

APPENDIX A: TEST CONFIGURATIONS AND TEST DATA

A1: TEST CONFIGURATION

Mode 1



The bottom of the EUT to the flat phantom distance 15 mm

Mode 2



The tip of the EUT to the flat phantom distance 0 mm

EUT Photo



Liquid Level Photo

2450MHz D=155mm



A2 : TEST DATA

Date/Time: 07/22/04 11:51:54

Test Laboratory: Advance Data Technology

ASS2101 Mode 1 Bottom Ch 1

DUT: Wireless USB Adapter ; Type: ASS2101 ; Test Channel Frequency: 2412 MHz

Communication System: 802.11b ; Frequency: 2412 MHz; Duty Cycle: 1:1; Modulation type: CCK
Medium: MSL2450 ($\sigma = 1.9036$ mho/m, $\epsilon_r = 50.6142$, $\rho = 1000$ kg/m³) ; Liquid level : 155mm

Phantom section: Flat Section ; Separation distance : 15 mm (The bottom side of the EUT to the Phantom)

Antenna type : Internal Antenna ; Air temp. : 22.0 degrees ; Liquid temp. : 21.0 degrees

DASY4 Configuration:

- Probe: ET3DV6 - SN1687; Calibrated: 2003/11/24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2003/8/15
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Low Channel/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Reference Value = 3.19 V/m

Power Drift = 0.07 dB

Maximum value of SAR = 0.107 mW/g

Low Channel/Zoon Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

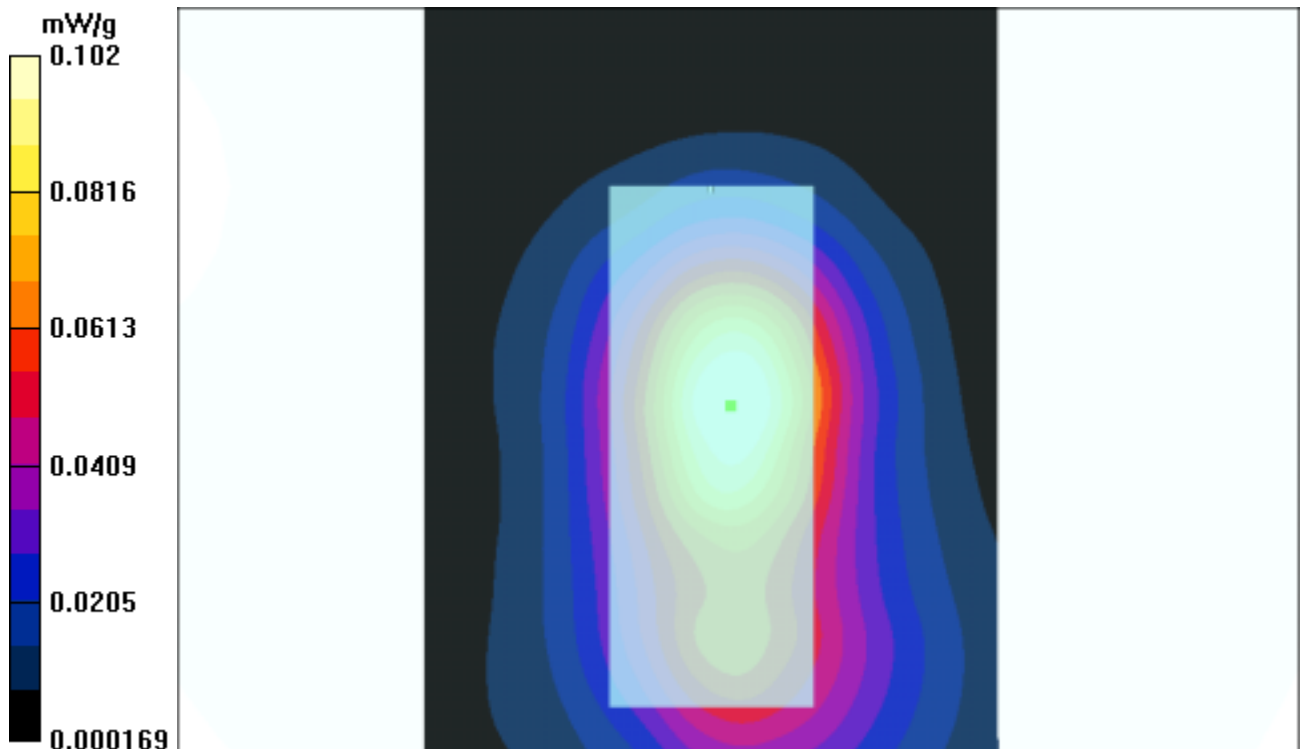
Peak SAR (extrapolated) = 0.204 W/kg

SAR(1 g) = 0.0973 mW/g; SAR(10 g) = 0.0508 mW/g

Reference Value = 3.19 V/m

Power Drift = 0.07 dB

Maximum value of SAR = 0.102 mW/g



Test Laboratory: Advance Data Technology

ASS2101 Mode 1 Bottom Ch 6

DUT: Wireless USB Adapter ; Type: ASS2101 ; Test Channel Frequency: 2437 MHz

Communication System: 802.11b ; Frequency: 2437 MHz; Duty Cycle: 1:1; Modulation type: CCK
Medium: MSL2450 ($\sigma = 1.9373$ mho/m, $\epsilon_r = 50.5805$, $\rho = 1000$ kg/m³) ; Liquid level : 155mm

Phantom section: Flat Section ; Separation distance : 15 mm (The bottom side of the EUT to the Phantom)

Antenna type : Internal Antenna ; Air temp. : 22.0 degrees ; Liquid temp. : 21.0 degrees

DASY4 Configuration:

- Probe: ET3DV6 - SN1687; Calibrated: 2003/11/24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2003/8/15
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Middle Channel/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Reference Value = 3.39 V/m

Power Drift = -0.2 dB

Maximum value of SAR = 0.102 mW/g

Middle Channel/Zoon Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

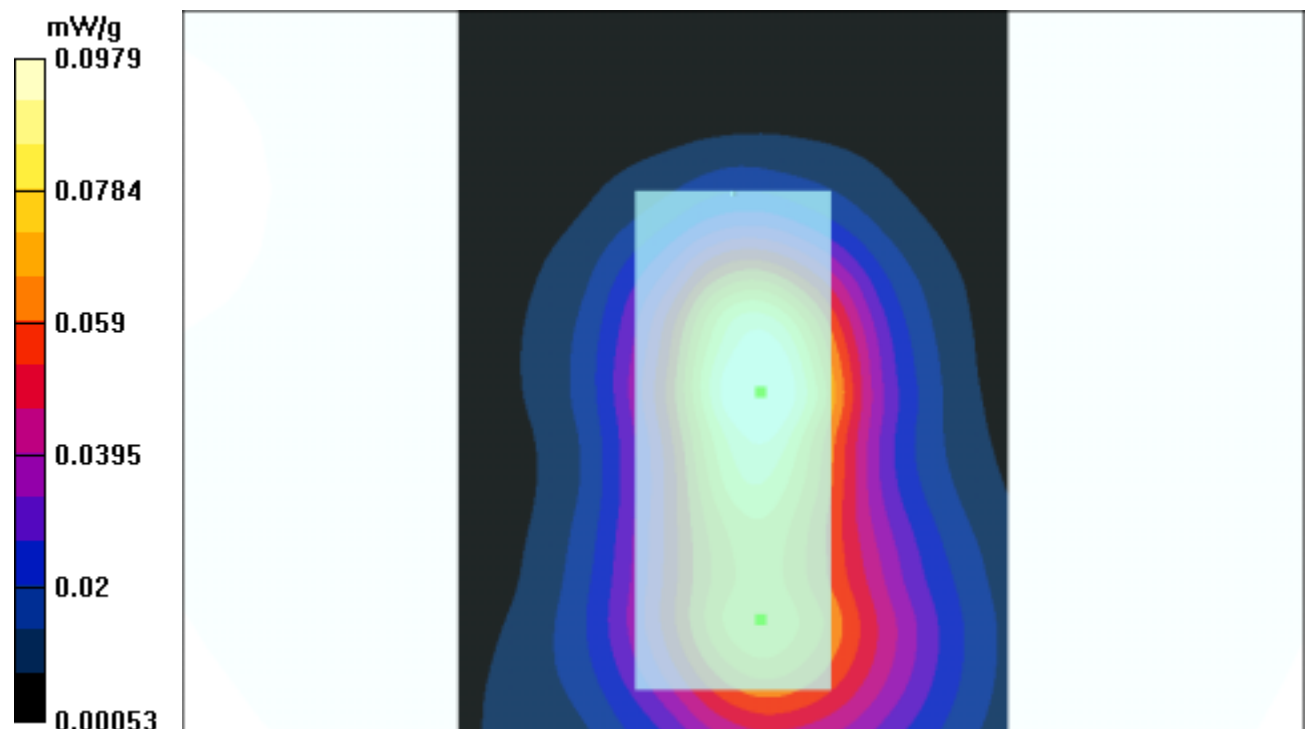
Peak SAR (extrapolated) = 0.204 W/kg

SAR(1 g) = 0.0943 mW/g; SAR(10 g) = 0.0486 mW/g

Reference Value = 3.39 V/m

Power Drift = -0.2 dB

Maximum value of SAR = 0.0979 mW/g



Test Laboratory: Advance Data Technology

ASS2101 Mode 1 Bottom Ch 11

DUT: Wireless USB Adapter ; Type: ASS2101 ; Test Channel Frequency: 2462 MHz

Communication System: 802.11b ; Frequency: 2462 MHz; Duty Cycle: 1:1; Modulation type: CCK

Medium: MSL2450 ($\sigma = 1.9682$ mho/m, $\epsilon_r = 50.5625$, $\rho = 1000$ kg/m³) ; Liquid level : 155mm

Phantom section: Flat Section ; Separation distance : 15 mm (The bottom side of the EUT to the Phantom)

Antenna type : Internal Antenna ; Air temp. : 22.0 degrees ; Liquid temp. : 21.0 degrees

DASY4 Configuration:

- Probe: ET3DV6 - SN1687; Calibrated: 2003/11/24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2003/8/15
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

High Channel/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Reference Value = 2.73 V/m

Power Drift = -0.2 dB

Maximum value of SAR = 0.0518 mW/g

High Channel/Zoon Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

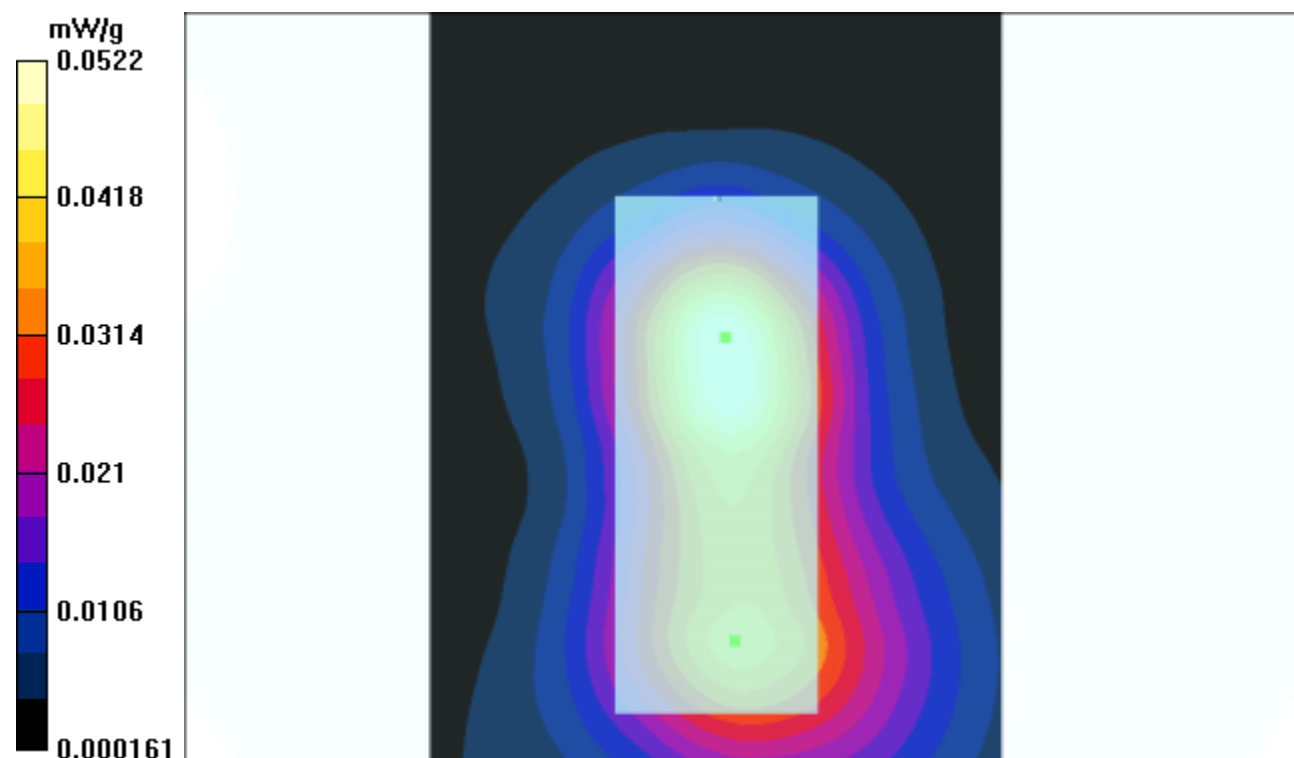
Peak SAR (extrapolated) = 0.109 W/kg

SAR(1 g) = 0.05 mW/g; SAR(10 g) = 0.0248 mW/g

Reference Value = 2.73 V/m

Power Drift = -0.2 dB

Maximum value of SAR = 0.0522 mW/g



Test Laboratory: Advance Data Technology

ASS2101 Mode 2 Tip Ch 1

DUT: Wireless USB Adapter ; Type: ASS2101 ; Test Channel Frequency: 2412 MHz

Communication System: 802.11b ; Frequency: 2412 MHz; Duty Cycle: 1:1; Modulation type: CCK

Medium: MSL2450 ($\sigma = 1.9036$ mho/m, $\epsilon_r = 50.6142$, $\rho = 1000$ kg/m³) ; Liquid level : 155 mm

Phantom section: Flat Section ; Separation distance : 0 mm (The tip of the EUT to the Phantom)

Antenna type : Internal Antenna ; Air temp. : 22.0 degrees ; Liquid temp. : 21.0 degrees

DASY4 Configuration:

- Probe: ET3DV6 - SN1687; Calibrated: 2003/11/24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2003/8/15
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Low Channel/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm

Reference Value = 2.97 V/m

Power Drift = -0.2 dB

Maximum value of SAR = 0.0226 mW/g

Low Channel/Zoon Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

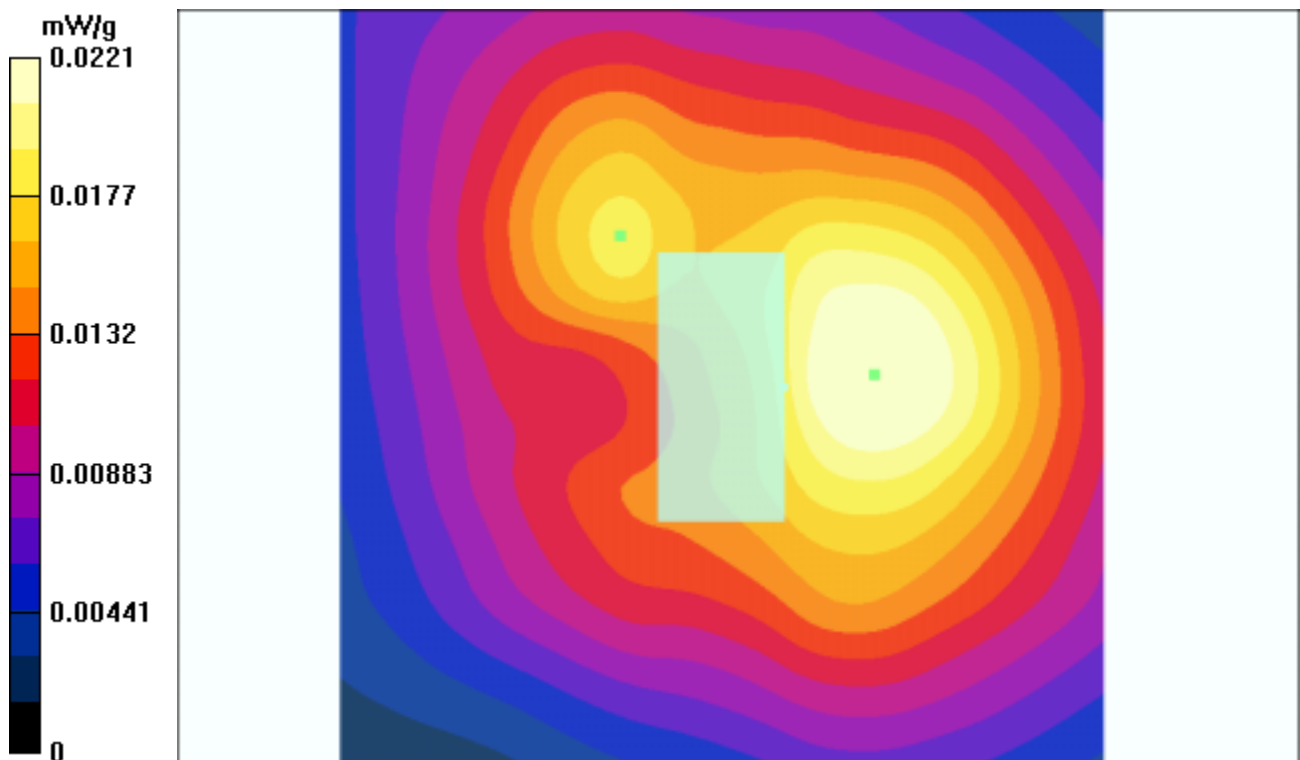
Peak SAR (extrapolated) = 0.045 W/kg

SAR(1 g) = 0.0213 mW/g; SAR(10 g) = 0.011 mW/g

Reference Value = 2.97 V/m

Power Drift = -0.2 dB

Maximum value of SAR = 0.0221 mW/g



Test Laboratory: Advance Data Technology

ASS2101 Mode 2 Tip Ch 6

DUT: Wireless USB Adapter ; Type: ASS2101 ; Test Channel Frequency: 2437 MHz

Communication System: 802.11b ; Frequency: 2437 MHz; Duty Cycle: 1:1; Modulation type: CCK

Medium: MSL2450 ($\sigma = 1.9373$ mho/m, $\epsilon_r = 50.5805$, $\rho = 1000$ kg/m³) ; Liquid level : 155 mm

Phantom section: Flat Section ; Separation distance : 0 mm (The tip of the EUT to the Phantom)

Antenna type : Internal Antenna ; Air temp. : 22.0 degrees ; Liquid temp. : 21.0 degrees

DASY4 Configuration:

- Probe: ET3DV6 - SN1687; Calibrated: 2003/11/24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2003/8/15
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Middle Channel/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm

Reference Value = 2.99 V/m

Power Drift = -0.2 dB

Maximum value of SAR = 0.0199 mW/g

Middle Channel/Zoon Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

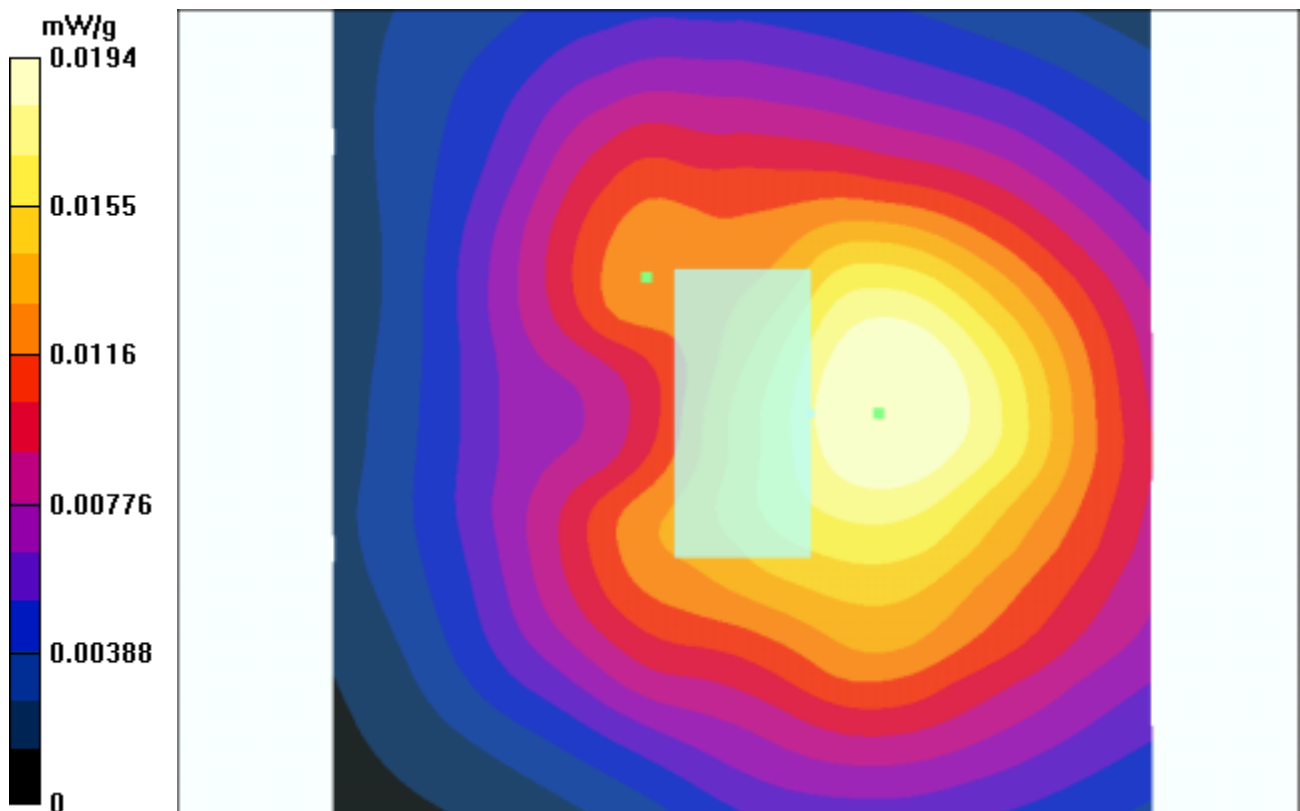
Peak SAR (extrapolated) = 0.0479 W/kg

SAR(1 g) = 0.0186 mW/g; SAR(10 g) = 0.00971 mW/g

Reference Value = 2.99 V/m

Power Drift = -0.2 dB

Maximum value of SAR = 0.0194 mW/g



Test Laboratory: Advance Data Technology

ASS2101 Mode 2 Tip Ch 11

DUT: Wireless USB Adapter ; Type: ASS2101 ; Test Channel Frequency: 2462 MHz

Communication System: 802.11b ; Frequency: 2462 MHz; Duty Cycle: 1:1; Modulation type: CCK

Medium: MSL2450 ($\sigma = 1.9682$ mho/m, $\epsilon_r = 50.5625$, $\rho = 1000$ kg/m³) ; Liquid level : 155 mm

Phantom section: Flat Section ; Separation distance : 0 mm (The tip of the EUT to the Phantom)

Antenna type : Internal Antenna ; Air temp. : 22.0 degrees ; Liquid temp. : 21.0 degrees

DASY4 Configuration:

- Probe: ET3DV6 - SN1687; Calibrated: 2003/11/24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2003/8/15
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

High Channel/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm

Reference Value = 1.93 V/m

Power Drift = -0.2 dB

Maximum value of SAR = 0.00922 mW/g

High Channel 2/Zoon Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

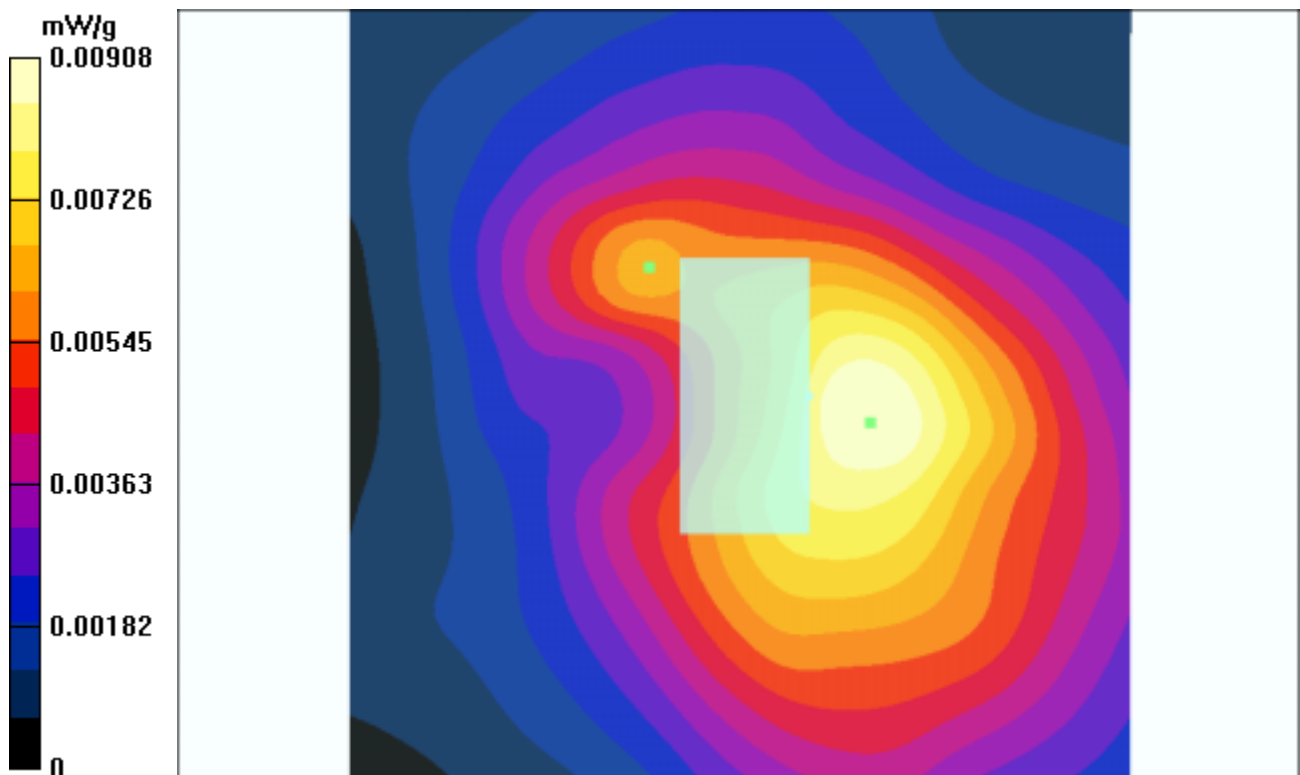
Peak SAR (extrapolated) = 0.0451 W/kg

SAR(1 g) = 0.0085 mW/g; SAR(10 g) = 0.00412 mW/g

Reference Value = 1.93 V/m

Power Drift = -0.2 dB

Maximum value of SAR = 0.00908 mW/g



Test Laboratory: Advance Data Technology

ASS2101 Mode 1 Bottom Ch 1

DUT: Wireless USB Adapter ; Type: ASS2101 ; Test Channel Frequency: 2412 MHz

Communication System: 802.11b ; Frequency: 2412 MHz; Duty Cycle: 1:1; Modulation type: CCK
Medium: MSL2450 ($\sigma = 1.9036$ mho/m, $\epsilon_r = 50.6142$, $\rho = 1000$ kg/m³) ; Liquid level : 155mm

Phantom section: Flat Section ; Separation distance : 15 mm (The bottom of the EUT to the Phantom)

Antenna type : Internal Antenna ; Air temp. : 22.0 degrees ; Liquid temp. : 21.0 degrees

DASY4 Configuration:

- Probe: ET3DV6 - SN1687; Calibrated: 2003/11/24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2003/8/15
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Low Channel/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Reference Value = 3.19 V/m

Power Drift = 0.07 dB

Maximum value of SAR = 0.107 mW/g

Low Channel/Zoon Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

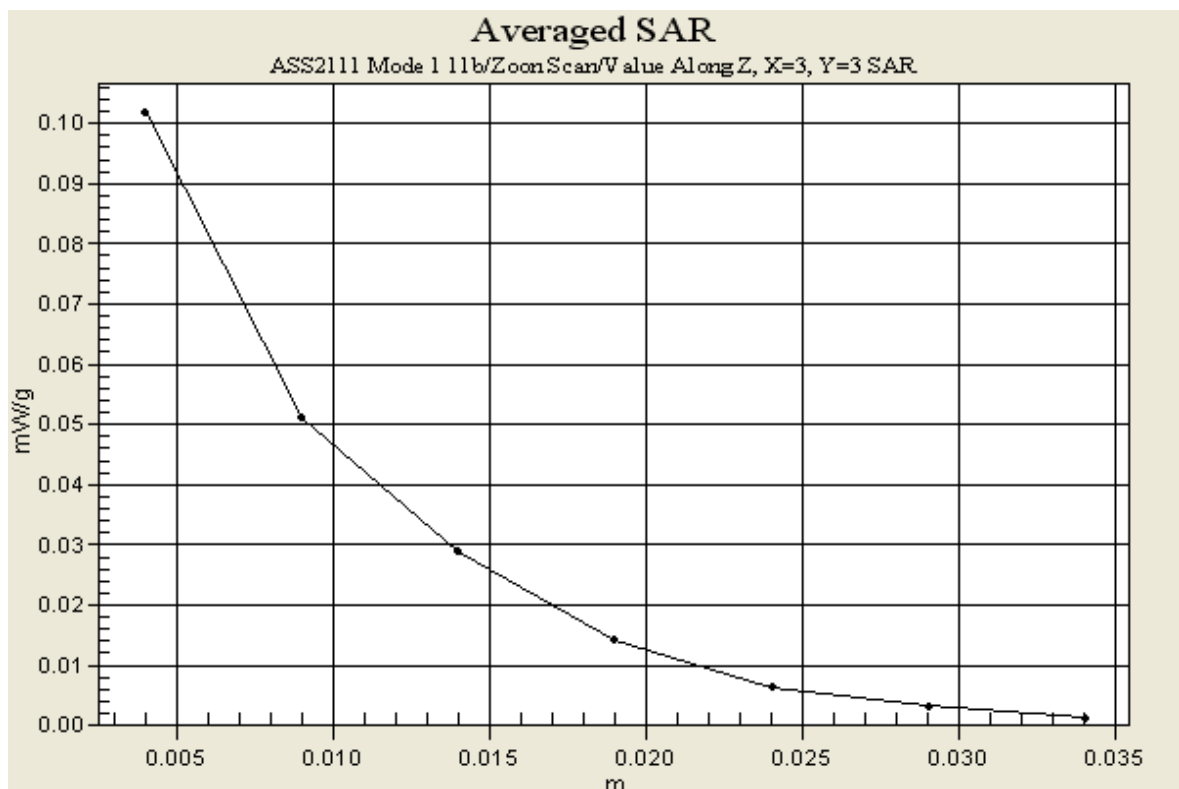
Peak SAR (extrapolated) = 0.204 W/kg

SAR(1 g) = 0.0973 mW/g; SAR(10 g) = 0.0508 mW/g

Reference Value = 3.19 V/m

Power Drift = 0.07 dB

Maximum value of SAR = 0.102 mW/g



A3 : SYSTEM VALIDATION

Date/Time: 07/22/04 09:10:26

Test Laboratory: Advance Data Technology

System Validation Check-MSL 2450MHz

DUT: Dipole 2450 MHz ; Type: D2450V2 ; Test Channel Frequency: 2450 MHz

Communication System: CW ; Frequency: 2450 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: MSL2450 ($\sigma = 1.9531$ mho/m, $\epsilon_r = 50.5702$, $\rho = 1000$ kg/m³) ; Liquid level : 155mm
Phantom section: Flat Section ; Separation distance : 10 mm (The feetpoint of the dipole to the Phantom)Air temp. : 22.0 degrees ; Liquid temp. : 21.0 degrees

DASY4 Configuration:

- Probe: ET3DV6 - SN1687; Calibrated: 2003/11/24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2003/8/15
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

d=10mm, Pin=250mW/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm

Reference Value = 95.7 V/m

Power Drift = -0.04 dB

Maximum value of SAR = 16.6 mW/g

d=10mm, Pin=250mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

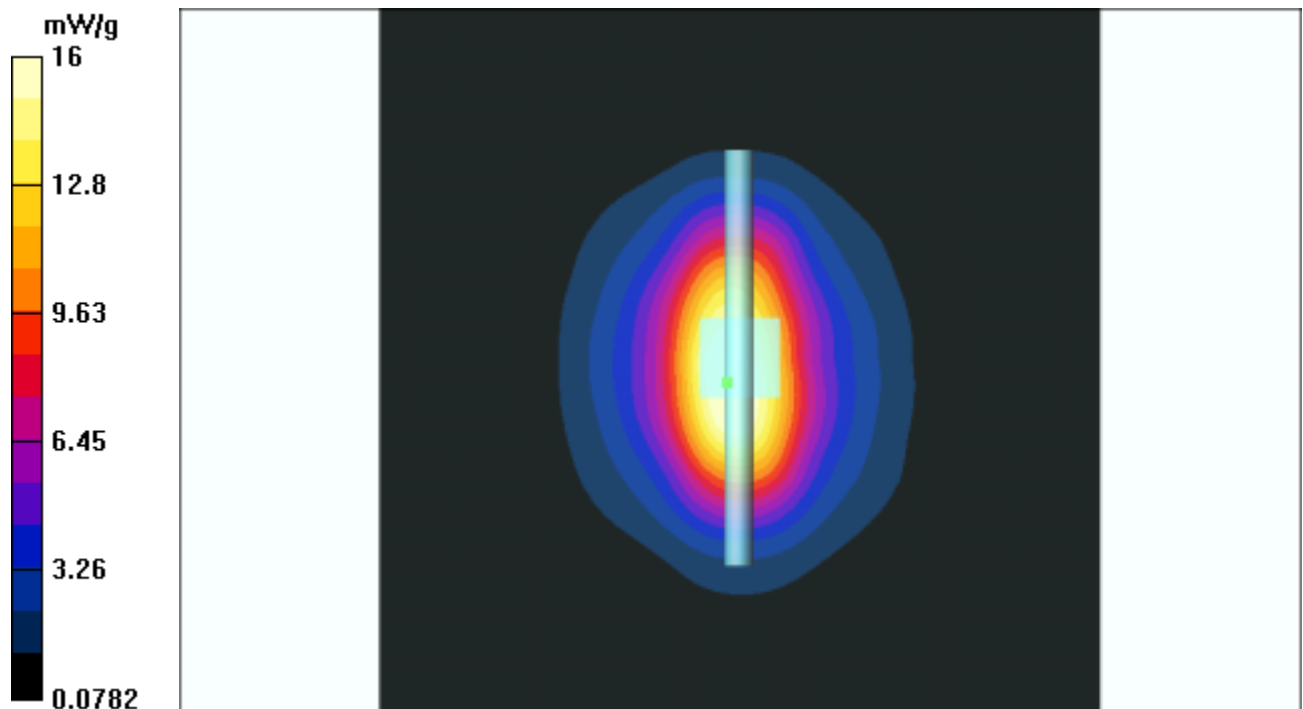
Peak SAR (extrapolated) = 32.8 W/kg

SAR(1 g) = 14.7 mW/g; SAR(10 g) = 6.55 mW/g

Reference Value = 95.7 V/m

Power Drift = -0.04 dB

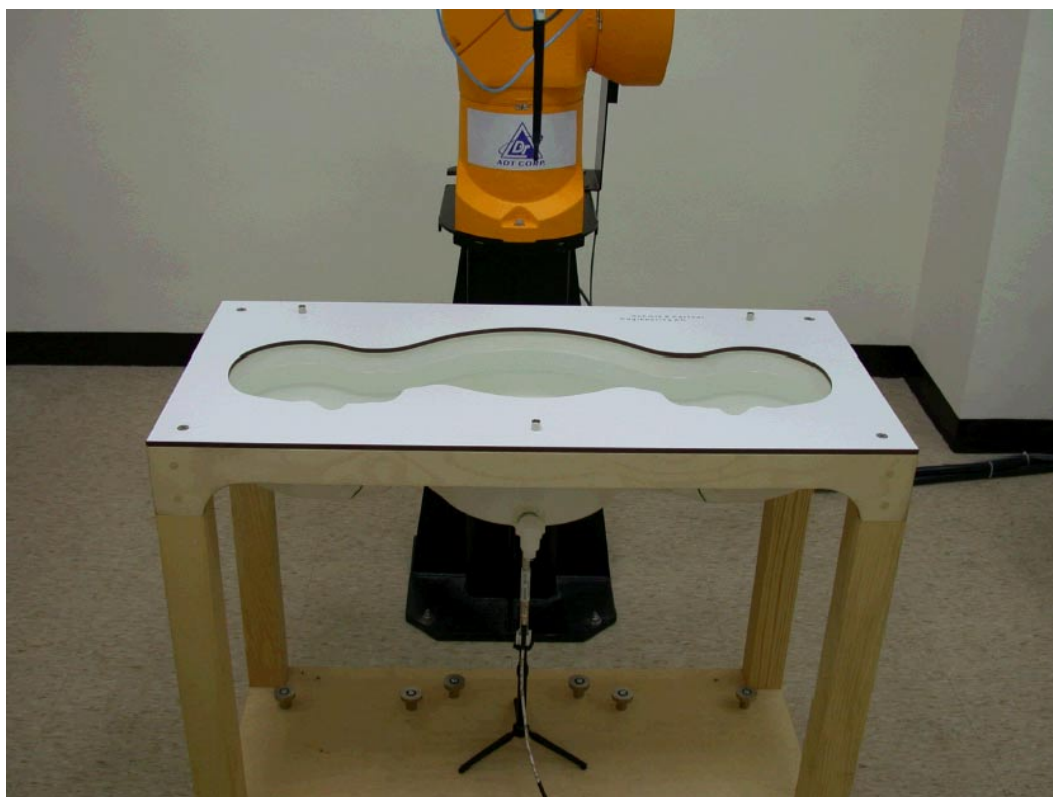
Maximum value of SAR = 16 mW/g



APPENDIX B: ADT SAR MEASUREMENT SYSTEM



APPENDIX C: PHOTOGRAPHS OF SYSTEM VALIDATION





APPENDIX D: SYSTEM CERTIFICATE & CALIBRATION

D1: SAM PHANTOM

Schmid & Partner Engineering AG

Zeughausstrasse 43, 8004 Zurich, Switzerland, Phone +41 1 245 97 00, Fax +41 1 245 97 79

Certificate of conformity / First Article Inspection

Item	SAM Twin Phantom V4.0
Type No	QD 000 P40 CA
Series No	TP-1150 and higher
Manufacturer / Origin	Untersee Composites Hauptstr. 69 CH-8559 Fruthwilen Switzerland

Tests

The series production process used allows the limitation to test of first articles. Complete tests were made on the pre-series Type No. QD 000 P40 AA, Serial No. TP-1001 and on the series first article Type No. QD 000 P40 BA, Serial No. TP-1006. Certain parameters have been retested using further series units (called samples).

Test	Requirement	Details	Units tested
Shape	Compliance with the geometry according to the CAD model.	IT'IS CAD File (*)	First article, Samples
Material thickness	Compliant with the requirements according to the standards	2mm +/- 0.2mm in specific areas	First article, Samples
Material parameters	Dielectric parameters for required frequencies	200 MHz – 3 GHz Relative permittivity < 5 Loss tangent < 0.05.	Material sample TP 104-5
Material resistivity	The material has been tested to be compatible with the liquids defined in the standards	Liquid type HSL 1800 and others according to the standard.	Pre-series, First article

Standards

- [1] CENELEC EN 50361
- [2] IEEE P1528-200x draft 6.5
- [3] IEC PT 62209 draft 0.9

(*) The IT'IS CAD file is derived from [2] and is also within the tolerance requirements of the shapes of [1] and [3].

Conformity

Based on the sample tests above, we certify that this item is in compliance with the uncertainty requirements of SAR measurements specified in standard [1] and draft standards [2] and [3].

Date 28.02.2002

Signature / Stamp

F. Bombault

**Schmid & Partner
Engineering AG**

Zeughausstrasse 43, CH-8004 Zurich
Tel. +41 1 245 97 00, Fax +41 1 245 97 79

Volker Kofe



D2: DOSIMETRIC E-FIELD PROBE

IMPORTANT NOTICE

USAGE OF PROBES IN ORGANIC SOLVENTS

Diethylene Glycol Monobuthy Ether (the basis for liquids above 1 GHz), as many other organic solvents, is a very effective softener for synthetic materials. These solvents can cause irreparable damage to certain SPEAG products, except those which are explicitly declared as compliant with organic solvents.

Compatible Probes:

- ET3DV6
- ET3DV6R
- ES3DV2
- ER3DV6
- H3DV6

Important Note for ET3DV6 Probes:

The ET3DV6 probes shall not be exposed to solvents longer than necessary for the measurements and shall be cleaned daily after use with warm water and stored dry.

s p e a g

Schmid & Partner Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 1 245 9700, Fax +41 1 245 9779
info@speag.com, <http://www.speag.com>

Schmid & Partner Engineering AG

Client

ADT (Auden)

CALIBRATION CERTIFICATE

Object(s)

ET3DV6 - SN:1687

Calibration procedure(s)

QA CAL-01.v2
Calibration procedure for dosimetric E-field probes

Calibration date:

November 24, 2003

Condition of the calibrated item

In Tolerance (according to the specific calibration document)

This calibration statement documents traceability of M&TE used in the calibration procedures and conformity of the procedures with the ISO/IEC 17025 international standard.

All calibrations have been conducted in the closed laboratory facility: environment temperature 22 +/- 2 degrees Celsius and humidity < 75%.

Calibration Equipment used (M&TE critical for calibration)

Model Type	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM E4419B	GB41293874	2-Apr-03 (METAS, No 252-0250)	Apr-04
Power sensor E4412A	MY41495277	2-Apr-03 (METAS, No 252-0250)	Apr-04
Reference 20 dB Attenuator	SN: 5086 (20b)	3-Apr-03 (METAS No. 251-0340)	Apr-04
Fluke Process Calibrator Type 702	SN: 6295803	8-Sep-03 (Sintrel SCS No. E-030020)	Sep-04
Power sensor HP 8481A	MY41092180	18-Sep-02 (SPEAG, in house check Oct-03)	In house check: Oct 05
RF generator HP 8684C	US3642U01700	4-Aug-99 (SPEAG, in house check Aug-02)	In house check: Aug-05
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Oct-03)	In house check: Oct 05

Calibrated by:

Name

Nico Vetterli

Function

Technician

Signature



Approved by:

Katja Pokovic

Laboratory Director



Date issued: November 24, 2003

This calibration certificate is issued as an intermediate solution until the accreditation process (based on ISO/IEC 17025 International Standard) for Calibration Laboratory of Schmid & Partner Engineering AG is completed.

Probe ET3DV6

SN:1687

Manufactured:	May 28, 2002
Last calibration:	June 5, 2002
Recalibrated:	November 24, 2003

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)