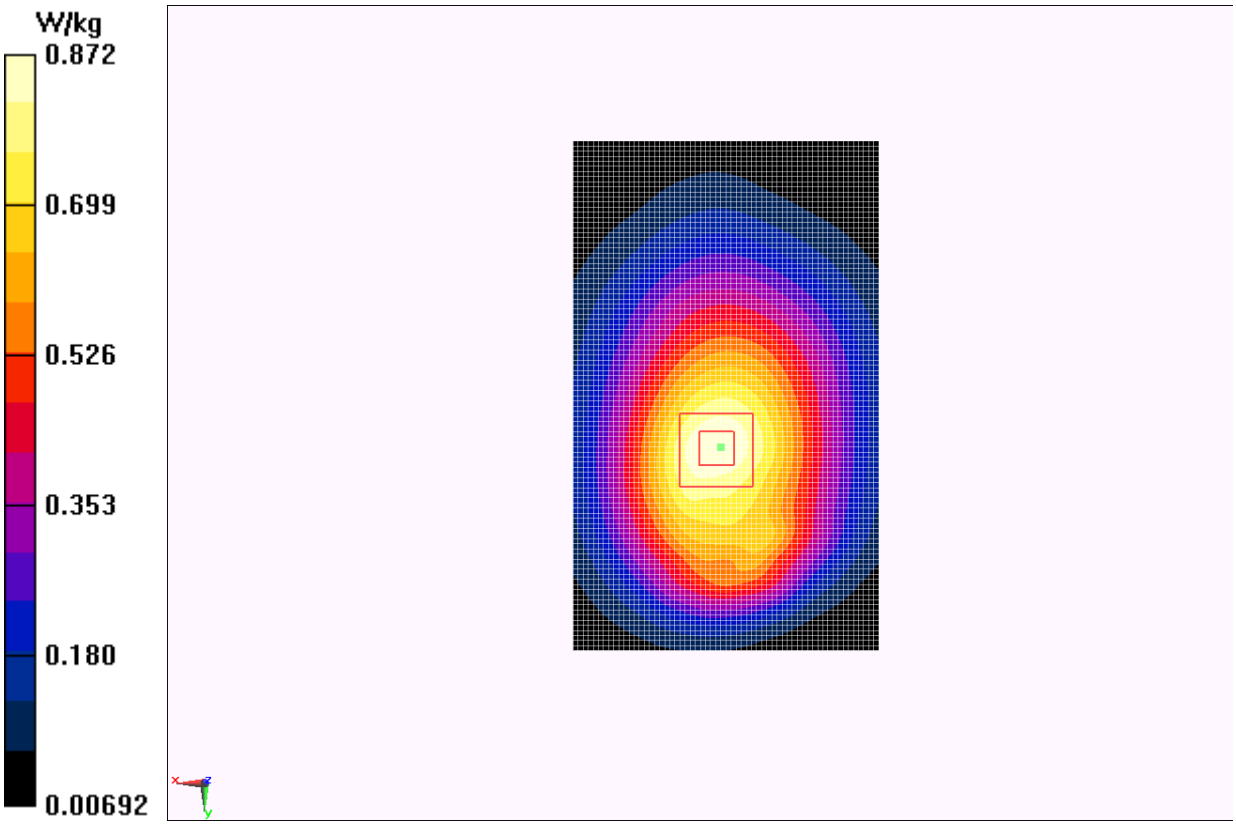



**Fig. 22 850 MHz CH190**

**1900 Left Cheek High**
Date: 2013-1-20
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1910 MHz; $\sigma$ = 1.419 mho/m; $\varepsilon r$ = 39.336; $\rho$ = 1000 kg/m$^3$
Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C
Communication System: GSM 1900MHz Frequency: 1909.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.19, 5.19, 5.19)

**Cheek High/Area Scan (61x91x1):** Measurement grid: dx=10 mm, dy=10 mm
Reference Value = 9.491 V/m; Power Drift = 0.04 dB
**Fast SAR: SAR(1 g) = 0.460 mW/g; SAR(10 g) = 0.270 mW/g**
Maximum value of SAR (interpolated) = 0.510 mW/g

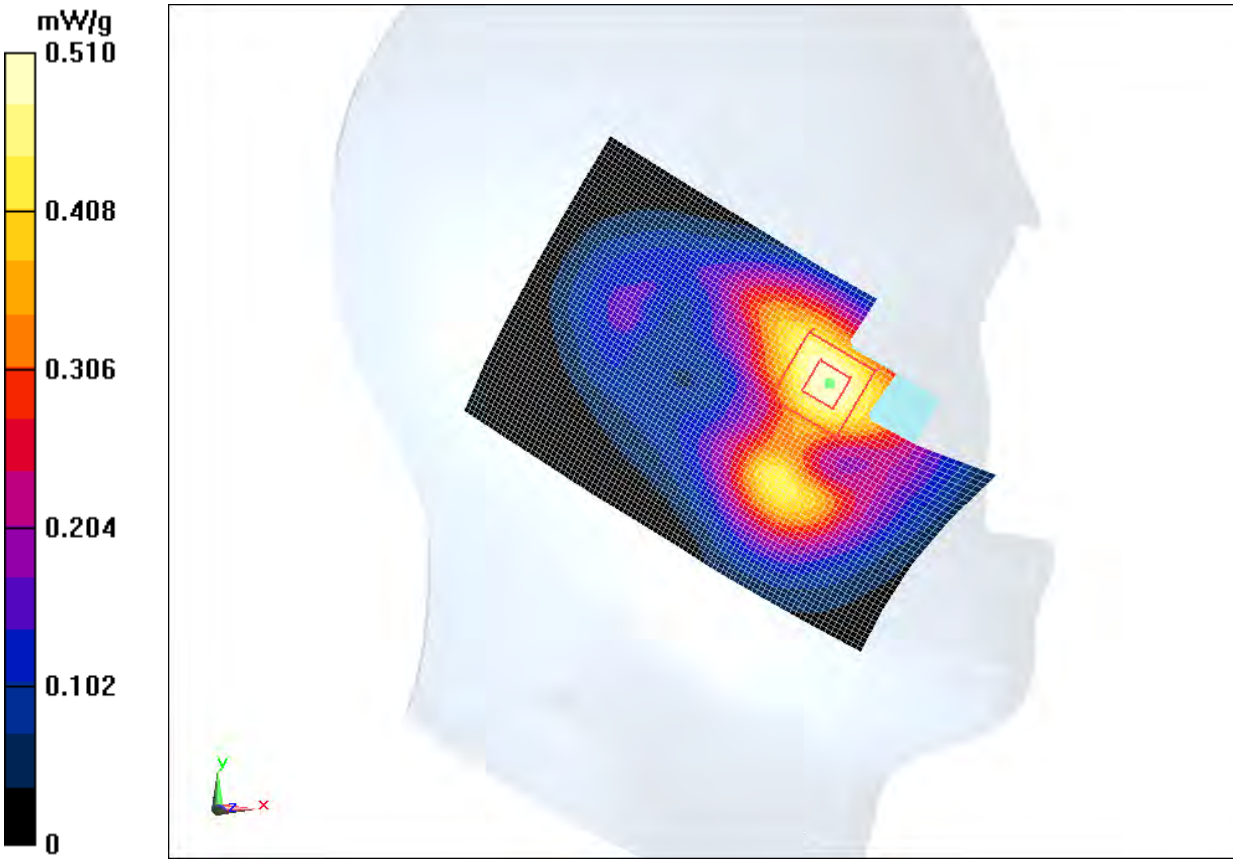



**Fig. 23 1900 MHz CH810**

**1900 Left Cheek Middle**
Date: 2013-1-20
Electronics: DAE4 Sn771
Medium: Head GSM1900
Medium parameters used: f = 1880 MHz; $\sigma$ = 1.391 mho/m; $\varepsilon r$ = 39.448; $\rho$ = 1000 kg/m$^3$
Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C
Communication System: GSM 1900MHz Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.19, 5.19, 5.19)

**Cheek Middle/Area Scan (61x91x1):** Measurement grid: dx=10 mm, dy=10 mm
Reference Value = 9.764 V/m; Power Drift = 0.05 dB
**Fast SAR: SAR(1 g) = 0.475 mW/g; SAR(10 g) = 0.281 mW/g**
Maximum value of SAR (interpolated) = 0.527 mW/g

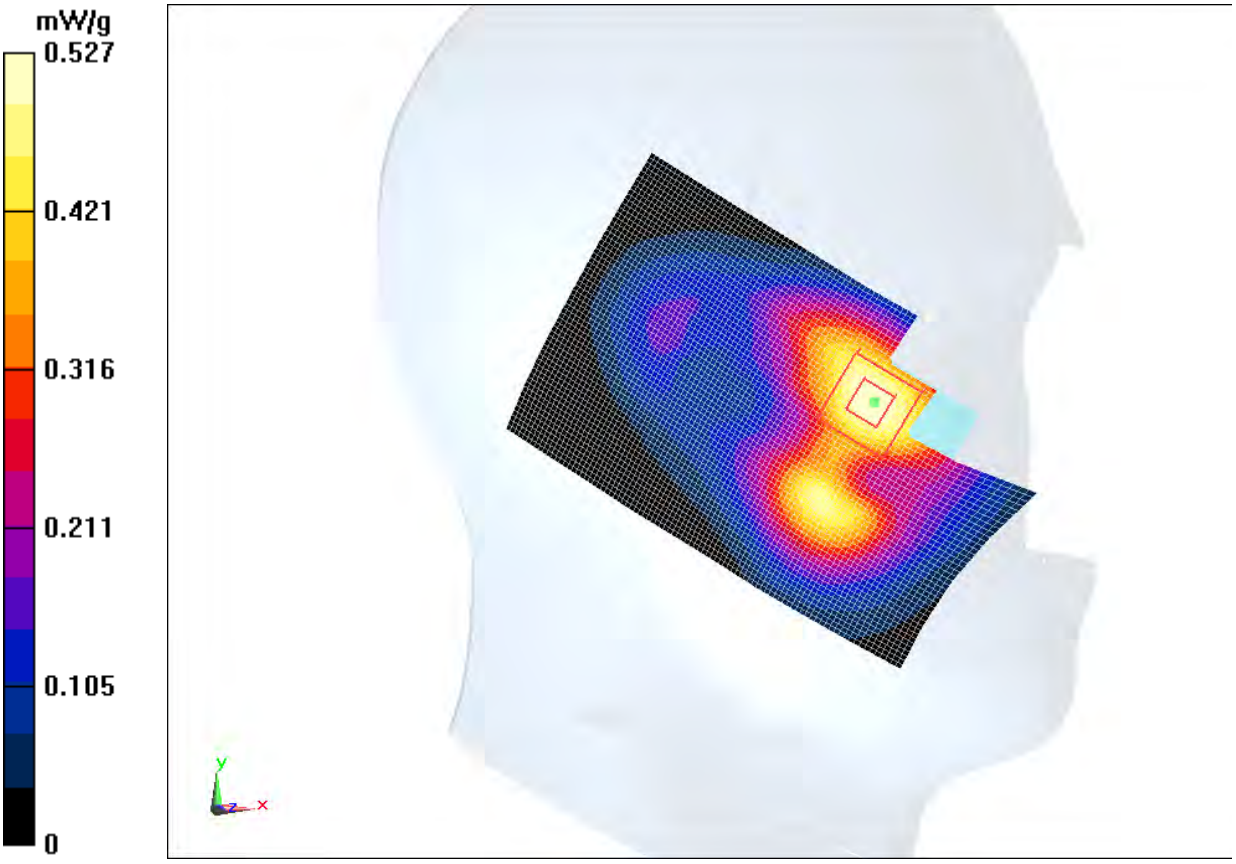



**Fig. 24 1900 MHz CH661**

**1900 Left Cheek Low**
Date: 2013-1-20
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; $\sigma$ = 1.361 mho/m; $\varepsilon r$ = 39.541; $\rho$ = 1000 kg/$m^3$
Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C
Communication System: GSM 1900MHz Frequency: 1850.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.19, 5.19, 5.19)

**Cheek Low/Area Scan (61x91x1):** Measurement grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.638 mW/g

**Cheek Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.963 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.904 mW/g
**SAR(1 g) = 0.605 mW/g; SAR(10 g) = 0.371 mW/g**
Maximum value of SAR (measured) = 0.652 mW/g

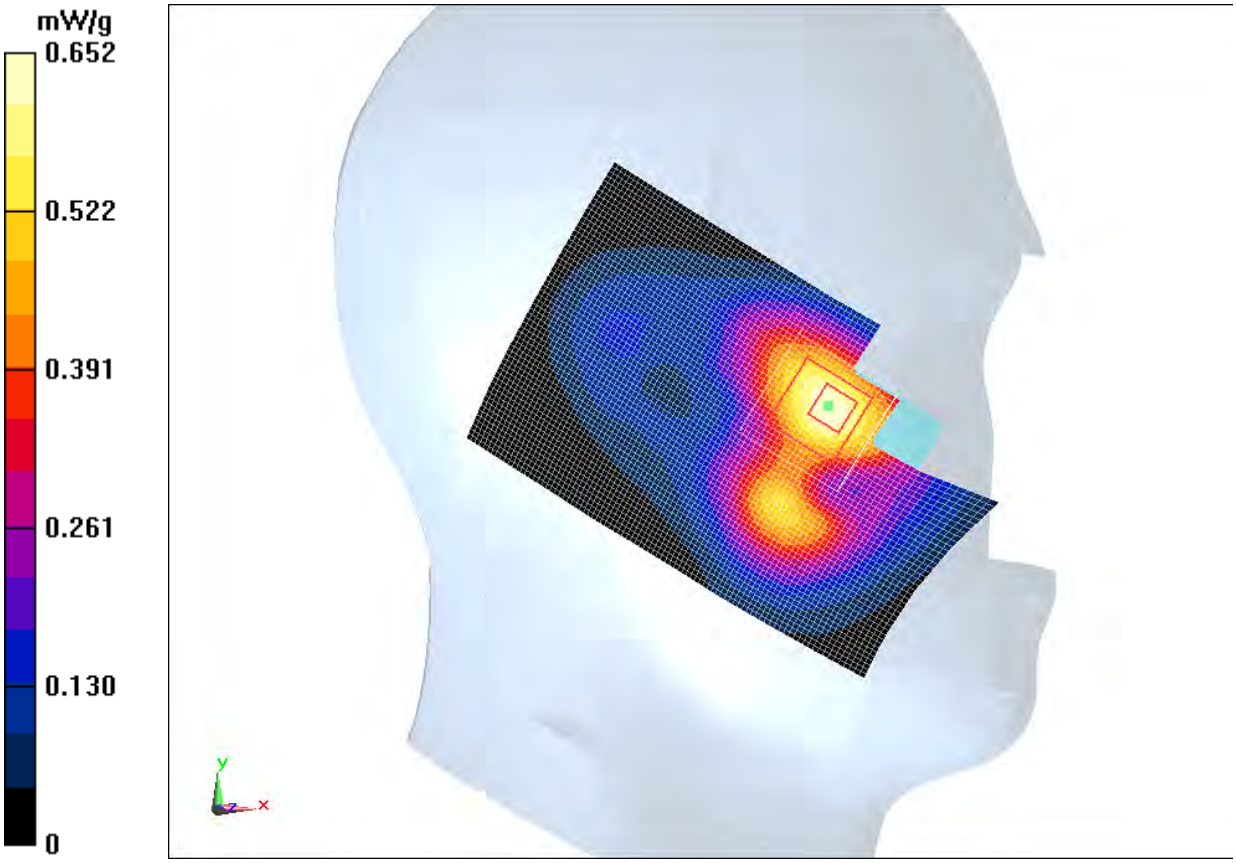



**Fig. 25 1900 MHz CH512**

**1900 Left Tilt High**
Date: 2013-1-20
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1910 MHz; $\sigma$ = 1.419 mho/m; $\varepsilon r$ = 39.336; $\rho$ = 1000 kg/$m^3$
Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C
Communication System: GSM 1900MHz Frequency: 1909.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.19, 5.19, 5.19)

**Tilt High/Area Scan (61x91x1):** Measurement grid: dx=10 mm, dy=10 mm
Reference Value = 13.056 V/m; Power Drift = 0.01 dB
**Fast SAR: SAR(1 g) = 0.248 mW/g; SAR(10 g) = 0.137 mW/g**
Maximum value of SAR (interpolated) = 0.276 mW/g

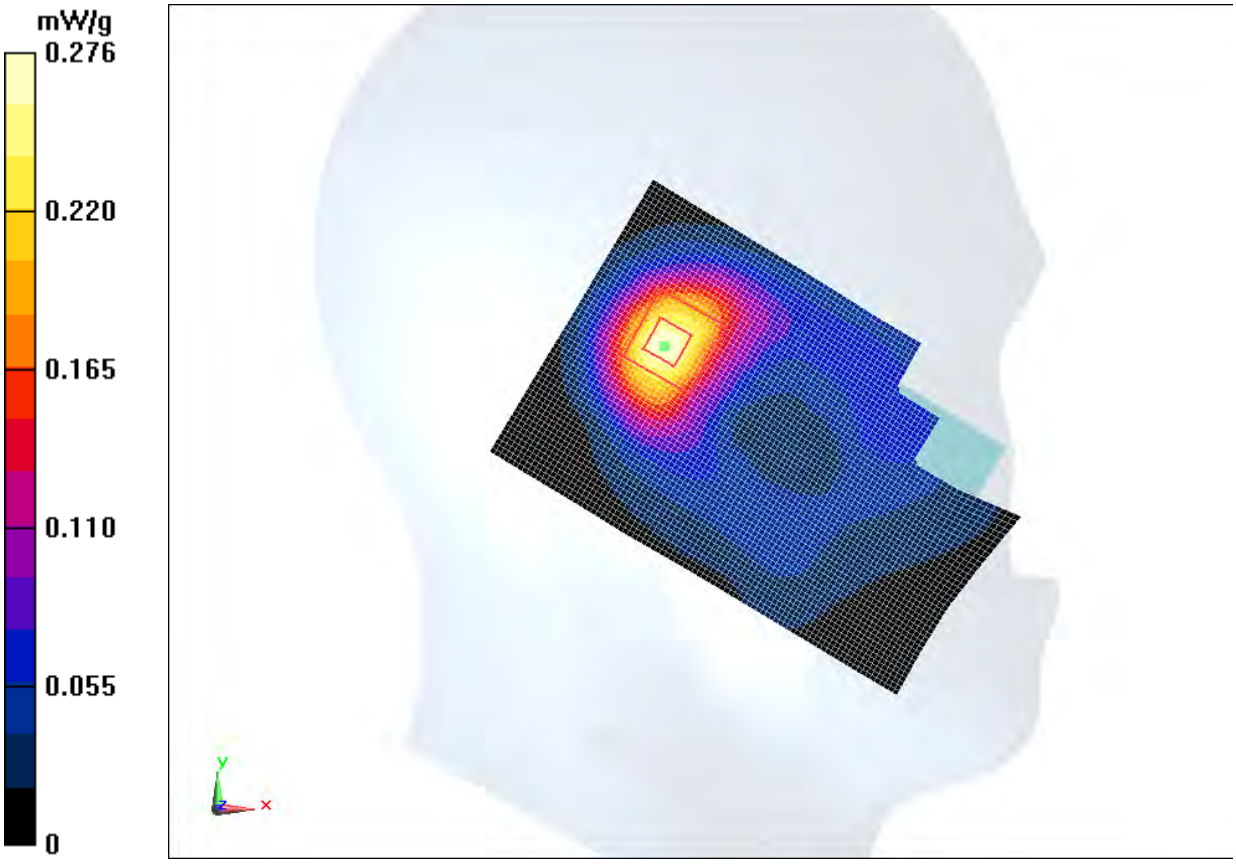



**Fig. 26 1900 MHz CH810**

**1900 Left Tilt Middle**
Date: 2013-1-20
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1880 MHz; $\sigma$ = 1.391 mho/m; $\varepsilon r$ = 39.448; $\rho$ = 1000 kg/$m^3$
Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C
Communication System: GSM 1900MHz Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.19, 5.19, 5.19)

**Tilt Middle/Area Scan (61x91x1):** Measurement grid: dx=10 mm, dy=10 mm
Reference Value = 13.926 V/m; Power Drift = 0.01 dB
**Fast SAR: SAR(1 g) = 0.274 mW/g; SAR(10 g) = 0.154 mW/g**
Maximum value of SAR (interpolated) = 0.303 mW/g

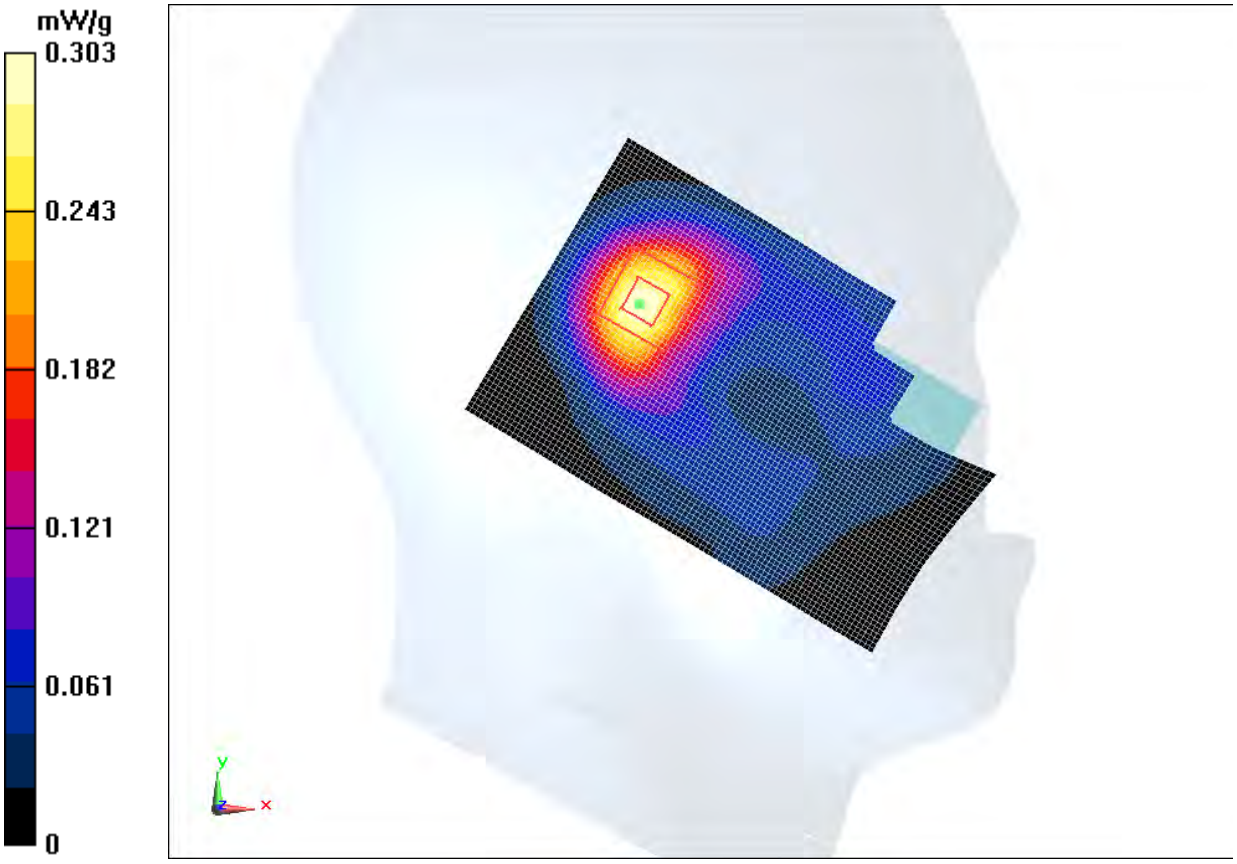



**Fig. 27 1900 MHz CH661**

**1900 Left Tilt Low**
Date: 2013-1-20
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; $\sigma$ = 1.361 mho/m; $\varepsilon r$ = 39.541; $\rho$ = 1000 kg/$m^3$
Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C
Communication System: GSM 1900MHz Frequency: 1850.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.19, 5.19, 5.19)

**Tilt Low/Area Scan (61x91x1):** Measurement grid: dx=10 mm, dy=10 mm
Reference Value = 13.869 V/m; Power Drift = -0.05 dB
**Fast SAR: SAR(1 g) = 0.261 mW/g; SAR(10 g) = 0.148 mW/g**
Maximum value of SAR (interpolated) = 0.287 mW/g

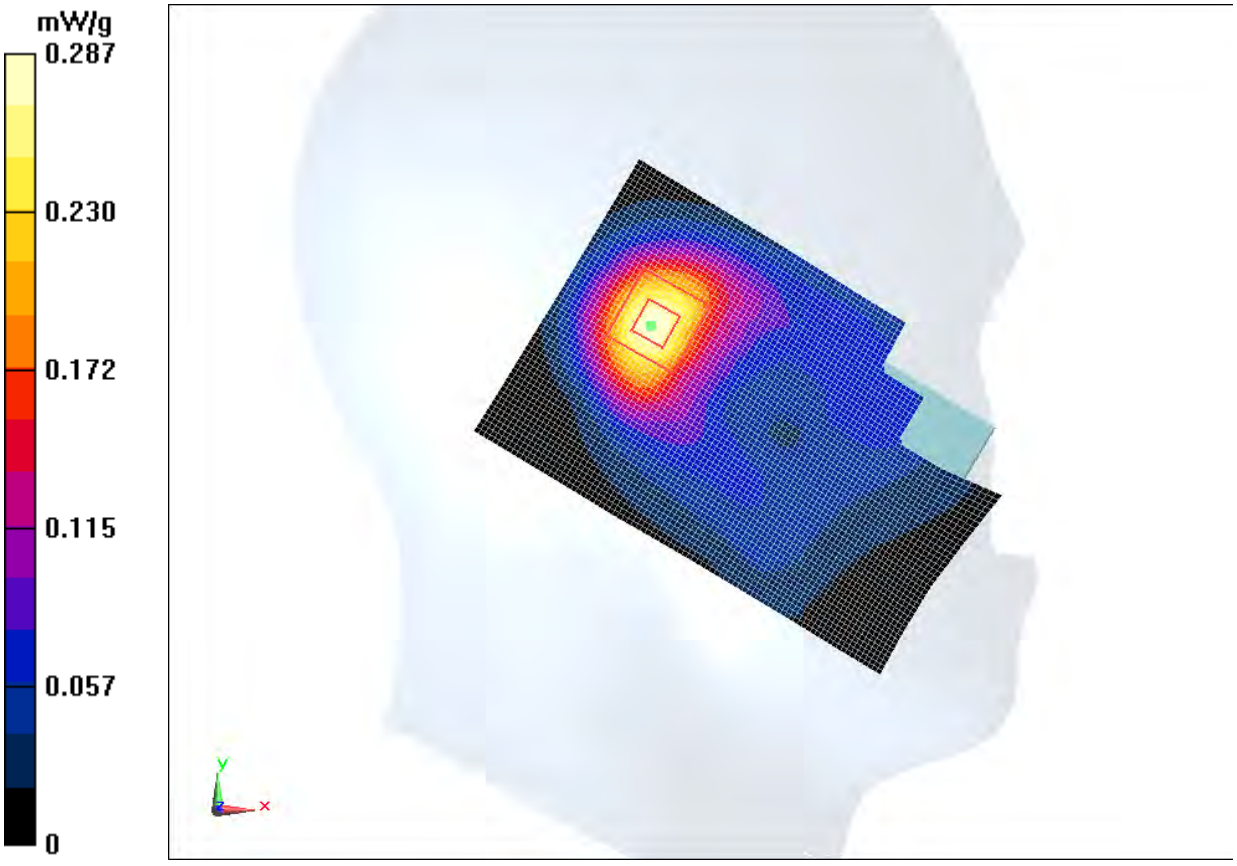



**Fig. 28 1900 MHz CH512**

**1900 Right Cheek High**

Date: 2013-1-20
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1910 MHz; $\sigma$ = 1.419 mho/m; $\varepsilon r$ = 39.336; $\rho$ = 1000 kg/m$^3$
Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C
Communication System: GSM 1900MHz Frequency: 1909.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.19, 5.19, 5.19)

**Cheek High/Area Scan (61x91x1):** Measurement grid: dx=10 mm, dy=10 mm
Reference Value = 10.345 V/m; Power Drift = -0.16 dB
**Fast SAR: SAR(1 g) = 0.817 mW/g; SAR(10 g) = 0.446 mW/g**
Maximum value of SAR (interpolated) = 0.916 mW/g

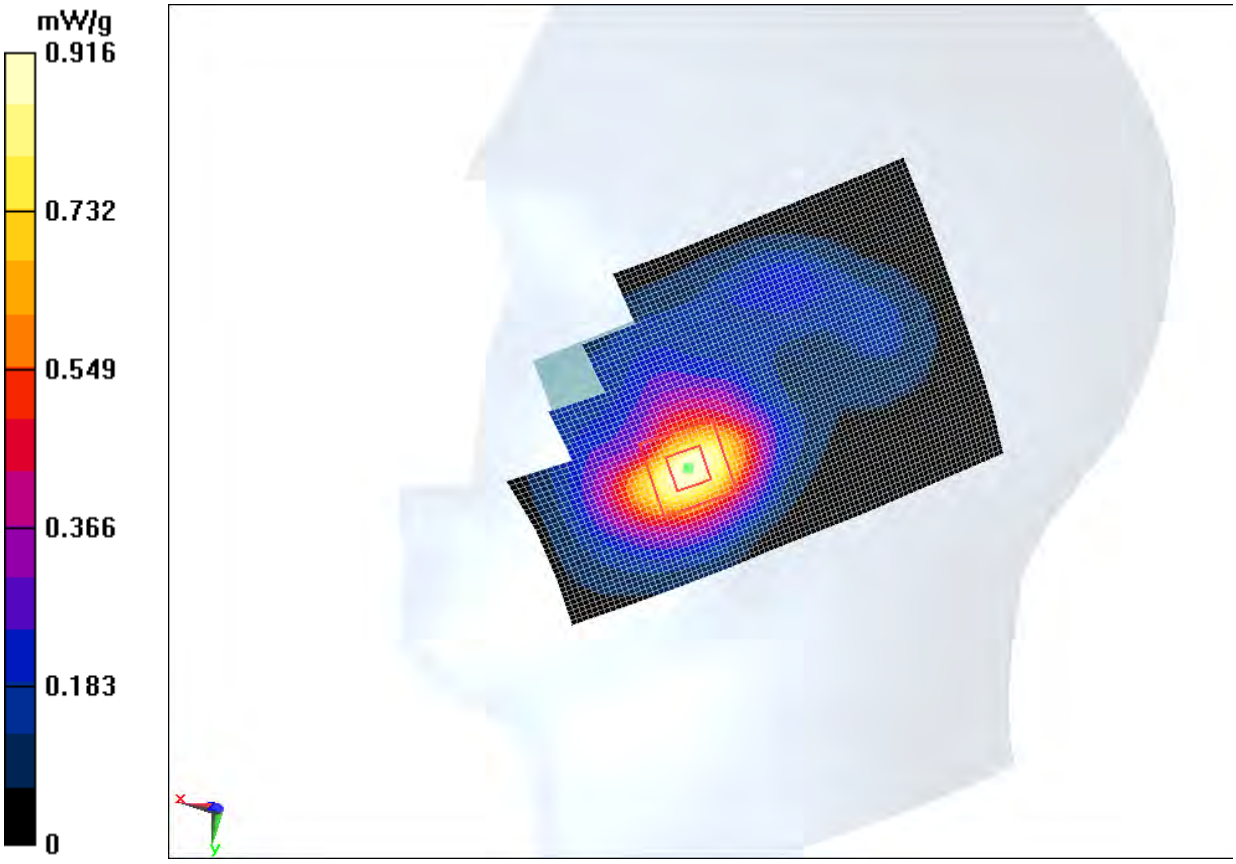



**Fig. 29 1900 MHz CH810**

**1900 Right Cheek Middle**
Date: 2013-1-20
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1880 MHz; $\sigma$ = 1.391 mho/m; $\varepsilon r$ = 39.448; $\rho$ = 1000 kg/$m^3$
Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C
Communication System: GSM 1900MHz Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.19, 5.19, 5.19)

**Cheek Middle/Area Scan (61x91x1):** Measurement grid: dx=10 mm, dy=10 mm
Reference Value = 10.488 V/m; Power Drift = 0.01 dB
**Fast SAR: SAR(1 g) = 0.904 mW/g; SAR(10 g) = 0.494 mW/g**
Maximum value of SAR (interpolated) = 1.02 mW/g

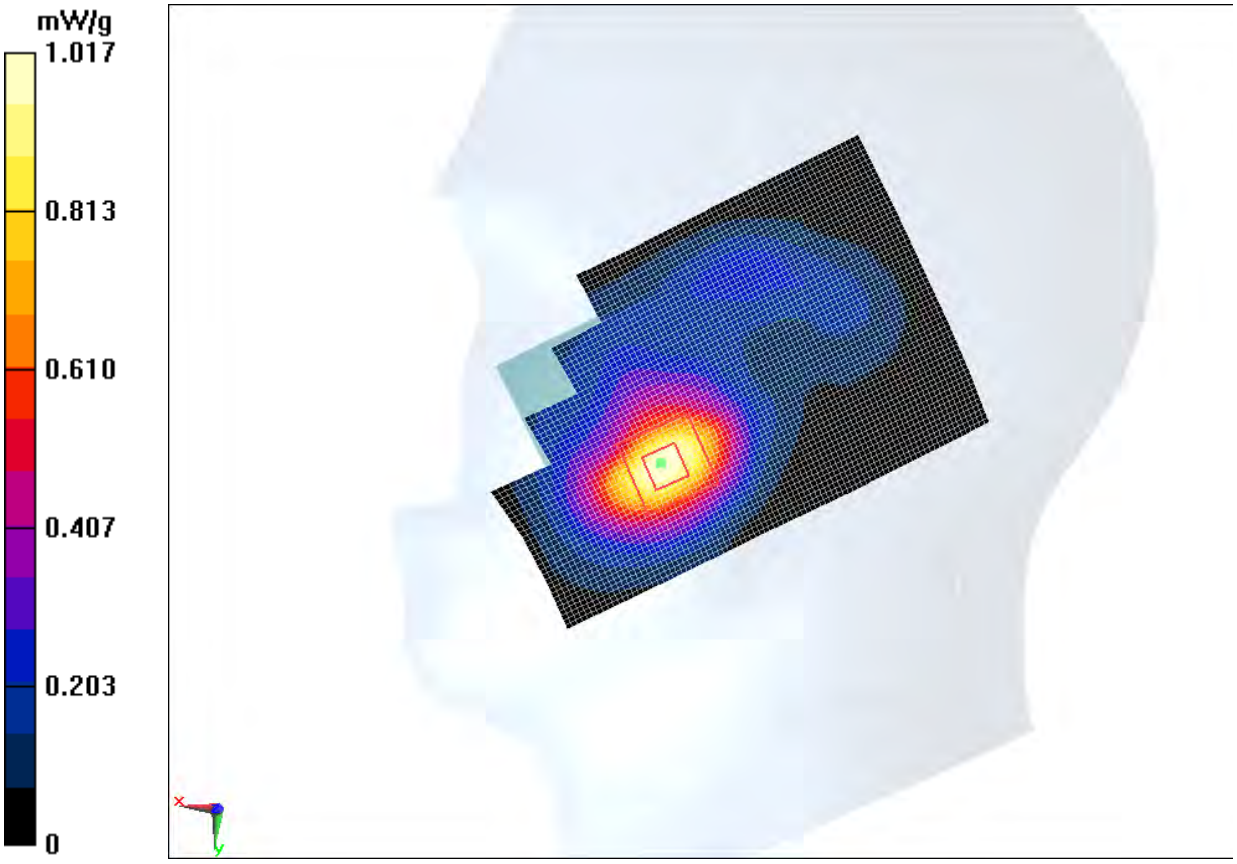



**Fig. 30 1900 MHz CH661**

**1900 Right Cheek Low**
Date: 2013-1-20
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; $\sigma$ = 1.361 mho/m; $\varepsilon r$ = 39.541; $\rho$ = 1000 kg/$m^3$
Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C
Communication System: GSM 1900MHz Frequency: 1850.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.19, 5.19, 5.19)

**Cheek Low/Area Scan (61x91x1):** Measurement grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.12 mW/g

**Cheek Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.159 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 1.521 mW/g
**SAR(1 g) = 0.983 mW/g; SAR(10 g) = 0.567 mW/g**
Maximum value of SAR (measured) = 1.10 mW/g

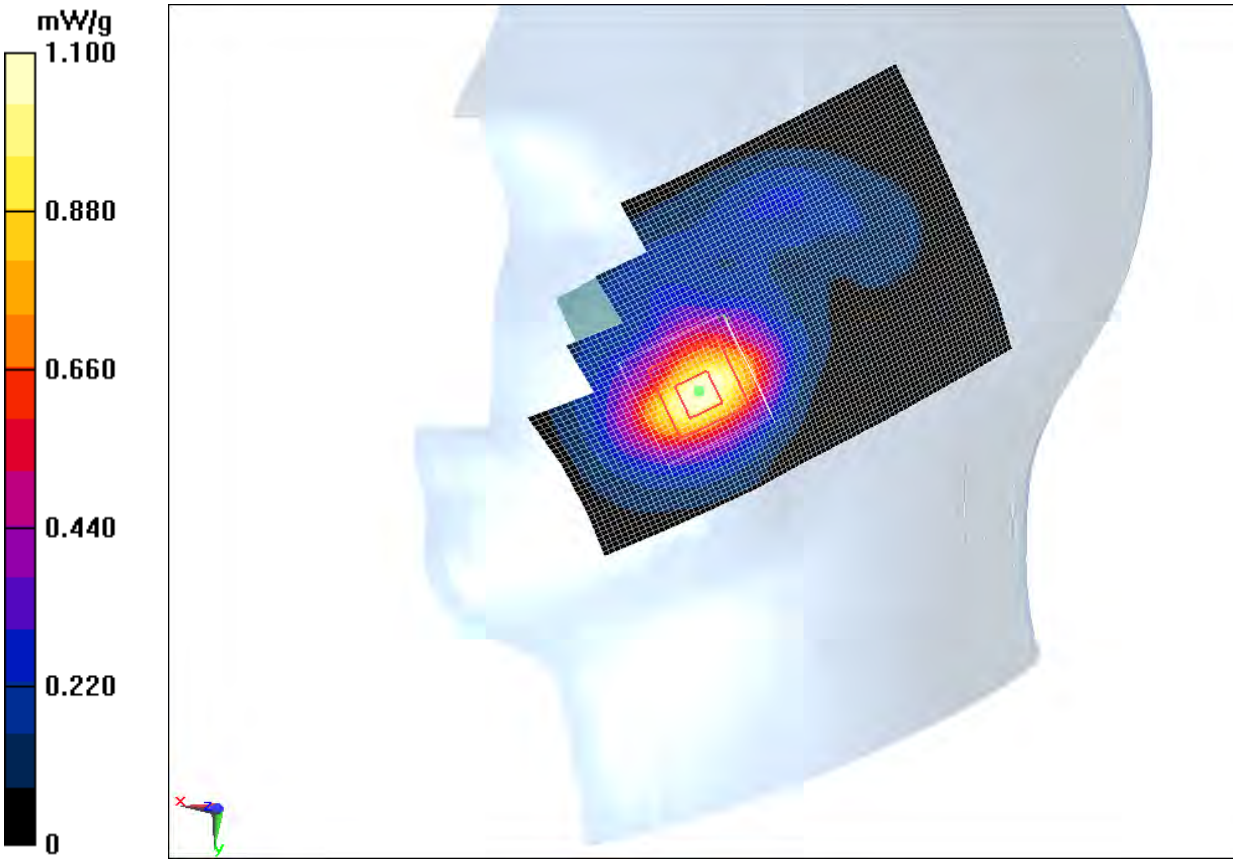



**Fig. 31 1900 MHz CH512**


**Fig. 31-1 Z-Scan at power reference point (1900 MHz CH512)**

**1900 Right Tilt High**
Date: 2013-1-20
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1910 MHz; $\sigma$ = 1.419 mho/m; $\varepsilon r$ = 39.336; $\rho$ = 1000 kg/$m^3$
Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C
Communication System: GSM 1900MHz Frequency: 1909.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.19, 5.19, 5.19)

**Tilt High/Area Scan (61x91x1):** Measurement grid: dx=10 mm, dy=10 mm
Reference Value = 13.203 V/m; Power Drift = 0.01 dB
**Fast SAR: SAR(1 g) = 0.229 mW/g; SAR(10 g) = 0.128 mW/g**
Maximum value of SAR (interpolated) = 0.261 mW/g

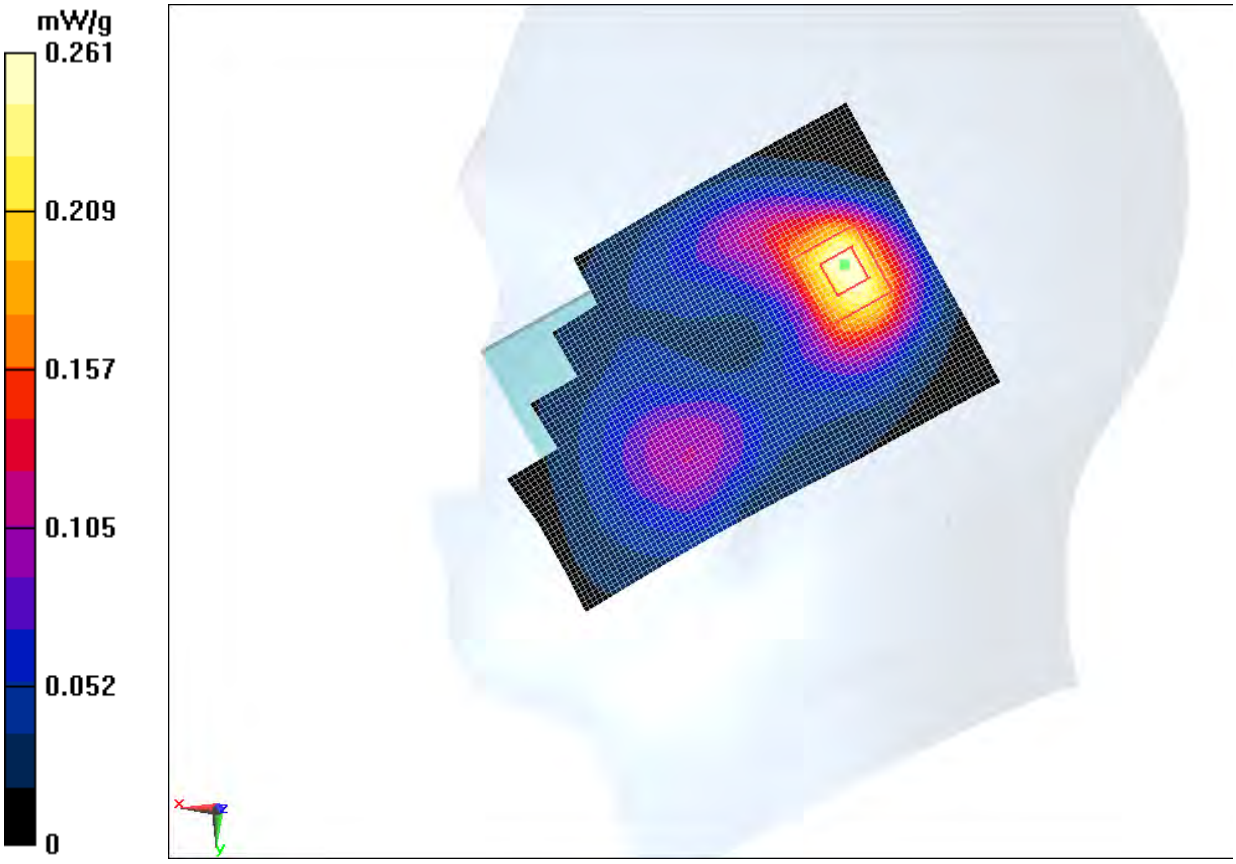



**Fig. 32 1900 MHz CH810**

**1900 Right Tilt Middle**
Date: 2013-1-20
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1880 MHz; $\sigma$ = 1.391 mho/m; $\varepsilon r$ = 39.448; $\rho$ = 1000 kg/$m^3$
Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C
Communication System: GSM 1900MHz Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.19, 5.19, 5.19)

**Tilt Middle/Area Scan (61x91x1):** Measurement grid: dx=10 mm, dy=10 mm
Reference Value = 14.056 V/m; Power Drift = -0.02 dB
**Fast SAR: SAR(1 g) = 0.254 mW/g; SAR(10 g) = 0.144 mW/g**
Maximum value of SAR (interpolated) = 0.288 mW/g

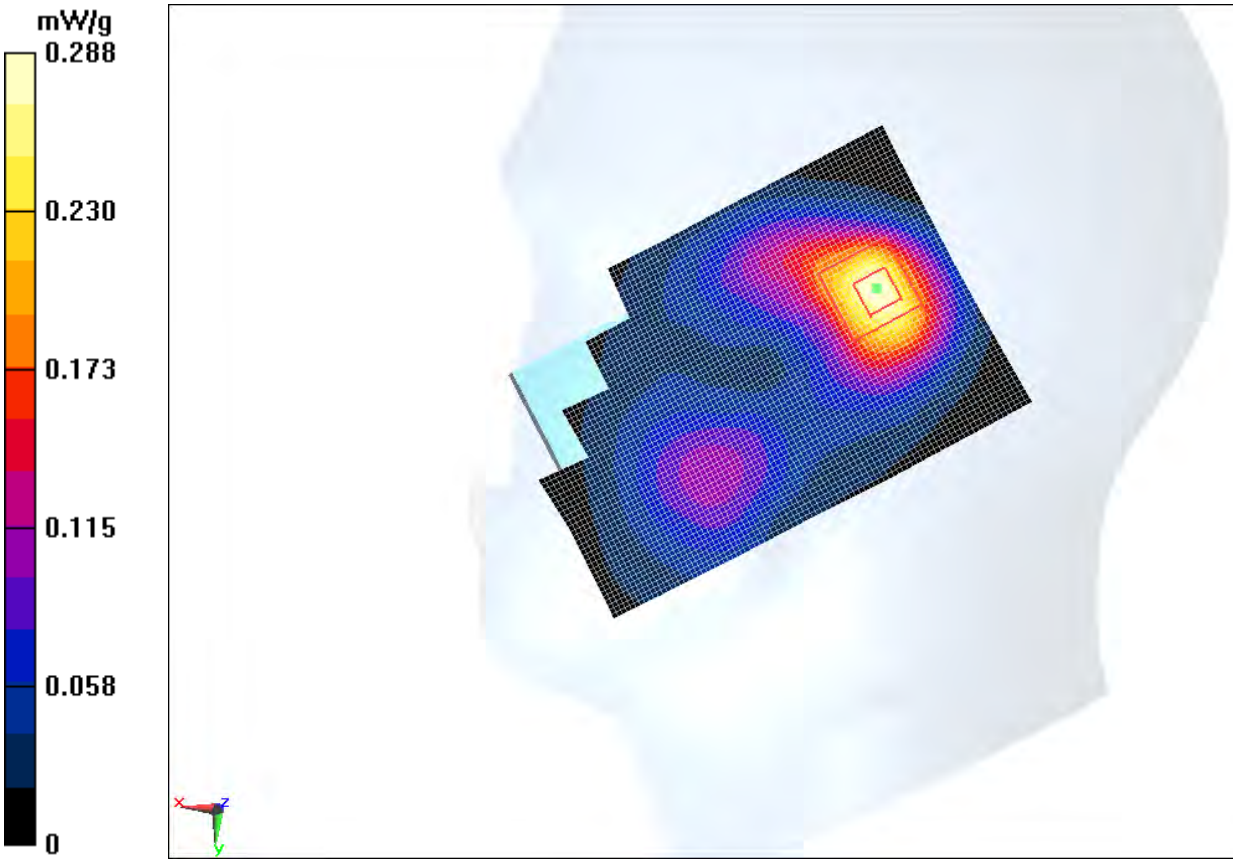



**Fig.33 1900 MHz CH661**

**1900 Right Tilt Low**
Date: 2013-1-20
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; $\sigma$ = 1.361 mho/m; $\varepsilon r$ = 39.541; $\rho$ = 1000 kg/$m^3$
Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C
Communication System: GSM 1900MHz Frequency: 1850.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.19, 5.19, 5.19)

**Tilt Low/Area Scan (61x91x1):** Measurement grid: dx=10 mm, dy=10 mm
Reference Value = 14.164 V/m; Power Drift = 0.03 dB
**Fast SAR: SAR(1 g) = 0.255 mW/g; SAR(10 g) = 0.147 mW/g**
Maximum value of SAR (interpolated) = 0.289 mW/g

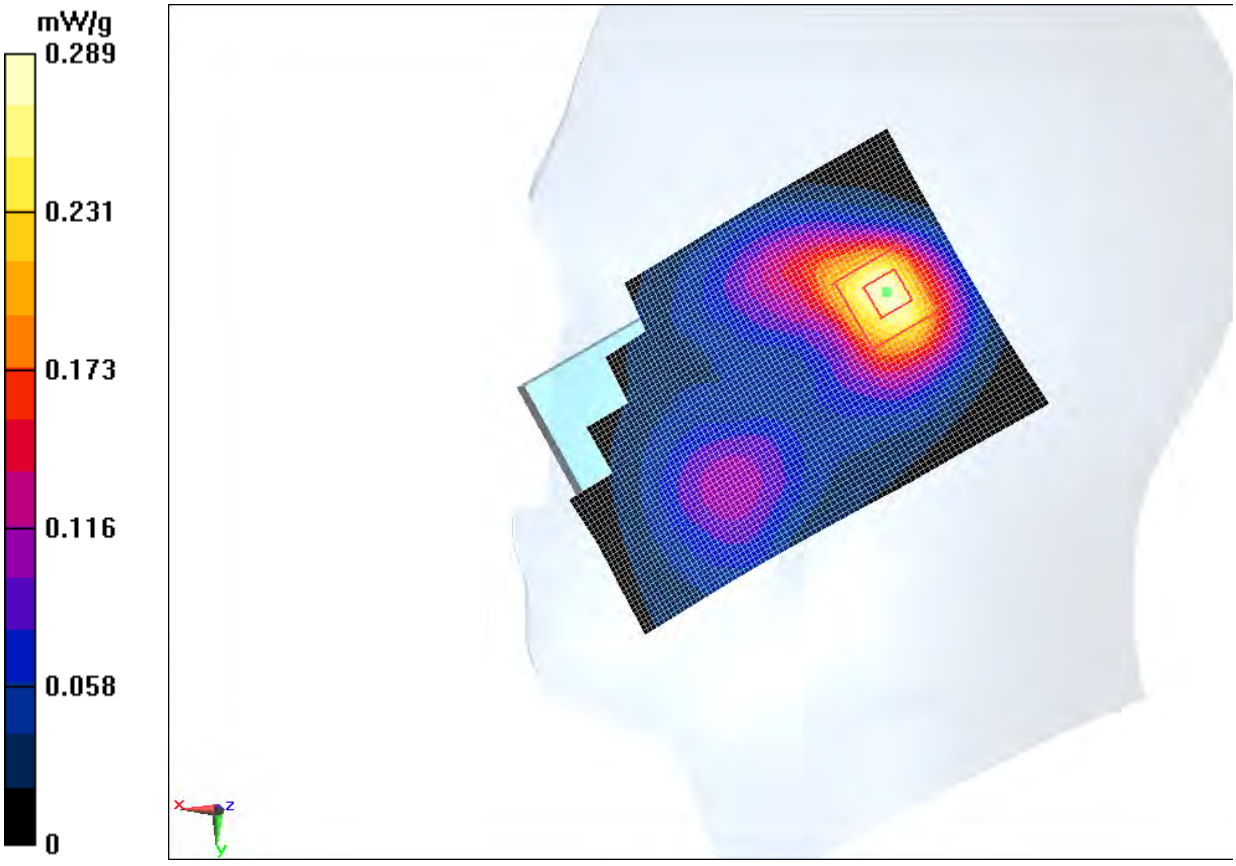



**Fig. 34 1900 MHz CH512**

**1900 Body Toward Phantom Middle with GPRS**
Date: 2013-1-20
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1880 MHz; $\sigma$ = 1.491 mho/m; $\varepsilon r$ = 52.333; $\rho$ = 1000 kg/$m^3$
Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C
Communication System: GSM 1900MHz GPRS Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(4.64, 4.64, 4.64)

**Toward Phantom Middle/Area Scan (61x111x1):** Measurement grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.617 mW/g

**Toward Phantom Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.913 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.869 mW/g
**SAR(1 g) = 0.573 mW/g; SAR(10 g) = 0.351 mW/g**
Maximum value of SAR (measured) = 0.615 mW/g

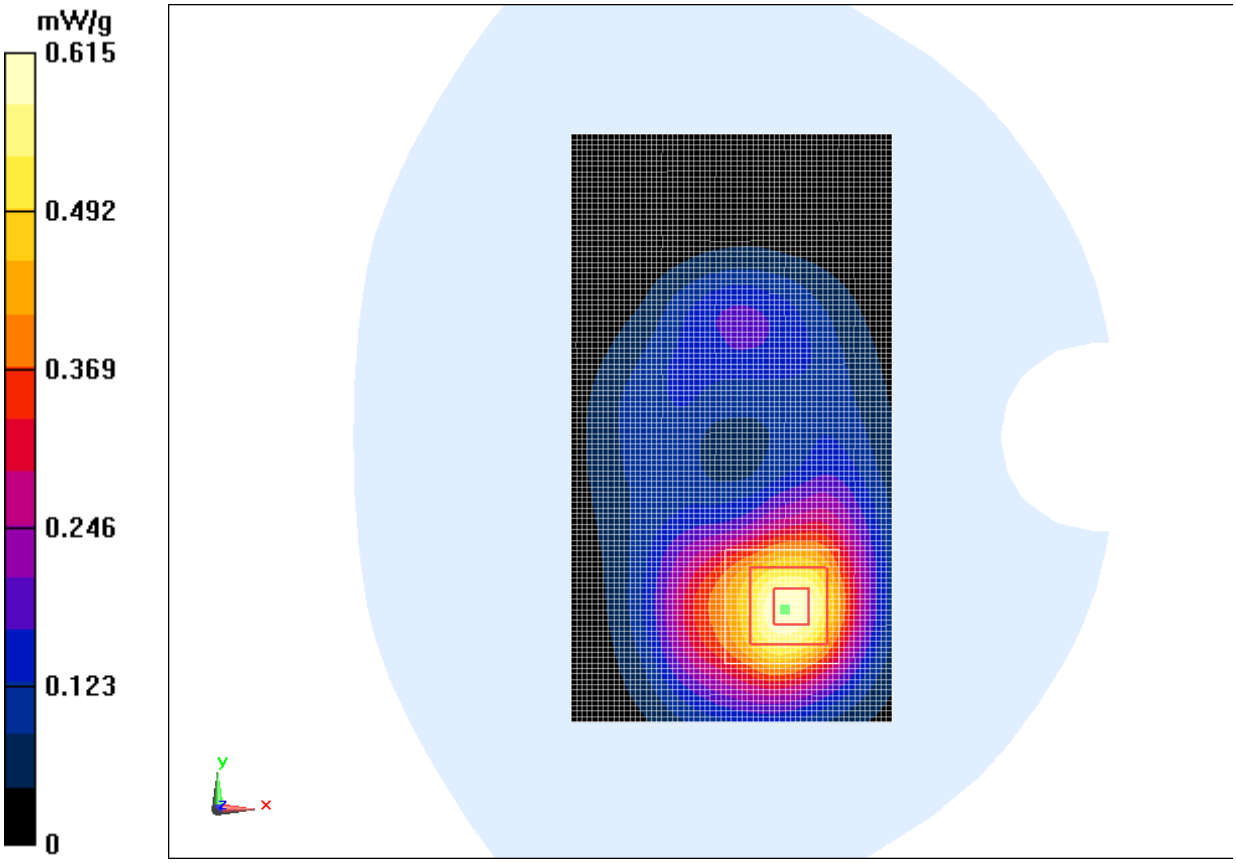



**Fig. 35 1900 MHz CH661**

**1900 Body Toward Ground High with GPRS**

Date: 2013-1-20
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1910 MHz; $\sigma$ = 1.521 mho/m; $\varepsilon r$ = 52.211; $\rho$ = 1000 kg/m$^3$
Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C
Communication System: GSM 1900MHz GPRS Frequency: 1909.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(4.64, 4.64, 4.64)

**Toward Ground High/Area Scan (61x111x1):** Measurement grid: dx=10 mm, dy=10 mm
Reference Value = 7.835 V/m; Power Drift = -0.04 dB
**Fast SAR: SAR(1 g) = 0.583 mW/g; SAR(10 g) = 0.337 mW/g**
Maximum value of SAR (interpolated) = 0.650 mW/g

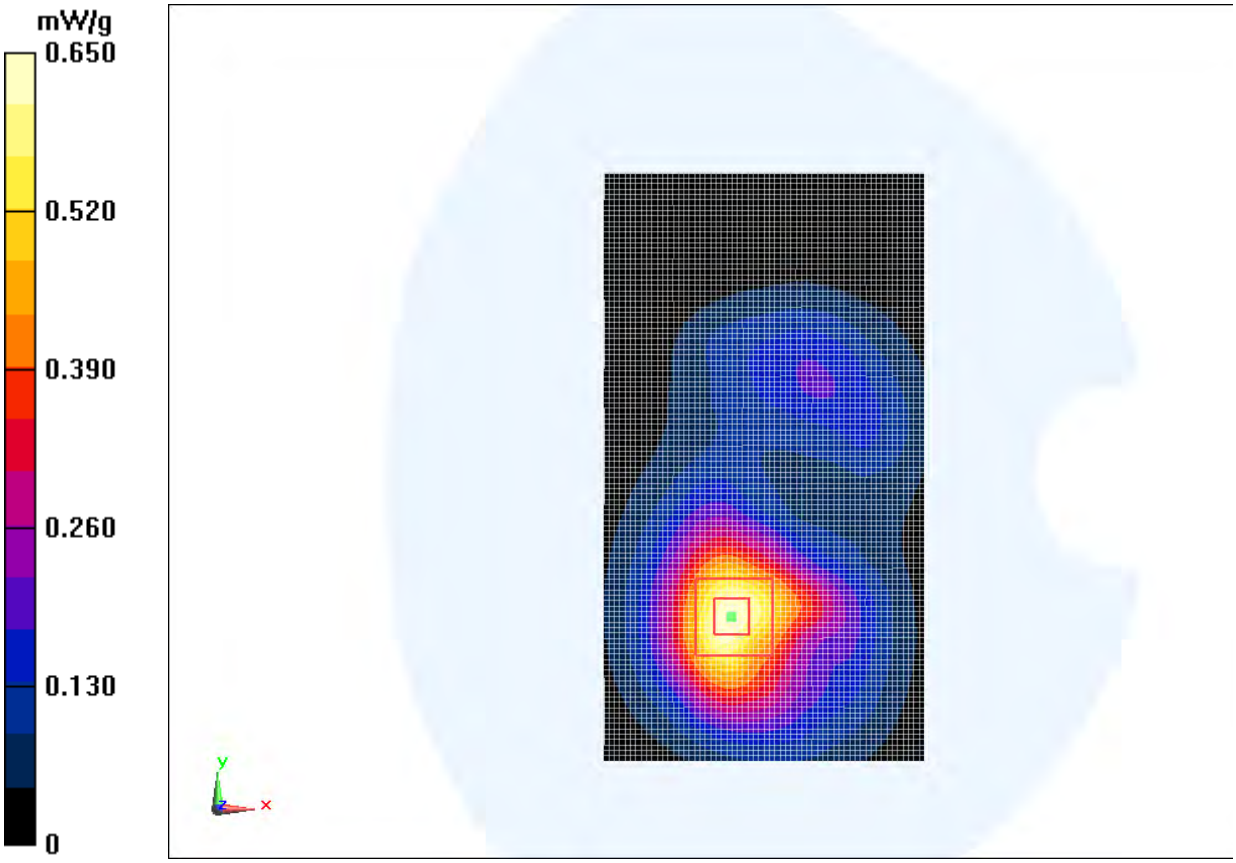



**Fig. 36 1900 MHz CH810**

**1900 Body Toward Ground Middle with GPRS**

Date: 2013-1-20
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1880 MHz; $\sigma$ = 1.491 mho/m; $\varepsilon r$ = 52.333; $\rho$ = 1000 kg/m$^3$
Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C
Communication System: GSM 1900MHz GPRS Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(4.64, 4.64, 4.64)

**Toward Ground Middle/Area Scan (61x111x1):** Measurement grid: dx=10 mm, dy=10 mm
Reference Value = 9.059 V/m; Power Drift = -0.02 dB
**Fast SAR: SAR(1 g) = 0.585 mW/g; SAR(10 g) = 0.337 mW/g**
Maximum value of SAR (interpolated) = 0.658 mW/g

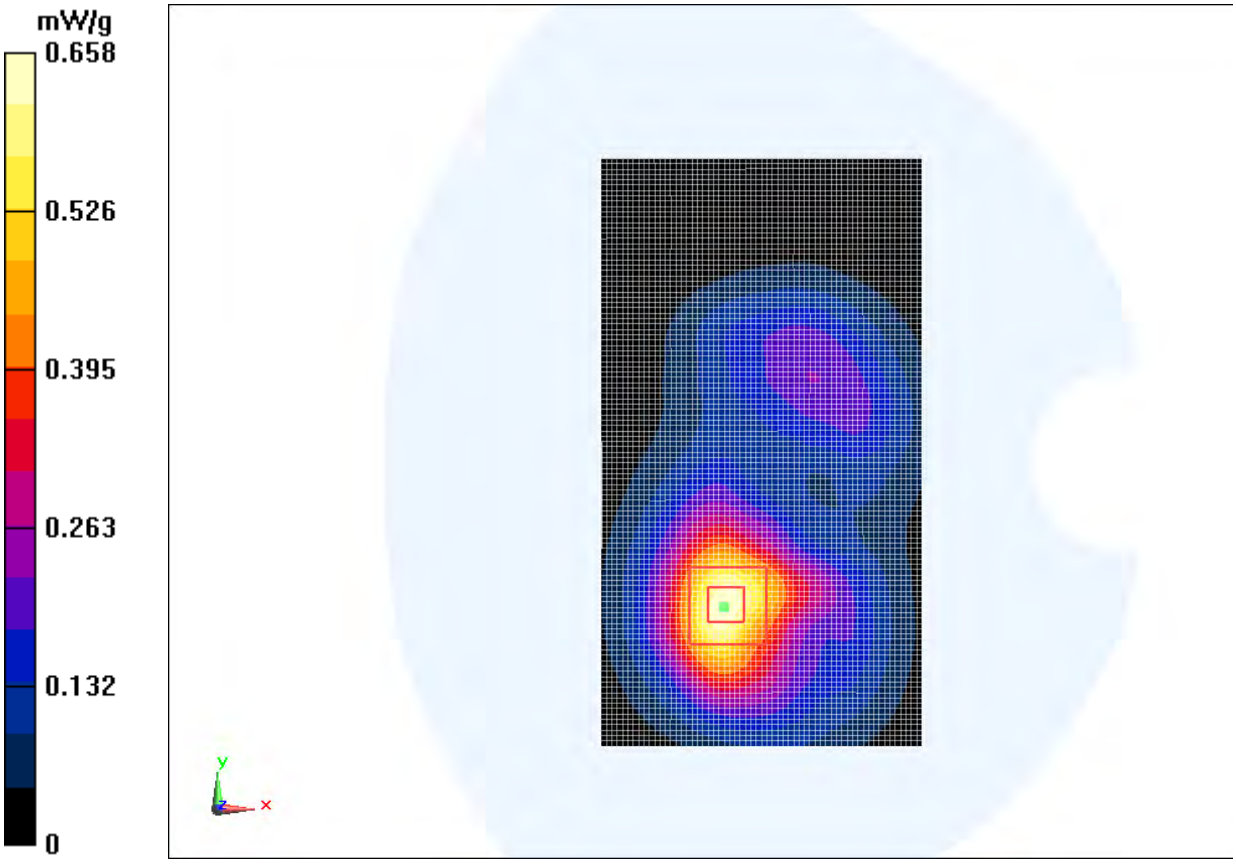



**Fig. 37 1900 MHz CH661**

**1900 Body Toward Ground Low with GPRS**

Date: 2013-1-20
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; $\sigma$ = 1.458 mho/m; $\varepsilon r$ = 52.468; $\rho$ = 1000 kg/$m^3$
Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C
Communication System: GSM 1900MHz GPRS Frequency: 1850.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(4.64, 4.64, 4.64)

**Toward Ground Low/Area Scan (61x111x1):** Measurement grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.688 mW/g

**Toward Ground Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.806 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.940 mW/g
**SAR(1 g) = 0.615 mW/g; SAR(10 g) = 0.372 mW/g**
Maximum value of SAR (measured) = 0.678 mW/g

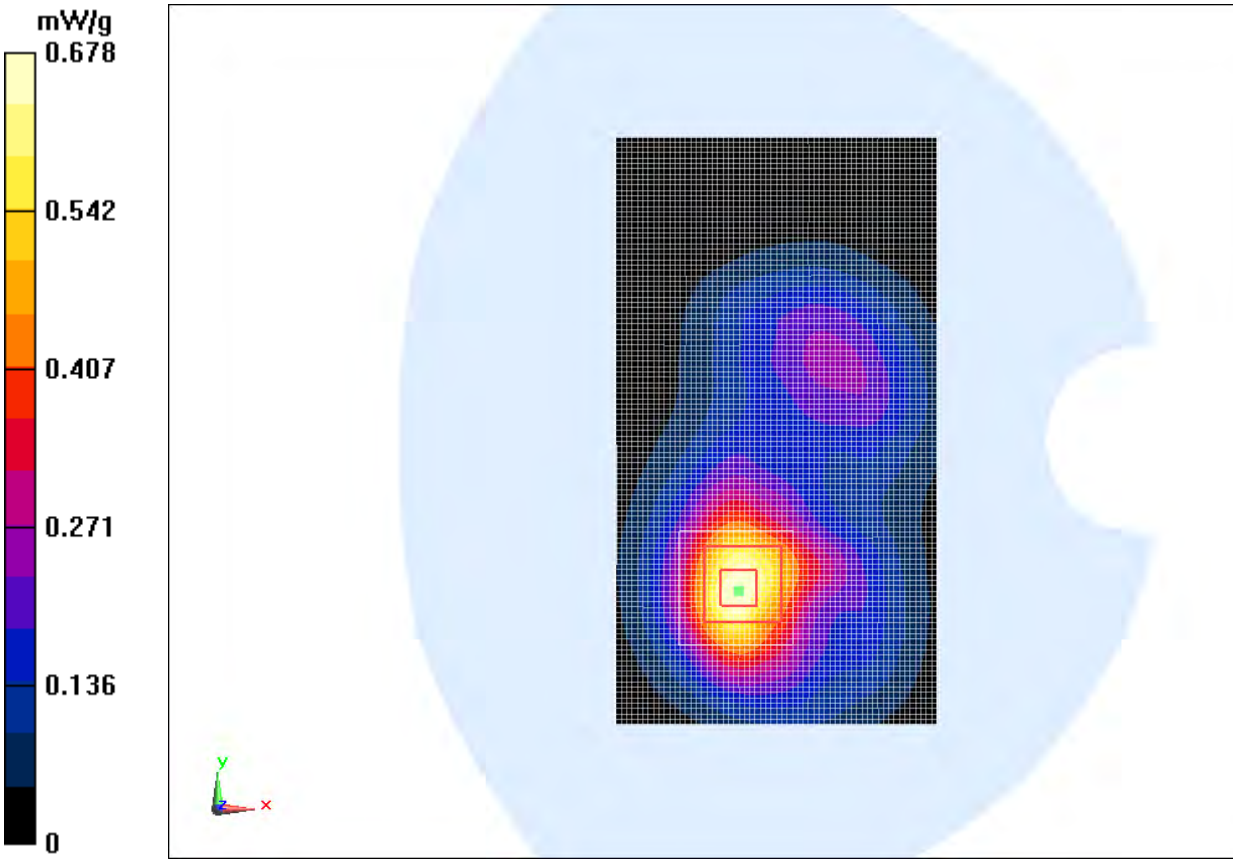



**Fig. 38 1900 MHz CH512**

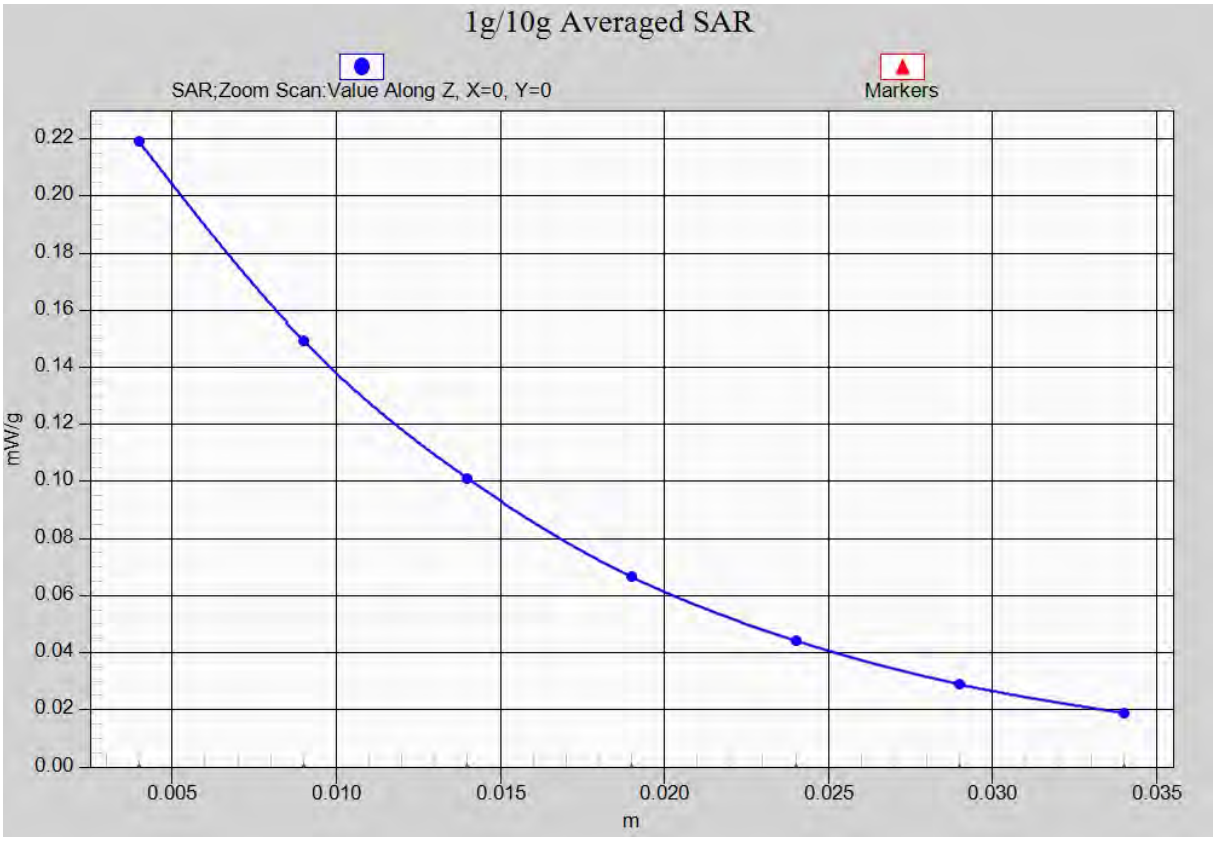



**Fig. 38-1 Z-Scan at power reference point (1900 MHz CH512)**

**1900 Body Left Side Middle with GPRS**

Date: 2013-1-20
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1880 MHz; $\sigma$ = 1.491 mho/m; $\varepsilon r$ = 52.333; $\rho$ = 1000 kg/$m^3$
Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C
Communication System: GSM 1900MHz GPRS Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(4.64, 4.64, 4.64)

**Left Side Middle/Area Scan (61x111x1):** Measurement grid: dx=10 mm, dy=10 mm
Reference Value = 6.730 V/m; Power Drift = 0.03 dB
**Fast SAR: SAR(1 g) = 0.101 mW/g; SAR(10 g) = 0.057 mW/g**
Maximum value of SAR (interpolated) = 0.114 mW/g

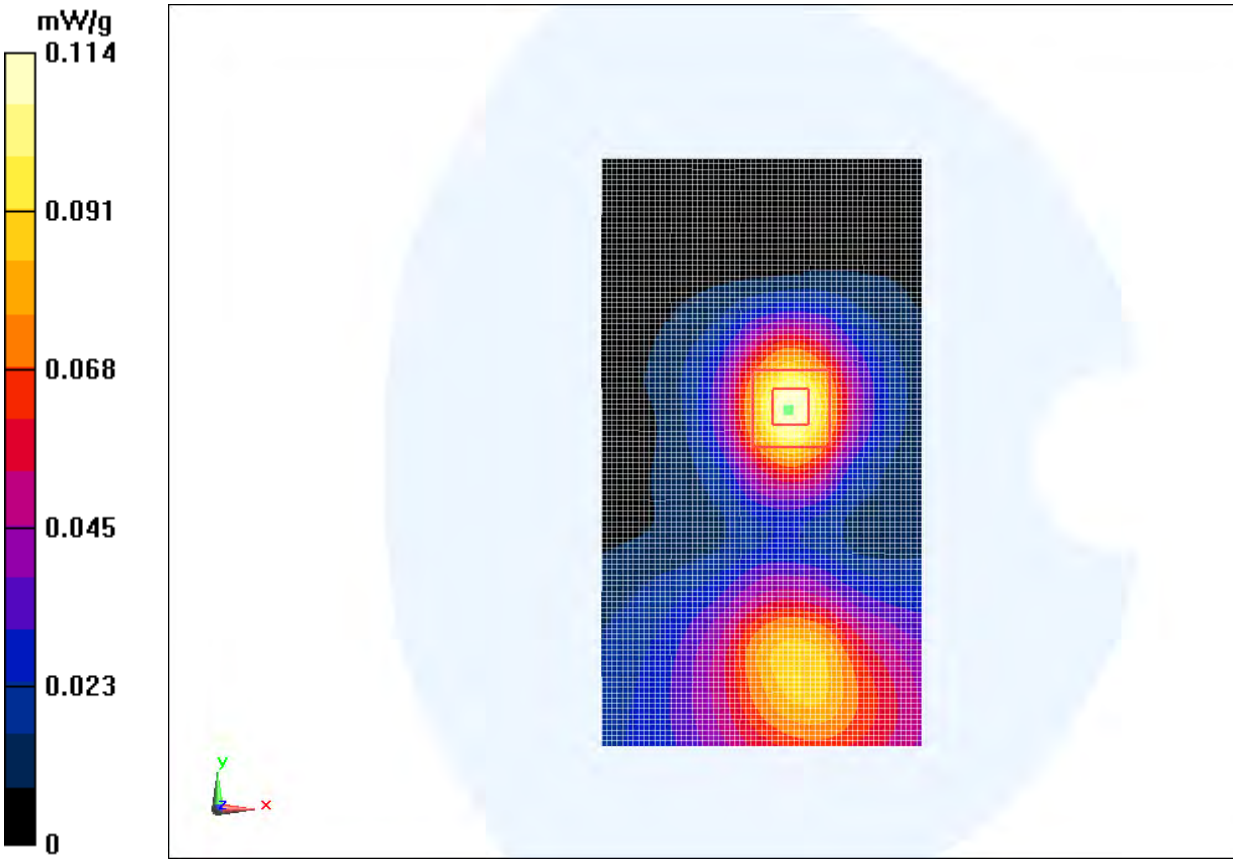



**Fig. 39 1900 MHz CH661**

**1900 Body Right Side Middle with GPRS**

Date: 2013-1-20
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1880 MHz; $\sigma$ = 1.491 mho/m; $\varepsilon r$ = 52.333; $\rho$ = 1000 kg/m$^3$
Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C
Communication System: GSM 1900MHz GPRS Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(4.64, 4.64, 4.64)

**Right Side Middle/Area Scan (61x111x1):** Measurement grid: dx=10 mm, dy=10 mm
Reference Value = 9.826 V/m; Power Drift = 0.02 dB
**Fast SAR: SAR(1 g) = 0.149 mW/g; SAR(10 g) = 0.087 mW/g**
Maximum value of SAR (interpolated) = 0.166 mW/g

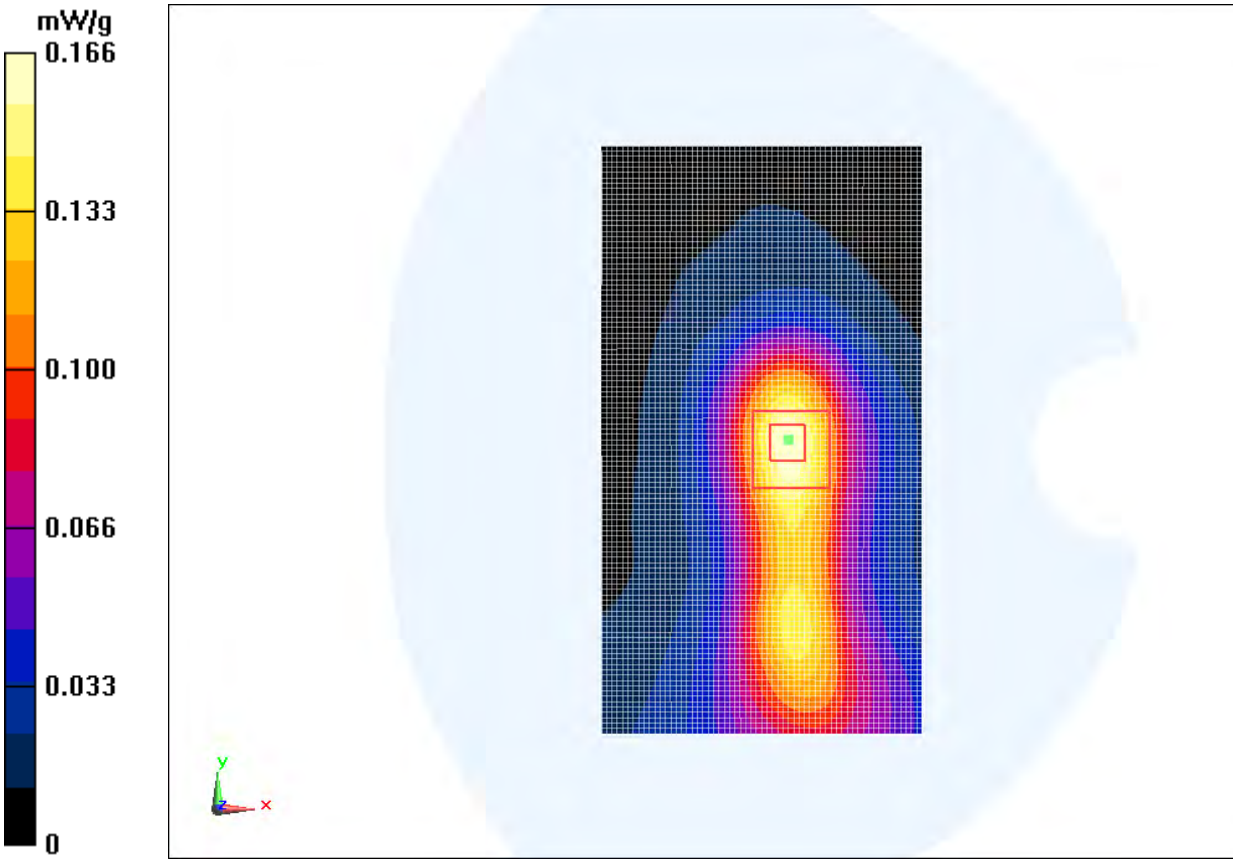



**Fig. 40 1900 MHz CH661**

**1900 Body Bottom Side Middle with GPRS**

Date: 2013-1-20
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1880 MHz; $\sigma$ = 1.491 mho/m; $\varepsilon r$ = 52.333; $\rho$ = 1000 kg/m$^3$
Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C
Communication System: GSM 1900MHz GPRS Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(4.64, 4.64, 4.64)

**Bottom Side Middle/Area Scan (61x111x1):** Measurement grid: dx=10 mm, dy=10 mm
Reference Value = 12.829 V/m; Power Drift = -0.07 dB
**Fast SAR: SAR(1 g) = 0.315 mW/g; SAR(10 g) = 0.183 mW/g**
Maximum value of SAR (interpolated) = 0.346 mW/g

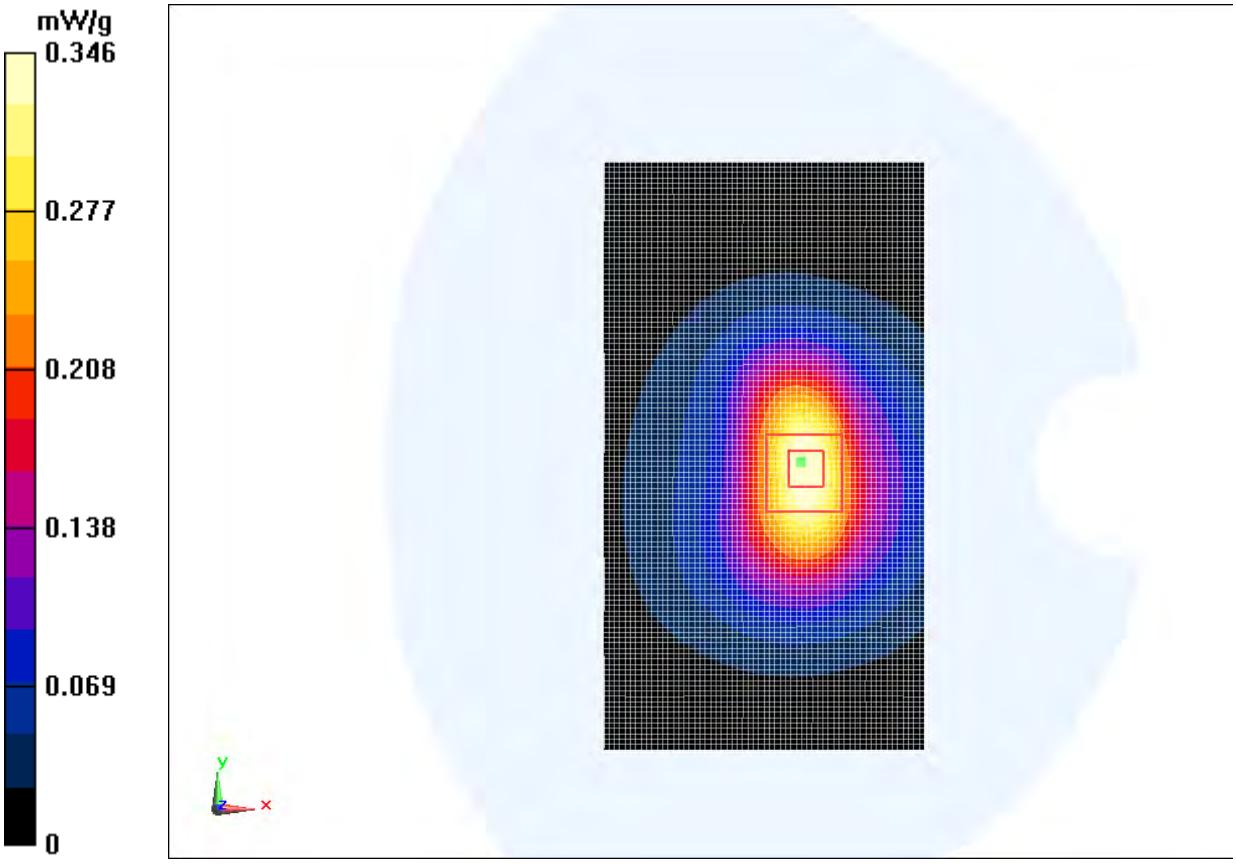



**Fig. 41 1900 MHz CH661**

**1900 Body Toward Ground Low with EGPRS**

Date: 2013-1-20

Electronics: DAE4 Sn771

Medium: Body 1900 MHz

Medium parameters used (interpolated): f = 1850.2 MHz; $\sigma$ = 1.458 mho/m; $\varepsilon r$ = 52.468; $\rho$ = 1000 kg/$m^3$

Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C

Communication System: GSM 1900MHz EGPRS Frequency: 1850.2 MHz Duty Cycle: 1:8.3

Probe: ES3DV3 - SN3149 ConvF(4.64, 4.64, 4.64)

**Toward Ground Low/Area Scan (61x111x1):** Measurement grid: dx=10 mm, dy=10 mm

Reference Value = 10.781 V/m; Power Drift = -0.03 dB

**Fast SAR: SAR(1 g) = 0.611 mW/g; SAR(10 g) = 0.352 mW/g**

Maximum value of SAR (interpolated) = 0.688 mW/g

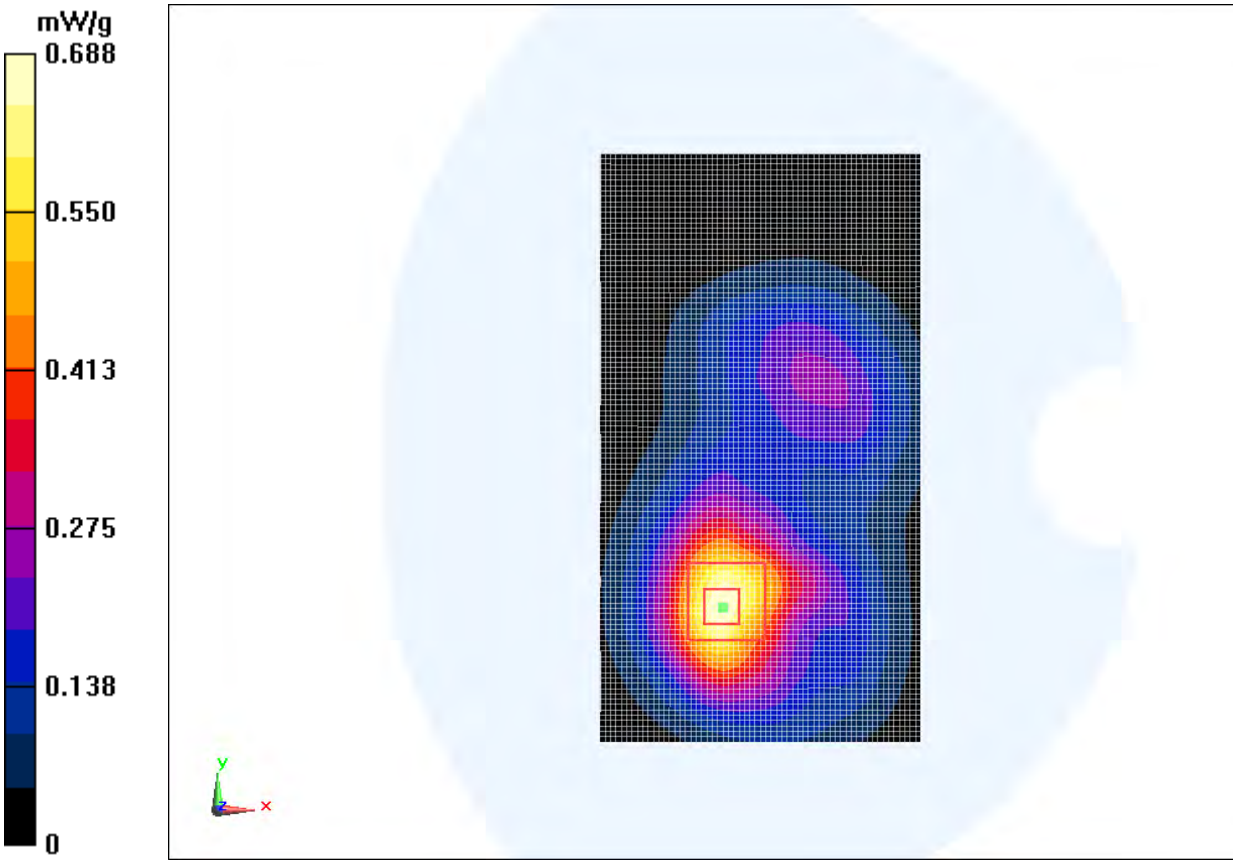



**Fig. 42 1900 MHz CH512**

**1900 Body Toward Ground Low with Headset CCB3160A11C2**

Date: 2013-1-20

Electronics: DAE4 Sn771

Medium: Body 1900 MHz

Medium parameters used (interpolated): f = 1850.2 MHz; $\sigma$ = 1.458 mho/m; $\varepsilon r$ = 52.468; $\rho$ = 1000 kg/$m^3$

Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C

Communication System: GSM 1900MHz Frequency: 1850.2 MHz Duty Cycle: 1:8.3

Probe: ES3DV3 - SN3149 ConvF(4.64, 4.64, 4.64)

**Toward Ground Low/Area Scan (61x111x1):** Measurement grid: dx=10 mm, dy=10 mm

Reference Value = 10.714 V/m; Power Drift = -0.01 dB

**Fast SAR: SAR(1 g) = 0.511 mW/g; SAR(10 g) = 0.300 mW/g**

Maximum value of SAR (interpolated) = 0.565 mW/g

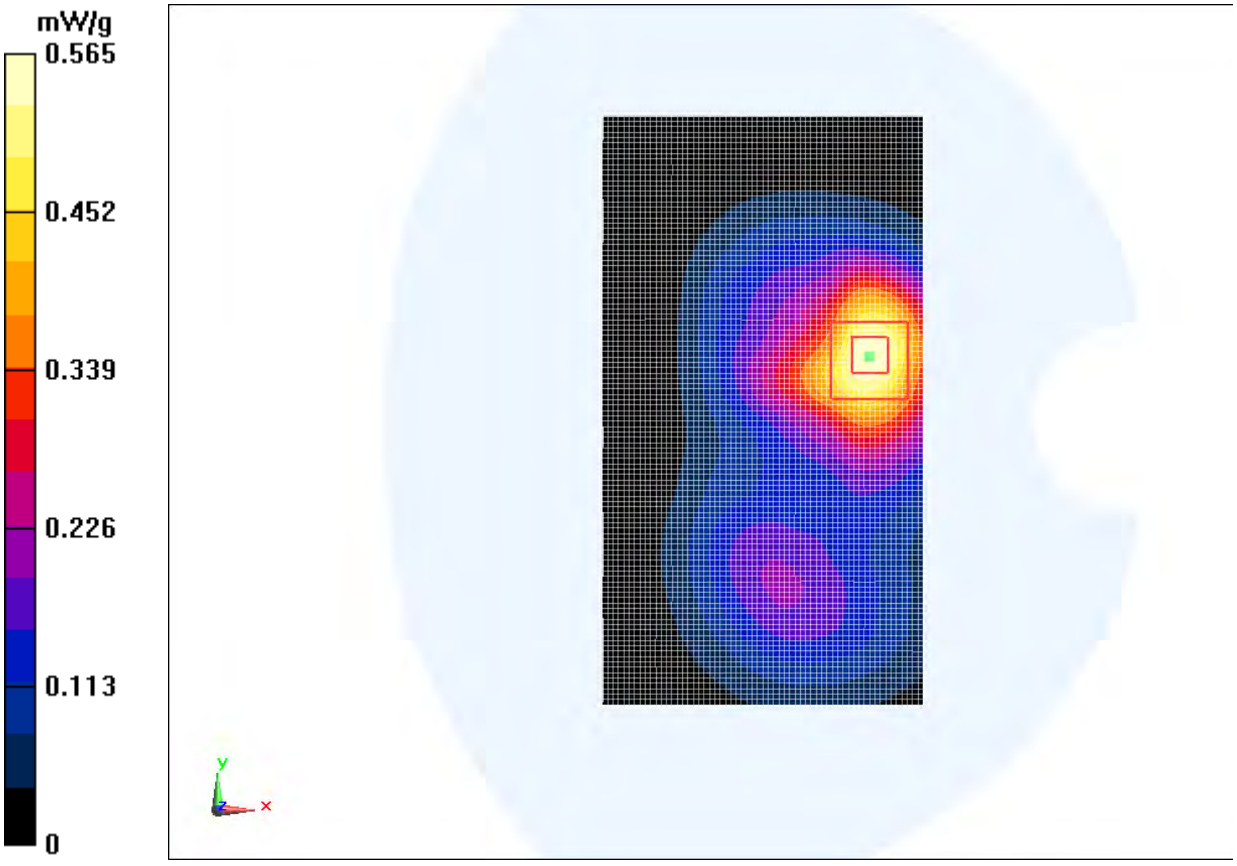



**Fig. 43 1900 MHz CH512**

**1900 Body Toward Ground Low with Headset CCB3160A11C4**

Date: 2013-1-20

Electronics: DAE4 Sn771

Medium: Body 1900 MHz

Medium parameters used (interpolated): f = 1850.2 MHz; $\sigma$ = 1.458 mho/m; $\varepsilon r$ = 52.468; $\rho$ = 1000 kg/$m^3$

Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C

Communication System: GSM 1900MHz Frequency: 1850.2 MHz Duty Cycle: 1:8.3

Probe: ES3DV3 - SN3149 ConvF(4.64, 4.64, 4.64)

**Toward Ground Low/Area Scan (61x111x1):** Measurement grid: dx=10 mm, dy=10 mm

Reference Value = 10.810 V/m; Power Drift = 0.02 dB

**Fast SAR: SAR(1 g) = 0.516 mW/g; SAR(10 g) = 0.304 mW/g**

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

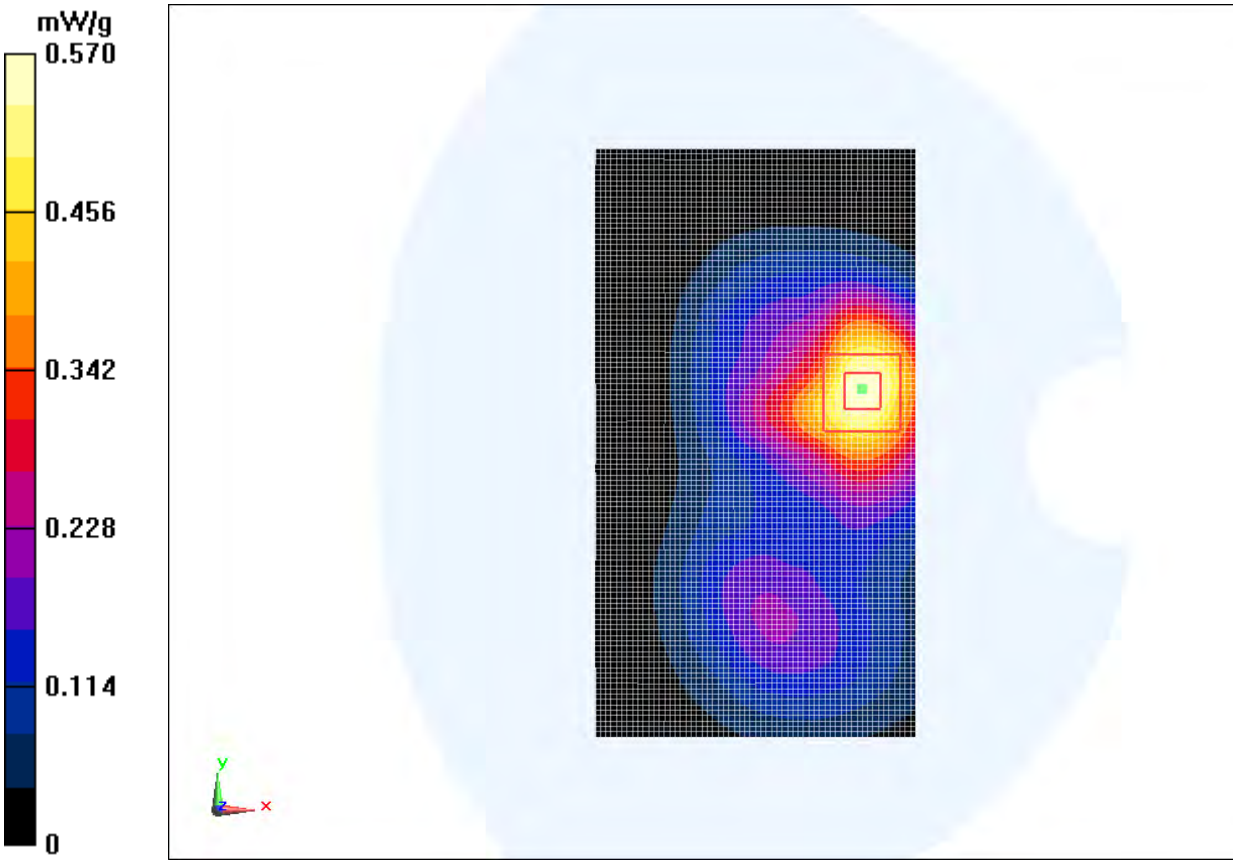



**Fig. 44 1900 MHz CH512**

**Wifi Left Cheek Low**
Date: 2013-1-17
Electronics: DAE4 Sn771
Medium: Head 2450 MHz
Medium parameters used (interpolated): f = 2412 MHz; σ = 1.803 mho/m; εr = 38.832; ρ = 1000 kg/$m^3$
Ambient Temperature: 22.6°C Liquid Temperature: 22.0°C
Communication System: WLan 2450 Frequency: 2412 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(4.49, 4.49, 4.49)

**Cheek Low/Area Scan (91x141x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.227 mW/g

**Cheek Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.874 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 0.415 mW/g
**SAR(1 g) = 0.204 mW/g; SAR(10 g) = 0.107 mW/g**
Maximum value of SAR (measured) = 0.226 mW/g

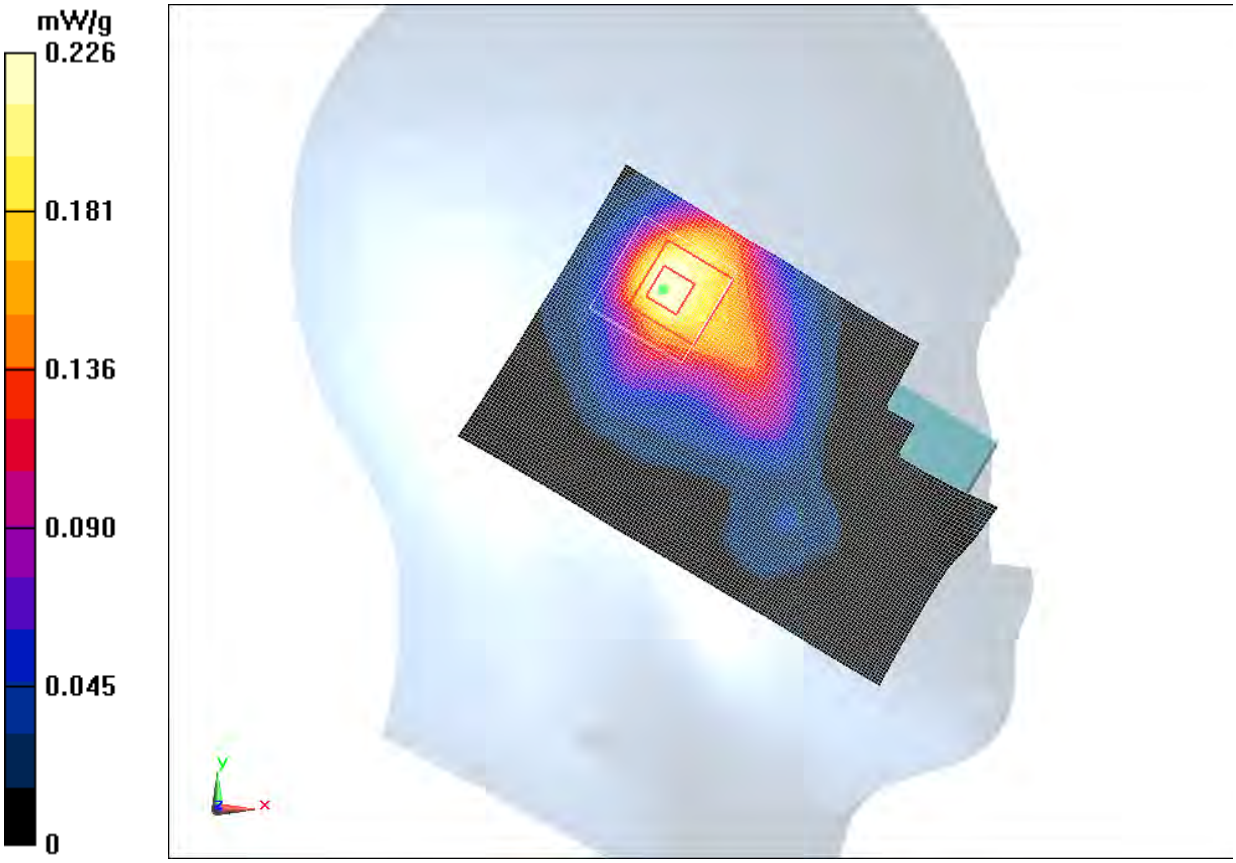



**Fig. 45 2450 MHz CH1**

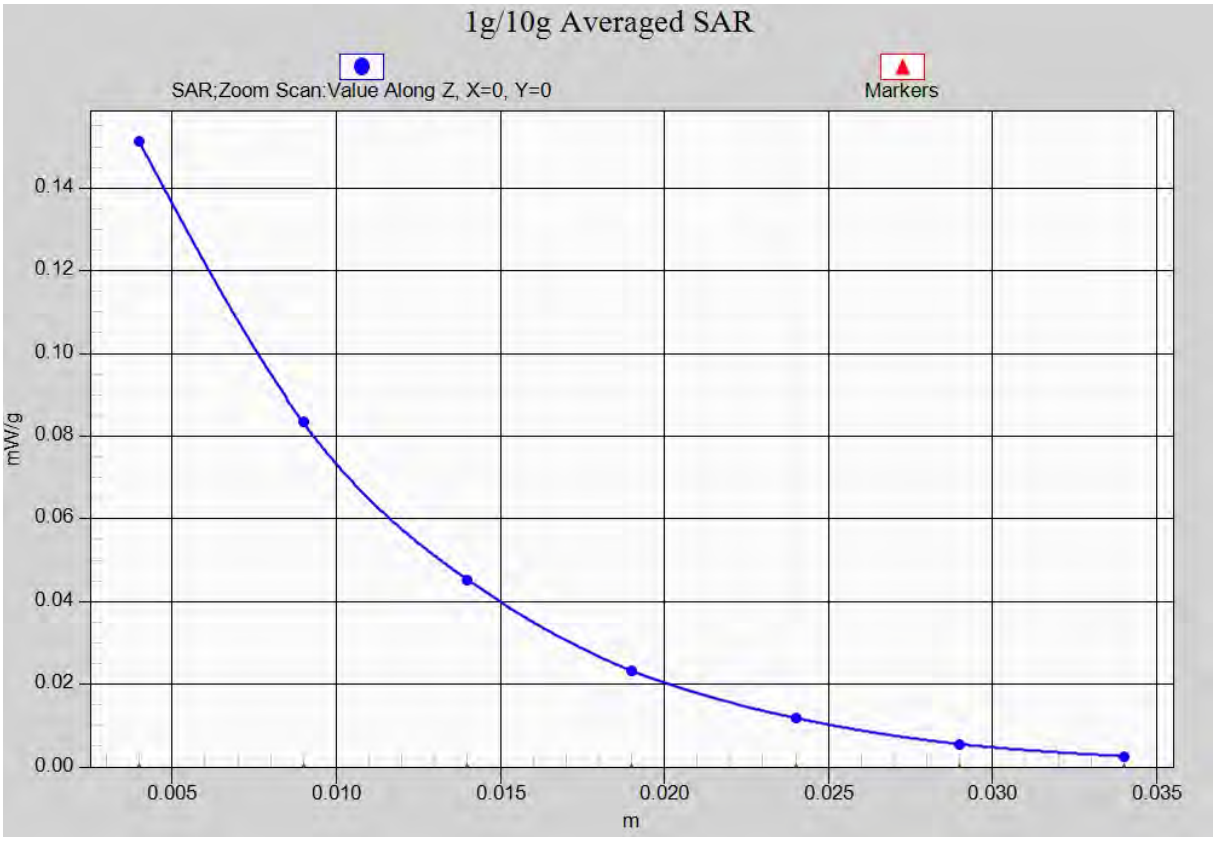



**Fig. 45-1 Z-Scan at power reference point (2450 MHz CH1)**

**Wifi Left Tilt Low**
Date: 2013-1-17
Electronics: DAE4 Sn771
Medium: Head 2450 MHz
Medium parameters used (interpolated): f = 2412 MHz; $\sigma$ = 1.803 mho/m; $\varepsilon r$ = 38.832; $\rho$ = 1000 kg/$m^3$
Ambient Temperature: 22.6°C Liquid Temperature: 22.0°C
Communication System: WLan 2450 Frequency: 2412 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(4.49, 4.49, 4.49)

**Tilt Low/Area Scan (91x141x1):** Measurement grid: dx=10mm, dy=10mm
Reference Value = 6.387 V/m; Power Drift = 0.12 dB
**Fast SAR: SAR(1 g) = 0.105 mW/g; SAR(10 g) = 0.053 mW/g**
Maximum value of SAR (interpolated) = 0.124 mW/g

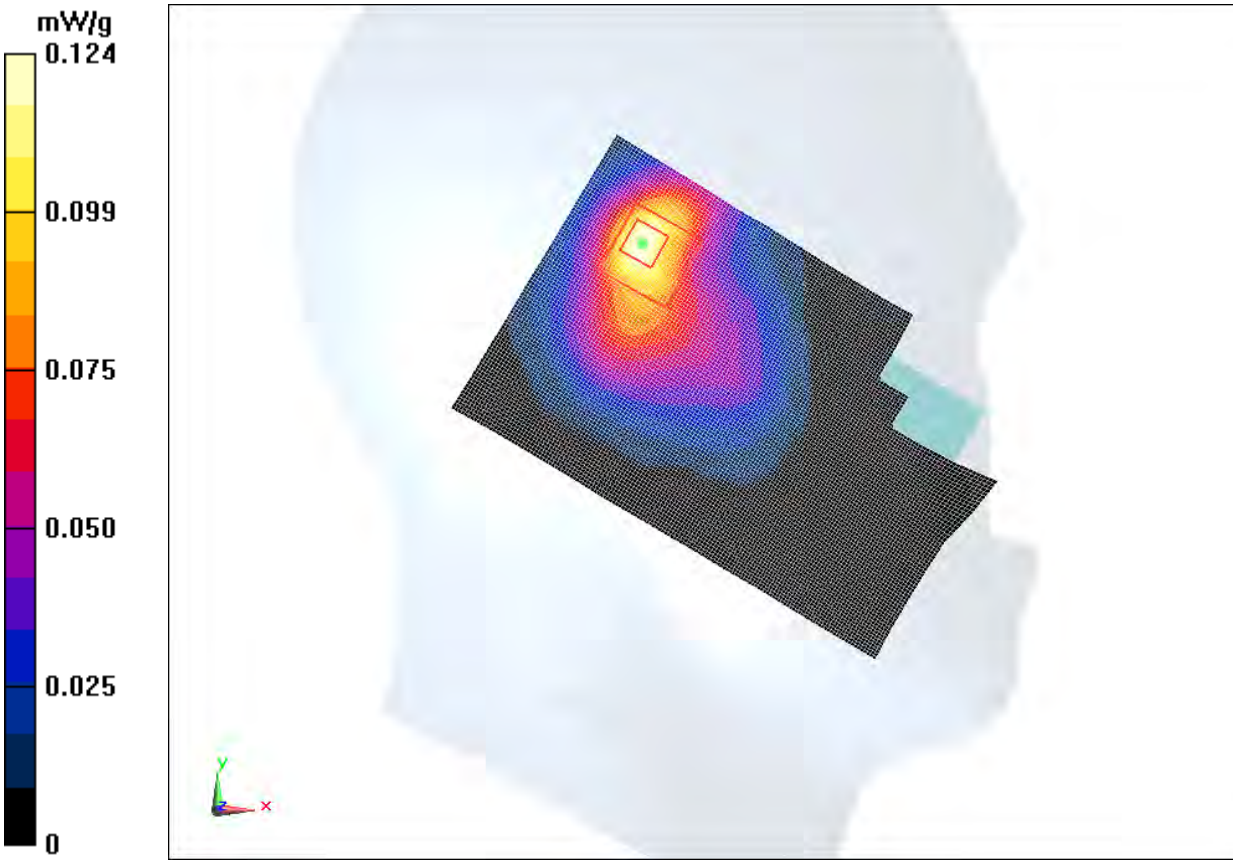



**Fig. 46 2450 MHz CH1**

**Wifi Right Cheek Low**
Date: 2013-1-17
Electronics: DAE4 Sn771
Medium: Head 2450 MHz
Medium parameters used (interpolated): f = 2412 MHz; $\sigma$ = 1.803 mho/m; $\varepsilon r$ = 38.832; $\rho$ = 1000 kg/$m^3$
Ambient Temperature: 22.6°C Liquid Temperature: 22.0°C
Communication System: WLan 2450 Frequency: 2412 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(4.49, 4.49, 4.49)

**Cheek Low/Area Scan (91x141x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.127 mW/g

**Cheek Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.735 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.213 mW/g
**SAR(1 g) = 0.119 mW/g; SAR(10 g) = 0.067 mW/g**
Maximum value of SAR (measured) = 0.130 mW/g
**Cheek Low/Zoom Scan (7x7x7)/Cube 1:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.735 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.210 mW/g
**SAR(1 g) = 0.114 mW/g; SAR(10 g) = 0.063 mW/g**
Maximum value of SAR (measured) = 0.124 mW/g

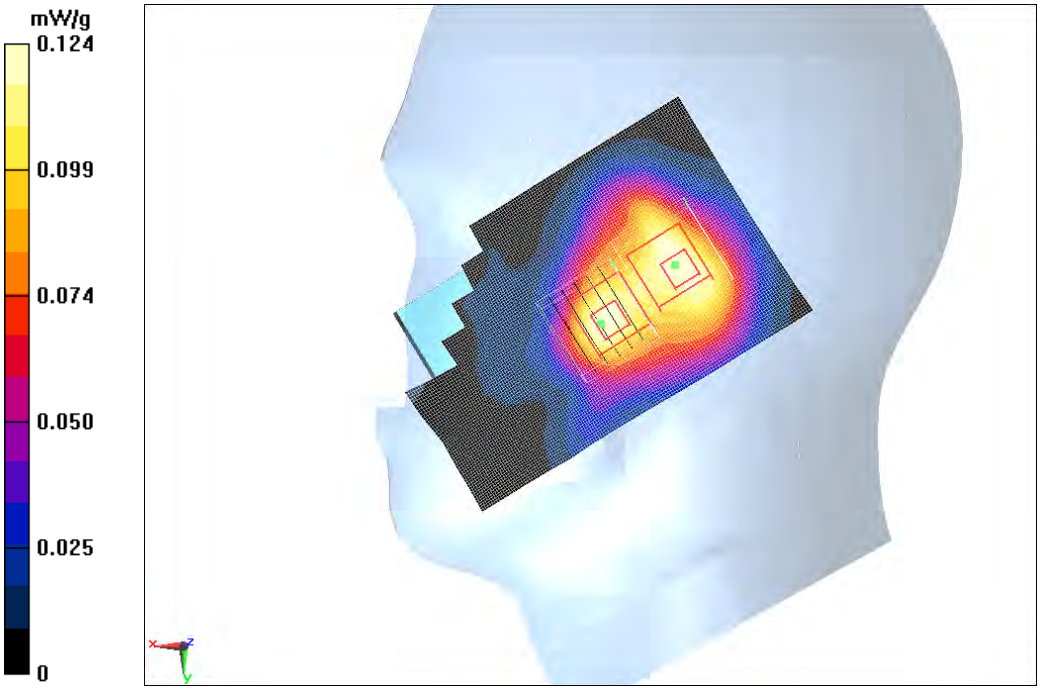



**Fig. 47 2450 MHz CH1**

**Wifi Right Tilt Low**
Date: 2013-1-17
Electronics: DAE4 Sn771
Medium: Head 2450 MHz
Medium parameters used (interpolated): f = 2412 MHz; $\sigma$ = 1.803 mho/m; $\varepsilon r$ = 38.832; $\rho$ = 1000 kg/$m^3$
Ambient Temperature: 22.6°C Liquid Temperature: 22.0°C
Communication System: WLan 2450 Frequency: 2412 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(4.49, 4.49, 4.49)

**Tilt Low/Area Scan (91x141x1):** Measurement grid: dx=10mm, dy=10mm
Reference Value = 6.120 V/m; Power Drift = 0.09 dB
**Fast SAR: SAR(1 g) = 0.066 mW/g; SAR(10 g) = 0.036 mW/g**
Maximum value of SAR (interpolated) = 0.0719 mW/g

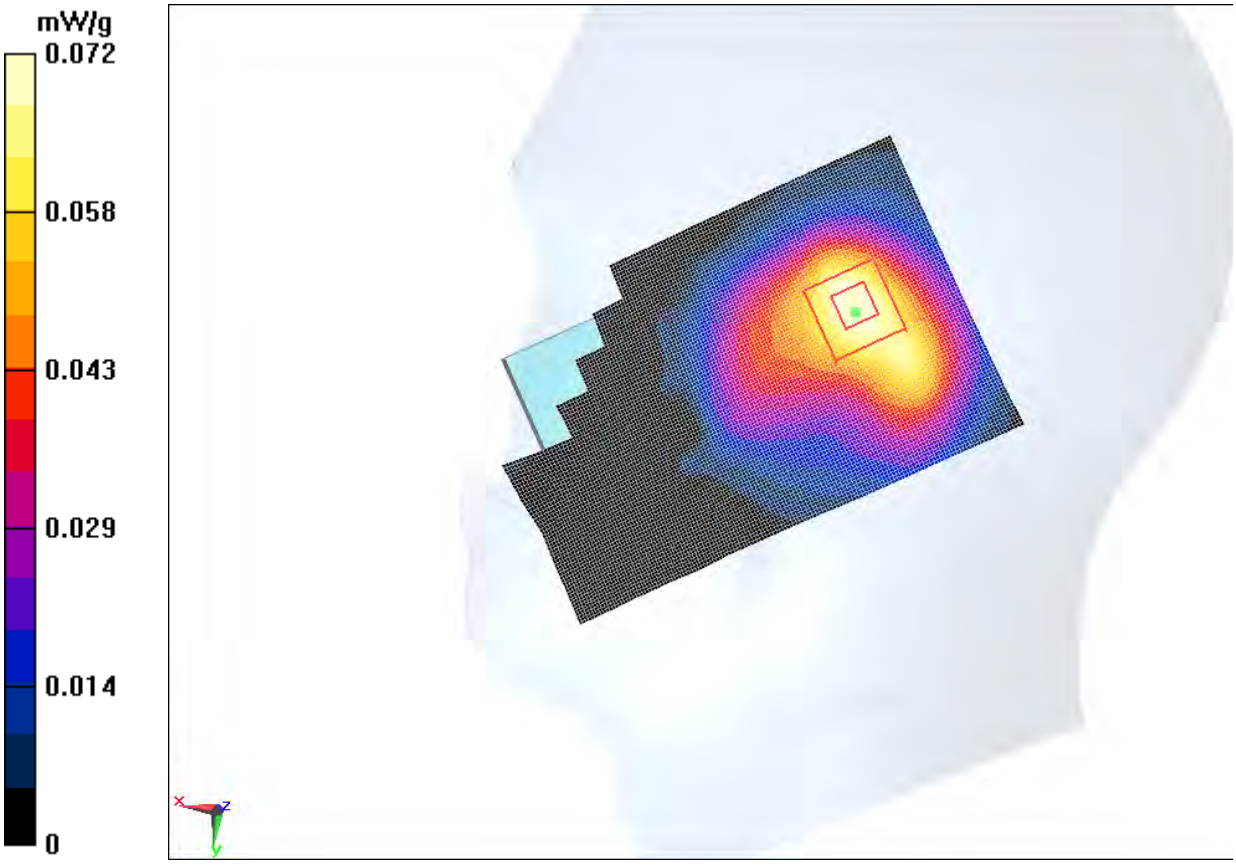



**Fig. 48 2450 MHz CH1**

**Wifi Body Toward Phantom Low**

Date: 2013-1-17

Electronics: DAE4 Sn771

Medium: 2450 Body

Medium parameters used (interpolated): f = 2412 MHz; $\sigma$ = 1.917 mho/m; $\varepsilon r$ = 52.143; $\rho$ = 1000 kg/$m^3$

Ambient Temperature: 22.6°C Liquid Temperature: 22.0°C

Communication System: WLan 2450 Frequency: 2412 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3149 ConvF(4.15, 4.15, 4.15)

**Toward Phantom/Area Scan (81x141x1):** Measurement grid: dx=10mm, dy=10mm

Reference Value = 4.920 V/m; Power Drift = 0.04 dB

**Fast SAR: SAR(1 g) = 0.042 mW/g; SAR(10 g) = 0.023 mW/g**

Maximum value of SAR (interpolated) = 0.0454 mW/g

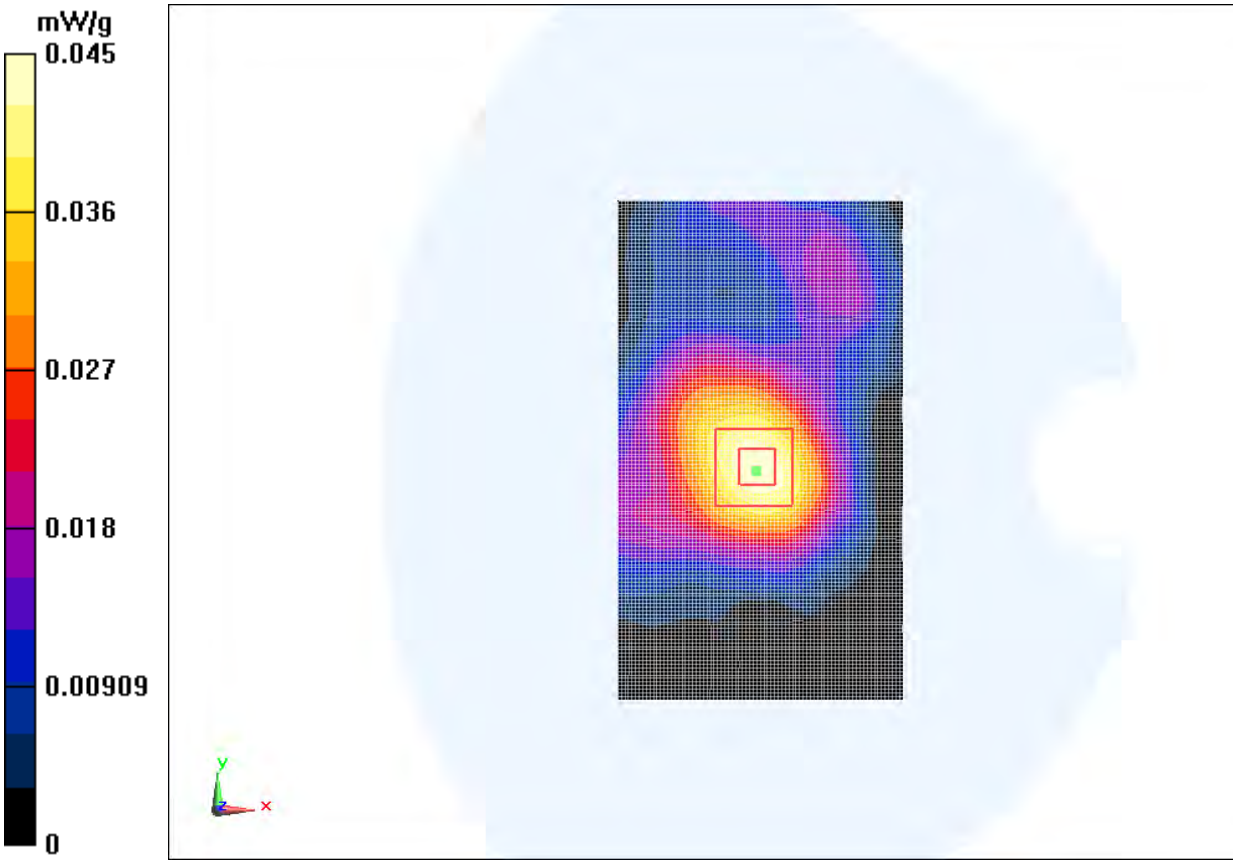



**Fig. 49 2450 MHz CH1**

**Wifi Body Toward Ground Low**

Date: 2013-1-17
Electronics: DAE4 Sn771
Medium: 2450 Body
Medium parameters used (interpolated): f = 2412 MHz; σ = 1.917 mho/m; εr = 52.143; ρ = 1000 kg/$m^3$
Ambient Temperature: 22.6°C Liquid Temperature: 22.0°C
Communication System: WLan 2450 Frequency: 2412 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(4.15, 4.15, 4.15)

**Toward Ground Low/Area Scan (81x141x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.313 mW/g

**Toward Ground Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.877 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.616 mW/g
**SAR(1 g) = 0.278 mW/g; SAR(10 g) = 0.122 mW/g**
Maximum value of SAR (measured) = 0.327 mW/g

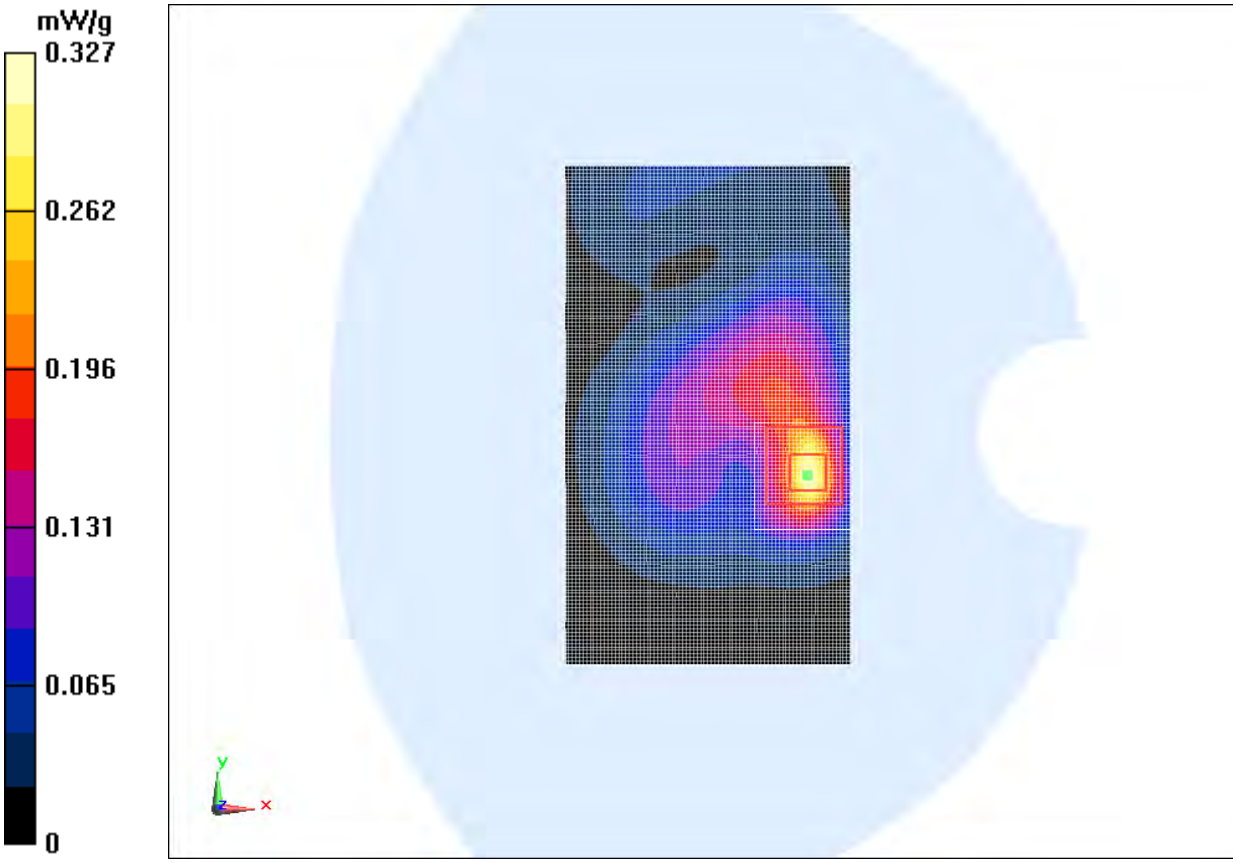



**Fig. 50 2450 MHz CH1**

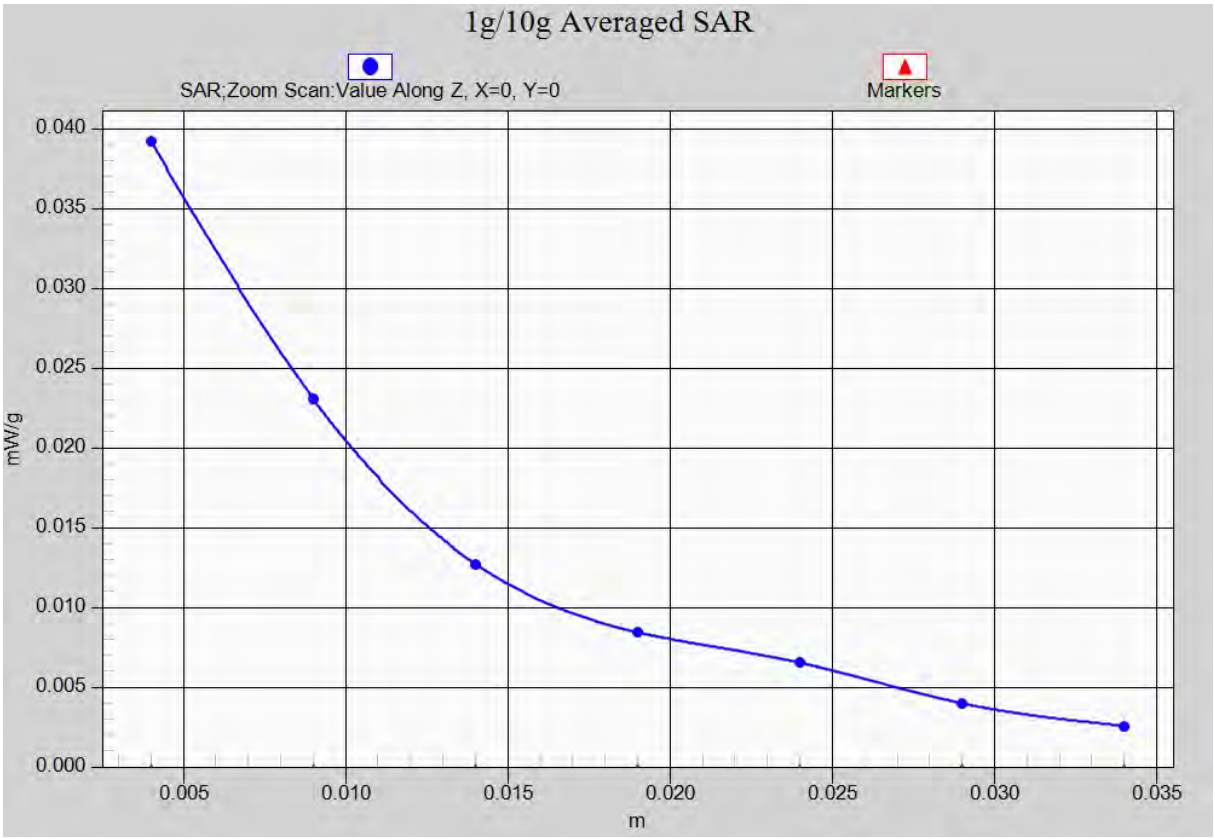



**Fig. 50-1 Z-Scan at power reference point (2450 MHz CH1)**

**Wifi Body Right Side Low**

Date: 2013-1-17

Electronics: DAE4 Sn771

Medium: 2450 Body

Medium parameters used (interpolated): f = 2412 MHz; $\sigma$ = 1.917 mho/m; $\varepsilon r$ = 52.143; $\rho$ = 1000 kg/$m^3$

Ambient Temperature: 22.6°C Liquid Temperature: 22.0°C

Communication System: WLan 2450 Frequency: 2412 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3149 ConvF(4.15, 4.15, 4.15)

**Right Side/Area Scan (81x141x1):** Measurement grid: dx=10mm, dy=10mm

Reference Value = 5.491 V/m; Power Drift = 0.16 dB

**Fast SAR: SAR(1 g) = 0.197 mW/g; SAR(10 g) = 0.100 mW/g**

Maximum value of SAR (interpolated) = 0.226 mW/g

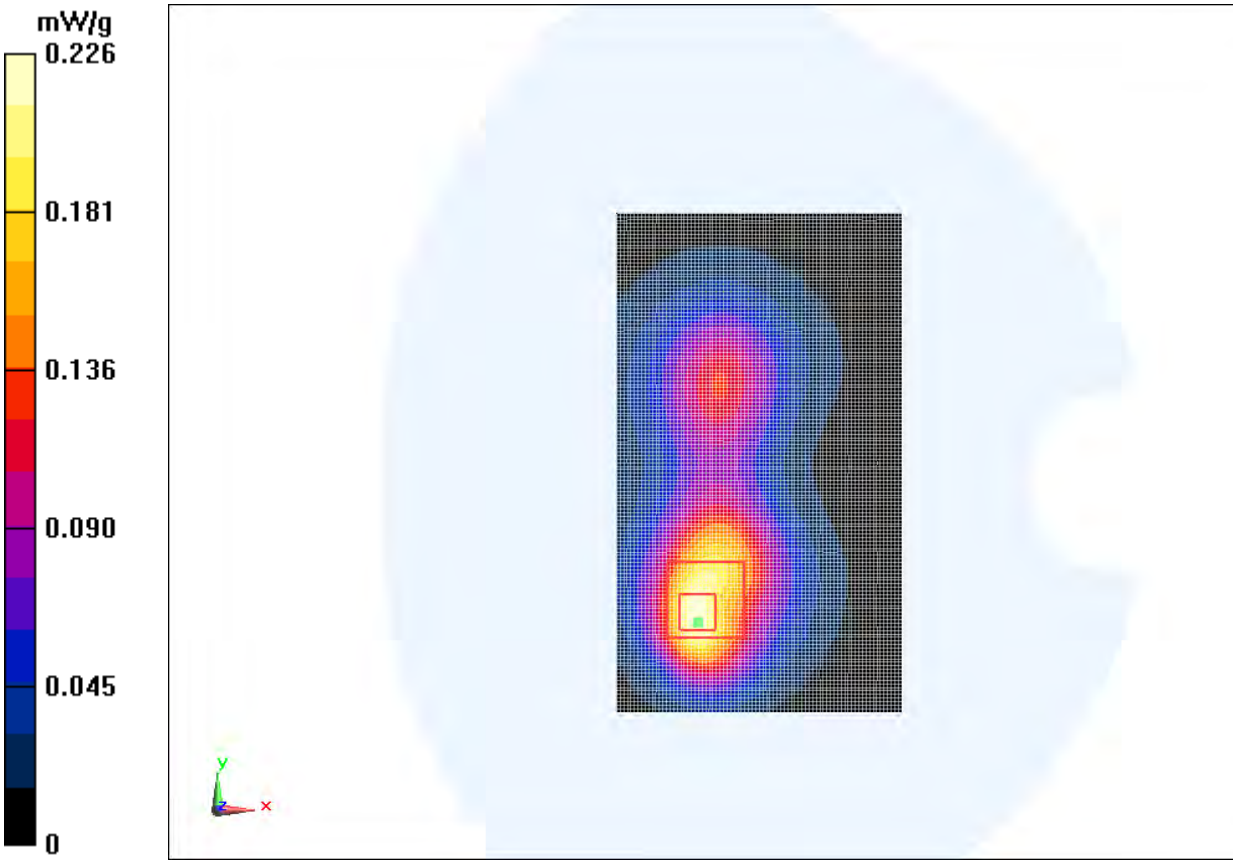



**Fig. 51 2450 MHz CH1**

**Wifi Body Top Side Low**
Date: 2013-1-17
Electronics: DAE4 Sn771
Medium: 2450 Body
Medium parameters used (interpolated): f = 2412 MHz; σ = 1.917 mho/m; εr = 52.143; ρ = 1000 kg/$m^3$
Ambient Temperature: 22.6°C Liquid Temperature: 22.0°C
Communication System: WLan 2450 Frequency: 2412 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(4.15, 4.15, 4.15)

**Top Side/Area Scan (81x131x1):** Measurement grid: dx=10mm, dy=10mm
Reference Value = 4.097 V/m; Power Drift = -0.10 dB
**Fast SAR: SAR(1 g) = 0.041 mW/g; SAR(10 g) = 0.021 mW/g**
Maximum value of SAR (interpolated) = 0.0457 mW/g

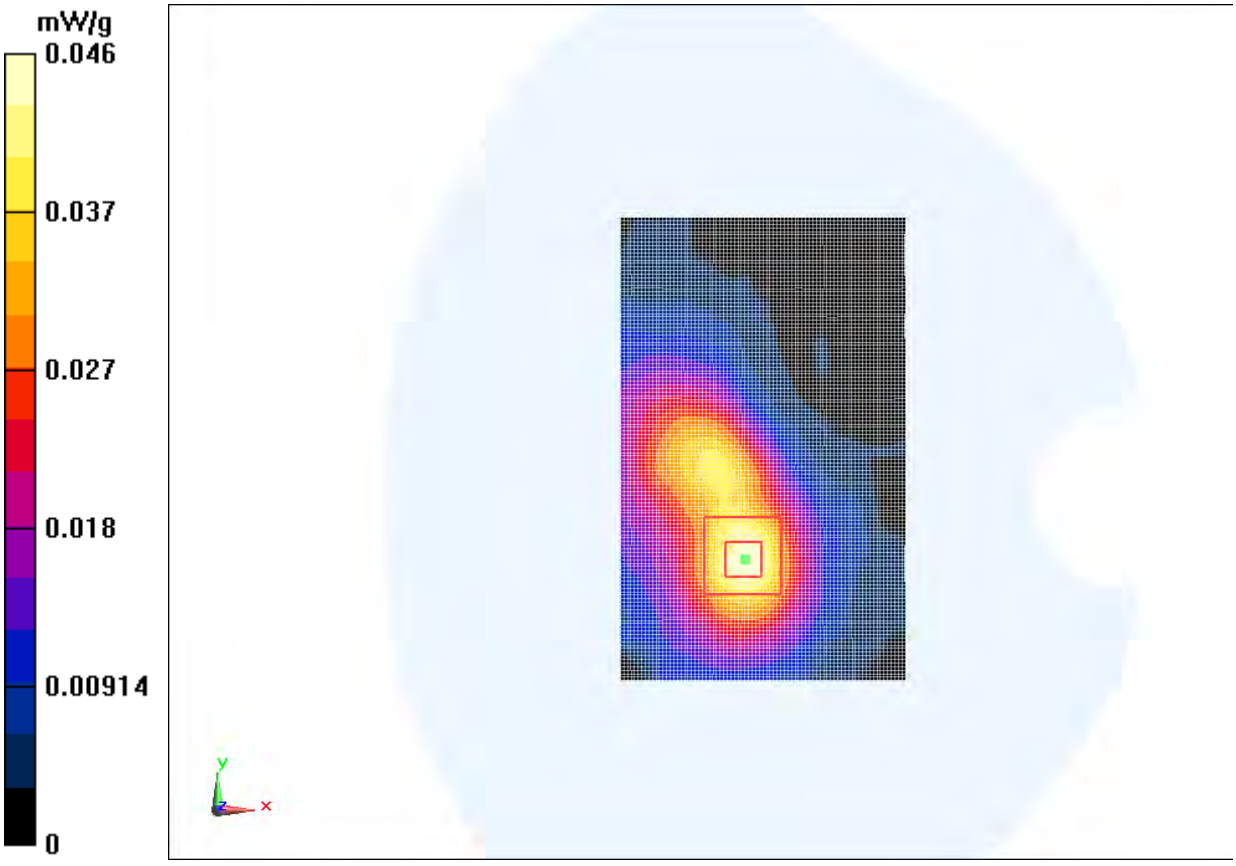



**Fig. 52 2450 MHz CH1**

**1900 Right Cheek Low with battery TLiB50B**
Date: 2013-1-20
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; $\sigma$ = 1.361 mho/m; $\varepsilon r$ = 39.541; $\rho$ = 1000 kg/$m^3$
Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C
Communication System: GSM 1900MHz Frequency: 1850.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.19, 5.19, 5.19)

**Cheek Low/Area Scan (61x91x1):** Measurement grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.12 mW/g

**Cheek Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.139 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.513 mW/g
**SAR(1 g) = 0.978 mW/g; SAR(10 g) = 0.566 mW/g**
Maximum value of SAR (measured) = 1.09 mW/g

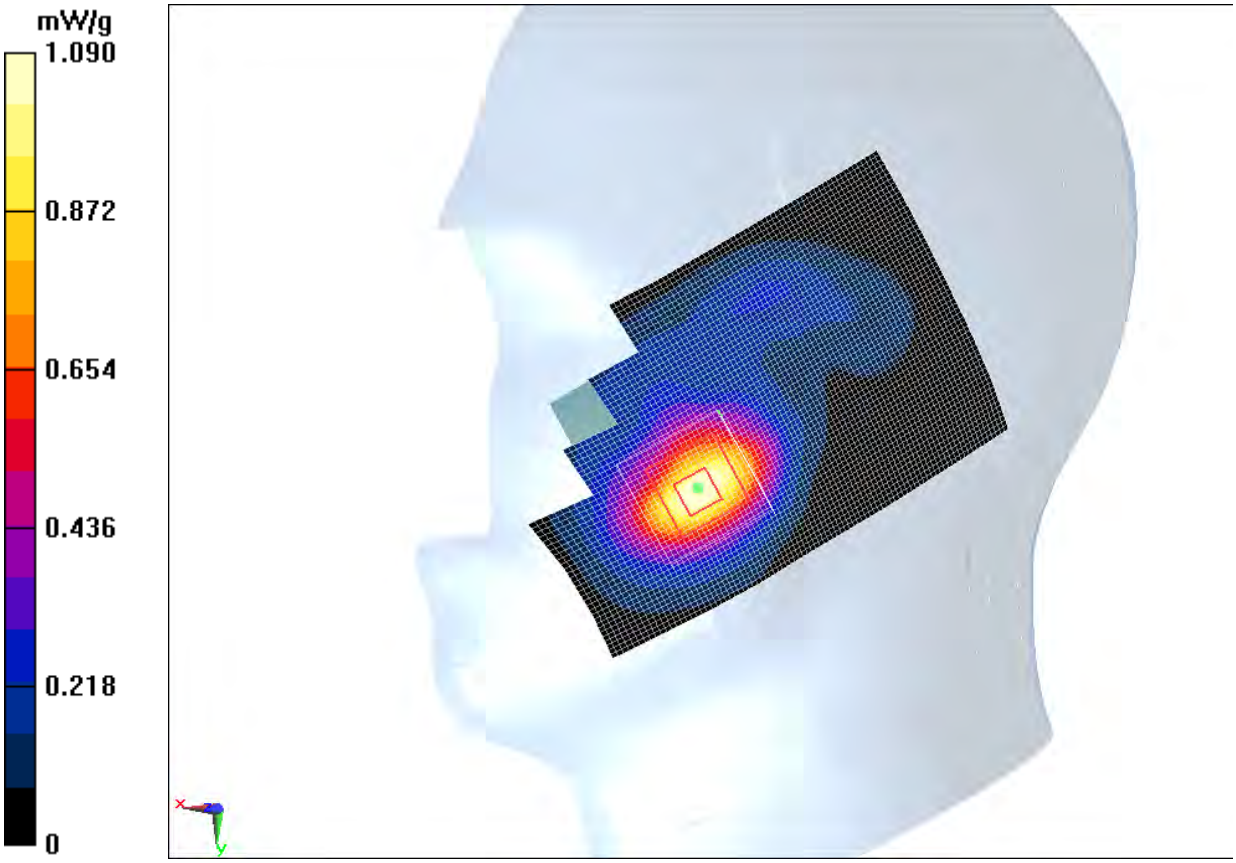



**Fig. 53 1900 MHz CH512**

**850 Body Toward Ground Middle with GPRS with battery TLiB50B**
Date: 2013-1-18
Electronics: DAE4 Sn771
Medium: Body 835 MHz
Medium parameters used (interpolated): f = 836.6 MHz; $\sigma$ = 0.99 mho/m; $\varepsilon r$ = 55.567; $\rho$ = 1000 kg/$m^3$
Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C
Communication System: GSM 850 GPRS Frequency: 836.6 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

**Toward Ground Middle/Area Scan (61x101x1):** Measurement grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.959 W/kg

**Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 31.098 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 1.22 W/kg
**SAR(1 g) = 0.886 W/kg; SAR(10 g) = 0.650 W/kg**
Maximum value of SAR (measured) = 0.949 W/kg
**Toward Ground Middle/Zoom Scan (7x7x7)/Cube 1:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 31.098 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.910 W/kg
**SAR(1 g) = 0.639 W/kg; SAR(10 g) = 0.453 W/kg**
Maximum value of SAR (measured) = 0.730 W/kg

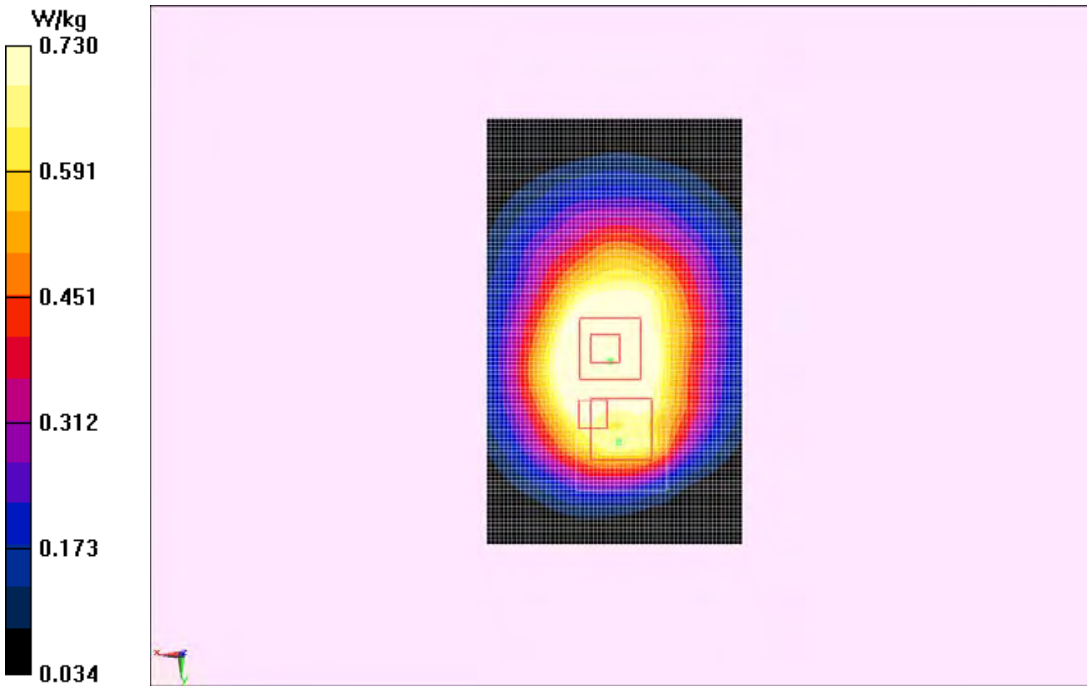



**Fig. 54 850 MHz CH190**

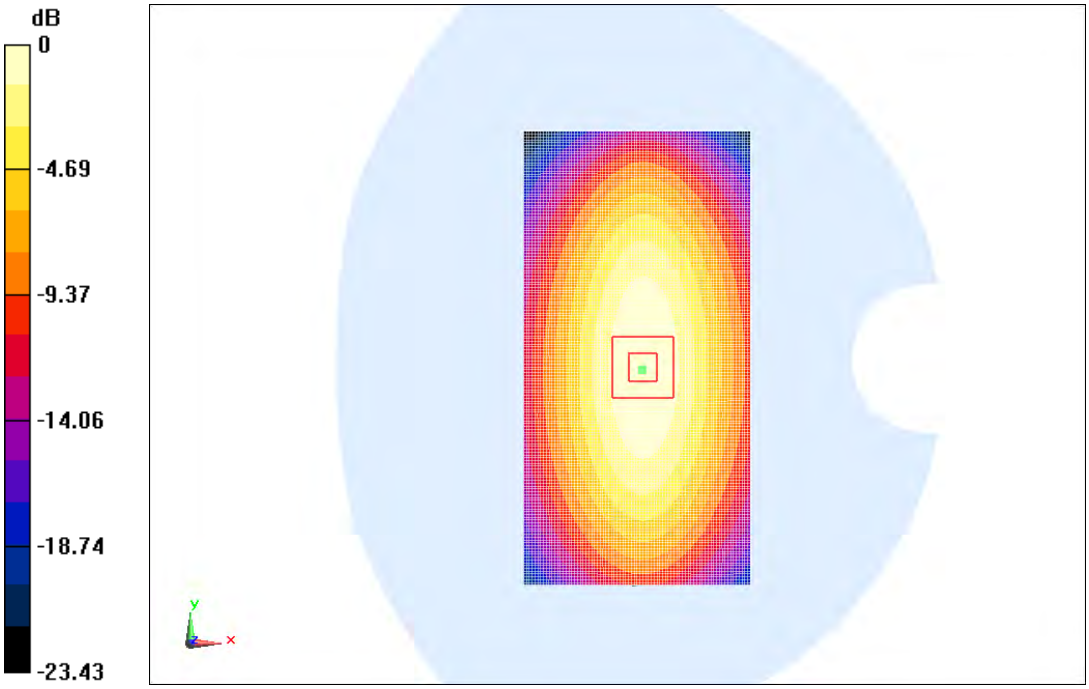
# ANNEX B System Verification Results

## 835MHz

Date: 2013-1-18
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used: f = 835 MHz; $\sigma$ = 0.882 mho/m; $\varepsilon_r$ = 40.83; $\rho$ = 1000 kg/m$^3$
Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C
Communication System: CW Frequency: 835 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(6.26, 6.26, 6.26)

**System Validation /Area Scan (81x161x1):** Measurement grid: dx=10mm, dy=10mm
Reference Value = 53.401 V/m; Power Drift = 0.07 dB
**Fast SAR: SAR(1 g) = 2.37 mW/g; SAR(10 g) = 1.52 mW/g**
Maximum value of SAR (interpolated) = 2.59 mW/g

**System Validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.401 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 3.556 W/kg
**SAR(1 g) = 2.41 mW/g; SAR(10 g) = 1.54 mW/g**
Maximum value of SAR (measured) = 2.60 mW/g




0 dB = 2.59 mW/g = 8.27 dB mW/g

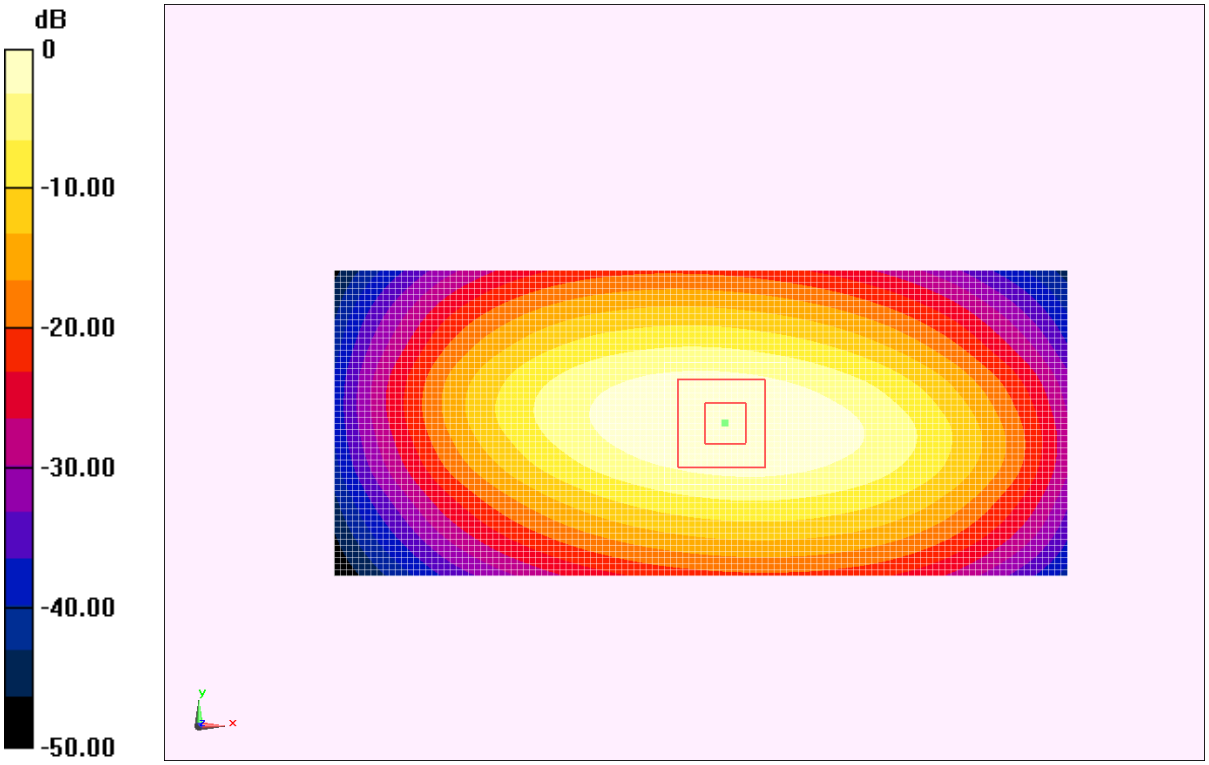
**Fig.B.1 validation 835MHz 250mW**

## 835MHz

Date: 2013-1-18
Electronics: DAE4 Sn771
Medium: Body 850 MHz
Medium parameters used: f = 835 MHz; $\sigma$ = 0.984 mho/m; $\varepsilon_r$ = 55.58; $\rho$ = 1000 kg/m$^3$
Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C
Communication System: CW Frequency: 835 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

**System Validation /Area Scan (81x171x1):** Measurement grid: dx=10mm, dy=10mm
Reference Value = 45.974 V/m; Power Drift = 0.079 dB
**Fast SAR: SAR(1 g) = 2.38 mW/g; SAR(10 g) = 1.56 mW/g**
Maximum value of SAR (interpolated) = 2.57 mW/g

**System Validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 45.974 V/m; Power Drift = 0.079 dB
Peak SAR (extrapolated) = 3.561 W/kg
**SAR(1 g) = 2.37 mW/g; SAR(10 g) = 1.56 mW/g**
Maximum value of SAR (measured) = 2.57 mW/g




0 dB = 2.57 mW/g = 8.20 dB mW/g

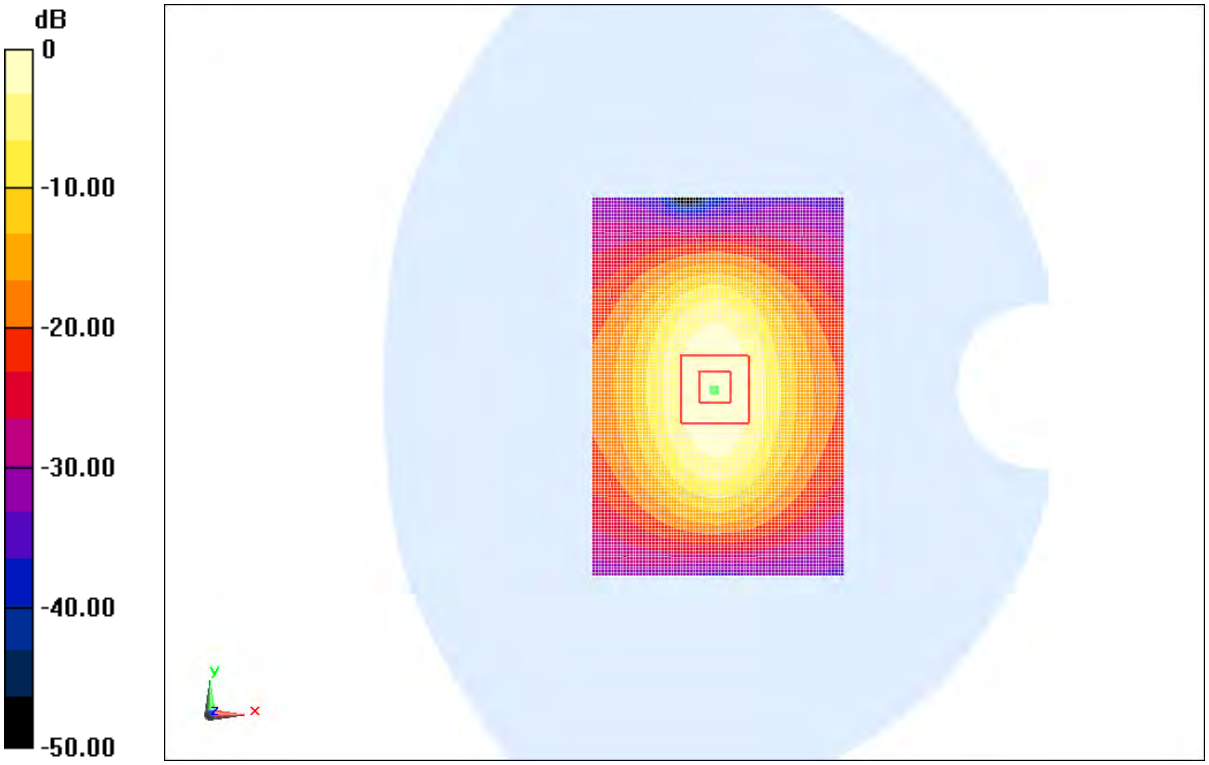
**Fig.B.2 validation 835MHz 250mW**

## 1900MHz

Date: 2013-1-20
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1900 MHz; $\sigma$ = 1.408 mho/m; $\varepsilon_r$ = 39.37; $\rho$ = 1000 kg/$m^3$
Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C
Communication System: CW Frequency: 1900 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(5.19, 5.19, 5.19)

**System Validation/Area Scan (81x121x1):** Measurement grid: dx=10mm, dy=10mm
Reference Value = 95.114 V/m; Power Drift = -0.053 dB
**Fast SAR: SAR(1 g) = 9.74 mW/g; SAR(10 g) = 5.12 mW/g**
Maximum value of SAR (interpolated) = 11.1 mW/g

**System Validation/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.114 V/m; Power Drift = -0.053 dB
Peak SAR (extrapolated) = 18.038 W/kg
**SAR(1 g) = 9.71 mW/g; SAR(10 g) = 5.10 mW/g**
Maximum value of SAR (measured) = 11.0 mW/g




0 dB = 11.1 mW/g = 20.91 dB mW/g

**Fig.B.3 validation 1900MHz 250mW**