

Fig. 12 Z-Scan at power reference point (CDMA 835MHz CH1013)

**CDMA 1X Right Cheek High**

Date/Time: 2006-12-14 14:58:59

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: 22.5°C      Liquid Temperature: 21.4°C

Communication System: CDMA 1X-new Frequency: 848.31 MHz Duty Cycle: 1:1

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

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

Maximum value of SAR (interpolated) = 0.885 mW/g

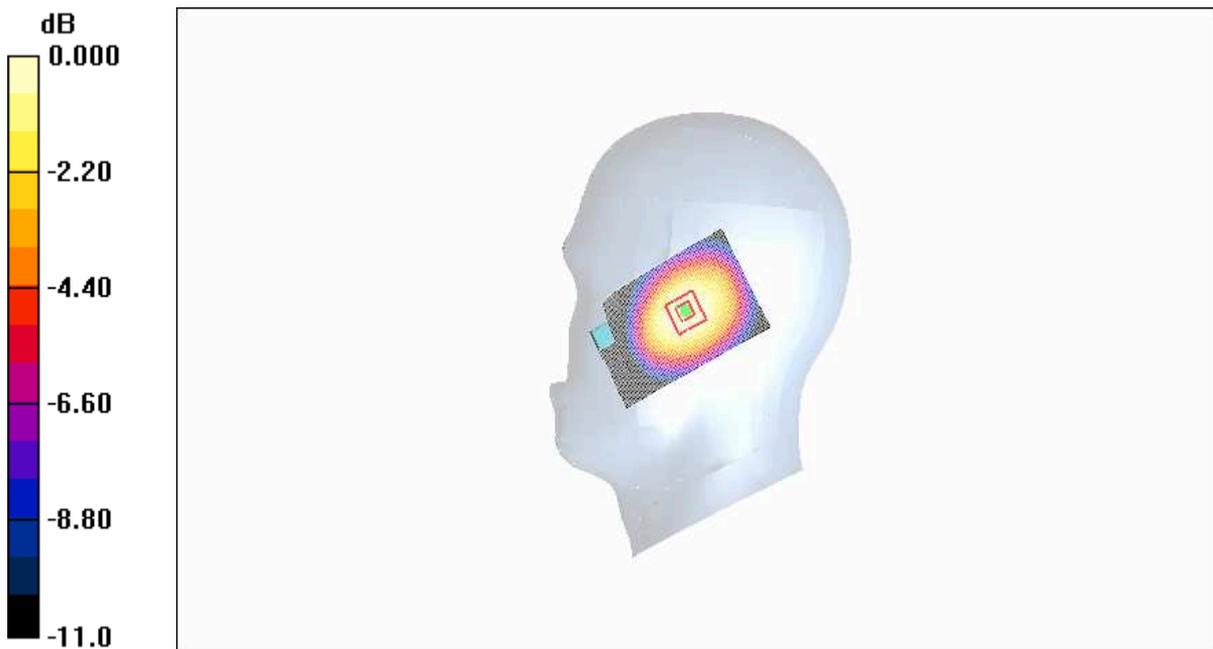
**Cheek High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 25.8 V/m; Power Drift = -0.200 dB

Peak SAR (extrapolated) = 1.09 W/kg

**SAR(1 g) = 0.783 mW/g; SAR(10 g) = 0.523 mW/g**

Maximum value of SAR (measured) = 0.791 mW/g



0 dB = 0.791mW/g

**Fig. 13 Right Hand Touch Cheek CDMA 835MHz CH777**

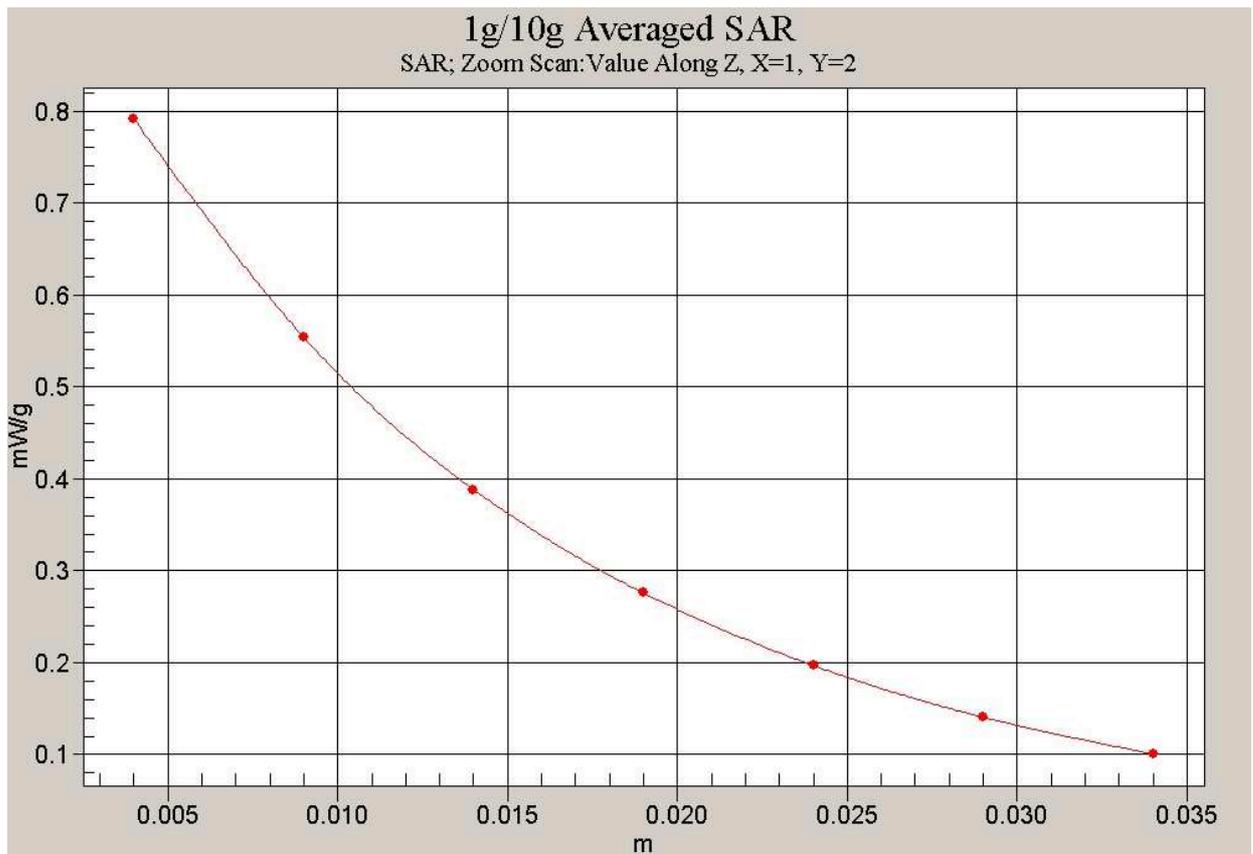


Fig. 14 Z-Scan at power reference point (CDMA 835MHz CH777)

**CDMA 1X Right Cheek Middle**

Date/Time: 2006-12-14 14:36:25

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: 22.5°C      Liquid Temperature: 21.4°C

Communication System: CDMA 1X-new Frequency: 836.52 MHz Duty Cycle: 1:1

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

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

Maximum value of SAR (interpolated) = 1.05 mW/g

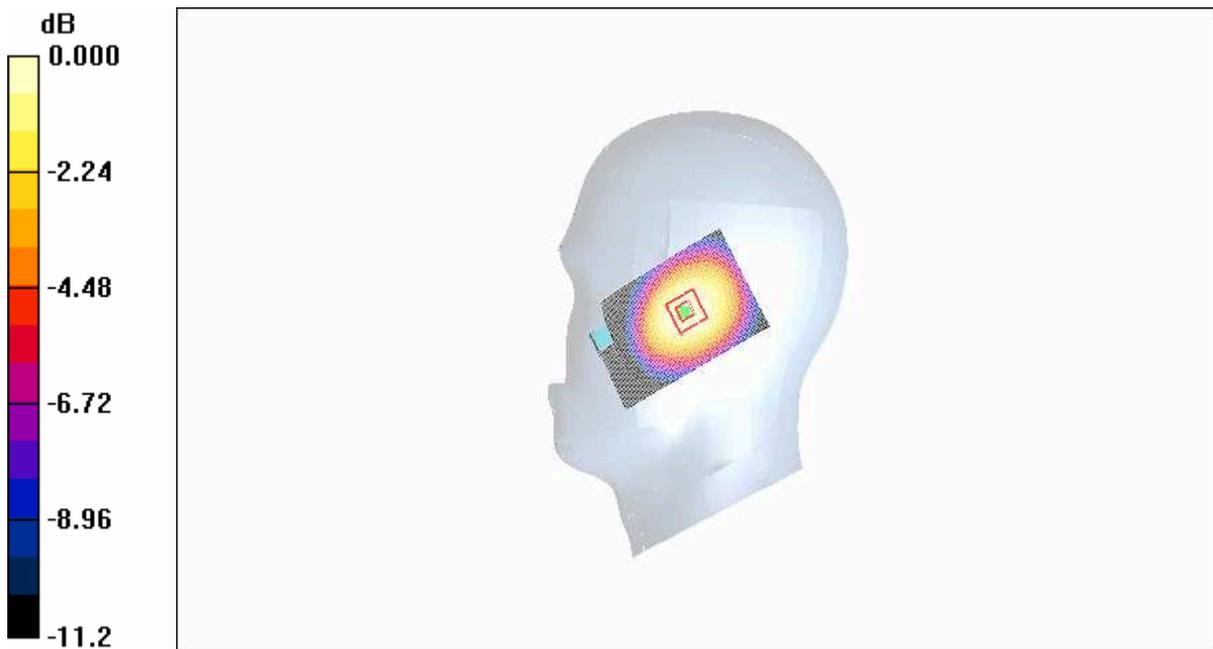
**Cheek Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 29.5 V/m; Power Drift = -0.145 dB

Peak SAR (extrapolated) = 1.26 W/kg

**SAR(1 g) = 0.926 mW/g; SAR(10 g) = 0.624 mW/g**

Maximum value of SAR (measured) = 0.928 mW/g



**Fig.15 Right Hand Touch Cheek CDMA 835MHz CH384**

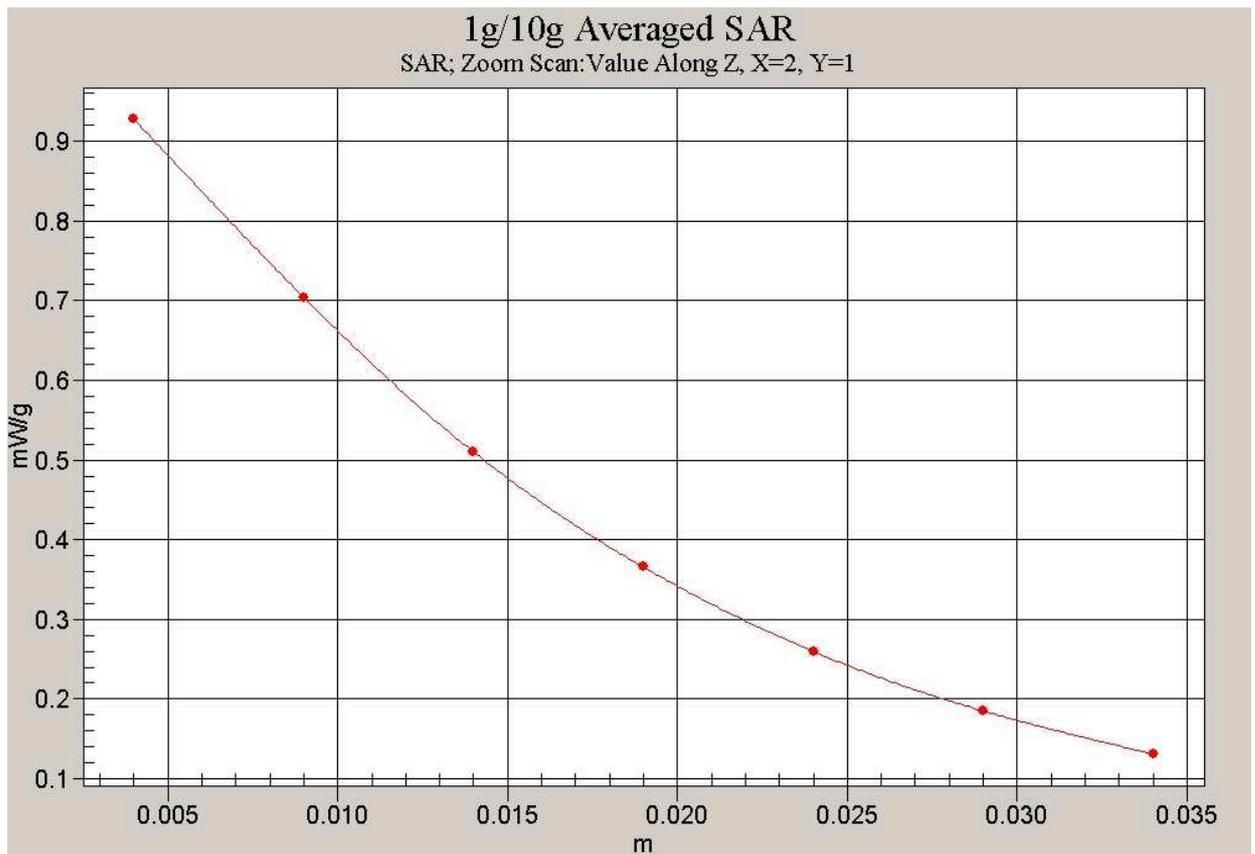


Fig. 16 Z-Scan at power reference point (CDMA 835MHz CH384)

**CDMA 1X Right Cheek Low**

Date/Time: 2006-12-14 15:21:46

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: 22.5°C      Liquid Temperature: 21.4°C

Communication System: CDMA 1X-new Frequency: 824.7 MHz Duty Cycle: 1:1

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

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

Maximum value of SAR (interpolated) = 0.530 mW/g

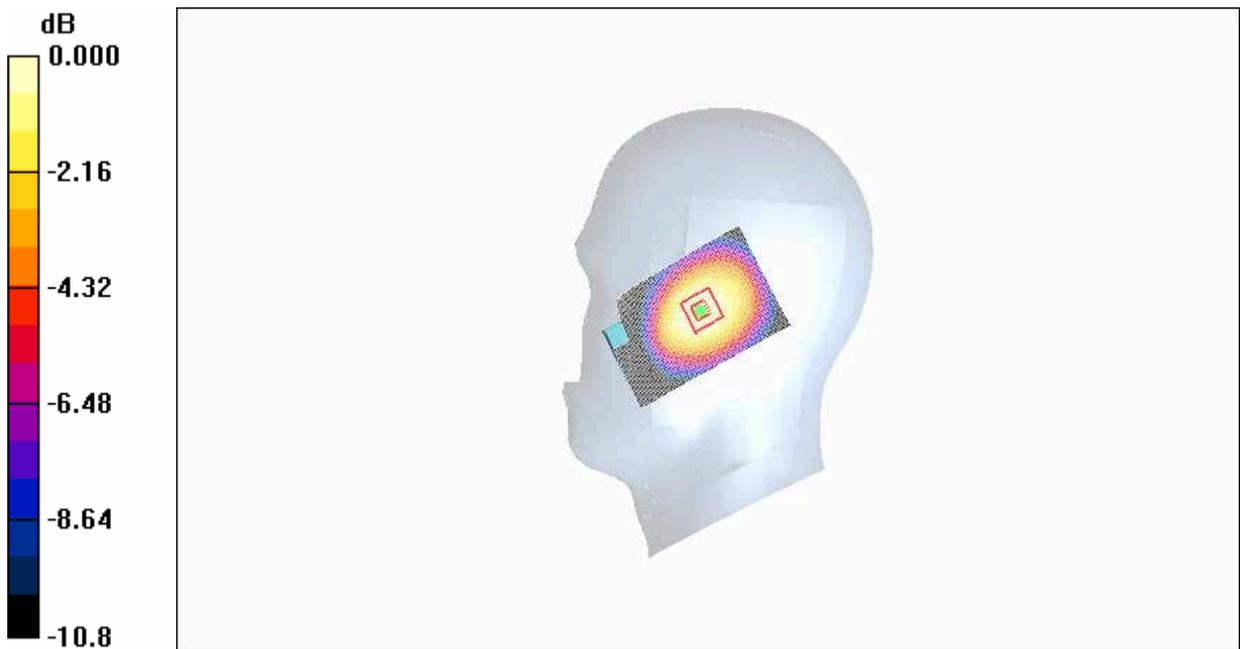
**Cheek Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 20.2 V/m; Power Drift = 0.096 dB

Peak SAR (extrapolated) = 0.651 W/kg

**SAR(1 g) = 0.485 mW/g; SAR(10 g) = 0.330 mW/g**

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



0 dB = 0.488mW/g

**Fig. 17 Right Hand Touch Cheek CDMA 835MHz CH1013**

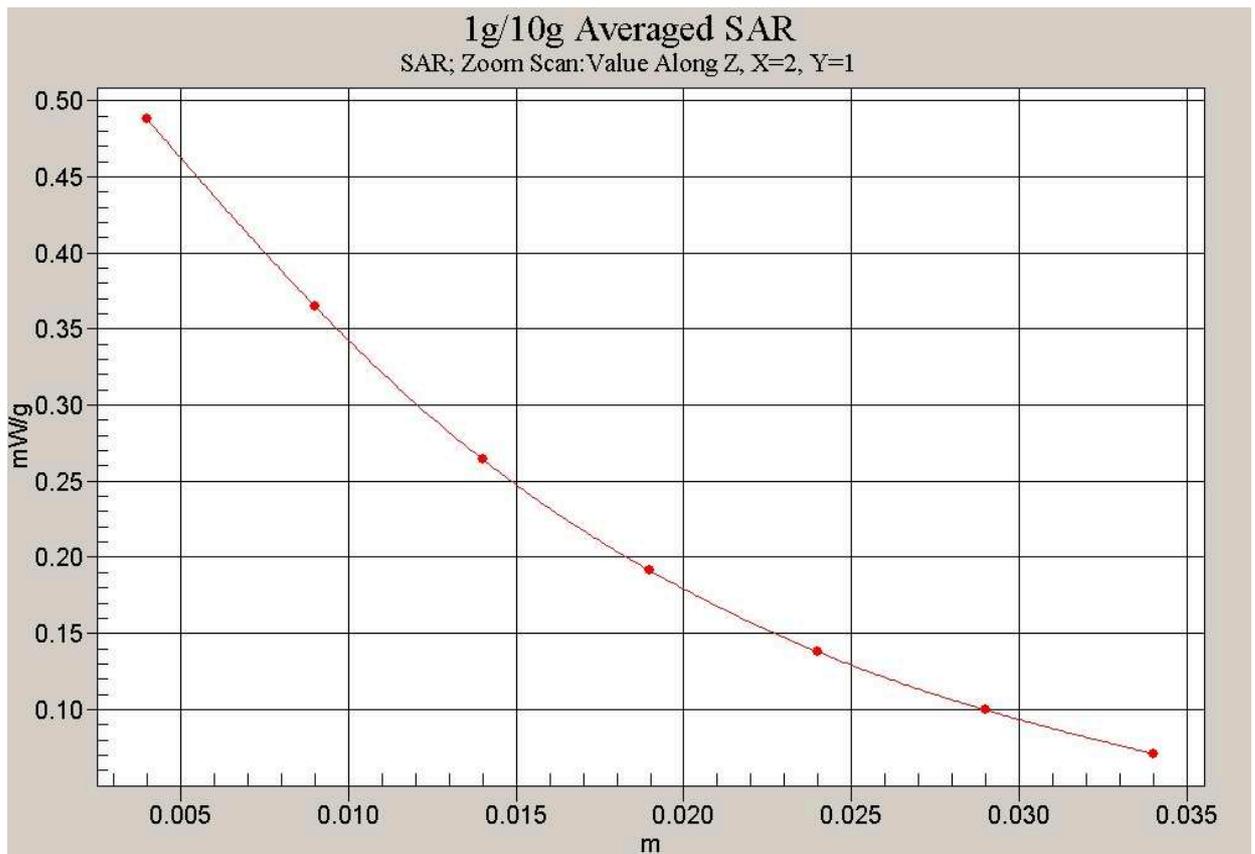


Fig. 18 Z-Scan at power reference point (CDMA 835MHz CH1013)

**CDMA 1X Right Tilt High**

Date/Time: 2006-12-14 15:09:30

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: 22.5°C      Liquid Temperature: 21.4°C

Communication System: CDMA 1X-new Frequency: 848.31 MHz Duty Cycle: 1:1

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

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

Maximum value of SAR (interpolated) = 0.432 mW/g

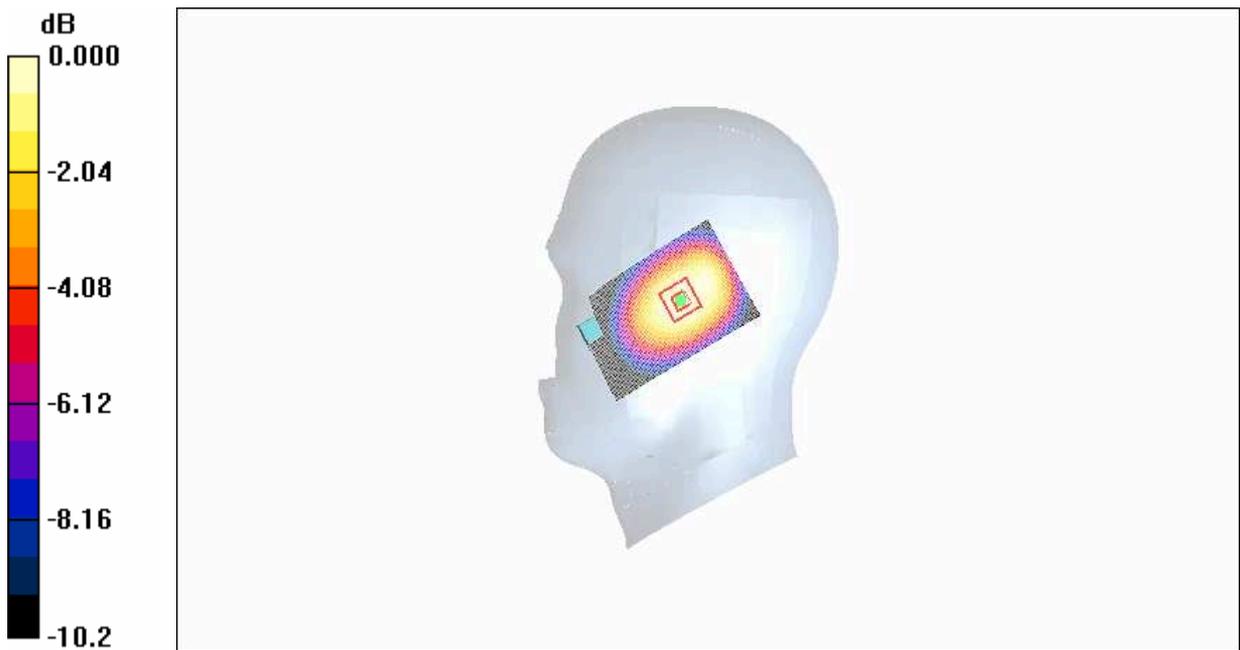
**Tilt High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 20.6 V/m; Power Drift = 0.109 dB

Peak SAR (extrapolated) = 0.535 W/kg

**SAR(1 g) = 0.396 mW/g; SAR(10 g) = 0.269 mW/g**

Maximum value of SAR (measured) = 0.401 mW/g



0 dB = 0.401mW/g

**Fig. 19 Right Hand Tilt 15°CDMA 835MHz CH777**

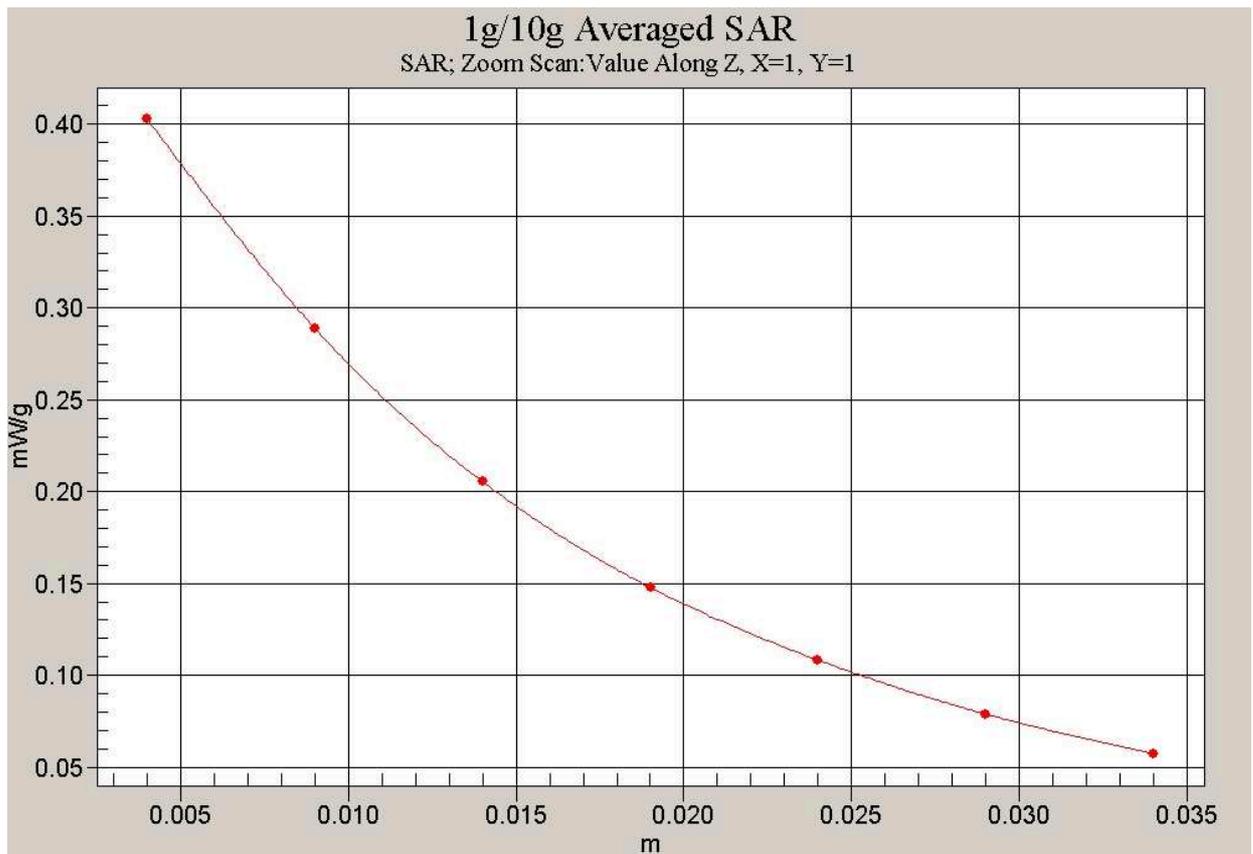


Fig. 20 Z-Scan at power reference point (CDMA 835MHz CH777)

**CDMA 1X Right Tilt Middle**

Date/Time: 2006-12-14 14:46:53

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: 22.5°C      Liquid Temperature: 21.4°C

Communication System: CDMA 1X-new Frequency: 836.52 MHz Duty Cycle: 1:1

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

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

Maximum value of SAR (interpolated) = 0.525 mW/g

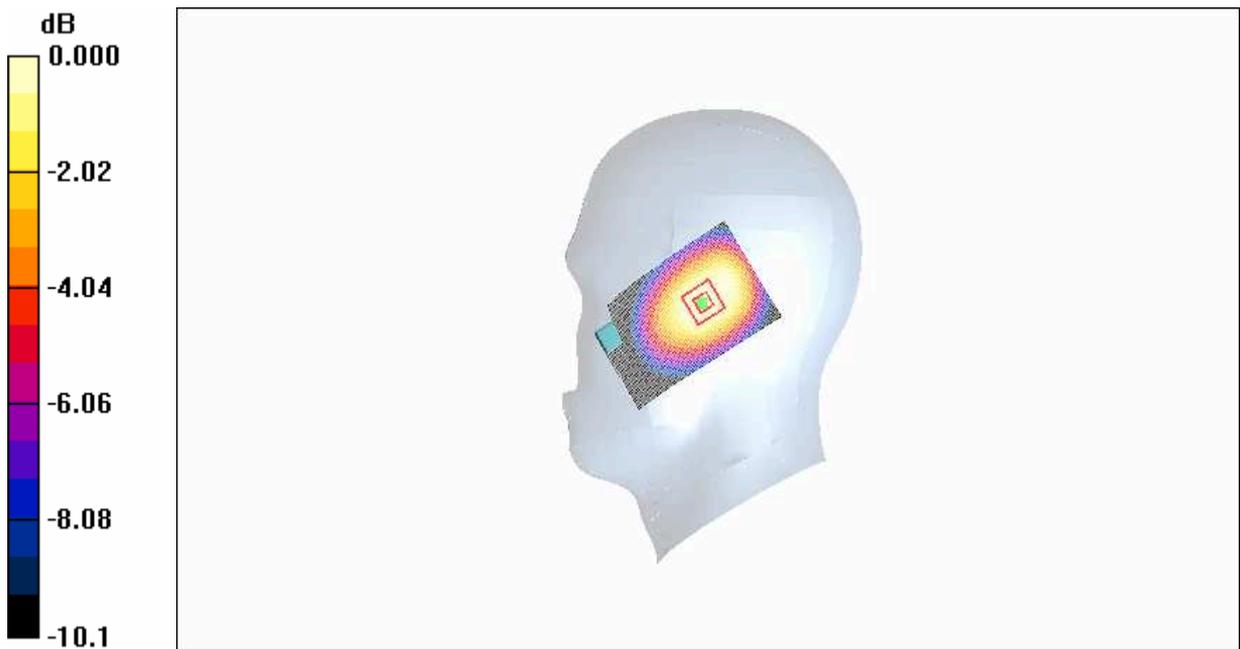
**Tilt Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 23.4 V/m; Power Drift = -0.176 dB

Peak SAR (extrapolated) = 0.637 W/kg

**SAR(1 g) = 0.481 mW/g; SAR(10 g) = 0.330 mW/g**

Maximum value of SAR (measured) = 0.492 mW/g



0 dB = 0.492mW/g

**Fig. 21 Right Hand Tilt 15°CDMA 835MHz CH384**

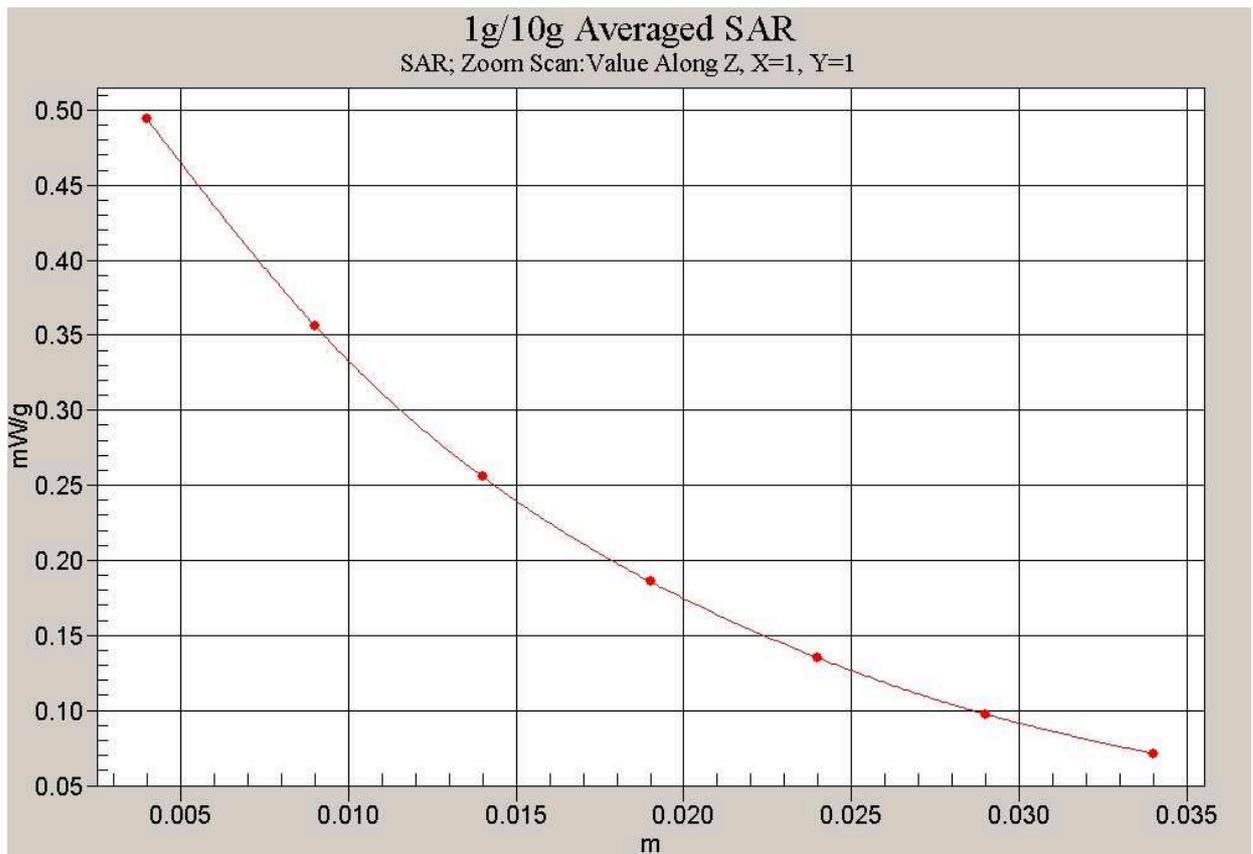


Fig. 22 Z-Scan at power reference point (CDMA 835MHz CH384)

**CDMA 1X Right Tilt Low**

Date/Time: 2006-12-14 15:32:01

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: 22.5°C      Liquid Temperature: 21.4°C

Communication System: CDMA 1X-new Frequency: 824.7 MHz Duty Cycle: 1:1

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

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

Maximum value of SAR (interpolated) = 0.275 mW/g

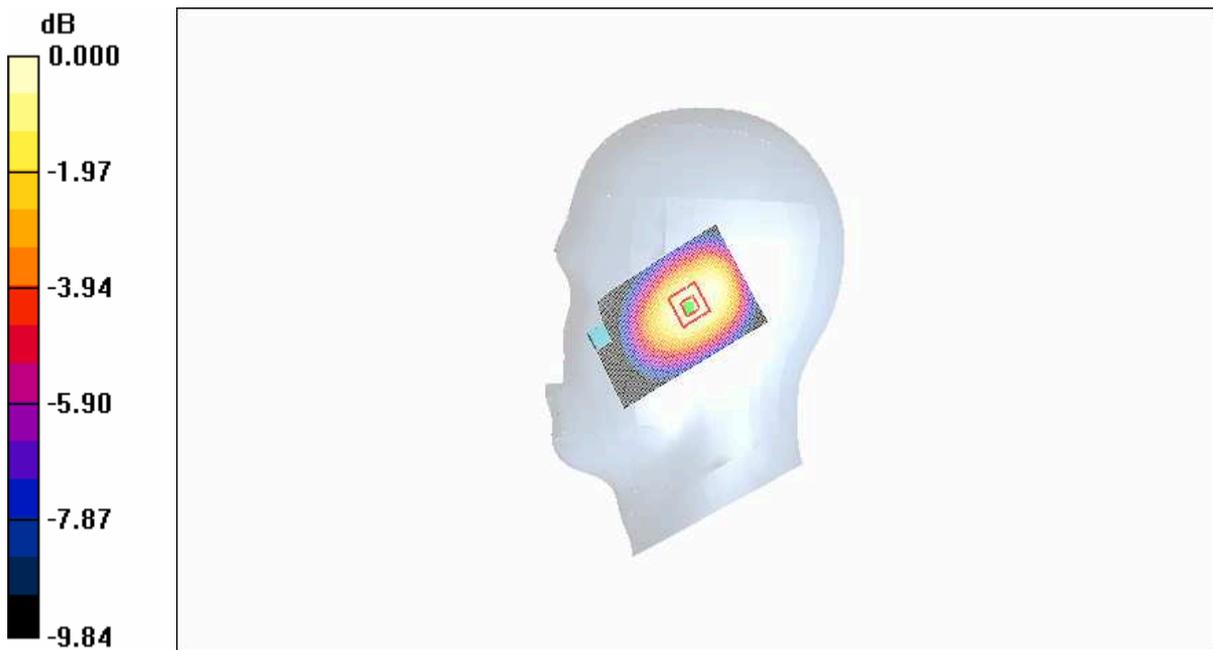
**Tilt Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 16.7 V/m; Power Drift = -0.085dB

Peak SAR (extrapolated) = 0.344 W/kg

**SAR(1 g) = 0.255 mW/g; SAR(10 g) = 0.174 mW/g**

Maximum value of SAR (measured) = 0.260 mW/g



0 dB = 0.260mW/g

**Fig. 23 Right Hand Tilt 15°CDMA 835MHz CH1013**

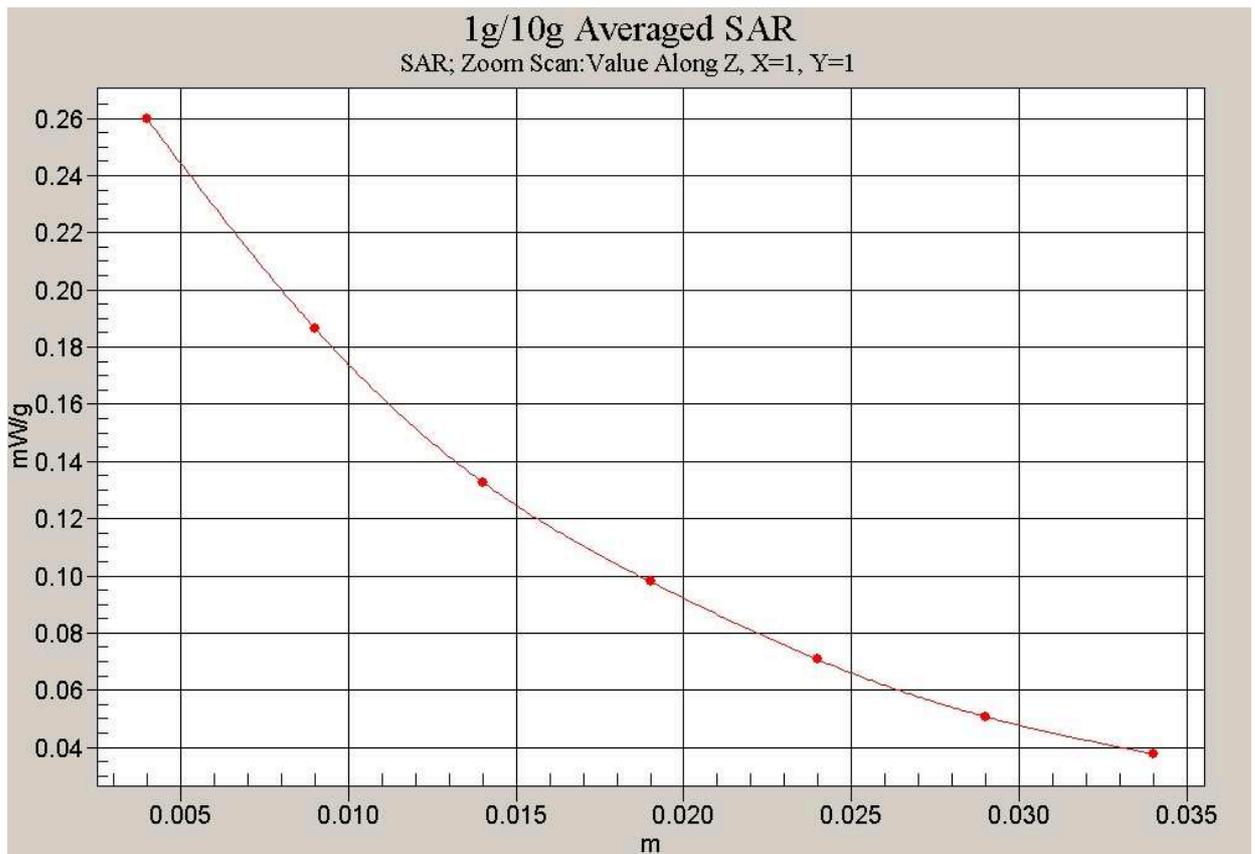


Fig. 24 Z-Scan at power reference point (CDMA 835MHz CH1013)

**CDMA 1X Body Toward Phantom High**

Date/Time: 2006-12-14 13:07:41

Electronics: DAE3 Sn536

Medium: 835 Body

Medium parameters used (interpolated):  $\sigma = 0.95$  mho/m;  $\epsilon_r = 55.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C      Liquid Temperature: 21.8°C

Communication System: CDMA 1X-new Frequency: 848.31 MHz Duty Cycle: 1:1

Probe: ET3DV6 - SN1736 ConvF(6.45, 6.45, 6.45)

**Toward Phantom High/Area Scan (71x121x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.424 mW/g

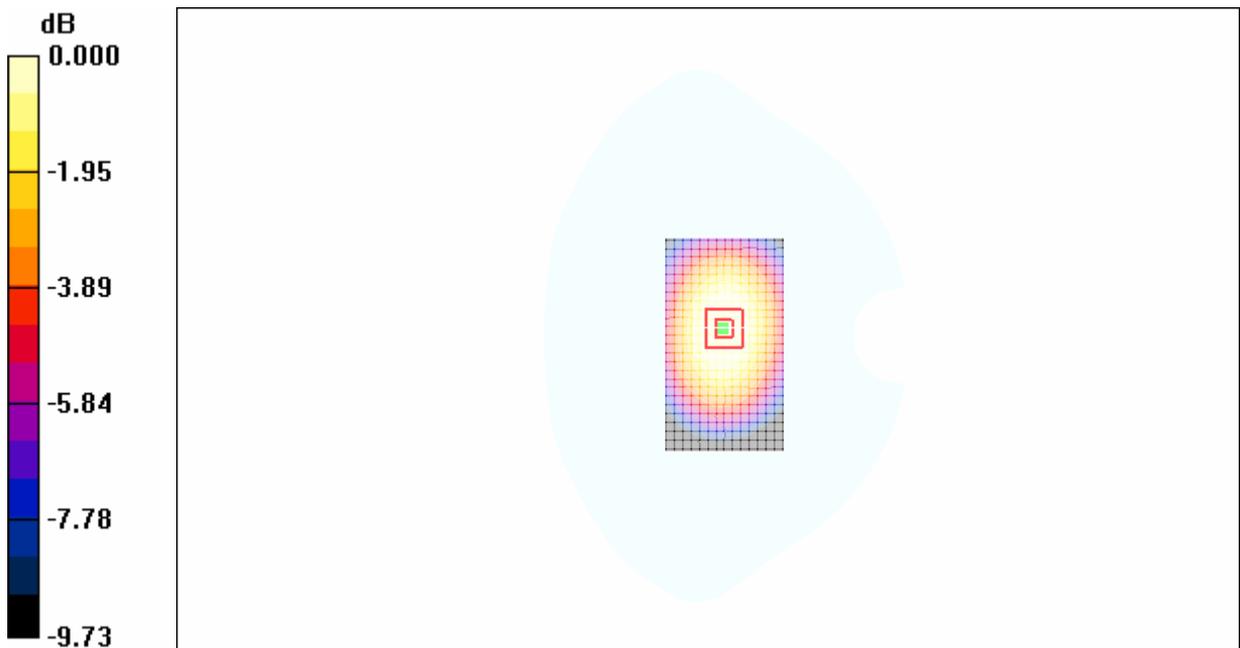
**Toward Phantom High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 23.1 V/m; Power Drift = 0.174 dB

Peak SAR (extrapolated) = 0.460 W/kg

**SAR(1 g) = 0.355 mW/g; SAR(10 g) = 0.255 mW/g**

Maximum value of SAR (measured) = 0.377 mW/g



0 dB = 0.377mW/g

**Fig. 25 CDMA 835MHz, Body, Towards Phantom, CH777**

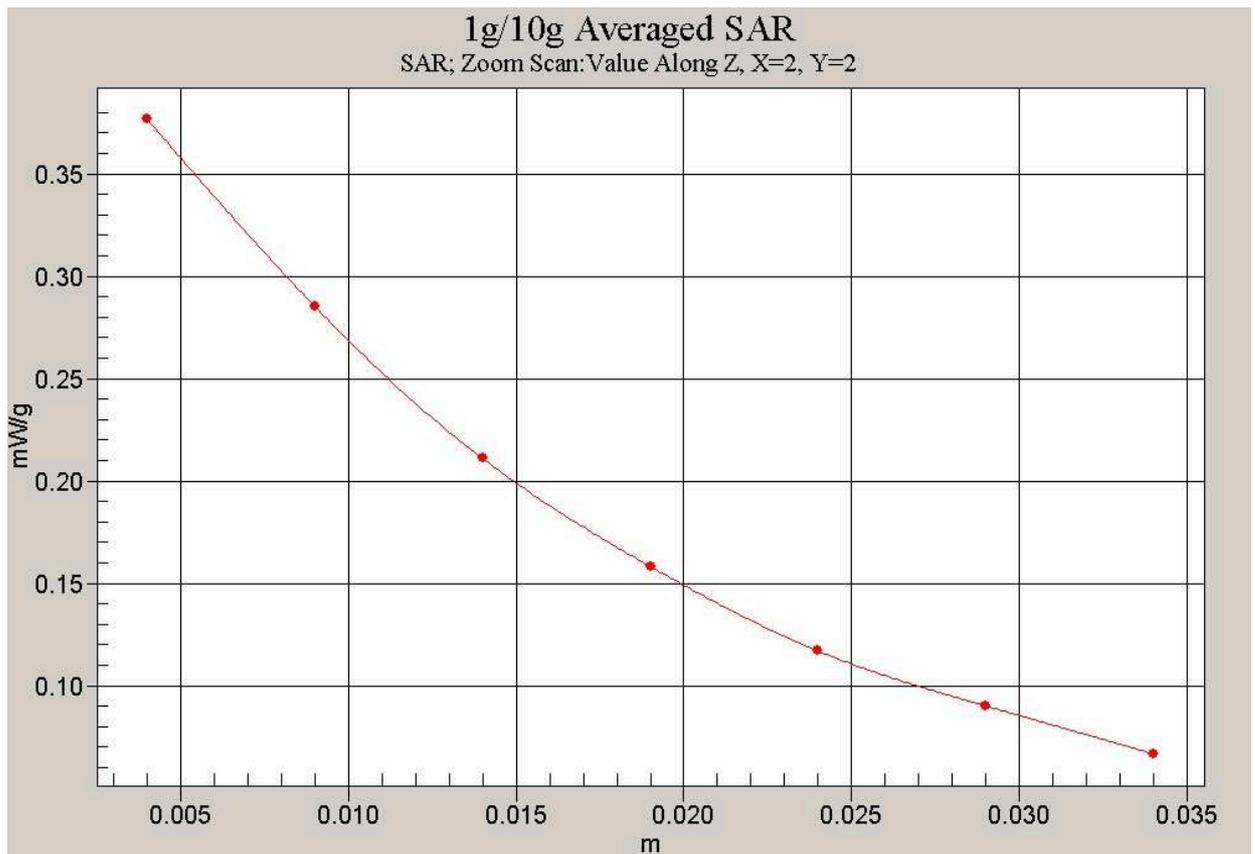


Fig. 26 Z-Scan at power reference point (CDMA 835MHz, Body,Towards Phantom, CH777)

**CDMA 1X Body Toward Phantom Middle**

Date/Time: 2006-12-14 13:19:07

Electronics: DAE3 Sn536

Medium: 835 Body

Medium parameters used (interpolated):  $\sigma = 0.95$  mho/m;  $\epsilon_r = 55.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C      Liquid Temperature: 21.8°C

Communication System: CDMA 1X-new Frequency: 836.52 MHz Duty Cycle: 1:1

Probe: ET3DV6 - SN1736 ConvF(6.45, 6.45, 6.45)

**Toward Phantom Middle/Area Scan (71x121x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.535 mW/g

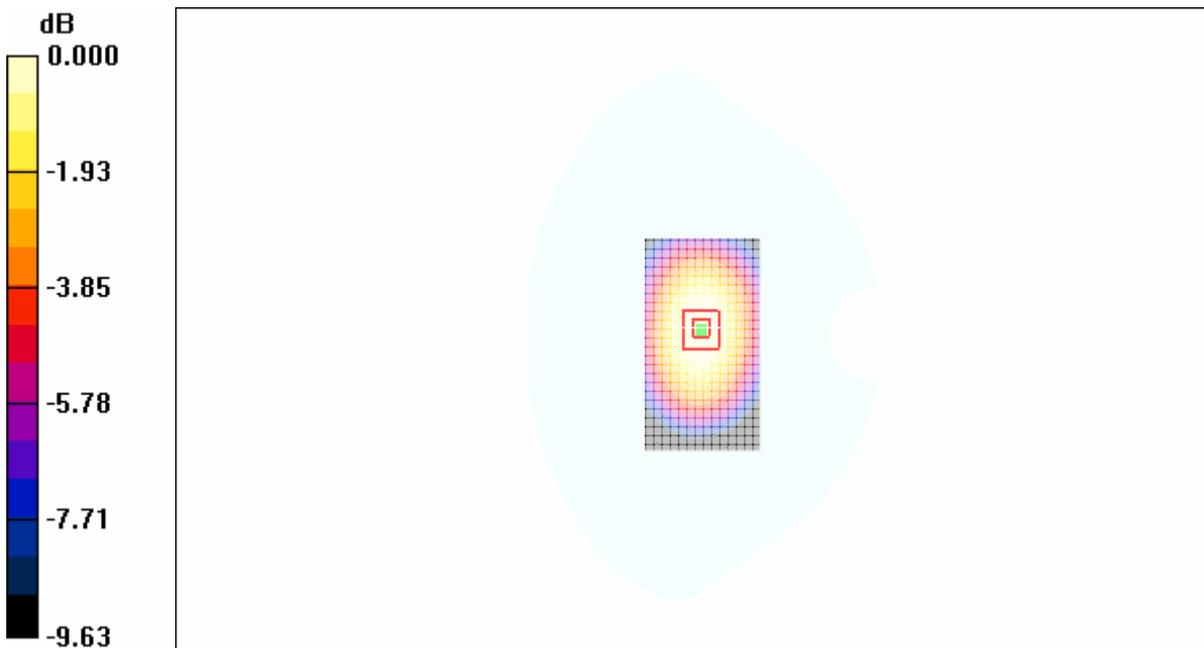
**Toward Phantom Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 25.0 V/m; Power Drift = 0.152 dB

Peak SAR (extrapolated) = 0.606 W/kg

**SAR(1 g) = 0.470 mW/g; SAR(10 g) = 0.337 mW/g**

Maximum value of SAR (measured) = 0.500 mW/g



0 dB = 0.500mW/g

Fig. 27 CDMA 835MHz, Body, Towards Phantom, CH384

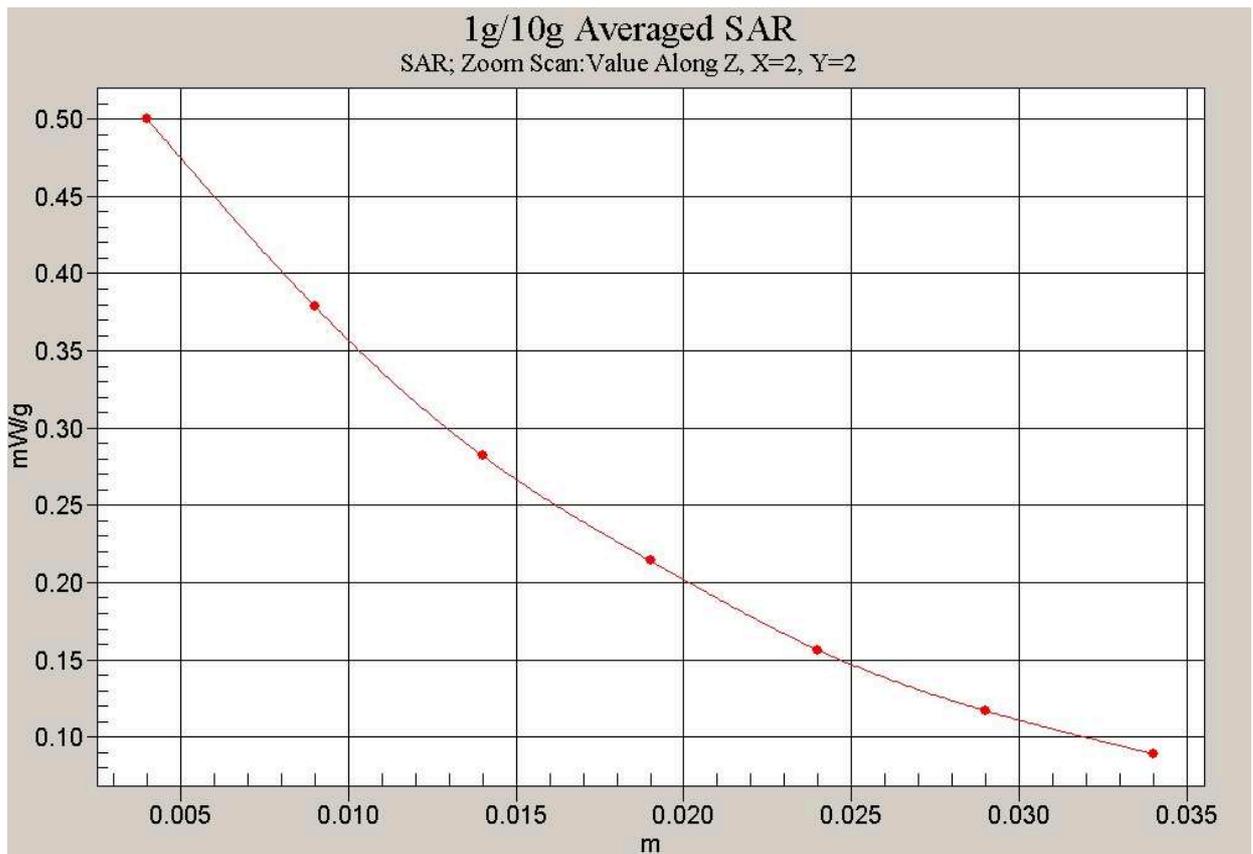


Fig. 28 Z-Scan at power reference point (CDMA 835MHz, Body, Towards Phantom, CH384)

**CDMA 1X Body Toward Phantom Low**

Date/Time: 2006-12-14 13:32:26

Electronics: DAE3 Sn536

Medium: 835 Body

Medium parameters used (interpolated):  $\sigma = 0.95$  mho/m;  $\epsilon_r = 55.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C      Liquid Temperature: 21.8°C

Communication System: CDMA 1X-new Frequency: 824.7 MHz Duty Cycle: 1:1

Probe: ET3DV6 - SN1736 ConvF(6.45, 6.45, 6.45)

**Toward Phantom Low/Area Scan (71x121x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.250 mW/g

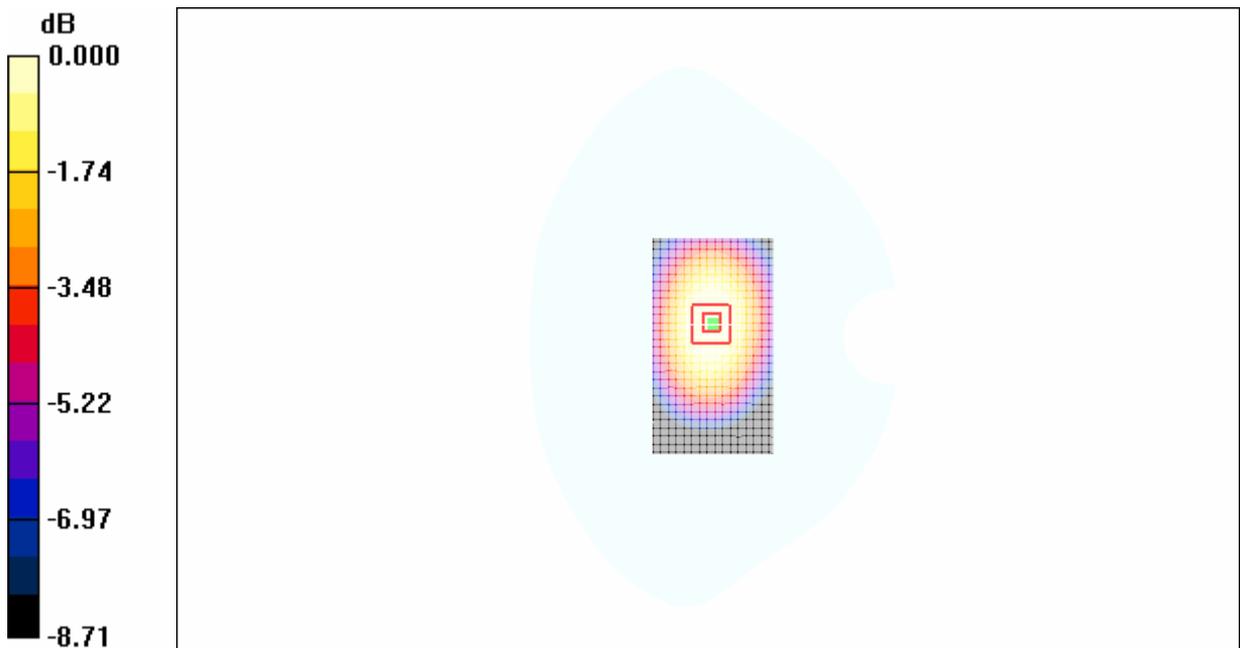
**Toward Phantom Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 16.8 V/m; Power Drift = -0.121 dB

Peak SAR (extrapolated) = 0.269 W/kg

**SAR(1 g) = 0.215 mW/g; SAR(10 g) = 0.155 mW/g**

Maximum value of SAR (measured) = 0.227 mW/g



0 dB = 0.227mW/g

**Fig. 29 CDMA 835MHz, Body, Towards Phantom, CH1013**

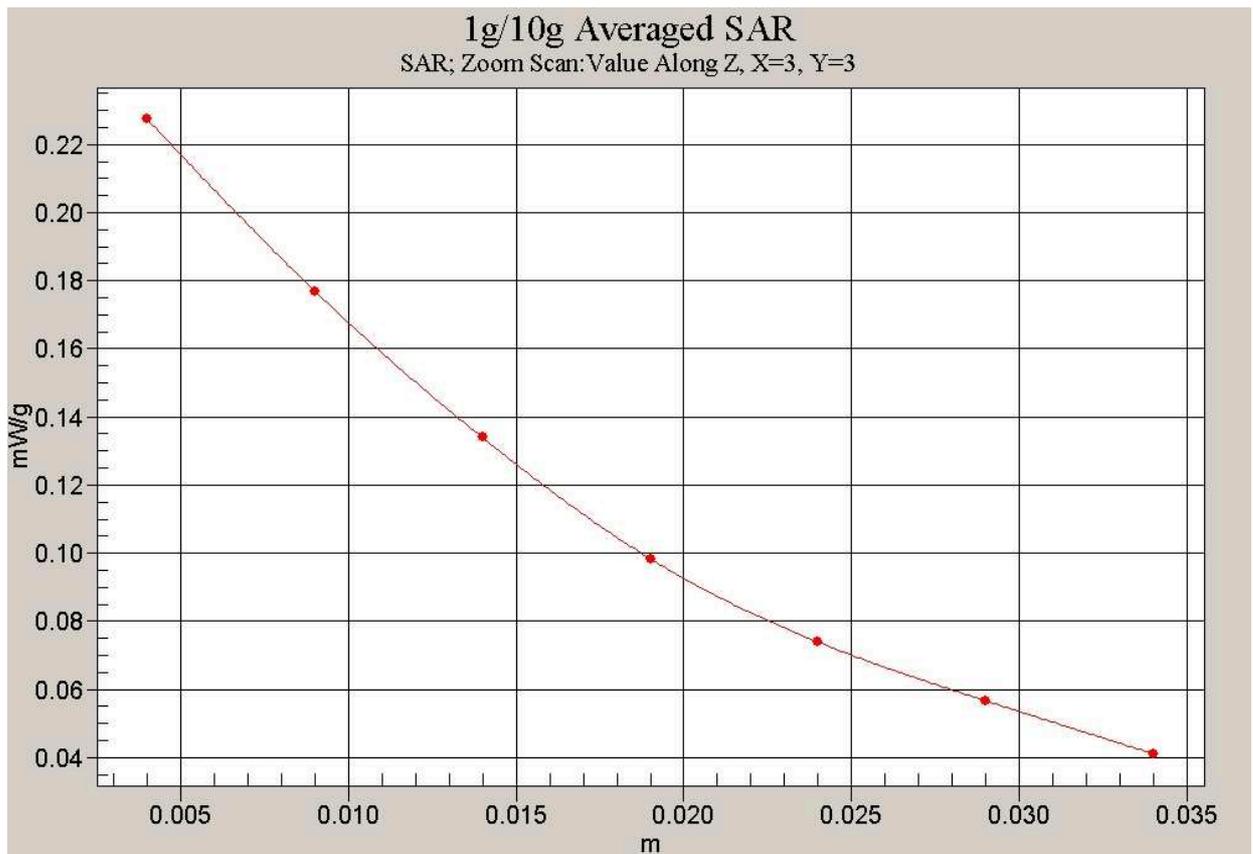


Fig. 30 Z-Scan at power reference point (CDMA 835MHz, Body, Towards Phantom, CH1013)

**CDMA 1X Body Toward Ground High**

Date/Time: 2006-12-14 13:45:32

Electronics: DAE3 Sn536

Medium: 835 Body

Medium parameters used (interpolated):  $\sigma = 0.95$  mho/m;  $\epsilon_r = 55.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C      Liquid Temperature: 21.8°C

Communication System: CDMA 1X-new Frequency: 848.31 MHz Duty Cycle: 1:1

Probe: ET3DV6 - SN1736 ConvF(6.45, 6.45, 6.45)

**Toward Ground High/Area Scan (71x121x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.925 mW/g

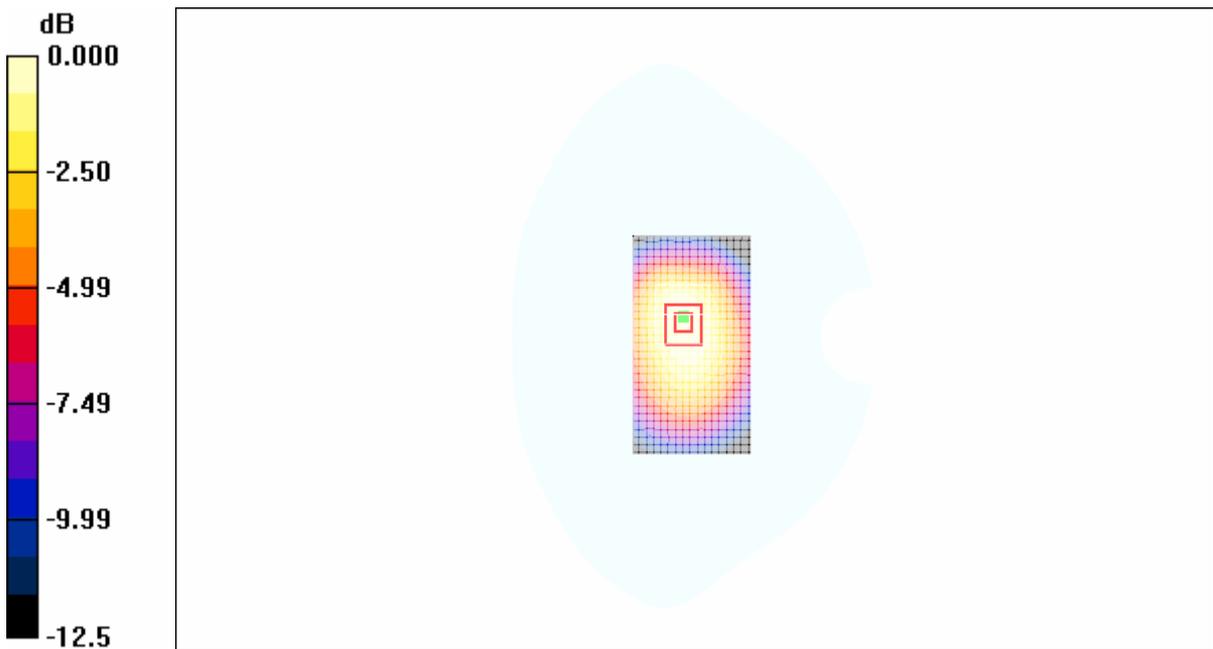
**Toward Ground High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 31.3 V/m; Power Drift = -0.181 dB

Peak SAR (extrapolated) = 1.16 W/kg

**SAR(1 g) = 0.855 mW/g; SAR(10 g) = 0.607 mW/g**

Maximum value of SAR (measured) = 0.906 mW/g



0 dB = 0.906mW/g

Fig. 31 CDMA 835MHz, Body, Towards Ground, CH777

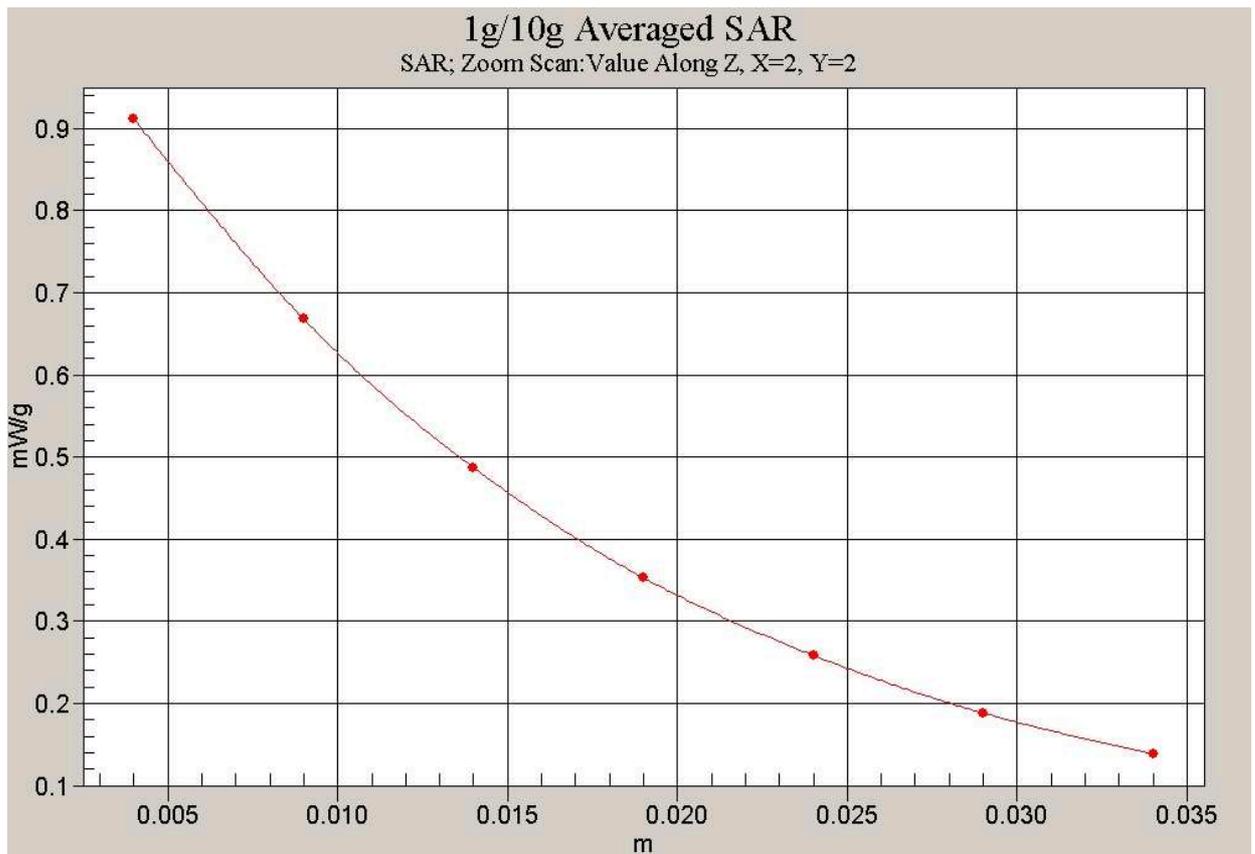


Fig. 32 Z-Scan at power reference point (CDMA 835MHz, Body, Towards Ground, CH777)

**CDMA 1X Body Toward Ground Middle**

Date/Time: 2006-12-14 13:58:30

Electronics: DAE3 Sn536

Medium: 835 Body

Medium parameters used (interpolated):  $\sigma = 0.95$  mho/m;  $\epsilon_r = 55.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C      Liquid Temperature: 21.8°C

Communication System: CDMA 1X-new Frequency: 836.52 MHz Duty Cycle: 1:1

Probe: ET3DV6 - SN1736 ConvF(6.45, 6.45, 6.45)

**Toward Ground Middle/Area Scan (71x121x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 1.06 mW/g

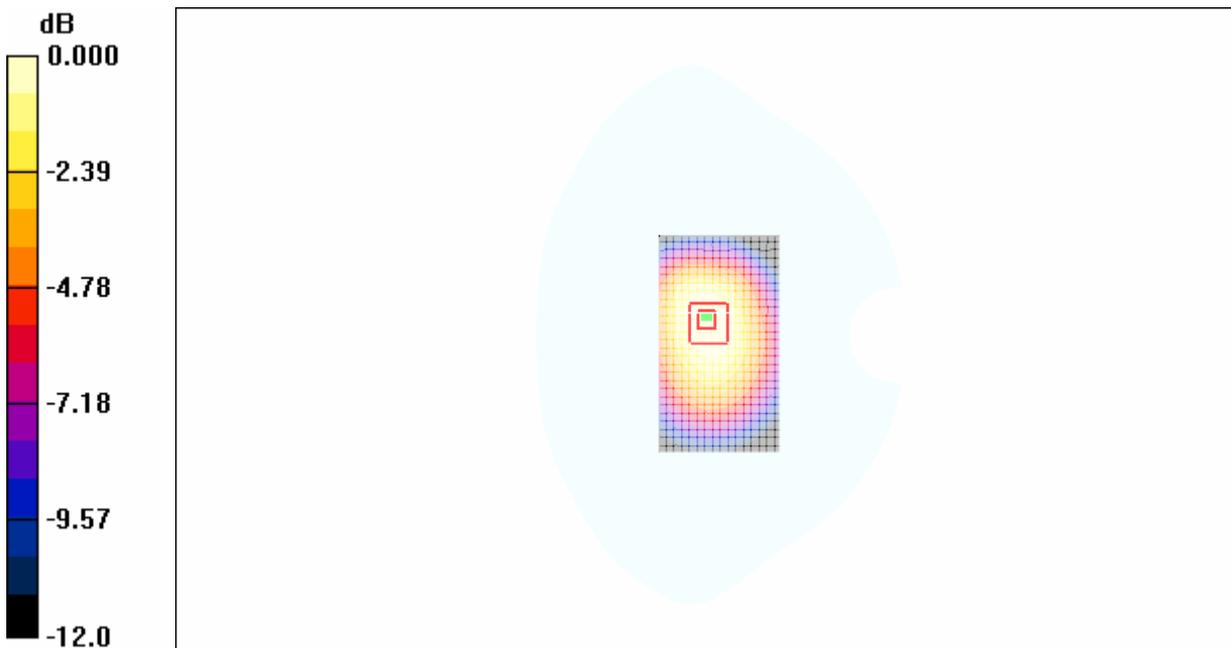
**Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 32.8 V/m; Power Drift = 0.009 dB

Peak SAR (extrapolated) = 1.30 W/kg

**SAR(1 g) = 0.985 mW/g; SAR(10 g) = 0.704 mW/g**

Maximum value of SAR (measured) = 1.04 mW/g



0 dB = 1.04mW/g

Fig. 33 CDMA 835MHz, Body, Towards Ground, CH384

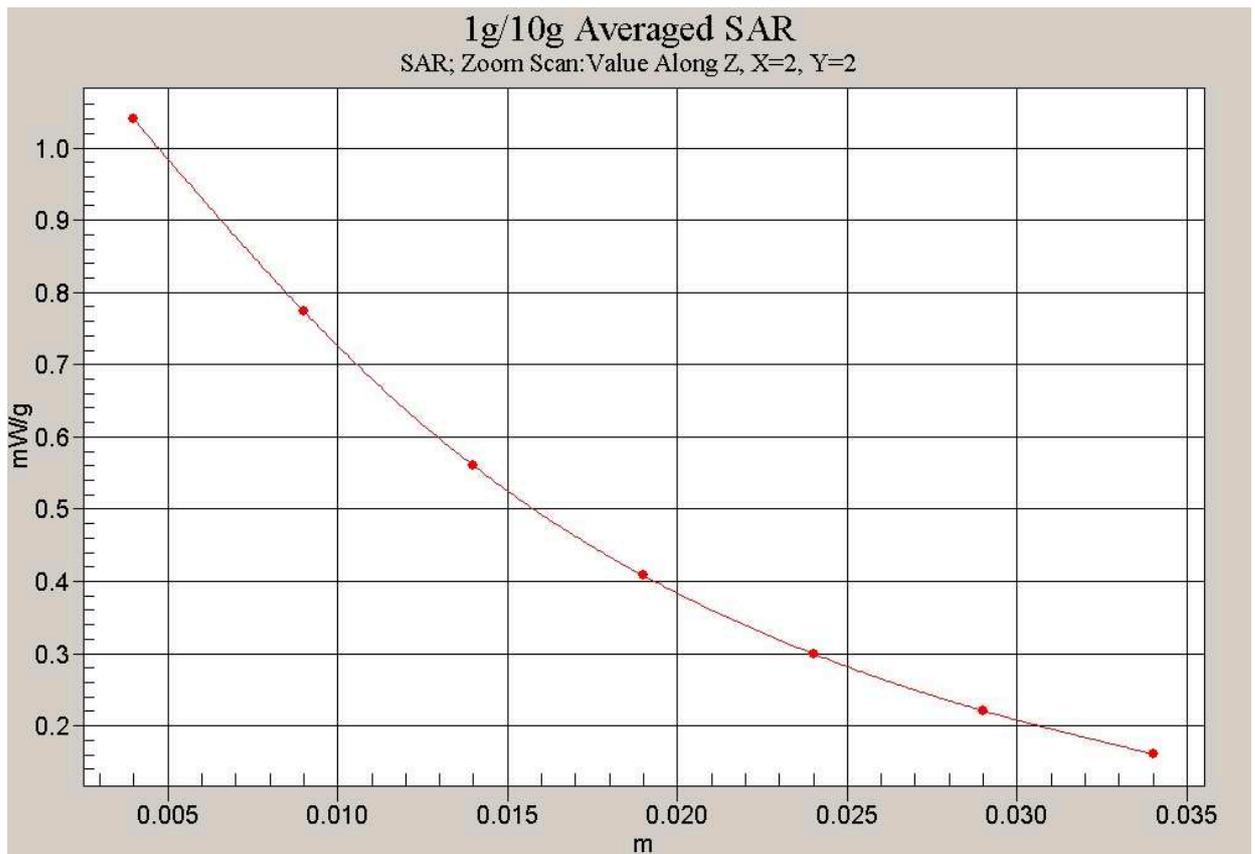


Fig. 34 Z-Scan at power reference point (CDMA 835MHz, Body, Towards Ground, CH384)

**CDMA 1X Body Toward Ground Low**

Date/Time: 2006-12-14 14:12:05

Electronics: DAE3 Sn536

Medium: 835 Body

Medium parameters used (interpolated):  $\sigma = 0.95$  mho/m;  $\epsilon_r = 55.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C      Liquid Temperature: 21.8°C

Communication System: CDMA 1X-new Frequency: 824.7 MHz Duty Cycle: 1:1

Probe: ET3DV6 - SN1736 ConvF(6.45, 6.45, 6.45)

**Toward Ground Low/Area Scan (71x121x1):** Measurement grid: dx=10mm, dy=10mm

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

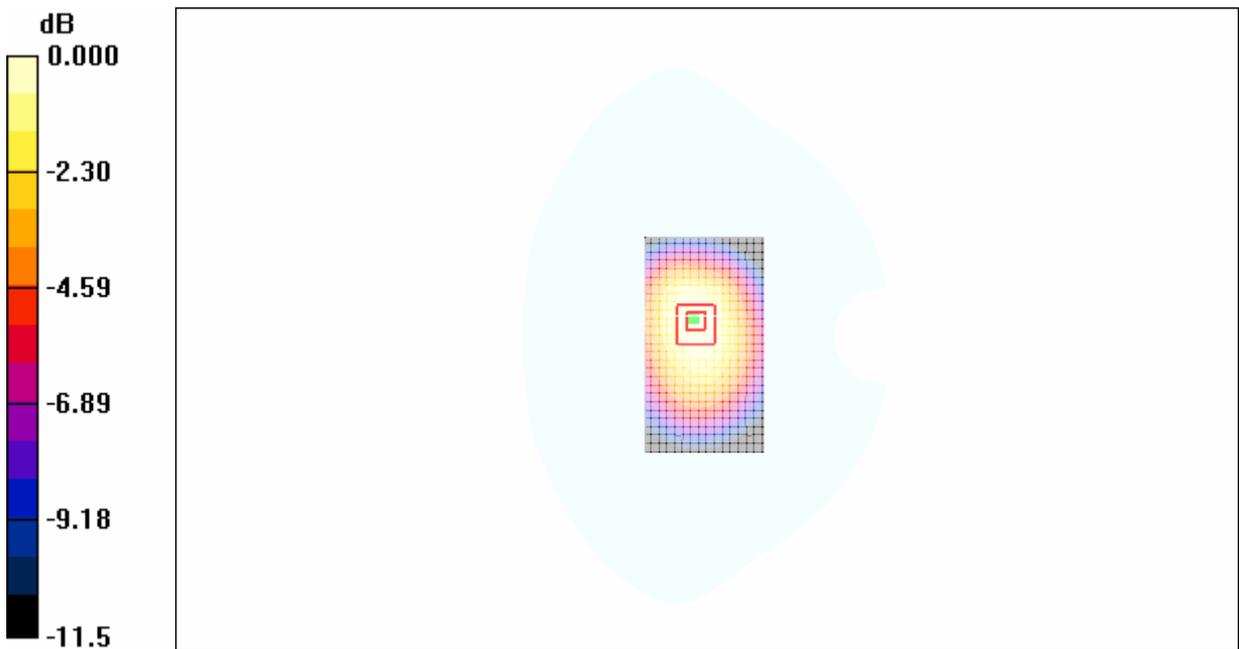
**Toward Ground Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 28.5 V/m; Power Drift = -0.095 dB

Peak SAR (extrapolated) = 0.923 W/kg

**SAR(1 g) = 0.704 mW/g; SAR(10 g) = 0.505 mW/g**

Maximum value of SAR (measured) = 0.746 mW/g



0 dB = 0.746mW/g

**Fig. 35 CDMA 835MHz, Body, Towards Ground, CH1013**

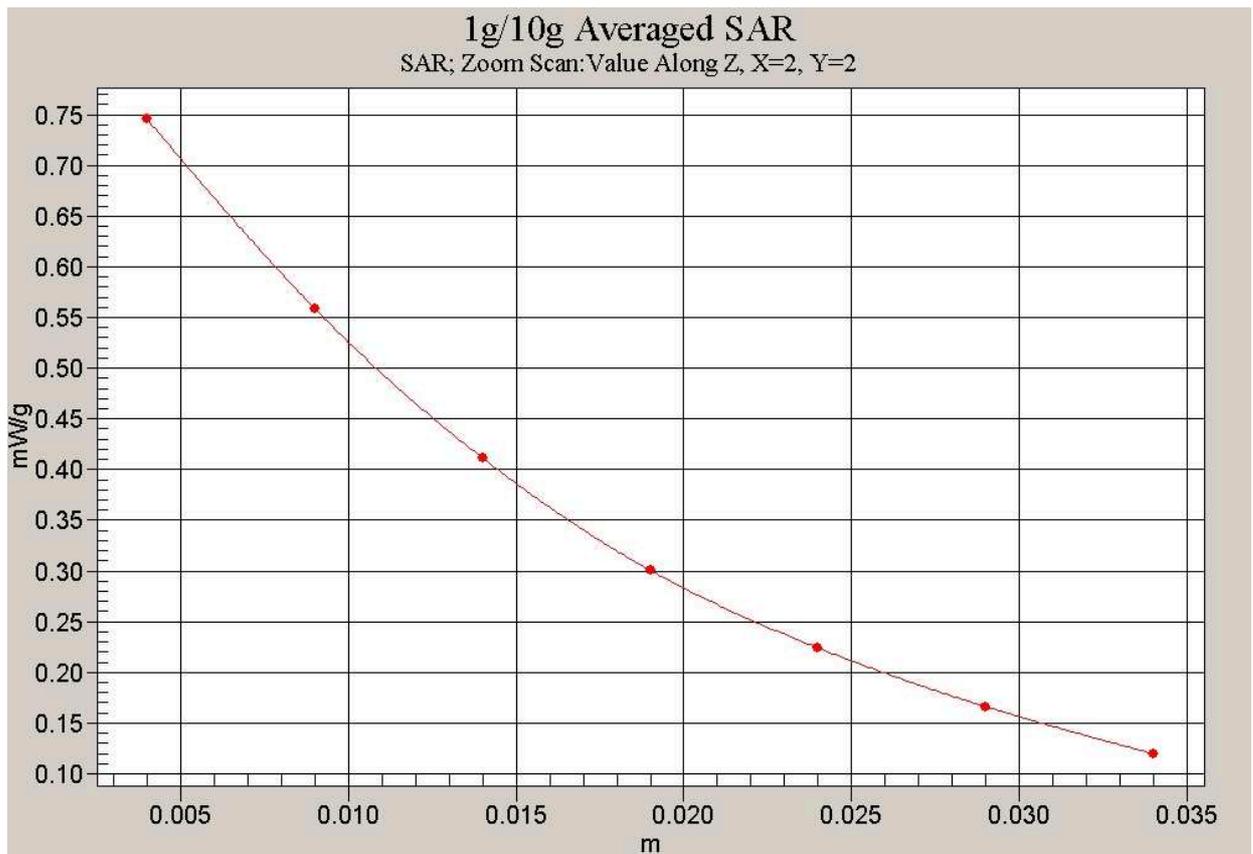


Fig. 36 Z-Scan at power reference point (CDMA 835MHz, Body, Towards Ground, CH1013)

## ANNEX D SYSTEM VALIDATION RESULTS

### 835MHzDAE589Probe1736

Date/Time: 2006-12-14 11:34:23

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: 22.5°C      Liquid Temperature: 21.4°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

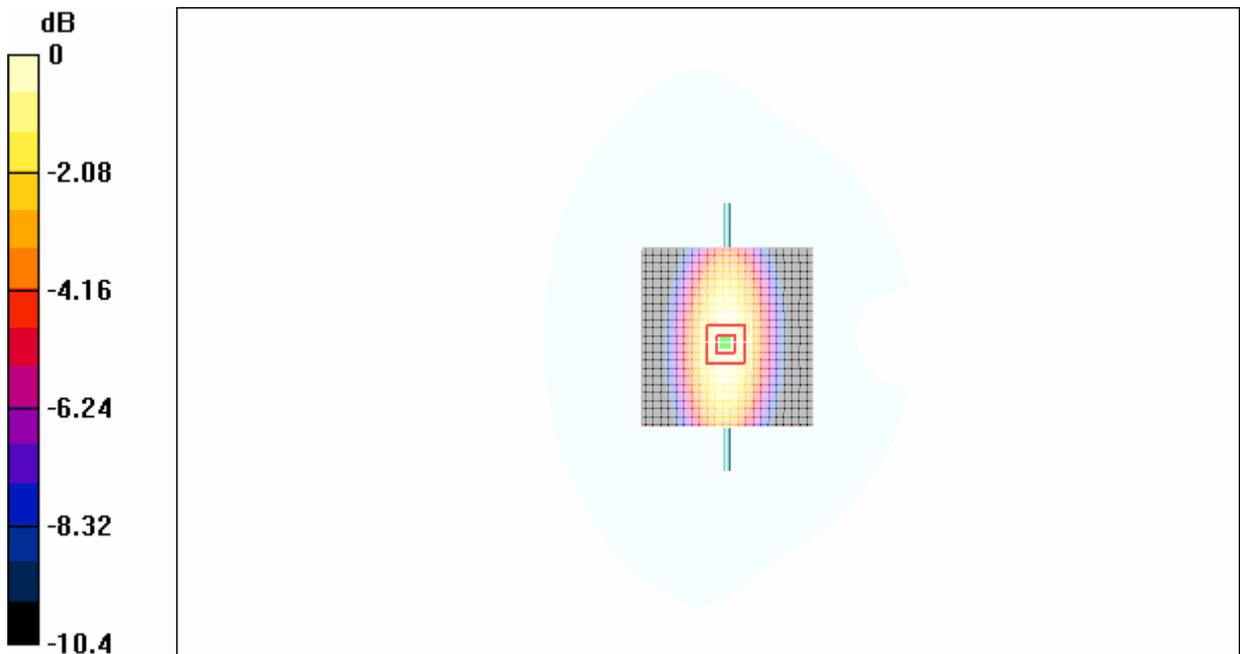
**835MHz/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

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



0 dB = 2.69mW/g

Fig.37 validation 835MHz 250mW

**Telecommunication Metrology Center  
of Ministry of Information Industry**

No. 2006E02030

Page 59 of 73

**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	<b>ET3DV6-SN: 1736</b>
Calibration procedure(s)	<b>QA CAL-01.v5 Calibration procedure for dosimetric E-field probes</b>
Calibration date:	<b>December 1, 2006</b>
Condition of the calibrated item	<b>In Tolerance</b>

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 ConF).
- 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 ConF.
- 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.
- ConF 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> \* ConF whereby the uncertainty corresponds to that given for ConF. A frequency dependent ConF 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

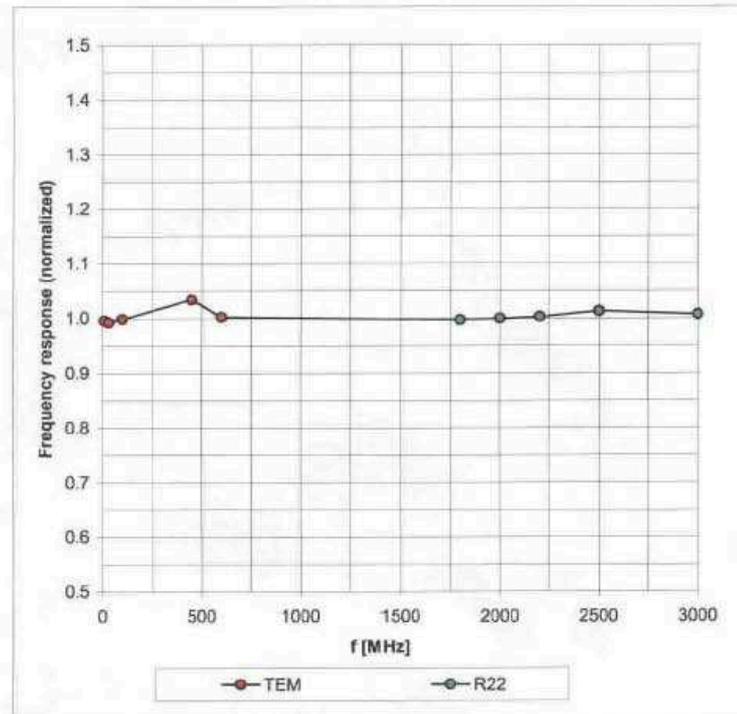


ET3DV6 SN: 1736

December 1, 2006

### Frequency Response of E-Field

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

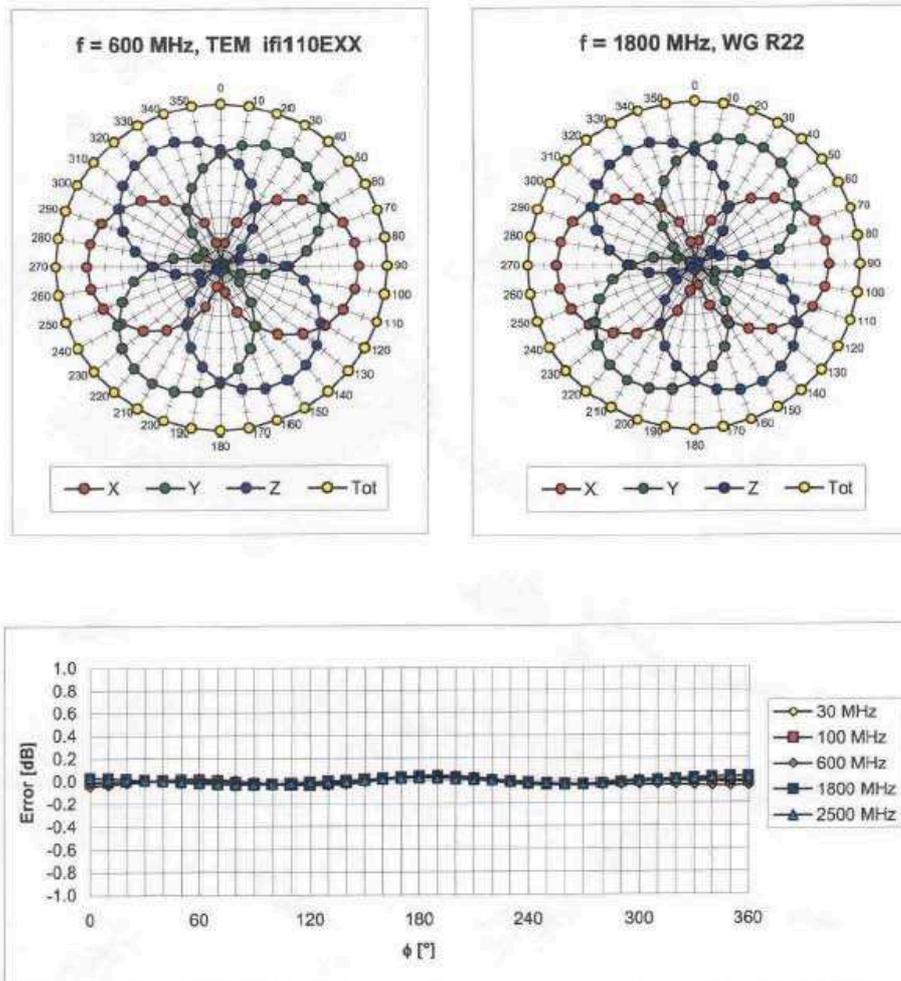


Uncertainty of Frequency Response of E-field:  $\pm 6.3\%$  (k=2)

ET3DV6 SN: 1736

December 1, 2006

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

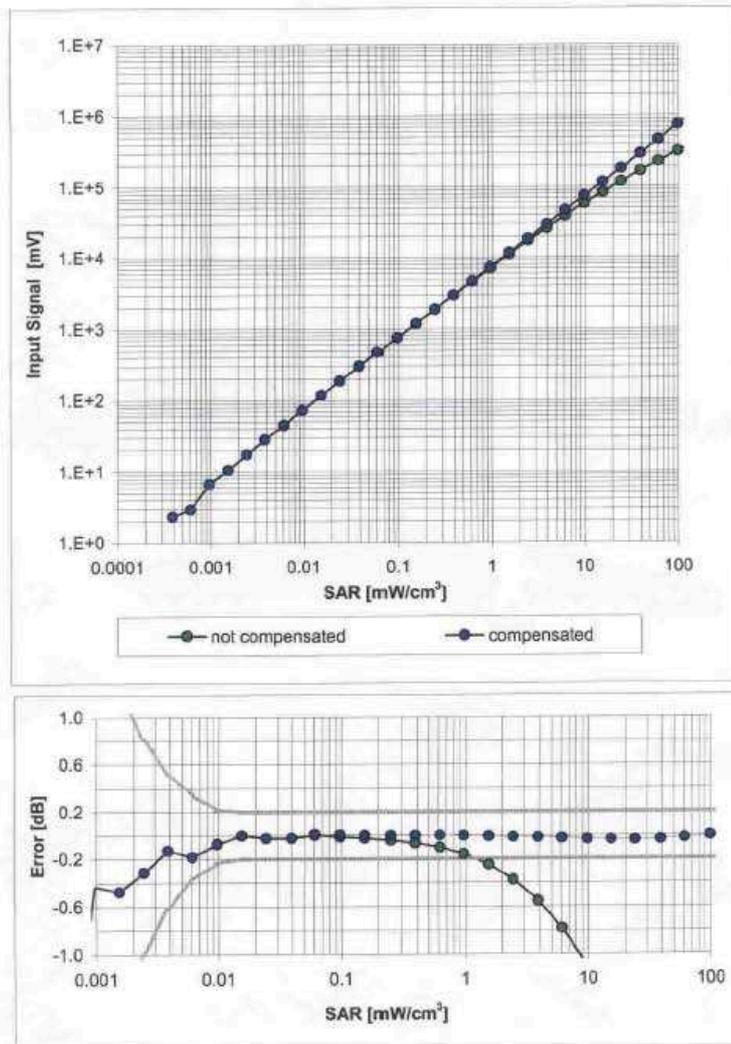


Uncertainty of Axial Isotropy Assessment:  $\pm 0.5\%$  ( $k=2$ )

ET3DV6 SN: 1736

December 1, 2006

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

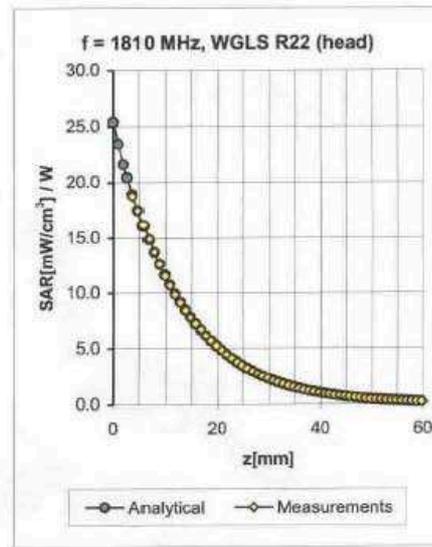
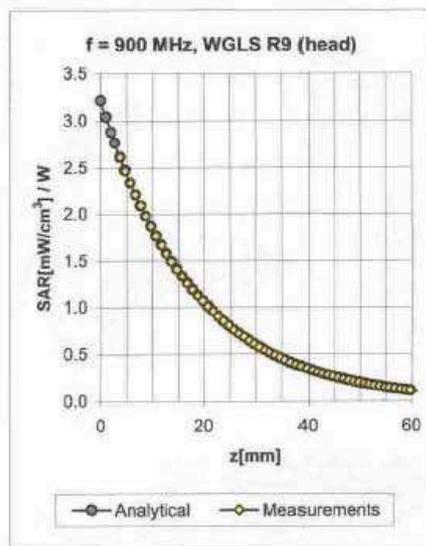


Uncertainty of Linearity Assessment:  $\pm 0.6\%$  ( $k=2$ )

ET3DV6 SN: 1736

December 1, 2006

### Conversion Factor Assessment



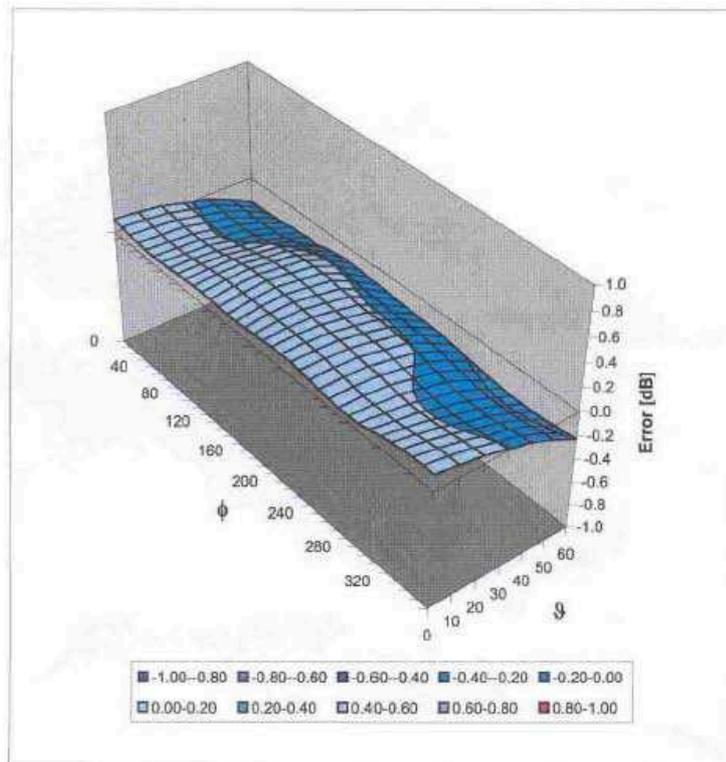
f [MHz]	Validity [MHz] <sup>c</sup>	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.56	1.85	6.51 ± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.57	2.47	5.40 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.62	2.29	4.67 ± 11.8%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

ET3DV6 SN: 1736

December 1, 2006

### Deviation from Isotropy in HSL

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



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

**ANNEX F DIPOLE CALIBRATION CERTIFICATE**

Y357

**受控文件**  
文件文件

**Schmid & Partner  
Engineering AG**

009

Zeughausstrasse 43, 8004 Zurich, Switzerland, Phone +41 1 245 97 00, Fax +41 1 245 97 79

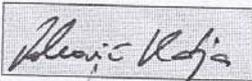
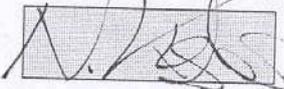
**Calibration Certificate**

**835 MHz System Validation Dipole**

Type:	D835V2
Serial Number:	443
Place of Calibration:	Zurich
Date of Calibration:	September 3, 2005
Calibration Interval:	24 months

Schmid & Partner Engineering AG hereby certifies, that this device has been calibrated on the date indicated above. The calibration was performed in accordance with specifications and procedures of Schmid & Partner Engineering AG.

Wherever applicable, the standards used in the calibration process are traceable to international standards. In all other cases the standards of the Laboratory for EMF and Microwave Electronics at the Swiss Federal Institute of Technology (ETH) in Zurich, Switzerland have been applied.

Calibrated by:	
Approved by:	

Schmid & Partner  
Engineering AG

Zeughausstrasse 43, 8004 Zurich, Switzerland, Phone +41 1 245 97 00, Fax +41 1 245 97 79

DASY

Dipole Validation Kit

Type: D835V2

Serial: 443

Manufactured: July 26, 2001

Calibrated: September 3, 2005

**1. Measurement Conditions**

The measurements were performed in the flat section of the new generic twin phantom filled with head simulating solution of the following electrical parameters at 835 MHz:

Relative Dielectricity	<b>41.0</b>	$\pm 5\%$
Conductivity	<b>0.89 mho/m</b>	$\pm 5\%$

The DASY3 System (Software version 3.1c) with a dosimetric E-field probe ET3DV6 (SN:1507, Conversion factor 6.27 at 900 MHz) was used for the measurements.

The dipole was mounted on the small tripod so that the dipole feedpoint was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 15mm from dipole center to the solution surface. The included distance holder was used during measurements for accurate distance positioning.

The coarse grid with a grid spacing of 15mm was aligned with the dipole. The 5x5x7 fine cube was chosen for cube integration. Probe isotropy errors were cancelled by measuring the SAR with normal and 90° turned probe orientations and averaging.

The dipole input power (forward power) was 250mW  $\pm 3\%$ . The results are normalized to 1W input power.

**2. SAR Measurement**

Standard SAR-measurements were performed with the phantom according to the measurement conditions described in section 1. The results have been normalized to a dipole input power of 1W (forward power). The resulting averaged SAR-values are:

averaged over 1 cm <sup>3</sup> (1 g) of tissue:	<b>10.6 mW/g</b>
averaged over 10 cm <sup>3</sup> (10 g) of tissue:	<b>6.80 mW/g</b>

Note: If the liquid parameters for validation are slightly different from the ones used for initial calibration, the SAR-values will be different as well.

### 3. Dipole Impedance and Return Loss

The impedance was measured at the SMA-connector with a network analyzer and numerically transformed to the dipole feedpoint. The transformation parameters from the SMA-connector to the dipole feedpoint are:

Electrical delay: **1.403 ns** (one direction)  
Transmission factor: **0.995** (voltage transmission, one direction)

The dipole was positioned at the flat phantom sections according to section 1 and the distance holder was in place during impedance measurements.

Feedpoint impedance at 835 MHz:  $\text{Re}\{Z\} = 50.5 \Omega$

$\text{Im}\{Z\} = -5.3 \Omega$

Return Loss at 835 MHz **-25.6 dB**

### 4. Handling

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.

Do not apply excessive force to the dipole arms, because they might bend. If the dipole arms have to be bent back, take care to release stress to the soldered connections near the feedpoint; they might come off.

After prolonged use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

**Validation Dipole D835V2 SN:443, d = 15 mm**

Frequency: 835 MHz; Antenna Input Power: 250 [mW]  
SAM Phantom; Flat Section; Grid Spacing: Dx = 20.0, Dy = 20.0, Dz = 10.0  
Probe: ET3DV6 - SN1507; ConvF(6.27,6.27) at 900 MHz; IEEE1528 835 MHz;  $\sigma = 0.89$  mho/m  $\epsilon_r = 41.0$   $\rho = 1.00$  g/cm<sup>3</sup>  
Cubes (2): Peak: 4.23 mW/g  $\pm 0.05$  dB, SAR (1g): 2.65 mW/g  $\pm 0.04$  dB, SAR (10g): 1.70 mW/g  $\pm 0.02$  dB, (Worst-case extrapolation)  
Penetration depth: 11.9 (10.5, 13.8) [mm]  
Powerdrift: -0.02 dB

