CNAS L0134

SHANGHAI INSTITUTE OF MEASUREMENT AND TESTING TECHNOLOGY
NATIONAL CENTER OF MEASUREMENT AND TEST FOR EAST CHINA

校准证书编号：2010J10-10-812011
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 835MHz
器具编号 No. of instrument	SN 48/05 DIPC32
器具准确度 Instrument accuracy	/

证书批准人 Approved by

核 验 员 Checked by 刘[illegible]

校 准 员 Calibrated by 高[illegible]

(机构校准专用章)

校准日期 Date for calibrated 2010 年 Year 2 月 Month 10 日 Day

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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 form 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	2010F31-10-001907 2011.06.26	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：Location　宜山路 716 号 (No. 716 Yishan Road)

温度：Ambient temperature　23　℃；　湿度：Relative humidity　48　%RH；　其它：Others　/

本次校准结果的扩展不确定度：
Expanded uncertainty

+3dB 至-15dB：U =0.8 dB（k=2）
-15dB至-25dB：U =1.2 dB（k=2）
-25dB至-35dB：U =3.1 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	835MHz

B. Head TSL parameters

The following parameters and calculation were applied.
Head TSL temperature change is well controlled to be within 22±0.2°C during test.

Frequency	Nominal Head TSL Parameters (Permittivity/ Conductivity)	Measurement Head TSL parameters (Permittivity/ Conductivity)
835 MHz	41.50/0.90	40.55/0.95

C. Body TSL parameters

The following parameters and calculation were applied.
Body TSL temperature change is well controlled to be within 22±0.2°C during test.

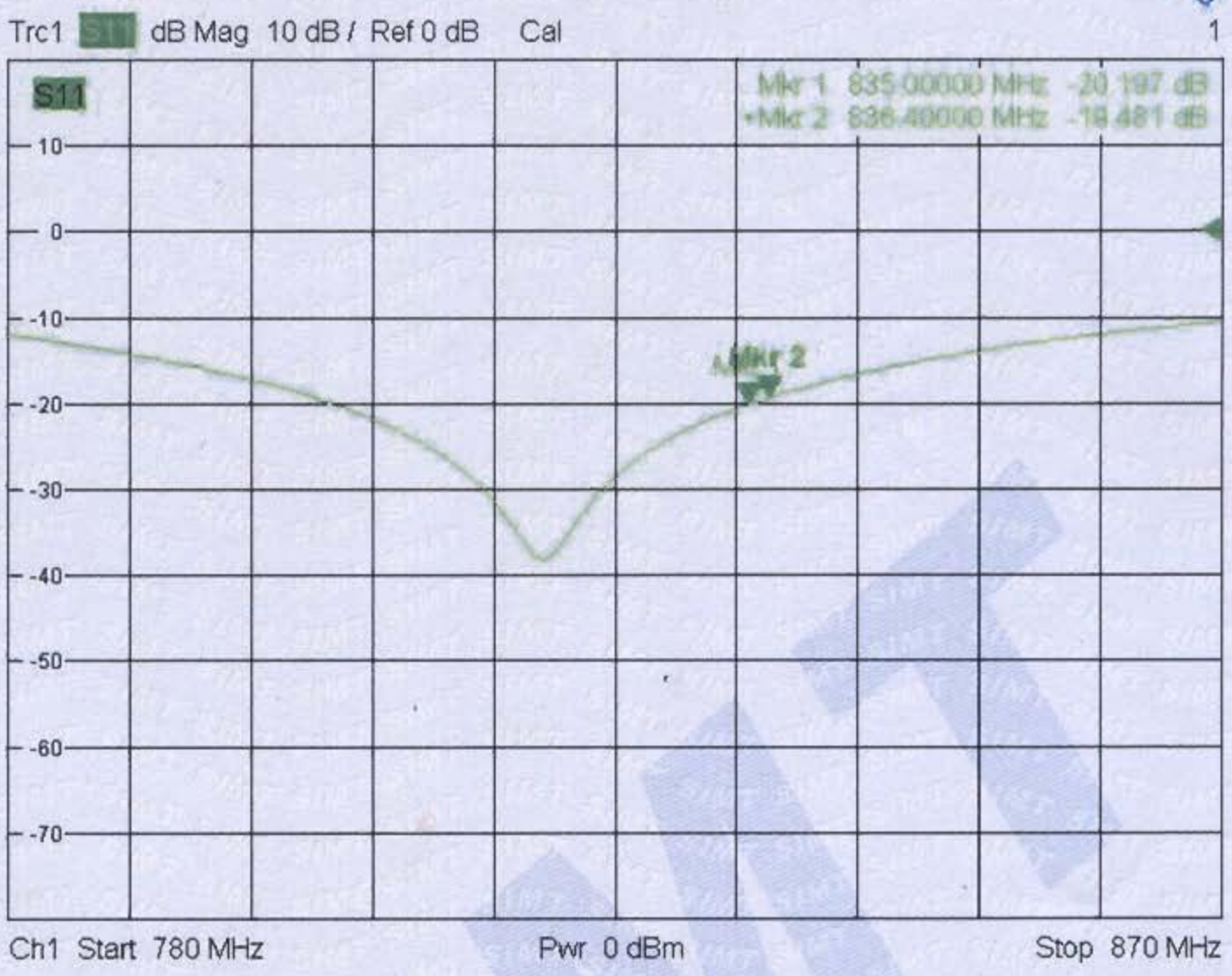
Frequency	Nominal Body TSL Parameters (Permittivity/ Conductivity)	Measurement Body TSL parameters (Permittivity/ Conductivity)
835 MHz	55.20/0.97	53.59/1.03

3. Measurement Results

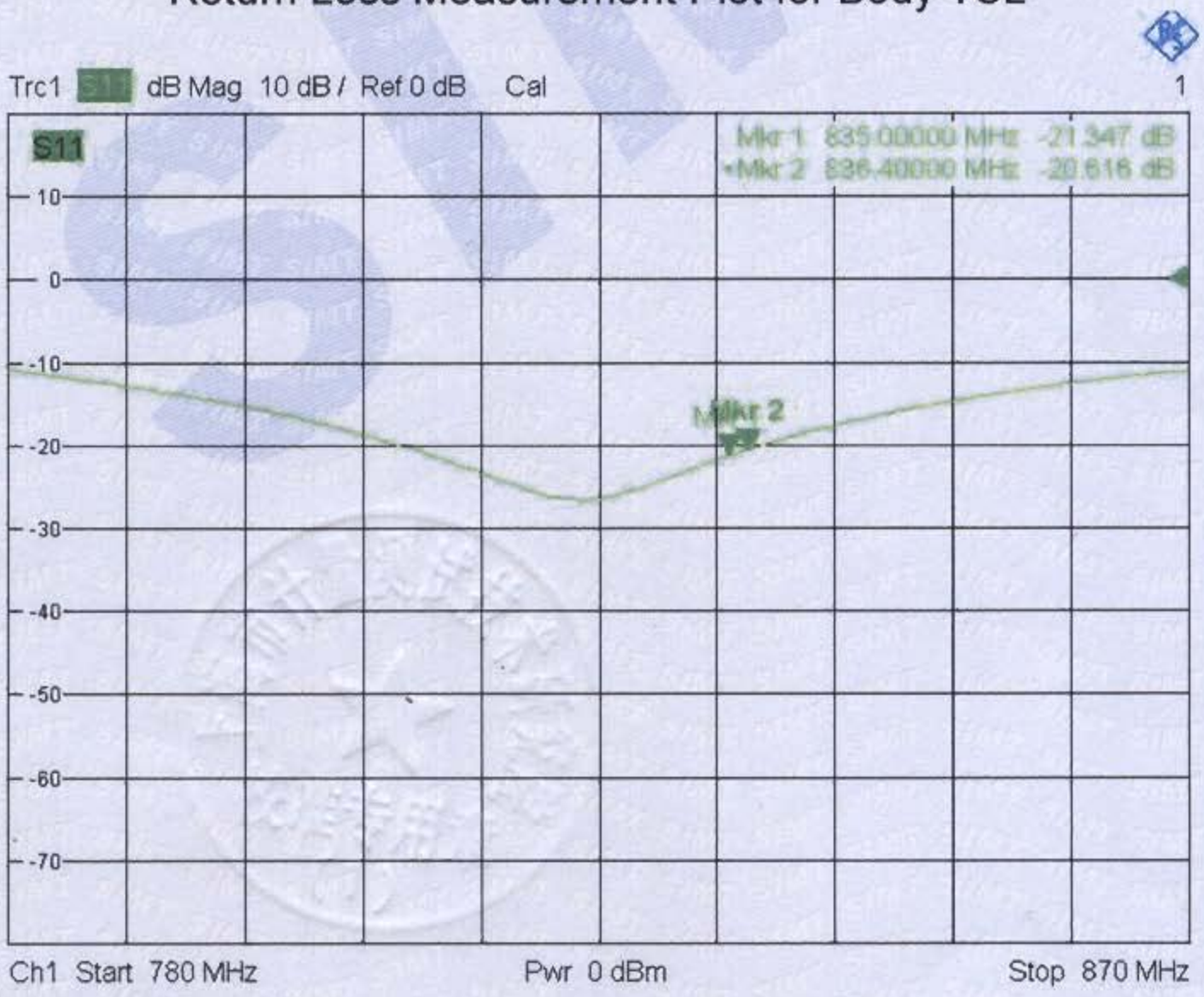
Frequency	Return Loss with Head TSL	Return Loss with Body TSL
835 MHz	-20.19 dB	-21.33 dB

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

Attachment 1: SAR validation & Test equipment

Validation	Condition	SAR Value (W/kg)	
		1g	10g
SAR measured with Head TSL	1W (input power)	9.41	6.27
SAR measured with Body TSL	1W (input power)	9.79	6.63

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： ± 0.05 mm, Nominal payload： 3 kg
Vector Network Analyzer ZVB 8	容-027-27	2010F31-10-001907 2011.06.26	300 kHz to 8 GHz，Frequency resolution：100 μHz，Measurement time：< 8 ms，Measurement bandwidths：1 Hz to 500 kHz
Signal Generator SMT 06	容-027-15	2010F33-10-001469 2011.06.26	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	2010F31-10-001906 2011.06.24	100 kHz to 6 GHz,10nW to 500mW
Millivoltmeter 2000	容-027-26	2010F11-10-001004 2011.06.19	Measurement range:100.0000mV~ 1000.000V Sensibility: 0.1μV~1mV.
Power Amplifier BLMA 0820-6	容-027-18	2010F33-10-001467 2011.06.26	0.8 - 2 GHz; Output:6W; Gain:min 37.8 / typ 40,± 2 dB; Harmonics:2nd:20dBc, 3rd:20dBc; Line power:125 W.
Isotropic E-Field Probe E-FIELD PROBE	容-027-54	2010J10-10-801001 2011.12.25	Dipole resistance (in the connector plane)： 1M . to 2M Axial isotropy in human-equivalent liquids： <0.25dBHemispherical Isotropy in humanequivalent liquids<0.5dB,Linearity<0.5dB,Lower SAR detection threshold: 0.0015 Watts/kg
SAM Phantom	容-027-22	/	/