

Appendix B - DAE & Probe Calibration Certificate

	ich, Switzerland	"Mahahahaha	S Swiss Calibration Service
Accredited by the Swiss Accredi The Swiss Accreditation Servi Multilateral Agreement for the	ce is one of the signatories	s to the EA	ion No.: SCS 0108
Client SGS - TW (Au	den)	Certificate	No: DAE4-856_Apr19
CALIBRATION	CERTIFICATE		
Object	DAE4 - SD 000 D	004 BM - SN: 856	
Calibration procedure(s)	QA CAL-06.v29 Calibration proces	dure for the data acquisition el	ectronics (DAE)
Calibration date:	April 24, 2019		
The measurements and the unc All calibrations have been condu	ertainties with confidence pro	onal standards, which realize the physical obability are given on the following pages / facility: environment temperature (22 ± 3	and are part of the certificate.
The measurements and the unc All calibrations have been condu Calibration Equipment used (M& Primary Standards	ertainties with confidence pro- ucted in the closed laboratory TE critical for calibration)	obability are given on the following pages facility: environment temperature (22 ± 2 Cal Date (Certificate No.)	and are part of the certificate.
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The measurements and the unc	ertainties with confidence pro- including the closed laboratory intertical for calibration) ID # SN: 0810278 ID # SE UWS 053 AA 1001	obability are given on the following pages (facility: environment temperature (22 ± 3 <u>Cal Date (Certificate No.)</u> 03-Sep-18 (No:23488)	and are part of the certificate. 3)°C and humidity < 70%. Scheduled Calibration Sep-19
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Schweizerischer Kalibrierdienst Service suisse d'étalonnage Servizio svizzero di taratura Swiss Calibration Service

Accreditation No.: SCS 0108

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

Glossary

DAE Connector angle

data acquisition electronics information used in DASY system to align probe sensor X to the robot coordinate system.

Methods Applied and Interpretation of Parameters

- DC Voltage Measurement: Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- Connector angle: The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
 - DC Voltage Measurement Linearity: Verification of the Linearity at +10% and -10% of . the nominal calibration voltage. Influence of offset voltage is included in this measurement
 - Common mode sensitivity: Influence of a positive or negative common mode voltage on . the differential measurement.
 - Channel separation: Influence of a voltage on the neighbor channels not subject to an input voltage.
 - AD Converter Values with inputs shorted: Values on the internal AD converter corresponding to zero input voltage
 - Input Offset Measurement. Output voltage and statistical results over a large number of zero voltage measurements.
 - Input Offset Current: Typical value for information; Maximum channel input offset current, not considering the input resistance.
 - Input resistance: Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
 - Low Battery Alarm Voltage: Typical value for information. Below this voltage, a battery alarm signal is generated.
 - Power consumption: Typical value for information. Supply currents in various operating ٠ modes.

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DC Voltage Measurement

High Range:	1LSB =	6.1µV ,	full range =	-100+300 mV
Low Range:	1LSB =	61nV		-1+3mV

Calibration Factors	х	Y	Z
High Range	403.400 ± 0.02% (k=2)	404.514 ± 0.02% (k=2)	403.834 ± 0.02% (k=2)
Low Range	3.97649 ± 1.50% (k=2)	3.98674 ± 1.50% (k=2)	3.94236 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	264.5 ° ± 1 °
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Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range	Reading (µV)	Difference (µV)	Error (%)
Channel X + Input	199994.07	0.95	0.00
Channel X + Input	19999.17	-2.09	-0.01
Channel X - Input	-20000.00	1.59	-0.01
Channel Y + Input	199993.69	0.37	0.00
Channel Y + Input	19998.33	-2.97	-0.01
Channel Y - Input	-20002.50	-0.88	0.00
Channel Z + Input	199993.47	-0.14	-0.00
Channel Z + Input	19998.83	-2.35	-0.01
Channel Z - Input	-20002.52	-0.77	0.00

Low Range	Reading (µV)	Difference (µV)	Error (%)
Channel X + Input	2000.95	0.19	0.01
Channel X + Input	201.39	0.20	0.10
Channel X - Input	-198.76	-0.08	0.04
Channel Y + Input	2000.77	-0.00	-0.00
Channel Y + Input	200.61	-0.60	-0.30
Channel Y - Input	-199.00	-0.38	0.19
Channel Z + Input	2000.74	0.11	0.01
Channel Z + Input	200.00	-1.10	-0.55
Channel Z - Input	-200.10	-1.29	0.65

2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Common mode Input Voltage (mV)	High Range Average Reading (μV)	Low Range Average Reading (µV)
Channel X	200	-15.47	-16,43
	- 200	17.24	15.88
Channel Y	200	-2.49	-1.95
	- 200	1.02	0.67
Channel Z	200	10.56	10.55
	- 200	-13.14	-13.28

3. Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

I. T	Input Voltage (mV)	Channel X (µV)	Channel Y (µV)	Channel Z (µV)
Channel X	200	10 C 10 C 10 C	3.15	-3.11
Channel Y	200	6.52	-	2.77
Channel Z	200	8.20	5.20	-

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4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	High Range (LSB)	Low Range (LSB)
Channel X	16223	16385
Channel Y	15954	15977
Channel Z	15878	16167

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec Input 10MΩ

	Average (µV)	min. Offset (μV)	max. Offset (µV)	Std. Deviation (µV)
Channel X	-0.02	-1.16	0.89	0.36
Channel Y	0.99	-2.15	3.08	0.60
Channel Z	0.49	-0.57	2.90	0.62

6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

7. Input Resistance (Typical values for information)

A DESCRIPTION OF THE OWNER	Zeroing (kOhm)	Measuring (MOhm)
Channel X	200	200
Channel Y	200	200
Channel Z	200	200

8. Low Battery Alarm Voltage (Typical values for information)

Typical values	Alarm Level (VDC)
Supply (+ Vcc)	+7.9
Supply (- Vcc)	-7.6

9. Power Consumption (Typical values for information)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)
Supply (+ Vcc)	+0.01	+6	+14
Supply (- Vcc)	-0.01	-8	-9

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	litation Service (SAS) rice is one of the signatories a recognition of calibration c	to the EA	reditation No.: SCS 0108
lient SGS (Auden)		Certificate No:	EX3-7509_Mar19
CALIBRATION	CERTIFICATE		
Dbject	EX3DV4 - SN:750	9	
Calibration procedure(s)		A CAL-14.v5, QA CAL-23.v5, QA lure for dosimetric E-field probes	CAL-25.v7
Calibration date:	March 25, 2019		
All calibrations have been cond	ducted in the closed laboratory	bability are given on the following pages and facility: environment temperature (22 \pm 3)°C a	
All calibrations have been conc Calibration Equipment used (M	tucted in the closed laboratory	facility: environment temperature (22 ± 3)°C a	ind humidity < 70%.
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Il calibrations have been conc alibration Equipment used (M Primary Standards Power meter NRP Power sensor NRP-Z91	Lucted in the closed laboratory I&TE critical for calibration) ID SN: 104778	facility: environment temperature (22 ± 3)°C a Cal Date (Certificate No.) 04-Apr-18 (No. 217-02672/02673)	ind humidity < 70%.
All calibrations have been conc Calibration Equipment used (M Primary Standards Power meter NRP Power sensor NRP-Z91 Power sensor NRP-Z91	ID SN: 104778 SN: 103244	facility: environment temperature (22 ± 3)°C a Cal Date (Certificate No.) 04-Apr-18 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672)	Scheduled Calibration Apr-19 Apr-19
All calibrations have been conc Calibration Equipment used (M Primary Standards Power meter NRP Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator	IUCted in the closed laboratory I&TE critical for calibration) ID SN: 104778 SN: 103244 SN: 103245	facility: environment temperature (22 ± 3)°C a Cal Date (Certificate No.) 04-Apr-18 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02673)	Scheduled Calibration Apr-19 Apr-19 Apr-19
All calibrations have been conc Calibration Equipment used (M Primary Standards Power meter NRP Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator DAE4	IUCTEd in the closed laboratory I&TE critical for calibration) ID SN: 104778 SN: 103244 SN: 103245 SN: 55277 (20x)	facility: environment temperature (22 ± 3)°C a Cal Date (Certificate No.) 04-Apr-18 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02673) 04-Apr-18 (No. 217-02682)	Scheduled Calibration Apr-19 Apr-19 Apr-19 Apr-19 Apr-19
Il calibrations have been conc Calibration Equipment used (M Primary Standards Power meter NRP Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator DAE4 Reference Probe ES3DV2	ID SN: 104778 SN: 103244 SN: 103245 SN: 55277 (20x) SN: 660 SN: 3013	facility: environment temperature (22 ± 3)°C a Cal Date (Certificate No.) 04-Apr-18 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02673) 04-Apr-18 (No. 217-02682) 19-Dec-18 (No. DAE4-660_Dec18) 31-Dec-18 (No. ES3-3013_Dec18)	Scheduled Calibration Apr-19 Apr-19 Apr-19 Apr-19 Dec-19 Dec-19 Dec-19
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All calibrations have been conc Calibration Equipment used (M Primary Standards Power meter NRP Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator DAE4 Reference Probe ES3DV2 Secondary Standards Power meter E4419B	Uucted in the closed laboratory I&TE critical for calibration) ID SN: 104778 SN: 103244 SN: 103245 SN: 103245 SN: 55277 (20x) SN: 660 SN: 3013 ID SN: GB41293874	facility: environment temperature (22 ± 3)°C a Cal Date (Certificate No.) 04-Apr-18 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02673) 04-Apr-18 (No. 217-02682) 19-Dec-18 (No. DAE4-660_Dec18) 31-Dec-18 (No. ES3-3013_Dec18) Check Date (in house) 06-Apr-16 (in house check Jun-18)	In humidity < 70%. Scheduled Calibration Apr-19 Apr-19 Apr-19 Apr-19 Dec-19 Dec-19 Dec-19 Scheduled Check In house check; Jun-20
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All calibrations have been conc Calibration Equipment used (M Primary Standards Power meter NRP Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator DAE4 Reference Probe ES3DV2 Secondary Standards Power meter E4419B Power sensor E4412A Power sensor E4412A RF generator HP 8648C	Uucted in the closed laboratory I&TE critical for calibration) ID SN: 104778 SN: 103244 SN: 103245 SN: 55277 (20x) SN: 660 SN: 3013 ID SN: GB41293874 SN: MY41498087 SN: 000110210	facility: environment temperature (22 ± 3)°C a Cal Date (Certificate No.) 04-Apr-18 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02673) 04-Apr-18 (No. 217-02682) 19-Dec-18 (No. 217-02682) 19-Dec-18 (No. DAE4-660_Dec18) 31-Dec-18 (No. ES3-3013_Dec18) Check Date (in house) 06-Apr-16 (in house check Jun-18) 06-Apr-16 (in house check Jun-18)	In humidity < 70%. Scheduled Calibration Apr-19 Apr-19 Apr-19 Apr-19 Dec-19 Dec-19 Dec-19 Dec-19 Scheduled Check In house check: Jun-20 In house check: Jun-20
All calibrations have been conc Calibration Equipment used (M Primary Standards Power meter NRP Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator DAE4 Reference Probe ES3DV2 Secondary Standards Power meter E4419B Power sensor E4412A Power sensor E4412A RF generator HP 8648C	Ucted in the closed laboratory IATE critical for calibration) ID SN: 104778 SN: 103244 SN: 103245 SN: 03245 SN: 03245 SN: 55277 (20x) SN: 660 SN: 3013 ID SN: GB41293874 SN: GB41293874 SN: GB41293874 SN: 000110210 SN: US3642U01700 SN: US41080477	facility: environment temperature (22 ± 3)°C a Cal Date (Certificate No.) 04-Apr-18 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02673) 04-Apr-18 (No. 217-02682) 19-Dec-18 (No. 217-02682) 19-Dec-18 (No. 247-02682) 19-Dec-18 (No. 247-02682) 19-Dec-18 (No. 253-3013_Dec18) Check Date (in house) 06-Apr-16 (in house check Jun-18) 06-Apr-16 (in house check Jun-18) 06-Apr-16 (in house check Jun-18) 04-Aug-99 (in house check Jun-18) 31-Mar-14 (in house check Oct-18)	In humidity < 70%. Scheduled Calibration Apr-19 Apr-19 Apr-19 Apr-19 Dec-19 Dec-19 Dec-19 Dec-19 Scheduled Check In house check: Jun-20 In house check: Jun-20
All calibrations have been conc Calibration Equipment used (M Primary Standards Power sensor NRP-291 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator DAE4 Reference Probe ES3DV2 Secondary Standards Power meter E4419B Power sensor E4412A Power sensor E4412A RF generator HP 8648C Network Analyzer E8358A	Iucted in the closed laboratory I&TE critical for calibration) ID SN: 104778 SN: 103244 SN: 103245 SN: 03245 SN: 05277 (20x) SN: 660 SN: 3013 ID SN: GB41293874 SN: MY41498087 SN: 000110210 SN: US3642U01700	facility: environment temperature (22 ± 3)°C a Cal Date (Certificate No.) 04-Apr-18 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02682) 19-Dec-18 (No. 217-02682) 19-Dec-18 (No. 247-02682) 19-Dec-18 (No. 247-02682) 19-Dec-18 (No. 247-02682) 06-Apr-18 (In bouse check Jun-18) 06-Apr-16 (In house check Jun-18) 06-Apr-16 (In house check Jun-18) 04-Aug-99 (In house check Jun-18)	In house check: Jun-20 In house check: Jun-20 In house check: Jun-20 In house check: Jun-20 In house check: Jun-20
All calibrations have been conc Calibration Equipment used (M Primary Standards Power meter NRP	Uucted in the closed laboratory IATE critical for calibration) ID SN: 104778 SN: 103244 SN: 103245 SN: 55277 (20x) SN: 660 SN: 3013 ID SN: GB41293874 SN: MY41498087 SN: 000110210 SN: US3642U01700 SN: US341080477 Name	facility: environment temperature (22 ± 3)°C a Cal Date (Certificate No.) 04-Apr-18 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02673) 04-Apr-18 (No. 217-02673) 04-Apr-18 (No. 217-02682) 19-Dec-18 (No. 217-02682) 19-Dec-18 (No. 217-02682) 19-Dec-18 (No. 217-02682) 19-Dec-18 (No. 217-02682) 06-Apr-18 (No. ES3-3013 Dec18) 06-Apr-16 (in house) 06-Apr-16 (in house check Jun-18) 06-Apr-16 (in house check Jun-18) 06-Apr-16 (in house check Jun-18) 04-Aug-99 (in house check Jun-18) 04-Aug-99 (in house check Jun-18) 31-Mar-14 (in house check Oct-18) Function	In humidity < 70%. Scheduled Calibration Apr-19 Apr-19 Apr-19 Apr-19 Dec-19 Dec-19 Dec-19 Dec-19 Scheduled Check In house check: Jun-20 In house check: Jun-20

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



Schweizerischer Kalibrierdienst S Service suisse d'étalonnage C Servizio svizzero di taratura

S Swiss Calibration Service

Accreditation No.: SCS 0108

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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 (p	φ rotation around probe axis
Polarization 9	9 rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., 9 = 0 is normal to probe axis

information used in DASY system to align probe sensor X to the robot coordinate system **Connector Angle**

Calibration is Performed According to the Following Standards:

- 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 a) Techniques", June 2013 IEC 62209-1, ", "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from handb)
- held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016 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 9 = 0 (f ≤ 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 E2-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:7509

March 25, 2019

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7509

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm $(\mu V/(V/m)^2)^A$	0.47	0,49	0.47	± 10,1 %
DCP (mV) ^B	99.6	98.6	102.3	- 10.1 70

Calibration Results for Modulation Response

UID	Communication System Name		A dB	B dBõV	С	D dB	VR mV	Max dev.	Unc ^E (k=2)
0 CW	0	CW	X 0.0	0.0	1.0	0.00	176.8	±3.3 %	±4.7 %
		Y	0.0	0.0	1.0		186.0		1.1
		Y	0.0	0.0	1.0		183.5		

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 E³-field uncertainty inside TSL (see Pages 5 and 6)

Numerical linearization parameter: uncertainty on required. 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:7509

March 25, 2019

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7509

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (")	-47.6
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

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EX3DV4- SN:7509

March 25, 2019

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7509

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	10.41	10.41	10.41	0.51	0.80	± 12.0 %
835	41.5	0.90	10.13	10.13	10.13	0.48	0.85	± 12.0 %
900	41.5	0.97	9.89	9.89	9.89	0.44	0.84	± 12.0 %
1750	40.1	1.37	8.84	8.84	8.84	0.28	0.98	± 12.0 %
1900	40.0	1.40	8.50	8.50	8.50	0.30	0.85	± 12.0 %
2000	40.0	1.40	8.39	8.39	8.39	0.35	0.85	± 12,0 %
2300	39.5	1.67	8.13	8.13	8.13	0.29	0.88	± 12.0 %
2450	39.2	1.80	7.79	7.79	7.79	0.30	0.88	± 12.0 %
2600	39.0	1.96	7.70	7.70	7.70	0.36	0.86	± 12.0 %
5200	36.0	4.66	5.46	5.46	5.46	0.40	1.80	± 13.1 %
5300	35.9	4.76	5.20	5.20	5.20	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.77	4.77	4.77	0.40	1,80	± 13.1 %
5800	35.3	5.27	4.94	4.94	4.94	0.40	1.80	± 13.1 %

Calibration Parameter Determined in Head Tissue Simulating Media

^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. Validity of ConvF assesses at 30 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Validity of ConvF assesses at 30 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Validity of ConvF assessed at 5 MHz is 9-19 MHz, Above 5 GHz frequency validity can be extended to ± 110 MHz. The validity of lissue parameters (c 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 lissue parameters (c and σ) is restricted to ± 5%. The uncertainty for indicated largel lissue parameters. ^{(C} 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 lissue parameters (c and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated largel lissue parameters. ^{(C} and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values, At 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.

diameter from the boundary

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EX3DV4-SN:7509

March 25, 2019

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7509

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	10.91	10.91	10.91	0.45	0.80	± 12.0 %
835	55.2	0.97	10,59	10.59	10.59	0.40	0.88	± 12.0 %
900	55.0	1.05	10.47	10.47	10.47	0.40	0.80	± 12.0 %
1750	53.4	1.49	8.63	8.63	8.63	0.35	0.85	± 12.0 %
1900	53.3	1.52	8,24	8.24	8.24	0.36	0.85	± 12.0 %
2000	53.3	1.52	8.19	8.19	8.19	0.22	1.16	± 12.0 %
2300	52.9	1.81	8.11	8.11	8.11	0.35	0.88	± 12,0 %
2450	52.7	1.95	8.05	8.05	8.05	0.28	0.93	±12.0 %
2600	52.5	2.16	7.76	7.76	7.76	0.25	0.98	± 12.0 %
5200	49.0	5.30	4.81	4.81	4.81	0.50	1.90	± 13.1 %
5300	48.9	5.42	4.66	4.66	4.66	0.50	1.90	± 13.1 %
5600	48.5	5.77	4.19	4.19	4.19	0.50	1.90	± 13.1 %
5800	48.2	6.00	4.20	4.20	4.20	0.50	1.90	± 13.1 %

Calibration Parameter Determined in Body Tissue Simulating Media

^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. Validity of ConvF assessed at 6 MHz is ± 9.9 MHz, and ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Validity of ConvF assessed at 6 MHz is 4-9 MHz, and ConvF assessed at 13 MHz is 9-19 MHz. Above 5 GHz frequency validity can be extended to ± 110 MHz. The measured SAR values. At frequencies below 3 GHz, the validity of tissue parameters (ic and o) 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 (ic and o) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty tor indicated target tissue parameters. [®] 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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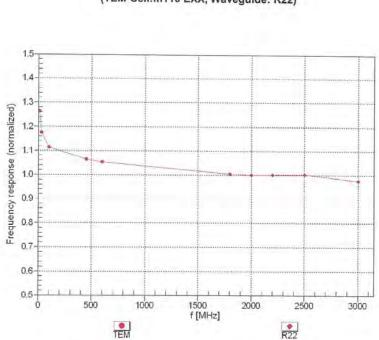
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EX3DV4- SN:7509

March 25, 2019



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

Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

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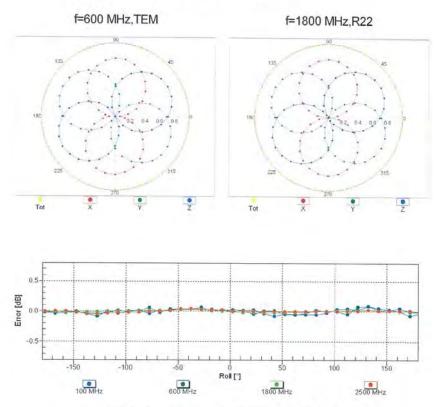
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Receiving Pattern (ϕ), $\vartheta = 0^{\circ}$

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

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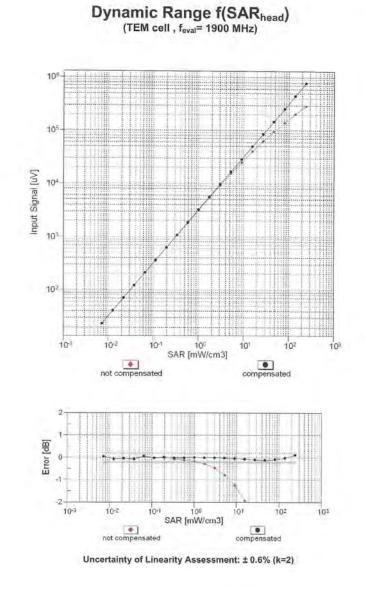
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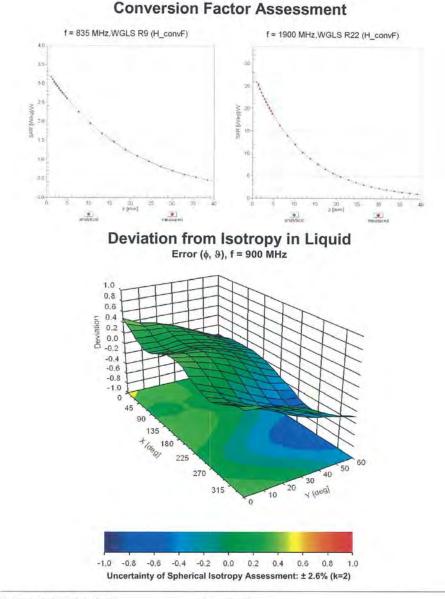
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