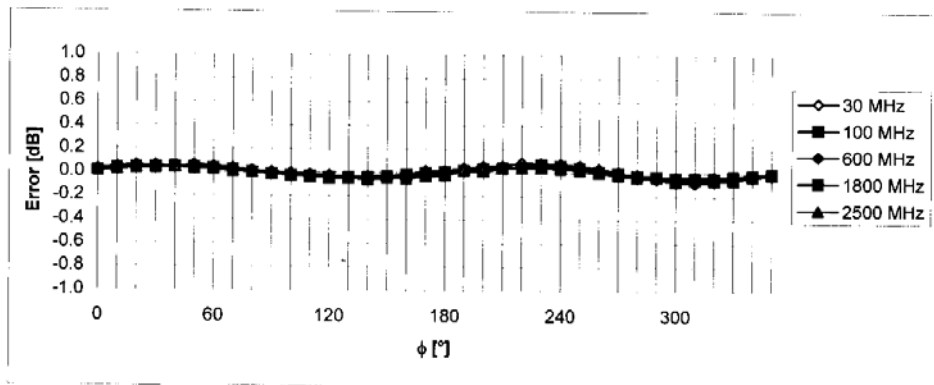
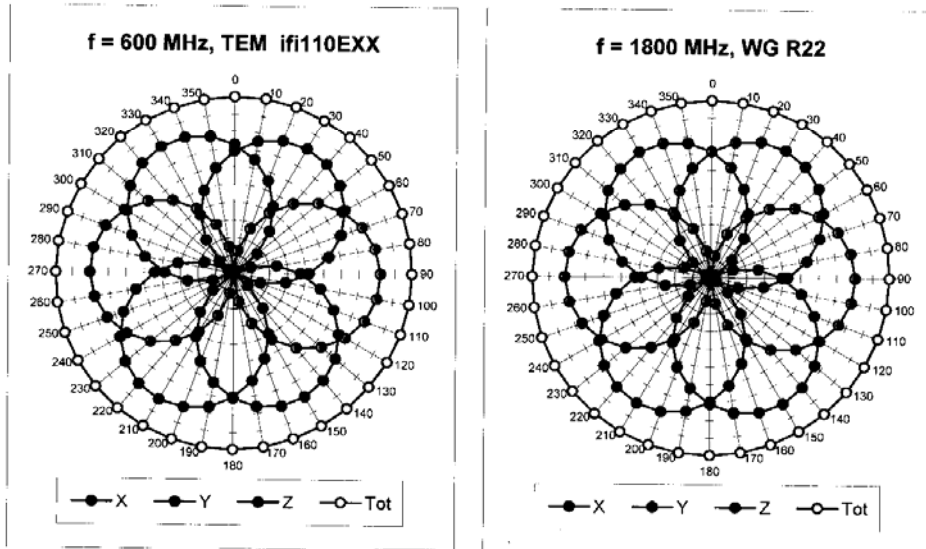


EX3DV4 SN:3677

September 23, 2009

Receiving Pattern ( $\phi$ ),  $\vartheta = 0^\circ$

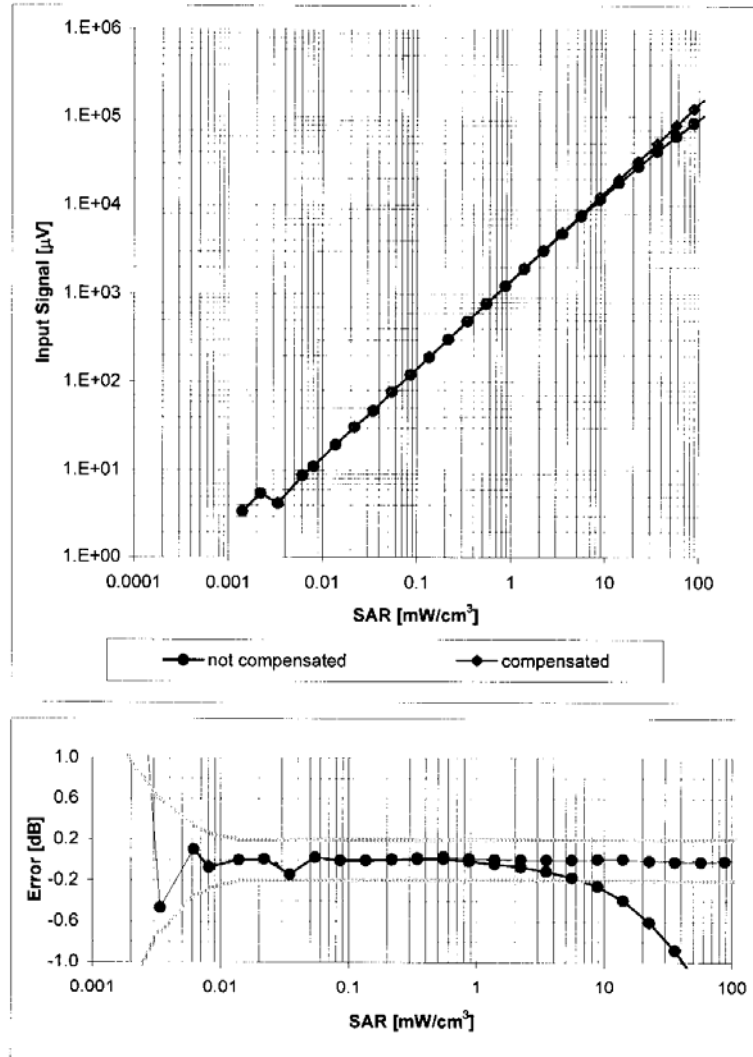


Uncertainty of Axial Isotropy Assessment:  $\pm 0.5\%$  (k=2)

EX3DV4 SN:3677

September 23, 2009

**Dynamic Range  $f(SAR_{head})$**   
(Waveguide R22,  $f = 1800$  MHz)

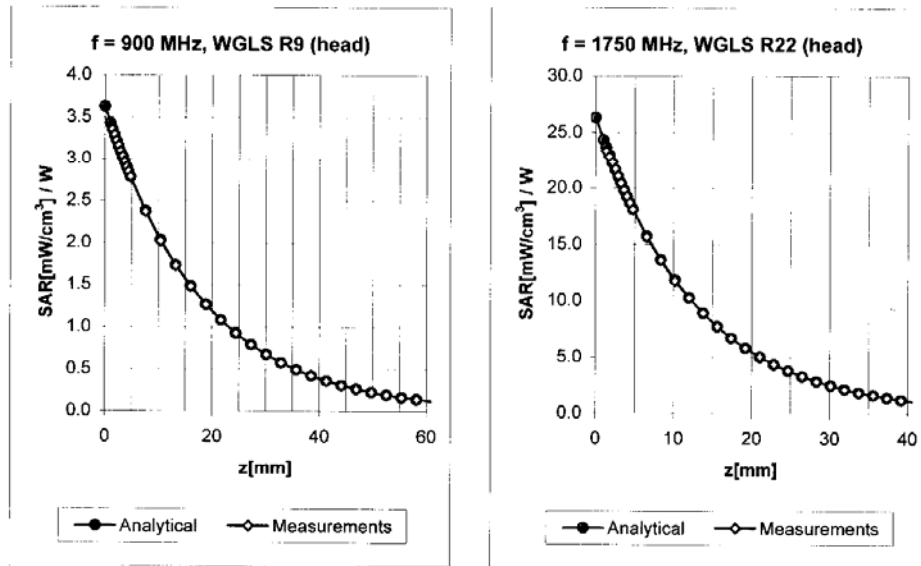


Uncertainty of Linearity Assessment:  $\pm 0.6\%$  ( $k=2$ )

EX3DV4 SN:3677

September 23, 2009

### Conversion Factor Assessment



| f [MHz] | Validity [MHz] <sup>c</sup> | TSL  | Permittivity | Conductivity | Alpha | Depth | ConvF Uncertainty   |
|---------|-----------------------------|------|--------------|--------------|-------|-------|---------------------|
| 835     | ± 50 / ± 100                | Head | 41.5 ± 5%    | 0.90 ± 5%    | 0.68  | 0.64  | 9.20 ± 11.0% (k=2)  |
| 900     | ± 50 / ± 100                | Head | 41.5 ± 5%    | 0.97 ± 5%    | 0.71  | 0.62  | 8.91 ± 11.0% (k=2)  |
| 1750    | ± 50 / ± 100                | Head | 40.1 ± 5%    | 1.37 ± 5%    | 0.68  | 0.62  | 8.04 ± 11.0% (k=2)  |
| 1950    | ± 50 / ± 100                | Head | 40.0 ± 5%    | 1.40 ± 5%    | 0.70  | 0.60  | 7.53 ± 11.0% (k=2)  |
| 450     | ± 50 / ± 100                | Body | 56.7 ± 5%    | 0.94 ± 5%    | 0.32  | 0.49  | 10.43 ± 13.3% (k=2) |
| 835     | ± 50 / ± 100                | Body | 55.2 ± 5%    | 0.97 ± 5%    | 0.54  | 0.73  | 9.11 ± 11.0% (k=2)  |
| 900     | ± 50 / ± 100                | Body | 55.0 ± 5%    | 1.05 ± 5%    | 0.63  | 0.71  | 8.89 ± 11.0% (k=2)  |
| 1750    | ± 50 / ± 100                | Body | 53.4 ± 5%    | 1.49 ± 5%    | 0.55  | 0.74  | 7.70 ± 11.0% (k=2)  |
| 1950    | ± 50 / ± 100                | Body | 53.3 ± 5%    | 1.52 ± 5%    | 0.30  | 1.01  | 7.62 ± 11.0% (k=2)  |
| 2450    | ± 50 / ± 100                | Body | 52.7 ± 5%    | 1.95 ± 5%    | 0.56  | 0.68  | 7.28 ± 11.0% (k=2)  |

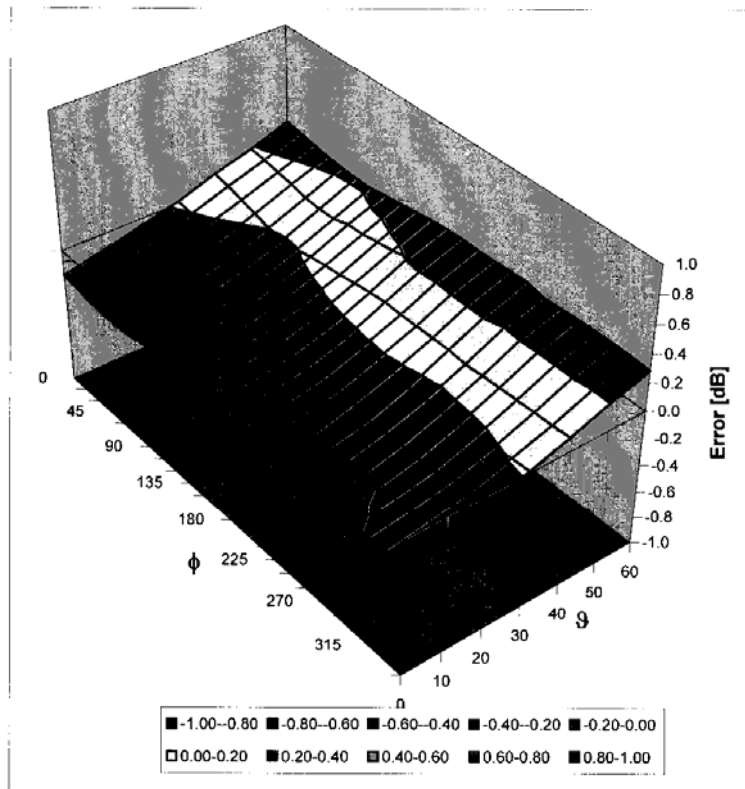
<sup>c</sup> The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

EX3DV4 SN:3677

September 23, 2009

### Deviation from Isotropy in HSL

Error ( $\phi$ ,  $\vartheta$ ),  $f = 900$  MHz



Uncertainty of Spherical Isotropy Assessment:  $\pm 2.6\%$  ( $k=2$ )

# TA Technology (Shanghai) Co., Ltd.

## Test Report

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### ANNEX E: D835V2 Dipole Calibration Certificate

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



**S** Schweizerischer Kalibrierdienst  
**C** Service suisse d'étalonnage  
**S** 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 **ATL (Auden)**

Certificate No: **D835V2-4d082\_Jul09**

| CALIBRATION CERTIFICATE   |  |                                   |                        |                   |      |                            |                       |                      |            |                           |        |                       |            |                           |        |                            |                |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                       |            |                                   |                        |                         |        |                                  |                        |                           |                  |                                   |                        |
|---|--|-----------------------------------|------------------------|-------------------|------|----------------------------|-----------------------|----------------------|------------|---------------------------|--------|-----------------------|------------|---------------------------|--------|----------------------------|----------------|---------------------------|--------|-----------------------------|--------------------|---------------------------|--------|------------------------|----------|--------------------------------|--------|------|---------|--------------------------------|--------|---------------------|------|-----------------------|-----------------|-----------------------|------------|-----------------------------------|------------------------|-------------------------|--------|----------------------------------|------------------------|---------------------------|------------------|-----------------------------------|------------------------|
| Object  | D835V2 - SN: 4d082   |                                   |                        |                   |      |                            |                       |                      |            |                           |        |                       |            |                           |        |                            |                |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                       |            |                                   |                        |                         |        |                                  |                        |                           |                  |                                   |                        |
| Calibration procedure(s)  | QA CAL-05.v7<br>Calibration procedure for dipole validation kits |                                   |                        |                   |      |                            |                       |                      |            |                           |        |                       |            |                           |        |                            |                |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                       |            |                                   |                        |                         |        |                                  |                        |                           |                  |                                   |                        |
| Calibration date:   | July 13, 2009  |                                   |                        |                   |      |                            |                       |                      |            |                           |        |                       |            |                           |        |                            |                |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                       |            |                                   |                        |                         |        |                                  |                        |                           |                  |                                   |                        |
| Condition of the calibrated item  | In Tolerance   |                                   |                        |                   |      |                            |                       |                      |            |                           |        |                       |            |                           |        |                            |                |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                       |            |                                   |                        |                         |        |                                  |                        |                           |                  |                                   |                        |
| <p>This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).<br/>The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.</p> <p>All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity &lt; 70%.</p> <p>Calibration Equipment used (M&amp;TE critical for calibration)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Primary Standards</th> <th style="width: 15%;">ID #</th> <th style="width: 30%;">Cal Date (Certificate No.)</th> <th style="width: 25%;">Scheduled Calibration</th> </tr> </thead> <tbody> <tr> <td>Power meter EPM-442A</td> <td>GB37480704</td> <td>08-Oct-08 (No. 217-00898)</td> <td>Oct-09</td> </tr> <tr> <td>Power sensor HP 8481A</td> <td>US37292783</td> <td>08-Oct-08 (No. 217-00898)</td> <td>Oct-09</td> </tr> <tr> <td>Reference 20 dB Attenuator</td> <td>SN: 5086 (20g)</td> <td>31-Mar-09 (No. 217-01025)</td> <td>Mar-10</td> </tr> <tr> <td>Type-N mismatch combination</td> <td>SN: 5047.2 / 06327</td> <td>31-Mar-09 (No. 217-01029)</td> <td>Mar-10</td> </tr> <tr> <td>Reference Probe ES3DV2</td> <td>SN: 3025</td> <td>30-Apr-09 (No. ES3-3025_Apr09)</td> <td>Apr-10</td> </tr> <tr> <td>DAE4</td> <td>SN: 601</td> <td>07-Mar-09 (No. DAE4-601_Mar09)</td> <td>Mar-10</td> </tr> </tbody> </table><br><table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Secondary Standards</th> <th style="width: 15%;">ID #</th> <th style="width: 30%;">Check Date (in house)</th> <th style="width: 25%;">Scheduled Check</th> </tr> </thead> <tbody> <tr> <td>Power sensor HP 8481A</td> <td>MY41092317</td> <td>18-Oct-02 (in house check Oct-07)</td> <td>In house check: Oct-09</td> </tr> <tr> <td>RF generator R&amp;S SMT-06</td> <td>100005</td> <td>4-Aug-99 (in house check Oct-07)</td> <td>In house check: Oct-09</td> </tr> <tr> <td>Network Analyzer HP 8753E</td> <td>US37390585 S4206</td> <td>18-Oct-01 (in house check Oct-08)</td> <td>In house check: Oct-09</td> </tr> </tbody> </table> |  |                                   |                        | Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration | Power meter EPM-442A | GB37480704 | 08-Oct-08 (No. 217-00898) | Oct-09 | Power sensor HP 8481A | US37292783 | 08-Oct-08 (No. 217-00898) | Oct-09 | Reference 20 dB Attenuator | SN: 5086 (20g) | 31-Mar-09 (No. 217-01025) | Mar-10 | Type-N mismatch combination | SN: 5047.2 / 06327 | 31-Mar-09 (No. 217-01029) | Mar-10 | Reference Probe ES3DV2 | SN: 3025 | 30-Apr-09 (No. ES3-3025_Apr09) | Apr-10 | DAE4 | SN: 601 | 07-Mar-09 (No. DAE4-601_Mar09) | Mar-10 | Secondary Standards | ID # | Check Date (in house) | Scheduled Check | Power sensor HP 8481A | MY41092317 | 18-Oct-02 (in house check Oct-07) | In house check: Oct-09 | RF generator R&S SMT-06 | 100005 | 4-Aug-99 (in house check Oct-07) | In house check: Oct-09 | Network Analyzer HP 8753E | US37390585 S4206 | 18-Oct-01 (in house check Oct-08) | In house check: Oct-09 |
| Primary Standards   | ID #   | Cal Date (Certificate No.)        | Scheduled Calibration  |                   |      |                            |                       |                      |            |                           |        |                       |            |                           |        |                            |                |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                       |            |                                   |                        |                         |        |                                  |                        |                           |                  |                                   |                        |
| Power meter EPM-442A  | GB37480704   | 08-Oct-08 (No. 217-00898)         | Oct-09                 |                   |      |                            |                       |                      |            |                           |        |                       |            |                           |        |                            |                |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                       |            |                                   |                        |                         |        |                                  |                        |                           |                  |                                   |                        |
| Power sensor HP 8481A   | US37292783   | 08-Oct-08 (No. 217-00898)         | Oct-09                 |                   |      |                            |                       |                      |            |                           |        |                       |            |                           |        |                            |                |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                       |            |                                   |                        |                         |        |                                  |                        |                           |                  |                                   |                        |
| Reference 20 dB Attenuator  | SN: 5086 (20g)   | 31-Mar-09 (No. 217-01025)         | Mar-10                 |                   |      |                            |                       |                      |            |                           |        |                       |            |                           |        |                            |                |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                       |            |                                   |                        |                         |        |                                  |                        |                           |                  |                                   |                        |
| Type-N mismatch combination   | SN: 5047.2 / 06327   | 31-Mar-09 (No. 217-01029)         | Mar-10                 |                   |      |                            |                       |                      |            |                           |        |                       |            |                           |        |                            |                |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                       |            |                                   |                        |                         |        |                                  |                        |                           |                  |                                   |                        |
| Reference Probe ES3DV2  | SN: 3025   | 30-Apr-09 (No. ES3-3025_Apr09)    | Apr-10                 |                   |      |                            |                       |                      |            |                           |        |                       |            |                           |        |                            |                |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                       |            |                                   |                        |                         |        |                                  |                        |                           |                  |                                   |                        |
| DAE4  | SN: 601  | 07-Mar-09 (No. DAE4-601_Mar09)    | Mar-10                 |                   |      |                            |                       |                      |            |                           |        |                       |            |                           |        |                            |                |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                       |            |                                   |                        |                         |        |                                  |                        |                           |                  |                                   |                        |
| Secondary Standards   | ID #   | Check Date (in house)             | Scheduled Check        |                   |      |                            |                       |                      |            |                           |        |                       |            |                           |        |                            |                |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                       |            |                                   |                        |                         |        |                                  |                        |                           |                  |                                   |                        |
| Power sensor HP 8481A   | MY41092317   | 18-Oct-02 (in house check Oct-07) | In house check: Oct-09 |                   |      |                            |                       |                      |            |                           |        |                       |            |                           |        |                            |                |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                       |            |                                   |                        |                         |        |                                  |                        |                           |                  |                                   |                        |
| RF generator R&S SMT-06   | 100005   | 4-Aug-99 (in house check Oct-07)  | In house check: Oct-09 |                   |      |                            |                       |                      |            |                           |        |                       |            |                           |        |                            |                |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                       |            |                                   |                        |                         |        |                                  |                        |                           |                  |                                   |                        |
| Network Analyzer HP 8753E   | US37390585 S4206   | 18-Oct-01 (in house check Oct-08) | In house check: Oct-09 |                   |      |                            |                       |                      |            |                           |        |                       |            |                           |        |                            |                |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                       |            |                                   |                        |                         |        |                                  |                        |                           |                  |                                   |                        |
| Calibrated by:  | Name<br>Jeton Kastrati   | Function<br>Laboratory Technician | Signature<br>          |                   |      |                            |                       |                      |            |                           |        |                       |            |                           |        |                            |                |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                       |            |                                   |                        |                         |        |                                  |                        |                           |                  |                                   |                        |
| Approved by:  | Name<br>Katja Pokovic  | Function<br>Technical Manager     | Signature<br>          |                   |      |                            |                       |                      |            |                           |        |                       |            |                           |        |                            |                |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                       |            |                                   |                        |                         |        |                                  |                        |                           |                  |                                   |                        |
|   |  |                                   | Issued: July 13, 2009  |                   |      |                            |                       |                      |            |                           |        |                       |            |                           |        |                            |                |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                       |            |                                   |                        |                         |        |                                  |                        |                           |                  |                                   |                        |
| This calibration certificate shall not be reproduced except in full without written approval of the laboratory.   |  |                                   |                        |                   |      |                            |                       |                      |            |                           |        |                       |            |                           |        |                            |                |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                       |            |                                   |                        |                         |        |                                  |                        |                           |                  |                                   |                        |

# TA Technology (Shanghai) Co., Ltd.

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Report No. RZA2010-0701

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



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

### Glossary:

|       |                                 |
|-------|---------------------------------|
| TSL   | tissue simulating liquid        |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A   | not applicable or not measured  |

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

- 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: Measurement Techniques", December 2003
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

### 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.

# TA Technology (Shanghai) Co., Ltd.

## Test Report

### Measurement Conditions

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

|                              |                           |             |
|------------------------------|---------------------------|-------------|
| DASY Version                 | DASY5                     | V5.0        |
| Extrapolation                | Advanced Extrapolation    |             |
| Phantom                      | Modular Flat Phantom V4.9 |             |
| Distance Dipole Center - TSL | 15 mm                     | with Spacer |
| Zoom Scan Resolution         | dx, dy, dz = 5 mm         |             |
| Frequency                    | 835 MHz $\pm$ 1 MHz       |             |

### Head TSL parameters

The following parameters and calculations were applied.

|                                  | Temperature         | Permittivity   | Conductivity         |
|----------------------------------|---------------------|----------------|----------------------|
| Nominal Head TSL parameters      | 22.0 °C             | 41.5           | 0.90 mho/m           |
| Measured Head TSL parameters     | (22.0 $\pm$ 0.2) °C | 40.4 $\pm$ 6 % | 0.89 mho/m $\pm$ 6 % |
| Head TSL temperature during test | (22.2 $\pm$ 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 | 2.42 mW / g                                      |
| SAR normalized  | normalized to 1W   | 9.68 mW / g                                      |
| SAR for nominal Head TSL parameters <sup>1</sup>      | normalized to 1W   | <b>9.71 mW / g <math>\pm</math> 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 | 1.58 mW / g                                      |
| SAR normalized  | normalized to 1W   | 6.32 mW / g                                      |
| SAR for nominal Head TSL parameters <sup>1</sup>        | normalized to 1W   | <b>6.34 mW / g <math>\pm</math> 16.5 % (k=2)</b> |

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

# TA Technology (Shanghai) Co., Ltd.

## Test Report

### Body TSL parameters

The following parameters and calculations were applied.

|                                  | Temperature     | Permittivity | Conductivity     |
|----------------------------------|-----------------|--------------|------------------|
| Nominal Body TSL parameters      | 22.0 °C         | 55.2         | 0.97 mho/m       |
| Measured Body TSL parameters     | (22.0 ± 0.2) °C | 53.0 ± 6 %   | 0.99 mho/m ± 6 % |
| Body TSL temperature during test | (22.5 ± 0.2) °C | ---          | ---              |

### SAR result with Body TSL

| SAR averaged over 1 cm <sup>3</sup> (1 g) of Body TSL | Condition          |                                   |
|---|--------------------|-----------------------------------|
| SAR measured  | 250 mW input power | 2.56 mW / g                       |
| SAR normalized  | normalized to 1W   | 10.2 mW / g                       |
| SAR for nominal Body TSL parameters <sup>2</sup>      | normalized to 1W   | <b>10.0 mW / g ± 17.0 % (k=2)</b> |

| SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL | condition          |                                   |
|---|--------------------|-----------------------------------|
| SAR measured  | 250 mW input power | 1.68 mW / g                       |
| SAR normalized  | normalized to 1W   | 6.72 mW / g                       |
| SAR for nominal Body TSL parameters <sup>2</sup>        | normalized to 1W   | <b>6.61 mW / g ± 16.5 % (k=2)</b> |

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



## Appendix

### Antenna Parameters with Head TSL

|                                      |                                |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 52.3 $\Omega$ - 2.5 j $\Omega$ |
| Return Loss                          | - 29.5 dB                      |

### Antenna Parameters with Body TSL

|                                      |                                |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 48.3 $\Omega$ - 4.3 j $\Omega$ |
| Return Loss                          | - 26.6 dB                      |

### General Antenna Parameters and Design

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.390 ns |
|----------------------------------|----------|

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 | October 17, 2008 |

**DASY5 Validation Report for Head TSL**

Date/Time: 13.07.2009 11:31:45

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d082**

Communication System: CW-835; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL 900 MHz

Medium parameters used:  $f = 835$  MHz;  $\sigma = 0.89$  mho/m;  $\epsilon_r = 40.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV2 - SN3025; ConvF(5.86, 5.86, 5.86); Calibrated: 30.04.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.03.2009
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

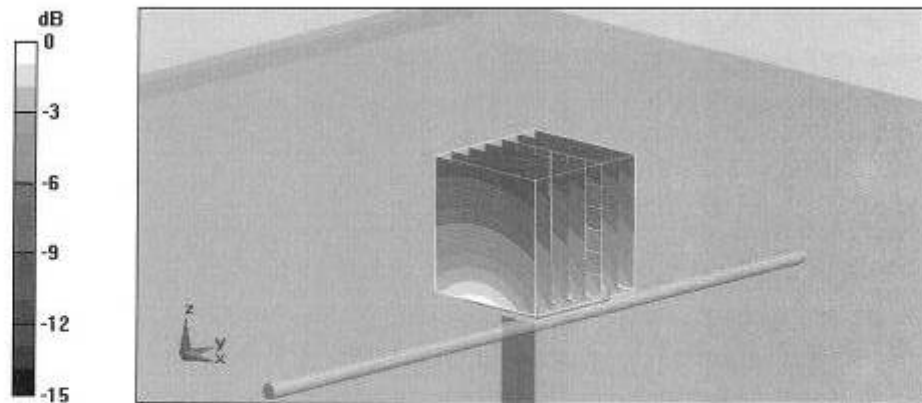
**Pin=250mW; dip=15mm/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 57.4 V/m; Power Drift = 0.00639 dB

Peak SAR (extrapolated) = 3.62 W/kg

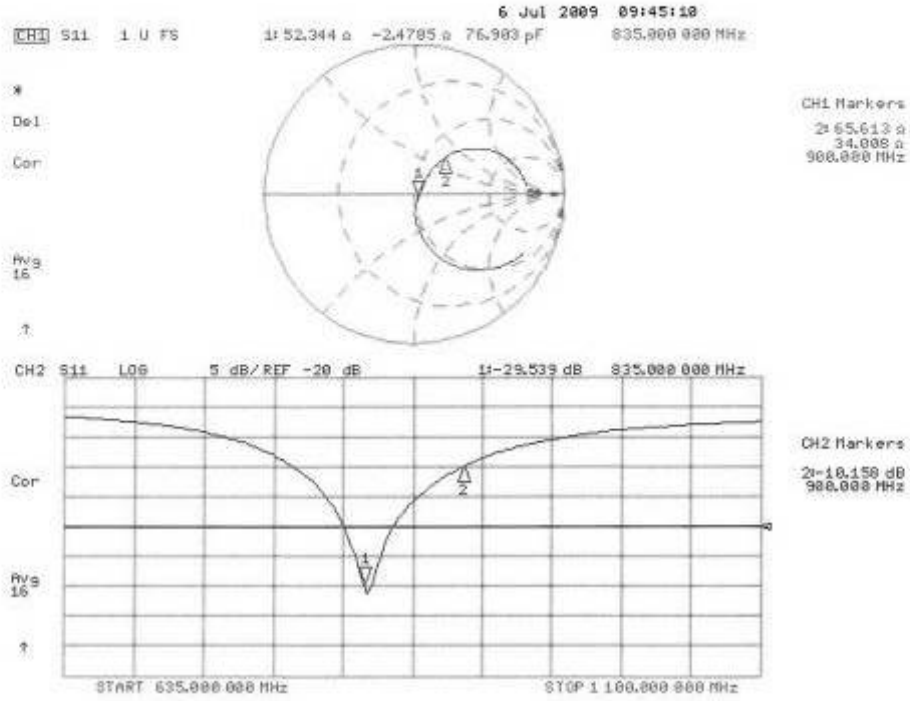
**SAR(1 g) = 2.42 mW/g; SAR(10 g) = 1.58 mW/g**

Maximum value of SAR (measured) = 2.8 mW/g



0 dB = 2.8mW/g

Impedance Measurement Plot for Head TSL



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## DASY5 Validation Report for Body TSL

Date/Time: 13.07.2009 11:50:13

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d082**

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: MSL900

Medium parameters used:  $f = 835$  MHz;  $\sigma = 0.99$  mho/m;  $\epsilon_r = 53$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC)

### DASY5 Configuration:

- Probe: ES3DV2 - SN3025; ConvF(5.79, 5.79, 5.79); Calibrated: 30.04.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.03.2009
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

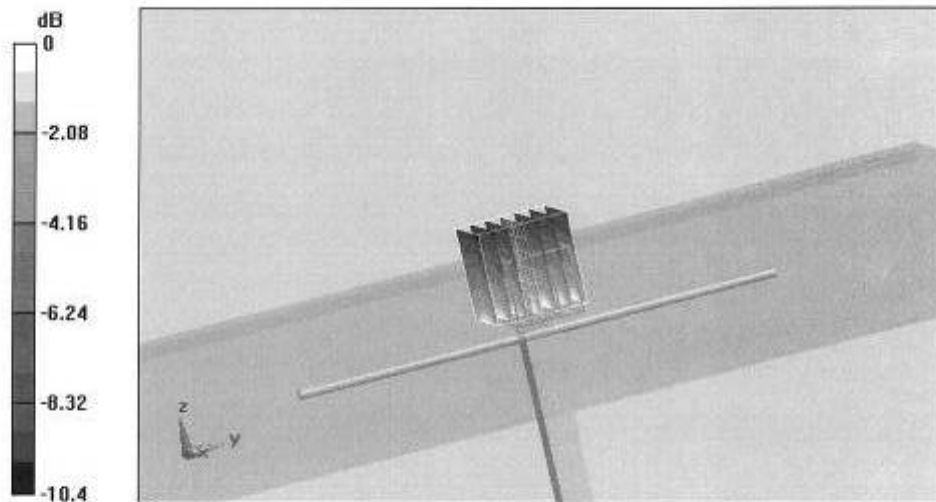
**Pin = 250mW, d = 15mm/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 56.4 V/m; Power Drift = 0.013 dB

Peak SAR (extrapolated) = 3.76 W/kg

**SAR(1 g) = 2.56 mW/g; SAR(10 g) = 1.68 mW/g**

Maximum value of SAR (measured) = 2.97 mW/g



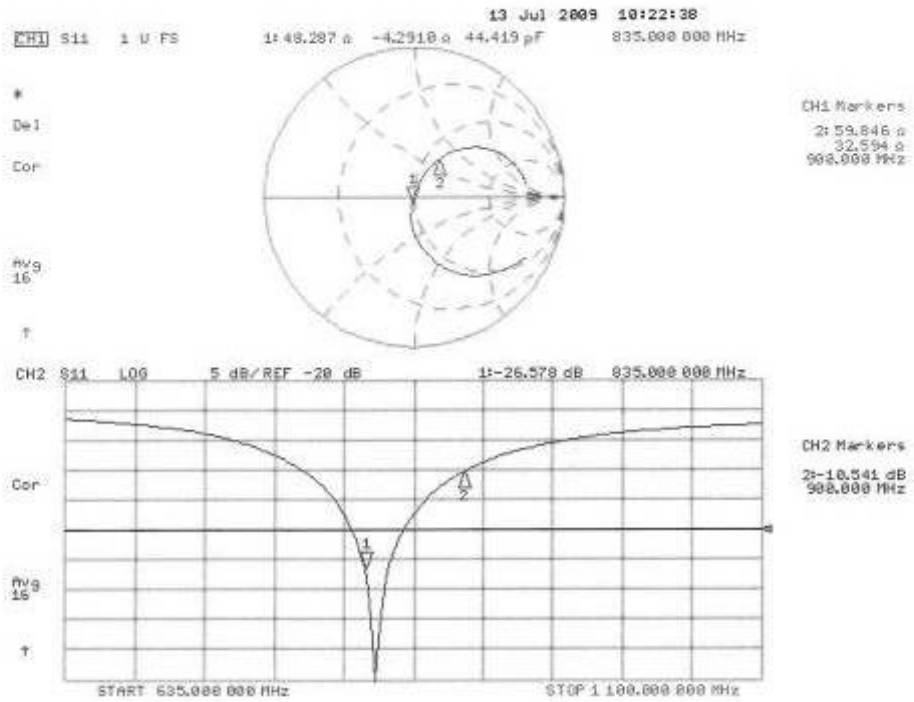
0 dB = 2.97mW/g

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## Impedance Measurement Plot for Body TSL



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## ANNEX F: D1900V2 Dipole Calibration Certificate

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



**S** Schweizerischer Kalibrierdienst  
**S** Service suisse d'étalonnage  
**S** 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: **D1900V2-5d018-Jun09**

### CALIBRATION CERTIFICATE

Object: **D1900V2 - SN: 5d018**

Calibration procedure(s): **QA CAL-05.v7  
Calibration procedure for dipole validation kits**

Calibration date: **June 26, 2009**

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 (Calibrated by, Certificate No.) | Scheduled Calibration  |
|-----------------------------|--------------------|---|------------------------|
| Power meter EPM-442A        | GB37480704         | 08-Oct-08 (No. 217-00898)                 | Oct-09                 |
| Power sensor HP 8481A       | US37292783         | 08-Oct-08 (No. 217-00898)                 | Oct-09                 |
| Reference 20 dB Attenuator  | SN: 5086 (20g)     | 31-Mar-09 (No. 217-01025)                 | Mar-10                 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 31-Mar-09 (No. 217-01029)                 | Mar-10                 |
| Reference Probe ES3DV2      | SN: 3025           | 30-Apr-09 (No. ES3-3025_Apr09)            | Apr-10                 |
| DAE4                        | SN: 601            | 07-Mar-09 (No. DAE4-601_Mar09)            | Mar-10                 |
| Secondary Standards         | ID #               | Check Date (in house)                     | Scheduled Check        |
| Power sensor HP 8481A       | MY41092317         | 18-Oct-02 (in house check Oct-07)         | In house check: Oct-09 |
| RF generator R&S SMT-06     | 100005             | 4-Aug-99 (in house check Oct-07)          | In house check: Oct-09 |
| Network Analyzer HP 8753E   | US37390585 S4206   | 18-Oct-01 (in house check Oct-08)         | In house check: Oct-09 |

Calibrated by: **Jeton Kastrati** (Name) / **Laboratory Technician** (Function) / *[Signature]* (Signature)

Approved by: **Katja Pokovic** (Name) / **Technical Manager** (Function) / *[Signature]* (Signature)

Issued: June 29, 2009

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

# TA Technology (Shanghai) Co., Ltd.

## Test Report

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



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

### Glossary:

|       |                                 |
|-------|---------------------------------|
| TSL   | tissue simulating liquid        |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A   | not applicable or not measured  |

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

- 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: Measurement Techniques", December 2003
- CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001
- Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

### 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.