BODY/WRIST SAR EVALUATION RESULTS (DUAL-BAND GPRS)

Freq. (MHz)	Chan.	Test Mode		Power Source	Phantom Section	DUT Position to Planar Phantom	DUT Spacing to Planar Phantom	EIRP/ERP Start Power (dBm)		Body SAR 1g (W/kg)		Wrist SAR 10g (W/kg)	
								Measured	SBTA	Measured	Scaled[1]	Measured	Scaled[1]
1880.0	661	PCS GPRS	2 Slots	4.1 VDC	SAM-Twin Left Neck	Bottom Side	Touch	30.66 EIRP	24.45 EIRP	0.111	**0.118**	0.0661	**0.0705**
836.6	190	Cellular GPRS	2 slots	4.1 VDC	SAM-Twin Left Neck	Bottom Side	Touch	22.57 ERP	16.37 ERP	**0.00126**	-	**0.000648**	-

ANSI / IEEE C95.1-2005 SAFETY LIMIT:	WRIST: 4.0 W/kg (averaged over 10 grams)	BODY: 1.6 W/kg (averaged over 1 gram)	Spatial Peak Uncontrolled Exposure / General Population

Test Date(s)	PCS GPRS:	March 13, 2007	Cellular GPRS:	March 26, 2007	Measured Fluid Type	1880 MHz	835 MHz	Unit
Dielectric Constant ε_r	1880 MHz Body				835 MHz Body				Relative Humidity	32	31	%
	IEEE Target		Meas.	Dev.	IEEE Target		Meas.	Dev.	Atmospheric Pressure	102.1	101.4	kPa
	53.3	± 5%	50.7	-4.8%	55.2	± 5%	56.6	+2.6%	Ambient Temperature	22.9	22.6	°C
Conductivity σ (mho/m)	1880 MHz Body				835 MHz Body				Fluid Temperature	20.9	21.6	°C
	IEEE Target		Meas.	Dev.	IEEE Target		Meas.	Dev.	Fluid Depth	≥ 15	≥ 15	cm
	1.52	± 5%	1.54	+1.4%	0.97	± 5%	0.98	+1.1%	ρ (Kg/m^3)	1000		

Note(s)

1. The SAR level measured at the mid channel for PCS band was scaled up by 0.28 dB to report an estimated increase in the SAR level based on the difference in output power (EIRP) that was measured for the low channel (see page 7 of Celltech SAR Test Report S/N: 033106TV9-T735-S24G Rev. 1.2 for EIRP measurement results).
2. If the measured SAR levels evaluated at the mid channel were ≥ 3 dB below the SAR limit, SAR evaluation for the low and high channels was optional (per FCC OET Bulletin 65, Supplement C, Edition 01-01 - see reference [3]).
3. The fluid temperature was measured prior to and after the SAR evaluation to ensure the temperature remained within +/-2°C of the fluid temperature reported during the dielectric parameter measurements.
4. The dielectric parameters of the simulated tissue mixtures were measured prior to the SAR evaluations using an ALS-PR-DIEL Dielectric Probe Kit and an HP 8753ET Network Analyzer (see Appendix C).
5. The SAR measurements were performed within 24 hours of the system performance check.

SYSTEM PERFORMANCE CHECK EVALUATIONS

Test Date	Tissue	SAR 1g (W/kg)			Dielectric Constant ε_r			Conductivity σ (mho/m)			ρ (Kg/m^3)	Amb. Temp. (°C)	Fluid Temp. (°C)	Fluid Depth (cm)	Humid. (%)	Barom. Press. (kPa)
	MHz	SPEAG Target	Meas.	Dev.	IEEE Target	Meas.	Dev.	IEEE Target	Meas.	Dev.						
3/13/07	1900 Body	9.95 ±10%	10.7	+7.6%	53.3 ±5%	50.6	-5.0%	1.52 ±5%	1.56	+2.7%	1000	22.9	20.9	≥ 15	102.1	32
3/26/07	835 Body	2.43 ±10%	2.31	-4.9%	55.2 ±5%	56.6	+2.6%	0.97 ±5%	0.98	+1.1%	1000	22.6	21.6	≥ 15	101.4	31

Dipole Type	Distance [mm]	Frequency [MHz]	SAR (1g) [W/kg]	SAR (10g) [W/kg]	SAR (peak) [W/kg]
D300V2	15	300	3.02	2.06	4.36
D450V2	15	450	5.01	3.36	7.22
D835V2	15	835	9.71	6.38	14.1
D900V2	15	900	11.1	7.17	16.3
D1450V2	10	1450	29.6	16.6	49.8
D1500V2	10	1500	30.8	17.1	52.1
D1640V2	10	1640	34.4	18.7	59.4
D1800V2	10	1800	38.5	20.3	67.5
D1900V2	10	1900	39.8	20.8	69.6
D2000V2	10	2000	40.9	21.2	71.5
D2450V2	10	2450	51.2	23.7	97.6
D3000V2	10	3000	61.9	24.8	136.7

Table 32.1: Numerical reference SAR values for SPEAG dipoles and flat phantom filled with body-tissue simulating liquid. Note: All SAR values normalized to 1 W forward power.

Date Tested: 03/13/2007

Body/Wrist-Worn SAR - Bottom Side of DUT - PCS GPRS - 1880.0 MHz - Channel 661

DUT: Medical Intelligence Columba; Type: Dual-Band GSM/GPRS Wrist-Worn Personal Location Device; Serial: None

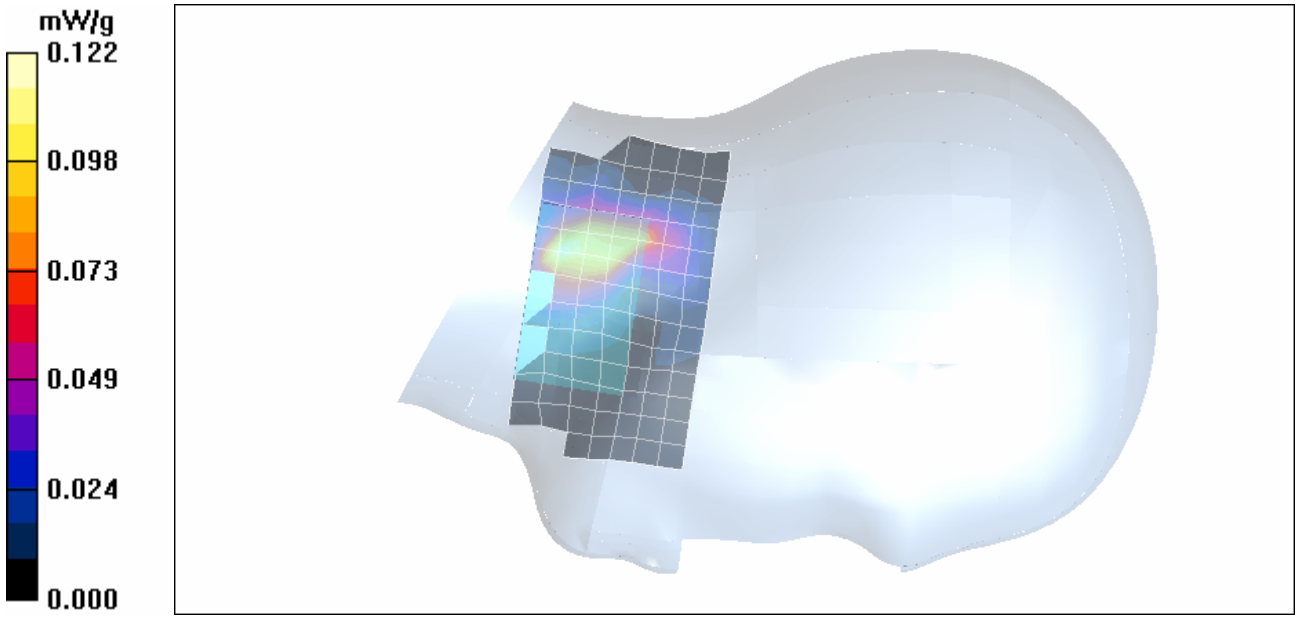
Ambient Temp: 22.9°C; Fluid Temp: 20.9°C; Barometric Pressure: 102.1 kPa; Humidity: 32%

Power Source: 4.1 VDC External
RF Output Power: 30.66 dBm (EIRP)
Frequency: 1880.0 MHz; Duty Cycle: 1:4.16
Communication System: PCS GPRS (2 Time Slots)
Medium: M1880 Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 50.7; ρ = 1000 kg/m^3

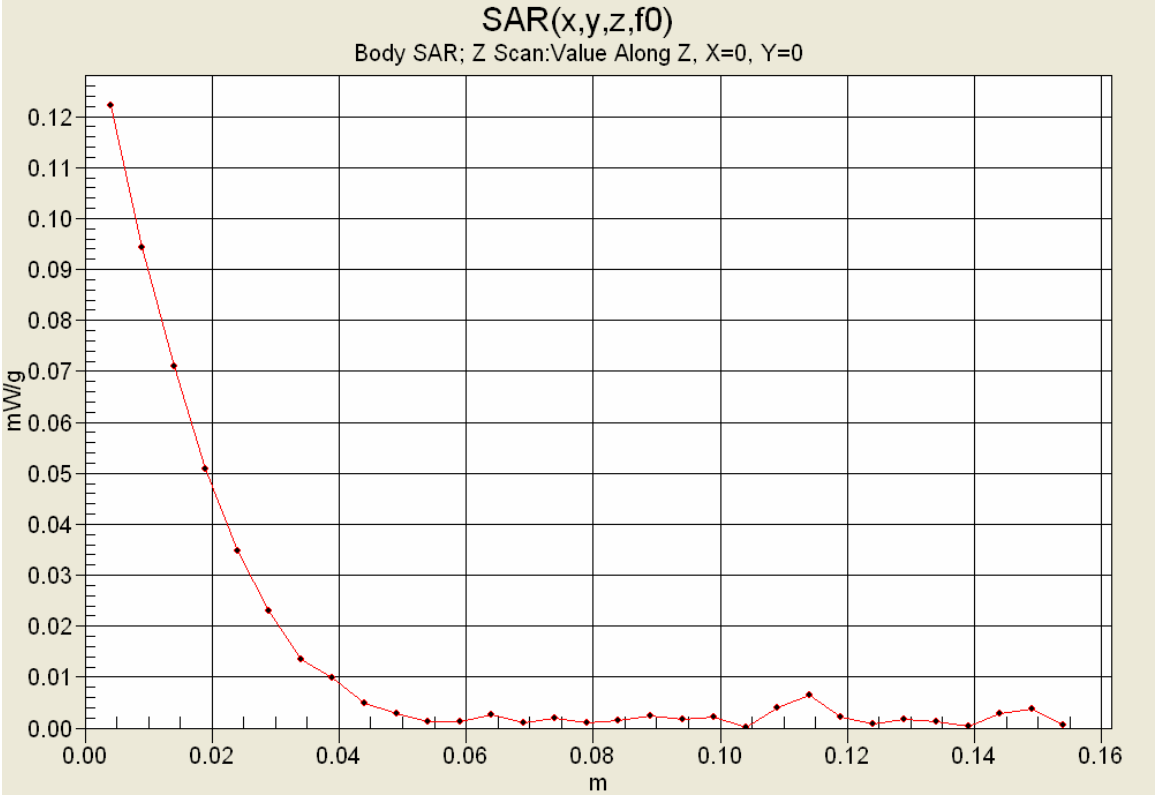
- Probe: EX3DV4 - SN3600; ConvF(6.54, 6.54, 6.54); Calibrated: 24/01/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 21/06/2006
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

SAR - PCS GPRS - Bottom Side of DUT Touching Left Neck Section of SAM Phantom - Channel 661 - 1880 MHz
Area Scan (8x14x1): Measurement grid: dx=10mm, dy=10mm

SAR - PCS GPRS - Bottom Side of DUT Touching Left Neck Section of SAM Phantom - Channel 661 - 1880 MHz
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.763 V/m
Peak SAR (extrapolated) = 0.186 W/kg
SAR(1 g) = 0.111 mW/g; SAR(10 g) = 0.0661 mW/g
Maximum value of SAR (measured) = 0.122 mW/g



Z-Axis Scan



Date Tested: 03/26/2007

Body/Wrist-Worn SAR - Bottom Side of DUT - Cellular GPRS - 836.6 MHz - Channel 190

DUT: Medical Intelligence Columba; Type: Dual-Band GSM/GPRS Wrist-Worn Personal Location Device; Serial: None

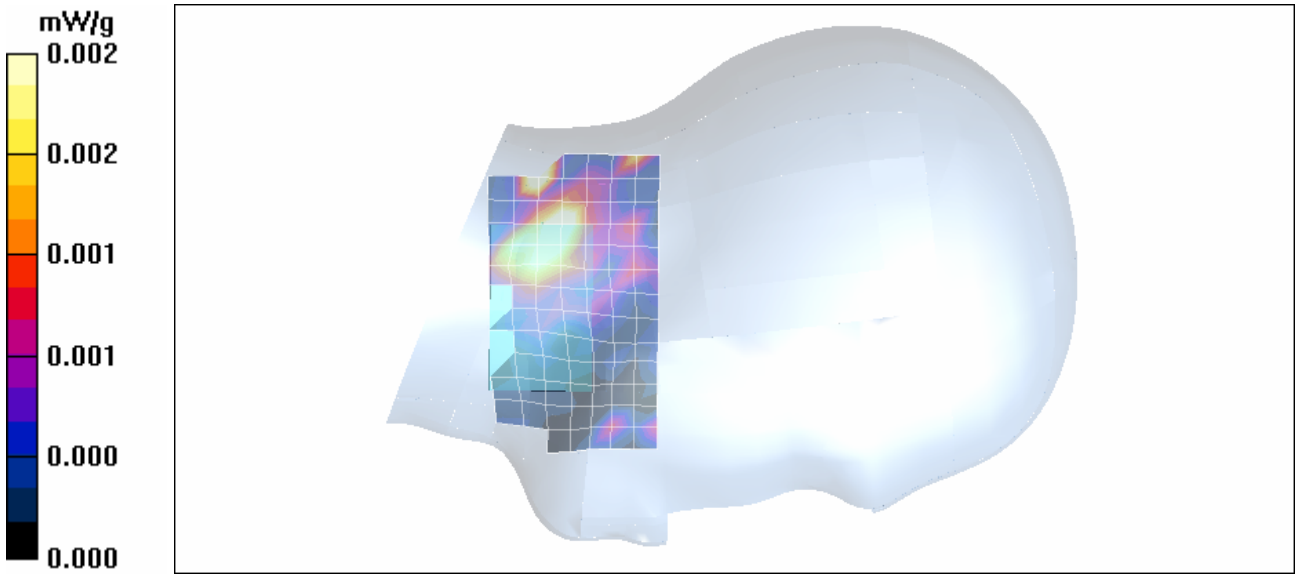
Ambient Temp: 22.6ºC; Fluid Temp: 21.6ºC; Barometric Pressure: 101.4 kPa; Humidity: 31%

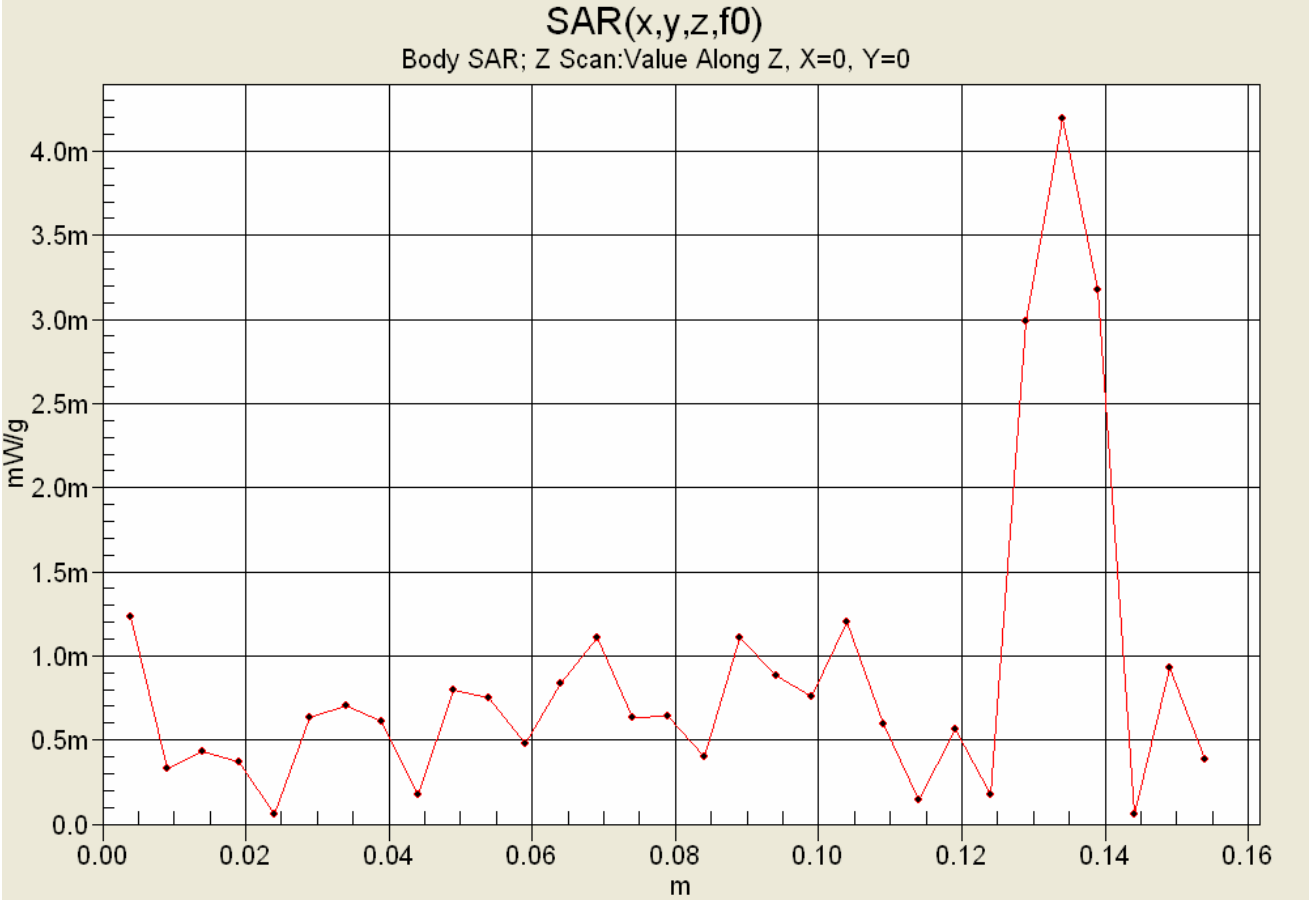
Power Source: 4.1 VDC External
RF Output Power: 22.57 dBm (ERP)
Frequency: 836.6 MHz; Duty Cycle: 1:4.16
Communication System: Cellular GPRS (2 Time Slots)
Medium: M835 Medium parameters used: f = 836.6 MHz; σ = 0.98 mho/m; ε_r = 56.6; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1387; ConvF(6.18, 6.18, 6.18); Calibrated: 16/03/2007
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 21/06/2006
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

SAR - Cellular GPRS - Bottom Side of DUT Touching Left Neck Section of SAM Phantom - Channel 190 - 836.6 MHz
Area Scan (8x14x1): Measurement grid: dx=10mm, dy=10mm

SAR - Cellular GPRS - Bottom Side of DUT Touching Left Neck Section of SAM Phantom - Channel 190 - 836.6 MHz
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.463 V/m
Peak SAR (extrapolated) = 0.004 W/kg
SAR(1 g) = 0.00126 mW/g; SAR(10 g) = 0.000648 mW/g
Maximum value of SAR (measured) = 0.002 mW/g





Date Tested: 03/13/2007

System Performance Check - 1900 MHz Dipole

DUT: Dipole 1900 MHz; Asset: 00032; Serial: 151; Validation: 02/02/2007

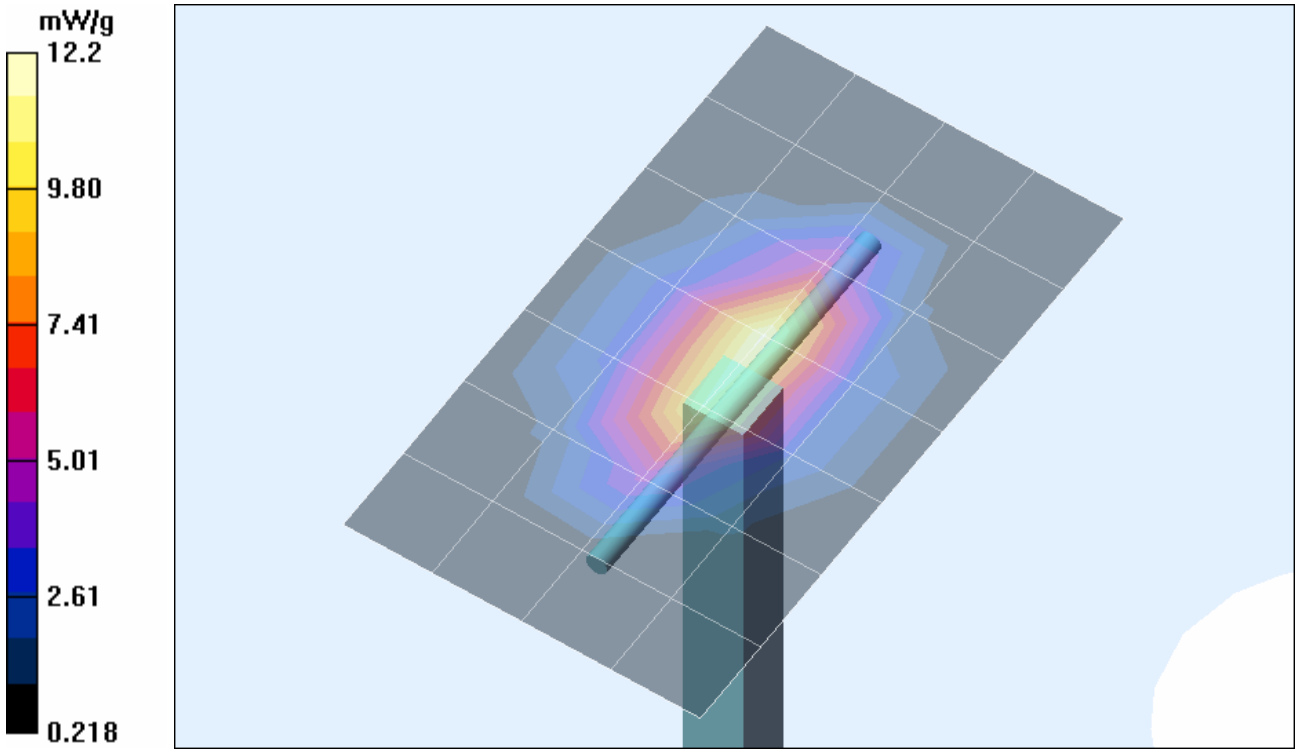
Ambient Temp: 22.9ºC; Fluid Temp: 20.9ºC; Barometric Pressure: 102.1 kPa; Humidity: 32%

Communication System: CW
Forward Conducted Power: 250 mW
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: M1900 Medium parameters used: f = 1900 MHz; σ = 1.56 mho/m; ε_r = 50.63; ρ = 1000 kg/m^3

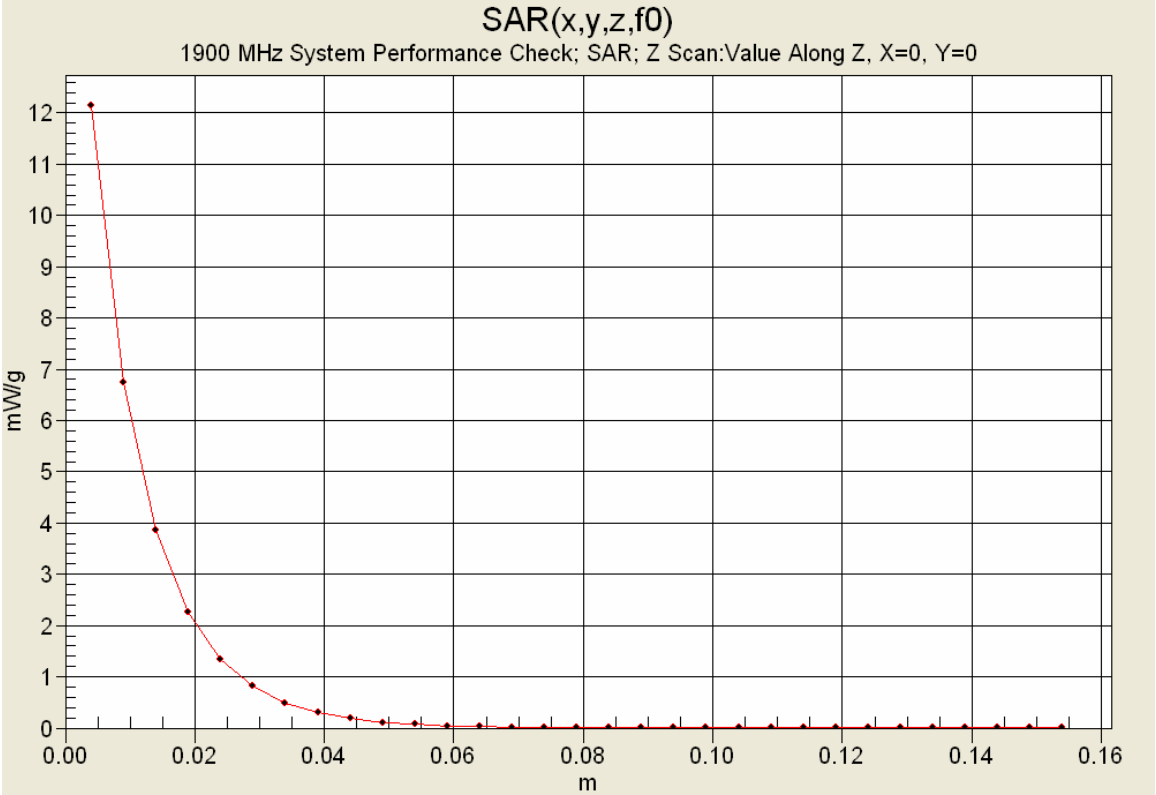
- Probe: EX3DV4 - SN3600; ConvF(6.54, 6.54, 6.54); Calibrated: 24/01/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 21/06/2006
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

1900 MHz Dipole - System Performance Check/Area Scan (5x8x1):
Measurement grid: dx=15mm, dy=15mm

1900 MHz Dipole - System Performance Check/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 88.6 V/m; Power Drift = -0.013 dB
Peak SAR (extrapolated) = 20.0 W/kg
SAR(1 g) = 10.7 mW/g; SAR(10 g) = 5.5 mW/g
Maximum value of SAR (measured) = 12.2 mW/g



Z-Axis Scan



Date Tested: 03/26/2007

System Performance Check - 835 MHz Dipole

DUT: Dipole 835 MHz; Asset: 00022; Serial: 411; Validation: 03/26/2007

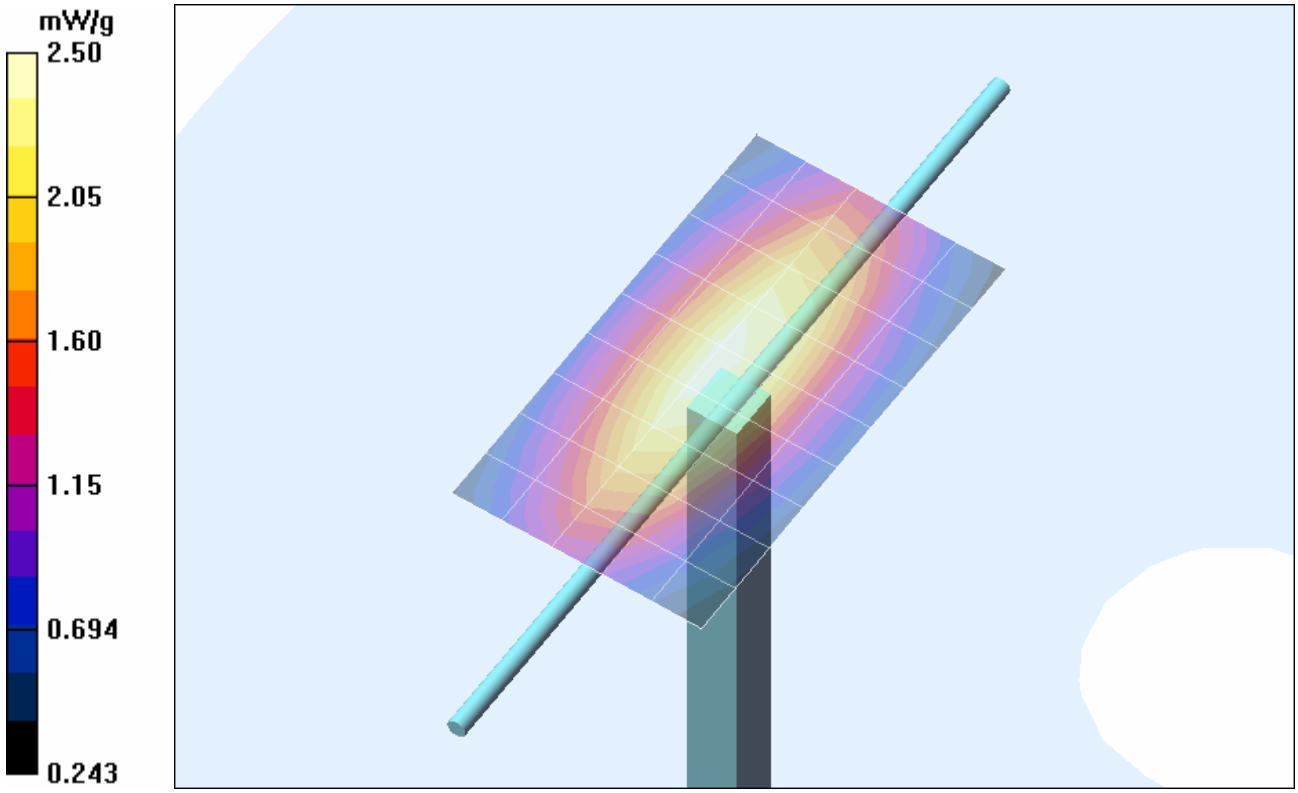
Ambient Temp: 22.6ºC; Fluid Temp: 21.6ºC; Barometric Pressure: 101.4 kPa; Humidity: 31%

Communication System: CW
Forward Conducted Power: 250 mW
Frequency: 835 MHz; Duty Cycle: 1:1
Medium: M835 Medium parameters used: f = 835 MHz; σ = 0.98 mho/m; ε_r = 56.6; ρ = 1000 kg/m^3

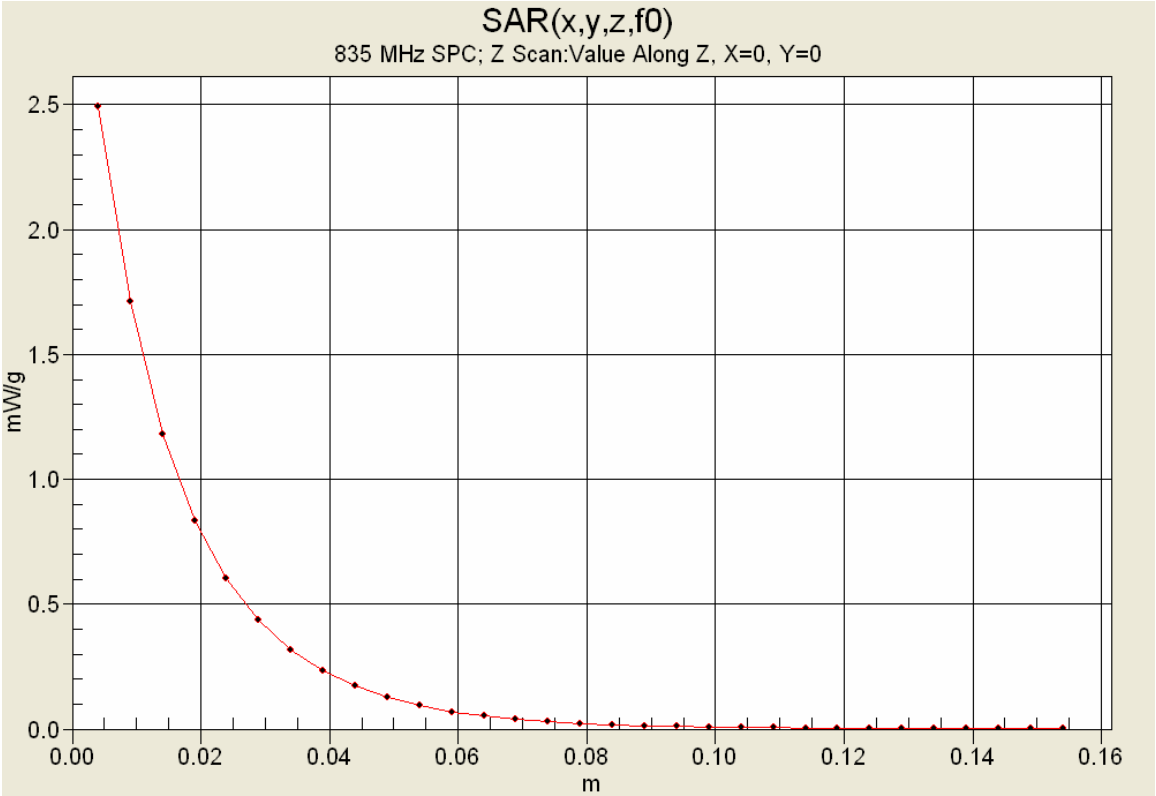
- Probe: ET3DV6 - SN1387; ConvF(6.18, 6.18, 6.18); Calibrated: 16/03/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 21/06/2006
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

835 MHz Dipole - System Performance Check/Area Scan (6x10x1):
Measurement grid: dx=10mm, dy=10mm

835 MHz Dipole - System Performance Check/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 52.3 V/m; Power Drift = -0.030 dB
Peak SAR (extrapolated) = 3.33 W/kg
SAR(1 g) = 2.31 mW/g; SAR(10 g) = 1.53 mW/g
Maximum value of SAR (measured) = 2.50 mW/g



Z-Axis Scan



1900 MHz System Performance Check & 1880 MHz DUT Evaluation (Body)

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Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
Tue 13/Mar/2007
Frequency (GHz)
FCC_eH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Sigma
FCC_eB FCC Limits for Body Epsilon
FCC_sB FCC Limits for Body Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM

****

Freq	FCC_eB	FCC_sB	Test_e	Test_s
1.8000	53.30	1.52	50.93	1.45
1.8100	53.30	1.52	50.97	1.47
1.8200	53.30	1.52	50.83	1.48
1.8300	53.30	1.52	50.74	1.49
1.8400	53.30	1.52	50.82	1.49
1.8500	53.30	1.52	50.77	1.52
1.8600	53.30	1.52	50.83	1.52
1.8700	53.30	1.52	50.65	1.53
1.8800	53.30	1.52	50.69	1.54
1.8900	53.30	1.52	50.68	1.55
1.9000	53.30	1.52	50.63	1.56
1.9100	53.30	1.52	50.68	1.58
1.9200	53.30	1.52	50.63	1.60
1.9300	53.30	1.52	50.53	1.59
1.9400	53.30	1.52	50.55	1.60
1.9500	53.30	1.52	50.44	1.62
1.9600	53.30	1.52	50.54	1.62
1.9700	53.30	1.52	50.52	1.64
1.9800	53.30	1.52	50.44	1.67
1.9900	53.30	1.52	50.45	1.67
2.0000	53.30	1.52	50.37	1.68

835 MHz System Performance Check & DUT Evaluation (Body)

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Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
Mon 26/Mar/2007
Frequency (GHz)
FCC_eH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Sigma
FCC_eB FCC Limits for Body Epsilon
FCC_sB FCC Limits for Body Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM

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Freq	FCC_eB	FCC_sB	Test_e	Test_s
0.7350	55.59	0.96	57.34	0.88
0.7450	55.55	0.96	57.48	0.89
0.7550	55.51	0.96	57.37	0.90
0.7650	55.47	0.96	57.32	0.91
0.7750	55.43	0.97	56.91	0.92
0.7850	55.39	0.97	56.75	0.93
0.7950	55.36	0.97	56.75	0.94
0.8050	55.32	0.97	56.57	0.95
0.8150	55.28	0.97	56.53	0.96
0.8250	55.24	0.97	56.53	0.98
0.8350	55.20	0.97	56.55	0.98
0.8450	55.17	0.98	56.53	0.99
0.8550	55.14	0.99	56.24	1.00
0.8650	55.11	1.01	56.39	1.00
0.8750	55.08	1.02	56.11	1.02
0.8850	55.05	1.03	55.94	1.02
0.8950	55.02	1.04	55.82	1.04
0.9050	55.00	1.05	55.86	1.05
0.9150	55.00	1.06	55.80	1.06
0.9250	54.98	1.06	55.62	1.07
0.9350	54.96	1.07	55.60	1.08

TEST SETUP PHOTOS - Bottom Side of DUT Touching Left Neck Section of SAM Phantom