

**APPENDIX C CALIBRATION CERTIFICATES**

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CALIBRATION  
CNAS L0570

Client **CCICT**  
**Dongguan**

Certificate No: 25J02Z000890

**CALIBRATION CERTIFICATE**

Object **ES3DV3 - SN : 3157**

Calibration Procedure(s) **FF-Z11-0004-03**  
**Calibration Procedures for Dosimetric E-field Probes**

Calibration date: **December 15, 2025**

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(Calibrated by, Certificate No.)  | Scheduled Calibration |
|--------------------------|--------------------|-------------------------------------------|-----------------------|
| Power Meter NRP2         | 106277             | 20-Oct-25(CTTL, No.25J02X100272)          | Oct-26                |
| Power sensor NRP8S       | 104291             | 20-Oct-25(CTTL, No.25J02X100272)          | Oct-26                |
| Power sensor NRP8S       | 104292             | 20-Oct-25(CTTL, No.25J02X100272)          | Oct-26                |
| Reference 10dBAttenuator | 18N50W-10dB        | 22-Jan-25(CTTL, No.25J02X000465)          | Jan-27                |
| Reference 20dBAttenuator | 18N50W-20dB        | 22-Jan-25(CTTL, No.25J02X000466)          | Jan-27                |
| Reference Probe EX3DV4   | SN 7307            | 27-May-25(SPEAG, No.EX-7307_May25)        | May-26                |
| DAE4                     | SN 771             | 22-Jan-25(SPEAG, No.DAE4-771_Jan25)       | Jan-26                |
| Secondary Standards      | ID #               | Cal Date(Calibrated by, Certificate No.)  | Scheduled Calibration |
| SignalGenerator MG3700A  | 6201052605         | 10-Jun-25(CTTL, No.25J02X004975)          | Jun-26                |
| SignalGenerator APSIN26G | 181-33A6D0700-1959 | 27-Mar-25(CTTL, No.25J02X001962)          | Mar-26                |
| Network Analyzer E5071C  | MY46110673         | 26-Nov-25(CTTL, No.25J02X102468)          | Nov-26                |
| Reference 10dBAttenuator | BT0520             | 15-May-25(CTTL, No.25J02X003069)          | May-27                |
| Reference 20dBAttenuator | BT0267             | 15-May-25(CTTL, No. 25J02X003070)         | May-27                |
| OCP DAKS-3.5             | SN 0015            | 20-Oct-25(SPEAG, No. OCP-DAKS-0015_Oct25) | Oct-26                |

|                | Name        | Function           | Signature |
|----------------|-------------|--------------------|-----------|
| Calibrated by: | Yu Zongying | SAR Test Engineer  |           |
| Reviewed by:   | Lin Jun     | SAR Test Engineer  |           |
| Approved by:   | Qi Dianyuan | SAR Project Leader |           |

Issued: December 15, 2025

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#### 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 $\Phi$   | $\Phi$ rotation around probe axis                                                                                                           |
| Polarization $\theta$ | $\theta$ rotation around an axis that is in the plane normal to probe axis (at measurement center), i<br>$\theta=0$ 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:

- 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 hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- 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
- 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  $\theta=0$  ( $f \leq 900$  MHz in TEM-cell;  $f > 1800$  MHz: waveguide). NORM<sub>x,y,z</sub> are only intermediate values, i.e., the uncertainties of NORM<sub>x,y,z</sub> does not effect the  $E^2$ -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 (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.
- A<sub>x,y,z</sub>; B<sub>x,y,z</sub>; C<sub>x,y,z</sub>; VR<sub>x,y,z</sub>; A,B,C** are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- 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 valued 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).



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## DASY/EASY – Parameters of Probe: ES3DV3 – SN:3157

### Basic Calibration Parameters

|                                                          | Sensor X | Sensor Y | Sensor Z | Unc (k=2)    |
|----------------------------------------------------------|----------|----------|----------|--------------|
| Norm( $\mu\text{V}/(\text{V}/\text{m})^2$ ) <sup>A</sup> | 0.98     | 1.13     | 0.98     | $\pm 10.0\%$ |
| DCP(mV) <sup>B</sup>                                     | 104.3    | 105.2    | 105.9    |              |

### Modulation Calibration Parameters

| UID | Communication System Name |   | A dB | B dB $\mu\text{V}$ | C   | D dB | VR mV | Unc <sup>E</sup> (k=2) |
|-----|---------------------------|---|------|--------------------|-----|------|-------|------------------------|
| 0   | CW                        | X | 0.0  | 0.0                | 1.0 | 0.00 | 250.6 | $\pm 2.1\%$            |
|     |                           | Y | 0.0  | 0.0                | 1.0 |      | 274.8 |                        |
|     |                           | Z | 0.0  | 0.0                | 1.0 |      | 250.9 |                        |

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%.

<sup>A</sup> The uncertainties of Norm X, Y, Z do not affect the E<sup>2</sup>-field uncertainty inside TSL (see Page 4).

<sup>B</sup> Numerical linearization parameter: uncertainty not required.

<sup>E</sup> 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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## DASY/EASY – Parameters of Probe: ES3DV3 – SN:3157

### Calibration Parameter Determined in Head Tissue Simulating Media

| f [MHz] <sup>C</sup> | Relative Permittivity <sup>F</sup> | Conductivity (S/m) <sup>F</sup> | ConvF X | ConvF Y | ConvF Z | Alpha <sup>G</sup> | Depth <sup>G</sup> (mm) | Unct. (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|--------------------|-------------------------|-------------|
| 750                  | 41.9                               | 0.89                            | 6.44    | 6.44    | 6.44    | 0.25               | 1.72                    | ± 13%       |
| 900                  | 41.5                               | 0.97                            | 6.24    | 6.24    | 6.24    | 0.35               | 1.51                    | ± 13%       |
| 1750                 | 40.1                               | 1.37                            | 5.36    | 5.36    | 5.36    | 0.52               | 1.28                    | ± 13%       |
| 1900                 | 40.0                               | 1.40                            | 5.05    | 5.05    | 5.05    | 0.62               | 1.26                    | ± 13%       |
| 2300                 | 39.5                               | 1.67                            | 4.86    | 4.86    | 4.86    | 0.63               | 1.21                    | ± 13%       |
| 2450                 | 39.2                               | 1.80                            | 4.65    | 4.65    | 4.65    | 0.66               | 1.20                    | ± 13%       |
| 2600                 | 39.0                               | 1.96                            | 4.48    | 4.48    | 4.48    | 0.75               | 1.12                    | ± 13%       |

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

<sup>F</sup> At frequency up to 6 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

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

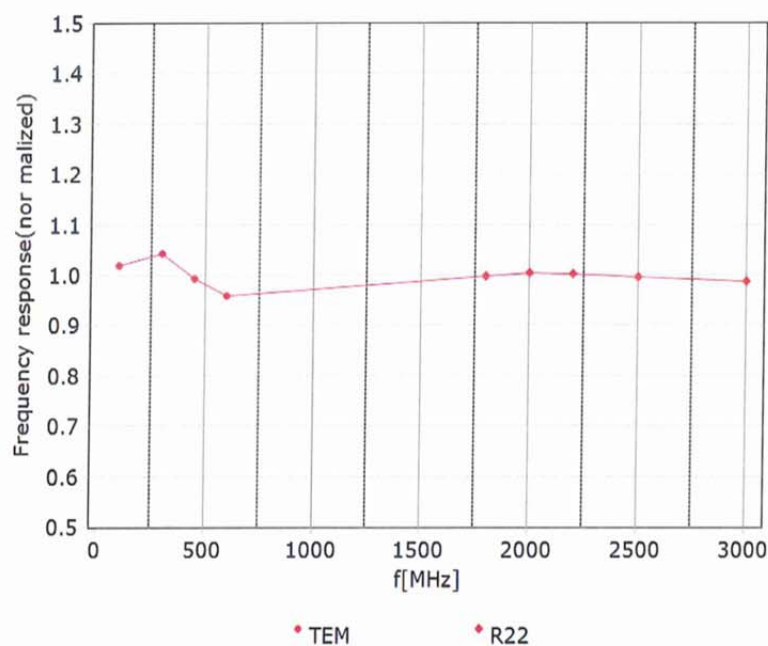


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### Frequency Response of E-Field (TEM-Cell: ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field:  $\pm 7.4\%$  ( $k=2$ )

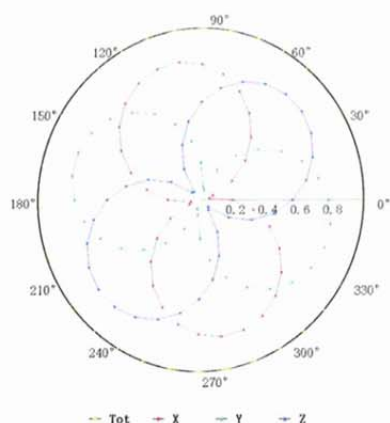


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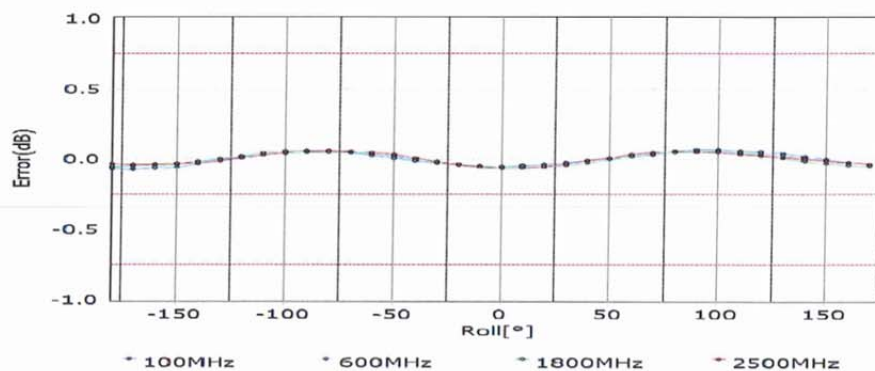
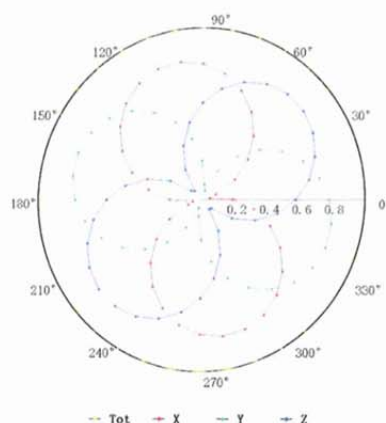


## Receiving Pattern ( $\Phi$ ), $\theta=0^\circ$

**f=600 MHz, TEM**



**f=1800 MHz, R22**



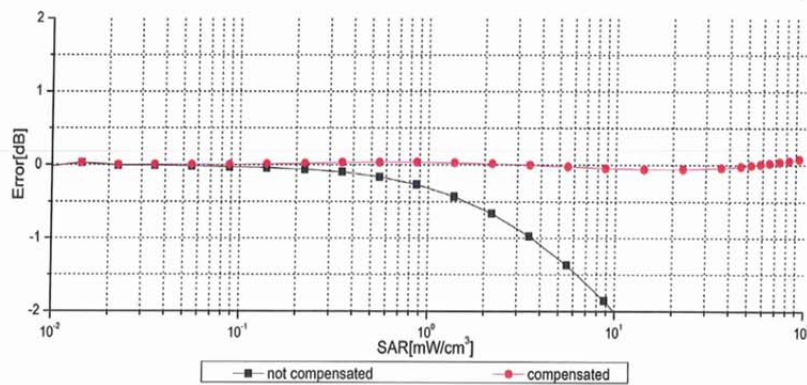
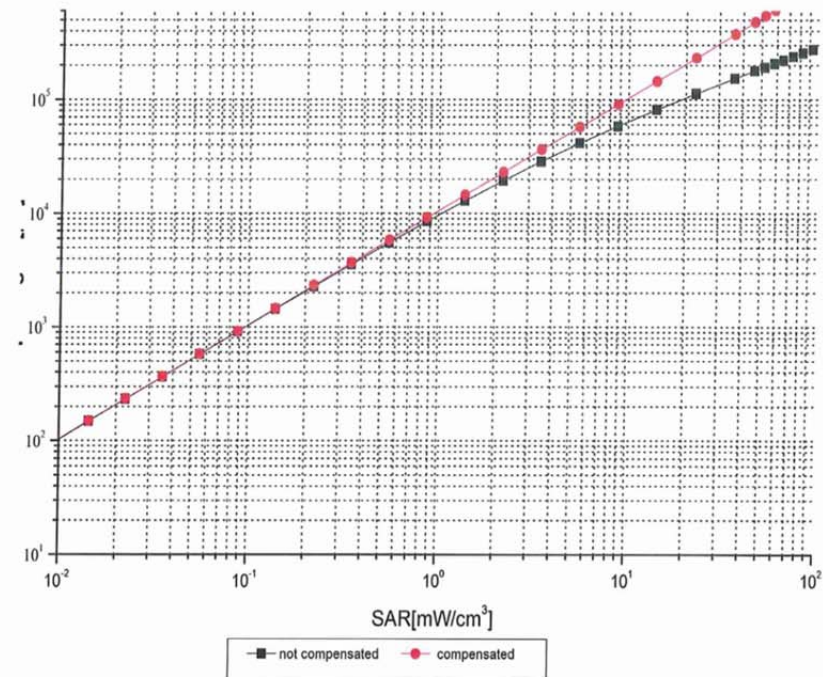
Uncertainty of Axial Isotropy Assessment:  $\pm 1.2\%$  ( $k=2$ )



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### Dynamic Range $f(\text{SAR}_{\text{head}})$ (TEM cell, $f = 900 \text{ MHz}$ )



Uncertainty of Linearity Assessment:  $\pm 0.9\%$  ( $k=2$ )



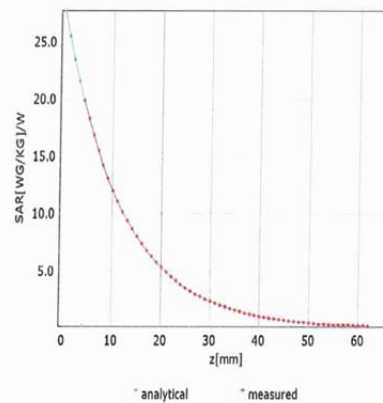
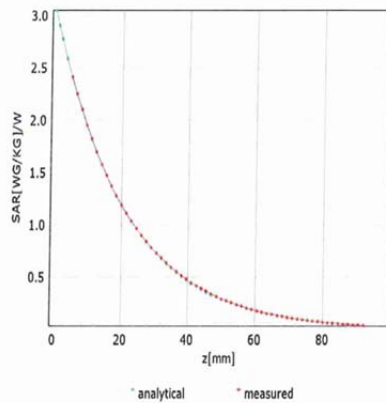
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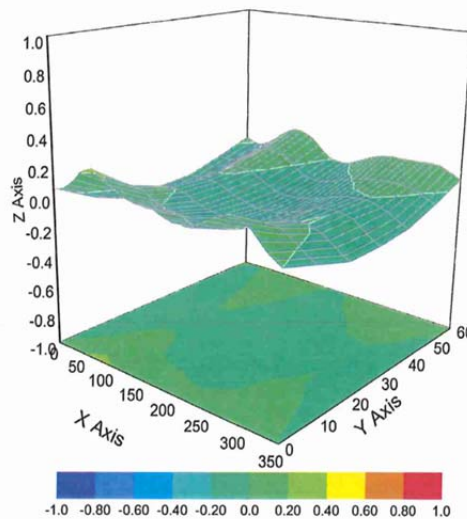
## Conversion Factor Assessment

f=750 MHz,WGLS R9(H\_convF)

f=1750 MHz,WGLS R22(H\_convF)



## Deviation from Isotropy in Liquid



Uncertainty of Spherical Isotropy Assessment:  $\pm 3.2\%$  ( $k=2$ )



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## DASY/EASY – Parameters of Probe: ES3DV3 – SN:3157

### Other Probe Parameters

|                                               |            |
|-----------------------------------------------|------------|
| Sensor Arrangement                            | Triangular |
| Connector Angle (°)                           | 57.9       |
| Mechanical Surface Detection Mode             | enabled    |
| Optical Surface Detection Mode                | disable    |
| Probe Overall Length                          | 337mm      |
| Probe Body Diameter                           | 10mm       |
| Tip Length                                    | 10mm       |
| Tip Diameter                                  | 4mm        |
| Probe Tip to Sensor X Calibration Point       | 2mm        |
| Probe Tip to Sensor Y Calibration Point       | 2mm        |
| Probe Tip to Sensor Z Calibration Point       | 2mm        |
| Recommended Measurement Distance from Surface | 3mm        |

## DIPOLE CALIBRATION CERTIFICATES



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Client **CCICT(Dongguan)** Certificate No: **26J02Z000219**

**CALIBRATION CERTIFICATE**

Object **D750V3 - SN: 1230**

Calibration Procedure(s) **FF-Z11-0003-02  
Calibration Procedures for dipole validation kits**

Calibration date: **March 23, 2026**

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 (Calibrated by, Certificate No.) | Scheduled Calibration |
|------------------------|---------|-------------------------------------------|-----------------------|
| Power Meter NRP2       | 106276  | 16-May-25 (CTTL, No. 25J02X003423)        | May-26                |
| Power sensor NRP6A     | 101369  | 16-May-25 (CTTL, No. 25J02X003423)        | May-26                |
| Reference Probe EX3DV4 | SN 7600 | 19-Jan-26(CTTL-SPEAG, No. 26J02Z000008)   | Jan-27                |
| DAE4                   | SN 1588 | 29-Aug-25(CTTL-SPEAG, No. 25J02Z000631)   | Aug-26                |

| Secondary Standards    | ID #       | Cal Date (Calibrated by, Certificate No.) | Scheduled Calibration |
|------------------------|------------|-------------------------------------------|-----------------------|
| SignalGeneratorSMA200A | 107732     | 01-Dec-25 (CTTL, No. 25J02X102467)        | Nov-26                |
| NetworkAnalyzer E5071C | MY46110673 | 26-Nov-25 (CTTL, No. 25J02X102468)        | Nov-26                |
| OCP DAKS-3.5           | 0015       | 20-Oct-25(SPEAG, No. OCP-DAKS-0015_Oct25) | Oct-26                |

|                | Name        | Function           | Signature                                                                             |
|----------------|-------------|--------------------|---------------------------------------------------------------------------------------|
| Calibrated by: | Zhao Jing   | SAR Test Engineer  |  |
| Reviewed by:   | Lin Jun     | SAR Test Engineer  |  |
| Approved by:   | Qi Dianyuan | SAR Project Leader |  |

Issued: March 27, 2026

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Certificate No: 26J02Z000219 Page 1 of 6



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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:**

- 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
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

- DASY 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.
- *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.

|                              |                        |             |
|------------------------------|------------------------|-------------|
| DASY Version                 | DASY6                  | V17.0.0     |
| Extrapolation                | Advanced Extrapolation |             |
| Phantom                      | Modular Flat Phantom   |             |
| Distance Dipole Center - TSL | 15 mm                  | with Spacer |
| Frequency                    | 750 MHz $\pm$ 1 MHz    |             |

### Head TSL parameters at 750 MHz

The following parameters and calculations were applied.

|                                         | Temperature         | Permittivity   | Conductivity         |
|-----------------------------------------|---------------------|----------------|----------------------|
| Nominal Head TSL parameters             | 22.0 °C             | 41.9           | 0.89 mho/m           |
| Measured Head TSL parameters            | (22.0 $\pm$ 0.2) °C | 41.4 $\pm$ 6 % | 0.87 mho/m $\pm$ 6 % |
| Head TSL temperature change during test | <1.0 °C             | ----           | ----                 |

### SAR result with Head TSL at 750 MHz

|                                                |                    |                                |
|------------------------------------------------|--------------------|--------------------------------|
| SAR averaged over 1 $cm^3$ (1 g) of Head TSL   | Condition          |                                |
| SAR measured                                   | 24 dBm input power | 2.12 W/kg                      |
| SAR for nominal Head TSL parameters            | normalized to 1W   | 8.61 W/kg $\pm$ 20 % ( $k=2$ ) |
| SAR averaged over 10 $cm^3$ (10 g) of Head TSL | Condition          |                                |
| SAR measured                                   | 24 dBm input power | 1.41 W/kg                      |
| SAR for nominal Head TSL parameters            | normalized to 1W   | 5.71 W/kg $\pm$ 20 % ( $k=2$ ) |



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

##### Antenna Parameters with Head TSL at 750 MHz

|                                      |               |
|--------------------------------------|---------------|
| Impedance, transformed to feed point | 52.0Ω+ 1.01jΩ |
| Return Loss                          | - 33.1dB      |

##### General Antenna Parameters and Design

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 0.944 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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**DASY6 Validation Report for Head TSL**  
Test Laboratory: CTTL, Beijing, China

Date: 2026-03-23

**Summary**

| Dipole           | Frequency [MHz] | TSL | Power [dBm] |
|------------------|-----------------|-----|-------------|
| D750V3 – SN 1230 | 750             | HSL | 24          |

**Exposure Conditions**

| Phantom Section, TSL | Position, Test Distance [mm] | Band Group, UID | Frequency [MHz] | Conversion Factor | TSL Cond. [S/m] | TSL Permittivity |
|----------------------|------------------------------|-----------------|-----------------|-------------------|-----------------|------------------|
| Flat                 | 15                           | CW              | 750             | 10.82             | 0.870           | 41.4             |

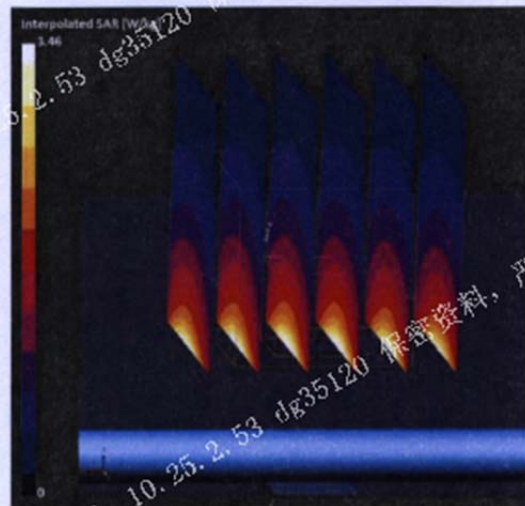
**Hardware Setup**

| Phantom        | TSL     | Probe, Calibration Date     | DAE, Calibration Date   |
|----------------|---------|-----------------------------|-------------------------|
| MFP V8.0 Right | 750Head | EX3DV4 - SN7600, 2026-01-19 | DAE4 Sn1588, 2025-08-29 |

**Scan Setup**

**Measurement Results**

| Zoom Scan           |                | Zoom Scan           |               |
|---------------------|----------------|---------------------|---------------|
| Grid Extents [mm]   | 30.0×30.0×30.0 | psSAR1g [W/kg]      | 2.12          |
| Grid Steps [mm]     | 6.0×6.0×1.5    | psSAR10g [W/kg]     | 1.41          |
| Sensor Surface [mm] | 1.4            | Power Drift [dB]    | 0.00          |
| Graded Grid         | Yes            | Power Scaling       | Disabled      |
| Grading Ratio       | 1.5            | Scaling Factor [dB] |               |
| MAIA                | N/A            | TSL Correction      | No correction |
| Surface Detection   | VMS + 6p       | M2/M1 [%]           | 84.0          |
| Scan Method         | Measured       | Dist 3dB Peak [mm]  | 17.8          |



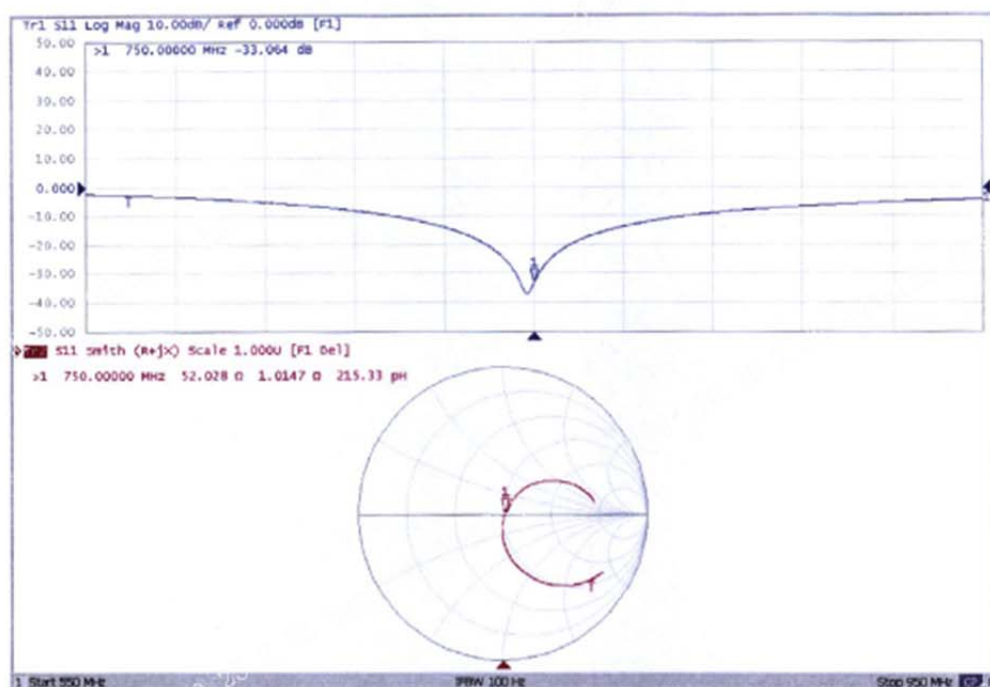


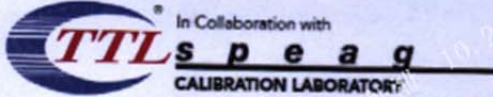
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### Impedance Measurement Plot for Head TSL





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CAICT

Client **CCICT(Dongguan)**
Certificate No: **26J02Z000221**

### CALIBRATION CERTIFICATE

**Object** D1750VZ - 3N. 1200

**Calibration Procedure(s)** FF-Z11-0003-02  
Calibration Procedures for dipole validation kits

**Calibration date:** March 24, 2026

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 (Calibrated by, Certificate No.) | Scheduled Calibration |
|------------------------|---------|-------------------------------------------|-----------------------|
| Power Meter NRP2       | 106276  | 16-May-25 (CTTL, No. 25J02X003423)        | May-26                |
| Power sensor NRP6A     | 101369  | 16-May-25 (CTTL, No. 25J02X003423)        | May-26                |
| Reference Probe EX3DV4 | SN 7600 | 19-Jan-26 (CTTL-SPEAG, No. 26J02Z000008)  | Jan-27                |
| DAE4                   | SN 1588 | 29-Aug-25 (CTTL-SPEAG, No. 25J02Z000631)  | Aug-26                |

| Secondary Standards    | ID #       | Cal Date (Calibrated by, Certificate No.)  | Scheduled Calibration |
|------------------------|------------|--------------------------------------------|-----------------------|
| SignalGeneratorSMA200A | 107732     | 01-Dec-25 (CTTL, No. 25J02X102467)         | Nov-26                |
| NetworkAnalyzer E5071C | MY46110673 | 26-Nov-25 (CTTL, No. 25J02X102468)         | Nov-26                |
| OCP DAKS-3.5           | 0015       | 20-Oct-25 (SPEAG, No. OCP-DAKS-0015_Oct25) | Oct-26                |

|                | Name        | Function           | Signature                                                                             |
|----------------|-------------|--------------------|---------------------------------------------------------------------------------------|
| Calibrated by: | Zhao Jing   | SAR Test Engineer  |  |
| Reviewed by:   | Lin Jun     | SAR Test Engineer  |  |
| Approved by:   | Qi Dianyuan | SAR Project Leader |  |

Issued: March 27, 2026

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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:**

- 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
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

- DASY 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.
- *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.

|                              |                        |             |
|------------------------------|------------------------|-------------|
| DASY Version                 | DASY6                  | V17.0.0     |
| Extrapolation                | Advanced Extrapolation |             |
| Phantom                      | Modular Flat Phantom   |             |
| Distance Dipole Center - TSL | 10 mm                  | with Spacer |
| Frequency                    | 1750 MHz $\pm$ 1 MHz   |             |

### Head TSL parameters at 1750 MHz

The following parameters and calculations were applied.

|                                         | Temperature         | Permittivity   | Conductivity         |
|-----------------------------------------|---------------------|----------------|----------------------|
| Nominal Head TSL parameters             | 22.0 °C             | 40.1           | 1.37 mho/m           |
| Measured Head TSL parameters            | (22.0 $\pm$ 0.2) °C | 39.5 $\pm$ 6 % | 1.36 mho/m $\pm$ 6 % |
| Head TSL temperature change during test | <1.0 °C             | -----          | -----                |

### SAR result with Head TSL at 1750 MHz

|                                                         |                    |                            |
|---------------------------------------------------------|--------------------|----------------------------|
| SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL   | Condition          |                            |
| SAR measured                                            | 24 dBm input power | 9.13 W/kg                  |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 36.6 W/kg $\pm$ 20 % (k=2) |
| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL | Condition          |                            |
| SAR measured                                            | 24 dBm input power | 4.91 W/kg                  |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 19.7 W/kg $\pm$ 20 % (k=2) |



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

#### Antenna Parameters with Head TSL at 1750 MHz

|                                      |                            |
|--------------------------------------|----------------------------|
| Impedance, transformed to feed point | $44.7\Omega + 2.58j\Omega$ |
| Return Loss                          | - 24.2dB                   |

#### General Antenna Parameters and Design

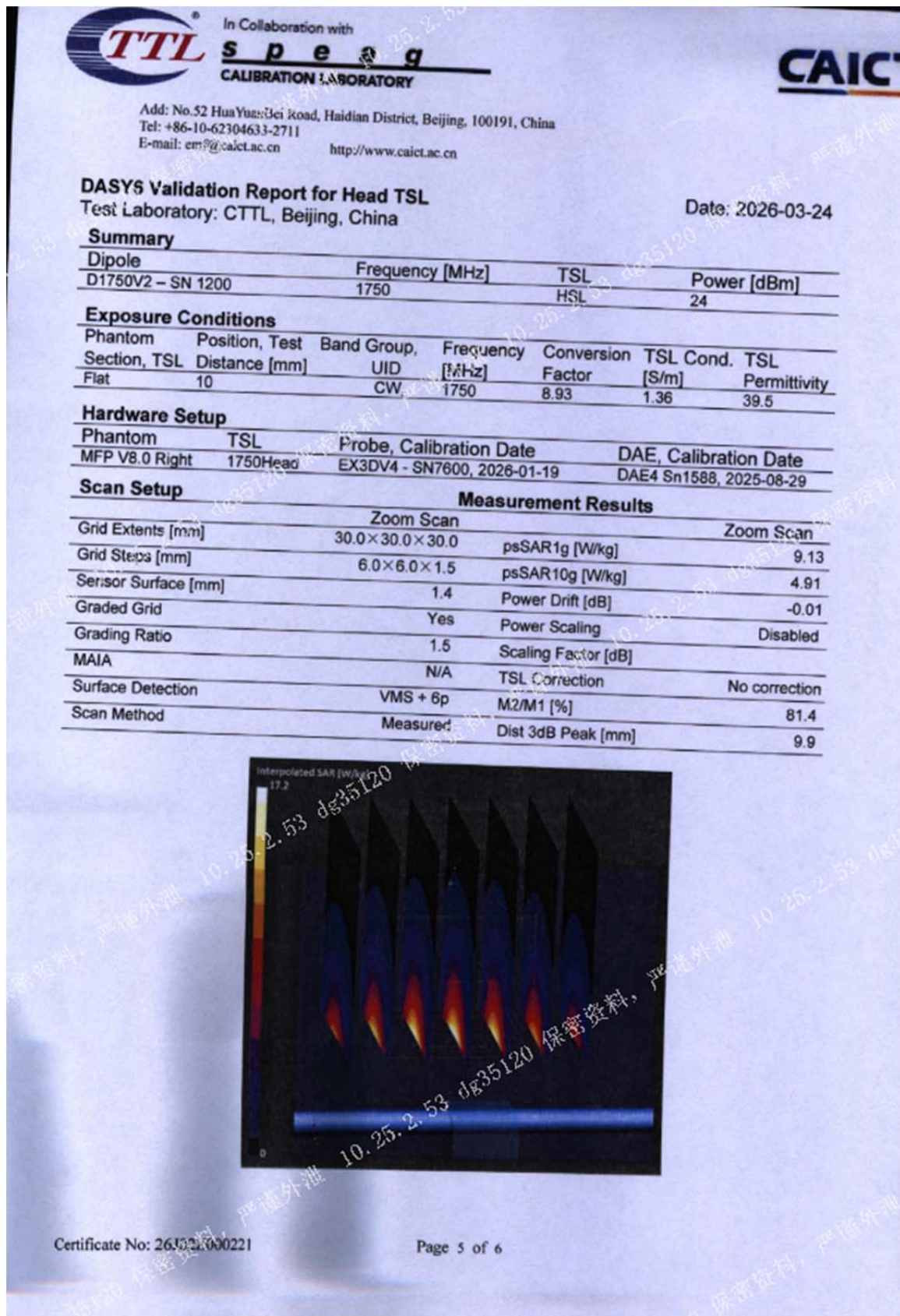
|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.118 ns |
|----------------------------------|----------|

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 |
|-----------------|-------|



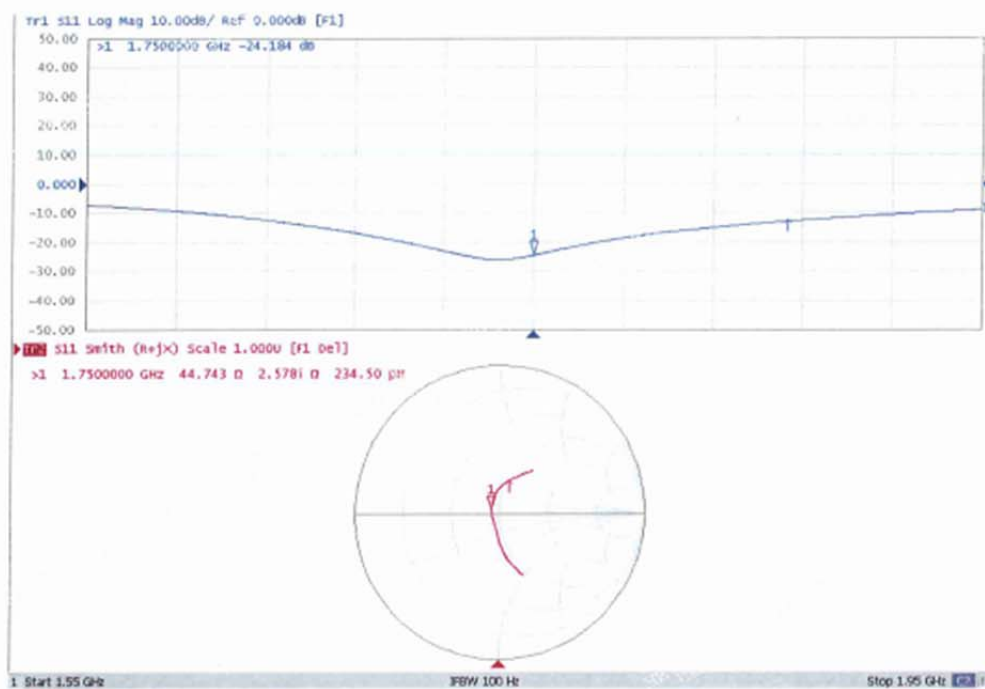


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### Impedance Measurement Plot for Head TSL





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Client: **CAICT(Dongguan)**
Certificate No: **26J02Z000222**

### CALIBRATION CERTIFICATE

Object: **D1900V2 - SN: 5d251**

Calibration Procedure(s): **FF-Z11-0003-02**  
**Calibration Procedures for dipole validation kits**

Calibration date: **March 23, 2026**

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 (Calibrated by, Certificate No.) | Scheduled Calibration |
|------------------------|---------|-------------------------------------------|-----------------------|
| Power Meter NRP2       | 106276  | 16-May-25 (CTTL, No. 25J02X003423)        | May-26                |
| Power sensor NRP6A     | 101369  | 16-May-25 (CTTL, No. 25J02X003423)        | May-26                |
| Reference Probe EX3DV4 | SN 7600 | 19-Jan-26(CTTL-SPEAG, No. 26J02Z000008)   | Jan-27                |
| DAE4                   | SN 1588 | 29-Aug-25(CTTL-SPEAG, No. 25J02Z000631)   | Aug-26                |

| Secondary Standards    | ID #       | Cal Date (Calibrated by, Certificate No.) | Scheduled Calibration |
|------------------------|------------|-------------------------------------------|-----------------------|
| SignalGeneratorSMA200A | 107732     | 01-Dec-25 (CTTL, No. 25J02X102467)        | Nov-26                |
| NetworkAnalyzer E5071C | M746110673 | 26-Nov-25 (CTTL, No. 25J02X102468)        | Nov-26                |
| OCP DAKS-3.5           | 0015       | 20-Oct-25(SPEAG, No. OCP-DAKS-0015_Oct25) | Oct-26                |

|                | Name        | Function           | Signature                                                                             |
|----------------|-------------|--------------------|---------------------------------------------------------------------------------------|
| Calibrated by: | Zhao Jing   | SAR Test Engineer  |  |
| Reviewed by:   | Lin Jun     | SAR Test Engineer  |  |
| Approved by:   | Qi Dianyuan | SAR Project Leader |  |

Issued: March 27, 2026

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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:**

- 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
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

- DASY 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.
- *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.

|                              |                        |             |
|------------------------------|------------------------|-------------|
| DASY Version                 | DASY6                  | V17.0.0     |
| Extrapolation                | Advanced Extrapolation |             |
| Phantom                      | Modular Flat Phantom   |             |
| Distance Dipole Center - TSL | 10 mm                  | with Spacer |
| Frequency                    | 1900 MHz $\pm$ 1 MHz   |             |

### Head TSL parameters at 1900 MHz

The following parameters and calculations were applied.

|                                         | Temperature         | Permittivity   | Conductivity         |
|-----------------------------------------|---------------------|----------------|----------------------|
| Nominal Head TSL parameters             | 22.0 °C             | 40.0           | 1.40 mho/m           |
| Measured Head TSL parameters            | (22.0 $\pm$ 0.2) °C | 40.1 $\pm$ 6 % | 1.39 mho/m $\pm$ 6 % |
| Head TSL temperature change during test | <1.0 °C             | -----          | -----                |

### SAR result with Head TSL at 1900 MHz

| SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL   | Condition          |                            |
|---------------------------------------------------------|--------------------|----------------------------|
| SAR measured                                            | 24 dBm input power | 10.1 W/kg                  |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 40.6 W/kg $\pm$ 20 % (k=2) |
| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL | Condition          |                            |
| SAR measured                                            | 24 dBm input power | 5.27 W/kg                  |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 21.1 W/kg $\pm$ 20 % (k=2) |



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

##### Antenna Parameters with Head TSL at 1900 MHz

|                                      |                            |
|--------------------------------------|----------------------------|
| Impedance, transformed to feed point | $48.8\Omega + 6.58j\Omega$ |
| Return Loss                          | - 23.4dB                   |

##### General Antenna Parameters and Design

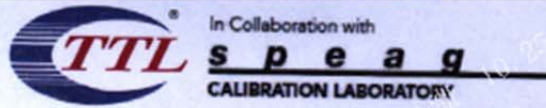
|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.097 ns |
|----------------------------------|----------|

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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### DASY6 Validation Report for Head TSL

Date: 2026-03-23

Test Laboratory: CTTL, Beijing, China

#### Summary

| Dipole             | Frequency [MHz] | TSL | Power [dBm] |
|--------------------|-----------------|-----|-------------|
| D1900V2 – SN 5d251 | 1900            | HSL | 24          |

#### Exposure Conditions

| Phantom      | Position, Test | Band Group, | Frequency | Conversion | TSL Cond. | TSL          |
|--------------|----------------|-------------|-----------|------------|-----------|--------------|
| Section, TSL | Distance [mm]  | UID         | [MHz]     | Factor     | [S/m]     | Permittivity |
| Flat         | 10             | CW,         | 1900      | 8.58       | 1.39      | 40.1         |

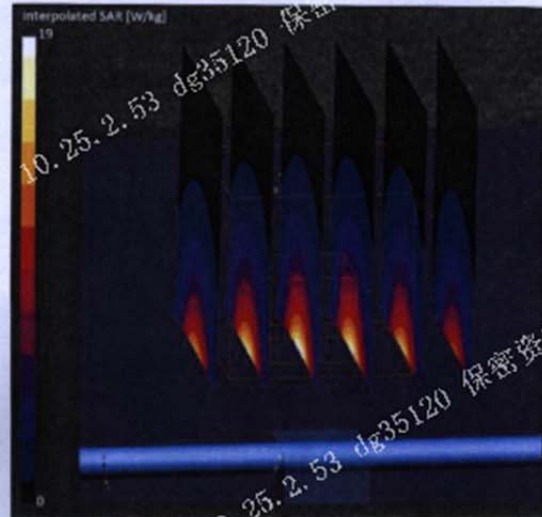
#### Hardware Setup

| Phantom        | TSL      | Probe, Calibration Date     | DAE, Calibration Date   |
|----------------|----------|-----------------------------|-------------------------|
| MFP V8.0 Right | 1900Head | EX3CV4 - SN7600, 2026-01-19 | DAE4 Sn1588, 2025-08-29 |

#### Scan Setup

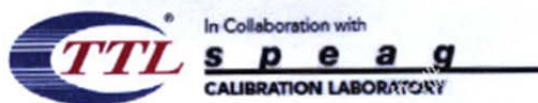
#### Measurement Results

| Zoom Scan           |                | Zoom Scan           |               |
|---------------------|----------------|---------------------|---------------|
| Grid Extents [mm]   | 30.0×30.0×30.0 | psSAR1g [W/kg]      | 10.1          |
| Grid Steps [mm]     | 6.0×6.0×1.5    | psSAR10g [W/kg]     | 5.27          |
| Sensor Surface [mm] | 1.4            | Power Drift [dB]    | -0.00         |
| Grated Grid         | Yes            | Power Scaling       | Disabled      |
| Grading Ratio       | 1.5            | Scaling Factor [dB] |               |
| MAIA                | N/A            | TSL Correction      | No correction |
| Surface Detection   | VMS + 6p       | M2/M1 [%]           | 81.8          |
| Scan Method         | Measured       | Dist 3dB Peak [mm]  | 9.6           |



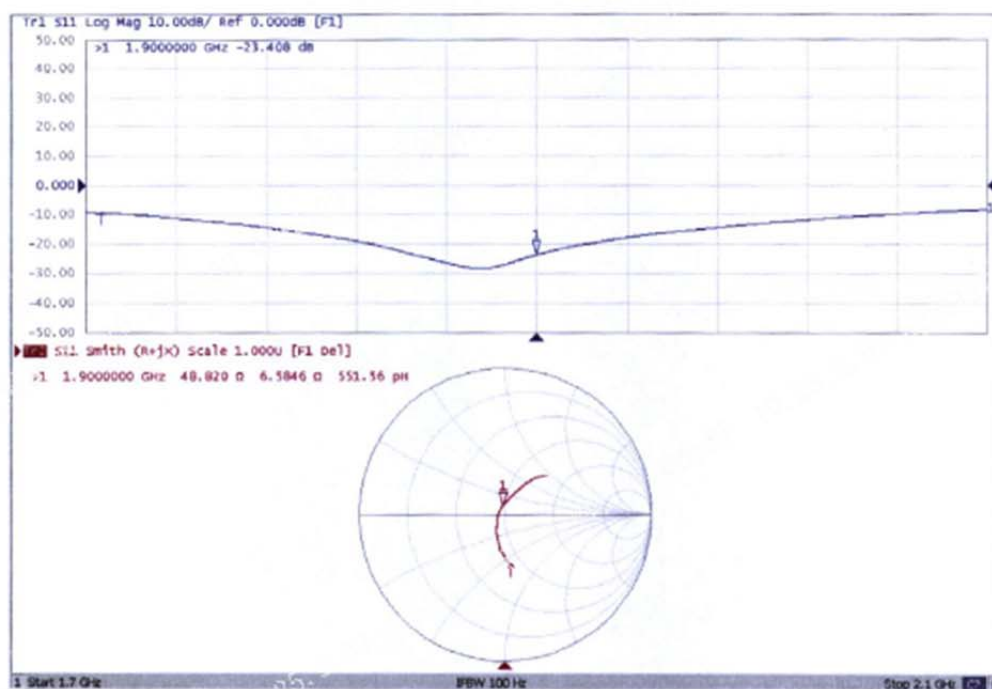
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### Impedance Measurement Plot for Head TSL





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CNAS L0570



**Client**      **CCICT(Dongguan)**
**Certificate No:**      **26J02Z000224**

### CALIBRATION CERTIFICATE

**Object**      D2600V2 - SN: 1206

**Calibration Procedure(s)**      FF-Z11-0003-02  
Calibration Procedures for dipole validation kits

**Calibration date:**      March 23, 2026

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.

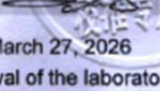
All calibrations have been conducted in the closed laboratory facility: environment temperature (22±3)°C and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards      | ID #    | Cal Date (Calibrated by, Certificate No.) | Scheduled Calibration |
|------------------------|---------|-------------------------------------------|-----------------------|
| Power Meter NRP2       | 106276  | 16-May-25 (CTTL, No. 25J02X003423)        | May-26                |
| Power sensor NRP6A     | 101369  | 16-May-25 (CTTL, No. 25J02X003423)        | May-26                |
| Reference Probe EX3DV4 | SN 7600 | 18-Jan-26(CTTL-SPEAG, No. 26J02Z000008)   | Jan-27                |
| DAE4                   | SN 1588 | 29-Aug-25(CTTL-SPEAG, No. 25J02Z000631)   | Aug-26                |

| Secondary Standards    | ID #       | Cal Date (Calibrated by, Certificate No.) | Scheduled Calibration |
|------------------------|------------|-------------------------------------------|-----------------------|
| SignalGeneratorSMA200A | 107732     | 01-Dec-25 (CTTL, No. 25J02X102467)        | Nov-26                |
| NetworkAnalyzer E5071C | MY46110673 | 26-Nov-25 (CTTL, No. 25J02X102468)        | Nov-26                |
| OCP DAKS-3.5           | 0015       | 20-Oct-25(SPEAG, No. OCP-DAKS-0015_Oct25) | Oct-26                |

|                | Name        | Function           | Signature                                                                             |
|----------------|-------------|--------------------|---------------------------------------------------------------------------------------|
| Calibrated by: | Zhao Jing   | SAR Test Engineer  |  |
| Reviewed by:   | Lin Jun     | SAR Test Engineer  |  |
| Approved by:   | Qi Dianyuan | SAR Project Leader |  |

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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:**

- 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
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

- DASY 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.
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- *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.

|                              |                        |             |
|------------------------------|------------------------|-------------|
| DASY Version                 | DASY6                  | V17.0.0     |
| Extrapolation                | Advanced Extrapolation |             |
| Phantom                      | Modular Flat Phantom   |             |
| Distance Dipole Center - TSL | 10 mm                  | with Spacer |
| Frequency                    | 2600 MHz $\pm$ 1 MHz   |             |

### Head TSL parameters at 2600 MHz

The following parameters and calculations were applied.

|                                         | Temperature         | Permittivity   | Conductivity         |
|-----------------------------------------|---------------------|----------------|----------------------|
| Nominal Head TSL parameters             | 22.0 °C             | 39.0           | 1.96 mho/m           |
| Measured Head TSL parameters            | (22.0 $\pm$ 0.2) °C | 38.8 $\pm$ 6 % | 1.97 mho/m $\pm$ 6 % |
| Head TSL temperature change during test | <1.0 °C             | ----           | ----                 |

### SAR result with Head TSL at 2600 MHz

| SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL   | Condition          |                            |
|---------------------------------------------------------|--------------------|----------------------------|
| SAR measured                                            | 24 dBm input power | 13.9 W/kg                  |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 55.4 W/kg $\pm$ 20 % (k=2) |
| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL | Condition          |                            |
| SAR measured                                            | 24 dBm input power | 6.22 W/kg                  |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 24.8 W/kg $\pm$ 20 % (k=2) |



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**Appendix (Additional assessments outside the scope of CNAS L0570)****Antenna Parameters with Head TSL at 2600 MHz**

|                                      |               |
|--------------------------------------|---------------|
| Impedance, transformed to feed point | 45.5Ω+ 2.18jΩ |
| Return Loss                          | - 25.6dB      |

**General Antenna Parameters and Design**

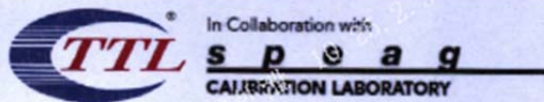
|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.051 ns |
|----------------------------------|----------|

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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## DASY6 Validation Report for Head TSL

Date: 2026-03-23

Test Laboratory: CTTL, Beijing, China

### Summary

| Dipole            | Frequency [MHz] | TSL | Power [dBm] |
|-------------------|-----------------|-----|-------------|
| D2600V2 – SN 1206 | 2600            | HSL | 24          |

### Exposure Conditions

| Phantom      | Position, Test | Band Group | Frequency | Conversion | TSL Cond. | TSL          |
|--------------|----------------|------------|-----------|------------|-----------|--------------|
| Section, TSL | Distance [mm]  | UID        | [MHz]     | Factor     | [S/m]     | Permittivity |
| Flat         | 10             | CW         | 2600      | 7.86       | 1.97      | 38.8         |

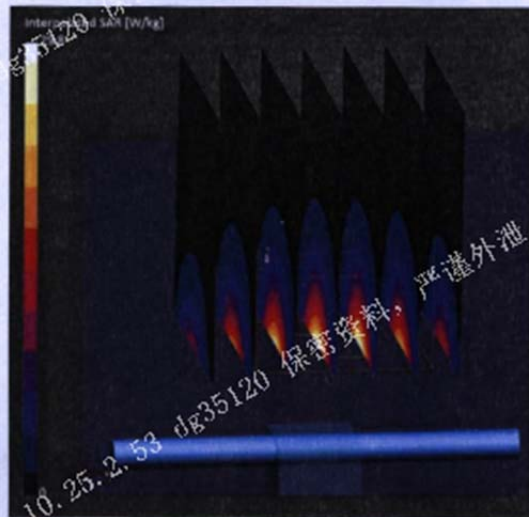
### Hardware Setup

| Phantom         | TSL       | Probe, Calibration Date     | DAE, Calibration Date   |
|-----------------|-----------|-----------------------------|-------------------------|
| MFP V8.0 Center | 2900 Head | EX3DV4 - SN7600, 2026-01-19 | DAE4 Sn1588, 2025-08-29 |

### Scan Setup

### Measurement Results

|                     | Zoom Scan      |                     | Zoom Scan     |
|---------------------|----------------|---------------------|---------------|
| Grid Extents [mm]   | 30.0×30.0×30.0 | psSAR1g [W/kg]      | 13.9          |
| Grid Steps [mm]     | 5.0×5.0×1.5    | psSAR10g [W/kg]     | 6.22          |
| Sensor Surface [mm] | 1.4            | Power Drift [dB]    | -0.01         |
| Graded Grid         | Yes            | Power Scaling       | Disabled      |
| Grading Ratio       | 1.5            | Scaling Factor [dB] |               |
| MAIA                | N/A            | TSL Correction      | No correction |
| Surface Detection   | VMS + 6p       | M2/M1 [%]           | 79.0          |
| Scan Method         | Measured       | Dist 3dB Peak [mm]  | 8.3           |



Certificate No: 26J02Z000224

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### Impedance Measurement Plot for Head TSL

