Specific Absorption Rate (SAR) Test Report
for
Philips Consumer Communications
on the
TDMA/AMPS Cellular Phone
Model: OZEO

Test Report: 20178673
Date of Report: July 28, 2000

NVLAP Laboratory Code 200201-0
Accredited for testing to FCC Parts 15

Tested by:	Suresh Kondapalli	[signature]
Reviewed by:	David Chernomordik	David Chernomordik

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1 JOB DESCRIPTION

1.1 Client Information

The EUT has been tested at the request of

Company: Philips Consumer Communications
1000 West Maude Avenue
Sunnyvale, California 94086
Name of contact: Mr. Sudarshan Biligiri
US Telephone: (408) 617-5914
US Fax: (408) 617-5960

1.2 Equipment under test (EUT)

Product Descriptions:

Equipment	AMPS/TDMA Cellular Radio Telephone		
Trade Name	Philips	Model No.	OZEO
FCC ID	M7VTCD588	S/N No.	Not Labeled
Category	Portable	RF Exposure	Uncontrolled Environment
Frequency Band (uplink)	AMPS, 824-849 MHz TDMA, 824-849 MHz TDMA: 1850-1910 MHz	System	AMPS TDMA TDMA PCS

EUT Antenna Description			
Type	Helical 800 MHz Monopole 1900 MHz	Configuration	Fixed
Dimensions	22 mm (L)	Gain	1.0 dBi Cellular 2.4 dBi PCS
Location	Right, Top		

Use of Product : Voice communications

Manufacturer: SAME as above.

Production is planned: [X] Yes, [ ] No

EUT receive date: 7/6/00
EUT received condition: Good condition prototype

Test start date: 7/6/00

Test end date: 7/29/00

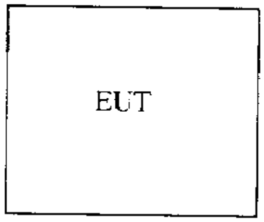
1.3 Test plan reference

FCC rule part 2.1093, FCC Docket 96-326 & Supplement C to OET Bulletin 65

1.4 System test configuration

1.4.1 System block diagram & Support equipment

The diagram shown below details test configuration of the equipment under test .



S:	Shielded	U:	Unshielded	F:	With Ferrite Core

Support equipment					
Equp. #	**Equipment**	**Manufacturer**	**Model #**	**S/N #**	**FCC ID**
None	-	-	-	-	-

1.4.2 Test Position

The EUT was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in C95.1 (1992) and Supplement C of OET 65 (1998). The EUT was placed in the intended use position, i.e. CENELEC 80° position. This position is defined by a reference plane and a line. The reference plane of the head is given by three points, the auditory canal opening of both ears and center of the closed mouth. The reference line of the EUT is defined by the line which connects the center of the ear piece with the center of the bottom of the case and lies on the surface of the case facing the phantom. The reference line of the EUT lies in the reference plane of the head. The center of the ear piece of the EUT is place at the entry of the auditory canal. The angle between the reference line of the phone and the line connecting both auditory canal openings is 80°. Please refer to figure 1 below for the position details:

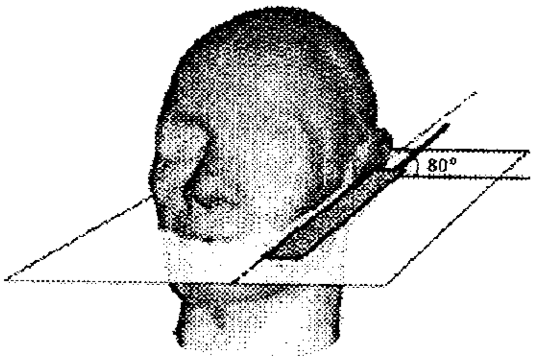


Figure 1: Intended use position

1.4.3 Test Condition

During tests, the worst case data (max. RF coupling) was determined with following conditions:

EUT Antenna	Fixed	Orientation	N/A
Usage	Left-Hand and Right –Hand	Distance between antenna axis at the joint and the liquid surface:	18.4 mm
Simulating human hand	Not Used	EUT Battery	Fully Charged
Power output	24.7 dBm on antenna port in AMPS mode 28..0 dBm on antenna port in TDMA mode 25.5 dBm on antenna port in PCS TDMA mode		

The spatial peak SAR values were accessed for lowest, middle and highest operating channels defined by the manufacturer. Tests were performed at AMPS mode, TDMA mode, & TDMA PCS mode.

Antenna port power measurement was performed, with the HP 435A power meter, before and after the SAR tests to ensure that the EUT operated at the highest power level.

1.5 Modifications required for compliance

No modifications were implemented by Intertek Testing Services.

1.6 Additions, deviations and exclusions from standards

No additions, deviations or exclusions have been made from standard.

2 SAR EVALUATION

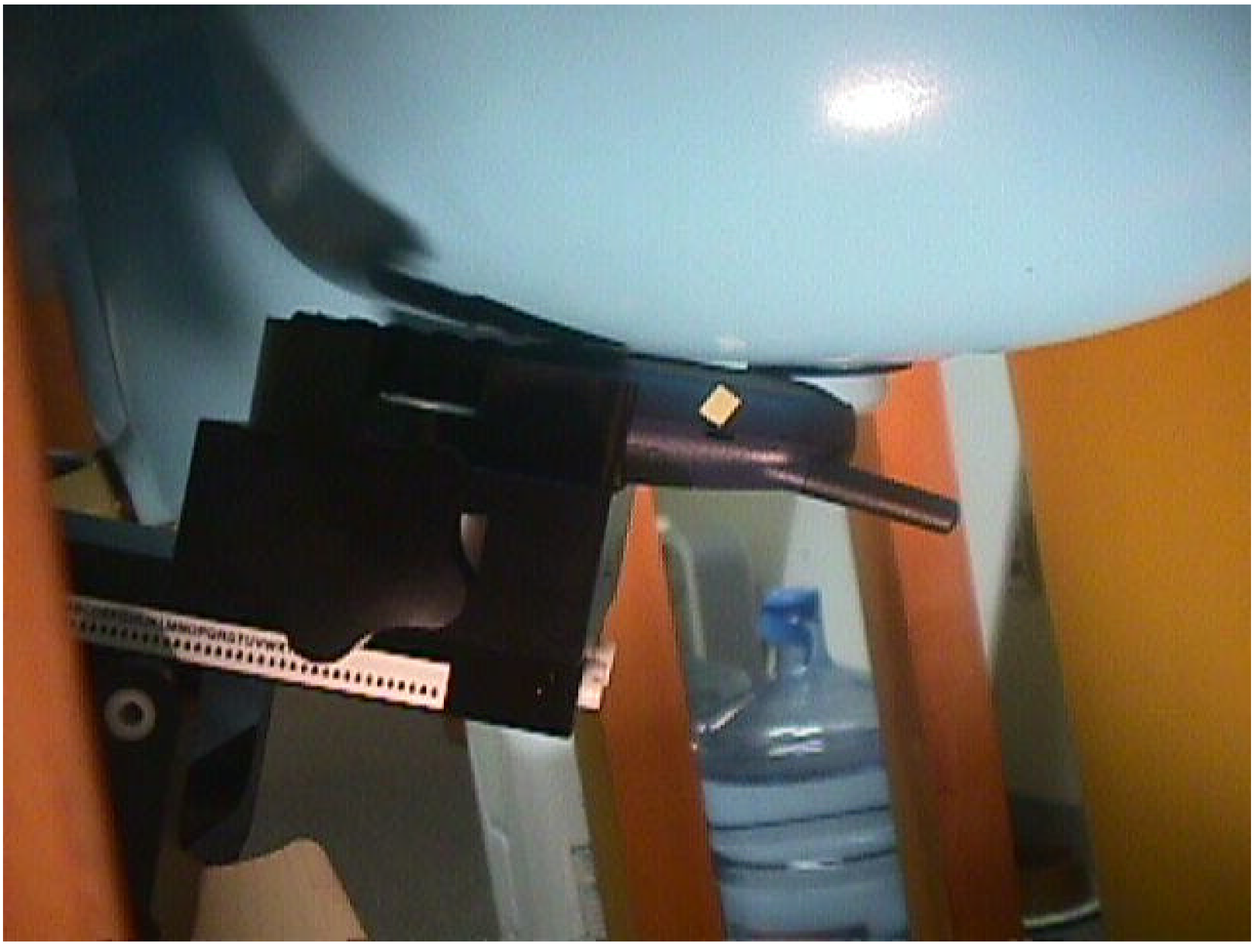
2.1 SAR Limits

The following FCC limits for SAR apply to devices operate in General Population/Uncontrolled Exposure environment:

EXPOSURE (General Population/Uncontrolled Exposure environment)	SAR (W/kg)
Average over the whole body	0.08
Spatial Peak (1g)	1.60
Spatial Peak for hands, wrists, feet and ankles (10g)	4.00

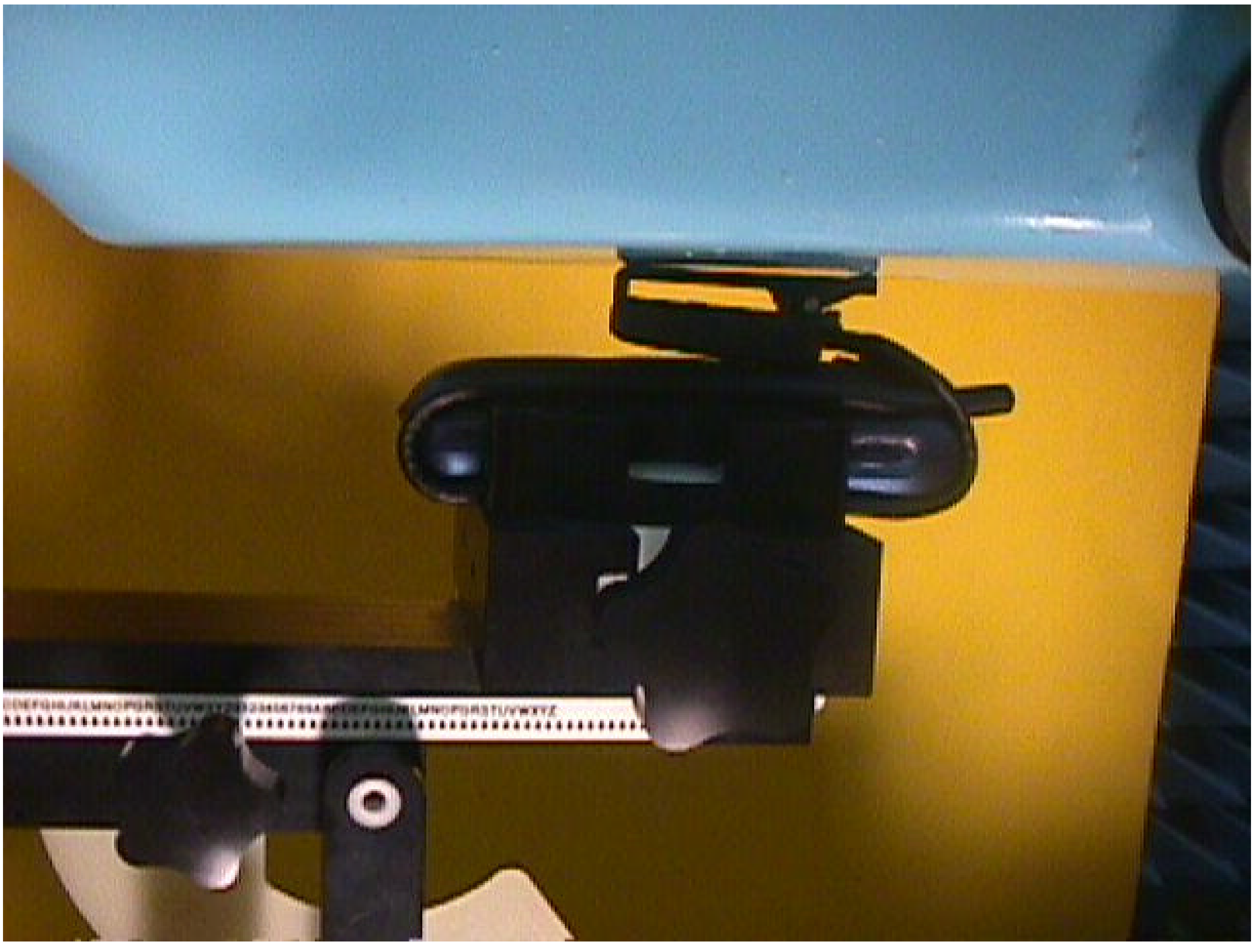
2.2 Configuration Photographs

Worst-Case SAR measurement



2.2 Configuration Photographs – Continued

Worst-Case SAR Measurement



2.3 System Verification

Prior to the assessment, the system was verified to the ±5% of the specifications by using the system validation kit. The validation was performed at 900 MHz.

Validation kit	Targeted SAR_{1g} (mW/g)	Measured SAR_{1g} (mW/g)
D900V2, S/N #: 013	3.92	3.86

2.4 Evaluation Procedures

The SAR evaluation was performed with the following procedures:

a. SAR was measured at a fixed location above the ear point and used as a reference value for the assessing the power drop.

b. The SAR distribution at the exposed side of the head was measured at a distance of 4.0 mm from the inner surface of the shell. The area covered the entire dimension of the head and the horizontal grid spacing was 20 mm x 20 mm. Based on this data, the area of the maximum absorption was determined by spline interpolation.

c. Around this point, a volume of 32 mm x 32 mm x 34 mm was assessed by measuring 5 x 5 x 7 points. On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

   I) The data at the surface were extrapolated, since the center of the dipoles is 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measurement point is 1.6 mm. The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in Z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip.

   ii) The maximum interpolated value was searched with a straight-forward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1g or 10g) were computed using the 3-D spline interpolation algorithm. The 3-D spline is composed of three one-dimensional splines with the "Not a knot" condition (in x, y and z directions). The volume was integrated with the trapezoidal algorithm. 1000 points (10 x 10 x 10) were interpolated to calculate the average.

   iii) All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

d. Re-measurement of the SAR value at the same location as in step a. above. If the value changed by more than 5 %, the evaluation was repeated.

2.5 Test Results

The results on the following page(s) were obtained when the device was tested in the condition described in this report. Detail measurement data and plots which reveal information about the location of the maximum SAR with respect to the device, are reported in Appendix A.

Trade Name:	Philips	Model No.:	OZEO
Serial No.:	Not Labeled	Test Engineer:	Suresh Kondapalli

TEST CONDITIONS			
Ambient Temperature	22 °C	Relative Humidity	51 %
Test Signal Source	Test Mode	Signal Modulation	CW
Output Power Before SAR Test	24.7 dBm (AMPS)	Output Power After SAR Test	24.5 dBm (AMPS)
Output Power Before SAR Test	28.0 dBm (TDMA, Cellular)	Output Power After SAR Test	28.0dBm (TDMA, Cellular)
Output Power Before SAR Test	25.5 dBm (TDMA, PCS)	Output Power After SAR Test	25.5 dBm (TDMA, PCS)
Test Duration	23 Min.	Number of Battery Change	Every Scan

EUT Position: Left Hand, 2 Points Touching Phantom

Channel MHz	Operating Mode	Crest Factor	Antenna Position	Measured SAR_{1g} (mW/g)	Plot Number
824	AMPS	1	Fixed	1.01	1
837	AMPS	1	Fixed	1.47	2
849	AMPS	1	Fixed	1.22	3

EUT Position: Left Hand, 80 Degrees Touching Phantom

Channel MHz	Operating Mode	Crest Factor	Antenna Position	Measured SAR_{1g} (mW/g)	Plot Number
824	AMPS	1	Fixed	0.999	4
837	AMPS	1	Fixed	0.799	5
849	AMPS	1	Fixed	1.18	6

EUT Position: Left Hand, 2 Points Touching Phantom

Channel MHz	Operating Mode	Crest Factor	Antenna Position	Measured SAR_{1g} (mW/g)	Plot Number
837	TDMA	3	Fixed	0.936	7

EUT Position: Right Hand, 2 Points Touching Phanton					
Channel MHz	Operating Mode	Crest Factor	Antenna Position	Measured SAR_{1g} (mW/g)	Plot Number
837	AMPS	1	Fixed	1.16	8

EUT Position: Left Hand, 2 Points Touching Phantom, Large Battery					
Channel MHz	Operating Mode	Crest Factor	Antenna Position	Measured SAR_{1g} (mW/g)	Plot Number
837	AMPS	1	Fixed	1.46	9

EUT Position: Body SAR, Face Down With Belt-Clip					
Channel MHz	Operating Mode	Crest Factor	Antenna Position	Measured SAR_{1g} (mW/g)	Plot Number
824	AMPS	1	Fixed	0.54	10
837	AMPS	1	Fixed	0.586	11
849	AMPS	1	Fixed	0.435	12

EUT Position: Body SAR, Face Down, Large Battery					
Channel MHz	Operating Mode	Crest Factor	Antenna Position	Measured SAR_{1g} (mW/g)	Plot Number
837	AMPS	1	Fixed	0.594	13
837	TDMA	3	Fixed	0.454	14

EUT Position: Left Hand, 2 Points Touching Phantom					
Channel MHz	Operating Mode	Crest Factor	Antenna Position	Measured SAR_{1g} (mW/g)	Plot Number
1850	TDMA	3	Fixed	1.45	15
1880	TDMA	3	Fixed	1.28	16
1910	TDMA	3	Fixed	1.17	17

EUT Position: Left Hand, 80 Degrees Touching Phantom					
Channel MHz	Operating Mode	Crest Factor	Antenna Position	Measured SAR_{1g} (mW/g)	Plot Number
1850	TDMA	3	Fixed	1.43	18

EUT Position: Left Hand, 80 Degrees Touching Phantom, Large Battery					
Channel MHz	Operating Mode	Crest Factor	Antenna Position	Measured SAR_{1g} (mW/g)	Plot Number
1850	TDMA	3	Fixed	1.49	19

EUT Position: Right Hand, 80 Degrees Touching Phantom, Large Battery					
Channel MHz	Operating Mode	Crest Factor	Antenna Position	Measured SAR_{1g} (mW/g)	Plot Number
1850	TDMA	3	Fixed	1.24	20

EUT Position: Body SAR, Face Down					
Channel MHz	Operating Mode	Crest Factor	Antenna Position	Measured SAR_{1g} (mW/g)	Plot Number
1850	TDMA	3	Fixed	0.184	21
1880	TDMA	3	Fixed	0.151	22
1910	TDMA	3	Fixed	0.140	23

EUT Position: Body SAR. *Face Down, Large Bettery					
Channel MHz	Operating Mode	Crest Factor	Antenna Position	Measured SAR_{1g} (mW/g)	Plot Number
1850	TDMA	3	Fixed	0.175	24

Note: a) Worst case data were reported
b) Duty cycle factor included in the measured SAR data
c) Uncertainty of the system is not included

3.0 EQUIPMENT

3.1 Equipment List

The Specific Absorption Rate (SAR) tests were performed with the SPEAG model DASY 3 automated near-field scanning system which is package optimized for dosimetric evaluation of mobile radios [3].

The following major equipment/components were used for the SAR evaluations:

SAR Measurement System			
EQUIPMENT	SPECIFICATIONS	S/N #	CAL. DATE
Robot	**Stäubi RX60L**	597412-01	N/A
	Repeatability: ± 0.025mm Accuracy: 0.806×10^{-3} degree Number of Axes: 6		
E-Field Probe	**ET3DV5**	1333	04/10/00
	Frequency Range: 10 MHZ to 6 GHz Linearity: ± 0.2 dB Directivity: ± 0.1 dB in brain tissue		
Data Acquisition	**DAE3**	317	N/A
	Measurement Range: 1μV to >200mV Input offset Voltage: < 1μV (with auto zero) Input Resistance: 200 M		
Phantom	**Generic Twin V3.0**	N/A	N/A
	Type: Generic Twin, Homogenous Shell Material: Fiberglass Thickness: 2 ± 0.1 mm Capacity: 20 liter Ear spacer: 4 mm (between EUT ear piece and tissue simulating liquid)		
Simulated Tissue	**Mixture**	N/A	07/06/00
	Please see section 3.2 for details		
Power Meter	**HP 435A w/ 8481H sensor**	1312A01255	02/16/00
	Frequency Range: 100kHz to 18 GHz Power Range: 300μW to 3W		

3.2 Simulating Liquid

Brain Tissue	
Ingredient	**Frequency** (800 – 900 MHz)
Water	40.3 %
Sugar	56.0 %
Salt	2.5 %
HEC	1.0 %
Bactericide	0.2 %

The dielectric parameters were verified prior to assessment using the HP 85070A dielectric probe kit and the HP 8753C network Analyzer. The dielectric parameters were:

Frequency (MHZ)	r *	*(mho/m)	**(kg/m$^{3)}$
900	41.9± 5%	0.835 ± 10%	1000

* *worst case uncertainty of the HP 85070A dielectric probe kit*
** *worst case assumption*

Brain Tissue	
Ingredient	**Frequency** (1900 MHz)
Water	53.9 %
Sugar	44.9 %
Salt	0%
Cellulose	1.0 %
Bactericide	0.2 %

The dielectric parameters were verified prior to assessment using the HP 85070A dielectric probe kit and the HP 8753C network Analyzer. The dielectric parameters were:

Frequency (MHZ)	r *	*(mho/m)	**(kg/m$^{3)}$
900	40.7± 5%	1.85 ± 10%	1000

* *worst case uncertainty of the HP 85070A dielectric probe kit*
** *worst case assumption*

Muscle Tissue	
Ingredient	**Frequency** (800 – 850 MHz)
Water	54.05 %
Sugar	45.05 %
Salt	0.1 %
Bactericide	0.8%

The dielectric parameters were verified prior to assessment using the HP 85070A dielectric probe kit and the HP 8753C network Analyzer. The dielectric parameters were:

Frequency (MHZ)	$_r$ *	*(mho/m)	**(kg/m^3)
835	56.1± 5%	0.95 ± 10%	1000

* *worst case uncertainty of the HP 85070A dielectric probe kit*
** *worst case assumption*

Muscle Tissue	
Ingredient	**Frequency** (1900 MHz)
Water	55.5 %
Sugar	53.5 %
Salt	0 %
Cellulose	1.0 %

The dielectric parameters were verified prior to assessment using the HP 85070A dielectric probe kit and the HP 8753C network Analyzer. The dielectric parameters were:

Frequency (MHZ)	$_r$ *	*(mho/m)	**(kg/m^3)
1900	54.4± 5%	1.57 ± 10%	1000

* *worst case uncertainty of the HP 85070A dielectric probe kit*
** *worst case assumption*

3.3 E-Field Probe Calibration

Probes were calibrated by the manufacturer in the TEM cell ifi 110. To ensure consistency, a strict protocol was followed. The conversion factor (ConF) between this calibration and the measurement in the tissue simulation solution was performed by comparison with temperature measurement and computer simulations. Probe calibration factors are included in Appendix C.

3.4 Measurement Uncertainty

The uncertainty budget has been determined for the DASY3 measurement system according to the NIS81 [5] and the NIST 1297 [6] documents and is given in the following table. The extended uncertainty (K=2) was assessed to be 23.5 %

UNCERTAINTY BUDGET				
Uncertainty Description	**Error**	**Distrib.**	**Weight**	**Std.Dev.**
Probe Uncertainty				
Axial isotropy	±0.2 dB	U-shape	0.5	±2.4 %
Spherical isotropy	±0.4 dB	U-shape	0.5	±4.8 %
Isotropy from gradient	±0.5 dB	U-shape	0	
Spatial resolution	±0.5 %	Normal	1	±0.5 %
Linearity error	±0.2 dB	Rectang.	1	±2.7 %
Calibration error	±3.3 %	Normal	1	±3.3 %
SAR Evaluation Uncertainty				
Data acquisition error	±1 %	Rectang.	1	±0.6 %
ELF and RF disturbances	±0.25 %	Normal	1	±0.25 %
Conductivity assessment	±10 %	Rectang.	1	±5.8 %
Spatial Peak SAR Evaluation Uncertainty				
Extrapol boundary effect	±3 %	Normal	1	±3 %
Probe positioning error	±0.1 mm	Normal	1	±1 %
Integrat. And cube orient	±3 %	Normal	1	±3 %
Cube shape inaccuracies	±2 %	Rectang.	1	±1.2 %
Device positioning	±6 %	Normal	1	±6 %
Combined Uncertanties				**±11.7 %**

3.5 Measurement Traceability

All measurements described in this report are traceable to National Institute of Standards and Technology (NIST) standards or appropriate national standards.

4.0 WARNING LABEL INFORMATION - USA

See attached users manual.

5.0 REFERENCES

[1] ANSI, *ANSI/IEEE C95.1-1991: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3kHz to 300 Ghz*. The Institute of electrical and Electronics Engineers, Inc., New York, NY 10017, 1992

[2] Federal Communications Commission, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields", OET Bulletin 65, FCC, Washington, D.C. 20554, 1997

[3] Thomas Schmid, Oliver Egger, and Niels Kuster, "Automated E-field scanning system for dosimetric assessments", *IEEE Transaction on Microwave Theory and Techniques*, vol. 44, pp. 105-113, Jan. 1996.

[4] Niels Kuster, Ralph Kastle, and Thomas Schmid, "Dosimetic evaluation of mobile communications equipment with know precision", IEICE Transactions on Communications, vol. E80-B, no. 5, pp.645-652, May 1997.

[5] NIS81, NAMAS, "The treatment of uncertainty in EMC measurement", Tech. Rep., NAMAS Executive, National Physical Laboratory, Teddinton, Middlesex, England, 1994.

[6] Barry N. Tayor and Chris E. Kuyatt, "Guidelines for evaluating and expressing the uncertainty of NIST measurement results", Tech. Rep., National Institude of Standards and Technology, 1994.

APPENDIX A - SAR EVALUATION DATA

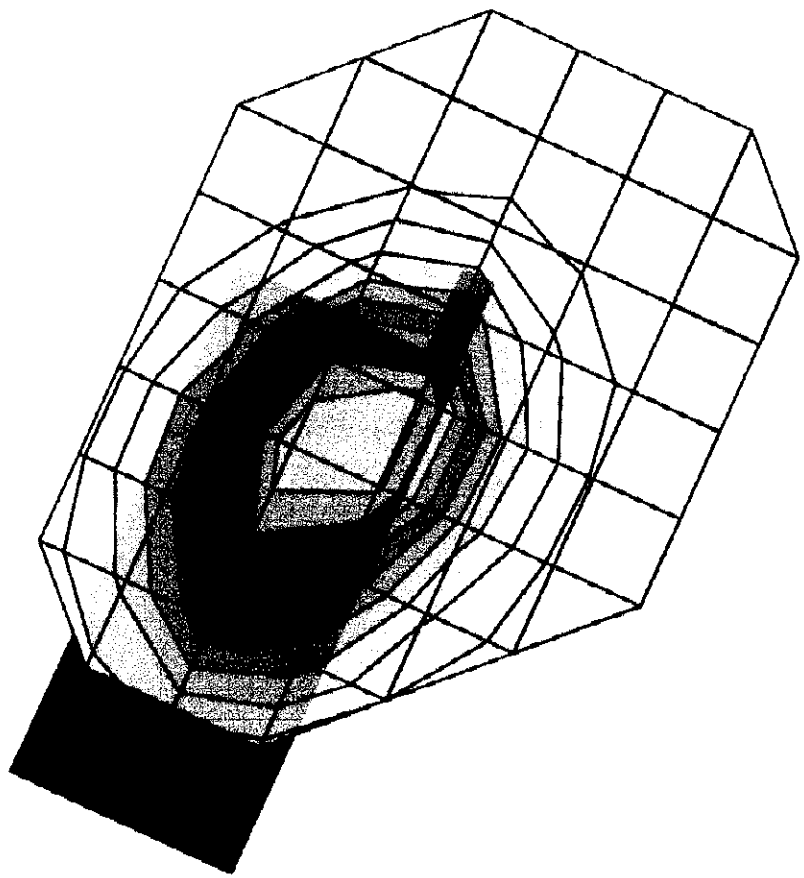
Please note that the graphical visualization of the phone position onto the SAR distribution gives only limited information on the current distribution of the device, since the curvature of the head results in graphical distortion. Full information can only be obtained either by H-field scans in free space or SAR evaluation with a flat phantom.

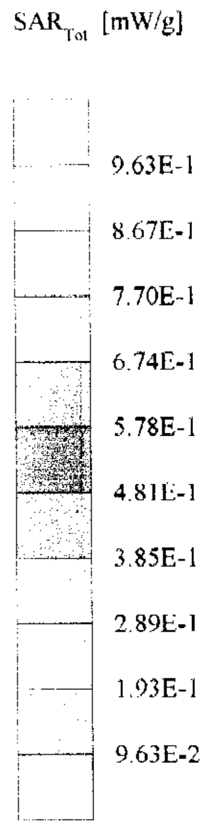
Powerdrift is the measurement of power drift of the device over one complete SAR scan.

#1

philips ozeo

Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 824 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Brain 825 MHz: $\sigma = 0.76$ mho/m $\varepsilon_r = 43.2$ $\rho = 1.00$ g/cm^3
Cube 5x5x7: SAR (1g): 1.01 mW/g, SAR (10g): 0.741 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.10 dB
OZEO PR3 2A, AMPS, 24.9 dBm, Position: 2 Point Touch

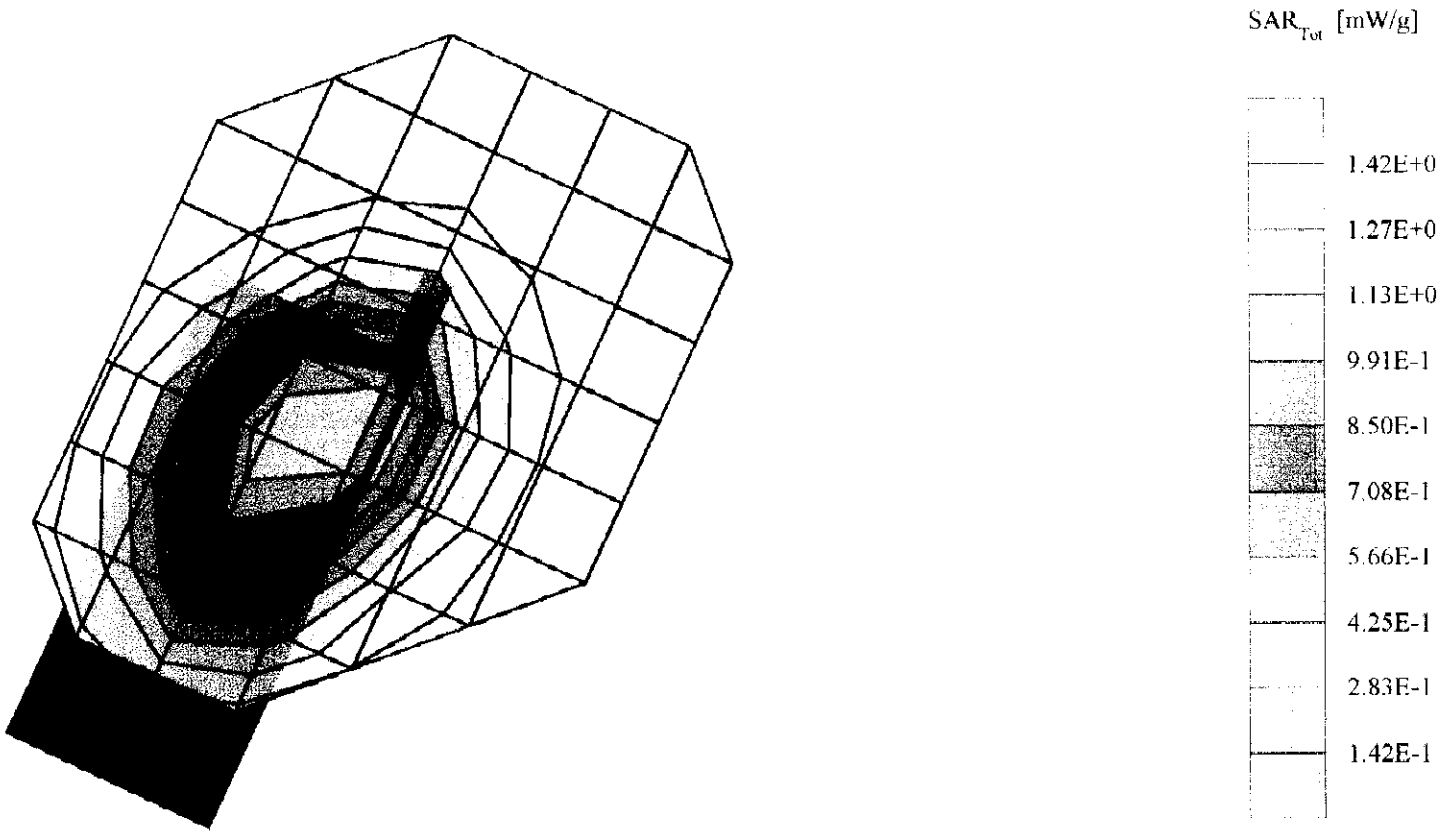




#2

philips ozeo

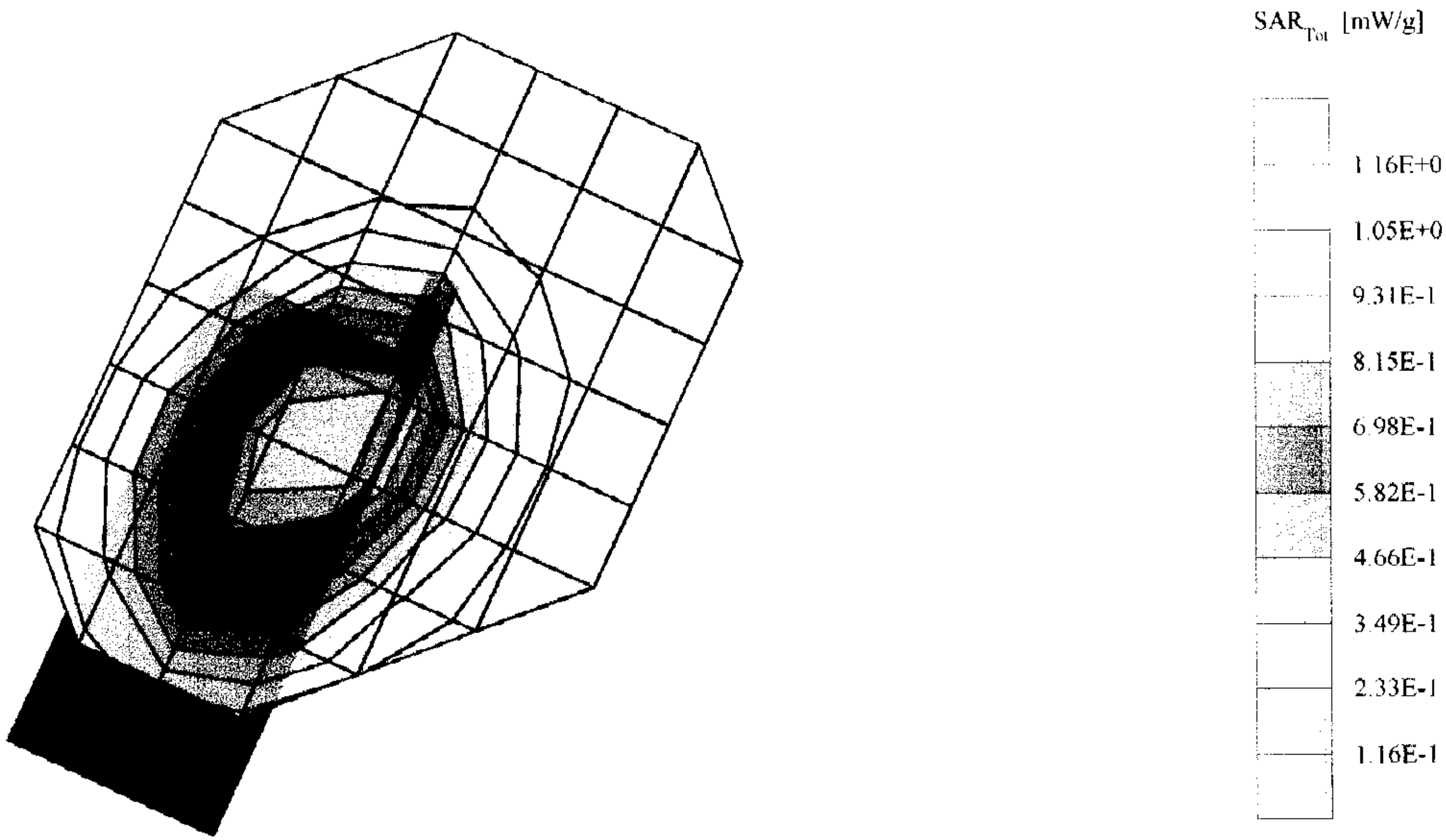
Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 837 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Brain 835 MHz: $\sigma = 0.76$ mho/m $\varepsilon_r = 43.1$ $\rho = 1.00$ g/cm^3
Cube 5x5x7: SAR (1g): 1.47 mW/g, SAR (10g): 1.07 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.14 dB
OZEO PR3 2A, AMPS, 24.7 dBm, Position: 2 Point Touch



#3

philips ozeo

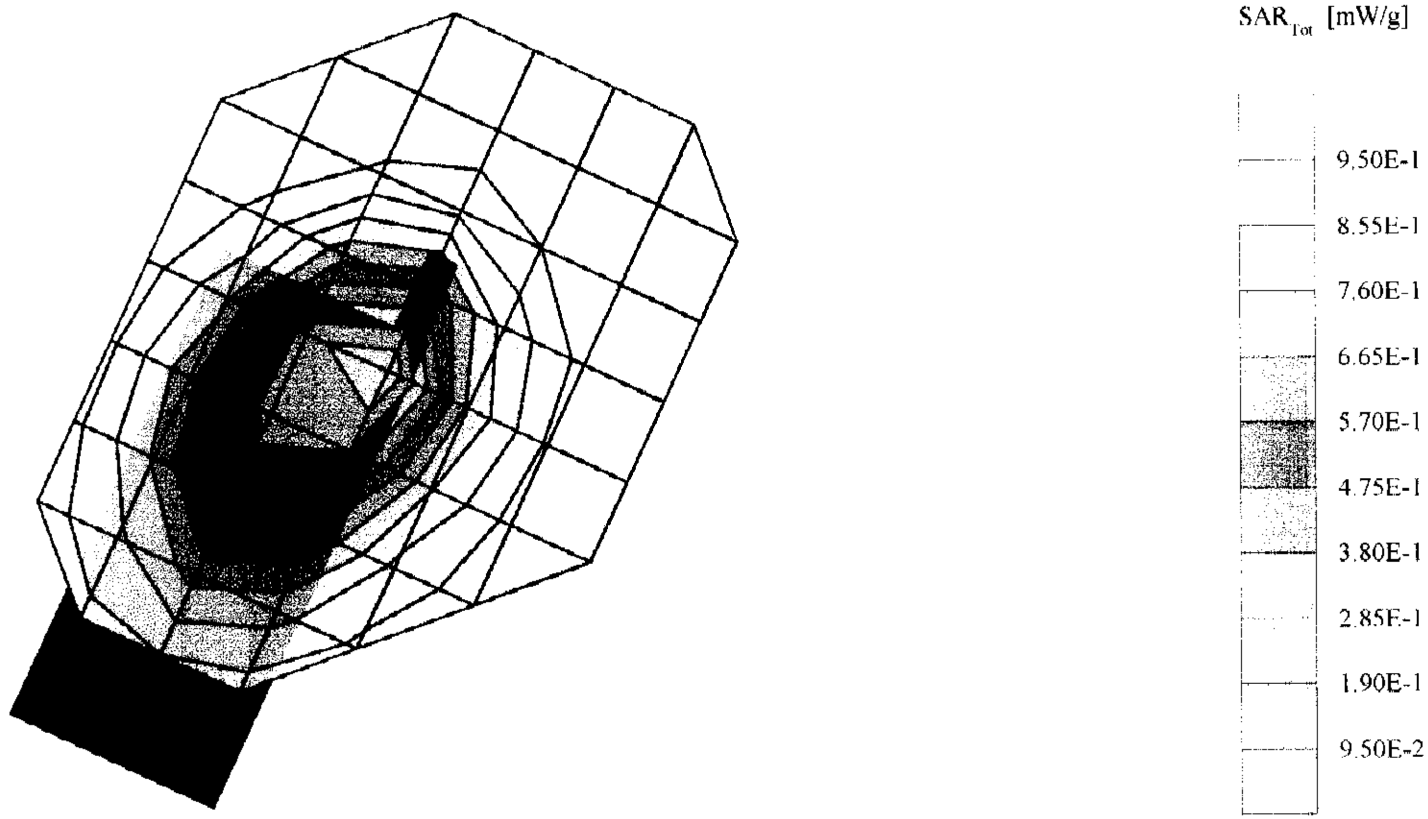
Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 849 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Brain 849 MHz: $\sigma = 0.77$ mho/m $\varepsilon_r = 43.2$ $\rho = 1.00$ g/cm^3
Cube 5x5x7: SAR (1g): 1.22 mW/g, SAR (10g): 0.885 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.25 dB
OZEO PR3 2A, AMPS, 24.7 dBm, Position: 2 Point Touch



#4

philips ozeo

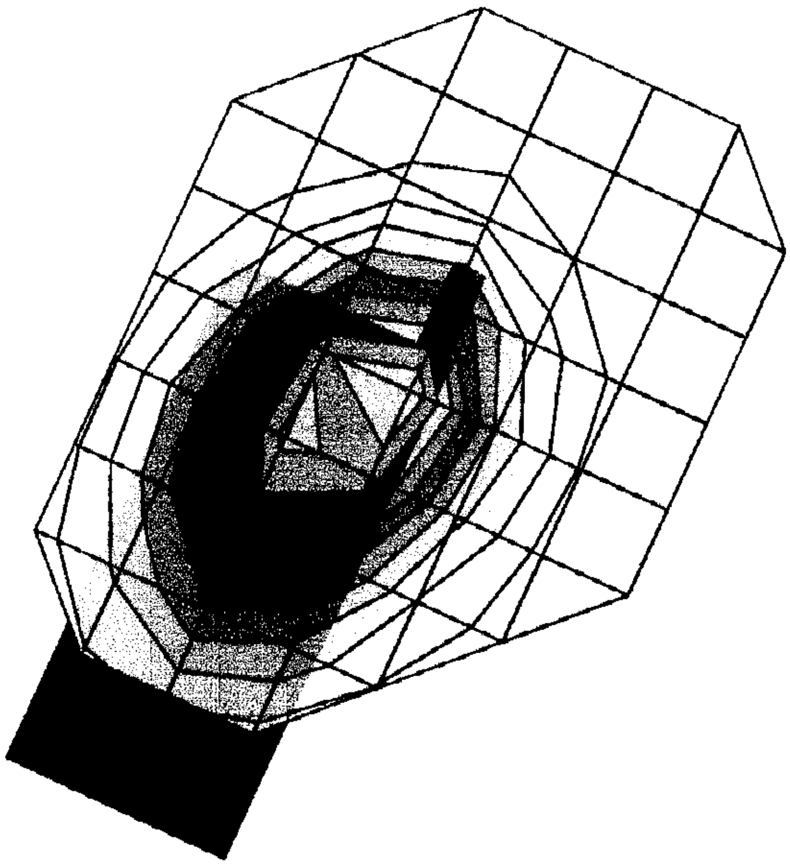
Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 824 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Brain 825 MHz: σ = 0.76 mho/m ε_r = 43.2 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.999 mW/g, SAR (10g): 0.706 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.05 dB
OZEO PR3 2A, AMPS, 24.9 dBm



#5

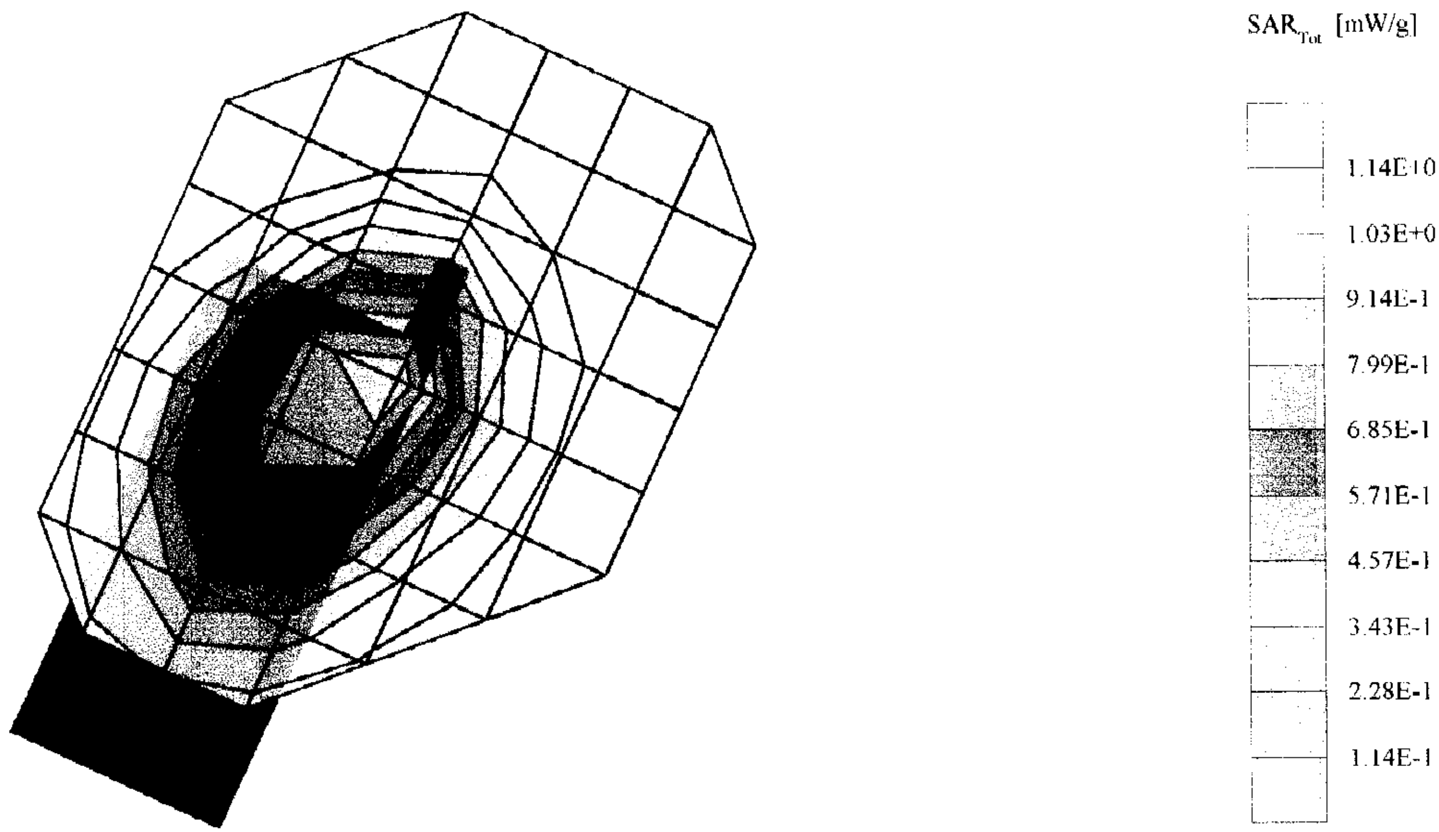
philips ozeo

Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 837 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Brain 835 MHz: σ = 0.76 mho/m ε_r = 43.1 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.799 mW/g, SAR (10g): 0.588 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.10 dB
OZEO PR3 2A, TDMA, 28.0 dBm



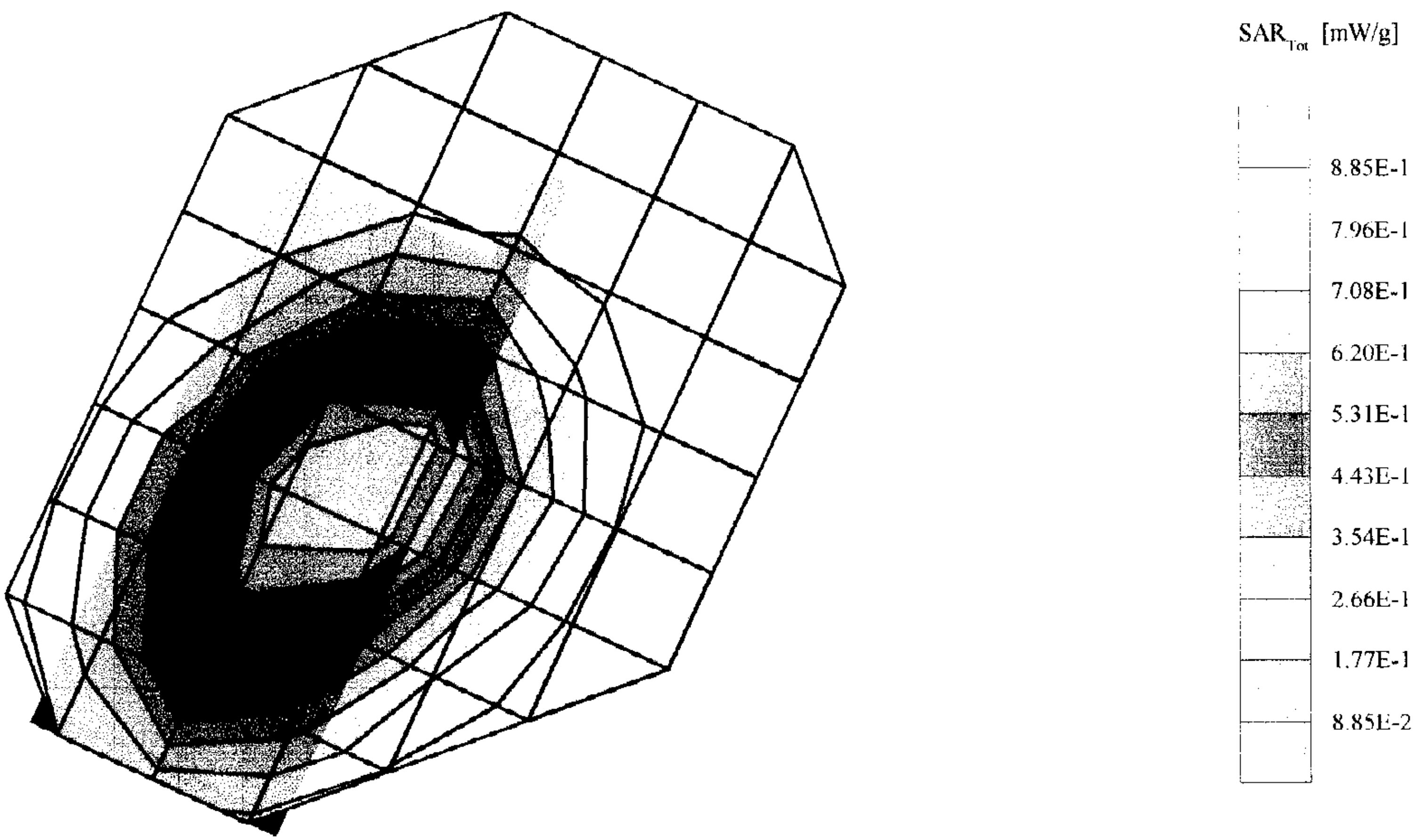
philips ozeo

Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 849 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Brain 849 MHz: σ = 0.77 mho/m ε_r = 43.2 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 1.18 mW/g, SAR (10g): 0.837 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.22 dB
OZEO PR3 2A, AMPS, 24.9 dBm



philips ozeo

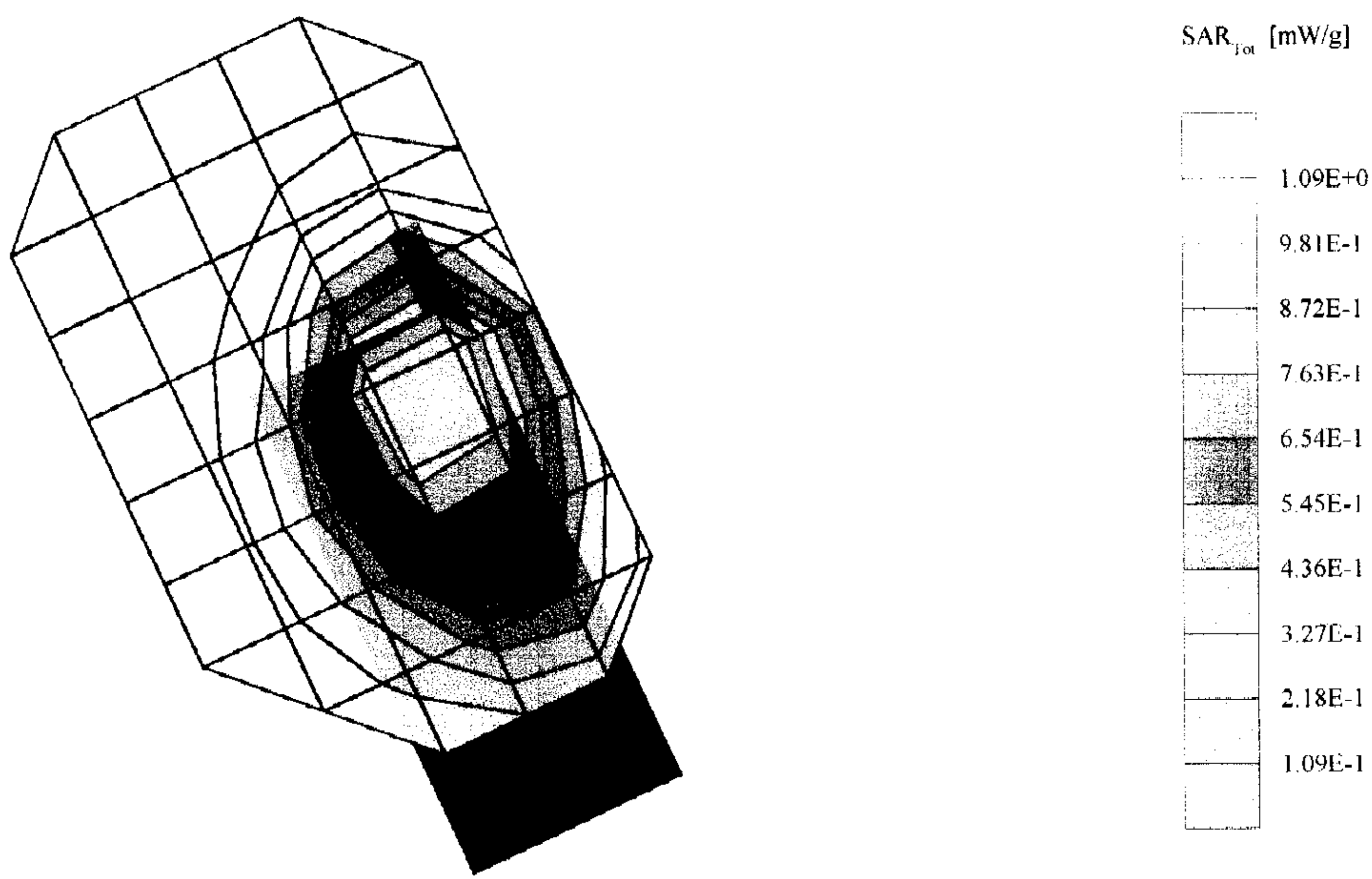
Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 837 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 3.0; Brain 835 MHz: σ = 0.76 mho/m ε_r = 43.1 ρ = 1.00 g/cm³
Cubes (2): SAR (1g): 0.936 mW/g ± 0.02 dB, SAR (10g): 0.682 mW/g ± 0.03 dB, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.03 dB
Two point touch



#8

philips ozeo

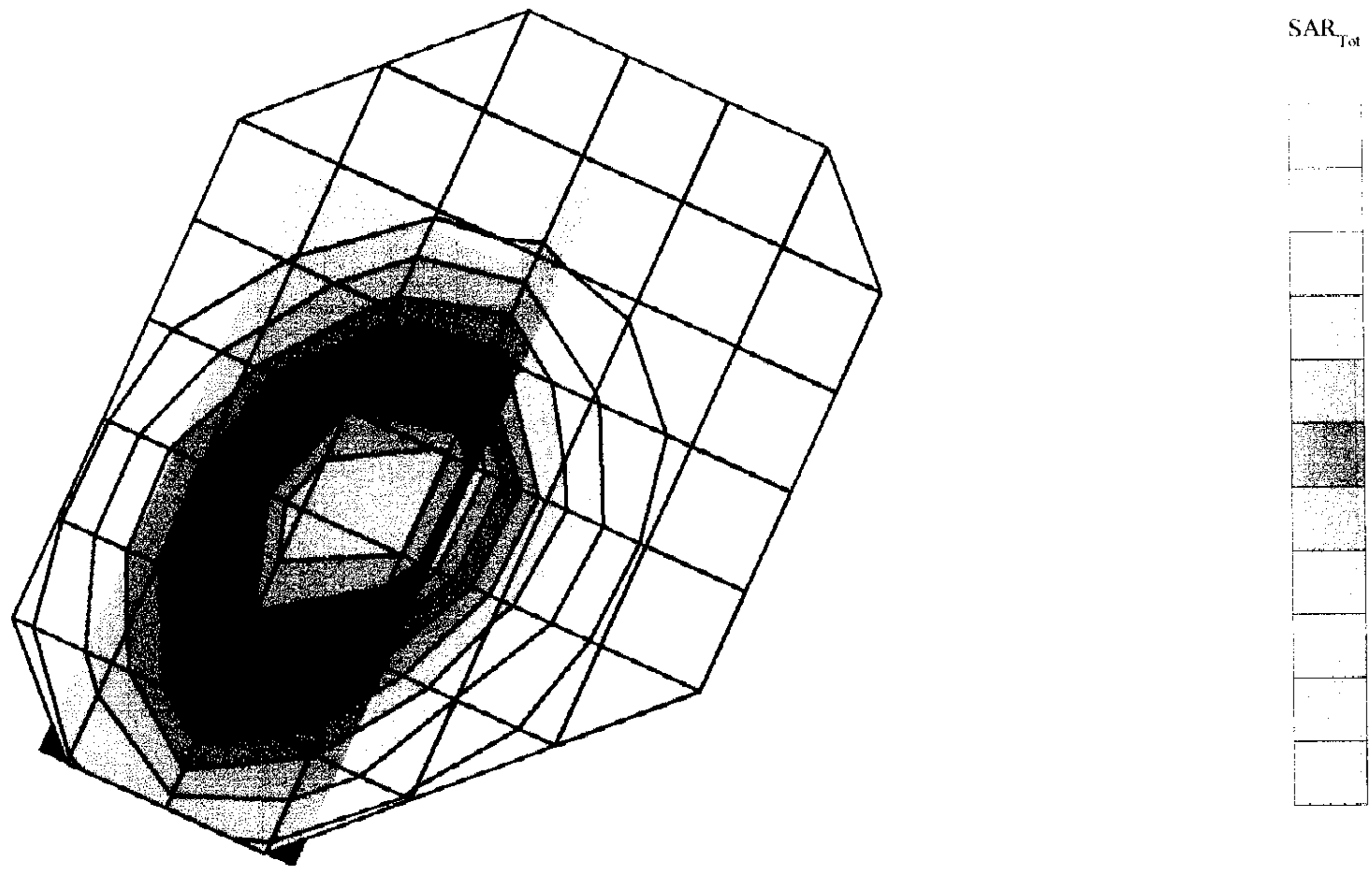
Generic Twin Phantom; Right Hand Section; Position: (80°,65°); Frequency: 837 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Brain 835 MHz: $\sigma = 0.76$ mho/m $\varepsilon_r = 43.1$ $\rho = 1.00$ g/cm³
Cube 5x5x7: SAR (1g): 1.16 mW/g, SAR (10g): 0.850 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.30 dB
OZEO PR3 2A, AMPS, 24.7 dBm



#9

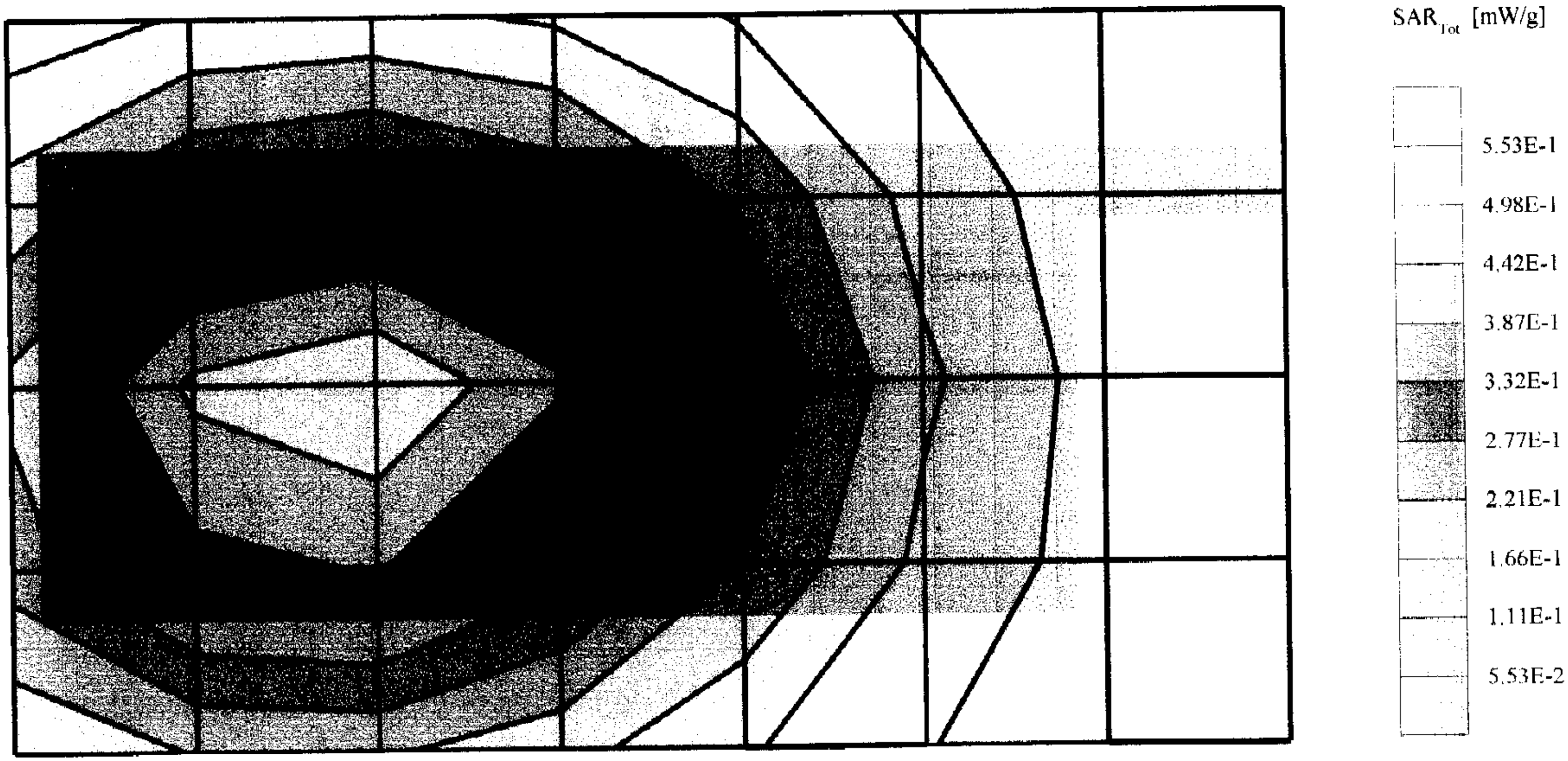
philips ozeo

Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 837 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Brain 835 MHz: σ = 0.76 mho/m ε_r = 43.1 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 1.46 mW/g, SAR (10g): 1.07 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.12 dB
Two point touch



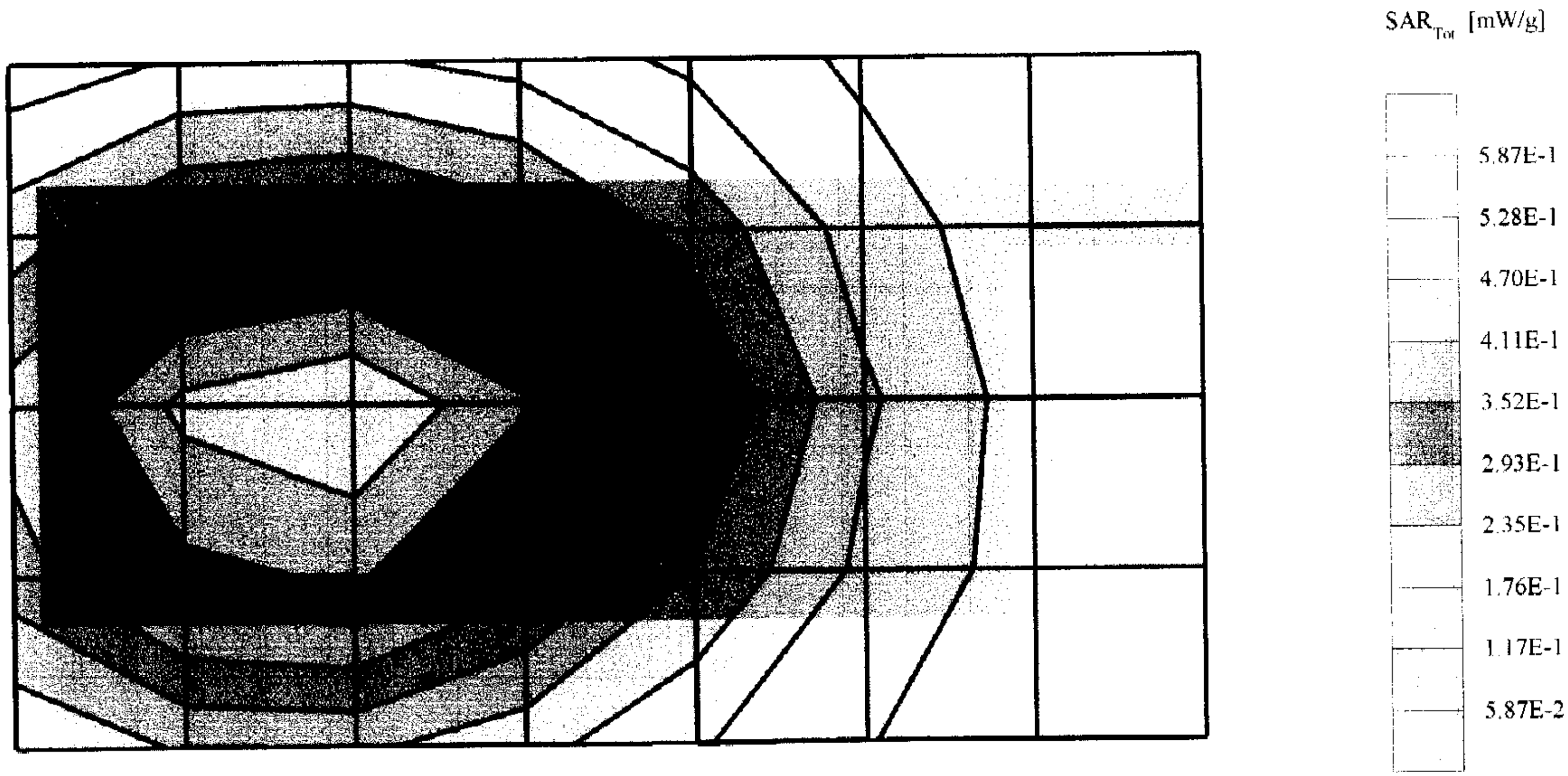
philips ozeo

Generic Twin Phantom; Flat Section; Position: (90°,90°); Frequency: 824 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Muscle 835 MHz: σ = 0.95 mho/m ε_r = 56.1 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.540 mW/g, SAR (10g): 0.393 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.19 dB



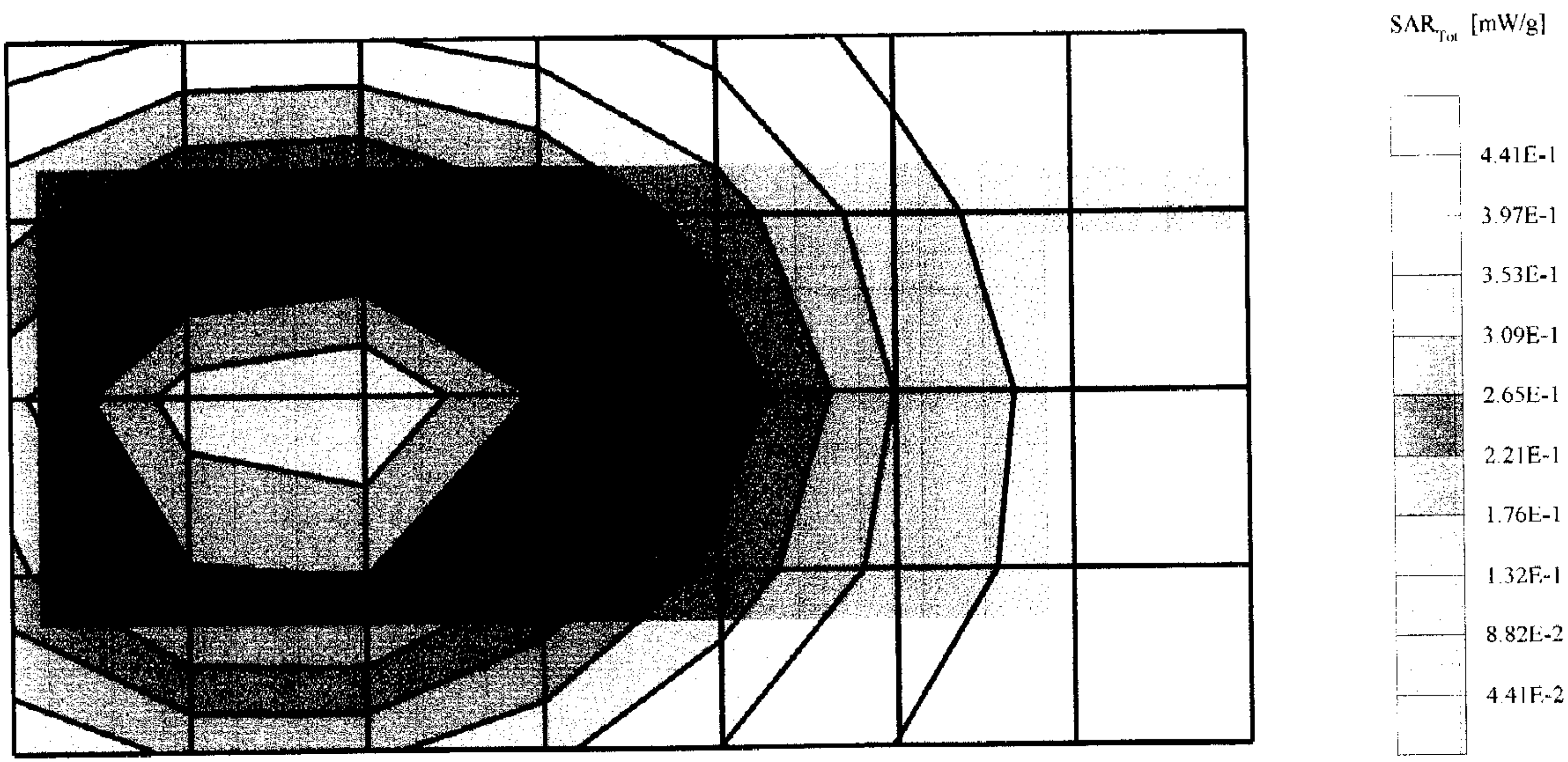
philips ozeo

Generic Twin Phantom; Flat Section; Position: (90°,90°); Frequency: 837 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Muscle 835 MHz: $\sigma = 0.95$ mho/m $\varepsilon_r = 56.1$ $\rho = 1.00$ g/cm^3
Cube 5x5x7: SAR (1g): 0.586 mW/g, SAR (10g): 0.427 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.07 dB



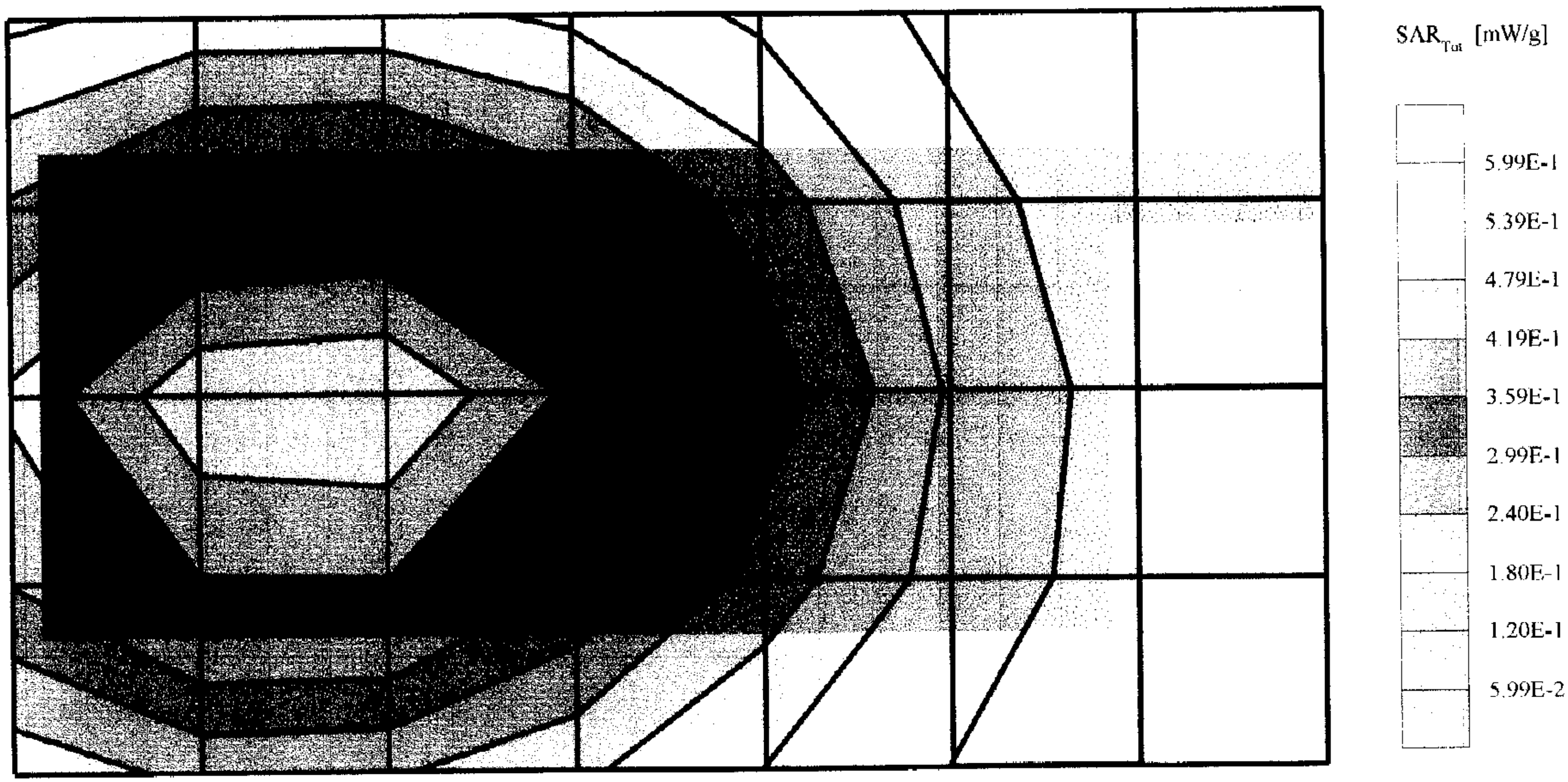
philips ozeo

Generic Twin Phantom; Flat Section; Position: (90°,90°); Frequency: 849 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Muscle 835 MHz: $\sigma = 0.95$ mho/m $\varepsilon_r = 56.1$ $\rho = 1.00$ g/cm^3
Cube 5x5x7: SAR (1g): 0.435 mW/g, SAR (10g): 0.316 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.19 dB



philips ozeo

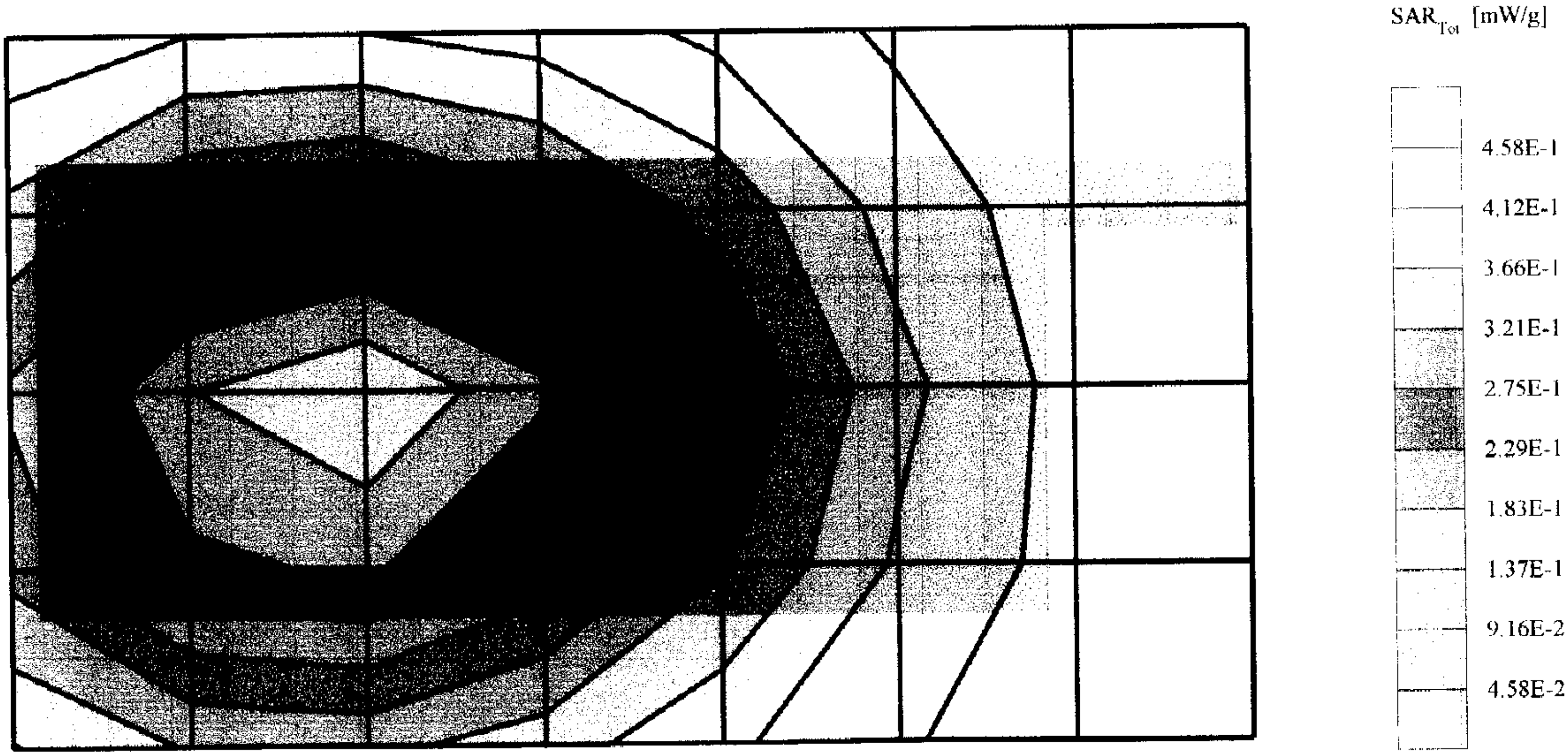
Generic Twin Phantom; Flat Section; Position: (90°,90°); Frequency: 837 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 1.0; Muscle 835 MHz: σ = 0.95 mho/m ε_r = 56.1 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.594 mW/g, SAR (10g): 0.432 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.19 dB



#14

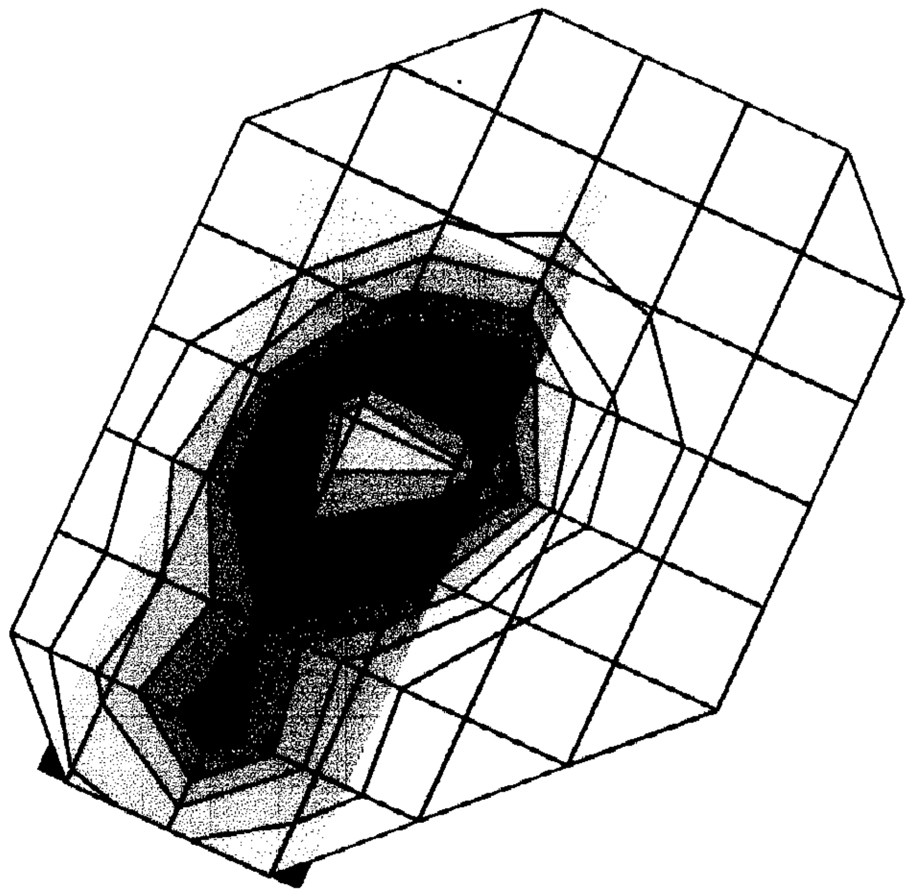
philips ozeo

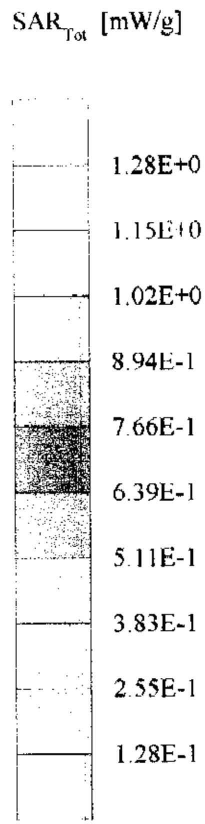
Generic Twin Phantom; Flat Section; Position: (90°,90°); Frequency: 837 MHz
Probe: ET3DV5 - SN1333; ConvF(5.70,5.70,5.70); Crest factor: 3.0; Muscle 835 MHz: σ = 0.95 mho/m ε_r = 56.1 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.454 mW/g, SAR (10g): 0.330 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy – 20.0, Dz = 10.0
Powerdrift: -0.08 dB



philips ozeo

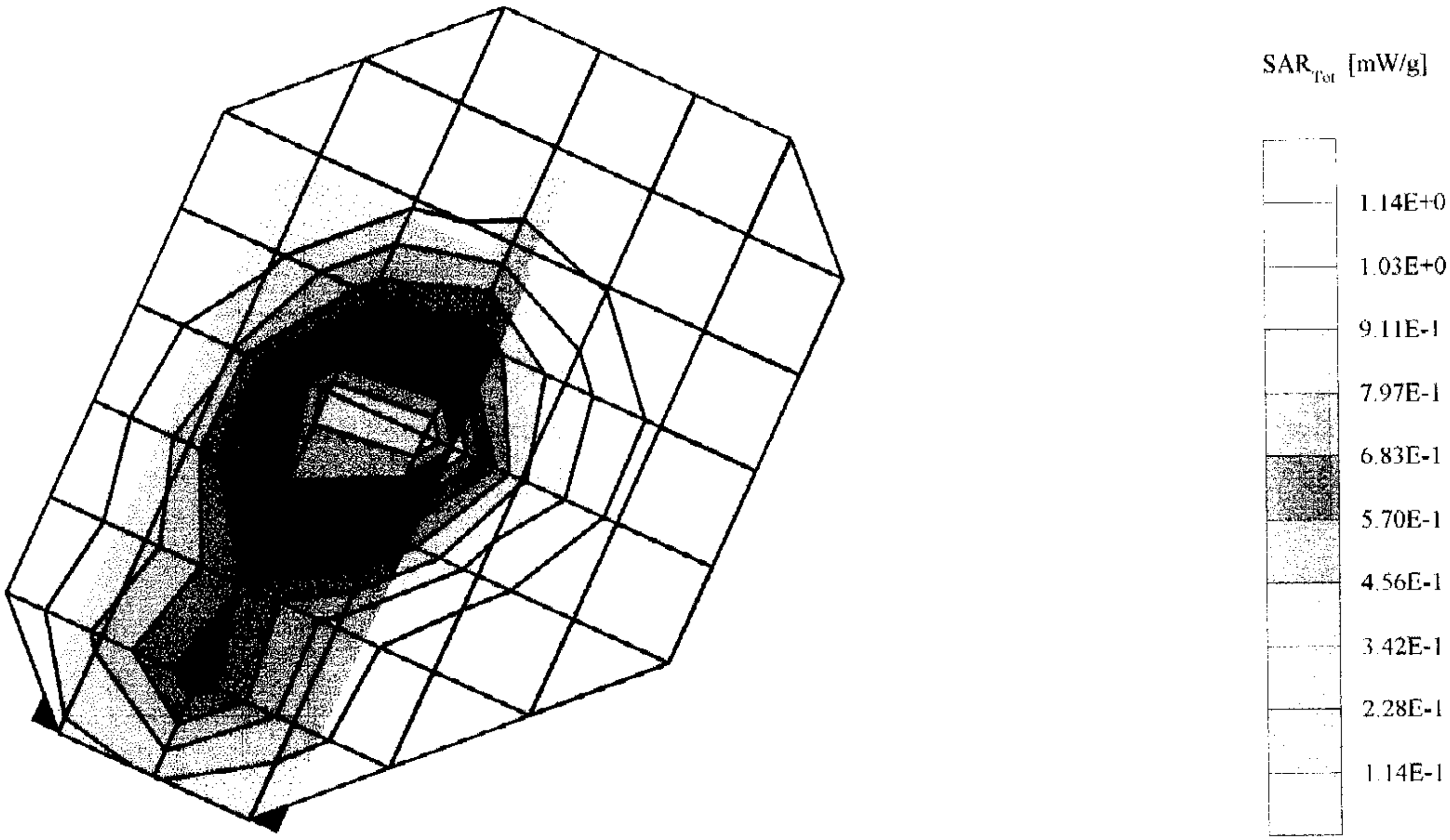
Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 1850 MHz
Probe: ET3DV5 - SN1333; ConvF(5.03,5.03,5.03); Crest factor: 3.0; Brain 1900 MHz: σ = 1.85 mho/m ε_r = 40.7 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 1.45 mW/g, SAR (10g): 0.836 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.04 dB





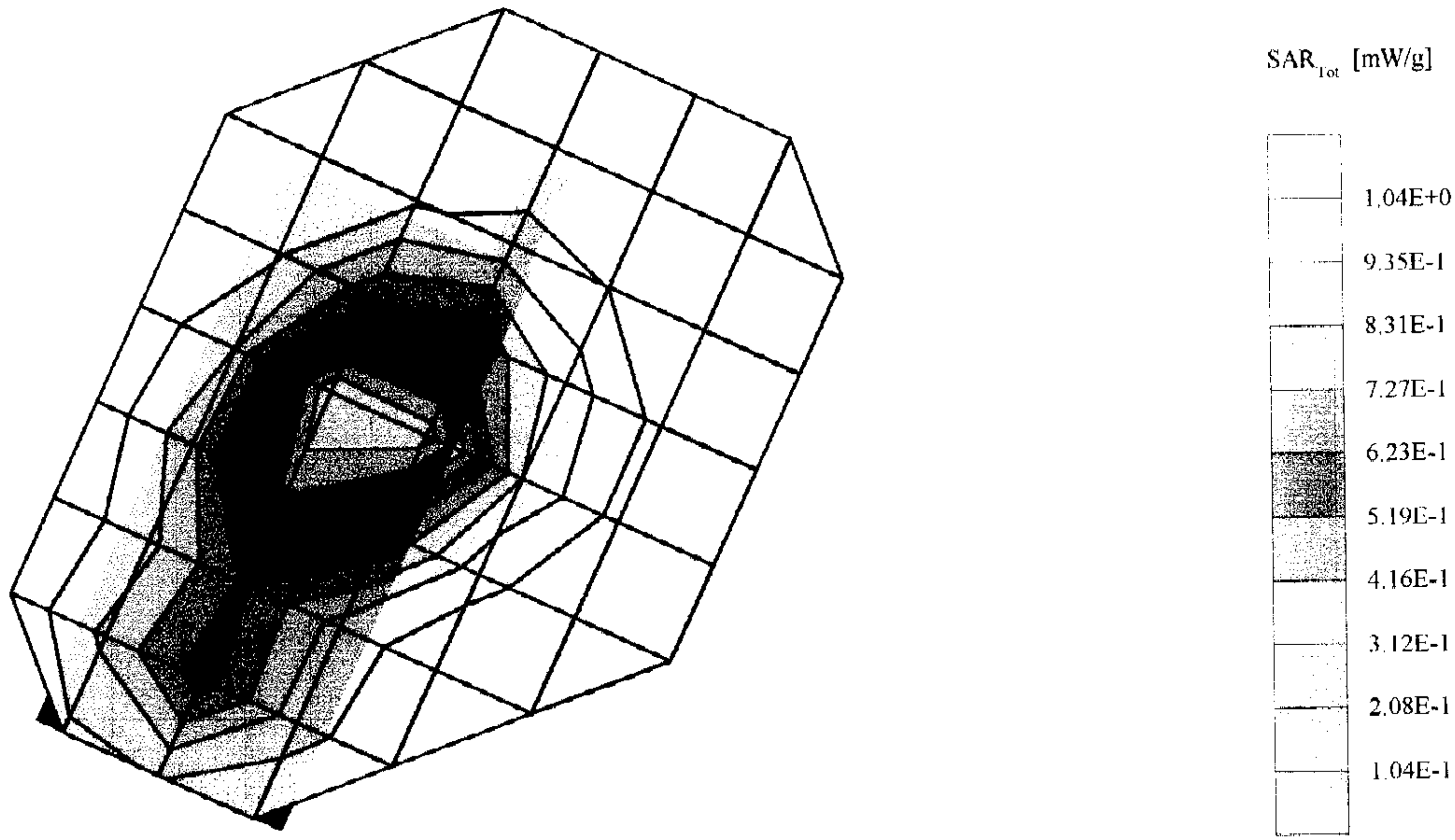
philips ozco

Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 1880 MHz
Probe: ET3DV5 - SN1333; ConvF(5.03,5.03,5.03); Crest factor: 3.0; Brain 1900 MHz: σ = 1.85 mho/m ε_r = 40.7 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 1.28 mW/g, SAR (10g): 0.740 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.01 dB



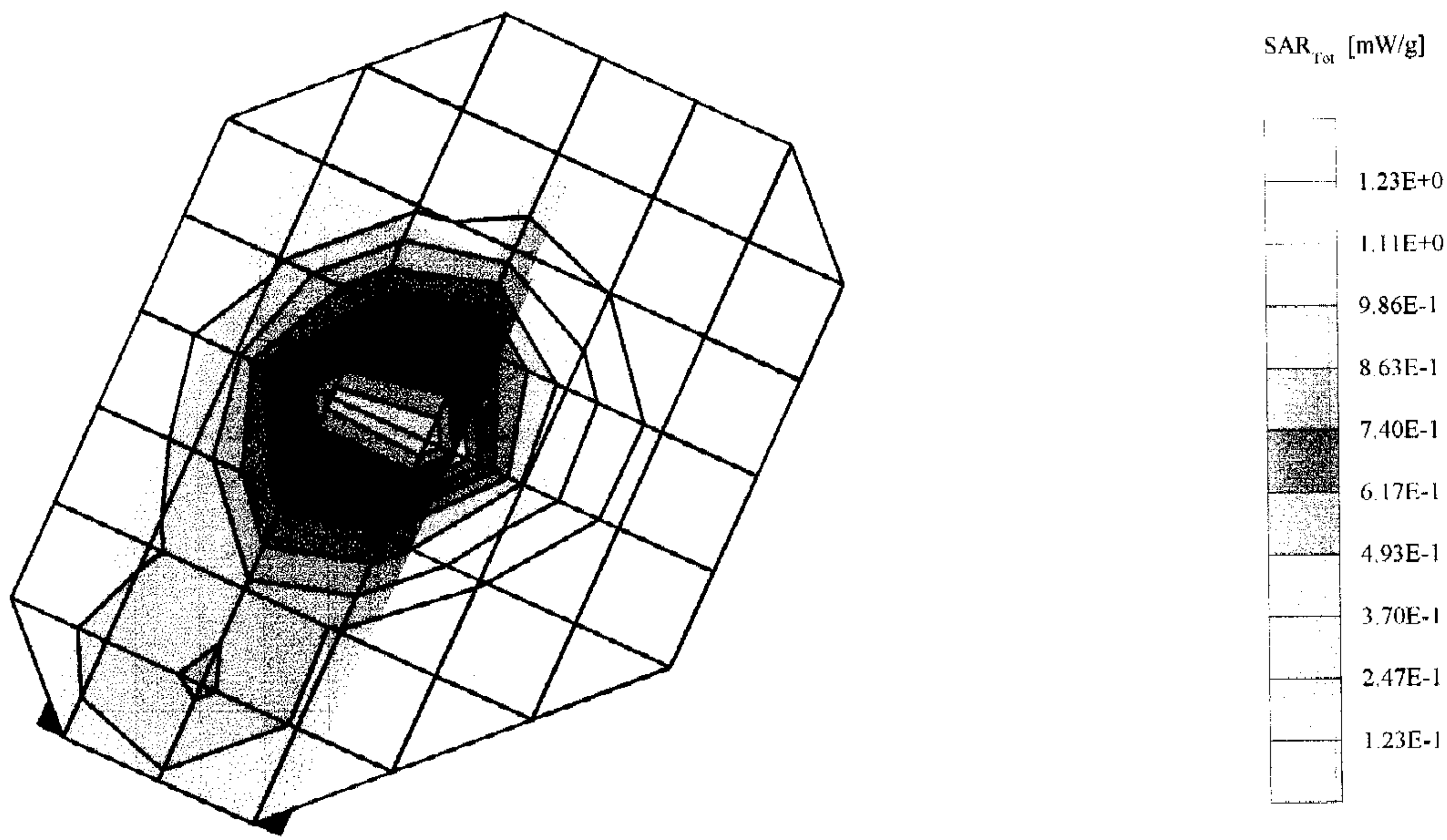
philips ozeo

Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 1910 MHz
Probe: ET3DV5 - SN1333; ConvF(5.03,5.03,5.03); Crest factor: 3.0; Brain 1900 MHz: σ = 1.85 mho/m ε_r = 40.7 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 1.17 mW/g, SAR (10g): 0.672 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.06 dB



philips ozeo

Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 1850 MHz
Probe: ET3DV5 - SN1333; ConvF(5.03,5.03,5.03); Crest factor: 3.0; Brain 1900 MHz: σ = 1.85 mho/m ε_r = 40.7 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 1.43 mW/g, SAR (10g): 0.792 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.06 dB



philips ozeo

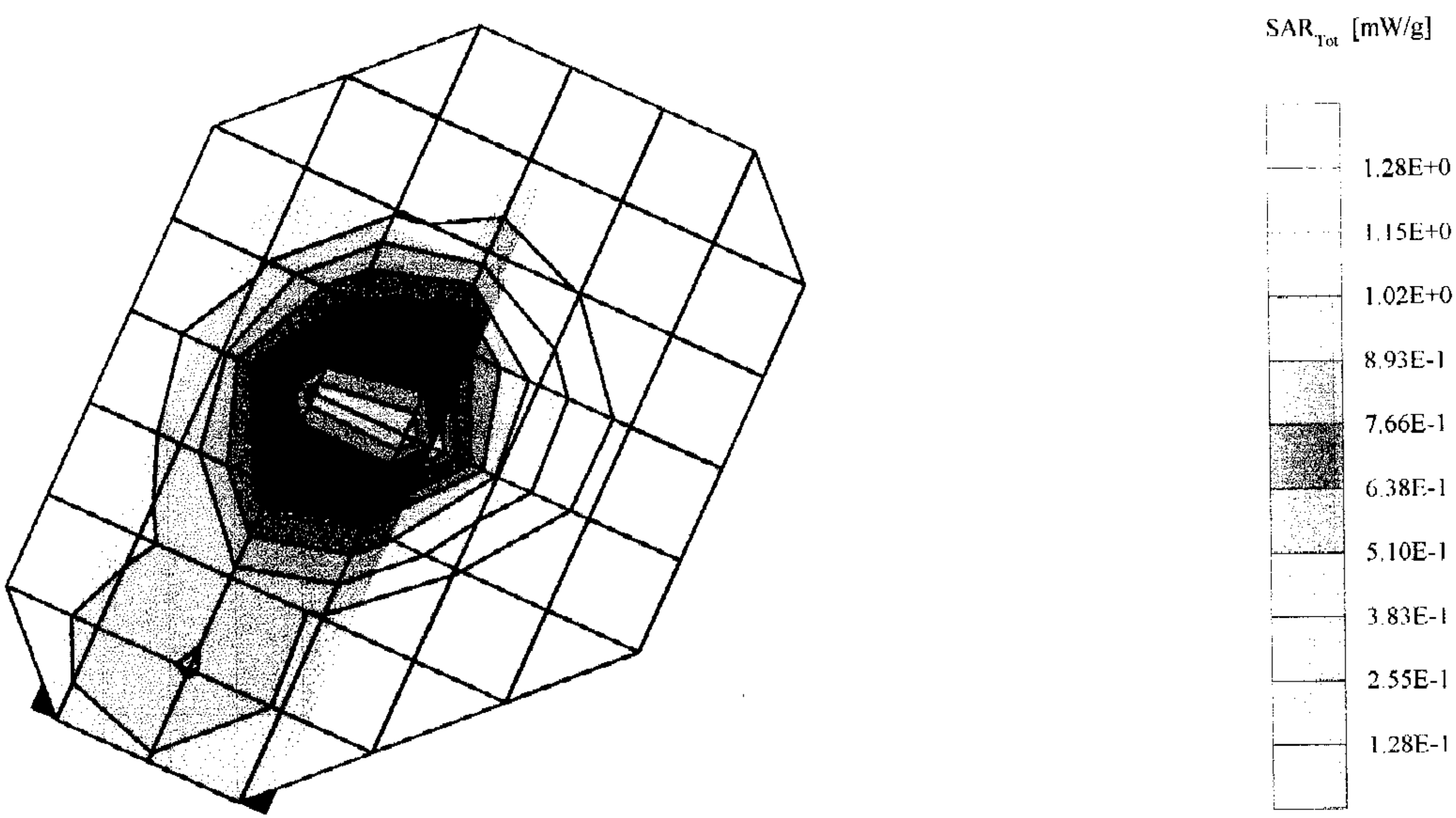
Generic Twin Phantom; Left Hand _X Section; Position: (80°,65°); Frequency: 1850 MHz

Probe: ET3DV5 - SN1333; ConvF(5.03,5.03,5.03); Crest factor: 3.0; Brain 1900 MHz: σ = 1.85 mho/m ε_r = 40.7 ρ = 1.00 g/cm^3

Cube 5x5x7: SAR (1g): 1.49 mW/g, SAR (10g): 0.824 mW/g, (Worst-case extrapolation)

Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0

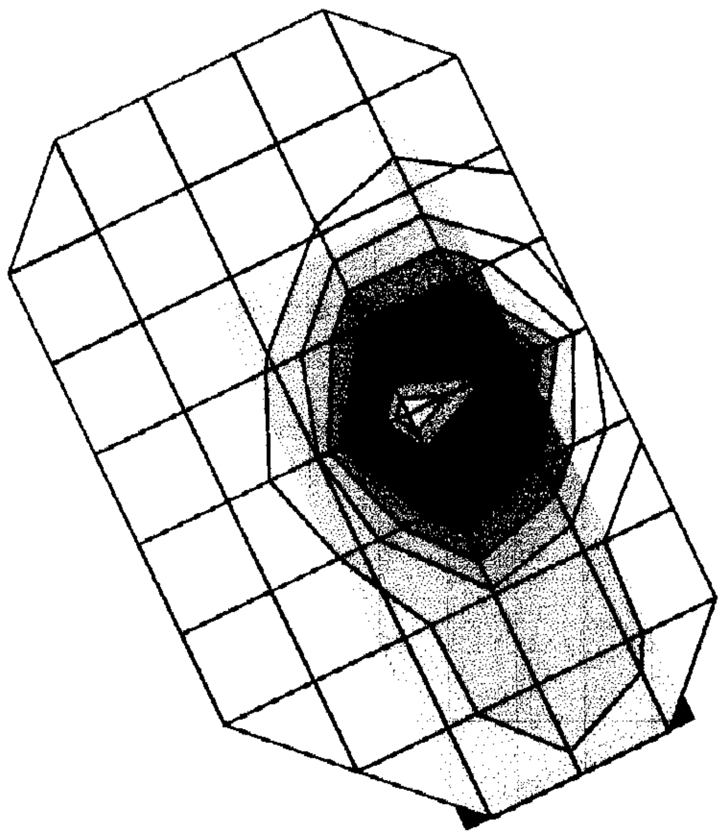
Powerdrift: -0.05 dB

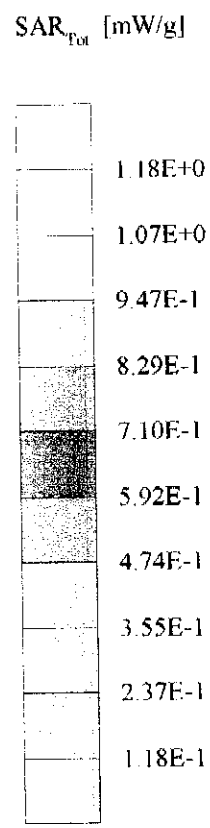


#12D

philips ozeo

Generic Twin Phantom; Right Hand Section; Position: (80°,65°); Frequency: 1850 MHz
Probe: ET3DV5 - SN1333; ConvF(5.03,5.03,5.03); Crest factor: 3.0; Brain 1900 MHz: σ = 1.85 mho/m ε_r = 40.7 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 1.24 mW/g, SAR (10g): 0.691 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.06 dB

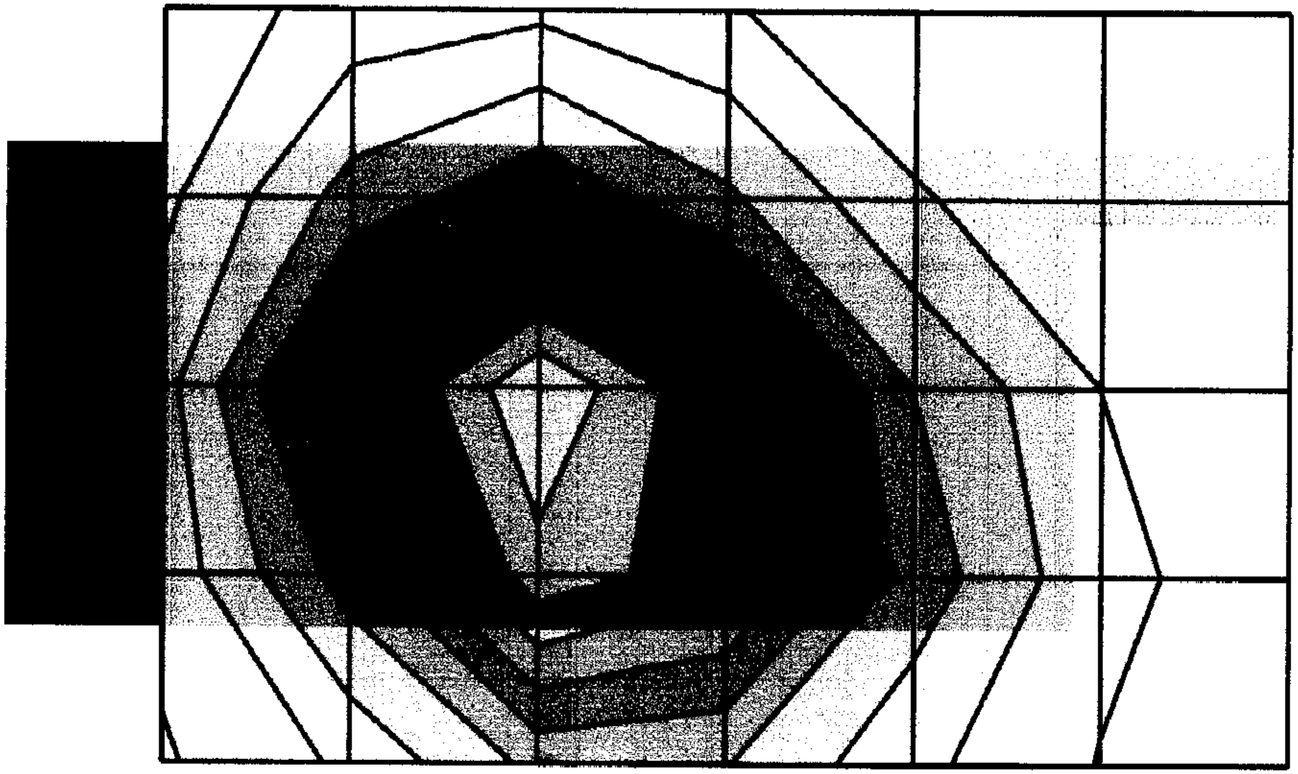


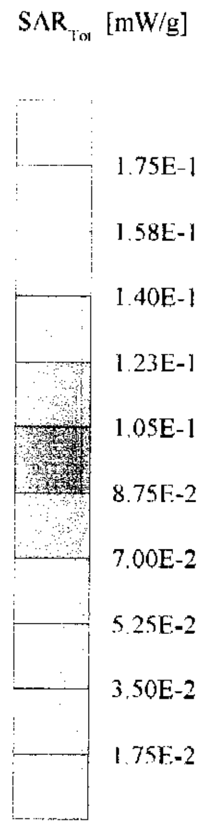


#121

philips ozeo

Generic Twin Phantom, Flat Section; Position: (90°,90°); Frequency: 1850 MHz
Probe: ET3DV5 - SN1333; ConvF(5.03,5.03,5.03); Crest factor: 3.0; Muscle 1880 MHz: σ = 1.57 mho/m ε_r = 54.4 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.184 mW/g, SAR (10g): 0.110 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.02 dB

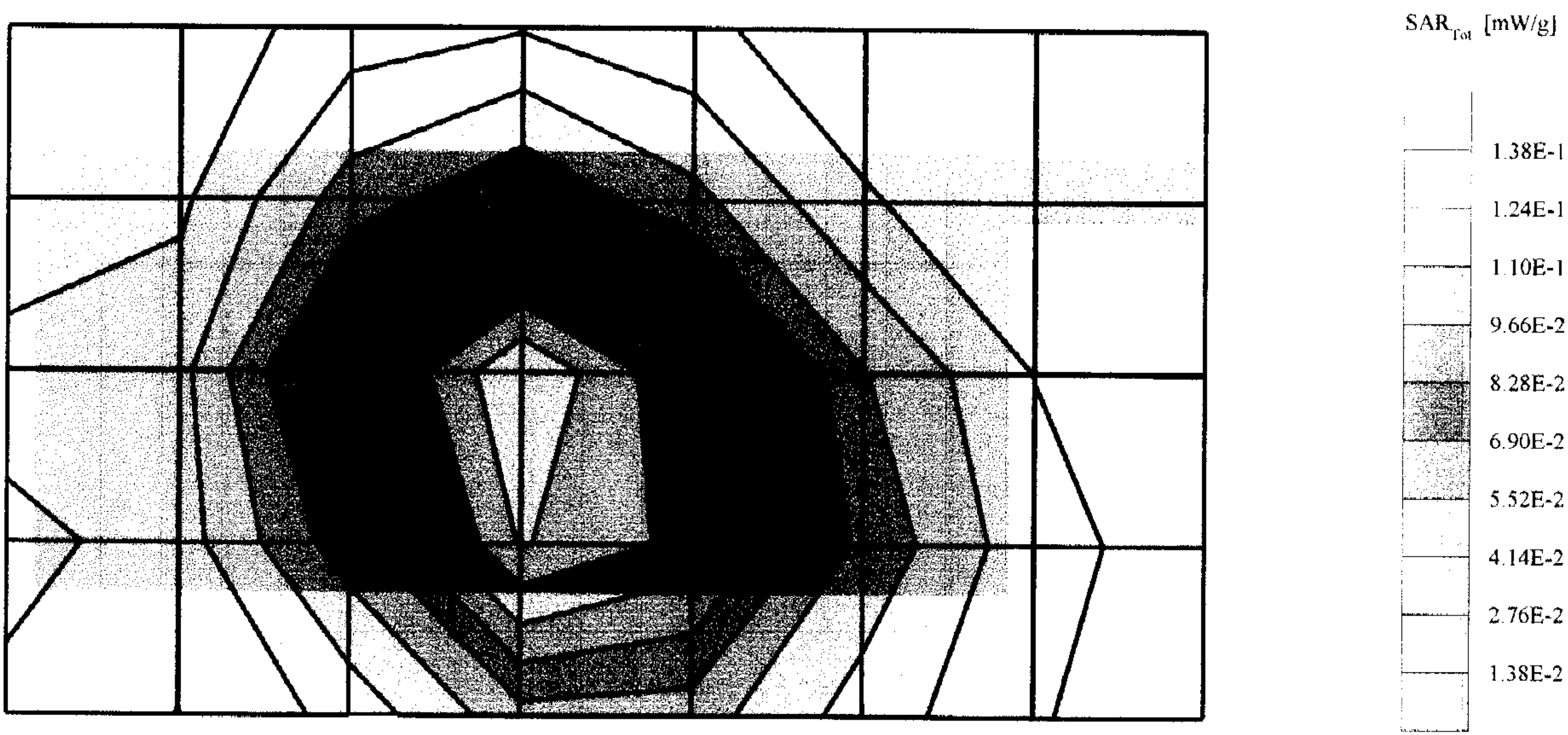




#22

philips ozeo

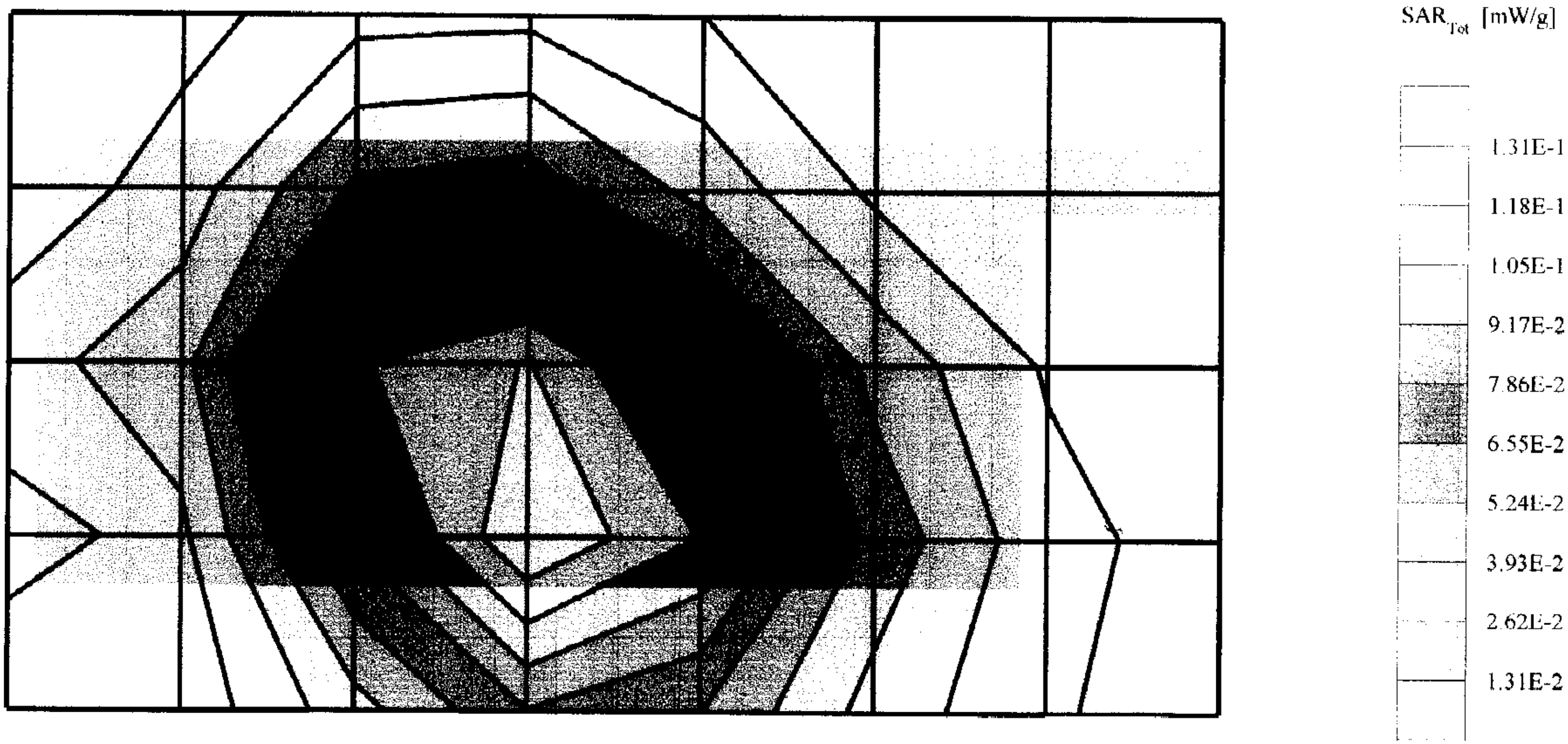
Generic Twin Phantom; Flat Section; Position: (90°,90°); Frequency: 1880 MHz
Probe: ET3DV5 - SN1333; ConvF(5.03,5.03,5.03); Crest factor: 3.0; Muscle 1880 MHz: σ = 1.57 mho/m ε_r = 54.4 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.151 mW/g, SAR (10g): 0.0894 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.01 dB



#23

philips ozeo

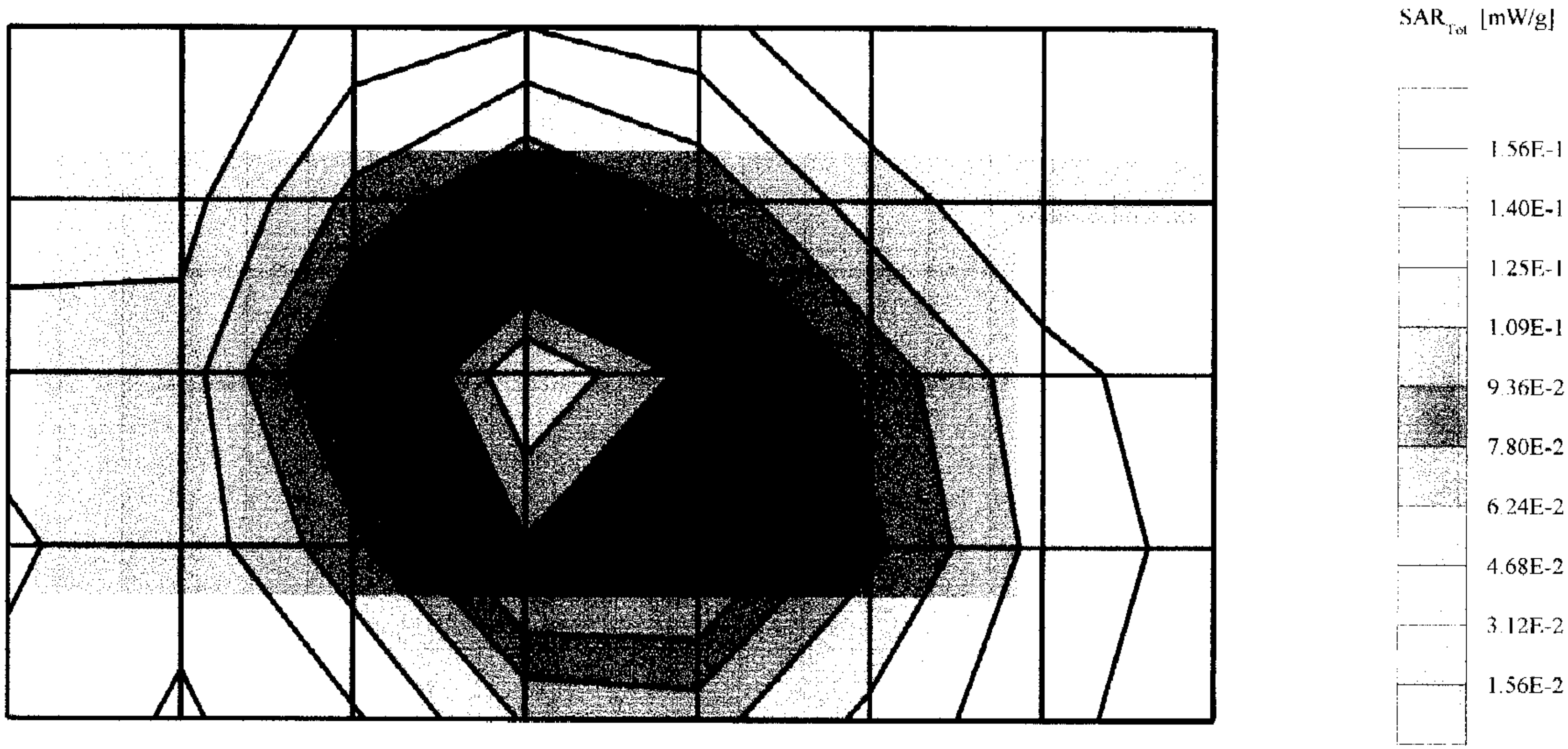
Generic Twin Phantom; Flat Section; Position: (90°,90°); Frequency: 1910 MHz
Probe: ET3DV5 - SN1333; ConvF(5.03,5.03,5.03); Crest factor: 3.0; Muscle 1880 MHz: σ = 1.57 mho/m ε_r = 54.4 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.140 mW/g, SAR (10g): 0.0841 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.02 dB



#24

philips ozeo

Generic Twin Phantom; Flat Section; Position: (90°,90°); Frequency: 1850 MHz
Probe: ET3DV5 - SN1333; ConvF(5.03,5.03,5.03); Crest factor: 3.0; Muscle 1880 MHz: σ = 1.57 mho/m ε_r = 54.4 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 0.175 mW/g, SAR (10g): 0.0926 mW/g * Max outside, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.04 dB



Schmid & Partner
Engineering AG

Staffelstrasse 8, 8045 Zurich, Switzerland, Telefon +41 1 280 08 60, Fax +41 1 280 08 64

Calibration Certificate

Dosimetric E-Field Probe

Type:	**ET3DV5**
Serial Number:	**1333**
Place of Calibration:	**Zurich**
Date of Calibration:	**April 10, 2000**
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:	[signature]
Approved by:	[signature]

APPENDIX B - E-FIELD PROBE CALIBRATION DATA

See attached pages.

Schmid & Partner
Engineering AG

Staffelstrasse 8, 8045 Zurich, Switzerland, Telefon +41 1 280 08 60, Fax +41 1 280 08 64

Probe ET3DV5

SN:1333

Manufactured: December 20, 1997
Last calibration: March 18, 1999
Recalibrated: April 10, 2000

Calibrated for System DASY3

DASY3 - Parameters of Probe: ET3DV5 SN:1333

Sensitivity in Free Space

NormX	**2.39** $\mu V/(V/m)^2$
NormY	**2.36** $\mu V/(V/m)^2$
NormZ	**2.34** $\mu V/(V/m)^2$

Diode Compression

DCP X	**100** mV
DCP Y	**100** mV
DCP Z	**100** mV

Sensitivity in Tissue Simulating Liquid

Brain **450 MHz** ε_r **= 48 ± 5%** σ = 0.50 ± 10% **mho/m**

ConvF X	**6.03**	extrapolated	Boundary effect:	
ConvF Y	**6.03**	extrapolated	Alpha	**0.13**
ConvF Z	**6.03**	extrapolated	Depth	**3.57**

Brain **900 MHz** ε_r **= 42.5 ± 5%** σ = 0.86 ± 10% **mho/m**

ConvF X	**5.70**	± 7% (k=2)	Boundary effect:	
ConvF Y	**5.70**	± 7% (k=2)	Alpha	**0.34**
ConvF Z	**5.70**	± 7% (k=2)	Depth	**3.00**

Brain **1500 MHz** ε_r **= 41 ± 5%** σ = 1.32 ± 10% **mho/m**

ConvF X	**5.25**	interpolated	Boundary effect:	
ConvF Y	**5.25**	interpolated	Alpha	**0.61**
ConvF Z	**5.25**	interpolated	Depth	**2.23**

Brain **1800 MHz** ε_r **= 41 ± 5%** σ = 1.69 ± 10% **mho/m**

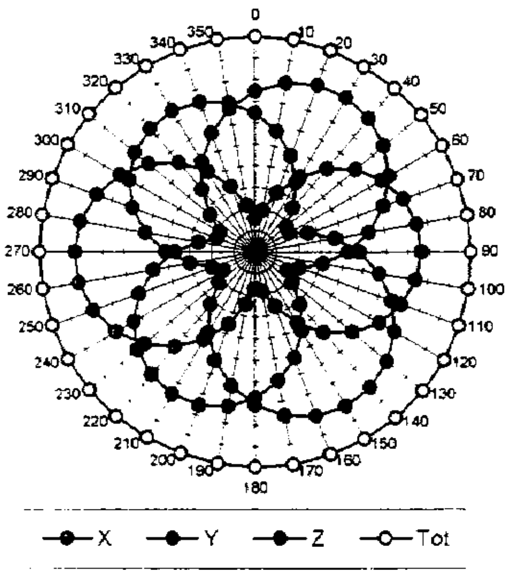
ConvF X	**5.03**	± 7% (k=2)	Boundary effect:	
ConvF Y	**5.03**	± 7% (k=2)	Alpha	**0.74**
ConvF Z	**5.03**	± 7% (k=2)	Depth	**1.85**

Sensor Offset

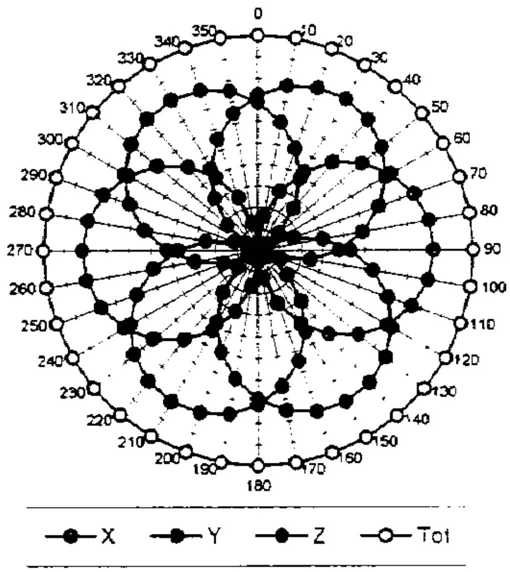
Probe Tip to Sensor Center	**2.7**	mm
Optical Surface Detection	**1.9 ± 0.2**	mm

Receiving Pattern (ϕ), $\theta = 0°$

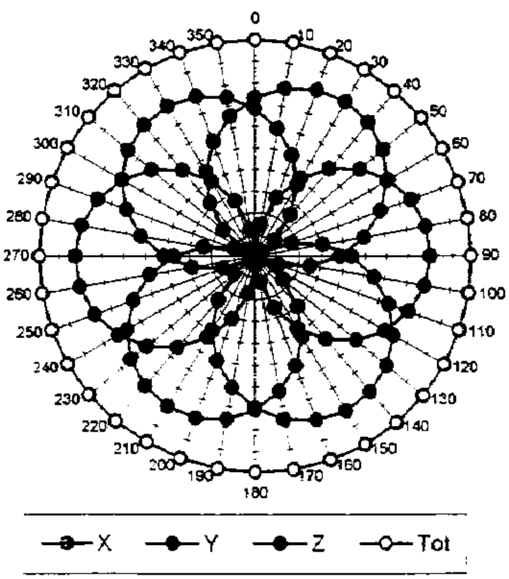
f = 30 MHz, TEM cell ifi110



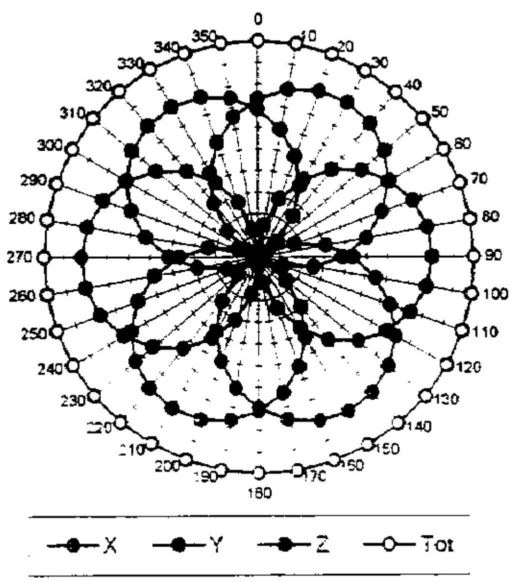
f = 100 MHz, TEM cell ifi110



f = 300 MHz, TEM cell ifi110

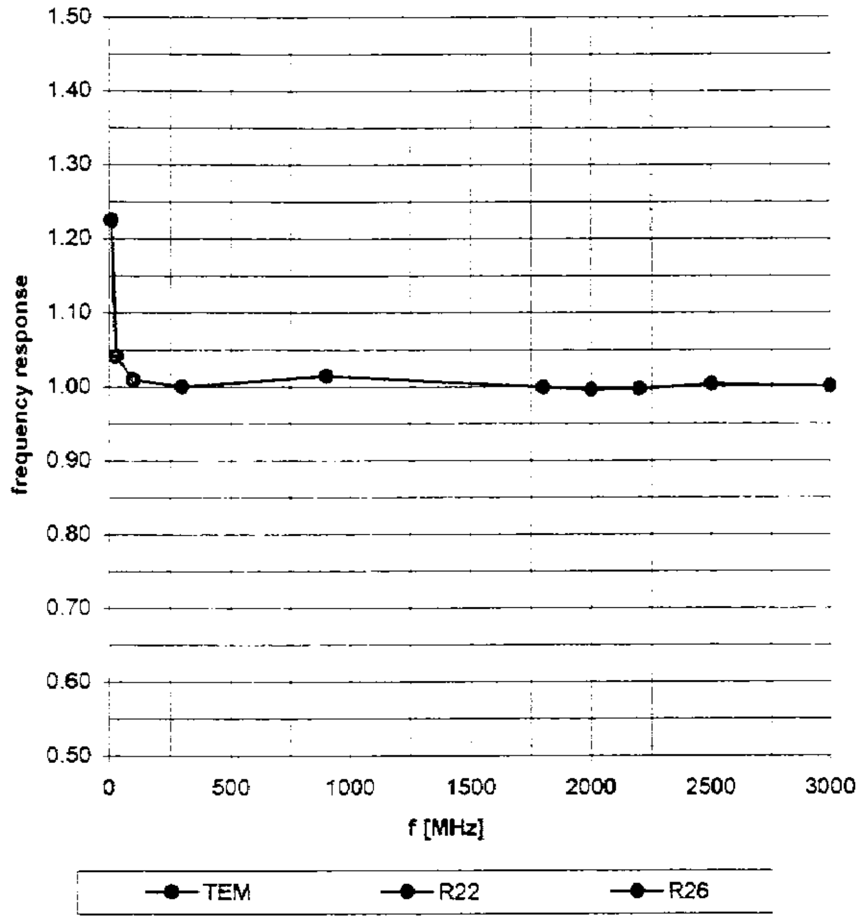


f = 900 MHz, TEM cell ifi110



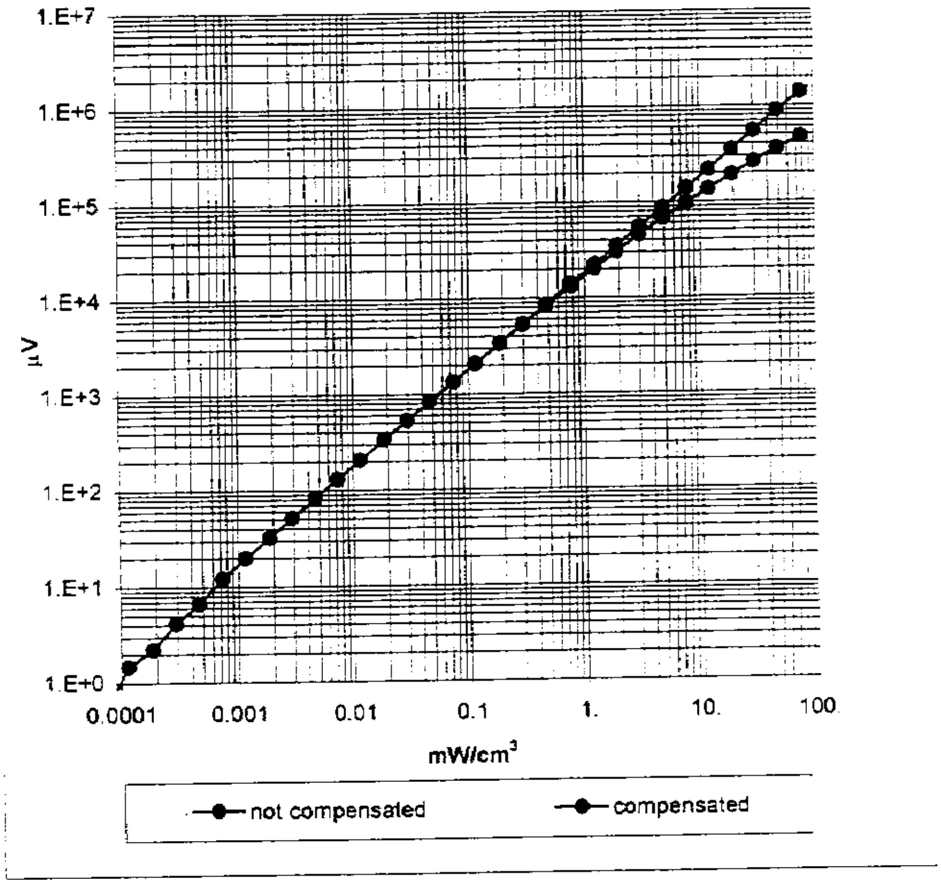
Frequency Response of E-Field

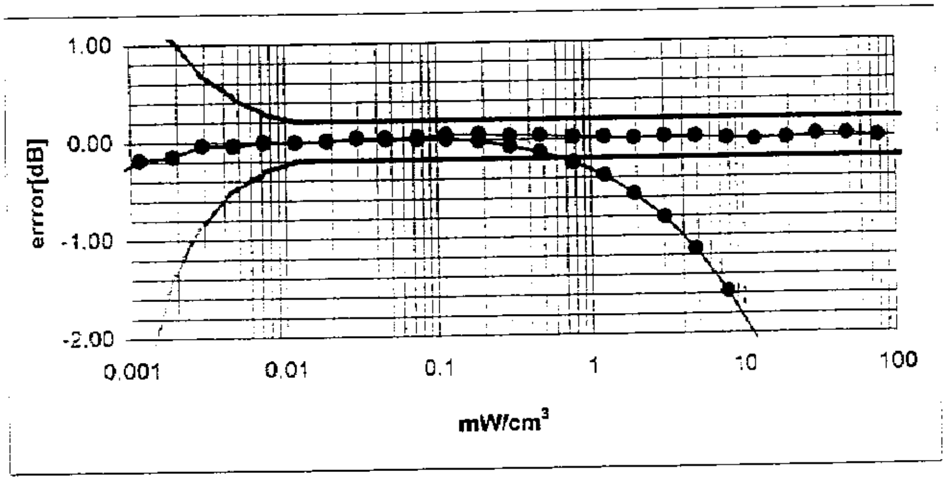
(TEM-Cell:ifi110, Waveguide R22, R26)



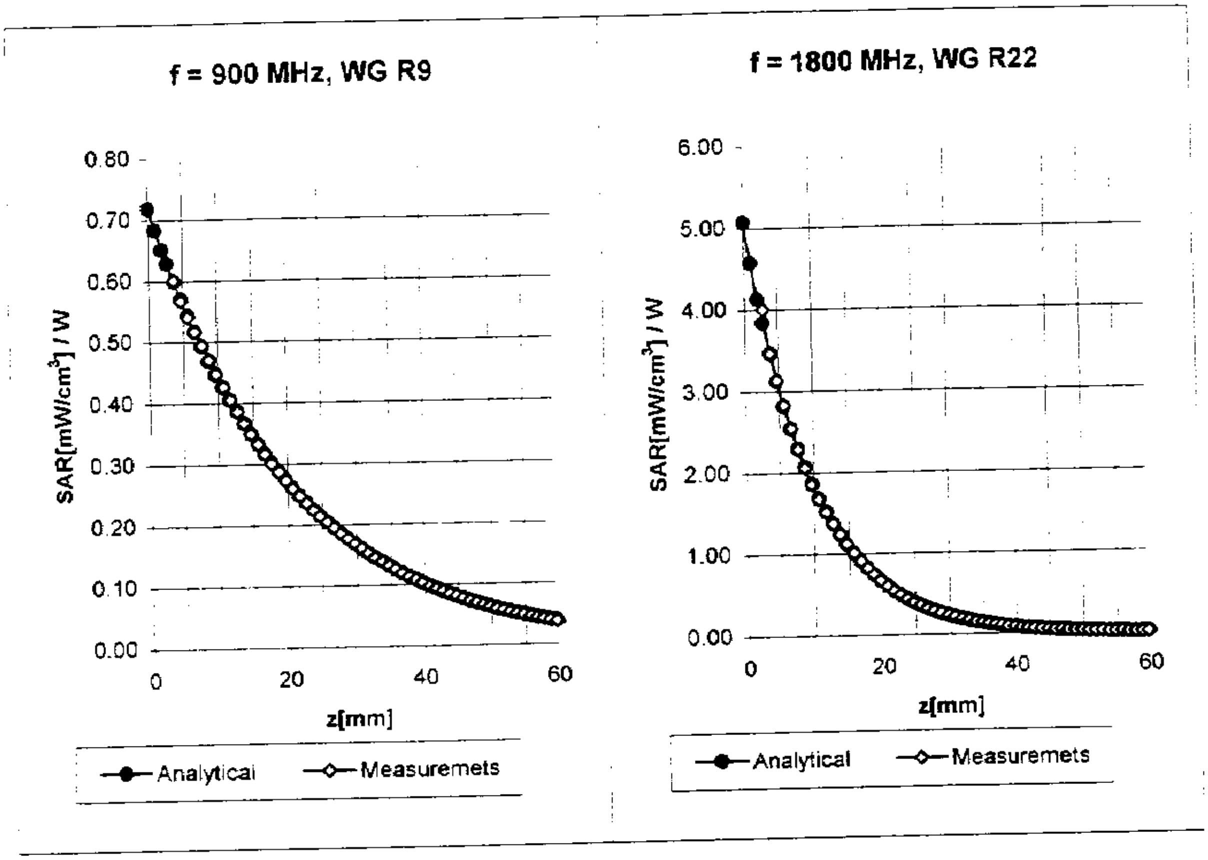
Dynamic Range f(SAR_{brain})

(TEM-Cell:ifi110)





Conversion Factor Assessment



Receiving Pattern (ϕ)

(in brain tissue, z = 5 mm)