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Accreditation No.: **SCS 0108**

Client

**WSCT**  
**Shenzhen**

Certificate No.

**D2550V2-1015\_Aug24**

## CALIBRATION CERTIFICATE

Object **D2550V2 - SN: 1015**

Calibration procedure(s) **QA CAL-05.v12**  
**Calibration Procedure for SAR Validation Sources between 0.7 - 3 GHz**

Calibration date **August 16, 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 Cal |
|--------------------------------------------|------------|---------------------------------------|---------------|
| Power Sensor R&S NRP-33T                   | SN: 100967 | 28-Mar-24 (No. 217-04038)             | Mar-25        |
| Power Sensor R&S NRP18A                    | SN: 101859 | 21-Mar-24 (No. 4030A315007801)        | Mar-25        |
| Spectrum Analyzer R&S FSV40                | SN: 101832 | 25-Jan-24 (No. 4030-315007551)        | Jan-25        |
| Mismatch; Short [S4188] Attenuator [S4423] | SN: 1152   | 28-Mar-24 (No. 217-04050)             | Mar-25        |
| OCP DAK-12                                 | SN: 1016   | 05-Oct-23 (No. OCP-DAK12-1016_Oct23)  | Oct-24        |
| OCP DAK-3.5                                | SN: 1249   | 05-Oct-23 (No. OCP-DAK3.5-1249_Oct23) | Oct-24        |
| Reference Probe EX3DV4                     | SN: 7349   | 03-Jun-24 (No. EX3-7349_Jun24)        | Jun-25        |
| DAE4ip                                     | SN: 1836   | 10-Jan-24 (No. DAE4ip-1836_Jan24)     | Jan-25        |

| Secondary Standards          | ID         | Check Date (in house)                      | Scheduled Check |
|------------------------------|------------|--------------------------------------------|-----------------|
| ACAD Source Box              | SN: 1000   | 28-May-24 (No. 675-ACAD_Source_Box-240528) | May-25          |
| Signal Generator R&S SMB100A | SN: 182081 | 28-May-24 (No. 0001-300719404)             | May-25          |
| Mismatch; SMA                | SN: 1102   | 22-May-24 (No. 675-Mismatch_SMA-240522)    | May-25          |

|                                                                                                                 | Name               | Function              | Signature |
|-----------------------------------------------------------------------------------------------------------------|--------------------|-----------------------|-----------|
| Calibrated by                                                                                                   | Aidonia Georgiadou | Laboratory Technician |           |
| Approved by                                                                                                     | Sven Kühn          | Technical Manager     |           |
| Issued: August 19, 2024                                                                                         |                    |                       |           |
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**Accreditation No.: SCS 0108**

## Glossary

|       |                                 |
|-------|---------------------------------|
| TSL   | tissue simulating liquid        |
| ConvF | sensitivity in TSL / NORM x,y,z |
| 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-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"

## 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.
- *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%.

## Measurement Conditions

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

|                                     |                          |                                     |
|-------------------------------------|--------------------------|-------------------------------------|
| <b>DASY Version</b>                 | DASY8 Module SAR         | 16.4.0                              |
| <b>Extrapolation</b>                | Advanced Extrapolation   |                                     |
| <b>Phantom</b>                      | Modular Flat Phantom     |                                     |
| <b>Distance Dipole Center - TSL</b> | 10 mm                    | with spacer                         |
| <b>Zoom Scan Resolution</b>         | dx, dy = 5mm, dz = 1.5mm | Graded Ratio = 1.5 mm (Z direction) |
| <b>Frequency</b>                    | 2550MHz $\pm$ 1MHz       |                                     |

## Head TSL parameters at 2550 MHz

The following parameters and calculations were applied.

|                                                | Temperature        | Permittivity  | Conductivity        |
|------------------------------------------------|--------------------|---------------|---------------------|
| <b>Nominal Head TSL parameters</b>             | 22.0 °C            | 39.1          | 1.91 mho/m          |
| <b>Measured Head TSL parameters</b>            | (22.0 $\pm$ 0.2)°C | 37.5 $\pm$ 6% | 1.95 mho/m $\pm$ 6% |
| <b>Head TSL temperature change during test</b> | < 0.5 °C           |               |                     |

## SAR result with Head TSL at 2550 MHz

| <b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Head TSL</b> | Condition          |                               |
|-------------------------------------------------------------|--------------------|-------------------------------|
| SAR for nominal Head TSL parameters                         | 24 dBm input power | 13.6 W/kg                     |
| SAR for nominal Head TSL parameters                         | normalized to 1W   | 54.1 W/kg $\pm$ 17.0% (k = 2) |

| <b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Head TSL</b> | Condition          |                               |
|---------------------------------------------------------------|--------------------|-------------------------------|
| SAR for nominal Head TSL parameters                           | 24 dBm input power | 6.21 W/kg                     |
| SAR for nominal Head TSL parameters                           | normalized to 1W   | 24.7 W/kg $\pm$ 16.5% (k = 2) |

**Appendix (Additional assessments outside the scope of SCS 0108)**

**Antenna Parameters with Head TSL at 2550 MHz**

|             |                                |
|-------------|--------------------------------|
| Impedance   | 50.4 $\Omega$ – 1.3 j $\Omega$ |
| Return Loss | -37.4 dB                       |

**General Antenna Parameters and Design**

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.151 ns |
|----------------------------------|----------|

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint 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 feedpoint may be damaged.

**Additional EUT Data**

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

System Performance Check Report

Summary

| Dipole           | Frequency [MHz] | TSL | Power [dBm] |
|------------------|-----------------|-----|-------------|
| D2550V2 - SN1015 | 2550            | HSL | 24          |

Exposure Conditions

| Phantom Section, TSL | Test Distance [mm] | Band | Group, UID | Frequency [MHz], Channel Number | Conversion Factor | TSL Conductivity [S/m] | TSL Permittivity |
|----------------------|--------------------|------|------------|---------------------------------|-------------------|------------------------|------------------|
| Flat                 | 10                 |      | CW, 0--    | 2550, 0                         | 7.35              | 1.95                   | 37.5             |

Hardware Setup

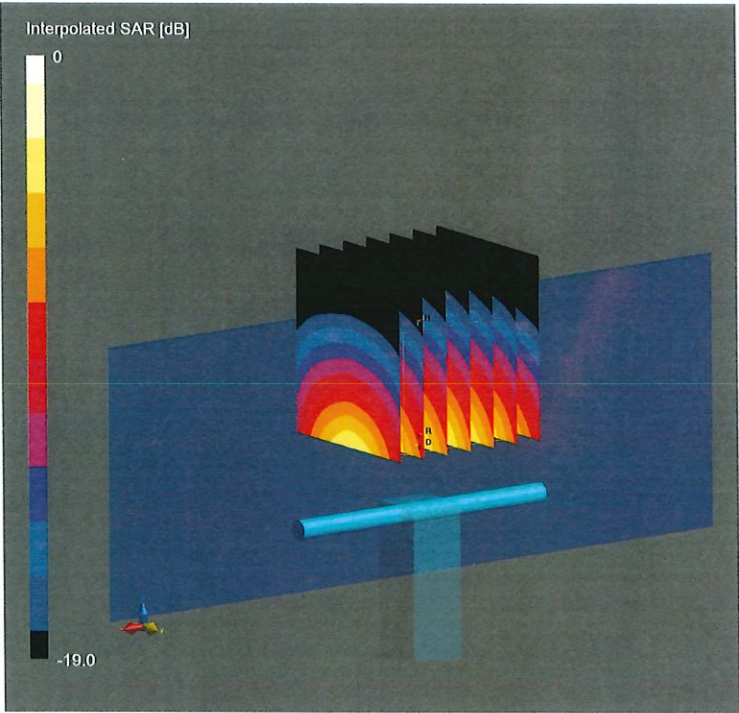
| Phantom         | TSL, Measured Date | Probe, Calibration Date     | DAE, Calibration Date     |
|-----------------|--------------------|-----------------------------|---------------------------|
| MFP V8.0 Center | HSL, 2024-08-16    | EX3DV4 - SN7349, 2024-06-03 | DAE4ip Sn1836, 2024-01-10 |

Scans Setup

|                     | Zoom Scan       |
|---------------------|-----------------|
| Grid Extents [mm]   | 30 x 30 x 30    |
| Grid Steps [mm]     | 5.0 x 5.0 x 1.5 |
| Sensor Surface [mm] | 1.4             |
| Graded Grid         | Yes             |
| Grading Ratio       | 1.5             |
| MAIA                | N/A             |
| Surface Detection   | VMS + 6p        |
| Scan Method         | Measured        |

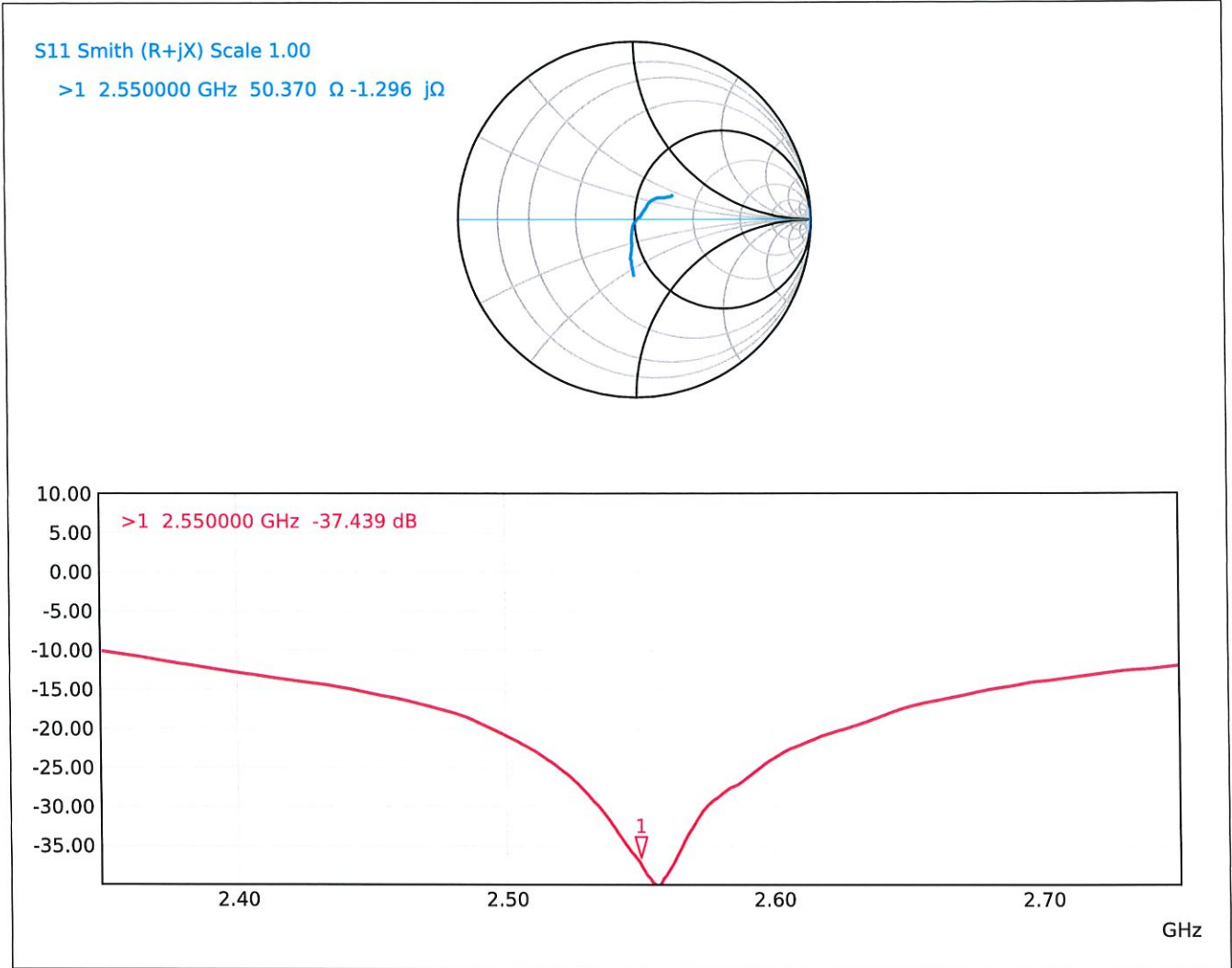
Measurement Results

|                     | Zoom Scan           |
|---------------------|---------------------|
| Date                | 2024-08-16          |
| psSAR1g [W/Kg]      | 13.6                |
| psSAR10g [W/Kg]     | 6.21                |
| Power Drift [dB]    | 0.01                |
| Power Scaling       | Disabled            |
| Scaling Factor [dB] |                     |
| TSL Correction      | Positive / Negative |



0 dB = 29.0 W/Kg

Impedance Measurement Plot for Head TSL



Client

**TOWE(Shenzhen)**

Certificate No:

**26J02Z000097**

## CALIBRATION CERTIFICATE

Object

D2600V2 - SN: 1094

Calibration Procedure(s)

FF-Z11-0003-02

Calibration Procedures for dipole validation kits

Calibration date:

February 4, 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: February 13, 2026

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Tel: +86-10-62304633-2711  
E-mail: emf@caict.ac.cn <http://www.caict.ac.cn>

### 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                    | 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 | 39.4 $\pm$ 6 % | 1.95 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   | 55.9 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 | 6.23 W/kg                  |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 25.0 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 | 48.9Ω- 5.16jΩ |
| Return Loss                          | - 25.5dB      |

### General Antenna Parameters and Design

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.058 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: 2026-02-04

Test Laboratory: CTTL, Beijing, China

### Summary

| Dipole            | Frequency [MHz] | TSL | Power [dBm] |
|-------------------|-----------------|-----|-------------|
| D2600V2 – SN 1094 | 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       | 1.95      | 39.4         |

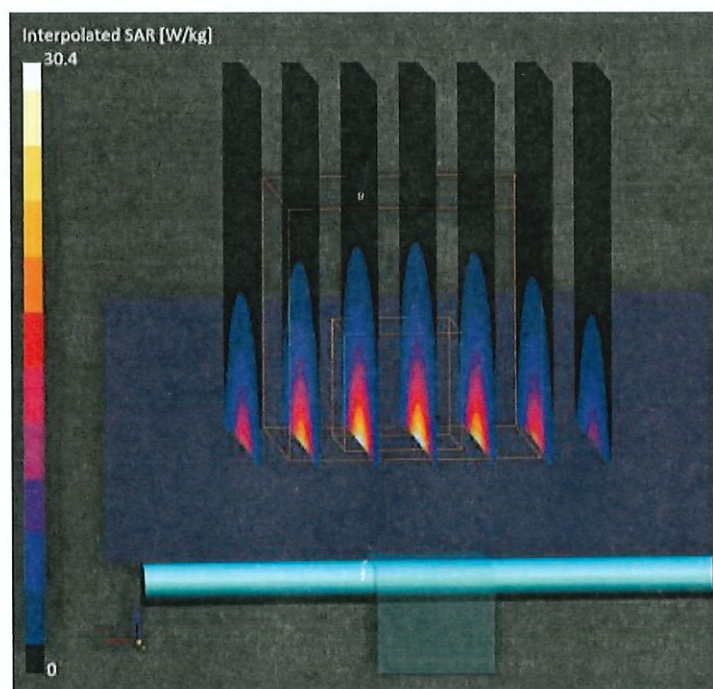
### Hardware Setup

| Phantom         | TSL       | Probe, Calibration Date     | DAE, Calibration Date   |
|-----------------|-----------|-----------------------------|-------------------------|
| MFP V8.0 Center | 2600 Head | EX3DV4 - SN7600, 2026-01-19 | DAE4 Sn1588, 2025-08-29 |

### Scan Setup

### Measurement Results

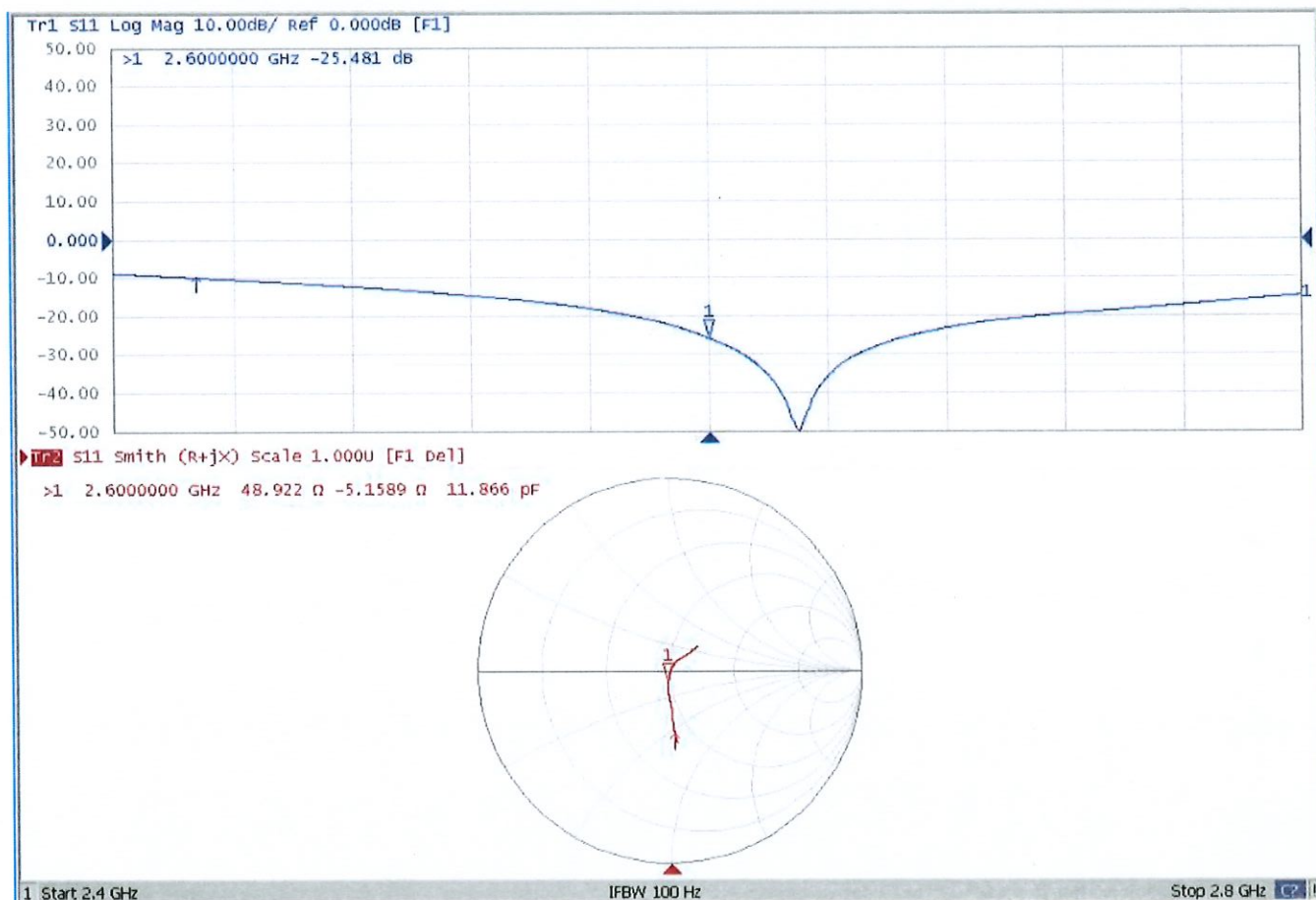
|                     | Zoom Scan      |                     | Zoom Scan     |
|---------------------|----------------|---------------------|---------------|
| Grid Extents [mm]   | 30.0×30.0×30.0 | psSAR1g [W/kg]      | 13.9          |
| Grid Steps [mm]     | 5.0×5.0×1.5    | psSAR10g [W/kg]     | 6.23          |
| 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 [%]           | 78.1          |
| Scan Method         | Measured       | Dist 3dB Peak [mm]  | 9.0           |





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### Impedance Measurement Plot for Head TSL





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Accreditation No.: SCS 0108

Client

WSCT  
Shenzhen

Certificate No.

D5GHzV2-1412\_Oct24

## CALIBRATION CERTIFICATE

Object D5GHzV2 - SN: 1412

Calibration procedure(s) QA CAL-22.v7  
Calibration Procedure for SAR Validation Sources between 3 - 10 GHz

Calibration date October 17, 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 Cal |
|--------------------------------------------|------------|---------------------------------------|---------------|
| Power Sensor R&S NRP-33T                   | SN: 100967 | 28-Mar-24 (No. 217-04038)             | Mar-25        |
| Power Sensor R&S NRP18A                    | SN: 101859 | 22-Jul-24 (No. 4030A315008547)        | Jul-25        |
| Spectrum Analyzer R&S FSV40                | SN: 101832 | 25-Jan-24 (No. 4030-315007551)        | Jan-25        |
| Mismatch; Short [S4188] Attenuator [S4423] | SN: 1152   | 28-Mar-24 (No. 217-04050)             | Mar-25        |
| OCP DAK-12                                 | SN: 1016   | 24-Sep-24 (No. OCP-DAK12-1016_Sep24)  | Sep-25        |
| OCP DAK-3.5                                | SN: 1249   | 23-Sep-24 (No. OCP-DAK3.5-1249_Sep24) | Sep-25        |
| Reference Probe EX3DV4                     | SN: 7349   | 03-Jun-24 (No. EX3-7349_Jun24)        | Jun-25        |
| DAE4ip                                     | SN: 1836   | 10-Jan-24 (No. DAE4ip-1836_Jan24)     | Jan-25        |

| Secondary Standards          | ID         | Check Date (in house)                      | Scheduled Check |
|------------------------------|------------|--------------------------------------------|-----------------|
| ACAD Source Box              | SN: 1000   | 28-May-24 (No. 675-ACAD_Source_Box-240528) | May-25          |
| Signal Generator R&S SMB100A | SN: 182081 | 28-May-24 (No. 675-CAL16-S4588-240528)     | May-25          |
| Mismatch; SMA                | SN: 1102   | 22-May-24 (No. 675-Mismatch_SMA-240522)    | May-25          |

|               | Name       | Function              | Signature |
|---------------|------------|-----------------------|-----------|
| Calibrated by | Paulo Pina | Laboratory Technician |           |
| Approved by   | Sven Kühn  | Technical Manager     |           |

Issued: October 17, 2024

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## Calibration Laboratory of

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

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## Glossary

|       |                                 |
|-------|---------------------------------|
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| ConvF | sensitivity in TSL / NORM x,y,z |
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## Calibration is Performed According to the Following Standards

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

## Additional Documentation

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## Methods Applied and Interpretation of Parameters

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- *Electrical Delay*: One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
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- *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%.

## Measurement Conditions

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

|                                     |                                                                                                            |                                     |
|-------------------------------------|------------------------------------------------------------------------------------------------------------|-------------------------------------|
| <b>DASY Version</b>                 | DASY8 Module SAR                                                                                           | 16.4.0                              |
| <b>Extrapolation</b>                | Advanced Extrapolation                                                                                     |                                     |
| <b>Phantom</b>                      | Modular Flat Phantom                                                                                       |                                     |
| <b>Distance Dipole Center - TSL</b> | 10 mm                                                                                                      | with spacer                         |
| <b>Zoom Scan Resolution</b>         | dx, dy = 4mm, dz = 1.4mm                                                                                   | Graded Ratio = 1.4 mm (Z direction) |
| <b>Frequency</b>                    | 5200MHz $\pm$ 1MHz<br>5300MHz $\pm$ 1MHz<br>5500MHz $\pm$ 1MHz<br>5600MHz $\pm$ 1MHz<br>5800MHz $\pm$ 1MHz |                                     |

## Head TSL parameters at 5200 MHz

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 $\pm$ 0.2)°C | 35.9 $\pm$ 6% | 4.51 mho/m $\pm$ 6% |
| <b>Head TSL temperature change during test</b> | < 0.5 °C           |               |                     |

## SAR result with Head TSL at 5200 MHz

| <b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Head TSL</b> | Condition          |                               |
|-------------------------------------------------------------|--------------------|-------------------------------|
| SAR for nominal Head TSL parameters                         | 20 dBm input power | 7.60 W/kg                     |
| SAR for nominal Head TSL parameters                         | normalized to 1W   | 76.0 W/kg $\pm$ 19.9% (k = 2) |

| <b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Head TSL</b> | Condition          |                               |
|---------------------------------------------------------------|--------------------|-------------------------------|
| SAR for nominal Head TSL parameters                           | 20 dBm input power | 2.20 W/kg                     |
| SAR for nominal Head TSL parameters                           | normalized to 1W   | 22.0 W/kg $\pm$ 19.5% (k = 2) |

### Head TSL parameters at 5300 MHz

The following parameters and calculations were applied.

|                                         | Temperature   | Permittivity | Conductivity   |
|-----------------------------------------|---------------|--------------|----------------|
| Nominal Head TSL parameters             | 22.0 °C       | 35.9         | 4.76 mho/m     |
| Measured Head TSL parameters            | (22.0 ±0.2)°C | 35.7 ±6%     | 4.60 mho/m ±6% |
| Head TSL temperature change during test | < 0.5 °C      |              |                |

### SAR result with Head TSL at 5300 MHz

| SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL | Condition          |                          |
|-------------------------------------------------------|--------------------|--------------------------|
| SAR for nominal Head TSL parameters                   | 20 dBm input power | 8.06 W/kg                |
| SAR for nominal Head TSL parameters                   | normalized to 1W   | 80.6 W/kg ±19.9% (k = 2) |

| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL | Condition          |                          |
|---------------------------------------------------------|--------------------|--------------------------|
| SAR for nominal Head TSL parameters                     | 20 dBm input power | 2.33 W/kg                |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 23.3 W/kg ±19.5% (k = 2) |

### Head TSL parameters at 5500 MHz

The following parameters and calculations were applied.

|                                         | Temperature   | Permittivity | Conductivity   |
|-----------------------------------------|---------------|--------------|----------------|
| Nominal Head TSL parameters             | 22.0 °C       | 35.6         | 4.96 mho/m     |
| Measured Head TSL parameters            | (22.0 ±0.2)°C | 35.3 ±6%     | 4.82 mho/m ±6% |
| Head TSL temperature change during test | < 0.5 °C      |              |                |

### SAR result with Head TSL at 5500 MHz

| SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL | Condition          |                          |
|-------------------------------------------------------|--------------------|--------------------------|
| SAR for nominal Head TSL parameters                   | 20 dBm input power | 8.56 W/kg                |
| SAR for nominal Head TSL parameters                   | normalized to 1W   | 85.6 W/kg ±19.9% (k = 2) |

| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL | Condition          |                          |
|---------------------------------------------------------|--------------------|--------------------------|
| SAR for nominal Head TSL parameters                     | 20 dBm input power | 2.45 W/kg                |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 24.5 W/kg ±19.5% (k = 2) |

### Head TSL parameters at 5600 MHz

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%     | 4.94 mho/m ±6% |
| Head TSL temperature change during test | < 0.5 °C      |              |                |

### SAR result with Head TSL at 5600 MHz

| SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL | Condition          |                          |
|-------------------------------------------------------|--------------------|--------------------------|
| SAR for nominal Head TSL parameters                   | 20 dBm input power | 8.33 W/kg                |
| SAR for nominal Head TSL parameters                   | normalized to 1W   | 83.3 W/kg ±19.9% (k = 2) |

| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL | Condition          |                          |
|---------------------------------------------------------|--------------------|--------------------------|
| SAR for nominal Head TSL parameters                     | 20 dBm input power | 2.41 W/kg                |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 24.1 W/kg ±19.5% (k = 2) |

### Head TSL parameters at 5800 MHz

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 | 34.9 ±6%     | 5.15 mho/m ±6% |
| Head TSL temperature change during test | < 0.5 °C      |              |                |

### SAR result with Head TSL at 5800 MHz

| SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL | Condition          |                          |
|-------------------------------------------------------|--------------------|--------------------------|
| SAR for nominal Head TSL parameters                   | 20 dBm input power | 7.90 W/kg                |
| SAR for nominal Head TSL parameters                   | normalized to 1W   | 79.0 W/kg ±19.9% (k = 2) |

| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL | Condition          |                          |
|---------------------------------------------------------|--------------------|--------------------------|
| SAR for nominal Head TSL parameters                     | 20 dBm input power | 2.27 W/kg                |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 22.7 W/kg ±19.5% (k = 2) |

**Appendix (Additional assessments outside the scope of SCS 0108)****Antenna Parameters with Head TSL at 5200 MHz**

|             |                                |
|-------------|--------------------------------|
| Impedance   | 53.3 $\Omega$ – 4.8 j $\Omega$ |
| Return Loss | -25.0 dB                       |

**Antenna Parameters with Head TSL at 5300 MHz**

|             |                                |
|-------------|--------------------------------|
| Impedance   | 48.4 $\Omega$ + 2.0 j $\Omega$ |
| Return Loss | -31.6 dB                       |

**Antenna Parameters with Head TSL at 5500 MHz**

|             |                                |
|-------------|--------------------------------|
| Impedance   | 47.6 $\Omega$ – 2.2 j $\Omega$ |
| Return Loss | -29.5 dB                       |

**Antenna Parameters with Head TSL at 5600 MHz**

|             |                                |
|-------------|--------------------------------|
| Impedance   | 55.9 $\Omega$ + 0.5 j $\Omega$ |
| Return Loss | -25.1 dB                       |

**Antenna Parameters with Head TSL at 5800 MHz**

|             |                                |
|-------------|--------------------------------|
| Impedance   | 50.5 $\Omega$ + 4.2 j $\Omega$ |
| Return Loss | -27.5 dB                       |

**General Antenna Parameters and Design**

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.207 ns |
|----------------------------------|----------|

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint 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 feedpoint may be damaged.

**Additional EUT Data**

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

System Performance Check Report

Summary

| Dipole           | Frequency [MHz] | TSL | Power [dBm] |
|------------------|-----------------|-----|-------------|
| D5GHzV2 - SN1412 | 5200            | HSL | 20          |

Exposure Conditions

| Phantom Section, TSL | Test Distance [mm] | Band | Group, UID | Frequency [MHz], Channel Number | Conversion Factor | TSL Conductivity [S/m] | TSL Permittivity |
|----------------------|--------------------|------|------------|---------------------------------|-------------------|------------------------|------------------|
| Flat                 | 10                 |      | CW, 0--    | 5200, 0                         | 5.68              | 4.51                   | 35.9             |

Hardware Setup

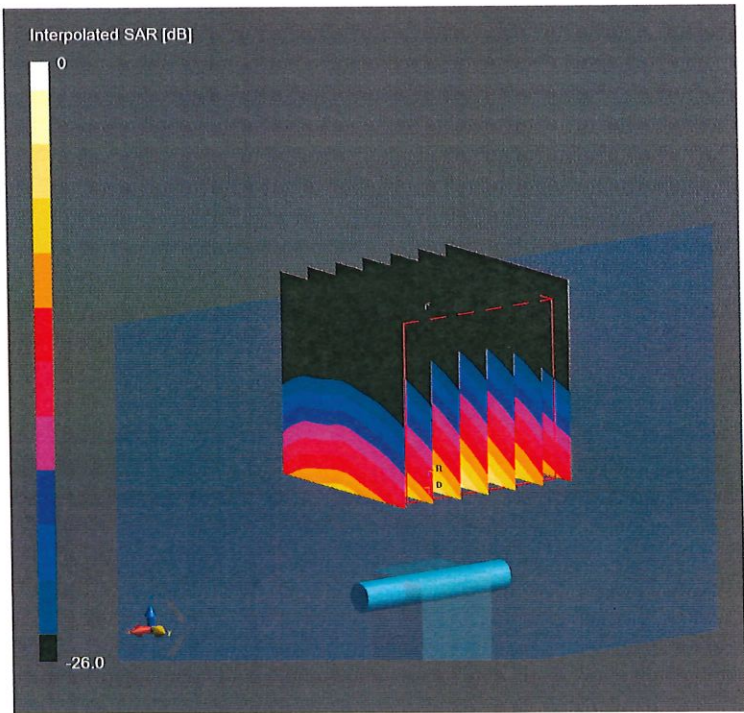
| Phantom         | TSL, Measured Date | Probe, Calibration Date     | DAE, Calibration Date     |
|-----------------|--------------------|-----------------------------|---------------------------|
| MFP V8.0 Center | HSL, 2024-10-17    | EX3DV4 - SN7349, 2024-06-03 | DAE4ip Sn1836, 2024-01-10 |

Scans Setup

|                     | Zoom Scan       |
|---------------------|-----------------|
| Grid Extents [mm]   | 22 x 22 x 22    |
| Grid Steps [mm]     | 4.0 x 4.0 x 1.4 |
| Sensor Surface [mm] | 1.4             |
| Graded Grid         | Yes             |
| Grading Ratio       | 1.4             |
| MAIA                | N/A             |
| Surface Detection   | VMS + 6p        |
| Scan Method         | Measured        |

Measurement Results

|                     | Zoom Scan           |
|---------------------|---------------------|
| Date                | 2024-10-17          |
| psSAR1g [W/Kg]      | 7.60                |
| psSAR10g [W/Kg]     | 2.20                |
| Power Drift [dB]    | 0.00                |
| Power Scaling       | Disabled            |
| Scaling Factor [dB] |                     |
| TSL Correction      | Positive / Negative |



0 dB = 30.4 W/Kg

System Performance Check Report

Summary

| Dipole           | Frequency [MHz] | TSL | Power [dBm] |
|------------------|-----------------|-----|-------------|
| D5GHzV2 - SN1412 | 5300            | HSL | 20          |

Exposure Conditions

| Phantom Section, TSL | Test Distance [mm] | Band | Group, UID | Frequency [MHz], Channel Number | Conversion Factor | TSL Conductivity [S/m] | TSL Permittivity |
|----------------------|--------------------|------|------------|---------------------------------|-------------------|------------------------|------------------|
| Flat                 | 10                 |      | CW, 0--    | 5300, 0                         | 5.45              | 4.60                   | 35.7             |

Hardware Setup

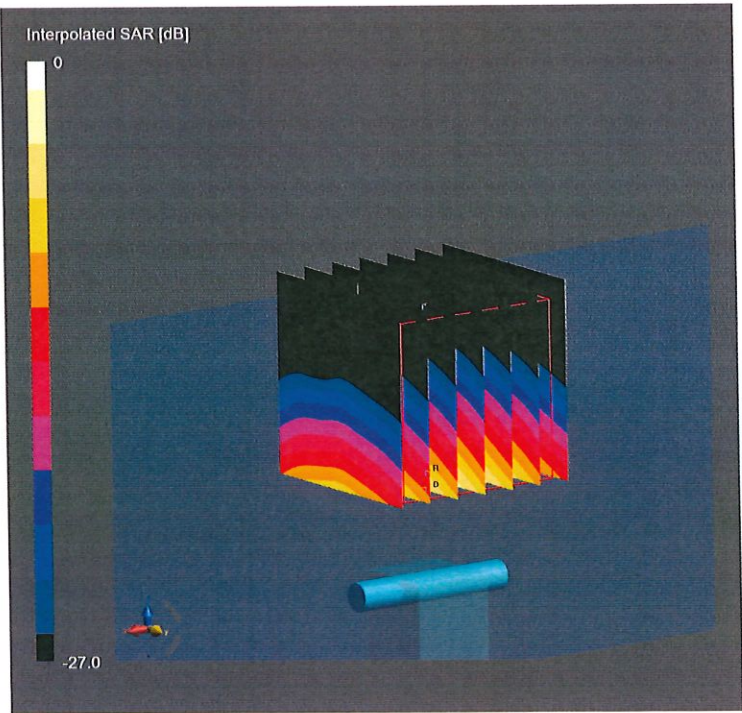
| Phantom         | TSL, Measured Date | Probe, Calibration Date     | DAE, Calibration Date     |
|-----------------|--------------------|-----------------------------|---------------------------|
| MFP V8.0 Center | HSL, 2024-10-17    | EX3DV4 - SN7349, 2024-06-03 | DAE4lp Sn1836, 2024-01-10 |

Scans Setup

|                     | Zoom Scan       |
|---------------------|-----------------|
| Grid Extents [mm]   | 22 x 22 x 22    |
| Grid Steps [mm]     | 4.0 x 4.0 x 1.4 |
| Sensor Surface [mm] | 1.4             |
| Graded Grid         | Yes             |
| Grading Ratio       | 1.4             |
| MAIA                | N/A             |
| Surface Detection   | VMS + 6p        |
| Scan Method         | Measured        |

Measurement Results

|                     | Zoom Scan           |
|---------------------|---------------------|
| Date                | 2024-10-17          |
| psSAR1g [W/Kg]      | 8.06                |
| psSAR10g [W/Kg]     | 2.33                |
| Power Drift [dB]    | 0.00                |
| Power Scaling       | Disabled            |
| Scaling Factor [dB] |                     |
| TSL Correction      | Positive / Negative |



0 dB = 33.1 W/Kg

System Performance Check Report

Summary

| Dipole           | Frequency [MHz] | TSL | Power [dBm] |
|------------------|-----------------|-----|-------------|
| D5GHzV2 - SN1412 | 5500            | HSL | 20          |

Exposure Conditions

| Phantom Section, TSL | Test Distance [mm] | Band | Group, UID | Frequency [MHz], Channel Number | Conversion Factor | TSL Conductivity [S/m] | TSL Permittivity |
|----------------------|--------------------|------|------------|---------------------------------|-------------------|------------------------|------------------|
| Flat                 | 10                 |      | CW, 0--    | 5500, 0                         | 5.07              | 4.82                   | 35.3             |

Hardware Setup

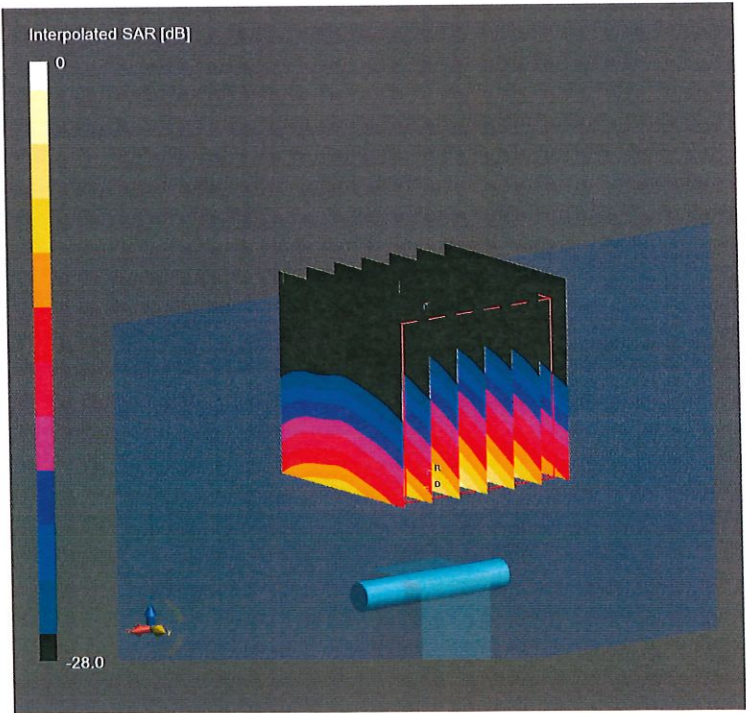
| Phantom         | TSL, Measured Date | Probe, Calibration Date     | DAE, Calibration Date     |
|-----------------|--------------------|-----------------------------|---------------------------|
| MFP V8.0 Center | HSL, 2024-10-17    | EX3DV4 - SN7349, 2024-06-03 | DAE4ip Sn1836, 2024-01-10 |

Scans Setup

|                     | Zoom Scan       |
|---------------------|-----------------|
| Grid Extents [mm]   | 22 x 22 x 22    |
| Grid Steps [mm]     | 4.0 x 4.0 x 1.4 |
| Sensor Surface [mm] | 1.4             |
| Graded Grid         | Yes             |
| Grading Ratio       | 1.4             |
| MAIA                | N/A             |
| Surface Detection   | VMS + 6p        |
| Scan Method         | Measured        |

Measurement Results

|                     | Zoom Scan           |
|---------------------|---------------------|
| Date                | 2024-10-17          |
| psSAR1g [W/Kg]      | 8.56                |
| psSAR10g [W/Kg]     | 2.45                |
| Power Drift [dB]    | 0.00                |
| Power Scaling       | Disabled            |
| Scaling Factor [dB] |                     |
| TSL Correction      | Positive / Negative |



0 dB = 36.7 W/Kg