



In Collaboration with

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CALIBRATION LABORATORY

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DASY/EASY – Parameters of Probe: EX3DV4 – SN:7515

Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz] ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unct. (k=2)
750	41.9	0.89	10.09	10.09	10.09	0.40	0.75	± 12.1%
835	41.5	0.90	9.74	9.74	9.74	0.16	1.15	± 12.1%
900	41.5	0.97	9.60	9.60	9.60	0.17	1.22	± 12.1%
1750	40.1	1.37	8.53	8.53	8.53	0.26	1.01	± 12.1%
1900	40.0	1.40	8.13	8.13	8.13	0.26	1.06	± 12.1%
2000	40.0	1.40	8.18	8.18	8.18	0.23	1.12	± 12.1%
2300	39.5	1.67	7.74	7.74	7.74	0.52	0.76	± 12.1%
2450	39.2	1.80	7.34	7.34	7.34	0.38	0.98	± 12.1%
2600	39.0	1.96	7.30	7.30	7.30	0.53	0.80	± 12.1%
3300	38.2	2.71	7.12	7.12	7.12	0.41	1.02	± 13.3%
3500	37.9	2.91	6.78	6.78	6.78	0.47	0.97	± 13.3%
3700	37.7	3.12	6.45	6.45	6.45	0.40	1.15	± 13.3%
3900	37.5	3.32	6.56	6.56	6.56	0.40	1.33	± 13.3%
4100	37.2	3.53	6.54	6.54	6.54	0.40	1.15	± 13.3%
4200	37.1	3.63	6.43	6.43	6.43	0.40	1.25	± 13.3%
4400	36.9	3.84	6.34	6.34	6.34	0.35	1.35	± 13.3%
4600	36.7	4.04	6.23	6.23	6.23	0.45	1.25	± 13.3%
4800	36.4	4.25	6.20	6.20	6.20	0.40	1.41	± 13.3%
4950	36.3	4.40	5.87	5.87	5.87	0.45	1.30	± 13.3%
5250	35.9	4.71	5.54	5.54	5.54	0.50	1.25	± 13.3%
5600	35.5	5.07	4.85	4.85	4.85	0.55	1.35	± 13.3%
5750	35.4	5.22	4.86	4.86	4.86	0.55	1.42	± 13.3%

^C 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.

^F At frequency below 3 GHz, the validity of tissue parameters (ϵ and σ) 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 (ϵ and σ) is restricted to ±5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

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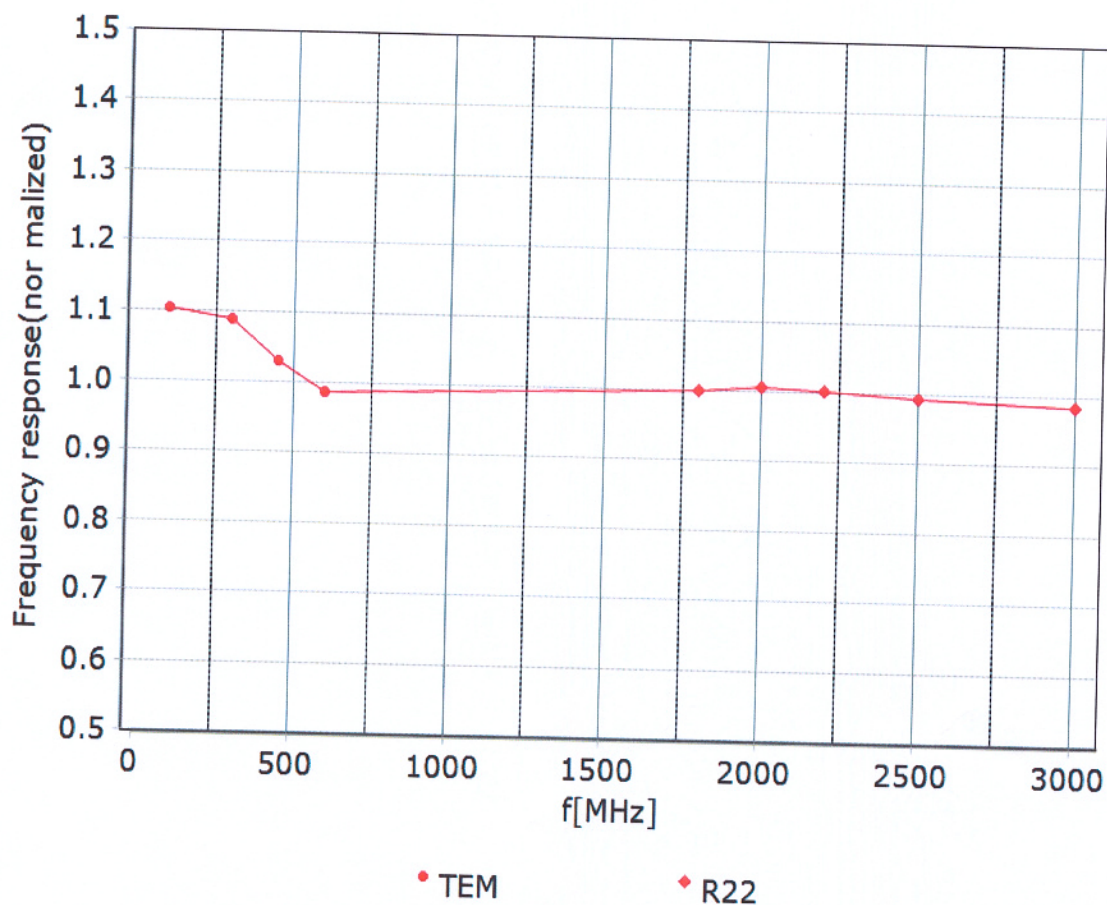
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Frequency Response of E-Field (TEM-Cell: ifi110 EXX, Waveguide: R22)



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

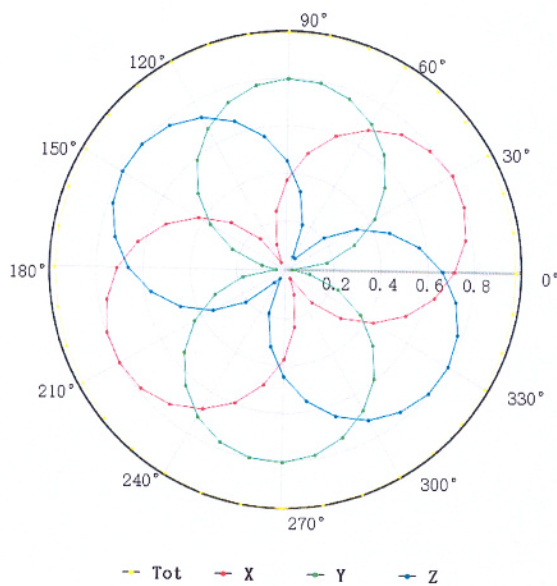


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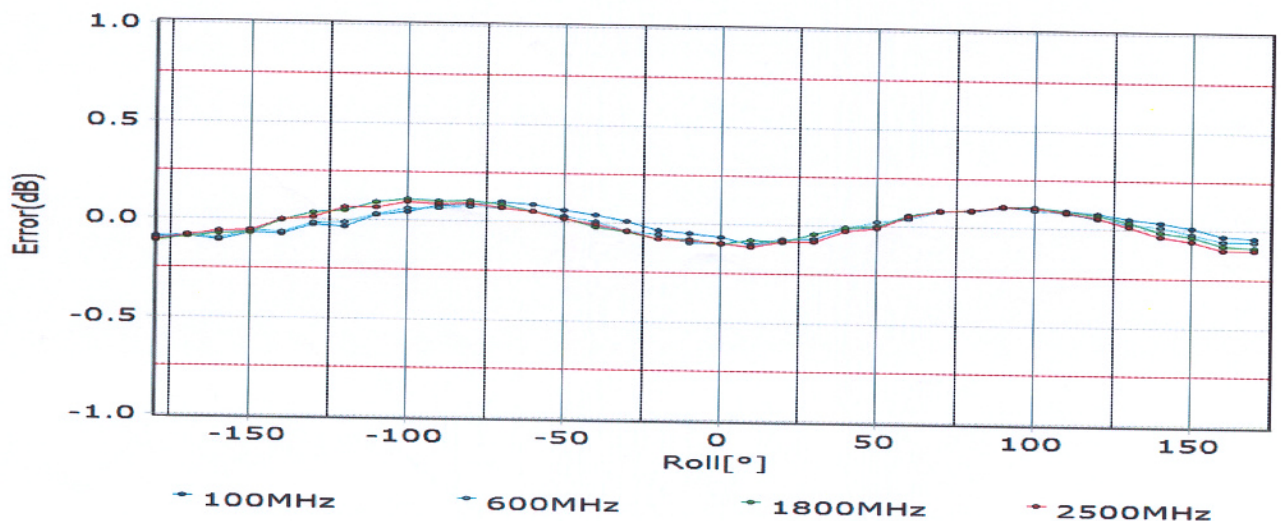
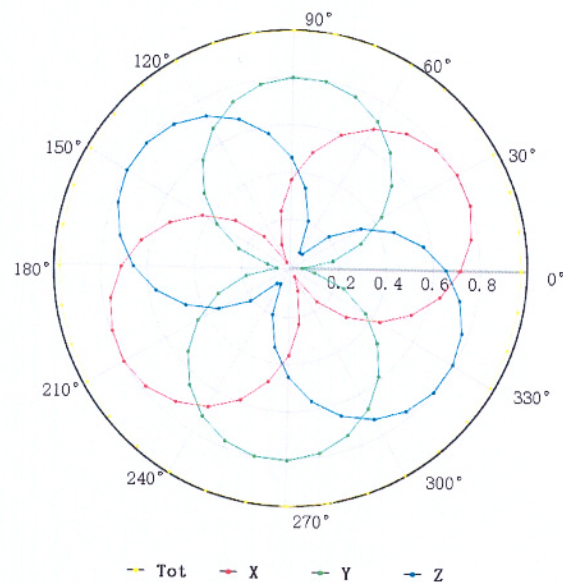
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Receiving Pattern (Φ), $\theta=0^\circ$

f=600 MHz, TEM



f=1800 MHz, R22



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

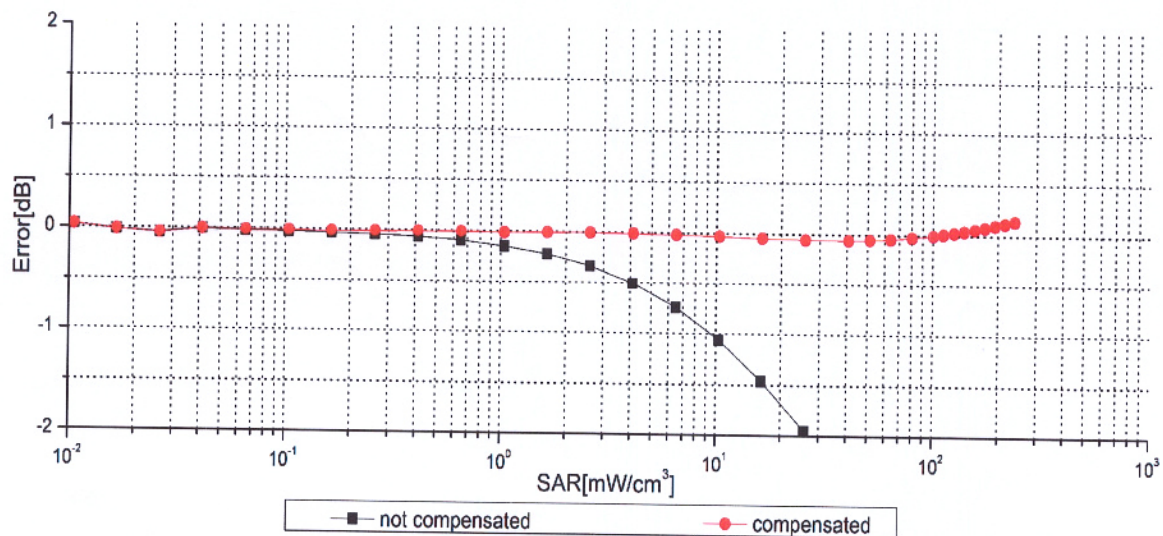
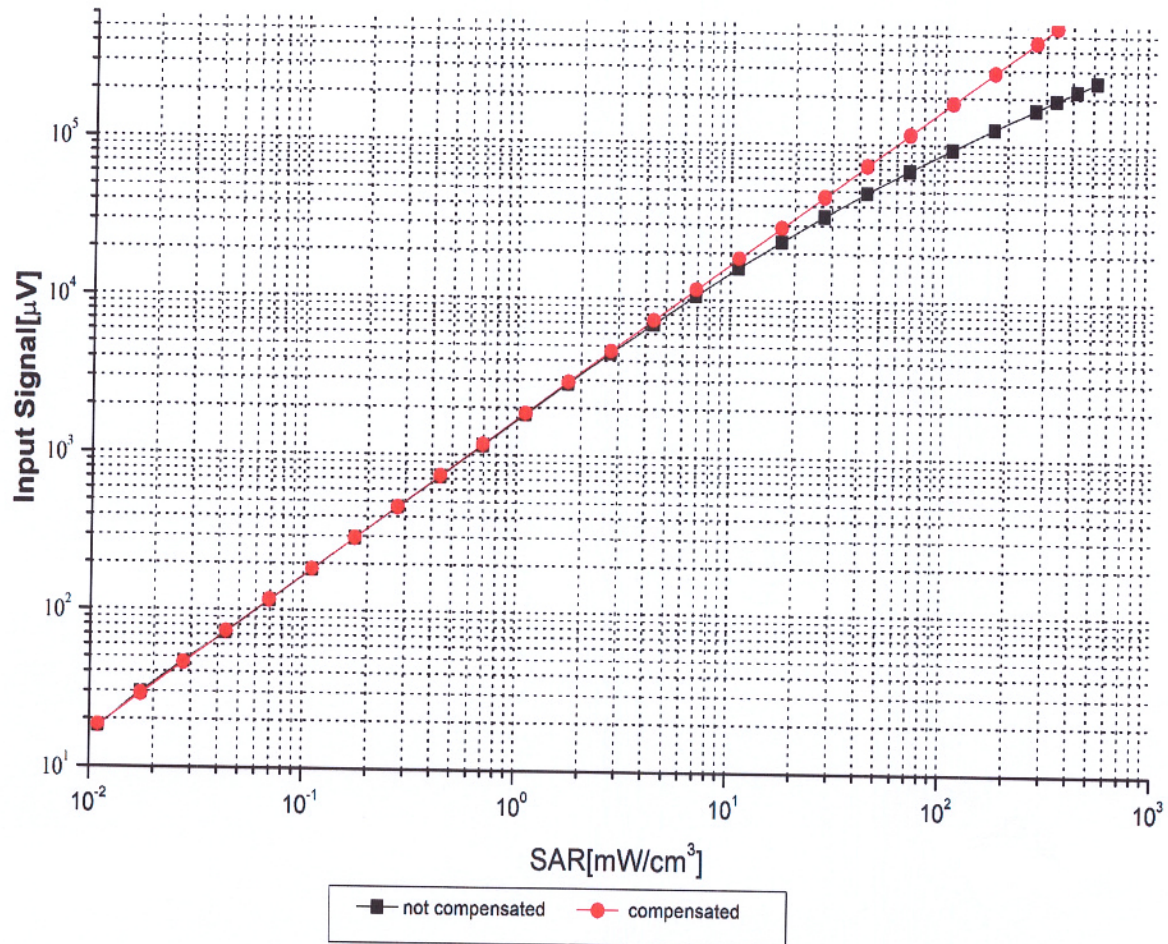


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Dynamic Range f(SAR_{head}) (TEM cell, f = 900 MHz)



Uncertainty of Linearity Assessment: $\pm 0.9\%$ ($k=2$)



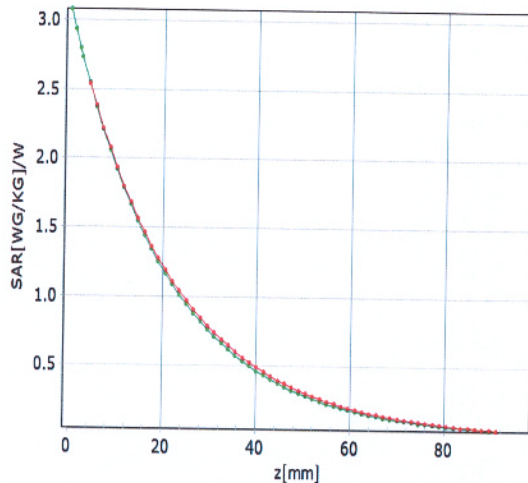
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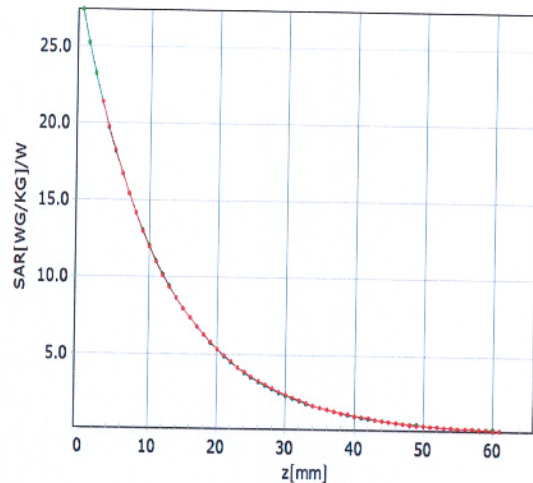
Conversion Factor Assessment

f=750 MHz,WGLS R9(H_convF)

f=1750 MHz,WGLS R22(H_convF)

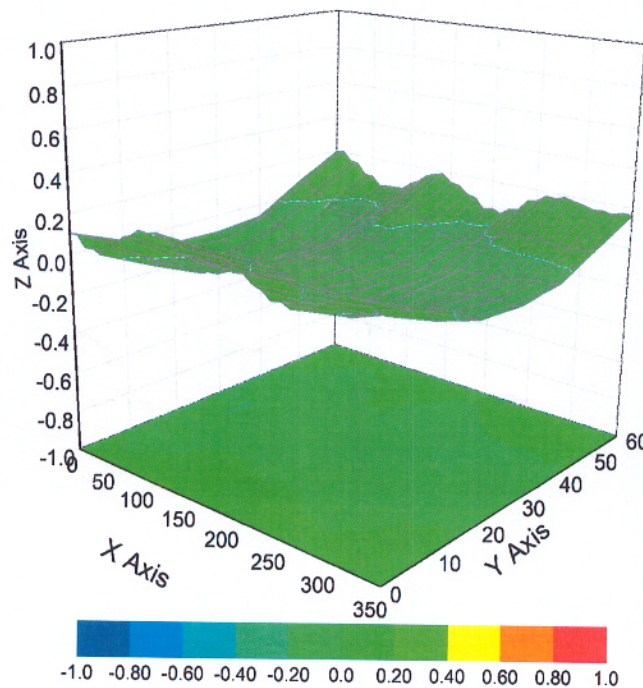


+ analytical + measured



+ analytical + measured

Deviation from Isotropy in Liquid



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