



Exhibit 11: Class 2 Permissive Change SAR Test Report IHDT6AF2

Date of test: April 29 & 30, 2002
Date of Report: May 24, 2002

Laboratory: Motorola Personal Communications Sector Product Safety & Compliance Laboratory
2001 N. Division
Room: AS228
Harvard, Illinois 60033

Test Responsible: Steven Hauswirth
Senior Staff 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 IHDT6AF2 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)

©Motorola, Inc. 2002

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	4
5) System Accuracy Verification	5
6) Test Results	5
6.1 Head Adjacent Test Results	6
6.2 Body-Worn Test Results	7

References:

Appendix 1: SAR distribution comparison for the system accuracy verification	8
Appendix 2: SAR distribution plots for Phantom Head Adjacent Use	9
Appendix 3: SAR distribution plots for Body Worn Configuration	12
Appendix 4. Probe Calibration Certificate	14
Appendix 5: Photographs of the device under test	15

1. Introduction

This class 2 permissive change report is supplied because of a slight redesign that allows the Motorola portable cellular phone (FCC ID IHDT6AF2) to be used in the head adjacent position.

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 IHDT6AF2). 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	Fixed Tri-band
Location	Front hinge, top left side
Configuration	Stub

Device description

FCC ID Number	IHDT6AF2		
Serial number	SP3-05		
Mode(s) of Operation	GSM 900	GSM 1800	GSM1900
Modulation Mode(s)	GSM	GSM	GSM
Maximum Output Power Setting	33.0dBm	30.0dBm	30.0dBm
Duty Cycle	1:8	1:8	1:8
Transmitting Frequency Rang(s)	880.2-914.8MHz	1710.2-1784.8MHz	1850.2-1909.8MHz
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 $\pm 12.0\%$ (K=1) with an expanded uncertainty of $\pm 24.0\%$ (K=2). The breakdown of the individual uncertainties is as follows:

Probe Uncertainty	$\pm\%$
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	SN434	13-Feb-03
E-Field Probe ETDV6	SN1514	25-Oct-02
Dipole Validation Kit, DV1800V2	SN281TR	4-Jan-03
SAM Phantom used for 1900MHz	TP-1157	

3.2 Additional Equipment

Description	Serial Number	Cal Due Date
Signal Generator HP8648C	3847A04822	14-Nov-02
Power Meter E4419B	GB39511087	16-Nov-02
Power Sensor #1 – E9301A	US39210930	6-Dec-02
Power Sensor #2 - E9301A	US39211013	19-Dec-02
Network Analyzer HP8753ES	US39172529	5-Jul-02

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)
1880	Head	Measured, 29-May-02	39.6	1.47	20.7
		Recommended Limits	40.0	1.40	20-25
	Body	Measured, 30-May-02	51.1	1.58	21.1
		Recommended Limits	53.3	1.52	20-25

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

Ingredient	800MHz Head	800MHz Body	1900MHz Head	1900MHz Body
Sugar	57.0	44.9	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 $\pm$ 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)		
1800	Measured, 29 May, 2002	39.92	39.9	1.39	22	21.5
	Recommended Limits	38.80	39.6	1.37	N/A	N/A
1800	Measured, 30 May, 2002	39.12	39.2	1.38	23	21.6
	Recommended Limits	38.80	39.6	1.37	N/A	N/A

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 ($\pm$ 30%) at 850MHz. The Cellular Phone (FCC ID IHDT6AF2) has a battery model: SNN5600A as the only battery options. This battery was used to do all of the SAR testing.

6.1 Head Adjacent Test Results

The SAR results shown in tables 1 and 2 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 $\pm$ 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 tables are included in Appendix 2.

f (MHz)	Description	Conducted Output Power (dBm)	Cheek / Touch Position					
			Left Head			Right Head		
			Measured (W/kg)	Drift (dB)	Simulat e Temp (°C)	Measured (W/kg)	Drift (dB)	Simulat e Temp (°C)
Digital 1900MHz	Channel 512	30.21						
	Channel 661	30.23	0.147	-0.45	20.7	0.248	0.00	20.7
	Channel 810	30.09						

Table 1: SAR measurement results for the portable cellular telephone FCC ID IHDT6AF2 at highest possible output power. Measured against the head in the Cheek/Touch Position.

f (MHz)	Description	Conducted Output Power (dBm)	15° Tilt Position					
			Left Head			Right Head		
			Measured (W/kg)	Drift (dB)	Simulat e Temp (°C)	Measured (W/kg)	Drift (dB)	Simulat e Temp (°C)
Digital 1900MHz	Channel 512	30.21						
	Channel 661	30.23	0.185	-0.11	20.7	0.280	-0.08	20.7
	Channel 810	30.09						

Table 2: SAR measurement results for the portable cellular telephone FCC ID IHDT6AF2 at highest possible output power. Measured against the head in the 15° Tilt Position.

6.2 Body-Worn Test Results

The SAR results shown in table 3 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 $\pm$ 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 only one Body-Worn Accessories available for this phone:
A Plastic Holster and Belt Clip: Model SYN8806A

This plastic holster and belt clip was used for the SAR measurements.

The test conditions indicated as bold numbers in the following table are included in Appendix 2.

f (MHz)	Description	Conducte d Output Power (dBm)	Body Worn		
			Ant Fxied		
			Measure d (W/kg)	Drift (dB)	Simulate Temp (°C)
Digital 1900MHz	Channel 512	30.21	0.121	-0.01	21.1
	Channel 661	30.23	0.123	-0.32	21.1
	Channel 810	30.09	0.131	-0.03	21.1

Table 3: SAR measurement results for the portable cellular telephone FCC ID IHDT6AF2 at highest possible output power. Measured against the body.

Appendix 1

SAR distribution comparison for the system accuracy verification

Dipole 1800 MHz

1800 MHz Dipole Validation / Dipole Sn# 281TR

Forward Power = 253mW Reflected Power = -22.5dB

Room Temp at time of measurement = 22 Simulant Temp at time of measurement = 21.5

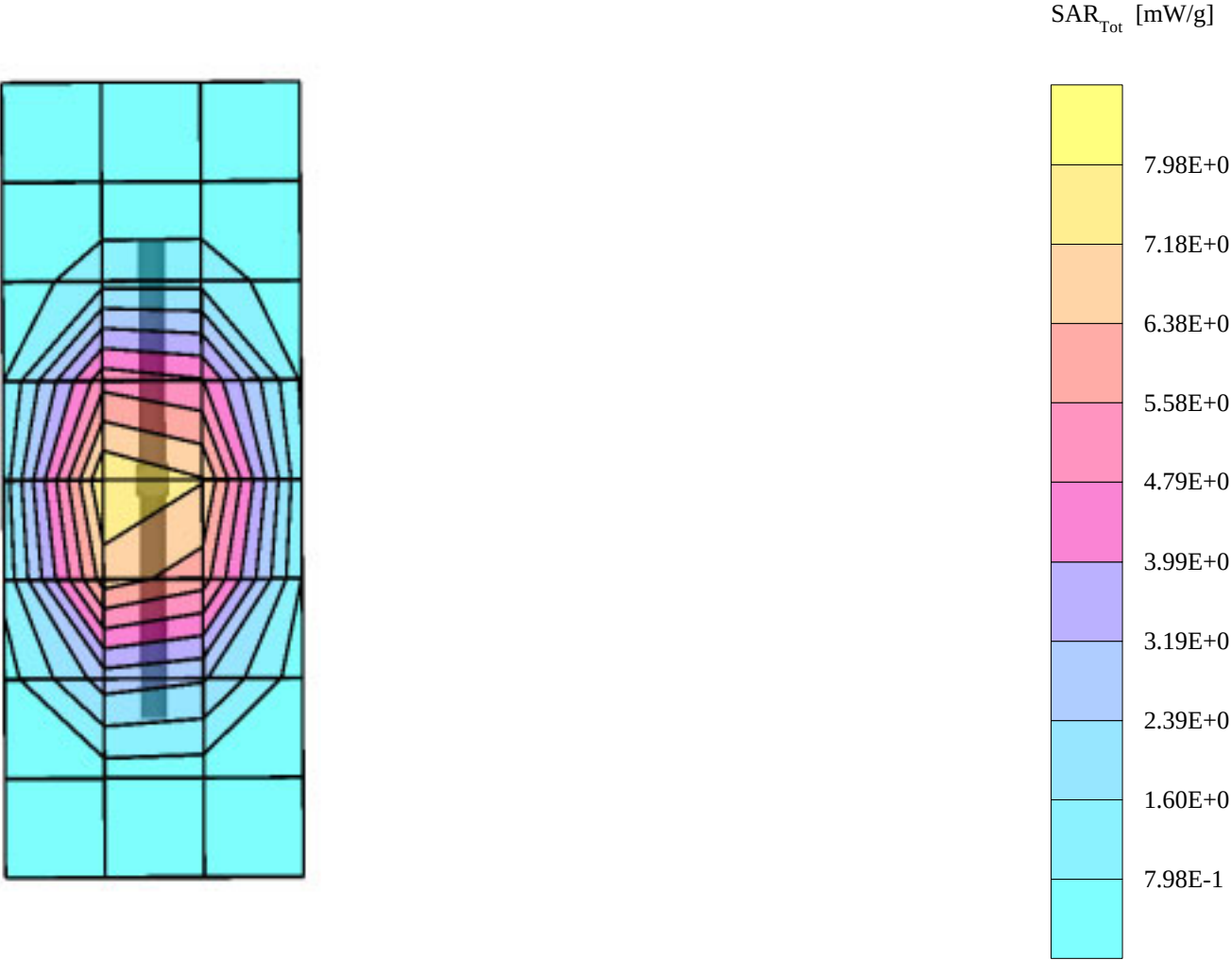
R3 Amy Twin Phantom Rev.3 ; section 2

Probe: ET3DV6 - SN1514 - Validation; ConvF(5.36,5.36,5.36); Crest factor: 1.0; 1800 MHz VALIDATION: $\sigma = 1.39$ mho/m $\epsilon_r = 39.9$ $\rho = 1.00$ g/cm³

Cubes (2): Peak: 18.5 mW/g $\pm$ 0.05 dB, SAR (1g): 10.1 mW/g $\pm$ 0.02 dB, SAR (10g): 5.31 mW/g $\pm$ 0.00 dB, (Worst-case extrapolation)

Penetration depth: 8.3 (7.9, 9.2) [mm]

Powerdrift: -0.02 dB



Dipole 1800 MHz

1800 MHz Dipole Validation / Dipole Sn# 281TR

Forward Power = 253mW Reflected Power = -22.5dB

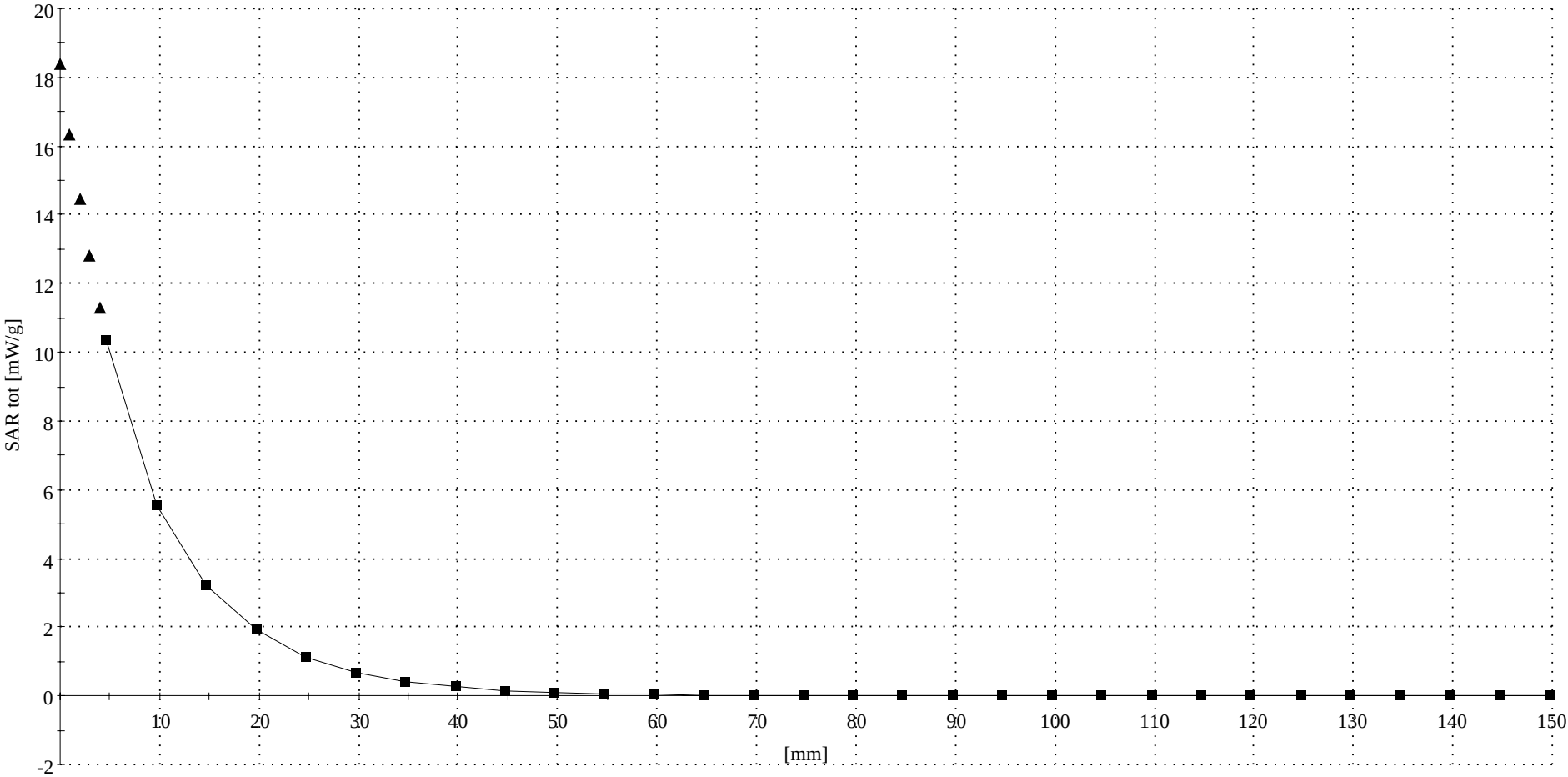
Room Temp at time of measurement = 22 Simulant Temp at time of measurement = 21.5

R3 Amy Twin Phantom Rev.3 ;

Probe: ET3DV6 - SN1514 - Validation; ConvF(5.36,5.36,5.36); Crest factor: 1.0; 1800 MHz VALIDATION: $\sigma = 1.39$ mho/m $\epsilon_r = 39.9$ $\rho = 1.00$ g/cm³

: , , 0

Penetration depth: 8.4 (8.0, 9.2) [mm]



Dipole 1800 MHz

1800 MHz Dipole Validation / Dipole Sn# 281TR

Forward Power = 252mW Reflected Power =-22.9dB

Room Temp at time of measurement = 23 Simulant Temp at time of measurement = 21.6c

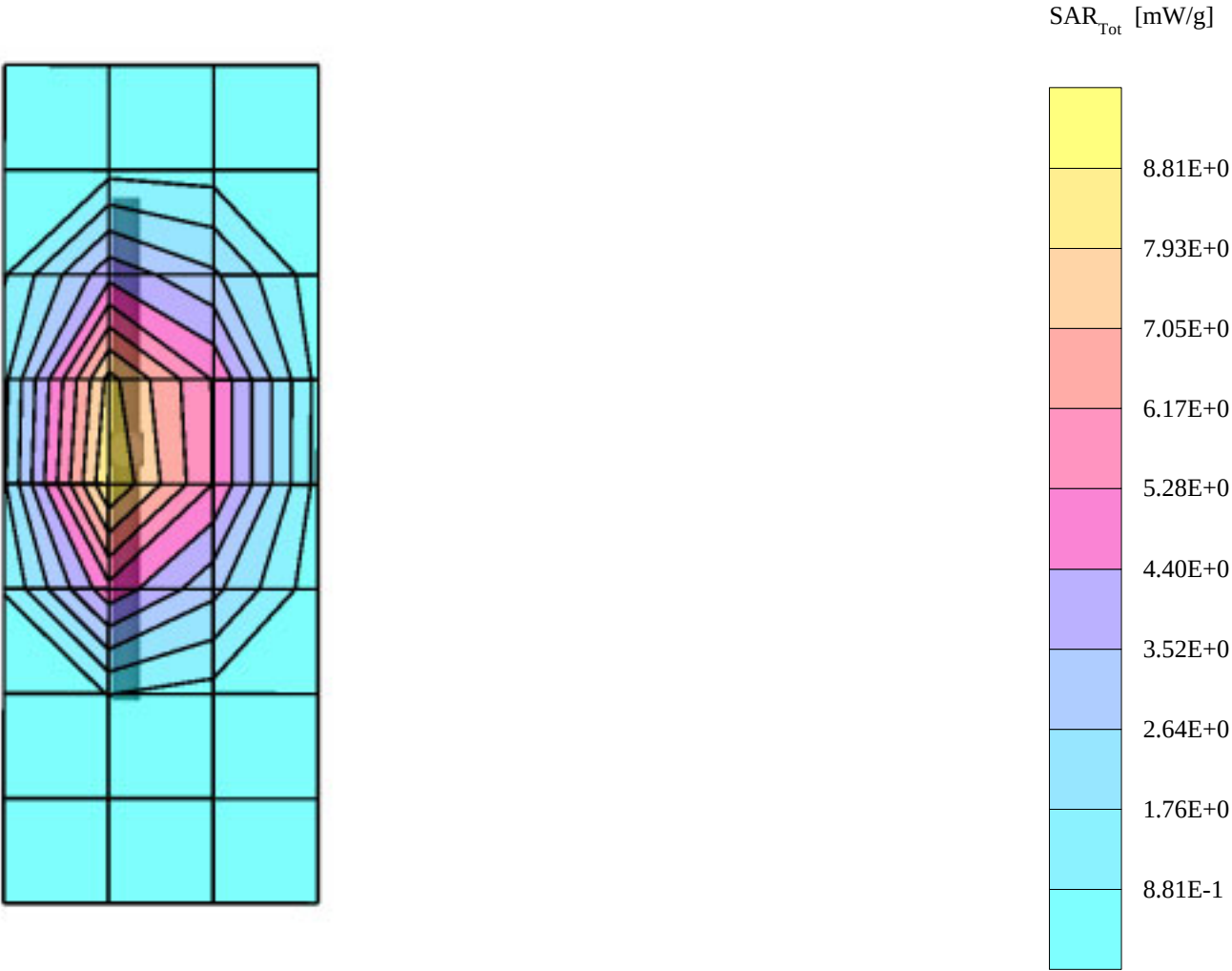
R3 Amy Twin Phantom Rev.3 ; section 1

Probe: ET3DV6 - SN1514 - Validation; ConvF(5.36,5.36,5.36); Crest factor: 1.0; 1800 MHz VALIDATION: $\sigma = 1.38$ mho/m $\epsilon_r = 39.2$ $\rho = 1.00$ g/cm³

Cubes (2): Peak: 17.9 mW/g $\pm$ 0.02 dB, SAR (1g): 9.86 mW/g $\pm$ 0.02 dB, SAR (10g): 5.23 mW/g $\pm$ 0.02 dB, (Worst-case extrapolation)

Penetration depth: 8.6 (8.2, 9.3) [mm]

Powerdrift: 0.08 dB



Dipole 1800 MHz

1800 MHz Dipole Validation / Dipole Sn# 281TR

Forward Power = 252mW Reflected Power =-22.9dB

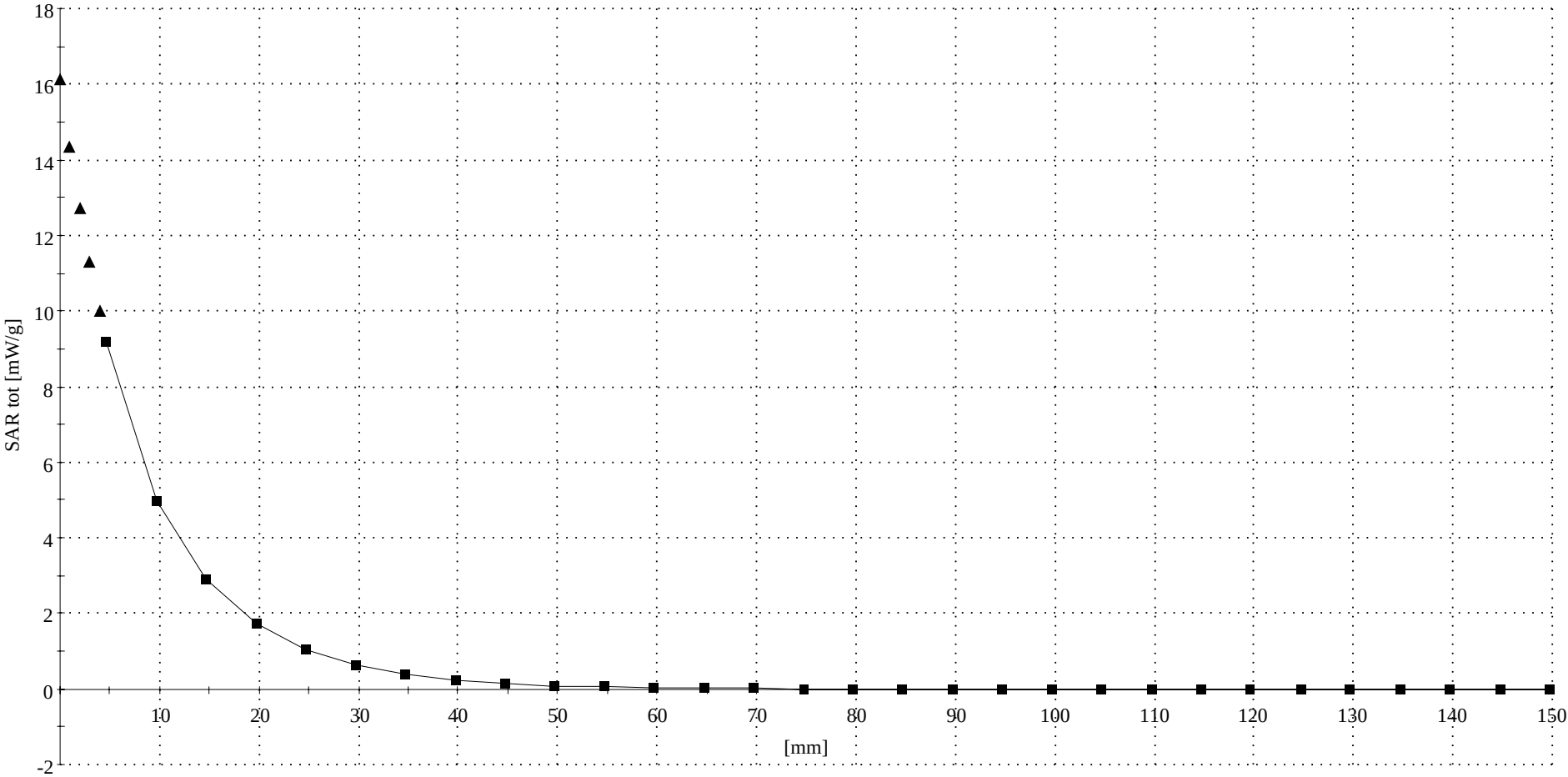
Room Temp at time of measurement = 23 Simulant Temp at time of measurement = 21.6c

R3 Amy Twin Phantom Rev.3 ;

Probe: ET3DV6 - SN1514 - Validation; ConvF(5.36,5.36,5.36); Crest factor: 1.0; 1800 MHz VALIDATION: $\sigma = 1.38$ mho/m $\epsilon_r = 39.2$ $\rho = 1.00$ g/cm³

: , , 0

Penetration depth: 8.6 (8.2, 9.3) [mm]



Appendix 2

SAR distribution plots for Phantom Head Adjacent Use

s/n: SP3-05

Ch# 661 / Pwr Step: 00 / Type of Modulation: GSM 1900 / Battery Model #: SNN5600A

DEVICE POSITION: cheek

Simulate Temp: When Measured = 21.5 After Test = 20.7 °C

R3: Glycol TP-1157 (rev. 3) Phantom; Left Hand Section; Position: (90°,180°); Frequency: 1880 MHz

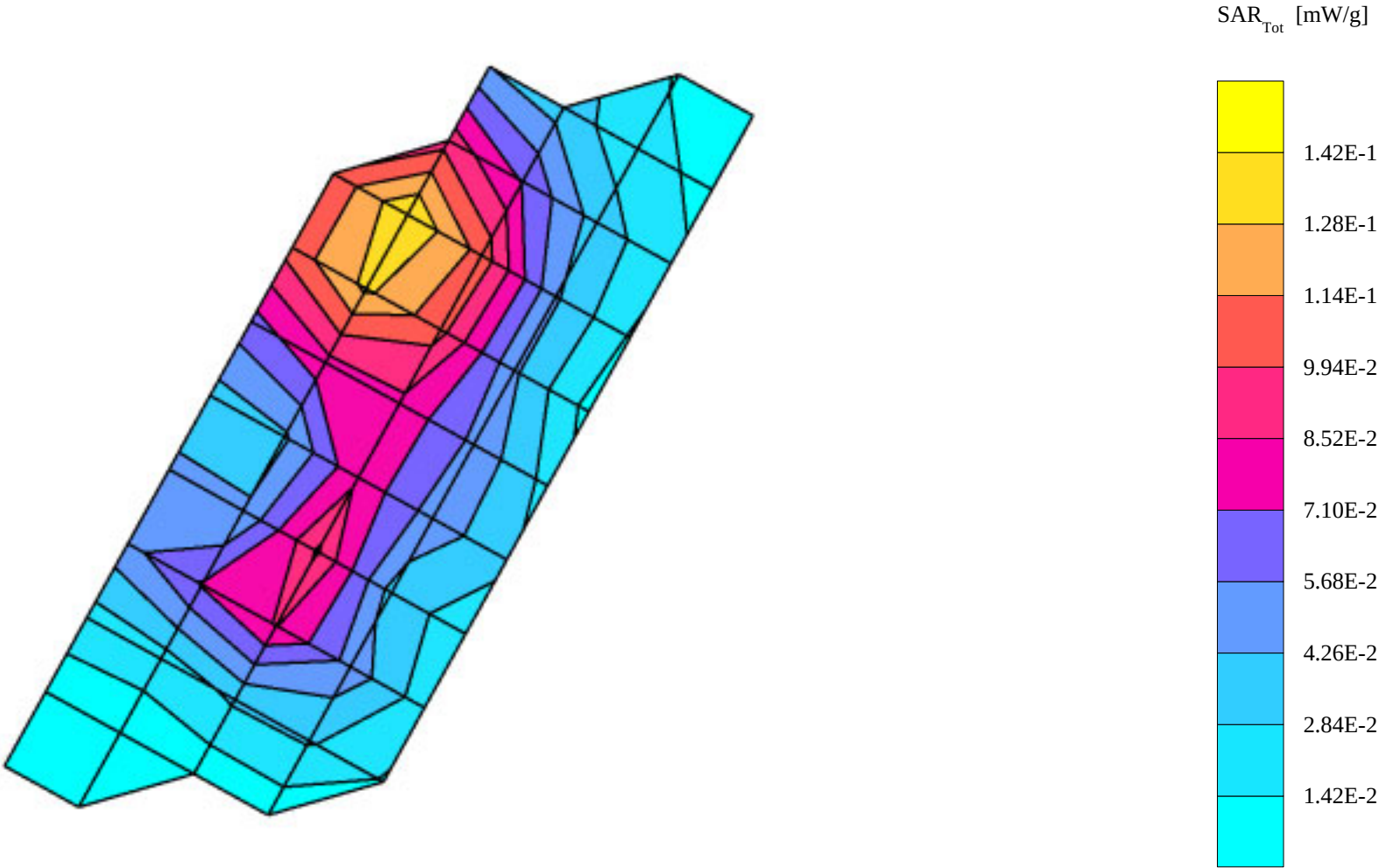
Probe: ET3DV6 - SN1514 - IEEE Head; ConvF(5.36,5.36,5.36); Crest factor: 8.0; 1880 MHz Head & Body: $\sigma = 1.47 \text{ mho/m}$ $\epsilon_r = 39.6$ $\rho = 1.00 \text{ g/cm}^3$

Cube 7x7x7: SAR (1g): 0.147 mW/g, SAR (10g): 0.0898 mW/g, (Worst-case extrapolation)

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

Penetration depth: 9.4 (8.9, 10.2) [mm]

Powerdrift: -0.45 dB



s/n: SP3-05

Ch# 661/ Pwr Step: 00 / Type of Modulation: GSM 1900 / Battery Model #: SNN5600A

DEVICE POSITION: cheek

Simulate Temp: When Measured = 21.5 After Test = 20.7 °C

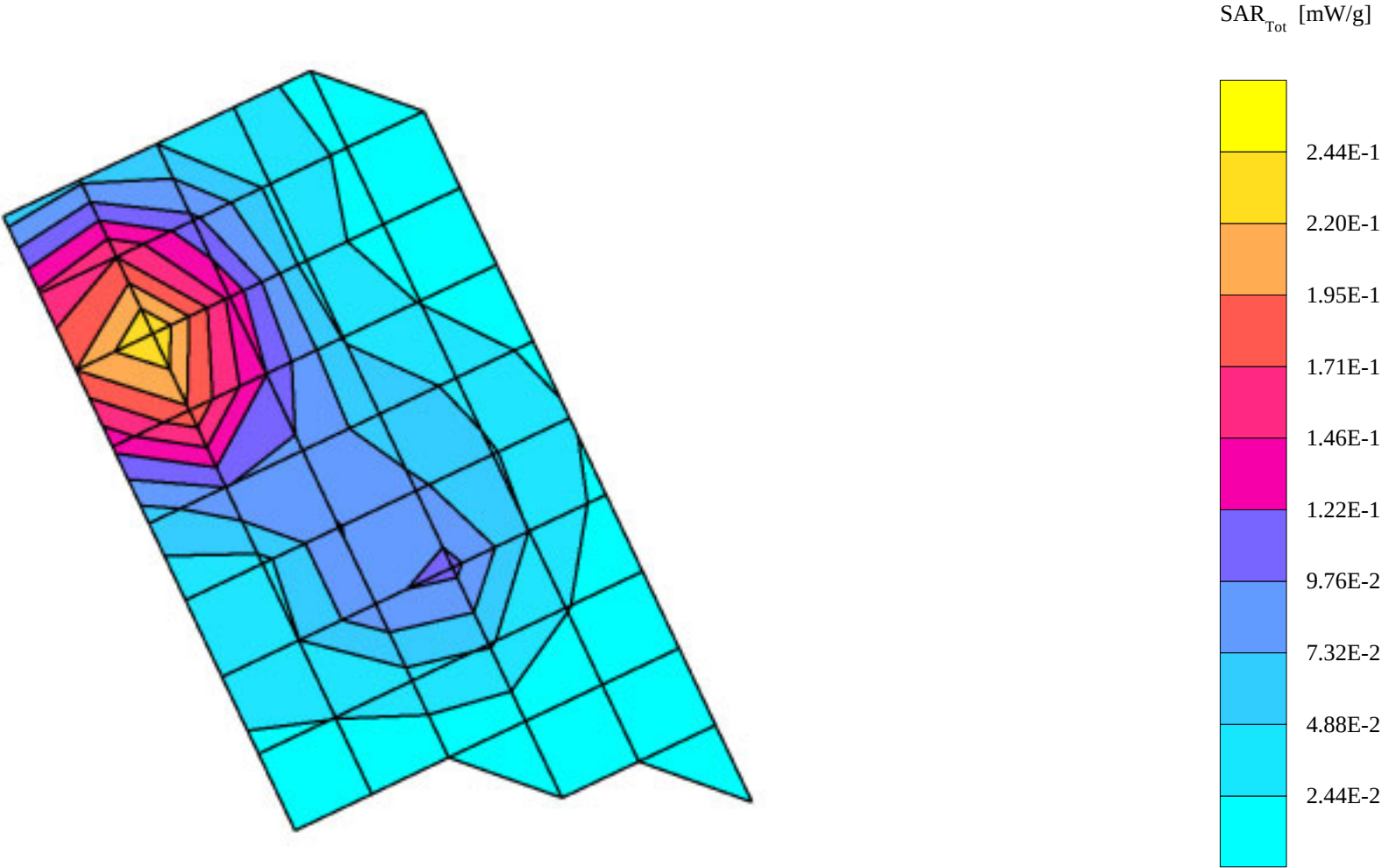
R3: Glycol TP-1157 (rev. 3) Phantom; Right Hand Section; Position: (90°,180°); Frequency: 1880 MHz

Probe: ET3DV6 - SN1514 - IEEE Head; ConvF(5.36,5.36,5.36); Crest factor: 8.0; 1880 MHz Head & Body: $\sigma = 1.47$ mho/m $\epsilon_r = 39.6$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 0.248 mW/g, SAR (10g): 0.147 mW/g, (Worst-case extrapolation)

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

Penetration depth: 9.4 (9.1, 9.9) [mm]



s/n: SP3-05

Ch# 661 / Pwr Step: 00 / Type of Modulation: GSM 1900 / Battery Model #: SNN5600A

DEVICE POSITION: Rotated

Simulated Temp: When Measured = 21.5 After Test = 20.7 °C

R3: Glycol TP-1157 (rev. 3) Phantom; Left Hand Section; Position: (90°,180°); Frequency: 1880 MHz

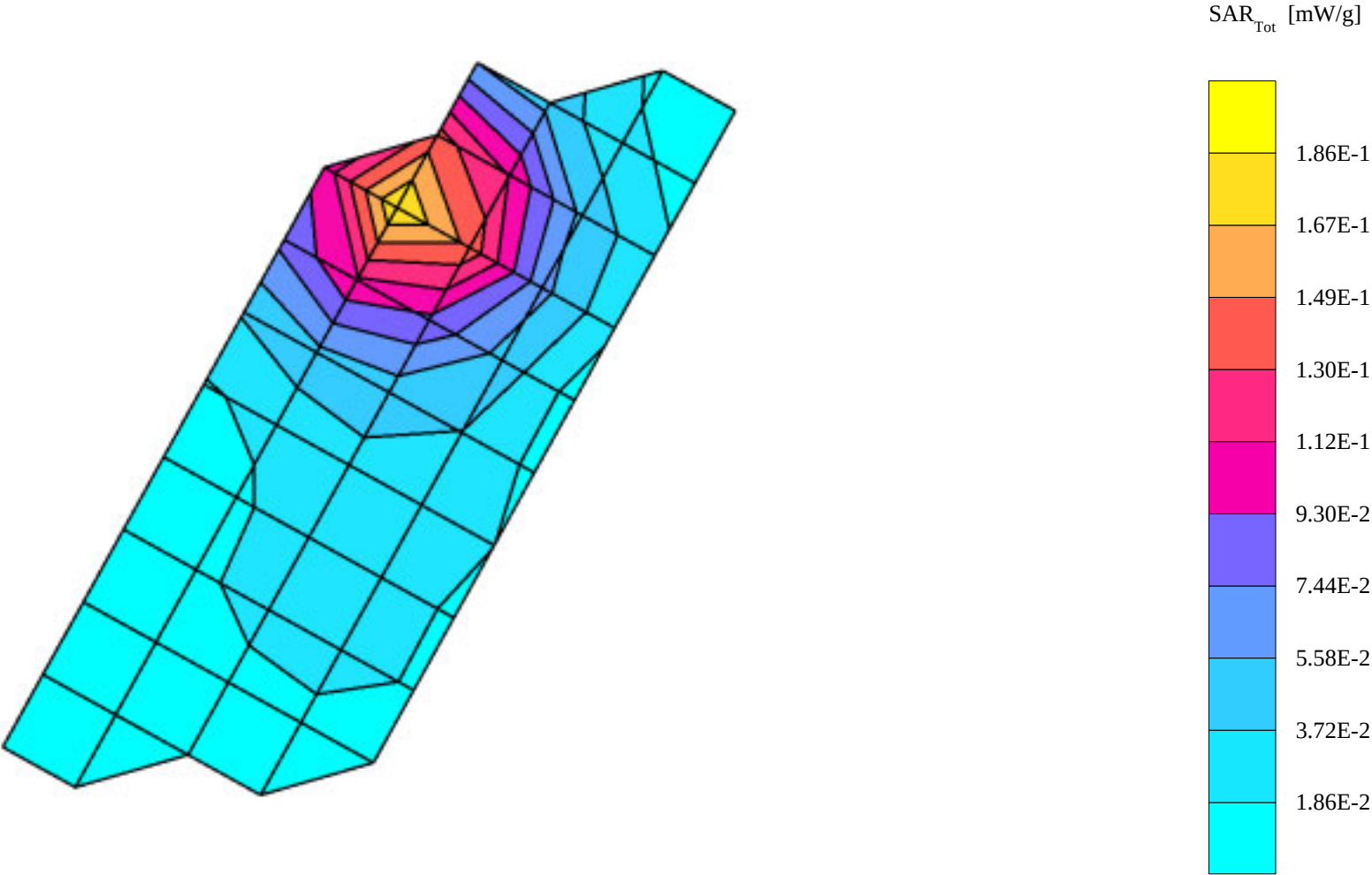
Probe: ET3DV6 - SN1514 - IEEE Head; ConvF(5.36,5.36,5.36); Crest factor: 8.0; 1880 MHz Head & Body: $\sigma = 1.47 \text{ mho/m}$ $\epsilon_r = 39.6$ $\rho = 1.00 \text{ g/cm}^3$

Cube 7x7x7: SAR (1g): 0.185 mW/g, SAR (10g): 0.106 mW/g * Max outside, (Worst-case extrapolation)

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

Penetration depth: 8.9 (8.1, 10.1) [mm]

Powerdrift: -0.11 dB



s/n: SP3-05

Ch# 661 / Pwr Step: 00 / Type of Modulation: GSM 1900 / Battery Model #: SNN5600A

DEVICE POSITION: rotated

Simulate Temp: When Measured = 21.5 After Test = 20.7 °C

R3: Glycol TP-1157 (rev. 3) Phantom; Right Hand Section; Position: (90°,180°); Frequency: 1850 MHz

Probe: ET3DV6 - SN1514 - IEEE Head; ConvF(5.36,5.36,5.36); Crest factor: 8.0; 1880 MHz Head & Body: $\sigma = 1.47 \text{ mho/m}$ $\epsilon_r = 39.6$ $\rho = 1.00 \text{ g/cm}^3$

Cube 7x7x7: SAR (1g): 0.280 mW/g, SAR (10g): 0.157 mW/g, (Worst-case extrapolation)

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

Penetration depth: 9.0 (8.6, 9.7) [mm]

Powerdrift: -0.08 dB

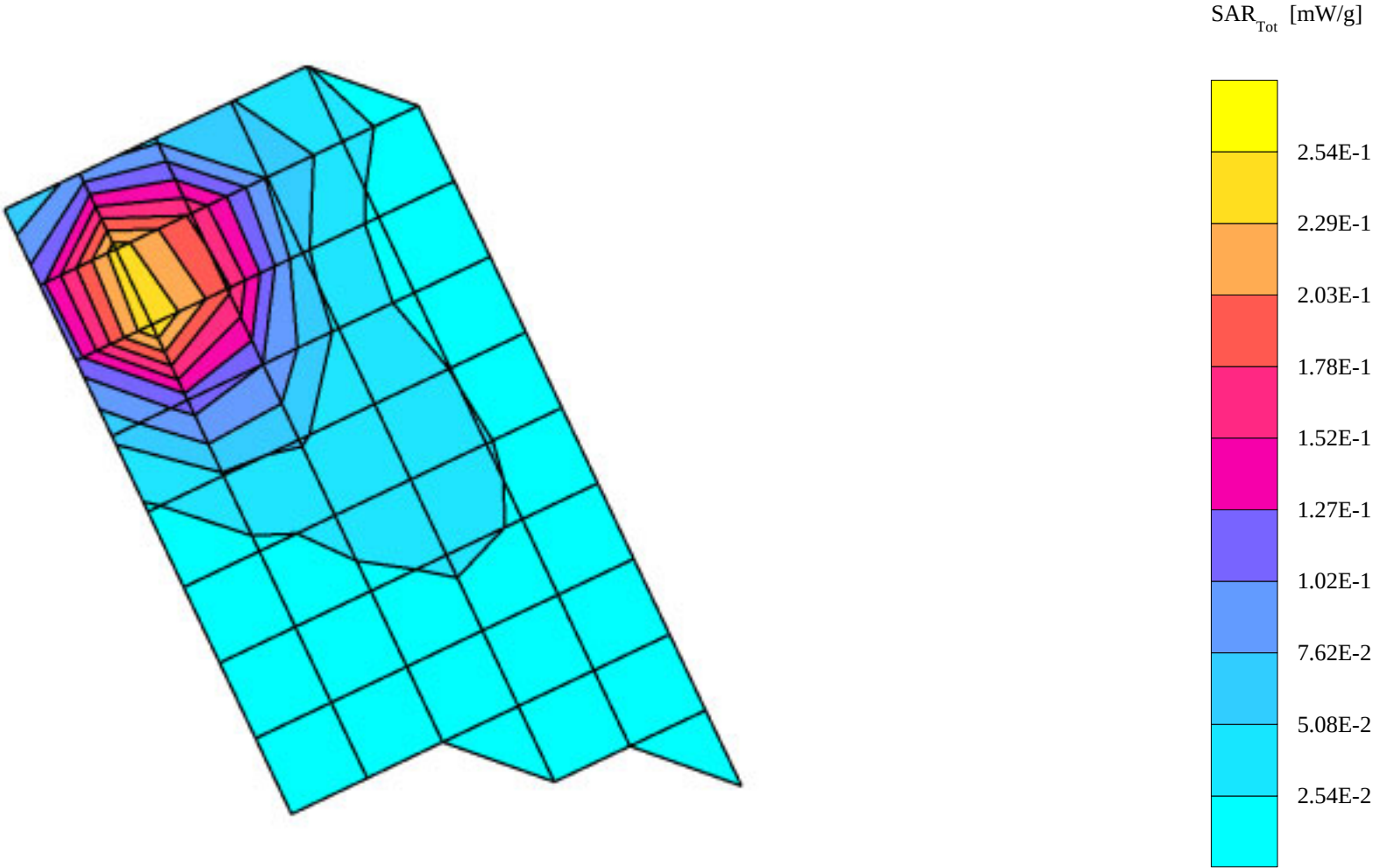




Figure 1. Typical Head Adjacent Contour Plot Overlaid on Bottom of Phone

Appendix 3

SAR distribution plots for Body Worn Configuration

s/n: SP3-05

Ch# 810 / Pwr Step: 00 / Type of Modulation: GSM 1900 / Battery Model #: SNN5600A

Simulate Temp: When Measured = 20.7 °C After Test = 21.1 °C

Accessory Model # = SYN8806a

R3 Amy Twin Phantom Rev.3 Phantom; section 1 Section; Position: (0°,0°); Frequency: 1910 MHz

Probe: ET3DV6 - SN1514 - FCC Body; ConvF(4.90,4.90,4.90); Crest factor: 8.0; 1880 MHz Head & Body: $\sigma = 1.58 \text{ mho/m}$ $\epsilon_r = 51.1$ $\rho = 1.00 \text{ g/cm}^3$

Cube 7x7x7: SAR (1g): 0.131 mW/g, SAR (10g): 0.0797 mW/g, (Worst-case extrapolation)

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

Penetration depth: 10.3 (9.3, 11.6) [mm]

Powerdrift: -0.03 dB

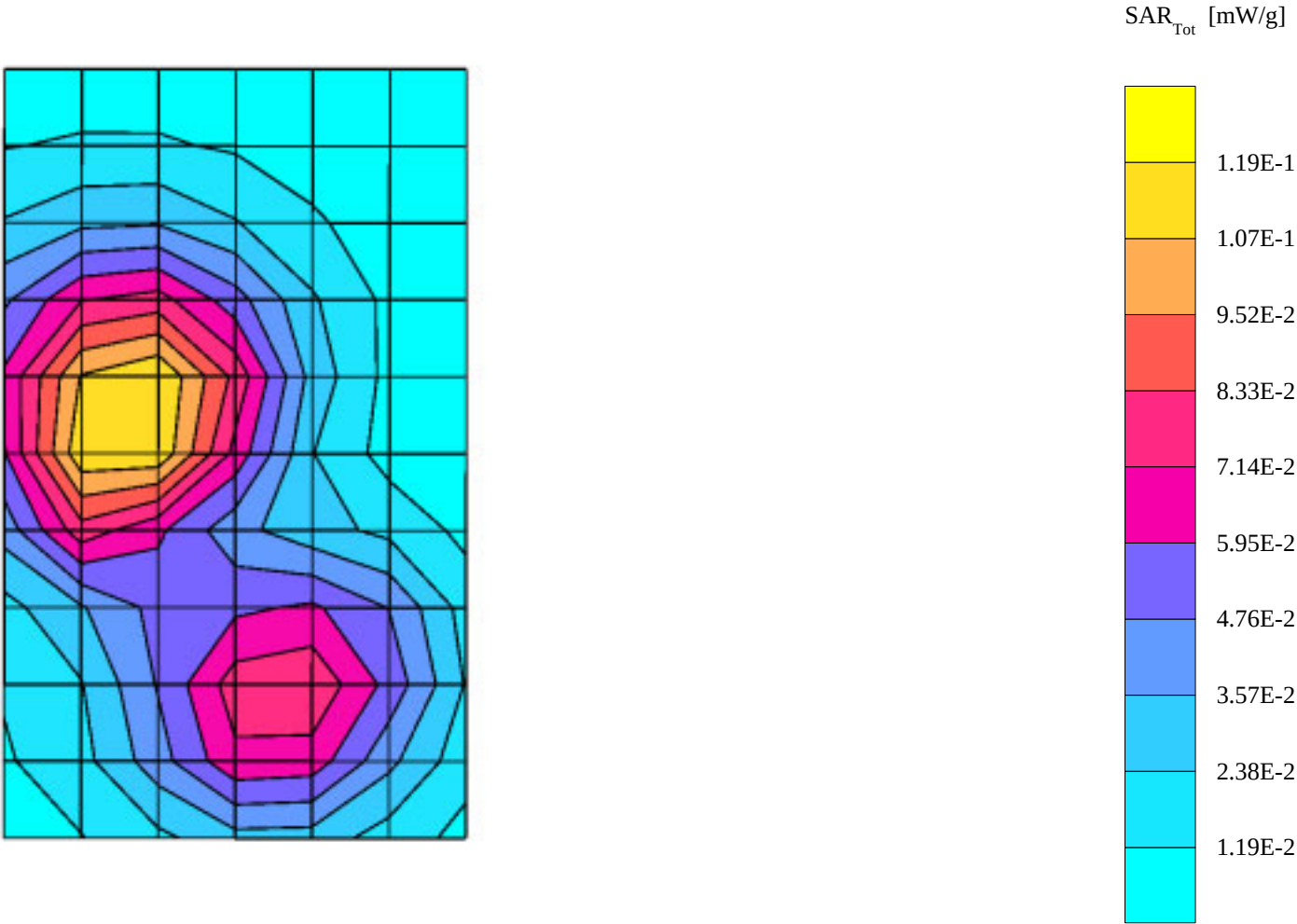




Figure 2. Typical Body Worn Contour Plot Overlaid on Bottom of Phone.

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:

1514

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. Edlauer

Approved by:

Heidi Kappeler

Probe ET3DV6

SN:1514

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

Calibrated for System DASY3

DASY3 - Parameters of Probe: ET3DV6 SN:1514

Sensitivity in Free Space

NormX	1.68 $\mu\text{V}/(\text{V}/\text{m})^2$
NormY	1.81 $\mu\text{V}/(\text{V}/\text{m})^2$
NormZ	1.76 $\mu\text{V}/(\text{V}/\text{m})^2$

Diode Compression

DCP X	96 mV
DCP Y	96 mV
DCP Z	96 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	6.88 extrapolated	Boundary effect:	
ConvF Y	6.88 extrapolated	Alpha	0.33
ConvF Z	6.88 extrapolated	Depth	2.37

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	6.37 $\pm 9.5\%$ (k=2)	Boundary effect:	
ConvF Y	6.37 $\pm 9.5\%$ (k=2)	Alpha	0.40
ConvF Z	6.37 $\pm 9.5\%$ (k=2)	Depth	2.31

Head **1500 MHz** $\epsilon_r = 40.4 \pm 5\%$ $s = 1.23 \pm 5\% \text{ mho/m}$

ConvF X	5.70 interpolated	Boundary effect:	
ConvF Y	5.70 interpolated	Alpha	0.51
ConvF Z	5.70 interpolated	Depth	2.24

Head **1800 MHz** $\epsilon_r = 40.0 \pm 5\%$ $s = 1.40 \pm 5\% \text{ mho/m}$

Head **1900 MHz** $\epsilon_r = 40.0 \pm 5\%$ $s = 1.40 \pm 5\% \text{ mho/m}$

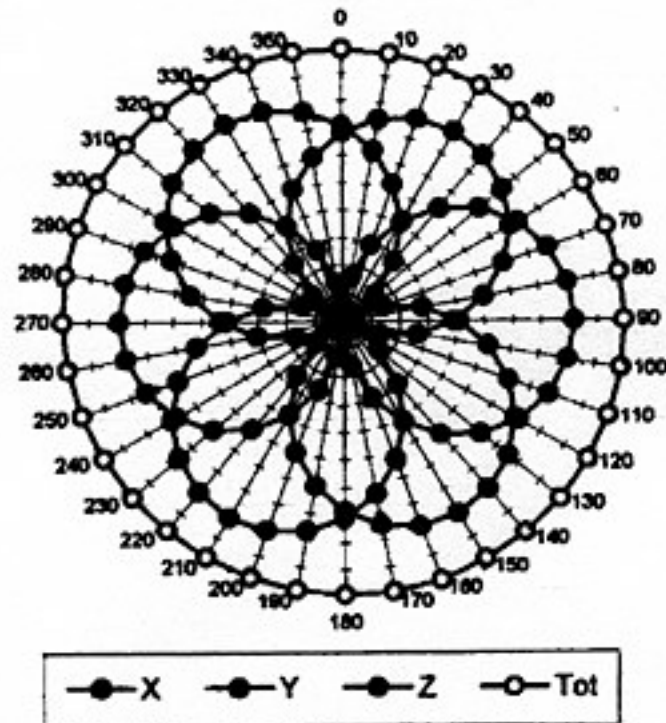
ConvF X	5.36 $\pm 9.5\%$ (k=2)	Boundary effect:	
ConvF Y	5.36 $\pm 9.5\%$ (k=2)	Alpha	0.56
ConvF Z	5.36 $\pm 9.5\%$ (k=2)	Depth	2.20

Sensor Offset

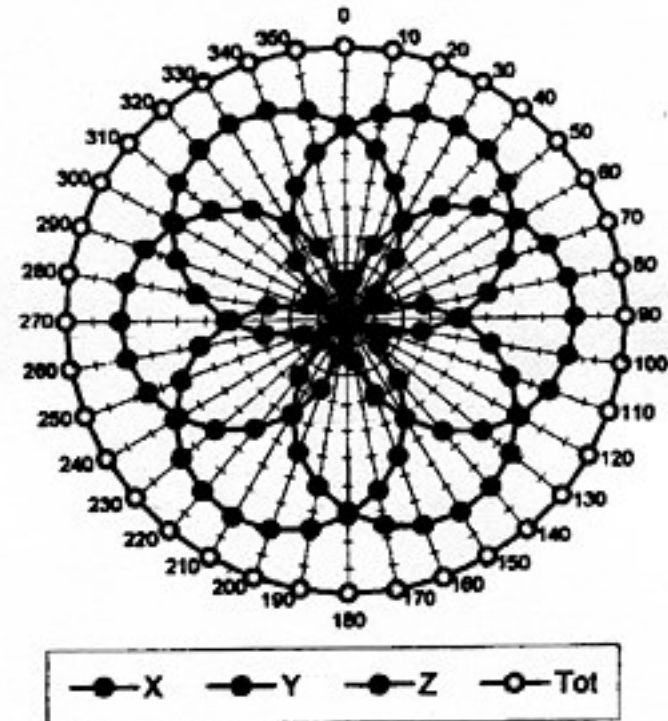
Probe Tip to Sensor Center	2.7	mm
Optical Surface Detection	1.7 $\pm$ 0.2	mm

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

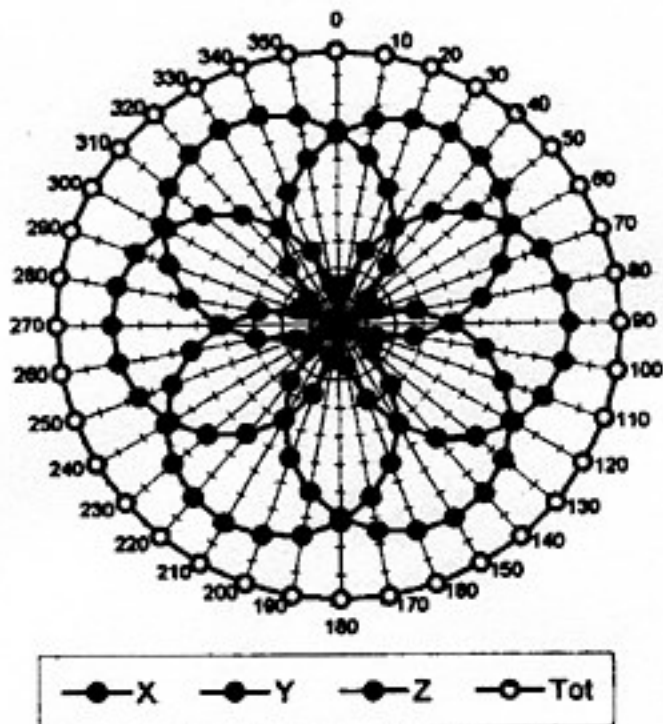
$f = 30 \text{ MHz}$, TEM cell if110



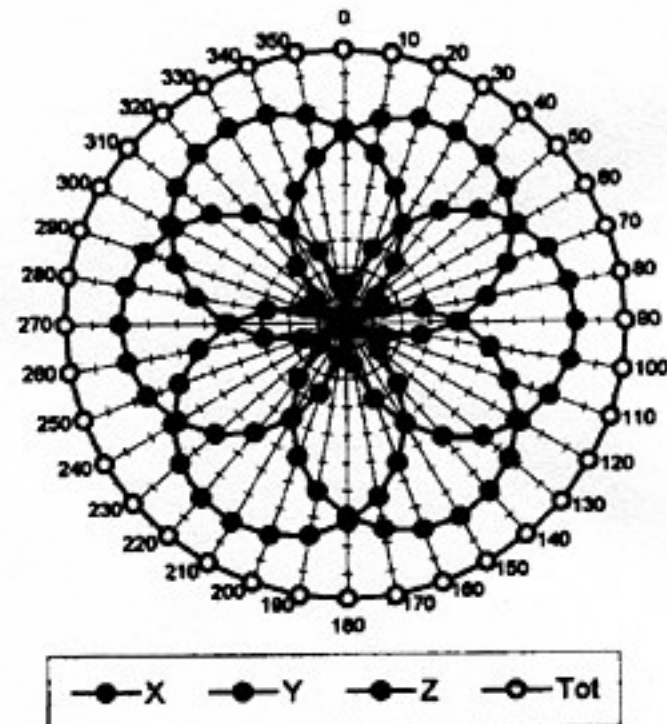
$f = 100 \text{ MHz}$, TEM cell if110

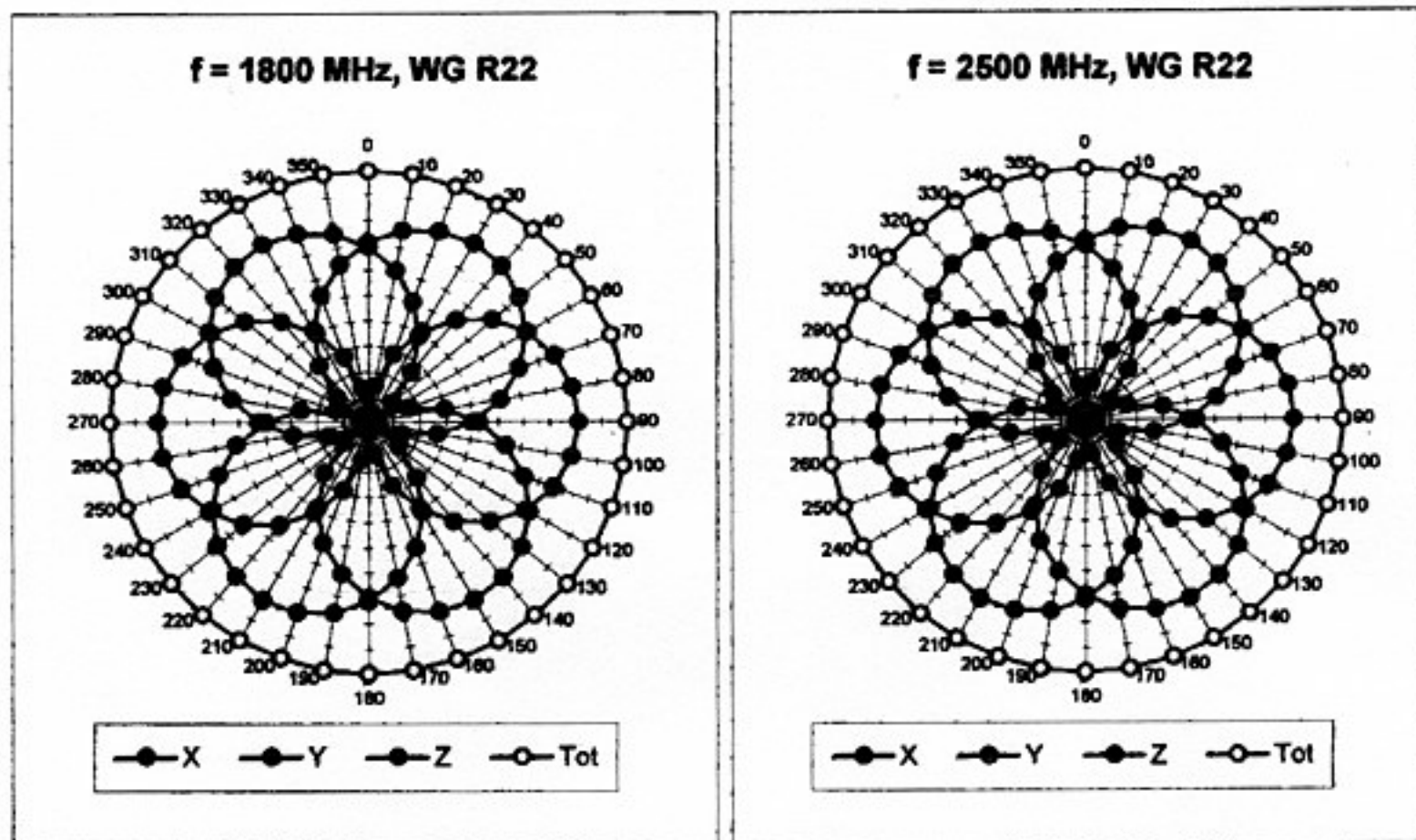


$f = 300 \text{ MHz}$, TEM cell if110

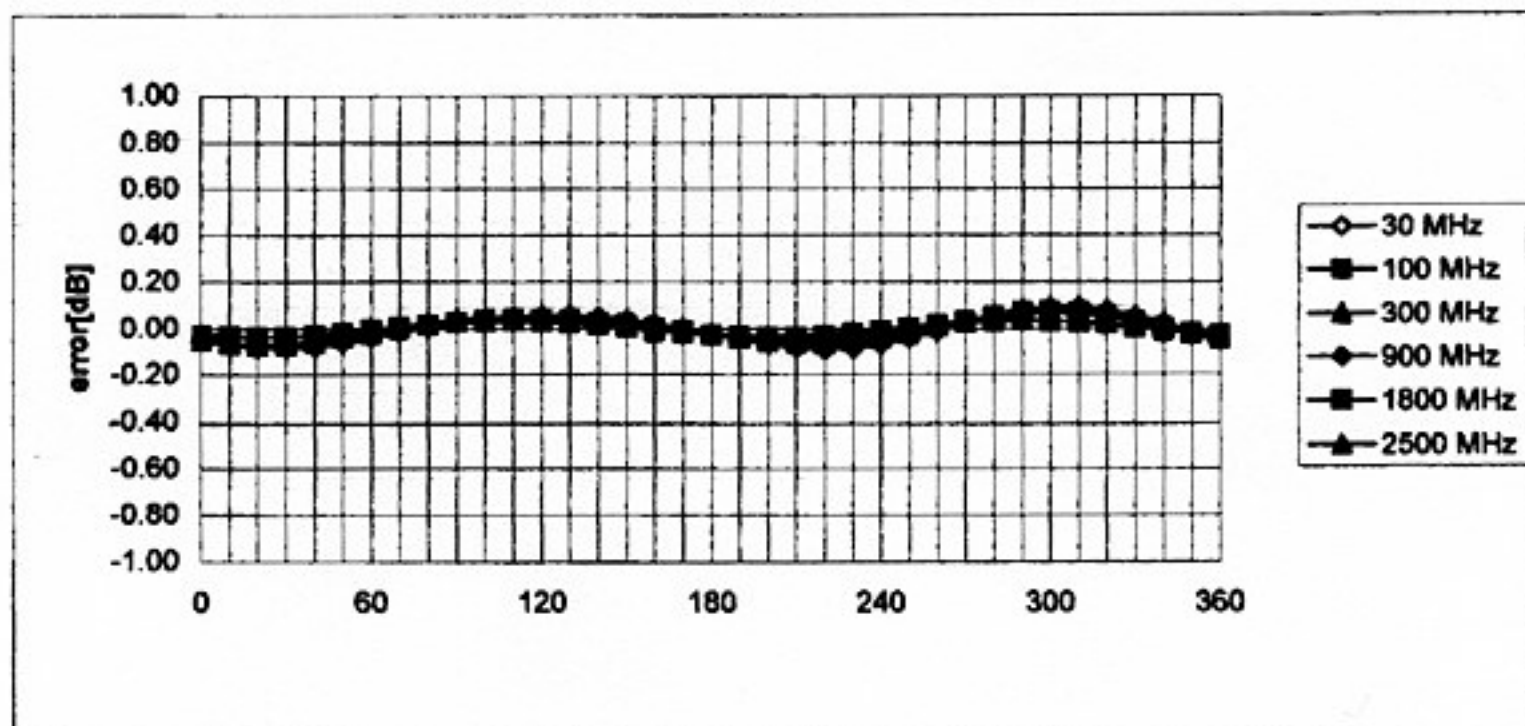


$f = 900 \text{ MHz}$, TEM cell if110



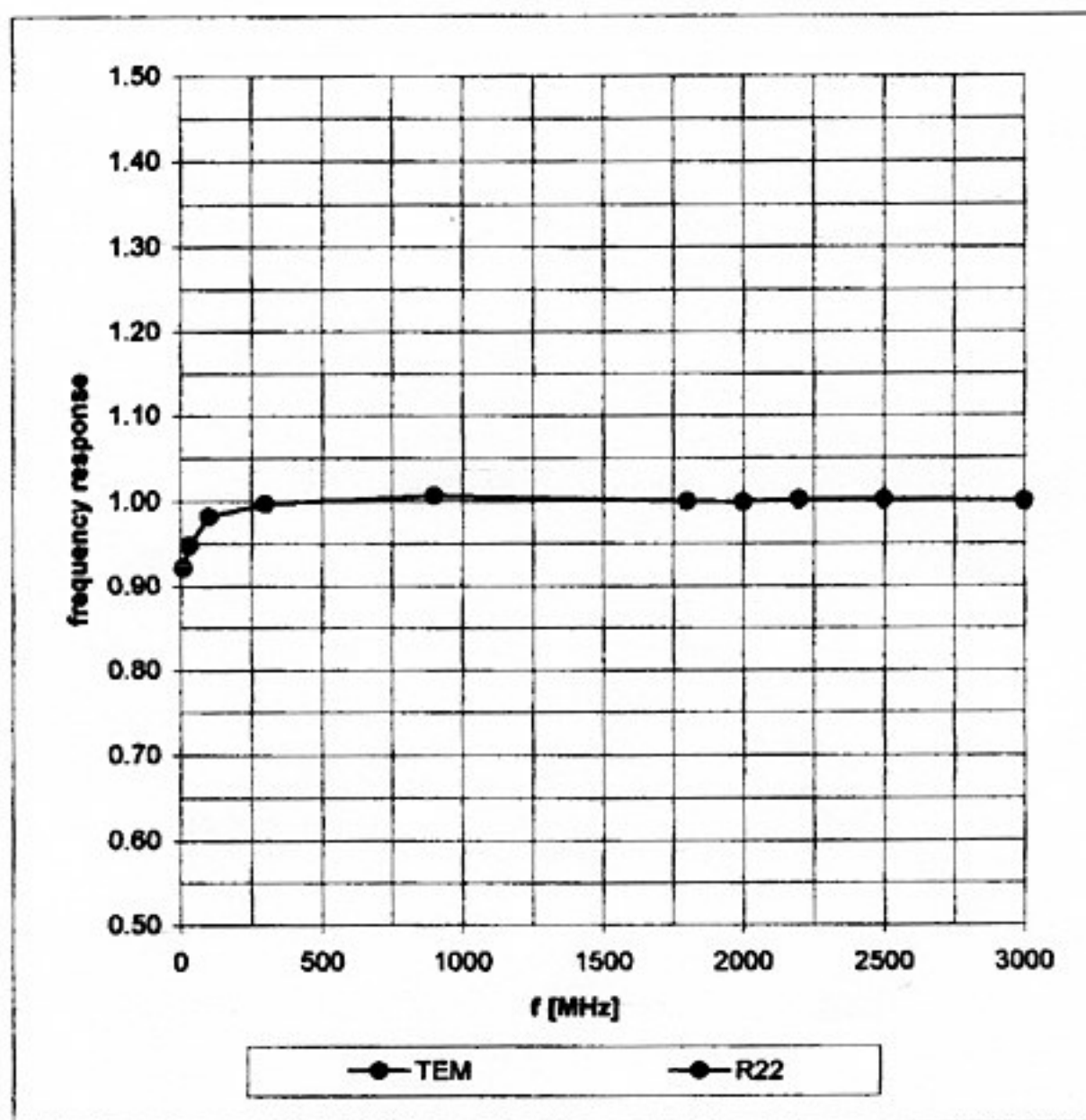


Isotropy Error (ϕ), $\theta = 0^\circ$

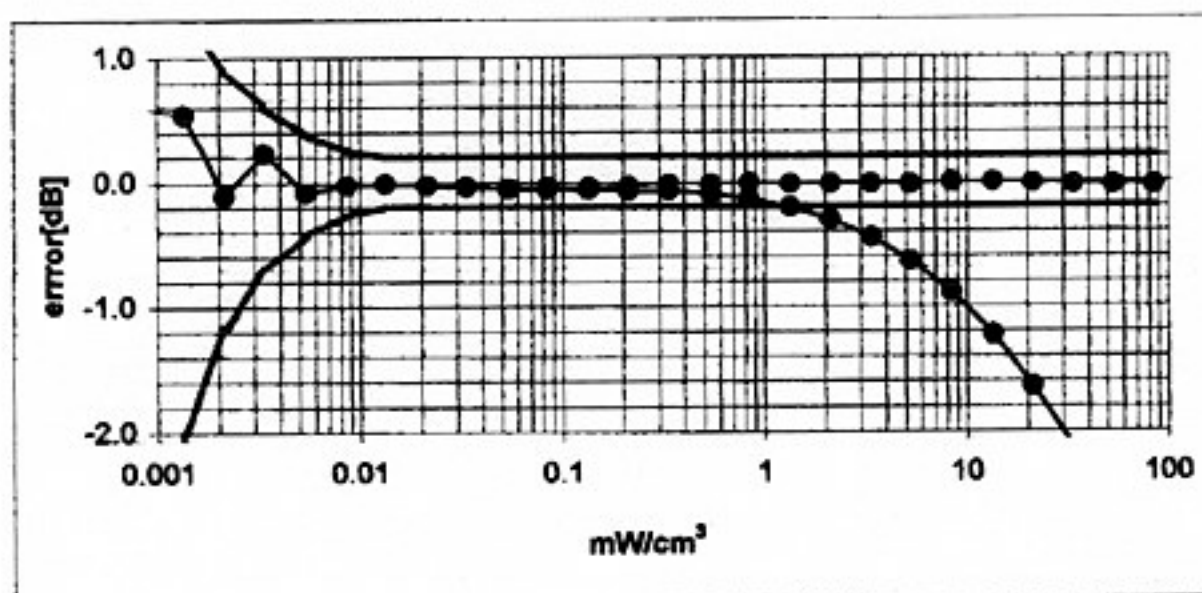
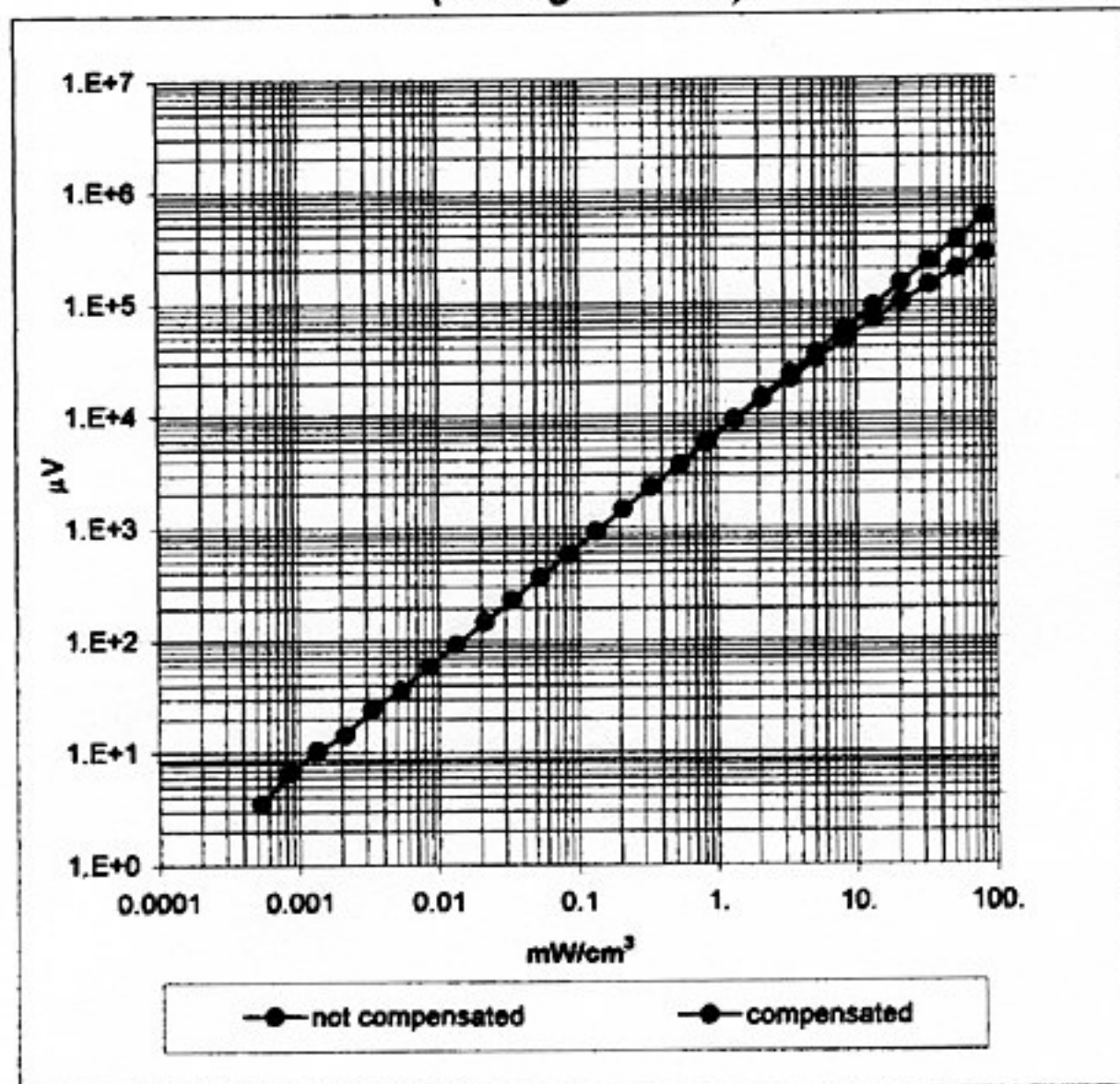


Frequency Response of E-Field

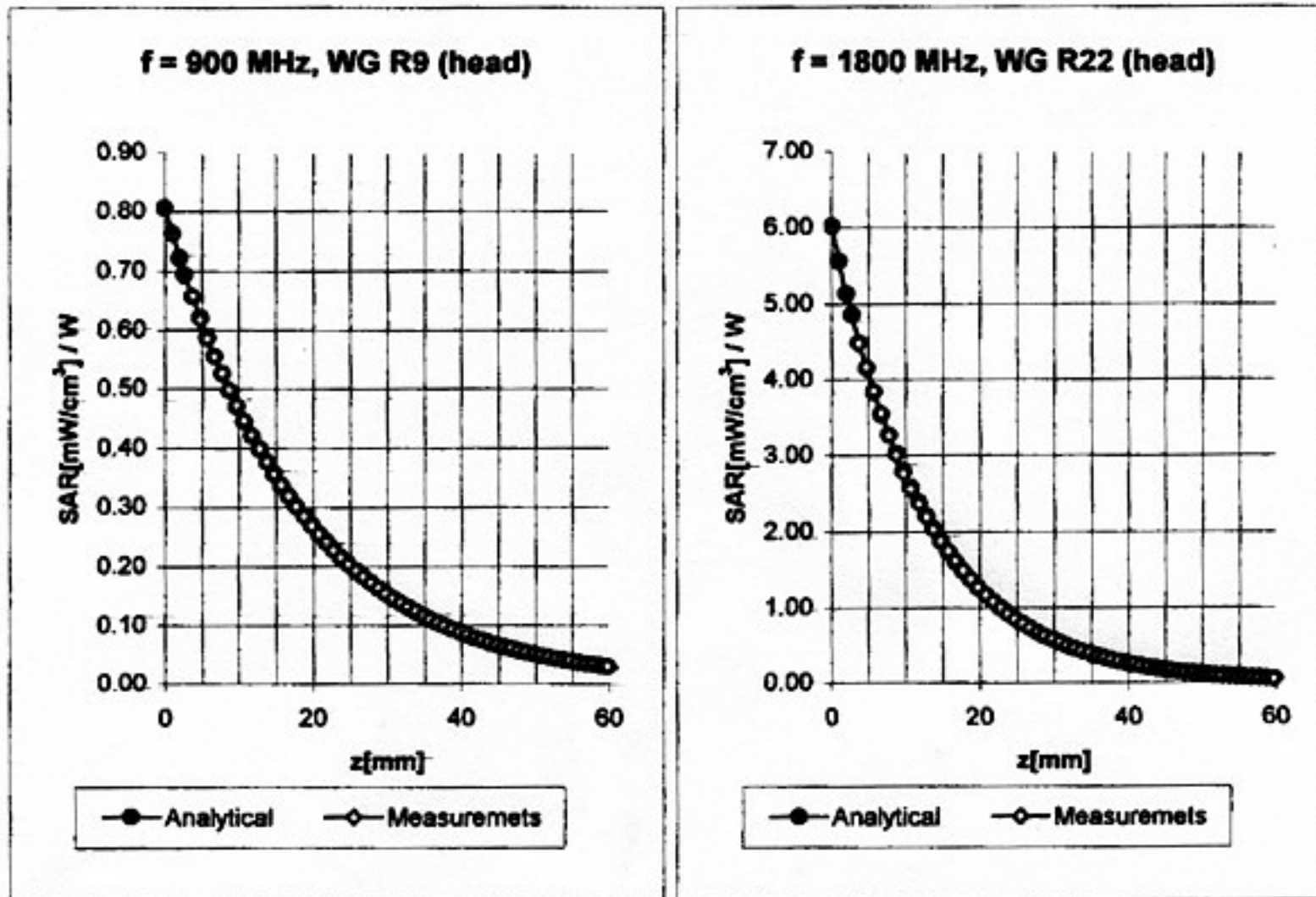
(TEM-Cell:ifi110, Waveguide R22)



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 **6.37** $\pm 9.5\%$ (k=2)
 ConvF Y **6.37** $\pm 9.5\%$ (k=2)
 ConvF Z **6.37** $\pm 9.5\%$ (k=2)

Boundary effect:
 Alpha **0.40**
 Depth **2.31**

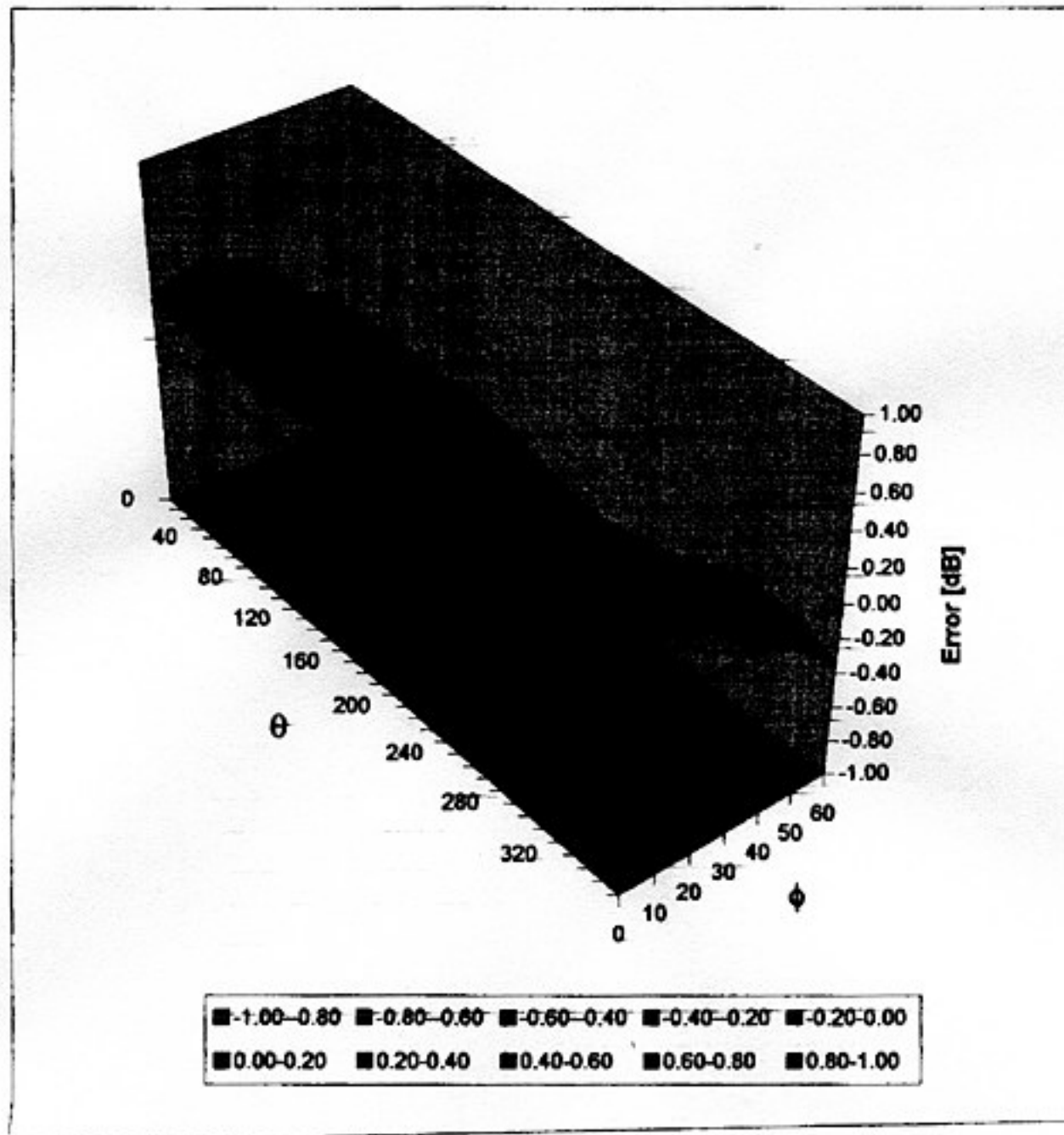
Head 1700 - 1910 MHz $\epsilon_r = 39.5 - 41.0$ $\sigma = 1.20 - 1.55$ mho/m

ConvF X **5.36** $\pm 9.5\%$ (k=2)
 ConvF Y **5.36** $\pm 9.5\%$ (k=2)
 ConvF Z **5.36** $\pm 9.5\%$ (k=2)

Boundary effect:
 Alpha **0.56**
 Depth **2.20**

Deviation from Isotropy in HSL

Error (θ, ϕ), $f = 900$ MHz



Additional Conversion Factors

for Dosimetric E-Field Probe

Type:

ET3DV6

Serial Number:

1514

Place of Assessment:

Zurich

Date of Assessment:

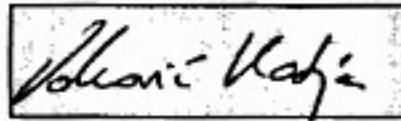
November 14, 2001

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:1514

Conversion factor ($\pm$ standard deviation)

835 MHz	ConvF	$6.5 \pm 8\%$	$\epsilon_r = 41.5$ $\sigma = 0.90 \text{ mho/m}$ (head tissue)
1950 MHz	ConvF	$5.1 \pm 8\%$	$\epsilon_r = 40.0$ $\sigma = 1.40 \text{ mho/m}$ (head tissue)
835 MHz	ConvF	$6.3 \pm 8\%$	$\epsilon_r = 55.2$ $\sigma = 0.97 \text{ mho/m}$ (body tissue)
900 MHz	ConvF	$6.2 \pm 8\%$	$\epsilon_r = 55.0$ $\sigma = 1.05 \text{ mho/m}$ (body tissue)
1800 MHz	ConvF	$4.9 \pm 8\%$	$\epsilon_r = 53.3$ $\sigma = 1.52 \text{ mho/m}$ (body tissue)
1950 MHz	ConvF	$4.7 \pm 8\%$	$\epsilon_r = 53.3$ $\sigma = 1.52 \text{ mho/m}$ (body tissue)

Appendix 5

Photographs of the device under test



Figure 3. Bottom of Phone showing Speaker and Microphone



Figure 4. Top of Phone



Figure 5. Face of Phone with Flip Open



Figure 6. Separation Distances Provided from Body Worn Accessory



Figure 7. Phone in Cheek Touch Position with Speaker and Microphone Placed Against Phantom Head.



Figure 8. Phone in Cheek Touch Position with Speaker and Microphone Placed Against Phantom Head.



Figure 9. Phone in Cheek Touch Position with Speaker and Microphone Placed Against Phantom Head.



Figure 10. Phone in Cheek Touch Position with Speaker and Microphone Placed Against Phantom Head.