

# TA Technology (Shanghai) Co., Ltd.

## Test Report

### Measurement Conditions

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

<b>DASY Version</b>	DASY5	V5.0
<b>Extrapolation</b>	Advanced Extrapolation	
<b>Phantom</b>	2mm Oval Phantom ELI4	
<b>Distance Dipole Center - TSL</b>	10 mm	with Spacer
<b>Zoom Scan Resolution</b>	dx, dy, dz = 5 mm	
<b>Frequency</b>	1900 MHz ± 1 MHz	

### Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
<b>Nominal Head TSL parameters</b>	22.0 °C	40.0	1.40 mho/m
<b>Measured Head TSL parameters</b>	(22.0 ± 0.2) °C	39.6 ± 6 %	1.40mho/m ± 6 %
<b>Head TSL temperature during test</b>	(21.9 ± 0.2) °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	9.88 mW / g
SAR normalized	normalized to 1W	39.5 mW / g
SAR for nominal Head TSL parameters <sup>1</sup>	normalized to 1W	<b>37.8 mW / g ± 17.0 % (k=2)</b>

SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	5.0 mW / g
SAR normalized	normalized to 1W	20.0 mW / g
SAR for nominal Head TSL parameters <sup>1</sup>	normalized to 1W	<b>19.8 mW / g ± 16.5 % (k=2)</b>

<sup>1</sup> Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

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**Body TSL parameters**

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
<b>Nominal Body TSL parameters</b>	22.0 °C	53.3	1.52 mho/m
<b>Measured Body TSL parameters</b>	(22.0 ± 0.2) °C	52.9 ± 6%	1.55 mho/m ± 6 %
<b>Body TSL temperature during test</b>	(21.8 ± 0.2) °C	----	----

**SAR result with Body TSL**

SAR averaged over 1 $cm^3$ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	10.2 mW / g
SAR normalized	normalized to 1W	40.8 mW / g
SAR for nominal Body TSL parameters <sup>2</sup>	normalized to 1W	<b>39.4 mW / g ± 17.0 % (k=2)</b>

SAR averaged over 10 $cm^3$ (10 g) of Body TSL	Condition	
SAR measured	250 mW input power	5.18 mW / g
SAR normalized	normalized to 1W	20.72 mW / g
SAR for nominal Body TSL parameters <sup>2</sup>	normalized to 1W	<b>21.0 mW / g ± 16.5 % (k=2)</b>

<sup>2</sup> Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

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### Appendix

#### Antenna Parameters with Head TSL

Impedance, transformed to feed point	54.8Ω + 4.0 jΩ
Return Loss	- 23.7dB

#### Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.9Ω + 7.1 jΩ
Return Loss	- 22.6dB

#### General Antenna Parameters and Design

Electrical Delay (one direction)	1.201 ns
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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. 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
Manufactured on	December 10, 2004

**DASY5 Validation Report for Head TSL**

Date/Time: 2009-7-15 14:15:30

**Test Laboratory: TMC, Beijing, China**

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: SN: 5d060**

Communication System: CW Frequency: 1900 MHz Duty Cycle: 1:1

Medium: Head 1900MHz

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.40$  mho/m;  $\epsilon_r = 39.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3149; ConvF(5.18, 5.18, 5.18); Calibrated: 08.12.08
- Electronics: DAE4 Sn771; Calibration: 21.11.08
- Phantom: 2mm Oval Phantom ELI4; Type: QDOVA001BB
- Measurement SW: DASY5, V5.0 Build 119.9; Postprocessing SW: SEMCAD, V13.2 Build 87

**Pin=250mW; d=10mm/Zoom Scan (7x7x7)/Cube 0:**

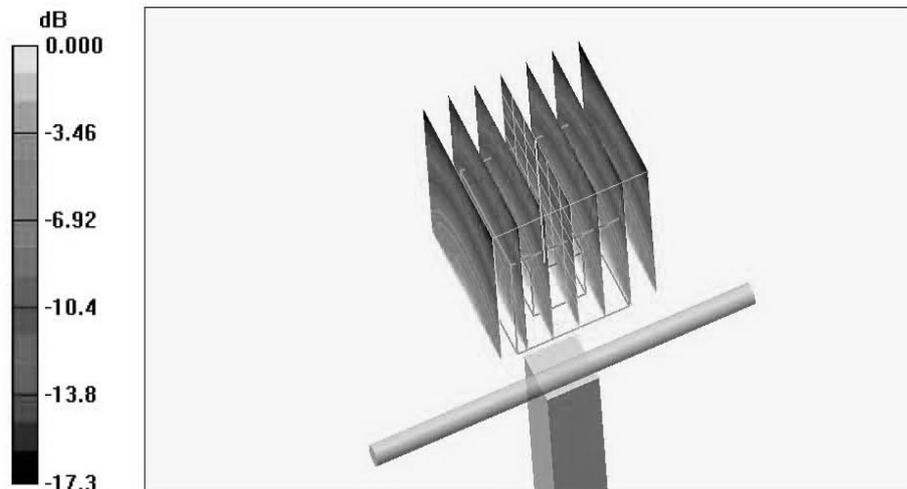
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 85.1 V/m; Power Drift = -0.057 dB

Peak SAR (extrapolated) = 18.8 W/kg

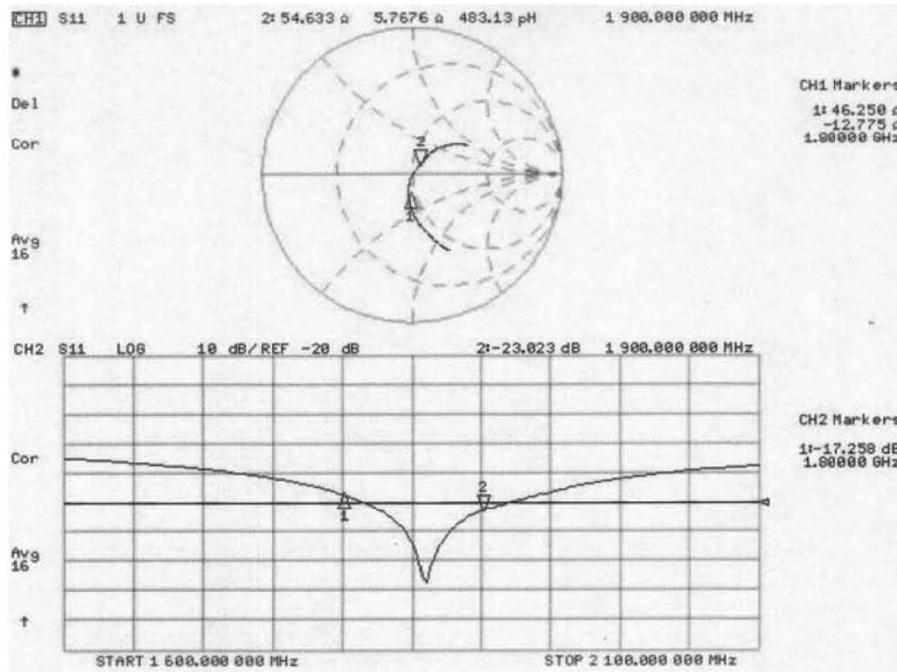
**SAR(1 g) = 9.88 mW/g; SAR(10 g) = 5.0 mW/g**

Maximum value of SAR (measured) = 11.5 mW/g



0 dB = 11.5mW/g

Impedance Measurement Plot for Head TSL



**DASY5 Validation Report for Body TSL**

Date/Time: 2009-7-15 15:37:31

**Test Laboratory: TMC, Beijing, China**

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: SN: 5d060**

Communication System: CW Frequency: 1900 MHz Duty Cycle: 1:1

Medium: Body 1900MHz

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.55$  mho/m;  $\epsilon_r = 52.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY5 Configuration:**

- Probe: ESSDV3 - SNS149; ConvP(4.97, 4.97, 4.97); Calibrated: 08.12.08
- Electronics: DAE4 Sn771; Calibration: 21.11.08
- Phantom: 2mm Oval Phantom ELI4; Type: QDOVA001BB
- Measurement SW: DASY5, V5.0 Build 119.9; Postprocessing SW: SEMCAD, V13.2 Build 87

**Pin=250mW; d=10mm/Zoom Scan (7x7x7)/Cube 0:**

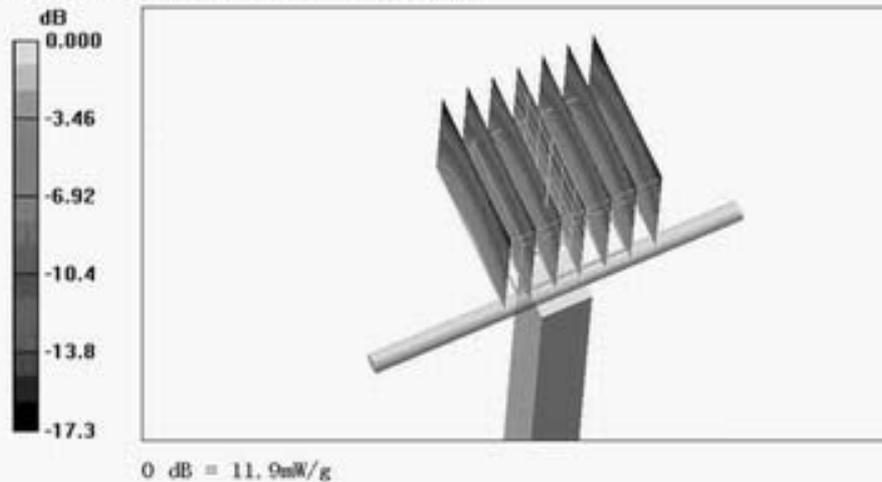
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 79.6 V/m; Power Drift = -0.009 dB

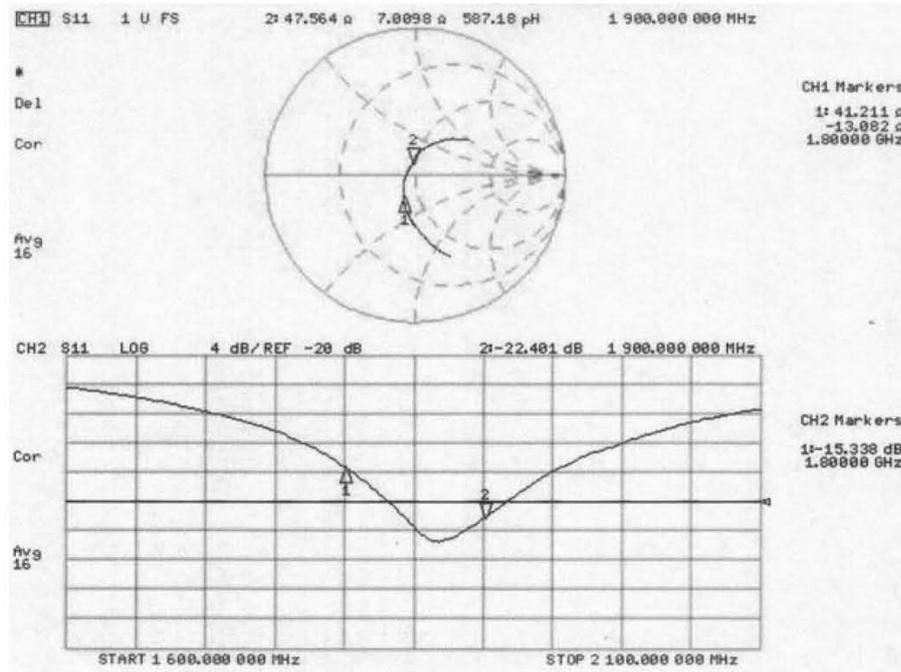
Peak SAR (extrapolated) = 19.1 W/kg

**SAR(1 g) = 10.2 mW/g; SAR(10 g) = 5.18 mW/g**

Maximum value of SAR (measured) = 11.9 mW/g



Impedance Measurement Plot for Body TSL



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### ANNEX F: DAE4 Calibration Certificate

**Calibration Laboratory of  
Schmid & Partner  
Engineering AG**  
Zeughausstrasse 43, 8004 Zurich, Switzerland



**S** Schweizerischer Kalibrierdienst  
**S** Service suisse d'étalonnage  
**C** 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 108**

Client **Auden**

Certificate No: **DAE4-452\_Nov08**

#### CALIBRATION CERTIFICATE

Object **DAE4 - SD 000 D04 BJ - SN: 452**

Calibration procedure(s) **QA CAL-06.v12  
Calibration procedure for the data acquisition electronics (DAE)**

Calibration date: **November 18, 2008**

Condition of the calibrated item **In Tolerance**

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 (Certificate No.)	Scheduled Calibration
Fluke Process Calibrator Type 702	SN: 6295803	30-Sep-08 (No: 7673)	Sep-09
Keithley Multimeter Type 2001	SN: 0810278	30-Sep-08 (No: 7670)	Sep-09
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Calibrator Box V1.1	SE UMS 006 AB 1004	06-Jun-08 (in house check)	In house check: Jun-09

	<b>Name</b>	<b>Function</b>	<b>Signature</b>
Calibrated by:	Dominique Steffen	Technician	
Approved by:	Fin Bornholt	R&D Director	

Issued: November 18, 2008

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