



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
 Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504  
 E-mail: cttl@chinattl.com [Http://www.chinattl.cn](http://www.chinattl.cn)

## DASY/EASY – Parameters of Probe: EX3DV4 – SN:3826

### Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm( $\mu\text{V}/(\text{V}/\text{m})^2$ ) <sup>A</sup>	0.48	0.41	0.35	±10.0%
DCP(mV) <sup>B</sup>	99.4	99.4	101.3	

### 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	168.0	±2.0%
		Y	0.0	0.0	1.0		152.4	
		Z	0.0	0.0	1.0		137.5	

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	9.43	9.43	9.43	0.40	0.78	±12.1%
835	41.5	0.90	9.15	9.15	9.15	0.16	1.30	±12.1%
900	41.5	0.97	9.12	9.12	9.12	0.16	1.35	±12.1%
1750	40.1	1.37	7.92	7.92	7.92	0.25	0.97	±12.1%
1900	40.0	1.40	7.75	7.75	7.75	0.22	1.15	±12.1%
2000	40.0	1.40	7.82	7.82	7.82	0.22	1.11	±12.1%
2300	39.5	1.67	7.44	7.44	7.44	0.46	0.78	±12.1%
2450	39.2	1.80	7.22	7.22	7.22	0.43	0.84	±12.1%
2600	39.0	1.96	6.93	6.93	6.93	0.47	0.81	±12.1%
3300	38.2	2.71	6.75	6.75	6.75	0.40	0.98	±13.3%
3500	37.9	2.91	6.61	6.61	6.61	0.44	0.94	±13.3%
3700	37.7	3.12	6.31	6.31	6.31	0.43	1.02	±13.3%
3900	37.5	3.32	6.21	6.21	6.21	0.35	1.35	±13.3%
4100	37.2	3.53	6.30	6.30	6.30	0.35	1.25	±13.3%
4200	37.1	3.63	6.15	6.15	6.15	0.35	1.35	±13.3%
4400	36.9	3.84	6.06	6.06	6.06	0.35	1.35	±13.3%
4600	36.7	4.04	5.92	5.92	5.92	0.40	1.30	±13.3%
4800	36.4	4.25	5.88	5.88	5.88	0.40	1.32	±13.3%
4950	36.3	4.40	5.66	5.66	5.66	0.40	1.35	±13.3%
5250	35.9	4.71	5.06	5.06	5.06	0.45	1.35	±13.3%
5600	35.5	5.07	4.68	4.68	4.68	0.45	1.40	±13.3%
5750	35.4	5.22	4.74	4.74	4.74	0.45	1.50	±13.3%

<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.

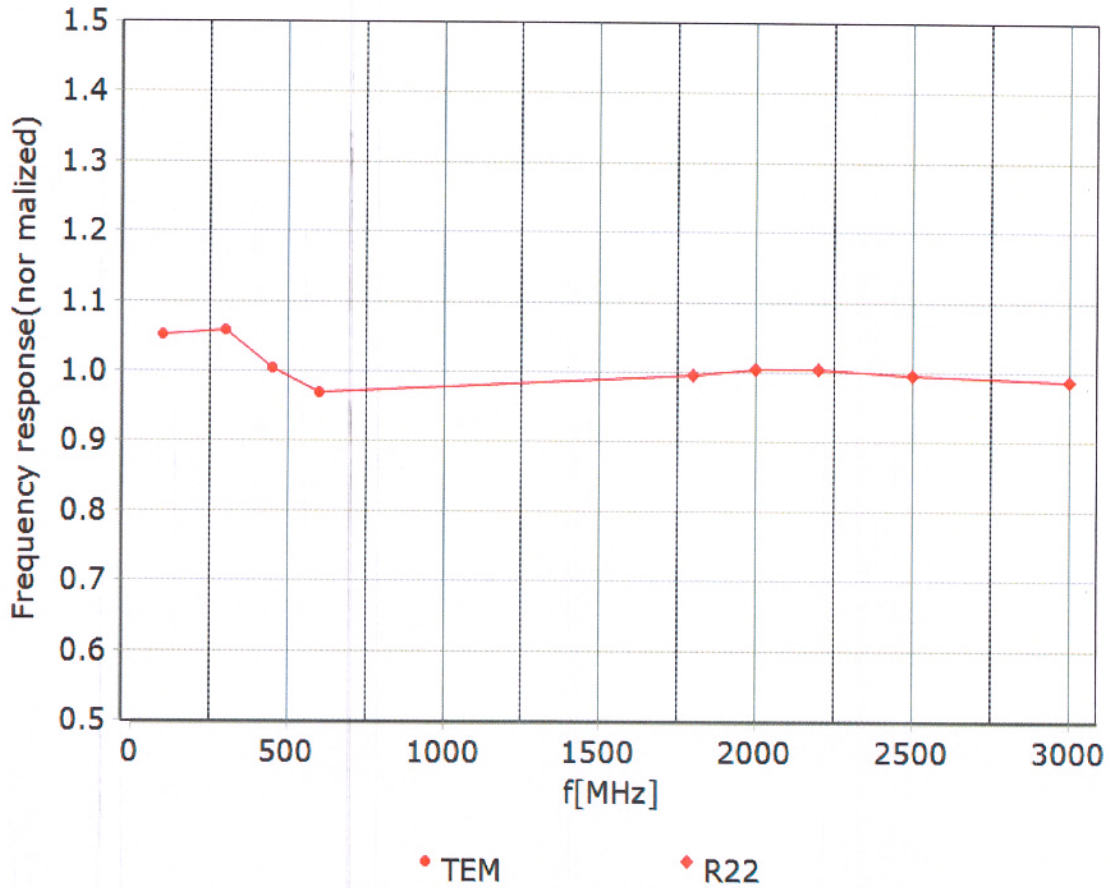
<sup>F</sup> At frequency below 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) is restricted to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

<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:  $\pm 7.4\%$  ( $k=2$ )

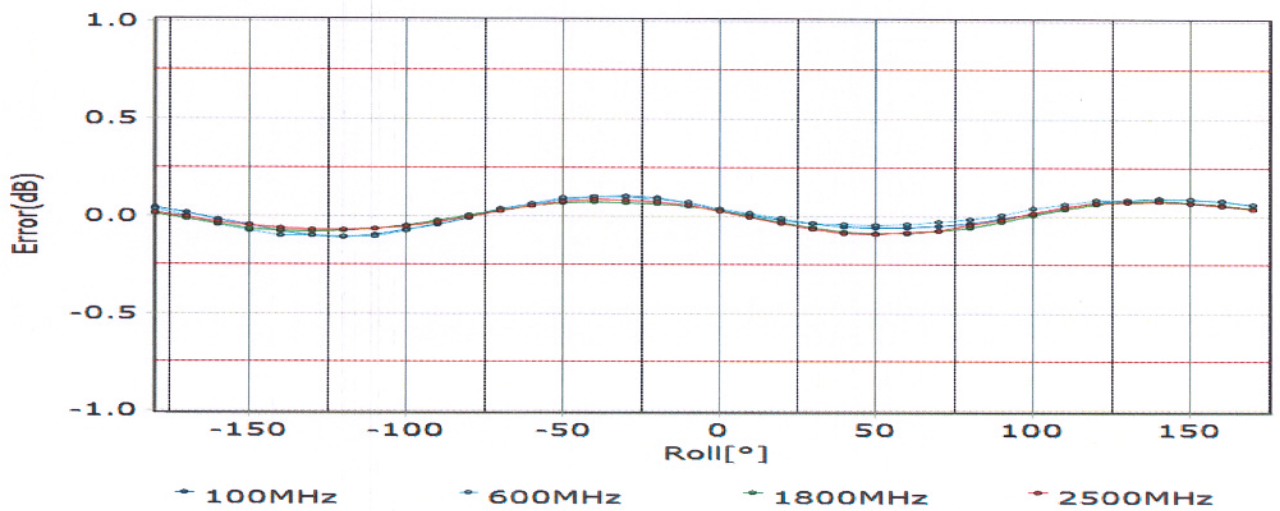
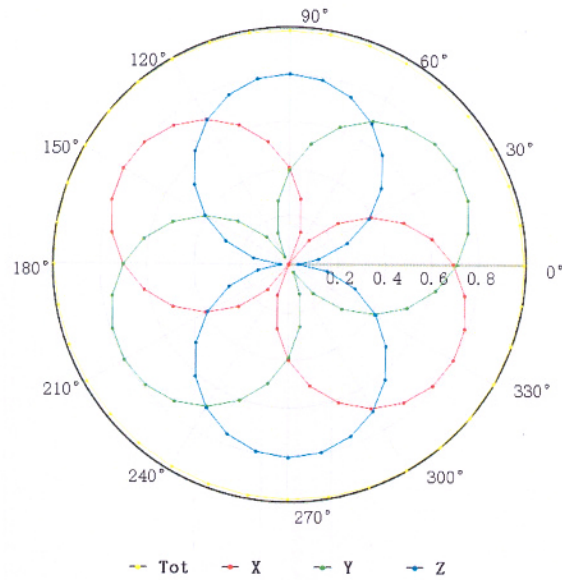
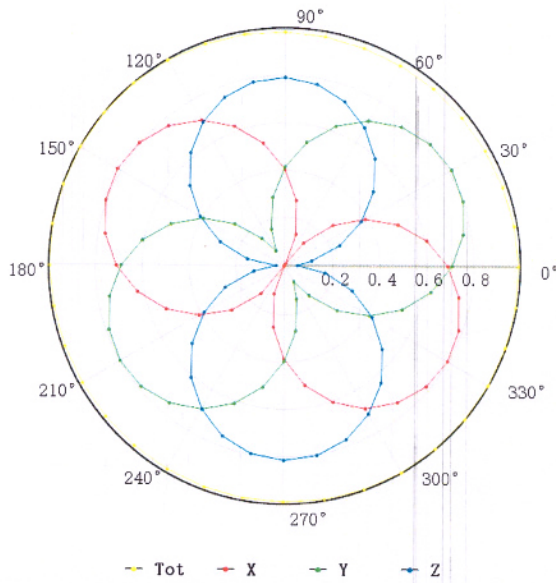




## Receiving Pattern ( $\Phi$ ), $\theta=0^\circ$

f=600 MHz, TEM

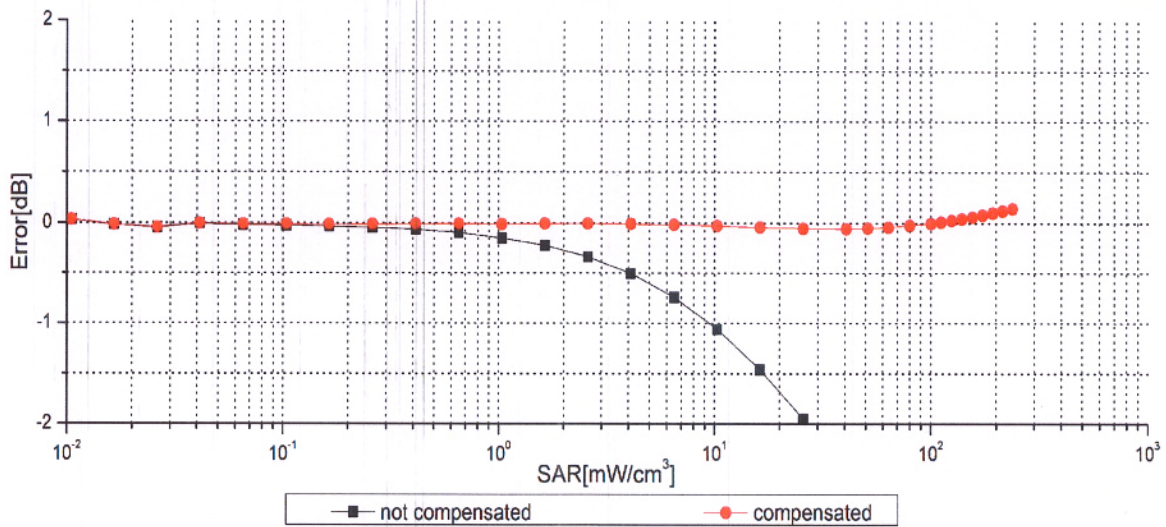
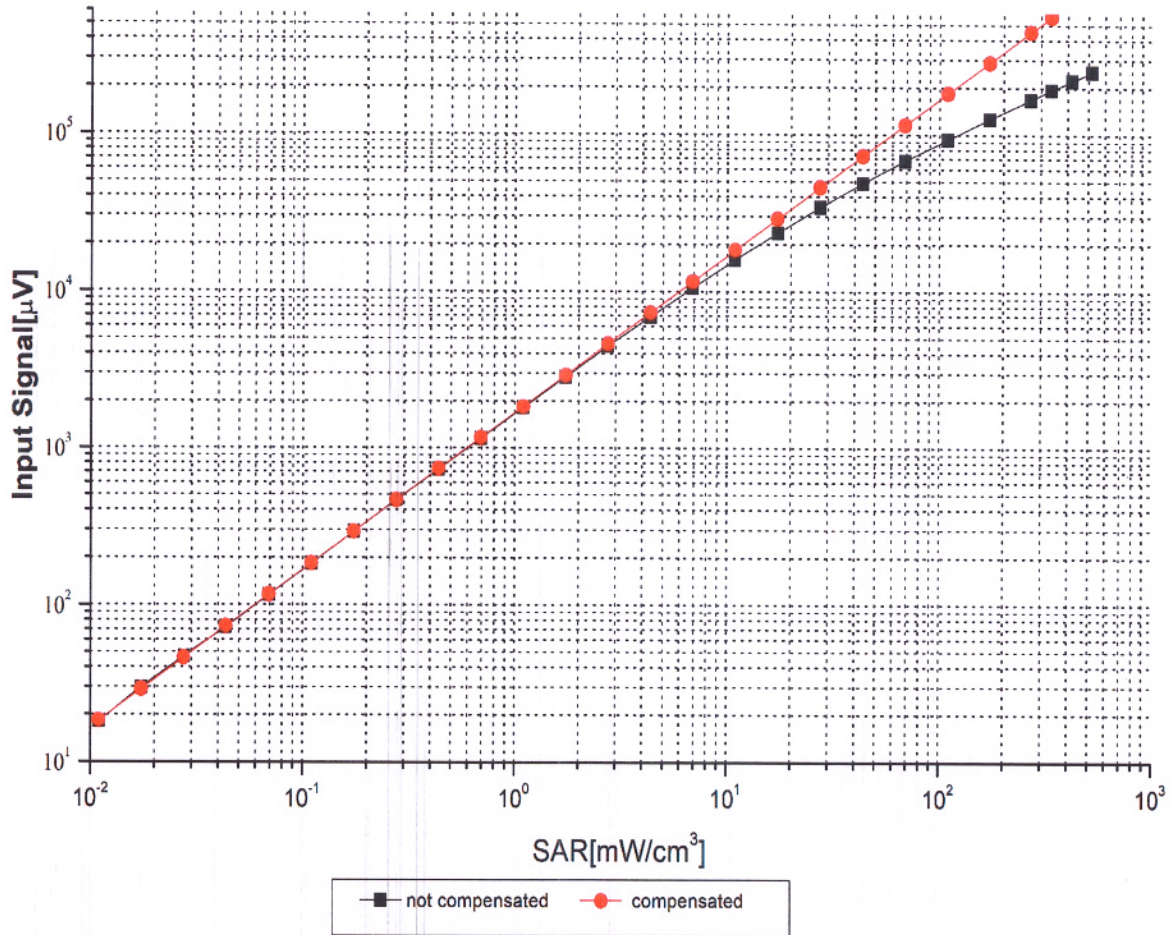
f=1800 MHz, R22



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



## Dynamic Range $f(\text{SAR}_{\text{head}})$ (TEM cell, $f = 900 \text{ MHz}$ )



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

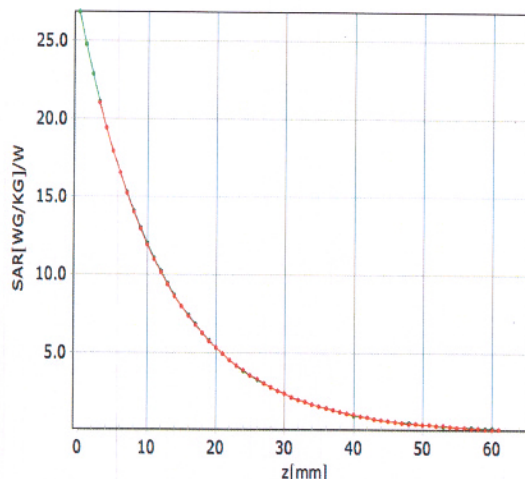
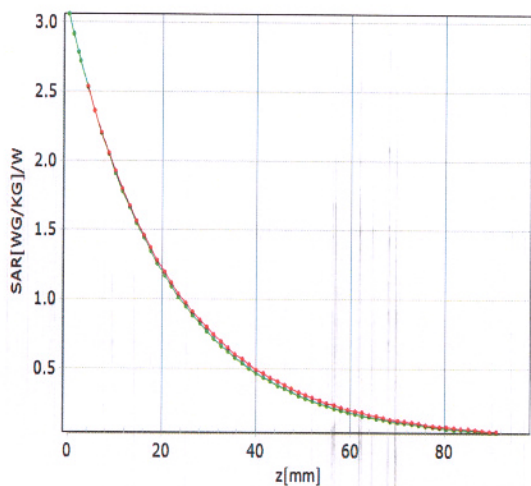




## Conversion Factor Assessment

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

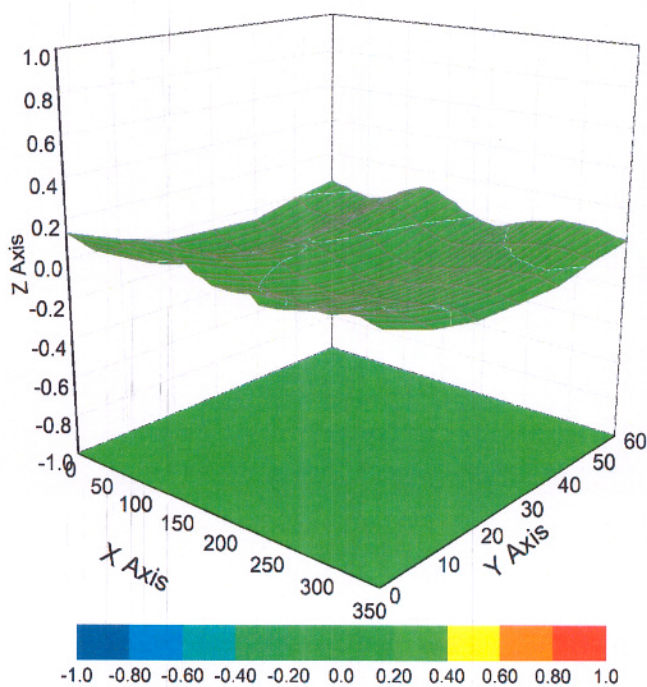
f=1750 MHz,WGLS R22(H\_convF)



+ analytical + measured

+ analytical + measured

## Deviation from Isotropy in Liquid



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



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### Other Probe Parameters

<b>Sensor Arrangement</b>	<b>Triangular</b>
<b>Connector Angle (°)</b>	<b>52.2</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>