

Test Laboratory: Advance Data Technology

## S680C RightHeadSide Cheek PCS1900 Mode 7 Ch512

**DUT: Mobile Phone ; Type: S680C ; Test Channel Frequency: 1850.2 MHz**

Communication System: PCS 1900 ; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3;  
Medium: HSL1900 ( $\sigma = 1.3384$  mho/m,  $\epsilon_r = 39.1076$ ,  $\rho = 1000$  kg/m<sup>3</sup>) ; Liquid level : 155mm

Phantom section: Right Section ; DUT test position : Cheek ; Modulation type: GMSK  
Antenna type : External 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

**Touch position - Low Channel/Area Scan (7x12x1):** Measurement grid: dx=15mm, dy=15mm

Reference Value = 3.57 V/m

Power Drift = -0.2 dB

Maximum value of SAR = 0.319 mW/g

**Touch position - Low Channel/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

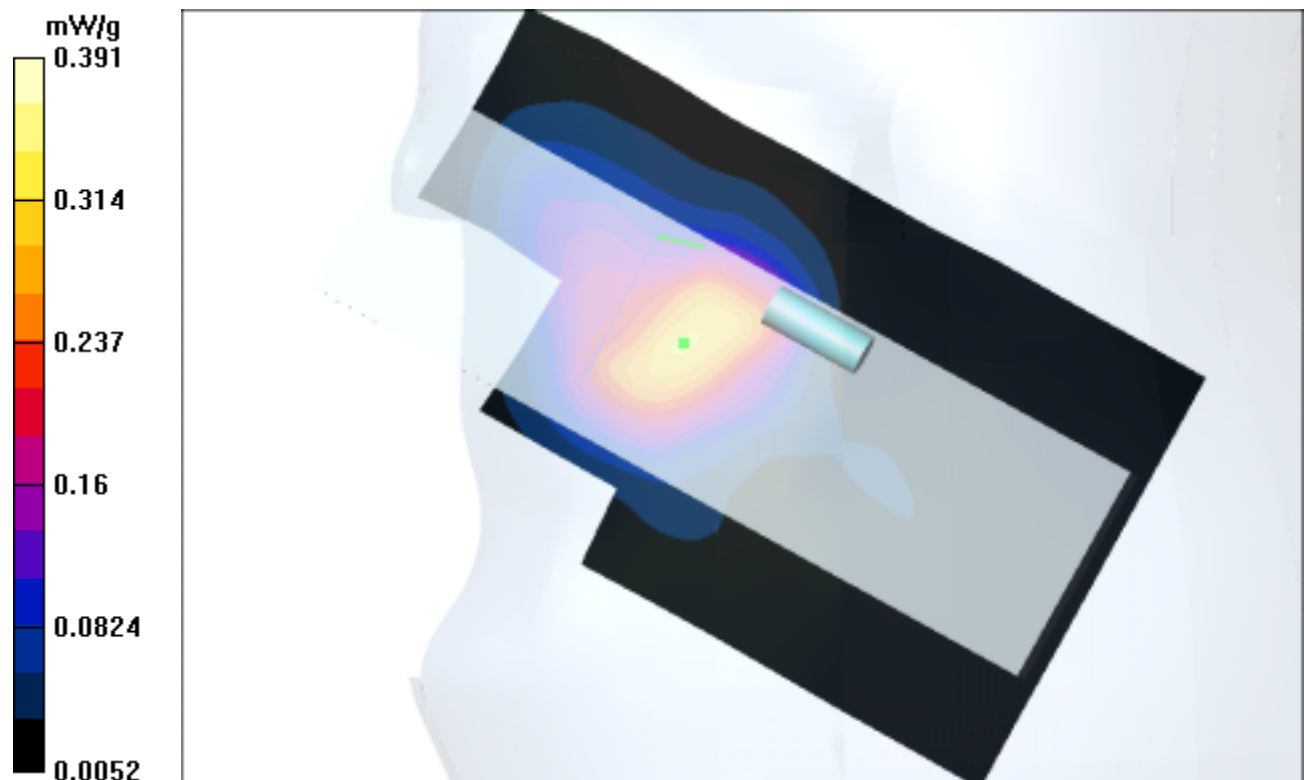
Peak SAR (extrapolated) = 0.632 W/kg

SAR(1 g) = 0.351 mW/g; SAR(10 g) = 0.186 mW/g

Reference Value = 3.57 V/m

Power Drift = -0.2 dB

Maximum value of SAR = 0.391 mW/g



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## S680C RightHeadSide Cheek PCS1900 Mode 7 Ch661

**DUT: Mobile Phone ; Type: S680C ; Test Channel Frequency: 1880 MHz**

Communication System: PCS 1900 ; Frequency: 1880 MHz; Duty Cycle: 1:8.3;

Medium: HSL1900 ( $\sigma = 1.3492$  mho/m,  $\epsilon_r = 38.9599$ ,  $\rho = 1000$  kg/m<sup>3</sup>) ; Liquid level : 155mm

Phantom section: Right Section ; DUT test position : Cheek ; Modulation type: GMSK

Antenna type : External 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

**Touch position - Middle Channel/Area Scan (7x12x1):** Measurement grid: dx=15mm, dy=15mm

Reference Value = 3.75 V/m

Power Drift = -0.2 dB

Maximum value of SAR = 0.312 mW/g

**Touch position - Middle Channel/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid:

dx=5mm, dy=5mm, dz=5mm

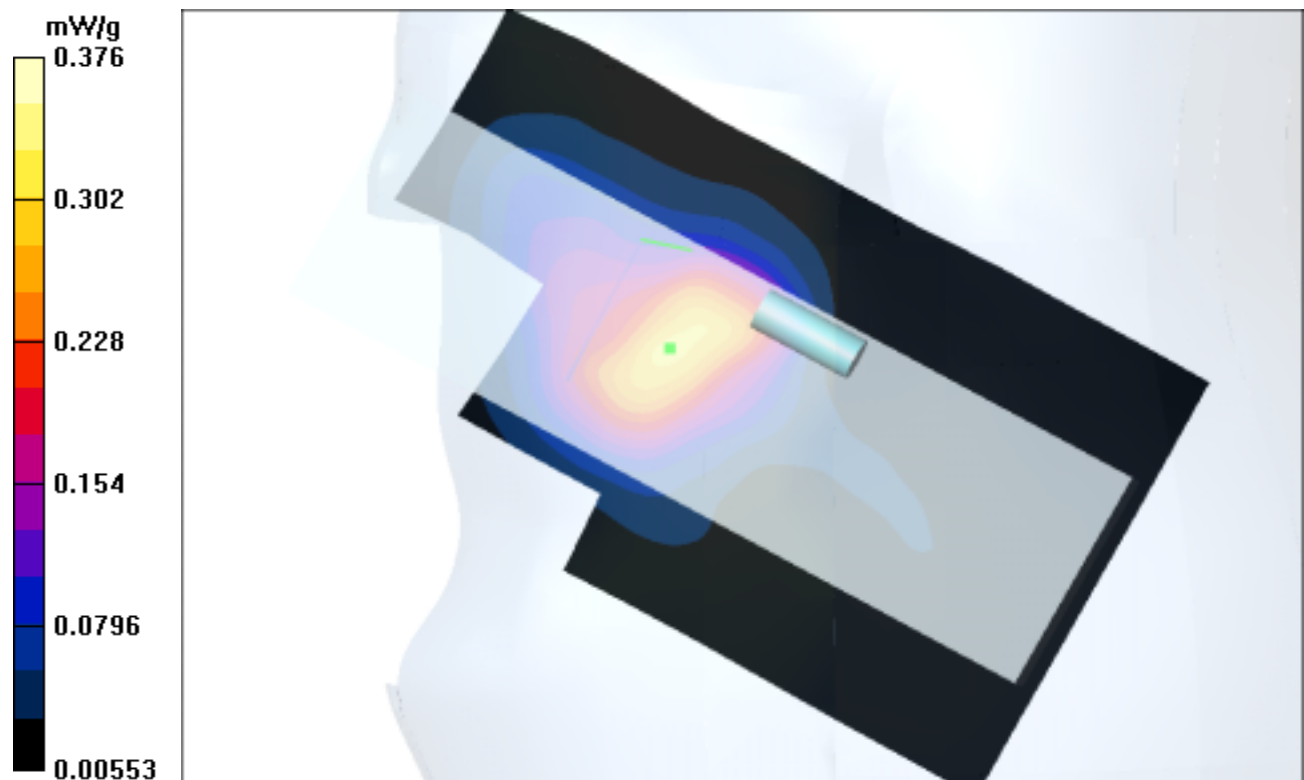
Peak SAR (extrapolated) = 0.636 W/kg

SAR(1 g) = 0.339 mW/g; SAR(10 g) = 0.179 mW/g

Reference Value = 3.75 V/m

Power Drift = -0.2 dB

Maximum value of SAR = 0.376 mW/g



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### S680C RightHeadSide Cheek PCS1900 Mode 7 Ch810

**DUT: Mobile Phone ; Type: S680C ; Test Channel Frequency: 1909.8 MHz**

Communication System: PCS 1900 ; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3;  
Medium: HSL1900 ( $\sigma = 1.3796$  mho/m,  $\epsilon_r = 39.0341$ ,  $\rho = 1000$  kg/m<sup>3</sup>) ; Liquid level : 155mm

Phantom section: Right Section ; DUT test position : Cheek ; Modulation type: GMSK  
Antenna type : External 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

**Touch position - High Channel/Area Scan (7x12x1):** Measurement grid: dx=15mm, dy=15mm

Reference Value = 3.5 V/m

Power Drift = -0.1 dB

Maximum value of SAR = 0.287 mW/g

**Touch position - High Channel/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid:

dx=5mm, dy=5mm, dz=5mm

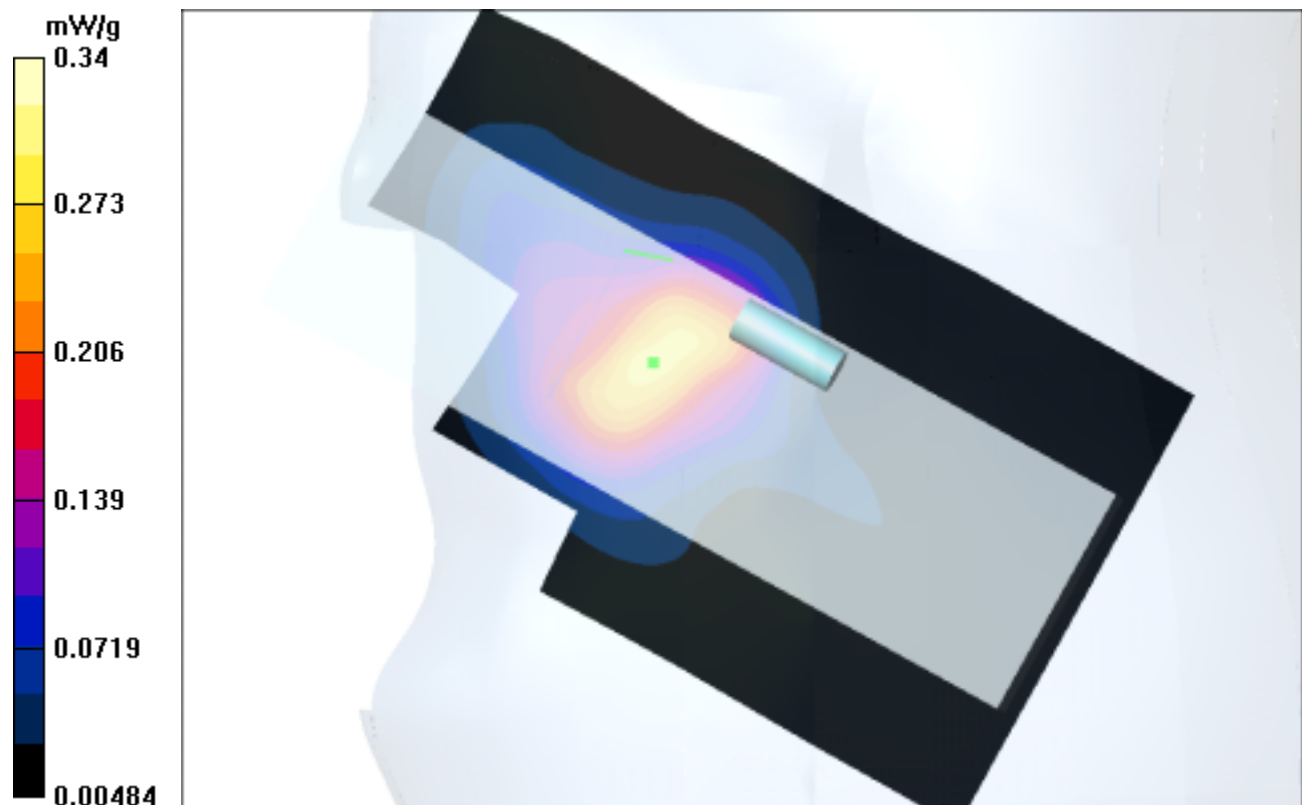
Peak SAR (extrapolated) = 0.557 W/kg

SAR(1 g) = 0.312 mW/g; SAR(10 g) = 0.166 mW/g

Reference Value = 3.5 V/m

Power Drift = -0.1 dB

Maximum value of SAR = 0.34 mW/g



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### S680C RightHeadSide Tilt PCS1900 Mode 8 Ch512

**DUT: Mobile Phone ; Type: S680C ; Test Channel Frequency: 1850.2 MHz**

Communication System: PCS 1900 ; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3;  
Medium: HSL1900 ( $\sigma = 1.3384$  mho/m,  $\epsilon_r = 39.1076$ ,  $\rho = 1000$  kg/m<sup>3</sup>) ; Liquid level : 155mm

Phantom section: Right Section ; DUT test position : Tilt ; Modulation type: GMSK  
Antenna type : External 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

**Tilt position - Low Channel/Area Scan (7x12x1):** Measurement grid: dx=15mm, dy=15mm

Reference Value = 5.64 V/m

Power Drift = -0.09 dB

Maximum value of SAR = 0.0741 mW/g

**Tilt position - Low Channel/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

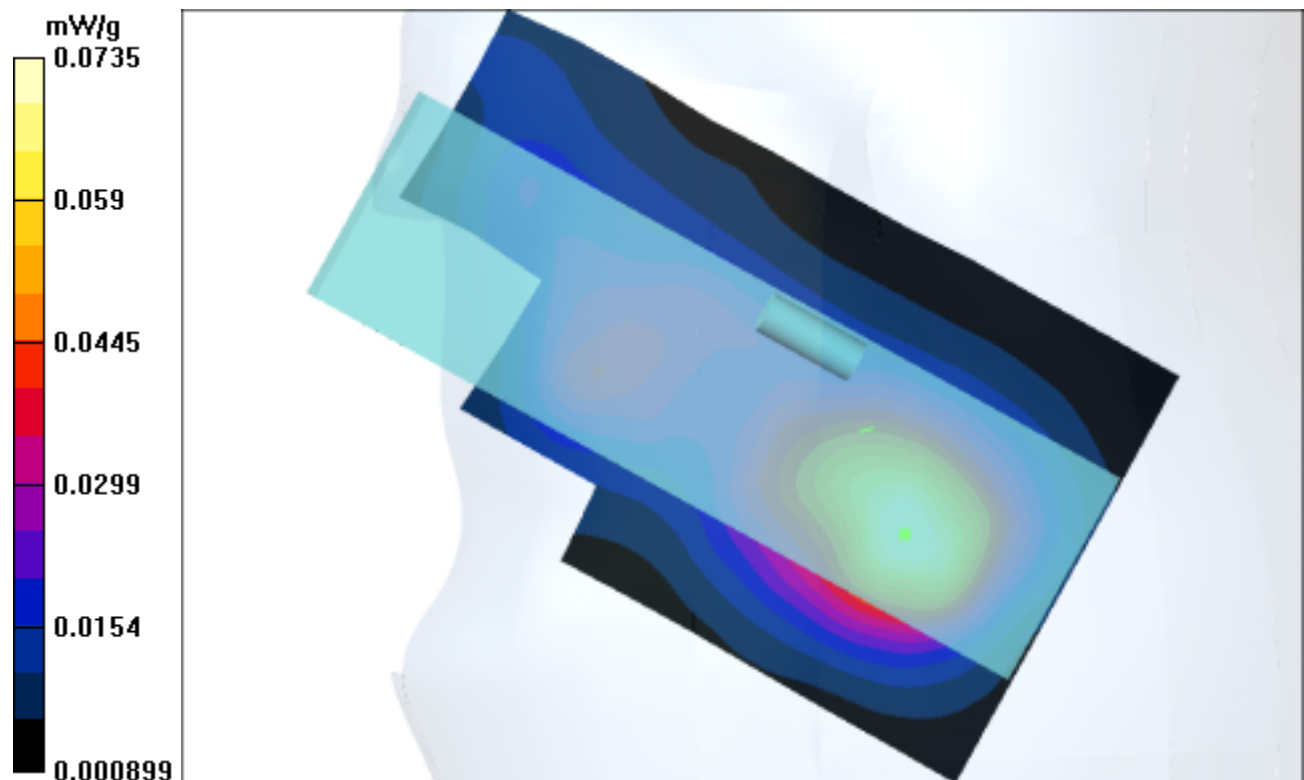
Peak SAR (extrapolated) = 0.0997 W/kg

SAR(1 g) = 0.0679 mW/g; SAR(10 g) = 0.0417 mW/g

Reference Value = 5.64 V/m

Power Drift = -0.09 dB

Maximum value of SAR = 0.0735 mW/g



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### S680C RightHeadSide Tilt PCS1900 Mode 8 Ch661

**DUT: Mobile Phone ; Type: S680C ; Test Channel Frequency: 1880 MHz**

Communication System: PCS 1900 ; Frequency: 1880 MHz; Duty Cycle: 1:8.3;

Medium: HSL1900 ( $\sigma = 1.3492$  mho/m,  $\epsilon_r = 38.9599$ ,  $\rho = 1000$  kg/m<sup>3</sup>) ; Liquid level : 155mm

Phantom section: Right Section ; DUT test position : Tilt ; Modulation type: GMSK

Antenna type : External 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

**Tilt position - Middle Channel/Area Scan (7x12x1):** Measurement grid: dx=15mm, dy=15mm

Reference Value = 5.64 V/m

Power Drift = 0.003 dB

Maximum value of SAR = 0.0739 mW/g

**Tilt position - Middle Channel/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

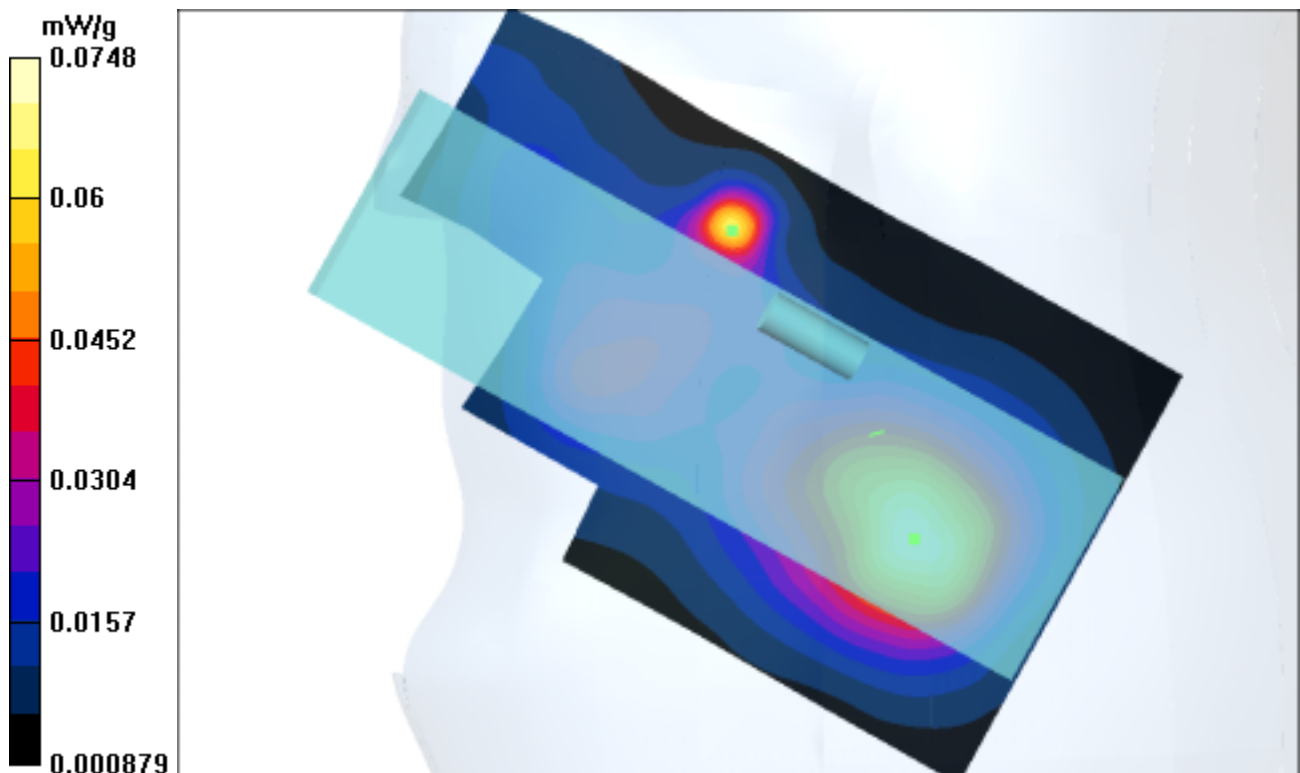
Peak SAR (extrapolated) = 0.105 W/kg

SAR(1 g) = 0.0685 mW/g; SAR(10 g) = 0.0411 mW/g

Reference Value = 5.64 V/m

Power Drift = 0.003 dB

Maximum value of SAR = 0.0748 mW/g



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### S680C RightHeadSide Tilt PCS1900 Mode 8 Ch810

**DUT: Mobile Phone ; Type: S680C ; Test Channel Frequency: 1909.8 MHz**

Communication System: PCS 1900 ; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3;  
Medium: HSL1900 ( $\sigma = 1.3796$  mho/m,  $\epsilon_r = 39.0341$ ,  $\rho = 1000$  kg/m<sup>3</sup>) ; Liquid level : 155mm

Phantom section: Right Section ; DUT test position : Tilt ; Modulation type: GMSK  
Antenna type : External 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

**Tilt position - High Channel/Area Scan (7x12x1):** Measurement grid: dx=15mm, dy=15mm

Reference Value = 5.51 V/m

Power Drift = -0.1 dB

Maximum value of SAR = 0.0706 mW/g

**Tilt position - High Channel/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

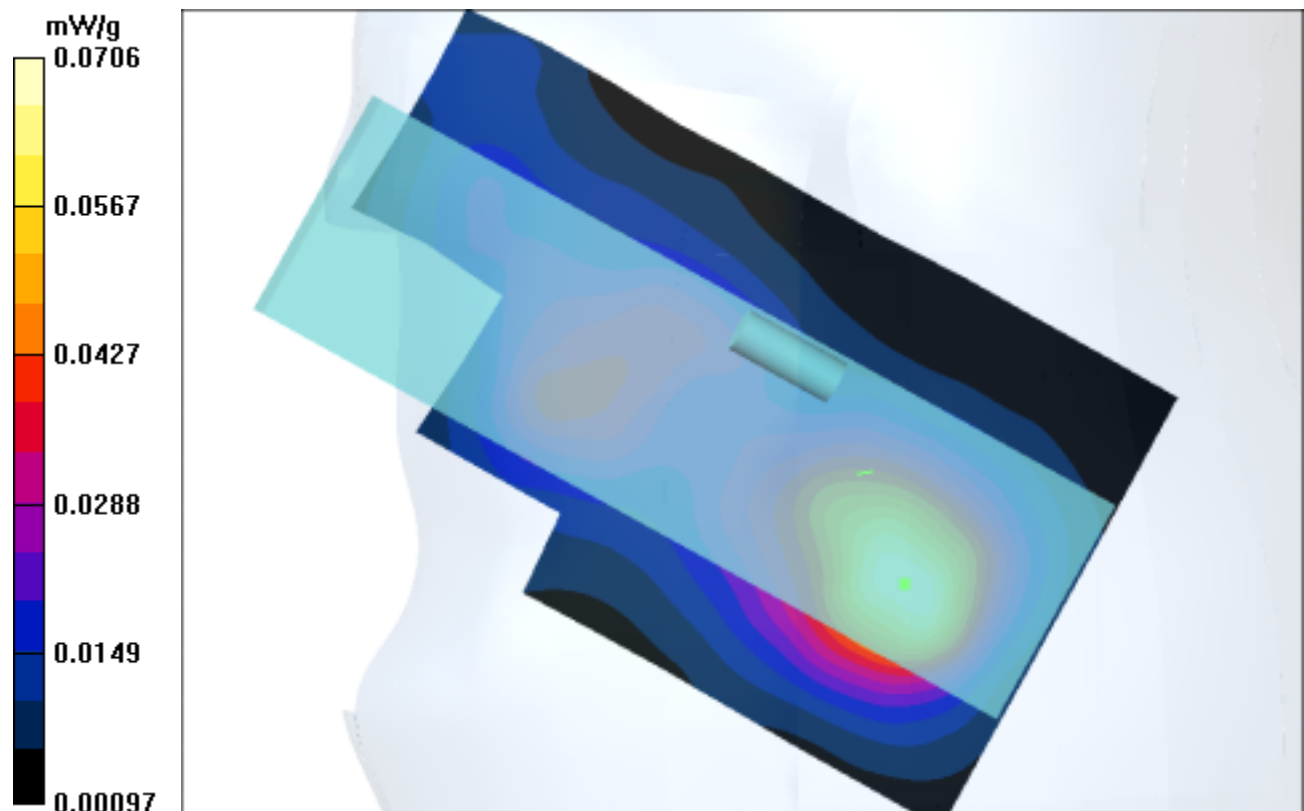
Peak SAR (extrapolated) = 0.112 W/kg

SAR(1 g) = 0.0647 mW/g; SAR(10 g) = 0.0379 mW/g

Reference Value = 5.51 V/m

Power Drift = -0.1 dB

Maximum value of SAR = 0.0706 mW/g



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### S680C BodyWorn PCS1900 GPRS Mode 2 Ch512

**DUT: Mobil Phone ; Type: S680C ; Test Channel Frequency: 1850.2 MHz**

Communication System: PCS 1900 ; Frequency: 1850.2 MHz; Duty Cycle: 1:4; Modulation Type: GMSK

Medium: MSL1900 ( $\sigma = 1.4701$  mho/m,  $\epsilon_r = 51.5061$ ,  $\rho = 1000$  kg/m<sup>3</sup>) ; Liquid Level : 155mm

Phantom section: Flat Section ; DUT test position : Body ; Antenna Type : External Antenna Separation Distance : 15 mm (The bottom side of the EUT 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

**Low Channel/Area Scan (61x91x1):** Measurement grid: dx=15mm, dy=15mm

Reference Value = 8.37 V/m

Power Drift = 0.06 dB

Maximum value of SAR = 0.593 mW/g

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

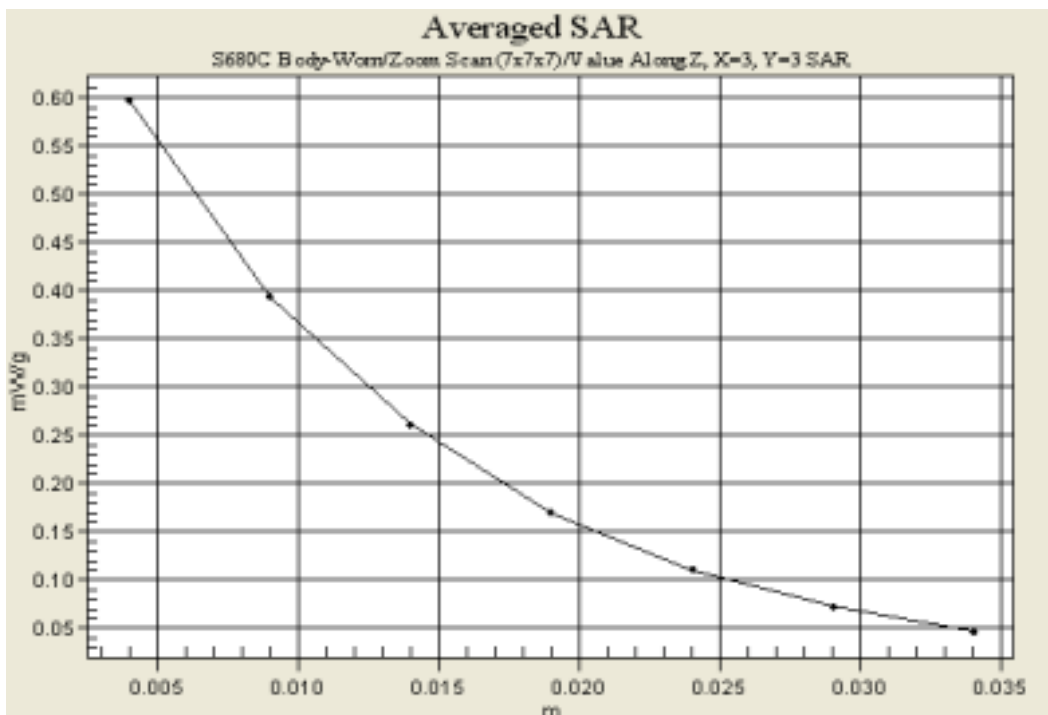
Peak SAR (extrapolated) = 0.844 W/kg

SAR(1 g) = 0.557 mW/g; SAR(10 g) = 0.35 mW/g

Reference Value = 8.37 V/m

Power Drift = 0.06 dB

Maximum value of SAR = 0.597 mW/g





Test Laboratory: Advance Data Technology

**S680C LeftHeadSide Cheek PCS1900 Mode 5 Ch661****DUT: Mobile Phone ; Type: S680C ; Test Channel Frequency: 1880 MHz**

Communication System: PCS 1900 ; Frequency: 1880 MHz; Duty Cycle: 1:8.3;

Medium: HSL1900 ( $\sigma = 1.3492$  mho/m,  $\epsilon_r = 38.9599$ ,  $\rho = 1000$  kg/m<sup>3</sup>) ; Liquid level : 155mm

Phantom section: Left Section ; DUT test position : Cheek ; Modulation type: GMSK

Antenna type : External Antenna ; Air temp. : 21.0 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

**Touch position - Middle Channel/Area Scan (7x12x1):** Measurement grid: dx=15mm, dy=15mm

Reference Value = 4.57 V/m

Power Drift = -0.1 dB

Maximum value of SAR = 0.533 mW/g

**Touch position - Middle Channel/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid:

dx=5mm, dy=5mm, dz=5mm

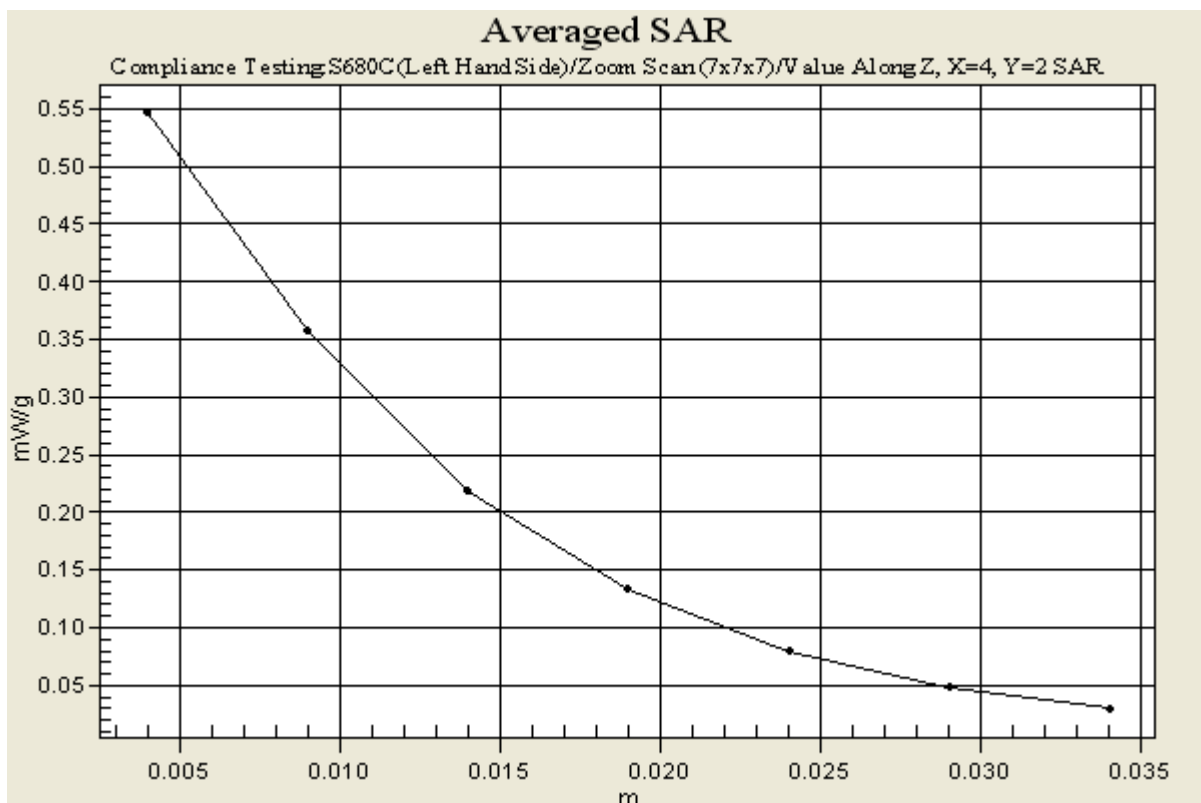
Peak SAR (extrapolated) = 0.83 W/kg

SAR(1 g) = 0.506 mW/g; SAR(10 g) = 0.299 mW/g

Reference Value = 4.57 V/m

Power Drift = -0.1 dB

Maximum value of SAR = 0.547 mW/g





# A3 : SYSTEM VALIDATION

Date/Time: 07/26/04 16:08:30

Test Laboratory: Advance Data Technology

## System Validation Check MSL 1900MHz

**DUT: Dipole 1900 MHz ; Type: D1900V2 ; Test Channel Frequency: 1900 MHz**

Communication System: CW ; Frequency: 1900 MHz; Duty Cycle: 1:1; Modulation type: CW  
Medium: MSL1900 ( $\sigma = 1.5257$  mho/m,  $\epsilon_r = 51.3996$ ,  $\rho = 1000$  kg/m<sup>3</sup>) ; 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 = 94.2 V/m

Power Drift = -0.1 dB

Maximum value of SAR = 12.1 mW/g

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

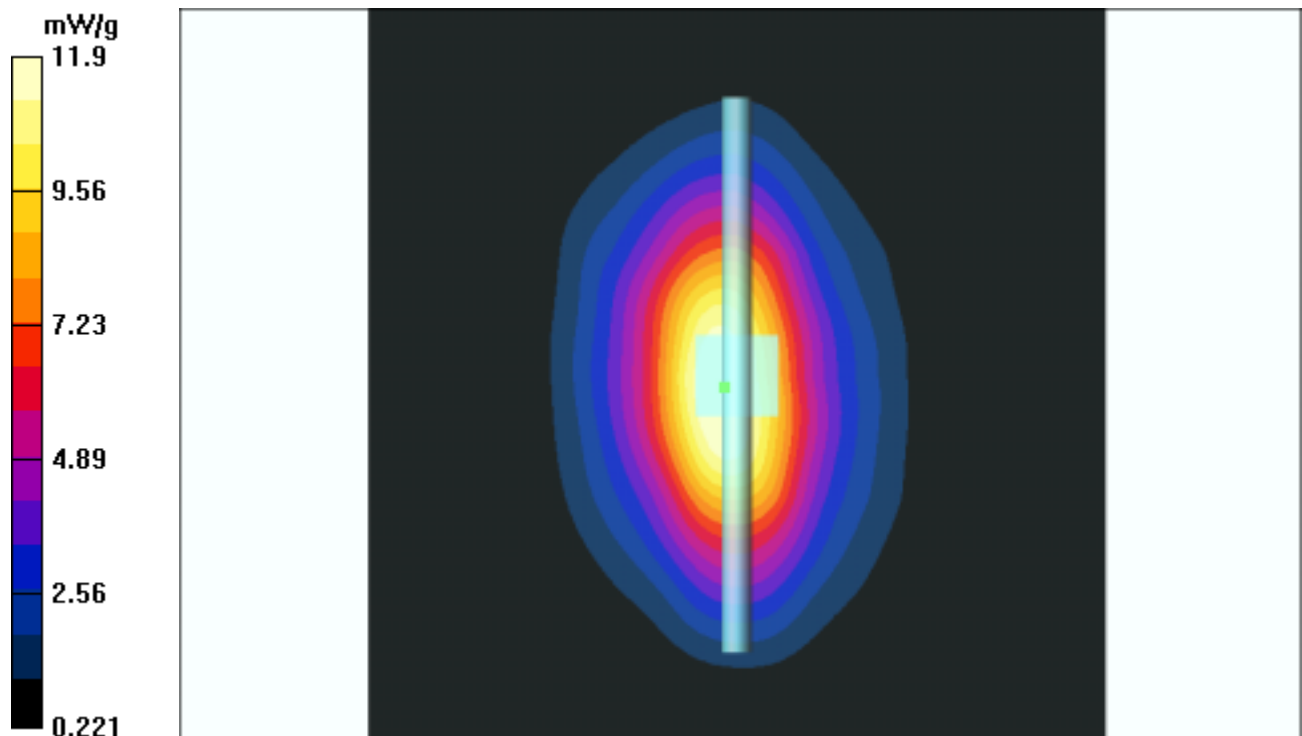
Peak SAR (extrapolated) = 18.4 W/kg

SAR(1 g) = 10.5 mW/g; SAR(10 g) = 5.42 mW/g

Reference Value = 94.2 V/m

Power Drift = -0.1 dB

Maximum value of SAR = 11.9 mW/g



Test Laboratory: Advance Data Technology

### System Validation Check HSL 1900MHz

**DUT: Dipole 1900 MHz ; Type: D1900V2 ; Test Channel Frequency: 1900 MHz**

Communication System: CW ; Frequency: 1900 MHz; Duty Cycle: 1:1; Modulation type: CW  
Medium: HSL1900 ( $\sigma = 1.3699$  mho/m,  $\epsilon_r = 39.0017$ ,  $\rho = 1000$  kg/m<sup>3</sup>) ; 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 = 94.6 V/m

Power Drift = 0.04 dB

Maximum value of SAR = 11.4 mW/g

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

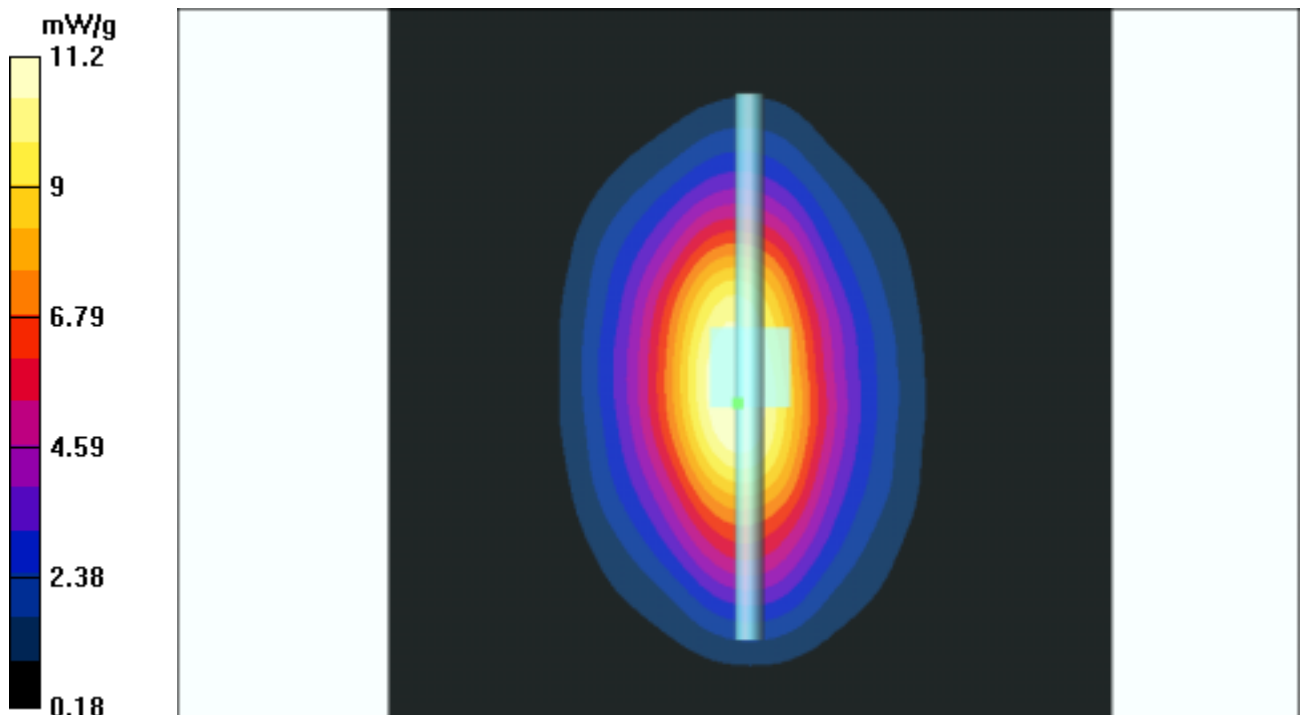
Peak SAR (extrapolated) = 18.1 W/kg

SAR(1 g) = 10.1 mW/g; SAR(10 g) = 5.18 mW/g

Reference Value = 94.6 V/m

Power Drift = 0.04 dB

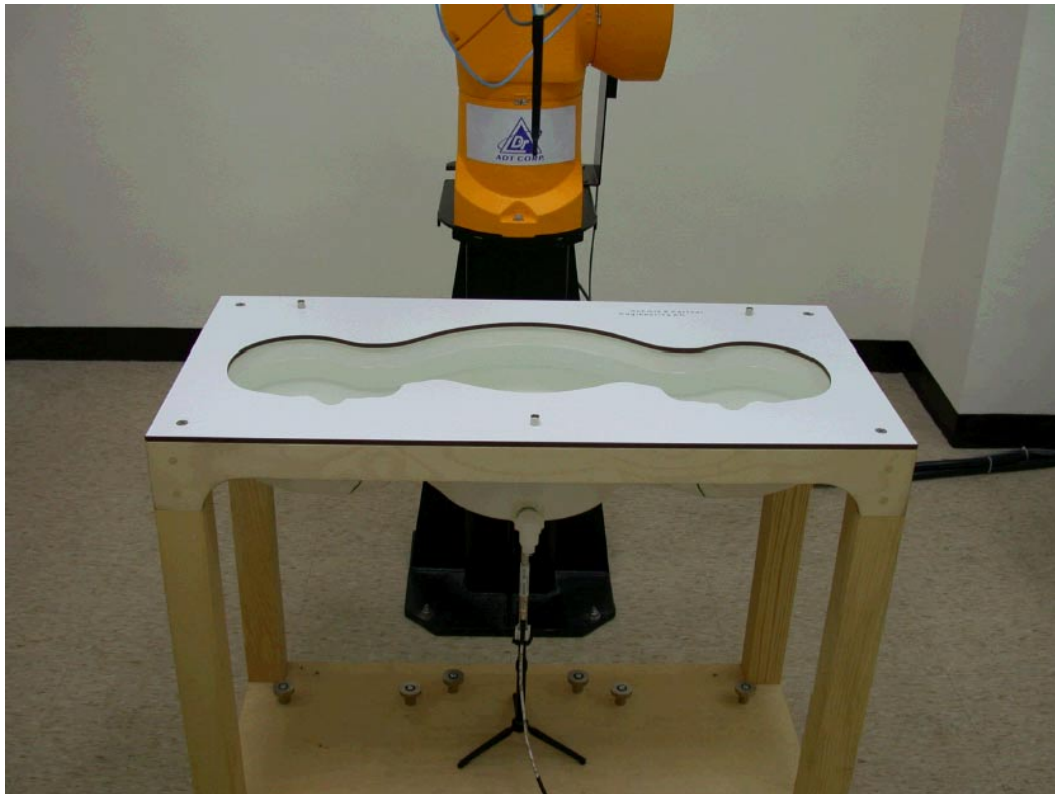
Maximum value of SAR = 11.2 mW/g



## 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

*Johannes Kofler*



## **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.**

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

	Name	Function	Signature
Calibrated by:	Nico Vetterli	Technician	
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!)



## DASY - Parameters of Probe: ET3DV6 SN:1687

### Sensitivity in Free Space

NormX	<b>1.79</b> $\mu\text{V}/(\text{V}/\text{m})^2$
NormY	<b>1.79</b> $\mu\text{V}/(\text{V}/\text{m})^2$
NormZ	<b>1.59</b> $\mu\text{V}/(\text{V}/\text{m})^2$

### Diode Compression

DCP X	<b>95</b>	mV
DCP Y	<b>95</b>	mV
DCP Z	<b>95</b>	mV

### Sensitivity in Tissue Simulating Liquid

Head                      900 MHz                       $\epsilon_r = 41.5 \pm 5\%$                        $\sigma = 0.97 \pm 5\%$  mho/m

Valid for f=800-1000 MHz with Head Tissue Simulating Liquid according to EN 50361, P1528-200X

ConvF X	<b>6.7</b> $\pm 9.5\%$ (k=2)	Boundary effect:
ConvF Y	<b>6.7</b> $\pm 9.5\%$ (k=2)	Alpha <b>0.39</b>
ConvF Z	<b>6.7</b> $\pm 9.5\%$ (k=2)	Depth <b>2.46</b>

Head                      1800 MHz                       $\epsilon_r = 40.0 \pm 5\%$                        $\sigma = 1.40 \pm 5\%$  mho/m

Valid for f=1710-1910 MHz with Head Tissue Simulating Liquid according to EN 50361, P1528-200X

ConvF X	<b>5.3</b> $\pm 9.5\%$ (k=2)	Boundary effect:
ConvF Y	<b>5.3</b> $\pm 9.5\%$ (k=2)	Alpha <b>0.46</b>
ConvF Z	<b>5.3</b> $\pm 9.5\%$ (k=2)	Depth <b>2.69</b>

### Boundary Effect

Head                      900 MHz                      Typical SAR gradient: 5 % per mm

Probe Tip to Boundary		<b>1 mm</b>	<b>2 mm</b>
SAR <sub>be</sub> [%]	Without Correction Algorithm	9.9	5.6
SAR <sub>be</sub> [%]	With Correction Algorithm	0.3	0.5

Head                      1800 MHz                      Typical SAR gradient: 10 % per mm

Probe Tip to Boundary		<b>1 mm</b>	<b>2 mm</b>
SAR <sub>be</sub> [%]	Without Correction Algorithm	13.0	8.9
SAR <sub>be</sub> [%]	With Correction Algorithm	0.2	0.1

### Sensor Offset

Probe Tip to Sensor Center	<b>2.7</b>	mm
Optical Surface Detection	<b>1.5 <math>\pm</math> 0.2</b>	mm

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

