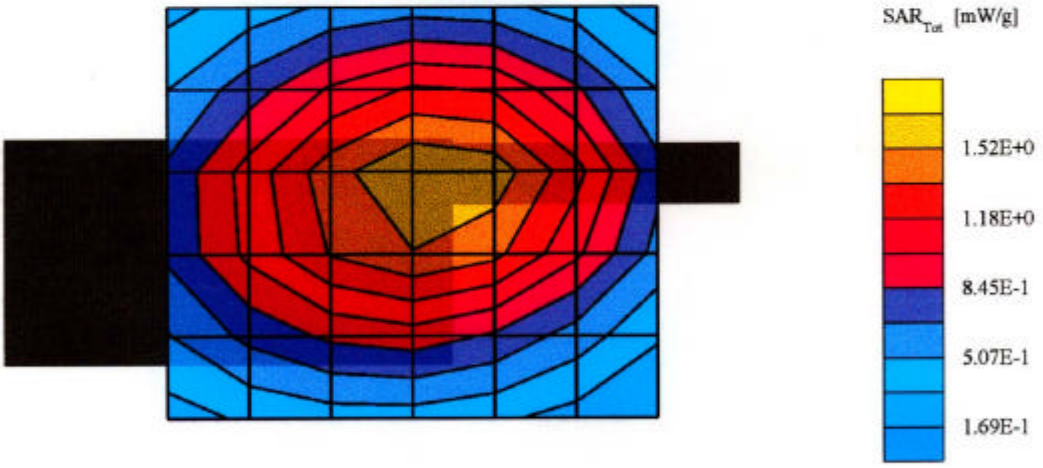
APPENDIX A – SAR TEST PLOTS

12/26/01

GMRS-1500XTM

SAM TP1019 Phantom; Flat Section; Position: (90°,90°); Frequency: 450 MHz
Probe: ET3DV6 - SN1608; ConvF(7.13,7.13,7.13); Crest factor: 1.0; Brain 450 MHz: σ = 0.84 mho/m ε_r = 45.2 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 1.62 mW/g, SAR (10g): 1.16 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.20 dB
Comment : Face- Held
Channel: 1 (462.5625MHz)



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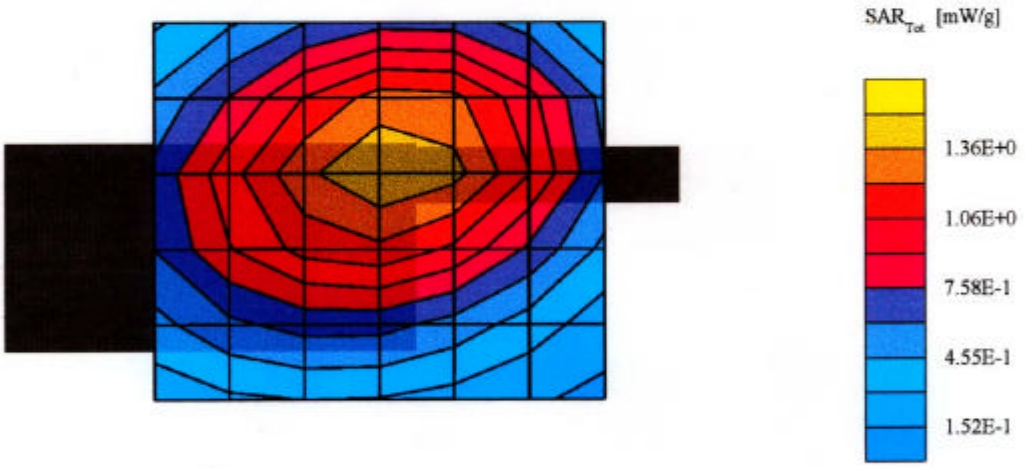
12/26/01

GMRS-1500XTM

SAM TP1019 Phantom; Flat Section; Position: (90°,90°); Frequency: 450 MHz
Probe: ET3DV6 - SN1608; ConvF(7.13,7.13,7.13); Crest factor: 1.0; Brain 450 MHz: σ = 0.84 mho/m ε_r = 45.2 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 1.43 mW/g, SAR (10g): 1.02 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.29 dB
Comment : Face- Held
Channel: 10 (462.6750MHz)



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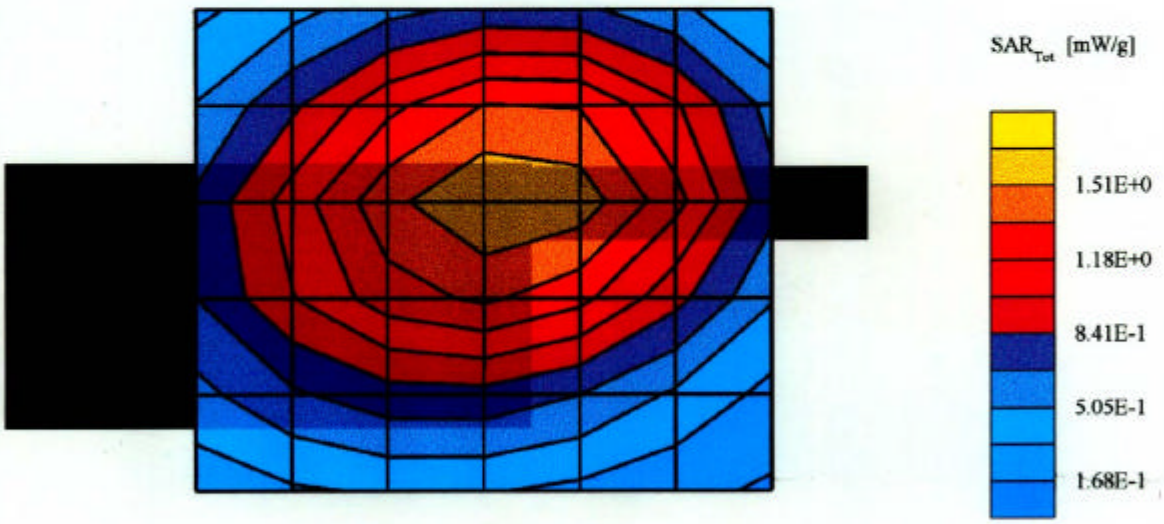
12/26/01

GMRS-1500XTM

SAM TP1019 Phantom; Flat Section; Position: (90°,90°); Frequency: 450 MHz
Probe: ET3DV6 - SN1608; ConvF(7.13,7.13,7.13); Crest factor: 1.0; Brain 450 MHz: σ = 0.84 mho/m ε_r = 45.2 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 1.61 mW/g, SAR (10g): 1.16 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.17 dB
Comment : Face- Held
Channel: 15 (462.7250MHz)



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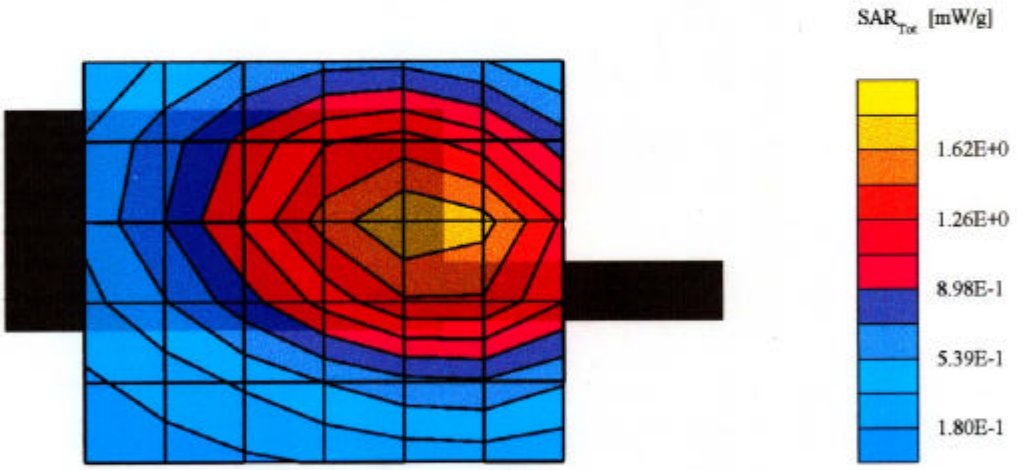
01/02/02

GMRS-1500XTM

SAM TP1019 Phantom; Flat Section; Position: (90°,90°); Frequency: 450 MHz
Probe: ET3DV6 - SN1608; ConvF(7.13,7.13,7.13); Crest factor: 1.0; Muscle 450 MHz: σ = 0.90 mho/m ε_r = 58.5 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 1.71 mW/g, SAR (10g): 1.23 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.18 dB
Comment : Body- Worn
Channel: 1 (462.5625MHz)



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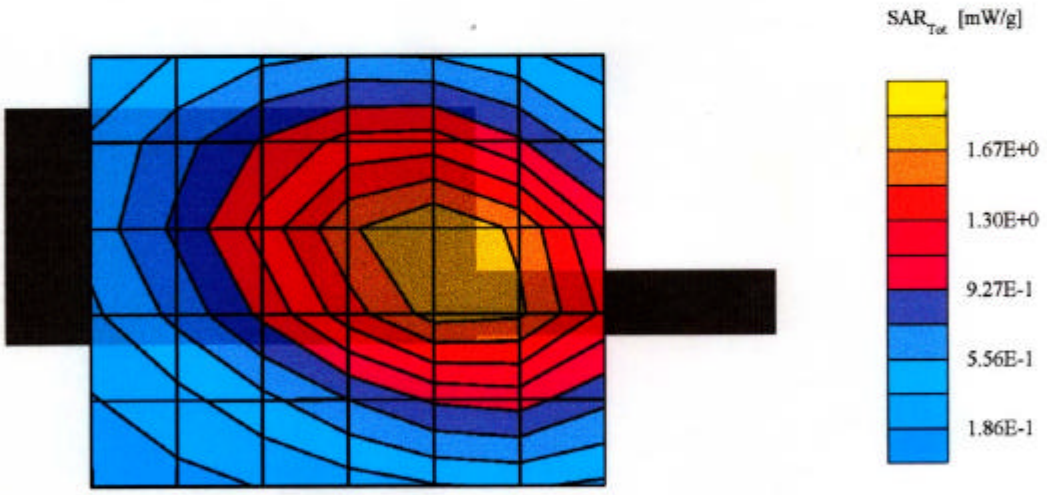
01/02/02

GMRS-1500XTM

SAM TP1019 Phantom; Flat Section; Position: (90°,90°); Frequency: 450 MHz
Probe: ET3DV6 - SN1608; ConvF(7.13,7.13,7.13); Crest factor: 1.0; Muscle 450 MHz: σ = 0.90 mho/m ε_r = 58.5 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 1.81 mW/g, SAR (10g): 1.29 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.16 dB
Comment : Body- Worn
Channel: 10 (462.6750MHz)



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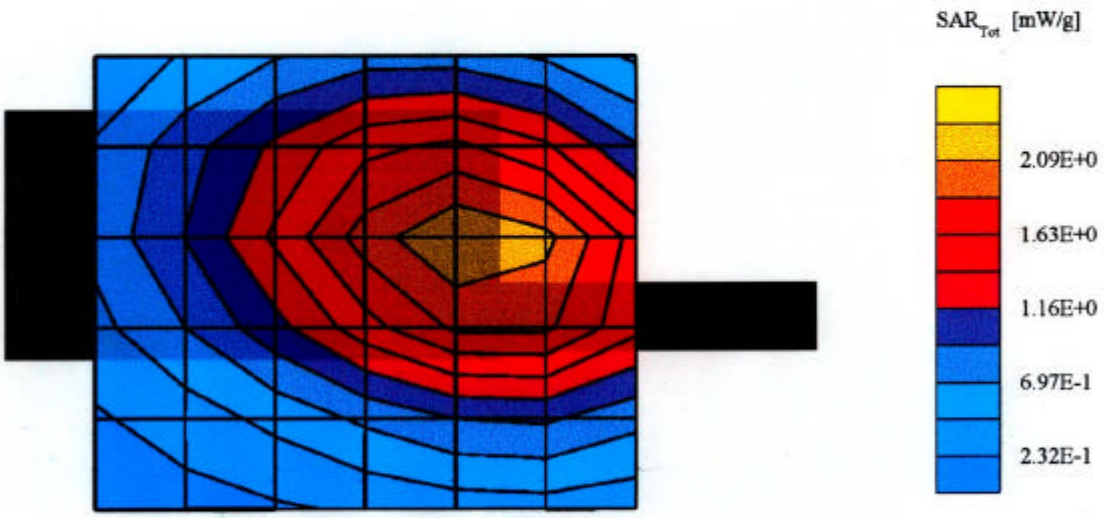
01/02/02

GMRS-1500XTM

SAM TP1019 Phantom; Flat Section; Position: (90°,90°); Frequency: 450 MHz
Probe: ET3DV6 - SN1608; ConvF(7.13,7.13,7.13); Crest factor: 1.0; Muscle 450 MHz: σ = 0.90 mho/m ε_r = 58.5 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 2.18 mW/g, SAR (10g): 1.57 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.26 dB
Comment : Body- Worn
Channel: 15 (462.7250MHz)



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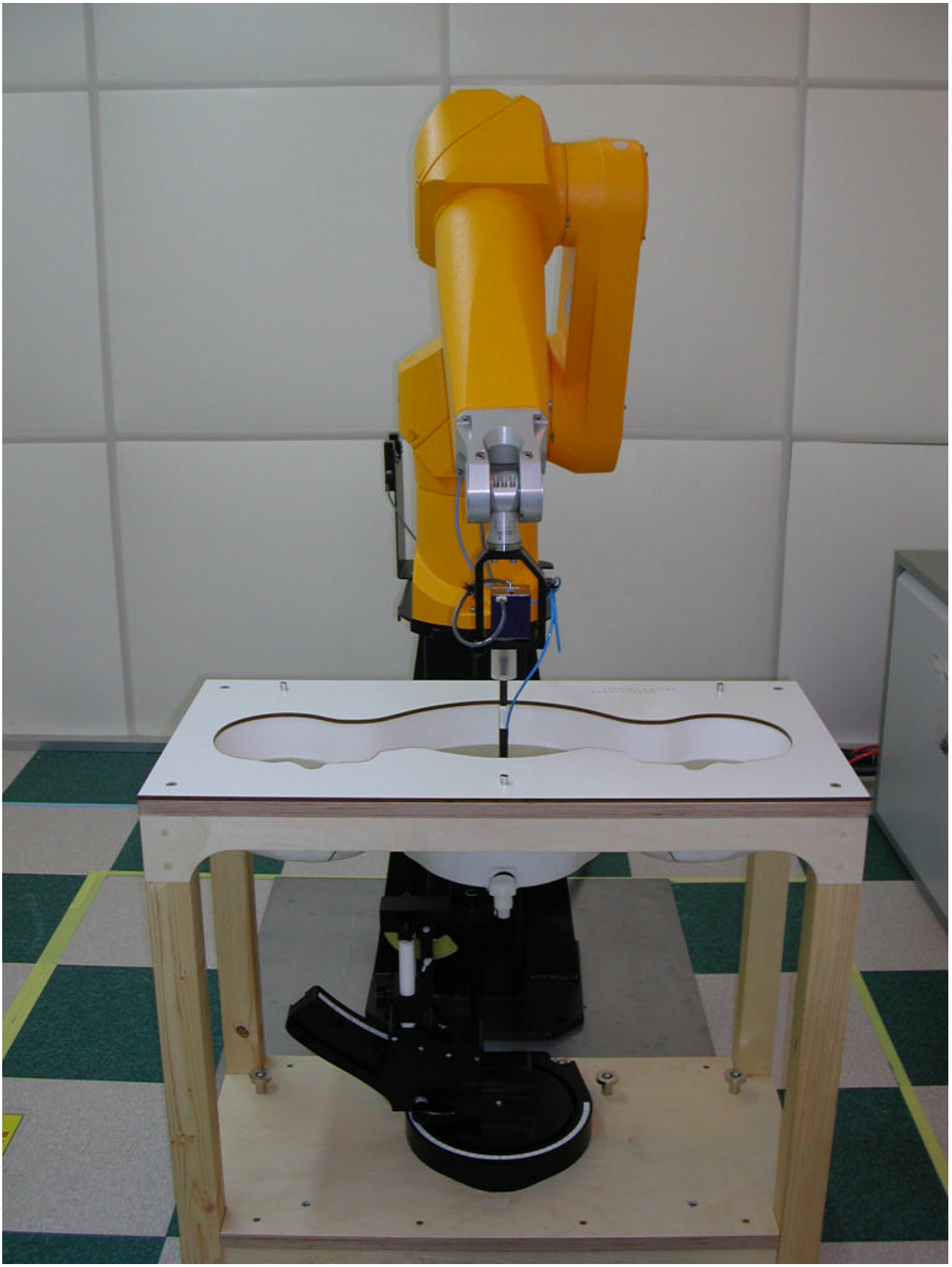
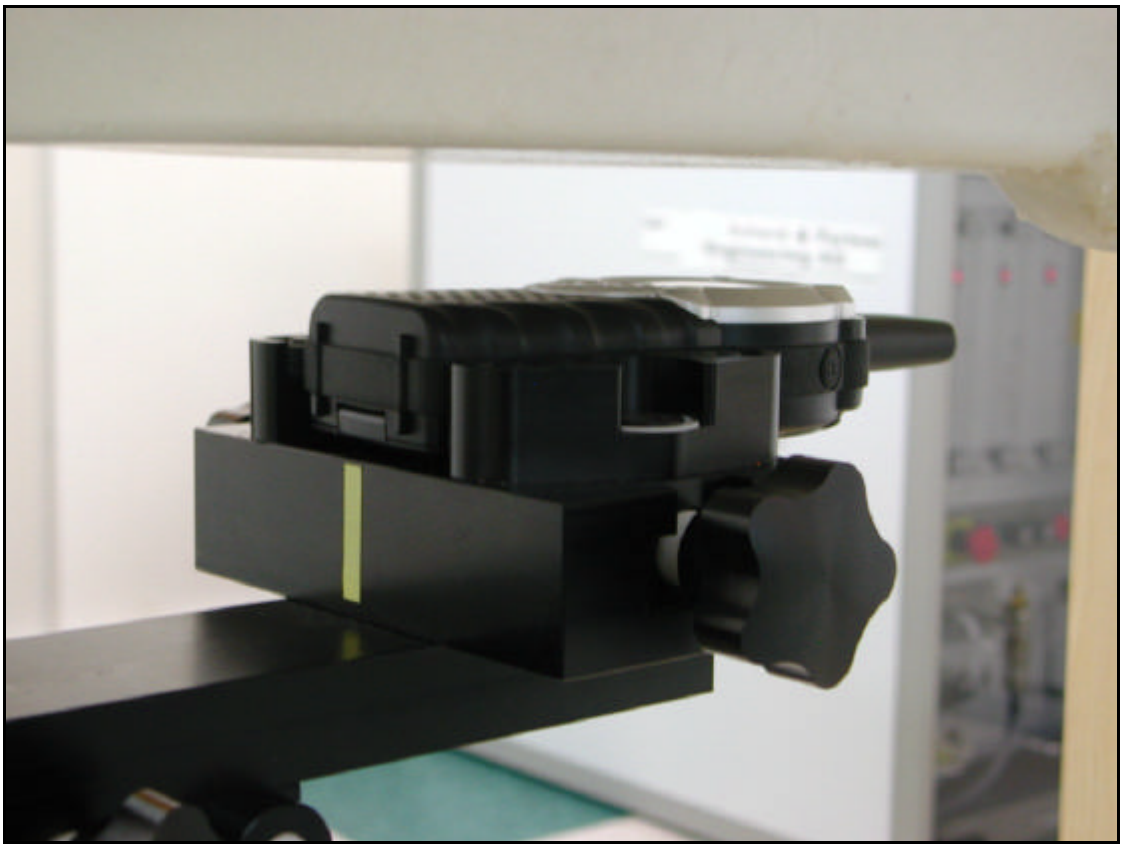
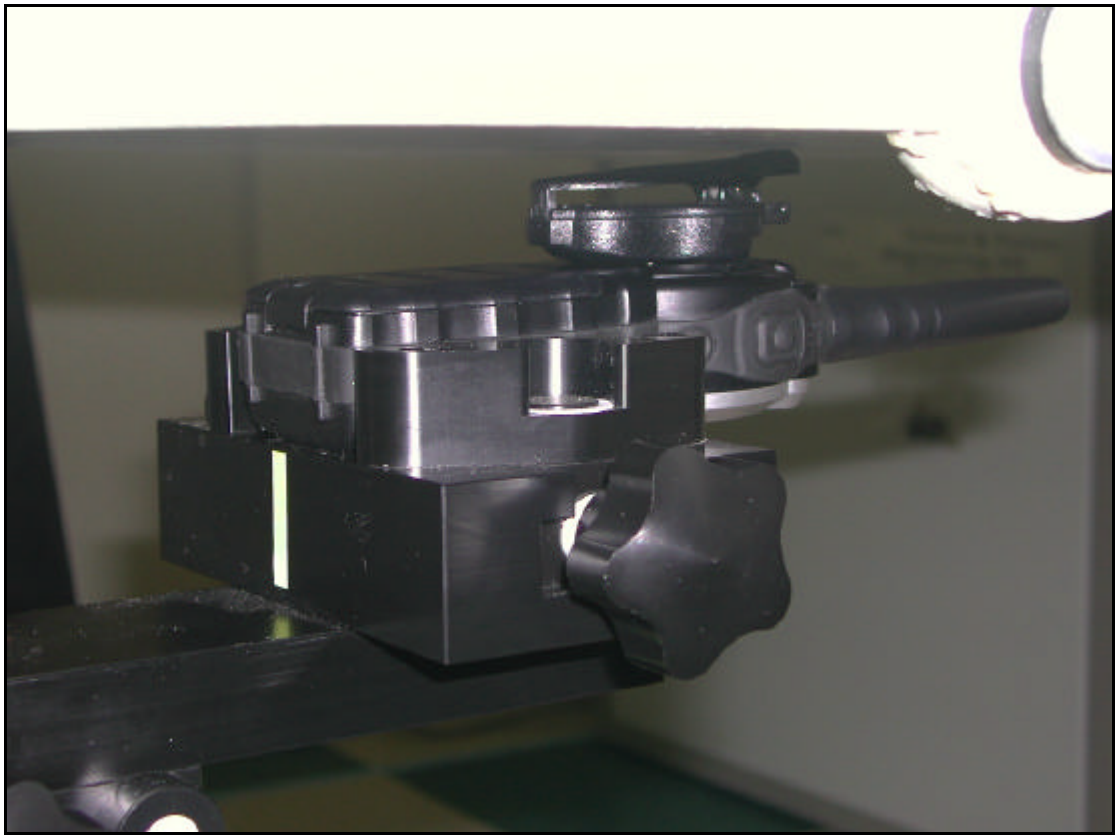
APPENDIX B – EUT TEST SETUP PHOTOGRAPHS



STÄUBLI





APPENDIX C – EUT PROFILE PHOTOGRAPHS

J com
FM RADIO

APPENDIX D – DIPOLE VALIDATION PLOTS

Dipole 835 MHz

SAM TP1019; Flat

Probe: ET3DV6 - SN1608; ConvF(6.62,6.62,6.62); Crest factor: 1.0; Head 835 MHz: σ = 0.88 mho/m ε_r = 40.0 ρ = 1.00 g/cm³

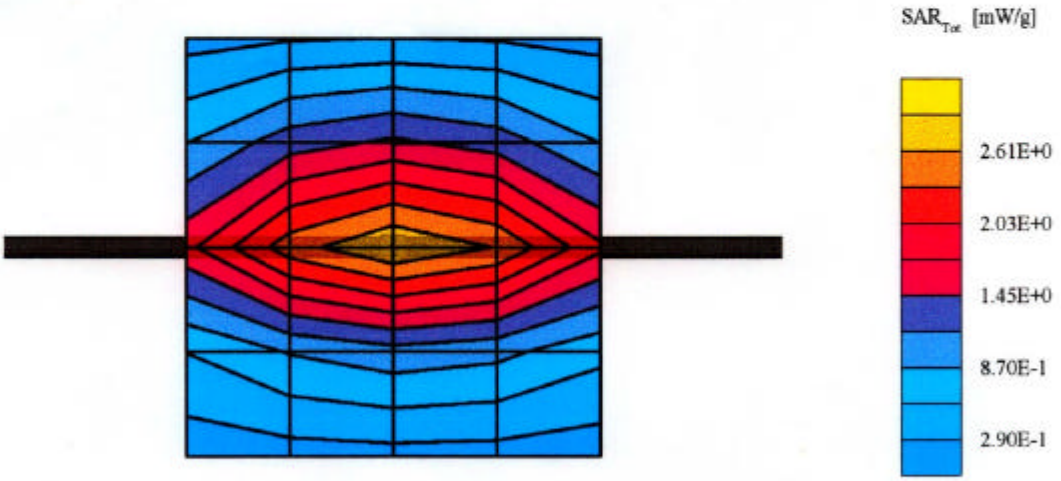
Cubes (2): Peak: 4.44 mW/g ± 0.03 dB, SAR (1g): 2.76 mW/g ± 0.02 dB, SAR (10g): 1.75 mW/g ± 0.01 dB, (Worst-case extrapolation)

Penetration depth: 11.7 (10.3, 13.5) [mm]

Powerdrift: 0.01 dB

Peak: 4.44 mW/g ± 0.03 dB

Comment :



Hyundai C-Tech Co.,Ltd.

APPENDIX E – PROBE CALIBRATION DATA

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:	**1608**
Place of Calibration:	**Zurich**
Date of Calibration:	**August 10, 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:	Nikolovski Neriana
Approved by:	[illegible]

Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland, Telephone +41 1 245 97 00, Fax +41 1 245 97 79

Probe ET3DV6

SN:1608

Manufactured: July 27, 2001
Calibrated: August 10, 2001

Calibrated for System DASY3

ET3DV6 SN:1608

DASY3 - Parameters of Probe: ET3DV6 SN:1608

Sensitivity in Free Space

NormX	1.70 $\mu V/(V/m)^2$
NormY	1.51 $\mu V/(V/m)^2$
NormZ	1.79 $\mu V/(V/m)^2$

Diode Compression

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

Sensitivity in Tissue Simulating Liquid

Head 450 MHz ε_r = 43.5 ± 5% σ = 0.87 ± 10% mho/m

ConvF X	7.13 extrapolated	Boundary effect:	
ConvF Y	7.13 extrapolated	Alpha	0.21
ConvF Z	7.13 extrapolated	Depth	3.07

Head 900 MHz ε_r = 42 ± 5% σ = 0.97 ± 10% mho/m

ConvF X	6.62 ± 7% (k=2)	Boundary effect:	
ConvF Y	6.62 ± 7% (k=2)	Alpha	0.29
ConvF Z	6.62 ± 7% (k=2)	Depth	2.81

Head 1500 MHz ε_r = 40.4 ± 5% σ = 1.23 ± 10% mho/m

ConvF X	5.94 interpolated	Boundary effect:	
ConvF Y	5.94 interpolated	Alpha	0.41
ConvF Z	5.94 interpolated	Depth	2.46

Head 1800 MHz ε_r = 40 ± 5% σ = 1.40 ± 10% mho/m

ConvF X	5.60 ± 7% (k=2)	Boundary effect:	
ConvF Y	5.60 ± 7% (k=2)	Alpha	0.46
ConvF Z	5.60 ± 7% (k=2)	Depth	2.29

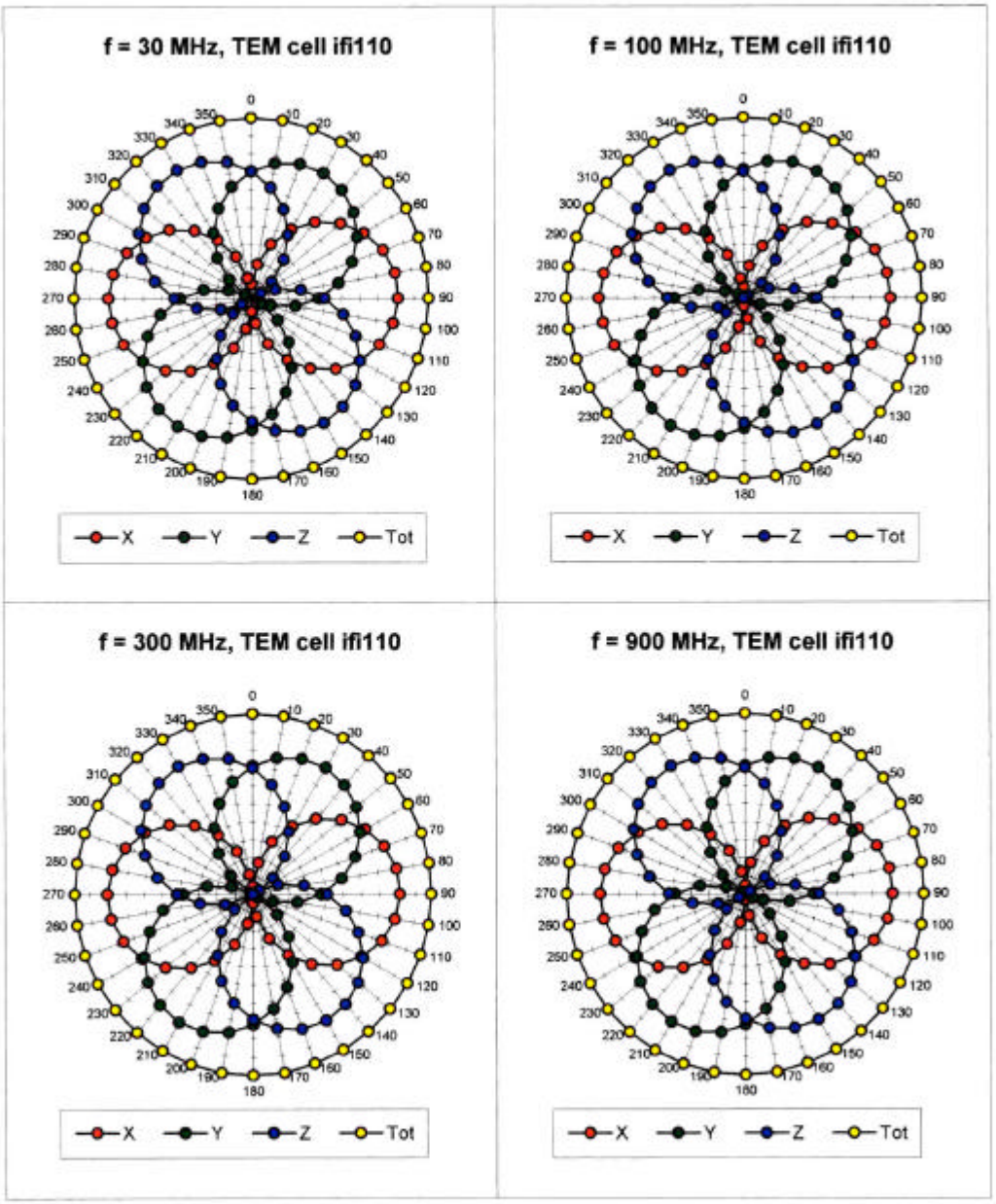
Sensor Offset

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

HYUNDAI CALIBRATION & CERTIFICATION TECHNOLOGIES CO., LTD.
SAN 136-1, AMI-RI , BUBAL-EUP, ICHEON-SI,KYOUNKI-DO, 467-701,KOREA
TEL : +82 31 639 8518 FAX : +82 31 639 8525 www.hctec.co.kr

ET3DV6 SN:1608

Receiving Pattern (ϕ), θ = 0°



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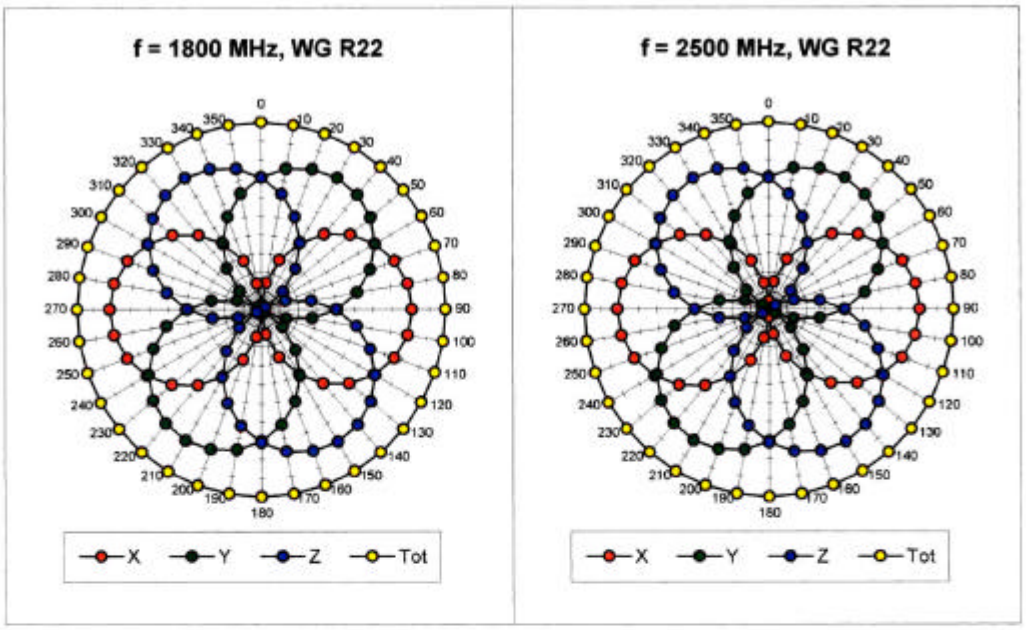
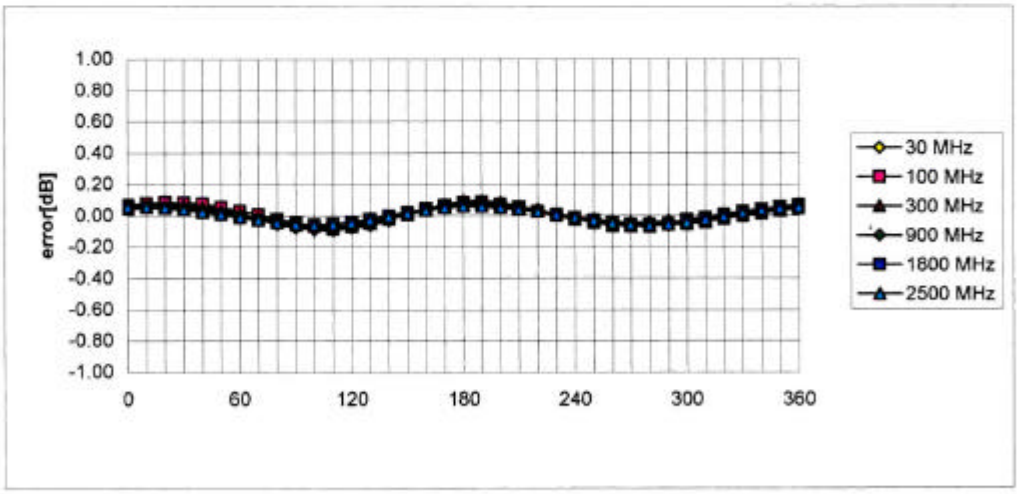
ET3DV6 SN:1608



Isotropy Error (ϕ), θ = 0°



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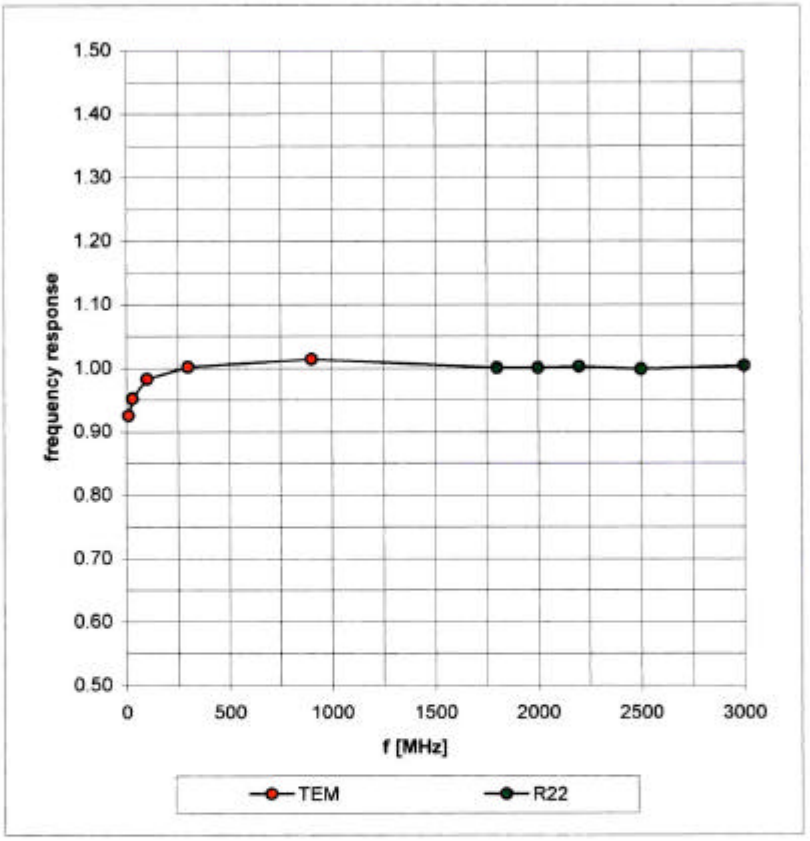
ET3DV6 SN:1608

Frequency Response of E-Field

(TEM-Cell:ifi110, Waveguide R22)



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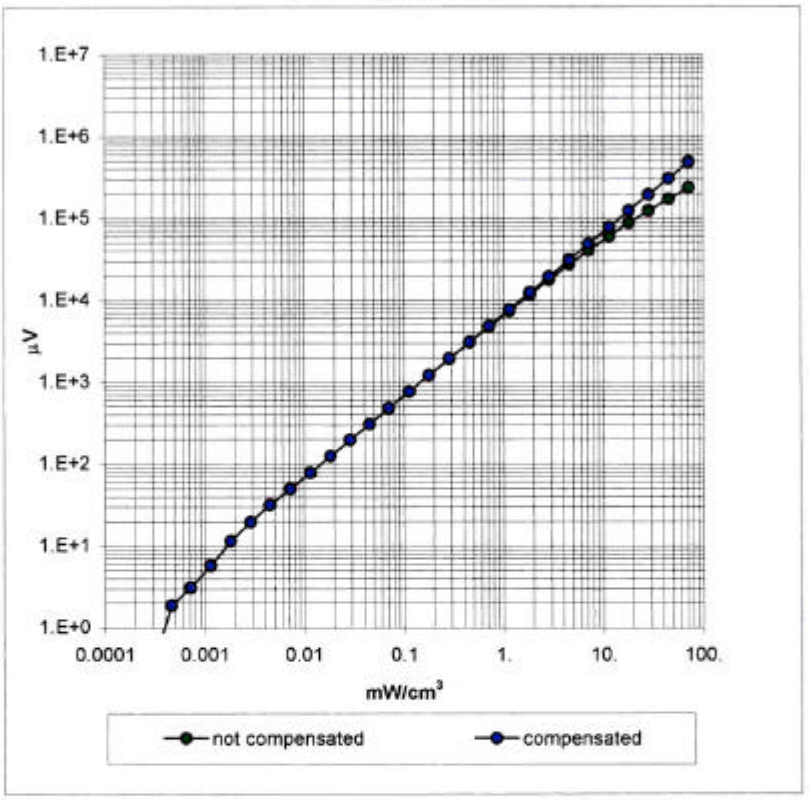
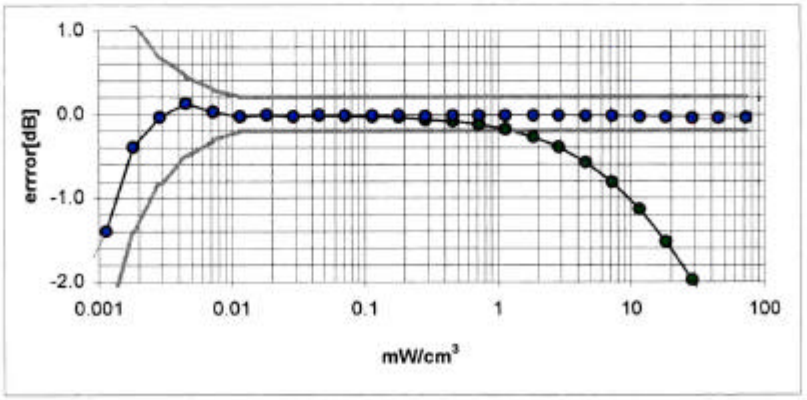
ET3DV6 SN:1608

Dynamic Range f(SAR_{brain})

(Waveguide R22)





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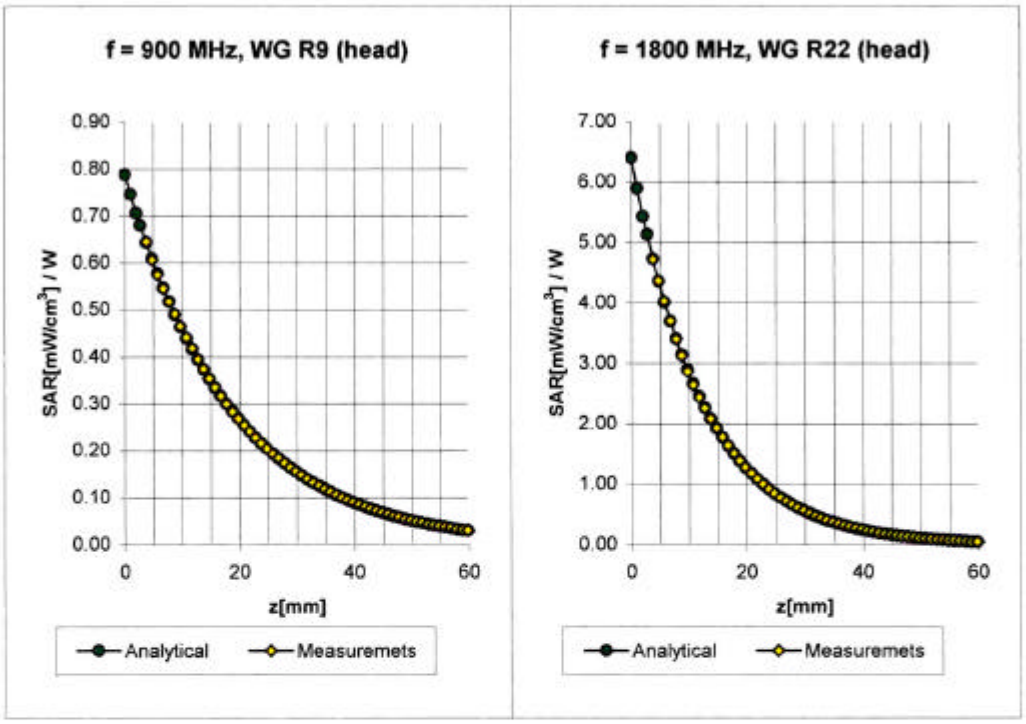
ET3DV6 SN:1608

Conversion Factor Assessment



Head **900 MHz** ε_r **= 42 ± 5%** σ **= 0.97 ± 10% mho/m**

ConvF X	**6.62** ± 7% (k=2)	Boundary effect:	
ConvF Y	**6.62** ± 7% (k=2)	Alpha	**0.29**
ConvF Z	**6.62** ± 7% (k=2)	Depth	**2.81**

Head **1800 MHz** ε_r **= 40 ± 5%** σ **= 1.40 ± 10% mho/m**

ConvF X	**5.60** ± 7% (k=2)	Boundary effect:	
ConvF Y	**5.60** ± 7% (k=2)	Alpha	**0.46**
ConvF Z	**5.60** ± 7% (k=2)	Depth	**2.29**

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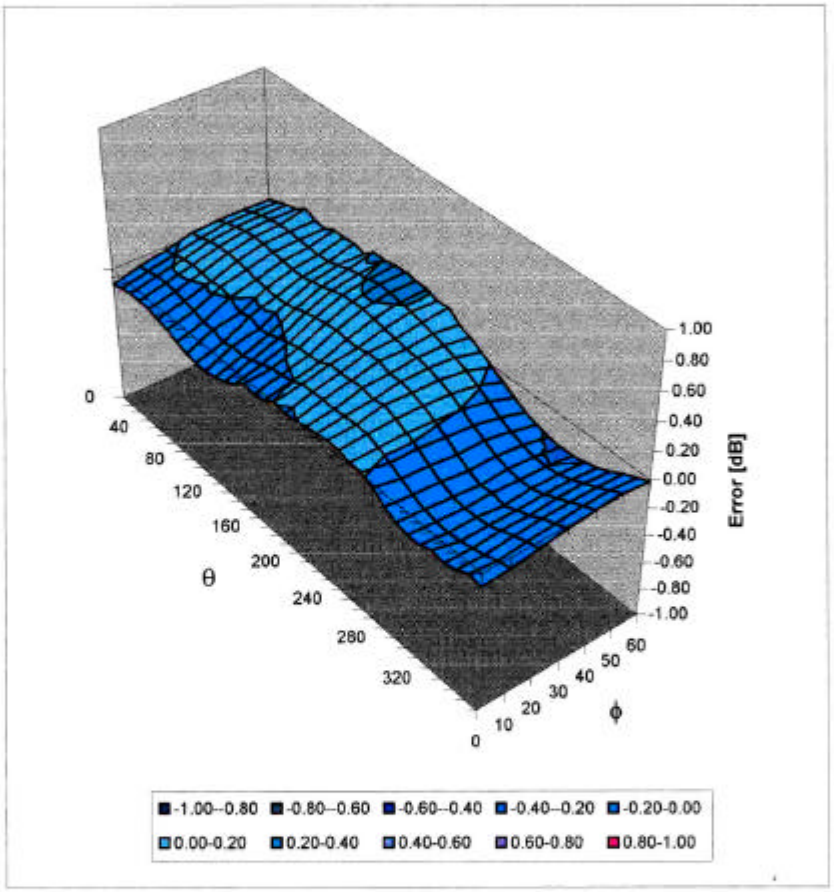
ET3DV6 SN:1608

Deviation from Isotropy in HSL

Error (θ,ϕ), f = 900 MHz



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