June 25, 2004
Supplement to Class II Permissive Change SAR Test Report for Motorola portable cellular phone (FCC ID IHDT56EC1)

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Summary of FCC request for additional information

There was a request for additional information regarding Motorola's SAR Test Report for Motorola portable cellular phone (FCC ID IHDT56EC1). The requested information is addressed below in the same numbering sequence received.

1. There appear to be some errors on the dipole validation test result table (p.5)- it looks as though the results for the 1800 MHz tests were listed under the wrong dates (May 18 and May19)- please address.

Response: The data was entered incorrectly. The corrected table is attached below in the response for question 2.

2. Many of the SAR tables have missing results- right head tilt data missing entirely; left head touch for analog operation (both ant ext and ant ret) only have data for one frequency, however, as the SAR value is greater than 0.8, data for 3 channels must be submitted; right head touch analog missing data for one channel for both ant ext and ant ret; all right head touch PCS data is missing. Please submit missing data and appropriate plots.

Response: Additional testing was performed. The data tables have been updated and are attached below. The associated pdf files are attached in Appendix 1, Appendix 2 and Appendix 4 respectively.

Dosimetric System (page 3 of test report)

Description	Serial Number	Cal Due Date
DASY3 DAE V1	SN398	16-Feb-05
	SN437	16-Mar-05
E-Field Probe ET3DV6	SN1514	31-Jul_04
	SN1398	16-Feb-05
Dipole Validation Kit, D900V2	SN96	4-Apr-05
	SN80	4-Apr-05
S.A.M. Phantom used for 800MHz	TP-1131	
	TP-1153	
Dipole Validation Kit, D1800V2	SN272TR	4-Apr-05
	SN251TR	4-Apr-05
S.A.M. Phantom used for 1900MHz	TP-1250	
	TP-1159	

Additional Equipment (page 4 of test report)

Description	Serial Number	Cal Due Date
Signal Generator HP8648C	3847A04822	6-Feb-05
Power Meter E4419B	GB39511087	5-Apr-05
	GB39511088	18-Apr-05
Power Sensor #1 - E9301A	US39211009	5-Aug-04
Power Sensor #2 - E9301A	US39210915	5-Aug-04
Network Analyzer HP8753ES	US39171846	3-Jun-04
	US39172529	29-Oct-04
Dielectric Probe Kit HP85070B	US99360074	N/A

Electrical parameters of the tissue simulating liquid (page 4 of test report)

f (MHz)	Tissue type	Limits / Measured	Dielectric Parameters		
			ε_r	σ (S/m)	Temp (°C)
835	Head	**Measured,** 23-Jun-04	42.4	0.91	19.8
		Measured, 17-May-04	41.4	0.91	20.0
		Measured, 18-May-04	42.1	0.92	19.7
		Recommended Limits	41.5 ±5%	0.90 ±5%	18-25
	Body	**Measured,** 18-May-04	55.0	0.98	19.6
		Recommended Limits	55.2 ±5%	0.97 ±5%	18-25
1880	Head	**Measured,** 23-Jun-04	38.4	1.45	19.5
		Measured, 25-Jun-04	39.3	1.44	19.8
		Measured, 18-May-04	38.2	1.45	19.1
		Recommended Limits	40.0 ±5%	1.40 ±5%	18-25
	Body	**Measured,** 18-May-04	51.2	1.59	18.4
		Measured, 19-May-04	51.4	1.59	19.2
		Recommended Limits	53.3 ±5%	1.52 ±5%	18-25

System Accuracy Verification (page 5 of test report)

f (MHz)	Description	SAR (W/kg), 1gram	Dielectric Parameters		Ambient Temp (°C)	Tissue Temp (°C)
			ε_r	σ (S/m)		
900	**Measured,** 23-Jun-04	11.3	41.6	0.97	20.0	20.0
	Measured, 17-May-04	11.3	40.6	0.96	20.0	19.4
	Measured, 18-May-04	11.3	41.3	0.98	20.0	19.7
	Recommended Limits	11.4	41.5 ±5%	0.97 ±5%	18-25	18-25
1800	**Measured,** 23-Jun-04	42.45	38.7	1.36	20.0	19.3
	Measured, 25-Jun-04	39.7	39.6	1.35	20.0	19.5
	Measured, 18-May-04	41.4	38.6	1.37	20	19.1
	Measured, 19-May-04	41.8	38.5	1.36	20	19.1
	Recommended Limits	40.7	40.0 ±5%	1.4 ±5%	18-25	18-25

The following probe conversion factors were used on the E-Field probe(s) used for the system accuracy verification measurements (page 5 of test report):

Description	Serial Number	f (MHz)	Conversion Factor	Cal Cert pg #
E-Field Probe ET3DV6	SN1514	900	6.3	7 of 11
		1800	5.1	7 of 11
	SN1398	900	6.29	7 of 8
		1800	5.04	7 of 8

The following probe conversion factors were used on the E-Field probe(s) used for the head adjacent measurements (page 7 of test report):

Description	Serial Number	f (MHz)	Conversion Factor	Cal Cert pg #
E-Field Probe ET3DV6	SN1514	900	6.3	7 of 11
		1800	5.1	7 of 11
	SN1398	900	6.29	7 of 8
		1800	5.04	7 of 8

f (MHz)	Description	Conducted Output Power (dBm)	Left Head (Cheek / Touch Position)							
			Ant Extended				Ant Retracted			
			Measured (W/kg)	Drift (dB)	Extrapolated (W/kg)	Simulate Temp (°C)	Measured (W/kg)	Drift (dB)	Extrapolated (W/kg)	Simulate Temp (°C)
Analog 800MHz	Channel 991	27.70	**1.06**	**-0.11**	**1.09**	**20.0**	0.804	0.06	0.80	20.0
	Channel 384	27.71	0.833	-0.05	0.84	20.0	0.921	-0.04	0.93	20.0
	Channel 799	27.70	0.911	-0.08	0.93	20.0	**1.235**	**-0.05**	**1.25**	**20.0**
Digital 1900MHz	Channel 25	24.96								
	Channel 600	24.92	**0.258**	**-0.44**	**0.29**	**19.2**	**0.505**	**-0.49**	**0.57**	**19.2**
	Channel 1175	24.97								

Table 1 (page 7 of test report): SAR measurement results for the portable cellular telephone FCC ID IHDT56EC1 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)	Extrapolated (W/kg)	Simulate Temp (°C)	Measured (W/kg)	Drift (dB)	Extrapolated (W/kg)	Simulate Temp (°C)
Analog 800MHz	Channel 991	27.70	**1.222**	**0.28**	**1.22**	**19.7**	0.954	0.03	0.95	20.0
	Channel 384	27.71	0.874	0.01	0.87	20.0	**1.38**	**-0.08**	**1.41**	**19.7**
	Channel 799	27.70	1.255	0.28	1.26	19.7	1.355	0.24	1.36	19.7
Digital 1900MHz	Channel 25	24.96								
	Channel 600	24.92	**0.483**	**0.14**	**0.48**	**19.8**	**0.593**	**-0.16**	**0.62**	**19.6**
	Channel 1175	24.97								

Table 2 (page 7 of test report): SAR measurement results for the portable cellular telephone FCC ID IHDT56EC1 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)	Extrapolated (W/kg)	Simulate Temp (°C)	Measured (W/kg)	Drift (dB)	Extrapolated (W/kg)	Simulate Temp (°C)
Analog 800MHz	Channel 991	27.70								
	Channel 384	27.71	**0.218**	**-0.11**	**0.22**	**20.0**	**0.30**	**-0.08**	**0.31**	**20.0**
	Channel 799	27.70								
Digital 1900MHz	Channel 25	24.96								
	Channel 600	24.92	**0.226**	**-0.31**	**0.24**	**18.5**	**0.157**	**-0.47**	**0.17**	**19.1**
	Channel 1175	24.97								

Table 3 (page 8 of test report): SAR measurement results for the portable cellular telephone FCC ID IHDT56EC1 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)	Extrapolated (W/kg)	Simulate Temp (°C)	Measured (W/kg)	Drift (dB)	Extrapolated (W/kg)	Simulate Temp (°C)
Analog 800MHz	Channel 991	27.70								
	Channel 384	27.71	**0.209**	**0.1**	**0.21**	**20.0**	**0.279**	**0.02**	**0.28**	**20.0**
	Channel 799	27.70								
Digital 1900MHz	Channel 25	24.96								
	Channel 600	24.92	**0.235**	**-0.07**	**0.24**	**19.5**	**0.117**	**-0.23**	**0.12**	**19.6**
	Channel 1175	24.97								

Table 4 (page 8 of test report): SAR measurement results for the portable cellular telephone FCC ID IHDT56EC1 at highest possible output power. Measured against the right head in the 15° Tilt Position.

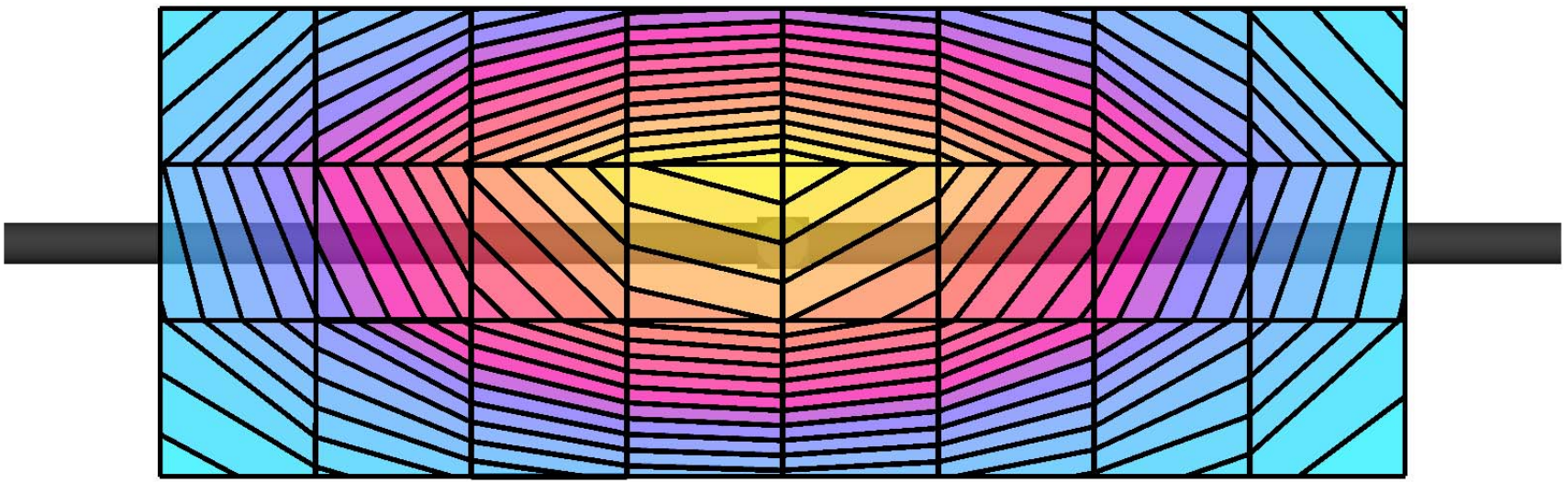
Appendix 1

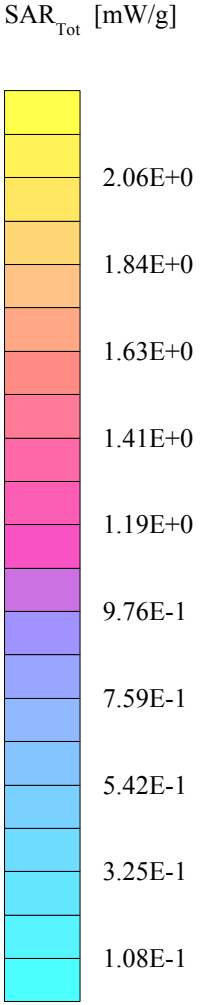
SAR distribution comparison for the system accuracy verification

06/23/04

Dipole 900 MHz

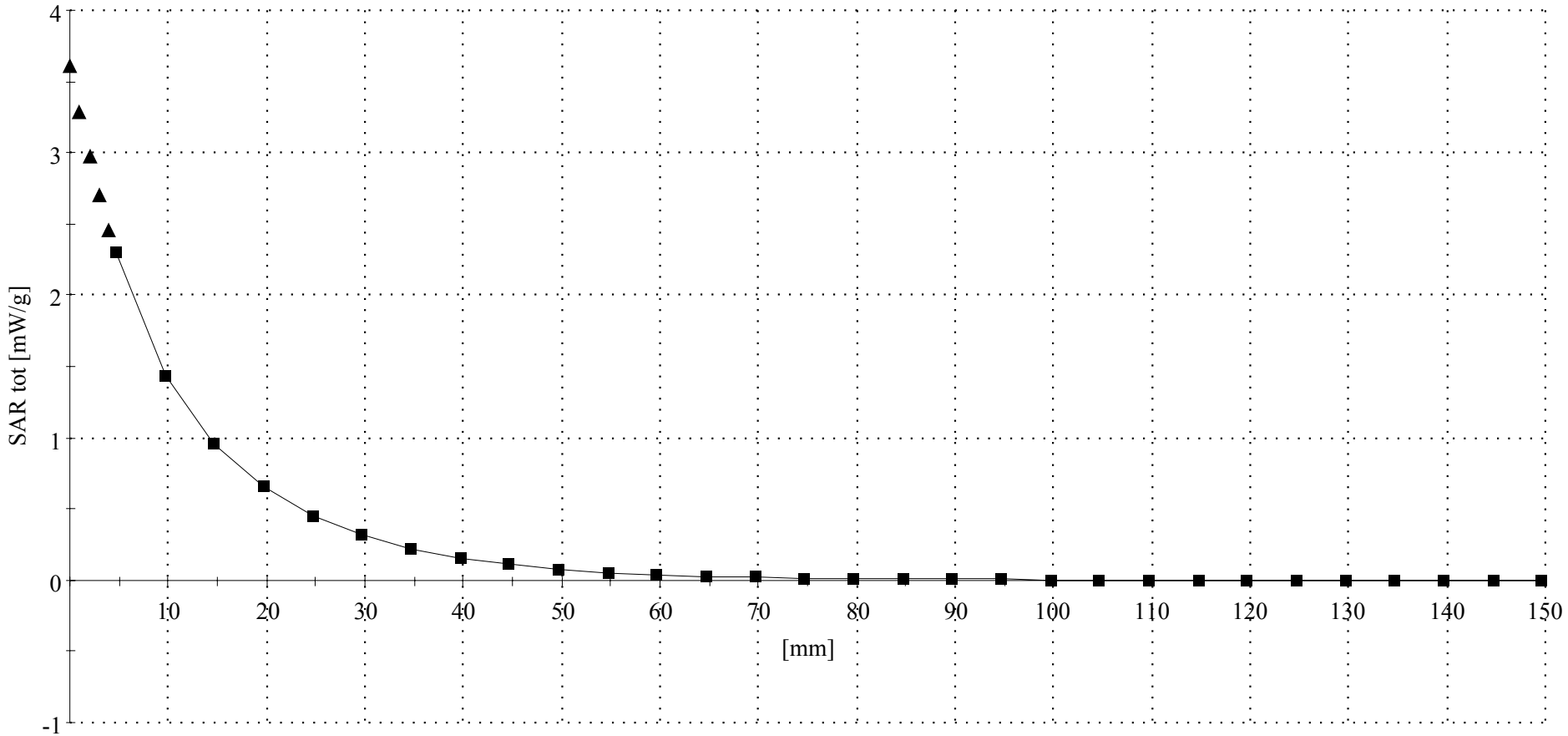
900 MHz System Performance Check / Dipole Sn# 96
PM1 Power = 200mW
Sim.Temp@meas=20.0*C Sim.Temp@SPC = 20.0*C Room Temp @ SPC = 20.0*C
R4 TP-1131 SUGAR SAM Expanded (Rev. 2)-9Jan03 Phantom; Flat Section; Position: (90°,90°); Frequency: 900 MHz
Probe: ET3DV6 - SN1514 - Validation4; ConvF(6.30,6.30,6.30); Crest factor: 1.0; 900 MHz VALIDATION: $\sigma = 0.97$ mho/m $\varepsilon_r = 41.6$ $\rho = 1.00$ g/cm^3
Cubes (2): SAR (1g): 2.26 mW/g ± 0.00 dB, SAR (10g): 1.42 mW/g ± 0.01 dB, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Penetration depth: 11.5 (10.6, 12.7) [mm]
Powerdrift: 0.01 dB





Dipole 900 MHz

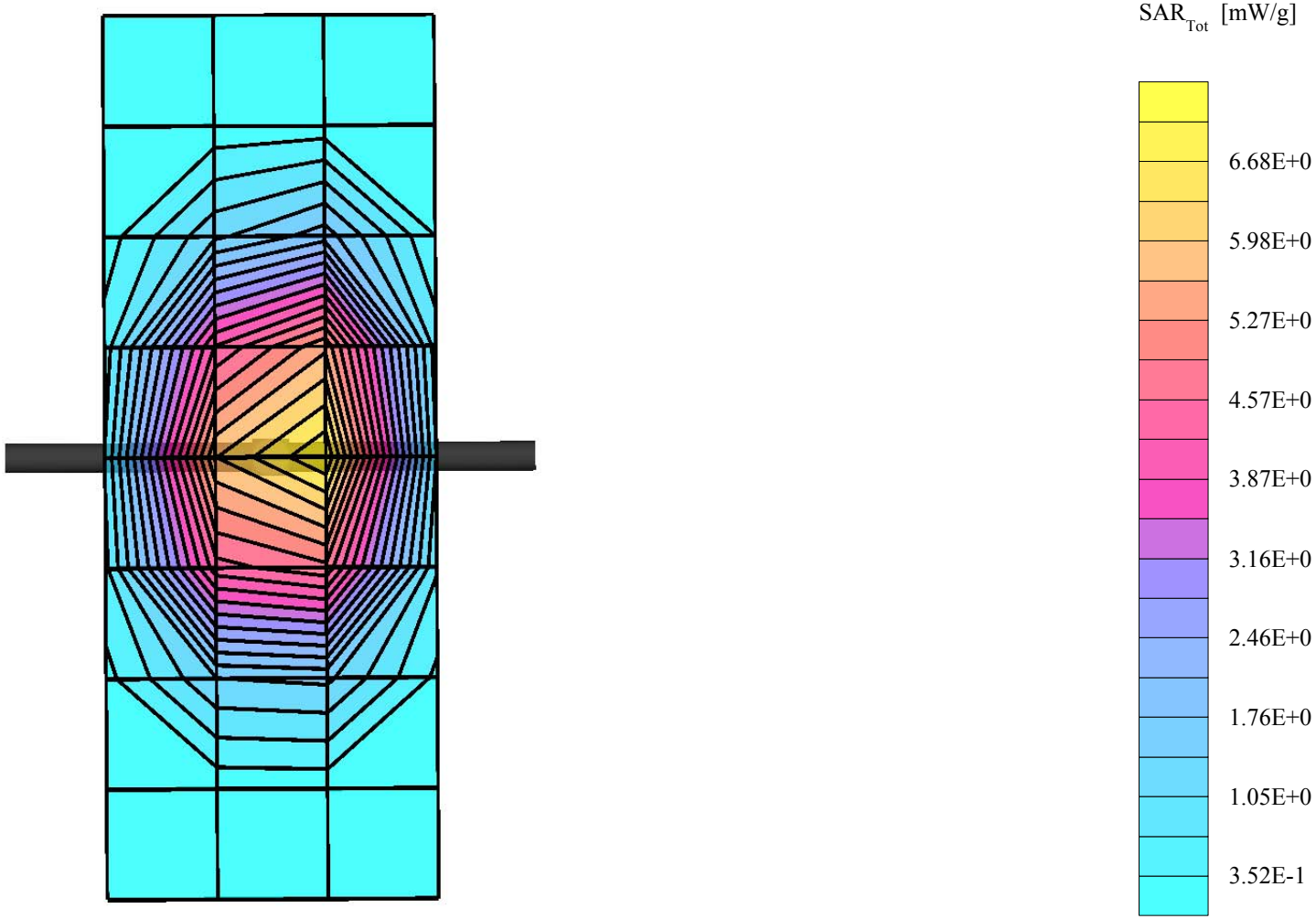
900 MHz System Performance Check / Dipole Sn# 96
PM1 Power = 200mW
Sim.Temp@meas=20.0*C Sim.Temp@SPC = 20.0*C Room Temp @ SPC = 20.0*C
R4 TP-1131 SUGAR SAM Expanded (Rev. 2)-9Jan03 Phantom; Section; Position: ; Frequency: 900 MHz
Probe: ET3DV6 - SN1514 - Validation4; ConvF(6.30,6.30,6.30); Crest factor: 1.0; 900 MHz VALIDATION: σ = 0.97 mho/m ε_r = 41.6 ρ = 1.00 g/cm^3
: , ()
Z-Axis: Dx = 0.0, Dy = 0.0, Dz = 5.0
Penetration depth: 11.3 (10.5, 12.5) [mm]



06/23/04

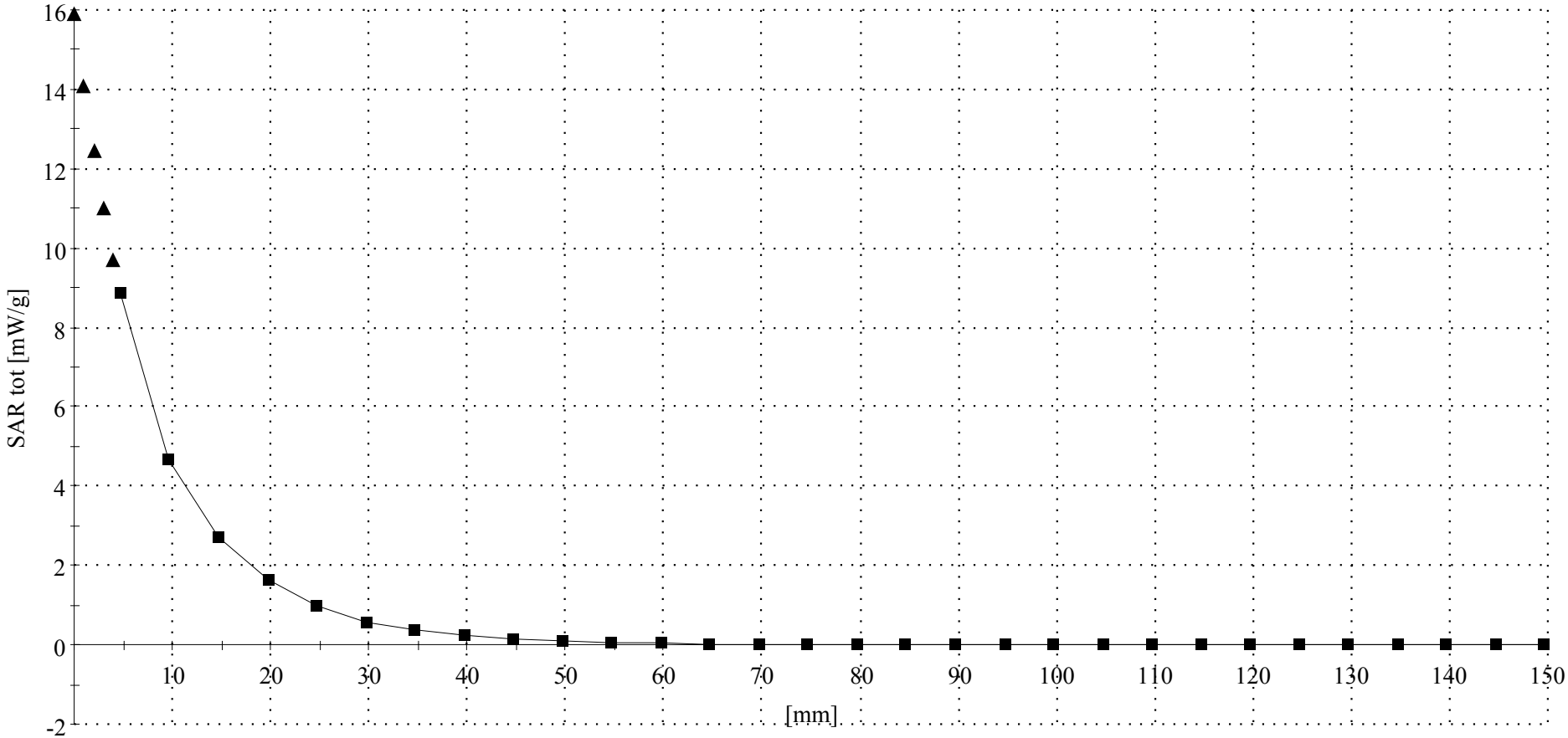
Dipole 1800 MHz

1800 MHz System Performance Check / Dipole Sn# 272TR
PM1 Power = 200mW
Sim.Temp@meas=19.3C Sim.Temp@SPC = 19.3C Room Temp @ SPC = 20C
R4 - Amy Twin Phantom Rev.4 (22Aug02) Phantom; section 2 Section; Position: (90°,90°); Frequency: 1800 MHz
Probe: ET3DV6 - SN1514 - Validation4; ConvF(5.10,5.10,5.10); Crest factor: 1.0; 1800 MHz VALIDATION: σ = 1.36 mho/m ε_r = 38.7 ρ = 1.00 g/cm^3
Cubes (2): SAR (1g): 8.49 mW/g ± 0.02 dB, SAR (10g): 4.45 mW/g ± 0.00 dB, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Penetration depth: 8.4 (8.0, 9.2) [mm]
Powerdrift: -0.04 dB



Dipole 1800 MHz

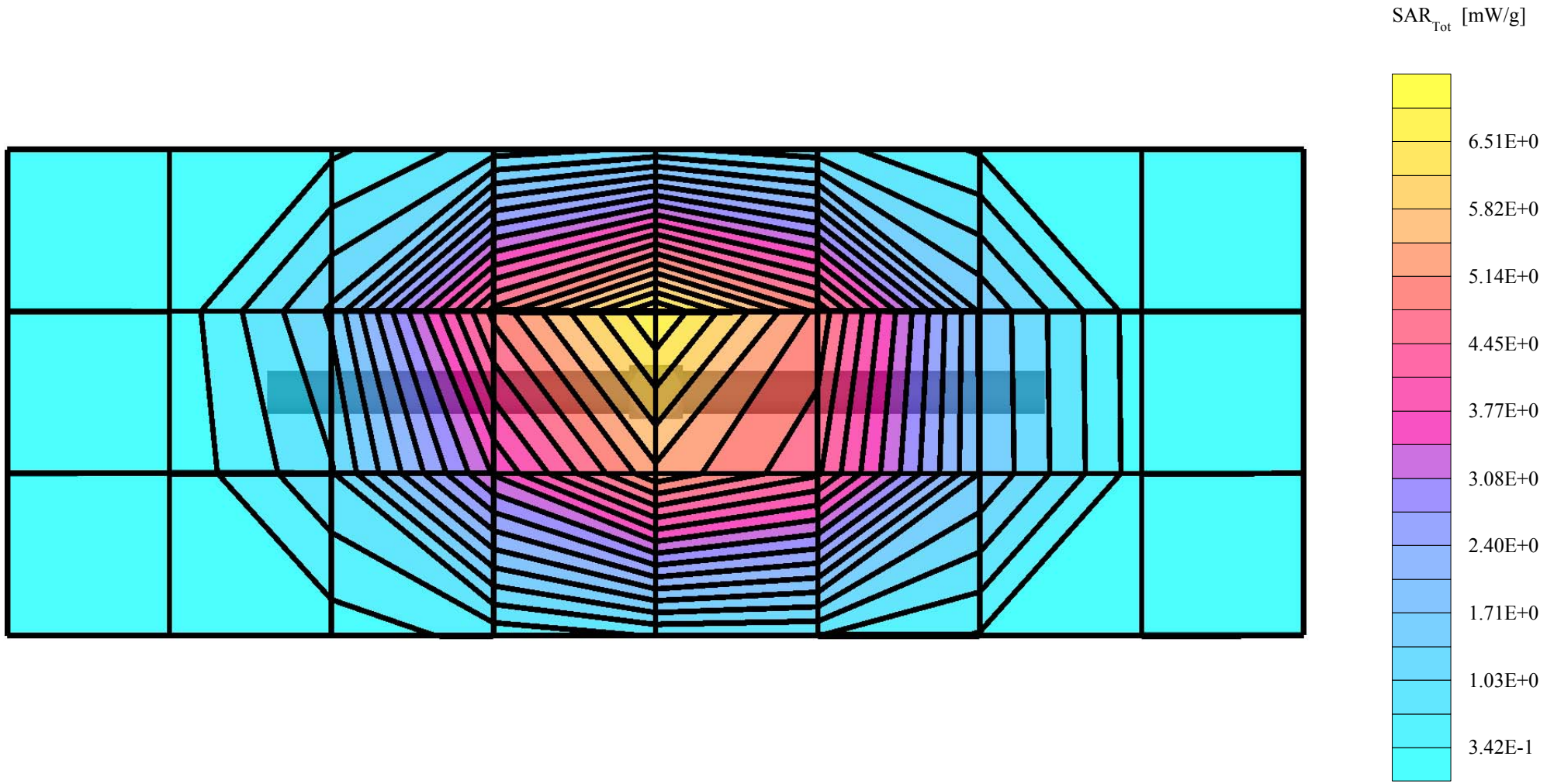
1800 MHz System Performance Check / Dipole Sn# 272TR
PM1 Power = 200mW
Sim.Temp@meas=19.3C Sim.Temp@SPC = 19.3C Room Temp @ SPC = 20C
R4 - Amy Twin Phantom Rev.4 (22Aug02) Phantom; Section; Position: ; Frequency: 1800 MHz
Probe: ET3DV6 - SN1514 - Validation4; ConvF(5.10,5.10,5.10); Crest factor: 1.0; 1800 MHz VALIDATION: σ = 1.36 mho/m ε_r = 38.7 ρ = 1.00 g/cm^3
: , ()
Z-Axis: Dx = 0.0, Dy = 0.0, Dz = 5.0
Penetration depth: 8.3 (7.9, 9.2) [mm]



06/25/04

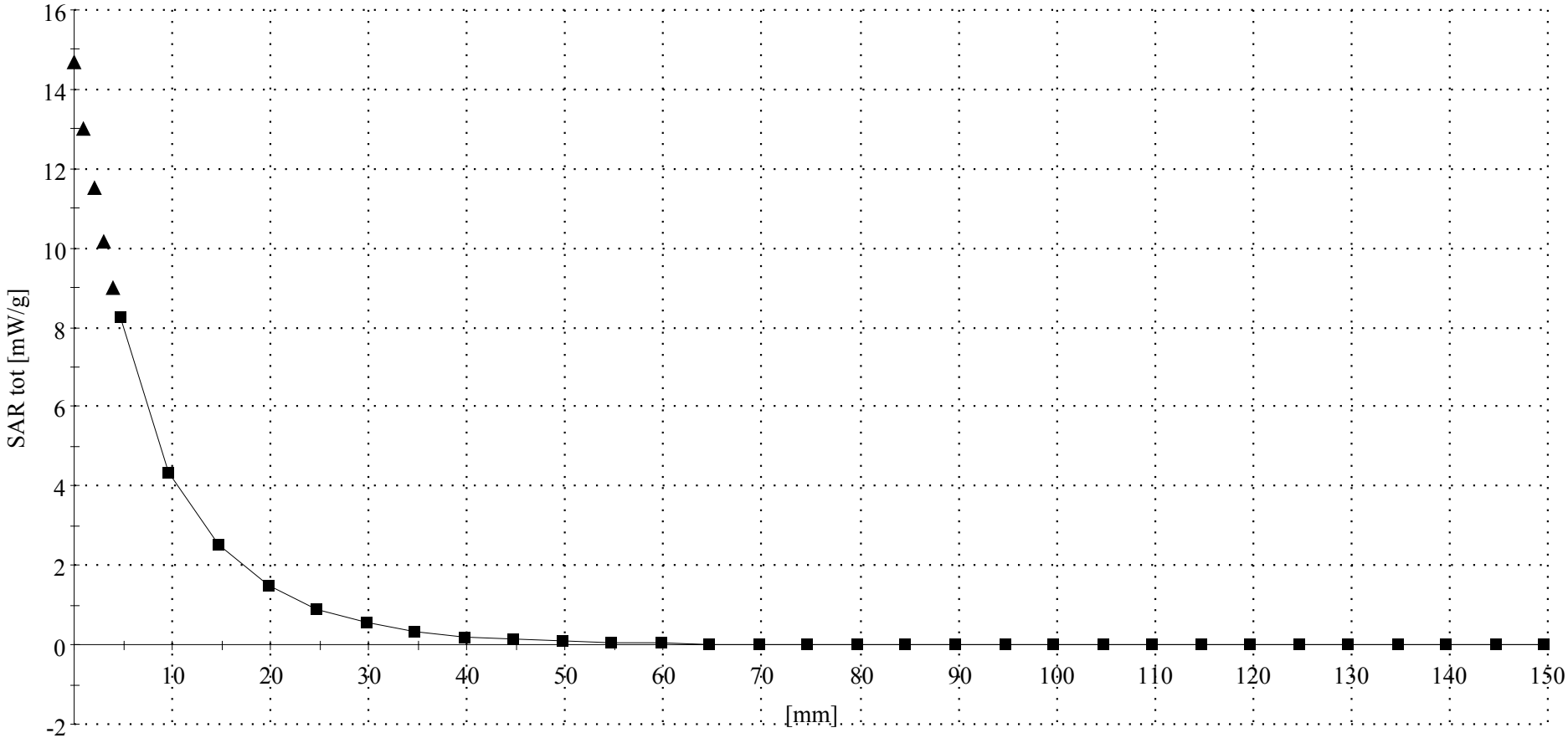
Dipole 1800 MHz

1800 MHz System Performance Check / Dipole Sn# 272tr
PM1 Power = 200mW
Sim.Temp@meas=19.4*C Sim.Temp@SPC = 19.5*C Room Temp @ SPC = 20*C
R4 TP-1250 GLYCOL sam expanded (Rev. 2)-9Jan03 Phantom; Flat Section; Position: (90°,90°); Frequency: 1800 MHz
Probe: ET3DV6 - SN1514 - Validation4; ConvF(5.10,5.10,5.10); Crest factor: 1.0; 1800 MHz VALIDATION: σ = 1.35 mho/m ε_r = 39.6 ρ = 1.00 g/cm^3
Cubes (2): SAR (1g): 7.94 mW/g ± 0.01 dB, SAR (10g): 4.19 mW/g ± 0.03 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 System Performance Check / Dipole Sn# 272tr
PM1 Power = 200mW
Sim.Temp@meas=19.4*C Sim.Temp@SPC = 19.5*C Room Temp @ SPC = 20*C
R4 TP-1250 GLYCOL sam expanded (Rev. 2)-9Jan03 Phantom; Section; Position: ; Frequency: 1800 MHz
Probe: ET3DV6 - SN1514 - Validation4; ConvF(5.10,5.10,5.10); Crest factor: 1.0; 1800 MHz VALIDATION: σ = 1.35 mho/m ε_r = 39.6 ρ = 1.00 g/cm^3
: , ()
Z-Axis: Dx = 0.0, Dy = 0.0, Dz = 5.0
Penetration depth: 8.3 (7.9, 9.2) [mm]



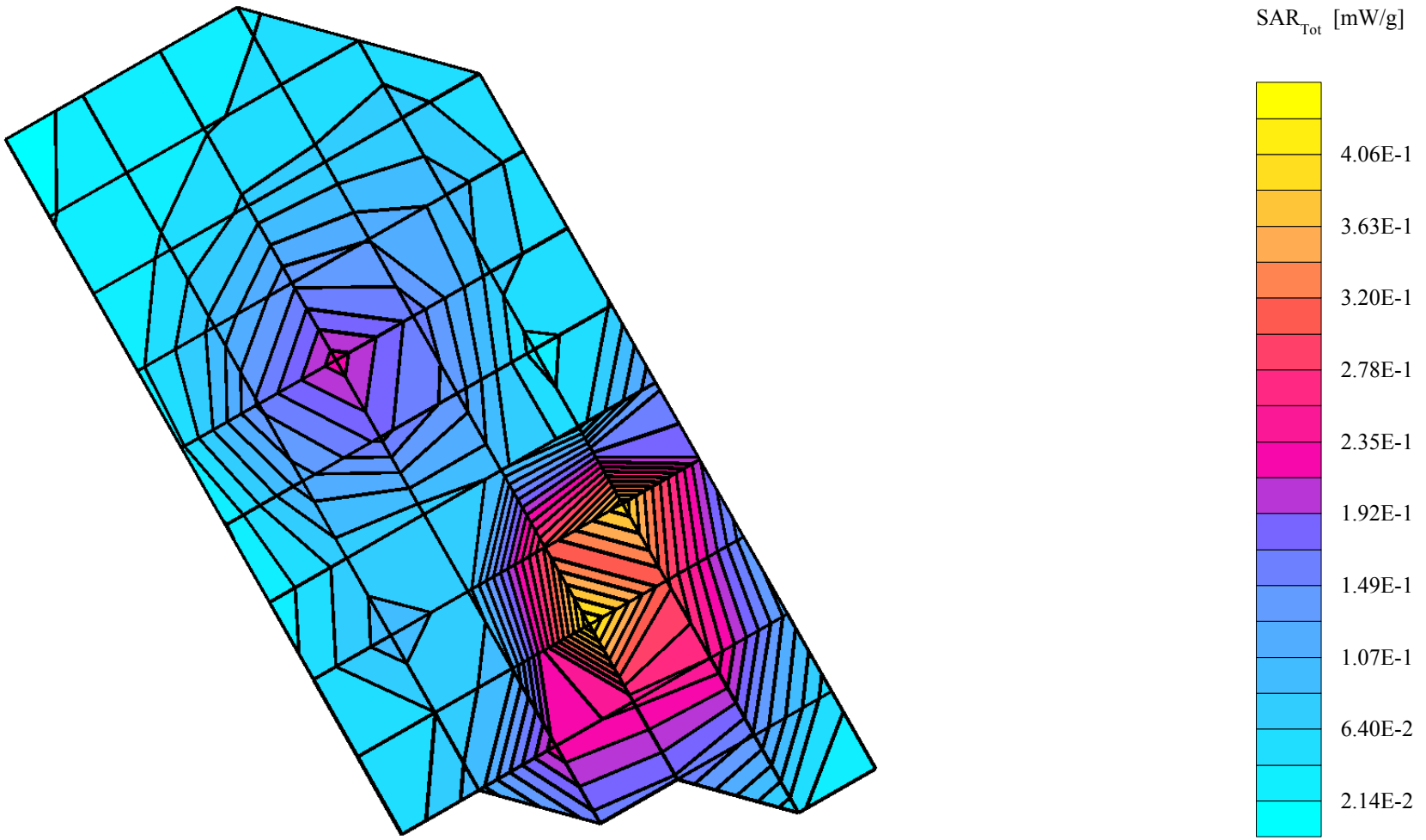
Appendix 2

SAR distribution plots for Phantom Head Adjacent Use

06/25/04 13:48

s/n: 33C7A484

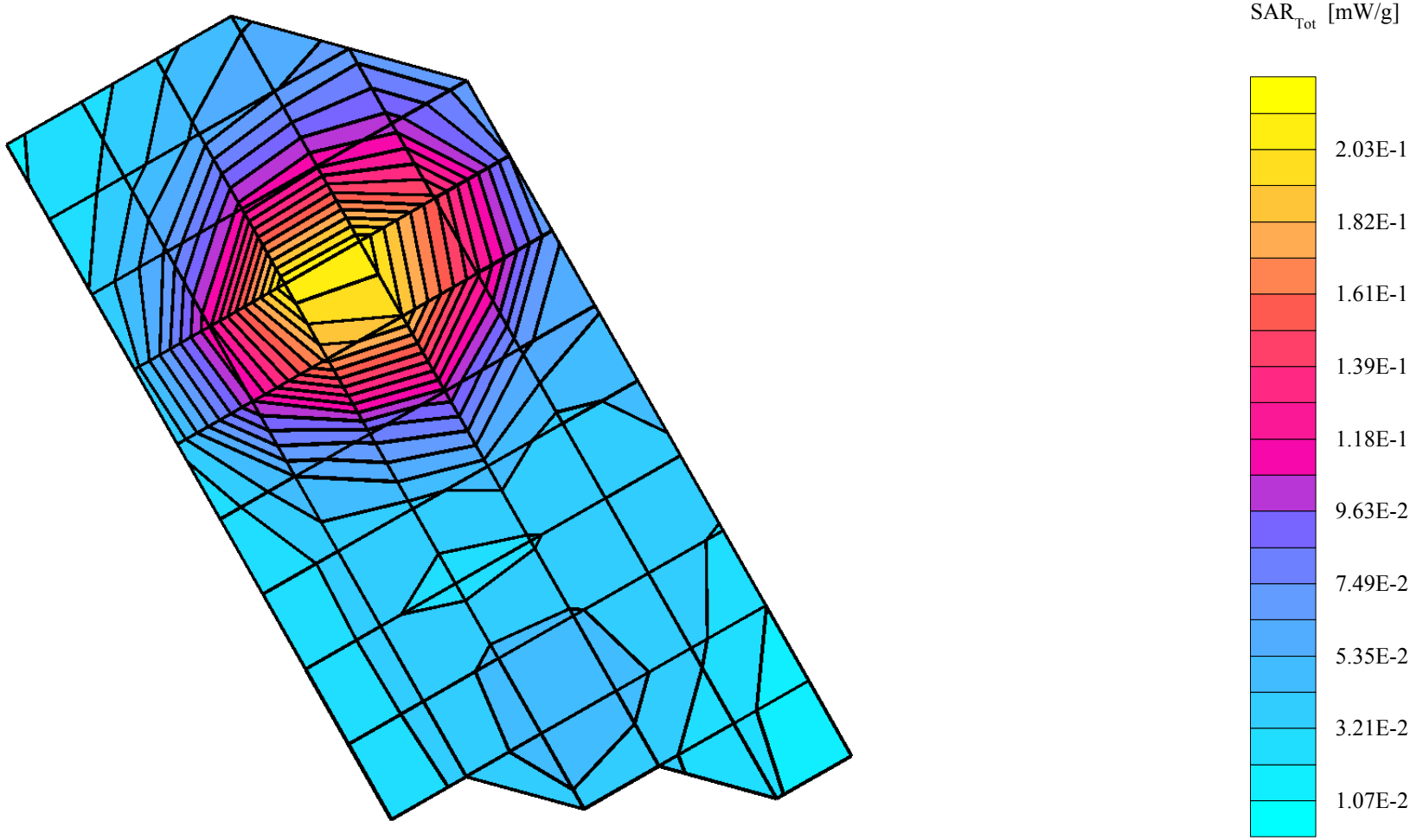
Ch# 600 Pwr Step: up Antenna Position: EXT
Type of Modulation: 1900 CDMA Battery Model #: SNN5615A
DEVICE POSITION: CHEEK
Accessory Model #: none
R4 TP-1250 GLYCOL sam expanded (Rev. 2)-9Jan03 Phantom; Right Hand Section; Position: (90°,180°); Frequency: 1880 MHz
Probe: ET3DV6 - SN1514 - IEEE Head.2; ConvF(5.10,5.10,5.10); Crest factor: 1.0; 1880 MHz Head & Body: σ = 1.44 mho/m ε_r = 39.3 ρ = 1.00 g/cm^3
Cube 7x7x7: SAR (1g): 0.483 mW/g, SAR (10g): 0.269 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0
Penetration depth: 11.0 (10.5, 11.5) [mm]
Powerdrift: 0.14 dB



06/25/04 14:57

s/n: 33C7A484

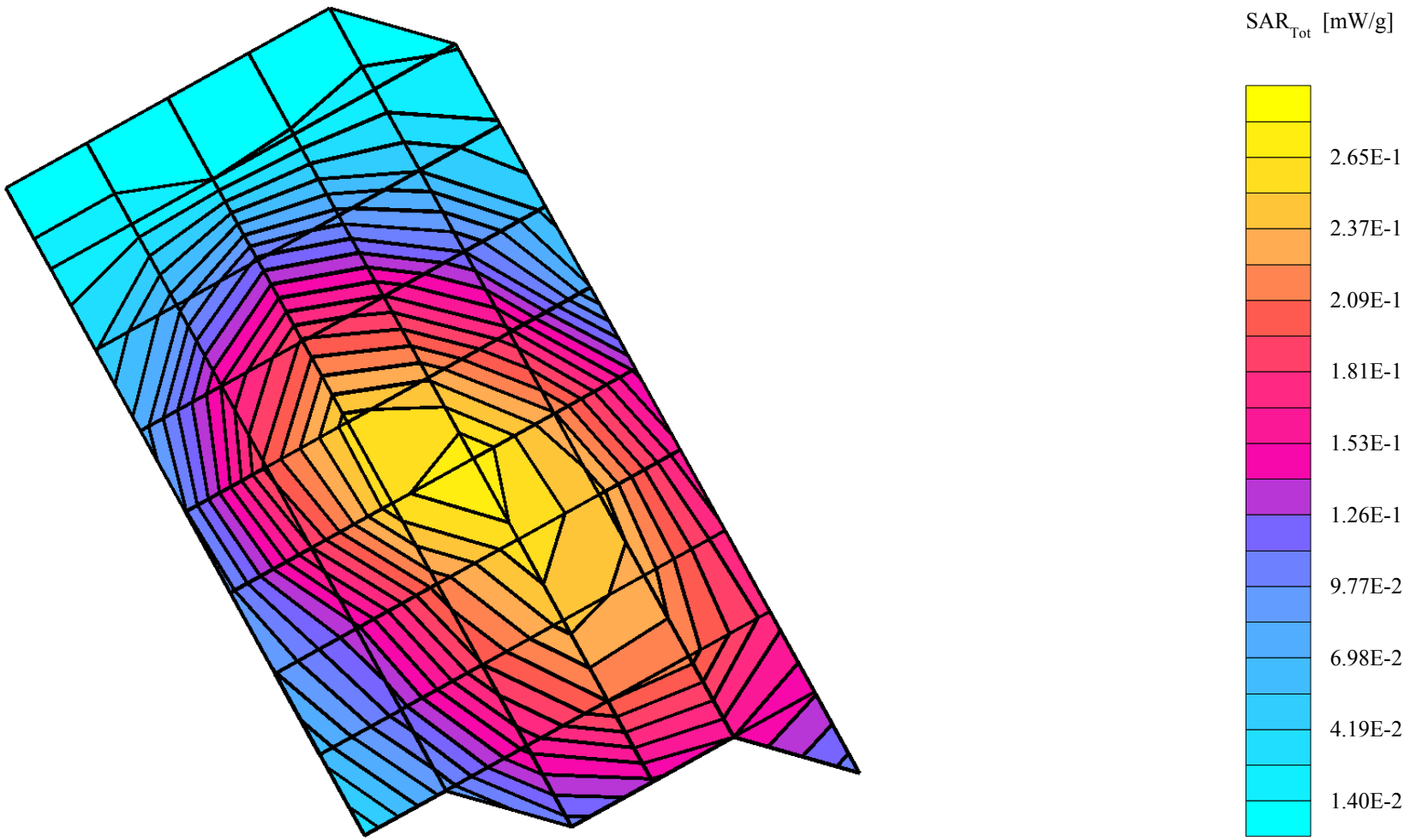
Ch# 600 Pwr Step: up
Antenna Position: EXT
Type of Modulation: 1900 CDMA
Battery Model #: SNN5615A
DEVICE POSITION: ROTATED
Accessory Model #: none
R4 TP-1250 GLYCOL sam expanded (Rev. 2)-9Jan03 Phantom; Right Hand Section; Position: (90°,180°); Frequency: 1880 MHz
Probe: ET3DV6 - SN1514 - IEEE Head.2; ConvF(5.10,5.10,5.10); Crest factor: 1.0; 1880 MHz Head & Body: σ = 1.44 mho/m ε_r = 39.3 ρ = 1.00 g/cm^3
Cube 7x7x7: SAR (1g): 0.235 mW/g, SAR (10g): 0.142 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0
Penetration depth: 11.0 (10.3, 11.8) [mm]
Powerdrift: -0.07 dB



06/23/04 11:25

s/n: 33C7A47E

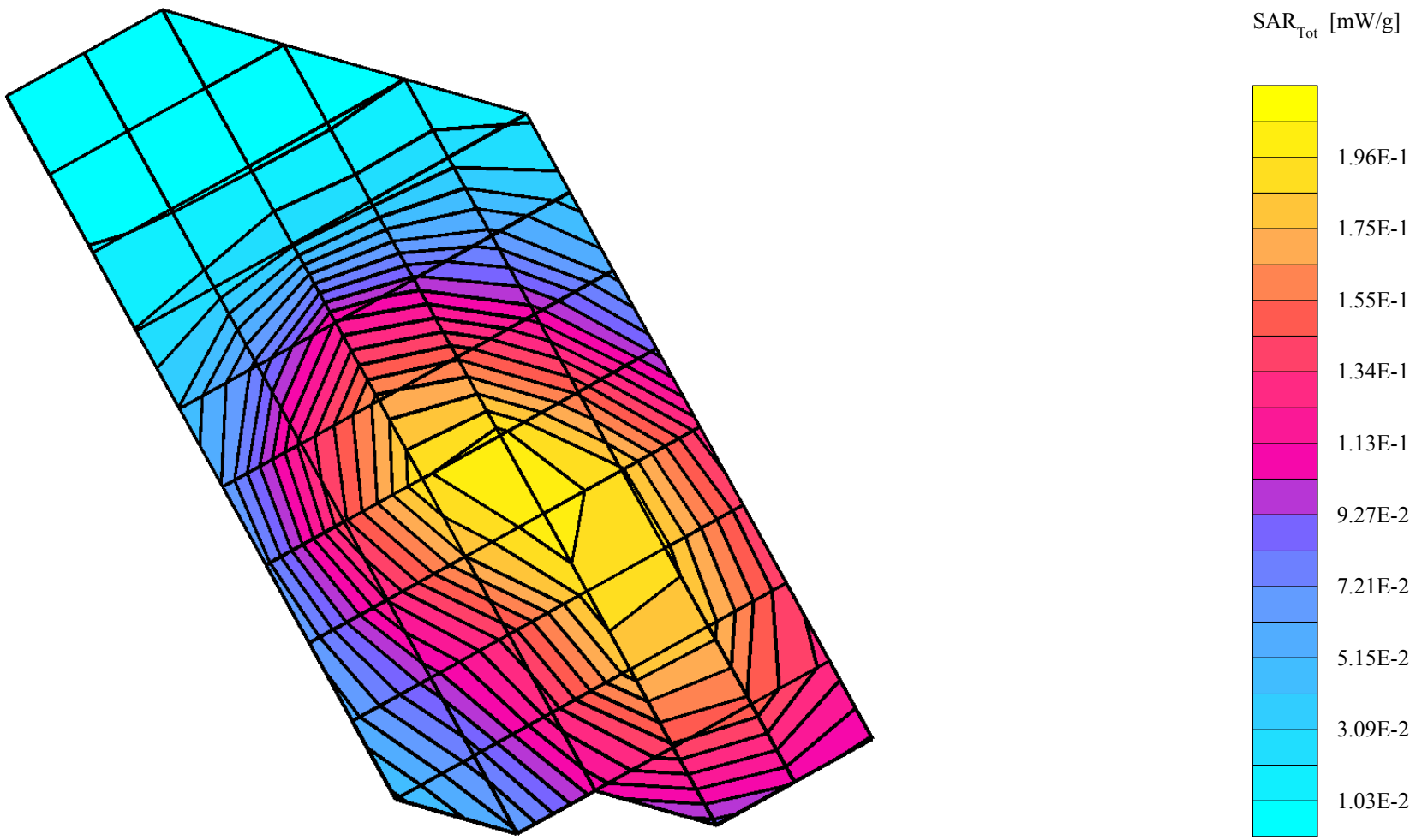
Ch# 384 Pwr Step: 2 ota
Antenna Position: RET
Type of Modulation: 800 amps
Battery Model #: SNN5615A
DEVICE POSITION: ROTATED
Accessory Model #: none
R4 TP-1131 SUGAR SAM Expanded (Rev. 2)-9Jan03 Phantom; Right Hand Section; Position: (90°,180°); Frequency: 837 MHz
Probe: ET3DV6 - SN1514 - IEEE Head.2; ConvF(6.30,6.30,6.30); Crest factor: 1.0; 835 MHz Head & Body: $\sigma = 0.91$ mho/m $\varepsilon_r = 42.4$ $\rho = 1.00$ g/cm^3
Cube 7x7x7: SAR (1g): 0.279 mW/g, SAR (10g): 0.211 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0
Penetration depth: 20.9 (19.7, 22.0) [mm]
Powerdrift: 0.02 dB



06/23/04 12:00

s/n: 33C7A47E

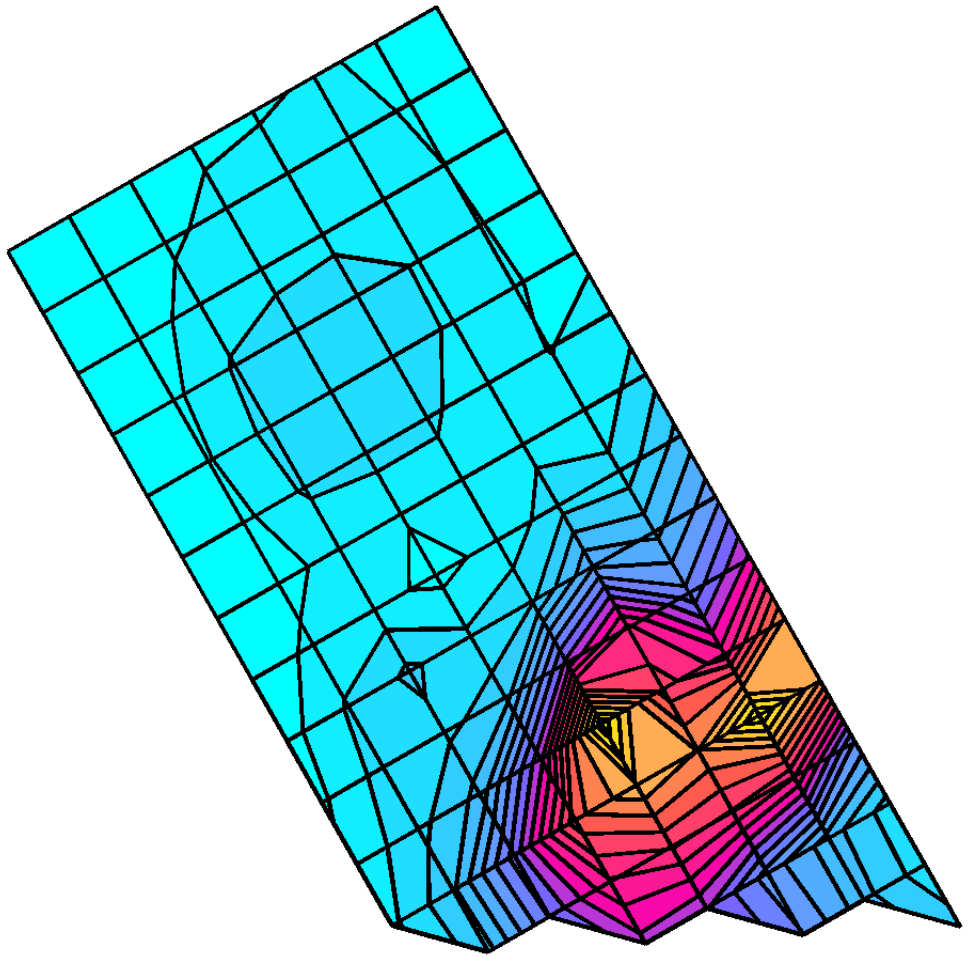
Ch# 384 Pwr Step: 2 ota
Antenna Position: EXT
Type of Modulation: 800 amps
Battery Model #: SNN5615A
DEVICE POSITION: ROTATED
Accessory Model #: none
R4 TP-1131 SUGAR SAM Expanded (Rev. 2)-9Jan03 Phantom; Right Hand Section; Position: (90°,180°); Frequency: 837 MHz
Probe: ET3DV6 - SN1514 - IEEE Head.2; ConvF(6.30,6.30,6.30); Crest factor: 1.0; 835 MHz Head & Body: $\sigma = 0.91$ mho/m $\varepsilon_r = 42.4$ $\rho = 1.00$ g/cm^3
Cube 7x7x7: SAR (1g): 0.209 mW/g, SAR (10g): 0.158 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0
Penetration depth: 19.7 (18.3, 20.9) [mm]
Powerdrift: 0.10 dB

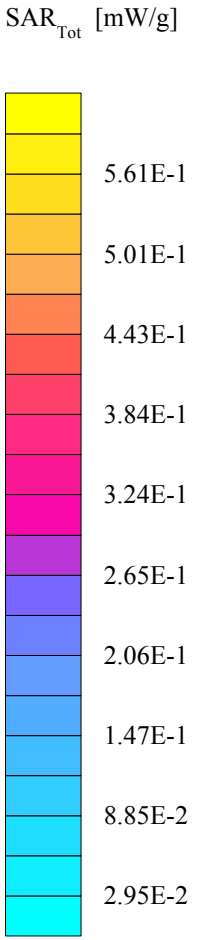


06/23/04 17:17

s/n: 33C7A484

Ch# 600 / Pwr Step: Always Up
Antenna Position: Retracted
Type of Modulation: CDMA 1900
Battery Model #: SNN5615A
DEVICE POSITION (cheek or rotated): Cheek
Accessory Model #: N/A
Simulate Temp when Measured: 19.3C
Simulate Temp after Test: 19.6C
R4 TP-1250 GLYCOL sam expanded (Rev. 2)-9Jan03 Phantom; Right Hand Section; Position: (90°,180°); Frequency: 1880 MHz
Probe: ET3DV6 - SN1514 - IEEE Head.2; ConvF(5.10,5.10,5.10); Crest factor: 1.0; 1880 MHz Head & Body: σ = 1.45 mho/m ε_r = 38.4 ρ = 1.00 g/cm^3
Cube 7x7x7: SAR (1g): 0.593 mW/g, SAR (10g): 0.303 mW/g, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0
Penetration depth: 7.6 (7.2, 8.5) [mm]
Powerdrift: -0.16 dB



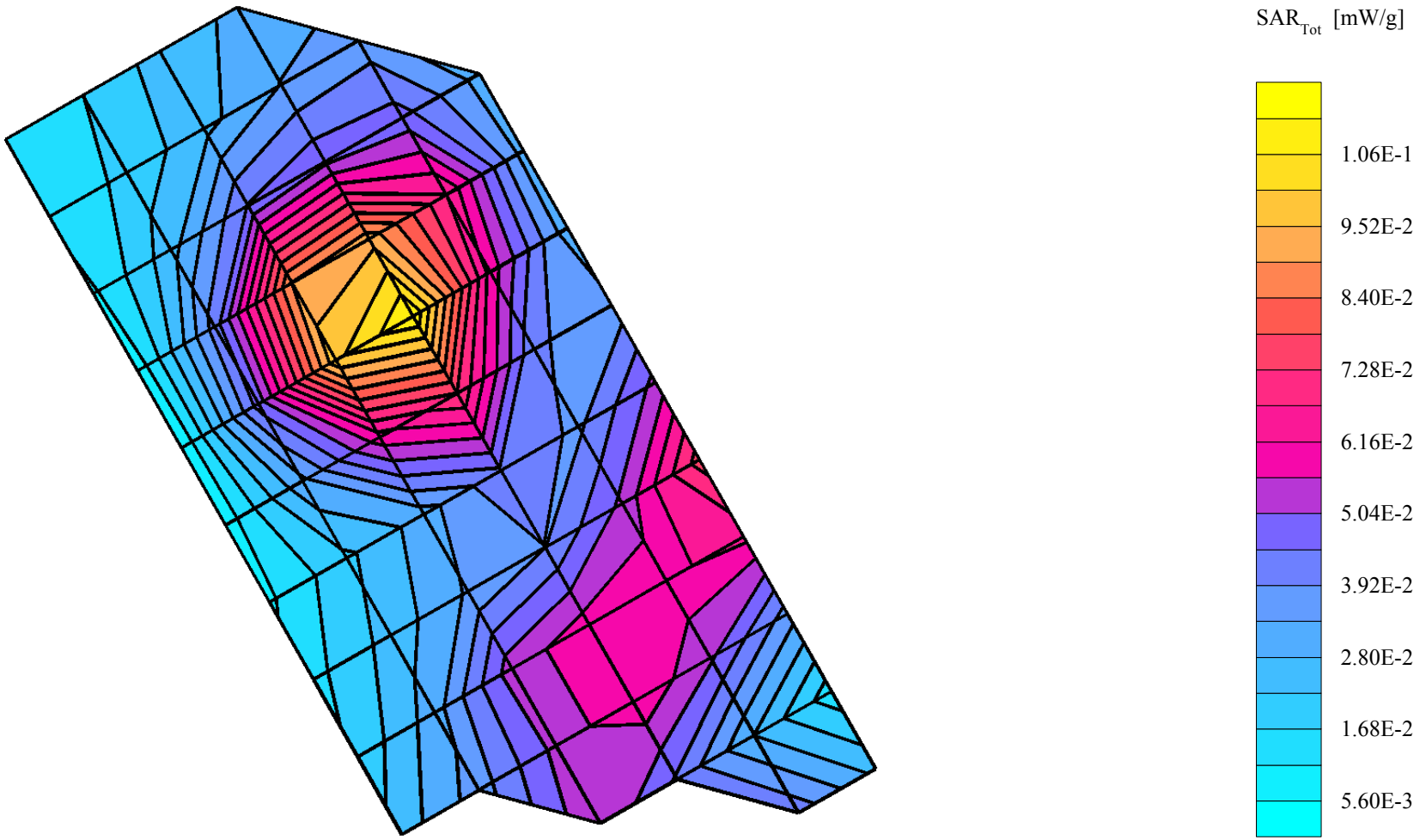


Motorola, Inc.

06/25/04 14:22

s/n: 33C7A484

Ch# 600 Pwr Step: up
Antenna Position: RET
Type of Modulation: 1900 CDMA
Battery Model #: SNN5615A
DEVICE POSITION: ROTATED
Accessory Model #: none
R4 TP-1250 GLYCOL sam expanded (Rev. 2)-9Jan03 Phantom; Right Hand Section; Position: (90°,180°); Frequency: 1880 MHz
Probe: ET3DV6 - SN1514 - IEEE Head.2; ConvF(5.10,5.10,5.10); Crest factor: 1.0; 1880 MHz Head & Body: σ = 1.44 mho/m ε_r = 39.3 ρ = 1.00 g/cm^3
Cube 7x7x7: SAR (1g): 0.117 mW/g, SAR (10g): 0.0701 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0
Penetration depth: 11.7 (11.5, 12.0) [mm]
Powerdrift: -0.23 dB



Appendix 4

Probe Calibration Certificate

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

Client Motorola MRO

CALIBRATION CERTIFICATE

Object(s) ET3DV6 - SN:1514

Calibration procedure(s) QA CAL-01.v2
Calibration procedure for dosimetric E-field probes

Calibration date: July 31, 2003

Condition of the calibrated item In Tolerance (according to the specific calibration document)

This calibration statement documents traceability of M&TE used in the calibration procedures and conformity of the procedures with the ISO/IEC 17025 international standard.

All calibrations have been conducted in the closed laboratory facility: environment temperature 22 +/- 2 degrees Celsius and humidity < 75%.

Calibration Equipment used (M&TE critical for calibration)

Model Type	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
RF generator HP 8684C	US3642U01700	4-Aug-99 (SPEAG, in house check Aug-02)	In house check: Aug-05
Power sensor E4412A	MY41495277	2-Apr-03 (METAS, No 252-0250)	Apr-04
Power sensor HP 8481A	MY41092180	18-Sep-02 (Agilent, No. 20020918)	Sep-03
Power meter EPM E4419B	GB41293874	2-Apr-03 (METAS, No 252-0250)	Apr-04
Network Analyzer HP 8753E	US37390585	18-Oct-01 (Agilent, No. 24BR1033101)	In house check: Oct 03
Fluke Process Calibrator Type 702	SN: 6295803	3-Sep-01 (ELCAL, No.2360)	Sep-03

	Name	Function	Signature
Calibrated by:	Nico Vetterli	Technician	
Approved by:	Katja Pokovic	Laboratory Director	

Date issued: July 31, 2003

This calibration certificate is issued as an intermediate solution until the accreditation process (based on ISO/IEC 17025 International Standard) for Calibration Laboratory of Schmid & Partner Engineering AG is completed.

Schmid & Partner Engineering AG

s p e a g

Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 1 245 9700, Fax +41 1 245 9779
info@speag.com, http://www.speag.com

Probe ET3DV6

SN:1514

Manufactured:	November 24, 1999
Last calibration:	July 25, 2002
Recalibrated:	July 31, 2003

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

DASY - Parameters of Probe: ET3DV6 SN:1514

Sensitivity in Free Space

Diode Compression

NormX	**1.70** $\mu V/(V/m)^2$	DCP X	**93**	mV
NormY	**1.86** $\mu V/(V/m)^2$	DCP Y	**93**	mV
NormZ	**1.79** $\mu V/(V/m)^2$	DCP Z	**93**	mV

Sensitivity in Tissue Simulating Liquid

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

Valid for f=800-1000 MHz with Head Tissue Simulating Liquid according to EN 50361, P1528-200X

ConvF X	**6.3** ± 9.5% (k=2)	Boundary effect:	
ConvF Y	**6.3** ± 9.5% (k=2)	Alpha	**0.58**
ConvF Z	**6.3** ± 9.5% (k=2)	Depth	**1.95**

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

Valid for f=1710-1910 MHz with Head Tissue Simulating Liquid according to EN 50361, P1528-200X

ConvF X	**5.1** ± 9.5% (k=2)	Boundary effect:	
ConvF Y	**5.1** ± 9.5% (k=2)	Alpha	**0.55**
ConvF Z	**5.1** ± 9.5% (k=2)	Depth	**2.48**

Boundary Effect

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

Probe Tip to Boundary		**1 mm**	**2 mm**
SAR_{be} [%]	Without Correction Algorithm	9.7	5.1
SAR_{be} [%]	With Correction Algorithm	0.2	0.4

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

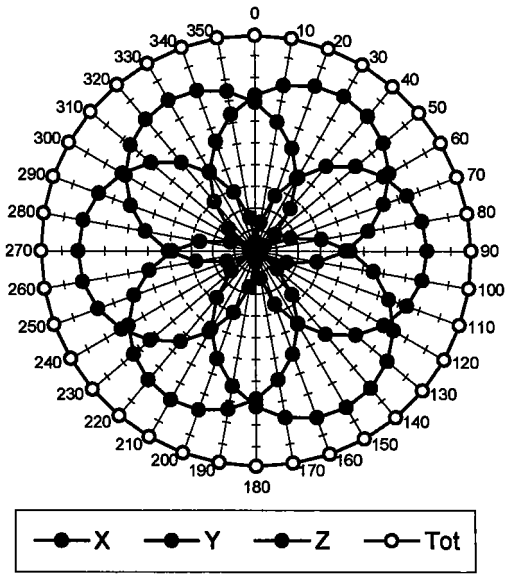
Probe Tip to Boundary		**1 mm**	**2 mm**
SAR_{be} [%]	Without Correction Algorithm	13.9	9.0
SAR_{be} [%]	With Correction Algorithm	0.1	0.0

Sensor Offset

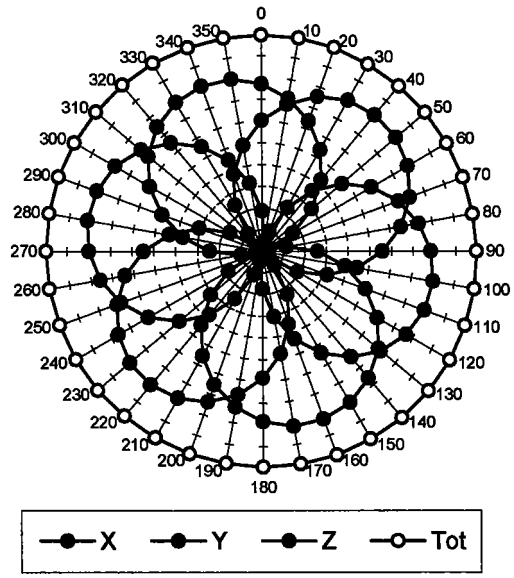
Probe Tip to Sensor Center	**2.7**	mm
Optical Surface Detection	**0.8 ± 0.2**	mm

Receiving Pattern (ϕ , θ = 0°

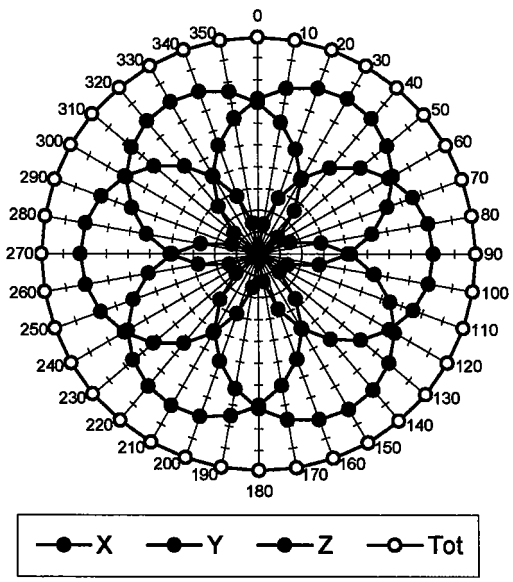
f = 30 MHz, TEM cell ifi110



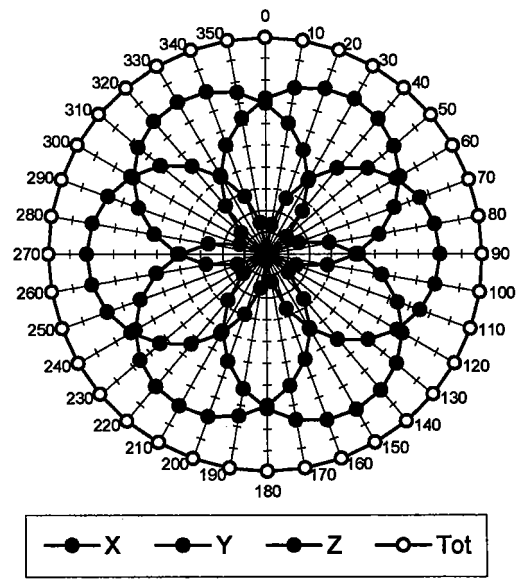
f = 100 MHz, TEM cell ifi110

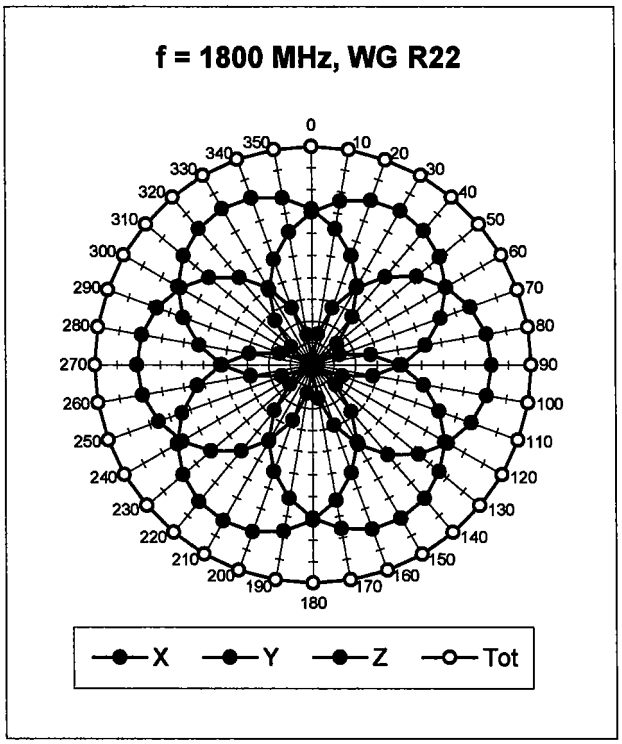


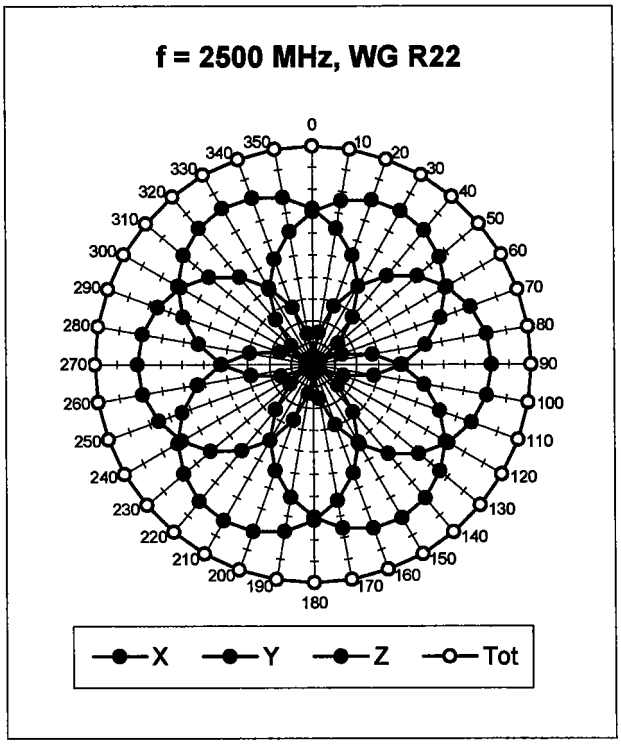
f = 300 MHz, TEM cell ifi110



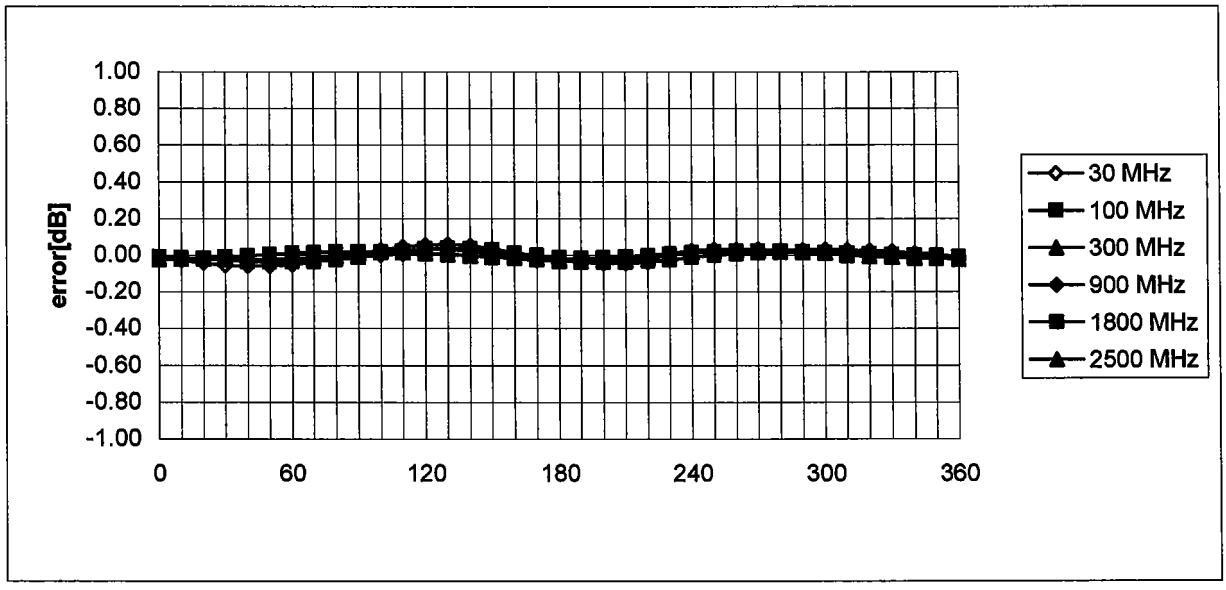
f = 900 MHz, TEM cell ifi110





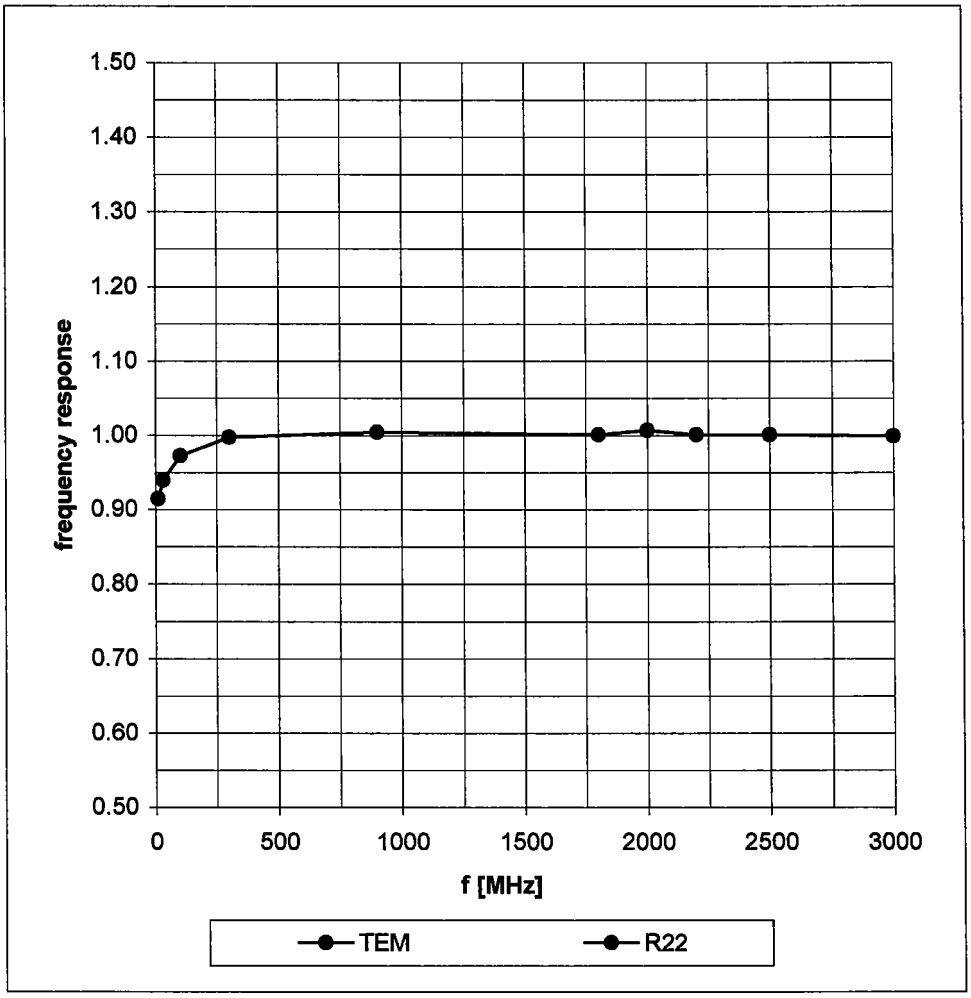


Isotropy Error (ϕ), θ = 0°



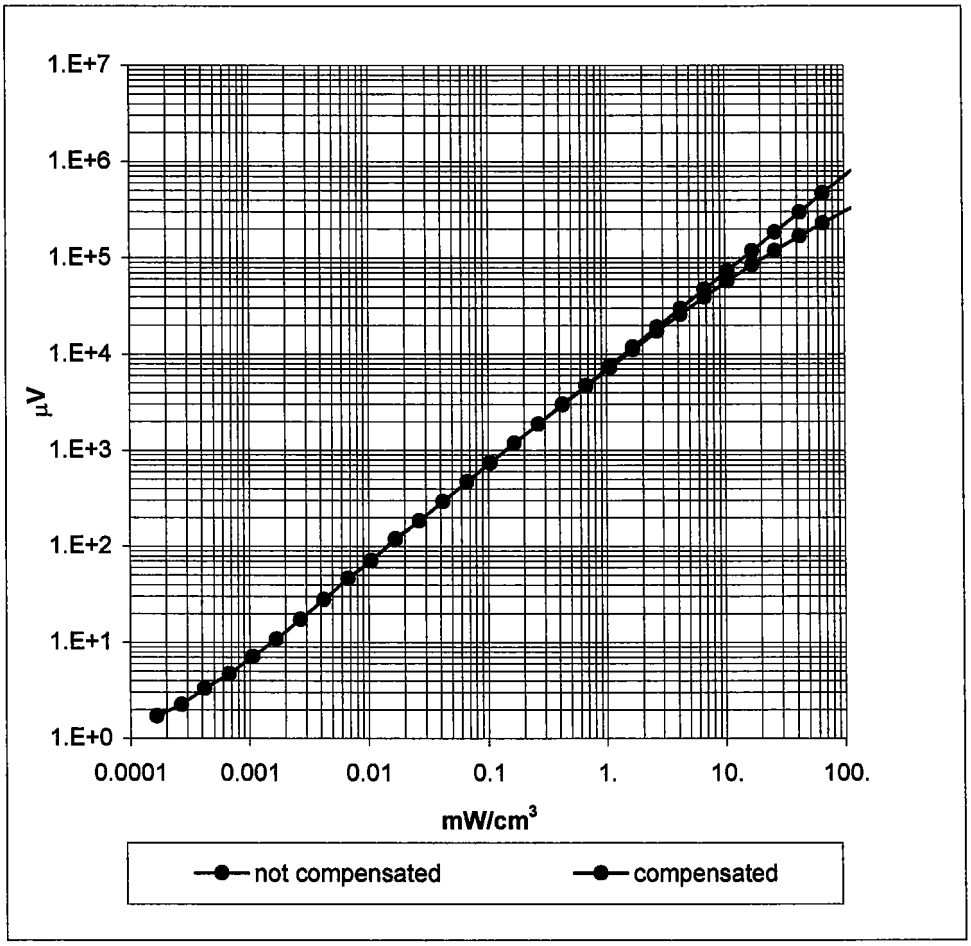
Frequency Response of E-Field

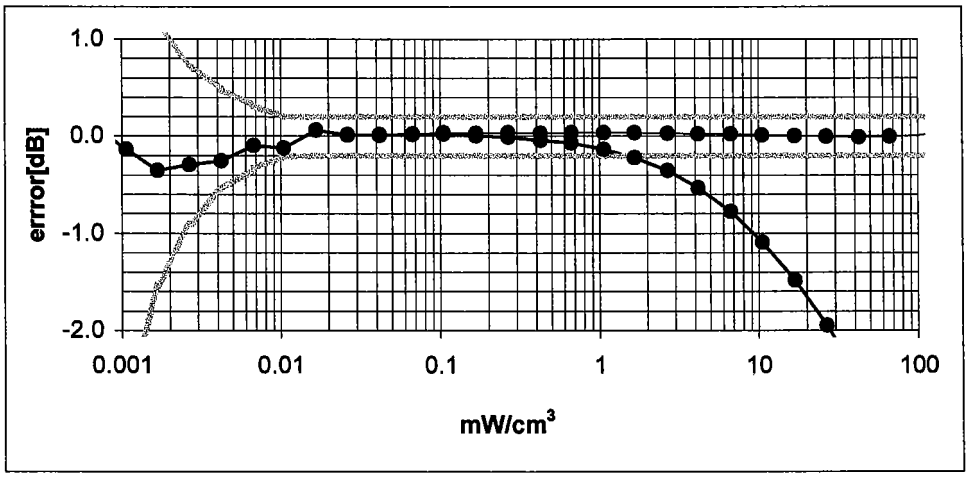
(TEM-Cell:ifi110, Waveguide R22)



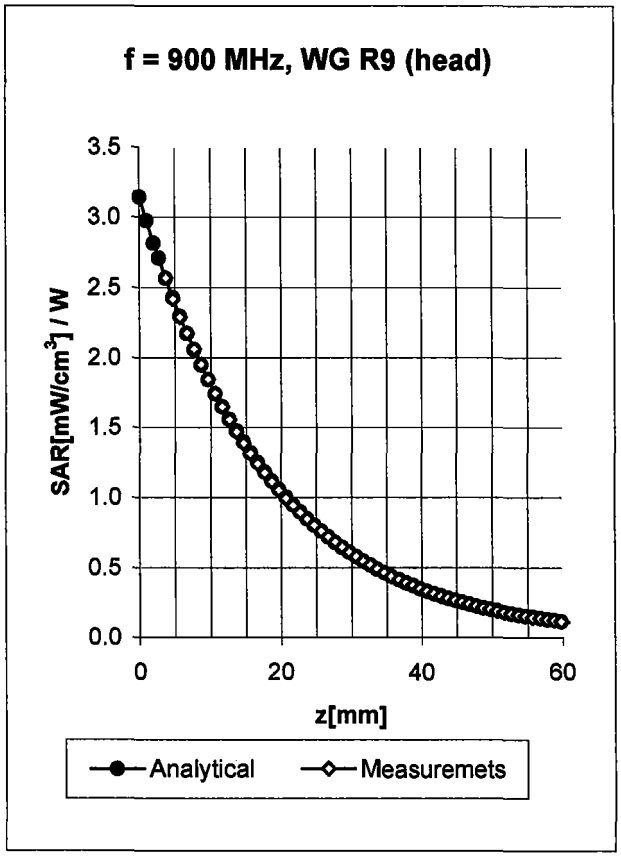
Dynamic Range f(SAR_{brain})

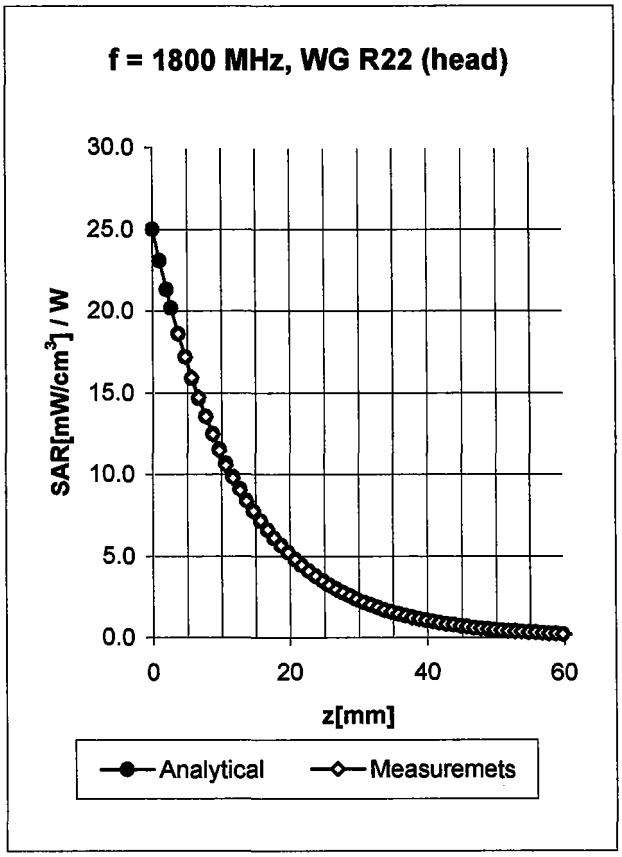
(Waveguide R22)





Conversion Factor Assessment





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

Valid for f=800-1000 MHz with Head Tissue Simulating Liquid according to EN 50361, P1528-200X

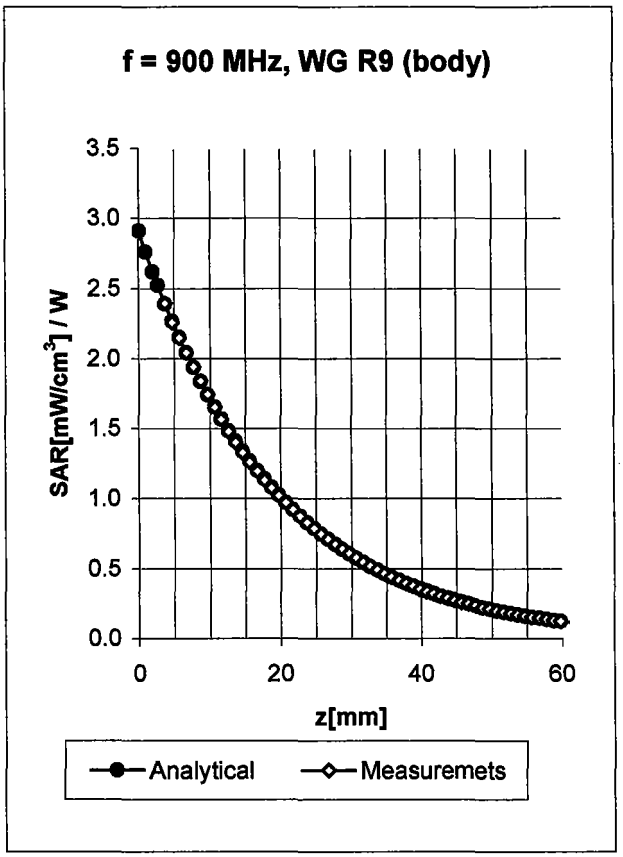
ConvF X	**6.3** ± 9.5% (k=2)	Boundary effect:	
ConvF Y	**6.3** ± 9.5% (k=2)	Alpha	**0.58**
ConvF Z	**6.3** ± 9.5% (k=2)	Depth	**1.95**

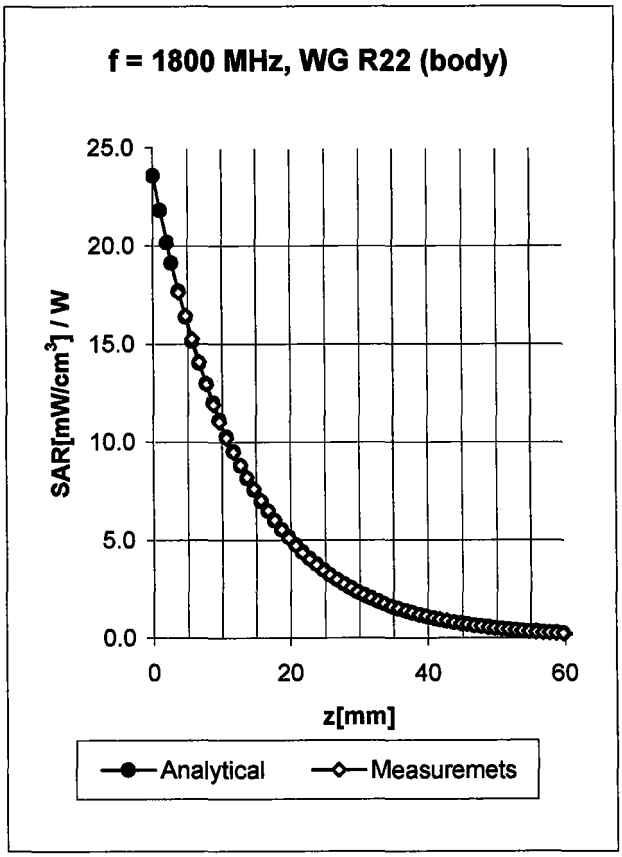
Head **1800 MHz** ε_r **= 40.0 ± 5%** σ **= 1.40 ± 5% mho/m**

Valid for f=1710-1910 MHz with Head Tissue Simulating Liquid according to EN 50361, P1528-200X

ConvF X	**5.1** ± 9.5% (k=2)	Boundary effect:	
ConvF Y	**5.1** ± 9.5% (k=2)	Alpha	**0.55**
ConvF Z	**5.1** ± 9.5% (k=2)	Depth	**2.48**

Conversion Factor Assessment





Body **900 MHz** ε_r **= 55.0 ± 5%** σ **= 1.05 ± 5% mho/m**

Valid for f=800-1000 MHz with Head Tissue Simulating Liquid according to OET 65 Suppl. C

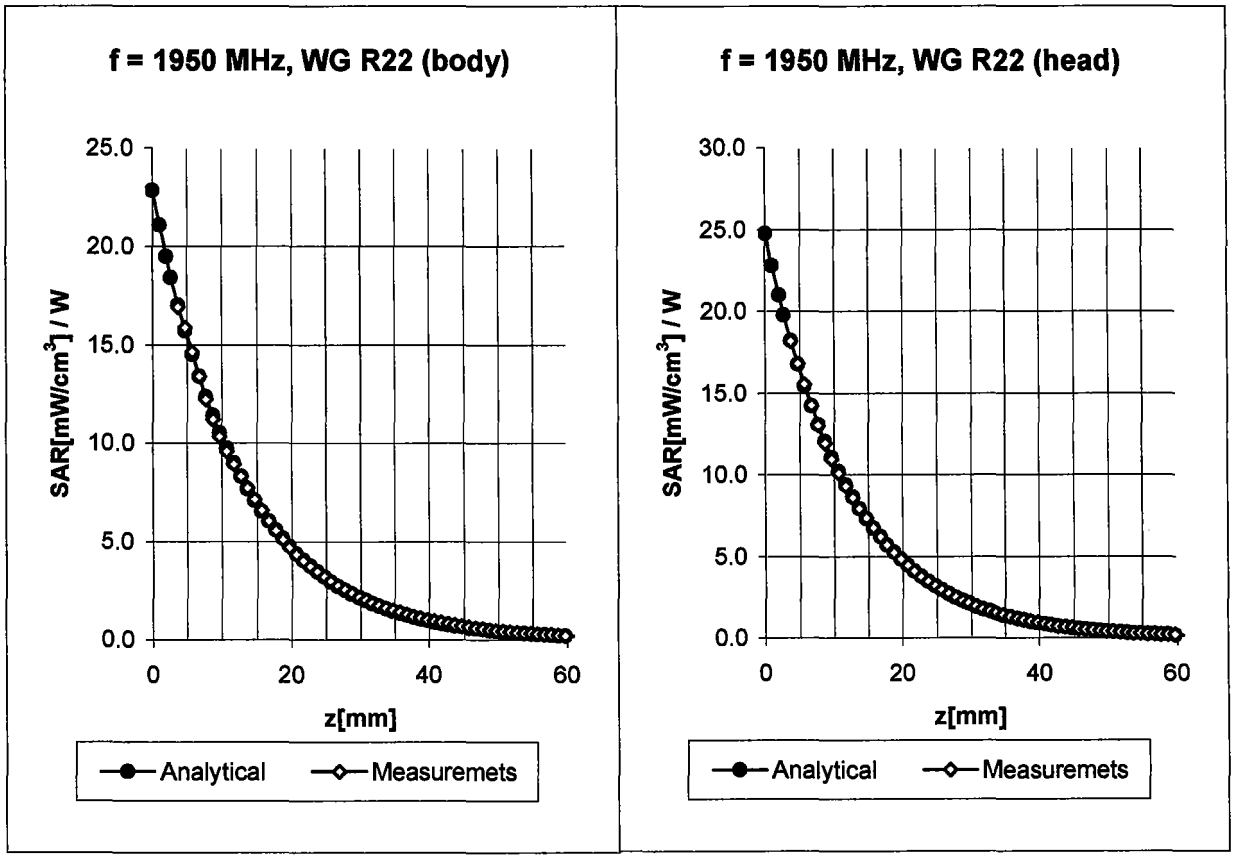
ConvF X	**6.1** ± 9.5% (k=2)	Boundary effect:	
ConvF Y	**6.1** ± 9.5% (k=2)	Alpha	**0.51**
ConvF Z	**6.1** ± 9.5% (k=2)	Depth	**2.18**

Body **1800 MHz** ε_r **= 53.3 ± 5%** σ **= 1.52 ± 5% mho/m**

Valid for f=1710-1910 MHz with Head Tissue Simulating Liquid according to OET 65 Suppl. C

ConvF X	**4.7** ± 9.5% (k=2)	Boundary effect:	
ConvF Y	**4.7** ± 9.5% (k=2)	Alpha	**0.57**
ConvF Z	**4.7** ± 9.5% (k=2)	Depth	**2.85**

Conversion Factor Assessment



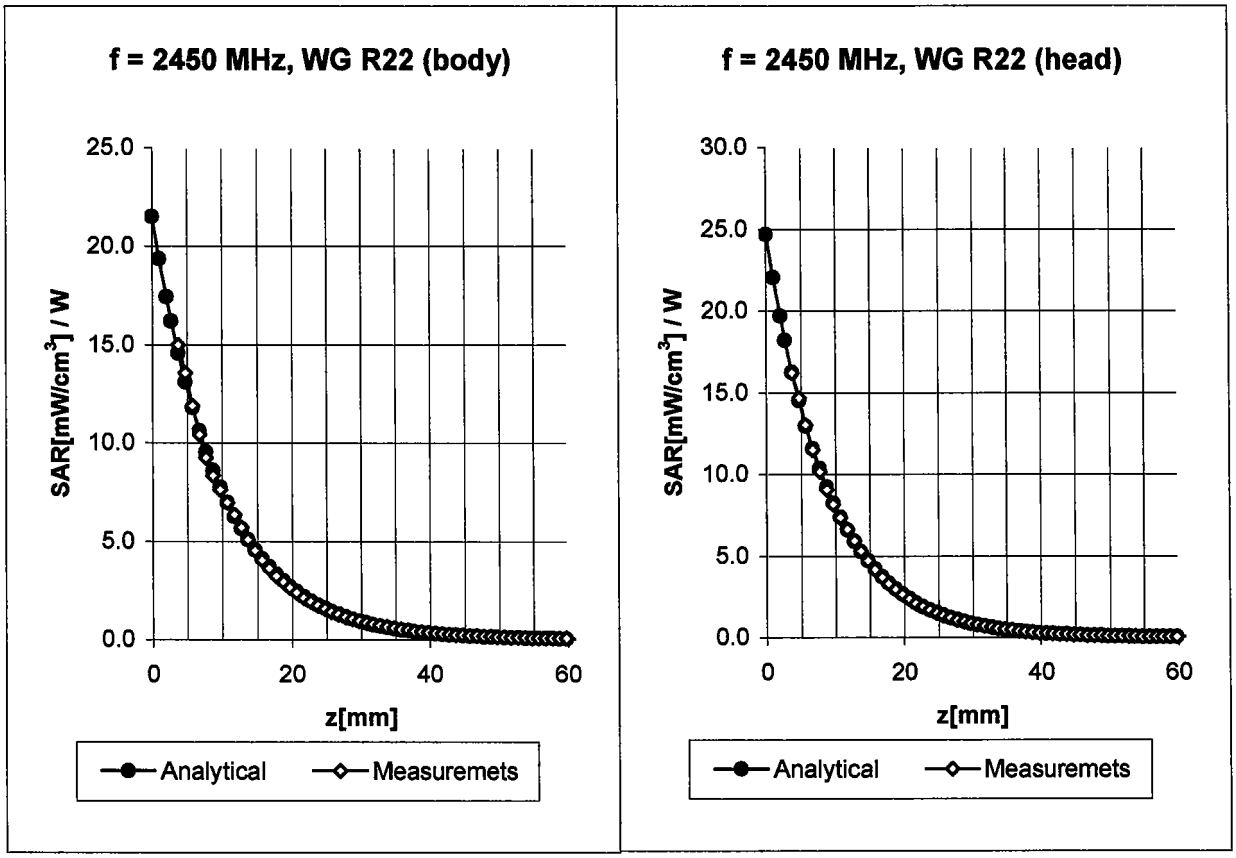
Body **1950 MHz** ε_r **= 53.3 ± 5%** σ **= 1.52 ± 5% mho/m**

ConvF X	**4.5** ± 9.5% (k=2)	Boundary effect:	
ConvF Y	**4.5** ± 9.5% (k=2)	Alpha	**0.80**
ConvF Z	**4.5** ± 9.5% (k=2)	Depth	**2.23**

Head **1950 MHz** ε_r **= 40.0 ± 5%** σ **= 1.40 ± 5% mho/m**

ConvF X	**5.0** ± 8.9% (k=2)	Boundary effect:	
ConvF Y	**5.0** ± 8.9% (k=2)	Alpha	**0.60**
ConvF Z	**5.0** ± 8.9% (k=2)	Depth	**2.44**

Conversion Factor Assessment



Body **2450 MHz** ε_r **= 52.7 ± 5%** σ **= 1.95 ± 5% mho/m**

Valid for f=2400-2500 MHz with Body Tissue Simulating Liquid according to OET 65 Suppl. C

ConvF X	**4.4** ± 8.9% (k=2)	Boundary effect:	
ConvF Y	**4.4** ± 8.9% (k=2)	Alpha	**1.55**
ConvF Z	**4.4** ± 8.9% (k=2)	Depth	**1.45**

Head **2450 MHz** ε_r **= 39.2 ± 5%** σ **= 1.80 ± 5% mho/m**

Valid for f=2400-2500 MHz with Head Tissue Simulating Liquid according to EN 50361, P1528-200X

ConvF X	**4.7** ± 8.9% (k=2)	Boundary effect:	
ConvF Y	**4.7** ± 8.9% (k=2)	Alpha	**1.24**
ConvF Z	**4.7** ± 8.9% (k=2)	Depth	**1.67**

Deviation from Isotropy in HSL

Error ($\theta\phi$), f = 900 MHz