

**CGISS EME Test Laboratory**8000 West Sunrise Blvd  
Fort Lauderdale, FL. 33322**S.A.R. EME Compliance Test Report****Part 3 of 3**

<b>Attention:</b>	FCC
<b>Date of Report:</b>	September 18, 2003
<b>Report Revision:</b>	Rev. B
<b>Manufacturer:</b>	Motorola
<b>Product Description:</b>	Portable 403-440 MHz 1-4W 16 Channel
<b>FCC ID:</b>	<b>ABZ99FT4057</b>
<b>Device Model:</b>	AAH65QDH9AA1AN/ AAH65QDC9AA1AN
<b>Test Period:</b>	8/08/03-9/06/03
<b>EME Tech:</b>	Ed Church, Clint Miller
<b>EME Engineer:</b>	Stephen Whalen SR. EME Engineer
<b>Author:</b>	Michael Sailsman Global EME Regulatory Affairs Liaison

**Note:** Based on the information and the testing results provided herein, the undersigned certifies that when used as stated in the operating instructions supplied, said product complies with the national and international reference standards and guidelines listed in section 2.0 of this report.

Signature on file

9/19/03

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Ken Enger  
Senior Resource Manager, Laboratory Director, CGISS EME Lab

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Date Approved

**Note:** This report shall not be reproduced without written approval from an officially designated representative of the Motorola EME Laboratory.

**APPENDIX D**

**Calibration Certificates**

Client **Motorola CGISS**

## CALIBRATION CERTIFICATE

Object(s) **ET3DV6 - SN:1384**

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

Calibration date: **May 15, 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 (Calibrated by, Certificate No.)	Scheduled Calibration
RF generator HP 8684C	US3642U01700	4-Aug-99 (SPEAG, in house check Aug-02)	In house check: Aug-05
Power sensor E4412A	MY41495277	2-Apr-03 (METAS, No 252-0250)	Apr-04
Power sensor HP 8481A	MY41092180	18-Sep-02 (Agilent, No. 20020918)	Sep-03
Power meter EPM E4419B	GB41293874	2-Apr-03 (METAS, No 252-0250)	Apr-04
Network Analyzer HP 8753E	US38432426	3-May-00 (Agilent, No. 8702K064602)	In house check: May 03
Fluke Process Calibrator Type 702	SN: 6295803	3-Sep-01 (ELCAL, No.2360)	Sep-03

	<b>Name</b>	<b>Function</b>	<b>Signature</b>
Calibrated by:	Nico Vetterli	Technician	
Approved by:	Katja Pokovic	Laboratory Director	

Date issued: May 15, 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: ET3DV6 SN:1384****Sensitivity in Free Space****Diode Compression**

NormX	$1.76 \mu\text{V}/(\text{V}/\text{m})^2$	DCP X	92	mV
NormY	$1.72 \mu\text{V}/(\text{V}/\text{m})^2$	DCP Y	92	mV
NormZ	$1.89 \mu\text{V}/(\text{V}/\text{m})^2$	DCP Z	92	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 EN 50361, P1528-200X

ConvF X	$6.6 \pm 9.5\%$ (k=2)	Boundary effect:	
ConvF Y	$6.6 \pm 9.5\%$ (k=2)	Alpha	0.45
ConvF Z	$6.6 \pm 9.5\%$ (k=2)	Depth	2.42

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 EN 50361, P1528-200X

ConvF X	$5.4 \pm 9.5\%$ (k=2)	Boundary effect:	
ConvF Y	$5.4 \pm 9.5\%$ (k=2)	Alpha	0.55
ConvF Z	$5.4 \pm 9.5\%$ (k=2)	Depth	2.56

**Boundary Effect**

Head 900 MHz Typical SAR gradient: 5 % per mm

Probe Tip to Boundary		1 mm	2 mm
SAR <sub>be</sub> [%]	Without Correction Algorithm	11.4	6.3
SAR <sub>be</sub> [%]	With Correction Algorithm	0.4	0.7

Head 1800 MHz Typical SAR gradient: 10 % per mm

Probe Tip to Boundary		1 mm	2 mm
SAR <sub>be</sub> [%]	Without Correction Algorithm	14.7	9.5
SAR <sub>be</sub> [%]	With Correction Algorithm	0.1	0.0

**Sensor Offset**

Probe Tip to Sensor Center	2.7	mm
Optical Surface Detection	$1.5 \pm 0.2$	mm

## **Additional Conversion Factors**

**for Dosimetric E-Field Probe**

Type:

**ET3DV6**

Serial Number:

**1384**

Place of Assessment:

**Zurich**

Date of Assessment:

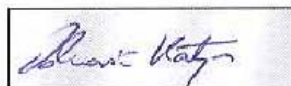
**May 19, 2003**

Probe Calibration Date:

**May 15, 2003**

Schmid & Partner Engineering AG hereby certifies that conversion factor(s) of this probe have been evaluated on the date indicated above. The assessment was performed using the FDTD numerical code SEMCAD of Schmid & Partner Engineering AG. Since the evaluation is coupled with measured conversion factors, it has to be recalculated yearly, i.e., following the re-calibration schedule of the probe. The uncertainty of the numerical assessment is based on the extrapolation from measured value at 900 MHz or at 1800 MHz.

Assessed by:



## Dosimetric E-Field Probe ET3DV6 SN:1384

Conversion factor ( $\pm$  standard deviation)

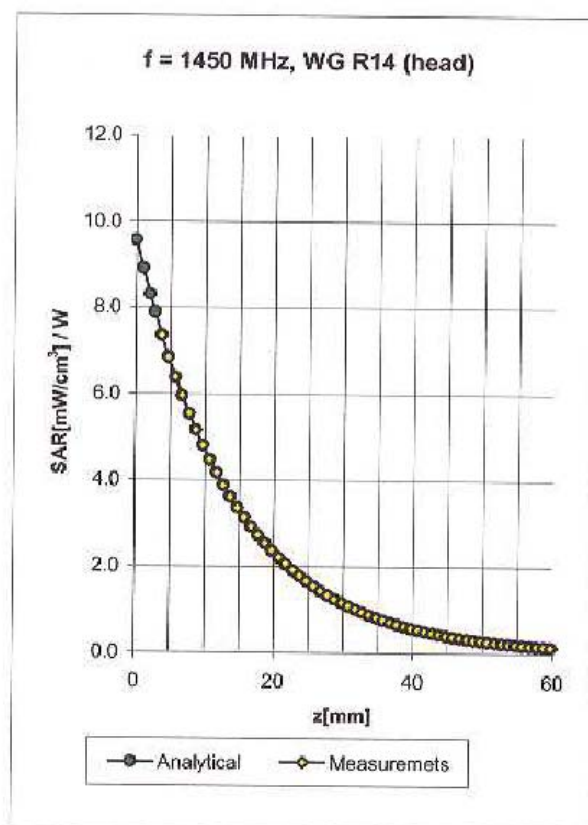
150 MHz	ConvF	$8.2 \pm 8\%$	$\epsilon_r = 61.9$ $\sigma = 0.80 \text{ mho/m}$ (body tissue)
236 MHz	ConvF	$8.1 \pm 8\%$	$\epsilon_r = 59.8$ $\sigma = 0.87 \text{ mho/m}$ (body tissue)
300 MHz	ConvF	$7.9 \pm 8\%$	$\epsilon_r = 58.2$ $\sigma = 0.92 \text{ mho/m}$ (body tissue)
350 MHz	ConvF	$7.9 \pm 8\%$	$\epsilon_r = 57.7$ $\sigma = 0.93 \text{ mho/m}$ (body tissue)
450 MHz	ConvF	$7.6 \pm 8\%$	$\epsilon_r = 56.7$ $\sigma = 0.94 \text{ mho/m}$ (body tissue)
784 MHz	ConvF	$6.6 \pm 8\%$	$\epsilon_r = 55.4$ $\sigma = 0.97 \text{ mho/m}$ (body tissue)
1450 MHz	ConvF	$5.5 \pm 8\%$	$\epsilon_r = 54.0$ $\sigma = 1.30 \text{ mho/m}$ (body tissue)



**Dosimetric E-Field Probe ET3DV6 SN:1384**Conversion factor ( $\pm$  standard deviation)

150 MHz	ConvF	9.1 $\pm$ 8%	$\epsilon_r = 52.3$ $\sigma = 0.76$ mho/m (head tissue)
236 MHz	ConvF	8.3 $\pm$ 8%	$\epsilon_r = 48.3$ $\sigma = 0.82$ mho/m (head tissue)
300 MHz	ConvF	7.8 $\pm$ 8%	$\epsilon_r = 45.3$ $\sigma = 0.87$ mho/m (head tissue)
350 MHz	ConvF	7.8 $\pm$ 8%	$\epsilon_r = 44.7$ $\sigma = 0.87$ mho/m (head tissue)
400 MHz	ConvF	7.5 $\pm$ 8%	$\epsilon_r = 44.4$ $\sigma = 0.87$ mho/m (head tissue - CENELEC)
450 MHz	ConvF	7.5 $\pm$ 8%	$\epsilon_r = 43.5$ $\sigma = 0.87$ mho/m (head tissue)
784 MHz	ConvF	6.8 $\pm$ 8%	$\epsilon_r = 41.8$ $\sigma = 0.90$ mho/m (head tissue)

## Conversion Factor Assessment



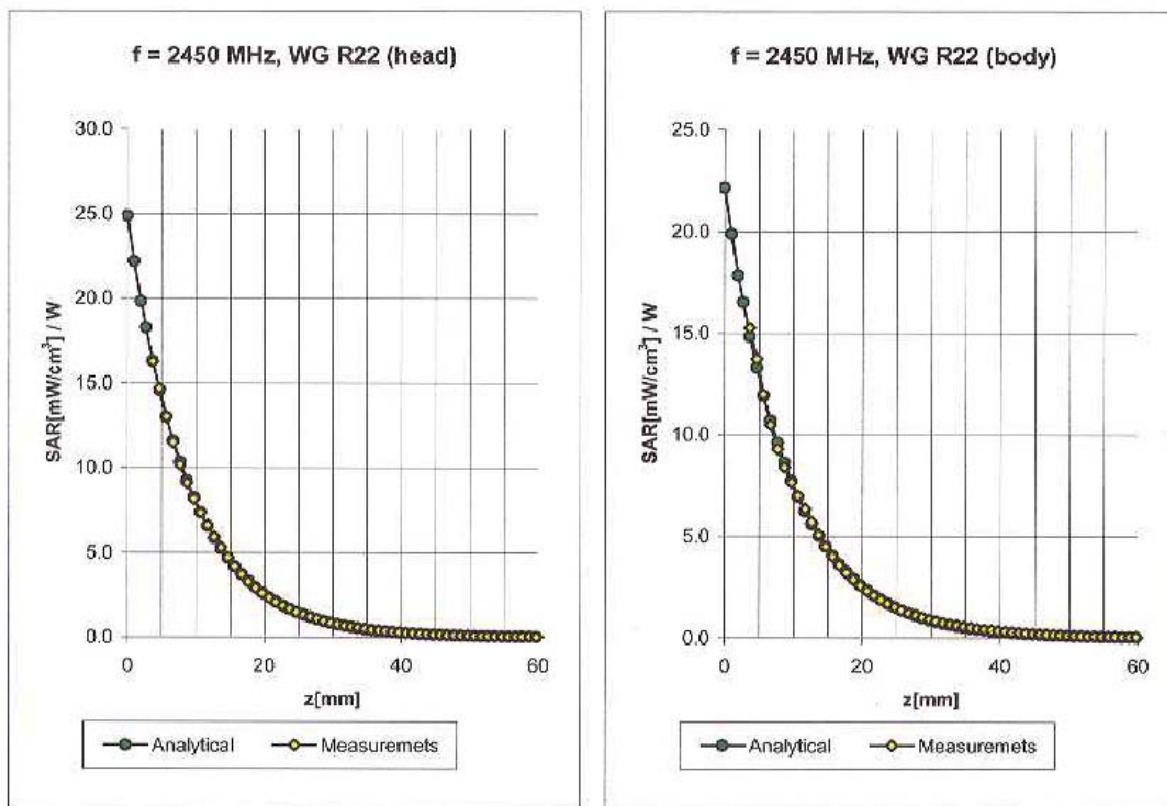
Head      1450      MHz       $\epsilon_r = 40.5 \pm 5\%$        $\sigma = 1.20 \pm 5\% \text{ mho/m}$

Valid for  $f=1400\text{-}1500 \text{ MHz}$  with Head Tissue Simulating Liquid according to EN 50361, P1528-200X

ConvF X	$5.9 \pm 8.9\% (k=2)$	Boundary effect:	
ConvF Y	$5.9 \pm 8.9\% (k=2)$	Alpha	<b>0.53</b>
ConvF Z	$5.9 \pm 8.9\% (k=2)$	Depth	<b>2.61</b>



## Conversion Factor Assessment



**Head**      **2450**      **MHz**       $\epsilon_r = 39.2 \pm 5\%$        $\sigma = 1.80 \pm 5\% \text{ mho/m}$

Valid for f=2400-2500 MHz with Head Tissue Simulating Liquid according to EN 50361, P1528-200X

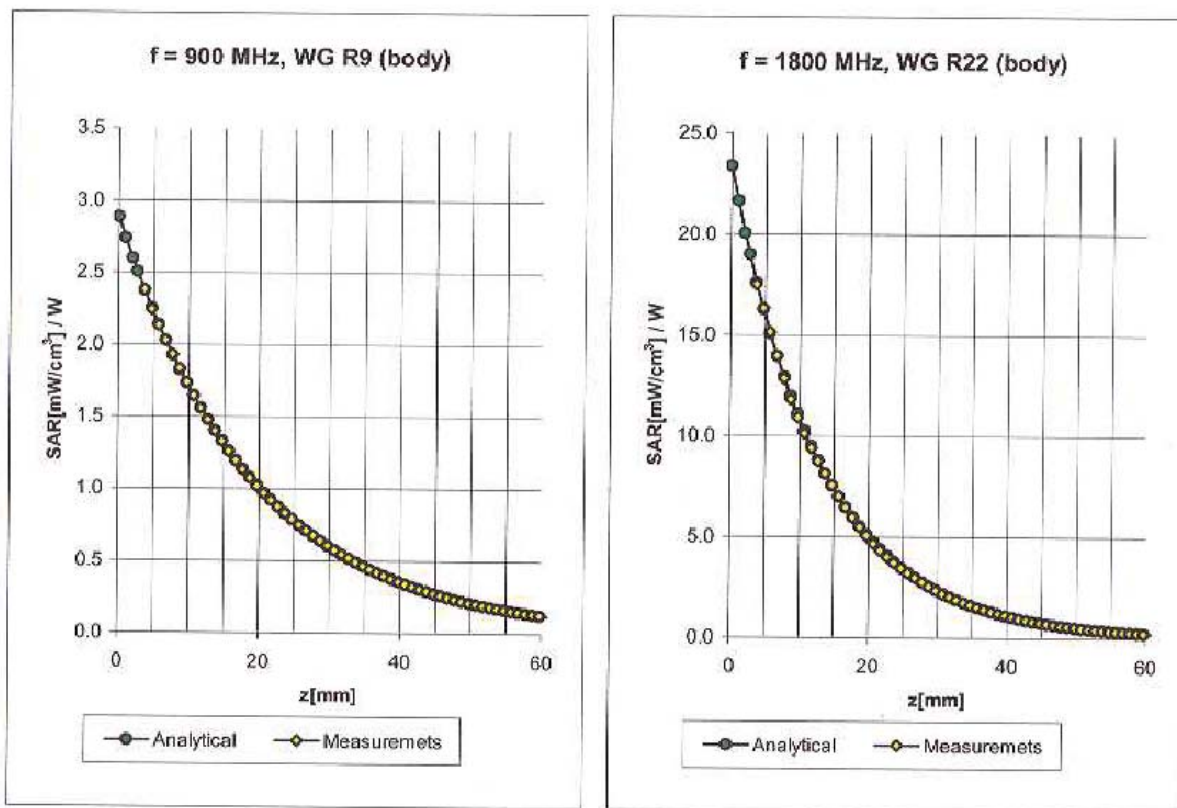
ConvF X	5.0 $\pm 8.9\%$ (k=2)	Boundary effect:	
ConvF Y	5.0 $\pm 8.9\%$ (k=2)	Alpha	<b>1.20</b>
ConvF Z	5.0 $\pm 8.9\%$ (k=2)	Depth	<b>1.70</b>

**Body**      **2450**      **MHz**       $\epsilon_r = 52.7 \pm 5\%$        $\sigma = 1.95 \pm 5\% \text{ mho/m}$

Valid for f=2400-2500 MHz with Body Tissue Simulating Liquid according to OET 65 Suppl. C

ConvF X	4.8 $\pm 8.9\%$ (k=2)	Boundary effect:	
ConvF Y	4.8 $\pm 8.9\%$ (k=2)	Alpha	<b>2.00</b>
ConvF Z	4.8 $\pm 8.9\%$ (k=2)	Depth	<b>1.25</b>

## Conversion Factor Assessment



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

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

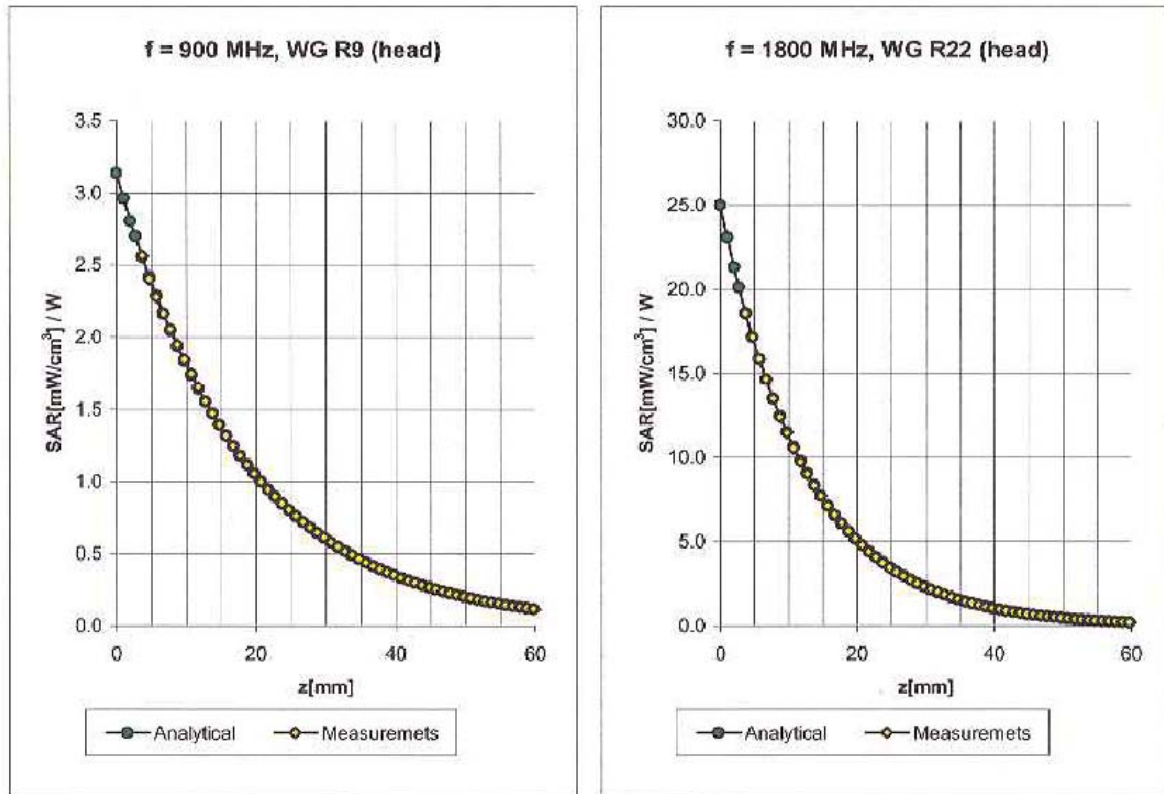
ConvF X	6.5 $\pm$ 9.5% (k=2)	Boundary effect:	
ConvF Y	6.5 $\pm$ 9.5% (k=2)	Alpha	<b>0.44</b>
ConvF Z	6.5 $\pm$ 9.5% (k=2)	Depth	<b>2.51</b>

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

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

ConvF X	5.0 $\pm$ 9.5% (k=2)	Boundary effect:	
ConvF Y	5.0 $\pm$ 9.5% (k=2)	Alpha	<b>0.64</b>
ConvF Z	5.0 $\pm$ 9.5% (k=2)	Depth	<b>2.49</b>

## 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 EN 50361, P1528-200X

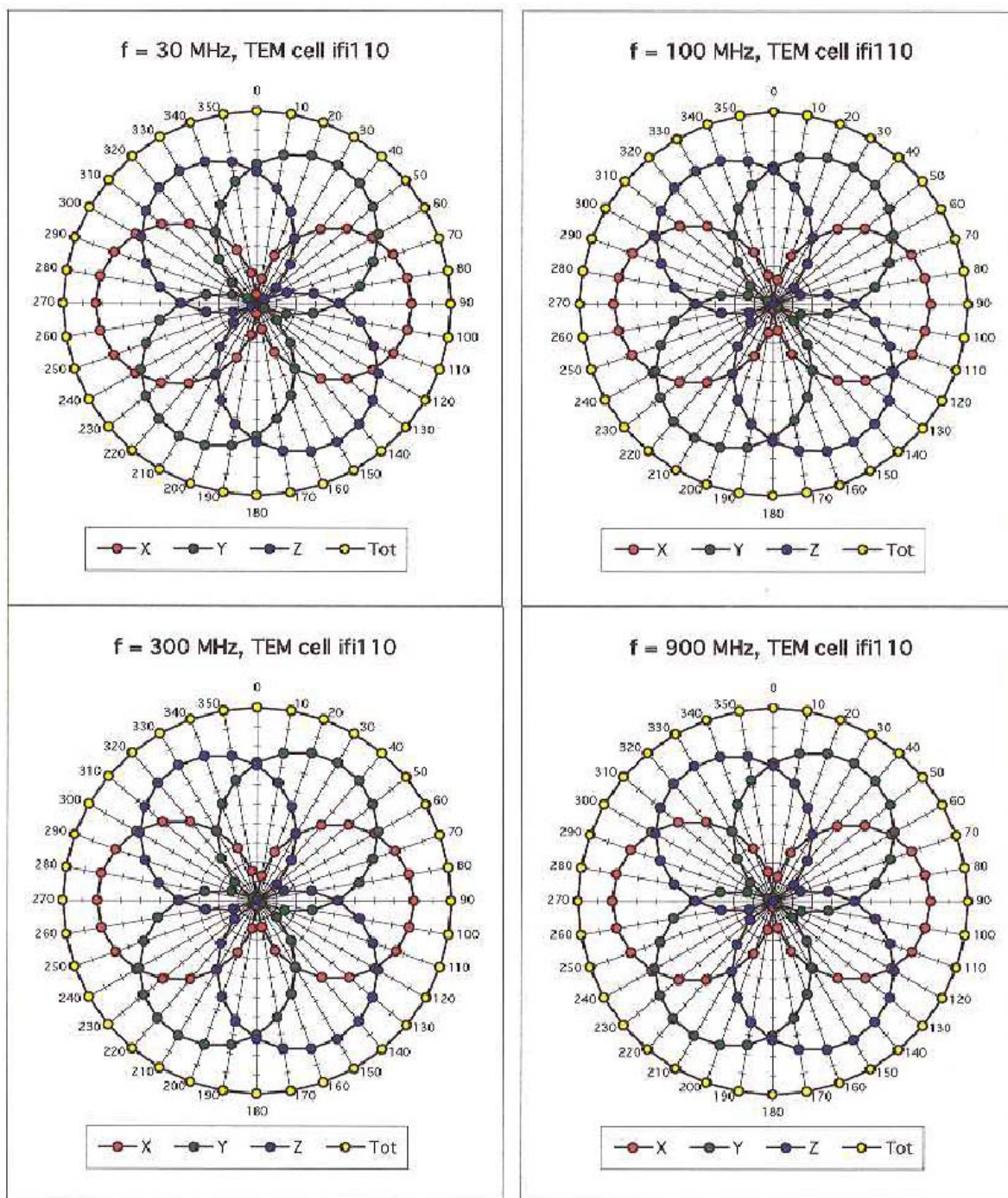
ConvF X	6.6 $\pm$ 9.5% (k=2)	Boundary effect:	
ConvF Y	6.6 $\pm$ 9.5% (k=2)	Alpha	<b>0.45</b>
ConvF Z	6.6 $\pm$ 9.5% (k=2)	Depth	<b>2.42</b>

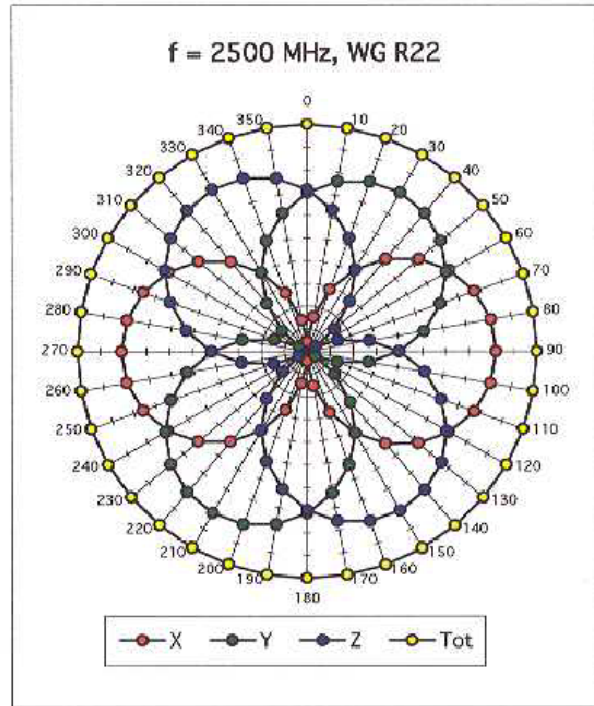
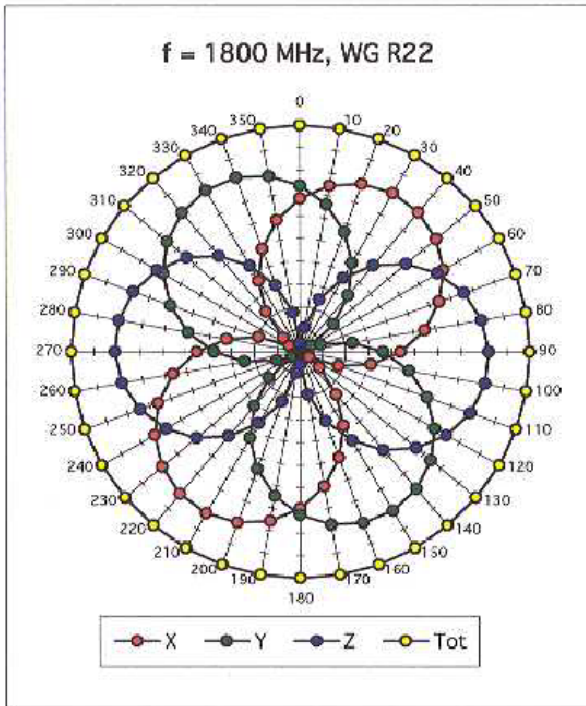
Head                      1800 MHz                       $\epsilon_r = 40.0 \pm 5\%$                        $\sigma = 1.40 \pm 5\%$  mho/m

Valid for f=1710-1910 MHz with Head Tissue Simulating Liquid according to EN 50361, P1528-200X

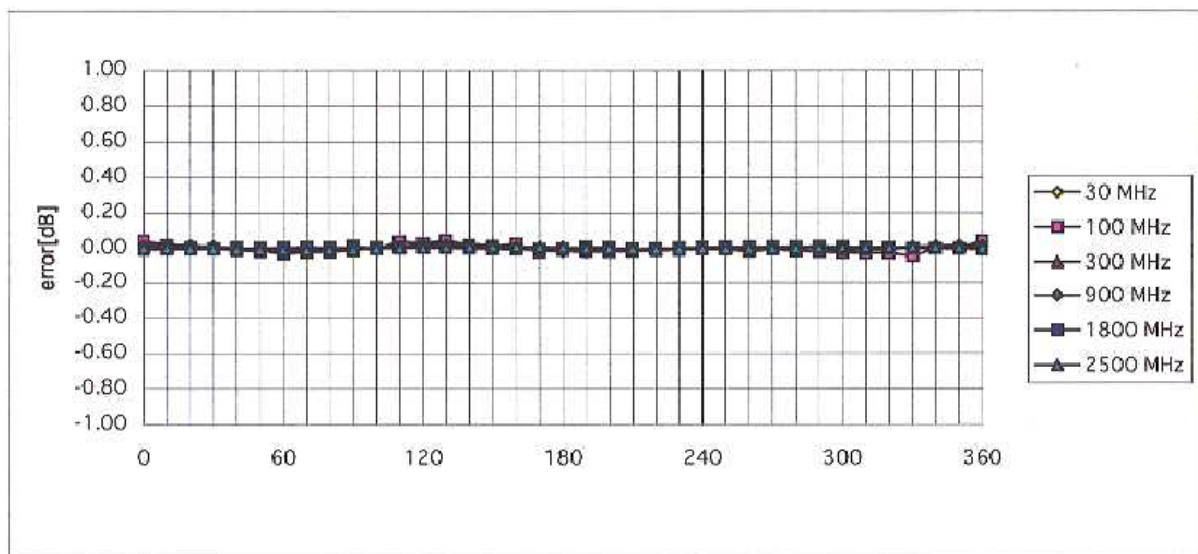
ConvF X	5.4 $\pm$ 9.5% (k=2)	Boundary effect:	
ConvF Y	5.4 $\pm$ 9.5% (k=2)	Alpha	<b>0.55</b>
ConvF Z	5.4 $\pm$ 9.5% (k=2)	Depth	<b>2.56</b>



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

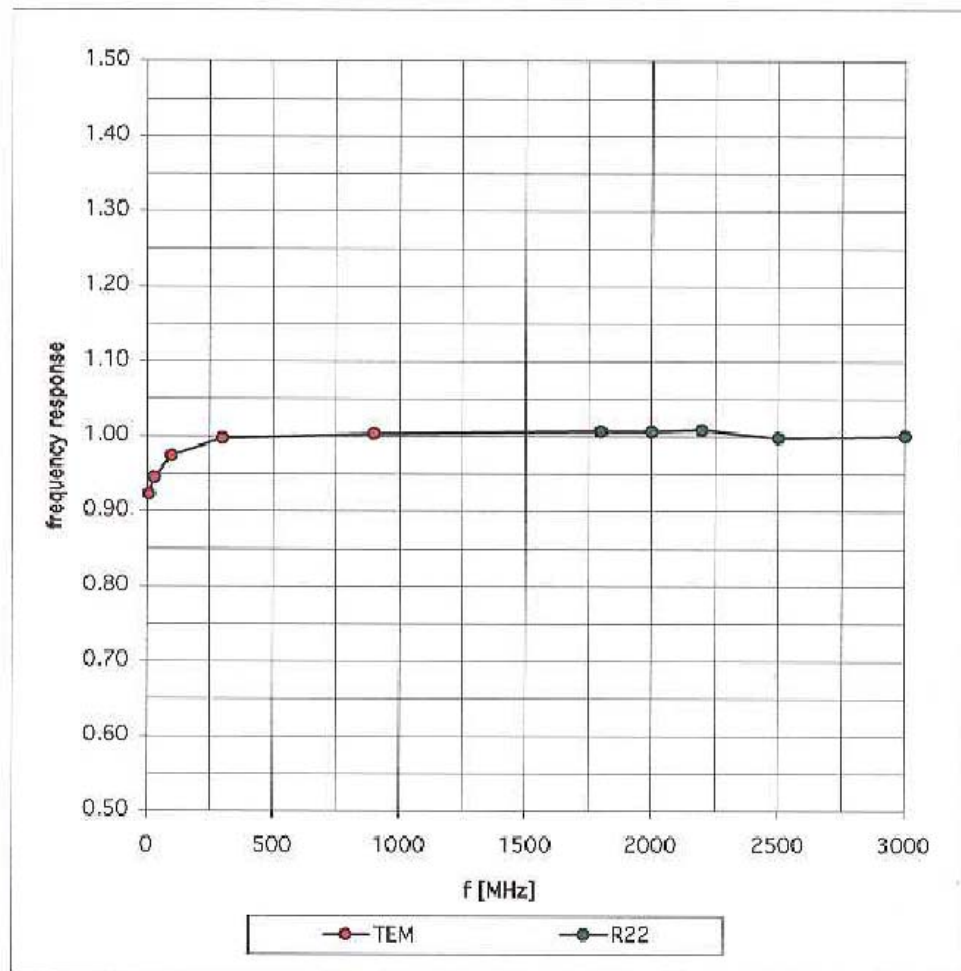


### Isotropy Error ( $\phi$ ), $\theta = 0^\circ$



## Frequency Response of E-Field

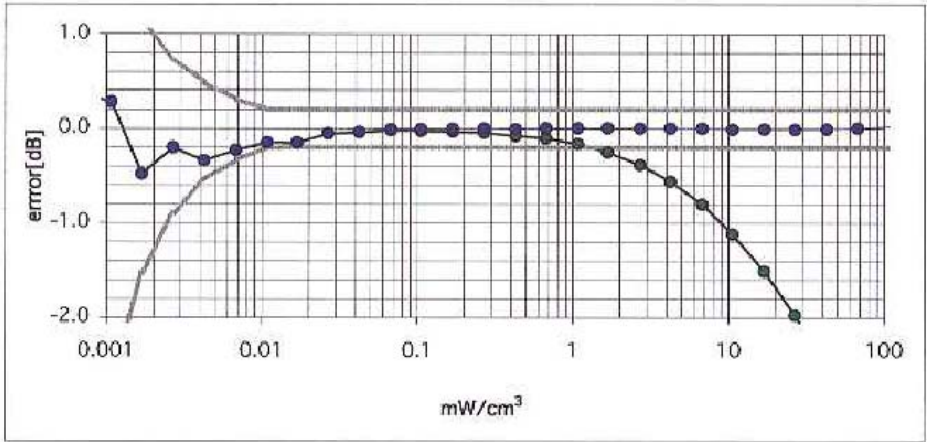
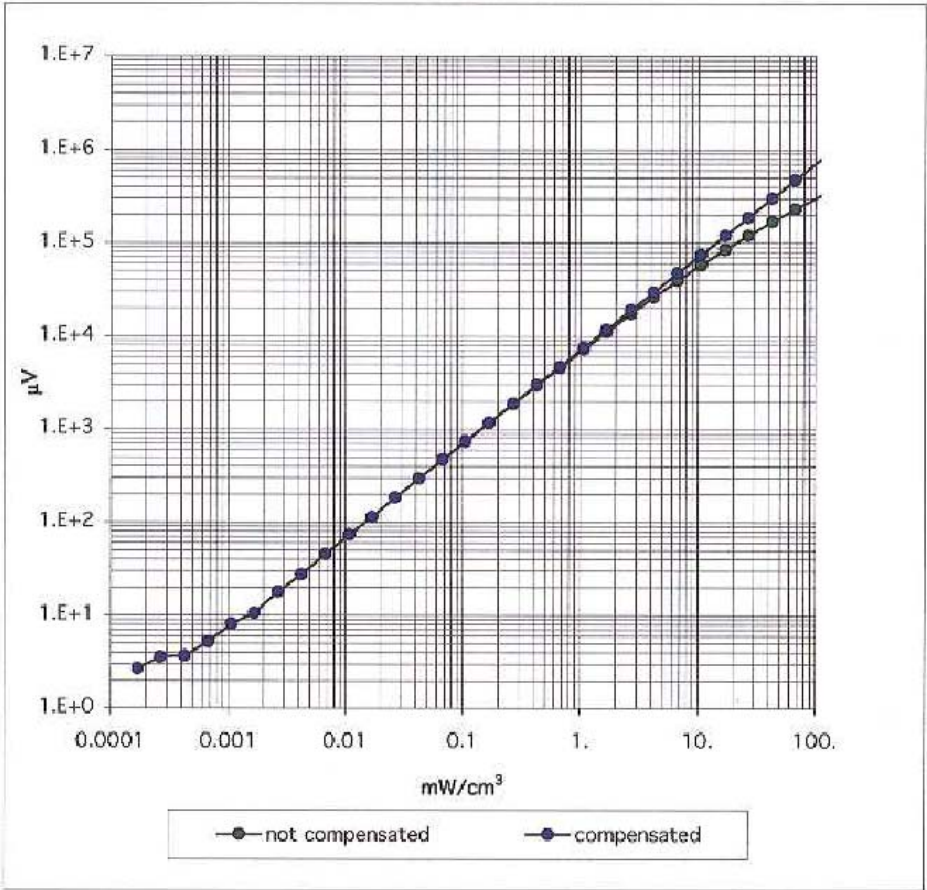
( TEM-Cell:ifi110, Waveguide R22)





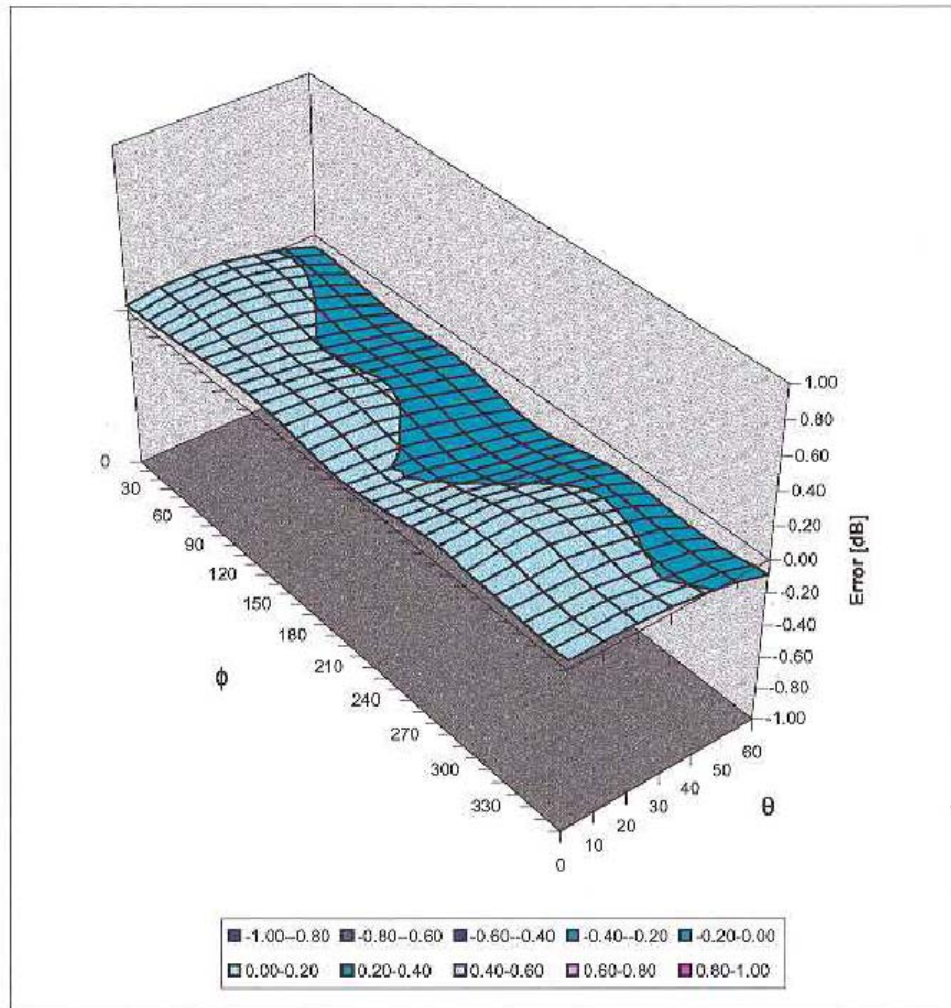
Dynamic Range f(SAR<sub>brain</sub>)

( Waveguide R22 )



## Deviation from Isotropy in HSL

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



# Schmid & Partner Engineering AG

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

## Calibration Certificate

### 450 MHz System Validation Dipole

Type:

D450V2

Serial Number:

1002

Place of Calibration:

Zurich

Date of Calibration:

April 5, 2002

Calibration Interval:

24 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:

*Polina Katya*

Approved by:

*N. [Signature]*

## 1. Measurement Conditions

The measurements were performed in the flat phantom filled with head simulating liquid of the following electrical parameters at 450 MHz:

Relative Dielectricity	44.5	± 5%
Conductivity	0.86 mho/m	± 5%

The DASY3 System (Software version 3.1d) with a dosimetric E-field probe ET3DV6 (SN:1507, Conversion factor 7.2 at 450 MHz) was used for the measurements.

The dipole was mounted on the small tripod so that the dipole feedpoint was positioned below the center marking of the flat phantom and the dipole was oriented parallel to the longer side of the phantom. The standard measuring distance was 15mm from dipole center to the liquid surface including the 6mm thick phantom shell. The included distance holder was used during measurements for accurate distance positioning.

The coarse grid with a grid spacing of 20mm was aligned with the dipole. The 5x5x7 fine cube was chosen for cube integration. Probe isotropy errors were cancelled by measuring the SAR with normal and 90° turned probe orientations and averaging.

The dipole input power (forward power) was 389 mW ± 3 %. The results are normalized to 1W input power.

## 2. SAR Measurement

Standard SAR-measurements were performed with the phantom according to the measurement conditions described in section 1. The results have been normalized to a dipole input power of 1W (forward power). The resulting averaged SAR-values are:

averaged over 1 cm <sup>3</sup> (1 g) of tissue:	4.81 mW/g (Advanced Extrapolation)
averaged over 10 cm <sup>3</sup> (10 g) of tissue:	3.19 mW/g (Advanced Extrapolation)

Advanced extrapolation has been applied to the measured SAR values to compensate for the probe boundary effect (see DASY User Manual for details).

Note: If the liquid parameters for validation are slightly different from the ones used for initial calibration, the SAR-values will be different as well.

### **3. Dipole Impedance and Return Loss**

The impedance was measured at the SMA-connector with a network analyzer and numerically transformed to the dipole feedpoint. The transformation parameters from the SMA-connector to the dipole feedpoint are:

Electrical delay:	<b>1.347 ns</b>	(one direction)
Transmission factor:	<b>0.997</b>	(voltage transmission, one direction)

The dipole was positioned at the flat phantom sections according to section 1 and the distance holder was in place during impedance measurements.

Feedpoint impedance at 450 MHz:	$\text{Re}\{Z\} = 57.2 \, \Omega$
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$\text{Im}\{Z\} = -5.2 \, \Omega$
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Return Loss at 450 MHz	<b>-21.7 dB</b>
------------------------	-----------------

### **4. Handling**

Do not apply excessive force to the dipole arms, because they might bend. Bending of the dipole arms stresses the soldered connections near the feedpoint leading to a damage of the dipole.

### **5. Design**

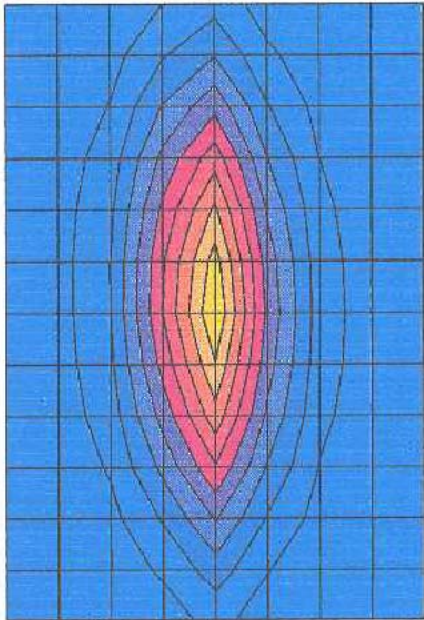
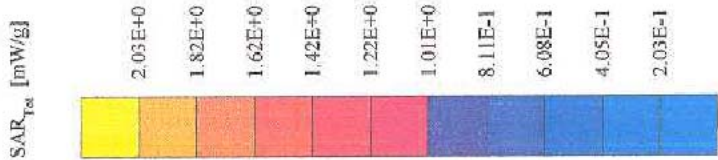
The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

### **6. Power Test**

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

Validation Dipole D450V2 SN:1002, d = 15 mm

Frequency: 450 MHz; Antenna Input Power: 389 [mW]  
Phantom Name: Calibration, Grid Spacing: Dx = 20.0, Dy = 20.0, Dz = 10.0  
Probe: ET3DV6 - SN1507; ConvF(7.20,7.20,7.20); Crest factor: 1.0; Head 450 MHz:  $\sigma = 0.86 \text{ mho/m}$ ,  $\epsilon_r = 44.5$ ,  $\rho = 1.00 \text{ g/cm}^3$   
Cubes (2): Peak: 2.84 mW/g  $\pm 0.03 \text{ dB}$ , SAR (1g): 1.87 mW/g  $\pm 0.03 \text{ dB}$ , SAR (10g): 1.24 mW/g  $\pm 0.03 \text{ dB}$ , (Advanced extrapolation)  
Penetration depth: 13.0 (11.9, 14.4) [mm]





# Schmid & Partner Engineering AG

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

## Calibration Certificate

### 450 MHz System Validation Dipole

Type:

D450V2

Serial Number:

1001

Place of Calibration:

Zurich

Date of Calibration:

April 5, 2002

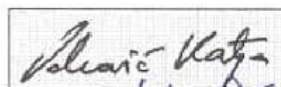
Calibration Interval:

24 months

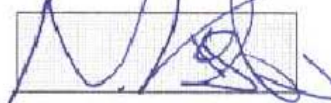
Schmid & Partner Engineering AG hereby certifies, that this device has been calibrated on the date indicated above. The calibration was performed in accordance with specifications and procedures of Schmid & Partner Engineering AG.

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:



## 1. Measurement Conditions

The measurements were performed in the flat phantom filled with head simulating liquid of the following electrical parameters at 450 MHz:

Relative Dielectricity	<b>44.5</b>	$\pm 5\%$
Conductivity	<b>0.86 mho/m</b>	$\pm 5\%$

The DASY3 System (Software version 3.1d) with a dosimetric E-field probe ET3DV6 (SN:1507, Conversion factor 7.2 at 450 MHz) was used for the measurements.

The dipole was mounted on the small tripod so that the dipole feedpoint was positioned below the center marking of the flat phantom and the dipole was oriented parallel to the longer side of the phantom. The standard measuring distance was 15mm from dipole center to the liquid surface including the 6mm thick phantom shell. The included distance holder was used during measurements for accurate distance positioning.

The coarse grid with a grid spacing of 20mm was aligned with the dipole. The 5x5x7 fine cube was chosen for cube integration. Probe isotropy errors were cancelled by measuring the SAR with normal and 90° turned probe orientations and averaging.

The dipole input power (forward power) was 389 mW  $\pm 3\%$ . The results are normalized to 1W input power.

## 2. SAR Measurement

Standard SAR-measurements were performed with the phantom according to the measurement conditions described in section 1. The results have been normalized to a dipole input power of 1W (forward power). The resulting averaged SAR-values are:

averaged over 1 cm <sup>3</sup> (1 g) of tissue:	<b>4.77 mW/g</b> (Advanced Extrapolation)
averaged over 10 cm <sup>3</sup> (10 g) of tissue:	<b>3.17 mW/g</b> (Advanced Extrapolation)

Advanced extrapolation has been applied to the measured SAR values to compensate for the probe boundary effect (see DASY User Manual for details).

Note: If the liquid parameters for validation are slightly different from the ones used for initial calibration, the SAR-values will be different as well.

### **3. Dipole Impedance and Return Loss**

The impedance was measured at the SMA-connector with a network analyzer and numerically transformed to the dipole feedpoint. The transformation parameters from the SMA-connector to the dipole feedpoint are:

Electrical delay:	<b>1.342 ns</b>	(one direction)
Transmission factor:	<b>0.997</b>	(voltage transmission, one direction)

The dipole was positioned at the flat phantom sections according to section 1 and the distance holder was in place during impedance measurements.

Feedpoint impedance at 450 MHz:	$\text{Re}\{Z\} = 57.9 \, \Omega$
	$\text{Im}\{Z\} = -6.0 \, \Omega$
Return Loss at 450 MHz	<b>-20.8 dB</b>

### **4. Handling**

Do not apply excessive force to the dipole arms, because they might bend. Bending of the dipole arms stresses the soldered connections near the feedpoint leading to a damage of the dipole.

### **5. Design**

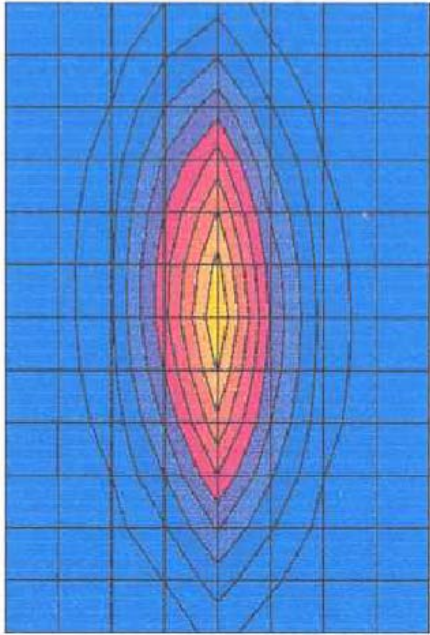
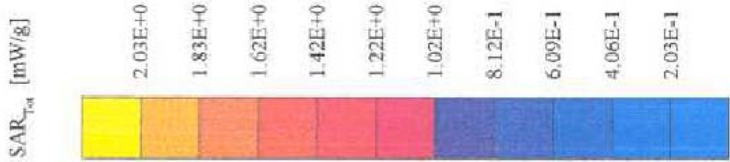
The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

### **6. Power Test**

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

Validation Dipole D450V2 SN:1001, d = 15 mm

Frequency: 450 MHz; Antenna Input Power: 388 [mW]  
Phantom Name: Calibration, Grid Spacing: Dx = 20.0, Dy = 20.0, Dz = 10.0  
Probe: ET3DV6 - SN1507; ConvF(7.20, 7.20, 7.20); Crest factor: 1.0; Head 450 MHz:  $\sigma = 0.86 \text{ mho/m}$ ,  $\epsilon_r = 44.5$ ,  $\rho = 1.00 \text{ g/cm}^3$   
Cubes (2): Peak:  $2.81 \text{ mW/g} \pm 0.03 \text{ dB}$ , SAR (1g):  $1.85 \text{ mW/g} \pm 0.03 \text{ dB}$ , SAR (10g):  $1.23 \text{ mW/g} \pm 0.03 \text{ dB}$ , (Advanced extrapolation)  
Penetration depth: 13.1 (12.0, 14.4) [mm]



**APPENDIX E**  
**Illustration of Body-Worn Accessories**



The purpose of this appendix is to illustrate the body-worn carry accessories for FCC ID: ABZ99FT4057. The sample that was used in the following photos represents the product used to obtain the results presented herein and was used in this section to demonstrate the different body-worn accessories.



**Photo 1.**  
**Model HLN8255B**  
**Back View**



**Photo 2.**  
**Model HLN8255B**  
**Side View**



**Photo 3.**  
**Model RLN5498A**  
**Back View**



**Photo 4.**  
**Model RLN5498A**  
**Front View**



**Photo 5.**  
**Model RLN5498A**  
**Side View**



**Photo 5.**  
**Model RLN5496A**  
**Back View**



**Photo 6.**  
**Model RLN5496A**  
**Front View**



**Photo 7.**  
**Model RLN5496A**  
**Side View**



**Photo 8.**  
**Model RLN5497A**  
**Back View**



**Photo 9.**  
**Model RLN5497A**  
**Front View**



**Photo 10.**  
**Model RLN5497A**  
**Side View**





**Photo 11.**  
**Model RLN5640A**  
**Back View**



**Photo 12.**  
**Model RLN5640A**  
**Front View**



**Photo 13.**  
**Model RLN5640A**  
**Side View**



**Photo 14.**  
**Model RLN5641A**  
**Back View**



**Photo 15.**  
**Model RLN5641A**  
**Front View**



**Photo 16.**  
**Model RLN5641A**  
**Side View**



**Photo 17.**  
**Model RLN5642A**  
**Back View**



**Photo 18.**  
**Model RLN5642A**  
**Front View**



**Photo 19.**  
**Model RLN5642A**  
**Side View**



**Photo 11.**  
**HLN6602A**  
**Universal Chest Pack**

**Photo 12.**  
**NTN5243A**  
**Shoulder Carry Strap**



**Photo 13.**  
**RLN4570A**  
**Break-Away Chest Pack**

## Appendix F

### Accessories and options test status and separation distances

The following table summarizes the body spacing distance provided by each of the body-worn accessories:

<b>Carry Case Model</b>	<b>Tested ?</b>	<b>Separation distance between device and phantom surface. (mm)</b>	<b>Comments</b>
HLN6602A	Yes	5-26	NA
RLN4570A	Yes	15-20	NA
NTN5243A	Yes	NA	Tested with carry case RLN5498A
HLN8255B	Yes	33-50	NA
RLN5498A	Yes	47-82	NA
RLN5496A	Yes	67-135	NA
RLN5497A	Yes	69-130	NA
RLN5640A	No	47-82	Same as RLN5498A except no display window
RLN5641A	No	67-135	Same as RLN5496A except no display window
RLN5642A	No	69-130	Same as RLN5497A except no display window
HLN9985B	No	NA	Device not functional while using this carry case
<b>Audio Acc. Model</b>	<b>Tested ?</b>	<b>Separation distance between device and phantom surface. (mm)</b>	<b>Comments</b>
HMN9030A	Yes	NA	NA
HMN9754D	Yes	NA	NA
PMMN4001A	Yes	NA	NA
HMN9013A	Yes	NA	NA
HLN9133A	Yes	NA	Tested w/ PMLN4443A
RMN4016A	Yes	NA	NA
RLN5238A	Yes	NA	NA
HMN9021A	Yes	NA	NA
BDN6647F	Yes	NA	NA
BDN6648C	Yes	NA	NA
RMN5015A	Yes	NA	NA
RKN4090A	Yes	NA	tested with RMN5015A
RLN5411A	Yes	NA	NA
PMMN4008A	Yes	NA	NA
PMLN4425A	Yes	NA	NA
PMLN4443A	Yes	NA	NA
PMLN4444A	Yes	NA	NA
PMLN4445A	Yes	NA	NA
PMLN4294C	Yes	NA	NA
PMLN4442A	Yes	NA	NA
BDN6706B	Yes	NA	NA
0180358B38	Yes	NA	Tested w/

			BDN6706B&BDN6677A
RMN4054B	Yes	NA	NA
RMN4055A	Yes	NA	NA
RMN4051B	Yes	NA	NA
RKN4094A	Yes	NA	Tested w/ RMN4051B
HMN9727B	Yes	NA	NA
HMN9752B	Yes	NA	NA
HLN9132A	Yes	NA	NA
BDN6720A	Yes	NA	NA
RLN4894A	No	NA	Similar to HMN9727B
RMN4052A	No	NA	Similar to RMN4051B
RMN4053A	No	NA	Similar to RMN4051B
BDN6646C	No	NA	Similar to BDN6706B
0180300E83	No	NA	Similar to 0180358B38
RLN4895A	No	NA	Similar to HMN9754D
HMN9036A	No	NA	Similar to HMN9754D
RLN5198AP	No	NA	Similar to HMN9754D
HMN9022A	No	NA	Similar to HMN9021A
<b>Additional attachments</b>	<b>Tested ?</b>	<b>Separation distance between device and phantom surface. (mm)</b>	<b>Comments</b>
5886627Z01	Yes	NA	Tested with standard and optional antenna