



## Exhibit 11: SAR Test Report: IHDT6BC1

**Date of test:** 3/9/ - 3/12/2001

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**Accreditation:** ISO Guide 25 Accredited Lab, A2LA certificate #1651-01

**Statement of Compliance:** Motorola declares under its sole responsibility that portable cellular telephone FCC ID IHDT6BC1 to which this declaration relates, is in conformity with the appropriate RF exposure standards, recommendations and guidelines. It also declares that the product was tested in accordance with the appropriate measurement standards, guidelines and recommended practices. Any deviations from these standards, guidelines and recommended practices are noted below:

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The results and statements contained herein relate only to the items tested. The names of individuals involved may be mentioned only in connection with the statements or results from this report.

Motorola encourages all feedback, both positive and negative, on this test report.

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### 1. Introduction

The Motorola Personal Communications Sector Product Safety Laboratory has performed measurements of the maximum potential exposure to the user of portable cellular phone FCC ID IHDT6BC1. The Specific Absorption Rate (SAR) of this product was measured. The portable cellular phone was tested in accordance with the latest available test guidelines. The SAR values found for the portable cellular phone (FCC ID IHDT6BC1) are below the maximum recommended levels of 1.6 W/kg. Detailed procedures of the test are described in the *Motorola Exhibit 11 Reference SAR Test Report*.

### 2. Description of the Device Under Test

#### Antenna description

|                      |                    |      |
|----------------------|--------------------|------|
| <b>Type</b>          | Fixed Tri-band     |      |
| <b>Location</b>      | Top and Right Side |      |
| <b>Dimensions</b>    | Length             | 21mm |
|                      | Width at base      | 9mm  |
| <b>Configuration</b> | Stub               |      |

#### Device description

|                                       |              |
|---------------------------------------|--------------|
| <b>FCC ID Number</b>                  | IHDT6BC1     |
| <b>Serial number</b>                  | L210059      |
| <b>Mode(s) of Operation</b>           | GSM1900      |
| <b>Modulation Mode(s)</b>             | GSM          |
| <b>Maximum Output Power Setting</b>   | 29.5dBm      |
| <b>Duty Cycle</b>                     | 1:8          |
| <b>Transmitting Frequency Rang(s)</b> | 1850-1910MHz |

### 3. Test Results

The SAR results shown in tables 1 and 2 are maximum SAR values averaged over 1 gram of phantom tissue. Also shown are the measured conducted output powers and the temperature of the test facility during the test.

The test sample was operated in a test mode that allows control of the transmitter without the need to place actual phone calls. For the purposes of this test the unit is commanded to test mode and manually set to the proper channel, transmitter power level and transmit mode of operation. The phone was then placed in the SAR measurement system with a fully charged battery.

A full data set output of the test conditions with the highest SAR values from each side of the head adjacent position from the Dasy™ measurement system is included as appendix 2. A full data set output of two test conditions with the highest SAR values from the body worn configuration from the Dasy™ measurement system is included as appendix 3. The test conditions included are indicated as bold numbers in the following table. All other test conditions measured lower SAR values than those included.

| <i>f</i><br>(MHz)          | Description        | Conducted Output<br>Power (dBm) | SAR, 1g (W/kg) |             |
|----------------------------|--------------------|---------------------------------|----------------|-------------|
|                            |                    |                                 | Left Head      | Right Head  |
|                            |                    |                                 | Ant Fixed      | Ant Fixed   |
| <b>Digital<br/>1900MHz</b> | <b>Channel 512</b> | 29.21                           | <b>0.77</b>    | 0.61        |
|                            | <b>Channel 661</b> | 29.38                           | 0.72           | 0.63        |
|                            | <b>Channel 810</b> | 29.33                           | 0.71           | <b>0.65</b> |

**Table 1: SAR measurement results for the portable cellular telephone FCC ID IHDT6BC1 at highest possible output power. Measured against the head.**

| <i>f</i><br>(MHz)          | Description        | Conducted Output<br>Power (dBm) | SAR, 1g<br>(W/kg) |
|----------------------------|--------------------|---------------------------------|-------------------|
|                            |                    |                                 | Phone Clip        |
|                            |                    |                                 | Ant Fixed         |
| <b>Digital<br/>1900MHz</b> | <b>Channel 512</b> | 29.21                           | <b>0.56</b>       |
|                            | <b>Channel 661</b> | 29.38                           | 0.51              |
|                            | <b>Channel 810</b> | 29.33                           | 0.46              |

**Table 2: SAR measurement results for the portable cellular telephone FCC ID IHDT6BC1 at highest possible output power. Measured against the body.**

#### 4. Test Equipment Used

##### 4.1 Dosimetric System

The Motorola Personal Communications Sector Product Safety Laboratory utilizes a Dosimetric Assessment System (Dasy3™) SAR measurement system manufactured by Schmid & Partner Engineering AG (SPEAG™), of Zurich Switzerland. The overall RSS uncertainty of the measurement system is ±12.0% (K=1).

| Description                            | Serial Number | Cal Due Date |
|--|---------------|--------------|
| <b>DASY3 DAE V1</b>                    | SN365         | 7/25/01      |
| <b>E-Field Probe ETDV6</b>             | SN1375        | 10/27/01     |
| <b>Dipole Validation Kit, DV1800V2</b> | SN250         | 9/01         |

**4.2 Additional Equipment**

| Description              | Serial Number | Cal Due Date |
|--------------------------|---------------|--------------|
| Signal Generator HP8648C | 3847A04845    | 10/5/02      |
| Power Meter E4419B       | GB39511085    | 10/6/01      |
| Power Sensor E9301A      | US39211006    | 1/24/02      |

**5. Electrical parameters of the tissue simulating liquid**

Prior to conducting SAR measurements, the relative permittivity,  $\epsilon_r$ , and the conductivity,  $\sigma$ , of the tissue simulating liquids were measured with HP85070 Dielectric Probe Kit. These values are shown in the table below. The mass density,  $\rho$ , used by the dosimetric system is also given. Recommended limits for maximum permittivity, minimum conductivity and maximum mass density are also shown. These come from the Federal Communication Commission, "Tissue Dielectric Properties" web site at <http://www.fcc.gov/fcc-bin/dielec.sh>. It is seen that the measured parameters are satisfactory for compliance testing.

| f (MHz) | Tissue type | Limits / Measured  | Dielectric Parameters |                |                             |
|---------|-------------|--------------------|-----------------------|----------------|-----------------------------|
|         |             |                    | $\epsilon_r$          | $\sigma$ (S/m) | $\rho$ (g/cm <sup>3</sup> ) |
| 1880    | Head        | Measured, 3/9/01   | 39.23                 | 1.49           | 1.00                        |
|         |             | Recommended Limits | 43.41                 | 1.19           | 1.03                        |
|         | Body        | Measured, 3/9/01   | 48.30                 | 1.70           | 1.00                        |
|         |             | Recommended Limits | 54.33                 | 1.43           | 1.04                        |

**6. System Accuracy Verification**

A system accuracy verification of the DASY3 was performed using the measurement equipment listed in Section 4. The test was conducted on the same day as the measurement of the DUT. The obtained results are displayed in the table below. The distributions of SAR compare well with those of the reference measurements (see Appendix 1).

| f (MHz) | Description        | SAR (W/kg), 1gram | Dielectric Parameters |                | Temp (°C) |
|---------|--------------------|-------------------|-----------------------|----------------|-----------|
|         |                    |                   | $\epsilon_r$          | $\sigma$ (S/m) |           |
| 1800    | Measured           | 38.68             | 40.3                  | 1.76           | 22.1      |
|         | Recommended Limits | 38.89             | 43.4                  | 1.68           | N/A       |

**Appendix 1**

**SAR distribution comparison for the system accuracy verification**

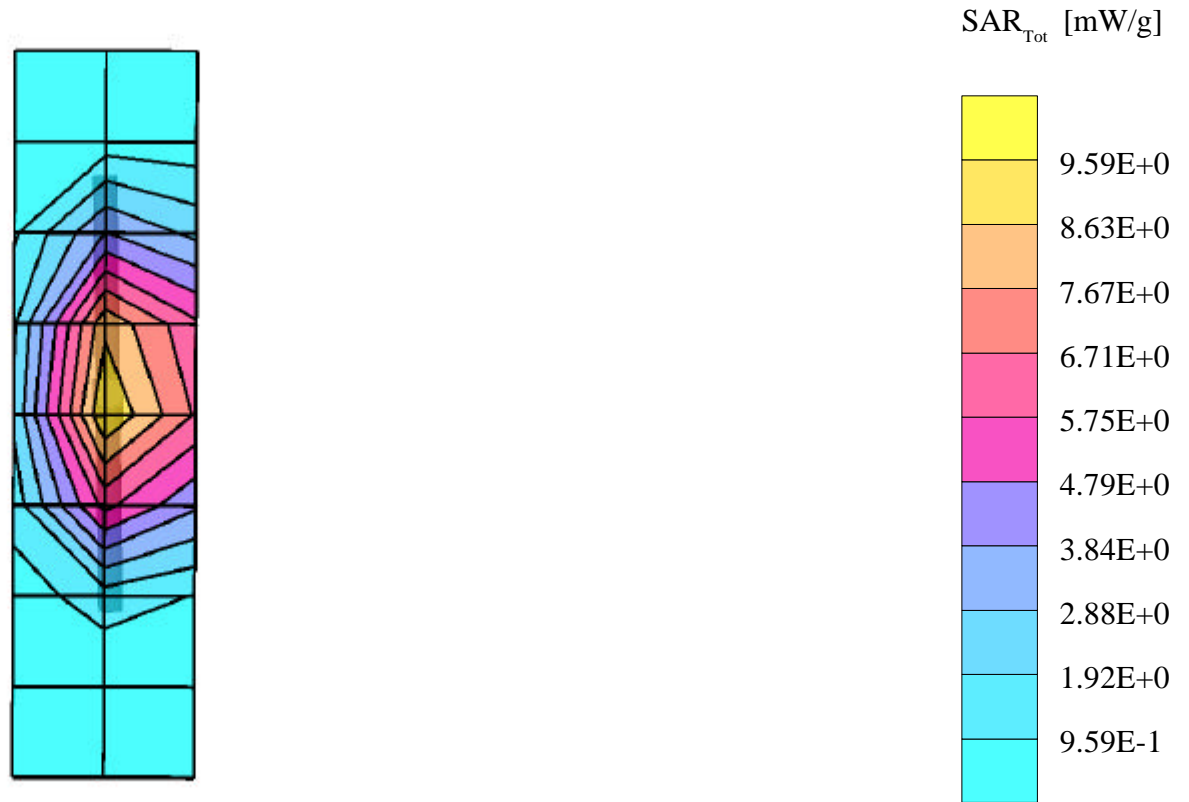
## Dipole 1800 MHz

1800 MHz Dipole Validation / Dipole Sn# 250 / Forward Power =249mW / Temp at time of measurement = 22.1C

Amy Twin Optics OFF; Section2

Probe: ET3DV6 - SN1375 - Validation 10-1-00; ConvF(5.61,5.61,5.61); Crest factor: 1.0; Valadation 1800 MHz:  $\sigma = 1.76 \text{ mho/m}$   $\epsilon_r = 40.3$   $\rho = 1.00 \text{ g/cm}^3$

Cubes (2): Peak:  $18.7 \text{ mW/g} \pm 0.25 \text{ dB}$ , SAR (1g):  $9.67 \text{ mW/g} \pm 0.24 \text{ dB}$ , SAR (10g):  $4.90 \text{ mW/g} \pm 0.23 \text{ dB}$ , (Worst-case extrapolation)



**Appendix 2**

**SAR distribution plots for Phantom Head Adjacent Use**

### s/n L210059

Ch#512 / Pwr Step:0 / Antenna Position:Fixed / Type of Modulation:1900 GSM

George (Lefthead) Phantom; Left Head Section; Position: (80°,176°); Frequency: 1850 MHz

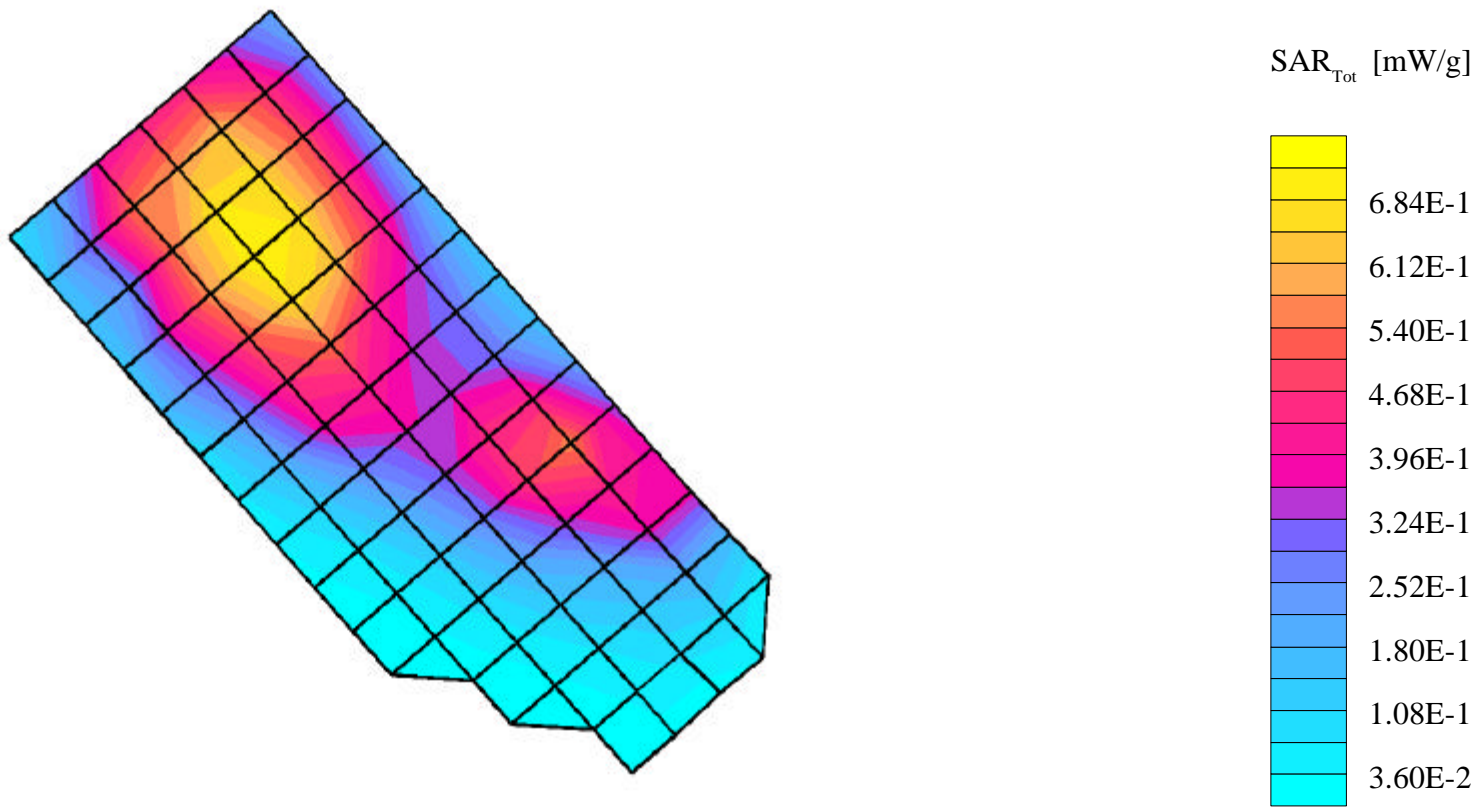
Probe: ET3DV6 - SN1375 - Head ( Glycol ) 10-1-00; ConvF(5.34,5.34,5.34); Crest factor: 8.0; Head Glycol 1900 MHz:  $\sigma = 1.47$  mho/m  $\epsilon_r = 39.4$   $\rho = 1.00$  g/cm<sup>3</sup>

Cube 5x5x7: SAR (1g): 0.768 mW/g, SAR (10g): 0.471 mW/g, (Worst-case extrapolation)

Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0

Penetration depth: 12.8 (12.4, 13.1) [mm]

Powerdrift: -0.05 dB



### s/n L210059

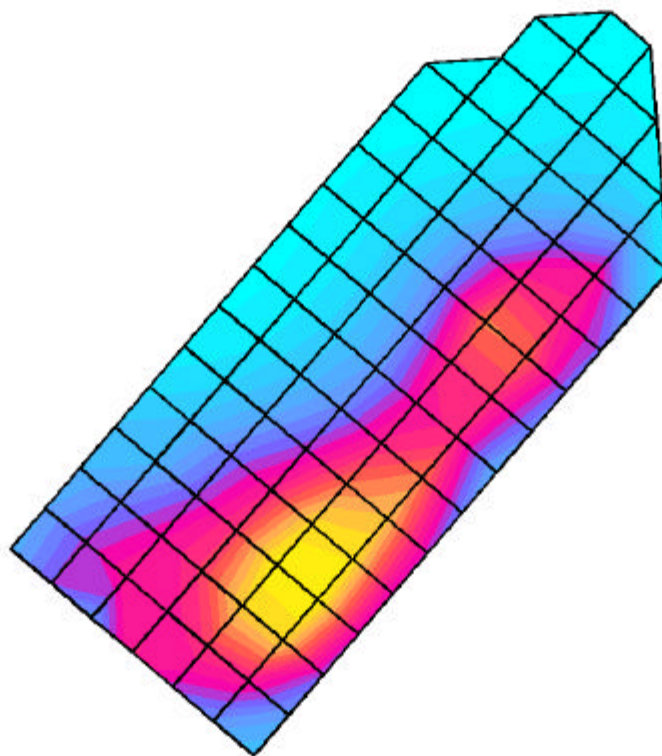
Ch#810 / Pwr Step:0 / Antenna Position:Fixed / Type of Modulation:GSM 1900

Weezie (Righthand) Phantom; Right Head Section; Position: (80°,183°); Frequency: 1910 MHz

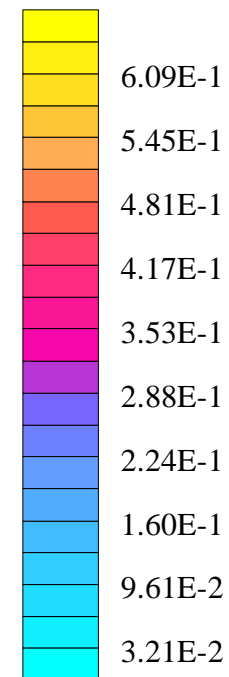
Probe: ET3DV6 - SN1375 - Head ( Glycol ) 10-1-00; ConvF(5.34,5.34,5.34); Crest factor: 8.0; Head Glycol 1900 MHz:  $\sigma = 1.49$  mho/m  $\epsilon_r = 39.2$   $\rho = 1.00$  g/cm<sup>3</sup>

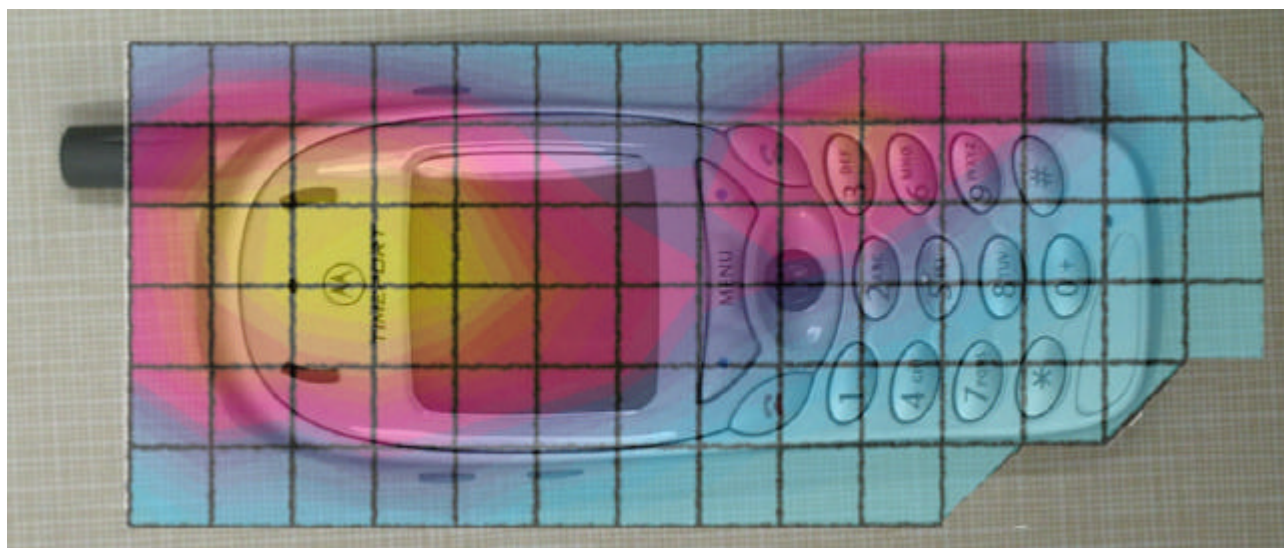
: , 0

Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0



SAR<sub>Tot</sub> [mW/g]





**Figure 1. Typical contour plot overlaid on face of phone.**

**Appendix 3**

**SAR distribution plots for Body Worn Configuration**

### Panther 2 GSM SUG0126A L210059 Phone A

Ch#512 / Pwr Step:0 / Antenna Position:Fixed / Type of Modulation:1900GSM / Body worn with phone clip

Amy Twin Optics OFF Phantom; Section 1 Section; Position: (0°,0°); Frequency: 1850 MHz

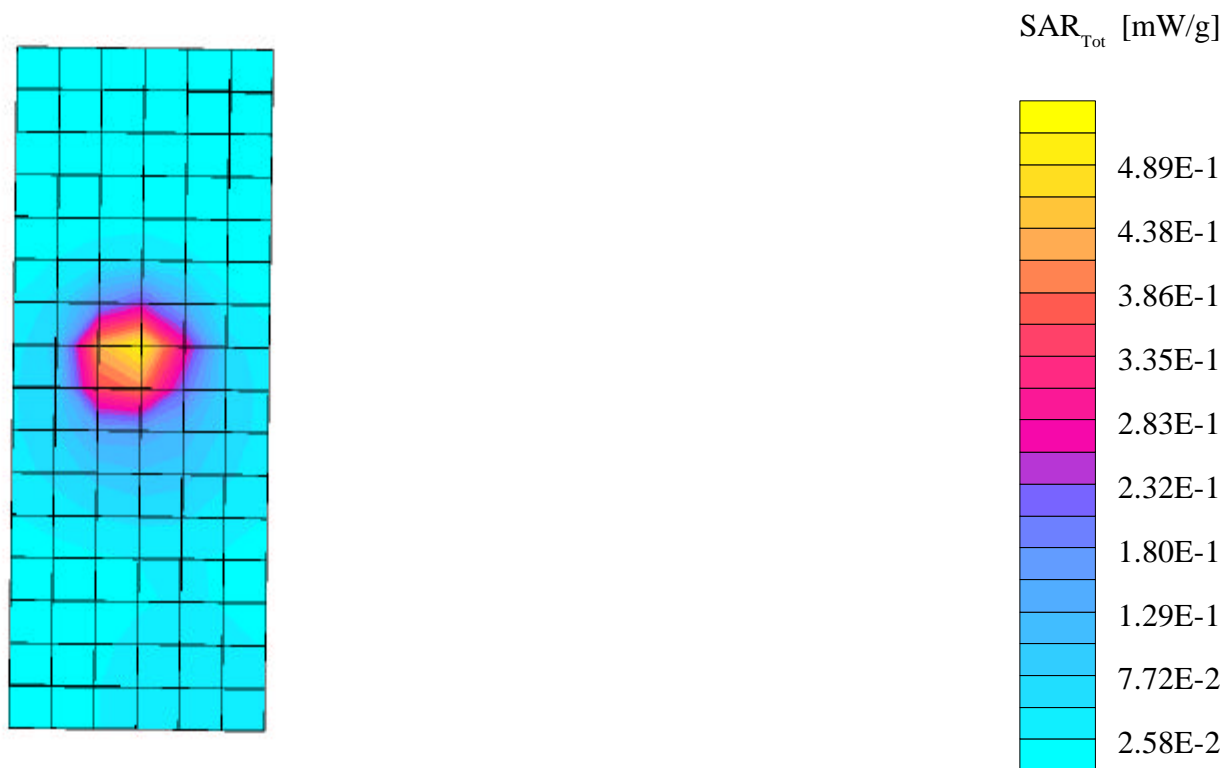
Probe: ET3DV6 - SN1375 - Muscle ( Glycol ) 10-1-00; ConvF(5.07,5.07,5.07); Crest factor: 8.0; Muscle Glycol 1900 MHz:  $\sigma = 1.68$  mho/m  $\epsilon_r = 48.6$   $\rho = 1.00$  g/cm<sup>3</sup>

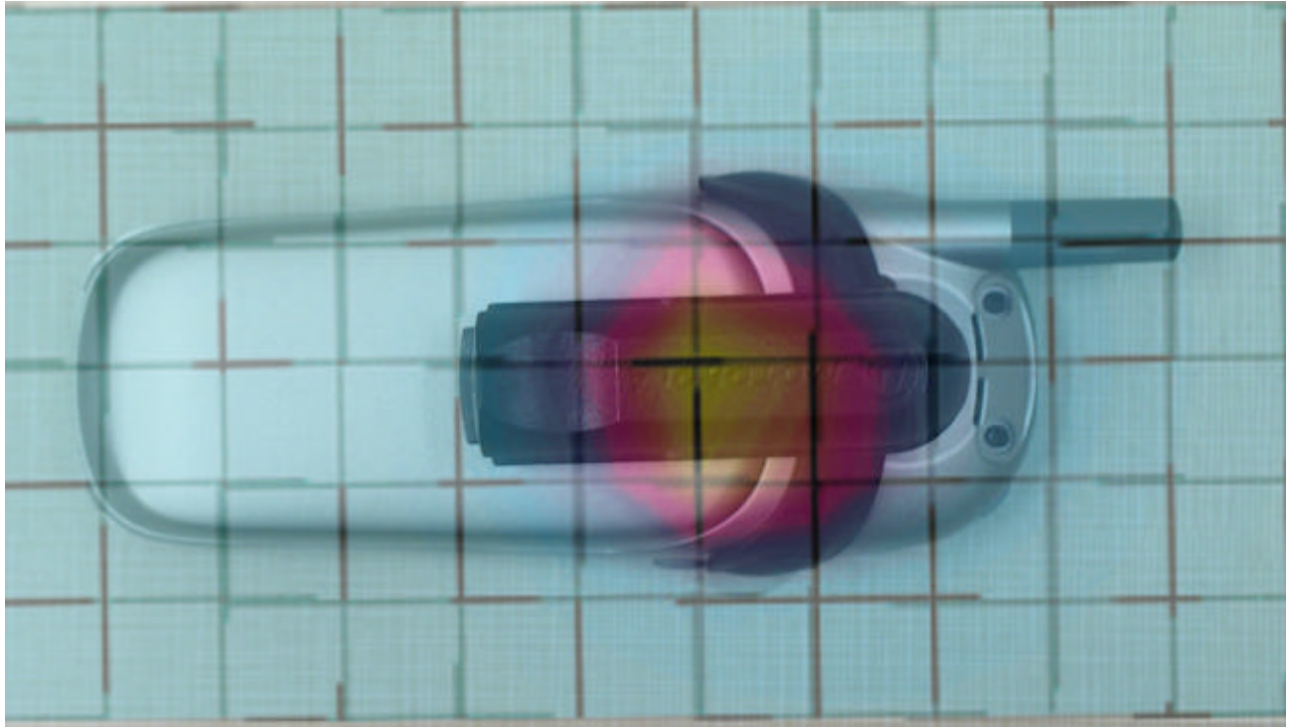
Cube 5x5x7: SAR (1g): 0.558 mW/g, SAR (10g): 0.290 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Penetration depth: 7.2 (6.9, 8.1) [mm]

Powerdrift: -0.03 dB





**Figure 2. Typical Body Worn contour plot overlaid on Back of phone**

**Appendix 4**

**Photographs of the device under test**



Figure 3. Front of Phone



Figure 4. Side of Phone



Figure 5. Phone against Phantom Head



Figure 6. Phone in Belt-clip



Figure 7. Proximity provided by Belt-clip