

Client: **CTI**  
**Shenzhen**

**Certificate No: 26J02Z000012**

## CALIBRATION CERTIFICATE

Object **DAE4 - SN: 1458**

Calibration Procedure(s) **FF-Z11-002-01**  
**Calibration Procedure for the Data Acquisition Electronics (DAEx)**

Calibration date: **January 12, 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.

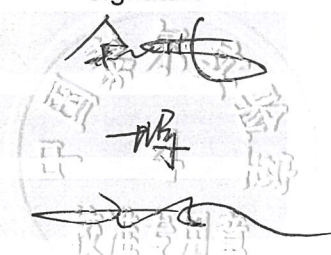
All calibrations have been conducted in the closed laboratory facility: environment temperature(22±3)°C and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards      | ID #    | Cal Date(Calibrated by, Certificate No.) | Scheduled Calibration |
|------------------------|---------|------------------------------------------|-----------------------|
| Process Calibrator 753 | 1971018 | 11-Jun-25 (CTTL, No.25J02X004977)        | Jun-26                |

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

Signature



Issued: January 13, 2026

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:**

DAE data acquisition electronics  
Connector angle information used in DASY system to align probe sensor X to the robot coordinate system.

### **Methods Applied and Interpretation of Parameters:**

- *DC Voltage Measurement:* Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- *Connector angle:* The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The report provide only calibration results for DAE, it does not contain other performance test results.



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>

## DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB =  $6.1\mu\text{V}$ , full range = -100...+300 mV

Low Range: 1LSB =  $61\text{nV}$ , full range = -1.....+3mV

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| Calibration Factors | X                          | Y                          | Z                          |
|---------------------|----------------------------|----------------------------|----------------------------|
| High Range          | $404.433 \pm 0.15\% (k=2)$ | $404.398 \pm 0.15\% (k=2)$ | $404.659 \pm 0.15\% (k=2)$ |
| Low Range           | $3.99201 \pm 0.7\% (k=2)$  | $3.96086 \pm 0.7\% (k=2)$  | $3.96267 \pm 0.7\% (k=2)$  |

## Connector Angle

|                                           |                           |
|-------------------------------------------|---------------------------|
| Connector Angle to be used in DASY system | $333.5^\circ \pm 1^\circ$ |
|-------------------------------------------|---------------------------|

Client **CTI(Shenzhen)**

Certificate No: **26J02Z000282**

## CALIBRATION CERTIFICATE

Object **D750V3 - SN: 1088**

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

Calibration date: **April 15, 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: April 20, 2026

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: +86-10-62304633-2711

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%.

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 | 15 mm                  | with Spacer |
| Frequency                    | 750 MHz $\pm$ 1 MHz    |             |

## Head TSL parameters at 750 MHz

The following parameters and calculations were applied.

|                                         | Temperature         | Permittivity   | Conductivity         |
|-----------------------------------------|---------------------|----------------|----------------------|
| Nominal Head TSL parameters             | 22.0 °C             | 41.9           | 0.89 mho/m           |
| Measured Head TSL parameters            | (22.0 $\pm$ 0.2) °C | 42.2 $\pm$ 6 % | 0.88 mho/m $\pm$ 6 % |
| Head TSL temperature change during test | <1.0 °C             | ----           | ----                 |

## SAR result with Head TSL at 750 MHz

|                                                |                    |                                                           |
|------------------------------------------------|--------------------|-----------------------------------------------------------|
| SAR averaged over 1 $cm^3$ (1 g) of Head TSL   | Condition          |                                                           |
| SAR measured                                   | 24 dBm input power | 2.15 W/kg                                                 |
| SAR for nominal Head TSL parameters            | normalized to 1W   | <b>8.71 W/kg <math>\pm</math> 20 % (<math>k=2</math>)</b> |
| SAR averaged over 10 $cm^3$ (10 g) of Head TSL | Condition          |                                                           |
| SAR measured                                   | 24 dBm input power | 1.44 W/kg                                                 |
| SAR for nominal Head TSL parameters            | normalized to 1W   | <b>5.82 W/kg <math>\pm</math> 20 % (<math>k=2</math>)</b> |



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 750 MHz

|                                      |               |
|--------------------------------------|---------------|
| Impedance, transformed to feed point | 51.4Ω- 2.31jΩ |
| Return Loss                          | - 31.5dB      |

### General Antenna Parameters and Design

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 0.943 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**  
Test Laboratory: CTTL, Beijing, China

Date: 2026-04-15

**Summary**

| Dipole           | Frequency [MHz] | TSL | Power [dBm] |
|------------------|-----------------|-----|-------------|
| D750V3 – SN 1088 | 750             | 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         | 15             | CW,         | 750       | 10.82      | 0.877     | 42.2         |

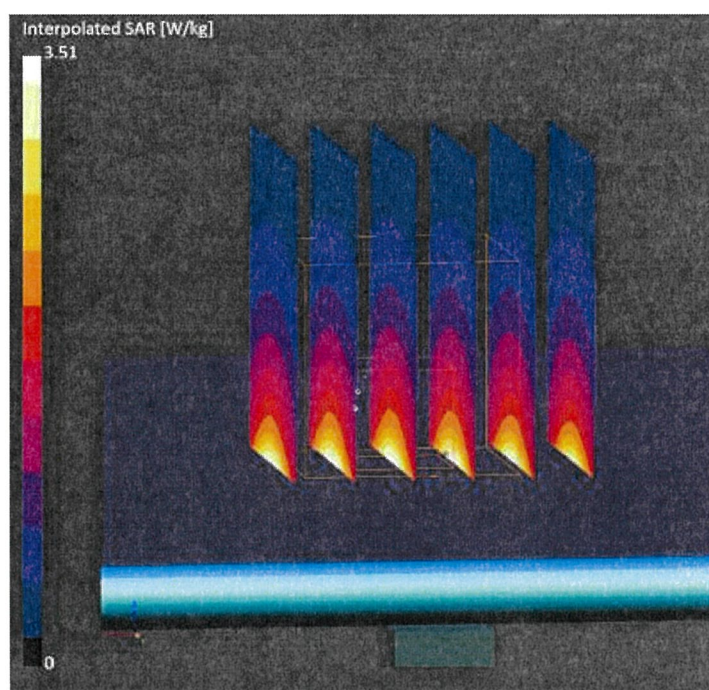
**Hardware Setup**

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

**Scan Setup**

**Measurement Results**

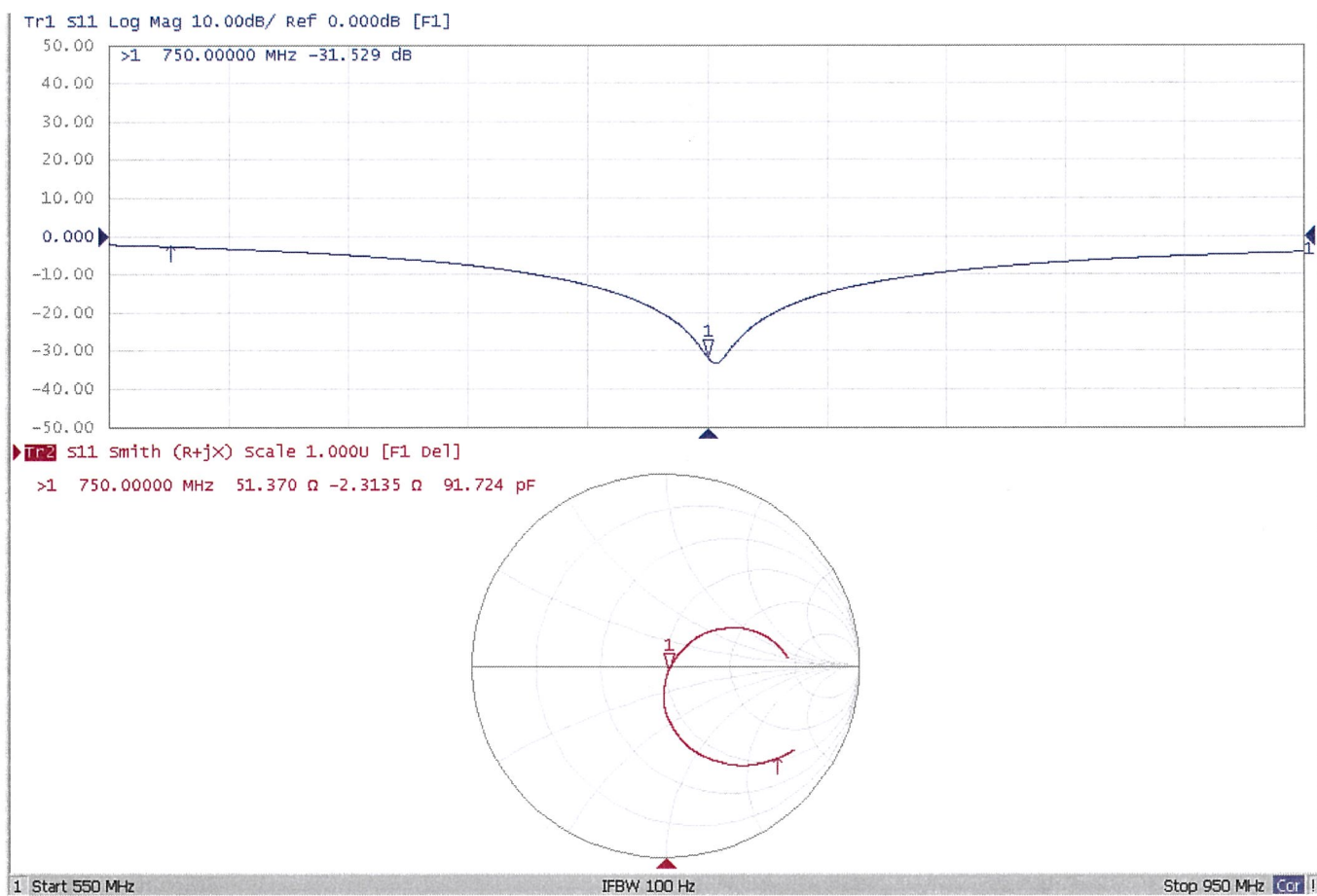
|                     | Zoom Scan      |                     | Zoom Scan     |
|---------------------|----------------|---------------------|---------------|
| Grid Extents [mm]   | 30.0×30.0×30.0 | psSAR1g [W/kg]      | 2.15          |
| Grid Steps [mm]     | 6.0×6.0×1.5    | psSAR10g [W/kg]     | 1.44          |
| Sensor Surface [mm] | 1.4            | Power Drift [dB]    | 0.00          |
| Graded Grid         | Yes            | Power Scaling       | Disabled      |
| Grading Ratio       | 1.5            | Scaling Factor [dB] |               |
| MAIA                | N/A            | TSL Correction      | No correction |
| Surface Detection   | VMS + 6p       | M2/M1 [%]           | 83.7          |
| Scan Method         | Measured       | Dist 3dB Peak [mm]  | 18.4          |





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



Client

CTI

Certificate No: 24J02Z80026

## CALIBRATION CERTIFICATE

Object D835V2 - SN: 4d193

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

Calibration date: January 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±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     | 15-May-23 (CTTL, No.J23X04183)            | May-24                |
| Power sensor NRP6A      | 101369     | 15-May-23 (CTTL, No.J23X04183)            | May-24                |
| ReferenceProbe EX3DV4   | SN 3617    | 31-Mar-23(CTTL-SPEAG,No.Z23-60161)        | Mar-24                |
| DAE4                    | SN 1556    | 03-Jan-24(CTTL-SPEAG,No.24J02Z80002)      | Jan-25                |
| Secondary Standards     | ID #       | Cal Date (Calibrated by, Certificate No.) | Scheduled Calibration |
| Signal Generator E4438C | MY49071430 | 25-Dec-23 (CTTL, No. J23X13426)           | Dec-24                |
| NetworkAnalyzer E5071C  | MY46110673 | 25-Dec-23 (CTTL, No. J23X13425)           | Dec-24                |

|                | 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: January 26, 2024

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 / NORM <sub>x,y,z</sub> |
| N/A   | not applicable or not measured             |

## Calibration is Performed According to the Following Standards:

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

## Additional Documentation:

- c) DASY4/5 System Handbook

## Methods Applied and Interpretation of Parameters:

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

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

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                   | V52.10.4    |
| <b>Extrapolation</b>                | Advanced Extrapolation   |             |
| <b>Phantom</b>                      | Triple Flat Phantom 5.1C |             |
| <b>Distance Dipole Center - TSL</b> | 15 mm                    | with Spacer |
| <b>Zoom Scan Resolution</b>         | dx, dy, dz = 5 mm        |             |
| <b>Frequency</b>                    | 835 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             | 41.5           | 0.90 mho/m           |
| <b>Measured Head TSL parameters</b>            | (22.0 $\pm$ 0.2) °C | 41.2 $\pm$ 6 % | 0.88 mho/m $\pm$ 6 % |
| <b>Head TSL temperature change during test</b> | <1.0 °C             | —              | —                    |

## SAR result with Head TSL

|                                                               |                    |                                       |
|---------------------------------------------------------------|--------------------|---------------------------------------|
| <b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Head TSL</b>   | Condition          |                                       |
| SAR measured                                                  | 250 mW input power | 2.37 W/kg                             |
| SAR for nominal Head TSL parameters                           | normalized to 1W   | 9.62 W/kg $\pm$ 18.8 % ( <i>k</i> =2) |
| <b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Head TSL</b> | Condition          |                                       |
| SAR measured                                                  | 250 mW input power | 1.55 W/kg                             |
| SAR for nominal Head TSL parameters                           | normalized to 1W   | 6.27 W/kg $\pm$ 18.7 % ( <i>k</i> =2) |



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 | 48.9Ω- 4.74jΩ |
| Return Loss                          | - 26.2dB      |

### General Antenna Parameters and Design

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.293 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 |
|-----------------|-------|