

Date/Time: 03/11/05 10:10:06

Test Laboratory: Advance Data Technology

S590 Mode 1 BodyWorn Bottom 15mm - PCS1900 GPRS

DUT: Mobil Phone ; Type: S590 ; Test Channel Frequency: 1880 MHz

Communication System: PCS 1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:4

Medium: MSL1900 Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.52 \text{ mho/m}$; $\epsilon_r = 50.9$; $\rho = 1000 \text{ kg/m}^3$; Liquid Level : 155mm

Phantom section: Flat Section ; DUT test position : Body ; Modulation Type: GMSK / UL 2 time slots

Separation Distance : 15 mm (The bottom side of the EUT to the Phantom)

Antenna Type : External Antenna ; Air Temp. : 22.0 degrees ; Liquid Temp. : 21.0 degrees

DASY4 Configuration:

- Probe: ET3DV6 - SN1687 ; ConvF(4.54, 4.54, 4.54) ; 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, V4.4 Build 3 ; Postprocessing SW: SEMCAD, V1.8 Build 130

Middle Channel 661/Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (measured) = 0.824 mW/g

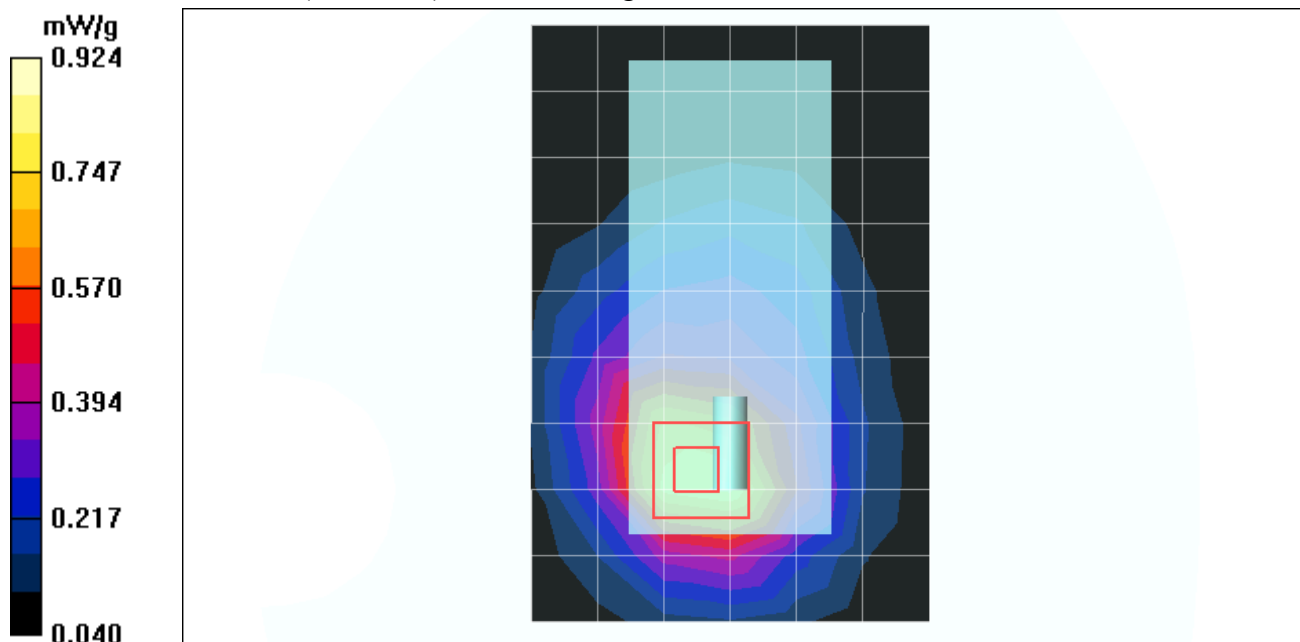
Middle Channel 661/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

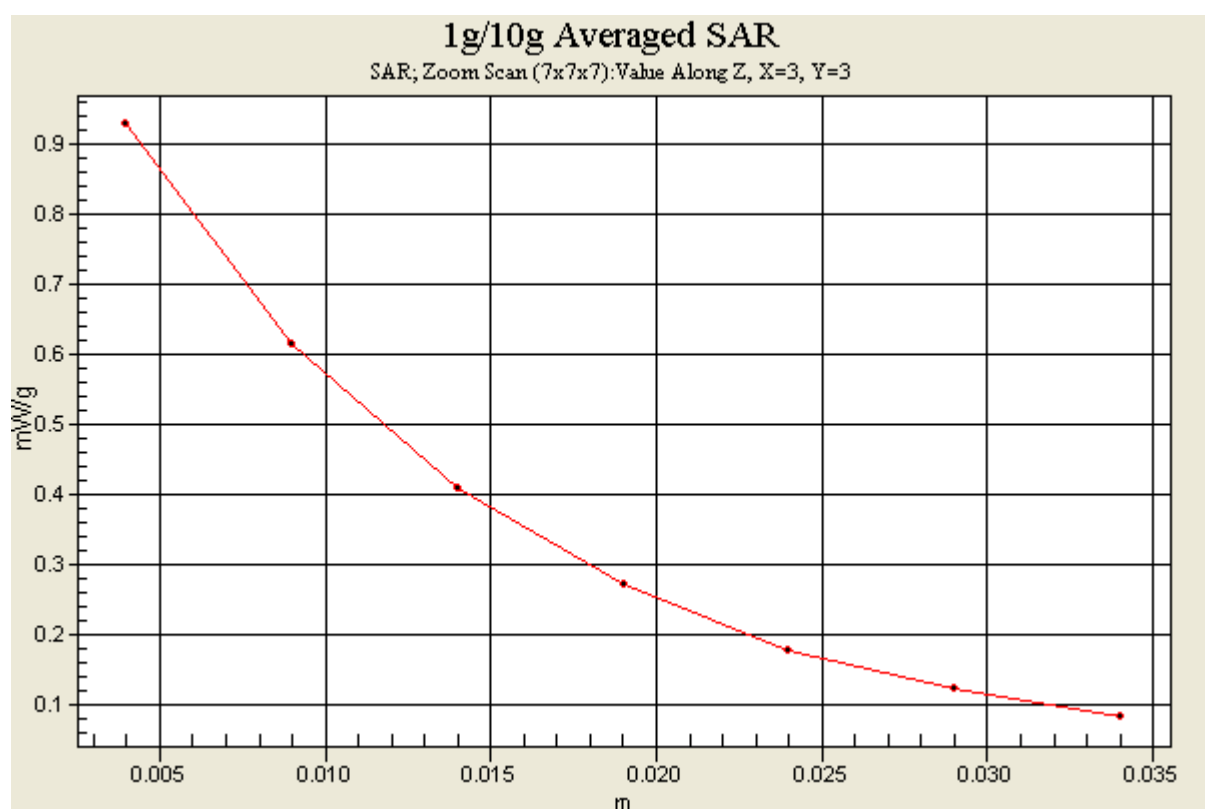
Reference Value = 25.1 V/m

Peak SAR (extrapolated) = 1.29 W/kg

SAR(1 g) = 0.840 mW/g; SAR(10 g) = 0.520 mW/g

Maximum value of SAR (measured) = 0.924 mW/g





Date/Time: 03/11/05 10:32:48

Test Laboratory: Advance Data Technology

S590 Mode 1 Body Worn Bottom 15mm - PCS1900 GPRS

DUT: Mobil Phone ; Type: S590 ; Test Channel Frequency: 1909.8 MHz

Communication System: PCS 1900 ; Frequency: 1909.8 MHz ; Duty Cycle: 1:4

Medium: MSL1900 Medium parameters used: $f = 1909.8 \text{ MHz}$; $\sigma = 1.55 \text{ mho/m}$; $\epsilon_r = 50.8$; $\rho = 1000 \text{ kg/m}^3$; Liquid Level : 155mm

Phantom section: Flat Section ; DUT test position : Body ; Modulation Type: GMSK / UL 2 time slots

Separation Distance : 15 mm (The bottom side of the EUT to the Phantom)

Antenna Type : External Antenna ; Air Temp. : 22.0 degrees ; Liquid Temp. : 21.0 degrees

DASY4 Configuration:

- Probe: ET3DV6 - SN1687 ; ConvF(4.54, 4.54, 4.54) ; 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, V4.4 Build 3 ; Postprocessing SW: SEMCAD, V1.8 Build 130

High Channel 810/Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.612 mW/g

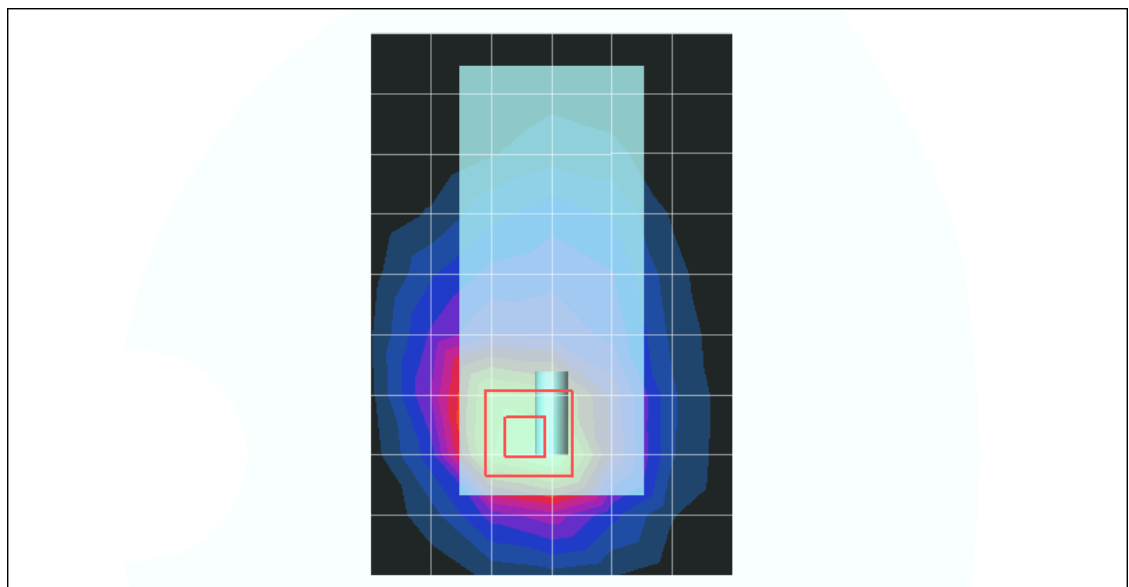
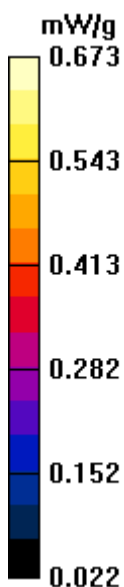
High Channel 810/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 21.3 V/m

Peak SAR (extrapolated) = 0.983 W/kg

SAR(1 g) = 0.611 mW/g; SAR(10 g) = 0.365 mW/g

Maximum value of SAR (measured) = 0.673 mW/g



Date/Time: 03/11/05 10:55:11

Test Laboratory: Advance Data Technology

S590 Mode 2 Body Worn Front 15mm - PCS1900 GPRS

DUT: Mobil Phone ; Type: S590 ; Test Channel Frequency: 1850.2 MHz

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

Medium: MSL1900 Medium parameters used: $f = 1850.2 \text{ MHz}$; $\sigma = 1.49 \text{ mho/m}$; $\epsilon_r = 51.2$; $\rho = 1000 \text{ kg/m}^3$; Liquid Level : 155mm

Phantom section: Flat Section ; DUT test position : Body ; Modulation Type: GMSK / UL 2 time slots

Separation Distance : 15 mm (The Top side of the EUT to the Phantom)

Antenna Type : External Antenna ; Air Temp. : 22.0 degrees ; Liquid Temp. : 21.0 degrees

DASY4 Configuration:

- Probe: ET3DV6 - SN1687 ; ConvF(4.54, 4.54, 4.54) ; 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, V4.4 Build 3 ; Postprocessing SW: SEMCAD, V1.8 Build 130

Low Channel 1/Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (measured) = 0.317 mW/g

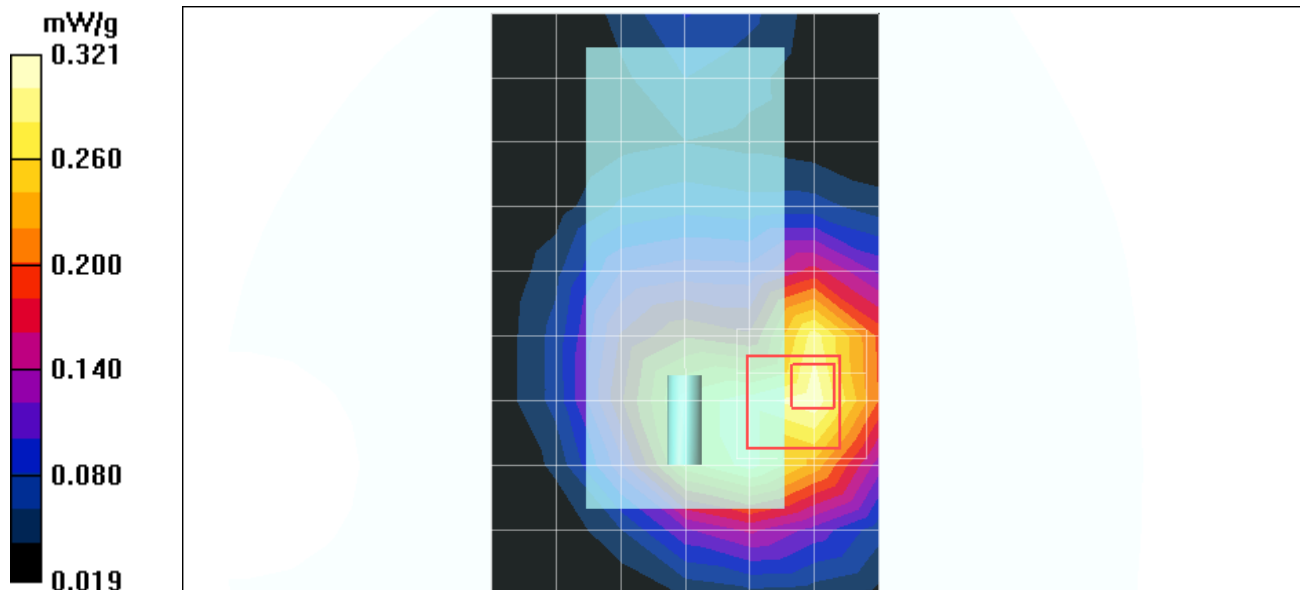
Low Channel 1/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 14 V/m

Peak SAR (extrapolated) = 0.422 W/kg

SAR(1 g) = 0.297 mW/g; SAR(10 g) = 0.197 mW/g

Maximum value of SAR (measured) = 0.321 mW/g



Date/Time: 03/11/05 11:21:31

Test Laboratory: Advance Data Technology

S590 Mode 2 Body Worn Front 15mm - PCS1900 GPRS

DUT: Mobil Phone ; Type: S590 ; Test Channel Frequency: 1880 MHz

Communication System: PCS 1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:4

Medium: MSL1900 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 50.9$; $\rho = 1000$ kg/m³ ; Liquid Level : 155mm

Phantom section: Flat Section ; DUT test position : Body ; Modulation Type: GMSK / UL 2 time slots

Separation Distance : 15 mm (The Top side of the EUT to the Phantom)

Antenna Type : External Antenna ; Air Temp. : 22.0 degrees ; Liquid Temp. : 21.0 degrees

DASY4 Configuration:

- Probe: ET3DV6 - SN1687 ; ConvF(4.54, 4.54, 4.54) ; 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, V4.4 Build 3 ; Postprocessing SW: SEMCAD, V1.8 Build 130

Low Channel 2/Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.236 mW/g

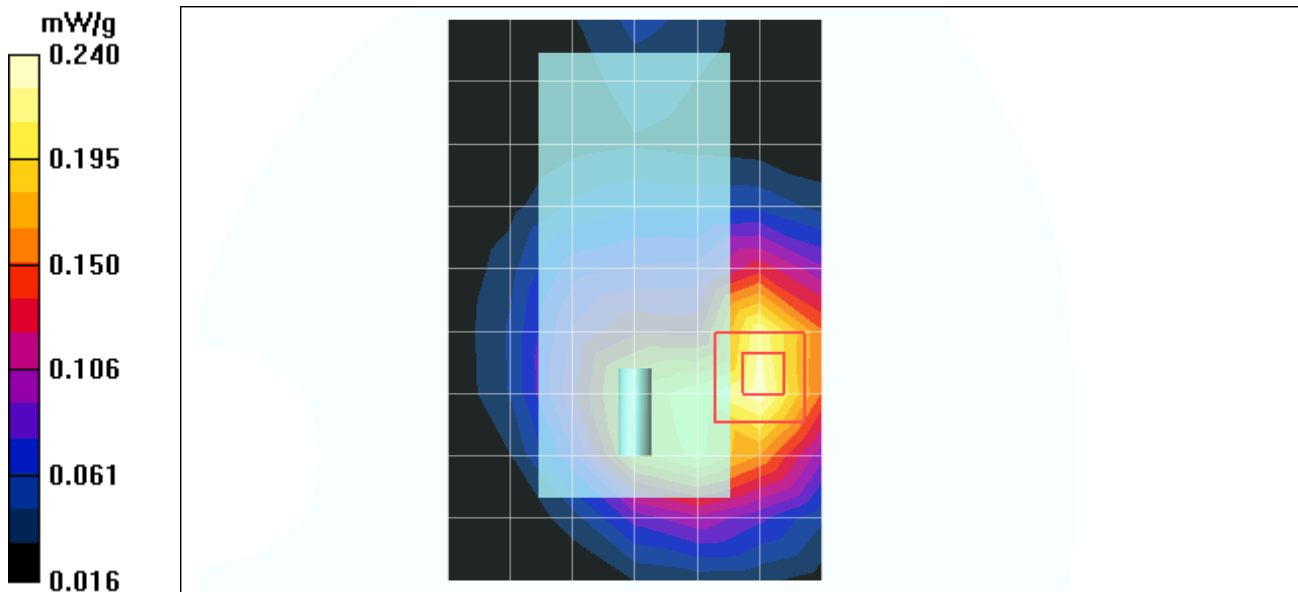
Low Channel 2/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.5 V/m

Peak SAR (extrapolated) = 0.324 W/kg

SAR(1 g) = 0.222 mW/g; SAR(10 g) = 0.143 mW/g

Maximum value of SAR (measured) = 0.240 mW/g



Date/Time: 03/11/05 11:45:03

Test Laboratory: Advance Data Technology

S590 Mode 2 Body Worn Front 15mm - PCS1900 GPRS

DUT: Mobil Phone ; Type: S590 ; Test Channel Frequency: 1909.8 MHz

Communication System: PCS 1900 ; Frequency: 1909.8 MHz ; Duty Cycle: 1:4

Medium: MSL1900 Medium parameters used: $f = 1909.8 \text{ MHz}$; $\sigma = 1.55 \text{ mho/m}$; $\epsilon_r = 50.8$; $\rho = 1000 \text{ kg/m}^3$; Liquid Level : 155mm

Phantom section: Flat Section ; DUT test position : Body ; Modulation Type: GMSK / UL 2 time slots
Separation Distance : 15 mm (The Top side of the EUT to the Phantom)

Antenna Type : External Antenna ; Air Temp. : 22.0 degrees ; Liquid Temp. : 21.0 degrees

DASY4 Configuration:

- Probe: ET3DV6 - SN1687 ; ConvF(4.54, 4.54, 4.54) ; 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, V4.4 Build 3 ; Postprocessing SW: SEMCAD, V1.8 Build 130

Low Channel 3/Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (measured) = 0.164 mW/g

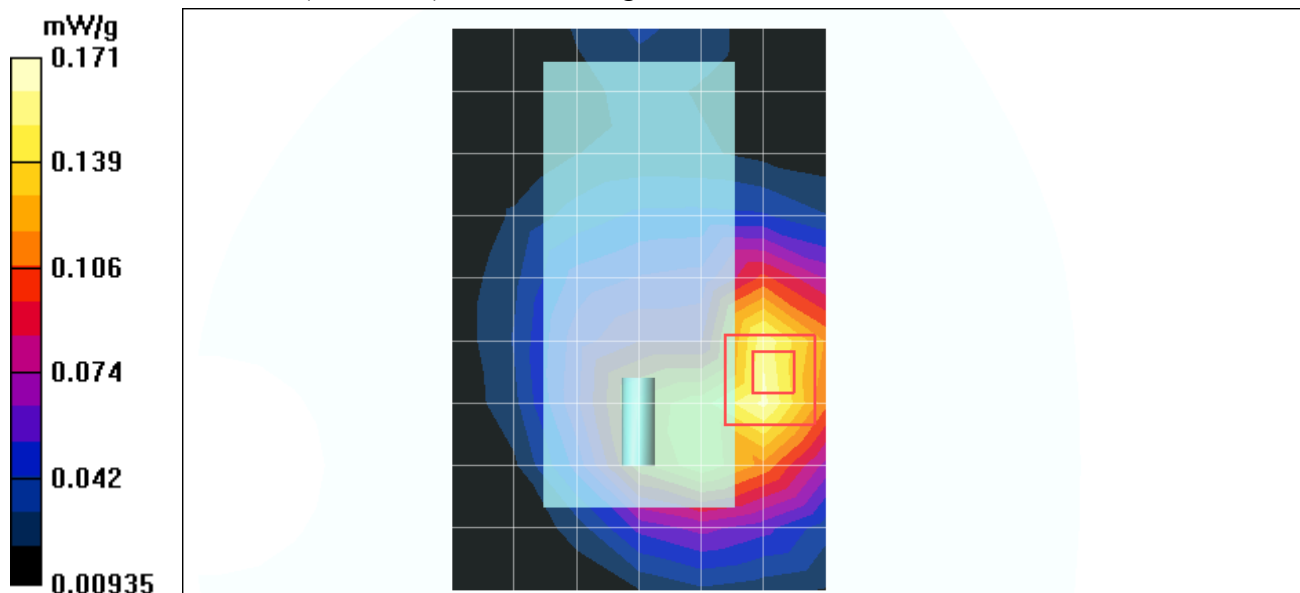
Low Channel 3/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 9.33 V/m;

Peak SAR (extrapolated) = 0.229 W/kg

SAR(1 g) = 0.157 mW/g; SAR(10 g) = 0.100 mW/g

Maximum value of SAR (measured) = 0.171 mW/g



Test Laboratory: Advance Data Technology

S590 Mode 3 LeftHead Cheek PCS1900

DUT: Mobil Phone ; Type: S590 ; Test Channel Frequency: 1850.2 MHz

Communication System: PCS 1900 ; Frequency: 1850.2 MHz ; Duty Cycle: 1:8

Medium: HSL1900 Medium parameters used: $f = 1850.2 \text{ MHz}$; $\sigma = 1.33 \text{ mho/m}$; $\epsilon_r = 39.6$; $\rho = 1000 \text{ kg/m}^3$; Liquid Level : 155mm

Phantom section: Left Section ; DUT test position : Body ; Modulation Type: GMSK / UL 2 time slots
Separation Distance : 15 mm (The bottom side of the EUT to the Phantom)

Antenna Type : External Antenna ; Air Temp. : 22.0 degrees ; Liquid Temp. : 21.0 degrees

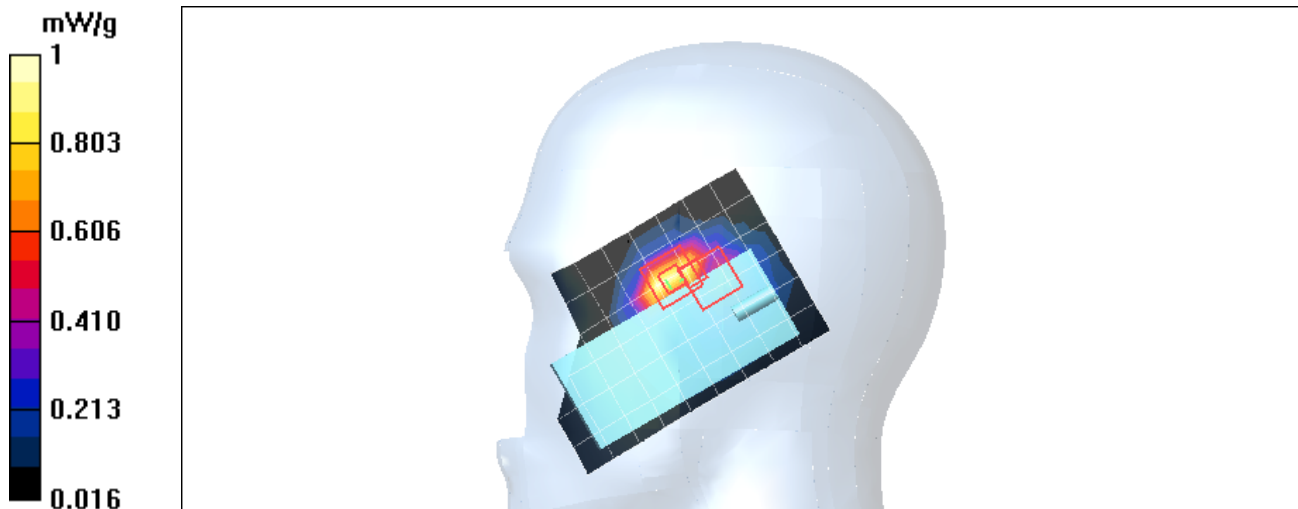
DASY4 Configuration:

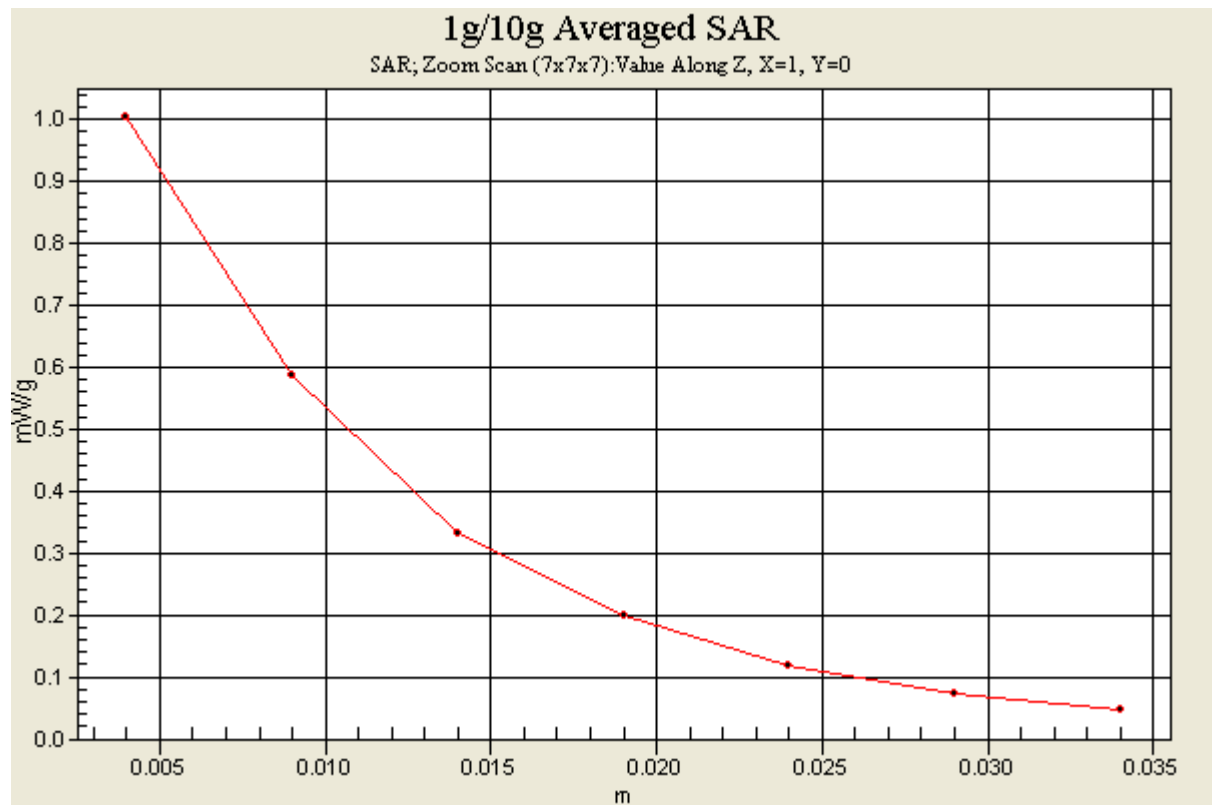
- Probe: ET3DV6 - SN1687 ; ConvF(5.16, 5.16, 5.16) ; Calibrated: 2004/8/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510 ; Calibrated: 2004/8/17
- Phantom: SAM 12 ; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.4 Build 3 ; Postprocessing SW: SEMCAD, V1.8 Build 130

Touch position - Low Channel/Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 0.973 mW/g

Touch position - Low Channel/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid:
 $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 18.4 V/m
Peak SAR (extrapolated) = 1.79 W/kg
SAR(1 g) = 0.964 mW/g; SAR(10 g) = 0.476 mW/g
Maximum value of SAR (measured) = 1.1 mW/g

Touch position - Low Channel/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid:
 $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 18.4 V/m;
Peak SAR (extrapolated) = 1.6 W/kg
SAR(1 g) = 0.775 mW/g; SAR(10 g) = 0.368 mW/g
Maximum value of SAR (measured) = 1 mW/g





Test Laboratory: Advance Data Technology

S590 Mode 3 LeftHead Cheek PCS1900**DUT: Mobil Phone ; Type: S590 ; Test Frequency: 1880 MHz**

Communication System: PCS 1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8

Phantom: SAM 12 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.37$ mho/m; $\epsilon_r = 39.5$; $\rho = 1000$ kg/m³ ; Liquid level: 155mm

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

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

DASY4 Configuration:

- Probe: ET3DV6 - SN1687; ConvF(5.16, 5.16, 5.16) ; 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, V4.4 Build 3; Postprocessing SW: SEMCAD, V1.8 Build 130

Touch position - Middle Channel/Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.813 mW/g

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

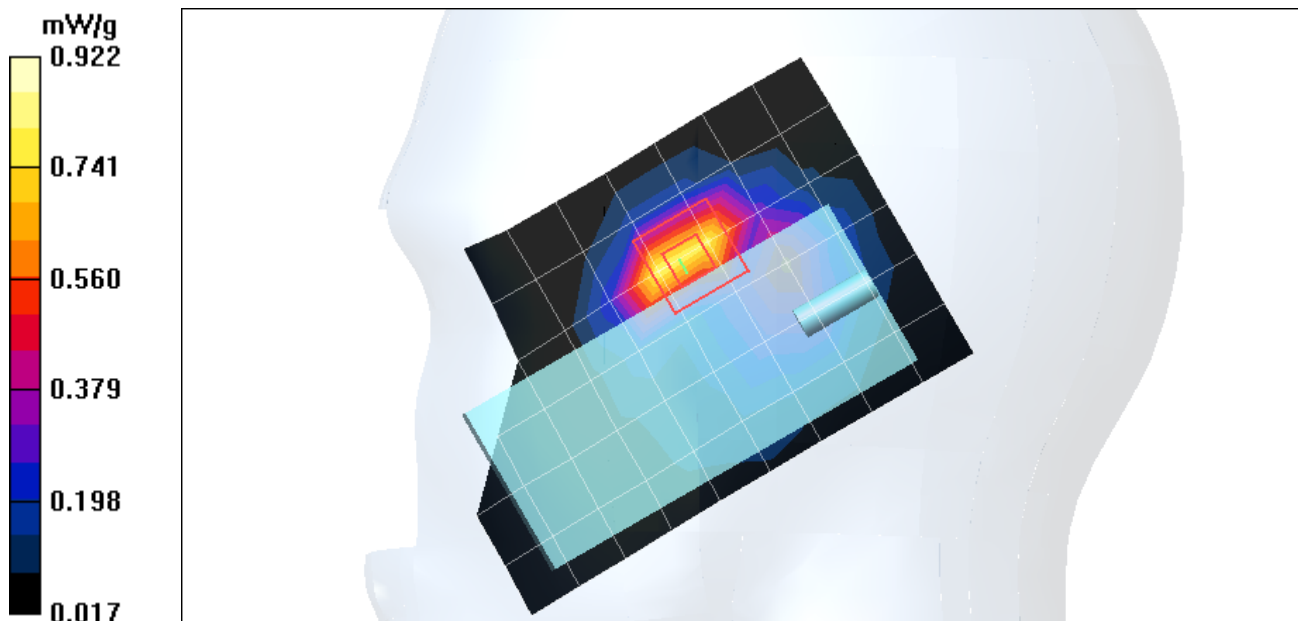
dx=5mm, dy=5mm, dz=5mm

Reference Value = 16.4 V/m;

Peak SAR (extrapolated) = 1.52 W/kg

SAR(1 g) = 0.821 mW/g; SAR(10 g) = 0.399 mW/g

Maximum value of SAR (measured) = 0.922 mW/g



Test Laboratory: Advance Data Technology

S590 Mode 3 LeftHead Cheek PCS1900

DUT: Mobil Phone ; Type: S590 ; Test Frequency: 1909.8 MHz

Communication System: PCS 1900 ; Frequency: 1909.8 MHz ; Duty Cycle: 1:8

Phantom: SAM 12 Medium parameters used: $f = 1909.8 \text{ MHz}$; $\sigma = 1.4 \text{ mho/m}$; $\epsilon_r = 39.3$; $\rho = 1000 \text{ kg/m}^3$; Liquid level: 155mm

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

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

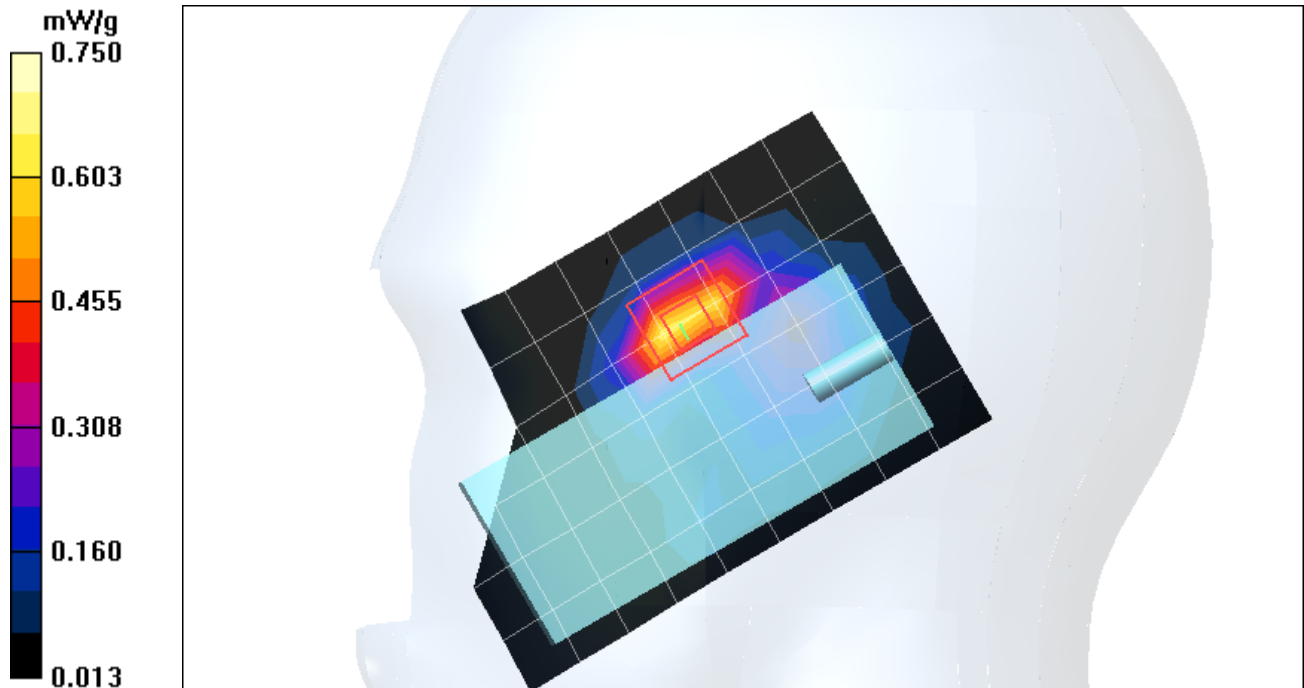
DASY4 Configuration:

- Probe: ET3DV6 - SN1687; ConvF(5.16, 5.16, 5.16) ; 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, V4.4 Build 3; Postprocessing SW: SEMCAD, V1.8 Build 130

Touch position - High Channel/Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 0.648 mW/g

Touch position - High Channel/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid:
 $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 14.6 V/m;
Peak SAR (extrapolated) = 1.25 W/kg

SAR(1 g) = 0.659 mW/g; SAR(10 g) = 0.316 mW/g
Maximum value of SAR (measured) = 0.750 mW/g



Test Laboratory: Advance Data Technology

S590 Mode 4 LeftHead Tilt PCS1900

DUT: Mobil Phone ; Type: S590 ; Test Channel Frequency: 1850.2 MHz

Communication System: PCS 1900 ; Frequency: 1850.2 MHz; Duty Cycle: 1:8

Medium: HSL1900 Medium parameters used: $f = 1850.2$ MHz; $\sigma = 1.33$ mho/m; $\epsilon_r = 39.6$; $\rho = 1000$ kg/m³ ; Liquid level: 155 mm

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

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

DASY4 Configuration:

- Probe: ET3DV6 - SN1687 ; ConvF(5.16, 5.16, 5.16) ; 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, V4.4 Build 3; Postprocessing SW: SEMCAD, V1.8 Build 130

Tilt position - Low Channel/Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.246 mW/g

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

Reference Value = 13.4 V/m;

Peak SAR (extrapolated) = 0.389 W/kg

SAR(1 g) = 0.243 mW/g; SAR(10 g) = 0.137 mW/g

Maximum value of SAR (measured) = 0.269 mW/g

Tilt position - Low Channel/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid:

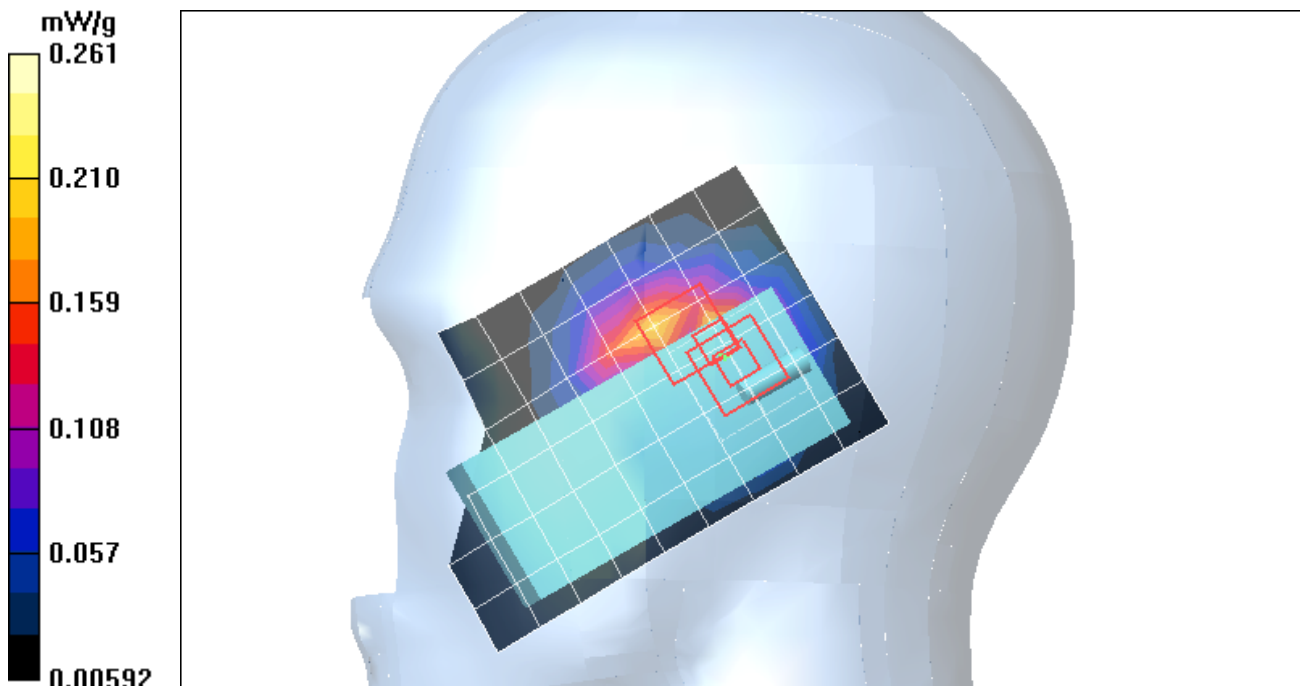
dx=5mm, dy=5mm, dz=5mm

Reference Value = 13.4 V/m;

Peak SAR (extrapolated) = 0.403 W/kg

SAR(1 g) = 0.212 mW/g; SAR(10 g) = 0.110 mW/g

Maximum value of SAR (measured) = 0.261 mW/g



Test Laboratory: Advance Data Technology

S590 Mode 4 LeftHead Tilt PCS1900

DUT: Mobil Phone ; Type: S590 ; Test Channel Frequency: 1880 MHz

Communication System: PCS 1900 ; Frequency: 1880 MHz; Duty Cycle: 1:8

Medium: HSL1900 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.37$ mho/m; $\epsilon_r = 39.5$; $\rho = 1000$ kg/m³ ; Liquid level: 155 mm

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

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

DASY4 Configuration:

- Probe: ET3DV6 - SN1687 ; ConvF(5.16, 5.16, 5.16) ; 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, V4.4 Build 3; Postprocessing SW: SEMCAD, V1.8 Build 130

Tilt position - Middle Channel/Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.335 mW/g

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

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

Reference Value = 15.7 V/m;

Peak SAR (extrapolated) = 0.579 W/kg

SAR(1 g) = 0.353 mW/g; SAR(10 g) = 0.198 mW/g

Maximum value of SAR (measured) = 0.388 mW/g

Tilt position - Middle Channel/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid:

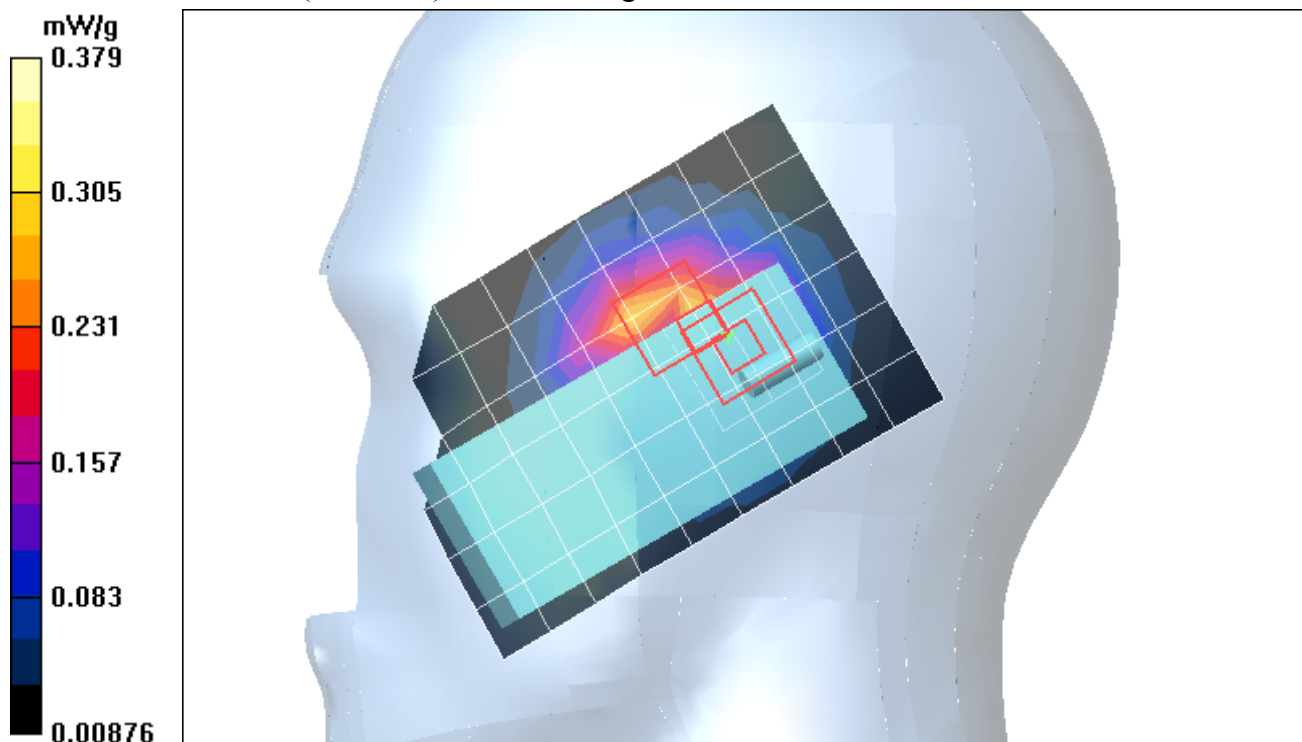
dx=5mm, dy=5mm, dz=5mm

Reference Value = 15.7 V/m;

Peak SAR (extrapolated) = 0.558 W/kg

SAR(1 g) = 0.278 mW/g; SAR(10 g) = 0.155 mW/g

Maximum value of SAR (measured) = 0.379 mW/g



Test Laboratory: Advance Data Technology

S590 Mode 4 LeftHead Tilt PCS1900

DUT: Mobil Phone ; Type: S590 ; Test Channel Frequency: 1909.8 MHz

Communication System: PCS 1900 ; Frequency: 1909.8 MHz; Duty Cycle: 1:8

Medium: HSL1900 Medium parameters used: $f = 1909.8 \text{ MHz}$; $\sigma = 1.4 \text{ mho/m}$; $\epsilon_r = 39.3$; $\rho = 1000 \text{ kg/m}^3$; Liquid level: 155 mm

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

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

DASY4 Configuration:

- Probe: ET3DV6 - SN1687 ; ConvF(5.16, 5.16, 5.16) ; 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, V4.4 Build 3; Postprocessing SW: SEMCAD, V1.8 Build 130

Tilt position - High Channel/Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (measured) = 0.258 mW/g

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

$dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 13.1 V/m;

Peak SAR (extrapolated) = 0.408 W/kg

SAR(1 g) = 0.256 mW/g; SAR(10 g) = 0.144 mW/g

Maximum value of SAR (measured) = 0.282 mW/g

Tilt position - High Channel/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid:

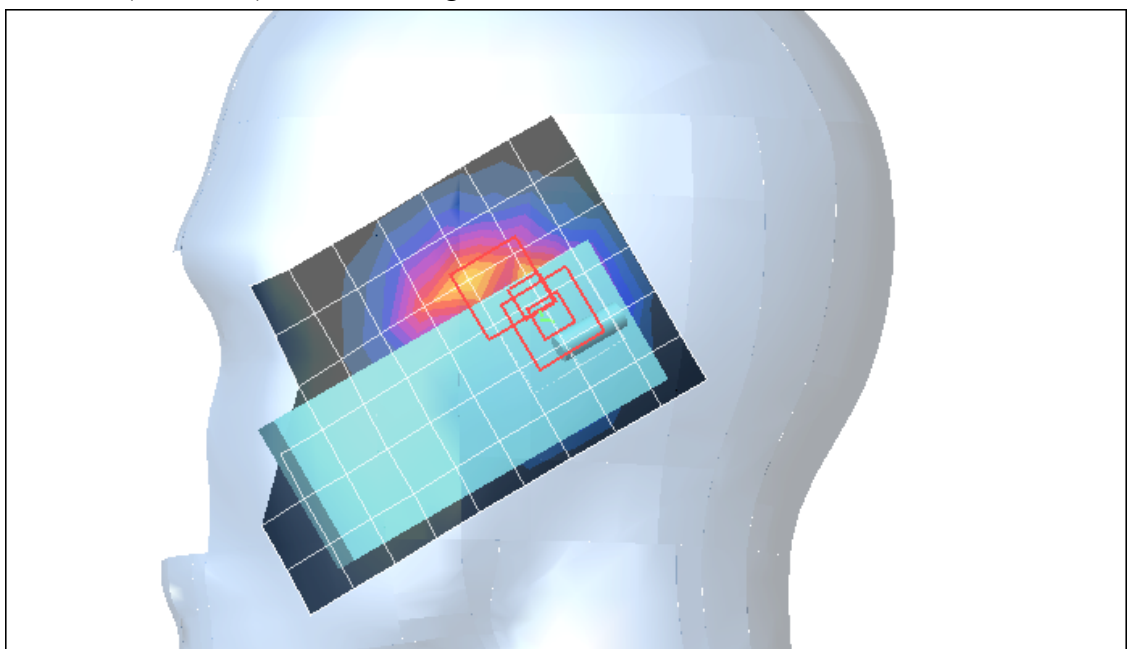
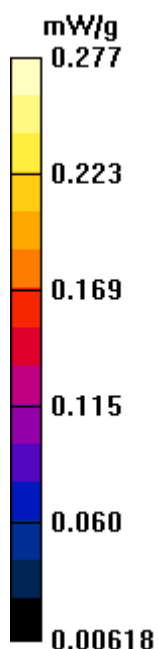
$dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 13.1 V/m;

Peak SAR (extrapolated) = 0.408 W/kg

SAR(1 g) = 0.224 mW/g; SAR(10 g) = 0.116 mW/g

Maximum value of SAR (measured) = 0.277 mW/g



Test Laboratory: Advance Data Technology

S590 Mode 5 RightHead Cheek PCS1900

DUT: Mobil Phone ; Type: S590 ; Test Frequency: 1850.2 MHz

Communication System: PCS 1900 ; Frequency: 1850.2 MHz ; Duty Cycle: 1:8

Phantom: SAM 12 Medium parameters used: $f = 1850.2$ MHz; $\sigma = 1.33$ mho/m; $\epsilon_r = 39.6$; $\rho = 1000$ kg/m³ ; Liquid level: 155mm

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

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

DASY4 Configuration:

- Probe: ET3DV6 - SN1687; ConvF(5.16, 5.16, 5.16) ; 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, V4.4 Build 3; Postprocessing SW: SEMCAD, V1.8 Build 130

Touch position - Low Channel/Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm

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

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

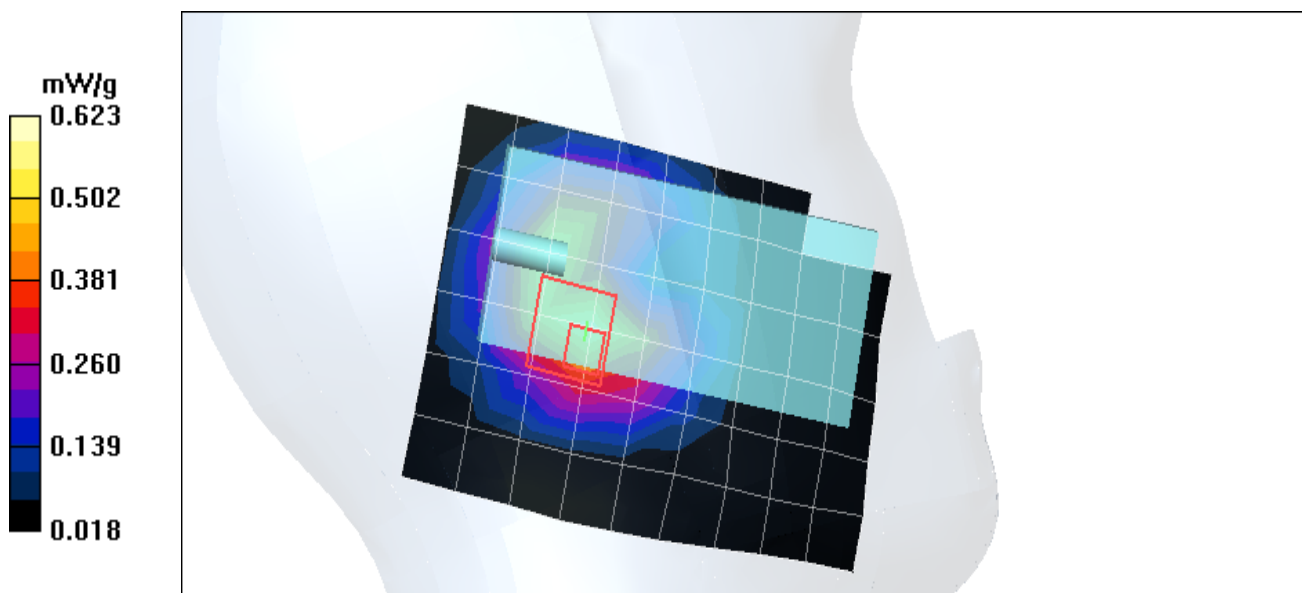
dx=5mm, dy=5mm, dz=5mm

Reference Value = 18.9 V/m

Peak SAR (extrapolated) = 0.910 W/kg

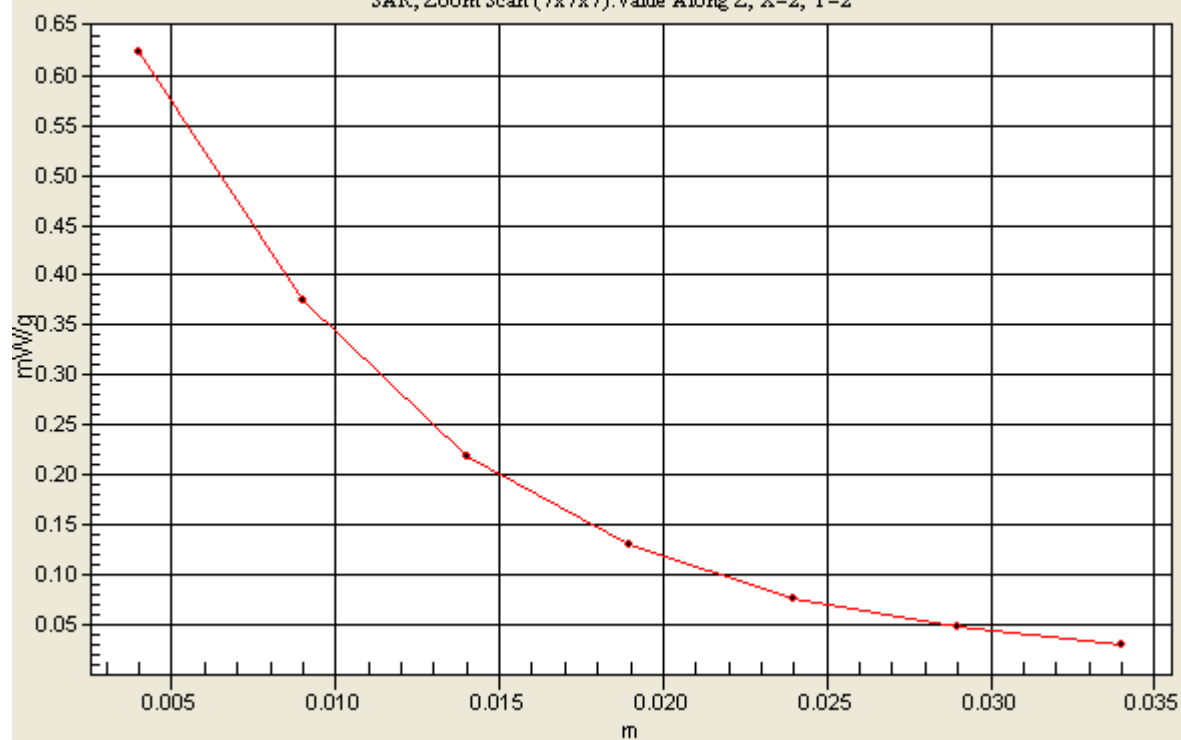
SAR(1 g) = 0.554 mW/g; SAR(10 g) = 0.312 mW/g

Maximum value of SAR (measured) = 0.623 mW/g



1g/10g Averaged SAR

SAR; Zoom Scan (7x7x7): Value Along Z, X=2, Y=2



Test Laboratory: Advance Data Technology

S590 Mode 5 RightHead Cheek PCS1900

DUT: Mobil Phone ; Type: S590 ; Test Frequency: 1880 MHz

Communication System: PCS 1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8

Phantom: SAM 12 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.37$ mho/m; $\epsilon_r = 39.5$; $\rho = 1000$ kg/m³ ; Liquid level: 155mm

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

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

DASY4 Configuration:

- Probe: ET3DV6 - SN1687; ConvF(5.16, 5.16, 5.16) ; 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, V4.4 Build 3; Postprocessing SW: SEMCAD, V1.8 Build 130

Touch position - Middle Channel/Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.456 mW/g

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

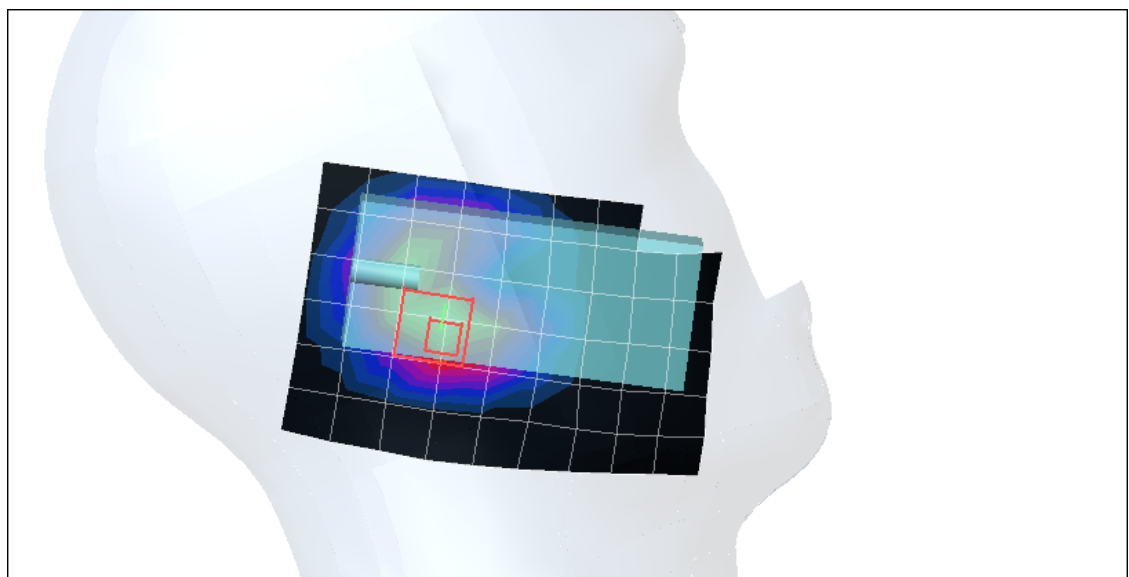
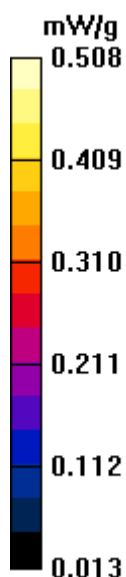
dx=5mm, dy=5mm, dz=5mm

Reference Value = 16.8 V/m

Peak SAR (extrapolated) = 0.752 W/kg

SAR(1 g) = 0.454 mW/g; SAR(10 g) = 0.250 mW/g

Maximum value of SAR (measured) = 0.508 mW/g



Test Laboratory: Advance Data Technology

S590 Mode 5 RightHead Cheek PCS1900

DUT: Mobil Phone ; Type: S590 ; Test Frequency: 1909.8 MHz

Communication System: PCS 1900 ; Frequency: 1909.8 MHz ; Duty Cycle: 1:8

Phantom: SAM 12 Medium parameters used: $f = 1909.8 \text{ MHz}$; $\sigma = 1.4 \text{ mho/m}$; $\epsilon_r = 39.3$; $\rho = 1000 \text{ kg/m}^3$; Liquid level: 155mm

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

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

DASY4 Configuration:

- Probe: ET3DV6 - SN1687; ConvF(5.16, 5.16, 5.16) ; 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, V4.4 Build 3; Postprocessing SW: SEMCAD, V1.8 Build 130

Touch position - High Channel/Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (measured) = 0.353 mW/g

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

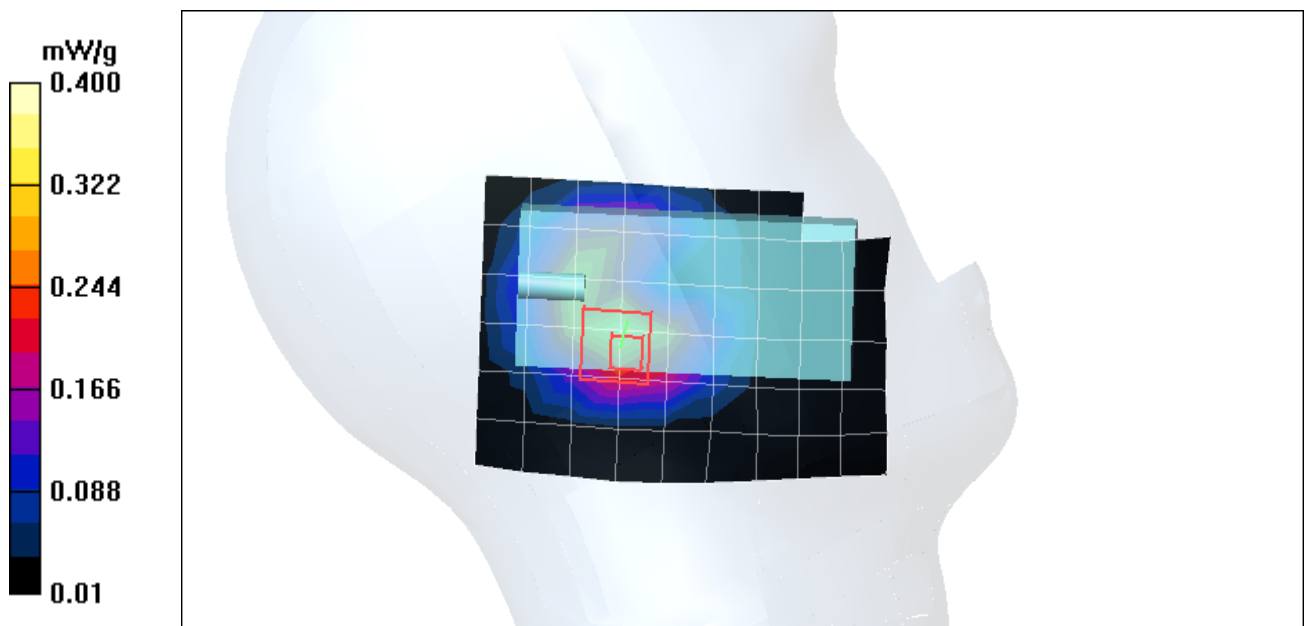
$dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 14.2 V/m

Peak SAR (extrapolated) = 0.610 W/kg

SAR(1 g) = 0.355 mW/g; SAR(10 g) = 0.191 mW/g

Maximum value of SAR (measured) = 0.400 mW/g



Test Laboratory: Advance Data Technology

S590 Mode 6 Right Head Tilt PCS1900

DUT: Mobil Phone ; Type: S590 ; Test Channel Frequency: 1850.2 MHz

Communication System: PCS 1900 ; Frequency: 1850.2 MHz; Duty Cycle: 1:8

Medium: HSL1900 Medium parameters used: $f = 1850.2$ MHz; $\sigma = 1.33$ mho/m; $\epsilon_r = 39.6$; $\rho = 1000$ kg/m³ ; Liquid level: 155 mm

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

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

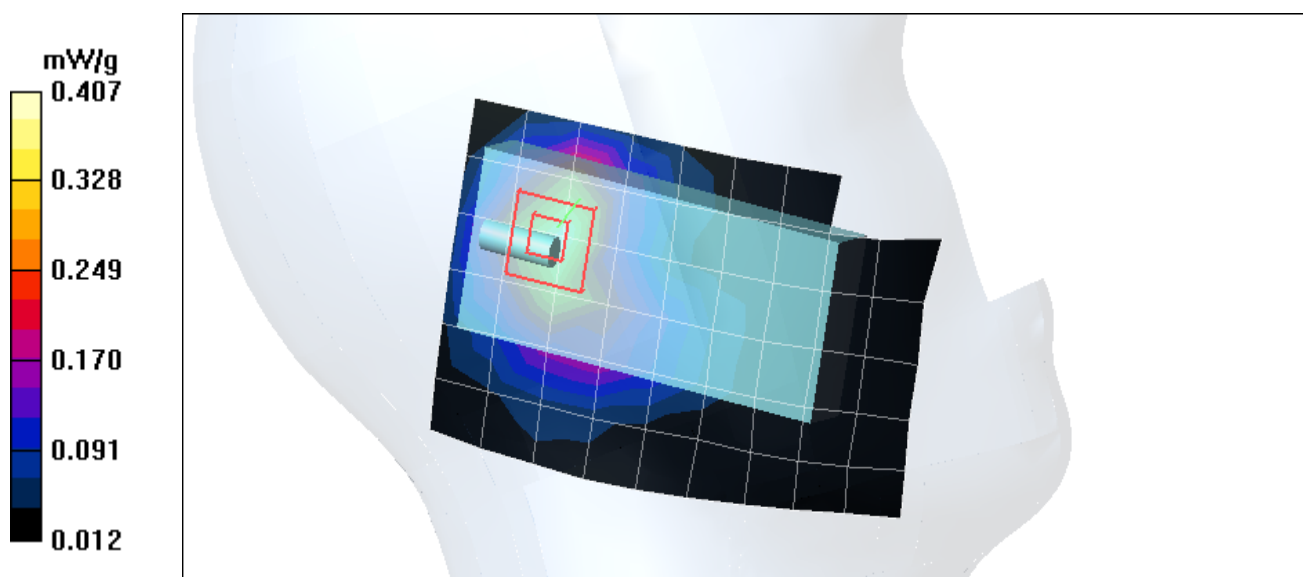
DASY4 Configuration:

- Probe: ET3DV6 - SN1687 ; ConvF(5.16, 5.16, 5.16) ; 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, V4.4 Build 3; Postprocessing SW: SEMCAD, V1.8 Build 130

Touch position - Low Channel/Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.404 mW/g

Touch position - Low Channel/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid:
dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.2 V/m
Peak SAR (extrapolated) = 0.579 W/kg

SAR(1 g) = 0.373 mW/g; SAR(10 g) = 0.216 mW/g
Maximum value of SAR (measured) = 0.407 mW/g



Test Laboratory: Advance Data Technology

S590 Mode 6 Right Head Tilt PCS1900

DUT: Mobil Phone ; Type: S590 ; Test Channel Frequency: 1880 MHz

Communication System: PCS 1900 ; Frequency: 1880 MHz; Duty Cycle: 1:8

Medium: HSL1900 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.37$ mho/m; $\epsilon_r = 39.5$; $\rho = 1000$ kg/m³ ; Liquid level: 155 mm

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

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

DASY4 Configuration:

- Probe: ET3DV6 - SN1687 ; ConvF(5.16, 5.16, 5.16) ; 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, V4.4 Build 3; Postprocessing SW: SEMCAD, V1.8 Build 130

Touch position - Middle Channel/Area Scan (7x10x1): Measurement grid:

$dx=15$ mm, $dy=15$ mm

Maximum value of SAR (measured) = 0.296 mW/g

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

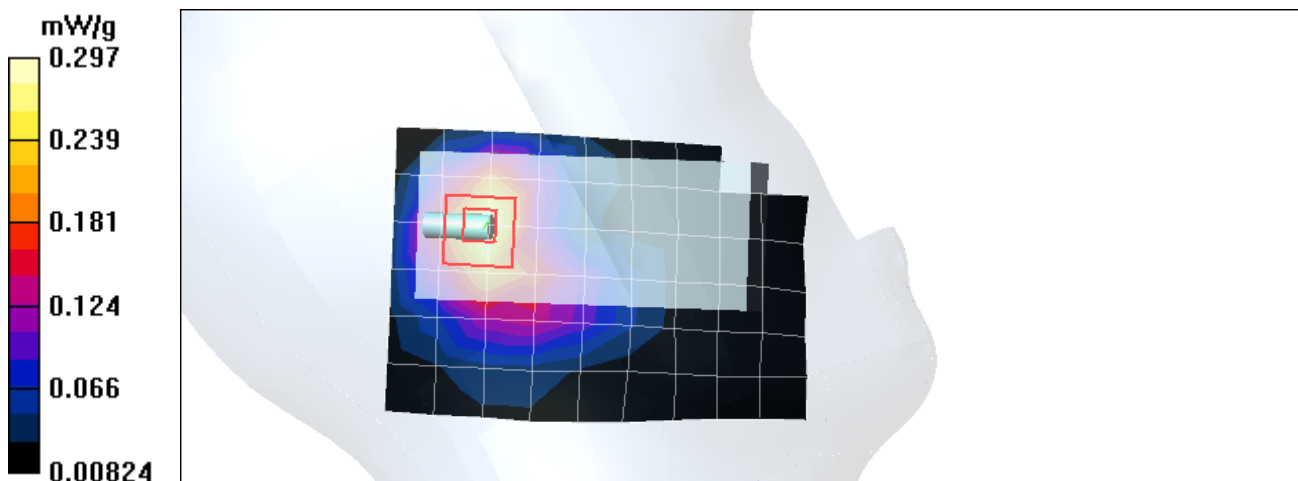
$dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 15.4 V/m

Peak SAR (extrapolated) = 0.420 W/kg

SAR(1 g) = 0.270 mW/g; SAR(10 g) = 0.156 mW/g

Maximum value of SAR (measured) = 0.297 mW/g



Test Laboratory: Advance Data Technology

S590 Mode 6 Right Head Tilt PCS1900

DUT: Mobil Phone ; Type: S590 ; Test Channel Frequency: 1909.8 MHz

Communication System: PCS 1900 ; Frequency: 1909.8 MHz; Duty Cycle: 1:8

Medium: HSL1900 Medium parameters used: $f = 1909.8 \text{ MHz}$; $\sigma = 1.4 \text{ mho/m}$; $\epsilon_r = 39.3$; $\rho = 1000 \text{ kg/m}^3$; Liquid level: 155 mm

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

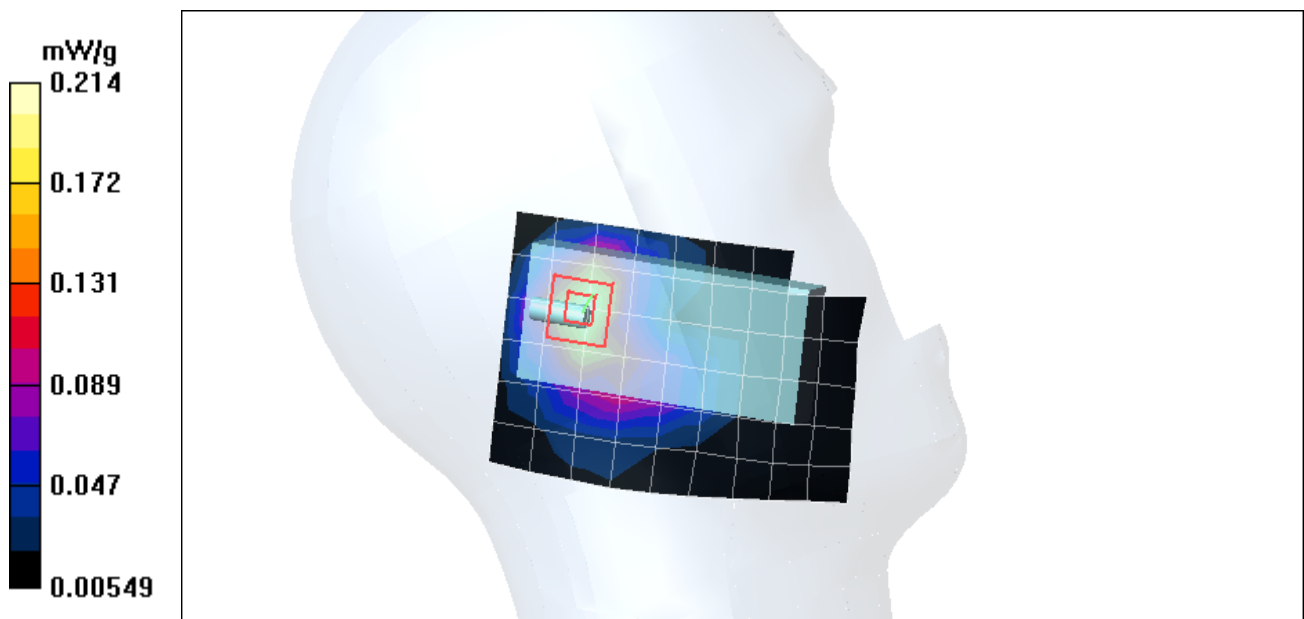
Antenna type : Internal Antenna ; Air temp. : 22.0 degrees ; Liquid temp. : 21.0 degrees

DASY4 Configuration:

- Probe: ET3DV6 - SN1687 ; ConvF(5.16, 5.16, 5.16) ; 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, V4.4 Build 3; Postprocessing SW: SEMCAD, V1.8 Build 130

Touch position - High Channel/Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 0.214 mW/g

Touch position - High Channel/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid:
 $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 12.8 V/m;
Peak SAR (extrapolated) = 0.311 W/kg
SAR(1 g) = 0.195 mW/g; SAR(10 g) = 0.110 mW/g
Maximum value of SAR (measured) = 0.214 mW/g



Test Laboratory: Advance Data Technology

System Validation Check MSL 1900MHz 2005-03-11

DUT: Dipole 1900 MHz ; Type: D1900V2 ; Serial: D1900V2 - SN:5d022 ; Test Frequency: 1900 MHz

Communication System: CW ; Frequency: 1900 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: **MSL1900**; Medium parameters used: $f = 1900$ MHz; $\sigma = 1.54$ mho/m; $\epsilon_r = 52.8$; $\rho = 1000$ kg/m³ ; Liquid level : 155 mm

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(4.54, 4.54, 4.54) ; 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, V4.4 Build 3; Postprocessing SW: SEMCAD, V1.8 Build 130

d=10mm, Pin=250mW/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 10.5 mW/g

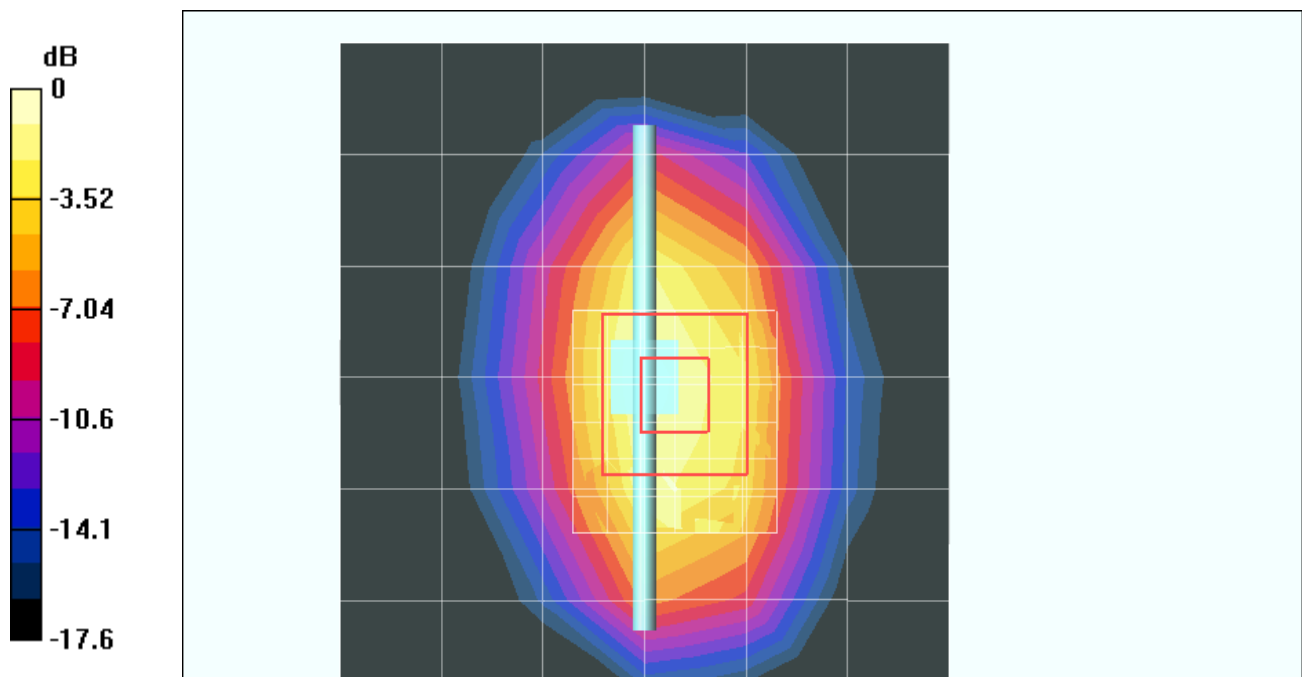
d=10mm, Pin=250mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 88.6 V/m

Peak SAR (extrapolated) = 17.3 W/kg

SAR(1 g) = 10.1 mW/g; SAR(10 g) = 5.35 mW/g

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



Test Laboratory: Advance Data Technology

System Validation Check HSL 1900MHz 2005-03-11

DUT: Dipole 1900 MHz ; Type: D1900V2 ; Serial: D1900V2 - SN:5d022 ; Test Frequency: 1900 MHz

Communication System: CW ; Frequency: 1900 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: HSL1900; Medium parameters used: $f = 1900$ MHz; $\sigma = 1.39$ mho/m; $\epsilon_r = 39.4$; $\rho = 1000$ kg/m³ ; Liquid level : 155 mm

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(5.16, 5.16, 5.16) ; 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, V4.4 Build 3; Postprocessing SW: SEMCAD, V1.8 Build 130

d=10mm, Pin=250mW/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 11 mW/g

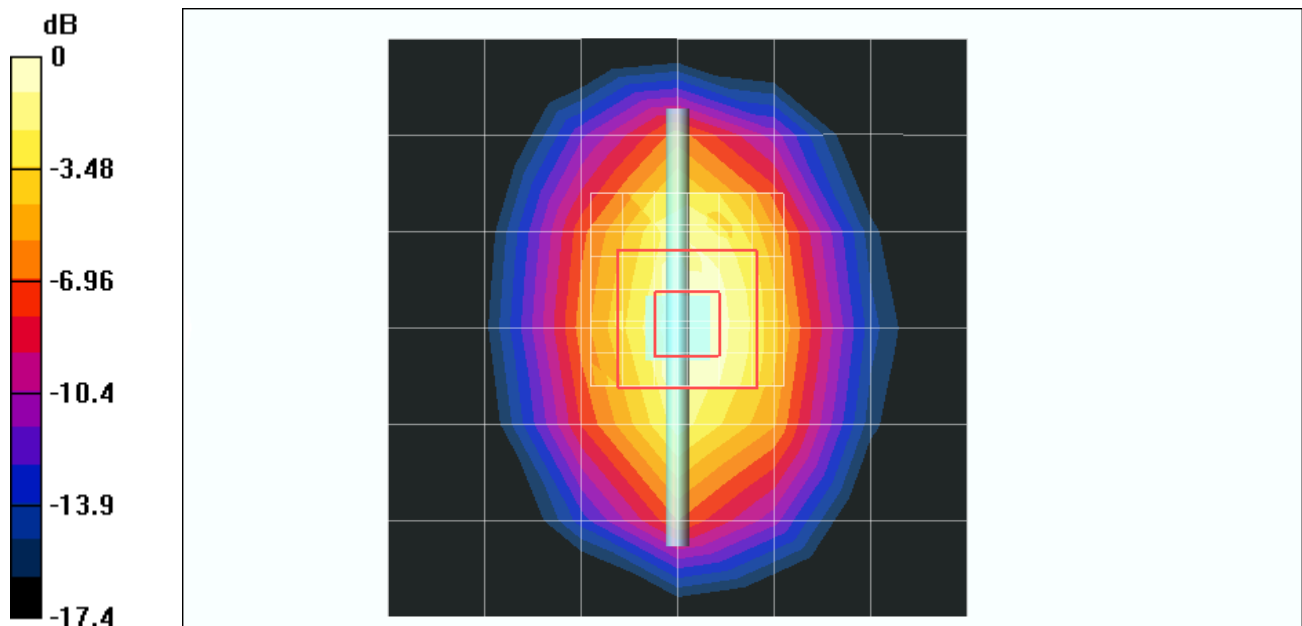
d=10mm, Pin=250mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 94 V/m; Power Drift = -0.2 dB

Peak SAR (extrapolated) = 16.4 W/kg

SAR(1 g) = 9.62 mW/g; SAR(10 g) = 5.16 mW/g

Maximum value of SAR (measured) = 11 mW/g



APPENDIX B: ADT SAR MEASUREMENT SYSTEM



APPENDIX C: PHOTOGRAPHS OF SYSTEM VALIDATION

