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## DASY/EASY – Parameters of Probe: EX3DV4 – SN:3789

### Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm( $\mu\text{V}/(\text{V}/\text{m})^2$ ) <sup>A</sup>	0.45	0.53	0.51	$\pm 10.0\%$
DCP(mV) <sup>B</sup>	102.5	101.2	99.3	

### Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB $\sqrt{\mu\text{V}}$	C	D dB	VR mV	Unc <sup>E</sup> (k=2)
0	CW	X	0.0	0.0	1.0	0.00	162.8	$\pm 2.1\%$
		Y	0.0	0.0	1.0		178.0	
		Z	0.0	0.0	1.0		172.3	

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 Norm X, Y, Z do not affect the E<sup>2</sup>-field uncertainty inside TSL (see Page 4).

<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.



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### 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 <sup>G</sup>	Depth <sup>G</sup> (mm)	Unct. (k=2)
750	41.9	0.89	9.04	9.04	9.04	0.25	0.89	± 12.7%
835	41.5	0.90	8.64	8.64	8.64	0.10	1.42	± 12.7%
1450	40.5	1.20	7.90	7.90	7.90	0.13	1.27	± 12.7%
1750	40.1	1.37	7.71	7.71	7.71	0.19	1.10	± 12.7%
1900	40.0	1.40	7.38	7.38	7.38	0.19	1.18	± 12.7%
2300	39.5	1.67	7.20	7.20	7.20	0.65	0.66	± 12.7%
2450	39.2	1.80	6.98	6.98	6.98	0.62	0.70	± 12.7%
2600	39.0	1.96	6.80	6.80	6.80	0.65	0.68	± 12.7%
3300	38.2	2.71	6.49	6.49	6.49	0.54	0.85	± 13.9%
3500	37.9	2.91	6.40	6.40	6.40	0.35	1.15	± 13.9%
3700	37.7	3.12	6.15	6.15	6.15	0.35	1.30	± 13.9%
3900	37.5	3.32	6.16	6.16	6.16	0.35	1.45	± 13.9%
4100	37.2	3.53	6.22	6.22	6.22	0.40	1.15	± 13.9%
4400	36.9	3.84	6.03	6.03	6.03	0.40	1.25	± 13.9%
4600	36.7	4.04	5.98	5.98	5.98	0.50	1.10	± 13.9%
4800	36.4	4.25	5.93	5.93	5.93	0.50	1.15	± 13.9%
5250	35.9	4.71	5.11	5.11	5.11	0.45	1.40	± 13.9%
5600	35.5	5.07	4.53	4.53	4.53	0.55	1.22	± 13.9%
5750	35.4	5.22	4.67	4.67	4.67	0.55	1.22	± 13.9%

<sup>C</sup> Frequency validity above 300 MHz of ±100MHz only applies for DASY v4.4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

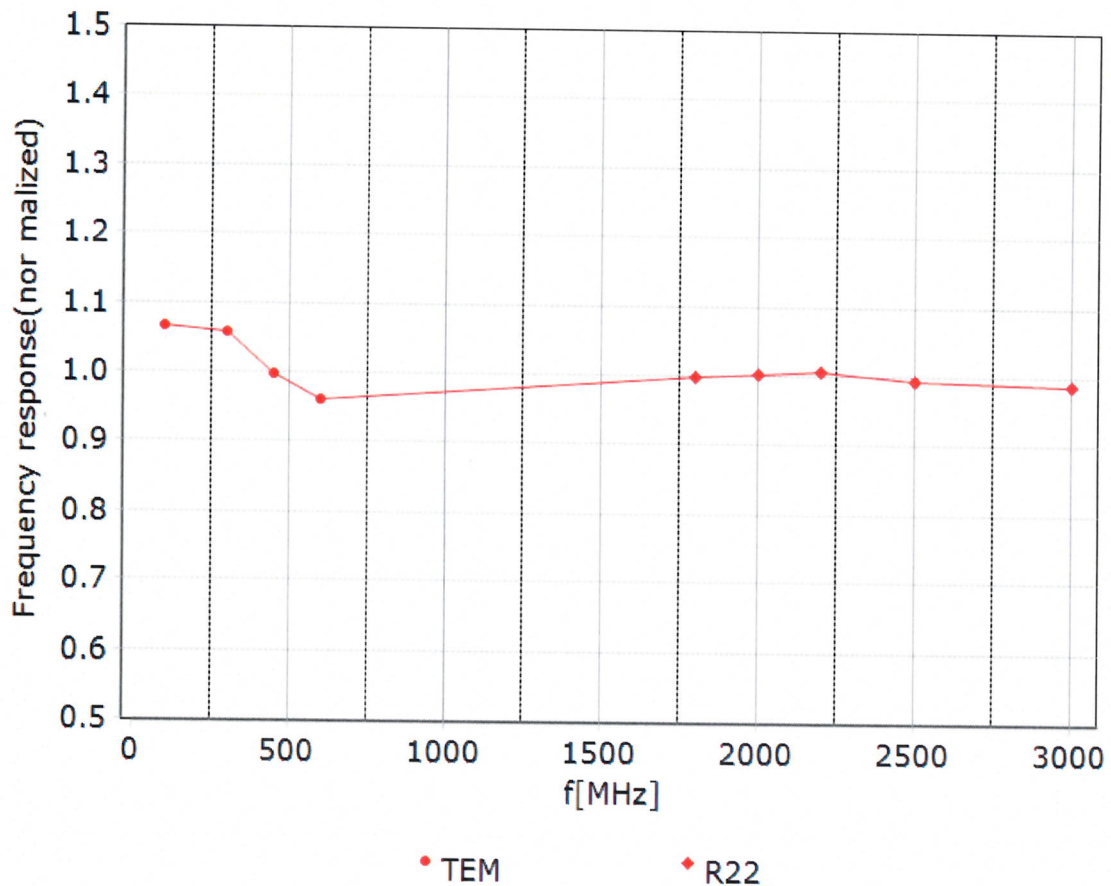
<sup>F</sup> At frequency up to 6 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

<sup>G</sup> Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for the frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.



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



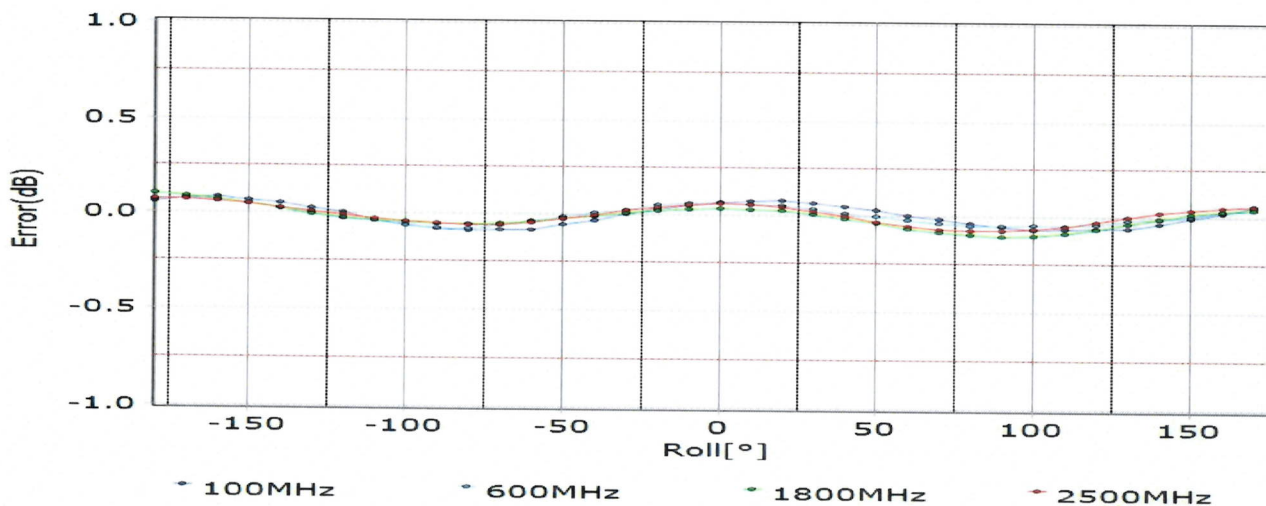
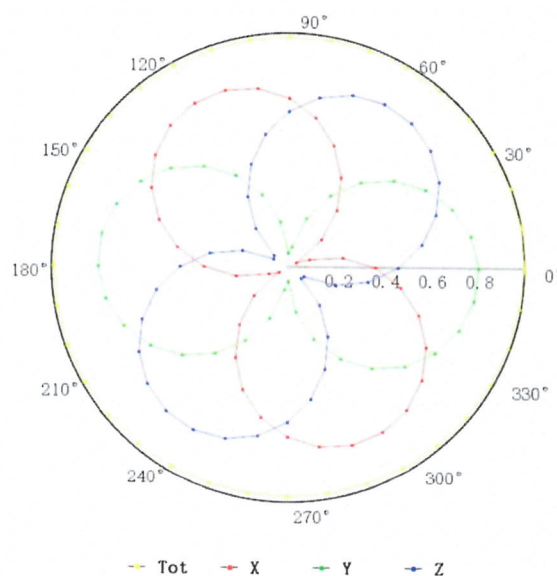
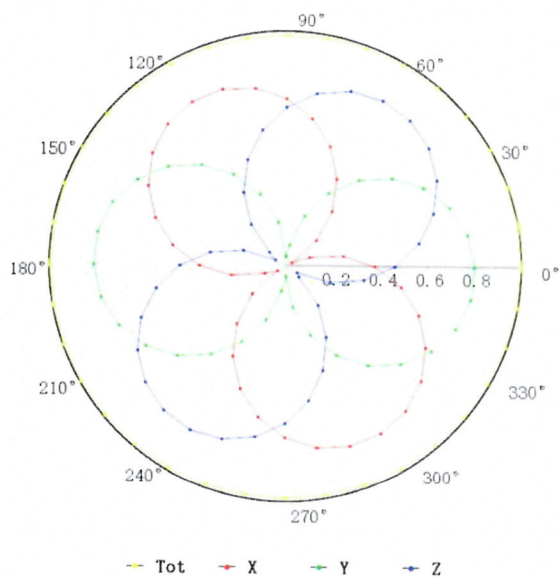
Uncertainty of Frequency Response of E-field:  $\pm 7.4\%$  ( $k=2$ )

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

**f=600 MHz, TEM**

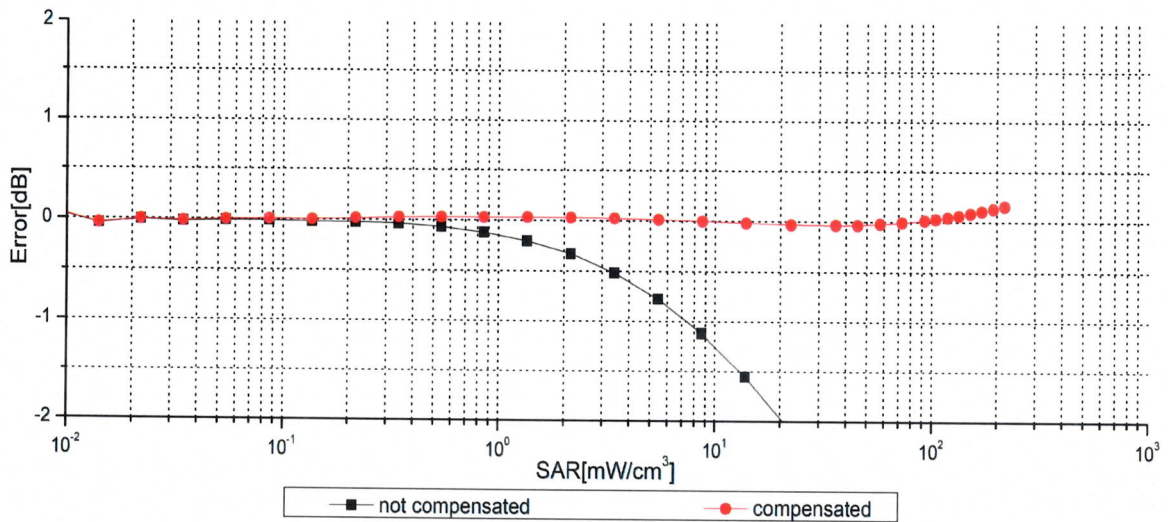
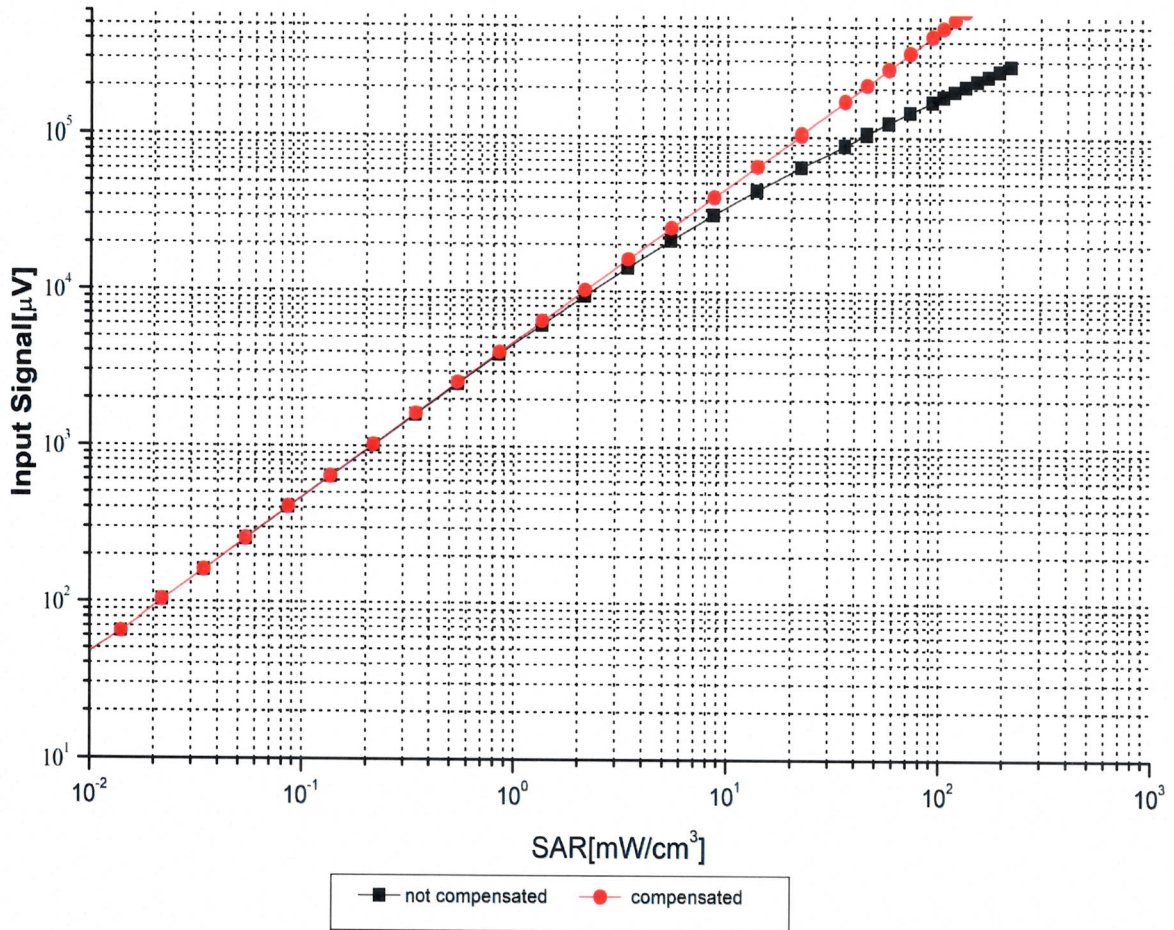
**f=1800 MHz, R22**



Uncertainty of Axial Isotropy Assessment:  $\pm 1.2\%$  ( $k=2$ )

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



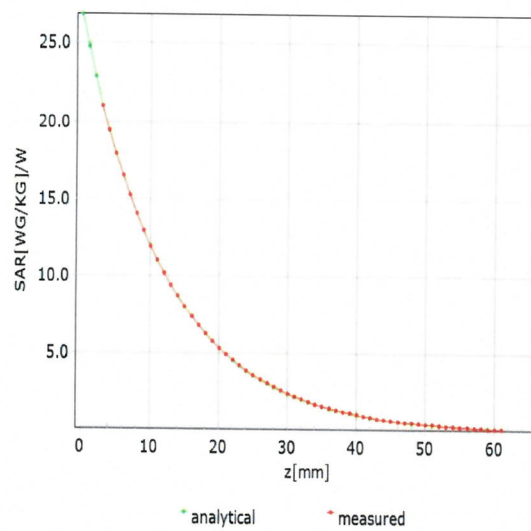
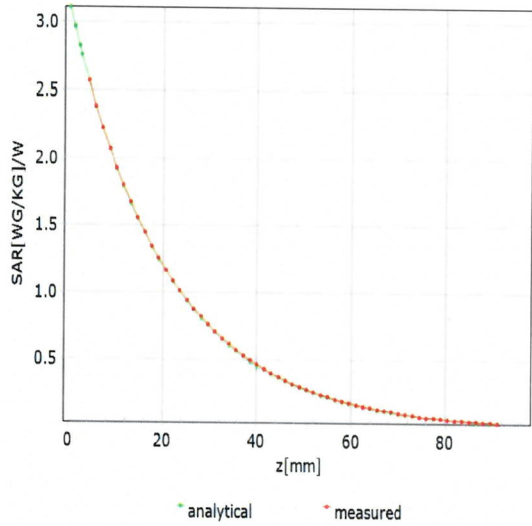
**Uncertainty of Linearity Assessment: ±0.9% (k=2)**

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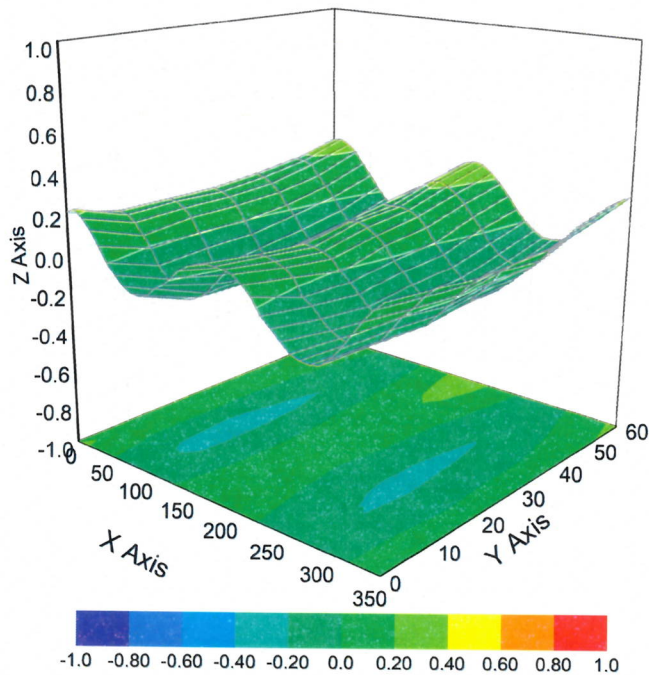
## Conversion Factor Assessment

f=750 MHz,WGLS R9(H\_convF)

f=1750 MHz,WGLS R22(H\_convF)



## Deviation from Isotropy in Liquid



Uncertainty of Spherical Isotropy Assessment:  $\pm 3.2\%$  ( $k=2$ )



In Collaboration with

**s p e a g**  
CALIBRATION LABORATORY



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### Other Probe Parameters

<b>Sensor Arrangement</b>	<b>Triangular</b>
<b>Connector Angle (°)</b>	<b>45.1</b>
<b>Mechanical Surface Detection Mode</b>	<b>enabled</b>
<b>Optical Surface Detection Mode</b>	<b>disable</b>
<b>Probe Overall Length</b>	<b>337mm</b>
<b>Probe Body Diameter</b>	<b>10mm</b>
<b>Tip Length</b>	<b>9mm</b>
<b>Tip Diameter</b>	<b>2.5mm</b>
<b>Probe Tip to Sensor X Calibration Point</b>	<b>1mm</b>
<b>Probe Tip to Sensor Y Calibration Point</b>	<b>1mm</b>
<b>Probe Tip to Sensor Z Calibration Point</b>	<b>1mm</b>
<b>Recommended Measurement Distance from Surface</b>	<b>1.4mm</b>

Dipole D2450V2 SN 733				
Head Liquid				
Date of Measurement	Return Loss(dB)	$\Delta$ %	Impedance ( $\Omega$ )	$\Delta\Omega()$
2022/11/2	-28.7	/	50.2	/
2024/10/31	-28.1	2.14%	50.7	0.5 $\Omega$

- End of Appendix -