

Probe ET3DV6

SN:1577

Manufactured:	April 6, 2001
Last calibration:	April 20, 2001
Recalibrated:	February 7, 2003

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

DASY - Parameters of Probe: ET3DV6 SN:1577

Sensitivity in Free Space

NormX	1.89 $\mu\text{V}/(\text{V}/\text{m})^2$
NormY	1.77 $\mu\text{V}/(\text{V}/\text{m})^2$
NormZ	1.74 $\mu\text{V}/(\text{V}/\text{m})^2$

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

ConvF X	7.1 $\pm 8.9\%$ (k=2)	Boundary effect:
ConvF Y	7.1 $\pm 8.9\%$ (k=2)	Alpha 0.32
ConvF Z	7.1 $\pm 8.9\%$ (k=2)	Depth 2.61

Head **1800 MHz** $\epsilon_r = 40.0 \pm 5\%$ $\sigma = 1.40 \pm 5\%$ mho/m

ConvF X	5.6 $\pm 8.9\%$ (k=2)	Boundary effect:
ConvF Y	5.6 $\pm 8.9\%$ (k=2)	Alpha 0.44
ConvF Z	5.6 $\pm 8.9\%$ (k=2)	Depth 2.77

Boundary Effect

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

Probe Tip to Boundary		1 mm	2 mm
SAR _{be} [%] Without Correction Algorithm		8.8	5.1
SAR _{be} [%] With Correction Algorithm		0.3	0.5

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

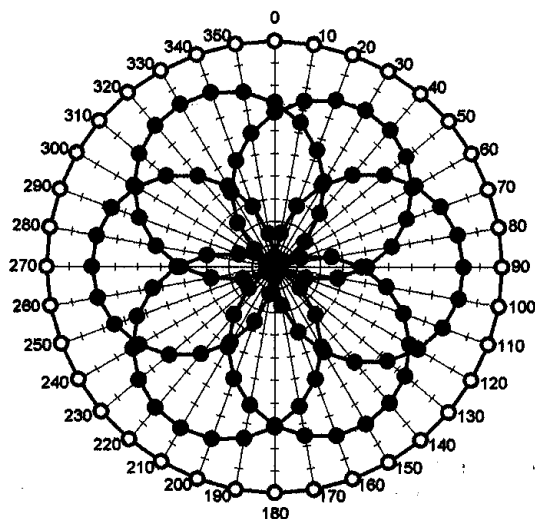
Probe Tip to Boundary		1 mm	2 mm
SAR _{be} [%] Without Correction Algorithm		12.9	9.0
SAR _{be} [%] With Correction Algorithm		0.2	0.2

Sensor Offset

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

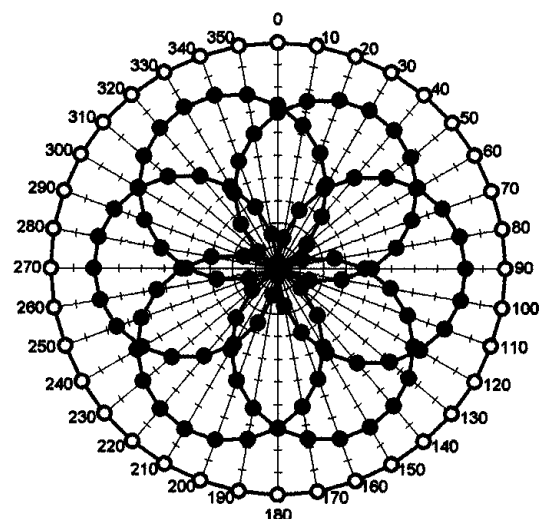
Receiving Pattern (ϕ), $\theta = 0^\circ$

f = 30 MHz, TEM cell if110



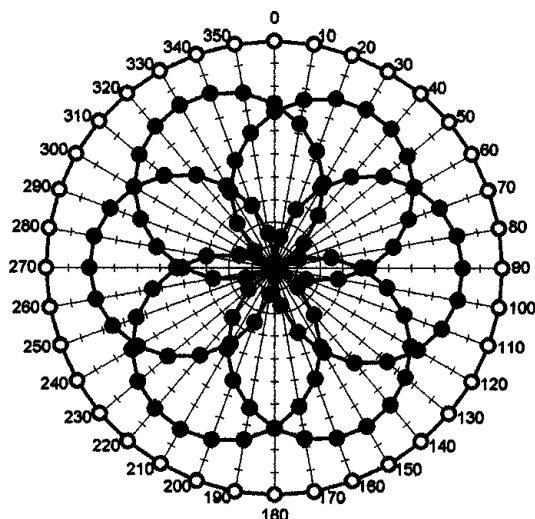
—●— X - - - ● - - Y ····· ● ····· Z —○— Tot

f = 100 MHz, TEM cell if110



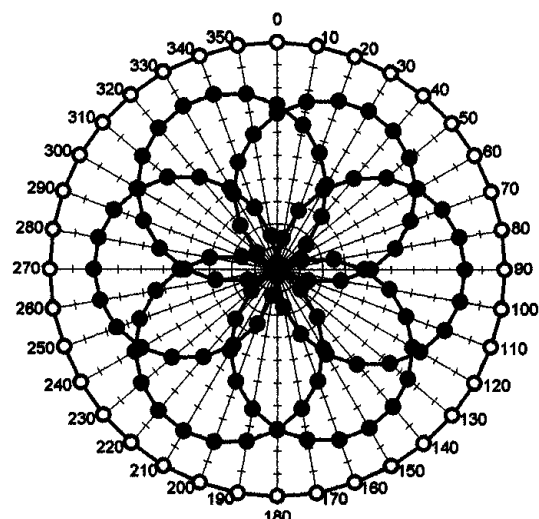
—●— X - - - ● - - Y ····· ● ····· Z —○— Tot

f = 300 MHz, TEM cell if110

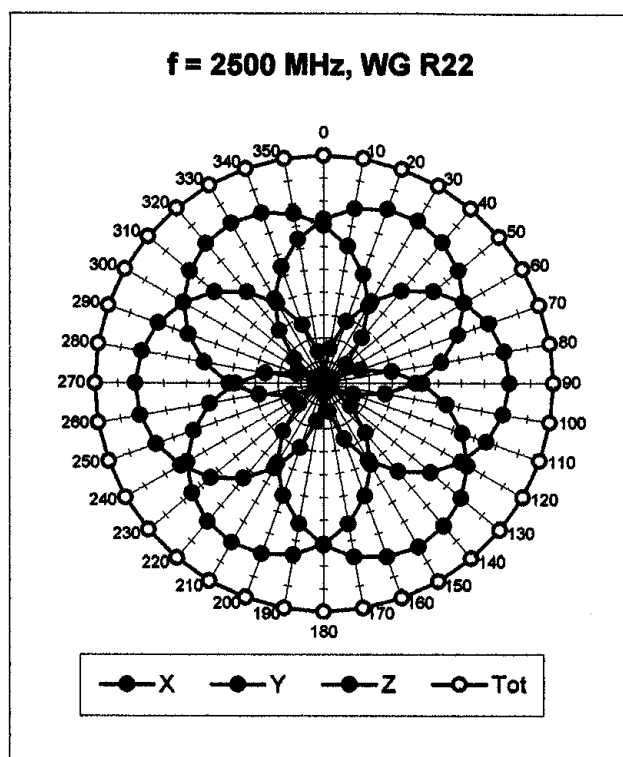
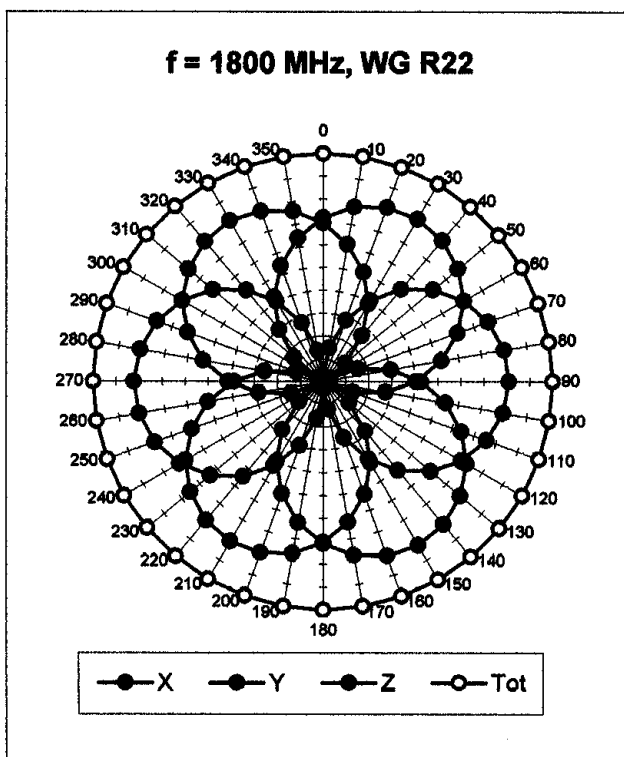


—●— X - - - ● - - Y ····· ● ····· Z —○— Tot

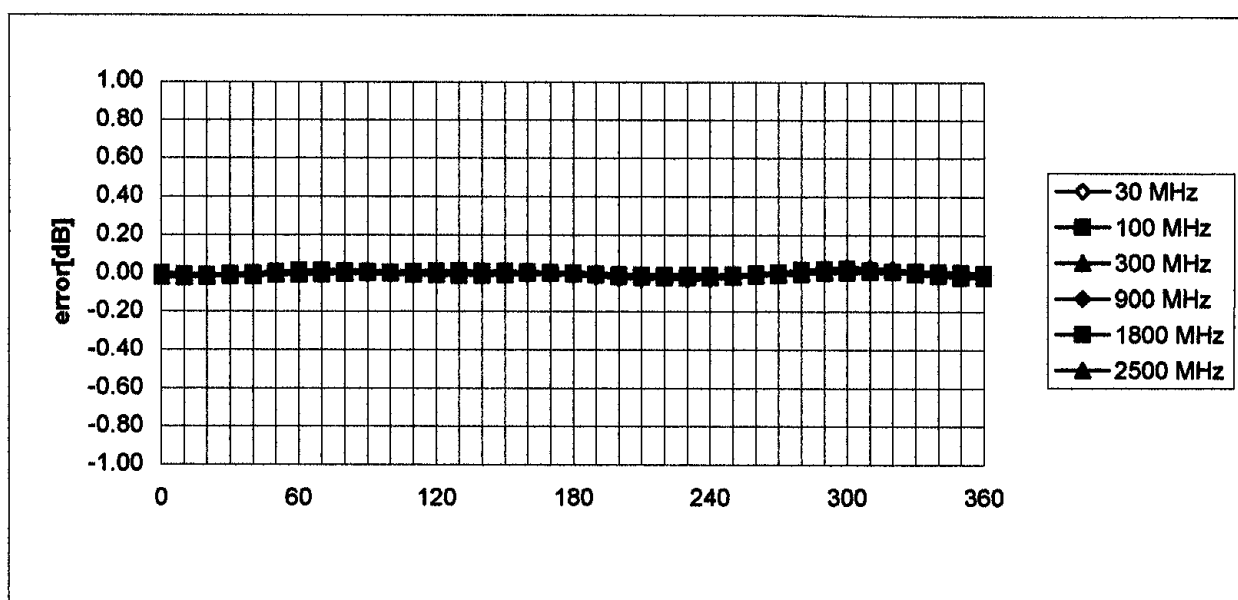
f = 900 MHz, TEM cell if110



—●— X - - - ● - - Y ····· ● ····· Z —○— Tot

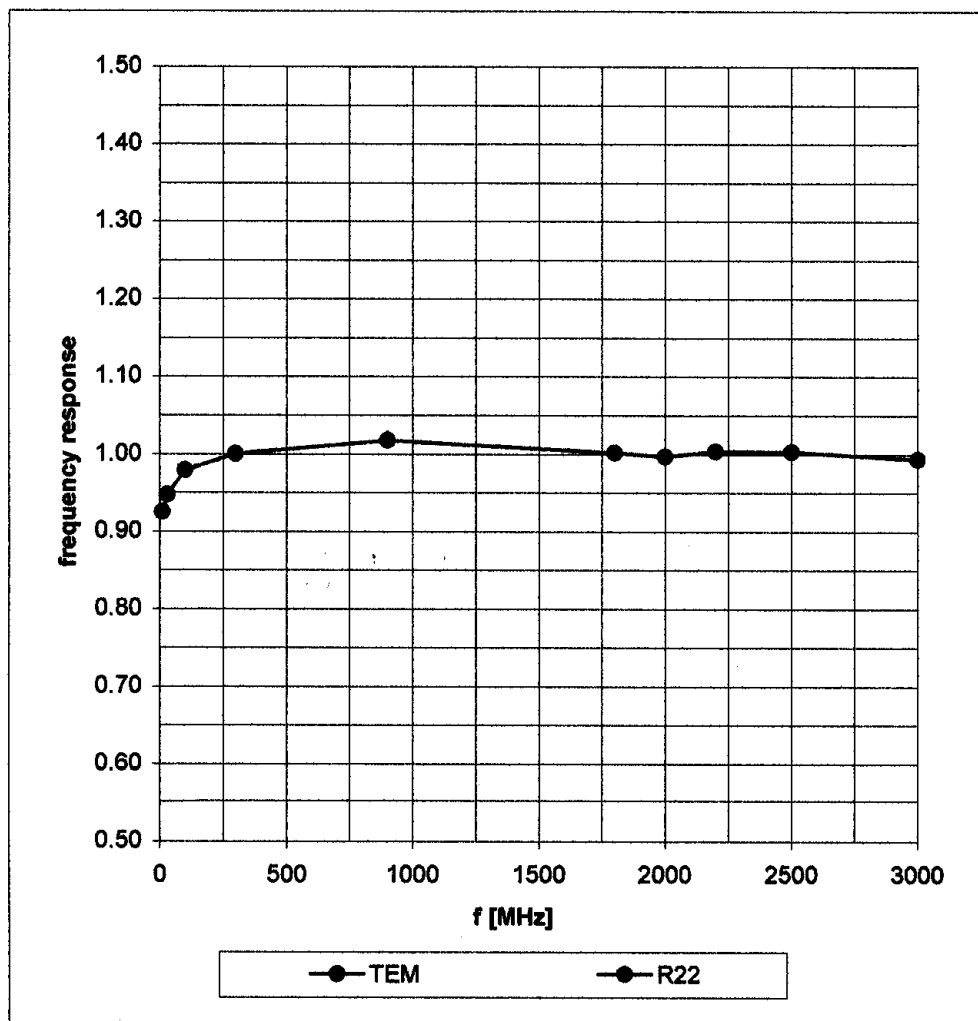


Isotropy Error (ϕ), $\theta = 0^\circ$

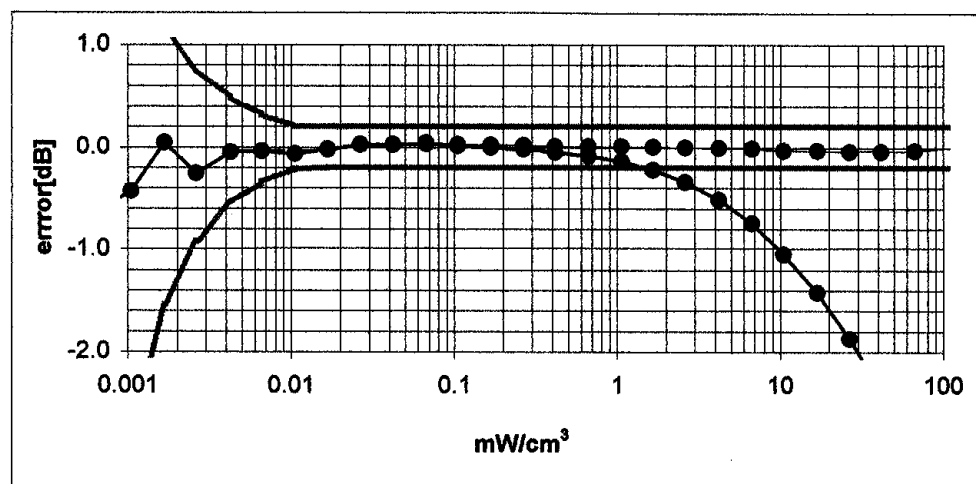
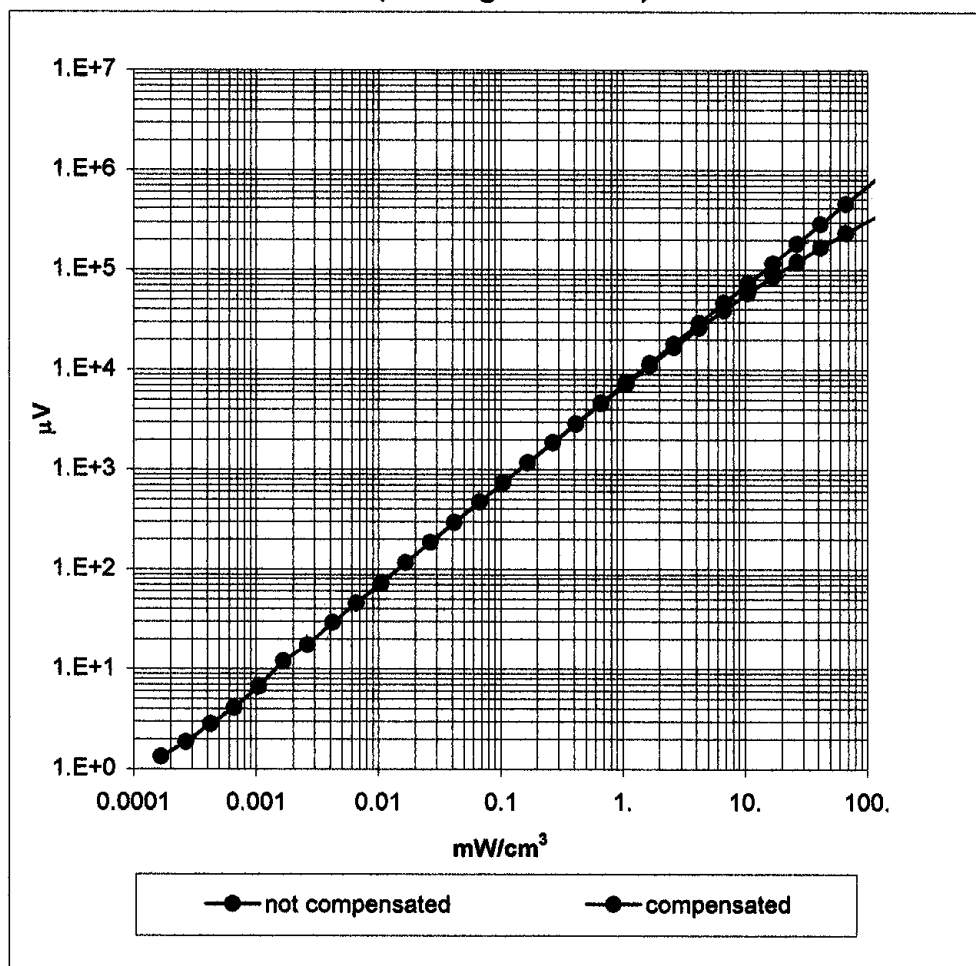


Frequency Response of E-Field

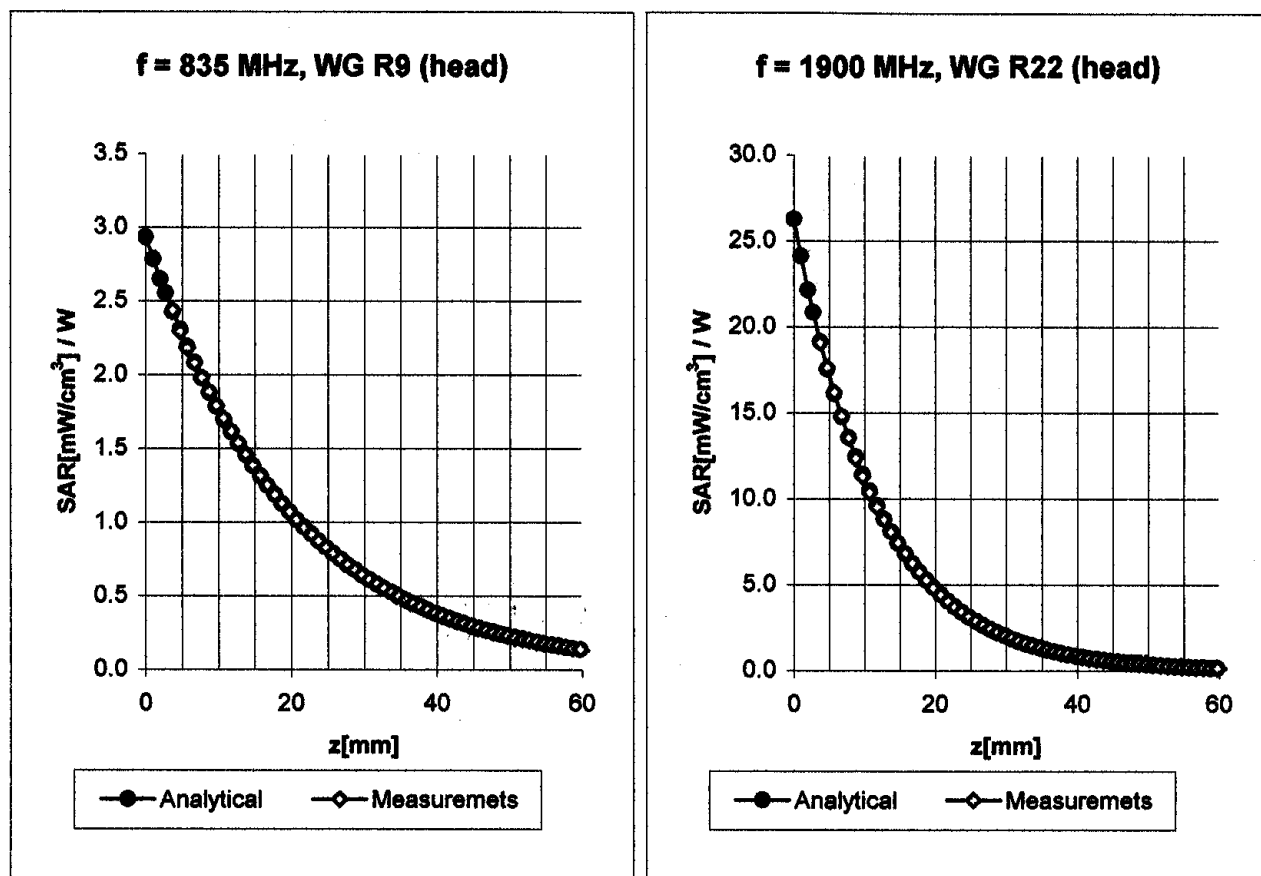
(TEM-Cell:ifi110, Waveguide R22)



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



Conversion Factor Assessment

**Head****835 MHz** $\epsilon_r = 41.5 \pm 5\%$ $\sigma = 0.90 \pm 5\% \text{ mho/m}$ ConvF X **7.1** $\pm 8.9\%$ (k=2)ConvF Y **7.1** $\pm 8.9\%$ (k=2)ConvF Z **7.1** $\pm 8.9\%$ (k=2)

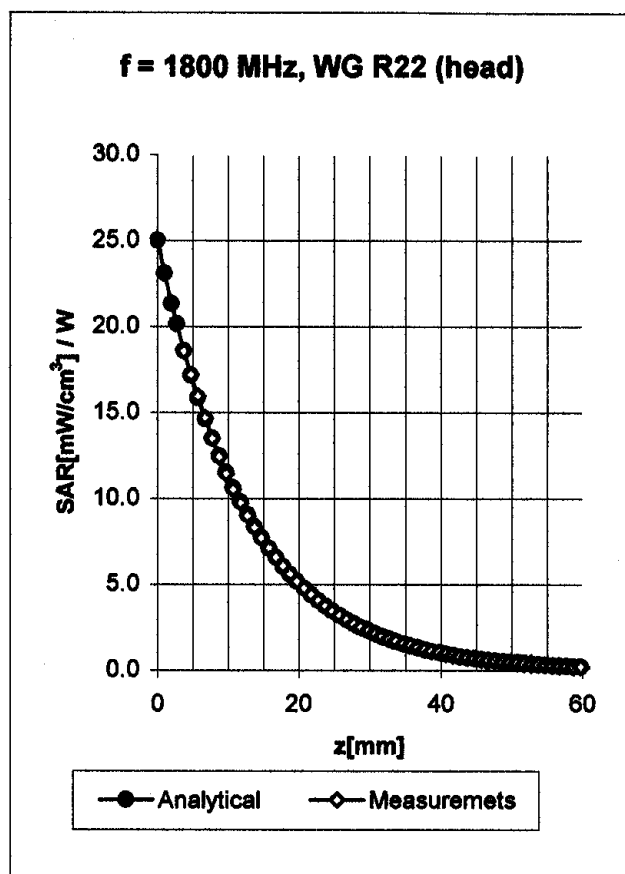
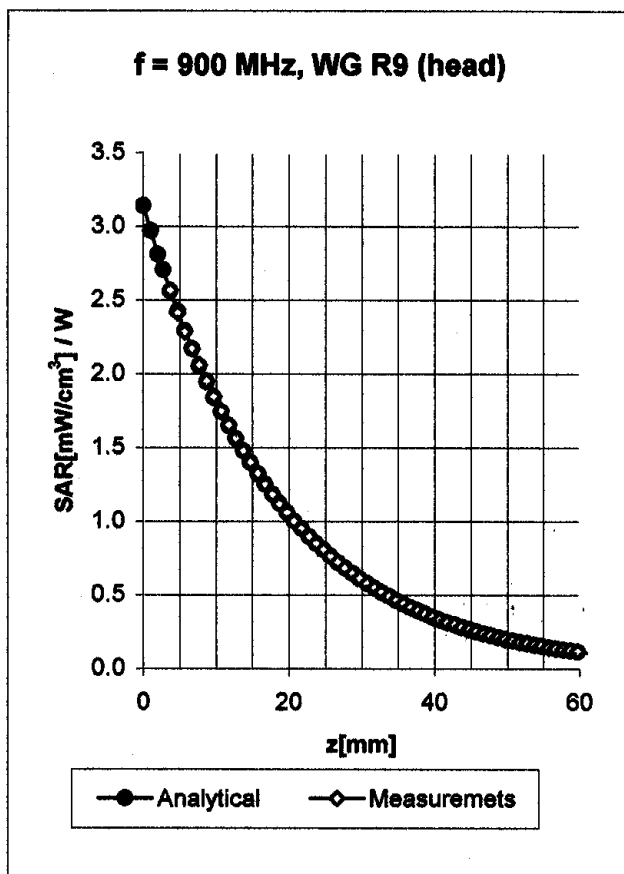
Boundary effect:

Alpha **0.32**Depth **2.61****Head****1900 MHz** $\epsilon_r = 40.0 \pm 5\%$ $\sigma = 1.40 \pm 5\% \text{ mho/m}$ ConvF X **5.3** $\pm 8.9\%$ (k=2)ConvF Y **5.3** $\pm 8.9\%$ (k=2)ConvF Z **5.3** $\pm 8.9\%$ (k=2)

Boundary effect:

Alpha **0.47**Depth **2.69**

Conversion Factor Assessment

**Head****900 MHz** **$\epsilon_r = 41.5 \pm 5\%$** **$\sigma = 0.97 \pm 5\%$ mho/m**ConvF X **7.1 $\pm$ 8.9% (k=2)**

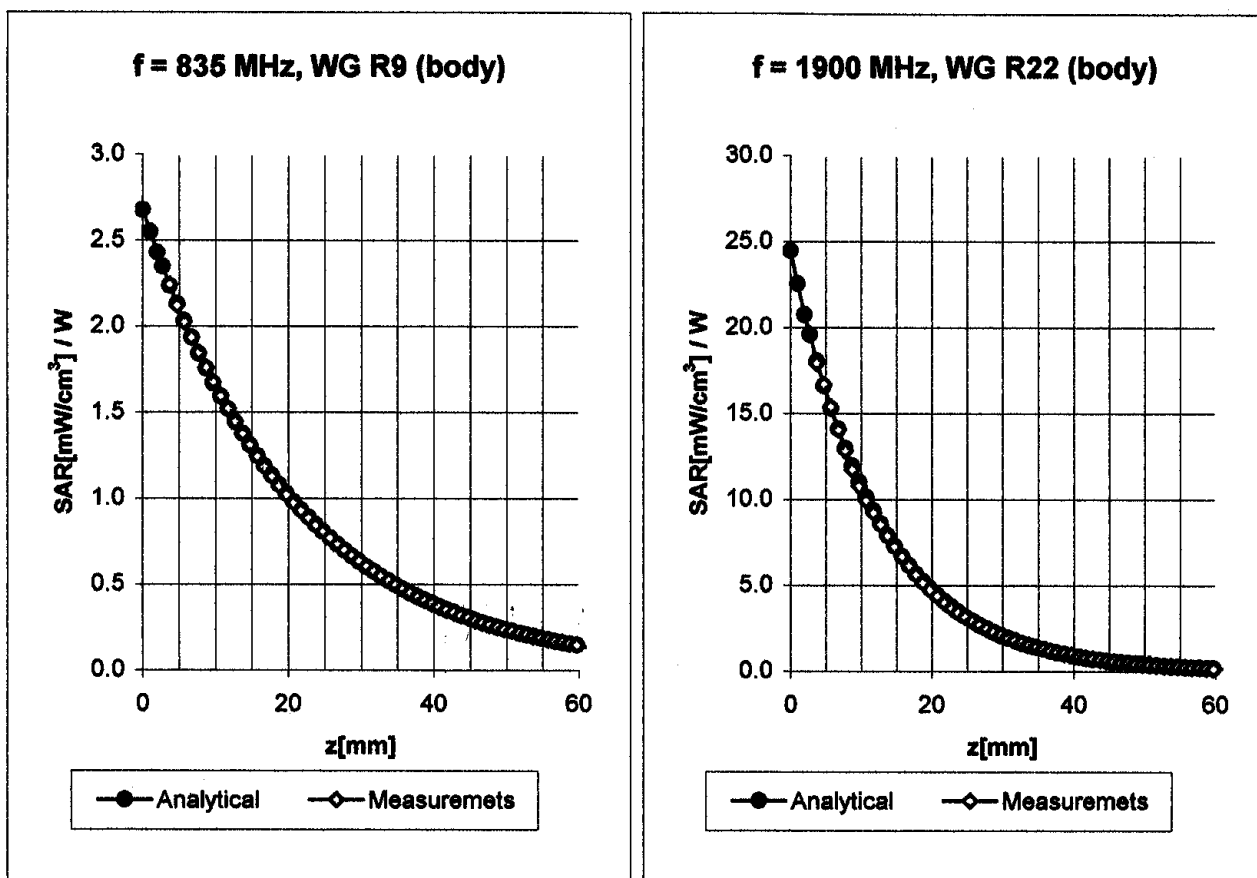
Boundary effect:

ConvF Y **7.1 $\pm$ 8.9% (k=2)**Alpha **0.32**ConvF Z **7.1 $\pm$ 8.9% (k=2)**Depth **2.61****Head****1800 MHz** **$\epsilon_r = 40.0 \pm 5\%$** **$\sigma = 1.40 \pm 5\%$ mho/m**ConvF X **5.6 $\pm$ 8.9% (k=2)**

Boundary effect:

ConvF Y **5.6 $\pm$ 8.9% (k=2)**Alpha **0.44**ConvF Z **5.6 $\pm$ 8.9% (k=2)**Depth **2.77**

Conversion Factor Assessment



Body 835 MHz $\epsilon_r = 55.2 \pm 5\%$ $\sigma = 0.97 \pm 5\%$ mho/m

ConvF X **6.9** $\pm 8.9\%$ (k=2)

Boundary effect:

ConvF Y **6.9** $\pm 8.9\%$ (k=2)

Alpha **0.32**

ConvF Z **6.9** $\pm 8.9\%$ (k=2)

Depth **2.64**

Body 1900 MHz $\epsilon_r = 53.3 \pm 5\%$ $\sigma = 1.52 \pm 5\%$ mho/m

ConvF X **5.0** $\pm 8.9\%$ (k=2)

Boundary effect:

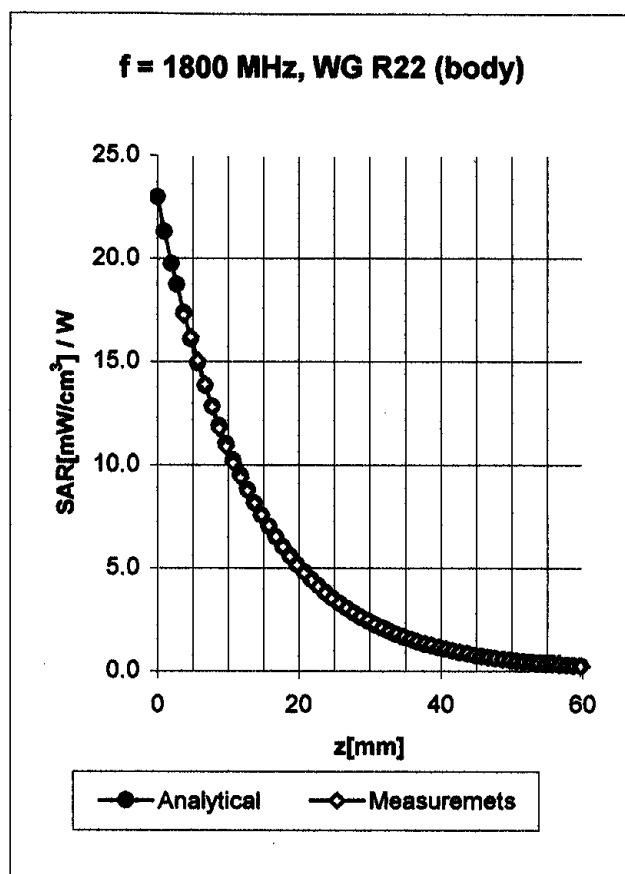
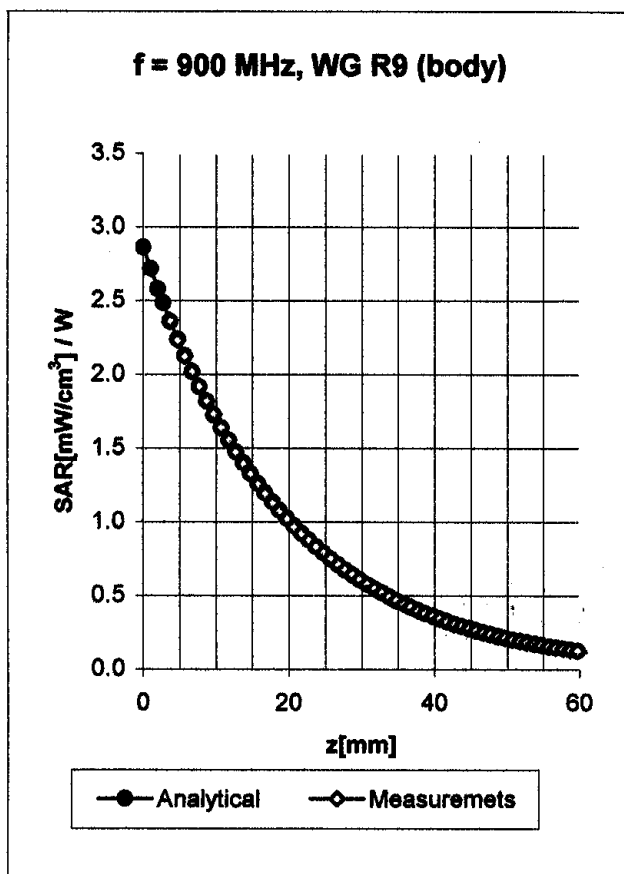
ConvF Y **5.0** $\pm 8.9\%$ (k=2)

Alpha **0.58**

ConvF Z **5.0** $\pm 8.9\%$ (k=2)

Depth **2.55**

Conversion Factor Assessment



Body 900 MHz $\epsilon_r = 55.0 \pm 5\%$ $\sigma = 1.05 \pm 5\%$ mho/m

ConvF X **6.9** $\pm 8.9\%$ (k=2)

Boundary effect:

ConvF Y **6.9** $\pm 8.9\%$ (k=2)

Alpha **0.33**

ConvF Z **6.9** $\pm 8.9\%$ (k=2)

Depth **2.71**

Body 1800 MHz $\epsilon_r = 53.3 \pm 5\%$ $\sigma = 1.52 \pm 5\%$ mho/m

ConvF X **5.0** $\pm 8.9\%$ (k=2)

Boundary effect:

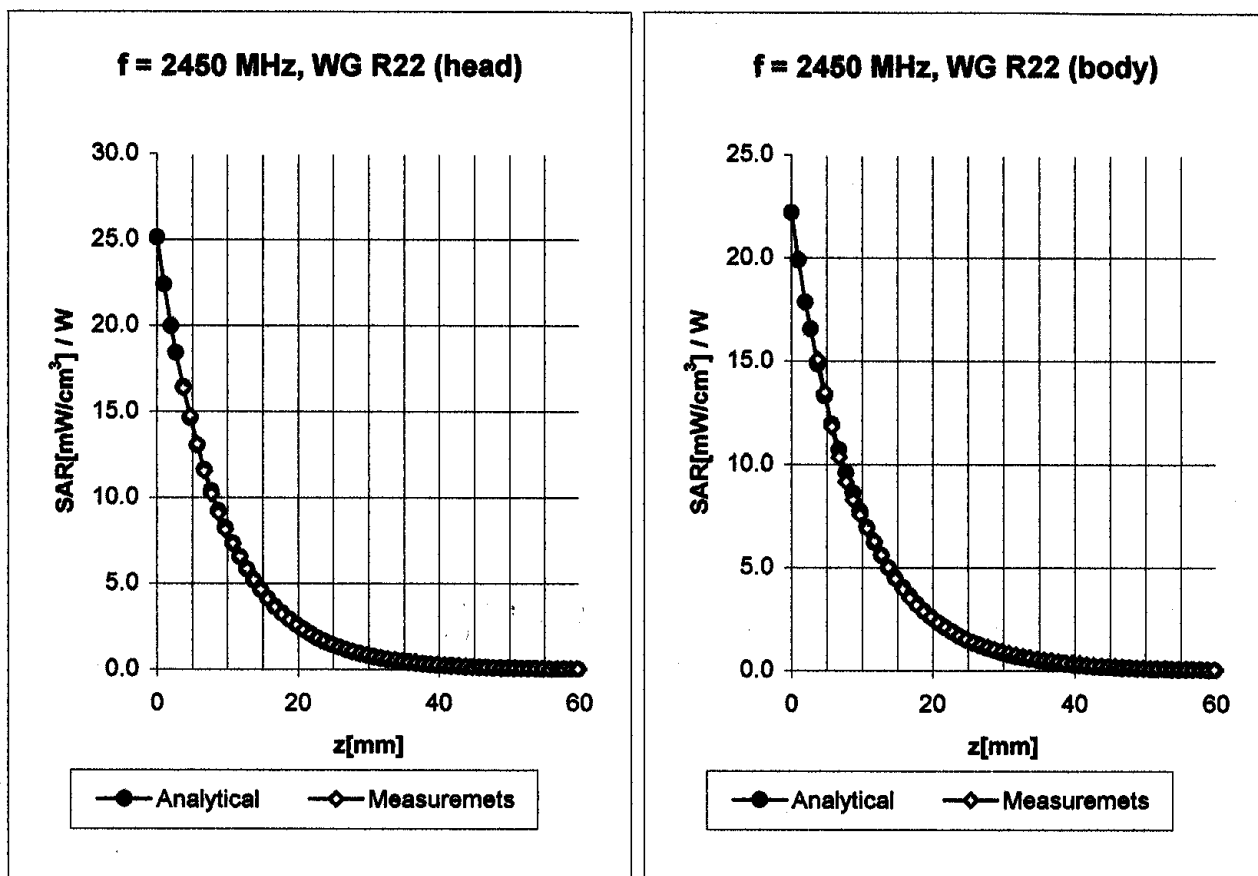
ConvF Y **5.0** $\pm 8.9\%$ (k=2)

Alpha **0.49**

ConvF Z **5.0** $\pm 8.9\%$ (k=2)

Depth **2.89**

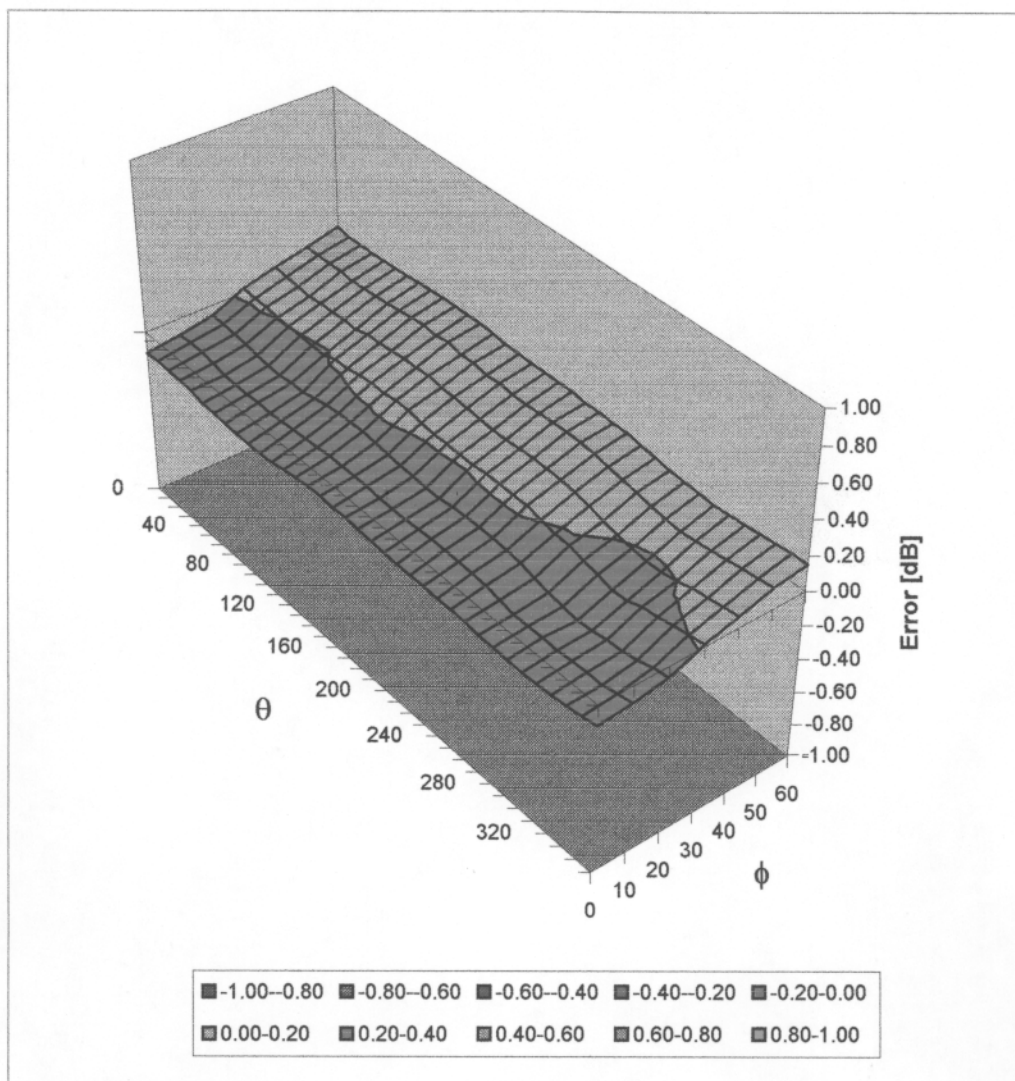
Conversion Factor Assessment



2450	Head	MHz	$\epsilon_r = 39.2 \pm 5\%$	$\sigma = 1.80 \pm 5\% \text{ mho/m}$
	ConvF X	5.1 $\pm 8.9\%$ (k=2)		Boundary effect:
	ConvF Y	5.1 $\pm 8.9\%$ (k=2)		Alpha 0.85
	ConvF Z	5.1 $\pm 8.9\%$ (k=2)		Depth 2.00
2450	Body	MHz	$\epsilon_r = 52.7 \pm 5\%$	$\sigma = 1.95 \pm 5\% \text{ mho/m}$
	ConvF X	4.7 $\pm 8.9\%$ (k=2)		Boundary effect:
	ConvF Y	4.7 $\pm 8.9\%$ (k=2)		Alpha 0.90
	ConvF Z	4.7 $\pm 8.9\%$ (k=2)		Depth 1.57

Deviation from Isotropy in HSL

Error (θ, ϕ), $f = 900$ MHz



Additional Conversion Factors for Dosimetric E-Field Probe

Type:

ET3DV6

Serial Number:

1577

Place of Assessment:

Zurich

Date of Assessment:

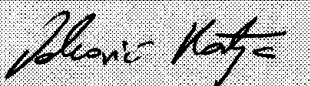
February 10, 2003

Probe Calibration Date:

February 7, 2003

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:1577

Conversion factor ($\pm$ standard deviation)

450 MHz ConvF $7.8 \pm 8\%$

$\epsilon_r = 43.5 \pm 5\%$
 $\sigma = 0.87 \pm 5\%$ mho/m
(head tissue)

450 MHz ConvF $8.1 \pm 8\%$

$\epsilon_r = 56.7 \pm 5\%$
 $\sigma = 0.94 \pm 5\%$ mho/m
(body tissue)