Exhibit 11: SAR Test Report IHDT56DD1

Date of test: 07/08/2003-07/15/2003
Date of Report: 08/08/2003

Laboratory:
Motorola Personal Communications Sector Product Safety & Compliance Laboratory
600 N. US Highway 45
Room: MW113
Libertyville, Illinois 60048

Test Responsible:
Firass Badaruzzaman
Senior RF Engineer

Accreditation: This laboratory is accredited to ISO/IEC 17025-1999 to perform the following tests:

Tests:	Procedures:
Electromagnetic Specific Absorption Rate (SAR)	ANSI/IEEE C95.1-1992, 1999 IEEE C95.3-1991 IEEE P1528 (*DRAFT*) FCC OET Bulletin 65 (*including Supplements A, B, C*) Australian Communications Authority Radio Communications (Electromagnetic Radiation – Human Exposure) Standard 1999 CENELEC EN 50361 (2001)
Simulated Tissue Preparation	APP-0247
RF Power Measurement	DOI-0876, 0900, 0902, 0904, 0915

On the following products or types of products:
Wireless Communications Devices (Examples): Two Way Radios; Portable Phones (including Cellular,
Licensed Non-Broadcast and PCS); Low Frequency Readers; and Pagers

A2LA certificate #1651-01

Statement of Compliance:

Motorola declares under its sole responsibility that portable cellular telephone FCC ID IHDT56DD1 to which this declaration relates, is in conformity with the appropriate General Population/Uncontrolled RF exposure standards, recommendations and guidelines (FCC 47 CFR §2.1093). It also declares that the product was tested in accordance with the appropriate measurement standards, guidelines and recommended practices. Any deviations from these standards, guidelines and recommended practices are noted below:

(none)

The results and statements contained herein relate only to the items tested. The names of individuals involved may be mentioned only in connection with the statements or results from this report.

Motorola encourages all feedback, both positive and negative, on this test report.

Table of Contents

References:

1. Introduction

The Motorola Personal Communications Sector Product Safety Laboratory has performed measurements of the maximum potential exposure to the user of portable cellular phone (FCC ID IHDT56DD1). The Specific Absorption Rate (SAR) of this product was measured. The portable cellular phone was tested in accordance with FCC OET Bulletin 65 Supplement C 01-01.

2. Description of the Device Under Test

Antenna description

Type	Internal Antenna	
Location	Back of phone	
Dimensions	Length	35 mm
	Width	25 mm
Configuration	Internal Patch	

Device description

FCC ID Number or Device Model	E380	
Serial number	10050000490712	
Mode(s) of Operation	GSM 850	GSM 1900
Modulation Mode(s)	GSM	GSM
Target Value for Maximum Output Power Setting	30.00 dBm	30.50 dBm
Duty Cycle	1:8	1:8
Transmitting Frequency Rang(s)	824.20 - 848.80 MHz	1850.20 – 1909.80 MHz
Device Category	Portable	
RF Exposure Limits	General Population / Uncontrolled	

3. Test Equipment Used

3.1 Dosimetric System

The Motorola Personal Communications Sector Product Safety & Compliance Laboratory utilizes a Dosimetric Assessment System (Dasy3™ v3.1d) manufactured by Schmid & Partner Engineering AG (SPEAG™), of Zurich Switzerland. All the SAR measurements are taken within a shielded enclosure. The overall RSS uncertainty of the measurement system is ±11.7% (K=1) with an expanded uncertainty of ±23.0% (K=2). The measurement uncertainty budget is given in Appendix 6. Per IEEE 1528, this uncertainty budget is applicable to the SAR range of 0.4 W/kg to 10 W/kg. The list of calibrated equipment used for the measurements is shown below.

Description	Serial Number	Cal Due Date
DASY3 DAE V1	SN365	10-Dec-03
E-Field Probe ET3DV6	SN1502	27-Sep-03
Dipole Validation Kit, D900V2	SN96	24-Jun -04
S.A.M. Phantom used for 800MHz	TP-1131	
Dipole Validation Kit, D1800V2	SN272TR	24-Jun-04
S.A.M. Phantom used for 1900MHz	TP-1250	

3.2 Additional Equipment

Description	Serial Number	Cal Due Date
Signal Generator HP8648C	3847A04822	07/06/2005
Power Meter E4419B	GB39511087	02/06/2004
Power Sensor #1 - 8481A	US39210929	02/06/2004
Power Sensor #2 - 8481A	US39210933	02/06/2004
Network Analyzer HP8753ES	US39172529	18-Jun-03
Dielectric Probe Kit HP85070B	US99360070	N/A

4. Electrical parameters of the tissue simulating liquid

Prior to conducting SAR measurements, the relative permittivity, ε_r, and the conductivity, σ, of the tissue simulating liquids were measured with the HP85070 Dielectric Probe Kit These values, along with the temperature of the tissue simulate are shown in the table below. The recommended limits for maximum permittivity and minimum conductivity are also shown. These come from the Federal Communication Commission, OET Bulletin 65 Supplement C 01-01. It is seen that the measured parameters are satisfactory for compliance testing.

f (MHz)	Tissue type	Limits / Measured	Dielectric Parameters		
			ε_r	σ (S/m)	Temp (°C)
835	Head	**Measured,** 07/08/2003	41.3	0.90	18.9 - 20
		Recommended Limits	41.5	0.90	20-25
	Body	**Measured,** 07/09/2003	54.9	1.0	18.9 - 20
		Recommended Limits	55.2	0.97	20-25
1880	Head	**Measured,** 07/09/2003	39.2	1.47	18.9 - 20
		Recommended Limits	40.0	1.40	20-25
	Body	**Measured,** 07/09/2003	51.7	1.57	18.9 - 20
		Recommended Limits	53.3	1.52	20-25

The list of ingredients and the percent composition used for the tissue simulates are indicated in the table below.

Ingredient	800MHz Head	800MHz Body	1900MHz Head	1900MHz Body
Sugar	57.0	44.9	--	30.80
DGBE	--	--	47.0	--
Water	40.45	53.06	52.8	68.91
Salt	1.45	0.94	0.2	0.29
HEC	1.0	1.0	--	--
Bact.	0.1	0.1	--	--

5. System Accuracy Verification

A system accuracy verification of the DASY3 was performed using the measurement equipment listed in Section 3.1. The daily system accuracy verification occurs within center section of the SAM phantom.

A SAR measurement was performed to see if the measured SAR was within +/- 10% from the target SAR indicated on the dipole certification sheet. These tests were done at 900MHz and/or 1800MHz. These frequencies are within 100MHz of the mid-band frequency of the test device. This is within the allowable window given in Supplement C 01-01 *Appendix D System Verification* section item #5. The test was conducted on the same days as the measurement of the DUT. Recommended limits for maximum permittivity, minimum conductivity are shown in the table below. These come from the Federal Communication Commission, OET Bulletin 65 Supplement C 01-01. The obtained results from the system accuracy verification are displayed in the table below. The distributions of SAR compare well with those of the reference measurements (see Appendix 1). The tissue stimulant depth was verified to be 15.0cm ±0.5cm. Z-axis scans showing the SAR penetration are also included in Appendix 1. SAR values are normalized to 1W forward power delivered to the dipole.

f (MHz)	Description	SAR (W/kg), 1gram	Dielectric Parameters		Ambient Temp (°C)	Tissue Temp (°C)
			ε_r	σ (S/m)		
900	Measured, 07/08/03	11.54	0.96	40.5	20	20.3
	Recommended Limits	11.4	0.95	40.3	n/a	n/a
	Measured, 07/09/03	11.48	0.96	40.1	21	20
	Recommended Limits	11.4	0.95	40.3	n/a	n/a
1800	Measured, 07/09/03	40.48	1.38	39.6	21	19.8
	Recommended Limits	38.8	1.37	39.6	n/a	n/a

The following probe conversion factors were used on the E-Field probe(s) used for the system accuracy verification measurements:

Description	Serial Number	f (MHz)	Conversion Factor	Cal Cert pg #
E-Field Probe ETDV6	SN1502	900	6.50	2 of 10
		1800	5.60	2 of 10

6. Test Results

The test sample was operated in a test mode that allows control of the transmitter without the need to place actual phone calls. For the purposes of this test the unit is commanded to test mode and manually set to the proper channel, transmitter power level and transmit mode of operation. The phone was tested in the configurations stipulated in OET Bulletin 65 Supplement C 01-01. Motorola also followed the requirements in Supplement. C / Appendix D: SAR Measurement Procedures, section titled "*Devices Operating Next To A Person's Ear* ". These directions state "The device should be tested on the left and right side of the head phantom in the "Cheek/Touch" and "Ear/Tilt" positions. When applicable, each configuration should be tested with the antenna in its fully extended and fully retracted positions. These test configurations should be tested at the high, middle and low frequency channels of each operating mode; for example, AMPS, CDMA, and TDMA. If the SAR measured at the middle channel for each test configuration (left, right, Cheek/Touch, Tile/Ear, extended and retracted) is at least 2.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s)."

The DASY v3.1d SAR measurement system specified in section 3.1 was utilized within the intended operations as set by the SPEAG™ setup. The phone was positioned into the measurement configurations using the positioner supplied with the DASY 3.1d SAR measurement system. The measured dielectric constant of the material used for the positioner is less than 2.9 and the loss tangent is less than 0.02 (± 30%) at 850MHz. The default settings for the "coarse" and "cube" scans were chosen and use for measurements. The grid spacing of the course scan was set to 15cm as shown in the SAR plots included in appendix 2 and 3. Please refer to the DASY manual for additional information on SAR scanning procedures and algorithms used.

The Cellular Phone (FCC ID IHDT56DD1) has the following battery options:

AANN4204A - Standard Battery
AANN4258A – Extended Battery

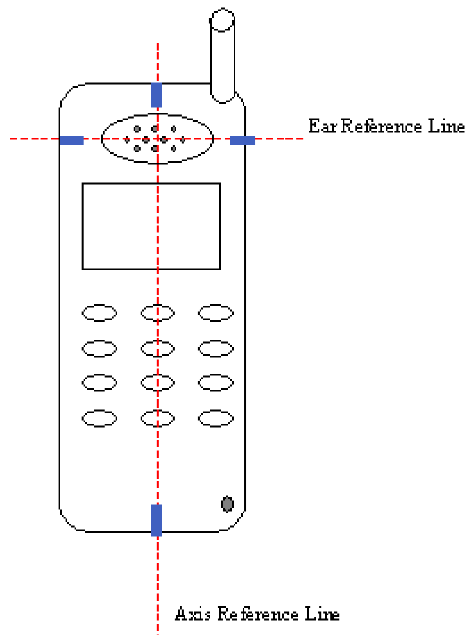
The standard battery with was used to do most of the SAR testing. The extended battery was spot checked for the highest head configurations for GSM 850MHz and GSM 1900 MHz bands. The phone was placed in the SAR measurement system with a fully charged battery. The configuration that resulted in the highest SAR values were tested using the extended battery.

6.1 Head Adjacent Test Results

To aid in positioning repeatability, the ear reference line of the device and the axis reference line of the device have been physically added using a non-metallic marker.

- Per Figure 1, the "Ear Reference Line" is centered vertically through the center of the listening area (as defined by the speaker holes in the housing).
- The "Axis Reference Line" bisects the front surface of the device at its top and bottom edges.
- The intersection of these two lines defines the location of the "Ear Reference Point".

The lines drawn on the device extended to the outside edges, as shown in blue in the figure below, & wrap around the sides of the device.



The SAR results shown in tables 1 through 4 are maximum SAR values averaged over 1 gram of phantom tissue. Also shown are the measured conducted output powers, the temperature of the test facility during the test, the temperature of the tissue simulate after the test, the measured drift and the extrapolated SAR. The exact method of extrapolation is New SAR = Old SAR * 10^(-drift/10). The SAR reported at the end of the measurement process by the DASY™ measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process. This is the most conservative SAR because it corresponds to the average output power at the beginning of the SAR test. This extrapolation has been done because when the DUT is operating properly it may exhibit a slump in radiated power and SAR over time. This is verified by measuring the SAR drift after the test. The test conditions indicated as bold numbers in the following table are included in Appendix 2

The SAR measurements were performed using the SAM phantoms listed in section 3.1. Since same phantoms and tissue simulate are used for the system accuracy verification as the device SAR measurements, the Z-axis scans included in within Appendix 1 are applicable for verification of tissue simulate depth to be 15.0cm ±0.5cm. All other test conditions measured lower SAR values than those included in Appendix 2. Note that 800MHz digital mode SAR measurements were performed in accordance with Supplement C.

The following probe conversion factors were used on the E-Field probe(s) used for the head adjacent measurements:

Description	Serial Number	f (MHz)	Conversion Factor	Cal Cert pg #
E-Field Probe ETDV6	SN1502	835	6.50	2 of 10
		1900	5.60	2 of 10

			Cheek Position SAR, 1g							
f (MHz)	Description	Conducted Output Power (dBm)	*Left Head*				*Right Head*			
			Measured (W/kg)	Drift (dB)	Extrapolated (W/kg)	Temp (°C)	Measured (W/kg)	Drift (dB)	Extrapolated (W/kg)	Temp (°C)
850 MHz	**Channel 128**	29.95								
	Channel 190	29.93	.39	-.05	.039	19.2	0.432	-.06	.44	19.1
	Channel 251	29.44								
1800MHz	**Channel 512**	30.42								
	Channel 661	30.44	.467	.07	.467	19.8	.528	-.24	.56	19.6
	Channel 810	30.44								

Table 1: SAR measurement results for the portable cellular telephone FCC ID IHDT56DD1 at highest possible output power. Measured against the left head in the Cheek/Touch Position.

			15° Tilt Position SAR, 1g							
f (MHz)	Description	Conducted Output Power (dBm)	*Left Head*				*Right Head*			
			Measured (W/kg)	Drift (dB)	Extrapolated (W/kg)	Temp (°C)	Measured (W/kg)	Drift (dB)	Extrapolated (W/kg)	Temp (°C)
850 MHz	**Channel 128**	29.95								
	Channel 190	29.93	.134	-.03	.13	19.2	.133	-.03	.13	18.9
	Channel 251	29.44								
1800MHz	**Channel 512**	30.42								
	Channel 661	30.44	.0756	-.34	.08	19.6	.0804	-.35	.09	19.5
	Channel 810	30.44								

Table 2: SAR measurement results for the portable cellular telephone FCC ID IHDT56DD1 at highest possible output power. Measured against the right head in the Cheek/Touch Position.

6.2 Body-Worn Test Results

The SAR results shown in table 5 are the maximum SAR values averaged over 1 gram of phantom tissue. Also shown are the measured conducted output powers, the temperature of the test facility during the test, the temperature of the tissue simulate after the test, the measured drift and the extrapolated SAR. The exact method of extrapolation is New SAR = Old SAR * 10^(-drift/10). The SAR reported at the end of the measurement process by the DASY™ measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process. This is the most conservative SAR because it corresponds to the average output power at the beginning of the SAR test. This extrapolation has been done because when the DUT is operating properly it may exhibit a slump in radiated power and SAR over time. This is verified by measuring the SAR drift after the test. The test conditions indicated as bold numbers in the following table are included in Appendix 3. Note that 800MHz digital mode SAR measurements were performed in accordance with OET Bulletin 65 Supplement C 01-01. All other test conditions measured lower SAR values than those included in Appendix 3.

A “flat” phantom was for the body-worn tests. This “flat” phantom is made out of 1” thick natural High Density Polyethylene with a thickness at the bottom equal to 2.0mm. It measures 52.7cm(long) x 26.7cm(wide) x 21.2cm(tall). The measured dielectric constant of the material used is less than 2.3 and the loss tangent is less than 0.0046 all the way up to 2.184GHz.

The tissue stimulant depth was verified to be 15.0cm ±0.5cm. The same device holder described in section 6 was used for positioning the phone. There are no Body-Worn Accessories available for this phone at the time of testing hence the device was tested per the supplement C testing guidelines for devices that do not have body worn accessories. The phone was placed 1 inch away from a flat phantom per the supplement C standard guidelines to perform SAR measurement. The cellular phone was tested with a headset connected to the device for all body-worn SAR measurements.

The following probe conversion factors were used on the E-Field probe(s) used for the body worn measurements:

Description	Serial Number	f (MHz)	Conversion Factor	Cal Cert pg #
E-Field Probe ETDV6	SN1502	835	6.30	8 of 10
		1900	5.30	8 of 10

			Body Worn							
			Body Worn (Front of Phone 1 inch Away From Phantom				Body Worn (Back of Phone 1 inch Away From Phantom			
f (MHz)	Description	Conducted Output Power (dBm)	Measured (W/kg)	Drift (dB)	Extrapolated (W/kg)	Temp (°C)	Measured (W/kg)	Drift (dB)	Extrapolated (W/kg)	Temp (°C)
850 MHz	Channel 128	29.95								
	Channel 190	29.93	0.0234	-0.08	0.02	20	0.0515	-0.07	0.05	20
	Channel 251	29.44								
1800MHz	Channel 512	30.42								
	Channel 661	30.44	0.019	-0.38	0.02	19.4	0.163	-0.3	0.17	19.6
	Channel 810	30.44								

Table 3: SAR measurement results for the portable cellular telephone FCC ID IHDT56DD1 at highest possible output power. Measured against the body.

Appendix 1

SAR distribution comparison for the system accuracy verification

Dipole 900 MHz

900 MHz Dipole Validation / Dipole Sn# 096 / Forward Power = 252mW / Acceptable Temp Range is 18-25°C Room Temp at time of measurement = 20.0*C. Simulant Temp at time of measurement = 20.3*C

R4 TP-1131 SUGAR sam expanded (Rev. 2)-9Jan03 Phantom; Flat Section; Position: (90°,90°); Frequency: 900 MHz

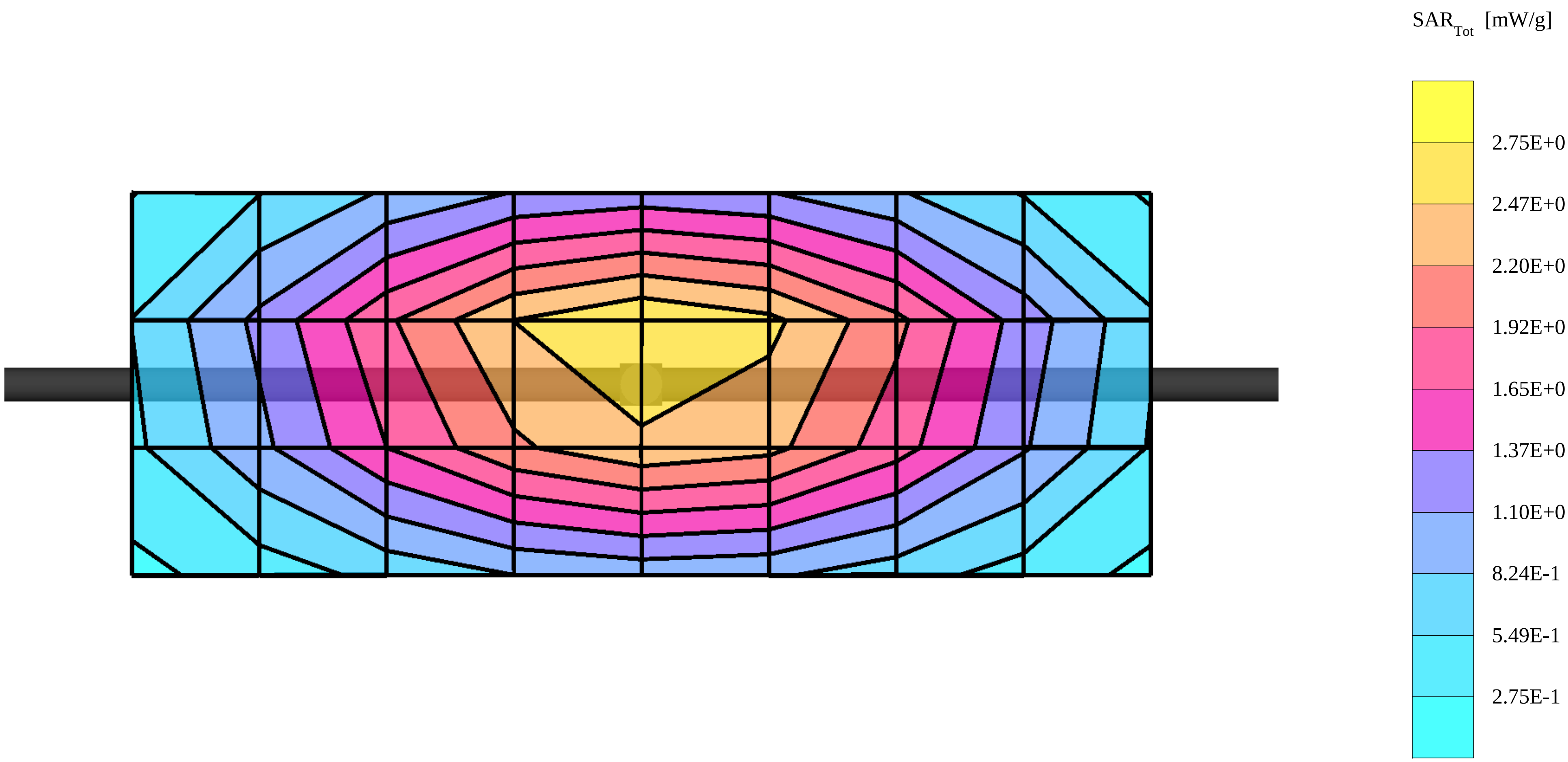
Probe: ET3DV6 - SN1502 - VALIDATION; ConvF(6.50,6.50,6.50); Crest factor: 1.0; 900 MHz VALIDATION: σ = 0.96 mho/m ε_r = 40.5 ρ = 1.00 g/cm^3

Cubes (2): SAR (1g): 2.91 mW/g ± 0.03 dB, SAR (10g): 1.84 mW/g ± 0.03 dB, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Penetration depth: 11.6 (10.7, 12.7) [mm]

Powerdrift: -0.04 dB



Dipole   900 MHz

900 MHz Dipole Validation / Dipole Sn# 096 / Forward Power = 249mW/ Acceptable Temp Range is 18-25°C Room Temp at time of measurement = 21.0*C. Simulant Temp at time of measurement = 20.C

R4 TP-1131   SUGAR sam expanded (Rev. 2)-9Jan03 Phantom; Flat Section; Position: (90°,90°); Frequency: 900 MHz

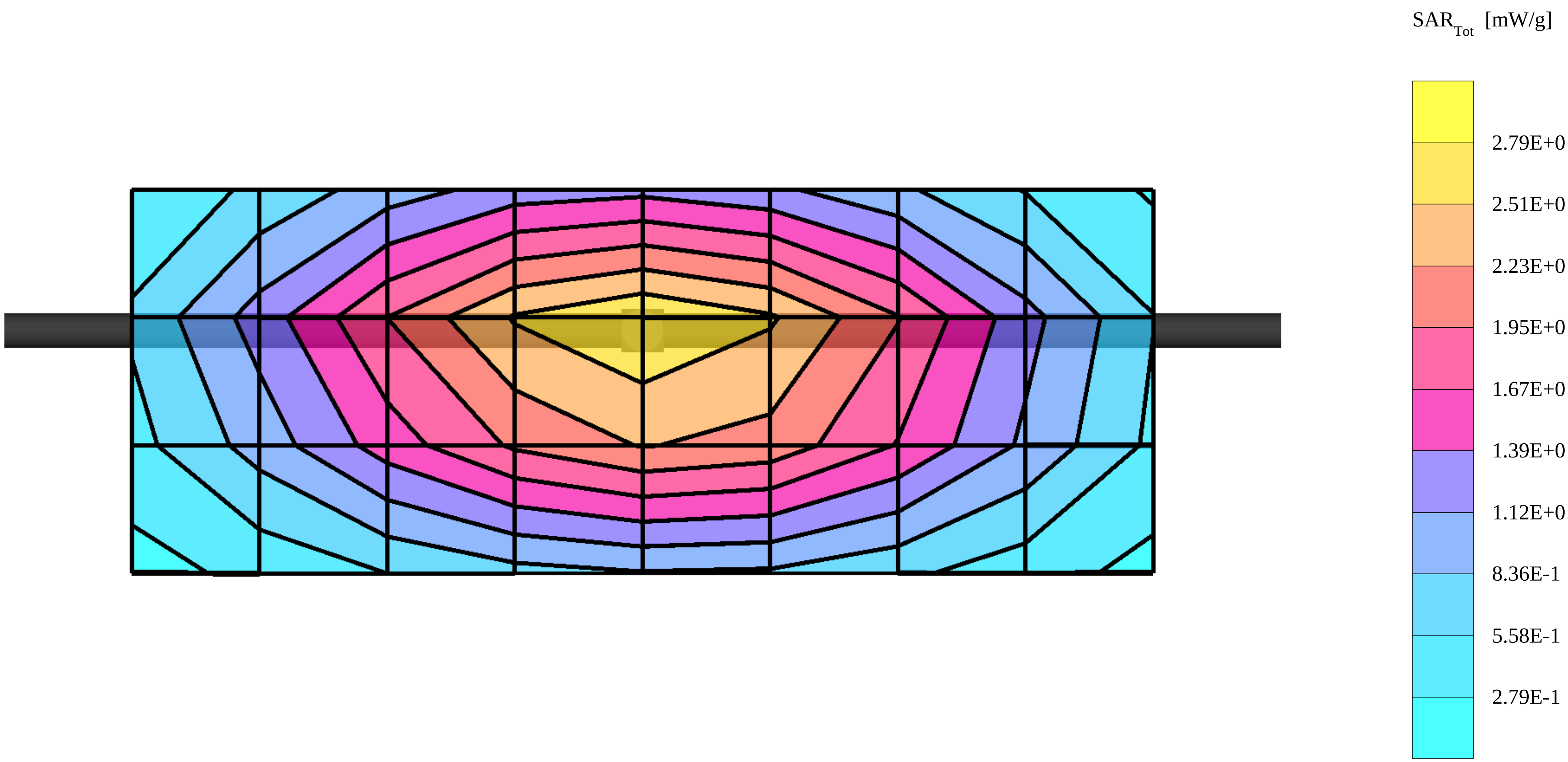
Probe: ET3DV6 - SN1502 - VALIDATION; ConvF(6.50,6.50,6.50); Crest factor: 1.0;   900 MHz VALIDATION: σ = 0.96 mho/m ε_r = 40.1 ρ = 1.00 g/cm^3

Cubes (2): SAR (1g): 2.86   mW/g ± 0.01 dB, SAR (10g): 1.81   mW/g ± 0.01 dB, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Penetration depth: 11.7 (10.8, 12.8) [mm]

Powerdrift: 0.01 dB



Dipole 1800 MHz

1800 MHz Dipole Validation / Dipole Sn# 272tr / Forward Power = 247mW / Acceptable Temp Range is 18-25°C Room Temp at time of measurement = 21.0*C. Simulant Temp at time of measurement =19.8*C.

R4 1-005 Amy Twin Phantom Rev.4 (22Aug02) Phantom; section 2 Section; Position: (90°,180°); Frequency: 1800 MHz

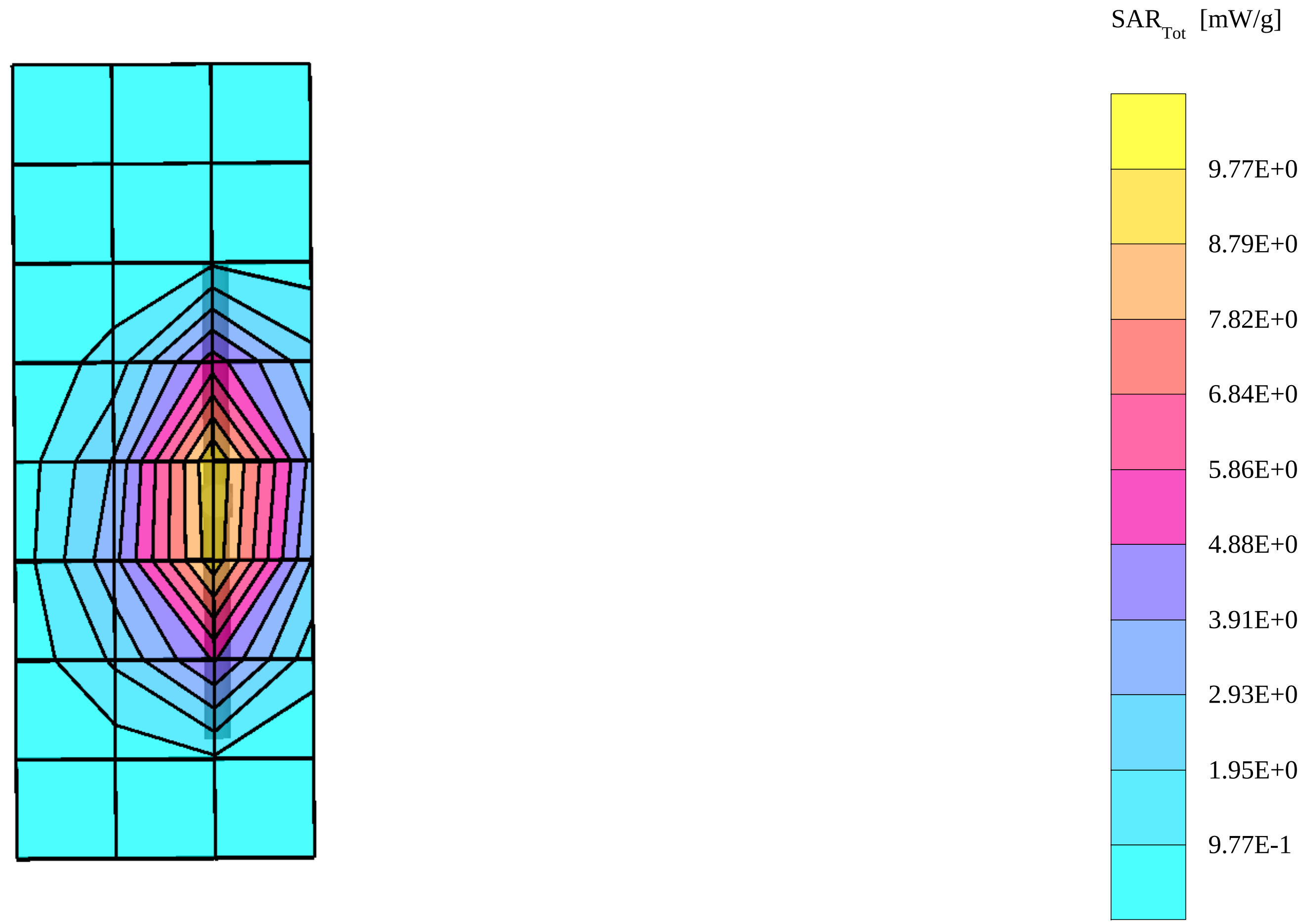
Probe: ET3DV6 - SN1502 - VALIDATION; ConvF(5.60,5.60,5.60); Crest factor: 1.0; 1800 MHz VALIDATION: σ = 1.38 mho/m ε_r = 39.5 ρ = 1.00 g/cm^3

Cubes (2): SAR (1g): 10.0 mW/g ± 0.01 dB, SAR (10g): 5.27 mW/g ± 0.00 dB, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Penetration depth: 8.3 (7.9, 9.1) [mm]

Powerdrift: -0.02 dB



Dipole 900 MHz

900 MHz Dipole Validation / Dipole Sn# 096 / Forward Power = 252mW / Acceptable Temp Range is 18-25°C Room Temp at time of measurement = 20.0*C. Simulant Temp at time of measurement = 20.3*C

R4 TP-1131 SUGAR sam expanded (Rev. 2)-9Jan03 Phantom; Section; Position: ; Frequency: 900 MHz

Probe: ET3DV6 - SN1502 - VALIDATION; ConvF(6.50,6.50,6.50); Crest factor: 1.0; 900 MHz VALIDATION: σ = 0.96 mho/m ε_r = 40.5 ρ = 1.00 g/cm^3

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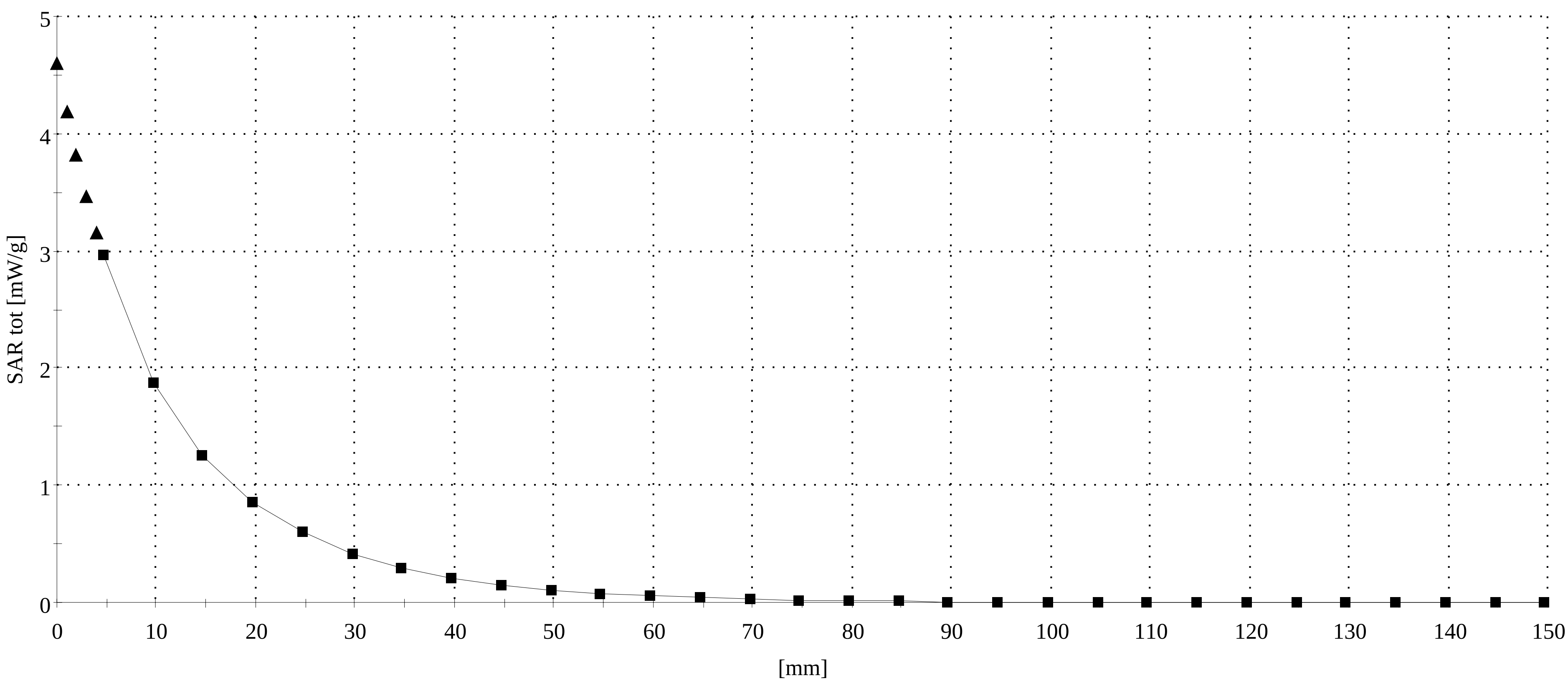
Z-Axis: Dx = 0.0, Dy = 0.0, Dz = 5.0

Penetration depth: 11.6 (10.8, 12.7) [mm]



Dipole 900 MHz

900 MHz Dipole Validation / Dipole Sn# 096 / Forward Power = 249mW/ Acceptable Temp Range is 18-25°C Room Temp at time of measurement = 21.0*C. Simulant Temp at time of measurement = 20.C

R4 TP-1131 SUGAR sam expanded (Rev. 2)-9Jan03 Phantom; Section; Position: ; Frequency: 900 MHz

Probe: ET3DV6 - SN1502 - VALIDATION; ConvF(6.50,6.50,6.50); Crest factor: 1.0; 900 MHz VALIDATION: σ = 0.96 mho/m ε_r = 40.1 ρ = 1.00 g/cm^3

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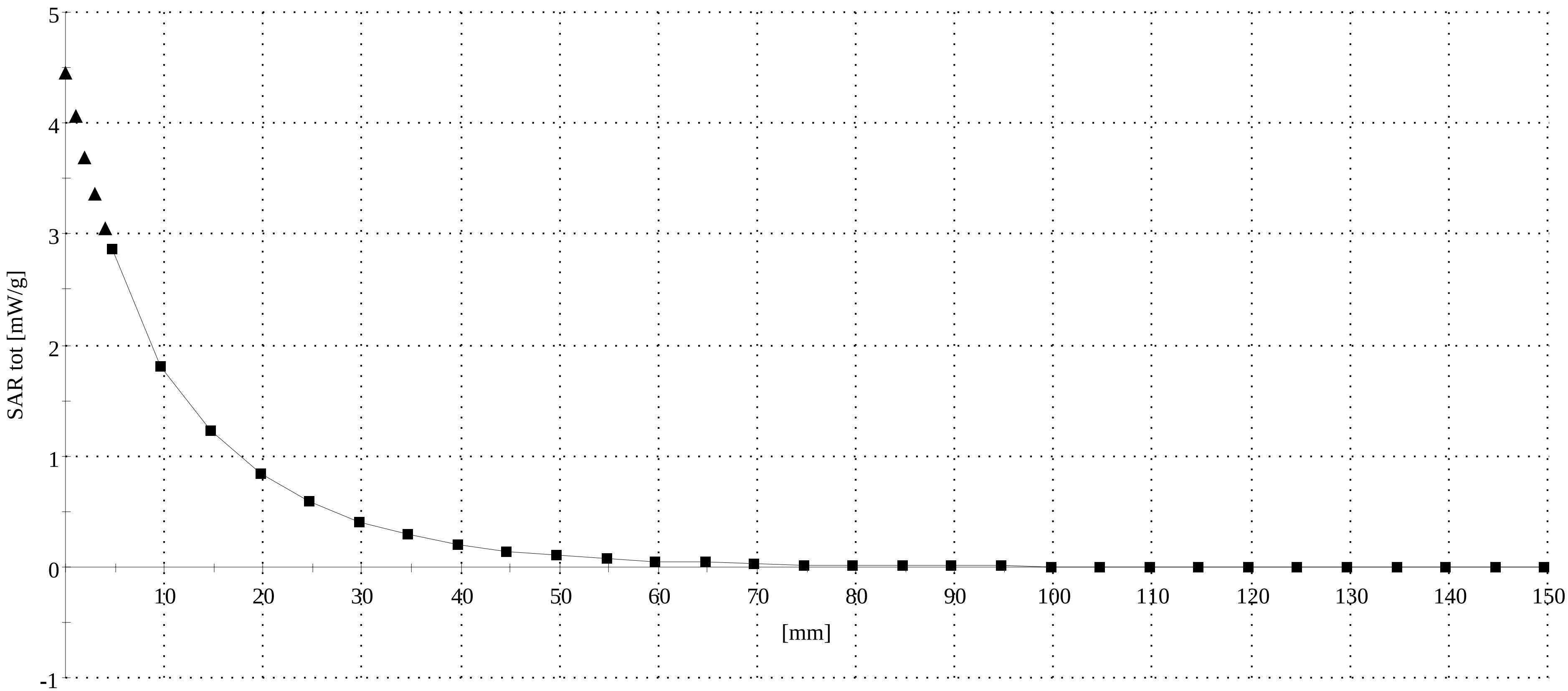
Z-Axis: Dx = 0.0, Dy = 0.0, Dz = 5.0

Penetration depth: 11.6 (10.7, 12.8) [mm]



Dipole 1800 MHz

1800 MHz Dipole Validation / Dipole Sn# 272tr / Forward Power = 247mW / Acceptable Temp Range is 18-25°C Room Temp at time of measurement = 21.0*C. Simulant Temp at time of measurement =19.8*C.

R4 1-005 Amy Twin Phantom Rev.4 (22Aug02) Phantom; Section; Position: ; Frequency: 1800 MHz

Probe: ET3DV6 - SN1502 - VALIDATION; ConvF(5.60,5.60,5.60); Crest factor: 1.0; 1800 MHz VALIDATION: σ = 1.38 mho/m ε_r = 39.5 ρ = 1.00 g/cm^3

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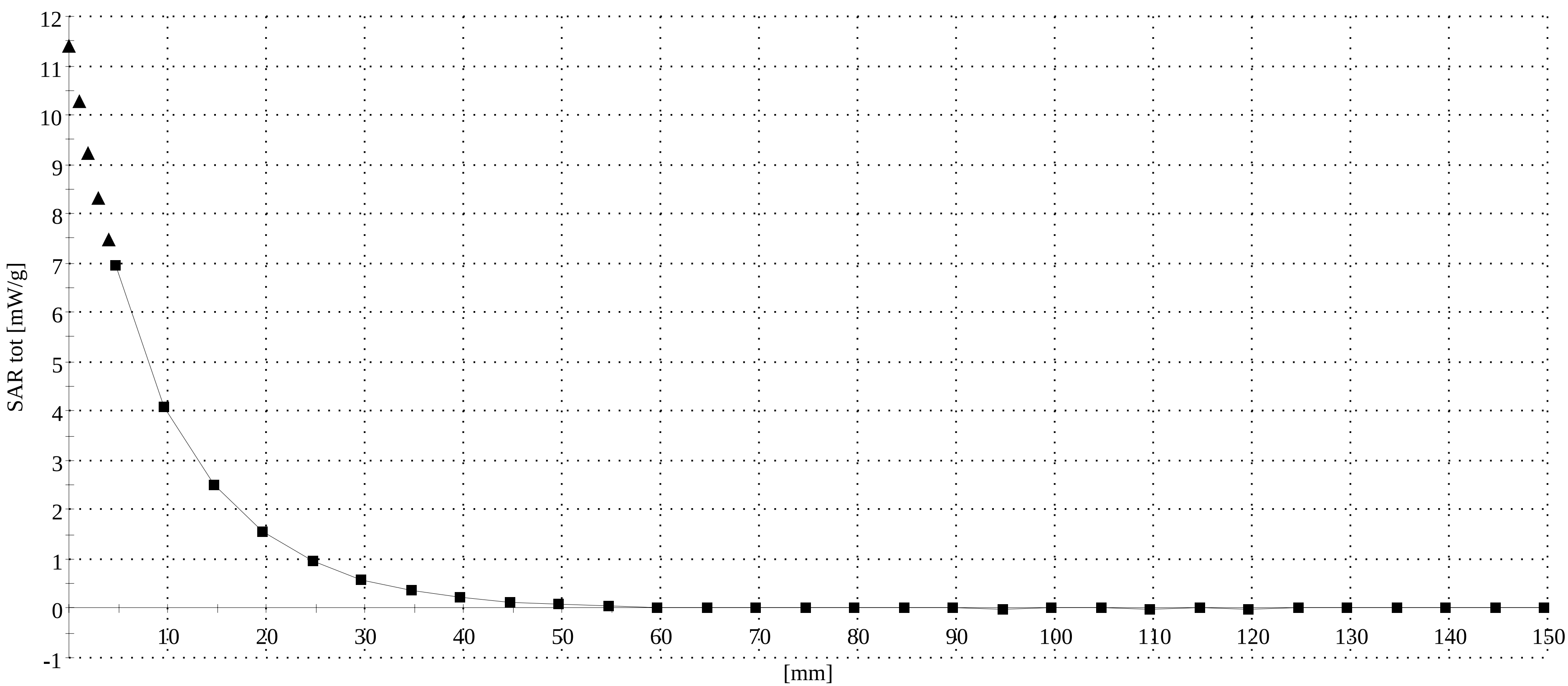
Z-Axis: Dx = 0.0, Dy = 0.0, Dz = 5.0

Penetration depth: 9.7 (9.4, 10.3) [mm]

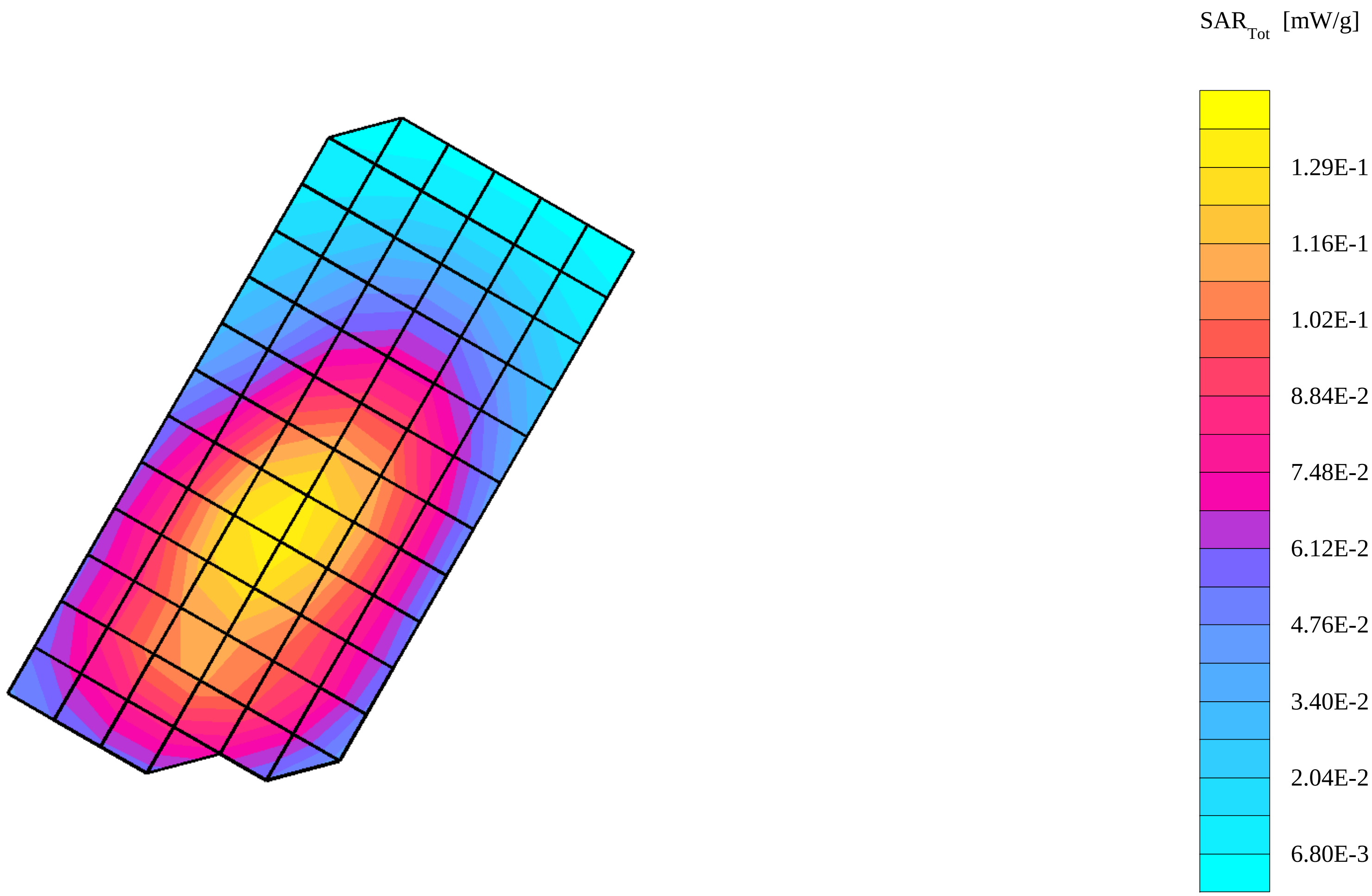


Appendix 2

SAR distribution plots for Phantom Head Adjacent Use

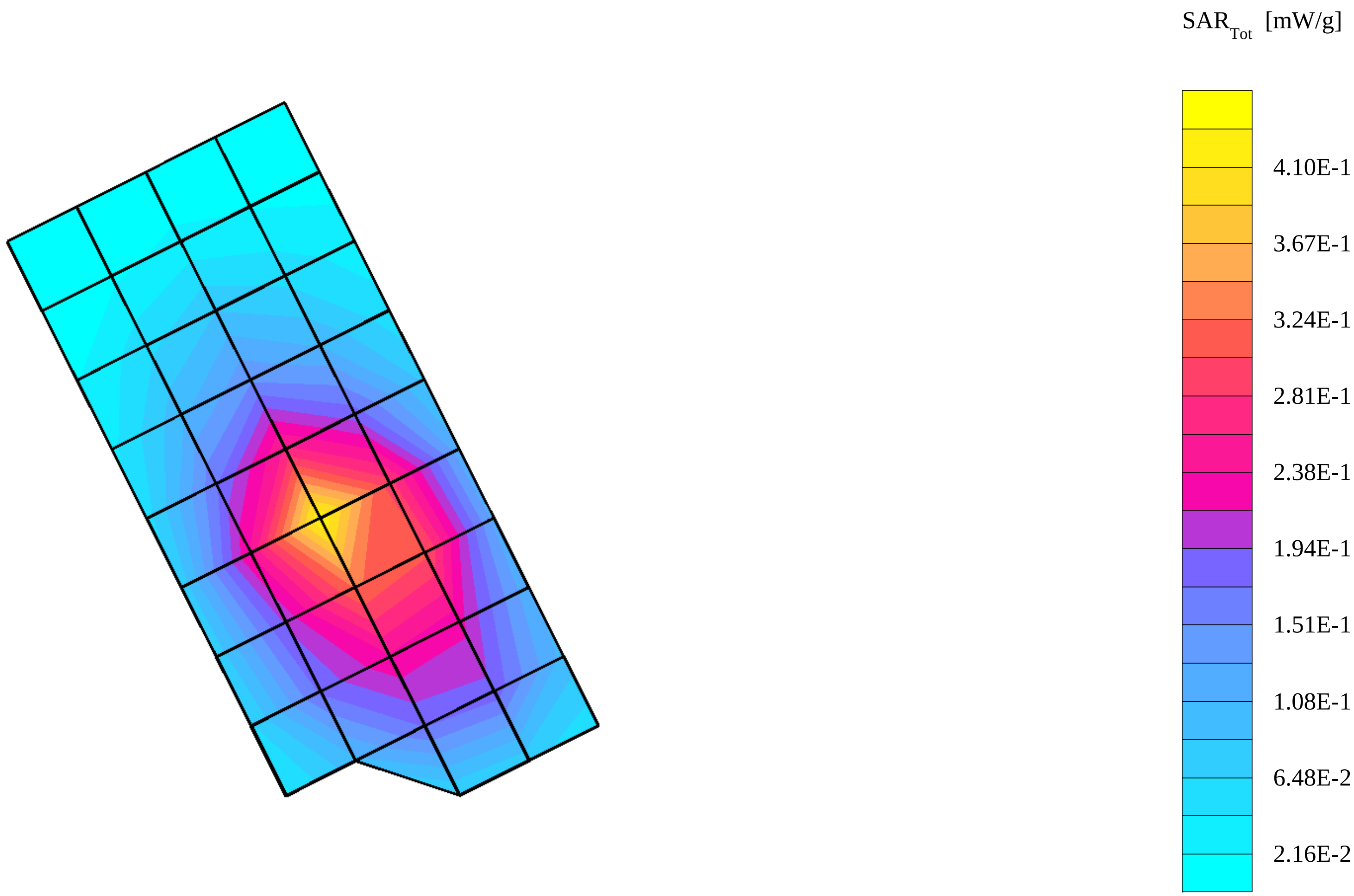
Serial# 1005000490712

Ch# 190 / Pwr Step: 7 / Antenna Position: Internal / Battery Model #: AANN4204A / DEVICE POSITION (cheek or rotated): Rotated
R4 TP-1131 SUGAR sam expanded (Rev. 2)-9Jan03 Phantom; Left Hand Section; Position: (90°,180°); Frequency: 837 MHz
Probe: ET3DV6 - SN1502 - IEEE HEAD; ConvF(6.50,6.50,6.50); Crest factor: 8.0; 835 MHz Head & Body: σ = 0.90 mho/m ε_r = 41.3 ρ = 1.00 g/cm^3
Cube 7x7x7: SAR (1g): 0.134 mW/g, SAR (10g): 0.0969 mW/g, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0
Penetration depth: 17.8 (16.8, 19.0) [mm]
Powerdrift: -0.03 dB



Serial# 1005000490712

Ch# 190 / Pwr Step: 7 / Antenna Position: Internal / Battery Model #: AANN4204A / DEVICE POSITION (cheek or rotated): Cheek
R4 TP-1131 SUGAR sam expanded (Rev. 2)-9Jan03 Phantom; Right Hand Section; Position: (90°,180°); Frequency: 837 MHz
Probe: ET3DV6 - SN1502 - IEEE HEAD; ConvF(6.50,6.50,6.50); Crest factor: 8.0; 835 MHz Head & Body: σ = 0.90 mho/m ε_r = 41.3 ρ = 1.00 g/cm^3
Cube 7x7x7: SAR (1g): 0.432 mW/g, SAR (10g): 0.274 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0
Penetration depth: 13.3 (12.2, 14.6) [mm]
Powerdrift: -0.06 dB



Serial# 1005000490712

Ch# 661 / Pwr Step: 0 / Antenna Position: Internal / Battery Model #: AANN4204A / DEVICE POSITION (cheek or rotated): Cheek

R4 TP-1250 GLYCOL sam expanded (Rev. 2)-9Jan03 Phantom; Right Hand Section; Position: (90°,180°); Frequency: 1880 MHz

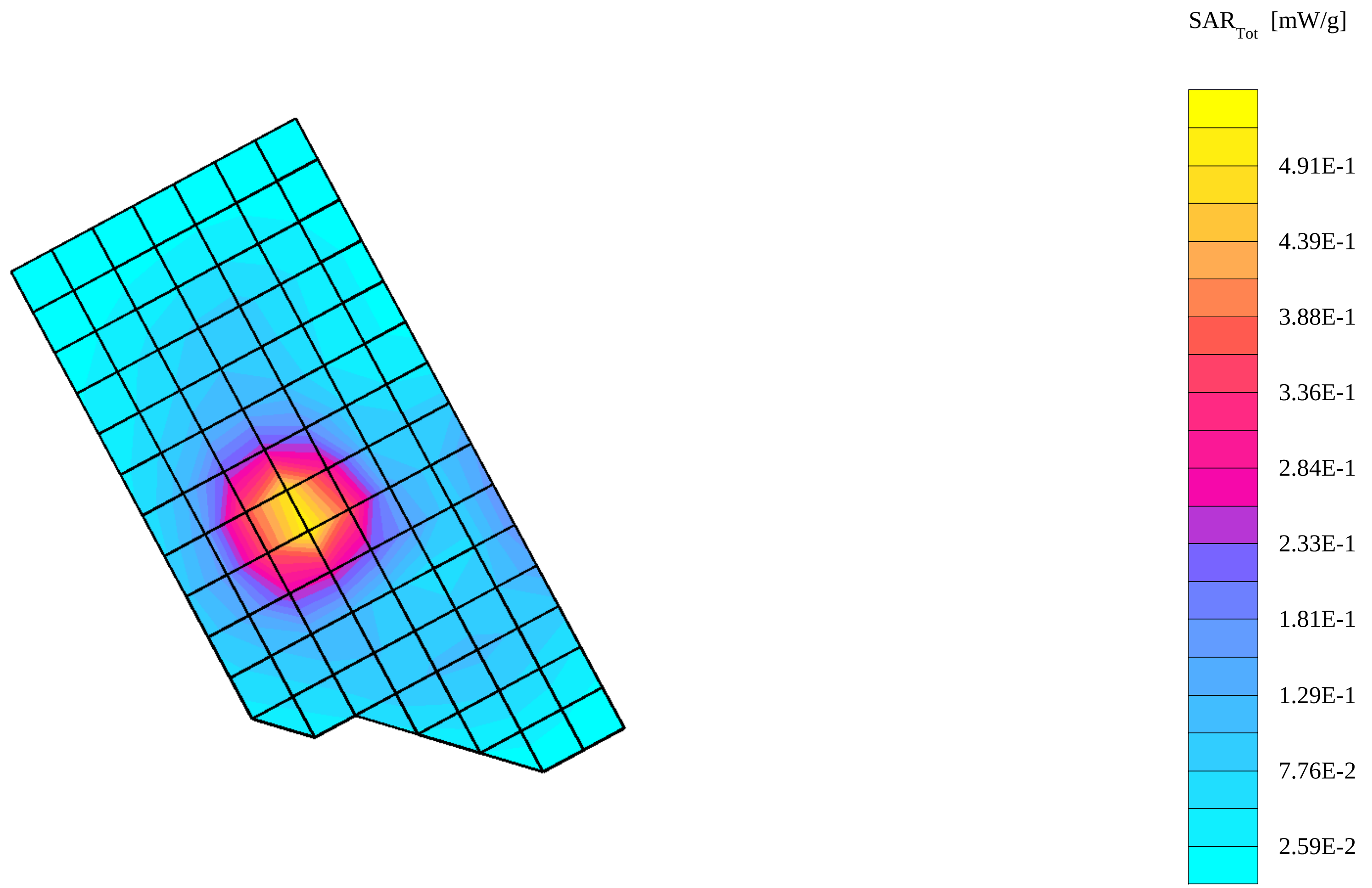
Probe: ET3DV6 - SN1502 - IEEE HEAD; ConvF(5.60,5.60,5.60); Crest factor: 8.0; 1880 MHz Head & Body: σ = 1.47 mho/m ε_r = 39.2 ρ = 1.00 g/cm^3

Cube 7x7x7: SAR (1g): 0.528 mW/g, SAR (10g): 0.269 mW/g, (Worst-case extrapolation)

Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0

Penetration depth: 8.7 (8.6, 8.9) [mm]

Powerdrift: -0.24 dB



Serial# 1005000490712

Ch# 661 / Pwr Step: 0 / Antenna Position: Internal / Battery Model #: AANN4204A / DEVICE POSITION (cheek or rotated): Rotated

R4 TP-1250 GLYCOL sam expanded (Rev. 2)-9Jan03 Phantom; Right Hand Section; Position: (90°,180°); Frequency: 1880 MHz

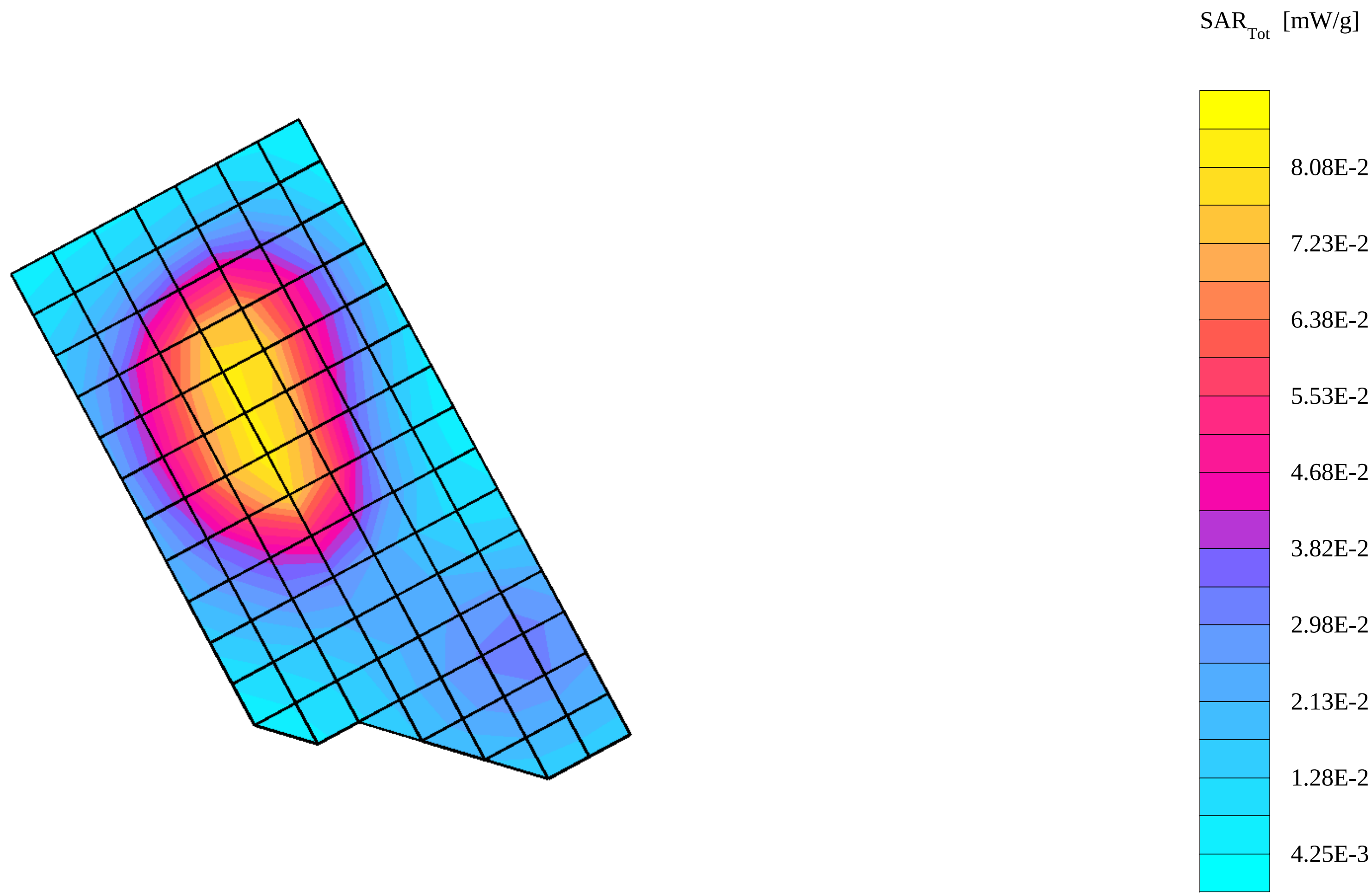
Probe: ET3DV6 - SN1502 - IEEE HEAD; ConvF(5.60,5.60,5.60); Crest factor: 8.0; 1880 MHz Head & Body: σ = 1.47 mho/m ε_r = 39.2 ρ = 1.00 g/cm^3

Cube 7x7x7: SAR (1g): 0.0821 mW/g, SAR (10g): 0.0522 mW/g * Max outside, (Worst-case extrapolation)

Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0

Penetration depth: 11.1 (10.4, 11.9) [mm]

Powerdrift: -0.10 dB



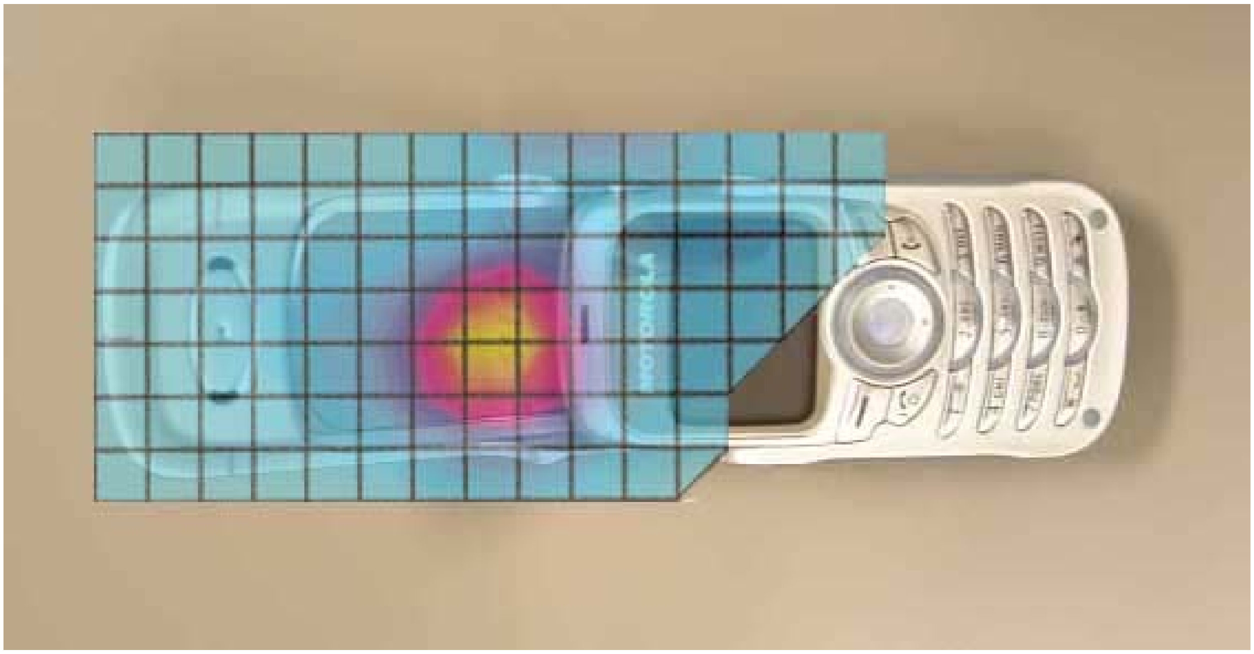


Figure 1.Typical 1900MHz Right Head Adjacent Contour Overlaid on Phone with Antenna Fixed (Cheek Touch)

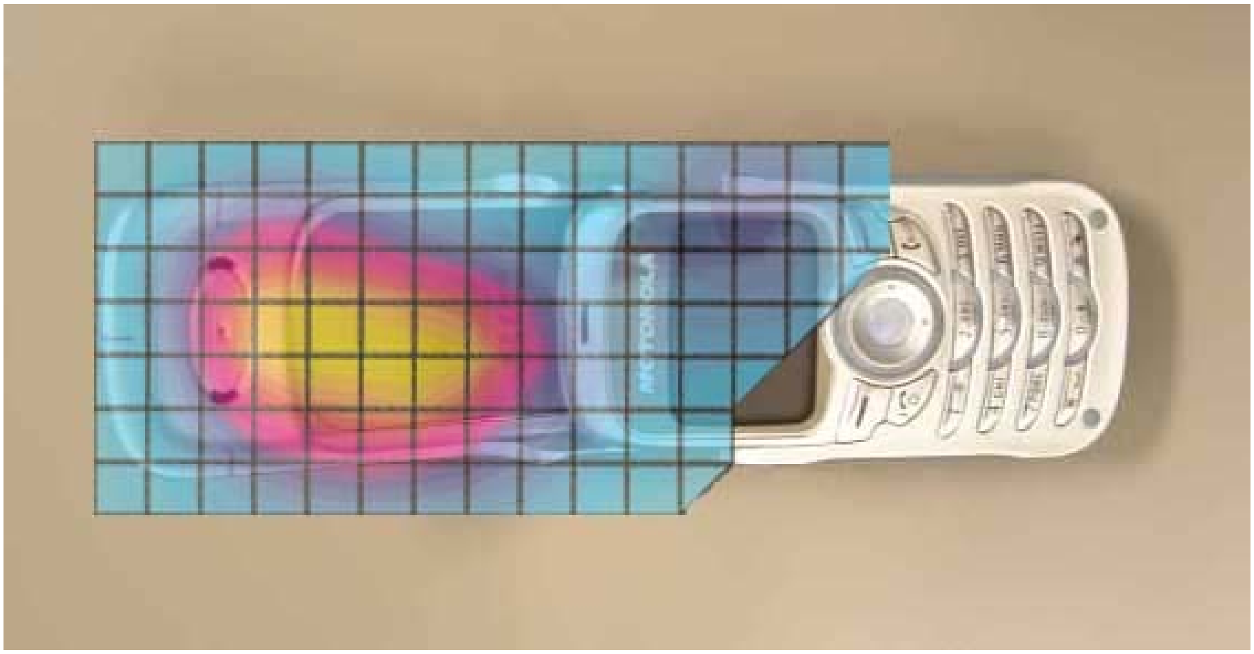


Figure 2.Typical 1900MHz Right Head Adjacent Contour Overlaid on Phone with Antenna Fixed (15 ˚ Tilt)

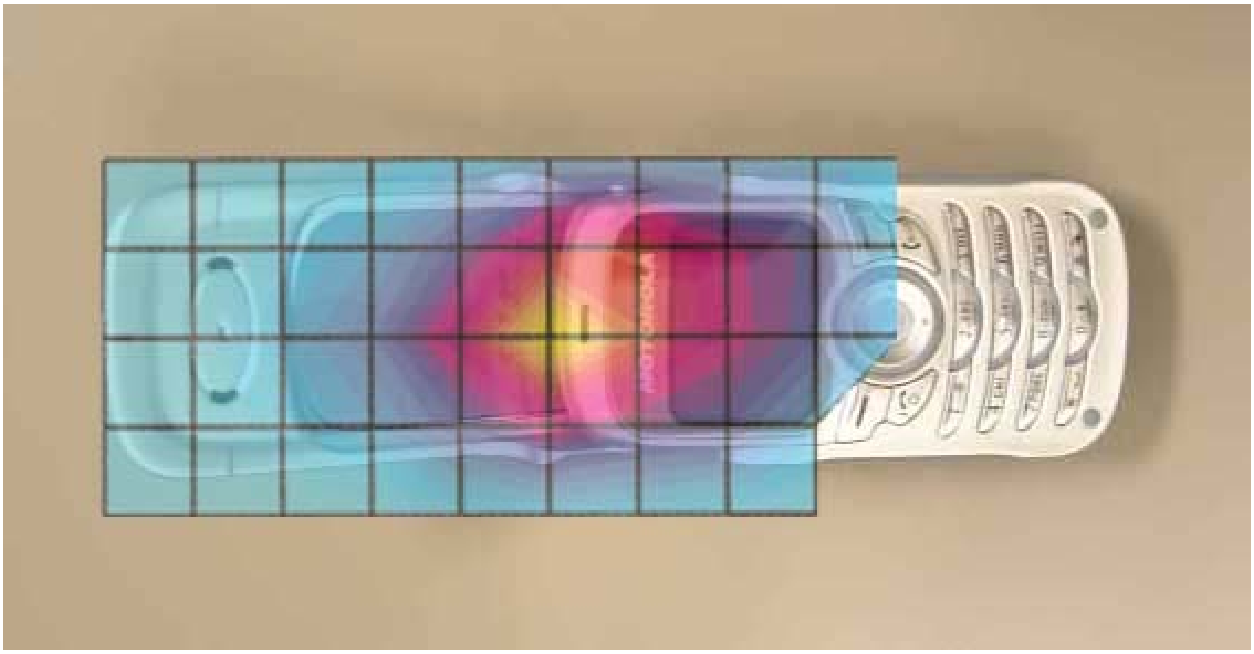


Figure 3.Typical 850MHz Right Head Adjacent Contour Overlaid on Phone with Antenna Fixed (Cheek Touch)

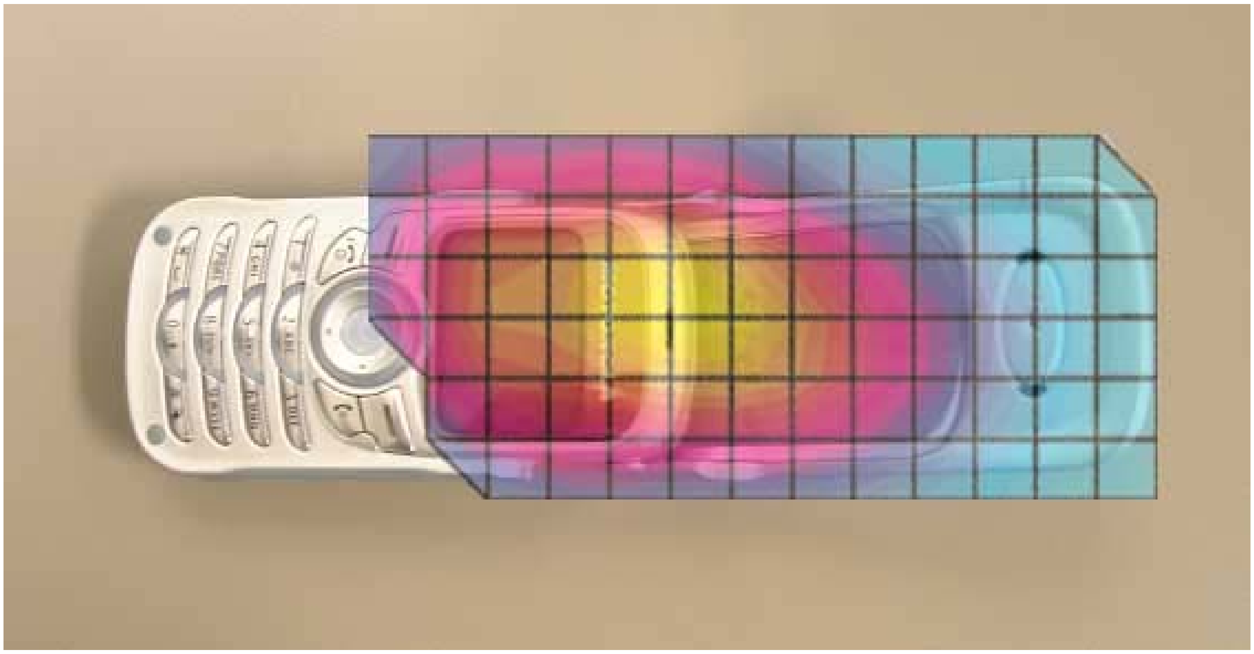


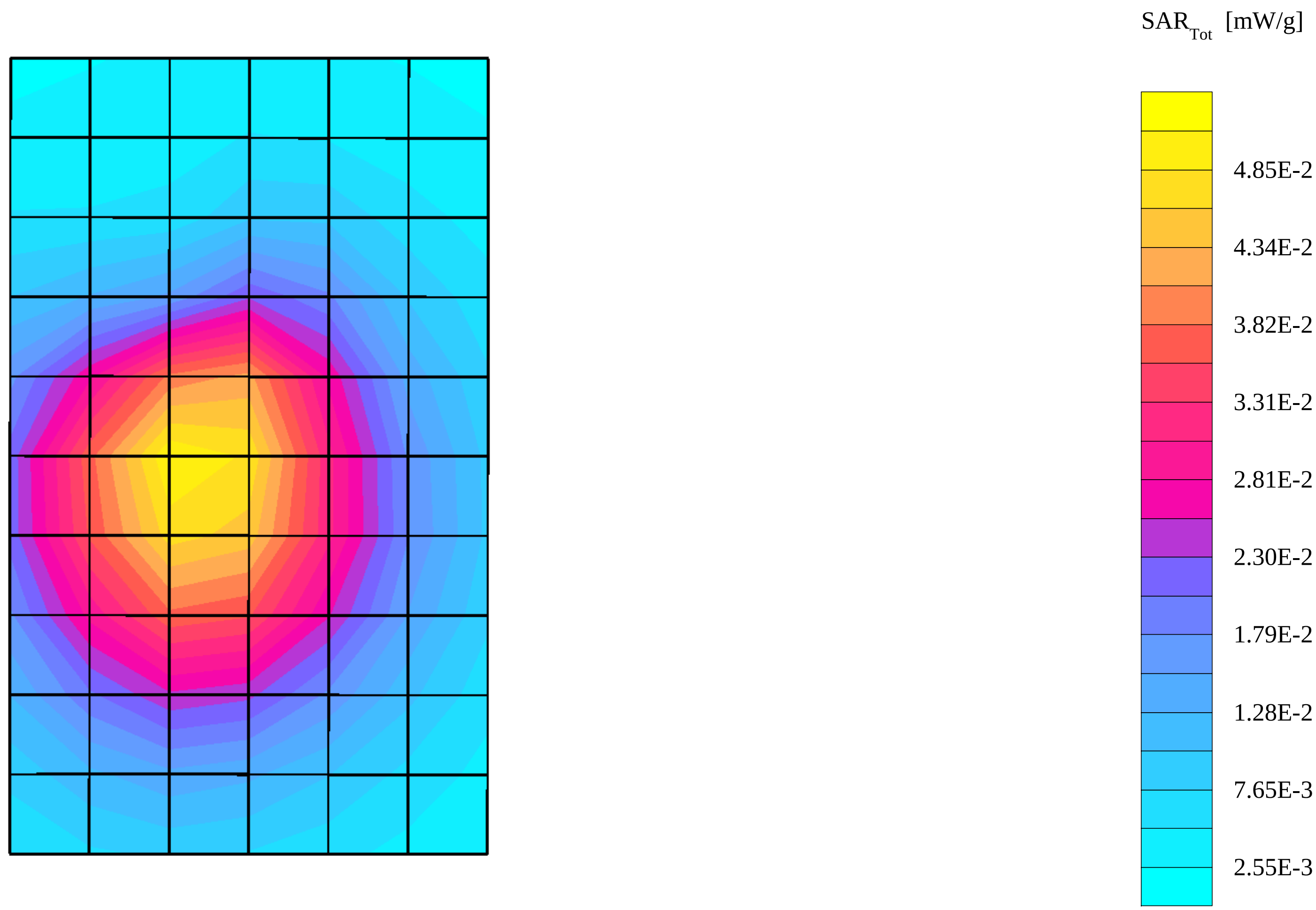
Figure 4.Typical 850MHz Right Head Adjacent Contour Overlaid on Phone with Antenna Fixed (15 ˚ Tilt)

Appendix 3

SAR distribution plots for Body Worn Configuration

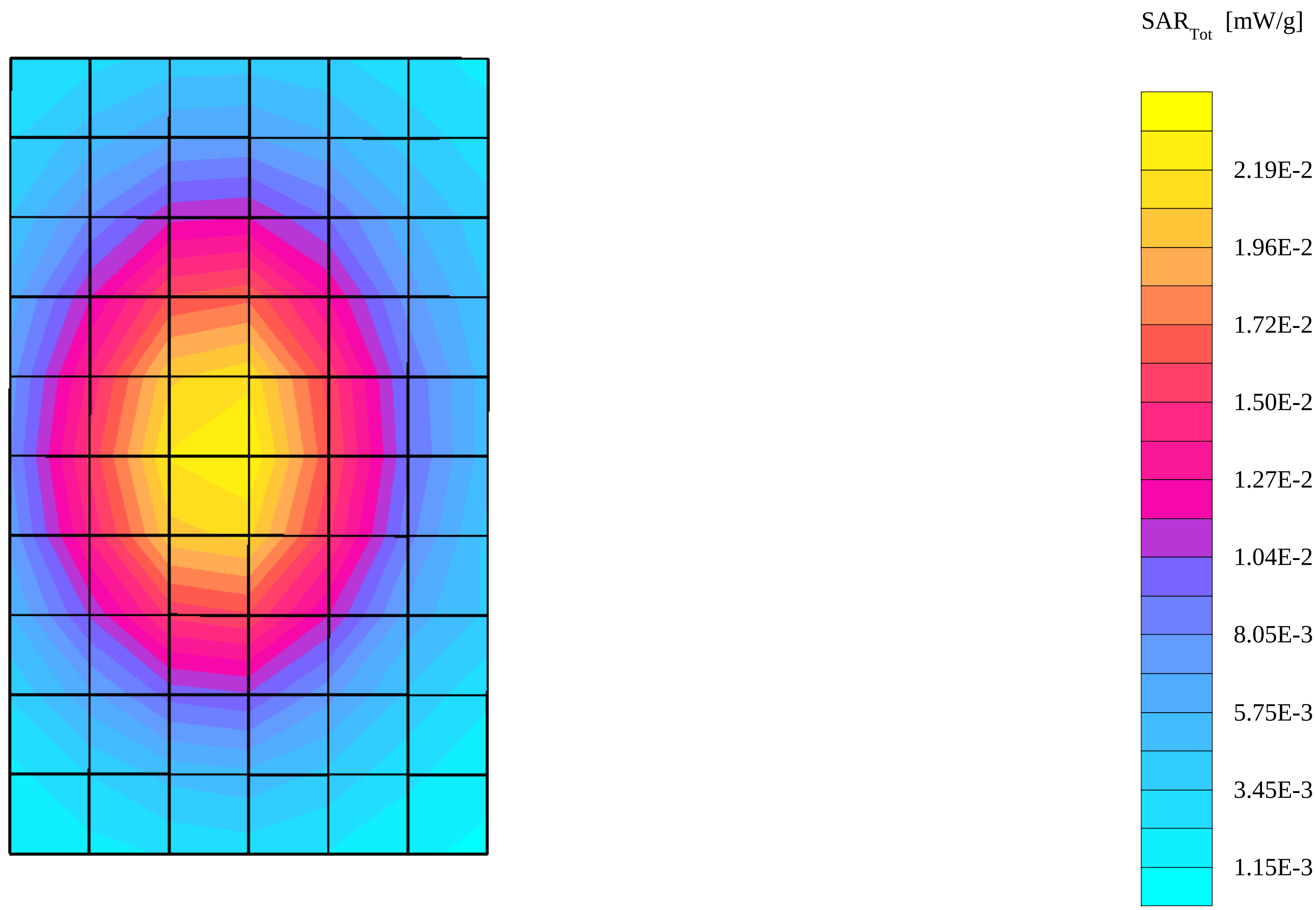
Serial# 1005000490712

Ch# 190 Pwr Step: 7 (OTA) / Antenna Position: INTERNAL / Battery Model #: AANN4204A / Accessory Model # = battery cover level. 1 in BACK of phone at its highest point
R4 1-005 Amy Twin Phantom Rev.4 (22Aug02) Phantom; section 1 Section; Position: (0°,0°); Frequency: 837 MHz
Probe: ET3DV6 - SN1502 - FCC Body; ConvF(6.30,6.30,6.30); Crest factor: 8.0; 835 MHz Head & Body: σ = 1.00 mho/m ε_r = 54.9 ρ = 1.00 g/cm^3
Cube 7x7x7: SAR (1g): 0.0515 mW/g, SAR (10g): 0.0368 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Penetration depth: 16.3 (14.6, 18.0) [mm]
Powerdrift: -0.07 dB



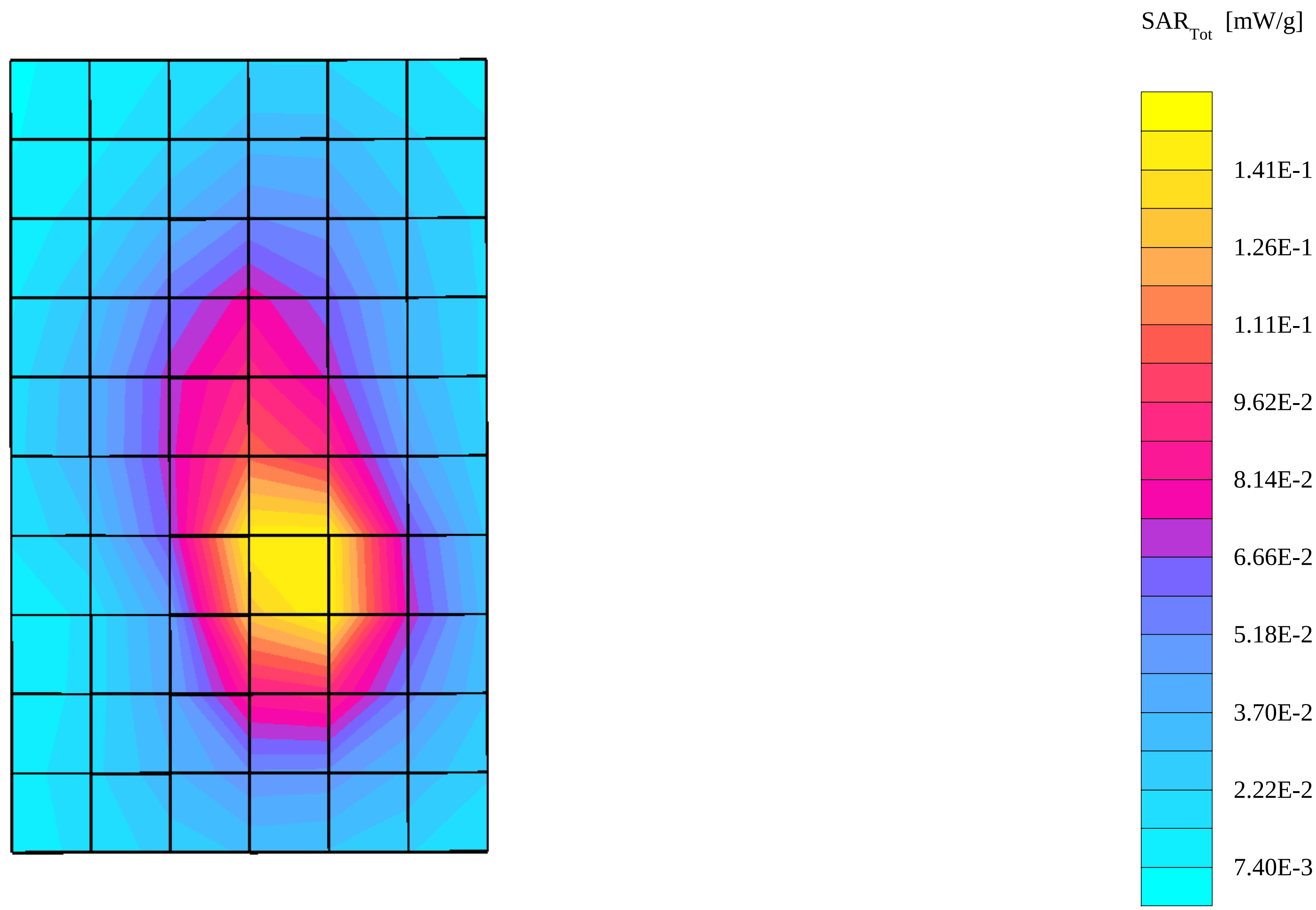
Serial# 1005000490712

Ch# 190 Pwr Step: 7 (OTA) / Antenna Position: INTERNAL / Battery Model #: AANN4204A / Accessory Model # = positioner level. 1 inch FRONT of phone at its highest point
R4 1-005 Amy Twin Phantom Rev.4 (22Aug02) Phantom; section 1 Section; Position: (0°,0°); Frequency: 837 MHz
Probe: ET3DV6 - SN1502 - FCC Body; ConvF(6.30,6.30,6.30); Crest factor: 8.0; 835 MHz Head & Body: $\sigma = 1.00$ mho/m $\varepsilon_r = 54.9$ $\rho = 1.00$ g/cm^3
Cube 7x7x7: SAR (1g): 0.0234 mW/g, SAR (10g): 0.0169 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Penetration depth: 16.7 (15.7, 17.9) [mm]
Powerdrift: -0.08 dB



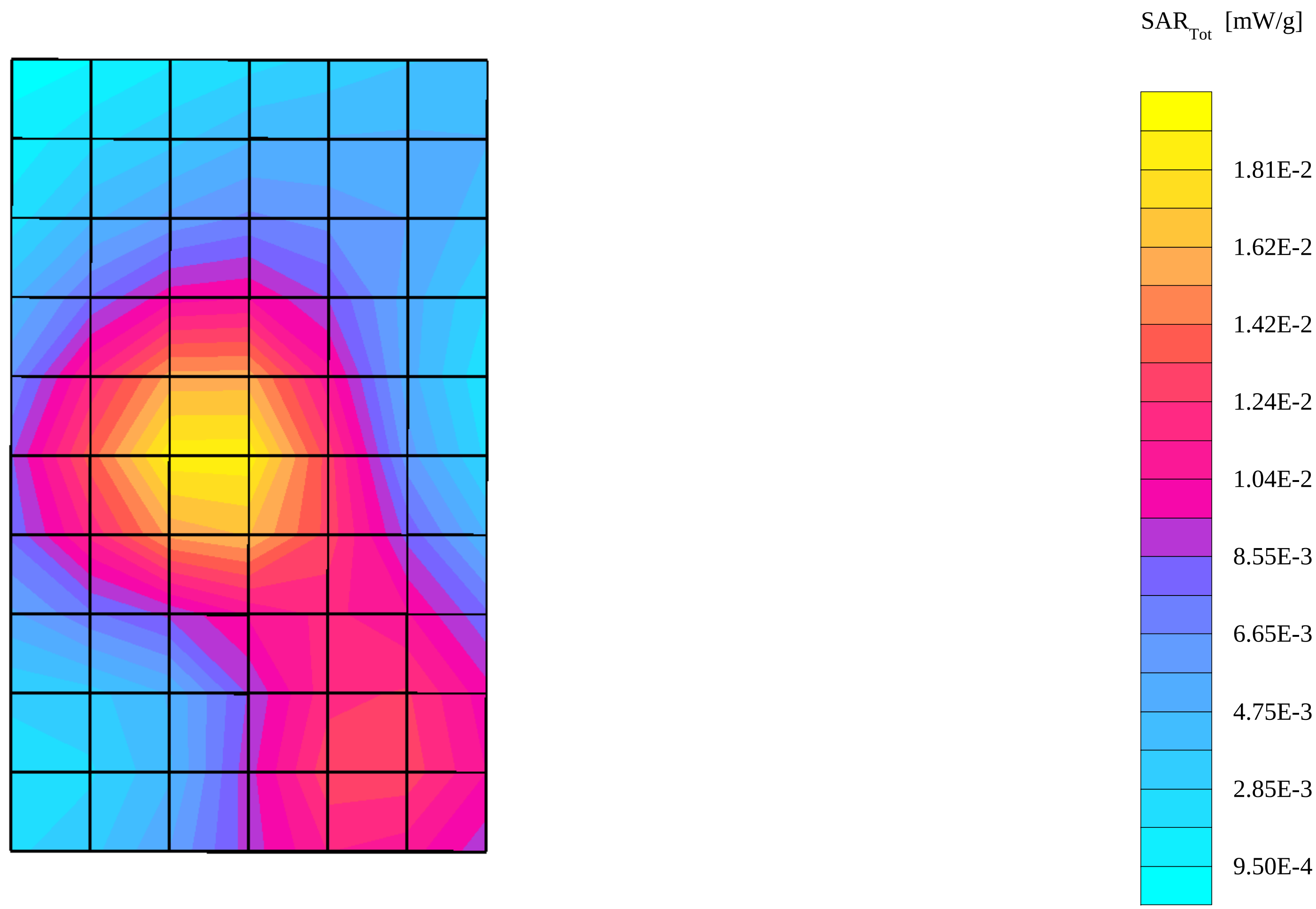
Serial# 1005000490712

Ch# 661 / Pwr Step: 0 / Antenna Position: Internal / Battery Model #: AANN4204A / Back of Phone 1in. from Phantom
R4 1-005 Amy Twin Phantom Rev.4 (22Aug02) Phantom; section 2 Section; Position: (0°,0°); Frequency: 1880 MHz
Probe: ET3DV6 - SN1502 - FCC Body; ConvF(5.30,5.30,5.30); Crest factor: 8.0; 1880 MHz Head & Body: σ = 1.57 mho/m ε_r = 51.7 ρ = 1.00 g/cm^3
Cube 7x7x7: SAR (1g): 0.163 mW/g, SAR (10g): 0.0971 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Penetration depth: 10.2 (9.3, 11.5) [mm]
Powerdrift: -0.30 dB



Serial# 1005000490712

Ch# 661 / Pwr Step: 0 / Antenna Position: Internal / Battery Model #: AANN4204A / Front of Phone 1in. from Phantom
R4 1-005 Amy Twin Phantom Rev.4 (22Aug02) Phantom; section 2 Section; Position: (0°,0°); Frequency: 1880 MHz
Probe: ET3DV6 - SN1502 - FCC Body; ConvF(5.30,5.30,5.30); Crest factor: 8.0; 1880 MHz Head & Body: σ = 1.57 mho/m ε_r = 51.7 ρ = 1.00 g/cm^3
Cube 7x7x7: SAR (1g): 0.0190 mW/g, SAR (10g): 0.0119 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Penetration depth: 10.2 (9.4, 11.3) [mm]
Powerdrift: -0.38 dB



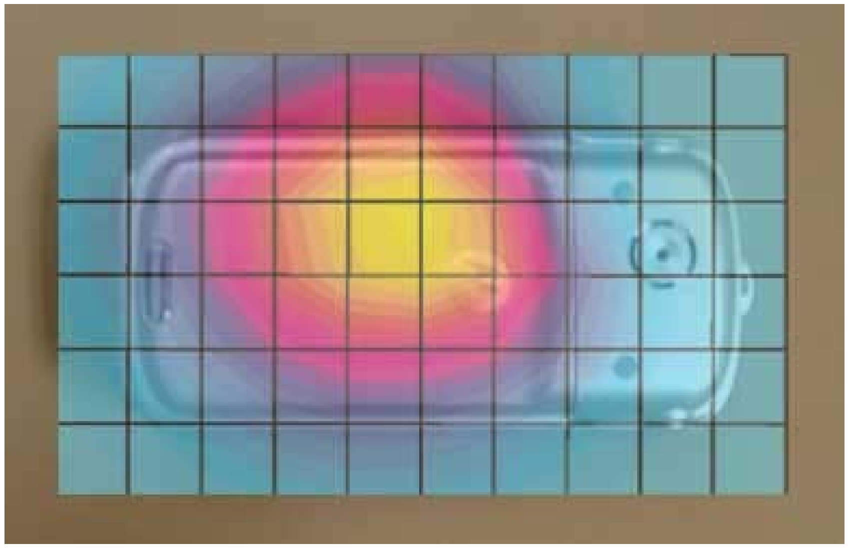


Figure 5.Typical 850 MHz Body-Worn Contour Overlaid on Phone with Antenna Fixed

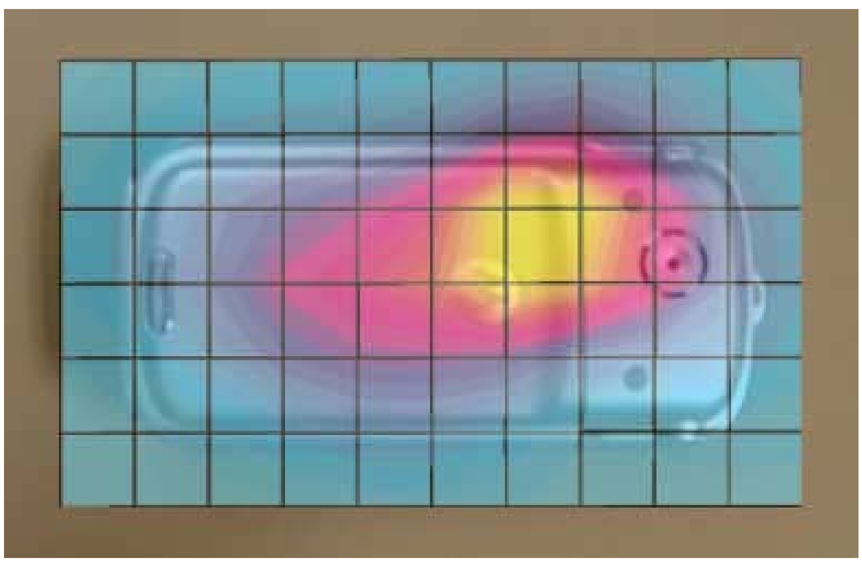


Figure 6. Typical 1900 MHz Body-Worn Contour Overlaid on Phone with Antenna Fixed

Appendix 4

Probe Calibration Certificate

Schmid & Partner
Engineering AG

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

Calibration Certificate

Dosimetric E-Field Probe

Type:	**ET3DV6**
Serial Number:	**1502**
Place of Calibration:	**Zurich**
Date of Calibration:	**September 27, 2002**
Calibration Interval:	**12 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:	N. Vetter
Approved by:	[illegible]

Schmid & Partner
Engineering AG

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

Probe ET3DV6

SN:1502

Manufactured:	October 24, 1999
Last calibration:	September 26, 2001
Recalibrated:	September 27, 2002

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

DASY - Parameters of Probe: ET3DV6 SN:1502

Sensitivity in Free Space

NormX	**1.84**	$\mu V/(V/m)^2$
NormY	**1.89**	$\mu V/(V/m)^2$
NormZ	**1.87**	$\mu V/(V/m)^2$

Diode Compression

DCP X	**93**	mV
DCP Y	**93**	mV
DCP Z	**93**	mV

Sensitivity in Tissue Simulating Liquid

Head **900 MHz** ε_r **= 41.5 ± 5%** σ **= 0.97 ± 5% mho/m**
Head **835 MHz** ε_r **= 41.5 ± 5%** σ **= 0.90 ± 5% mho/m**

ConvF X	**6.5**	± 9.5% (k=2)	Boundary effect:	
ConvF Y	**6.5**	± 9.5% (k=2)	Alpha	**0.46**
ConvF Z	**6.5**	± 9.5% (k=2)	Depth	**2.27**

Head **1800 MHz** ε_r **= 40.0 ± 5%** σ **= 1.40 ± 5% mho/m**
Head **1900 MHz** ε_r **= 40.0 ± 5%** σ **= 1.40 ± 5% mho/m**

ConvF X	**5.6**	± 9.5% (k=2)	Boundary effect:	
ConvF Y	**5.6**	± 9.5% (k=2)	Alpha	**0.56**
ConvF Z	**5.6**	± 9.5% (k=2)	Depth	**2.24**

Boundary Effect

Head **900 MHz** **Typical SAR gradient: 5 % per mm**

Probe Tip to Boundary		**1 mm**	**2 mm**
SAR_{be} [%]	Without Correction Algorithm	10.2	5.7
SAR_{be} [%]	With Correction Algorithm	0.3	0.4

Head **1800 MHz** **Typical SAR gradient: 10 % per mm**

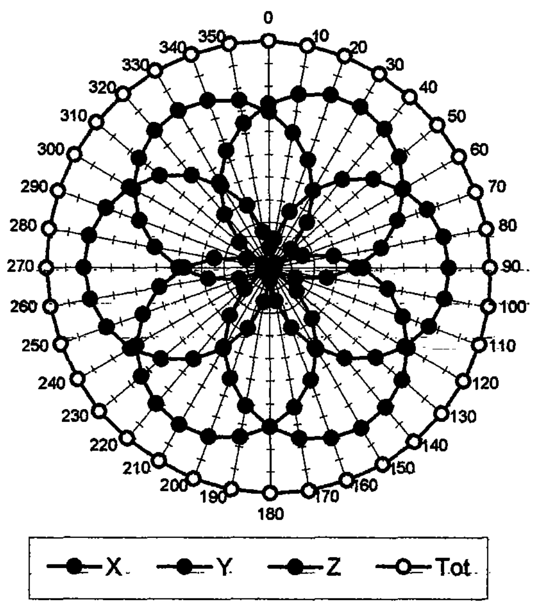
Probe Tip to Boundary		**1 mm**	**2 mm**
SAR_{be} [%]	Without Correction Algorithm	11.9	7.7
SAR_{be} [%]	With Correction Algorithm	0.1	0.3

Sensor Offset

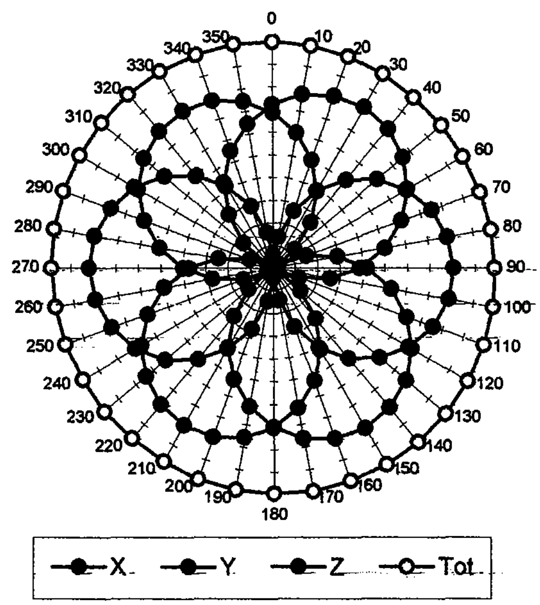
Probe Tip to Sensor Center	**2.7**	mm
Optical Surface Detection	**1.4 ± 0.2**	mm

Receiving Pattern (ϕ), θ = 0°

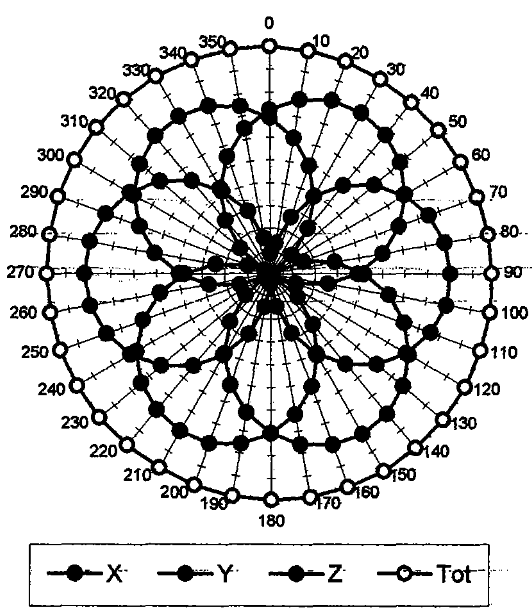
f = 30 MHz, TEM cell ifi110



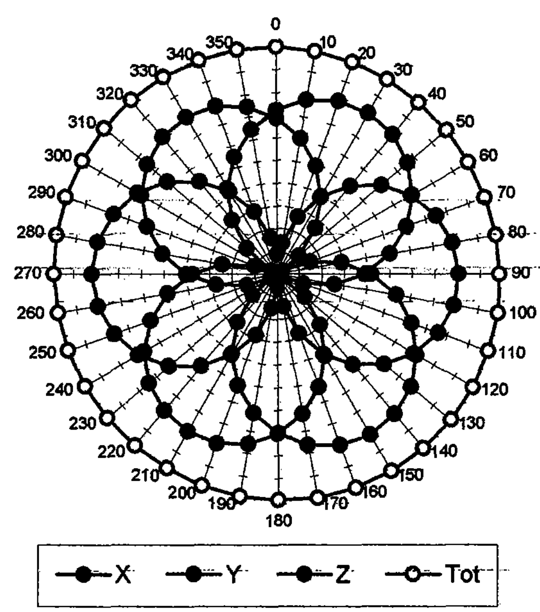
f = 100 MHz, TEM cell ifi110

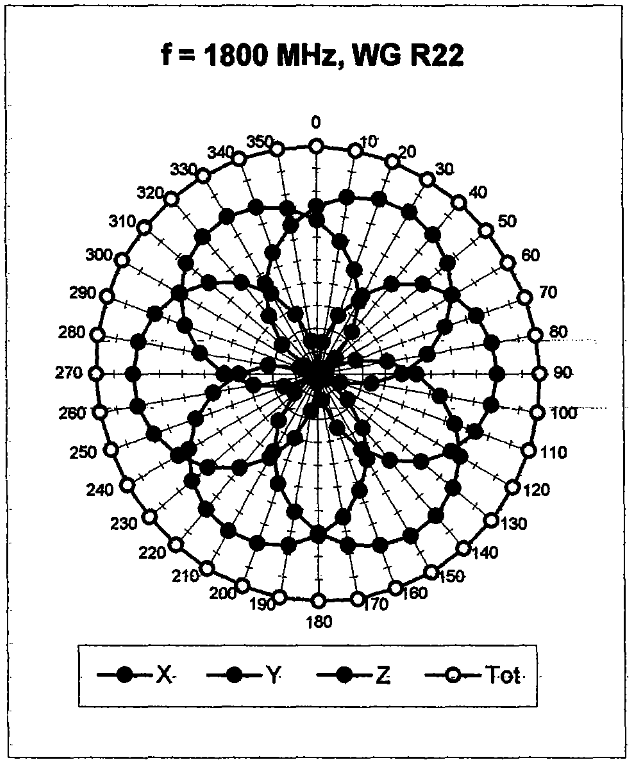


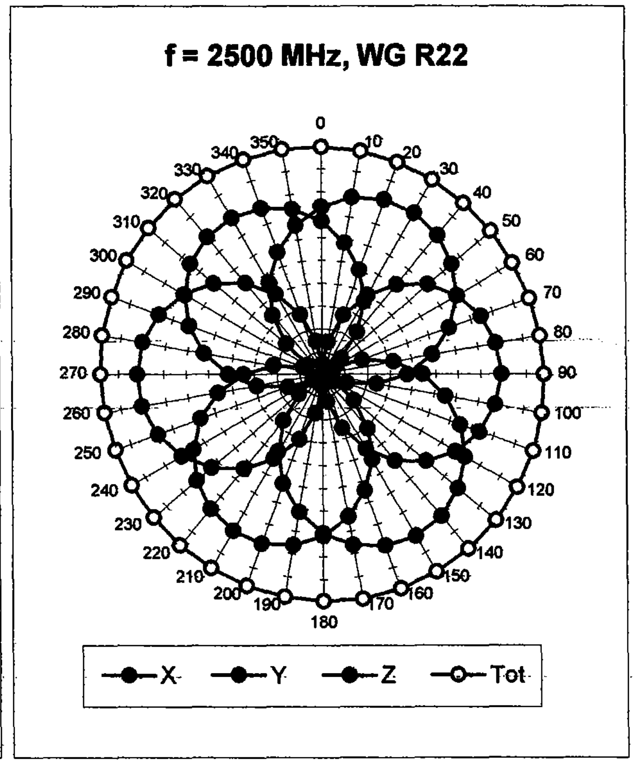
f = 300 MHz, TEM cell ifi110



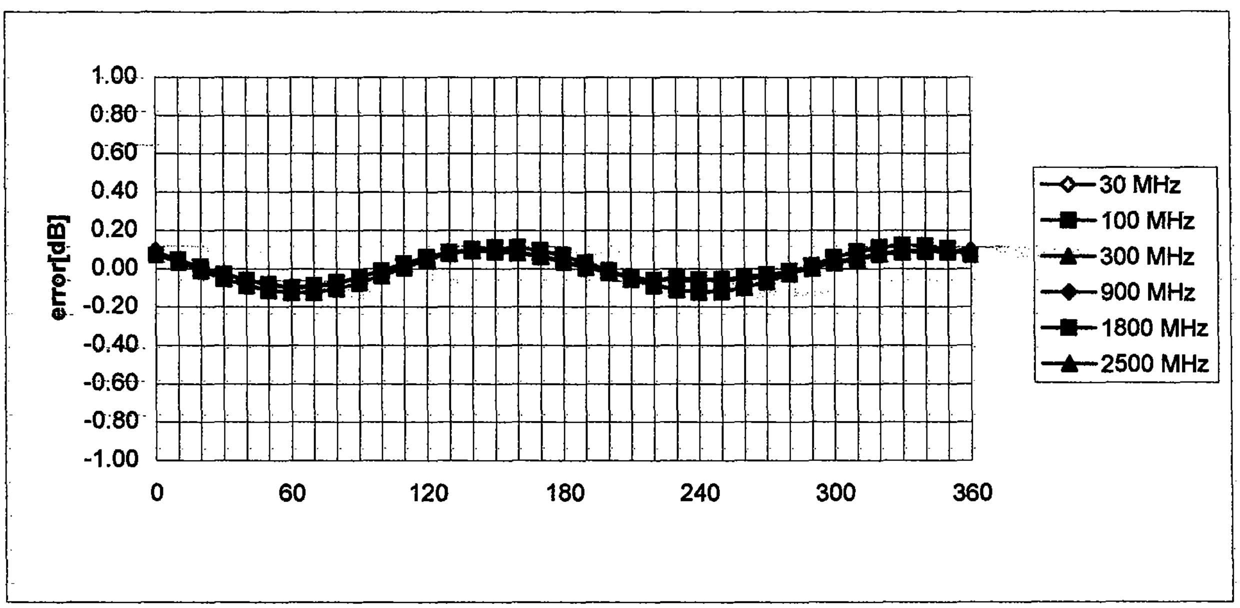
f = 900 MHz, TEM cell ifi110





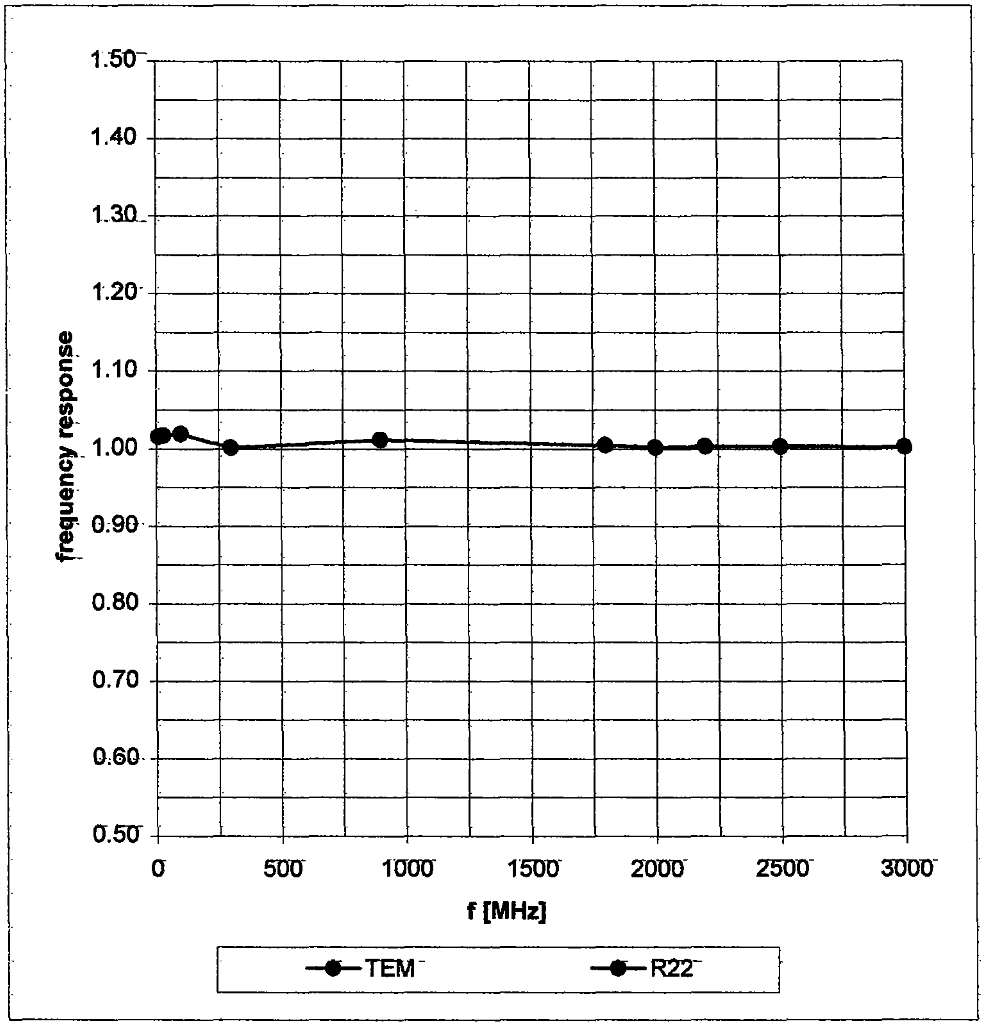


Isotropy Error (ϕ), θ = 0°



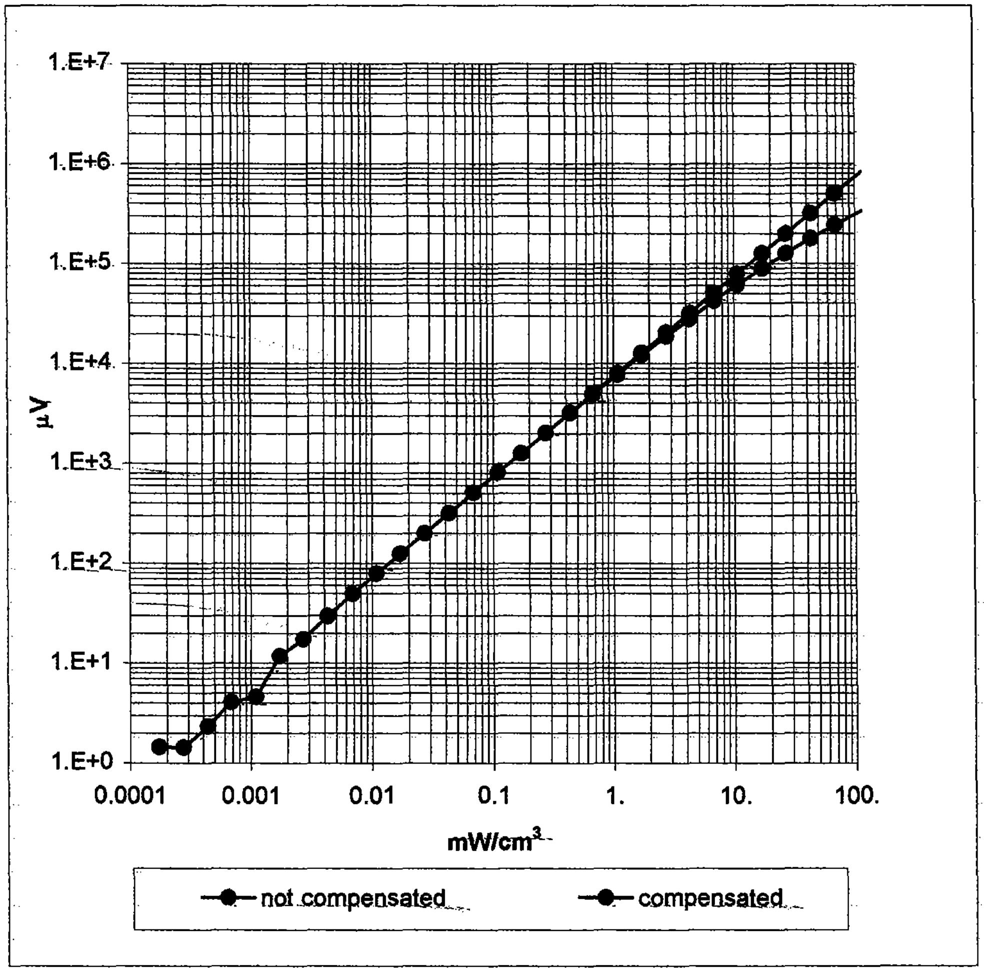
Frequency Response of E-Field

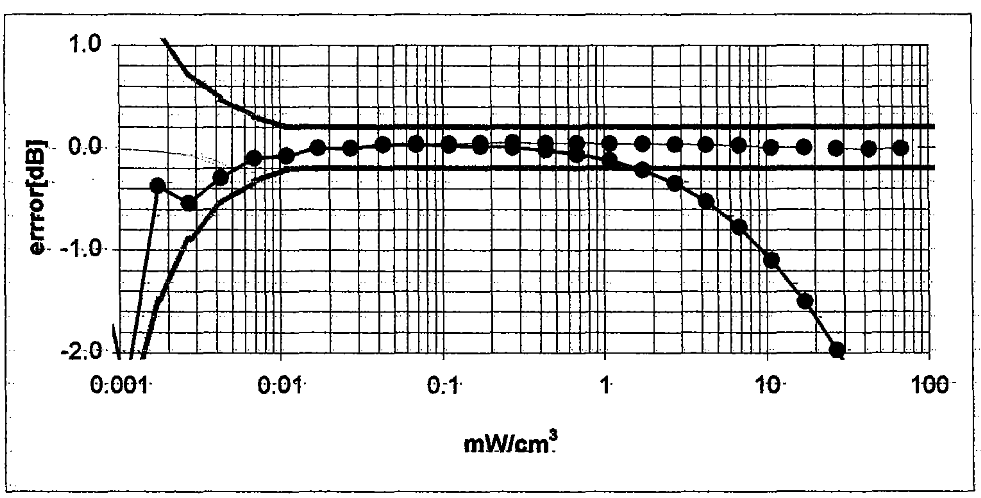
(TEM-Cell:ifi110, Waveguide R22)



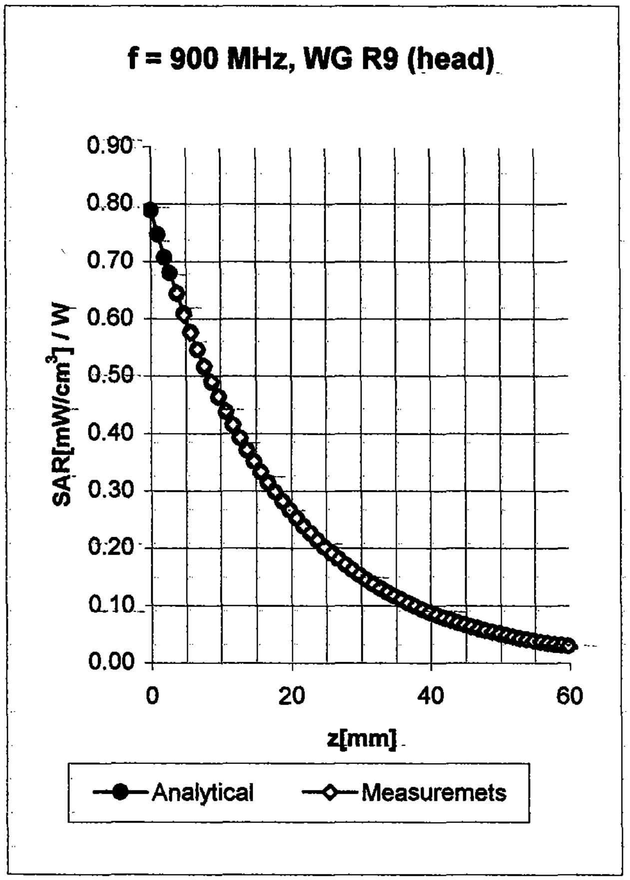
Dynamic Range f(SAR_{brain})

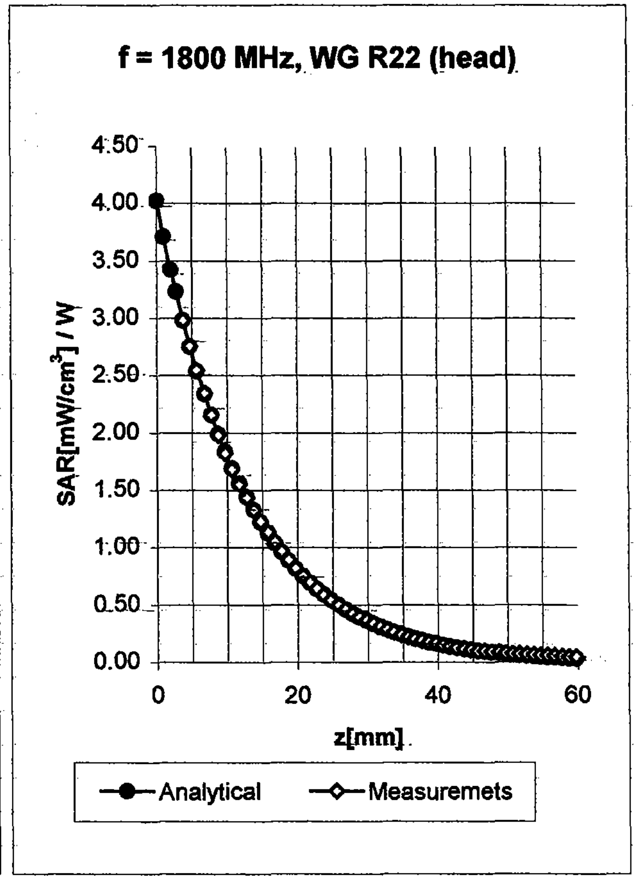
(Waveguide R22)





Conversion Factor Assessment

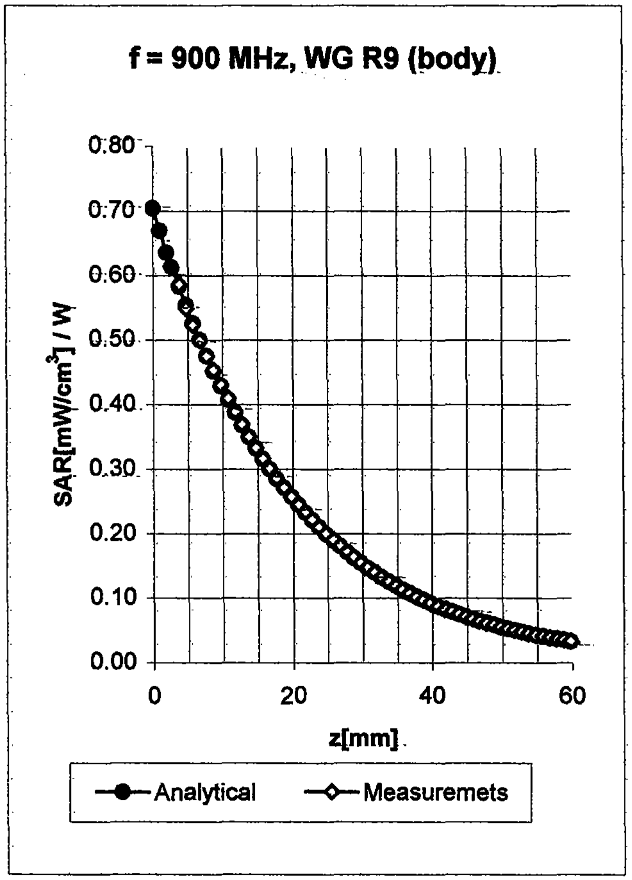


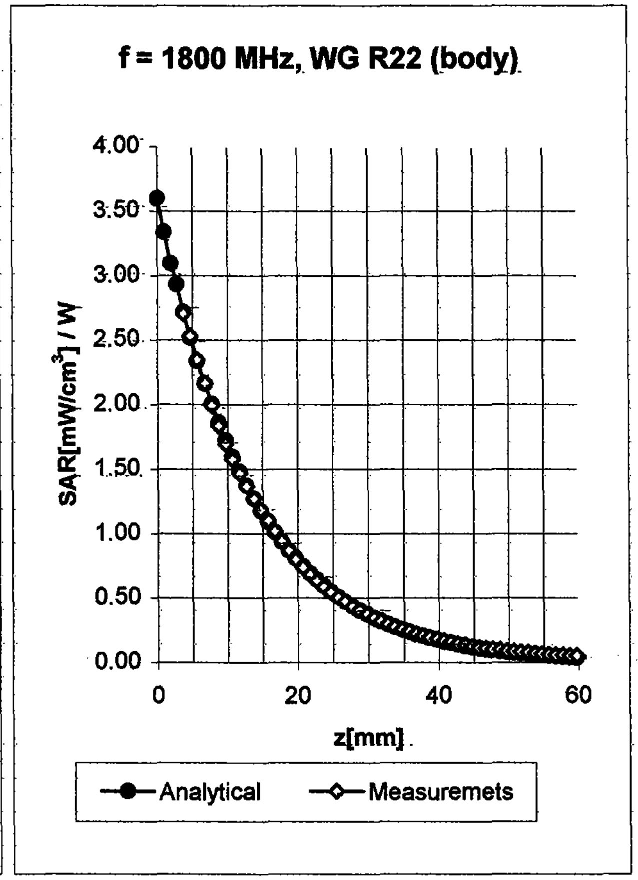


Head	**900 MHz**		ε_r **= 41.5 ± 5%**		σ **= 0.97 ± 5% mho/m**
~~**Head**~~	~~**835 MHz**~~		~~ε_r **= 41.5 ± 5%**~~		~~σ **= 0.90 ± 5% mho/m**~~
	ConvF X	**6.5** ± 9.5% (k=2)		Boundary effect:	
	~~ConvF Y~~	~~**6.5** ± 9.5% (k=2)~~		~~Alpha~~	~~**0.46**~~
	ConvF Z	**6.5** ± 9.5% (k=2)		Depth	**2.27**

Head	**1800 MHz**		ε_r **= 40.0 ± 5%**		σ **= 1.40 ± 5% mho/m**
~~**Head**~~	~~**1900 MHz**~~		~~ε_r **= 40.0 ± 5%**~~		~~σ **= 1.40 ± 5% mho/m**~~
	ConvF X	**5.6** ± 9.5% (k=2)		Boundary effect:	
	~~ConvF Y~~	~~**5.6** ± 9.5% (k=2)~~		~~Alpha~~	~~**0.56**~~
	ConvF Z	**5.6** ± 9.5% (k=2)		Depth	**2.24**

Conversion Factor Assessment



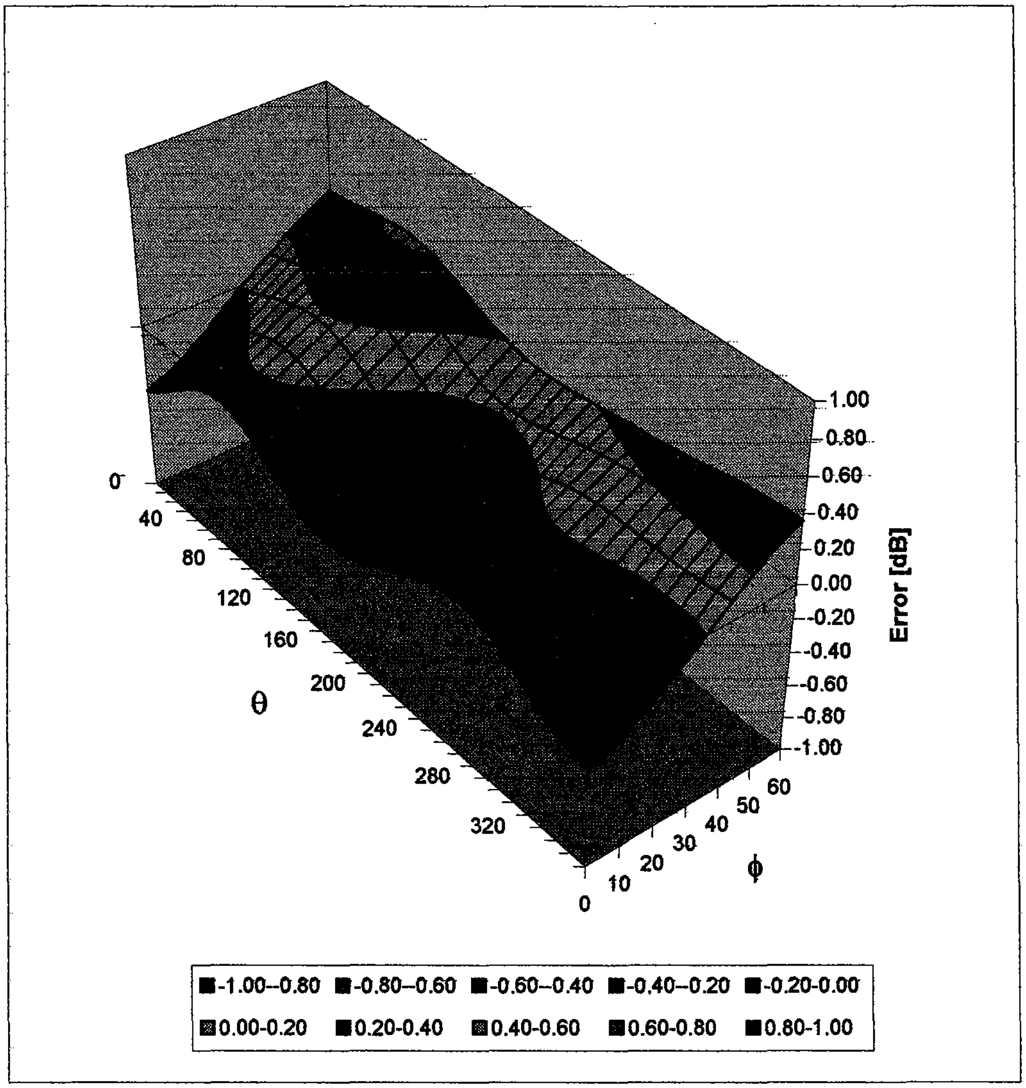


Body	**900 MHz**		**ε_r = 55.0 ± 5%**	**σ = 1.05 ± 5% mho/m**
~~**Body**~~	~~**835 MHz**~~		~~**ε_r = 55.2 ± 5%**~~	~~**σ = 0.97 ± 5% mho/m**~~
	ConvF X	**6.3** ± 9.5% (k=2)		Boundary effect:
	~~ConvF Y~~	~~**6.3** ± 9.5% (k=2)~~		~~Alpha~~ ~~**0.29**~~
	ConvF Z	**6.3** ± 9.5% (k=2)		Depth **3.55**

Body	**1800 MHz**		**ε_r = 53.3 ± 5%**	**σ = 1.52 ± 5% mho/m**
~~**Body**~~	~~**1900 MHz**~~		~~**ε_r = 53.3 ± 5%**~~	~~**σ = 1.52 ± 5% mho/m**~~
	ConvF X	**5.3** ± 9.5% (k=2)		Boundary effect:
	~~ConvF Y~~	~~**5.3** ± 9.5% (k=2)~~		~~Alpha~~ ~~**0.63**~~
	ConvF Z	**5.3** ± 9.5% (k=2)		Depth **2.34**

Deviation from Isotropy in HSL

Error (θ,φ), f = 900 MHz



Appendix 5

Dipole Characterization Certificate

Interim Dipole Correlation Certificate

FCD-0359, Rev.001

Dipole Serial Number:	096	Last Calibration Date:	January 6, 2003
Dipole Type (MHz):	D900V2	Calibration Due:	January 6, 2005
		Manufacturer:	SPEAG

-Manufacturer's Original Calibration Information-

Dipole to be correlated: [Serial Number: 096]

1g SAR normalized to 1W forward power (mW/g):	10.8 mW/g
Relative Dielectric:	40.8
Conductivity:	0.95
Probe Serial Number:	1507
Forward Power:	250 mW

Primary Dipole Referenced: [Serial Number: 077]

1g SAR normalized to 1W forward power (mW/g):	11.4 mW/g
Relative Dielectric:	40.3
Conductivity:	0.95
Probe Serial Number:	1507
Forward Power:	250 mW

-Correlation Method Utilized- per DOI-1265

(select one)

By Similarity: **X** By Transfer Calibration: ☐

-Measured Data-

Probe S/N:	**1521**	Conductivity (meas.):	**0.95**
Robot Cell #:	**PCS-1**	Permittivity (meas.):	**40.8**

Primary Standard (average of 0-degree & 90-degree 1g cubes):

2.90 mW/g		
	(if required)	(if required)

Secondary Standard (average of 0-degree & 90-degree 1g cubes):

2.89 mW/g		
	(if required)	(if required)

-NEW Correlated Target-

1g SAR normalized to 1W forward power (mW/g):	11.4 mW/g
Relative Dielectric:	40.3
Conductivity:	0.95

Approved by: Antonio Ferreira **Date:** 2/7/03

Comments: Secondary measured within 1% of the primary standard. Correlation is required to establish worst case extrapolation targets.

Interim Dipole Correlation Certificate

FCD-0359, Rev.001

Dipole Serial Number:	272(TR)	Last Calibration Date:	14-Nov-02
Dipole Type (MHz):	D1800V2 w Teflon rings	Calibration Due:	14-Nov-04
		Manufacturer:	SPEAG

-Manufacturer's Original Calibration Information-

Dipole to be correlated: [Serial Number: 272TR]

1g SAR normalized to 1W forward power (mW/g):	36.4 mW/g
Relative Dielectric:	40.2
Conductivity:	1.35
Probe Serial Number:	1507
Forward Power:	250

Primary Dipole Referenced: [Serial Number: 246TR]

1g SAR normalized to 1W forward power (mW/g):	38.8 mW/g
Relative Dielectric:	39.6
Conductivity:	1.37
Probe Serial Number:	1507
Forward Power:	250

-Correlation Method Utilized- per DOI-1265

(select one)

By Similarity: **X** By Transfer Calibration:

-Measured Data-

Probe S/N:	**1515**	Conductivity (meas.):	**1.38**
Robot Cell #:	**PCS-2**	Permittivity (meas.):	**40.7**

Primary Standard (average of 0-degree & 90-degree 1g cubes):

9.84 mW/g		
	(if required)	(if required)

Secondary Standard (average of 0-degree & 90-degree 1g cubes):

9.96 mW/g		
	(if required)	(if required)

-NEW Correlated Target-

1g SAR normalized to 1W forward power (mW/g):	38.8 mW/g
Relative Dielectric:	39.6
Conductivity:	1.37

Approved by: Antonio Faraone **Date:** 1/10/03

***Comments*:** Correlated to get worst case extrapolation targets. Secondary measured within 2% of the primary standard.

Appendix 6

Measurement Uncertainty Budget

Uncertainty Budget for Device Under Test

a	*b*	*c*	*d*	*e = f(d,k)*	*f*	*g*	*h = c x f / e*	*i = c x g / e*	*k*
Uncertainty Component	**Sec.**	**Tol. (± %)**	**Prob. Dist.**	**Div.**	**c_i (1 g)**	**c_i (10 g)**	**1 g u_i (±%)**	**10 g u_i (±%)**	**v_i**
Measurement System									
Probe Calibration	E.2.1	9.5	N	2.00	1	1	4.8	4.8	∞
Axial Isotropy	E.2.2	4.7	R	1.73	0.707	0.707	1.9	1.9	∞
Spherical Isotropy	E.2.2	9.6	R	1.73	0.707	0.707	3.9	3.9	∞
Boundary Effect	E.2.3	5.8	R	1.73	1	1	3.3	3.3	∞
Linearity	E.2.4	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	E.2.5	1.0	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	E.2.6	1.0	N	1.00	1	1	1.0	1.0	∞
Response Time	E.2.7	0.8	R	1.73	1	1	0.5	0.5	∞
Integration Time	E.2.8	1.3	R	1.73	1	1	0.8	0.8	∞
RF Ambient Conditions	E.6.1	3.0	R	1.73	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.3	R	1.73	1	1	0.2	0.2	∞
Probe Positioning with respect to Phantom Shell	E.6.3	1.1	R	1.73	1	1	0.6	0.6	∞
Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	E.5	3.9	R	1.73	1	1	2.3	2.3	∞
Test sample Related									
Test Sample Positioning	E.4.2	3.6	N	1.00	1	1	3.6	3.6	29
Device Holder Uncertainty	E.4.1	2.8	N	1.00	1	1	2.8	2.8	8
Output Power Variation - SAR drift measurement	6.6.2	5.0	R	1.73	1	1	2.9	2.9	∞
Phantom and Tissue Parameters									
Phantom Uncertainty (shape and thickness tolerances)	E.3.1	4.0	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity - deviation from target values	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity - measurement uncertainty	E.3.3	10.0	R	1.73	0.64	0.43	3.7	2.5	∞
Liquid Permittivity - deviation from target values	E.3.2	10.0	R	1.73	0.6	0.49	3.5	2.8	∞
Liquid Permittivity - measurement uncertainty	E.3.3	5.0	R	1.73	0.6	0.49	1.7	1.4	∞
Combined Standard Uncertainty			RSS				11.72	11.09	1363
Expanded Uncertainty (95% CONFIDENCE LEVEL)			*k* =2				22.98	21.75	

Uncertainty Budget for System Performance Check (dipole & flat phantom)

a	*b*	*c*	*d*	*e = f(d,k)*	*f*	*g*	*h = c x f / e*	*i = c x g / e*	*k*
Uncertainty Component	**Sec.**	**Tol. (± %)**	**Prob. Dist.**	**Div.**	c_i **(1 g)**	c_i **(10 g)**	**1 g** u_i **(±%)**	**10 g** u_i **(±%)**	v_i
Measurement System									
Probe Calibration	E.2.1	9.5	N	2.00	1	1	4.8	4.8	∞
Axial Isotropy	E.2.2	4.7	R	1.73	1	1	2.7	2.7	∞
Spherical Isotropy	E.2.2	9.6	R	1.73	0	0	0.0	0.0	∞
Boundary Effect	E.2.3	5.8	R	1.73	1	1	3.3	3.3	∞
Linearity	E.2.4	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	E.2.5	1.0	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	E.2.6	1.0	N	1.00	1	1	1.0	1.0	∞
Response Time	E.2.7	0.0	R	1.73	1	1	0.0	0.0	∞
Integration Time	E.2.8	0.0	R	1.73	1	1	0.0	0.0	∞
RF Ambient Conditions	E.6.1	3.0	R	1.73	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.3	R	1.73	1	1	0.2	0.2	∞
Probe Positioning with respect to Phantom Shell	E.6.3	1.1	R	1.73	1	1	0.6	0.6	∞
Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	E.5	3.9	R	1.73	1	1	2.3	2.3	∞
Dipole									
Dipole Axis to Liquid Distance	8, E.4.2	1.0	R	1.73	1	1	0.6	0.6	∞
Input Power and SAR Drift Measurement	8, 6.6.2	4.7	R	1.73	1	1	2.7	2.7	∞
Phantom and Tissue Parameters									
Phantom Uncertainty (shape and thickness tolerances)	E.3.1	4.0	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity - deviation from target values	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity - measurement uncertainty	E.3.3	10.0	R	1.73	0.64	0.43	3.7	2.5	∞
Liquid Permittivity - deviation from target values	E.3.2	10.0	R	1.73	0.6	0.49	3.5	2.8	∞
Liquid Permittivity - measurement uncertainty	E.3.3	5.0	R	1.73	0.6	0.49	1.7	1.4	∞
Combined Standard Uncertainty			RSS				10.16	9.43	99999
Expanded Uncertainty (95% CONFIDENCE LEVEL)			*k*=2				19.92	18.48	

Appendix 7

Photographs of the device under test

Figure 7. Front of Phone

Figure 8. Front of phone flip open

Figure 9. back of phone

Figure 10. Side of phone (Flip closed)

Figure 11. Side of phone (Flip open)

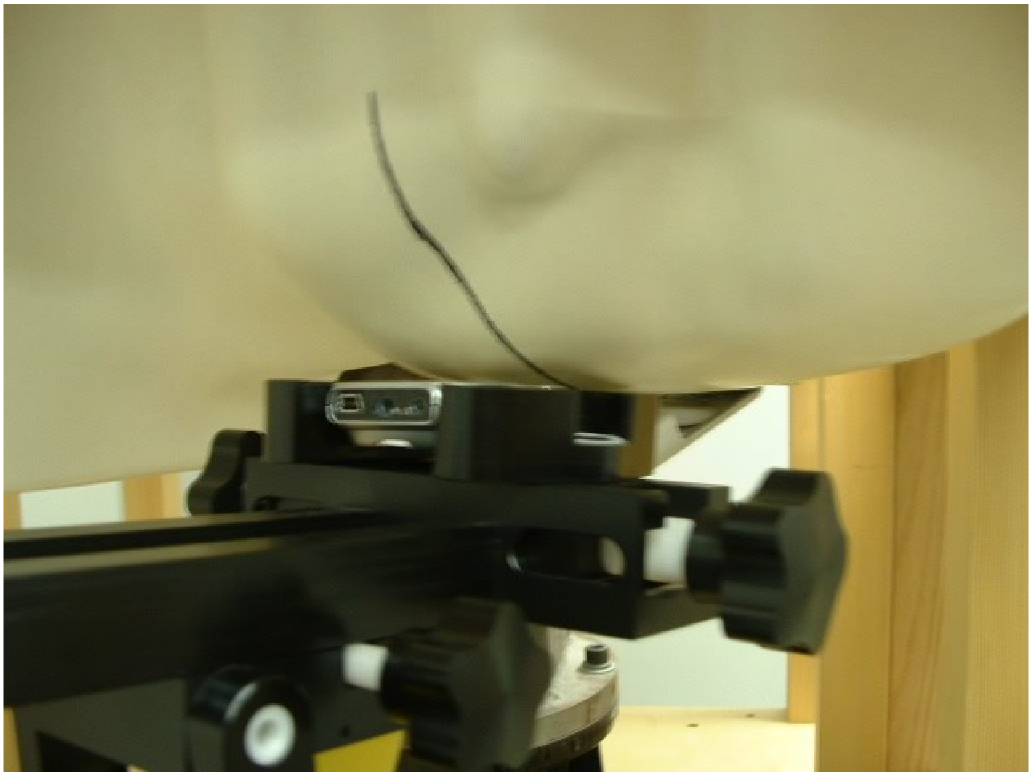


Figure 12. Phone against the head cheek touch (Front view)

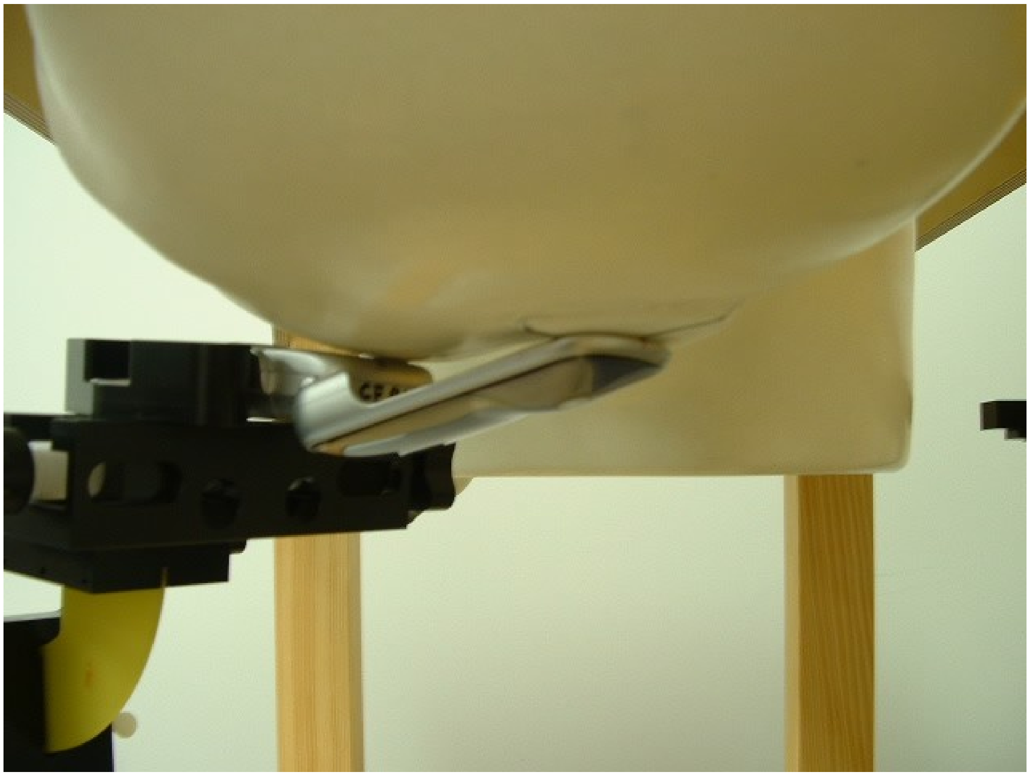


Figure 13. Phone against the head tilt (Back view)

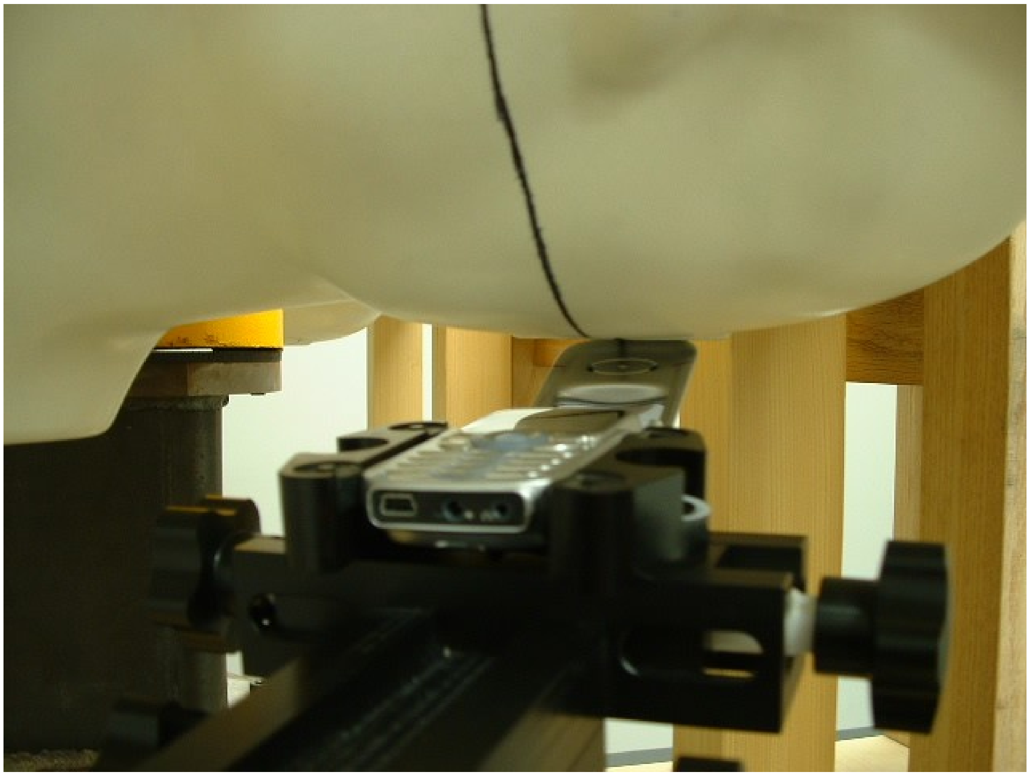


Figure 14. Phone against the head (15º tilt) front view

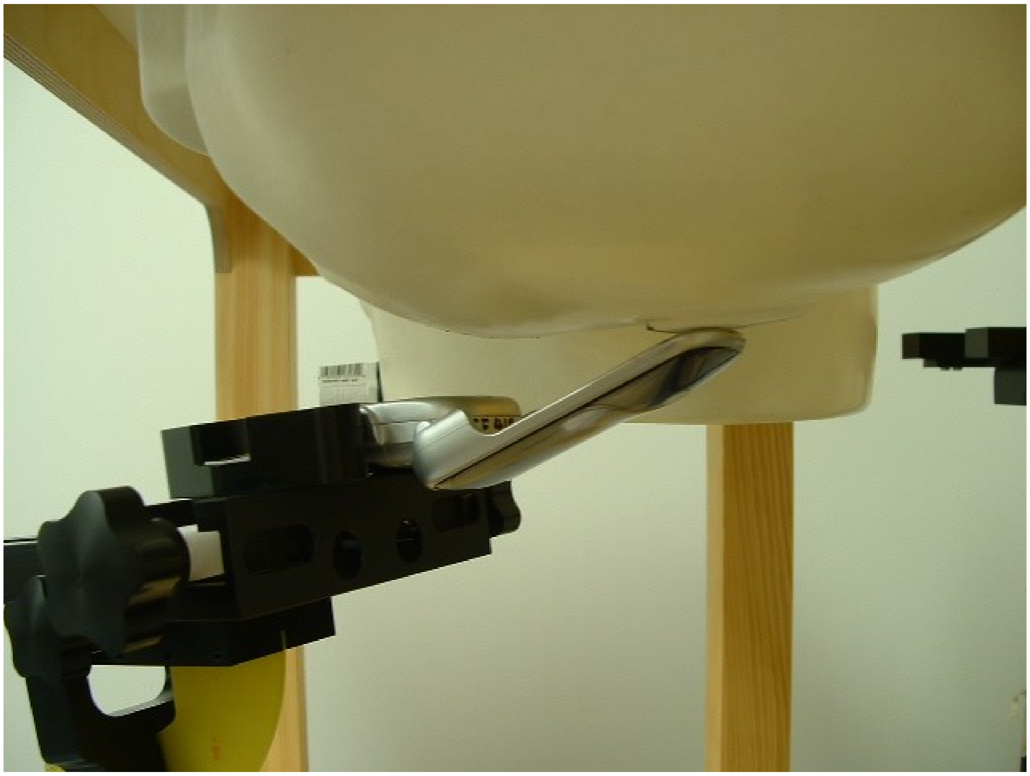


Figure 15. Phone against the head (15º tilt) back view