11.3 Left Cheek

	Bands	Chan.	Freq. (MHz)	Modulation type	Conducted Power (dBm)	Power Drift (dB)	Measured 1g SAR (W/kg)	Limits (W/Kg)	Results
EB-A101	PCS	512 (Low)	1850.2	GMSK	29.3	-	-	1.6	Pass
		661 (Mid)	1880	GMSK	28.9	-	-	1.6	Pass
		810 (High)	1909.8	GMSK	28.6	-	-	1.6	Pass
EB-A100	PCS	512 (Low)	1850.2	GMSK	29.2	-0.06	0.567	1.6	Pass
		661 (Mid)	1880	GMSK	29.1	-0.01	0.64	1.6	Pass
		810 (High)	1909.8	GMSK	29.3	-0.005	0.623	1.6	Pass

11.4 Left Tilted

	Bands	Chan.	Freq. (MHz)	Modulation type	Conducted Power (dBm)	Power Drift (dB)	Measured 1g SAR (W/kg)	Limits (W/Kg)	Results
EB-A101	PCS	512 (Low)	1850.2	GMSK	29.3	-	-	1.6	Pass
		661 (Mid)	1880	GMSK	28.9	-	-	1.6	Pass
		810 (High)	1909.8	GMSK	28.6	-	-	1.6	Pass
EB-A100	PCS	512 (Low)	1850.2	GMSK	29.2	-0.003	0.462	1.6	Pass
		661 (Mid)	1880	GMSK	29.1	-0.02	0.547	1.6	Pass
		810 (High)	1909.8	GMSK	29.3	-0.003	0.462	1.6	Pass

11.5 Body Worn-keypad up

	Bands	Chan.	Freq. (MHz)	Modulation type	Conducted Power (dBm)	Power Drift (dB)	Measured 1g SAR (W/kg)	Limits (W/Kg)	Results
EB-A101	PCS	512 (Low)	1850.2	GMSK	29.3	-	-	1.6	Pass
		661 (Mid)	**1880**	**GMSK**	**28.9**	**-0.07**	**0.131**	**1.6**	**Pass**
		810 (High)	1909.8	GMSK	28.6	-	-	1.6	Pass
EB-A100	PCS	512 (Low)	1850.2	GMSK	29.2	-	-	1.6	Pass
		661 (Mid)	**1880**	**GMSK**	**29.1**	**-0.03**	**0.167**	**1.6**	**Pass**
		810 (High)	1909.8	GMSK	29.3	-	-	1.6	Pass

11.6 Body Worn-keypad down

	Bands	Chan.	Freq. (MHz)	Modulation type	Conducted Power (dBm)	Power Drift (dB)	Measured 1g SAR (W/kg)	Limits (W/Kg)	Results
EB-A101	PCS	512 (Low)	1850.2	GMSK	29.3	-	-	1.6	Pass
		661 (Mid)	1880	GMSK	28.9	-	-	1.6	Pass
		810 (High)	1909.8	GMSK	28.6	-	-	1.6	Pass
EB-A100	PCS	512 (Low)	1850.2	GMSK	29.2	-	-	1.6	Pass
		661 (Mid)	1880	GMSK	29.1	0.07	0.13	1.6	Pass
		810 (High)	1909.8	GMSK	29.3	-	-	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 Meaurement 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 Noth 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

Date/Time: 04/27/04 10:06:42

Test Laboratory: SPORTON

HSL1900MHz Dipole System Calbration

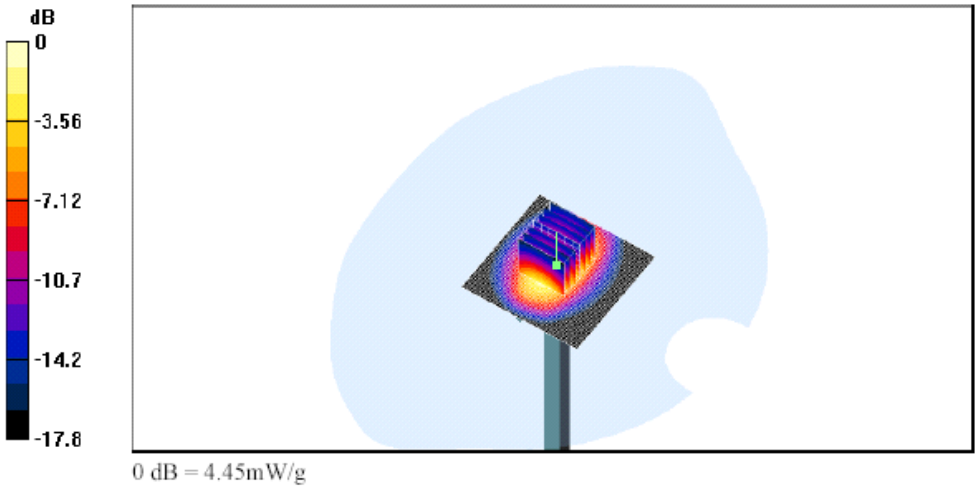
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d041
Program Name: System Performance Check

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL1900 (σ = 1.43596 mho/m, ε_r = 39.2448, ρ = 1000 kg/m^3)
Phantom section: Flat Section;Ambient Temp=21~23C; Liquid Temp=21.5C; Liquid height=15.2cm

DASY4 Configuration:
- Probe: ET3DV6 - SN1788; ConvF(5.3, 5.3, 5.3); Calibrated: 8/29/2003
- 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, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 116

Pin = 100mW; d = 10mm/Area Scan (51x51x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 59.3 V/m
Power Drift = -0.1 dB
Maximum value of SAR = 4.54 mW/g

Pin = 100mW; d = 10mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 6.88 W/kg
SAR(1 g) = 4 mW/g; SAR(10 g) = 2.08 mW/g
Reference Value = 59.3 V/m
Power Drift = -0.1 dB
Maximum value of SAR = 4.45 mW/g



0 dB = 4.45mW/g

Date/Time: 04/27/04 14:50:56

Test Laboratory: SPORTON

MSL 1900MHz Dipole System Calbration

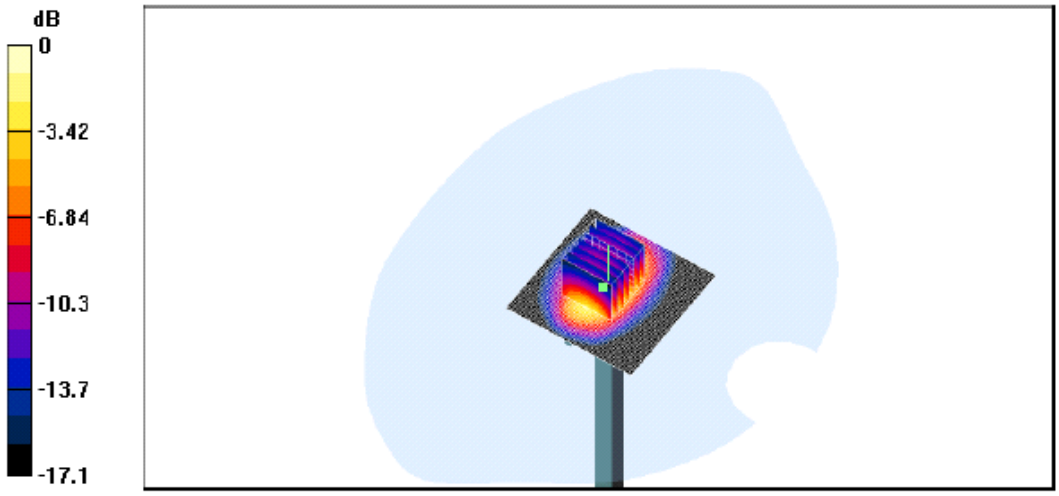
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d041
Program Name: System Performance Check

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL1900 (σ = 1.49962 mho/m, ε_r = 51.2968, ρ = 1000 kg/m^3)
Phantom section: Flat Section;Ambient Temp=21~23C; Liquid Temp=21.5C; Liquid height=15.2cm

DASY4 Configuration:
- Probe: ET3DV6 - SN1788; ConvF(5, 5, 5); Calibrated: 8/29/2003
- 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, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 116

Pin = 100mW; d = 10mm/Area Scan (51x51x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 56.6 V/m
Power Drift = -0.04 dB
Maximum value of SAR = 4.51 mW/g

Pin = 100mW; d = 10mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 6.4 W/kg
SAR(1 g) = 3.83 mW/g; SAR(10 g) = 2.04 mW/g
Reference Value = 56.6 V/m
Power Drift = -0.04 dB
Maximum value of SAR = 4.28 mW/g



0 dB = 4.28mW/g

Appendix B - SAR Measurement Data

Date/Time: 04/27/04 11:17:22

Test Laboratory: SPORTON

RIGHT-CHEEK 1900 CH 810

DUT: Quanta; Type: BN1; Serial:350421030000600
Program Name: RIGHT HEAD CHEEK

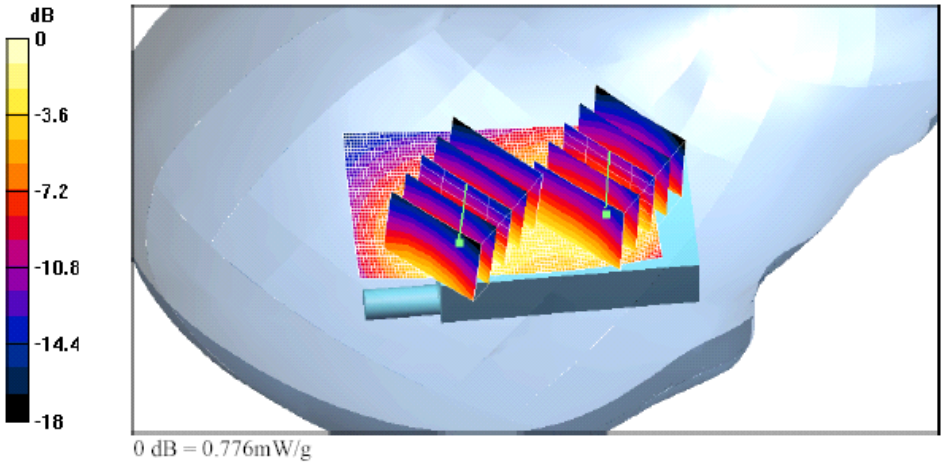
Communication System: GSM 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: HSL 1900 (σ = 1.44425 mho/m, ε_r = 39.2181, ρ = 1000 kg/m^3)
Phantom section: Right Section;Ambient Temp=21~23C; Liquid Temp=21.5C; Liquid height=15.2cm

DASY4 Configuration:
- Probe: ET3DV6 - SN1788; ConvF(5.3, 5.3, 5.3); Calibrated: 8/29/2003
- 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, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 116

CH 810 1909.8MHz/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 19.5 V/m
Power Drift = -0.04 dB
Maximum value of SAR = 0.8 mW/g

CH 810 1909.8MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 1.28 W/kg
SAR(1 g) = 0.705 mW/g; SAR(10 g) = 0.371 mW/g
Reference Value = 19.5 V/m
Power Drift = -0.04 dB
Maximum value of SAR = 0.776 mW/g

CH 810 1909.8MHz/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 0.818 W/kg
SAR(1 g) = 0.573 mW/g; SAR(10 g) = 0.347 mW/g
Reference Value = 19.5 V/m
Power Drift = -0.04 dB
Maximum value of SAR = 0.62 mW/g



0 dB = 0.776mW/g

Date/Time: 04/27/04 13:30:58

Test Laboratory: SPORTON

RIGHT-TILTED 1900 CH 810

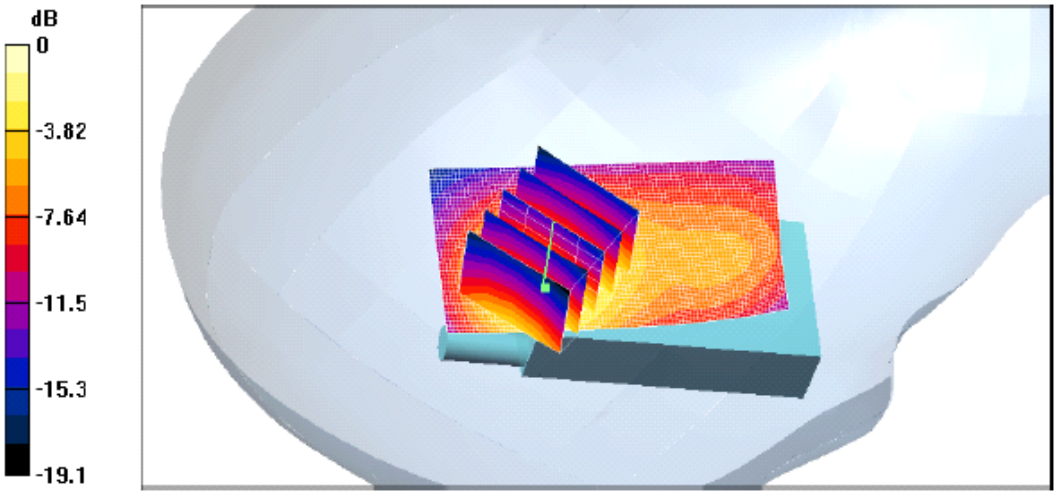
DUT: Quanta; Type: BN1; Serial:350421030000600
Program Name: RIGHT HEAD TILTED

Communication System: GSM 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: HSL 1900 (σ = 1.44425 mho/m, ε_r = 39.2181, ρ = 1000 kg/m^3)
Phantom section: Right Section;Ambient Temp=21~23C; Liquid Temp=21.5C; Liquid height=15.2cm

DASY4 Configuration:
- Probe: ET3DV6 - SN1788; ConvF(5.3, 5.3, 5.3); Calibrated: 8/29/2003
- 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, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 116

CH 810 1909.8MHz/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 21.5 V/m
Power Drift = -0.05 dB
Maximum value of SAR = 0.895 mW/g

CH 810 1909.8MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 1.4 W/kg
SAR(1 g) = 0.789 mW/g; SAR(10 g) = 0.415 mW/g
Reference Value = 21.5 V/m
Power Drift = -0.05 dB
Maximum value of SAR = 0.868 mW/g



0 dB = 0.868mW/g

Date/Time: 04/27/04 11:42:22

Test Laboratory: SPORTON

RIGHT-CHEEK 1900 CH 661

DUT: Quanta; Type: BN1; Serial:350421030000600
Program Name: RIGHT HEAD CHEEK

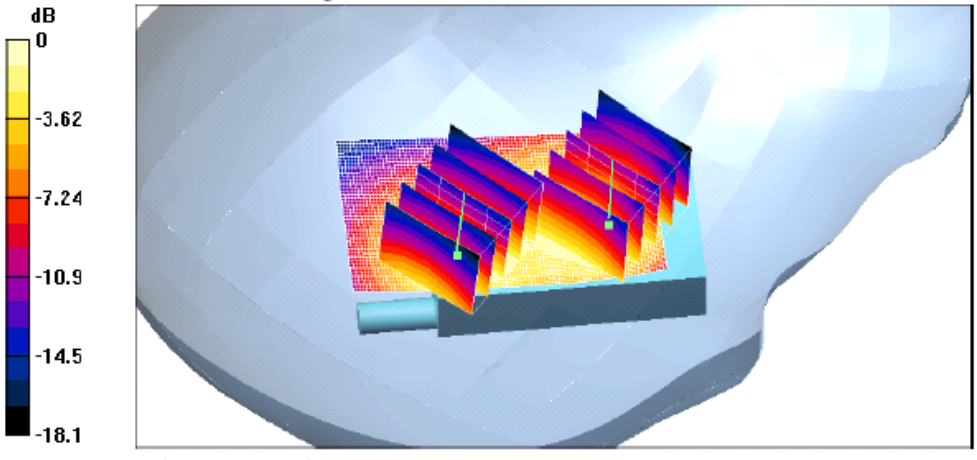
Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: HSL 1900 (σ = 1.41667 mho/m, ε_r = 39.2631, ρ = 1000 kg/m^3)
Phantom section: Right Section ;Ambient Temp=21~23C; Liquid Temp=21.5C; Liquid height=15.2cm

DASY4 Configuration:
- Probe: ET3DV6 - SN1788; ConvF(5.3, 5.3, 5.3); Calibrated: 8/29/2003
- 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, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 116

CH 661 1880MHz/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 19.8 V/m
Power Drift = -0.005 dB
Maximum value of SAR = 0.793 mW/g

CH 661 1880MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 1.22 W/kg
SAR(1 g) = 0.694 mW/g; SAR(10 g) = 0.371 mW/g
Reference Value = 19.8 V/m
Power Drift = -0.005 dB
Maximum value of SAR = 0.753 mW/g

CH 661 1880MHz/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 0.872 W/kg
SAR(1 g) = 0.617 mW/g; SAR(10 g) = 0.378 mW/g
Reference Value = 19.8 V/m
Power Drift = -0.005 dB
Maximum value of SAR = 0.665 mW/g



0 dB = 0.753mW/g

Date/Time: 04/27/04 18:07:30

Test Laboratory: SPORTON

Keypad up CH 661

DUT: Quanta; Type: NB1; Serial:350421030000600
Program Name: NB BTM Touch

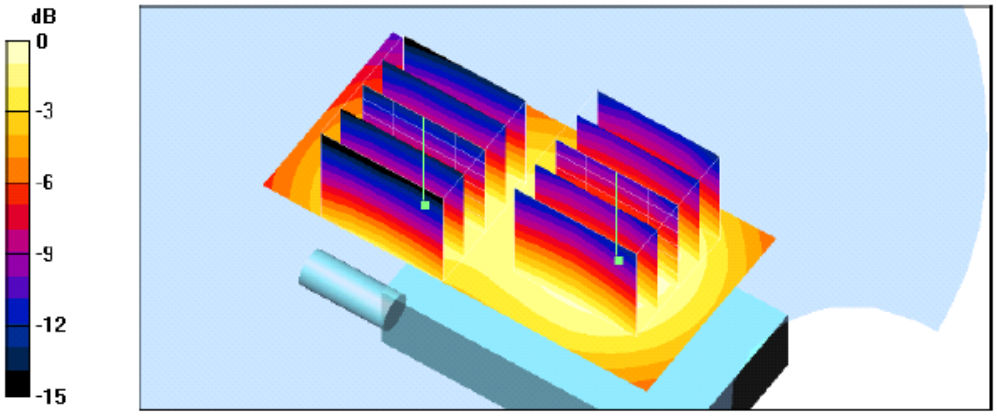
Communication System: DCS 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: MSL1900 (σ = 1.48387 mho/m, ε_r = 51.3549, ρ = 1000 kg/m^3)
Phantom section: Flat Section;Ambient Temp=21~23C; Liquid Temp=21.5C; Liquid height=15.2cm

DASY4 Configuration:
- Probe: ET3DV6 - SN1788; ConvF(5, 5, 5); Calibrated: 8/29/2003
- 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, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 116

CH 661 1880.0MHz/Area Scan (101x51x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 8.92 V/m
Power Drift = -0.07 dB
Maximum value of SAR = 0.14 mW/g

CH 661 1880.0MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 0.195 W/kg
SAR(1 g) = 0.131 mW/g; SAR(10 g) = 0.0856 mW/g
Reference Value = 8.92 V/m
Power Drift = -0.07 dB
Maximum value of SAR = 0.139 mW/g

CH 661 1880.0MHz/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 0.162 W/kg
SAR(1 g) = 0.104 mW/g; SAR(10 g) = 0.0659 mW/g
Reference Value = 8.92 V/m
Power Drift = -0.07 dB
Maximum value of SAR = 0.111 mW/g



0 dB = 0.139mW/g

Date/Time: 04/27/04 18:07:30

Test Laboratory: SPORTON

Keypad up CH 661

DUT: Quanta; Type: NB1; Serial:350421030000600
Program Name: body worn

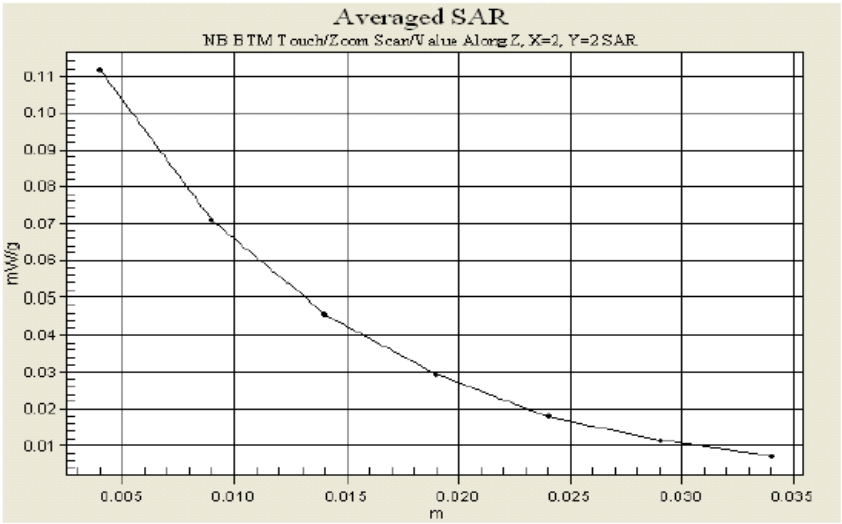
Communication System: DCS 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: MSL1900 (σ = 1.48387 mho/m, ε_r = 51.3549, ρ = 1000 kg/m^3)
Phantom section: Flat Section;Ambient Temp=21~23C; Liquid Temp=21.5C; Liquid height=15.2cm

DASY4 Configuration:
- Probe: ET3DV6 - SN1788; ConvF(5, 5, 5); Calibrated: 8/29/2003
- 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, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 116

CH 661 1880.0MHz/Area Scan (101x51x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 8.92 V/m
Power Drift = -0.07 dB
Maximum value of SAR = 0.14 mW/g

CH 661 1880.0MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 0.195 W/kg
SAR(1 g) = 0.131 mW/g; SAR(10 g) = 0.0856 mW/g
Reference Value = 8.92 V/m
Power Drift = -0.07 dB
Maximum value of SAR = 0.139 mW/g

CH 661 1880.0MHz/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 0.162 W/kg
SAR(1 g) = 0.104 mW/g; SAR(10 g) = 0.0659 mW/g
Reference Value = 8.92 V/m
Power Drift = -0.07 dB
Maximum value of SAR = 0.111 mW/g



Date/Time: 04/27/04 13:30:58

Test Laboratory: SPORTON

RIGHT-TILTED 1900 CH 810

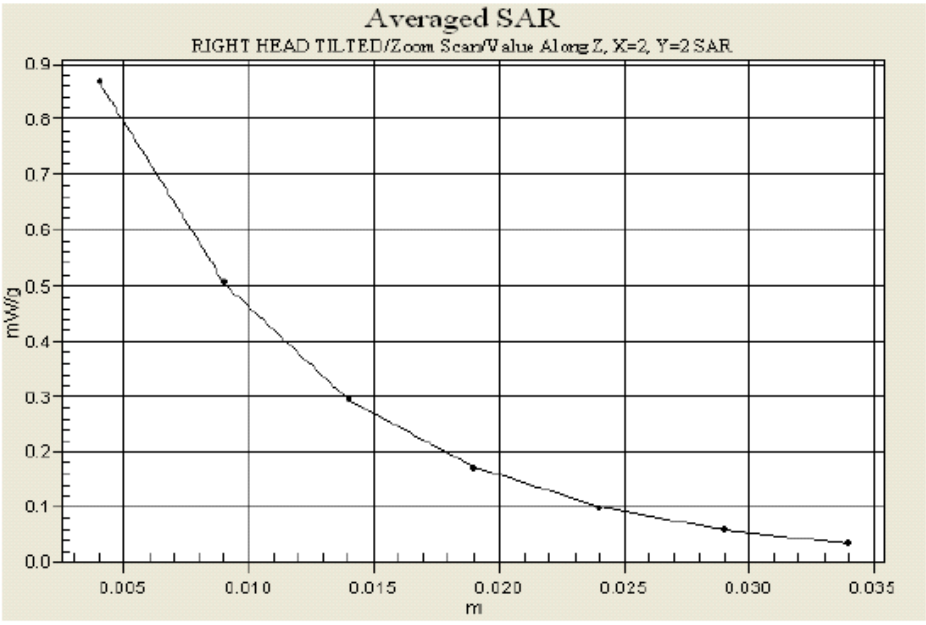
DUT: Quanta; Type: BN1; Serial:350421030000600
Program Name: RIGHT HEAD TILTED

Communication System: GSM 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: HSL 1900 (σ = 1.44425 mho/m, ε_r = 39.2181, ρ = 1000 kg/m^3)
Phantom section: Right Section;Ambient Temp=21~23C; Liquid Temp=21.5C; Liquid height=15.2cm

DASY4 Configuration:
- Probe: ET3DV6 - SN1788; ConvF(5.3, 5.3, 5.3); Calibrated: 8/29/2003
- 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, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 116

CH 810 1909.8MHz/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 21.5 V/m
Power Drift = -0.05 dB
Maximum value of SAR = 0.895 mW/g

CH 810 1909.8MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 1.4 W/kg
SAR(1 g) = 0.789 mW/g; SAR(10 g) = 0.415 mW/g
Reference Value = 21.5 V/m
Power Drift = -0.05 dB
Maximum value of SAR = 0.868 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

	Name	Function	Signature
Calibrated by:	Judith Mueller	Technician	
Approved by:	Katja Pokovic	Laboratory Director	

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.

880-KP0301061-A Page 1 (1)

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

DASY

Dipole Validation Kit

Type: D1900V2

Serial: 5d041

Manufactured: July 4, 2003
Calibrated: February 17, 2004

1. Measurement Conditions

The measurements were performed in the flat section of the SAM twin phantom filled with **head simulating liquid** of the following electrical parameters at 1900 MHz:

Relative Dielectricity	**38.8**	± 5%
Conductivity	**1.47 mho/m**	± 5%

The DASY4 System with a dosimetric E-field probe ET3DV6 (SN:1507, Conversion factor 4.96 at 1900 MHz) was used for the measurements.

The dipole was mounted on the small tripod so that the dipole feedpoint was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10mm from dipole center to the solution surface. The included distance spacer was used during measurements for accurate distance positioning.

The coarse grid with a grid spacing of 15mm was aligned with the dipole. The 7x7x7 fine cube was chosen for cube integration.
The dipole input power (forward power) was 250mW ± 3 %. The results are normalized to 1W input power.

2. SAR Measurement with DASY4 System

Standard SAR-measurements were performed according to the measurement conditions described in section 1. The results (see figure supplied) have been normalized to a dipole input power of 1W (forward power). The resulting averaged SAR-values measured with the dosimetric probe ET3DV6 SN:1507 and applying the advanced extrapolation are:

averaged over 1 cm^3 (1 g) of tissue:	**41.6 mW/g** ± 16.8 % (k=2)[1]
averaged over 10 cm^3 (10 g) of tissue:	**21.6 mW/g** ± 16.2 % (k=2)[1]

[1] validation uncertainty

3. Dipole Impedance and Return Loss

The impedance was measured at the SMA-connector with a network analyzer and numerically transformed to the dipole feedpoint. The transformation parameters from the SMA-connector to the dipole feedpoint are:

Electrical delay:	**1.200 ns**	(one direction)
Transmission factor:	**0.993**	(voltage transmission, one direction)

The dipole was positioned at the flat phantom sections according to section 1 and the distance spacer was in place during impedance measurements.

Feedpoint impedance at 1900 MHz:	Re{Z} = **51.2 Ω**
	Im {Z} = **4.9Ω**
Return Loss at 1900 MHz	**-26.1 dB**

4. Measurement Conditions

The measurements were performed in the flat section of the SAM twin phantom filled with **body simulating tissue** of the following electrical parameters at 1900 MHz:

Relative Dielectricity	**52.5**	± 5%
Conductivity	**1.58 mho/m**	± 5%

The DASY4 System with a dosimetric E-field probe ET3DV6 (SN:1507, Conversion factor 4.57 at 1900 MHz) was used for the measurements.

The dipole was mounted on the small tripod so that the dipole feedpoint was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10mm from dipole center to the solution surface. The included distance spacer was used during measurements for accurate distance positioning.

The coarse grid with a grid spacing of 15mm was aligned with the dipole. The 7x7x7 fine cube was chosen for cube integration.
The dipole input power (forward power) was 250mW ± 3 %. The results are normalized to 1W input power.

5. SAR Measurement with DASY4 System

Standard SAR-measurements were performed according to the measurement conditions described in section 4. The results (see figure supplied) have been normalized to a dipole input power of 1 W (forward power). The resulting averaged SAR-values measured with the dosimetric probe ET3DV6 SN:1507 and applying the advanced extrapolation are:

averaged over 1 cm^3 (1 g) of tissue:	**42.0 mW/g** ± 16.8 % $(k=2)^2$
averaged over 10 cm^3 (10 g) of tissue:	**22.0 mW/g** ± 16.2 % $(k=2)^2$

6. Dipole Impedance and Return Loss

The dipole was positioned at the flat phantom sections according to section 4 and the distance spacer was in place during impedance measurements.

Feedpoint impedance at 1900 MHz:	Re{Z} = **46.6 Ω**
	Im {Z} = **5.1 Ω**
Return Loss at 1900 MHz	**-24.0 dB**

7. Handling

Do not apply excessive force to the dipole arms, because they might bend. Bending of the dipole arms stresses the soldered connections near the feedpoint leading to a damage of the dipole.

8. Design

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

Small end caps have been added to the dipole arms in order to improve matching when loaded according to the position as explained in Section 1. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

9. Power Test

After long term use with 40W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

[2] validation uncertainty

Date/Time: 02/17/04 14:13:01

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN5d041

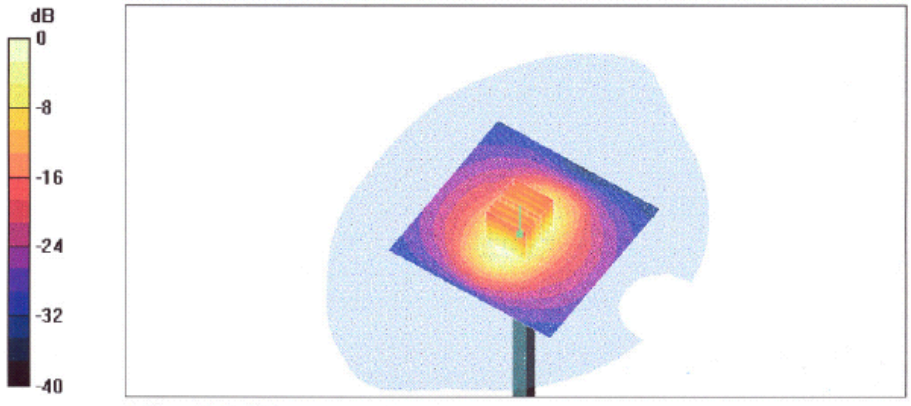
Communication System: CW-1900; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL 1900 MHz;
Medium parameters used: f = 1900 MHz; σ = 1.47 mho/m; ε_r = 38.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

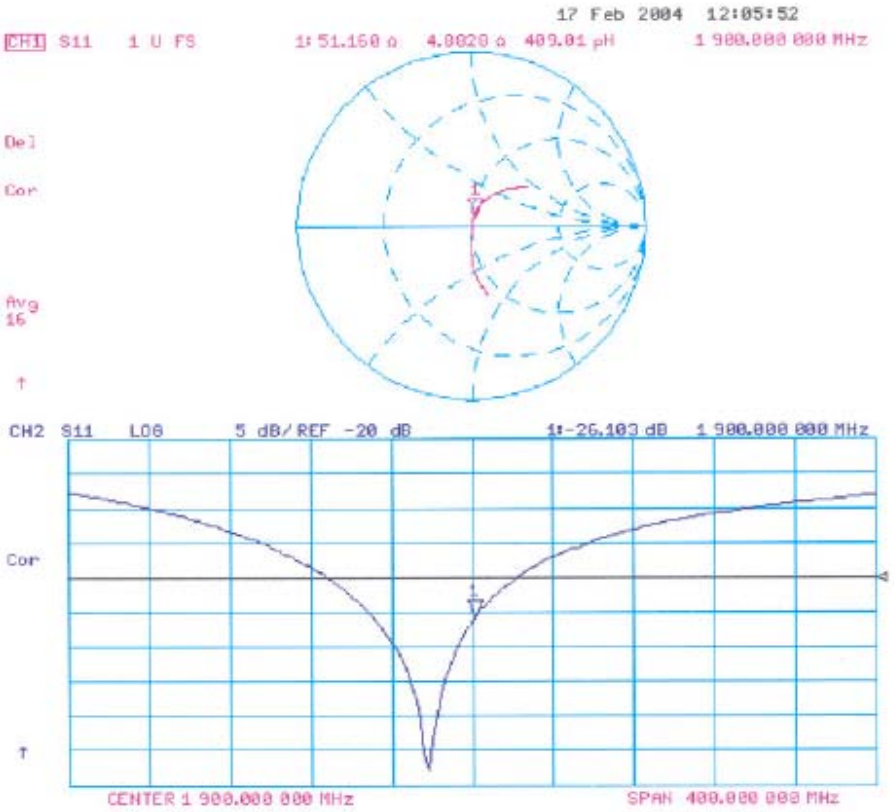
- Probe: ET3DV6 - SN1507; ConvF(4.96, 4.96, 4.96); Calibrated: 1/23/2004
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn411; Calibrated: 11/6/2003
- Phantom: SAM with CRP - TP1006; Type: SAM 4.0; Serial: TP:1006;
- Measurement SW: DASY4, V4.2 Build 30; Postprocessing SW: SEMCAD, V1.8 Build 98

Pin = 250 mW; d = 10 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 93.8 V/m
Power Drift = 0.002 dB
Maximum value of SAR = 11.8 mW/g

Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 18.7 W/kg
SAR(1 g) = 10.4 mW/g; SAR(10 g) = 5.39 mW/g
Reference Value = 93.8 V/m
Power Drift = 0.002 dB
Maximum value of SAR = 11.7 mW/g



0 dB = 11.7mW/g



Date/Time: 02/09/04 15:58:45

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN5d041

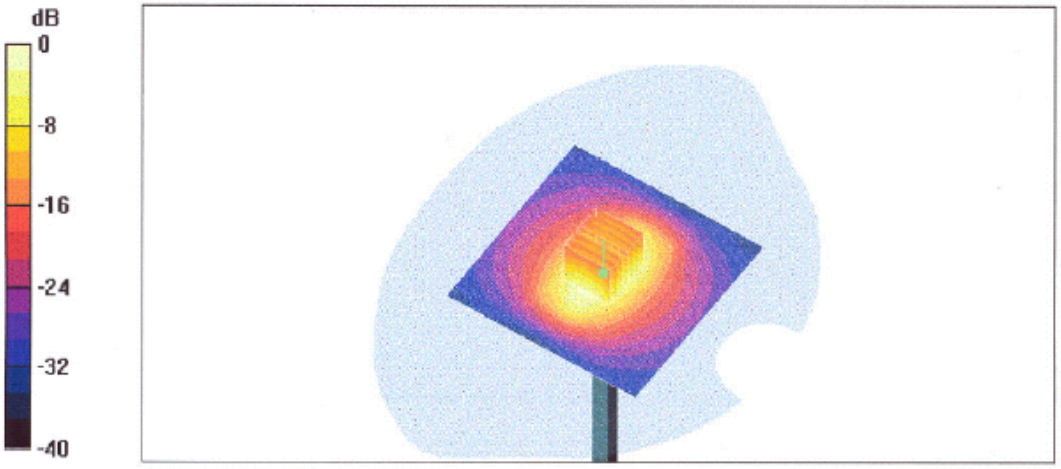
Communication System: CW-1900; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: Muscle 1900 MHz;
Medium parameters used: f = 1900 MHz; σ = 1.58 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

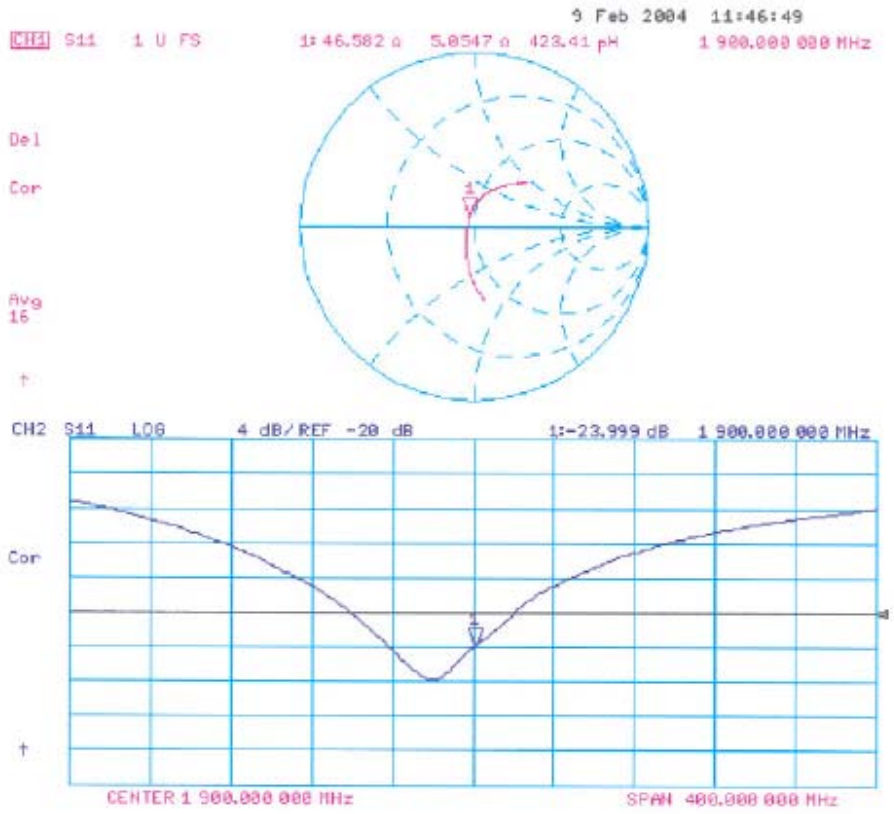
- Probe: ET3DV6 - SN1507; ConvF(4.57, 4.57, 4.57); Calibrated: 1/23/2004
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 - SN411; Calibrated: 11/6/2003
- Phantom: SAM with CRP - TP1006; Type: SAM 4.0; Serial: TP:1006;
- Measurement SW: DASY4, V4.2 Build 25; Postprocessing SW: SEMCAD, V1.8 Build 101

Pin = 250 mW; d = 10 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 92.6 V/m; Power Drift = 0.0 dB
Maximum value of SAR (interpolated) = 11.8 mW/g

Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 92.6 V/m; Power Drift = 0.0 dB
Maximum value of SAR (measured) = 11.9 mW/g
Peak SAR (extrapolated) = 18.8 W/kg
SAR(1 g) = 10.5 mW/g; SAR(10 g) = 5.49 mW/g



0 dB = 11.9mW/g



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

Client Auden > Sporton Int. Inc.

CALIBRATION CERTIFICATE

Object(s) ET3DV6 - SN:1788

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

Calibration date: August 29, 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
RF generator HP 8684C	US3642U01700	4-Aug-99 (SPEAG, in house check Aug-02)	In house check: Aug-05
Power sensor E4412A	MY41495277	2-Apr-03 (METAS, No 252-0250)	Apr-04
Power sensor HP 8481A	MY41092180	18-Sep-02 (Agilent, No. 20020918)	Sep-03
Power meter EPM E4419B	GB41293874	2-Apr-03 (METAS, No 252-0250)	Apr-04
Network Analyzer HP 8753E	US37390585	18-Oct-01 (Agilent, No. 24BR1033101)	In house check: Oct 03
Fluke Process Calibrator Type 702	SN: 6295803	3-Sep-01 (ELCAL, No.2360)	Sep-03

	Name	Function	Signature
Calibrated by:	Nico Vetterli	Technician	
Approved by:	Katja Pokovic	Laboratory Director	

Date issued: August 28, 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.

Schmid & Partner Engineering AG

s p e a g

Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 1 245 9700, Fax +41 1 245 9779
info@speag.com, http://www.speag.com

Probe ET3DV6

SN:1788

Manufactured: May 28, 2003
Last calibration: August 29, 2003

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

ET3DV6 SN:1788 August 29, 2003

DASY - Parameters of Probe: ET3DV6 SN:1788

Sensitivity in Free Space

Diode Compression

NormX	1.68 μV/(V/m)^2	DCP X	95	mV
NormY	1.62 μV/(V/m)^2	DCP Y	95	mV
NormZ	1.71 μV/(V/m)^2	DCP Z	95	mV

Sensitivity in Tissue Simulating Liquid

Head 900 MHz ε_r = 41.5 ± 5% σ = 0.97 ± 5% mho/m

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

ConvF X	6.6 ± 9.5% (k=2)	Boundary effect:	
ConvF Y	6.6 ± 9.5% (k=2)	Alpha	0.34
ConvF Z	6.6 ± 9.5% (k=2)	Depth	2.48

Head 1800 MHz ε_r = 40.0 ± 5% σ = 1.40 ± 5% mho/m

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

ConvF X	5.3 ± 9.5% (k=2)	Boundary effect:	
ConvF Y	5.3 ± 9.5% (k=2)	Alpha	0.43
ConvF Z	5.3 ± 9.5% (k=2)	Depth	2.80

Boundary Effect

Head 900 MHz **Typical SAR gradient: 5 % per mm**

Probe Tip to Boundary		1 mm	2 mm
SAR_{be} [%]	Without Correction Algorithm	8.7	5.0
SAR_{be} [%]	With Correction Algorithm	0.3	0.5

Head 1800 MHz **Typical SAR gradient: 10 % per mm**

Probe Tip to Boundary		1 mm	2 mm
SAR_{be} [%]	Without Correction Algorithm	12.8	8.9
SAR_{be} [%]	With Correction Algorithm	0.3	0.1

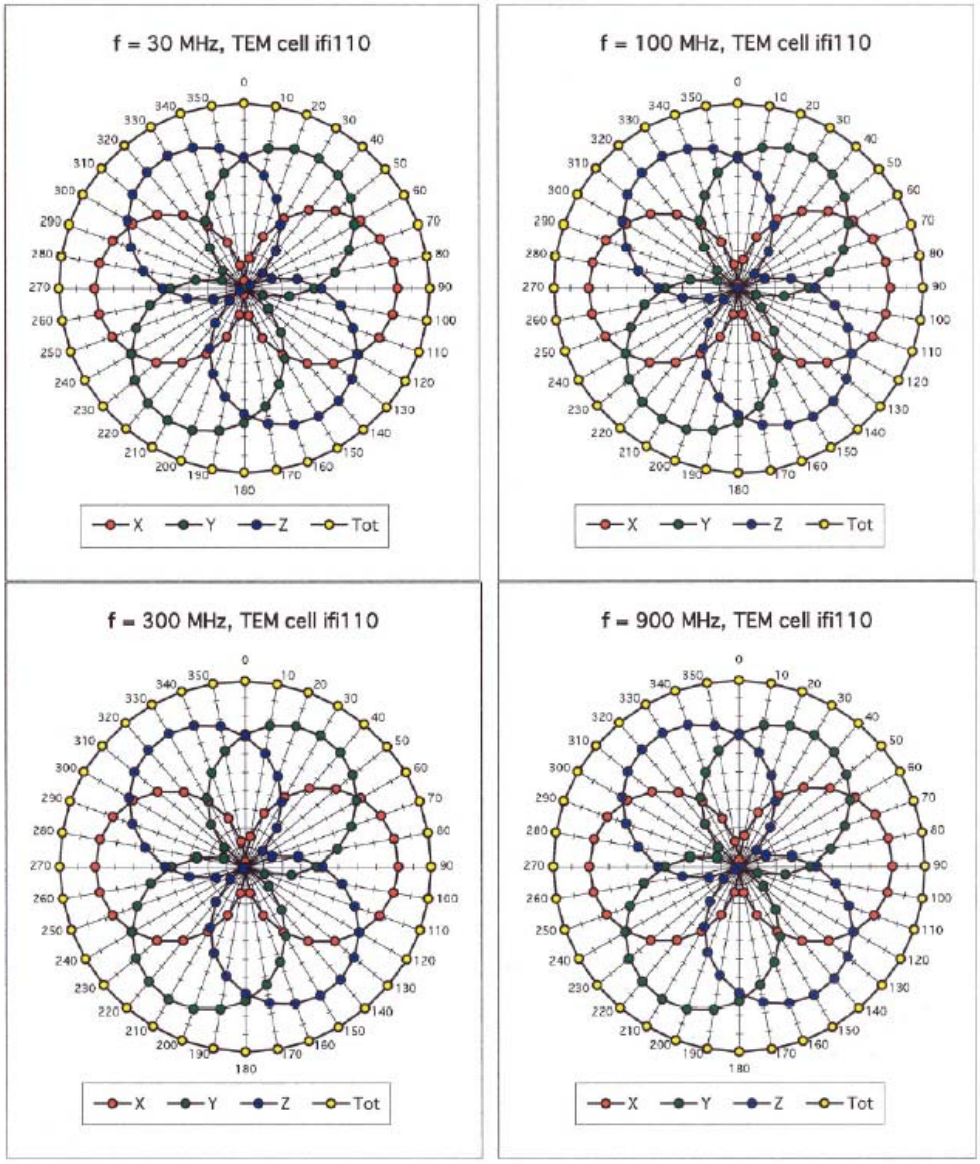
Sensor Offset

Probe Tip to Sensor Center	2.7	mm
Optical Surface Detection	1.6 ± 0.2	mm

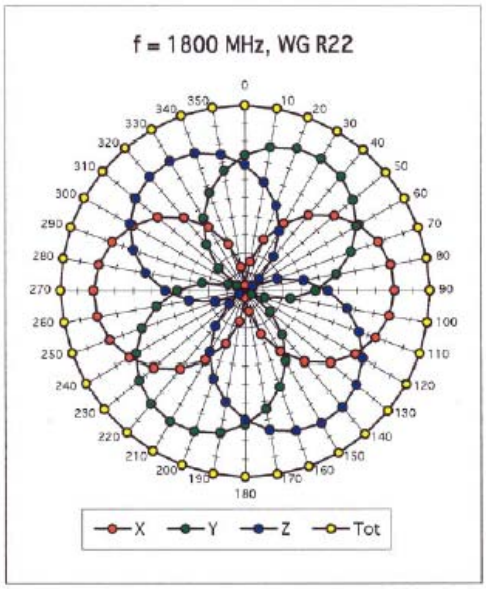
ET3DV6 SN:1788

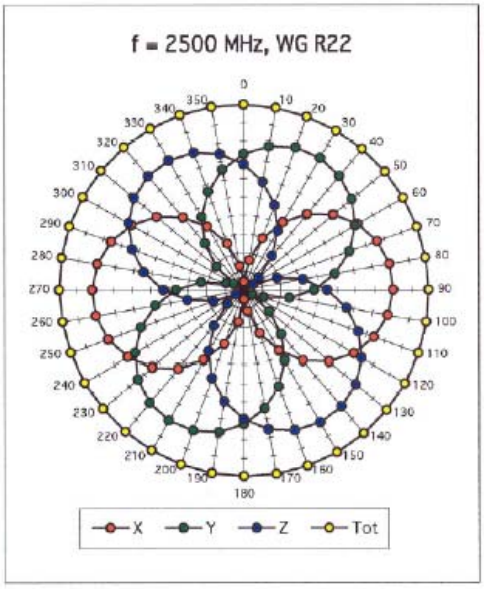
August 29, 2003

Receiving Pattern (ϕ), θ = 0°

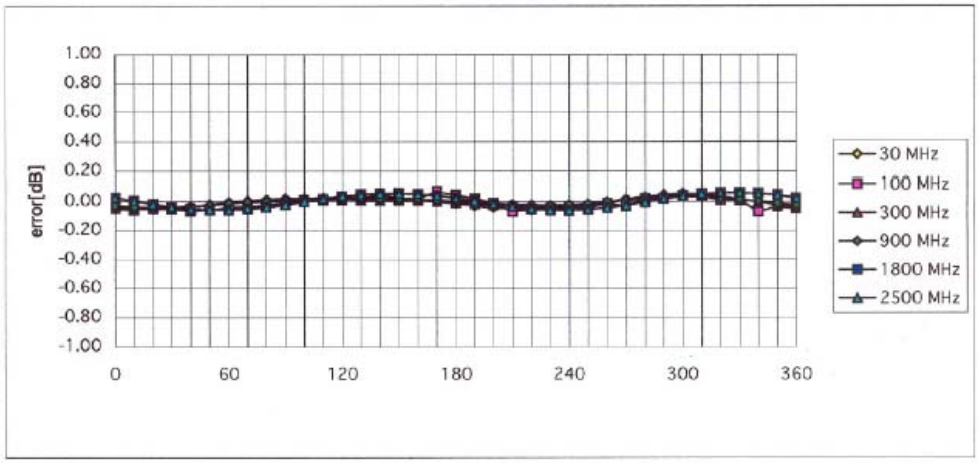


ET3DV6 SN:1788 August 29, 2003





Isotropy Error (ϕ), θ = 0°

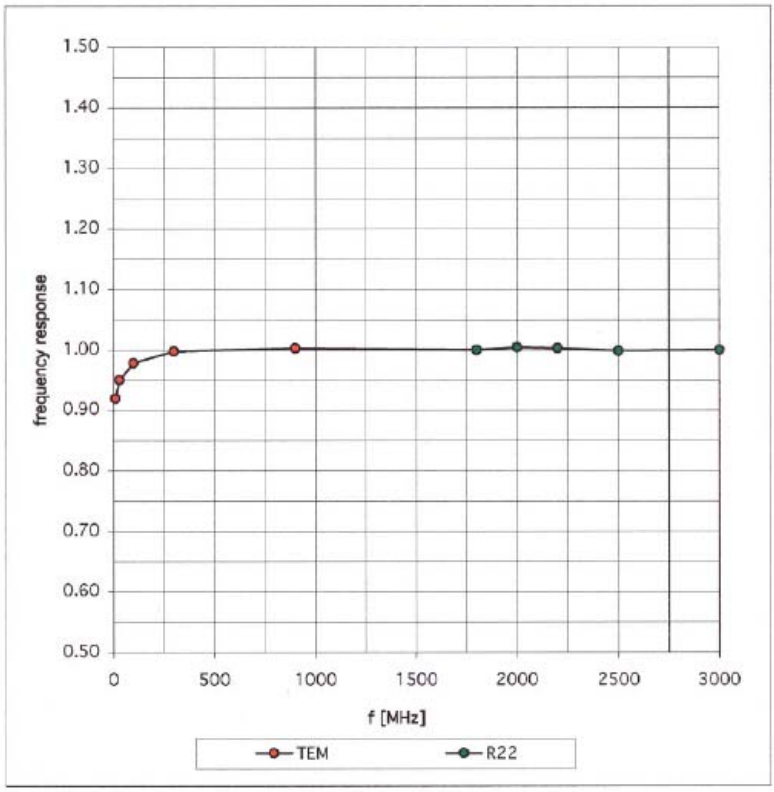


ET3DV6 SN:1788

August 29, 2003

Frequency Response of E-Field

(TEM-Cell:ifi110, Waveguide R22)

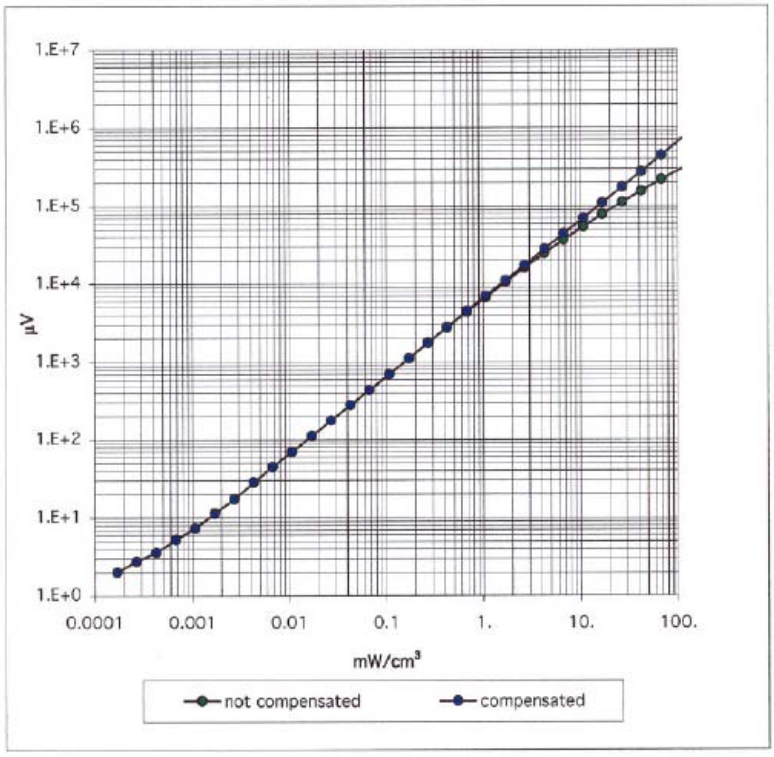


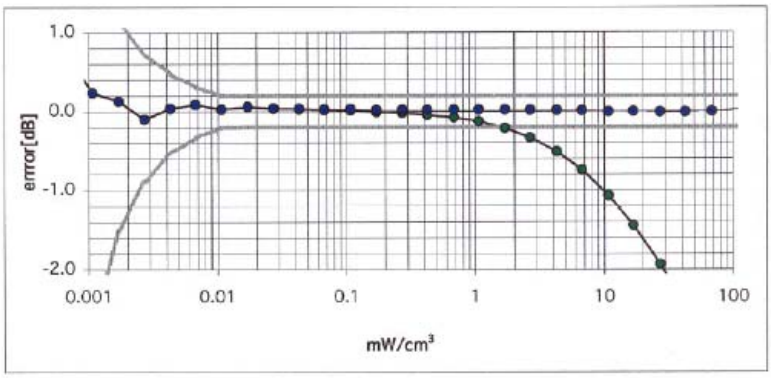
ET3DV6 SN:1788

August 29, 2003

Dynamic Range f(SAR_{brain})

(Waveguide R22)

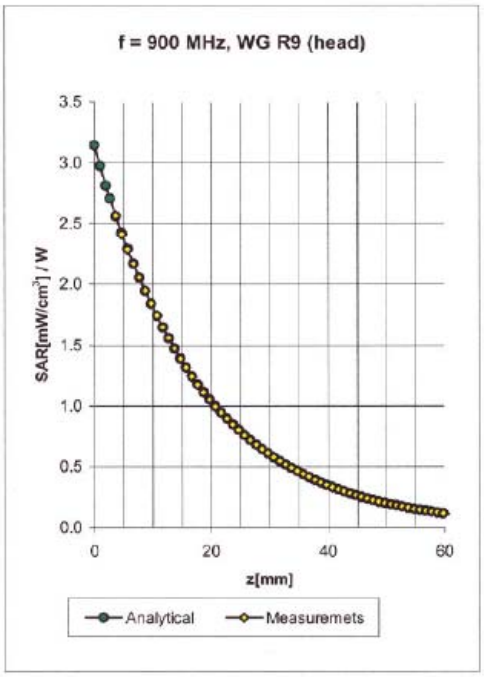


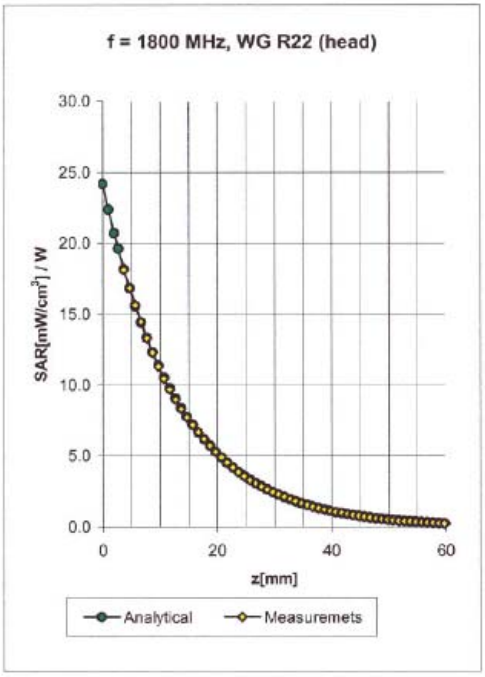


ET3DV6 SN:1788

August 29, 2003

Conversion Factor Assessment





Head 900 MHz ε_r = 41.5 ± 5% σ = 0.97 ± 5% mho/m

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

ConvF X	6.6 ± 9.5% (k=2)	Boundary effect:	
ConvF Y	6.6 ± 9.5% (k=2)	Alpha	0.34
ConvF Z	6.6 ± 9.5% (k=2)	Depth	2.48

Head 1800 MHz ε_r = 40.0 ± 5% σ = 1.40 ± 5% mho/m

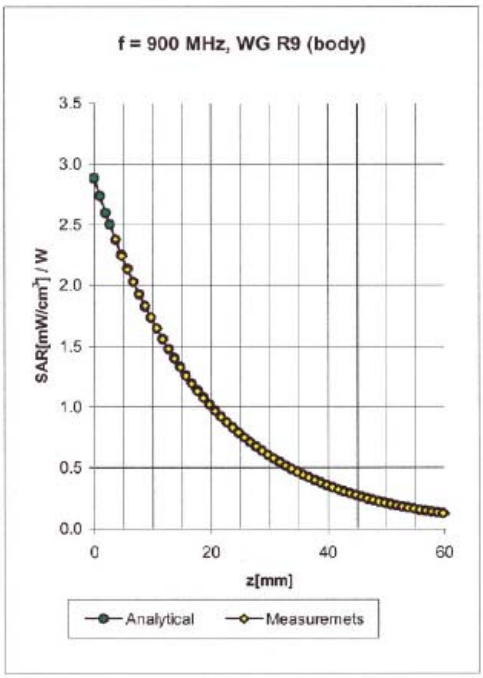
Valid for f=1710-1910 MHz with Head Tissue Simulating Liquid according to EN 50361, P1528-200X

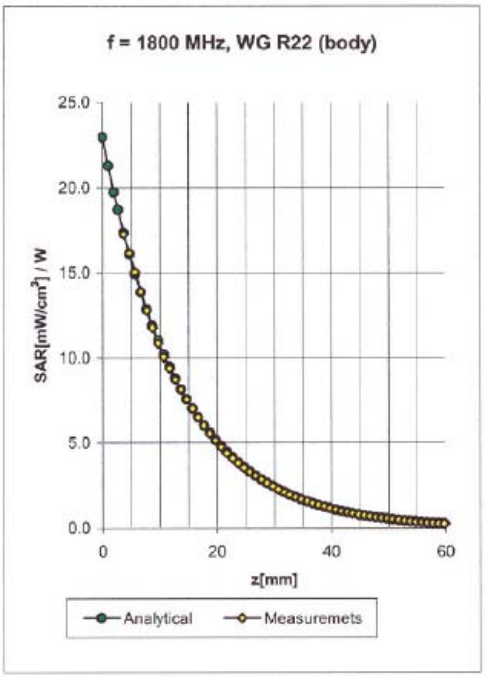
ConvF X	5.3 ± 9.5% (k=2)	Boundary effect:	
ConvF Y	5.3 ± 9.5% (k=2)	Alpha	0.43
ConvF Z	5.3 ± 9.5% (k=2)	Depth	2.80

ET3DV6 SN:1788

August 29, 2003

Conversion Factor Assessment





Body 900 MHz ε_r = 55.0 ± 5% σ = 1.05 ± 5% mho/m

Valid for f=800-1000 MHz with Body Tissue Simulating Liquid according to OET 65 Suppl. C

ConvF X	6.5 ± 9.5% (k=2)	Boundary effect:	
ConvF Y	6.5 ± 9.5% (k=2)	Alpha	0.31
ConvF Z	6.5 ± 9.5% (k=2)	Depth	2.92

Body 1800 MHz ε_r = 53.3 ± 5% σ = 1.52 ± 5% mho/m

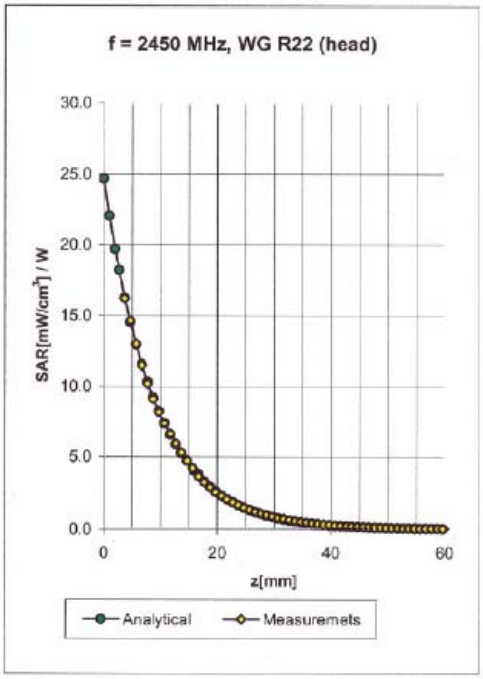
Valid for f=1710-1910 MHz with Body Tissue Simulating Liquid according to OET 65 Suppl. C

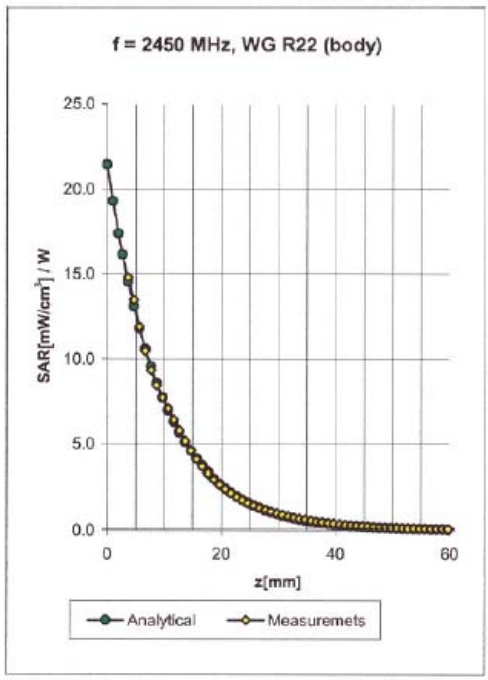
ConvF X	5.0 ± 9.5% (k=2)	Boundary effect:	
ConvF Y	5.0 ± 9.5% (k=2)	Alpha	0.51
ConvF Z	5.0 ± 9.5% (k=2)	Depth	2.78

ET3DV6 SN:1788

August 29, 2003

Conversion Factor Assessment





Head 2450 MHz ε_r = 39.2 ± 5% σ = 1.80 ± 5% mho/m

Valid for f=2400-2500 MHz with Head Tissue Simulating Liquid according to EN 50361, P1528-200X

ConvF X	4.7 ± 8.9% (k=2)	Boundary effect:	
ConvF Y	4.7 ± 8.9% (k=2)	Alpha	0.99
ConvF Z	4.7 ± 8.9% (k=2)	Depth	1.81

Body 2450 MHz ε_r = 52.7 ± 5% σ = 1.95 ± 5% mho/m

Valid for f=2400-2500 MHz with Body Tissue Simulating Liquid according to OET 65 Suppl. C

ConvF X	4.5 ± 8.9% (k=2)	Boundary effect:	
ConvF Y	4.5 ± 8.9% (k=2)	Alpha	1.01
ConvF Z	4.5 ± 8.9% (k=2)	Depth	1.74

ET3DV6 SN:1788

August 29, 2003

Deviation from Isotropy in HSL

Error (θ,φ), f = 900 MHz