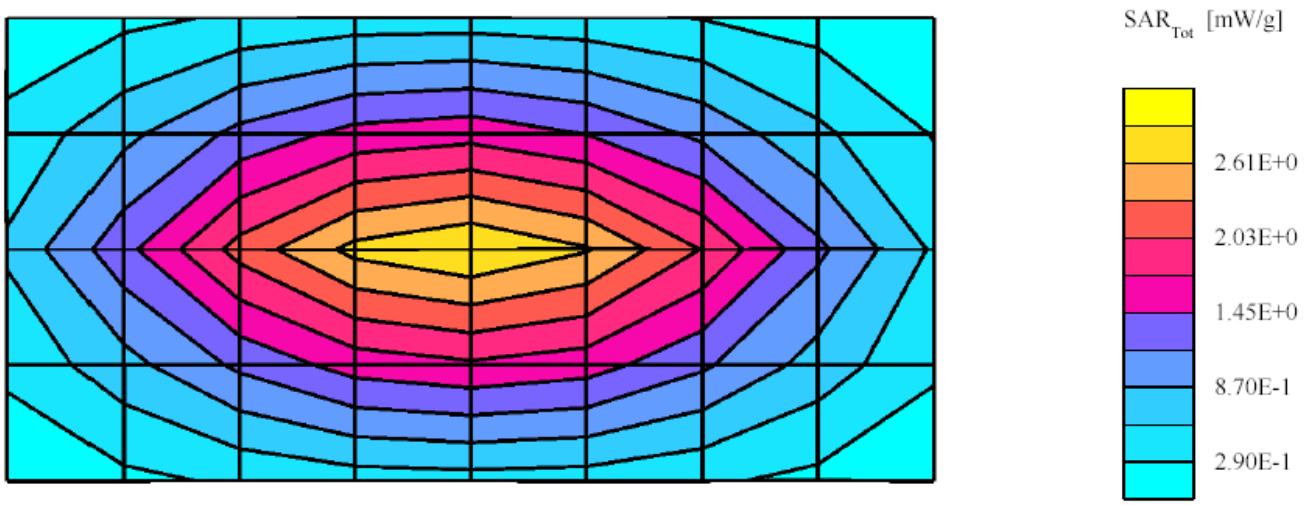
SPEAG 900 MHz Dipole; Model D900V2, SN 084; Test Date: 8/20/03
Motorola CGISS EME Lab
Run #: System perf R2-030820-01
TX Freq: 900MHz
Simulated tissue temp: 21.1C
Start Power; 250mW

Target: 11.99W/g for 1g SAR, 7.58mW/g for 10g SAR, +/- 10% from system performance target.
SAR calculated 1g is 11.39 mW/g percent from target (including drift) is -5.0%
SAR Calculated 10g is 7.26 mW/g Percent from target (including drift) is -4.3%

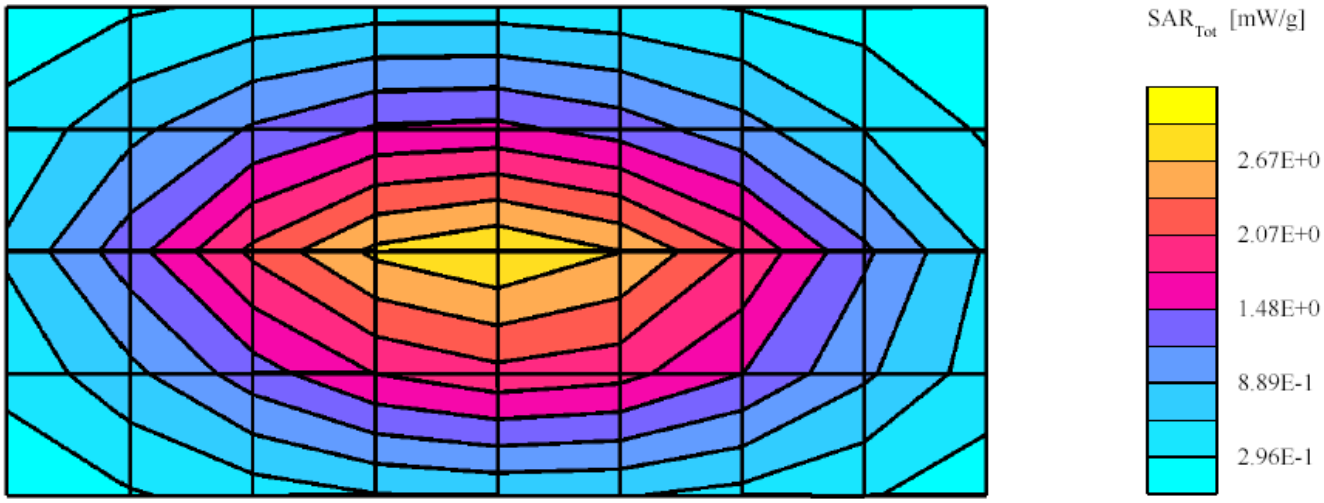
Flat; Probe: ET3DV6 - SN1547 (Cal Date 09-28-2002);Probe Cal Date: 28/09/02ConvF(6.20,6.20,6.20); Crest factor: 1.0; FCC Body 900: σ = 1.04 mho/m ε = 52.4 ρ = 1.00 g/cm3; DAE: DAE3V1 SN406; Cal 11/11/02
Cubes (3): Peak: 2.95 mW/g ± 17.21 dB, SAR (1g): 1.89 mW/g ± 16.71 dB, SAR (10g): 1.21 mW/g ± 16.25 dB, (Worst-case extrapolation) Penetration depth: 12.2 (11.3, 13.5) [mm]
Power drift: -0.01 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 084; Test Date: 8/20/03
Motorola CGISS EME Lab
Run #: System perf R2-030820-02
TX Freq: 900MHz
Simulated tissue temp: 20.9 C
Start Power; 250mW

Target: 11.66 mW/g for 1g SAR, 7.26 mW/g for 10g SAR, +/- 10% from system performance target.
SAR calculated 1g is 11.72 mW/g percent from target (including drift) is 0.5 %
SAR Calculated 10g is 7.35 mW/g Percent from target (including drift) is 1.2%

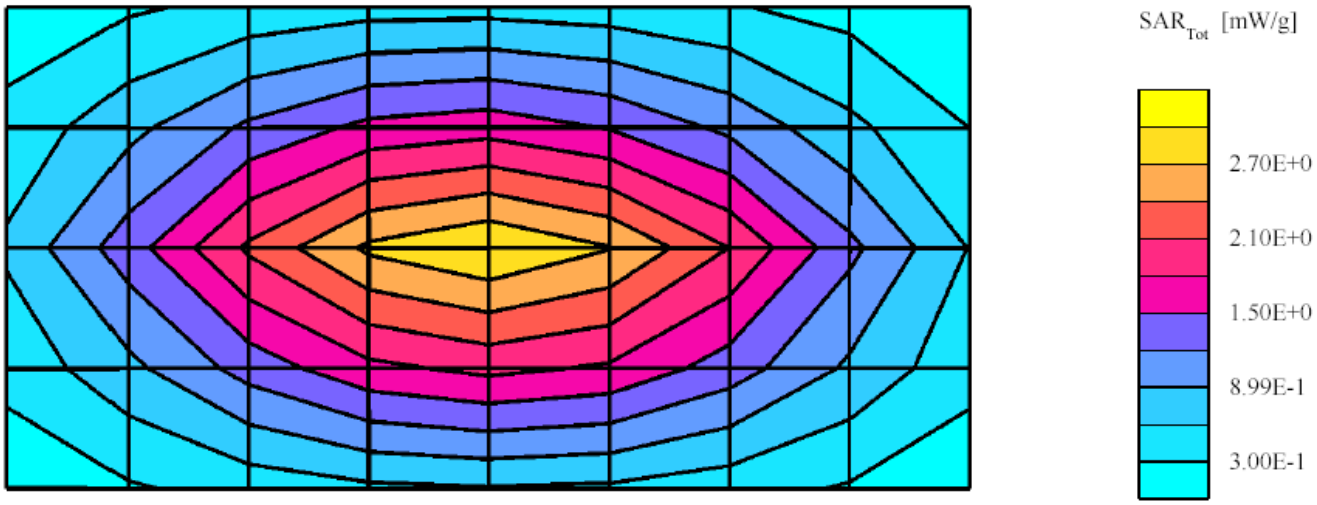
SAM; Probe: ET3DV6 - SN1547 (Cal Date 09-28-2002);Probe Cal Date: 28/09/02ConvF(6.50,6.50,6.50); Crest factor: 1.0; IEEE HEAD 900MHz: σ = 1.01 mho/m ε = 41.3 ρ = 1.00 g/cm3; DAE: DAE3V1 SN406; Cal 11/11/02
Cubes (3): Peak: 3.15 mW/g ± 18.12 dB, SAR (1g): 1.97 mW/g ± 0.00 dB, SAR (10g): 1.24 mW/g ± 0.00 dB, (Worst-case extrapolation) Penetration depth: 11.3 (10.5, 12.6) [mm]
Power drift: 0.03 dB



SPEAG 835 MHz Dipole; Model D835V2, SN 426; Test Date: 8/21/03
Motorola CGISS EME Lab
Run #: System perf R2-030821-01
TX Freq: 900MHz
Simulated tissue temp: 21.0 C
Start Power; 250mW

Target: 11.66 mW/g for 1g SAR, 7.26 mW/g for 10g SAR, +/- 10% from system performance target.
SAR calculated 1g is 11.89 mW/g percent from target (including drift) is 2.0 %
SAR Calculated 10g is 7.45 mW/g Percent from target (including drift) is 2.6%

SAM; Probe: ET3DV6 - SN1547 (Cal Date 09-28-2002);Probe Cal Date: 28/09/02ConvF(6.50,6.50,6.50); Crest factor: 1.0; IEEE HEAD 900MHz: σ = 1.01 mho/m ε = 41.3 ρ = 1.00 g/cm3
Cubes (3): Peak: 3.19 mW/g ± 20.28 dB, SAR (1g): 2.00 mW/g ± 22.83 dB, SAR (10g): 1.26 mW/g ± 0.00 dB, (Worst-case extrapolation) Penetration depth: 11.3 (10.5, 12.6) [mm]
Power drift: 0.04 dB



SYSTEM PERFORMANCE CHECK TARGET SAR

Date:	05/22/03	Frequency (MHz):	900
Lab Location:	CGISS	Mixture Type:	900-FCC Body
Robot System:	CGISS-2	Ambient Temp.(°C):	20.9
Probe Serial #:	1547	Tissue Temp.(°C):	21.0
DAE Serial #:	DAE3V1 SN401		

Tissue Characteristics		Phantom Type/SN:	80302002A/S8
Permitivity:	53.9	Distance (mm):	15
Conductivity:	1.07		

Reference Source: Dipole (Dipole/Handset)
Reference SN: 084

Power to Dipole: 250 mW

Measured SAR Value: 2.99 mW/g, 1.89 mW/g (10g avg.)
Power Drift: -0.01 dB

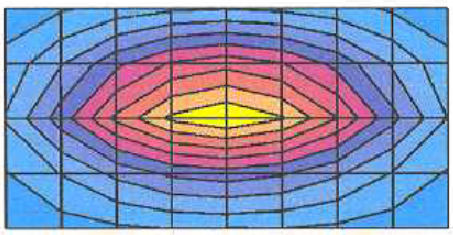
New Target/Measured SAR Value: 11.99 mW/g, 7.58 mW/g (10g avg.)
(normalized to 1.0 W, with drift compensation)

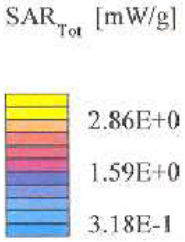
Test performed by: Kim Uong Initial: KU

Dipole D900V2 SN084; Test Date: 05/22/03

Run #: 0305022-06 Phantom #:80302002A/S8
Model#: SPEAG dipole D900V2 SN084
Robot#: CGISS-2 DAE: DAE3V1 SN374 (2/11/02) Tester: Kim Uong
Tx Freq:900MHz Simulated tissue temp: 21.0C, Ambient :20.9C
Start power: 250mW
Target:
11.8mW/g for 1g-SAR, 7.52mW/g for 10g-SAR, +/-12% from SPEAG Dipole certificate 2/11/02

Flat Phantom; Section;
Probe: ET3DV6 - SN1547 (Cal Date 09-28-2002); ConvF(6.20,6.20,6.20); Probe cal date: 28/09/02; Crest factor: 1.0; FCC Body 900: σ = 1.07 mho/m ε_r = 53.9 ρ = 1.00 g/cm^3
Cubes (2): SAR (1g): 2.99 mW/g ± 0.03 dB, SAR (10g): 1.89 mW/g ± 0.03 dB, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 28.5, 60.0, 4.0
Powerdrift: -0.01 dB





SYSTEM PERFORMANCE CHECK TARGET SAR

Date:	05/05/03	Frequency (MHz):	900
Lab Location:	CGISS	Mixture Type:	900-IEEE Head
Robot System:	CGISS-2	Ambient Temp.(°C):	22.4
Probe Serial #:	1547	Tissue Temp.(°C):	20.3
DAE Serial #:	DAE3V1 SN401		

Tissue Characteristics		Phantom Type/SN:	SAMTP1209
Permitivity:	40.5	Distance (mm):	15
Conductivity:	0.98		

Reference Source: Dipole (Dipole/Handset)
Reference SN: 084

Power to Dipole: 250 mW

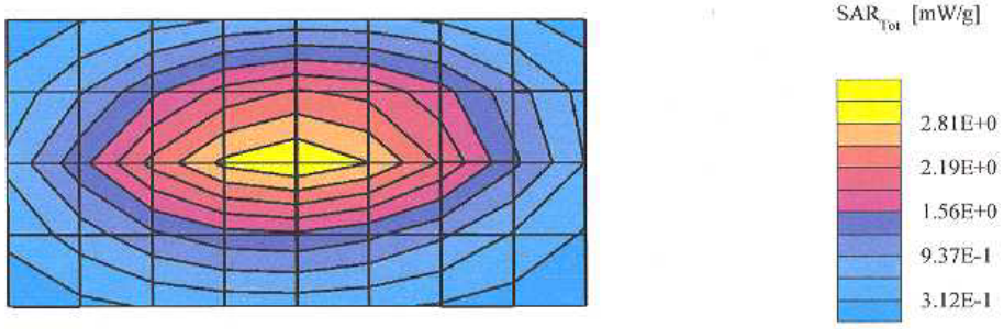
Measured SAR Value: 2.97 mW/g, 1.85 mW/g (10g avg.)
Power Drift: 0.08 dB

New Target/Measured SAR Value: 11.66 mW/g, 7.26 mW/g (10g avg.)
(normalized to 1.0 W, with drift compensation)

Test performed by: Kim Uong Initial: KU

Dipole D900V2 SN084; Test date:05/05/03

Run #: 030505-01 Phantom #:SAMTP1209
Model#: SPEAG dipole D900V2 SN084
Robot#: CGISS-2 DAE: DAE3V1 SN401 (8/26/02) Tester: Kim Uong
Tx Freq:900MHz Simulated tissue temp: 20.3C
Start power: 250mW
Target:
11.2mW/g for 1g-SAR, 7.12mW/g for 10g-SAR, +/-12% from SPEAG Dipole certificate 2/11/02
11.66mW/g for 1g-SAR , 7.26mW/g for 10g-SAR, +/-10% from system performance target 05/05/03.
SAM; Probe: ET3DV6 - SN1547 (Cal Date 09-28-2002); ConvF(6.50,6.50,6.50); Crest factor: 1.0; IEEE HEAD 900MHz: σ = 0.98 mho/m ε_r = 40.5 ρ = 1.00 g/cm^3
Cubes (2): Peak: 4.85 mW/g ± 0.02 dB, SAR (1g): 2.97 mW/g ± 0.02 dB, SAR (10g): 1.85 mW/g ± 0.02 dB, (Worst-case extrapolation)
Penetration depth: 11.1 (9.9, 12.7) [mm]
Powerdrift: 0.08 dB



APPENDIX D

Calibration Certificates

Schmid & Partner
Engineering AG

Zeughausstrasse 43, 8004 Zurich, Switzerland, Phone +41 1 245 97 00, Fax +41 1 245 97 79

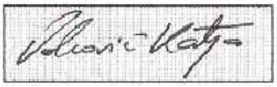
Calibration Certificate

Dosimetric E-Field Probe

Type:	ET3DV6
Serial Number:	1547
Place of Calibration:	Zurich
Date of Calibration:	September 28, 2002
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:	
Approved by:	

DASY - Parameters of Probe: ET3DV6 SN:1547

Sensitivity in Free Space

		Diode Compression		
NormX	1.37 $\mu V/(V/m)^2$	DCP X	90	mV
NormY	1.23 $\mu V/(V/m)^2$	DCP Y	90	mV
NormZ	1.23 $\mu V/(V/m)^2$	DCP Z	90	mV

Sensitivity in Tissue Simulating Liquid

Head	835 MHz	ε_r = 41.5 ± 5%	σ = 0.90 ± 5% mho/m
Head	900 MHz	ε_r = 41.5 ± 5%	σ = 0.97 ± 5% mho/m
	ConvF X	6.5 ± 9.5% (k=2)	Boundary effect:
	ConvF Y	6.5 ± 9.5% (k=2)	Alpha 1.47
	ConvF Z	6.5 ± 9.5% (k=2)	Depth 1.19
Head	1900 MHz	ε_r = 40.0 ± 5%	σ = 1.40 ± 5% mho/m
Head	1800 MHz	ε_r = 40.0 ± 5%	σ = 1.40 ± 5% mho/m
	ConvF X	5.2 ± 9.5% (k=2)	Boundary effect:
	ConvF Y	5.2 ± 9.5% (k=2)	Alpha 0.63
	ConvF Z	5.2 ± 9.5% (k=2)	Depth 2.21

Boundary Effect

Head 835 MHz **Typical SAR gradient: 5 % per mm**

Probe Tip to Boundary		1 mm	2 mm
SAR_{be} [%]	Without Correction Algorithm	7.1	2.9
SAR_{be} [%]	With Correction Algorithm	0.0	0.1

Head 1900 MHz **Typical SAR gradient: 10 % per mm**

Probe Tip to Boundary		1 mm	2 mm
SAR_{be} [%]	Without Correction Algorithm	13.2	8.5
SAR_{be} [%]	With Correction Algorithm	0.1	0.4

Sensor Offset

Probe Tip to Sensor Center	2.7	mm
Optical Surface Detection	1.3 ± 0.2	mm

Schmid & Partner
Engineering AG

Zeughausstrasse 43, 8004 Zurich, Switzerland, Phone +41 1 245 97 00, Fax +41 1 245 97 79

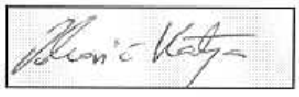
Additional Conversion Factors

for Dosimetric E-Field Probe

Type:	**ET3DV6**
Serial Number:	**1547**
Place of Assessment:	**Zurich**
Date of Assessment:	**September 30, 2002**
Probe Calibration Date:	**September 28, 2002**

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:

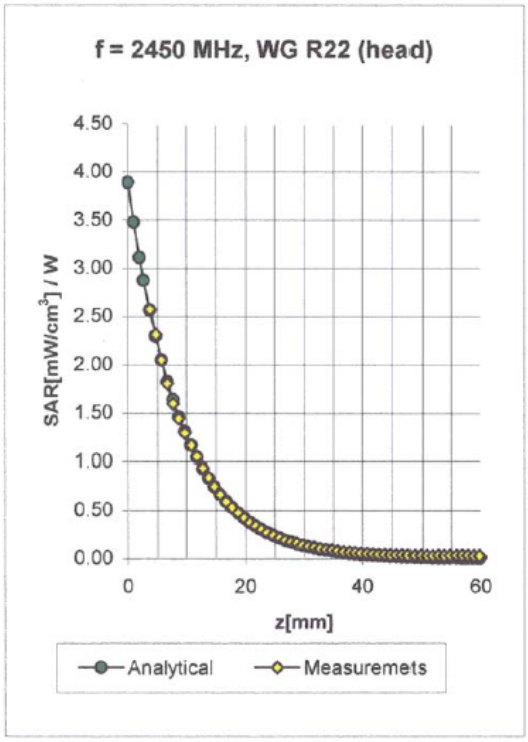


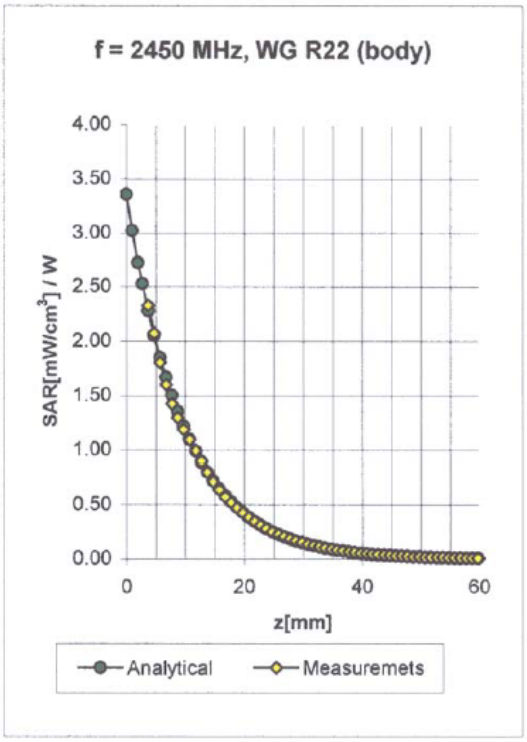
Dosimetric E-Field Probe ET3DV6 SN:1547

Conversion factor (± standard deviation)

150 MHz	ConvF	**8.0 ± 8%**	ε_r = **61.9** ±5% σ = **0.80** ±5% **mho/m** (body tissue)
236 MHz	ConvF	**7.8 ± 8%**	ε_r = **59.8** ±5% σ = **0.87** ±5% **mho/m** (body tissue)
300 MHz	ConvF	**7.7 ± 8%**	ε_r = **58.2** ±5% σ = **0.92** ±5% **mho/m** (body tissue)
350 MHz	ConvF	**7.6 ± 8%**	ε_r = **57.7** ±5% σ = **0.93** ±5% **mho/m** (body tissue)
450 MHz	ConvF	**7.3 ± 8%**	ε_r = **56.7** ±5% σ = **0.94** ±5% **mho/m** (body tissue)
784 MHz	ConvF	**6.4 ± 8%**	ε_r = **55.4** ±5% σ = **0.97** ±5% **mho/m** (body tissue)
1450 MHz	ConvF	**5.3 ± 8%**	ε_r = **54.0** ±5% σ = **1.30** ±5% **mho/m** (body tissue)

Conversion Factor Assessment





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

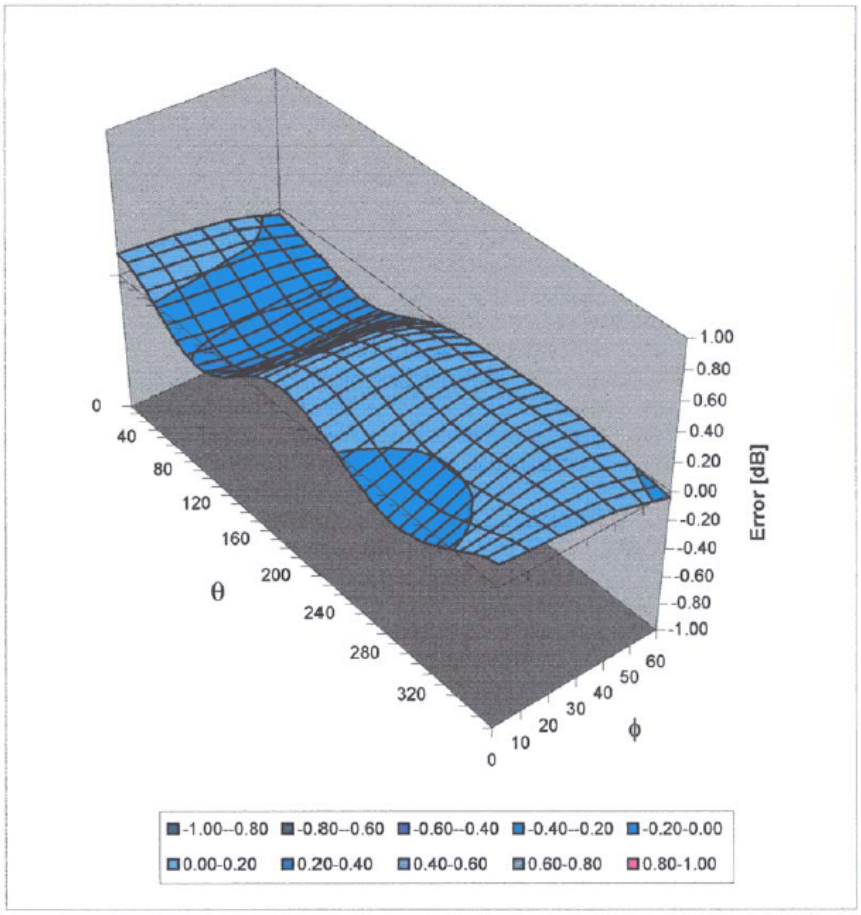
ConvF X	**4.8** ± 8.9% (k=2)	Boundary effect:	
ConvF Y	**4.8** ± 8.9% (k=2)	Alpha	**1.00**
ConvF Z	**4.8** ± 8.9% (k=2)	Depth	**1.81**

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

ConvF X	**4.5** ± 8.9% (k=2)	Boundary effect:	
ConvF Y	**4.5** ± 8.9% (k=2)	Alpha	**1.00**
ConvF Z	**4.5** ± 8.9% (k=2)	Depth	**1.50**

Deviation from Isotropy n HSL

Error φ), f 900 MHz



Frequency Response of E-Field

(TEM-Cell:ifi110, Waveguide R22)