Appendix 2

Probe 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:	**1523**
Place of Calibration:	**Zurich**
Date of Calibration:	**May 11, 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:	Jelena Knežević
Approved by:	

Engineering AG

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

Probe ET3DV6

SN:1523

Manufactured:	March 21, 2000
Last calibration:	April 7, 2000
Recalibrated:	May 11, 2001

Calibrated for System DASY3

DASY3 - Parameters of Probe: ET3DV6 SN:1523

Sensitivity in Free Space

NormX	1.57 $\mu V/(V/m)^2$
NormY	1.39 $\mu V/(V/m)^2$
NormZ	1.58 $\mu V/(V/m)^2$

Diode Compression

DCP X	96 mV
DCP Y	96 mV
DCP Z	96 mV

Sensitivity in Tissue Simulating Liquid

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

ConvF X	6.95 extrapolated	Boundary effect:	
ConvF Y	6.95 extrapolated	Alpha	0.57
ConvF Z	6.95 extrapolated	Depth	1.94

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

ConvF X	6.44 ± 7% (k=2)	Boundary effect:	
ConvF Y	6.44 ± 7% (k=2)	Alpha	0.58
ConvF Z	6.44 ± 7% (k=2)	Depth	1.98

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

ConvF X	5.77 interpolated	Boundary effect:	
ConvF Y	5.77 interpolated	Alpha	0.60
ConvF Z	5.77 interpolated	Depth	2.03

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

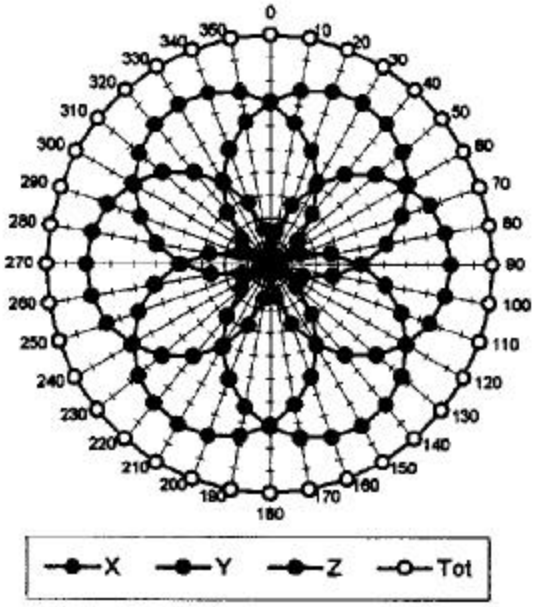
ConvF X	5.43 ± 7% (k=2)	Boundary effect:	
ConvF Y	5.43 ± 7% (k=2)	Alpha	0.60
ConvF Z	5.43 ± 7% (k=2)	Depth	2.06

Sensor Offset

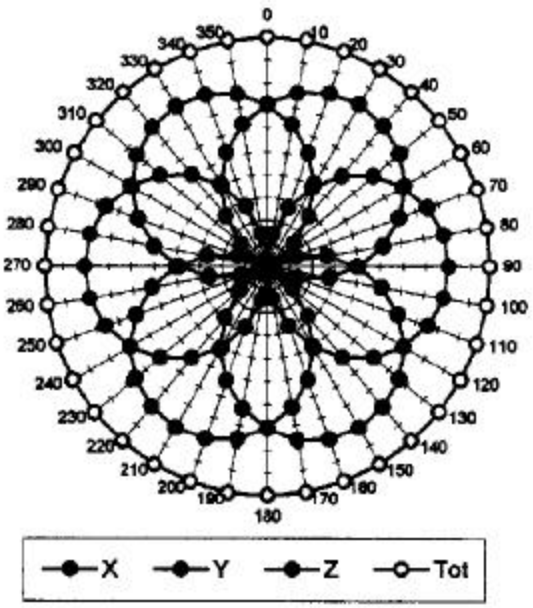
Probe Tip to Sensor Center	2.7	mm
Optical Surface Detection	1.3 ± 0.2	mm

Receiving Pattern (ϕ), θ = 0°

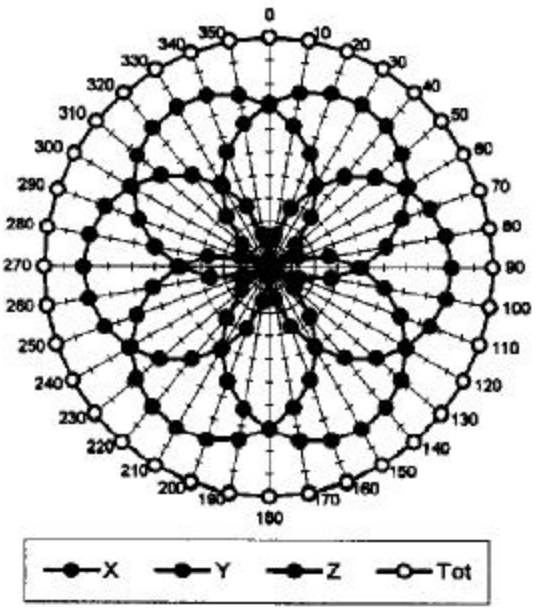
f = 30 MHz, TEM cell ifi110



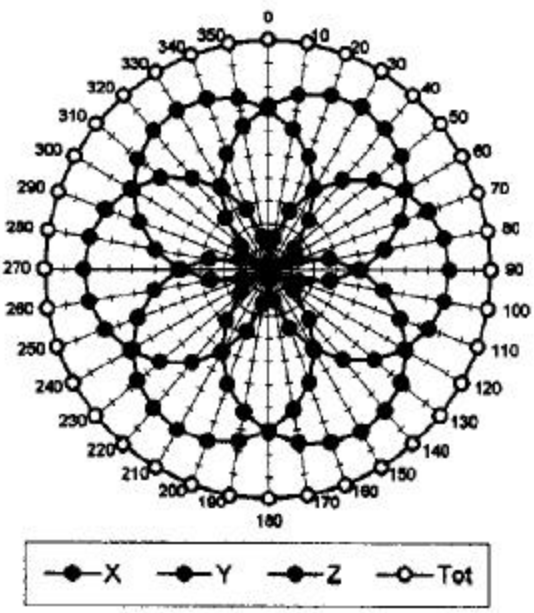
f = 100 MHz, TEM cell ifi110

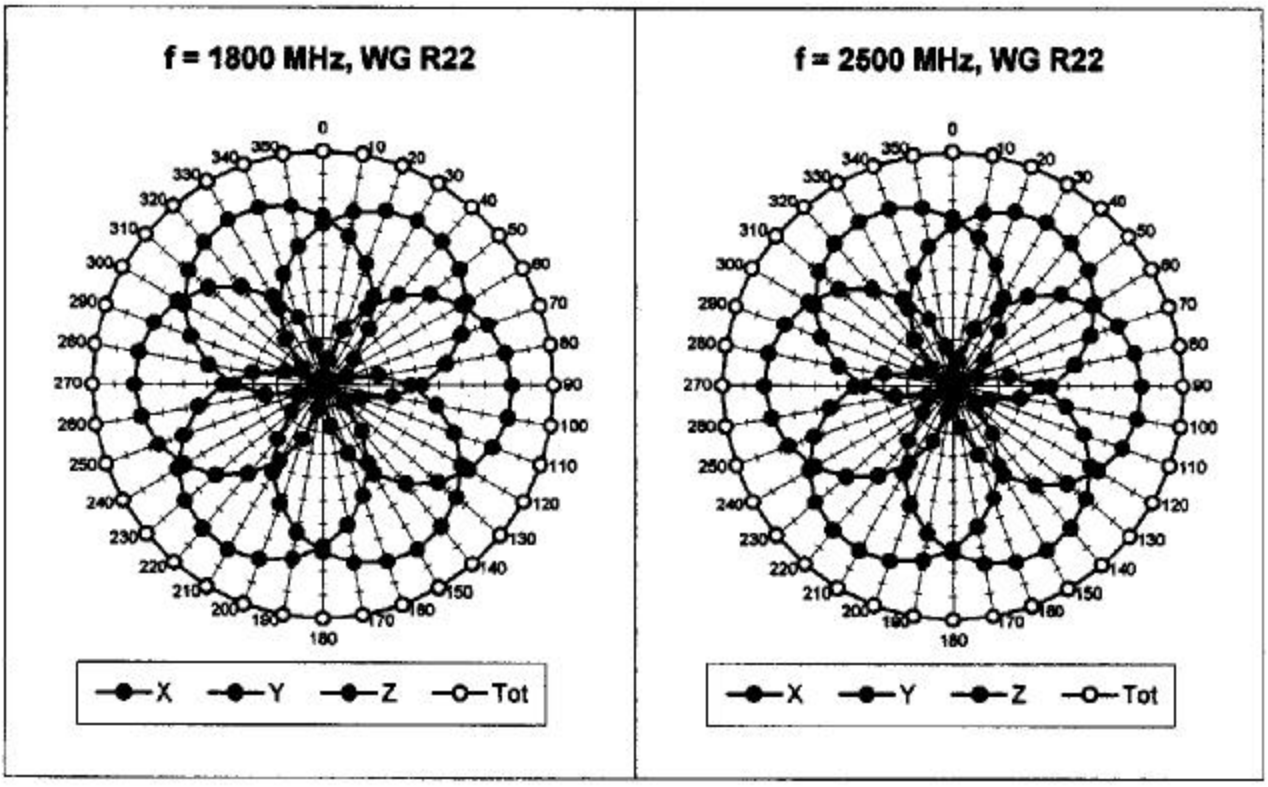


f = 300 MHz, TEM cell ifi110

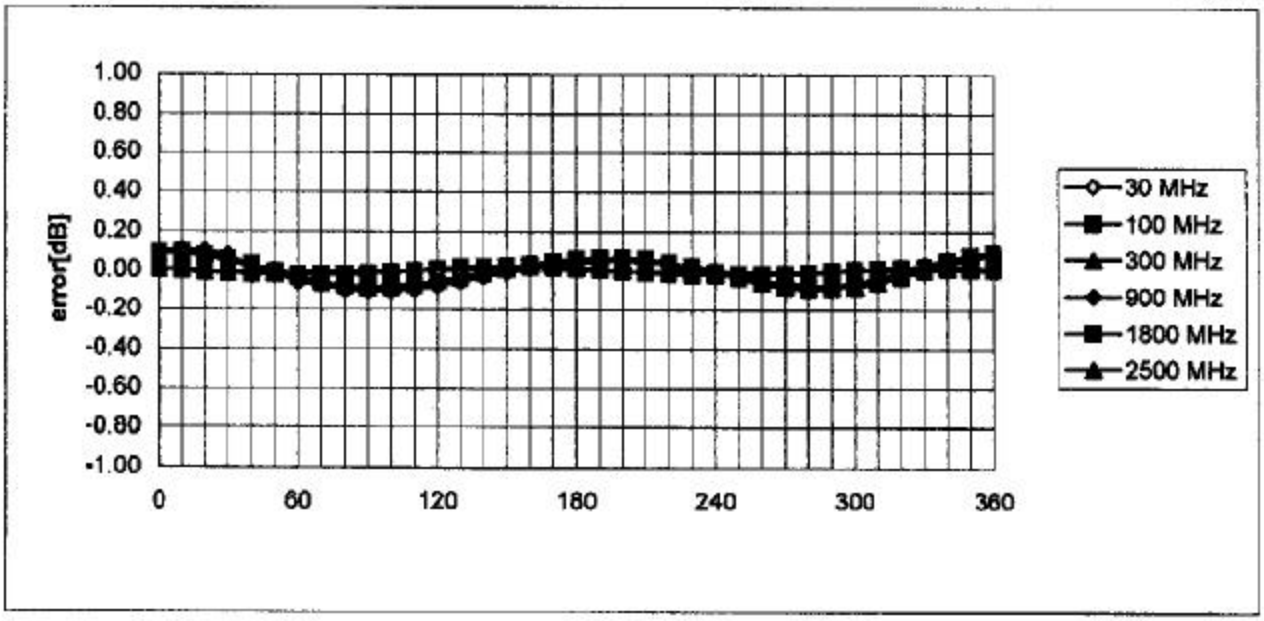


f = 900 MHz, TEM cell ifi110



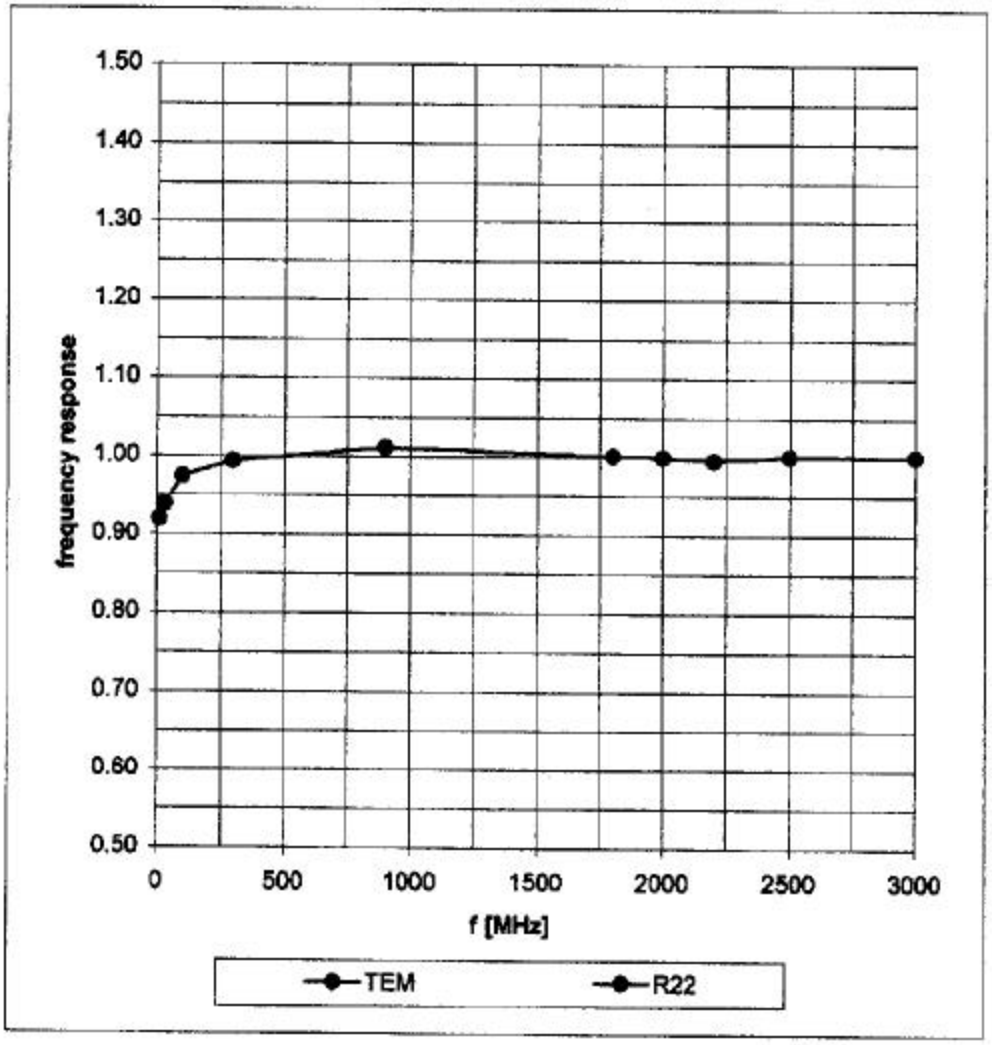


Isotropy Error (ϕ), θ = 0°



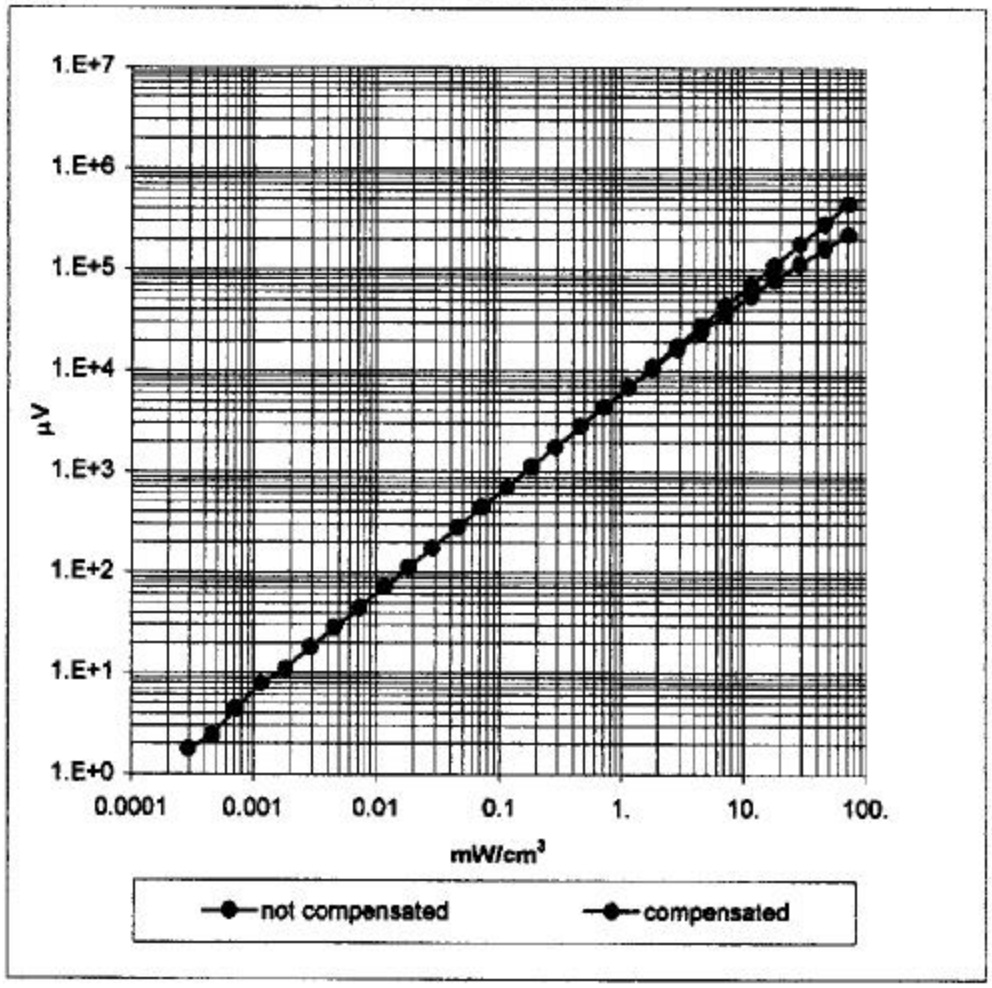
Frequency Response of E-Field

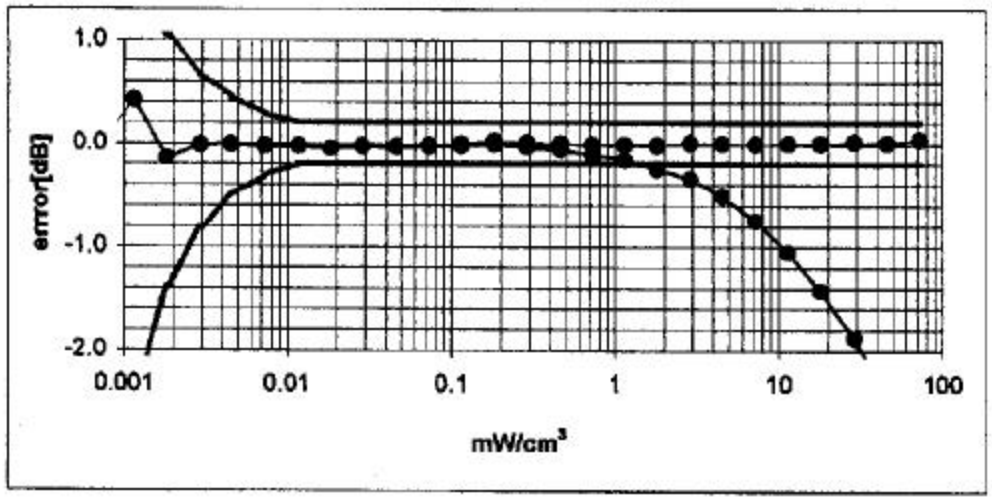
(TEM-Cell:ifi110, Waveguide R22)



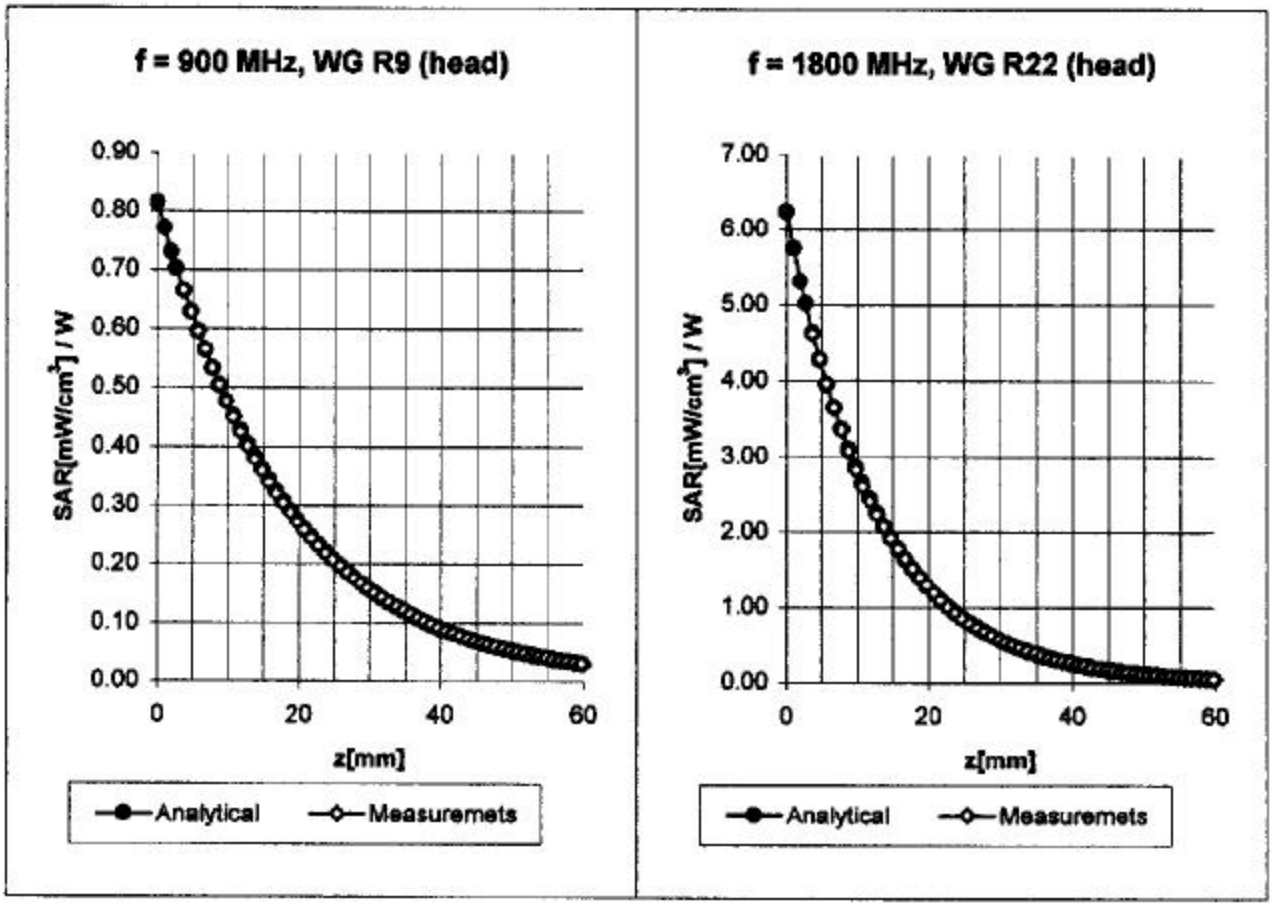
Dynamic Range f(SAR_{brain})

(TEM-Cell:ifi110)





Conversion Factor Assessment



Head **900 MHz** $\varepsilon_r = 42 \pm 5\%$ $\sigma = 0.97 \pm 10\%$ mho/m

ConvF X	**6.44** ± 7% (k=2)	Boundary effect:	
ConvF Y	**6.44** ± 7% (k=2)	Alpha	**0.58**
ConvF Z	**6.44** ± 7% (k=2)	Depth	**1.98**

Head **1800 MHz** $\varepsilon_r = 40 \pm 5\%$ $\sigma = 1.40 \pm 10\%$ mho/m

ConvF X	**5.43** ± 7% (k=2)	Boundary effect:	
ConvF Y	**5.43** ± 7% (k=2)	Alpha	**0.60**
ConvF Z	**5.43** ± 7% (k=2)	Depth	**2.06**

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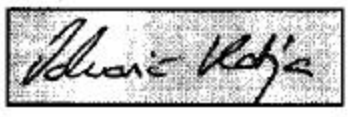
Additional Conversion Factors

for Dosimetric E-Field Probe

Type:	**ET3DV6**
Serial Number:	**1523**
Place of Assessment:	**Zurich**
Date of Assessment:	**May 16, 2001**
Probe Calibration Date:	**May 11, 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:1523

Conversion factor (± standard deviation)

835 MHz	ConvF	**6.51 ± 8%**	ε_r = **44.0** σ = **0.90 mho/m** (brain tissue)
900 MHz	ConvF	**6.38 ± 8%**	ε_r = **42.5** σ = **0.86 mho/m** (brain tissue)
925 MHz	ConvF	**6.32 ± 8%**	ε_r = **44.0** σ = **0.93 mho/m** (brain tissue)
835 MHz	ConvF	**6.44 ± 8%**	ε_r = **52.0** σ = **1.10 mho/m** (muscle tissue)
925 MHz	ConvF	**6.28 ± 8%**	ε_r = **52.0** σ = **1.20 mho/m** (muscle tissue)

Dosimetric E-Field Probe ET3DV6 SN:1523

Conversion factor (± standard deviation)

1800 MHz	ConvF	**5.51 ± 8%**	**ε_r = 41.5** **σ = 1.69 mho/m** (brain tissue, sugar-water)
1800 MHz	ConvF	**5.40 ± 8%**	**ε_r = 40.3** **σ = 1.35 mho/m** (brain tissue, glycol)
1900 MHz	ConvF	**5.27 ± 8%**	**ε_r = 39.9** **σ = 1.42 mho/m** (brain tissue, glycol)
1800 MHz	ConvF	**5.16 ± 8%**	**ε_r = 50.0** **σ = 1.58 mho/m** (muscle tissue, glycol)
1900 MHz	ConvF	**5.01 ± 8%**	**ε_r = 50.0** **σ = 1.64 mho/m** (muscle tissue, glycol)