APPENDIX B AND C

APPENDIX B - E-Field Probe Calibration Data

See attached.

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:	**1576**
Place of Calibration:	**Zurich**
Date of Calibration:	**February 27, 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:

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

Probe ET3DV6

SN:1576

Manufactured:	April 6, 2001
Last calibration:	April 20, 2001
Recalibrated:	February 27, 2002

Calibrated for System DASY3

ET3DV6 SN:1576 **February 27, 2002**

DASY3 - Parameters of Probe: ET3DV6 SN:1576

Sensitivity in Free Space

Diode Compression

NormX	**1.77** μV/(V/m)^2	DCP X	**98**	mV
NormY	**1.81** μV/(V/m)^2	DCP Y	**98**	mV
NormZ	**1.76** μV/(V/m)^2	DCP Z	**98**	mV

Sensitivity in Tissue Simulating Liquid

Head **900 MHz** ε_r **= 41.5 ± 5%** σ **= 0.97 ± 5% mho/m**
Head **835 MHz** ε_r **= 41.5 ± 5%** σ **= 0.90 ± 5% mho/m**

ConvF X	**7.0** ± 9.5% (k=2)	Boundary effect:	
ConvF Y	**7.0** ± 9.5% (k=2)	Alpha	**0.30**
ConvF Z	**7.0** ± 9.5% (k=2)	Depth	**2.51**

Head **1800 MHz** ε_r **= 40.0 ± 5%** σ **= 1.40 ± 5% mho/m**
Head **1900 MHz** ε_r **= 40.0 ± 5%** σ **= 1.40 ± 5% mho/m**

ConvF X	**5.4** ± 9.5% (k=2)	Boundary effect:	
ConvF Y	**5.4** ± 9.5% (k=2)	Alpha	**0.45**
ConvF Z	**5.4** ± 9.5% (k=2)	Depth	**2.30**

Boundary Effect

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

Probe Tip to Boundary		**1 mm**	**2 mm**
SAR_{be} [%]	Without Correction Algorithm	7.6	4.3
SAR_{be} [%]	With Correction Algorithm	0.3	0.5

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

Probe Tip to Boundary		**1 mm**	**2 mm**
SAR_{be} [%]	Without Correction Algorithm	9.7	6.6
SAR_{be} [%]	With Correction Algorithm	0.2	0.3

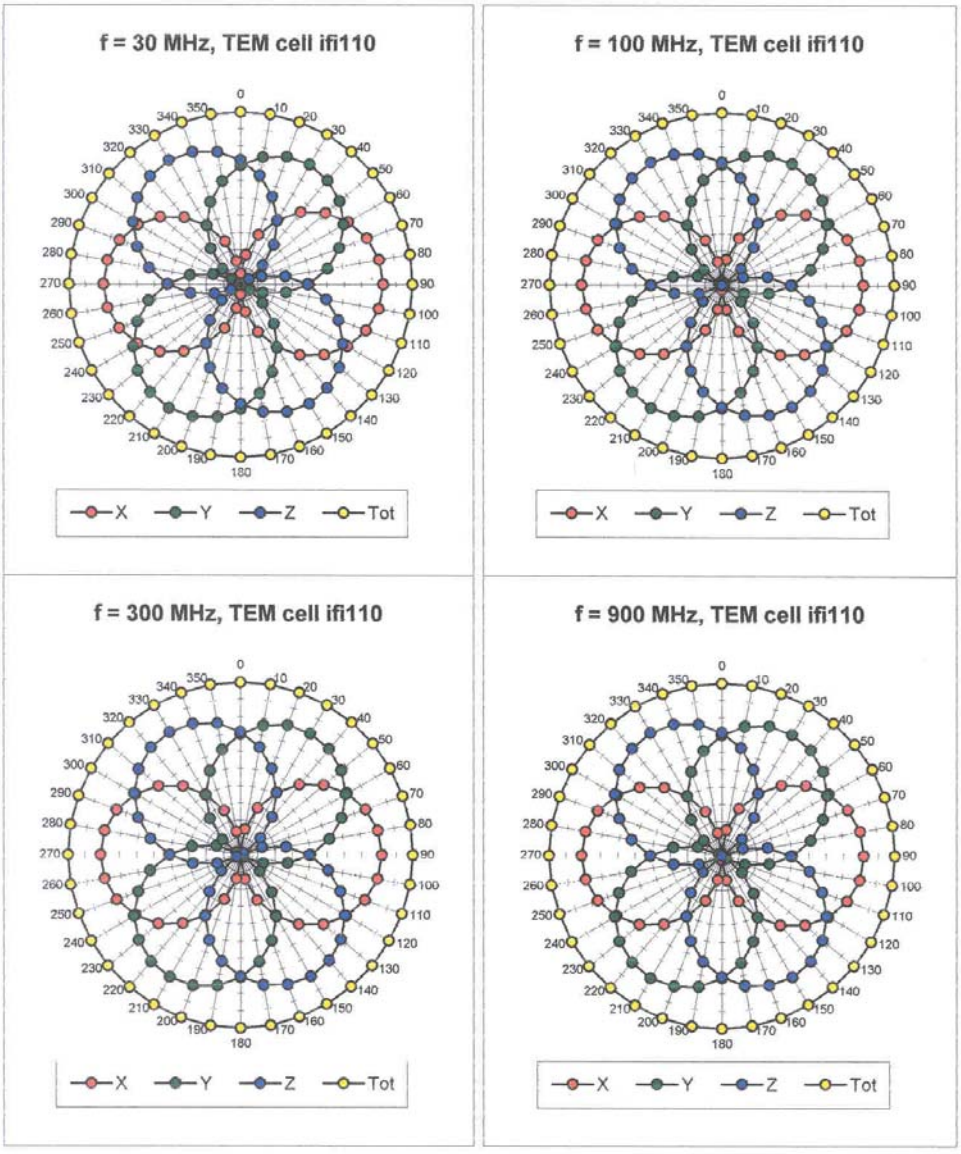
Sensor Offset

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

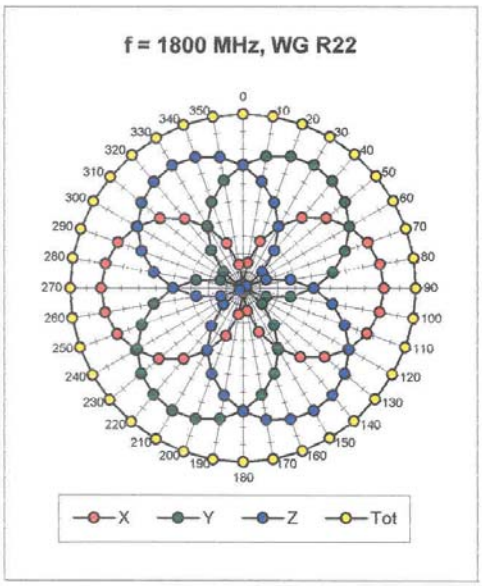
Page 2 of 11

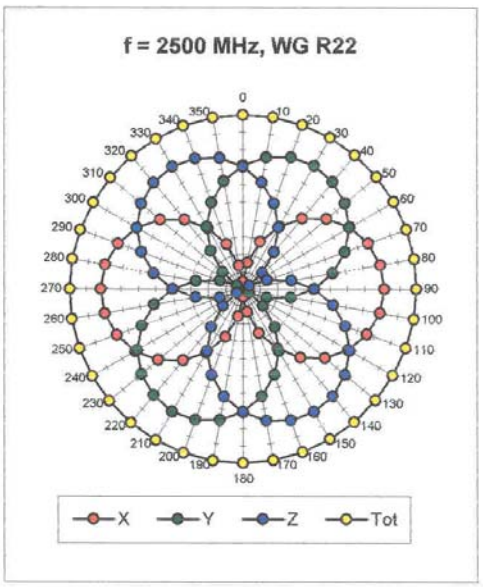
ET3DV6 SN:1576 February 27, 2002

Receiving Pattern (ϕ), θ = 0°

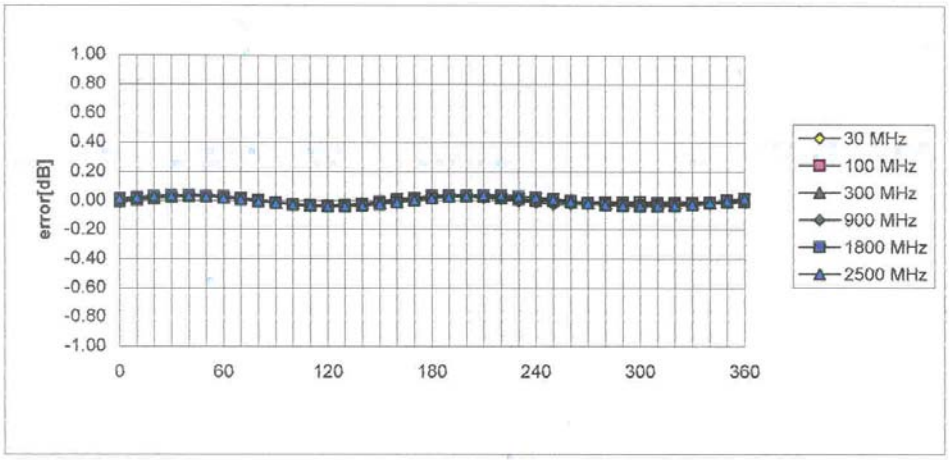


ET3DV6 SN:1576 February 27, 2002





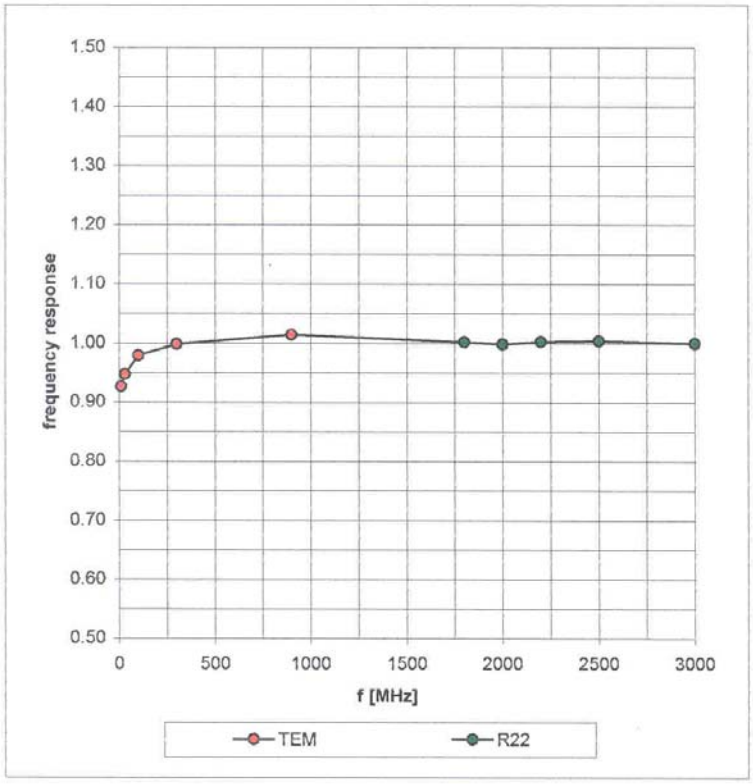
Isotropy Error (ϕ), θ = 0°



ET3DV6 SN:1576 February 27, 2002

Frequency Response of E-Field

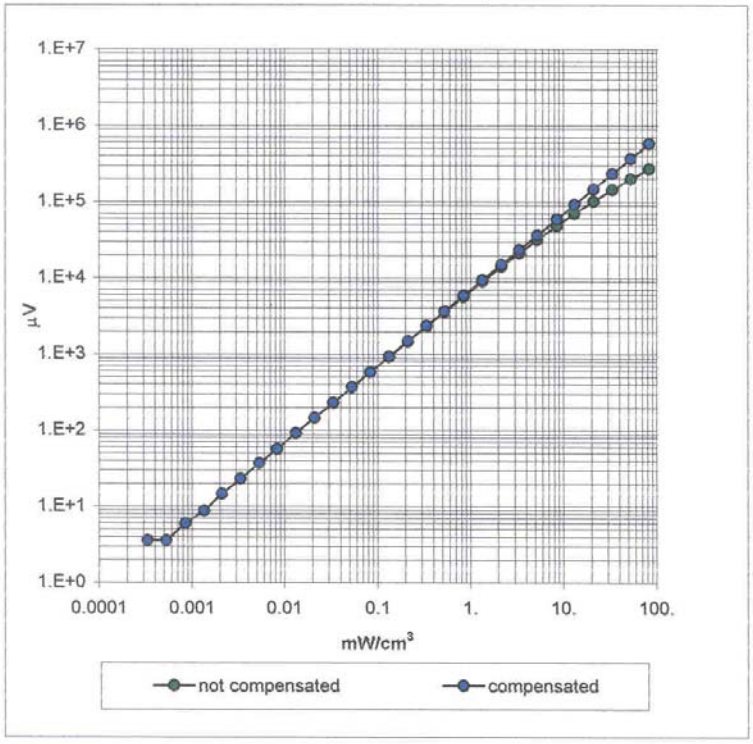
(TEM-Cell:ifi110, Waveguide R22)

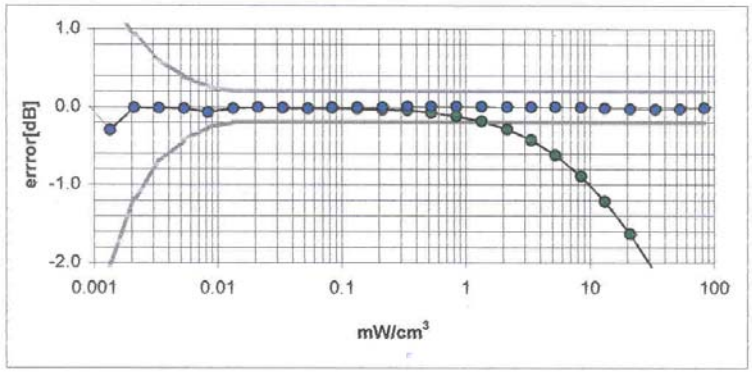


ET3DV6 SN:1576 February 27, 2002

Dynamic Range f(SAR_{brain})

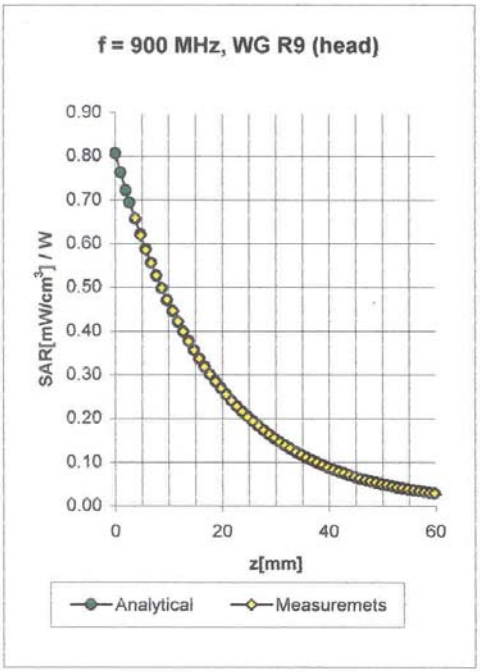
(Waveguide R22)

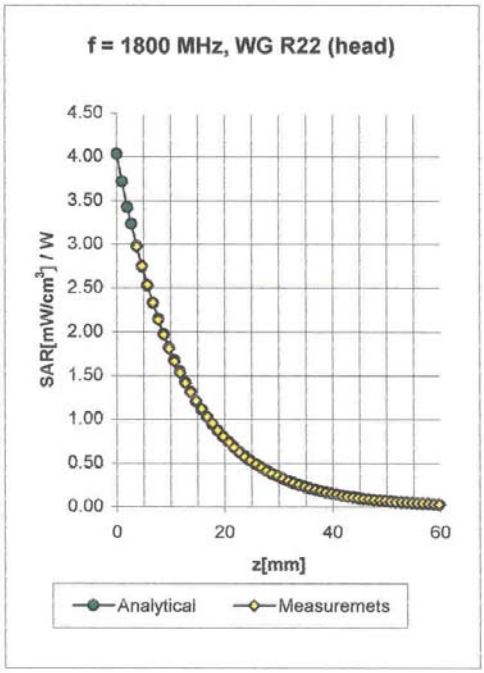




ET3DV6 SN:1576 **February 27, 2002**

Conversion Factor Assessment



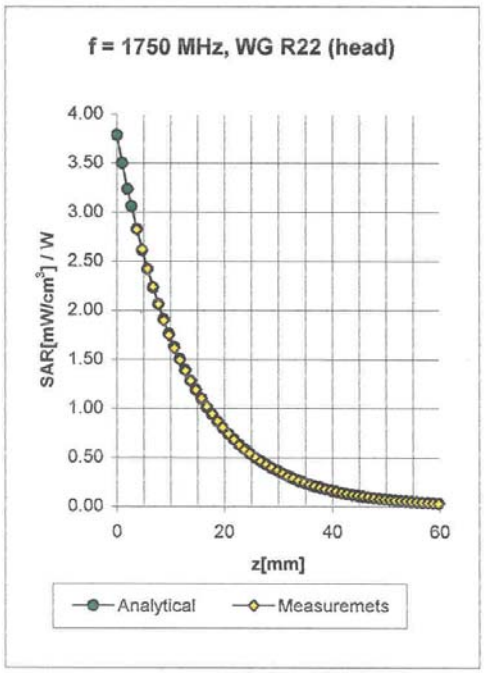


Head	**900 MHz**	ε_r **= 41.5 ± 5%**	**σ = 0.97 ± 5% mho/m**	
Head	**835 MHz**	ε_r **= 41.5 ± 5%**	**σ = 0.90 ± 5% mho/m**	
	ConvF X	**7.0** ± 9.5% (k=2)	Boundary effect:	
	ConvF Y	**7.0** ± 9.5% (k=2)	Alpha	**0.30**
	ConvF Z	**7.0** ± 9.5% (k=2)	Depth	**2.51**

Head	**1800 MHz**	ε_r **= 40.0 ± 5%**	**σ = 1.40 ± 5% mho/m**	
Head	**1900 MHz**	ε_r **= 40.0 ± 5%**	**σ = 1.40 ± 5% mho/m**	
	ConvF X	**5.4** ± 9.5% (k=2)	Boundary effect:	
	ConvF Y	**5.4** ± 9.5% (k=2)	Alpha	**0.45**
	ConvF Z	**5.4** ± 9.5% (k=2)	Depth	**2.30**

ET3DV6 SN:1576 **February 27, 2002**

Conversion Factor Assessment

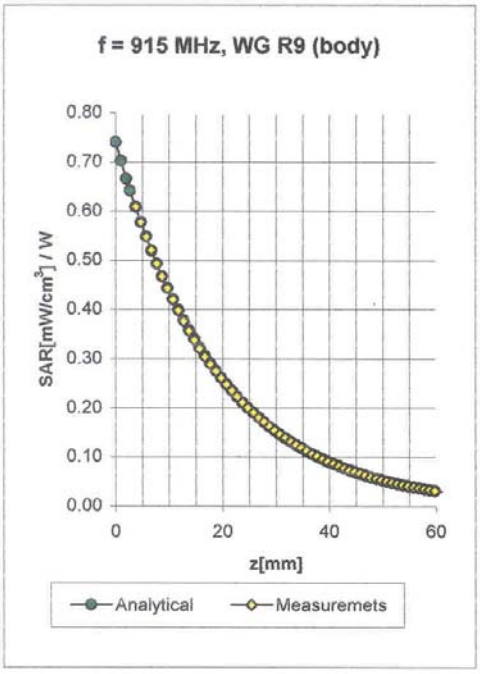


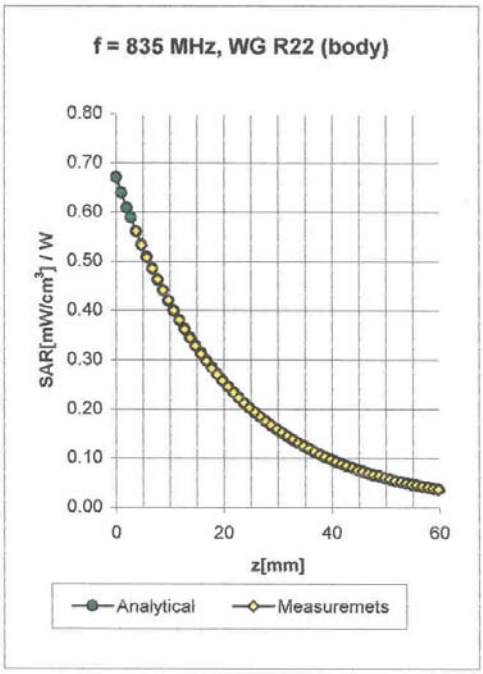
Head **1750 MHz** ε_r = 40.0 ± 5% σ = 1.40 ± 5% mho/m

ConvF X	**5.4** ± 8.9% (k=2)	Boundary effect:	
ConvF Y	**5.4** ± 8.9% (k=2)	Alpha	**0.45**
ConvF Z	**5.4** ± 8.9% (k=2)	Depth	**2.27**

ET3DV6 SN:1576 **February 27, 2002**

Conversion Factor Assessment





Body **915 MHz** ε_r **= 55.0 ± 5%** σ **= 1.06 ± 5% mho/m**

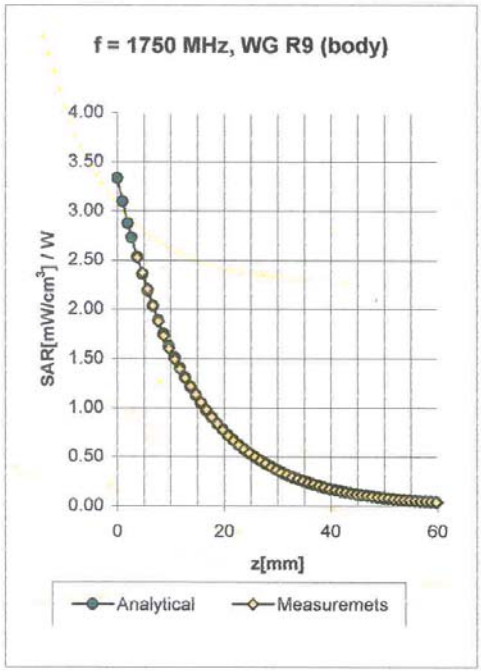
ConvF X	**6.7** ± 8.9% (k=2)	Boundary effect:	
ConvF Y	**6.7** ± 8.9% (k=2)	Alpha	**0.45**
ConvF Z	**6.7** ± 8.9% (k=2)	Depth	**2.01**

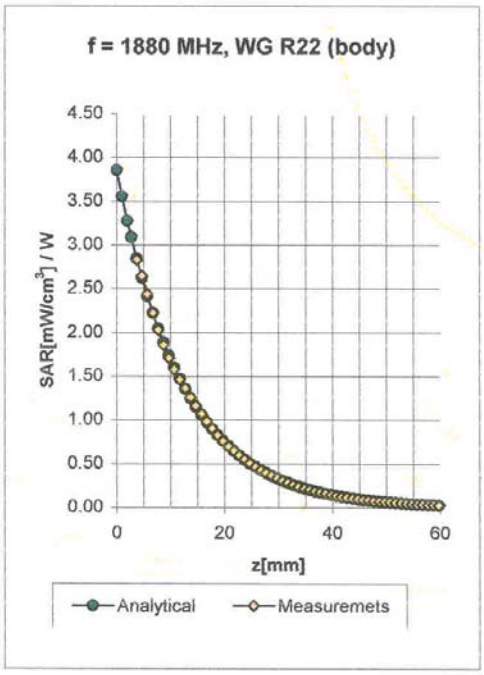
Body **835 MHz** ε_r **= 55.2 ± 5%** σ **= 0.97 ± 5% mho/m**

ConvF X	**6.7** ± 8.9% (k=2)	Boundary effect:	
ConvF Y	**6.7** ± 8.9% (k=2)	Alpha	**0.34**
ConvF Z	**6.7** ± 8.9% (k=2)	Depth	**2.37**

ET3DV6 SN:1576 **February 27, 2002**

Conversion Factor Assessment





Body **1750 MHz** ε_r = 53.3 ± 5% σ = 1.52 ± 5% mho/m

ConvF X	**5.1** ± 8.9% (k=2)	Boundary effect:	
ConvF Y	**5.1** ± 8.9% (k=2)	Alpha	**0.51**
ConvF Z	**5.1** ± 8.9% (k=2)	Depth	**2.31**

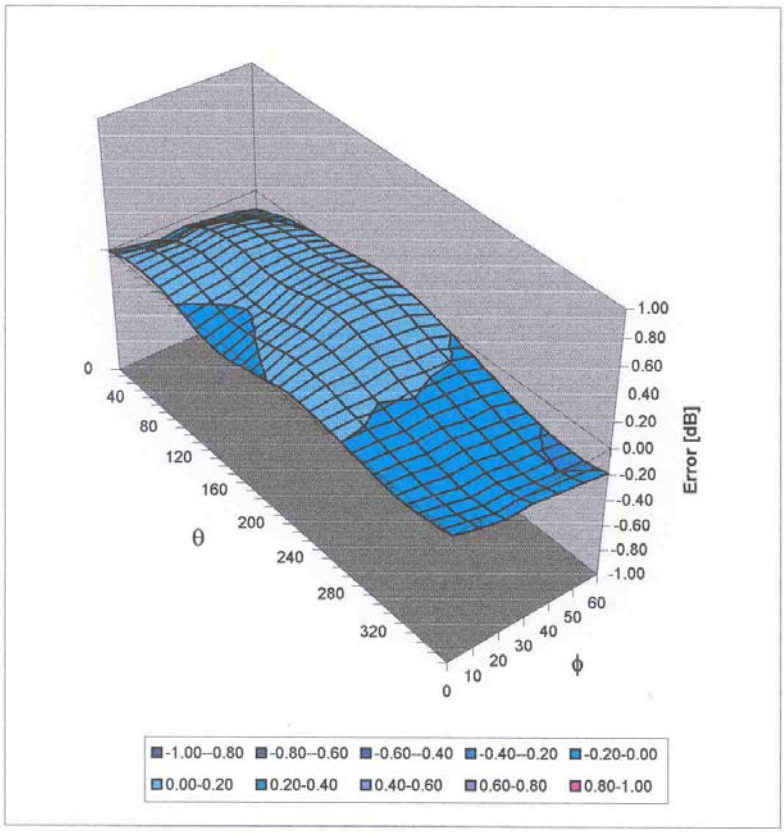
Body **1880 MHz** ε_r = 53.3 ± 5% σ = 1.52 ± 5% mho/m

ConvF X	**4.8** ± 8.9% (k=2)	Boundary effect:	
ConvF Y	**4.8** ± 8.9% (k=2)	Alpha	**0.63**
ConvF Z	**4.8** ± 8.9% (k=2)	Depth	**2.10**

ET3DV6 SN:1576 February 27, 2002

Deviation from Isotropy in HSL

Error (θ,ϕ), f = 900 MHz



APPENDIX C – Phantom Certificate

Schmid & Partner
Engineering AG

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

Certificate of conformity / First Article Inspection

Item	SAM Twin Phantom V4.0
Type No	QD 000 P40 BA
Series No	TP-1002 and higher
Manufacturer / Origin	Untersee Composites Hauptstr. 69 CH-8559 Fruthwilen Switzerland

Tests

The series production process used allows the limitation to test of first articles.
Complete tests were made on the pre-series Type No. QD 000 P40 AA, Serial No. TP-1001 and on the series first article Type No. QD 000 P40 BA, Serial No. TP-1006. Certain parameters have been retested using further series units (called samples).

Test	Requirement	Details	Units tested
Shape	Compliance with the geometry according to the CAD model.	IT'IS CAD File (*)	First article, Samples
Material thickness	Compliant with the requirements according to the standards	2mm +/- 0.2mm in specific areas	First article, Samples
Material parameters	Dielectric parameters for required frequencies	200 MHz – 3 GHz Relative permittivity < 5 Loss tangent < 0.05.	Material sample TP 104-5
Material resistivity	The material has been tested to be compatible with the liquids defined in the standards	Liquid type HSL 1800 and others according to the standard.	Pre-series, First article

Standards

[1] CENELEC EN 50361
[2] IEEE P1528-200x draft 6.5
[3] IEC PT 62209 draft 0.9
(*) The IT'IS CAD file is derived from [2] and is also within the tolerance requirements of the shapes of [1] and [3].

Conformity

Based on the sample tests above, we certify that this item is in compliance with the uncertainty requirements of SAR measurements specified in standard [1] and draft standards [2] and [3].

Date 18.11.2001

Signature / Stamp

Doc No 881 – QD 000 P40 BA – B Page 1 (1)