



In Collaboration with

**s p e a g**  
**CALIBRATION LABORATORY**



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### Glossary:

|       |                                            |
|-------|--------------------------------------------|
| TSL   | tissue simulating liquid                   |
| ConvF | sensitivity in TSL / NORM <sub>x,y,z</sub> |
| N/A   | not applicable or not measured             |

### Calibration is Performed According to the Following Standards:

- a) IEC/IEEE 62209-1528, "Measurement Procedure for The Assessment of Specific Absorption Rate of Human Exposure to Radio Frequency Fields from Hand-held and Body-mounted Wireless Communication Devices- Part 1528: Human Models, Instrumentation and Procedures (Frequency range of 4 MHz to 10 GHz)", October 2020
- b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

### Additional Documentation:

- c) DASY4/5 System Handbook

### Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

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%.



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## Measurement Conditions

DASY system configuration, as far as not given on page 1.

|                                     |                                                                                                  |                                  |
|-------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------|
| <b>DASY Version</b>                 | DASY52                                                                                           | 52.10.4                          |
| <b>Extrapolation</b>                | Advanced Extrapolation                                                                           |                                  |
| <b>Phantom</b>                      | Triple Flat Phantom 5.1C                                                                         |                                  |
| <b>Distance Dipole Center - TSL</b> | 10 mm                                                                                            | with Spacer                      |
| <b>Zoom Scan Resolution</b>         | dx, dy = 4 mm, dz = 1.4 mm                                                                       | Graded Ratio = 1.4 (Z direction) |
| <b>Frequency</b>                    | 5200 MHz ± 1 MHz<br>5300 MHz ± 1 MHz<br>5500 MHz ± 1 MHz<br>5600 MHz ± 1 MHz<br>5800 MHz ± 1 MHz |                                  |

## Head TSL parameters at 5200MHz

The following parameters and calculations were applied.

|                                                | Temperature     | Permittivity | Conductivity     |
|------------------------------------------------|-----------------|--------------|------------------|
| <b>Nominal Head TSL parameters</b>             | 22.0 °C         | 36.0         | 4.66 mho/m       |
| <b>Measured Head TSL parameters</b>            | (22.0 ± 0.2) °C | 35.9 ± 6 %   | 4.58 mho/m ± 6 % |
| <b>Head TSL temperature change during test</b> | <1.0 °C         | ---          | ---              |

## SAR result with Head TSL at 5200MHz

| <b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Head TSL</b>   | Condition          |                                 |
|---------------------------------------------------------------|--------------------|---------------------------------|
| SAR measured                                                  | 250 mW input power | 7.66 W/kg                       |
| SAR for nominal Head TSL parameters                           | normalized to 1W   | <b>76.5 W/kg ± 24.4 % (k=2)</b> |
| <b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Head TSL</b> | Condition          |                                 |
| SAR measured                                                  | 250 mW input power | 2.20 W/kg                       |
| SAR for nominal Head TSL parameters                           | normalized to 1W   | <b>22.0 W/kg ± 24.2 % (k=2)</b> |



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### Head TSL parameters at 5300MHz

The following parameters and calculations were applied.

|                                                | Temperature     | Permittivity | Conductivity     |
|------------------------------------------------|-----------------|--------------|------------------|
| <b>Nominal Head TSL parameters</b>             | 22.0 °C         | 35.9         | 4.76 mho/m       |
| <b>Measured Head TSL parameters</b>            | (22.0 ± 0.2) °C | 35.7 ± 6 %   | 4.69 mho/m ± 6 % |
| <b>Head TSL temperature change during test</b> | <1.0 °C         | ---          | ---              |

### SAR result with Head TSL at 5300MHz

|                                                               |                    |                                 |
|---------------------------------------------------------------|--------------------|---------------------------------|
| <b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Head TSL</b>   | Condition          |                                 |
| SAR measured                                                  | 100 mW input power | 7.94 W/kg                       |
| SAR for nominal Head TSL parameters                           | normalized to 1W   | <b>79.3 W/kg ± 24.4 % (k=2)</b> |
| <b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Head TSL</b> | Condition          |                                 |
| SAR measured                                                  | 100 mW input power | 2.29 W/kg                       |
| SAR for nominal Head TSL parameters                           | normalized to 1W   | <b>22.8 W/kg ± 24.2 % (k=2)</b> |

### Head TSL parameters at 5500MHz

The following parameters and calculations were applied.

|                                                | Temperature     | Permittivity | Conductivity     |
|------------------------------------------------|-----------------|--------------|------------------|
| <b>Nominal Head TSL parameters</b>             | 22.0 °C         | 35.6         | 4.96 mho/m       |
| <b>Measured Head TSL parameters</b>            | (22.0 ± 0.2) °C | 35.3 ± 6 %   | 4.89 mho/m ± 6 % |
| <b>Head TSL temperature change during test</b> | <1.0 °C         | ---          | ---              |

### SAR result with Head TSL at 5500MHz

|                                                               |                    |                                 |
|---------------------------------------------------------------|--------------------|---------------------------------|
| <b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Head TSL</b>   | Condition          |                                 |
| SAR measured                                                  | 100 mW input power | 8.46 W/kg                       |
| SAR for nominal Head TSL parameters                           | normalized to 1W   | <b>84.4 W/kg ± 24.4 % (k=2)</b> |
| <b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Head TSL</b> | Condition          |                                 |
| SAR measured                                                  | 100 mW input power | 2.40 W/kg                       |
| SAR for nominal Head TSL parameters                           | normalized to 1W   | <b>23.9 W/kg ± 24.2 % (k=2)</b> |



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### Head TSL parameters at 5600MHz

The following parameters and calculations were applied.

|                                         | Temperature     | Permittivity | Conductivity     |
|-----------------------------------------|-----------------|--------------|------------------|
| Nominal Head TSL parameters             | 22.0 °C         | 35.5         | 5.07 mho/m       |
| Measured Head TSL parameters            | (22.0 ± 0.2) °C | 35.1 ± 6 %   | 5.00 mho/m ± 6 % |
| Head TSL temperature change during test | <1.0 °C         | ---          | ---              |

### SAR result with Head TSL at 5600MHz

|                                                               |                    |                                 |
|---------------------------------------------------------------|--------------------|---------------------------------|
| <b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Head TSL</b>   | Condition          |                                 |
| SAR measured                                                  | 100 mW input power | 8.16 W/kg                       |
| SAR for nominal Head TSL parameters                           | normalized to 1W   | <b>81.4 W/kg ± 24.4 % (k=2)</b> |
| <b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Head TSL</b> | Condition          |                                 |
| SAR measured                                                  | 100 mW input power | 2.34 W/kg                       |
| SAR for nominal Head TSL parameters                           | normalized to 1W   | <b>23.4 W/kg ± 24.2 % (k=2)</b> |

### Head TSL parameters at 5800MHz

The following parameters and calculations were applied.

|                                         | Temperature     | Permittivity | Conductivity     |
|-----------------------------------------|-----------------|--------------|------------------|
| Nominal Head TSL parameters             | 22.0 °C         | 35.3         | 5.27 mho/m       |
| Measured Head TSL parameters            | (22.0 ± 0.2) °C | 34.7 ± 6 %   | 5.20 mho/m ± 6 % |
| Head TSL temperature change during test | <1.0 °C         | ---          | ---              |

### SAR result with Head TSL at 5800MHz

|                                                               |                    |                                 |
|---------------------------------------------------------------|--------------------|---------------------------------|
| <b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Head TSL</b>   | Condition          |                                 |
| SAR measured                                                  | 100 mW input power | 7.97 W/kg                       |
| SAR for nominal Head TSL parameters                           | normalized to 1W   | <b>79.4 W/kg ± 24.4 % (k=2)</b> |
| <b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Head TSL</b> | Condition          |                                 |
| SAR measured                                                  | 100 mW input power | 2.28 W/kg                       |
| SAR for nominal Head TSL parameters                           | normalized to 1W   | <b>22.7 W/kg ± 24.2 % (k=2)</b> |



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## Appendix (Additional assessments outside the scope of CNAS L0570)

### Antenna Parameters with Head TSL at 5200MHz

|                                      |                                |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 57.4 $\Omega$ - 4.44j $\Omega$ |
| Return Loss                          | - 21.9dB                       |

### Antenna Parameters with Head TSL at 5300MHz

|                                      |                                |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 51.1 $\Omega$ + 2.19j $\Omega$ |
| Return Loss                          | - 32.4dB                       |

### Antenna Parameters with Head TSL at 5500MHz

|                                      |                                |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 52.0 $\Omega$ - 0.67j $\Omega$ |
| Return Loss                          | - 33.5dB                       |

### Antenna Parameters with Head TSL at 5600MHz

|                                      |                                |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 56.1 $\Omega$ + 4.33j $\Omega$ |
| Return Loss                          | - 23.1dB                       |

### Antenna Parameters with Head TSL at 5800MHz

|                                      |                                |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 50.4 $\Omega$ + 5.52j $\Omega$ |
| Return Loss                          | - 25.2dB                       |



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## General Antenna Parameters and Design

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.167 ns |
|----------------------------------|----------|

After long term use with 100W radiated power, only a slight warming of the dipole near the feed-point can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard. No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feed-point may be damaged.

## Additional EUT Data

|                 |       |
|-----------------|-------|
| Manufactured by | SPEAG |
|-----------------|-------|



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## DASY5 Validation Report for Head TSL

Date: 2022-09-16

Test Laboratory: CTTL, Beijing, China

**DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1190**

Communication System: CW; Frequency: 5200 MHz, Frequency: 5300 MHz,  
Frequency: 5500 MHz, Frequency: 5600 MHz, Frequency: 5800 MHz

Medium parameters used:  $f = 5200$  MHz;  $\sigma = 4.58$  S/m;  $\epsilon_r = 35.87$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Medium parameters used:  $f = 5300$  MHz;  $\sigma = 4.687$  S/m;  $\epsilon_r = 35.67$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Medium parameters used:  $f = 5500$  MHz;  $\sigma = 4.894$  S/m;  $\epsilon_r = 35.31$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Medium parameters used:  $f = 5600$  MHz;  $\sigma = 5$  S/m;  $\epsilon_r = 35.09$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Medium parameters used:  $f = 5800$  MHz;  $\sigma = 5.199$  S/m;  $\epsilon_r = 34.72$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

### DASY5 Configuration:

- Probe: EX3DV4 - SN7464; ConvF(5.6, 5.6, 5.6) @ 5200 MHz; ConvF(5.32, 5.32, 5.32) @ 5300 MHz; ConvF(5.11, 5.11, 5.11) @ 5500 MHz; ConvF(4.91, 4.91, 4.91) @ 5600 MHz; ConvF(5, 5, 5) @ 5800 MHz; Calibrated: 2022-01-26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 2022-01-12
- Phantom: MFP\_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial: 1062
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

**Dipole Calibration /Pin=100mW, d=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm  
Reference Value = 68.15 V/m; Power Drift = -0.09 dB  
Peak SAR (extrapolated) = 29.4 W/kg  
**SAR(1 g) = 7.66 W/kg; SAR(10 g) = 2.2 W/kg**  
Smallest distance from peaks to all points 3 dB below = 6.8 mm  
Ratio of SAR at M2 to SAR at M1 = 66.5%  
Maximum value of SAR (measured) = 18.1 W/kg

**Dipole Calibration /Pin=100mW, d=10mm, f=5300 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm  
Reference Value = 70.15 V/m; Power Drift = -0.09 dB  
Peak SAR (extrapolated) = 31.5 W/kg  
**SAR(1 g) = 7.94 W/kg; SAR(10 g) = 2.29 W/kg**  
Smallest distance from peaks to all points 3 dB below = 7.2 mm  
Ratio of SAR at M2 to SAR at M1 = 65.7%  
Maximum value of SAR (measured) = 18.9 W/kg

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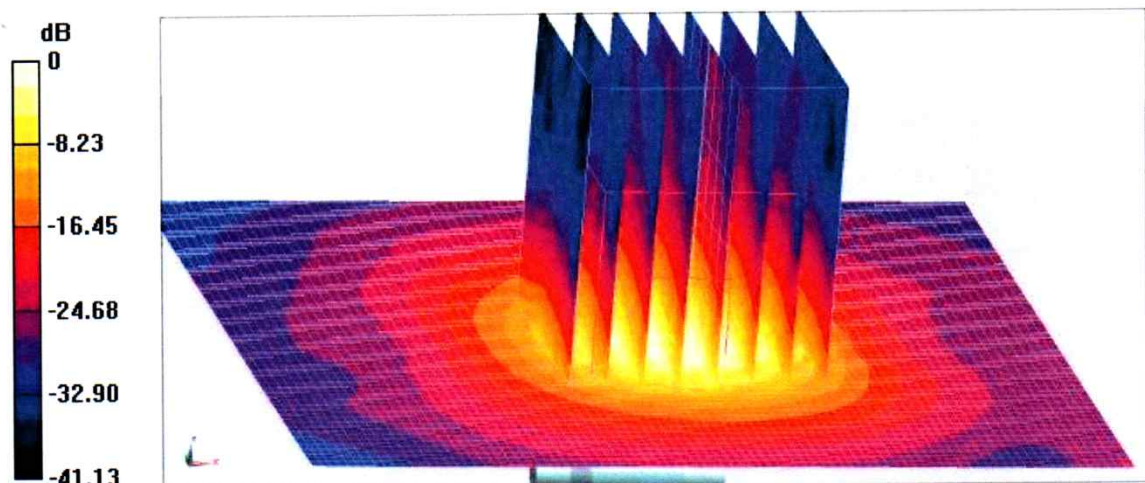
E-mail: emf@caict.ac.cn

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**Dipole Calibration /Pin=100mW, d=10mm, f=5500 MHz/Zoom Scan,**  
**dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm  
Reference Value = 69.71 V/m; Power Drift = -0.06 dB  
Peak SAR (extrapolated) = 35.8 W/kg  
**SAR(1 g) = 8.46 W/kg; SAR(10 g) = 2.4 W/kg**  
Smallest distance from peaks to all points 3 dB below = 7.2 mm  
Ratio of SAR at M2 to SAR at M1 = 63.7%  
Maximum value of SAR (measured) = 20.7 W/kg

**Dipole Calibration /Pin=100mW, d=10mm, f=5600 MHz/Zoom Scan,**  
**dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm  
Reference Value = 68.27 V/m; Power Drift = -0.09 dB  
Peak SAR (extrapolated) = 34.8 W/kg  
**SAR(1 g) = 8.16 W/kg; SAR(10 g) = 2.35 W/kg**  
Smallest distance from peaks to all points 3 dB below = 7.2 mm  
Ratio of SAR at M2 to SAR at M1 = 63.3%  
Maximum value of SAR (measured) = 19.4 W/kg

**Dipole Calibration /Pin=100mW, d=10mm, f=5800 MHz/Zoom Scan,**  
**dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm  
Reference Value = 62.89 V/m; Power Drift = -0.02 dB  
Peak SAR (extrapolated) = 35.3 W/kg  
**SAR(1 g) = 7.97 W/kg; SAR(10 g) = 2.28 W/kg**  
Smallest distance from peaks to all points 3 dB below = 7.4 mm  
Ratio of SAR at M2 to SAR at M1 = 61.4%  
Maximum value of SAR (measured) = 19.6 W/kg

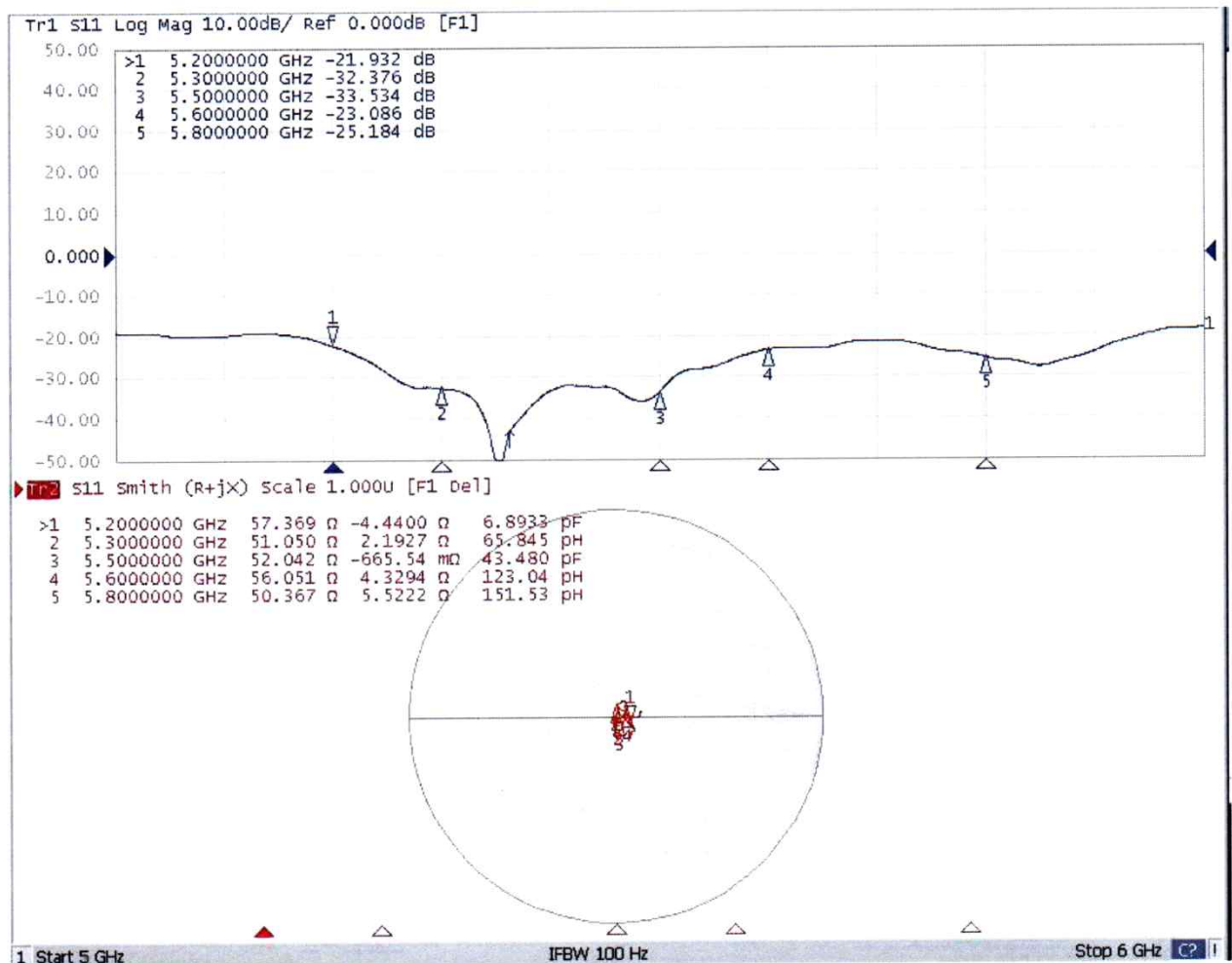


**0 dB = 19.6 W/kg = 12.92 dBW/kg**



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### Impedance Measurement Plot for Head TSL





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

CTB

Certificate No

EX-7769\_Sep05

## CALIBRATION CERTIFICATE

Object

EX3DV4 - SN:7769

Calibration procedure(s)

QA CAL-01.v9, QA CAL-12.v9, QA CAL-14.v6, QA CAL-23.v5,  
QA CAL-25.v7  
Calibration procedure for dosimetric E-field probes

Calibration date

September 05, 2024

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  $(22 \pm 3)^\circ\text{C}$  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-24 (No. 217-03525/03524)   | Apr-25                |
| Power sensor NRP-Z91       | SN: 103244       | 04-Apr-24 (No. 217-03524)         | Apr-25                |
| OCP DAK-3.5 (weighted)     | SN: 1249         | 20-Oct-23 (OCP-DAK3.5-1249_Oct21) | Oct-24                |
| OCP DAK-12                 | SN: 1016         | 20-Oct-23 (OCP-DAK12-1016_Oct21)  | Oct-24                |
| Reference 20 dB Attenuator | SN: CC2552 (20x) | 04-Apr-24 (No. 217-03527)         | Apr-25                |
| DAE4                       | SN: 660          | 13-Oct-23 (No. DAE4-660_Oct21)    | Oct-24                |
| Reference Probe ES3DV2     | SN: 3013         | 27-Dec-23 (No. ES3-3013_Dec21)    | Dec-24                |

| Secondary Standards     | ID               | Check Date (in house)             | Scheduled Check        |
|-------------------------|------------------|-----------------------------------|------------------------|
| Power meter E4419B      | SN: GB41293874   | 06-Apr-23 (in house check Jun-24) | In house check: Jun-25 |
| Power sensor E4412A     | SN: MY41498087   | 06-Apr-23 (in house check Jun-24) | In house check: Jun-25 |
| Power sensor E4412A     | SN: 000110210    | 06-Apr-23 (in house check Jun-24) | In house check: Jun-25 |
| RF generator HP 8648C   | SN: US3642U01700 | 04-Aug-23 (in house check Jun-24) | In house check: Jun-25 |
| Network Analyzer E8358A | SN: US41080477   | 31-Mar-23 (in house check Oct-24) | In house check: Oct-25 |

|               |                 |                       |           |
|---------------|-----------------|-----------------------|-----------|
|               | Name            | Function              | Signature |
| Calibrated by | Jeffrey Katzman | Laboratory Technician |           |
| Approved by   | Sven Kühn       | Technical Manager     |           |

Issued: September 05, 2024

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

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S Servizio svizzero di taratura  
S 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

## Glossary

|                          |                                                                                                                                                      |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| TSL                      | tissue simulating liquid                                                                                                                             |
| NORM <sub>x,y,z</sub>    | sensitivity in free space                                                                                                                            |
| ConvF                    | sensitivity in TSL / NORM <sub>x,y,z</sub>                                                                                                           |
| DCP                      | diode compression point                                                                                                                              |
| CF                       | crest factor (1/duty_cycle) of the RF signal                                                                                                         |
| A, B, C, D               | modulation dependent linearization parameters                                                                                                        |
| Polarization $\varphi$   | $\varphi$ rotation around probe axis                                                                                                                 |
| Polarization $\vartheta$ | $\vartheta$ 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:

- IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices – Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

## Methods Applied and Interpretation of Parameters:

- NORM<sub>x,y,z</sub>**: Assessed for E-field polarization  $\vartheta = 0$  ( $f \leq 900$  MHz in TEM-cell;  $f > 1800$  MHz: R22 waveguide). NORM<sub>x,y,z</sub> are only intermediate values, i.e., the uncertainties of NORM<sub>x,y,z</sub> does not affect the E<sup>2</sup>-field uncertainty inside TSL (see below ConvF).
- NORM(f)<sub>x,y,z</sub>** = NORM<sub>x,y,z</sub> \* 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.
- DCP<sub>x,y,z</sub>**: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal. 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
- A<sub>x,y,z</sub>; B<sub>x,y,z</sub>; C<sub>x,y,z</sub>; D<sub>x,y,z</sub>; VR<sub>x,y,z</sub>**: 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 NORM<sub>x,y,z</sub> \* 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  $\pm 50$  MHz to  $\pm 100$  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 NORM<sub>x</sub> (no uncertainty required).