



Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon		No. REP 2006 008 W810i HWB 02	
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Exhibit 11: SAR Test Report of Portable Cellular Phone FCC ID: PY7AF052051 Model : W810i

Date of test: July 12 – July 16, 2006
Date of Report: July 18, 2006

Laboratory: SAR Testing Laboratory Sony Ericsson Mobile Communications, Inc. 7001 Development Drive, P.O. Box 13969, Research Triangle Park, NC, 27709, USA

Tested by: Rodney Dixon
Eng. Technician IV, Product Verification Group

Test Responsible: Gerard Hayes *Gerard Hayes 18 July 2006*
Technical Manager

Accreditation: This laboratory is accredited to ISO/IEC 17025-1999 to perform the following electromagnetic exposure tests:



- Specific Absorption Rate (SAR)
- Dielectric parameters
- RF power measurement

On the following types of products:
Wireless communications devices. A2LA certificate #1650-01

Statement of Compliance: Sony Ericsson Mobile Communications, Inc declares under its sole responsibility that portable cellular telephone FCC ID PY7AF052051 model W810i to which this declaration relates, is in conformity with the appropriate General Population/Uncontrolled RF exposure standards, recommendations and guidelines (FCC 47 CFR §2.1093). It also declares that the product was tested in accordance with the appropriate measurement standards, guidelines and recommended practices. Any deviations from these standards, guidelines and recommended practices are noted below:

(none)

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This test report shall not be reproduced except in full, without written approval of the laboratory.

The results and statements contained herein relate only to the items tested. The names of individuals involved may be mentioned only in connection with the statements or results from this report.

Sony Ericsson Mobile Communications encourages all feedback, both positive and negative, on this test report.



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1. Introduction

The Sony Ericsson SAR Laboratory has performed measurements of the maximum potential exposure to the user of portable cellular phone FCC ID PY7AF052051 model W810i (Hardware Revision B). The Specific Absorption Rate (SAR) of this product was measured. The applicable RF safety guidelines and the SAR measurement specifications used for the test are described in [1].

2. Description of the Device Under Test

2.1 Antenna description

Type	PIFA- Type Antenna		
Location	Internal, Back of Phone, Near Top Edge		
Dimensions	Width	40	mm
	Length	22	mm
	Height	7	mm

2.2 Device description

FCC ID Number / Device Model	PY7AF052051 / W810i			
Serial number	BD3051N9XQ		BD3051N9ZR	
Mode(s) of Operation	GSM 800		GSM 1900	
Modulation Mode(s)	TDMA		TDMA	
Target Value for Maximum Output Power Setting GSM Mode: 1/8 Duty Cycle	f_{low}	33.0 dBm max.	f_{low}	30.5 dBm max.
	f_{mid}	33.0 dBm max.	f_{mid}	30.5 dBm max.
	f_{high}	33.0 dBm max.	f_{high}	31.0 dBm max.
Target Maximum Output Power Setting (adjusted from GSM mode) GPRS Mode: 2/8 Duty Cycle	f_{low}	31.0 dBm max.	f_{low}	28.5 dBm max.
	f_{mid}	31.0 dBm max.	f_{mid}	28.5 dBm max.
	f_{high}	31.0 dBm max.	f_{high}	29.0 dBm max.
Transmitting Frequency Rang(s)	824-849 MHz		1850-1910 MHz	
Production Unit or Identical Prototype (47 CFR §2.908)	Identical Prototype			
Device Category	Portable			
RF Exposure Limits	General Population / Uncontrolled			



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3. Test Equipment Used

3.1 Dosimetric System

The Sony Ericsson SAR Laboratory utilizes Dosimetric Assessment Systems (Dasy4™) for adjacent to head and body-worn measurements manufactured by Schmid & Partner Engineering AG (SPEAG™), of Zurich Switzerland. The overall RSS uncertainty of the measurement system is ±9.5% (K=1) with an expanded uncertainty of ±19.0% (K=2) for Dasy4™. The measurement uncertainty budget is given in Appendix 5 for the system. The list of calibrated equipment used for the measurements is shown in the following table.

Description	Serial Number	Cal Due Date
DASY3 DAE V1	417	11-Nov-2006
DASY3 DAE V1	416	10-Nov-2006
E-Field Probe ETDV6	1539	22-Nov-2006
E-Field Probe ETDV6	1583	22-Nov-2006
Dipole Validation Kit, DV835V2	429	21-Nov-2006
Dipole Validation Kit, DV1900V2	537	15-Nov-2006
S.A.M. Phantom used for 835MHz (Head)	1251	
S.A.M. Phantom used for 835MHz (Body)	1031	
S.A.M. Phantom used for 900MHz (Head and Body)	1251	
S.A.M. Phantom used for 1800MHz (Head and Body)	1335	
S.A.M. Phantom used for 1900MHz (Head)	1335	
S.A.M. Phantom used for 1900MHz (Body)	1020	

3.2 Additional Equipment

Description	Serial Number	Cal Due Date
Signal Generator HP8648C	3537A01598	August 30, 2006
Power Meter 437B	3125U16382	December 5, 2006
Power Meter 437B	3110A05257	March 28, 2007
Power Sensor - 8482H	2704A06235	December 30, 2006
Power Sensor - 8482H	MY41090239	March 28, 2007
Dielectric Probe Kit HP85070B	US33020390	April 4, 2007
Digital Thermometer 61220-601 And Probe (61220-604)	350078	November 9, 2006
Digital Hygrometer/ Thermometer	21242911	November 9, 2006
HP RF Amplifier 8347A	3307A1069	May 16, 2007



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4. Electrical parameters of the tissue simulating liquid

Prior to conducting SAR measurements, the relative permittivity, ϵ_r , and the conductivity, σ , of the tissue simulating liquids were measured with the dielectric probe kit. These values, along with the temperature of the simulated tissue are shown in the table below. A mass density of $\rho=1\text{g/cm}^3$ was entered into the system in all the cases. It can be seen that the measured parameters are within tolerance of the recommended limits [1]. During the tests, the ambient temperature of the laboratory was in the range 21.7-24.8 °C, the relative humidity was in the range 39.8 – 46.4 % and the liquid depth above the ear reference points was above 15.0 cm in all the cases. It is seen that the measured parameters are satisfactory for compliance testing.

f (MHz)	Tissue type	Limits / Measured	Dielectric Parameters		
			ϵ_r	σ (S/m)	Simulated Tissue Temp (°C)
835	Head	Measured, 14-July-06	42.28	0.912	23.5
		Recommended Limits	41.50	0.90	20-25
		Measured, 15-July-06	42.37	0.914	22.7
		Recommended Limits	41.50	0.90	20-25
	Body	Measured, 16-July-06	54.19	1.018	21.7
		Recommended Limits	55.20	0.97	20-25
1900	Head	Measured, 15-July-06	38.34	1.469	22.2
		Recommended Limits	40.00	1.40	20-25
	Body	Measured, 14-July-06	50.67	1.516	22.6
		Recommended Limits	53.30	1.52	20-25

The list of ingredients and the percent composition used for the simulated tissue are indicated in the table below.

Ingredient	800/900 MHz Head 900MHz Body	800MHz Body	1800/1900 MHz Head 1800MHz Body	1900MHz Body
Sugar	57.99%	56.00%	--	--
DGBE	--	--	44.92%	30.82%
Water	39.72%	41.76%	54.90%	68.89%
Salt	1.18%	0.76%	0.18%	0.29%
HEC	0.92%	1.21%	--	--
Bact.	0.19%	0.27%	--	--



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5. System Accuracy Verification

A system accuracy verification of the DASY4 was performed using the measurement equipment listed in Section 3.1. The daily system accuracy verification occurs within the flat section of the SAM phantom.

A SAR measurement was performed to see if the measured SAR was within +/- 10% from the target SAR indicated on the dipole certification sheet. These tests were done at 835MHz/900MHz and/or 1800MHz/1900MHz. These frequencies are within 100MHz of the mid-band frequency of the test device, according to [1]. The test was conducted on the same days as the measurement of the DUT. The results from the system accuracy verification are displayed in the table below (SAR values are normalized to 1W forward power delivered to the dipole). During the tests, the ambient temperature of the laboratory was in the range 21.7-24.8 °C, the relative humidity was in the range 39.8 – 46.4 % and the liquid depth above the ear reference points was above 15.0 cm in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values. The SAR distributions are shown in Appendix 1.

Daily, prior to conducting tests, measurements were made with the RF sources powered off to determine the system noise level. The highest system noise was 0.00124 W/kg, which is below the recommended limit in [1].

f (MHz)	Tissue Type	Description	SAR (W/kg) 1g / 10g		Dielectric Parameters		Tissue Temp (°C)
			e _r	s (S/m)			
835	Head	Measured, 14-July-06	8.8	5.7	42.28	0.912	23.5
		Recommended Limits	9.50	6.20	41.50	0.90	20-25
		Measured, 15-July-06	9.1	5.9	42.37	0.914	22.7
		Recommended Limits	9.50	6.20	41.50	0.90	20-25
	Body	Measured, 16-July-06	9.5	6.2	54.19	1.018	21.7
		Recommended Limits	9.90	6.46	55.20	0.97	20-25
1900	Head	Measured, 15-July-06	41.4	21.8	38.34	1.469	22.2
		Recommended Limits	39.70	20.50	40.00	1.40	20-25
	Body	Measured, 14-July-06	41.0	22.0	50.67	1.516	22.6
		Recommended Limits	40.50	20.89	53.30	1.52	20-25



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6. Test Results

For both head measurements (with a 1/8 GSM duty cycle) and body measurements (2/8 GPRS-EGPRS duty cycle), the test sample was operated using a base station simulator that allows control of the transmitter using the signally software that installed on the phone call. For the purposes of these tests, the unit is commanded to set to the proper channel, transmitter power level and transmit mode of operation. The phone was tested in the configurations stipulated in [1,2]. The phone was positioned into these configurations using the positioner supplied with the DASY4 SAR measurement system.

The Cellular Phone FCC ID PY7AF052051 has the following battery option:
BKB 193 203 (BST-37) Standard Lithium Polymer Battery

The phone was placed in the SAR measurement system with a fully charged battery.

6.1 Head Adjacent Test Results

The SAR results shown in Tables 1 and 2 are maximum SAR values averaged over 1 gram and 10 grams of phantom tissue. Also shown are the measured conducted output powers, the temperature of the test facility during the test, the temperature of the simulated tissue, the measured drift, and the extrapolated SAR. The extrapolated SAR corresponds to the measured SAR scaled to the maximum conducted output power.

During the tests, the ambient temperature of the laboratory was in the range 21.7-24.8 °C, the relative humidity was in the range 39.8 – 46.4 % and the liquid depth above the ear reference points was above 15.0 cm in all the cases.

The test conditions indicated as bold numbers in the following table are included in Appendix 2. All other test conditions measured lower SAR values than those included.

Summary of Maximum Extrapolated SAR Results : Head Adjacent			
Frequency	Extrapolated SAR (W/kg)		Test Configuration
	1 g	10 g	
800 GSM	1.07	0.74	Right head, cheek/touch position, 849 MHz BST-37 battery, Bluetooth On
1900 GSM	0.93	0.52	Right head, cheek/touch position, 1850 MHz BST-37 battery



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f (MHz)	Channel/ frequency	Conducted Output Power (dBm) GSM 1:8 Duty Cycle	FCC ID PY7AF052051 with Standard Battery BST-37						Ambient Temp (°C)	Simulate Temp (°C)
			Left Head (Cheek / Touch Position)							
			Measured (W/kg) 1g / 10g		Drift (dB)	Extrapolated (W/kg) 1g / 10g				
800 GSM	128 / 824	33.0	0.498	0.353	0.01	0.50	0.35	22.8	22.7	
	189 / 837	33.0	0.910	0.647	-0.05	0.91	0.65			
	251 / 849	33.0	0.986	0.703	0.01	0.99	0.70			
1900 GSM	512 / 1850	30.5	0.613	0.370	0.04	0.61	0.37	22.3	22.2	
	660/1880	30.5	0.550	0.330	0.03	0.55	0.33			
	810/1910	31.0	0.533	0.318	-0.04	0.53	0.32			
f (MHz)	Channel/ frequency	Conducted Output Power (dBm) GSM 1:8 Duty Cycle	FCC ID PY7AF052051 with Standard Battery BST-37						Ambient Temp (°C)	Simulate Temp (°C)
			Left Head (15° Tilt Position)							
			Measured (W/kg) 1g / 10g		Drift (dB)	Extrapolated (W/kg) 1g / 10g				
800 GSM	128 / 824	33.0	0.347	0.237	0.03	0.35	0.24	23	22.7	
	189 / 837	33.0	0.624	0.427	0.02	0.62	0.43			
	251 / 849	33.0	0.665	0.457	0.01	0.67	0.46			
1900 GSM	512 / 1850	30.5	0.691	0.395	-0.02	0.69	0.40	22.2	22.2	
	660/1880	30.5	0.633	0.360	0.06	0.63	0.36			
	810/1910	31.0	0.585	0.329	-0.04	0.59	0.33			

Table 1: SAR measurement results for the portable cellular telephone FCC ID PY7AF052051 model W810i at maximum output power with Standard Battery BST-37. Measured against the left head.



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f (MHz)	Channel/ frequency	Conducted Output Power (dBm) GSM 1:8 Duty Cycle	FCC ID PY7AF052051 with Standard Battery BST-37						Ambient Temp (°C)	Simulate Temp (°C)
			Right Head (Cheek / Touch Position)							
			Measured (W/kg) 1g / 10g		Drift (dB)	Extrapolated (W/kg) 1g / 10g				
800 GSM	128 / 824	33.0	0.488	0.338	0.12	0.49	0.34	23.6	23.5	
	189 / 837	33.0	0.920	0.638	-0.03	0.92	0.64			
	251 / 849	33.0	1.070	0.743	-0.08	1.07	0.74			
Bluetooth On	251 / 849	33.0	1.07	0.74	-0.01	1.07	0.74	23	22.7	
1900 GSM	512 / 1850	30.5	0.929	0.516	0.010	0.93	0.52	22.1	22.1	
	660/1880	30.5	0.796	0.438	0.04	0.80	0.44			
	810/1910	31.0	0.754	0.416	-0.05	0.75	0.42			
Bluetooth On	512 / 1850	30.5	0.882	0.491	0.02	0.88	0.49	21.9	22	
f (MHz)	Channel/ frequency	Conducted Output Power (dBm) GSM 1:8 Duty Cycle	FCC ID PY7AF052051 with Standard Battery BST-37						Ambient Temp (°C)	Simulate Temp (°C)
			Right Head (15° Tilt Position)							
			Measured (W/kg) 1g / 10g		Drift (dB)	Extrapolated (W/kg) 1g / 10g				
800 GSM	128 / 824	33.0	0.348	0.229	0.10	0.35	0.23	23.8	23.6	
	189 / 837	33.0	0.671	0.440	0.03	0.67	0.44			
	251 / 849	33.0	0.779	0.516	-0.02	0.78	0.52			
1900 GSM	512 / 1850	30.5	0.867	0.485	0.02	0.87	0.49	21.9	22	
	660/1880	30.5	0.720	0.401	0.01	0.72	0.40			
	810/1910	31.0	0.683	0.381	0.01	0.68	0.38			

Table 2: SAR measurement results for the portable cellular telephone FCC ID PY7AF052051 model W810i at maximum output power with Standard Battery BST-37. Measured against the right head.



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6.2 Body-Worn Test Results

The SAR results shown in Table 3 are the maximum SAR values averaged over 1 gram and 10 grams of phantom tissue. Also shown are the measured conducted output powers, the temperature of the test facility during the test, the temperature of the simulated tissue after the test, the measured drift and the extrapolated SAR. The extrapolated SAR corresponds to the measured SAR scaled to the maximum conducted output power. The humidity and ambient temperature of the test facility were in the ranges 39.8 – 46.4 % and 21.7-24.8 °C, respectively.

A “flat” phantom was used for the body-worn tests. This “flat” phantom corresponds to the flat portion of the SAM phantom. The tissue stimulant depth above the ear canal was verified to be above 15.0 cm in all the measurements. The same device holder described in section 6 was used for positioning the phone. The cellular phone was tested with a headset (HBP-20) connected to the device for all body-worn SAR measurements.

The following body-worn accessories were tested for this phone:

- 15 mm spacer

A full data set output of the test conditions with the highest SAR values from the DASY™ measurement system is included as Appendix 3. These test conditions included are indicated as bold numbers in the following tables. All other test conditions measured lower SAR values than those included.

Summary of Maximum Extrapolated SAR Results: Body-worn			
Frequency	Extrapolated SAR (W/kg)		Test Configuration
	1 g	10 g	
800 GSM	0.81	0.57	15mm SPACER Carry Accessory, back of phone facing body, 849 MHz, 2:8 Duty Cycle, BST-37 battery, Bluetooth On
1900 GSM	0.87	0.51	15mm SPACER Carry Accessory, back of phone facing body, 1850MHz, 2:8 Duty Cycle, BST-37 battery, Bluetooth On



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f (MHz)	Operating Condition	Channel/ frequency	Conduc ted Output Power (dBm)	FCC ID PY7AF052051 with Standard Battery BST-37						
				Body Worn			Carry Accessory: 15mm SPACER			
				Back of phone facing body						
				Measured (W/kg) 1g / 10g	Drift (dB)	Extrapolated (W/kg) 1g / 10g	Ambient Temp (°C)	Simulate Temp (°C)		
Back of phone facing body										
800 GSM	2:8 Duty Cycle	128 / 824	31.0	0.766	0.527	0.03	0.77	0.53	21.9	21.7
		189 / 837	31.0	0.739	0.521	0.02	0.74	0.52		
		251 / 849	31.0	0.783	0.567	0.03	0.78	0.57		
	Bluetooth On	251 / 849	31.0	0.806	0.571	-0.01	0.81	0.57	22	21.8
	1:8 Duty Cycle	251 / 849	33.0	0.666	0.481	-0.06	0.67	0.48	22	21.8
1900 GSM	2:8 Duty Cycle	512 / 1850	28.5	0.864	0.509	-0.01	0.86	0.51	21.7	22.6
		660/1880	28.5	0.834	0.483	-0.03	0.83	0.48		
		810/1910	29.0	0.822	0.472	-0.04	0.82	0.47		
	Bluetooth On	512 / 1850	28.5	0.871	0.506	0.07	0.87	0.51	21.7	21.9
	1:8 Duty Cycle	512 / 1850	30.5	0.741	0.429	0.07	0.74	0.43	21.7	21.9
Front of phone facing body										
800 GSM	2:8 Duty Cycle	128 / 824	31.0	0.240	0.169	0.03	0.24	0.17	21.9	21.7
		189 / 837	31.0	0.329	0.227	0.00	0.33	0.23		
		251 / 849	31.0	0.332	0.234	-0.01	0.33	0.23		
1900 GSM	2:8 Duty Cycle	512 / 1850	28.5	0.172	0.110	0.00	0.17	0.11	21.7	22.6
		660/1880	28.5	0.154	0.098	0.03	0.15	0.10		
		810/1910	29.0	0.154	0.098	-0.05	0.15	0.10		

Table 3: SAR measurement results for the portable cellular telephone FCC ID PY7AF052051 model W810i at maximum output power with Standard Battery BST-37. Measured against the body with carry accessory 15mm Spacer.



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References

- [1] FCC, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields: Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions," Supplement C (Edition 01-01) to OET Bulletin 65 (Edition 97-01).
- [2] IEEE, "Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques," Std 1528-200X, Draft 6.5 – August 20, 2001.



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Appendix 1

SAR distribution comparison for the system accuracy verification



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835 MHz SAR Distribution of Validation Dipole Antenna System Performance Check (Using head tissue).

Validation_835Head_429_1251_14July06_T01

File Name: [Validation_835Head_429_1251_14July06_T01.da4](#)

Phantom: SAM with CRP (Low Band Head) Phantom section: Flat Section

Probe: ET3DV6 - SN1583 ConvF(6.82, 6.82, 6.82) Duty Cycle: 1:1 Frequency: 835 MHz

Medium parameters used: f = 835 MHz; s = 0.912 mho/m; $\epsilon_r = 42.3$; $\rho = 1000 \text{ kg/m}^3$

Measurement Standard: DASY4 (High Precision Assessment)

Dipole at 10 mm/Area Scan (61x61x1):

Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.947 mW/g

Dipole at 10 mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 32.7 V/m; Power Drift = 0.006 dB

Peak SAR (extrapolated) = 1.34 W/kg

SAR(1 g) = 0.885 mW/g; SAR(10 g) = 0.576 mW/g

Maximum value of SAR (measured) = 0.956 mW/g

Dipole at 10 mm/Zoom Scan 2 (9x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 32.7 V/m; Power Drift = 0.006 dB

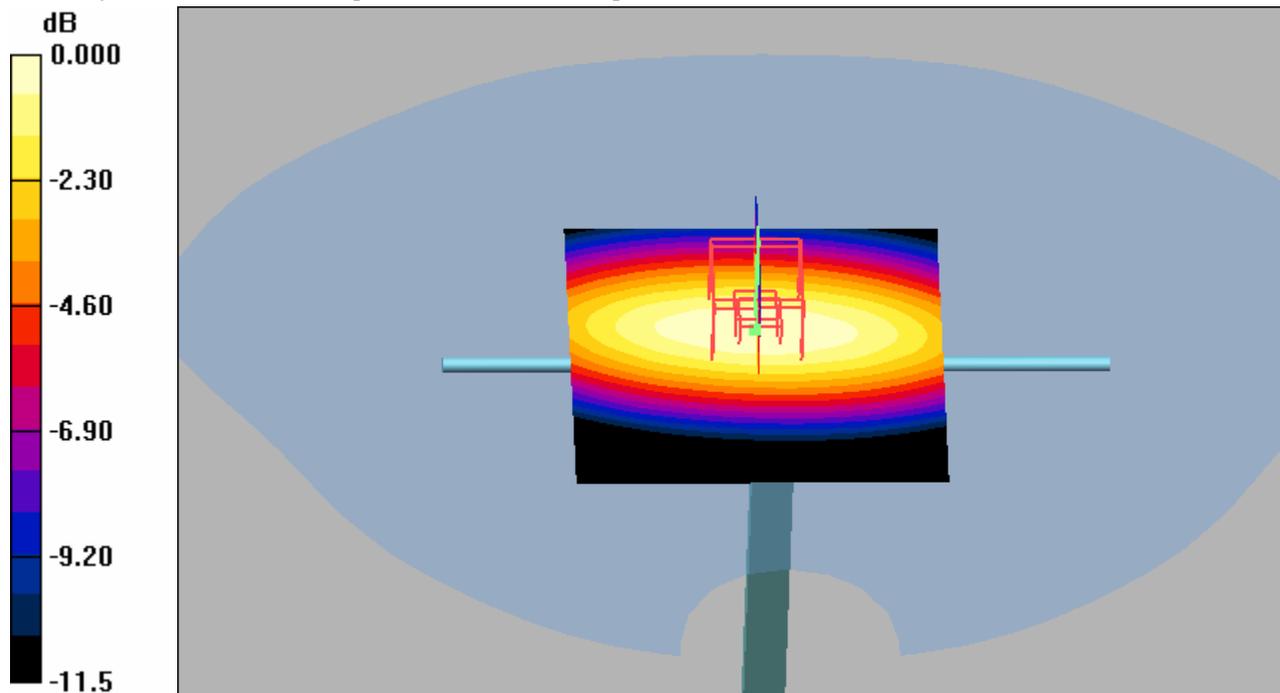
Peak SAR (extrapolated) = 1.36 W/kg

SAR(1 g) = 0.895 mW/g; SAR(10 g) = 0.582 mW/g

Maximum value of SAR (measured) = 0.958 mW/g

Procedure Notes: Pin: before 100.5 mW / after 100 mW

Humidity: 42.3% Ambient Temp: 23.6 C Simulant Temp: 23.5 C



0 dB = 0.958mW/g



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835 MHz SAR Distribution of Validation Dipole Antenna System Performance Check (Using head tissue).

Validation_835Head_429_1251_15July06_T01

File Name: [Validation_835Head_429_1251_15July06_T01.da4](#)

Phantom: SAM with CRP (Low Band Head) Phantom section: Flat Section

Probe: ET3DV6 - SN1583ConvF(6.82, 6.82, 6.82) Duty Cycle: 1:1 Frequency: 835 MHz

Medium parameters used: f = 835 MHz; s = 0.914 mho/m; $\epsilon_r = 42.4$; $\rho = 1000 \text{ kg/m}^3$

Measurement Standard: DASY4 (High Precision Assessment)

Dipole at 10 mm/Area Scan (61x61x1):

Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.978 mW/g

Dipole at 10 mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 33.6 V/m; Power Drift = 0.012 dB

Peak SAR (extrapolated) = 1.39 W/kg

SAR(1 g) = 0.911 mW/g; SAR(10 g) = 0.591 mW/g

Maximum value of SAR (measured) = 0.985 mW/g

Dipole at 10 mm/Zoom Scan 2 (9x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 33.6 V/m; Power Drift = 0.012 dB

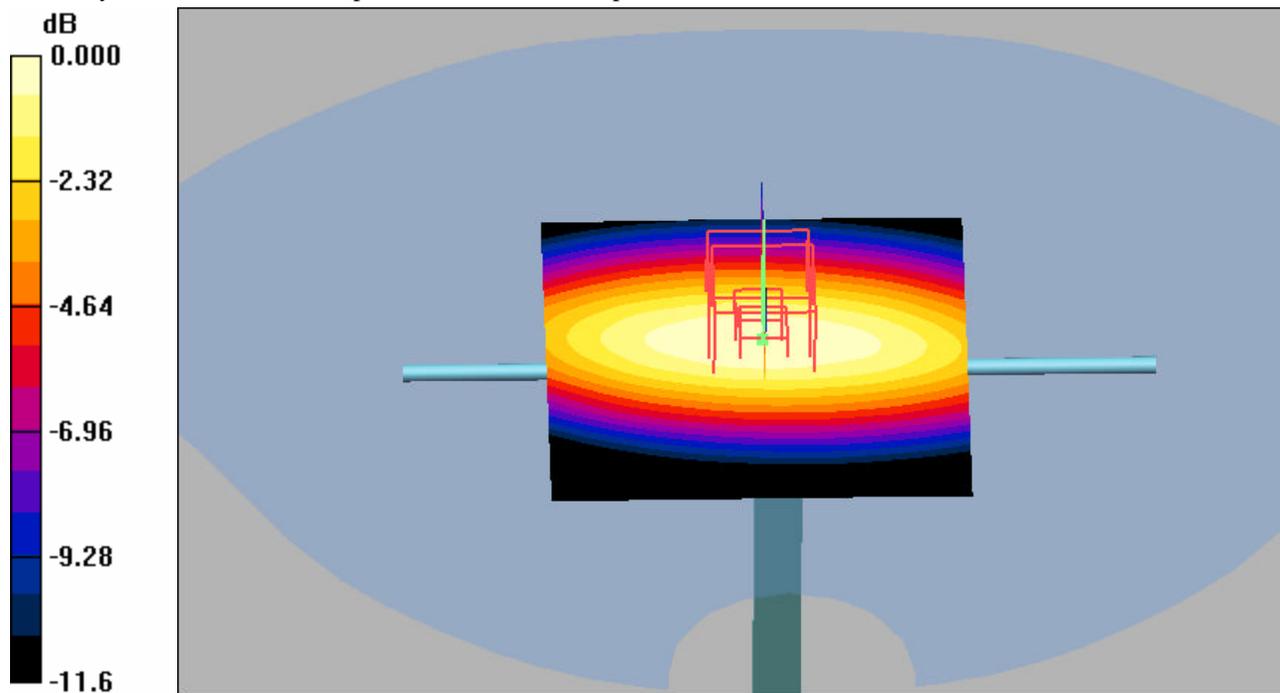
Peak SAR (extrapolated) = 1.39 W/kg

SAR(1 g) = 0.908 mW/g; SAR(10 g) = 0.591 mW/g

Maximum value of SAR (measured) = 0.976 mW/g

Procedure Notes: Pin: before 100.3 mW / after 100.2 mW

Humidity: 44.1% Ambient Temp: 22.8 C Simulant Temp: 22.7 C



0 dB = 0.976mW/g



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835 MHz SAR Distribution of Validation Dipole Antenna System Performance Check (Using body tissue).

Validation_835Body_429_1031_16July06_T01

File Name: [Validation_835Body_429_1031_16July06_T01.da4](#)

Phantom: SAM with CRP (Low Band Body) Phantom section: Flat Section

Probe: ET3DV6 - SN1539 ConvF(5.88, 5.88, 5.88) Duty Cycle: 1:1 Frequency: 835 MHz

Medium parameters used: f = 835 MHz; s = 1.02 mho/m; $\epsilon_r = 54.2$; $\rho = 1000 \text{ kg/m}^3$

Measurement Standard: DAS4 (High Precision Assessment)

Dipole at 10 mm/Area Scan (61x61x1):

Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.01 mW/g

Dipole at 10 mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 31.6 V/m; Power Drift = 0.012 dB

Peak SAR (extrapolated) = 1.36 W/kg

SAR(1 g) = 0.936 mW/g; SAR(10 g) = 0.615 mW/g

Maximum value of SAR (measured) = 1.01 mW/g

Dipole at 10 mm/Zoom Scan 2 (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 31.6 V/m; Power Drift = 0.012 dB

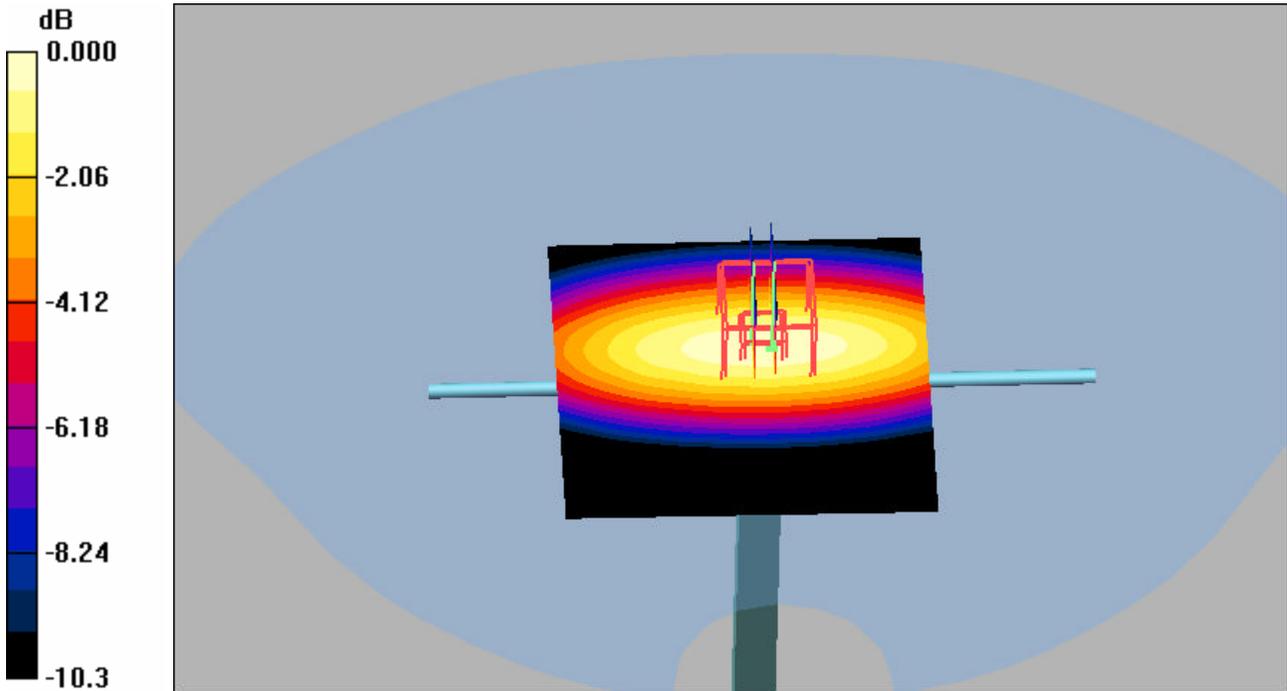
Peak SAR (extrapolated) = 1.41 W/kg

SAR(1 g) = 0.976 mW/g; SAR(10 g) = 0.642 mW/g

Maximum value of SAR (measured) = 1.06 mW/g

Procedure Notes: Pin: before 100.9 mW / after 100.9 mW

Humidity - 43.4% Ambient Temp - 21.9 C Simulant Temp - 21.7 C



0 dB = 1.06mW/g



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1900 MHz SAR Distribution of Validation Dipole Antenna System Performance Check (Using head tissue).

Validation_1900Head_537_1335_15July06_T01

File Name: [Validation_1900Head_537_1335_15July06_T01.da4](#)

Phantom: SAM with CRP (High Band Head) Phantom section: Flat Section

Probe: ET3DV6 - SN1539 ConvF(4.55, 4.55, 4.55) Duty Cycle: 1:1 Frequency: 1900 MHz

Medium parameters used: f = 1900 MHz; s = 1.47 mho/m; $\epsilon_r = 38.3$; $\rho = 1000 \text{ kg/m}^3$

Measurement Standard: DASY4 (High Precision Assessment)

Dipole at 10 mm/Area Scan (61x61x1):

Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 4.99 mW/g

Dipole at 10 mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 57.6 V/m; Power Drift = -0.049 dB

Peak SAR (extrapolated) = 6.98 W/kg

SAR(1 g) = 4.07 mW/g; SAR(10 g) = 2.14 mW/g

Maximum value of SAR (measured) = 4.58 mW/g

Dipole at 10 mm/Zoom Scan 2 (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 57.6 V/m; Power Drift = -0.049 dB

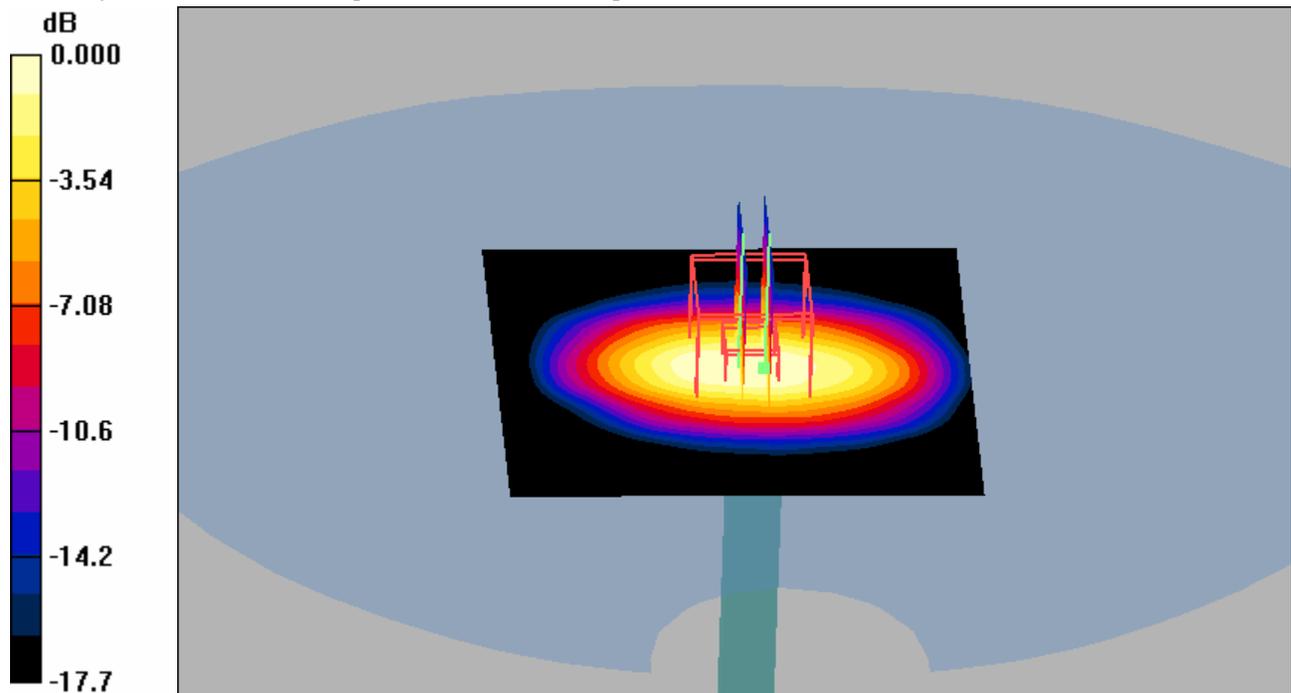
Peak SAR (extrapolated) = 7.30 W/kg

SAR(1 g) = 4.25 mW/g; SAR(10 g) = 2.24 mW/g

Maximum value of SAR (measured) = 4.74 mW/g

Procedure Notes: Pin: before 100.6 mW / after 100.4 mW

Humidity: 42.8% Ambient Temp: 22.3 C Simulant Temp: 22.2 C



0 dB = 4.74mW/g



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1900 MHz SAR Distribution of Validation Dipole Antenna System Performance Check (Using body tissue).

Validation_1900Body_537_1020_14July06_T01

File Name: [Validation_1900Body_537_1020_14July06_T01.da4](#)

Phantom: SAM with CRP (High Band Body) Phantom section: Flat Section

Probe: ET3DV6 - SN1539 ConvF(4.12, 4.12, 4.12) Duty Cycle: 1:1 Frequency: 1900 MHz

Medium parameters used: f = 1900 MHz; s = 1.52 mho/m; $\epsilon_r = 50.7$; $\rho = 1000 \text{ kg/m}^3$

Measurement Standard: DASY4 (High Precision Assessment)

Dipole at 10 mm/Area Scan (61x61x1):

Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 4.99 mW/g

Dipole at 10 mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 55.3 V/m; Power Drift = 0.000 dB

Peak SAR (extrapolated) = 6.81 W/kg

SAR(1 g) = 4.03 mW/g; SAR(10 g) = 2.16 mW/g

Maximum value of SAR (measured) = 4.55 mW/g

Dipole at 10 mm/Zoom Scan 2 (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 55.3 V/m; Power Drift = 0.000 dB

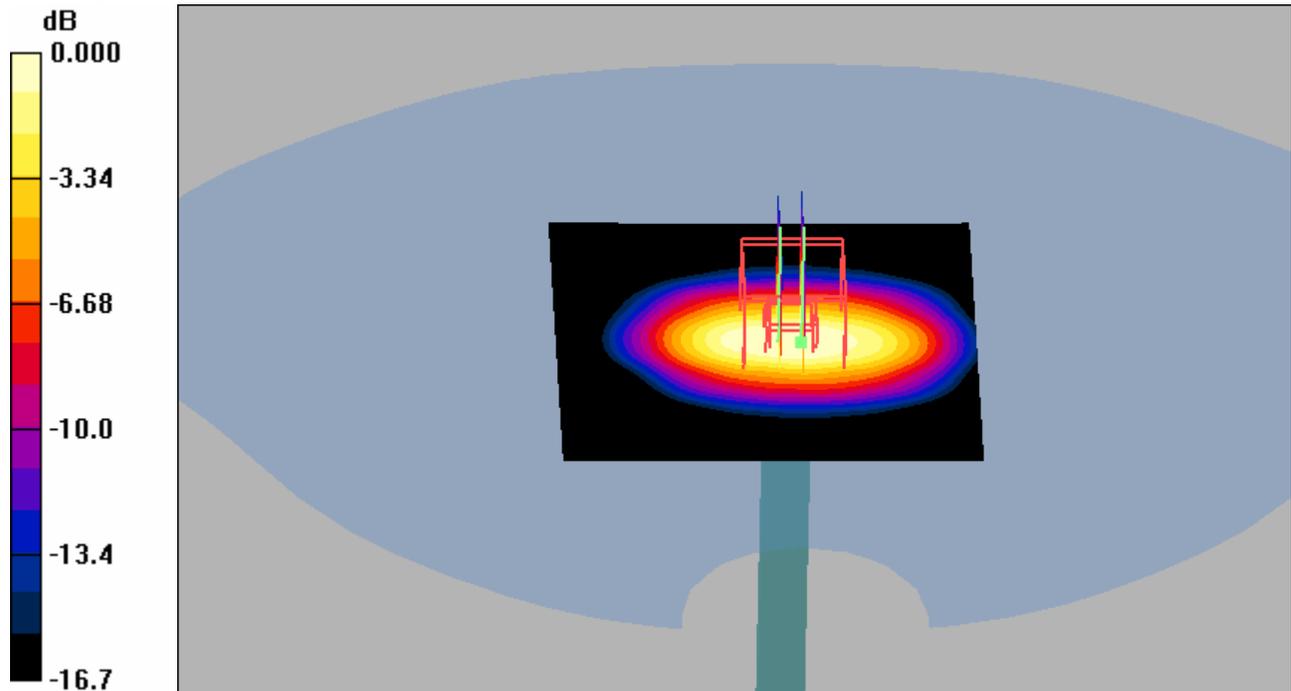
Peak SAR (extrapolated) = 6.95 W/kg

SAR(1 g) = 4.17 mW/g; SAR(10 g) = 2.24 mW/g

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

Procedure Notes: Pin: before 99.6 mW / after 100.6 mW

Humidity: 44.2% Ambient Temp: 21.7 C Simulant Temp: 22.6 C



0 dB = 4.52mW/g



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Appendix 2

SAR distribution plots for Phantom Head Adjacent Use



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800 GSM Band: SAR Distribution and Extrapolation of Maximum SAR

Model: W810i with Standard Battery: BST-37, Right Side, Cheek/Touch Position.

Date/Time: 7/14/2006 12:24:59 PM

File Name: [14July06 W810i GSM850 N9XQ RC01.da4](#)

DUT: W810i

Program Notes: Battery - BST37 Humidity - 42.3% Ambient Temp - 23.6 C Simulant Temp - 23.5 C

Communication System: GSM 850; Frequency: 849 MHz; Duty Cycle: 1:8.3

Medium: Head 835/900 MHz Medium parameters used (interpolated): f = 849 MHz; s = 0.927 mho/m; $\epsilon_r = 42.1$; ? = 1000 kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1583; ConvF(6.82, 6.82, 6.82); Calibrated: 11/22/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn416; Calibrated: 11/10/2005
- Phantom: SAM with CRP (Low Band Head); Type: SAM; Serial: 1251
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

Unnamed procedure 3/Area Scan (51x81x1):

Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 1.17 mW/g

Unnamed procedure 3/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 28.2 V/m; Power Drift = -0.084 dB

Peak SAR (extrapolated) = 1.51 W/kg

SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.743 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.14 mW/g

Unnamed procedure 3/Zoom Scan (31x31x36)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

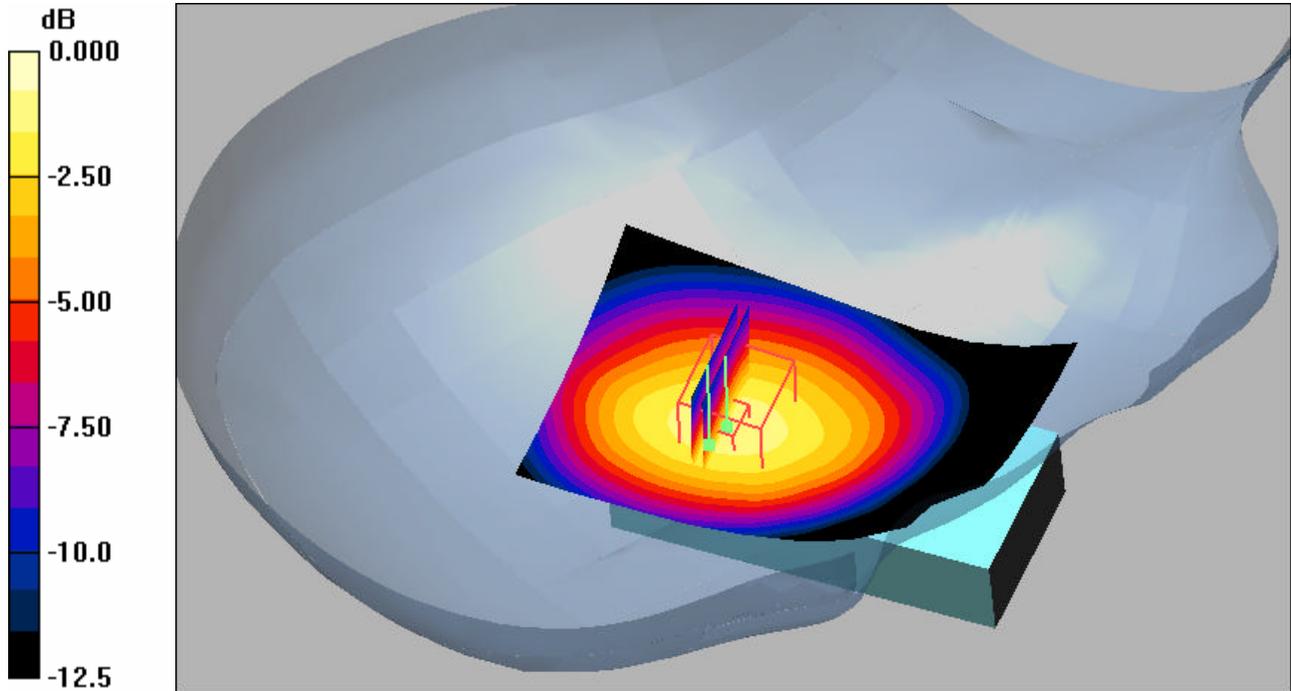
Reference Value = 28.2 V/m; Power Drift = -0.084 dB

[Info: Interpolated medium parameters used for SAR evaluation.](#)

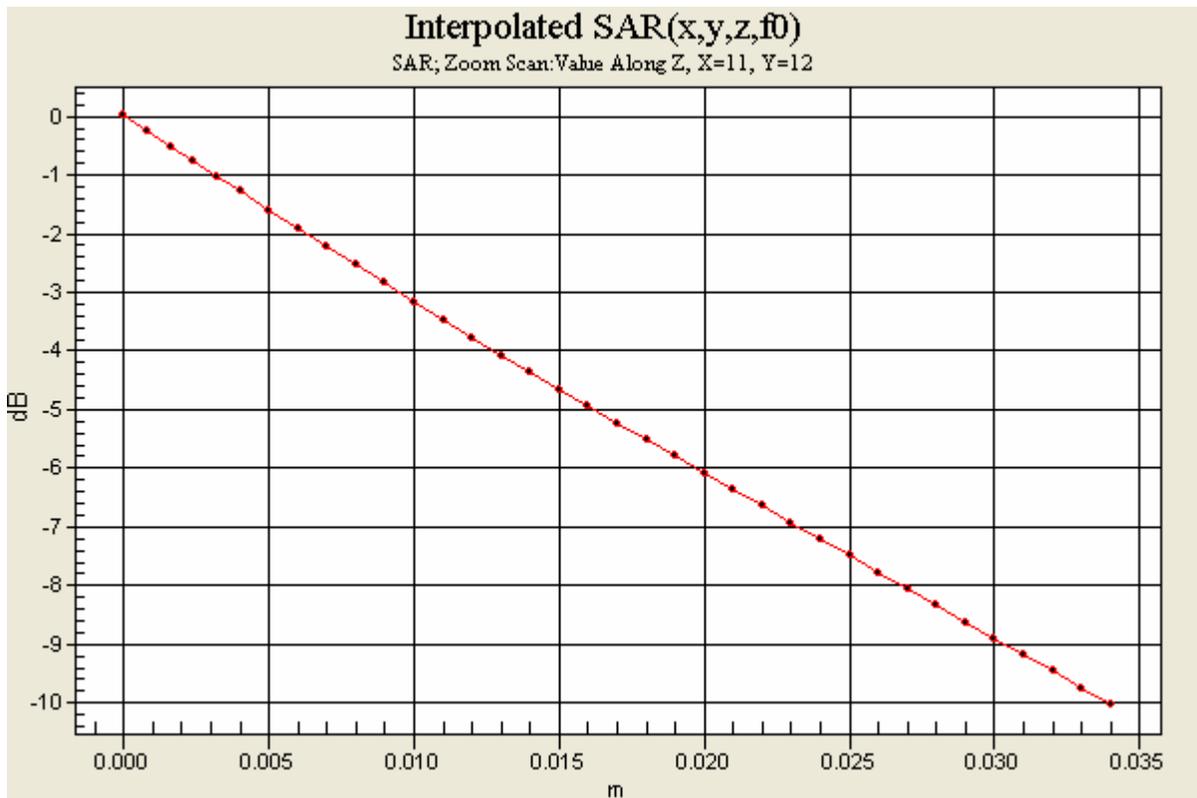
Maximum value of SAR (interpolated) = 1.51 mW/g



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0 dB = 1.51mW/g





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800 GSM Band: Distribution and Extrapolation of Maximum SAR

Model: W810i with Standard Battery: BST-37, Right Side, Tilt Position.

Date/Time: 7/14/2006 1:25:57 PM

File Name: [14July06 W810i GSM850 N9XQ RT01.da4](#)

DUT: W810i

Program Notes: Battery - BST37 Humidity - 43.4% Ambient Temp - 23.8 C Simulant Temp - 23.6 C

Communication System: GSM 850; Frequency: 849 MHz; Duty Cycle: 1:8.3

Medium: Head 835/900 MHz Medium parameters used (interpolated): f = 849 MHz; s = 0.927 mho/m; $\epsilon_r = 42.1$; ? = 1000 kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1583; ConvF(6.82, 6.82, 6.82); Calibrated: 11/22/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn416; Calibrated: 11/10/2005
- Phantom: SAM with CRP (Low Band Head); Type: SAM; Serial: 1251
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

Unnamed procedure 3/Area Scan (51x91x1):

Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.857 mW/g

Unnamed procedure 3/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 25.9 V/m; Power Drift = -0.020 dB

Peak SAR (extrapolated) = 1.22 W/kg

SAR(1 g) = 0.779 mW/g; SAR(10 g) = 0.516 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.839 mW/g

Unnamed procedure 3/Zoom Scan (31x31x36)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

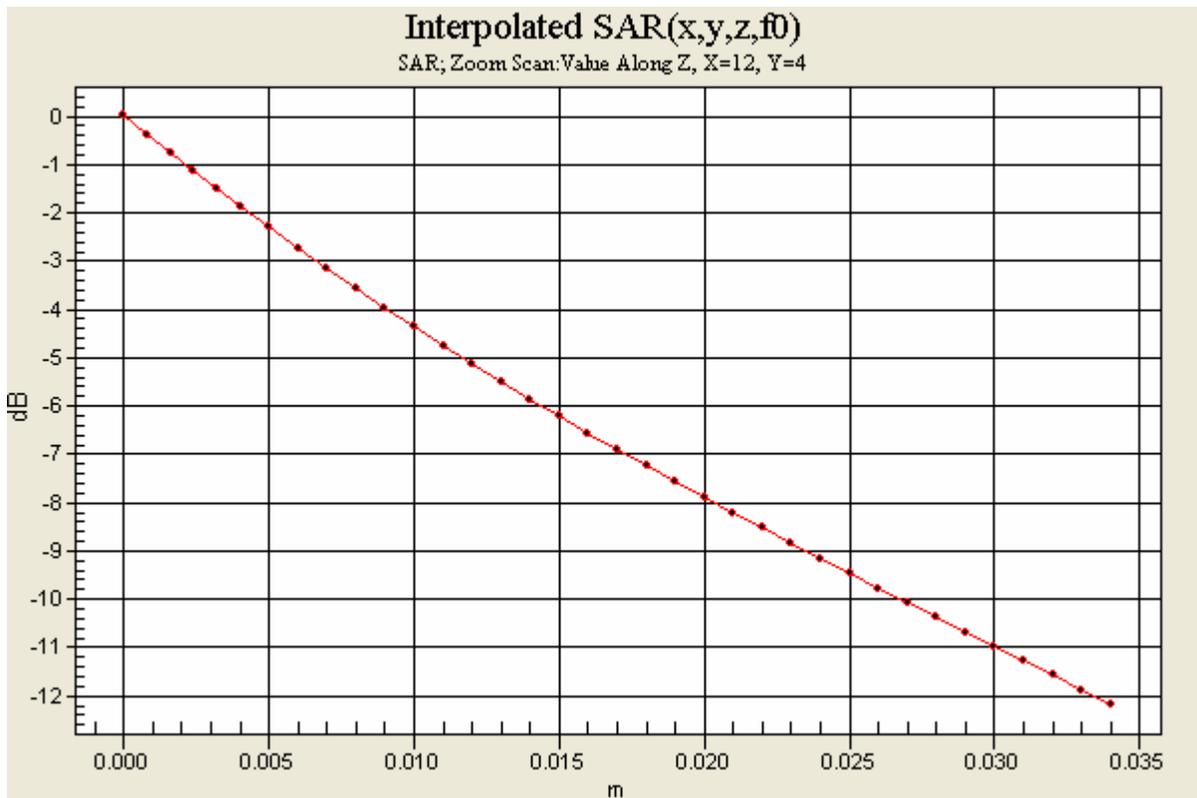
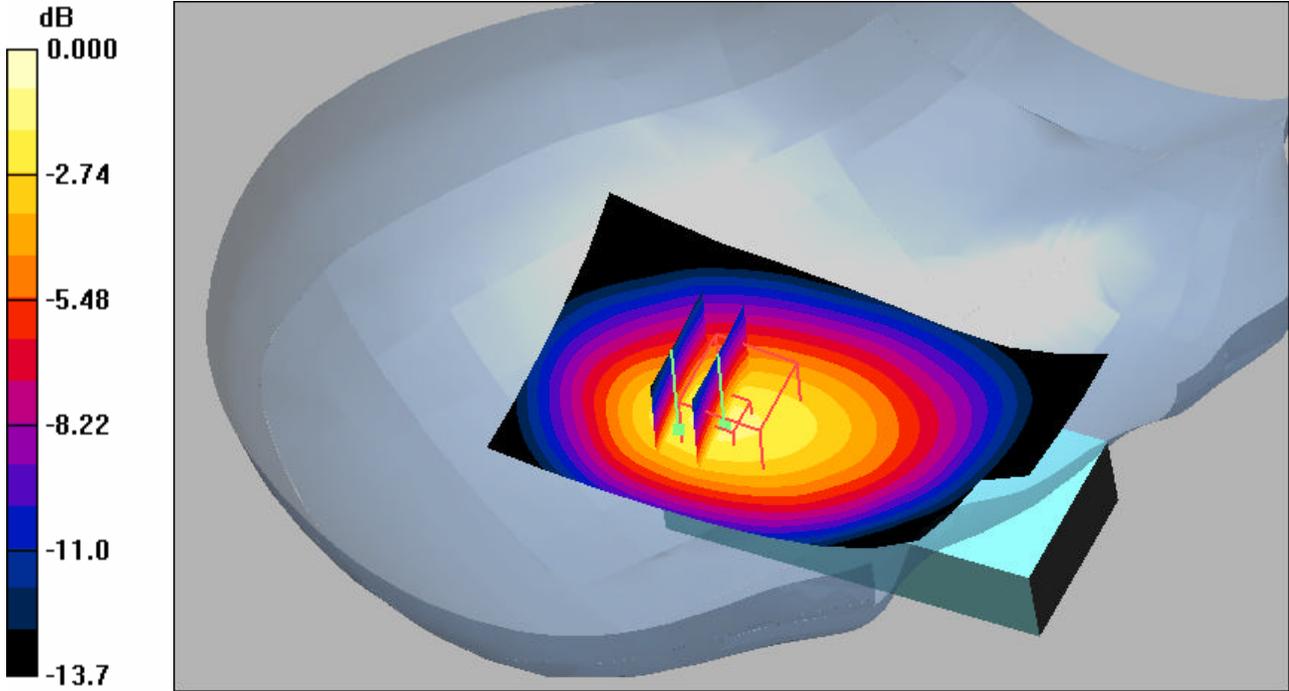
Reference Value = 25.9 V/m; Power Drift = -0.020 dB

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 1.22 mW/g



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800 GSM Band: Distribution and Extrapolation of Maximum SAR

Model: W810i with Standard Battery: BST-37, Left Side, Cheek/Touch Position.

Date/Time: 7/15/2006 9:49:22 AM

File Name: [15July06 W810i GSM850 N9XQ LC01.da4](#)

DUT: W810i

Program Notes: Battery - BST37 Humidity - 44.1 % Ambient Temp - 22.8 C Simulant Temp - 22.7 C

Communication System: GSM 850; Frequency: 849 MHz; Duty Cycle: 1:8.3

Medium: Head 835/900 MHz Medium parameters used (interpolated): f = 849 MHz; s = 0.928 mho/m; $\epsilon_r = 42.2$; ? = 1000 kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1583; ConvF(6.82, 6.82, 6.82); Calibrated: 11/22/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn416; Calibrated: 11/10/2005
- Phantom: SAM with CRP (Low Band Head); Type: SAM; Serial: 1251
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

Unnamed procedure 3/Area Scan (61x81x1):

Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 1.04 mW/g

Unnamed procedure 3/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 22.8 V/m; Power Drift = 0.009 dB

Peak SAR (extrapolated) = 1.28 W/kg

SAR(1 g) = 0.986 mW/g; SAR(10 g) = 0.703 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.04 mW/g

Unnamed procedure 3/Zoom Scan (31x31x36)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

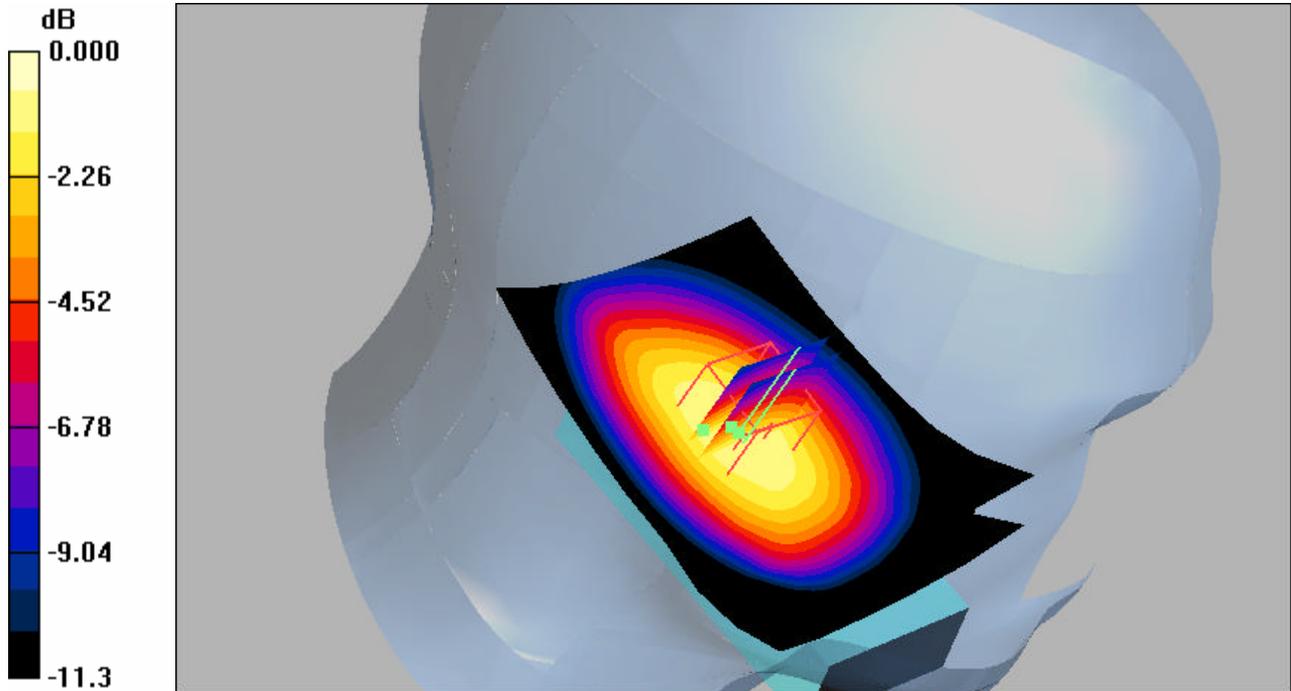
Reference Value = 22.8 V/m; Power Drift = 0.009 dB

[Info: Interpolated medium parameters used for SAR evaluation.](#)

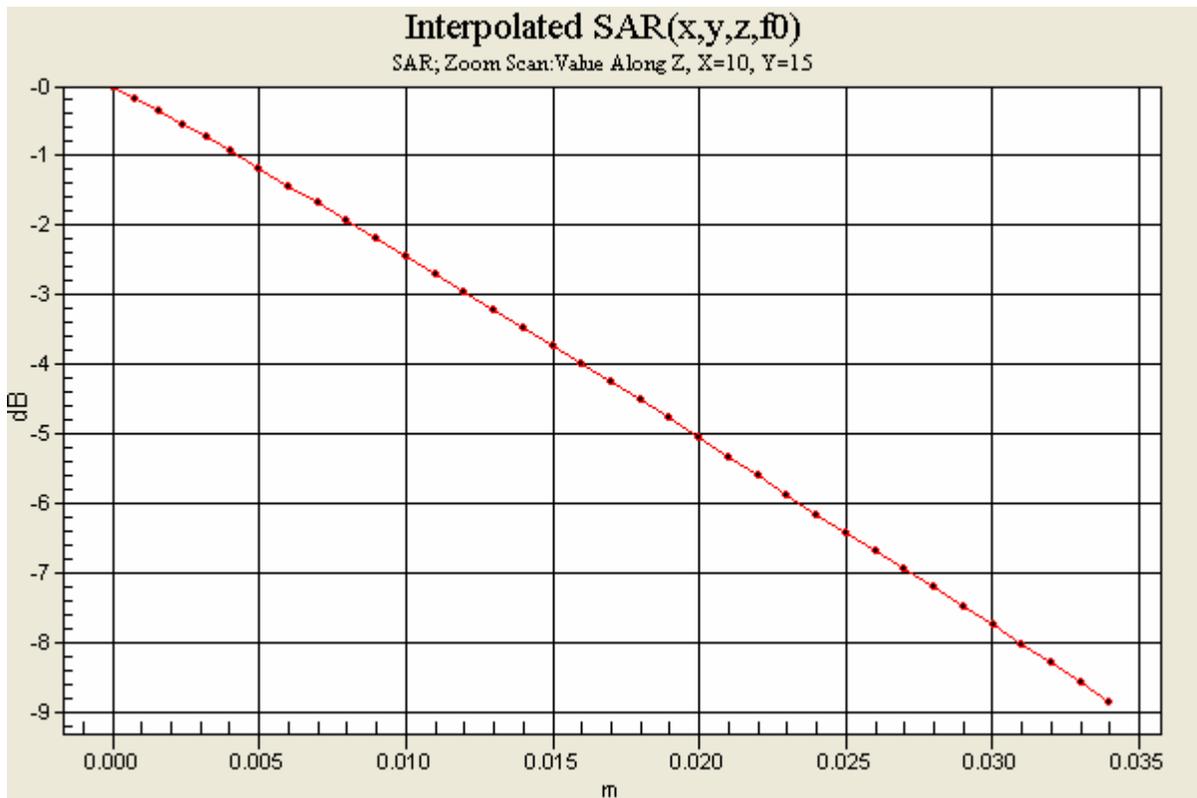
Maximum value of SAR (interpolated) = 1.28 mW/g



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0 dB = 1.28mW/g





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800 GSM Band: Distribution and Extrapolation of Maximum SAR

Model: W810i with Standard Battery: BST-37, Left Side, Tilt Position.

Date/Time: 7/15/2006 10:50:01 AM

File Name: [15July06 W810i GSM850 N9XQ LT01.da4](#)

DUT: W810i

Program Notes: Battery - BST37 Humidity - 43.7 % Ambient Temp - 23 C Simulant Temp - 22.7 C

Communication System: GSM 850; Frequency: 849 MHz; Duty Cycle: 1:8.3

Medium: Head 835/900 MHz Medium parameters used (interpolated): f = 849 MHz; s = 0.928 mho/m; $\epsilon_r = 42.2$; ? = 1000 kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1583; ConvF(6.82, 6.82, 6.82); Calibrated: 11/22/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn416; Calibrated: 11/10/2005
- Phantom: SAM with CRP (Low Band Head); Type: SAM; Serial: 1251
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

Unnamed procedure 3/Area Scan (61x81x1):

Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.730 mW/g

Unnamed procedure 3/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 20.9 V/m; Power Drift = 0.010 dB

Peak SAR (extrapolated) = 0.941 W/kg

SAR(1 g) = 0.665 mW/g; SAR(10 g) = 0.457 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.710 mW/g

Unnamed procedure 3/Zoom Scan (31x31x36)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

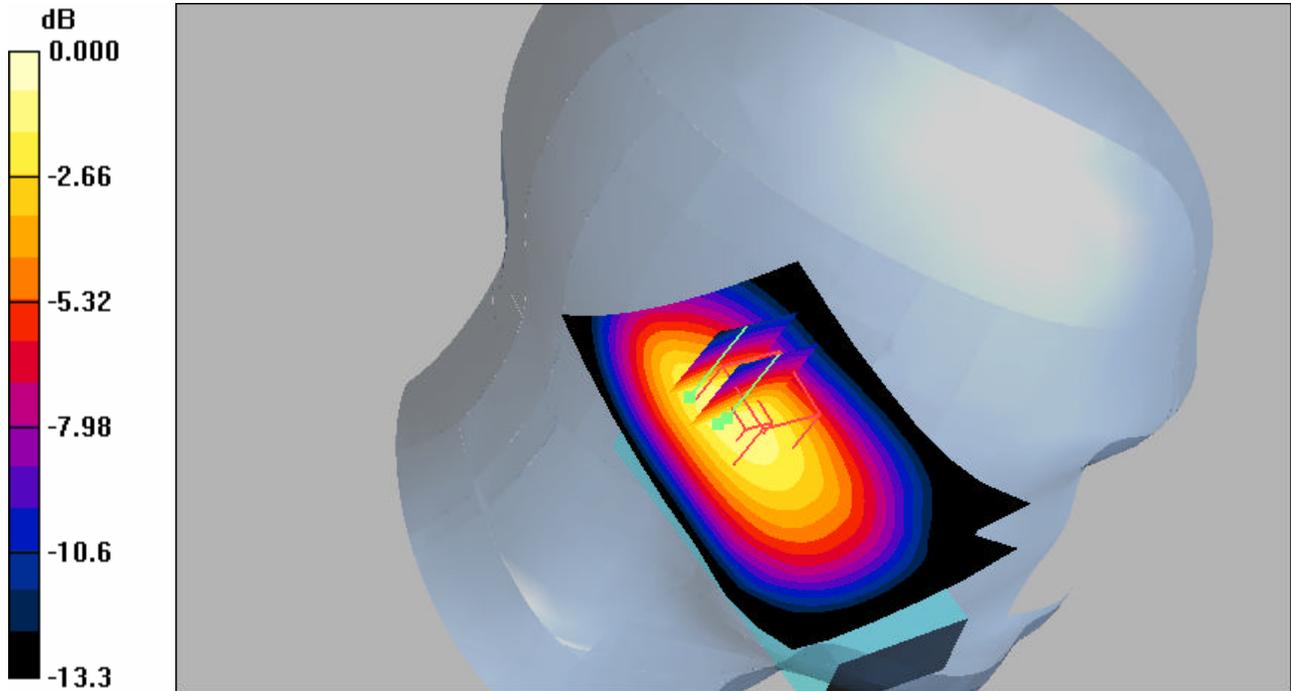
Reference Value = 20.9 V/m; Power Drift = 0.010 dB

[Info: Interpolated medium parameters used for SAR evaluation.](#)

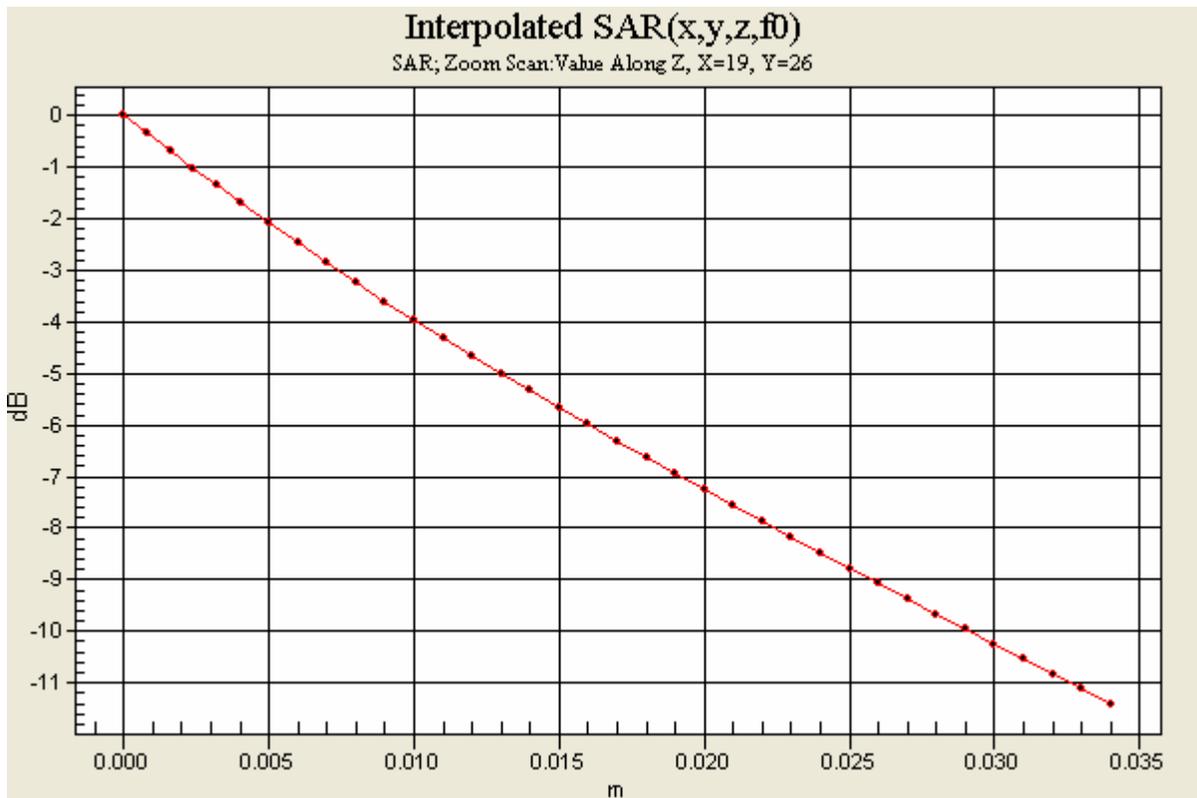
Maximum value of SAR (interpolated) = 0.941 mW/g



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0 dB = 0.941mW/g





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Approved SEM/CV/PF/P Gerard Hayes	Checked	A	X:\SAR Chamber\FCC reports\W810\Final Reports\FCCW810I.doc

800 GSM Band: Distribution and Extrapolation of Maximum SAR

Model: W810i with Standard Battery: BST-37, Right Side, Cheek/Touch Position with Blue Tooth.

Date/Time: 7/15/2006 11:13:39 AM

File Name: [14July06_W810i_GSM850_N9XQ_BT_RC01.da4](#)

DUT: W810i

Program Notes: Battery - BST37 Humidity - 43.7% Ambient Temp - 23 C Simulant Temp - 22.7 C

Communication System: GSM 850; Frequency: 849 MHz; Duty Cycle: 1:8.3

Medium: Head 835/900 MHz Medium parameters used (interpolated): f = 849 MHz; s = 0.928 mho/m; $\epsilon_r = 42.2$; ? = 1000 kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1583; ConvF(6.82, 6.82, 6.82); Calibrated: 11/22/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn416; Calibrated: 11/10/2005
- Phantom: SAM with CRP (Low Band Head); Type: SAM; Serial: 1251
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

Unnamed procedure 3/Area Scan (51x81x1):

Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 1.15 mW/g

Unnamed procedure 3/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 26.9 V/m; Power Drift = -0.007 dB

Peak SAR (extrapolated) = 1.53 W/kg

SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.740 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.14 mW/g

Unnamed procedure 3/Zoom Scan (31x31x36)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

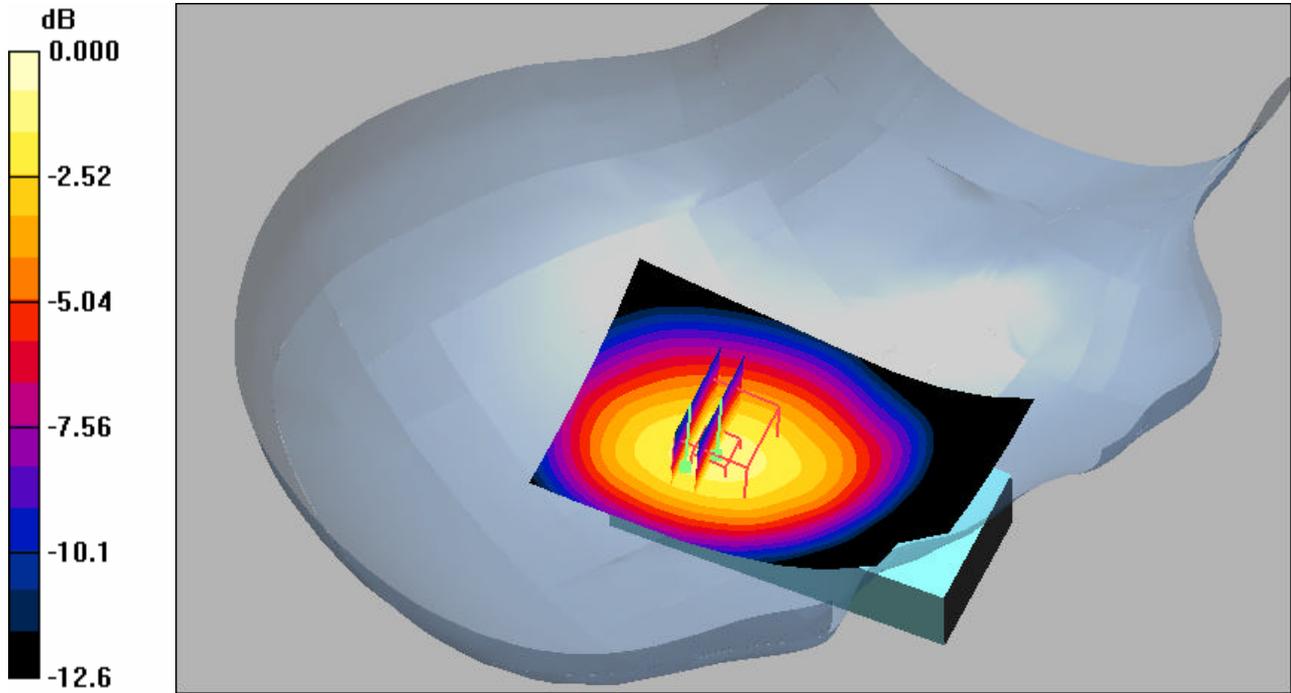
Reference Value = 26.9 V/m; Power Drift = -0.007 dB

[Info: Interpolated medium parameters used for SAR evaluation.](#)

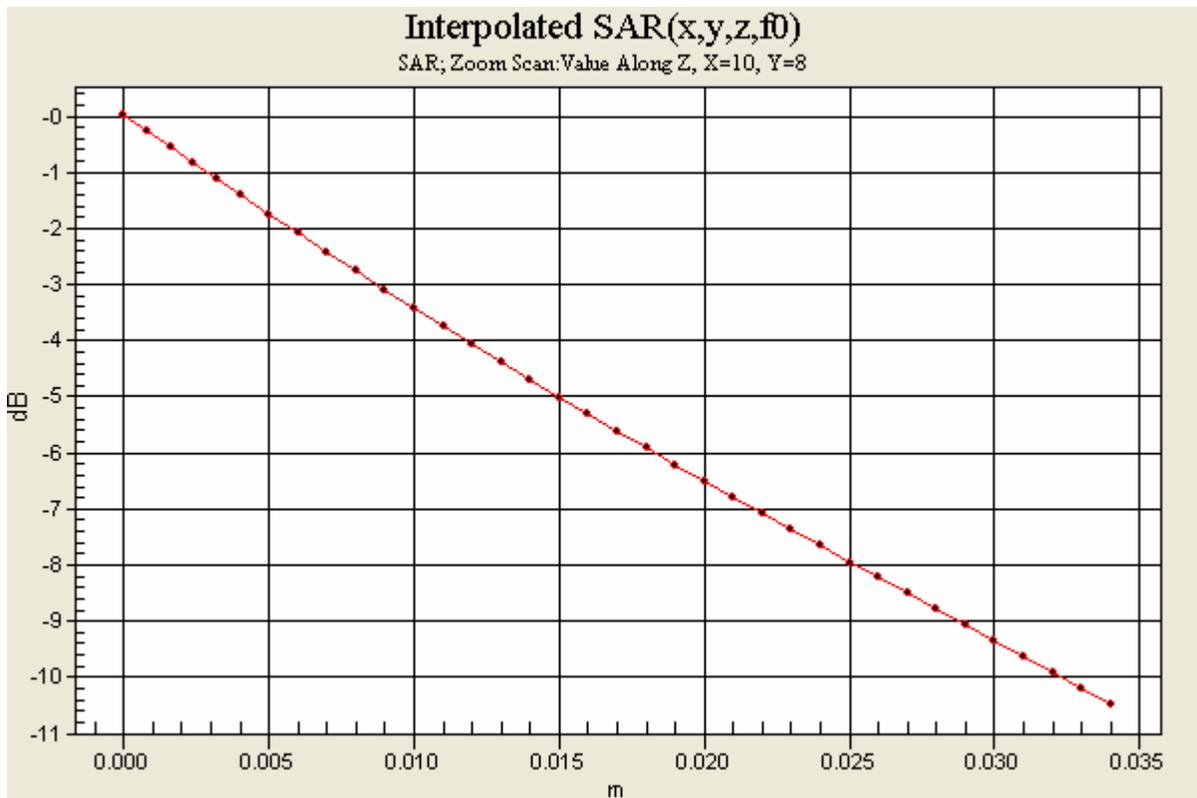
Maximum value of SAR (interpolated) = 1.53 mW/g



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0 dB = 1.53mW/g





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1900 GSM Band: Distribution and Extrapolation of Maximum SAR

Model: W810i with Standard Battery: BST-37, Right Side, Cheek/Touch Position.

Date/Time: 7/15/2006 12:00:49 PM

File Name: [15July06 W810i GSM1900 N9ZR RC01.da4](#)

DUT: W810i

Program Notes: Battery - BST37 Humidity - 42.9% Ambient Temp - 22.1 C Simulant Tem - 22.1 C

Communication System: DCS 1900; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3

Medium: Head 1800/1900 MHz Medium parameters used (interpolated): f = 1850.2 MHz; s = 1.43 mho/m; $\epsilon_r = 38.6$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1539; ConvF(4.55, 4.55, 4.55); Calibrated: 11/22/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn417; Calibrated: 11/11/2005
- Phantom: SAM with CRP (High Band Head); Type: SAM; Serial: TP: 1054
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

Unnamed procedure/Area Scan (51x81x1):

Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 1.08 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 23.5 V/m; Power Drift = 0.010 dB

Peak SAR (extrapolated) = 1.55 W/kg

SAR(1 g) = 0.929 mW/g; SAR(10 g) = 0.516 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.02 mW/g

Unnamed procedure/Zoom Scan (31x31x36)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

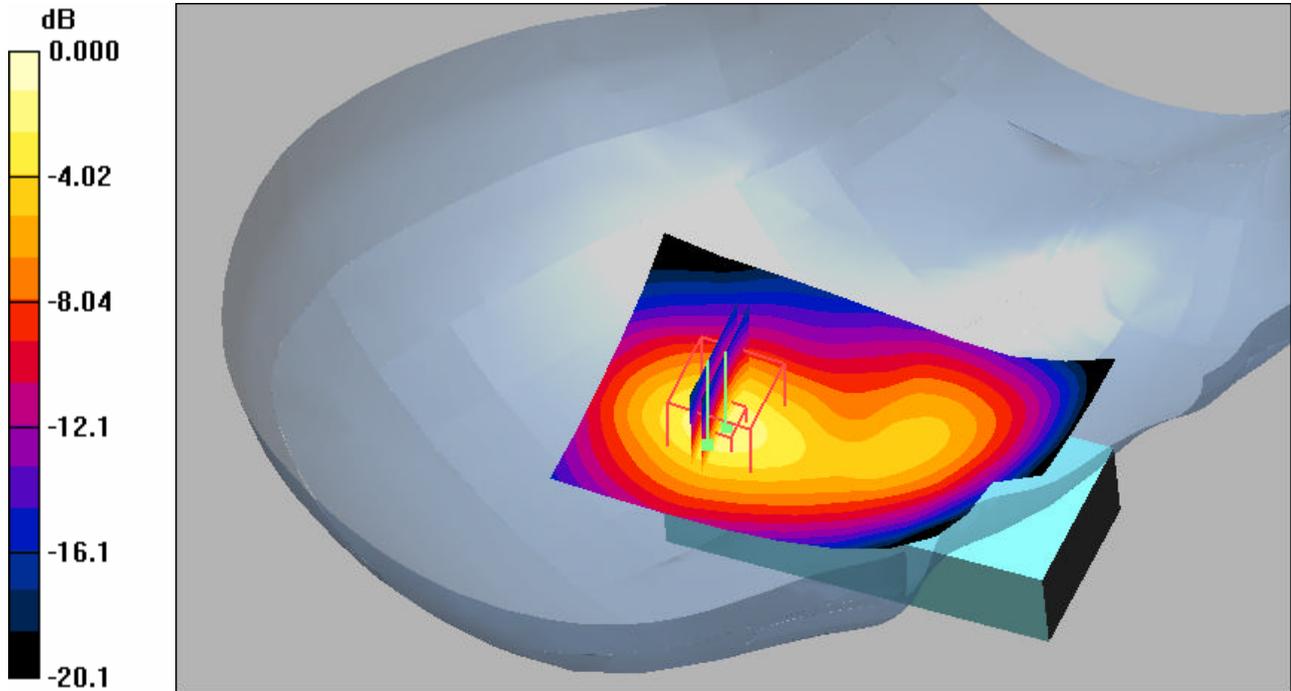
Reference Value = 23.5 V/m; Power Drift = 0.010 dB

[Info: Interpolated medium parameters used for SAR evaluation.](#)

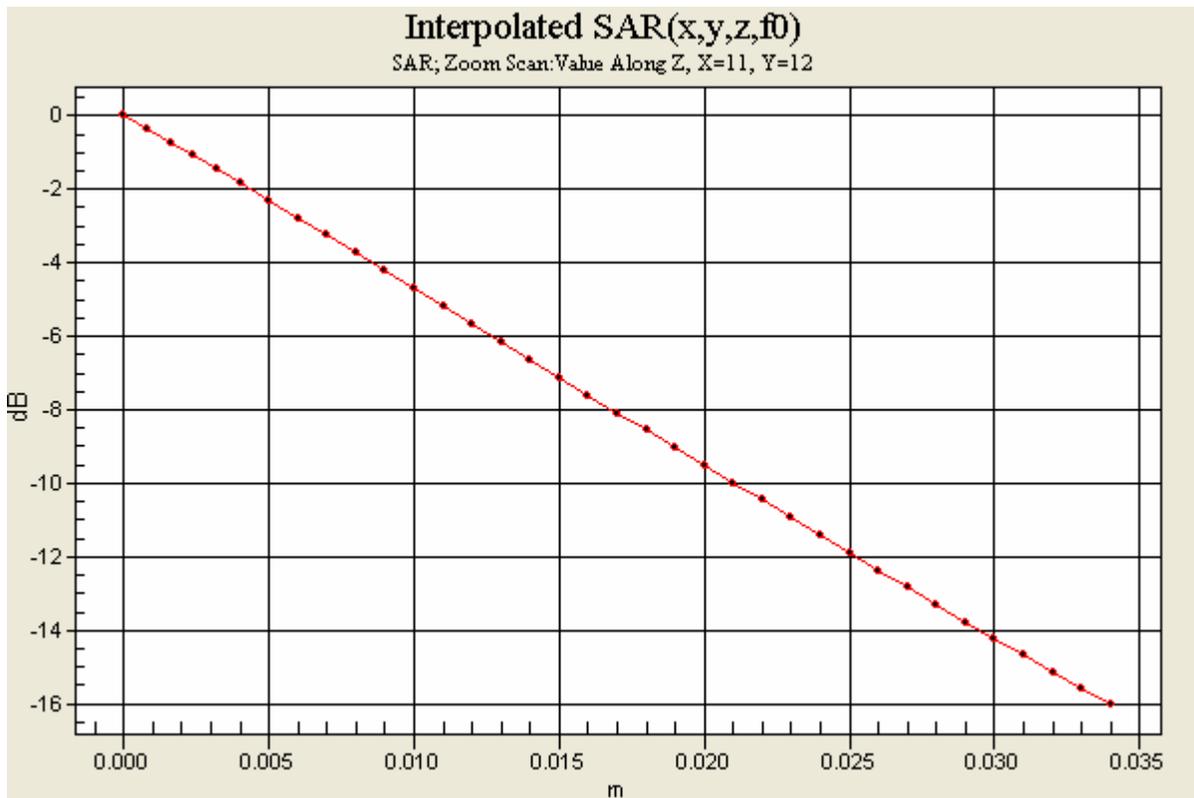
Maximum value of SAR (interpolated) = 1.55 mW/g



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0 dB = 1.55mW/g





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**1900 GSM Band: Distribution and Extrapolation of Maximum SAR
Model: W810i with Standard Battery: BST-37, Right Side, Tilt Position.**

Date/Time: 7/15/2006 12:59:29 PM

File Name: [15July06 W810i GSM1900 N9ZR RT01.da4](#)

DUT: W810i

Program Notes: Battery - BST37 Humidity - 43.2% Ambient Temp - 21.9 C Simulant Tem - 22 C

Communication System: DCS 1900; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3

Medium: Head 1800/1900 MHz Medium parameters used (interpolated): f = 1850.2 MHz; s = 1.43 mho/m; $\epsilon_r = 38.6$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1539; ConvF(4.55, 4.55, 4.55); Calibrated: 11/22/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn417; Calibrated: 11/11/2005
- Phantom: SAM with CRP (High Band Head); Type: SAM; Serial: TP: 1054
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

Unnamed procedure/Area Scan (51x81x1):

Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.989 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 25.0 V/m; Power Drift = 0.017 dB

Peak SAR (extrapolated) = 1.37 W/kg

SAR(1 g) = 0.867 mW/g; SAR(10 g) = 0.485 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.961 mW/g

Unnamed procedure/Zoom Scan (31x31x36)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

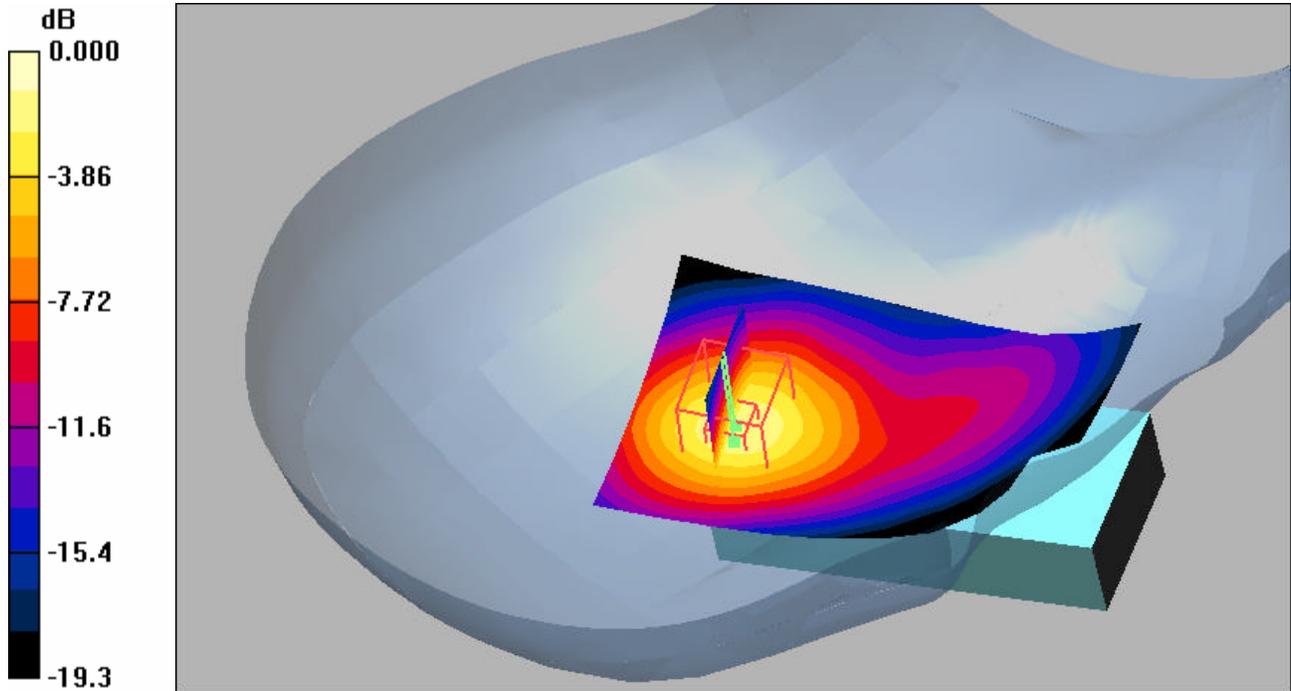
Reference Value = 25.0 V/m; Power Drift = 0.017 dB

[Info: Interpolated medium parameters used for SAR evaluation.](#)

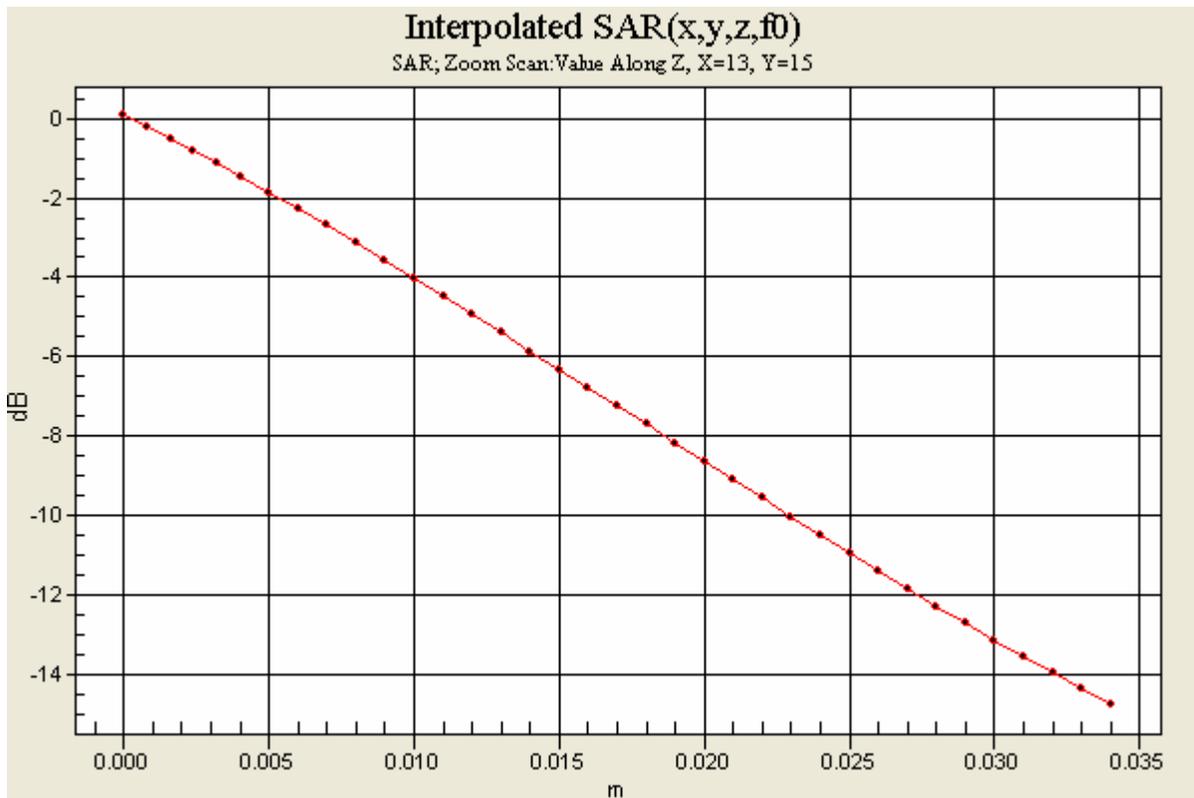
Maximum value of SAR (interpolated) = 1.37 mW/g



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0 dB = 1.37mW/g





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**1900 GSM Band: Distribution and Extrapolation of Maximum SAR
Model: W810i with Standard Battery: BST-37, Left Side, Cheek/Touch Position.**

Date/Time: 7/15/2006 10:34:47 AM

File Name: [15July06 W810i GSM1900 N9ZR LC01.da4](#)

DUT: W810i

Program Notes: Battery - BST-37 Humidity: 42.8% Ambient Temp: 22.3 C Simulant Temp: 22.2 C
Communication System: DCS 1900; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3
Medium: Head 1800/1900 MHz Medium parameters used (interpolated): f = 1850.2 MHz; s = 1.43 mho/m; $\epsilon_r = 38.6$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1539; ConvF(4.55, 4.55, 4.55); Calibrated: 11/22/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn417; Calibrated: 11/11/2005
- Phantom: SAM with CRP (High Band Head); Type: SAM; Serial: TP: 1054
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

Unnamed procedure/Area Scan (81x121x1):

Measurement grid: dx=10mm, dy=10mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.682 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 20.6 V/m; Power Drift = 0.044 dB

Peak SAR (extrapolated) = 0.941 W/kg

SAR(1 g) = 0.613 mW/g; SAR(10 g) = 0.370 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.675 mW/g

Unnamed procedure/Zoom Scan (31x31x36)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

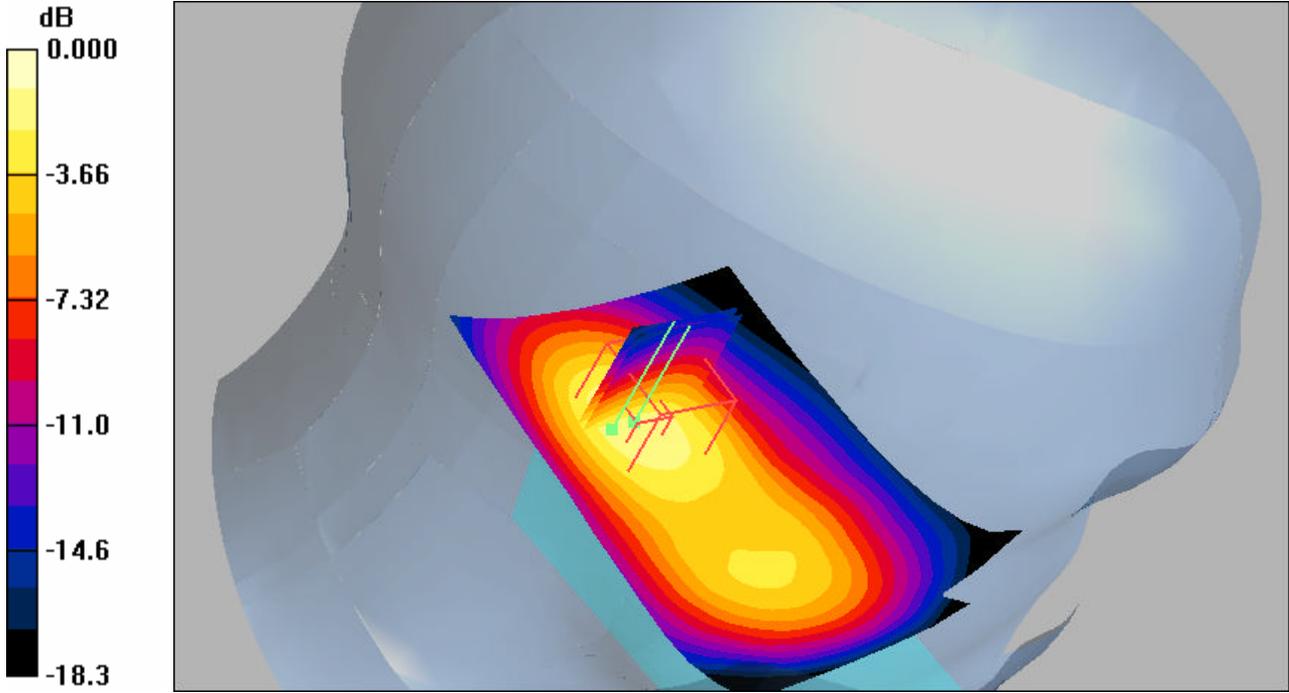
Reference Value = 20.6 V/m; Power Drift = 0.044 dB

[Info: Interpolated medium parameters used for SAR evaluation.](#)

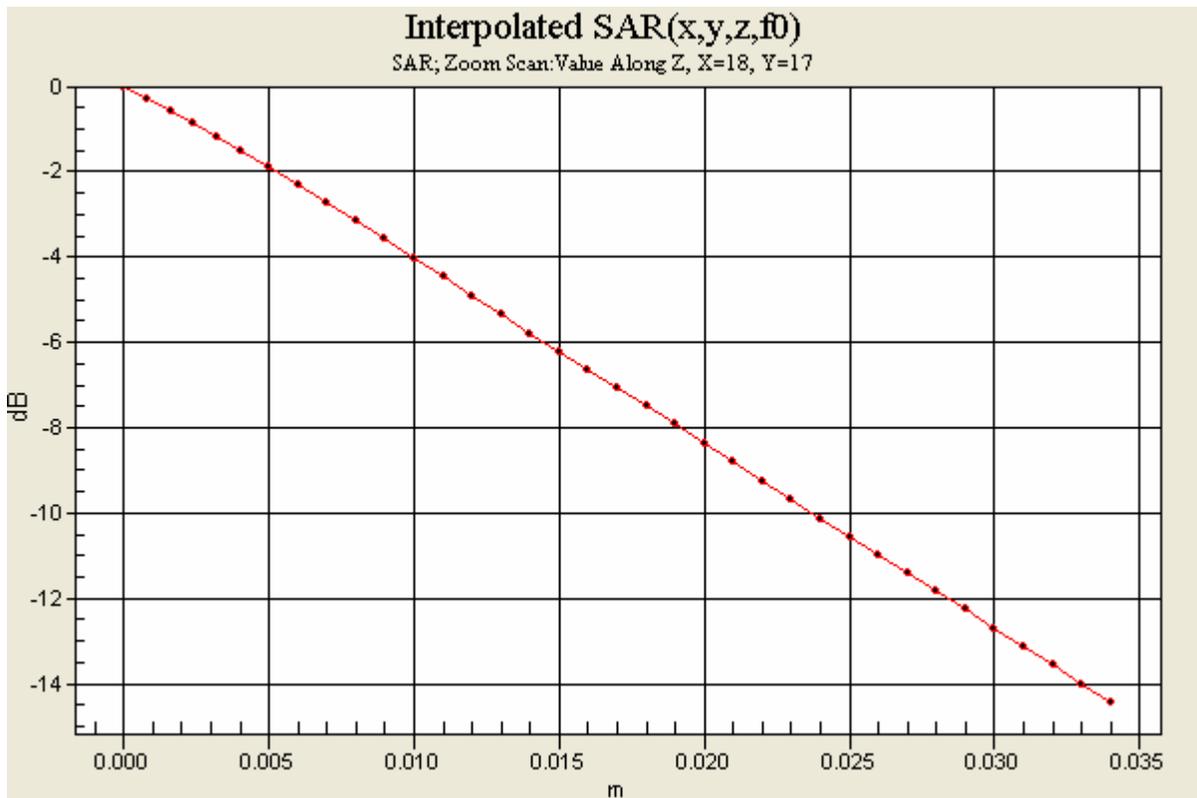
Maximum value of SAR (interpolated) = 0.941 mW/g



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0 dB = 0.941mW/g





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**1900 GSM Band: Distribution and Extrapolation of Maximum SAR
Model: W810i with Standard Battery: BST-37, Left Side, Tilt Position.**

Date/Time: 7/15/2006 11:02:37 AM

File Name: [15July06 W810i GSM1900 N9ZR LT01.da4](#)

DUT: W810i

Program Notes: Battery - BST-37 Humidity: 42.6% Ambient Temp: 22.2 C Simulant Temp: 22.2 C

Communication System: DCS 1900; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3

Medium: Head 1800/1900 MHz Medium parameters used (interpolated): f = 1850.2 MHz; s = 1.43 mho/m; $\epsilon_r = 38.6$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1539; ConvF(4.55, 4.55, 4.55); Calibrated: 11/22/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn417; Calibrated: 11/11/2005
- Phantom: SAM with CRP (High Band Head); Type: SAM; Serial: TP: 1054
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

Unnamed procedure/Area Scan (51x81x1):

Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.774 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 24.0 V/m; Power Drift = -0.025 dB

Peak SAR (extrapolated) = 1.07 W/kg

SAR(1 g) = 0.691 mW/g; SAR(10 g) = 0.395 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.759 mW/g

Unnamed procedure/Zoom Scan (31x31x36)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

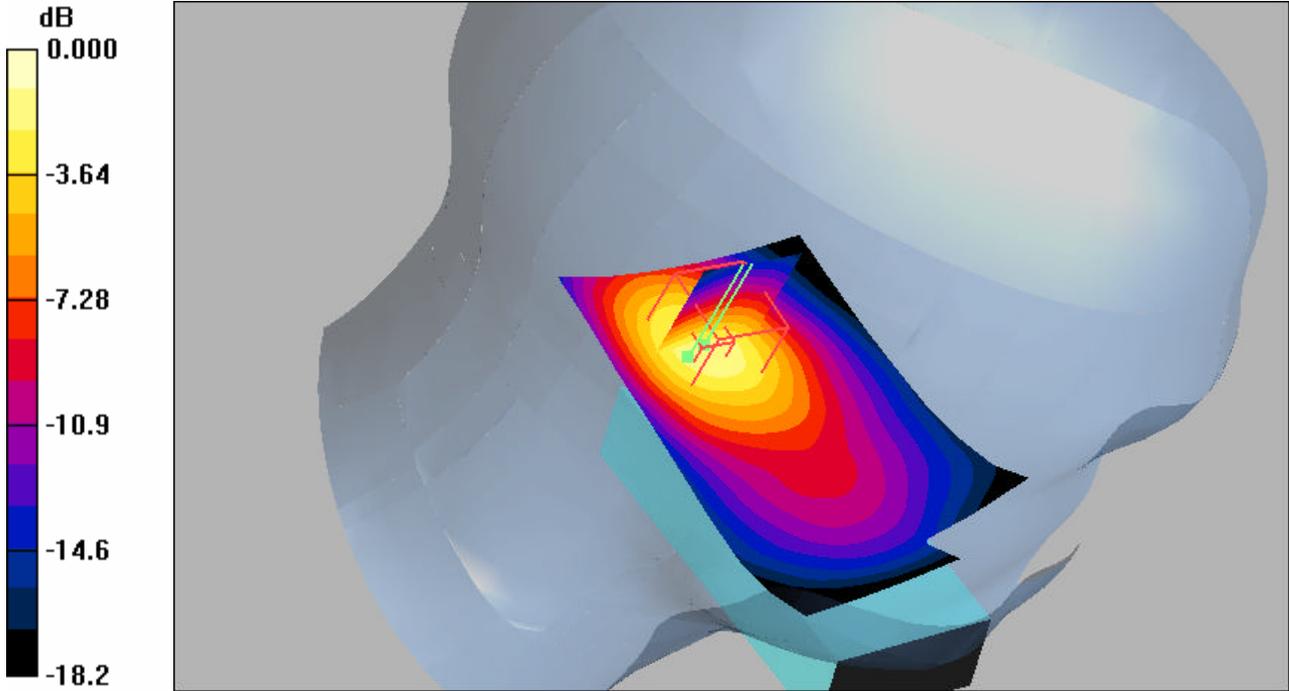
Reference Value = 24.0 V/m; Power Drift = -0.025 dB

[Info: Interpolated medium parameters used for SAR evaluation.](#)

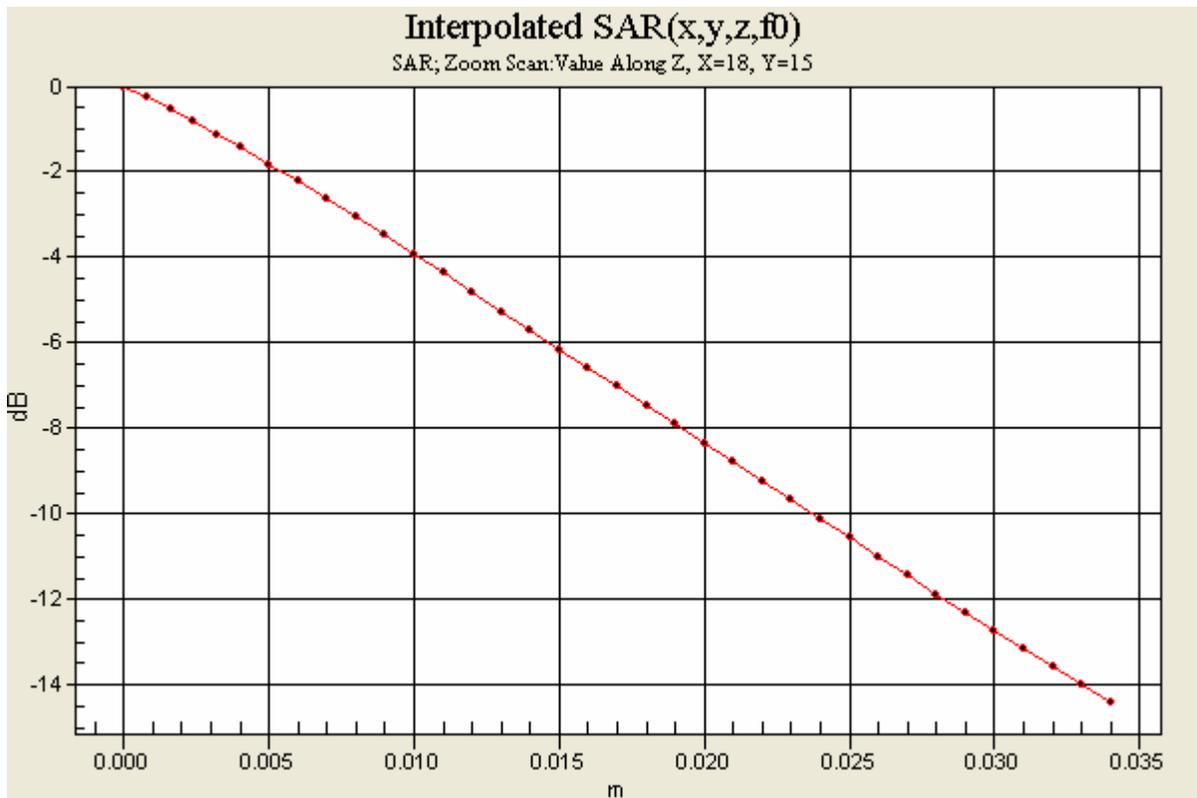
Maximum value of SAR (interpolated) = 1.07 mW/g



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0 dB = 1.07mW/g





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**1900 GSM Band: Distribution and Extrapolation of Maximum SAR
Model: W810i with Standard Battery: BST-37, Right Side, Cheek/Touch Position with Blue Tooth.**

Date/Time: 7/15/2006 1:57:22 PM

File Name: [15July06_W810i_GSM1900_N9ZR_BT_RC01.da4](#)

DUT: W810i

Program Notes: Battery - BST37 Humidity - 43.2% Ambient Temp - 21.9 C Simulant Tem - 22 C

Communication System: DCS 1900; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3

Medium: Head 1800/1900 MHz Medium parameters used (interpolated): f = 1850.2 MHz; s = 1.43 mho/m; $\epsilon_r = 38.6$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1539; ConvF(4.55, 4.55, 4.55); Calibrated: 11/22/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn417; Calibrated: 11/11/2005
- Phantom: SAM with CRP (High Band Head); Type: SAM; Serial: TP: 1054
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

Unnamed procedure/Area Scan (51x81x1):

Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.993 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 22.2 V/m; Power Drift = 0.022 dB

Peak SAR (extrapolated) = 1.44 W/kg

SAR(1 g) = 0.882 mW/g; SAR(10 g) = 0.491 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.971 mW/g

Unnamed procedure/Zoom Scan (31x31x36)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

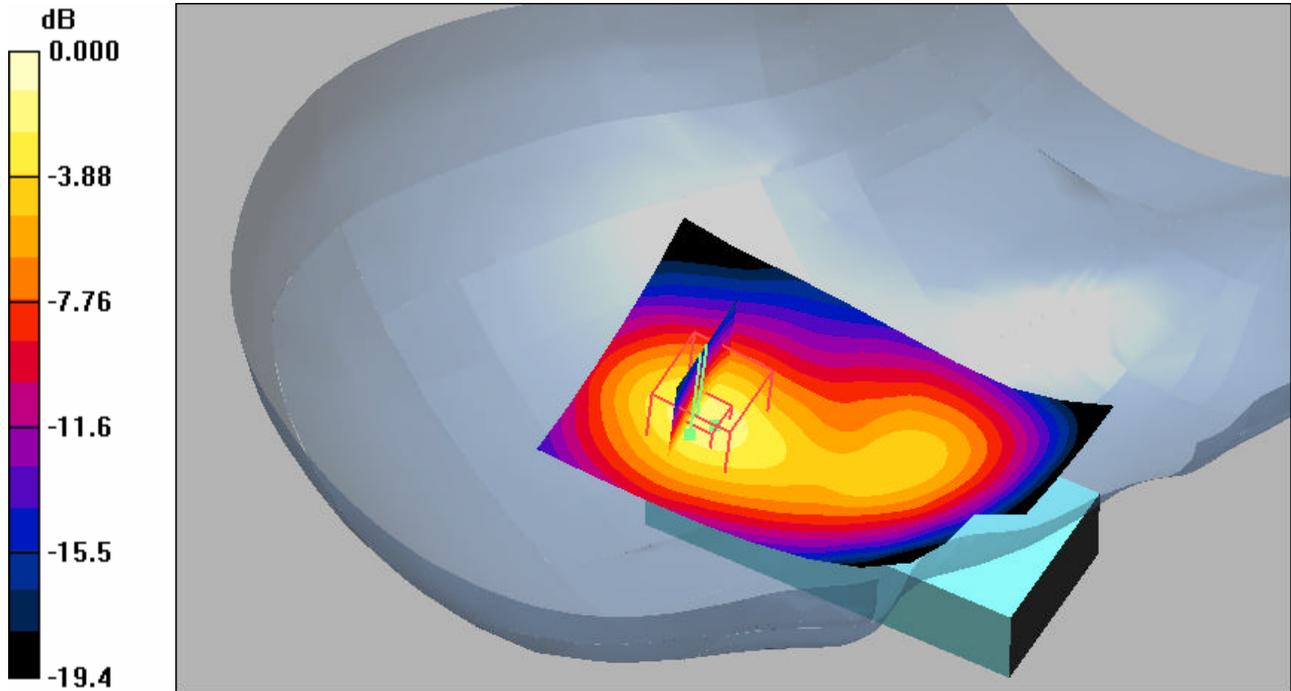
Reference Value = 22.2 V/m; Power Drift = 0.022 dB

[Info: Interpolated medium parameters used for SAR evaluation.](#)

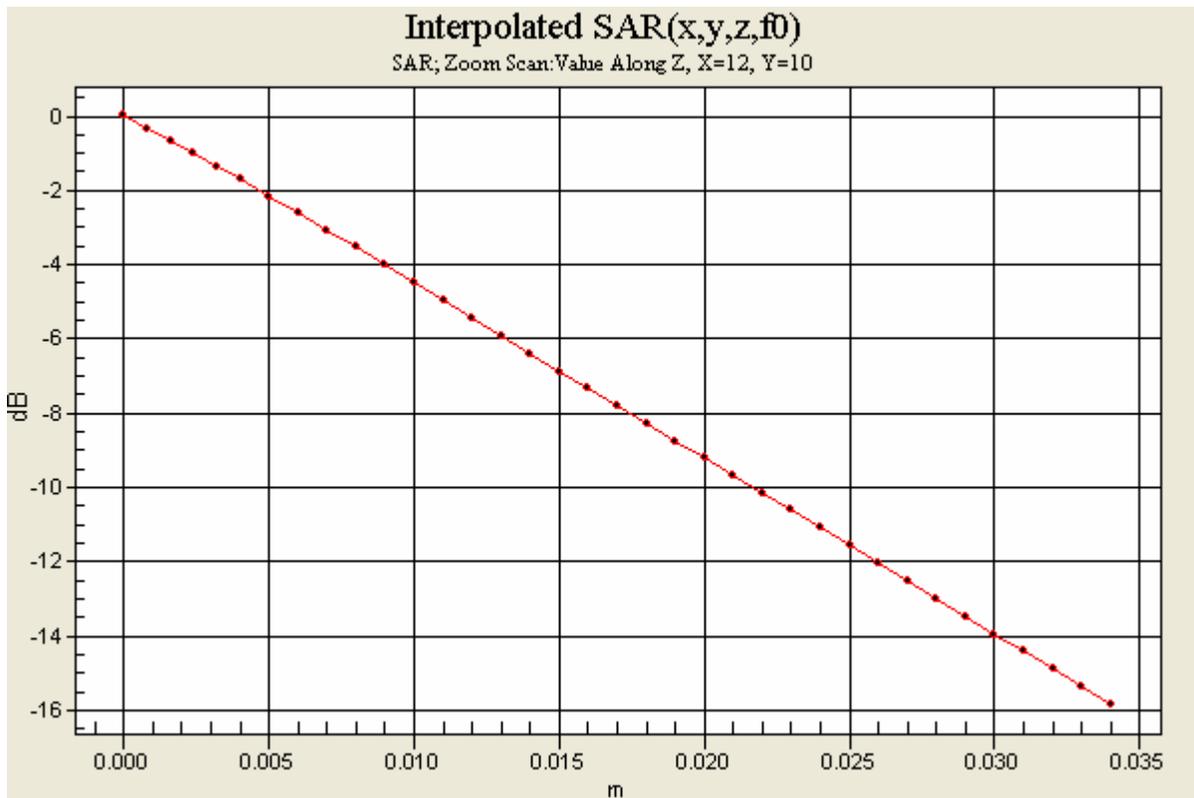
Maximum value of SAR (interpolated) = 1.44 mW/g



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0 dB = 1.44mW/g





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Appendix 3

SAR distribution plots for Body Worn Configuration



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Distribution of maximum SAR in 800 GSM band. Measured with back of device facing the body using a 15mm spacer. (Standard Battery, BST-37)

Date/Time: 7/16/2006 2:48:45 PM

File Name: [16July06_W810i_GSM835_N9XQ_15mm_BB01.da4](#)

DUT: W810i

Program Notes: Battery - BST37 Humidity - 43.4% Ambient Temp - 21.9 C Simulant Temp - 21.7 C

Communication System: GSM 850 multi-slot Body; Frequency: 849 MHz; Duty Cycle: 1:4.15

Medium: Head 835/900 MHz Medium parameters used (interpolated): f = 849 MHz; s = 1.03 mho/m; $\epsilon_r = 54.1$; ? = 1000 kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1539; ConvF(5.88, 5.88, 5.88); Calibrated: 11/22/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn417; Calibrated: 11/11/2005
- Phantom: SAM with CRP (Low Band Body); Type: SAM; Serial: TP: 1031
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

Unnamed procedure 3/Area Scan (51x81x1):

Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.828 mW/g

Unnamed procedure 3/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 26.3 V/m; Power Drift = 0.030 dB

Peak SAR (extrapolated) = 1.07 W/kg

SAR(1 g) = 0.783 mW/g; SAR(10 g) = 0.567 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.836 mW/g

Unnamed procedure 3/Zoom Scan (31x31x36)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

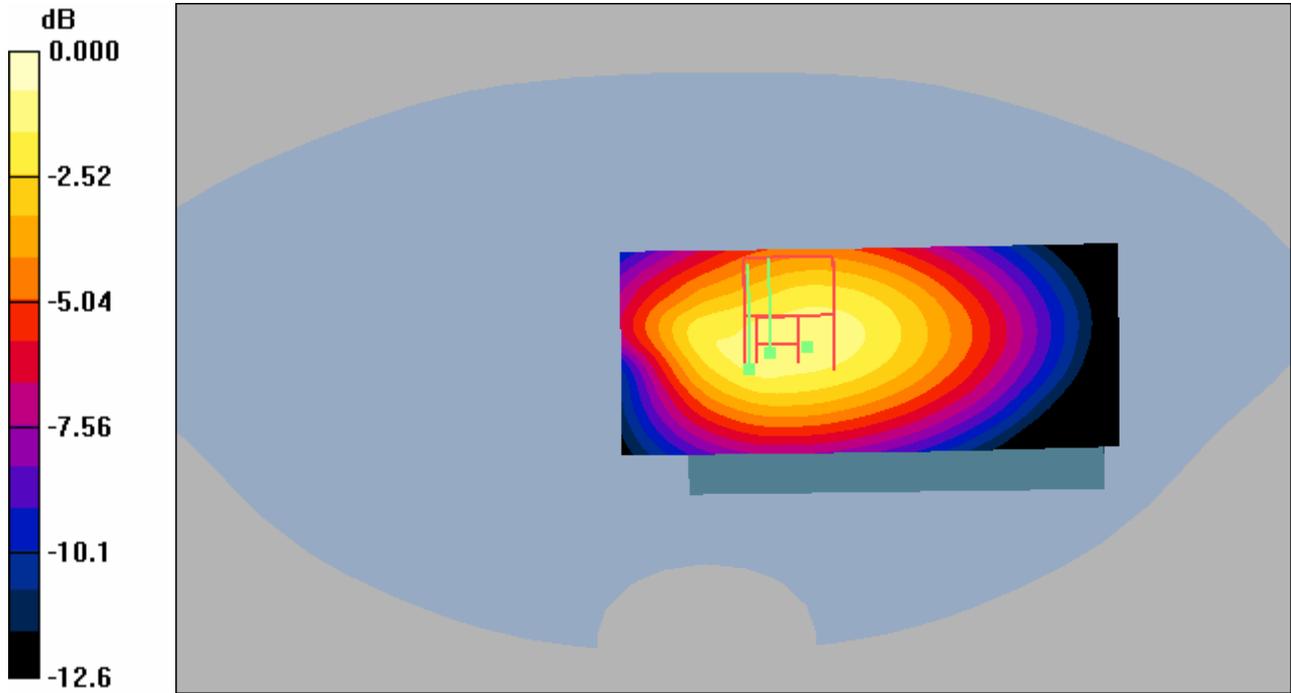
Reference Value = 26.3 V/m; Power Drift = 0.030 dB

[Info: Interpolated medium parameters used for SAR evaluation.](#)

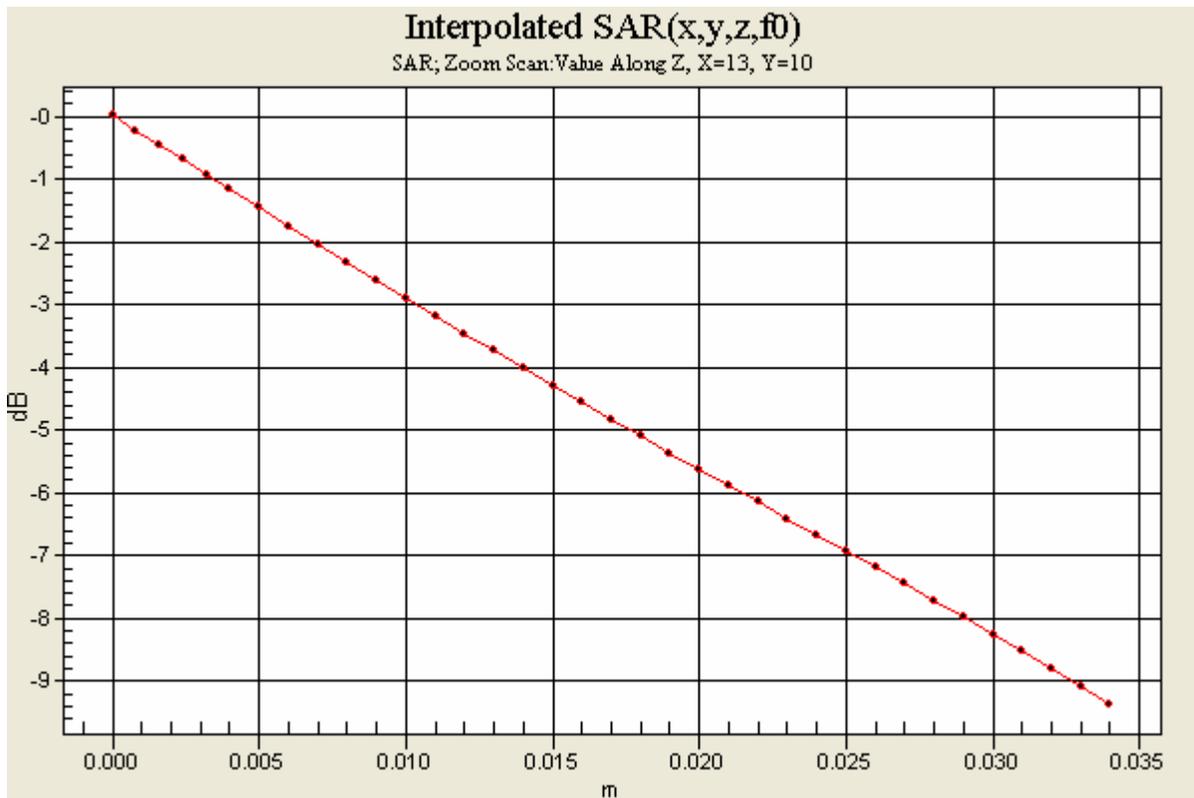
Maximum value of SAR (interpolated) = 1.07 mW/g



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0 dB = 1.07mW/g





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Distribution of maximum SAR in 800 GSM band. Measured with front of device facing the body using a 15mm spacer. (Standard Battery, BST-37)

Date/Time: 7/16/2006 3:07:39 PM

File Name: [16July06 W810i GSM835 N9XQ 15mm BF01.da4](#)

DUT: W810i

Program Notes: Battery - BST37 Humidity - 43.4% Ambient Temp - 21.9 C Simulant Temp - 21.7 C

Communication System: GSM 850 multi-slot Body; Frequency: 849 MHz; Duty Cycle: 1:4.15

Medium: Head 835/900 MHz Medium parameters used (interpolated): f = 849 MHz; s = 1.03 mho/m; e_r = 54.1; ? = 1000 kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1539; ConvF(5.88, 5.88, 5.88); Calibrated: 11/22/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn417; Calibrated: 11/11/2005
- Phantom: SAM with CRP (Low Band Body); Type: SAM; Serial: TP: 1031
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

Unnamed procedure 3/Area Scan (51x81x1):

Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.348 mW/g

Unnamed procedure 3/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.6 V/m; Power Drift = -0.011 dB

Peak SAR (extrapolated) = 0.471 W/kg

SAR(1 g) = 0.332 mW/g; SAR(10 g) = 0.234 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.354 mW/g

Unnamed procedure 3/Zoom Scan (31x31x36)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

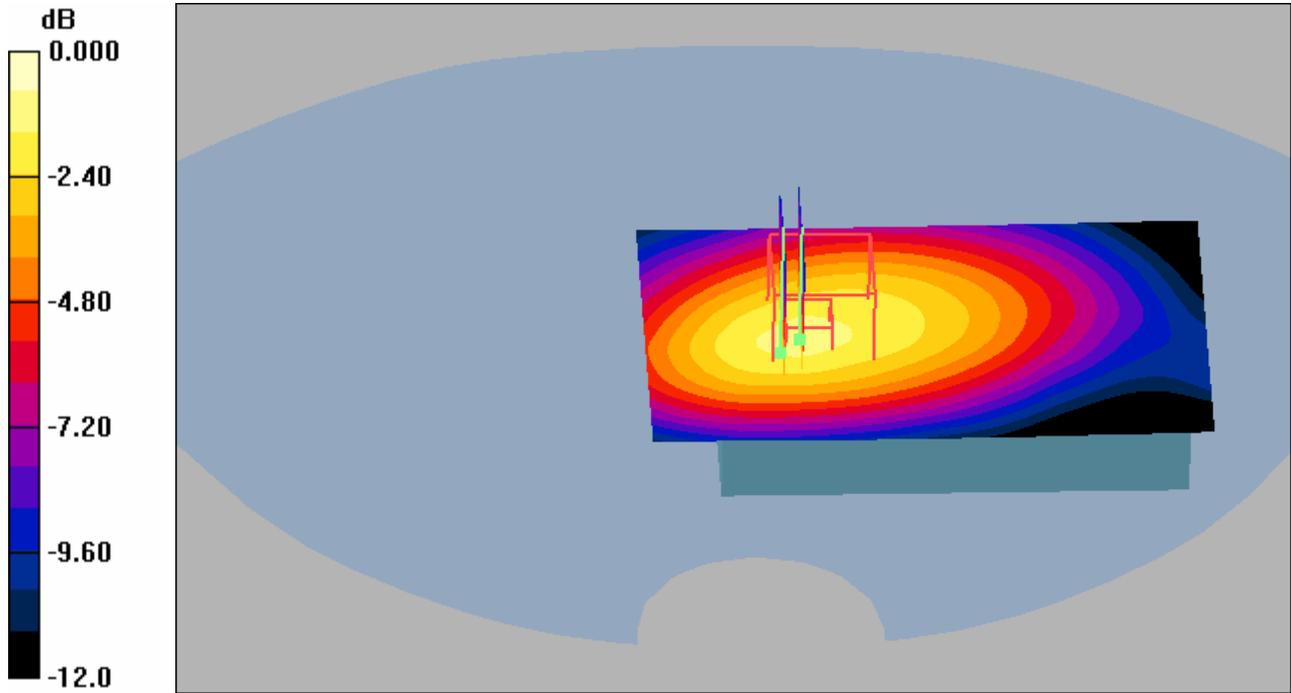
Reference Value = 17.6 V/m; Power Drift = -0.011 dB

[Info: Interpolated medium parameters used for SAR evaluation.](#)

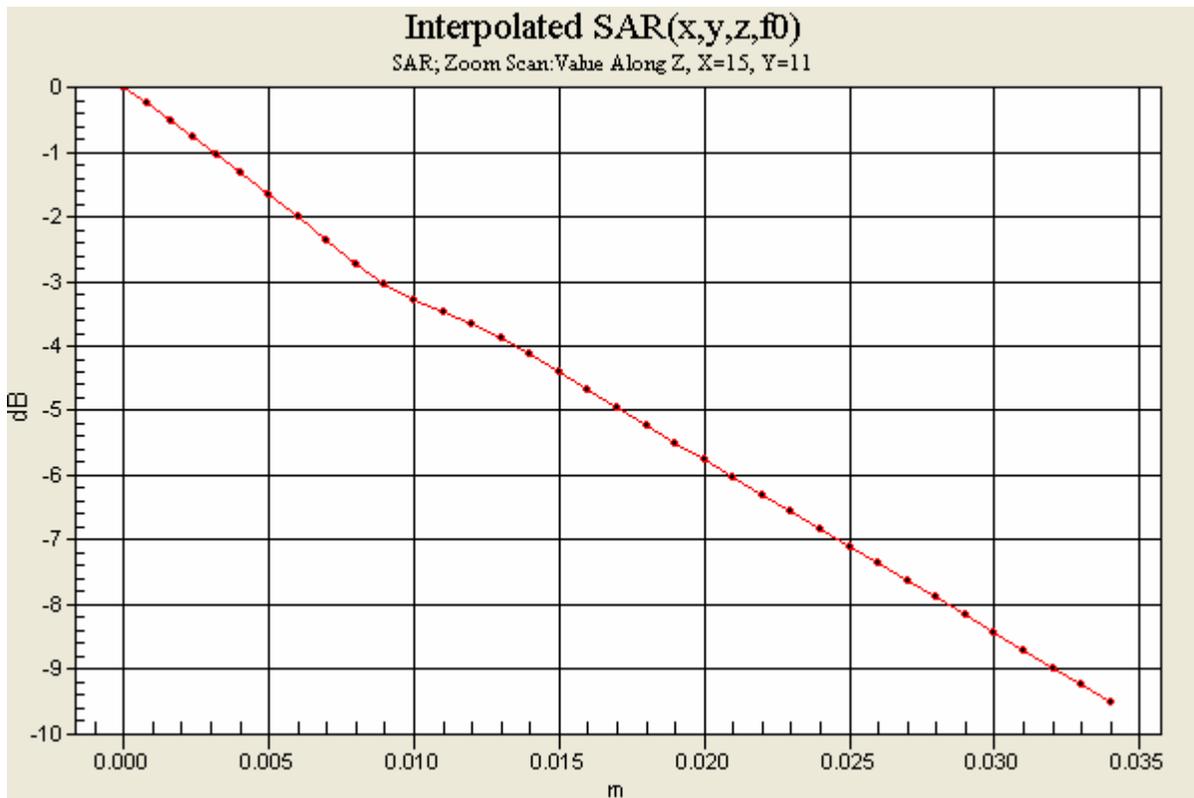
Maximum value of SAR (interpolated) = 0.471 mW/g



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0 dB = 0.471mW/g





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Distribution of maximum SAR in 800 GSM band. Measured with back of device facing the body using a 15mm SPACER with Blue Tooth. (Standard Battery BST-37)

Date/Time: 7/16/2006 3:30:01 PM

File Name: [16July06_W810i_GSM835_N9XQ_15mm_BT_BB01.da4](#)

DUT: W810i

Program Notes: Battery - BST37 Humidity - 44.4% Ambient Temp - 22 C Simulant Temp - 21.8 C

Communication System: GSM 850 multi-slot Body; Frequency: 849 MHz; Duty Cycle: 1:4.15

Medium: Head 835/900 MHz Medium parameters used (interpolated): f = 849 MHz; s = 1.03 mho/m; $\epsilon_r = 54.1$; ? = 1000 kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1539; ConvF(5.88, 5.88, 5.88); Calibrated: 11/22/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn417; Calibrated: 11/11/2005
- Phantom: SAM with CRP (Low Band Body); Type: SAM; Serial: TP: 1031
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

Unnamed procedure 3/Area Scan (51x81x1):

Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.854 mW/g

Unnamed procedure 3/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 25.3 V/m; Power Drift = -0.014 dB

Peak SAR (extrapolated) = 1.18 W/kg

SAR(1 g) = 0.806 mW/g; SAR(10 g) = 0.571 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.853 mW/g

Unnamed procedure 3/Zoom Scan (31x31x36)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

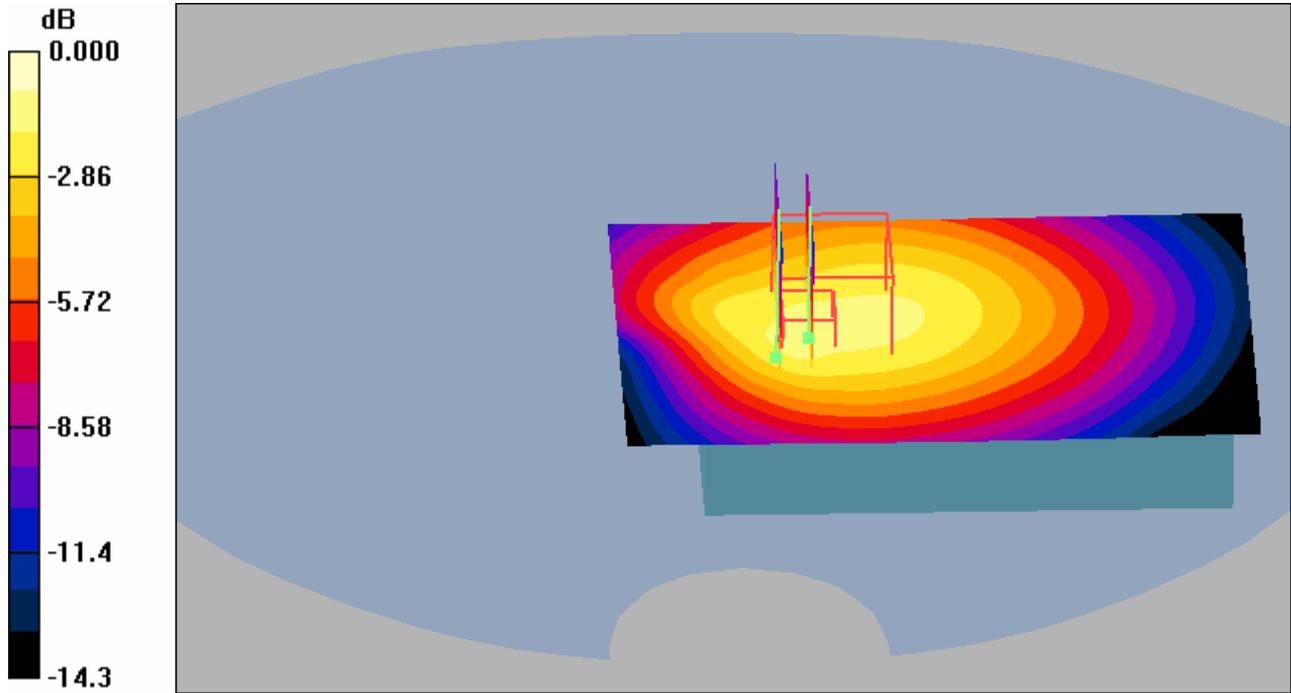
Reference Value = 25.3 V/m; Power Drift = -0.014 dB

[Info: Interpolated medium parameters used for SAR evaluation.](#)

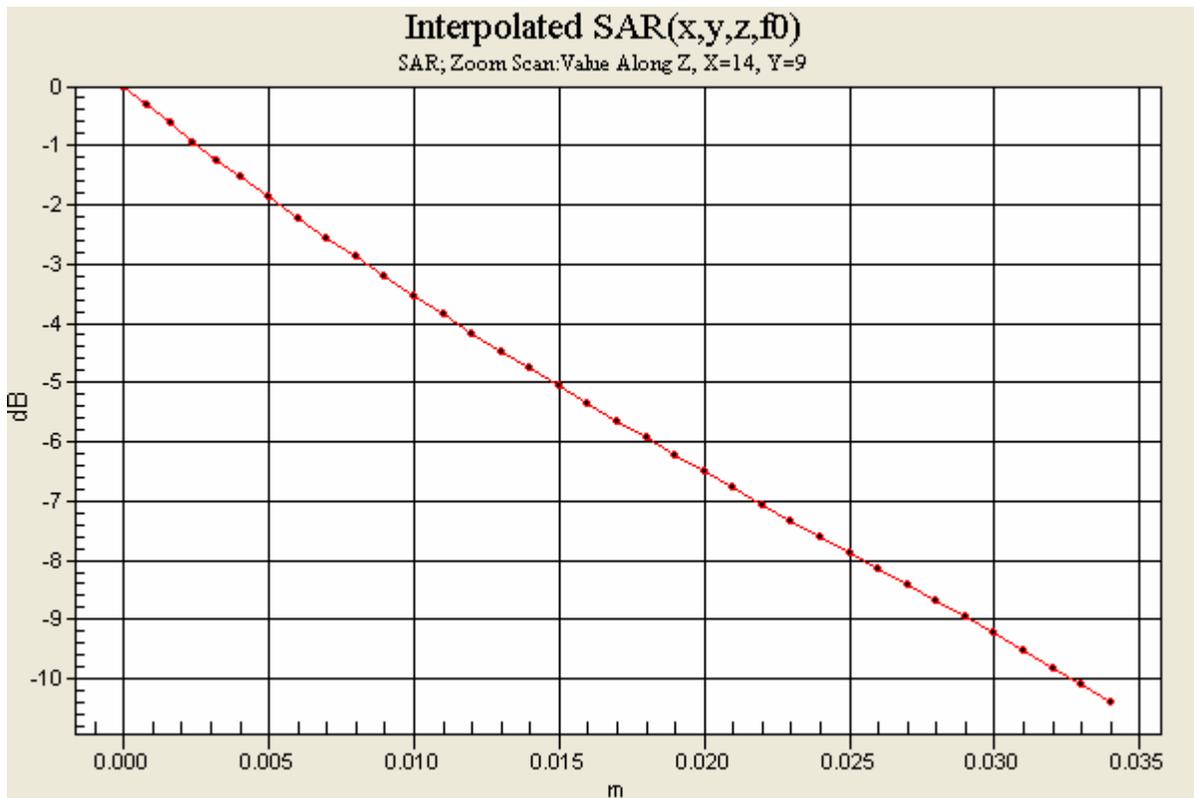
Maximum value of SAR (interpolated) = 1.18 mW/g



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0 dB = 1.18mW/g





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Distribution of maximum SAR in 1900 GSM band. Measured with back of device facing the body using a 15mm spacer. (Standard Battery, BST-37)

Date/Time: 7/14/2006 8:32:05 AM

File Name: [14July06_W810i_GSM1900_N9ZR_15mm_BB01.da4](#)

DUT: W810i

Program Notes: Battery - BST37 Humidity - 44.2 % Ambient Temp - 21.7 C Simulant Temp - 22.6 C

Communication System: DCS 1900 Body; Frequency: 1850.2 MHz; Duty Cycle: 1:4.15

Medium: Head 1800/1900 MHz Medium parameters used (interpolated): f = 1850.2 MHz; s = 1.47 mho/m; $\epsilon_r = 50.8$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1539; ConvF(4.12, 4.12, 4.12); Calibrated: 11/22/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn417; Calibrated: 11/11/2005
- Phantom: SAM with CRP (High Band Body); Type: SAM; Serial: TP: 1020
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

Unnamed procedure/Area Scan (61x101x1):

Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.962 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 23.4 V/m; Power Drift = -0.011 dB

Peak SAR (extrapolated) = 1.35 W/kg

SAR(1 g) = 0.864 mW/g; SAR(10 g) = 0.509 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.949 mW/g

Unnamed procedure/Zoom Scan (31x31x36)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

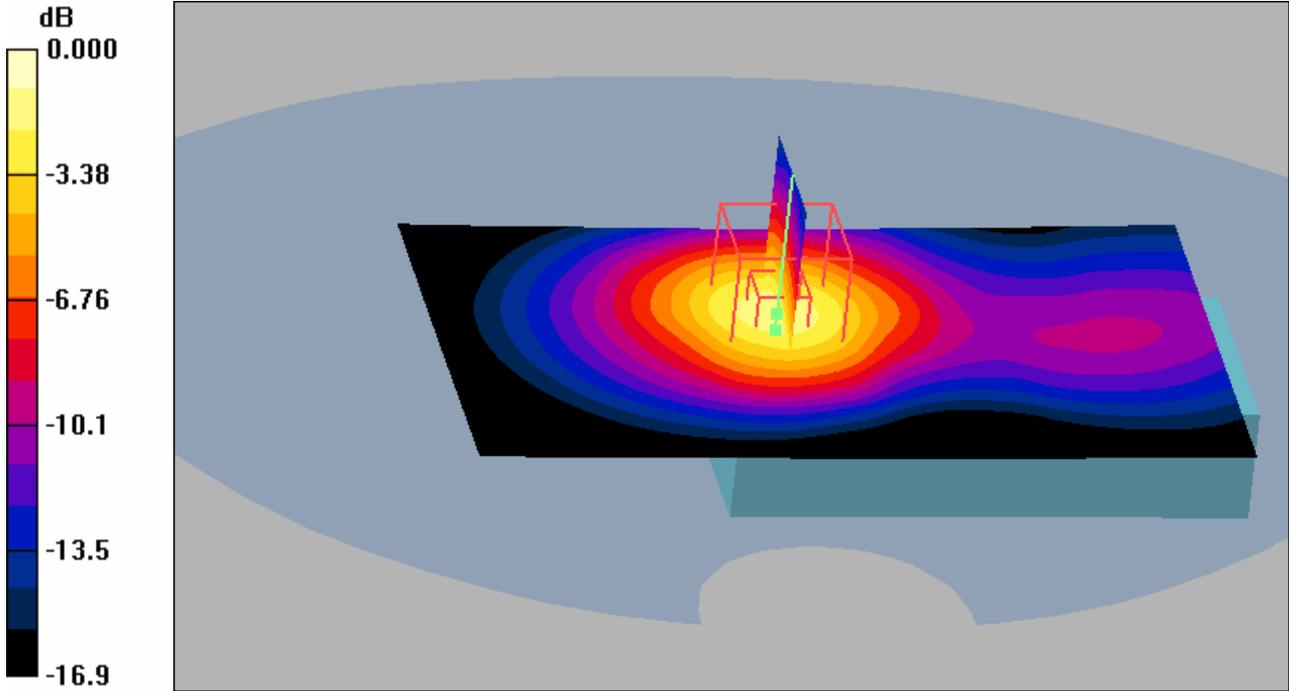
Reference Value = 23.4 V/m; Power Drift = -0.011 dB

[Info: Interpolated medium parameters used for SAR evaluation.](#)

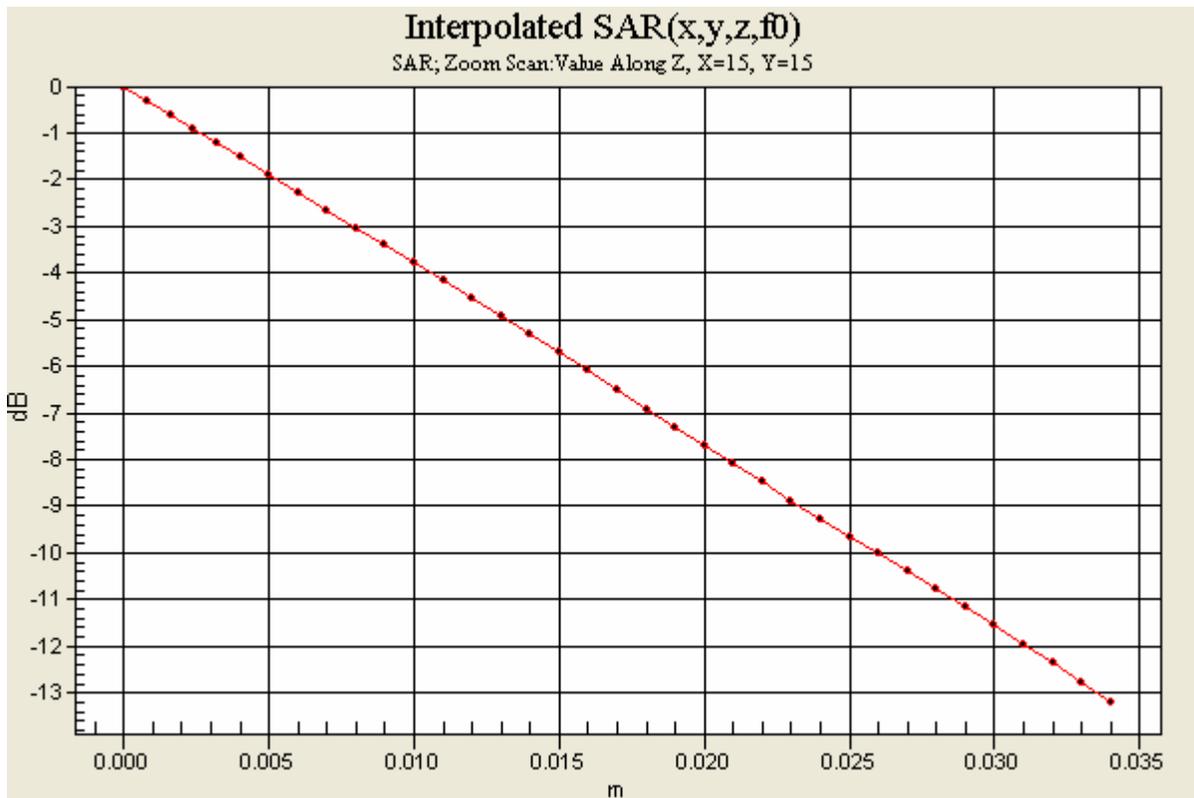
Maximum value of SAR (interpolated) = 1.35 mW/g



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0 dB = 1.35mW/g





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Distribution of maximum SAR in 1900 GSM band. Measured with front of device facing the body using a 15mm spacer. (Standard Battery, BST-37)

Date/Time: 7/14/2006 8:53:19 AM

File Name: [14July06 W810i GSM1900 N9ZR 15mm BF01.da4](#)

DUT: W810i

Program Notes: Battery - BST37 Humidity - 44.2 % Ambient Temp - 21.7 C Simulant Temp - 22.6 C

Communication System: DCS 1900 Body; Frequency: 1850.2 MHz; Duty Cycle: 1:4.15

Medium: Head 1800/1900 MHz Medium parameters used (interpolated): f = 1850.2 MHz; s = 1.47 mho/m; $\epsilon_r = 50.8$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1539; ConvF(4.12, 4.12, 4.12); Calibrated: 11/22/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn417; Calibrated: 11/11/2005
- Phantom: SAM with CRP (High Band Body); Type: SAM; Serial: TP: 1020
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

Unnamed procedure/Area Scan (61x101x1):

Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.188 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.9 V/m; Power Drift = 0.002 dB

Peak SAR (extrapolated) = 0.261 W/kg

SAR(1 g) = 0.172 mW/g; SAR(10 g) = 0.110 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.187 mW/g

Unnamed procedure/Zoom Scan (31x31x36)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

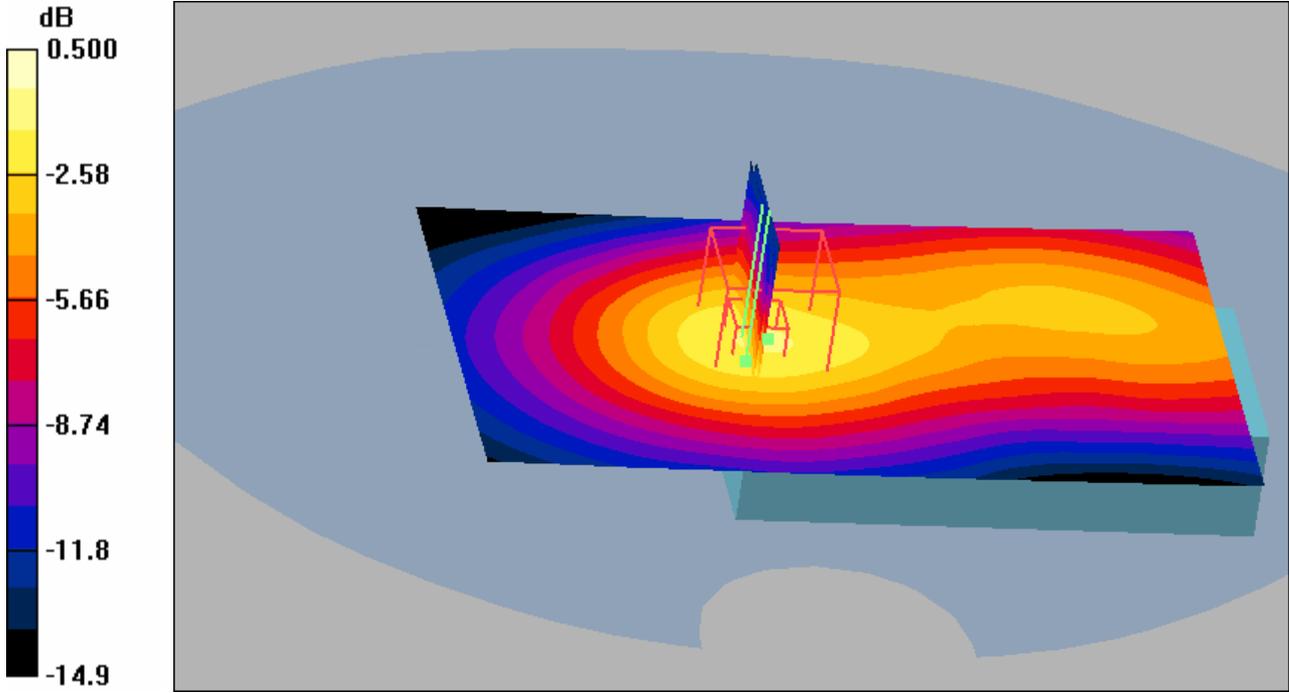
Reference Value = 11.9 V/m; Power Drift = 0.002 dB

[Info: Interpolated medium parameters used for SAR evaluation.](#)

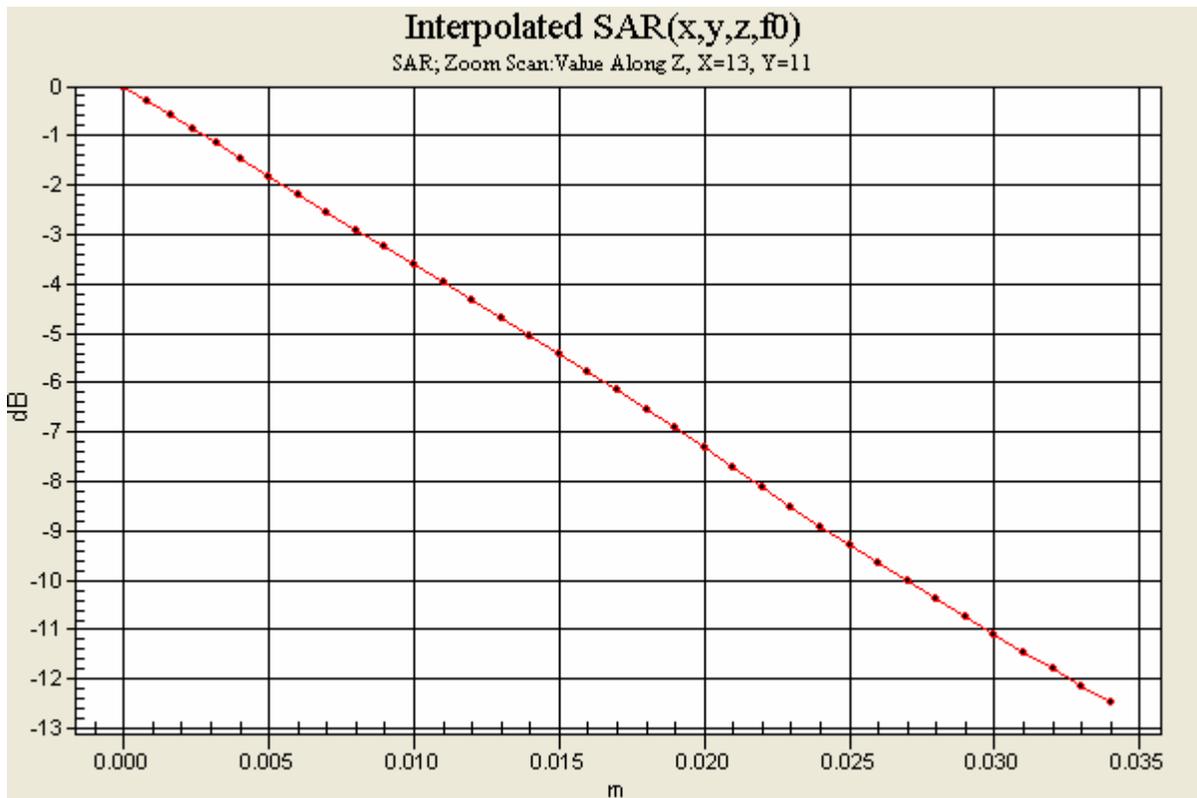
Maximum value of SAR (interpolated) = 0.261 mW/g



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0 dB = 0.261mW/g





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Distribution of maximum SAR in 1900 GSM band. Measured with back of device facing the body using a 15mm SPACER with Blue Tooth. (Standard Battery BST-37)

Date/Time: 7/14/2006 11:05:25 AM

File Name: [14July06_W810i_GSM1900_N9ZR_15mm_BT_BB01.da4](#)

DUT: W810i

Program Notes: Battery - BST37 Humidity - 44.9 % Ambient Temp - 21.7 C Simulant Temp - 21.9 C

Communication System: DCS 1900 Body; Frequency: 1850.2 MHz; Duty Cycle: 1:4.15

Medium: Head 1800/1900 MHz Medium parameters used (interpolated): f = 1850.2 MHz; s = 1.47 mho/m; $\epsilon_r = 50.8$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1539; ConvF(4.12, 4.12, 4.12); Calibrated: 11/22/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn417; Calibrated: 11/11/2005
- Phantom: SAM with CRP (High Band Body); Type: SAM; Serial: TP: 1020
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

Unnamed procedure/Area Scan (61x101x1):

Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.950 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 24.1 V/m; Power Drift = 0.069 dB

Peak SAR (extrapolated) = 1.39 W/kg

SAR(1 g) = 0.871 mW/g; SAR(10 g) = 0.506 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.973 mW/g

Unnamed procedure/Zoom Scan (31x31x36)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

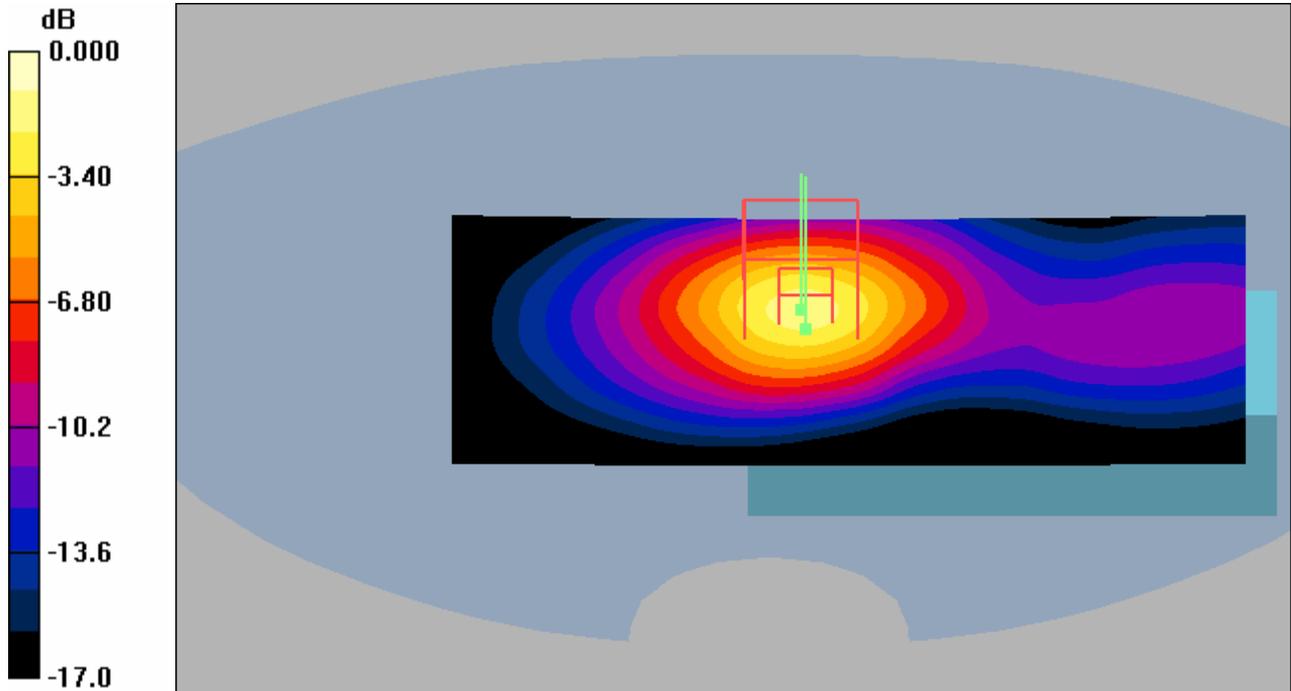
Reference Value = 24.1 V/m; Power Drift = 0.069 dB

[Info: Interpolated medium parameters used for SAR evaluation.](#)

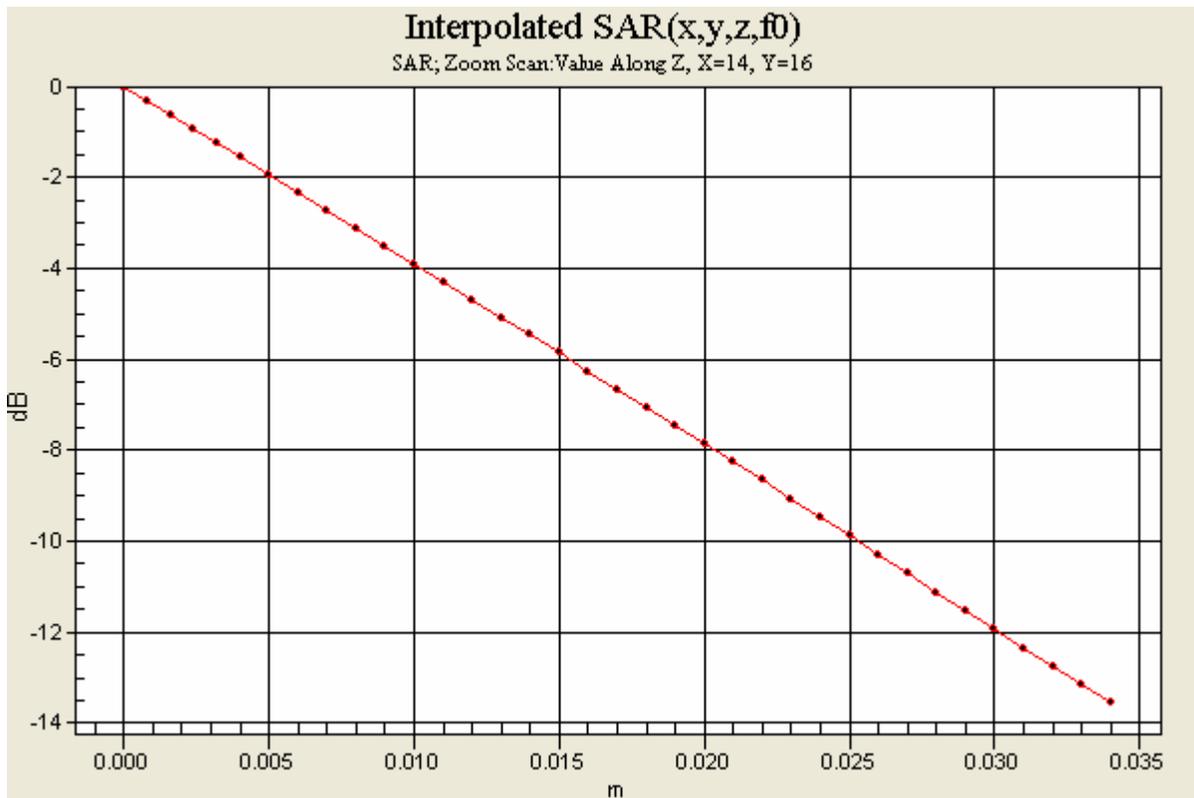
Maximum value of SAR (interpolated) = 1.39 mW/g



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0 dB = 1.39mW/g





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Appendix 4

Probe Calibration Certificates



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ET3DV6 SN:1539

November 22, 2005

DASY - Parameters of Probe: ET3DV6 SN:1539

Sensitivity in Free Space^A

Diode Compression^B

NormX	1.36 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP X	89 mV
NormY	1.27 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP Y	89 mV
NormZ	1.39 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP Z	89 mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

TSL 900 MHz Typical SAR gradient: 5 % per mm

Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR _{be} [%]	Without Correction Algorithm	8.8	4.7
SAR _{be} [%]	With Correction Algorithm	0.1	0.3

TSL 1750 MHz Typical SAR gradient: 10 % per mm

Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR _{be} [%]	Without Correction Algorithm	13.0	8.4
SAR _{be} [%]	With Correction Algorithm	0.8	0.0

Sensor Offset

Probe Tip to Sensor Center **2.7 mm**

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

^A The uncertainties of NormX,Y,Z do not affect the E²-field uncertainty inside TSL (see Page 8).
^B Numerical linearization parameter; uncertainty not required.

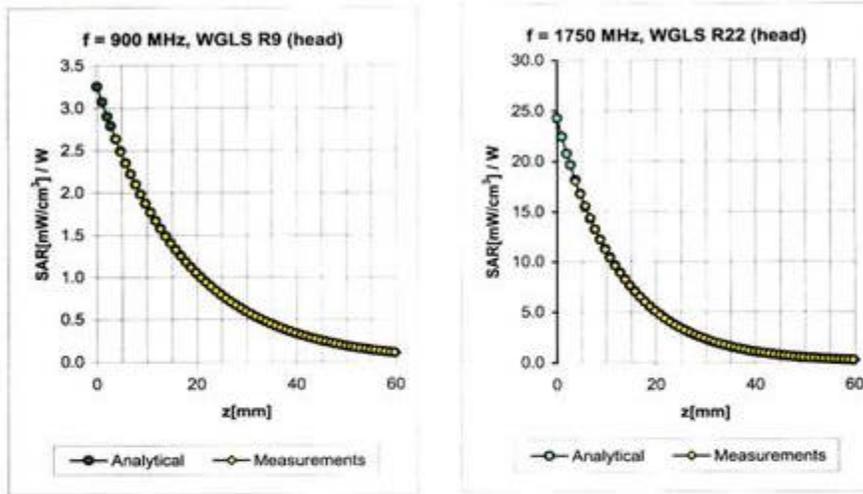


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ET3DV6 SN:1539

November 22, 2005

Conversion Factor Assessment



f [MHz]	Validity [MHz] ^c	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
835	± 50 / ± 100	Head	41.5 ± 5%	0.90 ± 5%	0.63	1.80	5.99 ± 11.0% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.54	1.93	5.86 ± 11.0% (k=2)
1750	± 50 / ± 100	Head	40.1 ± 5%	1.37 ± 5%	0.66	2.19	4.76 ± 11.0% (k=2)
1900	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.64	2.43	4.55 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.81	2.04	4.06 ± 11.8% (k=2)
835	± 50 / ± 100	Body	55.2 ± 5%	0.97 ± 5%	0.56	1.99	5.88 ± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.53	2.08	5.63 ± 11.0% (k=2)
1750	± 50 / ± 100	Body	53.4 ± 5%	1.49 ± 5%	0.65	2.48	4.21 ± 11.0% (k=2)
1900	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.66	2.48	4.12 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	1.18	1.35	4.06 ± 11.8% (k=2)

^c The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.



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ET3DV6 SN:1583

November 22, 2005

DASY - Parameters of Probe: ET3DV6 SN:1583

Sensitivity in Free Space^A

Diode Compression^B

NormX	1.81 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP X	93 mV
NormY	2.03 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP Y	93 mV
NormZ	1.98 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP Z	93 mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

TSL 900 MHz Typical SAR gradient: 5 % per mm

Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR _{90%} [%]	Without Correction Algorithm	7.7	4.3
SAR _{90%} [%]	With Correction Algorithm	0.0	0.2

TSL 1750 MHz Typical SAR gradient: 10 % per mm

Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR _{90%} [%]	Without Correction Algorithm	12.1	8.3
SAR _{90%} [%]	With Correction Algorithm	0.7	0.2

Sensor Offset

Probe Tip to Sensor Center **2.7 mm**

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

^A The uncertainties of NormX,Y,Z do not affect the E²-field uncertainty inside TSL (see Page 8).

^B Numerical linearization parameter: uncertainty not required.

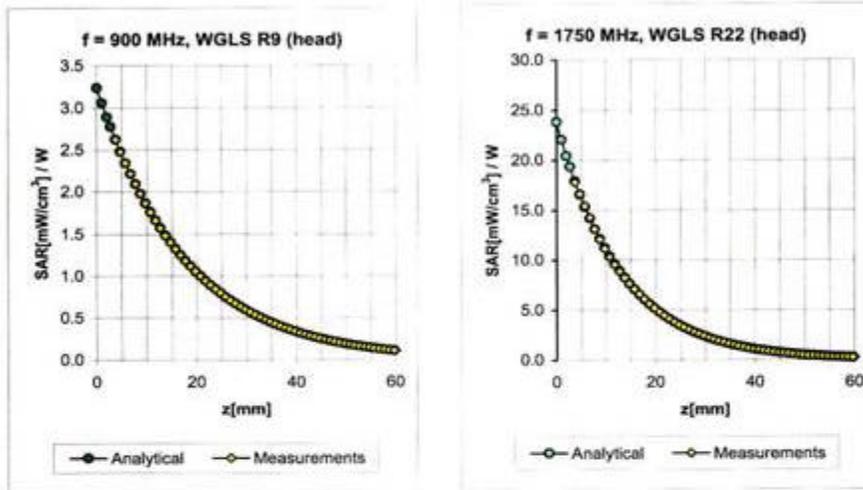


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ET3DV6 SN:1583

November 22, 2005

Conversion Factor Assessment



f [MHz]	Validity [MHz] ^c	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
835	± 50 / ± 100	Head	41.5 ± 5%	0.90 ± 5%	0.50	1.81	6.82 ± 11.0% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.48	1.93	6.51 ± 11.0% (k=2)
1750	± 50 / ± 100	Head	40.1 ± 5%	1.37 ± 5%	0.54	2.38	5.07 ± 11.0% (k=2)
1900	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.52	2.62	4.93 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.62	2.26	4.31 ± 11.8% (k=2)
835	± 50 / ± 100	Body	55.2 ± 5%	0.97 ± 5%	0.44	2.07	6.53 ± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.44	2.14	6.35 ± 11.0% (k=2)
1750	± 50 / ± 100	Body	53.4 ± 5%	1.49 ± 5%	0.52	2.78	4.60 ± 11.0% (k=2)
1900	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.53	2.81	4.46 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.69	1.93	4.22 ± 11.8% (k=2)

^c The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.



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Appendix 5

Measurement Uncertainty Budget



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Table 1. Uncertainty Budget for System Performance Check (Dipole & flat phantom) DASY4 System

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	$e = f(d,k)$	<i>f</i>	<i>g</i>	$h = c \times f / e$	$i = c \times g / e$	<i>k</i>
Uncertainty Component	Sec.	Tol. (± %)	Prob. Dist.	Div.	c_i (1-g)	c_i (10-g)	1-g u_i (±%)	10-g u_i (±%)	v_i
Measurement System									
Probe Calibration (<i>k</i> =1)	E2.1	4.7	R	1.73	0.707	0.707	1.9	1.9	∞
Axial Isotropy	E.2.2	9.6	R	1.73	0.707	0.707	3.9	3.9	∞
Hemispherical Isotropy	E.2.2	1.0	R	1.73	1	1	0.6	0.6	∞
Boundary Effect	E.2.3	4.7	R	1.73	1	1	2.7	2.7	∞
Linearity	E.2.4	1.0	R	1.73	1	1	0.6	0.6	∞
System Detection Limits	E.2.5	1.0	N	1	1	1	1.0	1.0	∞
Readout Electronics	E.2.6	0.8	R	1.73	1	1	0.5	0.5	∞
Response Time	E.2.7	2.6	R	1.73	1	1	1.5	1.5	∞
Integration Time	E.2.8	4.7	R	1.73	0.707	0.707	1.9	1.9	∞
RF Ambient Conditions	E.6.1	3.0	R	1.73	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance (corresponds to the mechanical constrains of the robot)	E.6.2	0.4	R	1.73	1	1	0.2	0.2	∞
Probe Positioning with respect to Phantom Shell	E.6.3	2.9	R	1.73	1	1	1.7	1.7	∞
Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	E.5	1.0	R	1.73	1	1	0.6	0.6	∞
Dipole									
Dipole Axis to Liquid Distance	8, E.4.2	1.0	R	1.73	1	1	0.6	0.6	∞
Input Power and SAR Drift Measurement	8, 6.6.2	5.0	R	1.73	1	1	2.9	2.9	∞
Phantom and Tissue Parameters									
Phantom Uncertainty - shell thickness tolerance	E.3.1	4.0	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity - deviation from target values (5)	E.3.2	4.3	R	1.73	0.64	0.43	1.59	1.07	∞
Liquid Conductivity -	E.3.3	6.20	R	1.73	0.64	0.43	2.29	1.54	∞



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measurement uncertainty (6)									
Liquid Permittivity - deviation from target values (5)	E.3.2	3.7	R	1.73	0.6	0.49	1.28	1.05	∞
Liquid Permittivity - measurement uncertainty (6)	E.3.3	6.08	R	1.73	0.6	0.49	2.11	1.72	∞
Combined Standard Uncertainty			RSS				9.37	9.03	
Expanded Uncertainty (95% C.L.)							18.74	18.05	



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Table 2: Uncertainty Budget for the Device Under Test with DASY4 System

a	b	c	d	e = f(d,k)	f	g	h = c x f / e	i = c x g / e	k
Uncertainty Component	Sec.	Tol. (± %)	Prob. Dist.	Div.	c _i (1-g)	c _i (10-g)	1-g u _i (±%)	10-g u _i (±%)	v _i
Measurement System									
Probe Calibration (k=1)	E.2.1	4.8	N	1	1	1	4.8	4.8	∞
Axial Isotropy	E.2.2	4.7	R	1.73	0.707	0.707	1.9	1.9	∞
Hemispherical Isotropy	E.2.2	9.6	R	1.73	0.707	0.707	3.9	3.9	∞
Boundary Effect	E.2.3	1.0	R	1.73	1	1	0.6	0.6	∞
Linearity	E.2.4	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	E.2.5	1.0	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	E.2.6	1.0	N	1	1	1	1.0	1.0	∞
Response Time	E.2.7	0.8	R	1.73	1	1	0.5	0.5	∞
Integration Time	E.2.8	2.6	R	1.73	1	1	1.5	1.5	∞
RF Ambient Conditions	E.6.1	3.0	R	1.73	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance (corresponds to the mechanical constrains of the robot)	E.6.2	0.4	R	1.73	1	1	0.2	0.2	∞
Probe Positioning with respect to Phantom Shell	E.6.3	2.9	R	1.73	1	1	1.7	1.7	∞
Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	E.5	1.0	R	1.73	1	1	0.6	0.6	∞
Test sample Related									
Test Sample Positioning	E.4.2	1.4	N	1	1	1	1.4	1.4	4
Device Holder Uncertainty	E.4.1	1.3	R	1.73	1	1	0.8	0.8	4
Output Power Variation - SAR drift measurement (4)	6.6.2	5.0	R	1.73	1	1	2.9	2.9	∞
Phantom and Tissue Parameters									



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Phantom Uncertainty (shape and thickness tolerances)	E.3.1	4.0	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity - deviation from target values (5)	E.3.2	4.3	R	1.73	0.64	0.43	1.6	1.1	∞
Liquid Conductivity - measurement uncertainty (6)	E.3.3	6.20	R	1.73	0.64	0.43	2.3	1.5	∞
Liquid Permittivity - deviation from target values (5)	E.3.2	3.7	R	1.73	0.6	0.49	1.3	1.0	∞
Liquid Permittivity - measurement uncertainty (6)	E.3.3	6.08	R	1.73	0.6	0.49	2.1	1.7	∞
Combined Standard Uncertainty			RSS				9.5	9.1	
Expanded Uncertainty (95% CONFIDENCE LEVEL)			K=2				19.0	18.3	



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Table 3a. Values for e'

Uncertainty Component	Tolerance (±%)	Probability Distribution	Divisor	c _i	Standard Uncertainty (±%)	v _i or v _{eff}
Repeatability (n repeats)	0.97	N	1	1	0.97	4
Network analyzer uncertainty sources	8.38	R	1.73	1	4.83	∞
Dielectric Error Sources	5.93	R	1.73	1	3.42	∞
Combined standard uncertainty					6.08	

Table 3b. Values for s

Uncertainty Component	Tolerance (±%)	Probability Distribution	Divisor	c _i	Standard Uncertainty (±%)	v _i or v _{eff}
Repeatability (n repeats)	1.85	N	1	1	1.85	4
Network analyzer uncertainty sources	8.38	R	1.73	1	4.83	∞
Dielectric Error Sources	5.93	R	1.73	1	3.42	∞
Combined standard uncertainty					6.20	



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Appendix 6

Photographs of the Device Under Test



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a. Front



b. Back



c. Side

View of Device



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View of Hands-free Accessory



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Position of device against head phantom using the “cheek” position



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Position of device against head phantom using the “tilt” position



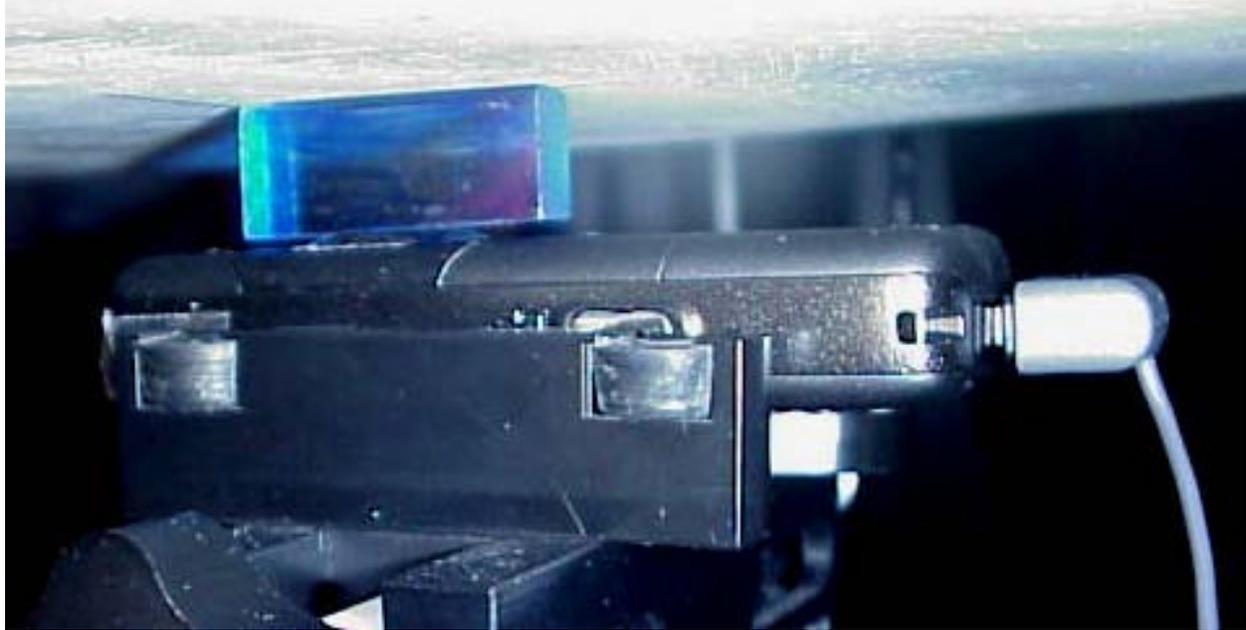
Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon		No. REP 2006 008 W810i HWB 02	
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Position with front of device against flat phantom using a 15mm SPACER with hands free accessory.



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Position with back of device against flat phantom using a 15mm SPACER with hands free accessory.