

Appendix B - DAE & Probe Calibration Certificate

Schmid & Partner Engineering AG eughausstrasse 43, 8004 Zuric	ry of		 Schweizerischer Kalibrierdienst Service suisse d'étalonnage Servizio svizzero di taratura Swiss Calibration Service
ccredited by the Swiss Accredit he Swiss Accreditation Servic lultilateral Agreement for the r	e is one of the signatories	to the EA	ation No.: SCS 0108
lient SGS-TW (Aude	en)	Certifica	te No: DAE4-547_Mar19
CALIBRATION O	CERTIFICATE		
Dbject	DAE4 - SD 000 D	04 BM - SN: 547	
Calibration procedure(s)	QA CAL-06.v29 Calibration procee	dure for the data acquisition (electronics (DAE)
Calibration date:	March 22, 2019		
The measurements and the unco All calibrations have been condu	ertainties with confidence protected in the closed laboratory	nal standards, which realize the physic obability are given on the following pag r facility: environment temperature (22 :	es and are part of the certificate.
The measurements and the unce All calibrations have been condu Calibration Equipment used (M&	ertainties with confidence protected in the closed laboratory	obability are given on the following page	es and are part of the certificate.
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The measurements and the unco All calibrations have been condu Calibration Equipment used (M& Primary Standards Selfhley Multimeter Type 2001 Secondary Standards Auto DAE Calibration Unit Calibrator Box V2.1 Calibrated by: Approved by:	artainties with confidence pr cted in the closed laboratory TE critical for calibration) ID # SN: 0810278 ID # SE UWS 053 AA 1001 SE UWS 053 AA 1002 SE UMS 006 AA 1002 Name Dominique Steffen Sven Kühn	Check Date (Certificate No.) 03-Sep-18 (No:23488) Check Date (in house) 07-Jan-19 (in house check) 07-Jan-19 (in house check) 07-Jan-19 (in house check)	es and are part of the certificate. ± 3)°C and humidity < 70%. Scheduled Calibration Sep-19 Scheduled Chack In house check: Jan-20 In house check: Jan-20 Signature Sign

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

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



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Accreditation No.: SCS 0108

Glossary

DAE data acquisition electronics Connector angle 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 modes.

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DC Voltage Measurement A/D - Converter Resolution nominal

 High Range:
 1LSB =
 6.1μV
 full range =
 -100...+300 mV

 Low Range:
 1LSB =
 61nV
 full range =
 -1.....+3mV

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

Calibration Factors	x	Y	z
High Range	403.235 ± 0.02% (k=2)	403.136 ± 0.02% (k=2)	402.783 ± 0.02% (k=2)
Low Range	3.95448 ± 1.50% (k=2)	3.90479 ± 1.50% (k=2)	3.96245 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	91.5°±1°
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High Range	Reading (µV)	Difference (µV)	Error (%)
Channel X + Input	199995.43	1.41	0.00
Channel X + Input	20002.84	1.52	0.01
Channel X - Input	-19996.87	4.76	-0.02
Channel Y + Input	199993.66	0.02	0.00
Channel Y + Input	19999.34	-2.02	-0.01
Channel Y - Input	-20003.96	-2.33	0.01
Channel Z + Input	199994.47	1.04	0.00
Channel Z + Input	20002.60	1.36	0.01
Channel Z - Input	-20001.47	0.29	-0.00
Low Range	Reading (µV)	Difference (µV)	Error (%)
Channel X + Input	2000.59	-0.23	-0.01
22 222	22.0.0		

Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

onamer 2 - mpar	-20001.47	0.20	-0.00
Low Range	Reading (µV)	Difference (µV)	Error (%)
Channel X + Input	2000.59	-0.23	-0.01
Channel X + Input	201.16	-0.10	-0.05
Channel X - Input	-199.09	-0.45	0.23
Channel Y + Input	2000.65	-0.10	-0.01
Channel Y + Input	200.83	-0.37	-0.18
Channel Y - Input	-199.37	-0.70	0.35
Channel Z + Input	2000.46	-0.35	-0.02
Channel Z + Input	199.75	-1.50	-0.75
Channel Z - Input	-200.47	-1.80	0.90

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	-3.65	-5.24
	- 200	5.24	3.62
Channel Y	200	-0.39	-1.02
	- 200	0.24	-0.55
Channel Z	200	5.61	5.22
	- 200	-7.68	-8.11

3. Channel separation

ement parameters: Auto Zero Time: 3 sec: Measuring time: 3 sec ASY measu

	Input Voltage (mV)	Channel X (µV)	Channel Y (µV)	Channel Z (µV)
Channel X	200		3.67	-2.18
Channel Y	200	9.88		4.13
Channel Z	200	4.62	8.17	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

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4. AD-Converter Values with inputs shorted

	High Range (LSB)	Low Range (LSB)
Channel X	16357	14727
Channel Y	16459	15185
Channel Z	16084	17210

5. Input Offset Measurement

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

	Average (µV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (μV)
Channel X	-1.59	-2.60	-0.90	0.32
Channel Y	0.54	-0.42	1.60	0.34
Channel Z	0.95	-0.46	2.89	0.59

6. Input Offset Current

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

7. Input Resistance (Typical values for information)

	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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lient SGS (Auden)		Certificate No:	EX3-3665_Aug19				
CALIBRATION	CERTIFICATE						
Dbject	EX3DV4 - SN:366	5					
Calibration procedure(s)	QA CAL-01,v9, QA CAL-14.v5, QA CAL-23.v5, QA CAL-25.v7 Calibration procedure for dosimetric E-field probes						
Calibration date:	August 30, 2019						
		facility: environment temperature (22 \pm 3)°C a	nd humidity < 70%.				
Calibration Equipment used (M	&TE critical for calibration)						
Calibration Equipment used (M Primary Standards	&TE critical for calibration)	Cal Date (Certificate No.)	Scheduled Calibration				
Calibration Equipment used (M Primary Standards Power meter NRP	&TE critical for calibration)	Cal Date (Certificate No.) 03-Apr-19 (No. 217-02892/02893)	Scheduled Calibration Apr-20				
Calibration Equipment used (M Primary Standards Power meter NRP Power sensor NRP-Z91	&TE critical for calibration)	Cal Date (Certificate No.)	Scheduled Calibration				
	&TE critical for calibration)	Cal Date (Certificate No.) 03-Apr-19 (No. 217-02892/02893) 03-Apr-19 (No. 217-02892)	Scheduled Calibration Apr-20 Apr-20				
Calibration Equipment used (M Primary Standards Power meter NRP Power sensor NRP-Z91 Power sensor NRP-Z91	&TE cntical for calibration) ID SN: 104778 SN: 103244 SN: 103245	Cal Date (Certificate No.) 03-Apr-19 (No. 217-02892/02893) 03-Apr-19 (No. 217-02892) 03-Apr-19 (No. 217-02893)	Scheduled Calibration Apr-20 Apr-20 Apr-20				
Calibration Equipment used (M Primary Standards Power meter NRP Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator	ID SN: 104778 SN: 103244 SN: 103245 SN: 55277 (20x) S1245	Cal Date (Certificate No.) 03-Apr-19 (No. 217-02692/02693) 03-Apr-19 (No. 217-02892) 03-Apr-19 (No. 217-02893) 04-Apr-19 (No. 217-02894)	Scheduled Calibration Apr-20 Apr-20 Apr-20 Apr-20 Apr-20				
Calibration Equipment used (M Primary Standards Power meter NRP Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator DAE4	8TE critical for calibration) ID SN: 104778 SN: 103244 SN: 103245 SN: 56277 (20x) SN: 560	Cal Date (Certificate No.) 03-Apr-19 (No. 217-02892/02893) 03-Apr-19 (No. 217-02892) 03-Apr-19 (No. 217-02893) 04-Apr-19 (No. 217-02894) 19-Dec-18 (No. DAE4-660_Dec18)	Scheduled Calibration Apr-20 Apr-20 Apr-20 Apr-20 Dec-19				
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	BTE critical for calibration) ID SN: 104778 SN: 103244 SN: 103245 SN: 5277 (20x) SN: 660 SN: 3013	Cal Date (Certificate No.) 03-Apr-19 (No. 217-02692/02693) 03-Apr-19 (No. 217-02692) 03-Apr-19 (No. 217-02893) 04-Apr-19 (No. 217-02894) 19-Dec-18 (No. DAE4-660_Dec18) 31-Dec-18 (No. ES3-3013_Dec18)	Scheduled Calibration Apr-20 Apr-20 Apr-20 Apr-20 Dec-19 Dec-19				
Calibration Equipment used (M Primary Standards Power meter NRP Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator DAE4 Reference Probe ES3DV2 Secondary Standards Power meter E4419B	8.TE critical for calibration) ID SN: 104778 SN: 103244 SN: 103245 SN: 503245 SN: 560 SN: 3013 ID	Cal Date (Certificate No.) 03-Apr-19 (No. 217-02892/02893) 03-Apr-19 (No. 217-02892) 03-Apr-19 (No. 217-02893) 04-Apr-19 (No. 217-02894) 19-Dec-18 (No. DAE4-660_Dec18) 31-Dec-18 (No. ES3-3013_Dec18) Check Date (in house)	Scheduled Calibration Apr-20 Apr-20 Apr-20 Apr-20 Dec-19 Dec-19 Scheduled Check				
Calibration Equipment used (M Primary Standards Power meter NRP Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator DAE4 Reference Probe ES3DVZ Secondary Standards Power sensor E4412A Power sensor E4412A	&TE critical for calibration) ID SN: 104778 SN: 103244 SN: 103245 SN: 5277 (20x) SN: 3013 ID SN: 660 SN: 3013 ID SN: 684/293874 SN: 041498087 SN: N0110210	Cal Date (Certificate No.) 03-Apr-19 (No. 217-02892/02893) 03-Apr-19 (No. 217-02892) 03-Apr-19 (No. 217-02893) 04-Apr-19 (No. 217-02894) 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)	Scheduled Calibration Apr-20 Apr-20 Apr-20 Dec-19 Dec-19 Scheduled Check In house check: Jun-20 In house check: Jun-20				
Calibration Equipment used (M Primary Standards Power meter NRP Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator DAE4 Reference Probe ES3DV2 Secondary Standards Power meter E44198 Power sensor E4412A Power sensor E4412A RF generator HP 8648C	ID SN: 104776 SN: 104776 SN: 103244 SN: 103245 SN: 52277 (20x) SN: 52277 (20x) SN: 606 SN: 3013 ID ID SN: 660 SN: 3013 SN: 5247 (20x) SN: 600 SN: 3013 ID SN: 6841293874 SN: 00110210 SN: W38642U01700	Cal Date (Certificate No.) 03-Apr-19 (No. 217-02892/02893) 03-Apr-19 (No. 217-02893) 04-Apr-19 (No. 217-02894) 19-Dec-18 (No. DAE-4660_Dec18) 31-Dec-18 (No. ES3-3013_Dec18) Check Date (in house check Jun-18) 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)	Scheduled Calibration Apr-20 Apr-20 Apr-20 Dec-19 Dec-19 Scheduled Check 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				
Calibration Equipment used (M Primary Standards Power meter NRP Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator DAE4 Reference 20 dB Attenuator DAE4 Reference Probe ES3DV2 Secondary Standards Power meter E4419B Power sensor E4412A	&TE critical for calibration) ID SN: 104778 SN: 103244 SN: 103245 SN: 5277 (20x) SN: 3013 ID SN: 660 SN: 3013 ID SN: 684/293874 SN: 041498087 SN: N0110210	Cal Date (Certificate No.) 03-Apr-19 (No. 217-02892/02893) 03-Apr-19 (No. 217-02892) 03-Apr-19 (No. 217-02893) 04-Apr-19 (No. 217-02894) 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)	Scheduled Calibration Apr-20 Apr-20 Apr-20 Dec-19 Dec-19 Scheduled Check In house check: Jun-20 In house check: Jun-20				
Calibration Equipment used (M Primary Standards Power meter NRP Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator DAE4 Reference Probe ES3DV2 Secondary Standards Power meter E4419B Power sensor E4412A Power sensor E4412A RF generator HP 8648C	ID SN: 104776 SN: 104776 SN: 103244 SN: 103245 SN: 52277 (20x) SN: 52277 (20x) SN: 606 SN: 3013 ID ID SN: 660 SN: 3013 SN: 5247 (20x) SN: 600 SN: 3013 ID SN: 6841293874 SN: 00110210 SN: W38642U01700	Cal Date (Certificate No.) 03-Apr-19 (No. 217-02892/02893) 03-Apr-19 (No. 217-02893) 04-Apr-19 (No. 217-02894) 19-Dec-18 (No. DAE-4660_Dec18) 31-Dec-18 (No. ES3-3013_Dec18) Check Date (in house check Jun-18) 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)	Scheduled Calibration Apr-20 Apr-20 Apr-20 Dec-19 Dec-19 Scheduled Check 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				
Calibration Equipment used (M Primary Standards Power meter NRP Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator DAE4 Reference Probe ES3DV2 Secondary Standards Power meter E4419B Power sensor E4412A Power sensor E4412A RF generator HP 8648C	ID ID SN: 104778 SN: 103244 SN: 103245 SN: 503245 SN: 503245 SN: 5660 SN: 3013 ID ID SN: 680 SN: 680 SN: 3013 ID SN: 6841293874 SN: MY41498087 SN: 00110210 SN: US3642001700 SN: US41080477	Cal Date (Certificate No.) 03-Apr-19 (No. 217-02892/02893) 03-Apr-19 (No. 217-02892) 03-Apr-19 (No. 217-02893) 04-Apr-19 (No. 217-02893) 04-Apr-19 (No. 217-02894) 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) 04-Apr-99 (in house check Jun-18) 31-Mar-14 (in house check Ct-18)	Scheduled Calibration Apr-20 Apr-20 Apr-20 Dec-19 Dec-19 Scheduled Check In house check: Jun-20 In house check: Jun-20				
Calibration Equipment used (M Primary Standards Power meter NRP Power sensor NRP-291 Reference 20 dB Attenuator DAE4 Reference 20 dB Attenuator DAE4 Reference Probe ES3DV2 Secondary Standards Power meter E4419B Power sensor E4412A Power sensor E4412A Power sensor E4412A Ref generator HP 8648C Network Analyzer E8358A	BTE critical for calibration) ID SN: 104778 SN: 103244 SN: 103245 SN: 55277 (20x) SN: 660 SN: 3013 ID SN: 6841293874 SN: 003110210 SN: 003110210 SN: US4462001700 SN: US41080477 Name	Cal Date (Certificate No.) 03-Apr-19 (No. 217-02892/02893) 03-Apr-19 (No. 217-02892) 03-Apr-19 (No. 217-02893) 04-Apr-19 (No. 217-02893) 05-Apr-16 (In house) 06-Apr-16 (In house check Jun-18) 06-Apr-16 (In house check Jun-18) 04-Apr-19 (In house check Jun-18) 04-Aug-19 (In house check Jun-18)	Scheduled Calibration Apr-20 Apr-20 Apr-20 Dec-19 Dec-19 Scheduled Check In house check: Jun-20 In house check: Jun-20 Signature				

Certificate No: EX3-3665 Aug19

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



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

Glossary:

TSI NORMx,y,z ConvF DCP

CF A, B, C, D Polarization φ tissue simulating liquid sensitivity in free space sensitivity in TSL / NORMx,y,z diode compression point crest factor (1/duty_cycle) of the RF signal modulation dependent linearization parameters ϕ rotation around probe axis 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

Polarization 9 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 Terrebriever," https://doi.org/10.1016/j.j.com/10.101 Ausorption Rate (SAR) in the Human Head from wireless Communications Devices: Measurement Techniques", June 2013
 b) IEC 62209-1, ", "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-heid 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 deep environment both (means both (means are for MHz to 2016)

- 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 $\theta = 0$ (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(1)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
- Ary, z; Bx, y, z; Cx, y, z; VRx, 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 ≤ 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 The satisfield is a second se 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:3665

August 30, 2019

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3665

	Sense	Sensor X			Sensor Y			Unc (k=2)		
Norm (μV/(V/m) ²) ^A 0.4	0.49		0.57 97.1			0.51 100.8		± 10.1 %	
DCP (n	nV) ^B 97.									
	ation Results for Modulation	Resp	onse	1 2 1				Mari	г е	
	ation Results for Modulation Communication System Name	Resp	A dB	B dBõV	С	D dB	VR mV	Max dev.	Unc ^E (k=2)	
		x Resp	А		C 1.0				(k=2)	
UID	Communication System Name		A dB	dBõV	1	dB	mV	dev.		

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 E²,field uncertainty inside TSL (see Pages 5 and 6).
⁹ Numerical linearization parameter: uncertainty not required.
⁶ 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:3665

August 30, 2019

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3665

Sensor Arrangement	Triangular
Connector Angle (°)	75.9
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:3665

August 30, 2019

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ⁶ (mm)	Unc (k=2)
750	41.9	0.89	9.77	9.77	9.77	0.47	0,80	± 12.0 %
835	41.5	0.90	9.47	9.47	9.47	0.39	1.00	± 12.0 %
900	41.5	0.97	9.26	9.26	9.26	0.51	0.80	± 12.0 %
1750	40.1	1.37	8.34	8.34	8.34	0.31	0.86	± 12.0 %
1900	40.0	1.40	8.03	8.03	8.03	0.29	0.88	± 12.0 %
2000	40.0	1.40	8.00	8.00	8.00	0.33	0.85	± 12.0 %
2300	39.5	1.67	7.68	7.68	7.68	0.26	0.88	± 12.0 %
2450	39.2	1.80	7.36	7.36	7.36	0,36	0.88	± 12.0 %
2600	39.0	1.96	7.19	7.19	7.19	0.32	0.88	± 12.0 %
5200	36.0	4.66	5.28	5,28	5.28	0.40	1.80	± 13.1 %
5300	35.9	4.76	5.18	5.18	5.18	0.40	1,80	± 13.1 %
5600	35.5	5.07	4.99	4.99	4.99	0.40	1.80	± 13.1 %
5800	35.3	5.27	4.97	4.97	4.97	0.40	1.80	± 13.1 9

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3665

^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, and ConvF assessed at 13 MHz is 9-19 MHz. Above 5 GHz frequency validity can be extended to ± 10 MHz. The for 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 band, the validity of convF assessed at 6 Mz is ad-9 Mz and be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At trequencies above 3 GHz, the validity of tissue parameters (c and c) is restricted to ± 5%. The uncertainty for indicated target tissue parameters.
⁶ 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:3665

August 30, 2019

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	10.00	10.00	10.00	0.40	0.85	± 12.0 %
835	55.2	0.97	9.77	9.77	9.77	0.31	0.98	± 12.0 %
900	55.0	1.05	9.48	9.48	9.48	0.47	0.80	± 12.0 %
1750	53.4	1,49	8.06	8.06	8.06	0.38	0.85	± 12,0 %
1900	53.3	1.52	7.73	7.73	7.73	0.42	0.87	± 12.0 %
2000	53.3	1.52	7.64	7.64	7.64	0.31	0.99	± 12.0 %
2300	52.9	1.81	7.54	7.54	7,54	0.35	0.90	± 12.0 %
2450	52.7	1.95	7.32	7.32	7.32	0.35	0.88	± 12.0 %
2600	52.5	2.16	7.30	7.30	7.30	0.31	0.95	± 12.0 %
5200	49.0	5.30	4.56	4.56	4.56	0.50	1.90	± 13.1 %
5300	48.9	5.42	4.37	4.37	4.37	0.50	1.90	± 13.1 %
5600	48.5	5.77	3.87	3.87	3.87	0.50	1.90	± 13.1 %
5800	48.2	6.00	4.05	4.05	4.05	0.50	1,90	± 13.1 %

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3665

^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 a 6 MHz is ± 90 MHz hz. Above 6 GHz frequency validity can be extanded to ± 110 MHz. The uncertainty for the indicated frequency band. Frequency validity of ConvF assessed at 30, 41, 28, 49 MHz, and ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Validity of ConvF assessed at 30 MHz is ± 91 MHz hz Above 6 GHz frequency validity can be extanded to ± 110 MHz. The uncertainty for indicated frequencies below 3 GHz, the validity of tissue parameters (a 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 (a and o) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated frequencies parameters. Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less threquencies 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. sed at

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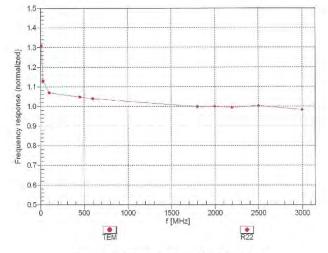


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EX3DV4- SN:3665

August 30, 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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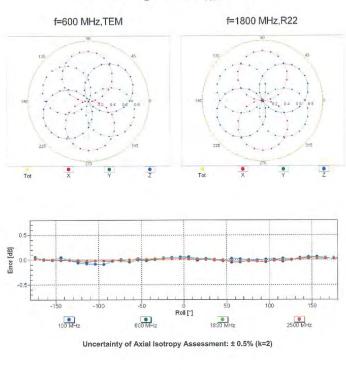
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August 30, 2019



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

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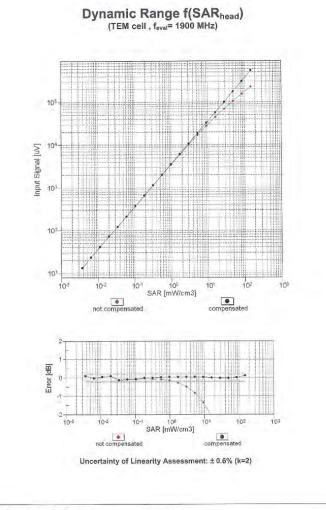
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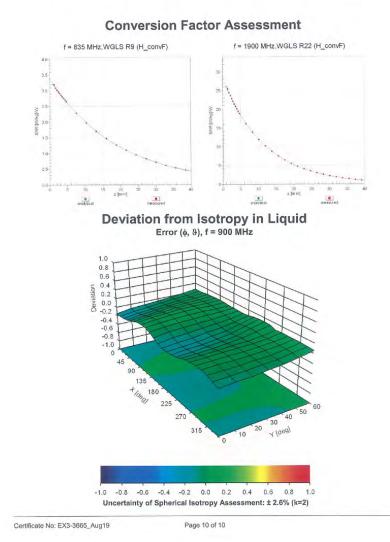
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- End of report -

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