

# Probe EX3DV4

## SN:3819

Manufactured: September 2, 2011  
Calibrated: November 26, 2012

Calibrated for DASY/EASY Systems  
(Note: non-compatible with DASY2 system!)

## DASY/EASY - Parameters of Probe: EX3DV4 - SN:3819

### Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ( $\mu\text{V}/(\text{V}/\text{m})^2$ ) <sup>A</sup>	0.49	0.38	0.53	$\pm 10.1 \%$
DCP (mV) <sup>B</sup>	96.9	98.5	98.7	

### Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc <sup>E</sup> (k=2)
0	CW	0.00	X	0.0	0.0	1.0	114.6	$\pm 3.0 \%$
			Y	0.0	0.0	1.0	141.4	
			Z	0.0	0.0	1.0	113.6	

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

<sup>A</sup> The uncertainties of NormX,Y,Z do not affect the E<sup>2</sup>-field uncertainty inside TSL (see Pages 5 and 6).

<sup>B</sup> Numerical linearization parameter: uncertainty not required.

<sup>E</sup> Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

## DASY/EASY - Parameters of Probe: EX3DV4 - SN:3819

### Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) <sup>C</sup>	Relative Permittivity <sup>F</sup>	Conductivity (S/m) <sup>F</sup>	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	41.9	0.89	9.97	9.97	9.97	0.22	1.26	± 12.0 %
835	41.5	0.90	9.56	9.56	9.56	0.42	0.82	± 12.0 %
900	41.5	0.97	9.48	9.48	9.48	0.30	1.02	± 12.0 %
1750	40.1	1.37	8.20	8.20	8.20	0.61	0.64	± 12.0 %
1900	40.0	1.40	7.84	7.84	7.84	0.34	0.89	± 12.0 %
2000	40.0	1.40	7.80	7.80	7.80	0.27	0.99	± 12.0 %
2450	39.2	1.80	6.99	6.99	6.99	0.35	0.93	± 12.0 %
2600	39.0	1.96	6.76	6.76	6.76	0.31	0.95	± 12.0 %
5200	36.0	4.66	5.11	5.11	5.11	0.35	1.80	± 13.1 %
5300	35.9	4.76	4.85	4.85	4.85	0.40	1.80	± 13.1 %
5500	35.6	4.96	4.81	4.81	4.81	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.34	4.34	4.34	0.50	1.80	± 13.1 %
5800	35.3	5.27	4.57	4.57	4.57	0.40	1.80	± 13.1 %

<sup>C</sup> Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

<sup>F</sup> At frequencies below 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

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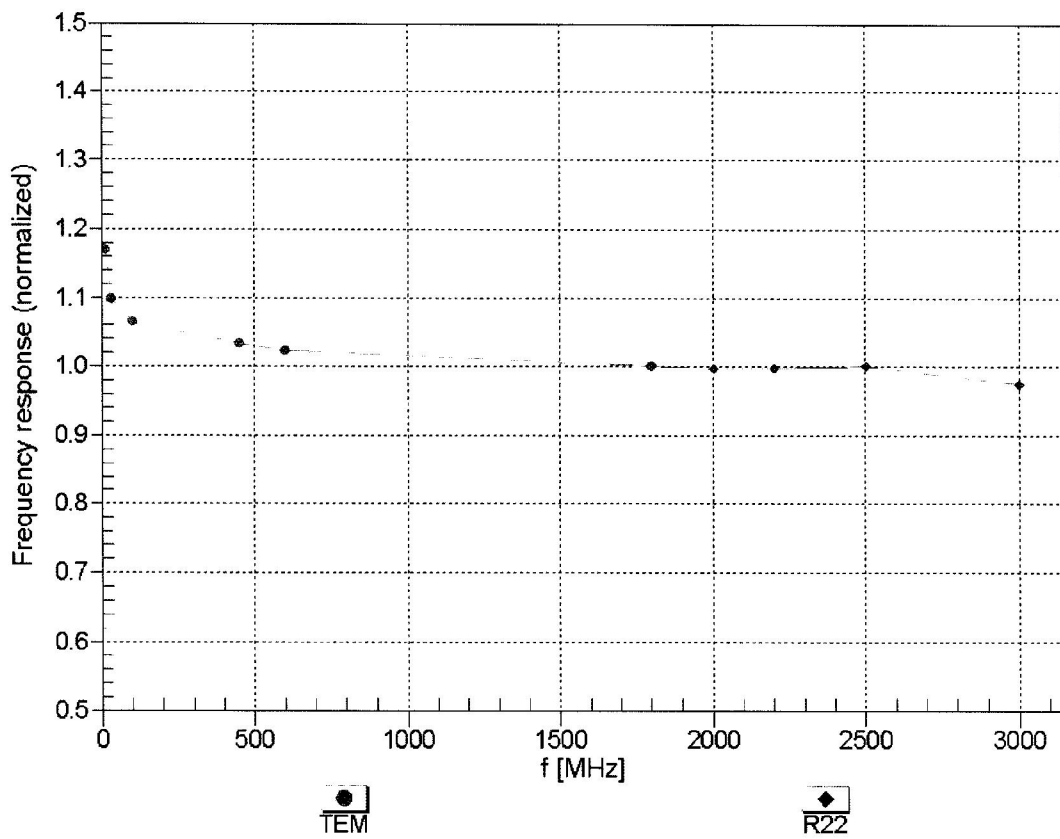
### Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) <sup>C</sup>	Relative Permittivity <sup>F</sup>	Conductivity (S/m) <sup>F</sup>	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	55.5	0.96	9.72	9.72	9.72	0.39	0.94	± 12.0 %
835	55.2	0.97	9.50	9.50	9.50	0.31	1.07	± 12.0 %
900	55.0	1.05	9.48	9.48	9.48	0.35	0.98	± 12.0 %
1750	53.4	1.49	8.00	8.00	8.00	0.43	0.83	± 12.0 %
1900	53.3	1.52	7.67	7.67	7.67	0.19	1.23	± 12.0 %
2000	53.3	1.52	7.78	7.78	7.78	0.35	0.87	± 12.0 %
2450	52.7	1.95	7.21	7.21	7.21	0.76	0.55	± 12.0 %
2600	52.5	2.16	6.89	6.89	6.89	0.80	0.50	± 12.0 %
5200	49.0	5.30	4.63	4.63	4.63	0.43	1.90	± 13.1 %
5300	48.9	5.42	4.31	4.31	4.31	0.48	1.90	± 13.1 %
5500	48.6	5.65	3.94	3.94	3.94	0.50	1.90	± 13.1 %
5600	48.5	5.77	3.86	3.86	3.86	0.50	1.90	± 13.1 %
5800	48.2	6.00	4.09	4.09	4.09	0.55	1.90	± 13.1 %

<sup>C</sup> Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

<sup>F</sup> At frequencies below 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

### Frequency Response of E-Field (TEM-Cell:ifi110 EXX, Waveguide: R22)

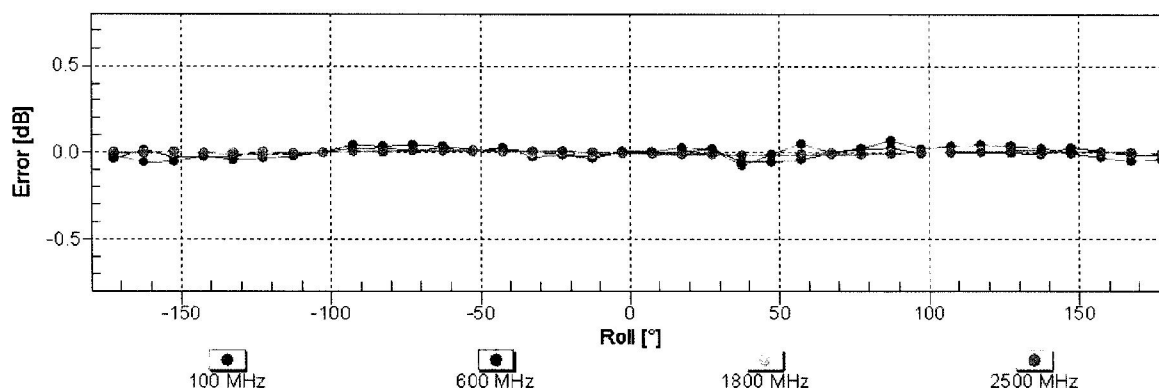
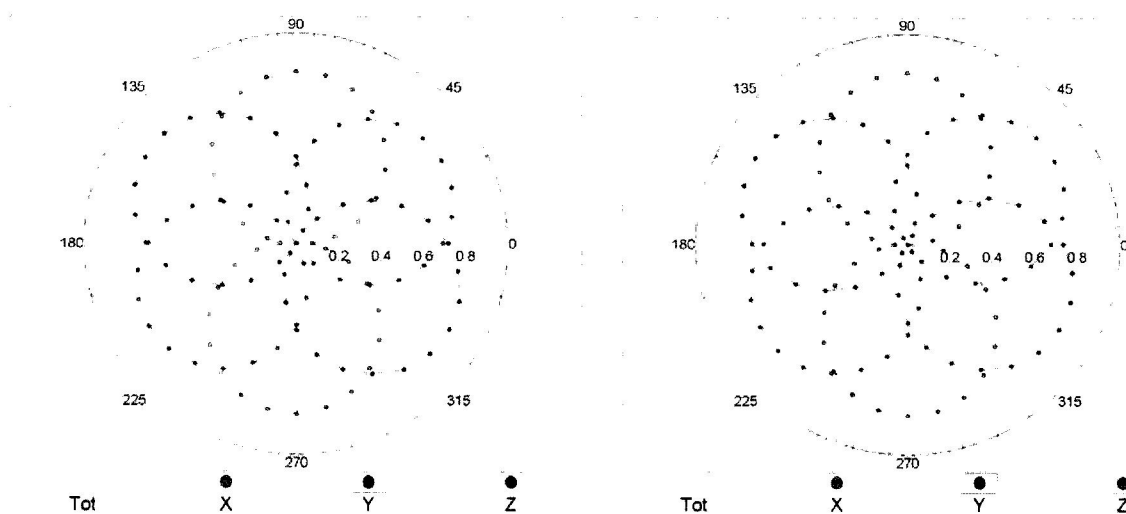


Uncertainty of Frequency Response of E-field:  $\pm 6.3\%$  (k=2)

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

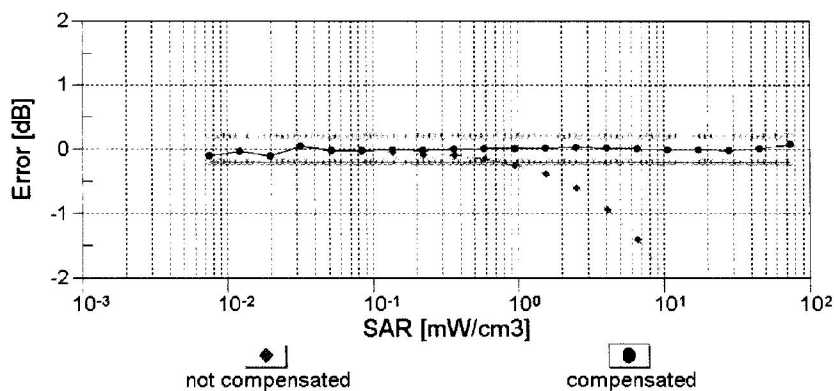
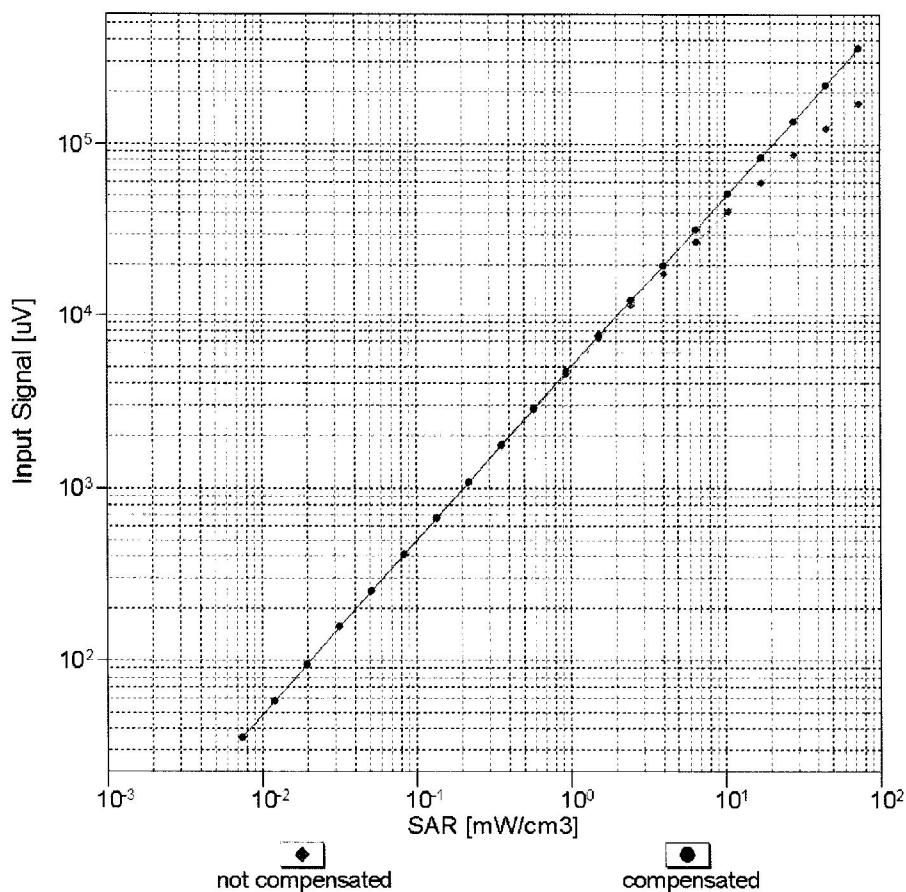
f=600 MHz,TEM

f=1800 MHz,R22



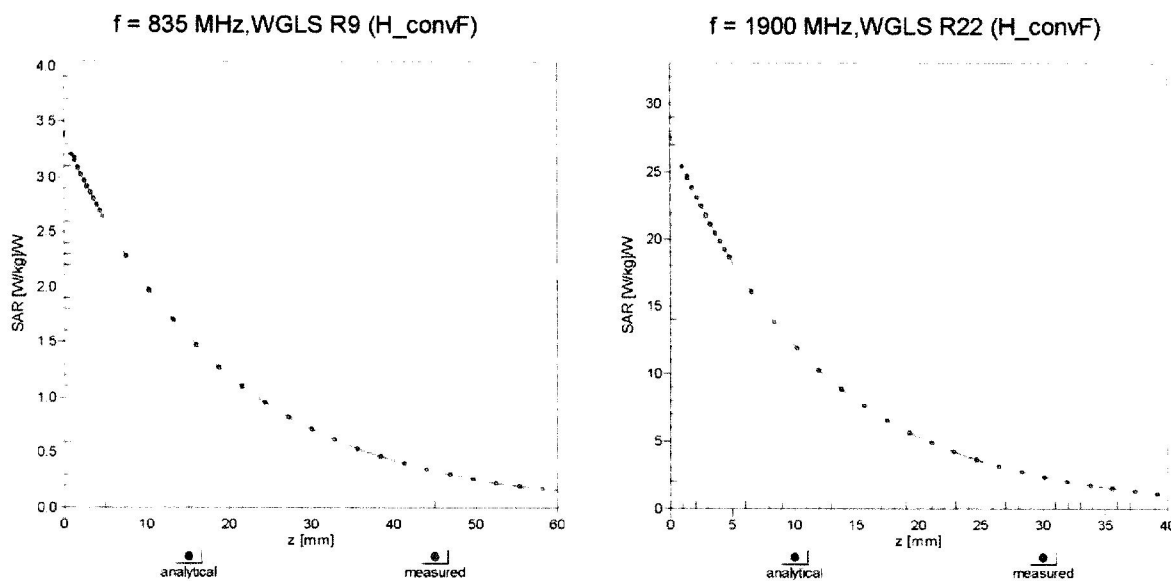
Uncertainty of Axial Isotropy Assessment:  $\pm 0.5\%$  (k=2)

### Dynamic Range f(SAR<sub>head</sub>) (TEM cell , f = 900 MHz)



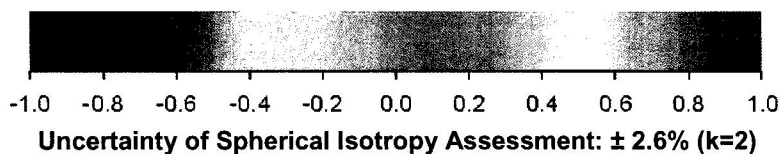
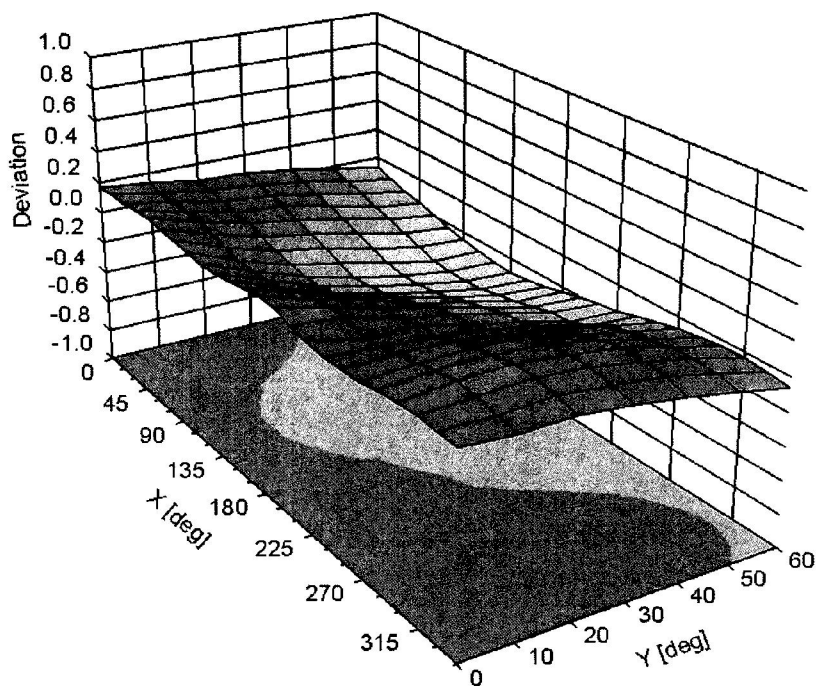
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

## Conversion Factor Assessment



## Deviation from Isotropy in Liquid

Error ( $\phi, \theta$ ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment:  $\pm 2.6\%$  (k=2)



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### Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-42.6
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	2 mm