



## APPENDIX D – DIPOLE VALIDATION PLOTS

## Dipole 835 MHz

SAM TP1019; Flat

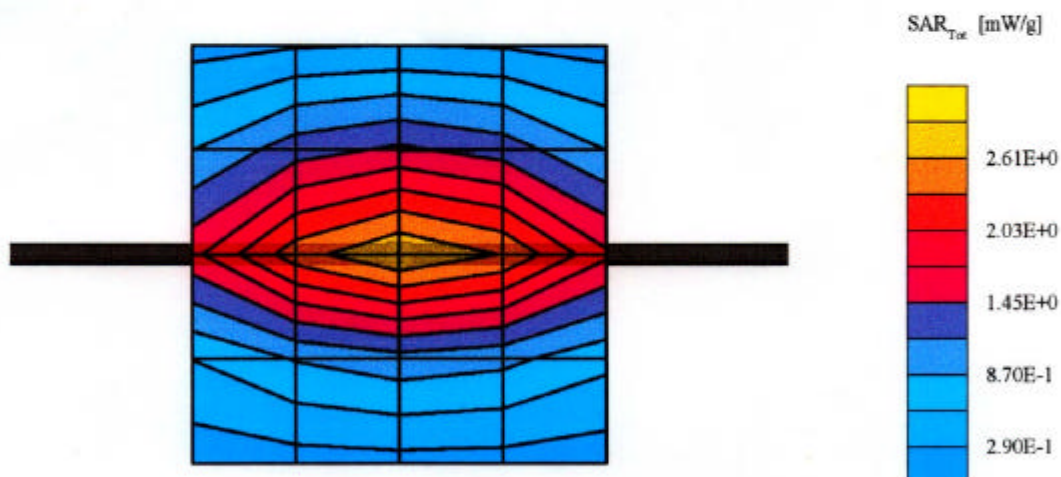
Probe: ET3DV6 - SN1608; ConvF(6.62,6.62,6.62); Crest factor: 1.0; Head 835 MHz:  $\sigma = 0.88 \text{ mho/m}$ ,  $\epsilon_r = 40.0$ ,  $\rho = 1.00 \text{ g/cm}^3$   
 Cubes (2): Peak:  $4.44 \text{ mW/g} \pm 0.03 \text{ dB}$ , SAR (1g):  $2.76 \text{ mW/g} \pm 0.02 \text{ dB}$ , SAR (10g):  $1.75 \text{ mW/g} \pm 0.01 \text{ dB}$ , (Worst-case extrapolation)

Penetration depth: 11.7 (10.3, 13.5) [mm]

Powerdrift: 0.01 dB

Peak:  $4.44 \text{ mW/g} \pm 0.03 \text{ dB}$

Comment :



Hyundai C-Tech Co.,Ltd.

## APPENDIX E – PROBE CALIBRATION DATA

## Schmid & Partner Engineering AG

Zeughausstrasse 43, 8004 Zurich, Switzerland, Phone +41 1 245 97 00, Fax +41 1 245 97 79

### Calibration Certificate

#### Dosimetric E-Field Probe

Type:

ET3DV6

Serial Number:

1608

Place of Calibration:

Zurich

Date of Calibration:

August 10, 2001

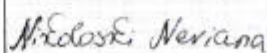
Calibration Interval:

12 months

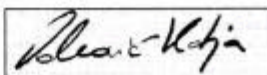
Schmid & Partner Engineering AG hereby certifies, that this device has been calibrated on the date indicated above. The calibration was performed in accordance with specifications and procedures of Schmid & Partner Engineering AG.

Wherever applicable, the standards used in the calibration process are traceable to international standards. In all other cases the standards of the Laboratory for EMF and Microwave Electronics at the Swiss Federal Institute of Technology (ETH) in Zurich, Switzerland have been applied.

Calibrated by:



Approved by:



**Schmid & Partner  
Engineering AG**

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Zeughausstrasse 43, 8004 Zurich, Switzerland, Telephone +41 1 245 97 00, Fax +41 1 245 97 79

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# Probe ET3DV6

## SN:1608

|               |                 |
|---------------|-----------------|
| Manufactured: | July 27, 2001   |
| Calibrated:   | August 10, 2001 |

Calibrated for System DASY3

ET3DV6 SN:1608

## DASY3 - Parameters of Probe: ET3DV6 SN:1608

### Sensitivity in Free Space

|       |                                          |
|-------|------------------------------------------|
| NormX | <b>1.70</b> $\mu\text{V}/(\text{V/m})^2$ |
| NormY | <b>1.51</b> $\mu\text{V}/(\text{V/m})^2$ |
| NormZ | <b>1.79</b> $\mu\text{V}/(\text{V/m})^2$ |

### Diode Compression

|       |              |
|-------|--------------|
| DCP X | <b>97</b> mV |
| DCP Y | <b>97</b> mV |
| DCP Z | <b>97</b> mV |

### Sensitivity in Tissue Simulating Liquid

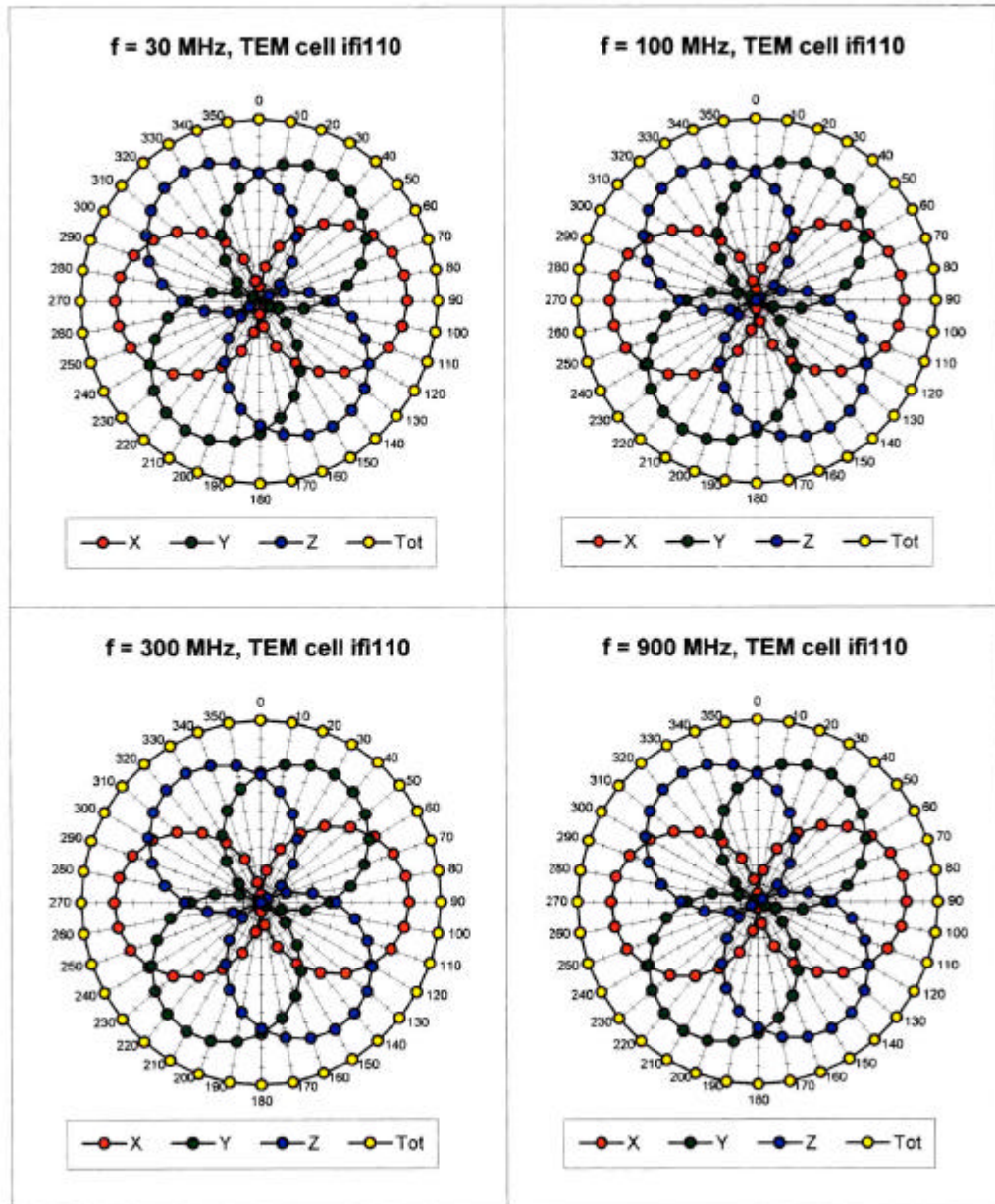
|             |                             |                             |                                |
|-------------|-----------------------------|-----------------------------|--------------------------------|
| <b>Head</b> | <b>450 MHz</b>              | $\epsilon_r = 43.5 \pm 5\%$ | $\sigma = 0.87 \pm 10\%$ mho/m |
| ConvF X     | <b>7.13</b> extrapolated    | Boundary effect:            |                                |
| ConvF Y     | <b>7.13</b> extrapolated    | Alpha                       | <b>0.21</b>                    |
| ConvF Z     | <b>7.13</b> extrapolated    | Depth                       | <b>3.07</b>                    |
| <b>Head</b> | <b>900 MHz</b>              | $\epsilon_r = 42 \pm 5\%$   | $\sigma = 0.97 \pm 10\%$ mho/m |
| ConvF X     | <b>6.62</b> $\pm 7\%$ (k=2) | Boundary effect:            |                                |
| ConvF Y     | <b>6.62</b> $\pm 7\%$ (k=2) | Alpha                       | <b>0.29</b>                    |
| ConvF Z     | <b>6.62</b> $\pm 7\%$ (k=2) | Depth                       | <b>2.81</b>                    |
| <b>Head</b> | <b>1500 MHz</b>             | $\epsilon_r = 40.4 \pm 5\%$ | $\sigma = 1.23 \pm 10\%$ mho/m |
| ConvF X     | <b>5.94</b> interpolated    | Boundary effect:            |                                |
| ConvF Y     | <b>5.94</b> interpolated    | Alpha                       | <b>0.41</b>                    |
| ConvF Z     | <b>5.94</b> interpolated    | Depth                       | <b>2.46</b>                    |
| <b>Head</b> | <b>1800 MHz</b>             | $\epsilon_r = 40 \pm 5\%$   | $\sigma = 1.40 \pm 10\%$ mho/m |
| ConvF X     | <b>5.60</b> $\pm 7\%$ (k=2) | Boundary effect:            |                                |
| ConvF Y     | <b>5.60</b> $\pm 7\%$ (k=2) | Alpha                       | <b>0.46</b>                    |
| ConvF Z     | <b>5.60</b> $\pm 7\%$ (k=2) | Depth                       | <b>2.29</b>                    |

### Sensor Offset

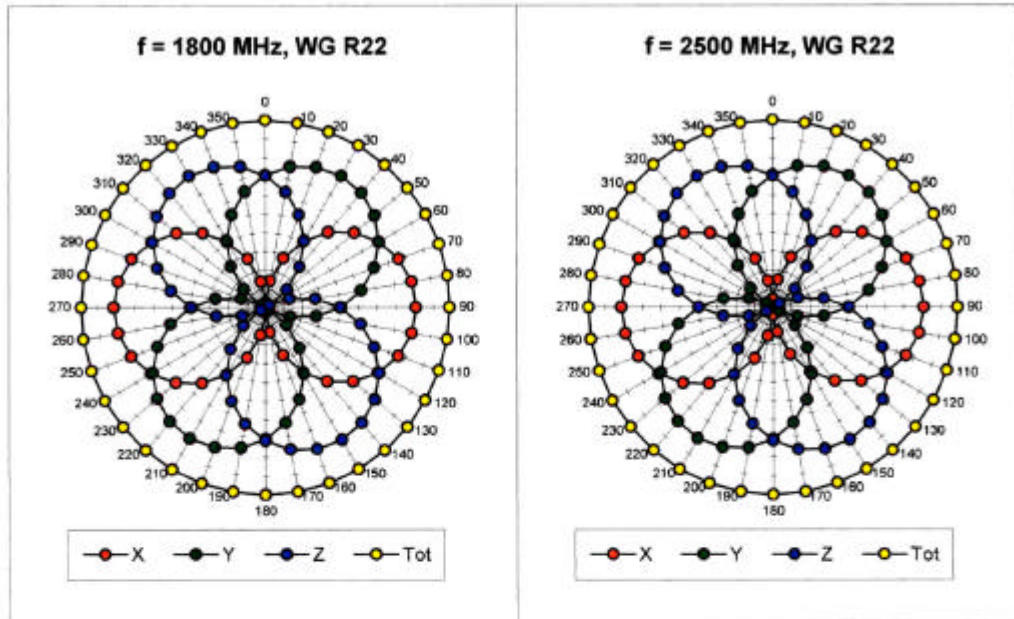
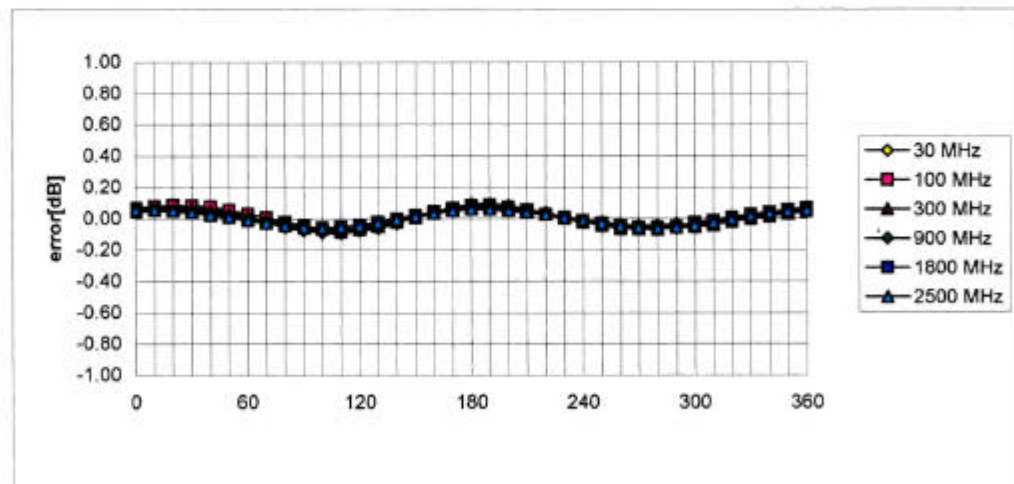
|                            |                                 |    |
|----------------------------|---------------------------------|----|
| Probe Tip to Sensor Center | <b>2.7</b>                      | mm |
| Optical Surface Detection  | <b>1.4 <math>\pm</math> 0.2</b> | mm |

ET3DV6 SN:1608

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



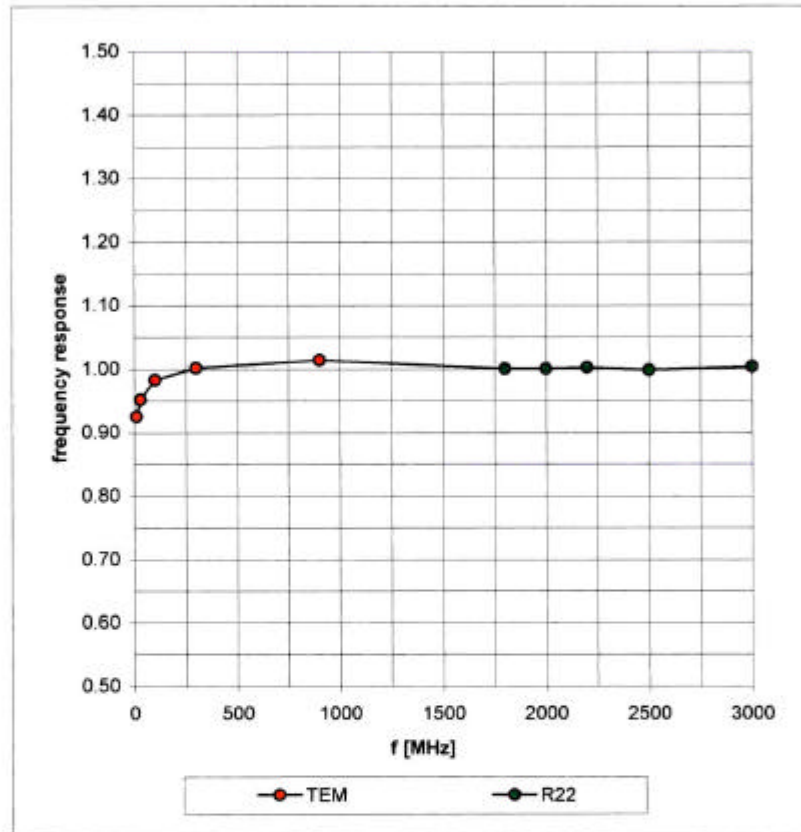
ET3DV6 SN:1608


Isotropy Error ( $\phi$ ),  $\theta = 0^\circ$ 


ET3DV6 SN:1608

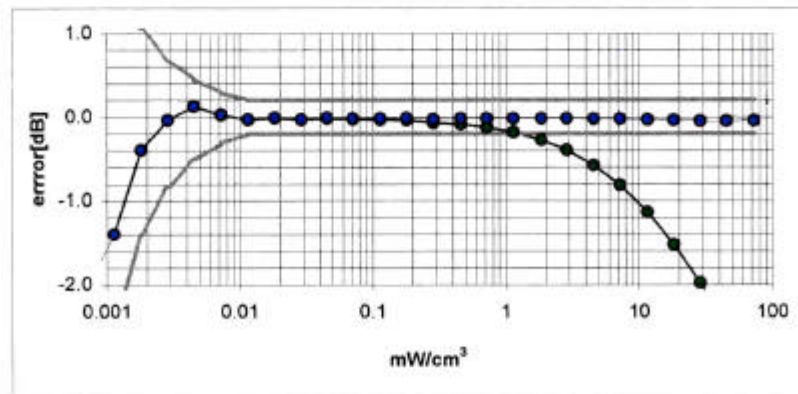
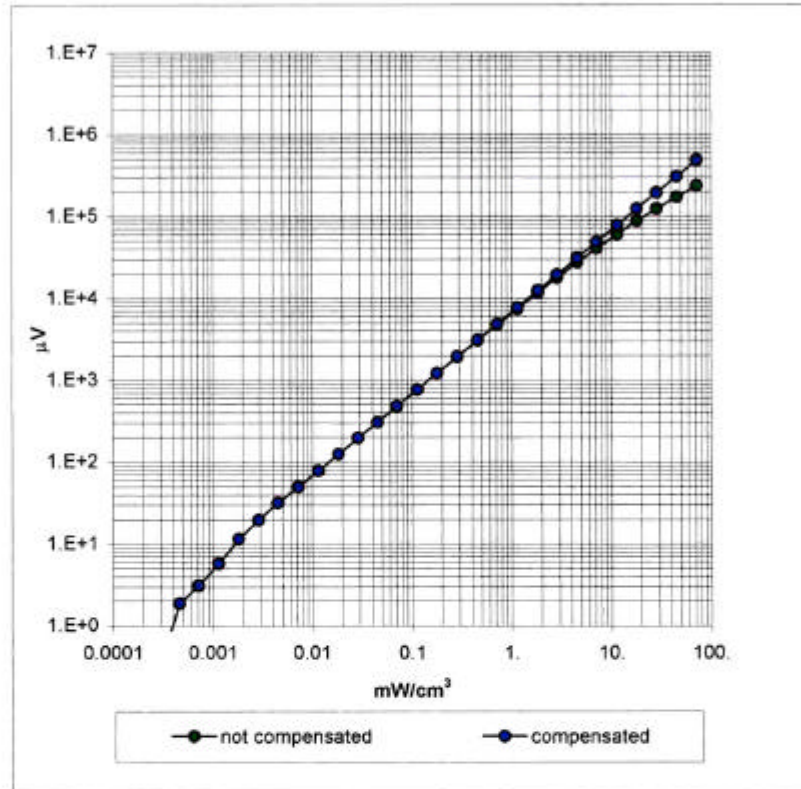
## Frequency Response of E-Field

( TEM-Cell:ifi110, Waveguide R22)



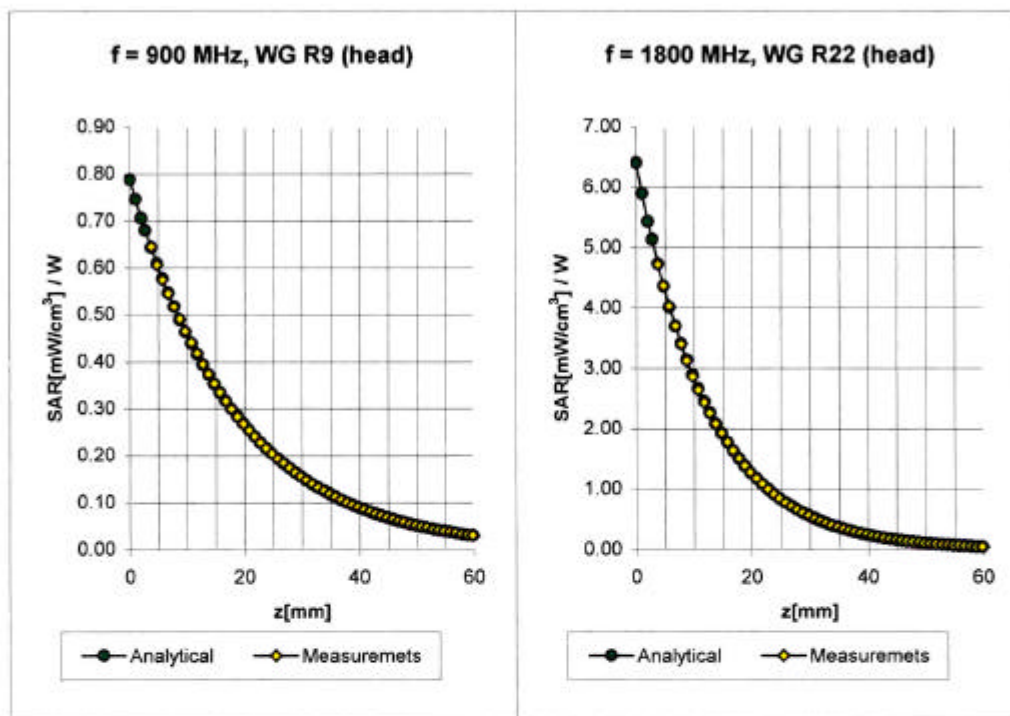
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### Dynamic Range f(SAR<sub>brain</sub>) ( Waveguide R22 )



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## Conversion Factor Assessment



|      |         |                             |                                        |             |
|------|---------|-----------------------------|----------------------------------------|-------------|
| Head | 900 MHz | $\epsilon_r = 42 \pm 5\%$   | $\sigma = 0.97 \pm 10\% \text{ mho/m}$ |             |
|      | ConvF X | <b>6.62</b> $\pm 7\%$ (k=2) | Boundary effect:                       |             |
|      | ConvF Y | <b>6.62</b> $\pm 7\%$ (k=2) | Alpha                                  | <b>0.29</b> |
|      | ConvF Z | <b>6.62</b> $\pm 7\%$ (k=2) | Depth                                  | <b>2.81</b> |

|      |          |                             |                                        |             |
|------|----------|-----------------------------|----------------------------------------|-------------|
| Head | 1800 MHz | $\epsilon_r = 40 \pm 5\%$   | $\sigma = 1.40 \pm 10\% \text{ mho/m}$ |             |
|      | ConvF X  | <b>5.60</b> $\pm 7\%$ (k=2) | Boundary effect:                       |             |
|      | ConvF Y  | <b>5.60</b> $\pm 7\%$ (k=2) | Alpha                                  | <b>0.46</b> |
|      | ConvF Z  | <b>5.60</b> $\pm 7\%$ (k=2) | Depth                                  | <b>2.29</b> |

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## Deviation from Isotropy in HSL

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