

Fig. 136 Z-Scan at power reference point (1900MHz CH810)

**1900 Right Tilt Middle**

Electronics: DAE3 Sn536

Medium: Head 1900 MHz

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.35$  mho/m;  $\epsilon_r = 39.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 24.5°C      Liquid Temperature: 24.0°C

Communication System: GSM 1900MHz new Frequency: 1880 MHz Duty Cycle: 1:1

Probe: ET3DV6 - SN1736 ConvF(5.4, 5.4, 5.4)

**Tilt Middle/Area Scan (51x81x1):** Measurement grid: dx=10mm, dy=10mm

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

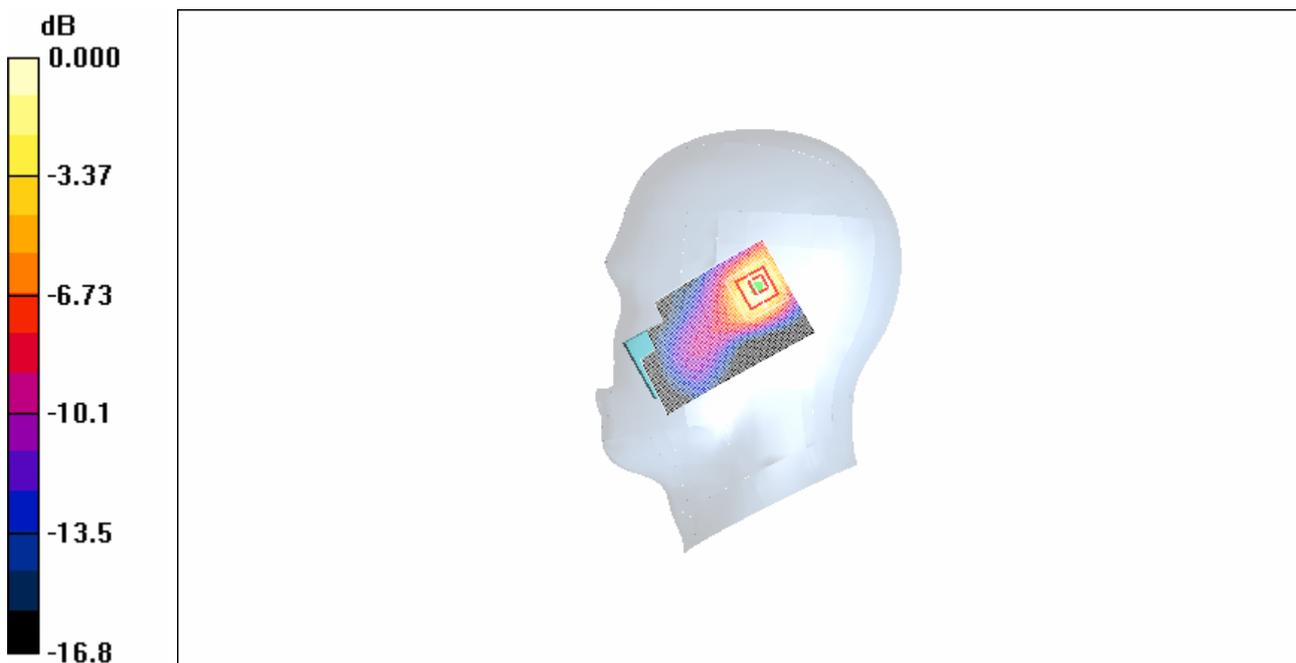
**Tilt Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

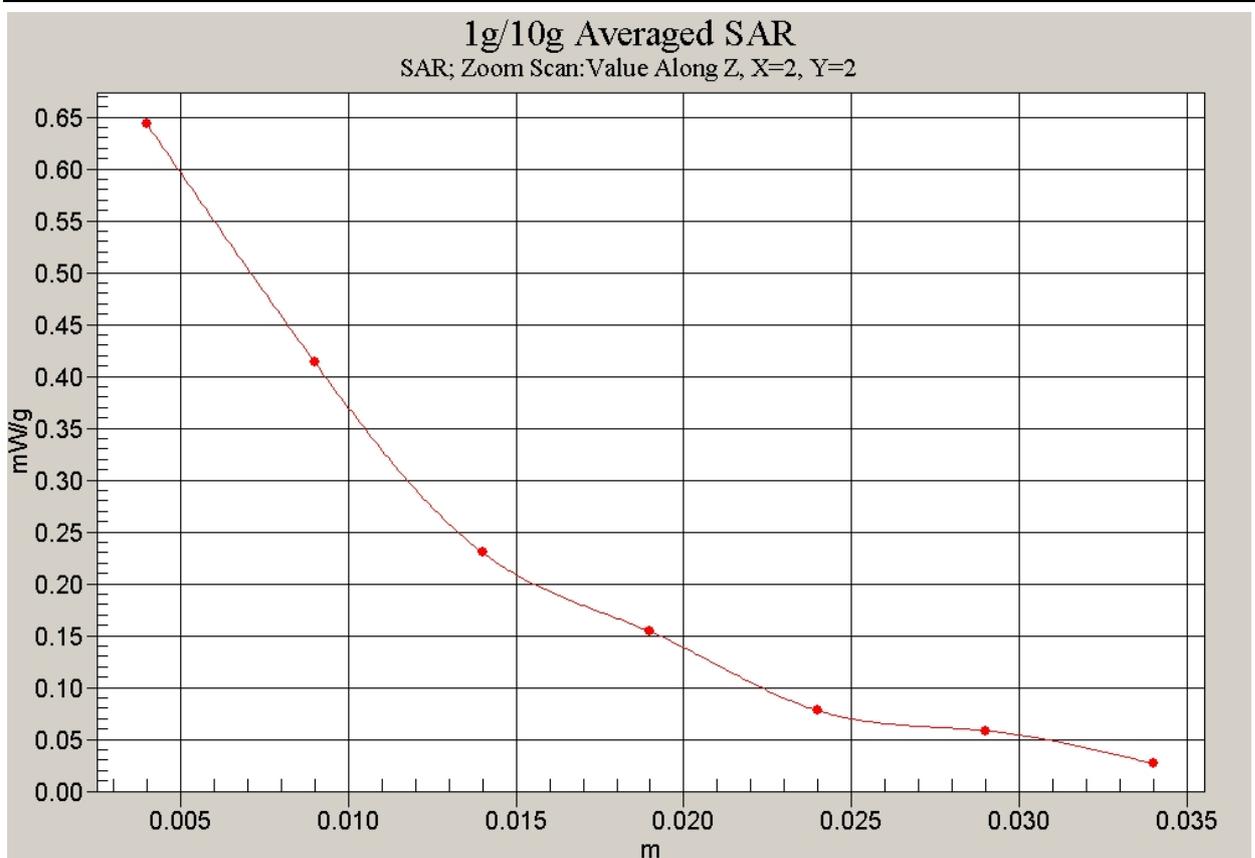
Reference Value = 17.6 V/m; Power Drift = -0.039 dB

Peak SAR (extrapolated) = 1.04 W/kg

**SAR(1 g) = 0.591 mW/g; SAR(10 g) = 0.316 mW/g**

Maximum value of SAR (measured) = 0.643 mW/g

**Fig. 137 Right Hand Tilt 15° 1900MHz CH661**



**Fig. 138 Z-Scan at power reference point (1900MHz CH661)**

**1900 Right Tilt Low**

Electronics: DAE3 Sn536

Medium: Head 1900 MHz

Medium parameters used (interpolated):  $f = 1850.2$  MHz;  $\sigma = 1.33$  mho/m;  $\epsilon_r = 39.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 24.5°C      Liquid Temperature: 24.0°C

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

Probe: ET3DV6 - SN1736 ConvF(5.4, 5.4, 5.4)

**Tilt Low/Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.460 mW/g

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

Reference Value = 14.6 V/m; Power Drift = -0.005 dB

Peak SAR (extrapolated) = 0.758 W/kg

**SAR(1 g) = 0.427 mW/g; SAR(10 g) = 0.223 mW/g**

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

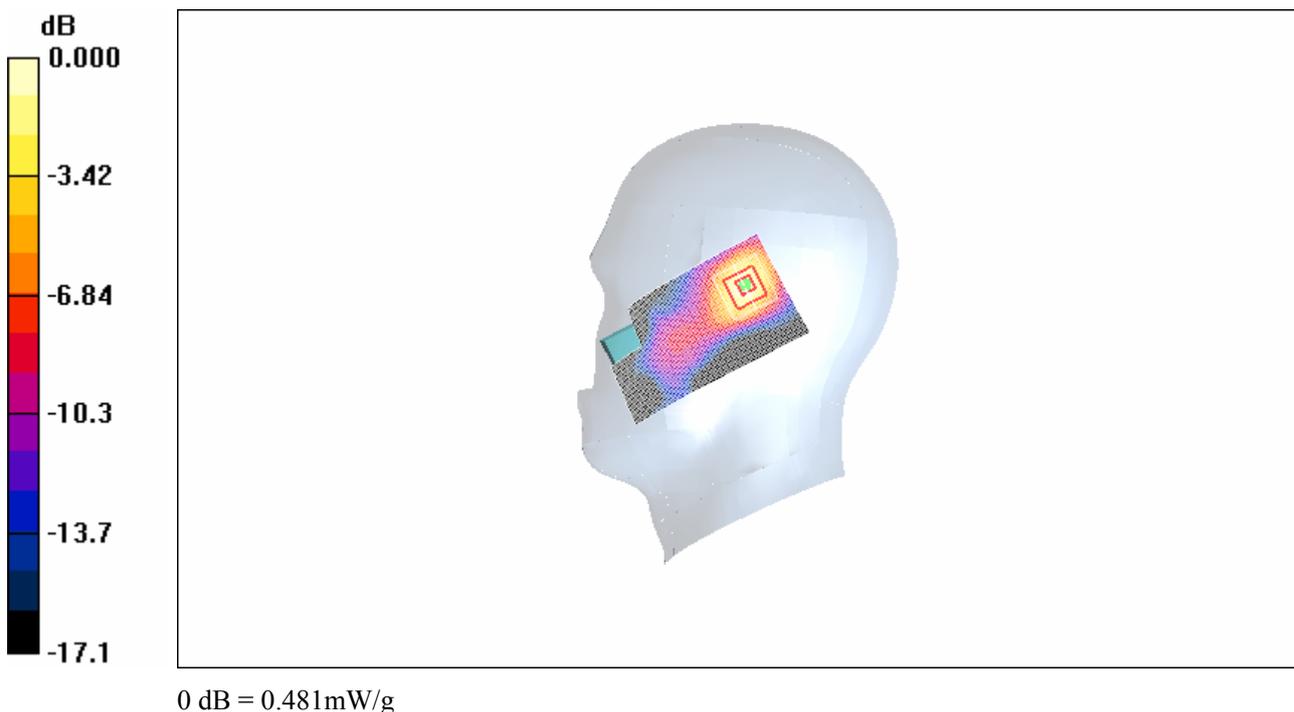


Fig. 139 Right Hand Tilt 15° 1900MHz CH512

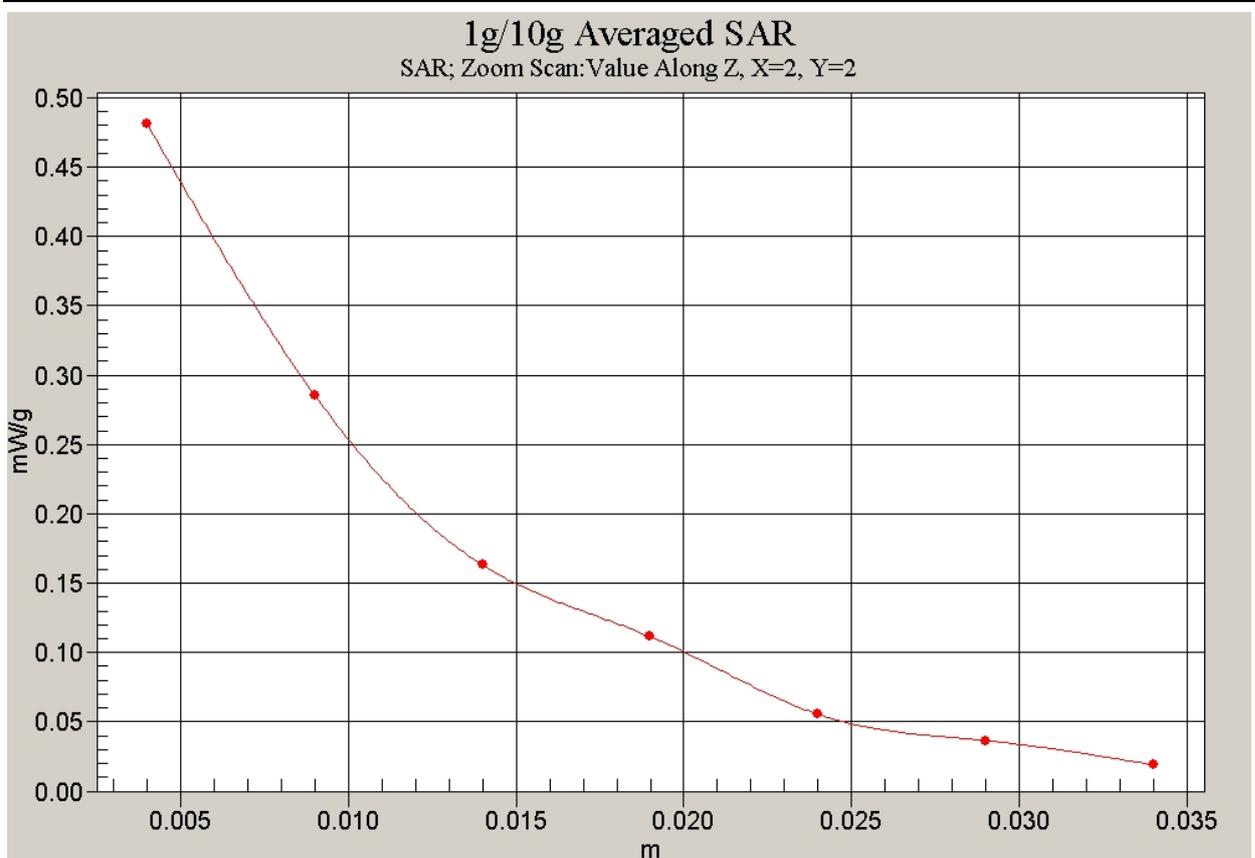


Fig. 140 Z-Scan at power reference point (1900MHz CH512)

**1900 Body Toward Ground High with GPRS**

Electronics: DAE3 Sn536

Medium: Body 1900 MHz

Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.54$  mho/m;  $\epsilon_r = 52$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 24.5°C      Liquid Temperature: 24.0°C

Communication System: GSM 1900MHz GPRS Frequency: 1909.8 MHz Duty Cycle: 1:4

Probe: ET3DV6 - SN1736 ConvF(4.88, 4.88, 4.88)

**Toward Ground High/Area Scan (51x81x1):** Measurement grid: dx=10mm, dy=10mm  
 Maximum value of SAR (interpolated) = 0.825 mW/g

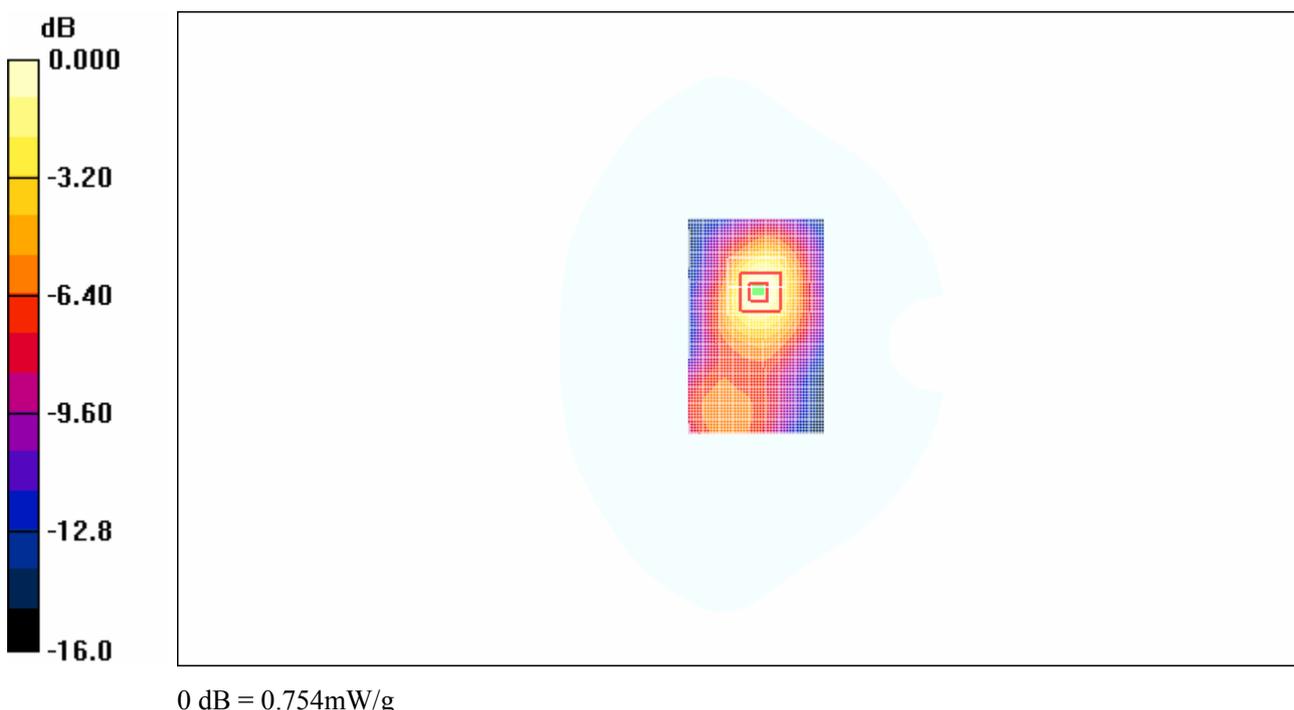
**Toward Ground High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 12.9 V/m; Power Drift = -0.074 dB

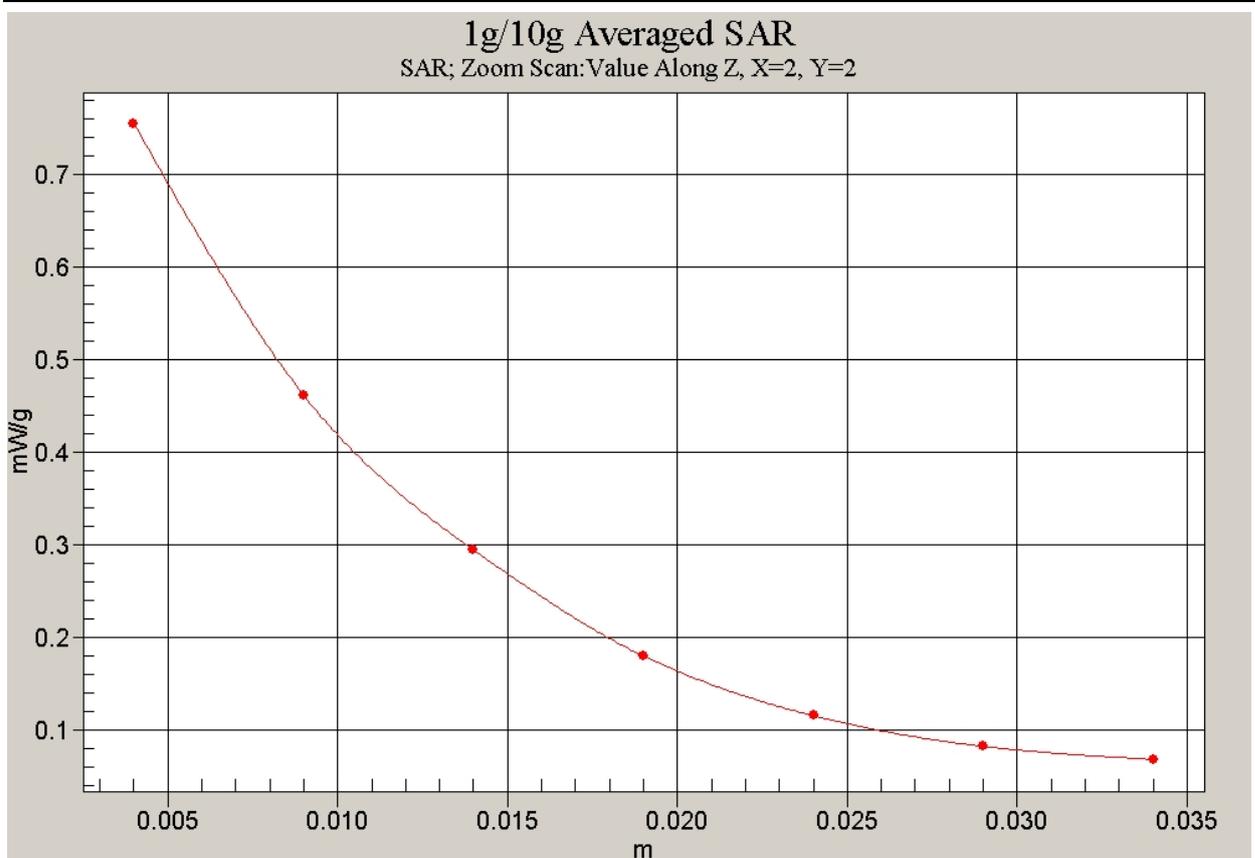
Peak SAR (extrapolated) = 1.20 W/kg

**SAR(1 g) = 0.698 mW/g; SAR(10 g) = 0.406 mW/g**

Maximum value of SAR (measured) = 0.754 mW/g



**Fig. 141 1900MHz Body, Towards Ground with GPRS, CH810**



**Fig. 142 Z-Scan at power reference point  
(1900MHz Body, Towards Ground with GPRS, CH810)**

**1900 Body Toward Ground Middle with GPRS**

Electronics: DAE3 Sn536

Medium: Body 1900 MHz

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.51$  mho/m;  $\epsilon_r = 52.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 24.5°C      Liquid Temperature: 24.0°C

Communication System: GSM 1900MHz GPRS Frequency: 1880 MHz Duty Cycle: 1:4

Probe: ET3DV6 - SN1736 ConvF(4.88, 4.88, 4.88)

**Toward Ground Middle/Area Scan (51x81x1):** Measurement grid: dx=10mm, dy=10mm

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

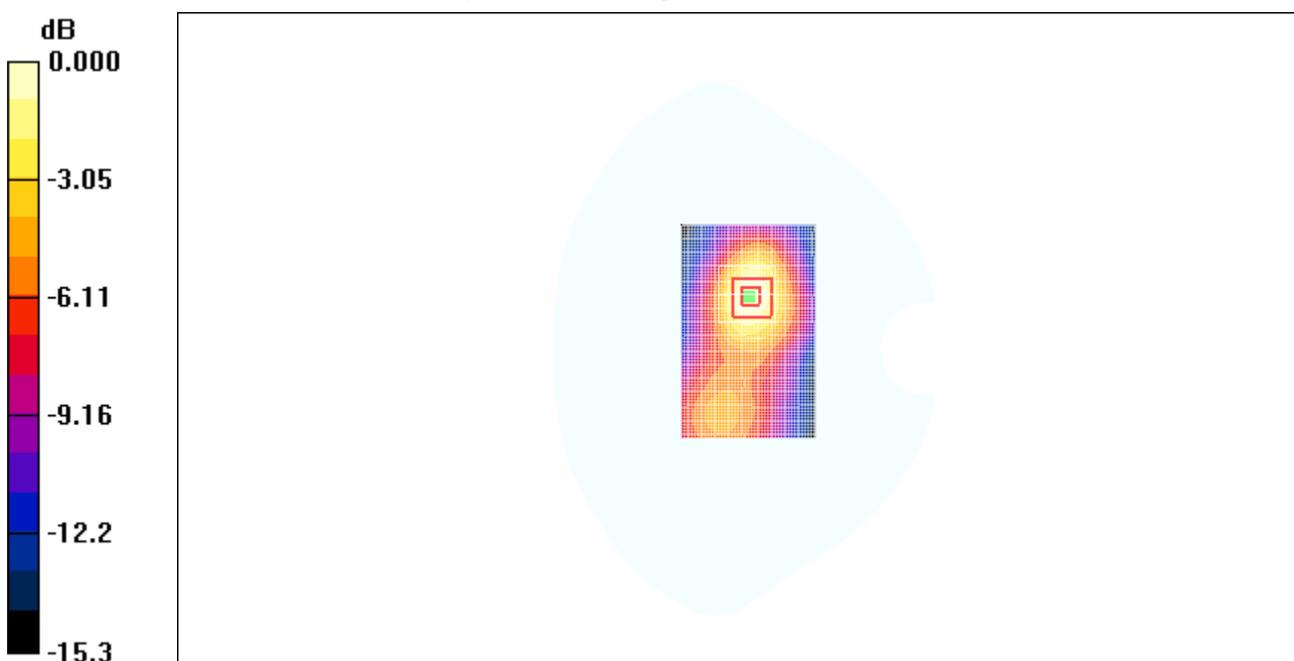
**Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 13.4 V/m; Power Drift = -0.096 dB

Peak SAR (extrapolated) = 1.15 W/kg

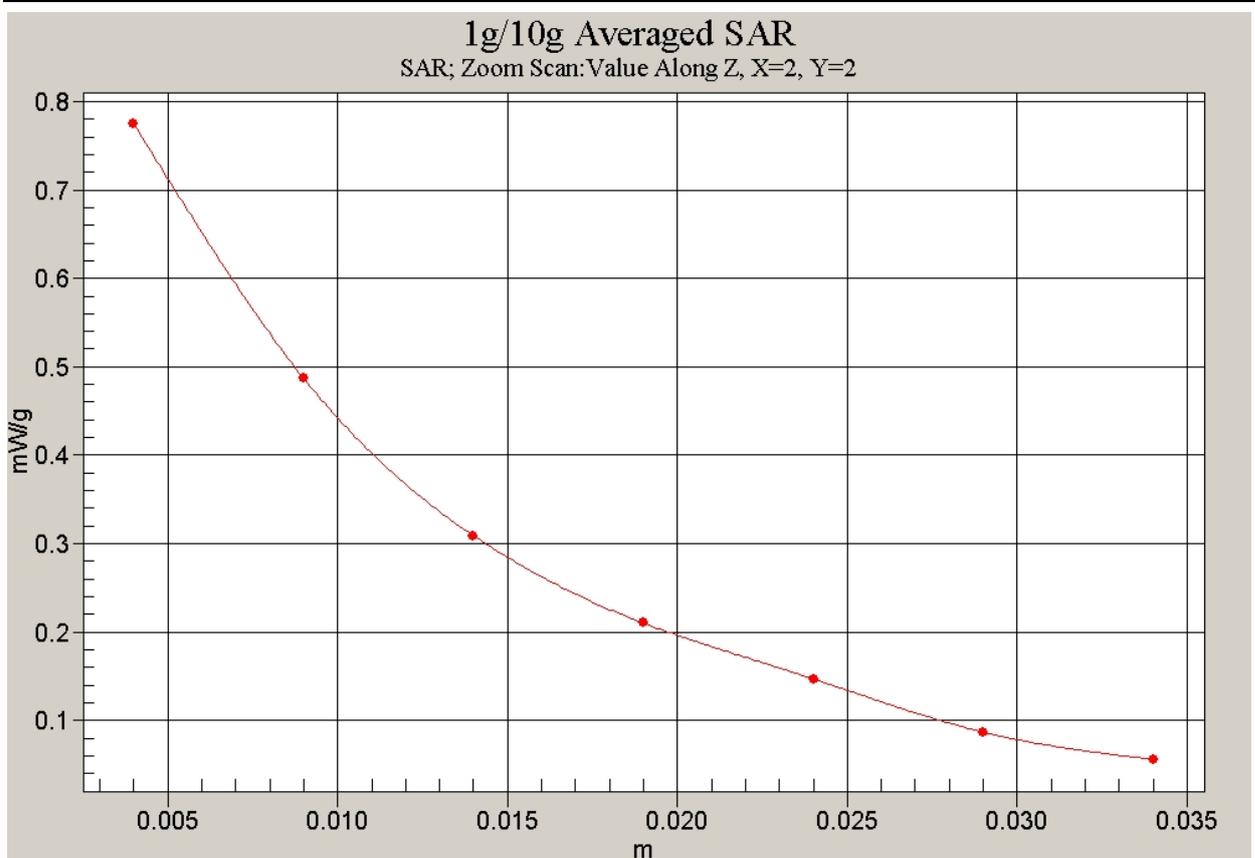
**SAR(1 g) = 0.709 mW/g; SAR(10 g) = 0.415 mW/g**

Maximum value of SAR (measured) = 0.770 mW/g



0 dB = 0.770mW/g

**Fig. 143 1900MHz Body, Towards Ground with GPRS, CH661**



**Fig. 144 Z-Scan at power reference point  
(1900MHz Body, Towards Ground with GPRS, CH661)**

**1900 Body Toward Ground Low with GPRS**

Electronics: DAE3 Sn536

Medium: Body 1900 MHz

Medium parameters used (interpolated):  $f = 1850.2$  MHz;  $\sigma = 1.48$  mho/m;  $\epsilon_r = 52.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 24.5°C      Liquid Temperature: 24.0°C

Communication System: GSM 1900MHz GPRS Frequency: 1850.2 MHz Duty Cycle: 1:4

Probe: ET3DV6 - SN1736 ConvF(4.88, 4.88, 4.88)

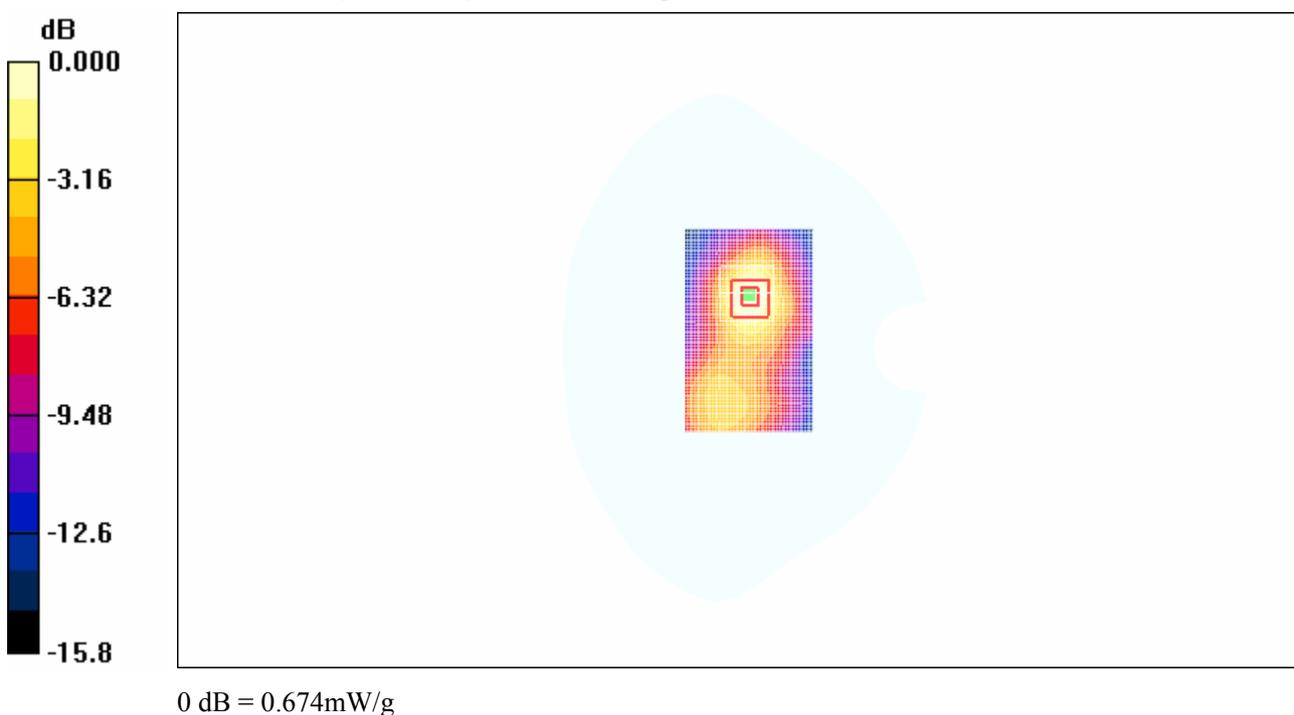
**Toward Ground Low/Area Scan (51x81x1):** Measurement grid: dx=10mm, dy=10mm  
Maximum value of SAR (interpolated) = 0.765 mW/g**Toward Ground Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

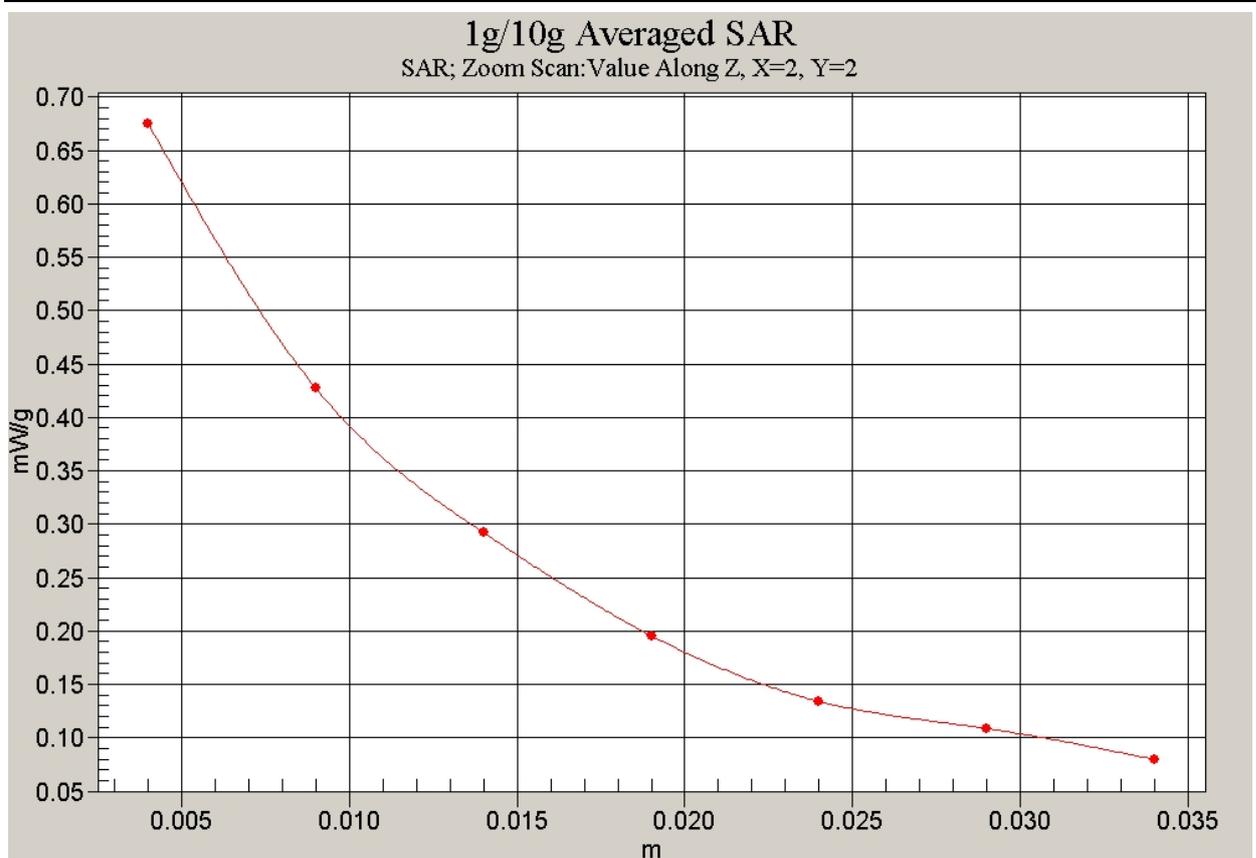
Reference Value = 13.0 V/m; Power Drift = -0.033 dB

Peak SAR (extrapolated) = 1.05 W/kg

**SAR(1 g) = 0.624 mW/g; SAR(10 g) = 0.367 mW/g**

Maximum value of SAR (measured) = 0.674 mW/g

**Fig. 145 1900MHz Body, Towards Ground with GPRS, CH512**



**Fig. 146 Z-Scan at power reference point  
(1900MHz Body, Towards Ground with GPRS, CH512)**

**1900 Body Toward Phantom High with GPRS**

Electronics: DAE3 Sn536

Medium: Body 1900 MHz

Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.54$  mho/m;  $\epsilon_r = 52$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 24.5°C      Liquid Temperature: 24.0°C

Communication System: GSM 1900MHz GPRS Frequency: 1909.8 MHz Duty Cycle: 1:4

Probe: ET3DV6 - SN1736 ConvF(4.88, 4.88, 4.88)

**Toward Phantom High/Area Scan (51x81x1):** Measurement grid: dx=10mm, dy=10mm  
 Maximum value of SAR (interpolated) = 0.173 mW/g

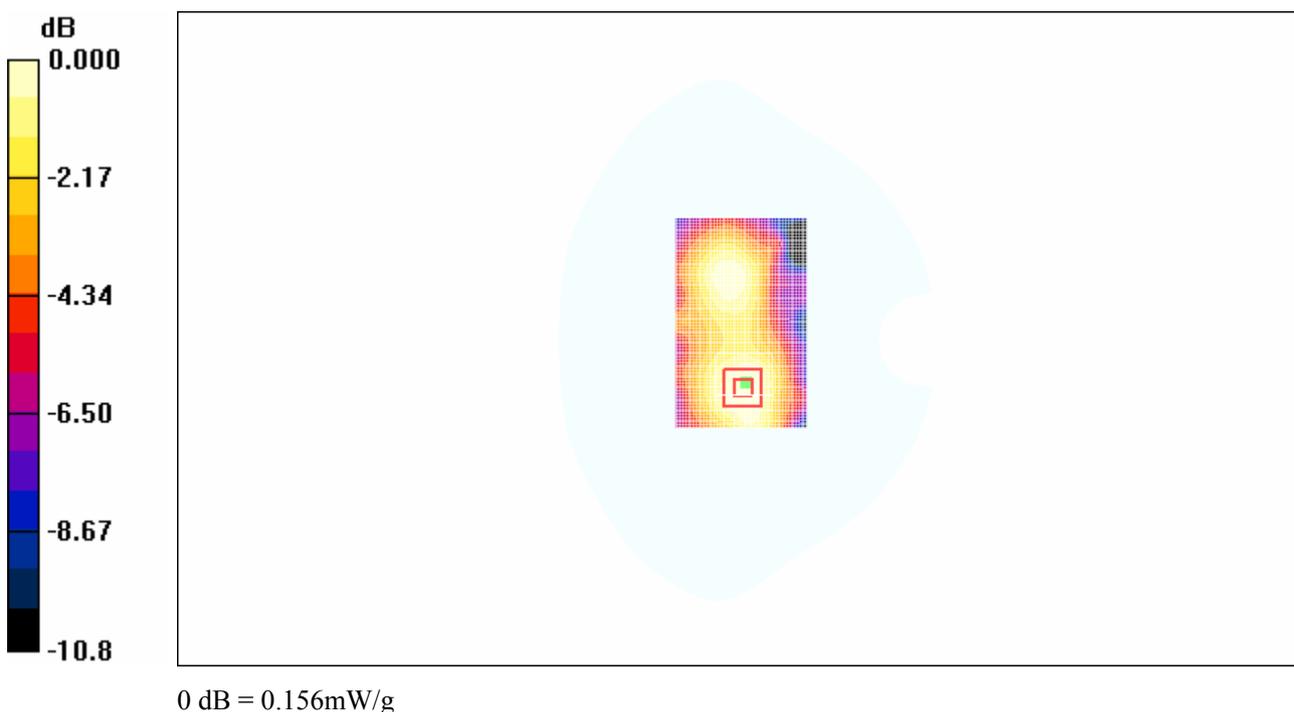
**Toward Phantom High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.20 V/m; Power Drift = -0.200 dB

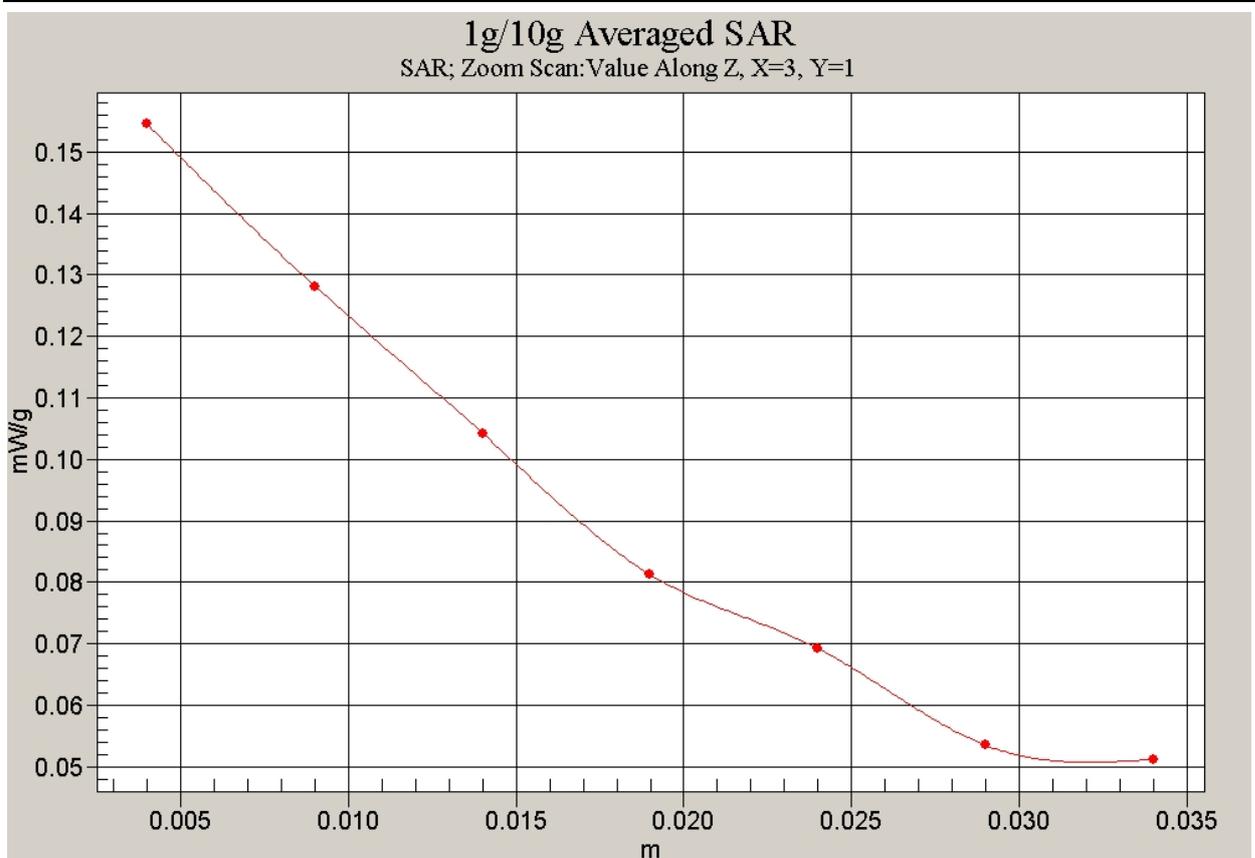
Peak SAR (extrapolated) = 0.253 W/kg

**SAR(1 g) = 0.154 mW/g; SAR(10 g) = 0.109 mW/g**

Maximum value of SAR (measured) = 0.156 mW/g



**Fig. 147 1900MHz Body, Towards Ground with GPRS, CH810**



**Fig. 148 Z-Scan at power reference point  
(1900MHz Body, Towards Ground with GPRS, CH810)**

**1900 Body Toward Phantom Middle with GPRS**

Electronics: DAE3 Sn536

Medium: Body 1900 MHz

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.51$  mho/m;  $\epsilon_r = 52.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 24.5°C      Liquid Temperature: 24.0°C

Communication System: GSM 1900MHz GPRS Frequency: 1880 MHz Duty Cycle: 1:4

Probe: ET3DV6 - SN1736 ConvF(4.88, 4.88, 4.88)

**Toward Phantom Middle/Area Scan (51x81x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.208 mW/g

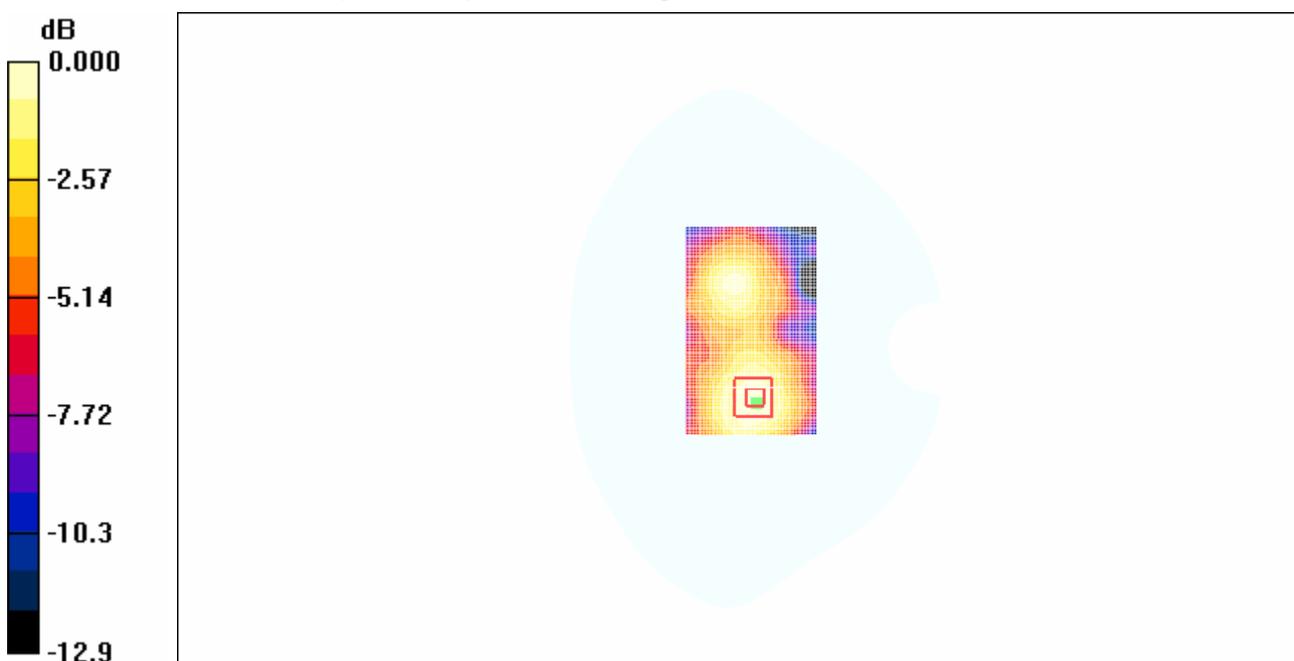
**Toward Phantom Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.46 V/m; Power Drift = -0.039 dB

Peak SAR (extrapolated) = 0.257 W/kg

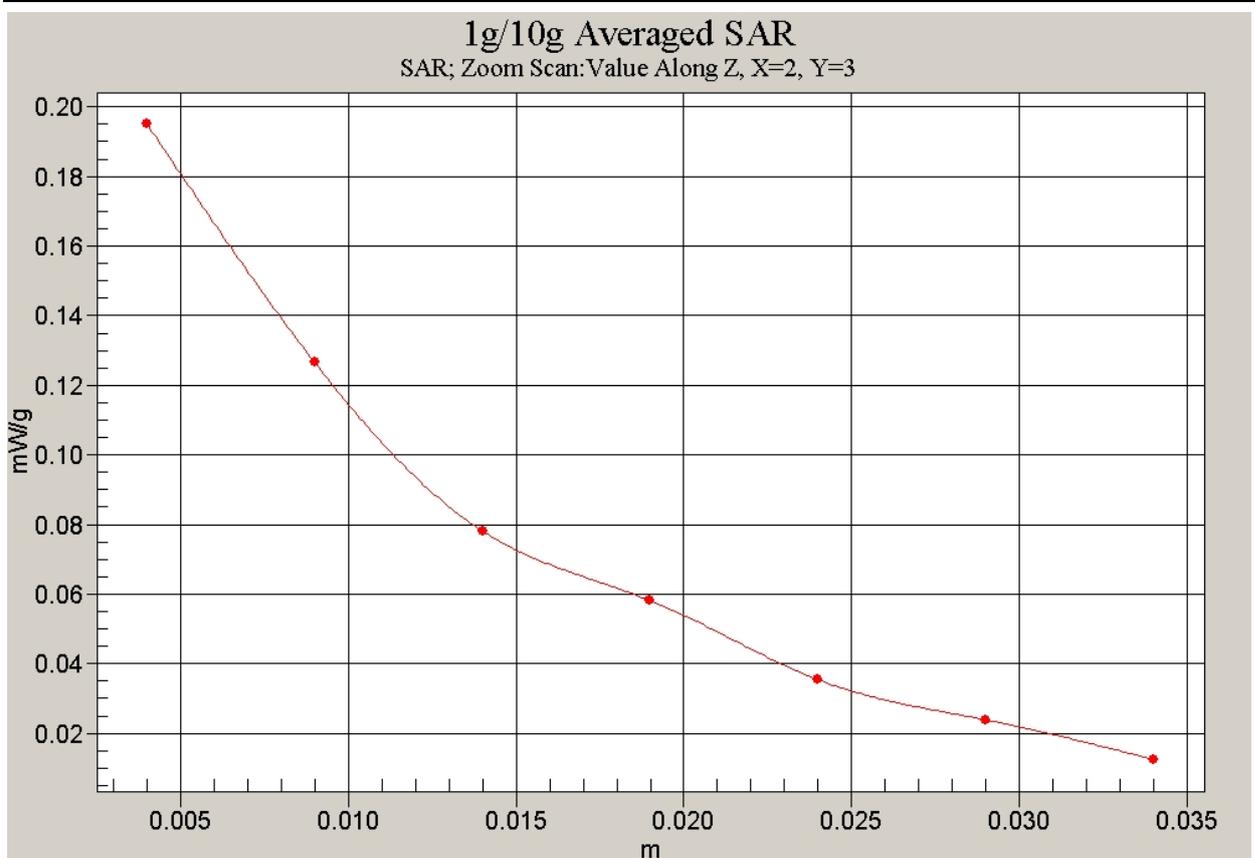
**SAR(1 g) = 0.197 mW/g; SAR(10 g) = 0.127 mW/g**

Maximum value of SAR (measured) = 0.206 mW/g



0 dB = 0.206mW/g

**Fig. 149 1900MHz Body, Towards Ground with GPRS, CH661**



**Fig. 150 Z-Scan at power reference point  
(1900MHz Body, Towards Ground with GPRS, CH661)**

**1900 Body Toward Phantom Low with GPRS**

Electronics: DAE3 Sn536

Medium: Body 1900 MHz

Medium parameters used (interpolated):  $f = 1850.2$  MHz;  $\sigma = 1.48$  mho/m;  $\epsilon_r = 52.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 24.5°C      Liquid Temperature: 24.0°C

Communication System: GSM 1900MHz GPRS Frequency: 1850.2 MHz Duty Cycle: 1:4

Probe: ET3DV6 - SN1736 ConvF(4.88, 4.88, 4.88)

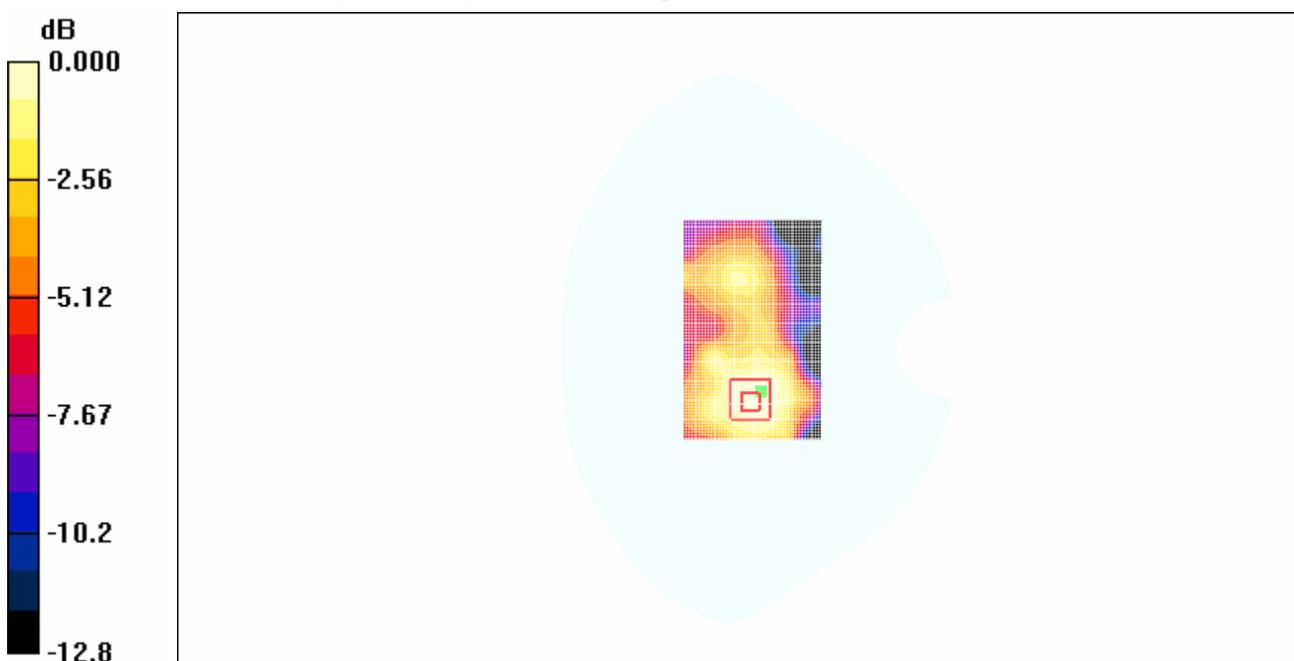
**Toward Phantom Low/Area Scan (51x81x1):** Measurement grid: dx=10mm, dy=10mm  
Maximum value of SAR (interpolated) = 0.203 mW/g**Toward Phantom Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.43 V/m; Power Drift = -0.191 dB

Peak SAR (extrapolated) = 0.302 W/kg

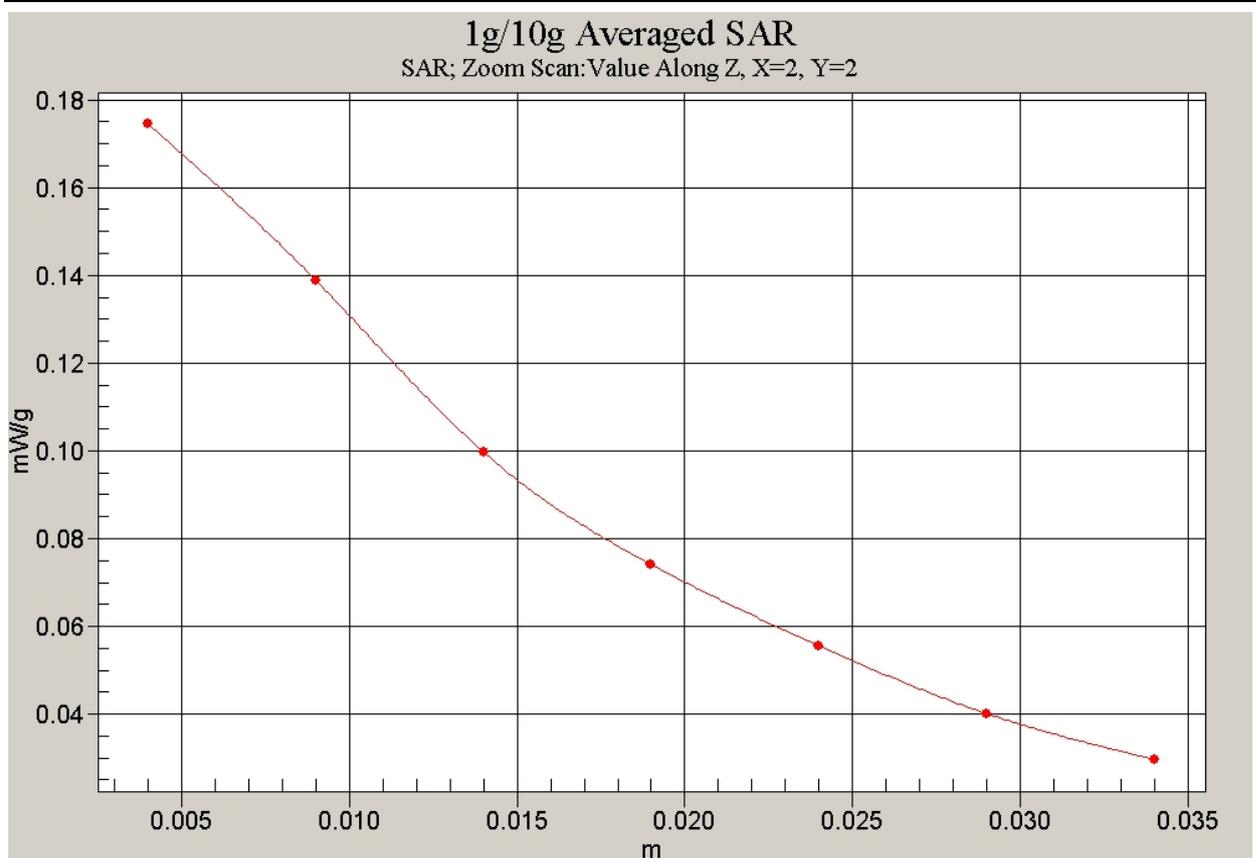
**SAR(1 g) = 0.175 mW/g; SAR(10 g) = 0.119 mW/g**

Maximum value of SAR (measured) = 0.187 mW/g



0 dB = 0.187mW/g

**Fig. 151 1900MHz Body, Towards Ground with GPRS, CH512**



**Fig. 152 Z-Scan at power reference point  
(1900MHz Body, Towards Ground with GPRS, CH512)**

**1900 Body Toward Phantom Low with EGPRS**

Electronics: DAE3 Sn536

Medium: Body 1900 MHz

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.51$  mho/m;  $\epsilon_r = 52.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 24.5°C      Liquid Temperature: 24.0°C

Communication System: GSM 1900MHz GPRS Frequency: 1880 MHz Duty Cycle: 1:4

Probe: ET3DV6 - SN1736 ConvF(4.88, 4.88, 4.88)

**Toward Ground Middle/Area Scan (51x81x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.303 mW/g

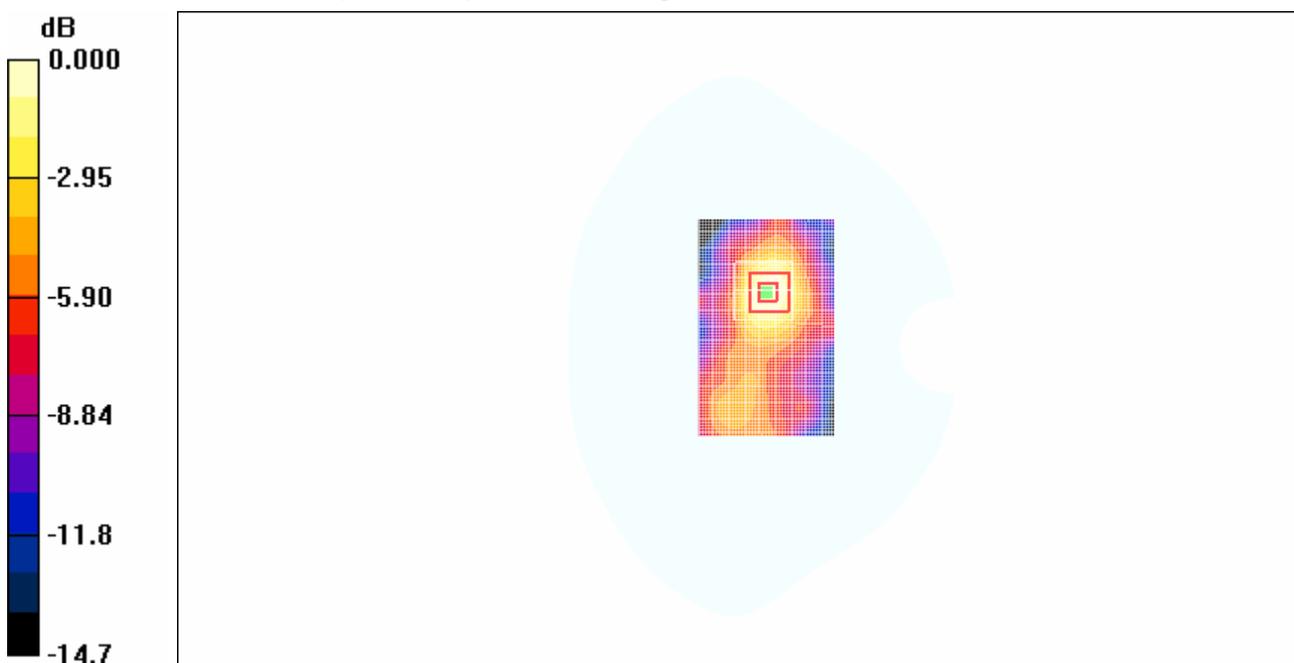
**Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.45 V/m; Power Drift = -0.185 dB

Peak SAR (extrapolated) = 0.461 W/kg

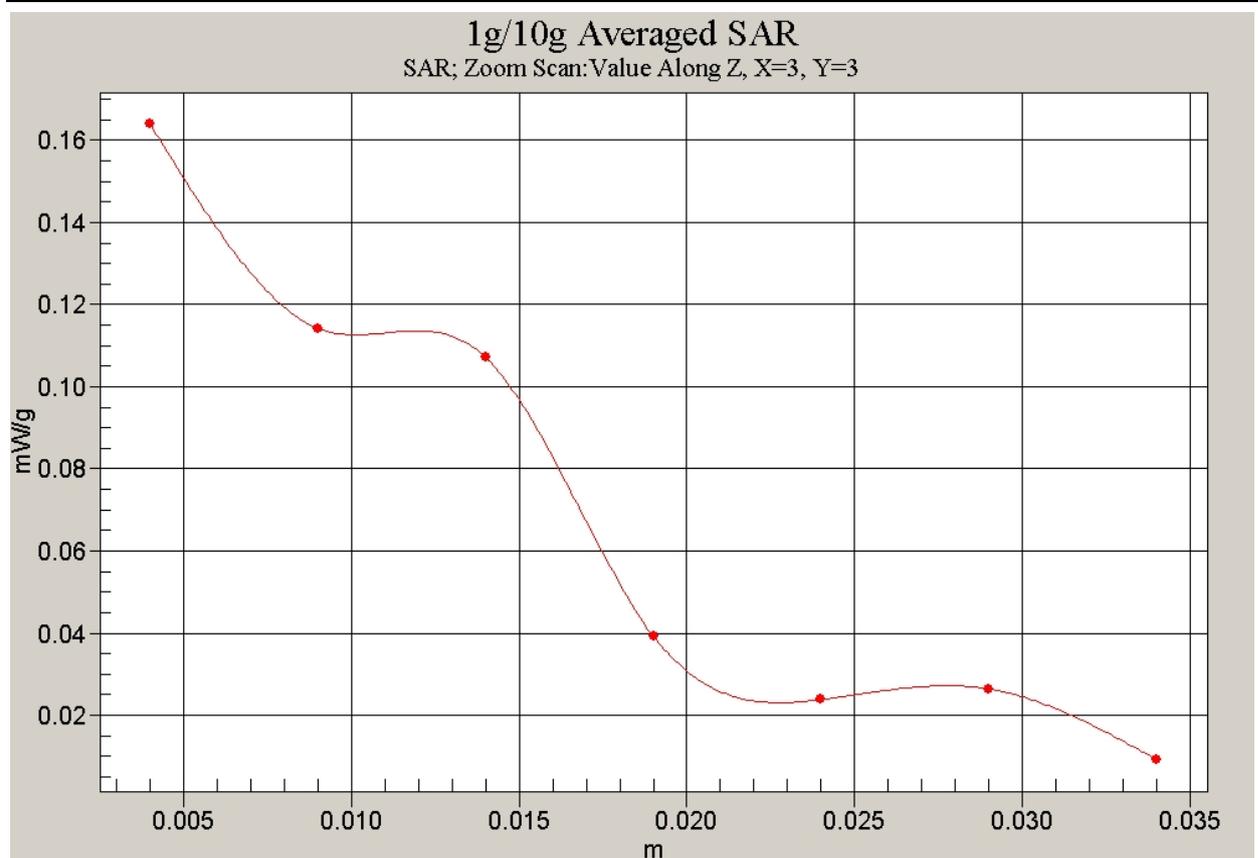
**SAR(1 g) = 0.263 mW/g; SAR(10 g) = 0.159 mW/g**

Maximum value of SAR (measured) = 0.276 mW/g



0 dB = 0.276mW/g

**Fig. 153 1900MHz Body, Towards Ground with EGPRS, CH661**



**Fig. 154 Z-Scan at power reference point  
(1900MHz Body, Towards Ground with EGPRS, CH661)**

**1900 Body Toward Ground High with Bluetooth Function**

Electronics: DAE3 Sn536

Medium: Body 1900 MHz

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.51$  mho/m;  $\epsilon_r = 52.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 24.5°C      Liquid Temperature: 24.0°C

Communication System: GSM 1900MHz GPRS Frequency: 1880 MHz Duty Cycle: 1:4

Probe: ET3DV6 - SN1736 ConvF(4.88, 4.88, 4.88)

**Toward Ground Middle/Area Scan (51x81x1):** Measurement grid: dx=10mm, dy=10mm

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

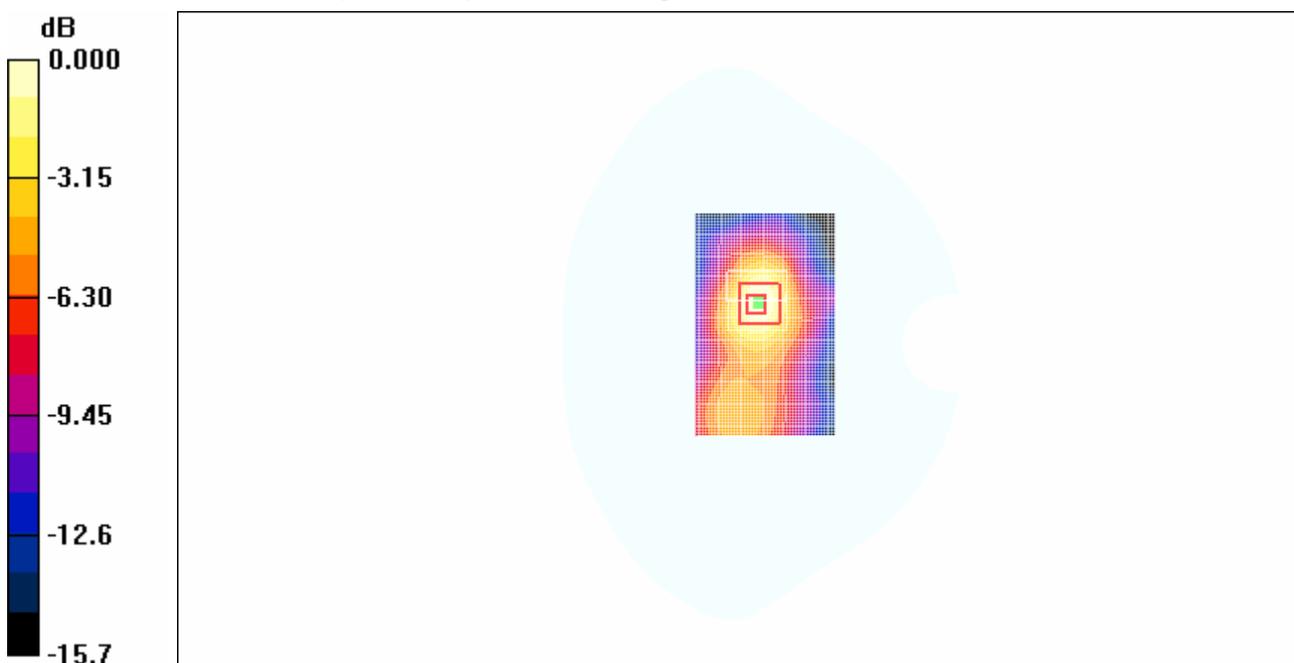
**Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.9 V/m; Power Drift = -0.136 dB

Peak SAR (extrapolated) = 1.18 W/kg

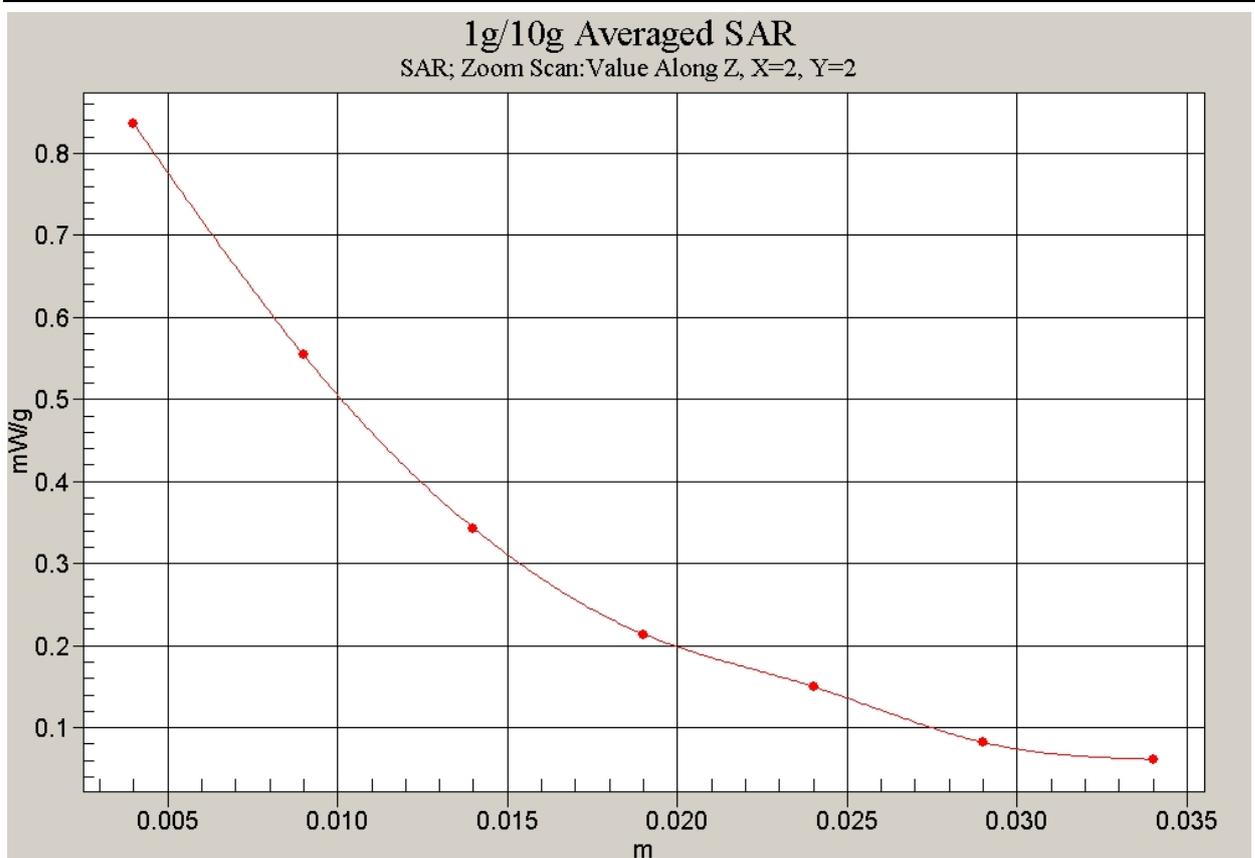
**SAR(1 g) = 0.721 mW/g; SAR(10 g) = 0.423 mW/g**

Maximum value of SAR (measured) = 0.796 mW/g



0 dB = 0.796mW/g

**Fig. 155 1900MHz Body, Towards Ground with Bluetooth, CH661**



**Fig. 156 Z-Scan at power reference point  
(1900MHz Body, Towards Ground with Bluetooth, CH661)**

**ANNEX D SYSTEM VALIDATION RESULTS****835MHzDAE589Probe1736**

Date/Time: 2007-5-21 7:56:38

Electronics: DAE3 Sn536

Medium: 850 Head

Medium parameters used:  $\sigma = 0.93$  mho/m;  $\epsilon_r = 42.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 24.5°C      Liquid Temperature: 24.0°C

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

Probe: ET3DV6 - SN1736 ConvF(6.51, 6.51, 6.51)

**835MHz/Area Scan (101x101x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 2.68 mW/g

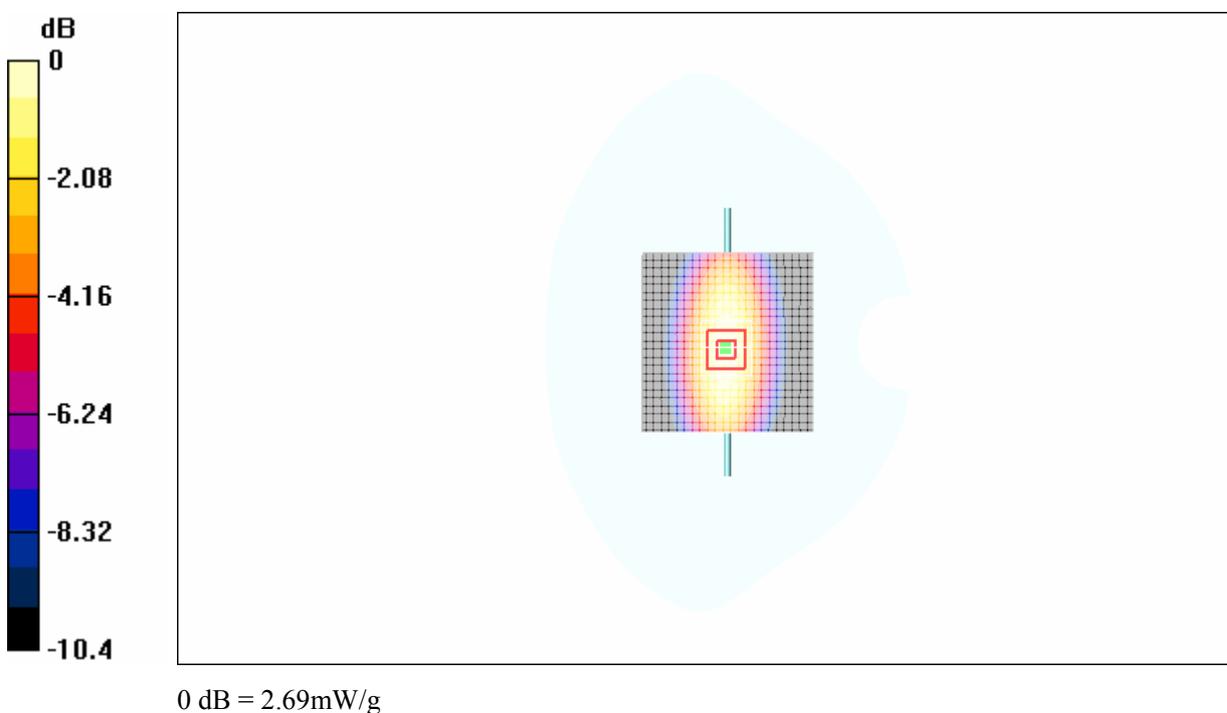
**835MHz/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 56.8 V/m; Power Drift = -0.0 dB

Peak SAR (extrapolated) = 3.67 W/kg

**SAR(1 g) = 2.48 mW/g; SAR(10 g) = 1.62 mW/g**

Maximum value of SAR (measured) = 2.69 mW/g

**Fig.157 validation 835MHz 250mW**

**1900MHzDAE536Probe1736**

Date/Time: 2007-5-22 8:22:30

Electronics: DAE3 Sn536

Medium: Head 1900 MHz

Medium parameters used:  $\sigma = 1.37$  mho/m;  $\epsilon_r = 39.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 24.5°C      Liquid Temperature: 24.0°C

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

Probe: ET3DV6 - SN1736 ConvF(5.4, 5.4, 5.4)

**System Validation/Area Scan (101x101x1):** Measurement grid: dx=10mm, dy=10mm  
Maximum value of SAR (interpolated) = 11.2 mW/g

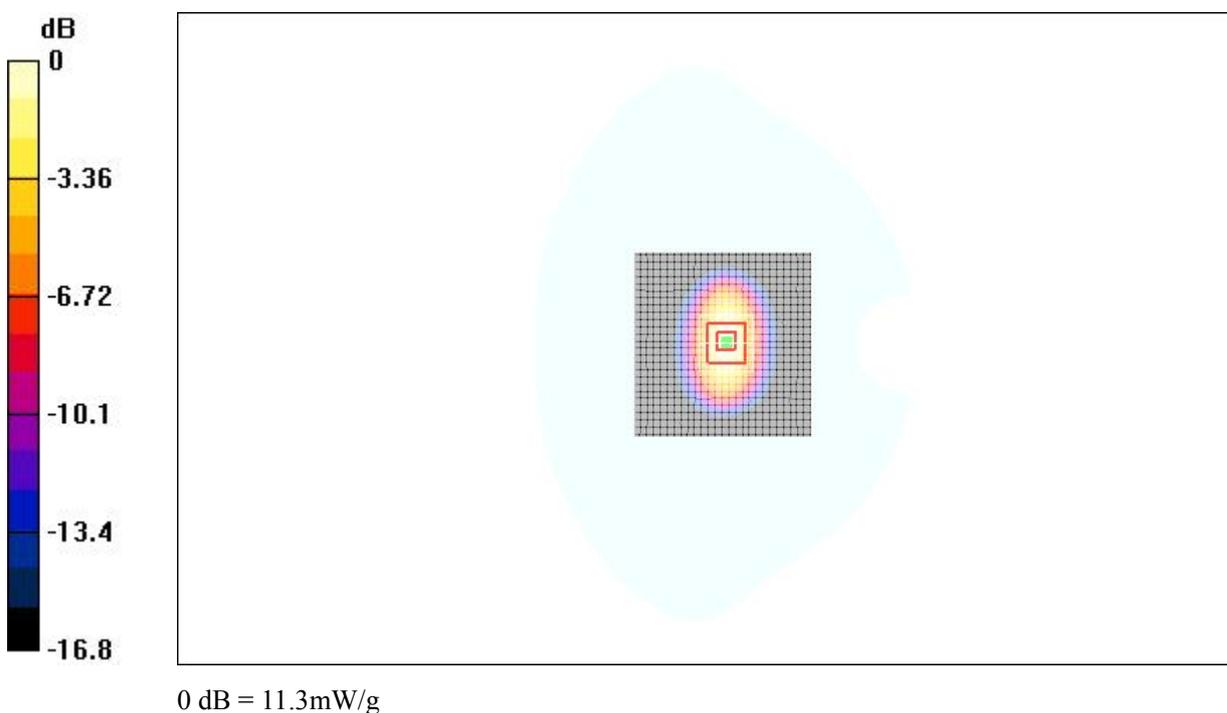
**System Validation/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 92.1 V/m; Power Drift = 0.1 dB

Peak SAR (extrapolated) = 16.9 W/kg

**SAR(1 g) = 9.91 mW/g; SAR(10 g) = 5.27 mW/g**

Maximum value of SAR (measured) = 11.3 mW/g

**Fig.158 validation 1900MHz 250mW**

**ANNEX E PROBE CALIBRATION CERTIFICATE**

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

Accreditation No.: **SCS 108**

Client **TMC China**

Certificate No: **ET3DV6-1736\_Dec06**

CALIBRATION CERTIFICATE																																															
Object	ET3DV6-SN: 1736																																														
Calibration procedure(s)	QA CAL-01.v5 Calibration procedure for dosimetric E-field probes																																														
Calibration date:	December 1, 2006																																														
Condition of the calibrated item	In Tolerance																																														
<p>This calibration certify documents the traceability to national standards, which realize the physical units of measurements(SI). All calibrations have been conducted at an environment temperature (22±3)°C and humidity&lt;70%</p> <p>Calibration Equipment used (M&amp;TE critical for calibration)</p> <table border="1"> <thead> <tr> <th>Primary Standards</th> <th>ID#</th> <th>Cal Data (Calibrated by, Certification NO.)</th> <th>Scheduled Calibration</th> </tr> </thead> <tbody> <tr> <td>Power meter E4419B</td> <td>GB341293874</td> <td>22-May-06 (METAS, NO. 251-00466)</td> <td>May-07</td> </tr> <tr> <td>Power sensor E4412A</td> <td>MY41495277</td> <td>22-May-06 (METAS, NO. 251-00466)</td> <td>May-07</td> </tr> <tr> <td>Power sensor E4412A</td> <td>MY41498087</td> <td>22-May-06 (METAS, NO. 251-00466)</td> <td>May-07</td> </tr> <tr> <td>Reference 20 dB Attenuator</td> <td>SN:S5086 (20b)</td> <td>22-May-06 (METAS, NO. 251-00467)</td> <td>May-07</td> </tr> <tr> <td>Reference Probe ES3DV2</td> <td>SN:S5086 (20b)</td> <td>22-May-06 (METAS, NO. 251-00467)</td> <td>May-07</td> </tr> <tr> <td>DAE4</td> <td>SN:3013</td> <td>13-Jan-06 (SPEAG, NO. ES3-3013_Jan06)</td> <td>Jan-07</td> </tr> <tr> <td>Reference Probe ES3DV2</td> <td>SN: 907</td> <td>11-Jun-06 (SPEAG, NO.DAE4-907_Jun06)</td> <td>Jun-07</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Secondary Standards</th> <th>ID#</th> <th>Check Data (in house)</th> <th>Scheduled Calibration</th> </tr> </thead> <tbody> <tr> <td>RF generator HP8648C</td> <td>US3642U01700</td> <td>4-Dec-05(SPEAG, in house check Dec-03)</td> <td>In house check: Dec-09</td> </tr> <tr> <td>Network Analyzer HP 8753E</td> <td>US37390585</td> <td>10-Nov-05(SPEAG, NO. DAE4-901_Nov-04)</td> <td>In house check: Nov-09</td> </tr> </tbody> </table>				Primary Standards	ID#	Cal Data (Calibrated by, Certification NO.)	Scheduled Calibration	Power meter E4419B	GB341293874	22-May-06 (METAS, NO. 251-00466)	May-07	Power sensor E4412A	MY41495277	22-May-06 (METAS, NO. 251-00466)	May-07	Power sensor E4412A	MY41498087	22-May-06 (METAS, NO. 251-00466)	May-07	Reference 20 dB Attenuator	SN:S5086 (20b)	22-May-06 (METAS, NO. 251-00467)	May-07	Reference Probe ES3DV2	SN:S5086 (20b)	22-May-06 (METAS, NO. 251-00467)	May-07	DAE4	SN:3013	13-Jan-06 (SPEAG, NO. ES3-3013_Jan06)	Jan-07	Reference Probe ES3DV2	SN: 907	11-Jun-06 (SPEAG, NO.DAE4-907_Jun06)	Jun-07	Secondary Standards	ID#	Check Data (in house)	Scheduled Calibration	RF generator HP8648C	US3642U01700	4-Dec-05(SPEAG, in house check Dec-03)	In house check: Dec-09	Network Analyzer HP 8753E	US37390585	10-Nov-05(SPEAG, NO. DAE4-901_Nov-04)	In house check: Nov-09
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Power meter E4419B	GB341293874	22-May-06 (METAS, NO. 251-00466)	May-07																																												
Power sensor E4412A	MY41495277	22-May-06 (METAS, NO. 251-00466)	May-07																																												
Power sensor E4412A	MY41498087	22-May-06 (METAS, NO. 251-00466)	May-07																																												
Reference 20 dB Attenuator	SN:S5086 (20b)	22-May-06 (METAS, NO. 251-00467)	May-07																																												
Reference Probe ES3DV2	SN:S5086 (20b)	22-May-06 (METAS, NO. 251-00467)	May-07																																												
DAE4	SN:3013	13-Jan-06 (SPEAG, NO. ES3-3013_Jan06)	Jan-07																																												
Reference Probe ES3DV2	SN: 907	11-Jun-06 (SPEAG, NO.DAE4-907_Jun06)	Jun-07																																												
Secondary Standards	ID#	Check Data (in house)	Scheduled Calibration																																												
RF generator HP8648C	US3642U01700	4-Dec-05(SPEAG, in house check Dec-03)	In house check: Dec-09																																												
Network Analyzer HP 8753E	US37390585	10-Nov-05(SPEAG, NO. DAE4-901_Nov-04)	In house check: Nov-09																																												
Calibrated by:	Name Nico Vetterli	Function Laboratory Technician	Signature 																																												
Approved by:	Name Katja Pokovic	Function Technical Director	Signature 																																												
Issued: December 1, 2006																																															
This calibration certificate shall not be reported except in full without written approval of the laboratory.																																															

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

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

Accreditation No.: **SCS 108**

**Glossary:**

TSL	tissue simulating liquid
NORM <sub>x,y,z</sub>	sensitivity in free space
ConF	sensitivity in TSL / NORM <sub>x,y,z</sub>
DCP	diode compression point
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), 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
- GENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001

**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 (no uncertainty required). DCP does not depend on frequency nor media.
- 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.

ET3DV6 SN: 1736

December 1, 2006

# Probe ET3DV6

**SN: 1736**

Manufactured: September 27, 2002

Last calibrated: November 25, 2005

Recalibrated: December 1, 2006

Calibrated for DASY System

ET3DV6 SN: 1736

December 1, 2006

**DASY - Parameters of Probe: ET3DV6 SN:1736**

Sensitivity in Free Space<sup>A</sup>

Diode Compression<sup>B</sup>

NormX	1.97 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP X	93 mV
NormY	1.75 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP Y	93 mV
NormZ	1.97 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP Z	93 mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

TSL                    900 MHz    Typical SAR gradient: 5 % per mm

Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR <sub>be</sub> [%]	Without Correction Algorithm	9.6	5.0
SAR <sub>be</sub> [%]	With Correction Algorithm	0.1	0.3

TSL                    1810 MHz    Typical SAR gradient: 10 % per mm

Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR <sub>be</sub> [%]	Without Correction Algorithm	13.2	8.8
SAR <sub>be</sub> [%]	With Correction Algorithm	0.6	0.1

Sensor Offset

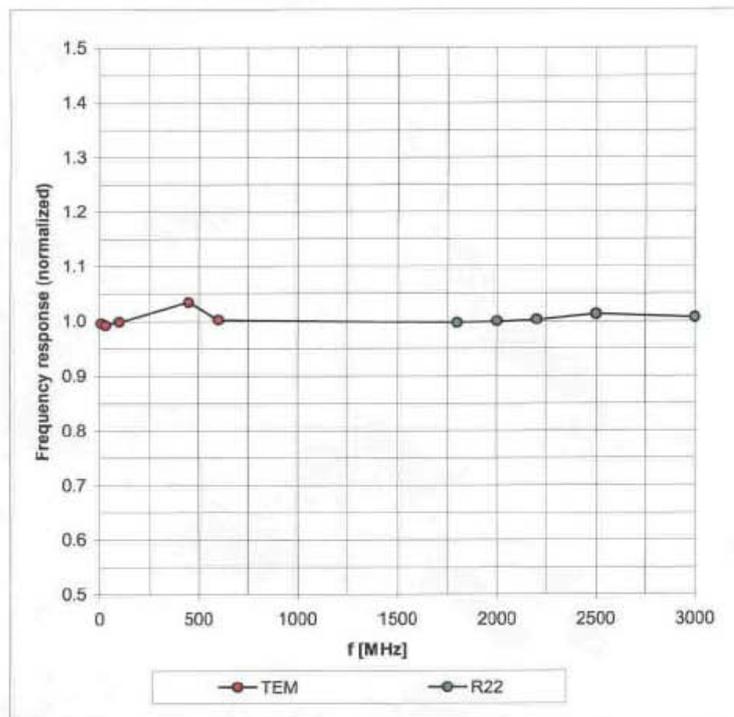
Probe Tip to Sensor Center                    2.7 mm

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### Frequency Response of E-Field

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

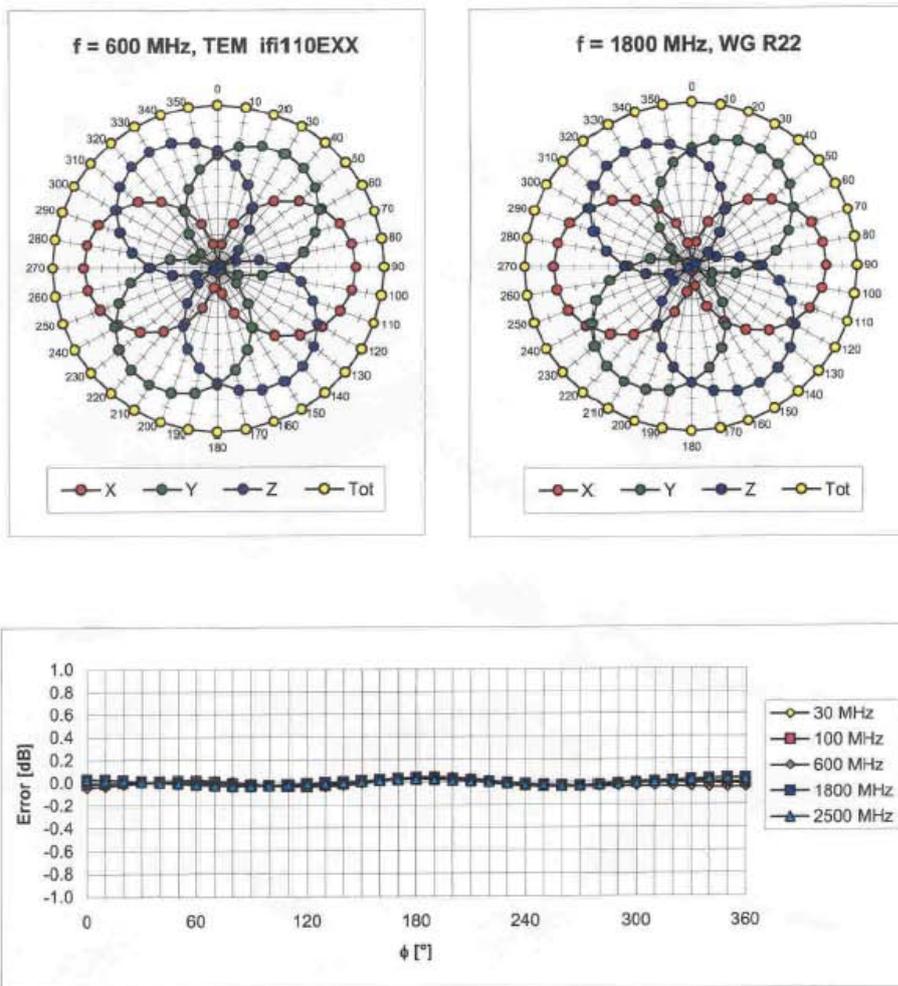


Uncertainty of Frequency Response of E-field:  $\pm 6.3\%$  (k=2)

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

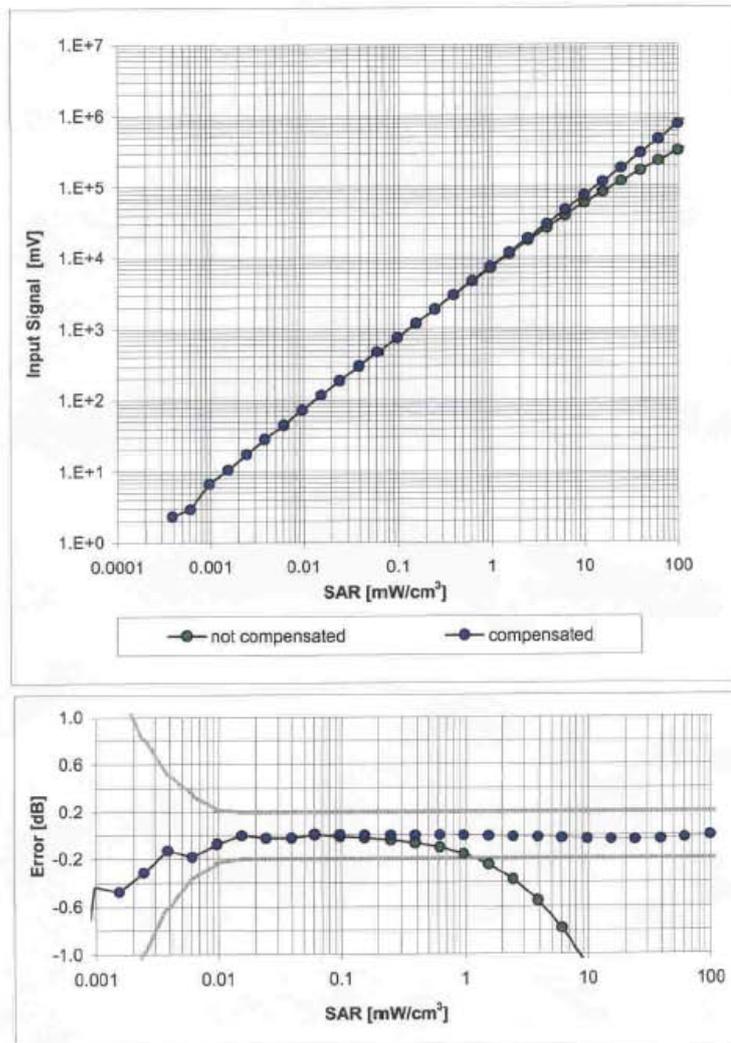


Uncertainty of Axial Isotropy Assessment:  $\pm 0.5\%$  (k=2)

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### Dynamic Range $f(SAR_{head})$ (Waveguide R22, $f = 1800$ MHz)

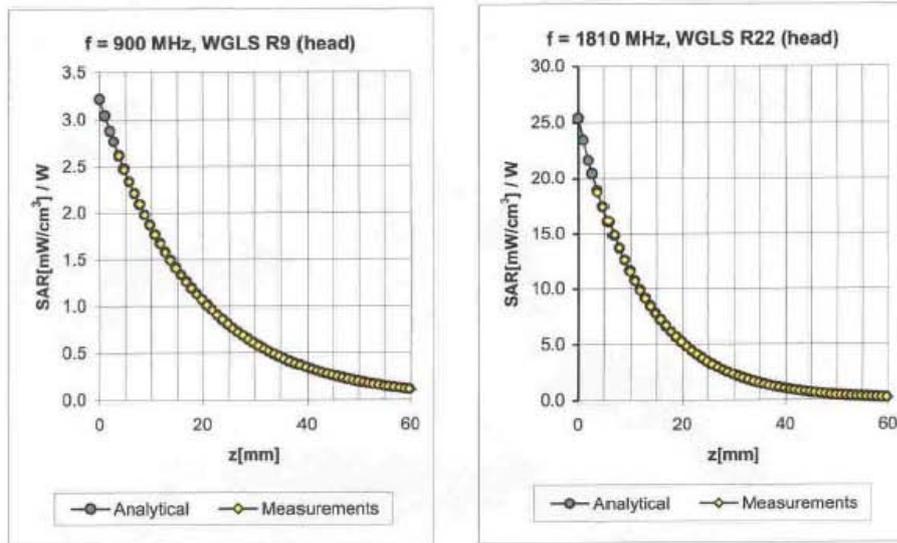


Uncertainty of Linearity Assessment:  $\pm 0.6\%$  ( $k=2$ )

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### Conversion Factor Assessment



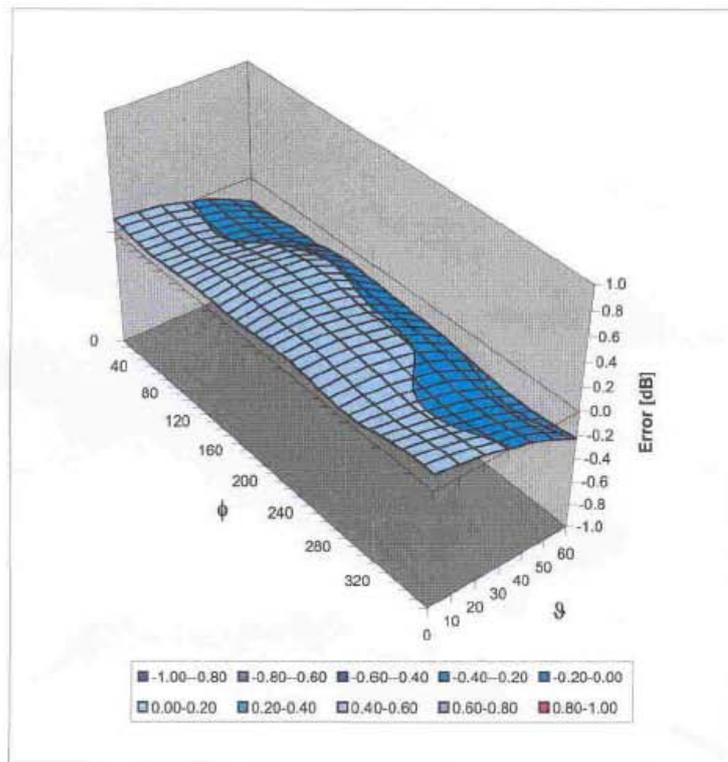
f [MHz]	Validity [MHz] <sup>C</sup>	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.56	1.85	6.51 ± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.57	2.47	5.40 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.62	2.29	4.67 ± 11.8% (k=2)
450	± 50 / ± 100	Body	56.7 ± 5%	0.94 ± 5%	0.12	1.61	7.74 ± 13.3% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.47	2.15	6.45 ± 11.0% (k=2)
1810	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.53	2.78	4.88 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.65	2.11	4.35 ± 11.8% (k=2)

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### Deviation from Isotropy in HSL

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



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