ATTACHMENT   R

PROBE CALIBRATION

FCC ID: POQWTE-500

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Probe ET3DV6

SN:1703

Manufactured:	July 3, 2002
Last calibration:	July 29, 2002
Recalibrated:	February 7, 2003

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

DASY - Parameters of Probe: ET3DV6 SN:1703

Sensitivity in Free Space

		Diode Compression		
NormX	$1.64\ \mu V/(V/m)^2$	DCP X	**95**	mV
NormY	$1.71\ \mu V/(V/m)^2$	DCP Y	**95**	mV
NormZ	$1.71\ \mu V/(V/m)^2$	DCP Z	**95**	mV

Sensitivity in Tissue Simulating Liquid

Head	900 MHz	$\varepsilon_r = 41.5 \pm 5\%$	$\sigma = 0.97 \pm 5\%$ mho/m
Head	835 MHz	$\varepsilon_r = 41.5 \pm 5\%$	$\sigma = 0.90 \pm 5\%$ mho/m

			Boundary effect:	
ConvF X	**6.8**	$\pm 9.5\%$ (k=2)		
ConvF Y	**6.8**	$\pm 9.5\%$ (k=2)	Alpha	**0.35**
ConvF Z	**6.8**	$\pm 9.5\%$ (k=2)	Depth	**2.73**

Head	1800 MHz	$\varepsilon_r = 40.0 \pm 5\%$	$\sigma = 1.40 \pm 5\%$ mho/m
Head	1900 MHz	$\varepsilon_r = 40.0 \pm 5\%$	$\sigma = 1.40 \pm 5\%$ mho/m

			Boundary effect:	
ConvF X	**5.4**	$\pm 9.5\%$ (k=2)		
ConvF Y	**5.4**	$\pm 9.5\%$ (k=2)	Alpha	**0.47**
ConvF Z	**5.4**	$\pm 9.5\%$ (k=2)	Depth	**2.78**

Boundary Effect

Head   900 MHz   Typical SAR gradient: 5 % per mm

		1 mm	2 mm
Probe Tip to Boundary		**1 mm**	**2 mm**
SAR_{be} [%]	Without Correction Algorithm	10.3	6.0
SAR_{be} [%]	With Correction Algorithm	0.4	0.6

Head   1800 MHz   Typical SAR gradient: 10 % per mm

		1 mm	2 mm
Probe Tip to Boundary		**1 mm**	**2 mm**
SAR_{be} [%]	Without Correction Algorithm	13.8	9.5
SAR_{be} [%]	With Correction Algorithm	0.2	0.1

Sensor Offset

Probe Tip to Sensor Center	**2.7**	mm
Optical Surface Detection	**1.6 ± 0.2**	mm

Receiving Pattern (ϕ), $\theta = 0°$

f = 30 MHz, TEM cell ifi110
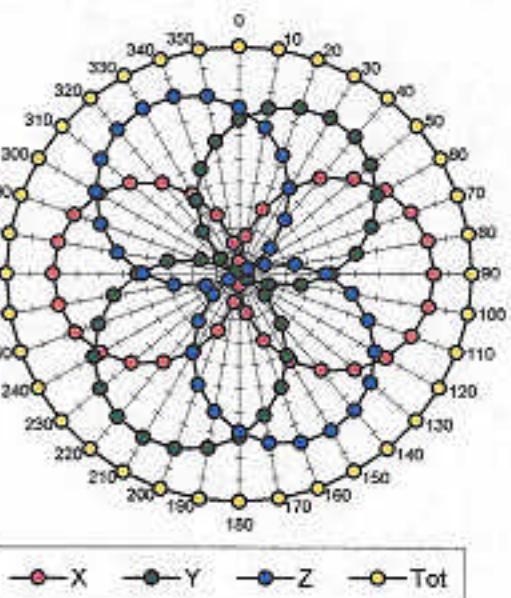
f = 100 MHz, TEM cell ifi110
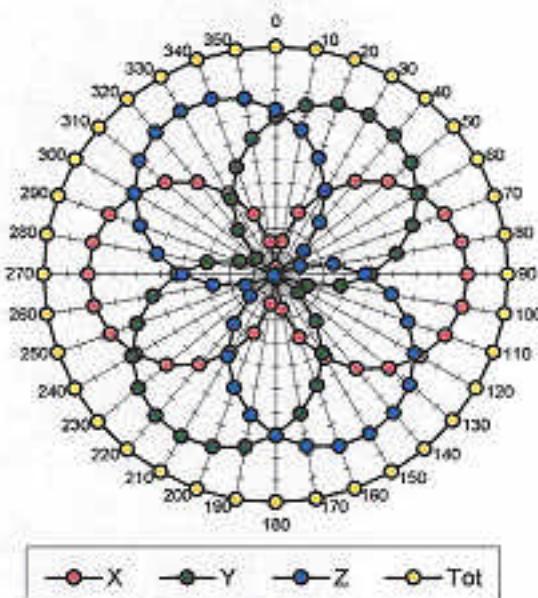
f = 300 MHz, TEM cell ifi110


f = 900 MHz, TEM cell ifi110

f = 1800 MHz, WG R22

f = 2500 MHz, WG R22
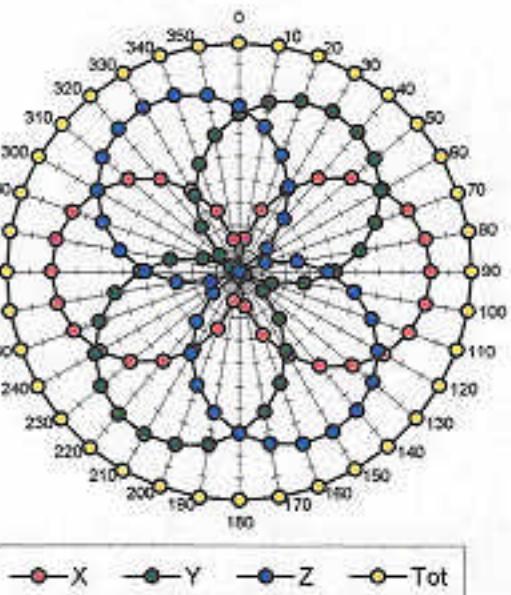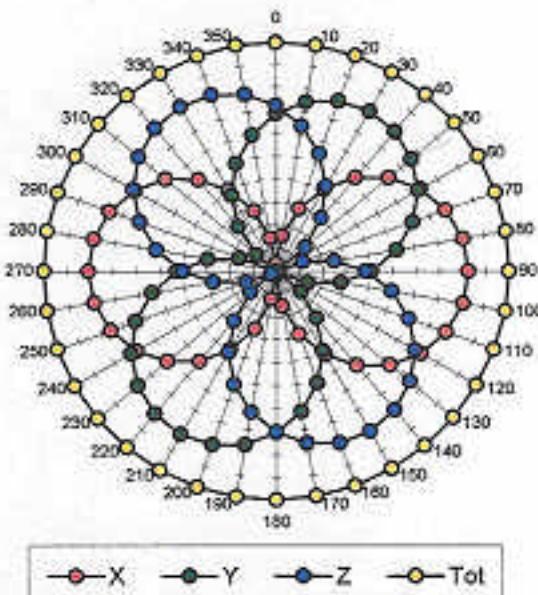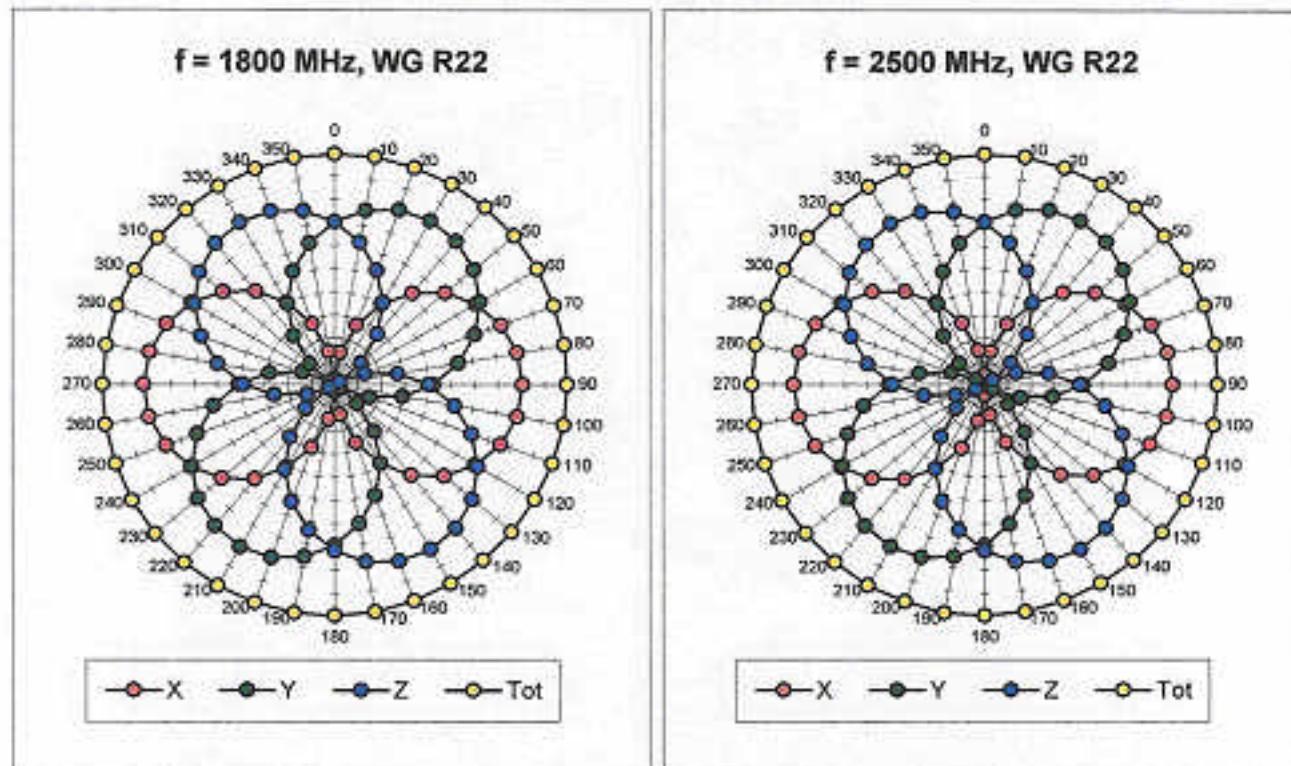
Isotropy Error (φ), θ = 0°
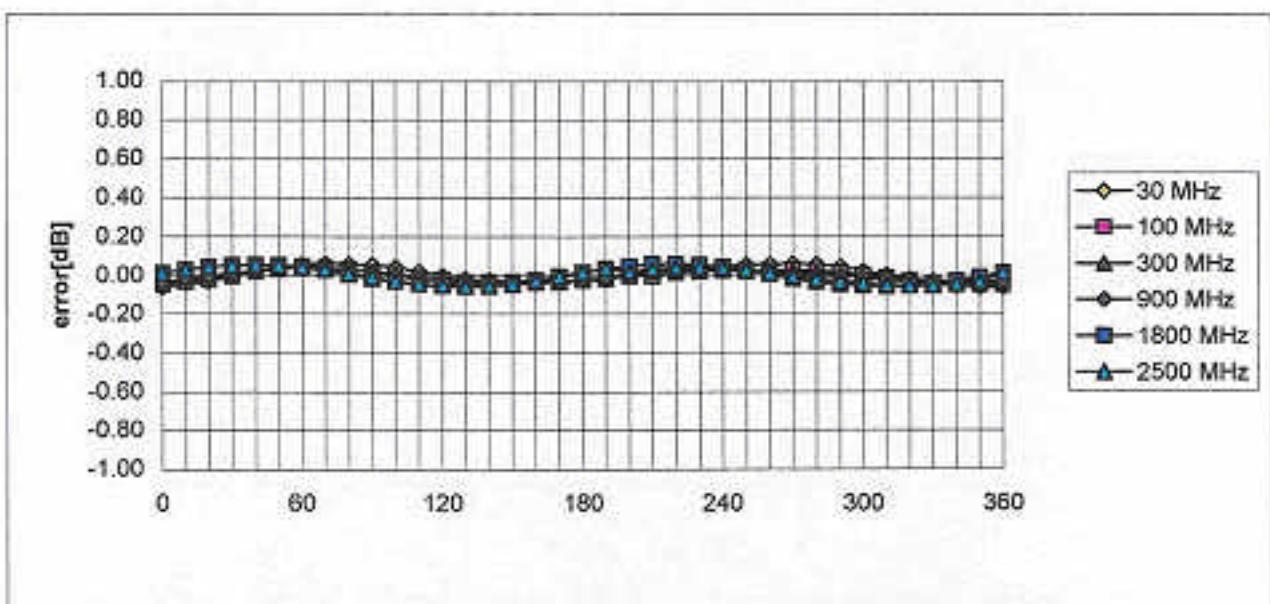
Frequency Response of E-Field

(TEM-Cell:ifi110, Waveguide R22)
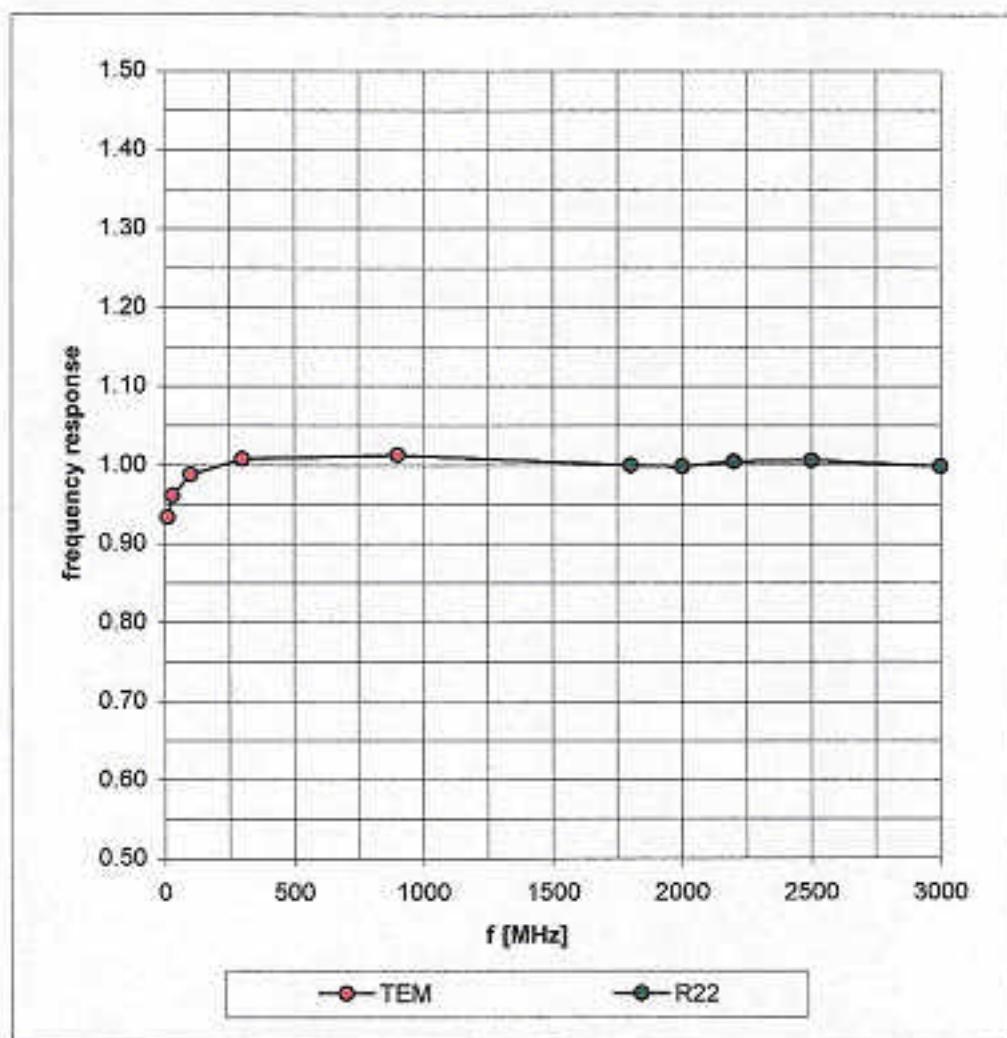
Dynamic Range f(SAR$_{brain}$)

(Waveguide R22)

Conversion Factor Assessment

f = 900 MHz, WG R9 (head)

f = 1800 MHz, WG R22 (head)
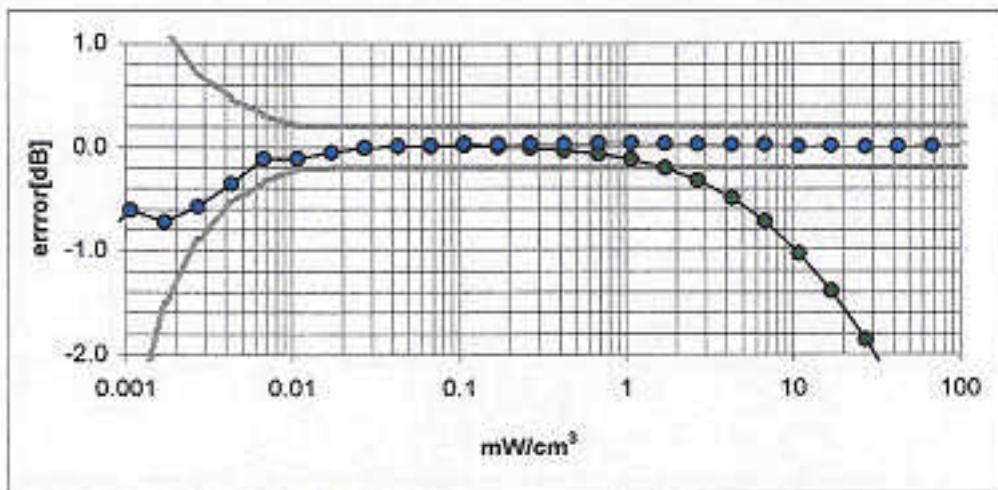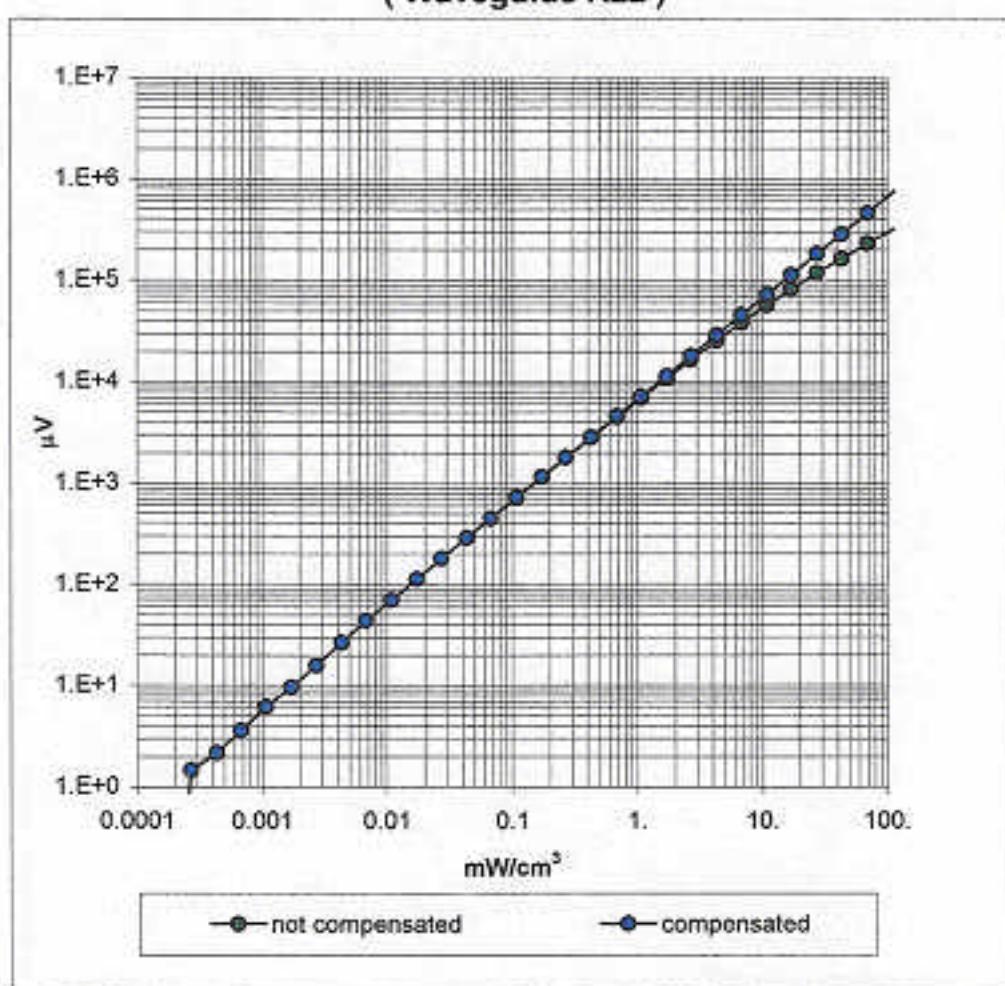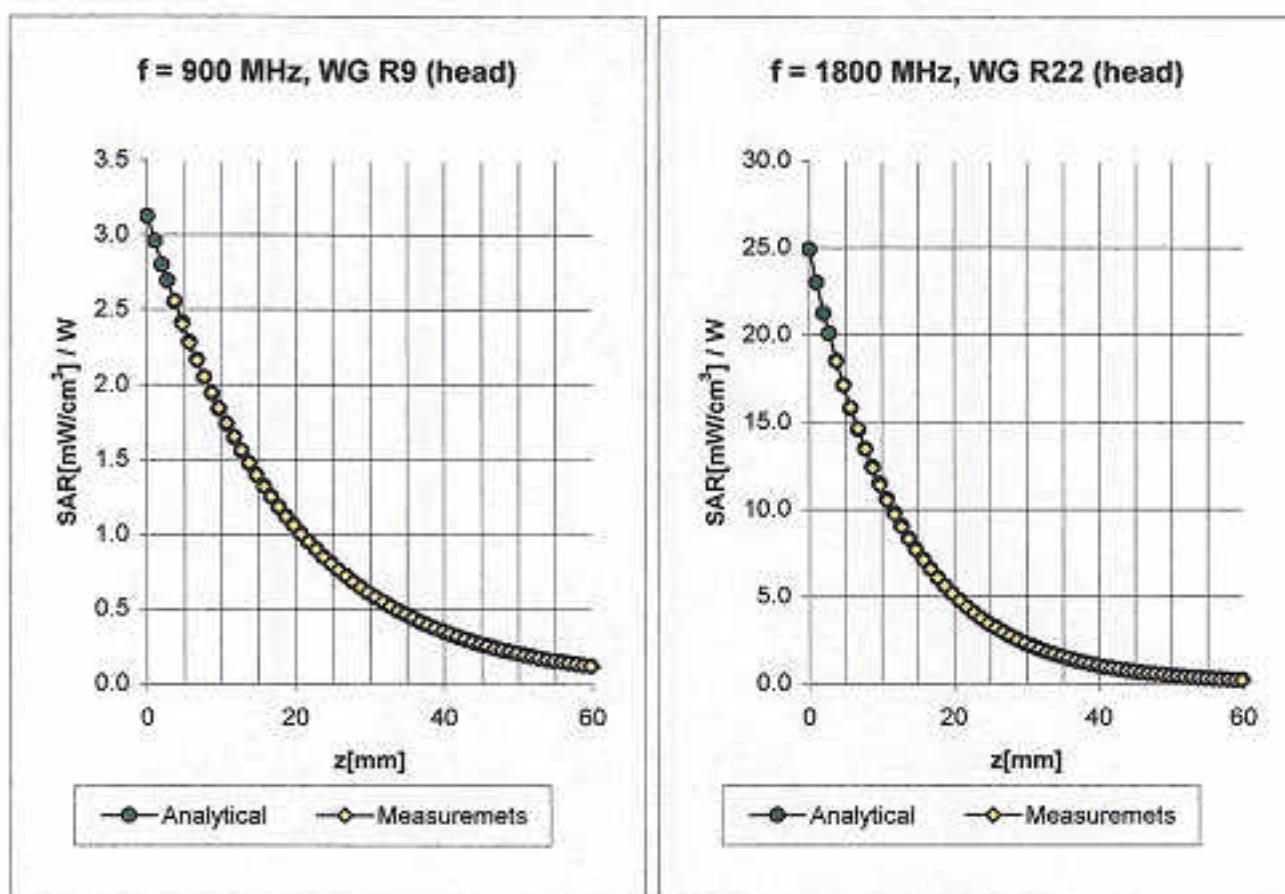
Head	900 MHz		$\varepsilon_r = 41.5 \pm 5\%$	$\sigma = 0.97 \pm 5\%$ mho/m
Head	835 MHz		$\varepsilon_r = 41.5 \pm 5\%$	$\sigma = 0.90 \pm 5\%$ mho/m
	ConvF X	**6.8** $\pm 9.5\%$ (k=2)	Boundary effect:	
	ConvF Y	**6.8** $\pm 9.5\%$ (k=2)	Alpha	**0.35**
	ConvF Z	**6.8** $\pm 9.5\%$ (k=2)	Depth	**2.73**

Head	1800 MHz		$\varepsilon_r = 40.0 \pm 5\%$	$\sigma = 1.40 \pm 5\%$ mho/m
Head	1900 MHz		$\varepsilon_r = 40.0 \pm 5\%$	$\sigma = 1.40 \pm 5\%$ mho/m
	ConvF X	**5.4** $\pm 9.5\%$ (k=2)	Boundary effect:	
	ConvF Y	**5.4** $\pm 9.5\%$ (k=2)	Alpha	**0.47**
	ConvF Z	**5.4** $\pm 9.5\%$ (k=2)	Depth	**2.78**

Conversion Factor Assessment
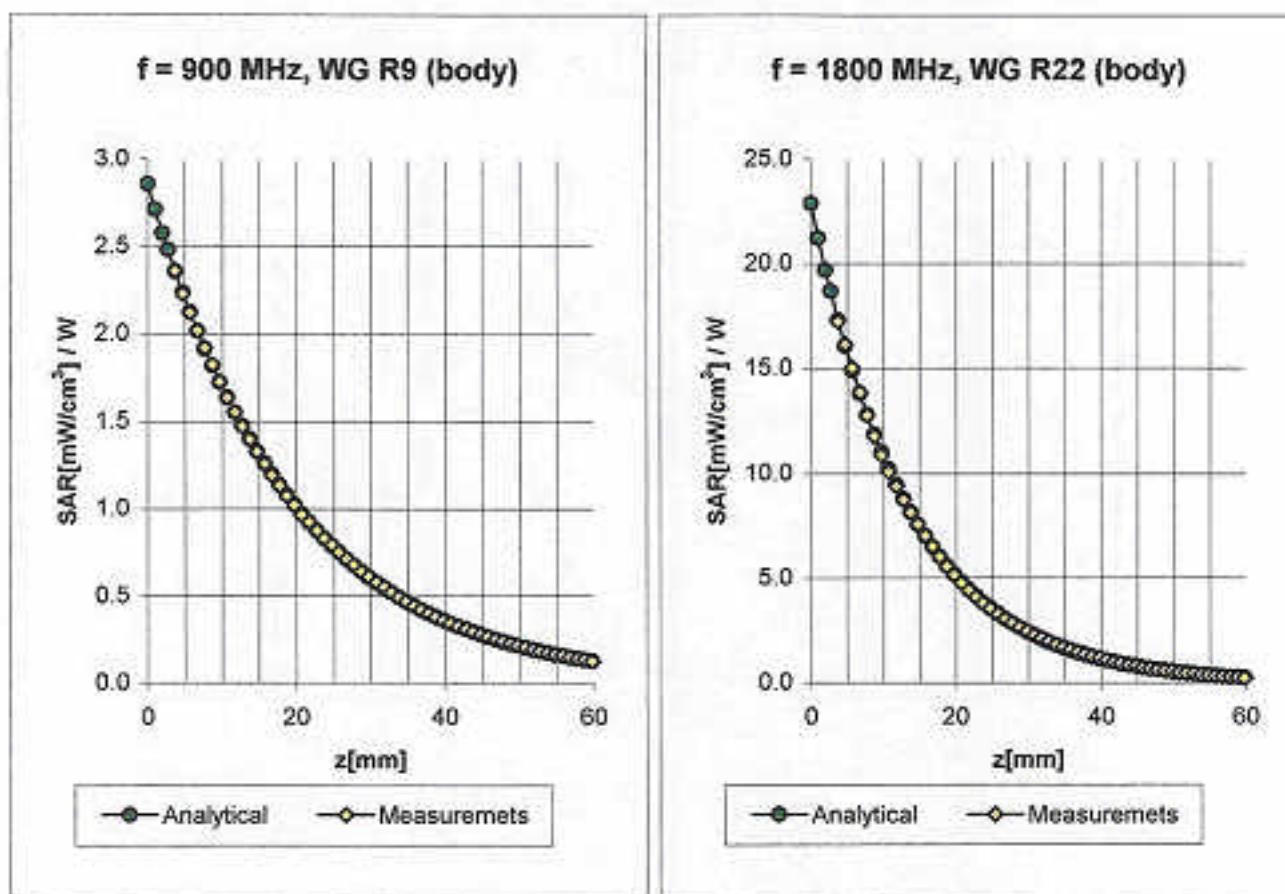
Body	900 MHz	$\varepsilon_r = 55.0 \pm 5\%$	$\sigma = 1.05 \pm 5\%$ mho/m
Body	835 MHz	$\varepsilon_r = 55.2 \pm 5\%$	$\sigma = 0.97 \pm 5\%$ mho/m

ConvF X	6.6 ± 9.5% (k=2)		Boundary effect:
ConvF Y	6.6 ± 9.5% (k=2)		Alpha	0.42
ConvF Z	6.6 ± 9.5% (k=2)		Depth	2.37

Body	1800 MHz	$\varepsilon_r = 53.3 \pm 5\%$	$\sigma = 1.52 \pm 5\%$ mho/m
Body	1900 MHz	$\varepsilon_r = 53.3 \pm 5\%$	$\sigma = 1.52 \pm 5\%$ mho/m

ConvF X	4.9 ± 9.5% (k=2)		Boundary effect:
ConvF Y	4.9 ± 9.5% (k=2)		Alpha	0.53
ConvF Z	4.9 ± 9.5% (k=2)		Depth	2.77

Conversion Factor Assessment

f = 2450 MHz, WG R22 (body)
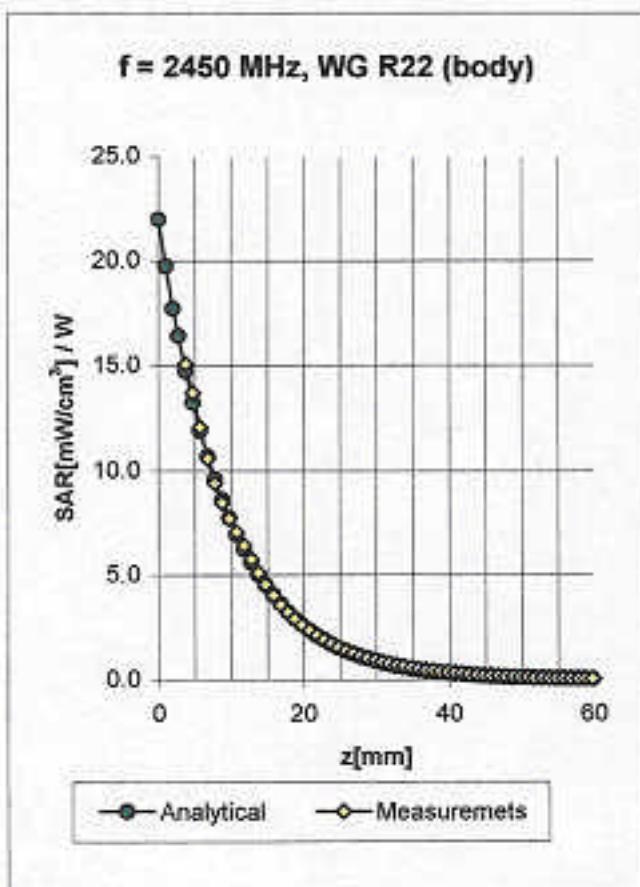
2450	Body	MHz		$\varepsilon_r = 52.7 \pm 5\%$	$\sigma = 1.95 \pm 5\%$ mho/m

ConvF X	4.7 $\pm 8.9\%$ (k=2)	Boundary effect:	
ConvF Y	4.7 $\pm 8.9\%$ (k=2)	Alpha	1.50
ConvF Z	4.7 $\pm 8.9\%$ (k=2)	Depth	1.45

Deviation from Isotropy in HSL

Error (θ,φ), f = 900 MHz
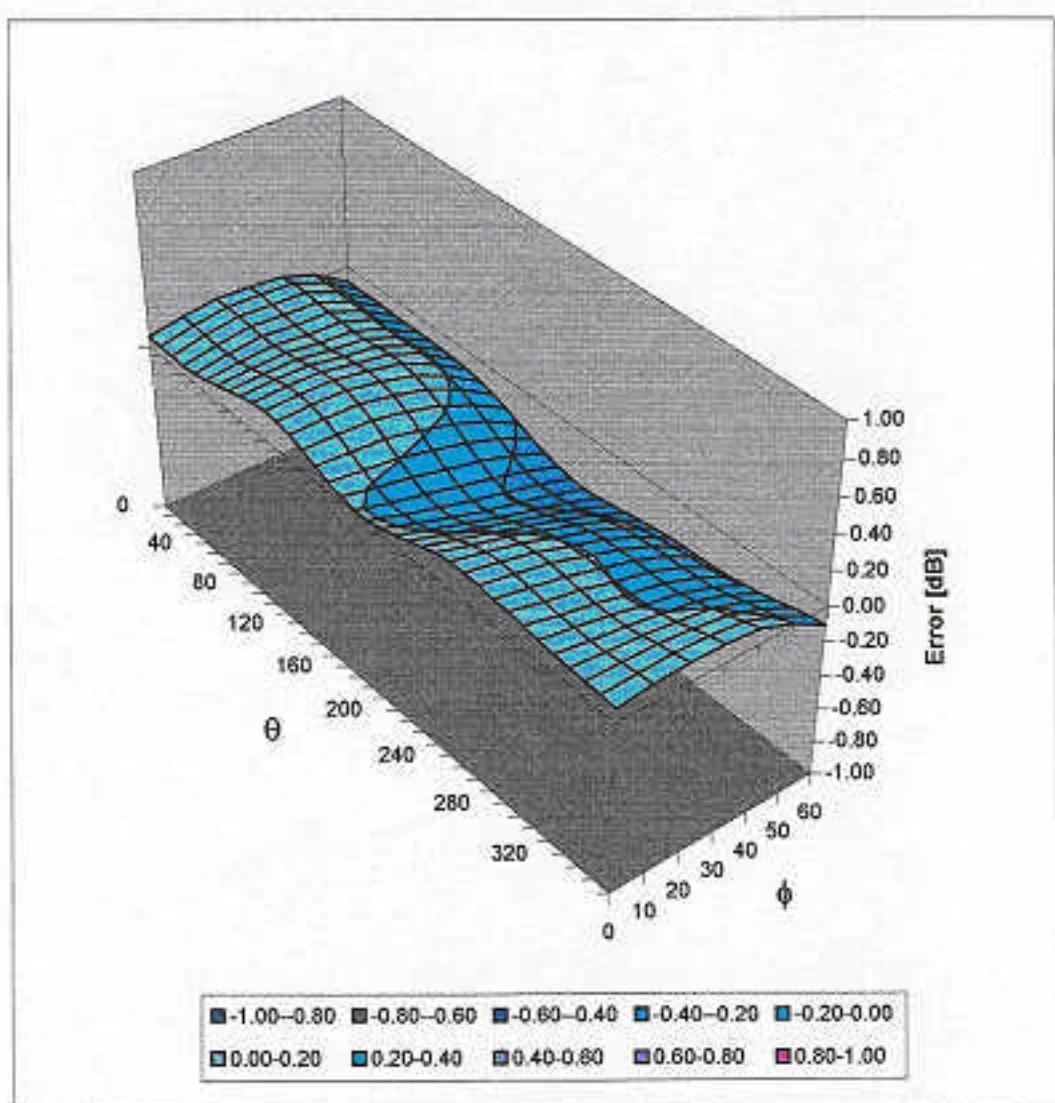
Probe ET3DV6

SN:1703

Additional Conversion Factor

Manufactured: July 3, 2002
Last calibration: July 29, 2002
Recalibrated: February 7, 2003

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

DASY - Parameters of Probe: ET3DV6 SN:1703

Sensitivity in Free Space

			Diode Compression		
NormX	**1.64**	$\mu V/(V/m)^2$	DCP X	**95**	mV
NormY	**1.71**	$\mu V/(V/m)^2$	DCP Y	**95**	mV
NormZ	**1.71**	$\mu V/(V/m)^2$	DCP Z	**95**	mV

Sensitivity in Tissue Simulating Liquid

Head	**900 MHz**	e_r = 41.5 ± 5%	s = 0.97 ± 5% mho/m
Head	**835 MHz**	e_r = 41.5 ± 5%	s = 0.90 ± 5% mho/m

			Boundary effect:	
ConvF X	**6.8**	± 9.5% (k=2)		
ConvF Y	**6.8**	± 9.5% (k=2)	Alpha	**0.35**
ConvF Z	**6.8**	± 9.5% (k=2)	Depth	**2.73**

Head	**1800 MHz**	e_r = 40.0 ± 5%	s = 1.40 ± 5% mho/m
Head	**1900 MHz**	e_r = 40.0 ± 5%	s = 1.40 ± 5% mho/m

			Boundary effect:	
ConvF X	**5.4**	± 9.5% (k=2)		
ConvF Y	**5.4**	± 9.5% (k=2)	Alpha	**0.47**
ConvF Z	**5.4**	± 9.5% (k=2)	Depth	**2.78**

Boundary Effect

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

		1 mm	**2 mm**
Probe Tip to Boundary			
SAR_{be} [%]	Without Correction Algorithm	10.3	6.0
SAR_{be} [%]	With Correction Algorithm	0.4	0.6

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

		1 mm	**2 mm**
Probe Tip to Boundary			
SAR_{be} [%]	Without Correction Algorithm	13.8	9.5
SAR_{be} [%]	With Correction Algorithm	0.2	0.1

Sensor Offset

Probe Tip to Sensor Center	**2.7**	mm
Optical Surface Detection	**1.6 ± 0.2**	mm

Conversion Factor Assessment

f = 2450 MHz, WG R22 (head)
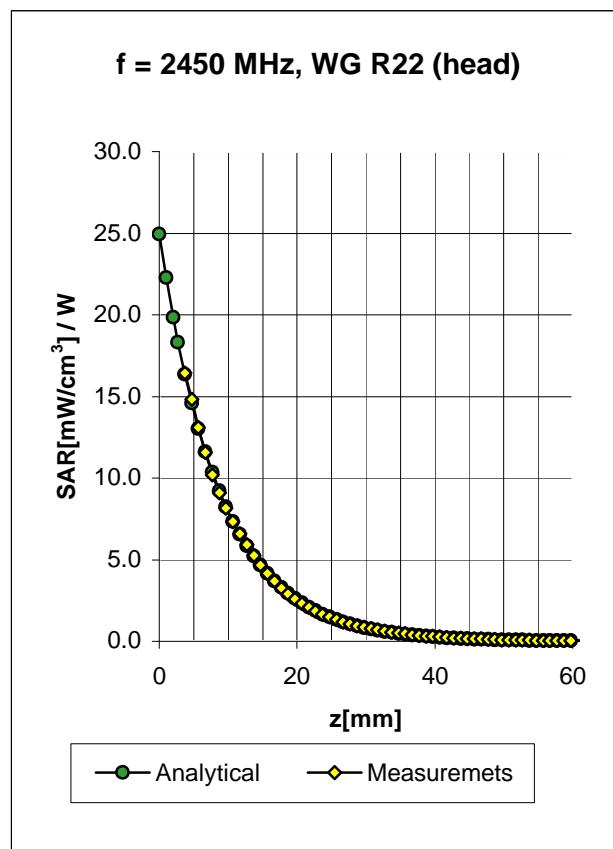
| Head | 2450 | MHz | e_r = 39.2 ± 5% | s = 1.80 ± 5% mho/m |

	ConvF X	**5.1** ± 8.9% (k=2)	Boundary effect:	
	ConvF Y	**5.1** ± 8.9% (k=2)	Alpha	**0.90**
	ConvF Z	**5.1** ± 8.9% (k=2)	Depth	**1.93**