

CDMA 1X Right Cheek High

Electronics: DAE3 Sn536

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) = 0.947 mW/g

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

Reference Value = 23.4 V/m; Power Drift = 0.056 dB

Peak SAR (extrapolated) = 1.20 W/kg

SAR(1 g) = 0.862 mW/g; SAR(10 g) = 0.585 mW/g

Maximum value of SAR (measured) = 0.909 mW/g

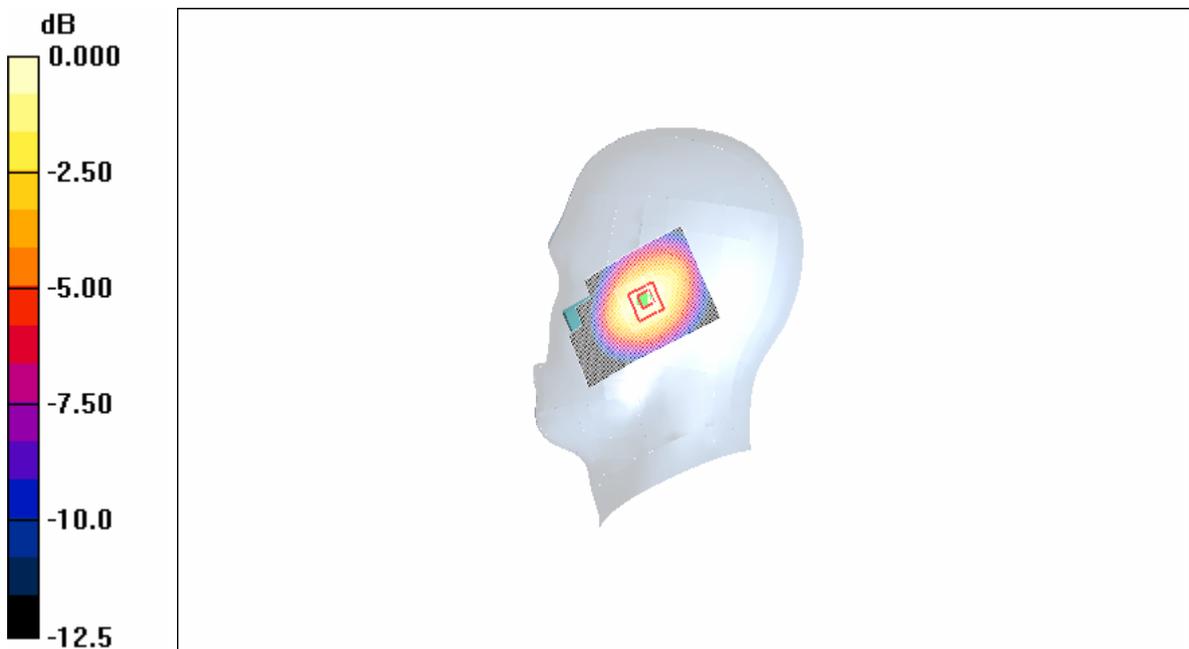


Fig. 13 Right Hand Touch Cheek CDMA 835MHz CH777

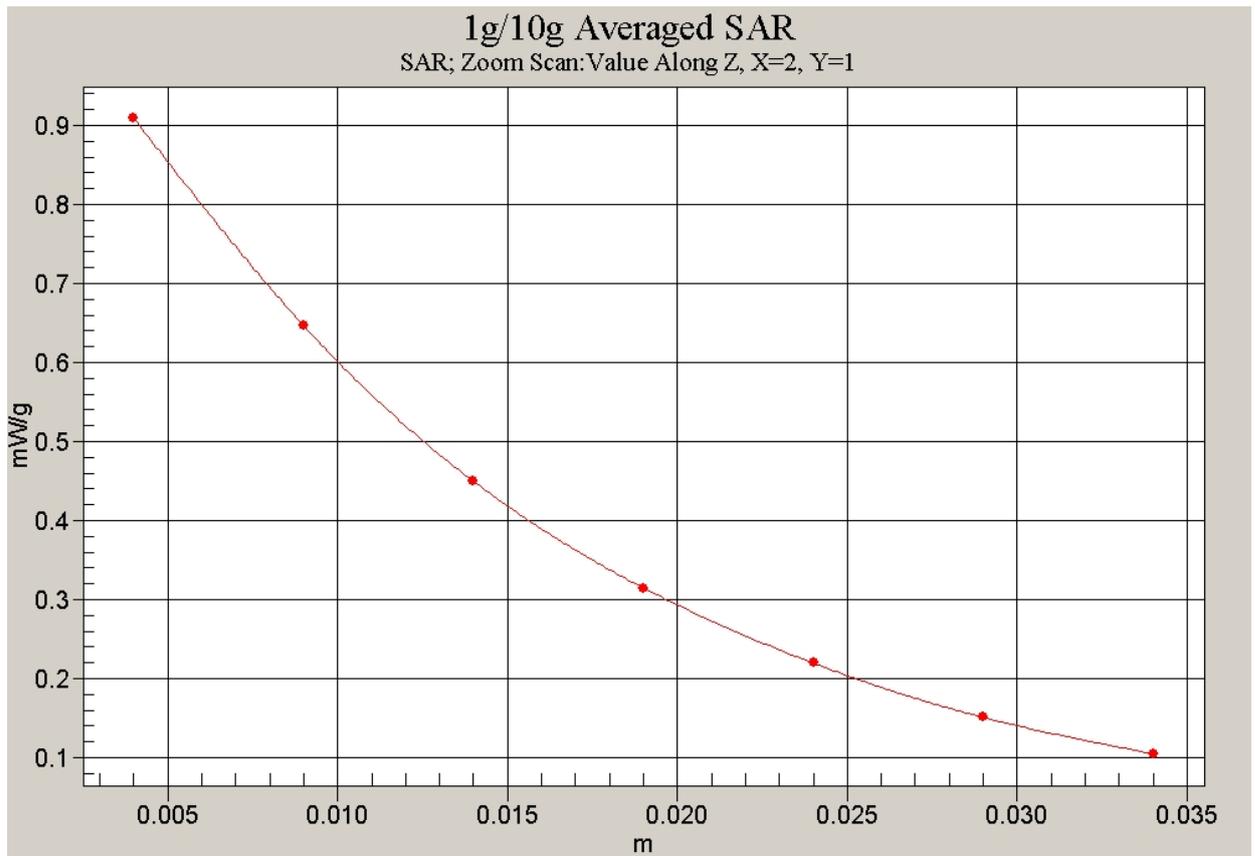


Fig. 14 Z-Scan at power reference point (CDMA 835MHz CH777)

CDMA 1X Right Cheek Middle

Electronics: DAE3 Sn536

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) = 0.994 mW/g

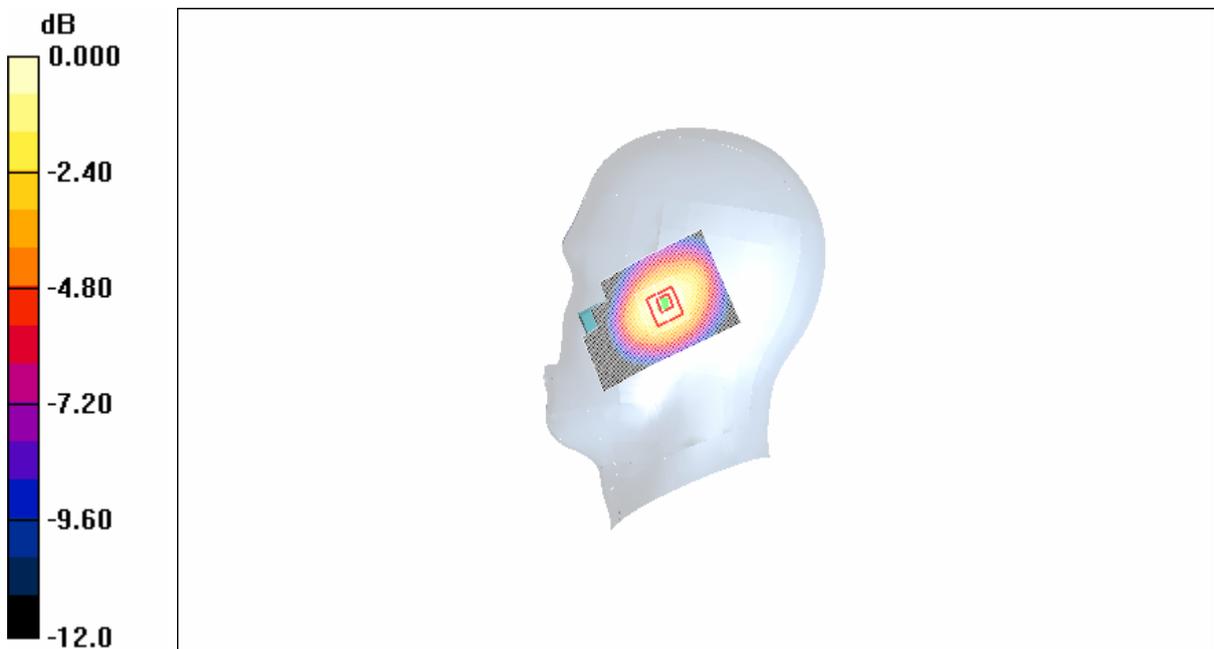
Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm,
dz=5mm

Reference Value = 24.3 V/m; Power Drift = 0.200 dB

Peak SAR (extrapolated) = 1.27 W/kg

SAR(1 g) = 0.916 mW/g; SAR(10 g) = 0.620 mW/g

Maximum value of SAR (measured) = 0.973 mW/g



0 dB = 0.973mW/g

Fig.15 Right Hand Touch Cheek CDMA 835MHz CH384

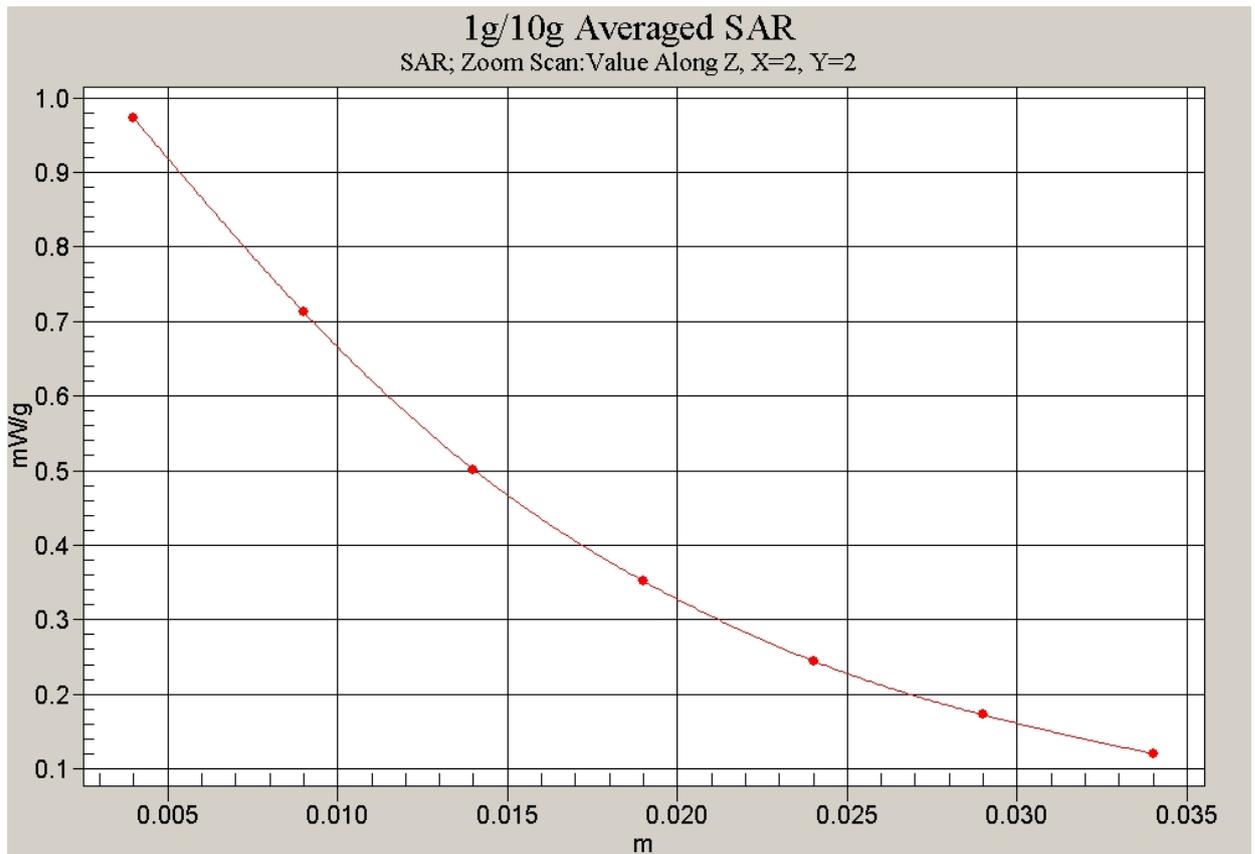


Fig. 16 Z-Scan at power reference point (CDMA 835MHz CH384)

CDMA 1X Right Cheek Low

Electronics: DAE3 Sn536

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) = 0.657 mW/g

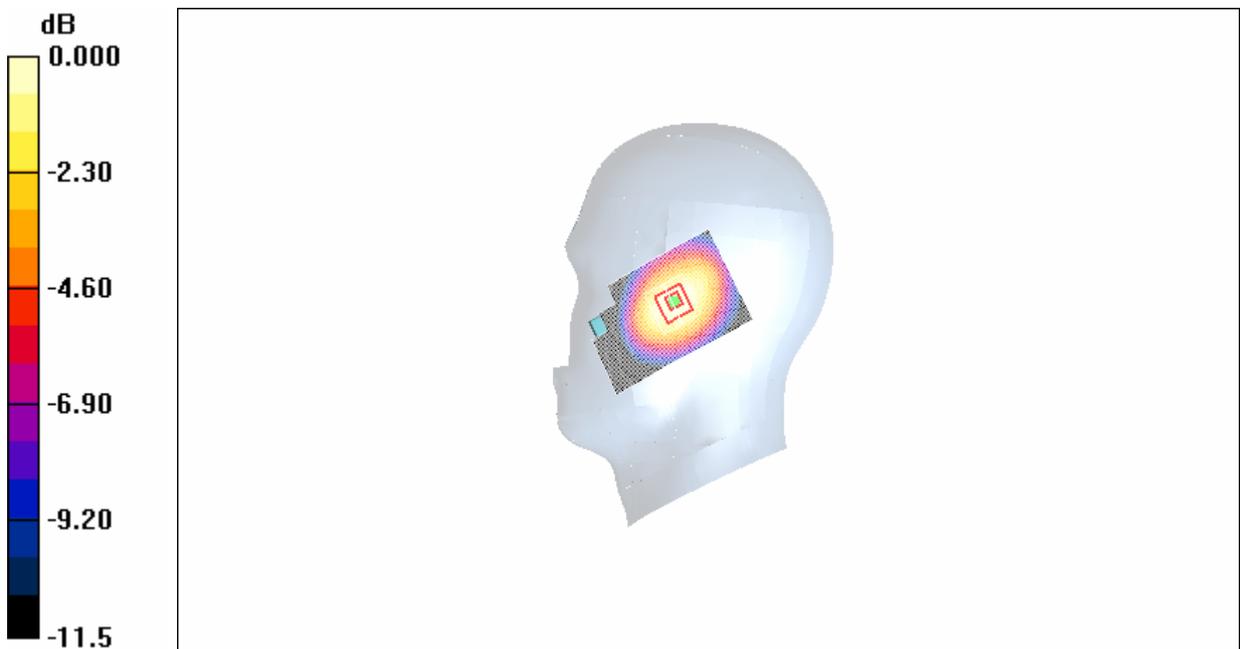
Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm,
dz=5mm

Reference Value = 20.4 V/m; Power Drift = -0.131 dB

Peak SAR (extrapolated) = 0.807 W/kg

SAR(1 g) = 0.580 mW/g; SAR(10 g) = 0.392 mW/g

Maximum value of SAR (measured) = 0.614 mW/g



0 dB = 0.614mW/g

Fig. 17 Right Hand Touch Cheek CDMA 835MHz CH1013

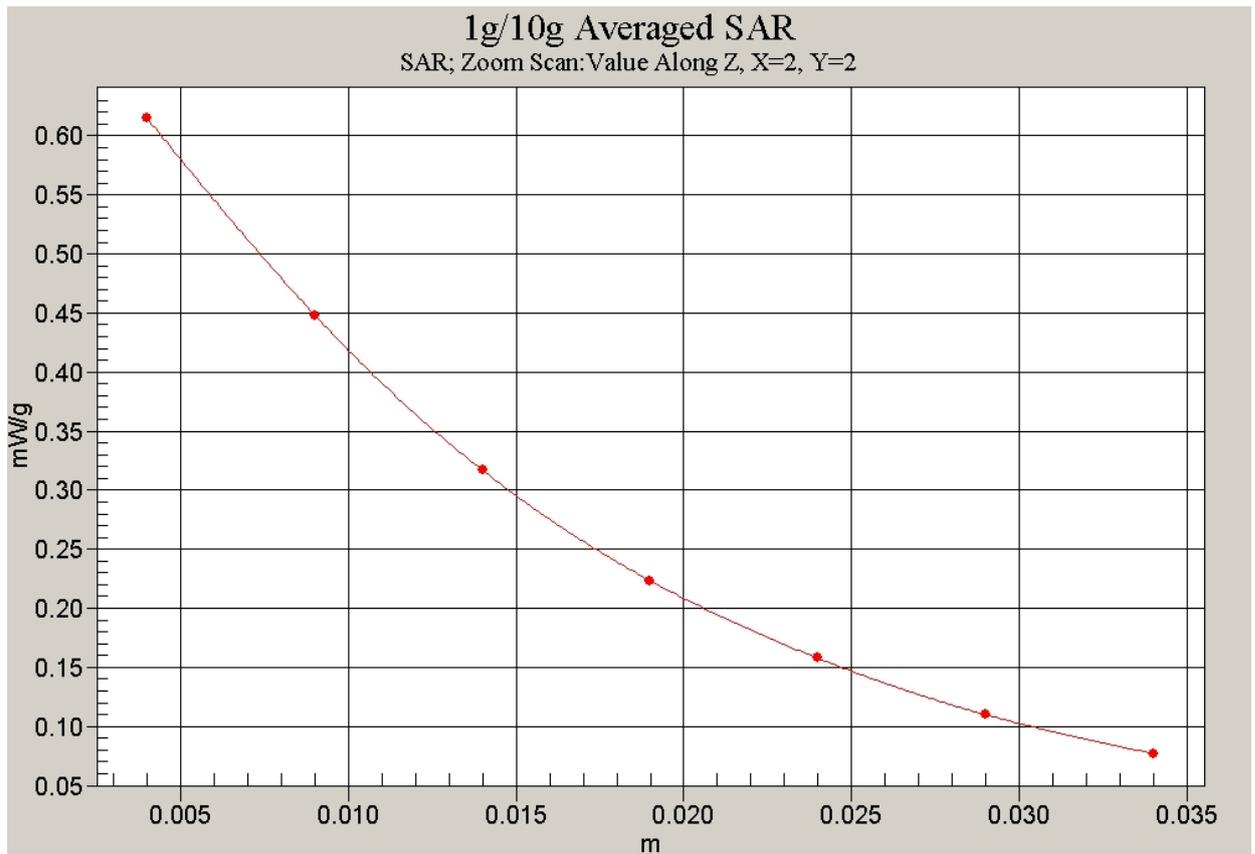


Fig. 18 Z-Scan at power reference point (CDMA 835MHz CH1013)

CDMA 1X Right Tilt High

Electronics: DAE3 Sn536

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) = 0.598 mW/g

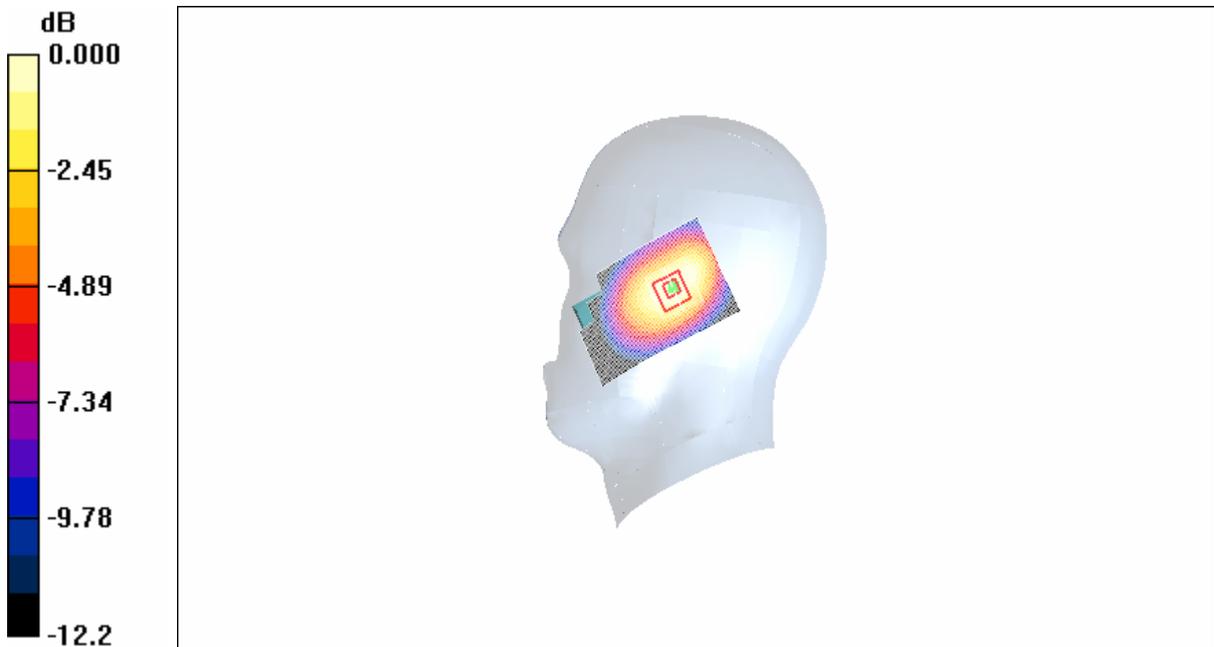
Tilt High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 23.1 V/m; Power Drift = -0.200 dB

Peak SAR (extrapolated) = 0.749 W/kg

SAR(1 g) = 0.534 mW/g; SAR(10 g) = 0.353 mW/g

Maximum value of SAR (measured) = 0.574 mW/g



0 dB = 0.574mW/g

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

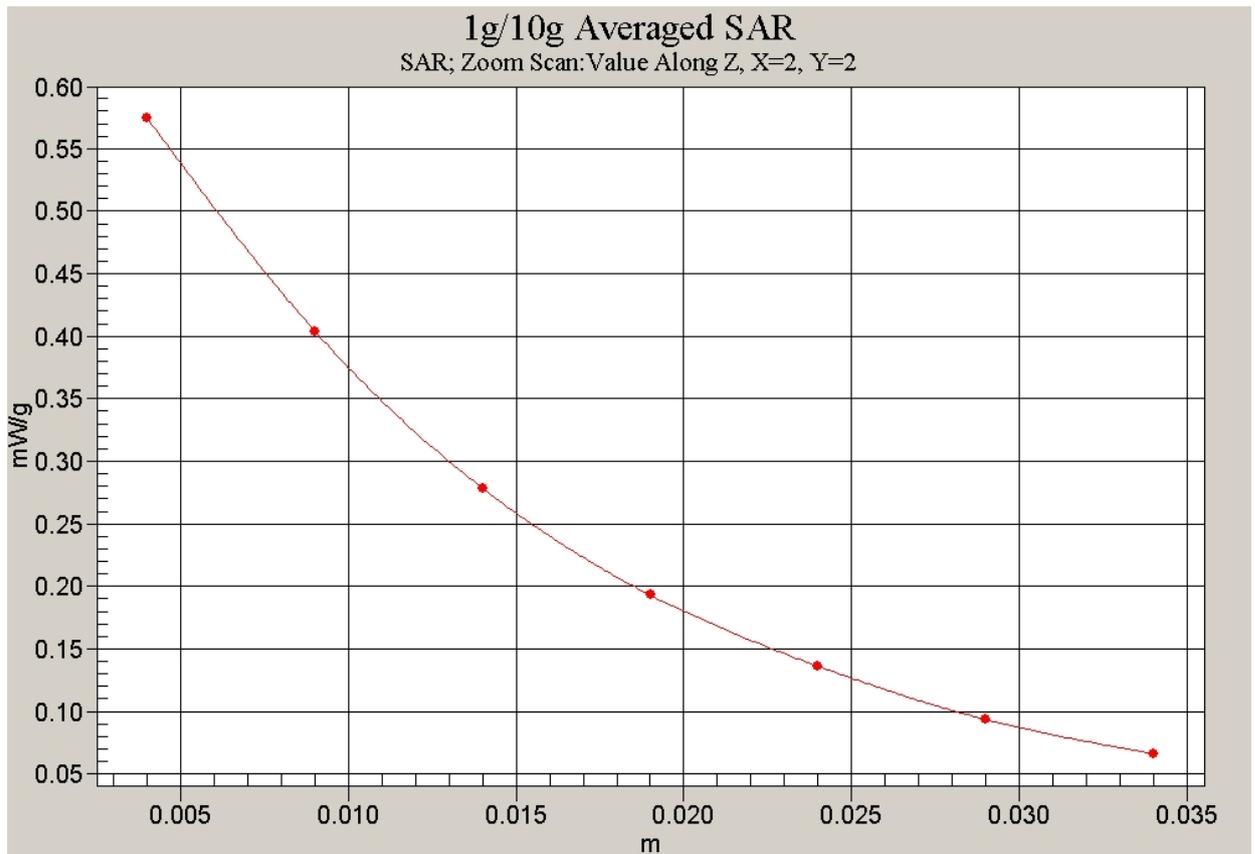


Fig. 20 Z-Scan at power reference point (CDMA 835MHz CH777)

CDMA 1X Right Tilt Middle

Electronics: DAE3 Sn536

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) = 0.624 mW/g

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

Reference Value = 23.8 V/m; Power Drift = -0.168 dB

Peak SAR (extrapolated) = 0.786 W/kg

SAR(1 g) = 0.559 mW/g; SAR(10 g) = 0.371 mW/g

Maximum value of SAR (measured) = 0.601 mW/g

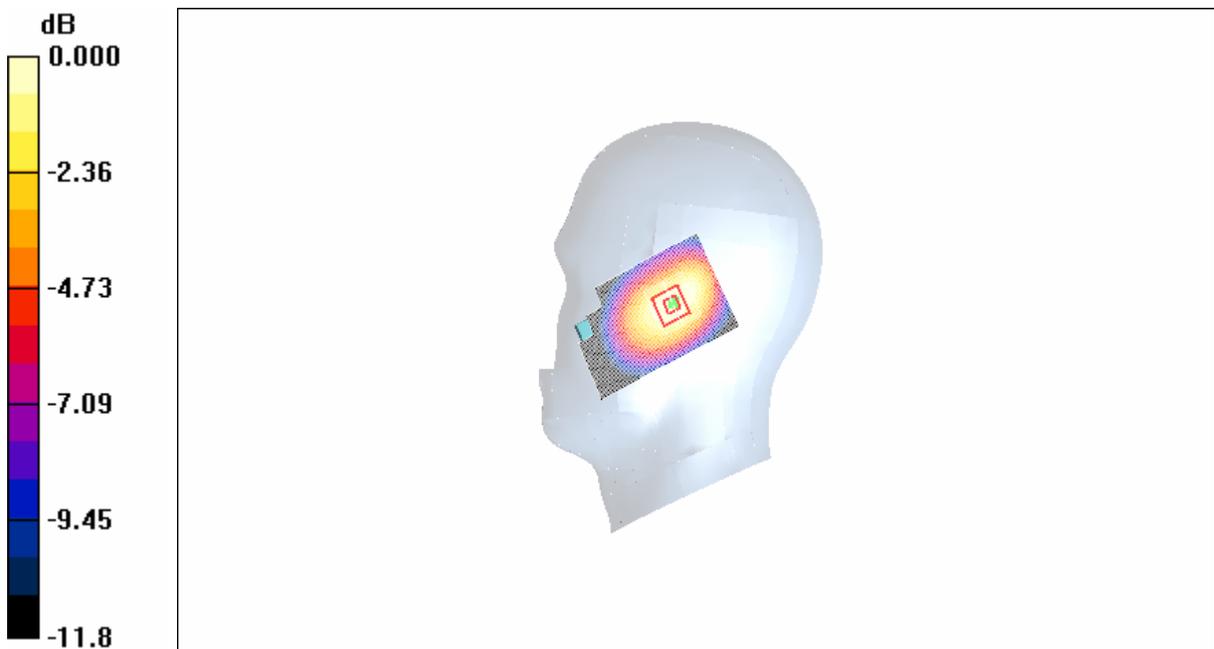


Fig. 21 Right Hand Tilt 15°CDMA 835MHz CH384

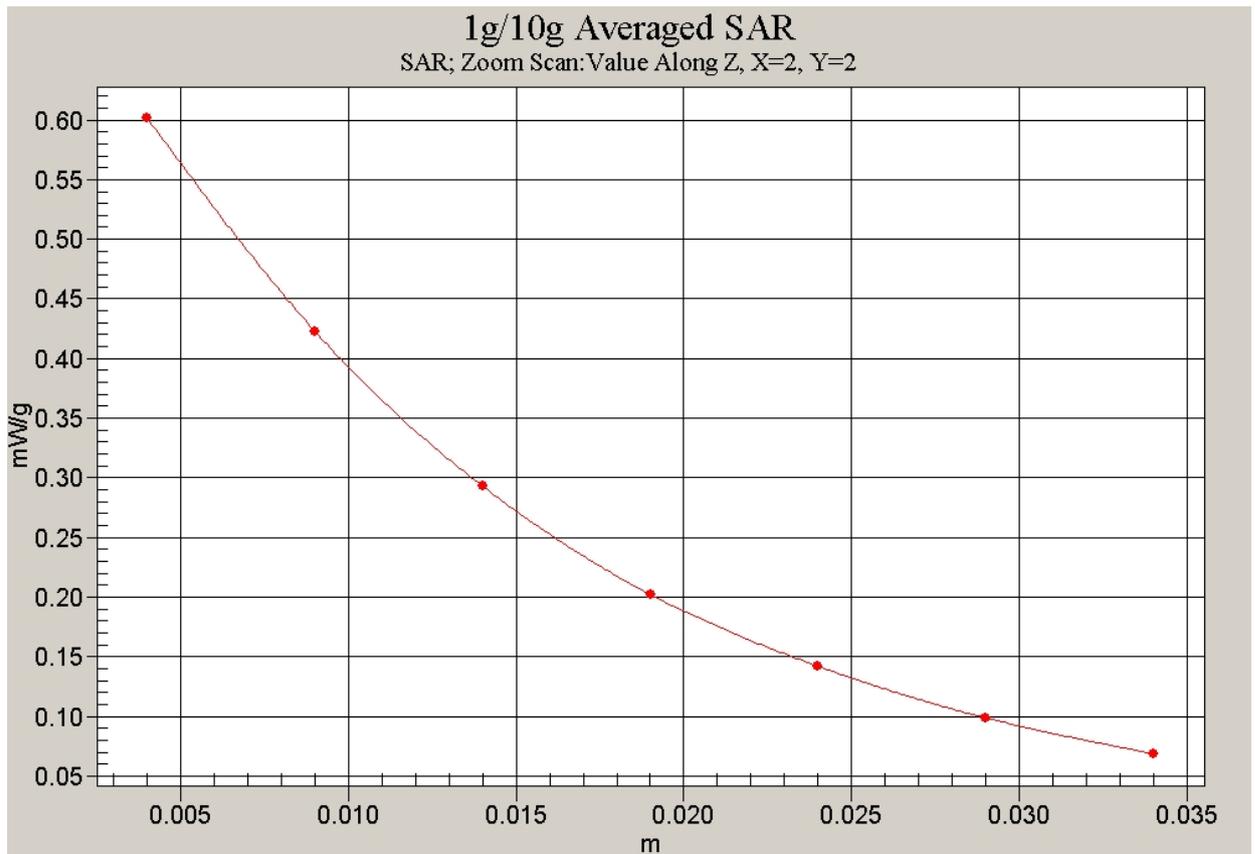


Fig. 22 Z-Scan at power reference point (CDMA 835MHz CH384)

CDMA 1X Right Tilt Low

Electronics: DAE3 Sn536

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) = 0.373 mW/g

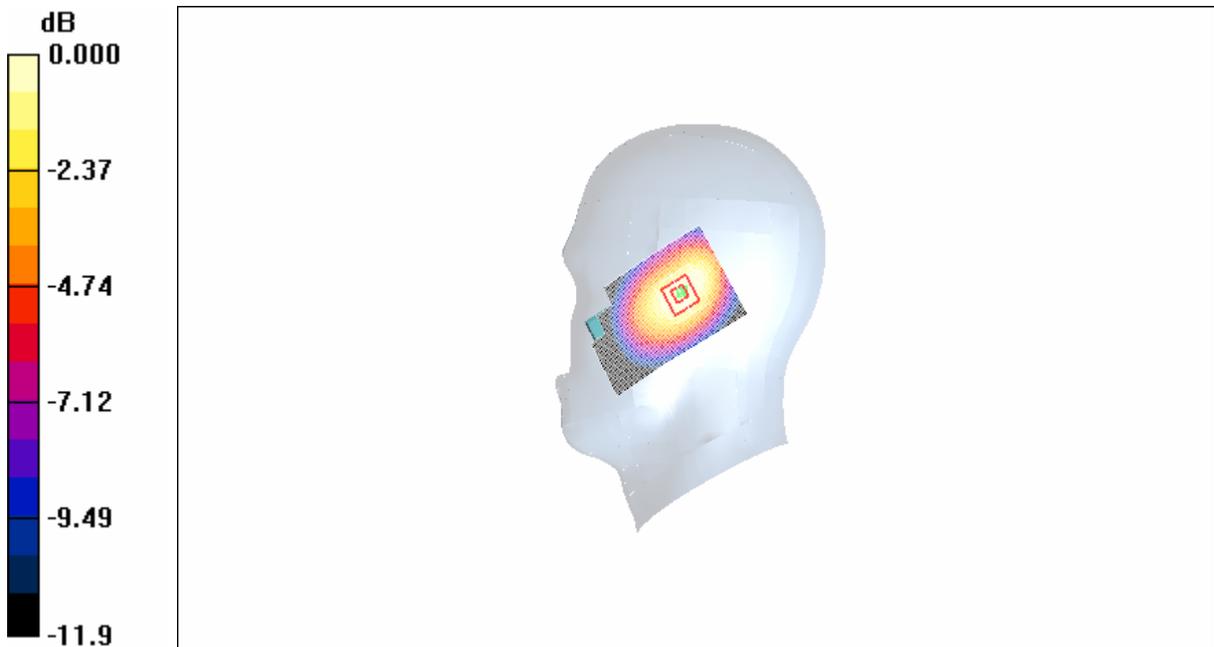
Tilt Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 18.6 V/m; Power Drift = -0.200 dB

Peak SAR (extrapolated) = 0.454 W/kg

SAR(1 g) = 0.326 mW/g; SAR(10 g) = 0.216 mW/g

Maximum value of SAR (measured) = 0.349 mW/g



0 dB = 0.349mW/g

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

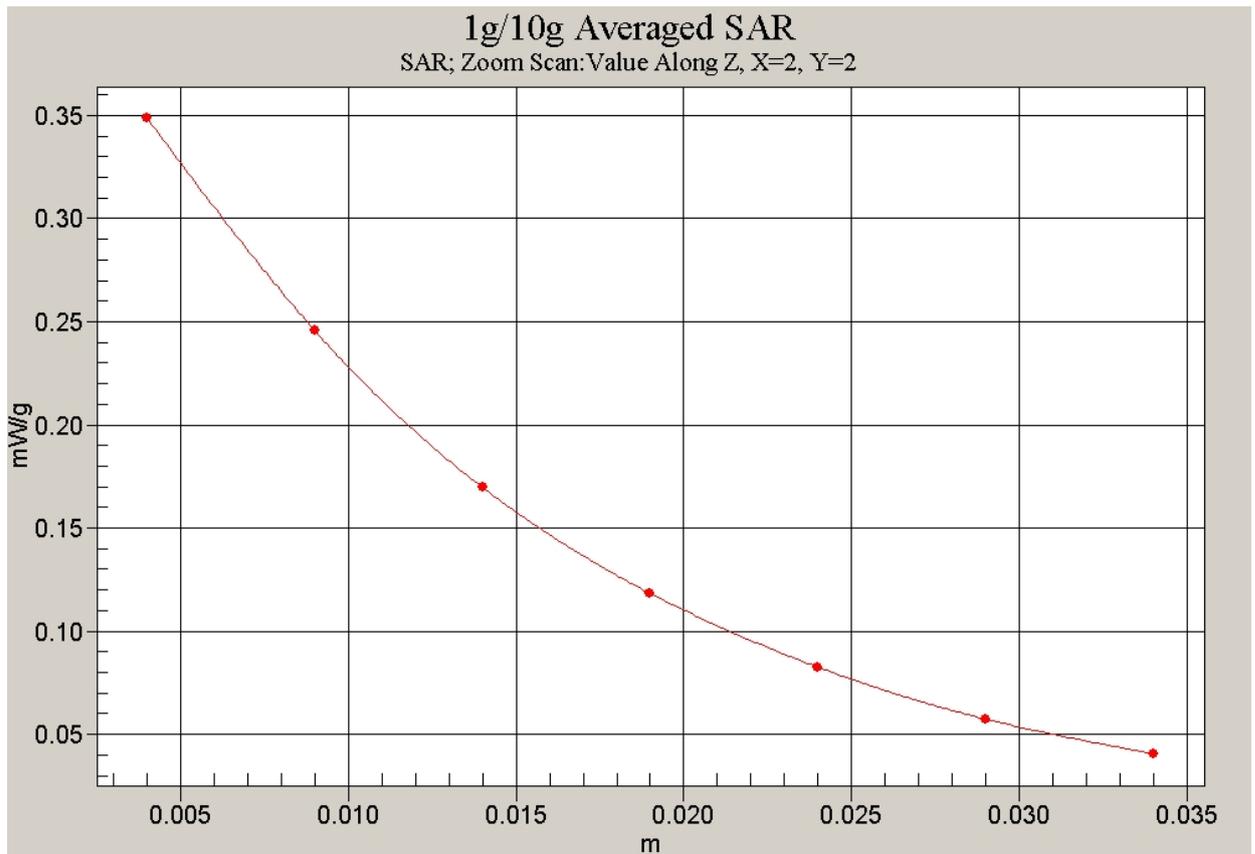


Fig. 24 Z-Scan at power reference point (CDMA 835MHz CH1013)

CDMA 1X Body Toward Phantom High

Electronics: DAE3 Sn536

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) = 0.252 mW/g

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

Reference Value = 15.3 V/m; Power Drift = -0.089 dB

Peak SAR (extrapolated) = 0.299 W/kg

SAR(1 g) = 0.234 mW/g; SAR(10 g) = 0.168 mW/g

Maximum value of SAR (measured) = 0.248 mW/g

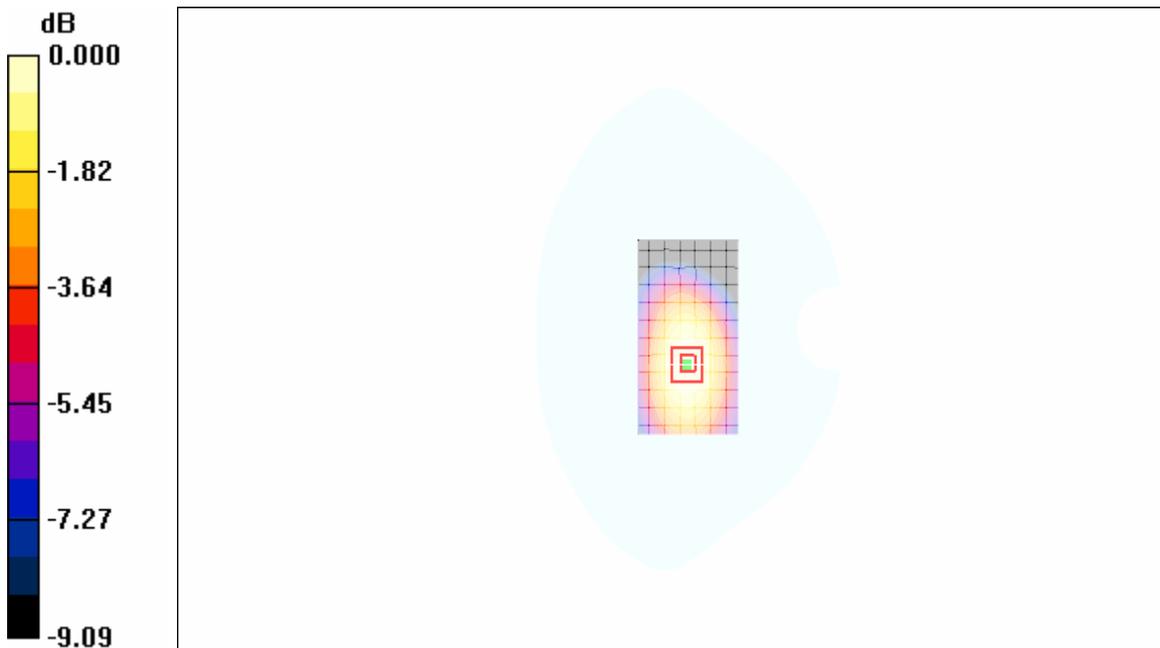


Fig. 25 CDMA 835MHz, Body, Towards Phantom, CH777

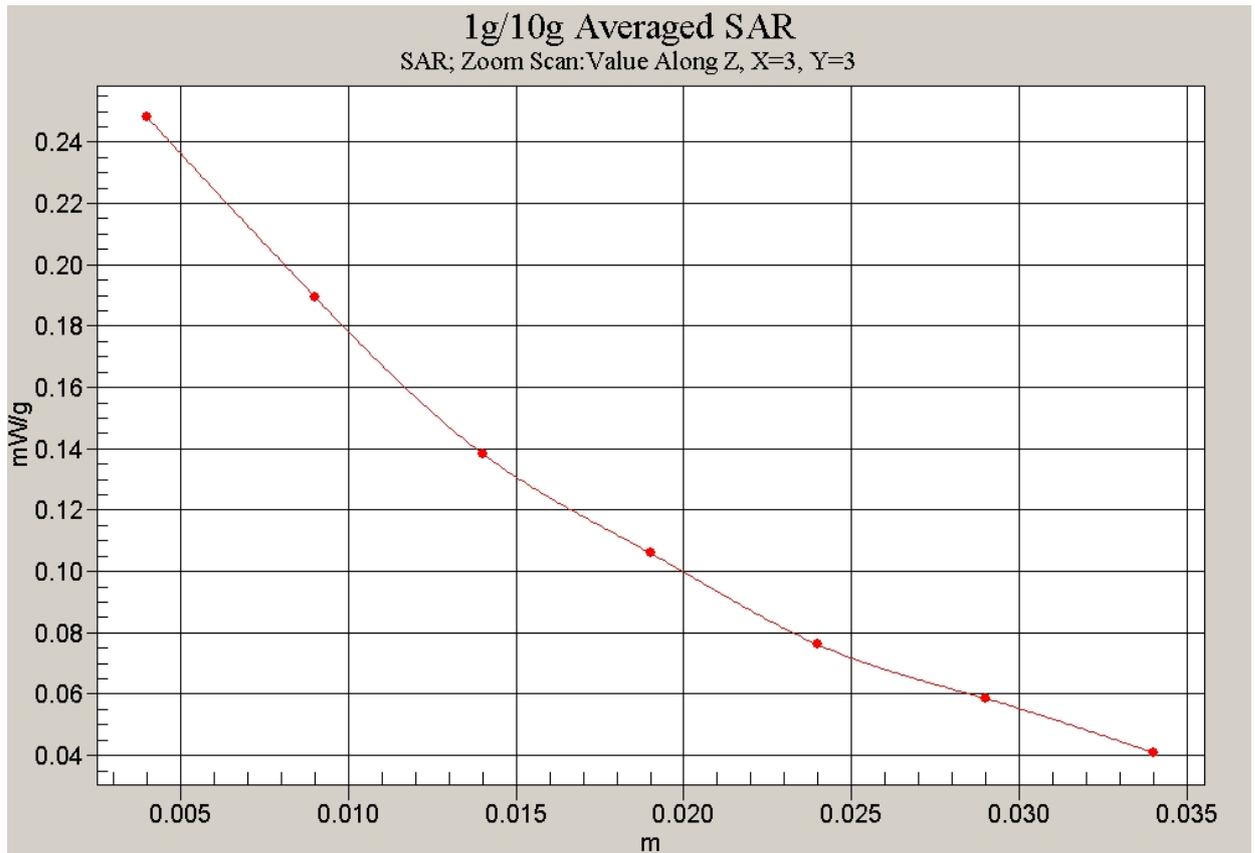


Fig. 26 Z-Scan at power reference point (CDMA 835MHz, Body, Towards Phantom, CH777)

CDMA 1X Body Toward Phantom Middle

Electronics: DAE3 Sn536

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) = 0.281 mW/g

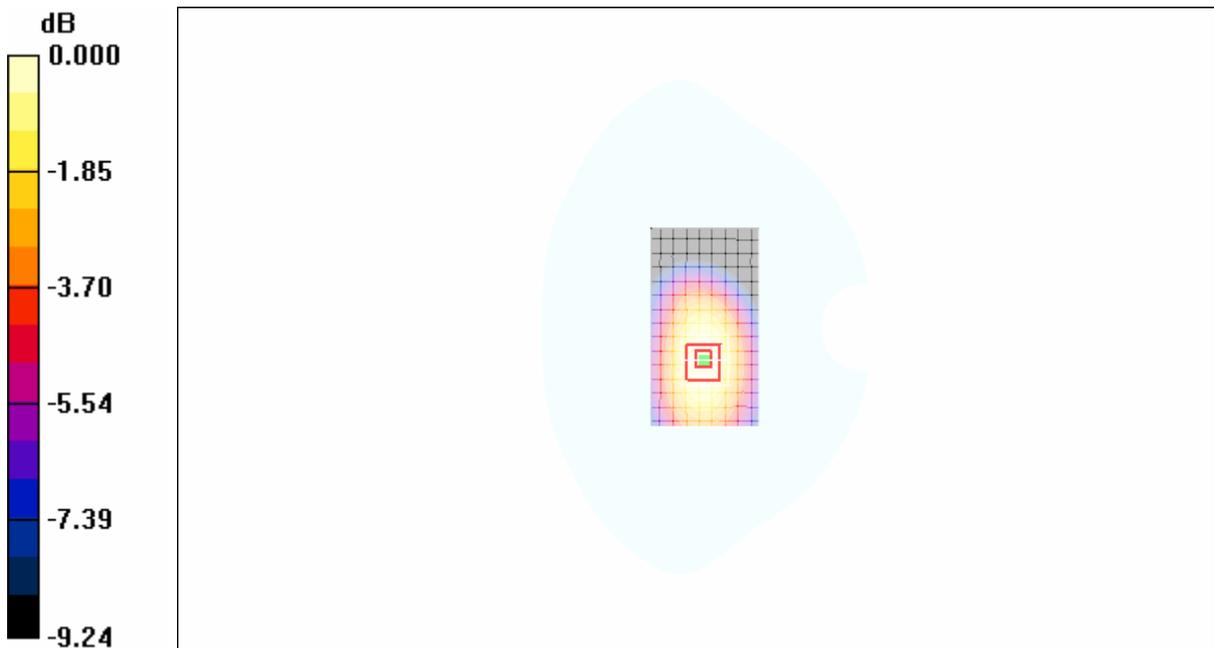
Toward Phantom Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 16.1 V/m; Power Drift = 0.200 dB

Peak SAR (extrapolated) = 0.346 W/kg

SAR(1 g) = 0.268 mW/g; SAR(10 g) = 0.192 mW/g

Maximum value of SAR (measured) = 0.285 mW/g



0 dB = 0.285mW/g

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

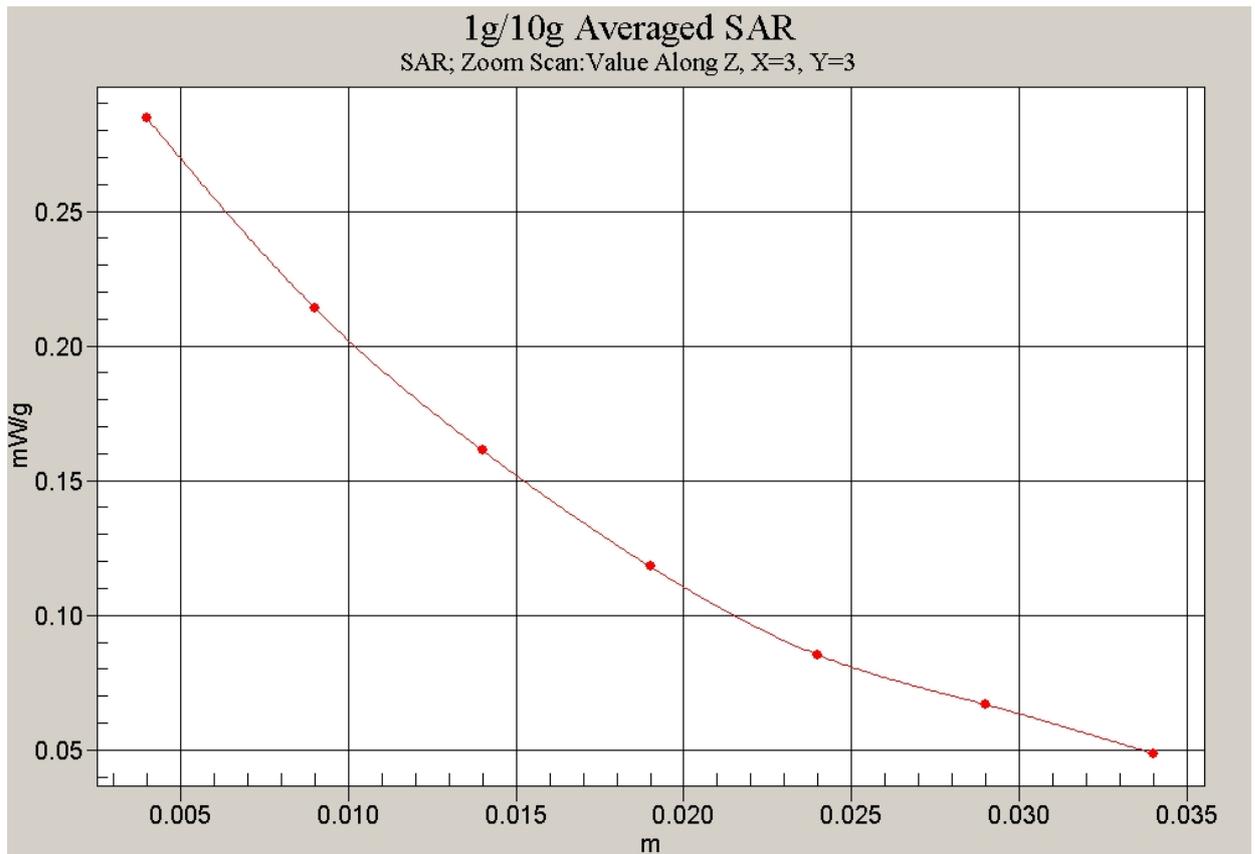


Fig. 28 Z-Scan at power reference point (CDMA 835MHz, Body, Towards Phantom, CH384)

CDMA 1X Body Toward Phantom Low

Electronics: DAE3 Sn536

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) = 0.201 mW/g

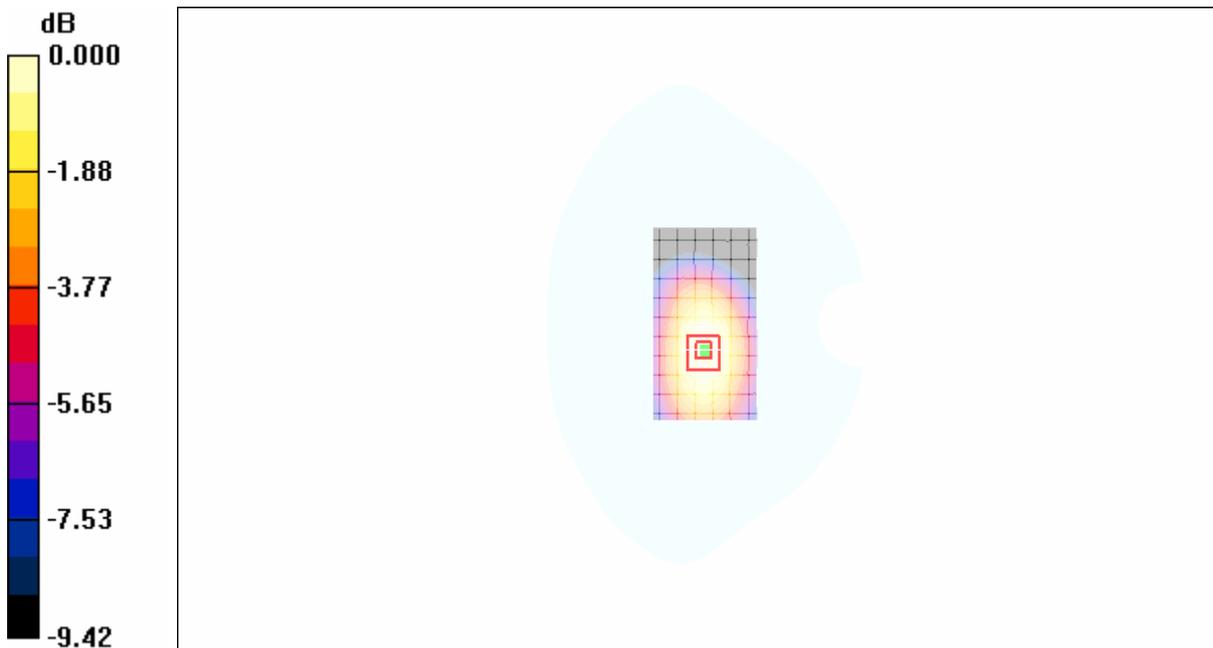
Toward Phantom Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 14.7 V/m; Power Drift = -0.200 dB

Peak SAR (extrapolated) = 0.236 W/kg

SAR(1 g) = 0.183 mW/g; SAR(10 g) = 0.131 mW/g

Maximum value of SAR (measured) = 0.195 mW/g



0 dB = 0.195mW/g

Fig. 28 CDMA 835MHz, Body, Towards Phantom, CH1013

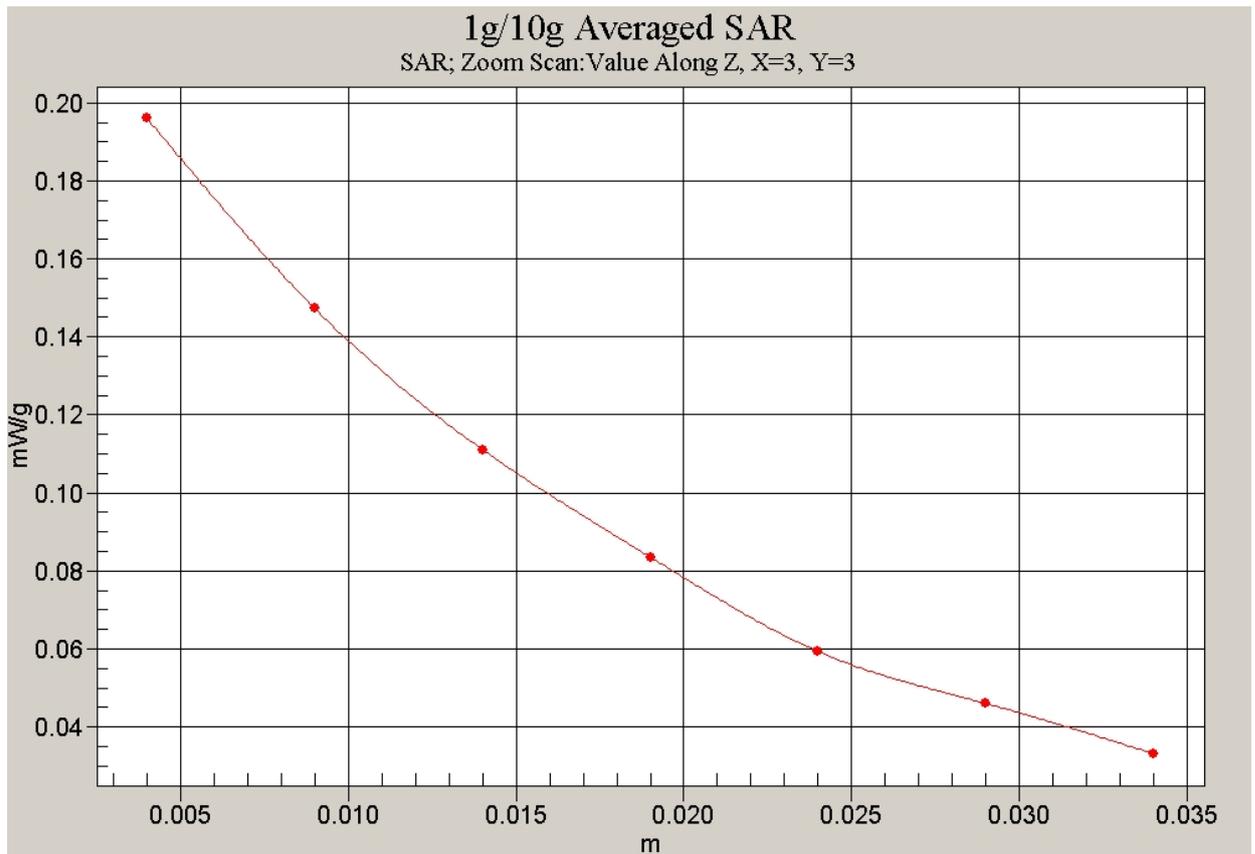


Fig. 30 Z-Scan at power reference point (CDMA 835MHz, Body, Towards Phantom, CH1013)

CDMA 1X Body Toward Ground High

Electronics: DAE3 Sn536

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) = 0.342 mW/g

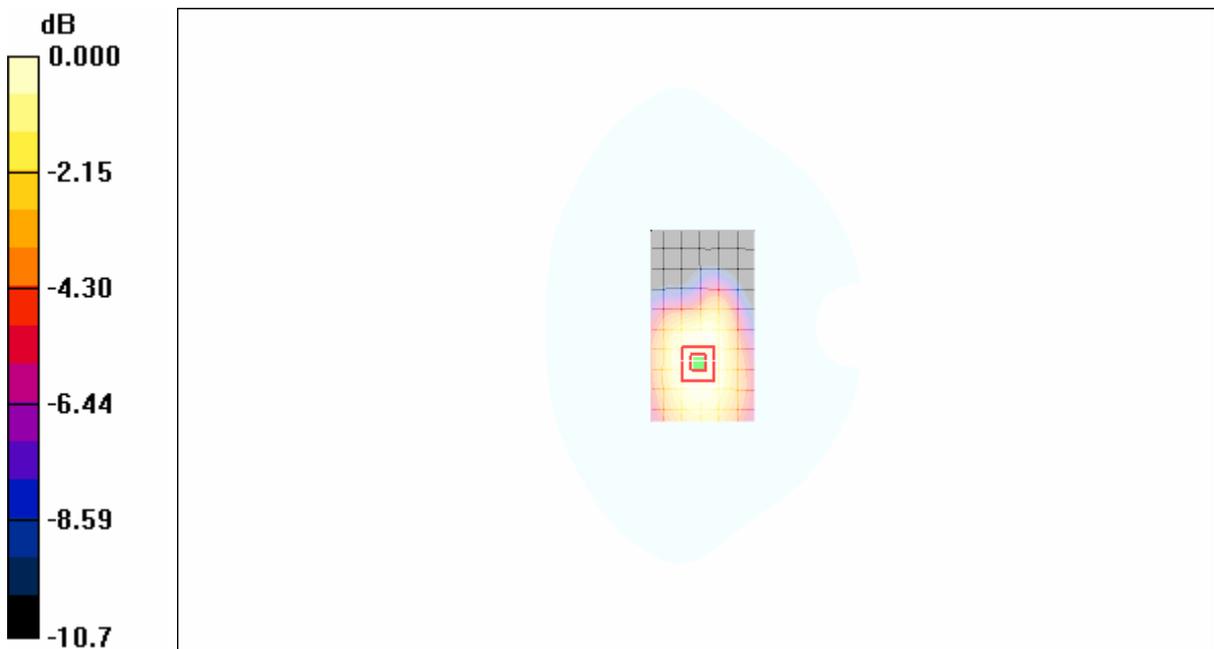
Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.4 V/m; Power Drift = -0.200 dB

Peak SAR (extrapolated) = 0.403 W/kg

SAR(1 g) = 0.312 mW/g; SAR(10 g) = 0.224 mW/g

Maximum value of SAR (measured) = 0.331 mW/g



0 dB = 0.331mW/g

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

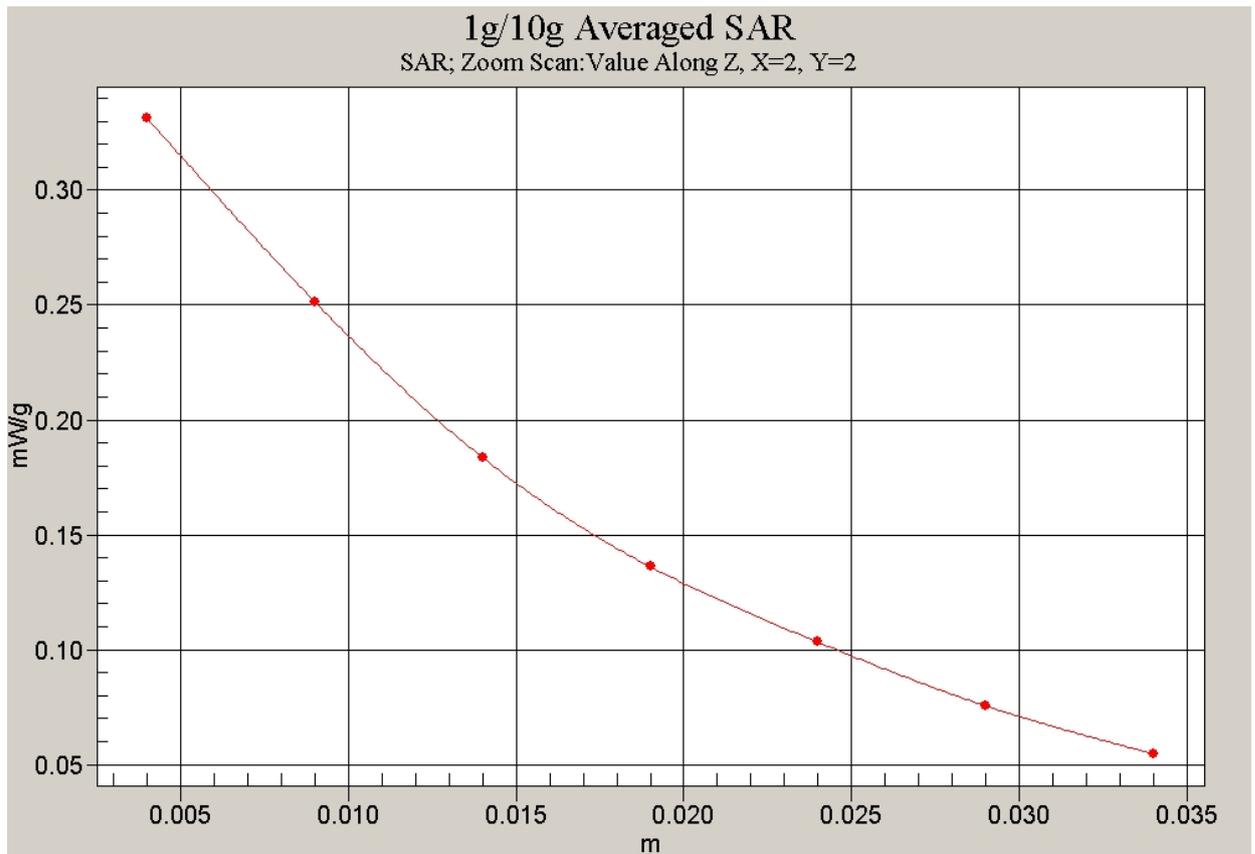


Fig. 232 Z-Scan at power reference point (CDMA 835MHz, Body, Towards Ground, CH777)

CDMA 1X Body Toward Ground Middle

Electronics: DAE3 Sn536

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) = 0.499 mW/g

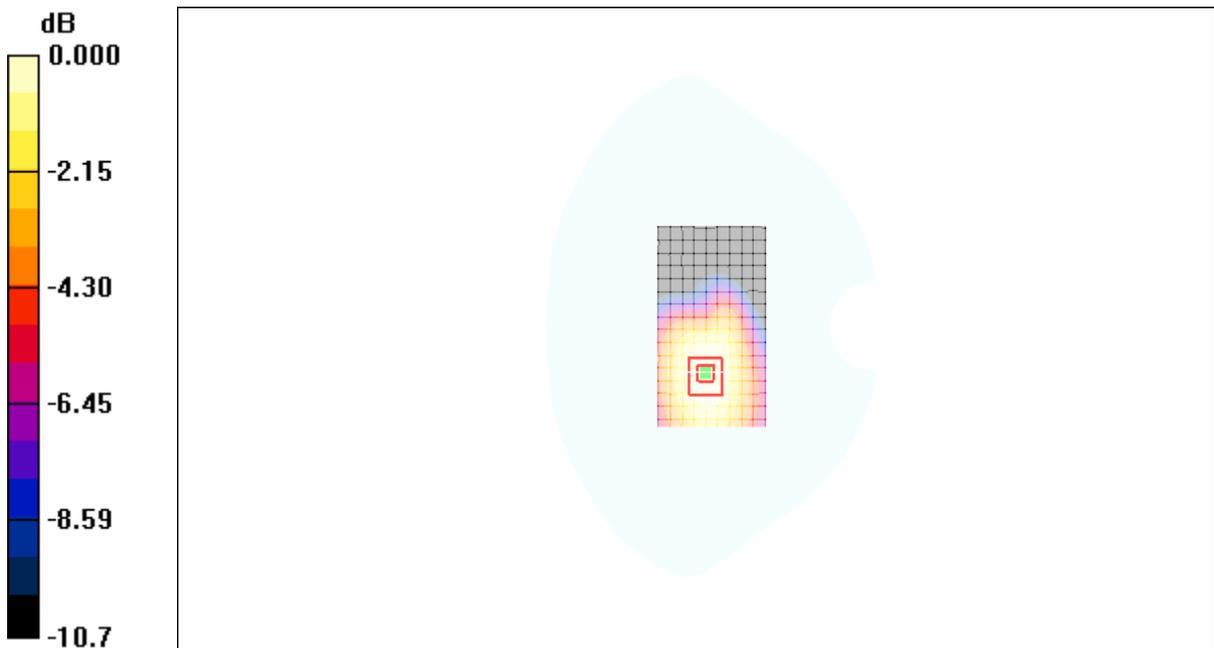
Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.9 V/m; Power Drift = -0.198 dB

Peak SAR (extrapolated) = 0.602 W/kg

SAR(1 g) = 0.464 mW/g; SAR(10 g) = 0.333 mW/g

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



0 dB = 0.492mW/g

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

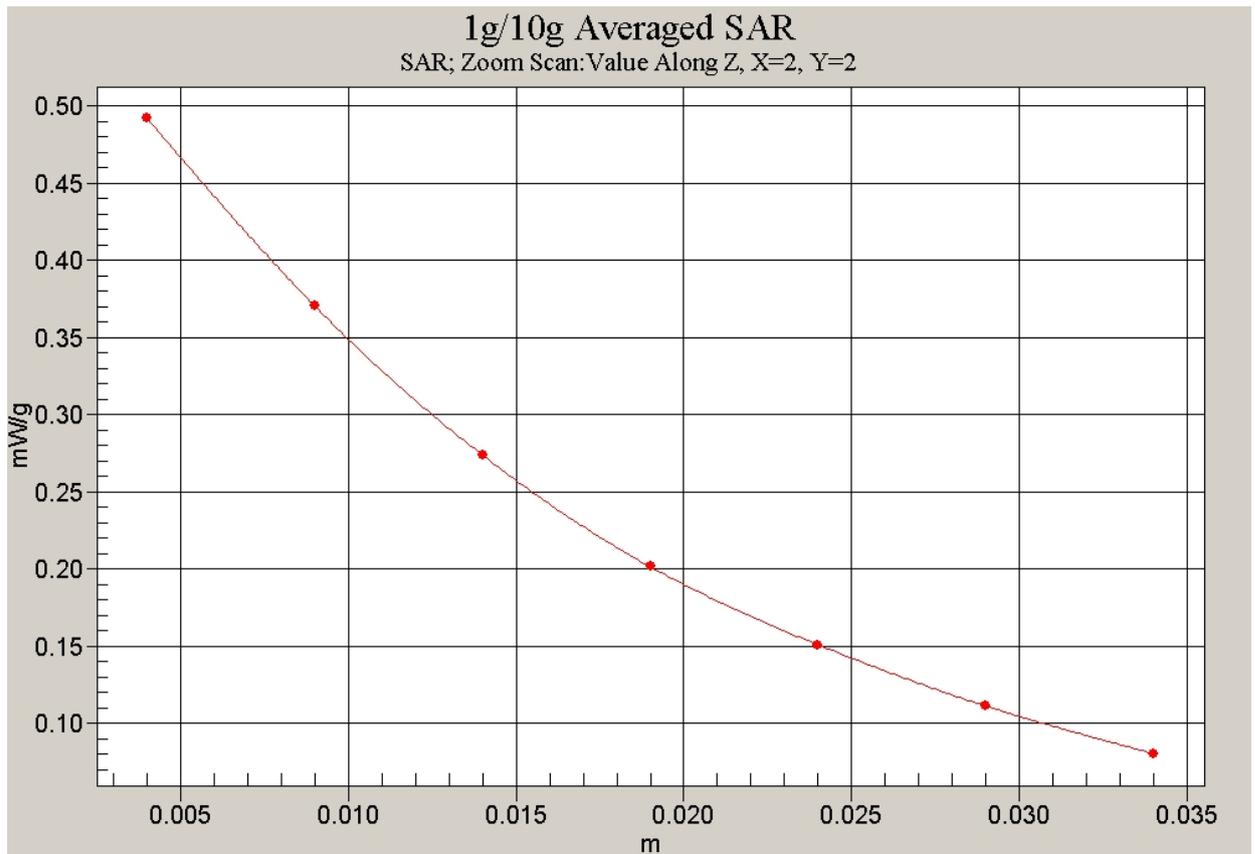


Fig. 34 Z-Scan at power reference point (CDMA 835MHz, Body, Towards Ground, CH384)

CDMA 1X Body Toward Ground Low

Electronics: DAE3 Sn536

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) = 0.467 mW/g

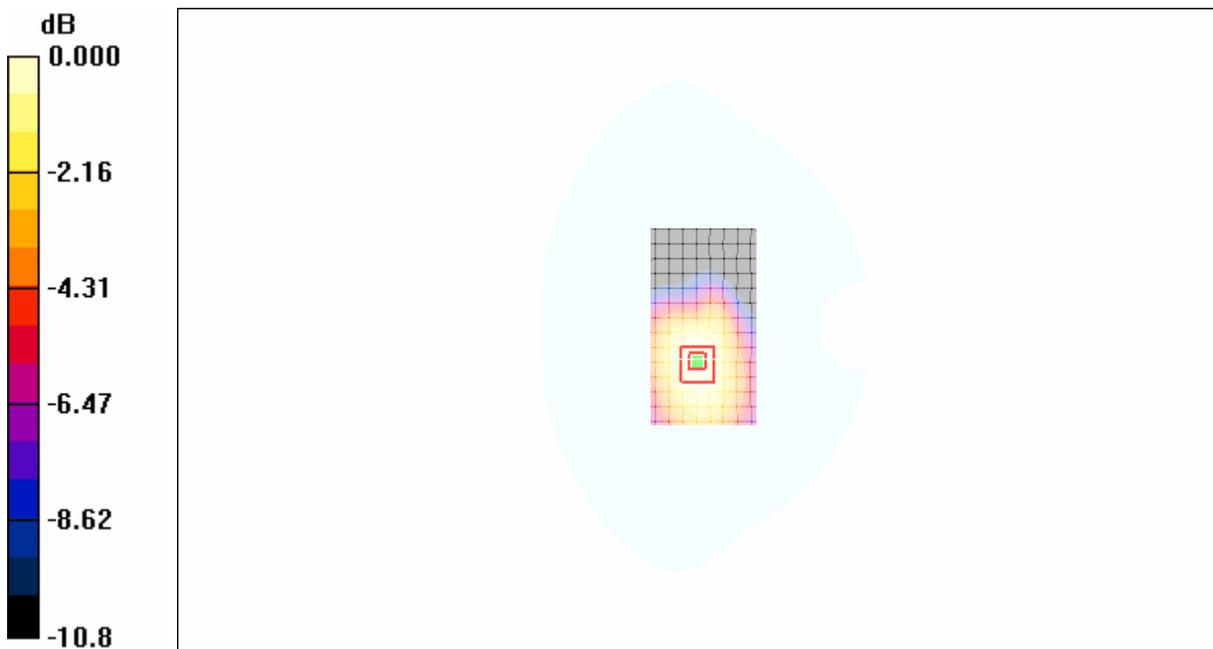
Toward Ground Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19.5 V/m; Power Drift = -0.049 dB

Peak SAR (extrapolated) = 0.588 W/kg

SAR(1 g) = 0.447 mW/g; SAR(10 g) = 0.321 mW/g

Maximum value of SAR (measured) = 0.474 mW/g



0 dB = 0.474mW/g

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

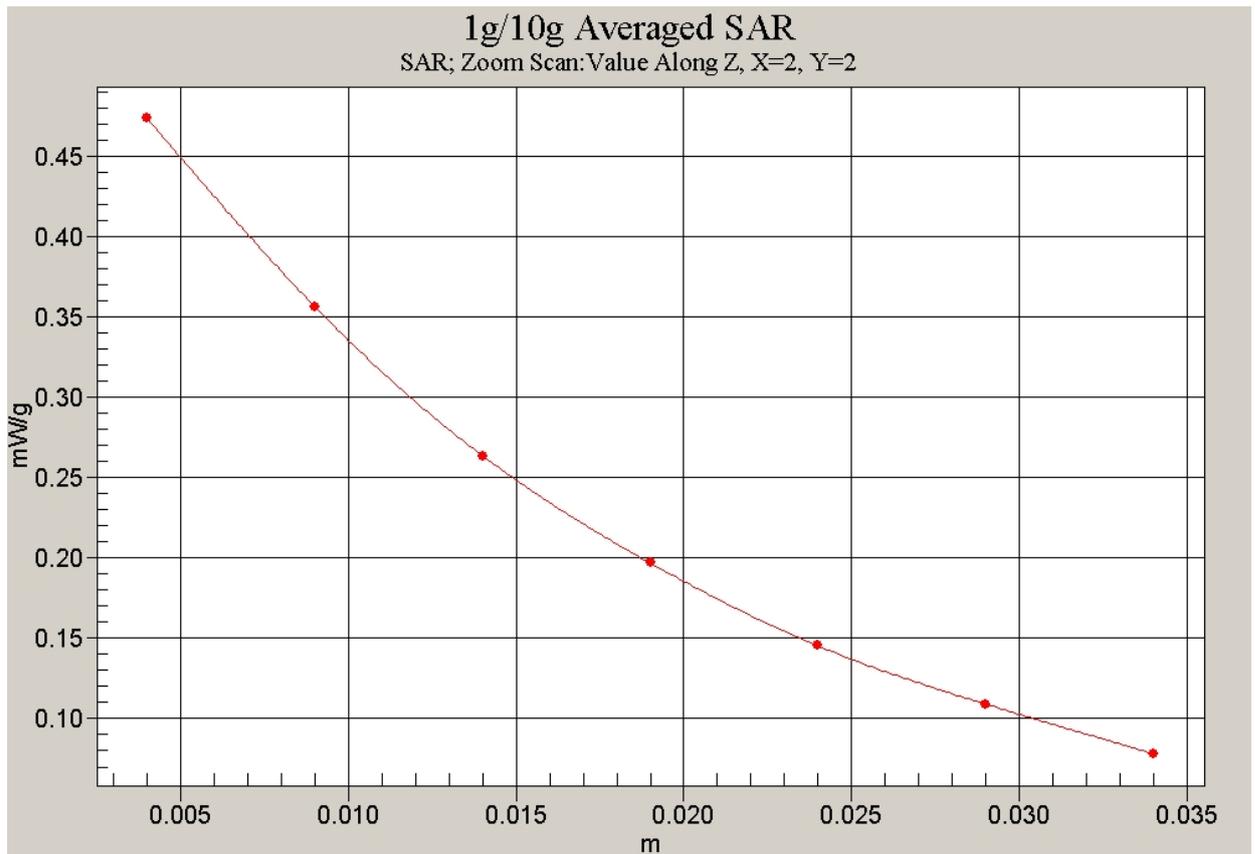


Fig. 36 Z-Scan at power reference point (CDMA 835MHz, Body, Towards Ground, CH1013)

ANNEX D SYSTEM VALIDATION RESULTS

835MHzDAE536Probe1736

Electronics: DAE3 Sn536

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

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

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

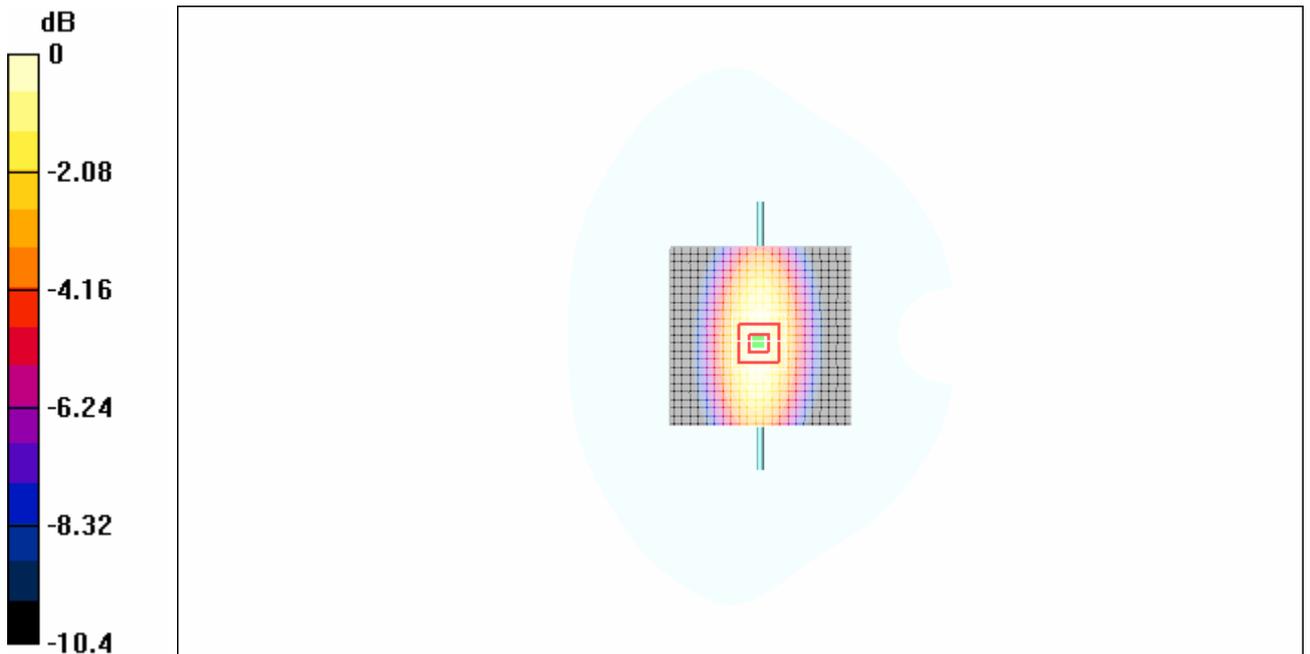
835MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

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

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

Peak SAR (extrapolated) = 3.67 W/kg

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



0 dB = 2.69mW/g

Fig.37 validation 835MHz 250mW

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

No. 2006E00429

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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-Auden**

Certificate No: **ET3-1736_Nov05**

CALIBRATION CERTIFICATE

Object **ET3DV6 - SN:1736**

Calibration procedure(s) **QA CAL-01.v5
Calibration procedure for dosimetric E-field probes**

Calibration date: **November 25, 2005**

Condition of the calibrated item **In Tolerance**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	3-May-05 (METAS, No. 251-00466)	May-06
Power sensor E4412A	MY41495277	3-May-05 (METAS, No. 251-00466)	May-06
Power sensor E4412A	MY41498087	3-May-05 (METAS, No. 251-00466)	May-06
Reference 20 dB Attenuator	SN: S5086 (20b)	3-May-05 (METAS, No. 251-00467)	May-06
Reference Probe ES3DV2	SN: S5086 (20b)	3-May-05 (METAS, No. 251-00467)	May-06
DAE4	SN: 3013	7-Jan-05 (SPEAG, No. ES3-3013_Jan05)	Jan-06
Reference Probe ES3DV2	SN: 907	21-Jun-05 (SPEAG, No. DAE4-907_Jun05)	Jun-06

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (SPEAG, in house check Dec-03)	In house check: Dec-05
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Nov-04)	In house check: Nov 05

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

Issued: November 25, 2005

This calibration certificate shall not be reproduced 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 _{x,y,z}	sensitivity in free space
ConF	sensitivity in TSL / NORM _{x,y,z}
DCP	diode compression point
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ 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
- 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_{x,y,z}*: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). *NORM_{x,y,z}* are only intermediate values, i.e., the uncertainties of *NORM_{x,y,z}* does not effect the E^2 -field uncertainty inside TSL (see below *ConvF*).
- NORM(f)_{x,y,z}* = *NORM_{x,y,z}* * *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_{x,y,z}*: 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_{x,y,z}* * *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 ± 50 MHz to ± 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

November 25, 2005

Probe ET3DV6

SN:1736

Manufactured:	September 27, 2002
Last calibrated:	July 14, 2005
Recalibrated:	November 25, 2005

Calibrated for DASY Systems

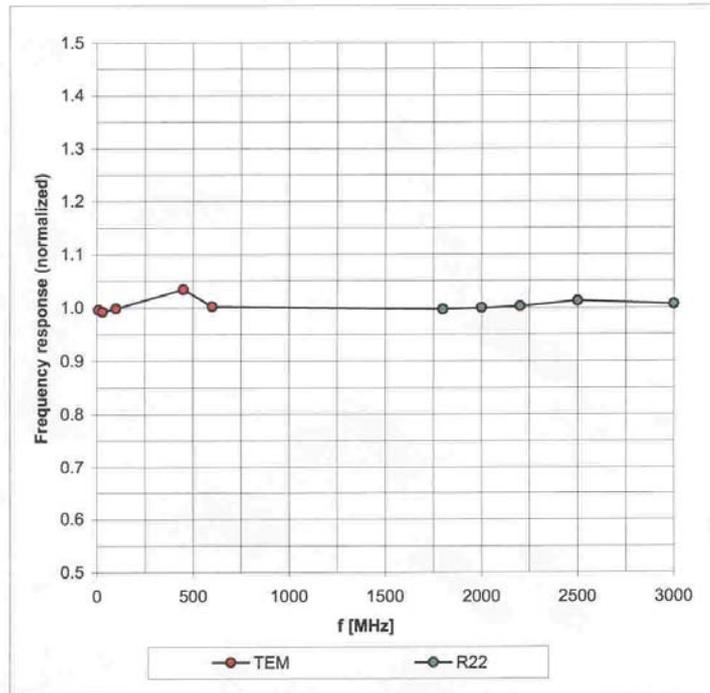
(Note: non-compatible with DASY2 system!)

ET3DV6 SN:1736

November 25, 2005

Frequency Response of E-Field

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

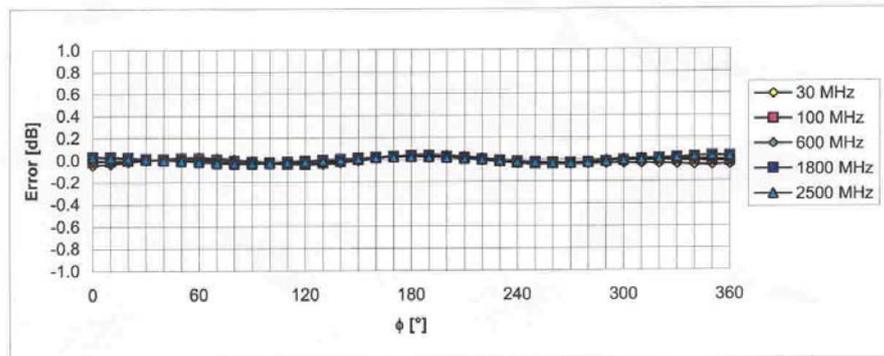
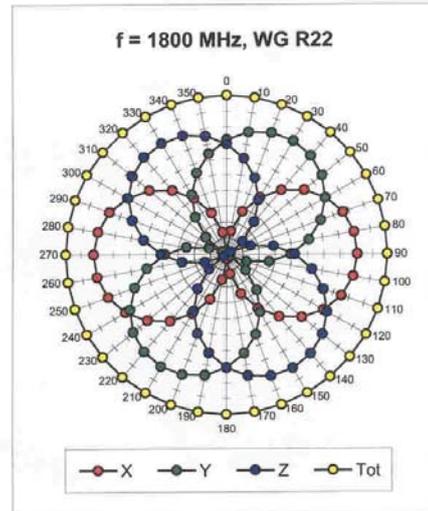
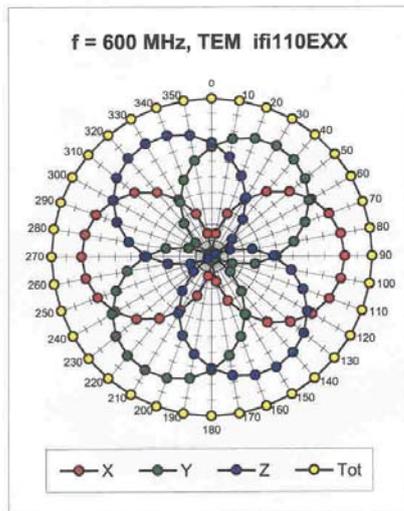


Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

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

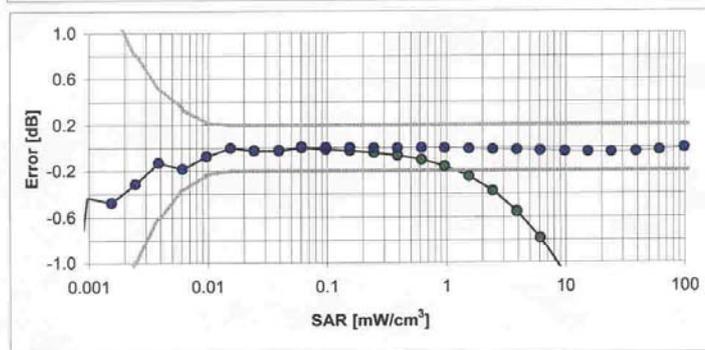
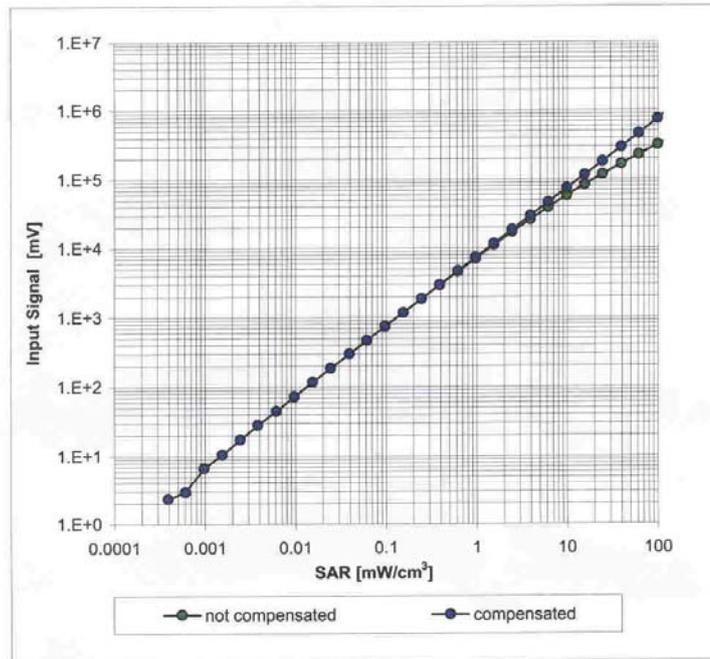


Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

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

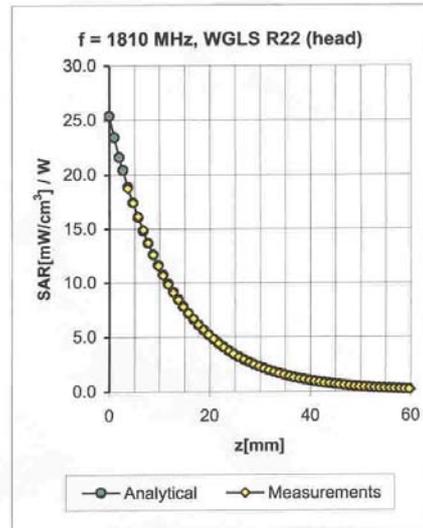
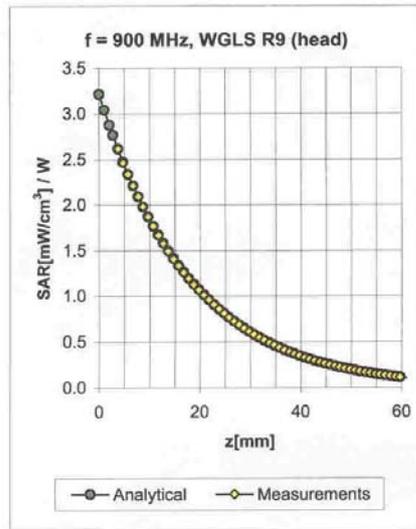


Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

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Conversion Factor Assessment



f [MHz]	Validity [MHz] ^c	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)

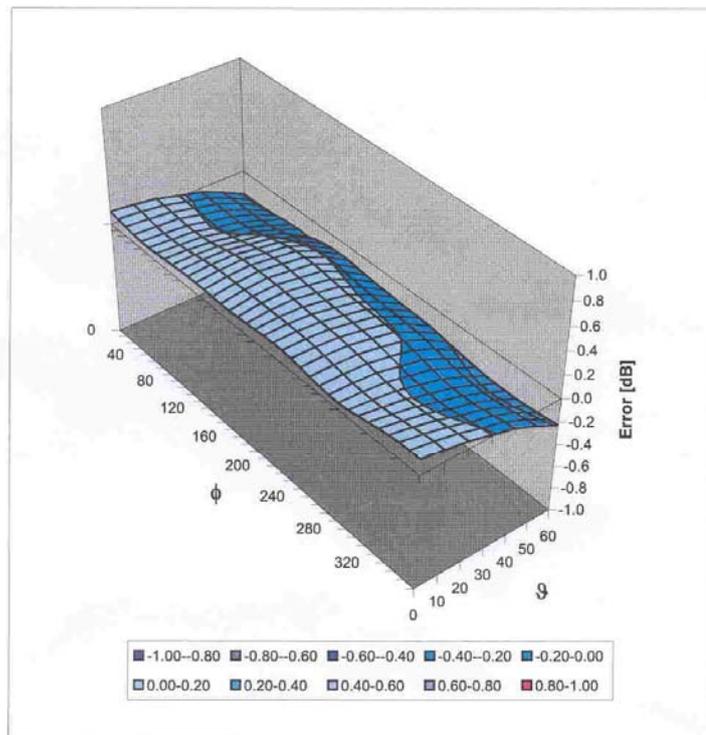
^c The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the Indicated frequency band.

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Deviation from Isotropy in HSL

Error (ϕ , ϑ), $f = 900$ MHz



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