



## DASY/EASY – Parameters of Probe: EX3DV4 – SN: 3887

### Basic Calibration Parameters

|                                                          | Sensor X | Sensor Y | Sensor Z | Unc (k=2) |
|----------------------------------------------------------|----------|----------|----------|-----------|
| Norm( $\mu\text{V}/(\text{V}/\text{m})^2$ ) <sup>A</sup> | 0.38     | 0.40     | 0.54     | ±10.0%    |
| DCP(mV) <sup>B</sup>                                     | 102.8    | 101.1    | 101.9    |           |

### Modulation Calibration Parameters

| UID | Communication System Name |   | A<br>dB | B<br>dB $\sqrt{\mu\text{V}}$ | C   | D<br>dB | VR<br>mV | Unc <sup>E</sup><br>(k=2) |
|-----|---------------------------|---|---------|------------------------------|-----|---------|----------|---------------------------|
| 0   | CW                        | X | 0.0     | 0.0                          | 1.0 | 0.00    | 141.0    | ±1.9%                     |
|     |                           | Y | 0.0     | 0.0                          | 1.0 |         | 147.5    |                           |
|     |                           | Z | 0.0     | 0.0                          | 1.0 |         | 181.8    |                           |

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 5 and Page 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: 3887

### 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                            | 9.93    | 9.93    | 9.93    | 0.40               | 0.80                    | ± 12.1%     |
| 835                  | 41.5                               | 0.90                            | 9.62    | 9.62    | 9.62    | 0.12               | 1.42                    | ± 12.1%     |
| 900                  | 41.5                               | 0.97                            | 9.48    | 9.48    | 9.48    | 0.17               | 1.22                    | ± 12.1%     |
| 1450                 | 40.5                               | 1.20                            | 8.79    | 8.79    | 8.79    | 0.10               | 1.39                    | ± 12.1%     |
| 1750                 | 40.1                               | 1.37                            | 8.19    | 8.19    | 8.19    | 0.22               | 1.08                    | ± 12.1%     |
| 1900                 | 40.0                               | 1.40                            | 7.97    | 7.97    | 7.97    | 0.30               | 0.91                    | ± 12.1%     |
| 2000                 | 40.0                               | 1.40                            | 8.10    | 8.10    | 8.10    | 0.22               | 1.02                    | ± 12.1%     |
| 2300                 | 39.5                               | 1.67                            | 7.85    | 7.85    | 7.85    | 0.42               | 0.79                    | ± 12.1%     |
| 2450                 | 39.2                               | 1.80                            | 7.55    | 7.55    | 7.55    | 0.47               | 0.78                    | ± 12.1%     |
| 2600                 | 39.0                               | 1.96                            | 7.46    | 7.46    | 7.46    | 0.59               | 0.69                    | ± 12.1%     |
| 5250                 | 35.9                               | 4.71                            | 5.52    | 5.52    | 5.52    | 0.40               | 1.35                    | ± 13.3%     |
| 5600                 | 35.5                               | 5.07                            | 4.73    | 4.73    | 4.73    | 0.40               | 1.50                    | ± 13.3%     |
| 5750                 | 35.4                               | 5.22                            | 5.04    | 5.04    | 5.04    | 0.45               | 1.30                    | ± 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.

## DASY/EASY – Parameters of Probe: EX3DV4 – SN: 3887

### 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 <sup>G</sup> | Depth <sup>G</sup> (mm) | Unct. (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|--------------------|-------------------------|-------------|
| 750                  | 55.5                               | 0.96                            | 9.96    | 9.96    | 9.96    | 0.40               | 0.80                    | ± 12.1%     |
| 835                  | 55.2                               | 0.97                            | 9.66    | 9.66    | 9.66    | 0.16               | 1.42                    | ± 12.1%     |
| 900                  | 55.0                               | 1.05                            | 9.54    | 9.54    | 9.54    | 0.19               | 1.31                    | ± 12.1%     |
| 1450                 | 54.0                               | 1.30                            | 8.57    | 8.57    | 8.57    | 0.13               | 1.41                    | ± 12.1%     |
| 1750                 | 53.4                               | 1.49                            | 7.97    | 7.97    | 7.97    | 0.18               | 1.20                    | ± 12.1%     |
| 1900                 | 53.3                               | 1.52                            | 7.65    | 7.65    | 7.65    | 0.19               | 1.20                    | ± 12.1%     |
| 2000                 | 53.3                               | 1.52                            | 7.99    | 7.99    | 7.99    | 0.18               | 1.23                    | ± 12.1%     |
| 2300                 | 52.9                               | 1.81                            | 7.63    | 7.63    | 7.63    | 0.44               | 0.89                    | ± 12.1%     |
| 2450                 | 52.7                               | 1.95                            | 7.49    | 7.49    | 7.49    | 0.54               | 0.79                    | ± 12.1%     |
| 2600                 | 52.5                               | 2.16                            | 7.15    | 7.15    | 7.15    | 0.31               | 1.18                    | ± 12.1%     |
| 5250                 | 48.9                               | 5.36                            | 5.09    | 5.09    | 5.09    | 0.48               | 1.27                    | ± 13.3%     |
| 5600                 | 48.5                               | 5.77                            | 4.34    | 4.34    | 4.34    | 0.51               | 1.39                    | ± 13.3%     |
| 5750                 | 48.3                               | 5.94                            | 4.36    | 4.36    | 4.36    | 0.53               | 1.42                    | ± 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.

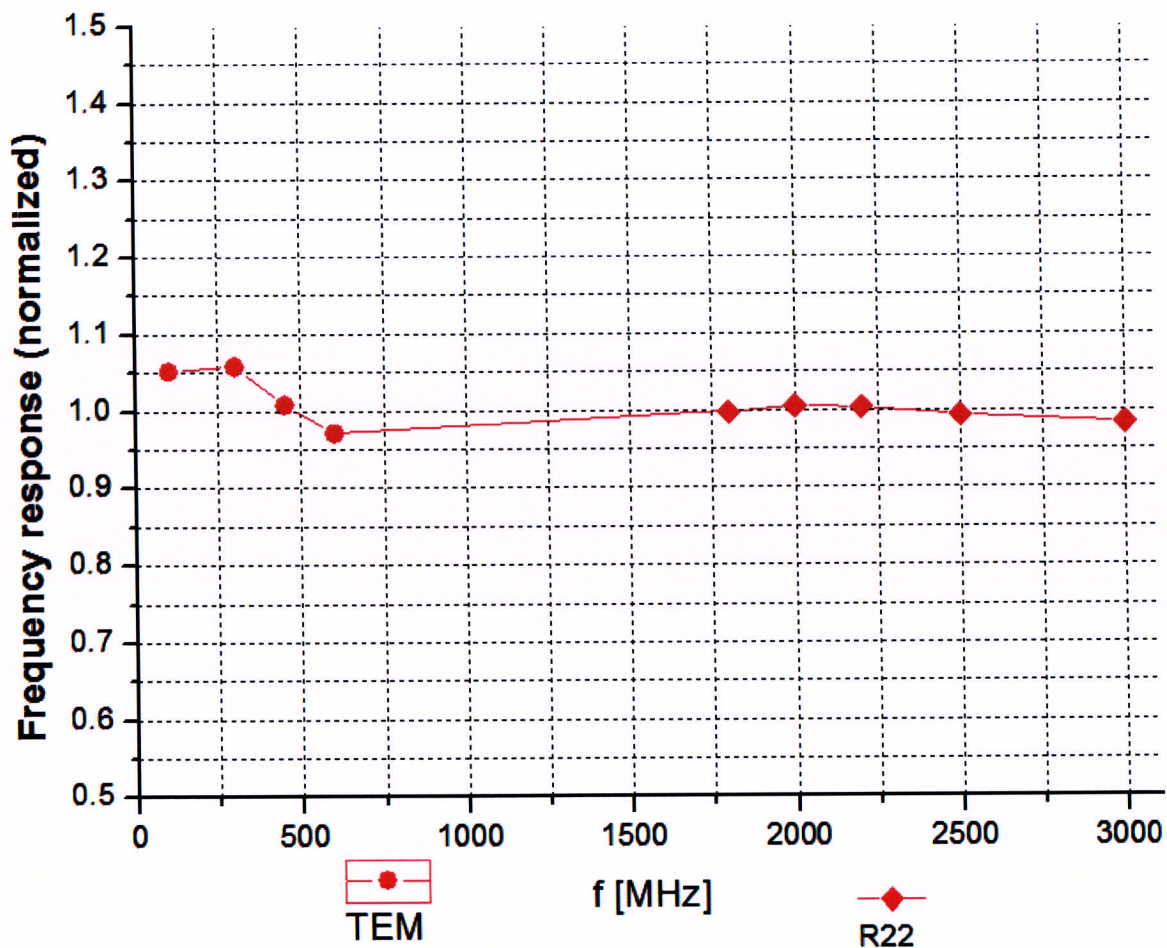
<sup>F</sup> At frequency below 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) is restricted to ±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:  $\pm 7.4\%$  ( $k=2$ )



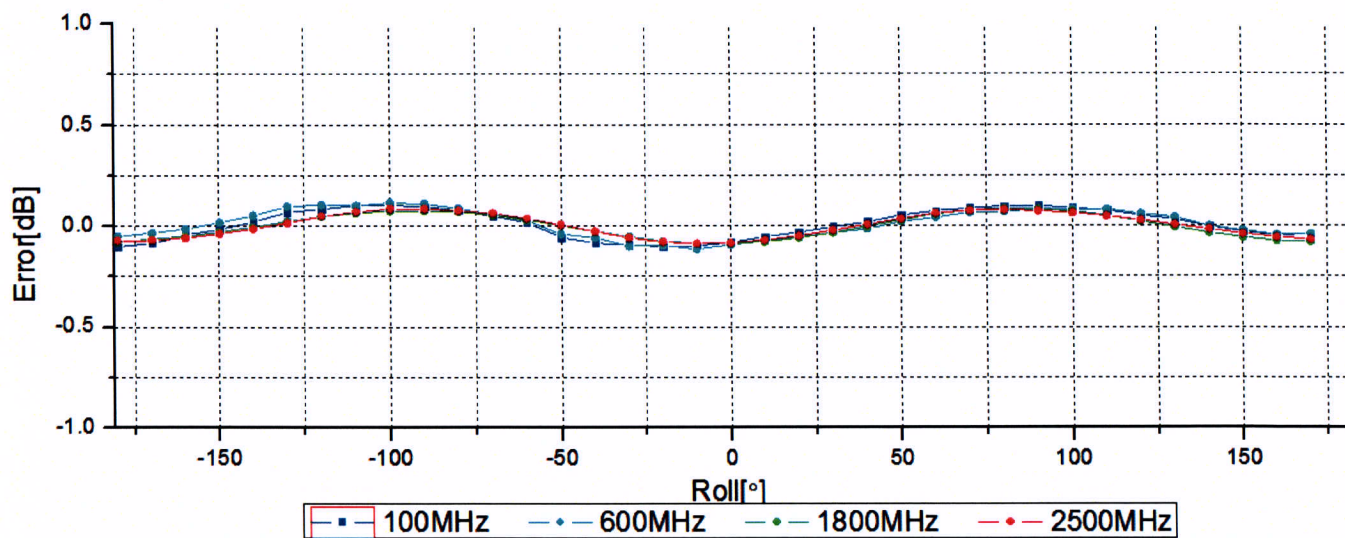
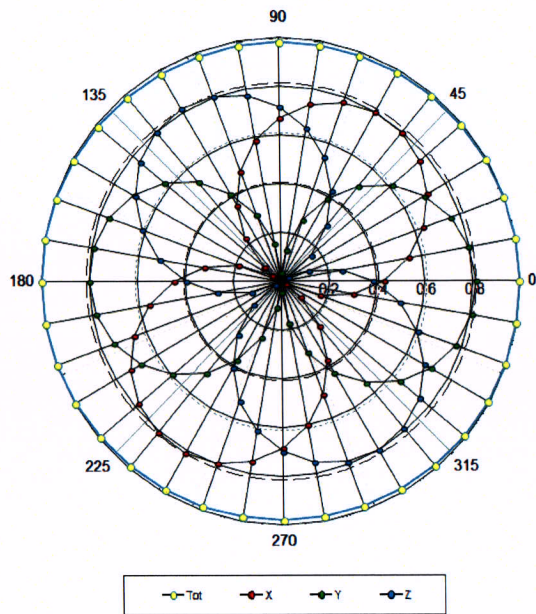
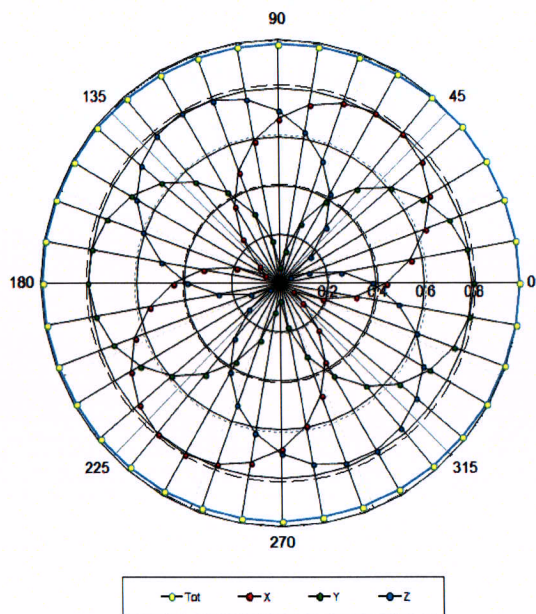
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## Receiving Pattern ( $\Phi$ ), $\theta=0^\circ$

**f=600 MHz, TEM**

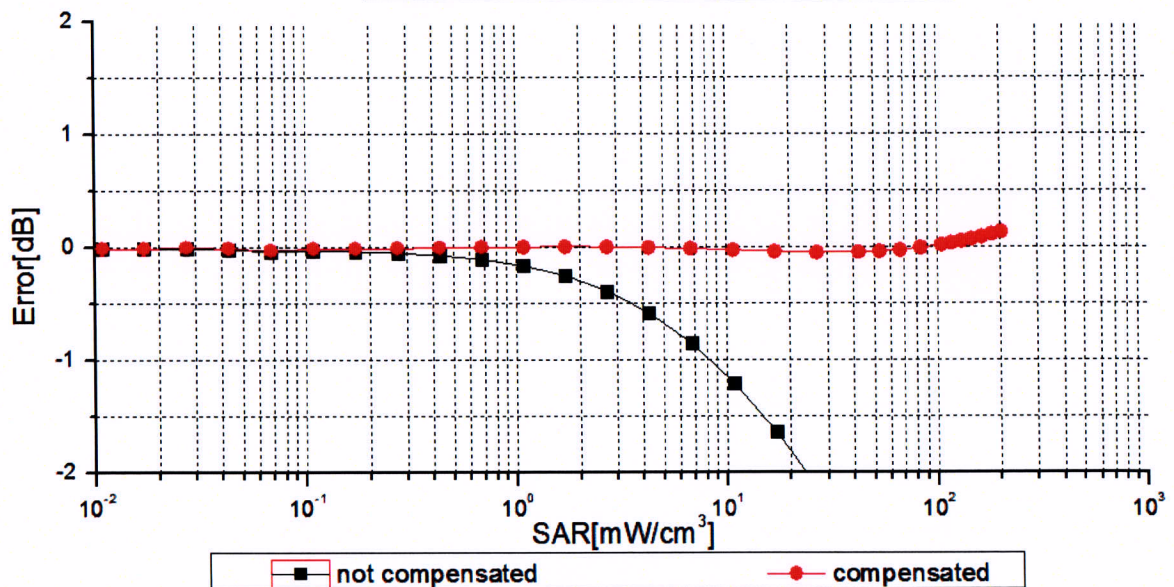
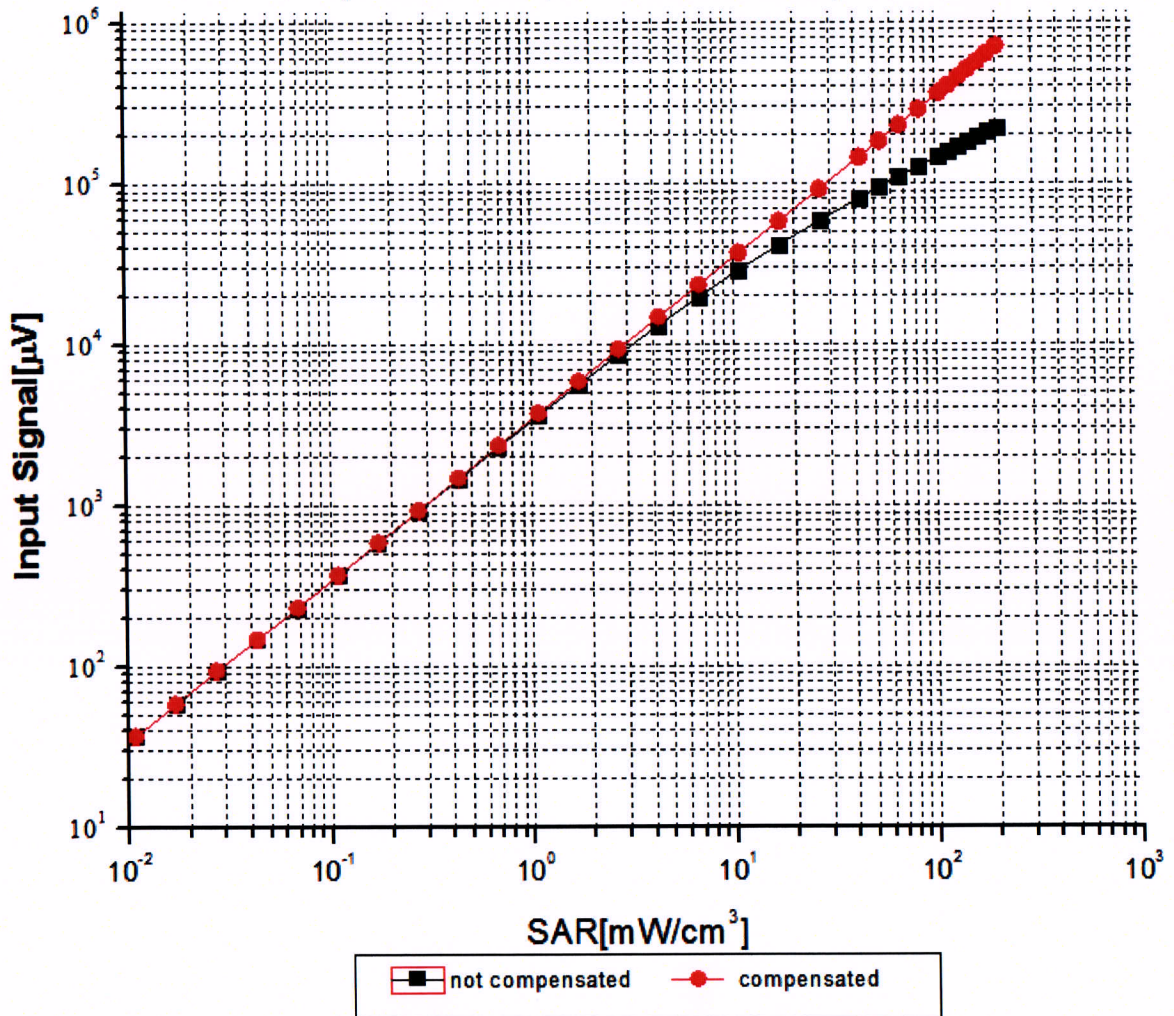
**f=1800 MHz, R22**



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



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



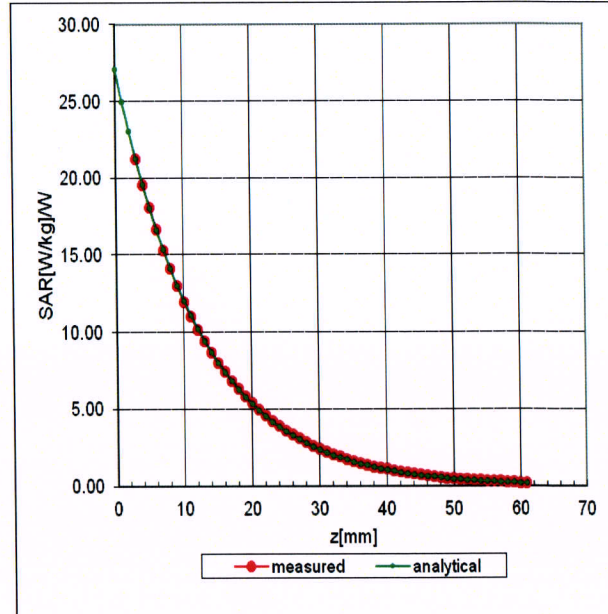
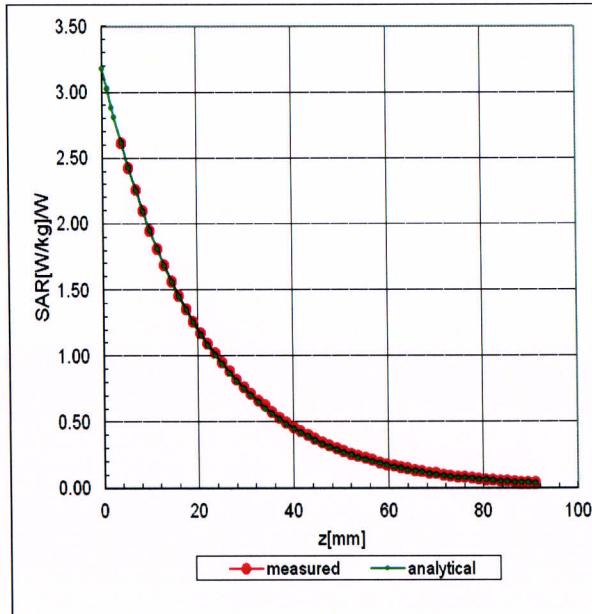
Uncertainty of Linearity Assessment:  $\pm 0.9\%$  ( $k=2$ )



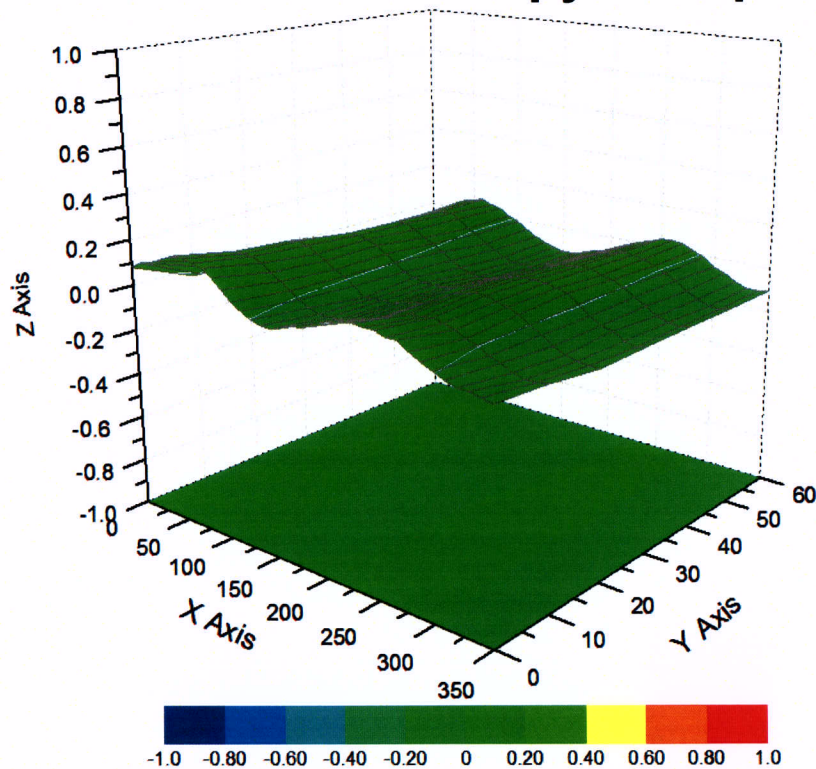
## Conversion Factor Assessment

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

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



## Deviation from Isotropy in Liquid



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