

Telian Corporation., Model No: MTD-3500 & MTD-3510
FCC ID: NPQMTD-3500

Date of Test: December 16 to 19, 2002

APPENDIX B - E-Field Probe Calibration Data

See attached.

Telian Corporation., Model No: MTD-3500 & MTD-3510
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**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

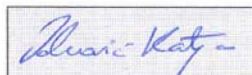
Calibration Interval:

12 months

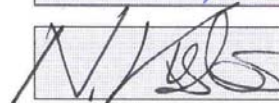
Schmid & Partner Engineering AG hereby certifies, that this device has been calibrated on the date indicated above. The calibration was performed in accordance with specifications and procedures of Schmid & Partner Engineering AG.

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	$\epsilon_r = 41.5 \pm 5\%$	$\sigma = 0.97 \pm 5\% \text{ mho/m}$
Head	835 MHz	$\epsilon_r = 41.5 \pm 5\%$	$\sigma = 0.90 \pm 5\% \text{ mho/m}$
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	$\epsilon_r = 40.0 \pm 5\%$	$\sigma = 1.40 \pm 5\% \text{ mho/m}$
Head	1900 MHz	$\epsilon_r = 40.0 \pm 5\%$	$\sigma = 1.40 \pm 5\% \text{ mho/m}$
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	

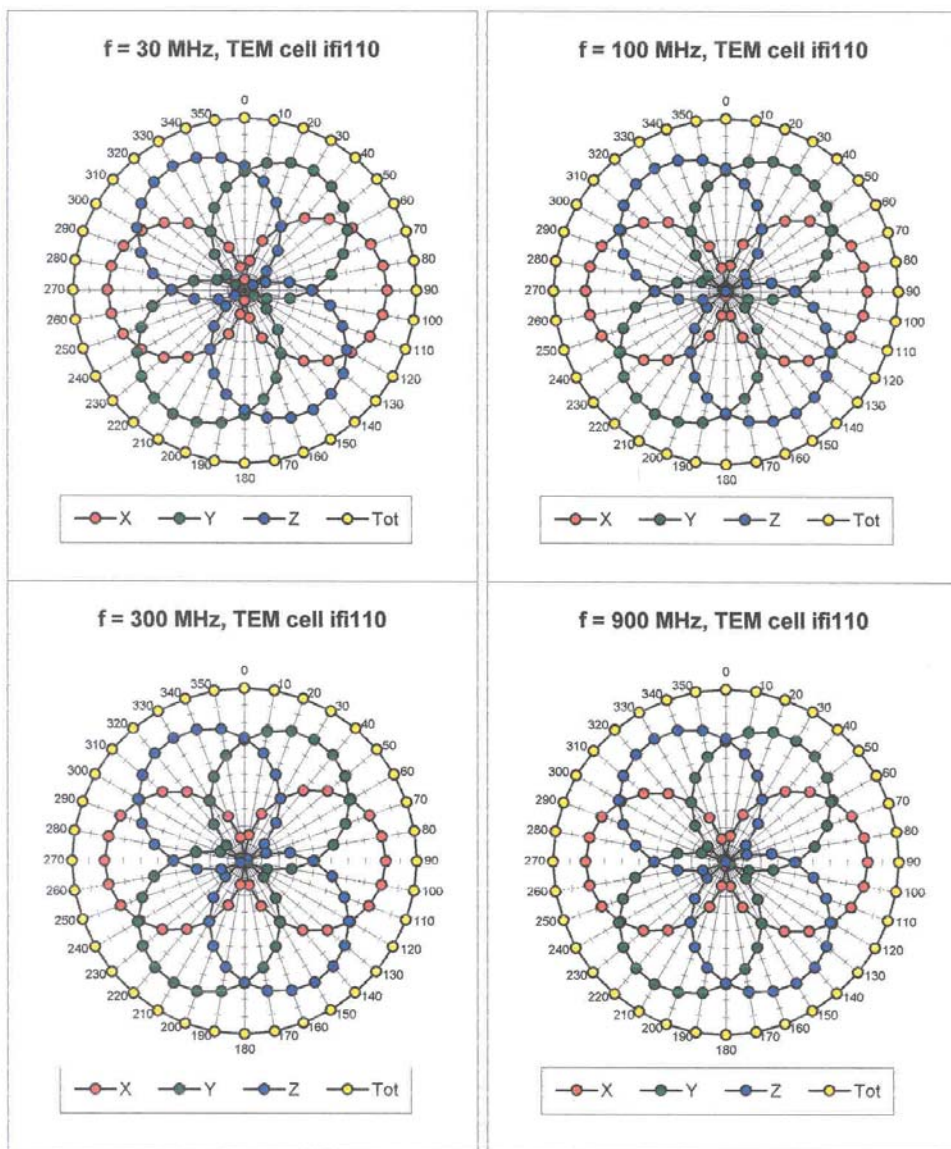
Sensor Offset

Probe Tip to Sensor Center	2.7	mm
Optical Surface Detection	1.9 $\pm$ 0.2	mm

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

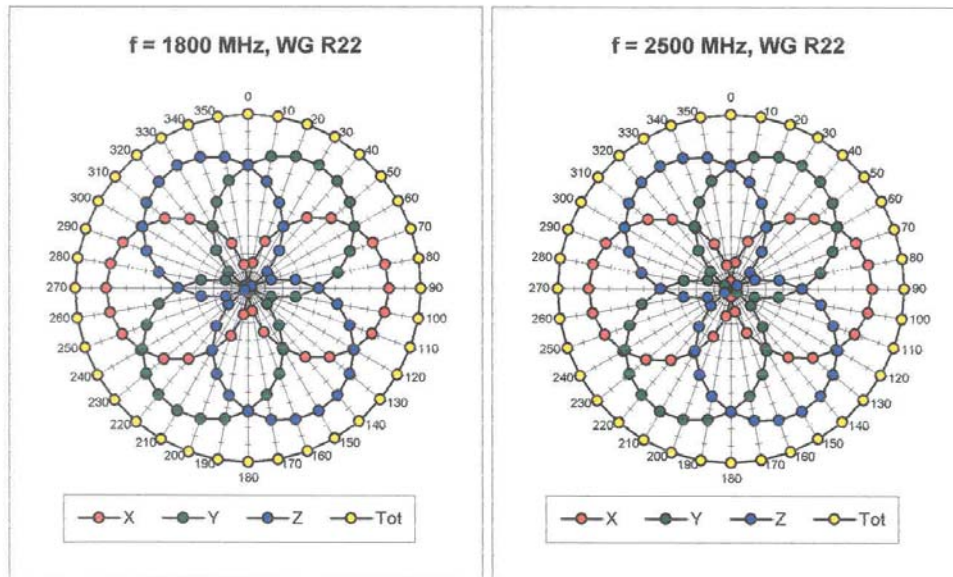


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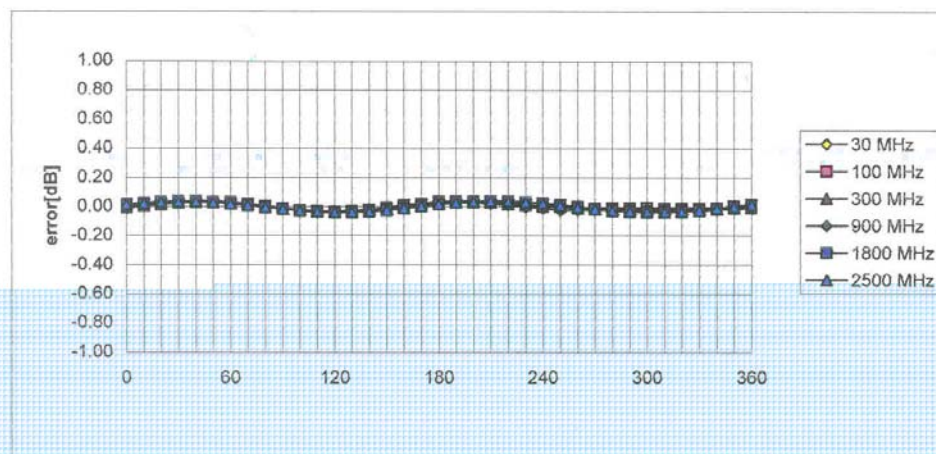
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Isotropy Error (ϕ), $\theta = 0^\circ$



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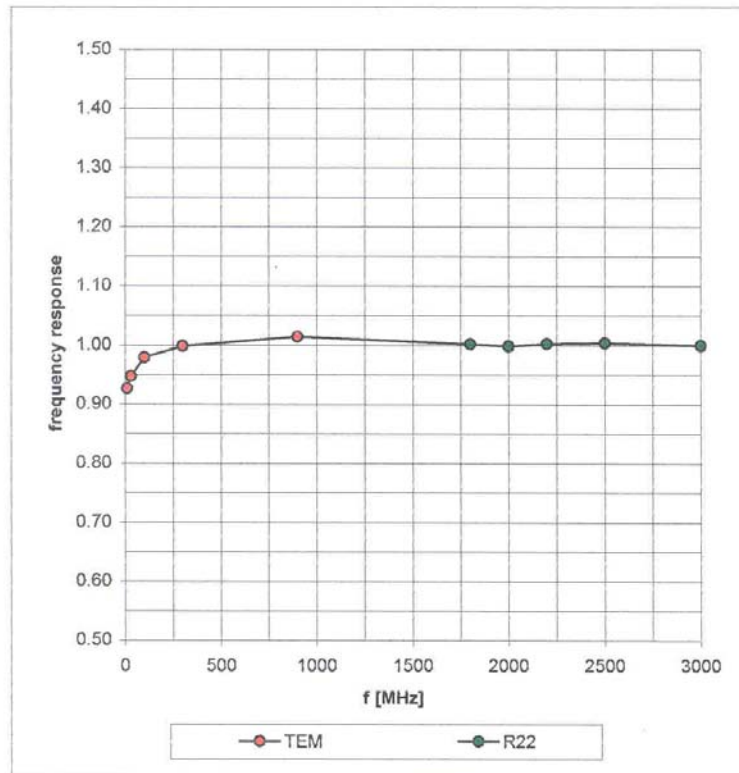
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Frequency Response of E-Field

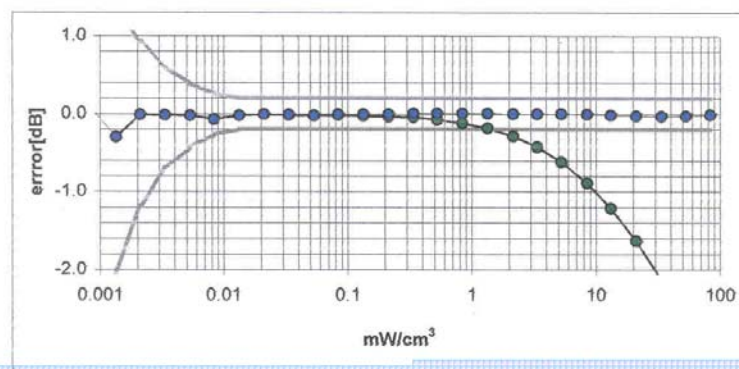
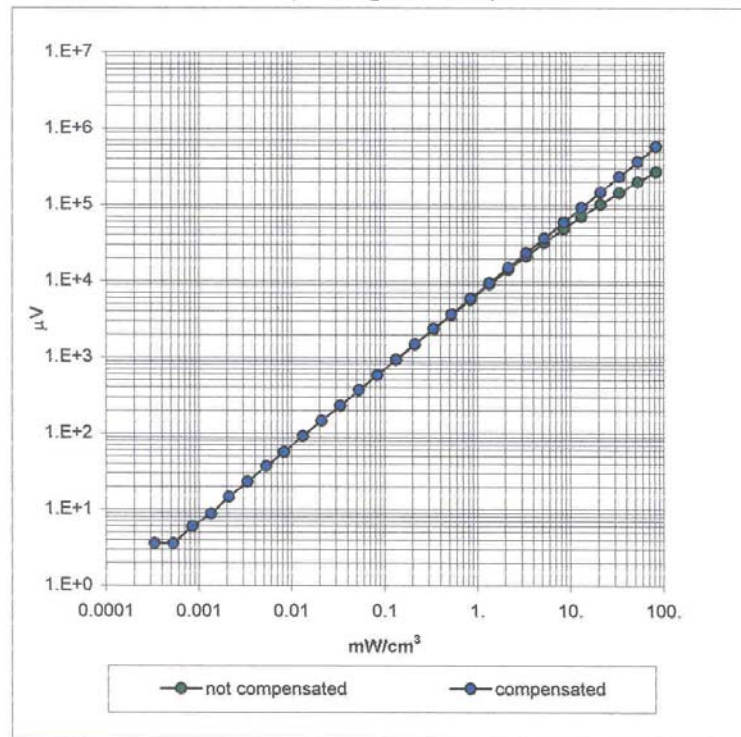
(TEM-Cell:ifi110, Waveguide R22)



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



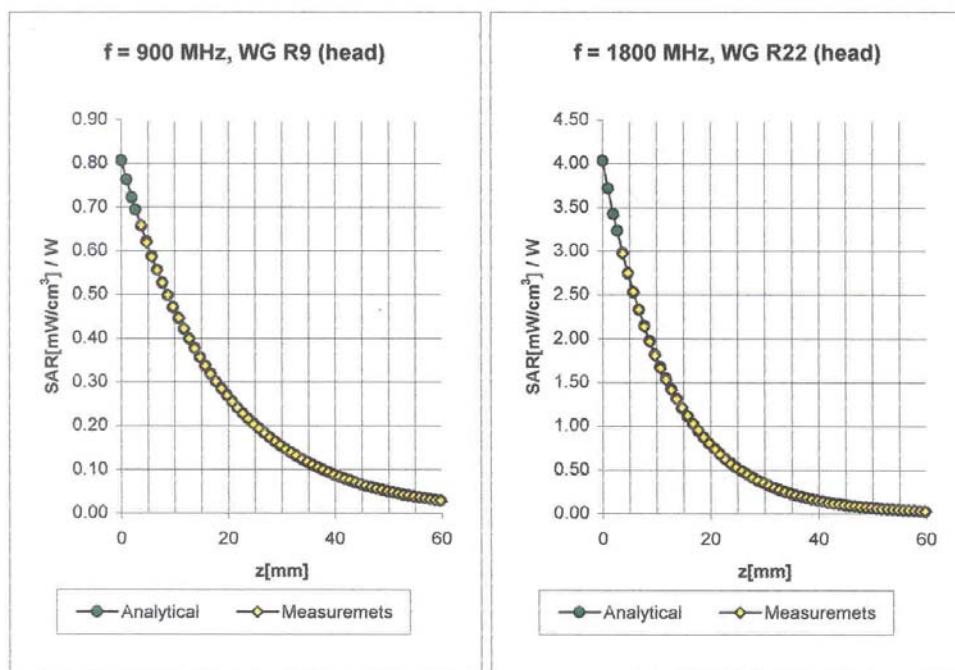
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Conversion Factor Assessment



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

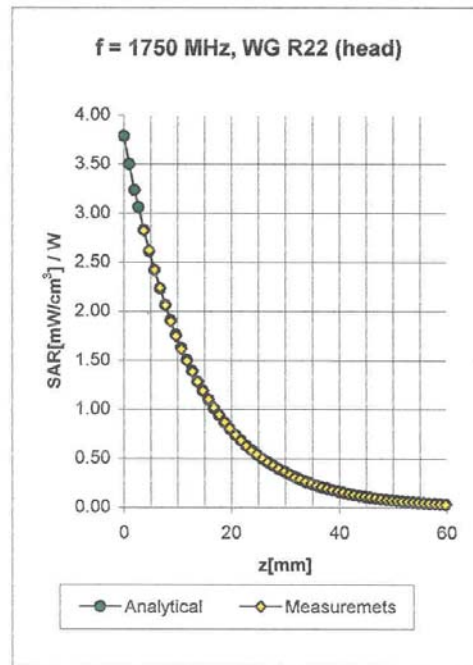
Telian Corporation., Model No: MTD-3500 & MTD-3510
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Conversion Factor Assessment



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

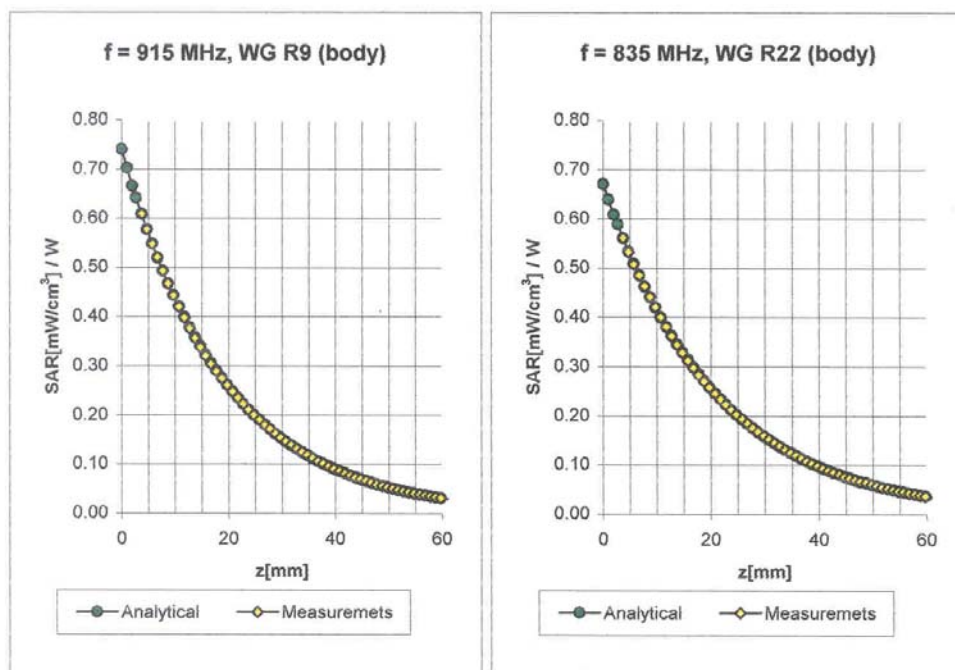
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Conversion Factor Assessment



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

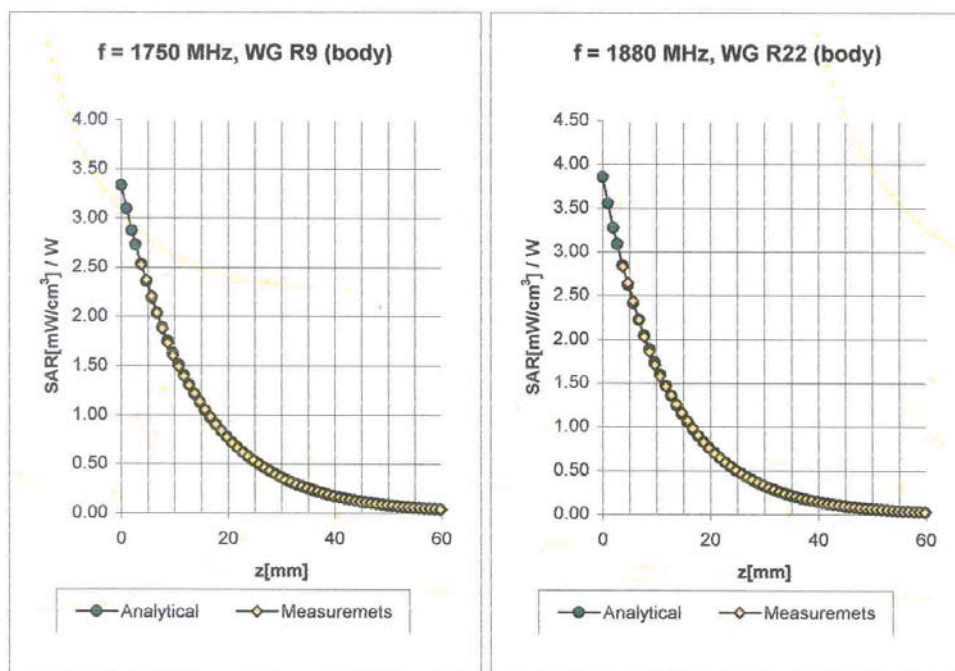
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Conversion Factor Assessment



Body 1750 MHz $\epsilon_r = 53.3 \pm 5\%$ $\sigma = 1.52 \pm 5\%$ 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 $\epsilon_r = 53.3 \pm 5\%$ $\sigma = 1.52 \pm 5\%$ 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

