



Exhibit 11: SAR Test Report IHDT56CF1

Date of test: 05/23/2002 – 05/30/2002
Date of Report: 06/06/2002

Laboratory: Motorola Personal Communications Sector Product Safety & Compliance
Laboratory
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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
IHDT56CF1 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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This test report shall not be reproduced in full, without written approval of the laboratory.

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

1) Introduction	3
2) Description of the Device Under Test	3
Antenna description	3
Device description	3
3) Test Equipment	3
3.1 Dosimetric system	3
3.2 Additional equipment used	4
4) Electrical parameters of the tissue simulating liquid	5
5) System Accuracy Verification	6
6) Test Results	7
6.1 Head Adjacent Test Results	8
6.2 Body-Worn Test Results	9

References:

Appendix 1: SAR distribution comparison for the system accuracy verification	10
Appendix 2: SAR distribution plots for Phantom Head Adjacent Use	11
Appendix 3: SAR distribution plots for Body Worn Configuration	14
Appendix 4. Probe Calibration Certificate	16
Appendix 5: Photographs of the device under test	17

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 IHDT56CF1). 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	Stubby	
Location	Right Side	
Dimensions	Length	17mm
	Width	6mm
Configuration	Stubby	

Device description

FCC ID Number	IHDT56CF1		
Serial number	5281E239		
Mode(s) of Operation	800 AMPS	800 TDMA	TDMA 1900
Modulation Mode(s)	AMPS	TDMA	TDMA
Maximum Output Power Setting	26.30	27.10	26.00
Duty Cycle	1:1	1:3	1:3
Transmitting Frequency Rang(s)	824.04-848.97 MHz	824.04-848.97 MHz	1850.04-1909.92 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 ±12.0% (K=1) with an expanded uncertainty of ±24.0% (K=2). The breakdown of the individual uncertainties is as follows:

<u>Probe Uncertainty</u>	<u>±%</u>
Isotropy error	7.2
Calibration error	3.3
Spatial resolution	0.5
<u>SAR Evaluation</u>	<u>±%</u>
Conductivity measurement	5.0
Environmental errors	1.0
<u>Peak SAR Evaluation</u>	<u>±%</u>
Probe positioning	1.0
Volumetric averaging	4.2
Device positioning	6.0

The list of calibrated equipment used for the measurements is shown below.

Description	Serial Number	Cal Due Date
DASY3 DAE V1	SN 365	09/26/2002
E-Field Probe ETDV6	SN 1508	10/25/2002
Dipole Validation Kit, DV900V2	SN 95	01/03/2003
SAM Phantom used for 800MHz	TP-1005	
Dipole Validation Kit, DV1900V2	SN 277tr	01/04/2003
SAM Phantom used for 1900MHz	TP-1085	

3.2 Additional Equipment

Description	Serial Number	Cal Due Date
Signal Generator HP8648C	3847A04848	01/19/2003
Power Meter E4419B	GB39511090	11/28/2002
Power Sensor #1	US39211007	12/19/2002
Power Sensor #2	US39210929	12/19/2002
Network Analyzer HP8753ES	US39172529	07/05/2002

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 a HP85070 Dielectric Probe Kit. These values 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.

<i>f</i> (MHz)	Tissue type	Limits / Measured	Dielectric Parameters			
			ϵ_r	σ (S/m)	Temp (°C)	
835	Head	Measured, 05/23/2002	42.40	0.92	22.10	
		Recommended Limits	41.50	0.90	20-25	
		Measured, 05/24/2002	0.91	41.70	22.30	
		Recommended Limits	41.50	0.90	20-25	
		Measured, 05/28/2002	0.92	42.00	22.30	
		Recommended Limits	41.50	0.90	20-25	
		Measured, 05/29/2002	0.92	42.50	22.20	
		Recommended Limits	41.50	0.90	20-25	
	Body	Measured, 05/28/2002	0.97	53.40	22.30	
		Recommended Limits	55.20	0.97	20-25	
		Measured, 05/29/2002	0.97	53.40	22.20	
		Recommended Limits	55.20	0.97	20-25	
	1880	Head	Measured, 05/23/2002	1.47	38.40	21.60
			Recommended Limits	40.00	1.40	20-25
Measured, 05/24/2002			1.46	39.20	22.00	
Recommended Limits			40.00	1.40	20-25	
Body		Measured, 05/28/2002	53.30	1.56	21.10	
		Recommended Limits	53.30	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	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 0.0001 W/kg.

f (MHz)	Description	SAR (W/kg), 1gram	Dielectric Parameters		Ambient Temp (°C)	Tissue Temp (°C)
			ε _r	σ (S/m)		
900	Measured, 05/23/2002	12.02	41.70	0.98	23.00	22.10
	Recommended Limits	11.40	40.30	0.95	20-26	20-26
	Measured, 05/24/2002	12.02	41.00	0.97	23.00	23.00
	Recommended Limits	11.40	40.30	0.95	20-26	20-26
	Measured, 05/28/2002	12.15	41.30	0.98	23.00	22.30
	Recommended Limits	11.40	40.30	0.95	20-26	20-26
	Measured, 05/29/2002	12.18	41.70	0.98	23.00	22.00
	Recommended Limits	11.40	40.30	0.95	20-26	20-26
1800	Measured, 05/23/2002	38.88	38.80	1.38	23.00	21.60
	Recommended Limits	38.80	39.60	1.37	20-26	20-26
	Measured, 05/24/2002	37.33	39.50	1.38	23.00	22.00
	Recommended Limits	38.80	39.60	1.37	20-26	20-26
	Measured, 05/28/2002	38.25	40.30	1.37	23.00	21.40
	Recommended Limits	38.80	39.60	1.37	20-26	20-26

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 then placed in the SAR measurement system with a fully charged battery. The phone was tested in the configurations stipulated in OET Bulletin 65 Supplement C 01-01. The phone was positioned into these 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 Cellular Phone (FCC ID IHDT56CF1) has the following battery options:

SNN5582A – 3.6 V Lithium Ion Battery

The battery with the highest capacity is the SNN5582A. This battery was used to do all of the SAR testing. No other battery type is presently available with this phone.

6.1 Head Adjacent Test Results

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 and the temperature of the tissue simulate after the test. The SAR measurements were performed using the SAM phantoms listed in section 3.1. The tissue stimulant depth was verified to be 15.0cm ±0.5cm at the center of the ear by doing a Z-axis scan during the system accuracy verification.

The test conditions indicated as bold numbers in the following table are included in Appendix 2. All other test conditions measured lower SAR values than those included. Note that for 800MHz digital mode, SAR was not measured in the low and high channels since the SAR value for the Middle channel (Ch. 384) is more than 2.0 dB lower than the SAR limit.

f (MHz)	Description	Conducted Output Power (dBm)	Left Head (Cheek / Touch Position)			
			Antenna Fixed			
			Measured (W/kg)	Drift (dB)	Amb. Temp (°C)	Simulate Temp (°C)
Analog 800MHz	Channel 991	26.25	1.39	-0.02	22.10	21.80
	Channel 384	26.37	1.13	-0.31	22.10	21.80
	Channel 799	26.23	1.29	-0.21	22.10	21.80
Digital 800MHz	Channel 991	27.00				
	Channel 384	27.13	0.755	0.06	22.30	22.00
	Channel 799	27.16				
Digital 1900MHz	Channel 2	25.92	1.20	-0.03	22.00	21.60
	Channel 1000	26.00	1.22	-0.05	22.00	21.70
	Channel 1998	25.98	1.15	-0.08	22.00	21.70

Table 1: SAR measurement results for the portable cellular telephone FCC ID IHDT56CF1 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)			
			Antenna Fixed			
			Measured (W/kg)	Drift (dB)	Amb. Temp (°C)	Simulate Temp (°C)
Analog 800MHz	Channel 991	26.25	1.15	0.09	22.10	22.00
	Channel 384	26.37	1.04	-0.16	22.10	21.40
	Channel 799	26.23	1.11	-0.47	22.10	21.30
Digital 800MHz	Channel 991	27.00				
	Channel 384	27.13	0.649	0.03	22.30	22.00
	Channel 799	27.16				
Digital 1900MHz	Channel 2	25.92	1.07	0.06	21.60	21.80
	Channel 1000	26.00	1.13	0.00	21.60	21.80
	Channel 1998	25.98	1.12	-0.08	22.00	21.50

Table 2: SAR measurement results for the portable cellular telephone FCC ID IHDT56CF1 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)			
			Antenna Fixed			
			Measured (W/kg)	Drift (dB)	Amb. Temp (°C)	Simulate Temp (°C)
Analog 800MHz	Channel 991	26.25	1.47	0.10	22.10	21.80
	Channel 384	26.37	1.23	0.04	22.10	21.80
	Channel 799	26.23	1.37	-0.45	22.10	21.80
Digital 800MHz	Channel 991	27.00				
	Channel 384	27.13	0.785	0.01	22.30	22.00
	Channel 799	27.16				
Digital 1900MHz	Channel 2	25.92	1.44	-0.02	22.00	21.70
	Channel 1000	26.00	1.51	-0.08	22.00	22.70
	Channel 1998	25.98	1.42	-0.08	22.00	21.70

Table 3: SAR measurement results for the portable cellular telephone FCC ID IHDT56CF1 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)			
			Antenna Fixed			
			Measured (W/kg)	Drift (dB)	Amb. Temp (°C)	Simulate Temp (°C)
Analog 800MHz	Channel 991	26.25	1.10	0.03	22.10	21.80
	Channel 384	26.37	0.978	-0.17	22.10	21.80
	Channel 799	26.23	1.06	-0.17	22.10	21.80
Digital 800MHz	Channel 991	27.00				
	Channel 384	27.13	0.659	-0.01	22.30	22.00
	Channel 799	27.16				
Digital 1900MHz	Channel 2	25.92	1.34	-0.02	22.00	21.60
	Channel 1000	26.00	1.38	-0.03	22.00	21.50
	Channel 1998	25.98	1.22	-0.01	22.00	21.50

Table 4: SAR measurement results for the portable cellular telephone FCC ID IHDT56CF1 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 and the temperature of the tissue simulate after the test. 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. The functional accessories were divided into two categories, the ones with metal components and the ones with non-metal components. For non-metallic component accessories’, testing was performed on the accessory that displayed the closest proximity to the flat phantom. Each metallic component accessory, if any, was checked for uniqueness of metal component so that each is tested with the device. If multiple accessories shared an identical metal component, only the accessory that dictates the closest spacing to the body was tested. The cellular phone was tested with a headset connected to the device for all body-worn SAR measurements.

(There are no Body-Worn Accessories available for this phone hence the device was tested per the supplement C testing guidelines for devices that do not have body worn accessories. The back part of the phone was placed 1 inch away from a flat phantom per the supplement C standard guidelines to perform SAR measurement. Placing the back of the phone towards the user in this configuration causes the antenna to be closer than with the front of the phone towards the users).

A full data set output of test conditions with the highest SAR values in each band from the Dasy™ measurement system are included as appendix 3. The test conditions included are indicated as bold numbers in the following table. All other test conditions measured lower SAR values than those included.

f (MHz)	Description	Conducted Output Power (dBm)	Body Worn			
			Antenna Fixed (Back of Phone 1 inch away from Phantom)			
			Measured (W/kg)	Drift (dB)	Amb. Temp (°C)	Simulate Temp (°C)
Analog 800MHz	Channel 991	26.25	0.687	0.01	22.20	22.40
	Channel 384	26.37	0.471	-0.27	21.30	22.30
	Channel 799	26.23	0.596	-0.30	22.20	22.30
Digital 800MHz	Channel 1013	27.00	0.23	0.01	22.20	22.40
	Channel 384	27.13	0.28	0.03	22.20	22.40
	Channel 779	27.16	0.22	0.03	22.20	22.40
Digital 1900MHz	Channel 2	25.92	0.21	0.04	21.10	21.40
	Channel 1001	26.00	0.19	0.02	21.10	21.40
	Channel 1998	25.98	0.17	0.06	21.10	21.40

Table 5: SAR measurement results for the portable cellular telephone FCC ID IHDT56CF1 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# 95 / Forward Power = 252 mW / Room Temp at time of measurement = 23c Simulant Temp at time of measurement=22.1c

R1: TP-1005 SUGAR (rev. 3) Phantom; Flat Section; Position: (90°,90°); Frequency: 900 MHz

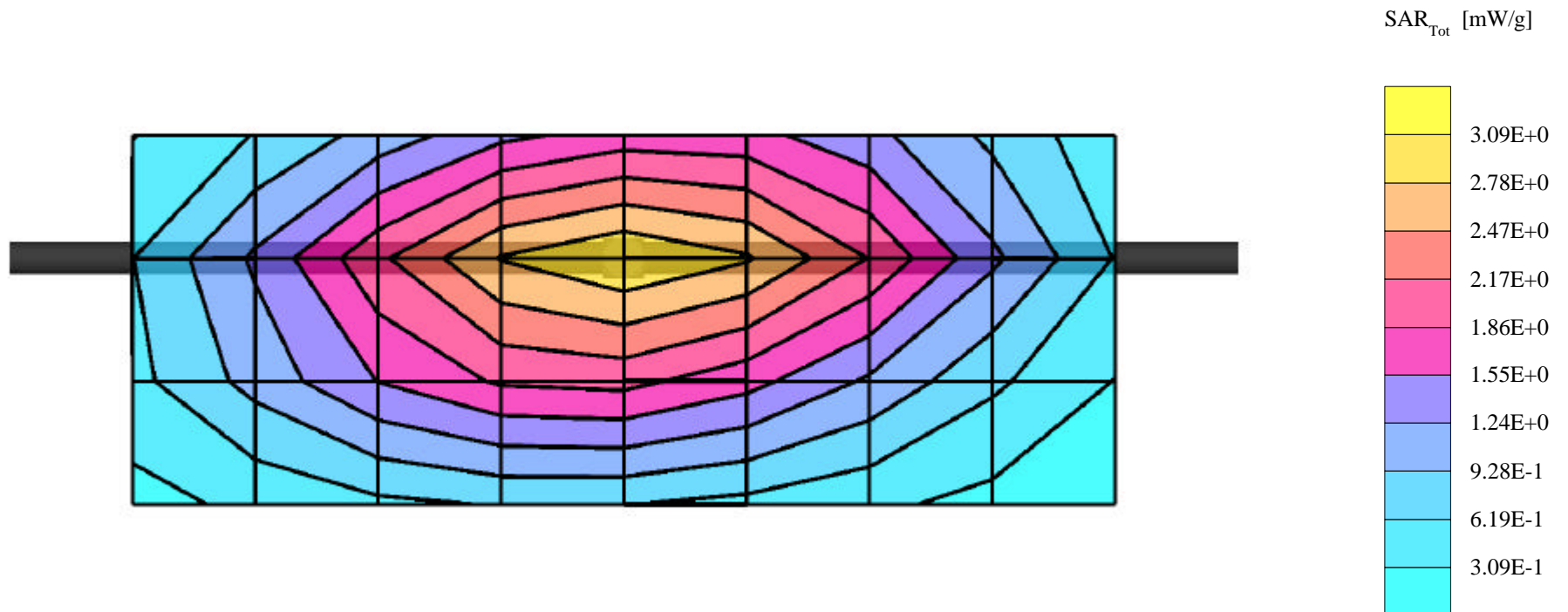
Probe: ET3DV6 - SN1508 - Validation; ConvF(6.35,6.35,6.35); Crest factor: 1.0; 900 MHz VALIDATION: $\sigma = 0.98$ mho/m $\epsilon_r = 41.7$ $\rho = 1.00$ g/cm³

Cubes (2): SAR (1g): 3.03 mW/g ± 0.02 dB, SAR (10g): 1.92 mW/g ± 0.02 dB, (Worst-case extrapolation)

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

Penetration depth: 11.7 (10.9, 12.8) [mm]

Powerdrift: 0.02 dB



Dipole 900 MHz

900 MHz Dipole Validation / Dipole Sn# 95 / Forward Power = 252 mW / Room Temp at time of measurement = 23 C Simulant Temp at time of measurement = 23 C

R1: TP-1005 SUGAR (rev. 3) Phantom; Flat Section; Position: (90°,90°); Frequency: 900 MHz

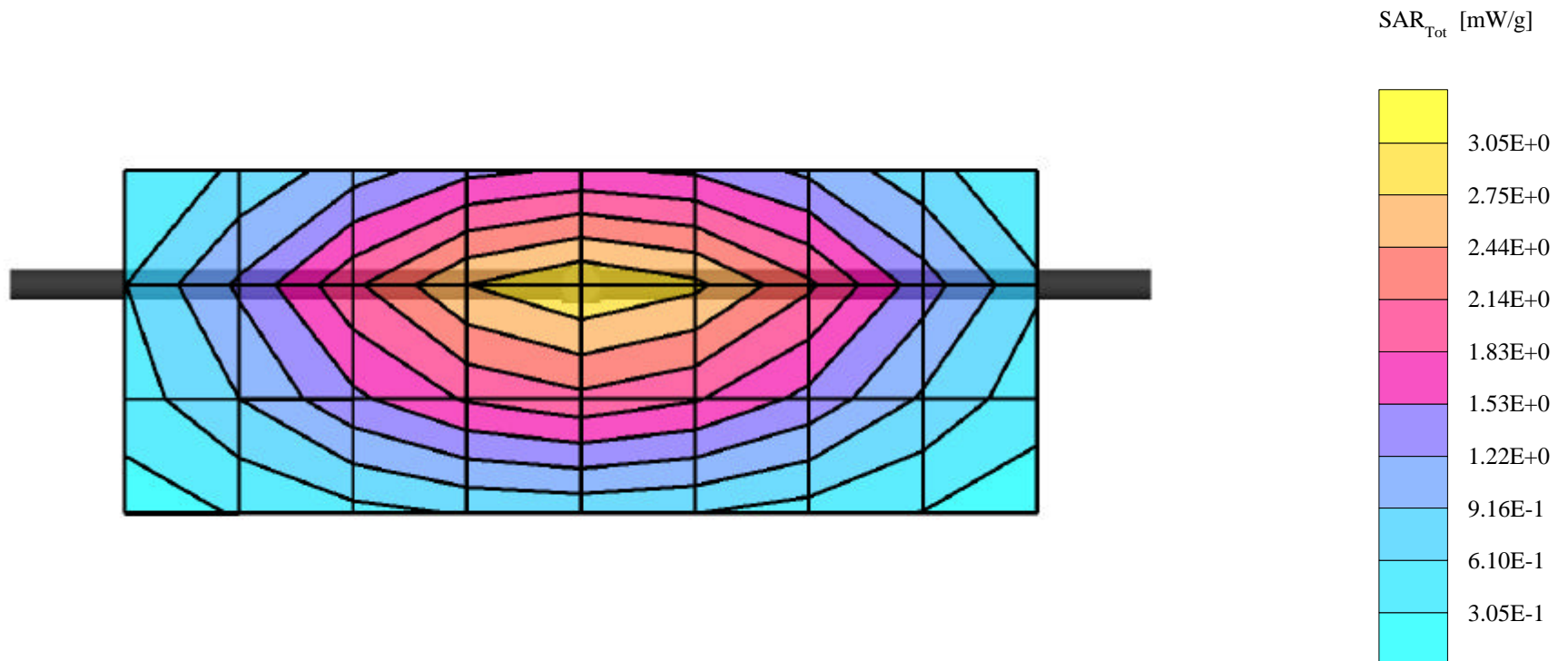
Probe: ET3DV6 - SN1508 - Validation; ConvF(6.35,6.35,6.35); Crest factor: 1.0; 900 MHz VALIDATION: $\sigma = 0.97$ mho/m $\epsilon_r = 41.0$ $\rho = 1.00$ g/cm³

Cubes (2): SAR (1g): 3.03 mW/g ± 0.03 dB, SAR (10g): 1.92 mW/g ± 0.02 dB, (Worst-case extrapolation)

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

Penetration depth: 11.6 (10.8, 12.8) [mm]

Powerdrift: 0.06 dB



Dipole 900 MHz

900 MHz Dipole Validation / Dipole Sn# 95 / Forward Power = 255 mW/ Room Temp at time of measurement = 23c Simulant Temp at time of measurement = 22.3c

R1: TP-1005 SUGAR (rev. 3) Phantom; Flat Section; Position: (90°,90°); Frequency: 900 MHz

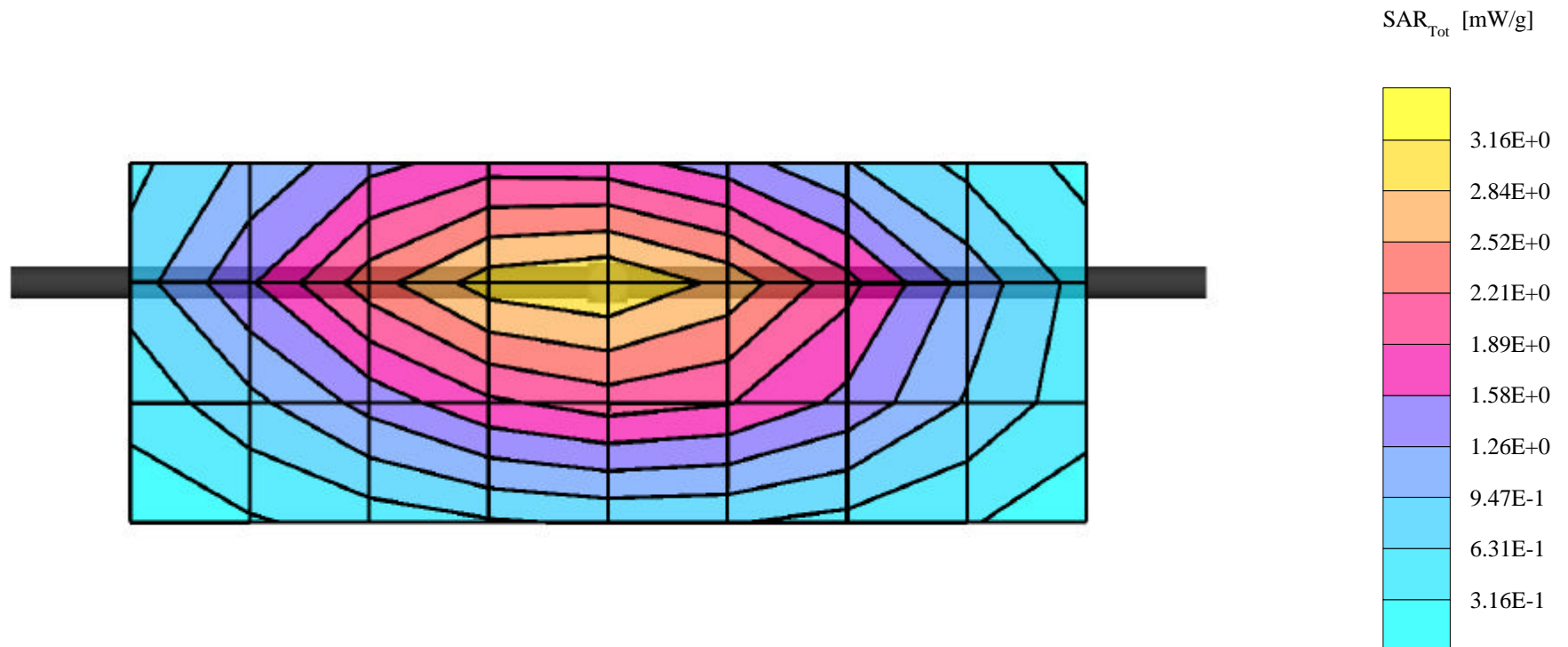
Probe: ET3DV6 - SN1508 - Validation; ConvF(6.35,6.35,6.35); Crest factor: 1.0; 900 MHz VALIDATION: $\sigma = 0.98$ mho/m $\epsilon_r = 41.3$ $\rho = 1.00$ g/cm³

Cubes (2): SAR (1g): 3.10 mW/g ± 0.05 dB, SAR (10g): 1.96 mW/g ± 0.05 dB, (Worst-case extrapolation)

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

Penetration depth: 11.6 (10.8, 12.8) [mm]

Powerdrift: 0.03 dB



Dipole 900 MHz

900 MHz Dipole Validation / Dipole Sn# 95 / Forward Power =252 mW/ Room Temp at time of measurement = 23 C Simulant Temp at time of measurement = 22 C

R1: TP-1005 SUGAR (rev. 3) Phantom; Flat Section; Position: (90°,90°); Frequency: 900 MHz

Probe: ET3DV6 - SN1508 - Validation; ConvF(6.35,6.35,6.35); Crest factor: 1.0; 900 MHz VALIDATION: $\sigma = 0.98$ mho/m $\epsilon_r = 41.7$ $\rho = 1.00$ g/cm³

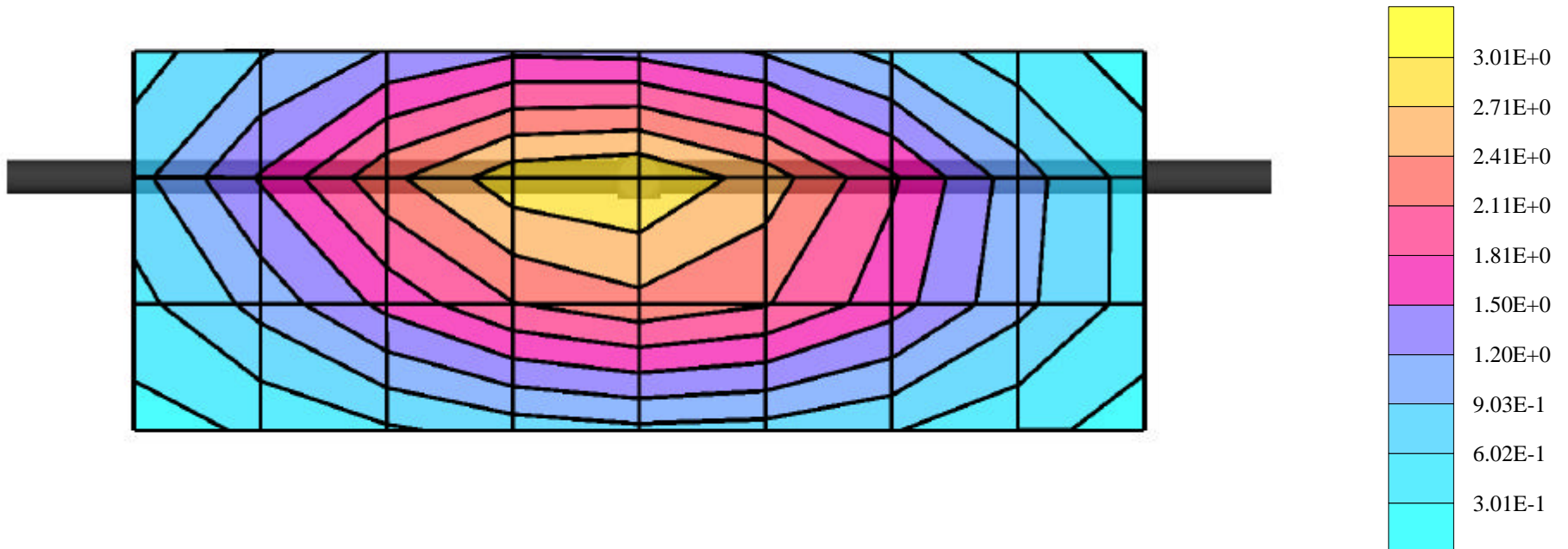
Cubes (2): SAR (1g): 3.07 mW/g ± 0.04 dB, SAR (10g): 1.94 mW/g ± 0.04 dB, (Worst-case extrapolation)

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

Penetration depth: 11.5 (10.7, 12.7) [mm]

Powerdrift: 0.03 dB

SAR_{Tot} [mW/g]



Dipole 1800 MHz

1800 MHz Dipole Validation / Dipole Sn# 277tr / Forward Power = 251 mW / Room Temp at time of measurement = 23c Simulant Temp at time of measurement = 21.6c

R1 Amy Twin Phantom Rev.3 Phantom; section 1 Section; Position: (90°,180°); Frequency: 1800 MHz

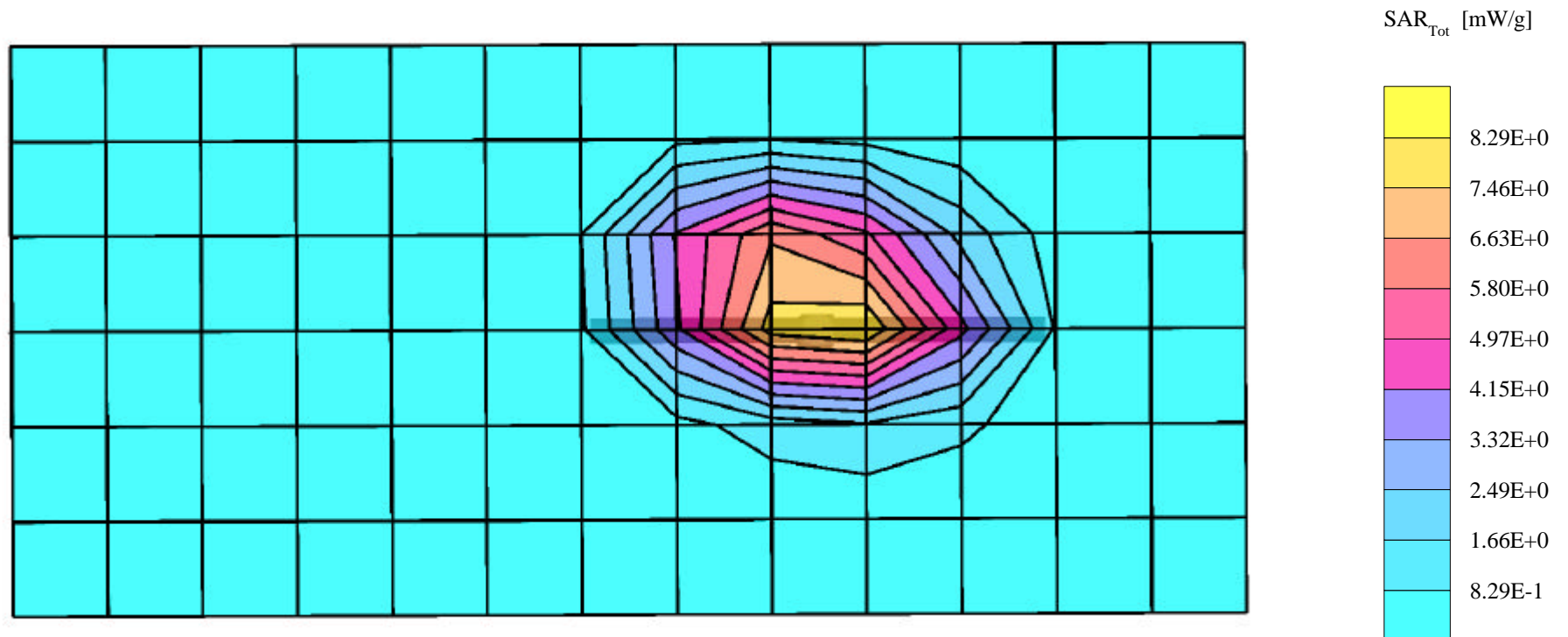
Probe: ET3DV6 - SN1508 - Validation; ConvF(5.41,5.41,5.41); Crest factor: 1.0; 1800 MHz VALIDATION: $\sigma = 1.38$ mho/m $\epsilon_r = 38.8$ $\rho = 1.00$ g/cm³

Cubes (2): SAR (1g): 9.76 mW/g ± 0.06 dB, SAR (10g): 5.17 mW/g ± 0.06 dB, (Worst-case extrapolation)

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

Penetration depth: 8.5 (8.1, 9.3) [mm]

Powerdrift: 0.02 dB



Dipole 1800 MHz

1800 MHz Dipole Validation / Dipole Sn# 277tr / Forward Power = 251 mW / Room Temp at time of measurement = 23 C Simulant Temp at time of measurement = 22 C

R1: TP-1085 GLYCOL (rev. 3) Phantom; Flat Section; Position: (90°,90°); Frequency: 1800 MHz

Probe: ET3DV6 - SN1508 - Validation; ConvF(5.41,5.41,5.41); Crest factor: 1.0; 1800 MHz VALIDATION: $\sigma = 1.38$ mho/m $\epsilon_r = 39.5$ $\rho = 1.00$ g/cm³

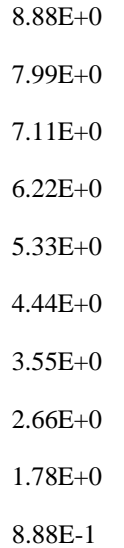
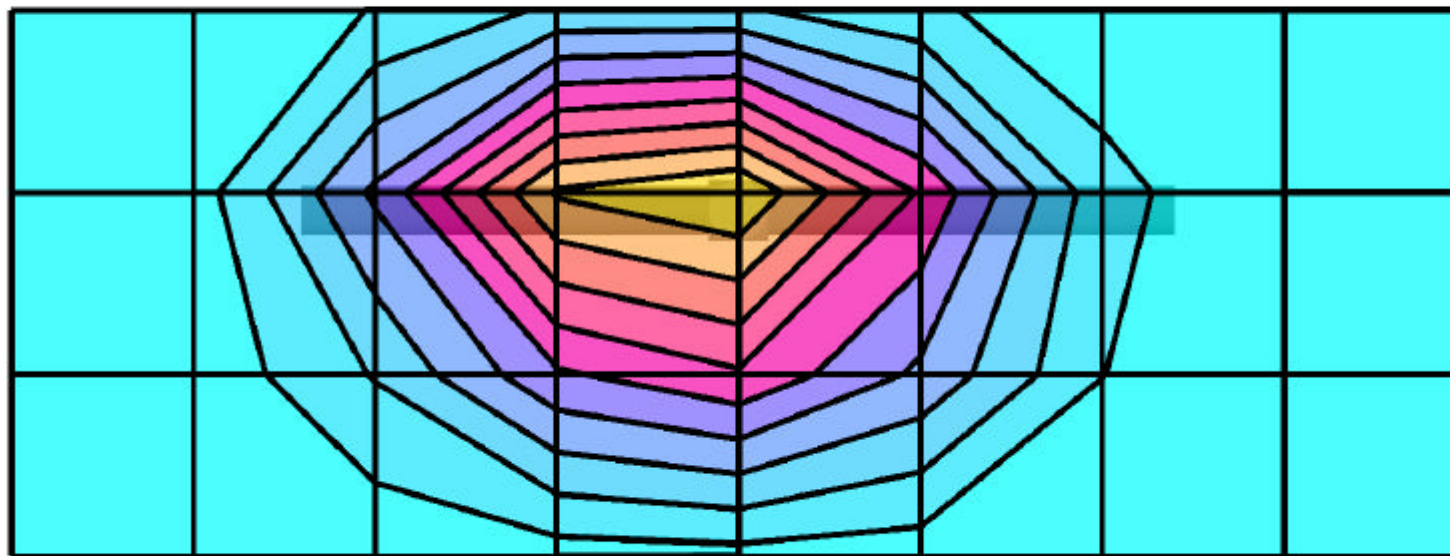
Cubes (2): SAR (1g): 9.37 mW/g \pm 0.05 dB, SAR (10g): 4.99 mW/g \pm 0.05 dB, (Worst-case extrapolation)

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

Penetration depth: 8.6 (8.2, 9.4) [mm]

Powerdrift: -0.01 dB

SAR_{Tot} [mW/g]



Dipole 1800 MHz

1800 MHz Dipole Validation / Dipole Sn# 277tr / Forward Power = 252 mW / Room Temp at time of measurement = 23C Simulant Temp at time of measurement = 21.4C

R1 Amy Twin Phantom Rev.3 Phantom; section 1 Section; Position: (90°,180°); Frequency: 1800 MHz

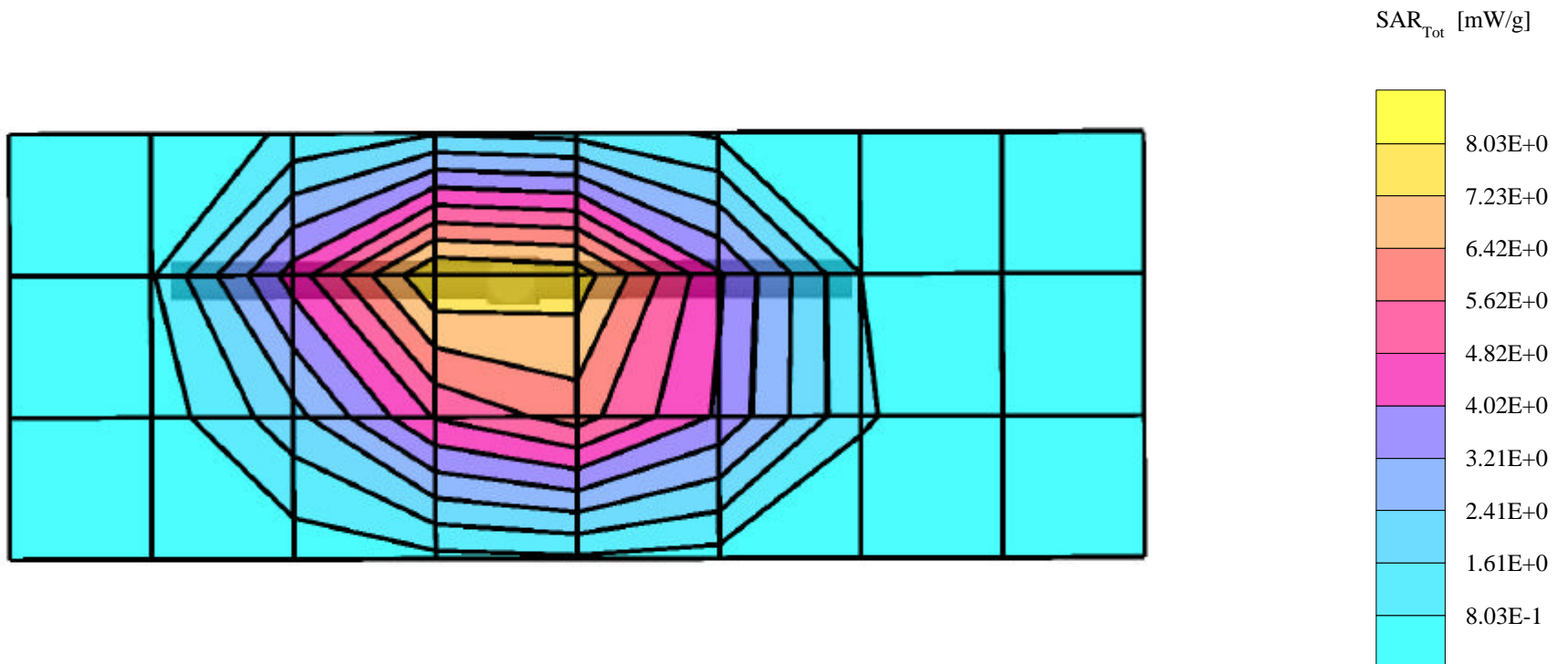
Probe: ET3DV6 - SN1508 - Validation; ConvF(5.41,5.41,5.41); Crest factor: 1.0; 1800 MHz VALIDATION: $\sigma = 1.37$ mho/m $\epsilon_r = 40.3$ $\rho = 1.00$ g/cm³

Cubes (2): SAR (1g): 9.64 mW/g ± 0.07 dB, SAR (10g): 5.10 mW/g ± 0.05 dB, (Worst-case extrapolation)

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

Penetration depth: 8.7 (8.3, 9.5) [mm]

Powerdrift: 0.02 dB



Dipole 900 MHz

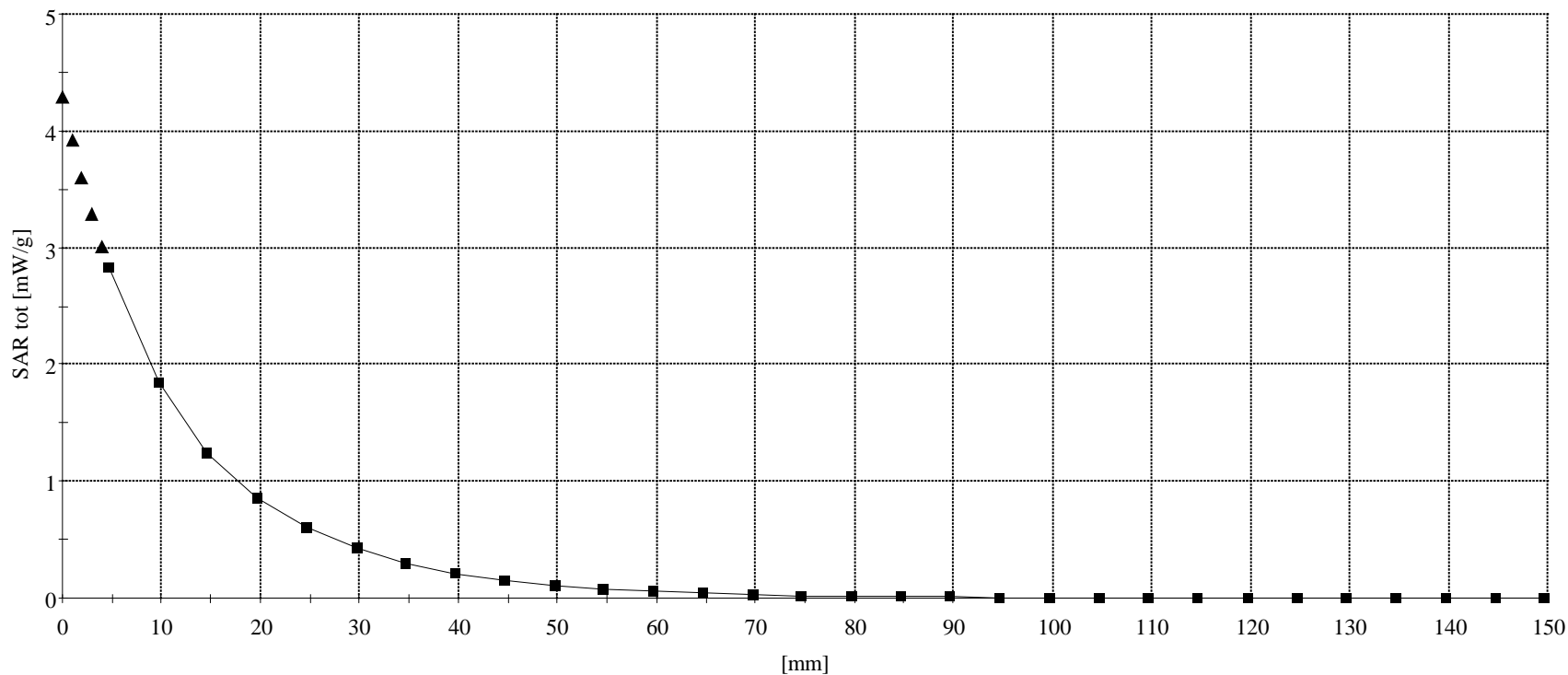
900 MHz Dipole Validation / Dipole Sn# 95 / Forward Power = 252 mW / Room Temp at time of measurement = 23 Simulant Temp at time of measurement = 22.1c

R1: TP-1005 SUGAR (rev. 3) Phantom; Section; Position: ; Frequency: 900 MHz

Probe: ET3DV6 - SN1508 - Validation; ConvF(6.35,6.35,6.35); Crest factor: 1.0; 900 MHz VALIDATION: $\sigma = 0.98$ mho/m $\epsilon_r = 41.7$ $\rho = 1.00$ g/cm³

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

Penetration depth: 12.0 (11.4, 12.9) [mm]



Dipole 900 MHz

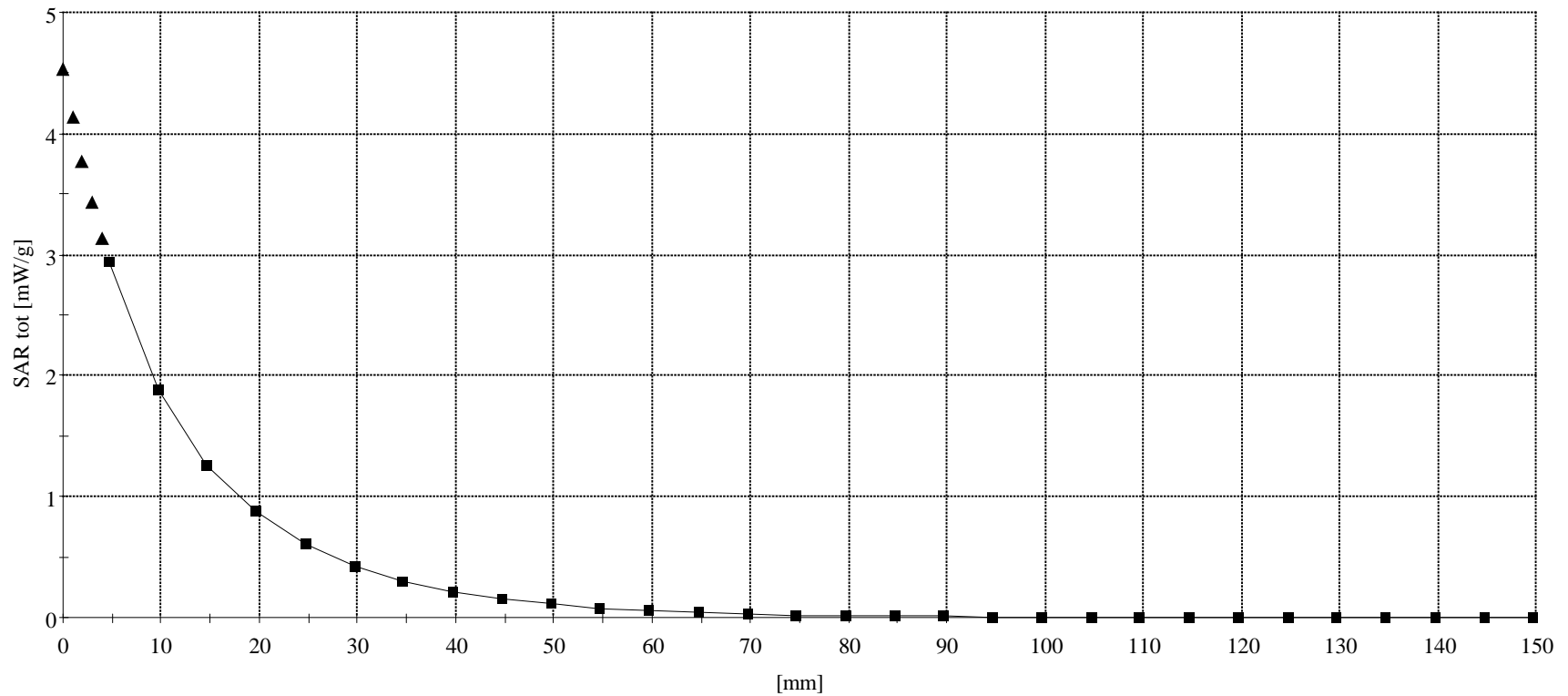
900 MHz Dipole Validation / Dipole Sn# 95 / Forward Power = 252 mW / Room Temp at time of measurement = 23 C Simulant Temp at time of measurement = 23 C

R1: TP-1005 SUGAR (rev. 3) Phantom; Section; Position: ; Frequency: 900 MHz

Probe: ET3DV6 - SN1508 - Validation; ConvF(6.35,6.35,6.35); Crest factor: 1.0; 900 MHz VALIDATION: $\sigma = 0.97$ mho/m $\epsilon_r = 41.0$ $\rho = 1.00$ g/cm³

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

Penetration depth: 11.8 (11.0, 12.8) [mm]



Dipole 900 MHz

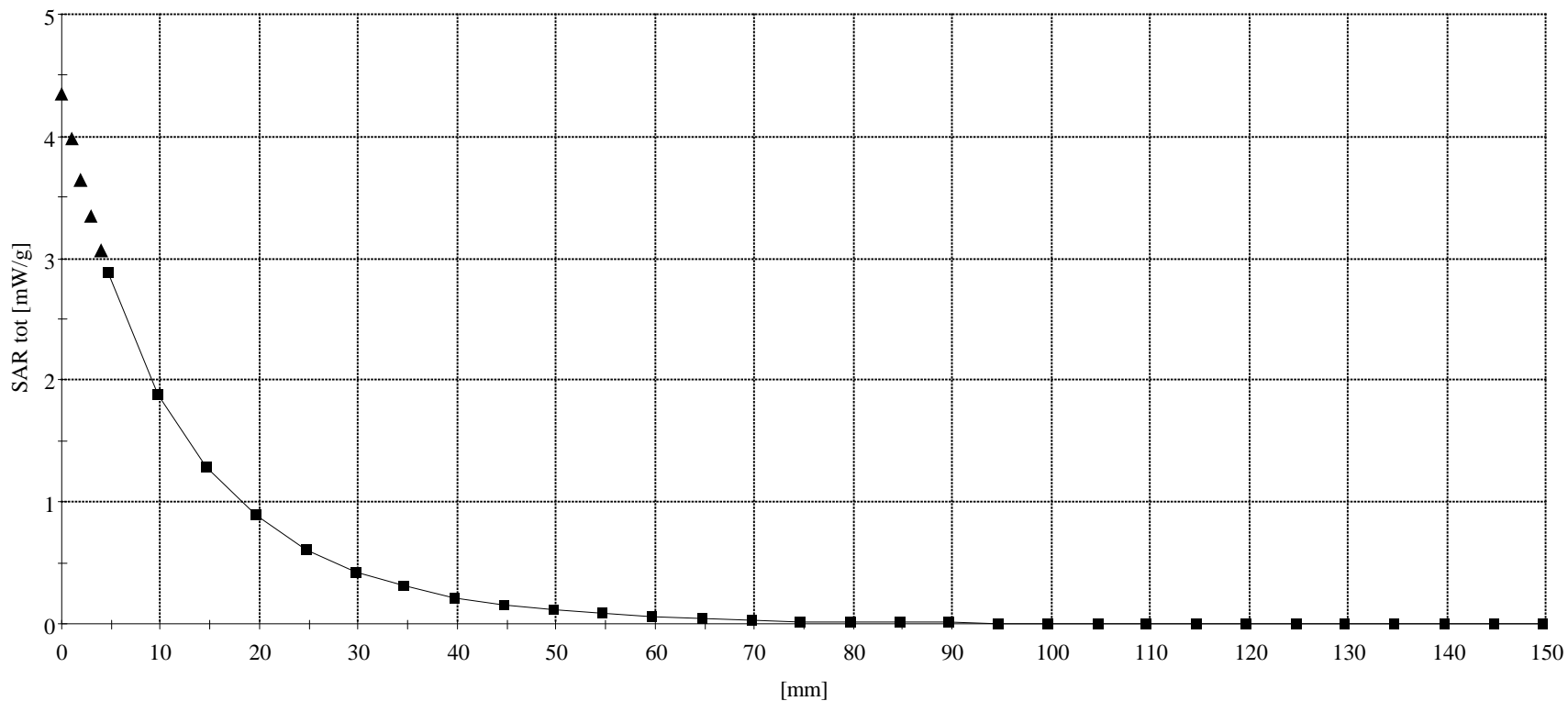
900 MHz Dipole Validation / Dipole Sn# 95 / Forward Power = 255 mW/ Room Temp at time of measurement = 23 Simulant Temp at time of measurement = 22.3

R1: TP-1005 SUGAR (rev. 3) Phantom; Section; Position: ; Frequency: 900 MHz

Probe: ET3DV6 - SN1508 - Validation; ConvF(6.35,6.35,6.35); Crest factor: 1.0; 900 MHz VALIDATION: $\sigma = 0.98$ mho/m $\epsilon_r = 41.3$ $\rho = 1.00$ g/cm³

Z-Axis: $D_x = 0.0$, $D_y = 0.0$, $D_z = 5.0$

Penetration depth: 12.2 (11.5, 13.2) [mm]



Dipole 900 MHz

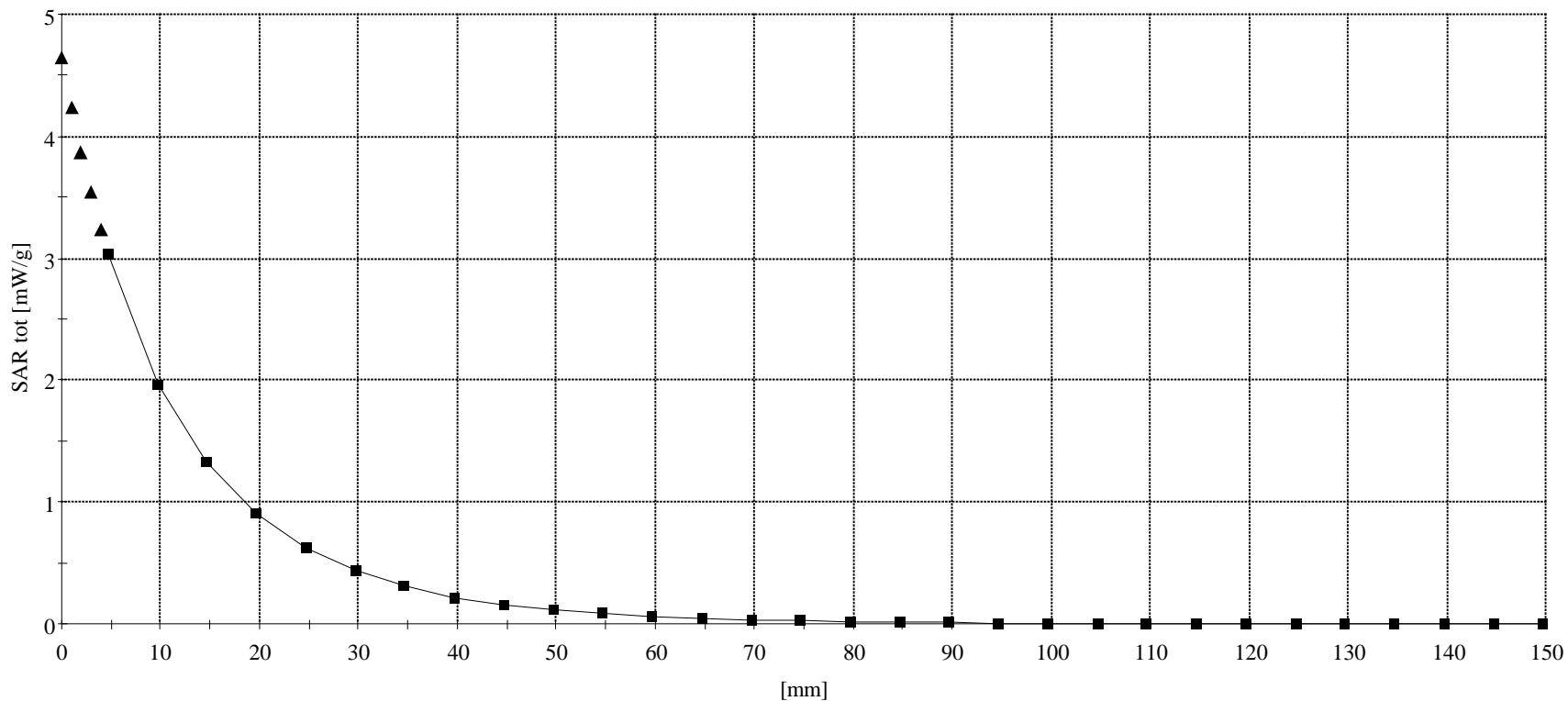
900 MHz Dipole Validation / Dipole Sn# 95 / Forward Power =252 mW/ Room Temp at time of measurement = 23 C Simulant Temp at time of measurement = 22 C

R1: TP-1005 SUGAR (rev. 3) Phantom; Section; Position: ; Frequency: 900 MHz

Probe: ET3DV6 - SN1508 - Validation; ConvF(6.35,6.35,6.35); Crest factor: 1.0; 900 MHz VALIDATION: $\sigma = 0.98$ mho/m $\epsilon_r = 41.7$ $\rho = 1.00$ g/cm³

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

Penetration depth: 11.9 (11.2, 12.8) [mm]



Dipole 1800 MHz

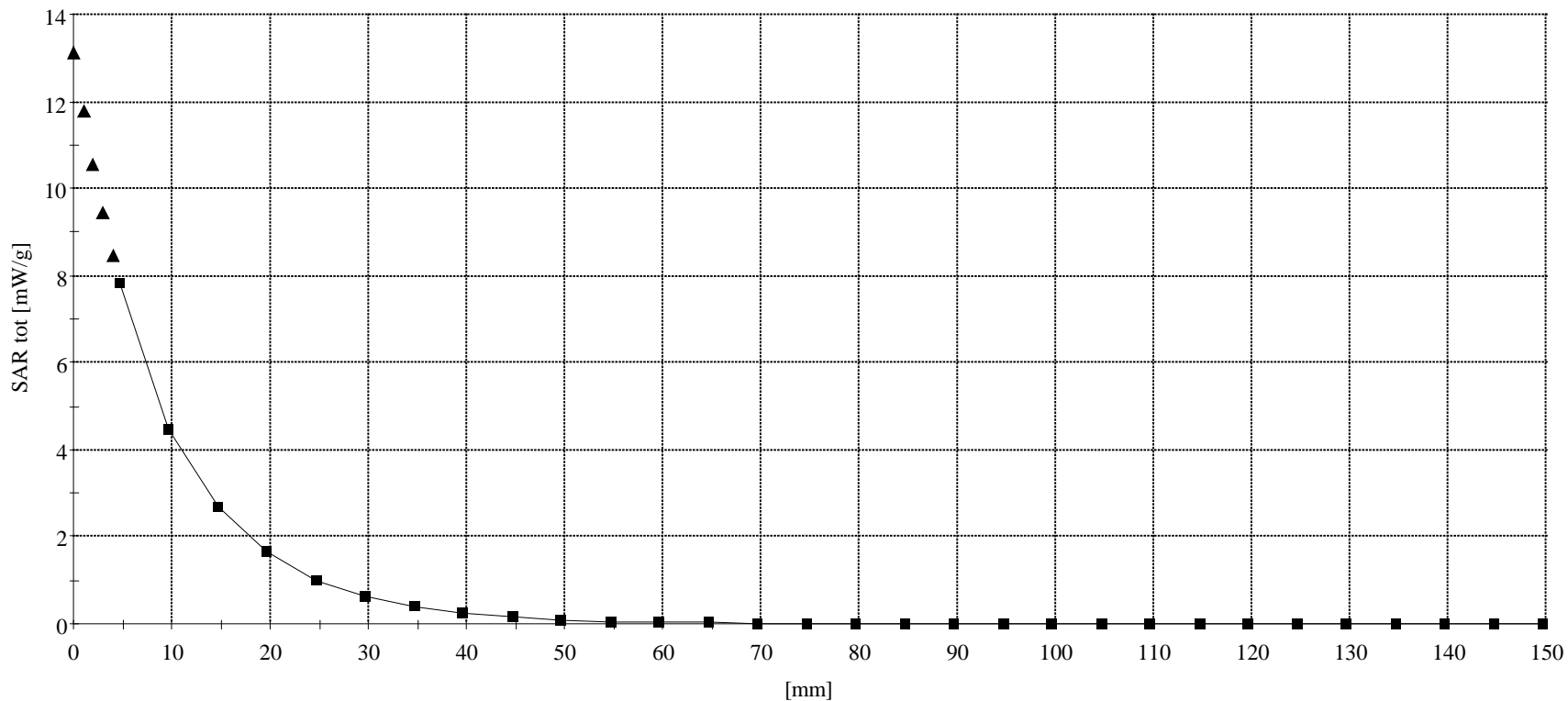
1800 MHz Dipole Validation / Dipole Sn# 277tr / Forward Power = 251 mW / Room Temp at time of measurement = 23c Simulant Temp at time of measurement = 21.6

R1 Amy Twin Phantom Rev.3 Phantom; Section; Position: ; Frequency: 1800 MHz

Probe: ET3DV6 - SN1508 - Validation; ConvF(5.41,5.41,5.41); Crest factor: 1.0; 1800 MHz VALIDATION: $\sigma = 1.38$ mho/m $\epsilon_r = 38.8$ $\rho = 1.00$ g/cm³

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

Penetration depth: 9.3 (9.0, 9.9) [mm]



Dipole 1800 MHz

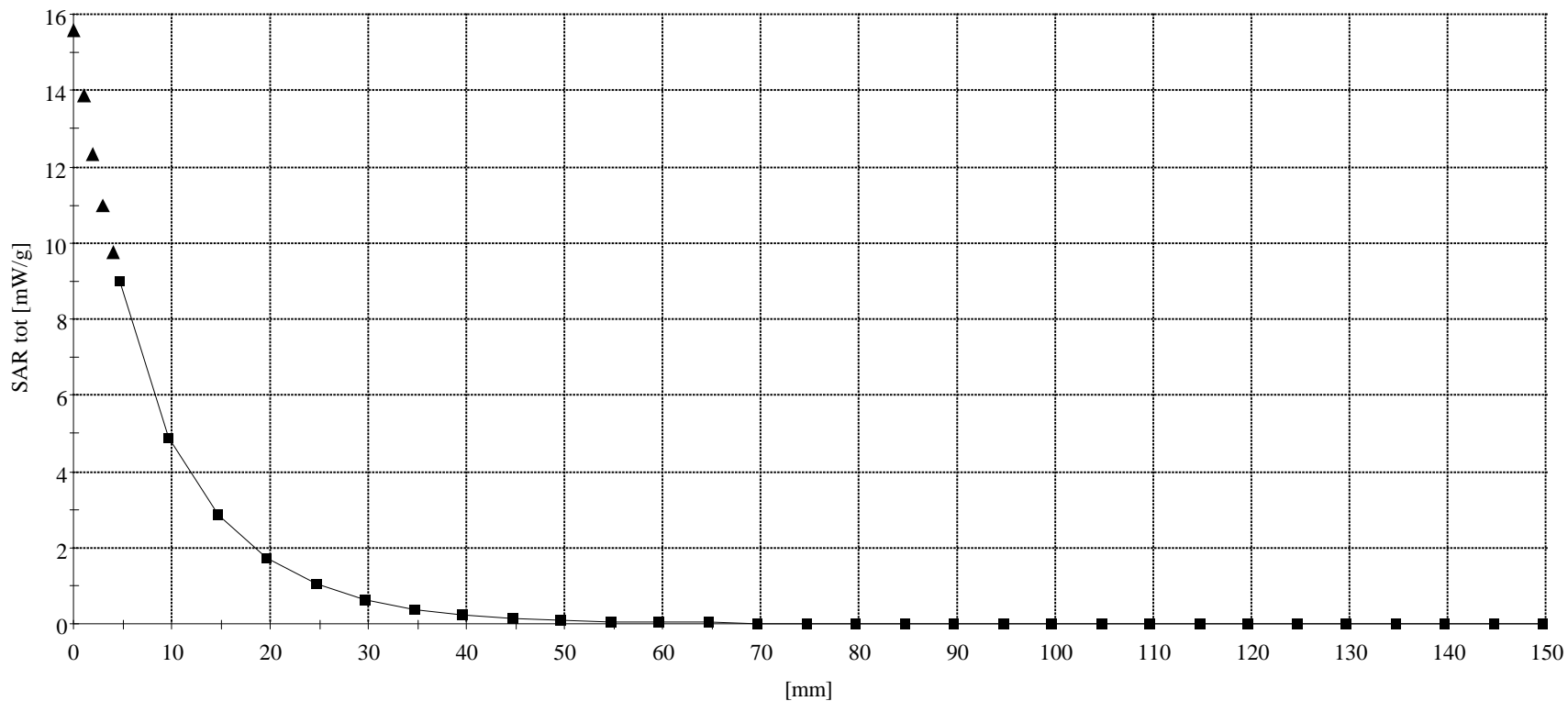
1800 MHz Dipole Validation / Dipole Sn# 277tr / Forward Power = 251 mW / Room Temp at time of measurement = 23 C Simulant Temp at time of measurement = 22 C

R1: TP-1085 GLYCOL (rev. 3) Phantom; Section; Position: ; Frequency: 1800 MHz

Probe: ET3DV6 - SN1508 - Validation; ConvF(5.41,5.41,5.41); Crest factor: 1.0; 1800 MHz VALIDATION: $\sigma = 1.38$ mho/m $\epsilon_r = 39.5$ $\rho = 1.00$ g/cm³

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

Penetration depth: 8.6 (8.3, 9.3) [mm]



Dipole 1800 MHz

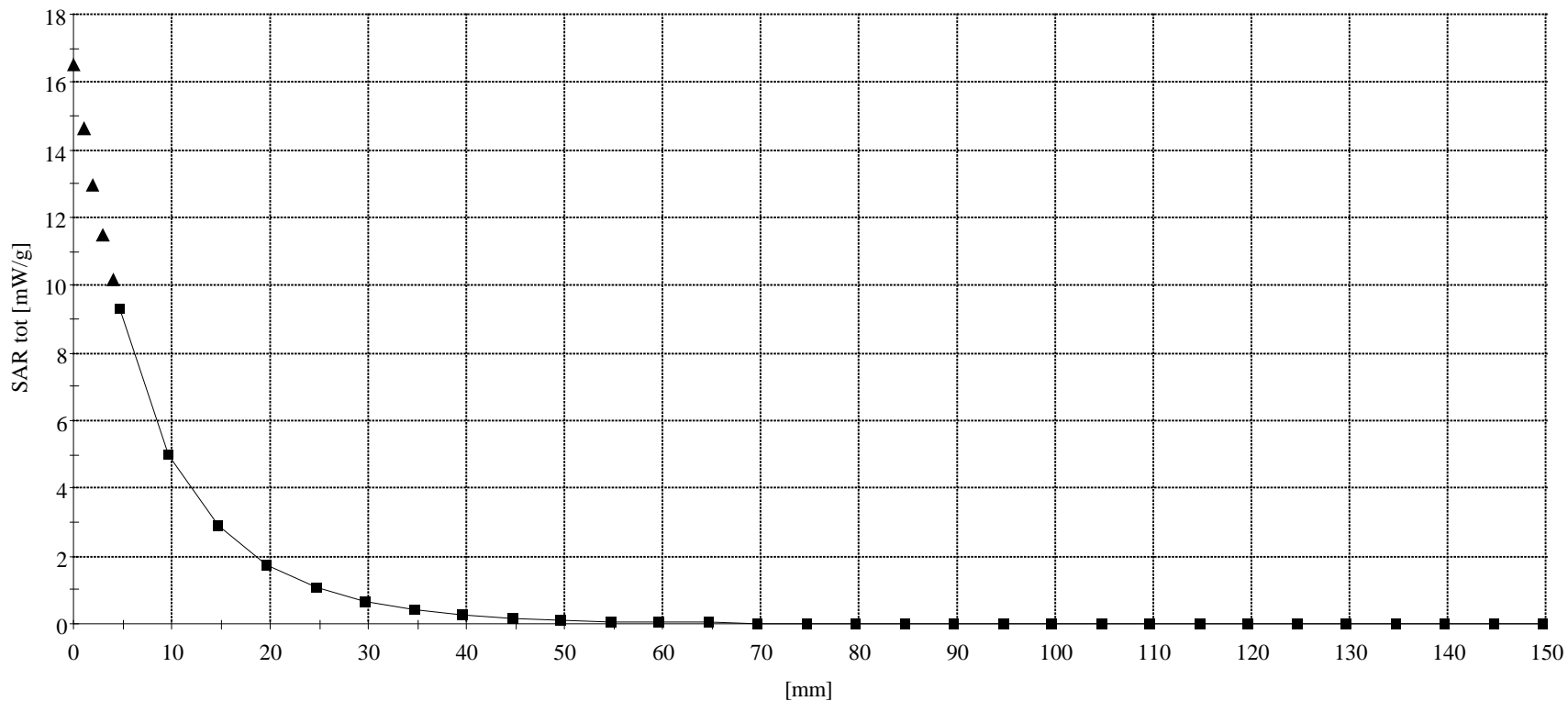
1800 MHz Dipole Validation / Dipole Sn# 277tr / Forward Power = 252 mW / Room Temp at time of measurement = 23 Simulant Temp at time of measurement = 21.4

R1 Amy Twin Phantom Rev.3 Phantom; Section; Position: ; Frequency: 1800 MHz

Probe: ET3DV6 - SN1508 - Validation; ConvF(5.41,5.41,5.41); Crest factor: 1.0; 1800 MHz VALIDATION: $\sigma = 1.37$ mho/m $\epsilon_r = 40.3$ $\rho = 1.00$ g/cm³

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

Penetration depth: 8.4 (8.0, 9.3) [mm]



Appendix 2

SAR distribution plots for Phantom Head Adjacent Use

SN# 5281E239

Ch# 991 / Pwr Step: 2 / Antenna Position: Fixed / Battery Model #: SNN5528A / SIM'T TEMP: When Measured = 22.1 °C After Test = 21.8 °C

R1: TP-1005 SUGAR (rev. 3) Phantom; R2 Homer Left Head Section; Position: (90°,180°); Frequency: 824 MHz

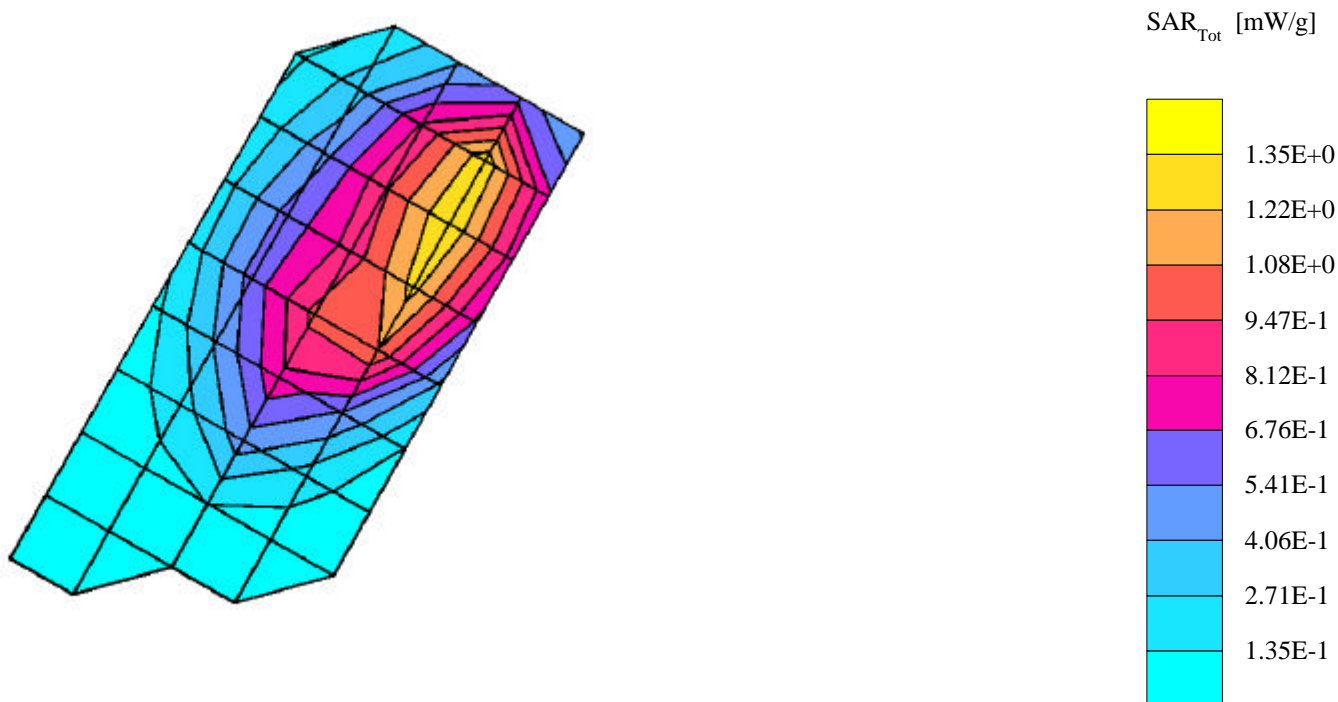
Probe: ET3DV6 - SN1508 - IEEE Head; ConvF(6.50,6.50,6.50); Crest factor: 1.0; 835 MHz Head & Body: $\sigma = 0.92$ mho/m $\epsilon_r = 42.4$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 1.39 mW/g, SAR (10g): 0.875 mW/g, (Worst-case extrapolation)

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

Penetration depth: 12.2 (11.5, 13.0) [mm]

Powerdrift: -0.02 dB



SN# 5281E239

Ch# 799 / Pwr Step: 2 / Antenna Position: Fixed / Battery Model #: SNN5528A / SIM'T TEMP: When Measured = 22.1 °C After Test = 21.8 °C

R1: TP-1005 SUGAR (rev. 3) Phantom; R2 Homer Left Head Section; Position: (90°,180°); Frequency: 848 MHz

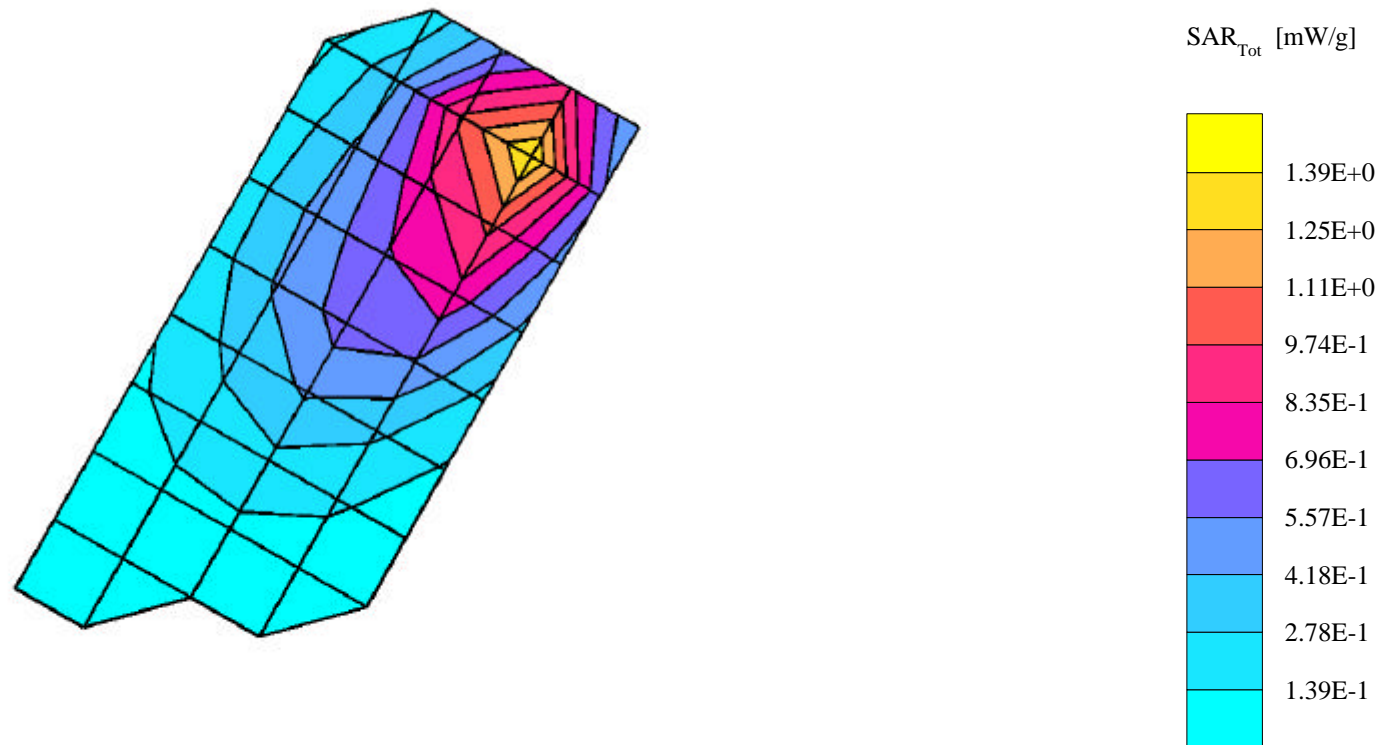
Probe: ET3DV6 - SN1508 - IEEE Head; ConvF(6.50,6.50,6.50); Crest factor: 1.0; 835 MHz Head & Body: $\sigma = 0.92$ mho/m $\epsilon_r = 42.4$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 1.37 mW/g, SAR (10g): 0.788 mW/g * Max outside, (Worst-case extrapolation)

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

Penetration depth: 10.4 (9.9, 11.1) [mm]

Powerdrift: -0.45 dB



SN# 5281E239

Ch#799 / Pwr Step: 2 / Antenna Position: Fixed / Battery Model #: SNN5582A / SIM'T TEMP: When Measured = 22.1 °C After Test = 22.2 °C

R1: TP-1005 SUGAR (rev. 3) Phantom; R2 Marge Right Head Section; Position: (90°,180°); Frequency: 849 MHz

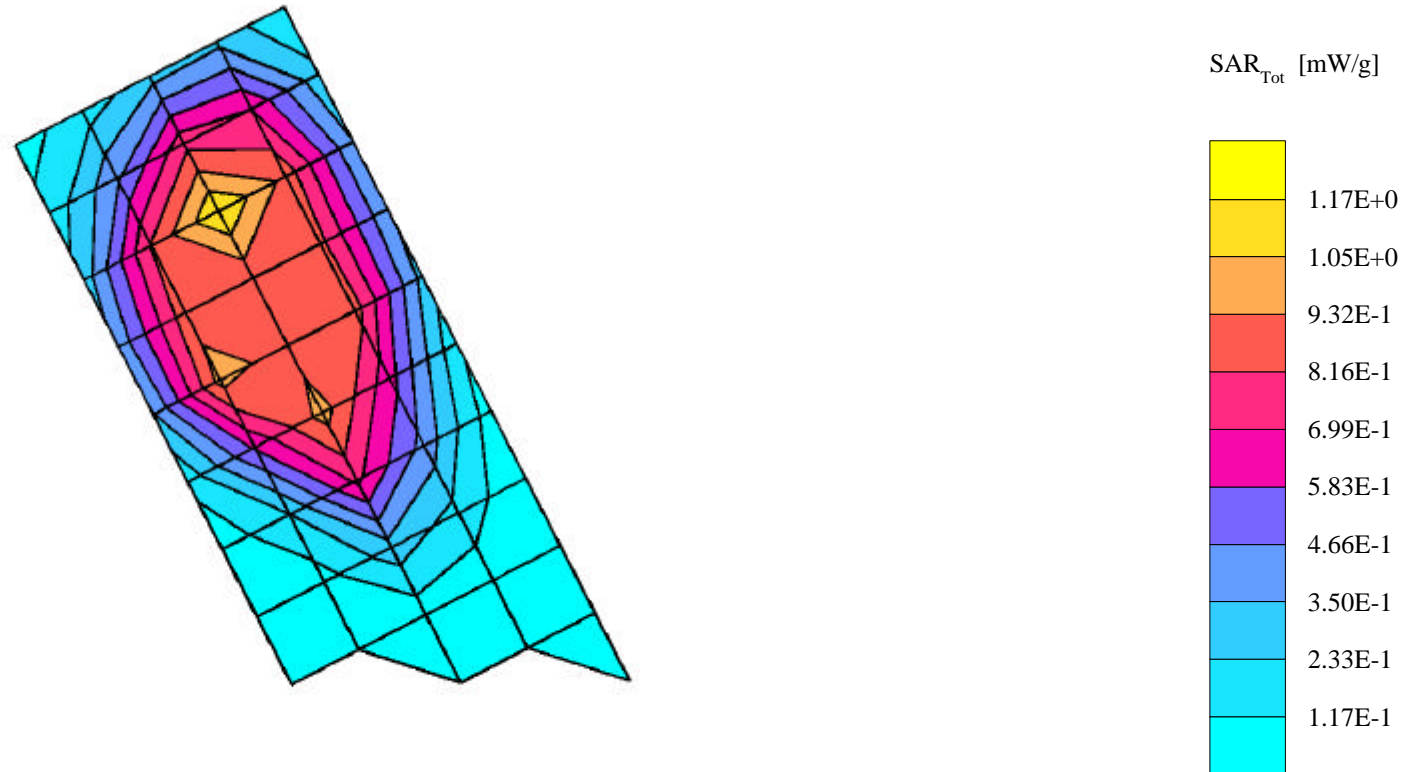
Probe: ET3DV6 - SN1508 - IEEE Head; ConvF(6.50,6.50,6.50); Crest factor: 1.0; 835 MHz Head & Body: $\sigma = 0.92$ mho/m $\epsilon_r = 42.5$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 1.11 mW/g, SAR (10g): 0.716 mW/g, (Worst-case extrapolation)

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

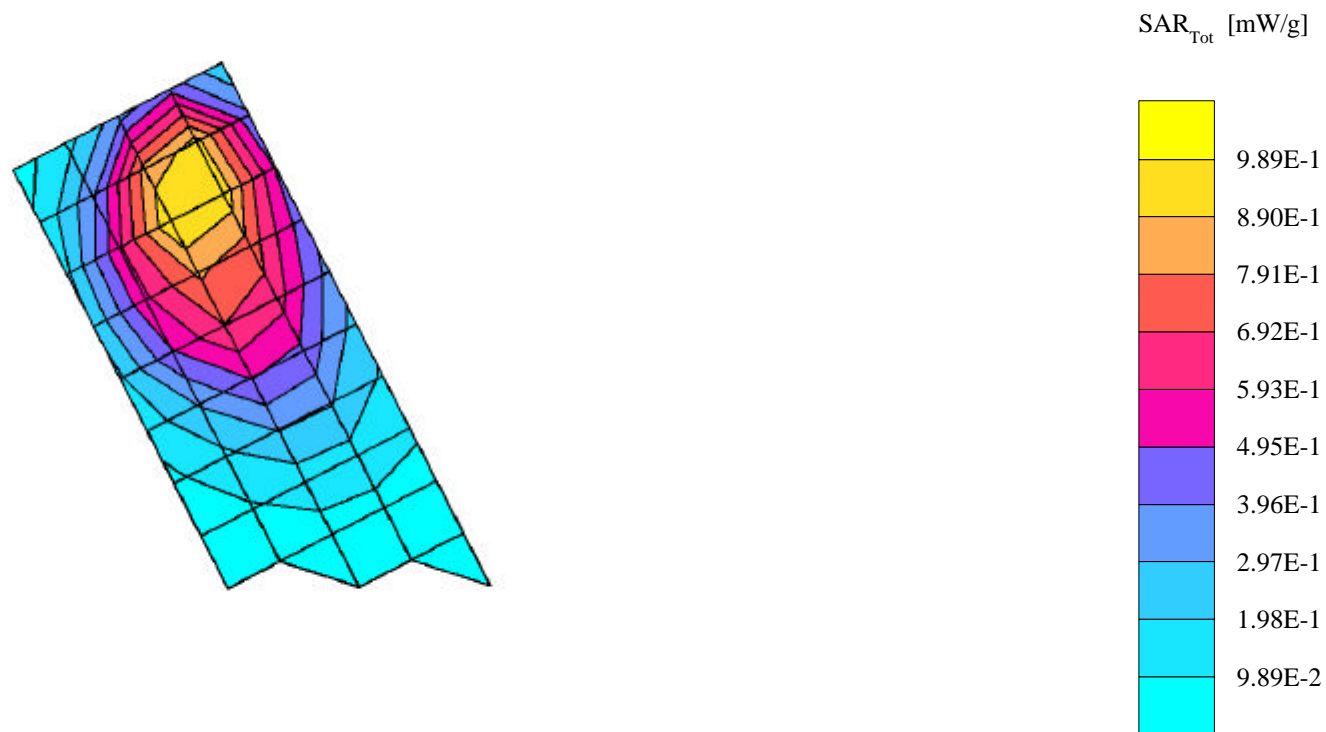
Penetration depth: 13.6 (13.6, 13.8) [mm]

Powerdrift: -0.47 dB



SN# 5281E239

Ch# 991 / Pwr Step: 2 / Antenna Position: Fixed / Battery Model #: SNN5528A / SIM'T TEMP: When Measured = 22.1 °C After Test = 21.8 °C
R1: TP-1005 SUGAR (rev. 3) Phantom; R2 Marge Right Head Section; Position: (90°,180°); Frequency: 824 MHz
Probe: ET3DV6 - SN1508 - IEEE Head; ConvF(6.50,6.50,6.50); Crest factor: 1.0; 835 MHz Head & Body: $\sigma = 0.92$ mho/m $\epsilon_r = 42.4$ $\rho = 1.00$ g/cm³
Cube 7x7x7: SAR (1g): 1.10 mW/g, SAR (10g): 0.709 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0
Penetration depth: 12.8 (12.2, 13.6) [mm]
Powerdrift: 0.03 dB



SN# 5281E239

Ch#384 / Pwr Step: 02 / Antenna Position:Fixed / Battery Model #: SNN5582A / SIM'T TEMP: When Measured = 22.3 °C After Test = 22 °C

R1: TP-1005 SUGAR (rev. 3) Phantom; R2 Homer Left Head Section; Position: (90°,180°); Frequency: 836 MHz

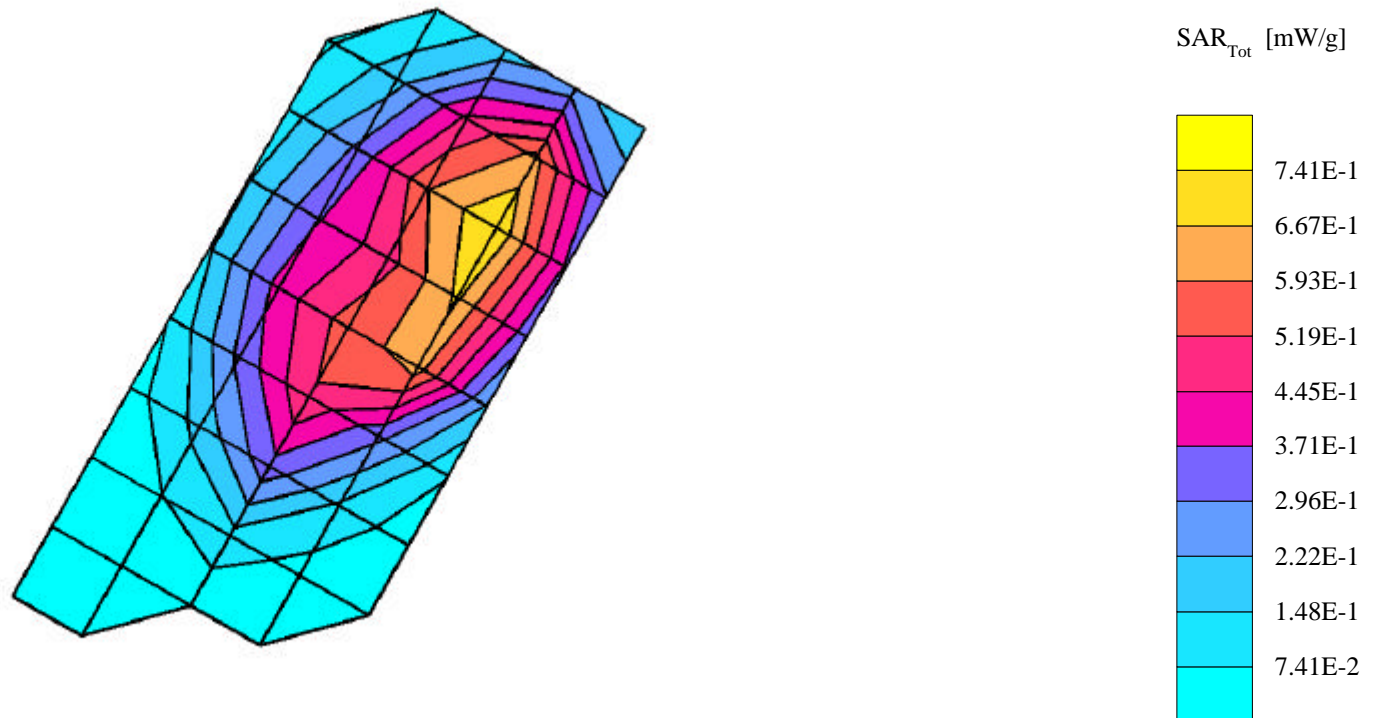
Probe: ET3DV6 - SN1508 - IEEE Head; ConvF(6.50,6.50,6.50); Crest factor: 3.0; 835 MHz Head & Body: $\sigma = 0.91$ mho/m $\epsilon_r = 41.7$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 0.755 mW/g, SAR (10g): 0.481 mW/g, (Worst-case extrapolation)

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

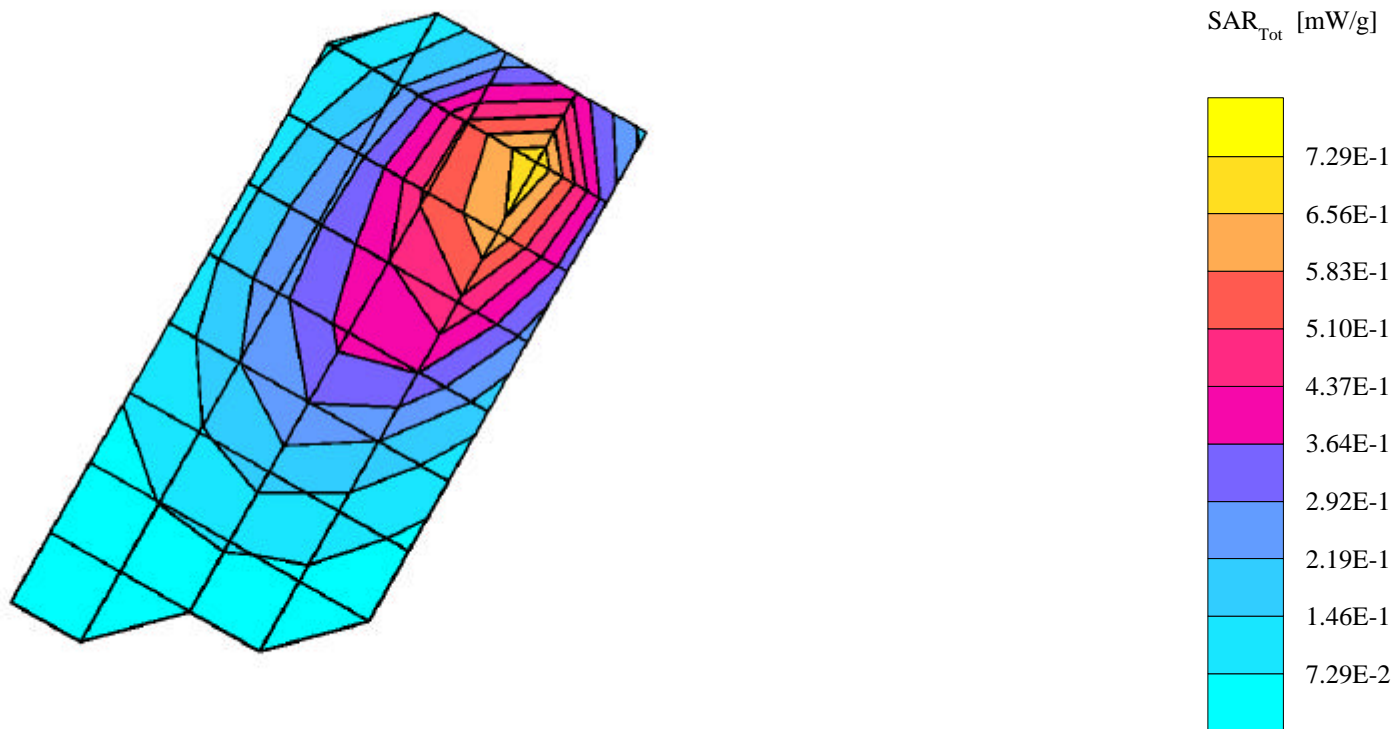
Penetration depth: 13.0 (12.2, 13.9) [mm]

Powerdrift: 0.06 dB



SN# 5281E239

Ch#384 / Pwr Step: 02 / Antenna Position:Fixed / Battery Model #: SNN5582A / SIM'T TEMP: When Measured = 22.3 °C After Test = 22 °C
R1: TP-1005 SUGAR (rev. 3) Phantom; R2 Homer Left Head Section; Position: (90°,180°); Frequency: 836 MHz
Probe: ET3DV6 - SN1508 - IEEE Head; ConvF(6.50,6.50,6.50); Crest factor: 3.0; 835 MHz Head & Body: $\sigma = 0.91$ mho/m $\epsilon_r = 41.7$ $\rho = 1.00$ g/cm³
Cube 7x7x7: SAR (1g): 0.785 mW/g, SAR (10g): 0.465 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0
Penetration depth: 10.7 (10.2, 11.5) [mm]
Powerdrift: 0.01 dB



SN# 5281E239

Ch#384 / Pwr Step: 02/ Antenna Position:Fixed / Battery Model #: SNN5582A / SIMT TEMP: When Measured = 22.3 °C After Test = 22 °C

R1: TP-1005 SUGAR (rev. 3) Phantom; R2 Marge Right Head Section; Position: (90°,180°); Frequency: 836 MHz

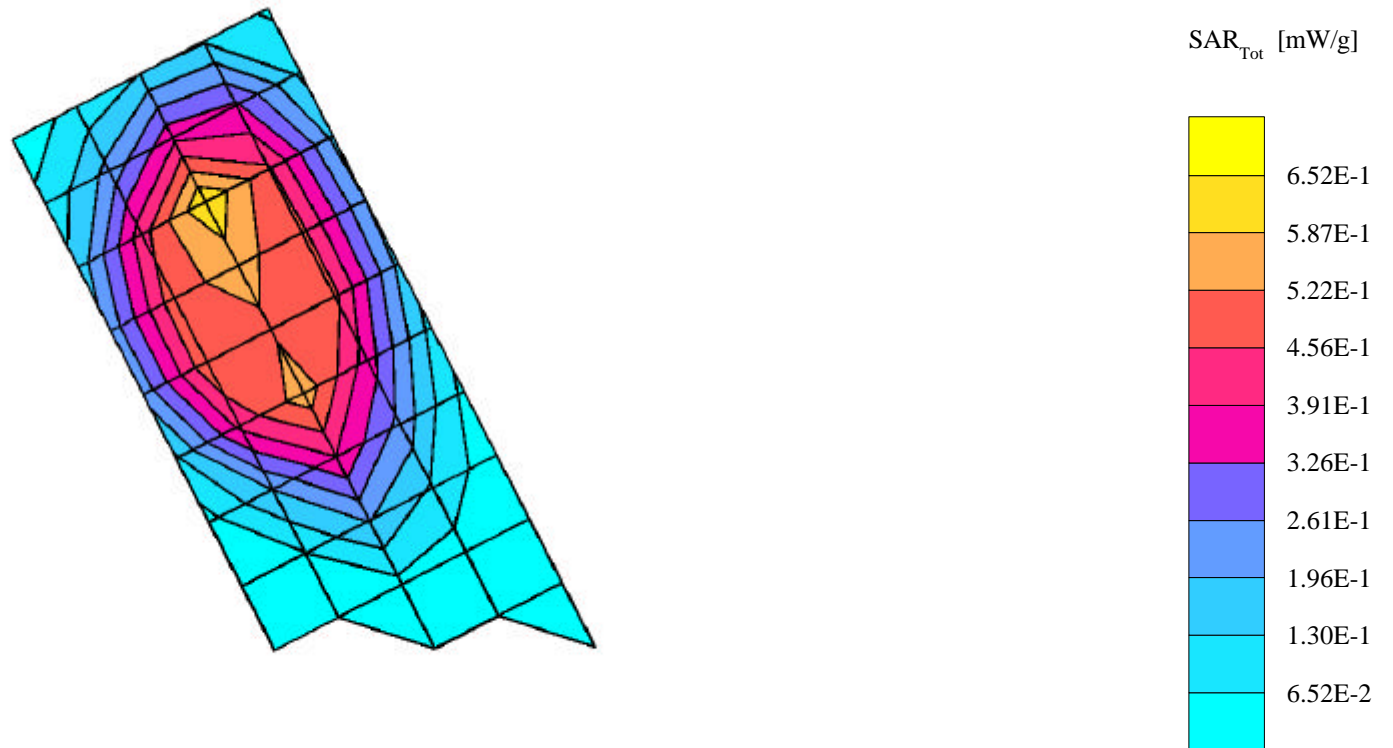
Probe: ET3DV6 - SN1508 - IEEE Head; ConvF(6.50,6.50,6.50); Crest factor: 3.0; 835 MHz Head & Body: $\sigma = 0.91$ mho/m $\epsilon_r = 41.7$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 0.649 mW/g, SAR (10g): 0.432 mW/g, (Worst-case extrapolation)

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

Penetration depth: 13.1 (12.8, 13.6) [mm]

Powerdrift: 0.03 dB



SN# 5281E239

Ch#384 / Pwr Step:2 / Antenna Position: Fixed / Battery Model #: SNN5582A / SIM'T TEMP: When Measured = 22.3 °C After Test = 22 °C

R1: TP-1005 SUGAR (rev. 3) Phantom; R2 Marge Right Head Section; Position: (90°,180°); Frequency: 836 MHz

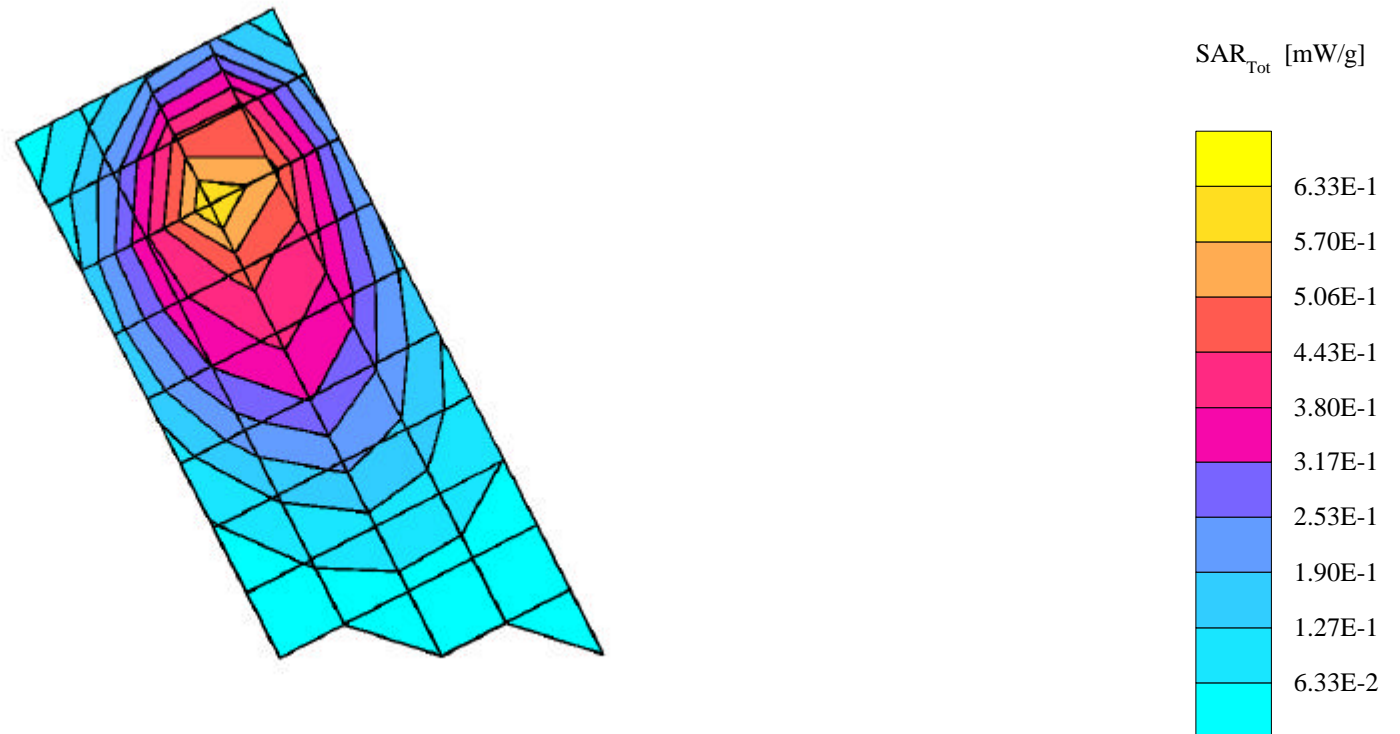
Probe: ET3DV6 - SN1508 - IEEE Head; ConvF(6.50,6.50,6.50); Crest factor: 3.0; 835 MHz Head & Body: $\sigma = 0.92$ mho/m $\epsilon_r = 42.0$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 0.659 mW/g, SAR (10g): 0.411 mW/g, (Worst-case extrapolation)

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

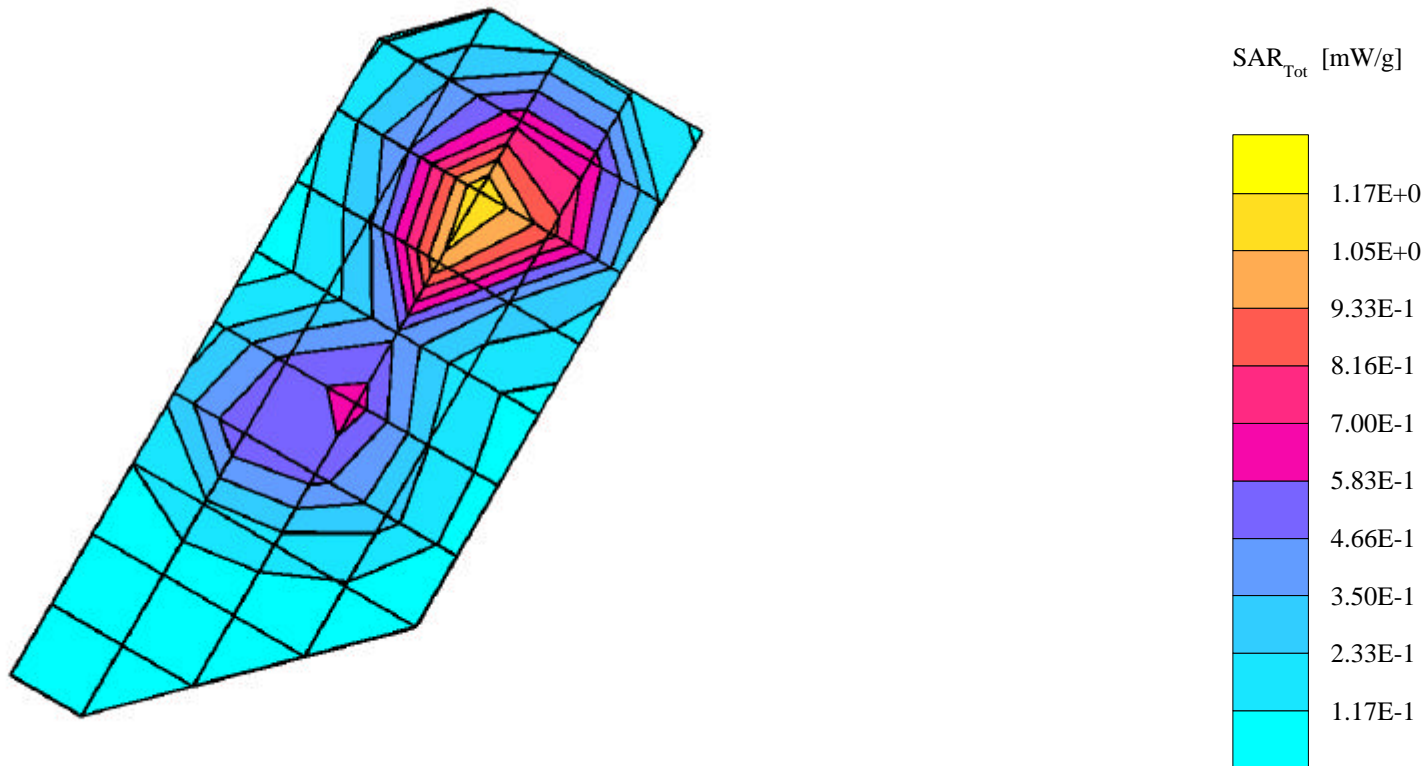
Penetration depth: 12.5 (11.5, 13.6) [mm]

Powerdrift: -0.01 dB



SN# 5281E239

Ch#1000 / Pwr Step: 02 / Antenna Position:Fixed / Battery Model #: SNN5582 / SIM'T TEMP: When Measured = 22 °C After Test = 21.5 °C
R1: TP-1085 GLYCOL (rev. 3) Phantom; R2 Bart Left Head Section; Position: (90°,180°); Frequency: 1880 MHz
Probe: ET3DV6 - SN1508 - IEEE Head; ConvF(5.41,5.41,5.41); Crest factor: 3.0; 1880 MHz Head & Body: $\sigma = 1.47$ mho/m $\epsilon_r = 39.2$ $\rho = 1.00$ g/cm³
Cube 7x7x7: SAR (1g): 1.22 mW/g, SAR (10g): 0.673 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0
Penetration depth: 9.9 (9.8, 10.3) [mm]
Powerdrift: -0.05 dB



SN#5281E239

Ch#1000 / Pwr Step: 02 / Antenna Position:Fixed / Battery Model #: SNN5582 / SIM'T TEMP: When Measured = 22 °C After Test = 21.7 °C

R1: TP-1085 GLYCOL (rev. 3) Phantom; R2 Bart Left Head Section; Position: (90°,180°); Frequency: 1880 MHz

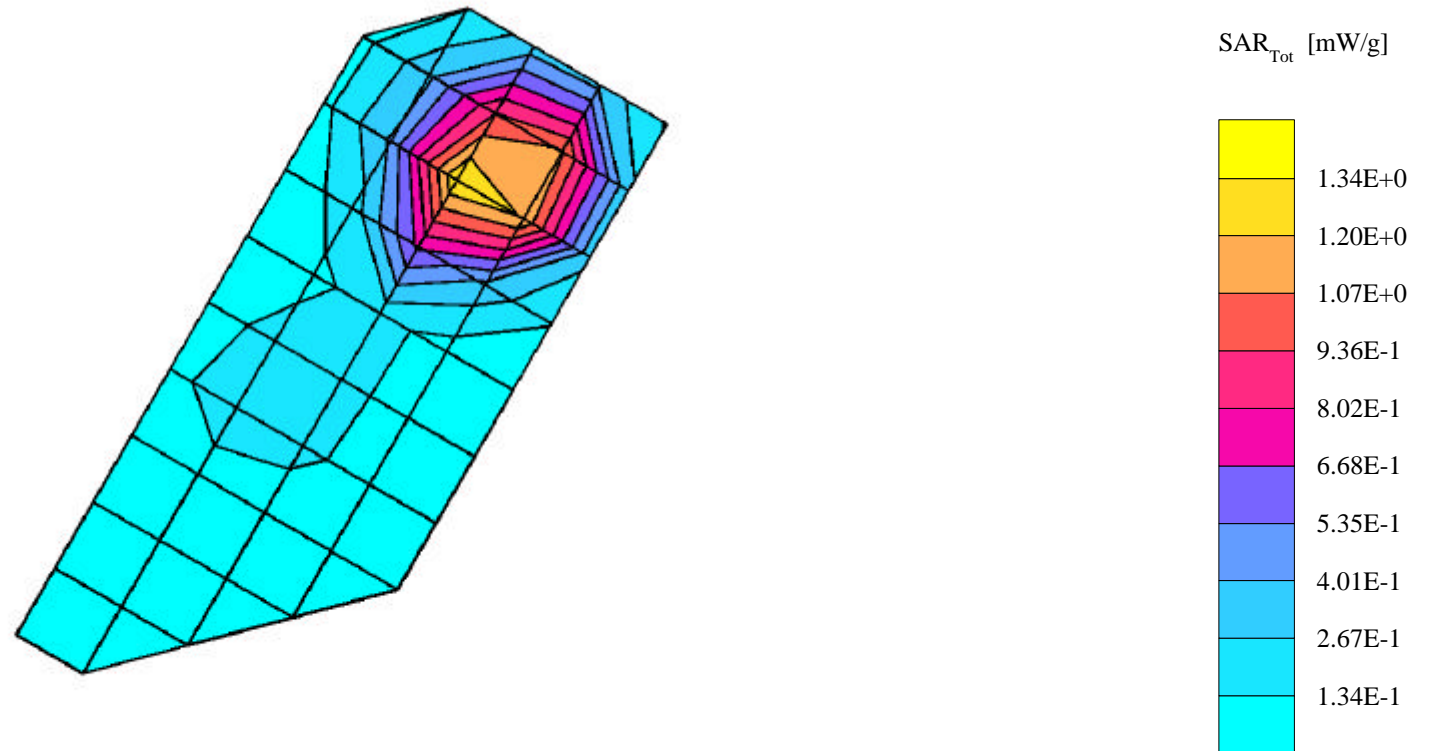
Probe: ET3DV6 - SN1508 - IEEE Head; ConvF(5.41,5.41,5.41); Crest factor: 3.0; 1880 MHz Head & Body: $\sigma = 1.47$ mho/m $\epsilon_r = 39.2$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 1.51 mW/g, SAR (10g): 0.830 mW/g, (Worst-case extrapolation)

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

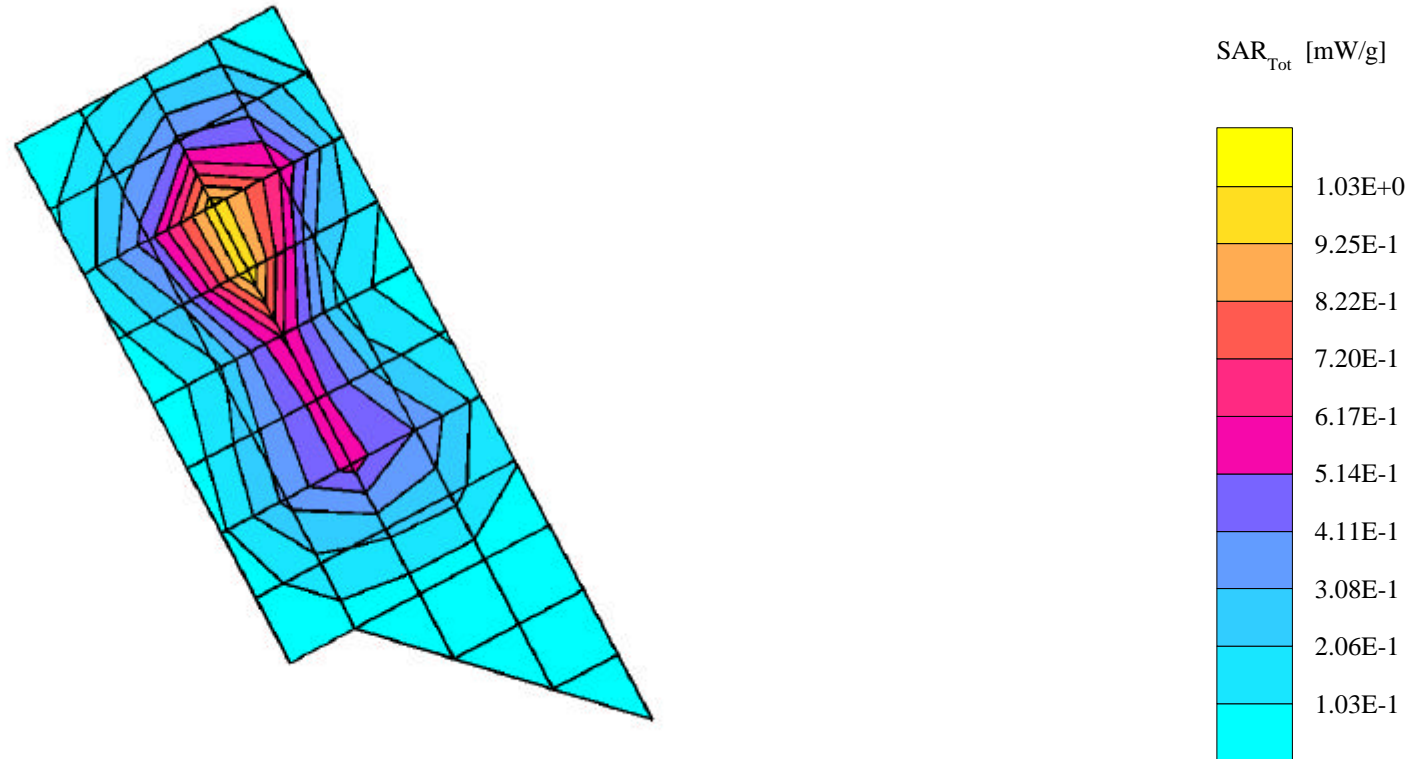
Penetration depth: 9.6 (9.4, 10.0) [mm]

Powerdrift: -0.08 dB



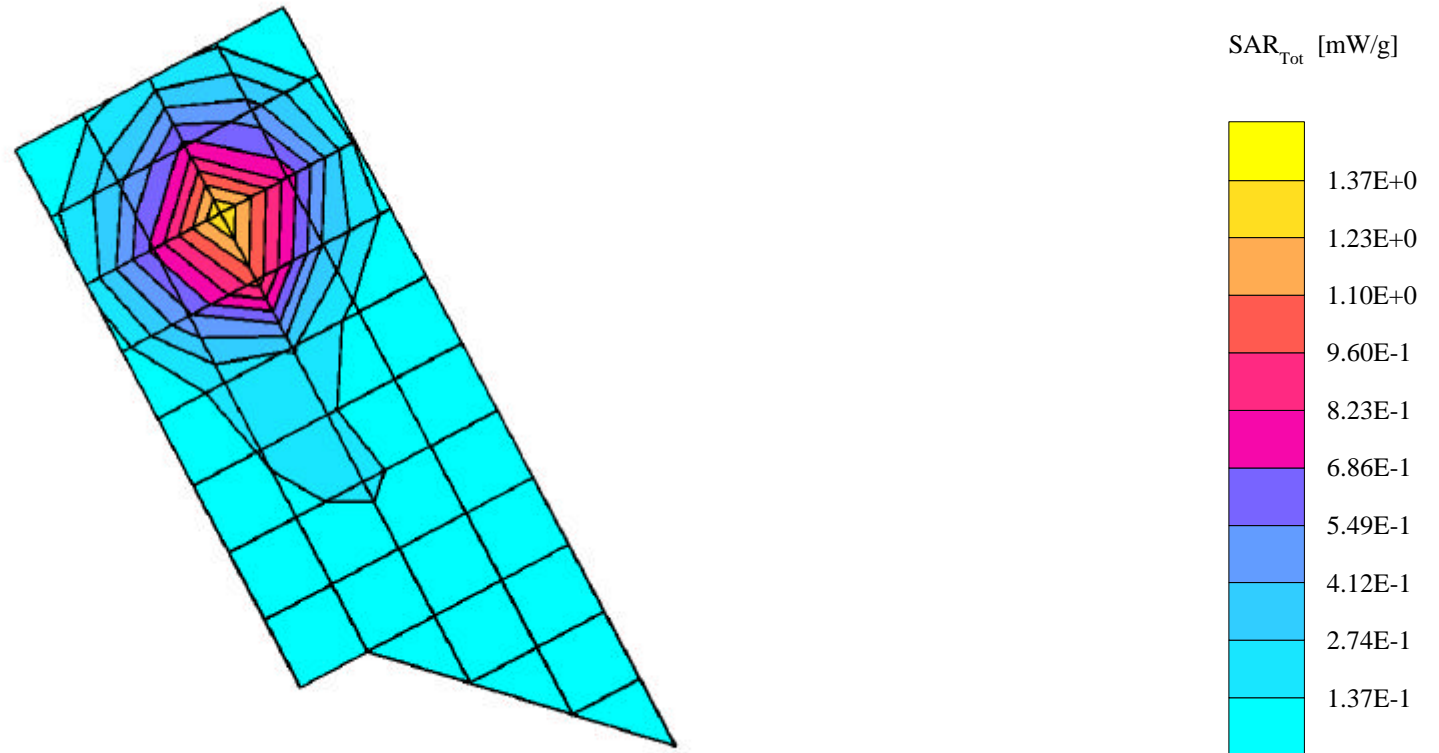
SN# 5281E239

Ch# 1000 / Pwr Step: 0 / Antenna Position: Fixed / Battery Model #: SNN5528A / SIM'T TEMP: When Measured = 21.6 °C After Test = 21.8 °C
R1: TP-1085 GLYCOL (rev. 3) Phantom; R2 Lisa Right Head Section; Position: (90°,180°); Frequency: 1880 MHz
Probe: ET3DV6 - SN1508 - IEEE Head; ConvF(5.41,5.41,5.41); Crest factor: 3.0; 1880 MHz Head & Body: $\sigma = 1.47$ mho/m $\epsilon_r = 38.4$ $\rho = 1.00$ g/cm³
Cube 7x7x7: SAR (1g): 1.13 mW/g, SAR (10g): 0.607 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0
Penetration depth: 10.0 (9.8, 10.4) [mm]
Powerdrift: 0.00 dB



SN# 5281E239

Ch#1000 / Pwr Step: 02 / Antenna Position:Fixed / Battery Model #: SNN5582A / SIM'T TEMP: When Measured = 22 °C After Test = 21.5 °C
R1: TP-1085 GLYCOL (rev. 3) Phantom; R2 Lisa Right Head Section; Position: (90°,180°); Frequency: 1880 MHz
Probe: ET3DV6 - SN1508 - IEEE Head; ConvF(5.41,5.41,5.41); Crest factor: 3.0; 1880 MHz Head & Body: $\sigma = 1.47$ mho/m $\epsilon_r = 39.2$ $\rho = 1.00$ g/cm³
Cube 7x7x7: SAR (1g): 1.38 mW/g, SAR (10g): 0.762 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0
Penetration depth: 9.7 (9.6, 10.0) [mm]
Powerdrift: -0.03 dB



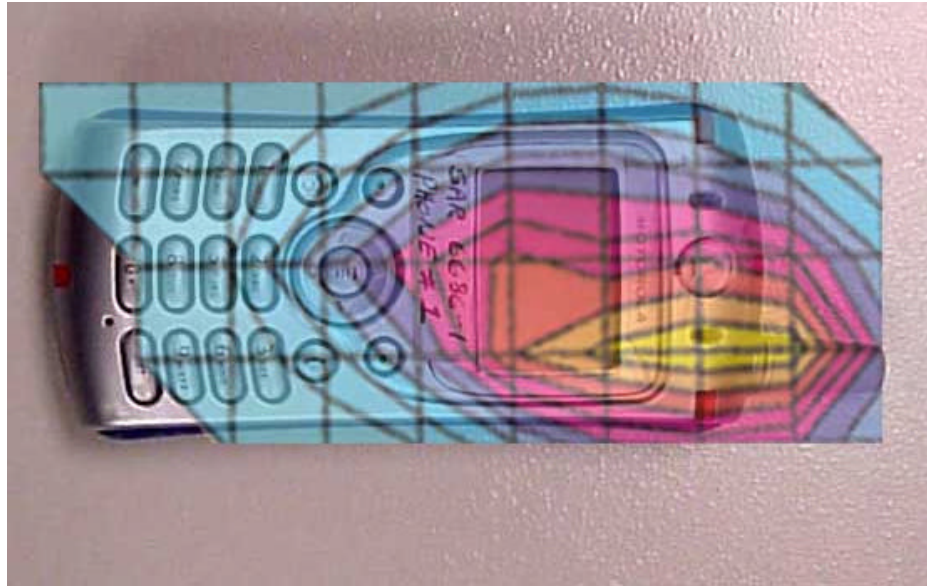


Figure 1. Typical 800MHz Left Head Adjacent Contour Overlaid on Phone with Antenna Fixed (Cheek Touch)

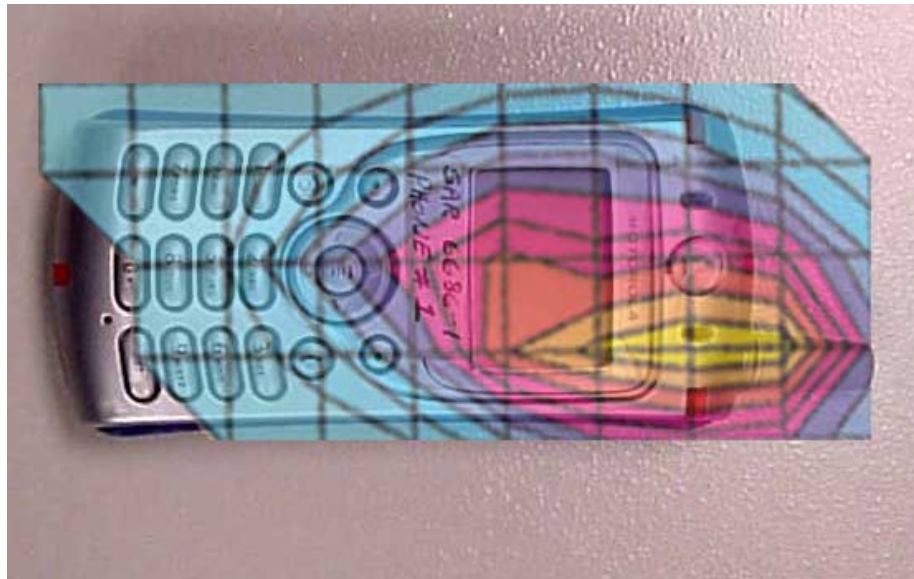


Figure 2. Typical 1900MHz Left Head Adjacent Contour Overlaid on Phone with Antenna Fixed (Cheek Touch)

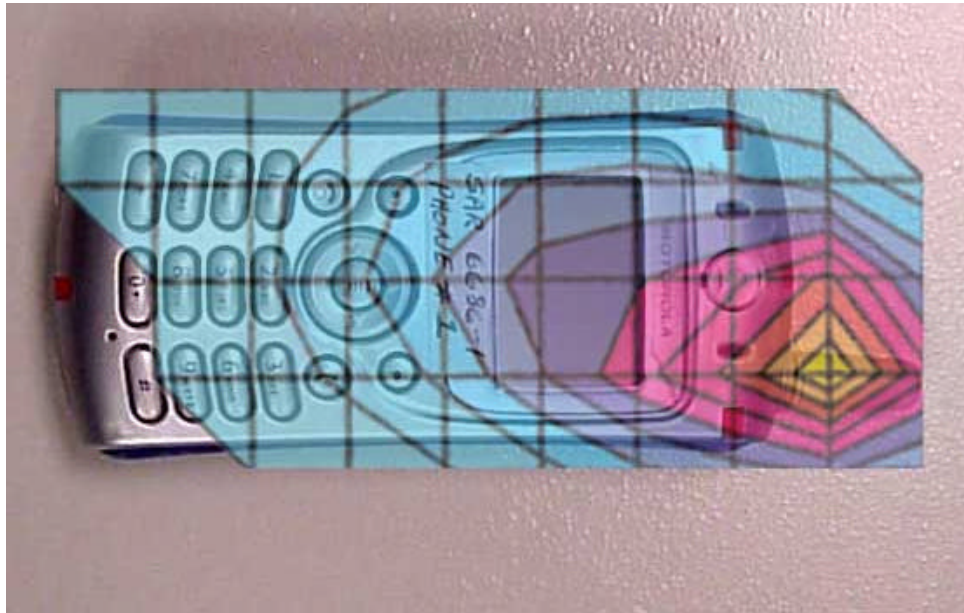


Figure 3. Typical 800MHz Left Head Adjacent Contour Overlaid on Phone with Antenna Fixed (15°Tilt)

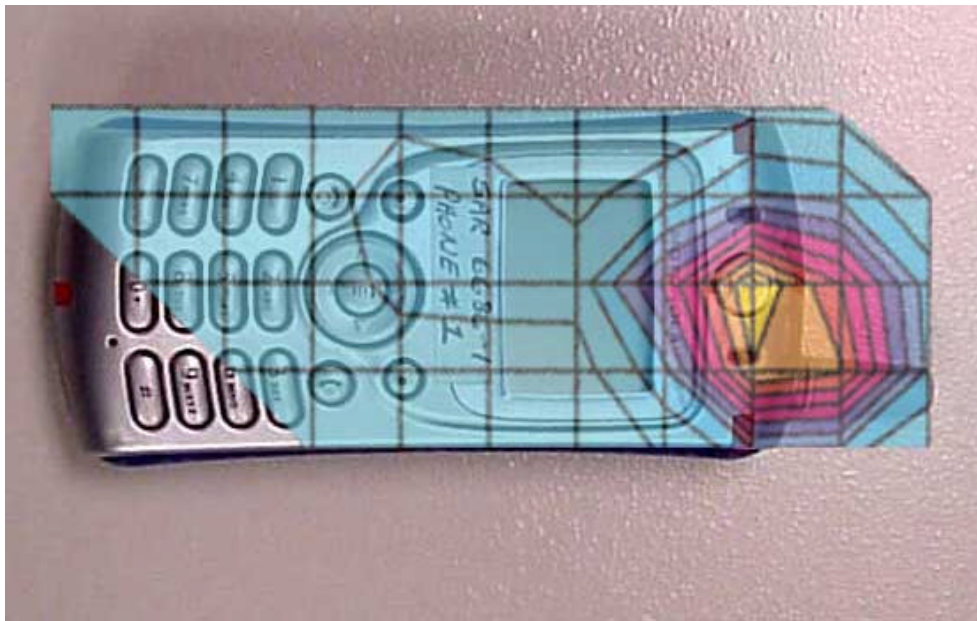


Figure 4. Typical 1900MHz Left Head Adjacent Contour Overlaid on Phone with Antenna Fixed (15°Tilt)

Appendix 3

SAR distribution plots for Body Worn Configuration

SN# 5281E239

Ch#991 / Pwr Step: 2 / Antenna Position: Fixed / Battery Model #: SNN5582A / SIM'T TEMP: When Measured = 22.2 °C After Test = 22.4 °C / Accessory Model # = 1 inch from botton of phone

R1 Amy Twin Phantom Rev.3 Phantom; section 2 Section; Position: (0°,0°); Frequency: 824 MHz

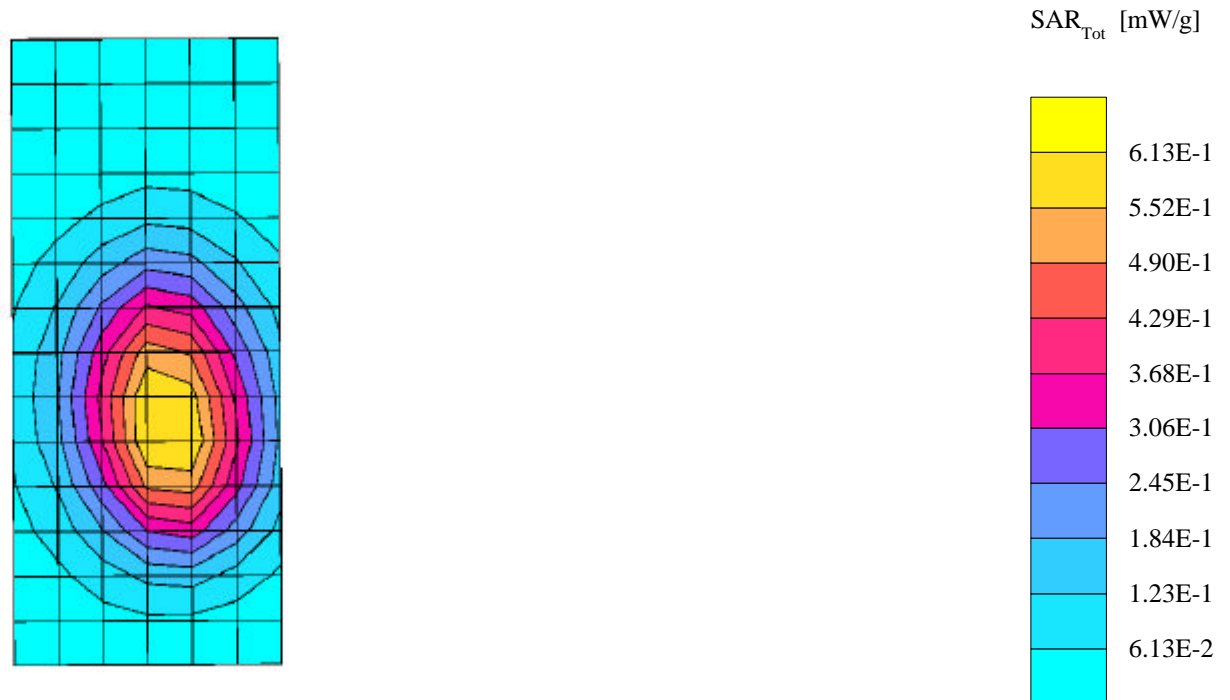
Probe: ET3DV6 - SN1508 - FCC Body; ConvF(6.20,6.20,6.20); Crest factor: 1.0; 835 MHz Head & Body: $\sigma = 0.97$ mho/m $\epsilon_r = 53.4$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 0.687 mW/g, SAR (10g): 0.484 mW/g, (Worst-case extrapolation)

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

Penetration depth: 15.5 (14.7, 16.5) [mm]

Powerdrift: 0.01 dB



SN# 5281E239

Ch# 991 / Pwr Step: 2 / Antenna Position: Fixed / Battery Model #: SNN5582A / SIMT TEMP: When Measured = 22.2 °C After Test = 22 °C / Accessory Model # = 1 inch from Bottom of phone

R1 Amy Twin Phantom Rev.3 Phantom; section 2 Section; Position: (0°,0°); Frequency: 824 MHz

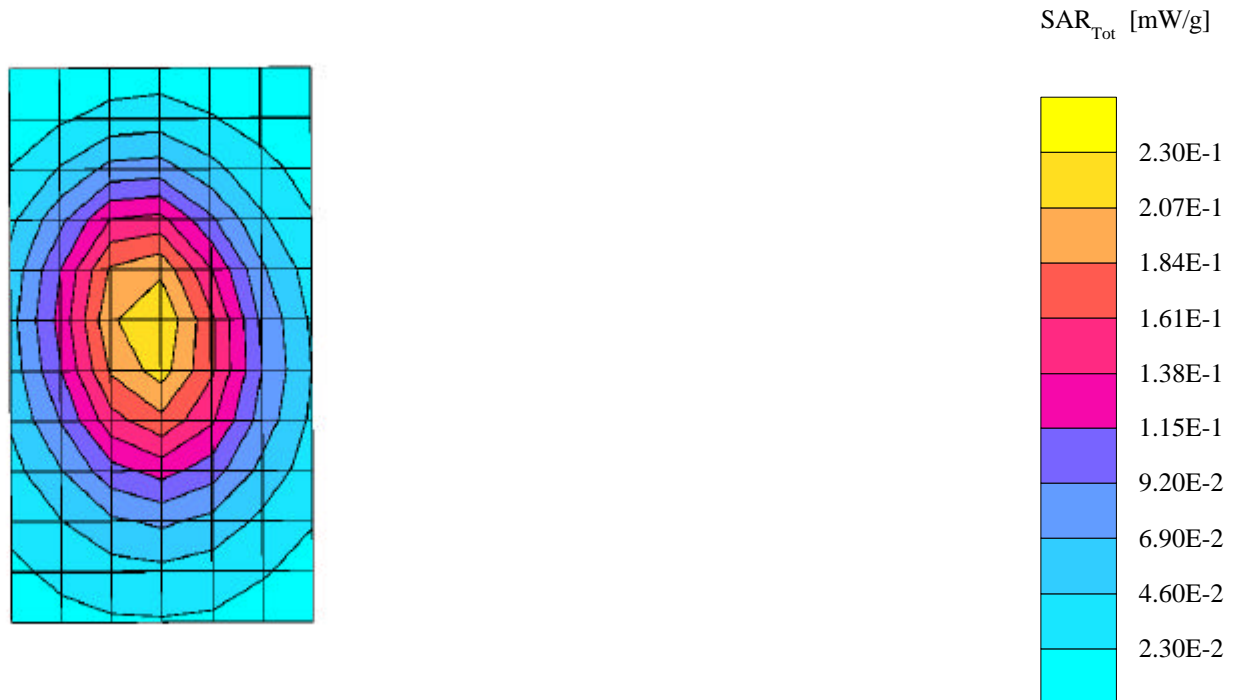
Probe: ET3DV6 - SN1508 - FCC Body; ConvF(6.20,6.20,6.20); Crest factor: 3.0; 835 MHz Head & Body: $\sigma = 0.97$ mho/m $\epsilon_r = 53.4$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 0.230 mW/g, SAR (10g): 0.164 mW/g, (Worst-case extrapolation)

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

Penetration depth: 16.1 (14.6, 17.7) [mm]

Powerdrift: 0.01 dB



SN# 5281E239

Ch# 2 / Pwr Step: 2 / Antenna Position: Fixed / Battery Model #: SNN5582A / SIM'T TEMP: When Measured = 21.1 °C After Test = 21.4 °C / Accessory Model # = 1 inch from Bottom of phone

R1 Amy Twin Phantom Rev.3 Phantom; section 1 Section; Position: (0°,0°); Frequency: 1851 MHz

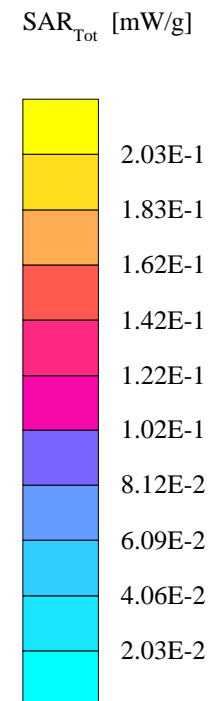
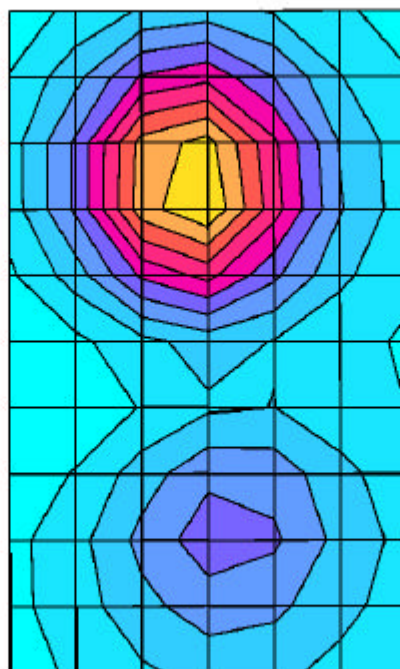
Probe: ET3DV6 - SN1508 - FCC Body; ConvF(5.00,5.00,5.00); Crest factor: 3.0; 1880 MHz Head & Body: $\sigma = 1.56$ mho/m $\epsilon_r = 53.3$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 0.212 mW/g, SAR (10g): 0.131 mW/g, (Worst-case extrapolation)

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

Penetration depth: 10.7 (9.7, 12.2) [mm]

Powerdrift: 0.04 dB



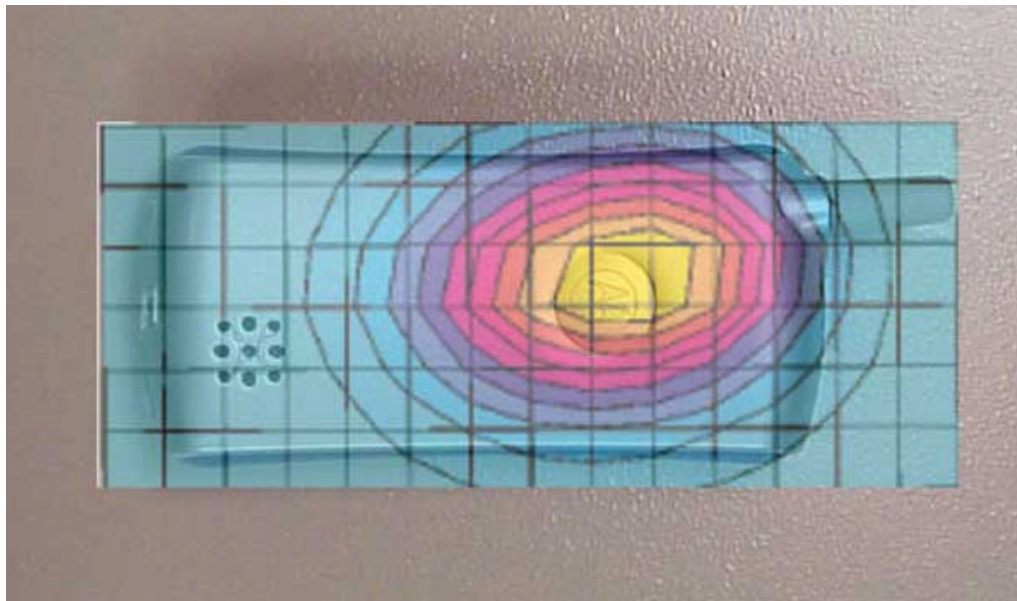


Figure 5. Typical 800 MHz Body-Worn Contour Overlaid on Phone with Antenna Fixed

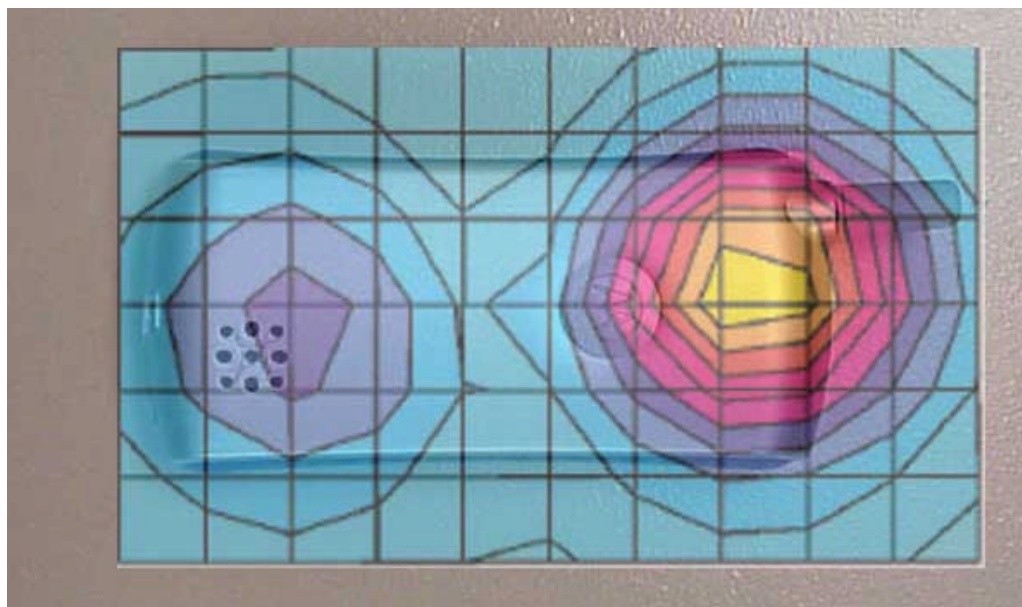


Figure 6. Typical 1900 MHz Body-Worn Contour Overlaid on Phone with Antenna Fixed

Appendix 4

Probe Calibration Certificate (Please View Attachement)

Appendix 5

Photographs of the device under test



Figure 7. Front Of Phone



Figure 8. Back Of Phone



Figure 9. Side View Of Phone

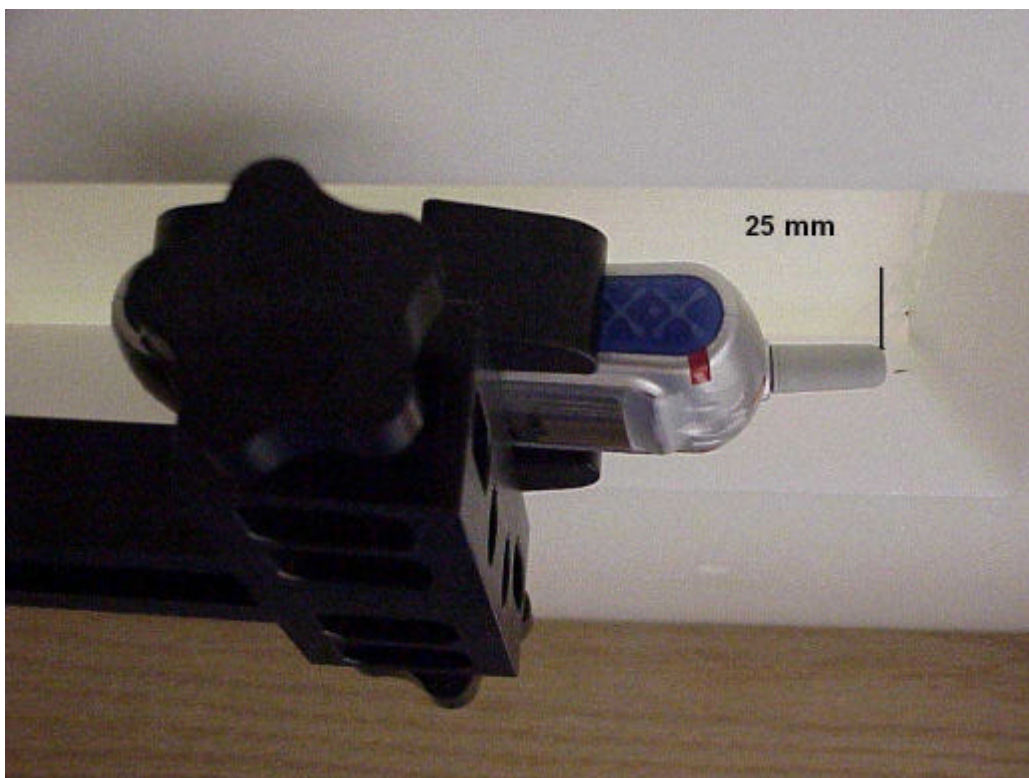


Figure 10. Phone in the positioner distanced 1 inch away from the flat phantom (Antenna Fixed)



Figure 11. Phone in the positioner distanced 1 inch away from the flat phantom with Head Set Attached (Antenna Fixed)

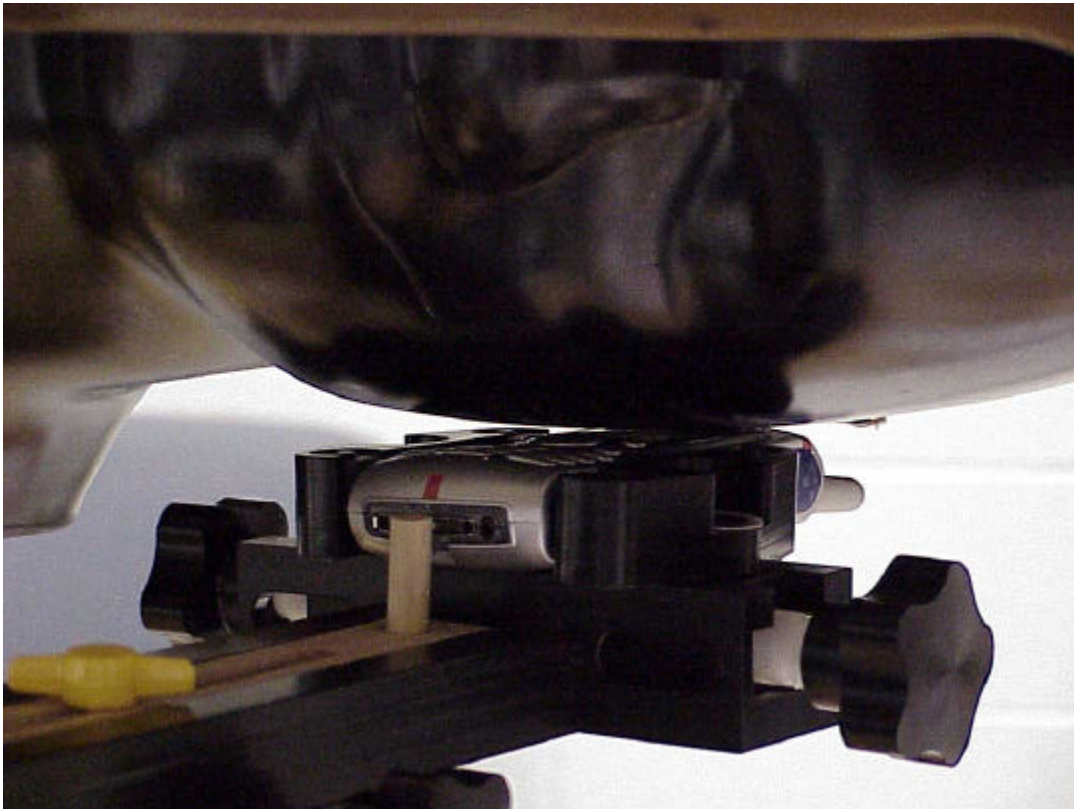


Figure 12. Front View of Phone Placed Against Head with Antenna Fixed

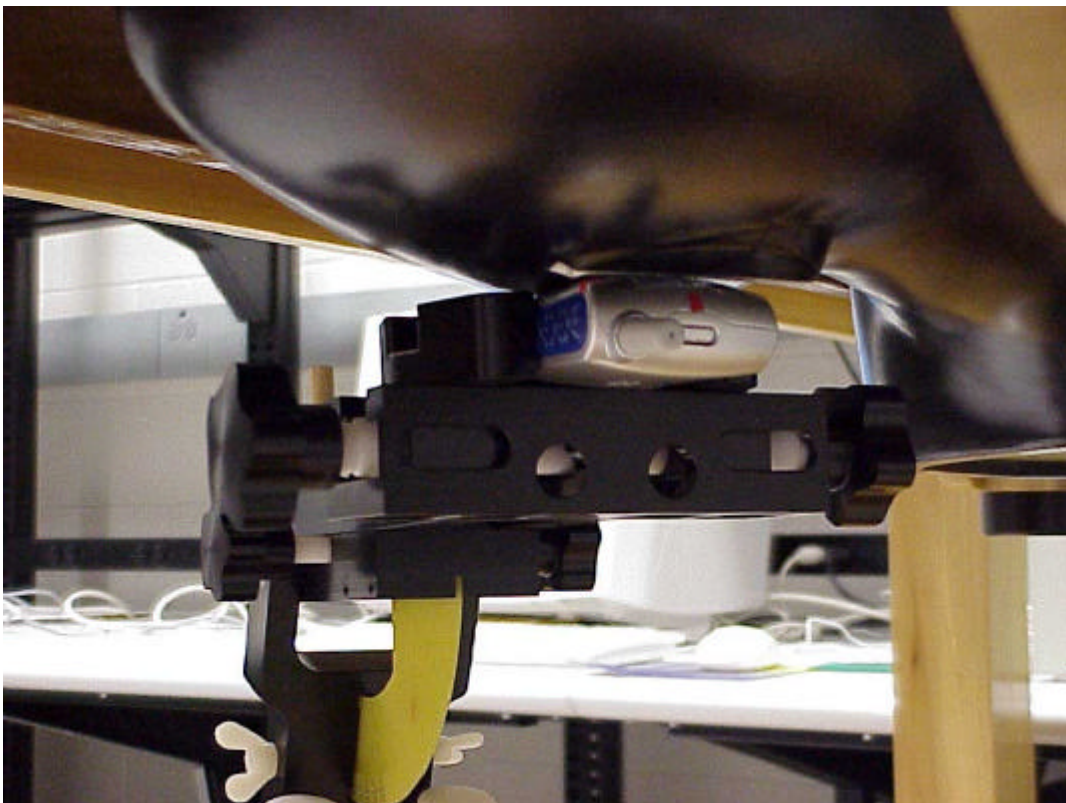


Figure 13. Back View of Phone Placed Against Head with Antenna Fixed

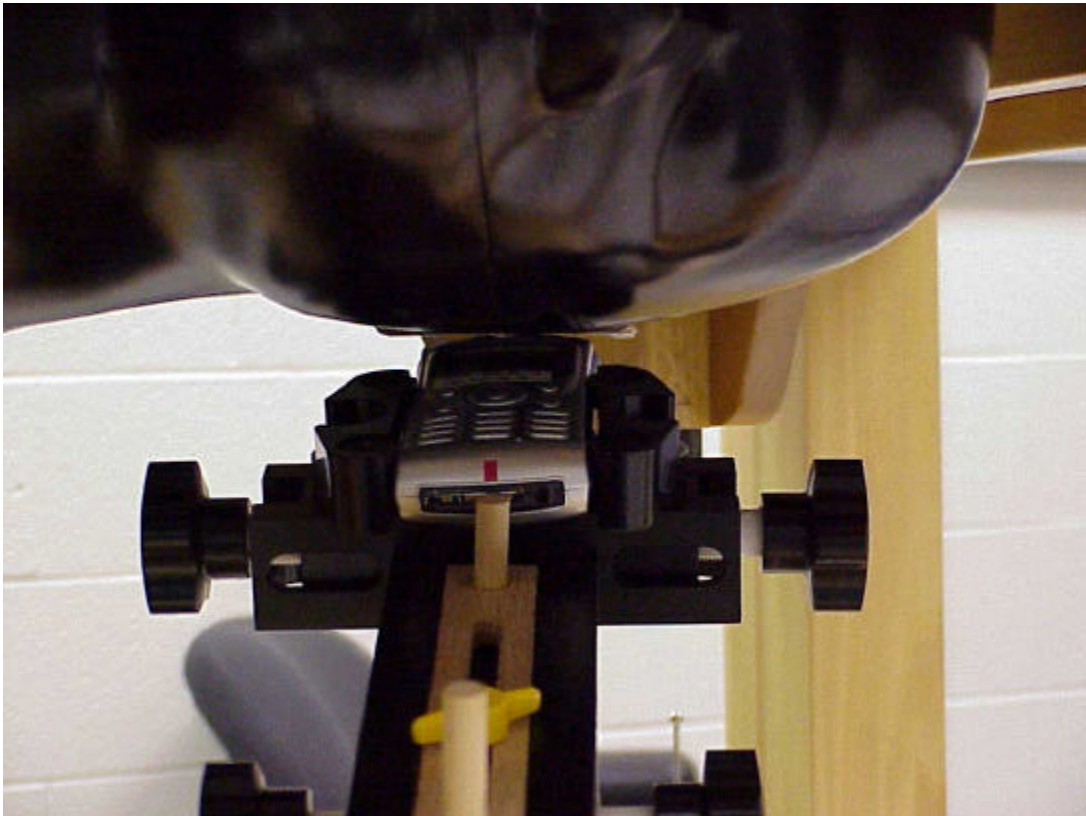


Figure 14. Front View of Phone Placed Against the Head (15° Tilt Position) with Antenna Fixed

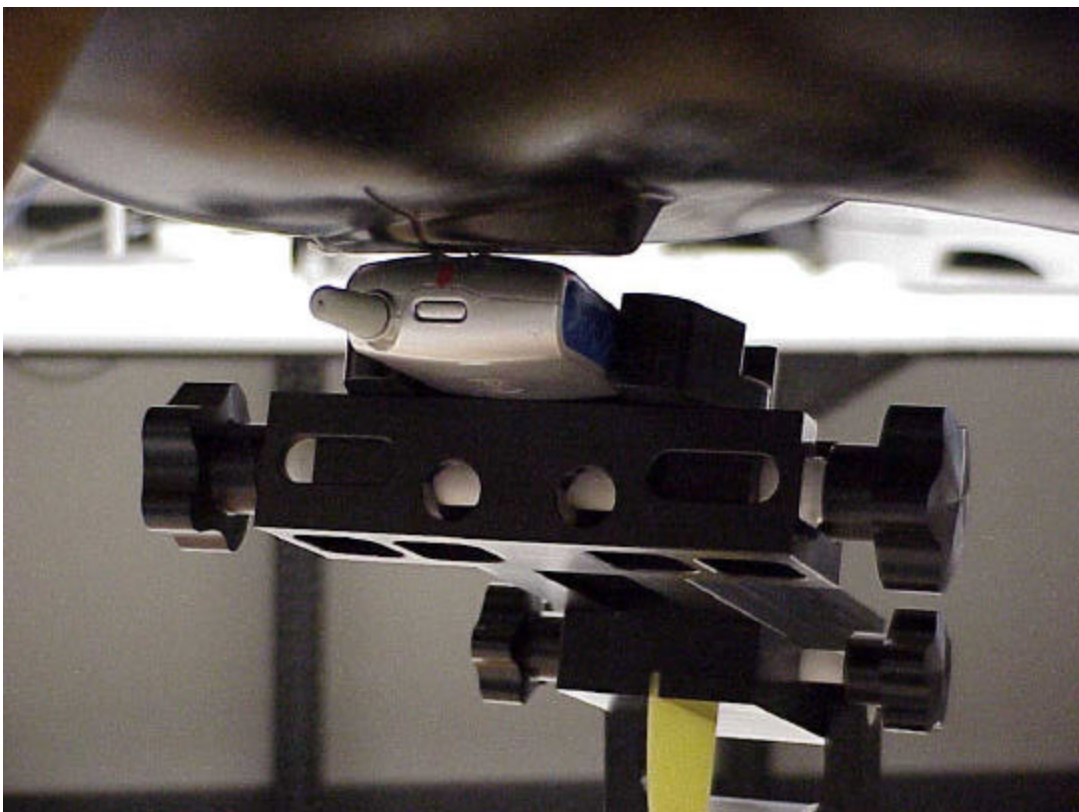


Figure 15. Back View of Phone Placed Against the Head (15° Tilt Position) with Antenna Fixed