

# SAR TEST REPORT

|                      |                                                             |
|----------------------|-------------------------------------------------------------|
| Equipment Under Test | Mobile Hotspot                                              |
| Model Number         | AirCard 754S                                                |
| Mode of Operation    | GPRS\EGPRS\WCDMA\HSDPA\HSUPA\LTE\WLAN802.11 b/g/n(20M) band |
| Company Name         | Sierra Wireless                                             |
| Company Address      | 13811 Wireless Way :: Richmond, BC, Canada, V6V 3A4         |
| Date of Receipt      | 2011.04.07                                                  |
| Date of Test(s)      | 2011.04.27~2011.05.13                                       |
| Date of Issue        | 2011.07.08                                                  |

Standards:

**FCC OET 65 supplement C,  
IEEE / ANSI C95.1 , C95.3, IEEE 1528,**

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

**Remarks:**

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

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Tested by : Ricky Huang  
Asst. Supervisor

Date : 2011.07.08

Approved by : Nick Hsu  
Supervisor

Date : 2011.07.08

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## Revision Version

| Report Number | Revision | Date       | Memo                             |
|---------------|----------|------------|----------------------------------|
| ES/2011/40002 | 00       | 2011/05/25 | Initial creation of test report. |
| ES/2011/40002 | 01       | 2011/07/07 | 1 <sup>st</sup> modification     |
| ES/2011/40002 | 02       | 2011/07/08 | 2 <sup>nd</sup> modification     |

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## 1. General Information

### 1.1 Testing Laboratory

|                                                        |                                                           |
|--------------------------------------------------------|-----------------------------------------------------------|
| SGS Taiwan Ltd. Electronics & Communication Laboratory |                                                           |
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| Fax                                                    | +886-2-2298-0488                                          |
| Internet                                               | <a href="http://www.tw.sgs.com">http://www.tw.sgs.com</a> |

### 1.2 Details of Applicant

|                |                                                                        |
|----------------|------------------------------------------------------------------------|
| Name           | Sierra Wireless                                                        |
| Address        | 13811 Wireless Way :: Richmond, BC, Canada, V6V 3A4                    |
| Contact Person | Ying Wang                                                              |
| Tel            | +1 604 232 1440                                                        |
| Email address  | <a href="mailto:ywang@sierrawireless.com">ywang@sierrawireless.com</a> |

### 1.3 Description of EUT

|                   |                                                             |
|-------------------|-------------------------------------------------------------|
| EUT Name          | Mobile Hotspot                                              |
| Model Number      | AirCard 754S                                                |
| IMEI code         | 001027009999990                                             |
| FCC ID            | N7NAC754S                                                   |
| Definition        | Production unit                                             |
| Mode of Operation | GSM\GPRS\EGPRS\WCDMA\HSDPA\HSUPA\WLAN802.11 b/g/n(20M) band |

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| Duty Cycle                        | GPRS                                              |              | EGPRS                   |                 | WCDMA           |                 | LTE                               |  | WLAN |  |  |
|-----------------------------------|---------------------------------------------------|--------------|-------------------------|-----------------|-----------------|-----------------|-----------------------------------|--|------|--|--|
|                                   | 1/4<br>(multi class 10)                           |              | 1/2<br>(multi class 12) |                 | 1               |                 | 1                                 |  | 1    |  |  |
| TX<br>Frequency<br>range<br>(MHz) | GPRS<br>850                                       | GPRS<br>1900 | WCDMA<br>Band 2         | WCDMA<br>Band 5 | LTE<br>Band 4   | LTE<br>Band 17  | WLAN<br>802. 11<br>b/g/n<br>(20M) |  |      |  |  |
|                                   | 824.2<br>-                                        | 1850.2<br>-  | 1852.4<br>-             | 826.4<br>-      | 1710<br>-       | 704<br>-        | 2412<br>-                         |  |      |  |  |
|                                   | 848.8                                             | 1909.8       | 1907.6                  | 846.6           | 1755            | 716             | 2462                              |  |      |  |  |
| Channel<br>Number<br>(ARFCN)      | GPRS<br>850                                       | GPRS<br>1900 | WCDMA<br>Band 2         | WCDMA<br>Band 5 | LTE<br>Band 4   | LTE<br>Band 17  | WLAN<br>802. 11<br>b/g/n<br>(20M) |  |      |  |  |
|                                   | 128-<br>251                                       | 512-<br>810  | 9262-<br>9538           | 4132-<br>4233   | 19950-<br>20399 | 23730-<br>23849 | 1-11                              |  |      |  |  |
| Max. SAR<br>Measured<br>(1g)      | GRPS 850                                          |              |                         |                 |                 |                 |                                   |  |      |  |  |
|                                   | 1.07W/kg<br>(At GPRS 850 _CH190 Front side)       |              |                         |                 |                 |                 |                                   |  |      |  |  |
|                                   | GRRS 1900                                         |              |                         |                 |                 |                 |                                   |  |      |  |  |
|                                   | 0.772W/kg<br>(At GPRS 1900 _CH512 Back side)      |              |                         |                 |                 |                 |                                   |  |      |  |  |
|                                   | WCDMA Band 2                                      |              |                         |                 |                 |                 |                                   |  |      |  |  |
|                                   | 0.776W/kg<br>(At WCDMA Band 2 _CH9262 Back side)  |              |                         |                 |                 |                 |                                   |  |      |  |  |
|                                   | WCDMA Band 5                                      |              |                         |                 |                 |                 |                                   |  |      |  |  |
|                                   | 1.04W/kg<br>(At WCDMA Band 5 _CH4132 Front side)  |              |                         |                 |                 |                 |                                   |  |      |  |  |
|                                   | LTE Band 4                                        |              |                         |                 |                 |                 |                                   |  |      |  |  |
|                                   | 1.09W/kg<br>(At LTE Band 4 _CH20000 Right side)   |              |                         |                 |                 |                 |                                   |  |      |  |  |
|                                   | LTE Band 17                                       |              |                         |                 |                 |                 |                                   |  |      |  |  |
|                                   | 0.912W/kg<br>(At LTE Band 17 _CH23780 Front side) |              |                         |                 |                 |                 |                                   |  |      |  |  |
|                                   | WLAN802.11 b                                      |              |                         |                 |                 |                 |                                   |  |      |  |  |
|                                   | 0.151W/kg<br>(At WLAN802.11 b CH11 Top side)      |              |                         |                 |                 |                 |                                   |  |      |  |  |

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## 1.4 Test Environment

Ambient Temperature:  $22 \pm 2^\circ \text{C}$

Tissue Simulating Liquid:  $22 \pm 2^\circ \text{C}$

## 1.5 Operation description

The EUT is controlled by using a Radio Communication Tester (R&S CMU200), and the communication between the EUT and the tester is established by air link.

WLAN part is controlled by chip-specific software to make it transmit at max power.

The test configuration tested at the low, middle and high frequency channels, and then test of set in highest power. Finally, we will test it by dividing into 6 configurations:

The testing device is a mobile hotspot product, the test separation distance is 10mm due to its dimension of testing device (96 mmx56.81 mm) is bigger than 9 x 5 cm referred as test guidance of KDB941225D06.

**WWAN:** Setup configuration referred as appendix of setup photograph

Configuration 1: Front side.

Configuration 2: Back side.

Configuration 3: Top side.

Configuration 4: Bottom side.

Configuration 5: Right side.

Configuration 6: Left side. (Antenna to user distance > 25mm)

(No need SAR testing due to the distance between antenna and left of the device is bigger than 2.5 cm referred as the KDB941225 D06)

**WLAN:** Setup configuration referred as appendix of setup photograph

Configuration 1: Front side.

Configuration 2: Back side.

Configuration 3: Top side.

Configuration 4: Bottom side. (Antenna to user distance > 25mm)

(No need SAR testing due to the distance between antenna and bottom side of the device is bigger than 2.5 cm referred as the KDB941225 D06)

Configuration 5: Right side.

Configuration 6: Left side. (Antenna to user distance > 25mm)

(No need SAR testing due to the distance between antenna and left side of the device is bigger than 2.5 cm referred as the KDB941225 D06)

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- #. The test separation distance and test positions are referred as test guidance of KDB941125 D06(SAR evaluation procedure for portable devices with wireless router capabilities)
- #. Follow the test guidance of KDB941125 D05 (LTE SAR test considerations) to perform the LTE SAR testing and channel exclusion.
- #. When the maximum transmitter and antenna output power are  $\leq 60/f(\text{GHz})$  (mW) SAR evaluation is not required for FCC or TCB approval.
- #. The highest 1-g SAR for WLAN is 0.118 W/kg(Front side) and the highest 1-g SAR for WWAN is 1.07W/kg(Front side). The sum of 1-g for simultaneous transmitting WLAN and WWAN antenna pair is  $0.118+1.07 = 1.188 \text{ W/kg} < 1.6 \text{ W/kg}$ . The sum of the 1-g SAR is  $< 1.6 \text{ W/kg}$  for all simultaneous transmitting antennas, therefore SAR evaluation is not required for the simultaneous transmission conditions per KDB **KDB648474 / KDB447498 / KDB248227**. Pls see detailed analysis under item 11 on page 17.”
- #. According to **KDB248227**-SAR is not required for 802.11 g/HT20 channels when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding 802.11b channels.
- #. According to KDB447498 the 1-g SAR for the highest output channel is less than 0.8 W/kg, where the transmission band corresponding to all channels is  $\leq 100 \text{ MHz}$ , testing for the other channels is not required.

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## 1.6 LTE Related Information of Testing Device

**Identifying the wireless operating configurations and parameters for submitting a laboratory testing KDB inquiry, a TCB PBA or preparing SAR reports:**

- 1) identify the operating frequency range of each LTE transmission band used by the device

| E-UTRA Operating Band | Uplink (UL)<br>eNode B receive<br>UE transmit |                      | Downlink (DL)<br>eNode B transmit<br>UE receive |                      | Duplex Mode |
|-----------------------|-----------------------------------------------|----------------------|-------------------------------------------------|----------------------|-------------|
|                       | F <sub>UL_low</sub>                           | F <sub>UL_high</sub> | F <sub>DL_low</sub>                             | F <sub>DL_high</sub> |             |
| 4                     | 1710 MHz                                      | 1755 MHz             | 2110 MHz                                        | 2155 MHz             | FDD         |
| 17                    | 704 MHz                                       | 716 MHz              | 734 MHz                                         | 746 MHz              | FDD         |

- 2) identify the channel bandwidths used in each frequency band; 1.4, 3, 5, 10, 15, 20 MHz etc

| E-UTRA band / channel bandwidth |         |       |       |        |        |        |
|---------------------------------|---------|-------|-------|--------|--------|--------|
| LTE band                        | 1.4 MHz | 3 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz |
| Band 4                          | No      | No    | Yes   | Yes    | No     | No     |
| Band 17                         | No      | No    | Yes   | Yes    | No     | No     |

- 3) identify the high, middle and low (H, M, L) channel numbers and frequencies in each LTE frequency band

### Test frequencies for E-UTRA channel bandwidth for operating band 4

| Test Frequency ID | Bandwidth [MHz] | N <sub>UL</sub> | Frequency of Uplink [MHz] | N <sub>DL</sub> | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range         | 5               | 19975           | 1712.5                    | 1975            | 2112.5                      |
|                   | 10              | 20000           | 1715                      | 2000            | 2115                        |
| Mid Range         | 5/10            | 20175           | 1732.5                    | 2175            | 2132.5                      |
| High Range        | 5               | 20375           | 1752.5                    | 2375            | 2152.5                      |
|                   | 10              | 20350           | 1750                      | 2350            | 2150                        |

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### Test frequencies for E-UTRA channel bandwidth for operating band 17

| Test Frequency ID | Bandwidth [MHz] | N <sub>UL</sub> | Frequency of Uplink [MHz] | N <sub>DL</sub> | Frequency of Downlink [MHz] |
|-------------------|-----------------|-----------------|---------------------------|-----------------|-----------------------------|
| Low Range         | 5               | 23755           | 706.5                     | 5755            | 736.5                       |
|                   | 10              | 23780           | 709                       | 5780            | 739                         |
| Mid Range         | 5/10            | 23790           | 710                       | 5790            | 740                         |
| High Range        | 5               | 23825           | 713.5                     | 5825            | 743.5                       |
|                   | 10              | 23800           | 711                       | 5800            | 741                         |

#### 4) specify the UE category and uplink modulations used

UE LTE Category 3, UL Modulations: QPSK and 16QAM

#### 5) include descriptions of the LTE transmitter and antenna implementation; and also identify whether it is a standalone transmitter operating independently of other wireless transmitters in the device or sharing hardware components and/or antenna(s) with other transmitters etc

The EUT has two LTE transmitters, one for band-4 and the other for band-17. The front-end and antenna are shared between LTE, GSM and UMTS RF paths. The WWAN radios may co-transmit with the embedded WiFi radio.

#### 6) identify the LTE voice/data requirements in each operating mode and exposure condition with respect to head and body test configurations, antenna locations, handset flip-cover or slide positions, antenna diversity conditions etc

The EUT supports data only, and not support simultaneously voice/data transmission scenario.

Antenna location/separation diagram:

Please refer to the attached of SAR test setup photographs.

#### 7) identify if Maximum Power Reduction (MPR) is optional or mandatory, i.e. built-in by design:

- only mandatory MPR may be considered during SAR testing, when the maximum output power is permanently limited by the MPR implemented within

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the UE; and only for the applicable RB (resource block) configurations specified in LTE standards.

MPR is mandatory, and been implemented permanently.

b) A-MPR (additional MPR) must be disabled

A-MPR is disabled by hard-coded in the software and is not available to the device.

MPR Target Value of Testing Device

| Modulation | Channel bandwidth /<br>Transmission bandwidth<br>configuration [RB] |           | MPR<br>(dB) |
|------------|---------------------------------------------------------------------|-----------|-------------|
|            | 5<br>MHz                                                            | 10<br>MHz |             |
| QPSK       | > 8                                                                 | > 12      | ≤ 1         |
| 16 QAM     | ≤ 8                                                                 | ≤ 12      | ≤ 1         |
| 16 QAM     | > 8                                                                 | > 12      | ≤ 2         |

8) include the maximum average conducted output power measured on the required test channels for each channel bandwidth and UL modulation used in each frequency band:

- a) with 1 RB allocated at the upper edge of a channel
- b) with 1 RB allocated at the lower edge of a channel
- c) using 50% RB allocation centered within a channel
- d) using 100% RB allocation

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## LTE Band 17

| BW (MHz) | Modulation | Channel | Frequency (MHz) | RB Size | RB Offset | Conducted power(dBm) | Target Power(dBm) | MPR Target(dB) |
|----------|------------|---------|-----------------|---------|-----------|----------------------|-------------------|----------------|
| 10       | QPSK       | 23780   | 709             | 1       | 49        | 23.34                | 23.5              | 0              |
|          |            |         |                 | 1       | 0         | 23.75                | 23.5              | 0              |
|          |            |         |                 | 25      | 12        | 22.26                | 23.5              | 1              |
|          |            |         |                 | 50      | 0         | 22.29                | 23.5              | 1              |
|          |            | 23790   | 710             | 1       | 49        | 23.25                | 23.5              | 0              |
|          |            |         |                 | 1       | 0         | 23.30                | 23.5              | 0              |
|          |            |         |                 | 25      | 12        | 22.21                | 23.5              | 1              |
|          |            |         |                 | 50      | 0         | 22.19                | 23.5              | 1              |
|          |            | 23800   | 711             | 1       | 49        | 23.31                | 23.5              | 0              |
|          |            |         |                 | 1       | 0         | 23.38                | 23.5              | 0              |
|          |            |         |                 | 25      | 12        | 22.19                | 23.5              | 1              |
|          |            |         |                 | 50      | 0         | 22.35                | 23.5              | 1              |
| 10       | 16 QAM     | 23780   | 709             | 1       | 49        | 22.78                | 23.5              | 1              |
|          |            |         |                 | 1       | 0         | 22.63                | 23.5              | 1              |
|          |            |         |                 | 25      | 12        | 21.11                | 23.5              | 2              |
|          |            |         |                 | 50      | 0         | 21.18                | 23.5              | 2              |
|          |            | 23790   | 710             | 1       | 49        | 22.77                | 23.5              | 1              |
|          |            |         |                 | 1       | 0         | 22.68                | 23.5              | 1              |
|          |            |         |                 | 25      | 12        | 21.07                | 23.5              | 2              |
|          |            |         |                 | 50      | 0         | 21.14                | 23.5              | 2              |
|          |            | 23800   | 711             | 1       | 49        | 23.07                | 23.5              | 1              |
|          |            |         |                 | 1       | 0         | 23.04                | 23.5              | 1              |
|          |            |         |                 | 25      | 12        | 21.21                | 23.5              | 2              |
|          |            |         |                 | 50      | 0         | 21.23                | 23.5              | 2              |

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## LTE Band 17

| BW<br>(MHz) | Modulation | Channel | Frequency<br>(MHz) | RB Size | RB<br>Offset | Conducted<br>power(dBm) | Target<br>Power(dBm) | MPR<br>Target(dB) |
|-------------|------------|---------|--------------------|---------|--------------|-------------------------|----------------------|-------------------|
| 5           | QPSK       | 23755   | 706.5              | 1       | 24           | 23.23                   | 23.5                 | 0                 |
|             |            |         |                    | 1       | 0            | 23.21                   | 23.5                 | 0                 |
|             |            |         |                    | 12      | 6            | 22.10                   | 23.5                 | 1                 |
|             |            |         |                    | 25      | 0            | 22.15                   | 23.5                 | 1                 |
|             |            | 23790   | 710                | 1       | 24           | 23.24                   | 23.5                 | 0                 |
|             |            |         |                    | 1       | 0            | 23.25                   | 23.5                 | 0                 |
|             |            |         |                    | 12      | 6            | 22.04                   | 23.5                 | 1                 |
|             |            |         |                    | 25      | 0            | 22.17                   | 23.5                 | 1                 |
|             |            | 23825   | 713.5              | 1       | 24           | 23.25                   | 23.5                 | 0                 |
|             |            |         |                    | 1       | 0            | 23.36                   | 23.5                 | 0                 |
|             |            |         |                    | 12      | 6            | 22.06                   | 23.5                 | 1                 |
|             |            |         |                    | 25      | 0            | 22.27                   | 23.5                 | 1                 |
| 5           | 16 QAM     | 23755   | 706.5              | 1       | 24           | 22.77                   | 23.5                 | 1                 |
|             |            |         |                    | 1       | 0            | 22.53                   | 23.5                 | 1                 |
|             |            |         |                    | 12      | 6            | 21.04                   | 23.5                 | 2                 |
|             |            |         |                    | 25      | 0            | 20.90                   | 23.5                 | 2                 |
|             |            | 23790   | 710                | 1       | 24           | 22.67                   | 23.5                 | 1                 |
|             |            |         |                    | 1       | 0            | 22.55                   | 23.5                 | 1                 |
|             |            |         |                    | 12      | 6            | 21.03                   | 23.5                 | 2                 |
|             |            |         |                    | 25      | 0            | 21.10                   | 23.5                 | 2                 |
|             |            | 23825   | 713.5              | 1       | 24           | 22.99                   | 23.5                 | 1                 |
|             |            |         |                    | 1       | 0            | 22.92                   | 23.5                 | 1                 |
|             |            |         |                    | 12      | 6            | 21.15                   | 23.5                 | 2                 |
|             |            |         |                    | 25      | 0            | 21.01                   | 23.5                 | 2                 |

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## LTE Band 4

| BW (MHz) | Modulation | Channel | Frequency (MHz) | RB Size | RB Offset | Conducted power(dBm) | Target Power(dBm) | MPR Target(dB) |
|----------|------------|---------|-----------------|---------|-----------|----------------------|-------------------|----------------|
| 10       | QPSK       | 20000   | 1715            | 1       | 49        | 23.53                | 23.5              | 0              |
|          |            |         |                 | 1       | 0         | 23.75                | 23.5              | 0              |
|          |            |         |                 | 25      | 12        | 22.33                | 23.5              | 1              |
|          |            |         |                 | 50      | 0         | 22.21                | 23.5              | 1              |
|          |            | 20175   | 1732.5          | 1       | 49        | 23.45                | 23.5              | 0              |
|          |            |         |                 | 1       | 0         | 23.37                | 23.5              | 0              |
|          |            |         |                 | 25      | 12        | 22.17                | 23.5              | 1              |
|          |            |         |                 | 50      | 0         | 22.05                | 23.5              | 1              |
|          |            | 20350   | 1750            | 1       | 49        | 23.35                | 23.5              | 0              |
|          |            |         |                 | 1       | 0         | 23.49                | 23.5              | 0              |
|          |            |         |                 | 25      | 12        | 22.11                | 23.5              | 1              |
|          |            |         |                 | 50      | 0         | 22.08                | 23.5              | 1              |
| 10       | 16 QAM     | 20000   | 1715            | 1       | 49        | 22.83                | 23.5              | 1              |
|          |            |         |                 | 1       | 0         | 22.76                | 23.5              | 1              |
|          |            |         |                 | 25      | 12        | 21.16                | 23.5              | 2              |
|          |            |         |                 | 50      | 0         | 21.38                | 23.5              | 2              |
|          |            | 20175   | 1732.5          | 1       | 49        | 23.10                | 23.5              | 1              |
|          |            |         |                 | 1       | 0         | 22.99                | 23.5              | 1              |
|          |            |         |                 | 25      | 12        | 21.17                | 23.5              | 2              |
|          |            |         |                 | 50      | 0         | 21.15                | 23.5              | 2              |
|          |            | 20350   | 1750            | 1       | 49        | 22.72                | 23.5              | 1              |
|          |            |         |                 | 1       | 0         | 22.91                | 23.5              | 1              |
|          |            |         |                 | 25      | 12        | 21.15                | 23.5              | 2              |
|          |            |         |                 | 50      | 0         | 21.14                | 23.5              | 2              |

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## LTE Band 4

| BW (MHz) | Modulation | Channel | Frequency (MHz) | RB Size | RB Offset | Conducted power(dBm) | Target Power(dBm) | MPR Target(dB) |
|----------|------------|---------|-----------------|---------|-----------|----------------------|-------------------|----------------|
| 5        | QPSK       | 19975   | 1712.5          | 1       | 24        | 23.52                | 23.5              | 0              |
|          |            |         |                 | 1       | 0         | 23.74                | 23.5              | 0              |
|          |            |         |                 | 12      | 6         | 22.29                | 23.5              | 1              |
|          |            |         |                 | 25      | 0         | 22.20                | 23.5              | 1              |
|          |            | 20175   | 1732.5          | 1       | 24        | 23.41                | 23.5              | 0              |
|          |            |         |                 | 1       | 0         | 23.36                | 23.5              | 0              |
|          |            |         |                 | 12      | 6         | 22.09                | 23.5              | 1              |
|          |            |         |                 | 25      | 0         | 22.01                | 23.5              | 1              |
|          |            | 20375   | 1752.5          | 1       | 24        | 23.33                | 23.5              | 0              |
|          |            |         |                 | 1       | 0         | 23.48                | 23.5              | 0              |
|          |            |         |                 | 12      | 6         | 22.06                | 23.5              | 1              |
|          |            |         |                 | 25      | 0         | 22.04                | 23.5              | 1              |
| 5        | 16 QAM     | 19975   | 1712.5          | 1       | 24        | 22.76                | 23.5              | 1              |
|          |            |         |                 | 1       | 0         | 22.75                | 23.5              | 1              |
|          |            |         |                 | 12      | 6         | 21.11                | 23.5              | 2              |
|          |            |         |                 | 25      | 0         | 21.21                | 23.5              | 2              |
|          |            | 20175   | 1732.5          | 1       | 24        | 22.80                | 23.5              | 1              |
|          |            |         |                 | 1       | 0         | 22.95                | 23.5              | 1              |
|          |            |         |                 | 12      | 6         | 21.03                | 23.5              | 2              |
|          |            |         |                 | 25      | 0         | 20.86                | 23.5              | 2              |
|          |            | 20375   | 1752.5          | 1       | 24        | 22.65                | 23.5              | 1              |
|          |            |         |                 | 1       | 0         | 22.91                | 23.5              | 1              |
|          |            |         |                 | 12      | 6         | 21.04                | 23.5              | 2              |
|          |            |         |                 | 25      | 0         | 20.94                | 23.5              | 2              |

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- 9) include the maximum average conducted output power measured for the other wireless modes and frequency bands:

Conducted power table\_Edge/GPRS:

| EUT Mode               | Frequency<br>(MHz) | CH  | Peak<br>Power<br>(1DN<br>1UP)<br>(dBm) | Avg.<br>Power<br>(1DN<br>1UP)<br>(dBm) | Peak<br>Power<br>(1DN<br>2UP)<br>(dBm) | Avg.<br>Power<br>(1DN<br>2UP)<br>(dBm) |
|------------------------|--------------------|-----|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|
| GPRS 850<br>(Class 10) | 824.2              | 128 | 32.30                                  | 32.00                                  | 28.60                                  | 28.50                                  |
|                        | 836.6              | 190 | 32.70                                  | 32.40                                  | 28.70                                  | 28.60                                  |
|                        | 848.8              | 251 | 33.00                                  | 32.60                                  | 28.60                                  | 28.50                                  |

| EUT Mode                | Frequency<br>(MHz) | CH  | Peak<br>Power<br>(1DN<br>1UP)<br>(dBm) | Avg.<br>Power<br>(1DN<br>1UP)<br>(dBm) | Peak<br>Power<br>(1DN<br>2UP)<br>(dBm) | Avg.<br>Power<br>(1DN<br>2UP)<br>(dBm) |
|-------------------------|--------------------|-----|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|
| GPRS 1900<br>(Class 10) | 1850.2             | 512 | 29.60                                  | 29.50                                  | 29.00                                  | 28.80                                  |
|                         | 1880.0             | 661 | 30.00                                  | 29.90                                  | 28.80                                  | 28.60                                  |
|                         | 1909.8             | 810 | 29.90                                  | 29.80                                  | 28.90                                  | 28.70                                  |

| EUT Mode               | Frequency<br>(MHz) | CH  | Peak<br>Power<br>(1DN<br>1UP)<br>(dBm) | Avg.<br>Power<br>(1DN<br>1UP)<br>(dBm) | Peak<br>Power<br>(1DN<br>2UP)<br>(dBm) | Avg.<br>Power<br>(1DN<br>2UP)<br>(dBm) | Peak<br>Power<br>(1DN<br>3UP)<br>(dBm) | Avg.<br>Power<br>(1DN<br>3UP)<br>(dBm) | Peak<br>Power<br>(1DN<br>4UP)<br>(dBm) | Avg.<br>Power<br>(1DN<br>4UP)<br>(dBm) |
|------------------------|--------------------|-----|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|
| EDGE 850<br>(Class 12) | 824.2              | 128 | 28.90                                  | 25.50                                  | 28.70                                  | 25.40                                  | 28.50                                  | 25.20                                  | 28.40                                  | 25.10                                  |
|                        | 836.6              | 190 | 29.00                                  | 25.60                                  | 28.70                                  | 25.40                                  | 28.50                                  | 25.20                                  | 28.30                                  | 25.00                                  |
|                        | 848.8              | 251 | 29.00                                  | 25.60                                  | 28.70                                  | 25.40                                  | 28.50                                  | 25.20                                  | 28.30                                  | 25.00                                  |

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| EUT Mode                | Frequency<br>(MHz) | CH  | Peak<br>Power<br>(1DN<br>1UP)<br>(dBm) | Avg.<br>Power<br>(1DN<br>1UP)<br>(dBm) | Peak<br>Power<br>(1DN<br>2UP)<br>(dBm) | Avg.<br>Power<br>(1DN<br>2UP)<br>(dBm) | Peak<br>Power<br>(1DN<br>3UP)<br>(dBm) | Avg.<br>Power<br>(1DN<br>3UP)<br>(dBm) | Peak<br>Power<br>(1DN<br>4UP)<br>(dBm) | Avg.<br>Power<br>(1DN<br>4UP)<br>(dBm) |
|-------------------------|--------------------|-----|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|
| EDGE 1900<br>(Class 12) | 1850.2             | 512 | 28.50                                  | 25.20                                  | 28.10                                  | 25.00                                  | 27.60                                  | 24.40                                  | 27.60                                  | 24.30                                  |
|                         | 1880.0             | 661 | 28.80                                  | 25.60                                  | 28.50                                  | 25.20                                  | 28.00                                  | 24.70                                  | 28.00                                  | 24.70                                  |
|                         | 1909.8             | 810 | 28.90                                  | 25.60                                  | 28.60                                  | 25.40                                  | 28.10                                  | 24.80                                  | 28.00                                  | 24.80                                  |

Conducted power table\_ WCDMA/HSDPA/HSUPA:

|            |         | WCDMA Band II Channel |       |       | WCDMA Band V Channel |       |       |
|------------|---------|-----------------------|-------|-------|----------------------|-------|-------|
| Mode       | Subtest | 9262                  | 9400  | 9538  | 4132                 | 4183  | 4233  |
| Rel99      | R99     | 23.1                  | 22.46 | 22.91 | 22.90                | 23.06 | 23.01 |
| Rel6 HSDPA | 1       | 23.27                 | 22.35 | 22.77 | 22.69                | 22.92 | 23.13 |
|            | 2       | 22.98                 | 22.32 | 22.76 | 22.83                | 22.95 | 22.88 |
|            | 3       | 22.79                 | 21.9  | 22.24 | 22.23                | 22.44 | 22.64 |
|            | 4       | 22.86                 | 21.91 | 22.36 | 22.28                | 22.48 | 22.7  |
| Rel6 HSUPA | 1       | 23.02                 | 22.44 | 22.85 | 22.86                | 22.99 | 22.93 |
|            | 2       | 21.07                 | 20.51 | 20.89 | 20.92                | 21.07 | 20.97 |
|            | 3       | 22.08                 | 21.46 | 21.93 | 21.9                 | 22.05 | 22.01 |
|            | 4       | 21.2                  | 20.56 | 20.93 | 20.97                | 21.13 | 21.05 |
|            | 5       | 22.91                 | 22.3  | 22.76 | 22.72                | 22.82 | 22.82 |

Conducted power table\_ WLAN802.11 b:

|           | 11b     | 11g     | 11n     |
|-----------|---------|---------|---------|
| Fre.(MHz) | Average | Average | Average |
| 2412      | 15.3    | 12.1    | 11.9    |
| 2437      | 15.6    | 12.6    | 12.2    |
| 2462      | 16.2    | 13.2    | 12.7    |

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- 10) identify all other U.S. wireless operating modes (3G, Wi-Fi, WiMax, Bluetooth etc), device/exposure configurations (head and body, antenna and handset flip-cover or slide positions, antenna diversity conditions etc.) and frequency bands used for these modes

GSM/EDGE 850, GSM/EDGE 1900, UMTS/HSPA band II & V, and WIFI 802.11 b/g/n

- 11) identify the simultaneous transmission conditions for the voice and data configurations supported by all wireless modes, device configurations and frequency bands, for the head and body exposure conditions and device operating configurations (handset flip or cover positions, antenna diversity conditions etc.)

| Simultaneous TX Modes | UMTS      | GPRS/EDGE | LTE       | 802.11b/g/n |
|-----------------------|-----------|-----------|-----------|-------------|
| 1                     | <b>ON</b> | OFF       | OFF       | <b>ON</b>   |
| 2                     | OFF       | <b>ON</b> | OFF       | <b>ON</b>   |
| 3                     | OFF       | OFF       | <b>ON</b> | <b>ON</b>   |

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|                    |                                                                                                                                                  |          |                 |                 |               |                |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------------|-----------------|---------------|----------------|
| <b>Front side</b>  | GPRS850                                                                                                                                          | GPRS1900 | WCDMA<br>Band 2 | WCDMA<br>Band 5 | LTE<br>Band 4 | LTE<br>Band 17 |
| Sum 1g-SAR         |                                                                                                                                                  |          |                 |                 |               |                |
| WLAN802.11 b       | <b>1.188</b>                                                                                                                                     | 0.844    | 0.812           | 1.158           | 0.947         | 1.03           |
| <b>Back side</b>   | GPRS850                                                                                                                                          | GPRS1900 | WCDMA<br>Band 2 | WCDMA<br>Band 5 | LTE<br>Band 4 | LTE<br>Band 17 |
| Sum 1g-SAR         |                                                                                                                                                  |          |                 |                 |               |                |
| WLAN802.11 b       | 0.902                                                                                                                                            | 0.872    | 0.876           | 0.779           | 0.908         | 0.857          |
| <b>Top side</b>    | GPRS850                                                                                                                                          | GPRS1900 | WCDMA<br>Band 2 | WCDMA<br>Band 5 | LTE<br>Band 4 | LTE<br>Band 17 |
| Sum 1g-SAR         |                                                                                                                                                  |          |                 |                 |               |                |
| WLAN802.11 b       | 0.533                                                                                                                                            | 0.38     | 0.355           | 0.486           | 0.273         | 0.347          |
| <b>Bottom side</b> | GPRS850                                                                                                                                          | GPRS1900 | WCDMA<br>Band 2 | WCDMA<br>Band 5 | LTE<br>Band 4 | LTE<br>Band 17 |
| Sum 1g-SAR         |                                                                                                                                                  |          |                 |                 |               |                |
| WLAN802.11 b       | (No need SAR testing due to the distance between antenna and left of the device is bigger than 2.5 cm referred as the KDB941225 D06)_WLAN        |          |                 |                 |               |                |
| <b>Right side</b>  | GPRS850                                                                                                                                          | GPRS1900 | WCDMA<br>Band 2 | WCDMA<br>Band 5 | LTE<br>Band 4 | LTE<br>Band 17 |
| Sum 1g-SAR         |                                                                                                                                                  |          |                 |                 |               |                |
| WLAN802.11 b       | 0.16                                                                                                                                             | 0.548    | 0.589           | 0.126           | 1.129         | 0.101          |
| <b>Left side</b>   | GPRS850                                                                                                                                          | GPRS1900 | WCDMA<br>Band 2 | WCDMA<br>Band 5 | LTE<br>Band 4 | LTE<br>Band 17 |
| Sum 1g-SAR         |                                                                                                                                                  |          |                 |                 |               |                |
| WLAN802.11 b       | (No need SAR testing due to the distance between antenna and left of the device is bigger than 2.5 cm referred as the KDB941225 D06)_WLAN & WWAN |          |                 |                 |               |                |

12)when power reduction is applied to certain wireless modes to satisfy SAR compliance for simultaneous transmission conditions, other equipment certification or operating requirements, include the maximum average conducted output power measured in each power reduction mode applicable to the simultaneous voice/data transmission configurations for such wireless configurations and frequency bands; and also include details of the power reduction implementation and measurement setup

There is no power reduction techniques used to satisfy SAR limits.

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- 13) include descriptions of the test equipment, test software, built-in test firmware etc. required to support testing the device when power reduction is applied to one or more transmitters/antennas for simultaneous voice/data transmission

There is no power reduction techniques used to satisfy SAR limits.

- 14) when appropriate, include a SAR test plan proposal with respect to the above

Follow the test guidance of KDB 941225D05(LTE SAR test consideration) to perform the LTE SAR testing and channel exclusion.

### 1.7 The SAR Measurement System

A photograph of the SAR measurement System is given in Diag. a. This SAR Measurement System uses a Computer-controlled 3-D stepper motor system ( SPEAG DASY 4 professional system ). A Model ES3DV3/ET3DV6 field probe is used to determine the internal electric fields. The SAR can be obtained from the equation  $SAR = \sigma (|E|^2) / \rho$  where  $\sigma$  and  $\rho$  are the conductivity and mass density of the tissue-simulant.

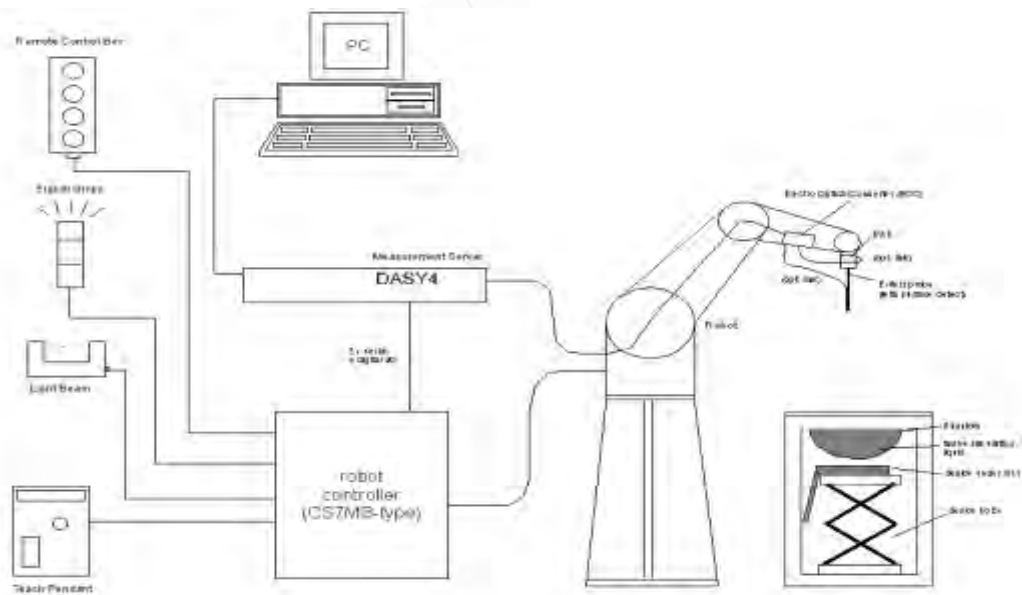
The DASY4 system for performing compliance tests consists of the following items:

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

The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.

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Diag.a The block diagram of SAR system

- The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to the DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
  - A computer operating Windows 2000 or Windows XP.
  - DASY4 software.
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
  - The SAM twin phantom enabling testing left-hand and right-hand usage.
  - The device holder for handheld mobile phones.
  - Tissue simulating liquid mixed according to the given recipes.
  - Validation dipole kits allowing to validate the proper functioning of the system.

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## 1.8 System Components

### ES3DV3/ET3DV6 E-Field Probe

|               |                                                                                                                                                                                                            |                                                                                     |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Construction  | Symmetrical design with triangular core<br>Built-in shielding against static charges<br>PEEK enclosure material (resistant to organic solvents, e.g., DGBE)                                                |  |
| Calibration   | Basic Broad Band Calibration in air<br>Conversion Factors (CF) for<br>HSL750/835/1900/2450 MHz Additional CF for other liquids and frequencies upon request                                                |                                                                                     |
| Frequency     | 10 MHz to > 4 GHz, Linearity: $\pm 0.2$ dB (30 MHz to 6 GHz)                                                                                                                                               |                                                                                     |
| Directivity   | $\pm 0.3$ dB in HSL (rotation around probe axis)<br>$\pm 0.5$ dB in tissue material (rotation normal to probe axis)                                                                                        |                                                                                     |
| Dynamic Range | 10 $\mu$ W/g to > 100 mW/g<br>Linearity: $\pm 0.2$ dB (noise: typically < 1 $\mu$ W/g)                                                                                                                     |                                                                                     |
| Dimensions    | Overall length: 330 mm (Tip: 20 mm)<br>Tip diameter: 2.5 mm (Body: 12 mm)<br>Typical distance from probe tip to dipole centers: 1 mm                                                                       |                                                                                     |
| Application   | High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%. |                                                                                     |

### SAM PHANTOM V4.0C

|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Construction | The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528-200X, CENELEC 50361 and IEC 62209.<br>It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points with the robot. |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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|                 |                                                      |                                                                                    |
|-----------------|------------------------------------------------------|------------------------------------------------------------------------------------|
| Shell Thickness | 2 ± 0.2 mm                                           |  |
| Filling Volume  | Approx. 25 liters                                    |                                                                                    |
| Dimensions      | Height: 251 mm;<br>Length: 1000 mm;<br>Width: 500 mm |                                                                                    |

## DEVICE HOLDER

|              |                                                                                                                                                                                         |                                                                                     |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Construction | The device holder (Supporter) for Notebook is made by POM (polyoxymethylene resin) , which is non-metal and non-conductive. The height can be adjusted to fit varies kind of notebooks. |  |
|              |                                                                                                                                                                                         | Device Holder                                                                       |

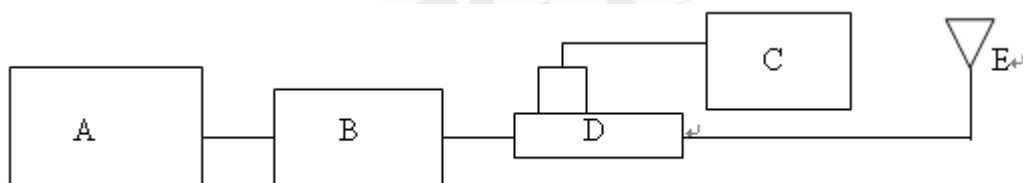
## 1.9 SAR System Verification

The microwave circuit arrangement for system verification is sketched in Diag. b. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within +/- 5% from the target SAR values. These tests were done at 750/835/1900/2450 MHz. The tests were conducted on the same days as the measurement of the DUT. The obtained results from the system accuracy verification are displayed in the table 1 (SAR values are normalized to 1W forward power delivered to the dipole). During the tests, the ambient temperature of the laboratory was in the range 22.1°C, the relative humidity was in the range 62% and the liquid depth above the ear reference points was above 15 cm in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.

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Diag.b The block diagram of system verification

- A. Agilent Model 8648D Signal Generator
- B. Mini circuits Model ZHL-42 Amplifier
- C. Agilent Model U2001B Power sensor
- D. Agilent Model 778D/777D Dual directional coupling
- E. Reference dipole antenna



Photograph of the dipole Antenna

| Validation Kit        | Frequency Hz       | Target SAR (1g)<br>(Pin=250mW) | Measured SAR (1g) | Measured Date |
|-----------------------|--------------------|--------------------------------|-------------------|---------------|
| D750V2<br>S/N: 1015   | 750 MHz<br>(Body)  | 2.06 m W/g                     | 2.16 m W/g        | 2011-05-02    |
| D835V2<br>S/N: 4d063  | 850 MHz<br>(Body)  | 2.53 m W/g                     | 2.62 m W/g        | 2011-04-27    |
| D1750V2<br>S/N: 1008  | 1750 MHz<br>(Body) | 9.46m W/g                      | 9.32m W/g         | 2011-05-13    |
| D1900V2<br>S/N: 5d027 | 1900 MHz<br>(Body) | 9.93m W/g                      | 9.98 m W/g        | 2011-04-27    |
| D2450V2<br>S/N: 727   | 2450 MHz<br>(Body) | 12.7m W/g                      | 13.1 m W/g        | 2011-05-03    |

Table 2. Results of system validation

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### 1.10 Tissue Simulant Fluid for the Frequency Band

The dielectric properties for this body-simulant fluid were measured by using the Agilent Model 85070D Dielectric Probe (rates frequency band 200 MHz to 20 GHz) in conjunction with HP 8753D Network Analyzer (30 KHz-6000 MHz ).

All dielectric parameters of tissue simulates were measured within 24 hours of SAR measurements. The depth of the tissue simulant in the flat section of the phantom was  $15\text{cm} \pm 5\text{mm}$  during all tests. (Fig .2)

| Frequency<br>(MHz) | Tissue type | Measurement date/<br>Limits | Dielectric Parameters |                |                                                |
|--------------------|-------------|-----------------------------|-----------------------|----------------|------------------------------------------------|
|                    |             |                             | $\rho$                | $\sigma$ (S/m) | Simulated Tissue<br>Temperature( $^{\circ}$ C) |
| 750                | Body        | Measured, 2011.05.02        | 53.2                  | 0.931          | 21.7                                           |
|                    |             | Recommended Limits          | 52.44-57.96           | 0.92-1.02      | 20-24                                          |
| 850                | Body        | Measured, 2011.04.27        | 53.3                  | 1              | 21.7                                           |
|                    |             | Recommended Limits          | 51.49-56.91           | 0.93-1.03      | 20-24                                          |
| 1750               | Body        | Measured, 2011.05.13        | 53                    | 1.45           | 21.7                                           |
|                    |             | Recommended Limits          | 51.40-56.81           | 1.36-1.50      | 20-24                                          |
| 1900               | Body        | Measured, 2011.04.27        | 52.5                  | 1.59           | 21.7                                           |
|                    |             | Recommended Limits          | 48.55-53.66           | 1.44-1.60      | 20-24                                          |
| 2450               | Body        | Measured, 2011.05.03        | 52.8                  | 1.97           | 21.7                                           |
|                    |             | Recommended Limits          | 48.07-53.13           | 1.81-2.01      | 20-24                                          |

Table 3. Dielectric Parameters of Tissue Simulant Fluid

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The composition of the body tissue simulating liquid is:

| Ingredient    | 750MHz<br>(Body) | 850MHz<br>(Body) | 1750MHz<br>(Body) | 1900MHz<br>(Body) | 2450MHz<br>(Body) |
|---------------|------------------|------------------|-------------------|-------------------|-------------------|
| DGMBE         | X                | X                | 300.67g           | 300.67g           | 301.7ml           |
| Water         | 631.68 g         | 631.68 g         | 716.56 g          | 716.56 g          | 698.3ml           |
| Salt          | 11.72 g          | 11.72 g          | 4.0 g             | 4.0 g             | X                 |
| Preventol D-7 | 1.2 g            | 1.2 g            | X                 | X                 | X                 |
| Cellulose     | X                | X                | X                 | X                 | X                 |
| Sugar         | 600 g            | 600 g            | X                 | X                 | X                 |
| Total amount  | 1 L (1.0kg)      | 1 L (1.0kg)      | 1 L (1.0kg)       | 1 L (1.0kg)       | 1 L (1.0kg)       |

Table 3. Recipes for tissue simulating liquid

## 1.11 EVALUATION PROCEDURES

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

1. The extraction of the measured data (grid and values) from the Zoom Scan.
2. The calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
3. The generation of a high-resolution mesh within the measured volume
4. The interpolation of all measured values from the measurement grid to the high-resolution grid
5. The extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
6. The calculation of the averaged SAR within masses of 1g and 10g.

The probe is calibrated at the center of the dipole sensors that is located 1 to 2.7mm away from the probe tip. During measurements, the probe stops shortly above the phantom surface, depending on the probe and the surface detecting system. Both distances are included as parameters in the probe configuration file. The software always knows exactly how far away the measured point is from the surface. As the probe cannot directly measure at the surface, the values between the deepest measured point and the surface must be extrapolated. The angle between the probe axis and the surface normal line is less than 30 degree.

In the Area Scan, the gradient of the interpolation function is evaluated to find all the extreme of the SAR distribution. The uncertainty on the locations of the extreme is less than 1/20 of the grid size. Only local maximum within -2 dB of the global maximum are searched and passed for the Cube Scan measurement. In the Cube Scan, the

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interpolation function is used to extrapolate the Peak SAR from the lowest measurement points to the inner phantom surface (the extrapolation distance). The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5mm.

The maximum search is automatically performed after each area scan measurement. It is based on splines in two or three dimensions. The procedure can find the maximum for most SAR distributions even with relatively large grid spacing. After the area scanning measurement, the probe is automatically moved to a position at the interpolated maximum. The following scan can directly use this position for reference, e.g., for a finer resolution grid or the cube evaluations. The 1g and 10g peak evaluations are only available for the predefined cube 7x7x7 scans. The routines are verified and optimized for the grid dimensions used in these cube measurements. The measured volume of 30x30x30mm contains about 30g of tissue.

The first procedure is an extrapolation (incl. Boundary correction) to get the points between the lowest measured plane and the surface. The next step uses 3D interpolation to get all points within the measured volume. In the last step, a 1g cube is placed numerically into the volume and its averaged SAR is calculated. This cube is moved around until the highest averaged SAR is found. If the highest SAR is found at the edge of the measured volume, the system will issue a warning: higher SAR values might be found outside of the measured volume. In that case the cube measurement can be repeated, using the new interpolated maximum as the center.

## 1.12 Test Standards and Limits

According to FCC 47CFR §2.1093(d) The limits to be used for evaluation are based generally on criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate ("SAR") in Section 4.2 of "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz," ANSI/IEEE C95.1-1992, Copyright 1992 by the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017. These criteria for SAR evaluation are similar to those recommended by the National Council on Radiation Protection and Measurements (NCRP) in "Biological Effects and Exposure Criteria for Radio frequency Electromagnetic Fields," NCRP Report No. 86, Section 17.4.5. Copyright NCRP, 1986, Bethesda, Maryland 20814.

SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards. The criteria to be used are specified in paragraphs (d)(1) and (d)(2) of this section and

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shall apply for portable devices transmitting in the frequency range from 100 kHz to 6 GHz. Portable devices that transmit at frequencies above 6 GHz are to be evaluated in terms of the MPE limits specified in § 1.1310 of this chapter. Measurements and calculations to demonstrate compliance with MPE field strength or power density limits for devices operating above 6 GHz should be made at a minimum distance of 5 cm from the radiating source.

- (1) Limits for Occupational/Controlled exposure: 0.4 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 8 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 20 W/kg, as averaged over an 10 grams of tissue (defined as a tissue volume in the shape of a cube).
- (2) Occupational/Controlled limits apply when persons are exposed as a consequence of their employment provided these persons are fully aware of and exercise control over their exposure. Awareness of exposure can be accomplished by use of warning labels or by specific training or education through appropriate means, such as an RF safety program in a work environment.
- (3) Limits for General Population/Uncontrolled exposure: 0.08 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 1.6 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 4 W/kg, as averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). General Population/Uncontrolled limits apply when the general public may be exposed, or when persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or do not exercise control over their exposure. Warning labels placed on consumer devices such as cellular telephones will not be sufficient reason to allow these devices to be evaluated subject to limits for occupational/controlled exposure in paragraph (d)(1) of this section.(Table .4)

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| Human Exposure                                      | Uncontrolled Environment<br>General Population | Controlled Environment<br>Occupational |
|-----------------------------------------------------|------------------------------------------------|----------------------------------------|
| <b>Spatial Peak SAR</b><br>(Brain)                  | 1.60 m W/g                                     | 8.00 m W/g                             |
| <b>Spatial Average SAR</b><br>(Whole Body)          | 0.08 m W/g                                     | 0.40 m W/g                             |
| <b>Spatial Peak SAR</b><br>(Hands/Feet/Ankle/Wrist) | 4.00 m W/g                                     | 20.00 m W/g                            |

Table .4 RF exposure limits

## Notes:

1. Uncontrolled environments are defined as locations where there is potential exposure of individuals who have no knowledge or control of their potential exposure.
2. Controlled environments are defined as locations where there is potential exposure of individuals who have knowledge of their potential exposure and can exercise control over their exposure.

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## 2. Summary of Results

### GPRS850 (multi class 10\_2 up 1 down)

| Front side  |         |       |                                  |                      |                   |                     |
|-------------|---------|-------|----------------------------------|----------------------|-------------------|---------------------|
| Frequency   | Channel | MHz   | Conducted Output Power (Average) | Measured(W/kg)<br>1g | Amb.<br>Temp[ °C] | Liquid<br>Temp[ °C] |
| 850MHz      | 128     | 824.2 | 28.50 dBm                        | 0.872                | 22.1              | 21.7                |
|             | 190     | 836.6 | 28.60 dBm                        | 0.966                | 22.1              | 21.7                |
|             | 251     | 848.8 | 28.50 dBm                        | 0.872                | 22.1              | 21.7                |
| Back side   |         |       |                                  |                      |                   |                     |
| Frequency   | Channel | MHz   | Conducted Output Power (Average) | Measured(W/kg)<br>1g | Amb.<br>Temp[ °C] | Liquid<br>Temp[ °C] |
| 850MHz      | 128     | 824.2 | 28.50 dBm                        | 0.687                | 22.1              | 21.7                |
|             | 190     | 836.6 | 28.60 dBm                        | 0.802                | 22.1              | 21.7                |
|             | 251     | 848.8 | 28.50 dBm                        | 0.679                | 22.1              | 21.7                |
| Top side    |         |       |                                  |                      |                   |                     |
| Frequency   | Channel | MHz   | Conducted Output Power (Average) | Measured(W/kg)<br>1g | Amb.<br>Temp[ °C] | Liquid<br>Temp[ °C] |
| 850MHz      | 190     | 836.6 | 28.60 dBm                        | 0.380                | 22.1              | 21.7                |
| Bottom side |         |       |                                  |                      |                   |                     |
| Frequency   | Channel | MHz   | Conducted Output Power (Average) | Measured(W/kg)<br>1g | Amb.<br>Temp[ °C] | Liquid<br>Temp[ °C] |
| 850MHz      | 190     | 836.6 | 28.60 dBm                        | 0.681                | 22.1              | 21.7                |
| Right side  |         |       |                                  |                      |                   |                     |
| Frequency   | Channel | MHz   | Conducted Output Power (Average) | Measured(W/kg)<br>1g | Amb.<br>Temp[ °C] | Liquid<br>Temp[ °C] |
| 850MHz      | 190     | 836.6 | 28.60 dBm                        | 0.074                | 22.1              | 21.7                |

#. Using KDB941225 D03 to exclude SAR test requirements for EDGE modes due to the source-based time-averaged output power for edge mode is lower than that in the GPRS mode

#. According to KDB447498 the 1-g SAR for the highest output channel is less than 0.8 W/kg, where the transmission band corresponding to all channels is  $\leq 100$  MHz, testing for the other channels is not required.

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## GPRS850 (multi class 8\_1 up 1 down)

| Front side  |         |       |                                  |                   |                |                  |
|-------------|---------|-------|----------------------------------|-------------------|----------------|------------------|
| Frequency   | Channel | MHz   | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[ °C] | Liquid Temp[ °C] |
| 850MHz      | 128     | 824.2 | 32.00 dBm                        | 1.06              | 22.1           | 21.7             |
|             | 190     | 836.6 | 32.40 dBm                        | 1.07              | 22.1           | 21.7             |
|             | 251     | 848.8 | 32.60 dBm                        | 1.04              | 22.1           | 21.7             |
| Back side   |         |       |                                  |                   |                |                  |
| Frequency   | Channel | MHz   | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[ °C] | Liquid Temp[ °C] |
| 850MHz      | 190     | 836.6 | 32.40 dBm                        | 0.797             | 22.1           | 21.7             |
| Top side    |         |       |                                  |                   |                |                  |
| Frequency   | Channel | MHz   | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[ °C] | Liquid Temp[ °C] |
| 850MHz      | 190     | 836.6 | 32.40 dBm                        | 0.382             | 22.1           | 21.7             |
| Bottom side |         |       |                                  |                   |                |                  |
| Frequency   | Channel | MHz   | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[ °C] | Liquid Temp[ °C] |
| 850MHz      | 190     | 836.6 | 32.40 dBm                        | 0.693             | 22.1           | 21.7             |
| Right side  |         |       |                                  |                   |                |                  |
| Frequency   | Channel | MHz   | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[ °C] | Liquid Temp[ °C] |
| 850MHz      | 190     | 836.6 | 32.40 dBm                        | 0.121             | 22.1           | 21.7             |

#. Using KDB941225 D03 to exclude SAR test requirements for EDGE modes due to the source-based time-averaged output power for edge mode is lower than that in the GPRS mode.

#. According to KDB447498 the 1-g SAR for the highest output channel is less than 0.8 W/kg, where the transmission band corresponding to all channels is  $\leq 100$  MHz, testing for the other channels is not required.

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### GPRS1900 (multi class 10\_2 up 1 down)

| Front side  |         |        |                                  |                   |                 |                   |
|-------------|---------|--------|----------------------------------|-------------------|-----------------|-------------------|
| Frequency   | Channel | MHz    | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[ ° C] | Liquid Temp[ ° C] |
| 1900MHz     | 512     | 1850.2 | 28.8 dBm                         | 0.726             | 22.1            | 21.7              |
| Back side   |         |        |                                  |                   |                 |                   |
| Frequency   | Channel | MHz    | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[ ° C] | Liquid Temp[ ° C] |
| 1900MHz     | 512     | 1850.2 | 28.8 dBm                         | 0.772             | 22.1            | 21.7              |
| Top side    |         |        |                                  |                   |                 |                   |
| Frequency   | Channel | MHz    | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[ ° C] | Liquid Temp[ ° C] |
| 1900MHz     | 512     | 1850.2 | 28.8 dBm                         | 0.229             | 22.1            | 21.7              |
| Bottom side |         |        |                                  |                   |                 |                   |
| Frequency   | Channel | MHz    | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[ ° C] | Liquid Temp[ ° C] |
| 1900MHz     | 512     | 1850.2 | 28.8 dBm                         | 0.614             | 22.1            | 21.7              |
| Right side  |         |        |                                  |                   |                 |                   |
| Frequency   | Channel | MHz    | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[ ° C] | Liquid Temp[ ° C] |
| 1900MHz     | 512     | 1850.2 | 28.8 dBm                         | 0.509             | 22.1            | 21.7              |

### GPRS1900 (multi class 8\_1 up 1 down)

| Back side |         |        |                                  |                   |                 |                   |
|-----------|---------|--------|----------------------------------|-------------------|-----------------|-------------------|
| Frequency | Channel | MHz    | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[ ° C] | Liquid Temp[ ° C] |
| 1900MHz   | 661     | 1850.2 | 29.9dBm                          | 0.661             | 22.1            | 21.7              |

#. Using KDB941225 D03 to exclude SAR test requirements for EDGE modes due to the

source-based time-averaged output power for edge mode is lower than that in the GPRS mode

#. According to KDB447498 the 1-g SAR for the highest output channel is less than 0.8 W/kg, where the transmission band corresponding to all channels is  $\leq 100$  MHz, testing for the other channels is not required.

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## WCDMA B2

| Front side  |         |        |                                  |                      |                   |                     |
|-------------|---------|--------|----------------------------------|----------------------|-------------------|---------------------|
| Frequency   | Channel | MHz    | Conducted Output Power (Average) | Measured(W/kg)<br>1g | Amb.<br>Temp[ °C] | Liquid<br>Temp[ °C] |
| 1900MHz     | 9262    | 1852.4 | 23.1dBm                          | 0.694                | 22.1              | 21.7                |
| Back side   |         |        |                                  |                      |                   |                     |
| Frequency   | Channel | MHz    | Conducted Output Power (Average) | Measured(W/kg)<br>1g | Amb.<br>Temp[ °C] | Liquid<br>Temp[ °C] |
| 1900MHz     | 9262    | 1852.4 | 23.1dBm                          | 0.776                | 22.1              | 21.7                |
| Top side    |         |        |                                  |                      |                   |                     |
| Frequency   | Channel | MHz    | Conducted Output Power (Average) | Measured(W/kg)<br>1g | Amb.<br>Temp[ °C] | Liquid<br>Temp[ °C] |
| 1900MHz     | 9262    | 1852.4 | 23.1dBm                          | 0.204                | 22.1              | 21.7                |
| Bottom side |         |        |                                  |                      |                   |                     |
| Frequency   | Channel | MHz    | Conducted Output Power (Average) | Measured(W/kg)<br>1g | Amb.<br>Temp[ °C] | Liquid<br>Temp[ °C] |
| 1900MHz     | 9262    | 1852.4 | 23.1dBm                          | 0.505                | 22.1              | 21.7                |
| Right side  |         |        |                                  |                      |                   |                     |
| Frequency   | Channel | MHz    | Conducted Output Power (Average) | Measured(W/kg)<br>1g | Amb.<br>Temp[ °C] | Liquid<br>Temp[ °C] |
| 1900MHz     | 9262    | 1852.4 | 23.1dBm                          | 0.550                | 22.1              | 21.7                |

#. Using KDB941225 D01 to exclude SAR test requirements for HSPA modes due to the maximum average output power of HSPA active is less than 1/4 dB higher than that measured without HSPA using 12.2kbps RMC

#. According to KDB447498 the 1-g SAR for the highest output channel is less than 0.8 W/kg, where the transmission band corresponding to all channels is  $\leq 100$  MHz, testing for the other channels is not required.

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## WCDMA B5

| Front side  |         |       |                                  |                   |                 |                   |
|-------------|---------|-------|----------------------------------|-------------------|-----------------|-------------------|
| Frequency   | Channel | MHz   | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[ ° C] | Liquid Temp[ ° C] |
| 850MHz      | 4132    | 826.4 | 22.90 dBm                        | 1.04              | 22.1            | 21.7              |
|             | 4183    | 836.6 | 23.06 dBm                        | 0.896             | 22.1            | 21.7              |
|             | 4233    | 846.6 | 23.01 dBm                        | 0.743             | 22.1            | 21.7              |
| Back side   |         |       |                                  |                   |                 |                   |
| Frequency   | Channel | MHz   | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[ ° C] | Liquid Temp[ ° C] |
| 850MHz      | 4183    | 836.6 | 23.06 dBm                        | 0.679             | 22.1            | 21.7              |
| Top side    |         |       |                                  |                   |                 |                   |
| Frequency   | Channel | MHz   | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[ ° C] | Liquid Temp[ ° C] |
| 850MHz      | 4183    | 836.6 | 23.06 dBm                        | 0.335             | 22.1            | 21.7              |
| Bottom side |         |       |                                  |                   |                 |                   |
| Frequency   | Channel | MHz   | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[ ° C] | Liquid Temp[ ° C] |
| 850MHz      | 4183    | 836.6 | 23.06 dBm                        | 0.651             | 22.1            | 21.7              |
| Right side  |         |       |                                  |                   |                 |                   |
| Frequency   | Channel | MHz   | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[ ° C] | Liquid Temp[ ° C] |
| 850MHz      | 4183    | 836.6 | 23.06 dBm                        | 0.087             | 22.1            | 21.7              |

#. Using KDB941225 D01 to exclude SAR test requirements for HSPA modes due to the maximum average output power of HSPA active is less than 1/4 dB higher than that measured without HSPA using 12.2kbps RMC

#. According to KDB447498 the 1-g SAR for the highest output channel is less than 0.8 W/kg, where the transmission band corresponding to all channels is  $\leq 100$  MHz, testing for the other channels is not required.

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# LTE Band 4\_Front side

| LTE Band 4_Uplink frequency band : 1710 to 1755MHz |            |         |                |         |           |                      |                   |                |                     |           |
|----------------------------------------------------|------------|---------|----------------|---------|-----------|----------------------|-------------------|----------------|---------------------|-----------|
| BW (MHz)                                           | Modulation | Channel | Frequency(MHz) | RB Size | RB Offset | Conducted power(dBm) | Target Power(dBm) | MPR Target(dB) | Max SAR value(W/kg) | Test case |
| 10                                                 | QPSK       | 20000   | 1715           | 1       | 49        | 23.53                | 23.5              | 0              | 0.789               | 3         |
|                                                    |            |         |                | 1       | 0         | 23.75                | 23.5              | 0              | 0.829               | 4         |
|                                                    |            |         |                | 25      | 12        | 22.33                | 23.5              | 1              | No need test        | 1         |
|                                                    |            |         |                | 50      | 0         | 22.21                | 23.5              | 1              | No need test        | 2         |
|                                                    |            | 20175   | 1732.5         | 1       | 49        | 23.45                | 23.5              | 0              | No need test        | 3         |
|                                                    |            |         |                | 1       | 0         | 23.37                | 23.5              | 0              | No need test        | 4         |
|                                                    |            |         |                | 25      | 12        | 22.17                | 23.5              | 1              | 0.516               | 1         |
|                                                    |            |         |                | 50      | 0         | 22.05                | 23.5              | 1              | No need test        | 2         |
|                                                    |            | 20350   | 1750           | 1       | 49        | 23.35                | 23.5              | 0              | No need test        | 3         |
|                                                    |            |         |                | 1       | 0         | 23.49                | 23.5              | 0              | No need test        | 4         |
|                                                    |            |         |                | 25      | 12        | 22.11                | 23.5              | 1              | No need test        | 1         |
|                                                    |            |         |                | 50      | 0         | 22.08                | 23.5              | 1              | No need test        | 2         |
| 10                                                 | 16 QAM     | 20000   | 1715           | 1       | 49        | 22.83                | 23.5              | 1              | No need test        | 7         |
|                                                    |            |         |                | 1       | 0         | 22.76                | 23.5              | 1              | No need test        | 8         |
|                                                    |            |         |                | 25      | 12        | 21.16                | 23.5              | 2              | No need test        | 5         |
|                                                    |            |         |                | 50      | 0         | 21.38                | 23.5              | 2              | No need test        | 6         |
|                                                    |            | 20175   | 1732.5         | 1       | 49        | 23.1                 | 23.5              | 1              | 0.526               | 7         |
|                                                    |            |         |                | 1       | 0         | 22.99                | 23.5              | 1              | 0.439               | 8         |
|                                                    |            |         |                | 25      | 12        | 21.17                | 23.5              | 2              | 0.363               | 5         |
|                                                    |            |         |                | 50      | 0         | 21.15                | 23.5              | 2              | No need test        | 6         |
|                                                    |            | 20350   | 1750           | 1       | 49        | 22.72                | 23.5              | 1              | No need test        | 7         |
|                                                    |            |         |                | 1       | 0         | 22.91                | 23.5              | 1              | No need test        | 8         |
|                                                    |            |         |                | 25      | 12        | 21.15                | 23.5              | 2              | No need test        | 5         |
|                                                    |            |         |                | 50      | 0         | 21.14                | 23.5              | 2              | No need test        | 6         |

#. Follow the test guidance of KDB941125 D05(LTE SAR test considerations) to perform the LTE SAR testing and channel exclusion.

#. No need SAR testing with 5MHz channel bandwidth due to the max conductive power of 5 MHz with different RB allocations compared to 10 MHz channel bandwidth are all within 0.5dB, and the SAR value of 10 MHz with different RB allocations are all below 1.45w/kg based on KDB 941225 D05 guidance.

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## LTE Band 4\_Back side

| LTE Band 4_Uplink frequency band : 1710 to 1755MHz |            |         |                |         |           |                      |                   |                |                     |           |
|----------------------------------------------------|------------|---------|----------------|---------|-----------|----------------------|-------------------|----------------|---------------------|-----------|
| BW (MHz)                                           | Modulation | Channel | Frequency(MHz) | RB Size | RB Offset | Conducted power(dBm) | Target Power(dBm) | MPR Target(dB) | Max SAR value(W/kg) | Test case |
| 10                                                 | QPSK       | 20000   | 1715           | 1       | 49        | 23.53                | 23.5              | 0              | 0.678               | 3         |
|                                                    |            |         |                | 1       | 0         | 23.75                | 23.5              | 0              | 0.808               | 4         |
|                                                    |            |         |                | 25      | 12        | 22.33                | 23.5              | 1              | No need test        | 1         |
|                                                    |            |         |                | 50      | 0         | 22.21                | 23.5              | 1              | No need test        | 2         |
|                                                    |            | 20175   | 1732.5         | 1       | 49        | 23.45                | 23.5              | 0              | No need test        | 3         |
|                                                    |            |         |                | 1       | 0         | 23.37                | 23.5              | 0              | No need test        | 4         |
|                                                    |            |         |                | 25      | 12        | 22.17                | 23.5              | 1              | 0.433               | 1         |
|                                                    |            |         |                | 50      | 0         | 22.05                | 23.5              | 1              | No need test        | 2         |
|                                                    |            | 20350   | 1750           | 1       | 49        | 23.35                | 23.5              | 0              | No need test        | 3         |
|                                                    |            |         |                | 1       | 0         | 23.49                | 23.5              | 0              | No need test        | 4         |
|                                                    |            |         |                | 25      | 12        | 22.11                | 23.5              | 1              | No need test        | 1         |
|                                                    |            |         |                | 50      | 0         | 22.08                | 23.5              | 1              | No need test        | 2         |
| 10                                                 | 16 QAM     | 20000   | 1715           | 1       | 49        | 22.83                | 23.5              | 1              | No need test        | 7         |
|                                                    |            |         |                | 1       | 0         | 22.76                | 23.5              | 1              | No need test        | 8         |
|                                                    |            |         |                | 25      | 12        | 21.16                | 23.5              | 2              | No need test        | 5         |
|                                                    |            |         |                | 50      | 0         | 21.38                | 23.5              | 2              | No need test        | 6         |
|                                                    |            | 20175   | 1732.5         | 1       | 49        | 23.1                 | 23.5              | 1              | 0.488               | 7         |
|                                                    |            |         |                | 1       | 0         | 22.99                | 23.5              | 1              | 0.483               | 8         |
|                                                    |            |         |                | 25      | 12        | 21.17                | 23.5              | 2              | 0.377               | 5         |
|                                                    |            |         |                | 50      | 0         | 21.15                | 23.5              | 2              | No need test        | 6         |
|                                                    |            | 20350   | 1750           | 1       | 49        | 22.72                | 23.5              | 1              | No need test        | 7         |
|                                                    |            |         |                | 1       | 0         | 22.91                | 23.5              | 1              | No need test        | 8         |
|                                                    |            |         |                | 25      | 12        | 21.15                | 23.5              | 2              | No need test        | 5         |
|                                                    |            |         |                | 50      | 0         | 21.14                | 23.5              | 2              | No need test        | 6         |

#. Follow the test guidance of KDB941125 D05(LTE SAR test considerations) to perform the LTE SAR testing and channel exclusion.

#. No need SAR testing with 5MHz channel bandwidth due to the max conductive power of 5 MHz with different RB allocations compared to 10 MHz channel bandwidth are all within 0.5dB, and the SAR value of 10 MHz with different RB allocations are all below 1.45w/kg based on KDB 941225 D05 guidance.

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# LTE Band 4\_Top side

| LTE Band 4_Uplink frequency band : 1710 to 1755MHz |            |         |                |         |           |                      |                   |                |                     |           |
|----------------------------------------------------|------------|---------|----------------|---------|-----------|----------------------|-------------------|----------------|---------------------|-----------|
| BW (MHz)                                           | Modulation | Channel | Frequency(MHz) | RB Size | RB Offset | Conducted power(dBm) | Target Power(dBm) | MPR Target(dB) | Max SAR value(W/kg) | Test case |
| 10                                                 | QPSK       | 20000   | 1715           | 1       | 49        | 23.53                | 23.5              | 0              | 0.03                | 3         |
|                                                    |            |         |                | 1       | 0         | 23.75                | 23.5              | 0              | 0.122               | 4         |
|                                                    |            |         |                | 25      | 12        | 22.33                | 23.5              | 1              | No need test        | 1         |
|                                                    |            |         |                | 50      | 0         | 22.21                | 23.5              | 1              | No need test        | 2         |
|                                                    |            | 20175   | 1732.5         | 1       | 49        | 23.45                | 23.5              | 0              | No need test        | 3         |
|                                                    |            |         |                | 1       | 0         | 23.37                | 23.5              | 0              | No need test        | 4         |
|                                                    |            |         |                | 25      | 12        | 22.17                | 23.5              | 1              | 0.00937             | 1         |
|                                                    |            |         |                | 50      | 0         | 22.05                | 23.5              | 1              | No need test        | 2         |
|                                                    |            | 20350   | 1750           | 1       | 49        | 23.35                | 23.5              | 0              | No need test        | 3         |
|                                                    |            |         |                | 1       | 0         | 23.49                | 23.5              | 0              | No need test        | 4         |
|                                                    |            |         |                | 25      | 12        | 22.11                | 23.5              | 1              | No need test        | 1         |
|                                                    |            |         |                | 50      | 0         | 22.08                | 23.5              | 1              | No need test        | 2         |
| 10                                                 | 16 QAM     | 20000   | 1715           | 1       | 49        | 22.83                | 23.5              | 1              | No need test        | 7         |
|                                                    |            |         |                | 1       | 0         | 22.76                | 23.5              | 1              | No need test        | 8         |
|                                                    |            |         |                | 25      | 12        | 21.16                | 23.5              | 2              | No need test        | 5         |
|                                                    |            |         |                | 50      | 0         | 21.38                | 23.5              | 2              | No need test        | 6         |
|                                                    |            | 20175   | 1732.5         | 1       | 49        | 23.1                 | 23.5              | 1              | 0.025               | 7         |
|                                                    |            |         |                | 1       | 0         | 22.99                | 23.5              | 1              | 0.102               | 8         |
|                                                    |            |         |                | 25      | 12        | 21.17                | 23.5              | 2              | 0.00919             | 5         |
|                                                    |            |         |                | 50      | 0         | 21.15                | 23.5              | 2              | No need test        | 6         |
|                                                    |            | 20350   | 1750           | 1       | 49        | 22.72                | 23.5              | 1              | No need test        | 7         |
|                                                    |            |         |                | 1       | 0         | 22.91                | 23.5              | 1              | No need test        | 8         |
|                                                    |            |         |                | 25      | 12        | 21.15                | 23.5              | 2              | No need test        | 5         |
|                                                    |            |         |                | 50      | 0         | 21.14                | 23.5              | 2              | No need test        | 6         |

#. Follow the test guidance of KDB941125 D05(LTE SAR test considerations) to perform the LTE SAR testing and channel exclusion.

#. No need SAR testing with 5MHz channel bandwidth due to the max conductive power of 5 MHz with different RB allocations compared to 10 MHz channel bandwidth are all within 0.5dB, and the SAR value of 10 MHz with different RB allocations are all below 1.45w/kg based on KDB 941225 D05 guidance.

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## LTE Band 4\_Bottom side

| LTE Band 4_Uplink frequency band : 1710 to 1755MHz |            |         |                |         |           |                      |                   |                |                     |           |
|----------------------------------------------------|------------|---------|----------------|---------|-----------|----------------------|-------------------|----------------|---------------------|-----------|
| BW (MHz)                                           | Modulation | Channel | Frequency(MHz) | RB Size | RB Offset | Conducted power(dBm) | Target Power(dBm) | MPR Target(dB) | Max SAR value(W/kg) | Test case |
| 10                                                 | QPSK       | 20000   | 1715           | 1       | 49        | 23.53                | 23.5              | 0              | 0.746               | 3         |
|                                                    |            |         |                | 1       | 0         | 23.75                | 23.5              | 0              | 0.639               | 4         |
|                                                    |            |         |                | 25      | 12        | 22.33                | 23.5              | 1              | No need test        | 1         |
|                                                    |            |         |                | 50      | 0         | 22.21                | 23.5              | 1              | No need test        | 2         |
|                                                    |            | 20175   | 1732.5         | 1       | 49        | 23.45                | 23.5              | 0              | No need test        | 3         |
|                                                    |            |         |                | 1       | 0         | 23.37                | 23.5              | 0              | No need test        | 4         |
|                                                    |            |         |                | 25      | 12        | 22.17                | 23.5              | 1              | 0.424               | 1         |
|                                                    |            |         |                | 50      | 0         | 22.05                | 23.5              | 1              | No need test        | 2         |
|                                                    |            | 20350   | 1750           | 1       | 49        | 23.35                | 23.5              | 0              | No need test        | 3         |
|                                                    |            |         |                | 1       | 0         | 23.49                | 23.5              | 0              | No need test        | 4         |
|                                                    |            |         |                | 25      | 12        | 22.11                | 23.5              | 1              | No need test        | 1         |
|                                                    |            |         |                | 50      | 0         | 22.08                | 23.5              | 1              | No need test        | 2         |
| 10                                                 | 16 QAM     | 20000   | 1715           | 1       | 49        | 22.83                | 23.5              | 1              | No need test        | 7         |
|                                                    |            |         |                | 1       | 0         | 22.76                | 23.5              | 1              | No need test        | 8         |
|                                                    |            |         |                | 25      | 12        | 21.16                | 23.5              | 2              | No need test        | 5         |
|                                                    |            |         |                | 50      | 0         | 21.38                | 23.5              | 2              | No need test        | 6         |
|                                                    |            | 20175   | 1732.5         | 1       | 49        | 23.1                 | 23.5              | 1              | 0.528               | 7         |
|                                                    |            |         |                | 1       | 0         | 22.99                | 23.5              | 1              | 0.377               | 8         |
|                                                    |            |         |                | 25      | 12        | 21.17                | 23.5              | 2              | 0.401               | 5         |
|                                                    |            |         |                | 50      | 0         | 21.15                | 23.5              | 2              | No need test        | 6         |
|                                                    |            | 20350   | 1750           | 1       | 49        | 22.72                | 23.5              | 1              | No need test        | 7         |
|                                                    |            |         |                | 1       | 0         | 22.91                | 23.5              | 1              | No need test        | 8         |
|                                                    |            |         |                | 25      | 12        | 21.15                | 23.5              | 2              | No need test        | 5         |
|                                                    |            |         |                | 50      | 0         | 21.14                | 23.5              | 2              | No need test        | 6         |

#. Follow the test guidance of KDB941125 D05(LTE SAR test considerations) to perform the LTE SAR testing and channel exclusion.

#. No need SAR testing with 5MHz channel bandwidth due to the max conductive power of 5 MHz with different RB allocations compared to 10 MHz channel bandwidth are all within 0.5dB, and the SAR value of 10 MHz with different RB allocations are all below 1.45w/kg based on KDB 941225 D05 guidance.

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# LTE Band 4\_Right side

| LTE Band 4_Uplink frequency band : 1710 to 1755MHz |            |         |                |         |           |                      |                   |                |                     |           |
|----------------------------------------------------|------------|---------|----------------|---------|-----------|----------------------|-------------------|----------------|---------------------|-----------|
| BW (MHz)                                           | Modulation | Channel | Frequency(MHz) | RB Size | RB Offset | Conducted power(dBm) | Target Power(dBm) | MPR Target(dB) | Max SAR value(W/kg) | Test case |
| 10                                                 | QPSK       | 20000   | 1715           | 1       | 49        | 23.53                | 23.5              | 0              | 1.04                | 3         |
|                                                    |            |         |                | 1       | 0         | 23.75                | 23.5              | 0              | 1.09                | 4         |
|                                                    |            |         |                | 25      | 12        | 22.33                | 23.5              | 1              | No need test        | 1         |
|                                                    |            |         |                | 50      | 0         | 22.21                | 23.5              | 1              | No need test        | 2         |
|                                                    |            | 20175   | 1732.5         | 1       | 49        | 23.45                | 23.5              | 0              | No need test        | 3         |
|                                                    |            |         |                | 1       | 0         | 23.37                | 23.5              | 0              | No need test        | 4         |
|                                                    |            |         |                | 25      | 12        | 22.17                | 23.5              | 1              | 0.710               | 1         |
|                                                    |            |         |                | 50      | 0         | 22.05                | 23.5              | 1              | No need test        | 2         |
|                                                    |            | 20350   | 1750           | 1       | 49        | 23.35                | 23.5              | 0              | No need test        | 3         |
|                                                    |            |         |                | 1       | 0         | 23.49                | 23.5              | 0              | No need test        | 4         |
|                                                    |            |         |                | 25      | 12        | 22.11                | 23.5              | 1              | No need test        | 1         |
|                                                    |            |         |                | 50      | 0         | 22.08                | 23.5              | 1              | No need test        | 2         |
| 10                                                 | 16 QAM     | 20000   | 1715           | 1       | 49        | 22.83                | 23.5              | 1              | No need test        | 7         |
|                                                    |            |         |                | 1       | 0         | 22.76                | 23.5              | 1              | No need test        | 8         |
|                                                    |            |         |                | 25      | 12        | 21.16                | 23.5              | 2              | No need test        | 5         |
|                                                    |            |         |                | 50      | 0         | 21.38                | 23.5              | 2              | No need test        | 6         |
|                                                    |            | 20175   | 1732.5         | 1       | 49        | 23.1                 | 23.5              | 1              | 0.755               | 7         |
|                                                    |            |         |                | 1       | 0         | 22.99                | 23.5              | 1              | 0.736               | 8         |
|                                                    |            |         |                | 25      | 12        | 21.17                | 23.5              | 2              | 0.593               | 5         |
|                                                    |            |         |                | 50      | 0         | 21.15                | 23.5              | 2              | No need test        | 6         |
|                                                    |            | 20350   | 1750           | 1       | 49        | 22.72                | 23.5              | 1              | No need test        | 7         |
|                                                    |            |         |                | 1       | 0         | 22.91                | 23.5              | 1              | No need test        | 8         |
|                                                    |            |         |                | 25      | 12        | 21.15                | 23.5              | 2              | No need test        | 5         |
|                                                    |            |         |                | 50      | 0         | 21.14                | 23.5              | 2              | No need test        | 6         |

#. Follow the test guidance of KDB941125 D05(LTE SAR test considerations) to perform the LTE SAR testing and channel exclusion.

#. No need SAR testing with 5MHz channel bandwidth due to the max conductive power of 5 MHz with different RB allocations compared to 10 MHz channel bandwidth are all within 0.5dB, and the SAR value of 10 MHz with different RB allocations are all below 1.45w/kg based on KDB 941225 D05 guidance.

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## LTE Band 17\_Front side

| LTE Band 17_Uplink frequency band : 704 to 716MHz |            |         |                |            |              |                         |                      |                   |                        |              |
|---------------------------------------------------|------------|---------|----------------|------------|--------------|-------------------------|----------------------|-------------------|------------------------|--------------|
| BW<br>(MHz)                                       | Modulation | Channel | Frequency(MHz) | RB<br>Size | RB<br>Offset | Conducted<br>power(dBm) | Target<br>Power(dBm) | MPR<br>Target(dB) | Max SAR<br>value(W/kg) | Test<br>case |
| 10                                                | QPSK       | 23780   | 709            | 1          | 49           | 23.34                   | 23.5                 | 0                 | 0.896                  | 3            |
|                                                   |            |         |                | 1          | 0            | 23.75                   | 23.5                 | 0                 | 0.912                  | 4            |
|                                                   |            |         |                | 25         | 12           | 22.26                   | 23.5                 | 1                 | No need test           | 1            |
|                                                   |            |         |                | 50         | 0            | 22.29                   | 23.5                 | 1                 | No need test           | 2            |
|                                                   |            | 23790   | 710            | 1          | 49           | 23.25                   | 23.5                 | 0                 | No need test           | 3            |
|                                                   |            |         |                | 1          | 0            | 23.3                    | 23.5                 | 0                 | No need test           | 4            |
|                                                   |            |         |                | 25         | 12           | 22.21                   | 23.5                 | 1                 | 0.772                  | 1            |
|                                                   |            |         |                | 50         | 0            | 22.19                   | 23.5                 | 1                 | No need test           | 2            |
|                                                   |            | 23800   | 711            | 1          | 49           | 23.31                   | 23.5                 | 0                 | No need test           | 3            |
|                                                   |            |         |                | 1          | 0            | 23.38                   | 23.5                 | 0                 | No need test           | 4            |
|                                                   |            |         |                | 25         | 12           | 22.19                   | 23.5                 | 1                 | No need test           | 1            |
|                                                   |            |         |                | 50         | 0            | 22.35                   | 23.5                 | 1                 | No need test           | 2            |
| 10                                                | 16 QAM     | 23780   | 709            | 1          | 49           | 22.78                   | 23.5                 | 1                 | No need test           | 7            |
|                                                   |            |         |                | 1          | 0            | 22.63                   | 23.5                 | 1                 | 0.796                  | 8            |
|                                                   |            |         |                | 25         | 12           | 21.11                   | 23.5                 | 2                 | No need test           | 5            |
|                                                   |            |         |                | 50         | 0            | 21.18                   | 23.5                 | 2                 | No need test           | 6            |
|                                                   |            | 23790   | 710            | 1          | 49           | 22.77                   | 23.5                 | 1                 | No need test           | 7            |
|                                                   |            |         |                | 1          | 0            | 22.68                   | 23.5                 | 1                 | No need test           | 8            |
|                                                   |            |         |                | 25         | 12           | 21.07                   | 23.5                 | 2                 | 0.650                  | 5            |
|                                                   |            |         |                | 50         | 0            | 21.14                   | 23.5                 | 2                 | No need test           | 6            |
|                                                   |            | 23800   | 711            | 1          | 49           | 23.07                   | 23.5                 | 1                 | 0.759                  | 7            |
|                                                   |            |         |                | 1          | 0            | 23.04                   | 23.5                 | 1                 | No need test           | 8            |
|                                                   |            |         |                | 25         | 12           | 21.21                   | 23.5                 | 2                 | No need test           | 5            |
|                                                   |            |         |                | 50         | 0            | 21.23                   | 23.5                 | 2                 | No need test           | 6            |

#. Follow the test guidance of KDB941125 D05(LTE SAR test considerations) to perform the LTE SAR testing and channel exclusion except one(RB size = 1; RB offset =0) of the RB allocations for the LTE band 17 with 16QAM due to wrong channel selection. However, The FCC Lab has concluded upon review of the SAR results that re-testing of 16 QAM for Band 17 will not be required. This is a one time exemption from FCC lab.

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## LTE Band 17\_Back side

| LTE Band 17_Uplink frequency band : 704 to 716MHz |            |         |                |            |              |                         |                      |                   |                        |              |
|---------------------------------------------------|------------|---------|----------------|------------|--------------|-------------------------|----------------------|-------------------|------------------------|--------------|
| BW<br>(MHz)                                       | Modulation | Channel | Frequency(MHz) | RB<br>Size | RB<br>Offset | Conducted<br>power(dBm) | Target<br>Power(dBm) | MPR<br>Target(dB) | Max SAR<br>value(W/kg) | Test<br>case |
| 10                                                | QPSK       | 23780   | 709            | 1          | 49           | 23.34                   | 23.5                 | 0                 | 0.663                  | 3            |
|                                                   |            |         |                | 1          | 0            | 23.75                   | 23.5                 | 0                 | 0.757                  | 4            |
|                                                   |            |         |                | 25         | 12           | 22.26                   | 23.5                 | 1                 | No need test           | 1            |
|                                                   |            |         |                | 50         | 0            | 22.29                   | 23.5                 | 1                 | No need test           | 2            |
|                                                   |            | 23790   | 710            | 1          | 49           | 23.25                   | 23.5                 | 0                 | No need test           | 3            |
|                                                   |            |         |                | 1          | 0            | 23.3                    | 23.5                 | 0                 | No need test           | 4            |
|                                                   |            |         |                | 25         | 12           | 22.21                   | 23.5                 | 1                 | 0.638                  | 1            |
|                                                   |            |         |                | 50         | 0            | 22.19                   | 23.5                 | 1                 | No need test           | 2            |
|                                                   |            | 23800   | 711            | 1          | 49           | 23.31                   | 23.5                 | 0                 | No need test           | 3            |
|                                                   |            |         |                | 1          | 0            | 23.38                   | 23.5                 | 0                 | No need test           | 4            |
|                                                   |            |         |                | 25         | 12           | 22.19                   | 23.5                 | 1                 | No need test           | 1            |
|                                                   |            |         |                | 50         | 0            | 22.35                   | 23.5                 | 1                 | No need test           | 2            |
| 10                                                | 16 QAM     | 23780   | 709            | 1          | 49           | 22.78                   | 23.5                 | 1                 | No need test           | 7            |
|                                                   |            |         |                | 1          | 0            | 22.63                   | 23.5                 | 1                 | 0.625                  | 8            |
|                                                   |            |         |                | 25         | 12           | 21.11                   | 23.5                 | 2                 | No need test           | 5            |
|                                                   |            |         |                | 50         | 0            | 21.18                   | 23.5                 | 2                 | No need test           | 6            |
|                                                   |            | 23790   | 710            | 1          | 49           | 22.77                   | 23.5                 | 1                 | No need test           | 7            |
|                                                   |            |         |                | 1          | 0            | 22.68                   | 23.5                 | 1                 | No need test           | 8            |
|                                                   |            |         |                | 25         | 12           | 21.07                   | 23.5                 | 2                 | 0.495                  | 5            |
|                                                   |            |         |                | 50         | 0            | 21.14                   | 23.5                 | 2                 | No need test           | 6            |
|                                                   |            | 23800   | 711            | 1          | 49           | 23.07                   | 23.5                 | 1                 | 0.637                  | 7            |
|                                                   |            |         |                | 1          | 0            | 23.04                   | 23.5                 | 1                 | No need test           | 8            |
|                                                   |            |         |                | 25         | 12           | 21.21                   | 23.5                 | 2                 | No need test           | 5            |
|                                                   |            |         |                | 50         | 0            | 21.23                   | 23.5                 | 2                 | No need test           | 6            |

#. Follow the test guidance of KDB941125 D05(LTE SAR test considerations) to perform the LTE SAR testing and channel exclusion except one(RB size = 1; RB offset =0) of the RB allocations for the LTE band 17 with 16QAM due to wrong channel selection. However, The FCC Lab has concluded upon review of the SAR results that re-testing of 16 QAM for Band 17 will not be required. This is a one time exemption from FCC lab.

#. No need SAR testing with 5MHz channel bandwidth due to the max conductive power of 5 MHz with different RB allocations compared to 10 MHz channel bandwidth are all within 0.5dB, and the SAR value of 10 MHz with different RB allocations are all below 1.45w/kg based on KDB 941225 D05 guidance.

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## LTE Band 17\_Top side

| LTE Band 17_Uplink frequency band : 704 to 716MHz |            |         |                |            |              |                         |                      |                   |                        |              |
|---------------------------------------------------|------------|---------|----------------|------------|--------------|-------------------------|----------------------|-------------------|------------------------|--------------|
| BW<br>(MHz)                                       | Modulation | Channel | Frequency(MHz) | RB<br>Size | RB<br>Offset | Conducted<br>power(dBm) | Target<br>Power(dBm) | MPR<br>Target(dB) | Max SAR<br>value(W/kg) | Test<br>case |
| 10                                                | QPSK       | 23780   | 709            | 1          | 49           | 23.34                   | 23.5                 | 0                 | 0.196                  | 3            |
|                                                   |            |         |                | 1          | 0            | 23.75                   | 23.5                 | 0                 | 0.153                  | 4            |
|                                                   |            |         |                | 25         | 12           | 22.26                   | 23.5                 | 1                 | No need test           | 1            |
|                                                   |            |         |                | 50         | 0            | 22.29                   | 23.5                 | 1                 | No need test           | 2            |
|                                                   |            | 23790   | 710            | 1          | 49           | 23.25                   | 23.5                 | 0                 | No need test           | 3            |
|                                                   |            |         |                | 1          | 0            | 23.3                    | 23.5                 | 0                 | No need test           | 4            |
|                                                   |            |         |                | 25         | 12           | 22.21                   | 23.5                 | 1                 | 0.134                  | 1            |
|                                                   |            |         |                | 50         | 0            | 22.19                   | 23.5                 | 1                 | No need test           | 2            |
|                                                   |            | 23800   | 711            | 1          | 49           | 23.31                   | 23.5                 | 0                 | No need test           | 3            |
|                                                   |            |         |                | 1          | 0            | 23.38                   | 23.5                 | 0                 | No need test           | 4            |
|                                                   |            |         |                | 25         | 12           | 22.19                   | 23.5                 | 1                 | No need test           | 1            |
|                                                   |            |         |                | 50         | 0            | 22.35                   | 23.5                 | 1                 | No need test           | 2            |
| 10                                                | 16 QAM     | 23780   | 709            | 1          | 49           | 22.78                   | 23.5                 | 1                 | No need test           | 7            |
|                                                   |            |         |                | 1          | 0            | 22.63                   | 23.5                 | 1                 | 0.171                  | 8            |
|                                                   |            |         |                | 25         | 12           | 21.11                   | 23.5                 | 2                 | No need test           | 5            |
|                                                   |            |         |                | 50         | 0            | 21.18                   | 23.5                 | 2                 | No need test           | 6            |
|                                                   |            | 23790   | 710            | 1          | 49           | 22.77                   | 23.5                 | 1                 | No need test           | 7            |
|                                                   |            |         |                | 1          | 0            | 22.68                   | 23.5                 | 1                 | No need test           | 8            |
|                                                   |            |         |                | 25         | 12           | 21.07                   | 23.5                 | 2                 | 0.147                  | 5            |
|                                                   |            |         |                | 50         | 0            | 21.14                   | 23.5                 | 2                 | No need test           | 6            |
|                                                   |            | 23800   | 711            | 1          | 49           | 23.07                   | 23.5                 | 1                 | 0.107                  | 7            |
|                                                   |            |         |                | 1          | 0            | 23.04                   | 23.5                 | 1                 | No need test           | 8            |
|                                                   |            |         |                | 25         | 12           | 21.21                   | 23.5                 | 2                 | No need test           | 5            |
|                                                   |            |         |                | 50         | 0            | 21.23                   | 23.5                 | 2                 | No need test           | 6            |

#. Follow the test guidance of KDB941125 D05(LTE SAR test considerations) to perform the LTE SAR testing and channel exclusion except one(RB size = 1; RB offset =0) of the RB allocations for the LTE band 17 with 16QAM due to wrong channel selection. However, The FCC Lab has concluded upon review of the SAR results that re-testing of 16 QAM for Band 17 will not be required. This is a one time exemption from FCC lab.

#. No need SAR testing with 5MHz channel bandwidth due to the max conductive power of 5 MHz with different RB allocations compared to 10 MHz channel bandwidth are all within 0.5dB, and the SAR value of 10 MHz with different RB allocations are all below 1.45w/kg based on KDB 941225 D05 guidance.

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## LTE Band 17\_Bottom side

| LTE Band 17_Uplink frequency band : 704 to 716MHz |            |         |                |            |              |                         |                      |                   |                        |              |
|---------------------------------------------------|------------|---------|----------------|------------|--------------|-------------------------|----------------------|-------------------|------------------------|--------------|
| BW<br>(MHz)                                       | Modulation | Channel | Frequency(MHz) | RB<br>Size | RB<br>Offset | Conducted<br>power(dBm) | Target<br>Power(dBm) | MPR<br>Target(dB) | Max SAR<br>value(W/kg) | Test<br>case |
| 10                                                | QPSK       | 23780   | 709            | 1          | 49           | 23.34                   | 23.5                 | 0                 | 0.529                  | 3            |
|                                                   |            |         |                | 1          | 0            | 23.75                   | 23.5                 | 0                 | 0.491                  | 4            |
|                                                   |            |         |                | 25         | 12           | 22.26                   | 23.5                 | 1                 | No need test           | 1            |
|                                                   |            |         |                | 50         | 0            | 22.29                   | 23.5                 | 1                 | No need test           | 2            |
|                                                   |            | 23790   | 710            | 1          | 49           | 23.25                   | 23.5                 | 0                 | No need test           | 3            |
|                                                   |            |         |                | 1          | 0            | 23.3                    | 23.5                 | 0                 | No need test           | 4            |
|                                                   |            |         |                | 25         | 12           | 22.21                   | 23.5                 | 1                 | 0.514                  | 1            |
|                                                   |            |         |                | 50         | 0            | 22.19                   | 23.5                 | 1                 | No need test           | 2            |
|                                                   |            | 23800   | 711            | 1          | 49           | 23.31                   | 23.5                 | 0                 | No need test           | 3            |
|                                                   |            |         |                | 1          | 0            | 23.38                   | 23.5                 | 0                 | No need test           | 4            |
|                                                   |            |         |                | 25         | 12           | 22.19                   | 23.5                 | 1                 | No need test           | 1            |
|                                                   |            |         |                | 50         | 0            | 22.35                   | 23.5                 | 1                 | No need test           | 2            |
| 10                                                | 16 QAM     | 23780   | 709            | 1          | 49           | 22.78                   | 23.5                 | 1                 | No need test           | 7            |
|                                                   |            |         |                | 1          | 0            | 22.63                   | 23.5                 | 1                 | 0.348                  | 8            |
|                                                   |            |         |                | 25         | 12           | 21.11                   | 23.5                 | 2                 | No need test           | 5            |
|                                                   |            |         |                | 50         | 0            | 21.18                   | 23.5                 | 2                 | No need test           | 6            |
|                                                   |            | 23790   | 710            | 1          | 49           | 22.77                   | 23.5                 | 1                 | No need test           | 7            |
|                                                   |            |         |                | 1          | 0            | 22.68                   | 23.5                 | 1                 | No need test           | 8            |
|                                                   |            |         |                | 25         | 12           | 21.07                   | 23.5                 | 2                 | 0.407                  | 5            |
|                                                   |            |         |                | 50         | 0            | 21.14                   | 23.5                 | 2                 | No need test           | 6            |
|                                                   |            | 23800   | 711            | 1          | 49           | 23.07                   | 23.5                 | 1                 | 0.491                  | 7            |
|                                                   |            |         |                | 1          | 0            | 23.04                   | 23.5                 | 1                 | No need test           | 8            |
|                                                   |            |         |                | 25         | 12           | 21.21                   | 23.5                 | 2                 | No need test           | 5            |
|                                                   |            |         |                | 50         | 0            | 21.23                   | 23.5                 | 2                 | No need test           | 6            |

#. Follow the test guidance of KDB941125 D05(LTE SAR test considerations) to perform the LTE SAR testing and channel exclusion except one(RB size = 1; RB offset =0) of the RB allocations for the LTE band 17 with 16QAM due to wrong channel selection. However, The FCC Lab has concluded upon review of the SAR results that re-testing of 16 QAM for Band 17 will not be required. This is a one time exemption from FCC lab.

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## LTE Band 17\_Right side

| LTE Band 17_Uplink frequency band : 704 to 716MHz |            |         |                |            |              |                         |                      |                   |                        |              |
|---------------------------------------------------|------------|---------|----------------|------------|--------------|-------------------------|----------------------|-------------------|------------------------|--------------|
| BW<br>(MHz)                                       | Modulation | Channel | Frequency(MHz) | RB<br>Size | RB<br>Offset | Conducted<br>power(dBm) | Target<br>Power(dBm) | MPR<br>Target(dB) | Max SAR<br>value(W/kg) | Test<br>case |
| 10                                                | QPSK       | 23780   | 709            | 1          | 49           | 23.34                   | 23.5                 | 0                 | 0.039                  | 3            |
|                                                   |            |         |                | 1          | 0            | 23.75                   | 23.5                 | 0                 | 0.062                  | 4            |
|                                                   |            |         |                | 25         | 12           | 22.26                   | 23.5                 | 1                 | No need test           | 1            |
|                                                   |            |         |                | 50         | 0            | 22.29                   | 23.5                 | 1                 | No need test           | 2            |
|                                                   |            | 23790   | 710            | 1          | 49           | 23.25                   | 23.5                 | 0                 | No need test           | 3            |
|                                                   |            |         |                | 1          | 0            | 23.3                    | 23.5                 | 0                 | No need test           | 4            |
|                                                   |            |         |                | 25         | 12           | 22.21                   | 23.5                 | 1                 | 0.061                  | 1            |
|                                                   |            |         |                | 50         | 0            | 22.19                   | 23.5                 | 1                 | No need test           | 2            |
|                                                   |            | 23800   | 711            | 1          | 49           | 23.31                   | 23.5                 | 0                 | No need test           | 3            |
|                                                   |            |         |                | 1          | 0            | 23.38                   | 23.5                 | 0                 | No need test           | 4            |
|                                                   |            |         |                | 25         | 12           | 22.19                   | 23.5                 | 1                 | No need test           | 1            |
|                                                   |            |         |                | 50         | 0            | 22.35                   | 23.5                 | 1                 | No need test           | 2            |
| 10                                                | 16 QAM     | 23780   | 709            | 1          | 49           | 22.78                   | 23.5                 | 1                 | No need test           | 7            |
|                                                   |            |         |                | 1          | 0            | 22.63                   | 23.5                 | 1                 | 0.021                  | 8            |
|                                                   |            |         |                | 25         | 12           | 21.11                   | 23.5                 | 2                 | No need test           | 5            |
|                                                   |            |         |                | 50         | 0            | 21.18                   | 23.5                 | 2                 | No need test           | 6            |
|                                                   |            | 23790   | 710            | 1          | 49           | 22.77                   | 23.5                 | 1                 | No need test           | 7            |
|                                                   |            |         |                | 1          | 0            | 22.68                   | 23.5                 | 1                 | No need test           | 8            |
|                                                   |            |         |                | 25         | 12           | 21.07                   | 23.5                 | 2                 | 0.054                  | 5            |
|                                                   |            |         |                | 50         | 0            | 21.14                   | 23.5                 | 2                 | No need test           | 6            |
|                                                   |            | 23800   | 711            | 1          | 49           | 23.07                   | 23.5                 | 1                 | 0.034                  | 7            |
|                                                   |            |         |                | 1          | 0            | 23.04                   | 23.5                 | 1                 | No need test           | 8            |
|                                                   |            |         |                | 25         | 12           | 21.21                   | 23.5                 | 2                 | No need test           | 5            |
|                                                   |            |         |                | 50         | 0            | 21.23                   | 23.5                 | 2                 | No need test           | 6            |

#. Follow the test guidance of KDB941125 D05(LTE SAR test considerations) to perform the LTE SAR testing and channel exclusion except one(RB size = 1; RB offset =0) of the RB allocations for the LTE band 17 with 16QAM due to wrong channel selection. However, The FCC Lab has concluded upon review of the SAR results that re-testing of 16 QAM for Band 17 will not be required. This is a one time exemption from FCC lab.

#. No need SAR testing with 5MHz channel bandwidth due to the max conductive power of 5 MHz with different RB allocations compared to 10 MHz channel bandwidth are all within 0.5dB, and the SAR value of 10 MHz with different RB allocations are all below 1.45w/kg based on KDB 941225 D05 guidance.

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## WLAN802.11 b

| Front side |         |      |                                  |                   |                 |                   |
|------------|---------|------|----------------------------------|-------------------|-----------------|-------------------|
| Frequency  | Channel | MHz  | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[ ° C] | Liquid Temp[ ° C] |
| 2450MHz    | 11      | 2462 | 16.2dBm                          | 0.118             | 22.1            | 21.7              |
| Back side  |         |      |                                  |                   |                 |                   |
| Frequency  | Channel | MHz  | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[ ° C] | Liquid Temp[ ° C] |
| 2450MHz    | 11      | 2462 | 16.2dBm                          | 0.10              | 22.1            | 21.7              |
| Top side   |         |      |                                  |                   |                 |                   |
| Frequency  | Channel | MHz  | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[ ° C] | Liquid Temp[ ° C] |
| 2450MHz    | 11      | 2462 | 16.2dBm                          | 0.151             | 22.1            | 21.7              |
| Right side |         |      |                                  |                   |                 |                   |
| Frequency  | Channel | MHz  | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[ ° C] | Liquid Temp[ ° C] |
| 2450MHz    | 11      | 2462 | 16.2dBm                          | 0.039             | 22.1            | 21.7              |

- #. According to **KDB248227**-SAR is not required for 802.11 g/HT20 channels when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding 802.11b channels.
- #. According to KDB447498 the 1-g SAR for the highest output channel is less than 0.8 W/kg, where the transmission band corresponding to all channels is  $\leq 100$  MHz, testing for the other channels is not required.

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### 3. Instruments List

| Manufacturer                    | Device                                              | Type                 | Serial number | Date of last calibration |
|---------------------------------|-----------------------------------------------------|----------------------|---------------|--------------------------|
| Schmid & Partner Engineering AG | Dosimetric E-Field Probe                            | ES3DV3               | 3172          | May.21.2010              |
|                                 |                                                     | ET3DV6               | 1760          | Sep.21.2010              |
| Schmid & Partner Engineering AG | 750/835/1750/1900/2450 MHz System Validation Dipole | D750V3               | 1015          | Aug.23.2010              |
|                                 |                                                     | D835V2               | 4d063         | May.21.2010              |
|                                 |                                                     | D1750V2              | 1008          | May.26.2010              |
|                                 |                                                     | D1900V2              | 5d027         | Apr.19.2011              |
|                                 |                                                     | D2450V2              | 727           | Apr.19.2011              |
| Schmid & Partner Engineering AG | Data acquisition Electronics                        | DAE4                 | 547           | Aug.18.2010              |
| Schmid & Partner Engineering AG | Software                                            | DASY 4 V4.7 Build 80 | N/A           | Calibration not required |
| Schmid & Partner Engineering AG | Phantom                                             | SAM                  | N/A           | Calibration not required |
| HP                              | Network Analyzer                                    | 8753D                | 3410A05547    | Mar.16.2011              |
| HP                              | Dielectric Probe Kit                                | 85070D               | US01440168    | Calibration not required |
| Agilent                         | Dual-directional coupler                            | 777D                 | 50114         | Aug.25.2010              |
|                                 |                                                     | 778D                 | 50313         | Aug.25.2010              |
| Agilent                         | RF Signal Generator                                 | 8648D                | 3847M00432    | Jun.04.2010              |
| Agilent                         | Power Sensor                                        | U2001B               | MY48100169    | Apr.28.2011              |
|                                 |                                                     |                      |               |                          |
| R&S                             | Radio Communication Test                            | CMU200               | 109326        | Apr.01.2011              |

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## 4. Measurements

Date: 2011/4/27

### Front side\_GPRS850\_CH128

Communication System: GSM 850; Frequency: 824.2 MHz; Duty Cycle: 1:4

Medium: Muscle 900 MHz Medium parameters used (interpolated):  $f = 824.2$  MHz;  $\sigma = 0.987$  mho/m;  $\epsilon_r = 53.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.84, 5.84, 5.84); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.927 mW/g

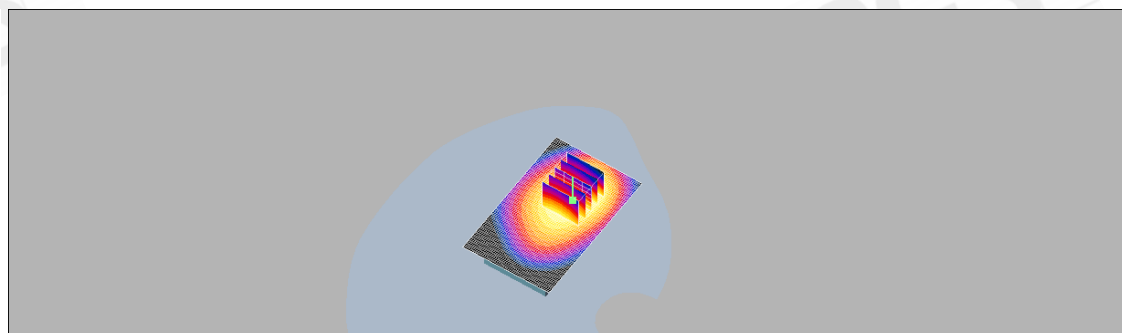
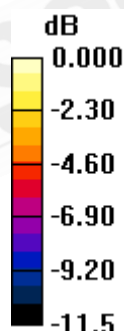
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.7 V/m; Power Drift = -0.025 dB

Peak SAR (extrapolated) = 1.20 W/kg

**SAR(1 g) = 0.872 mW/g; SAR(10 g) = 0.606 mW/g**

Maximum value of SAR (measured) = 0.920 mW/g



0 dB = 0.920mW/g

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## Front side\_GPRS850\_CH190

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:4

Medium: Muscle 900 MHz Medium parameters used:  $f = 837 \text{ MHz}$ ;  $\sigma = 1 \text{ mho/m}$ ;  $\epsilon_r = 53.3$ ;  
 $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.84, 5.84, 5.84); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.02 mW/g

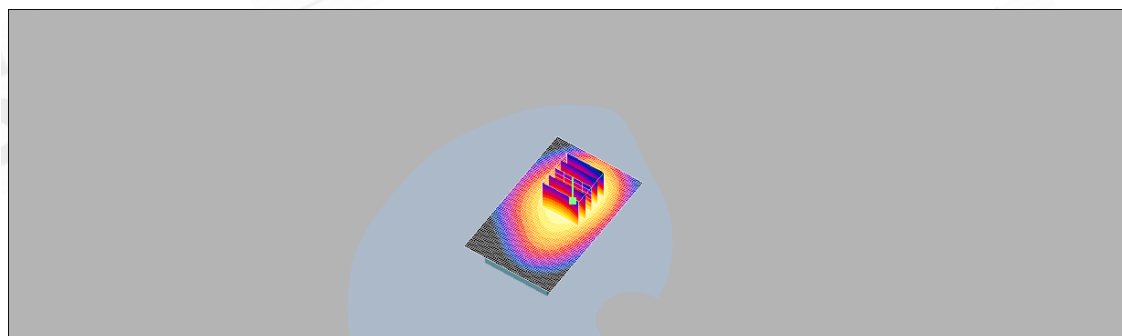
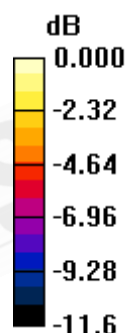
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.5 V/m; Power Drift = -0.131 dB

Peak SAR (extrapolated) = 1.34 W/kg

**SAR(1 g) = 0.966 mW/g; SAR(10 g) = 0.676 mW/g**

Maximum value of SAR (measured) = 1.02 mW/g



0 dB = 1.02mW/g

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Date: 2011/4/27

## Front side\_GPRS850\_CH251

Communication System: GSM 850; Frequency: 848.8 MHz; Duty Cycle: 1:4  
Medium: Muscle 900 MHz Medium parameters used:  $f = 849 \text{ MHz}$ ;  $\sigma = 1.01 \text{ mho/m}$ ;  $\epsilon_r = 53.1$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.84, 5.84, 5.84); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.922 mW/g

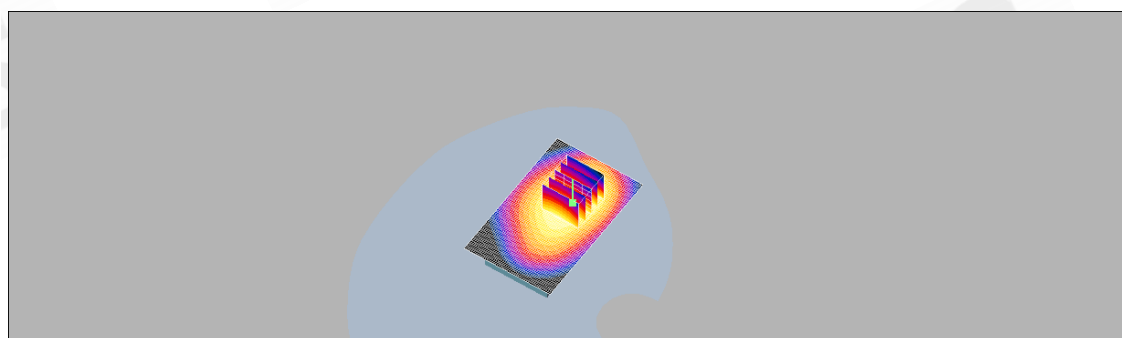
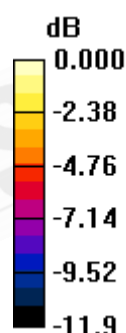
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 12.7 V/m; Power Drift = -0.013 dB

Peak SAR (extrapolated) = 1.21 W/kg

**SAR(1 g) = 0.872 mW/g; SAR(10 g) = 0.610 mW/g**

Maximum value of SAR (measured) = 0.918 mW/g



0 dB = 0.918mW/g

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## Back Side\_GPRS850\_CH128

Communication System: GSM 850; Frequency: 824.2 MHz; Duty Cycle: 1:4  
Medium: Muscle 900 MHz Medium parameters used (interpolated):  $f = 824.2 \text{ MHz}$ ;  $\sigma = 0.987 \text{ mho/m}$ ;  $\epsilon_r = 53.4$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.84, 5.84, 5.84); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.736 mW/g

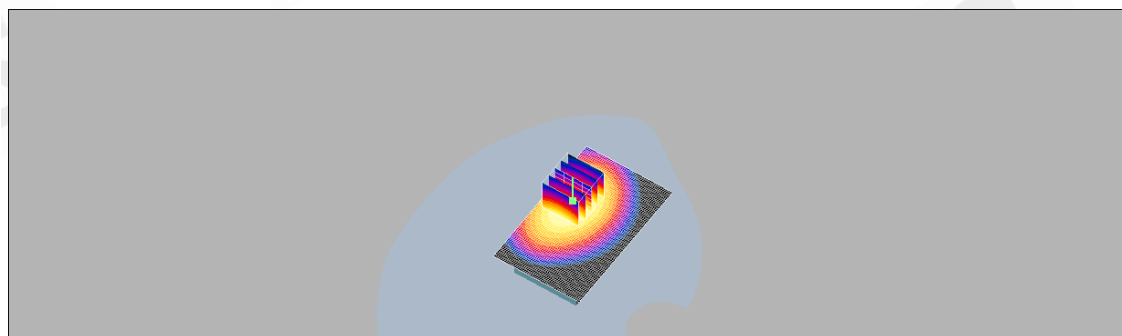
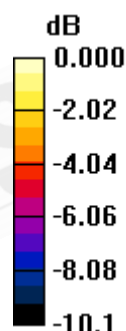
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 10.4 V/m; Power Drift = 0.026 dB

Peak SAR (extrapolated) = 0.906 W/kg

**SAR(1 g) = 0.687 mW/g; SAR(10 g) = 0.490 mW/g**

Maximum value of SAR (measured) = 0.724 mW/g



0 dB = 0.724mW/g

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Date: 2011/4/27

## Back Side\_GPRS850\_CH190

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:4  
Medium: Muscle 900 MHz Medium parameters used:  $f = 837 \text{ MHz}$ ;  $\sigma = 1 \text{ mho/m}$ ;  $\epsilon_r = 53.3$ ;  
 $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.84, 5.84, 5.84); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.863 mW/g

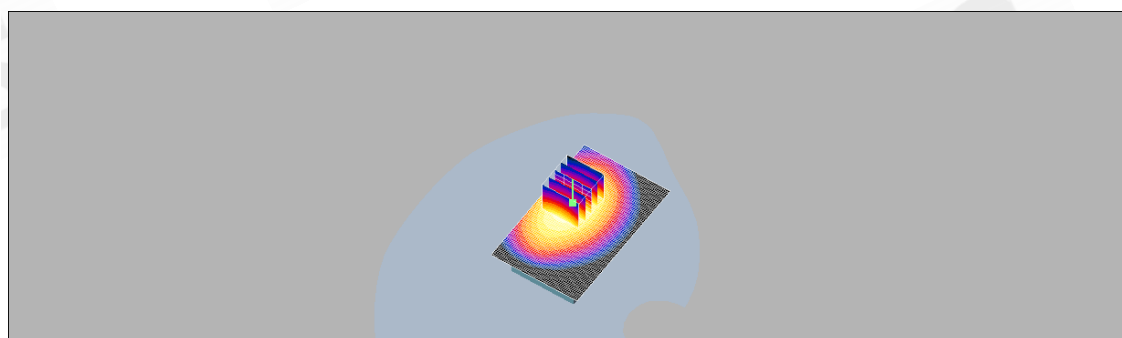
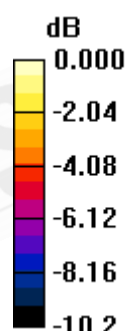
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 13.0 V/m; Power Drift = 0.028 dB

Peak SAR (extrapolated) = 1.06 W/kg

**SAR(1 g) = 0.802 mW/g; SAR(10 g) = 0.573 mW/g**

Maximum value of SAR (measured) = 0.848 mW/g



0 dB = 0.848mW/g

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## Back Side\_GPRS850\_CH251

Communication System: GSM 850; Frequency: 848.8 MHz; Duty Cycle: 1:4

Medium: Muscle 900 MHz Medium parameters used:  $f = 849 \text{ MHz}$ ;  $\sigma = 1.01 \text{ mho/m}$ ;  $\epsilon_r = 53.1$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.84, 5.84, 5.84); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) =  $0.729 \text{ mW/g}$

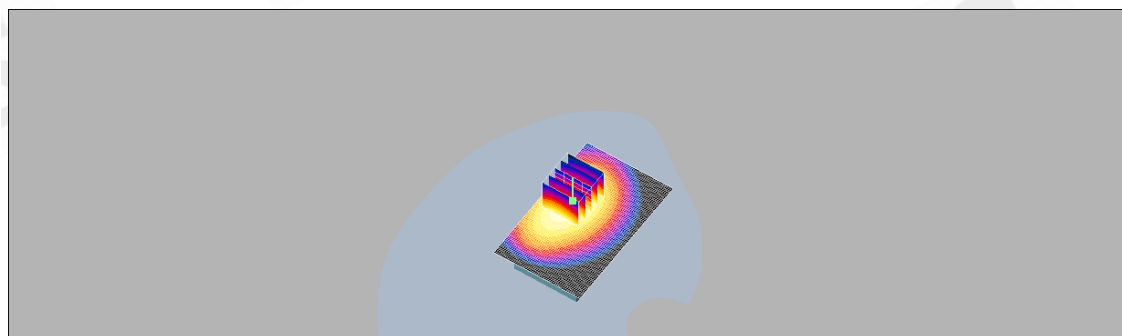
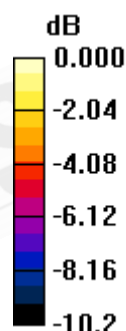
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $12.3 \text{ V/m}$ ; Power Drift =  $0.035 \text{ dB}$

Peak SAR (extrapolated) =  $0.887 \text{ W/kg}$

**SAR(1 g) =  $0.679 \text{ mW/g}$ ; SAR(10 g) =  $0.486 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.719 \text{ mW/g}$



0 dB =  $0.719 \text{ mW/g}$

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## Top side\_GPRS850\_CH190

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:4  
Medium: Muscle 900 MHz Medium parameters used:  $f = 837 \text{ MHz}$ ;  $\sigma = 1 \text{ mho/m}$ ;  $\epsilon_r = 53.3$ ;  
 $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.84, 5.84, 5.84); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.413 mW/g

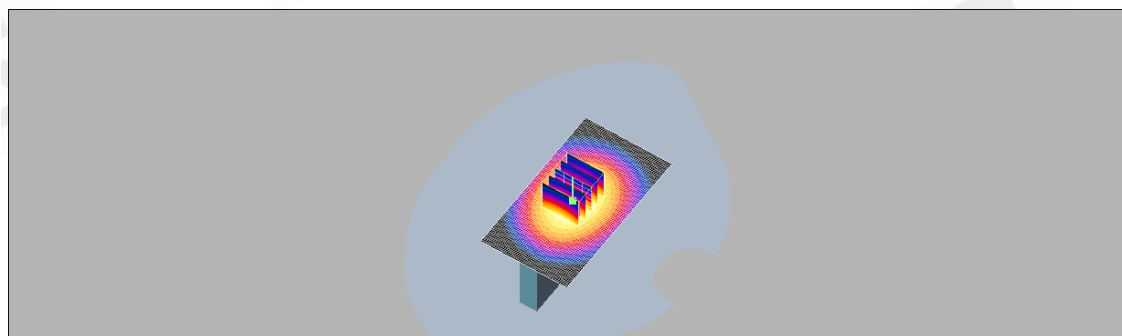
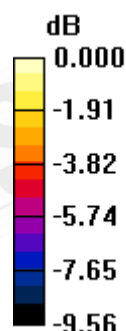
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 19.9 V/m; Power Drift = -0.066 dB

Peak SAR (extrapolated) = 0.523 W/kg

**SAR(1 g) = 0.380 mW/g; SAR(10 g) = 0.266 mW/g**

Maximum value of SAR (measured) = 0.405 mW/g



0 dB = 0.405mW/g

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## Bottom side\_GPRS850\_CH190

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:4  
Medium: Muscle 900 MHz Medium parameters used:  $f = 837 \text{ MHz}$ ;  $\sigma = 1 \text{ mho/m}$ ;  $\epsilon_r = 53.3$ ;  
 $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.84, 5.84, 5.84); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.759 mW/g

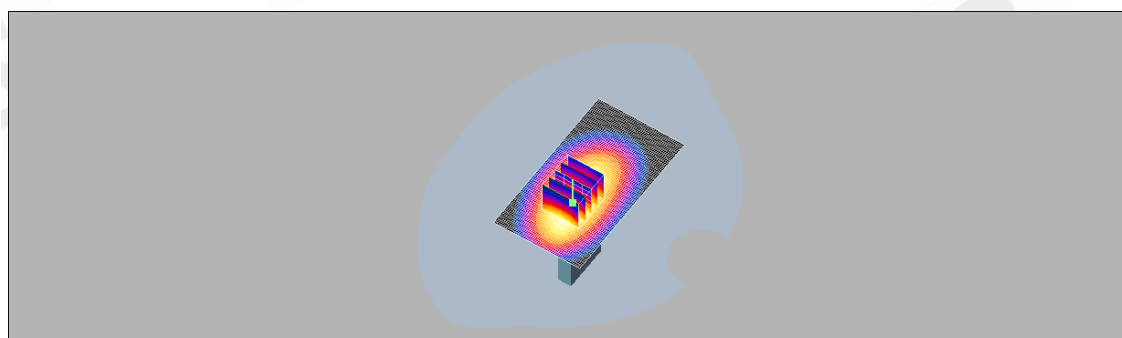
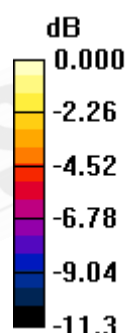
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 26.6 V/m; Power Drift = -0.179 dB

Peak SAR (extrapolated) = 0.993 W/kg

**SAR(1 g) = 0.681 mW/g; SAR(10 g) = 0.454 mW/g**

Maximum value of SAR (measured) = 0.735 mW/g



0 dB = 0.735mW/g

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## Right side\_GPRS850\_CH190

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:4

Medium: Muscle 900 MHz Medium parameters used:  $f = 837 \text{ MHz}$ ;  $\sigma = 1 \text{ mho/m}$ ;  $\epsilon_r = 53.3$ ;  
 $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.84, 5.84, 5.84); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x71x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.074 mW/g

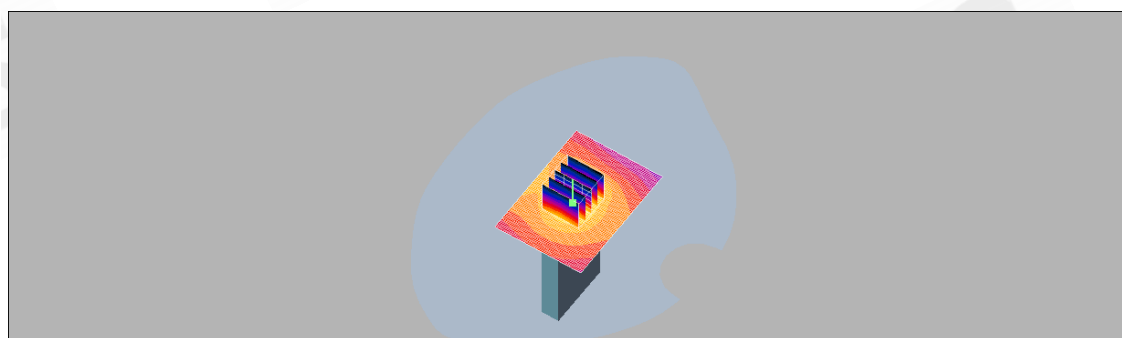
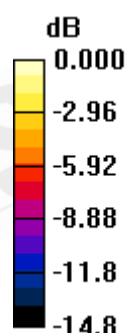
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 9.04 V/m; Power Drift = -0.148 dB

Peak SAR (extrapolated) = 0.157 W/kg

**SAR(1 g) = 0.074 mW/g; SAR(10 g) = 0.038 mW/g**

Maximum value of SAR (measured) = 0.084 mW/g



0 dB = 0.084mW/g

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Date: 2011/4/27

**Front side\_GPRS850\_CH128**

Communication System: GSM 850; Frequency: 824.2 MHz; Duty Cycle: 1:8.3  
Medium: Muscle 900 MHz Medium parameters used (interpolated):  $f = 824.2 \text{ MHz}$ ;  $\sigma = 0.987 \text{ mho/m}$ ;  $\epsilon_r = 53.4$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3172; ConvF(5.84, 5.84, 5.84); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 1.12 mW/g

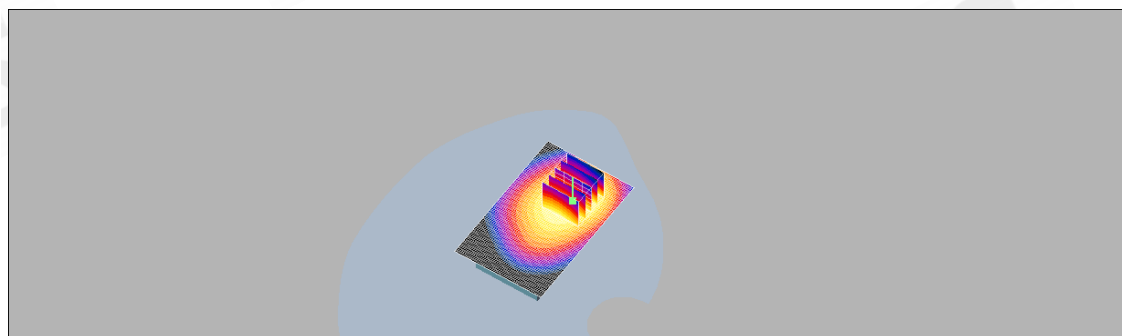
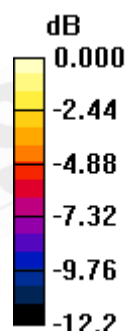
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 10.3 V/m; Power Drift = -0.007 dB

Peak SAR (extrapolated) = 1.49 W/kg

**SAR(1 g) = 1.06 mW/g; SAR(10 g) = 0.734 mW/g**

Maximum value of SAR (measured) = 1.14 mW/g



0 dB = 1.14mW/g

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## Front side\_GPRS850\_CH190

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

Medium: Muscle 900 MHz Medium parameters used:  $f = 837 \text{ MHz}$ ;  $\sigma = 1 \text{ mho/m}$ ;  $\epsilon_r = 53.3$ ;  
 $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.84, 5.84, 5.84); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 1.12 mW/g

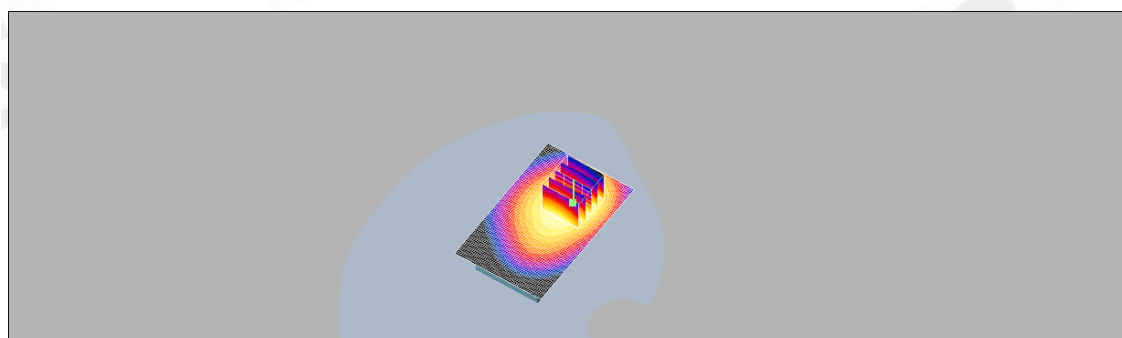
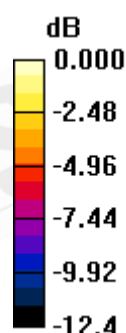
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 11.1 V/m; Power Drift = 0.039 dB

Peak SAR (extrapolated) = 1.48 W/kg

**SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.742 mW/g**

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



0 dB = 1.13mW/g

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## Front side\_GPRS850\_CH251

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

Medium: Muscle 900 MHz Medium parameters used:  $f = 849 \text{ MHz}$ ;  $\sigma = 1.01 \text{ mho/m}$ ;  $\epsilon_r = 53.1$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.84, 5.84, 5.84); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) =  $1.01 \text{ mW/g}$

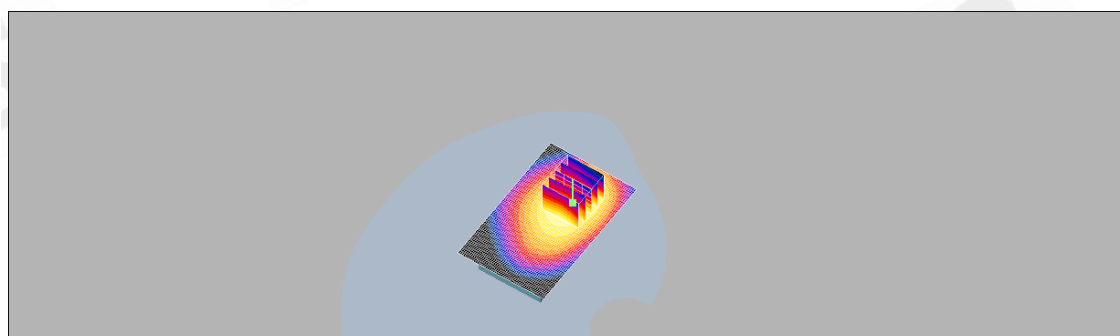
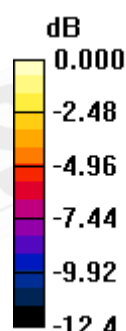
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $11.4 \text{ V/m}$ ; Power Drift =  $0.152 \text{ dB}$

Peak SAR (extrapolated) =  $1.41 \text{ W/kg}$

**SAR(1 g) =  $1.04 \text{ mW/g}$ ; SAR(10 g) =  $0.710 \text{ mW/g}$**

Maximum value of SAR (measured) =  $1.13 \text{ mW/g}$



0 dB =  $1.13 \text{ mW/g}$

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**Back Side\_GPRS850\_CH190**

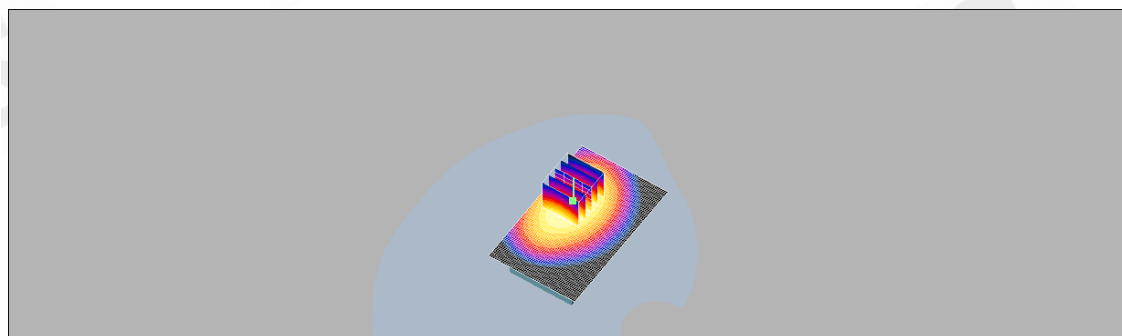
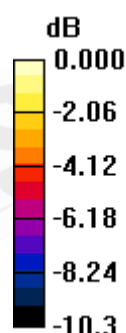
Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: Muscle 900 MHz Medium parameters used:  $f = 837 \text{ MHz}$ ;  $\sigma = 1 \text{ mho/m}$ ;  $\epsilon_r = 53.3$ ;  
 $\rho = 1000 \text{ kg/m}^3$ 

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.84, 5.84, 5.84); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$ Maximum value of SAR (interpolated) =  $0.919 \text{ mW/g}$ **body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$ Reference Value =  $11.7 \text{ V/m}$ ; Power Drift =  $0.043 \text{ dB}$ Peak SAR (extrapolated) =  $1.14 \text{ W/kg}$ **SAR(1 g) =  $0.797 \text{ mW/g}$ ; SAR(10 g) =  $0.611 \text{ mW/g}$** Maximum value of SAR (measured) =  $0.916 \text{ mW/g}$ 0 dB =  $0.916 \text{ mW/g}$ 

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## Top side\_GPRS850\_CH190

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

Medium: Muscle 900 MHz Medium parameters used:  $f = 837 \text{ MHz}$ ;  $\sigma = 1 \text{ mho/m}$ ;  $\epsilon_r = 53.3$ ;  
 $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.84, 5.84, 5.84); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.409 mW/g

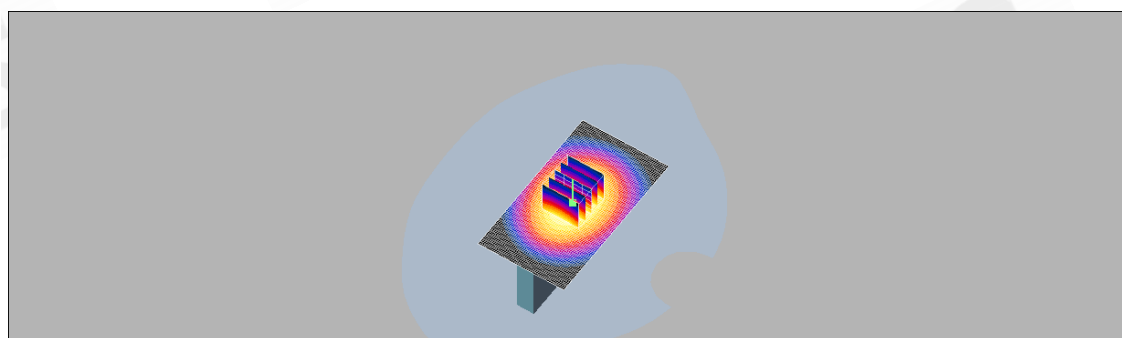
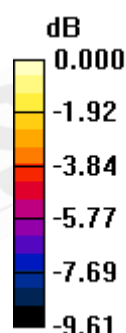
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 19.9 V/m; Power Drift = -0.032 dB

Peak SAR (extrapolated) = 0.521 W/kg

**SAR(1 g) = 0.382 mW/g; SAR(10 g) = 0.268 mW/g**

Maximum value of SAR (measured) = 0.408 mW/g



0 dB = 0.408mW/g

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## Bottom side\_GPRS850\_CH190

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

Medium: Muscle 900 MHz Medium parameters used:  $f = 837 \text{ MHz}$ ;  $\sigma = 1 \text{ mho/m}$ ;  $\epsilon_r = 53.3$ ;  
 $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.84, 5.84, 5.84); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.755 mW/g

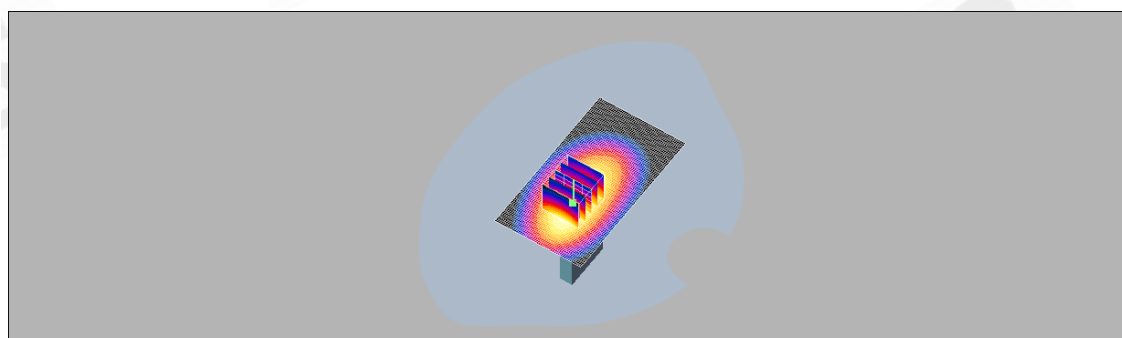
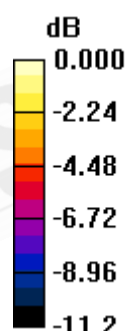
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 26.3 V/m; Power Drift = 0.001 dB

Peak SAR (extrapolated) = 1.02 W/kg

**SAR(1 g) = 0.693 mW/g; SAR(10 g) = 0.462 mW/g**

Maximum value of SAR (measured) = 0.743 mW/g



0 dB = 0.743mW/g

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## Right side\_GPRS850\_190

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

Medium: Muscle 900 MHz Medium parameters used:  $f = 837 \text{ MHz}$ ;  $\sigma = 1 \text{ mho/m}$ ;  $\epsilon_r = 53.3$ ;  
 $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.84, 5.84, 5.84); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x71x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.129 mW/g

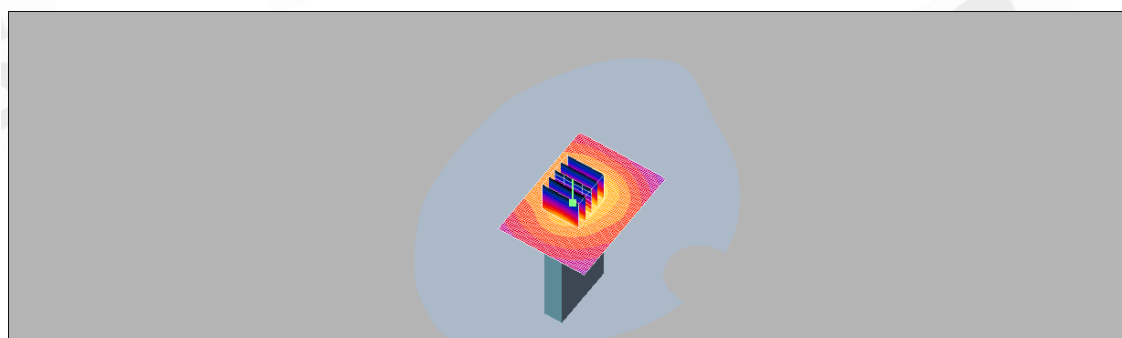
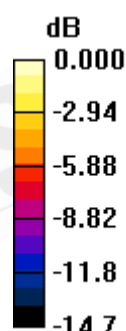
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 10.4 V/m; Power Drift = 0.101 dB

Peak SAR (extrapolated) = 0.260 W/kg

**SAR(1 g) = 0.121 mW/g; SAR(10 g) = 0.062 mW/g**

Maximum value of SAR (measured) = 0.138 mW/g



0 dB = 0.138mW/g

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Date: 2011/4/27

## Front side\_GPRS1900\_CH512

Communication System: GSM1900; Frequency: 1850.2 MHz; Duty Cycle: 1:4  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1850.2 \text{ MHz}$ ;  $\sigma = 1.56 \text{ mho/m}$ ;  $\epsilon_r = 52.7$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.45, 4.45, 4.45); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.800 \text{ mW/g}$

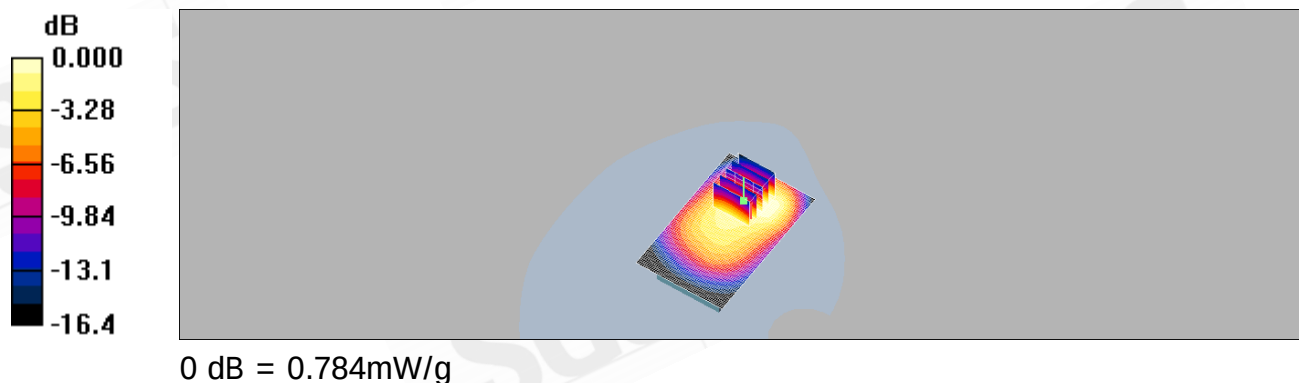
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $5.88 \text{ V/m}$ ; Power Drift =  $0.033 \text{ dB}$

Peak SAR (extrapolated) =  $1.13 \text{ W/kg}$

**SAR(1 g) =  $0.726 \text{ mW/g}$ ; SAR(10 g) =  $0.443 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.784 \text{ mW/g}$



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## Back Side\_GPRS1900\_CH512

Communication System: GSM1900; Frequency: 1850.2 MHz; Duty Cycle: 1:4  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1850.2 \text{ MHz}$ ;  $\sigma = 1.56 \text{ mho/m}$ ;  $\epsilon_r = 52.7$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.45, 4.45, 4.45); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.825 \text{ mW/g}$

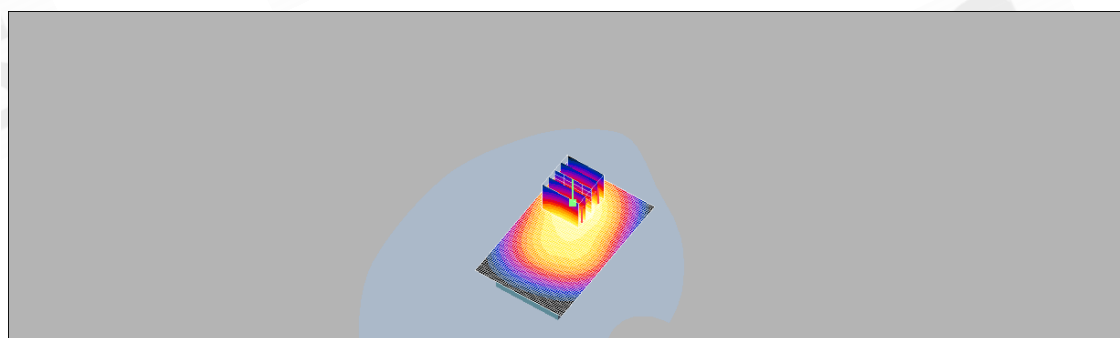
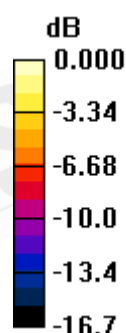
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $6.12 \text{ V/m}$ ; Power Drift =  $0.109 \text{ dB}$

Peak SAR (extrapolated) =  $1.21 \text{ W/kg}$

**SAR(1 g) =  $0.772 \text{ mW/g}$ ; SAR(10 g) =  $0.468 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.825 \text{ mW/g}$



0 dB =  $0.825 \text{ mW/g}$

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## Top side\_GPRS1900\_CH512

Communication System: GSM1900; Frequency: 1850.2 MHz; Duty Cycle: 1:4  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1850.2 \text{ MHz}$ ;  $\sigma = 1.56 \text{ mho/m}$ ;  $\epsilon_r = 52.7$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.45, 4.45, 4.45); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.262 mW/g

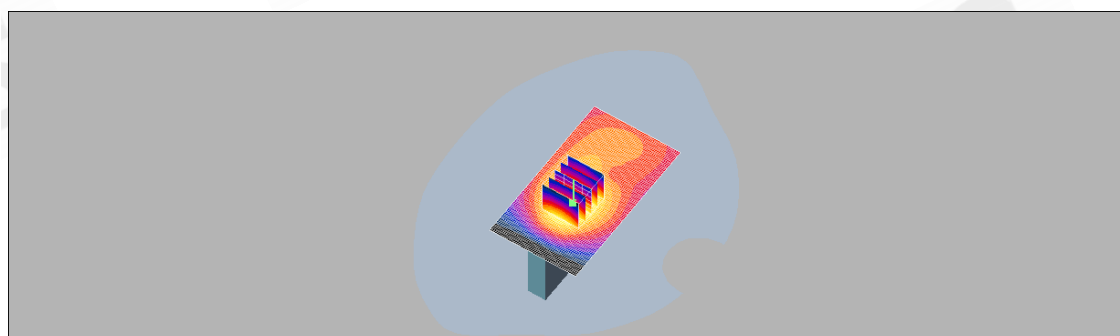
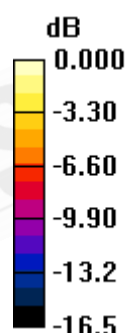
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 12.5 V/m; Power Drift = 0.032 dB

Peak SAR (extrapolated) = 0.361 W/kg

**SAR(1 g) = 0.229 mW/g; SAR(10 g) = 0.136 mW/g**

Maximum value of SAR (measured) = 0.246 mW/g



0 dB = 0.246mW/g

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## Bottom side\_GPRS1900\_CH512

Communication System: GSM1900; Frequency: 1850.2 MHz; Duty Cycle: 1:4  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1850.2 \text{ MHz}$ ;  $\sigma = 1.56 \text{ mho/m}$ ;  $\epsilon_r = 52.7$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

**body/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.755 mW/g

**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 16.8 V/m; Power Drift = 0.167 dB

Peak SAR (extrapolated) = 1.06 W/kg

**SAR(1 g) = 0.614 mW/g; SAR(10 g) = 0.337 mW/g**

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

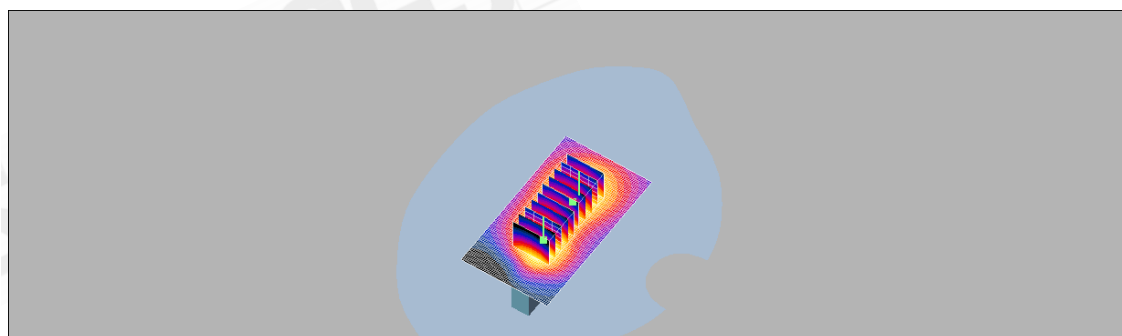
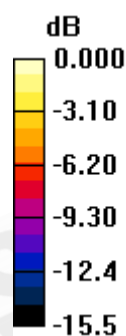
**body/Zoom Scan (7x7x7)/Cube 1:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 16.8 V/m; Power Drift = 0.167 dB

Peak SAR (extrapolated) = 0.725 W/kg

**SAR(1 g) = 0.463 mW/g; SAR(10 g) = 0.277 mW/g**

Maximum value of SAR (measured) = 0.490 mW/g



0 dB = 0.490mW/g

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## Right side\_GPRS1900\_CH512

Communication System: GSM1900; Frequency: 1850.2 MHz; Duty Cycle: 1:4

Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1850.2 \text{ MHz}$ ;  $\sigma = 1.56 \text{ mho/m}$ ;  $\epsilon_r = 52.7$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.45, 4.45, 4.45); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x71x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) =  $0.580 \text{ mW/g}$

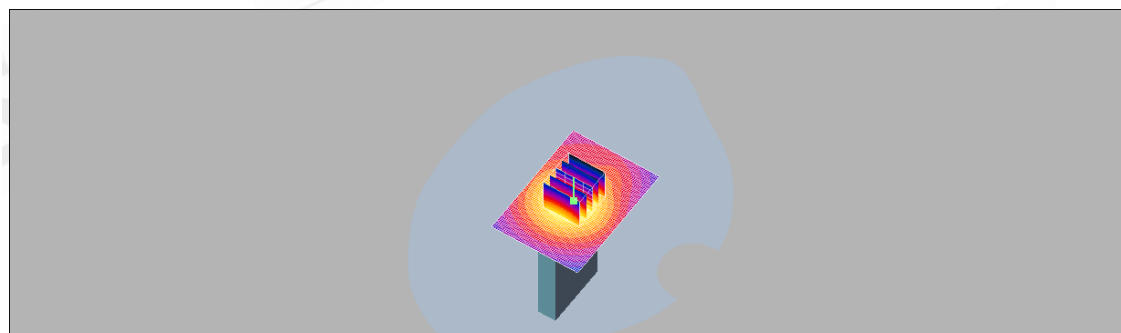
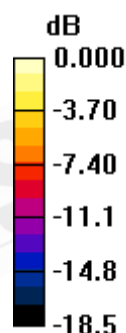
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $19.2 \text{ V/m}$ ; Power Drift =  $-0.006 \text{ dB}$

Peak SAR (extrapolated) =  $0.905 \text{ W/kg}$

**SAR(1 g) =  $0.509 \text{ mW/g}$ ; SAR(10 g) =  $0.274 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.566 \text{ mW/g}$



0 dB =  $0.566 \text{ mW/g}$

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**Back Side\_GPRS1900\_CH661**

Communication System: GSM1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium: M1800 & 1900 Medium parameters used:  $f = 1880 \text{ MHz}$ ;  $\sigma = 1.59 \text{ mho/m}$ ;  $\epsilon_r = 52.6$ ;  
 $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) =  $0.712 \text{ mW/g}$

**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value =  $5.17 \text{ V/m}$ ; Power Drift =  $-0.059 \text{ dB}$

Peak SAR (extrapolated) =  $1.02 \text{ W/kg}$

**SAR(1 g) =  $0.661 \text{ mW/g}$ ; SAR(10 g) =  $0.410 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.711 \text{ mW/g}$

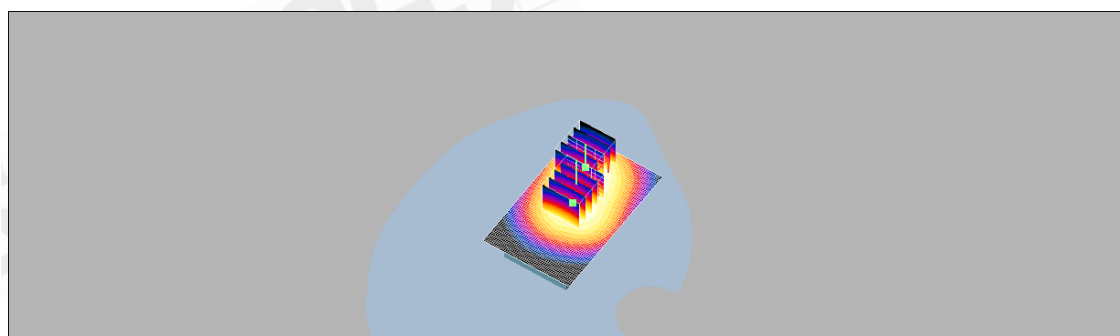
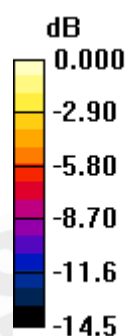
**body/Zoom Scan (7x7x7)/Cube 1:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value =  $5.17 \text{ V/m}$ ; Power Drift =  $-0.059 \text{ dB}$

Peak SAR (extrapolated) =  $0.849 \text{ W/kg}$

**SAR(1 g) =  $0.550 \text{ mW/g}$ ; SAR(10 g) =  $0.356 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.605 \text{ mW/g}$



0 dB =  $0.605 \text{ mW/g}$

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Date: 2011/4/27

## Front side\_WCDMA B2\_CH9262

Communication System: WCDMA BAND2; Frequency: 1852.4 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1852.4 \text{ MHz}$ ;  $\sigma = 1.57 \text{ mho/m}$ ;  $\epsilon_r = 52.7$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.45, 4.45, 4.45); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.760 \text{ mW/g}$

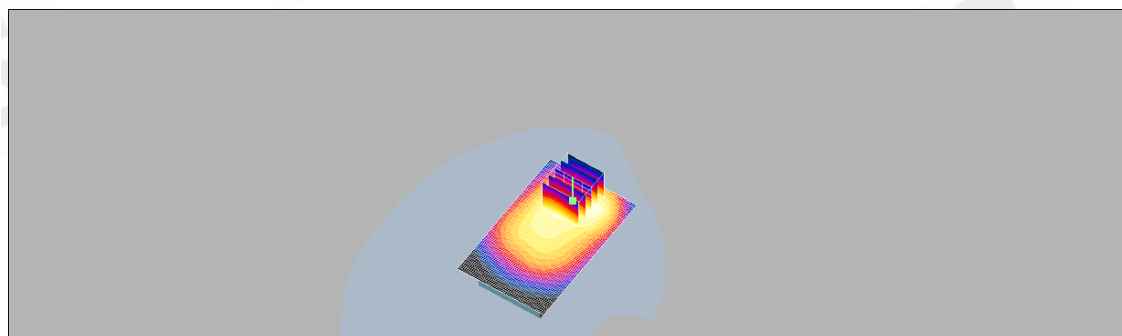
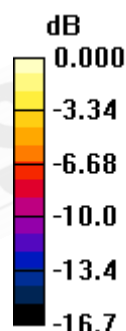
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $5.17 \text{ V/m}$ ; Power Drift =  $0.065 \text{ dB}$

Peak SAR (extrapolated) =  $1.07 \text{ W/kg}$

**SAR(1 g) =  $0.694 \text{ mW/g}$ ; SAR(10 g) =  $0.429 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.751 \text{ mW/g}$



0 dB =  $0.751 \text{ mW/g}$

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## Back Side\_WCDMA B2\_CH9262

Communication System: WCDMA BAND2; Frequency: 1852.4 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1852.4 \text{ MHz}$ ;  $\sigma = 1.57 \text{ mho/m}$ ;  $\epsilon_r = 52.7$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.45, 4.45, 4.45); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.836 \text{ mW/g}$

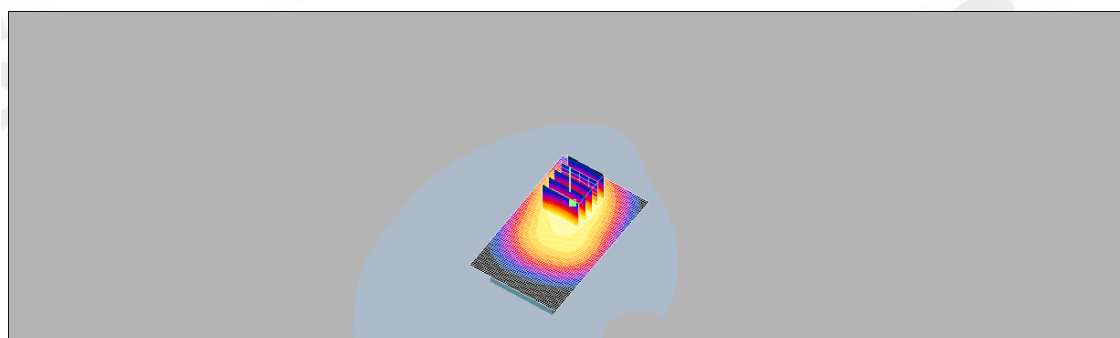
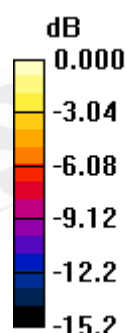
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $5.57 \text{ V/m}$ ; Power Drift =  $0.086 \text{ dB}$

Peak SAR (extrapolated) =  $1.21 \text{ W/kg}$

**SAR(1 g) =  $0.776 \text{ mW/g}$ ; SAR(10 g) =  $0.474 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.823 \text{ mW/g}$



0 dB =  $0.823 \text{ mW/g}$

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## Top side\_WCDMA B2\_CH9262

Communication System: WCDMA BAND2; Frequency: 1852.4 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1852.4 \text{ MHz}$ ;  $\sigma = 1.57 \text{ mho/m}$ ;  $\epsilon_r = 52.7$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.45, 4.45, 4.45); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.232 \text{ mW/g}$

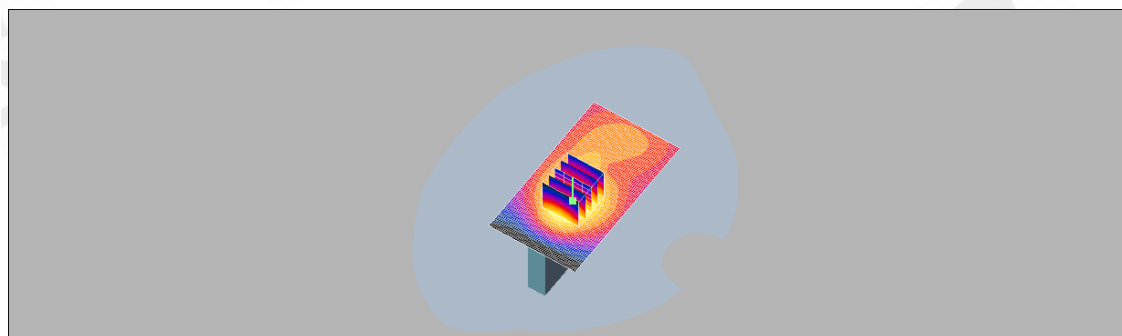
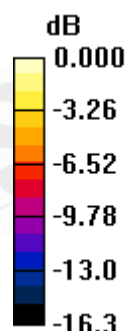
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $11.7 \text{ V/m}$ ; Power Drift =  $0.004 \text{ dB}$

Peak SAR (extrapolated) =  $0.319 \text{ W/kg}$

**SAR(1 g) =  $0.204 \text{ mW/g}$ ; SAR(10 g) =  $0.120 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.223 \text{ mW/g}$



0 dB =  $0.223\text{mW/g}$

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Date: 2011/4/27

## Bottom sid\_WCDMA B2\_CH9262

Communication System: WCDMA BAND2; Frequency: 1852.4 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1852.4 \text{ MHz}$ ;  $\sigma = 1.57 \text{ mho/m}$ ;  $\epsilon_r = 52.7$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

**body/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) =  $0.647 \text{ mW/g}$

**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $16.8 \text{ V/m}$ ; Power Drift =  $-0.006 \text{ dB}$

Peak SAR (extrapolated) =  $0.869 \text{ W/kg}$

**SAR(1 g) =  $0.505 \text{ mW/g}$ ; SAR(10 g) =  $0.280 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.562 \text{ mW/g}$

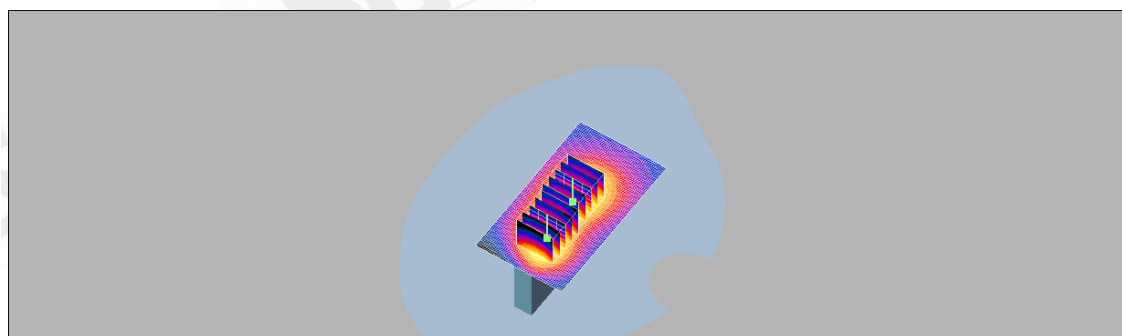
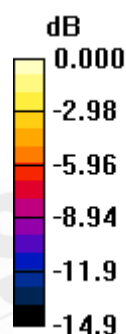
**body/Zoom Scan (7x7x7)/Cube 1:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $16.8 \text{ V/m}$ ; Power Drift =  $-0.006 \text{ dB}$

Peak SAR (extrapolated) =  $0.673 \text{ W/kg}$

**SAR(1 g) =  $0.428 \text{ mW/g}$ ; SAR(10 g) =  $0.256 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.466 \text{ mW/g}$



0 dB =  $0.466 \text{ mW/g}$

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## Right side\_WCDMA B2\_CH9262

Communication System: WCDMA BAND2; Frequency: 1852.4 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1852.4 \text{ MHz}$ ;  $\sigma = 1.57 \text{ mho/m}$ ;  $\epsilon_r = 52.7$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.45, 4.45, 4.45); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x71x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.627 \text{ mW/g}$

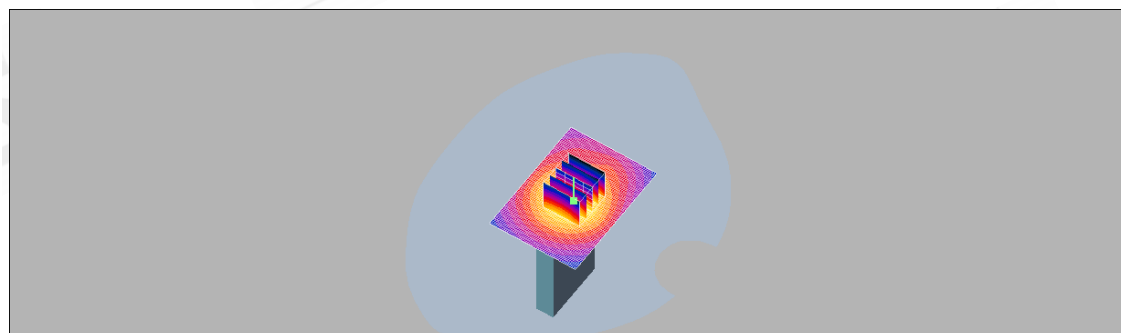
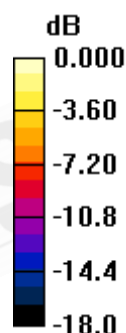
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $20.4 \text{ V/m}$ ; Power Drift =  $-0.087 \text{ dB}$

Peak SAR (extrapolated) =  $0.990 \text{ W/kg}$

**SAR(1 g) =  $0.550 \text{ mW/g}$ ; SAR(10 g) =  $0.291 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.611 \text{ mW/g}$



0 dB =  $0.611 \text{ mW/g}$

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Date: 2011/4/27

## Front side\_WCDMA B5\_CH4132

Communication System: WCDMA BAND5; Frequency: 826.4 MHz; Duty Cycle: 1:1  
Medium: Muscle 900 MHz Medium parameters used (interpolated):  $f = 826.4 \text{ MHz}$ ;  $\sigma = 0.99 \text{ mho/m}$ ;  $\epsilon_r = 53.4$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.84, 5.84, 5.84); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 1.09 mW/g

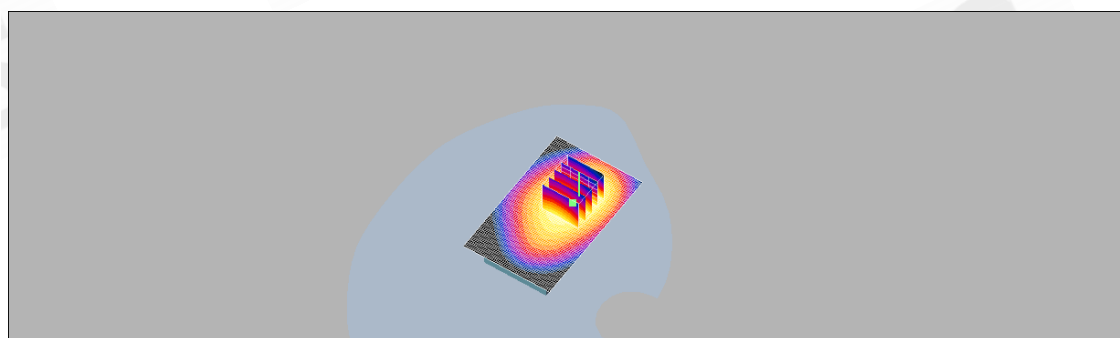
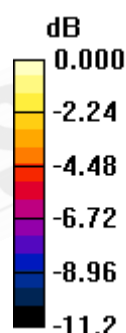
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 14.0 V/m; Power Drift = 0.071 dB

Peak SAR (extrapolated) = 1.44 W/kg

**SAR(1 g) = 1.04 mW/g; SAR(10 g) = 0.734 mW/g**

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



0 dB = 1.10mW/g

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Date: 2011/4/27

## Front side\_WCDMA B5\_CH4183

Communication System: WCDMA BAND5; Frequency: 836.6 MHz; Duty Cycle: 1:1  
Medium: Muscle 900 MHz Medium parameters used:  $f = 837 \text{ MHz}$ ;  $\sigma = 1 \text{ mho/m}$ ;  $\epsilon_r = 53.3$ ;  
 $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.84, 5.84, 5.84); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.963 mW/g

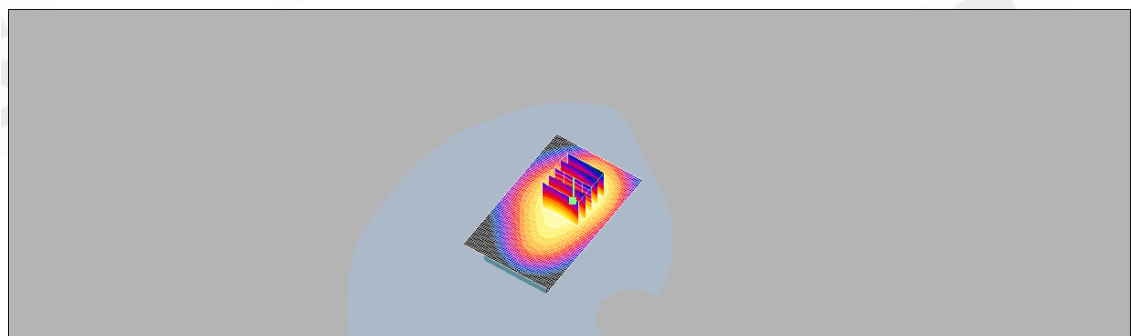
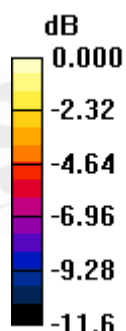
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 14.4 V/m; Power Drift = 0.036 dB

Peak SAR (extrapolated) = 1.23 W/kg

**SAR(1 g) = 0.896 mW/g; SAR(10 g) = 0.633 mW/g**

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



0 dB = 0.942mW/g

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## Front side\_WCDMA B5\_CH4233

Communication System: WCDMA BAND5; Frequency: 846.6 MHz; Duty Cycle: 1:1  
Medium: Muscle 900 MHz Medium parameters used:  $f = 847 \text{ MHz}$ ;  $\sigma = 1.01 \text{ mho/m}$ ;  $\epsilon_r = 53.2$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.84, 5.84, 5.84); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.796 mW/g

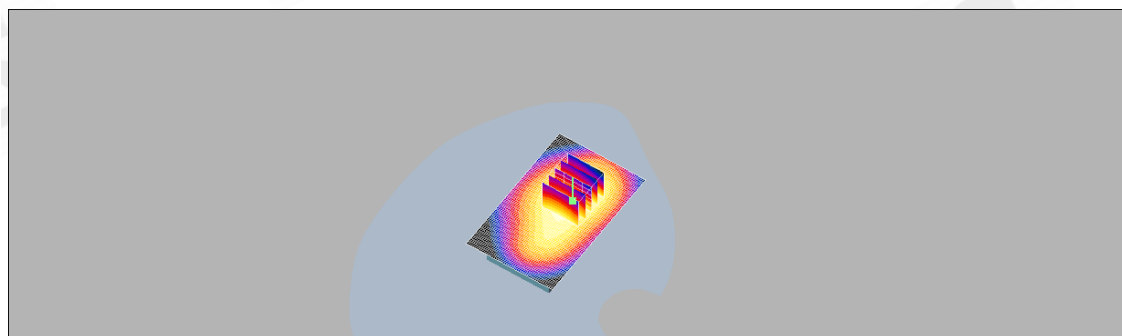
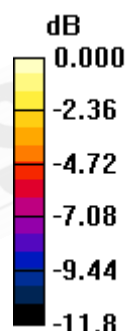
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 15.5 V/m; Power Drift = 0.076 dB

Peak SAR (extrapolated) = 1.000 W/kg

**SAR(1 g) = 0.743 mW/g; SAR(10 g) = 0.527 mW/g**

Maximum value of SAR (measured) = 0.777 mW/g



0 dB = 0.777mW/g

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Date: 2011/4/27

## Back Side\_WCDMA B5\_CH4183

Communication System: WCDMA BAND5; Frequency: 836.6 MHz; Duty Cycle: 1:1  
Medium: Muscle 900 MHz Medium parameters used:  $f = 837 \text{ MHz}$ ;  $\sigma = 1 \text{ mho/m}$ ;  $\epsilon_r = 53.3$ ;  
 $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.84, 5.84, 5.84); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.716 \text{ mW/g}$

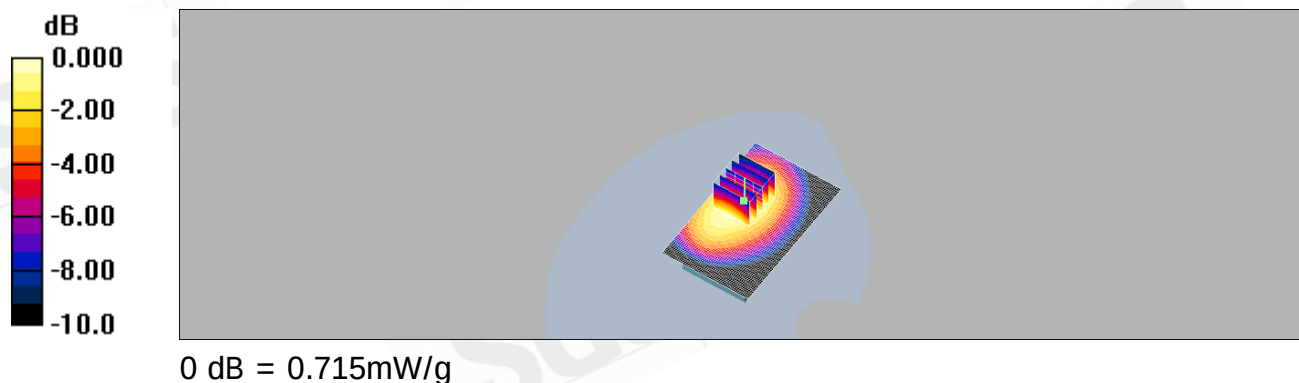
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value =  $11.9 \text{ V/m}$ ; Power Drift =  $0.032 \text{ dB}$

Peak SAR (extrapolated) =  $0.891 \text{ W/kg}$

**SAR(1 g) =  $0.679 \text{ mW/g}$ ; SAR(10 g) =  $0.484 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.715 \text{ mW/g}$



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Date: 2011/4/27

## Top side\_WCDMA B5\_CH4183

Communication System: WCDMA BAND5; Frequency: 836.6 MHz; Duty Cycle: 1:1  
Medium: Muscle 900 MHz Medium parameters used:  $f = 837 \text{ MHz}$ ;  $\sigma = 1 \text{ mho/m}$ ;  $\epsilon_r = 53.3$ ;  
 $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.84, 5.84, 5.84); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.354 mW/g

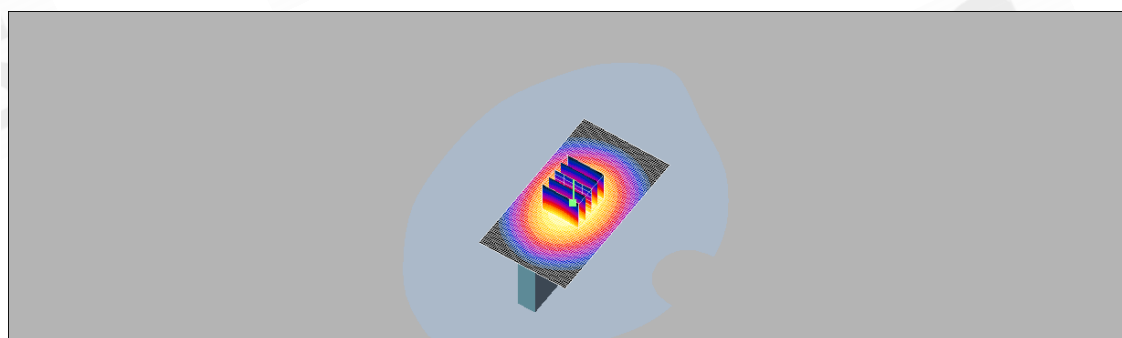
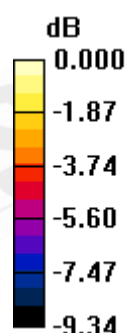
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 18.6 V/m; Power Drift = 0.120 dB

Peak SAR (extrapolated) = 0.459 W/kg

**SAR(1 g) = 0.335 mW/g; SAR(10 g) = 0.235 mW/g**

Maximum value of SAR (measured) = 0.358 mW/g



0 dB = 0.358mW/g

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Date: 2011/4/27

## Bottom side\_WCDMA B5\_CH4183

Communication System: WCDMA BAND5; Frequency: 836.6 MHz; Duty Cycle: 1:1  
Medium: Muscle 900 MHz Medium parameters used:  $f = 837 \text{ MHz}$ ;  $\sigma = 1 \text{ mho/m}$ ;  $\epsilon_r = 53.3$ ;  
 $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.84, 5.84, 5.84); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.688 mW/g

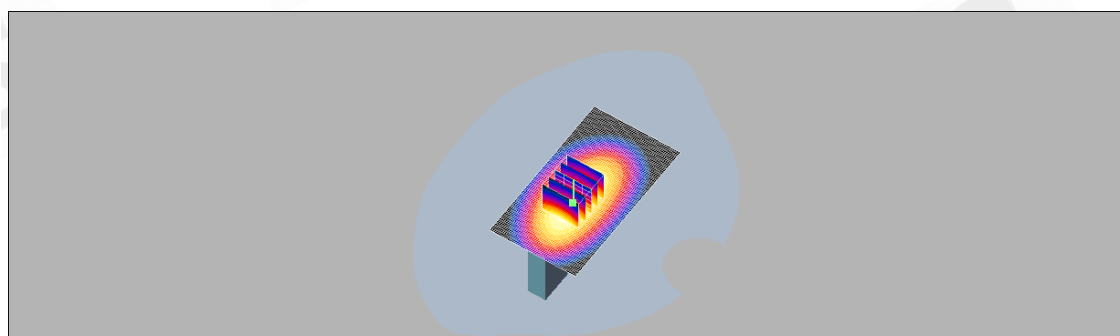
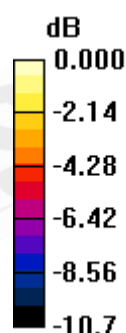
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 26.3 V/m; Power Drift = 0.009 dB

Peak SAR (extrapolated) = 0.918 W/kg

**SAR(1 g) = 0.651 mW/g; SAR(10 g) = 0.443 mW/g**

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



0 dB = 0.696mW/g

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## Right side\_WCDMA B5\_CH4183

Communication System: WCDMA BAND5; Frequency: 836.6 MHz; Duty Cycle: 1:1  
Medium: Muscle 900 MHz Medium parameters used:  $f = 837 \text{ MHz}$ ;  $\sigma = 1 \text{ mho/m}$ ;  $\epsilon_r = 53.3$ ;  
 $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.84, 5.84, 5.84); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x71x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.090 mW/g

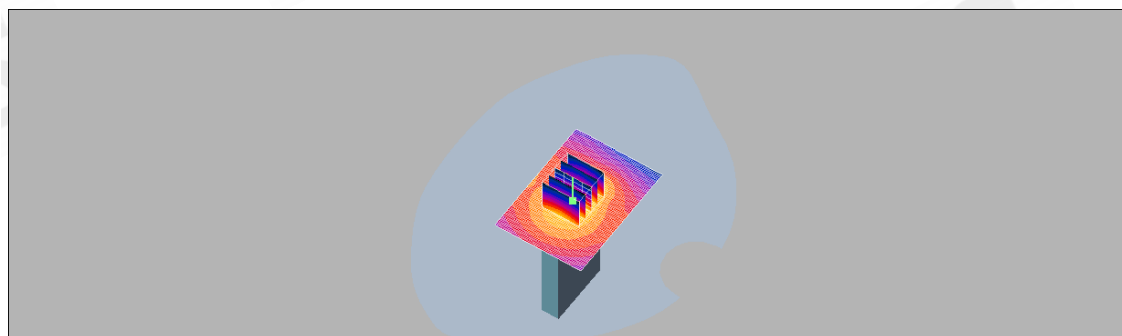
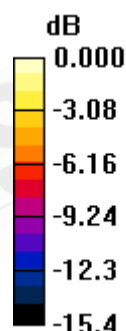
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 9.33 V/m; Power Drift = 0.197 dB

Peak SAR (extrapolated) = 0.187 W/kg

**SAR(1 g) = 0.087 mW/g; SAR(10 g) = 0.044 mW/g**

Maximum value of SAR (measured) = 0.100 mW/g



0 dB = 0.100mW/g

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## Front side\_LTE Band 4\_CH20175\_10MHz\_QPSK\_Test case 1

Communication System: LTE Band 4\_10MHz; Frequency: 1732.5 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1732.5 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.63, 4.63, 4.63); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.571 mW/g

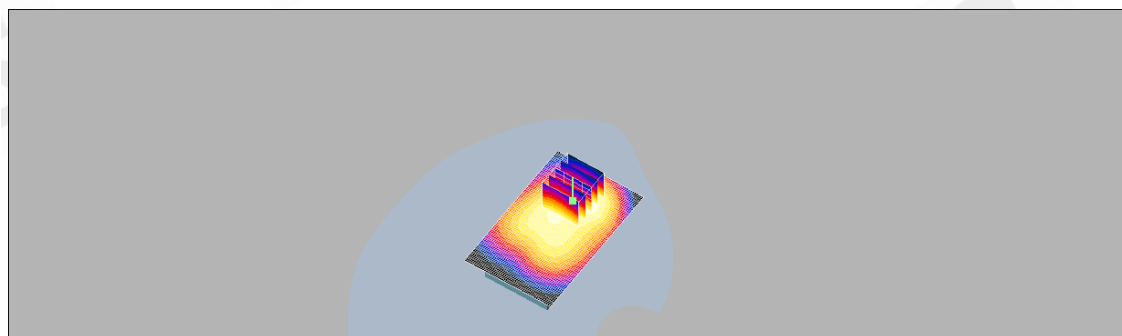
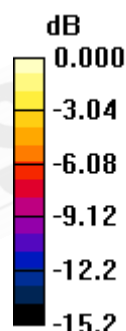
**body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 5.53 V/m; Power Drift = -0.152 dB

Peak SAR (extrapolated) = 0.810 W/kg

**SAR(1 g) = 0.516 mW/g; SAR(10 g) = 0.324 mW/g**

Maximum value of SAR (measured) = 0.553 mW/g



0 dB = 0.553mW/g

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## Back side\_LTE Band 4\_CH20175\_10MHz\_QPSK\_Test case 1

Communication System: LTE Band 4\_10MHz; Frequency: 1732.5 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1732.5 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.63, 4.63, 4.63); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.476 mW/g

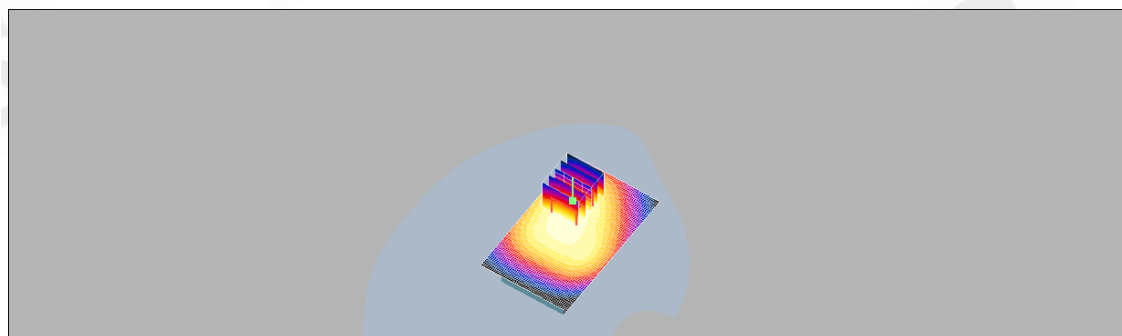
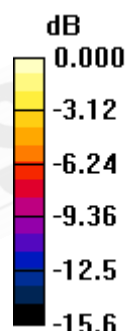
**body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 6.02 V/m; Power Drift = 0.047 dB

Peak SAR (extrapolated) = 0.677 W/kg

**SAR(1 g) = 0.433 mW/g; SAR(10 g) = 0.279 mW/g**

Maximum value of SAR (measured) = 0.466 mW/g



0 dB = 0.466mW/g

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## Top side\_LTE Band 4\_CH20175\_10MHz\_QPSK\_Test case 1

Communication System: LTE Band 4\_10MHz; Frequency: 1732.5 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1732.5 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.63, 4.63, 4.63); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x71x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.010 mW/g

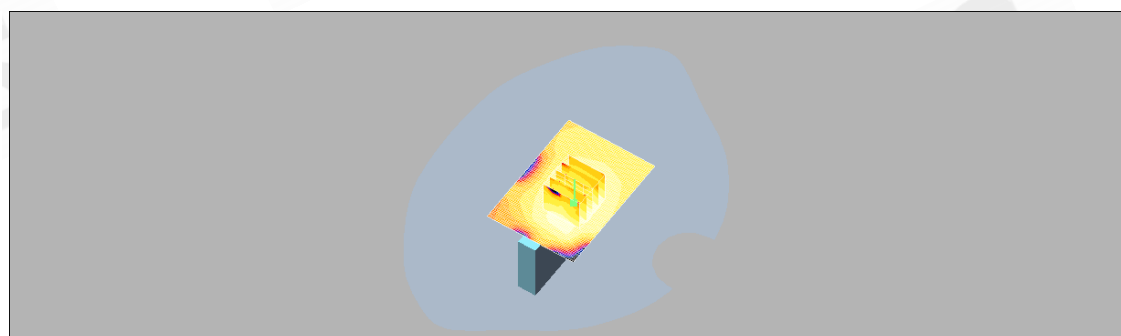
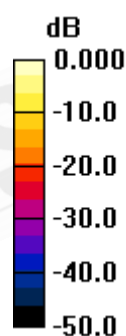
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 2.61 V/m; Power Drift = 0.118 dB

Peak SAR (extrapolated) = 0.014 W/kg

**SAR(1 g) = 0.00937 mW/g; SAR(10 g) = 0.00557 mW/g**

Maximum value of SAR (measured) = 0.010 mW/g



0 dB = 0.010mW/g

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## Bottom side\_LTE Band 4\_CH20175\_10MHz\_QPSK\_Test case 1

Communication System: LTE Band 4\_10MHz; Frequency: 1732.5 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1732.5$  MHz;  $\sigma = 1.43$  mho/m;  $\epsilon_r = 53$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

**body/Area Scan (51x71x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.529 mW/g

**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.6 V/m; Power Drift = 0.150 dB

Peak SAR (extrapolated) = 0.739 W/kg

**SAR(1 g) = 0.424 mW/g; SAR(10 g) = 0.237 mW/g**

Maximum value of SAR (measured) = 0.463 mW/g

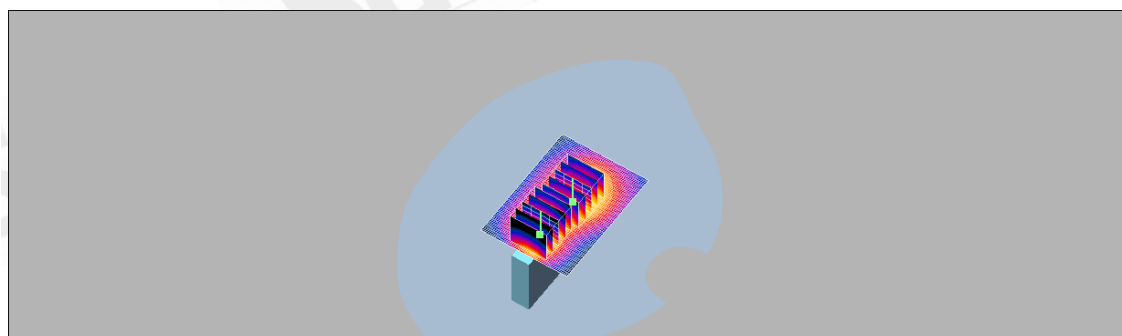
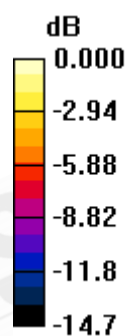
**body/Zoom Scan (7x7x7)/Cube 1:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.6 V/m; Power Drift = 0.150 dB

Peak SAR (extrapolated) = 0.670 W/kg

**SAR(1 g) = 0.421 mW/g; SAR(10 g) = 0.252 mW/g**

Maximum value of SAR (measured) = 0.459 mW/g



0 dB = 0.459mW/g

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## Right side\_LTE Band 4\_CH20175\_10MHz\_QPSK\_Test case 1

Communication System: LTE Band 4\_10MHz; Frequency: 1732.5 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1732.5 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.63, 4.63, 4.63); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.777 \text{ mW/g}$

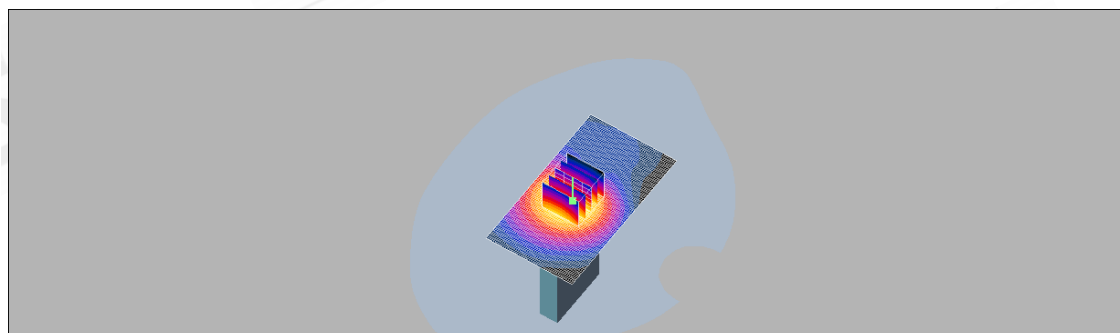
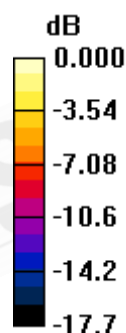
**body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $21.0 \text{ V/m}$ ; Power Drift =  $0.077 \text{ dB}$

Peak SAR (extrapolated) =  $1.23 \text{ W/kg}$

**SAR(1 g) =  $0.710 \text{ mW/g}$ ; SAR(10 g) =  $0.390 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.782 \text{ mW/g}$



0 dB =  $0.782 \text{ mW/g}$

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## Front side\_LTE Band 4\_CH20000\_10MHz\_QPSK\_Test case 3

Communication System: LTE Band 4\_10MHz; Frequency: 1715 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used:  $f = 1715 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53.1$ ;  
 $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.63, 4.63, 4.63); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.833 mW/g

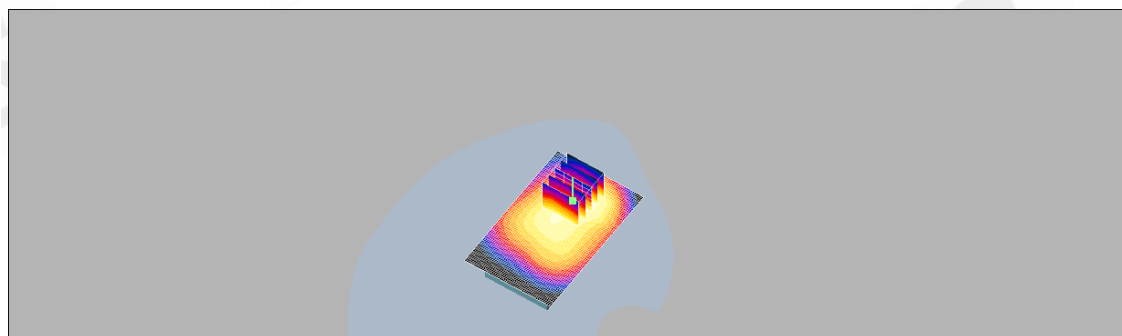
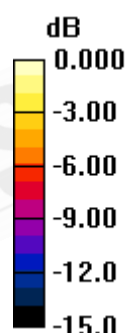
**body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 5.92 V/m; Power Drift = 0.180 dB

Peak SAR (extrapolated) = 1.30 W/kg

**SAR(1 g) = 0.789 mW/g; SAR(10 g) = 0.488 mW/g**

Maximum value of SAR (measured) = 0.846 mW/g



0 dB = 0.846mW/g

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Date: 2011/5/13

## Back side\_LTE Band 4\_CH20000\_10MHz\_QPSK\_Test case 3

Communication System: LTE Band 4\_10MHz; Frequency: 1715 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used:  $f = 1715 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53.1$ ;  
 $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.745 mW/g

**body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 6.96 V/m; Power Drift = -0.078 dB

Peak SAR (extrapolated) = 1.07 W/kg

**SAR(1 g) = 0.678 mW/g; SAR(10 g) = 0.435 mW/g**

Maximum value of SAR (measured) = 0.725 mW/g

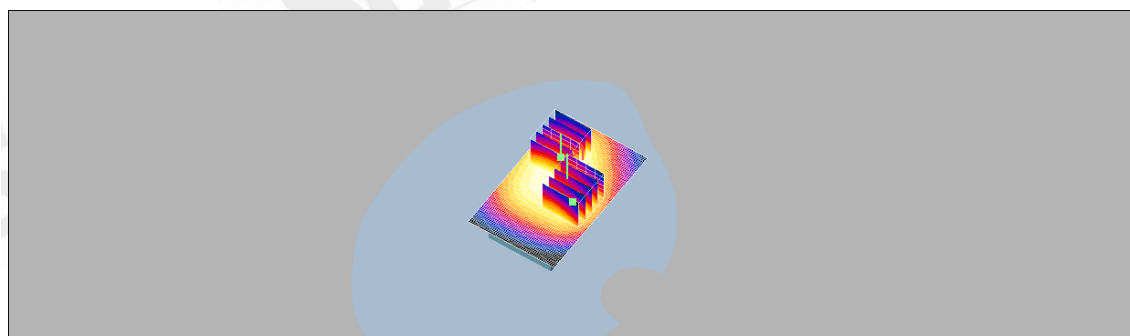
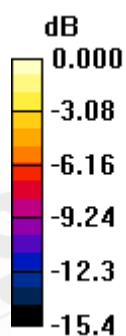
**body/Zoom Scan (5x5x7)/Cube 1:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 6.96 V/m; Power Drift = -0.078 dB

Peak SAR (extrapolated) = 0.906 W/kg

**SAR(1 g) = 0.527 mW/g; SAR(10 g) = 0.342 mW/g**

Maximum value of SAR (measured) = 0.631 mW/g



0 dB = 0.631mW/g

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## Top side\_LTE Band 4\_CH20000\_10MHz\_QPSK\_Test case 3

Communication System: LTE Band 4\_10MHz; Frequency: 1715 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used:  $f = 1715 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53.1$ ;  
 $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.63, 4.63, 4.63); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x71x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.034 mW/g

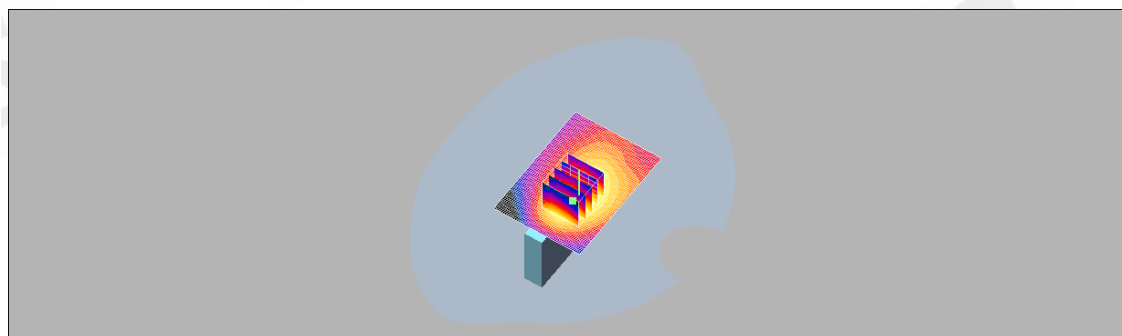
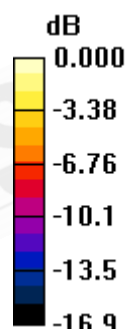
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 4.71 V/m; Power Drift = -0.181 dB

Peak SAR (extrapolated) = 0.049 W/kg

**SAR(1 g) = 0.030 mW/g; SAR(10 g) = 0.018 mW/g**

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



0 dB = 0.032mW/g

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## Bottom side\_LTE Band 4\_CH20000\_10MHz\_QPSK\_Test case 3

Communication System: LTE Band 4\_10MHz; Frequency: 1715 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used:  $f = 1715 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53.1$ ;  
 $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

**body/Area Scan (51x71x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.881 mW/g

**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 22.0 V/m; Power Drift = 0.109 dB

Peak SAR (extrapolated) = 1.27 W/kg

**SAR(1 g) = 0.737 mW/g; SAR(10 g) = 0.415 mW/g**

Maximum value of SAR (measured) = 0.792 mW/g

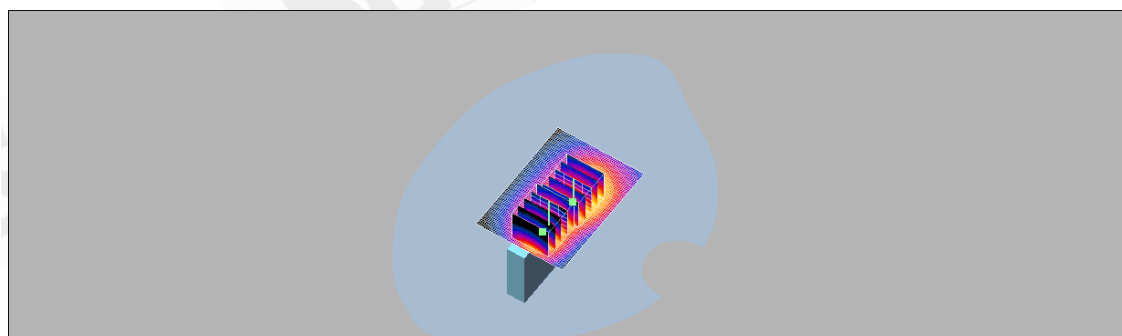
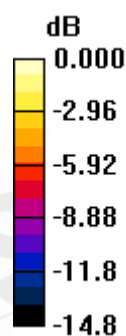
**body/Zoom Scan (7x7x7)/Cube 1:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 22.0 V/m; Power Drift = 0.109 dB

Peak SAR (extrapolated) = 1.22 W/kg

**SAR(1 g) = 0.746 mW/g; SAR(10 g) = 0.444 mW/g**

Maximum value of SAR (measured) = 0.824 mW/g



0 dB = 0.824mW/g

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Date: 2011/5/13

## Right side\_LTE Band 4\_CH20000\_10MHz\_QPSK\_Test case 3

Communication System: LTE Band 4\_10MHz; Frequency: 1715 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used:  $f = 1715 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53.1$ ;  
 $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.63, 4.63, 4.63); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 1.26 mW/g

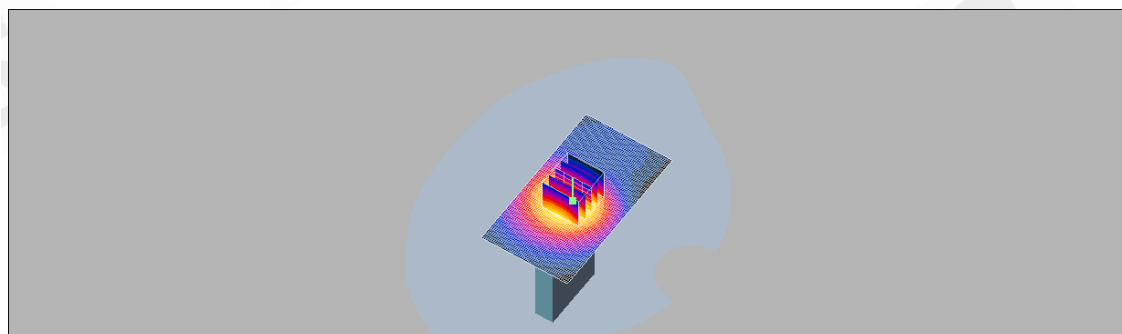
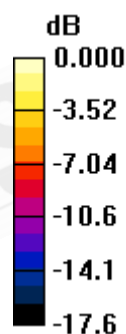
**body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 27.4 V/m; Power Drift = -0.174 dB

Peak SAR (extrapolated) = 1.81 W/kg

**SAR(1 g) = 1.04 mW/g; SAR(10 g) = 0.570 mW/g**

Maximum value of SAR (measured) = 1.12 mW/g



0 dB = 1.12mW/g

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## Front side\_LTE Band 4\_CH20000\_10MHz\_QPSK\_Test case 4

Communication System: LTE Band 4\_10MHz; Frequency: 1715 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used:  $f = 1715 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53.1$ ;  
 $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.63, 4.63, 4.63); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.953 mW/g

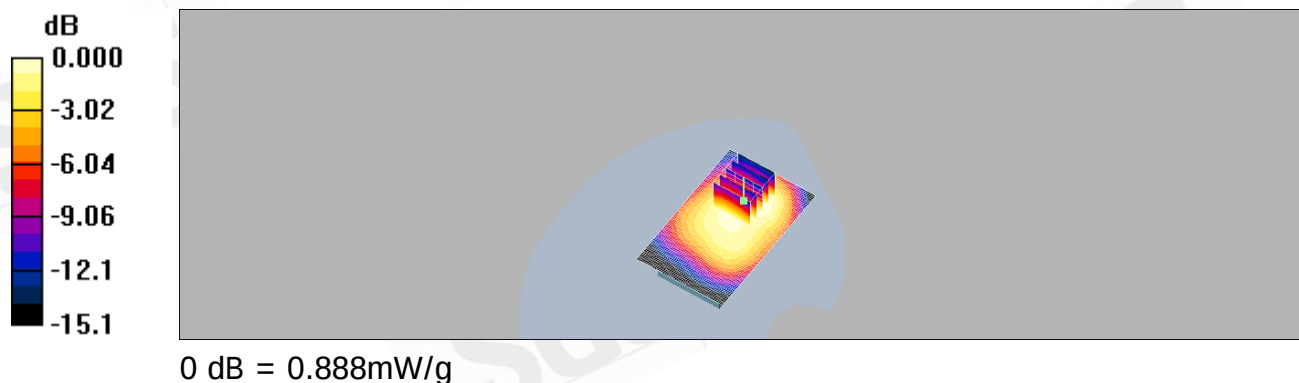
**body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 6.62 V/m; Power Drift = 0.020 dB

Peak SAR (extrapolated) = 1.28 W/kg

**SAR(1 g) = 0.829 mW/g; SAR(10 g) = 0.533 mW/g**

Maximum value of SAR (measured) = 0.888 mW/g



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## Back Side\_LTE Band 4\_CH20000\_10MHz\_QPSK\_Test case 4

Communication System: LTE Band 4\_10MHz; Frequency: 1715 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used:  $f = 1715 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53.1$ ;  
 $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.870 mW/g

**body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 6.97 V/m; Power Drift = -0.117 dB

Peak SAR (extrapolated) = 1.25 W/kg

**SAR(1 g) = 0.808 mW/g; SAR(10 g) = 0.512 mW/g**

Maximum value of SAR (measured) = 0.870 mW/g

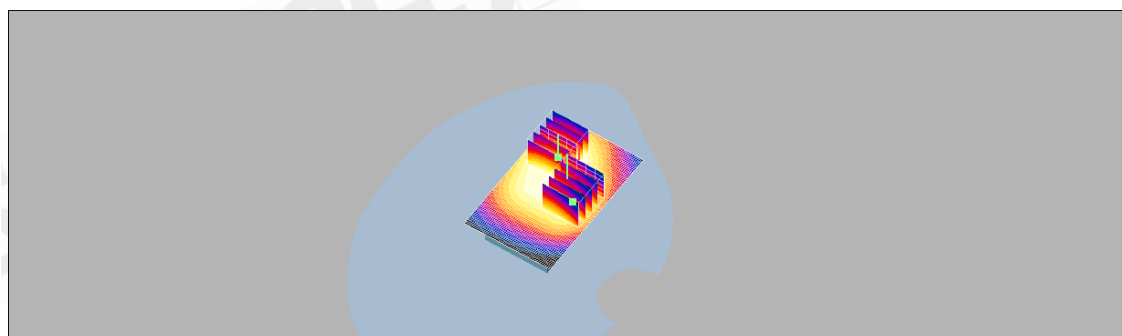
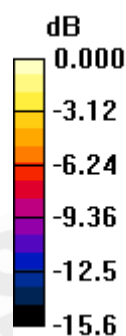
**body/Zoom Scan (5x5x7)/Cube 1:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 6.97 V/m; Power Drift = -0.117 dB

Peak SAR (extrapolated) = 0.890 W/kg

**SAR(1 g) = 0.553 mW/g; SAR(10 g) = 0.351 mW/g**

Maximum value of SAR (measured) = 0.653 mW/g



0 dB = 0.653mW/g

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## Top side\_LTE Band 4\_CH20000\_10MHz\_QPSK\_Test case 4

Communication System: LTE Band 4\_10MHz; Frequency: 1715 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used:  $f = 1715 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53.1$ ;  
 $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.63, 4.63, 4.63); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x71x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.143 \text{ mW/g}$

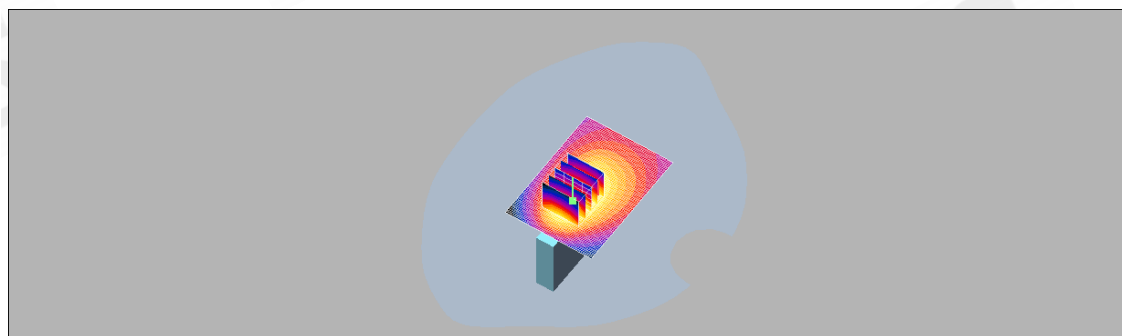
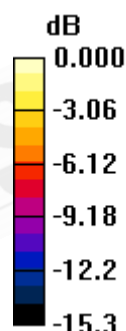
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value =  $9.37 \text{ V/m}$ ; Power Drift =  $-0.162 \text{ dB}$

Peak SAR (extrapolated) =  $0.200 \text{ W/kg}$

**SAR(1 g) =  $0.122 \text{ mW/g}$ ; SAR(10 g) =  $0.074 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.130 \text{ mW/g}$



0 dB =  $0.130 \text{ mW/g}$

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Date: 2011/5/13

## Bottom side\_LTE Band 4\_CH20000\_10MHz\_QPSK\_Test case 4

Communication System: LTE Band 4\_10MHz; Frequency: 1715 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used:  $f = 1715 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53.1$ ;  
 $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

**body/Area Scan (51x71x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.660 mW/g

**body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 20.2 V/m; Power Drift = 0.197 dB

Peak SAR (extrapolated) = 0.992 W/kg

**SAR(1 g) = 0.639 mW/g; SAR(10 g) = 0.393 mW/g**

Maximum value of SAR (measured) = 0.700 mW/g

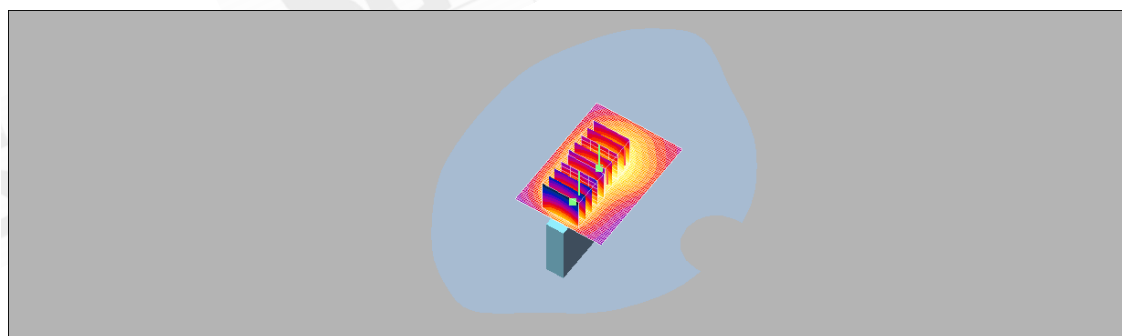
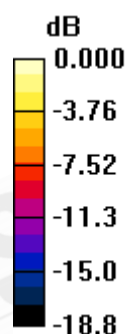
**body/Zoom Scan (5x5x7)/Cube 1:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 20.2 V/m; Power Drift = 0.197 dB

Peak SAR (extrapolated) = 0.922 W/kg

**SAR(1 g) = 0.557 mW/g; SAR(10 g) = 0.325 mW/g**

Maximum value of SAR (measured) = 0.585 mW/g



0 dB = 0.585mW/g

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## Right side\_LTE Band 4\_CH20000\_10MHz\_QPSK\_Test case 4

Communication System: LTE Band 4\_10MHz; Frequency: 1715 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used:  $f = 1715 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53.1$ ;  
 $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.63, 4.63, 4.63); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $1.35 \text{ mW/g}$

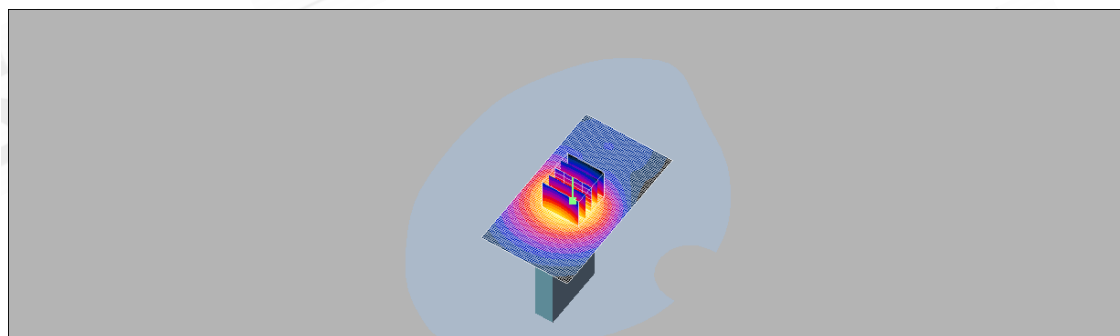
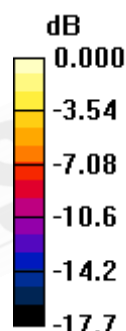
**body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value =  $28.9 \text{ V/m}$ ; Power Drift =  $-0.167 \text{ dB}$

Peak SAR (extrapolated) =  $1.89 \text{ W/kg}$

**SAR(1 g) =  $1.09 \text{ mW/g}$ ; SAR(10 g) =  $0.599 \text{ mW/g}$**

Maximum value of SAR (measured) =  $1.20 \text{ mW/g}$



0 dB =  $1.20 \text{ mW/g}$

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Date: 2011/5/13

## Front side\_LTE Band 4\_CH20175\_10MHz\_16QAM\_Test case 5

Communication System: LTE Band 4\_10MHz; Frequency: 1732.5 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1732.5 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.63, 4.63, 4.63); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.398 mW/g

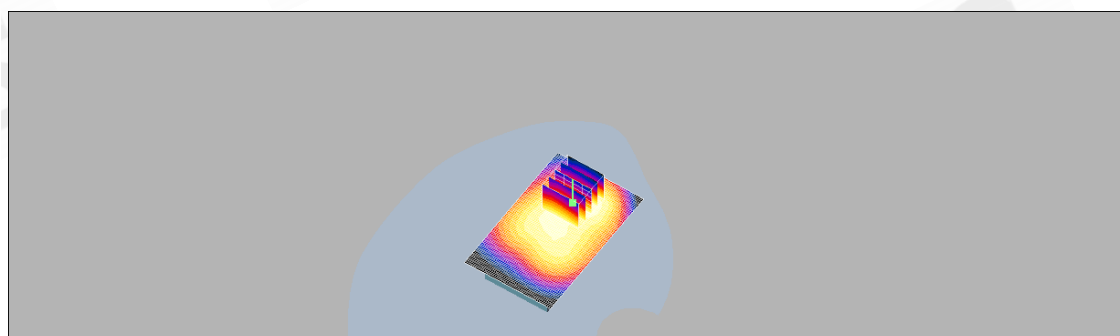
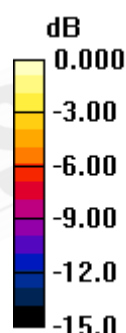
**body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 4.65 V/m; Power Drift = 0.101 dB

Peak SAR (extrapolated) = 0.572 W/kg

**SAR(1 g) = 0.363 mW/g; SAR(10 g) = 0.230 mW/g**

Maximum value of SAR (measured) = 0.384 mW/g



0 dB = 0.384mW/g

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## Back side\_LTE Band 4\_CH20175\_10MHz\_16QAM\_Test case 5

Communication System: LTE Band 4\_10MHz; Frequency: 1732.5 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1732.5 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.63, 4.63, 4.63); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.412 \text{ mW/g}$

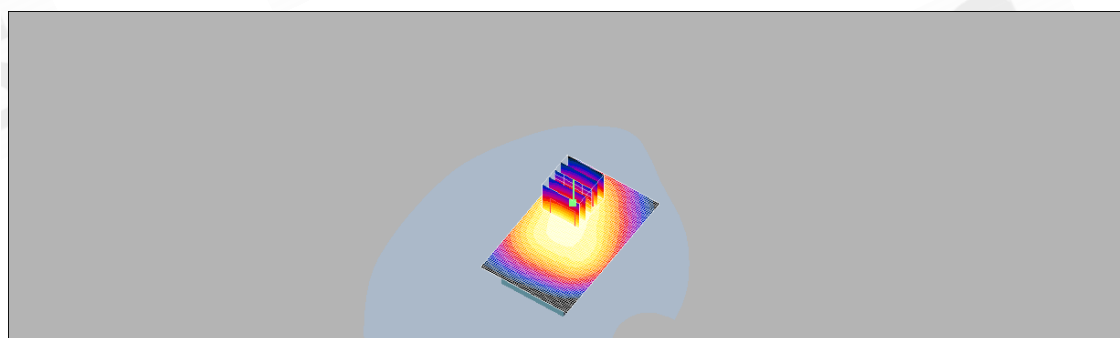
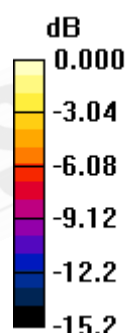
**body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $5.71 \text{ V/m}$ ; Power Drift =  $0.101 \text{ dB}$

Peak SAR (extrapolated) =  $0.583 \text{ W/kg}$

**SAR(1 g) =  $0.377 \text{ mW/g}$ ; SAR(10 g) =  $0.242 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.406 \text{ mW/g}$



0 dB =  $0.406 \text{ mW/g}$

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## Top side\_LTE Band 4\_CH20175\_10MHz\_16QAM\_Test case 5

Communication System: LTE Band 4\_10MHz; Frequency: 1732.5 MHz;Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1732.5 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.63, 4.63, 4.63); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x71x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.010 mW/g

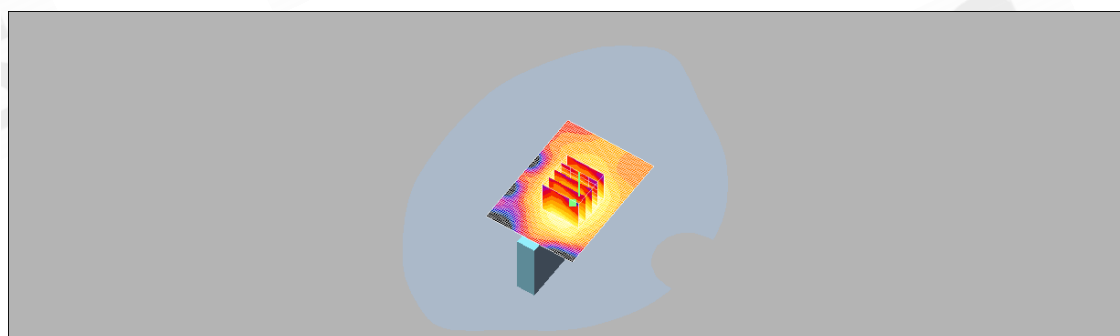
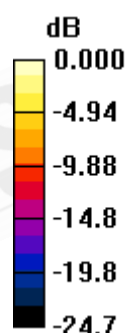
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 2.59 V/m; Power Drift = 0.190 dB

Peak SAR (extrapolated) = 0.014 W/kg

**SAR(1 g) = 0.00919 mW/g; SAR(10 g) = 0.00557 mW/g**

Maximum value of SAR (measured) = 0.010 mW/g



0 dB = 0.010mW/g

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Date: 2011/5/13

## Bottom side\_LTE Band 4\_CH20175\_10MHz\_16QAM\_Test case 5

Communication System: LTE Band 4\_10MHz; Frequency: 1732.5 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1732.5 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

**body/Area Scan (51x71x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.473 mW/g

**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 16.7 V/m; Power Drift = 0.073 dB

Peak SAR (extrapolated) = 0.664 W/kg

**SAR(1 g) = 0.379 mW/g; SAR(10 g) = 0.212 mW/g**

Maximum value of SAR (measured) = 0.416 mW/g

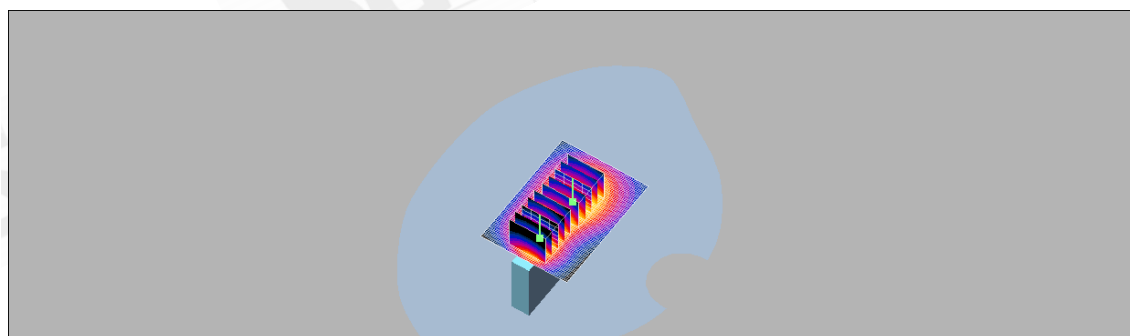
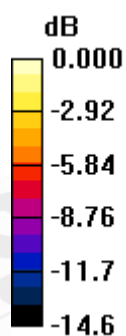
**body/Zoom Scan (7x7x7)/Cube 1:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 16.7 V/m; Power Drift = 0.073 dB

Peak SAR (extrapolated) = 0.641 W/kg

**SAR(1 g) = 0.401 mW/g; SAR(10 g) = 0.239 mW/g**

Maximum value of SAR (measured) = 0.439 mW/g



0 dB = 0.439mW/g

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## Right side\_LTE Band 4\_CH20175\_10MHz\_16QAM\_Test case 5

Communication System: LTE Band 4\_10MHz; Frequency: 1732.5 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1732.5 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.63, 4.63, 4.63); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.685 \text{ mW/g}$

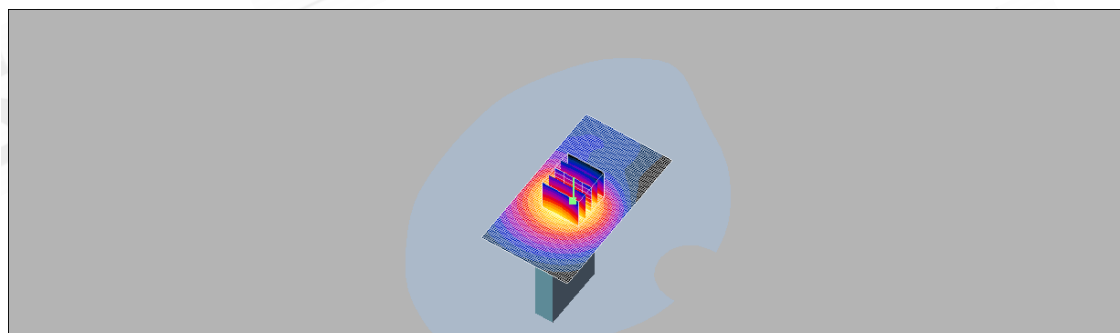
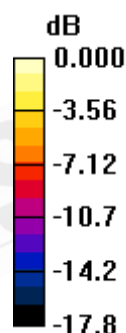
**body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $20.7 \text{ V/m}$ ; Power Drift =  $-0.041 \text{ dB}$

Peak SAR (extrapolated) =  $1.03 \text{ W/kg}$

**SAR(1 g) =  $0.593 \text{ mW/g}$ ; SAR(10 g) =  $0.326 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.647 \text{ mW/g}$



0 dB =  $0.647 \text{ mW/g}$

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## Front side\_LTE Band 4\_CH20175\_10MHz\_16QAM\_Test case 7

Communication System: LTE Band 4\_10MHz; Frequency: 1732.5 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1732.5 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) =  $0.596 \text{ mW/g}$

**body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $5.98 \text{ V/m}$ ; Power Drift =  $-0.09 \text{ dB}$

Peak SAR (extrapolated) =  $0.881 \text{ W/kg}$

**SAR(1 g) =  $0.526 \text{ mW/g}$ ; SAR(10 g) =  $0.323 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.619 \text{ mW/g}$

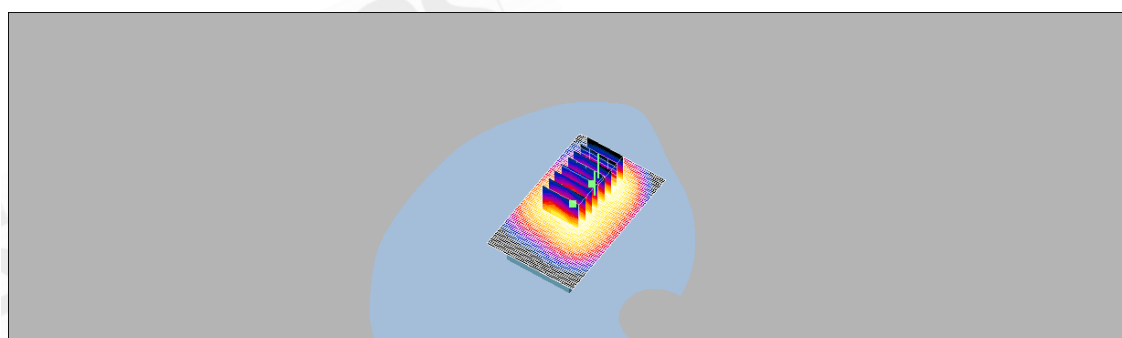
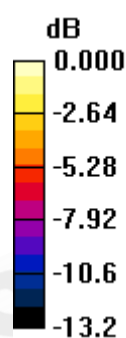
**body/Zoom Scan (5x5x7)/Cube 1:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $5.98 \text{ V/m}$ ; Power Drift =  $-0.09 \text{ dB}$

Peak SAR (extrapolated) =  $0.947 \text{ W/kg}$

**SAR(1 g) =  $0.454 \text{ mW/g}$ ; SAR(10 g) =  $0.307 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.565 \text{ mW/g}$



0 dB =  $0.565 \text{ mW/g}$

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## Back side\_LTE Band 4\_CH20175\_10MHz\_16QAM\_Test case 7

Communication System: LTE Band 4\_10MHz; Frequency: 1732.5 MHz;Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1732.5 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.559 mW/g

**body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 6.61 V/m; Power Drift = -0.108 dB

Peak SAR (extrapolated) = 0.805 W/kg

**SAR(1 g) = 0.488 mW/g; SAR(10 g) = 0.314 mW/g**

Maximum value of SAR (measured) = 0.531 mW/g

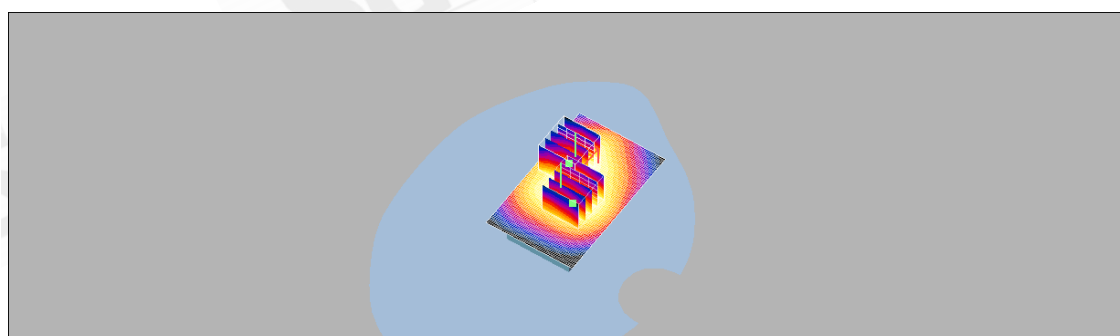
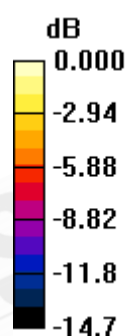
**body/Zoom Scan (5x5x7)/Cube 1:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 6.61 V/m; Power Drift = -0.108 dB

Peak SAR (extrapolated) = 0.680 W/kg

**SAR(1 g) = 0.426 mW/g; SAR(10 g) = 0.282 mW/g**

Maximum value of SAR (measured) = 0.458 mW/g



0 dB = 0.458mW/g

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## Top side\_LTE Band 4\_CH20175\_10MHz\_16QAM\_Test case 7

Communication System: LTE Band 4\_10MHz; Frequency: 1732.5 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1732.5$  MHz;  $\sigma = 1.43$  mho/m;  $\epsilon_r = 53$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.63, 4.63, 4.63); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x71x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (interpolated) = 0.027 mW/g

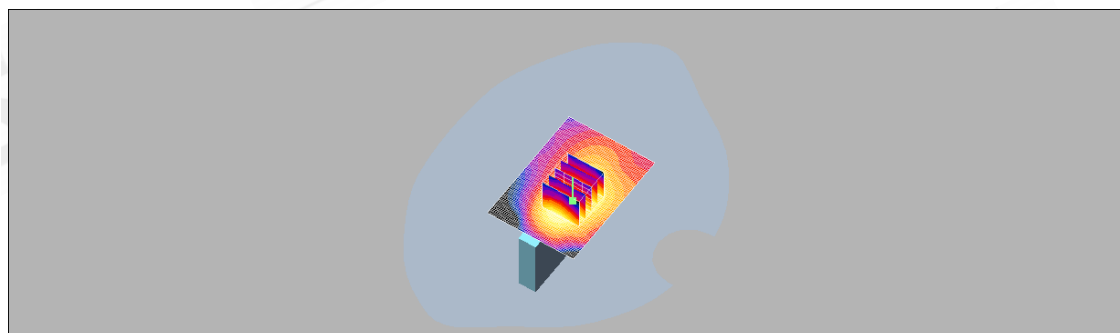
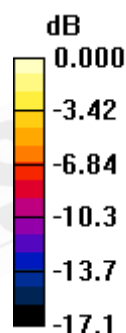
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.29 V/m; Power Drift = -0.163 dB

Peak SAR (extrapolated) = 0.039 W/kg

**SAR(1 g) = 0.025 mW/g; SAR(10 g) = 0.015 mW/g**

Maximum value of SAR (measured) = 0.026 mW/g



0 dB = 0.026mW/g

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## Bottom side\_LTE Band 4\_CH20175\_10MHz\_16QAM\_Test case 7

Communication System: LTE Band 4\_10MHz; Frequency: 1732.5 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1732.5 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

**body/Area Scan (51x71x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.573 mW/g

**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 18.9 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 1.03 W/kg

**SAR(1 g) = 0.528 mW/g; SAR(10 g) = 0.284 mW/g**

Maximum value of SAR (measured) = 0.634 mW/g

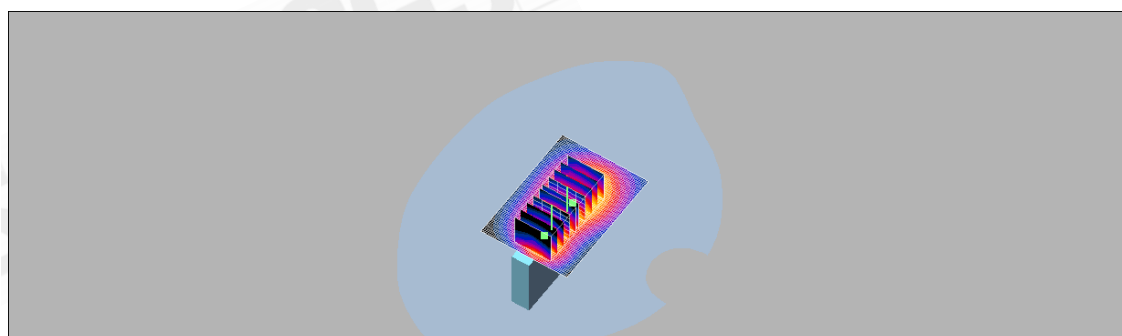
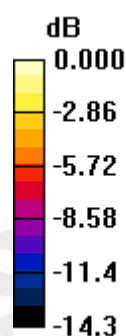
**body/Zoom Scan (7x7x7)/Cube 1:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 18.9 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 0.877 W/kg

**SAR(1 g) = 0.526 mW/g; SAR(10 g) = 0.323 mW/g**

Maximum value of SAR (measured) = 0.607 mW/g



0 dB = 0.607mW/g

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## Right side\_LTE Band 4\_CH20175\_10MHz\_16QAM\_Test case 7

Communication System: LTE Band 4\_10MHz; Frequency: 1732.5 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1732.5 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.63, 4.63, 4.63); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.964 \text{ mW/g}$

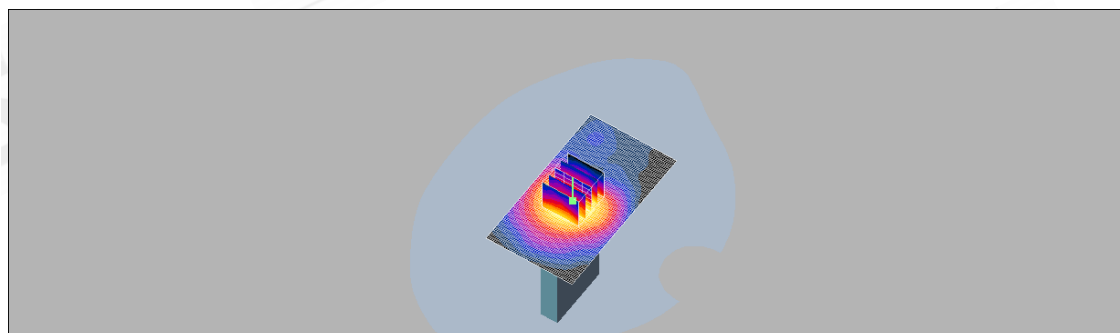
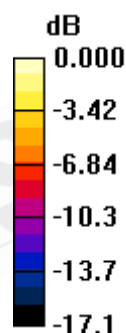
**body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $22.7 \text{ V/m}$ ; Power Drift =  $0.106 \text{ dB}$

Peak SAR (extrapolated) =  $1.52 \text{ W/kg}$

**SAR(1 g) =  $0.755 \text{ mW/g}$ ; SAR(10 g) =  $0.416 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.856 \text{ mW/g}$



0 dB =  $0.856 \text{ mW/g}$

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## Front side\_LTE Band 4\_CH20175\_10MHz\_16QAM\_Test case 8

Communication System: LTE Band 4\_10MHz; Frequency: 1732.5 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1732.5 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.488 mW/g

**body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 5.14 V/m; Power Drift = 0.035 dB

Peak SAR (extrapolated) = 0.681 W/kg

**SAR(1 g) = 0.439 mW/g; SAR(10 g) = 0.282 mW/g**

Maximum value of SAR (measured) = 0.471 mW/g

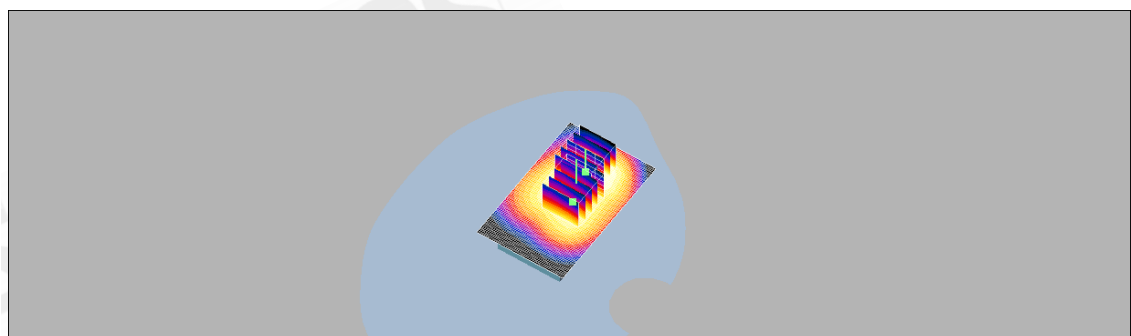
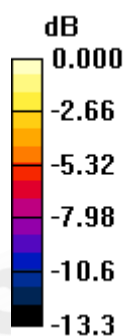
**body/Zoom Scan (5x5x7)/Cube 1:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 5.14 V/m; Power Drift = 0.035 dB

Peak SAR (extrapolated) = 0.664 W/kg

**SAR(1 g) = 0.401 mW/g; SAR(10 g) = 0.262 mW/g**

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



0 dB = 0.433mW/g

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## Back Side\_LTE Band 4\_CH20175\_10MHz\_16QAM\_Test case 8

Communication System: LTE Band 4\_10MHz; Frequency: 1732.5 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1732.5 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

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

**body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 6.71 V/m; Power Drift = 0.131 dB

Peak SAR (extrapolated) = 0.730 W/kg

**SAR(1 g) = 0.483 mW/g; SAR(10 g) = 0.310 mW/g**

Maximum value of SAR (measured) = 0.523 mW/g

**body/Zoom Scan (5x5x7)/Cube 1:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 6.71 V/m; Power Drift = 0.131 dB

Peak SAR (extrapolated) = 0.653 W/kg

**SAR(1 g) = 0.413 mW/g; SAR(10 g) = 0.272 mW/g**

Maximum value of SAR (measured) = 0.459 mW/g

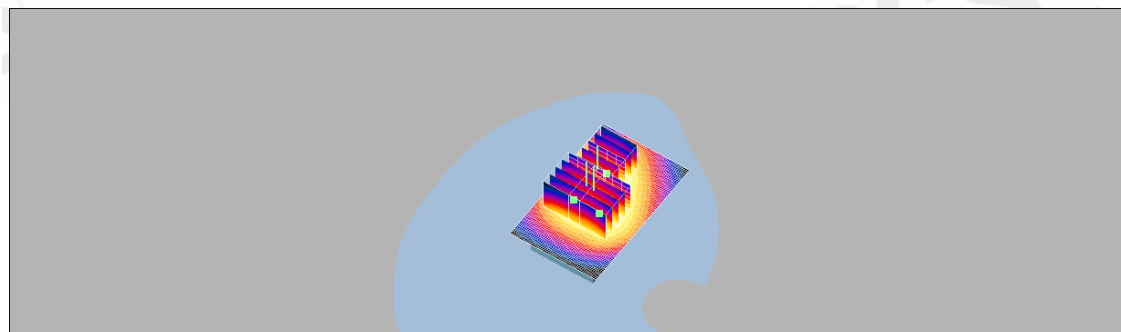
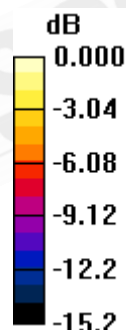
**body/Zoom Scan (5x5x7)/Cube 2:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 6.71 V/m; Power Drift = 0.131 dB

Peak SAR (extrapolated) = 0.657 W/kg

**SAR(1 g) = 0.429 mW/g; SAR(10 g) = 0.278 mW/g**

Maximum value of SAR (measured) = 0.465 mW/g



0 dB = 0.465mW/g

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## Top side\_LTE Band 4\_CH20175\_10MHz\_16QAM\_Test case 8

Communication System: LTE Band 4\_10MHz; Frequency: 1732.5 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1732.5 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.63, 4.63, 4.63); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.100 \text{ mW/g}$

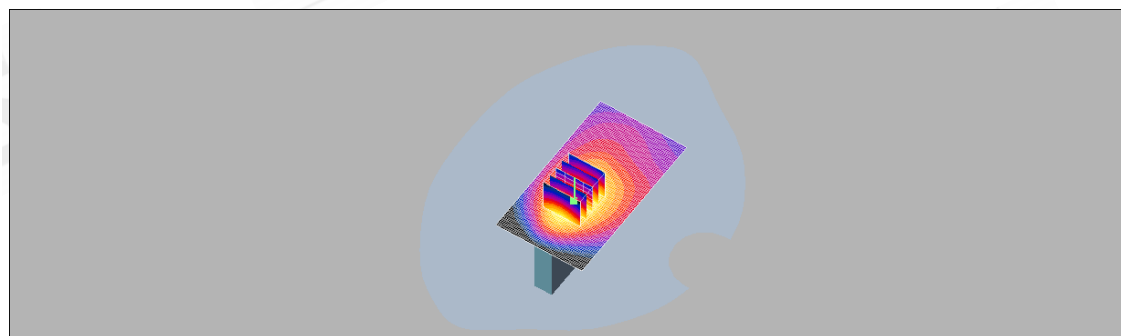
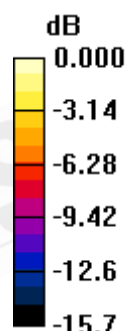
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $7.86 \text{ V/m}$ ; Power Drift =  $0.165 \text{ dB}$

Peak SAR (extrapolated) =  $0.162 \text{ W/kg}$

**SAR(1 g) =  $0.102 \text{ mW/g}$ ; SAR(10 g) =  $0.061 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.111 \text{ mW/g}$



0 dB =  $0.111 \text{ mW/g}$

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## Bottom side\_LTE Band 4\_CH20175\_10MHz\_16QAM\_Test case 8

Communication System: LTE Band 4\_10MHz; Frequency: 1732.5 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1732.5 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

**body/Area Scan (51x71x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.437 mW/g

**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 16.5 V/m; Power Drift = 0.112 dB

Peak SAR (extrapolated) = 0.603 W/kg

**SAR(1 g) = 0.354 mW/g; SAR(10 g) = 0.204 mW/g**

Maximum value of SAR (measured) = 0.375 mW/g

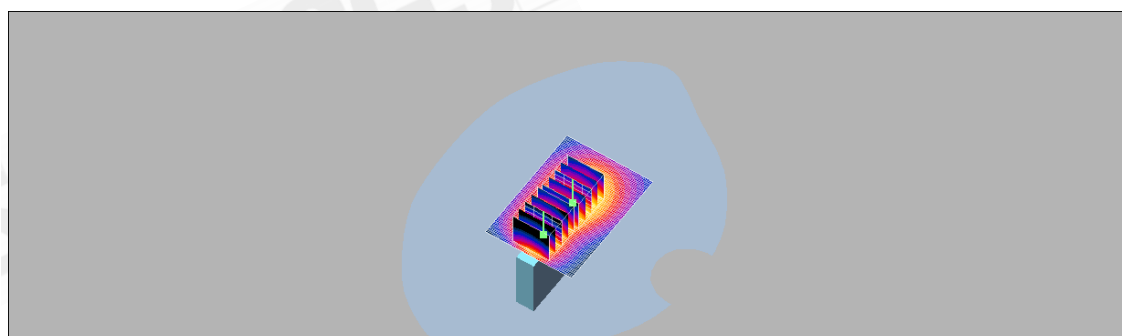
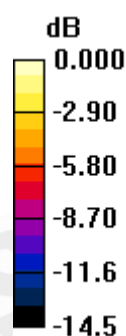
**body/Zoom Scan (7x7x7)/Cube 1:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 16.5 V/m; Power Drift = 0.112 dB

Peak SAR (extrapolated) = 0.625 W/kg

**SAR(1 g) = 0.377 mW/g; SAR(10 g) = 0.228 mW/g**

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



0 dB = 0.414mW/g

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## Right side\_LTE Band 4\_CH20175\_10MHz\_16QAM\_Test case 8

Communication System: LTE Band 4\_10MHz; Frequency: 1732.5 MHz; Duty Cycle: 1:1  
Medium: M1800 & 1900 Medium parameters used (interpolated):  $f = 1732.5 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 53$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.63, 4.63, 4.63); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.867 \text{ mW/g}$

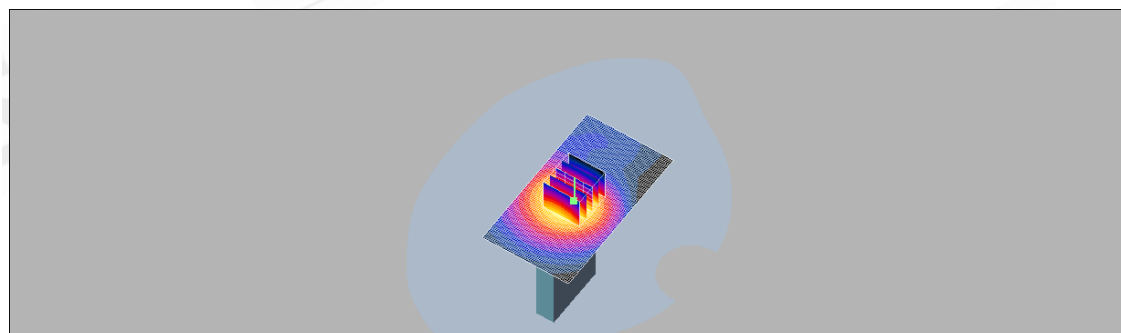
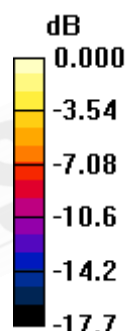
**body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $22.6 \text{ V/m}$ ; Power Drift =  $0.061 \text{ dB}$

Peak SAR (extrapolated) =  $1.27 \text{ W/kg}$

**SAR(1 g) =  $0.736 \text{ mW/g}$ ; SAR(10 g) =  $0.406 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.811 \text{ mW/g}$



0 dB =  $0.811 \text{ mW/g}$

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## Front side\_LTE Band 17\_CH23790\_10MHz\_QPSK\_Test case 1

Communication System: LTE Band 17\_10MHz; Frequency: 710 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used:  $f = 710 \text{ MHz}$ ;  $\sigma = 0.922 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.813 \text{ mW/g}$

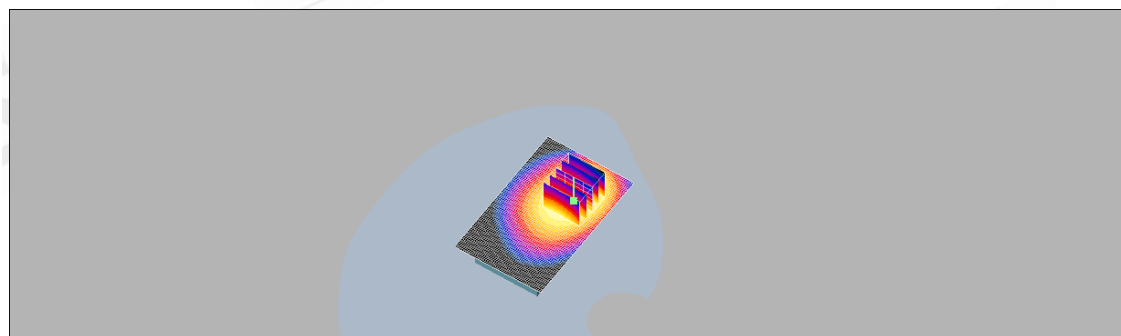
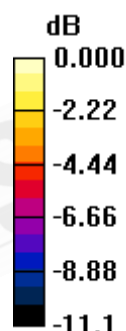
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $9.06 \text{ V/m}$ ; Power Drift =  $-0.166 \text{ dB}$

Peak SAR (extrapolated) =  $1.08 \text{ W/kg}$

**SAR(1 g) =  $0.772 \text{ mW/g}$ ; SAR(10 g) =  $0.535 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.822 \text{ mW/g}$



0 dB =  $0.822 \text{ mW/g}$

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## Back side\_LTE Band 17\_CH23790\_10MHz\_QPSK\_Test case 1

Communication System: LTE Band 17\_10MHz; Frequency: 710 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used:  $f = 710 \text{ MHz}$ ;  $\sigma = 0.922 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.681 mW/g

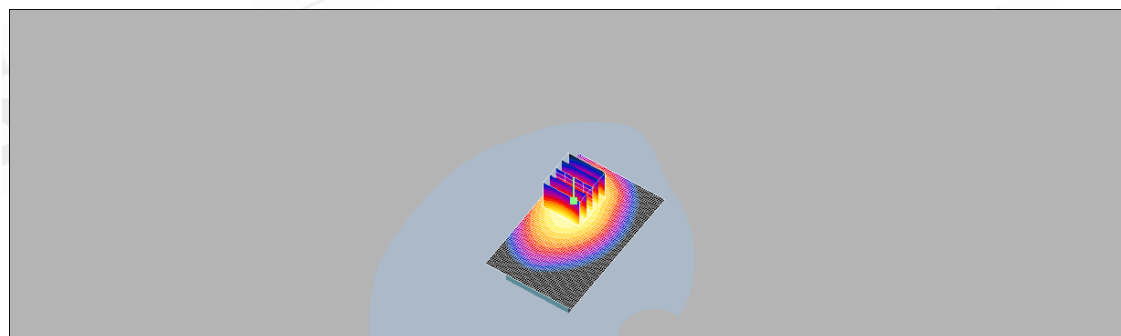
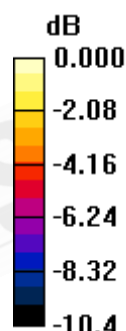
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 9.37 V/m; Power Drift = 0.028 dB

Peak SAR (extrapolated) = 0.860 W/kg

**SAR(1 g) = 0.638 mW/g; SAR(10 g) = 0.452 mW/g**

Maximum value of SAR (measured) = 0.679 mW/g



0 dB = 0.679mW/g

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## Top side\_LTE Band 17\_CH23790\_10MHz\_QPSK\_Test case 1

Communication System: LTE Band 17\_10MHz; Frequency: 710 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used:  $f = 710 \text{ MHz}$ ;  $\sigma = 0.922 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.148 \text{ mW/g}$

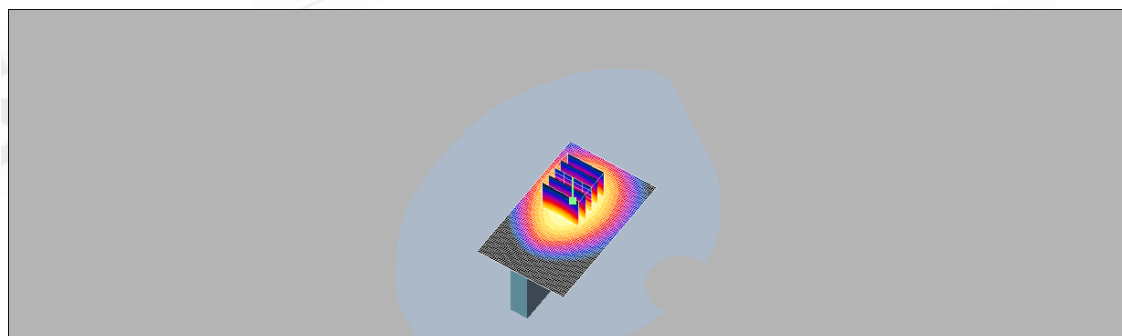
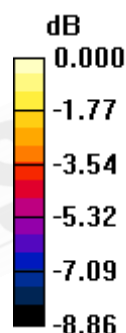
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $12.2 \text{ V/m}$ ; Power Drift =  $-0.184 \text{ dB}$

Peak SAR (extrapolated) =  $0.181 \text{ W/kg}$

**SAR(1 g) =  $0.134 \text{ mW/g}$ ; SAR(10 g) =  $0.095 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.142 \text{ mW/g}$



0 dB =  $0.142\text{mW/g}$

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## Bottom side\_LTE Band 17\_CH23790\_10MHz\_QPSK\_Test case 1

Communication System: LTE Band 17\_10MHz; Frequency: 710 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used:  $f = 710 \text{ MHz}$ ;  $\sigma = 0.922 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.556 mW/g

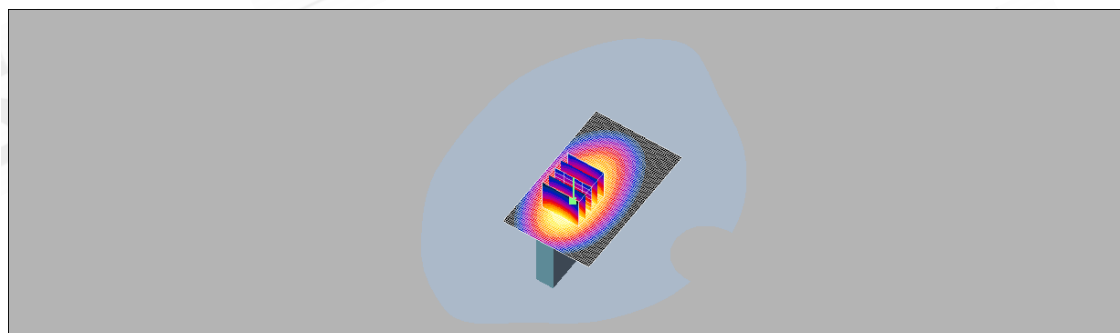
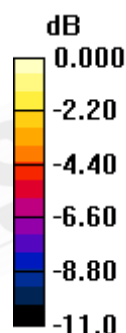
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 23.0 V/m; Power Drift = -0.050 dB

Peak SAR (extrapolated) = 0.750 W/kg

**SAR(1 g) = 0.514 mW/g; SAR(10 g) = 0.342 mW/g**

Maximum value of SAR (measured) = 0.554 mW/g



0 dB = 0.554mW/g

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**Right side\_LTE Band 17\_CH23790\_10MHz\_QPSK\_Test case 1**

Communication System: LTE Band 17\_10MHz; Frequency: 710 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used:  $f = 710 \text{ MHz}$ ;  $\sigma = 0.922 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.063 \text{ mW/g}$

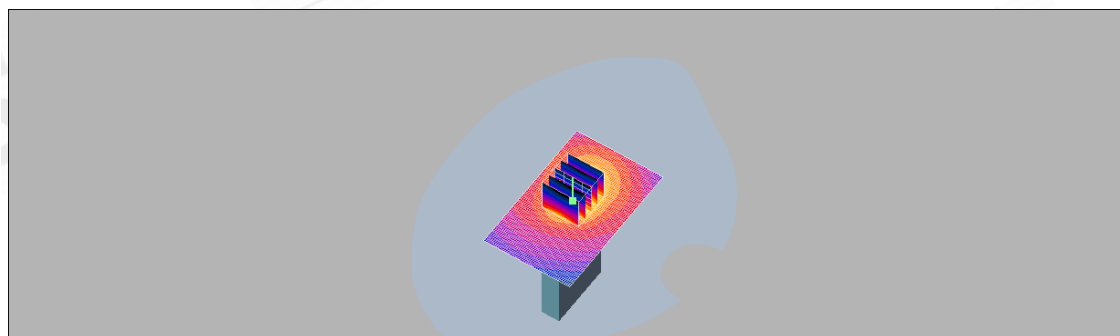
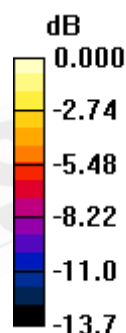
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $7.62 \text{ V/m}$ ; Power Drift =  $0.077 \text{ dB}$

Peak SAR (extrapolated) =  $0.172 \text{ W/kg}$

**SAR(1 g) =  $0.061 \text{ mW/g}$ ; SAR(10 g) =  $0.030 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.065 \text{ mW/g}$



0 dB =  $0.065 \text{ mW/g}$

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## Front side\_LTE Band 17\_CH23780\_10MHz\_QPSK\_Test case 3

Communication System: LTE Band 17\_10MHz; Frequency: 709 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used (interpolated):  $f = 709 \text{ MHz}$ ;  $\sigma = 0.921 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.944 \text{ mW/g}$

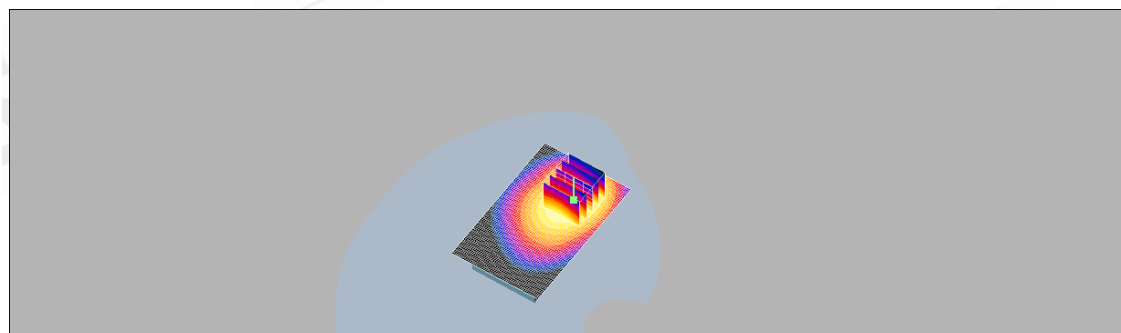
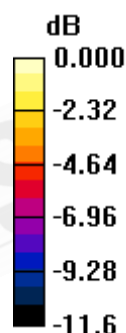
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $9.00 \text{ V/m}$ ; Power Drift =  $-0.041 \text{ dB}$

Peak SAR (extrapolated) =  $1.26 \text{ W/kg}$

**SAR(1 g) =  $0.896 \text{ mW/g}$ ; SAR(10 g) =  $0.621 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.967 \text{ mW/g}$



0 dB =  $0.967 \text{ mW/g}$

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## Back side\_LTE Band 17\_CH23780\_10MHz\_QPSK\_Test case 3

Communication System: LTE Band 17\_10MHz; Frequency: 709 MHz;Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used (interpolated):  $f = 709 \text{ MHz}$ ;  $\sigma = 0.921 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.704 \text{ mW/g}$

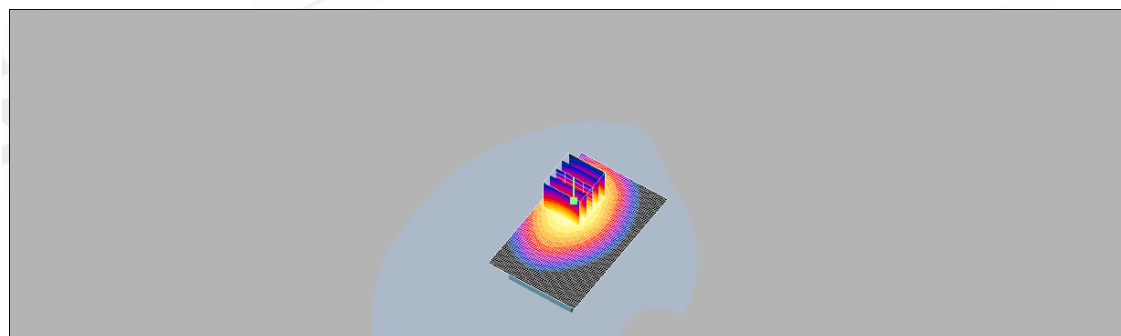
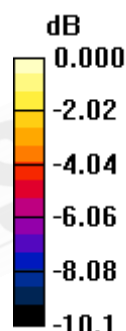
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $9.86 \text{ V/m}$ ; Power Drift =  $0.040 \text{ dB}$

Peak SAR (extrapolated) =  $0.885 \text{ W/kg}$

**SAR(1 g) =  $0.663 \text{ mW/g}$ ; SAR(10 g) =  $0.472 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.705 \text{ mW/g}$



0 dB =  $0.705\text{mW/g}$

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## Top side\_LTE Band 17\_CH23780\_10MHz\_QPSK\_Test case 3

Communication System: LTE Band 17\_10MHz; Frequency: 709 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used (interpolated):  $f = 709 \text{ MHz}$ ;  $\sigma = 0.921 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.212 \text{ mW/g}$

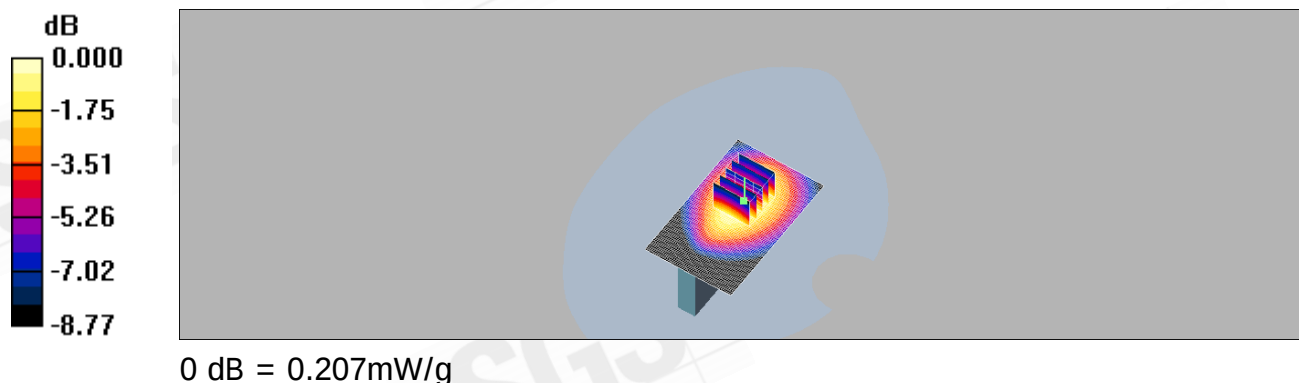
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $13.1 \text{ V/m}$ ; Power Drift =  $0.172 \text{ dB}$

Peak SAR (extrapolated) =  $0.261 \text{ W/kg}$

**SAR(1 g) =  $0.196 \text{ mW/g}$ ; SAR(10 g) =  $0.141 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.207 \text{ mW/g}$



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## Bottom side\_LTE Band 17\_CH23780\_10MHz\_QPSK\_Test case 3

Communication System: LTE Band 17\_10MHz; Frequency: 709 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used (interpolated):  $f = 709 \text{ MHz}$ ;  $\sigma = 0.921 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.579 \text{ mW/g}$

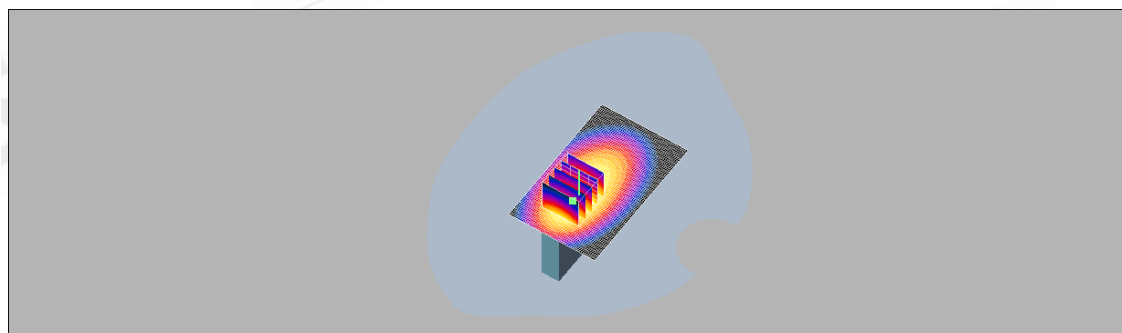
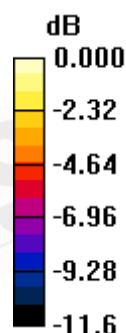
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $23.3 \text{ V/m}$ ; Power Drift =  $-0.035 \text{ dB}$

Peak SAR (extrapolated) =  $0.766 \text{ W/kg}$

**SAR(1 g) =  $0.529 \text{ mW/g}$ ; SAR(10 g) =  $0.354 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.567 \text{ mW/g}$



0 dB =  $0.567 \text{ mW/g}$

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## Right side\_LTE Band 17\_CH23780\_10MHz\_QPSK\_Test case 3

Communication System: LTE Band 17\_10MHz; Frequency: 709 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used (interpolated):  $f = 709 \text{ MHz}$ ;  $\sigma = 0.921 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.037 \text{ mW/g}$

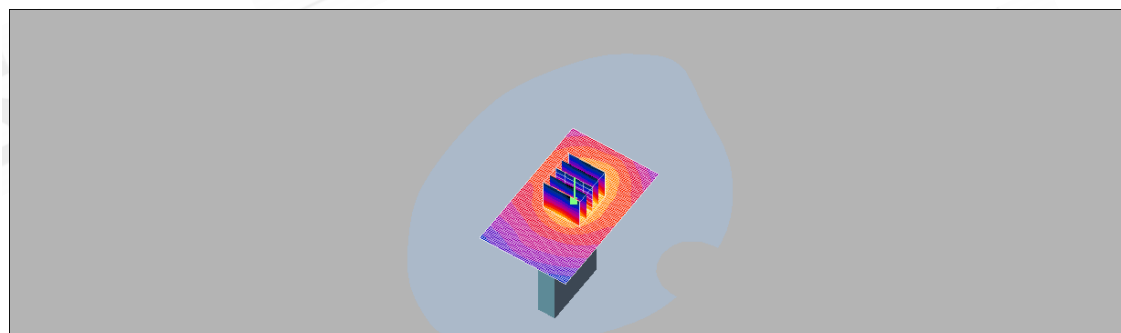
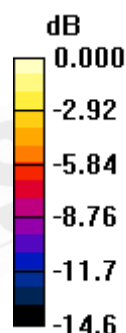
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $6.54 \text{ V/m}$ ; Power Drift =  $0.124 \text{ dB}$

Peak SAR (extrapolated) =  $0.109 \text{ W/kg}$

**SAR(1 g) =  $0.039 \text{ mW/g}$ ; SAR(10 g) =  $0.019 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.041 \text{ mW/g}$



0 dB =  $0.041 \text{ mW/g}$

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## Front side\_LTE Band 17\_CH23780\_10MHz\_QPSK\_Test case 4

Communication System: LTE Band 17\_10MHz; Frequency: 709 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used (interpolated):  $f = 709 \text{ MHz}$ ;  $\sigma = 0.921 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.945 \text{ mW/g}$

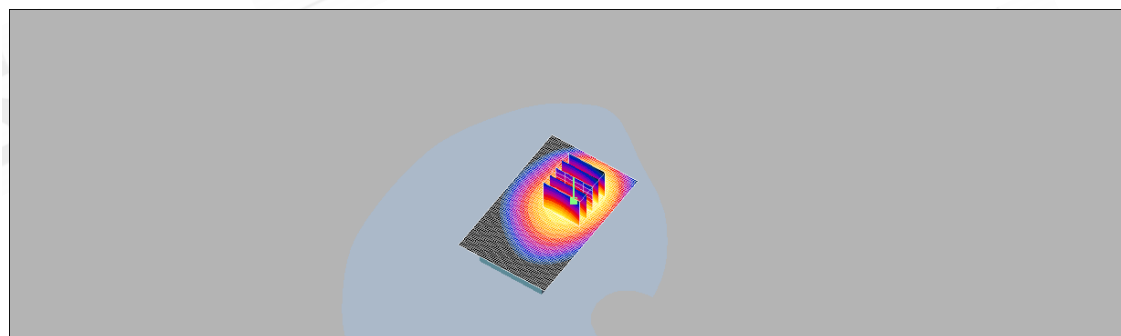
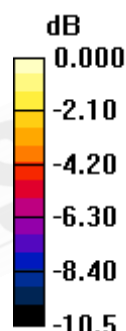
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $9.83 \text{ V/m}$ ; Power Drift =  $-0.005 \text{ dB}$

Peak SAR (extrapolated) =  $1.26 \text{ W/kg}$

**SAR(1 g) =  $0.912 \text{ mW/g}$ ; SAR(10 g) =  $0.633 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.967 \text{ mW/g}$



0 dB =  $0.967 \text{ mW/g}$

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## Back side\_LTE Band 17\_CH23780\_10MHz\_QPSK\_Test case 4

Communication System: LTE Band 17\_10MHz; Frequency: 709 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used (interpolated):  $f = 709 \text{ MHz}$ ;  $\sigma = 0.921 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.809 \text{ mW/g}$

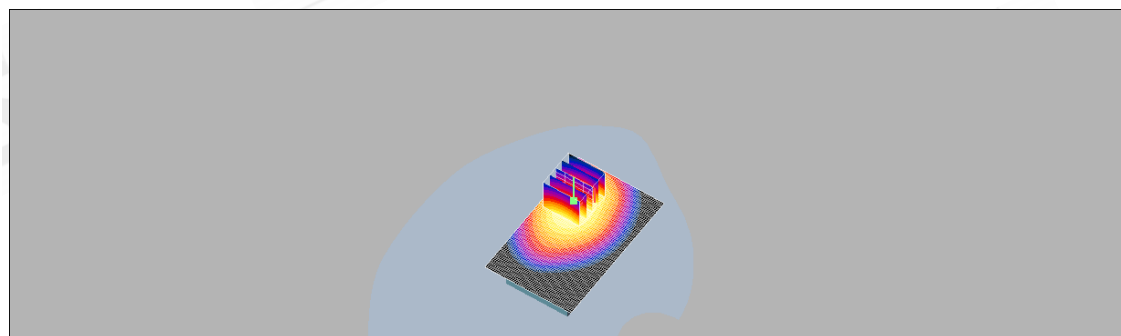
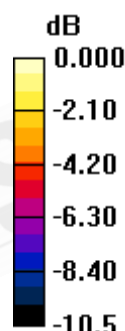
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $8.77 \text{ V/m}$ ; Power Drift =  $0.070 \text{ dB}$

Peak SAR (extrapolated) =  $1.01 \text{ W/kg}$

**SAR(1 g) =  $0.757 \text{ mW/g}$ ; SAR(10 g) =  $0.537 \text{ mW/g}$**

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



0 dB =  $0.805 \text{ mW/g}$

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Date: 2011/5/2

## Top side\_LTE Band 17\_CH23780\_10MHz\_QPSK\_Test case 4

Communication System: LTE Band 17\_10MHz; Frequency: 709 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used (interpolated):  $f = 709 \text{ MHz}$ ;  $\sigma = 0.921 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.154 mW/g

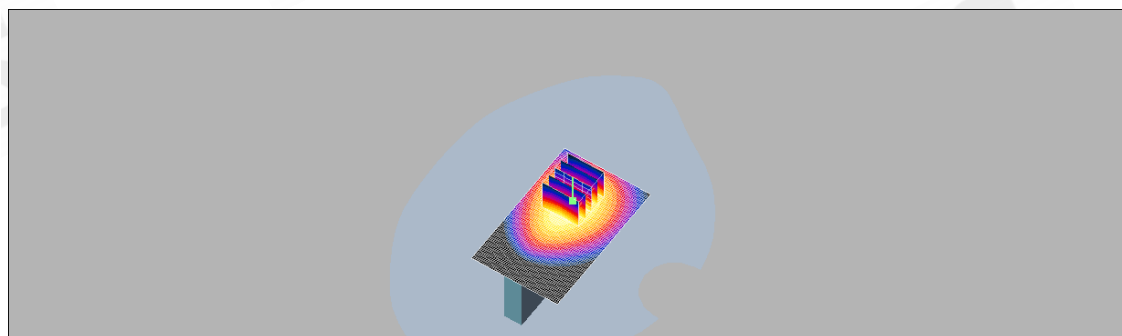
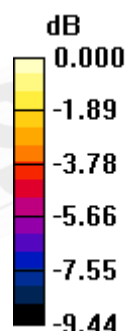
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 12.2 V/m; Power Drift = -0.045 dB

Peak SAR (extrapolated) = 0.204 W/kg

**SAR(1 g) = 0.153 mW/g; SAR(10 g) = 0.107 mW/g**

Maximum value of SAR (measured) = 0.165 mW/g



0 dB = 0.165mW/g

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Date: 2011/5/2

## Bottom side\_LTE Band 17\_CH23780\_10MHz\_QPSK\_Test case 4

Communication System: LTE Band 17\_10MHz; Frequency: 709 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used (interpolated):  $f = 709 \text{ MHz}$ ;  $\sigma = 0.921 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.530 \text{ mW/g}$

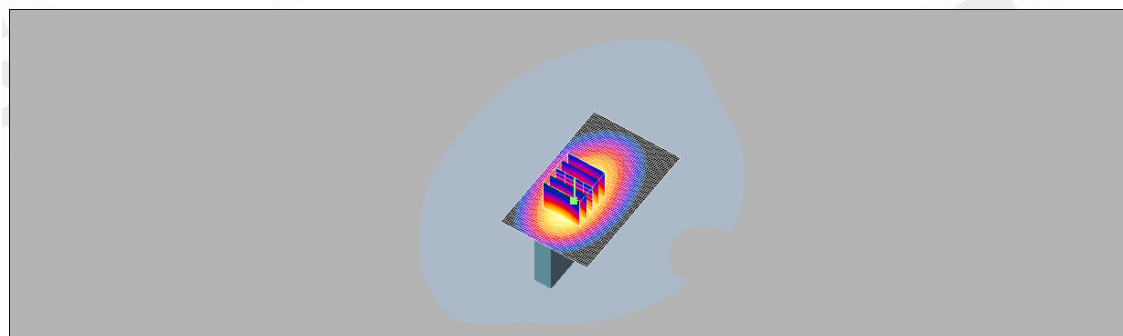
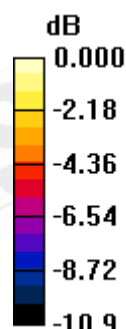
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $22.9 \text{ V/m}$ ; Power Drift =  $0.003 \text{ dB}$

Peak SAR (extrapolated) =  $0.701 \text{ W/kg}$

**SAR(1 g) =  $0.491 \text{ mW/g}$ ; SAR(10 g) =  $0.328 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.530 \text{ mW/g}$



0 dB =  $0.530 \text{ mW/g}$

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Date: 2011/5/2

## Right side\_LTE Band 17\_CH23780\_10MHz\_QPSK\_Test case 4

Communication System: LTE Band 17\_10MHz; Frequency: 709 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used (interpolated):  $f = 709 \text{ MHz}$ ;  $\sigma = 0.921 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.063 \text{ mW/g}$

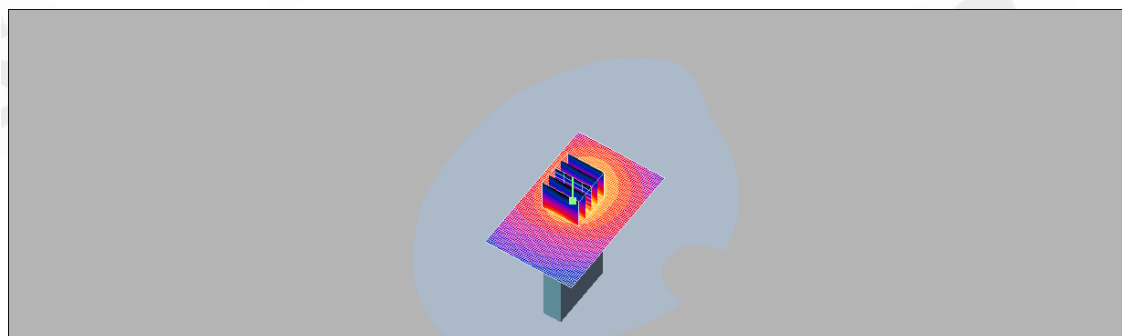
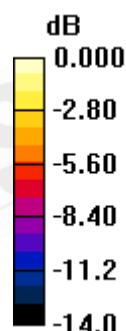
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $7.33 \text{ V/m}$ ; Power Drift =  $-0.079 \text{ dB}$

Peak SAR (extrapolated) =  $0.177 \text{ W/kg}$

**SAR(1 g) =  $0.062 \text{ mW/g}$ ; SAR(10 g) =  $0.030 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.065 \text{ mW/g}$



0 dB =  $0.065 \text{ mW/g}$

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Date: 2011/5/2

## Front side\_LTE Band 17\_CH23790\_10MHz\_16QAM\_Test case 5

Communication System: LTE Band 17\_10MHz; Frequency: 710 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used:  $f = 710 \text{ MHz}$ ;  $\sigma = 0.922 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.681 mW/g

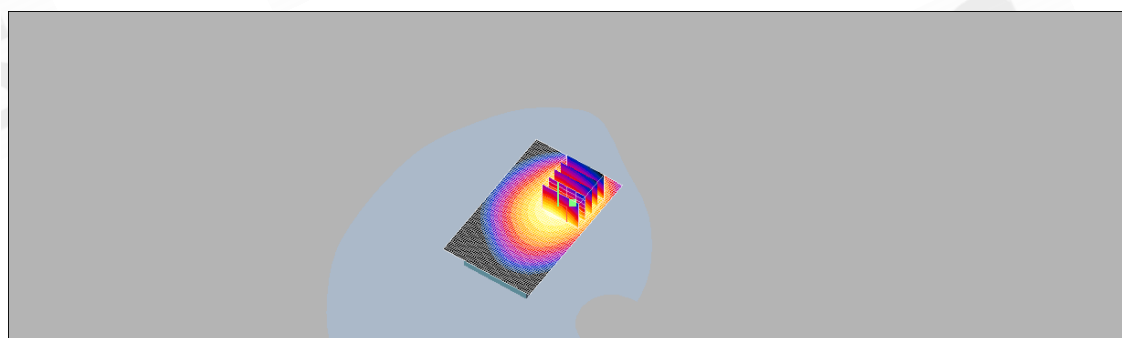
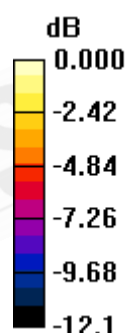
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 8.12 V/m; Power Drift = -0.111 dB

Peak SAR (extrapolated) = 0.902 W/kg

**SAR(1 g) = 0.650 mW/g; SAR(10 g) = 0.451 mW/g**

Maximum value of SAR (measured) = 0.683 mW/g



0 dB = 0.683mW/g

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Date: 2011/5/2

**Back side\_LTE Band 17\_CH23790\_10MHz\_16QAM\_Test case 5**

Communication System: LTE Band 17\_10MHz; Frequency: 710 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used:  $f = 710 \text{ MHz}$ ;  $\sigma = 0.922 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.528 mW/g

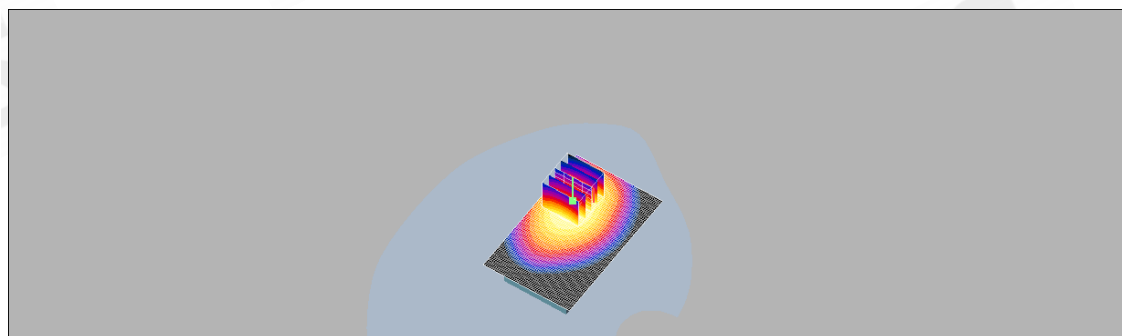
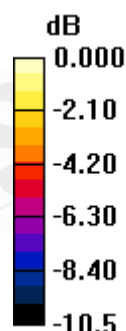
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 8.17 V/m; Power Drift = -0.053 dB

Peak SAR (extrapolated) = 0.667 W/kg

**SAR(1 g) = 0.495 mW/g; SAR(10 g) = 0.351 mW/g**

Maximum value of SAR (measured) = 0.526 mW/g



0 dB = 0.526mW/g

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## Top side\_LTE Band 17\_CH23790\_10MHz\_16QAM\_Test case 5

Communication System: LTE Band 17\_10MHz; Frequency: 710 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used:  $f = 710 \text{ MHz}$ ;  $\sigma = 0.922 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.161 mW/g

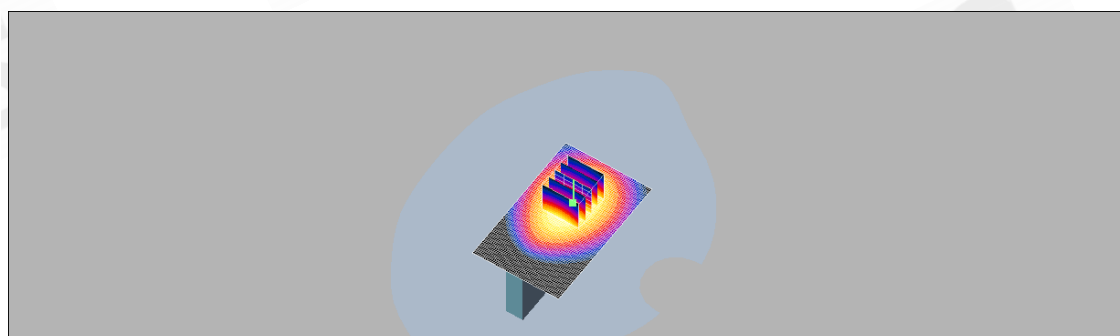
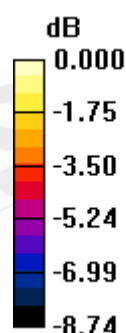
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 12.7 V/m; Power Drift = -0.180 dB

Peak SAR (extrapolated) = 0.195 W/kg

**SAR(1 g) = 0.147 mW/g; SAR(10 g) = 0.105 mW/g**

Maximum value of SAR (measured) = 0.156 mW/g



0 dB = 0.156mW/g

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## Bottom side\_LTE Band 17\_CH23790\_10MHz\_16QAM\_Test case 5

Communication System: LTE Band 17\_10MHz; Frequency: 710 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used:  $f = 710 \text{ MHz}$ ;  $\sigma = 0.922 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.448 mW/g

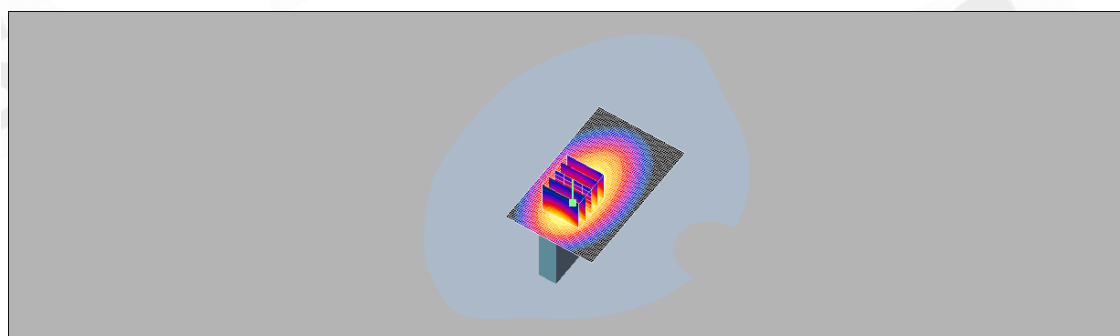
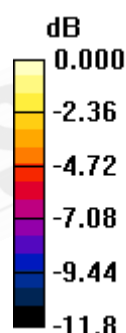
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 20.2 V/m; Power Drift = -0.037 dB

Peak SAR (extrapolated) = 0.597 W/kg

**SAR(1 g) = 0.407 mW/g; SAR(10 g) = 0.270 mW/g**

Maximum value of SAR (measured) = 0.437 mW/g



0 dB = 0.437mW/g

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Date: 2011/5/2

## Right side\_LTE Band 17\_CH23790\_10MHz\_16QAM\_Test case 5

Communication System: LTE Band 17\_10MHz; Frequency: 710 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used:  $f = 710 \text{ MHz}$ ;  $\sigma = 0.922 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.052 mW/g

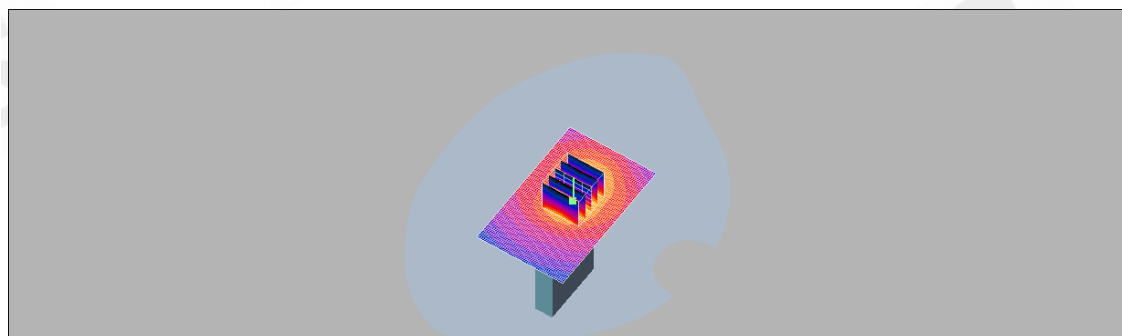
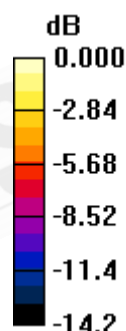
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 7.85 V/m; Power Drift = 0.187 dB

Peak SAR (extrapolated) = 0.156 W/kg

**SAR(1 g) = 0.054 mW/g; SAR(10 g) = 0.026 mW/g**

Maximum value of SAR (measured) = 0.056 mW/g



0 dB = 0.056mW/g

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## Front side\_LTE Band 17\_CH23800\_10MHz\_16QAM\_Test case 7

Communication System: LTE Band 17\_10MHz; Frequency: 711 MHz;Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used (interpolated):  $f = 711 \text{ MHz}$ ;  $\sigma = 0.922 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.815 \text{ mW/g}$

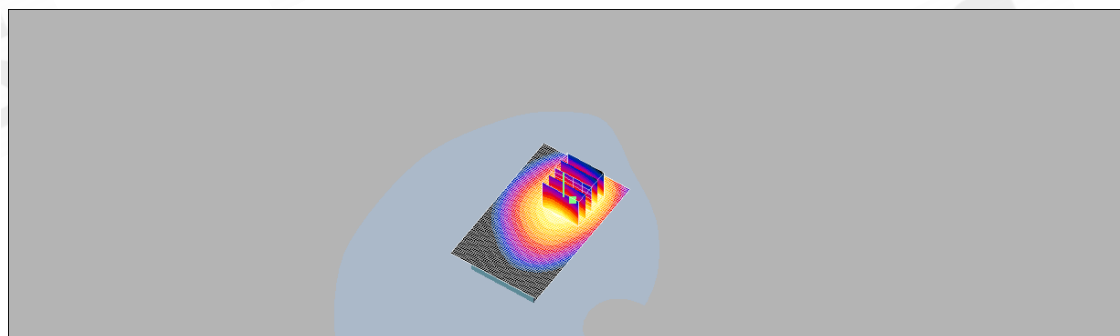
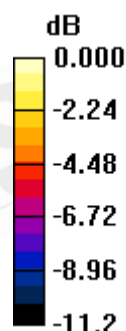
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $8.02 \text{ V/m}$ ; Power Drift =  $0.129 \text{ dB}$

Peak SAR (extrapolated) =  $1.14 \text{ W/kg}$

**SAR(1 g) =  $0.759 \text{ mW/g}$ ; SAR(10 g) =  $0.532 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.811 \text{ mW/g}$



0 dB =  $0.811\text{mW/g}$

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Date: 2011/5/2

## Back side\_LTE Band 17\_CH23800\_10MHz\_16QAM\_Test case 7

Communication System: LTE Band 17\_10MHz; Frequency: 711 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used (interpolated):  $f = 711 \text{ MHz}$ ;  $\sigma = 0.922 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.657 mW/g

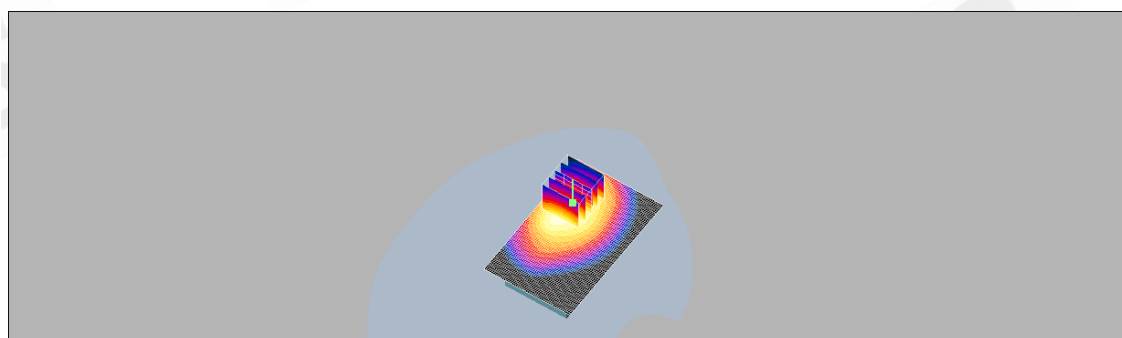
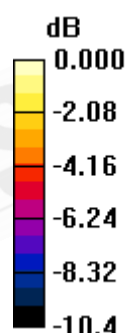
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 8.84 V/m; Power Drift = 0.016 dB

Peak SAR (extrapolated) = 0.831 W/kg

**SAR(1 g) = 0.637 mW/g; SAR(10 g) = 0.451 mW/g**

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



0 dB = 0.682mW/g

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## Top side\_LTE Band 17\_CH23800\_10MHz\_16QAM\_Test case 7

Communication System: LTE Band 17\_10MHz; Frequency: 711 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used (interpolated):  $f = 711 \text{ MHz}$ ;  $\sigma = 0.922 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.116 \text{ mW/g}$

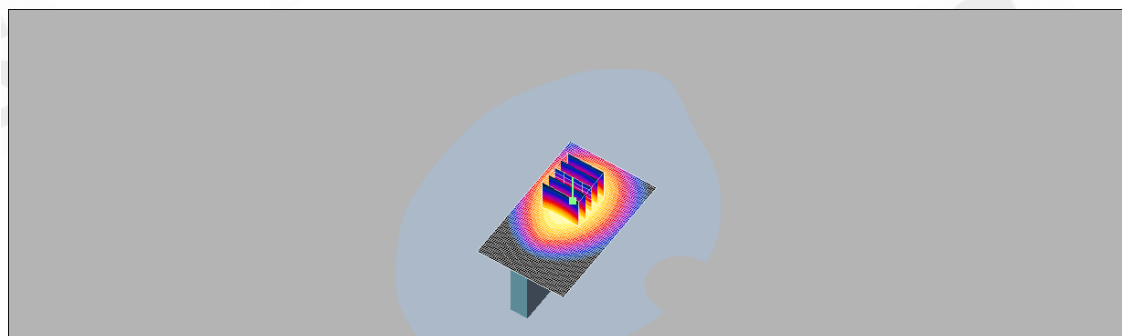
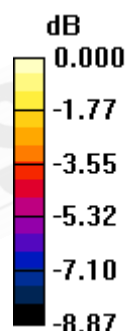
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $10.6 \text{ V/m}$ ; Power Drift =  $-0.039 \text{ dB}$

Peak SAR (extrapolated) =  $0.144 \text{ W/kg}$

**SAR(1 g) =  $0.107 \text{ mW/g}$ ; SAR(10 g) =  $0.077 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.114 \text{ mW/g}$



0 dB =  $0.114 \text{ mW/g}$

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Date: 2011/5/2

## Bottom side\_LTE Band 17\_CH23800\_10MHz\_16QAM\_Test case 7

Communication System: LTE Band 17\_10MHz; Frequency: 711 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used (interpolated):  $f = 711 \text{ MHz}$ ;  $\sigma = 0.922 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.521 mW/g

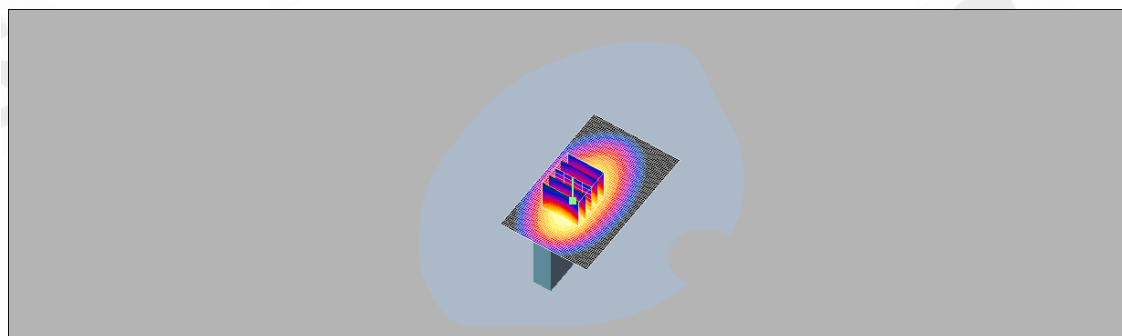
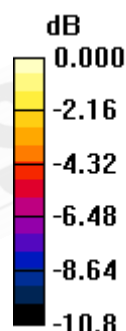
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 22.9 V/m; Power Drift = -0.137 dB

Peak SAR (extrapolated) = 0.727 W/kg

**SAR(1 g) = 0.491 mW/g; SAR(10 g) = 0.328 mW/g**

Maximum value of SAR (measured) = 0.517 mW/g



0 dB = 0.517mW/g

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Date: 2011/5/2

## Right side\_LTE Band 17\_CH23800\_10MHz\_16QAM\_Test case 7

Communication System: LTE Band 17\_10MHz; Frequency: 711 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used (interpolated):  $f = 711 \text{ MHz}$ ;  $\sigma = 0.922 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.033 mW/g

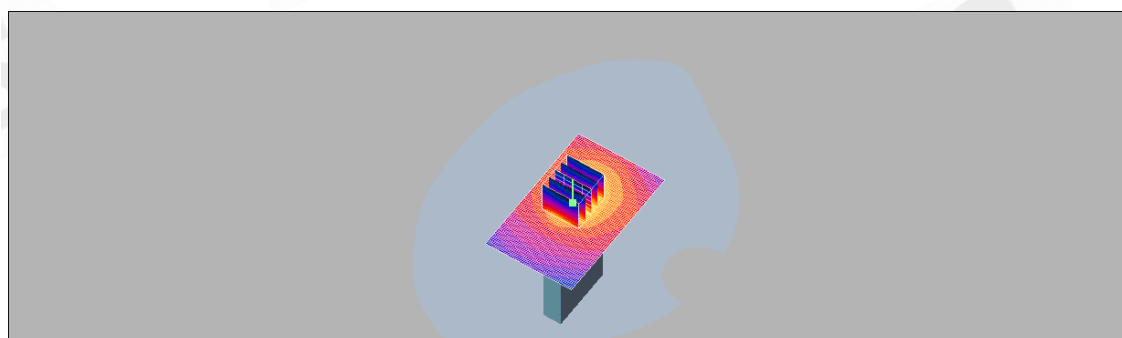
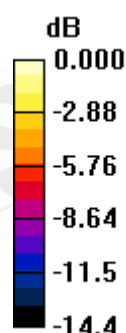
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 5.15 V/m; Power Drift = 0.103 dB

Peak SAR (extrapolated) = 0.097 W/kg

**SAR(1 g) = 0.034 mW/g; SAR(10 g) = 0.016 mW/g**

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



0 dB = 0.035mW/g

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Date: 2011/5/2

## Front side\_LTE Band 17\_CH23780\_10MHz\_16QAM\_Test case 8

Communication System: LTE Band 17\_10MHz; Frequency: 709 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used (interpolated):  $f = 709 \text{ MHz}$ ;  $\sigma = 0.921 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.856 mW/g

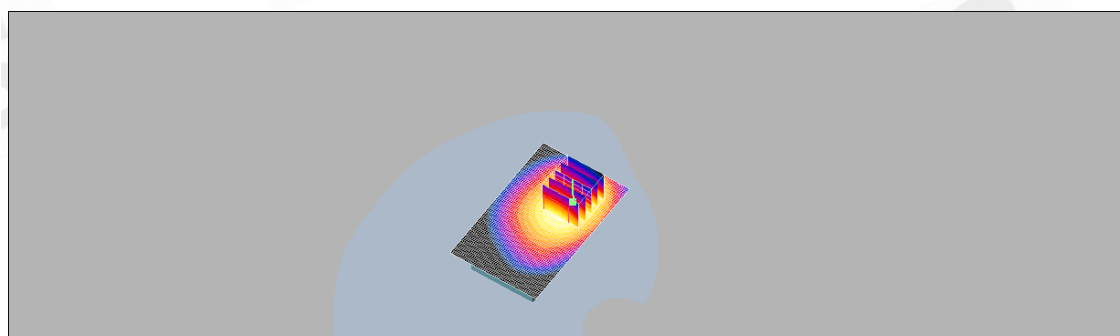
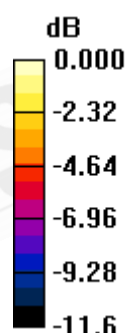
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 8.95 V/m; Power Drift = -0.046 dB

Peak SAR (extrapolated) = 1.09 W/kg

**SAR(1 g) = 0.796 mW/g; SAR(10 g) = 0.553 mW/g**

Maximum value of SAR (measured) = 0.848 mW/g



0 dB = 0.848mW/g

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Date: 2011/5/2

## Back side\_LTE Band 17\_CH23780\_10MHz\_16QAM\_Test case 8

Communication System: LTE Band 17\_10MHz; Frequency: 709 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used (interpolated):  $f = 709 \text{ MHz}$ ;  $\sigma = 0.921 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.646 mW/g

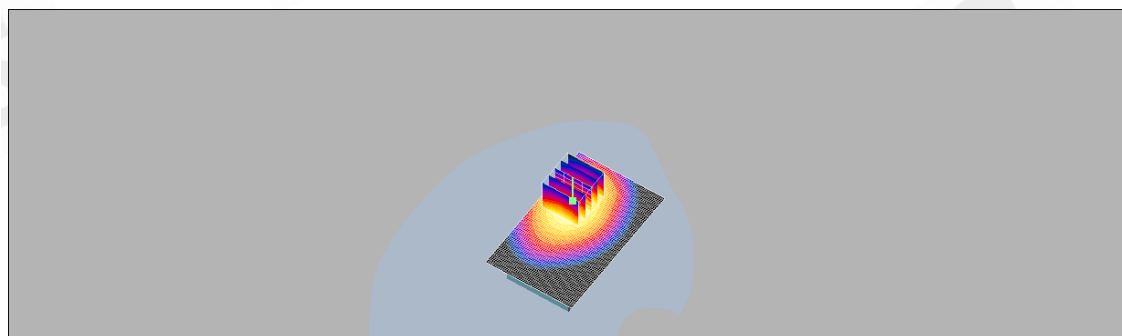
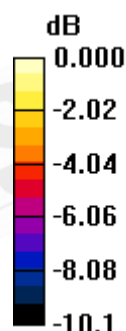
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 9.36 V/m; Power Drift = -0.182 dB

Peak SAR (extrapolated) = 0.821 W/kg

**SAR(1 g) = 0.625 mW/g; SAR(10 g) = 0.443 mW/g**

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



0 dB = 0.672mW/g

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Date: 2011/5/2

## Top side\_LTE Band 17\_CH23780\_10MHz\_16QAM\_Test case 8

Communication System: LTE Band 17\_10MHz; Frequency: 709 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used (interpolated):  $f = 709 \text{ MHz}$ ;  $\sigma = 0.921 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.186 mW/g

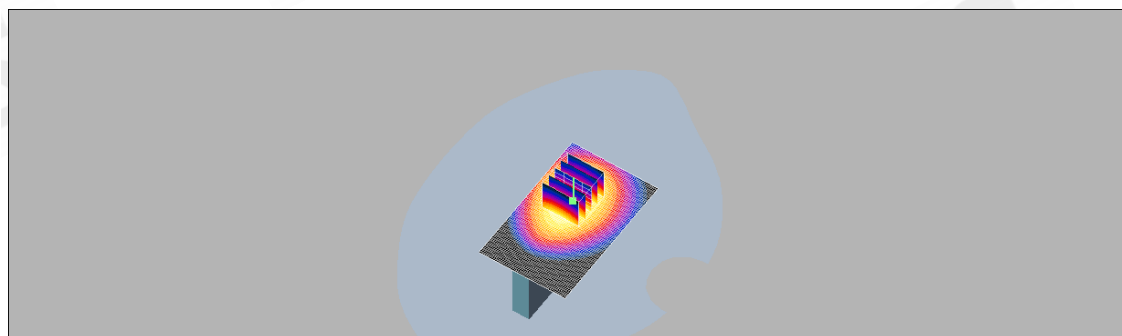
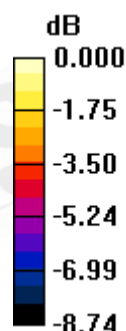
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 13.3 V/m; Power Drift = 0.084 dB

Peak SAR (extrapolated) = 0.229 W/kg

**SAR(1 g) = 0.171 mW/g; SAR(10 g) = 0.123 mW/g**

Maximum value of SAR (measured) = 0.183 mW/g



0 dB = 0.183mW/g

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Date: 2011/5/2

## Bottom side\_LTE Band 17\_CH23780\_10MHz\_16QAM\_Test case 8

Communication System: LTE Band 17\_10MHz; Frequency: 709 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used (interpolated):  $f = 709 \text{ MHz}$ ;  $\sigma = 0.921 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 0.381 mW/g

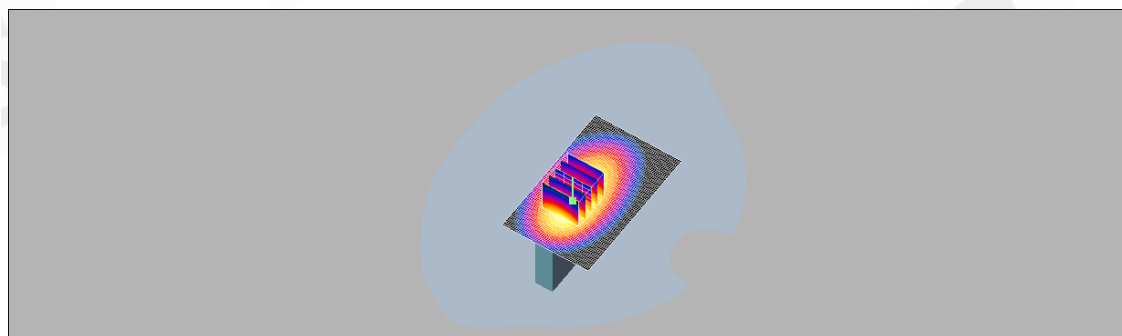
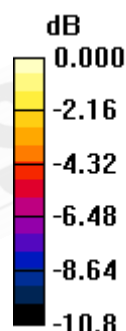
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 19.1 V/m; Power Drift = 0.088 dB

Peak SAR (extrapolated) = 0.493 W/kg

**SAR(1 g) = 0.348 mW/g; SAR(10 g) = 0.234 mW/g**

Maximum value of SAR (measured) = 0.372 mW/g



0 dB = 0.372mW/g

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Date: 2011/5/2

## Right side\_LTE Band 17\_CH23780\_10MHz\_16QAM\_Test case 8

Communication System: LTE Band 17\_10MHz; Frequency: 709 MHz; Duty Cycle: 1:1  
Medium: Muscle 750 MHz Medium parameters used (interpolated):  $f = 709 \text{ MHz}$ ;  $\sigma = 0.921 \text{ mho/m}$ ;  $\epsilon_r = 55.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.019 \text{ mW/g}$

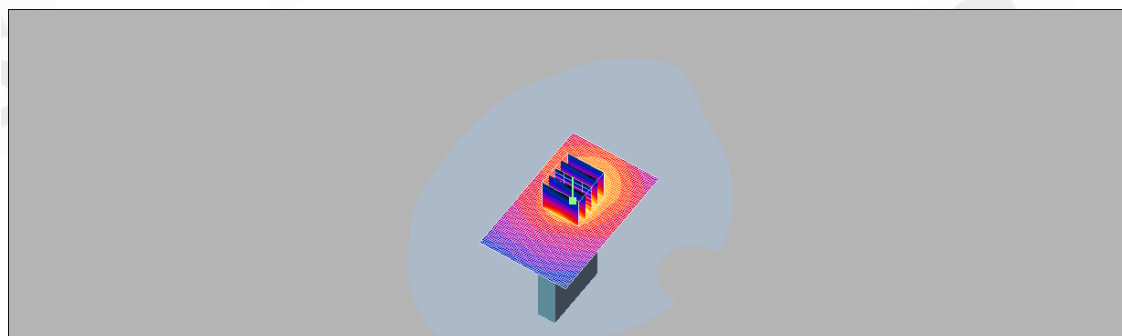
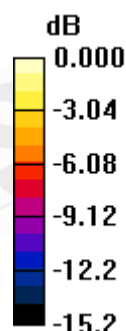
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $4.58 \text{ V/m}$ ; Power Drift =  $0.100 \text{ dB}$

Peak SAR (extrapolated) =  $0.059 \text{ W/kg}$

**SAR(1 g) =  $0.021 \text{ mW/g}$ ; SAR(10 g) =  $0.010 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.023 \text{ mW/g}$



0 dB =  $0.023\text{mW/g}$

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Date: 2011/5/3

**Front Side\_WLAN802.11 b\_CH11**

Communication System: Wireless LAN; Frequency: 2462 MHz; Duty Cycle: 1:1  
Medium: Muscle 2450 Medium parameters used:  $f = 2462 \text{ MHz}$ ;  $\sigma = 1.99 \text{ mho/m}$ ;  $\epsilon_r = 52.6$ ;  
 $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.132 mW/g

**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 2.77 V/m; Power Drift = -0.177 dB

Peak SAR (extrapolated) = 0.221 W/kg

**SAR(1 g) = 0.118 mW/g; SAR(10 g) = 0.066 mW/g**

Maximum value of SAR (measured) = 0.126 mW/g

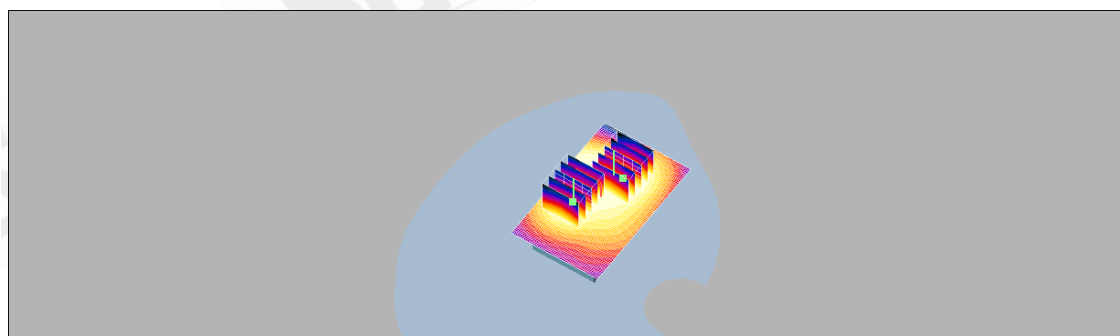
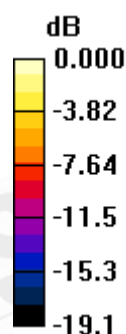
**body/Zoom Scan (7x7x7)/Cube 1:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 2.77 V/m; Power Drift = -0.177 dB

Peak SAR (extrapolated) = 0.148 W/kg

**SAR(1 g) = 0.080 mW/g; SAR(10 g) = 0.046 mW/g**

Maximum value of SAR (measured) = 0.086 mW/g



0 dB = 0.086mW/g

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## Back Side\_WLAN802.11 b\_CH11

Communication System: Wireless LAN; Frequency: 2462 MHz; Duty Cycle: 1:1  
Medium: Muscle 2450 Medium parameters used:  $f = 2462 \text{ MHz}$ ;  $\sigma = 1.99 \text{ mho/m}$ ;  $\epsilon_r = 52.6$ ;  
 $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.11, 4.11, 4.11); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.110 \text{ mW/g}$

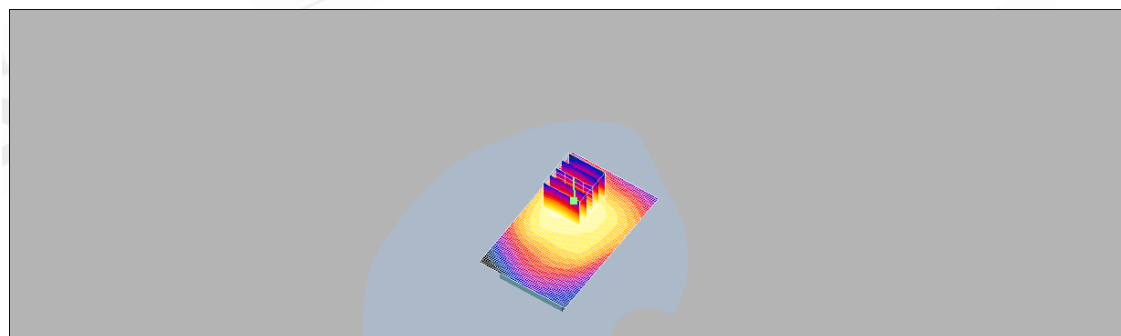
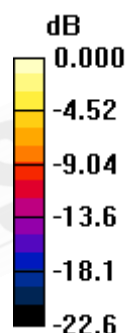
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value =  $1.91 \text{ V/m}$ ; Power Drift =  $0.128 \text{ dB}$

Peak SAR (extrapolated) =  $0.185 \text{ W/kg}$

**SAR(1 g) =  $0.100 \text{ mW/g}$ ; SAR(10 g) =  $0.055 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.108 \text{ mW/g}$



0 dB =  $0.108 \text{ mW/g}$

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## Top Side\_WLAN802.11 b\_CH11

Communication System: Wireless LAN; Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: Muscle 2450 Medium parameters used:  $f = 2462 \text{ MHz}$ ;  $\sigma = 1.99 \text{ mho/m}$ ;  $\epsilon_r = 52.6$ ;  
 $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.166 mW/g

**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 7.55 V/m; Power Drift = 0.135 dB

Peak SAR (extrapolated) = 0.291 W/kg

**SAR(1 g) = 0.151 mW/g; SAR(10 g) = 0.079 mW/g**

Maximum value of SAR (measured) = 0.162 mW/g

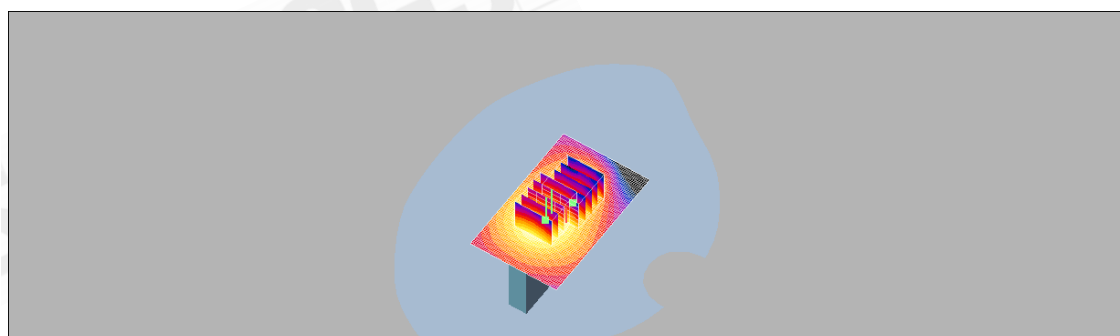
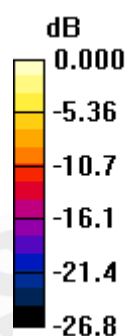
**body/Zoom Scan (7x7x7)/Cube 1:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value = 7.55 V/m; Power Drift = 0.135 dB

Peak SAR (extrapolated) = 0.271 W/kg

**SAR(1 g) = 0.122 mW/g; SAR(10 g) = 0.061 mW/g**

Maximum value of SAR (measured) = 0.153 mW/g



0 dB = 0.153mW/g

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## Right Side\_WLAN802.11 b\_CH11

Communication System: Wireless LAN; Frequency: 2462 MHz; Duty Cycle: 1:1  
Medium: Muscle 2450 Medium parameters used:  $f = 2462 \text{ MHz}$ ;  $\sigma = 1.99 \text{ mho/m}$ ;  $\epsilon_r = 52.6$ ;  
 $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.11, 4.11, 4.11); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**body/Area Scan (51x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.045 \text{ mW/g}$

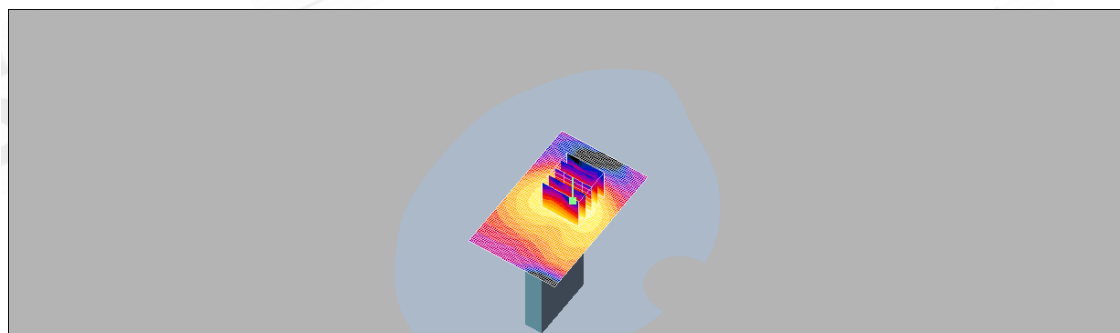
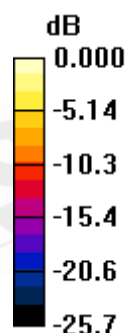
**body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value =  $2.52 \text{ V/m}$ ; Power Drift =  $0.191 \text{ dB}$

Peak SAR (extrapolated) =  $0.084 \text{ W/kg}$

**SAR(1 g) =  $0.039 \text{ mW/g}$ ; SAR(10 g) =  $0.019 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.043 \text{ mW/g}$



0 dB =  $0.043 \text{ mW/g}$

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## 5. SAR System Performance Verification

Date: 2011/5/2

### DUT: Dipole 750 MHz ;

Communication System: CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium: Body 750 MHz Medium parameters used:  $f = 750 \text{ MHz}$ ;  $\sigma = 0.931 \text{ mho/m}$ ;  $\epsilon_r = 53.2$ ;  
 $\rho = 1000 \text{ kg/m}^3$ 

Phantom section: Flat Section

### DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(6.33, 6.33, 6.33); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Pin=250mW/Area Scan (61x61x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 2.33 mW/g

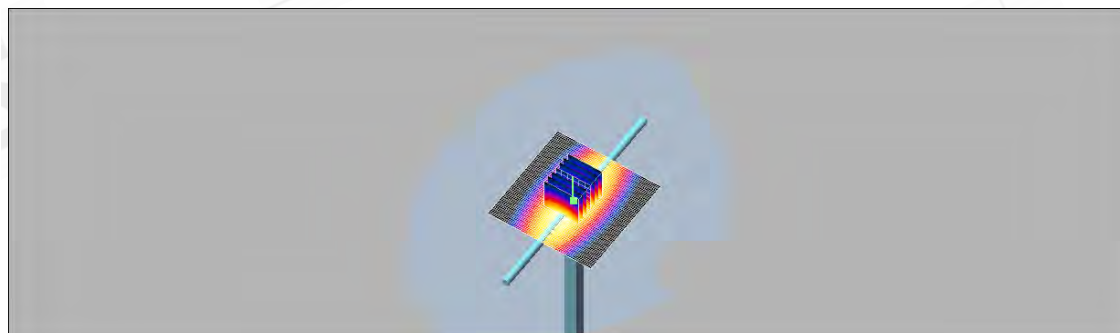
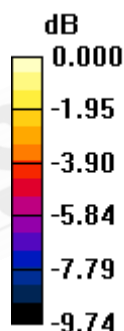
**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  
 $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 52.2 V/m; Power Drift = -0.013 dB

Peak SAR (extrapolated) = 3.12 W/kg

**SAR(1 g) = 2.16 mW/g; SAR(10 g) = 1.44 mW/g**

Maximum value of SAR (measured) = 2.33 mW/g



0 dB = 2.33mW/g

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## DUT: Dipole 835 MHz;

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

Medium: Body 850 MHz Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 1 \text{ mho/m}$ ;  $\epsilon_r = 53.3$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

## DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.84, 5.84, 5.84); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Pin=250mW/Area Scan (61x61x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 2.82 mW/g

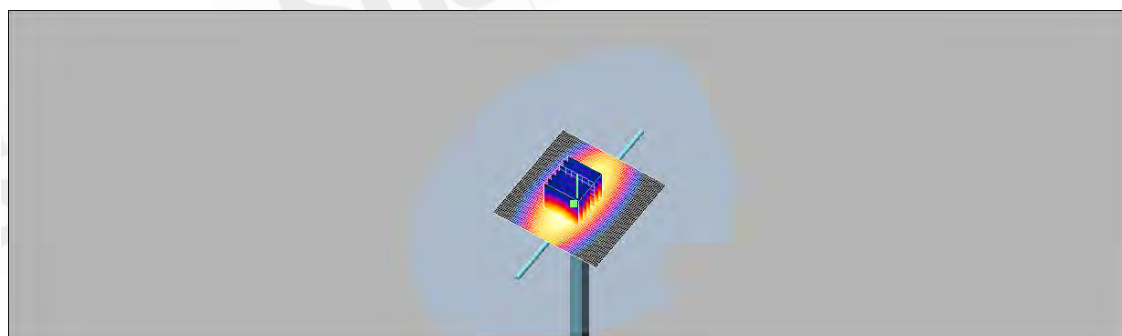
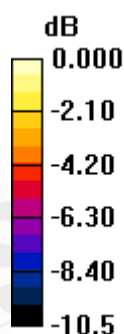
**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 53.4 V/m; Power Drift = 0.032 dB

Peak SAR (extrapolated) = 3.88 W/kg

**SAR(1 g) = 2.62 mW/g; SAR(10 g) = 1.72 mW/g**

Maximum value of SAR (measured) = 2.83 mW/g



0 dB = 2.83mW/g

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Date: 2011/5/13

## DUT: Dipole 1750 MHz;

Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: Body 1750 Medium parameters used:  $f = 1750 \text{ MHz}$ ;  $\sigma = 1.45 \text{ mho/m}$ ;  $\epsilon_r = 53$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

## DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.63, 4.63, 4.63); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Pin=250mW/Area Scan (61x61x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 10.9 mW/g

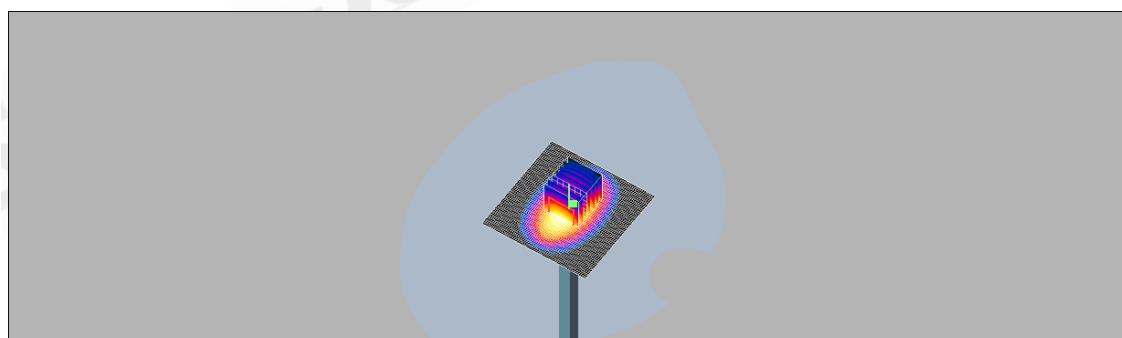
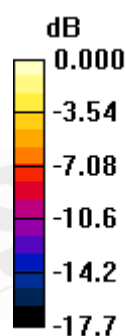
**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 86.4 V/m; Power Drift = 0.009 dB

Peak SAR (extrapolated) = 17.0 W/kg

**SAR(1 g) = 9.32 mW/g; SAR(10 g) = 4.88 mW/g**

Maximum value of SAR (measured) = 10.6 mW/g



0 dB = 10.6mW/g

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## DUT: Dipole 1900 MHz;

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

Medium: Body 1900 Medium parameters used:  $f = 1900 \text{ MHz}$ ;  $\sigma = 1.59 \text{ mho/m}$ ;  $\epsilon_r = 52.5$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

## DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.45, 4.45, 4.45); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Pin=250mW/Area Scan (51x61x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 13.2 mW/g

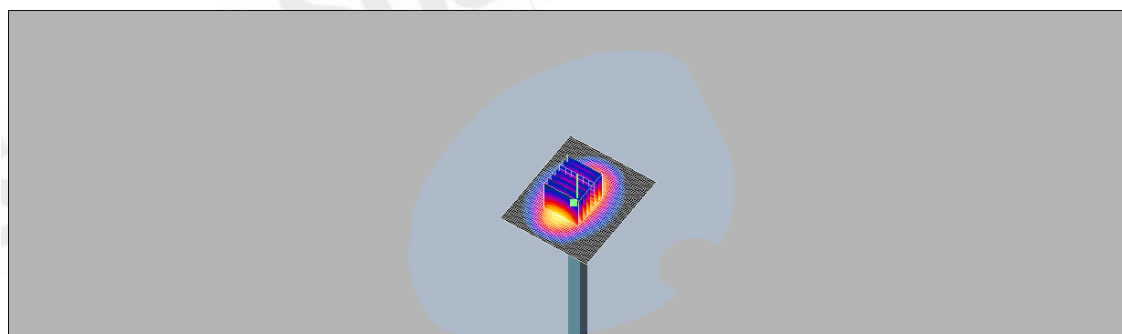
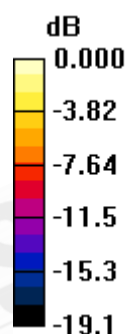
**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 86.8 V/m; Power Drift = -0.010 dB

Peak SAR (extrapolated) = 18.5 W/kg

**SAR(1 g) = 9.98 mW/g; SAR(10 g) = 5.12 mW/g**

Maximum value of SAR (measured) = 11.5 mW/g



0 dB = 11.5mW/g

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## DUT: Dipole 2450 MHz;

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: Body 2450 Medium parameters used:  $f = 2450 \text{ MHz}$ ;  $\sigma = 1.97 \text{ mho/m}$ ;  $\epsilon_r = 52.8$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

## DASY4 Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.11, 4.11, 4.11); Calibrated: 2010/5/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2010/8/18
- Phantom: SAM1; Type: SAM 4.0; Serial: TP:1419
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Pin=250mW/Area Scan (51x61x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 19.3 mW/g

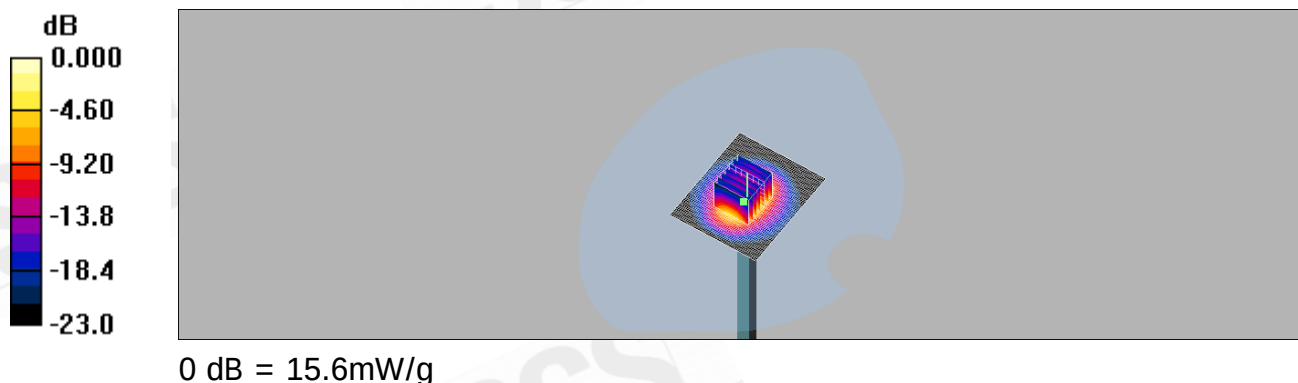
**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 89.1 V/m; Power Drift = -0.028 dB

Peak SAR (extrapolated) = 29.7 W/kg

**SAR(1 g) = 13.1 mW/g; SAR(10 g) = 6.12 mW/g**

Maximum value of SAR (measured) = 15.6 mW/g



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## 6. DAE & Probe Calibration certificate

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Zeughausstrasse 43, 8004 Zurich, Switzerland



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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client **SGS-TW**

Certificate No: **DAE4-547\_Aug10**

### CALIBRATION CERTIFICATE

Object **DAE4 - SD 000 D04 BJ - SN: 547**

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

Calibration date: **August 18, 2010**

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

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

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards             | ID #               | Cal Date (Certificate No.) | Scheduled Calibration  |
|-------------------------------|--------------------|----------------------------|------------------------|
| Keithley Multimeter Type 2001 | SN: 0810278        | 1-Oct-09 (No: 9055)        | Oct-10                 |
| Secondary Standards           | ID #               | Check Date (in house)      | Scheduled Check        |
| Calibrator Box V1.1           | SE UMS 006 AB 1004 | 07-Jun-10 (in house check) | In house check: Jun-11 |

|                |                           |                        |               |
|----------------|---------------------------|------------------------|---------------|
| Calibrated by: | Name<br>Dominique Steffen | Function<br>Technician | Signature<br> |
| Approved by:   | Fin Bornholt              | R&D Director           |               |

Issued: August 18, 2010

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Certificate No: DAE4-547\_Aug10

Page 1 of 5

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Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 108**

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Client **SGS-TW (Auden)**

Certificate No: **ES3-3172\_May10**

## CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3172**

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

Calibration date: **May 21, 2010**

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

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

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards          | ID #            | Cal Date (Certificate No.)        | Scheduled Calibration  |
|----------------------------|-----------------|-----------------------------------|------------------------|
| Power meter E4419B         | GB41293874      | 1-Apr-10 (No. 217-01136)          | Apr-11                 |
| Power sensor E4412A        | MY41495277      | 1-Apr-10 (No. 217-01136)          | Apr-11                 |
| Power sensor E4412A        | MY41498087      | 1-Apr-10 (No. 217-01136)          | Apr-11                 |
| Reference 3 dB Attenuator  | SN: S5054 (3c)  | 30-Mar-10 (No. 217-01159)         | Mar-11                 |
| Reference 20 dB Attenuator | SN: S5086 (20b) | 30-Mar-10 (No. 217-01161)         | Mar-11                 |
| Reference 30 dB Attenuator | SN: S5129 (30b) | 30-Mar-10 (No. 217-01160)         | Mar-11                 |
| Reference Probe ES3DV2     | SN: 3013        | 30-Dec-09 (No. ES3-3013_Dec09)    | Dec-10                 |
| DAE4                       | SN: 660         | 20-Apr-10 (No. DAE4-660_Apr10)    | Apr-11                 |
| Secondary Standards        | ID #            | Check Date (in house)             | Scheduled Check        |
| RF generator HP 8648C      | US3642U01700    | 4-Aug-99 (in house check Oct-09)  | In house check: Oct-11 |
| Network Analyzer HP 8753E  | US37390585      | 18-Oct-01 (in house check Oct-09) | In house check: Oct10  |

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

Issued: May 22, 2010

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Certificate No: ES3-3172\_May10

Page 1 of 11

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Accreditation No.: **SCS 108**

## Glossary:

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

## Calibration is Performed According to the Following Standards:

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

## Methods Applied and Interpretation of Parameters:

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

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ES3DV3 SN:3172

May 21, 2010

## Probe ES3DV3

SN:3172

|                  |                  |
|------------------|------------------|
| Manufactured:    | January 23, 2008 |
| Last calibrated: | May 27, 2009     |
| Recalibrated:    | May 21, 2010     |

Calibrated for DASY/EASY Systems

(Note: non-compatible with DASY2 system!)

Certificate No: ES3-3172\_May10

Page 3 of 11

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ES3DV3 SN:3172

May 21, 2010

**DASY/EASY - Parameters of Probe: ES3DV3 SN:3172****Basic Calibration Parameters**

|                                                           | Sensor X | Sensor Y | Sensor Z | Unc (k=2) |
|-----------------------------------------------------------|----------|----------|----------|-----------|
| Norm ( $\mu\text{V}/(\text{V}/\text{m})^2$ ) <sup>A</sup> | 1.37     | 1.19     | 0.97     | ± 10.1%   |
| DCP (mV) <sup>B</sup>                                     | 93.9     | 92.5     | 93.2     |           |

**Modulation Calibration Parameters**

| UID   | Communication System Name | PAR  |   | A<br>dB | B<br>dBuV | C    | VR<br>mV | Unc <sup>E</sup><br>(k=2) |
|-------|---------------------------|------|---|---------|-----------|------|----------|---------------------------|
| 10000 | CW                        | 0.00 | X | 0.00    | 0.00      | 1.00 | 300.0    | ± 1.5%                    |
|       |                           |      | Y | 0.00    | 0.00      | 1.00 | 300.0    |                           |
|       |                           |      | Z | 0.00    | 0.00      | 1.00 | 300.0    |                           |

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

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

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

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

Certificate No: ES3-3172\_May10

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ES3DV3 SN:3172

May 21, 2010

**DASY/EASY - Parameters of Probe: ES3DV3 SN:3172****Calibration Parameter Determined in Head Tissue Simulating Media**

| f [MHz] | Validity [MHz] <sup>C</sup> | Permittivity | Conductivity | ConvF X | ConvF Y | ConvF Z | Alpha | Depth Unc (k=2) |
|---------|-----------------------------|--------------|--------------|---------|---------|---------|-------|-----------------|
| 835     | ± 50 / ± 100                | 41.5 ± 5%    | 0.90 ± 5%    | 5.85    | 5.85    | 5.85    | 0.76  | 1.14 ± 11.0%    |
| 900     | ± 50 / ± 100                | 41.5 ± 5%    | 0.97 ± 5%    | 5.75    | 5.75    | 5.75    | 0.87  | 1.08 ± 11.0%    |
| 1750    | ± 50 / ± 100                | 40.1 ± 5%    | 1.37 ± 5%    | 5.04    | 5.04    | 5.04    | 0.31  | 1.82 ± 11.0%    |
| 1900    | ± 50 / ± 100                | 40.0 ± 5%    | 1.40 ± 5%    | 4.89    | 4.89    | 4.89    | 0.50  | 1.46 ± 11.0%    |
| 2000    | ± 50 / ± 100                | 40.0 ± 5%    | 1.40 ± 5%    | 4.73    | 4.73    | 4.73    | 0.49  | 1.44 ± 11.0%    |
| 2450    | ± 50 / ± 100                | 39.2 ± 5%    | 1.80 ± 5%    | 4.32    | 4.32    | 4.32    | 0.42  | 1.70 ± 11.0%    |

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

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ES3DV3 SN:3172

May 21, 2010

**DASY/EASY - Parameters of Probe: ES3DV3 SN:3172****Calibration Parameter Determined in Body Tissue Simulating Media**

| f [MHz] | Validity [MHz] <sup>c</sup> | Permittivity | Conductivity | ConvF X | ConvF Y | ConvF Z | Alpha | Depth Unc (k=2) |
|---------|-----------------------------|--------------|--------------|---------|---------|---------|-------|-----------------|
| 835     | ± 50 / ± 100                | 55.2 ± 5%    | 0.97 ± 5%    | 5.84    | 5.84    | 5.84    | 0.81  | 1.19 ± 11.0%    |
| 900     | ± 50 / ± 100                | 55.0 ± 5%    | 1.05 ± 5%    | 5.75    | 5.75    | 5.75    | 0.73  | 1.24 ± 11.0%    |
| 1750    | ± 50 / ± 100                | 53.4 ± 5%    | 1.49 ± 5%    | 4.63    | 4.63    | 4.63    | 0.39  | 1.75 ± 11.0%    |
| 1900    | ± 50 / ± 100                | 53.3 ± 5%    | 1.52 ± 5%    | 4.45    | 4.45    | 4.45    | 0.32  | 2.36 ± 11.0%    |
| 2000    | ± 50 / ± 100                | 53.3 ± 5%    | 1.52 ± 5%    | 4.47    | 4.47    | 4.47    | 0.32  | 2.44 ± 11.0%    |
| 2450    | ± 50 / ± 100                | 52.7 ± 5%    | 1.95 ± 5%    | 4.11    | 4.11    | 4.11    | 0.82  | 1.17 ± 11.0%    |
| 2600    | ± 50 / ± 100                | 52.5 ± 5%    | 2.16 ± 5%    | 3.99    | 3.99    | 3.99    | 0.95  | 1.09 ± 11.0%    |
| 3500    | ± 50 / ± 100                | 51.3 ± 5%    | 3.31 ± 5%    | 3.28    | 3.28    | 3.28    | 1.00  | 1.28 ± 13.1%    |

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

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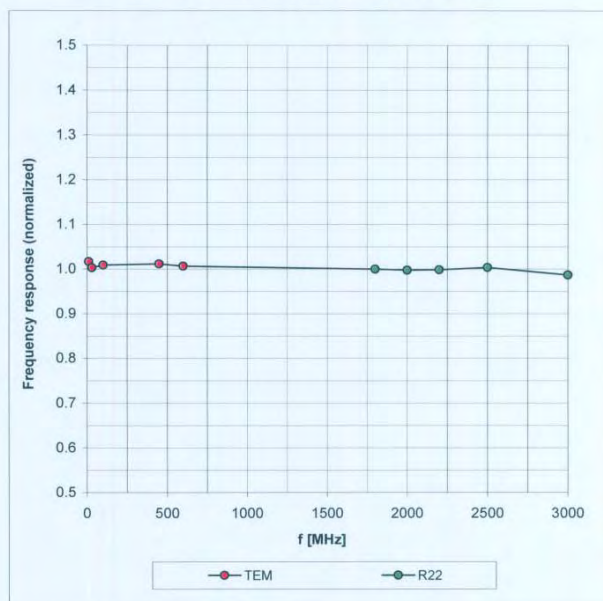
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ES3DV3 SN:3172

May 21, 2010

## Frequency Response of E-Field

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



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

Certificate No: ES3-3172\_May10

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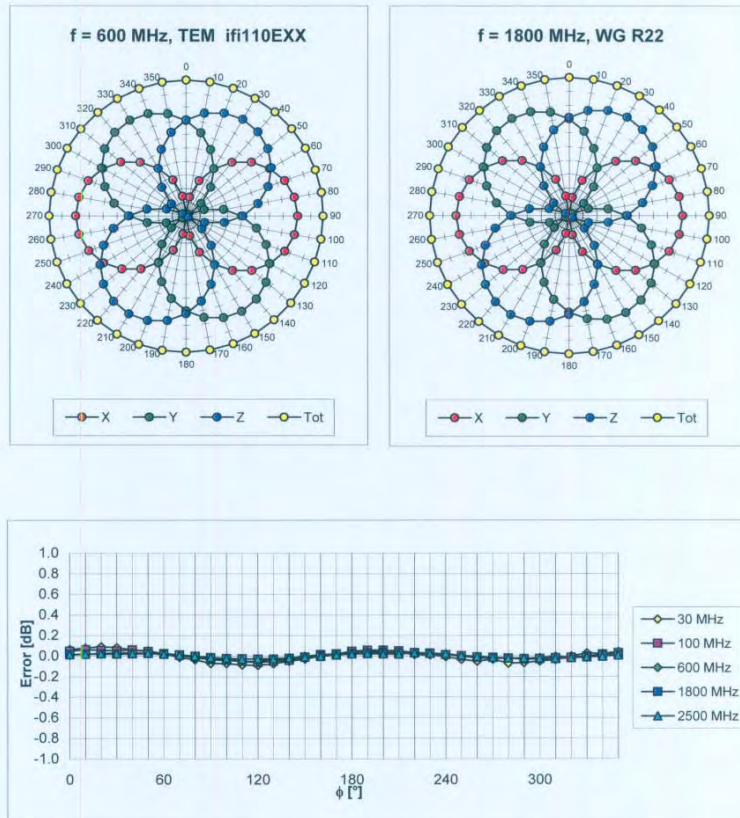
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ES3DV3 SN:3172

May 21, 2010

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



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

Certificate No: ES3-3172\_May10

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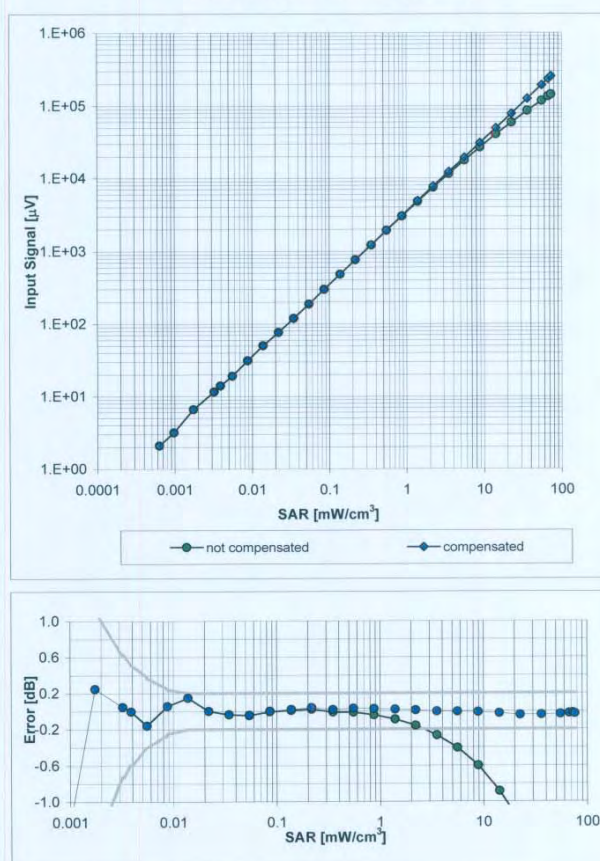
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ES3DV3 SN:3172

May 21, 2010

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



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

Certificate No: ES-3172\_May10

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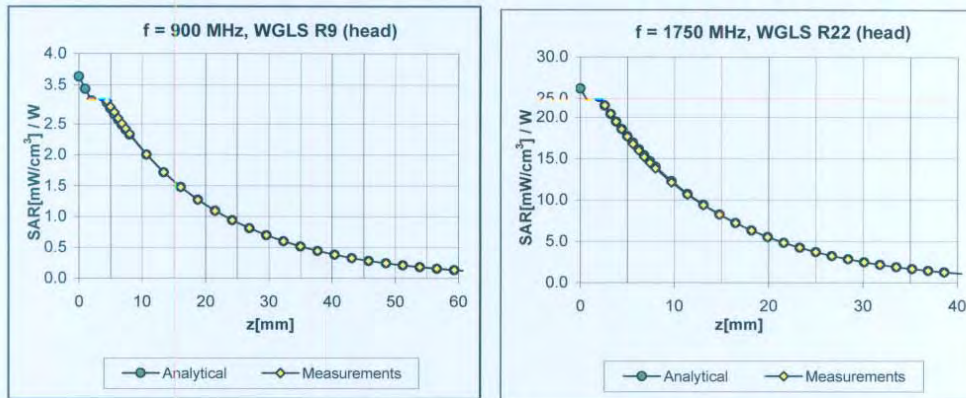
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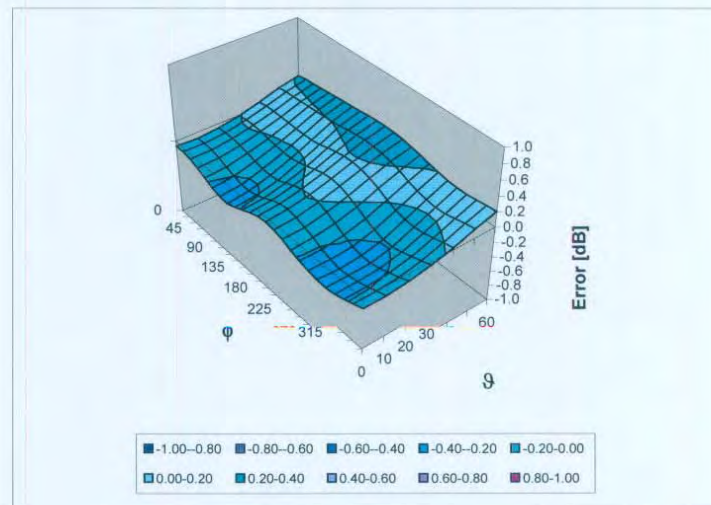
ES3DV3 SN:3172

May 21, 2010

## Conversion Factor Assessment



## Deviation from Isotropy in HSA Error ( $\phi$ , $\theta$ ), f = 900 MHz



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

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ES3DV3 SN:3172

May 21, 2010

## Other Probe Parameters

|                                               |                |
|-----------------------------------------------|----------------|
| Sensor Arrangement                            | Triangular     |
| Connector Angle (°)                           | Not applicable |
| Mechanical Surface Detection Mode             | enabled        |
| Optical Surface Detection Mode                | disabled       |
| Probe Overall Length                          | 337 mm         |
| Probe Body Diameter                           | 10 mm          |
| Tip Length                                    | 10 mm          |
| Tip Diameter                                  | 4.0 mm         |
| Probe Tip to Sensor X Calibration Point       | 2 mm           |
| Probe Tip to Sensor Y Calibration Point       | 2 mm           |
| Probe Tip to Sensor Z Calibration Point       | 2 mm           |
| Recommended Measurement Distance from Surface | 3 mm           |

Certificate No: ES3-3172\_May10

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



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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **SGS-TW (Auden)**

Certificate No: **ET3-1760\_Sep10**

## CALIBRATION CERTIFICATE

Object **ET3DV6 - SN:1760**

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

Calibration date: **September 21, 2010**

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

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

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards          | ID #            | Cal Date (Certificate No.)        | Scheduled Calibration  |
|----------------------------|-----------------|-----------------------------------|------------------------|
| Power meter E4419B         | GB41293874      | 1-Apr-10 (No. 217-01136)          | Apr-11                 |
| Power sensor E4412A        | MY41495277      | 1-Apr-10 (No. 217-01136)          | Apr-11                 |
| Power sensor E4412A        | MY41498087      | 1-Apr-10 (No. 217-01136)          | Apr-11                 |
| Reference 3 dB Attenuator  | SN: S5054 (3c)  | 30-Mar-10 (No. 217-01159)         | Mar-11                 |
| Reference 20 dB Attenuator | SN: S5086 (20b) | 30-Mar-10 (No. 217-01161)         | Mar-11                 |
| Reference 30 dB Attenuator | SN: S5129 (30b) | 30-Mar-10 (No. 217-01160)         | Mar-11                 |
| Reference Probe ES3DV2     | SN: 3013        | 30-Dec-09 (No. ES3-3013_Dec09)    | Dec-10                 |
| DAE4                       | SN: 660         | 20-Apr-10 (No. DAE4-660_Apr10)    | Apr-11                 |
| Secondary Standards        | ID #            | Check Date (in house)             | Scheduled Check        |
| RF generator HP 8648C      | US3642U01700    | 4-Aug-99 (in house check Oct-09)  | In house check: Oct-11 |
| Network Analyzer HP 8753E  | US37390585      | 18-Oct-01 (in house check Oct-09) | In house check: Oct10  |

|                |                               |                                          |               |
|----------------|-------------------------------|------------------------------------------|---------------|
| Calibrated by: | Name<br><b>Jeton Kastrati</b> | Function<br><b>Laboratory Technician</b> | Signature<br> |
| Approved by:   | Name<br><b>Katja Pokovic</b>  | Function<br><b>Technical Manager</b>     | Signature<br> |

Issued: September 22, 2010

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Certificate No: **ET3-1760\_Sep10**

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## Calibration Laboratory of

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Accreditation No.: SCS 108

## Glossary:

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

## Calibration is Performed According to the Following Standards:

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

## Methods Applied and Interpretation of Parameters:

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

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ET3DV6 SN:1760

September 21, 2010

## Probe ET3DV6

SN:1760

|                  |                    |
|------------------|--------------------|
| Manufactured:    | November 12, 2002  |
| Last calibrated: | February 17, 2004  |
| Recalibrated:    | September 21, 2010 |

Calibrated for DASY/EASY Systems

(Note: non-compatible with DASY2 system!)

Certificate No: ET3-1760\_Sep10

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ET3DV6 SN:1760

September 21, 2010

## DASY/EASY - Parameters of Probe: ET3DV6 SN:1760

## Basic Calibration Parameters

|                                                           | Sensor X | Sensor Y | Sensor Z | Unc (k=2) |
|-----------------------------------------------------------|----------|----------|----------|-----------|
| Norm ( $\mu\text{V}/(\text{V}/\text{m})^2$ ) <sup>A</sup> | 1.73     | 1.80     | 1.74     | ± 10.1%   |
| DCP (mV) <sup>B</sup>                                     | 90.7     | 93.0     | 93.0     |           |

## Modulation Calibration Parameters

| UID   | Communication System Name | PAR  |   | A<br>dB | B<br>dBuV | C    | VR<br>mV | Unc <sup>E</sup><br>(k=2) |
|-------|---------------------------|------|---|---------|-----------|------|----------|---------------------------|
| 10000 | CW                        | 0.00 | X | 0.00    | 0.00      | 1.00 | 300.0    | ± 1.5%                    |
|       |                           |      | Y | 0.00    | 0.00      | 1.00 | 300.0    |                           |
|       |                           |      | Z | 0.00    | 0.00      | 1.00 | 300.0    |                           |

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

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

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

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

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ET3DV6 SN:1760

September 21, 2010

**DASY/EASY - Parameters of Probe: ET3DV6 SN:1760****Calibration Parameter Determined in Head Tissue Simulating Media**

| f [MHz] | Validity [MHz] <sup>C</sup> | Permittivity | Conductivity | ConvF X | ConvF Y | ConvF Z | Alpha | Depth Unc (k=2) |
|---------|-----------------------------|--------------|--------------|---------|---------|---------|-------|-----------------|
| 750     | ± 50 / ± 100                | 41.9 ± 5%    | 0.89 ± 5%    | 6.58    | 6.58    | 6.58    | 0.54  | 1.96 ± 11.0%    |

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

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ET3DV6 SN:1760

September 21, 2010

**DASY/EASY - Parameters of Probe: ET3DV6 SN:1760****Calibration Parameter Determined in Body Tissue Simulating Media**

| f [MHz] | Validity [MHz] <sup>C</sup> | Permittivity | Conductivity | ConvF X | ConvF Y | ConvF Z | Alpha | Depth Unc (k=2) |
|---------|-----------------------------|--------------|--------------|---------|---------|---------|-------|-----------------|
| 750     | ± 50 / ± 100                | 55.5 ± 5%    | 0.96 ± 5%    | 6.33    | 6.33    | 6.33    | 0.48  | 2.14 ± 11.0%    |

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

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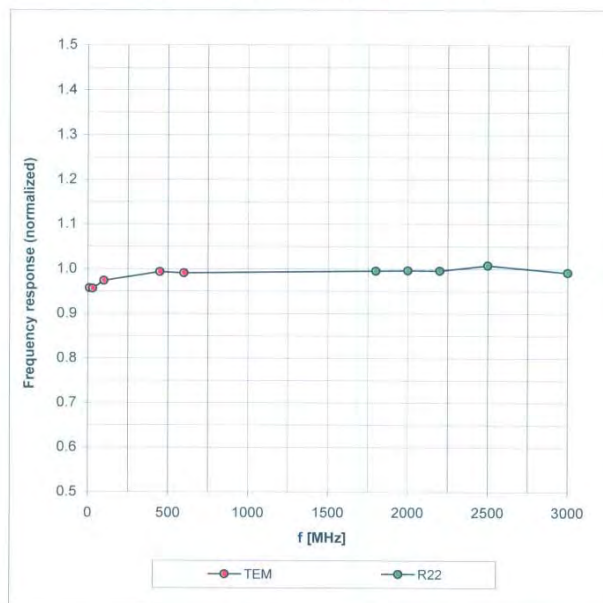
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ET3DV6 SN:1760

September 21, 2010

## Frequency Response of E-Field

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

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

Certificate No: ET3-1760\_Sep10

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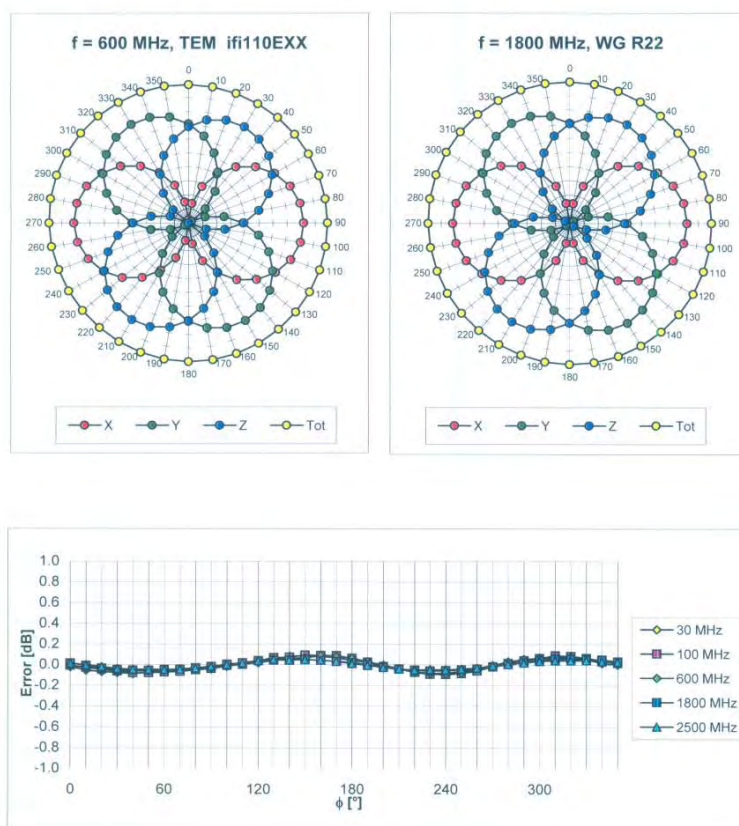
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ET3DV6 SN:1760

September 21, 2010

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



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

Certificate No: ET3-1760\_Sep10

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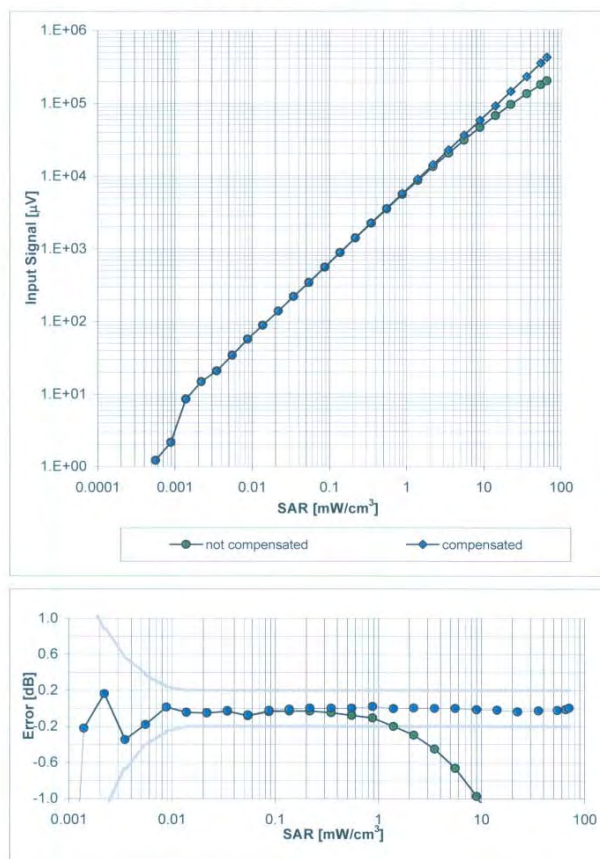
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ET3DV6 SN:1760

September 21, 2010

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



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

Certificate No: ET3-1760\_Sep10

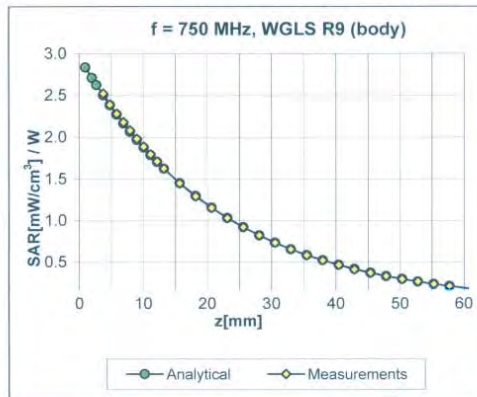
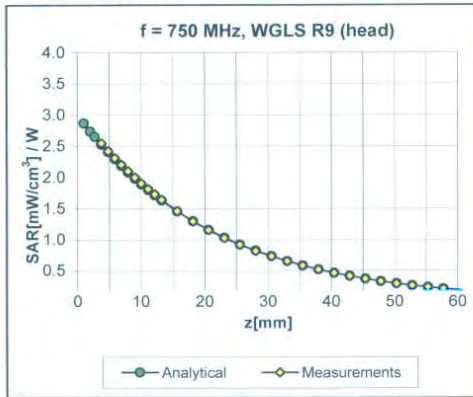
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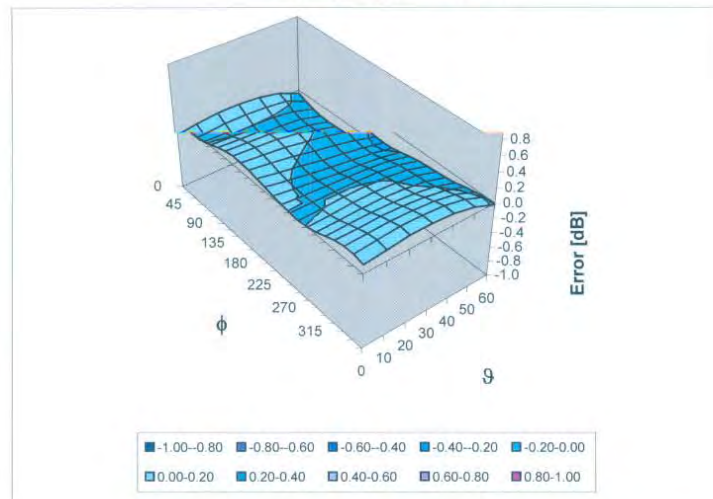
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ET3DV6 SN:1760

September 21, 2010



### Deviation from Isotropy in HSL

Error ( $\phi$ ,  $\theta$ ), f = 900 MHzUncertainty of Spherical Isotropy Assessment:  $\pm 2.6\%$  (k=2)

Certificate No: ET3-1760\_Sep10

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September 21, 2010

## Other Probe Parameters

|                                               |                |
|-----------------------------------------------|----------------|
| Sensor Arrangement                            | Triangular     |
| Connector Angle (°)                           | Not applicable |
| Mechanical Surface Detection Mode             | enabled        |
| Optical Surface Detection Mode                | enabled        |
| Probe Overall Length                          | 337 mm         |
| Probe Body Diameter                           | 10 mm          |
| Tip Length                                    | 10 mm          |
| Tip Diameter                                  | 6.8 mm         |
| Probe Tip to Sensor X Calibration Point       | 2.7 mm         |
| Probe Tip to Sensor Y Calibration Point       | 2.7 mm         |
| Probe Tip to Sensor Z Calibration Point       | 2.7 mm         |
| Recommended Measurement Distance from Surface | 4 mm           |

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## 7. Uncertainty Budget

| DASY4 Uncertainty Budget<br>According to IEEE P1528 [1] |                   |             |            |               |                |                   |                    |                      |
|---------------------------------------------------------|-------------------|-------------|------------|---------------|----------------|-------------------|--------------------|----------------------|
| Error Description                                       | Uncertainty value | Prob. Dist. | Div.       | $(c_1)$<br>1g | $(c_1)$<br>10g | Std. Unc.<br>(1g) | Std. Unc.<br>(10g) | $(v_i)$<br>$v_{eff}$ |
| <b>Measurement System</b>                               |                   |             |            |               |                |                   |                    |                      |
| Probe Calibration                                       | $\pm 4.8\%$       | N           | 1          | 1             | 1              | $\pm 4.8\%$       | $\pm 4.8\%$        | $\infty$             |
| Axial Isotropy                                          | $\pm 4.7\%$       | R           | $\sqrt{3}$ | 0.7           | 0.7            | $\pm 1.9\%$       | $\pm 1.9\%$        | $\infty$             |
| Hemispherical Isotropy                                  | $\pm 9.6\%$       | R           | $\sqrt{3}$ | 0.7           | 0.7            | $\pm 3.9\%$       | $\pm 3.9\%$        | $\infty$             |
| Boundary Effects                                        | $\pm 1.0\%$       | R           | $\sqrt{3}$ | 1             | 1              | $\pm 0.6\%$       | $\pm 0.6\%$        | $\infty$             |
| Linearity                                               | $\pm 4.7\%$       | R           | $\sqrt{3}$ | 1             | 1              | $\pm 2.7\%$       | $\pm 2.7\%$        | $\infty$             |
| System Detection Limits                                 | $\pm 1.0\%$       | R           | $\sqrt{3}$ | 1             | 1              | $\pm 0.6\%$       | $\pm 0.6\%$        | $\infty$             |
| Readout Electronics                                     | $\pm 1.0\%$       | N           | 1          | 1             | 1              | $\pm 1.0\%$       | $\pm 1.0\%$        | $\infty$             |
| Response Time                                           | $\pm 0.8\%$       | R           | $\sqrt{3}$ | 1             | 1              | $\pm 0.5\%$       | $\pm 0.5\%$        | $\infty$             |
| Integration Time                                        | $\pm 2.6\%$       | R           | $\sqrt{3}$ | 1             | 1              | $\pm 1.5\%$       | $\pm 1.5\%$        | $\infty$             |
| RF Ambient Conditions                                   | $\pm 3.0\%$       | R           | $\sqrt{3}$ | 1             | 1              | $\pm 1.7\%$       | $\pm 1.7\%$        | $\infty$             |
| Probe Positioner                                        | $\pm 0.4\%$       | R           | $\sqrt{3}$ | 1             | 1              | $\pm 0.2\%$       | $\pm 0.2\%$        | $\infty$             |
| Probe Positioning                                       | $\pm 2.9\%$       | R           | $\sqrt{3}$ | 1             | 1              | $\pm 1.7\%$       | $\pm 1.7\%$        | $\infty$             |
| Max. SAR Eval.                                          | $\pm 1.0\%$       | R           | $\sqrt{3}$ | 1             | 1              | $\pm 0.6\%$       | $\pm 0.6\%$        | $\infty$             |
| <b>Test Sample Related</b>                              |                   |             |            |               |                |                   |                    |                      |
| Device Positioning                                      | $\pm 2.9\%$       | N           | 1          | 1             | 1              | $\pm 2.9\%$       | $\pm 2.9\%$        | 875                  |
| Device Holder                                           | $\pm 3.6\%$       | N           | 1          | 1             | 1              | $\pm 3.6\%$       | $\pm 3.6\%$        | 5                    |
| Power Drift                                             | $\pm 5.0\%$       | R           | $\sqrt{3}$ | 1             | 1              | $\pm 2.9\%$       | $\pm 2.9\%$        | $\infty$             |
| <b>Phantom and Setup</b>                                |                   |             |            |               |                |                   |                    |                      |
| Phantom Uncertainty                                     | $\pm 4.0\%$       | R           | $\sqrt{3}$ | 1             | 1              | $\pm 2.3\%$       | $\pm 2.3\%$        | $\infty$             |
| Liquid Conductivity (target)                            | $\pm 5.0\%$       | R           | $\sqrt{3}$ | 0.64          | 0.43           | $\pm 1.8\%$       | $\pm 1.2\%$        | $\infty$             |
| Liquid Conductivity (meas.)                             | $\pm 2.5\%$       | N           | 1          | 0.64          | 0.43           | $\pm 1.6\%$       | $\pm 1.1\%$        | $\infty$             |
| Liquid Permittivity (target)                            | $\pm 5.0\%$       | R           | $\sqrt{3}$ | 0.6           | 0.49           | $\pm 1.7\%$       | $\pm 1.4\%$        | $\infty$             |
| Liquid Permittivity (meas.)                             | $\pm 2.5\%$       | N           | 1          | 0.6           | 0.49           | $\pm 1.5\%$       | $\pm 1.2\%$        | $\infty$             |
| Combined Std. Uncertainty                               |                   |             |            |               |                | $\pm 10.3\%$      | $\pm 10.0\%$       | 331                  |
| Expanded STD Uncertainty                                |                   |             |            |               |                | $\pm 20.6\%$      | $\pm 20.1\%$       |                      |

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## 8. Phantom Description

Schmid &amp; Partner Engineering AG

s p e a g

Zeughausstrasse 43, 8004 Zurich, Switzerland  
Phone +41 1 245 9700, Fax +41 1 245 9779  
info@speag.com, http://www.speag.com

### Certificate of Conformity / First Article Inspection

|              |                                                              |
|--------------|--------------------------------------------------------------|
| Item         | SAM Twin Phantom V4.0                                        |
| Type No      | QD 000 P40 C                                                 |
| Series No    | TP-1150 and higher                                           |
| Manufacturer | SPEAG<br>Zeughausstrasse 43<br>CH-8004 Zurich<br>Switzerland |

#### Tests

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

| Test                        | Requirement                                                                                                                                                                                         | Details                                                                  | Units tested                                |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|---------------------------------------------|
| Dimensions                  | Compliant with the geometry according to the CAD model.                                                                                                                                             | IT'IS CAD File (*)                                                       | First article, Samples                      |
| Material thickness of shell | Compliant with the requirements according to the standards                                                                                                                                          | 2mm +/- 0.2mm in flat and specific areas of head section                 | First article, Samples, TP-1314 ff.         |
| Material thickness at ERP   | Compliant with the requirements according to the standards                                                                                                                                          | 6mm +/- 0.2mm at ERP                                                     | First article, All items                    |
| Material parameters         | Dielectric parameters for required frequencies                                                                                                                                                      | 300 MHz – 6 GHz:<br>Relative permittivity < 5,<br>Loss tangent < 0.05    | Material samples                            |
| Material resistivity        | The material has been tested to be compatible with the liquids defined in the standards if handled and cleaned according to the instructions.<br>Observe technical Note for material compatibility. | DEGMBE based<br>simulating liquids                                       | Pre-series, First article, Material samples |
| Sagging                     | Compliant with the requirements according to the standards.<br>Sagging of the flat section when filled with tissue simulating liquid.                                                               | < 1% typical < 0.8% if filled with 155mm of HSL900 and without DUT below | Prototypes, Sample testing                  |

#### Standards

- [1] CENELEC EN 50361
  - [2] IEEE Std 1528-2003
  - [3] IEC 62209 Part 1
  - [4] FCC OET Bulletin 65, Supplement C, Edition 01-01
- (\*) The IT'IS CAD file is derived from [2] and is also within the tolerance requirements of the shapes of the other documents.

#### Conformity

Based on the sample tests above, we certify that this item is in compliance with the uncertainty requirements of SAR measurements specified in standards [1] to [4].

Date 07.07.2006

s p e a g

Signature / Stamp

Schmid & Partner Engineering AG  
Zeughausstrasse 43, 8004 Zurich, Switzerland  
Phone +41 1 245 9700, Fax +41 1 245 9779  
info@speag.com, http://www.speag.com

Doc No : SS1 - QD 000 P40 C - 7

Page 1 (1)

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## 9. System Validation from Original equipment supplier

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



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

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

Accreditation No.: SCS 108

Client **SGS-TW (Auden)**

Certificate No: **D750V3-1015\_Aug10**

**CALIBRATION CERTIFICATE**

Object **D750V3 - SN: 1015**

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

Calibration date: **August 23, 2010**

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

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

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards           | ID #               | Cal Date (Certificate No.)     | Scheduled Calibration |
|-----------------------------|--------------------|--------------------------------|-----------------------|
| Power meter EPM-442A        | GB37480704         | 06-Oct-09 (No. 217-01086)      | Oct-10                |
| Power sensor HP 8481A       | US37292783         | 06-Oct-09 (No. 217-01086)      | Oct-10                |
| Reference 20 dB Attenuator  | SN: 5086 (20g)     | 30-Mar-10 (No. 217-01158)      | Mar-11                |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 30-Mar-10 (No. 217-01162)      | Mar-11                |
| Reference Probe ES3DV3      | SN: 3205           | 30-Apr-10 (No. ES3-3205_Apr10) | Apr-11                |
| DAE4                        | SN: 601            | 10-Jun-10 (No. DAE4-601_Jun10) | Jun-11                |

| Secondary Standards       | ID #             | Check Date (in house)             | Scheduled Check        |
|---------------------------|------------------|-----------------------------------|------------------------|
| Power sensor HP 8481A     | MY41092317       | 18-Oct-02 (in house check Oct-09) | In house check: Oct-11 |
| RF generator R&S SMT-06   | 100005           | 4-Aug-99 (in house check Oct-09)  | In house check: Oct-11 |
| Network Analyzer HP 8753E | US37390585 S4206 | 18-Oct-01 (in house check Oct-09) | In house check: Oct-10 |

|                |                               |                                          |               |
|----------------|-------------------------------|------------------------------------------|---------------|
| Calibrated by: | Name<br><b>Jeton Kastrati</b> | Function<br><b>Laboratory Technician</b> | Signature<br> |
| Approved by:   | Name<br><b>Katja Pokovic</b>  | Function<br><b>Technical Manager</b>     | Signature<br> |

Issued: August 24, 2010

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Certificate No: D750V3-1015\_Aug10

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Zeughausstrasse 43, 8004 Zurich, Switzerland



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

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

Accreditation No.: **SCS 108**

## Glossary:

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

## Calibration is Performed According to the Following Standards:

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

## Additional Documentation:

- DASY4/5 System Handbook

## Methods Applied and Interpretation of Parameters:

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

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**Measurement Conditions**

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

|                              |                           |             |
|------------------------------|---------------------------|-------------|
| DASY Version                 | DASY5                     | V52.2       |
| Extrapolation                | Advanced Extrapolation    |             |
| Phantom                      | Modular Flat Phantom V4.9 |             |
| Distance Dipole Center - TSL | 15 mm                     | with Spacer |
| Zoom Scan Resolution         | dx, dy, dz = 5 mm         |             |
| Frequency                    | 750 MHz $\pm$ 1 MHz       |             |

**Head TSL parameters**

The following parameters and calculations were applied.

|                                  | Temperature         | Permittivity   | Conductivity         |
|----------------------------------|---------------------|----------------|----------------------|
| Nominal Head TSL parameters      | 22.0 °C             | 41.9           | 0.89 mho/m           |
| Measured Head TSL parameters     | (22.0 $\pm$ 0.2) °C | 42.0 $\pm$ 6 % | 0.86 mho/m $\pm$ 6 % |
| Head TSL temperature during test | (22.0 $\pm$ 0.2) °C | ----           | ----                 |

**SAR result with Head TSL**

|                                                       |                    |                                                  |
|-------------------------------------------------------|--------------------|--------------------------------------------------|
| SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL | Condition          |                                                  |
| SAR measured                                          | 250 mW input power | 2.06 mW / g                                      |
| SAR normalized                                        | normalized to 1W   | 8.24 mW / g                                      |
| SAR for nominal Head TSL parameters                   | normalized to 1W   | <b>8.46 mW / g <math>\pm</math> 17.0 % (k=2)</b> |

|                                                         |                    |                                                  |
|---------------------------------------------------------|--------------------|--------------------------------------------------|
| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL | condition          |                                                  |
| SAR measured                                            | 250 mW input power | 1.37 mW / g                                      |
| SAR normalized                                          | normalized to 1W   | 5.48 mW / g                                      |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | <b>5.59 mW / g <math>\pm</math> 16.5 % (k=2)</b> |

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**Body TSL parameters**

The following parameters and calculations were applied.

|                                  | Temperature     | Permittivity | Conductivity     |
|----------------------------------|-----------------|--------------|------------------|
| Nominal Body TSL parameters      | 22.0 °C         | 55.5         | 0.96 mho/m       |
| Measured Body TSL parameters     | (22.0 ± 0.2) °C | 55.2 ± 6 %   | 0.97 mho/m ± 6 % |
| Body TSL temperature during test | (22.0 ± 0.2) °C | ----         | ----             |

**SAR result with Body TSL**

| SAR averaged over 1 cm <sup>3</sup> (1 g) of Body TSL | Condition          |                                   |
|-------------------------------------------------------|--------------------|-----------------------------------|
| SAR measured                                          | 250 mW input power | 2.27 mW / g                       |
| SAR normalized                                        | normalized to 1W   | 9.08 mW / g                       |
| SAR for nominal Body TSL parameters                   | normalized to 1W   | <b>9.00 mW / g ± 17.0 % (k=2)</b> |

| SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL | condition          |                                   |
|---------------------------------------------------------|--------------------|-----------------------------------|
| SAR measured                                            | 250 mW input power | 1.51 mW / g                       |
| SAR normalized                                          | normalized to 1W   | 6.04 mW / g                       |
| SAR for nominal Body TSL parameters                     | normalized to 1W   | <b>6.00 mW / g ± 16.5 % (k=2)</b> |

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## Appendix

## Antenna Parameters with Head TSL

|                                      |                                |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 53.4 $\Omega$ - 1.4 j $\Omega$ |
| Return Loss                          | - 29.0 dB                      |

## Antenna Parameters with Body TSL

|                                      |                                |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 49.8 $\Omega$ - 2.8 j $\Omega$ |
| Return Loss                          | - 31.2 dB                      |

## General Antenna Parameters and Design

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.040 ns |
|----------------------------------|----------|

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

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

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

## Additional EUT Data

|                 |                |
|-----------------|----------------|
| Manufactured by | SPEAG          |
| Manufactured on | March 22, 2010 |

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## DASY5 Validation Report for Head TSL

Date/Time: 23.08.2010 14:38:13

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1015**

Communication System: CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium: HSL900

Medium parameters used:  $f = 750 \text{ MHz}$ ;  $\sigma = 0.86 \text{ mho/m}$ ;  $\epsilon_r = 42$ ;  $\rho = 1000 \text{ kg/m}^3$ 

Phantom section: Flat Section

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

## DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.37, 6.37, 6.37); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY52, V52.2 Build 0, Version 52.2.0 (163)
- Postprocessing SW: SEMCAD X, V14.2 Build 2, Version 14.2.2 (1685)

**Pin=250mW; dip=15mm; dist=3.0mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid:**

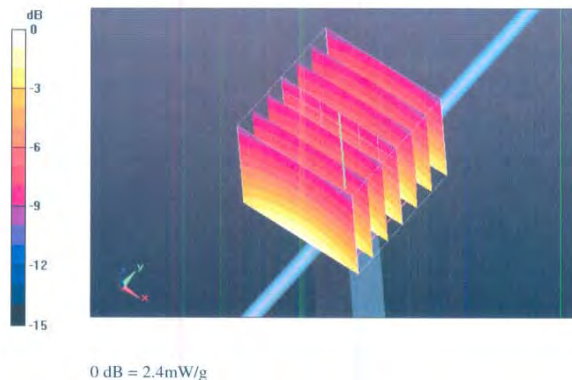
dx=5mm, dy=5mm, dz=5mm

Reference Value = 54.2 V/m; Power Drift = -0.00601 dB

Peak SAR (extrapolated) = 3.06 W/kg

**SAR(1 g) = 2.06 mW/g; SAR(10 g) = 1.37 mW/g**

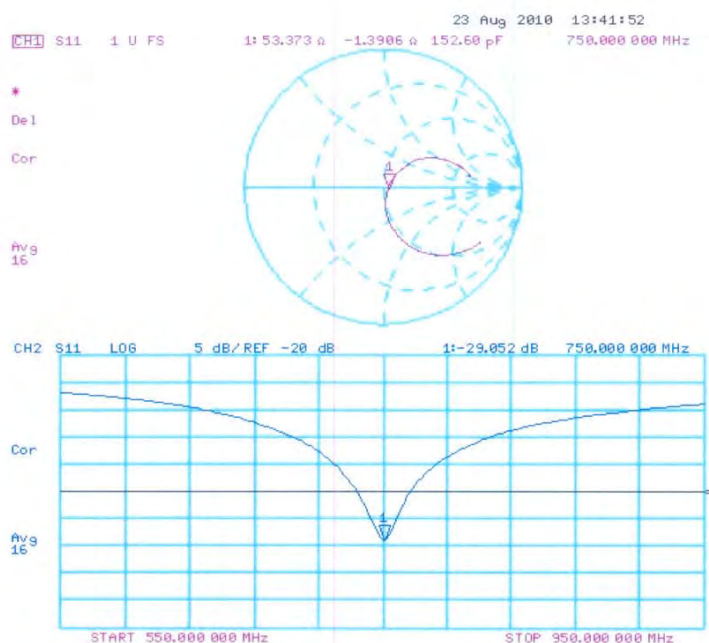
Maximum value of SAR (measured) = 2.4 mW/g



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## Impedance Measurement Plot for Head TSL



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## DASY5 Validation Report for Body TSL

Date/Time: 19.08.2010 14:46:19

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1015**

Communication System: CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium: MSL U11 BB

Medium parameters used:  $f = 750 \text{ MHz}$ ;  $\sigma = 0.97 \text{ mho/m}$ ;  $\epsilon_r = 55.2$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.08, 6.08, 6.08); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY52, V52.2 Build 0, Version 52.2.0 (163)
- Postprocessing SW: SEMCAD X, V14.2 Build 2, Version 14.2.2 (1685)

**Pin=250mW; dip=15mm; dist=3.0mm/Zoom Scan (7x7x7)/Cube 0; Measurement grid:**

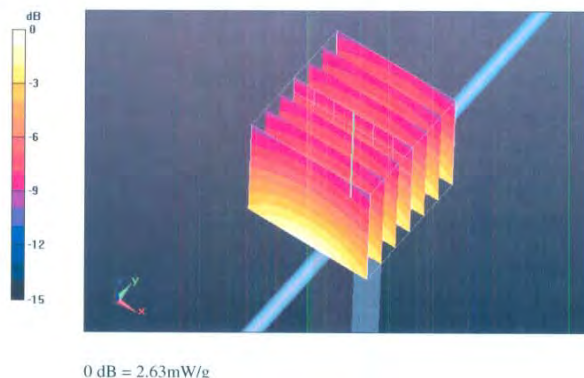
$dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 54 V/m; Power Drift = -0.027 dB

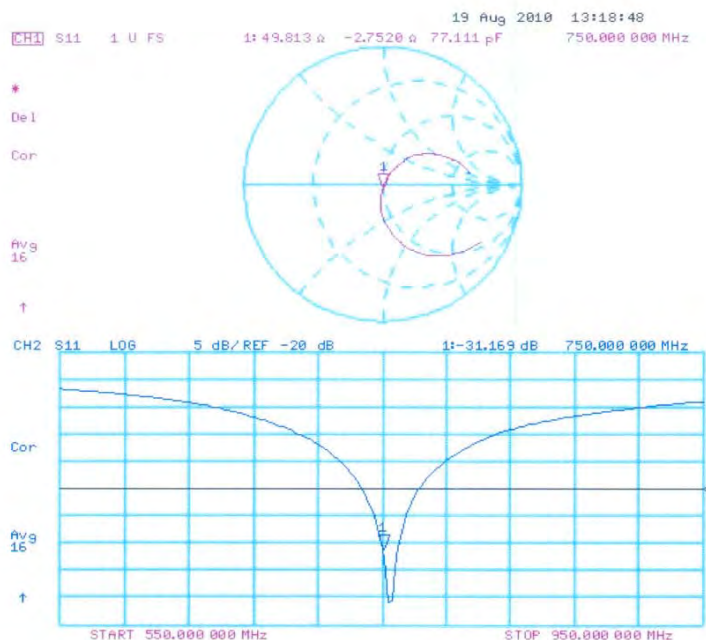
Peak SAR (extrapolated) = 3.29 W/kg

**SAR(1 g) = 2.27 mW/g; SAR(10 g) = 1.51 mW/g**

Maximum value of SAR (measured) = 2.63 mW/g



## Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 108

Client **SGS-TW (Auden)**

Certificate No: D835V2-4d063\_May10

## CALIBRATION CERTIFICATE

Object **D835V2 - SN: 4d063**

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

Calibration date: **May 21, 2010**

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

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

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards           | ID #               | Cal Date (Certificate No.)        | Scheduled Calibration  |
|-----------------------------|--------------------|-----------------------------------|------------------------|
| Power meter EPM-442A        | GB37480704         | 06-Oct-09 (No. 217-01086)         | Oct-10                 |
| Power sensor HP 8481A       | US37292783         | 06-Oct-09 (No. 217-01086)         | Oct-10                 |
| Reference 20 dB Attenuator  | SN: 5086 (20g)     | 30-Mar-10 (No. 217-01158)         | Mar-11                 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 30-Mar-10 (No. 217-01162)         | Mar-11                 |
| Reference Probe ES3DV3      | SN: 3205           | 30-Apr-10 (No. ES3-3205_Apr10)    | Apr-11                 |
| DAE4                        | SN: 601            | 02-Mar-10 (No. DAE4-601_Mar10)    | Mar-11                 |
| Secondary Standards         | ID #               | Check Date (in house)             | Scheduled Check        |
| Power sensor HP 8481A       | MY41092317         | 18-Oct-02 (in house check Oct-09) | In house check: Oct-11 |
| RF generator R&S SMT-06     | 100005             | 4-Aug-99 (in house check Oct-09)  | In house check: Oct-11 |
| Network Analyzer HP 8753E   | US37390585 S4206   | 18-Oct-01 (in house check Oct-09) | In house check: Oct-10 |

|                |                               |                                   |               |
|----------------|-------------------------------|-----------------------------------|---------------|
| Calibrated by: | Name<br><b>Jeton Kastrati</b> | Function<br>Laboratory Technician | Signature<br> |
| Approved by:   | Name<br><b>Katja Pokovic</b>  | Function<br>Technical Manager     | Signature<br> |

Issued: May 26, 2010

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Certificate No: D835V2-4d063\_May10

Page 1 of 9

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Accreditation No.: **SCS 108**

## Glossary:

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

## Calibration is Performed According to the Following Standards:

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

## Additional Documentation:

- DASY4/5 System Handbook

## Methods Applied and Interpretation of Parameters:

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

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**Measurement Conditions**

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

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

**Head TSL parameters**

The following parameters and calculations were applied.

|                                  | Temperature         | Permittivity   | Conductivity         |
|----------------------------------|---------------------|----------------|----------------------|
| Nominal Head TSL parameters      | 22.0 °C             | 41.5           | 0.90 mho/m           |
| Measured Head TSL parameters     | (22.0 $\pm$ 0.2) °C | 41.7 $\pm$ 6 % | 0.91 mho/m $\pm$ 6 % |
| Head TSL temperature during test | (22.5 $\pm$ 0.2) °C | ----           | ----                 |

**SAR result with Head TSL**

| SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL | Condition          |                                                  |
|-------------------------------------------------------|--------------------|--------------------------------------------------|
| SAR measured                                          | 250 mW input power | 2.42 mW / g                                      |
| SAR normalized                                        | normalized to 1W   | 9.68 mW / g                                      |
| SAR for nominal Head TSL parameters                   | normalized to 1W   | <b>9.62 mW / g <math>\pm</math> 17.0 % (k=2)</b> |

| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL | condition          |                                                  |
|---------------------------------------------------------|--------------------|--------------------------------------------------|
| SAR measured                                            | 250 mW input power | 1.58 mW / g                                      |
| SAR normalized                                          | normalized to 1W   | 6.32 mW / g                                      |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | <b>6.29 mW / g <math>\pm</math> 16.5 % (k=2)</b> |

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**Body TSL parameters**

The following parameters and calculations were applied.

|                                  | Temperature     | Permittivity | Conductivity     |
|----------------------------------|-----------------|--------------|------------------|
| Nominal Body TSL parameters      | 22.0 °C         | 55.2         | 0.97 mho/m       |
| Measured Body TSL parameters     | (22.0 ± 0.2) °C | 54.2 ± 6 %   | 0.98 mho/m ± 6 % |
| Body TSL temperature during test | (22.0 ± 0.2) °C | ----         | ----             |

**SAR result with Body TSL**

| SAR averaged over 1 cm <sup>3</sup> (1 g) of Body TSL | Condition          |                                   |
|-------------------------------------------------------|--------------------|-----------------------------------|
| SAR measured                                          | 250 mW input power | 2.53 mW / g                       |
| SAR normalized                                        | normalized to 1W   | 10.1 mW / g                       |
| SAR for nominal Body TSL parameters                   | normalized to 1W   | <b>10.0 mW / g ± 17.0 % (k=2)</b> |

| SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL | condition          |                                   |
|---------------------------------------------------------|--------------------|-----------------------------------|
| SAR measured                                            | 250 mW input power | 1.66 mW / g                       |
| SAR normalized                                          | normalized to 1W   | 6.64 mW / g                       |
| SAR for nominal Body TSL parameters                     | normalized to 1W   | <b>6.59 mW / g ± 16.5 % (k=2)</b> |

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## Appendix

## Antenna Parameters with Head TSL

|                                      |                                |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 52.6 $\Omega$ - 0.6 j $\Omega$ |
| Return Loss                          | - 31.7 dB                      |

## Antenna Parameters with Body TSL

|                                      |                                |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 47.9 $\Omega$ - 2.8 j $\Omega$ |
| Return Loss                          | - 28.9 dB                      |

## General Antenna Parameters and Design

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.392 ns |
|----------------------------------|----------|

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

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

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

## Additional EUT Data

|                 |                   |
|-----------------|-------------------|
| Manufactured by | SPEAG             |
| Manufactured on | November 27, 2006 |

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## DASY5 Validation Report for Head TSL

Date/Time: 21.05.2010 11:22:13

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d063**

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

Medium: HSL900

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.91 \text{ mho/m}$ ;  $\epsilon_r = 41.9$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

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

### DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.03, 6.03, 6.03); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

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

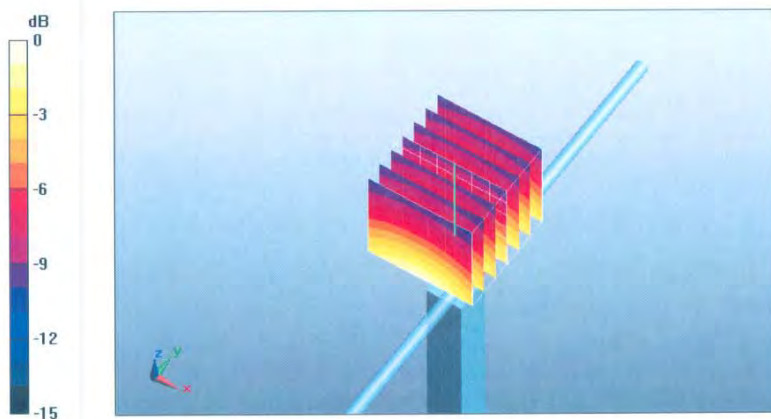
grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 57.5 V/m; Power Drift = 0.00219 dB

Peak SAR (extrapolated) = 3.61 W/kg

**SAR(1 g) = 2.42 mW/g; SAR(10 g) = 1.58 mW/g**

Maximum value of SAR (measured) = 2.83 mW/g



0 dB = 2.83mW/g

Certificate No: D835V2-4d063\_May10

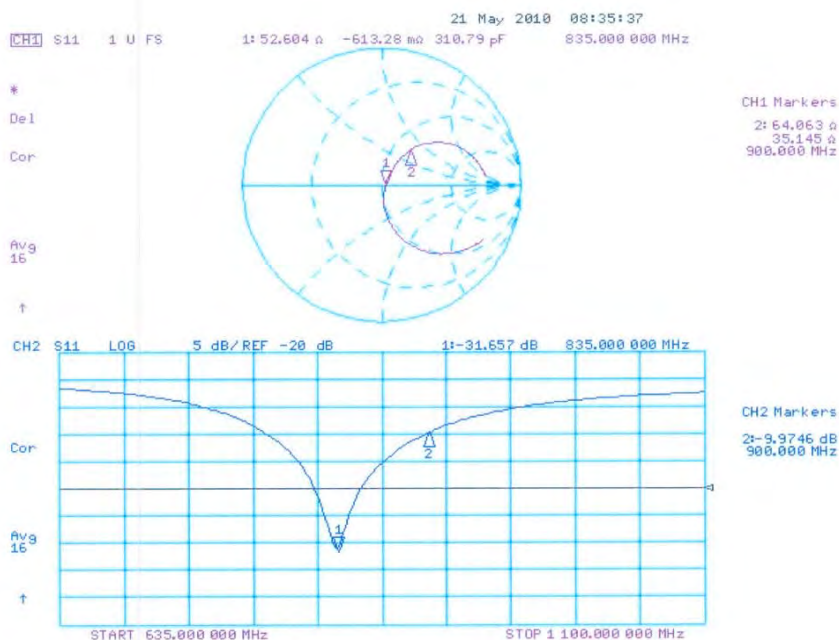
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## Impedance Measurement Plot for Head TSL



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## DASY5 Validation Report for Body

Date/Time: 20.05.2010 10:45:06

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d063**

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

Medium: MSL900

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.98 \text{ mho/m}$ ;  $\epsilon_r = 54.2$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

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

### DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.86, 5.86, 5.86); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

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

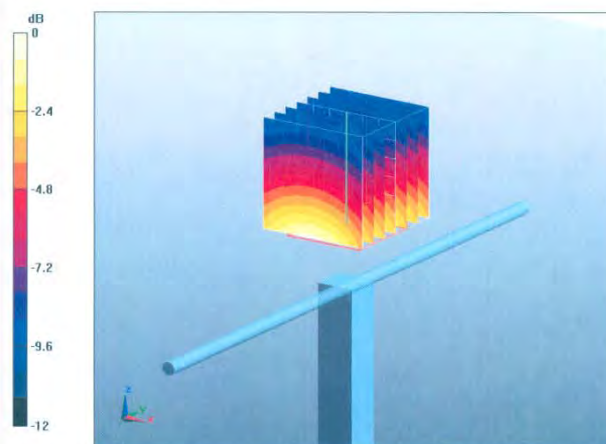
grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 56.5 V/m; Power Drift = 0.013 dB

Peak SAR (extrapolated) = 3.71 W/kg

**SAR(1 g) = 2.53 mW/g; SAR(10 g) = 1.66 mW/g**

Maximum value of SAR (measured) = 2.94 mW/g



0 dB = 2.94mW/g

Certificate No: D835V2-4d063\_May10

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