

APPENDIX B AND C

Telson Electronics USA, Inc., Model No: TDC-8200
FCC ID: MC6TDC8200

Date of Test: April 14 to 17, 2003

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

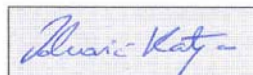
Calibration Interval:

12 months

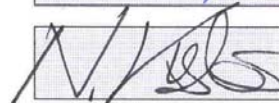
Schmid & Partner Engineering AG hereby certifies, that this device has been calibrated on the date indicated above. The calibration was performed in accordance with specifications and procedures of Schmid & Partner Engineering AG.

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

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DASY3 - Parameters of Probe: ET3DV6 SN:1576

Sensitivity in Free Space

NormX	1.77 $\mu\text{V}/(\text{V}/\text{m})^2$
NormY	1.81 $\mu\text{V}/(\text{V}/\text{m})^2$
NormZ	1.76 $\mu\text{V}/(\text{V}/\text{m})^2$

Diode Compression

DCP X	98	mV
DCP Y	98	mV
DCP Z	98	mV

Sensitivity in Tissue Simulating Liquid

Head	900 MHz	$\epsilon_r = 41.5 \pm 5\%$	$\sigma = 0.97 \pm 5\%$ mho/m
Head	835 MHz	$\epsilon_r = 41.5 \pm 5\%$	$\sigma = 0.90 \pm 5\%$ mho/m
ConvF X	7.0 $\pm 9.5\%$ (k=2)	Boundary effect:	
ConvF Y	7.0 $\pm 9.5\%$ (k=2)	Alpha	0.30
ConvF Z	7.0 $\pm 9.5\%$ (k=2)	Depth	2.51
Head	1800 MHz	$\epsilon_r = 40.0 \pm 5\%$	$\sigma = 1.40 \pm 5\%$ mho/m
Head	1900 MHz	$\epsilon_r = 40.0 \pm 5\%$	$\sigma = 1.40 \pm 5\%$ mho/m
ConvF X	5.4 $\pm 9.5\%$ (k=2)	Boundary effect:	
ConvF Y	5.4 $\pm 9.5\%$ (k=2)	Alpha	0.45
ConvF Z	5.4 $\pm 9.5\%$ (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

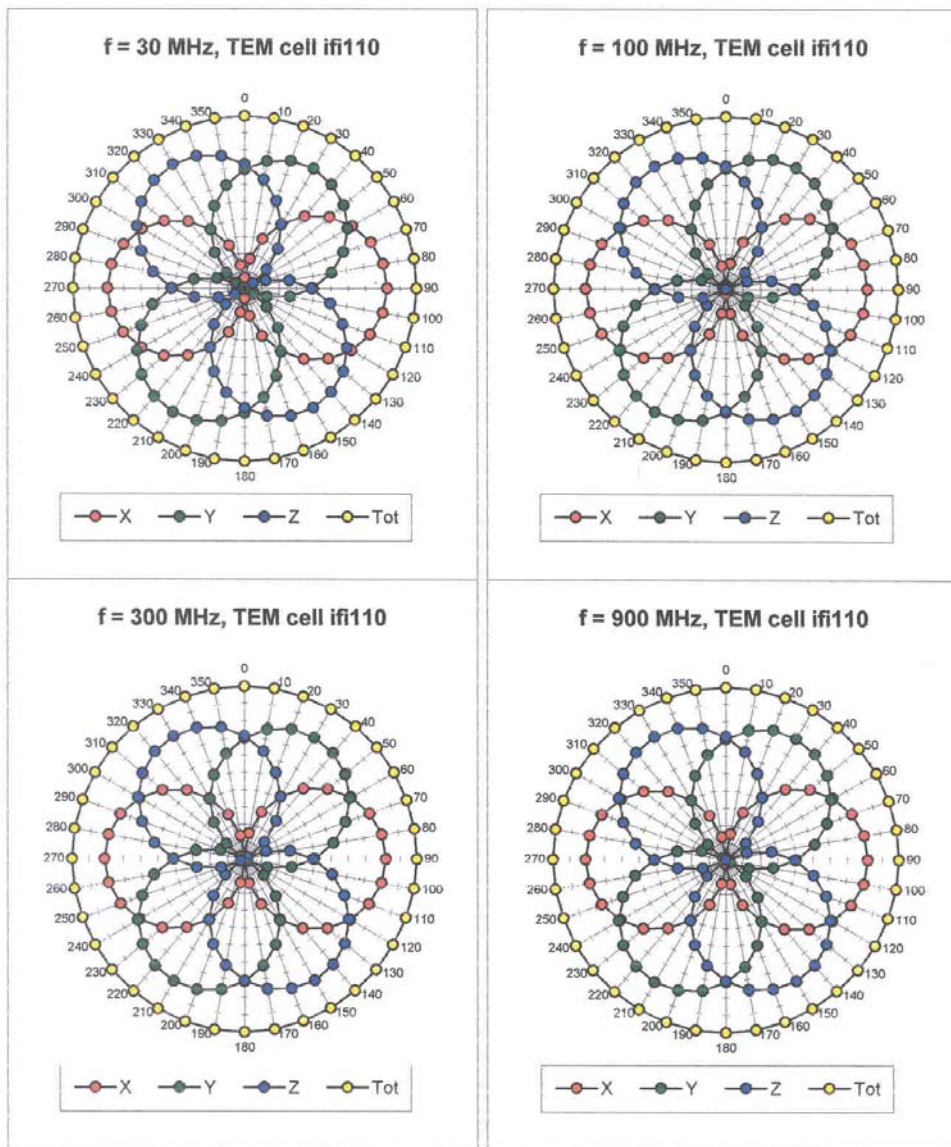
Sensor Offset

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

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Receiving Pattern (ϕ), $\theta = 0^\circ$

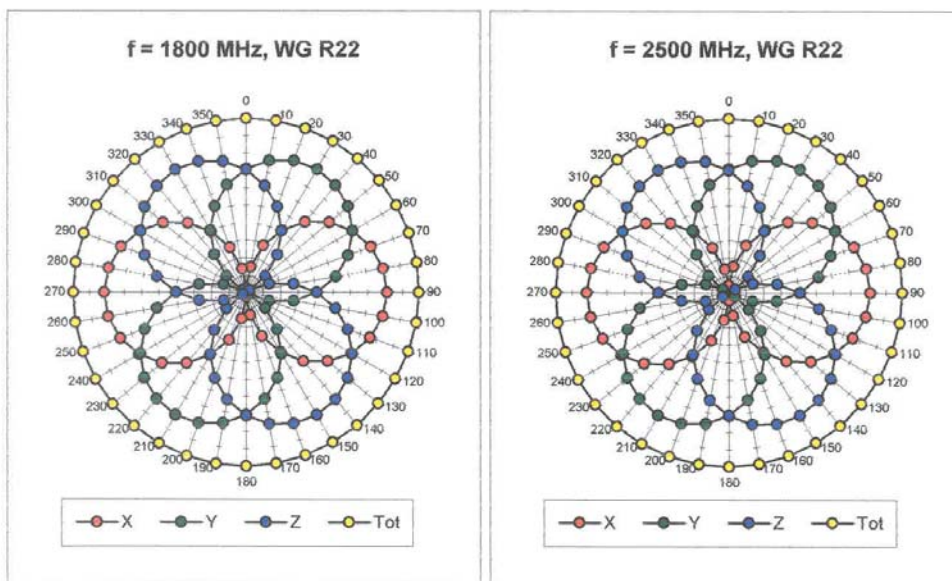


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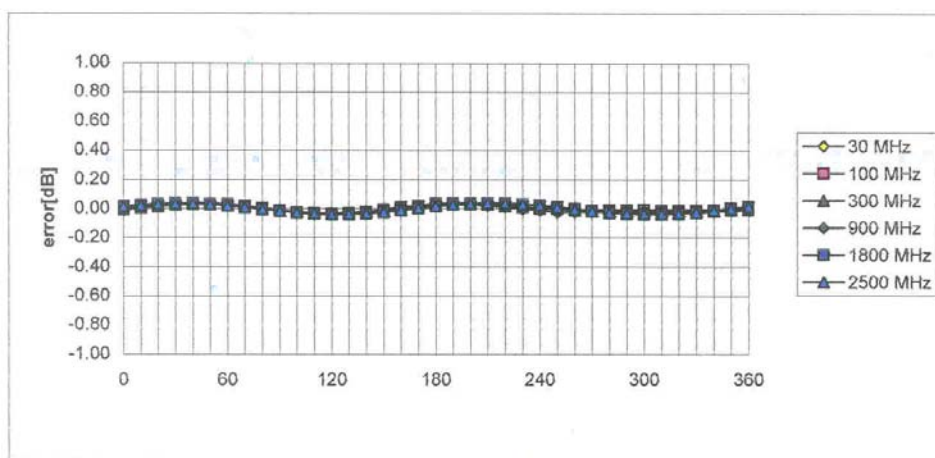
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Isotropy Error (ϕ), $\theta = 0^\circ$



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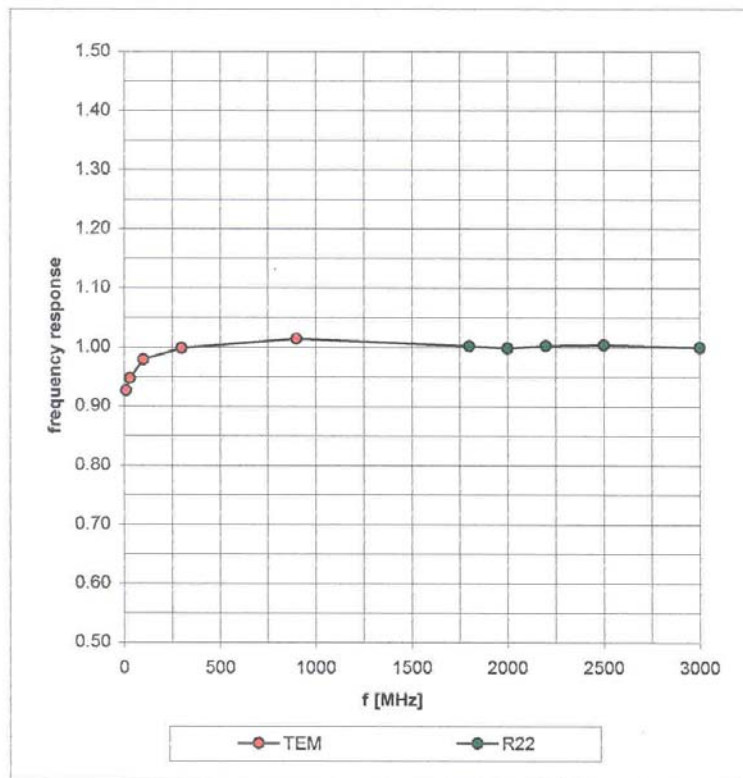
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Frequency Response of E-Field

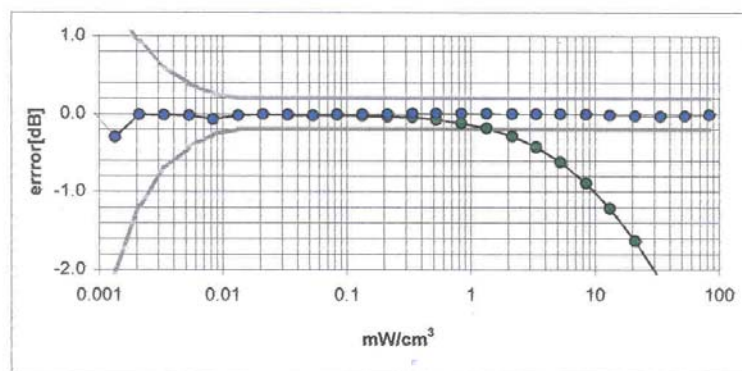
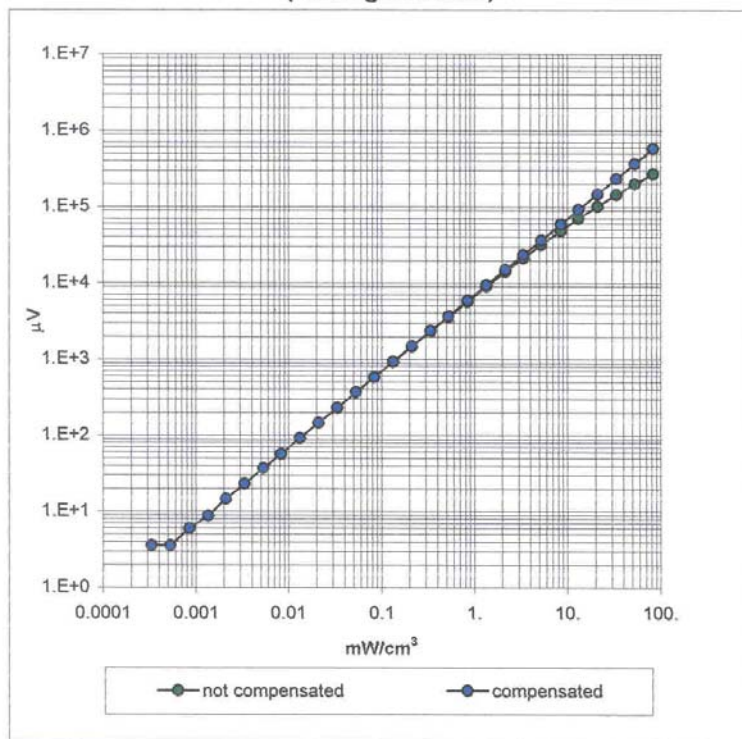
(TEM-Cell:ifi110, Waveguide R22)



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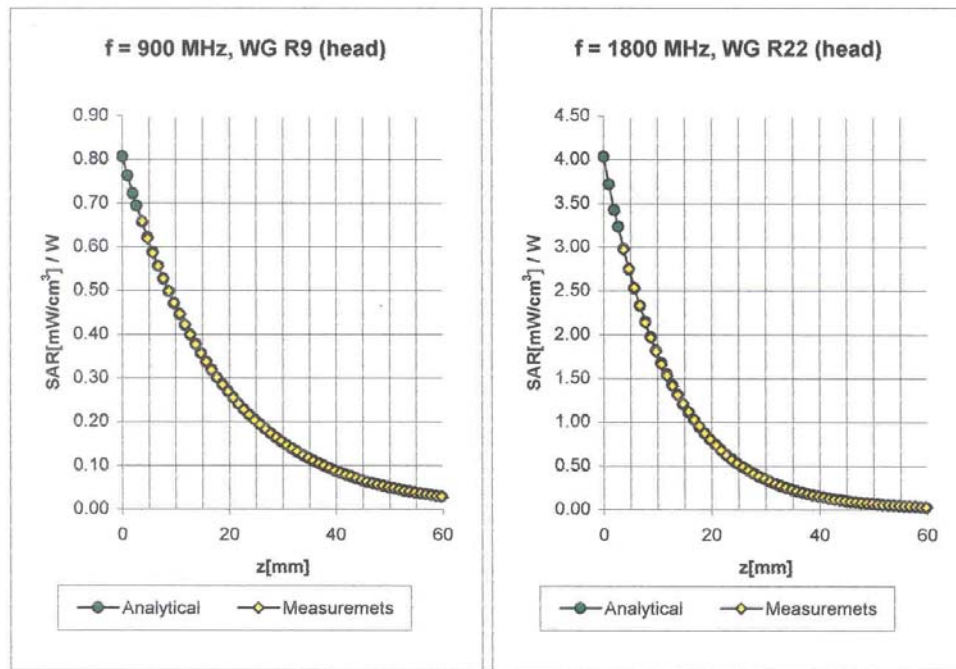
Dynamic Range $f(\text{SAR}_{\text{brain}})$ (Waveguide R22)



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Conversion Factor Assessment

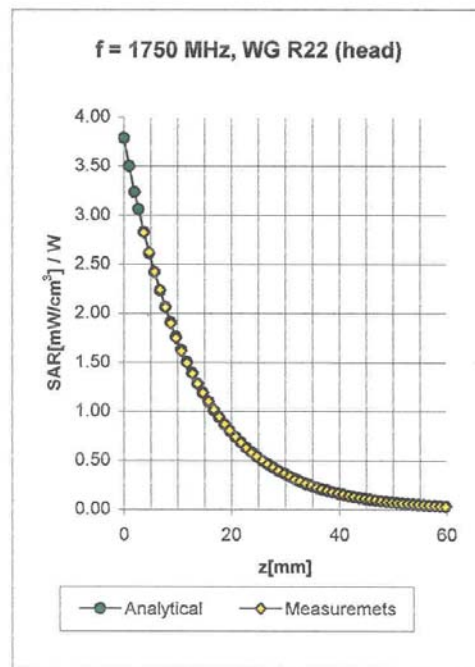


Head	900 MHz	$\epsilon_r = 41.5 \pm 5\%$	$\sigma = 0.97 \pm 5\%$ mho/m
Head	835 MHz	$\epsilon_r = 41.5 \pm 5\%$	$\sigma = 0.90 \pm 5\%$ mho/m
	ConvF X	$7.0 \pm 9.5\%$ (k=2)	Boundary effect:
	ConvF Y	$7.0 \pm 9.5\%$ (k=2)	Alpha 0.30
	ConvF Z	$7.0 \pm 9.5\%$ (k=2)	Depth 2.51
Head	1800 MHz	$\epsilon_r = 40.0 \pm 5\%$	$\sigma = 1.40 \pm 5\%$ mho/m
Head	1900 MHz	$\epsilon_r = 40.0 \pm 5\%$	$\sigma = 1.40 \pm 5\%$ mho/m
	ConvF X	$5.4 \pm 9.5\%$ (k=2)	Boundary effect:
	ConvF Y	$5.4 \pm 9.5\%$ (k=2)	Alpha 0.45
	ConvF Z	$5.4 \pm 9.5\%$ (k=2)	Depth 2.30

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Conversion Factor Assessment

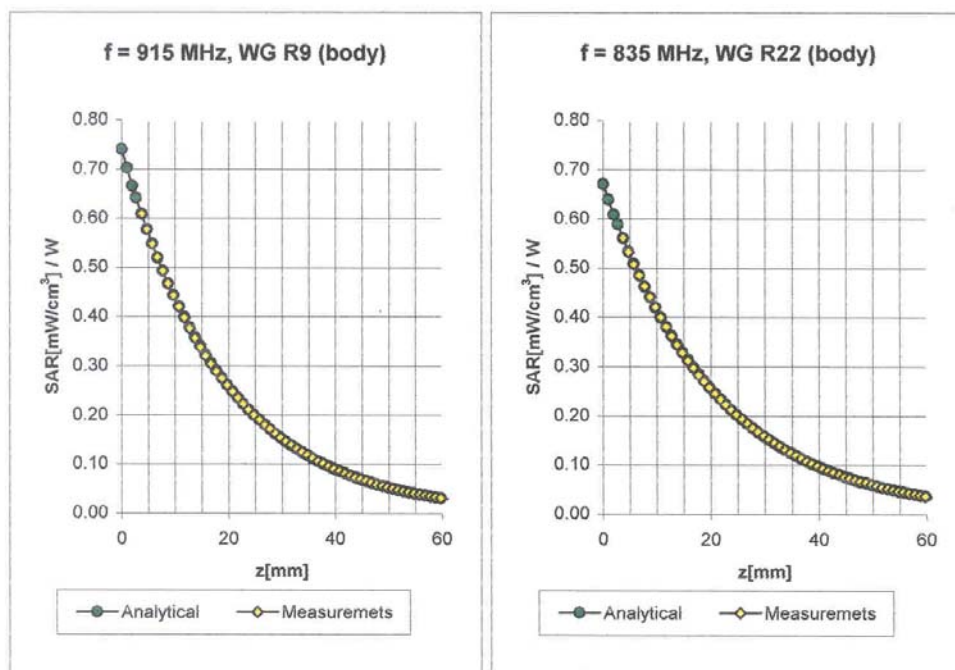


Head	1750 MHz	$\epsilon_r = 40.0 \pm 5\%$	$\sigma = 1.40 \pm 5\% \text{ mho/m}$
ConvF X	5.4 $\pm 8.9\%$ (k=2)	Boundary effect:	
ConvF Y	5.4 $\pm 8.9\%$ (k=2)	Alpha	0.45
ConvF Z	5.4 $\pm 8.9\%$ (k=2)	Depth	2.27

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Conversion Factor Assessment

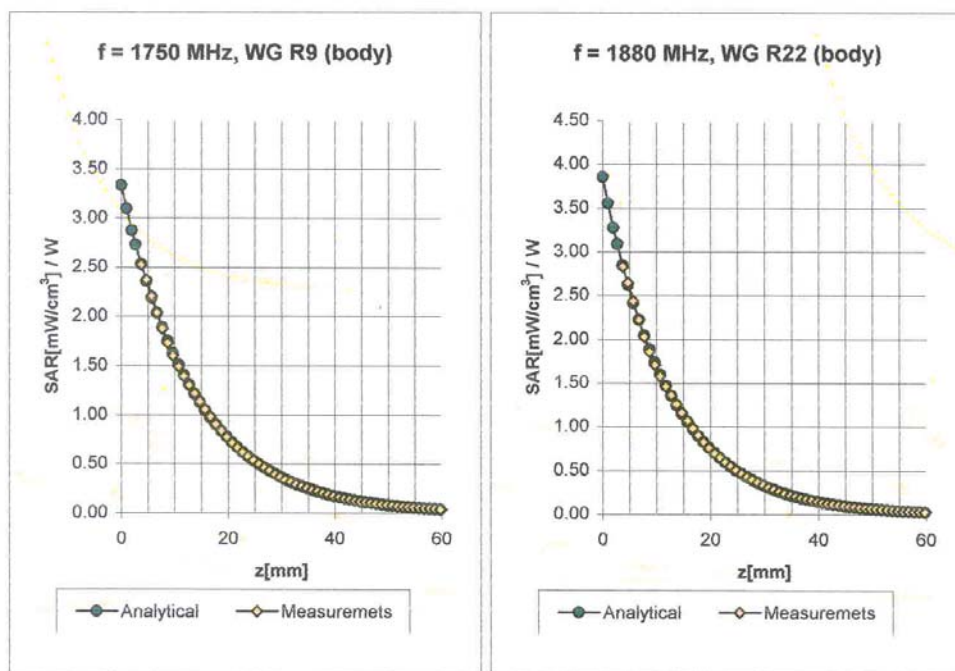


Body	915 MHz	$\epsilon_r = 55.0 \pm 5\%$	$\sigma = 1.06 \pm 5\% \text{ mho/m}$
ConvF X	6.7 $\pm 8.9\%$ (k=2)	Boundary effect:	
ConvF Y	6.7 $\pm 8.9\%$ (k=2)	Alpha	0.45
ConvF Z	6.7 $\pm 8.9\%$ (k=2)	Depth	2.01
Body	835 MHz	$\epsilon_r = 55.2 \pm 5\%$	$\sigma = 0.97 \pm 5\% \text{ mho/m}$
ConvF X	6.7 $\pm 8.9\%$ (k=2)	Boundary effect:	
ConvF Y	6.7 $\pm 8.9\%$ (k=2)	Alpha	0.34
ConvF Z	6.7 $\pm 8.9\%$ (k=2)	Depth	2.37

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Conversion Factor Assessment



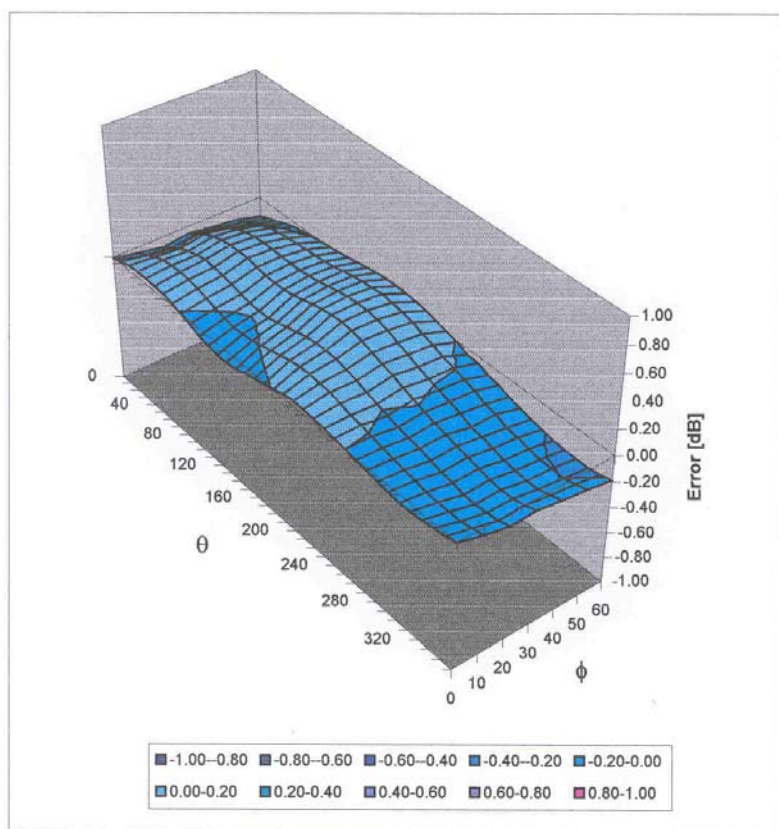
Body	1750 MHz	$\epsilon_r = 53.3 \pm 5\%$	$\sigma = 1.52 \pm 5\% \text{ mho/m}$
ConvF X	5.1 $\pm 8.9\%$ (k=2)	Boundary effect:	
ConvF Y	5.1 $\pm 8.9\%$ (k=2)	Alpha	0.51
ConvF Z	5.1 $\pm 8.9\%$ (k=2)	Depth	2.31
Body	1880 MHz	$\epsilon_r = 53.3 \pm 5\%$	$\sigma = 1.52 \pm 5\% \text{ mho/m}$
ConvF X	4.8 $\pm 8.9\%$ (k=2)	Boundary effect:	
ConvF Y	4.8 $\pm 8.9\%$ (k=2)	Alpha	0.63
ConvF Z	4.8 $\pm 8.9\%$ (k=2)	Depth	2.10

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Deviation from Isotropy in HSL

Error (θ, ϕ), $f = 900$ MHz



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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

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