



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191  
 Tel: +86-10-62304633-2117  
 E-mail: emf@caict.ac.cn http://www.caict.ac.cn



Client ATC

Certificate No: Z23-60086

## CALIBRATION CERTIFICATE

Object D2600V2 - SN: 1073

Calibration Procedure(s) FF-Z11-003-01  
 Calibration Procedures for dipole validation kits

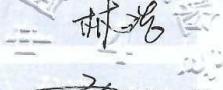
Calibration date: February 17, 2023

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	10-May-22 (CTTL, No.J22X03103)	May-23
Power sensor NRP6A	101369	10-May-22 (CTTL, No.J22X03103)	May-23
Reference Probe EX3DV4	SN 7464	19-Jan-23 (CTTL-SPEAG, No.Z22-60565)	Jan-24
DAE4	SN 1556	11-Jan-23 (CTTL-SPEAG, No.Z23-60034)	Jan-24
Secondary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49070393	17-May-23 (CTTL, No.J22X03157)	May-24
NetworkAnalyzer E5071C	MY46110673	10-Jan-23 (CTTL, No. J23X00104)	Jan-24

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

Issued: February 24, 2023

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



In Collaboration with  
**s p e a g**  
CALIBRATION LABORATORY



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2117  
E-mail: emf@caict.ac.cn <http://www.caict.ac.cn>

**Glossary:**

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORMx,y,z
N/A	not applicable or not measured

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

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

**Additional Documentation:**

- c) DASY4/5 System Handbook

**Methods Applied and Interpretation of Parameters:**

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

The reported uncertainty of measurement is stated as the standard uncertainty of Measurement multiplied by the coverage factor  $k=2$ , which for a normal distribution Corresponds to a coverage probability of approximately 95%.



In Collaboration with  
**s p e a g**  
 CALIBRATION LABORATORY



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
 Tel: +86-10-62304633-2117  
 E-mail: emf@caict.ac.cn <http://www.caict.ac.cn>

### Measurement Conditions

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

<b>DASY Version</b>	DASY52	52.10.4
<b>Extrapolation</b>	Advanced Extrapolation	
<b>Phantom</b>	Triple Flat Phantom 5.1C	
<b>Distance Dipole Center - TSL</b>	10 mm	with Spacer
<b>Zoom Scan Resolution</b>	dx, dy, dz = 5 mm	
<b>Frequency</b>	2600 MHz $\pm$ 1 MHz	

### Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
<b>Nominal Head TSL parameters</b>	22.0 °C	39.0	1.96 mho/m
<b>Measured Head TSL parameters</b>	(22.0 $\pm$ 0.2) °C	39.8 $\pm$ 6 %	1.98 mho/m $\pm$ 6 %
<b>Head TSL temperature change during test</b>	<1.0 °C	----	----

### SAR result with Head TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	14.2 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	56.8 W/kg $\pm$ 18.8 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	6.36 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	25.5 W/kg $\pm$ 18.7 % (k=2)



In Collaboration with  
**s p e a g**  
CALIBRATION LABORATORY



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2117  
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

Impedance, transformed to feed point	48.6Ω- 6.32jΩ
Return Loss	- 23.7dB

#### 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
-----------------	-------



In Collaboration with  
**s p e a g**  
CALIBRATION LABORATORY



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2117  
E-mail: emf@caict.ac.cn <http://www.caict.ac.cn>

### DASY5 Validation Report for Head TSL

Date: 2023-02-17

Test Laboratory: CTTL, Beijing, China

**DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1073**

Communication System: UID 0, CW; Frequency: 2600 MHz

Medium parameters used:  $f = 2600$  MHz;  $\sigma = 1.98$  S/m;  $\epsilon_r = 39.75$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN7464; ConvF(7.5, 7.5, 7.5) @ 2600 MHz; Calibrated: 2023-01-19
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 2023-01-11
- Phantom: MFP\_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial: 1062
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

**Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm**

Reference Value = 98.06 V/m; Power Drift = -0.04 dB

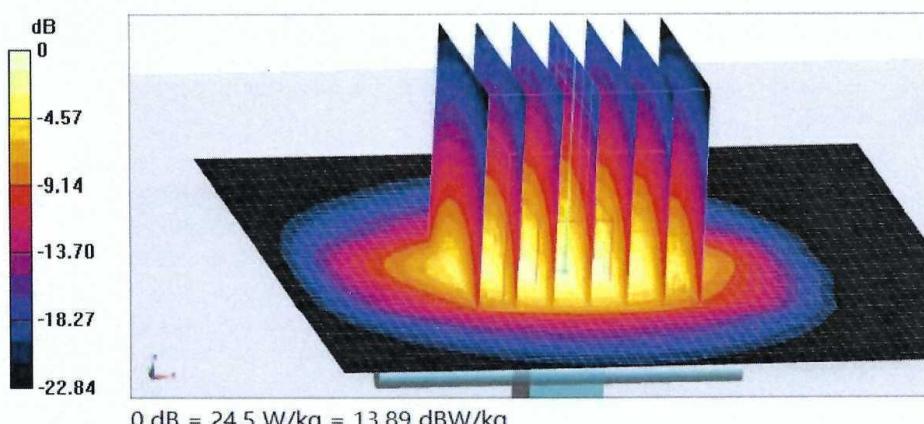
Peak SAR (extrapolated) = 30.6 W/kg

**SAR(1 g) = 14.2 W/kg; SAR(10 g) = 6.36 W/kg**

Smallest distance from peaks to all points 3 dB below = 8.9 mm

Ratio of SAR at M2 to SAR at M1 = 47.1%

Maximum value of SAR (measured) = 24.5 W/kg



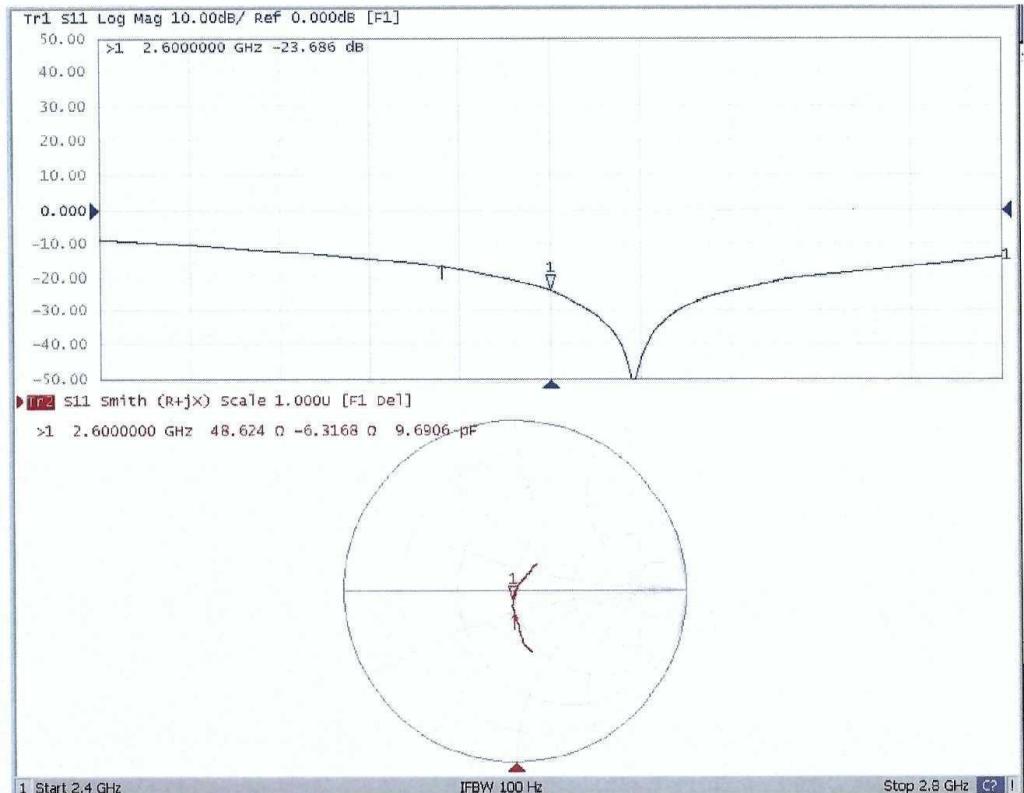


In Collaboration with  
**s p e a g**  
CALIBRATION LABORATORY



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2117  
E-mail: emf@caict.ac.cn <http://www.caict.ac.cn>

### Impedance Measurement Plot for Head TSL



## D2600V2 - SN:1073 Extended Dipole Calibrations

Per FCC KDB 865664 D01, calibration intervals of up to 3 years may be considered for reference dipoles when it is demonstrated that the SAR target, impedance and return loss of a dipole have remained stable according to the following requirements.

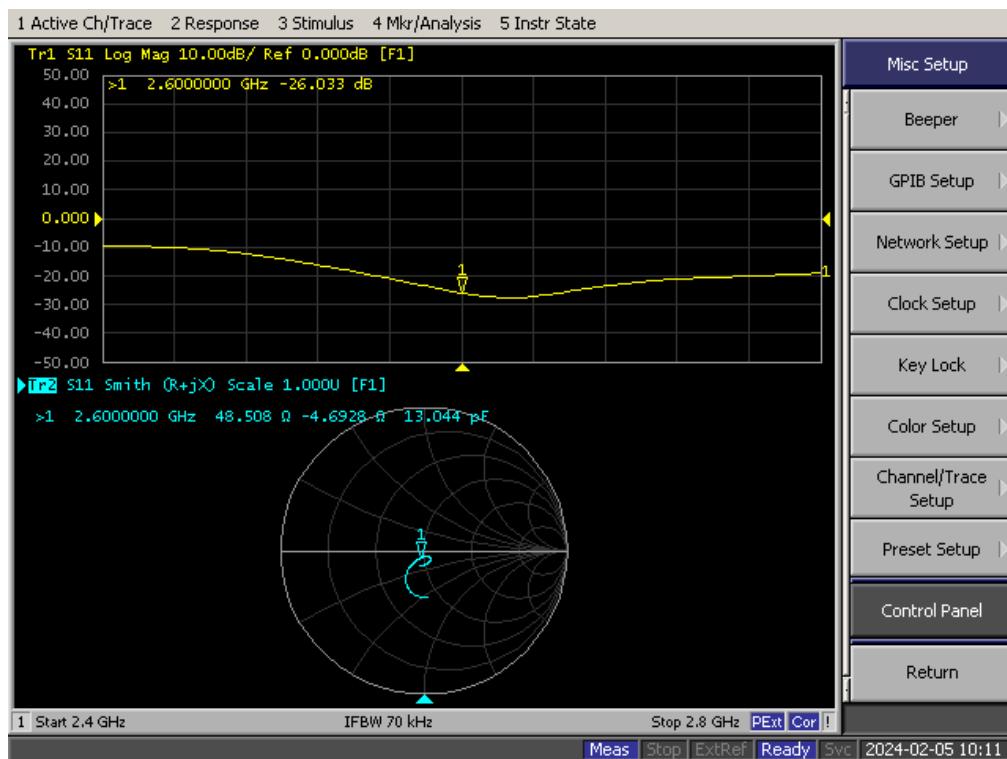
1. The measured SAR does not deviate more than 10% from the target on the calibration certificate.
2. The return-loss does not deviate more than 20% from the previous measurement and meets the required 20 dB minimum return-loss requirement.
3. The measurement of real or imaginary parts of impedance does not deviate more than  $5\Omega$  from the previous measurement.

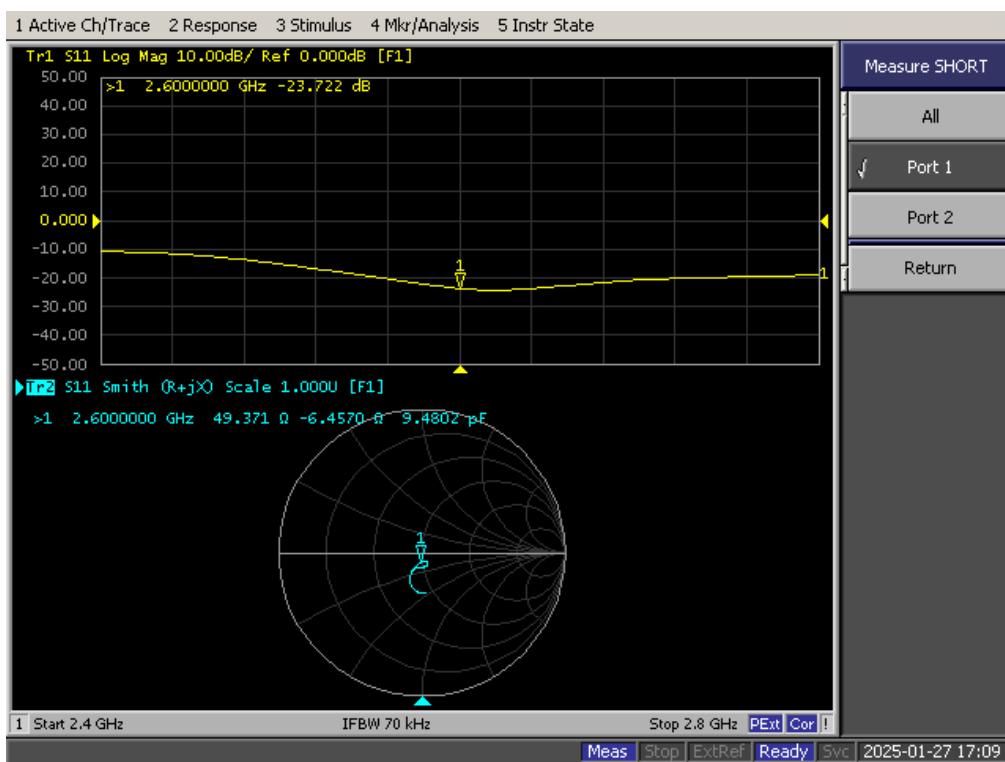
The following dipole was checked to pass the above 3 requirements to have 3-year calibration period from calibration date.

### Calibrated Equipment:

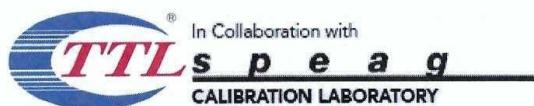
Verification Date	Equipment	Model	S/N	Calibration Date	Calibration Due Date
2024/02/05	Simulated Tissue Liquid Head	HBBL600-10000V6	220406-1	Each Time	
	SAM Twin Phantom	SAM-Twin V5.0	1744	NCR	NCR
	Network Analyzer	E5071B	MY42403851	2024/01/12	2025/01/11
	Network Analyzer Calibration Kit	$50\Omega$	50164	NCR	NCR
2025/01/27	Simulated Tissue Liquid Head	HBBL600-10000V6	2200808-2	Each Time	
	SAM Twin Phantom	SAM-Twin V5.0	1744	NCR	NCR
	Network Analyzer	E5071B	MY42403851	2024/10/08	2025/10/07
	Network Analyzer Calibration Kit	$50\Omega$	50164	NCR	NCR

D2600V2 - SN:1073						
2600MHz Head						
Date of Measurement	Return Loss (dB)	Delta (%)	Real Impedance( $\Omega$ )	Delta ( $\Omega$ )	Imaginary Impedance( $\Omega$ )	Delta ( $\Omega$ )
2023/02/17	-23.7	/	48.6	/	-6.32	/
2024/02/05	-26.0	9.7	48.5	0.10	-4.69	1.63
2025/01/27	-23.7	0	49.4	0.80	-6.46	0.14





	Name	Signature
Calibrated By:	Lance Li	



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191  
 Tel: +86-10-62304633-2117  
 E-mail: emf@caict.ac.cn http://www.caic.ac.cn



Client ATC

Certificate No: Z23-60087

## CALIBRATION CERTIFICATE

Object D5GHzV2 - SN: 1301

Calibration Procedure(s) FF-Z11-003-01  
 Calibration Procedures for dipole validation kits

Calibration date: February 16, 2023

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	10-May-22 (CTTL, No.J22X03103)	May-23
Power sensor NRP6A	101369	10-May-22 (CTTL, No.J22X03103)	May-23
Reference Probe EX3DV4	SN 7464	19-Jan-23 (CTTL-SPEAG, No.Z22-60565)	Jan-24
DAE4	SN 1556	11-Jan-23 (CTTL-SPEAG, No.Z23-60034)	Jan-24
Secondary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49070393	17-May-23 (CTTL, No.J22X03157)	May-24
Network Analyzer E5071C	MY46110673	10-Jan-23 (CTTL, No. J23X00104)	Jan-24

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

Issued: February 24, 2023

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



In Collaboration with  
**s p e a g**  
CALIBRATION LABORATORY



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2117  
E-mail: emf@caict.ac.cn <http://www.caic.ac.cn>

**Glossary:**

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORMx,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:**

- DASY4/5 System Handbook

**Methods Applied and Interpretation of Parameters:**

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

The reported uncertainty of measurement is stated as the standard uncertainty of Measurement multiplied by the coverage factor  $k=2$ , which for a normal distribution Corresponds to a coverage probability of approximately 95%.



In Collaboration with  
**speag**  
 CALIBRATION LABORATORY



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
 Tel: +86-10-62304633-2117  
 E-mail: emf@caict.ac.cn <http://www.caic.ac.cn>

### Measurement Conditions

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

<b>DASY Version</b>	DASY52	52.10.4
<b>Extrapolation</b>	Advanced Extrapolation	
<b>Phantom</b>	Triple Flat Phantom 5.1C	
<b>Distance Dipole Center - TSL</b>	10 mm	with Spacer
<b>Zoom Scan Resolution</b>	dx, dy = 4 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
<b>Frequency</b>	5250 MHz ± 1 MHz 5600 MHz ± 1 MHz 5750 MHz ± 1 MHz	

### Head TSL parameters at 5250MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
<b>Nominal Head TSL parameters</b>	22.0 °C	35.9	4.71 mho/m
<b>Measured Head TSL parameters</b>	(22.0 ± 0.2) °C	36.2 ± 6 %	4.58 mho/m ± 6 %
<b>Head TSL temperature change during test</b>	<1.0 °C	----	----

### SAR result with Head TSL at 5250MHz

<b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Head TSL</b>	Condition	
SAR measured	100 mW input power	7.76 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	77.7 W/kg ± 24.4 % (k=2)
<b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Head TSL</b>	Condition	
SAR measured	100 mW input power	2.20 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	22.0 W/kg ± 24.2 % (k=2)



In Collaboration with  
**s p e a g**  
 CALIBRATION LABORATORY



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
 Tel: +86-10-62304633-2117  
 E-mail: emf@caict.ac.cn <http://www.caic.ac.cn>

### Head TSL parameters at 5600MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
<b>Nominal Head TSL parameters</b>	22.0 °C	35.5	5.07 mho/m
<b>Measured Head TSL parameters</b>	(22.0 ± 0.2) °C	35.6 ± 6 %	4.95 mho/m ± 6 %
<b>Head TSL temperature change during test</b>	<1.0 °C	---	---

### SAR result with Head TSL at 5600MHz

<b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Head TSL</b>	Condition	
SAR measured	100 mW input power	8.16 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	<b>81.6 W/kg ± 24.4 % (k=2)</b>
<b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Head TSL</b>	Condition	
SAR measured	100 mW input power	2.28 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	<b>22.8 W/kg ± 24.2 % (k=2)</b>

### Head TSL parameters at 5750MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
<b>Nominal Head TSL parameters</b>	22.0 °C	35.4	5.22 mho/m
<b>Measured Head TSL parameters</b>	(22.0 ± 0.2) °C	35.4 ± 6 %	5.11 mho/m ± 6 %
<b>Head TSL temperature change during test</b>	<1.0 °C	---	---

### SAR result with Head TSL at 5750MHz

<b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Head TSL</b>	Condition	
SAR measured	100 mW input power	7.81 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	<b>78.0 W/kg ± 24.4 % (k=2)</b>
<b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Head TSL</b>	Condition	
SAR measured	100 mW input power	2.19 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	<b>21.9 W/kg ± 24.2 % (k=2)</b>



In Collaboration with  
**s p e a g**  
 CALIBRATION LABORATORY



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
 Tel: +86-10-62304633-2117  
 E-mail: emf@caict.ac.cn <http://www.caic.ac.cn>

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

#### Antenna Parameters with Head TSL at 5250MHz

Impedance, transformed to feed point	48.1Ω- 1.23jΩ
Return Loss	- 32.6dB

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

Impedance, transformed to feed point	52.4Ω+ 2.45jΩ
Return Loss	- 29.5dB

#### Antenna Parameters with Head TSL at 5750MHz

Impedance, transformed to feed point	51.4Ω+ 2.84jΩ
Return Loss	- 30.1dB

#### General Antenna Parameters and Design

Electrical Delay (one direction)	1.099 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
-----------------	-------



In Collaboration with  
**s p e a g**  
 CALIBRATION LABORATORY



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
 Tel: +86-10-62304633-2117  
 E-mail: emf@caict.ac.cn      <http://www.caic.ac.cn>

### DASY5 Validation Report for Head TSL

Date: 2023-02-16

Test Laboratory: CTTL, Beijing, China

**DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1301**

Communication System: CW; Frequency: 5250 MHz, Frequency: 5600 MHz,

Frequency: 5750 MHz

Medium parameters used:  $f = 5250 \text{ MHz}$ ;  $\sigma = 4.582 \text{ S/m}$ ;  $\epsilon_r = 36.22$ ;  $\rho = 1000 \text{ kg/m}^3$

Medium parameters used:  $f = 5600 \text{ MHz}$ ;  $\sigma = 4.952 \text{ S/m}$ ;  $\epsilon_r = 35.61$ ;  $\rho = 1000 \text{ kg/m}^3$

Medium parameters used:  $f = 5750 \text{ MHz}$ ;  $\sigma = 5.112 \text{ S/m}$ ;  $\epsilon_r = 35.39$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

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

#### DASY5 Configuration:

- Probe: EX3DV4 - SN7464; ConvF(5.42, 5.42, 5.42) @ 5250 MHz; ConvF(4.85, 4.85, 4.85) @ 5600 MHz; ConvF(4.92, 4.92, 4.92) @ 5750 MHz; Calibrated: 2023-01-19
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 2023-01-11
- Phantom: MFP\_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial: 1062
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

#### Dipole Calibration /Pin=100mW, d=10mm, f=5250 MHz/Zoom Scan,

**dist=1.4mm (8x8x7)/Cube 0:** Measurement grid:  $dx=4\text{mm}$ ,  $dy=4\text{mm}$ ,  $dz=1.4\text{mm}$

Reference Value = 59.45 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 31.4 W/kg

**SAR(1 g) = 7.76 W/kg; SAR(10 g) = 2.2 W/kg**

Smallest distance from peaks to all points 3 dB below = 7.2 mm

Ratio of SAR at M2 to SAR at M1 = 65%

Maximum value of SAR (measured) = 18.2 W/kg

#### Dipole Calibration /Pin=100mW, d=10mm, f=5600 MHz/Zoom Scan,

**dist=1.4mm (8x8x7)/Cube 0:** Measurement grid:  $dx=4\text{mm}$ ,  $dy=4\text{mm}$ ,  $dz=1.4\text{mm}$

Reference Value = 59.07 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 36.1 W/kg

**SAR(1 g) = 8.16 W/kg; SAR(10 g) = 2.28 W/kg**

Smallest distance from peaks to all points 3 dB below = 7.2 mm

Ratio of SAR at M2 to SAR at M1 = 62%

Maximum value of SAR (measured) = 19.8 W/kg

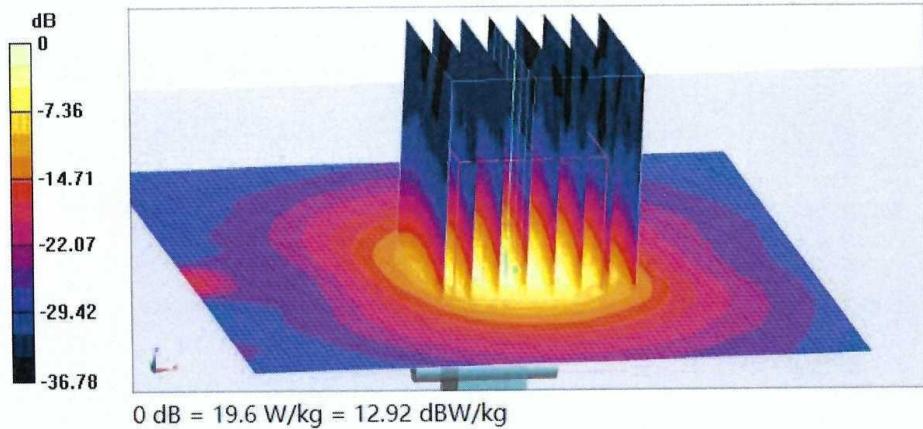


In Collaboration with  
**s p e a g**  
CALIBRATION LABORATORY



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2117  
E-mail: emf@caict.ac.cn <http://www.caie.ac.cn>

**Dipole Calibration /Pin=100mW, d=10mm, f=5750 MHz/Zoom Scan,**  
**dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm**  
Reference Value = 59.52 V/m; Power Drift = -0.06 dB  
Peak SAR (extrapolated) = 36.6 W/kg  
**SAR(1 g) = 7.81 W/kg; SAR(10 g) = 2.19 W/kg**  
Smallest distance from peaks to all points 3 dB below = 7.4 mm  
Ratio of SAR at M2 to SAR at M1 = 60.7%  
Maximum value of SAR (measured) = 19.6 W/kg



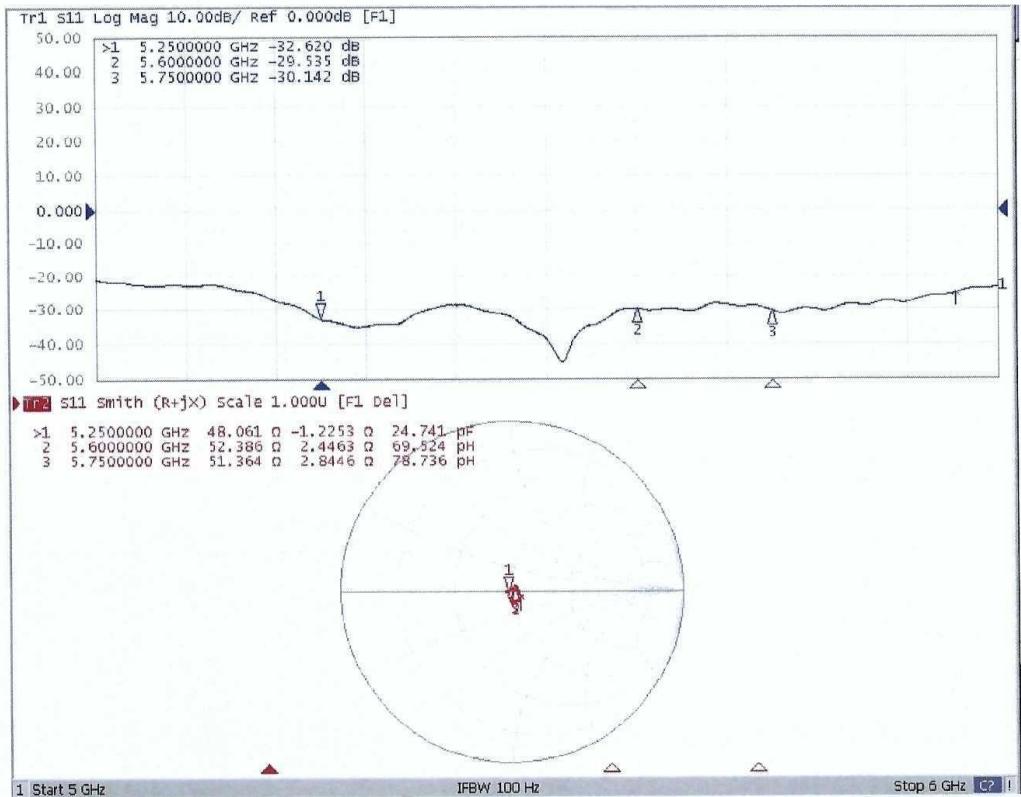


In Collaboration with  
**s p e a g**  
CALIBRATION LABORATORY



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2117  
E-mail: emf@caict.ac.cn <http://www.caic.ac.cn>

### Impedance Measurement Plot for Head TSL



## D5GHzV2 - SN:1301 Extended Dipole Calibrations

Per FCC KDB 865664 D01, calibration intervals of up to 3 years may be considered for reference dipoles when it is demonstrated that the SAR target, impedance and return loss of a dipole have remained stable according to the following requirements.

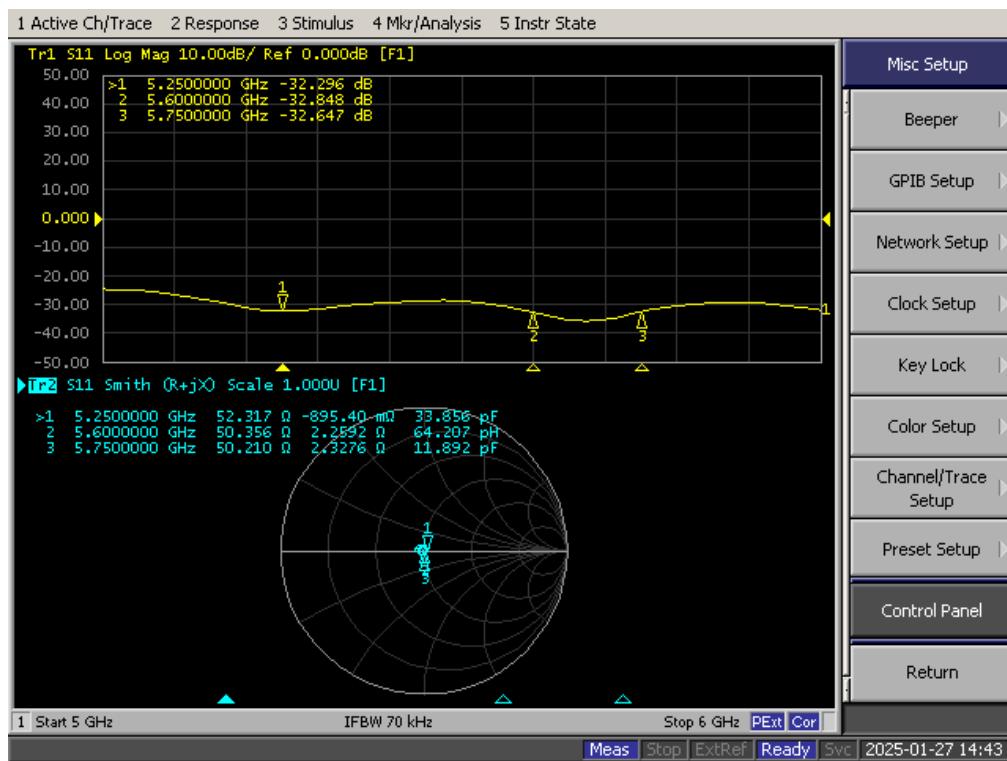
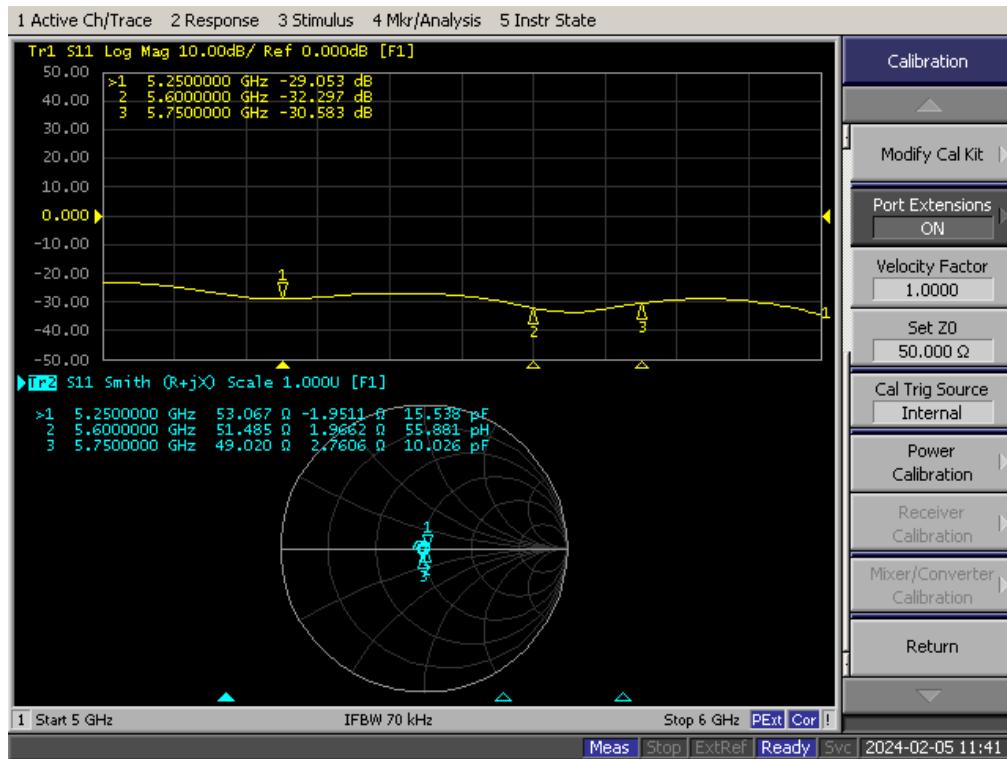
1. The measured SAR does not deviate more than 10% from the target on the calibration certificate.
2. The return-loss does not deviate more than 20% from the previous measurement and meets the required 20 dB minimum return-loss requirement.
3. The measurement of real or imaginary parts of impedance does not deviate more than 5Ω from the previous measurement.

The following dipole was checked to pass the above 3 requirements to have 3-year calibration period from calibration date.

### Calibrated Equipment:

Verification Date	Equipment	Model	S/N	Calibration Date	Calibration Due Date
2024/02/05	Simulated Tissue Liquid Head	HBBL600-10000V6	220406-1	Each Time	
	SAM Twin Phantom	SAM-Twin V5.0	1744	NCR	NCR
	Network Analyzer	E5071B	MY42403851	2024/01/12	2025/01/11
	Network Analyzer Calibration Kit	50 Ω	50164	NCR	NCR
2025/01/27	Simulated Tissue Liquid Head	HBBL600-10000V6	2200808-2	Each Time	
	SAM Twin Phantom	SAM-Twin V5.0	1744	NCR	NCR
	Network Analyzer	E5071B	MY42403851	2024/10/08	2025/10/07
	Network Analyzer Calibration Kit	50 Ω	50164	NCR	NCR

D5GHzV2-SN:1301						
5250MHz Head						
Date of Measurement	Return Loss (dB)	Delta (%)	Real Impedence( $\Omega$ )	Delta ( $\Omega$ )	Imaginary Impedence( $\Omega$ )	Delta ( $\Omega$ )
2023/02/16	-32.6	/	48.1	/	-1.23	/
2024/02/05	-29.1	-10.7	53.1	5.00	-1.95	0.72
2025/01/27	-32.3	-0.92	52.3	4.2	-0.90	0.33
5600MHz Head						
Date of Measurement	Return Loss (dB)	Delta (%)	Real Impedence( $\Omega$ )	Delta ( $\Omega$ )	Imaginary Impedence( $\Omega$ )	Delta ( $\Omega$ )
2023/02/16	-29.5	/	52.4	/	2.45	/
2024/02/05	-32.3	9.5	51.5	0.9	1.97	0.48
2025/01/27	-32.8	11.2	50.4	2	2.26	0.19
5750MHz Head						
Date of Measurement	Return Loss (dB)	Delta (%)	Real Impedence( $\Omega$ )	Delta ( $\Omega$ )	Imaginary Impedence( $\Omega$ )	Delta ( $\Omega$ )
2023/02/16	-30.1	/	51.4	/	2.84	/
2024/02/05	-30.6	1.7	49.0	2.40	2.76	0.08
2025/01/27	-32.6	8.31	50.2	1.20	2.33	0.51



	Name	Signature
Calibrated By:	Lance Li	<i>Lance Li</i>