

**Client**                      **Motorola MRO**

**CALIBRATION CERTIFICATE**

**Object(s)**                      **ET3DV6R - SN 1501**

**Calibration procedure(s)**                      **QA CAL-01.v2  
 Calibration procedure for dosimetric E-field probes**

**Calibration date:**                      **April 16, 2003**



**Condition of the calibrated item**                      **In Tolerance (according to the specific calibration document)**

This calibration statement documents traceability of M&TE used in the calibration procedures and conformity of the procedures with the ISO/IEC 17025 international standard.

All calibrations have been conducted in the closed laboratory facility: environment temperature 22 +/- 2 degrees Celsius and humidity < 75%.

**Calibration Equipment used (M&TE critical for calibration)**

Model Type	ID #	Cal Date	Scheduled Calibration
RF generator HP 8684C	US3642U01700	4-Aug-99 (in house check Aug-02)	In house check: Aug-05
Power sensor E4412A	MY41495277	2-Apr-03	Apr-04
Power sensor HP 8481A	MY41092180	18-Sep-02	Sep-03
Power meter EPM E4419B	GB41293874	13-Sep-02	Sep-03
Network Analyzer HP 8753E	US38432426	3-May-00	In house check: May 03
Fluke Process Calibrator Type 702	SN: 6295803	3-Sep-01	Sep-03

	Name	Function	Signature
Calibrated by:	Nico Vetterli	Technician	
Approved by:	Katja Pokovic	Laboratory Director	

Date issued: April 16, 2003

This calibration certificate is issued as an intermediate solution until the accreditation process (based on ISO/IEC 17025 International Standard) for Calibration Laboratory of Schmid & Partner Engineering AG is completed.

**DASY - Parameters of Probe: ET3DV6R SN:1501****Sensitivity in Free Space****Diode Compression**

NormX	<b>2.08</b> $\mu\text{V}/(\text{V}/\text{m})^2$	DCP X	<b>96</b>	mV
NormY	<b>2.09</b> $\mu\text{V}/(\text{V}/\text{m})^2$	DCP Y	<b>96</b>	mV
NormZ	<b>2.14</b> $\mu\text{V}/(\text{V}/\text{m})^2$	DCP Z	<b>96</b>	mV

**Sensitivity in Tissue Simulating Liquid**

**Head**                      **900 MHz**                       $\epsilon_r = 41.5 \pm 5\%$                        $\sigma = 0.97 \pm 5\%$  mho/m

Valid for f=800-1000 MHz with Head Tissue Simulating Liquid according to IEEE P1528-200X

ConvF X	<b>6.4</b> $\pm 9.5\%$ (k=2)	Boundary effect:	
ConvF Y	<b>6.4</b> $\pm 9.5\%$ (k=2)	Alpha	<b>0.39</b>
ConvF Z	<b>6.4</b> $\pm 9.5\%$ (k=2)	Depth	<b>2.31</b>

**Head**                      **1800 MHz**                       $\epsilon_r = 40.0 \pm 5\%$                        $\sigma = 1.40 \pm 5\%$  mho/m

Valid for f=1710-1910 MHz with Head Tissue Simulating Liquid according to IEEE P1528-200X

ConvF X	<b>5.0</b> $\pm 9.5\%$ (k=2)	Boundary effect:	
ConvF Y	<b>5.0</b> $\pm 9.5\%$ (k=2)	Alpha	<b>0.49</b>
ConvF Z	<b>5.0</b> $\pm 9.5\%$ (k=2)	Depth	<b>2.55</b>

**Boundary Effect**

**Head**                      **900 MHz**                      **Typical SAR gradient: 5 % per mm**

Probe Tip to Boundary		<b>1 mm</b>	<b>2 mm</b>
SAR <sub>be</sub> [%] Without Correction Algorithm		<b>8.9</b>	<b>4.9</b>
SAR <sub>be</sub> [%] With Correction Algorithm		<b>0.3</b>	<b>0.5</b>

**Head**                      **1800 MHz**                      **Typical SAR gradient: 10 % per mm**

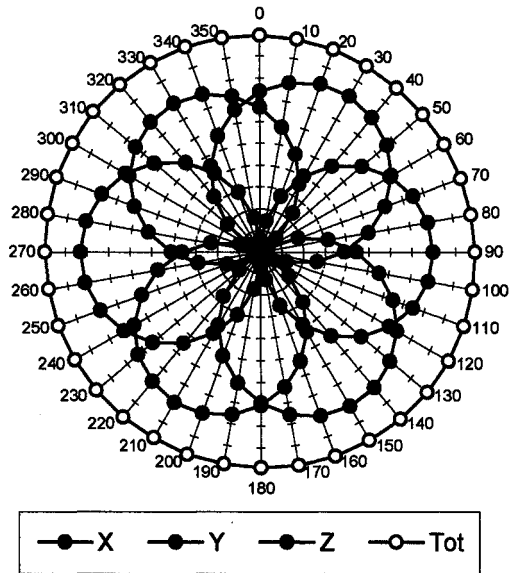
Probe Tip to Boundary		<b>1 mm</b>	<b>2 mm</b>
SAR <sub>be</sub> [%] Without Correction Algorithm		<b>12.8</b>	<b>8.6</b>
SAR <sub>be</sub> [%] With Correction Algorithm		<b>0.2</b>	<b>0.2</b>

**Sensor Offset**

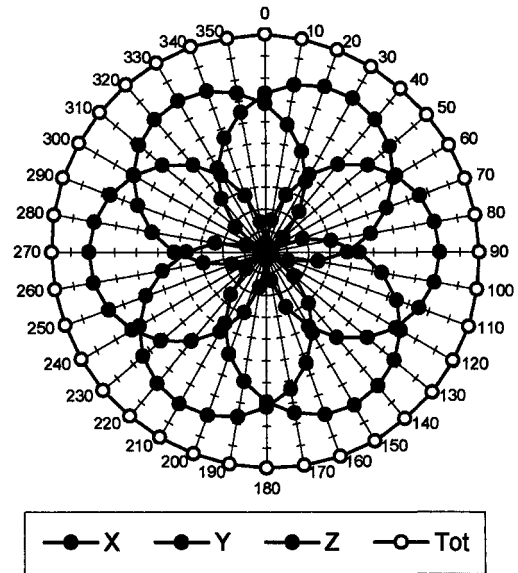
Probe Tip to Sensor Center	<b>2.7</b>	mm
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### Receiving Pattern ( $\phi$ , $\theta = 0^\circ$ )

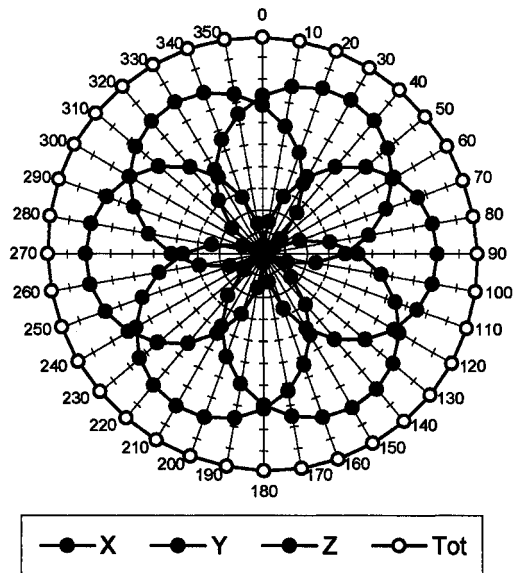
**f = 30 MHz, TEM cell ifi110**



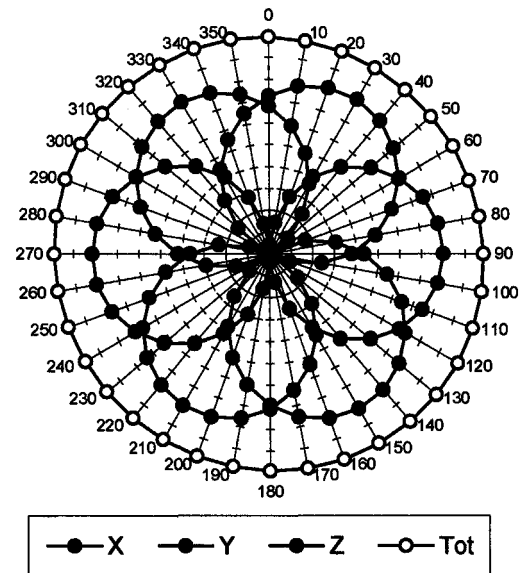
**f = 100 MHz, TEM cell ifi110**

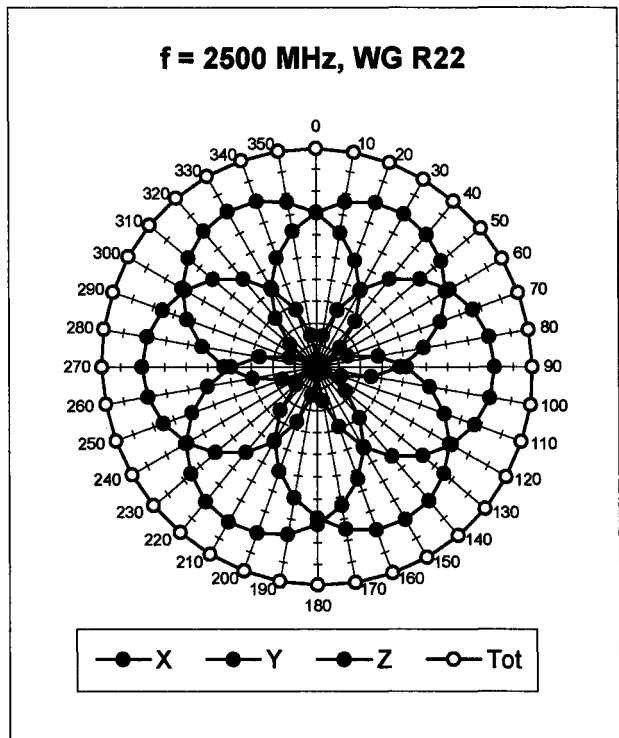
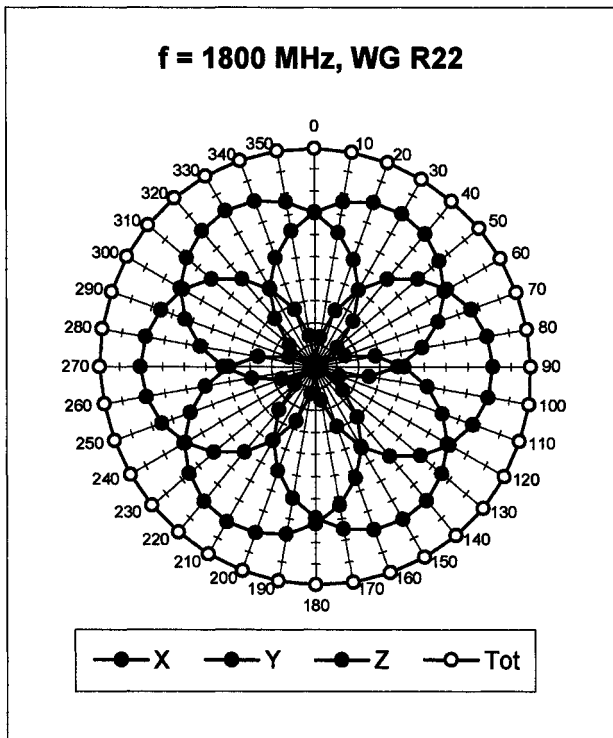


**f = 300 MHz, TEM cell ifi110**

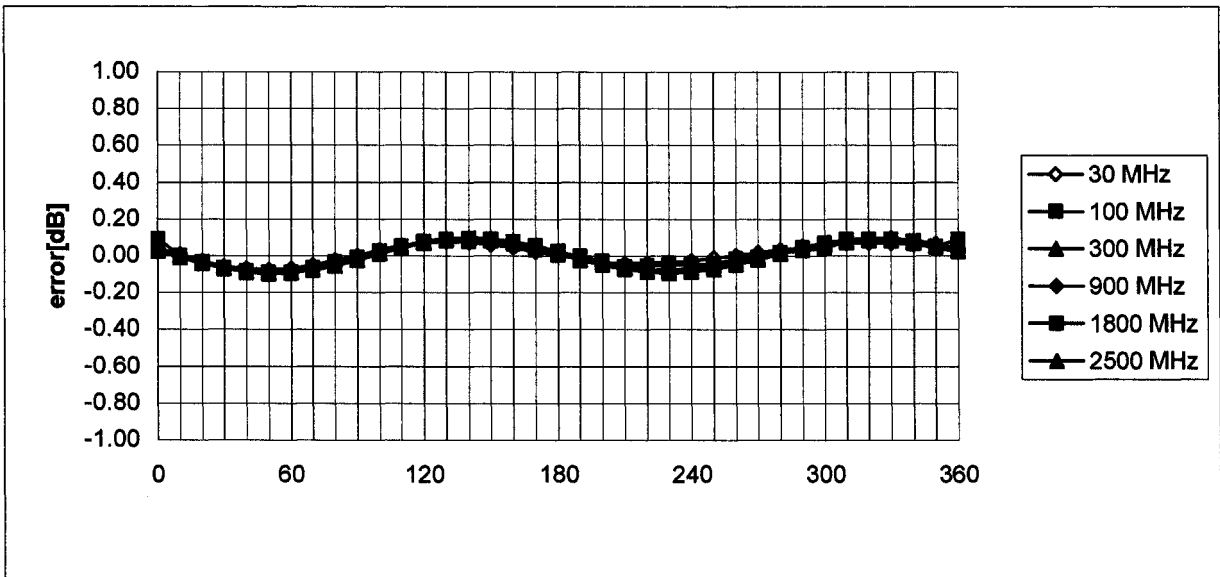


**f = 900 MHz, TEM cell ifi110**



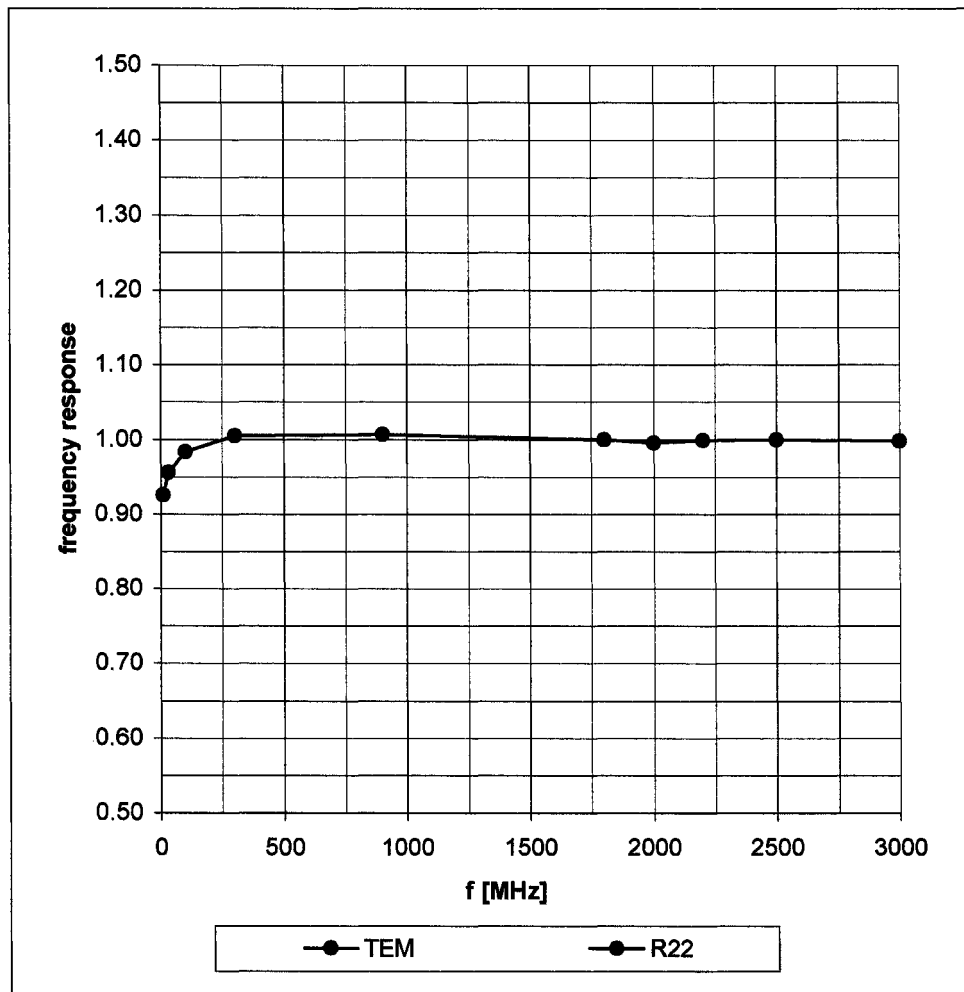


### Isotropy Error ( $\phi$ ), $\theta = 0^\circ$

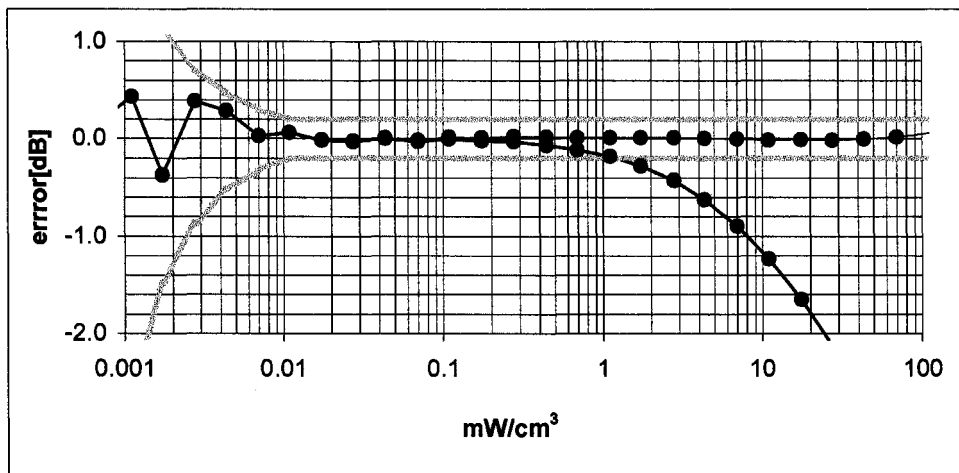
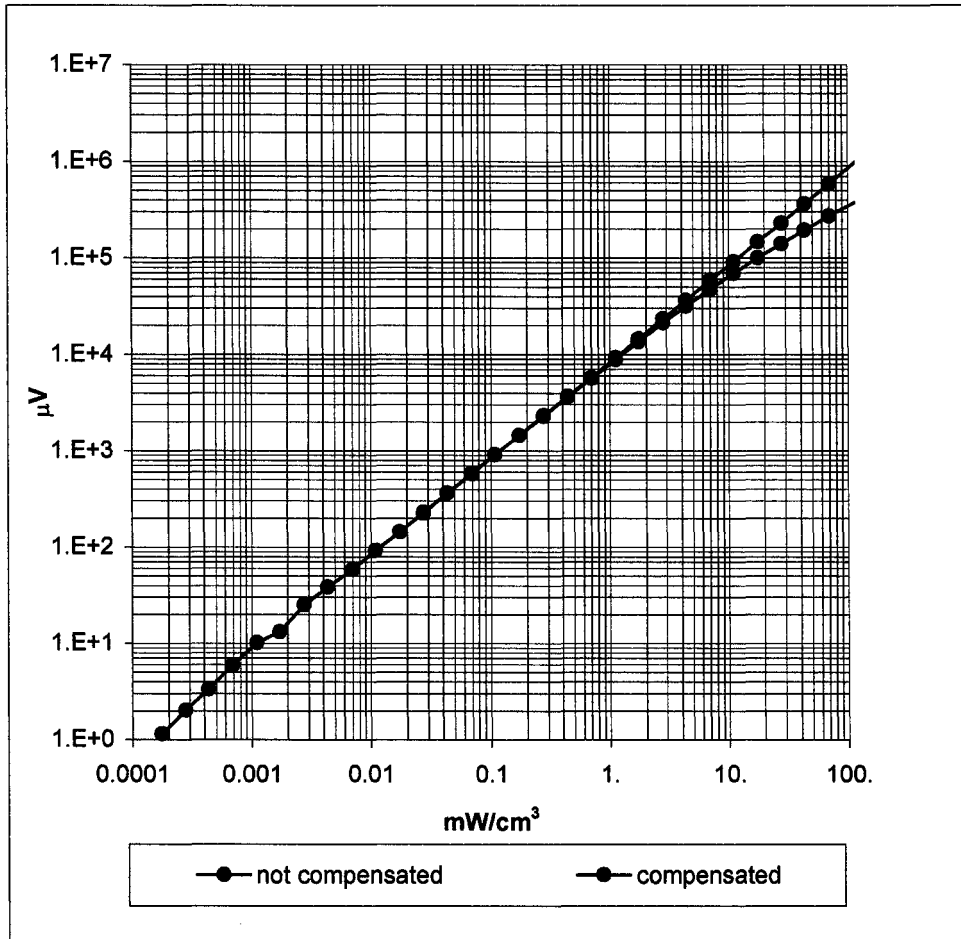


# Frequency Response of E-Field

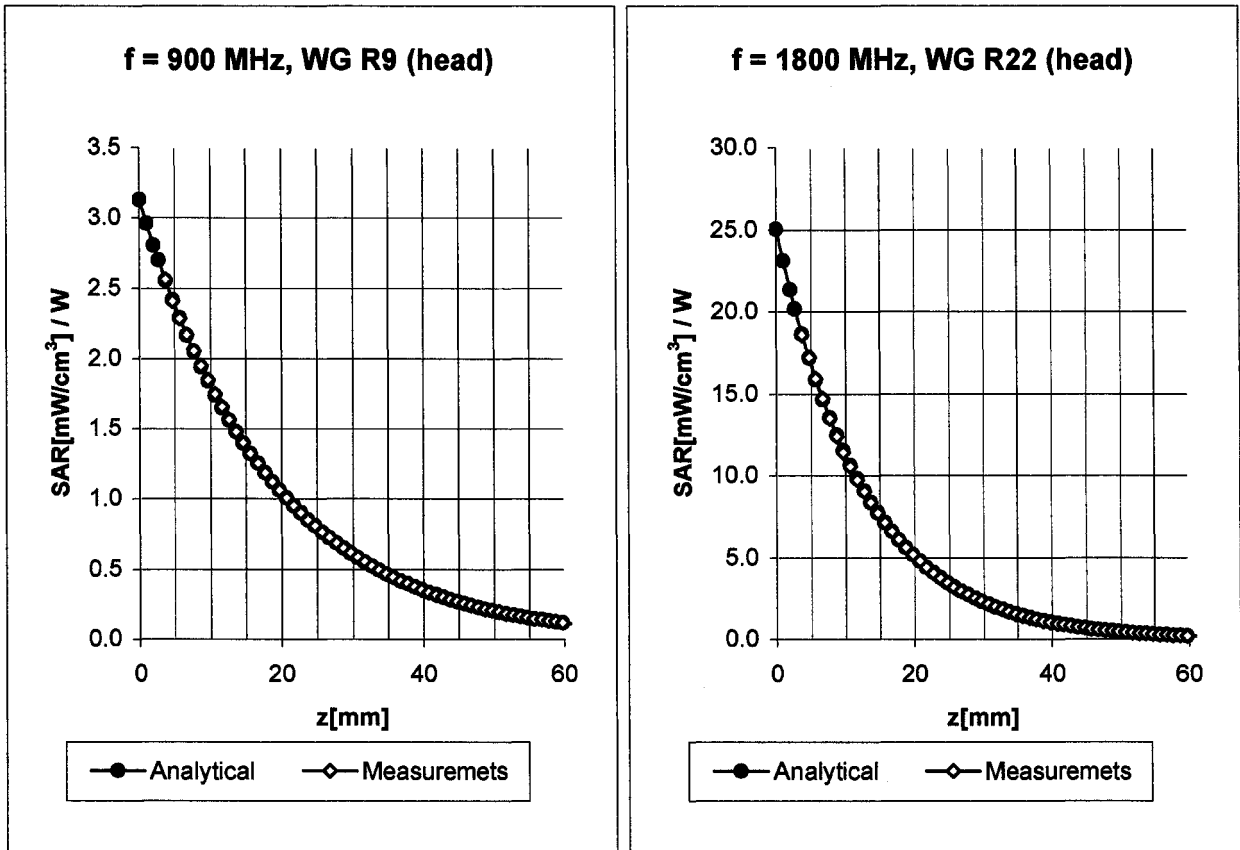
( TEM-Cell:ifi110, Waveguide R22)



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



## Conversion Factor Assessment



**Head                      900 MHz                       $\epsilon_r = 41.5 \pm 5\%$                        $\sigma = 0.97 \pm 5\%$  mho/m**

**Valid for f=800-1000 MHz with Head Tissue Simulating Liquid according to IEEE P1528-200X**

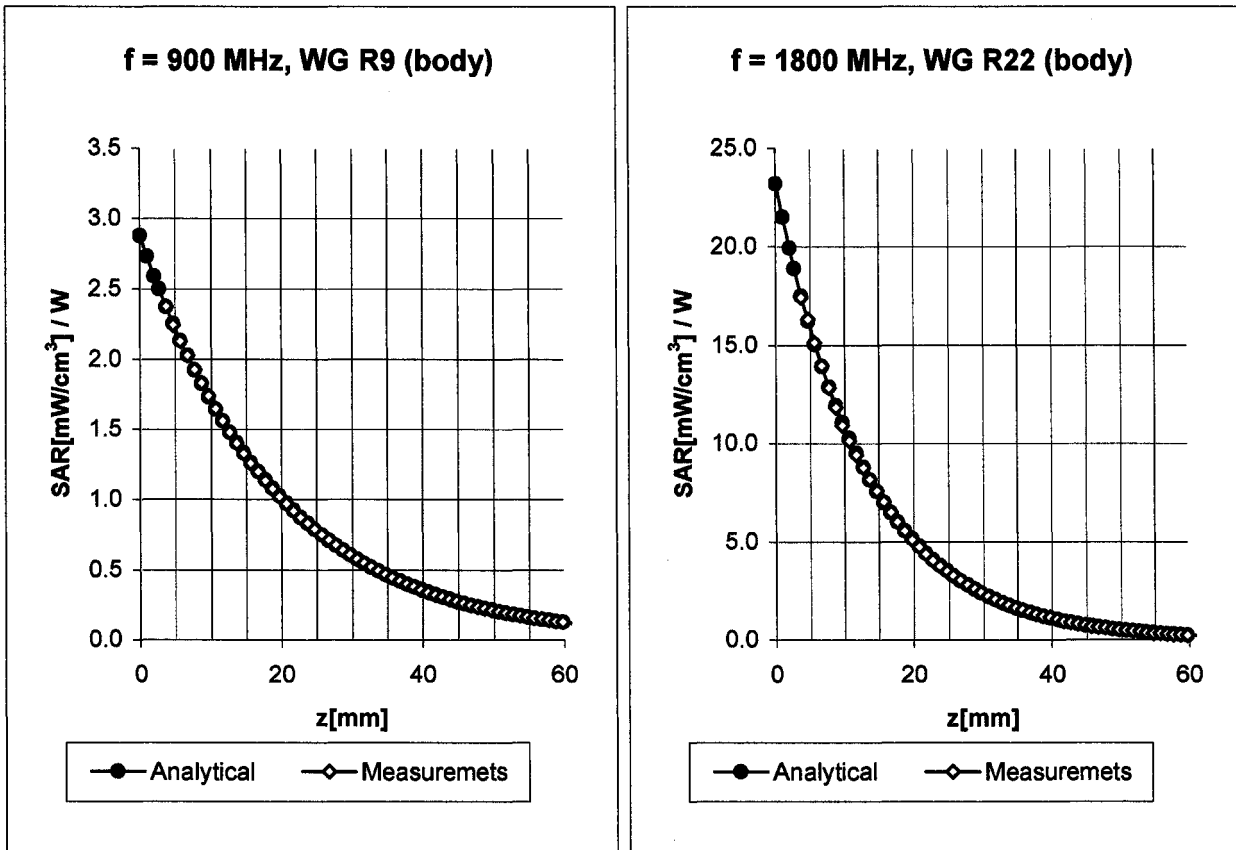
ConvF X	<b>6.4</b> $\pm$ 9.5% (k=2)	Boundary effect:
ConvF Y	<b>6.4</b> $\pm$ 9.5% (k=2)	Alpha <b>0.39</b>
ConvF Z	<b>6.4</b> $\pm$ 9.5% (k=2)	Depth <b>2.31</b>

**Head                      1800 MHz                       $\epsilon_r = 40.0 \pm 5\%$                        $\sigma = 1.40 \pm 5\%$  mho/m**

**Valid for f=1710-1910 MHz with Head Tissue Simulating Liquid according to IEEE P1528-200X**

ConvF X	<b>5.0</b> $\pm$ 9.5% (k=2)	Boundary effect:
ConvF Y	<b>5.0</b> $\pm$ 9.5% (k=2)	Alpha <b>0.49</b>
ConvF Z	<b>5.0</b> $\pm$ 9.5% (k=2)	Depth <b>2.55</b>

## Conversion Factor Assessment



**Body**                      **900 MHz**                       $\epsilon_r = 55.0 \pm 5\%$                        $\sigma = 1.05 \pm 5\% \text{ mho/m}$

Valid for f=800-1000 MHz with Body Tissue Simulating Liquid according to OET 65 Suppl. C

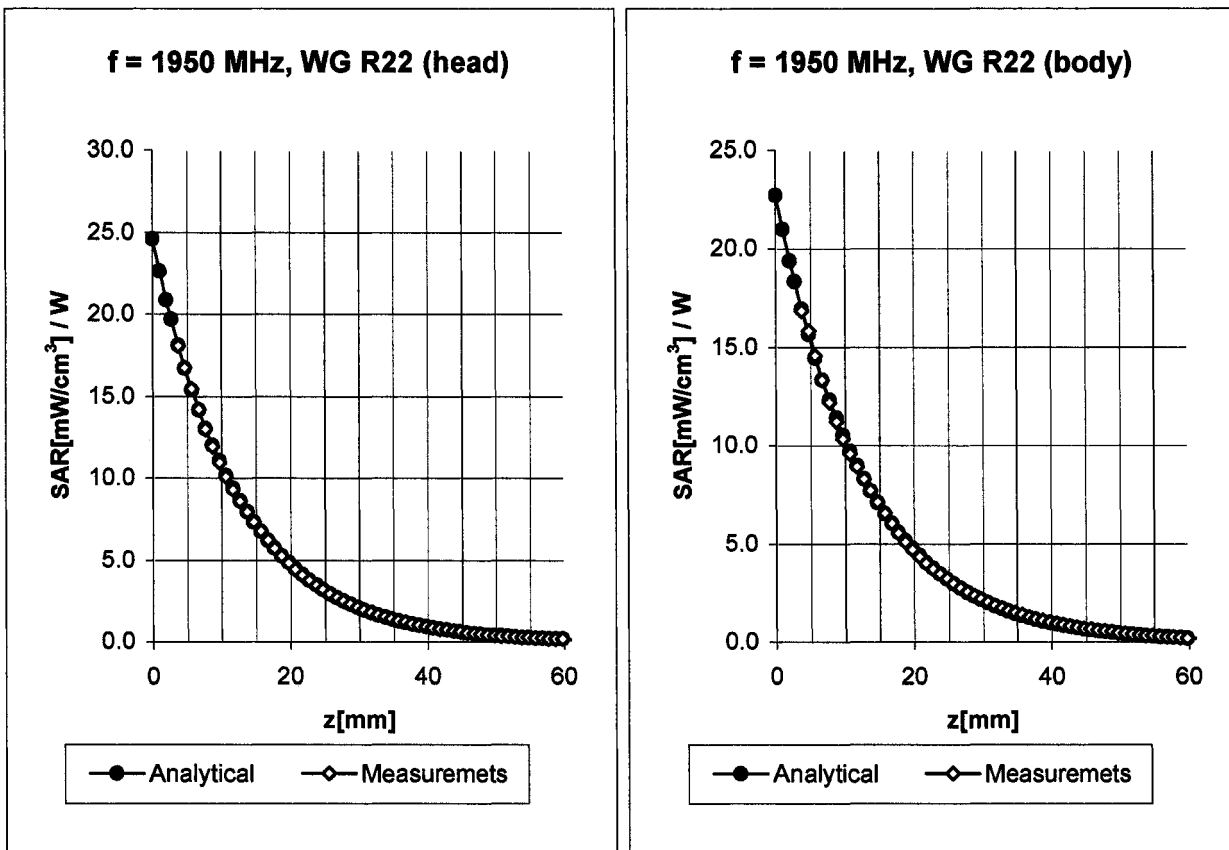
ConvF X	<b>6.1</b> $\pm 9.5\%$ (k=2)	Boundary effect:
ConvF Y	<b>6.1</b> $\pm 9.5\%$ (k=2)	Alpha <b>0.40</b>
ConvF Z	<b>6.1</b> $\pm 9.5\%$ (k=2)	Depth <b>2.37</b>

**Body**                      **1800 MHz**                       $\epsilon_r = 53.3 \pm 5\%$                        $\sigma = 1.52 \pm 5\% \text{ mho/m}$

Valid for f=1710-1910 MHz with Body Tissue Simulating Liquid according to OET 65 Suppl. C

ConvF X	<b>4.6</b> $\pm 9.5\%$ (k=2)	Boundary effect:
ConvF Y	<b>4.6</b> $\pm 9.5\%$ (k=2)	Alpha <b>0.55</b>
ConvF Z	<b>4.6</b> $\pm 9.5\%$ (k=2)	Depth <b>2.59</b>

## Conversion Factor Assessment

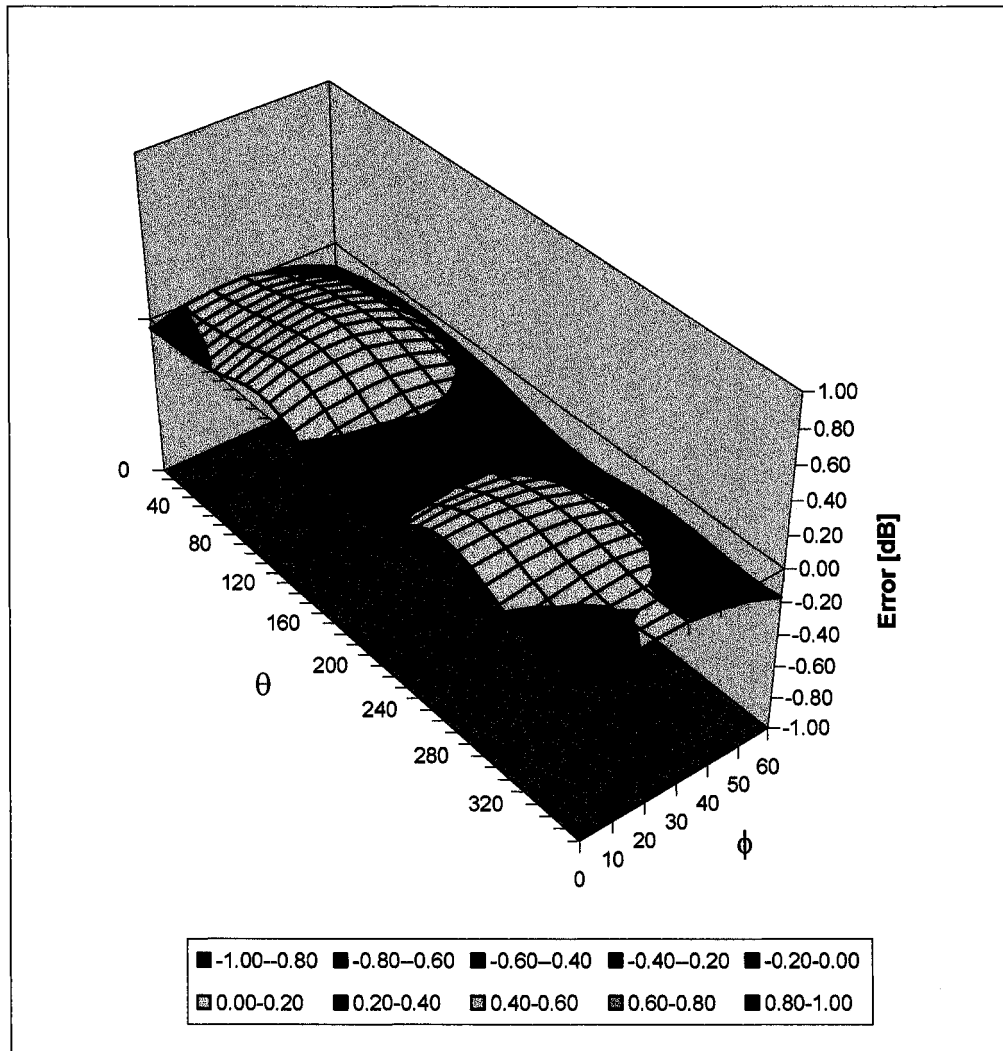


<b>Head</b>	<b>1950</b>	<b>MHz</b>	$\epsilon_r = 40.0 \pm 5\%$	$\sigma = 1.40 \pm 5\% \text{ mho/m}$
	ConvF X		<b>4.7</b> $\pm 8.9\%$ (k=2)	Boundary effect:
	ConvF Y		<b>4.7</b> $\pm 8.9\%$ (k=2)	Alpha <b>0.53</b>
	ConvF Z		<b>4.7</b> $\pm 8.9\%$ (k=2)	Depth <b>2.53</b>

<b>Body</b>	<b>1950</b>	<b>MHz</b>	$\epsilon_r = 53.3 \pm 5\%$	$\sigma = 1.52 \pm 5\% \text{ mho/m}$
	ConvF X		<b>4.2</b> $\pm 8.9\%$ (k=2)	Boundary effect:
	ConvF Y		<b>4.2</b> $\pm 8.9\%$ (k=2)	Alpha <b>0.70</b>
	ConvF Z		<b>4.2</b> $\pm 8.9\%$ (k=2)	Depth <b>2.26</b>

# Deviation from Isotropy in HSL

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



## Calibration Certificate

### Dosimetric E-Field Probe

Type:

**ET3DV6**

Serial Number:

**1502**

Place of Calibration:

**Zurich**

Date of Calibration:

**September 27, 2002**

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:

*N. Vetter*

Approved by:

*Alain Käfer*

# Probe ET3DV6

## SN:1502

<b>Manufactured:</b>	<b>October 24, 1999</b>
<b>Last calibration:</b>	<b>September 26, 2001</b>
<b>Recalibrated:</b>	<b>September 27, 2002</b>

**Calibrated for DASY Systems**

(Note: non-compatible with DASY2 system!)

## DASY - Parameters of Probe: ET3DV6 SN:1502

### Sensitivity in Free Space

NormX	<b>1.84</b> $\mu\text{V}/(\text{V}/\text{m})^2$
NormY	<b>1.89</b> $\mu\text{V}/(\text{V}/\text{m})^2$
NormZ	<b>1.87</b> $\mu\text{V}/(\text{V}/\text{m})^2$

### Diode Compression

DCP X	<b>93</b>	mV
DCP Y	<b>93</b>	mV
DCP Z	<b>93</b>	mV

### Sensitivity in Tissue Simulating Liquid

Head	<b>900 MHz</b>	$\epsilon_r = 41.5 \pm 5\%$	$\sigma = 0.97 \pm 5\%$ mho/m
Head	<b>835 MHz</b>	$\epsilon_r = 41.5 \pm 5\%$	$\sigma = 0.90 \pm 5\%$ mho/m
ConvF X	<b>6.5</b> $\pm 9.5\%$ (k=2)		Boundary effect:
ConvF Y	<b>6.5</b> $\pm 9.5\%$ (k=2)		Alpha <b>0.46</b>
ConvF Z	<b>6.5</b> $\pm 9.5\%$ (k=2)		Depth <b>2.27</b>
Head	<b>1800 MHz</b>	$\epsilon_r = 40.0 \pm 5\%$	$\sigma = 1.40 \pm 5\%$ mho/m
Head	<b>1900 MHz</b>	$\epsilon_r = 40.0 \pm 5\%$	$\sigma = 1.40 \pm 5\%$ mho/m
ConvF X	<b>5.6</b> $\pm 9.5\%$ (k=2)		Boundary effect:
ConvF Y	<b>5.6</b> $\pm 9.5\%$ (k=2)		Alpha <b>0.56</b>
ConvF Z	<b>5.6</b> $\pm 9.5\%$ (k=2)		Depth <b>2.24</b>

### Boundary Effect

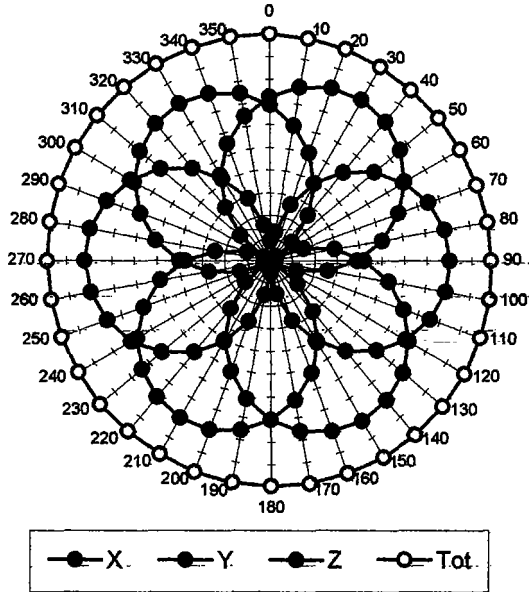
Head	<b>900 MHz</b>	<b>Typical SAR gradient: 5 % per mm</b>	
	Probe Tip to Boundary	<b>1 mm</b>	<b>2 mm</b>
	SAR <sub>be</sub> [%] Without Correction Algorithm	<b>10.2</b>	<b>5.7</b>
	SAR <sub>be</sub> [%] With Correction Algorithm	<b>0.3</b>	<b>0.4</b>
Head	<b>1800 MHz</b>	<b>Typical SAR gradient: 10 % per mm</b>	
	Probe Tip to Boundary	<b>1 mm</b>	<b>2 mm</b>
	SAR <sub>be</sub> [%] Without Correction Algorithm	<b>11.9</b>	<b>7.7</b>
	SAR <sub>be</sub> [%] With Correction Algorithm	<b>0.1</b>	<b>0.3</b>

### Sensor Offset

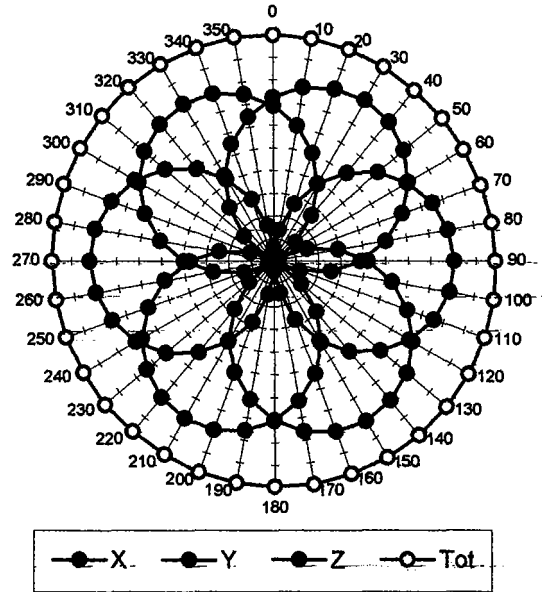
Probe Tip to Sensor Center	<b>2.7</b>	mm
Optical Surface Detection	<b>1.4 <math>\pm</math> 0.2</b>	mm

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

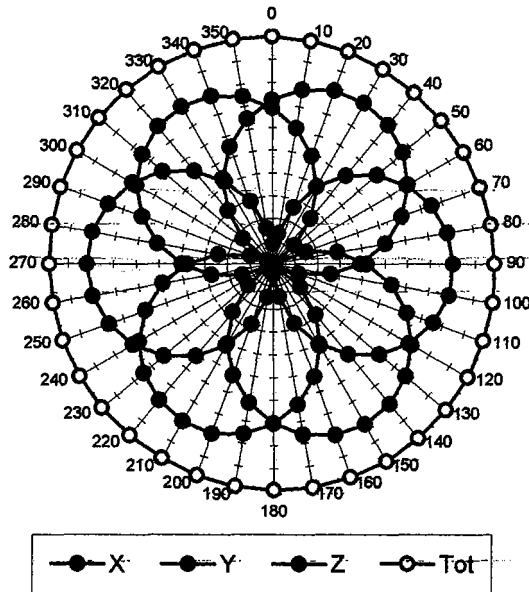
**f = 30 MHz, TEM cell ifi110**



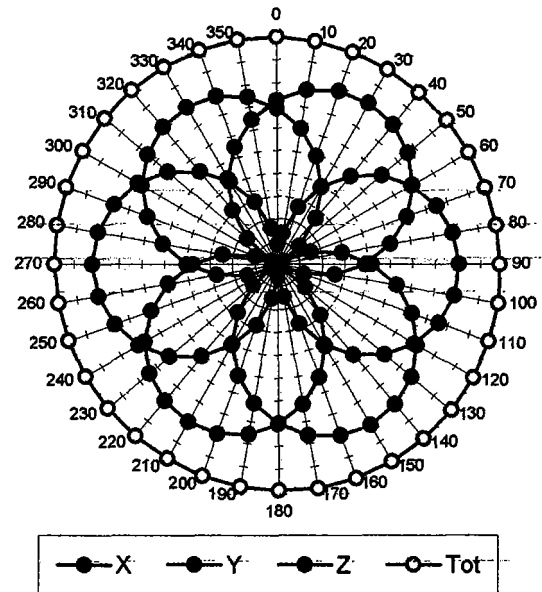
**f = 100 MHz, TEM cell ifi110**

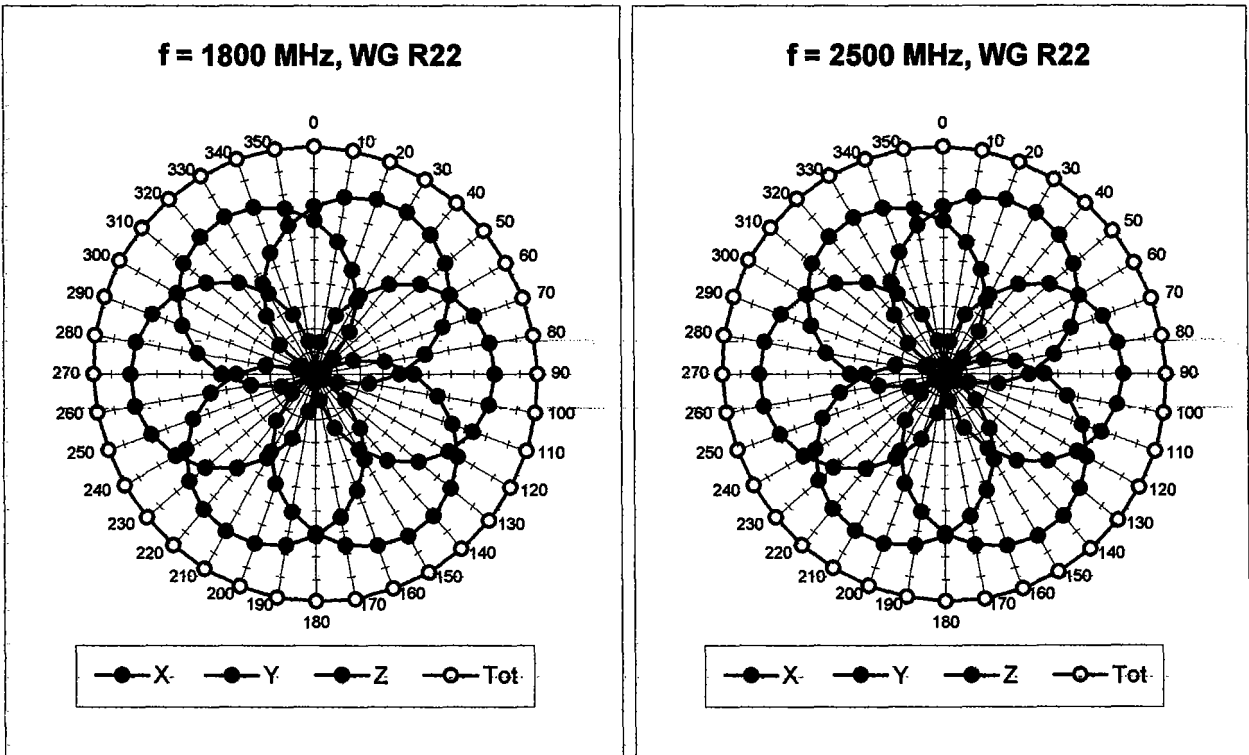


**f = 300 MHz, TEM cell ifi110**

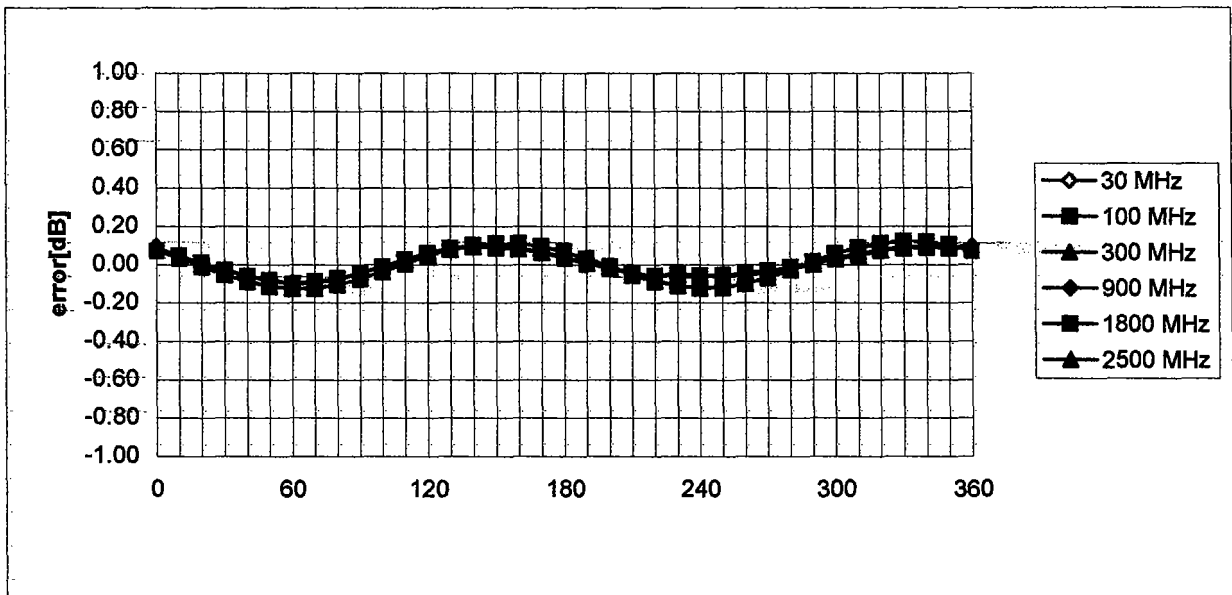


**f = 900 MHz, TEM cell ifi110**



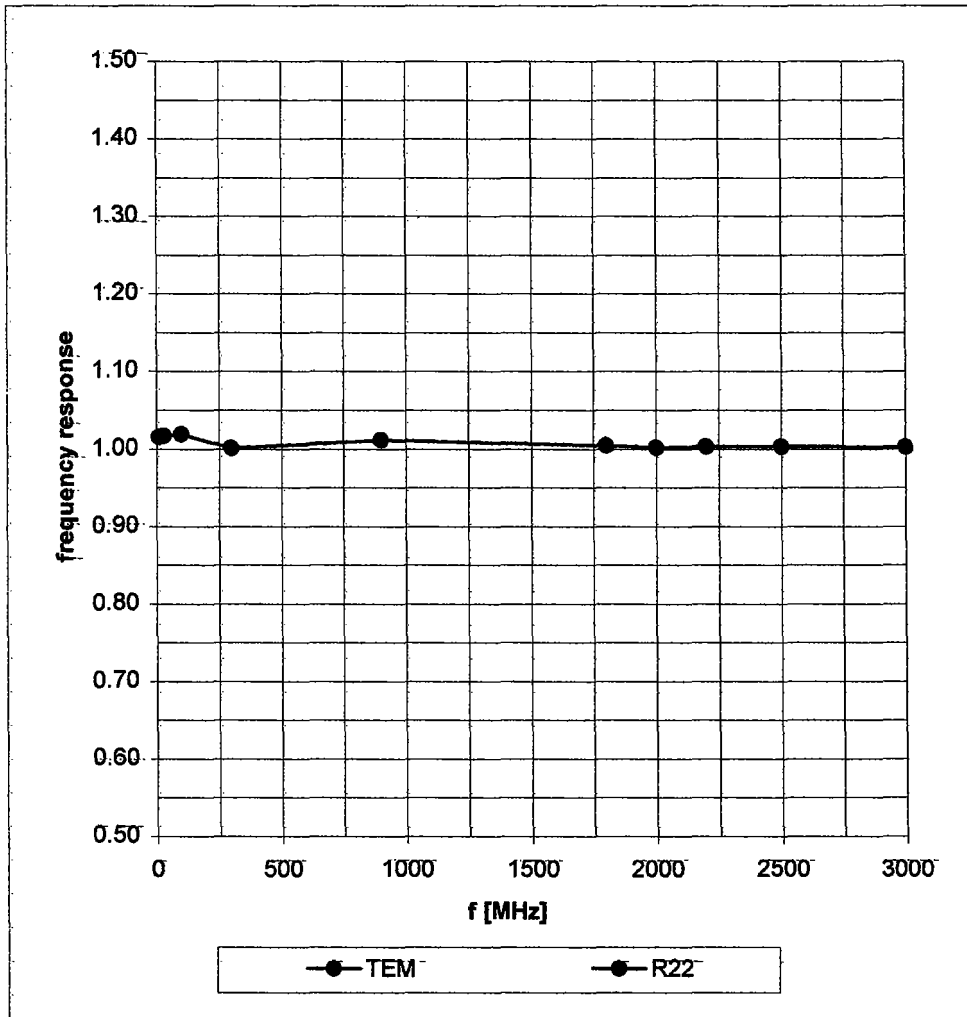


### Isotropy Error ( $\phi$ ), $\theta = 0^\circ$

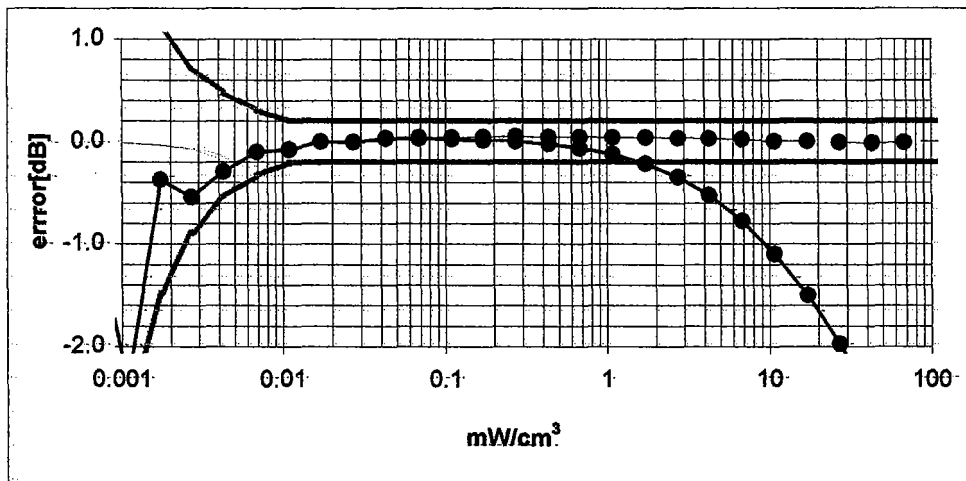
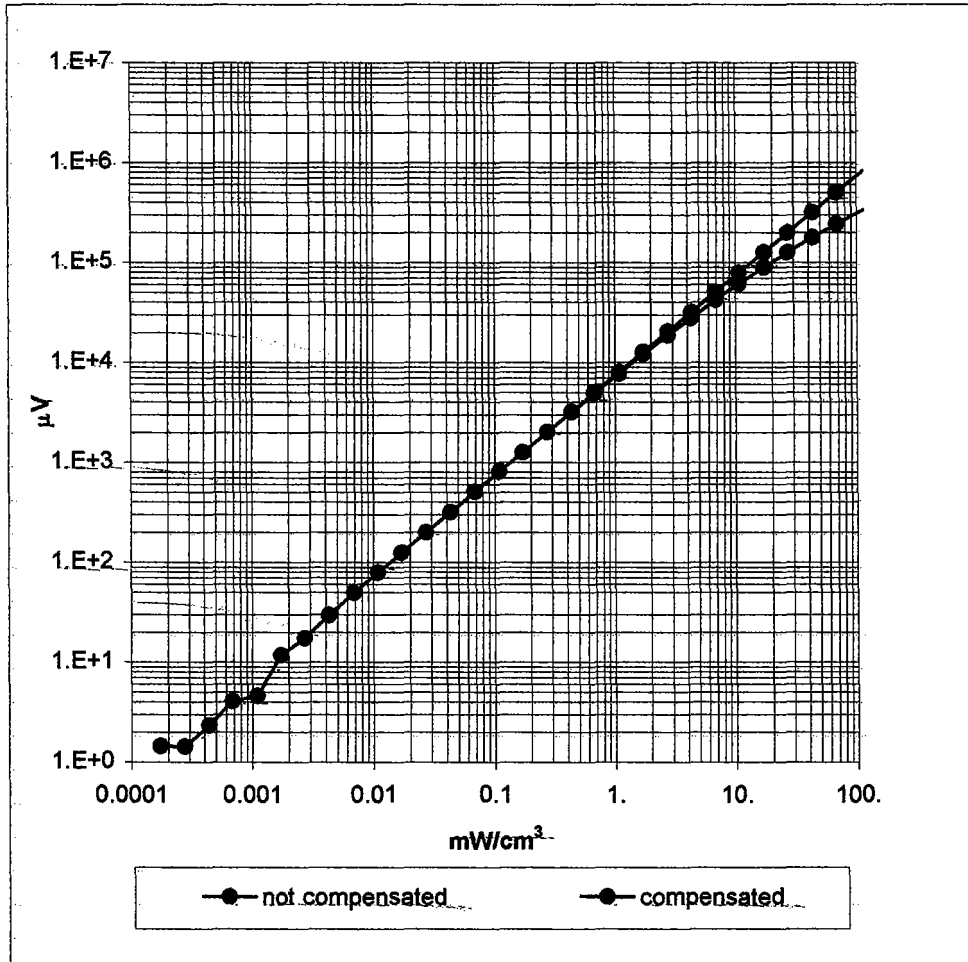


# Frequency Response of E-Field

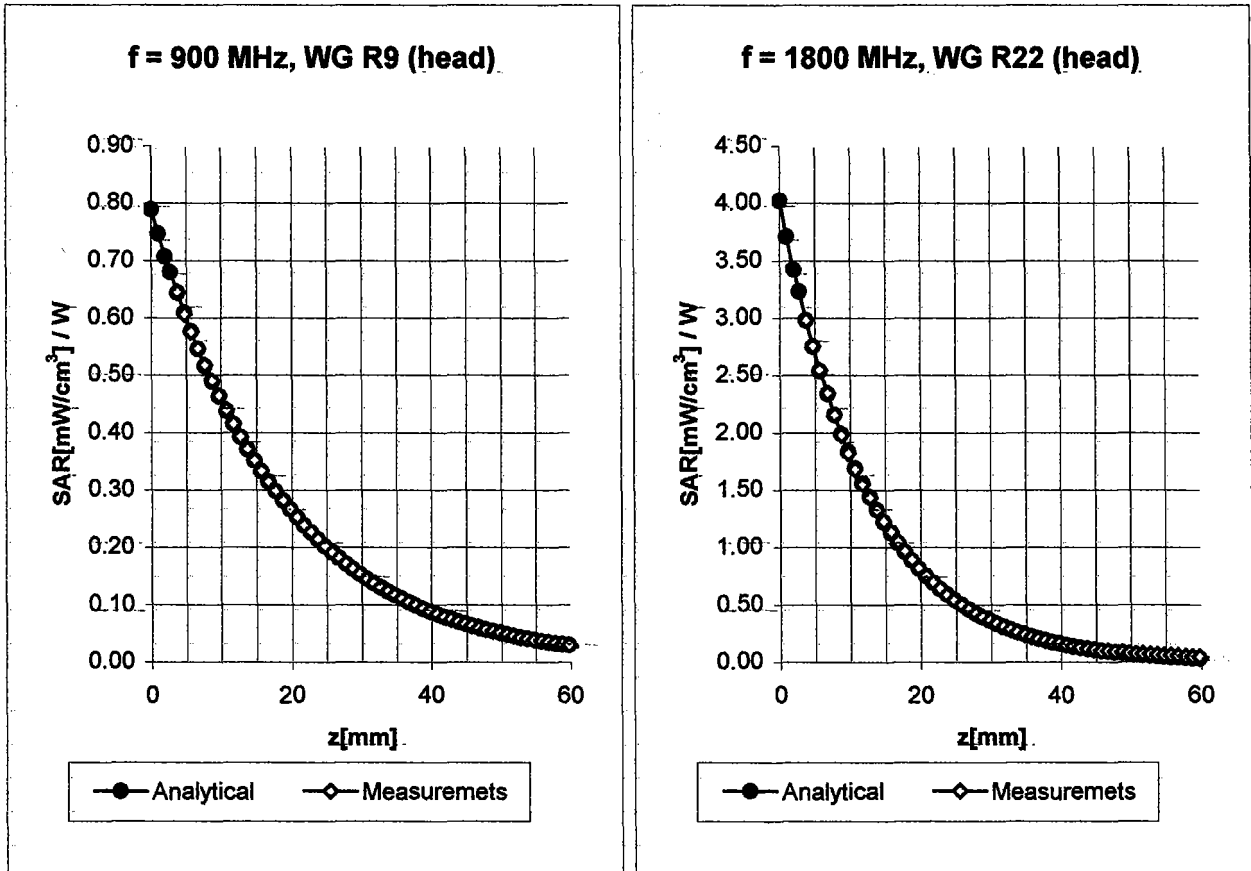
( TEM-Cell:ifi110, Waveguide R22)



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

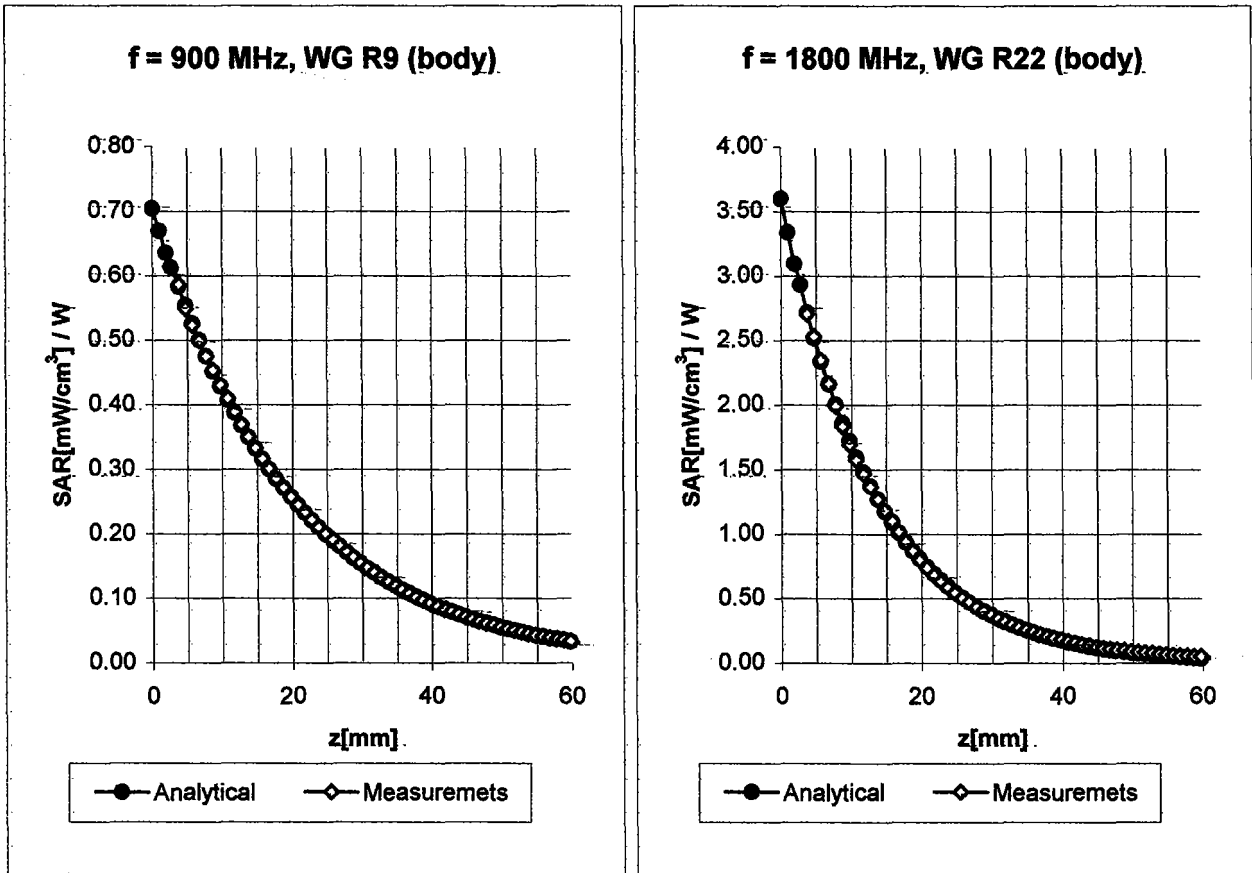


## Conversion Factor Assessment



<b>Head</b>	<b>900 MHz</b>	$\epsilon_r = 41.5 \pm 5\%$	$\sigma = 0.97 \pm 5\% \text{ mho/m}$
<b>Head</b>	<b>835 MHz</b>	$\epsilon_r = 41.5 \pm 5\%$	$\sigma = 0.90 \pm 5\% \text{ mho/m}$
	ConvF X	<b>6.5</b> $\pm 9.5\%$ (k=2)	Boundary effect:
	ConvF Y	<b>6.5</b> $\pm 9.5\%$ (k=2)	Alpha <b>0.46</b>
	ConvF Z	<b>6.5</b> $\pm 9.5\%$ (k=2)	Depth <b>2.27</b>
<b>Head</b>	<b>1800 MHz</b>	$\epsilon_r = 40.0 \pm 5\%$	$\sigma = 1.40 \pm 5\% \text{ mho/m}$
<b>Head</b>	<b>1900 MHz</b>	$\epsilon_r = 40.0 \pm 5\%$	$\sigma = 1.40 \pm 5\% \text{ mho/m}$
	ConvF X	<b>5.6</b> $\pm 9.5\%$ (k=2)	Boundary effect:
	ConvF Y	<b>5.6</b> $\pm 9.5\%$ (k=2)	Alpha <b>0.56</b>
	ConvF Z	<b>5.6</b> $\pm 9.5\%$ (k=2)	Depth <b>2.24</b>

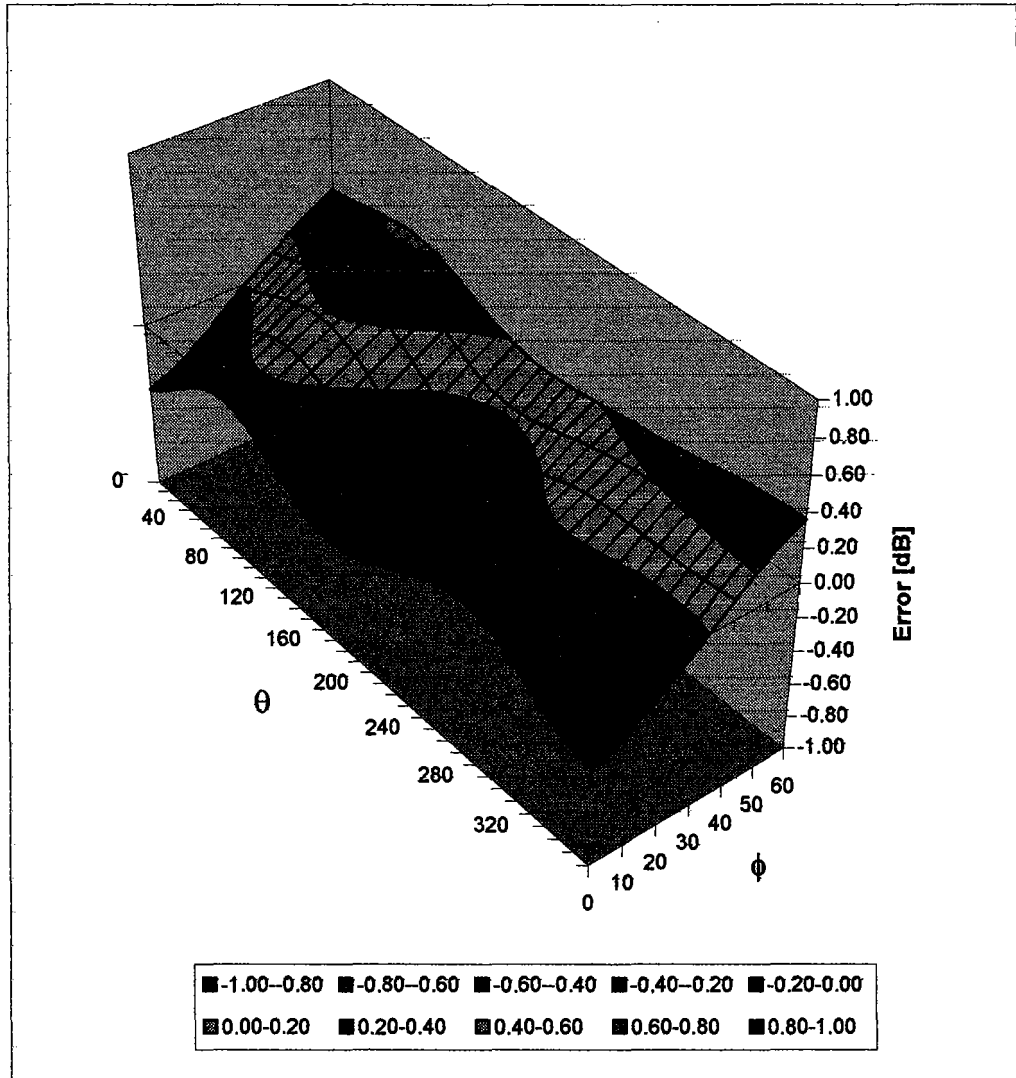
## Conversion Factor Assessment



<b>Body</b>	<b>900 MHz</b>	$\epsilon_r = 55.0 \pm 5\%$	$\sigma = 1.05 \pm 5\% \text{ mho/m}$
<del>Body</del>	<del>835 MHz</del>	<del><math>\epsilon_r = 55.2 \pm 5\%</math></del>	<del><math>\sigma = 0.97 \pm 5\% \text{ mho/m}</math></del>
	ConvF X	<b>6.3</b> $\pm 9.5\%$ (k=2)	Boundary effect:
	ConvF Y	<b>6.3</b> $\pm 9.5\%$ (k=2)	Alpha <b>0.29</b>
	ConvF Z	<b>6.3</b> $\pm 9.5\%$ (k=2)	Depth <b>3.55</b>
<b>Body</b>	<b>1800 MHz</b>	$\epsilon_r = 53.3 \pm 5\%$	$\sigma = 1.52 \pm 5\% \text{ mho/m}$
<del>Body</del>	<del>1900 MHz</del>	<del><math>\epsilon_r = 53.3 \pm 5\%</math></del>	<del><math>\sigma = 1.52 \pm 5\% \text{ mho/m}</math></del>
	ConvF X	<b>5.3</b> $\pm 9.5\%$ (k=2)	Boundary effect:
	ConvF Y	<b>5.3</b> $\pm 9.5\%$ (k=2)	Alpha <b>0.63</b>
	ConvF Z	<b>5.3</b> $\pm 9.5\%$ (k=2)	Depth <b>2.34</b>

# Deviation from Isotropy in HSL

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



**Client**      **Motorola MRO (Harvard)**

**CALIBRATION CERTIFICATE**

**Object(s)**      **ET3DV6 - SN 1513**

**Calibration procedure(s)**      **QA CAL-01 v2**  
**Calibration procedure for dosimetric E-field probes**

**Calibration date:**      **January 17, 2003**


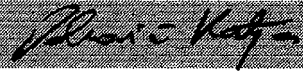
**Condition of the calibrated item**      **In Tolerance (according to the specific calibration document)**

This calibration statement documents traceability of M&TE used in the calibration procedures and conformity of the procedures with the ISO/IEC 17025 international standard.

All calibrations have been conducted in the closed laboratory facility: environment temperature 22 +/- 2 degrees Celsius and humidity < 75%.

**Calibration Equipment used (M&TE critical for calibration)**

Model Type	ID #	Cal Date	Scheduled Calibration
RF generator HP 8684C	US3642U01700	4-Aug-99 (in house check Aug-02)	In house check: Aug-05
Power sensor E4412A	MY41495277	8-Mar-02	Mar-03
Power sensor HP 8481A	MY41092180	18-Sep-02	Sep-03
Power meter EPM E4419B	GB41293874	13-Sep-02	Sep-03
Network Analyzer HP 8753E	US38432426	3-May-00	In house check: May 03
Fluke Process Calibrator Type 702	SN: 6295803	3-Sep-01	Sep-03

	Name	Function	Signature
Calibrated by:	Nico Vetterli	Technician	
Approved by:	Katja Pokovic	Laboratory Director	

Date issued: January 17, 2003

This calibration certificate is issued as an intermediate solution until the accreditation process (based on ISO/IEC 17025 International Standard) for Calibration Laboratory of Schmid & Partner Engineering AG is completed.

# Probe ET3DV6R

## SN:1513

Manufactured:	May 3, 2002
Last calibration:	May 8, 2002
Repaired:	December 16, 2002
Recalibrated:	January 17, 2003

**Calibrated for DASY Systems**

(Note: non-compatible with DASY2 system!)

## DASY - Parameters of Probe: ET3DV6R SN:1513

### Sensitivity in Free Space

NormX	<b>2.21</b> $\mu\text{V}/(\text{V}/\text{m})^2$
NormY	<b>2.00</b> $\mu\text{V}/(\text{V}/\text{m})^2$
NormZ	<b>2.02</b> $\mu\text{V}/(\text{V}/\text{m})^2$

### Diode Compression

DCP X	<b>94</b>	mV
DCP Y	<b>94</b>	mV
DCP Z	<b>94</b>	mV

### Sensitivity in Tissue Simulating Liquid

Head	<b>900 MHz</b>	$\epsilon_r = 41.5 \pm 5\%$	$\sigma = 0.97 \pm 5\%$ mho/m
Head	<b>835 MHz</b>	$\epsilon_r = 41.5 \pm 5\%$	$\sigma = 0.90 \pm 5\%$ mho/m
ConvF X	<b>6.0</b> $\pm 9.5\%$ (k=2)		Boundary effect:
ConvF Y	<b>6.0</b> $\pm 9.5\%$ (k=2)		Alpha <b>0.56</b>
ConvF Z	<b>6.0</b> $\pm 9.5\%$ (k=2)		Depth <b>1.95</b>
Head	<b>1800 MHz</b>	$\epsilon_r = 40.0 \pm 5\%$	$\sigma = 1.40 \pm 5\%$ mho/m
Head	<b>1900 MHz</b>	$\epsilon_r = 40.0 \pm 5\%$	$\sigma = 1.40 \pm 5\%$ mho/m
ConvF X	<b>4.9</b> $\pm 9.5\%$ (k=2)		Boundary effect:
ConvF Y	<b>4.9</b> $\pm 9.5\%$ (k=2)		Alpha <b>0.50</b>
ConvF Z	<b>4.9</b> $\pm 9.5\%$ (k=2)		Depth <b>2.63</b>

### Boundary Effect

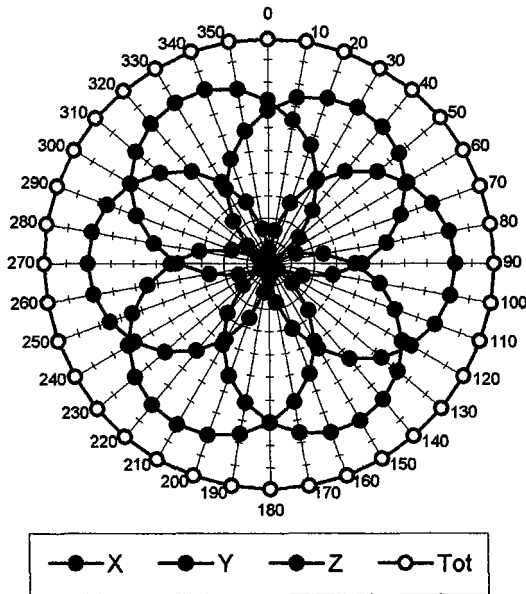
Head	<b>900 MHz</b>	<b>Typical SAR gradient: 5 % per mm</b>	
	Probe Tip to Boundary	<b>1 mm</b>	<b>2 mm</b>
	SAR <sub>be</sub> [%] Without Correction Algorithm	<b>9.3</b>	<b>4.9</b>
	SAR <sub>be</sub> [%] With Correction Algorithm	<b>0.2</b>	<b>0.4</b>
Head	<b>1800 MHz</b>	<b>Typical SAR gradient: 10 % per mm</b>	
	Probe Tip to Boundary	<b>1 mm</b>	<b>2 mm</b>
	SAR <sub>be</sub> [%] Without Correction Algorithm	<b>13.9</b>	<b>9.3</b>
	SAR <sub>be</sub> [%] With Correction Algorithm	<b>0.2</b>	<b>0.1</b>

### Sensor Offset

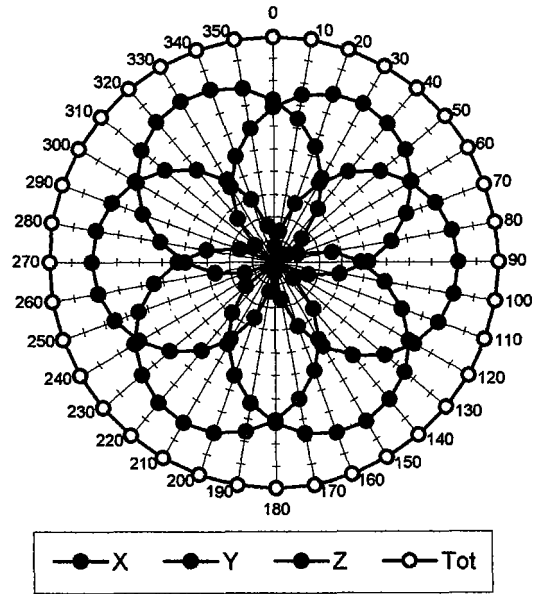
Probe Tip to Sensor Center	<b>2.7</b>	mm
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# Receiving Pattern ( $\phi$ ), $\theta = 0^\circ$

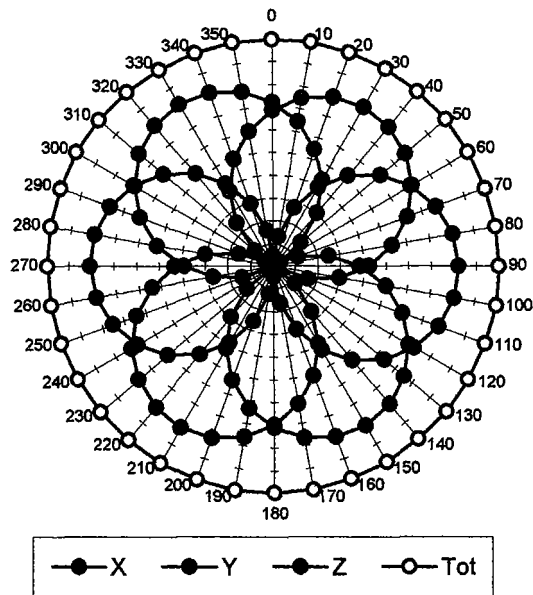
**f = 30 MHz, TEM cell ifi110**



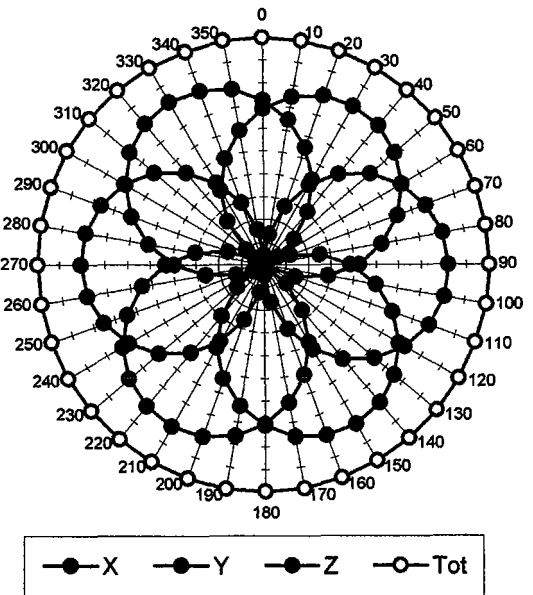
**f = 100 MHz, TEM cell ifi110**

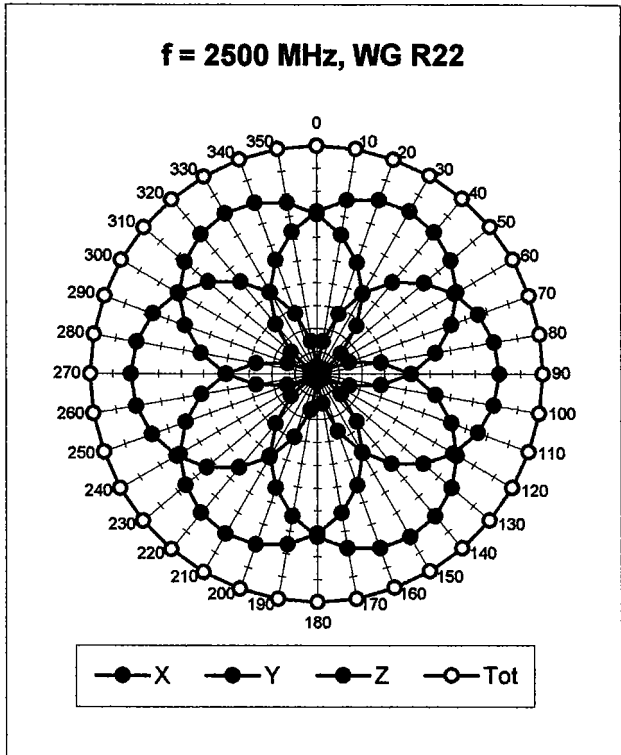
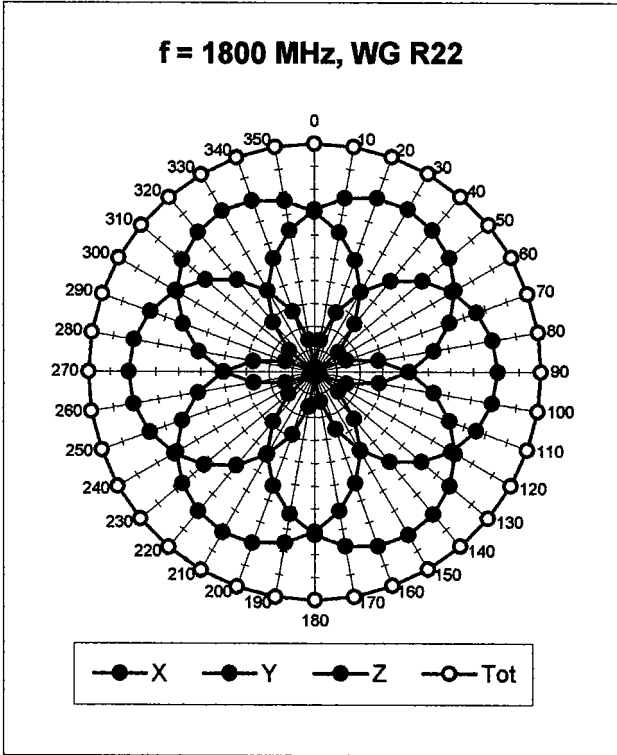


**f = 300 MHz, TEM cell ifi110**

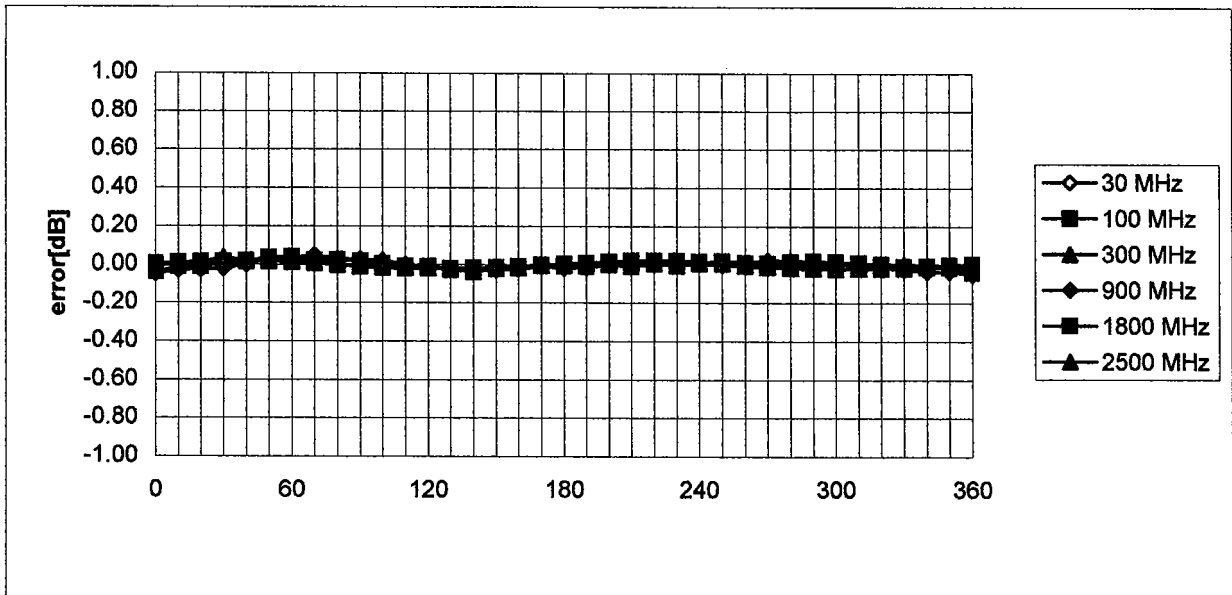


**f = 900 MHz, TEM cell ifi110**



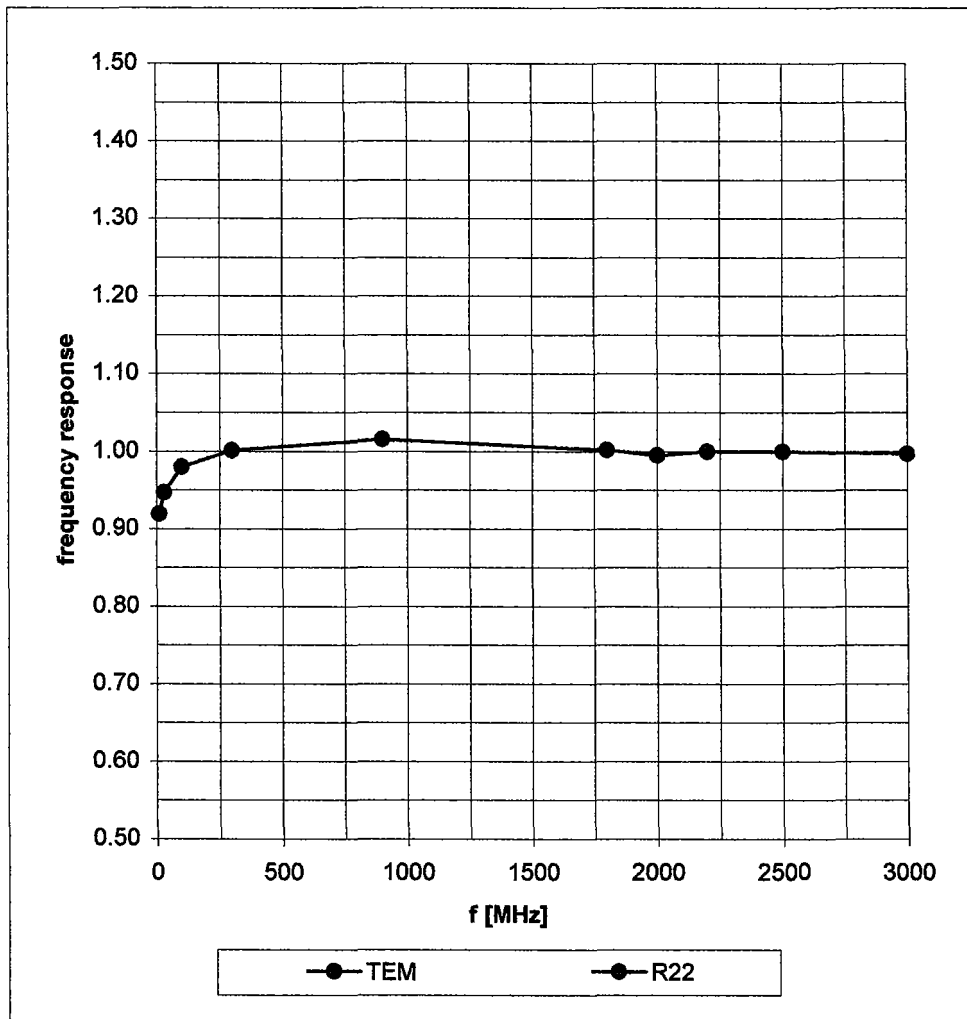


### Isotropy Error ( $\phi$ ), $\theta = 0^\circ$

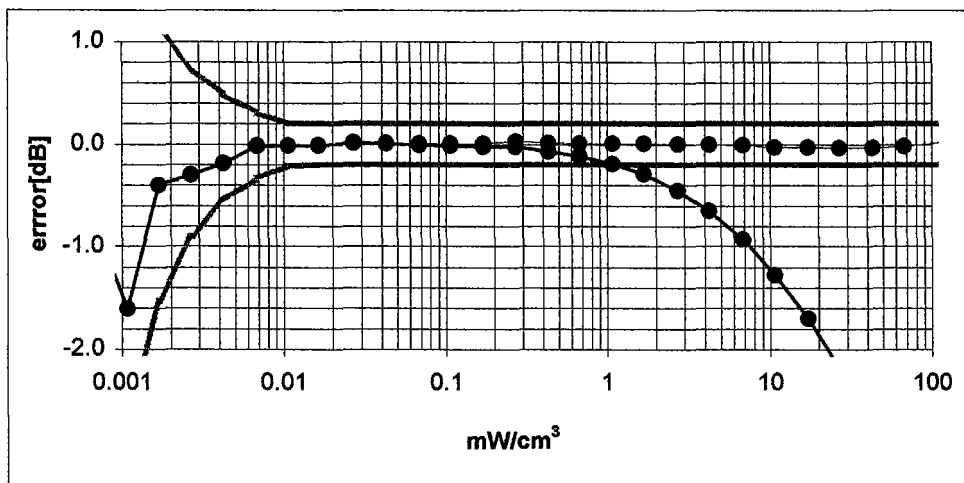
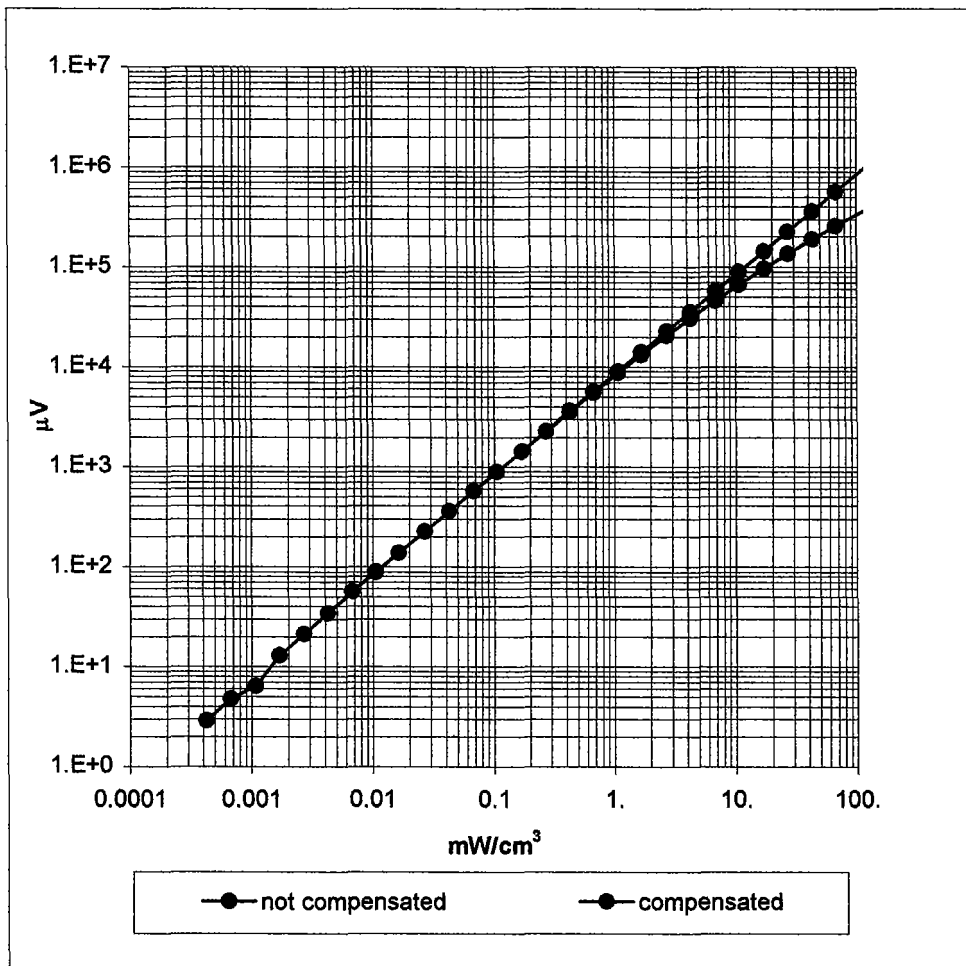


# Frequency Response of E-Field

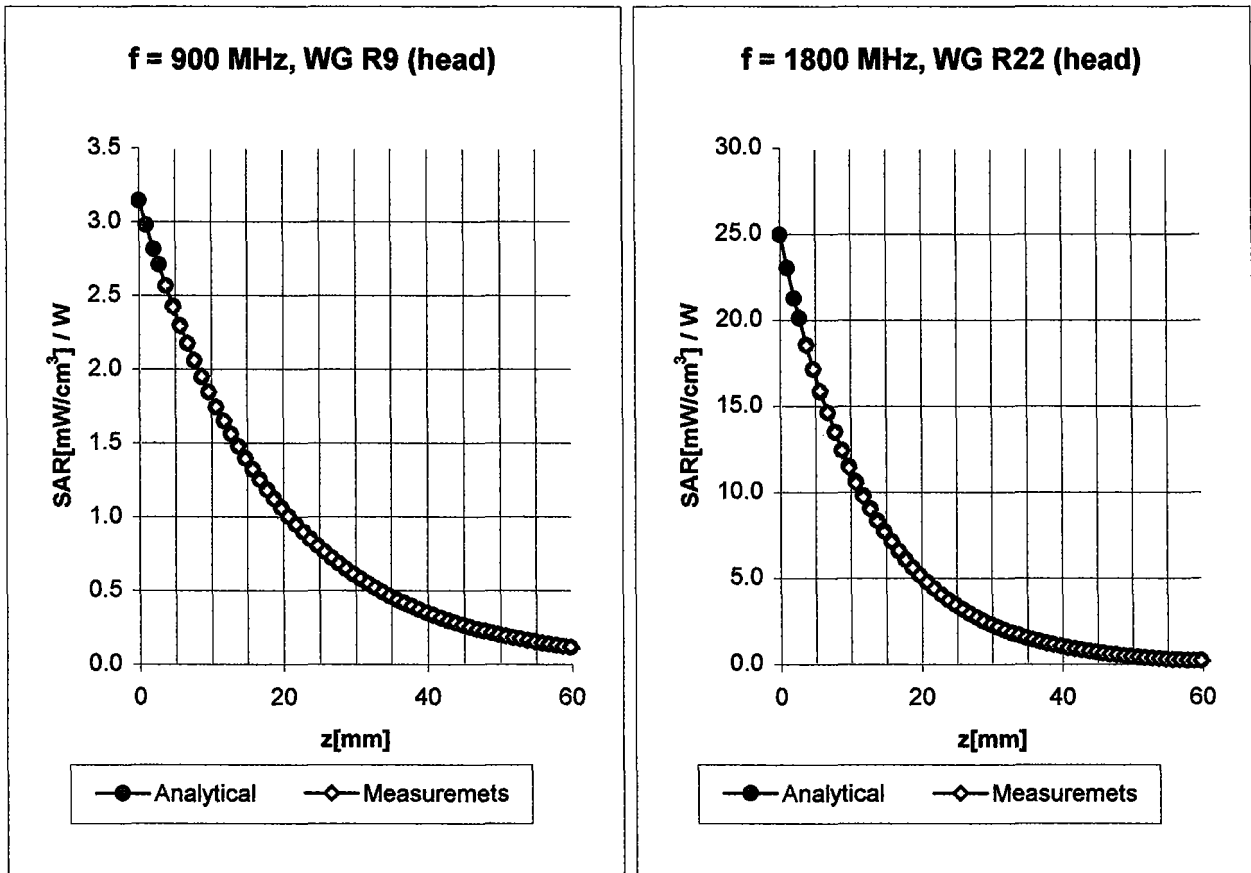
( TEM-Cell:ifi110, Waveguide R22)



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



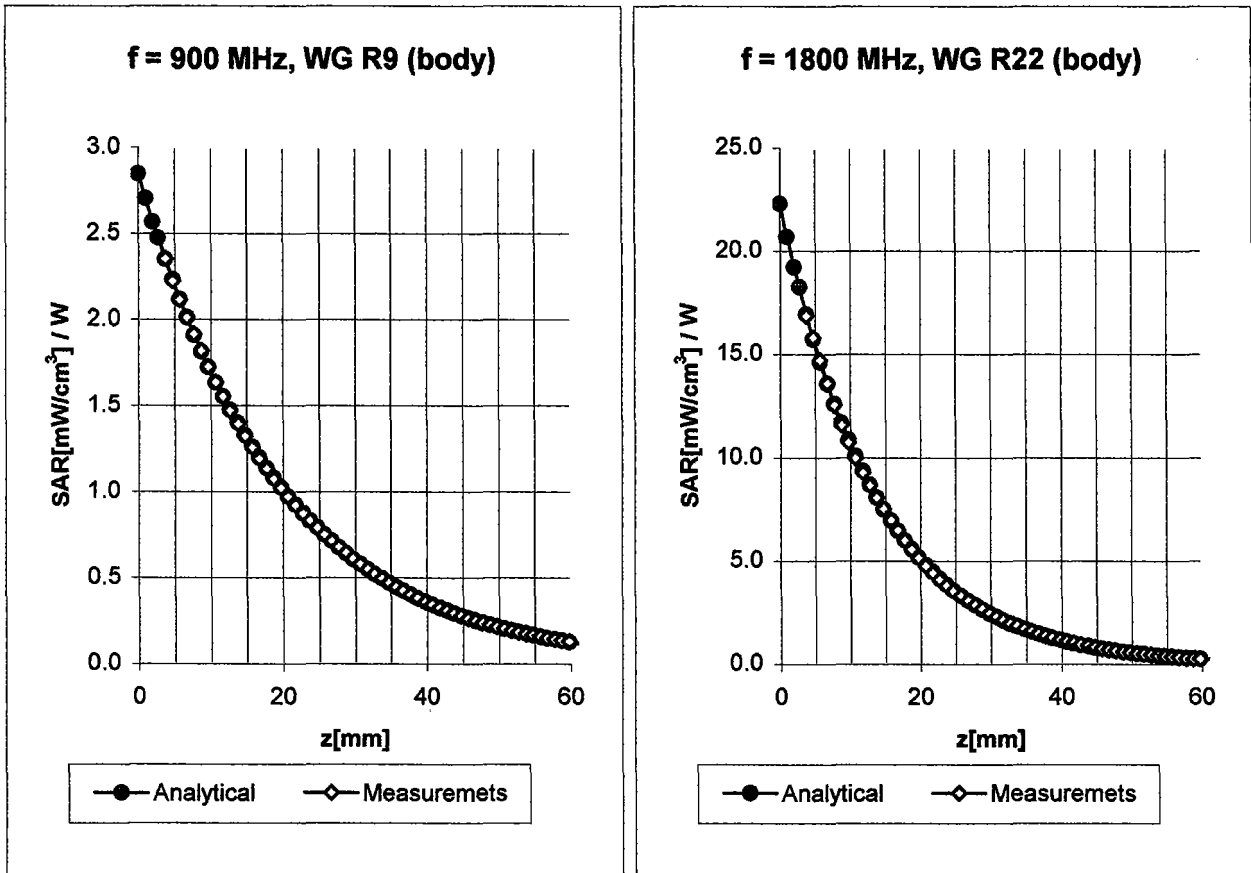
## Conversion Factor Assessment



Head	900 MHz	$\epsilon_r = 41.5 \pm 5\%$	$\sigma = 0.97 \pm 5\%$ mho/m
Head	835 MHz	$\epsilon_r = 41.5 \pm 5\%$	$\sigma = 0.90 \pm 5\%$ mho/m
	ConvF X	<b>6.0</b> $\pm 9.5\%$ (k=2)	Boundary effect:
	ConvF Y	<b>6.0</b> $\pm 9.5\%$ (k=2)	Alpha <b>0.56</b>
	ConvF Z	<b>6.0</b> $\pm 9.5\%$ (k=2)	Depth <b>1.95</b>

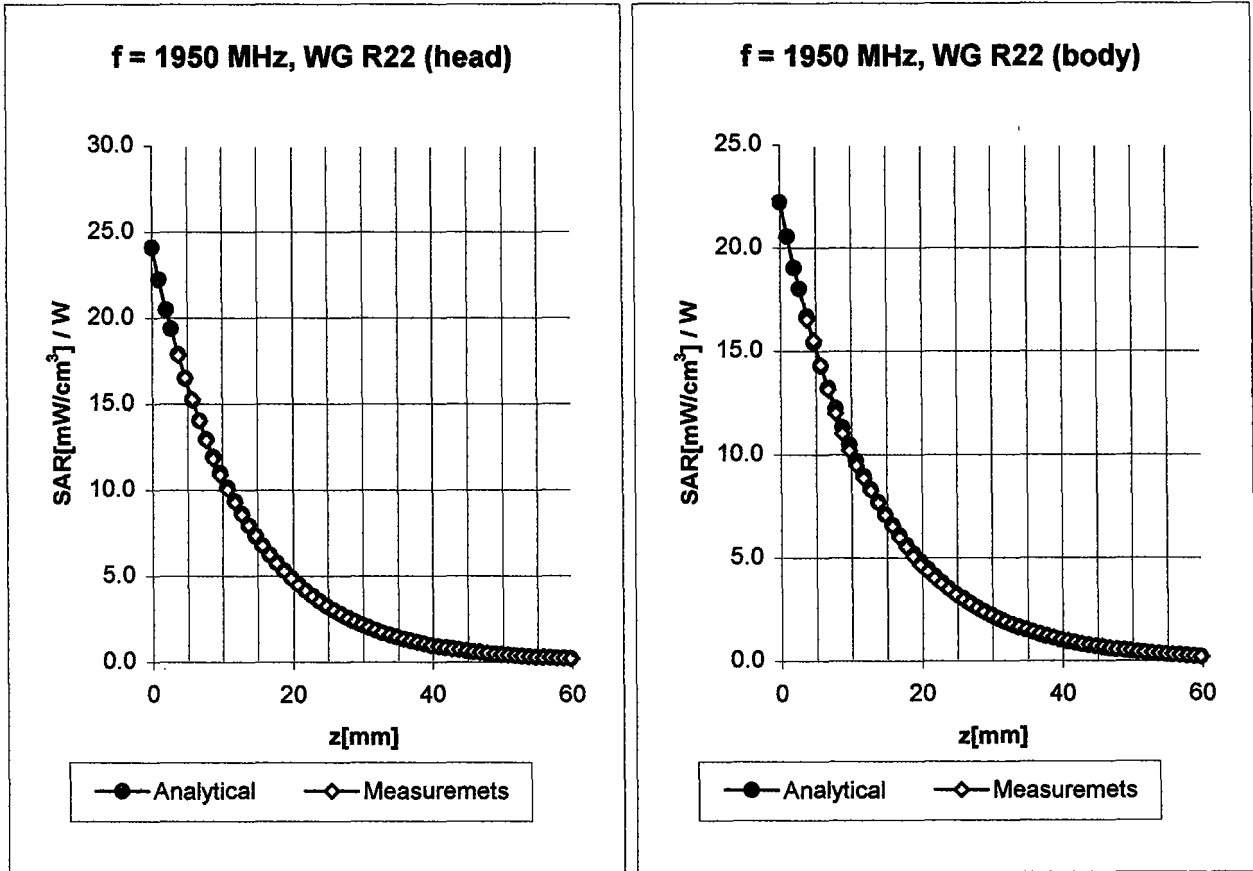
Head	1800 MHz	$\epsilon_r = 40.0 \pm 5\%$	$\sigma = 1.40 \pm 5\%$ mho/m
Head	1900 MHz	$\epsilon_r = 40.0 \pm 5\%$	$\sigma = 1.40 \pm 5\%$ mho/m
	ConvF X	<b>4.9</b> $\pm 9.5\%$ (k=2)	Boundary effect:
	ConvF Y	<b>4.9</b> $\pm 9.5\%$ (k=2)	Alpha <b>0.50</b>
	ConvF Z	<b>4.9</b> $\pm 9.5\%$ (k=2)	Depth <b>2.63</b>

## Conversion Factor Assessment



<b>Body</b>	<b>900 MHz</b>	$\epsilon_r = 55.0 \pm 5\%$	$\sigma = 1.05 \pm 5\% \text{ mho/m}$
<b>Body</b>	<b>835 MHz</b>	$\epsilon_r = 55.2 \pm 5\%$	$\sigma = 0.97 \pm 5\% \text{ mho/m}$
	ConvF X	<b>5.8</b> $\pm 9.5\%$ (k=2)	Boundary effect:
	ConvF Y	<b>5.8</b> $\pm 9.5\%$ (k=2)	Alpha <b>0.45</b>
	ConvF Z	<b>5.8</b> $\pm 9.5\%$ (k=2)	Depth <b>2.35</b>
<b>Body</b>	<b>1800 MHz</b>	$\epsilon_r = 53.3 \pm 5\%$	$\sigma = 1.52 \pm 5\% \text{ mho/m}$
<b>Body</b>	<b>1900 MHz</b>	$\epsilon_r = 53.3 \pm 5\%$	$\sigma = 1.52 \pm 5\% \text{ mho/m}$
	ConvF X	<b>4.4</b> $\pm 9.5\%$ (k=2)	Boundary effect:
	ConvF Y	<b>4.4</b> $\pm 9.5\%$ (k=2)	Alpha <b>0.57</b>
	ConvF Z	<b>4.4</b> $\pm 9.5\%$ (k=2)	Depth <b>2.66</b>

# Conversion Factor Assessment



<b>Head</b>	<b>1950</b>	<b>MHz</b>	$\epsilon_r = 40.0 \pm 5\%$	$\sigma = 1.40 \pm 5\% \text{ mho/m}$
	ConvF X	<b>4.6</b>	$\pm 8.9\% (k=2)$	Boundary effect:
	ConvF Y	<b>4.6</b>	$\pm 8.9\% (k=2)$	Alpha <b>0.55</b>
	ConvF Z	<b>4.6</b>	$\pm 8.9\% (k=2)$	Depth <b>2.57</b>
<b>Body</b>	<b>1950</b>	<b>MHz</b>	$\epsilon_r = 53.3 \pm 5\%$	$\sigma = 1.52 \pm 5\% \text{ mho/m}$
	ConvF X	<b>4.2</b>	$\pm 8.9\% (k=2)$	Boundary effect:
	ConvF Y	<b>4.2</b>	$\pm 8.9\% (k=2)$	Alpha <b>0.80</b>
	ConvF Z	<b>4.2</b>	$\pm 8.9\% (k=2)$	Depth <b>2.14</b>

# Deviation from Isotropy in HSL

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

