



Accredited by the Swiss Accreditation Service (SAS)
 The Swiss Accreditation Service is one of the signatories to the EA
 Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client

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

Calibration Laboratory of

Schmid & Partner
Engineering AG

Zeughausstrasse 43, 8004 Zurich, Switzerland



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

Accredited by the Swiss Accreditation Service (SAS)

The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Glossary

TSL	tissue simulating liquid
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.

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

Head TSL parameters at 2550 MHz

The following parameters and calculations were applied.

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

SAR result with Head TSL at 2550 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	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)

SAR averaged over 10 cm³ (10 g) of Head TSL	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 Ω – 1.3 j Ω
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

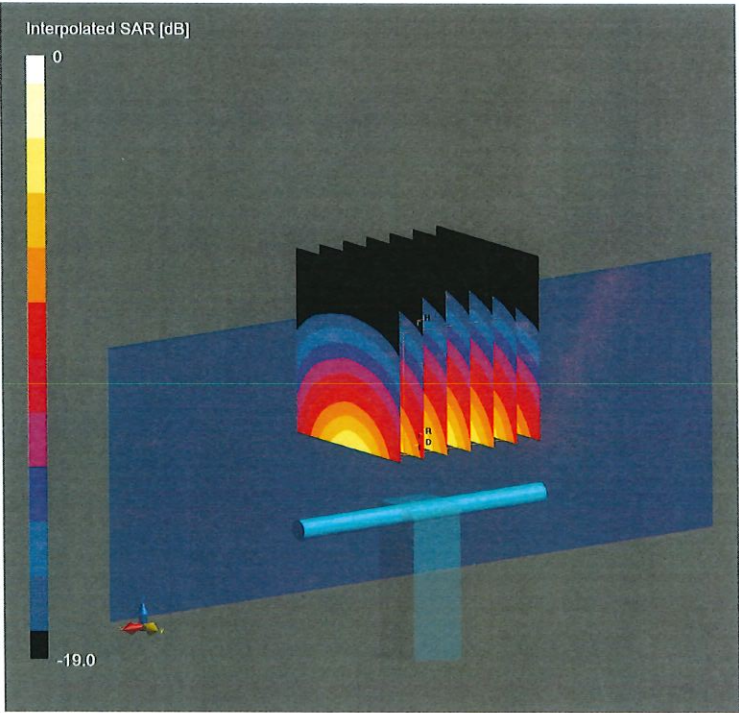
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
MFP V8.0 Center	HSL, 2024-08-16	EX3DV4 - SN7349, 2024-06-03	DAE4ip Sn1836, 2024-01-10

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

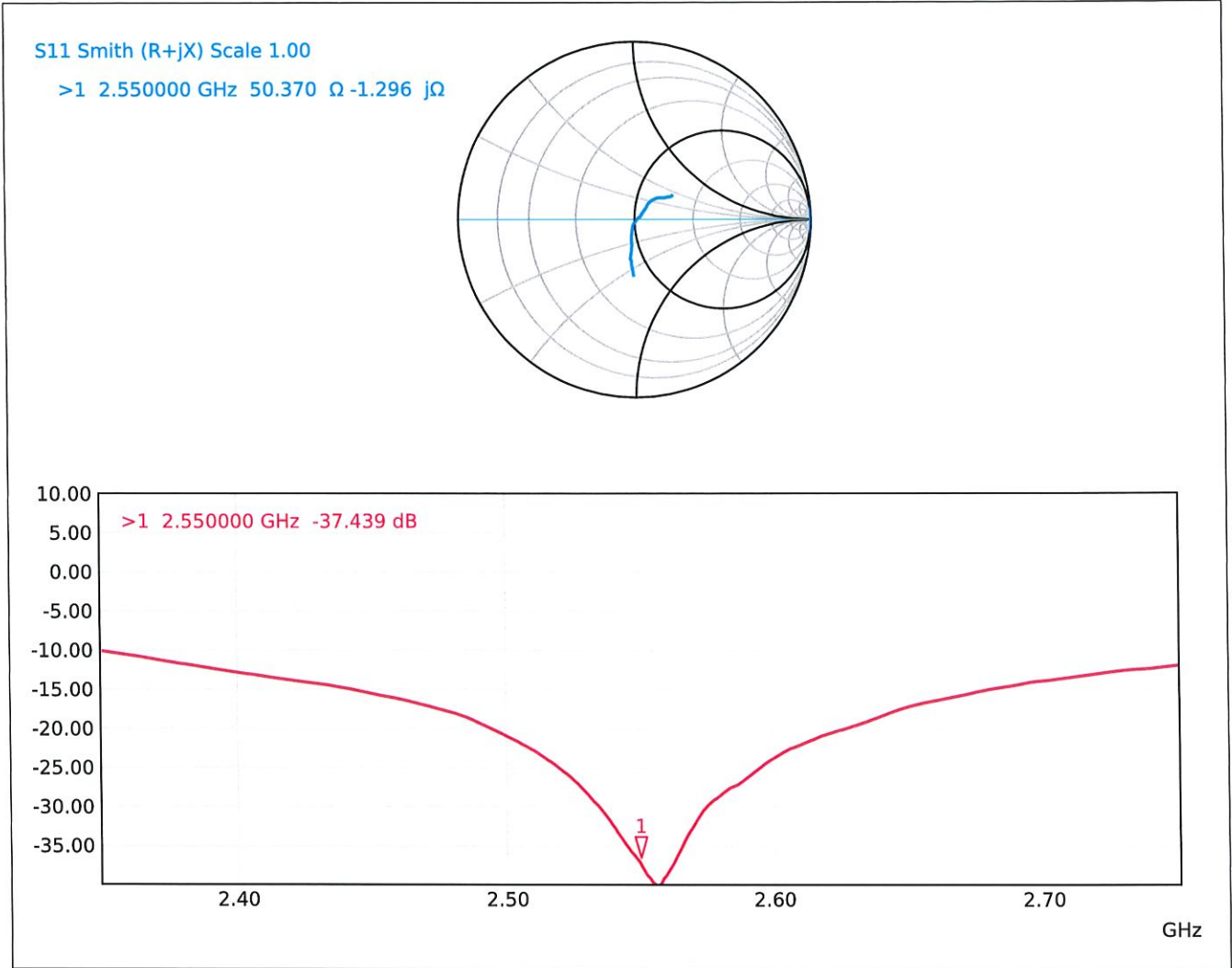
Measurement Results

	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

WSCT

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

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



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China
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 _{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-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%.



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2711
E-mail: emf@caict.ac.cn <http://www.caict.ac.cn>

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 ³ (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 ³ (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)



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2711
E-mail: emf@caict.ac.cn <http://www.caict.ac.cn>

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
-----------------	-------

Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2711
E-mail: emf@caict.ac.cn <http://www.caict.ac.cn>

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

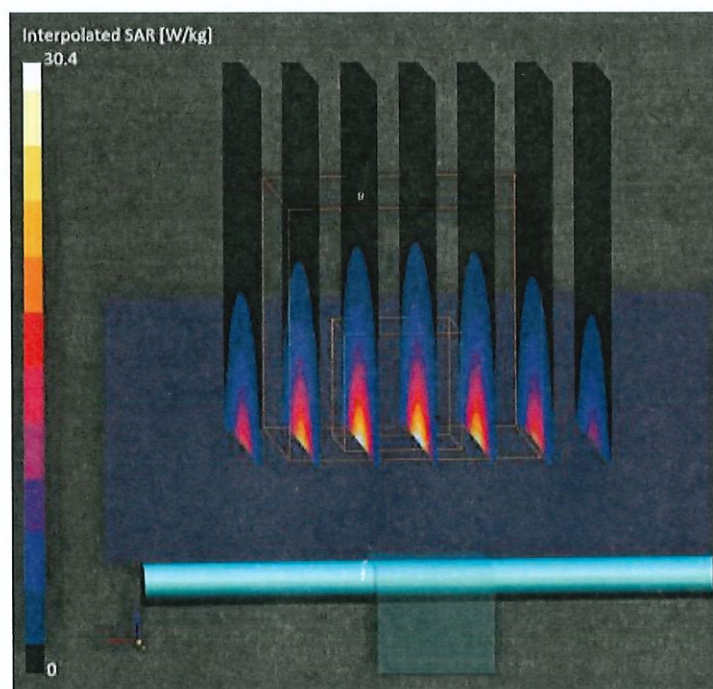
Hardware Setup

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

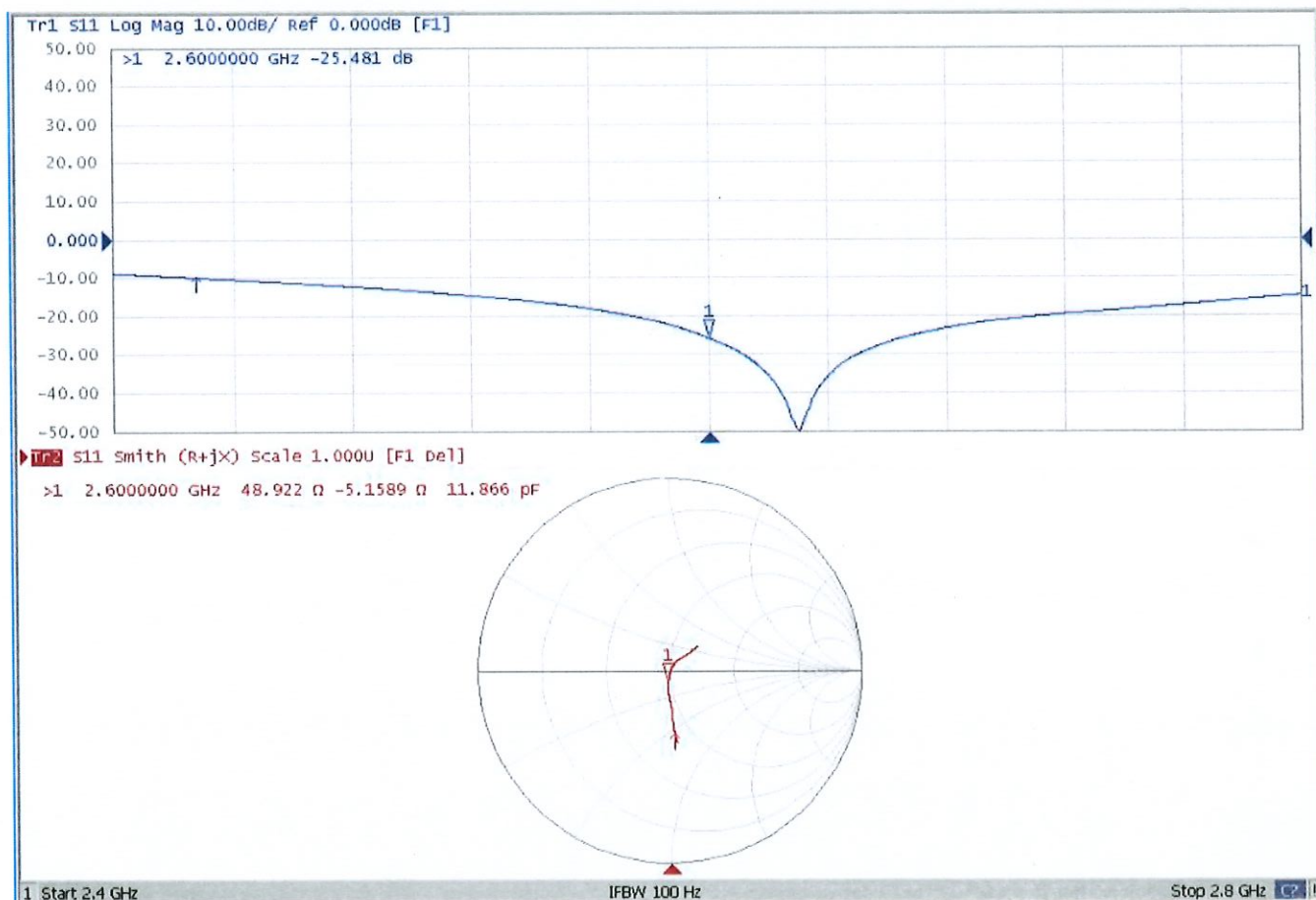
	Zoom Scan		Zoom Scan
Grid Extents [mm]	30.0×30.0×30.0	psSAR1g [W/kg]	13.9
Grid Steps [mm]	5.0×5.0×1.5	psSAR10g [W/kg]	6.23
Sensor Surface [mm]	1.4	Power Drift [dB]	-0.01
Graded Grid	Yes	Power Scaling	Disabled
Grading Ratio	1.5	Scaling Factor [dB]	
MAIA	N/A	TSL Correction	No correction
Surface Detection	VMS + 6p	M2/M1 [%]	78.1
Scan Method	Measured	Dist 3dB Peak [mm]	9.0





Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2711
E-mail: emf@caict.ac.cn <http://www.caict.ac.cn>

Impedance Measurement Plot for Head TSL





Accredited by the Swiss Accreditation Service (SAS)
**The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates**

Accreditation No.: **SCS 0108**

Client

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

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

Calibration Laboratory of

Schmid & Partner
Engineering AG

Zeughausstrasse 43, 8004 Zurich, Switzerland



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

Accredited by the Swiss Accreditation Service (SAS)

**The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates**

Accreditation No.: SCS 0108

Glossary

TSL	tissue simulating liquid
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.

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

Head TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	36.0	4.66 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2)°C	35.9 $\pm$ 6%	4.51 mho/m $\pm$ 6%
Head TSL temperature change during test	< 0.5 °C		

SAR result with Head TSL at 5200 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	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)

SAR averaged over 10 cm³ (10 g) of Head TSL	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 ³ (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 ³ (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 ³ (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 ³ (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 ³ (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 ³ (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 ³ (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 ³ (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 Ω – 4.8 j Ω
Return Loss	-25.0 dB

Antenna Parameters with Head TSL at 5300 MHz

Impedance	48.4 Ω + 2.0 j Ω
Return Loss	-31.6 dB

Antenna Parameters with Head TSL at 5500 MHz

Impedance	47.6 Ω – 2.2 j Ω
Return Loss	-29.5 dB

Antenna Parameters with Head TSL at 5600 MHz

Impedance	55.9 Ω + 0.5 j Ω
Return Loss	-25.1 dB

Antenna Parameters with Head TSL at 5800 MHz

Impedance	50.5 Ω + 4.2 j Ω
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

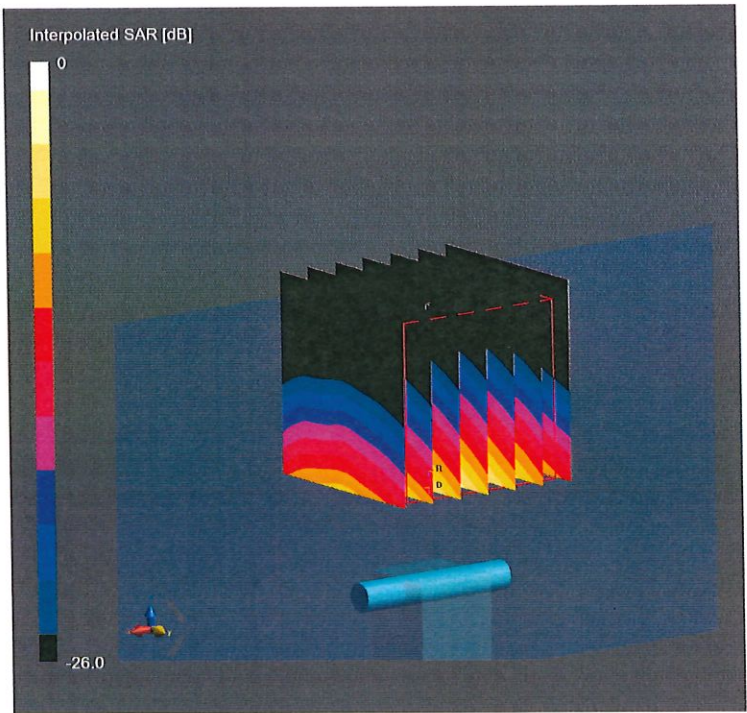
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
MFP V8.0 Center	HSL, 2024-10-17	EX3DV4 - SN7349, 2024-06-03	DAE4ip Sn1836, 2024-01-10

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

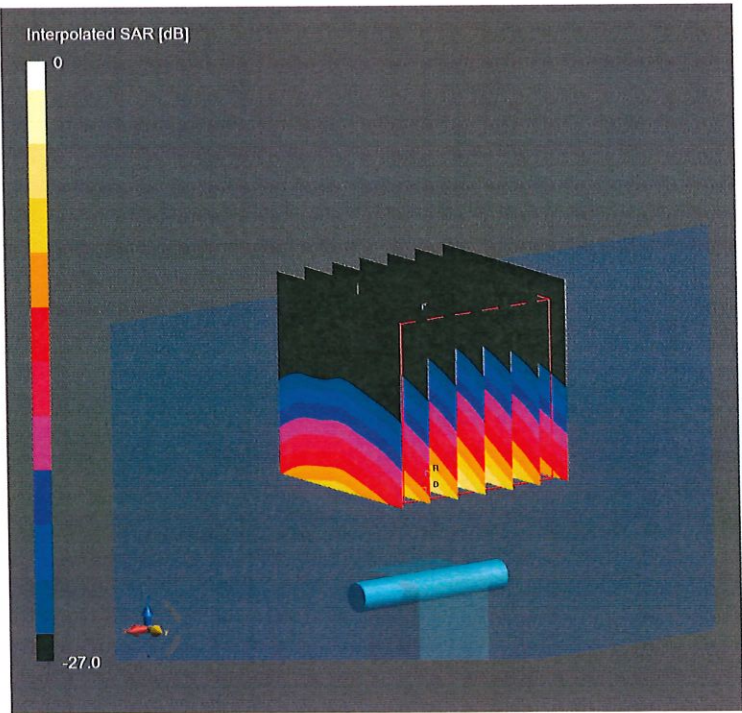
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
MFP V8.0 Center	HSL, 2024-10-17	EX3DV4 - SN7349, 2024-06-03	DAE4lp Sn1836, 2024-01-10

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

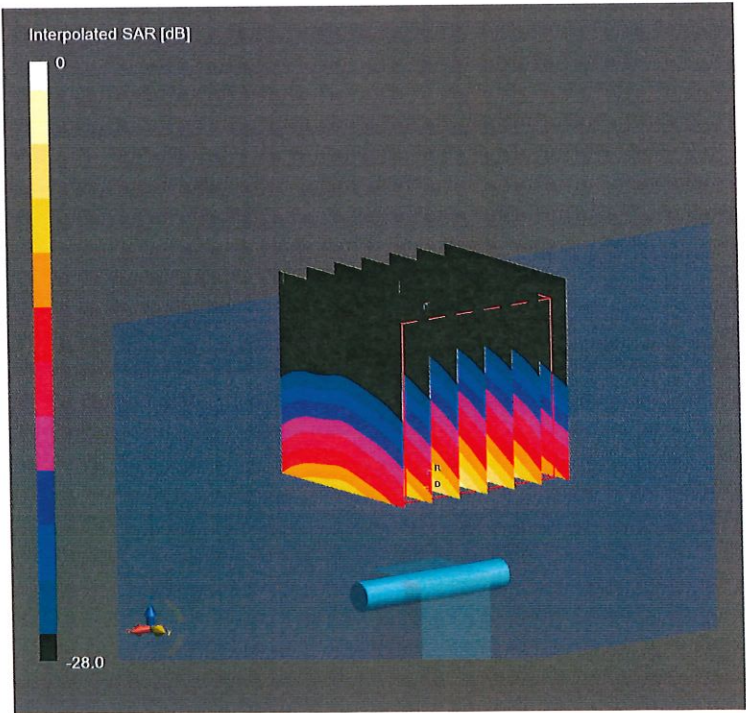
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
MFP V8.0 Center	HSL, 2024-10-17	EX3DV4 - SN7349, 2024-06-03	DAE4ip Sn1836, 2024-01-10

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

System Performance Check Report

Summary

Dipole	Frequency [MHz]	TSL	Power [dBm]
D5GHzV2 - SN1412	5600	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--	5600, 0	5.03	4.94	35.1

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]	8.33
psSAR10g [W/Kg]	2.41
Power Drift [dB]	0.00
Power Scaling	Disabled
Scaling Factor [dB]	
TSL Correction	Positive / Negative

