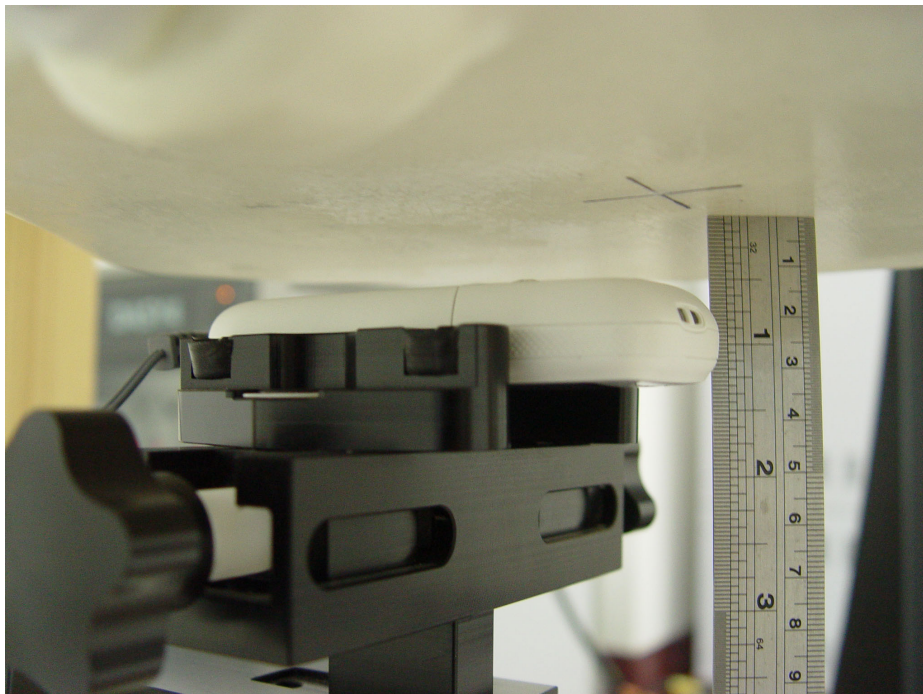


**Fig. 9.7 Body Worn-keypad up**



**Fig. 9.8 Body Worn-keypad down**



## **10. Measurement Procedures**

The measurement procedures are as follows:

- Linking DUT with base station emulator CMU200 in middle channel for PCS band
- Setting PCL=0 for PCS on CMU200 to allow DUT to radiate maximum output power
- Measuring output power through RF cable and power meter
- Placing the DUT in the positions described in the last section
- Setting scan area, grid size and other setting on the DASY4 software
- Taking data for the lowest, middle, and highest channel on each testing position

According to the IEEE P1528 draft standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

- Power reference measurement
- Area scan
- Zoom scan
- Power reference measurement

### ***10.1 Spatial Peak SAR Evaluation***

The procedure for spatial peak SAR evaluation has been implemented according to the IEEE1528-200X standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY4 software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

Base on the Draft: SCC-34, SC-2, WG-2-Computational Dosimetry, IEEE P1528/D0.0 (Draft recommended Practice for Determining the Spatial-Peak Specific Absorption Rate (SAR) Associated with the Use of Wireless Handset-Computational techniques), a new algorithm has been implemented. The spatial-peak SAR can be computed over any required mass.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the postprocessing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

- extraction of the measured data (grid and values) from the Zoom Scan
- calculation of the SAR value at every measurement point based on all stored data (A/D values)



- 
- and measurement parameters)
  - generation of a high-resolution mesh within the measured volume
  - interpolation of all measured values from the measurement grid to the high-resolution grid
  - extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
  - calculation of the averaged SAR within masses of 1g and 10g

### ***10.2 Scan Procedures***

First **Area Scan** is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an **Area Scan** is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, **Zoom Scan** is required. The **Zoom Scan** measures 5x5x7 points with step size 8, 8 and 5 mm. The **Zoom Scan** is performed around the highest E-field value to determine the averaged SAR-distribution over 1 g.

### ***10.3 SAR Averaged Methods***

In DASY4, the interpolation and extrapolation are both based on the modified Quadratic Shepard's method. The interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation.

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5 mm.



## **11. SAR Test Results**

### ***11.1 Right Cheek***

<b>Bands</b>	<b>Chan.</b>	<b>Freq. (MHz)</b>	<b>Modulation type</b>	<b>Conducted Power (dBm)</b>	<b>Power Drift (dB)</b>	<b>Measured 1g SAR (W/kg)</b>	<b>Limits (W/Kg)</b>	<b>Results</b>
PCS	512 (Low)	1850.2	GMSK	30.25	-0.1	0.475	1.6	Pass
	661 (Mid)	1880.0	GMSK	30.32	-0.1	0.337	1.6	Pass
	810 (High)	1909.8	GMSK	30.18	0	0.286	1.6	Pass

### ***11.2 Right Tilted***

<b>Bands</b>	<b>Chan.</b>	<b>Freq. (MHz)</b>	<b>Modulation type</b>	<b>Conducted Power (dBm)</b>	<b>Power Drift (dB)</b>	<b>Measured 1g SAR (W/kg)</b>	<b>Limits (W/Kg)</b>	<b>Results</b>
PCS	512 (Low)	1850.2	GMSK	30.25	0	0.537	1.6	Pass
	661 (Mid)	1880.0	GMSK	30.32	-0.1	0.379	1.6	Pass
	810 (High)	1909.8	GMSK	30.18	0	0.312	1.6	Pass

### ***11.3 Left Cheek***

<b>Bands</b>	<b>Chan.</b>	<b>Freq. (MHz)</b>	<b>Modulation type</b>	<b>Conducted Power (dBm)</b>	<b>Power Drift (dB)</b>	<b>Measured 1g SAR (W/kg)</b>	<b>Limits (W/Kg)</b>	<b>Results</b>
PCS	<b>512 (Low)</b>	<b>1850.2</b>	<b>GMSK</b>	<b>30.25</b>	<b>-0.1</b>	<b>0.683</b>	<b>1.6</b>	<b>Pass</b>
	661 (Mid)	1880.0	GMSK	30.32	-0.1	0.491	1.6	Pass
	810 (High)	1909.8	GMSK	30.18	-0.1	0.389	1.6	Pass

### ***11.4 Left Tilted***

<b>Bands</b>	<b>Chan.</b>	<b>Freq. (MHz)</b>	<b>Modulation type</b>	<b>Conducted Power (dBm)</b>	<b>Power Drift (dB)</b>	<b>Measured 1g SAR (W/kg)</b>	<b>Limits (W/Kg)</b>	<b>Results</b>
PCS	512 (Low)	1850.2	GMSK	30.25	0.009	0.667	1.6	Pass
	661 (Mid)	1880.0	GMSK	30.32	0	0.463	1.6	Pass
	810 (High)	1909.8	GMSK	30.18	-0.1	0.379	1.6	Pass

**11.5 Body Worn-keypad up**

<b>Bands</b>	<b>Chan.</b>	<b>Freq. (MHz)</b>	<b>Modulation type</b>	<b>Conducted Power (dBm)</b>	<b>Power Drift (dB)</b>	<b>Measured 1g SAR (W/kg)</b>	<b>Limits (W/Kg)</b>	<b>Results</b>
PCS	512 (Low)	1850.2	GMSK	30.25	-	-	1.6	Pass
	661 (Mid)	1880.0	GMSK	30.32	0	0.125	1.6	Pass
	810 (High)	1909.8	GMSK	30.18	-	-	1.6	Pass

**11.6 Body Worn-keypad down**

<b>Bands</b>	<b>Chan.</b>	<b>Freq. (MHz)</b>	<b>Modulation type</b>	<b>Conducted Power (dBm)</b>	<b>Power Drift (dB)</b>	<b>Measured 1g SAR (W/kg)</b>	<b>Limits (W/Kg)</b>	<b>Results</b>
PCS	<b>512 (Low)</b>	<b>1850.2</b>	<b>GMSK</b>	<b>30.25</b>	<b>0</b>	<b>1.13</b>	<b>1.6</b>	<b>Pass</b>
	661 (Mid)	1880.0	GMSK	30.32	0	0.888	1.6	Pass
	810 (High)	1909.8	GMSK	30.18	-0.1	0.713	1.6	Pass



---

## **12. References**

- [1] FCC 47 CFR Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”
- [2] IEEE Std. 1528-200X, Draft CD 1.1 “ Recommended Practice for Determining the Spatial-Peak Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques”, December 2002
- [3] Supplement C (Edition 01-10) to OET Bulletin 65 (Edition 97-01), “Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to RF Emissions”, June 2001
- [4] IEEE Std. C95.3, “IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields-RF and Microwave”, 1991
- [5] IEEE Std. C95.1, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, 1999
- [6] Robert J. Renka, “Multivariate Interpolation Of Large Sets Of Scattered Data”, University of North Texas ACM Transactions on Mathematical Software, vol. 14, no. 2, June 1988, pp. 139-148
- [7] DAYS4 System Handbook





## **Appendix A - System Performance Check Data**

Test Laboratory: Sporton International Inc. SAR Testing Lab

Date/Time: 06/15/04 21:31:14

### **System Check\_Head\_1900MHz\_20040615**

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d041**

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL\_1900 Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.43$  mho/m;  $\epsilon_r = 39.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.3, 5.3, 5.3); Calibrated: 8/29/2003
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 11/21/2003
- Phantom: SAM 12; Type: QD 000 P40 C; Serial: TP-1150
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

**Pin=100mW/Area Scan (61x61x1):** Measurement grid: dx=15mm, dy=15mm

Reference Value = 58.6 V/m; Power Drift = -0.0 dB

Maximum value of SAR (interpolated) = 4.97 mW/g

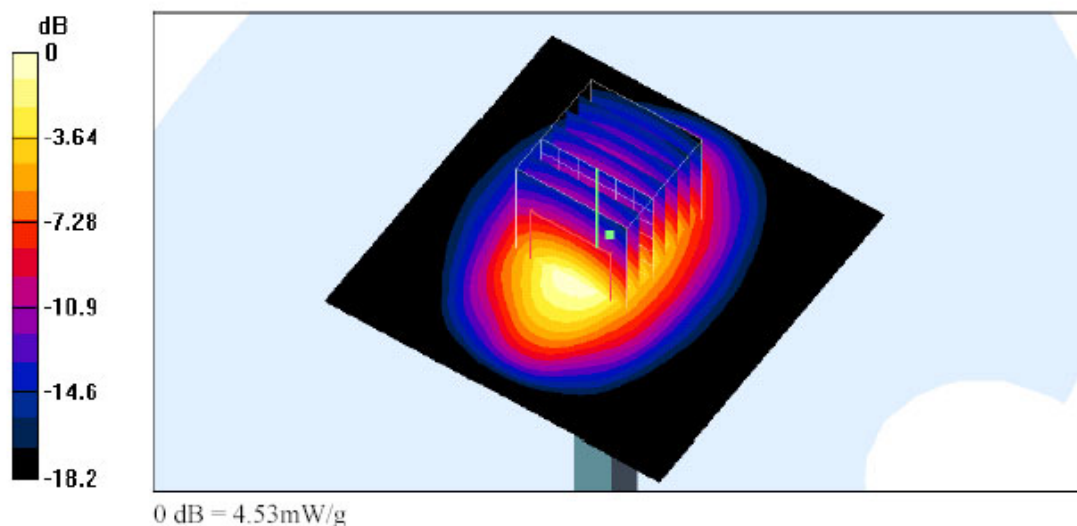
**Pin=100mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 58.6 V/m; Power Drift = -0.0 dB

Maximum value of SAR (measured) = 4.53 mW/g

Peak SAR (extrapolated) = 6.97 W/kg

**SAR(1 g) = 3.98 mW/g; SAR(10 g) = 2.1 mW/g**





Test Laboratory: Sporton International Inc. SAR Testing Lab

Date/Time: 06/14/04 21:28:45

**System Check\_Body\_1900MHz\_20040524**

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d041**

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: MSL\_1900 Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.54$  mho/m;  $\epsilon_r = 52$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5, 5, 5); Calibrated: 8/29/2003
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 11/21/2003
- Phantom: SAM 12; Type: QD 000 P40 C; Serial: TP-1150
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

**Pin=100mW/Area Scan (61x61x1):** Measurement grid: dx=15mm, dy=15mm

Reference Value = 58.3 V/m; Power Drift = -0.1 dB

Maximum value of SAR (interpolated) = 4.88 mW/g

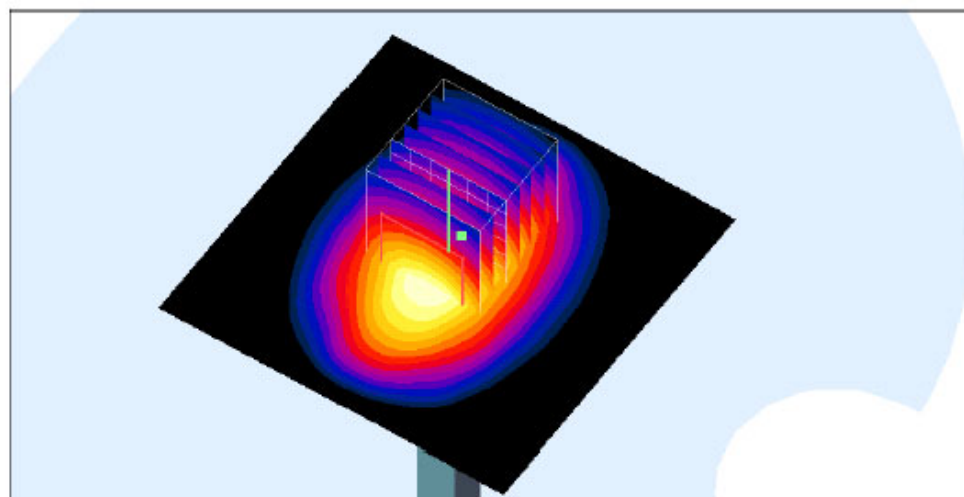
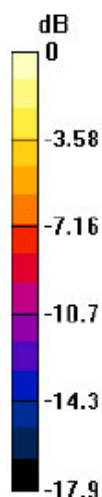
**Pin=100mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 58.3 V/m; Power Drift = -0.1 dB

Maximum value of SAR (measured) = 4.52 mW/g

Peak SAR (extrapolated) = 6.78 W/kg

**SAR(1 g) = 3.99 mW/g; SAR(10 g) = 2.14 mW/g**



0 dB = 4.52mW/g





## **Appendix B - SAR Measurement Data**

Test Laboratory: Sporton International Inc. SAR Testing Lab

Date/Time: 06/15/04 21:49:43

### **Right Cheek\_PCS CH512\_20040615**

**DUT: BenQ M100(56F52); Type: Mobile Phone; Serial: 449281670000010**

Communication System: PCS; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3

Medium: HSL\_1900 Medium parameters used (interpolated):  $f = 1850.2$  MHz;  $\sigma = 1.38$  mho/m;  $\epsilon_r = 39.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.3, 5.3, 5.3); Calibrated: 8/29/2003
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 11/21/2003
- Phantom: SAM 12; Type: QD 000 P40 C; Serial: TP-1150
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

**Ch512/Area Scan (41x81x1):** Measurement grid: dx=15mm, dy=15mm

Reference Value = 18.7 V/m; Power Drift = -0.1 dB

Maximum value of SAR (interpolated) = 0.554 mW/g

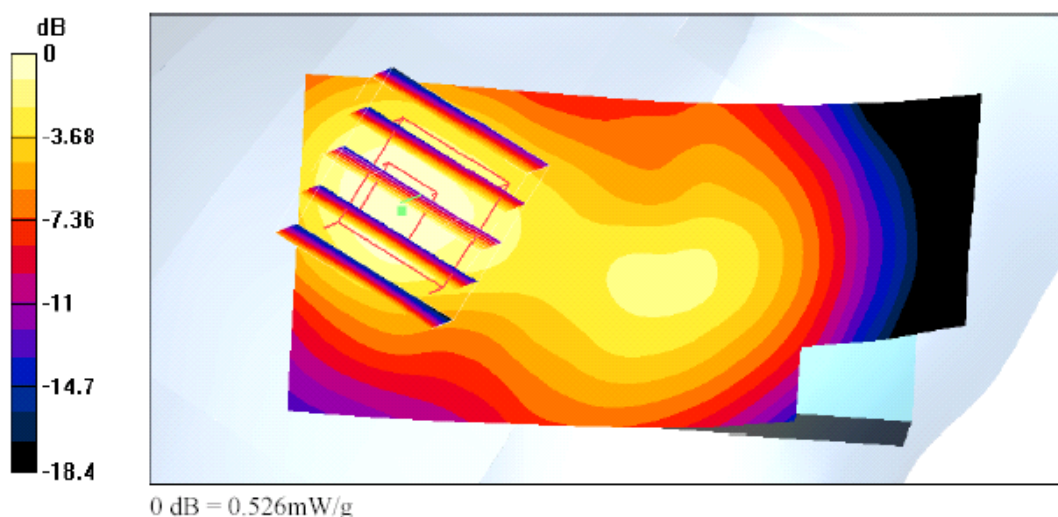
**Ch512/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.7 V/m; Power Drift = -0.1 dB

Maximum value of SAR (measured) = 0.526 mW/g

Peak SAR (extrapolated) = 0.768 W/kg

**SAR(1 g) = 0.475 mW/g; SAR(10 g) = 0.272 mW/g**





Test Laboratory: Sporton International Inc. SAR Testing Lab

Date/Time: 06/15/04 22:47:32

**Right Titled\_PCS CH512\_20040615**

**DUT: BenQ M100(56F52); Type: Mobile Phone; Serial: 449281670000010**

Communication System: PCS; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3

Medium: HSL\_1900 Medium parameters used (interpolated):  $f = 1850.2$  MHz;  $\sigma = 1.38$  mho/m;  $\epsilon_r = 39.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.3, 5.3, 5.3); Calibrated: 8/29/2003
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 11/21/2003
- Phantom: SAM I2; Type: QD 000 P40 C; Serial: TP-1150
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

**Ch512/Area Scan (41x81x1):** Measurement grid: dx=15mm, dy=15mm

Reference Value = 20.6 V/m; Power Drift = -0.0 dB

Maximum value of SAR (interpolated) = 0.624 mW/g

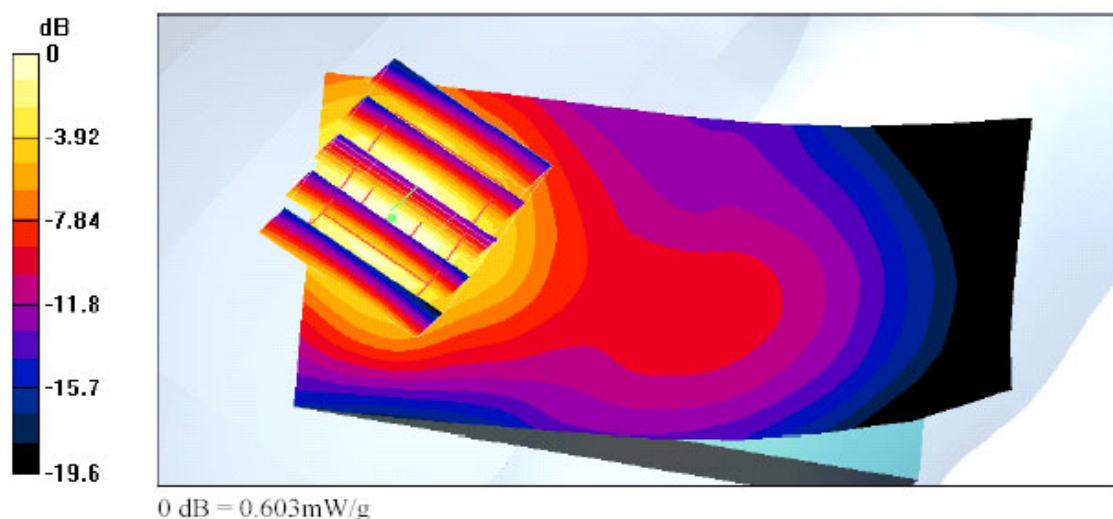
**Ch512/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.6 V/m; Power Drift = -0.0 dB

Maximum value of SAR (measured) = 0.603 mW/g

Peak SAR (extrapolated) = 0.903 W/kg

**SAR(1 g) = 0.537 mW/g; SAR(10 g) = 0.291 mW/g**





Test Laboratory: Sporton International Inc. SAR Testing Lab

Date/Time: 06/15/04 23:28:02

**Left Cheek\_PCS CH512\_20040615**

**DUT: BenQ M100(56F52); Type: Mobile Phone; Serial: 449281670000010**

Communication System: PCS; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3

Medium: HSL\_1900 Medium parameters used (interpolated):  $f = 1850.2$  MHz;  $\sigma = 1.38$  mho/m;  $\epsilon_r = 39.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.3, 5.3, 5.3); Calibrated: 8/29/2003
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 11/21/2003
- Phantom: SAM 12; Type: QD 000 P40 C; Serial: TP-1150
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

**Ch512/Area Scan (41x81x1):** Measurement grid: dx=15mm, dy=15mm

Reference Value = 20.9 V/m; Power Drift = -0.1 dB

Maximum value of SAR (interpolated) = 0.815 mW/g

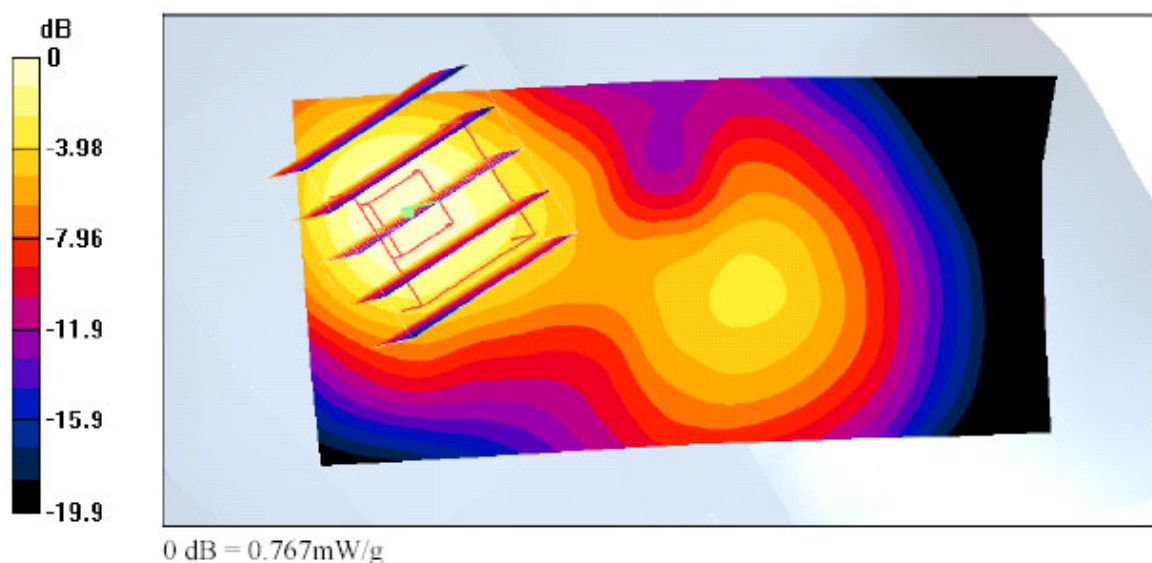
**Ch512/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.9 V/m; Power Drift = -0.1 dB

Maximum value of SAR (measured) = 0.767 mW/g

Peak SAR (extrapolated) = 1.21 W/kg

SAR(1 g) = 0.683 mW/g; SAR(10 g) = 0.364 mW/g





Test Laboratory: Sporton International Inc. SAR Testing Lab

Date/Time: 06/16/04 00:05:40

**Left Tilted\_PCS CH512\_20040615**

**DUT: BenQ M100(56F52); Type: Mobile Phone; Serial: 449281670000010**

Communication System: PCS; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3

Medium: HSL\_1900 Medium parameters used (interpolated):  $f = 1850.2$  MHz;  $\sigma = 1.38$  mho/m;  $\epsilon_r = 39.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.3, 5.3, 5.3); Calibrated: 8/29/2003
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 11/21/2003
- Phantom: SAM 12; Type: QD 000 P40 C; Serial: TP-1150
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

**Ch512/Area Scan (41x81x1):** Measurement grid: dx=15mm, dy=15mm

Reference Value = 22.3 V/m; Power Drift = 0.009 dB

Maximum value of SAR (interpolated) = 0.782 mW/g

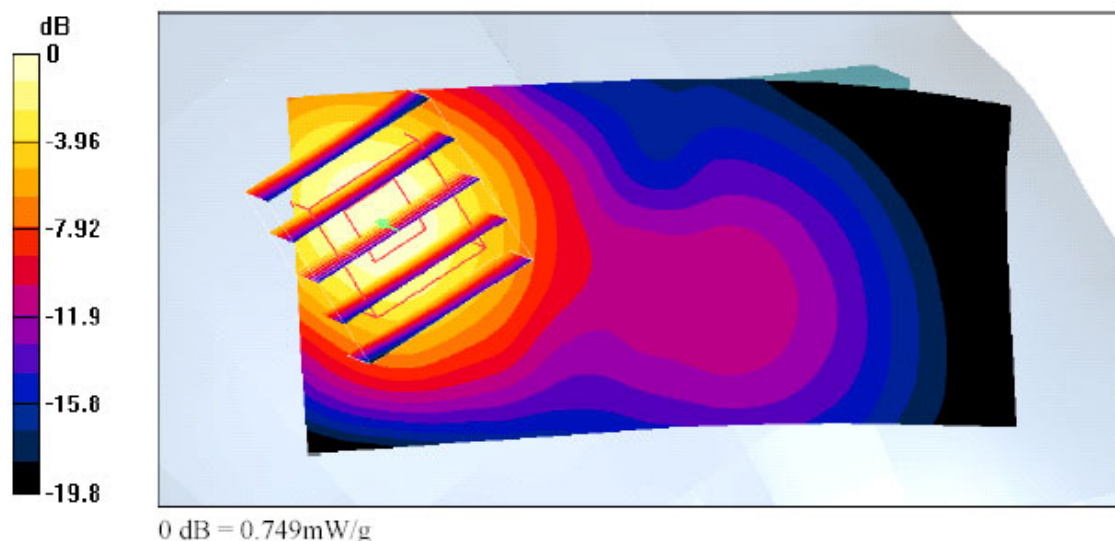
**Ch512/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 22.3 V/m; Power Drift = 0.009 dB

Maximum value of SAR (measured) = 0.749 mW/g

Peak SAR (extrapolated) = 1.17 W/kg

**SAR(1 g) = 0.667 mW/g; SAR(10 g) = 0.352 mW/g**







Test Laboratory: Sporton International Inc. SAR Testing Lab

Date/Time: 06/15/04 23:28:02

**Left Cheek\_PCS CH512\_20040615****DUT: BenQ M100(56F52); Type: Mobile Phone; Serial: 449281670000010**

Communication System: PCS; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3

Medium: HSL\_1900 Medium parameters used (interpolated):  $f = 1850.2$  MHz;  $\sigma = 1.38$  mho/m;  $\epsilon_r = 39.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.3, 5.3, 5.3); Calibrated: 8/29/2003
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 11/21/2003
- Phantom: SAM 12; Type: QD 000 P40 C; Serial: TP-1150
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

**Ch512/Area Scan (41x81x1):** Measurement grid: dx=15mm, dy=15mm

Reference Value = 20.9 V/m; Power Drift = -0.1 dB

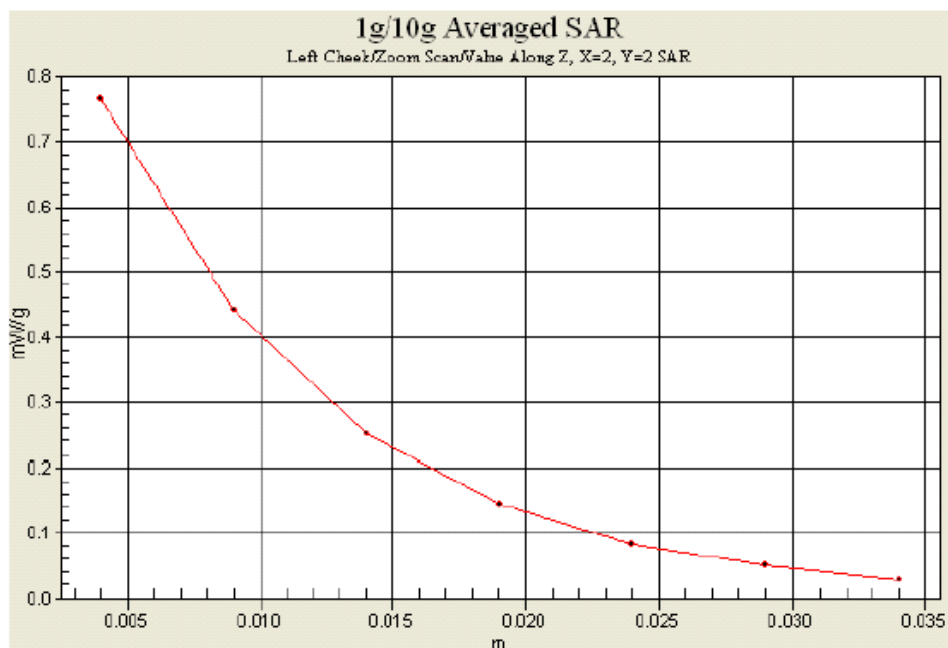
Maximum value of SAR (interpolated) = 0.815 mW/g

**Ch512/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.9 V/m; Power Drift = -0.1 dB

Maximum value of SAR (measured) = 0.767 mW/g

Peak SAR (extrapolated) = 1.21 W/kg

**SAR(1 g) = 0.683 mW/g; SAR(10 g) = 0.364 mW/g**





Test Laboratory: Sporton International Inc. SAR Testing Lab

Date/Time: 06/14/04 22:51:33

**Body\_PCS Ch661\_Keypad Up With 1.5cm Gap\_20040614**

**DUT: BenQ M100(56F52); Type: Mobile Phone; Serial: 449281670000010**

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

Medium: MSL\_1900 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.52$  mho/m;  $\epsilon_r = 52.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5, 5, 5); Calibrated: 8/29/2003
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 11/21/2003
- Phantom: SAM 12; Type: QD 000 P40 C; Serial: TP-1150
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

**Ch661/Area Scan (51x81x1):** Measurement grid: dx=15mm, dy=15mm

Reference Value = 9.02 V/m; Power Drift = 0.0 dB

Maximum value of SAR (interpolated) = 0.140 mW/g

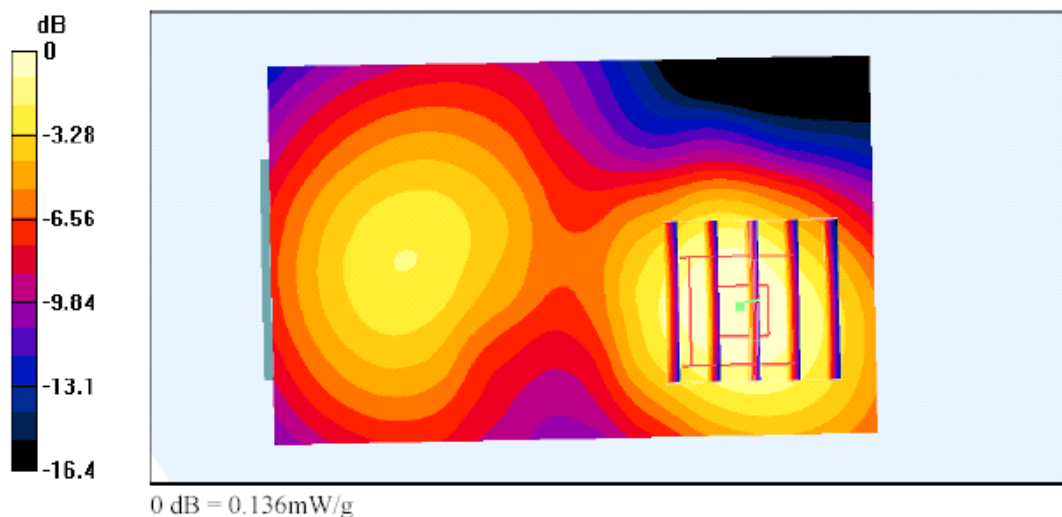
**Ch661/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.02 V/m; Power Drift = 0.0 dB

Maximum value of SAR (measured) = 0.136 mW/g

Peak SAR (extrapolated) = 0.198 W/kg

**SAR(1 g) = 0.125 mW/g; SAR(10 g) = 0.075 mW/g**





Test Laboratory: Sporton International Inc. SAR Testing Lab

Date/Time: 06/14/04 22:22:31

**Body\_PCS Ch512\_Keypad Down With 1.5cm Gap \_20040614**

**DUT: BenQ M100(56F52); Type: Mobile Phone; Serial: 449281670000010**

Communication System: PCS; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3

Medium: MSL\_1900 Medium parameters used (interpolated):  $f = 1850.2$  MHz;  $\sigma = 1.49$  mho/m;  $\epsilon_r = 52.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5, 5, 5); Calibrated: 8/29/2003
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 11/21/2003
- Phantom: SAM 12; Type: QD 000 P40 C; Serial: TP-1150
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

**Ch512/Area Scan (51x81x1):** Measurement grid: dx=15mm, dy=15mm

Reference Value = 24 V/m; Power Drift = -0.0 dB

Maximum value of SAR (interpolated) = 1.24 mW/g

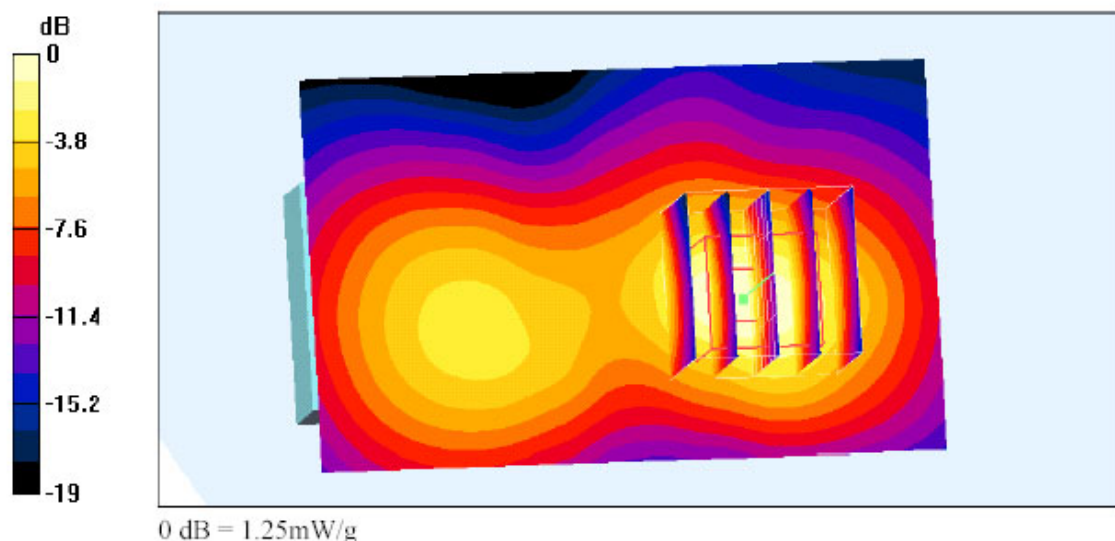
**Ch512/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 24 V/m; Power Drift = -0.0 dB

Maximum value of SAR (measured) = 1.25 mW/g

Peak SAR (extrapolated) = 2.03 W/kg

**SAR(1 g) = 1.13 mW/g; SAR(10 g) = 0.604 mW/g**





Test Laboratory: Sporton International Inc. SAR Testing Lab

Date/Time: 06/14/04 21:52:13

**Body\_PCS Ch661\_Keypad Down With 1.5cm Gap \_20040614**

**DUT: BenQ M100(56F52); Type: Mobile Phone; Serial: 449281670000010**

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

Medium: MSL\_1900 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.52$  mho/m;  $\epsilon_r = 52.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5, 5, 5); Calibrated: 8/29/2003
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 11/21/2003
- Phantom: SAM 12; Type: QD 000 P40 C; Serial: TP-1150
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

**Ch661/Area Scan (51x81x1):** Measurement grid: dx=15mm, dy=15mm

Reference Value = 21.7 V/m; Power Drift = -0.0 dB

Maximum value of SAR (interpolated) = 0.975 mW/g

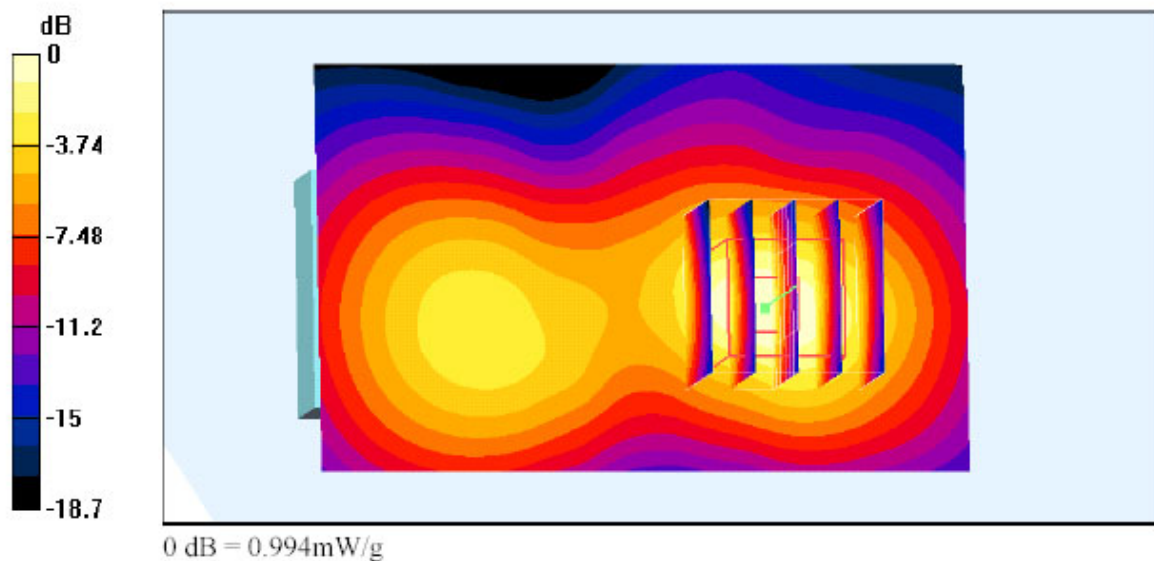
**Ch661/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 21.7 V/m; Power Drift = -0.0 dB

Maximum value of SAR (measured) = 0.994 mW/g

Peak SAR (extrapolated) = 1.61 W/kg

**SAR(1 g) = 0.888 mW/g; SAR(10 g) = 0.477 mW/g**





Test Laboratory: Sporton International Inc. SAR Testing Lab

Date/Time: 06/14/04 22:34:49

**Body\_PCS Ch810\_Keypad Down With 1.5cm Gap \_20040614**

**DUT: BenQ M100(56F52); Type: Mobile Phone; Serial: 449281670000010**

Communication System: PCS; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3

Medium: MSL\_1900 Medium parameters used (interpolated):  $f = 1909.8$  MHz;  $\sigma = 1.55$  mho/m;  $\epsilon_r = 52$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5, 5, 5); Calibrated: 8/29/2003
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 11/21/2003
- Phantom: SAM 12; Type: QD 000 P40 C; Serial: TP-1150
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

**Ch810/Area Scan (51x81x1):** Measurement grid: dx=15mm, dy=15mm

Reference Value = 19.4 V/m; Power Drift = -0.1 dB

Maximum value of SAR (interpolated) = 0.785 mW/g

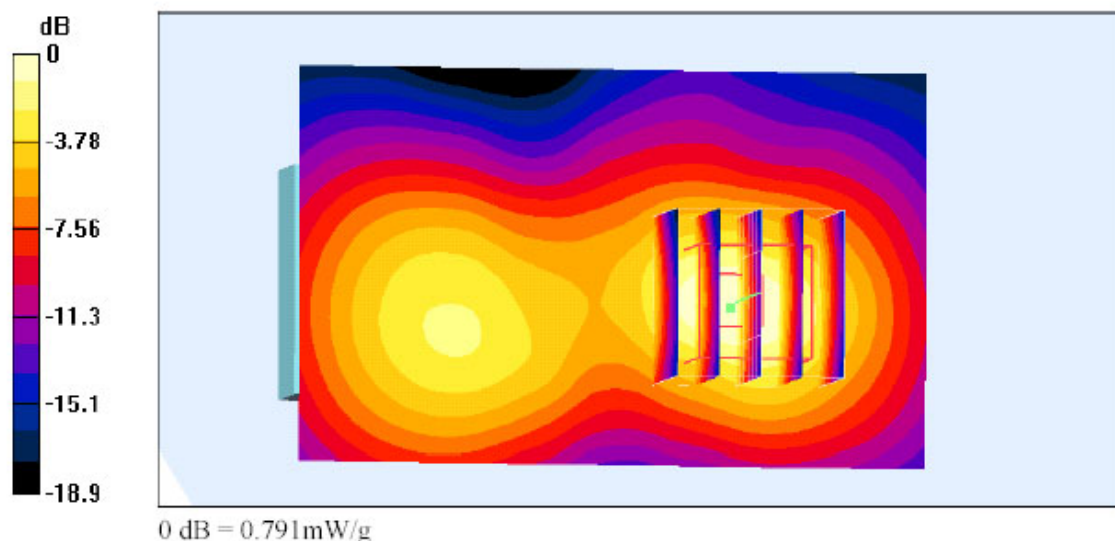
**Ch810/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 19.4 V/m; Power Drift = -0.1 dB

Maximum value of SAR (measured) = 0.791 mW/g

Peak SAR (extrapolated) = 1.31 W/kg

**SAR(1 g) = 0.713 mW/g; SAR(10 g) = 0.385 mW/g**







Test Laboratory: Sporton International Inc. SAR Testing Lab

Date/Time: 06/14/04 22:22:31

**Body\_PCS Ch512\_Keypad Down With 1.5cm Gap \_20040614****DUT: BenQ M100(56F52); Type: Mobile Phone; Serial: 449281670000010**

Communication System: PCS; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3

Medium: MSL\_1900 Medium parameters used (interpolated):  $f = 1850.2$  MHz;  $\sigma = 1.49$  mho/m;  $\epsilon_r = 52.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5, 5, 5); Calibrated: 8/29/2003
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 11/21/2003
- Phantom: SAM 12; Type: QD 000 P40 C; Serial: TP-1150
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

**Ch512/Area Scan (51x81x1):** Measurement grid: dx=15mm, dy=15mm

Reference Value = 24 V/m; Power Drift = -0.0 dB

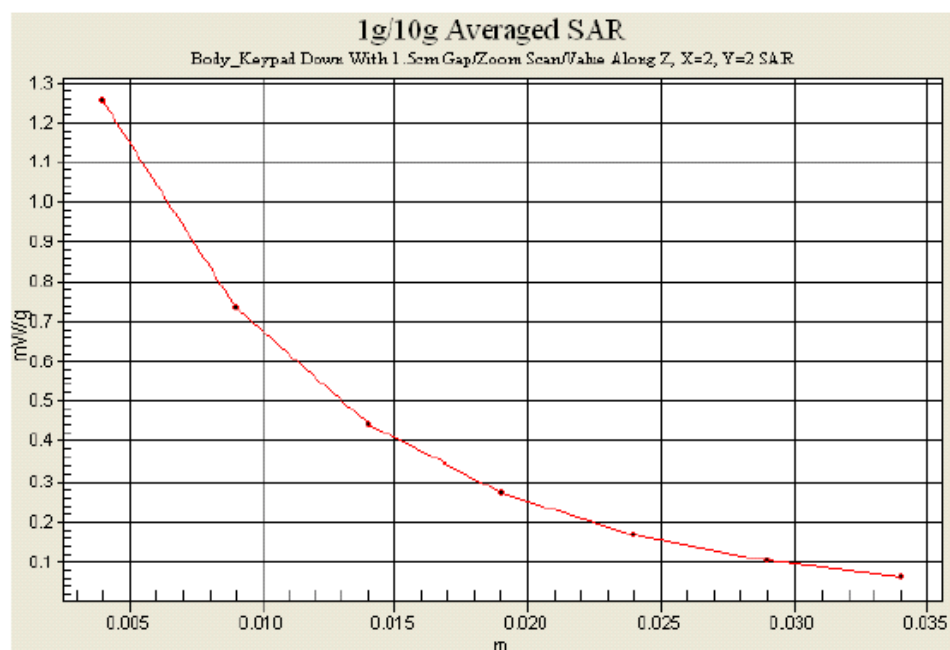
Maximum value of SAR (interpolated) = 1.24 mW/g

**Ch512/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 24 V/m; Power Drift = -0.0 dB

Maximum value of SAR (measured) = 1.25 mW/g

Peak SAR (extrapolated) = 2.03 W/kg

**SAR(1 g) = 1.13 mW/g; SAR(10 g) = 0.604 mW/g**





## Appendix C – Calibration Data

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

Client **Sproton Int. (Auden)**

CALIBRATION CERTIFICATE			
Object(s)	D1900V2 - SN:5d041		
Calibration procedure(s)	QA CAL-05 v2 Calibration procedure for dipole validation kits		
Calibration date:	February 17, 2004		
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 E442	GB37480704	6-Nov-03 (METAS, No. 252-0254)	Nov-04
Power sensor HP 8481A	US37292783	6-Nov-03 (METAS, No. 252-0254)	Nov-04
Power sensor HP 8481A	MY41092317	18-Oct-02 (Agilent, No. 20021018)	Oct-04
RF generator R&S SML-03	100698	27-Mar-2002 (R&S, No. 20-92389)	In house check: Mar-05
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Nov-03)	In house check: Oct 05
Calibrated by:	Name Judith Mueßer	Function Technician	Signature 
Approved by:	Name Ketja Pokovic	Function Laboratory Director	Signature 
Date issued: February 18, 2004			
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.			



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Schmid & Partner Engineering AG

**s p e a g**

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info@speag.com, <http://www.speag.com>

# DASY

## Dipole Validation Kit

Type: D1900V2

Serial: 5d041

Manufactured: July 4, 2003

Calibrated: February 17, 2004