

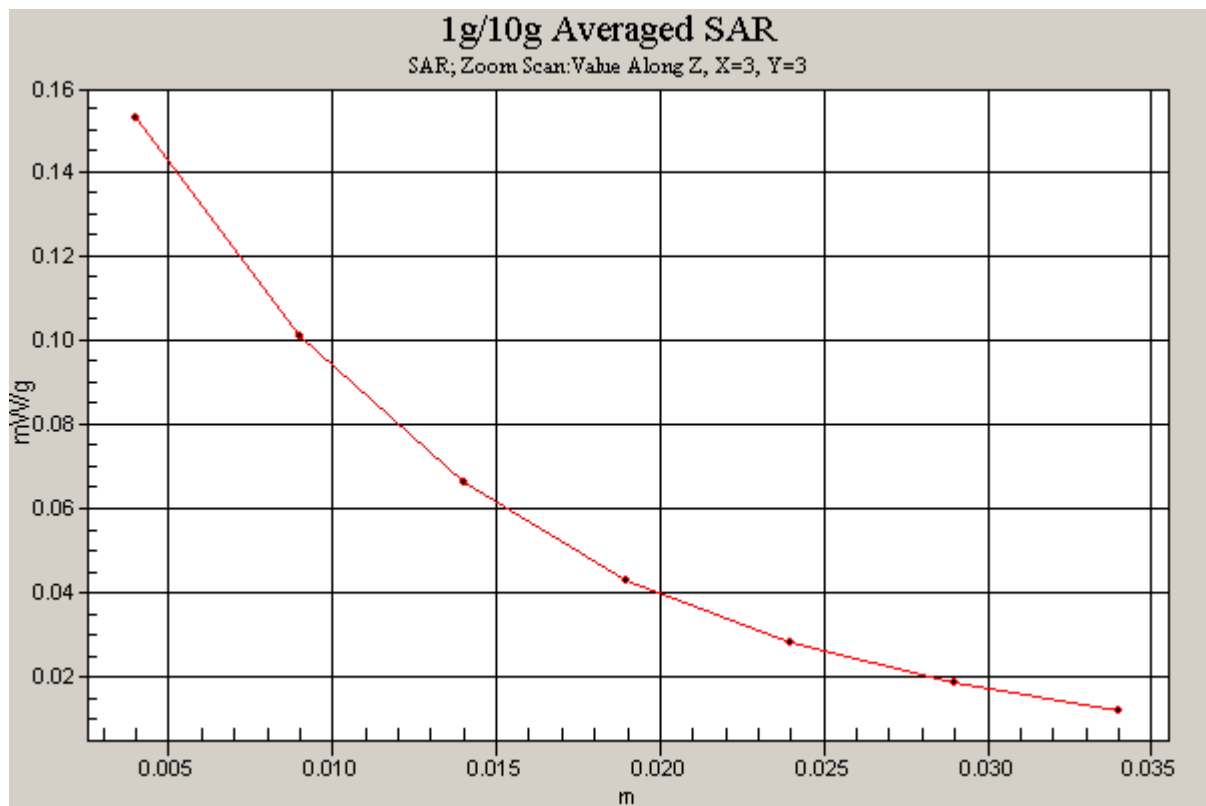


Figure 18 Z-Scan at power reference point (Left Hand Tilt 15° GSM 1900 Channel 661)

GSM 1900 Right Cheek Middle

Date/Time: 9/3/2009 3:03:06 PM

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.39$ mho/m; $\epsilon_r = 39.5$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Right Section

DASY4 Configuration:

Probe: ET3DV6 – SN1737; ConvF(4.89, 4.89, 4.89); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM000 T01 ; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 7.29 V/m; Power Drift = 0.068 dB

Peak SAR (extrapolated) = 0.286 W/kg

SAR(1 g) = 0.198 mW/g; SAR(10 g) = 0.126 mW/g

Maximum value of SAR (measured) = 0.213 mW/g

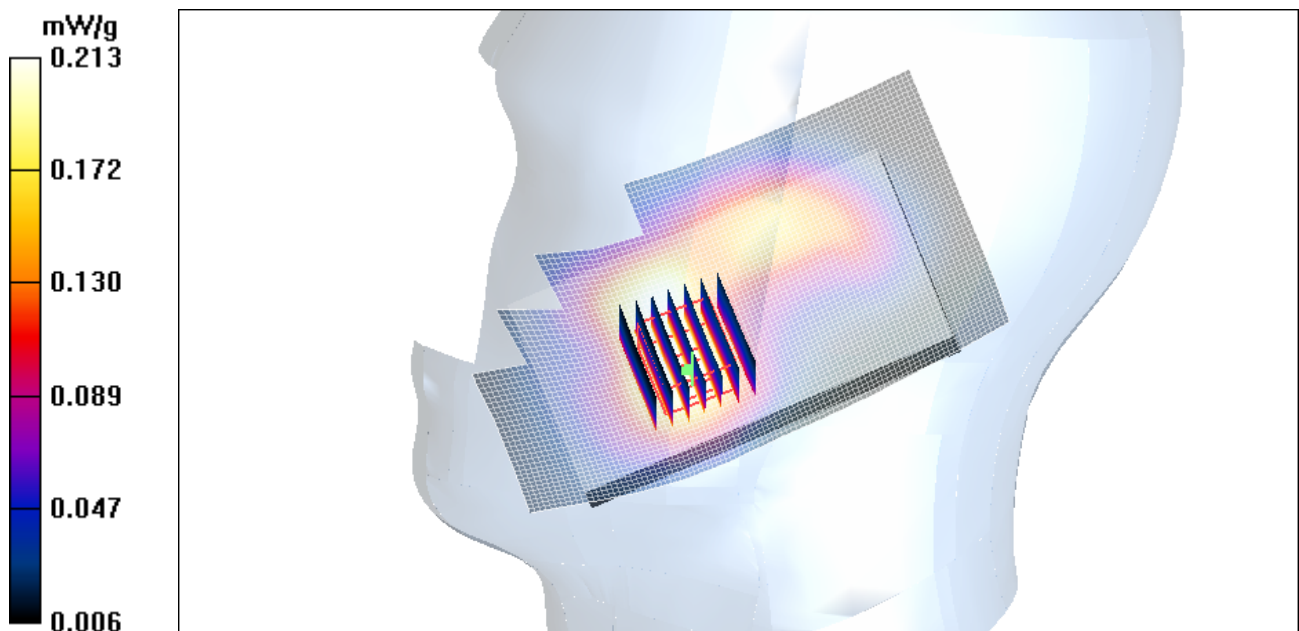


Figure 19 Right Hand Touch Cheek GSM 1900 Channel 661

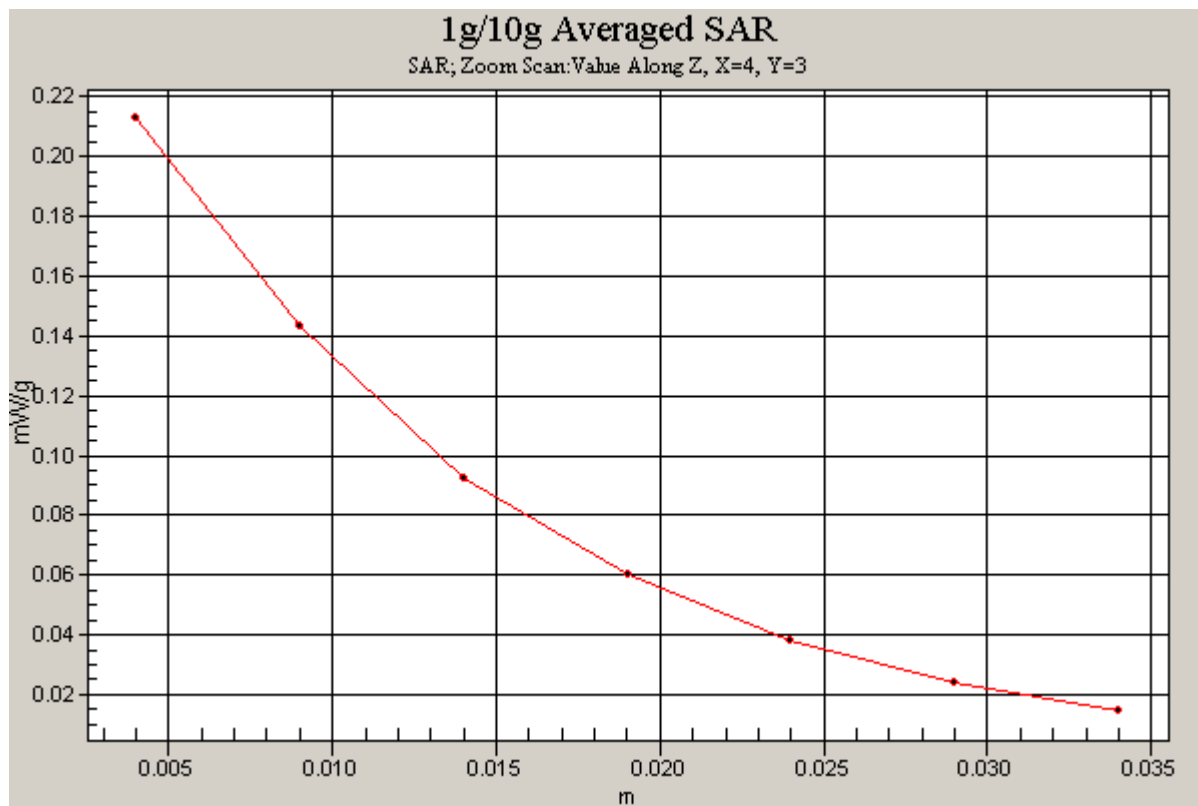


Figure 20 Z-Scan at power reference point (Right Hand Touch Cheek GSM 1900 Channel 661)

GSM 1900 Right Tilt Middle

Date/Time: 9/3/2009 3:30:29 PM

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.39 \text{ mho/m}$; $\epsilon_r = 39.5$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature: 22.3°C Liquid Temperature: 21.5°C

Phantom section: Right Section

DASY4 Configuration:

Probe: ET3DV6 – SN1737; ConvF(4.89, 4.89, 4.89); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM000 T01 ; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Tilt Middle/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.146 mW/g

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

Reference Value = 9.50 V/m ; Power Drift = -0.019 dB

Peak SAR (extrapolated) = 0.178 W/kg

SAR(1 g) = 0.124 mW/g ; SAR(10 g) = 0.079 mW/g

Maximum value of SAR (measured) = 0.134 mW/g

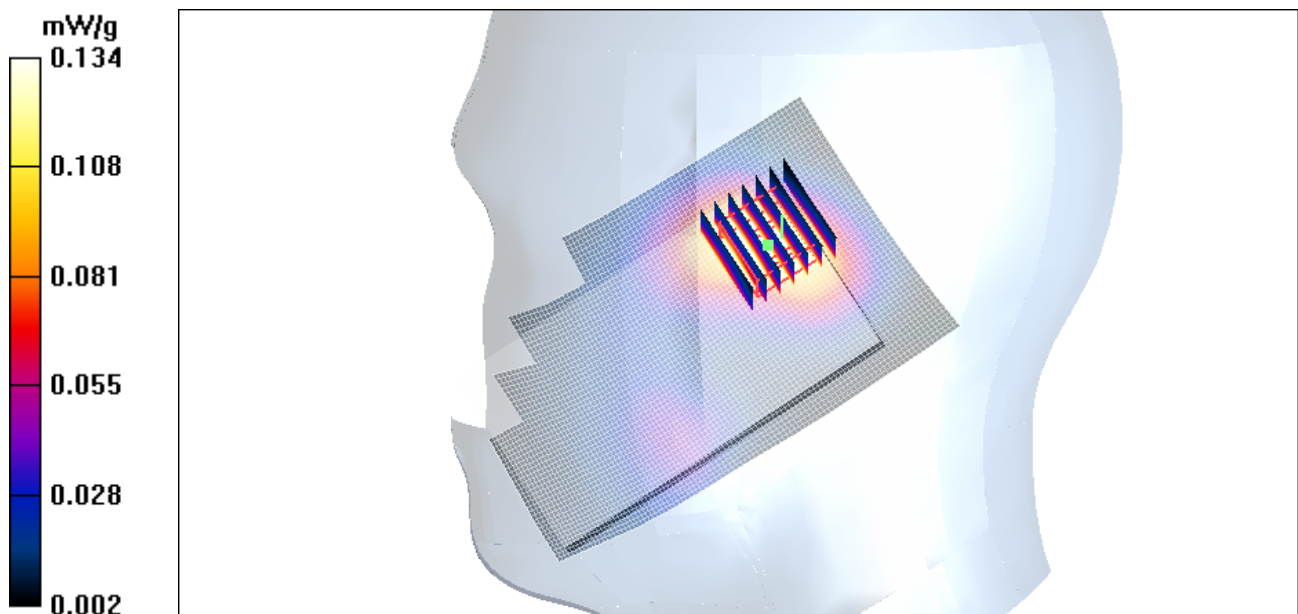


Figure 21 Right Hand Tilt 15° GSM 1900 Channel 661

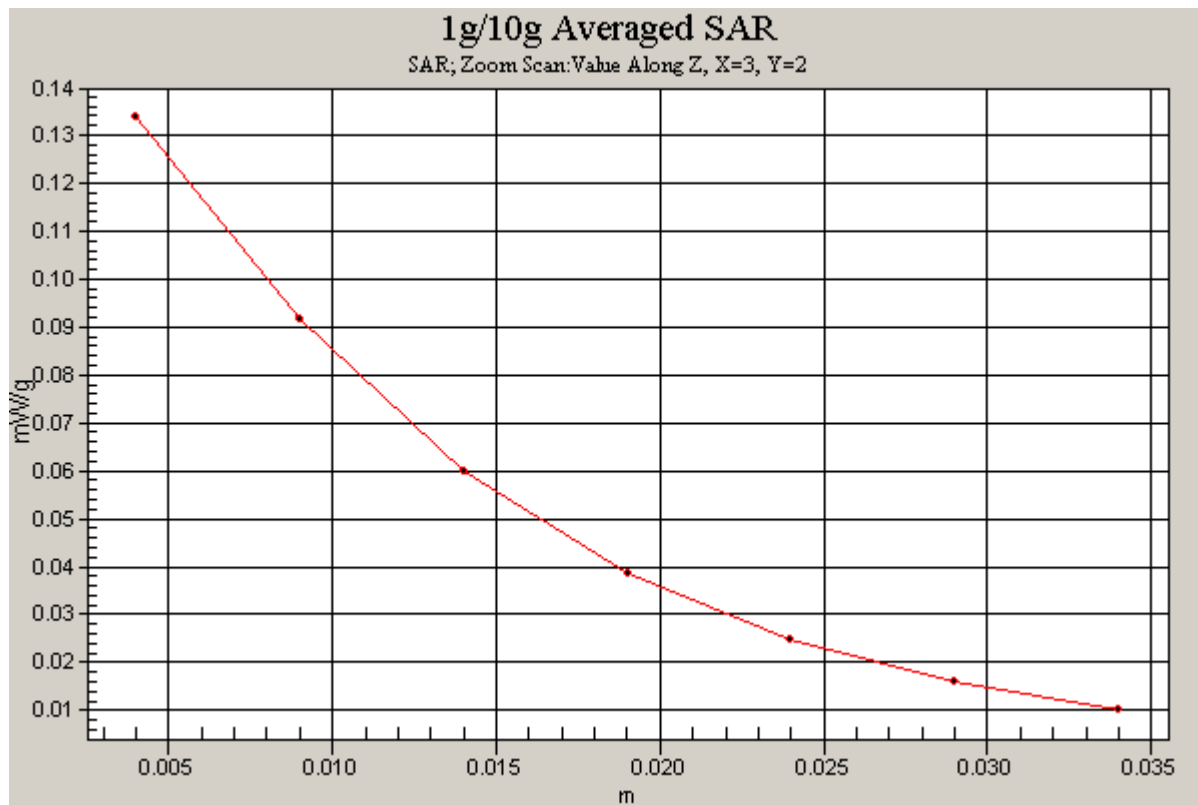


Figure 22 Z-Scan at power reference point (Right Hand Tilt 15° GSM 1900 Channel 661)

GSM 1900 Towards Ground High

Date/Time: 9/4/2009 12:39:59 AM

Communication System: PCS 1900; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1910$ MHz; $\sigma = 1.54$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(4.60, 4.60, 4.60); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM000 T01 ; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground High/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.267 mW/g

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

Reference Value = 7.31 V/m; Power Drift = -0.024 dB

Peak SAR (extrapolated) = 0.455 W/kg

SAR(1 g) = 0.248 mW/g; SAR(10 g) = 0.147 mW/g

Maximum value of SAR (measured) = 0.263 mW/g

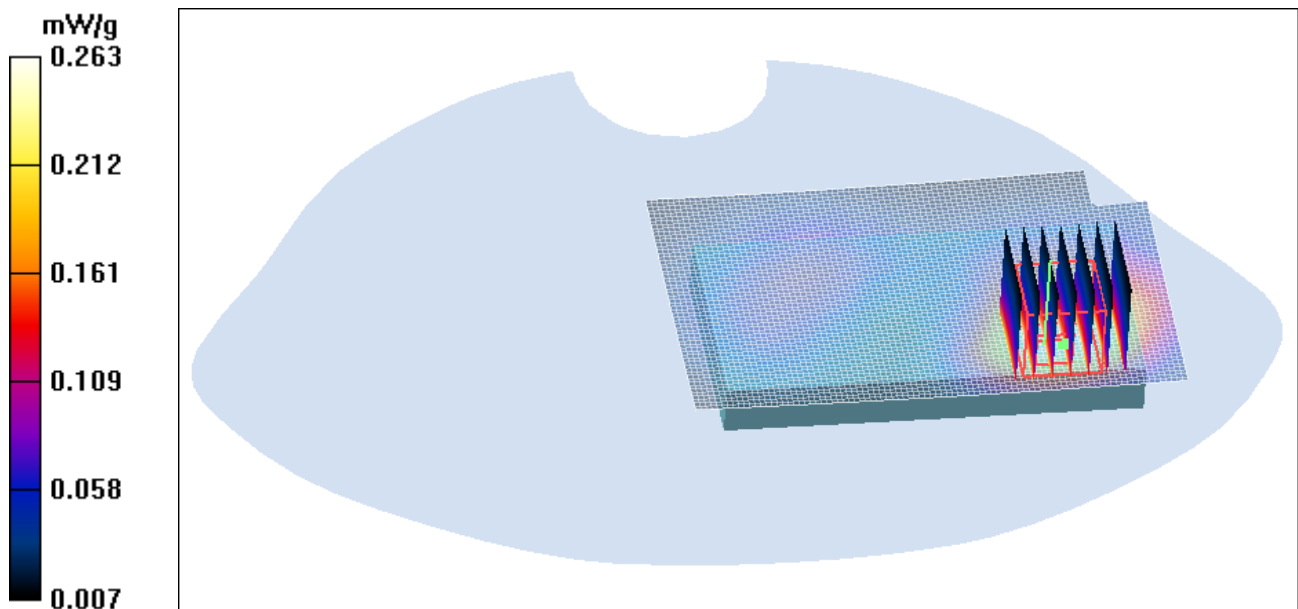


Figure 23 Body, Towards Ground, GSM 1900 Channel 810

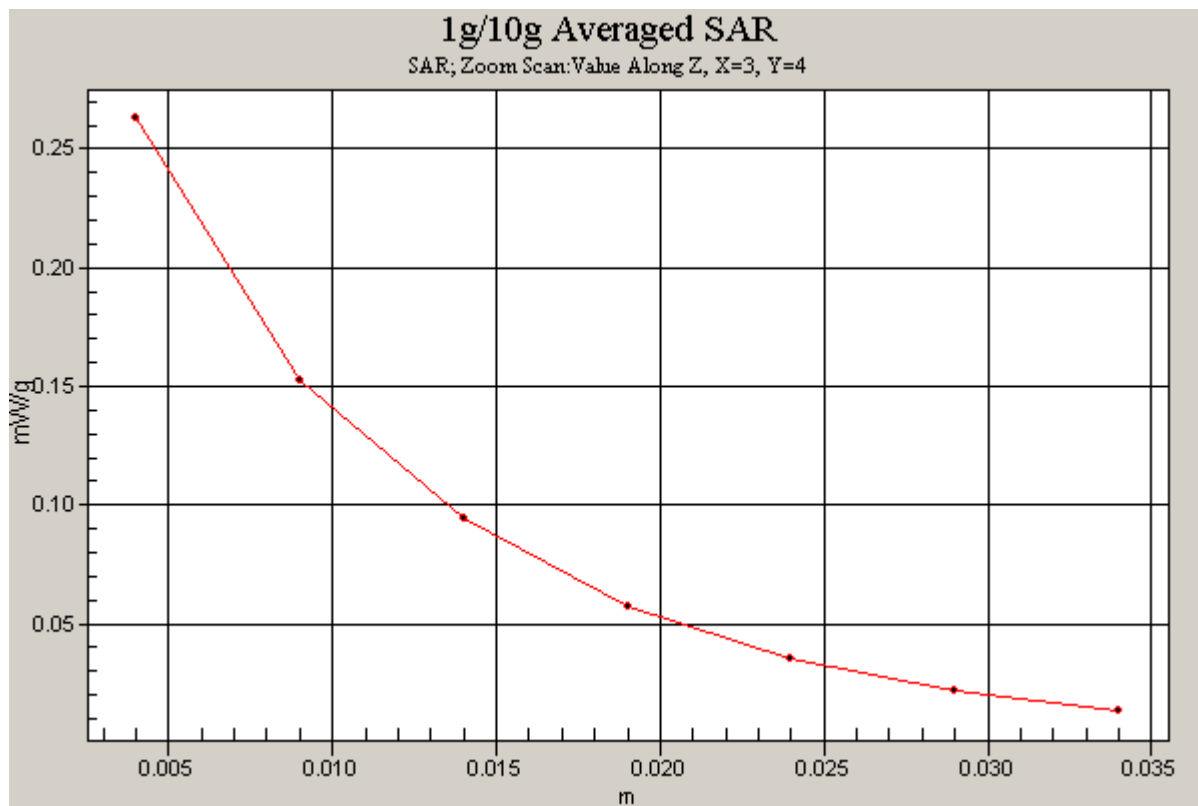


Figure 24 Z-Scan at power reference point (Body, Towards Ground, GSM 1900 Channel 810)

GSM 1900 Towards Ground Middle

Date/Time: 9/4/2009 12:20:38 AM

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 52.7$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(4.60, 4.60, 4.60); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM000 T01 ; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Middle/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.271 mW/g

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

Reference Value = 7.39 V/m; Power Drift = -0.089 dB

Peak SAR (extrapolated) = 0.451 W/kg

SAR(1 g) = 0.248 mW/g; SAR(10 g) = 0.146 mW/g

Maximum value of SAR (measured) = 0.264 mW/g

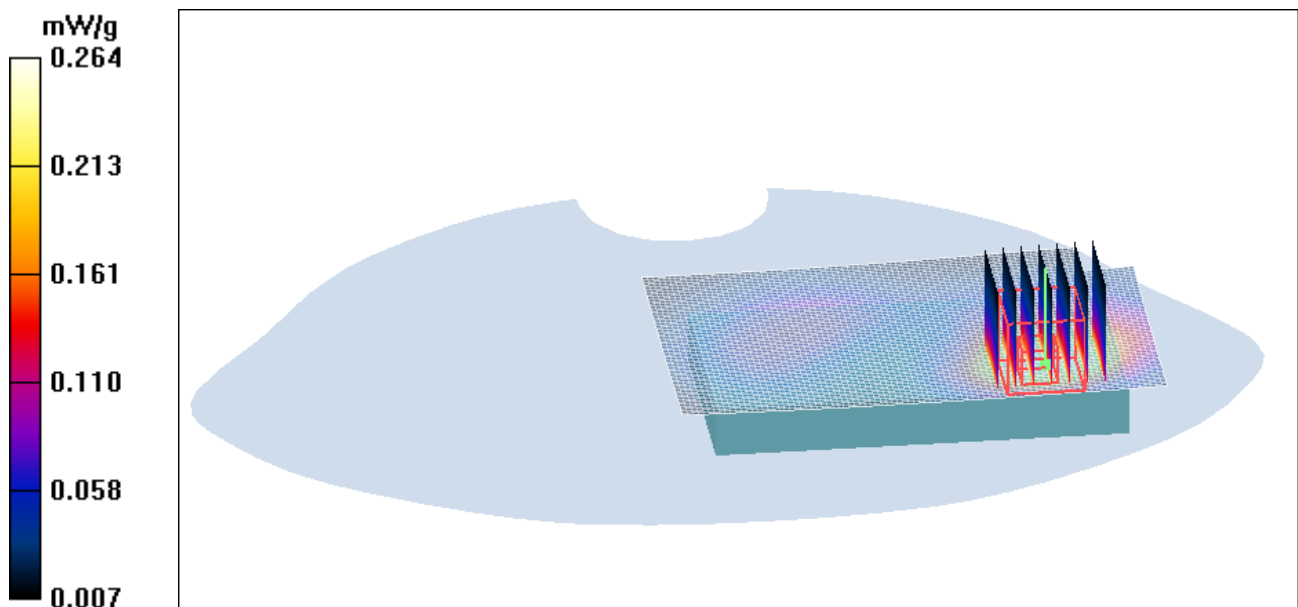


Figure 25 Body, Towards Ground, GSM 1900 Channel 661

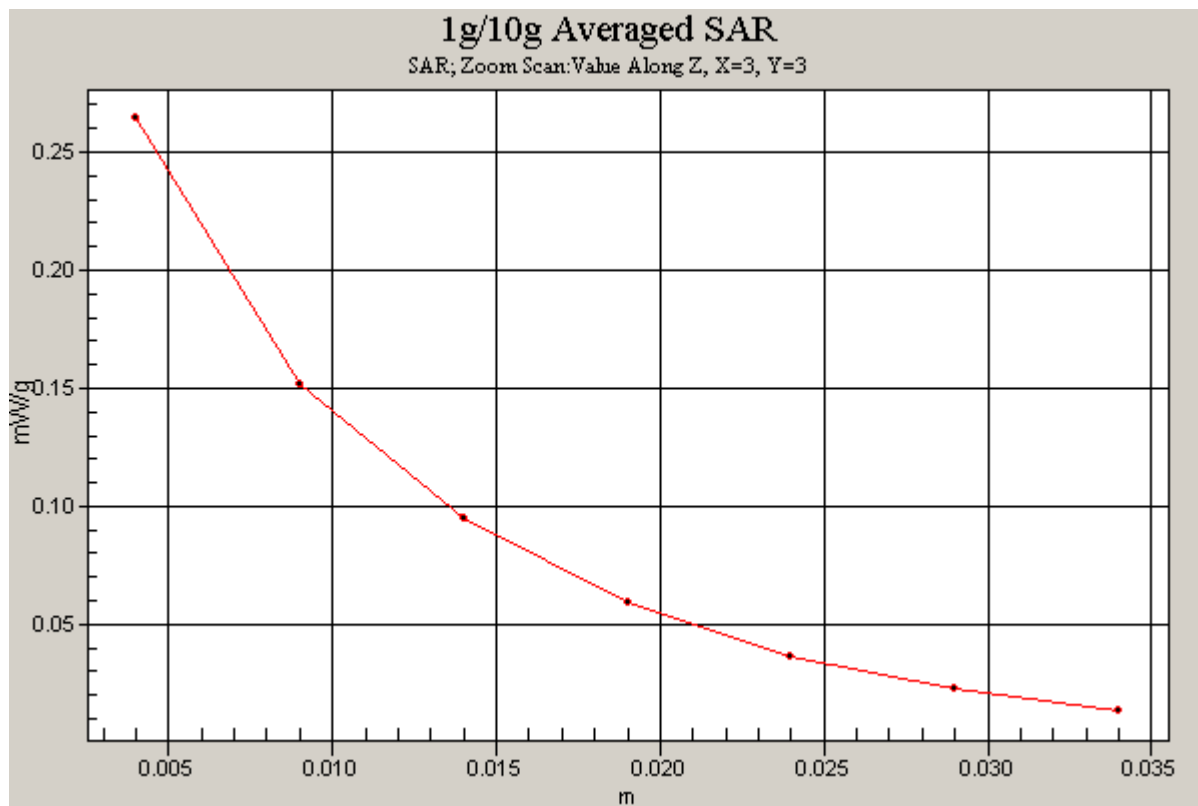


Figure 26 Z-Scan at power reference point (Body, Towards Ground, GSM 1900 Channel 661)

GSM 1900 Towards Ground Low

Date/Time: 9/4/2009 12:59:38 AM

Communication System: PCS 1900; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3

Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.51$ mho/m; $\epsilon_r = 52.9$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(4.60, 4.60, 4.60); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM000 T01 ; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Low/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.269 mW/g

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

Reference Value = 6.83 V/m; Power Drift = -0.099 dB

Peak SAR (extrapolated) = 0.442 W/kg

SAR(1 g) = 0.247 mW/g; SAR(10 g) = 0.145 mW/g

Maximum value of SAR (measured) = 0.264 mW/g

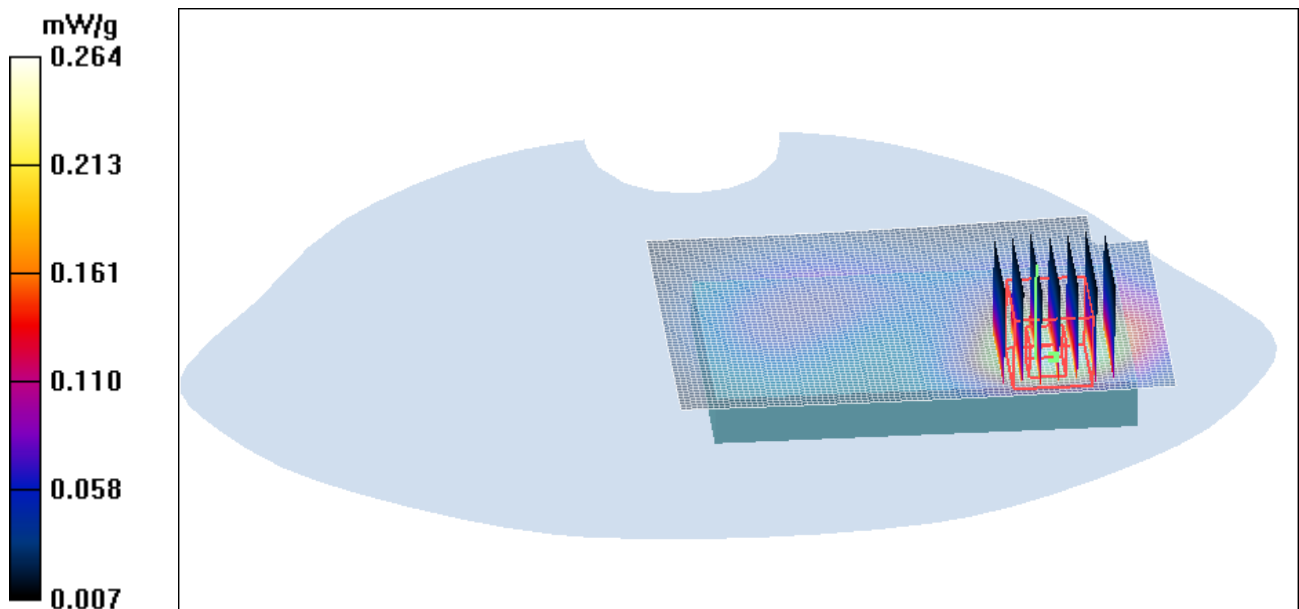


Figure 27 Body, Towards Ground, GSM 1900 Channel 512

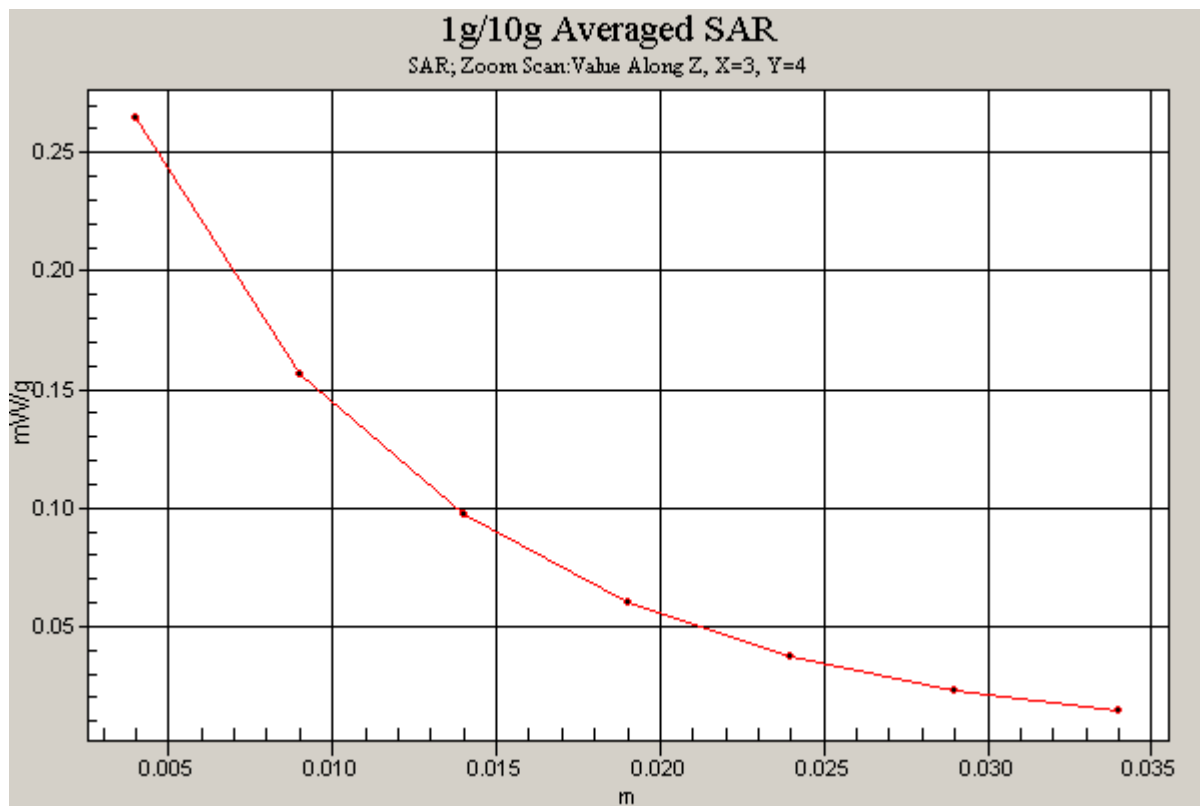


Figure 28 Z-Scan at power reference point (Body, Towards Ground, GSM 1900 Channel 512)

GSM 1900 Towards Phantom Middle

Date/Time: 9/3/2009 11:58:34 PM

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 52.7$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(4.60, 4.60, 4.60); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM000 T01 ; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Phantom Middle/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 6.32 V/m; Power Drift = -0.117 dB

Peak SAR (extrapolated) = 0.265 W/kg

SAR(1 g) = 0.151 mW/g; SAR(10 g) = 0.089 mW/g

Maximum value of SAR (measured) = 0.164 mW/g

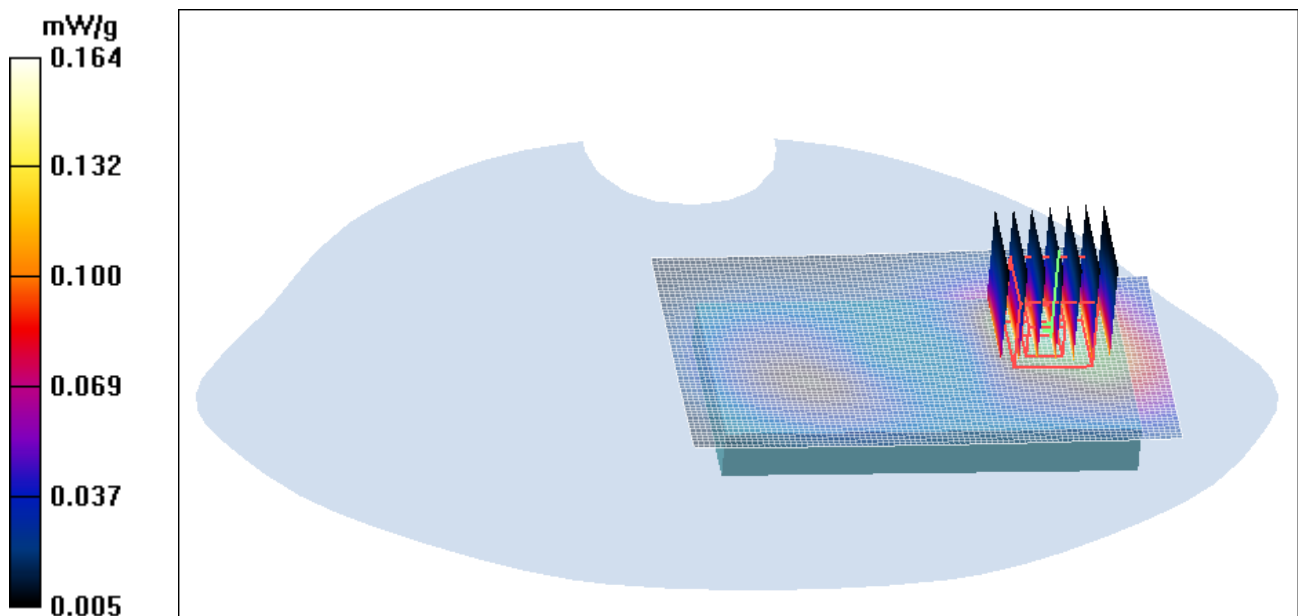


Figure 29 Body, Towards Phantom, GSM 1900 Channel 661

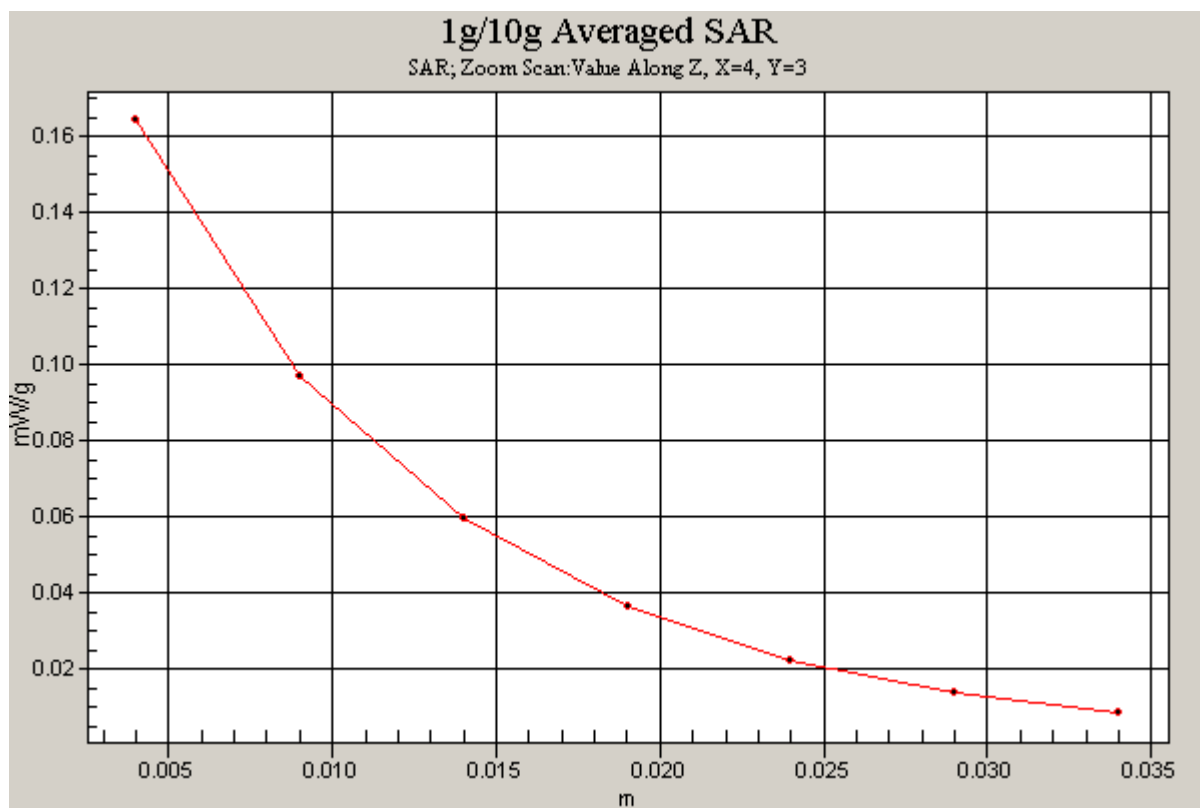


Figure 30 Z-Scan at power reference point (Body, Towards Phantom, GSM 1900 Channel 661)

GSM 1900 Towards Ground with Earphone High

Date/Time: 9/4/2009 1:47:46 AM

Communication System: PCS 1900; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1910$ MHz; $\sigma = 1.54$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(4.60, 4.60, 4.60); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM000 T01 ; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground High/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.242 mW/g

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

Reference Value = 7.02 V/m; Power Drift = -0.104 dB

Peak SAR (extrapolated) = 0.407 W/kg

SAR(1 g) = 0.223 mW/g; SAR(10 g) = 0.133 mW/g

Maximum value of SAR (measured) = 0.237 mW/g

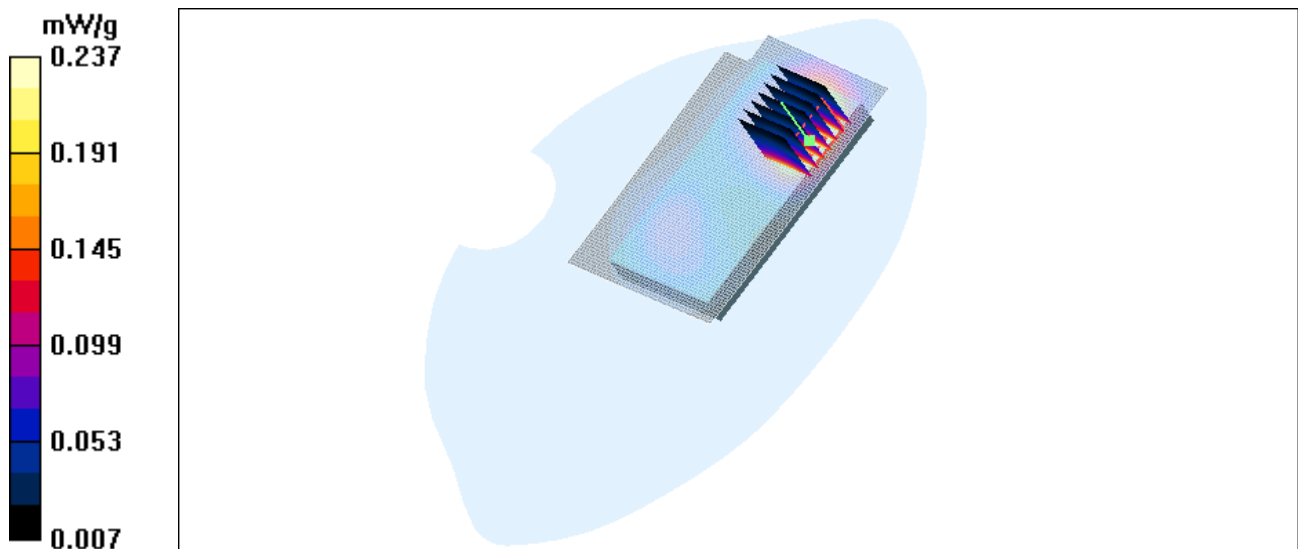


Figure 31 Body with Earphone, Towards Ground, GSM 1900 Channel 810

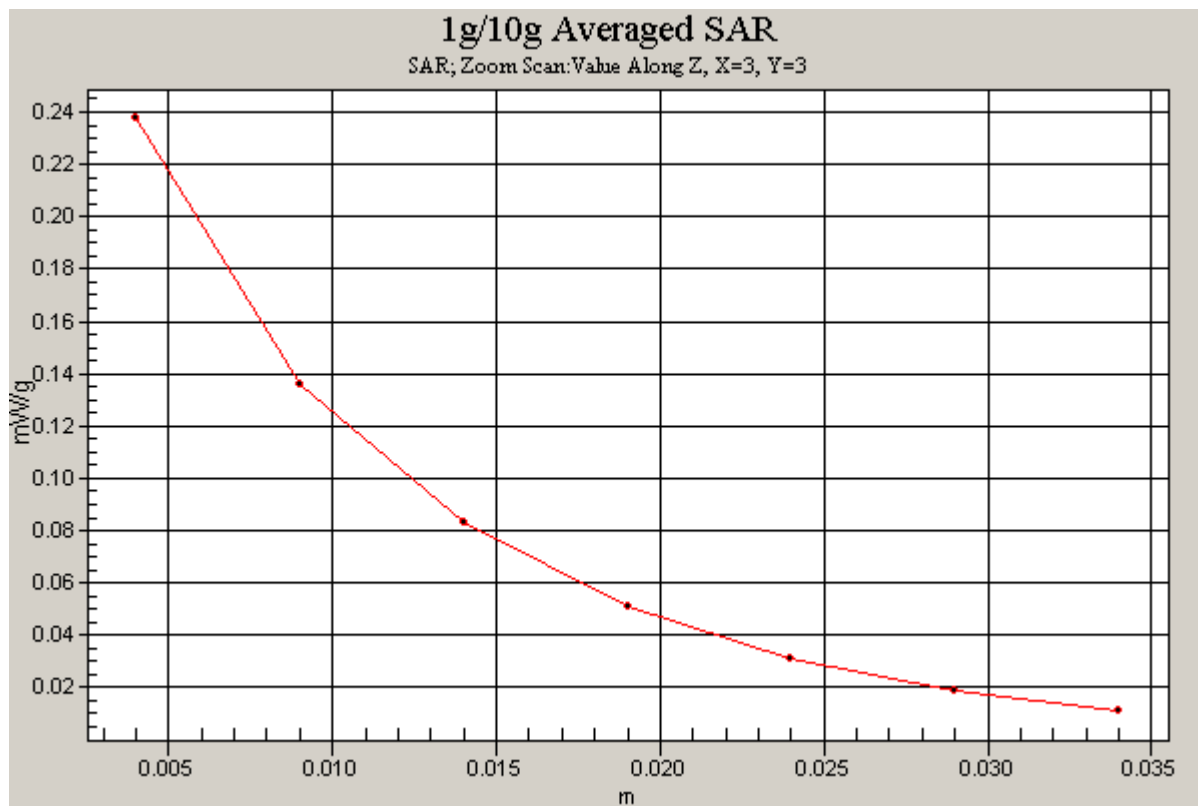


Figure 32 Z-Scan at power reference point (Body with Earphone, Towards Ground, GSM 1900 Channel 810)

GSM 1900 GPRS (2 timeslots uplink) Towards Ground High

Date/Time: 9/4/2009 3:40:35 AM

Communication System: PCS 1900+GPRS(2Up); Frequency: 1909.8 MHz; Duty Cycle: 1:4

Medium parameters used: $f = 1910$ MHz; $\sigma = 1.54$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(4.60, 4.60, 4.60); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM000 T01 ; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground High/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.463 mW/g

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

Reference Value = 10.2 V/m; Power Drift = -0.168 dB

Peak SAR (extrapolated) = 0.783 W/kg

SAR(1 g) = 0.422 mW/g; SAR(10 g) = 0.250 mW/g

Maximum value of SAR (measured) = 0.451 mW/g

Towards Ground High/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.2 V/m; Power Drift = -0.168 dB

Peak SAR (extrapolated) = 0.790 W/kg

SAR(1 g) = 0.412 mW/g; SAR(10 g) = 0.238 mW/g

Maximum value of SAR (measured) = 0.452 mW/g

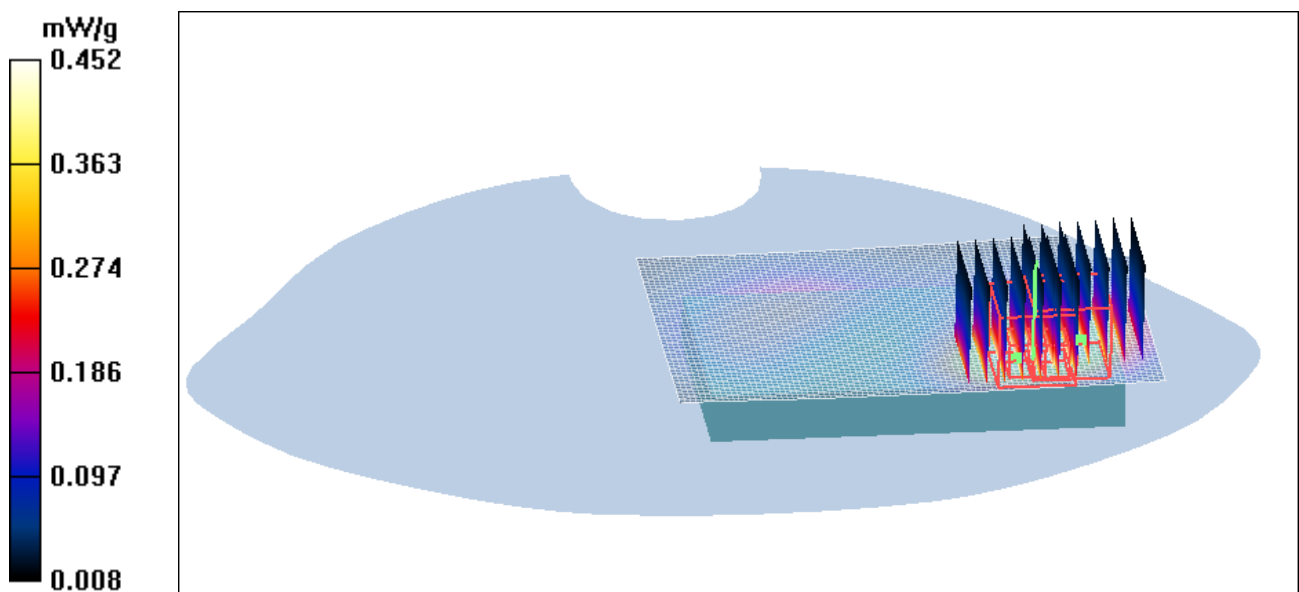


Figure 33 Body, Towards Ground, GSM 1900 GPRS (2 timeslots uplink) Channel 810

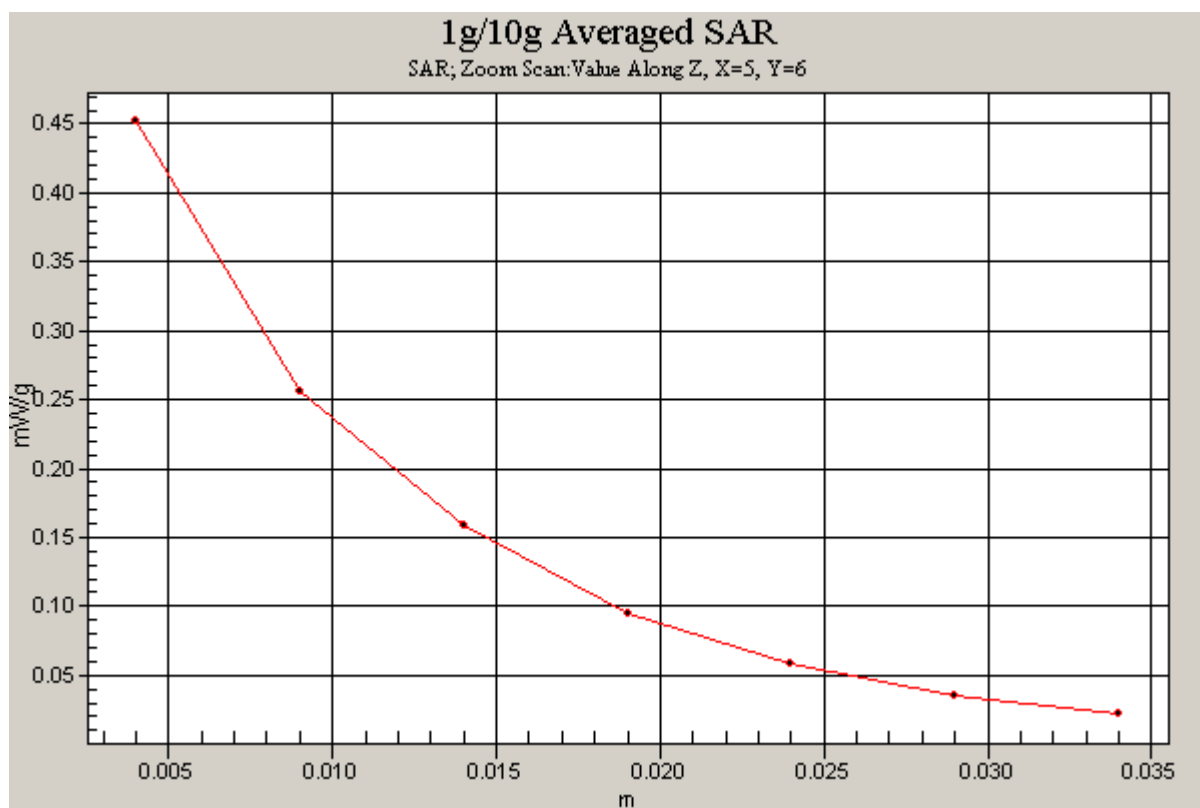
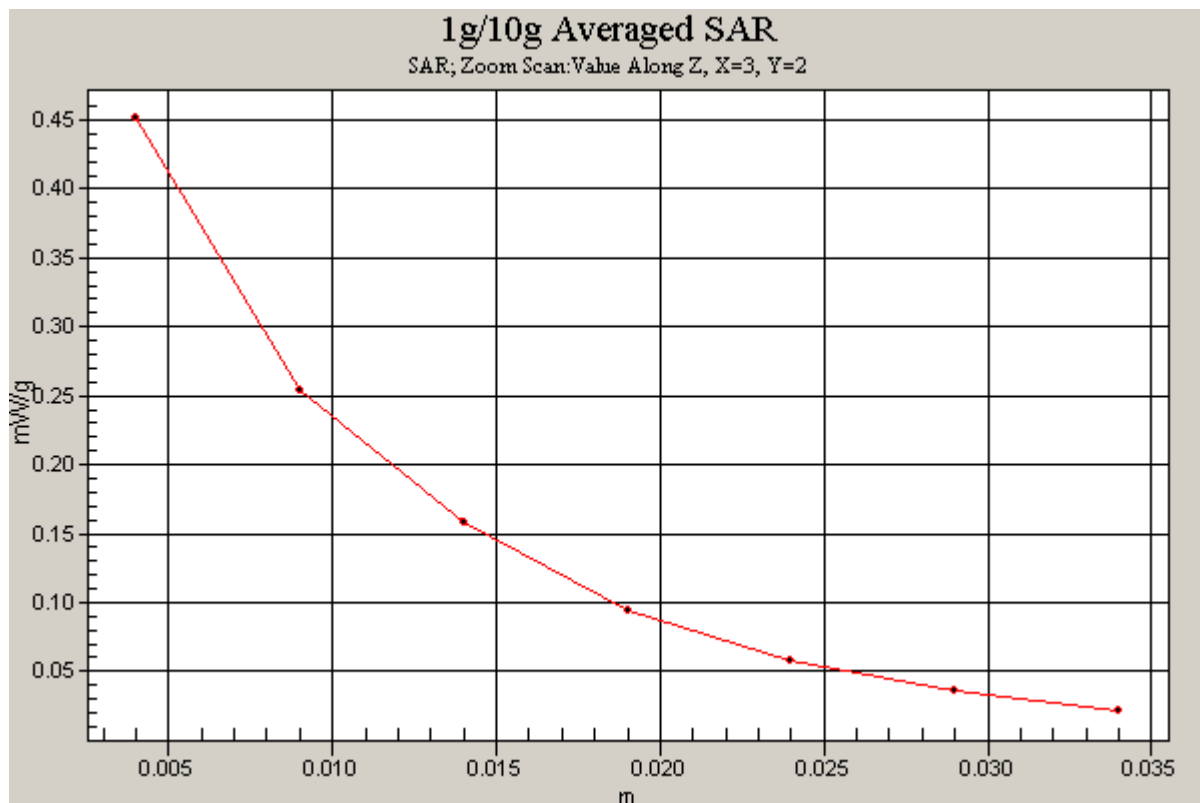


Figure 34 Z-Scan at power reference point [Body, Towards Ground, GSM 1900 GPRS (2 timeslots uplink) Channel 810]

GSM 1900 GPRS (2 timeslots uplink) Towards Ground Middle

Date/Time: 9/4/2009 2:30:05 AM

Communication System: PCS 1900+GPRS(2Up); Frequency: 1880 MHz; Duty Cycle: 1:4

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 52.7$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(4.60, 4.60, 4.60); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM000 T01 ; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Middle/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.503 mW/g

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

Reference Value = 10.2 V/m; Power Drift = 0.044 dB

Peak SAR (extrapolated) = 1.01 W/kg

SAR(1 g) = 0.474 mW/g; SAR(10 g) = 0.277 mW/g

Maximum value of SAR (measured) = 0.506 mW/g

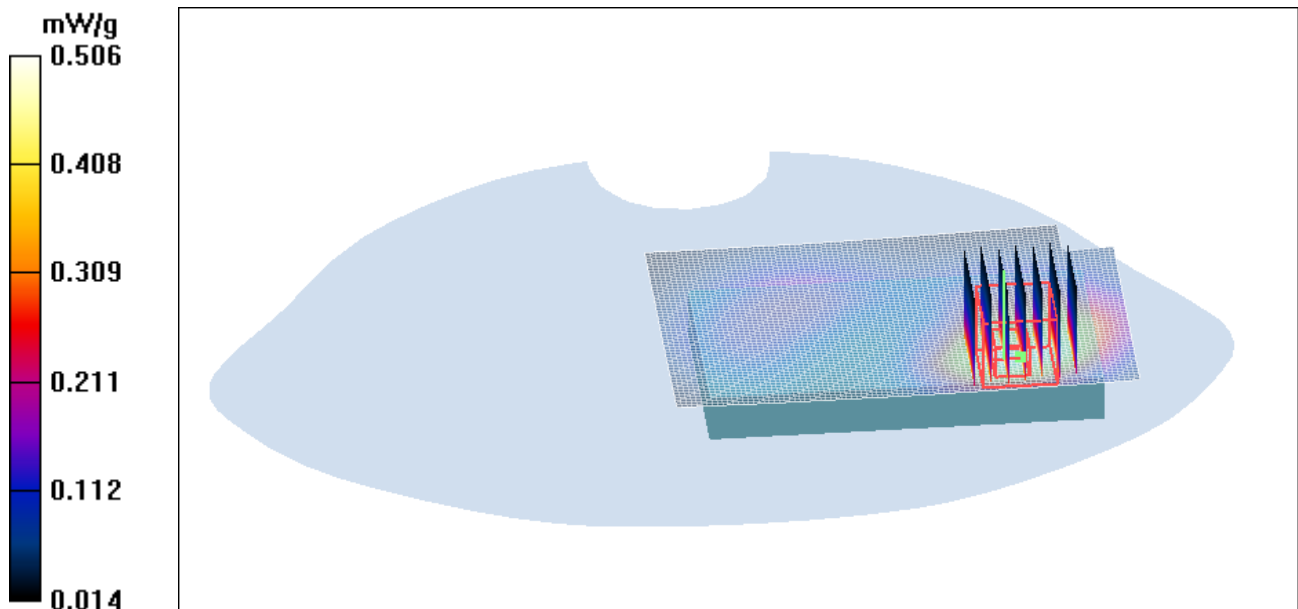


Figure 36 Body, Towards Ground, GSM 1900 GPRS (2 timeslots uplink) Channel 661

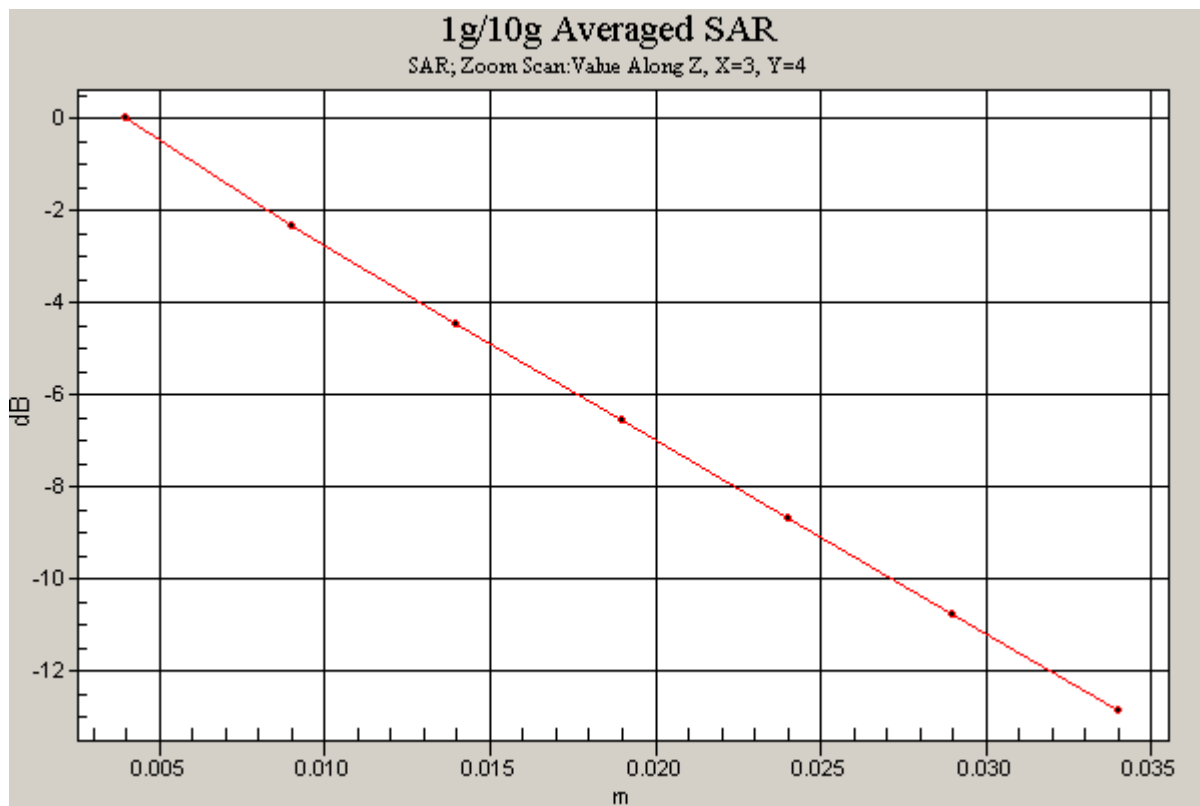


Figure 37 Z-Scan at power reference point [Body, Towards Ground, GSM 1900 GPRS (2 timeslots uplink) Channel 661]

GSM 1900 GPRS (2 timeslots uplink) Towards Ground Low

Date/Time: 9/4/2009 2:58:48 AM

Communication System: PCS 1900+GPRS(2Up); Frequency: 1850.2 MHz; Duty Cycle: 1:4

Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.51$ mho/m; $\epsilon_r = 52.9$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(4.60, 4.60, 4.60); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM000 T01 ; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Low/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.526 mW/g

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

Reference Value = 9.76 V/m; Power Drift = -0.078 dB

Peak SAR (extrapolated) = 0.887 W/kg

SAR(1 g) = 0.489 mW/g; SAR(10 g) = 0.288 mW/g

Maximum value of SAR (measured) = 0.526 mW/g

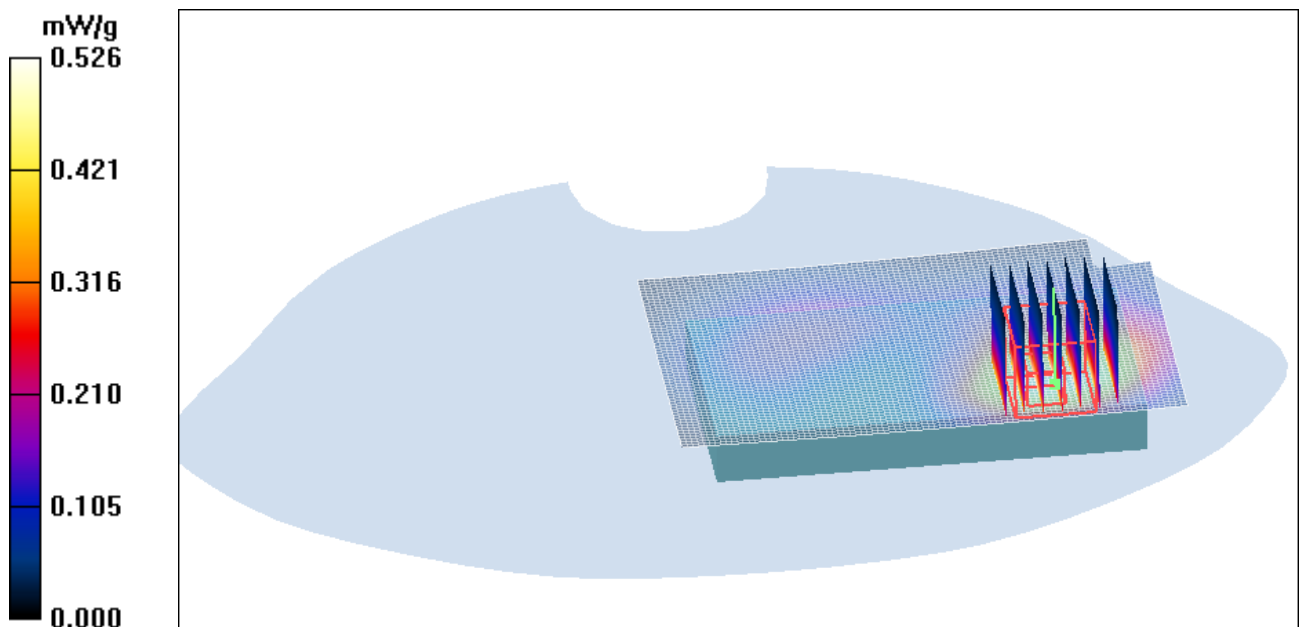


Figure 38 Body, Towards Ground, GSM 1900 GPRS (2 timeslots uplink) Channel 512

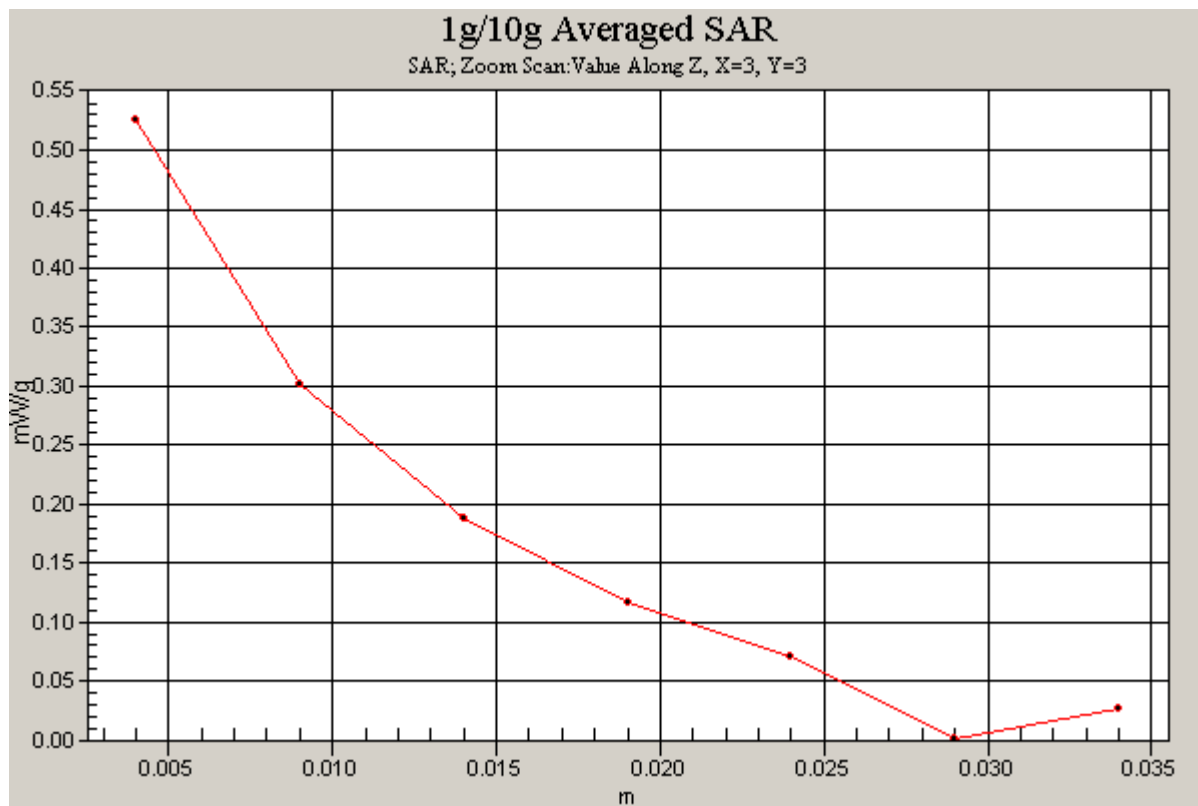


Figure 39 Z-Scan at power reference point [Body, Towards Ground, GSM 1900 GPRS (2 timeslots uplink) Channel 512]

GSM 1900 GPRS (2 timeslots uplink) Towards Phantom Middle

Date/Time: 9/4/2009 2:10:21 AM

Communication System: PCS 1900+GPRS(2Up); Frequency: 1880 MHz; Duty Cycle: 1:4

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 52.7$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(4.60, 4.60, 4.60); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM000 T01 ; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Phantom Middle/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.376 mW/g

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

Reference Value = 8.64 V/m; Power Drift = -0.047 dB

Peak SAR (extrapolated) = 0.499 W/kg

SAR(1 g) = 0.280 mW/g; SAR(10 g) = 0.166 mW/g

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

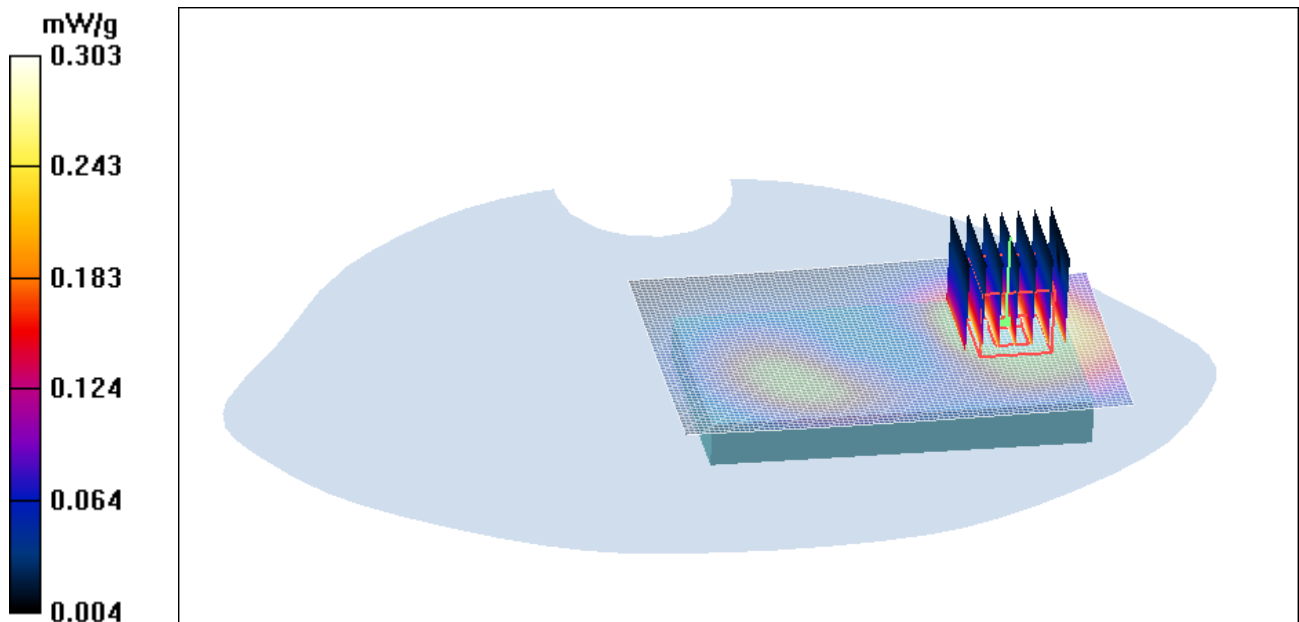


Figure40 Body, Towards Phantom, GSM 1900 GPRS (2 timeslots uplink) Channel 661

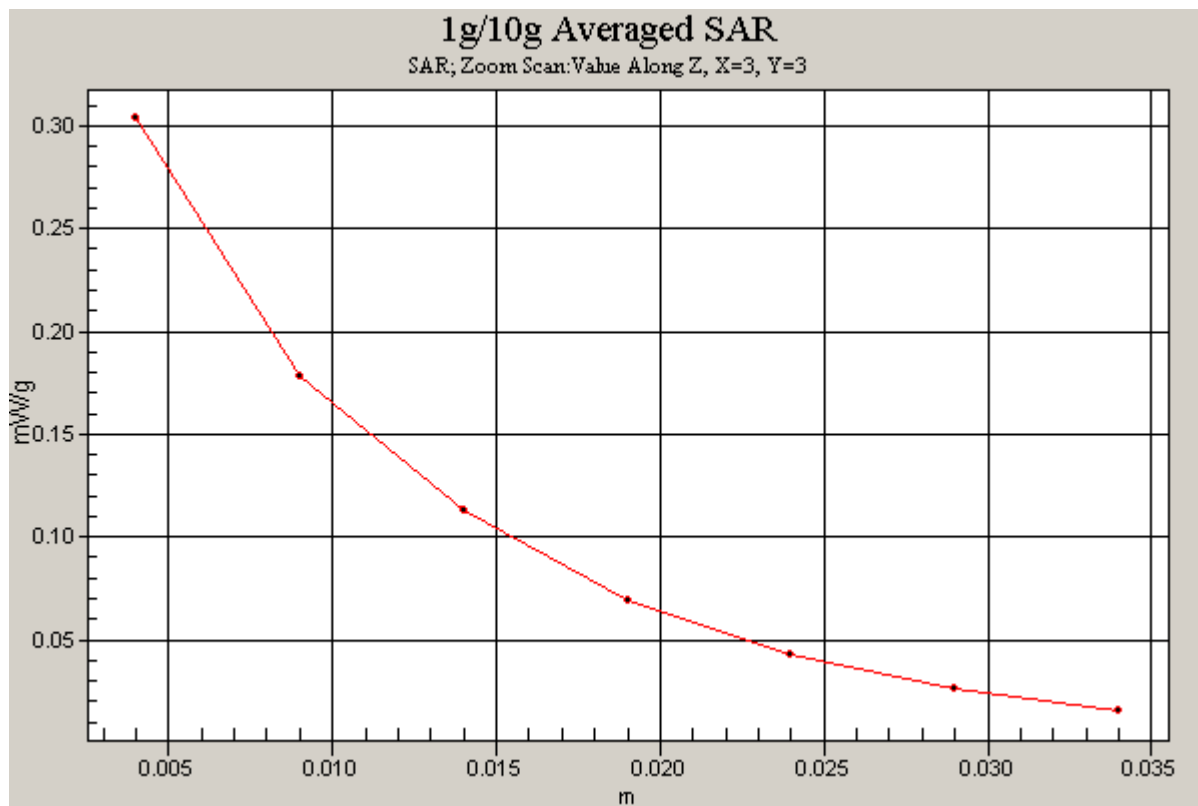


Figure 41 Z-Scan at power reference point [Body, Towards Phantom, GSM 1900 GPRS (2 timeslots uplink) Channel 661]

GSM 1900 EGPRS (2 timeslots uplink) Towards Ground Low

Date/Time: 9/4/2009 4:19:00 AM

Communication System: PCS 1900+EGPRS(2Up); Frequency: 1850.2 MHz; Duty Cycle: 1:4

Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.51$ mho/m; $\epsilon_r = 52.9$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(4.60, 4.60, 4.60); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM000 T01 ; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Low/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 9.55 V/m; Power Drift = -0.029 dB

Peak SAR (extrapolated) = 0.808 W/kg

SAR(1 g) = 0.447 mW/g; SAR(10 g) = 0.263 mW/g

Maximum value of SAR (measured) = 0.473 mW/g

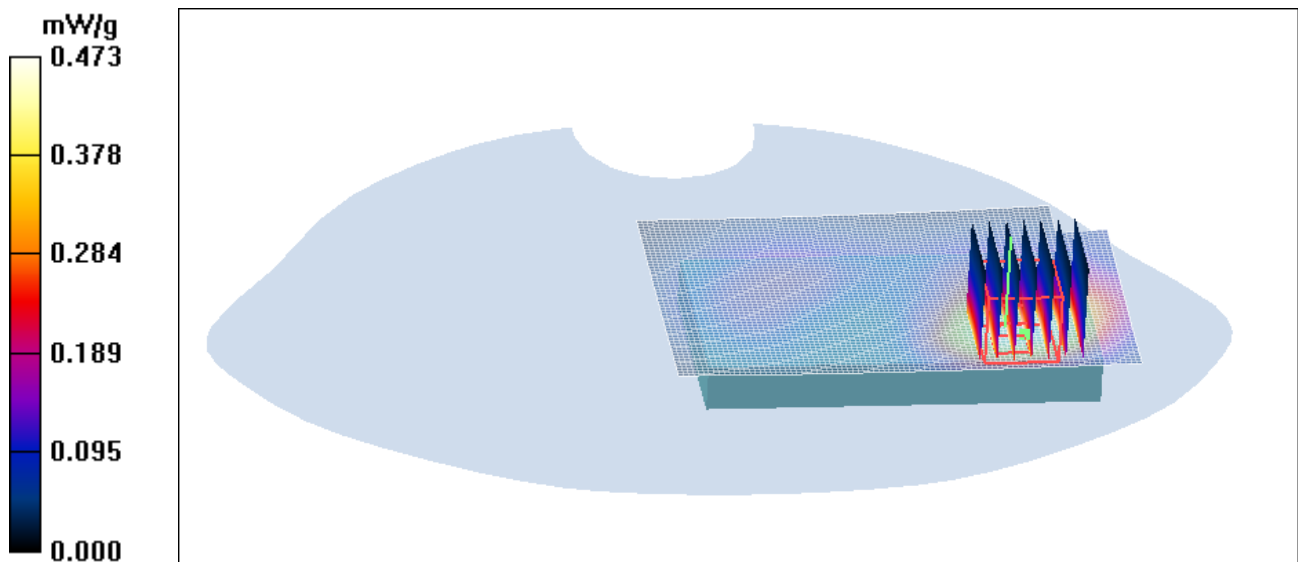


Figure 42 Body, Towards Ground, GSM 1900 EGPRS (2 timeslots uplink) Channel 512

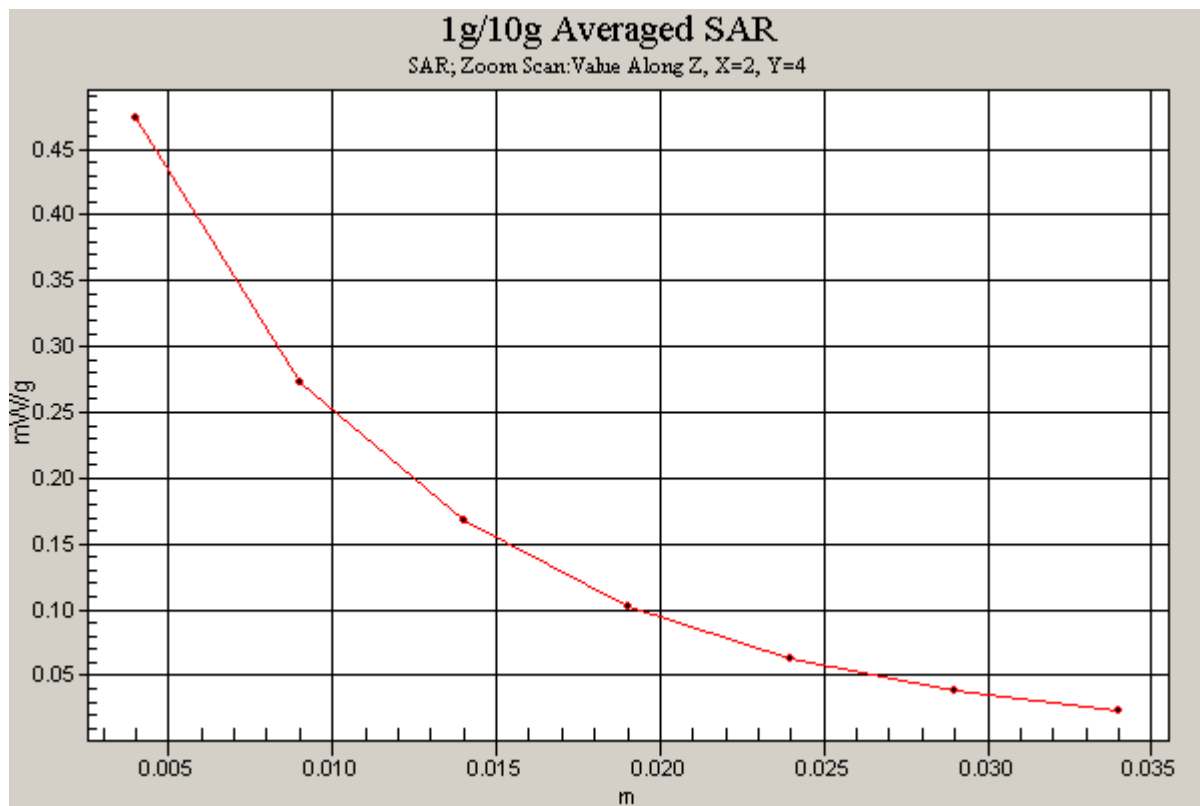


Figure43 Z-Scan at power reference point [Body, Towards Ground, GSM 1900 EGPRS (2 timeslots uplink) Channel 512

TA Technology (Shanghai) Co., Ltd.

Test Report

Report No. RZA2009-1125FCC

Page 66 of 92

ANNEX D: 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 Accreditation Service (SAS)
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 **TA Shanghai (Auden)**

Certificate No: **ET3-1737_Nov08**

CALIBRATION CERTIFICATE

Object **ET3DV6 - SN:1737**

Calibration procedure(s) **QA CAL-01.v6, QA CAL-12.v5 and QA CAL-23.v3**
Calibration procedure for dosimetric E-field probes

Calibration date: **November 25, 2008**

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 $(22 \pm 3)^{\circ}\text{C}$ and humidity $< 70\%$.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	1-Apr-08 (No. 217-00788)	Apr-09
Power sensor E4412A	MY41495277	1-Apr-08 (No. 217-00788)	Apr-09
Power sensor E4412A	MY41498087	1-Apr-08 (No. 217-00788)	Apr-09
Reference 3 dB Attenuator	SN: S5054 (3c)	1-Jul-08 (No. 217-00865)	Jul-09
Reference 20 dB Attenuator	SN: S5086 (20b)	31-Mar-08 (No. 217-00787)	Apr-09
Reference 30 dB Attenuator	SN: S5129 (30b)	1-Jul-08 (No. 217-00866)	Jul-09
Reference Probe ES3DV2	SN: 3013	2-Jan-08 (No. ES3-3013_Jan08)	Jan-09
DAE4	SN: 660	9-Sep-08 (No. DAE4-660_Sep08)	Sep-09

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-08)	In house check: Oct-09

Calibrated by:	Name Katja Pokovic	Function Technical Manager	Signature
Approved by:	Name Niels Kuster	Function Quality Manager	Signature

Issued: November 25, 2008

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

Certificate No: ET3-1737_Nov08

Page 1 of 9

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 Accreditation Service (SAS)
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
ConvF	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
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

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 E²-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:1737

November 25, 2008

Probe ET3DV6

SN:1737

Manufactured:	September 27, 2002
Last calibrated:	February 19, 2007
Repaired:	November 18, 2008
Recalibrated:	November 25, 2008

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

TA Technology (Shanghai) Co., Ltd.

Test Report

Report No. RZA2009-1125FCC

Page 69 of 92

ET3DV6 SN:1737

November 25, 2008

DASY - Parameters of Probe: ET3DV6 SN:1737

Sensitivity in Free Space^A

Diode Compression^B

NormX	1.42 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP X	93 mV
NormY	1.68 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP Y	94 mV
NormZ	1.63 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP Z	85 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 _{be} [%]	Without Correction Algorithm	10.7	6.9
SAR _{be} [%]	With Correction Algorithm	0.3	0.4

TSL 1750 MHz Typical SAR gradient: 10 % per mm

Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR _{be} [%]	Without Correction Algorithm	12.5	8.4
SAR _{be} [%]	With Correction Algorithm	0.8	0.5

Sensor Offset

Probe Tip to Sensor Center 2.7 mm

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

^A The uncertainties of NormX,Y,Z do not affect the E²-field uncertainty inside TSL (see Page 8).

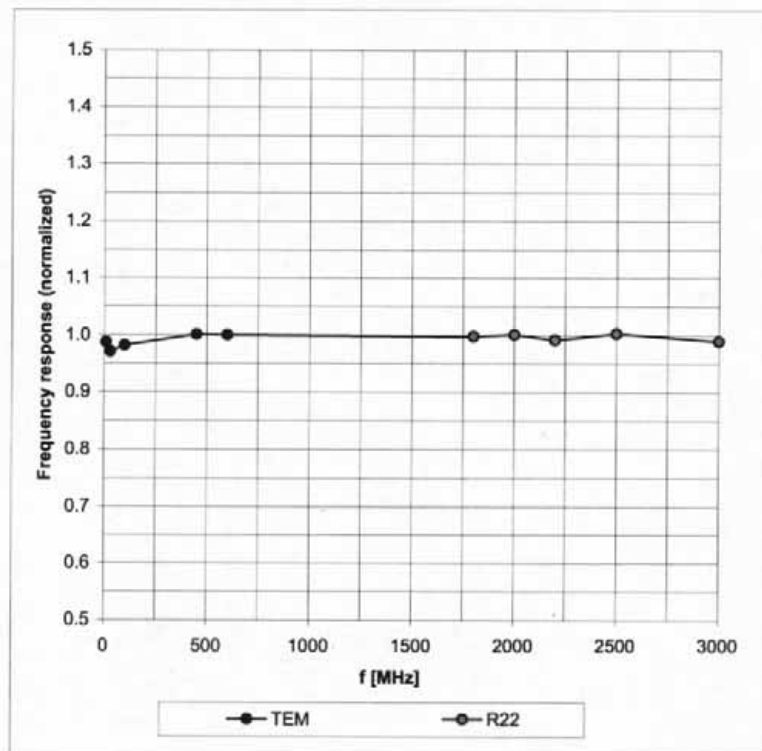
^B Numerical linearization parameter; uncertainty not required.

ET3DV6 SN:1737

November 25, 2008

Frequency Response of E-Field

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



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

TA Technology (Shanghai) Co., Ltd.
Test Report

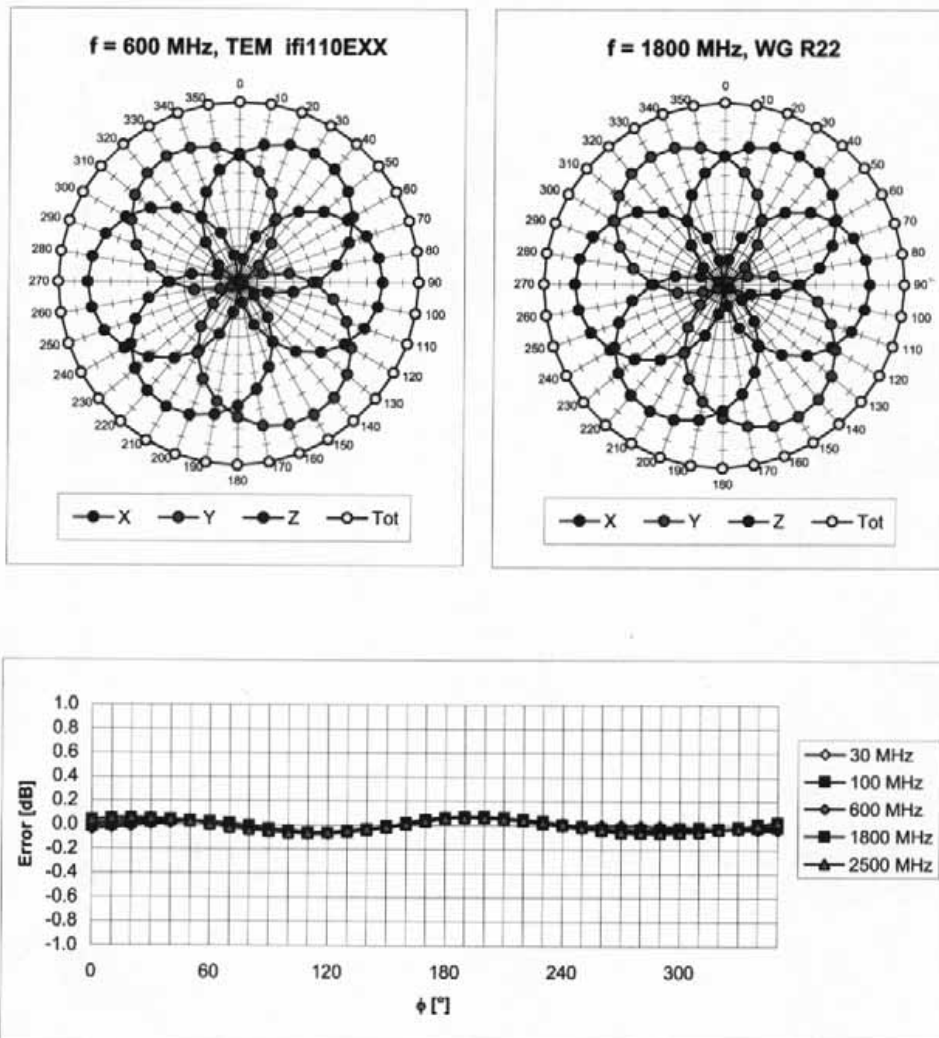
Report No. RZA2009-1125FCC

Page 71 of 92

ET3DV6 SN:1737

November 25, 2008

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



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

TA Technology (Shanghai) Co., Ltd.
Test Report

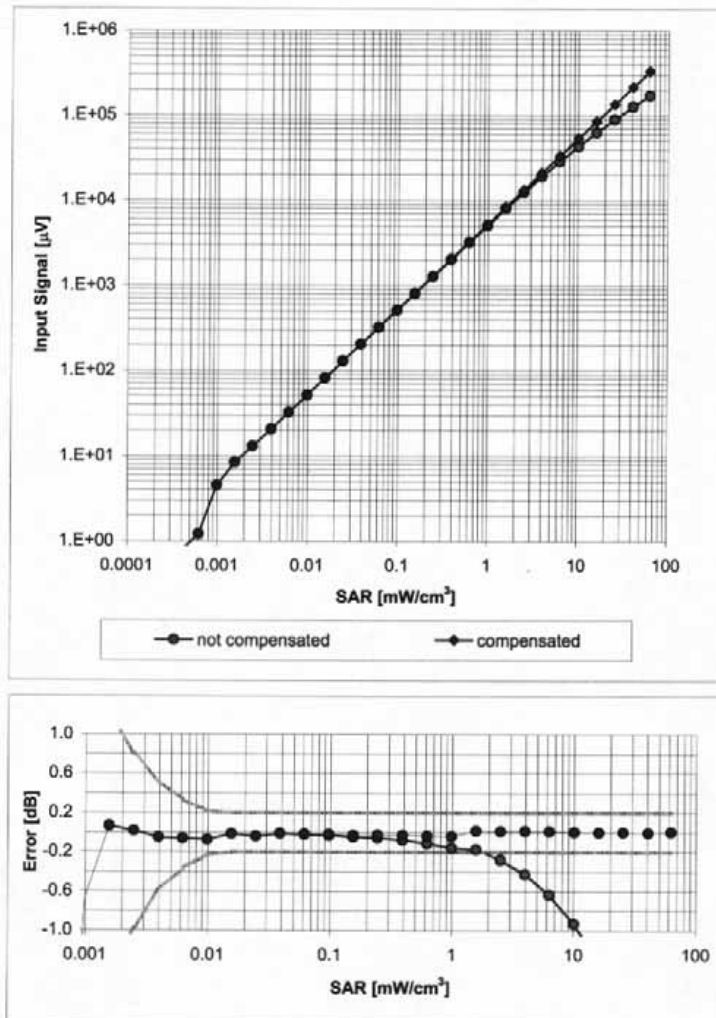
Report No. RZA2009-1125FCC

Page 72 of 92

ET3DV6 SN:1737

November 25, 2008

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



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

TA Technology (Shanghai) Co., Ltd.

Test Report

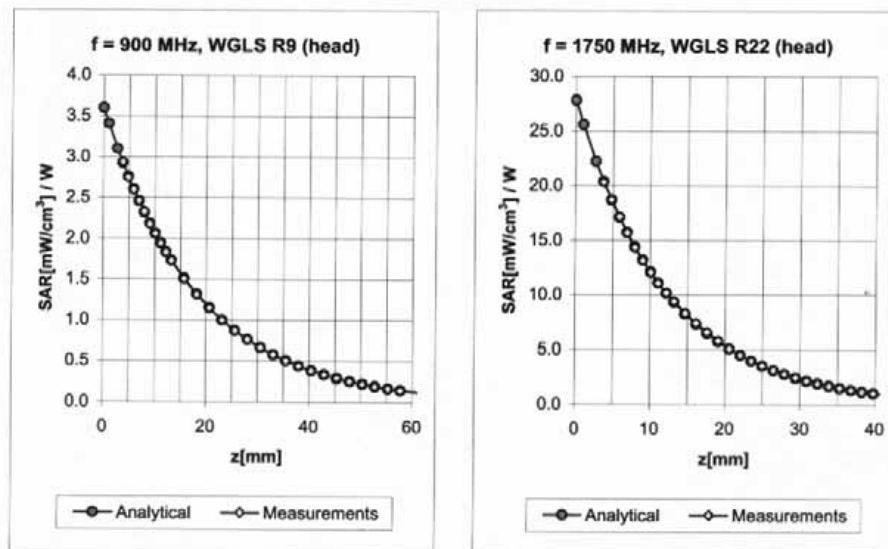
Report No. RZA2009-1125FCC

Page 73of 92

ET3DV6 SN:1737

November 25, 2008

Conversion Factor Assessment



f [MHz]	Validity [MHz] ^c	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
450	± 50 / ± 100	Head	43.5 ± 5%	0.87 ± 5%	0.36	1.84	7.20 ± 13.3% (k=2)
835	± 50 / ± 100	Head	41.5 ± 5%	0.90 ± 5%	0.25	3.53	6.33 ± 11.0% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.27	3.53	6.14 ± 11.0% (k=2)
1750	± 50 / ± 100	Head	40.1 ± 5%	1.37 ± 5%	0.56	2.77	5.35 ± 11.0% (k=2)
1950	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.57	2.72	4.89 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.51	1.60	4.39 ± 11.0% (k=2)
450	± 50 / ± 100	Body	56.7 ± 5%	0.94 ± 5%	0.27	1.80	7.52 ± 13.3% (k=2)
835	± 50 / ± 100	Body	55.2 ± 5%	0.97 ± 5%	0.36	2.75	6.14 ± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.43	2.51	5.98 ± 11.0% (k=2)
1750	± 50 / ± 100	Body	53.4 ± 5%	1.49 ± 5%	0.99	1.74	4.84 ± 11.0% (k=2)
1950	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.99	1.50	4.60 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.98	1.42	3.91 ± 11.0% (k=2)

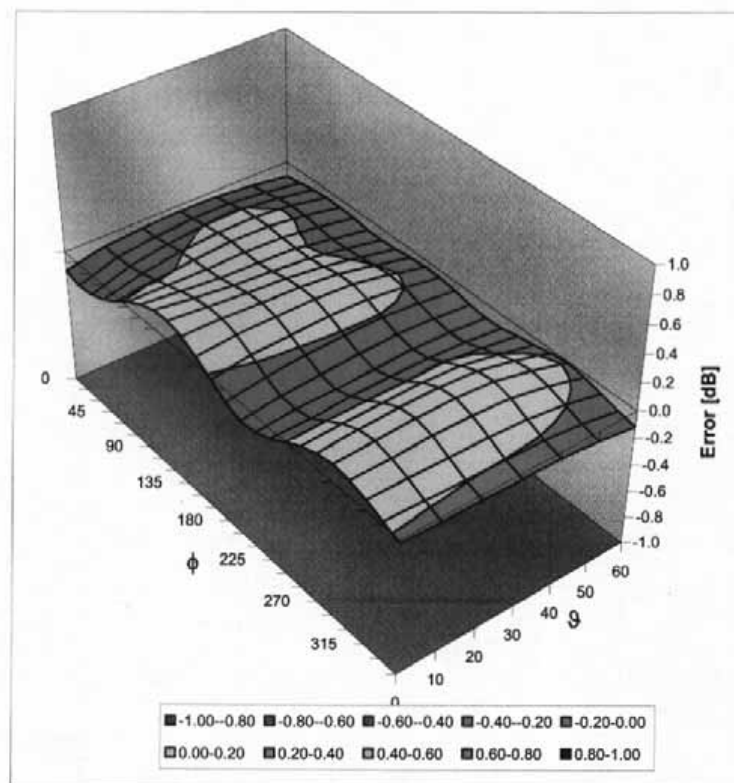
^c The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

ET3DV6 SN:1737

November 25, 2008

Deviation from Isotropy in HSL

Error (ϕ , θ), $f = 900$ MHz



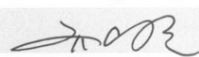
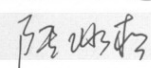
Uncertainty of Spherical Isotropy Assessment: $\pm 2.6\%$ ($k=2$)

TA Technology (Shanghai) Co., Ltd.
Test Report

Report No. RZA2009-1125FCC

Page 75of 92

ANNEX E: D1900V2 Dipole Calibration Certificate

信息产业部通信计量中心 Telecommunication Metrology Center of MII		TMC	ILAC-MRA	CNAS 检测 CNAS L0442																												
Client	TA	Certificate No: D1900V2-5d060_Jul09																														
CALIBRATION CERTIFICATE																																
Object	D1900V2 - SN: 5d060																															
Calibration Procedure(s)	TMC-XZ-01-027 Calibration procedure for dipole validation kits																															
Calibration date:	July 15, 2009																															
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)℃ and humidity<70%. Calibration Equipment used (M&TE critical for calibration) <table border="1"><thead><tr><th>Primary Standards</th><th>ID #</th><th>Cal Date(Calibrated by, Certificate No.)</th><th>Scheduled Calibration</th></tr></thead><tbody><tr><td>Power Meter NRVD</td><td>101253</td><td>19-Jun-09 (TMC, No. JZ09-248)</td><td>Jun-10</td></tr><tr><td>Power sensor NRV-Z5</td><td>100333</td><td>19-Jun-09 (TMC, No. JZ09-248)</td><td>Jun-10</td></tr><tr><td>Reference Probe ES3DV3</td><td>SN 3149</td><td>08-Dec-08(SPEAG, No.ES3-3149_Dec08)</td><td>Dec-09</td></tr><tr><td>DAE4</td><td>SN 771</td><td>21-Nov-08(SPEAG, No.DAE4-771_Nov08)</td><td>Nov-09</td></tr><tr><td>RF generator E4438C</td><td>MY45092879</td><td>18-Jun-09(TMC, No.JZ09-302)</td><td>Jun-10</td></tr><tr><td>Network Analyzer 8753E</td><td>US38433212</td><td>03-Aug-08(TMC, No.JZ08-056)</td><td>Aug-09</td></tr></tbody></table>					Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration	Power Meter NRVD	101253	19-Jun-09 (TMC, No. JZ09-248)	Jun-10	Power sensor NRV-Z5	100333	19-Jun-09 (TMC, No. JZ09-248)	Jun-10	Reference Probe ES3DV3	SN 3149	08-Dec-08(SPEAG, No.ES3-3149_Dec08)	Dec-09	DAE4	SN 771	21-Nov-08(SPEAG, No.DAE4-771_Nov08)	Nov-09	RF generator E4438C	MY45092879	18-Jun-09(TMC, No.JZ09-302)	Jun-10	Network Analyzer 8753E	US38433212	03-Aug-08(TMC, No.JZ08-056)	Aug-09
Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration																													
Power Meter NRVD	101253	19-Jun-09 (TMC, No. JZ09-248)	Jun-10																													
Power sensor NRV-Z5	100333	19-Jun-09 (TMC, No. JZ09-248)	Jun-10																													
Reference Probe ES3DV3	SN 3149	08-Dec-08(SPEAG, No.ES3-3149_Dec08)	Dec-09																													
DAE4	SN 771	21-Nov-08(SPEAG, No.DAE4-771_Nov08)	Nov-09																													
RF generator E4438C	MY45092879	18-Jun-09(TMC, No.JZ09-302)	Jun-10																													
Network Analyzer 8753E	US38433212	03-Aug-08(TMC, No.JZ08-056)	Aug-09																													
Calibrated by:	Name Lin Hao	Function SAR Test Engineer	Signature 																													
Reviewed by:	Qi Dianyuan	SAR Project Leader																														
Approved by:	Lu Bingsong	Deputy Director of the laboratory																														
Issued: July 15, 2009																																
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.																																

Certificate No: D1900V2-5d060_Jul09

Page 1 of 9

TA Technology (Shanghai) Co., Ltd.

Test Report

Report No. RZA2009-1125FCC

Page 76 of 92

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM _{x,y,z}
N/A	not applicable or not measured

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) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) For hand-held devices used in close proximity to the ear (frequency range of 300MHz to 3GHz)", February 2005
- c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

- d) DASY System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

TA Technology (Shanghai) Co., Ltd.

Test Report

Report No. RZA2009-1125FCC

Page 77 of 92

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V5.0
Extrapolation	Advanced Extrapolation	
Phantom	2mm Oval Phantom ELI4	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	39.6 $\pm$ 6 %	1.40mho/m $\pm$ 6 %
Head TSL temperature during test	(21.9 $\pm$ 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.88 mW / g
SAR normalized	normalized to 1W	39.5 mW / g
SAR for nominal Head TSL parameters ¹	normalized to 1W	37.8 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm^3 (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	5.0 mW / g
SAR normalized	normalized to 1W	20.0 mW / g
SAR for nominal Head TSL parameters ¹	normalized to 1W	19.8 mW / g $\pm$ 16.5 % (k=2)

¹ Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

TA Technology (Shanghai) Co., Ltd.

Test Report

Report No. RZA2009-1125FCC

Page 78 of 92

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.9 ± 6%	1.55 mho/m ± 6 %
Body TSL temperature during test	(21.8 ± 0.2) °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	10.2 mW / g
SAR normalized	normalized to 1W	40.8 mW / g
SAR for nominal Body TSL parameters ²	normalized to 1W	39.4 mW / g ± 17.0 % (k=2)

SAR averaged over 10 cm^3 (10 g) of Body TSL	Condition	
SAR measured	250 mW input power	5.18 mW / g
SAR normalized	normalized to 1W	20.72 mW / g
SAR for nominal Body TSL parameters ²	normalized to 1W	21.0 mW / g ± 16.5 % (k=2)

² Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

TA Technology (Shanghai) Co., Ltd.

Test Report

Report No. RZA2009-1125FCC

Page 79 of 92

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$54.8\Omega + 4.0 j\Omega$
Return Loss	- 23.7dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	$47.9\Omega + 7.1 j\Omega$
Return Loss	- 22.6dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.201 ns
----------------------------------	----------

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

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.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 10, 2004

TA Technology (Shanghai) Co., Ltd.

Test Report

Report No. RZA2009-1125FCC

Page 80 of 92

DASY5 Validation Report for Head TSL

Date/Time: 2009-7-15 14:15:30

Test Laboratory: TMC, Beijing, China

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: SN: 5d060

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

Medium: Head 1900MHz

Medium parameters used: $f = 1900 \text{ MHz}$; $\sigma = 1.40 \text{ mho/m}$; $\epsilon_r = 39.6$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3149; ConvF(5.18, 5.18, 5.18); Calibrated: 08.12.08
- Electronics: DAE4 Sn771; Calibration: 21.11.08
- Phantom: 2mm Oval Phantom ELI4; Type: QDOVA001BB
- Measurement SW: DASY5, V5.0 Build 119.9; Postprocessing SW: SEMCAD, V13.2 Build 87

Pin=250mW; d=10mm/Zoom Scan (7x7x7)/Cube 0:

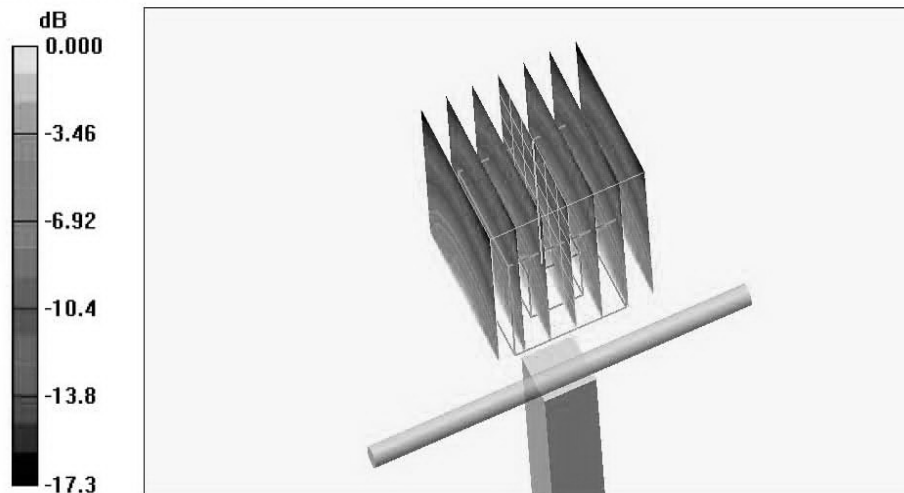
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 85.1 V/m ; Power Drift = -0.057 dB

Peak SAR (extrapolated) = 18.8 W/kg

SAR(1 g) = 9.88 mW/g ; SAR(10 g) = 5.0 mW/g

Maximum value of SAR (measured) = 11.5 mW/g



0 dB = 11.5 mW/g