Exhibit 11: SAR Test Report IHDT5DA1

Date of test:	01/14/2003-01/16/2003
Date of Report:	02/06/2003
Laboratory:	Motorola Personal Communications Sector Product Safety & Compliance Laboratory 2001 N. Division Room: AS228 Harvard, Illinois 60033
Test Responsible:	Firass Badaruzzaman SAR RF Engineer
Accreditation:	This laboratory is accredited to ISO/IEC 17025-1999 to perform the following electromagnetic exposure tests: System Validation & Interlaboratory Comparison Simulated Tissue Specifications and Procedure EME Cellular Phone Testing Procedure On the following 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 IHDT5DA1 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)

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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 IHDT5DA1). 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	Helix	
Location	Right	
Dimensions	Length	25 mm
	Width	8 mm
Configuration	Stubby	

Device description

FCC ID Number	IHDT56DA1	
Serial number	OXF41D6A27	
Mode(s) of Operation	800 AMPS	800 CDMA
Modulation Mode(s)	AMPS	CDMA
Maximum Output Power Setting	26.80 dBm	25.00 dBm
Duty Cycle	1:1	1:1
Transmitting Frequency Rang(s)	824.04-848.97 MHz	824.70-848.31 MHz
Production Unit or Identical Prototype (47 CFR §2..908)	Identical Prototype	
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. 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	SN 440	08/26/2003
E-Field Probe ET3DV6	SN 1514	07/25/2003
Dipole Validation Kit, D900V2	SN 79	10/15/2004
S.A.M. Phantom used for 800MHz	TP-1132	

3.2 Additional Equipment

Description	Serial Number	Cal Due Date
Signal Generator HP8648C	3847A04632	10/10/2004
Power Meter E4419B	GB39510900	01/18/2003
Power Sensor #1 - 8481A	US39211009	02/14/2003
Power Sensor #2 - 8481A	US39211008	02/15/2003
Network Analyzer HP8753ES	US39171846	05/02/2003
Dielectric Probe Kit HP85070B	US99360074	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, 01/14/2003**	43.00	0.92	20.20 -20.50
		Recommended Limits	41.50	0.90	20.00-25.00
		Measured, 01/15/2003	42.00	0.92	20.20 -20.50
		Recommended Limits	41.50	0.90	20.00-25.00
		Measured, 01/16/2003	42.00	0.91	20.20 -20.50
		Recommended Limits	41.50	0.90	20.00-25.00
	Body	**Measured, 01/16/2003**	56.00	0.97	20.20 -20.50
		Recommended Limits	55.20	0.97	20.00-25.00

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	47.0	30.80
DGBE	--	--	52.8	68.91
Water	40.45	53.06	0.2	0.29
Salt	1.45	0.94	--	--
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.

Daily, prior to conducting tests, measurements were made with the RF sources powered off to determine the system noise level. The highest system noise was 0.000 W/kg, which is below the recommended limit.

f (MHz)	Description	SAR (W/kg), 1gram	Dielectric Parameters		Ambient Temp (°C)	Tissue Temp (°C)
			ε_r	σ (S/m)		
900	**Measured, 01/14/2003**	11.66	42.20	0.98	23.00	21.40
	Recommended Limits	11.40	40.30	0.95	n/a	n/a
	Measured, 01/15/2003	11.48	41.30	0.97	22.00	20.50
	Recommended Limits	11.40	40.30	0.95	n/a	n/a
	Measured, 01/16/2003	11.30	46.60	0.96	22.00	20.40
	Recommended Limits	11.40	40.30	0.95	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	SN1514	900	6.20	2 of 8

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 IHDT56DA1) has the following battery options:

SNN5668A - 860 mAh Battery

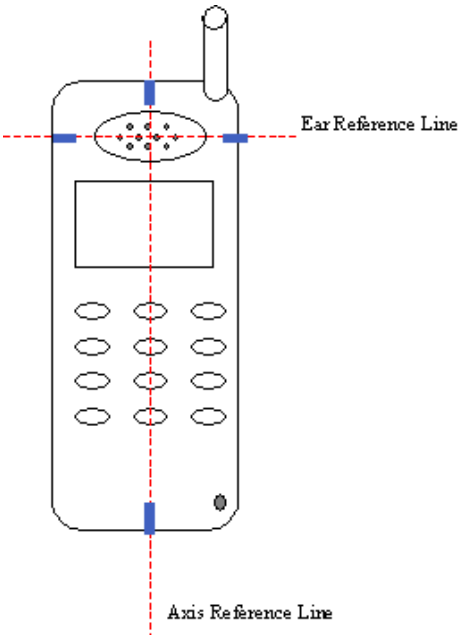
This battery was used to do all of the SAR testing. The phone was placed in the SAR measurement system with a fully charged battery.

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	SN1514	900	6.20	2 of 8

f (MHz)	Description	Conducted Output Power (dBm)	Left Head (Cheek / Touch Position) Ant Fixed				
			Measured (W/kg)	Drift (dB)	Extrapolated (W/kg)	Amb. Temp (°C)	Simulate Temp (°C)
Analog 800MHz	Channel 991	26.95	1.04	0.03	1.04	21.40	20.50
	Channel 384	26.73	1.03	-0.16	1.07	21.40	20.50
	Channel 799	27.01	1.06	-0.22	1.12	21.50	20.50
Digital 800MHz	Channel 1011	25.10	0.663	0.08	0.66	20.50	20.30
	Channel 410	25.09	0.921	-0.22	0.97	20.50	20.30
	Channel 779	24.91	0.713	-0.04	0.72	20.50	20.30

Table 1: SAR measurement results for the portable cellular telephone FCC ID IHDT5DA1 at highest possible output power. Measured against the left head in the Cheek/Touch Position.

f (MHz)	Description	Conducted Output Power (dBm)	Right Head (Cheek / Touch Position) Ant Fixed				
			Measured (W/kg)	Drift (dB)	Extrapolated (W/kg)	Amb. Temp (°C)	Simulate Temp (°C)
Analog 800MHz	Channel 991	26.95	0.915	0.14	0.92	21.40	20.50
	Channel 384	26.73	0.964	0.00	0.96	21.40	20.50
	Channel 799	27.01	0.966	0.03	1.00	21.40	20.50
Digital 800MHz	Channel 1011	25.10	0.614	0.06	0.61	20.50	20.20
	Channel 410	25.09	0.898	0.17	0.90	20.50	20.40
	Channel 779	24.91	0.681	-0.09	0.70	20.50	20.20

Table 2: SAR measurement results for the portable cellular telephone FCC ID IHDT5DA1 at highest possible output power. Measured against the right head in the Cheek/Touch Position.

f (MHz)	Description	Conducted Output Power (dBm)	Left Head (15° Tilt Position) Ant Fixed				
			Measured (W/kg)	Drift (dB)	Extrapolated (W/kg)	Amb. Temp (°C)	Simulate Temp (°C)
Analog 800MHz	Channel 991	26.95	1.15	0.12	1.15	21.40	20.50
	Channel 384	26.73	1.19	-0.13	1.23	21.40	20.50
	Channel 799	27.01	1.15	-0.07	1.17	21.40	20.50
Digital 800MHz	Channel 1011	25.10	0.712	-0.04	0.72	20.50	20.30
	Channel 410	25.09	0.918	-0.01	0.92	20.50	20.40
	Channel 779	24.91	0.772	0.05	0.77	20.50	20.30

Table 3: SAR measurement results for the portable cellular telephone FCC ID IHDT5DA1 at highest possible output power. Measured against the left head in the 15° Tilt Position.

f (MHz)	Description	Conducted Output Power (dBm)	Right Head (15° Tilt Position)				
			Ant Fixed				
			Measured (W/kg)	Drift (dB)	Extrapolated (W/kg)	Amb. Temp (°C)	Simulate Temp (°C)
Analog 800MHz	Channel 991	26.95	0.957	-0.21	1.00	21.40	20.30
	Channel 384	26.73	1.03	-0.16	1.07	21.40	20.30
	Channel 799	27.01	0.995	-0.21	1.04	21.40	20.30
Digital 800MHz	Channel 1011	25.10	0.59	-0.05	0.60	20.50	20.20
	Channel 410	25.09	0.847	-0.27	0.90	20.50	20.20
	Channel 779	24.91	0.664	-0.09	0.68	20.50	20.20

Table 4: SAR measurement results for the portable cellular telephone FCC ID IHDT5DA1 at at highest possible output power. Measured against the right head in the 15° Tilt 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	SN1514	900	6.00	2 of 2

f (MHz)	Description	Conducted Output Power (dBm)	Body Worn (Front of Phone 1 inch Away From Phantom)				
			Ant Fixed				
			Measured (W/kg)	Drift (dB)	Extrapolated (W/kg)	Amb. Temp (°C)	Simulate Temp (°C)
Analog 800MHz	Channel 991	26.95					
	Channel 384	26.73	0.283	-0.28	0.30	21.00	20.90
	Channel 799	27.01					
Digital 800MHz	Channel 1011	25.10					
	Channel 410	25.09	0.263	-0.38	0.29	21.00	20.90
	Channel 779	24.91					

Table 5: SAR measurement results for the portable cellular telephone FCC ID IHDT5DA1 at highest possible output power. Measured against the body.

f (MHz)	Description	Conducted Output Power (dBm)	Body Worn (Back of Phone 1 inch Away From Phantom)				
			Ant Fixed				
			Measured (W/kg)	Drift (dB)	Extrapolated (W/kg)	Amb. Temp (°C)	Simulate Temp (°C)
Analog 800MHz	Channel 991	26.95					
	Channel 384	26.73	0.329	-0.11	0.34	21.00	20.90
	Channel 799	27.01					
Digital 800MHz	Channel 1011	25.10					
	Channel 410	25.09	0.321	-0.21	0.34	21.00	20.90
	Channel 779	24.91					

Table 6: SAR measurement results for the portable cellular telephone FCC ID IHDT5DA1 at highest possible output power. Measured against the body

Appendix 1

SAR distribution comparison for the system accuracy verification

01/14/03

Dipole 900 MHz

900 MHz Dipole Validation / Dipole Sn# 079 / Forward Power = 252mW / Val Rack Info = R3A / Acceptable Temp Range is 15-25°C Room Temp at time of measurement = 23C Simulant Temp at time of measurement = 21.4C

R5: TP-1132 SUGAR (rev.3) Phantom; Flat Section; Position: (90°,90°); Frequency: 900 MHz

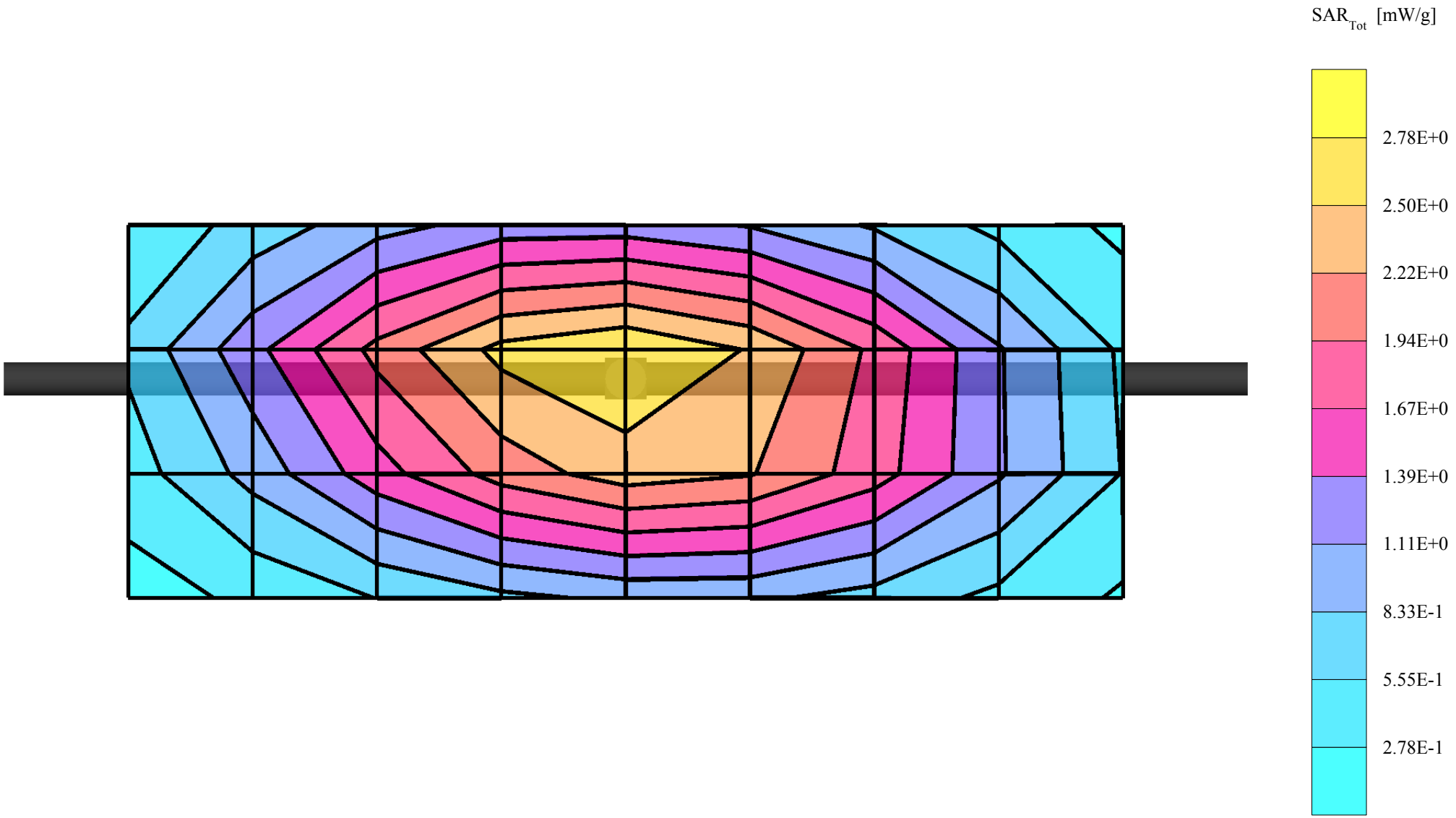
Probe: ET3DV6 - SN1514 - VALIDATION; ConvF(6.20,6.20,6.20); Crest factor: 1.0; 900 MHz VALIDATION: σ = 0.98 mho/m ε_r = 42.2 ρ = 1.00 g/cm^3

Cubes (2): SAR (1g): 2.94 mW/g ± 0.04 dB, SAR (10g): 1.86 mW/g ± 0.04 dB, (Worst-case extrapolation)

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

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

Powerdrift: 0.03 dB



01/15/03

Dipole 900 MHz

900 MHz Dipole Validation / Dipole Sn# 079 / Forward Power = 250mW / Acceptable Temp Range is 15-25°C Room Temp at time of measurement = 22C Simulant Temp at time of measurement = 20.5C

R5: TP-1132 SUGAR (rev.3) Phantom; Flat Section; Position: (90°,90°); Frequency: 900 MHz

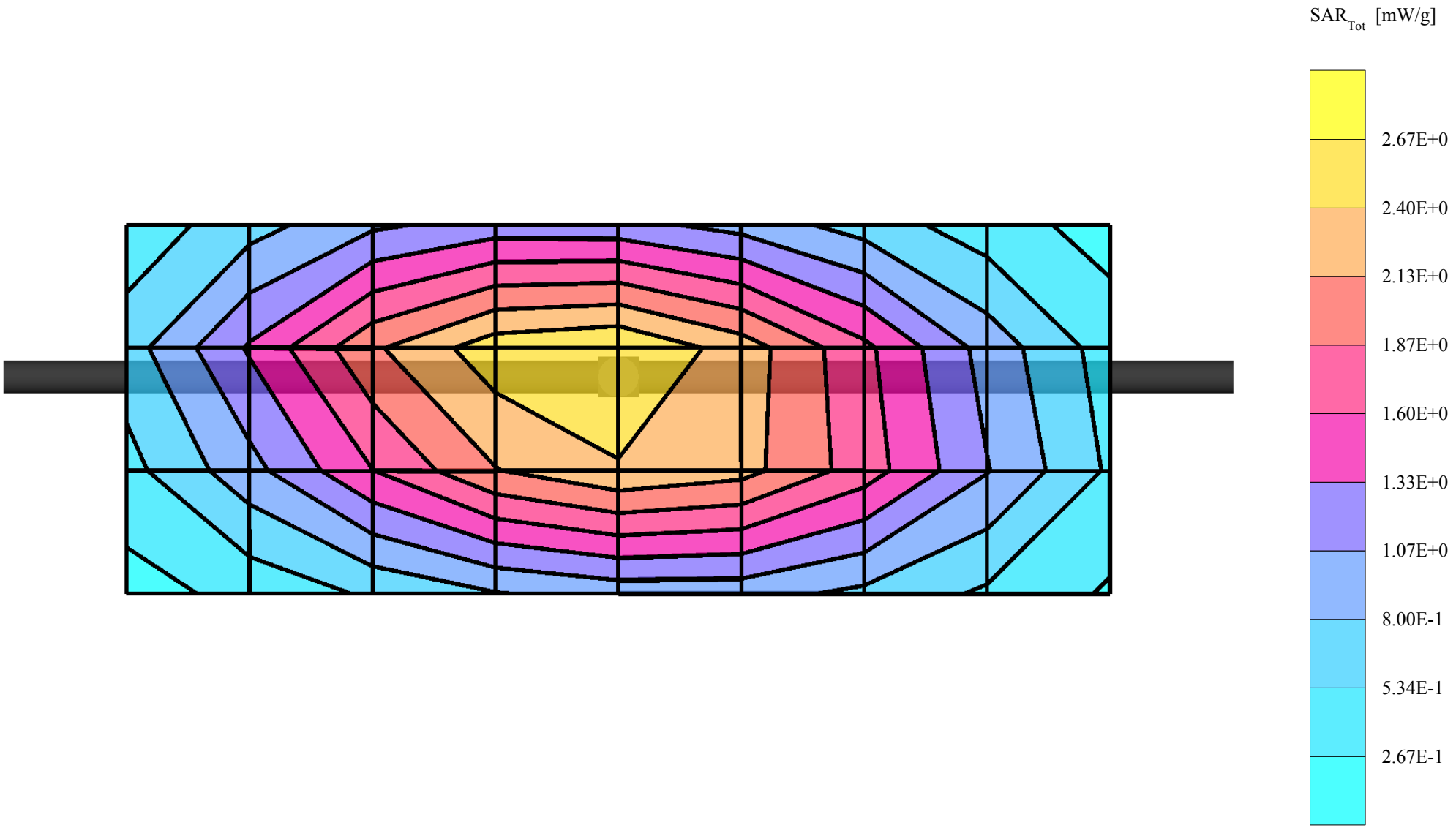
Probe: ET3DV6 - SN1514 - VALIDATION; ConvF(6.20,6.20,6.20); Crest factor: 1.0; 900 MHz VALIDATION: $\sigma = 0.97$ mho/m $\varepsilon_r = 41.3$ $\rho = 1.00$ g/cm^3

Cubes (2): SAR (1g): 2.87 mW/g ± 0.01 dB, SAR (10g): 1.82 mW/g ± 0.01 dB, (Worst-case extrapolation)

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

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

Powerdrift: 0.06 dB



01/16/03

Dipole 900 MHz

900 MHz Dipole Validation / Dipole Sn# 079 / Forward Power = 253mW / Acceptable Temp Range is 15-25°C Room Temp at time of measurement = 22C Simulant Temp at time of measurement = 20.4C

R5: TP-1132 SUGAR (rev.3) Phantom; Flat Section; Position: (90°,90°); Frequency: 900 MHz

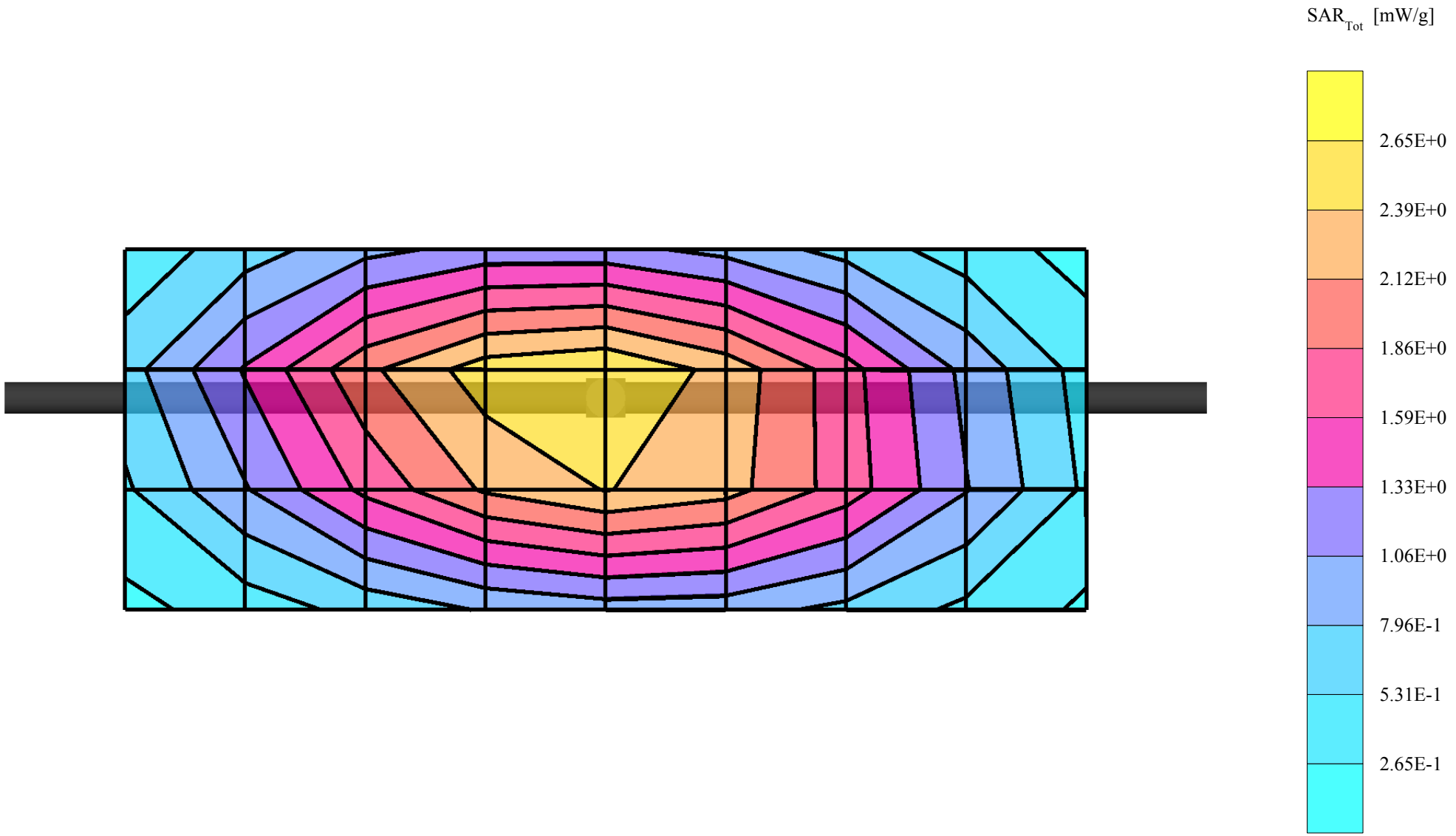
Probe: ET3DV6 - SN1514 - VALIDATION; ConvF(6.20,6.20,6.20); Crest factor: 1.0; 900 MHz VALIDATION: $\sigma = 0.96$ mho/m $\varepsilon_r = 40.6$ $\rho = 1.00$ g/cm^3

Cubes (2): SAR (1g): 2.86 mW/g ± 0.02 dB, SAR (10g): 1.81 mW/g ± 0.02 dB, (Worst-case extrapolation)

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

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

Powerdrift: 0.02 dB



Dipole 900 MHz

900 MHz Dipole Validation / Dipole Sn# 079 / Forward Power = 252mW / Val Rack Info = R3A / Acceptable Temp Range is 15-25°C Room Temp at time of measurement = 23C Simulant Temp at time of measurement = 21.4C

R5: TP-1132 SUGAR (rev.3) Phantom; Section; Position: ; Frequency: 900 MHz

Probe: ET3DV6 - SN1514 - VALIDATION; ConvF(6.20,6.20,6.20); Crest factor: 1.0; 900 MHz VALIDATION: σ = 0.98 mho/m ε_r = 42.2 ρ = 1.00 g/cm^3

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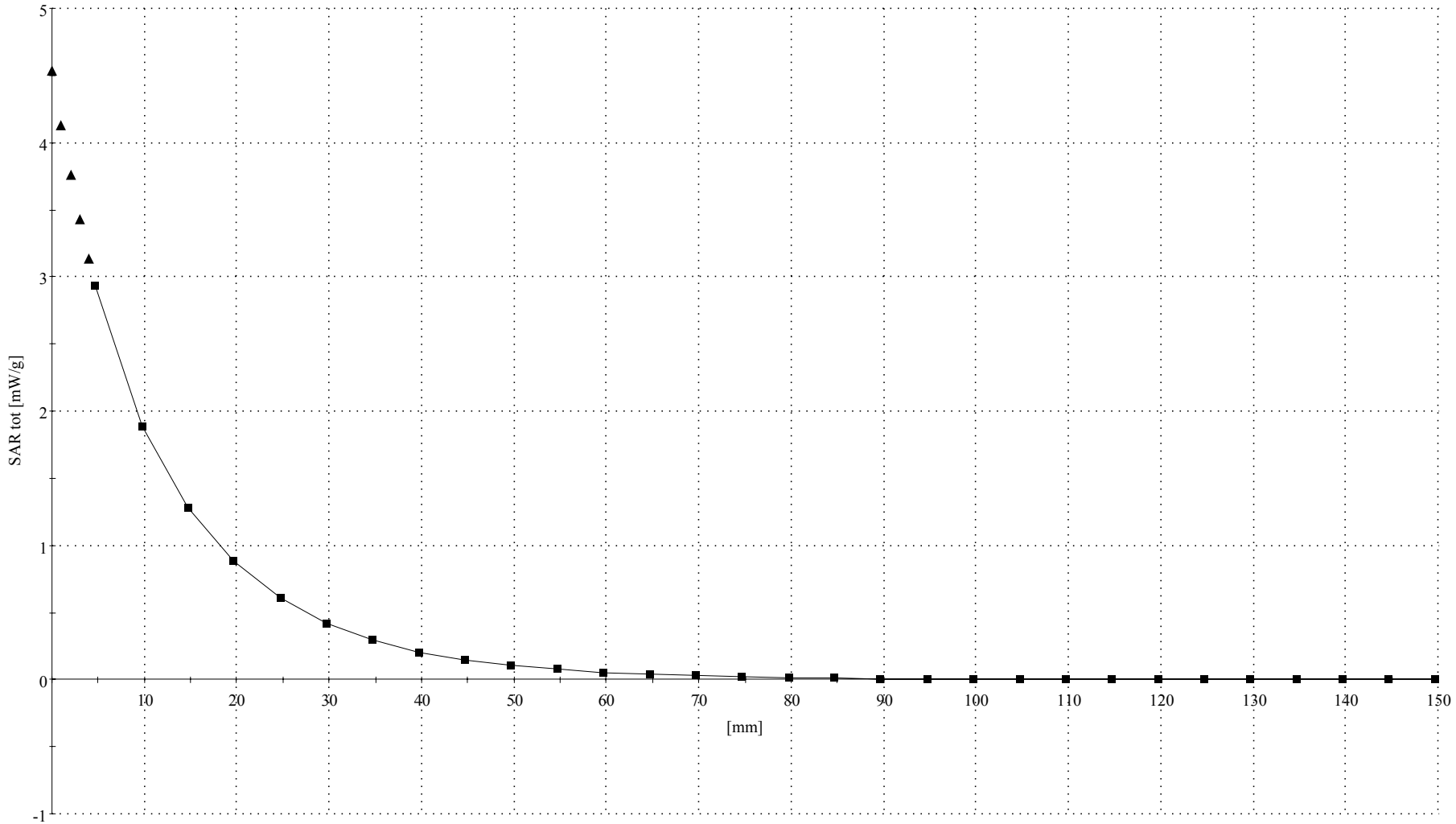
Z-Axis: Dx = 0.0, Dy = 0.0, Dz = 5.0

Penetration depth: 11.9 (11.0, 13.1) [mm]



Dipole 900 MHz

900 MHz Dipole Validation / Dipole Sn# 079 / Forward Power = 250mW / Acceptable Temp Range is 15-25°C Room Temp at time of measurement = 22C Simulant Temp at time of measurement = 20.5C

R5: TP-1132 SUGAR (rev.3) Phantom; Section; Position: ; Frequency: 900 MHz

Probe: ET3DV6 - SN1514 - VALIDATION; ConvF(6.20,6.20,6.20); Crest factor: 1.0; 900 MHz VALIDATION: σ = 0.97 mho/m ε_r = 41.3 ρ = 1.00 g/cm^3

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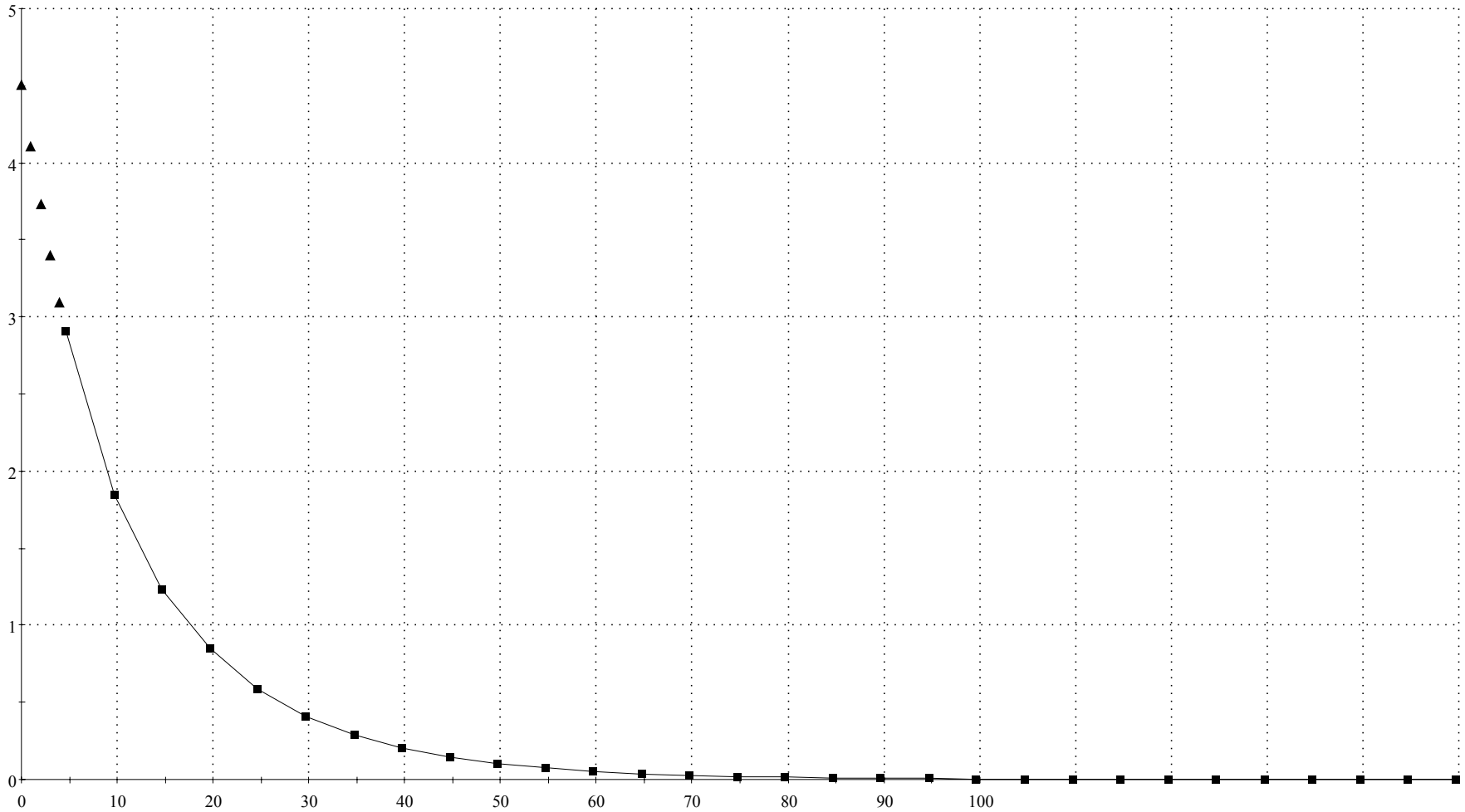
Z-Axis: Dx = 0.0, Dy = 0.0, Dz = 5.0

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



Dipole 900 MHz

900 MHz Dipole Validation / Dipole Sn# 079 / Forward Power = 253mW / Acceptable Temp Range is 15-25°C Room Temp at time of measurement = 22C Simulant Temp at time of measurement = 20.4C

R5: TP-1132 SUGAR (rev.3) Phantom; Section; Position: ; Frequency: 900 MHz

Probe: ET3DV6 - SN1514 - VALIDATION; ConvF(6.20,6.20,6.20); Crest factor: 1.0; 900 MHz VALIDATION: σ = 0.96 mho/m ε_r = 40.6 ρ = 1.00 g/cm^3

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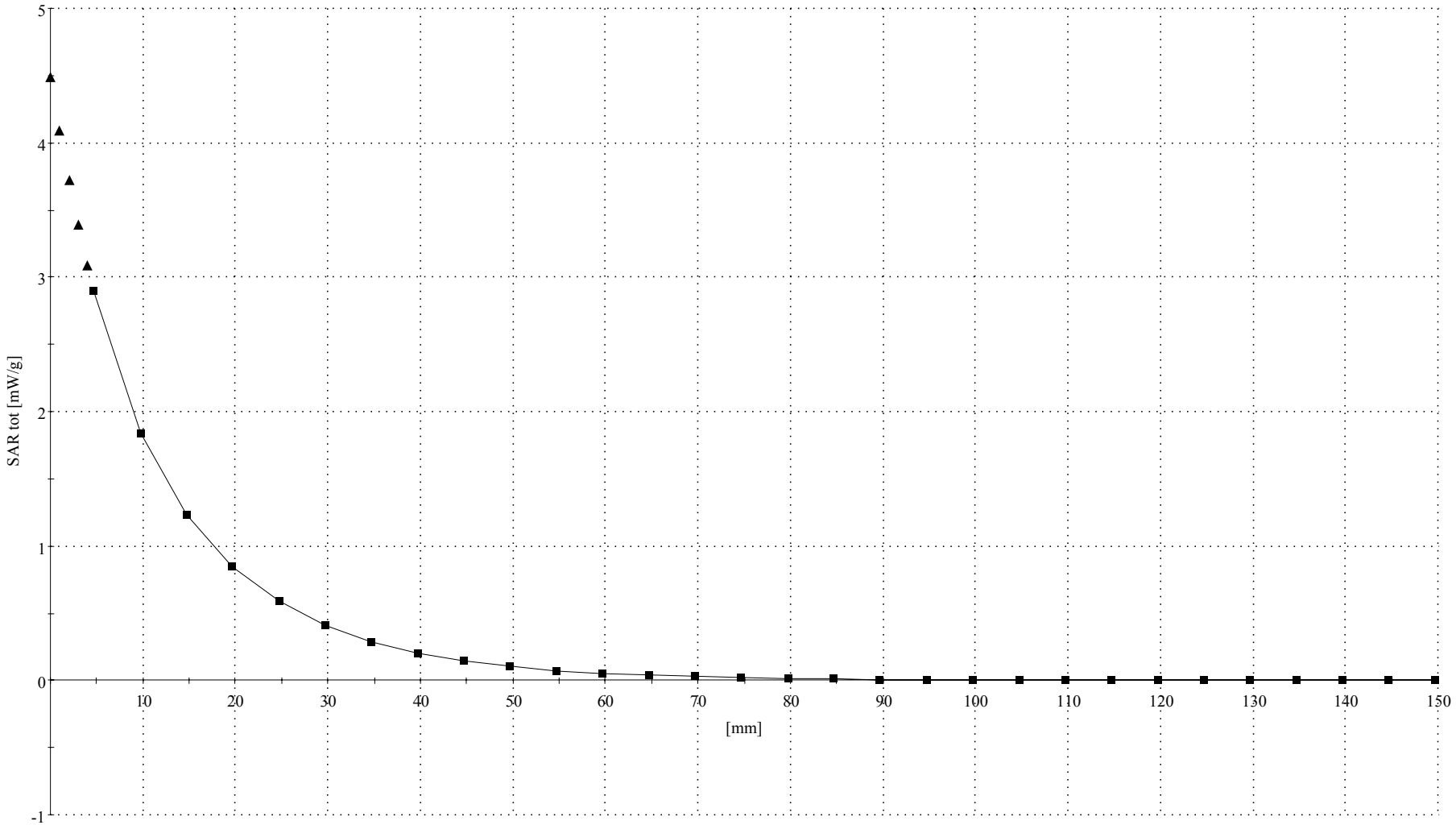
Z-Axis: Dx = 0.0, Dy = 0.0, Dz = 5.0

Penetration depth: 11.6 (10.9, 12.7) [mm]



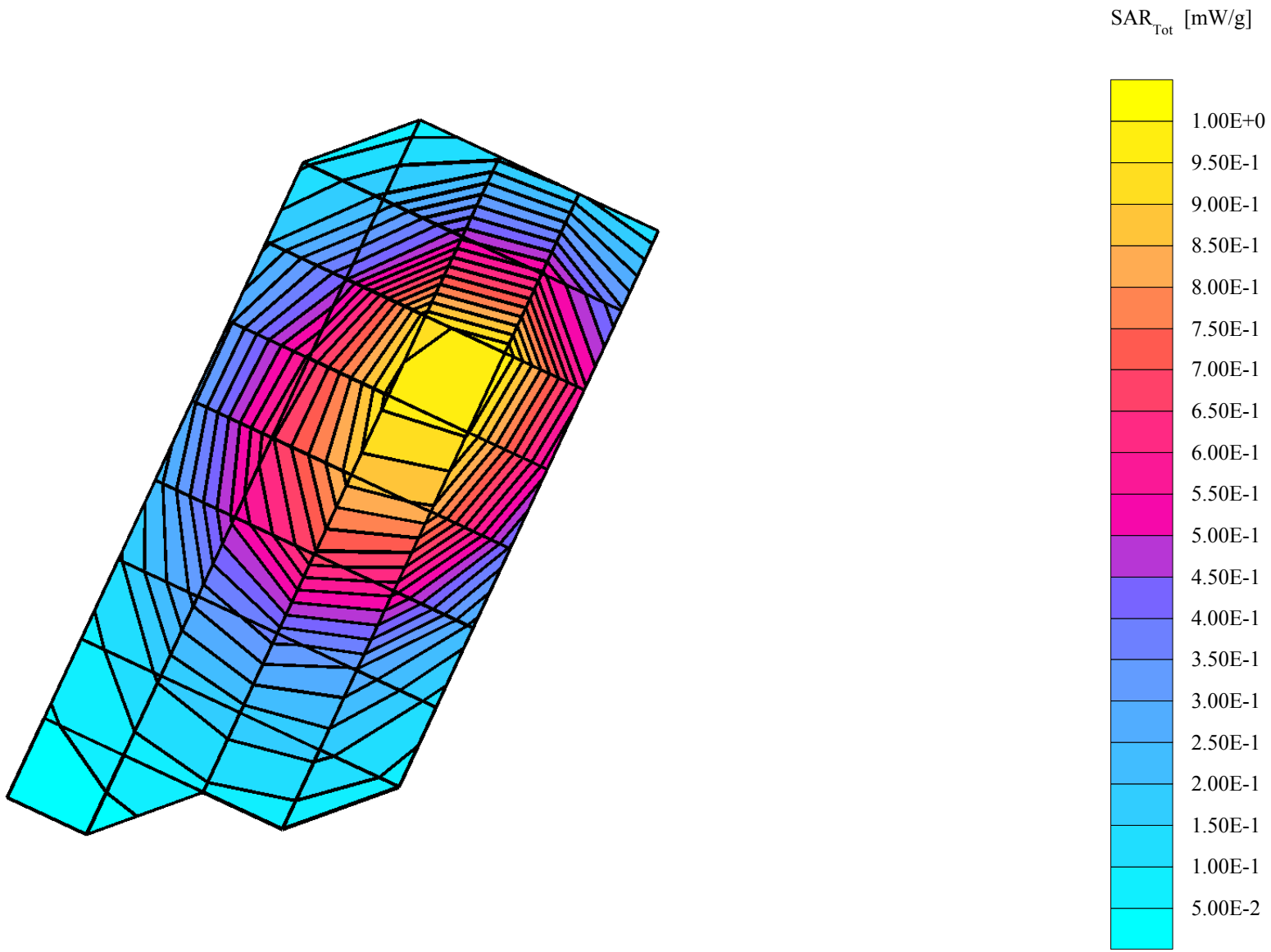
Appendix 2

SAR distribution plots for Phantom Head Adjacent Use

01/14/03

SN# OXF41D6A27

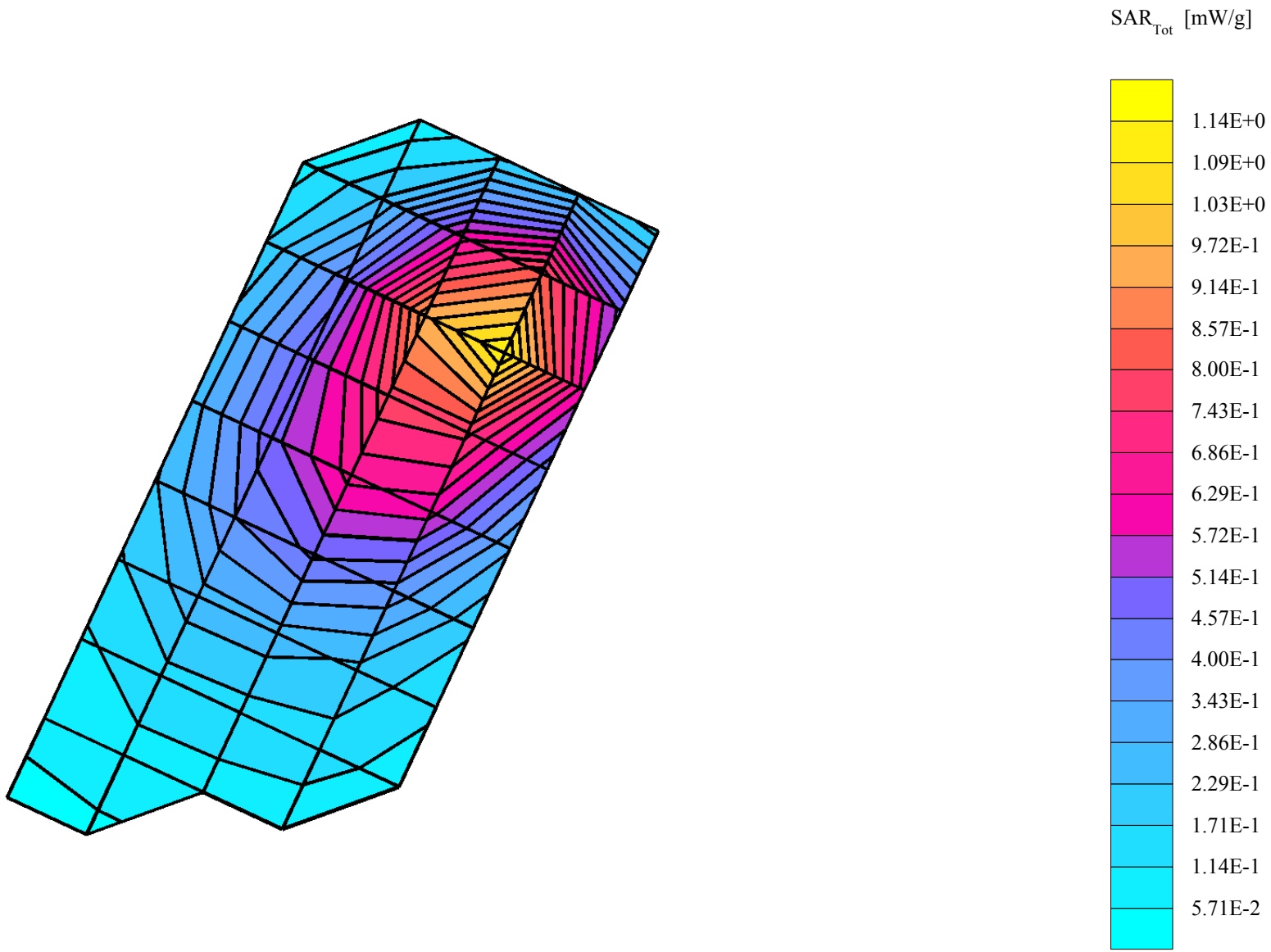
Ch# 384 / Pwr Step: 02 (OTA) / ntenna Position: Fixed / Battery Model #: SNN5668A / DEVICE POSITION : Cheek
R5: TP-1132 SUGAR (rev.3) Phantom; R5 Gilligan Left Hand Section; Position: (90°,180°); Frequency: 837 MHz
Probe: ET3DV6 - SN1514 - IEEE Head; ConvF(6.20,6.20,6.20); Crest factor: 1.0; 835 MHz Head & Body: σ = 0.92 mho/m ε_r = 43.0 ρ = 1.00 g/cm^3
Cube 7x7x7: SAR (1g): 1.03 mW/g, SAR (10g): 0.721 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0
Penetration depth: 14.7 (14.6, 14.9) [mm]
Powerdrift: -0.16 dB



01/14/03

SN# OXF41D6A27

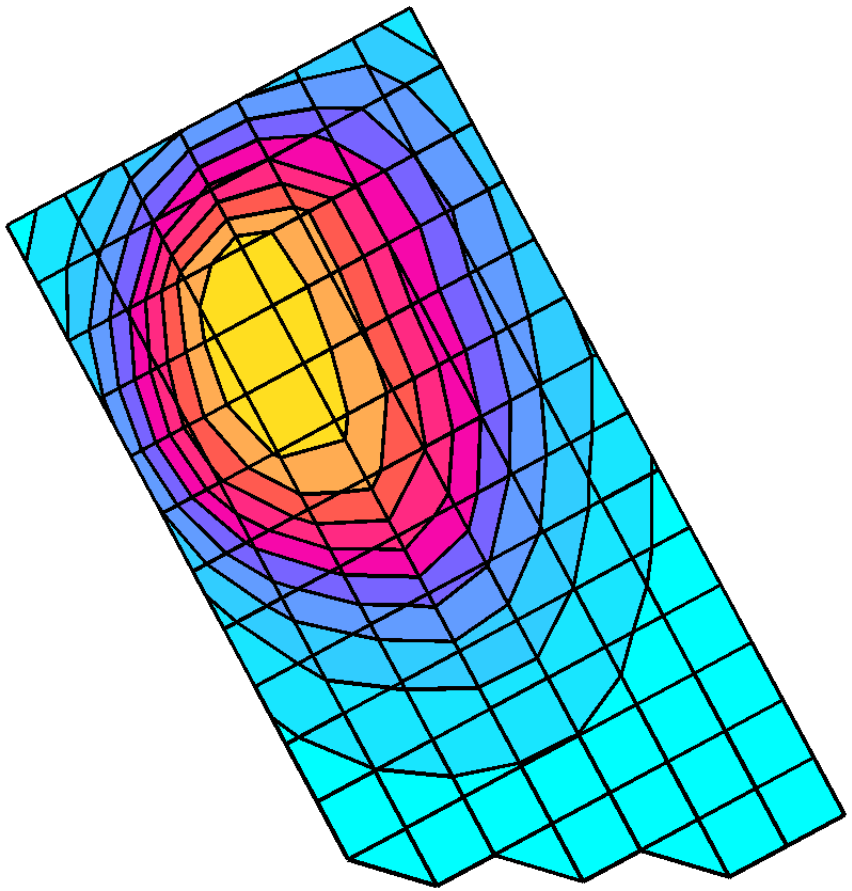
Ch# 384 / Pwr Step: 02 (OTA) / Antenna Position: Fixed / Battery Model #: SNN5668A / DEVICE POSITION : Tilt 15*
R5: TP-1132 SUGAR (rev.3) Phantom; R5 Gilligan Left Hand Section; Position: (90°,180°); Frequency: 837 MHz
Probe: ET3DV6 - SN1514 - IEEE Head; ConvF(6.20,6.20,6.20); Crest factor: 1.0; 835 MHz Head & Body: σ = 0.92 mho/m ε_r = 43.0 ρ = 1.00 g/cm^3
Cube 7x7x7: SAR (1g): 1.19 mW/g, SAR (10g): 0.720 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0
Penetration depth: 11.5 (10.8, 12.5) [mm]
Powerdrift: -0.13 dB

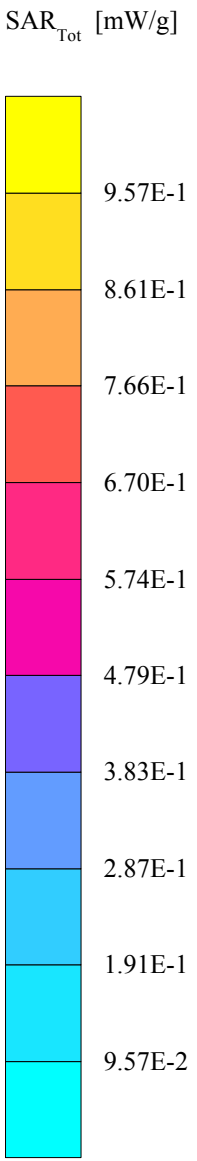


01/14/03

SN# OXF41D6A27

Ch# 799 / Pwr Step: 02 (OTA) / Antenna Position: Fixed / Battery Model #: SNN5668A / DEVICE POSITION : Cheek
R5: TP-1132 SUGAR (rev.3) Phantom; R5 MaryAnn Right Hand Section; Position: (90°,180°); Frequency: 849 MHz
Probe: ET3DV6 - SN1514 - IEEE Head; ConvF(6.20,6.20,6.20); Crest factor: 1.0; 835 MHz Head & Body: $\sigma = 0.92$ mho/m $\varepsilon_r = 43.0$ $\rho = 1.00$ g/cm^3
Cube 7x7x7: SAR (1g): 0.996 mW/g, SAR (10g): 0.694 mW/g * Max outside, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0
Penetration depth: 14.8 (14.5, 15.2) [mm]
Powerdrift: 0.03 dB

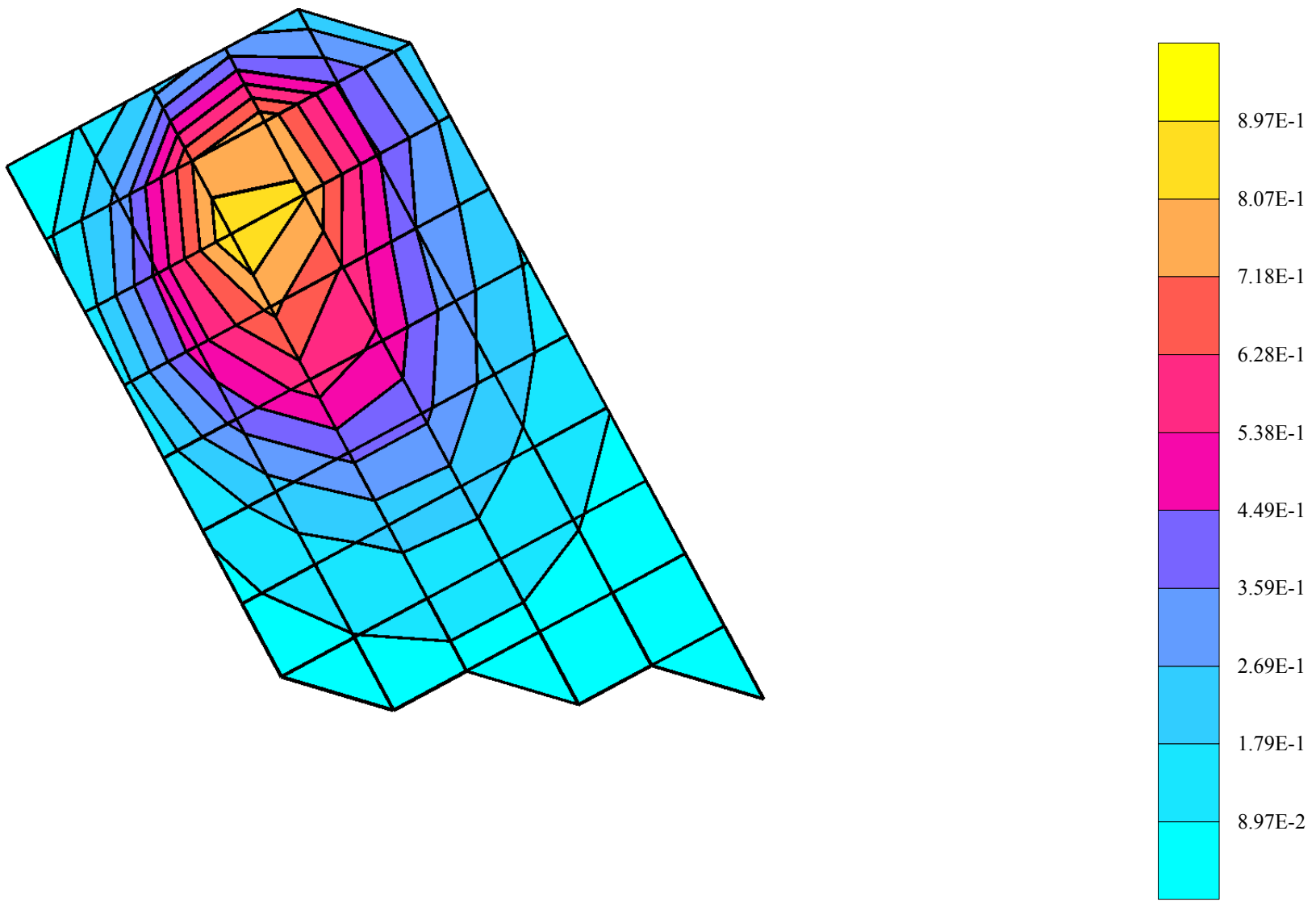




01/14/03

SN# OXF41D6A27

Ch# 384 / Pwr Step: 02 (OTA) / Antenna Position: Fixed / Battery Model #: SNN5668A / DEVICE POSITION : Tilt 15*
R5: TP-1132 SUGAR (rev.3) Phantom; R5 MaryAnn Right Hand Section; Position: (90°,180°); Frequency: 837 MHz
Probe: ET3DV6 - SN1514 - IEEE Head; ConvF(6.20,6.20,6.20); Crest factor: 1.0; 835 MHz Head & Body: $\sigma = 0.92$ mho/m $\varepsilon_r = 43.0$ $\rho = 1.00$ g/cm^3
Cube 7x7x7: SAR (1g): 1.03 mW/g, SAR (10g): 0.644 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0
Penetration depth: 14.6 (14.2, 15.0) [mm]
Powerdrift: -0.16 dB

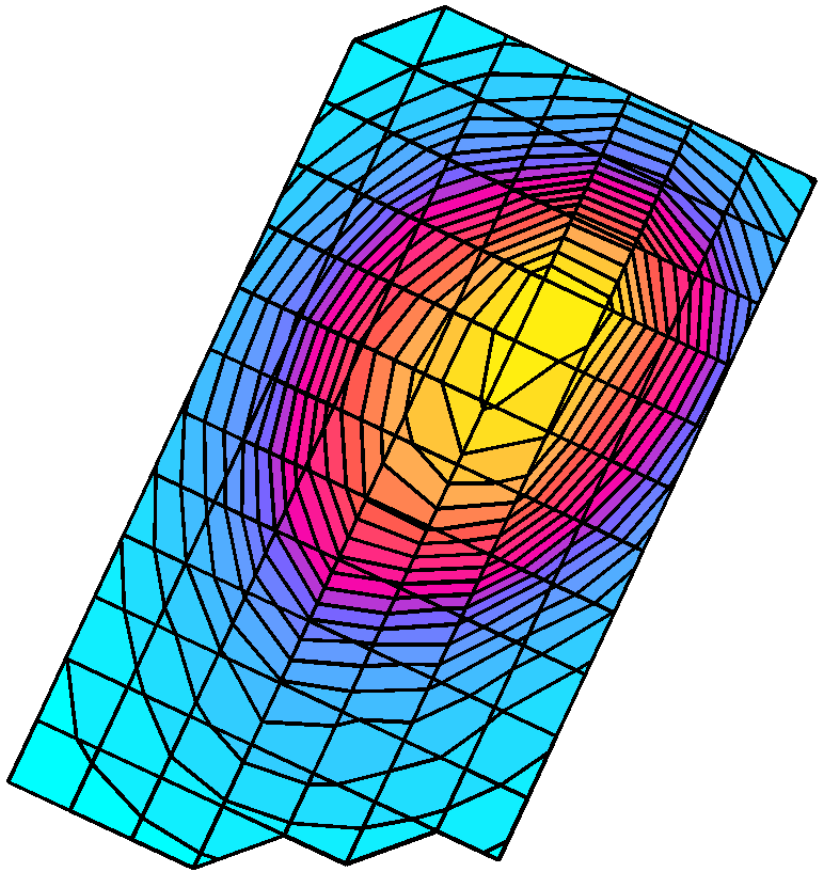


Motorola, Inc.

01/15/03

SN# OXF41D6A27

Ch# 410 / Pwr Step: Always UP / Antenna Position: Fixed / Battery Model #: SNN5668A / DEVICE POSITION: Cheek
R5: TP-1132 SUGAR (rev.3) Phantom; R5 Gilligan Left Hand Section; Position: (90°,180°); Frequency: 837 MHz
Probe: ET3DV6 - SN1514 - IEEE Head; ConvF(6.20,6.20,6.20); Crest factor: 1.0; 835 MHz Head & Body: σ = 0.91 mho/m ε_r = 42.1 ρ = 1.00 g/cm^3
Cube 7x7x7: SAR (1g): 0.921 mW/g, SAR (10g): 0.635 mW/g, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0
Penetration depth: 13.8 (13.4, 14.2) [mm]
Powerdrift: -0.22 dB



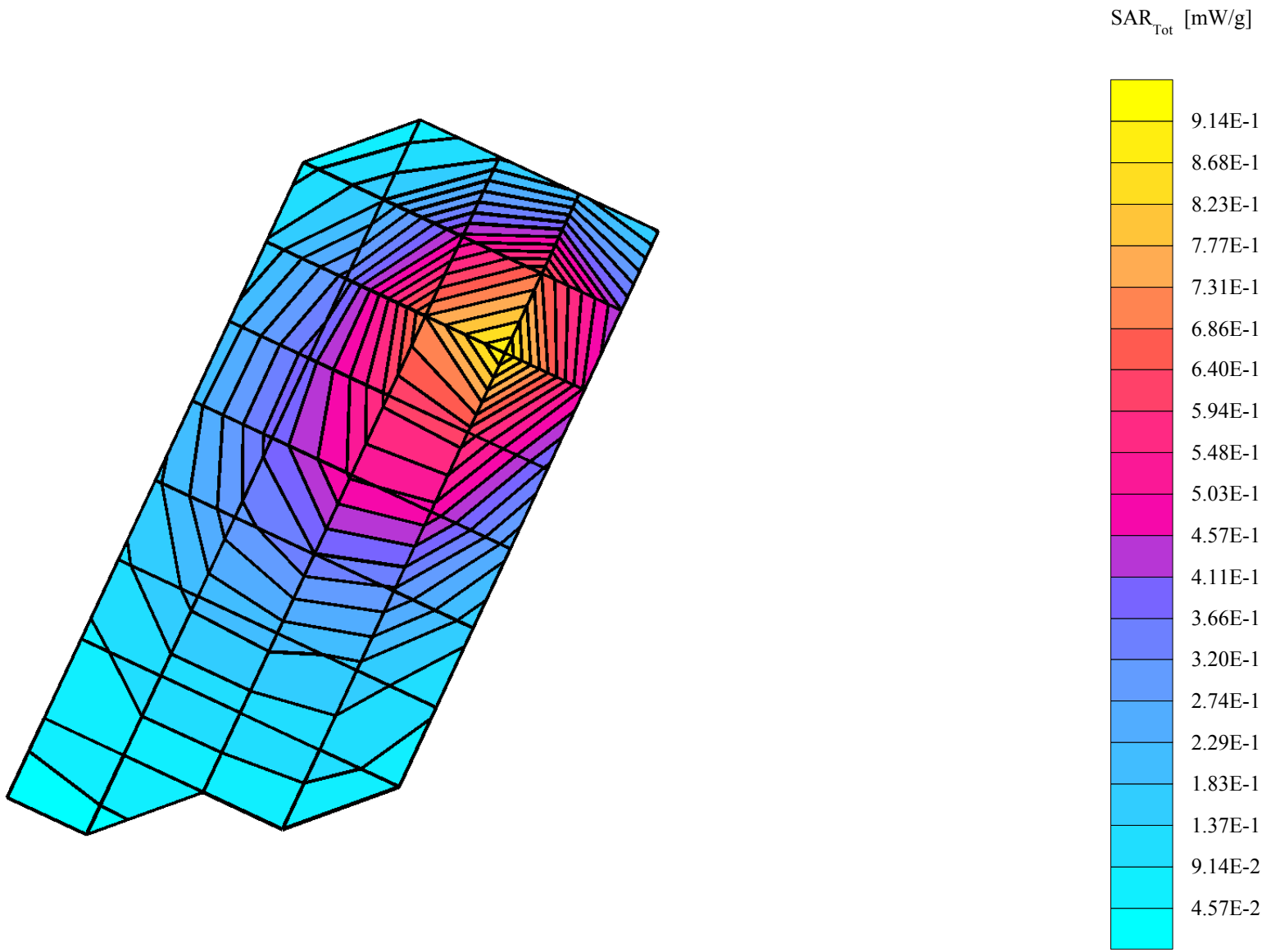
SAR_{Tot} [mW/g]

9.16E-1
8.70E-1
8.24E-1
7.79E-1
7.33E-1
6.87E-1
6.41E-1
5.95E-1
5.50E-1
5.04E-1
4.58E-1
4.12E-1
3.66E-1
3.21E-1
2.75E-1
2.29E-1
1.83E-1
1.37E-1
9.16E-2
4.58E-2

01/15/03

SN# OXF41D6A27

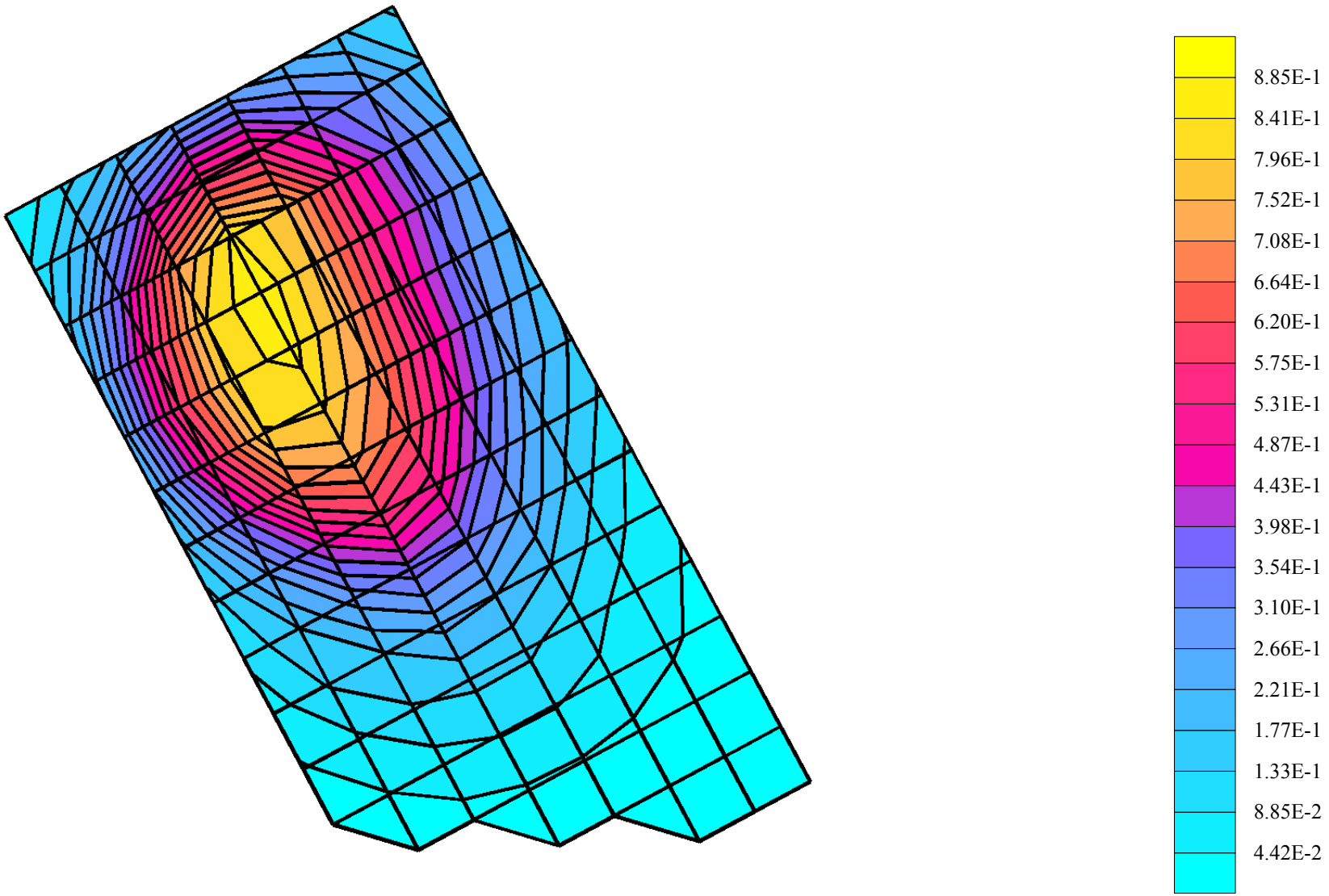
Ch# 410 / Pwr Step: Always UP / Antenna Position: Fixed / Battery Model #: SNN5668A / DEVICE POSITION: 15 deg TILT
R5: TP-1132 SUGAR (rev.3) Phantom; R5 Gilligan Left Hand Section; Position: (90°,180°); Frequency: 837 MHz
Probe: ET3DV6 - SN1514 - IEEE Head; ConvF(6.20,6.20,6.20); Crest factor: 1.0; 835 MHz Head & Body: σ = 0.91 mho/m ε_r = 42.1 ρ = 1.00 g/cm^3
Cube 7x7x7: SAR (1g): 0.918 mW/g, SAR (10g): 0.556 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0
Penetration depth: 11.9 (11.2, 12.7) [mm]
Powerdrift: -0.01 dB



01/16/03

SN# OXF41D6A27

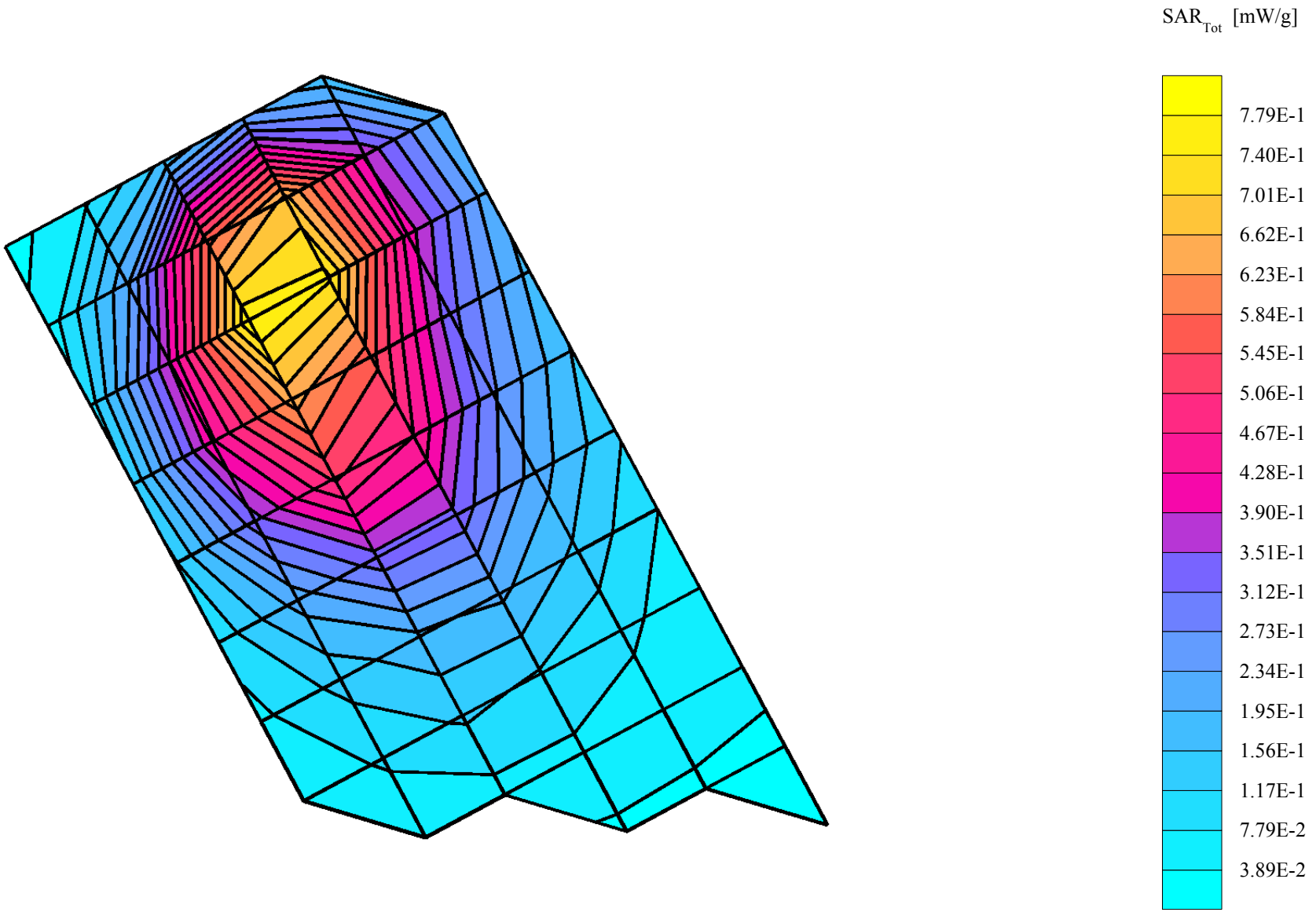
Ch# 410 / Pwr Step: Always UP / Antenna Position: Fixed / Battery Model #: SNN5668A / DEVICE POSITION: Cheek
R5: TP-1132 SUGAR (rev.3) Phantom; R5 MaryAnn Right Hand Section; Position: (90°,180°); Frequency: 837 MHz
Probe: ET3DV6 - SN1514 - IEEE Head; ConvF(6.20,6.20,6.20); Crest factor: 1.0; 835 MHz Head & Body: $\sigma = 0.91$ mho/m $\varepsilon_r = 42.1$ $\rho = 1.00$ g/cm^3
Cube 7x7x7: SAR (1g): 0.898 mW/g, SAR (10g): 0.630 mW/g * Max outside, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0
Penetration depth: 15.2 (14.8, 15.5) [mm]
Powerdrift: 0.17 dB



01/16/03

SN# OXF41D6A27

Ch# 410 / Pwr Step: Always UP / Antenna Position: Fixed / Battery Model #: SNN5668A / DEVICE POSITION: tilt 15*
R5: TP-1132 SUGAR (rev.3) Phantom; R5 MaryAnn Right Hand Section; Position: (90°,180°); Frequency: 837 MHz
Probe: ET3DV6 - SN1514 - IEEE Head; ConvF(6.20,6.20,6.20); Crest factor: 1.0; 835 MHz Head & Body: $\sigma = 0.91$ mho/m $\varepsilon_r = 42.1$ $\rho = 1.00$ g/cm^3
Cube 7x7x7: SAR (1g): 0.847 mW/g, SAR (10g): 0.536 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0
Penetration depth: 14.6 (14.5, 14.8) [mm]
Powerdrift: -0.27 dB



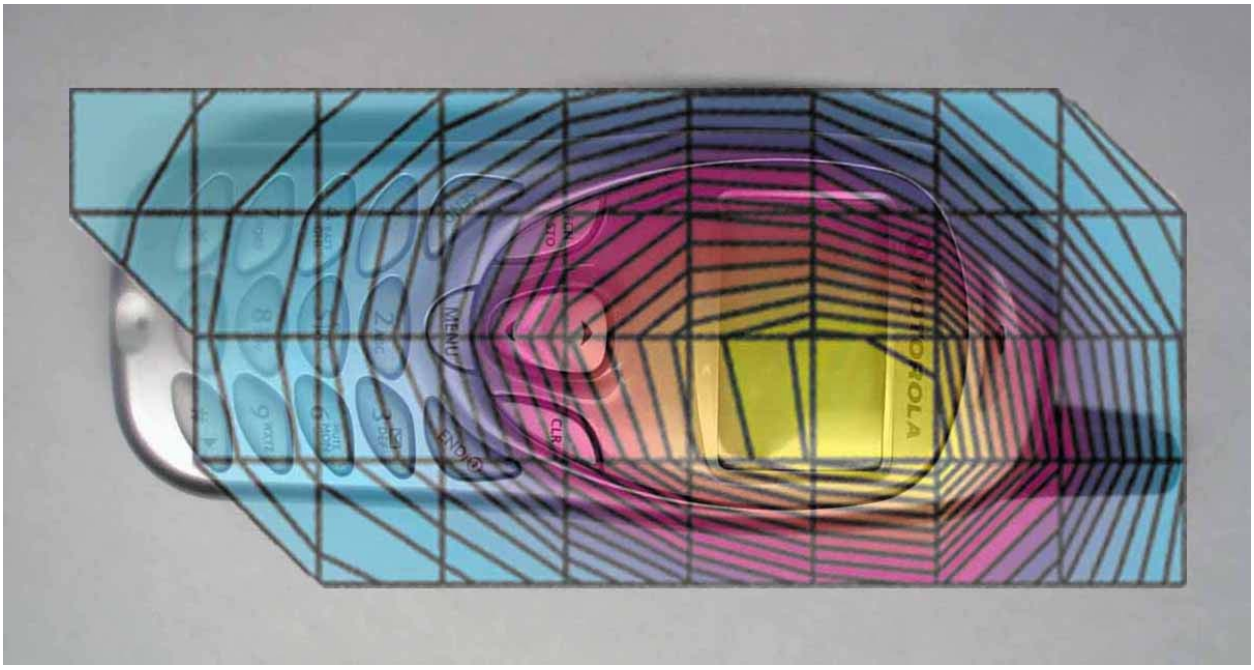


Figure 1.Typical 800MHz Left Head Adjacent Contour Overlaid on Phone with Antenna Fixed (Cheek Touch)

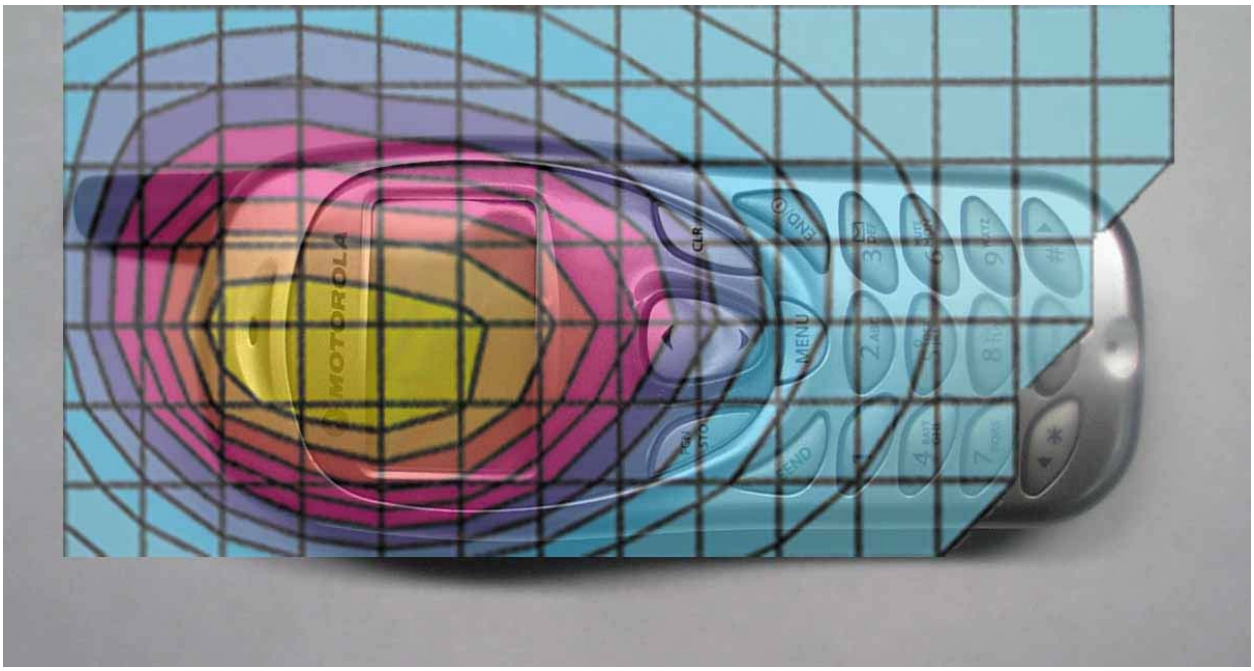


Figure 2.Typical 800MHz Right Head Adjacent Contour Overlaid on Phone with Antenna Fixed (Cheek Touch)

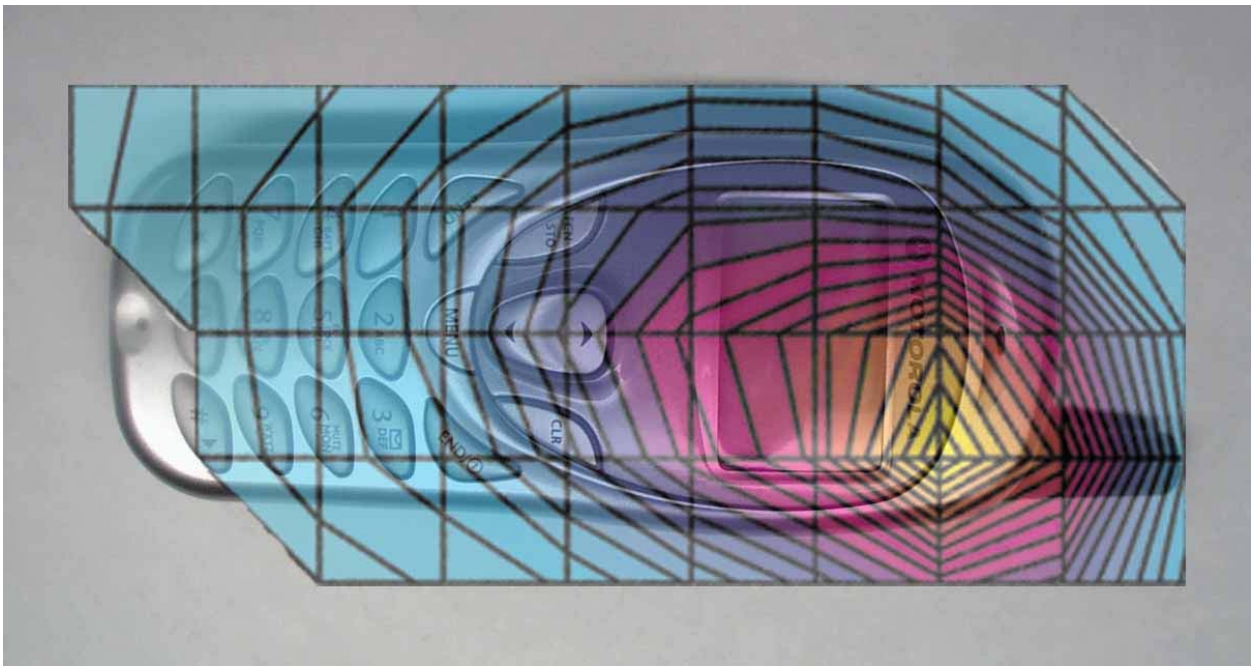


Figure 3.Typical 800MHz Left Head Adjacent Contour Overlaid on Phone with Antenna Fixed (15 ° Tilt)

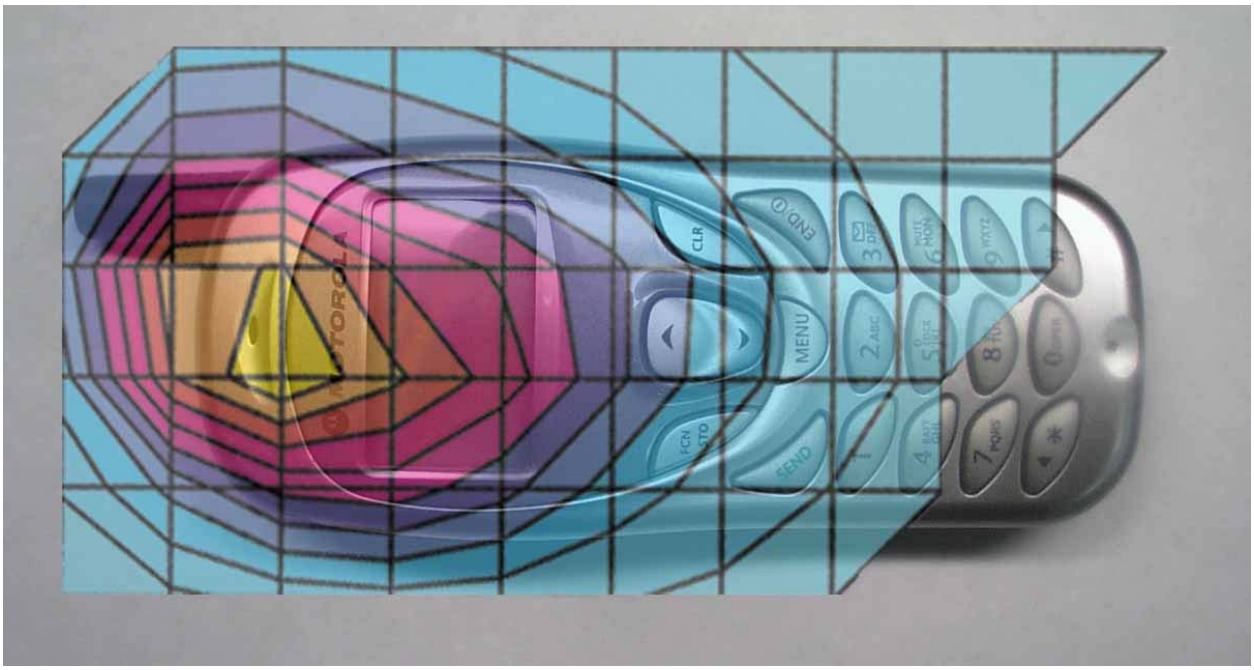


Figure 4.Typical 800MHz Right Head Adjacent Contour Overlaid on Phone with Antenna Fixed (15 ° Tilt)

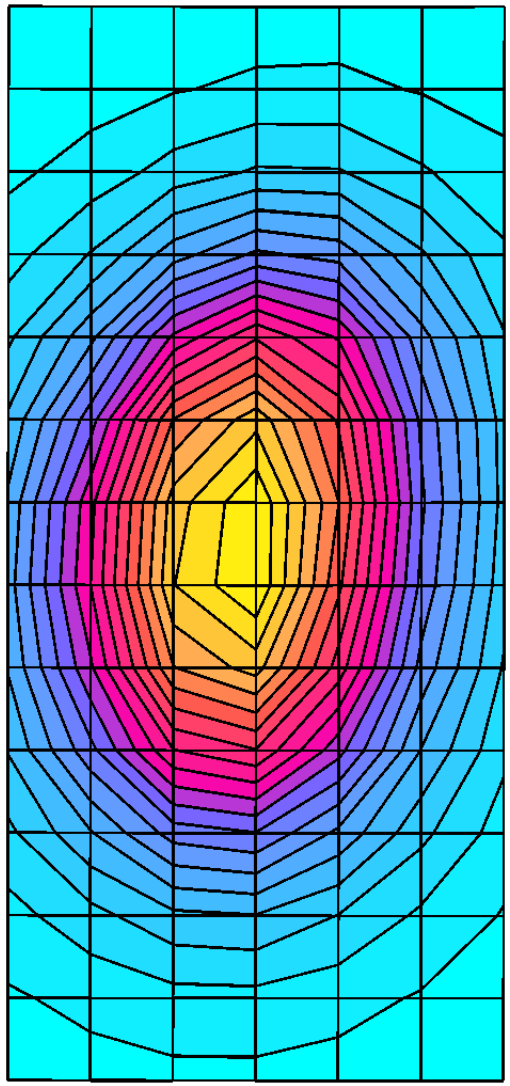
Appendix 3

SAR distribution plots for Body Worn Configuration

01/16/03

SN# OXF41D6A27

Ch# 384 / Pwr Step: 02 (OTA) / Antenna Position: Fixed / Battery Model #: SNN5668A / Accessory Model # = FRONT of phone 1 inch away from phantom
R5 Amy Twin Phantom Rev.4 (22Aug02) Phantom; section 1 Section; Position: (0°,0°); Frequency: 837 MHz
Probe: ET3DV6 - SN1514 - FCC Body; ConvF(6.00,6.00,6.00); Crest factor: 1.0; 835 MHz Head & Body: σ = 0.97 mho/m ε_r = 56.0 ρ = 1.00 g/cm^3
Cube 7x7x7: SAR (1g): 0.283 mW/g, SAR (10g): 0.204 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Penetration depth: 17.5 (16.0, 19.0) [mm]
Powerdrift: -0.28 dB



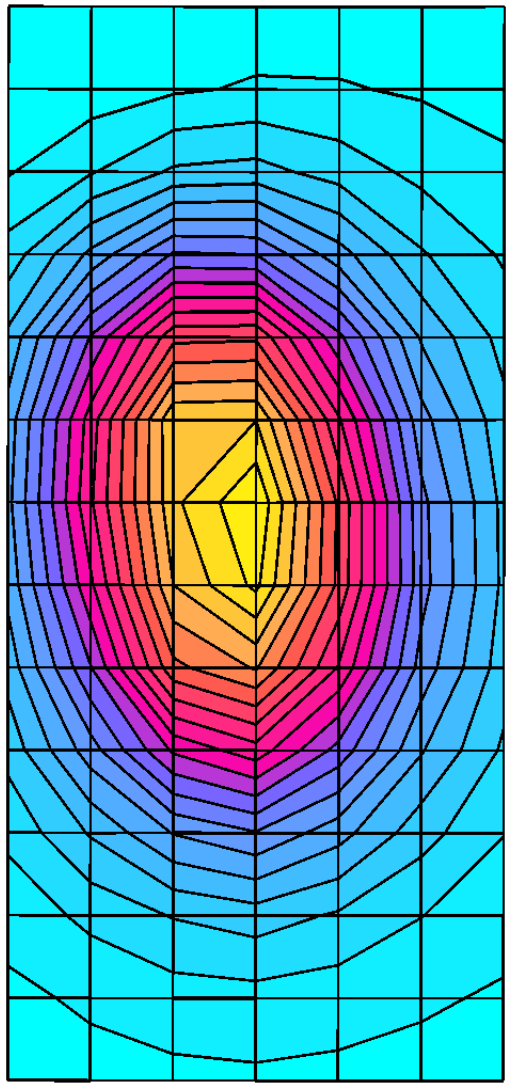
SAR_{Tot} [mW/g]

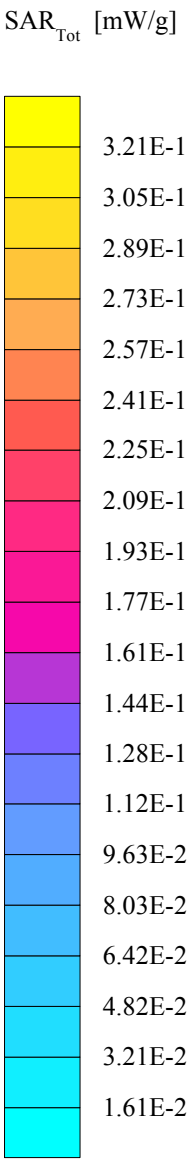
2.84E-1
2.70E-1
2.56E-1
2.41E-1
2.27E-1
2.13E-1
1.99E-1
1.85E-1
1.70E-1
1.56E-1
1.42E-1
1.28E-1
1.14E-1
9.94E-2
8.52E-2
7.10E-2
5.68E-2
4.26E-2
2.84E-2
1.42E-2

01/16/03

SN# OXF41D6A27

Ch# 384 / Pwr Step: 02 (OTA) / Antenna Position: Fixed / Battery Model #: SNN5668A / Accessory Model # = BACK of phone 1 inch away from phantom
R5 Amy Twin Phantom Rev.4 (22Aug02) Phantom; section 1 Section; Position: (0°,0°); Frequency: 837 MHz
Probe: ET3DV6 - SN1514 - FCC Body; ConvF(6.00,6.00,6.00); Crest factor: 1.0; 835 MHz Head & Body: σ = 0.97 mho/m ε_r = 56.0 ρ = 1.00 g/cm^3
Cube 7x7x7: SAR (1g): 0.329 mW/g, SAR (10g): 0.239 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Penetration depth: 17.8 (17.5, 18.3) [mm]
Powerdrift: -0.11 dB

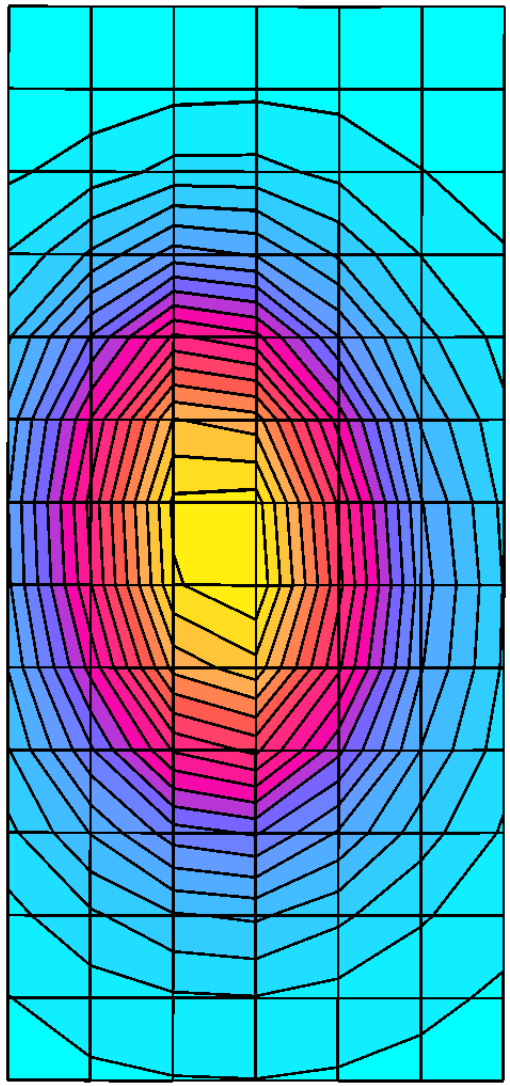


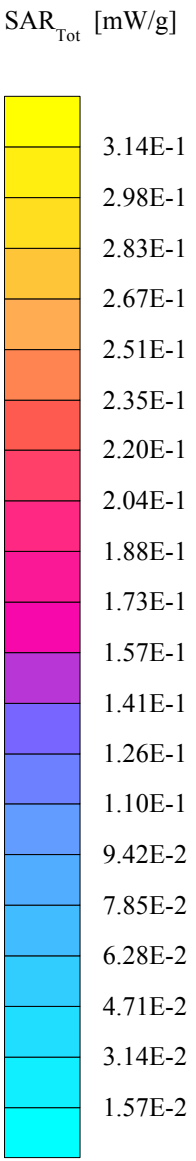


01/16/03

SN# OXF41D6A27

Ch# 410 / Pwr Step: Always UP / Antenna Position: Fixed / Battery Model #: SNN5668A / Accessory Model # = BACK of phone 1 inch away from phantom
R5 Amy Twin Phantom Rev.4 (22Aug02) Phantom; section 1 Section; Position: (0°,0°); Frequency: 837 MHz
Probe: ET3DV6 - SN1514 - FCC Body; ConvF(6.00,6.00,6.00); Crest factor: 1.0; 835 MHz Head & Body: σ = 0.97 mho/m ε_r = 56.0 ρ = 1.00 g/cm^3
Cube 7x7x7: SAR (1g): 0.321 mW/g, SAR (10g): 0.232 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Penetration depth: 16.9 (15.3, 18.5) [mm]
Powerdrift: -0.21 dB

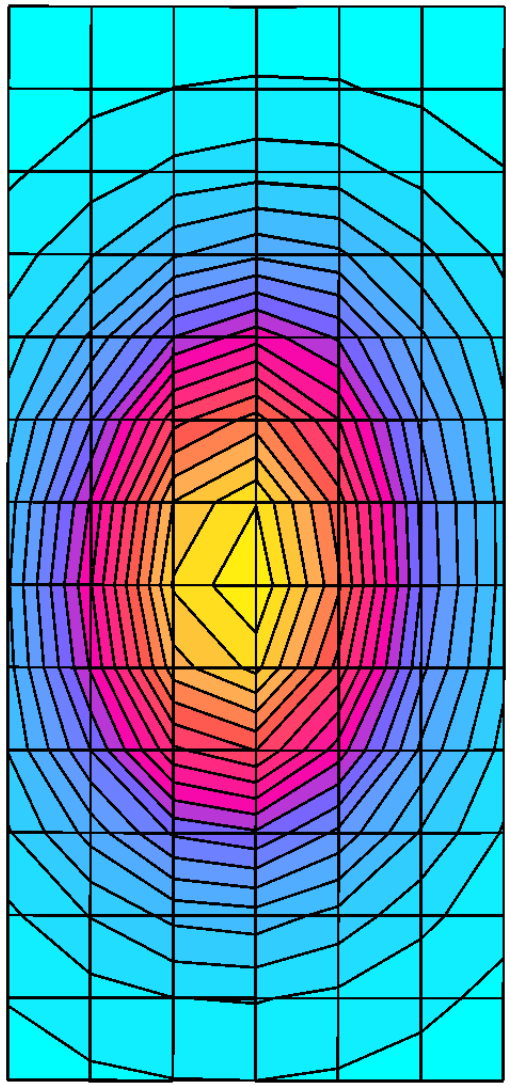




01/16/03

SN# OXF41D6A27

Ch# 410 / Pwr Step: Always UP / Antenna Position: Fixed / Battery Model #: SNN5668A / Accessory Model # = FRONT of phone 1 inch away from phantom
R5 Amy Twin Phantom Rev.4 (22Aug02) Phantom; section 1 Section; Position: (0°,0°); Frequency: 837 MHz
Probe: ET3DV6 - SN1514 - FCC Body; ConvF(6.00,6.00,6.00); Crest factor: 1.0; 835 MHz Head & Body: σ = 0.97 mho/m ε_r = 56.0 ρ = 1.00 g/cm^3
Cube 7x7x7: SAR (1g): 0.263 mW/g, SAR (10g): 0.190 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Penetration depth: 17.0 (15.6, 18.6) [mm]
Powerdrift: -0.38 dB



SAR_{Tot} [mW/g]

2.73E-1
2.59E-1
2.46E-1
2.32E-1
2.18E-1
2.05E-1
1.91E-1
1.77E-1
1.64E-1
1.50E-1
1.37E-1
1.23E-1
1.09E-1
9.55E-2
8.19E-2
6.83E-2
5.46E-2
4.10E-2
2.73E-2
1.37E-2

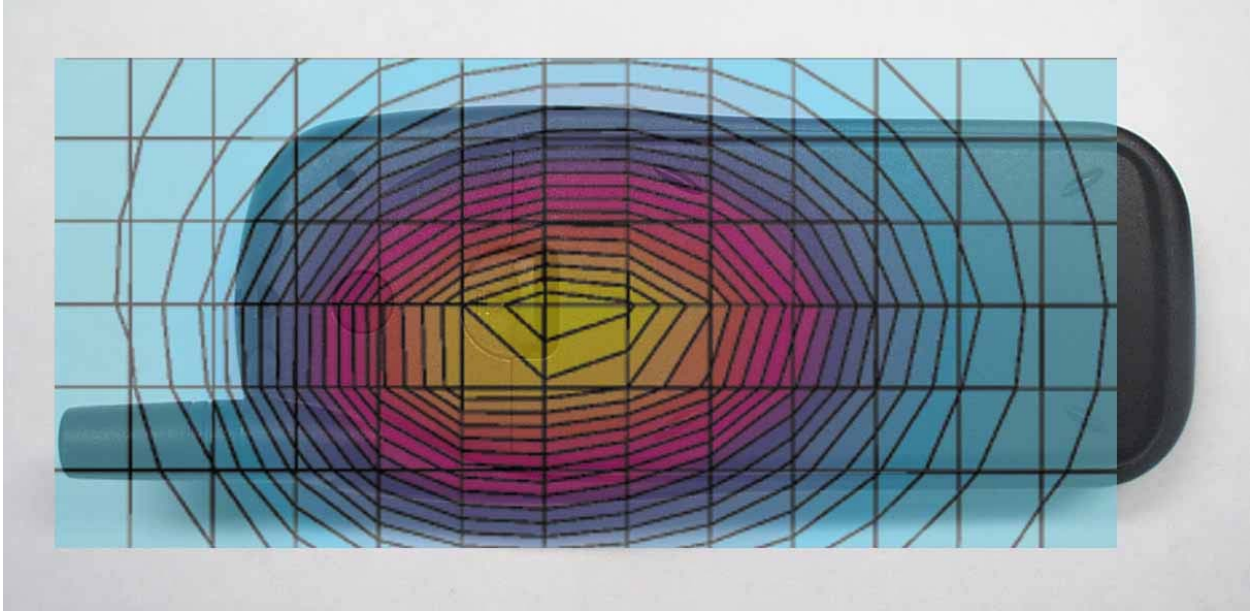


Figure 5.Typical 800 MHz Body-Worn Contour Overlaid on Phone with Antenna Fixed (Back 1” away from phantom)

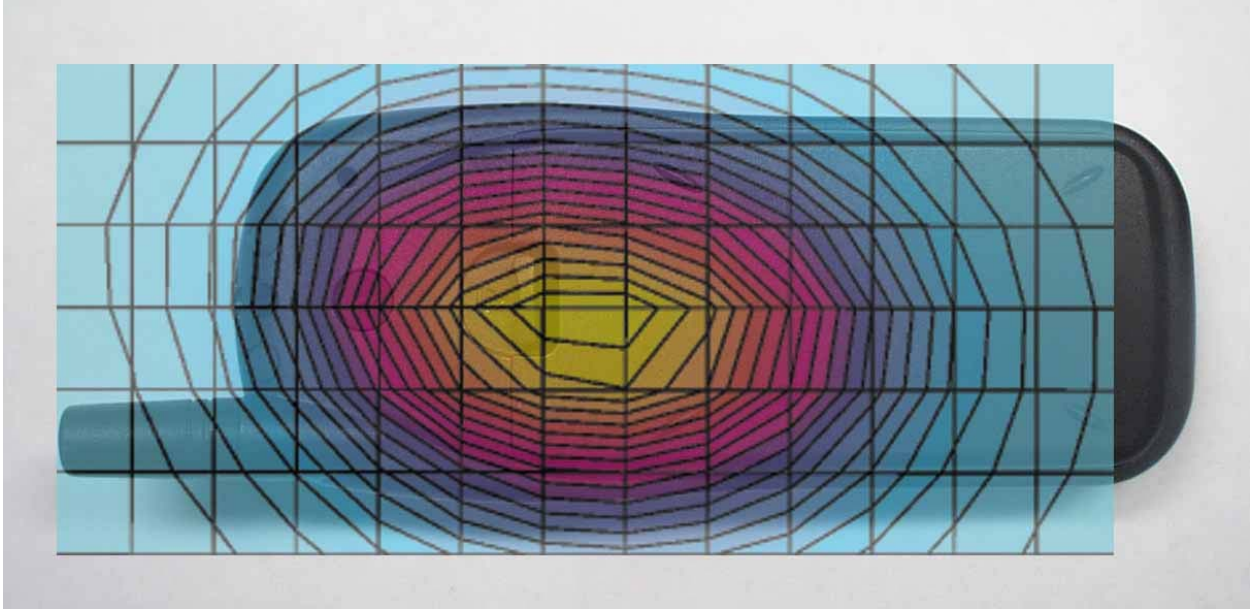


Figure 6. Typical 800 MHz Body-Worn Contour Overlaid on Phone with Antenna Fixed (Front 1” away form phantom)

Appendix 4

Probe Calibration Certificate - Please see attached file

Appendix 5

Dipole Characterization Certificate

Interim Dipole Correlation Certificate

FCD-0359, Rev.001

Dipole Serial Number:	# 079	Last Calibration Date:	26-Oct-00
Dipole Type (MHz):	900 MHz	Calibration Due:	26-Oct-02
		Manufacturer:	SPEAG

-Manufacturer's Original Calibration Information-

Dipole to be correlated: **[Serial Number: 079]**

1g SAR normalized to 1W forward power (mW/g):	10.2 mW/g
Relative Dielectric:	40.0
Conductivity:	0.85
Probe Serial Number:	SN 1507
Forward Power:	250mW +/-3%

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:	SN 1507
Forward Power:	250mW +/-3%

-Correlation Method Utilized- per DOI-1265

(select one)

By Similarity: X By Transfer Calibration:

-Measured Data-

Probe S/N:	SN 1515	Conductivity (meas.):	0.97
Robot Cell #:	HVD #8	Permittivity (meas.):	42.5

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

2.875 mW/g	N/R (if required)	N/R (if required)

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

2.82 mW/g	N/R (if required)	N/R (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 Fernandez **Date:** 11/13/2001

Comments: Secondary dipole measured –1.9% from primary dipole.

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. Back of Phone

Figure 9. Side of Phone

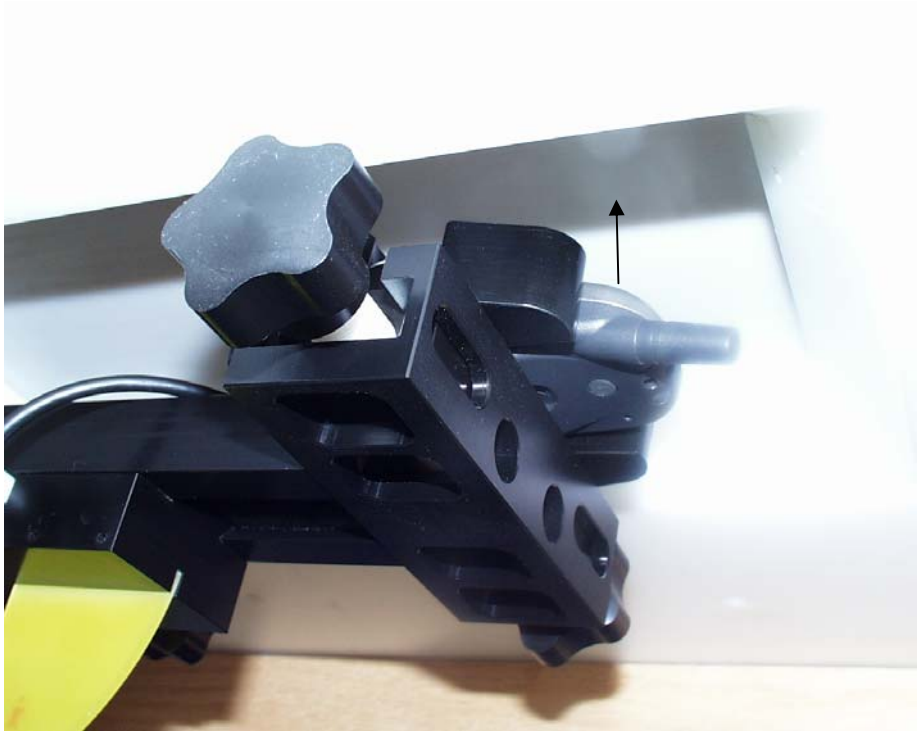


Figure 10. Front of Phone 1 inch away from Flat Phantom

Figure 11. Back of Phone 1 inch away from Flat Phantom

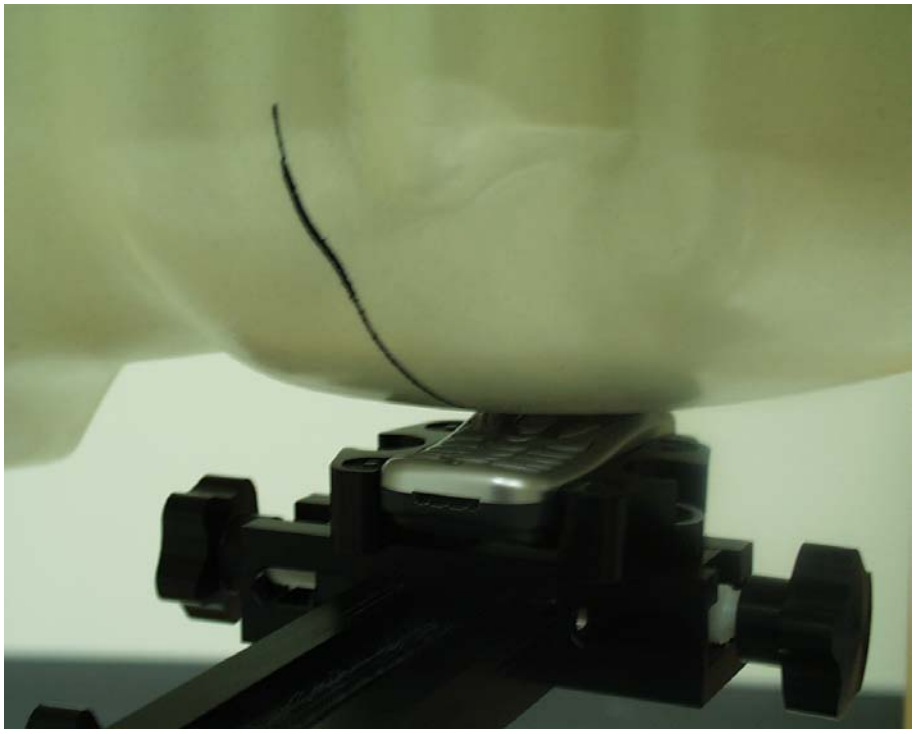


Figure 12. Phone Against the Head Cheek Touch (Front View)

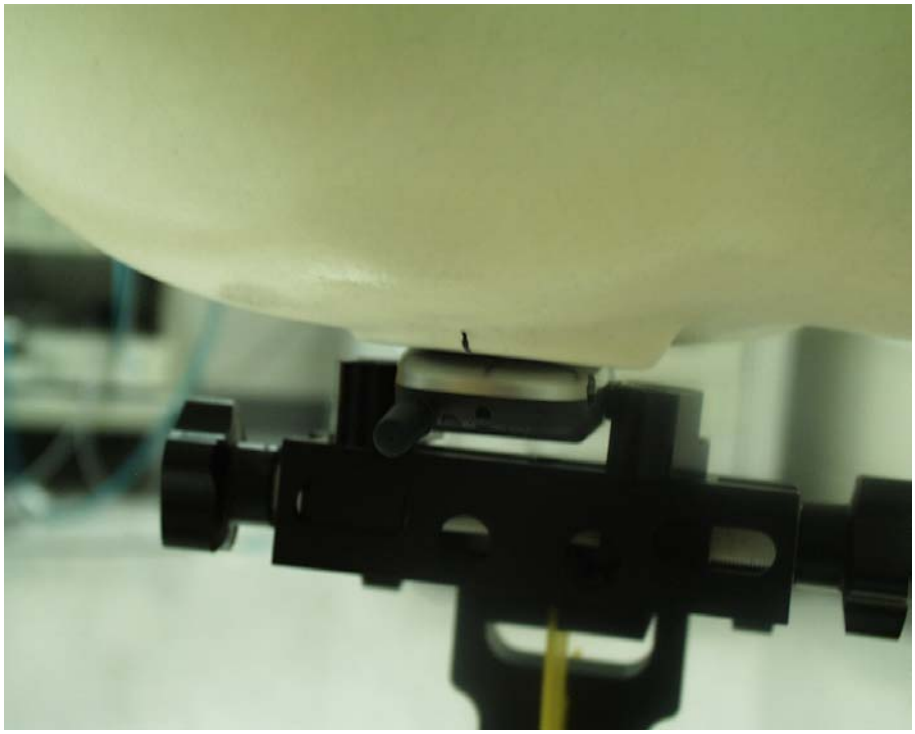


Figure 13. Phone Against the Head Cheek Touch (Back View)

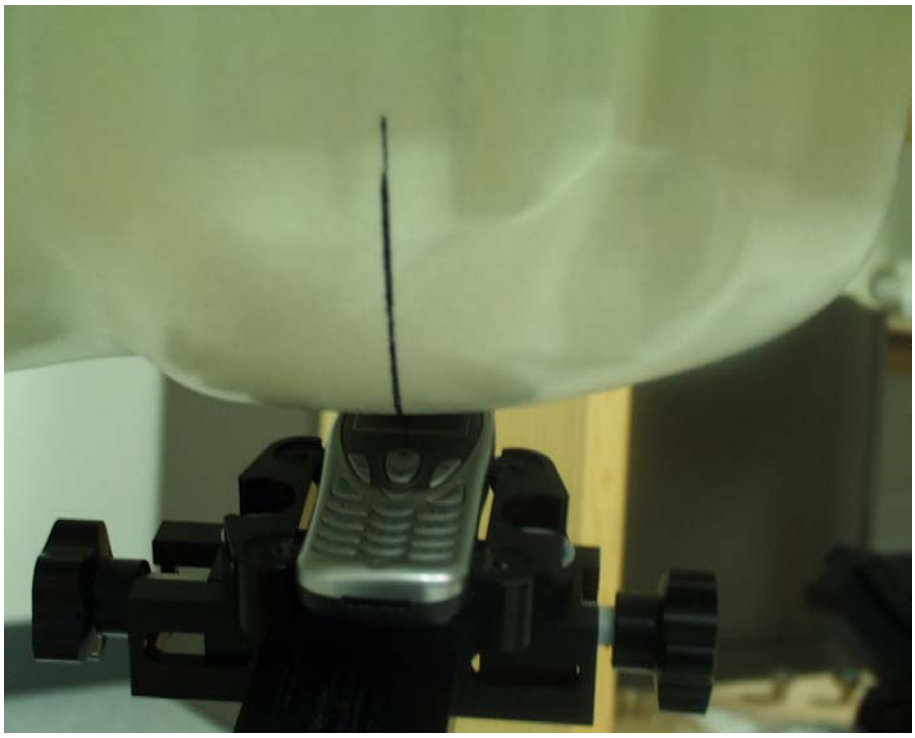


Figure 14. Phone Against the Head 15° Tilt (Front View)

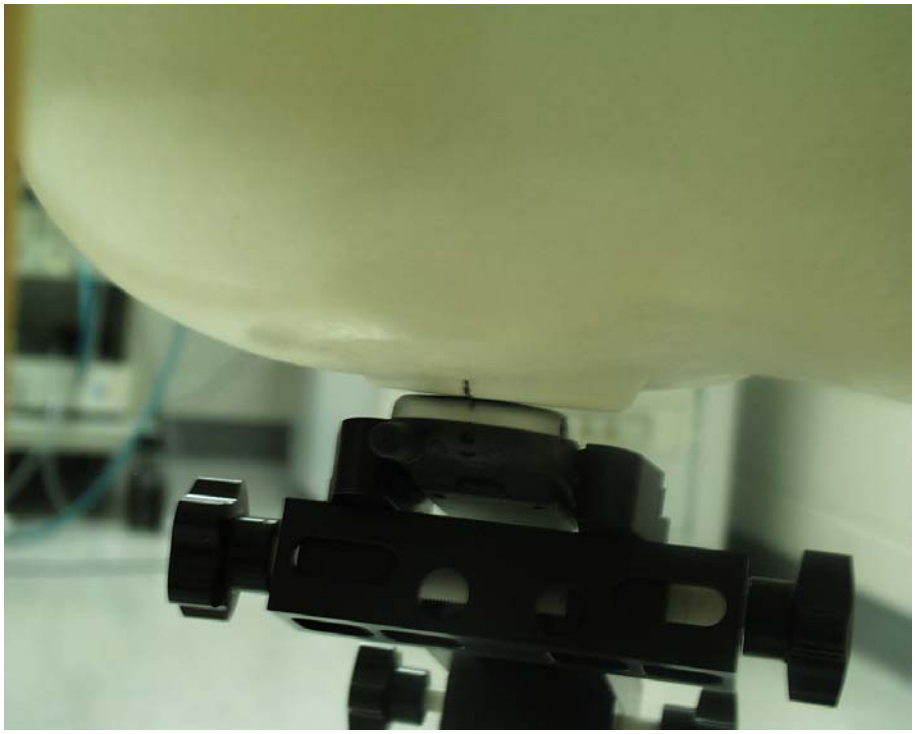


Figure 15. Phone Against the Head 15° Tilt (Back View)