Calibration Laboratory of

Schmid & Partner **Engineering AG** Zeughausstrasse 43, 8004 Zurich, Switzerland





Schweizerischer Kalibrierdienst Service suisse d'étalonnage Servizio svizzero di taratura 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

Client

Sporton

Accreditation No.: SCS 0108

C

S

Certificate No: DAE4-1210 Jan19

CALIBRATION CERTIFICATE

DAE4 - SD 000 D04 BM - SN: 1210 Object

Calibration procedure(s) QA CAL-06.v29

Calibration procedure for the data acquisition electronics (DAE)

Calibration date:

January 25, 2019

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 |
|-------------------------------|--------------------|----------------------------|------------------------|
| Keithley Multimeter Type 2001 | SN: 0810278 | 03-Sep-18 (No:23488) | Sep-19 |
| Secondary Standards | ID# | Check Date (in house) | Scheduled Check |
| Auto DAE Calibration Unit | SE UWS 053 AA 1001 | 07-Jan-19 (in house check) | In house check: Jan-20 |
| Calibrator Box V2.1 | SE UMS 006 AA 1002 | 07-Jan-19 (in house check) | In house check: Jan-20 |

Name **Function** Signature Calibrated by:

Eric Hainfeld Laboratory Technician

Approved by: Sven Kühn Deputy Manager

Issued: January 25, 2019

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

Certificate No: DAE4-1210 Jan19

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





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

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.

Certificate No: DAE4-1210_Jan19 Page 2 of 5

DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB =

 $6.1\mu V$, 61nV ,

full range = -100...+300 mV

Low Range:

1LSB =

full range = -1.....+3mV

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

| Calibration Factors | х | Υ | z |
|---------------------|-----------------------|-----------------------|-----------------------|
| High Range | 404.160 ± 0.02% (k=2) | 404.976 ± 0.02% (k=2) | 405.094 ± 0.02% (k=2) |
| Low Range | 4.00057 ± 1.50% (k=2) | 3.98261 ± 1.50% (k=2) | 4.00043 ± 1.50% (k=2) |

Connector Angle

| Connector Angle to be used in DASY system | 345.5 ° ± 1 ° |
|---|---------------|

Certificate No: DAE4-1210_Jan19

Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

| Reading (μV) | Difference (μV) | Error (%) |
|--------------|---|---|
| 199991.51 | -3.59 | -0.00 |
| 20002.42 | 1.17 | 0.01 |
| -19999.76 | 2.07 | -0.01 |
| 199990.24 | -4.87 | -0.00 |
| 20000.15 | -1.16 | -0.01 |
| -20001.02 | 0.85 | -0.00 |
| 199993.15 | -1.62 | -0.00 |
| 20000.24 | -1.01 | -0.01 |
| -20002.77 | -0.77 | 0.00 |
| | 199991.51 20002.42 -19999.76 199990.24 20000.15 -20001.02 199993.15 20000.24 | 199991.51 -3.59 20002.42 1.17 -19999.76 2.07 199990.24 -4.87 20000.15 -1.16 -20001.02 0.85 199993.15 -1.62 20000.24 -1.01 |

| Low Range | Reading (μV) | Difference (μV) | Error (%) |
|------------------|--------------|-----------------|-----------|
| Channel X + Inp | ut 2000.98 | 0.24 | 0.01 |
| Channel X + Inp | ut 201.15 | 0.18 | 0.09 |
| Channel X - Inpu | ıt -198.49 | 0.30 | -0.15 |
| Channel Y + Inp | ut 2000.93 | 0.15 | 0.01 |
| Channel Y + Inp | ut 201.11 | 0.10 | 0.05 |
| Channel Y - Inpu | t -199.20 | -0.34 | 0.17 |
| Channel Z + Inp | ut 2001.50 | 0.78 | 0.04 |
| Channel Z + Inp | ut 199.66 | -1.25 | -0.62 |
| Channel Z - Inpu | t -199.89 | -0.97 | 0.49 |
| | | | |

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 | -6.73 | -8.02 |
| | - 200 | 8.24 | 6.60 |
| Channel Y | 200 | -8.48 | -8.76 |
| | - 200 | 8.37 | 8.32 |
| Channel Z | 200 | 11.47 | 11.82 |
| | - 200 | -14.71 | -14.52 |

3. Channel separation

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

| | Input Voltage (mV) | Channel X (μV) | Channel Y (μV) | Channel Z (μV) |
|-----------|--------------------|----------------|----------------|----------------|
| Channel X | 200 | - | 2.99 | -4.21 |
| Channel Y | 200 | 8.23 | · . | 3.34 |
| Channel Z | 200 | 9.47 | 6.81 | - |

Certificate No: DAE4-1210_Jan19

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 | 15963 | 16757 |
| Channel Y | 15963 | 16462 |
| Channel Z | 15874 | 16956 |

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 | -1.06 | -2.29 | -0.14 | 0.43 |
| Channel Y | -0.26 | -1.46 | 1.12 | 0.48 |
| Channel Z | -0.17 | -1.06 | 1.57 | 0.45 |

6. Input Offset Current

Nominal 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 |

Certificate No: DAE4-1210_Jan19 Page 5 of 5

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





S Schweizerischer Kalibrierdienst
C 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

Client Sporton Certificate No: EX3-3857_May18

CALIBRATION CERTIFICATE

Object EX3DV4 - SN:3857

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: May 31, 2018

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 NRP | SN: 104778 | 04-Apr-18 (No. 217-02672/02673) | Apr-19 |
| Power sensor NRP-Z91 | SN: 103244 | 04-Apr-18 (No. 217-02672) | Apr-19 |
| Power sensor NRP-Z91 | SN: 103245 | 04-Apr-18 (No. 217-02673) | Apr-19 |
| Reference 20 dB Attenuator | SN: S5277 (20x) | 04-Apr-18 (No. 217-02682) | Apr-19 |
| Reference Probe ES3DV2 | SN: 3013 | 30-Dec-17 (No. ES3-3013_Dec17) | Dec-18 |
| DAE4 | SN: 660 | 21-Dec-17 (No. DAE4-660_Dec17) | Dec-18 |
| Secondary Standards | ID | Check Date (in house) | Scheduled Check |
| Power meter E4419B | SN: GB41293874 | 06-Apr-16 (in house check Jun-16) | In house check: Jun-18 |
| Power sensor E4412A | SN: MY41498087 | 06-Apr-16 (in house check Jun-16) | In house check: Jun-18 |
| Power sensor E4412A | SN: 000110210 | 06-Apr-16 (in house check Jun-16) | In house check: Jun-18 |
| RF generator HP 8648C | SN: US3642U01700 | 04-Aug-99 (in house check Jun-16) | In house check: Jun-18 |
| Notwork Analyzer HP 8753E | SN: 11S37390585 | 18-Oct-01 (in house check Oct-17) | In house check: Oct-18 |

Calibrated by:

Signature

Laboratory Technician

Approved by:

Katja Pokovic

Technical Manager

Issued: May 31, 2018

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

Calibration Laboratory of

Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland





S Schweizerischer Kalibrierdienst
C 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:

TSL NORMx,y,z tissue simulating liquid sensitivity in free space

ConvF

sensitivity in TSL / NORMx,y,z diode compression point

CF A, B, C, D crest factor (1/duty_cycle) of the RF signal modulation dependent linearization parameters

Polarization φ

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

Connector Angle

Certificate No: EX3-3857_May18

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
- iEC 62209-1, ", "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from handheld 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 ≤ 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).

Probe EX3DV4

SN:3857

Manufactured: Janua Calibrated: May 3

January 23, 2012 May 31, 2018

Calibrated for DASY/EASY Systems

(Note: non-compatible with DASY2 system!)

Certificate No: EX3-3857_May18 Page 3 of 11

May 31, 2018

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3857

Basic Calibration Parameters

| | Sensor X | Sensor Y | Sensor Z | Unc (k=2) | |
|--|----------|----------|----------|-----------|--|
| Norm (µV/(V/m) ²) ^A | 0.17 | 0.43 | 0.45 | ± 10.1 % | |
| DCP (mV) ⁸ | 103.6 | 97.8 | 99.3 | | |

Modulation Calibration Parameters

| UID | Communication System Name | | A dB | B dB√μV | С | D dB | VR mV | Unc ^E (k=2) |
|-----|---------------------------|---|---------|------------|-----|---------|----------|---------------------------|
| 0 | CW | X | 0.0 | 0.0 | 1.0 | 0.00 | 134.3 | ±3.3 % |
| | | Y | 0.0 | 0.0 | 1.0 | | 145.9 | |
| | | Z | 0.0 | 0.0 | 1.0 | | 129.0 | |

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%.

Page 4 of 11

A The uncertainties of Norm X,Y,Z do not affect the E²-field uncertainty inside TSL (see Pages 5 and 6).
 Numerical linearization parameter: uncertainty not required.
 Uncertainty is determined using the max, deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3857

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 | 9.92 | 9.92 | 9.92 | 0.48 | 0.80 | ± 12.0 % |
| 835 | 41.5 | 0.90 | 9.51 | 9.51 | 9.51 | 0.32 | 1.03 | ± 12.0 % |
| 900 | 41.5 | 0.97 | 9.34 | 9.34 | 9.34 | 0.40 | 0.88 | ± 12.0 % |
| 1750 | 40.1 | 1.37 | 8.29 | 8.29 | 8.29 | 0.29 | 0.80 | ± 12.0 % |
| 1900 | 40.0 | 1.40 | 8.04 | 8.04 | 8.04 | 0.30 | 0.90 | ± 12.0 % |
| 2000 | 40.0 | 1.40 | 8.10 | 8.10 | 8.10 | 0.35 | 0.80 | ± 12.0 % |
| 2300 | 39.5 | 1.67 | 7.87 | 7.87 | 7.87 | 0.34 | 0.80 | ± 12.0 % |
| 2450 | 39.2 | 1.80 | 7.56 | 7.56 | 7.56 | 0.38 | 0.80 | ± 12.0 % |
| 2600 | 39.0 | 1.96 | 7.44 | 7.44 | 7.44 | 0.39 | 0.82 | ± 12.0 % |
| 3500 | 37.9 | 2.91 | 7.25 | 7.25 | 7.25 | 0.20 | 1.20 | ± 13.1 % |
| 3700 | 37.7 | 3.12 | 6.83 | 6.83 | 6.83 | 0.20 | 1.20 | ± 13.1 % |
| 5250 | 35.9 | 4.71 | 5.20 | 5.20 | 5.20 | 0.40 | 1.80 | ± 13.1 % |
| 5600 | 35.5 | 5.07 | 4.94 | 4.94 | 4.94 | 0.40 | 1.80 | ± 13.1 % |
| 5750 | 35.4 | 5.22 | 5.23 | 5.23 | 5.23 | 0.40 | 1.80 | ± 13.1 % |

⁶ 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.

Certificate No: EX3-3857_May18 Page 5 of 11

At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to \pm 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 \pm 5%. The uncertainty is the RSS of the ConvF uncertainty for 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.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3857

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 ⁶ (mm) | Unc (k=2) |
|----------------------|---------------------------------------|------------------------------------|---------|---------|---------|--------------------|----------------------------|--------------|
| 750 | 55.5 | 0.96 | 9.70 | 9.70 | 9.70 | 0.47 | 0.84 | ± 12.0 % |
| 835 | 55.2 | 0.97 | 9.49 | 9.49 | 9.49 | 0.42 | 0.80 | ± 12.0 % |
| 1750 | 53.4 | 1.49 | 8.15 | 8.15 | 8.15 | 0.42 | 0.85 | ± 12.0 % |
| 1900 | 53.3 | 1.52 | 7.82 | 7.82 | 7.82 | 0.34 | 0.95 | ± 12.0 % |
| 2300 | 52.9 | 1.81 | 7.66 | 7.66 | 7.66 | 0.43 | 0.85 | ± 12.0 % |
| 2450 | 52.7 | 1.95 | 7.42 | 7.42 | 7.42 | 0.36 | 0.93 | ± 12.0 % |
| 2600 | 52.5 | 2.16 | 7.38 | 7.38 | 7.38 | 0.31 | 0.95 | ± 12.0 % |
| 3500 | 51.3 | 3,31 | 6.77 | 6.77 | 6.77 | 0.25 | 1,25 | ± 13.1 % |
| 3700 | 51.0 | 3,55 | 6.71 | 6.71 | 6.71 | 0.35 | 1.20 | ± 13.1 % |
| 5250 | 48.9 | 5.36 | 4.40 | 4.40 | 4.40 | 0.50 | 1.90 | ± 13.1 % |
| 5600 | 48.5 | 5.77 | 3.98 | 3.98 | 3.98 | 0.50 | 1,90 | ± 13.1 % |
| 5750 | 48.3 | 5.94 | 4.31 | 4.31 | 4.31 | 0.50 | 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.

Certificate No: EX3-3857_May18 Page 6 of 11

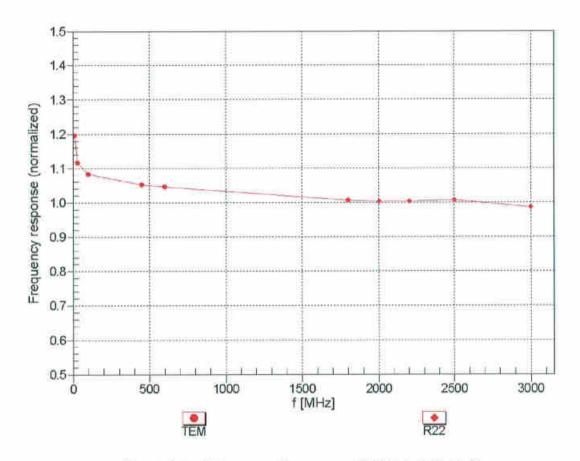
F At frequencies below 3 GHz, the validity of tissue parameters (ε and α) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and α) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty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

O 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.

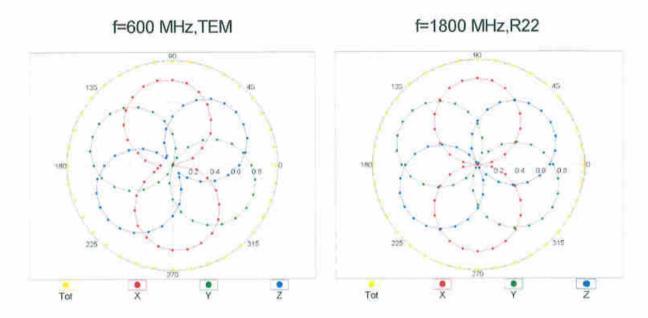
May 31, 2018 EX3DV4-SN:3857

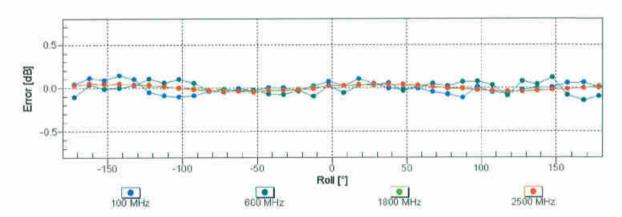
Frequency Response of E-Field (TEM-Cell:ifi110 EXX, Waveguide: R22)



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

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

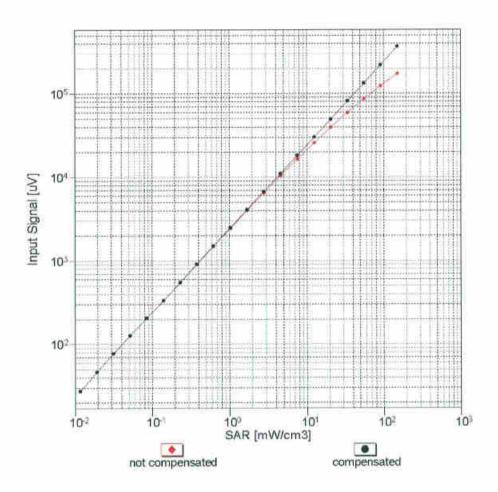


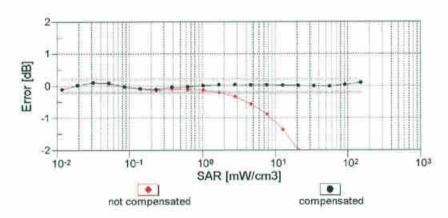


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

May 31, 2018

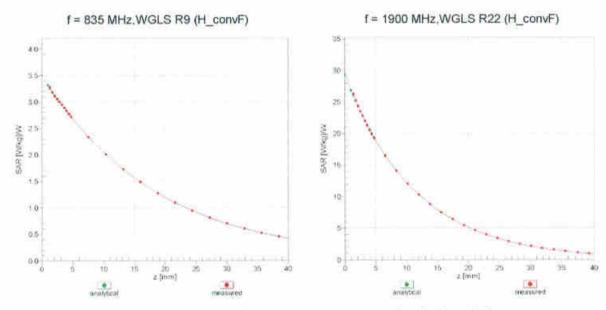
Dynamic Range f(SAR_{head}) (TEM cell , f_{eval}= 1900 MHz)





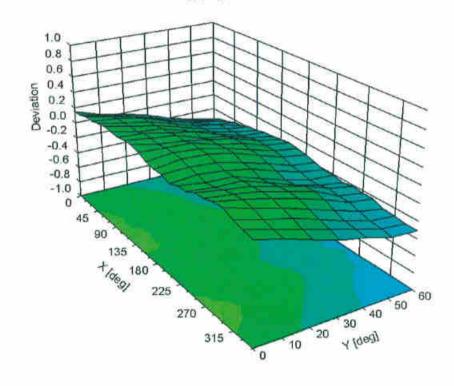
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

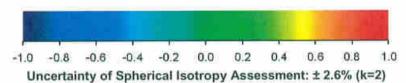
Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (φ, θ), f = 900 MHz





DASY/EASY - Parameters of Probe: EX3DV4 - SN:3857

Other Probe Parameters

| Sensor Arrangement | Triangular | | | |
|---|------------|--|--|--|
| Connector Angle (°) | -42.4 | | | |
| Mechanical Surface Detection Mode | enabled | | | |
| Optical Surface Detection Mode | disable | | | |
| Probe Overall Length | 337 mr | | | |
| Probe Body Diameter | 10 mr | | | |
| 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 | | | |