ANNEX G   Probe Calibration Certificate

Probe 7307 Calibration Certificate

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

ilac-MRA

S Schweizerischer Kalibrierdienst
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Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client	**CTTL (Auden)**	Certificate No: **EX3-7307_Feb16**

CALIBRATION CERTIFICATE

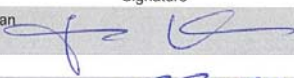|	
Object	EX3DV4 - SN:7307
Calibration procedure(s)	QA CAL-01.v9, QA CAL-14.v4, QA CAL-23.v5, QA CAL-25.v6 Calibration procedure for dosimetric E-field probes
Calibration date:	February 19, 2016

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	01-Apr-15 (No. 217-02128)	Mar-16
Power sensor E4412A	MY41498087	01-Apr-15 (No. 217-02128)	Mar-16
Reference 3 dB Attenuator	SN: S5054 (3c)	01-Apr-15 (No. 217-02129)	Mar-16
Reference 20 dB Attenuator	SN: S5277 (20x)	01-Apr-15 (No. 217-02132)	Mar-16
Reference 30 dB Attenuator	SN: S5129 (30b)	01-Apr-15 (No. 217-02133)	Mar-16
Reference Probe ES3DV2	SN: 3013	31-Dec-15 (No. ES3-3013_Dec15)	Dec-16
DAE4	SN: 660	23-Dec-15 (No. DAE4-660_Dec15)	Dec-16
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-13)	In house check: Apr-16
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-15)	In house check: Oct-16

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: February 20, 2016

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

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Zeughausstrasse 43, 8004 Zurich, Switzerland

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Accreditation No.: SCS 0108

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z*: Assessed for E-field polarization $\vartheta = 0$ (f $\leq$ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z*: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR*: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z*: A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters*: Assessed in flat phantom using E-field (or Temperature Transfer Standard for f $\leq$ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle*: The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

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EX3DV4 – SN:7307

February 19, 2016

Probe EX3DV4

SN:7307

Manufactured: March 11, 2014
Calibrated: February 19, 2016

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

EX3DV4– SN:7307

February 19, 2016

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7307

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm (μV/(V/m)^2)^A	0.40	0.62	0.65	± 10.1 %
DCP (mV)^B	101.6	97.3	97.6	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc^E (k=2)
0	CW	X	0.0	0.0	1.0	0.00	146.6	±3.3 %
		Y	0.0	0.0	1.0		133.9	
		Z	0.0	0.0	1.0		135.8	

> The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

^{A} The uncertainties of Norm X,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
^{B} Numerical linearization parameter: uncertainty not required.
^{E} Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

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EX3DV4– SN:7307

February 19, 2016

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7307

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz)^C	Relative Permittivity^F	Conductivity (S/m)^F	ConvF X	ConvF Y	ConvF Z	Alpha^G	Depth^G (mm)	Unc (k=2)
750	41.9	0.89	10.47	10.47	10.47	0.50	0.80	± 12.0 %
835	41.5	0.90	10.01	10.01	10.01	0.49	0.83	± 12.0 %
900	41.5	0.97	9.82	9.82	9.82	0.43	0.85	± 12.0 %
1450	40.5	1.20	8.72	8.72	8.72	0.43	0.80	± 12.0 %
1640	40.3	1.29	8.46	8.46	8.46	0.31	0.85	± 12.0 %
1750	40.1	1.37	8.37	8.37	8.37	0.39	0.80	± 12.0 %
1810	40.0	1.40	8.14	8.14	8.14	0.36	0.83	± 12.0 %
1900	40.0	1.40	8.10	8.10	8.10	0.34	0.85	± 12.0 %
2000	40.0	1.40	8.02	8.02	8.02	0.39	0.84	± 12.0 %
2100	39.8	1.49	8.22	8.22	8.22	0.31	0.85	± 12.0 %
2300	39.5	1.67	7.65	7.65	7.65	0.41	0.80	± 12.0 %
2450	39.2	1.80	7.36	7.36	7.36	0.44	0.80	± 12.0 %
2600	39.0	1.96	7.21	7.21	7.21	0.50	0.80	± 12.0 %
3500	37.9	2.91	7.11	7.11	7.11	0.45	0.89	± 13.1 %
3700	37.7	3.12	6.65	6.65	6.65	0.31	1.23	± 13.1 %
5200	36.0	4.66	5.32	5.32	5.32	0.35	1.80	± 13.1 %
5300	35.9	4.76	5.02	5.02	5.02	0.40	1.80	± 13.1 %
5500	35.6	4.96	4.85	4.85	4.85	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.52	4.52	4.52	0.45	1.80	± 13.1 %
5800	35.3	5.27	4.45	4.45	4.45	0.50	1.80	± 13.1 %

^{C} Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

^{F} At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

^{G} Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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EX3DV4– SN:7307

February 19, 2016

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7307

Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) ^{C}	Relative Permittivity ^{F}	Conductivity (S/m) ^{F}	ConvF X	ConvF Y	ConvF Z	Alpha ^{G}	Depth ^{G} (mm)	Unc (k=2)
750	55.5	0.96	9.93	9.93	9.93	0.48	0.83	± 12.0 %
835	55.2	0.97	9.83	9.83	9.83	0.36	0.94	± 12.0 %
900	55.0	1.05	9.90	9.90	9.90	0.45	0.84	± 12.0 %
1450	54.0	1.30	8.72	8.72	8.72	0.40	0.80	± 12.0 %
1640	53.8	1.40	8.69	8.69	8.69	0.39	0.84	± 12.0 %
1750	53.4	1.49	8.18	8.18	8.18	0.41	0.82	± 12.0 %
1810	53.3	1.52	7.82	7.82	7.82	0.46	0.81	± 12.0 %
1900	53.3	1.52	7.67	7.67	7.67	0.44	0.81	± 12.0 %
2000	53.3	1.52	7.83	7.83	7.83	0.40	0.80	± 12.0 %
2100	53.2	1.62	8.08	8.08	8.08	0.40	0.80	± 12.0 %
2300	52.9	1.81	7.41	7.41	7.41	0.39	0.80	± 12.0 %
2450	52.7	1.95	7.22	7.22	7.22	0.37	0.85	± 12.0 %
2600	52.5	2.16	7.03	7.03	7.03	0.40	0.80	± 12.0 %
3500	51.3	3.31	6.58	6.58	6.58	0.38	1.08	± 13.1 %
3700	51.0	3.55	6.47	6.47	6.47	0.33	1.28	± 13.1 %
5200	49.0	5.30	4.48	4.48	4.48	0.50	1.90	± 13.1 %
5300	48.9	5.42	4.29	4.29	4.29	0.50	1.90	± 13.1 %
5500	48.6	5.65	3.97	3.97	3.97	0.55	1.90	± 13.1 %
5600	48.5	5.77	3.72	3.72	3.72	0.60	1.90	± 13.1 %
5800	48.2	6.00	3.91	3.91	3.91	0.60	1.90	± 13.1 %

^{C} Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

^{F} At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

^{G} Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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EX3DV4– SN:7307

February 19, 2016

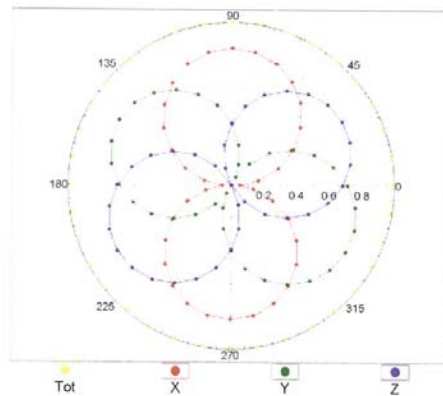# Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)
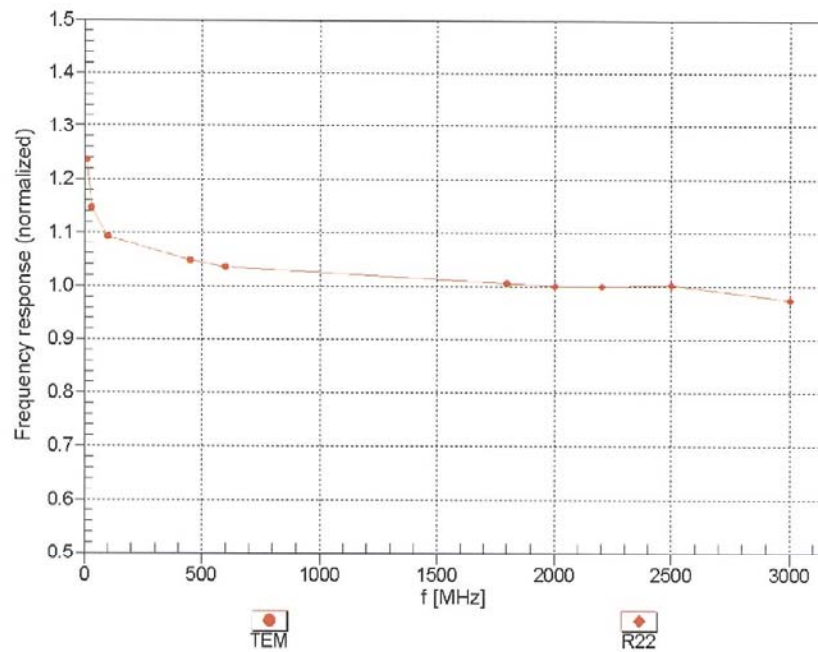
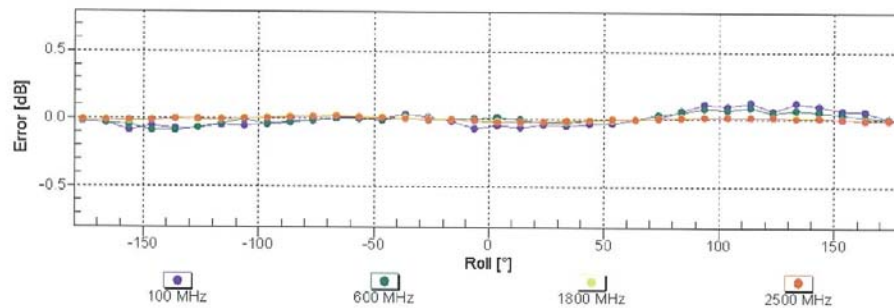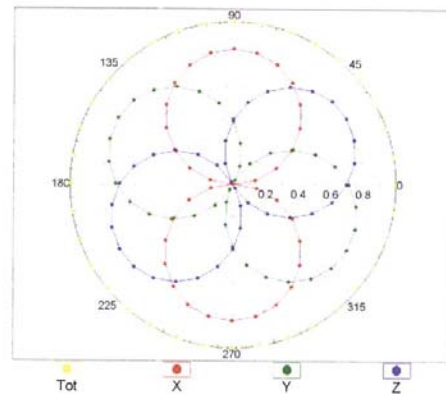Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

EX3DV4– SN:7307

February 19, 2016

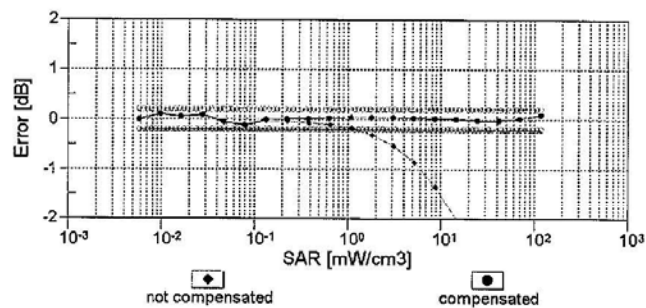# Receiving Pattern (φ), ϑ = 0°

f=600 MHz,TEM

f=1800 MHz,R22

Tot   X   Y   Z

Tot   X   Y   Z
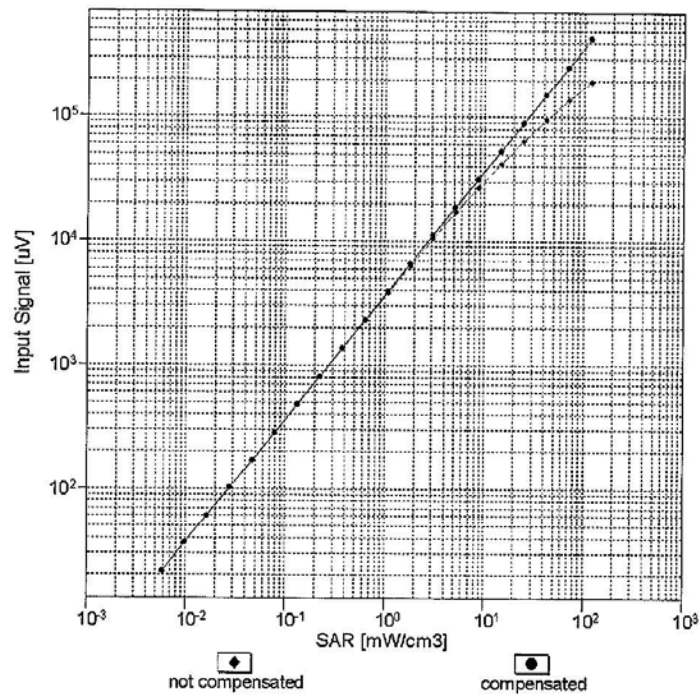

100 MHz   600 MHz   1800 MHz   2500 MHz

Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

EX3DV4– SN:7307

February 19, 2016

Dynamic Range f(SAR_head)
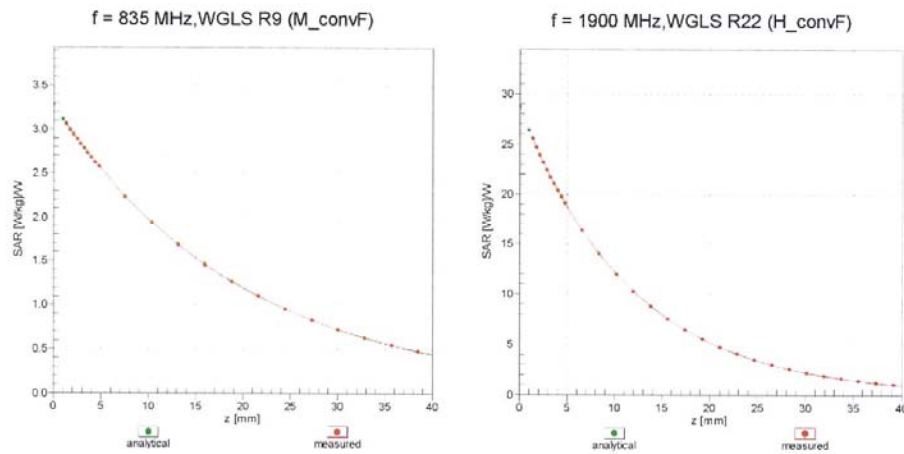### (TEM cell , f_{eval}= 1900 MHz)

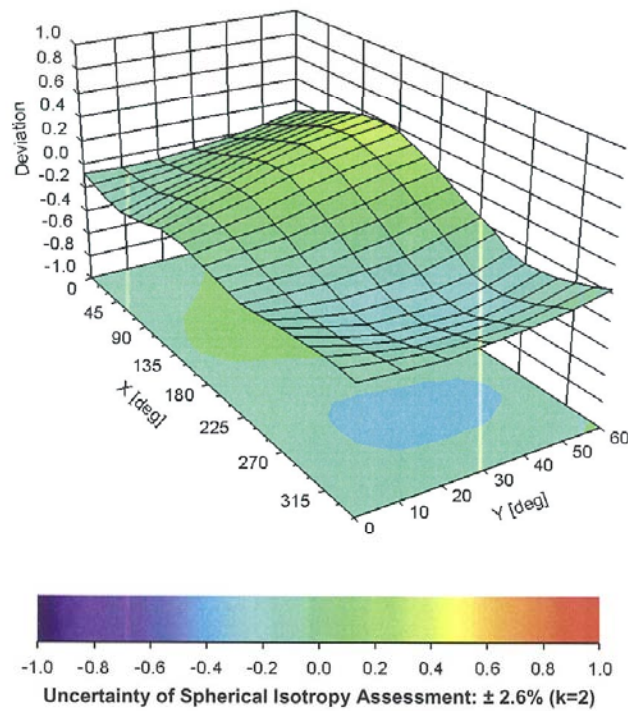Uncertainty of Linearity Assessment: ± 0.6% (k=2)

EX3DV4– SN:7307

February 19, 2016

Conversion Factor Assessment

f = 835 MHz, WGLS R9 (M_convF)

f = 1900 MHz, WGLS R22 (H_convF)

Deviation from Isotropy in Liquid

Error (φ, ϑ), f = 900 MHz

Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

EX3DV4– SN:7307

February 19, 2016

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7307

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	43.6
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

Probe 3846 Calibration Certificate

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CALIBRATION
CNAS L0570

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E-mail: cttl@chinattl.com   Http://www.chinattl.cn

Client   **CTTL**   Certificate No: Z16-97251

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:3846
Calibration Procedure(s)	FD-Z11-004-01 Calibration Procedures for Dosimetric E-field Probes
Calibration date:	January 13, 2017

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements(SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature(22±3)℃ and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards		ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter	NRP2	101919	27-Jun-16 (CTTL, No.J16X04777)	Jun-17
Power sensor	NRP-Z91	101547	27-Jun-16 (CTTL, No.J16X04777)	Jun-17
Power sensor	NRP-Z91	101548	27-Jun-16 (CTTL, No.J16X04777)	Jun-17
Reference10dBAttenuator		18N50W-10dB	13-Mar-16(CTTL,No.J16X01547)	Mar-18
Reference20dBAttenuator		18N50W-20dB	13-Mar-16(CTTL,No.J16X01548)	Mar-18
Reference Probe EX3DV4		SN 7433	26-Sep-16(SPEAG,No.EX3-7433_Sep16)	Sep-17
DAE4		SN 1331	21-Jan-16(SPEAG, No.DAE4-1331_Jan16)	Jan -17
Secondary Standards		ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
SignalGeneratorMG3700A		6201052605	27-Jun-16 (CTTL, No.J16X04776)	Jun-17
Network Analyzer E5071C		MY46110673	26-Jan-16 (CTTL, No.J16X00894)	Jan -17

	Name	Function	Signature
Calibrated by:	Yu Zongying	SAR Test Engineer	
Reviewed by:	Qi Dianyuan	SAR Project Leader	
Approved by:	Lu Bingsong	Deputy Director of the laboratory	

Issued: January 14, 2017

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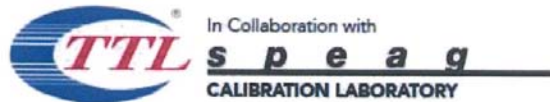
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E-mail: cttl@chinattl.com   Http://www.chinattl.cn

Glossary:

TSL	tissue simulating liquid
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A,B,C,D	modulation dependent linearization parameters
Polarization Φ	Φ rotation around probe axis
Polarization θ	θ rotation around an axis that is in the plane normal to probe axis (at measurement center), i θ=0 is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013

b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300MHz to 3GHz)", February 2005

c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010

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- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.

- PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics.

- *Ax,y,z; Bx,y,z; Cx,y,z; VRx,y,z:*A,B,C are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.

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- *Spherical isotropy (3D deviation from isotropy):* in a field of low gradients realized using a flat phantom exposed by a patch antenna.

- *Sensor Offset:* The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

- *Connector Angle:* The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

Certificate No: Z16-97251   Page 2 of 11

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Probe EX3DV4

SN: 3846

Calibrated: January 13, 2017

Calibrated for DASY/EASY Systems

(Note: non-compatible with DASY2 system!)

Certificate No: Z16-97251   Page 3 of 11

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Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2218   Fax: +86-10-62304633-2209
E-mail: cttl@chinattl.com   Http://www.chinattl.cn

DASY/EASY – Parameters of Probe: EX3DV4 – SN: 3846

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm(µV/(V/m)^2) ^{A}	0.39	0.47	0.47	±10.8%
DCP(mV)^B	99.4	98.9	99.6	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√µV	C	D dB	VR mV	Unc ^{E} (k=2)
0	CW	X	0.0	0.0	1.0	0.00	175.0	±2.1%
		Y	0.0	0.0	1.0		188.3	
		Z	0.0	0.0	1.0		190.7	

The reported uncertainty of measurement is stated as the standard uncertainty of Measurement multiplied by the coverage factor k=2, which for a normal distribution Corresponds to a coverage probability of approximately 95%.

^{A} The uncertainties of Norm X, Y, Z do not affect the E^2-field uncertainty inside TSL (see Page 5 and Page 6).
^{B} Numerical linearization parameter: uncertainty not required.
^{E} Uncertainly is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

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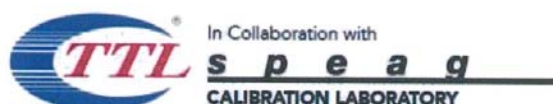# DASY/EASY – Parameters of Probe: EX3DV4 – SN: 3846

Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz]^C	Relative Permittivity ^{F}	Conductivity (S/m) ^{F}	ConvF X	ConvF Y	ConvF Z	Alpha^G	Depth^G (mm)	Unct. (k=2)
750	41.9	0.89	9.65	9.65	9.65	0.30	0.70	±12%
900	41.5	0.97	9.33	9.33	9.33	0.16	1.27	±12%
1450	40.5	1.20	8.42	8.42	8.42	0.26	0.92	±12%
1750	40.1	1.37	8.16	8.16	8.16	0.22	1.09	±12%
1900	40.0	1.40	7.89	7.89	7.89	0.23	1.14	±12%
2100	39.8	1.49	7.90	7.90	7.90	0.20	1.18	±12%
2300	39.5	1.67	7.43	7.43	7.43	0.53	0.72	±12%
2450	39.2	1.80	7.22	7.22	7.22	0.43	0.87	±12%
2600	39.0	1.96	7.12	7.12	7.12	0.52	0.80	±12%
5250	35.9	4.71	5.37	5.37	5.37	0.45	1.15	±13%
5600	35.5	5.07	4.72	4.72	4.72	0.45	1.30	±13%
5750	35.4	5.22	4.95	4.95	4.95	0.45	1.40	±13%

^{C} Frequency validity above 300 MHz of ±100MHz only applies for DASY v4.4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

^{F} At frequency below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ±5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

^{G} Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for the frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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DASY/EASY – Parameters of Probe: EX3DV4 – SN: 3846

Calibration Parameter Determined in Body Tissue Simulating Media

f [MHz]^C	Relative Permittivity ^{F}	Conductivity (S/m) ^{F}	ConvF X	ConvF Y	ConvF Z	Alpha^G	Depth^G (mm)	Unct. (k=2)
750	55.5	0.96	9.96	9.96	9.96	0.40	0.85	±12%
900	55.0	1.05	9.52	9.52	9.52	0.21	1.23	±12%
1450	54.0	1.30	8.22	8.22	8.22	0.12	1.36	±12%
1750	53.4	1.49	7.90	7.90	7.90	0.29	1.00	±12%
1900	53.3	1.52	7.57	7.57	7.57	0.19	1.26	±12%
2100	53.2	1.62	7.93	7.93	7.93	0.17	1.56	±12%
2300	52.9	1.81	7.55	7.55	7.55	0.62	0.76	±12%
2450	52.7	1.95	7.31	7.31	7.31	0.55	0.83	±12%
2600	52.5	2.16	7.25	7.25	7.25	0.58	0.81	±12%
5250	48.9	5.36	4.95	4.95	4.95	0.50	1.55	±13%
5600	48.5	5.77	4.18	4.18	4.18	0.55	1.60	±13%
5750	48.3	5.94	4.53	4.53	4.53	0.58	1.98	±13%

^{C} Frequency validity above 300 MHz of ±100MHz only applies for DASY v4.4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.
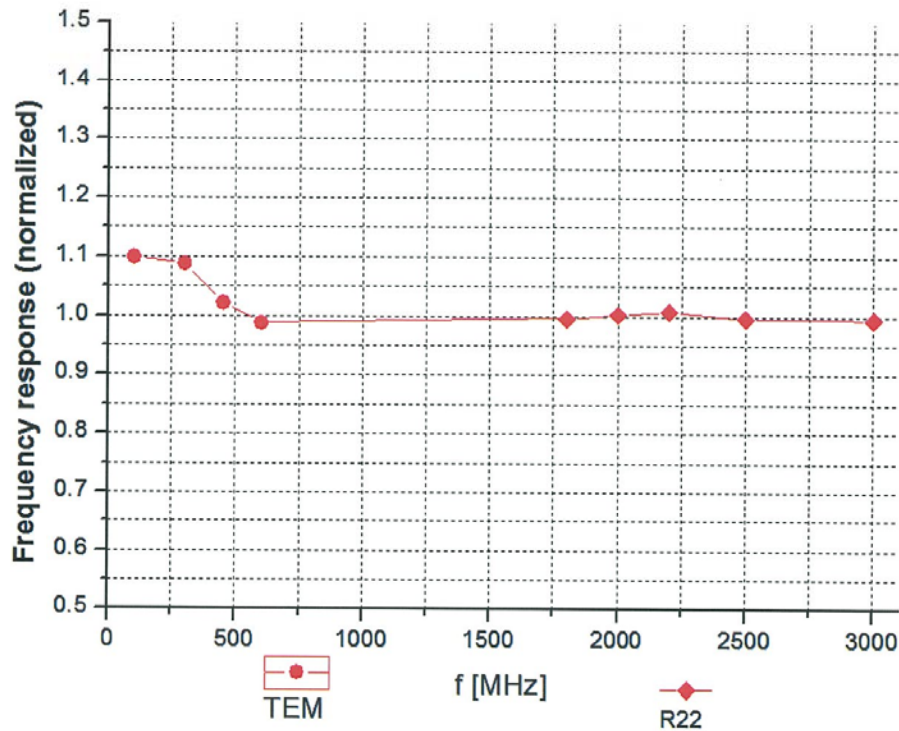
^{F} At frequency below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ±5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

^{G} Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for the frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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Frequency Response of E-Field
(TEM-Cell: ifi110 EXX, Waveguide: R22)

Uncertainty of Frequency Response of E-field: ±7.5% (k=2)

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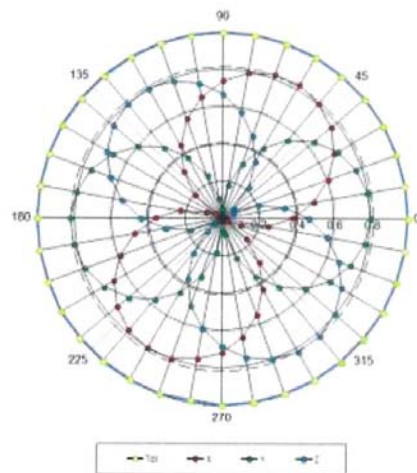E-mail: cttl@chinattl.com   Http://www.chinattl.cn

Receiving Pattern (Φ), θ=0°

f=600 MHz, TEM

f=1800 MHz, R22

| | 100MHz | 600MHz | 1800MHz | 2500MHz |

Uncertainty of Axial Isotropy Assessment: ±0.9% (k=2)

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