

Calibration Certificate

Dosimetric E-Field Probe

Type:

ET3DV6

Serial Number:

1547

Place of Calibration:

Zurich

Date of Calibration:

November 16, 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:

Nikolaus Neviana

Approved by:

Oliver Kötter

Probe ET3DV6

SN:1547

Manufactured:	October 16, 2000
Last calibration:	November 14, 2000
Recalibrated:	November 16, 2001

Calibrated for System DASY3

DASY3 - Parameters of Probe: ET3DV6 SN:1547**Sensitivity in Free Space**

NormX	1.37 $\mu\text{V}/(\text{V}/\text{m})^2$
NormY	1.25 $\mu\text{V}/(\text{V}/\text{m})^2$
NormZ	1.24 $\mu\text{V}/(\text{V}/\text{m})^2$

Diode Compression

DCP X	92 mV
DCP Y	92 mV
DCP Z	92 mV

Sensitivity in Tissue Simulating Liquid

Head **450 MHz** $\epsilon_r = 43.5 \pm 5\%$ $\sigma = 0.87 \pm 10\%$ mho/m

ConvF X	6.86 extrapolated	Boundary effect:	
ConvF Y	6.86 extrapolated	Alpha	0.33
ConvF Z	6.86 extrapolated	Depth	2.54

Head **800 - 1000 MHz** $\epsilon_r = 39.0 - 43.5$ $\sigma = 0.80 - 1.10$ mho/m

ConvF X	6.30 $\pm 9.5\%$ (k=2)	Boundary effect:	
ConvF Y	6.30 $\pm 9.5\%$ (k=2)	Alpha	0.41
ConvF Z	6.30 $\pm 9.5\%$ (k=2)	Depth	2.45

Head **1500 MHz** $\epsilon_r = 40.4 \pm 5\%$ $\sigma = 1.23 \pm 10\%$ mho/m

ConvF X	5.54 interpolated	Boundary effect:	
ConvF Y	5.54 interpolated	Alpha	0.52
ConvF Z	5.54 interpolated	Depth	2.33

Head **1700 - 1910 MHz** $\epsilon_r = 39.5 - 41.0$ $\sigma = 1.20 - 1.55$ mho/m

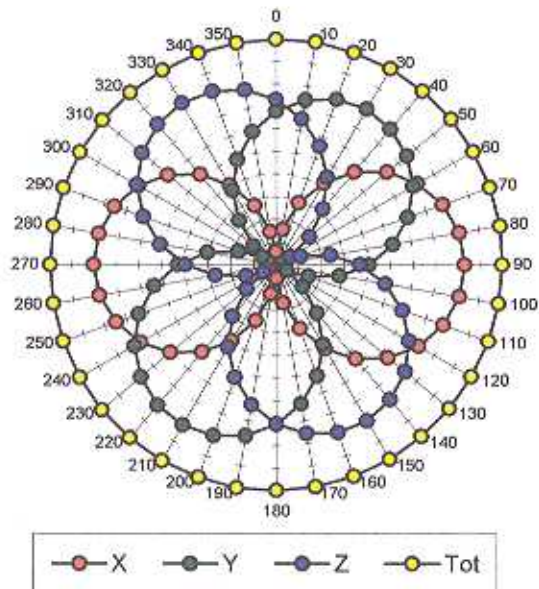
ConvF X	5.17 $\pm 9.5\%$ (k=2)	Boundary effect:	
ConvF Y	5.17 $\pm 9.5\%$ (k=2)	Alpha	0.57
ConvF Z	5.17 $\pm 9.5\%$ (k=2)	Depth	2.27

Sensor Offset

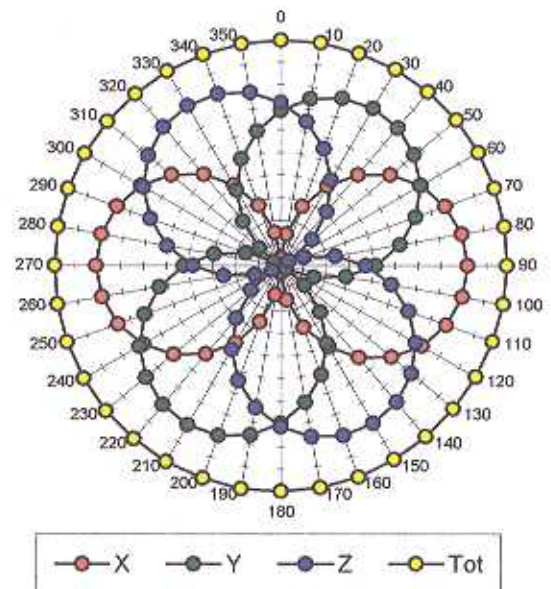
Probe Tip to Sensor Center	2.7	mm
Optical Surface Detection	1.4 $\pm$ 0.2	mm

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

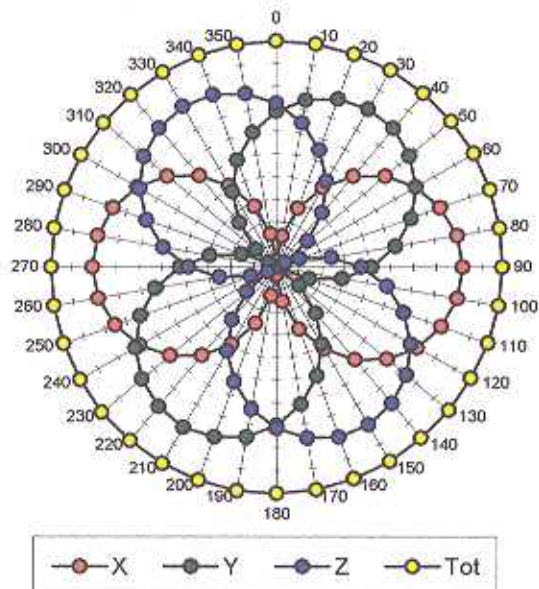
f = 30 MHz, TEM cell ifi110



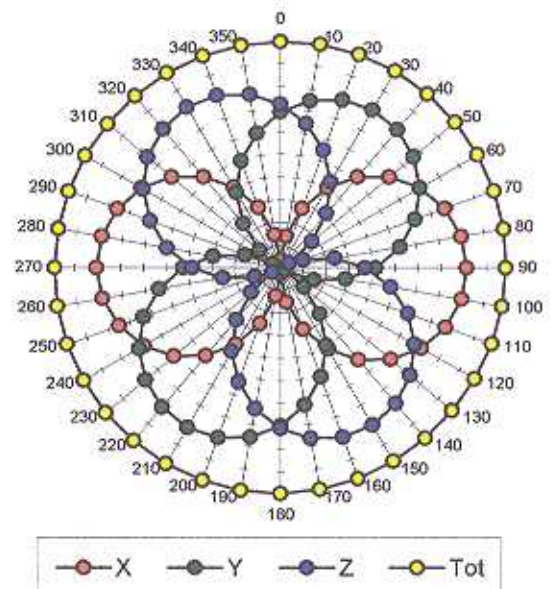
f = 100 MHz, TEM cell ifi110

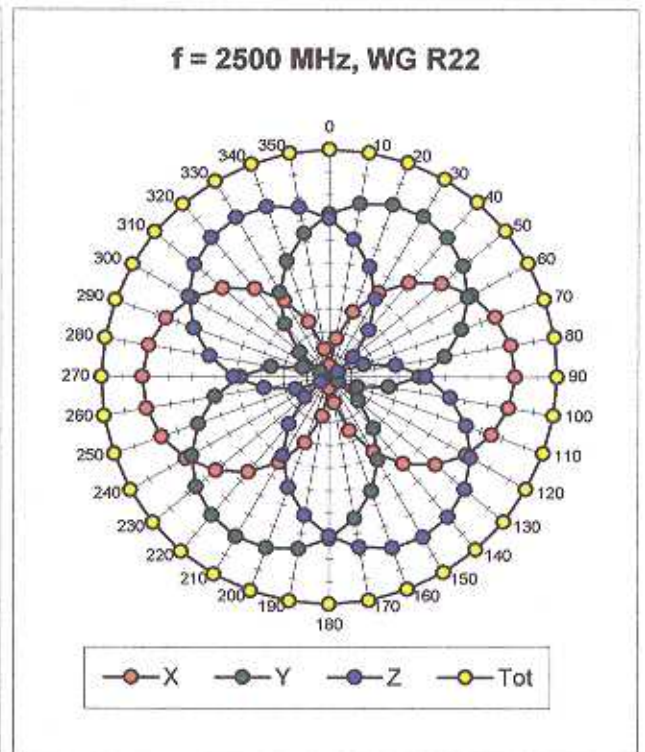
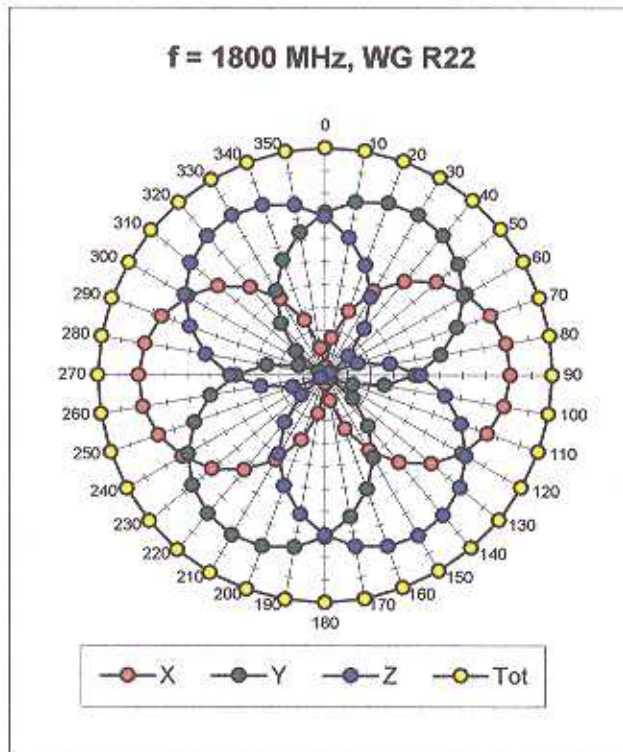


f = 300 MHz, TEM cell ifi110

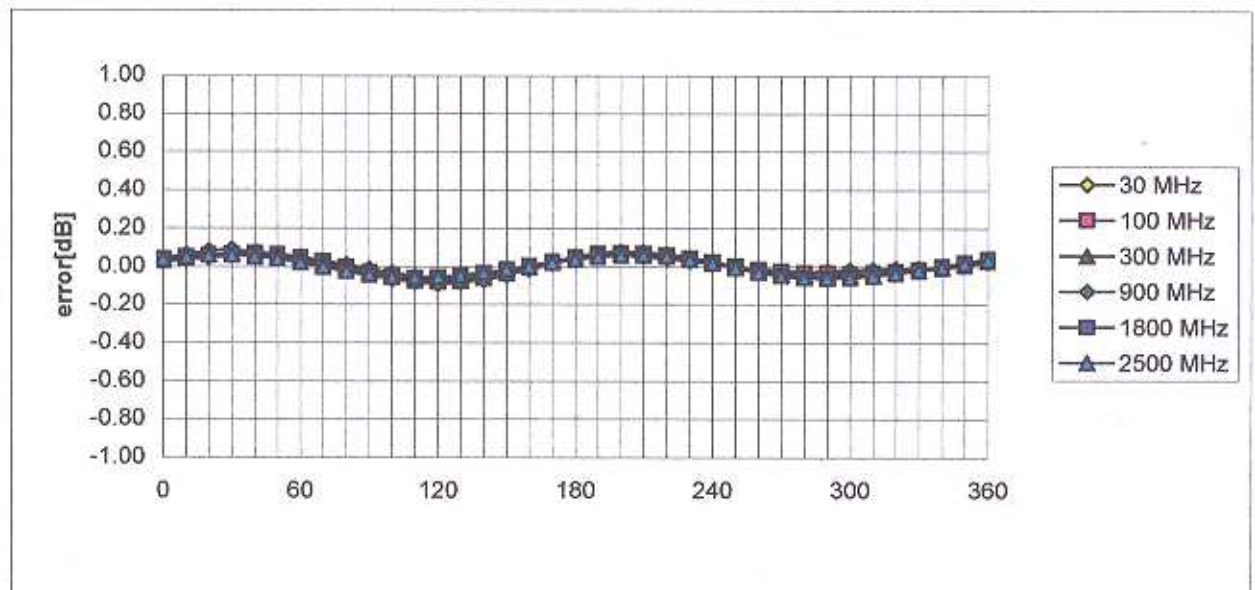


f = 900 MHz, TEM cell ifi110



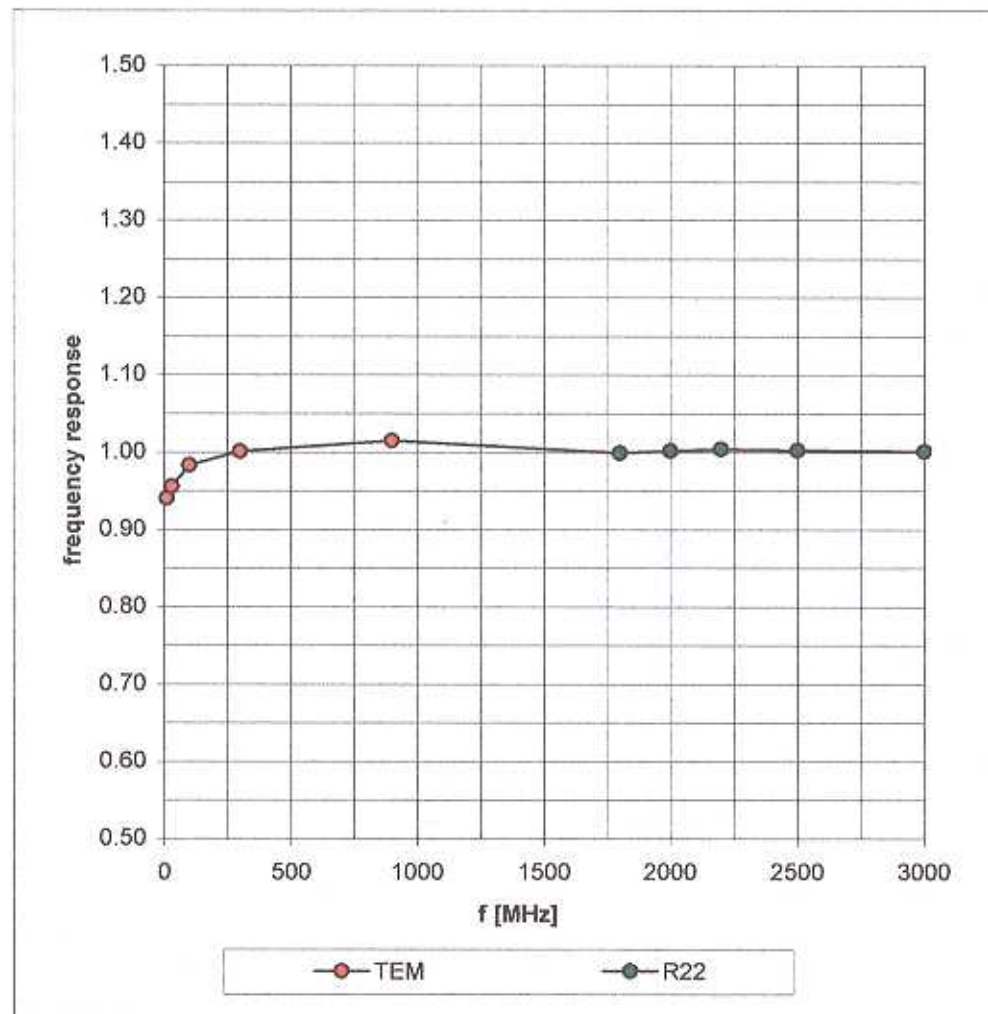


Isotropy Error (ϕ), $\theta = 0^\circ$

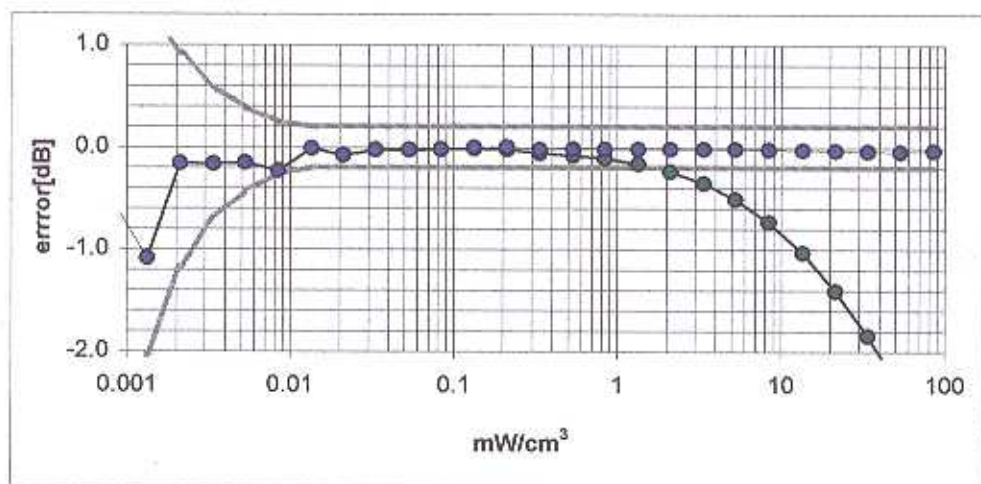
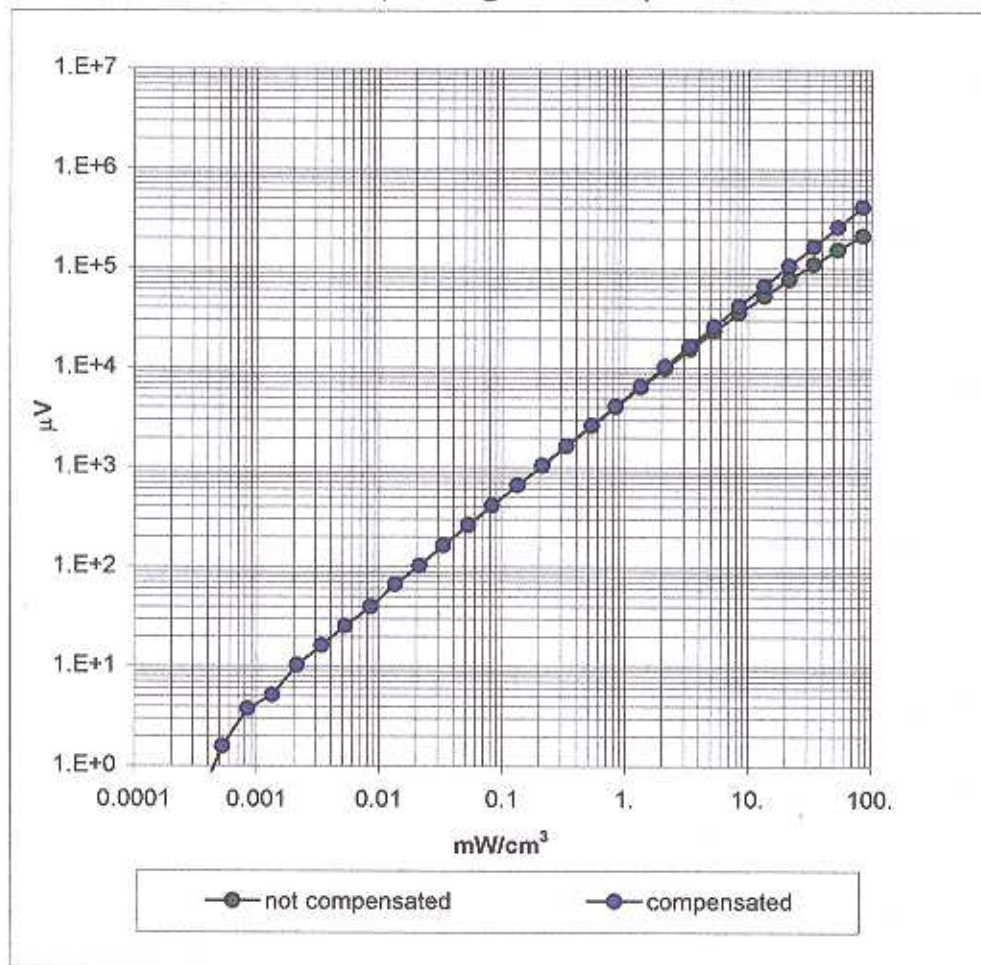


Frequency Response of E-Field

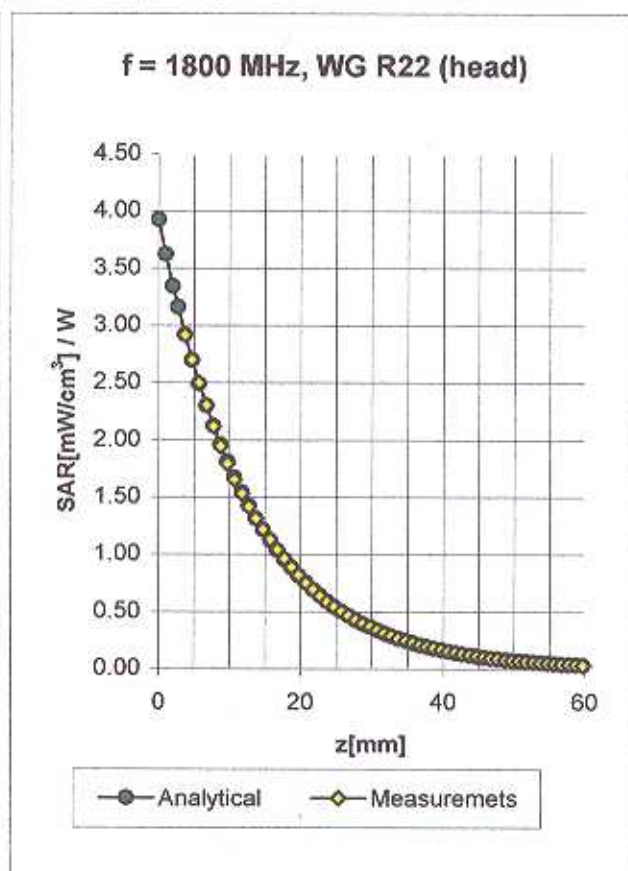
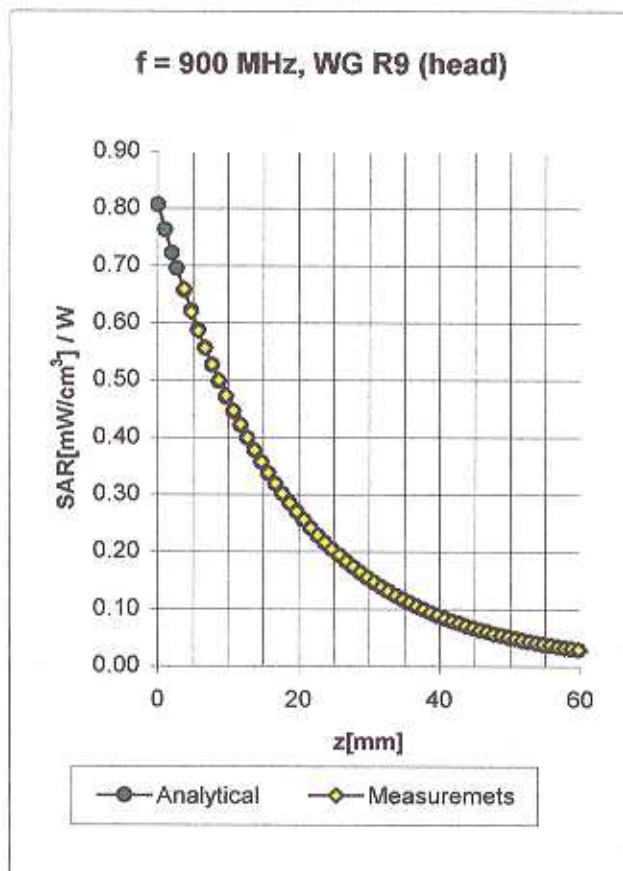
(TEM-Cell:ifi110, Waveguide R22)



Dynamic Range $f(\text{SAR}_{\text{brain}})$ (Waveguide R22)



Conversion Factor Assessment



Head 800 - 1000 MHz $\epsilon_r = 39.0 - 43.5$ $\sigma = 0.80 - 1.10$ mho/m

ConvF X **6.30** $\pm 9.5\%$ (k=2)

Boundary effect:

ConvF Y **6.30** $\pm 9.5\%$ (k=2)

Alpha **0.41**

ConvF Z **6.30** $\pm 9.5\%$ (k=2)

Depth **2.45**

Head 1700 - 1910 MHz $\epsilon_r = 39.5 - 41.0$ $\sigma = 1.20 - 1.55$ mho/m

ConvF X **5.17** $\pm 9.5\%$ (k=2)

Boundary effect:

ConvF Y **5.17** $\pm 9.5\%$ (k=2)

Alpha **0.57**

ConvF Z **5.17** $\pm 9.5\%$ (k=2)

Depth **2.27**

Deviation from Isotropy in HSL

Error (θ, ϕ), $f = 900$ MHz

