



Exhibit 11: SAR Test Report IHDT5CK1

Date of test: 06/12/2002 – 06/13/2002
Date of Report: 06/18/2002

Laboratory: Motorola Personal Communications Sector Product Safety & Compliance
Laboratory
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Harvard, Illinois 60033

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SAR 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 IHDT5CK1 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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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 report

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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 IHDT5CK1). 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	Extendable Antenna	
Location	Right Side	
Dimensions	Length	78 mm
	Width	5 mm

Device description

FCC ID Number	IHDT5CK1
Serial number	#1
Mode(s) of Operation	CDMA 800
Modulation Mode(s)	CDMA
Maximum Output Power Setting	25.00 dBm
Duty Cycle	1:1
Transmitting Frequency Rang(s)	824.64 – 848.37 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:

Probe Uncertainty	±%
Isotropy error	7.2
Calibration error	3.3
Spatial resolution	0.5
SAR Evaluation	±%
Conductivity measurement	5.0
Environmental errors	1.0

Peak SAR Evaluation	±%
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	

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.

f (MHz)	Tissue type	Limits / Measured	Dielectric Parameters		
			ϵ_r	σ (S/m)	Temp (°C)
835	Head	Measured, 06/12/2002	41.10	0.90	22.80
		Recommended Limits	41.50	0.90	20-25
		Measured, 06/13/2002	40.80	0.91	22.80
		Recommended Limits	41.50	0.90	20-25
	Body	Measured, 06/12/2002	54.00	0.98	22.70
		Recommended Limits	55.20	0.97	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 0.0004 W/kg.

f (MHz)	Description	SAR (W/kg), 1gram	Dielectric Parameters		Ambient Temp (°C)	Tissue Temp (°C)
			ϵ_r	σ (S/m)		
900	Measured, 06/12/2002	12.23	40.30	0.97	23.00	22.80
	Recommended Limits	11.40	40.30	0.95	20-26	20-26
	Measured, 06/13/2002	12.22	40.00	0.96	23.00	22.40
	Recommended Limits	11.40	40.30	0.95	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 IHDT5CK1) has only the following battery option: AANN4133A – 3.6 V Lithium Ion. This battery was used to do all of the SAR testing.

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 DASY™ output plots of all test conditions are included in Appendix 2.

f (MHz)	Description	Conducted Output Power (dBm)	Left Head (Cheek / Touch Position)							
			Ant Extended				Ant Retracted			
			Measured (W/kg)	Drift (dB)	Amb. Temp (°C)	Simulate Temp (°C)	Measured (W/kg)	Drift (dB)	Amb. Temp (°C)	Simulate Temp (°C)
Digital 800MHz	Channel 1013	25.00								
	Channel 384	24.91	0.245	-0.52	22.80	21.70	0.183	-0.64	21.70	22.80
	Channel 779	25.10								

Table 1: SAR measurement results for the portable cellular telephone FCC ID IHDT5CK1 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 Extended				Ant Retracted			
			Measured (W/kg)	Drift (dB)	Amb. Temp (°C)	Simulate Temp (°C)	Measured (W/kg)	Drift (dB)	Amb. Temp (°C)	Simulate Temp (°C)
Digital 800MHz	Channel 1013	25.00								
	Channel 384	24.91	0.142	-0.49	22.80	22.30	0.105	0.31	22.80	22.30
	Channel 779	25.10								

Table 2: SAR measurement results for the portable cellular telephone FCC ID IHDT5CK1 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 Extended				Ant Retracted			
			Measured (W/kg)	Drift (dB)	Amb. Temp (°C)	Simulate Temp (°C)	Measured (W/kg)	Drift (dB)	Amb. Temp (°C)	Simulate Temp (°C)
Digital 800MHz	Channel 1013	25.00								
	Channel 384	24.91	0.051	-0.29	22.80	21.70	0.035	-0.21	22.80	22.30
	Channel 779	25.10								

Table 3: SAR measurement results for the portable cellular telephone FCC ID IHDT5CK1 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 Extended				Ant Retracted			
			Measured (W/kg)	Drift (dB)	Amb. Temp (°C)	Simulate Temp (°C)	Measured (W/kg)	Drift (dB)	Amb. Temp (°C)	Simulate Temp (°C)
Digital 800MHz	Channel 1013	25.00								
	Channel 384	24.91	0.0978	-0.57	22.40	22.00	0.030	-0.37	22.40	22.00
	Channel 779	25.10								

Table 4: SAR measurement results for the portable cellular telephone FCC ID IHDT5CK1 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 is one Body-Worn Accessories available for this phone:

Leather Case (White) – KSCN6101

The leather case (KSCN6101) causes closer proximity and was used for the SAR measurements.

A full data set output of the two test conditions with the highest SAR values from the Dasy™ measurement system is 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							
			Ant Extended				Ant Retracted			
			Measured (W/kg)	Drift (dB)	Amb. Temp (°C)	Simulate Temp (°C)	Measured (W/kg)	Drift (dB)	Amb. Temp (°C)	Simulate Temp (°C)
Digital 800MHz	Channel 1013	25.00	0.299	-0.20	22.70	23.00	0.141	0.12	22.70	23.00
	Channel 384	24.91	0.211	-0.13	22.70	23.00	0.124	-0.32	22.70	23.00
	Channel 779	25.10	0.440	-0.35	22.70	23.00	0.267	0.42	22.70	23.00

Table 5: SAR measurement results for the portable cellular telephone FCC ID IHDT5CK1 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 =251mW / Room Temp at time of measurement = 23 c Simulant Temp at time of measurement = 22.8c

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

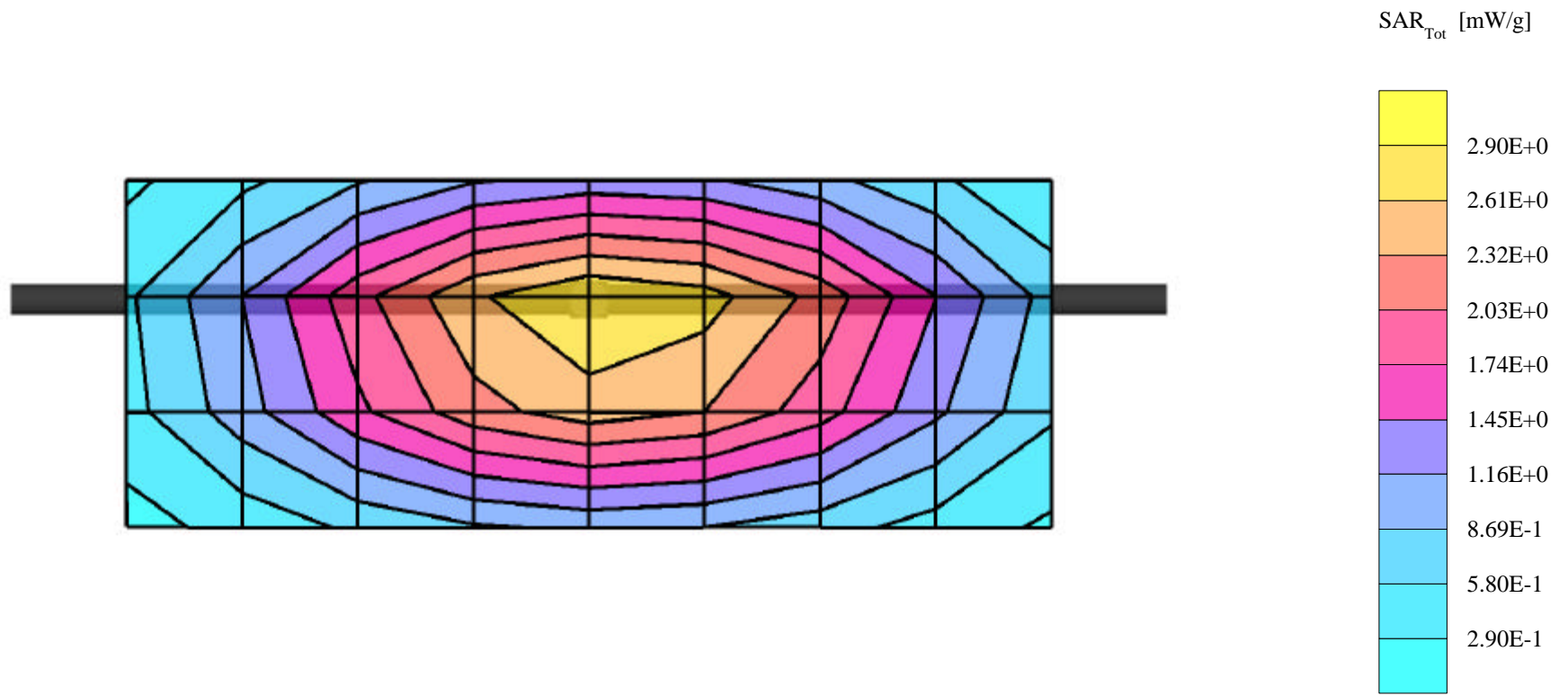
Probe: ET3DV6 - SN1508 - Validation; ConvF(6.35,6.35,6.35); Crest factor: 1.0; 900 MHz VALIDATION: $\sigma = 0.97$ mho/m $\epsilon_r = 40.3$ $\rho = 1.00$ g/cm³

Cubes (2): SAR (1g): 3.07 mW/g \pm 0.02 dB, SAR (10g): 1.94 mW/g \pm 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: 0.02 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 = 22.4c

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

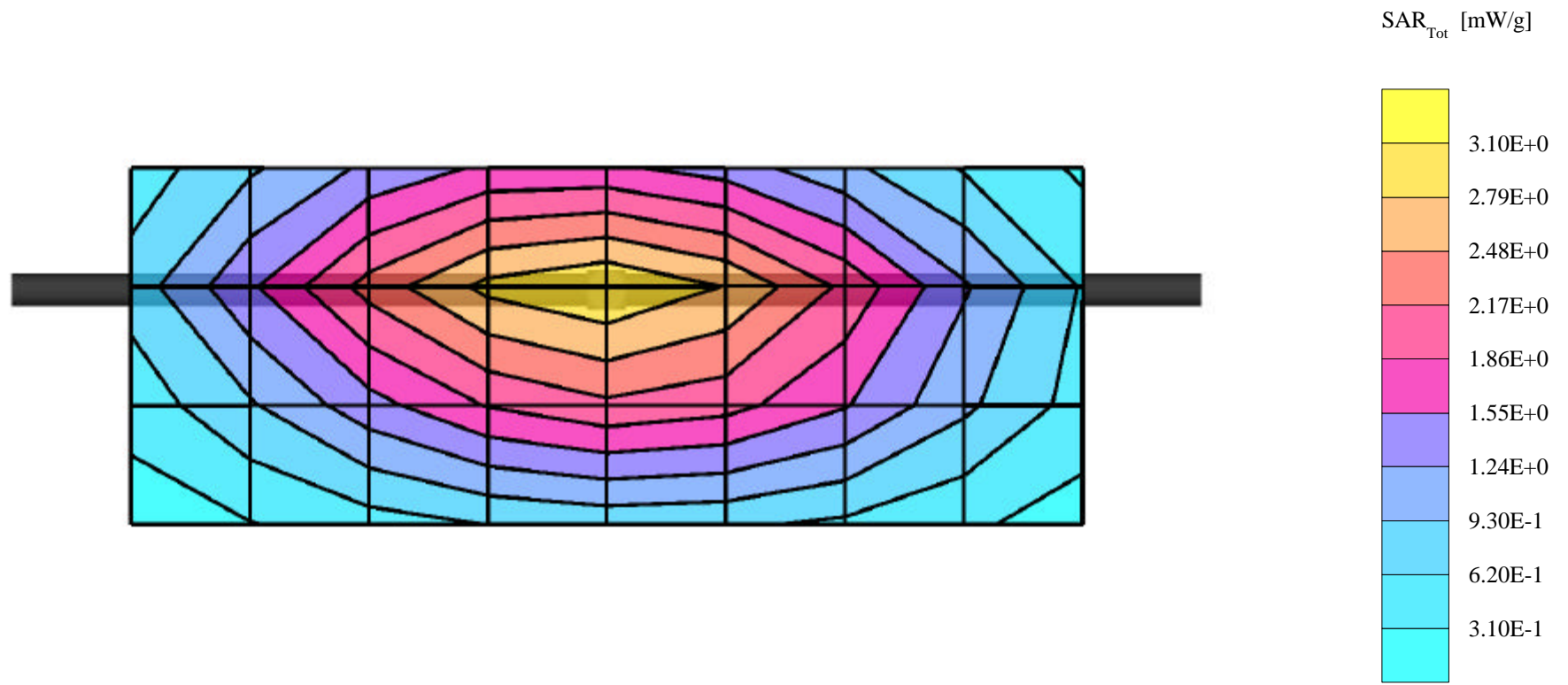
Probe: ET3DV6 - SN1508 - Validation; ConvF(6.35,6.35,6.35); Crest factor: 1.0; 900 MHz VALIDATION: $\sigma = 0.96$ mho/m $\epsilon_r = 40.0$ $\rho = 1.00$ g/cm³

Cubes (2): SAR (1g): 3.08 mW/g ± 0.03 dB, SAR (10g): 1.95 mW/g ± 0.02 dB, (Worst-case extrapolation)

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

Penetration depth: 11.6 (10.6, 12.8) [mm]

Powerdrift: 0.02 dB



Dipole 900 MHz

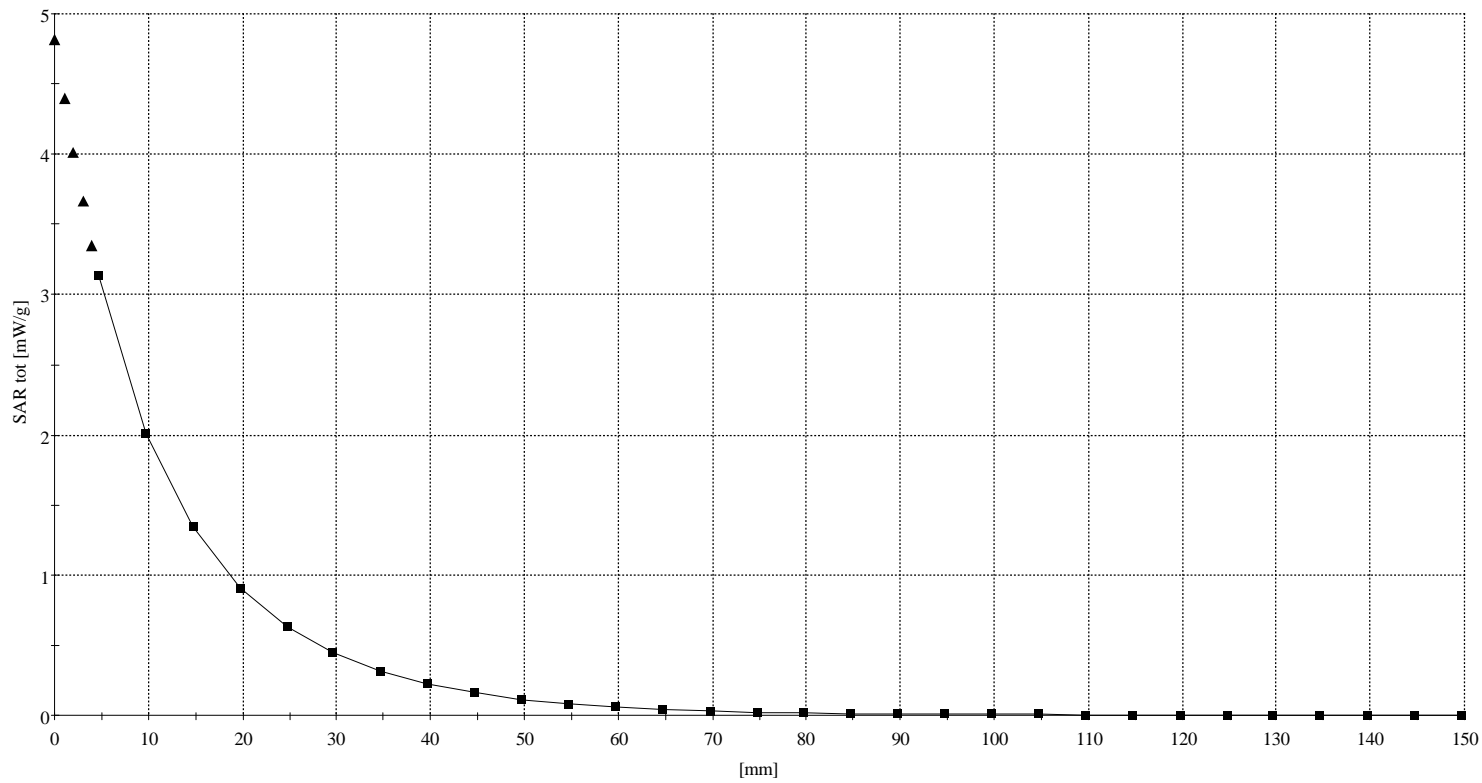
900 MHz Dipole Validation / Dipole Sn# 95 / Forward Power =251mW / Room Temp at time of measurement = 23 c Simulant Temp at time of measurement = 22.8c

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 $\epsilon_r = 40.3$ $\rho = 1.00$ g/cm³

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

Penetration depth: 11.7 (11.1, 12.5) [mm]



Dipole 900 MHz

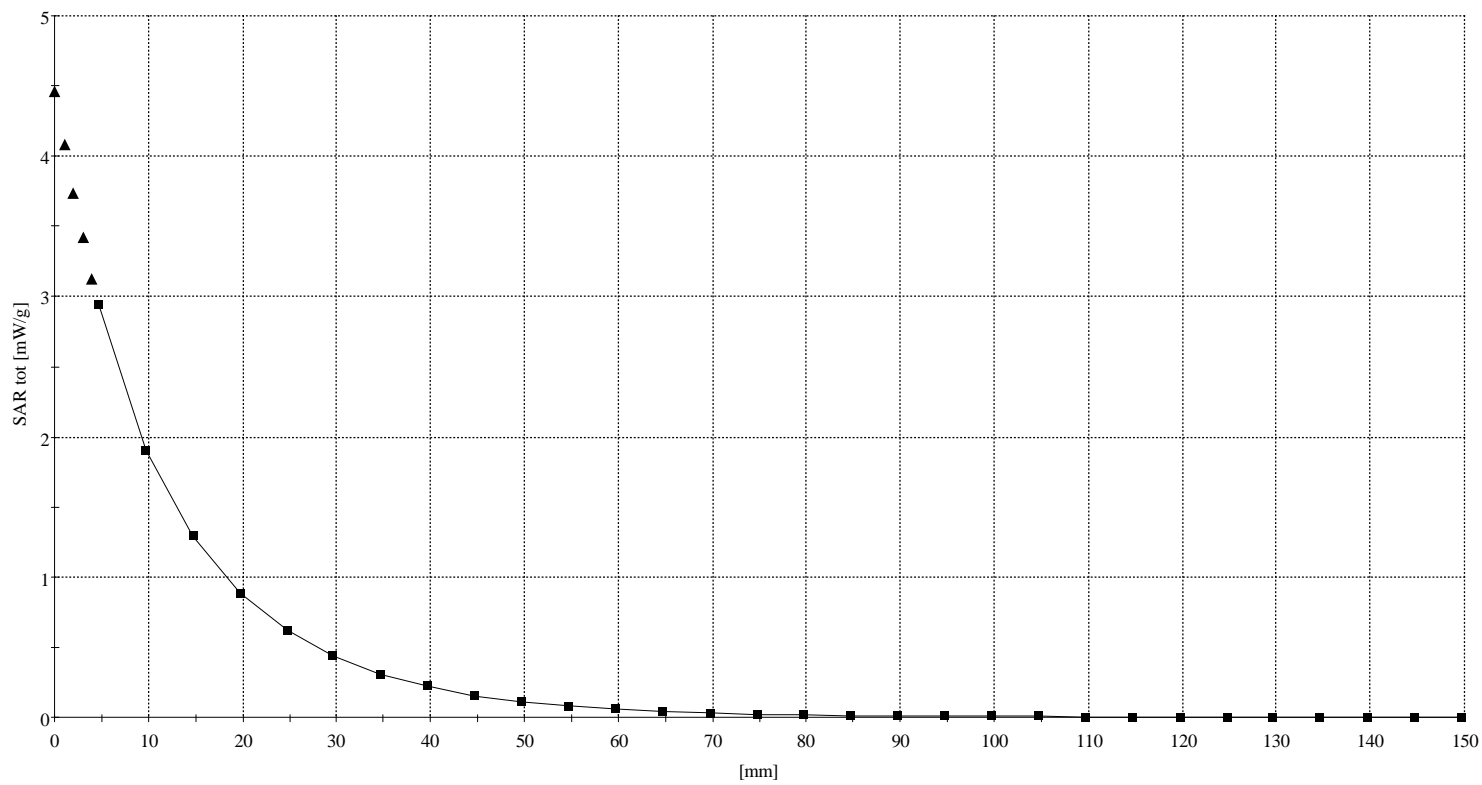
900 MHz Dipole Validation / Dipole Sn# 95 / Forward Power = 252 mW / Room Temp at time of measurement = 23 c Simulant Temp at time of measurement = 22.4c

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: $\sigma = 0.96$ mho/m $\epsilon_r = 40.0$ $\rho = 1.00$ g/cm³

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

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

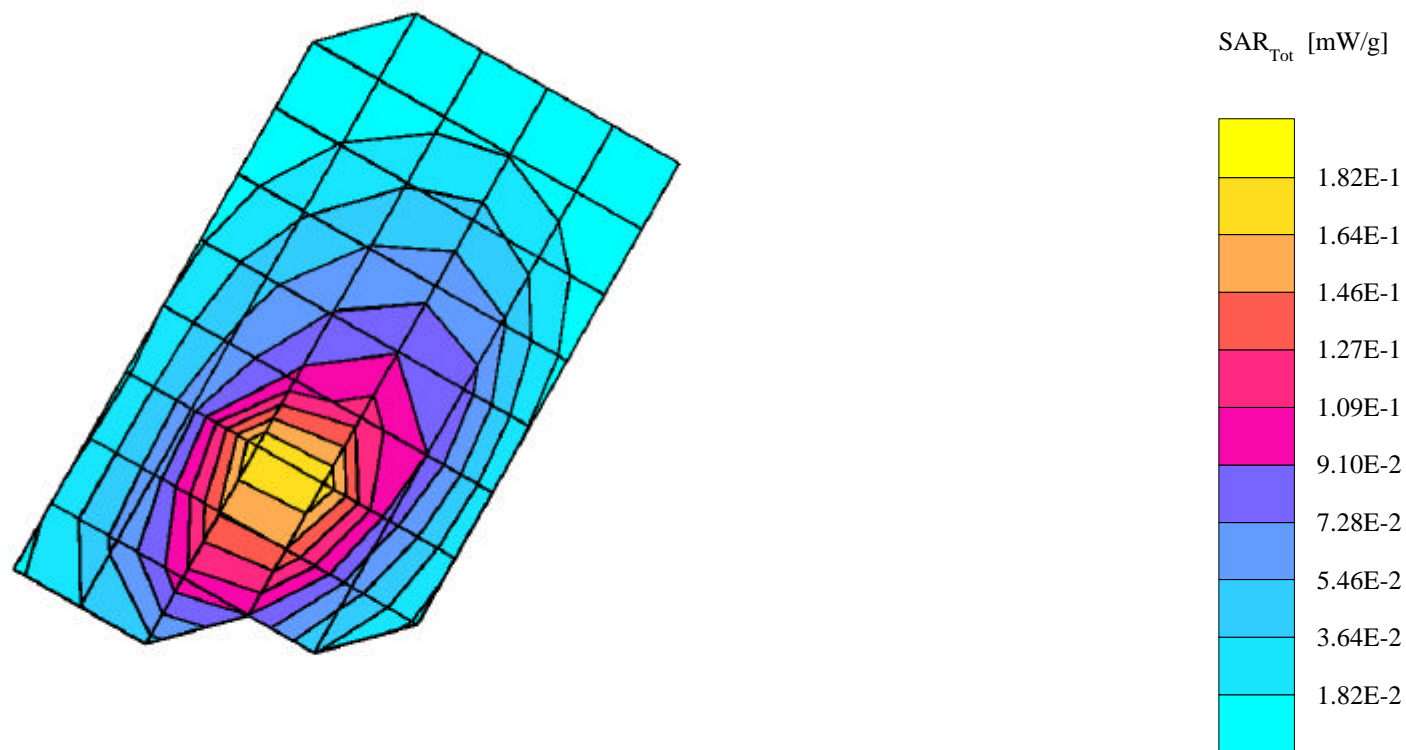


Appendix 2

SAR distribution plots for Phantom Head Adjacent Use

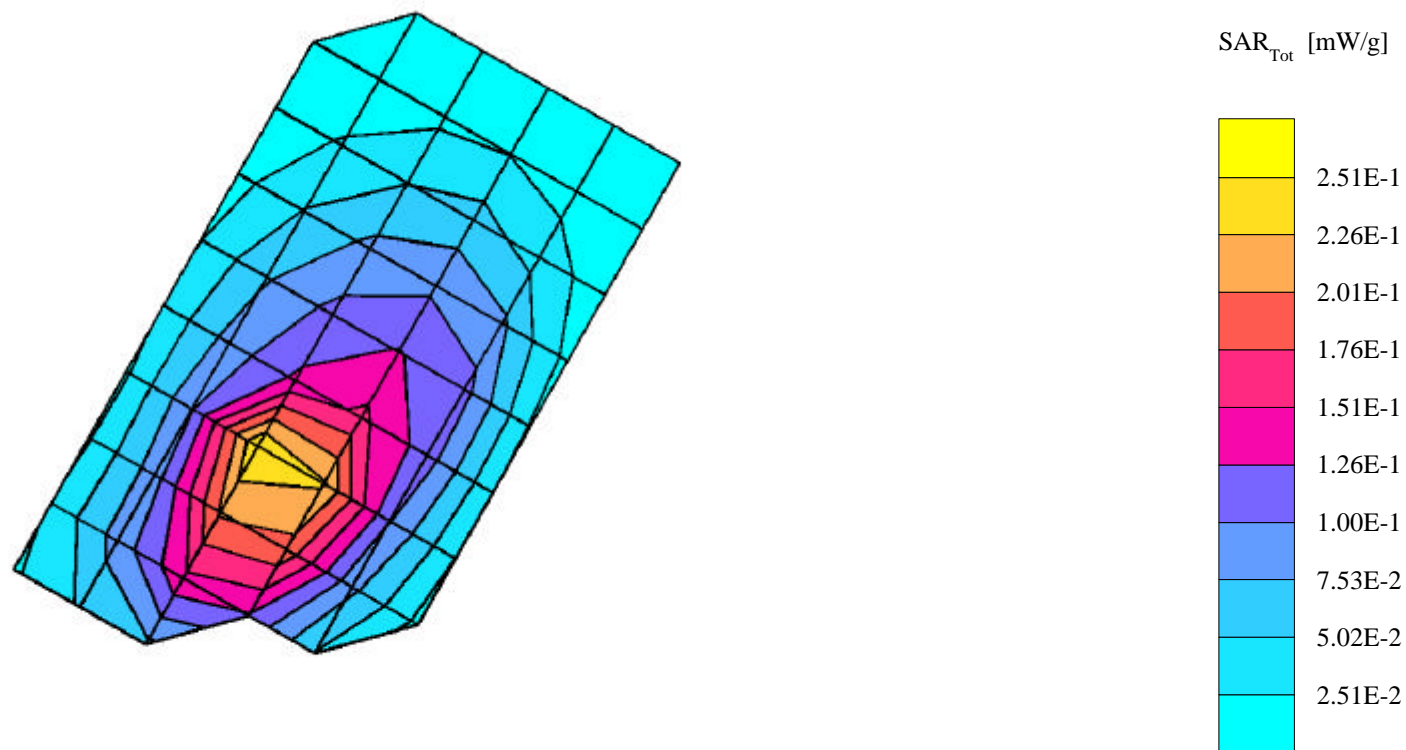
SN# 01

Ch# 363 / Pwr Step: Always up / Antenna Position: Retracted / Battery Model #: AANN4133A / SIM'T TEMP: When Measured = 22.8 °C After Test = 21.7 °C
R1: TP-1005 SUGAR (rev. 3) Phantom; R2 Homer Left Head Section; Position: (90°, 180°); Frequency: 837 MHz
Probe: ET3DV6 - SN1508 - IEEE Head; ConvF(6.50, 6.50, 6.50); Crest factor: 1.0; 835 MHz Head & Body: $\sigma = 0.91$ mho/m $\epsilon_r = 41.1$ $\rho = 1.00$ g/cm³
Cube 7x7x7: SAR (1g): 0.183 mW/g, SAR (10g): 0.119 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0
Penetration depth: 13.8 (12.4, 15.5) [mm]
Powerdrift: -0.64 dB



SN# 01

Ch# 363 / Pwr Step:Always up / Antenna Position: Extended / Battery Model #:AANN4133A / SIM'T TEMP: When Measured =22.8 °C After Test = 21.7 °C
R1: TP-1005 SUGAR (rev. 3) Phantom; R2 Homer Left Head Section; Position: (90°,180°); Frequency: 837 MHz
Probe: ET3DV6 - SN1508 - IEEE Head; ConvF(6.50,6.50,6.50); Crest factor: 1.0; 835 MHz Head & Body: $\sigma = 0.91$ mho/m $\epsilon_r = 41.1$ $\rho = 1.00$ g/cm³
Cube 7x7x7: SAR (1g): 0.245 mW/g, SAR (10g): 0.160 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0
Penetration depth: 13.6 (11.9, 15.7) [mm]
Powerdrift: -0.52 dB



SN# 01

Ch# 363 / Pwr Step: Always up / Antenna Position: Retracted / Battery Model #:AANN4133A / SIM'T TEMP: When Measured =22.8 °C After Test = 21.7 °C

R1: TP-1005 SUGAR (rev. 3) Phantom; R2 Marge Right Head Section; Position: (90°,180°); Frequency: 837 MHz

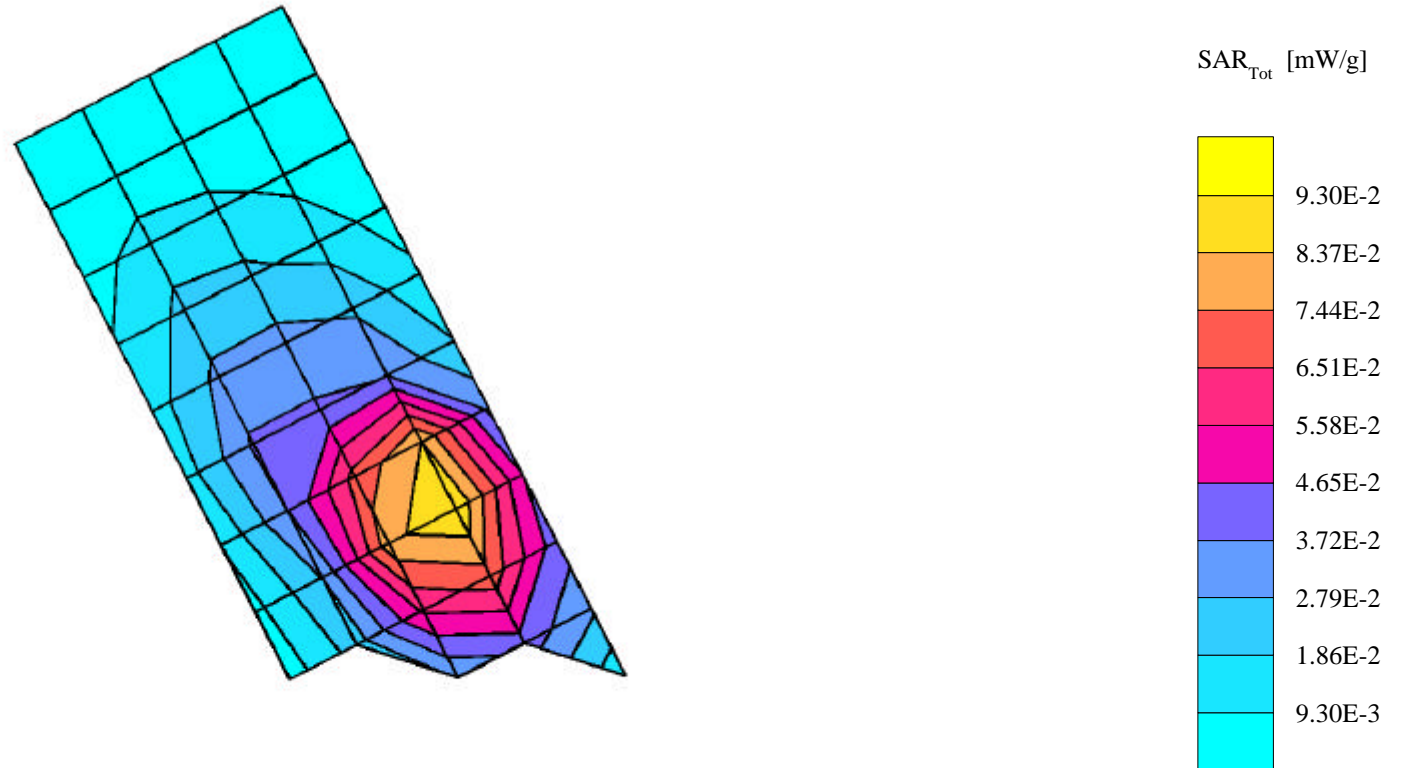
Probe: ET3DV6 - SN1508 - IEEE Head; ConvF(6.50,6.50,6.50); Crest factor: 1.0; 835 MHz Head & Body: $\sigma = 0.91$ mho/m $\epsilon_r = 41.1$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 0.105 mW/g, SAR (10g): 0.0657 mW/g, (Worst-case extrapolation)

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

Penetration depth: 12.9 (11.4, 14.8) [mm]

Powerdrift: 0.13 dB



SN# 01

Ch# 363 / Pwr Step: Always up/ Antenna Position: Extended / Battery Model #:AANN4133A / SIM'T TEMP: When Measured =22.8 °C After Test = 21.7 °C

R1: TP-1005 SUGAR (rev. 3) Phantom; R2 Marge Right Head Section; Position: (90°,180°); Frequency: 837 MHz

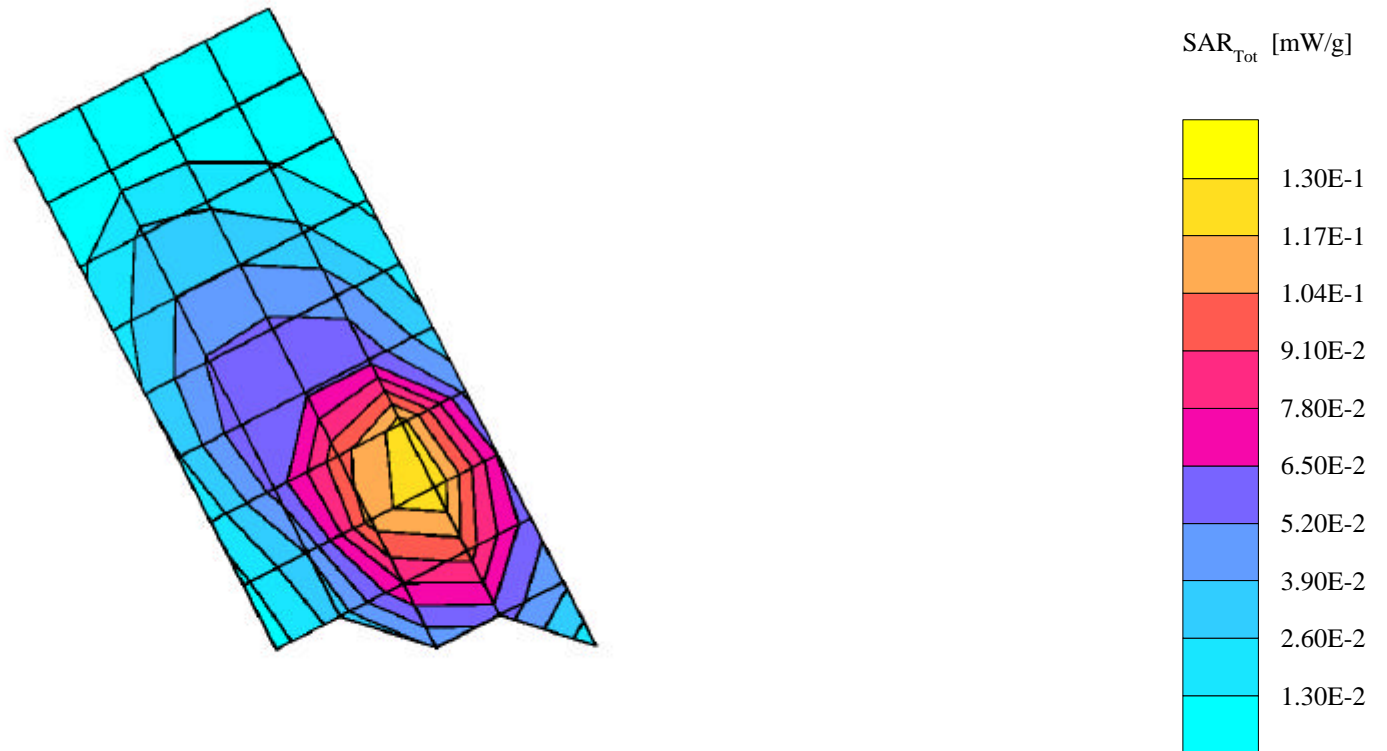
Probe: ET3DV6 - SN1508 - IEEE Head; ConvF(6.50,6.50,6.50); Crest factor: 1.0; 835 MHz Head & Body: $\sigma = 0.91$ mho/m $\epsilon_r = 41.1$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 0.142 mW/g, SAR (10g): 0.0878 mW/g, (Worst-case extrapolation)

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

Penetration depth: 12.5 (10.9, 14.8) [mm]

Powerdrift: -0.49 dB



SN# 01

Ch# 363 / Pwr Step:Always up / Antenna Position: Retracted / Battery Model #:AANN4133A / SIM'T TEMP: When Measured =22.8 °C After Test = 22.3 °C

R1: TP-1005 SUGAR (rev. 3) Phantom; R2 Homer Left Head Section; Position: (90°,180°); Frequency: 837 MHz

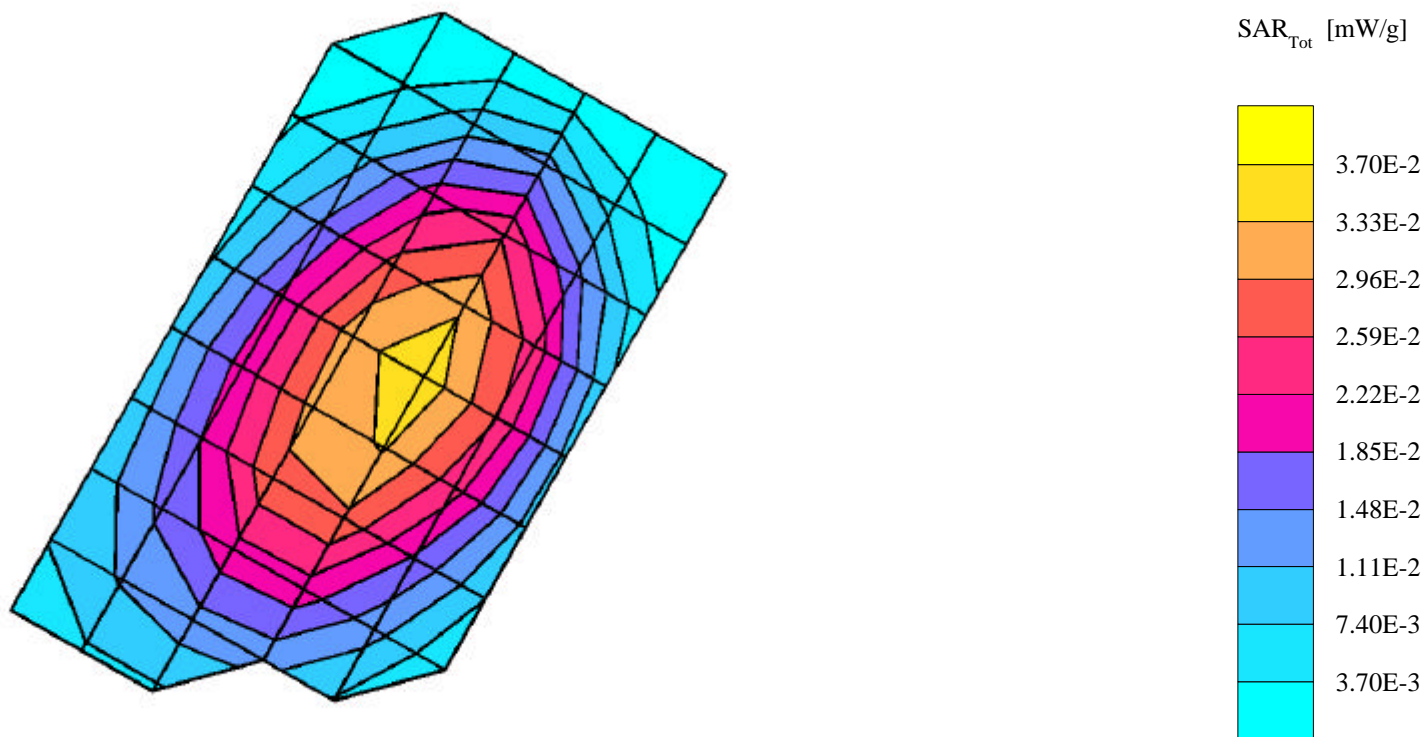
Probe: ET3DV6 - SN1508 - IEEE Head; ConvF(6.50,6.50,6.50); Crest factor: 1.0; 835 MHz Head & Body: $\sigma = 0.91$ mho/m $\epsilon_r = 41.1$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 0.0351 mW/g, SAR (10g): 0.0262 mW/g, (Worst-case extrapolation)

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

Penetration depth: 20.6 (20.4, 21.0) [mm]

Powerdrift: -0.21 dB



SN# 01

Ch# 363 / Pwr Step:Always up / Antenna Position: Extended / Battery Model #:AANN4133A / SIM'T TEMP: When Measured =22.8 °C After Test = 21.7 °C

R1: TP-1005 SUGAR (rev. 3) Phantom; R2 Homer Left Head Section; Position: (90°,180°); Frequency: 837 MHz

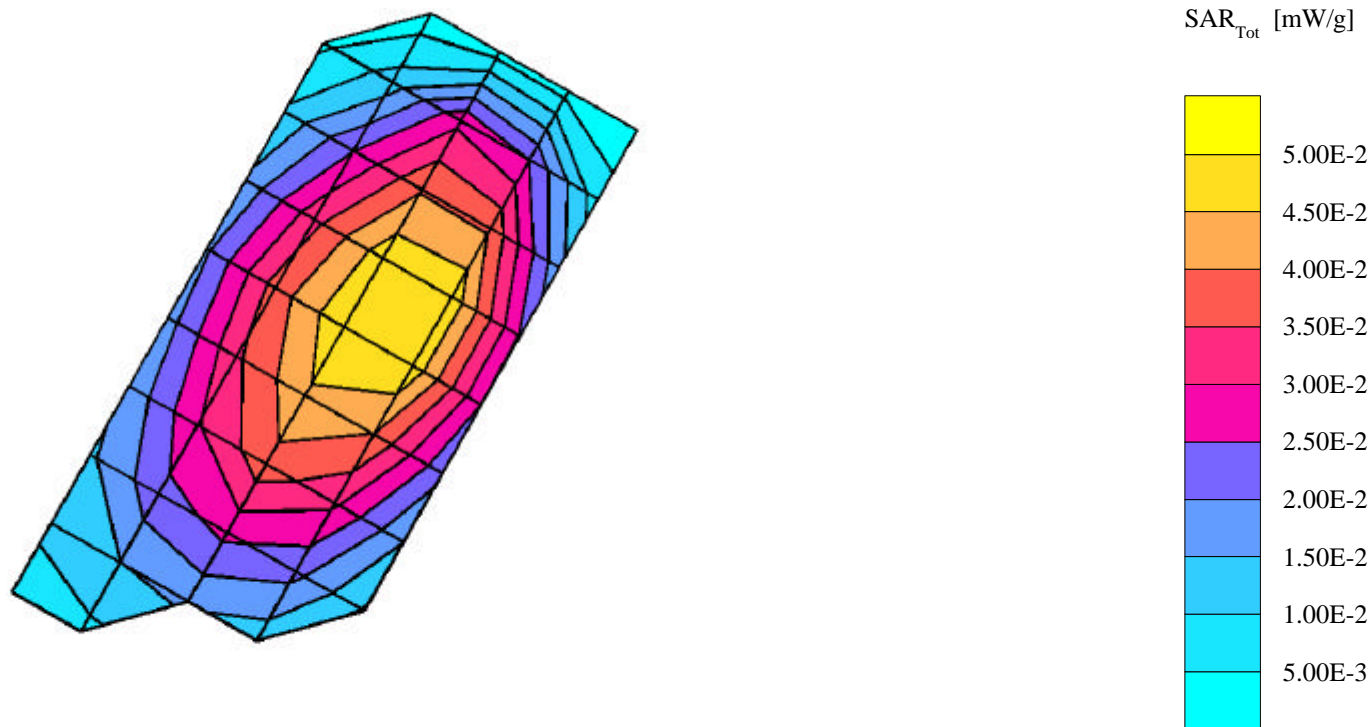
Probe: ET3DV6 - SN1508 - IEEE Head; ConvF(6.50,6.50,6.50); Crest factor: 1.0; 835 MHz Head & Body: $\sigma = 0.91$ mho/m $\epsilon_r = 41.1$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 0.0511 mW/g, SAR (10g): 0.0379 mW/g, (Worst-case extrapolation)

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

Penetration depth: 19.4 (18.1, 20.7) [mm]

Powerdrift: -0.29 dB



SN# 01

Ch#363 / Pwr Step: always up / Antenna Position: retracted / Battery Model #: AANN4133A / SIM'T TEMP: When Measured = 22.4 °C After Test = 22 °C

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

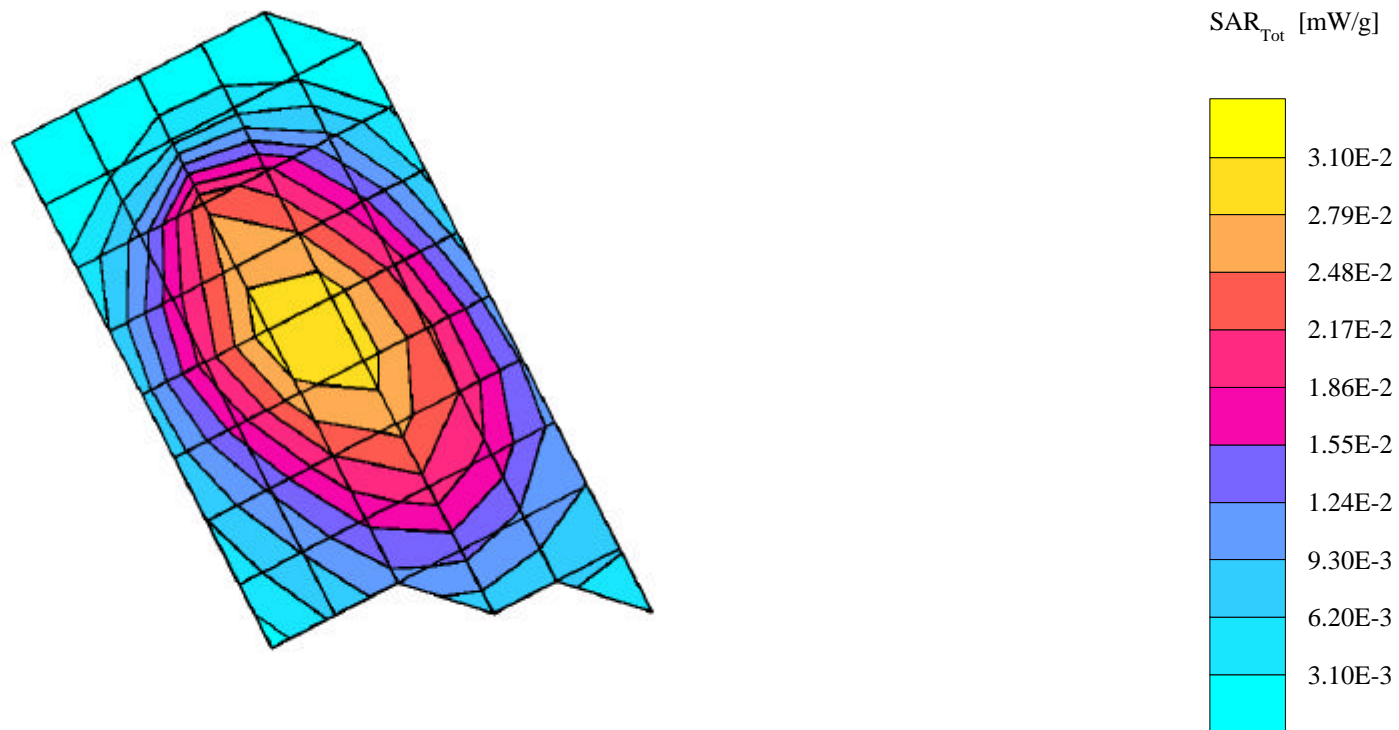
Probe: ET3DV6 - SN1508 - IEEE Head; ConvF(6.50,6.50,6.50); Crest factor: 1.0; 835 MHz Head & Body: $\sigma = 0.90$ mho/m $\epsilon_r = 40.8$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 0.0300 mW/g, SAR (10g): 0.0221 mW/g, (Worst-case extrapolation)

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

Penetration depth: 18.8 (17.6, 19.9) [mm]

Powerdrift: -0.37 dB



SN# 01

Ch#363 / Pwr Step: always up / Antenna Position:Extended / Battery Model #: AANN4133A / SIM'T TEMP: When Measured = 22.4 °C After Test = 22 °C

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

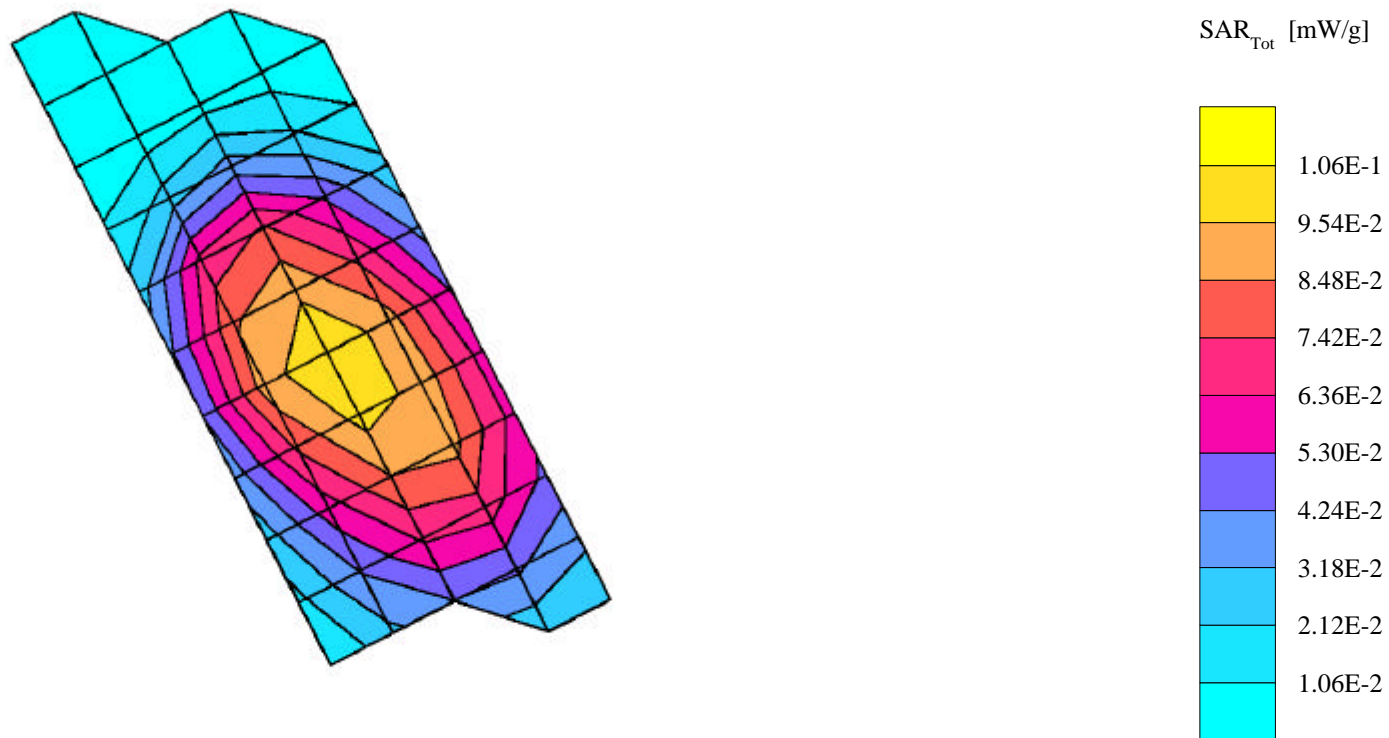
Probe: ET3DV6 - SN1508 - IEEE Head; ConvF(6.50,6.50,6.50); Crest factor: 1.0; 835 MHz Head & Body: $\sigma = 0.90$ mho/m $\epsilon_r = 40.8$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 0.0978 mW/g, SAR (10g): 0.0738 mW/g, (Worst-case extrapolation)

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

Penetration depth: 20.2 (19.3, 21.1) [mm]

Powerdrift: -0.57 dB



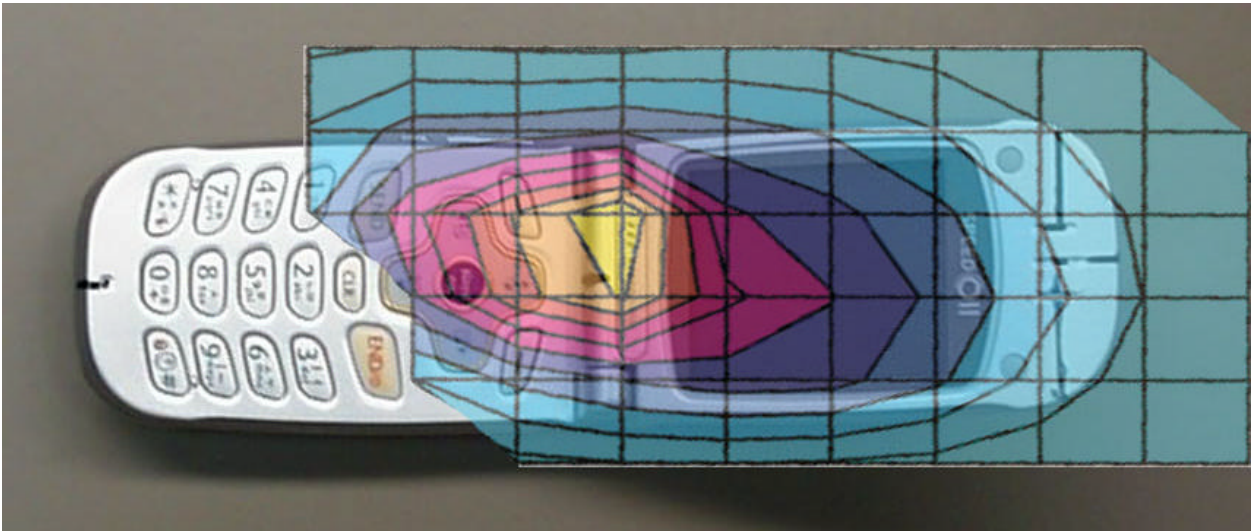


Figure 1. Typical 800MHz Left Head Cheek Touch Contour Overlaid on Face of Phone.

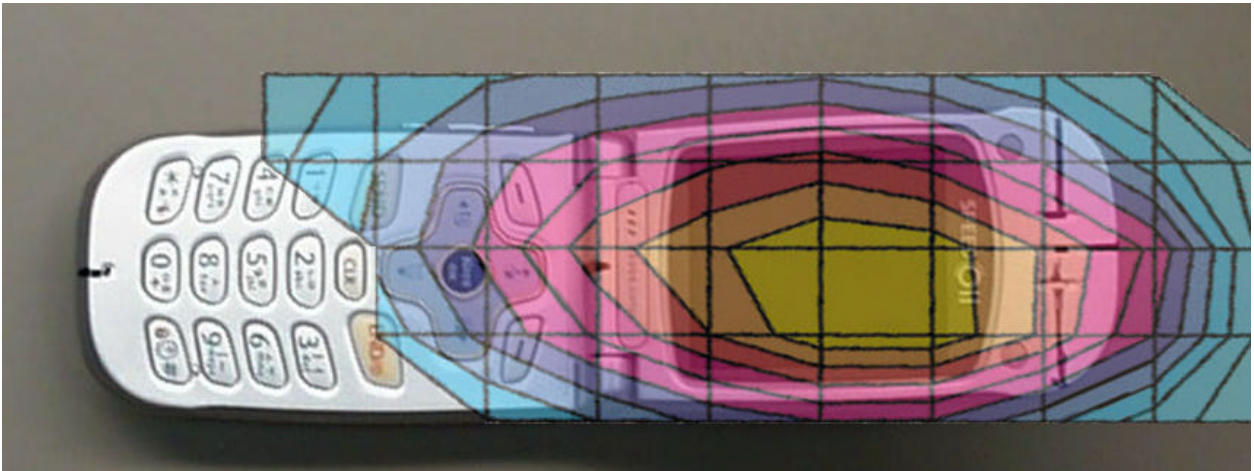


Figure 2. Typical 800MHz Left Head 15Degree Tilt Contour Overlaid on Face of Phone.

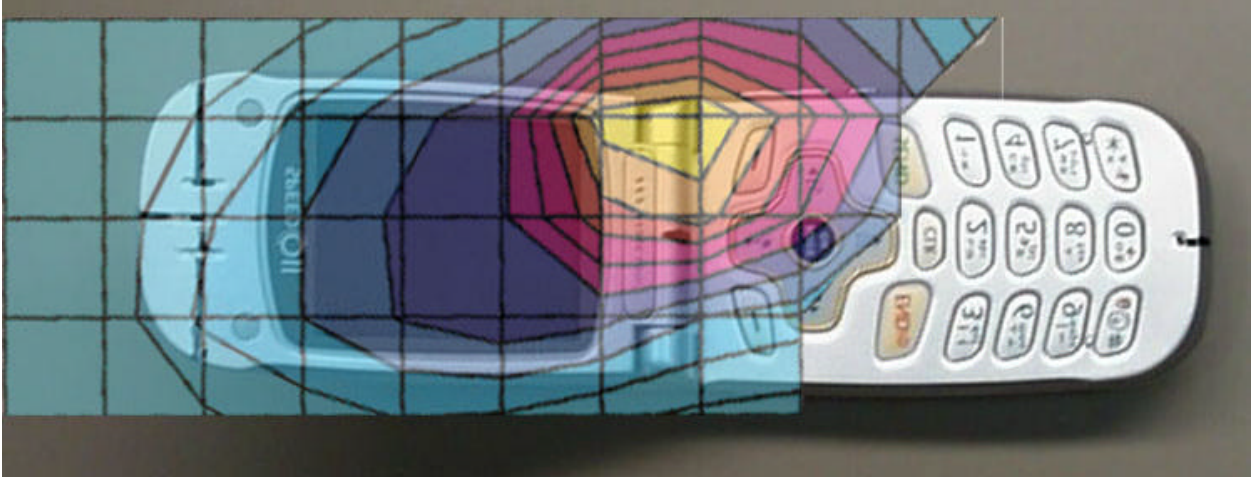


Figure 3. Typical 800MHz Right Head Cheek Touch Contour Overlaid on Face of Phone.

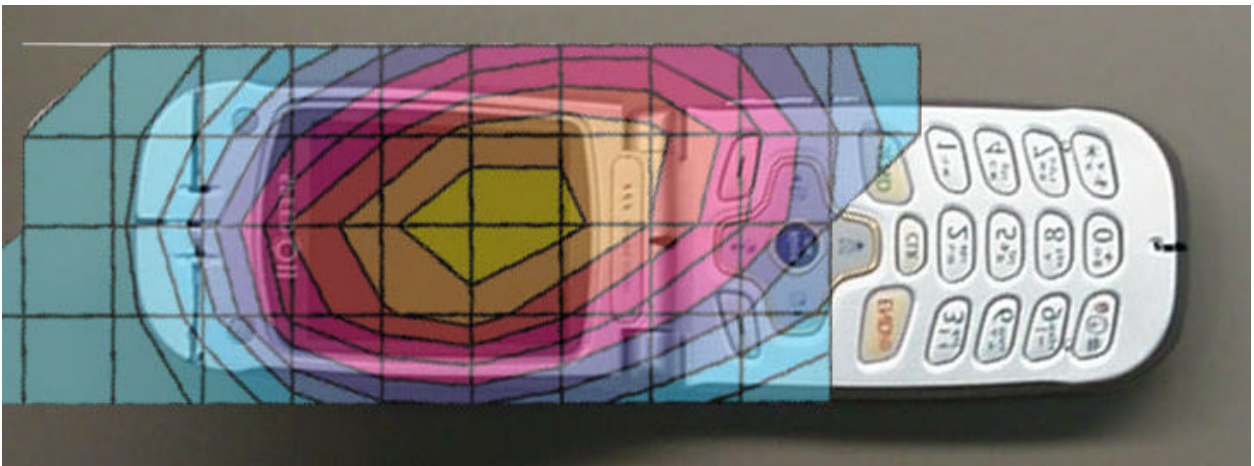


Figure 4. Typical 800MHz Right Head 15Degree Tilt Contour Overlaid on Face of Phone.

Appendix 3

SAR distribution plots for Body Worn Configuration

SN# 01

Ch# 779 / Pwr Step: Always up / Antenna Position: Retracted / Battery Model #:AANN4133A / SIM'T TEMP: When Measured =22.7 °C After Test = 23 °C / Accessory Model # = Leather Case KSCN6101

R1 Amy Twin Phantom Rev.3 Phantom; section 2 Section; Position: (0°,0°); Frequency: 848 MHz

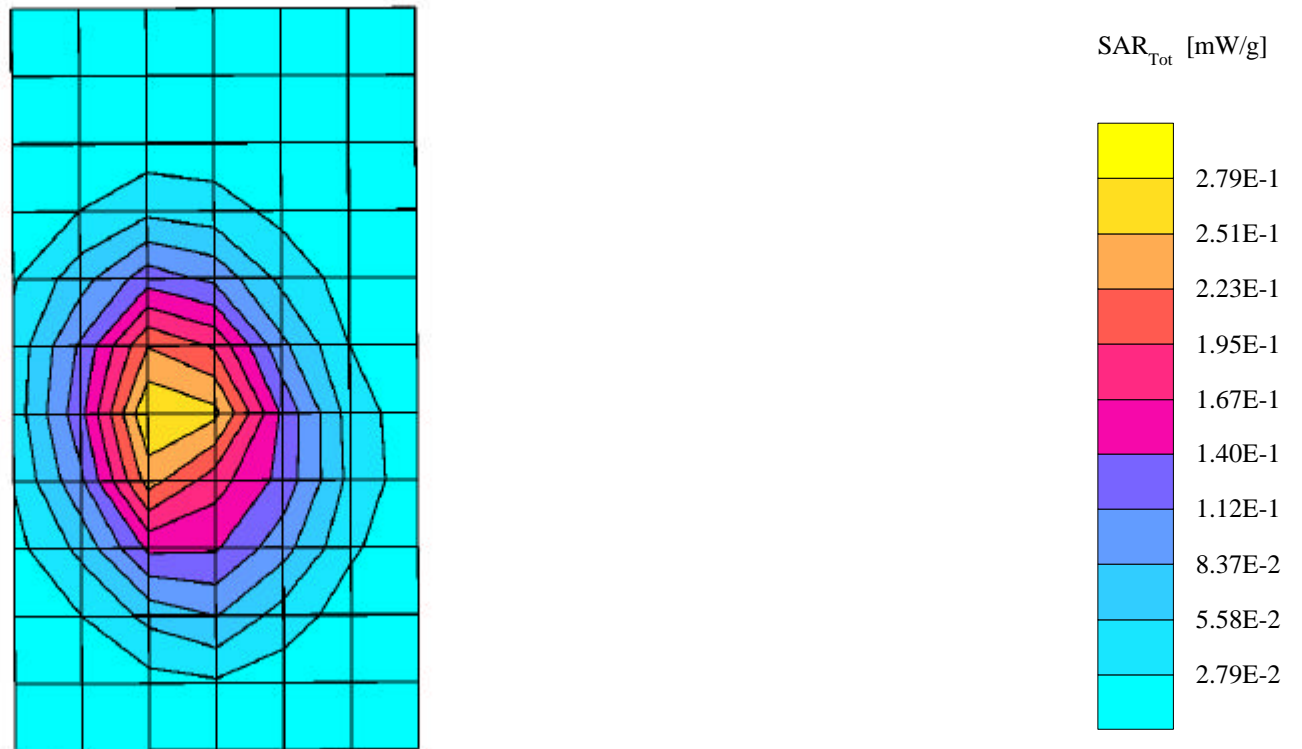
Probe: ET3DV6 - SN1508 - FCC Body; ConvF(6.20,6.20,6.20); Crest factor: 1.0; 835 MHz Head & Body: $\sigma = 0.98$ mho/m $\epsilon_r = 54.0$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 0.267 mW/g, SAR (10g): 0.167 mW/g, (Worst-case extrapolation)

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

Penetration depth: 11.7 (10.6, 13.4) [mm]

Powerdrift: 0.42 dB



SN# 01

Ch#779 / Pwr Step: Always up / Antenna Position: Extended / Battery Model #:AANN4133A / SIM'T TEMP: When Measured =22.7 °C After Test = 23 °C / Accessory Model # = Leather Case KSCN6101

R1 Amy Twin Phantom Rev.3 Phantom; section 2 Section; Position: (0°,0°); Frequency: 848 MHz

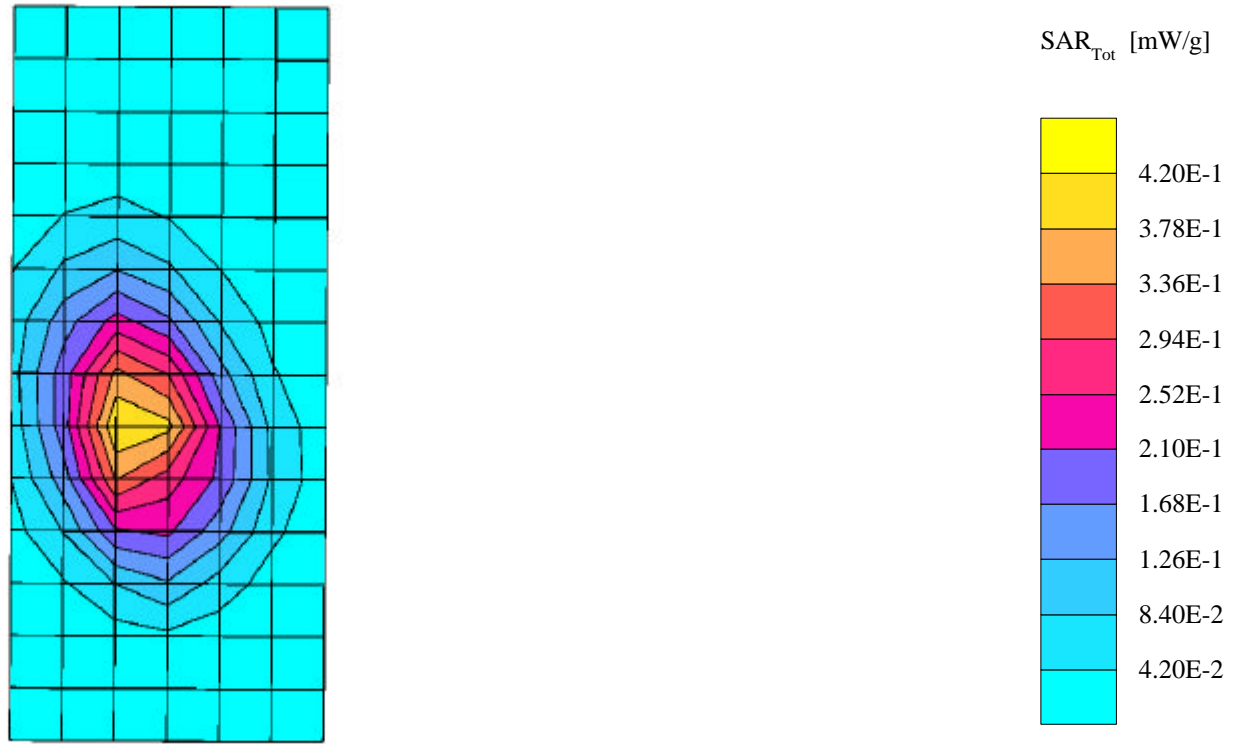
Probe: ET3DV6 - SN1508 - FCC Body; ConvF(6.20,6.20,6.20); Crest factor: 1.0; 835 MHz Head & Body: $\sigma = 0.98$ mho/m $\epsilon_r = 54.0$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 0.440 mW/g, SAR (10g): 0.273 mW/g, (Worst-case extrapolation)

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

Penetration depth: 11.4 (10.1, 13.3) [mm]

Powerdrift: -0.35 dB



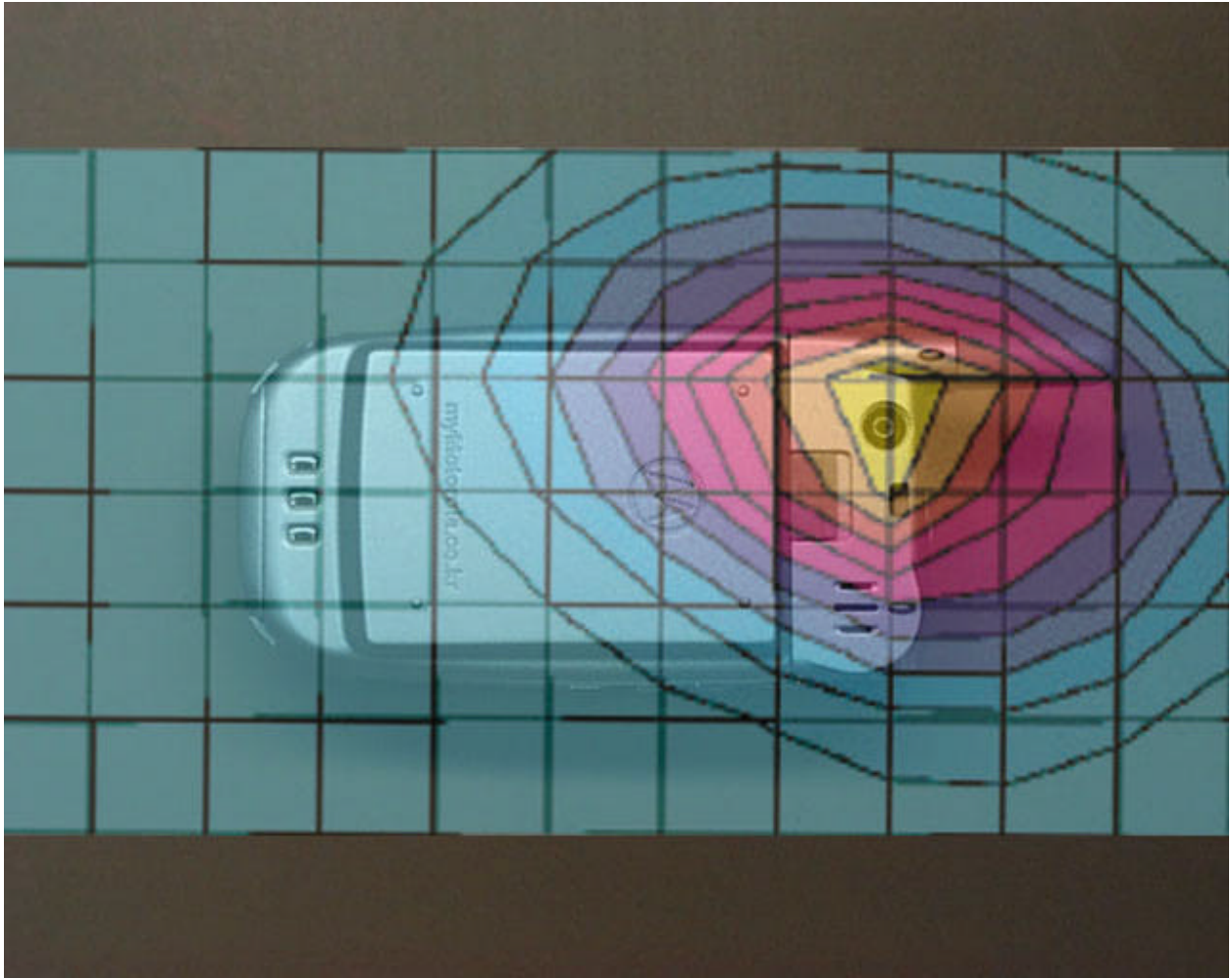


Figure 4. Typical 800MHz Body Worn Contour Overlaid on Back of Phone.

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:

1508

Place of Calibration:

Zurich

Date of Calibration:

October 25, 2001

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. Edlösser Meriana

Approved by:

Alain Katz

Probe ET3DV6

SN:1508

Manufactured:	October 24, 1999
Remade:	October 11, 2001
Recalibrated:	October 25, 2001

Calibrated for System DASY3

DASY3 - Parameters of Probe: ET3DV6 SN:1508

Sensitivity in Free Space

NormX	1.62 $\mu\text{V}/(\text{V}/\text{m})^2$
NormY	1.51 $\mu\text{V}/(\text{V}/\text{m})^2$
NormZ	1.49 $\mu\text{V}/(\text{V}/\text{m})^2$

Diode Compression

DCP X	97 mV
DCP Y	97 mV
DCP Z	97 mV

Sensitivity in Tissue Simulating Liquid

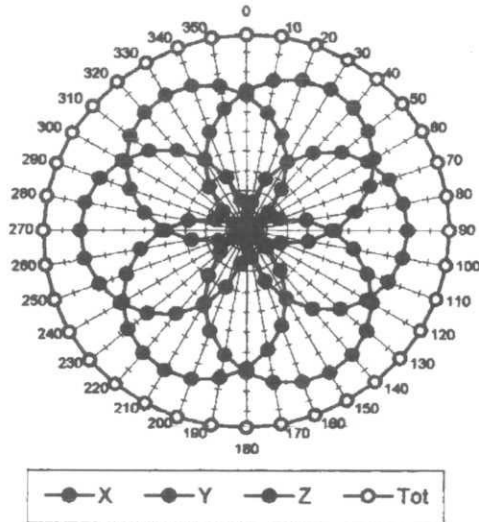
Head	450 MHz	$\epsilon_r = 40.4 \pm 5\%$	$s = 0.87 \pm 5\% \text{ mho/m}$
ConvF X	6.82	extrapolated	Boundary effect:
ConvF Y	6.82	extrapolated	Alpha 0.25
ConvF Z	6.82	extrapolated	Depth 2.86
Head	900 MHz	$\epsilon_r = 41.5 \pm 5\%$	$s = 0.97 \pm 5\% \text{ mho/m}$
Head	835 MHz	$\epsilon_r = 41.5 \pm 5\%$	$s = 0.90 \pm 5\% \text{ mho/m}$
ConvF X	6.35	$\pm 9.5\% (k=2)$	Boundary effect:
ConvF Y	6.35	$\pm 9.5\% (k=2)$	Alpha 0.35
ConvF Z	6.35	$\pm 9.5\% (k=2)$	Depth 2.68
Head	1500 MHz	$\epsilon_r = 40.4 \pm 5\%$	$s = 1.23 \pm 5\% \text{ mho/m}$
ConvF X	5.72	interpolated	Boundary effect:
ConvF Y	5.72	interpolated	Alpha 0.47
ConvF Z	5.72	interpolated	Depth 2.43
Head	1800 MHz	$\epsilon_r = 40.0 \pm 5\%$	$s = 1.40 \pm 5\% \text{ mho/m}$
Head	1900 MHz	$\epsilon_r = 40.0 \pm 5\%$	$s = 1.40 \pm 5\% \text{ mho/m}$
ConvF X	5.41	$\pm 9.5\% (k=2)$	Boundary effect:
ConvF Y	5.41	$\pm 9.5\% (k=2)$	Alpha 0.53
ConvF Z	5.41	$\pm 9.5\% (k=2)$	Depth 2.31

Sensor Offset

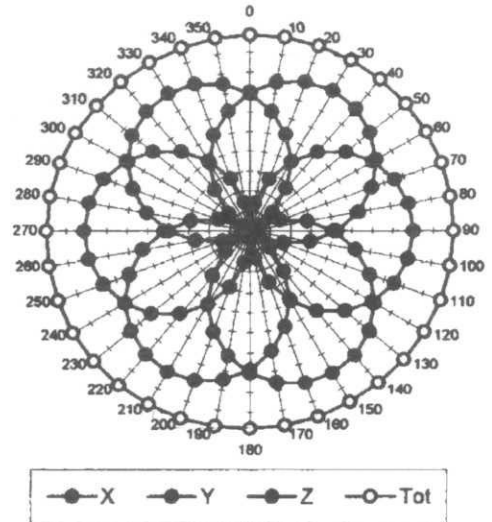
Probe Tip to Sensor Center	2.7	mm
Optical Surface Detection	1.4 ± 0.2	mm

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

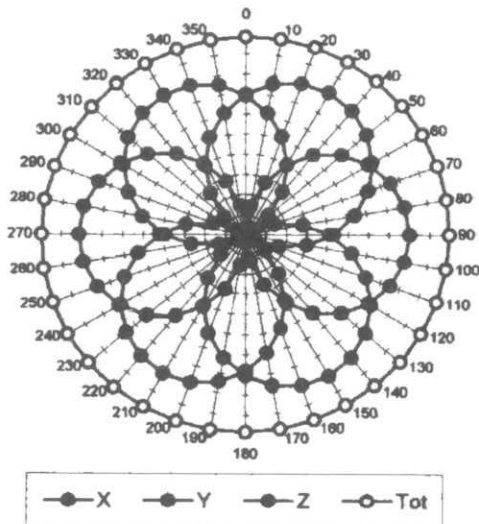
f = 30 MHz, TEM cell if110



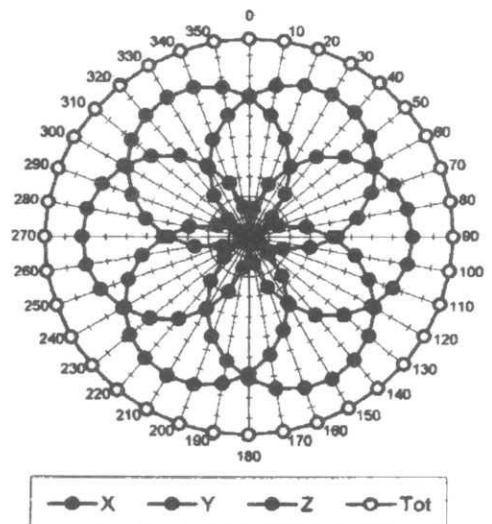
f = 100 MHz, TEM cell if110

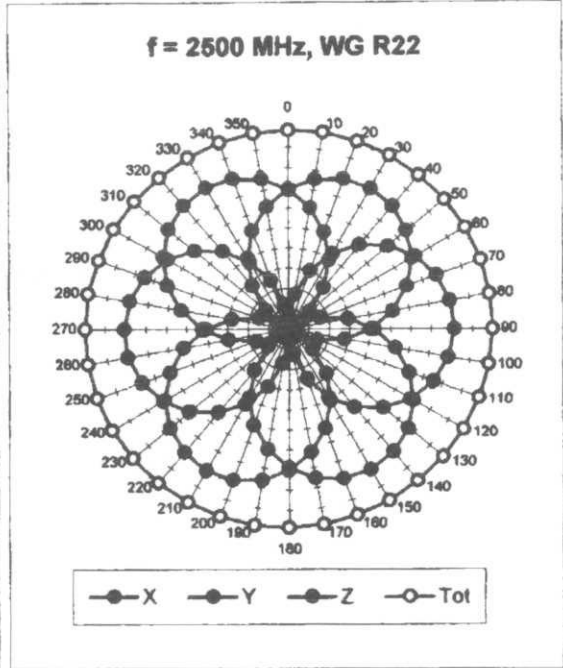
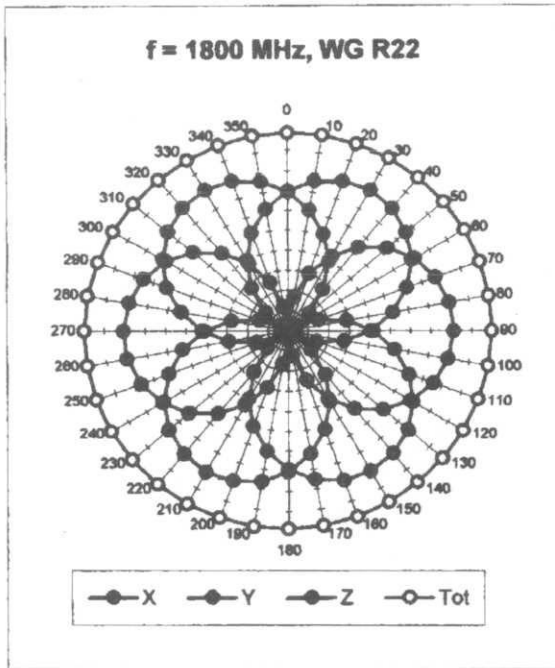


f = 300 MHz, TEM cell if110

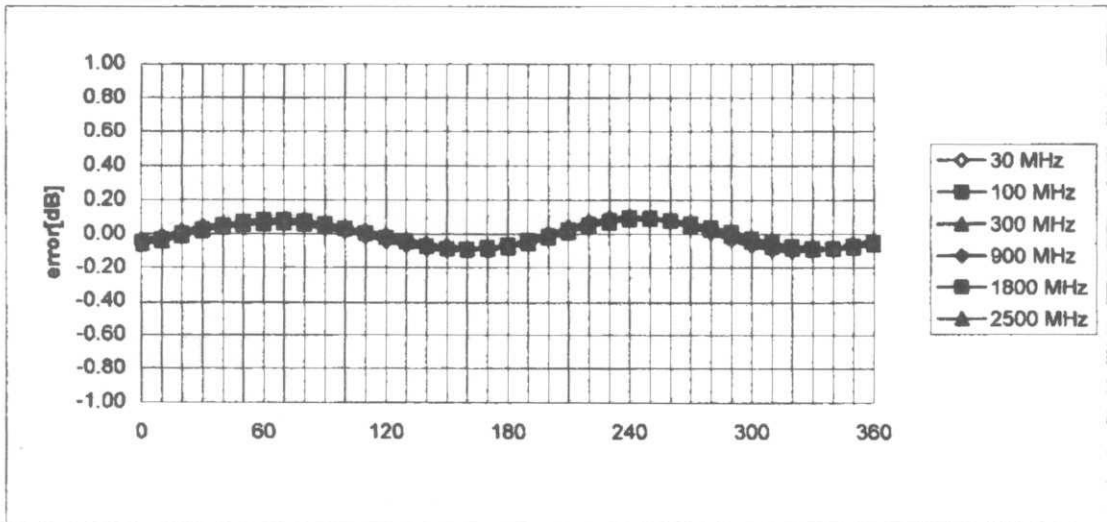


f = 900 MHz, TEM cell if110



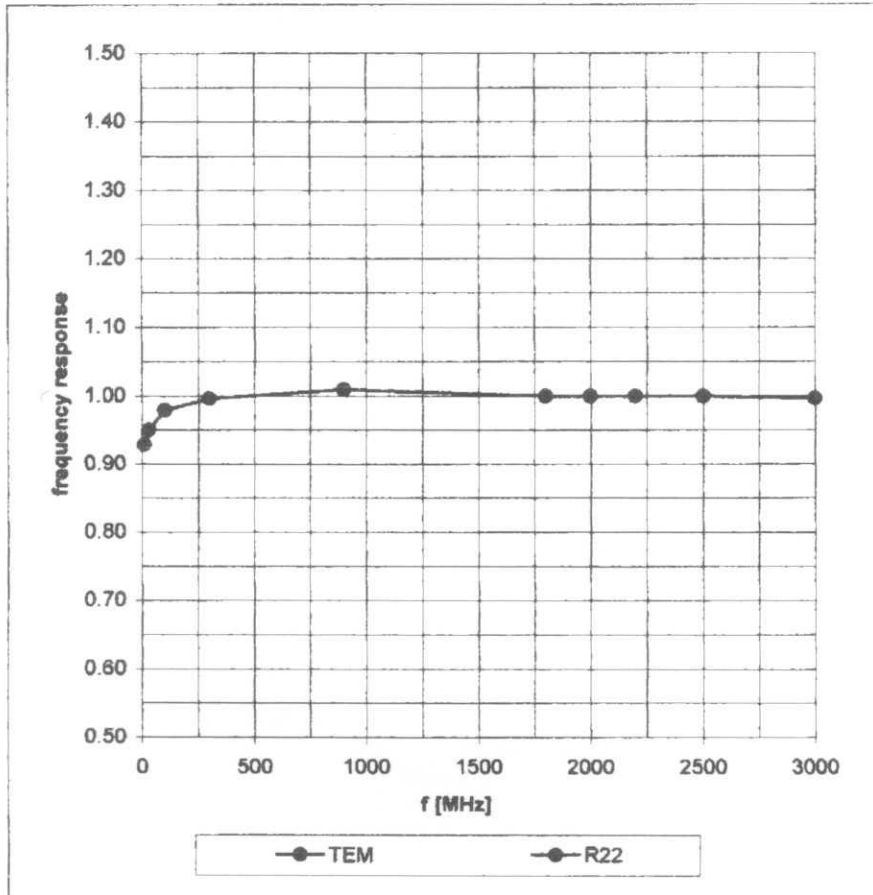


Isotropy Error (ϕ), $\theta = 0^\circ$

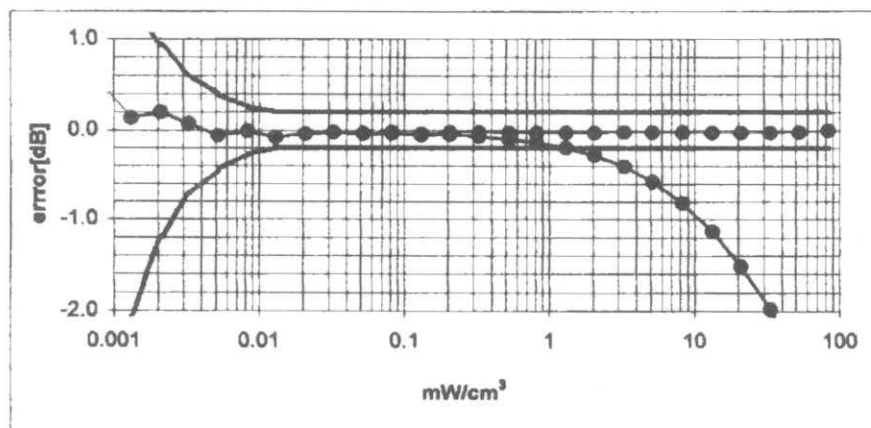
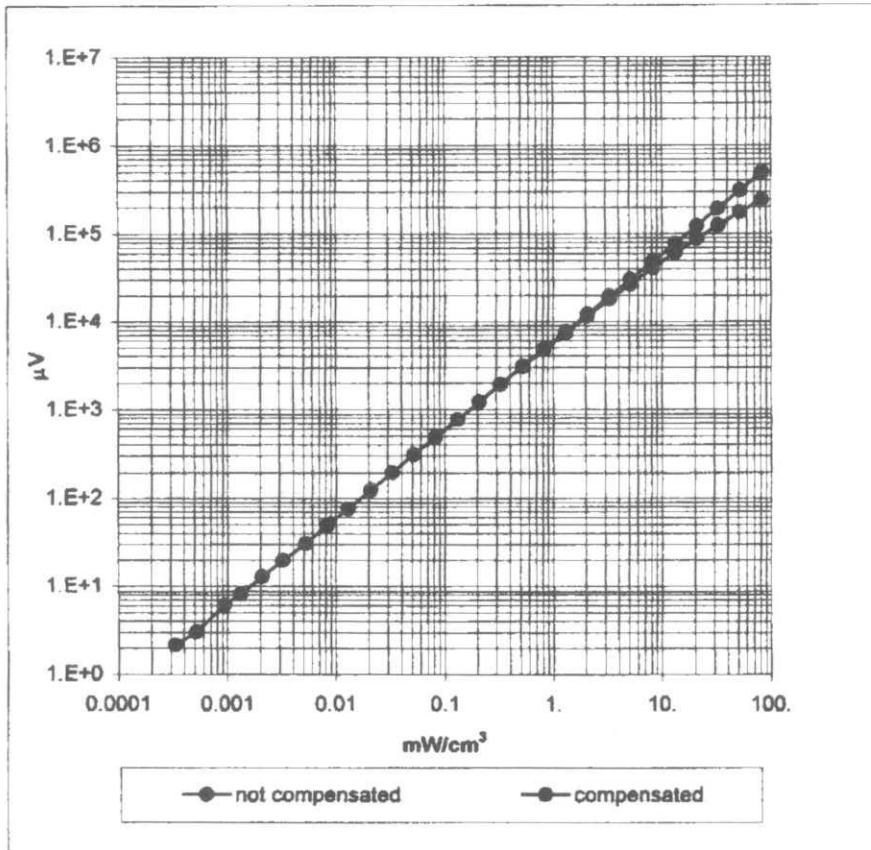


Frequency Response of E-Field

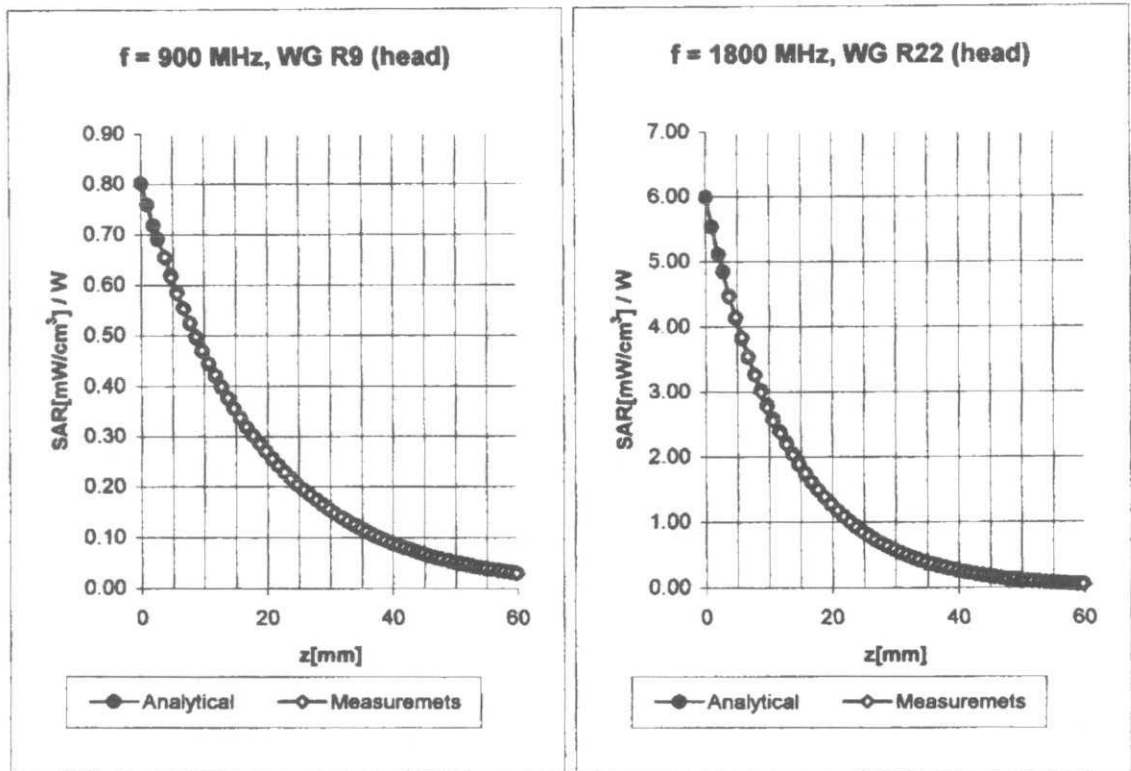
(TEM-Cell:ifi110, Waveguide R22)



Dynamic Range $f(\text{SAR}_{\text{brain}})$ (Waveguide R22)



Conversion Factor Assessment



Head 800 - 1000 MHz

$\epsilon_r = 39.0 - 43.5$

$\sigma = 0.80 - 1.10$ mho/m

ConvF X **6.35** $\pm 9.5\%$ (k=2)

ConvF Y **6.35** $\pm 9.5\%$ (k=2)

ConvF Z **6.35** $\pm 9.5\%$ (k=2)

Boundary effect:

Alpha **0.35**

Depth **2.68**

Head 1700 - 1910 MHz

$\epsilon_r = 39.5 - 41.0$

$\sigma = 1.20 - 1.55$ mho/m

ConvF X **5.41** $\pm 9.5\%$ (k=2)

ConvF Y **5.41** $\pm 9.5\%$ (k=2)

ConvF Z **5.41** $\pm 9.5\%$ (k=2)

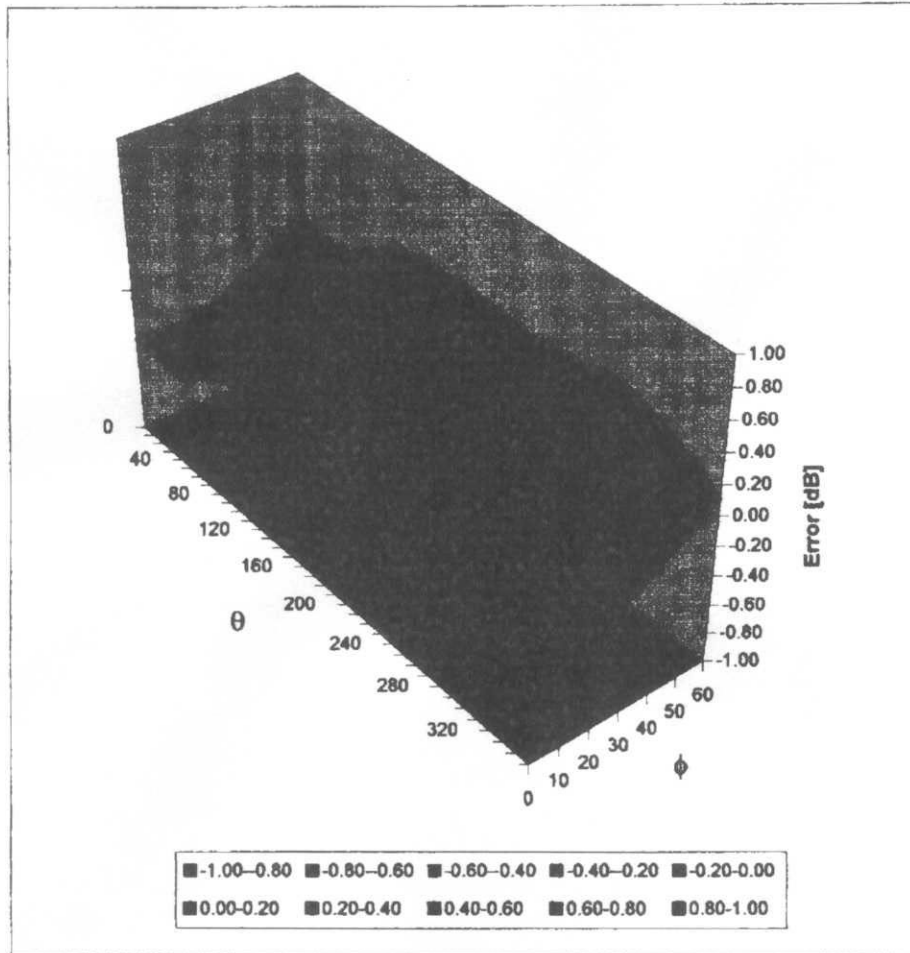
Boundary effect:

Alpha **0.53**

Depth **2.31**

Deviation from Isotropy in HSL

Error (θ, ϕ), $f = 900$ MHz



Additional Conversion Factors for Dosimetric E-Field Probe

Type:

ET3DV6

Serial Number:

1508

Place of Assessment:

Zurich

Date of Assessment:

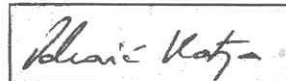
November 14, 2001

Probe Calibration Date:

October 25, 2001

Schmid & Partner Engineering AG hereby certifies that conversion factor(s) of this probe have been evaluated on the date indicated above. The assessment was performed using the FDTD numerical code SEMCAD of Schmid & Partner Engineering AG. Since the evaluation is coupled with measured conversion factors, it has to be recalculated yearly, i.e., following the re-calibration schedule of the probe. The uncertainty of the numerical assessment is based on the extrapolation from measured value at 900 MHz or at 1800 MHz.

Assessed by:



Dosimetric E-Field Probe ET3DV6 SN:1508

Conversion factor (\pm standard deviation)

835 MHz	ConvF	6.5 \pm 8%	$\epsilon_r = 41.5$ $\sigma = 0.90$ mho/m (head tissue)
1950 MHz	ConvF	5.1 \pm 8%	$\epsilon_r = 40.0$ $\sigma = 1.40$ mho/m (head tissue)
835 MHz	ConvF	6.2 \pm 8%	$\epsilon_r = 55.2$ $\sigma = 0.97$ mho/m (body tissue)
900 MHz	ConvF	6.1 \pm 8%	$\epsilon_r = 55.0$ $\sigma = 1.05$ mho/m (body tissue)
1800 MHz	ConvF	5.0 \pm 8%	$\epsilon_r = 53.3$ $\sigma = 1.52$ mho/m (body tissue)
1950 MHz	ConvF	4.7 \pm 8%	$\epsilon_r = 53.3$ $\sigma = 1.52$ mho/m (body tissue)

Appendix 5

Photographs of the device under test



Figure 5. Front of phone



Figure 6. Front with flip open



Figure 7. Back of phone



Figure 8. Side view of phone (Antenna Extended)



Figure 9. Side view of phone (Antenna Retracted)



Figure 10. Phone under a flat phantom with head set attached (Antenna Extended)

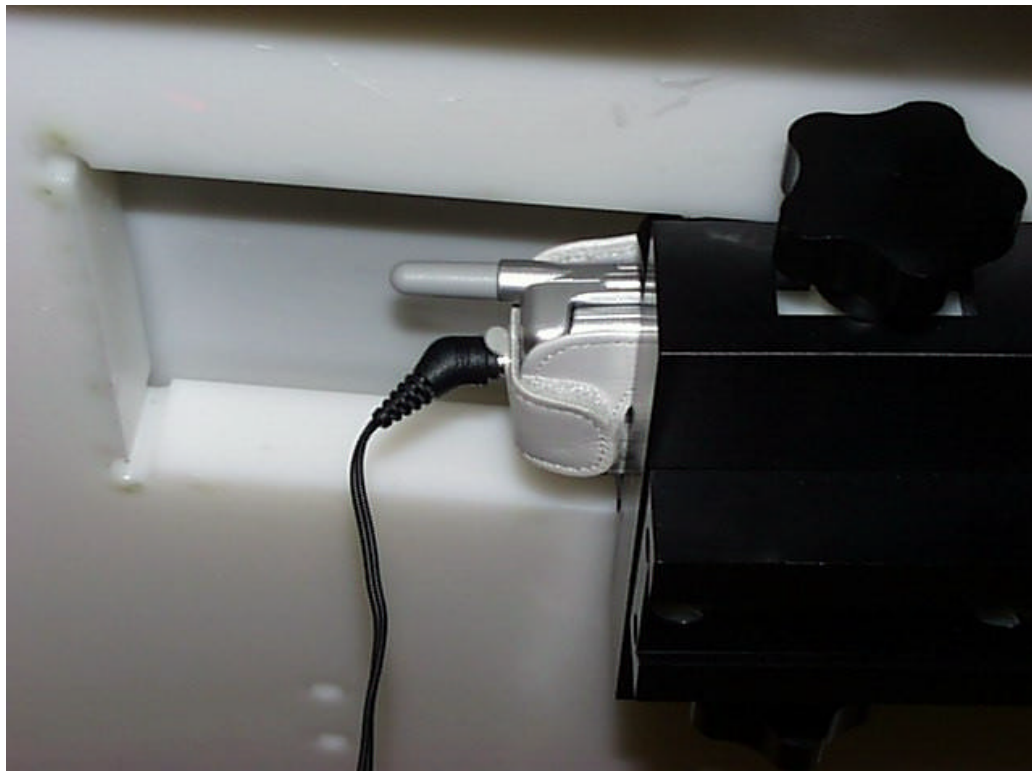


Figure 11. Phone under a flat phantom with head set attached (Antenna Retracted)



Figure 12. Distance from the base of the antenna to the flat base



Figure 13. Distance from the base of the antenna to the flat phantom

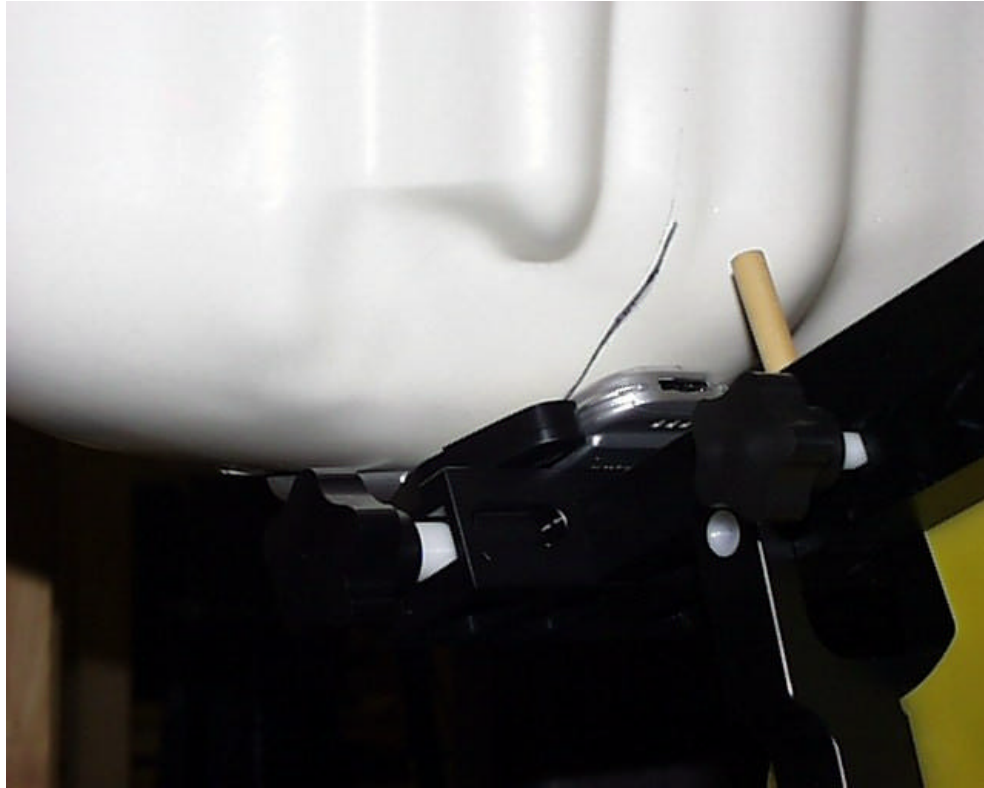


Figure 14. Phone Adjacent to head phantom (Front View)



Figure 15. Phone Adjacent to head phantom with Antenna Extended (Back View)



Figure 16. Phone Adjacent to head phantom with Antenna Retracted (Back View)

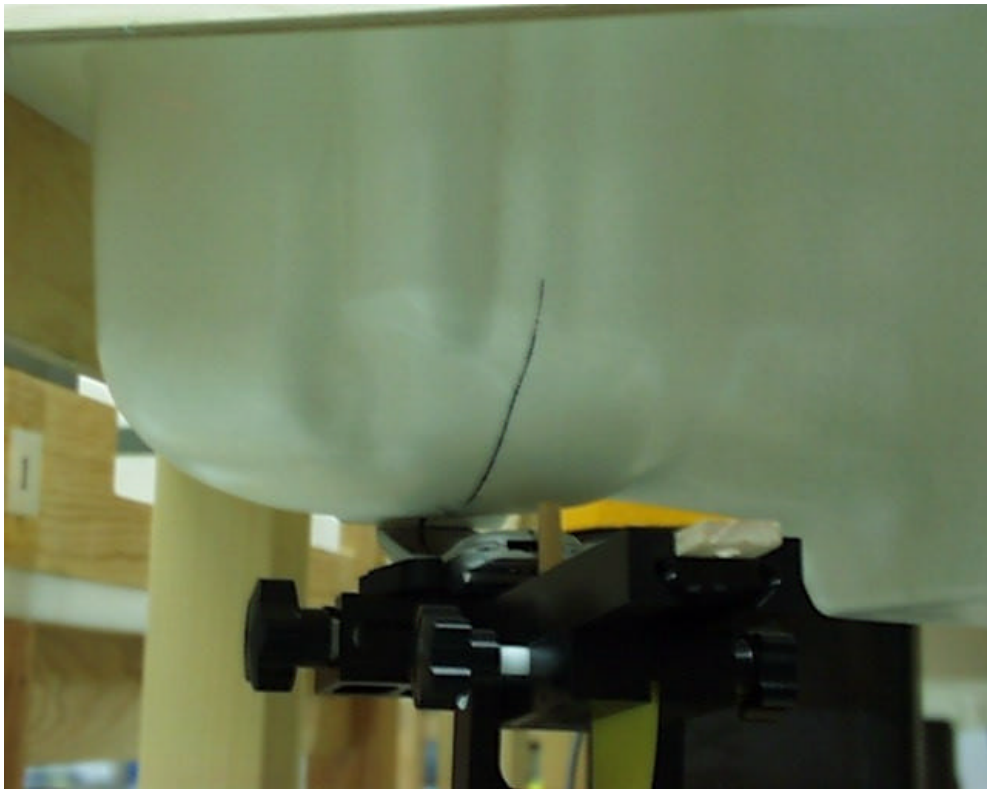


Figure 17. Phone Against head phantom (15°Tilt) (Front View)

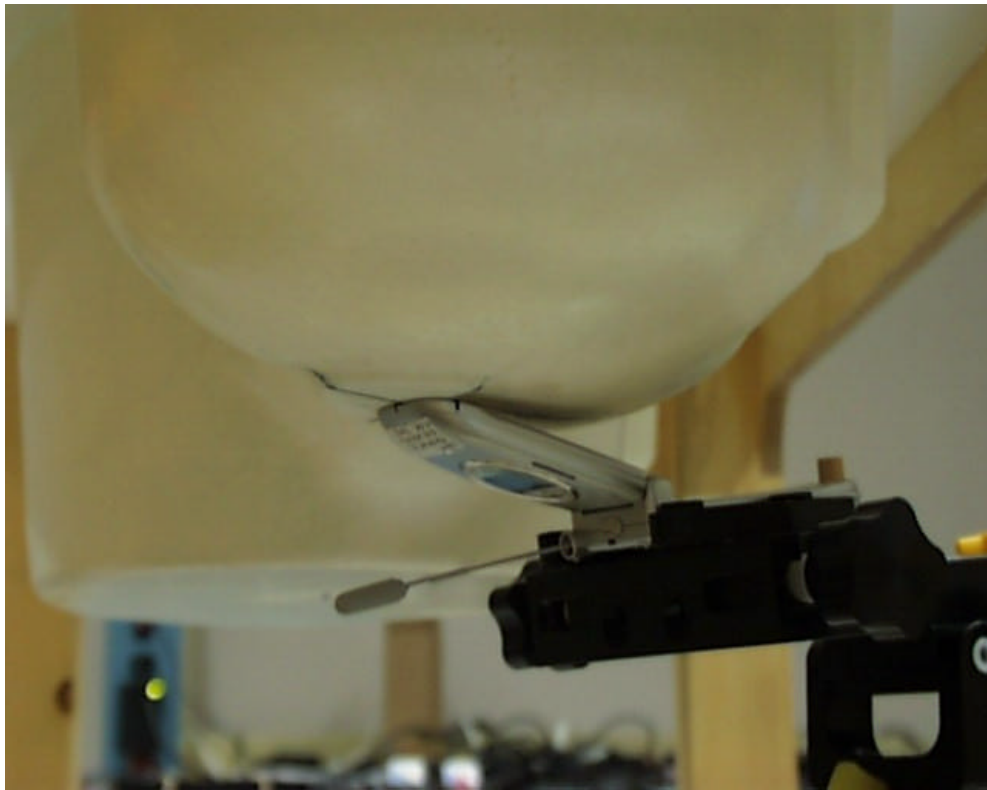


Figure 18. Phone Against head phantom (15°Tilt) with Antenna Extended (Back View)



Figure 19. Phone Against head phantom (15°Tilt) with Antenna Retracted (Back View)