



SIMT

CNAS L0134

SHANGHAI INSTITUTE OF MEASUREMENT AND TESTING TECHNOLOGY
NATIONAL CENTER OF MEASUREMENT AND TEST FOR EAST CHINA校准证书编号: 2008J10-10-812002
Calibrated certificate series No.

CALIBRATION CERTIFICATE

上海市计量测试技术研究院
华东国家计量测试中心

校 准 证 书

| | |
|------------------------------|---|
| 委托者 Customer | 程智科技股份(昆山)有限公司 Compliance Certification Services Inc. |
| 委托者地址 Address of customer | 江苏省昆山市(留学创业园)伟业路10号 No. 10, Wei-Ye Rd., Innovation park, Eco & Tec, Development Zone, Kun Shan City, Jiang Su, P. R. O. C. |
| 器具名称 Name of instrument | 偶极子天线 DIPOLE ANTENNA |
| 制造厂 Manufacturer | ANTENNESSA 公司 |
| 型号/规格 Model/Specification | DIPOLE 900MHz |
| 器具编号 No. of instrument | SN 48/05 DIPD33 |
| 器具准确度 Instrument accuracy | / |

(机构校准专用章)

| | |
|------------------------|--|
| 证书批准人 Approved by | |
| 核 验 员 Checked by | |
| 校 准 员 Calibrated by | |

| | |
|-----------------------------|------------------------------------|
| 校准日期 Date for calibrated | 2008 年 12 月 10 日 Year Month Day |
|-----------------------------|------------------------------------|

投诉电话: 021-50798262

地址: 上海市张衡路 1500 号(总部) 电话: 021-38839800 传真: 021-50798390 邮编: 201203
Address: No.1500 Zhangheng Road, Shanghai(headquarters) Tel.: Fax.: Post Code: 201203 Tel. for complaint上海市宜山路 716 号(分部) 电话: 021-64701390 传真: 021-64701810 邮编: 200233
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国家法定计量检定机构计量授权证书号(中心/院): (国)法计(2002)01039号/ (2002)01019号
The number of the Certificate of Metrological Authorization to The Legal Metrological Verification Institution is No. (2002) 01039 / No. (2002) 01019

中国合格评定国家认可委员会实验室认可证书号: No. CNAS L0134
The number of the certificate accredited by CNAS is No. L0134

本次校准所依据的技术规范(代号、名称):
Reference documents for the calibration (code, name)

JCJ/J101002.1/0-2007 SAR偶极子天线校准规范

IEEE Std 1528-2003 "IEEE Recommended Practice for Determining the Peak

Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head
from Wireless Communications Devices: Measure Techniques"

IEC 62209-1: 2005 Procedure to measure the Specific Absorption Rate (SAR) in the
frequency range of 300 MHz to 3 GHz Part 1: hand-held mobile wireless
communication devices

本次校准所使用的主要计量标准器具:

Main measurement standards used in this calibration

| 名称/型号 Name/Model | 编号 Number | 证书编号/有效期限 Certificate No./Due date | 测量范围/准确度 Measuring range/accuracy |
|-------------------------------------|--------------|---------------------------------------|---|
| VECTOR NETWORK ANALYZER ZVB 8 | 容-027-27 | 2008F31-10-001907 2009.06.26 | 300 kHz~8 GHz, Frequency resolution: 100 μHz, Measurement time: < 8 ms, Measurement bandwidths: 1 Hz~500 kHz |

以上计量标准器具的量值溯源至国家基准。

Quantity values of above measurement standards used in this calibration are traced to those of the national primary standards in the P.R. China.

校准地点及环境条件:

Location and environmental condition for the calibration

地点: 宜山路 716 号 (No. 716 Yishan Road)
Location:

温度: 23 °C; 湿度: 49 %RH; 其它: /
Ambient temperature: 23 °C; Relative humidity: 49 %RH; Others: /

本次校准结果的扩展不确定度:

Expanded uncertainty

+3dB 至 -15dB: $U = 0.8 \text{ dB}$ ($k=2$)

-15dB 至 -25dB: $U = 1.2 \text{ dB}$ ($k=2$)

-25dB 至 -35dB: $U = 3.1 \text{ dB}$ ($k=2$)

校准结果/说明:

Results of calibration and additional explanation

Pass

The requirements of the calibration criterion: return Loss must be less than -20dB

本证书提供的结果仅对本次被校的器具有效。

The data are valid only for the instrument(s).

校准证书续页专用

Continued page of calibration certificate

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校准结果/说明 (续页) :

Results of calibration and additional explanation (continued page)

1. Calibration procedure:

Return Loss is measured with the dipole 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. During calibration, the flat phantom is filled with the liquid whose parameters are calibrated relative to different frequency.

2. Calibration Conditions:

A. The spacer from Dipole center to TSL

| Distance Dipole Center - TSL | Frequency |
|------------------------------|-----------|
| 15mm±0.2mm with spacer | 900MHz |

B. Head TSL parameters

The following parameters and calculation were applied.

Head TSL temperature change is well controlled to be within $22\pm0.2^{\circ}\text{C}$ during test.

| Frequency | Nominal Head TSL Parameters (Permittivity/ Conductivity) | Measurement Head TSL parameters (Permittivity/ Conductivity) |
|-----------|---|---|
| 900 MHz | 41.50/0.97 | 41.71/1.00 |

C. Body TSL parameters

The following parameters and calculation were applied.

Body TSL temperature change is well controlled to be within $22\pm0.2^{\circ}\text{C}$ during test.

| Frequency | Nominal Body TSL Parameters (Permittivity/ Conductivity) | Measurement Body TSL parameters (Permittivity/ Conductivity) |
|-----------|---|---|
| 900 MHz | 55.00/1.05 | 54.62/1.04 |

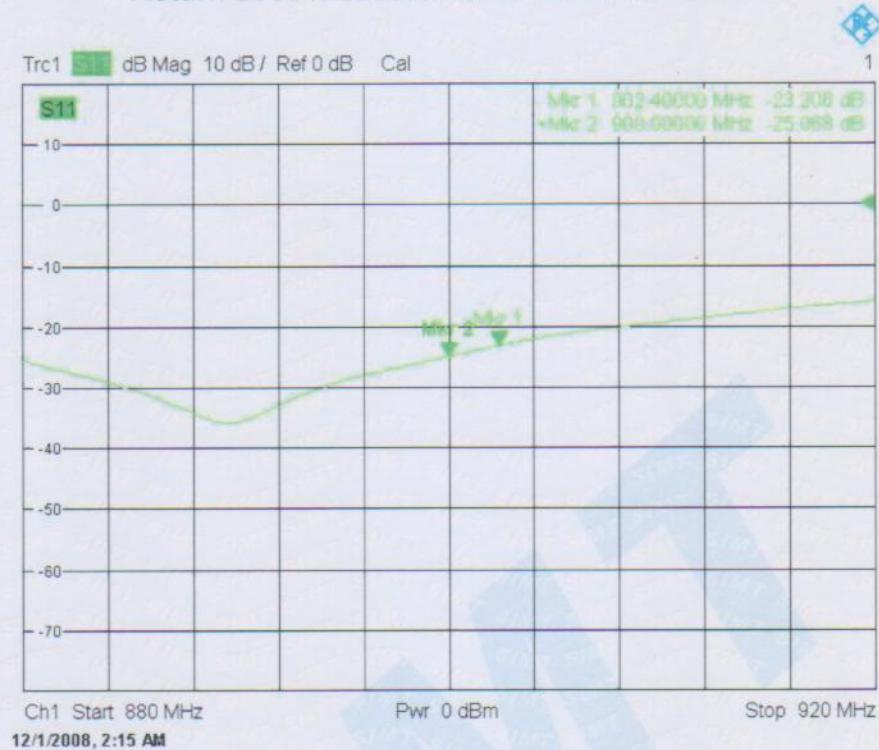
3. Measurement Results

| Frequency | Return Loss with Head TSL | Return Loss with Body TSL |
|-----------|---------------------------|---------------------------|
| 900 MHz | -25.06 dB | -24.23 dB |

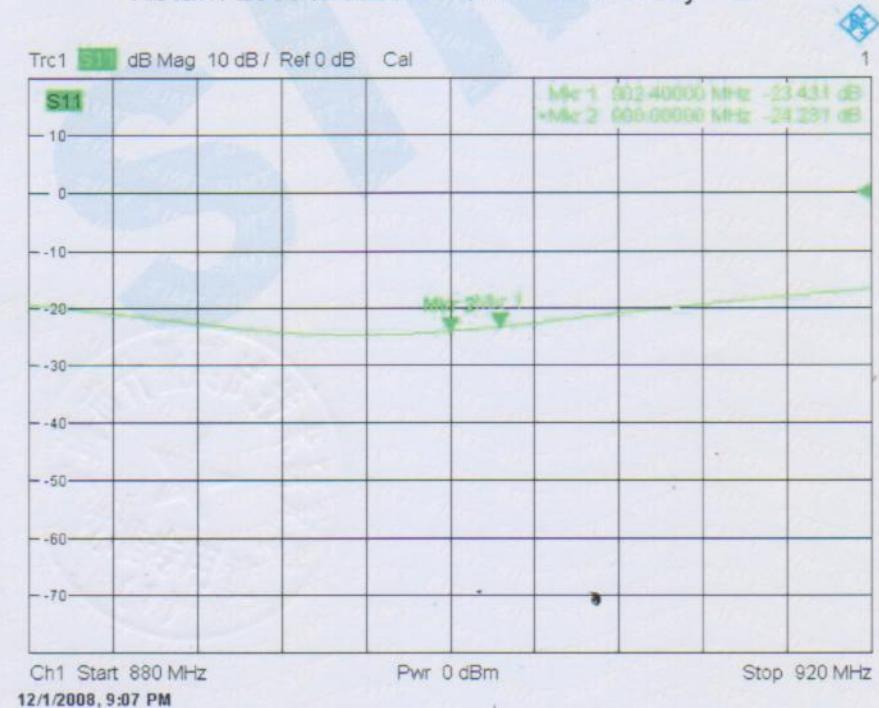
校准结果/说明 (续页) :

Results of calibration and additional explanation (continued page)

Return Loss Measurement Plot for head TSL



Return Loss Measurement Plot for Body TSL



Remark: Attachment 1:SAR validation & Test equipment

End



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Attachment 1: SAR validation & Test equipment

| Validation | Condition | SAR Value (W/kg) | |
|----------------------------|------------------|------------------|------|
| | | 1g | 10g |
| SAR measured with Head TSL | 1W (input power) | 11.11 | 7.27 |
| SAR measured with Body TSL | 1W (input power) | 10.98 | 7.29 |

| 名称/型号 Name/Model | 编号 Number | 证书编号/有效期限 Certificate No./Due date | 测量范围/准确度 Measuring range/accuracy |
|---------------------------------------|--------------|---------------------------------------|---|
| 6 axis Robot KR3 | 容-027-01 | / | 6 axes, Repeatability: \pm 0.05 mm, Nominal payload: 3 kg |
| Vector Network Analyzer ZVB 8 | 容-027-27 | 2008F31-10-001907 2009.06.26 | 300 kHz to 8 GHz, Frequency resolution: 100 μ Hz, Measurement time: < 8 ms, Measurement bandwidths: 1 Hz to 500 kHz |
| Signal Generator SMT 06 | 容-027-15 | 2008F33-10-001469 2009.06.26 | 5 kHz - 6 GHz, Resolution: 0.1Hz, -144 to + 13 dBm, Max. RF power: 1W, Max. DC voltage: 0V / Level > -127 dBm: f < 1.5 GHz: < 1dB; F > 1.5 GHz: < 1.5dB; f > 3GHz: < 2dB |
| Power Meter NRVD | 容-027-16 | 2008F31-10-001906 2009.06.24 | 100 kHz to 6 GHz, 10nW to 500mW |
| Millivoltmeter 2000 | 容-027-26 | 2008F11-10-001004 2009.06.19 | Measurement range: 100.0000 mV ~ 1000.000V Sensitivity: 0.1 μ V ~ 1 m V. |
| Power Amplifier BLMA 0820-6 | 容-027-18 | 2008F33-10-001467 2009.06.26 | 0.8 - 2 GHz; Output: 6W; Gain: min 37.8 / typ 40, \pm 2 dB; Harmonics: 2nd: 20dBc, 3rd: 20dBc; Line power: 125 W. |
| Isotropic E-Field Probe E-FIELD PROBE | 容-027-54 | 2008J10-10-801001 2008.12.25 | Dipole resistance (in the connector plane): 1M Ω to 2M Axial isotropy in human-equivalent liquids: < 0.25dB Hemispherical Isotropy in human-equivalent liquids < 0.5dB, Linearity < 0.5dB, Lower SAR detection threshold: 0.0015 Watts/kg |
| SAM Phantom | 容-027-22 | / | / |