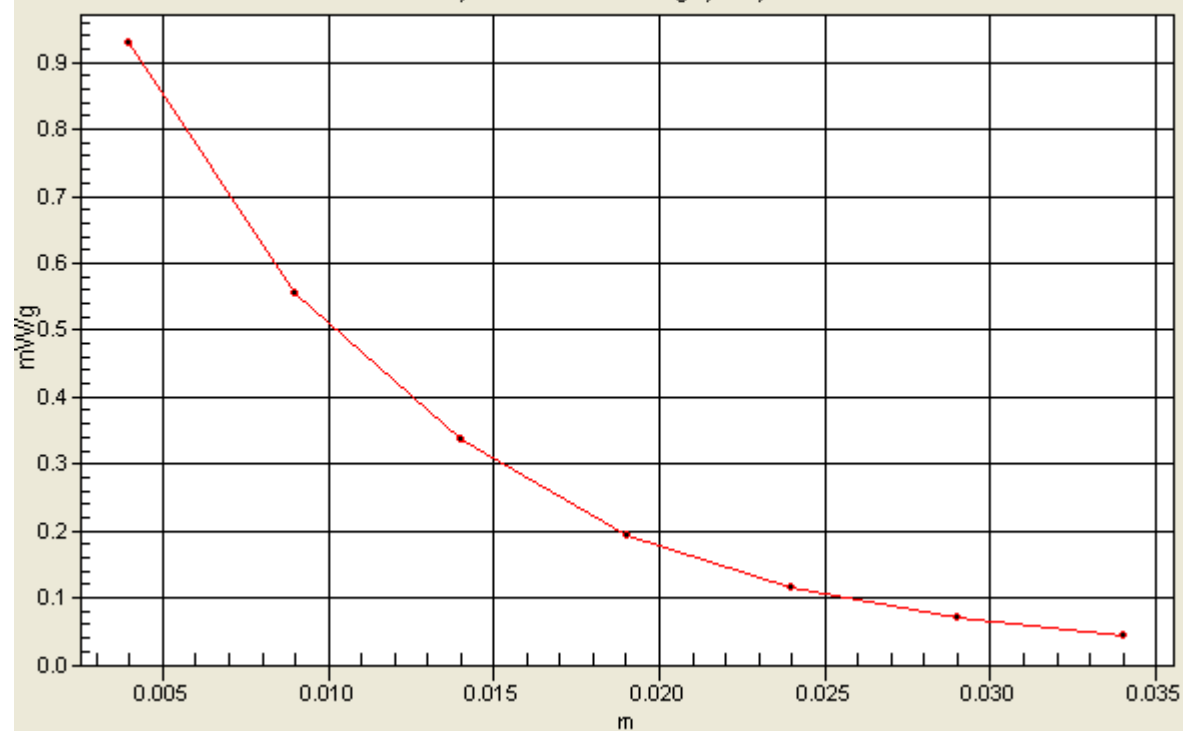


1g/10g Averaged SAR

SAR; Zoon Scan: Value Along Z, X=2, Y=3



Test Laboratory: Advance Data Technology

WPCA-112AG 11b Bottom Mode 3 Ch 6**DUT: Wireless A/G CardBus Network Card ; Type: WPCA-112AG ; Test Channel Frequency: 2437 MHz**Communication System: 802.11b ; Frequency: 2437 MHz ; Duty Cycle: 1:1 ; Modulation type: CCK
Medium: MSL2450 Medium parameters used: $f = 2437 \text{ MHz}$; $\sigma = 2.01 \text{ mho/m}$; $\epsilon_r = 51.7$; $\rho = 1000$ kg/m^3 ; Liquid level : 150 mm

Phantom section: Flat Section ; Separation distance : 10 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 ; ConvF(4.23, 4.23, 4.23) ; Calibrated: 2004/8/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510 ; Calibrated: 2004/8/17
- Phantom: SAM 12 ; Type: SAM V4.0 ; Serial: TP 1202
- Measurement SW: DASY4, V4.3 Build 22 ; Postprocessing SW: SEMCAD, V1.8 Build 127

Middle Channel/Area Scan (8x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (measured) = 0.823 mW/g

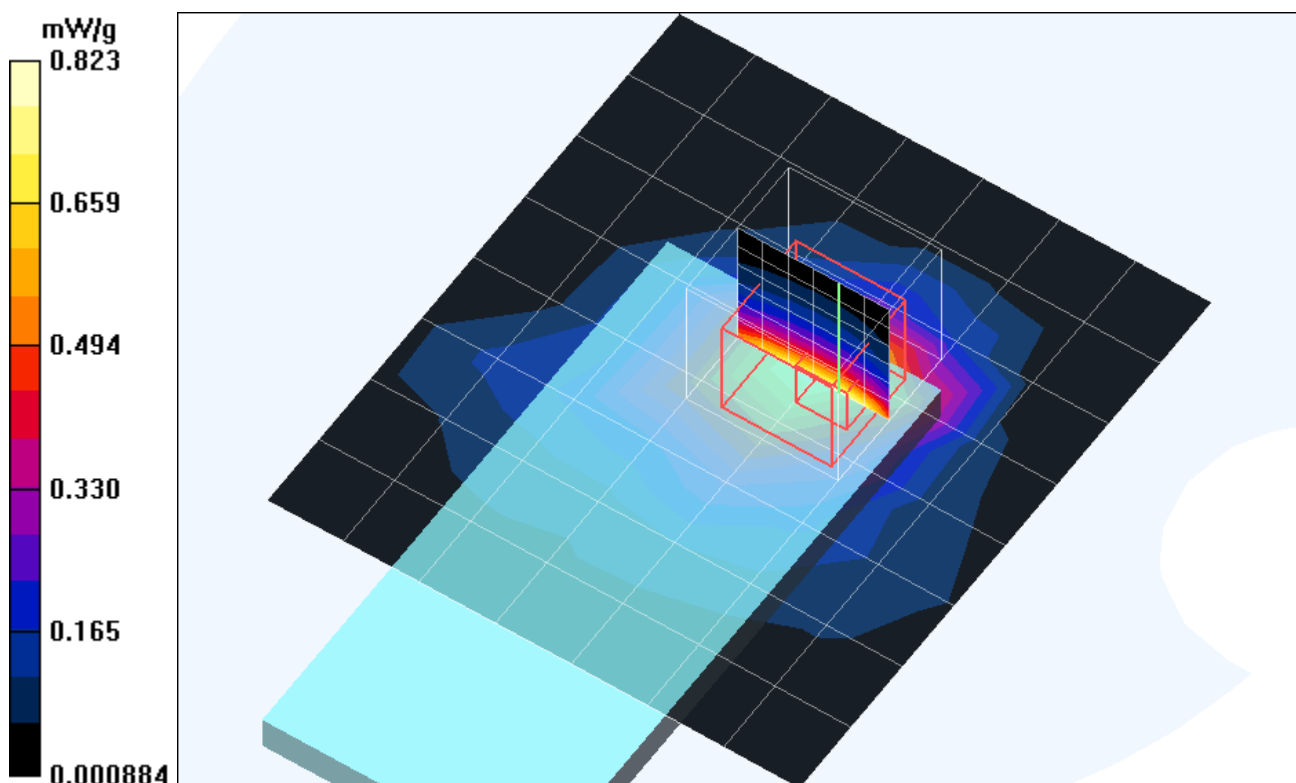
Middle Channel/Zoon Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 7.32 V/m; Power Drift = 0.1 dB

Peak SAR (extrapolated) = 1.36 W/kg

SAR(1 g) = 0.781 mW/g; SAR(10 g) = 0.429 mW/g

Maximum value of SAR (measured) = 0.855 mW/g



Test Laboratory: Advance Data Technology

WPCA-112AG 11b Bottom Mode 3 Ch 11**DUT: Wireless A/G CardBus Network Card ; Type: WPCA-112AG ; Test Channel Frequency: 2462 MHz**Communication System: 802.11b ; Frequency: 2462 MHz ; Duty Cycle: 1:1 ; Modulation type: CCK
Medium: MSL2450 Medium parameters used: $f = 2462 \text{ MHz}$; $\sigma = 2.05 \text{ mho/m}$; $\epsilon_r = 51.6$; $\rho = 1000$ kg/m^3 ; Liquid level : 150 mm

Phantom section: Flat Section ; Separation distance : 10 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 ; ConvF(4.23, 4.23, 4.23) ; Calibrated: 2004/8/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510 ; Calibrated: 2004/8/17
- Phantom: SAM 12 ; Type: SAM V4.0 ; Serial: TP 1202
- Measurement SW: DASY4, V4.3 Build 22 ; Postprocessing SW: SEMCAD, V1.8 Build 127

High Channel/Area Scan (8x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (measured) = 0.629 mW/g

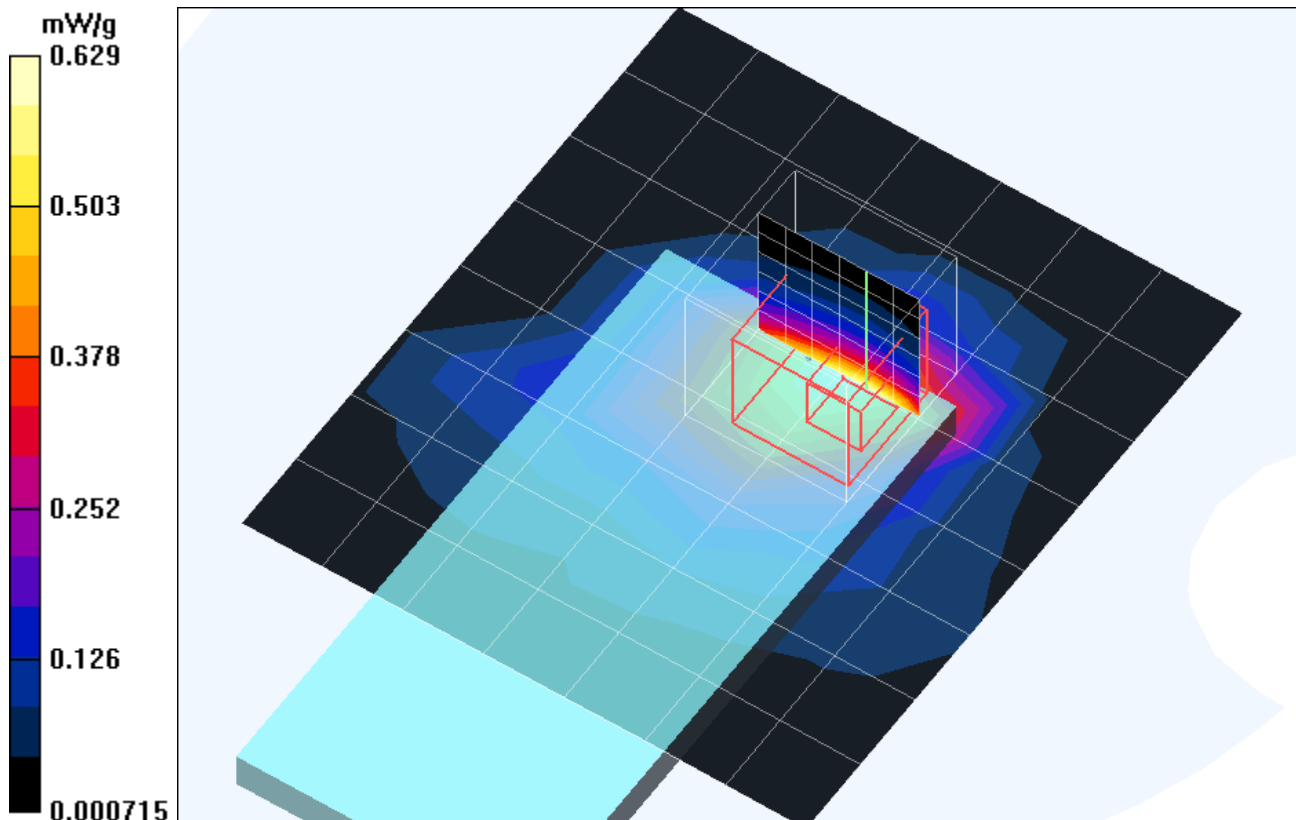
High Channel/Zoon Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 6.48 V/m; Power Drift = -0.1 dB

Peak SAR (extrapolated) = 1.13 W/kg

SAR(1 g) = 0.621 mW/g; SAR(10 g) = 0.336 mW/g

Maximum value of SAR (measured) = 0.677 mW/g



Test Laboratory: Advance Data Technology

WPCA-112AG 11g Bottom Mode 4 Ch 1**DUT: Wireless A/G CardBus Network Card ; Type: WPCA-112AG ; Test Channel Frequency: 2412 MHz**

Communication System: 802.11g ; Frequency: 2412 MHz ; Duty Cycle: 1:1 ; Modulation type: OFDM

Medium: MSL2450 Medium parameters used: $f = 2412$ MHz; $\sigma = 1.98$ mho/m; $\epsilon_r = 51.7$; $\rho = 1000$ kg/m³ ; Liquid level : 150 mm

Phantom section: Flat Section ; Separation distance : 10 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 ; ConvF(4.23, 4.23, 4.23) ; Calibrated: 2004/8/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510 ; Calibrated: 2004/8/17
- Phantom: SAM 12 ; Type: SAM V4.0 ; Serial: TP 1202
- Measurement SW: DASY4, V4.3 Build 22 ; Postprocessing SW: SEMCAD, V1.8 Build 127

Low Channel/Area Scan (8x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.303 mW/g

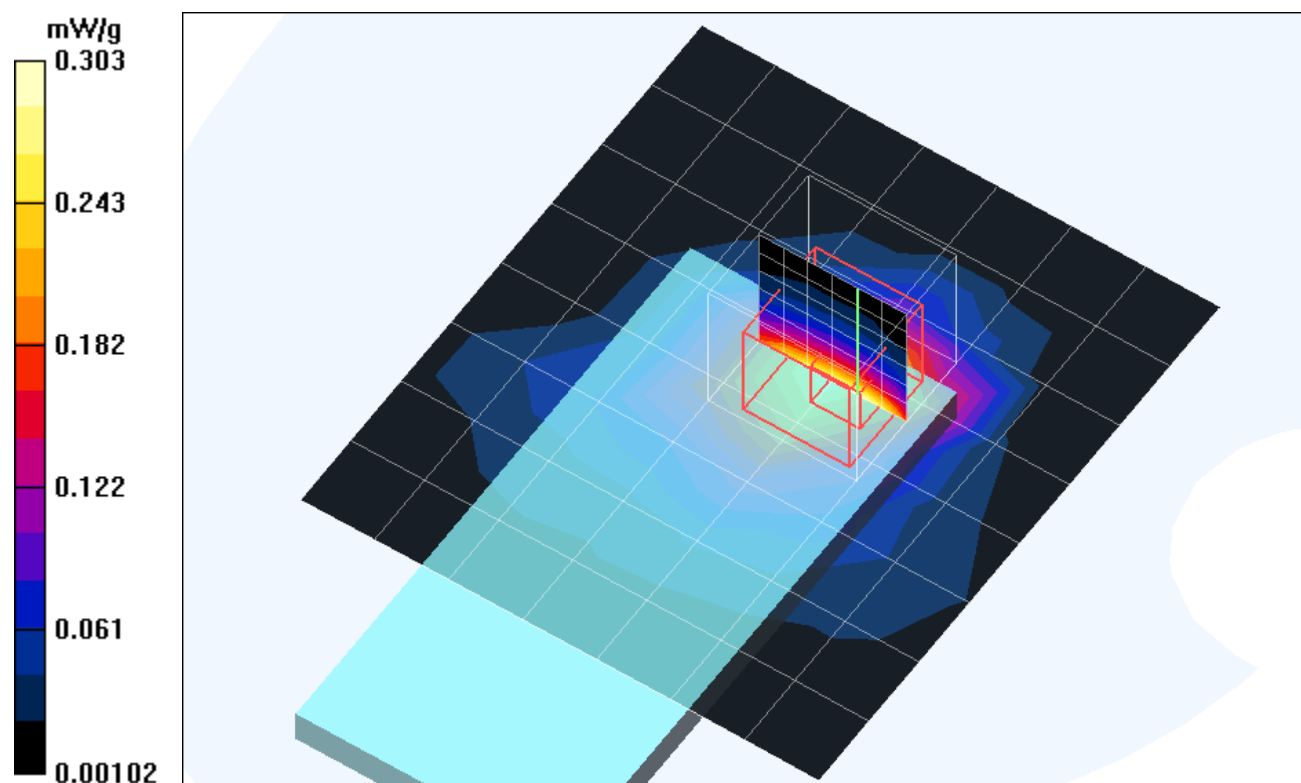
Low Channel/Zoon Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.66 V/m; Power Drift = -0.2 dB

Peak SAR (extrapolated) = 0.511 W/kg

SAR(1 g) = 0.295 mW/g; SAR(10 g) = 0.161 mW/g

Maximum value of SAR (measured) = 0.320 mW/g



Test Laboratory: Advance Data Technology

WPCA-112AG 11g Bottom Mode 4 Ch 6**DUT: Wireless A/G CardBus Network Card ; Type: WPCA-112AG ; Test Channel Frequency: 2437 MHz**

Communication System: 802.11g ; Frequency: 2437 MHz ; Duty Cycle: 1:1 ; Modulation type: OFDM

Medium: MSL2450 Medium parameters used: $f = 2437 \text{ MHz}$; $\sigma = 2.01 \text{ mho/m}$; $\epsilon_r = 51.7$; $\rho = 1000$ kg/m^3 ; Liquid level : 150 mm

Phantom section: Flat Section ; Separation distance : 10 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 ; ConvF(4.23, 4.23, 4.23) ; Calibrated: 2004/8/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510 ; Calibrated: 2004/8/17
- Phantom: SAM 12 ; Type: SAM V4.0 ; Serial: TP 1202
- Measurement SW: DASY4, V4.3 Build 22 ; Postprocessing SW: SEMCAD, V1.8 Build 127

Middle Channel/Area Scan (8x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (measured) = 0.534 mW/g

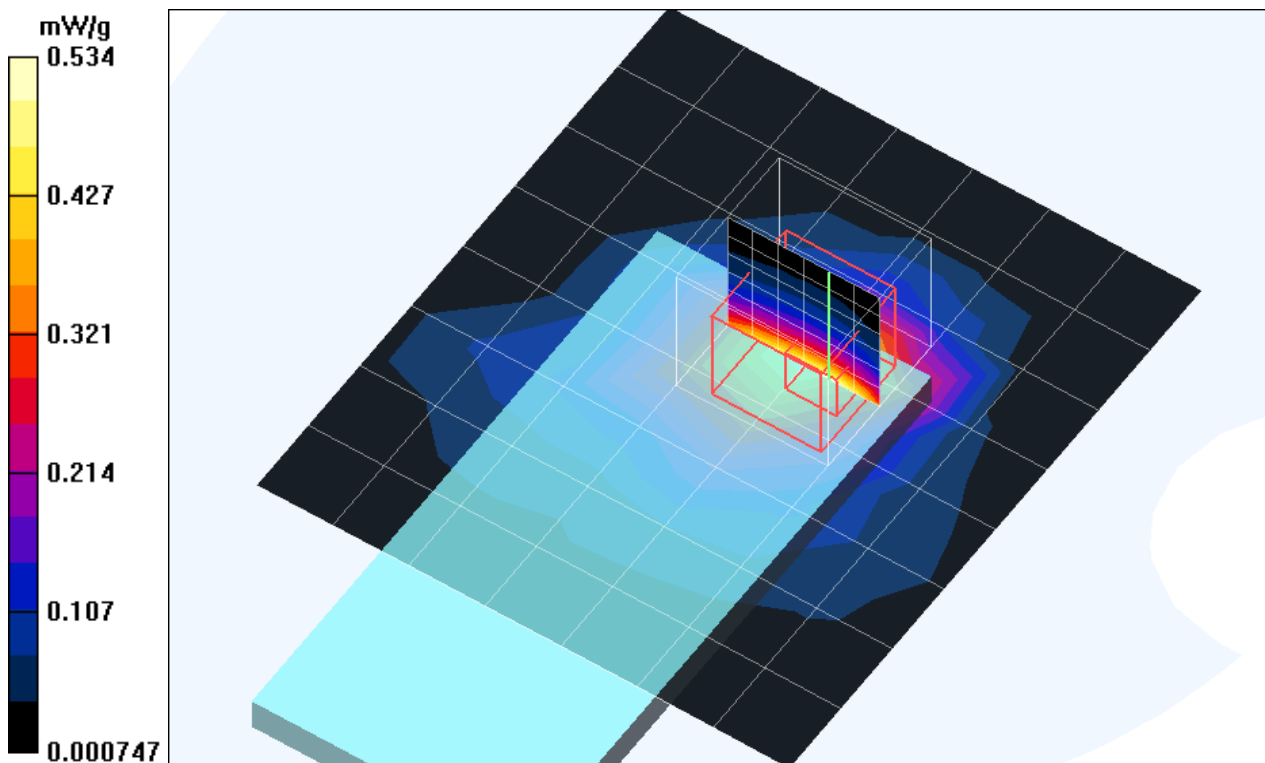
Middle Channel/Zoon Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 5.71 V/m; Power Drift = 0.2 dB

Peak SAR (extrapolated) = 0.871 W/kg

SAR(1 g) = 0.497 mW/g; SAR(10 g) = 0.270 mW/g

Maximum value of SAR (measured) = 0.545 mW/g



Test Laboratory: Advance Data Technology

WPCA-112AG 11g Bottom Mode 4 Ch 11**DUT: Wireless A/G CardBus Network Card ; Type: WPCA-112AG ; Test Channel Frequency: 2462 MHz**

Communication System: 802.11g ; Frequency: 2462 MHz ; Duty Cycle: 1:1 ; Modulation type: OFDM

Medium: MSL2450 Medium parameters used: $f = 2462 \text{ MHz}$; $\sigma = 2.05 \text{ mho/m}$; $\epsilon_r = 51.6$; $\rho = 1000$ kg/m^3 ; Liquid level : 150 mm

Phantom section: Flat Section ; Separation distance : 10 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 ; ConvF(4.23, 4.23, 4.23) ; Calibrated: 2004/8/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510 ; Calibrated: 2004/8/17
- Phantom: SAM 12 ; Type: SAM V4.0 ; Serial: TP 1202
- Measurement SW: DASY4, V4.3 Build 22 ; Postprocessing SW: SEMCAD, V1.8 Build 127

High Channel/Area Scan (8x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (measured) = 0.221 mW/g

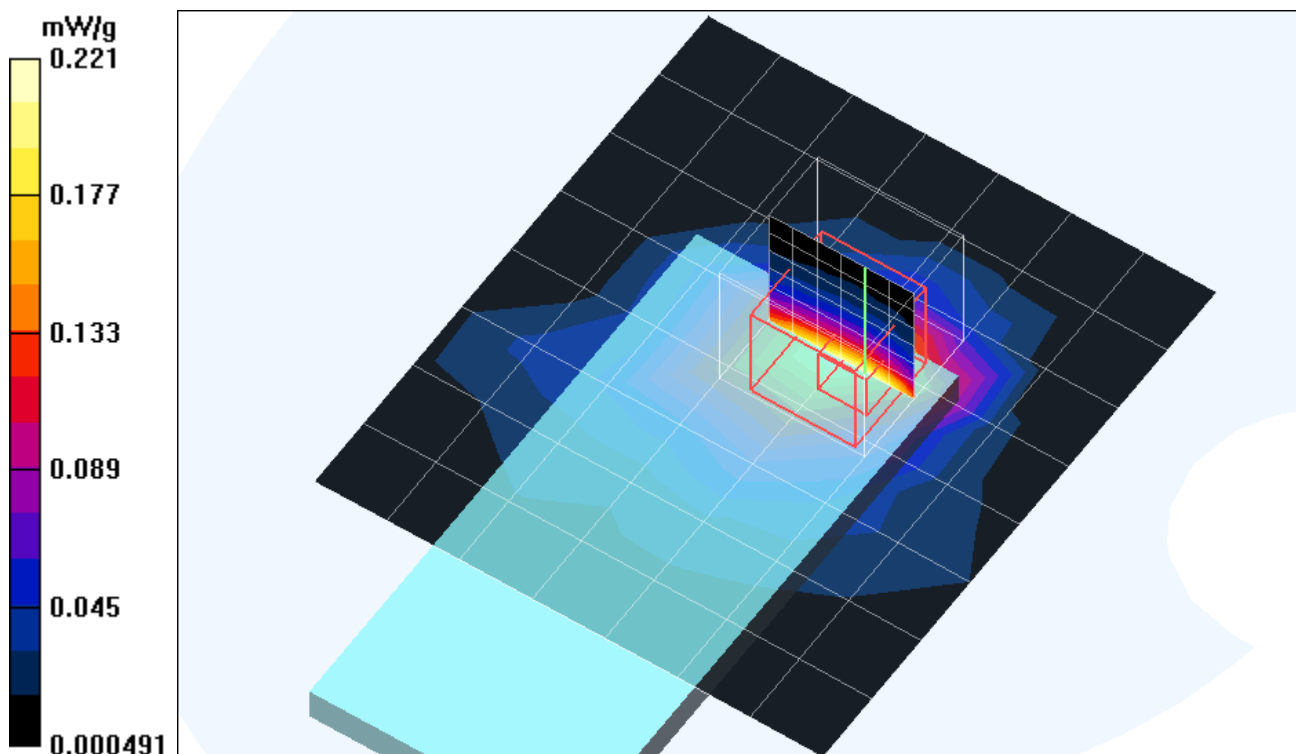
High Channel/Zoon Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 3.79 V/m; Power Drift = -0.2 dB

Peak SAR (extrapolated) = 0.375 W/kg

SAR(1 g) = 0.208 mW/g; SAR(10 g) = 0.112 mW/g

Maximum value of SAR (measured) = 0.232 mW/g



Test Laboratory: Advance Data Technology

WPCA-112AG 11g Turbo Mode Bottom Mode 5 Ch 6**DUT: Wireless A/G CardBus Network Card ; Type: WPCA-112AG ; Test Channel Frequency: 2437 MHz**

Communication System: 802.11g ; Frequency: 2437 MHz ; Duty Cycle: 1:1 ; Modulation type: OFDM

Medium: MSL2450 Medium parameters used: $f = 2437 \text{ MHz}$; $\sigma = 2.01 \text{ mho/m}$; $\epsilon_r = 51.7$; $\rho = 1000$ kg/m^3 ; Liquid level : 150 mm

Phantom section: Flat Section ; Separation distance : 10 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 ; ConvF(4.23, 4.23, 4.23) ; Calibrated: 2004/8/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510 ; Calibrated: 2004/8/17
- Phantom: SAM 12 ; Type: SAM V4.0 ; Serial: TP 1202
- Measurement SW: DASY4, V4.3 Build 22 ; Postprocessing SW: SEMCAD, V1.8 Build 127

Middle Channel Turbo/Area Scan (8x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (measured) = 0.533 mW/g

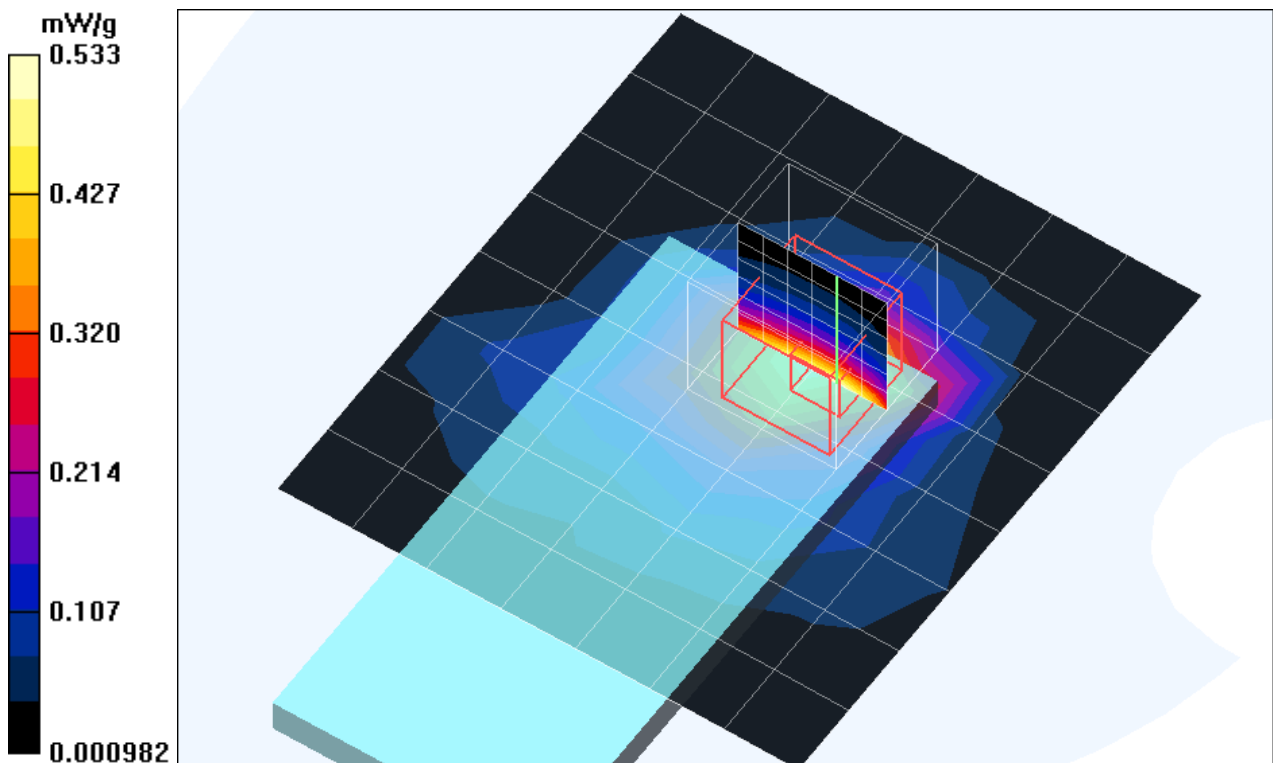
Middle Channel Turbo/Zoon Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 6.22 V/m; Power Drift = -0.2 dB

Peak SAR (extrapolated) = 0.915 W/kg

SAR(1 g) = 0.522 mW/g; SAR(10 g) = 0.285 mW/g

Maximum value of SAR (measured) = 0.570 mW/g



A3 : SYSTEM VALIDATION

Date/Time: 11/11/04 09:25:46

Test Laboratory: Advance Data Technology

System Validation Check-MSL 5200MHz

DUT: Dipole 5 GHz ; Type: D5GHzV2 ; Test Channel Frequency: 5200 MHz

Communication System: CW ; Frequency: 5200 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: MSL5800; Medium parameters used: $f = 5200$ MHz; $\sigma = 5.29$ mho/m; $\epsilon_r = 48.2$; $\rho = 1000$

kg/m³ ; Liquid level : 150mm

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: EX3DV3 - SN3504 ; ConvF(4.29, 4.29, 4.29) ; Calibrated: 2004/2/20
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2004/8/17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.3 Build 22; Postprocessing SW: SEMCAD, V1.8 Build 127

f=5200, d=10mm, Pin=250mW 3/Area Scan (6x6x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 22.2 mW/g

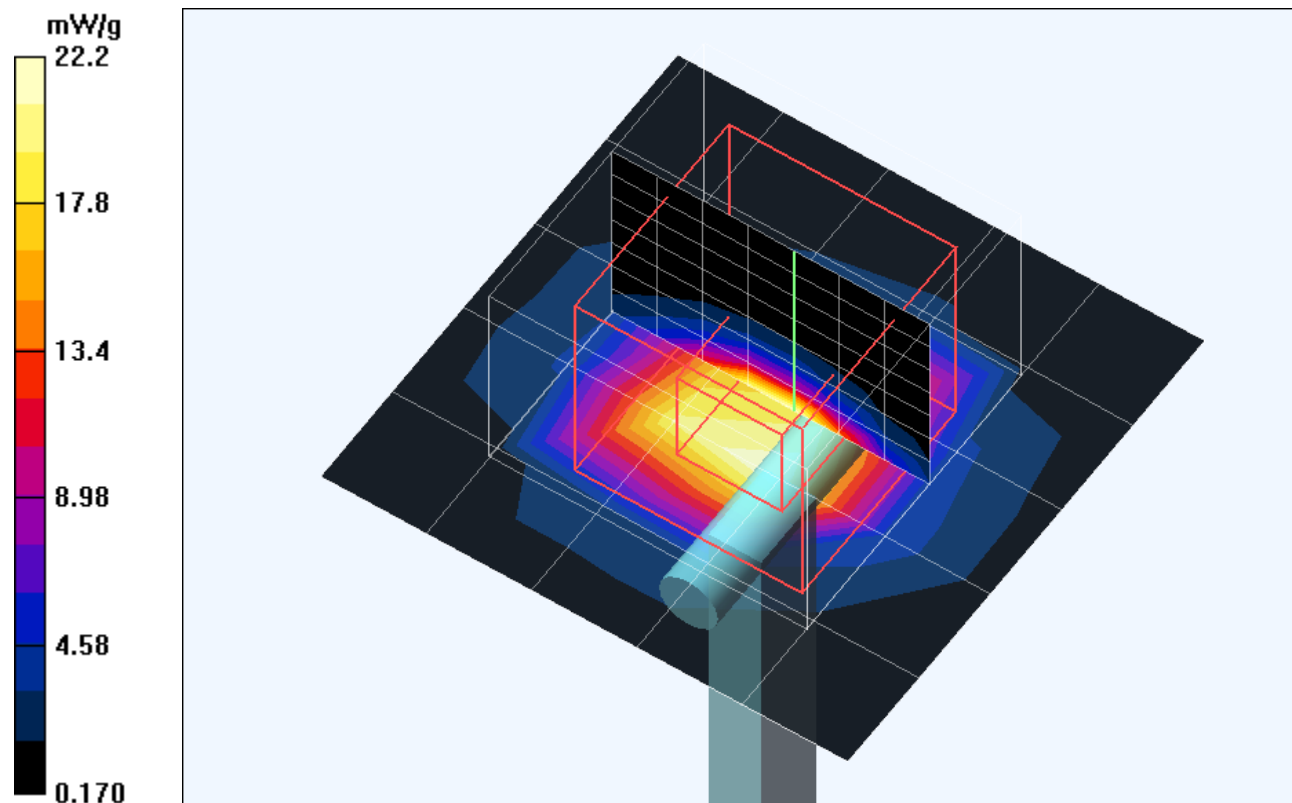
f=5200, d=10mm, Pin=250mW 3/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 85.8 V/m; Power Drift = -0.007 dB

Peak SAR (extrapolated) = 68.2 W/kg

SAR(1 g) = 19 mW/g; SAR(10 g) = 5.3 mW/g

Maximum value of SAR (measured) = 32.3 mW/g



Test Laboratory: Advance Data Technology

System Validation Check-MSL 5800MHz**DUT: Dipole 5 GHz ; Type: D5GHzV2 ; Test Channel Frequency: 5800 MHz**

Communication System: CW ; Frequency: 5800 MHz ; Duty Cycle: 1:1 ; Modulation type: OFDM
 Medium: MSL5800 Medium parameters used: $f = 5800$ MHz; $\sigma = 6.21$ mho/m; $\epsilon_r = 47$; $\rho = 1000$

kg/m³ ; Liquid level : 155 mm

Phantom section: Flat Section ; Separation distance : 10 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: EX3DV3 - SN3504 ; ConvF(3.96, 3.96, 3.96) ; Calibrated: 2004/2/20
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510 ; Calibrated: 2004/8/17
- Phantom: SAM 12 ; Type: SAM V4.0 ; Serial: TP 1202
- Measurement SW: DASY4, V4.3 Build 22 ; Postprocessing SW: SEMCAD, V1.8 Build 127

f=5800, d=10mm, Pin=250mW/Area Scan (6x6x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 22.8 mW/g

f=5800, d=10mm, Pin=250mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid:

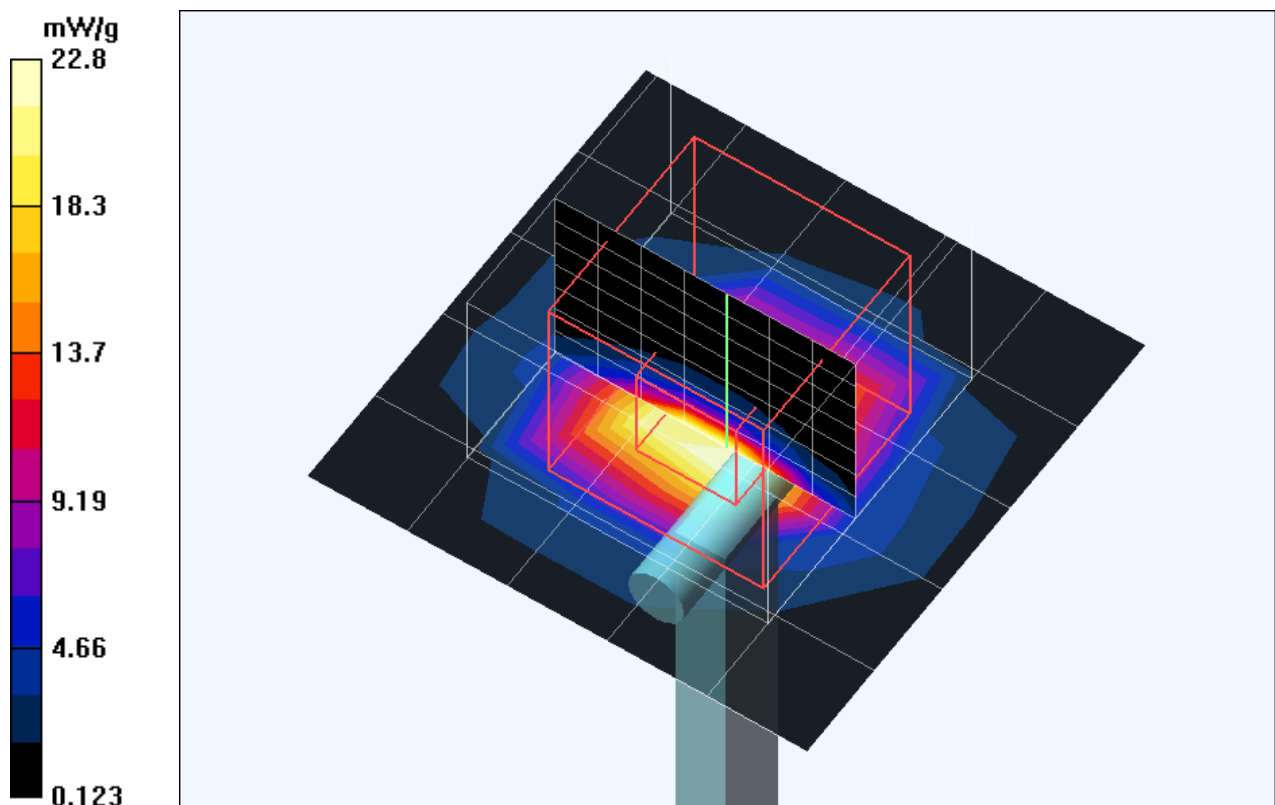
dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 79.6 V/m; Power Drift = -0.0 dB

Peak SAR (extrapolated) = 83.5 W/kg

SAR(1 g) = 19.6 mW/g; SAR(10 g) = 5.38 mW/g

Maximum value of SAR (measured) = 33 mW/g



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; Medium parameters used: $f = 2450$ MHz; $\sigma = 2.03$ mho/m; $\epsilon_r = 51.6$; $\rho = 1000$

kg/m^3 ; Liquid level : 150mm

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 ; ConvF(4.23, 4.23, 4.23) ; Calibrated: 2004/8/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2004/8/17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.3 Build 22; Postprocessing SW: SEMCAD, V1.8 Build 127

d=10mm, Pin=250mW 3/Area Scan (5x6x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (measured) = 13.2 mW/g

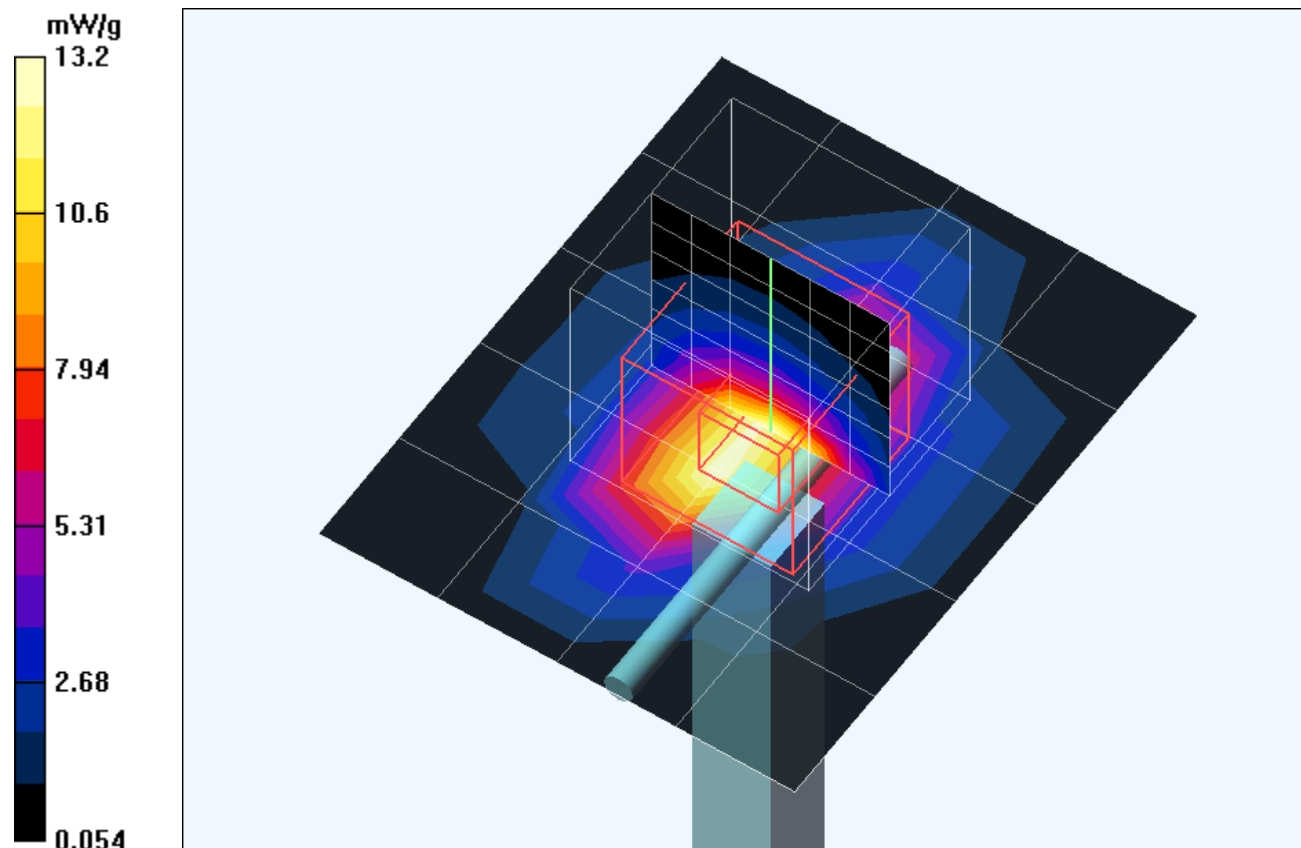
d=10mm, Pin=250mW 3/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 86.7 V/m; Power Drift = -0.1 dB

Peak SAR (extrapolated) = 23.3 W/kg

SAR(1 g) = 12.6 mW/g; SAR(10 g) = 6.15 mW/g

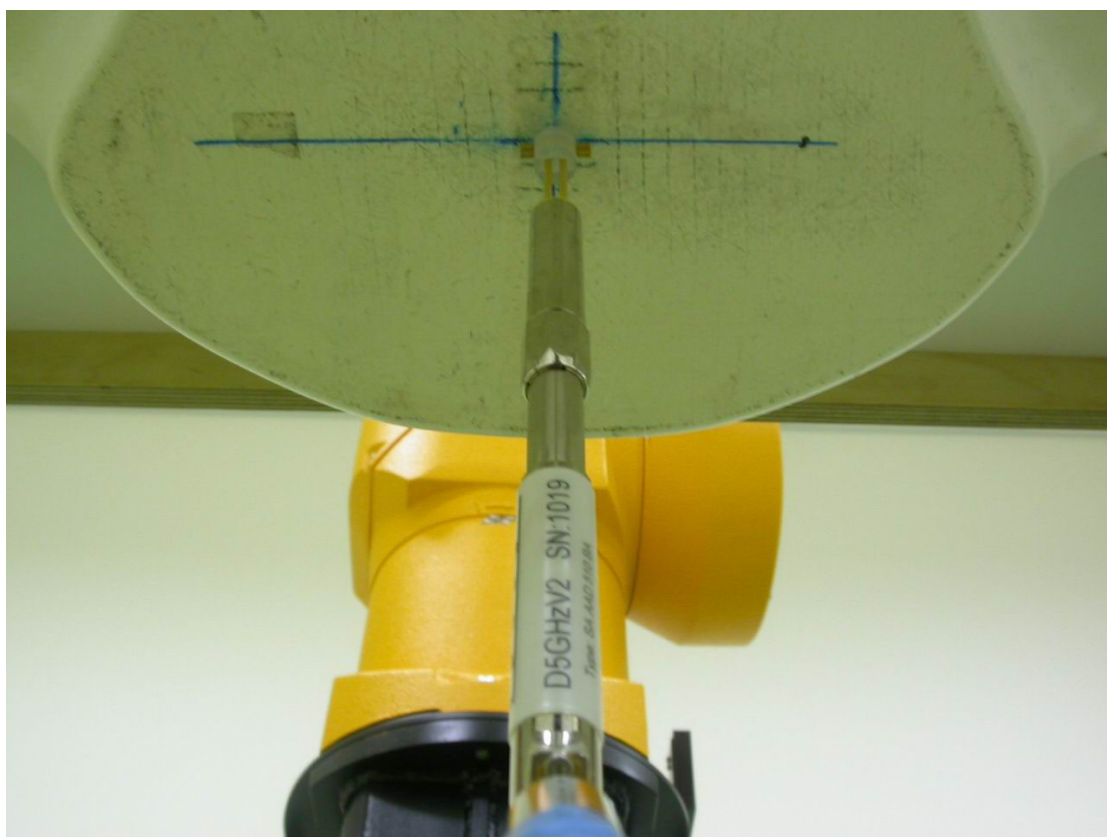
Maximum value of SAR (measured) = 14.5 mW/g

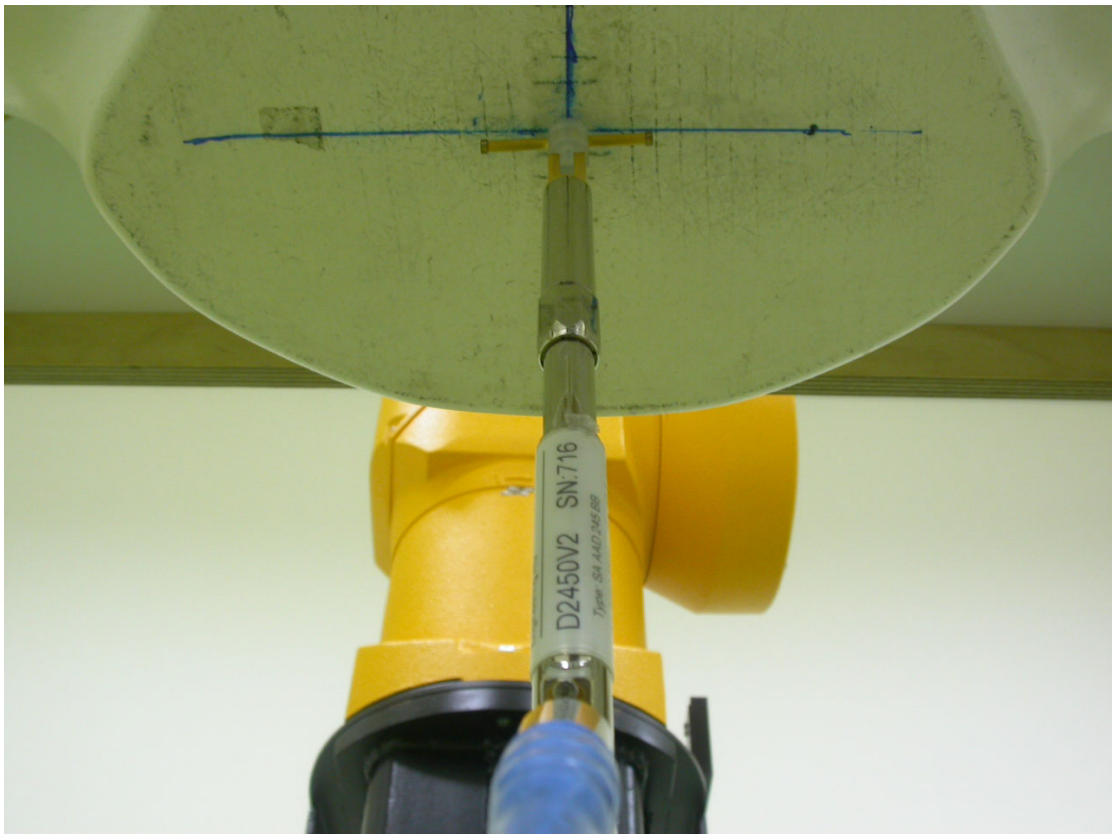


APPENDIX B : ADT SAR MEASUREMENT SYSTEM



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

Thomas Kofe



D2: DOSIMETRIC E-FIELD PROBE

EX3DV3 - SN:3504 ☐

IMPORTANT NOTICE

UNCERTAINTY OF THE PROBE CONVERSION FACTOR

Important Note:

The Swiss accreditation body (METAS) has requested an additional uncertainty for narrow bandwidth probe calibration compared to the uncertainty table of IEEE/IEC defined for a single frequency. SPEAG and the IT'IS foundation are currently investigating the most appropriate method for narrow and broadband uncertainty assessment.

A preliminary uncertainty value for the indicated frequency bandwidth is included in the attached probe calibration document.

s p e a g

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Schmid & Partner Engineering AG

January 2004