



Certificate Number: 1449-02



ELECTROMAGNETIC EXPOSURE (EME)  
TESTING LABORATORY  
8000 West Sunrise Blvd  
Fort Lauderdale, Florida

Addendum S.A.R. TEST REPORT  
(APPENDIX C)  
FCC ID: AZ489FT5806  
H18UCH9PW7AN

November 13, 2001 - Rev. O

<b>Tested By:</b>	Andy Gessner, Pat Lomax / Lim Fortier, Stephen Whalen, Kim Uong SAR Test Technicians / Engineers
<b>Prepared By:</b>	Michael Sailsman REPR FCC Regulatory Liaison
<b>Reviewed and Approved By:</b>	Ken Enger Sr. Resource Manager Product Safety and EME Lab Director

## **Appendix C: Measurement Probe Calibration Certificates**

# Schmid & Partner Engineering AG

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

## Calibration Certificate

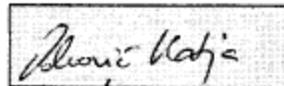
### Dosimetric E-Field Probe

Type	ET3DV6R
Serial Number:	1417
Place of Calibration:	Zurich
Date of Calibration:	Mar. 16, 2001
Calibration Interval	12 months

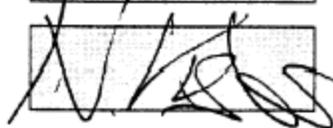
Schmid & Partner Engineering AG hereby certifies, that this device has been calibrated on the date indicated above. The calibration was performed in accordance with specifications and procedures of Schmid & Partner Engineering AG.

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



Approved by



ET3DV6R SN:1417

## DASY3 - Parameters of Probe: ET3DV6R SN:1417

### Sensitivity in Free Space

NormX 2.46  $\mu\text{V}/(\text{V}/\text{m})^2$   
NormY 2.35  $\mu\text{V}/(\text{V}/\text{m})^2$   
NormZ 2.47  $\mu\text{V}/(\text{V}/\text{m})^2$

### Diode Compression

DCP X 95 mV  
DCP Y 95 mV  
DCP Z 95 mV

### Sensitivity in Tissue Simulating Liquid

Head 450 MHz  $\epsilon_r = 43.5 \pm 5\%$   $\sigma = 0.87 \pm 10\% \text{ mho}/\text{m}$   
*41.35 45.65* *.826 - .913*  
ConvF X 6.41 extrapolated Boundary effect:  
ConvF Y 6.41 extrapolated Alpha 0.29  
ConvF Z 6.41 extrapolated Depth 3.07

Head 900 MHz  $\epsilon_r = 42 \pm 5\%$   $\sigma = 0.97 \pm 10\% \text{ mho}/\text{m}$   
ConvF X 5.97  $\pm 7\%$  (k=2) Boundary effect:  
ConvF Y 5.97  $\pm 7\%$  (k=2) Alpha 0.37  
ConvF Z 5.97  $\pm 7\%$  (k=2) Depth 2.76

Head 1500 MHz  $\epsilon_r = 40.4 \pm 5\%$   $\sigma = 1.23 \pm 10\% \text{ mho}/\text{m}$   
ConvF X 5.39 interpolated Boundary effect:  
ConvF Y 5.39 interpolated Alpha 0.49  
ConvF Z 5.39 interpolated Depth 2.36

Head 1800 MHz  $\epsilon_r = 40 \pm 5\%$   $\sigma = 1.40 \pm 10\% \text{ mho}/\text{m}$   
ConvF X 5.10  $\pm 7\%$  (k=2) Boundary effect:  
ConvF Y 5.10  $\pm 7\%$  (k=2) Alpha 0.54  
ConvF Z 5.10  $\pm 7\%$  (k=2) Depth 2.15

### Sensor Offset

Probe Tip to Sensor Center 2.7 mm

**From: Ballen Maurice-EMB033**

Sent: Thursday, July 26, 2001 10:02 AM

To: 'pokovic@speag.com'

Subject: Assesment Numbers Muscle

Katja

Hot issue !!!

Could I get asses. Num. For:

Probes 1417 and 1418

835 MHz 55.20 / .97

925 MHz 54.98 / 1.06

Thank you

**From: Katja Pokovic [SMTP:pokovic@speag.com] <mailto:[SMTP:pokovic@speag.com]>**

Sent: Sunday, July 29, 2001 10:54 AM

To: Ballen Maurice-EMB033

Subject: Re: FW: Assesment Numbers Muscle

hi maurice,

Could I get body asses. Num. For:

Probes 1417 and 1418

835 MHz 55.20 / .97

925 MHz 54.98 / 1.06

**PROBE: ET3DV6R - SN:1417**

frequency epsilon range sigma range ConvF  $\pm$  st.dev.

835 MHz 52.0 -58.0 0.92 - 1.02 5.9  $\pm$  8%

frequency epsilon range sigma range ConvF  $\pm$  st.dev.

925 MHz 52.2 - 57.7 1.01 - 1.11 5.7  $\pm$  8%

best, katja

# 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:

1383

Place of Calibration:

Zurich

Date of Calibration:

May 23, 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:

*Miroslav Mervana*

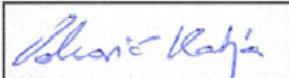
Approved by:

*Igor Kofja*

**Additional Conversion Factors  
for Dosimetric E-Field Probe**

Type:	ET3DV6
Serial Number:	1383
Place of Assessment:	Zurich
Date of Assessment:	May 28, 2001
Probe Calibration Date:	May 23, 2001

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:1383

Conversion factor ( $\pm$  standard deviation)

<b>400 MHz</b>	ConvF	<b>7.64 <math>\pm</math> 8%</b>	$\epsilon_r = 44.4$ $\sigma = 0.87 \text{ mho/m}$ (CENELEC head tissue)
<b>835 MHz</b>	ConvF	<b>6.54 <math>\pm</math> 8%</b>	$\epsilon_r = 42.5$ $\sigma = 0.98 \text{ mho/m}$ (CENELEC head tissue)
<b>900 MHz</b>	ConvF	<b>6.41 <math>\pm</math> 8%</b>	$\epsilon_r = 42.3$ $\sigma = 0.99 \text{ mho/m}$ (CENELEC head tissue)
<b>350 MHz</b>	ConvF	<b>7.76 <math>\pm</math> 8%</b>	$\epsilon_r = 44.7$ $\sigma = 0.87 \text{ mho/m}$ (IEEE head tissue)
<b>450 MHz</b>	ConvF	<b>7.52 <math>\pm</math> 8%</b>	$\epsilon_r = 43.5$ $\sigma = 0.87 \text{ mho/m}$ (IEEE head tissue)
<b>835 MHz</b>	ConvF	<b>6.53 <math>\pm</math> 8%</b>	$\epsilon_r = 41.5$ $\sigma = 0.90 \text{ mho/m}$ (IEEE head tissue)
<b>925 MHz</b>	ConvF	<b>6.37 <math>\pm</math> 8%</b>	$\epsilon_r = 41.45$ $\sigma = 0.98 \text{ mho/m}$ (IEEE head tissue)
<b>1500 MHz</b>	ConvF	<b>6.04 <math>\pm</math> 8%</b>	$\epsilon_r = 40.43$ $\sigma = 1.23 \text{ mho/m}$ (IEEE head tissue)
<b>1900 MHz</b>	ConvF	<b>5.41 <math>\pm</math> 8%</b>	$\epsilon_r = 40.0$ $\sigma = 1.40 \text{ mho/m}$ (IEEE head tissue)
<b>2450 MHz</b>	ConvF	<b>5.18 <math>\pm</math> 8%</b>	$\epsilon_r = 39.2$ $\sigma = 1.8 \text{ mho/m}$ (IEEE head tissue)
<b>2450 MHz</b>	ConvF	<b>5.40 <math>\pm</math> 8%</b>	$\epsilon_r = 37.2$ $\sigma = 2.09 \text{ mho/m}$ (H1800 at 2450 MHz)

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## Calibration Certificate

### Dosimetric E-Field Probe

Type:	ET3DV6
Serial Number:	1384
Place of Calibration:	Zurich
Date of Calibration:	May 23, 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 Meviana*

Approved by:

*Jelenc Kedia*

# Schmid & Partner Engineering AG

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

## Additional Conversion Factors for Dosimetric E-Field Probe

Type:	ET3DV6
Serial Number:	1384
Place of Assessment:	Zurich
Date of Assessment:	May 28, 2001
Probe Calibration Date:	May 23, 2001

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)

400 MHz	ConvF	7.69 $\pm$ 8%	$\epsilon_r = 44.4$ $\sigma = 0.87$ mho/m (CENELEC head tissue)
835 MHz	ConvF	6.59 $\pm$ 8%	$\epsilon_r = 42.5$ $\sigma = 0.98$ mho/m (CENELEC head tissue)
900 MHz	ConvF	6.45 $\pm$ 8%	$\epsilon_r = 42.3$ $\sigma = 0.99$ mho/m (CENELEC head tissue)
350 MHz	ConvF	7.81 $\pm$ 8%	$\epsilon_r = 44.7$ $\sigma = 0.87$ mho/m (IEEE head tissue)
450 MHz	ConvF	7.57 $\pm$ 8%	$\epsilon_r = 43.5$ $\sigma = 0.87$ mho/m (IEEE head tissue)
835 MHz	ConvF	6.57 $\pm$ 8%	$\epsilon_r = 41.5$ $\sigma = 0.90$ mho/m (IEEE head tissue)
925 MHz	ConvF	6.41 $\pm$ 8%	$\epsilon_r = 41.45$ $\sigma = 0.98$ mho/m (IEEE head tissue)
1500 MHz	ConvF	6.10 $\pm$ 8%	$\epsilon_r = 40.43$ $\sigma = 1.23$ mho/m (IEEE head tissue)
1900 MHz	ConvF	5.46 $\pm$ 8%	$\epsilon_r = 40.0$ $\sigma = 1.40$ mho/m (IEEE head tissue)
2450 MHz	ConvF	5.22 $\pm$ 8%	$\epsilon_r = 39.2$ $\sigma = 1.8$ mho/m (IEEE head tissue)
2450 MHz	ConvF	5.45 $\pm$ 8%	$\epsilon_r = 37.2$ $\sigma = 2.09$ mho/m (H1800 at 2450 MHz)

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## Calibration Certificate

### Dosimetric E-Field Probe

Type:	ET3DV6
Serial Number:	1545
Place of Calibration:	Zurich
Date of Calibration:	September 24, 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 E. Meriana*

Approved by:

*Thomas Kutz*

# Schmid & Partner Engineering AG

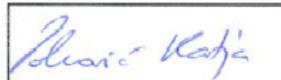
Zeughausstrasse 43, 8004 Zurich, Switzerland, Phone +41 1 245 97 00, Fax +41 1 245 97 79

## Additional Conversion Factors for Dosimetric E-Field Probe

Type:	<b>ET3DV6</b>
Serial Number:	<b>1545</b>
Place of Assessment:	<b>Zurich</b>
Date of Assessment:	<b>September 25, 2001</b>
Probe Calibration Date:	<b>September 24, 2001</b>

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:1545

Conversion factor ( $\pm$  standard deviation)

150 MHz	ConvF	7.9 $\pm$ 8%	$\epsilon_r = 61.9$ $\sigma = 0.80$ mho/m (muscle tissue)
236 MHz	ConvF	7.7 $\pm$ 8%	$\epsilon_r = 59.8$ $\sigma = 0.87$ mho/m (muscle tissue)
300 MHz	ConvF	7.6 $\pm$ 8%	$\epsilon_r = 58.2$ $\sigma = 0.92$ mho/m (muscle tissue)
350 MHz	ConvF	7.5 $\pm$ 8%	$\epsilon_r = 57.7$ $\sigma = 0.93$ mho/m (muscle tissue)
450 MHz	ConvF	7.3 $\pm$ 8%	$\epsilon_r = 56.7$ $\sigma = 0.94$ mho/m (muscle tissue)
784 MHz	ConvF	6.3 $\pm$ 8%	$\epsilon_r = 55.4$ $\sigma = 0.97$ mho/m (muscle tissue)
835 MHz	ConvF	6.2 $\pm$ 8%	$\epsilon_r = 55.2$ $\sigma = 0.97$ mho/m (muscle tissue)
925 MHz	ConvF	6.1 $\pm$ 8%	$\epsilon_r = 55.0$ $\sigma = 1.06$ mho/m (muscle tissue)
1450 MHz	ConvF	5.5 $\pm$ 8%	$\epsilon_r = 54.0$ $\sigma = 1.30$ mho/m (muscle tissue)
1900 MHz	ConvF	4.8 $\pm$ 8%	$\epsilon_r = 53.3$ $\sigma = 1.52$ mho/m (muscle tissue)
2450 MHz	ConvF	4.0 $\pm$ 8%	$\epsilon_r = 52.7$ $\sigma = 1.95$ mho/m (muscle tissue)