

**Fig. 70 Z-Scan at power reference point (1900 MHz CH661)**

### 1900 Right Tilt Low

Date/Time: 2007-1-17 10:59:29

Electronics: DAE3 Sn536

Medium: 1900 Head

Medium parameters used:  $\sigma = 1.45$  mho/m;  $\epsilon_r = 39.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 23.3°C      Liquid Temperature: 22.5°C

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

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

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

Maximum value of SAR (interpolated) = 0.194 mW/g

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

Reference Value = 11.5 V/m; Power Drift = 0.033 dB

Peak SAR (extrapolated) = 0.292 W/kg

**SAR(1 g) = 0.170 mW/g; SAR(10 g) = 0.094 mW/g**

Maximum value of SAR (measured) = 0.184 mW/g

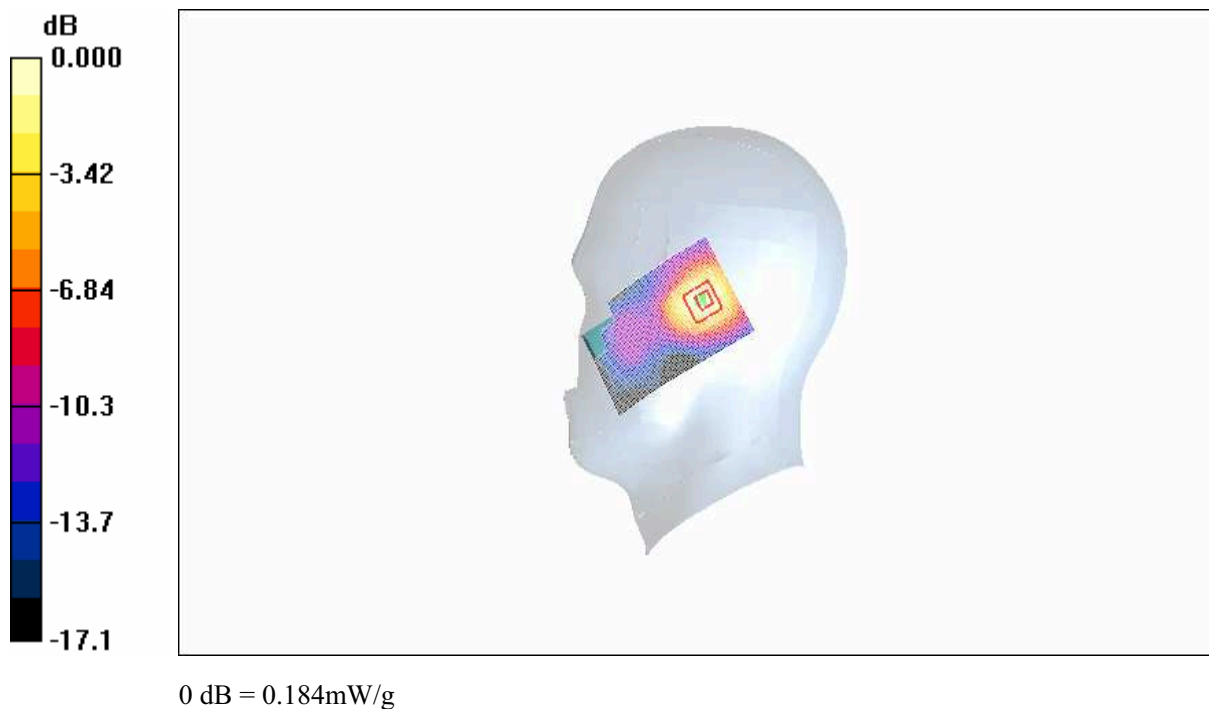
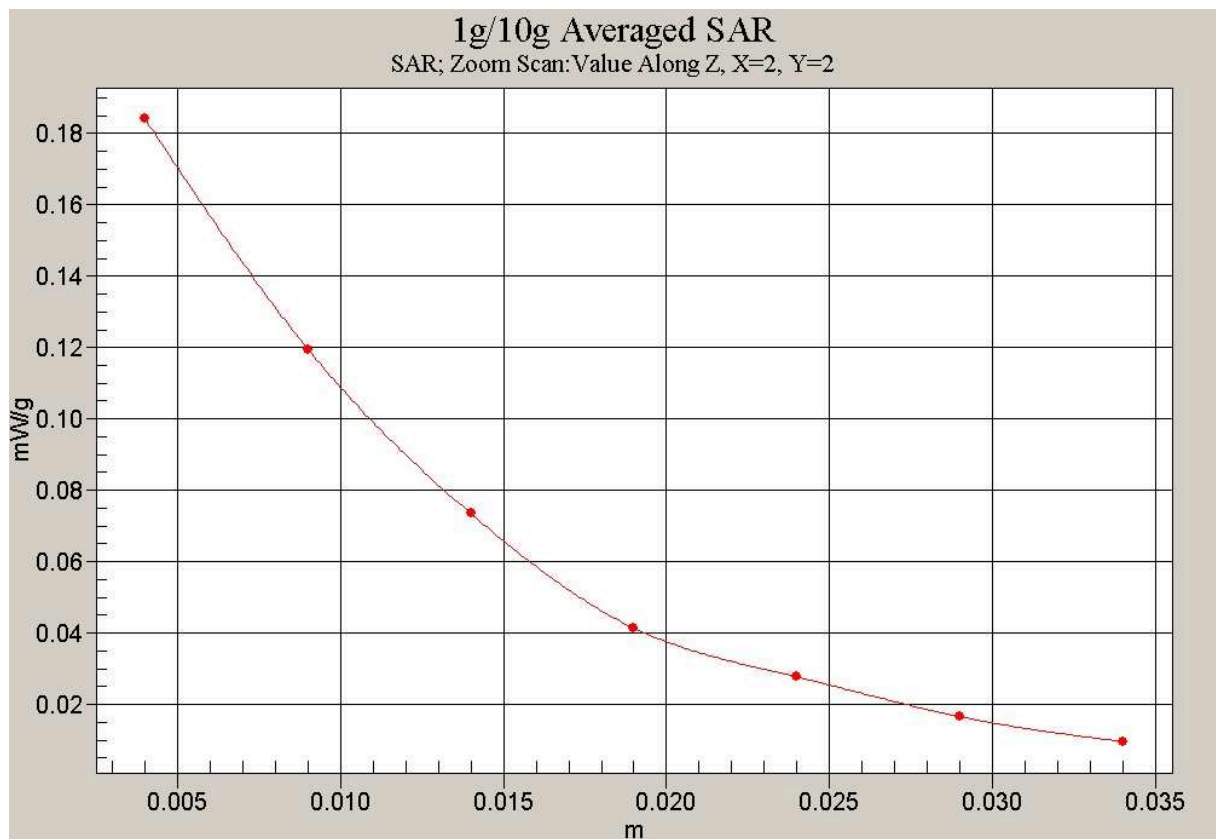


Fig.71 1900 MHz CH512



**Fig. 72 Z-Scan at power reference point (1900 MHz CH512)**

### 1900 Body Towards Phantom High

Date/Time: 2007-1-17 12:33:24

Electronics: DAE3 Sn536

Medium: 1900 Body

Medium parameters used:  $\sigma = 1.57$  mho/m;  $\epsilon_r = 51.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 23.3°C      Liquid Temperature: 22.5°C

Communication System: GSM 1900MHz Frequency: 1909.8 MHz Duty Cycle: 1:8.3

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) = 0.046 mW/g

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

Reference Value = 4.47 V/m; Power Drift = -0.022 dB

Peak SAR (extrapolated) = 0.066 W/kg

**SAR(1 g) = 0.043 mW/g; SAR(10 g) = 0.029 mW/g**

Maximum value of SAR (measured) = 0.046 mW/g

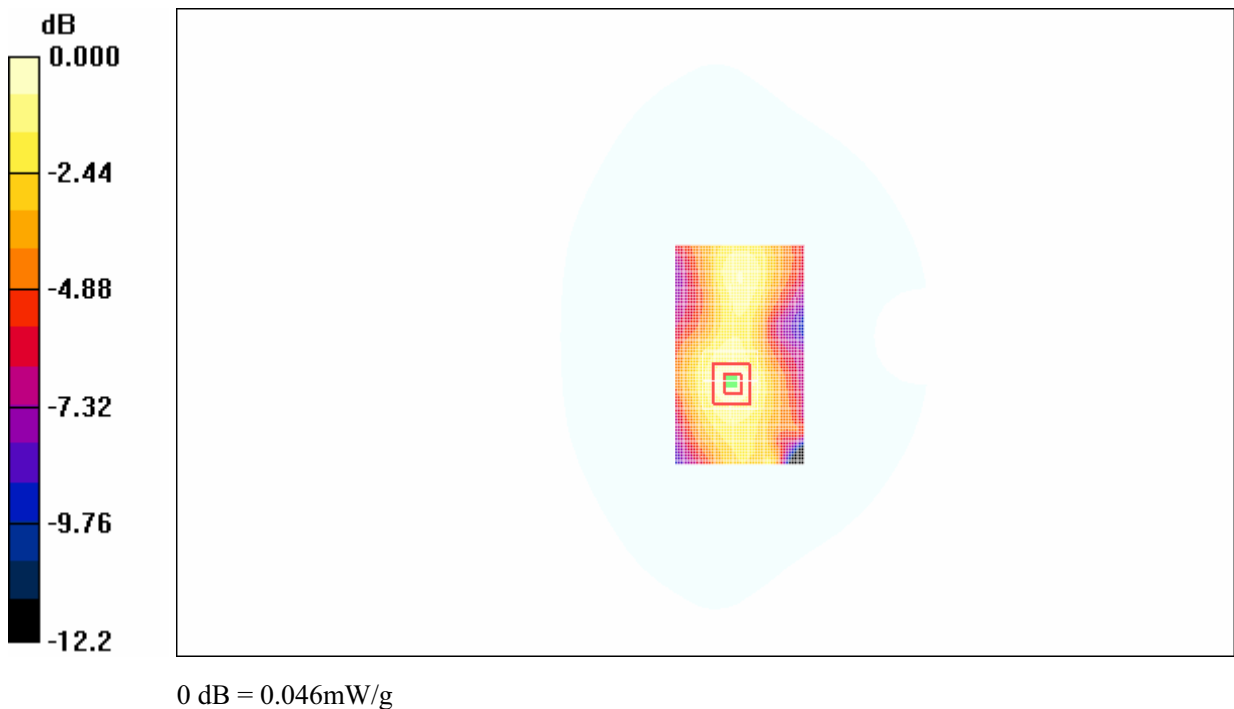
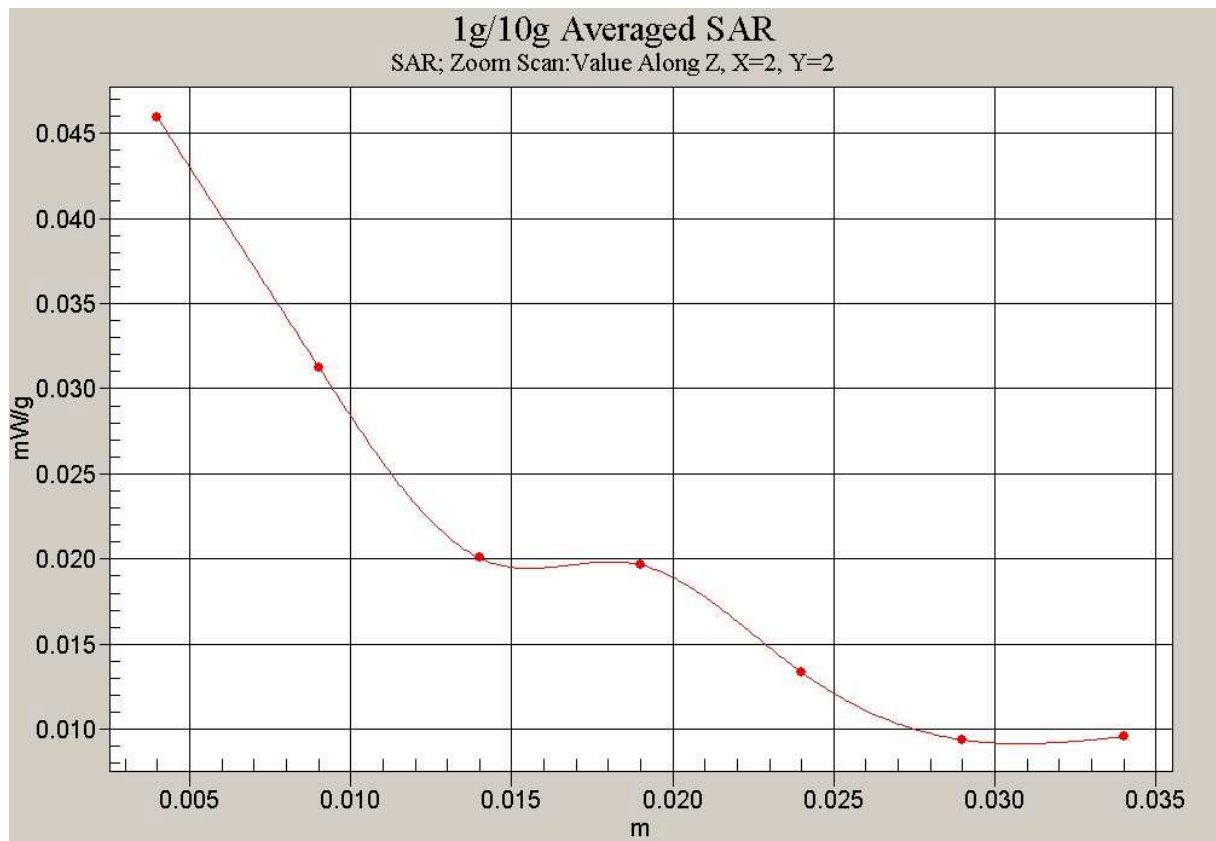


Fig. 73 1900 MHz CH810



**Fig. 74 Z-Scan at power reference point (1900 MHz CH810)**

### 1900 Body Towards Phantom Middle

Date/Time: 2007-1-17 12:58:28

Electronics: DAE3 Sn536

Medium: 1900 Body

Medium parameters used:  $\sigma = 1.57$  mho/m;  $\epsilon_r = 51.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 23.3°C      Liquid Temperature: 22.5°C

Communication System: GSM 1900MHz Frequency: 1880 MHz Duty Cycle: 1:8.3

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) = 0.034 mW/g

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

Reference Value = 4.13 V/m; Power Drift = -0.142 dB

Peak SAR (extrapolated) = 0.051 W/kg

**SAR(1 g) = 0.031 mW/g; SAR(10 g) = 0.020 mW/g**

Maximum value of SAR (measured) = 0.033 mW/g

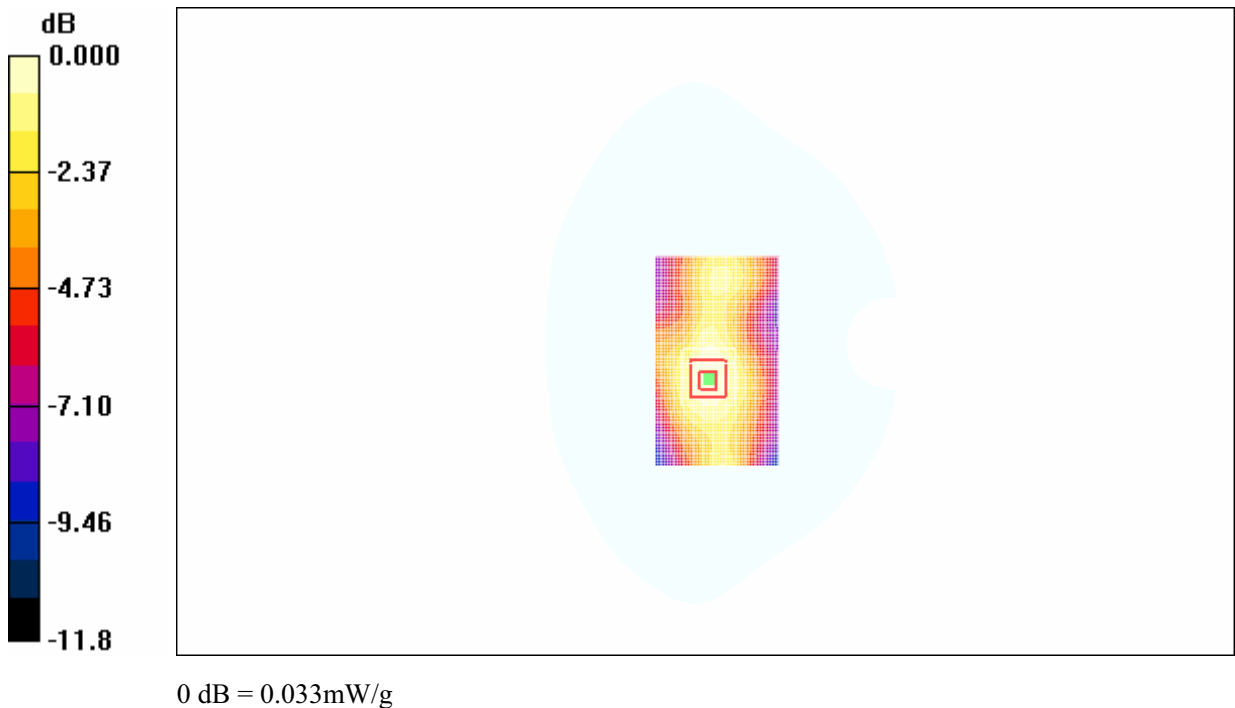
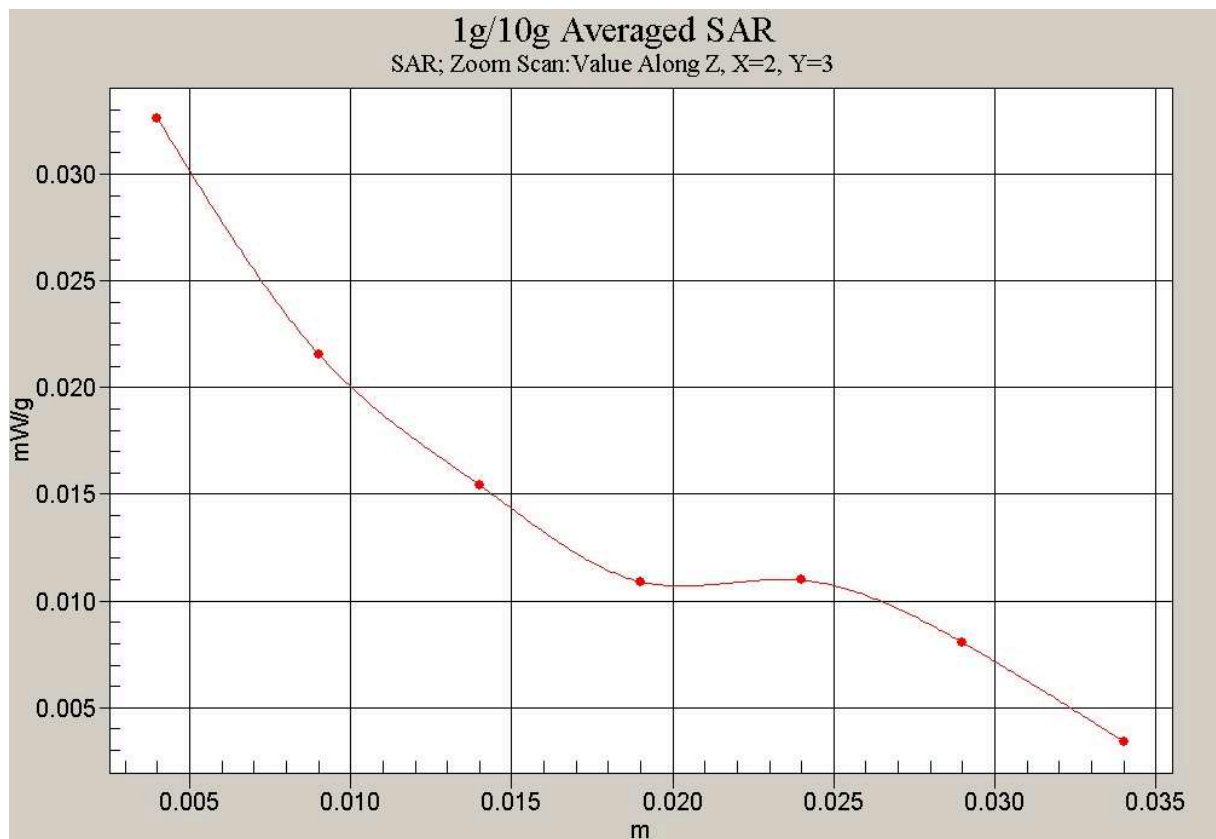


Fig. 75 1900 MHz CH661



**Fig. 76 Z-Scan at power reference point (1900 MHz CH661)**

### 1900 Body Towards Phantom Low

Date/Time: 2007-1-17 13:23:43

Electronics: DAE3 Sn536

Medium: 1900 Body

Medium parameters used:  $\sigma = 1.57$  mho/m;  $\epsilon_r = 51.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 23.3°C      Liquid Temperature: 22.5°C

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

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

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

Maximum value of SAR (interpolated) = 0.021 mW/g

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

Reference Value = 3.52 V/m; Power Drift = -0.005 dB

Peak SAR (extrapolated) = 0.033 W/kg

**SAR(1 g) = 0.020 mW/g; SAR(10 g) = 0.010 mW/g**

Maximum value of SAR (measured) = 0.023 mW/g

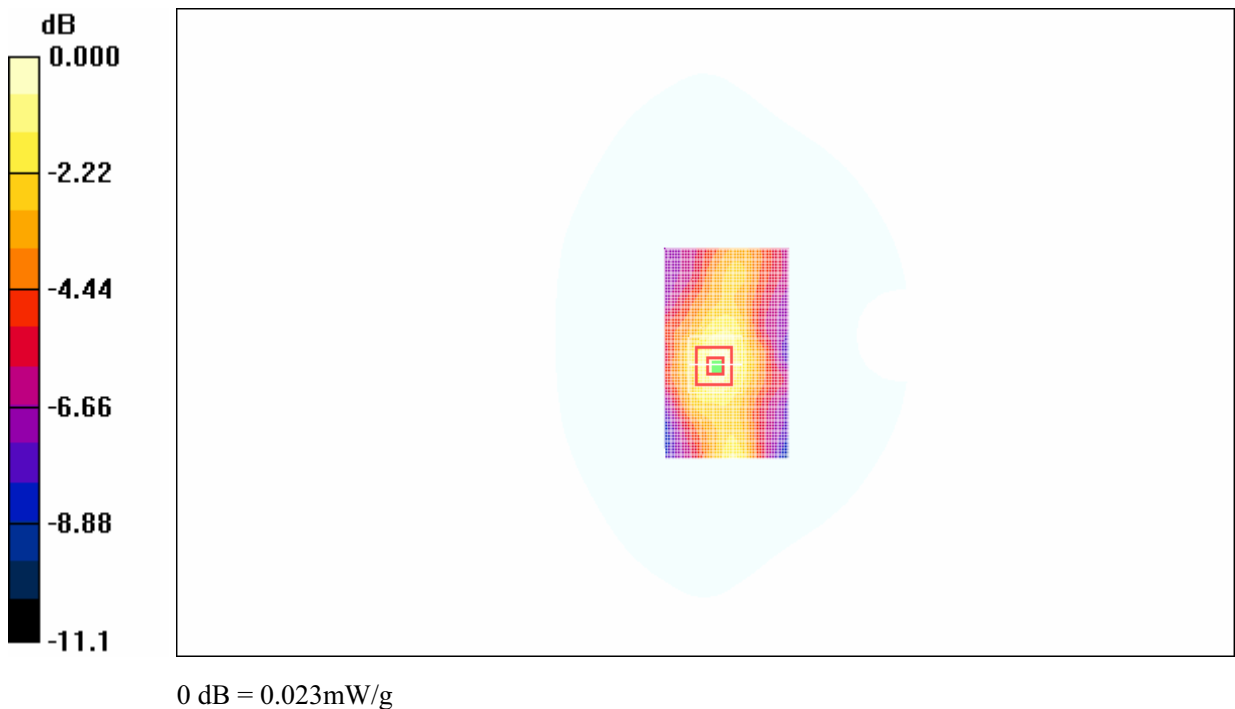
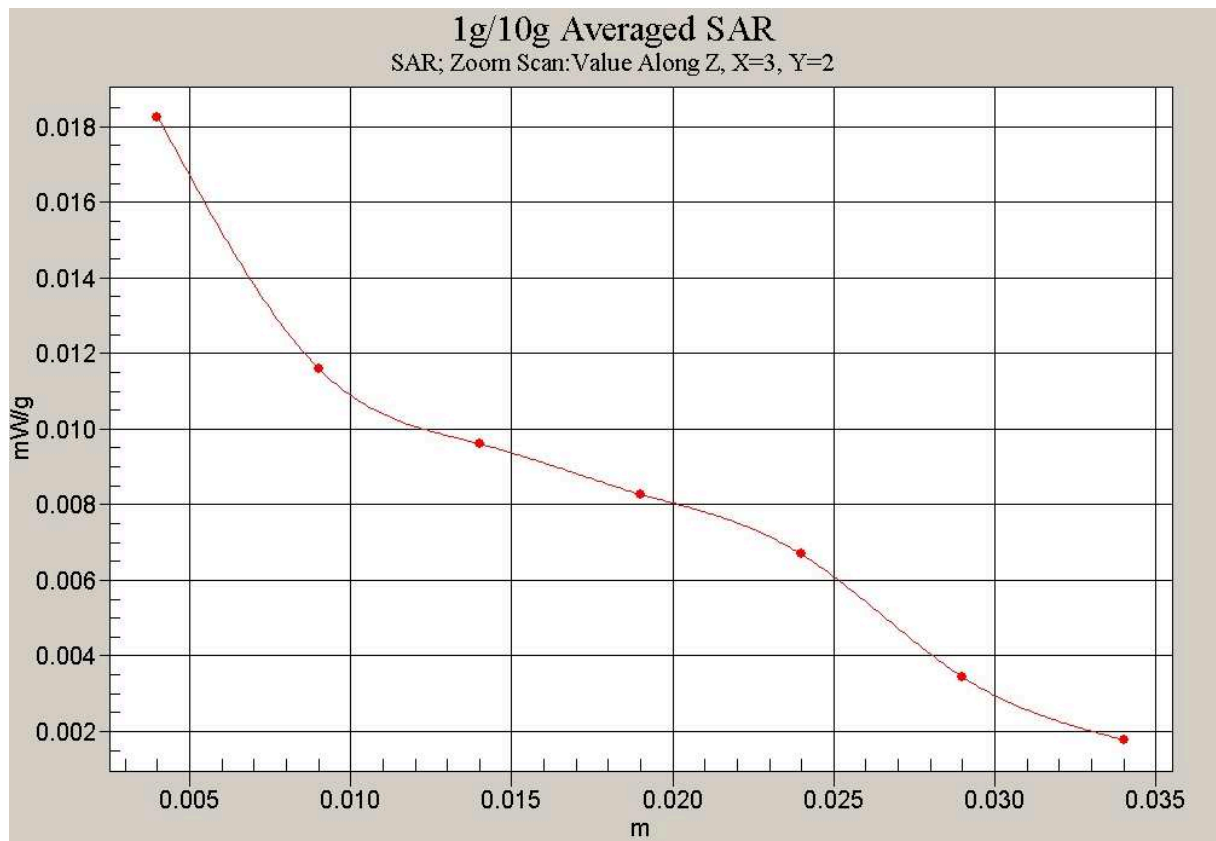


Fig. 77 1900 MHz CH512





**Fig. 78 Z-Scan at power reference point (1900 MHz CH512)**

### 1900 Body Towards Ground High

Date/Time: 2007-1-17 14:49:26

Electronics: DAE3 Sn536

Medium: 1900 Body

Medium parameters used:  $\sigma = 1.57$  mho/m;  $\epsilon_r = 51.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 23.3°C      Liquid Temperature: 22.5°C

Communication System: GSM 1900MHz Frequency: 1909.8 MHz Duty Cycle: 1:8.3

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) = 0.183 mW/g

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

Reference Value = 7.10 V/m; Power Drift = -0.200 dB

Peak SAR (extrapolated) = 0.261 W/kg

**SAR(1 g) = 0.161 mW/g; SAR(10 g) = 0.096 mW/g**

Maximum value of SAR (measured) = 0.171 mW/g

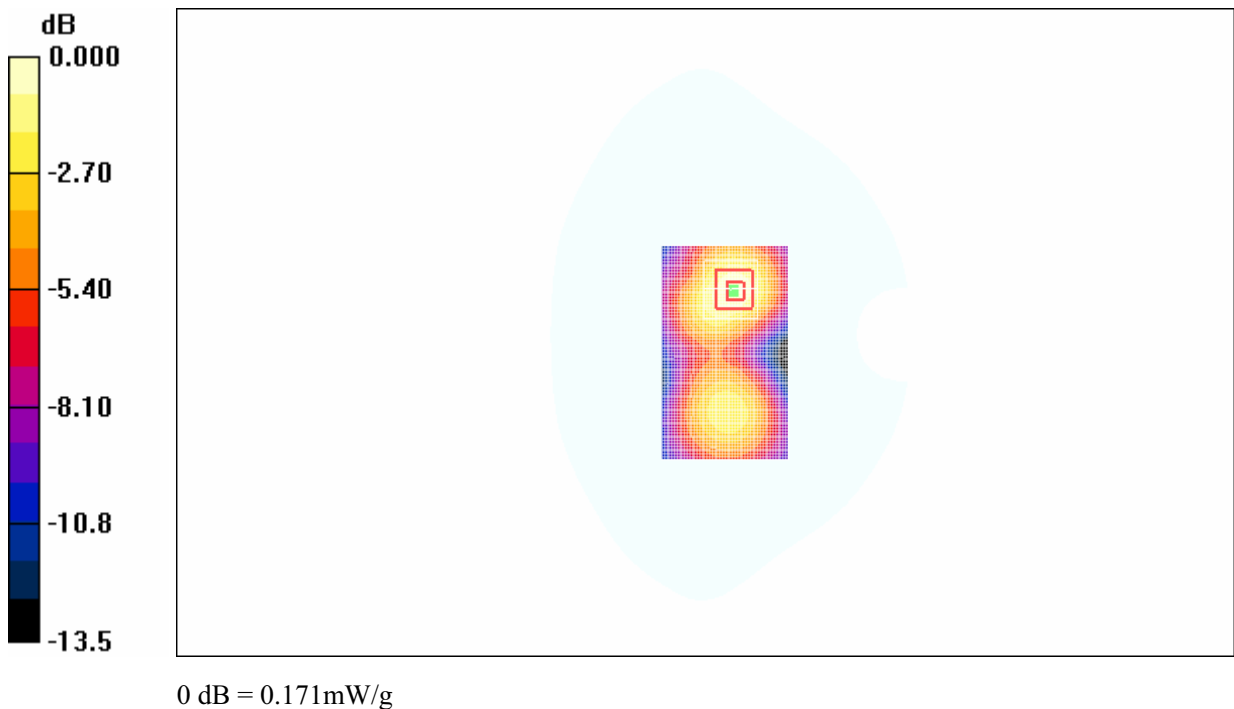
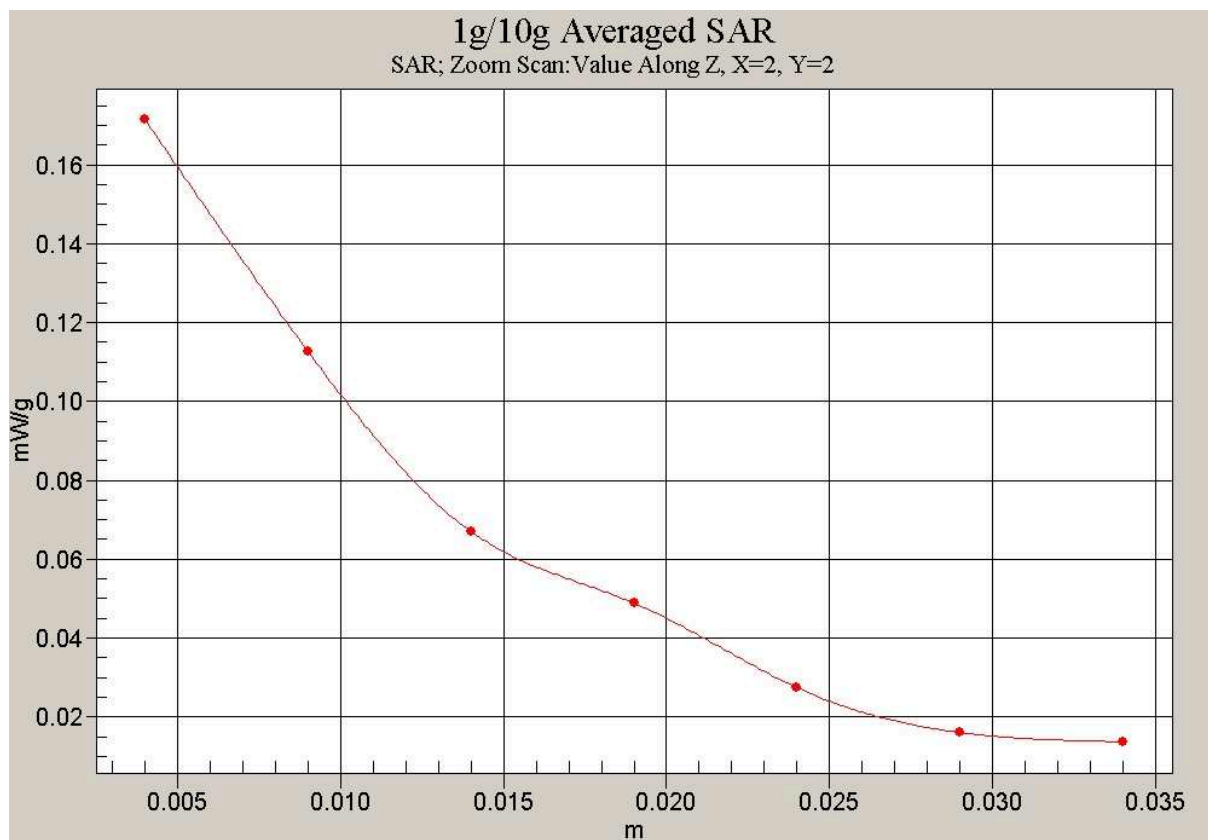


Fig. 79 1900 MHz CH810



**Fig. 80 Z-Scan at power reference point (1900 MHz CH810)**

### 1900 Body Towards Ground Middle

Date/Time: 2007-1-17 14:23:15

Electronics: DAE3 Sn536

Medium: 1900 Body

Medium parameters used:  $\sigma = 1.57$  mho/m;  $\epsilon_r = 51.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 23.3°C      Liquid Temperature: 22.5°C

Communication System: GSM 1900MHz Frequency: 1880 MHz Duty Cycle: 1:8.3

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) = 0.141 mW/g

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

Reference Value = 5.78 V/m; Power Drift = 0.164 dB

Peak SAR (extrapolated) = 0.228 W/kg

**SAR(1 g) = 0.126 mW/g; SAR(10 g) = 0.076 mW/g**

Maximum value of SAR (measured) = 0.132 mW/g

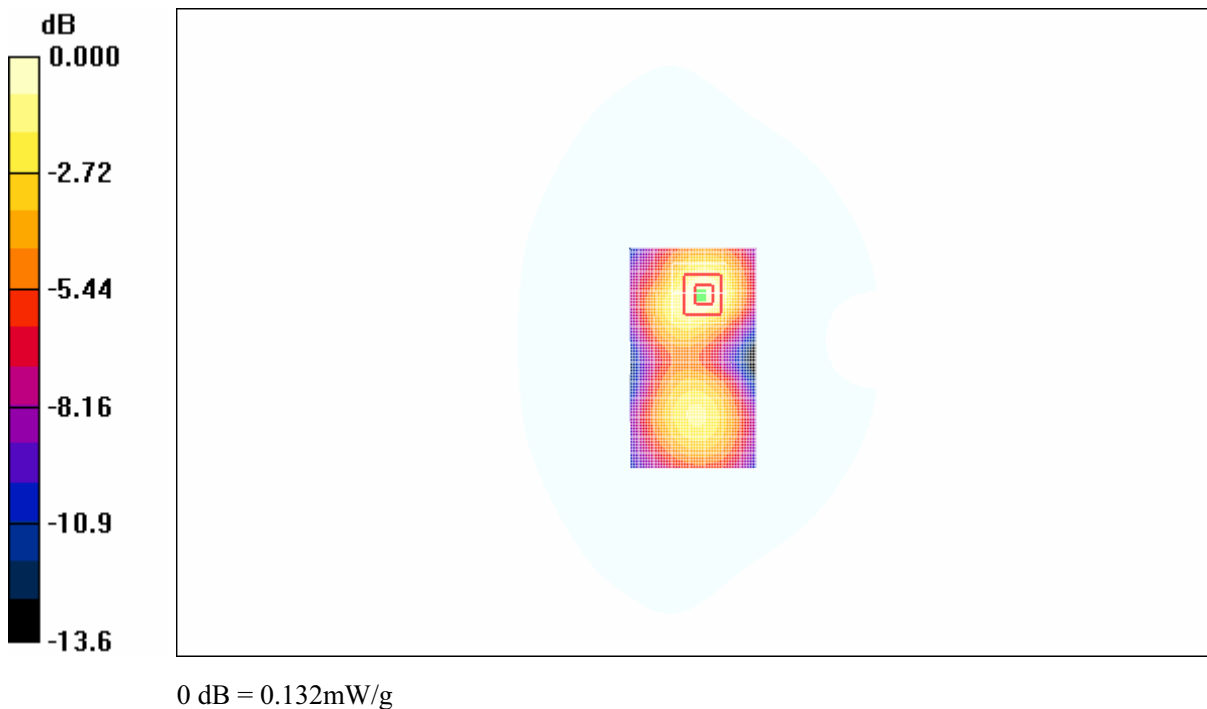
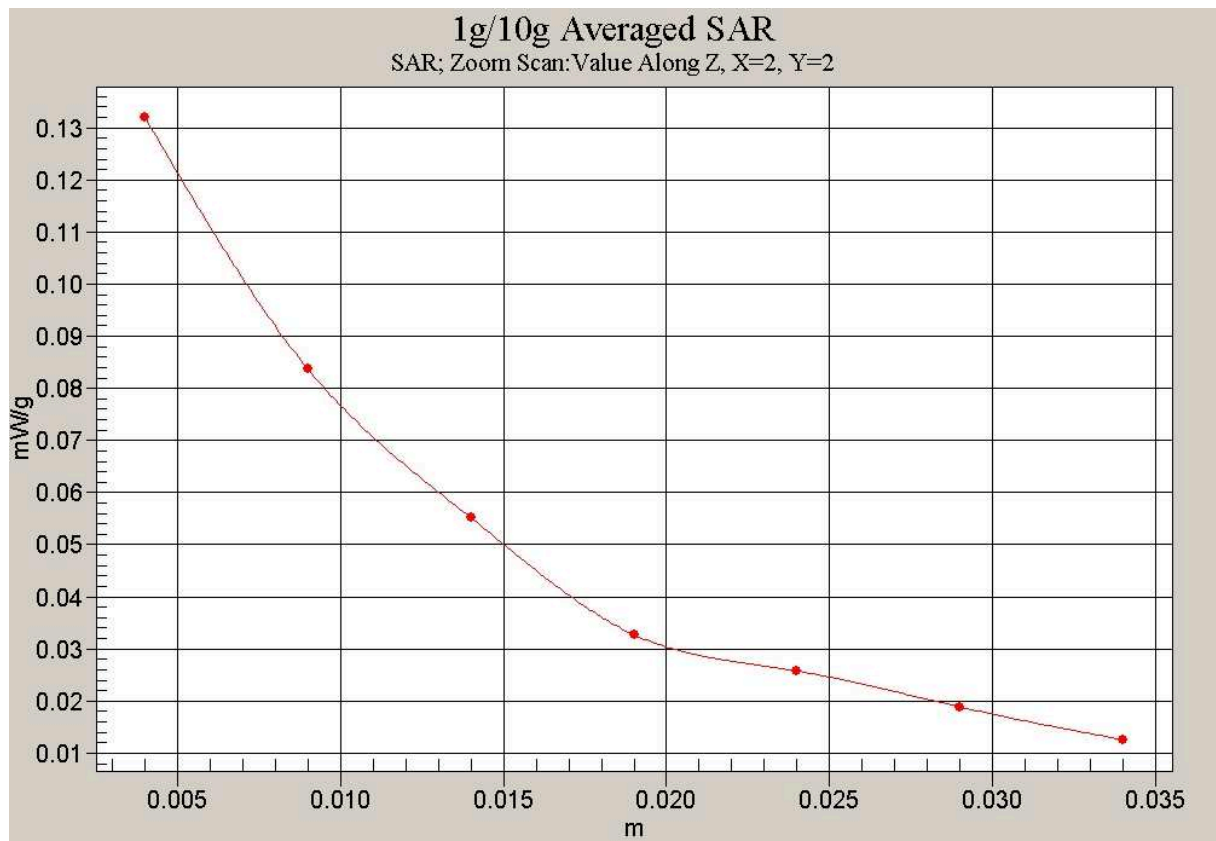


Fig. 81 1900 MHz CH661



**Fig. 82 Z-Scan at power reference point (1900 MHz CH661)**

### 1900 Body Towards Ground Low

Date/Time: 2007-1-17 13:59:23

Electronics: DAE3 Sn536

Medium: 1900 Body

Medium parameters used:  $\sigma = 1.57$  mho/m;  $\epsilon_r = 51.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 23.3°C      Liquid Temperature: 22.5°C

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

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) = 0.101 mW/g

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

Reference Value = 5.05 V/m; Power Drift = -0.187 dB

Peak SAR (extrapolated) = 0.149 W/kg

**SAR(1 g) = 0.089 mW/g; SAR(10 g) = 0.053 mW/g**

Maximum value of SAR (measured) = 0.097 mW/g

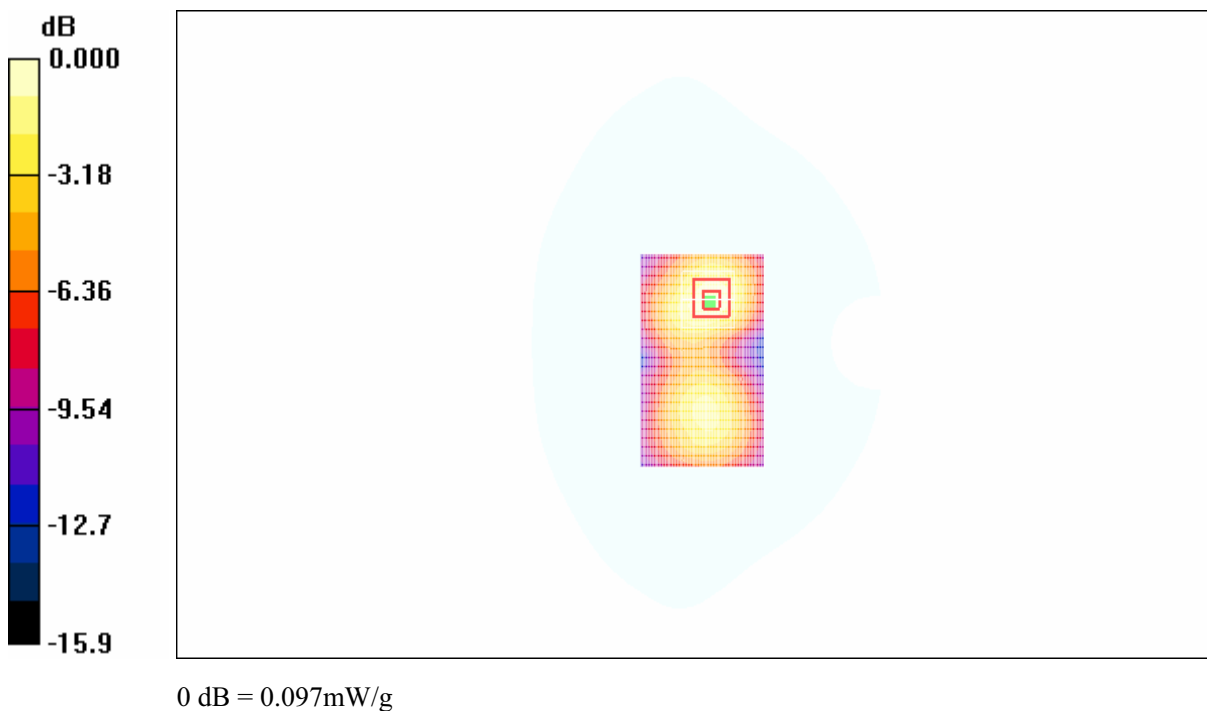
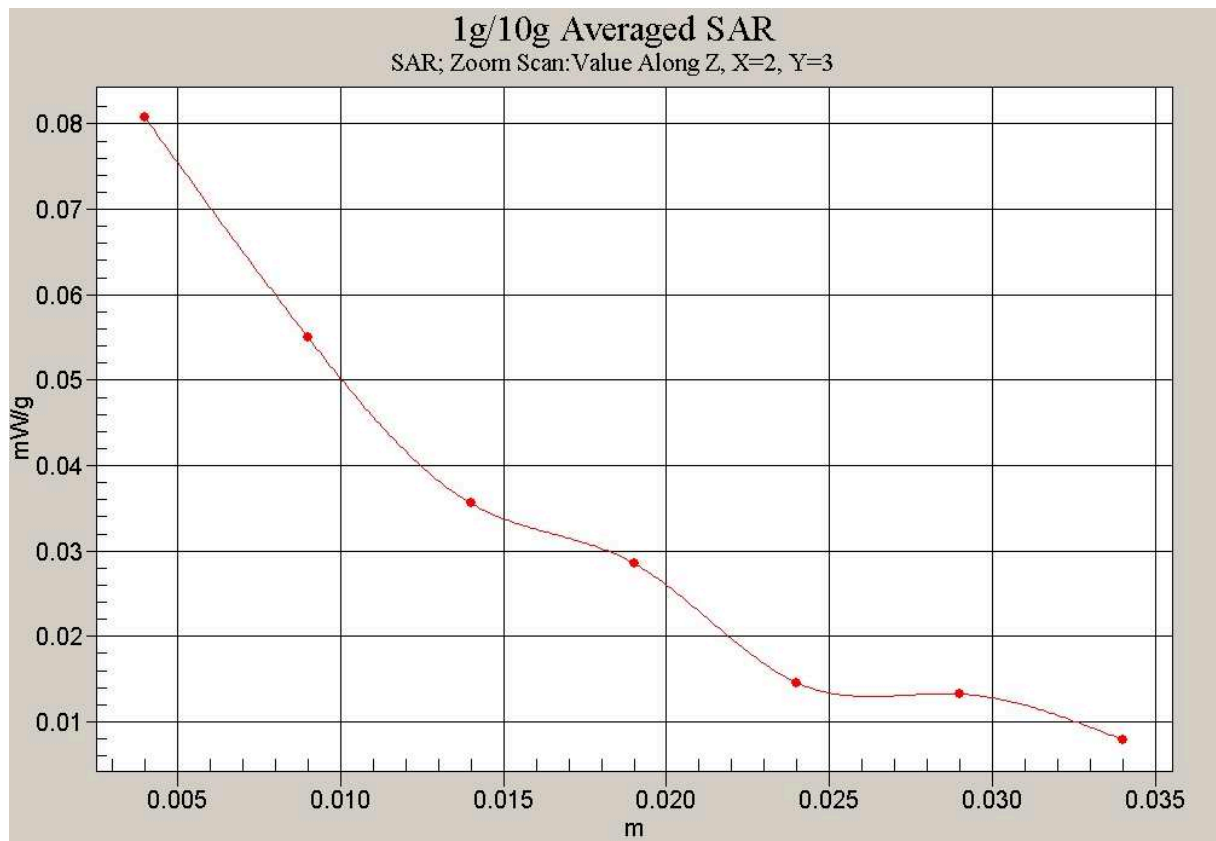


Fig. 83 1900 MHz CH512



**Fig. 84 Z-Scan at power reference point (1900 MHz CH512)**

### 1900 Body Towards Phantom High with GPRS

Date/Time: 2007-1-17 15:17:28

Electronics: DAE3 Sn536

Medium: 1900 Body

Medium parameters used:  $\sigma = 1.57$  mho/m;  $\epsilon_r = 51.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 23.3°C      Liquid Temperature: 22.5°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) = 0.071 mW/g

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

Reference Value = 6.52 V/m; Power Drift = 0.029 dB

Peak SAR (extrapolated) = 0.100 W/kg

**SAR(1 g) = 0.067 mW/g; SAR(10 g) = 0.045 mW/g**

Maximum value of SAR (measured) = 0.071 mW/g

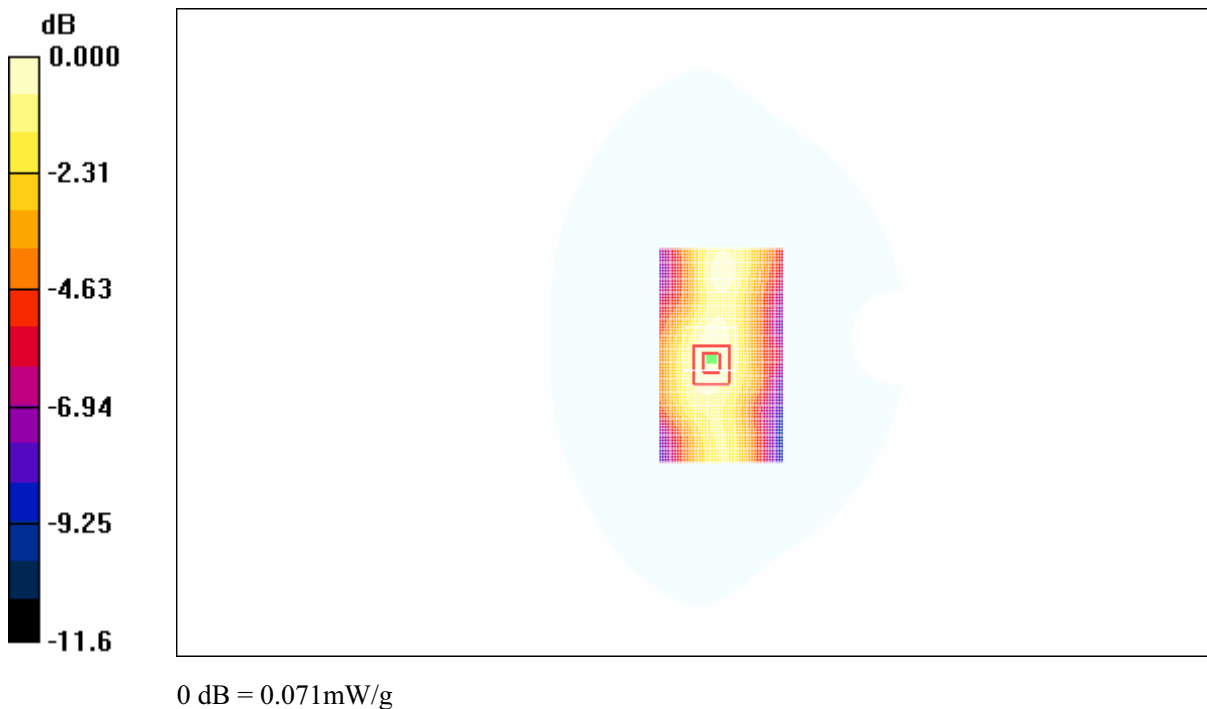
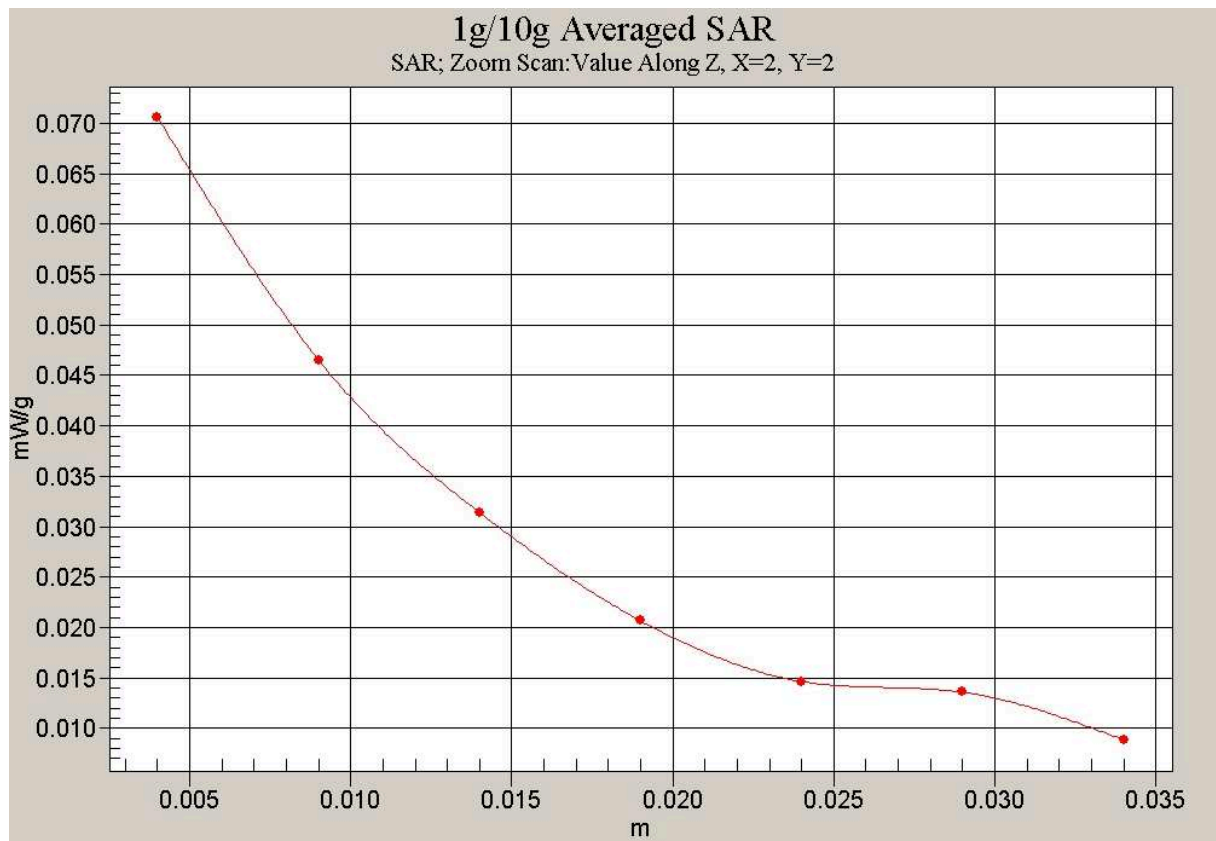


Fig. 85 1900 MHz CH810





**Fig. 86 Z-Scan at power reference point (1900 MHz CH810)**

### 1900 Body Towards Phantom Middle with GPRS

Date/Time: 2007-1-17 15:39:37

Electronics: DAE3 Sn536

Medium: 1900 Body

Medium parameters used:  $\sigma = 1.57$  mho/m;  $\epsilon_r = 51.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 23.3°C      Liquid Temperature: 22.5°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) = 0.048 mW/g

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

Reference Value = 5.75 V/m; Power Drift = 0.046 dB

Peak SAR (extrapolated) = 0.083 W/kg

**SAR(1 g) = 0.046 mW/g; SAR(10 g) = 0.032 mW/g**

Maximum value of SAR (measured) = 0.049 mW/g

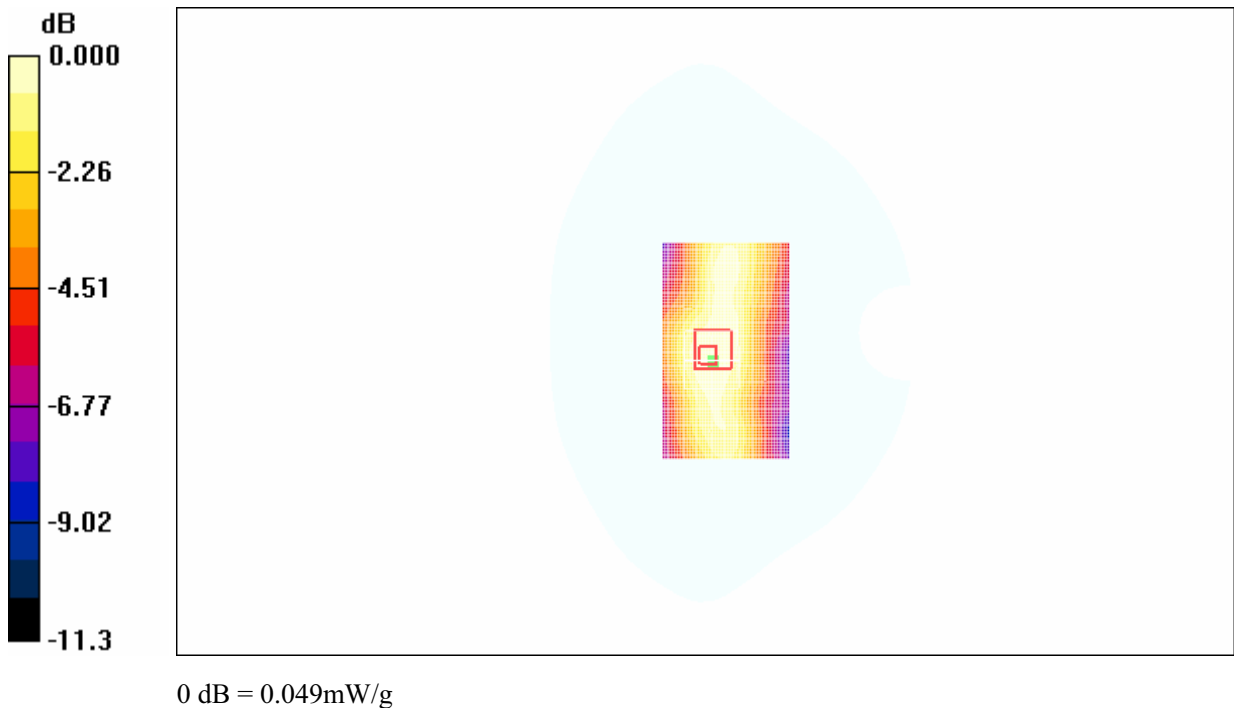
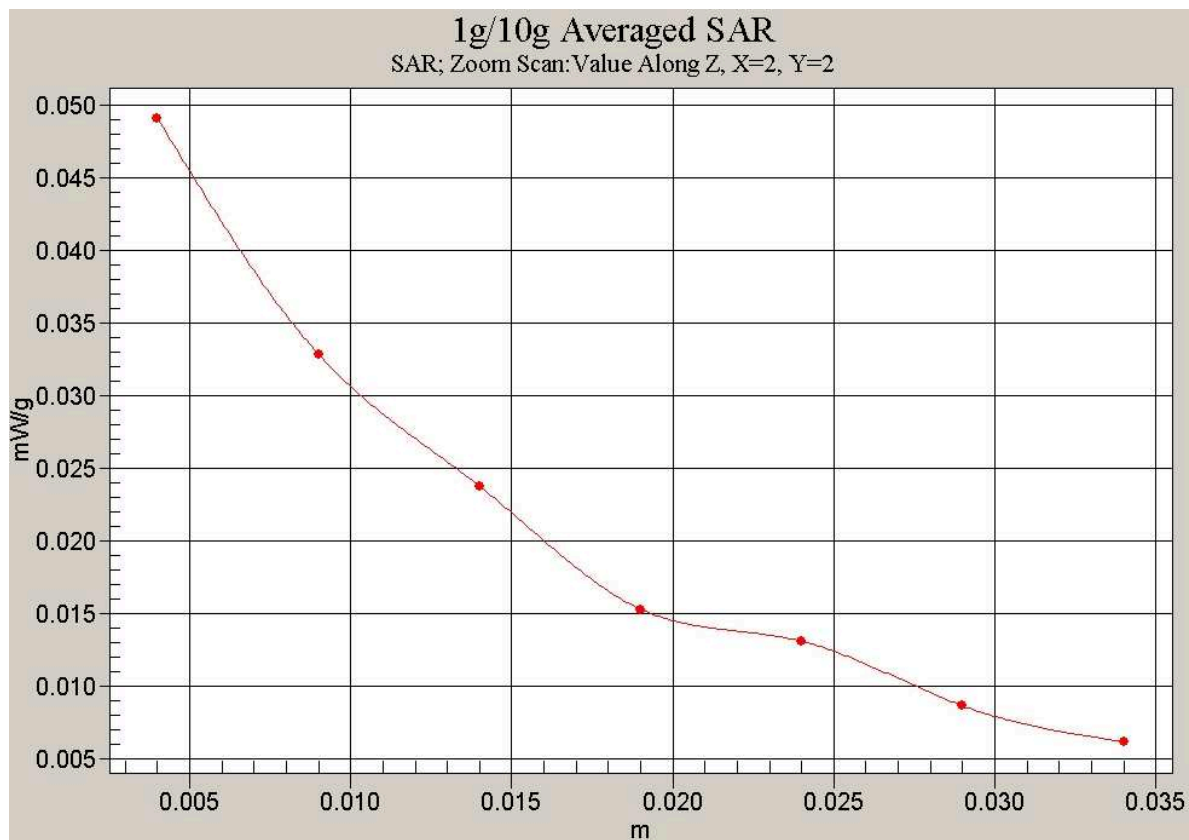


Fig. 87 1900 MHz CH661



**Fig. 88 Z-Scan at power reference point (1900 MHz CH661)**

### 1900 Body Towards Phantom Low with GPRS

Date/Time: 2007-1-17 16:07:02

Electronics: DAE3 Sn536

Medium: 1900 Body

Medium parameters used:  $\sigma = 1.57$  mho/m;  $\epsilon_r = 51.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 23.3°C      Liquid Temperature: 22.5°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) = 0.033 mW/g

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

Reference Value = 4.62 V/m; Power Drift = -0.195 dB

Peak SAR (extrapolated) = 0.048 W/kg

**SAR(1 g) = 0.031 mW/g; SAR(10 g) = 0.021 mW/g**

Maximum value of SAR (measured) = 0.033 mW/g

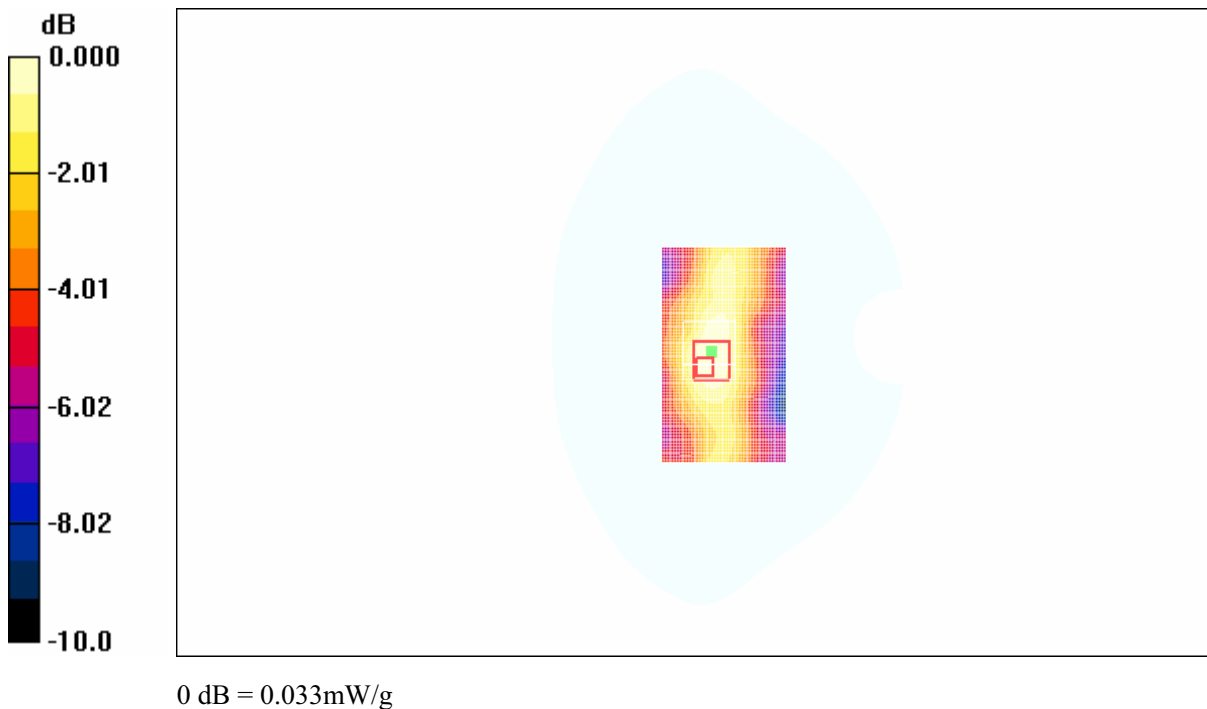
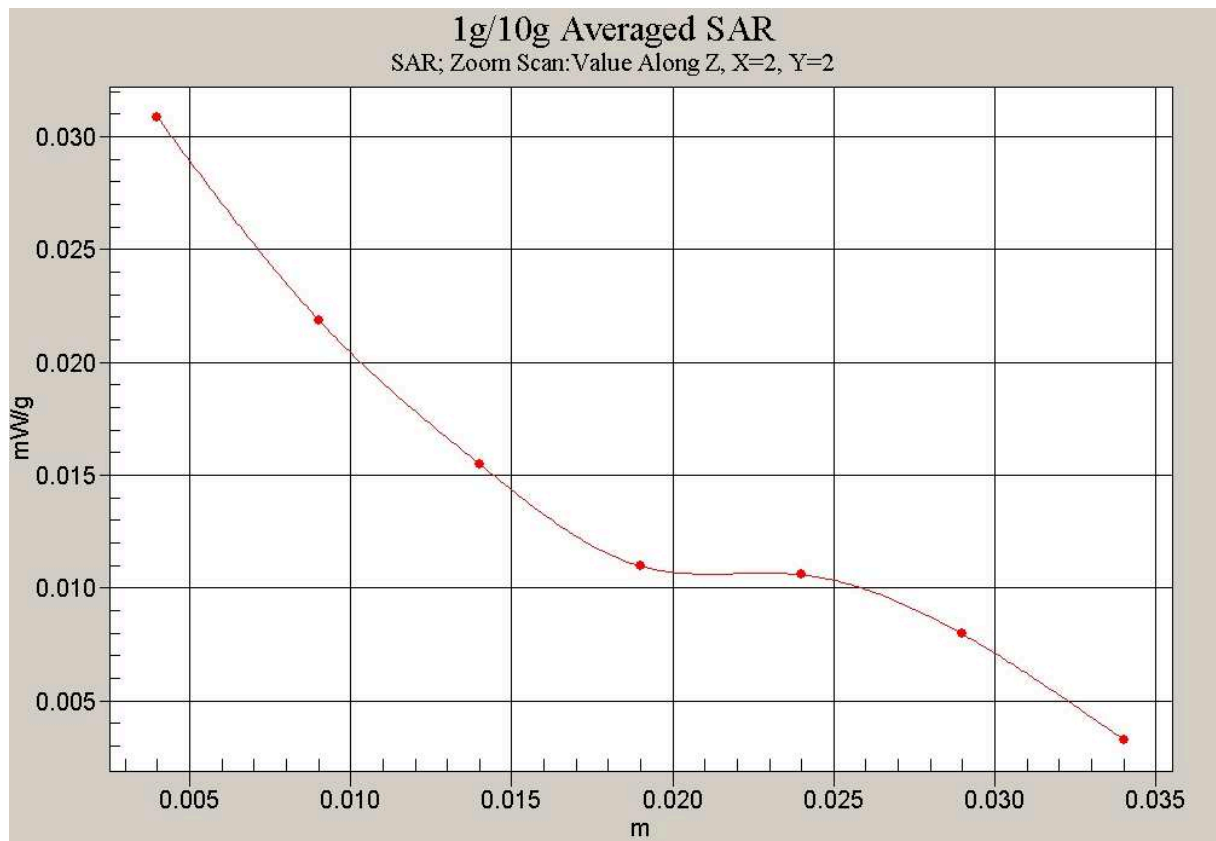


Fig. 89 1900 MHz CH512



**Fig. 90 Z-Scan at power reference point (1900 MHz CH512)**

### 1900 Body Towards Ground High with GPRS

Date/Time: 2007-1-17 17:31:11

Electronics: DAE3 Sn536

Medium: 1900 Body

Medium parameters used:  $\sigma = 1.57$  mho/m;  $\epsilon_r = 51.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 23.3°C      Liquid Temperature: 22.5°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) = 0.336 mW/g

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

Reference Value = 9.58 V/m; Power Drift = 0.117 dB

Peak SAR (extrapolated) = 0.530 W/kg

**SAR(1 g) = 0.298 mW/g; SAR(10 g) = 0.175 mW/g**

Maximum value of SAR (measured) = 0.313 mW/g

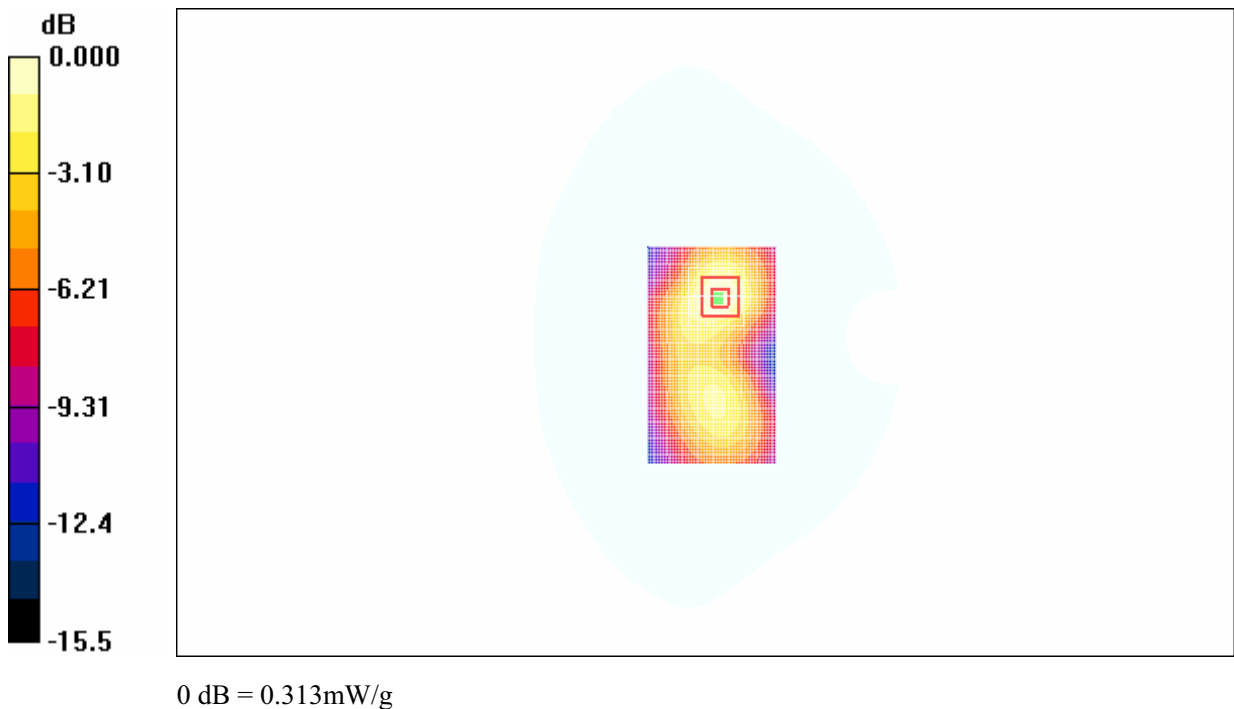
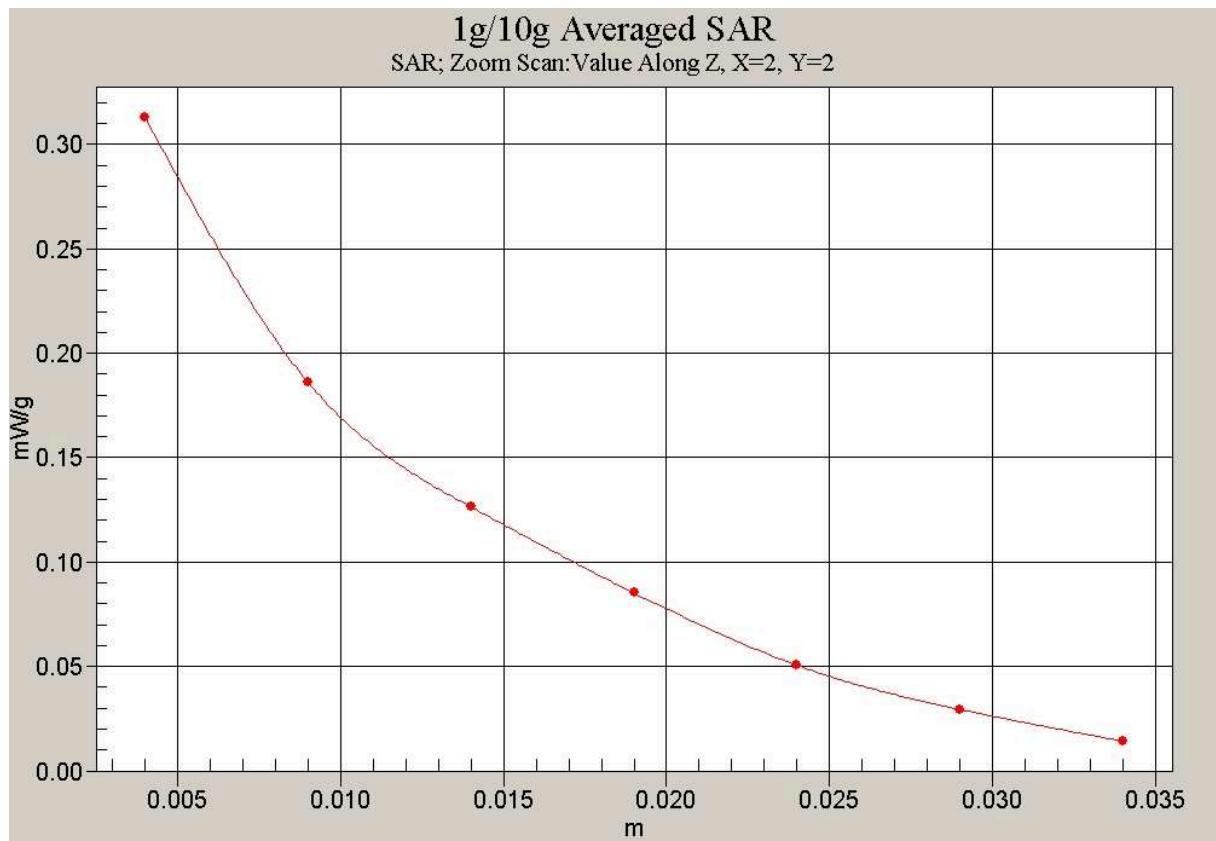


Fig. 91 1900 MHz CH810



**Fig. 92 Z-Scan at power reference point (1900 MHz CH810)**

### 1900 Body Towards Ground Middle with GPRS

Date/Time: 2007-1-17 17:12:51

Electronics: DAE3 Sn536

Medium: 1900 Body

Medium parameters used:  $\sigma = 1.57$  mho/m;  $\epsilon_r = 51.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 23.3°C      Liquid Temperature: 22.5°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) = 0.237 mW/g

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

Reference Value = 8.77 V/m; Power Drift = -0.095 dB

Peak SAR (extrapolated) = 0.356 W/kg

**SAR(1 g) = 0.212 mW/g; SAR(10 g) = 0.127 mW/g**

Maximum value of SAR (measured) = 0.225 mW/g

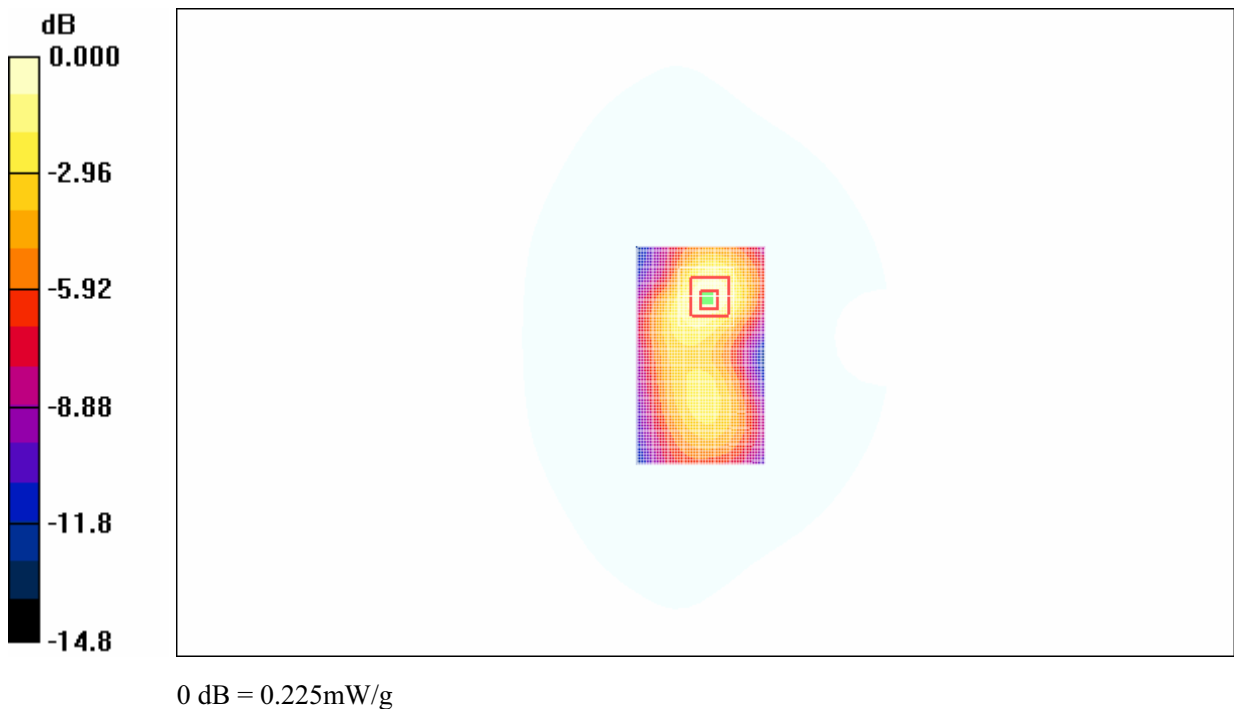
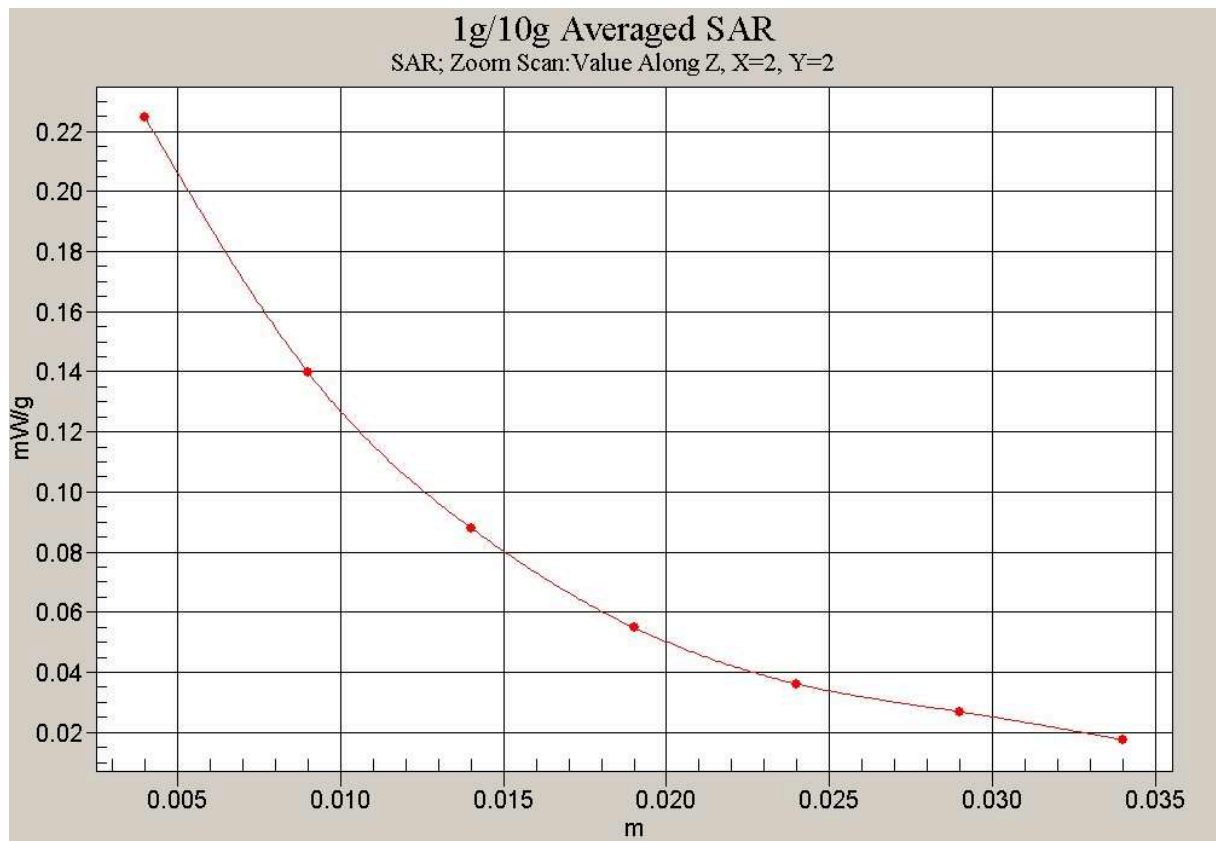


Fig. 93 1900 MHz CH661





**Fig. 94 Z-Scan at power reference point (1900 MHz CH661)**

### 1900 Body Towards Ground Low with GPRS

Date/Time: 2007-1-17 16:32:20

Electronics: DAE3 Sn536

Medium: 1900 Body

Medium parameters used:  $\sigma = 1.57$  mho/m;  $\epsilon_r = 51.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 23.3°C      Liquid Temperature: 22.5°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) = 0.161 mW/g

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

Reference Value = 7.29 V/m; Power Drift = -0.059 dB

Peak SAR (extrapolated) = 0.277 W/kg

**SAR(1 g) = 0.146 mW/g; SAR(10 g) = 0.088 mW/g**

Maximum value of SAR (measured) = 0.152 mW/g

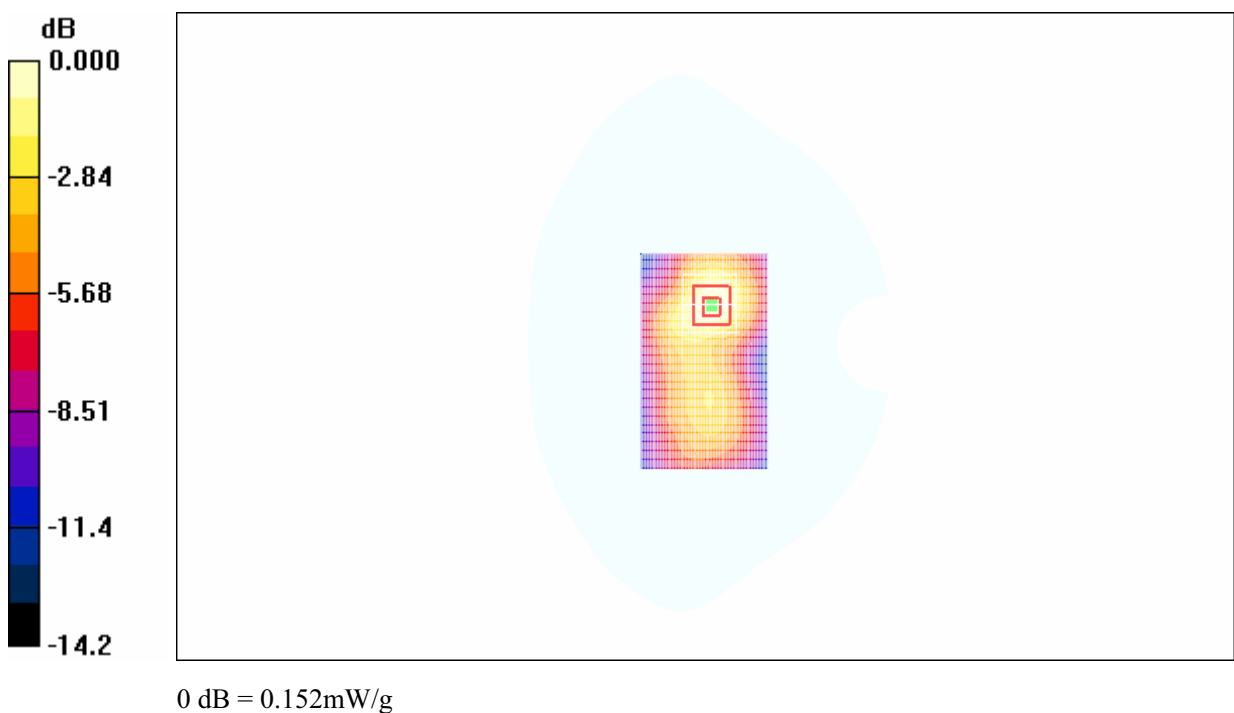
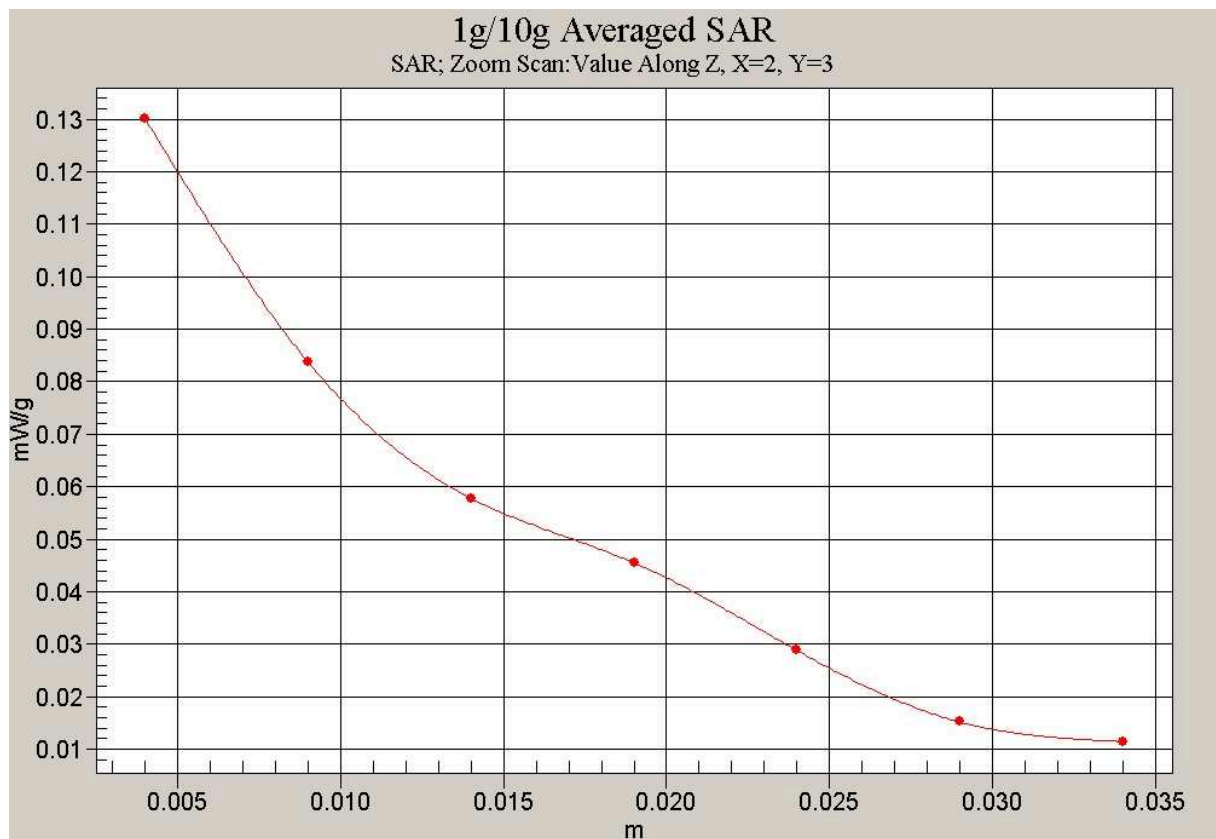


Fig. 95 1900 MHz CH512



**Fig. 96 Z-Scan at power reference point (1900 MHz CH512)**

## ANNEX D: SYSTEM VALIDATION RESULTS

### 835MHzDAE589Probe1736

Date/Time: 2007-01-16 07:27:50

Electronics: DAE3 Sn536

Medium: 835 Head

Medium parameters used (interpolated):  $\sigma = 0.88$  mho/m;  $\epsilon_r = 41.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 23.3°C      Liquid Temperature: 22.3°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

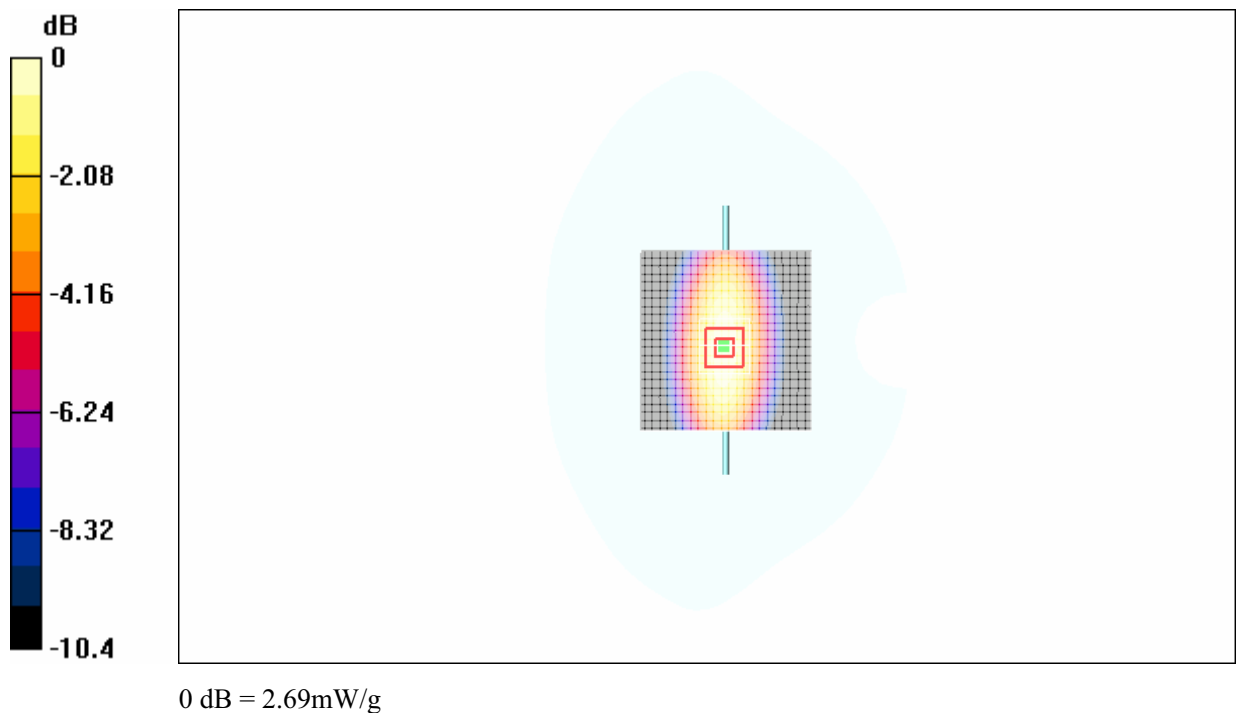


Fig.97 validation 835MHz 250mW

**1900MHzDAE536Probe1736**

Date/Time: 2007-01-17 07:45:17

Electronics: DAE3 Sn536

Medium: 1900 Head

Medium parameters used (interpolated):  $\sigma = 1.45$  mho/m;  $\epsilon_r = 39.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 23.3°C      Liquid Temperature: 22.3°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

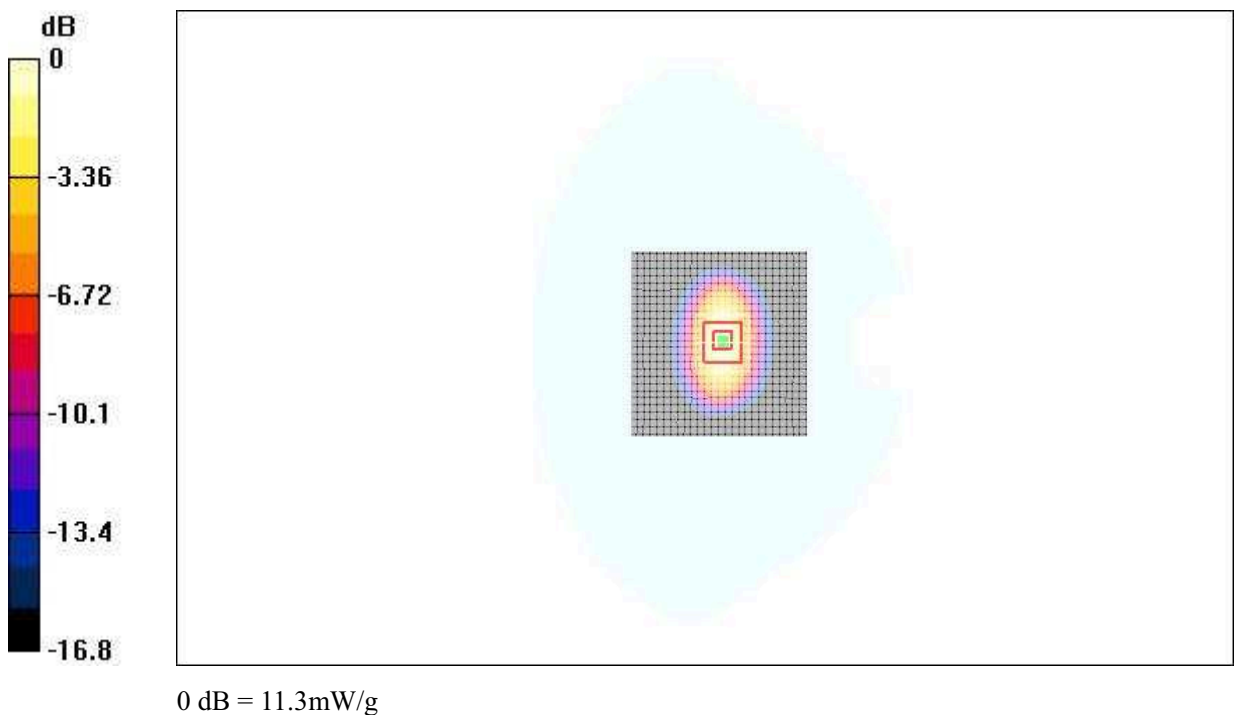
**System Validation/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

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.98 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  
Client TMC China

Accreditation No.: **SCS 108**

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

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<70%

Calibration Equipment used (M&TE critical for calibration)

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

	Name	Function	Signature
Calibrated by:	Nico Vetterli	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Director	

Issued: December 1, 2006

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

**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**

**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:**

- a) 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
- b) CENELEC 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

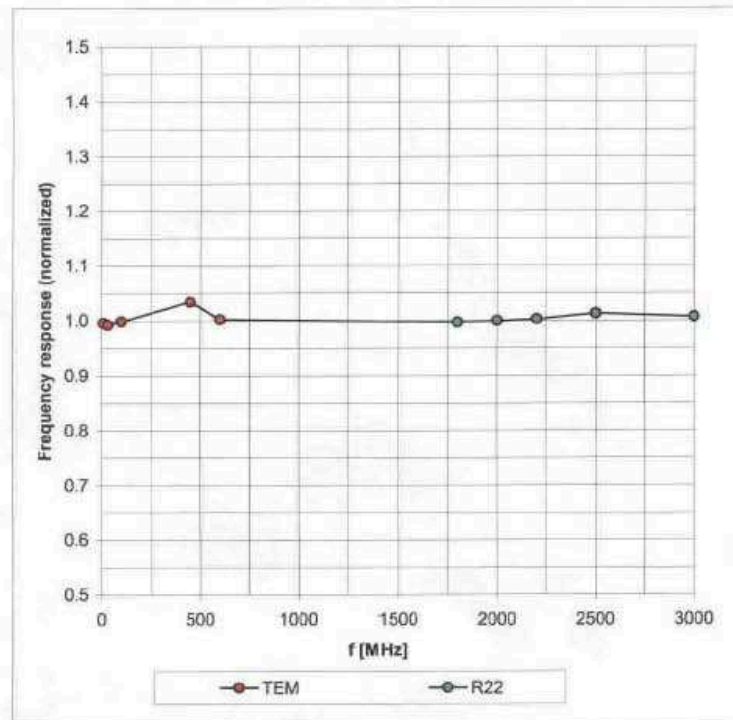
Probe Tip to Sensor Center	2.7 mm
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### Frequency Response of E-Field

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

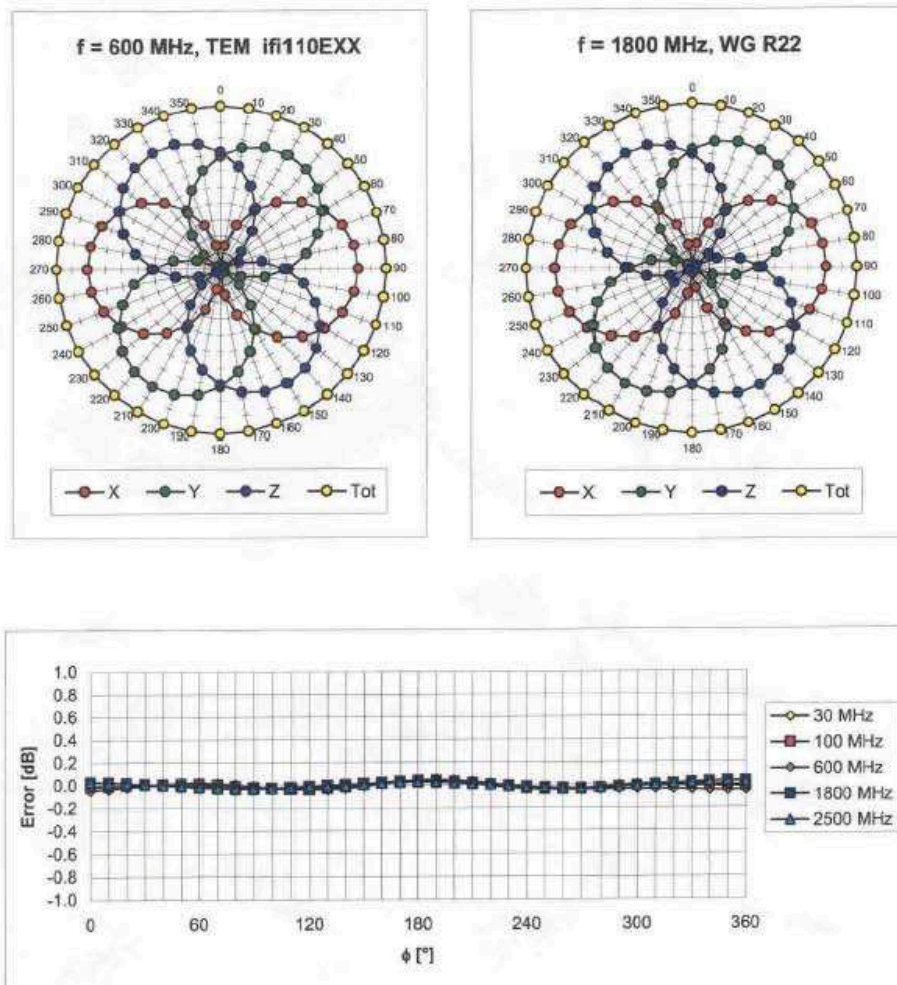


Uncertainty of Frequency Response of E-field:  $\pm 6.3\%$  ( $k=2$ )

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

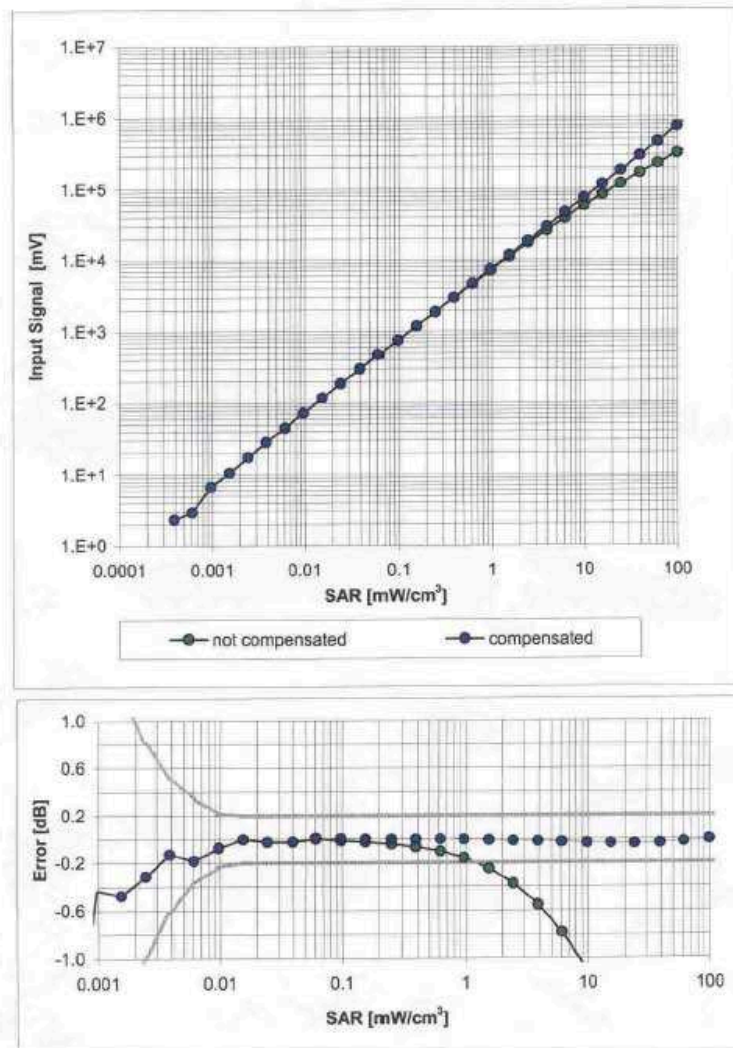


Uncertainty of Axial Isotropy Assessment:  $\pm 0.5\%$  ( $k=2$ )

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**Dynamic Range  $f(\text{SAR}_{\text{head}})$**   
(Waveguide R22,  $f = 1800$  MHz)

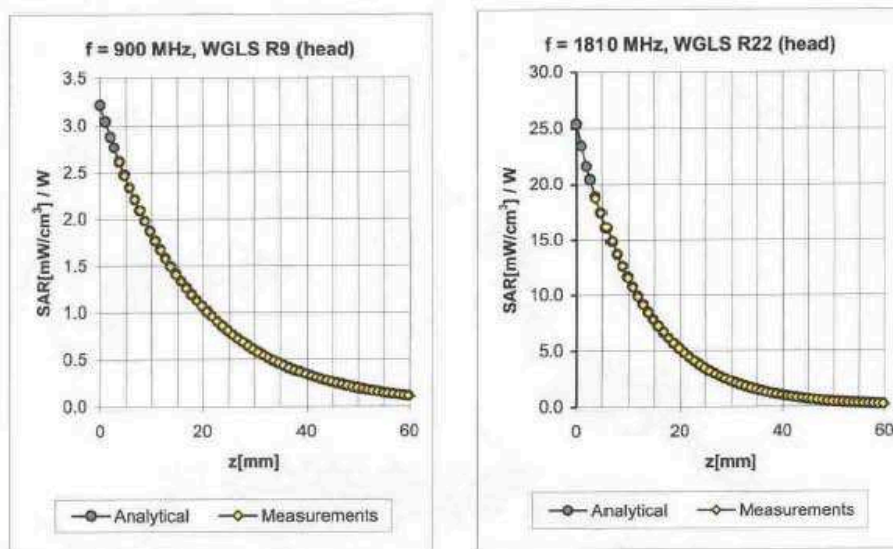


Uncertainty of Linearity Assessment:  $\pm 0.6\%$  ( $k=2$ )

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### Conversion Factor Assessment



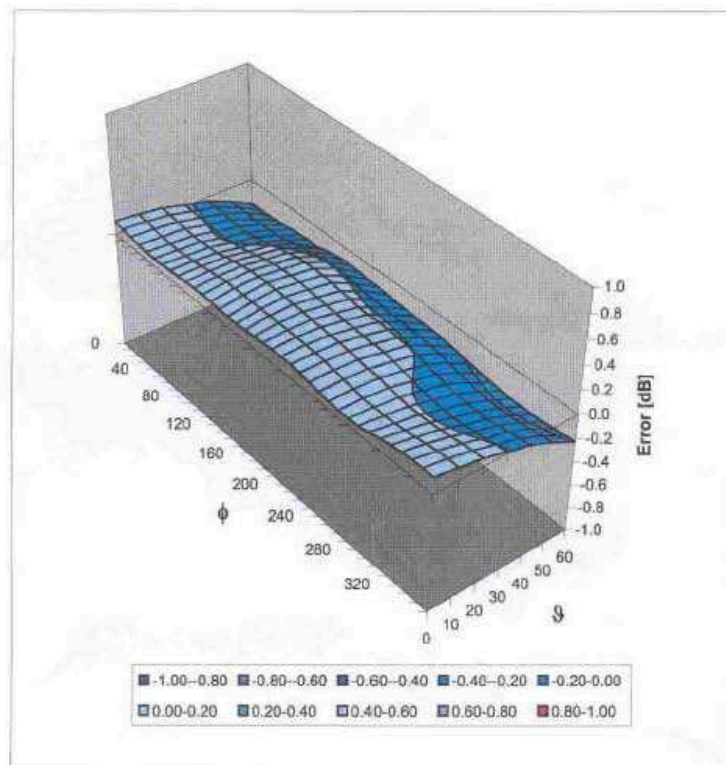
f [MHz]	Validity [MHz] <sup>C</sup>	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.56	1.85	6.51 ± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.57	2.47	5.40 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.62	2.29	4.67 ± 11.8% (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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December 1, 2006

### Deviation from Isotropy in HSL

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



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