RF EXPOSURE EVALUATION

SPECIFIC ABSORPTION RATE

SAR TEST REPORT

FOR

PALM, INC.

PORTABLE DUAL-BAND PCS/CELLULAR CDMA2000 PHONE
With BLUETOOTH and 802.11b WLAN SDIO CARD

CLASS II PERMISSIVE CHANGE - ADD 802.11b WLAN SDIO CARD

MODEL(S): TREO XXX

FCC ID: O8FJIMI

IC: 3905A-JIMI

Test Report Serial Number

082205O8F-T664-S24CW
Issue 1.0

Test Report Issue Date

October 01, 2005

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DECLARATION OF COMPLIANCE
SAR RF EXPOSURE EVALUATION

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Applicant Information

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FCC IDENTIFER:	**O8FJIMI**
IC IDENTIFIER:	**3905A-JIMI**
Model(s):	**Treo XXX**
FCC Rule Part(s):	**47 CFR §2.1093; IC RSS-102 Issue 1 (Provisional)**
Test Procedure(s):	**FCC OET Bulletin 65, Supplement C (01-01)** **IEEE Standard 1528-2003, IEC 62209-1:2005**
FCC Classification:	**PCS Licensed Transmitter held to ear (PCE)**
Device Description:	**Portable Dual-Band PCS/Cellular CDMA2000 Phone**
Co-located Transmitter(s):	**Bluetooth, 802.11b WLAN SDIO Card**
Tx Frequency Range(s):	**1851.25 - 1908.75 MHz (PCS CDMA)** **824.70 - 848.31 MHz (Cellular CDMA** **2412 - 2462 MHz (802.11b WLAN)** **2402 - 2480 MHz (Bluetooth)**
Max. RF Output Power Tested:	**23.8 dBm Conducted (PCS CDMA)** **24.0 dBm Conducted (Cellular CDMA)** **15.2 dBm Peak Conducted (802.11b)** **0 dBm Peak Conducted (Bluetooth)**
Battery Type(s) Tested:	**Lithium-ion 3.7 VDC (P/N: 157-10014-00)**
Antenna Type(s) Tested:	**Fixed Stubby (Dual-Band CDMA)** **Internal to phone (Bluetooth)** **Internal to SDIO (802.11b WLAN)**
Body-Worn Accessories Tested:	**Fitted Leather Pouch and Swivel Belt-Clip (SKU#3179WW)**
Additional Configuration(s) Tested:	**1.5 cm Air-Gap Spacing (Front and Back Sides of DUT)**
Audio Accessories Tested:	**Generic Ear-Microphone**
Max. SAR Levels Evaluated:	**Head: 0.311 W/kg (WLAN); 1.06 W/kg (PCS Band); 1.46 W/kg (Cellular Band)** **Body: 0.0685 W/kg (WLAN); 0.532 W/kg (PCS Band); 0.614 W/kg (Cellular Band)**
Class II Permissive Change(s):	**Add 802.11b WLAN SDIO Card (SyChip Model: WLAN6065SD)**

Celltech Labs Inc. declares under its sole responsibility that this wireless portable device has demonstrated compliance with the Specific Absorption Rate (SAR) RF exposure requirements specified in FCC 47 CFR §2.1093 and Health Canada's Safety Code 6. The device was tested in accordance with the measurement standards and procedures specified in FCC OET Bulletin 65, Supplement C (Edition 01-01), Industry Canada RSS-102 Issue 1 (Provisional) and IEEE Standard 1528-2003 for the General Population / Uncontrolled Exposure environment. All measurements were performed in accordance with the SAR system manufacturer recommendations.

I attest to the accuracy of data. All measurements were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Tested By:

Sean Johnston
Compliance Technologist
Celltech Labs Inc.

Reviewed By:

Spencer Watson
Senior Compliance Technologist
Celltech Labs Inc.

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1.0 INTRODUCTION

This measurement report demonstrates that the Palm, Inc. Model: Treo XXX Dual-Band PCS/Cellular CDMA2000 Phone with 802.11b WLAN and Bluetooth FCC ID: O8FJIMI, with the Class II Permissive Change(s) described in this report, complies with the SAR (Specific Absorption Rate) RF exposure requirements specified in FCC 47 CFR §2.1093 (see reference [1]) and Health Canada's Safety Code 6 (see reference [2]) for the General Population / Uncontrolled Exposure environment. The test procedures described in FCC OET Bulletin 65, Supplement C, Edition 01-01 (see reference [3]), IC RSS-102 Issue 1 (Provisional) (see reference [4]), and IEEE Standard 1528-2003 (see reference [5]) were employed. A description of the product, operating configuration, detailed summary of the test results, methodology and procedures used in the evaluation, equipment used, and the various provisions of the rules are included within this test report.

2.0 DESCRIPTION OF DEVICE UNDER TEST (DUT)

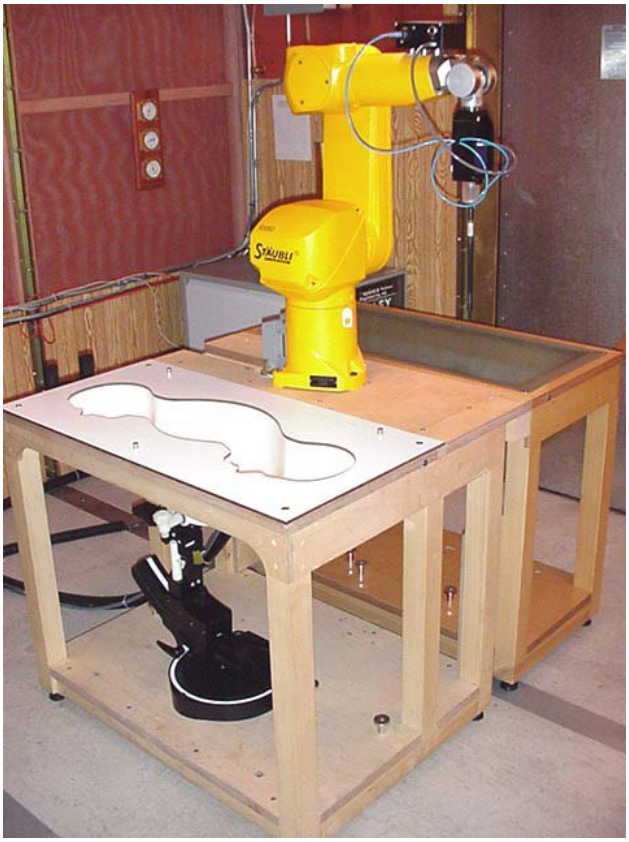
FCC Rule Part(s)	47 CFR §2.1093				
IC Rule Part(s)	RSS-102 Issue 1 (Provisional)				
FCC Device Classification	PCS Licensed Transmitter held to ear (PCE)				
IC Device Classification	2 GHz Personal Communications Services			RSS-133 Issue 3	
	800 MHz Cellular Telephone Employing New Technology			RSS-132 Issue 1 (Provisional)	
Test Procedure(s) / Standards	FCC OET Bulletin 65, Supplement C (01-01)			IC RSS-102 Issue 1 (Provisional)	
	IEEE Standard 1528-2003			IEC 62209-1:2005	
Device Description	Portable Dual-Band PCS/Cellular CDMA2000 Phone with Bluetooth and 802.11b WLAN SDIO Card				
FCC IDENTIFIER	O8FJIMI				
IC IDENTIFIER	3905A-JIMI				
Model(s)	Treo XXX				
Serial No. of Sample(s) Tested	Phone	PTVC03Q5H055	Sample used for 802.11b Head SAR Testing		Identical Prototype
		PWVC0835H0AX	Sample used for 802.11b & CDMA Body SAR Testing		Identical Prototype
	SDIO	1051002452	Sample used for Head and Body SAR testing		Identical Prototype
Tx Frequency Range(s)	1851.25 - 1908.75 MHz			PCS CDMA	
	824.70 - 848.31 MHz			Cellular CDMA	
	2412 - 2462 MHz			802.11b WLAN	
	2402 - 2480 MHz			Bluetooth	

Max. RF Conducted Output Power Tested	**802.11b WLAN (DSSS)**		**Cellular CDMA Band**		**PCS CDMA Band**	
	2412 MHz	15.2 MHz	824.70 MHz	24.0 dBm	1851.25 MHz	23.8 dBm
	2437 MHz	14.7 MHz	836.52 MHz	23.8 dBm	1880.00 MHz	23.8 dBm
	2462 MHz	14.2 MHz	848.31 MHz	24.0 dBm	1908.75 MHz	23.3 dBm
	Bluetooth	0 dBm	Peak Conducted		Frequency Hopping Spread Spectrum	

Battery Type(s) Tested	Lithium-ion		3.7 VDC	P/N: 157-10014-00
Antenna Type(s) Tested	External Fixed Stubby		Dual-Band CDMA	
	Internal (to the phone)		Bluetooth	
	Internal (to the SDIO)		802.11b WLAN	
Body-Worn Accessories Tested	Fitted Leather Pouch and Swivel Belt-Clip (Plastic w/ Metal Spring)			SKU#3179WW
Additional Configurations Tested	1.5 cm Air-Gap Spacing		Front and Back Sides of DUT	
Audio Accessories Tested	Generic Ear-Microphone			
Class II Permissive Change(s)	**Add 802.11b WLAN SDIO Card (SyChip Model: WLAN6065SD)**			

3.0 SAR MEASUREMENT SYSTEM

Celltech Labs Inc. SAR measurement facility utilizes the Dosimetric Assessment System (DASY™) manufactured by Schmid & Partner Engineering AG (SPEAG™) of Zurich, Switzerland. The DASY4 measurement system is comprised of the measurement server, robot controller, computer, near-field probe, probe alignment sensor, specific anthropomorphic mannequin (SAM) phantom, and various planar phantoms for brain and/or body SAR evaluations. The robot is a six-axis industrial robot performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF). A cell controller system contains the power supply, robot controller, teach pendant (Joystick), and remote control, is used to drive the robot motors. The Staubli robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the DASY4 measurement server. The DAE4 utilizes a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16-bit AD-converter and a command decoder and control logic unit. Transmission to the DASY4 measurement server is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe-mounting device includes two different sensor systems for frontal and sidewise probe contacts. The sensor systems are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer.



DASY4 Measurement System with SAM Phantom

DASY4 Measurement System with SAM Phantom

4.0 MEASUREMENT SUMMARY

HEAD SAR EVALUATION RESULTS - 802.11b WLAN Card in Treo XXX SDIO Slot (Data Rate: 1Mbps)

Test Mode	Freq. (MHz)	Chan.	Transmitter (Test Type)	Power Source	Phantom Section	Test Position	Conducted Power Before Test (dBm)	SAR Drift During Test (dB)	Measured SAR 1g (W/kg)
DSSS	2437	6	802.11b SDIO	Li-ion (Phone)	Right Ear	Cheek/Touch	14.7	0.0101	0.176
DSSS	2412	1	802.11b SDIO	Li-ion (Phone)	Right Ear	Cheek/Touch	15.2	-0.0254	0.184
DSSS	2462	11	802.11b SDIO	Li-ion (Phone)	Right Ear	Cheek/Touch	14.2	-0.177	0.0869
DSSS	2412	1	802.11b SDIO (Volume Scan)	Li-ion (Phone)	Right Ear	Cheek/Touch	15.2	0.0475	0.184
DSSS	2437	6	802.11b SDIO	Li-ion (Phone)	Right Ear	Ear/Tilt (15°)	14.7	-0.0402	0.292
DSSS	2412	1	802.11b SDIO	Li-ion (Phone)	Right Ear	Ear/Tilt (15°)	15.2	-0.0158	0.296
DSSS	2462	11	802.11b SDIO	Li-ion (Phone)	Right Ear	Ear/Tilt (15°)	14.2	-0.0641	0.142
DSSS	2412	1	**802.11b SDIO (Volume Scan)**	Li-ion (Phone)	Right Ear	Ear/Tilt (15°)	15.2	-0.127	**0.311**
DSSS	2437	6	802.11b SDIO	Li-ion (Phone)	Left Ear	Cheek/Touch	14.7	-0.0749	0.153
DSSS	2412	1	802.11b SDIO	Li-ion (Phone)	Left Ear	Cheek/Touch	15.2	-0.0342	0.159
DSSS	2462	11	802.11b SDIO	Li-ion (Phone)	Left Ear	Cheek/Touch	14.2	-0.0664	0.0677
DSSS	2412	1	802.11b SDIO (Volume Scan)	Li-ion (Phone)	Left Ear	Cheek/Touch	15.2	-0.102	0.171
DSSS	2437	6	802.11b SDIO	Li-ion (Phone)	Left Ear	Ear/Tilt (15°)	14.7	-0.0294	0.250
DSSS	2412	1	802.11b SDIO	Li-ion (Phone)	Left Ear	Ear/Tilt (15°)	15.2	0.0581	0.266
DSSS	2462	11	802.11b SDIO	Li-ion (Phone)	Left Ear	Ear/Tilt (15°)	14.2	0.0201	0.114
DSSS	2412	1	802.11b SDIO (Volume Scan)	Li-ion (Phone)	Left Ear	Ear/Tilt (15°)	15.2	0.0138	0.294
ANSI / IEEE C95.1 1999 - SAFETY LIMIT				**BRAIN: 1.6 W/kg (averaged over 1 gram)**			**Spatial Peak - Uncontrolled Exposure**		

Test Date(s)	May 26, 2005				Relative Humidity	31	%
Measured Fluid Type	2450 MHz Brain				Atmospheric Pressure	102.9	kPa
Dielectric Constant ε_r	IEEE Target		Measured	Deviation	Ambient Temperature	24.8	°C
	39.2	± 5%	37.5	-4.3%	Fluid Temperature	23.3	°C
Conductivity σ (mho/m)	IEEE Target		Measured	Deviation	Fluid Depth	≥ 15	cm
	1.80	± 5%	1.85	+2.8%	ρ (Kg/m^3)	1000	

Note(s):

1. The measurement results were obtained with the DUT tested in the conditions described in this report. Detailed measurement data and plots showing the maximum SAR location of the DUT are reported in Appendix A.
2. The power drifts measured by the DASY4 system during the SAR evaluations were <5% from the start power.
3. The DUT was not evaluated for Head SAR with the Bluetooth co-transmitting due to the fact that the Bluetooth is intended for body-worn operation only with a corresponding Bluetooth device.
4. The Lithium-ion battery in the phone was fully charged prior to each SAR evaluation.
5. The ambient and fluid temperatures were measured prior to, and during, the fluid dielectric parameter check and the SAR evaluations. The temperatures reported were consistent for all measurement periods.
6. The dielectric parameters of the simulated tissue mixture were measured prior to the SAR evaluations using an ALS-PR-DIEL Dielectric Probe Kit and an HP 8753ET Network Analyzer (see Appendix C for measured fluid dielectric parameters).
7. SAR measurements were performed within 24 hours of the system performance check.

MEASUREMENT SUMMARY (CONT.)

HEAD SAR EVALUATION RESULTS - Treo XXX CELLULAR CDMA Phone with 802.11b WLAN SDIO Card

Test Mode	Freq. (MHz)	Chan.	Transmitter (Test Type)	Antenna Type	Battery Type	Phantom Section	Test Position	Cond. Power Before Test (dBm)	Measured SAR 1g (W/kg)	SAR Drift During Test (dB)	Scaled SAR 1g (+0.2 dB Cond. Pwr.) SAR (W/kg)	Scaled SAR 1g (+0.2 dB Cond. Pwr.) Cond. Pwr. (dB)
Cellular CDMA	848.31	777	Treo Phone (SDIO Installed)	Stubby	Li-ion	Right Ear	Cheek/Touch	24.0	P 0.961	0.142	P 1.01	24.2
									S 0.888		S 0.930	24.2
Cellular CDMA	848.31	777	Treo Phone (SDIO Installed)	Stubby	Li-ion	Right Ear	Ear/Tilt (15°)	24.0	1.11	0.00875	1.16	24.2
Cellular CDMA	848.31	777	**Treo Phone (SDIO Installed) Volume Scan**	Stubby	Li-ion	Right Ear	Ear/Tilt (15°)	24.0	1.16	0.000413	1.21	24.2
Cellular CDMA	848.31	777	**Multi-Band Volume Scan Grid Summation**	Stubby	Li-ion	Right Ear	Ear/Tilt (15°)	24.0	1.39	0.000413	**1.46**	24.2
DSSS WLAN	2412	1						15.2		-0.127		15.2
Cellular CDMA	848.31	777	Treo Phone (SDIO Installed)	Stubby	Li-ion	Left Ear	Cheek/Touch	24.0	0.961	-0.0164	1.01	24.2
Cellular CDMA	848.31	777	Treo Phone (SDIO Installed)	Stubby	Li-ion	Left Ear	Ear/Tilt (15°)	24.0	0.809	-0.0413	0.847	24.2

ANSI / IEEE C95.1 1999 - SAFETY LIMIT	BRAIN: 1.6 W/kg (averaged over 1 gram)	Spatial Peak - Uncontrolled Exposure

Test Date(s)	August 23, 2005				Relative Humidity	31	%
Measured Fluid Type	835 MHz Brain				Atmospheric Pressure	101.8	kPa
Dielectric Constant ε_r	IEEE Target		Measured	Deviation	Ambient Temperature	22.9	°C
	41.5	± 5%	41.3	-0.5%	Fluid Temperature	22.7	°C
Conductivity σ (mho/m)	IEEE Target		Measured	Deviation	Fluid Depth	≥ 15	cm
	0.90	± 5%	0.87	-3.3%	ρ (Kg/m^3)	1000	

Note(s):

1. The measurement results were obtained with the DUT tested in the conditions described in this report. Detailed measurement data and plots showing the maximum SAR location of the DUT are reported in Appendix A.
2. The "SDIO installed" test configurations shown in the table above were determined based on the worst-case Cellular CDMA SAR levels without the SDIO installed, which were tested for the original FCC Certification filing (Celltech Test Report Serial No.: 082205O8F-T664-S24C) as shown below:
   a). Cellular CDMA (without SDIO) - Right Ear - Cheek/Touch Position - 848.31 MHz - Chan. 777 (1.17 W/kg)
   b). Cellular CDMA (without SDIO) - Right Ear - Tilt Position 15° - 848.31 MHz - Chan. 777 (1.20 W/kg)
   c). Cellular CDMA (without SDIO) - Left Ear - Cheek/Touch Position - 848.31 MHz - Chan. 777 (1.10 W/kg)
   d). Cellular CDMA (without SDIO) - Left Ear - Tilt Position 15° - 848.31 MHz - Chan. 777 (0.928 W/kg)
3. Secondary peak SAR levels within 2 dB of the primary were reported (P = Primary, S = Secondary).
4. The power drifts of the DUT measured by the DASY4 system during the SAR evaluations were < 5% from the start power.
5. The measured SAR levels were scaled up by +0.2 dB (≤ 5%) to report worst-case SAR levels with a ≤ +5% increase in conducted power.
6. The DUT was not evaluated for Head SAR with the Bluetooth co-transmitting due to the fact that the Bluetooth is intended for body-worn operation only with a corresponding Bluetooth device.
7. The Lithium-ion battery in the phone was fully charged prior to each SAR evaluation.
8. The ambient and fluid temperatures were measured prior to, and during, the fluid dielectric parameter check and the SAR evaluations. The temperatures reported were consistent for all measurement periods.
9. The dielectric parameters of the simulated tissue mixture were measured prior to the SAR evaluations using an ALS-PR-DIEL Dielectric Probe Kit and an HP 8753ET Network Analyzer (see Appendix C for measured fluid dielectric parameters).
10. The SAR measurements were performed within 24 hours of the system performance check.

MEASUREMENT SUMMARY (CONT.)

HEAD SAR EVALUATION RESULTS - Treo XXX PCS CDMA Phone with 802.11b WLAN SDIO Card

Test Date	Test Mode	Freq. (MHz)	Chan.	Transmitter (Test Type)	Antenna Type	Battery Type	Phantom Section	Test Position	Cond. Power Before Test (dBm)	Measured SAR 1g (W/kg)	SAR Drift During Test (dB)	Scaled SAR 1g (+0.2 dB Cond. Pwr.) SAR (W/kg)	Scaled SAR 1g (+0.2 dB Cond. Pwr.) Cond. Pwr. (dB)
8/24	PCS CDMA	1880.00	600	Treo Phone (SDIO Installed)	Stubby	Li-ion	Right Ear	Cheek/Touch	23.8	0.382	-0.0917	0.400	24.0
8/23	PCS CDMA	1880.00	600	Treo Phone (SDIO Installed)	Stubby	Li-ion	Right Ear	Ear/Tilt (15°)	23.8	0.675	-0.0198	0.707	24.0
8/24	PCS CDMA	1880.00	600	Treo Phone (SDIO Installed)	Stubby	Li-ion	Left Ear	Cheek/Touch	23.8	0.424	-0.0787	0.444	24.0
8/23	PCS CDMA	1851.25	25	Treo Phone (SDIO Installed)	Stubby	Li-ion	Left Ear	Ear/Tilt (15°)	23.8	0.740	-0.205	0.775	24.0
8/23	PCS CDMA	1851.25	25	**Treo Phone (SDIO Installed) Volume Scan**	Stubby	Li-ion	Left Ear	Ear/Tilt (15°)	23.8	0.776	-0.0330	0.813	24.0
8/23	PCS CDMA	1851.25	25	**Multi-Band Volume Scan Grid Summation**	Stubby	Li-ion	Left Ear	Ear/Tilt (15°)	23.8	1.01	-0.0330	**1.06**	24.0
	DSSS WLAN	2412	1						15.2		0.0138		15.2

ANSI / IEEE C95.1 1999 SAFETY LIMIT	BRAIN: 1.6 W/kg (averaged over 1 gram)	Spatial Peak - Uncontrolled Exposure

Test Date(s)	August 23, 2005	August 24, 2005
Measured Fluid Type	1880 MHz Brain	
Dielectric Constant ε_r	IEEE Target: 40.0 ± 5%	
	Aug 23: Meas. 38.5, Dev. -3.8%	
	Aug 24: Meas. 38.2, Dev. -4.5%	
Conductivity σ (mho/m)	1880 MHz Brain	
	IEEE Target: 1.40 ± 5%	
	Aug 23: Meas. 1.40, Dev. 0.0%	
	Aug 24: Meas. 1.35, Dev. -3.6%	

Test Date(s)	Aug 23	Aug 24	Unit
Relative Humidity	30	31	%
Atmospheric Pressure	101.5	102.0	kPa
Ambient Temperature	25.3	24.0	°C
Fluid Temperature	23.3	23.5	°C
Fluid Depth	≥ 15	≥ 15	cm
ρ (Kg/m^3)	1000		

Note(s):

1. The measurement results were obtained with the DUT tested in the conditions described in this report. Detailed measurement data and plots showing the maximum SAR location of the DUT are reported in Appendix A.
2. The "SDIO installed" test configurations shown in the table above were determined based on the worst-case PCS CDMA SAR levels without the SDIO installed, which were tested for the original FCC Certification filing (Celltech Test Report Serial No.: 082205O8F-T664-S24C) as shown below:
   a). PCS CDMA (without SDIO) - Right Ear - Cheek/Touch Position - 1880.00 MHz - Chan. 600 (0.917 W/kg)
   b). PCS CDMA (without SDIO) - Right Ear - Tilt Position 15° - 1880.00 MHz - Chan. 600 (1.20 W/kg)
   c). PCS CDMA (without SDIO) - Left Ear - Cheek/Touch Position - 1880.00 MHz - Chan. 600 (0.912 W/kg)
   d). PCS CDMA (without SDIO) - Left Ear - Tilt Position 15° - 1851.51 MHz - Chan. 25 (1.18 W/kg)
3. The power drifts of the DUT measured by the DASY4 system during the SAR evaluations were < 5% from the start power.
4. The measured SAR levels were scaled up by +0.2 dB (≤ 5%) to report worst-case SAR levels with a ≤ +5% increase in conducted power.
5. The DUT was not evaluated for Head SAR with the Bluetooth co-transmitting due to the fact that the Bluetooth is intended for body-worn operation only with a corresponding Bluetooth device.
6. The Lithium-ion battery in the phone was fully charged prior to each SAR evaluation.
7. The ambient and fluid temperatures were measured prior to, and during, the fluid dielectric parameter check and the SAR evaluations. The temperatures reported were consistent for all measurement periods.
8. The dielectric parameters of the simulated tissue mixture were measured prior to the SAR evaluations using an ALS-PR-DIEL Dielectric Probe Kit and an HP 8753ET Network Analyzer (see Appendix C for measured fluid dielectric parameters).
9. The SAR measurements were performed within 24 hours of the system performance check.

MEASUREMENT SUMMARY (CONT.)

BODY-WORN SAR EVALUATION RESULTS - 802.11b WLAN Card in Treo XXX SDIO Slot (Data Rate: 1Mbps)

Test Date	Freq. (MHz)	Chan.	Test Mode	Transmitter (Test Type)	Power Source	Accessories Tested: Body-Worn / Audio	DUT Position facing Planar Phantom	Separ. Distance to Planar Phantom (cm)	Cond. Power Before Test (dBm)	Measured SAR 1g (W/kg)	SAR Drift During Test (dB)	Scaled SAR 1g with droop > 5% (W/kg)
Aug 26	2437	6	DSSS	802.11b SDIO	Li-ion (Phone)	Fitted Pouch/Belt-Clip / Ear-Microphone	Back	2.5	14.7	0.0305	-0.251	0.0323
Aug 26	2437	6	DSSS	802.11b SDIO	Li-ion (Phone)	None (Air-Gap Spacing) / Ear-Microphone	Back	1.5	14.7	**0.0685**	0.255	-
Aug 26	2437	6	DSSS	802.11b SDIO	Li-ion (Phone)	None (Air-Gap Spacing) / Ear-Microphone	Front	1.5	14.7	0.0429	0.0123	-
Aug 30	2412	1	DSSS	802.11b SDIO	Li-ion (Phone)	None (Air-Gap Spacing) / Ear-Microphone	Back	1.5	15.2	0.0549	-0.0463	-
Aug 30	2437	6	DSSS	**802.11b SDIO Volume Scan**	Li-ion (Phone)	None (Air-Gap Spacing) / Ear-Microphone	Back	1.5	14.7	0.0580	-0.296	0.0621
Aug 30	2437	6	DSSS	802.11b SDIO	Li-ion (Phone)	None (Air-Gap Spacing) / Ear-Microphone	Back	1.5	14.7	0.0609	-0.221	0.0641
	Bluetooth*		FHSS	Bluetooth					0			
Aug 30	2437	6	DSSS	**802.11b SDIO & Bluetooth Volume Scan**	Li-ion (Phone)	None (Air-Gap Spacing) / Ear-Microphone	Back	1.5	14.7	0.0610	0.115	-
	Bluetooth*		FHSS						0			
Aug 30	2462	11	DSSS	802.11b SDIO	Li-ion (Phone)	None (Air-Gap Spacing) / Ear-Microphone	Back	1.5	14.2	0.0325	0.229	-

ANSI / IEEE C95.1 1999 SAFETY LIMIT	BODY: 1.6 W/kg (averaged over 1 gram)	Spatial Peak Uncontrolled Exposure

Test Date(s)	August 26, 2005	August 30, 2005
Measured Fluid Type	2450 MHz Body	

Fluid Parameters	IEEE Target		Date	Measured	Deviation
Dielectric Constant ε_r	52.7	± 5%	Aug 26	50.7	-3.8%
			Aug 30	50.3	-4.6%
Conductivity σ (mho/m)	1.95	± 5%	Aug 26	1.92	-1.5%
			Aug 30	2.01	+3.1%
ρ (Kg/m^3)	1000				

Test Date(s)	Aug. 26	Aug. 30	Unit
Relative Humidity	31	30	%
Atmospheric Pressure	101.5	102.2	kPa
Ambient Temperature	25.3	25.0	°C
Fluid Temperature	23.9	22.8	°C
Fluid Depth	≥ 15	≥ 15	cm

Note(s):

* Bluetooth Co-located Simultaneous Transmit evaluation.

1. The measurement results were obtained with the DUT tested in the conditions described in this report. Detailed measurement data and plots showing the maximum SAR location of the DUT are reported in Appendix A.
2. If the SAR levels measured 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 power drifts of the DUT during the SAR evaluations were measured by the DASY4 system. Measured power droops that were >5% from the start power were added to the measured SAR levels to report scaled SAR results as shown in the above test data table.
4. The Lithium-ion battery in the phone was fully charged prior to each SAR evaluation.
5. The ambient and fluid temperatures were measured prior to, and during, the fluid dielectric parameter check and the SAR evaluations. The temperatures reported were consistent for all measurement periods.
6. The dielectric parameters of the simulated tissue mixture were measured prior to the SAR evaluations using an ALS-PR-DIEL Dielectric Probe Kit and an HP 8753ET Network Analyzer (see Appendix C for measured fluid dielectric parameters).
7. The SAR measurements were performed within 24 hours of the system performance check.

MEASUREMENT SUMMARY (CONT.)

BODY-WORN SAR EVALUATION RESULTS - Treo XXX CELLULAR CDMA Phone with 802.11b SDIO Card & Bluetooth

Freq. (MHz)	Chan.	Test Mode	Transmitter (Test Type)	Battery Type	Accessories: Body-Worn / Audio	DUT Position Facing Planar Phantom	Separ. Distance to Planar Phantom (cm)	Cond. Power Before Test (dBm)	SAR Drift During Test (dB)	Measured SAR 1g (W/kg)	Scaled SAR 1g (+ 0.2 dB Cond. Pwr.) SAR (W/kg)	Scaled SAR 1g (+ 0.2 dB Cond. Pwr.) Cond. Pwr. (dB)
836.52	384	Cellular CDMA	CDMA Phone (SDIO Installed)	Li-ion	Fitted Pouch/Belt-Clip / Ear-Microphone	Back	2.5	23.8	-0.0592	0.253	0.265	24.0
836.52	384	Cellular CDMA	CDMA Phone (SDIO Installed)	Li-ion	None (Air-Gap Spacing) / Ear-Microphone	Back	1.5	23.8	0.0129	0.524	0.549	24.0
836.52*	384	CDMA	CDMA Phone (SDIO Installed) and Bluetooth	Li-ion	None (Air-Gap Spacing) / Ear-Microphone	Back	1.5	23.8	-0.0625	0.560	0.586	24.0
Bluetooth**		FHSS						0				0
836.52*	384	Cellular CDMA	**CDMA Phone (SDIO Installed) Volume Scan**	Li-ion	None (Air-Gap Spacing) / Ear-Microphone	Back	1.5	23.8	-0.100	0.555	0.581	24.0
836.52*	384	CDMA	**Multi-Band Volume Scan Grid Summation**	Li-ion	None (Air-Gap Spacing) / Ear-Microphone	Back	1.5	23.8	-0.100	0.582	0.609	24.0
2437	6	DSSS						14.7	-0.296			14.7
836.52*	384	CDMA	**Multi-Band Volume Scan Grid Summation**	Li-ion	None (Air-Gap Spacing) / Ear-Microphone	Back	1.5	23.8	-0.100	0.586	**0.614**	24.0
2437	6	DSSS						14.7	0.115			14.7
Bluetooth**		FHSS						0				0
836.52	384	Cellular CDMA	CDMA Phone (SDIO Installed)	Li-ion	None (Air-Gap Spacing) / Ear-Microphone	Front	1.5	23.8	0.0370	0.522	0.547	24.0

ANSI / IEEE C95.1 1999 - SAFETY LIMIT	BODY: 1.6 W/kg (averaged over 1 gram)	Spatial Peak - Uncontrolled Exposure / General Population

Test Date(s)	August 25, 2005	*August 30, 2005
Measured Fluid Type	835 MHz Body	
Fluid Parameters	IEEE Target	Date / Measured / Deviation
Dielectric Constant ε_r	55.2 ± 5%	Aug 25: 54.0 / -2.2%; Aug 30: 53.8 / -2.5%
Conductivity σ (mho/m)	0.97 ± 5%	Aug 25: 0.98 / +1.0%; Aug 30: 0.97 / 0.0%
ρ (Kg/m^3)	1000	

Test Date(s)	Aug. 25	Aug. 30	Unit
Relative Humidity	30	34	%
Atmospheric Pressure	102.2	102.2	kPa
Ambient Temperature	24.1	24.2	°C
Fluid Temperature	23.5	23.3	°C
Fluid Depth	≥ 15	≥ 15	cm

Note(s):
* Test Date: August 30, 2005
** Bluetooth Co-located Simultaneous Transmit evaluation.

1. The measurement results were obtained with the DUT tested in the conditions described in this report. Detailed measurement data and plots showing the maximum SAR location of the DUT are reported in Appendix A.
2. The "SDIO installed" test configurations shown in the table above were determined based on the worst-case Cellular CDMA SAR levels without the SDIO installed, which were tested for the original FCC Certification filing (Celltech Test Report Serial No.: 082205O8F-T664-S24C) as shown below:
   a). Cellular CDMA (without SDIO) - Fitted Pouch with Swivel Belt-Clip - Back Side of DUT - 836.52 MHz - Chan. 384 (0.248 W/kg)
   b). Cellular CDMA (without SDIO) - Back Side of DUT - 1.5 cm Air-Gap Spacing - 836.52 MHz - Chan. 384 (0.618 W/kg)
   c). Cellular CDMA (without SDIO) - Front Side of DUT - 1.5 cm Air-Gap Spacing - 836.52 MHz - Chan. 384 (0.636 W/kg)
3. The power drifts of the DUT during the SAR evaluations were measured by the DASY4 system.
4. The measured SAR levels (CDMA) were scaled up by +0.2 dB (≤ 5%) to report worst-case SAR levels with a ≤ +5% increase in conducted power.
5. The Lithium-ion battery in the phone was fully charged prior to each SAR evaluation.
6. The ambient and fluid temperatures were measured prior to, and during, the fluid dielectric parameter check and the SAR evaluations. The temperatures reported were consistent for all measurement periods.
7. The dielectric parameters of the simulated tissue mixture were measured prior to the SAR evaluations using an ALS-PR-DIEL Dielectric Probe Kit and an HP 8753ET Network Analyzer (see Appendix C for measured fluid dielectric parameters).
8. The SAR measurements were performed within 24 hours of the system performance check.

MEASUREMENT SUMMARY (CONT.)

BODY-WORN SAR EVALUATION RESULTS - Treo XXX PCS CDMA Phone with 802.11b SDIO Card & Bluetooth

Freq. (MHz)	Ch.	Test Mode	Transmitter (Test Type)	Battery Type	Accessories: Body-Worn / Audio	DUT Position to Planar Phantom	Separ. Distance to Planar Phantom (cm)	Cond. Power Before Test (dBm)	SAR Drift During Test (dB)	Measured SAR 1g (W/kg)	Scaled SAR 1g (+0.2 dB Cond. Pwr.) SAR (W/kg)	Scaled SAR 1g (+0.2 dB Cond. Pwr.) Cond. Pwr. (dBm)
1880.00	600	PCS CDMA	CDMA Phone (SDIO Installed)	Li-ion	Fitted Pouch/Belt-Clip / Ear-Microphone	Back	2.5	23.8	-0.00461	0.101	0.106	24.0
1880.00	600	PCS CDMA	CDMA Phone (SDIO Installed)	Li-ion	None (Air-Gap Spacing) / Ear-Microphone	Back	1.5	23.8	-0.0976	0.258	0.270	24.0
1880.00*	600	CDMA	CDMA Phone (SDIO Installed) and Bluetooth	Li-ion	None (Air-Gap Spacing) / Ear-Microphone	Back	1.5	23.8	-0.0152	0.276	0.289	24.0
Bluetooth**		FHSS						0				0
1880.00*	600	PCS CDMA	**CDMA Phone (SDIO Installed) Volume Scan**	Li-ion	None (Air-Gap Spacing) / Ear-Microphone	Back	1.5	23.8	-0.211	0.474	0.496	24.0
1880.00*	600	CDMA	**Multi-Band Volume Scan Grid Summation**	Li-ion	None (Air-Gap Spacing) / Ear-Microphone	Back	1.5	23.8	-0.211	0.508	**0.532**	24.0
2437	6	DSSS						14.7	-0.296			14.7
1880.00*	600	CDMA	**Multi-Band Volume Scan Grid Summation**	Li-ion	None (Air-Gap Spacing) / Ear-Microphone	Back	1.5	23.8	-0.211	0.506	0.530	24.0
2437	6	DSSS						14.7	0.115			14.7
Bluetooth**		FHSS						0				0
1880.00	600	PCS CDMA	CDMA Phone (SDIO Installed)	Li-ion	None (Air-Gap Spacing) / Ear-Microphone	Front	1.5	23.8	-0.102	0.162	0.170	24.0

ANSI / IEEE C95.1 1999 - SAFETY LIMIT	BODY: 1.6 W/kg - (averaged over 1 gram)	Spatial Peak - Uncontrolled Exposure / General Population

Test Date(s)	August 24, 2005	*August 30, 2005
Measured Fluid Type	1880 MHz Body	

Fluid Parameters	IEEE Target		Date	Measured	Deviation
Dielectric Constant ε_r	53.3	± 5%	Aug 24	51.0	-4.3%
			Aug 30	50.9	-4.5%
Conductivity σ (mho/m)	1.52	± 5%	Aug 24	1.51	-0.5%
			Aug 30	1.58	+3.9%
ρ (Kg/m^3)	1000				

Test Date(s)	Aug. 24	Aug. 30	Unit
Relative Humidity	30	34	%
Atmospheric Pressure	101.8	102.2	kPa
Ambient Temperature	25.5	23.4	°C
Fluid Temperature	23.5	23.5	°C
Fluid Depth	≥ 15	≥ 15	cm

Note(s):
* Test Date: August 30, 2005
** Bluetooth Co-located Simultaneous Transmit evaluation.

1. The measurement results were obtained with the DUT tested in the conditions described in this report. Detailed measurement data and plots showing the maximum SAR location of the DUT are reported in Appendix A.
2. The "SDIO installed" test configurations shown in the table above were determined based on the worst-case PCS CDMA SAR levels without the SDIO installed, which were tested for the original FCC Certification filing (Celltech Test Report Serial No.: 082205O8F-T664-S24C) as shown below:
   a). PCS CDMA (without SDIO) - Fitted Pouch with Swivel Belt-Clip - Back Side of DUT - 1880.00 MHz - Chan. 600 (0.260 W/kg)
   b). PCS CDMA (without SDIO) - Back Side of DUT - 1.5 cm Air-Gap Spacing - 1880.00 MHz - Chan. 600 (0.481 W/kg)
   c). PCS CDMA with Bluetooth (without SDIO) - Back Side of DUT - 1.5 cm Air-Gap Spacing - 1880.00 MHz - Chan. 600 (0.523 W/kg)
   d). PCS CDMA - Front Side of DUT - 1.5 cm Air-Gap Spacing - 1880.00 MHz - Chan. 600 (0.405 W/kg)
3. The power drifts of the DUT during the SAR evaluations were measured by the DASY4 system.
4. The measured SAR levels (CDMA) were scaled up by +0.2 dB (≤ 5%) to report worst-case SAR levels with a ≤ +5% increase in conducted power.
5. The Lithium-ion battery in the phone was fully charged prior to each SAR evaluation.
6. The ambient and fluid temperatures were measured prior to, and during, the fluid dielectric parameter check and the SAR evaluations. The temperatures reported were consistent for all measurement periods.
7. The dielectric parameters of the simulated tissue mixture were measured prior to the SAR evaluations using an ALS-PR-DIEL Dielectric Probe Kit and an HP 8753ET Network Analyzer (see Appendix C for measured fluid dielectric parameters).
8. The SAR measurements were performed within 24 hours of the system performance check.

5.0 DETAILS OF SAR EVALUATION

The Palm, Inc. Model: Treo XXX Dual-Band PCS/Cellular CDMA2000 Phone with Bluetooth FCC ID: O8FJIMI, with the Class II Permissive Change(s) described in this report (add 802.11b WLAN SDIO Card), was compliant for localized Specific Absorption Rate (SAR) based on the test provisions and conditions described below. The detailed test setup photographs are shown in Appendix D.

Ear-held Configuration

1) The DUT was tested in an ear-held configuration on both the left and right sections of the SAM phantom at the mid channel of the operating band. If the SAR level at the mid channel of the frequency band for each test configuration (left ear, right ear, cheek/touch, ear/tilt) was ≥ 3dB below the SAR limit, measurements at the low and high channels were optional (per FCC OET Bulletin 65, Supplement C, Edition 01-01 - see reference [3]).
2) The ear-held test configurations evaluated for Cellular CDMA band and PCS CDMA band with the 802.11b SDIO Card installed were determined based on the SAR results for the ear-held configurations evaluated for the original FCC Certification filing (Celltech TRSN: 082205O8F-T664-S24W). The multi-band evaluations for CDMA and WLAN are based on single-transmit tests, and were not performed with both transmitters activated simultaneously.

a) The handset was placed in the device holder in a normal operating position with the test device reference point located along the vertical centerline on the front of the device aligned to the ear reference point, with the center of the earpiece touching the center of the ear spacer of the SAM phantom.
b) With the handset positioned parallel to the cheek, the test device reference point was aligned to the ear reference point on the head phantom, and the vertical centerline was aligned to the phantom reference plane (initial ear position).
c) While maintaining the three alignments, the body of the handset was gradually adjusted to each of the following test positions:

- Cheek/Touch Position: the handset was brought toward the mouth of the head phantom by pivoting against the ear reference point until any point of the mouthpiece or keypad touched the phantom.

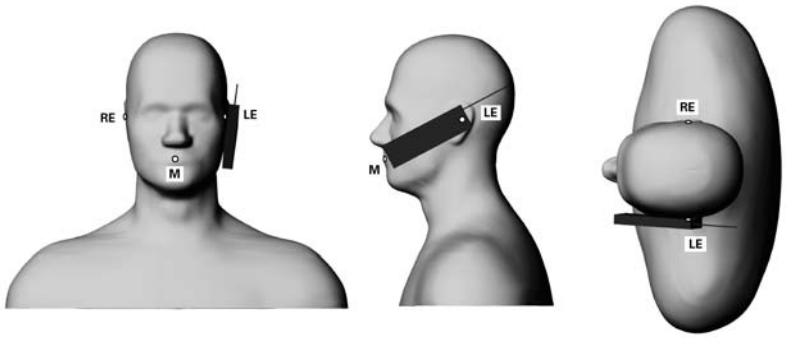


Figure 1. Phone position 1, "cheek" or "touch" position. The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for phone positioning, are indicated (Shoulders are shown for illustration only).

- Ear/Tilt Position: With the phone aligned in the Cheek/Touch position, the handset was tilted away from the mouth with respect to the test device reference point by 15 degrees.

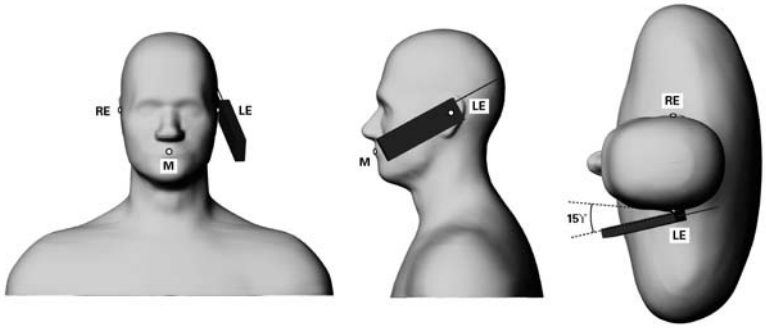


Figure 2. Phone position 2, "tilted position." The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for phone positioning, are indicated (Shoulders are shown for illustration only).

DETAILS OF SAR EVALUATION (CONT.)

Body-worn Configuration

3) The DUT was tested in a body-worn configuration placed inside the Fitted Leather Pouch with Swivel Belt-Clip accessory (SKU#3179WW). The back side of the DUT was placed facing parallel to the outer surface of the SAM phantom (planar section) with the attached swivel belt-clip touching the phantom surface (the Fitted Leather Pouch accessory is designed so that the back side of the DUT is facing the user's body). The Fitted Leather Pouch with Swivel Belt-Clip accessory provided a 2.5 cm separation distance between the back side of the DUT and the outer surface of the SAM phantom (planar section). A generic ear-microphone accessory was connected to the audio port of the DUT for the duration of the tests.
4) The DUT was tested in a body-worn configuration with an "air-gap" spacing of 1.5 cm between the front side (keypad side) and the outer surface of the SAM phantom (planar section). The DUT was also tested with an "air-gap" spacing of 1.5 cm between the back side (battery side) and the outer surface of the SAM phantom (planar section). No body-worn accessories were used with the DUT in the "air-gap" spacing test configurations for the purpose of allowing for generic body-worn holster/case/clip accessories that do not contain any metallic components and provide a minimum separation distance of 1.5 cm between the phone and the user's body. A generic ear-microphone accessory was connected to the audio port of the DUT for the duration of the tests.
5) Multi-band SAR evaluations were not performed with the DUT placed in the Leather Side Case accessory (SKU#3180WW) based on the fact that the DUT does not fit inside the Leather Side Case accessory with the 802.11b SDIO card installed.
6) Co-located transmit tests were performed with CDMA and Bluetooth transmitting simultaneously in the worst-case single-transmit body-worn configuration for CDMA.
7) Co-located transmit tests were performed with WLAN and Bluetooth transmitting simultaneously in the worst-case single-transmit body-worn configuration for 802.11b WLAN.
8) The body-worn test configurations evaluated for Cellular CDMA band and PCS CDMA band with the 802.11b SDIO Card installed were determined based on the SAR results for the body-worn configurations evaluated for the original FCC Certification filing (Celltech TRSN: 082205O8F-T664-S24W). The CDMA and WLAN multi-band evaluations are based on single-transmit tests, and were not performed with both transmitters activated simultaneously.
9) The multi-band volume scan grid summations for CDMA, WLAN, and Bluetooth were based on WLAN and Bluetooth simultaneous transmit evaluations in the same frequency tissue mixture.

Volume Scans & Multi-Band Grid Summations

10) Interim Guidance per FCC (see reference [6])

"Interim simultaneous transmission SAR measurement procedures for combination handset and WLAN devices: Recommended test procedures for typical configurations: perform phone and WLAN SAR test independently in each band according to handset test positions and required channel configurations. The area and zoom scan data are used to identify peak locations and 1-g SAR in independent operations. For simultaneous transmission (after it is clarified how this occurs, etc.), identify the highest SAR configuration in each test position (among H, M & L channels and antenna Ext/Ret positions) with respect to the handset and WLAN communication modes & frequency bands. Perform volume scan at the test position with the highest combined handset & WLAN 1-g SAR (simple addition of 1-g SAR values), using the same (previously used) channel configurations. The closest measurement points (first layer) from the phantom surface in the volume scans should be the same as those used in the corresponding independent zoom scans to minimize SAR extrapolation errors. The volume scan resolution should be verified with respect to measurement uncertainty procedures according to the SAR reference functions defined in existing IEEE & IEC SAR measurement standards. If the 1-g SAR based on the volume scans and those measured independently are all less than or equal to 1.2 W/kg (75% of limit with an assumed typical measurement uncertainty of 25%), additional volume scan is not required for the specific combination of communication modes & frequency bands (e.g., GSM & 802.11b/g). Otherwise, perform volume scans according to the highest SAR of the handset and WLAN for the other test positions in the specific combination of communication modes & frequency bands when an independent 1-g SAR value is greater than 1.2 W/kg and the combined (simple addition) handset & WLAN 1-g SAR is greater than the SAR limit (1.6 W/kg). The above procedures should be repeated for all applicable combinations of communication modes and frequency bands used by the handset and WLAN; for example, GSM1900 & 802.11b, GSM1900 & 802.11g, GSM850 & 802.11g etc. The test plan, procedures and applicable justifications should be explained in the test report. The above procedures are intended as interim guidance while more detailed and general procedures are being developed. The procedures are based on typical handset and WLAN combinations. Please contact us for additional guidance if the above is not applicable for your specific product configuration."

DETAILS OF SAR EVALUATION (CONT.)

11) How Multi-Band Evaluation Test Positions were chosen:

1) All standard Single Transmit tests (Area + Zoom Scan) in all bands were performed as per Supplement C and IEEE P1528 requirements.
2) For each test position for which Multi-Band transmission is capable, the channel/configuration combination with the highest SAR level was determined using simple addition of 1g averaged SAR values.
3) The worst-case of these combinations as well as each additional combination with SAR level > 1.2 W/kg was then chosen for Multi-Band Evaluation.

12) How Multi-Band Evaluations were performed for each combination determined as per above:

1) The SAR test setup was prepared with parameters for the frequency of the primary band(s) (835MHz and 1900MHz).
2) The Probe Conversion Factors for the primary frequency were used.
3) The DUT was positioned equivalent to the standard SAR test.
4) The Area and Zoom scans were replaced with a Volume scan performed in DASY4.5 software. The Volume scan has a resolution of 7.5 mm x 7.5 mm x 5 mm and is made to cover an physical area large and enough and positioned to cover the hotspots of both transmitters being evaluated for Multi-Band SAR. All other parameters of the SAR evaluation were performed as per the standard test (i.e. the E-field strength is measured both before and after the test to measure power drift and a Z-Scan is performed).
5) The SAR test setup was prepared with parameters for the frequency of the secondary band (2450 MHz).
6) The Probe Conversion Factors for the secondary frequency were used.
7) The DUT was positioned equivalent to the standard SAR test.
8) A Volume Scan of the same size and position used in step 4 is performed for the secondary transmitter.
9) The relative positions of the two transmitters being evaluated within the DUT is a determining factor for Multi-Band SAR. The Volume Scans used for the Multi-Band Grid Summations were the same size, grid resolution and test position (identical).

13) How Multi-Band Grid Summation was performed in SEMCAD (per DASY4 Manual - see reference [7]):

1) Both Volume Scans must have the same size and spatial resolution for Multi-Band Grid Summation. Each measurement point in one Volume Scan has a corresponding measurement point in the other Volume Scan. Each pair of corresponding points is added numerically. Subsequently, the Interpolation, Extrapolation and Averaging techniques are performed using the standard mathematical algorithm (Shepard technique) for Zoom Scan evaluation.

Test Modes & Power Settings

14) All SAR evaluations were performed with the 802.11b SDIO Card installed in the SDIO slot of the Treo XXX phone.
15) The DUT was tested in CDMA mode with a modulated CDMA signal generated by the Will'Tek 4303 Mobile Service Tester in the "always up" power control mode.
16) For the WLAN SDIO Card SAR evaluations, the WLAN was transmitting continuously at maximum power with a modulated DSSS signal. The DUT was controlled in test mode via internal software in the Treo XXX phone.
17) For the co-located transmitter body-worn SAR evaluations the Bluetooth was enabled via internal software with the DUT transmitting to a remote Bluetooth headset.
18) The conducted power levels were measured prior to the SAR evaluations according to the procedures described in FCC 47 CFR §2.1046 using a Gigatronics 8652A Universal Power Meter.
19) The power drifts of the DUT during the SAR evaluations were measured by the DASY4 system.
20) The Lithium-ion battery in the Treo XXX phone was fully charged prior to each SAR evaluation.

Test Conditions

21) The ambient and fluid temperatures were measured prior to, and during, the fluid dielectric parameter checks and the SAR evaluations. The temperatures reported were consistent for all measurement periods.
22) 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 for measured fluid dielectric parameters).
23) The SAR measurements were performed within 24 hours of the system performance check.

6.0 EVALUATION PROCEDURES

a. (i) The evaluation was performed in the applicable area of the phantom depending on the type of device being tested. For devices held to the ear during normal operation, both the left and right ear positions were evaluated using the SAM phantom.
(ii) For body-worn and face-held devices a planar phantom was used.

b. The SAR was determined by a pre-defined procedure within the DASY4 software. Upon completion of a reference and optical surface check, the exposed region of the phantom was scanned near the inner surface with a grid spacing of 15mm x 15mm.

An area scan was determined as follows:

c. Based on the defined area scan grid, a more detailed grid is created to increase the points by a factor of 10. The interpolation function then evaluates all field values between corresponding measurement points.

d. A linear search is applied to find all the candidate maxima. Subsequently, all maxima are removed that are >2 dB from the global maximum. The remaining maxima are then used to position the cube scans.

A 1g and 10g spatial peak SAR was determined as follows:

e. Extrapolation is used to find the points between the dipole center of the probe and the surface of the phantom. This data cannot be measured, since the center of the dipoles is 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.4 mm (see probe calibration document in Appendix F). The extrapolation was based on trivariate quadratics computed from the previously calculated 3D interpolated points nearest the phantom surface.

f. Interpolated data is used to calculate the average SAR over 1g and 10g cubes by spatially discretizing the entire measured cube. The volume used to determine the averaged SAR is a 1mm grid (42875 interpolated points).

g. A zoom scan volume of 32 mm x 32 mm x 30 mm (5x5x7 points) centered at the peak SAR location determined from the area scan is used for all zoom scans for devices with a transmit frequency < 800 MHz. Zoom scans for frequencies ≥ 800 MHz are determined with a scan volume of 30 mm x 30 mm x 30 mm (7x7x7 points) to ensure complete capture of the peak spatial-average SAR.

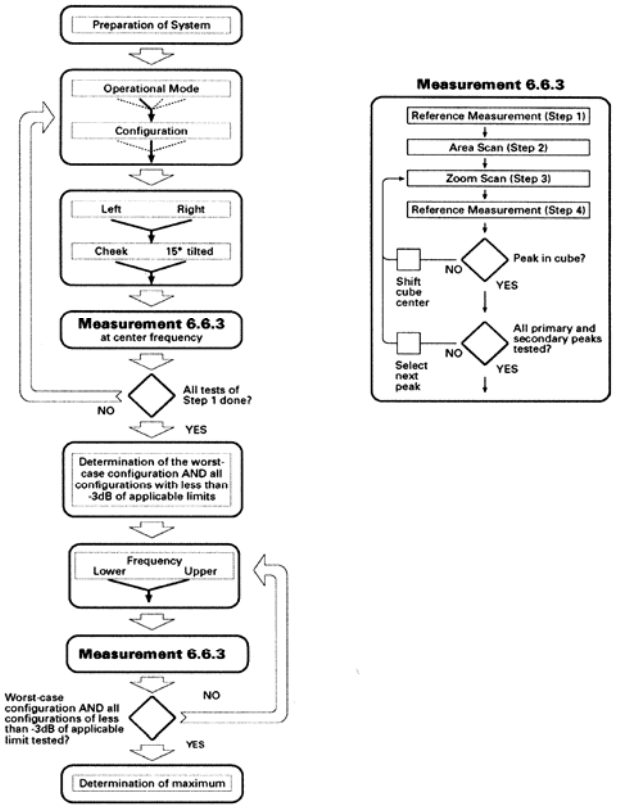


Figure 3. Flow Chart for determining the largest peak spatial-average SAR from all device configurations per IEEE Standard 1528-2003 (see reference [5]).

7.0 SYSTEM PERFORMANCE CHECK

Prior to the SAR evaluations a system check was performed at the planar section of the SAM phantom with an 835MHz dipole, a 1900MHz dipole, and a 2450MHz dipole (see Appendix E for system validation procedures). The dielectric parameters of the simulated tissue mixture were measured prior to the system performance check using an ALS-PR-DIEL Dielectric Probe Kit and an HP 8753ET Network Analyzer (see Appendix C for measured fluid dielectric parameters). A forward power of 250mW was applied to the dipole and the system was verified to a tolerance of ±10% (see Appendix B for system performance check test plots). See Table 1 below for the SAR system manufacturer's reference body SAR values from the DASY4 Operation Manual, April 2005 (see reference [8]).

SYSTEM PERFORMANCE CHECK EVALUATION

Test Date	Equiv. Tissue	SAR 1g (W/kg)			Dielectric Constant ε_r			Conductivity σ (mho/m)			ρ (Kg/m³)	Amb. Temp. (°C)	Fluid Temp. (°C)	Fluid Depth (cm)	Humid. (%)	Barom. Press. (kPa)
		IEEE/SPEAG Target	Meas.	Dev.	IEEE Target	Meas.	Dev.	IEEE Target	Meas.	Dev.						
5/26/05	2450 Brain	13.1 ±10%	13.6	+3.8%	39.2 ±5%	37.5	-4.3%	1.80 ±5%	1.85	+2.8%	1000	22.9	23.3	≥ 15	32	103.0
8/22/05	835 Brain	2.38 ±10%	2.54	+6.7%	41.5 ±5%	41.6	+0.2%	0.90 ±5%	0.92	+2.2%	1000	25.5	23.8	≥ 15	30	101.1
8/23/05	1900 Brain	9.93 ±10%	10.4	+4.7%	40.0 ±5%	38.4	-4.0%	1.40 ±5%	1.42	+1.4%	1000	25.6	23.3	≥ 15	30	101.5
8/25/05	835 Brain	2.38 ±10%	2.45	+2.9%	41.5 ±5%	40.7	-1.9%	0.90 ±5%	0.90	0.0%	1000	24.2	23.1	≥ 15	31	102.2
8/26/05	2450 Body	12.8 ±10%	13.4	+4.7%	52.7 ±5%	50.7	-3.8%	1.95 ±5%	1.92	-1.5%	1000	24.9	23.9	≥ 15	31	101.7
8/30/05	1900 Body	9.95 ±10%	10.4	+4.6%	53.3 ±5%	50.7	-4.9%	1.52 ±5%	1.59	+4.6%	1000	23.4	23.5	≥ 15	34	102.2
8/30/05	835 Body	2.43 ±10%	2.49	+2.5%	55.2 ±5%	53.8	-2.5%	0.97 ±5%	0.97	0.0%	1000	24.7	23.3	≥ 15	33	102.2
8/30/05	2450 Body	12.8 ±10%	13.9	+8.6%	52.7 ±5%	50.3	-4.6%	1.95 ±5%	2.01	+3.1%	1000	25.3	22.8	≥ 15	31	102.2

Note(s):
1. The ambient and fluid temperatures were measured prior to, and during, the fluid dielectric parameter check and the system performance check. The temperatures reported in the above table were consistent for all measurement periods.

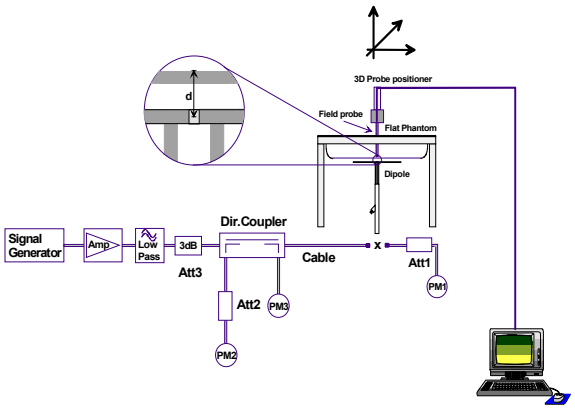


Figure 4. System Performance Check Setup Diagram

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.

Table 1. SAR system manufacturer's reference Body SAR values

835MHz Dipole Setup

1900MHz Dipole Setup

2450MHz Dipole Setup

8.0 SIMULATED EQUIVALENT TISSUES

The 1880MHz/1900MHz and 2450MHz simulated equivalent tissue mixtures consist of Glycol-monobutyl, water, and salt (except 2450MHz brain tissue mixture does not contain salt). The 835MHz simulated tissue mixtures consist of a viscous gel using hydroxethylcellulose (HEC) gelling agent and saline solution. Preservation with a bactericide was added and visual inspection was made to ensure air bubbles were not trapped during the mixing process. The fluids were prepared according to standardized procedures and measured for dielectric parameters (permittivity and conductivity).

2450 MHz SIMULATED TISSUE MIXTURES		
INGREDIENT	2450 MHz Brain	2450 MHz Body
	System Performance Check	System Performance Check
	DUT Evaluation	DUT Evaluation
Water	52.00 %	69.98 %
Glycol Monobutyl	48.00 %	30.00 %
Salt	-	0.02 %

835 MHz SIMULATED TISSUE MIXTURES		
INGREDIENT	835 MHz Brain	835 MHz Body
	System Check & DUT Evaluation	System Check & DUT Evaluation
Water	40.71 %	53.79 %
Sugar	56.63 %	45.13 %
Salt	1.48 %	0.98 %
HEC	0.99 %	--
Bactericide	0.19 %	0.10 %

1880/1900 MHz SIMULATED TISSUE MIXTURES				
INGREDIENT	1900 MHz Brain	1880 MHz Brain	1900 MHz Body	1880 MHz Body
	System Check	DUT Evaluation	System Check	DUT Evaluation
Water	55.85 %	55.85 %	69.85 %	69.85 %
Glycol Monobutyl	44.00 %	44.00 %	29.89 %	29.89 %
Salt	0.15 %	0.15 %	0.26 %	0.26 %

9.0 SAR SAFETY LIMITS

EXPOSURE LIMITS	SAR (W/kg)	
	(General Population / Uncontrolled Exposure Environment)	(Occupational / Controlled Exposure Environment)
Spatial Average (averaged over the whole body)	0.08	0.4
Spatial Peak (averaged over any 1 g of tissue)	1.60	8.0
Spatial Peak (hands/wrists/feet/ankles averaged over 10 g)	4.0	20.0

Notes:
1. Uncontrolled environments are defined as locations where there is potential exposure of individuals who have no knowledge or control of their potential exposure.
2. Controlled environments are defined as locations where there is potential exposure of individuals who have knowledge of their potential exposure and can exercise control over their exposure.

10.0 ROBOT SYSTEM SPECIFICATIONS

Specifications

POSITIONER: Stäubli Unimation Corp. Robot Model: RX60L
Repeatability: 0.02 mm
No. of axis: 6

Data Acquisition Electronic (DAE) System

Cell Controller

Processor: AMD Athlon XP 2400+
Clock Speed: 2.0 GHz
Operating System: Windows XP Professional

Data Converter

Features: Signal Amplifier, multiplexer, A/D converter, and control logic
Software: DASY4 software
Connecting Lines: Optical downlink for data and status info.
Optical uplink for commands and clock

DASY4 Measurement Server

Function: Real-time data evaluation for field measurements and surface detection
Hardware: PC/104 166MHz Pentium CPU; 32 MB chipdisk; 64 MB RAM
Connections: COM1, COM2, DAE, Robot, Ethernet, Service Interface

E-Field Probe

Model: ET3DV6
Serial No.: 1387
Construction: Triangular core fiber optic detection system
Frequency: 10 MHz to 6 GHz
Linearity: ±0.2 dB (30 MHz to 3 GHz)

Phantom(s)

Type: SAM V4.0C
Shell Material: Fiberglas
Thickness: 2.0 ±0.1 mm
Volume: Approx. 25 liters

11.0 PROBE SPECIFICATION (ET3DV6)

Construction:	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g. glycol)
Calibration:	In air from 10 MHz to 2.5 GHz In brain simulating tissue at frequencies of 900 MHz and 1.8 GHz (accuracy ± 8%)
Frequency:	10 MHz to >6 GHz; Linearity: ±0.2 dB (30 MHz to 3 GHz)
Directivity:	±0.2 dB in brain tissue (rotation around probe axis) ±0.4 dB in brain tissue (rotation normal to probe axis)
Dynamic Range:	5 μW/g to >100 mW/g; Linearity: ±0.2 dB
Surface Detection:	±0.2 mm repeatability in air and clear liquids over diffuse reflecting surfaces
Dimensions:	Overall length: 330 mm Tip length: 16 mm Body diameter: 12 mm Tip diameter: 6.8 mm Distance from probe tip to dipole centers: 2.7 mm
Application:	General dosimetry up to 3 GHz Compliance tests of portable phone

ET3DV6 E-Field Probe

12.0 SAM PHANTOM V4.0C

The SAM phantom V4.0C is a fiberglass shell phantom with a 2.0 mm (+/-0.2 mm) shell thickness for left and right head and flat planar area integrated in a wooden table. The shape of the fiberglass shell corresponds to the phantom defined by SCC34-SC2. The device holder positions are adjusted to the standard measurement positions in the three sections (see Appendix G for specifications of the SAM phantom V4.0C).

SAM Phantom V4.0C

13.0 DEVICE HOLDER

The DASY4 device holder has two scales for device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear openings). The plane between the ear openings and the mouth tip has a rotation angle of 65°. The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections.

Device Holder

14.0 TEST EQUIPMENT LIST

TEST EQUIPMENT		ASSET NO.	SERIAL NO.	DATE CALIBRATED		CALIBRATION DUE DATE
USED	DESCRIPTION					
x	Schmid & Partner DASY4 System	-	-	-		-
x	-DASY4 Measurement Server	00158	1078	N/A		N/A
x	-Robot	00046	599396-01	N/A		N/A
x	-DAE3	00019	353	06Jul04		06Jlu05
	-DAE4			15Jun05		15Jun06
x	-DAE3	00018	370	25Jan05		25Jan06
x	-ET3DV6 E-Field Probe	00016	1387	18Mar05		18Mar06
	-ET3DV6 E-Field Probe	00017	1590	20May05		20May06
	-EX3DV4 E-Field Probe	00125	3547	21Jan05		21Jan06
	-300 MHz Validation Dipole	00023	135	26Oct04		26Oct05
	-450 MHz Validation Dipole	00024	136	04Nov04		04Nov05
x	-835 MHz Validation Dipole	00022	411	**Brain**	30Mar05	30Mar06
x				**Body**	12Apr05	12Apr06
	-900 MHz Validation Dipole	00020	054	**Brain**	10Jun04	10Jun05
					10Jun05	10Jun06
				Body	10Jun05	10Jun06
	-1800 MHz Validation Dipole	00021	247	**Brain**	08Jun04	08Jun05
					14Jun05	14Jun06
				Body	14Jun05	14Jun06
	-1900 MHz Validation Dipole	00032	151	**Brain**	18Jun04	18Jun05
x					17Jun05	17Jun06
x				**Body**	22Apr05	22Apr06
x	-2450 MHz Validation Dipole	00025	150	**Brain**	30Sep04	30Sep05
x				**Body**	22Apr05	22Apr06
	-5000 MHz Validation Dipole	00126	1031	**Brain**	11Jan05	11Jan06
				Body	11Jan05	11Jan06
x	-SAM Phantom V4.0C	00154	1033	N/A		N/A
	-Barski Planar Phantom	00155	03-01	N/A		N/A
	-Plexiglas Planar Phantom	00156	161	N/A		N/A
	-Validation Planar Phantom	00157	137	N/A		N/A
	HP 85070C Dielectric Probe Kit	00033	N/A	N/A		N/A
x	ALS-PR-DIEL Dielectric Probe Kit	00160	260-00953	N/A		N/A
x	Gigatronics 8652A Power Meter	00110	1835801	16Apr05		16Apr06
	Gigatronics 8652A Power Meter	00008	1835267	29Apr05		29Apr06
	Gigatronics 8652A Power Meter	00007	1835272	18Oct04		18Oct05
x	Gigatronics 80701A Power Sensor	00011	1833542	08Oct04		08Oct05
x	Gigatronics 80701A Power Sensor	00109	1834366	16Apr05		16Apr06
x	HP 8753ET Network Analyzer	00134	US39170292	04May05		04May06
x	Will'Tek 4303 Mobile Service Tester	n/a	1141417	09Jun04		09Jun06
x	HP 8648D Signal Generator	00005	3847A00611	29Apr05		29Apr06
x	Rohde & Schwarz SMR40 Signal Generator	00006	100104	12Apr05		12Apr06
x	Amplifier Research 5S1G4 Power Amplifier	00106	26235	N/A		N/A

15.0 MEASUREMENT UNCERTAINTIES

UNCERTAINTY BUDGET FOR DEVICE EVALUATION						
Error Description	**Uncertainty Value ±%**	**Probability Distribution**	**Divisor**	**ci 1g**	**Uncertainty Value ±% (1g)**	**V_i or V_{eff}**
Measurement System						
Probe calibration	5.9	Normal	1	1	5.9	∞
Axial isotropy of the probe	4.7	Rectangular	1.732050808	0.7	1.9	∞
Spherical isotropy of the probe	9.6	Rectangular	1.732050808	0.7	3.9	∞
Spatial resolution	0	Rectangular	1.732050808	1	0.0	∞
Boundary effects	1	Rectangular	1.732050808	1	0.6	∞
Probe linearity	4.7	Rectangular	1.732050808	1	2.7	∞
Detection limit	1	Rectangular	1.732050808	1	0.6	∞
Readout electronics	0.3	Normal	1	1	0.3	∞
Response time	0.8	Rectangular	1.732050808	1	0.5	∞
Integration time	2.6	Rectangular	1.732050808	1	1.5	∞
RF ambient conditions	3	Rectangular	1.732050808	1	1.7	∞
Mech. constraints of robot	0.4	Rectangular	1.732050808	1	0.2	∞
Probe positioning	2.9	Rectangular	1.732050808	1	1.7	∞
Extrapolation & integration	1	Rectangular	1.732050808	1	0.6	∞
Test Sample Related						
Device positioning	2.9	Normal	1	1	2.9	12
Device holder uncertainty	3.6	Normal	1	1	3.6	8
Power drift	5	Rectangular	1.732050808	1	2.9	∞
Phantom and Setup						
Phantom uncertainty	4	Rectangular	1.732050808	1	2.3	∞
Liquid conductivity (target)	5	Rectangular	1.732050808	0.64	1.8	∞
Liquid conductivity (measured)	2.5	Normal	1	0.64	1.6	∞
Liquid permittivity (target)	5	Rectangular	1.732050808	0.6	1.7	∞
Liquid permittivity (measured)	2.5	Normal	1	0.6	1.5	∞
Combined Standard Uncertainty					**10.79**	
Expanded Uncertainty (k=2)					**21.59**	

Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003 (see reference [5])

MEASUREMENT UNCERTAINTIES (CONT.)

UNCERTAINTY BUDGET FOR SYSTEM VALIDATION

Error Description	Uncertainty Value ±%	Probability Distribution	Divisor	ci 1g	Uncertainty Value ±% (1g)	V_i or V_{eff}
Measurement System						
Probe calibration	5.9	Normal	1	1	5.9	∞
Axial isotropy of the probe	4.7	Rectangular	1.732050808	1	2.7	∞
Spherical isotropy of the probe	0	Rectangular	1.732050808	1	0.0	∞
Spatial resolution	0	Rectangular	1.732050808	1	0.0	∞
Boundary effects	1	Rectangular	1.732050808	1	0.6	∞
Probe linearity	4.7	Rectangular	1.732050808	1	2.7	∞
Detection limit	1	Rectangular	1.732050808	1	0.6	∞
Readout electronics	0.3	Normal	1	1	0.3	∞
Response time	0	Rectangular	1.732050808	1	0.0	∞
Integration time	0	Rectangular	1.732050808	1	0.0	∞
RF ambient conditions	3	Rectangular	1.732050808	1	1.7	∞
Mech. constraints of robot	0.4	Rectangular	1.732050808	1	0.2	∞
Probe positioning	2.9	Rectangular	1.732050808	1	1.7	∞
Extrapolation & integration	1	Rectangular	1.732050808	1	0.6	∞
Test Sample Related						
Dipole Positioning	2	Normal	1.732050808	1	1.2	∞
Power & Power Drift	4.7	Normal	1.732050808	1	2.7	∞
Phantom and Setup						
Phantom uncertainty	4	Rectangular	1.732050808	1	2.3	∞
Liquid conductivity (target)	5	Rectangular	1.732050808	0.64	1.8	∞
Liquid conductivity (measured)	2.5	Normal	1	0.64	1.6	∞
Liquid permittivity (target)	5	Rectangular	1.732050808	0.6	1.7	∞
Liquid permittivity (measured)	2.5	Normal	1	0.6	1.5	∞
Combined Standard Uncertainty					**9.04**	
Expanded Uncertainty (k=2)					**18.08**	

Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003 (see reference [5])

16.0 REFERENCES

[1] Federal Communications Commission, “Radiofrequency radiation exposure evaluation: portable devices”, Rule Part 47 CFR §2.1093: 1999.

[2] Health Canada, “Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz”, Safety Code 6: 1999.

[3] Federal Communications Commission, “Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields”, OET Bulletin 65, Supplement C (Edition 01-01), FCC, Washington, D.C.: June 2001.

[4] Industry Canada, “Evaluation Procedure for Mobile and Portable Radio Transmitters with respect to Health Canada’s Safety Code 6 for Exposure of Humans to Radio Frequency Fields”, Radio Standards Specification RSS-102 Issue 1 (Provisional): September 1999.

[5] IEEE Standard 1528-2003, “Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”: December 2003.

[6] Email from FCC (Tim Harrington) - Subject: Phone & SDIO - RE: TCBC Chat: 05/21/2005.

[7] Schmid &Partner Engineering AG, “Application Notes, Multi-band Evaluation, DASY4 Manual V4.5”: March 2005.

[8] Schmid & Partner Engineering AG, “DASY4 Manual V4.5”: March 2005.

APPENDIX B - SYSTEM PERFORMANCE CHECK DATA

Date Tested: 05/26/2005

System Performance Check (Brain) - 2450 MHz Dipole

DUT: Dipole 2450 MHz; Model: D2450V2; Type: System Performance Check; Serial: 150; Calibrated: 09/30/2004

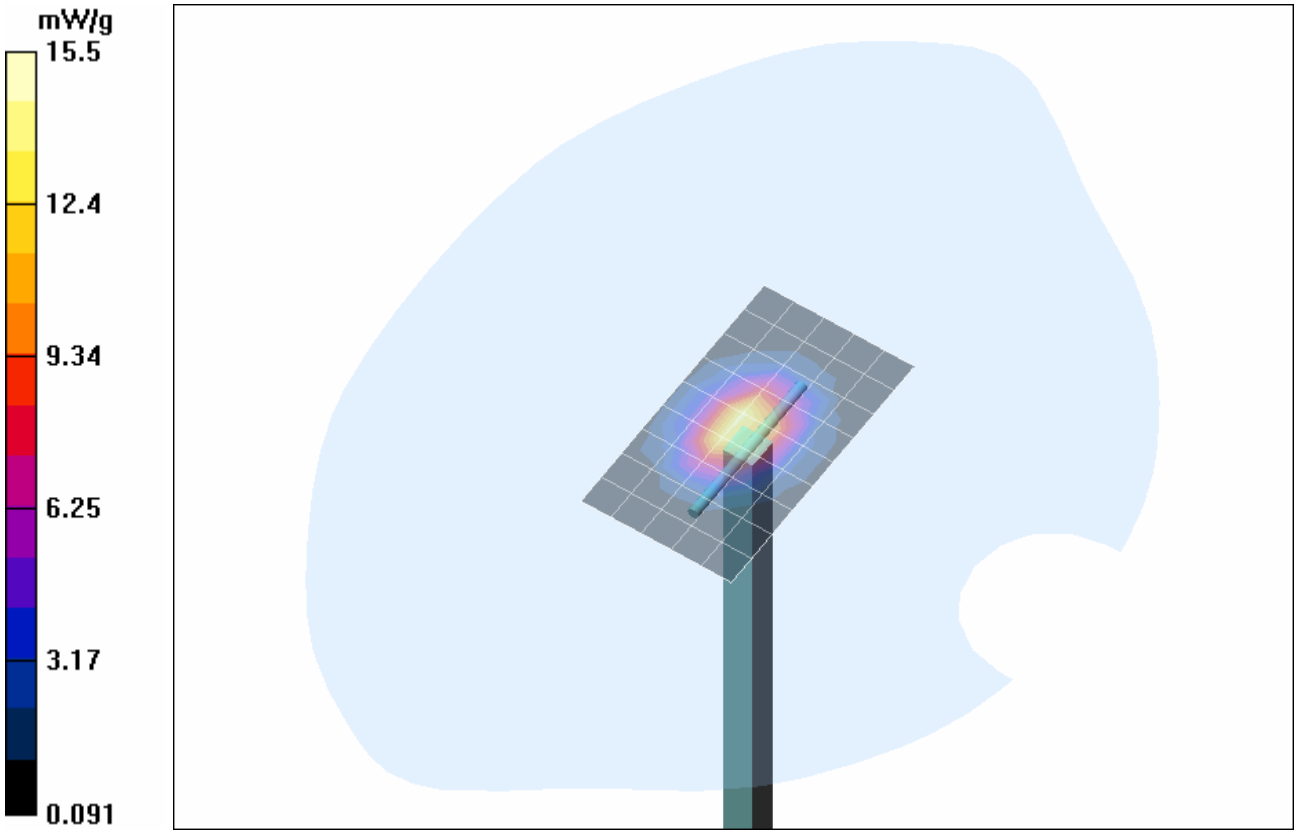
Ambient Temp: 22.9 °C; Fluid Temp: 23.3 °C; Barometric Pressure: 103.0 kPa; Humidity: 32%

Communication System: CW
Forward Conducted Power: 250 mW
Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: HSL2450 (σ = 1.85 mho/m; ε_r = 37.5; ρ = 1000 kg/m^3)

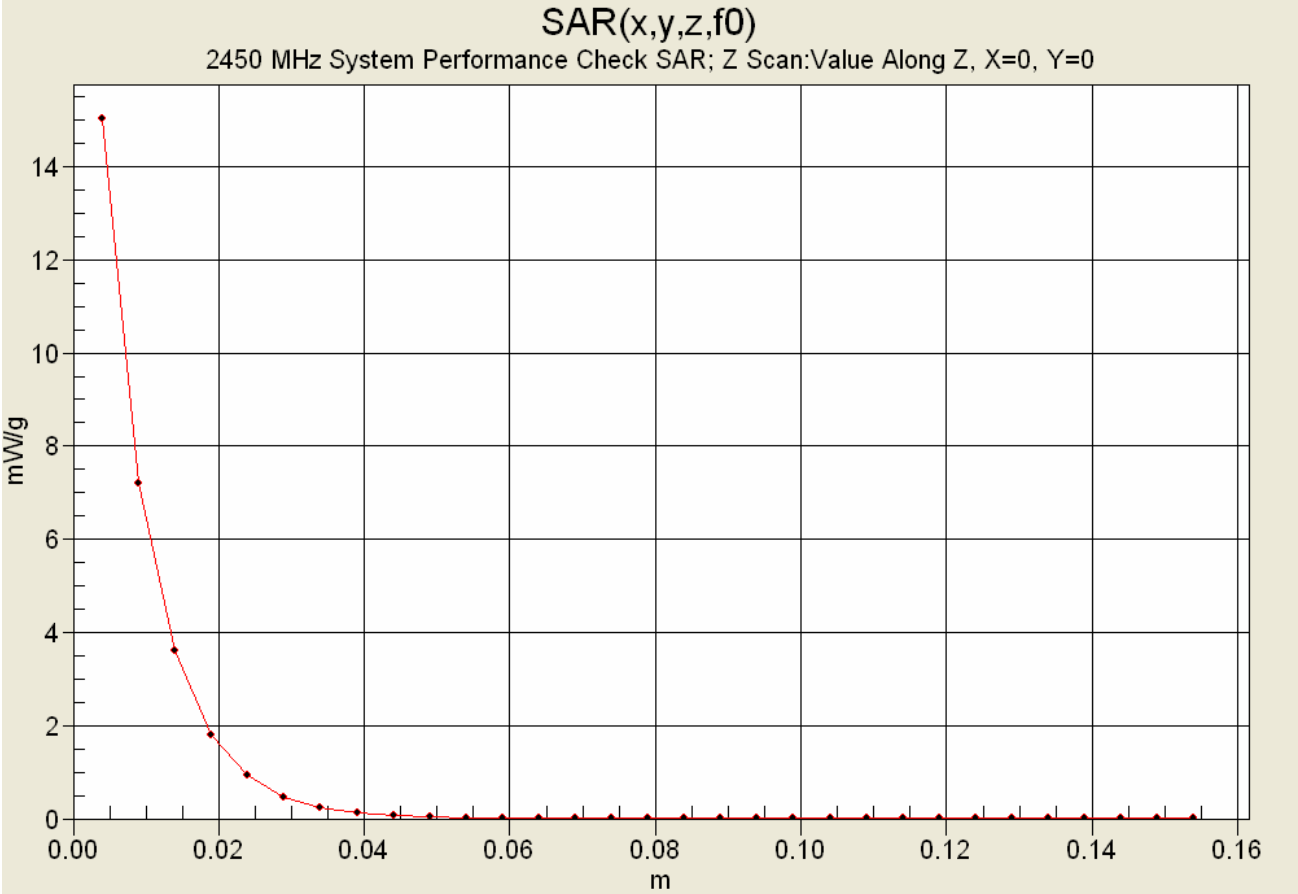
- Probe: ET3DV6 - SN1387; ConvF(4.56, 4.56, 4.56); Calibrated: 18/03/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn353; Calibrated: 06/07/2004
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

2450 MHz Dipole - System Performance Check/Area Scan (6x10x1):
Measurement grid: dx=10mm, dy=10mm

2450 MHz Dipole - System Performance Check/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.5 V/m; Power Drift = -0.092 dB
Peak SAR (extrapolated) = 29.7 W/kg
SAR(1 g) = 13.6 mW/g; SAR(10 g) = 6.21 mW/g



Z-Axis Scan



Date Tested: 08/22/2005

System Performance Check (Brain) - 835 MHz Dipole

DUT: Dipole 835 MHz; Model: D835V2; Type: System Performance Check; Serial: 411; Calibrated: 03/30/2005

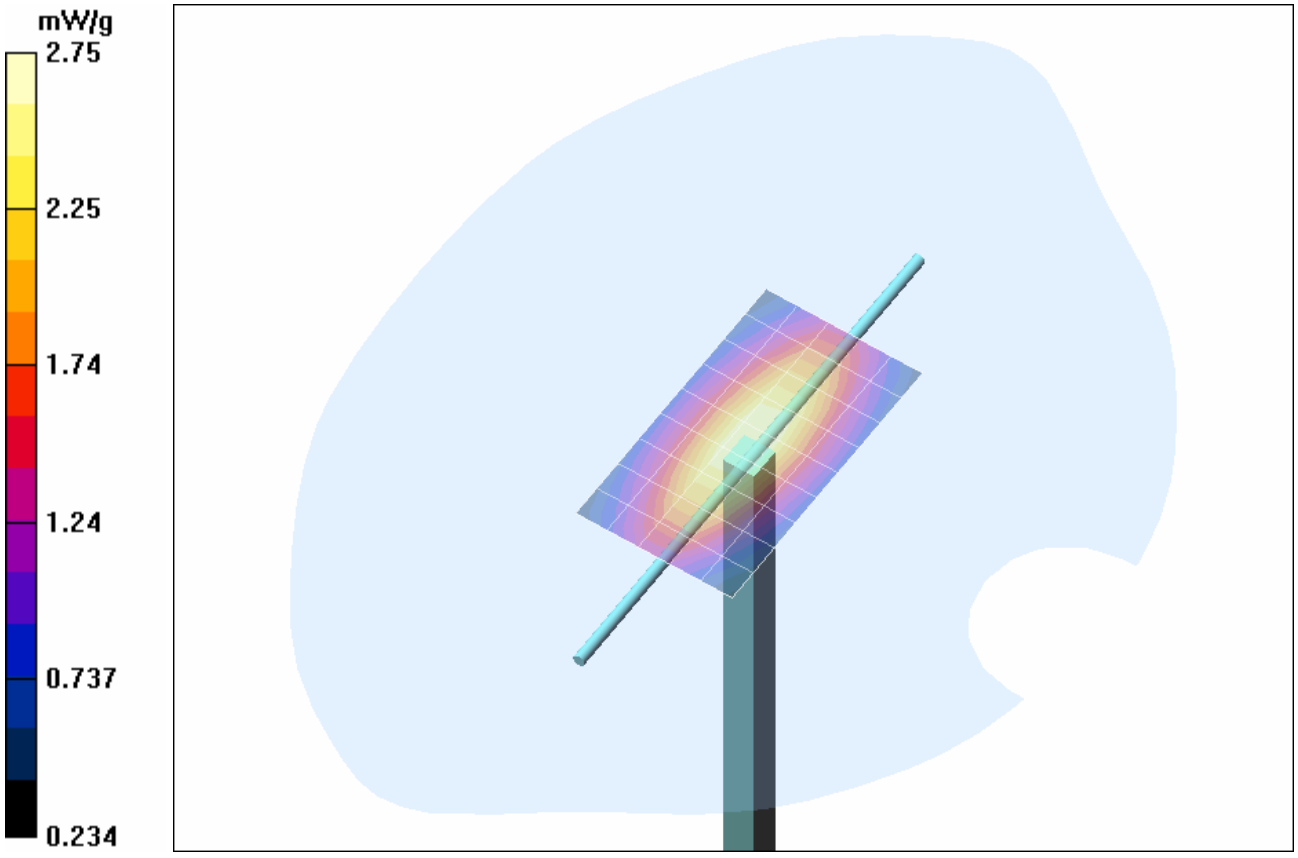
Ambient Temp: 25.5 °C; Fluid Temp: 23.8 °C; Barometric Pressure: 101.1 kPa; Humidity: 30%

Communication System: CW
Forward Conducted Power: 250 mW
Frequency: 835 MHz; Duty Cycle: 1:1
Medium: HSL835 (σ = 0.92 mho/m; ε_r = 41.6; ρ = 1000 kg/m^3)

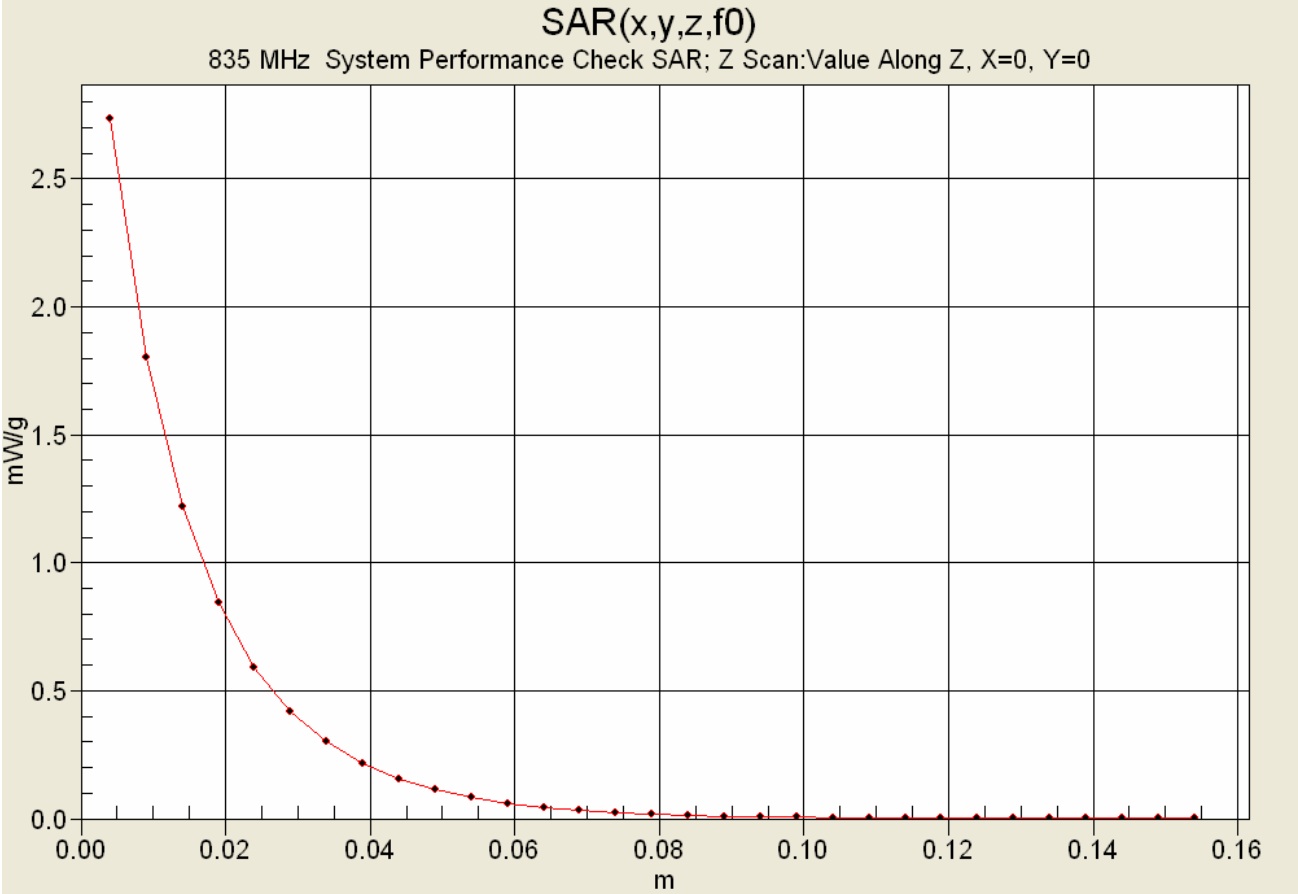
- Probe: ET3DV6 - SN1387; ConvF(6.47, 6.47, 6.47); Calibrated: 18/03/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 25/01/2005
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

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 = 56.2 V/m; Power Drift = 0.014 dB
Peak SAR (extrapolated) = 3.89 W/kg
SAR(1 g) = 2.54 mW/g; SAR(10 g) = 1.64 mW/g



Z-Axis Scan



Date Tested: 08/23/2005

System Performance Check (Brain) - 1900 MHz Dipole

DUT: Dipole 1900 MHz; Model: D1900V2; Type: System Performance Check; Serial: 151; Calibrated: 06/17/2005

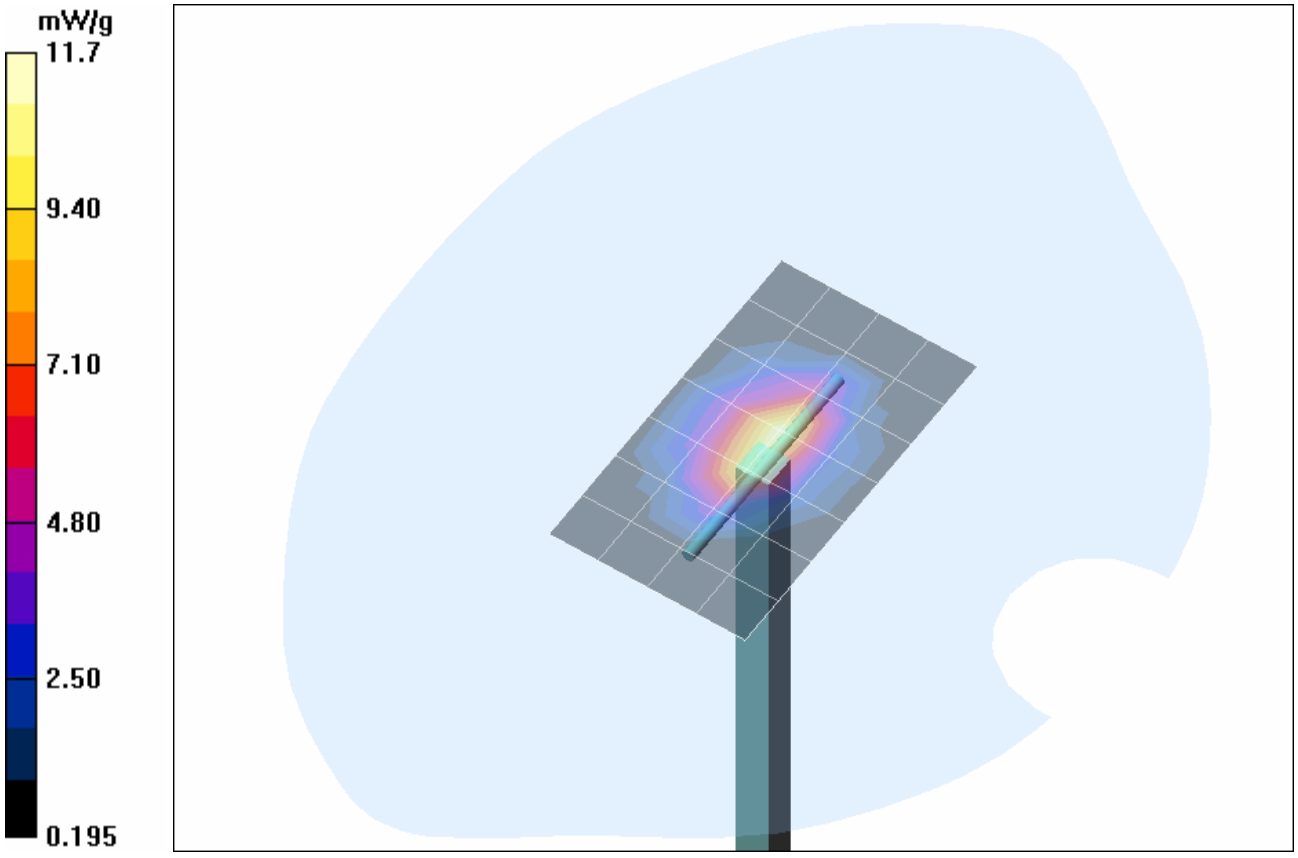
Ambient Temp: 25.6 °C; Fluid Temp: 23.3 °C; Barometric Pressure: 101.5 kPa; Humidity: 30%

Communication System: CW
Forward Conducted Power: 250 mW
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: HSL1900 (σ = 1.42 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3)

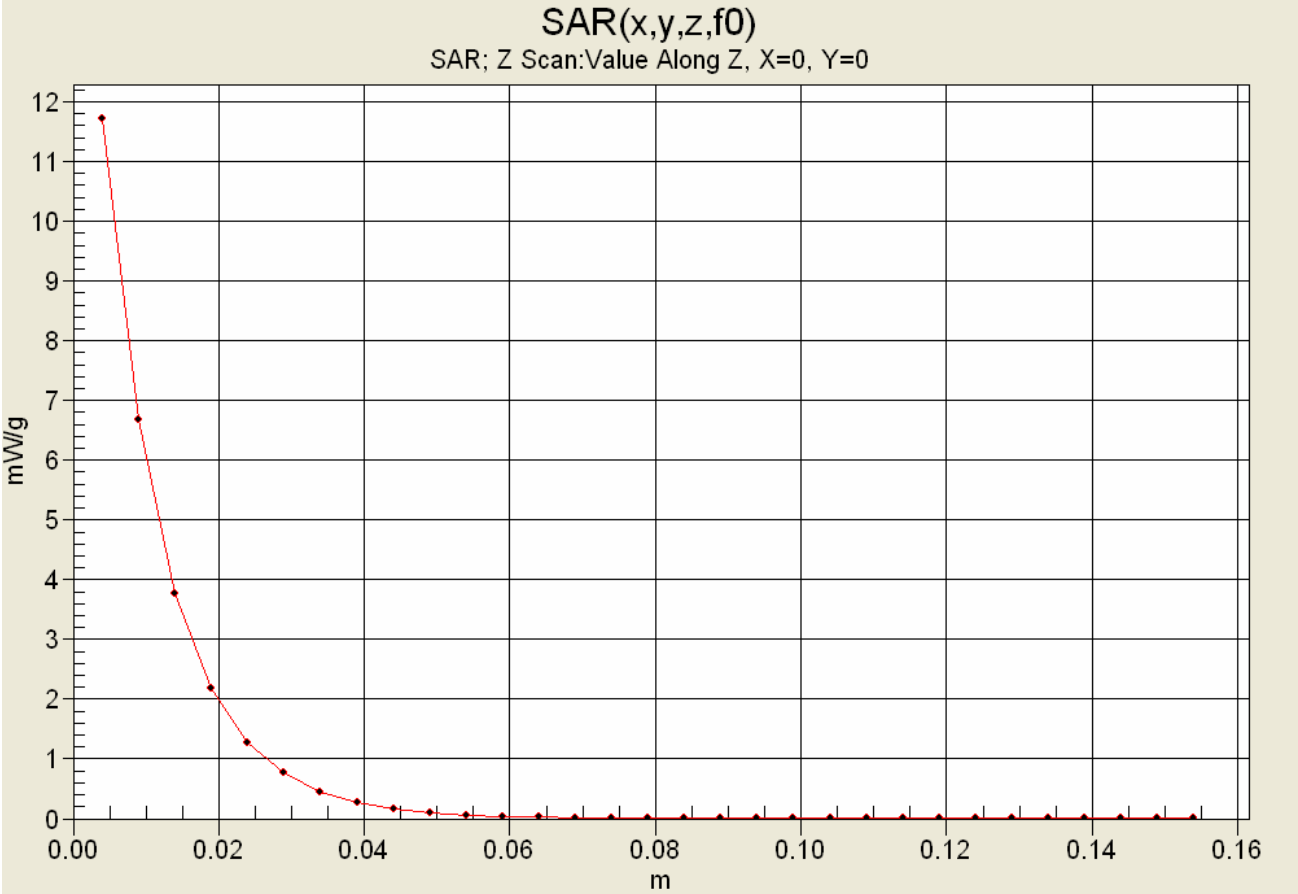
- Probe: ET3DV6 - SN1387; ConvF(5.18, 5.18, 5.18); Calibrated: 18/03/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 25/01/2005
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

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 = 96.0 V/m; Power Drift = -0.014 dB
Peak SAR (extrapolated) = 18.1 W/kg
SAR(1 g) = 10.4 mW/g; SAR(10 g) = 5.45 mW/g



Z-Axis Scan



Date Tested: 08/25/2005

System Performance Check (Brain) - 835 MHz Dipole

DUT: Dipole 835 MHz; Model: D835V2; Type: System Performance Check; Serial: 411; Calibrated: 03/30/2005

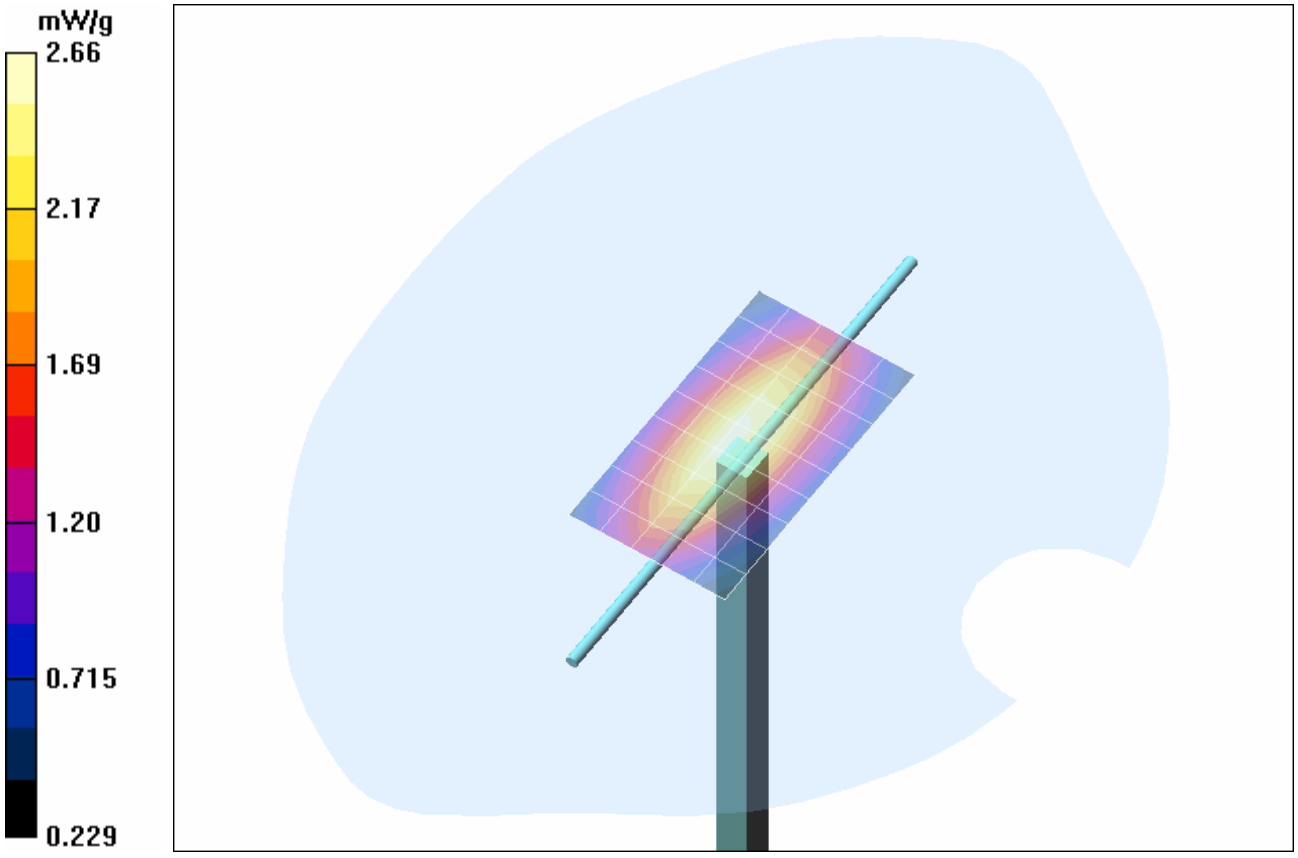
Ambient Temp: 24.2 °C; Fluid Temp: 23.1 °C; Barometric Pressure: 102.2 kPa; Humidity: 31%

Communication System: CW
Forward Conducted Power: 250 mW
Frequency: 835 MHz; Duty Cycle: 1:1
Medium: HSL835 (σ = 0.90 mho/m; ε_r = 40.7; ρ = 1000 kg/m^3)

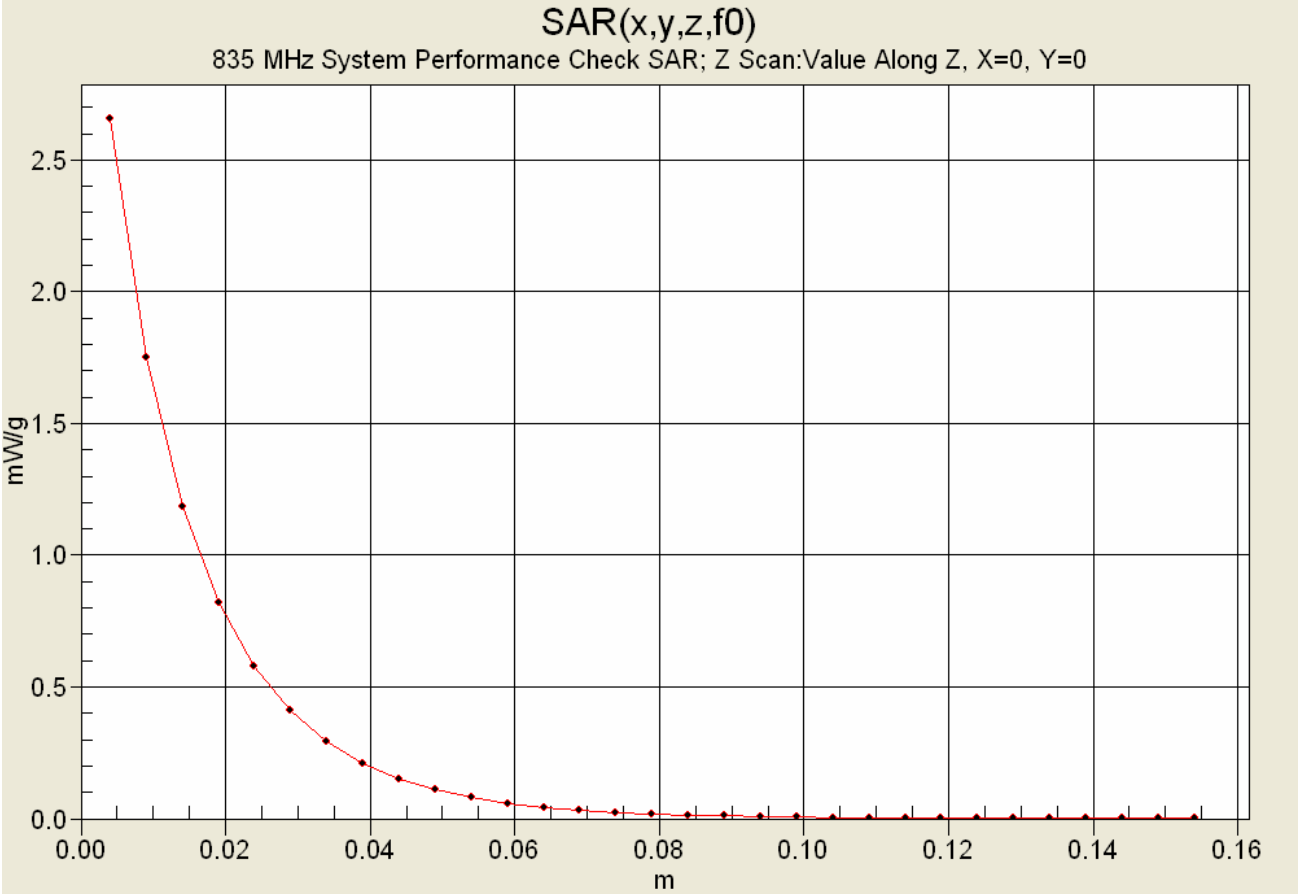
- Probe: ET3DV6 - SN1387; ConvF(6.47, 6.47, 6.47); Calibrated: 18/03/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 25/01/2005
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

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 = 56.6 V/m; Power Drift = -0.022 dB
Peak SAR (extrapolated) = 3.74 W/kg
SAR(1 g) = 2.45 mW/g; SAR(10 g) = 1.59 mW/g



Z-Axis Scan



Date Tested: 08/26/2005

System Performance Check (Body) - 2450 MHz Dipole

DUT: Dipole 2450 MHz; Model: D2450V2; Type: System Performance Check; Serial: 150; Calibrated: 04/22/2005

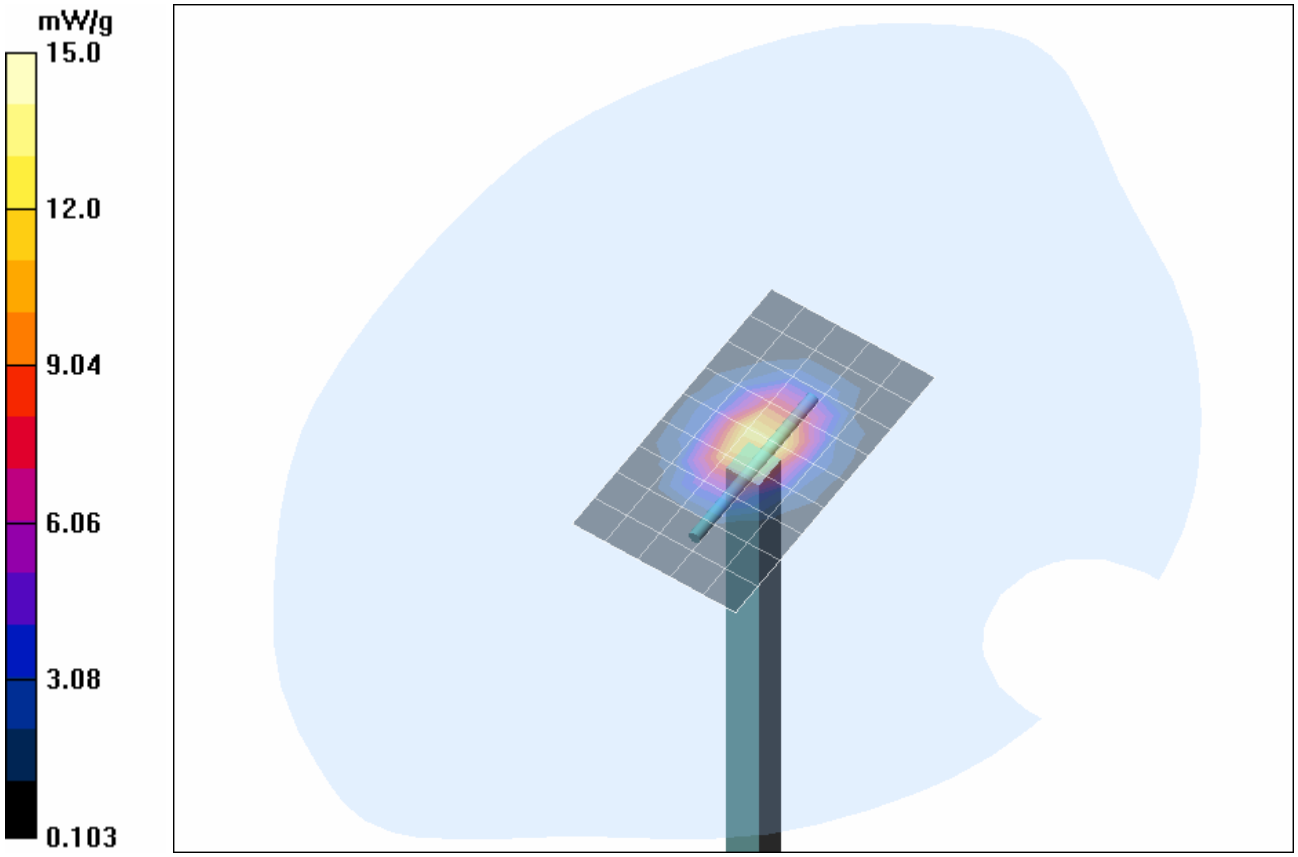
Ambient Temp: 24.9 °C; Fluid Temp: 23.9 °C; Barometric Pressure: 101.7 kPa; Humidity: 31%

Communication System: CW
Forward Conducted Power: 250 mW
Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: M2450 (σ = 1.92 mho/m; ε_r = 50.7; ρ = 1000 kg/m^3)

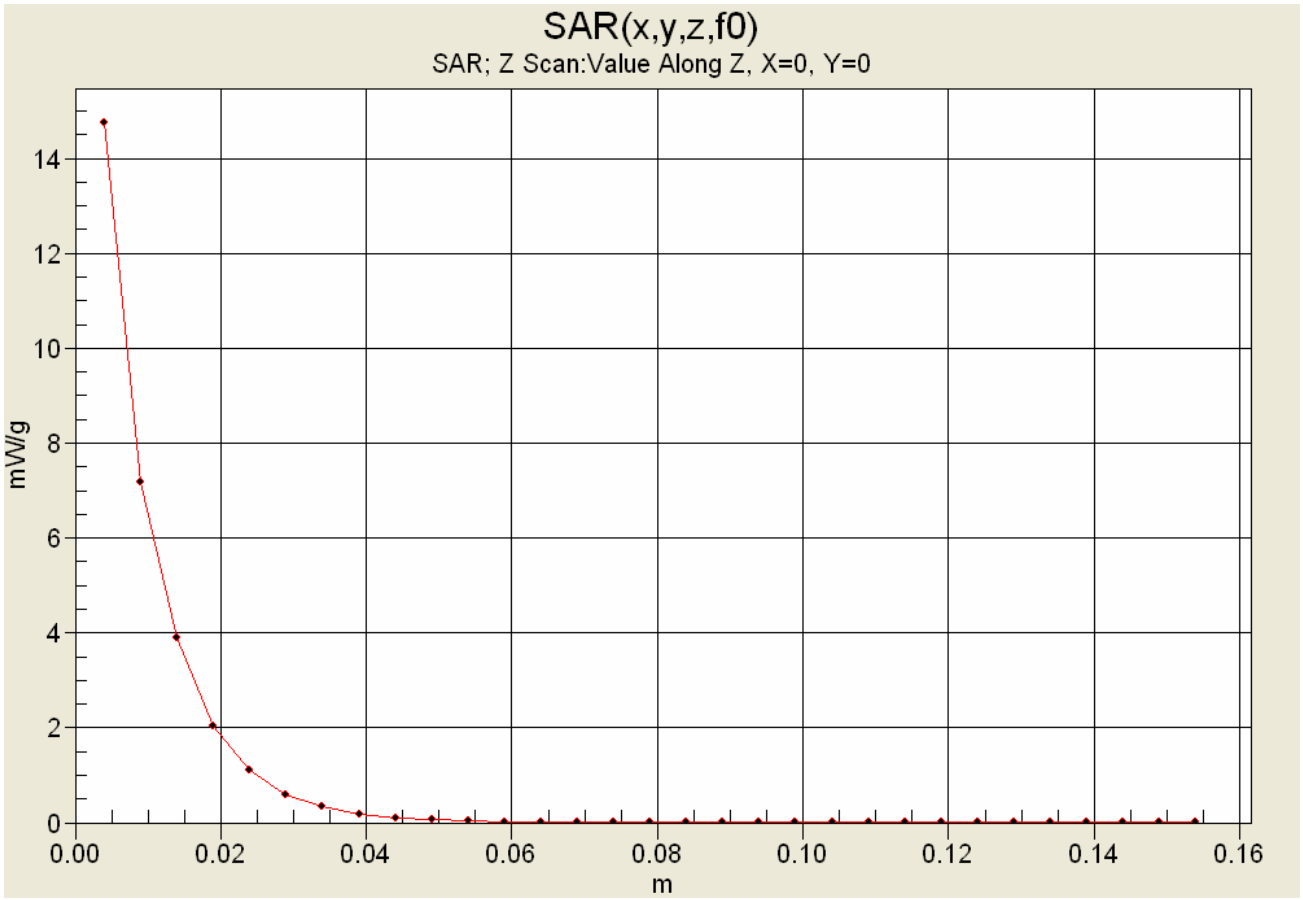
- Probe: ET3DV6 - SN1387; ConvF(4.3, 4.3, 4.3); Calibrated: 18/03/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 25/01/2005
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

2450 MHz Dipole - System Performance Check/Area Scan (6x10x1):
Measurement grid: dx=10mm, dy=10mm

2450 MHz Dipole - System Performance Check/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 91.4 V/m; Power Drift = -0.036 dB
Peak SAR (extrapolated) = 30.8 W/kg
SAR(1 g) = 13.4 mW/g; SAR(10 g) = 6.1 mW/g



Z-Axis Scan



Date Tested: 08/30/2005

System Performance Check (Body) - 1900 MHz Dipole

DUT: Dipole 1900 MHz; Model: D1900V2; Type: System Performance Check; Serial: 151; Calibrated: 04/22/2005

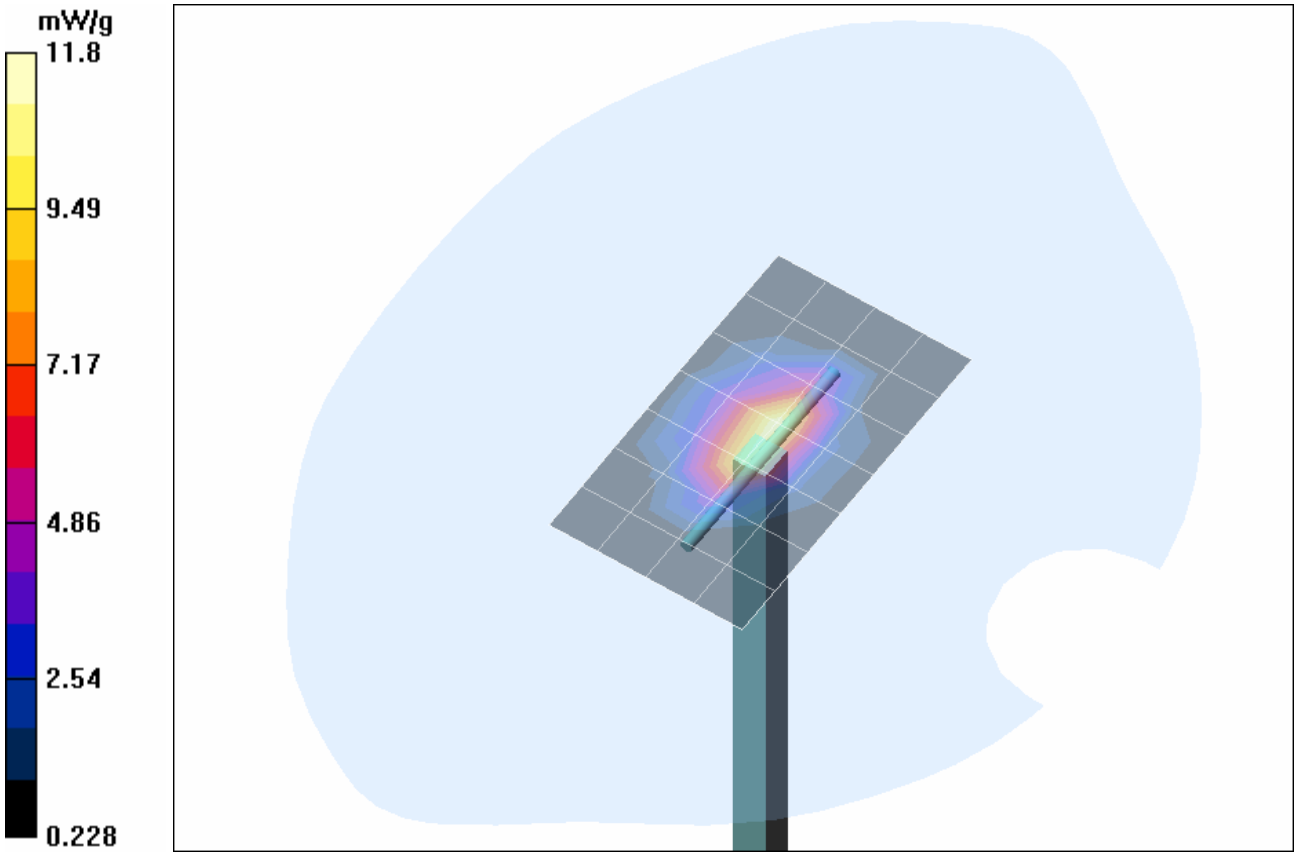
Ambient Temp: 23.4 °C; Fluid Temp: 23.5 °C; Barometric Pressure: 102.2 kPa; Humidity: 34%

Communication System: CW
Forward Conducted Power: 250 mW
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: M1900 (σ = 1.59 mho/m; ε_r = 50.7; ρ = 1000 kg/m^3)

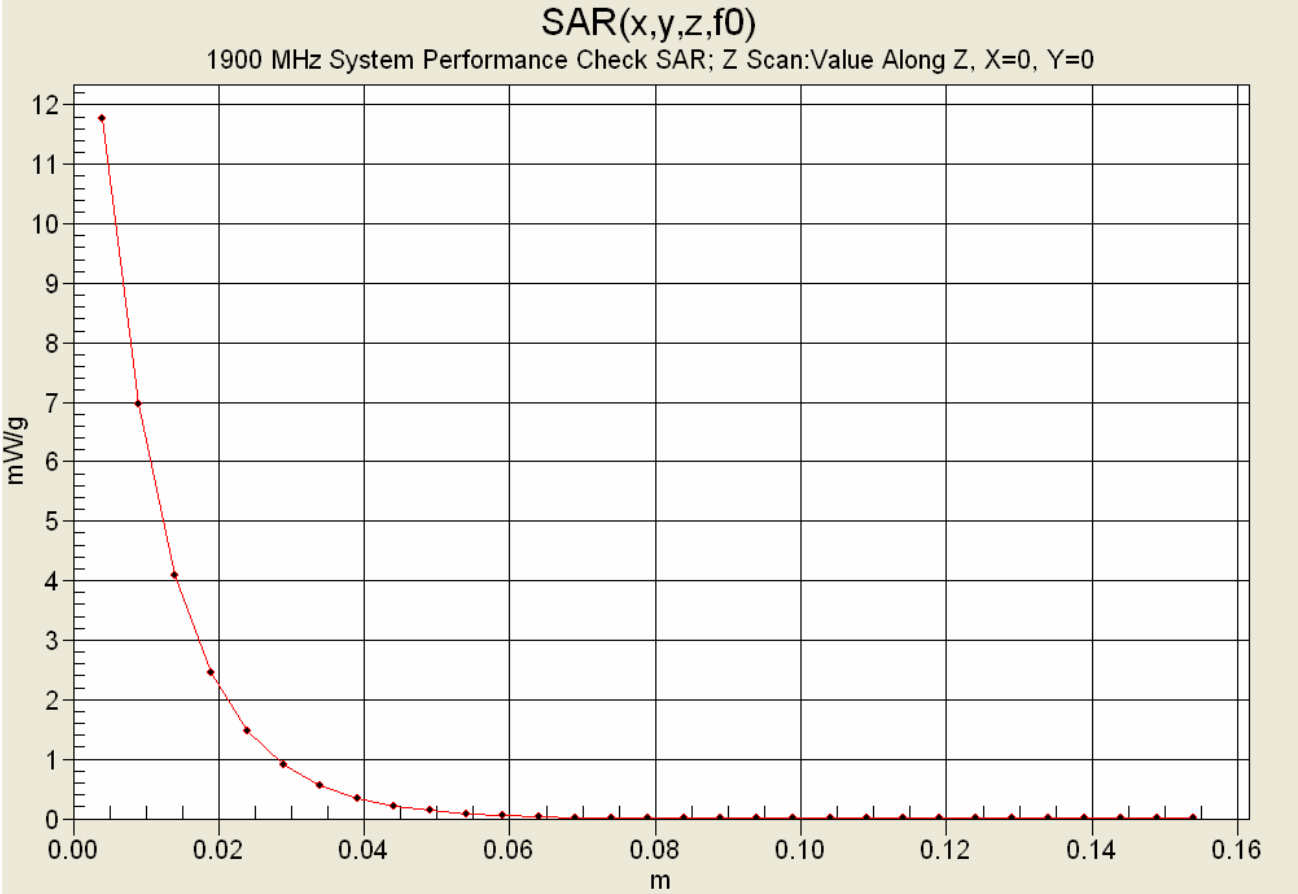
- Probe: ET3DV6 - SN1387; ConvF(4.75, 4.75, 4.75); Calibrated: 18/03/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 25/01/2005
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

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 = 93.1 V/m; Power Drift = -0.055 dB
Peak SAR (extrapolated) = 17.9 W/kg
SAR(1 g) = 10.4 mW/g; SAR(10 g) = 5.54 mW/g



Z-Axis Scan



Date Tested: 08/30/2005

System Performance Check (Body) - 835 MHz Dipole

DUT: Dipole 835 MHz; Model: D835V2; Type: System Performance Check; Serial: 411; Calibrated: 04/12/2005

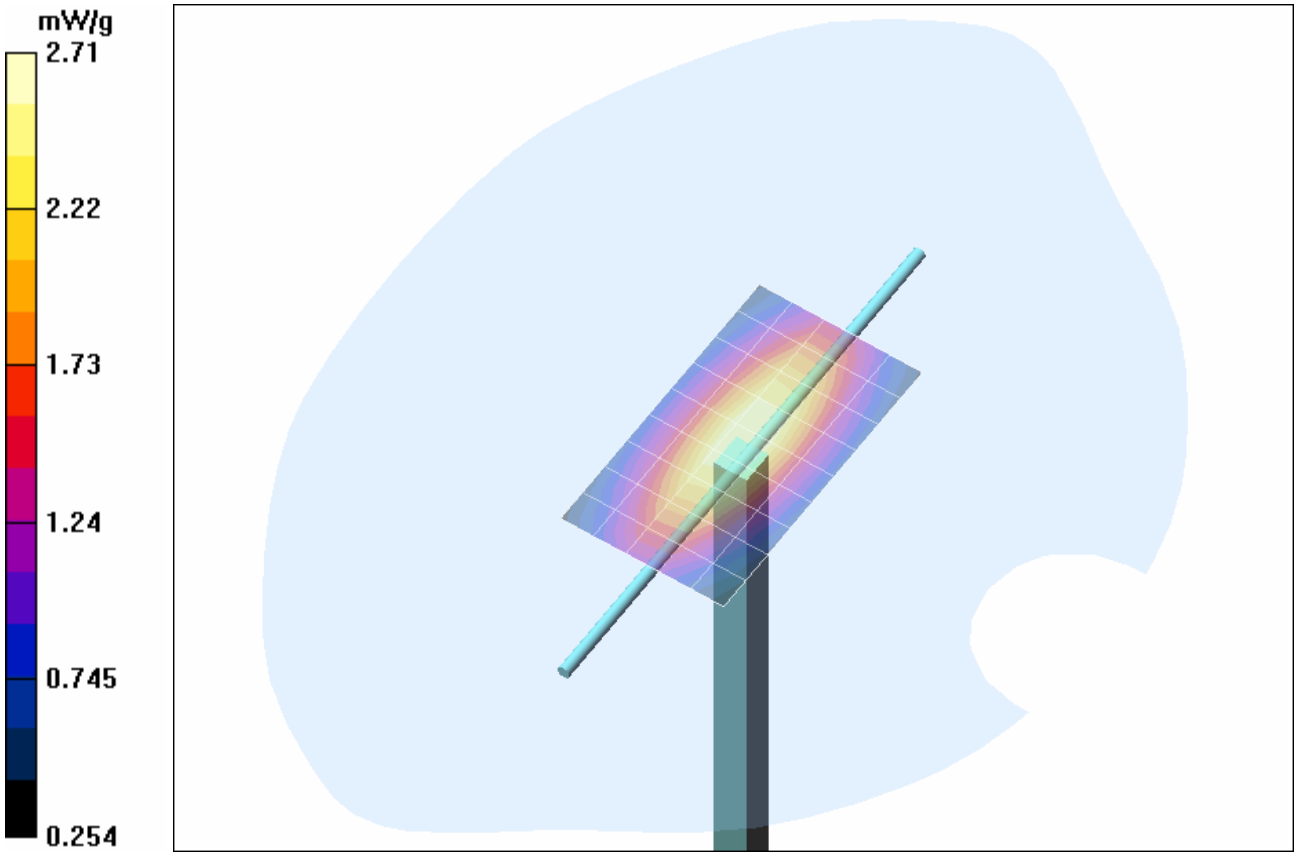
Ambient Temp: 24.7 °C; Fluid Temp: 23.3 °C; Barometric Pressure: 102.2 kPa; Humidity: 33%

Communication System: CW
Forward Conducted Power: 250 mW
Frequency: 835 MHz; Duty Cycle: 1:1
Medium: M835 (σ = 0.97 mho/m; ε_r = 53.8; ρ = 1000 kg/m^3)

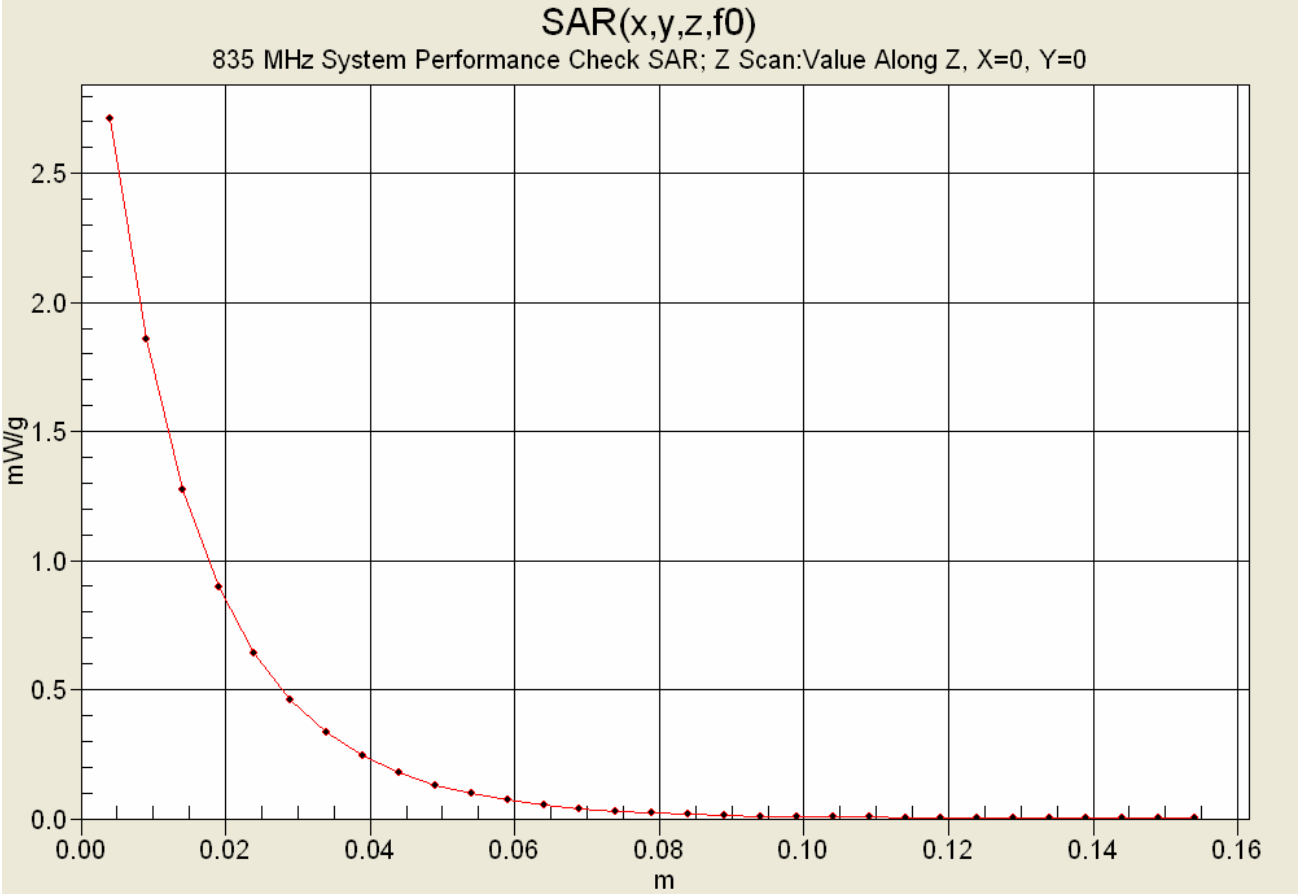
- Probe: ET3DV6 - SN1387; ConvF(6.1, 6.1, 6.1); Calibrated: 18/03/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 25/01/2005
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

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 = 55.0 V/m; Power Drift = 0.013 dB
Peak SAR (extrapolated) = 3.60 W/kg
SAR(1 g) = 2.49 mW/g; SAR(10 g) = 1.64 mW/g



Z-Axis Scan



Date Tested: 08/30/2005

System Performance Check (Body) - 2450 MHz Dipole

DUT: Dipole 2450 MHz; Model: D2450V2; Type: System Performance Check; Serial: 150; Calibrated: 04/22/2005

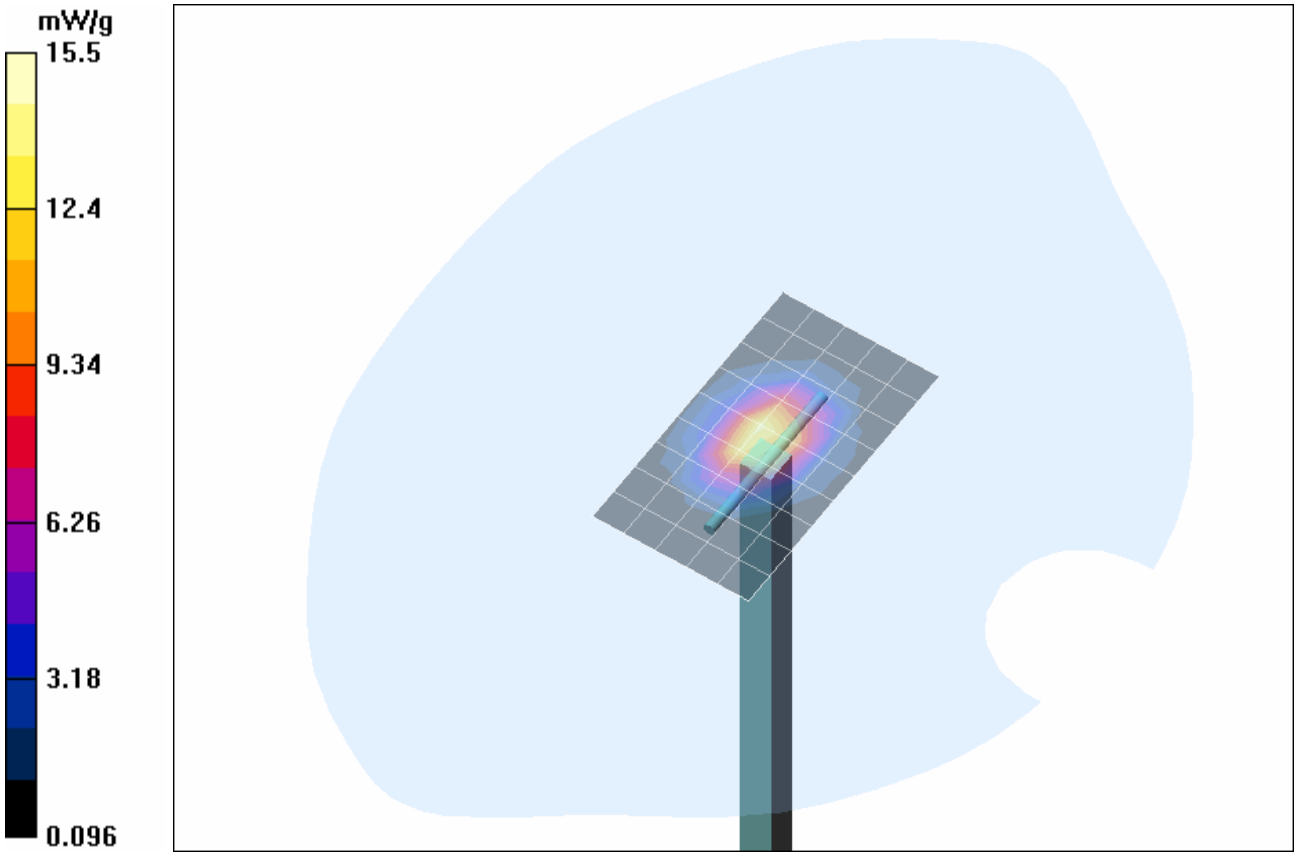
Ambient Temp: 25.3 °C; Fluid Temp: 22.8 °C; Barometric Pressure: 102.2 kPa; Humidity: 31%

Communication System: CW
Forward Conducted Power: 250 mW
Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: M2450 (σ = 2.01 mho/m; ε_r = 50.3; ρ = 1000 kg/m^3)

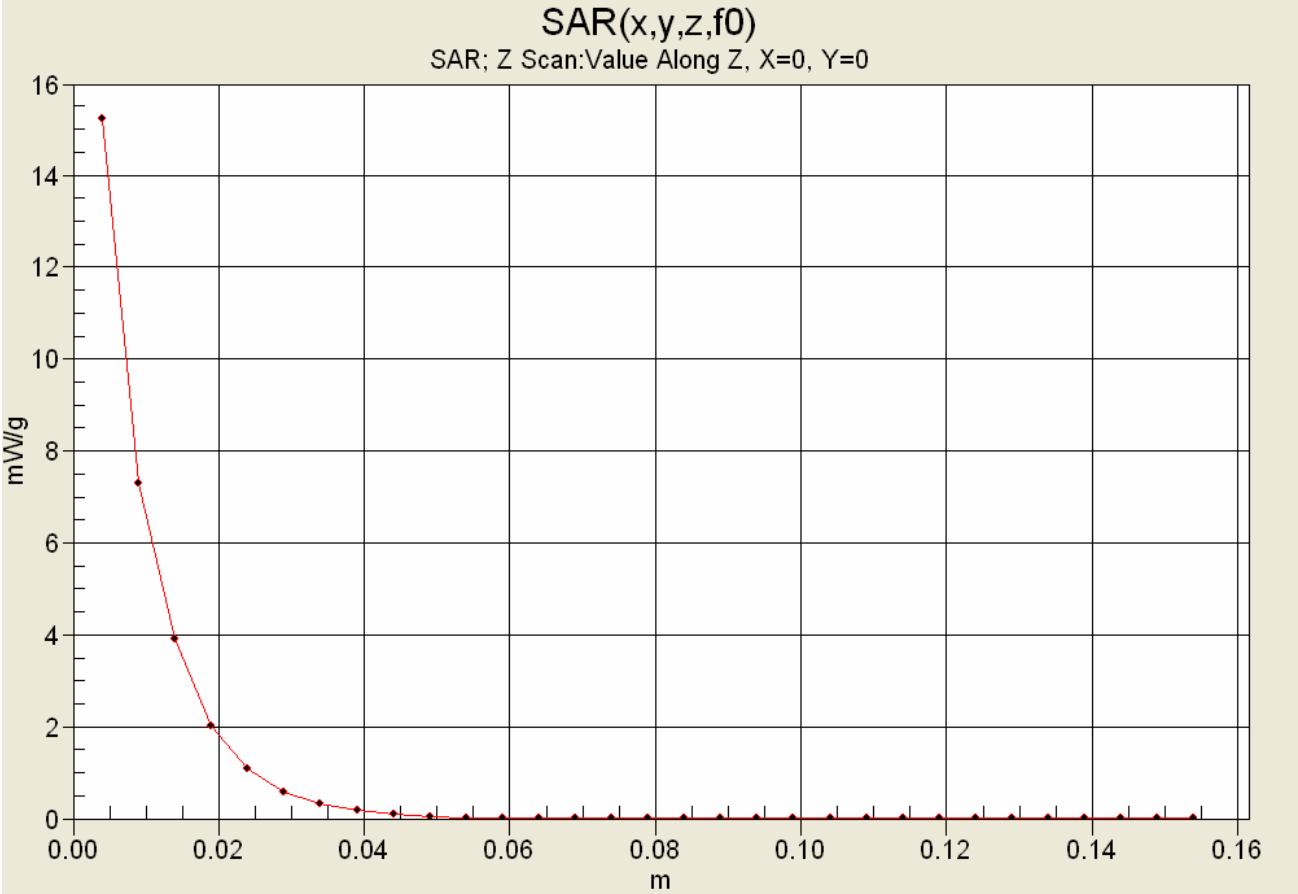
- Probe: ET3DV6 - SN1387; ConvF(4.3, 4.3, 4.3); Calibrated: 18/03/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 25/01/2005
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

2450 MHz Dipole - System Performance Check/Area Scan (6x10x1):
Measurement grid: dx=10mm, dy=10mm

2450 MHz Dipole - System Performance Check/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 91.1 V/m; Power Drift = 0.024 dB
Peak SAR (extrapolated) = 31.9 W/kg
SAR(1 g) = 13.9 mW/g; SAR(10 g) = 6.34 mW/g



Z-Axis Scan



APPENDIX C - MEASURED FLUID DIELECTRIC PARAMETERS

2450 MHz System Performance Check & DUT Evaluation (Brain)

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Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
Thu 26/May/2005
Freq Frequency(GHz)
FCC_eH FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM

****

Freq	FCC_eH	FCC_sH	Test_e	Test_s
2.3500	39.38	1.71	37.94	1.73
2.3600	39.36	1.72	37.94	1.74
2.3700	39.34	1.73	37.88	1.77
2.3800	39.32	1.74	37.87	1.77
2.3900	39.31	1.75	37.78	1.77
2.4000	39.29	1.76	37.73	1.79
2.4100	39.27	1.76	37.60	1.81
2.4200	39.25	1.77	37.60	1.81
2.4300	39.24	1.78	37.55	1.82
2.4400	39.22	1.79	37.52	1.84
2.4500	39.20	1.80	37.53	1.85
2.4600	39.19	1.81	37.43	1.86
2.4700	39.17	1.82	37.50	1.87
2.4800	39.16	1.83	37.40	1.89
2.4900	39.15	1.84	37.30	1.89
2.5000	39.14	1.85	37.28	1.90
2.5100	39.12	1.87	37.25	1.91
2.5200	39.11	1.88	37.23	1.93
2.5300	39.10	1.89	37.17	1.93
2.5400	39.09	1.90	37.12	1.96
2.5500	39.07	1.91	37.04	1.96

835 MHz DUT Evaluation (Head)

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************************************************************
Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
Tue 23/Aug/2005
Freq     Frequency(GHz)
FCC_eH   FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH   FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e   Epsilon  of  UIM
Test_s   Sigma of UIM
************************************************************
```

Freq	FCC_eH	FCC_sH	Test_e	Test_s
0.7350	42.02	0.89	42.38	0.78
0.7450	41.97	0.89	41.83	0.80
0.7550	41.92	0.89	41.37	0.82
0.7650	41.86	0.89	41.15	0.83
0.7750	41.81	0.90	41.09	0.84
0.7850	41.76	0.90	41.09	0.85
0.7950	41.71	0.90	41.17	0.85
0.8050	41.66	0.90	41.50	0.85
0.8150	41.60	0.90	41.54	0.86
0.8250	41.55	0.90	41.52	0.86
0.8350	41.50	0.90	41.29	0.87
0.8450	41.50	0.91	41.01	0.88
0.8550	41.50	0.92	40.51	0.89
0.8650	41.50	0.93	40.06	0.91
0.8750	41.50	0.94	39.79	0.93
0.8850	41.50	0.95	39.58	0.94
0.8950	41.50	0.96	39.60	0.95
0.9050	41.50	0.97	39.88	0.95
0.9150	41.50	0.98	40.17	0.95
0.9250	41.48	0.98	40.33	0.95
0.9350	41.46	0.99	40.37	0.95

835 MHz System Performance Check (Brain)

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************************************************************
Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
Mon 22/Aug/2005
Freq     Frequency(GHz)
FCC_eH   FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH   FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e   Epsilon  of  UIM
Test_s   Sigma of UIM
************************************************************
```

Freq	FCC_eH	FCC_sH	Test_e	Test_s
0.7350	42.02	0.89	42.71	0.83
0.7450	41.97	0.89	42.48	0.83
0.7550	41.92	0.89	42.36	0.84
0.7650	41.86	0.89	42.21	0.85
0.7750	41.81	0.90	42.05	0.86
0.7850	41.76	0.90	42.11	0.87
0.7950	41.71	0.90	42.05	0.88
0.8050	41.66	0.90	41.96	0.89
0.8150	41.60	0.90	41.96	0.90
0.8250	41.55	0.90	41.79	0.91
0.8350	41.50	0.90	41.57	0.92
0.8450	41.50	0.91	41.47	0.92
0.8550	41.50	0.92	41.41	0.93
0.8650	41.50	0.93	41.13	0.94
0.8750	41.50	0.94	40.92	0.95
0.8850	41.50	0.95	40.77	0.96
0.8950	41.50	0.96	40.75	0.97
0.9050	41.50	0.97	40.66	0.98
0.9150	41.50	0.98	40.68	0.99
0.9250	41.48	0.98	40.69	0.99
0.9350	41.46	0.99	40.65	1.01

1880 MHz DUT Evaluation (Head)

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**********************************************************
Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
Tue 23/Aug/2005
Freq     Frequency(GHz)
FCC_eH   FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH   FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e   Epsilon  of  UIM
Test_s   Sigma of UIM
**********************************************************
```

Freq	FCC_eH	FCC_sH	Test_e	Test_s
1.8000	40.00	1.40	38.82	1.32
1.8100	40.00	1.40	38.79	1.32
1.8200	40.00	1.40	38.77	1.34
1.8300	40.00	1.40	38.58	1.35
1.8400	40.00	1.40	38.69	1.35
1.8500	40.00	1.40	38.68	1.36
1.8600	40.00	1.40	38.63	1.36
1.8700	40.00	1.40	38.48	1.38
1.8800	40.00	1.40	38.54	1.40
1.8900	40.00	1.40	38.37	1.41
1.9000	40.00	1.40	38.36	1.42
1.9100	40.00	1.40	38.36	1.42
1.9200	40.00	1.40	38.32	1.44
1.9300	40.00	1.40	38.29	1.45
1.9400	40.00	1.40	38.19	1.46
1.9500	40.00	1.40	38.18	1.47
1.9600	40.00	1.40	38.11	1.48
1.9700	40.00	1.40	37.95	1.49
1.9800	40.00	1.40	38.01	1.50
1.9900	40.00	1.40	37.92	1.50
2.0000	40.00	1.40	37.87	1.52

1880 MHz DUT Evaluation (Head)

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**********************************************************
Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
Wed 24/Aug/2005
Freq     Frequency(GHz)
FCC_eH   FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH   FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e   Epsilon  of  UIM
Test_s   Sigma of UIM
**********************************************************
```

Freq	FCC_eH	FCC_sH	Test_e	Test_s
1.7800	40.03	1.39	38.70	1.24
1.7900	40.02	1.39	38.54	1.28
1.8000	40.00	1.40	38.64	1.25
1.8100	40.00	1.40	38.56	1.30
1.8200	40.00	1.40	38.29	1.28
1.8300	40.00	1.40	38.48	1.28
1.8400	40.00	1.40	38.48	1.32
1.8500	40.00	1.40	38.37	1.33
1.8600	40.00	1.40	38.18	1.31
1.8700	40.00	1.40	38.22	1.32
1.8800	40.00	1.40	38.17	1.35
1.8900	40.00	1.40	37.68	1.37
1.9000	40.00	1.40	37.97	1.36
1.9100	40.00	1.40	37.91	1.37
1.9200	40.00	1.40	37.80	1.40
1.9300	40.00	1.40	37.80	1.37
1.9400	40.00	1.40	37.72	1.40
1.9500	40.00	1.40	37.93	1.38
1.9600	40.00	1.40	37.71	1.42
1.9700	40.00	1.40	37.87	1.43
1.9800	40.00	1.40	38.05	1.44

1880 MHz DUT Evaluation (Body)

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**********************************************************
Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
Wed 24/Aug/2005
Freq    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	51.38	1.42
1.8100	53.30	1.52	51.32	1.43
1.8200	53.30	1.52	51.29	1.44
1.8300	53.30	1.52	51.17	1.45
1.8400	53.30	1.52	51.26	1.47
1.8500	53.30	1.52	51.25	1.47
1.8600	53.30	1.52	51.09	1.49
1.8700	53.30	1.52	51.10	1.50
1.8800	53.30	1.52	50.98	1.51
1.8900	53.30	1.52	51.01	1.53
1.9000	53.30	1.52	51.01	1.54
1.9100	53.30	1.52	50.86	1.54
1.9200	53.30	1.52	50.90	1.56
1.9300	53.30	1.52	50.87	1.56
1.9400	53.30	1.52	50.78	1.58
1.9500	53.30	1.52	50.70	1.58
1.9600	53.30	1.52	50.53	1.60
1.9700	53.30	1.52	50.74	1.62
1.9800	53.30	1.52	50.59	1.62
1.9900	53.30	1.52	50.50	1.64
2.0000	53.30	1.52	50.46	1.65

1900 MHz System Performance Check (Brain)

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**********************************************************
Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
Tue 23/Aug/2005
Freq    Frequency(GHz)
FCC_eH  FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH  FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e  Epsilon  of  UIM
Test_s  Sigma of UIM
**********************************************************
```

Freq	FCC_eH	FCC_sH	Test_e	Test_s
1.8000	40.00	1.40	38.82	1.32
1.8100	40.00	1.40	38.79	1.32
1.8200	40.00	1.40	38.77	1.34
1.8300	40.00	1.40	38.58	1.35
1.8400	40.00	1.40	38.69	1.35
1.8500	40.00	1.40	38.68	1.36
1.8600	40.00	1.40	38.63	1.36
1.8700	40.00	1.40	38.48	1.38
1.8800	40.00	1.40	38.54	1.40
1.8900	40.00	1.40	38.37	1.41
1.9000	40.00	1.40	38.36	1.42
1.9100	40.00	1.40	38.36	1.42
1.9200	40.00	1.40	38.32	1.44
1.9300	40.00	1.40	38.29	1.45
1.9400	40.00	1.40	38.19	1.46
1.9500	40.00	1.40	38.18	1.47
1.9600	40.00	1.40	38.11	1.48
1.9700	40.00	1.40	37.95	1.49
1.9800	40.00	1.40	38.01	1.50
1.9900	40.00	1.40	37.92	1.50
2.0000	40.00	1.40	37.87	1.52

835 MHz DUT Evaluation (Body)

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************************************************************
Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
Thu 25/Aug/2005
Freq     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
0.7350	55.59	0.96	54.98	0.89
0.7450	55.55	0.96	55.04	0.89
0.7550	55.51	0.96	55.16	0.90
0.7650	55.47	0.96	54.96	0.91
0.7750	55.43	0.97	54.80	0.89
0.7850	55.39	0.97	54.90	0.92
0.7950	55.36	0.97	54.35	0.91
0.8050	55.32	0.97	54.02	0.95
0.8150	55.28	0.97	54.29	0.96
0.8250	55.24	0.97	54.08	0.96
0.8350	55.20	0.97	54.02	0.98
0.8450	55.17	0.98	54.58	0.98
0.8550	55.14	0.99	54.34	0.99
0.8650	55.11	1.01	54.28	1.00
0.8750	55.08	1.02	53.78	1.00
0.8850	55.05	1.03	53.91	1.02
0.8950	55.02	1.04	53.43	1.02
0.9050	55.00	1.05	53.53	1.03
0.9150	55.00	1.06	53.41	1.05
0.9250	54.98	1.06	53.42	1.05
0.9350	54.96	1.07	53.44	1.07

835 MHz System Performance Check (Brain)

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************************************************************
Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
Thu 25/Aug/2005
Freq     Frequency(GHz)
FCC_eH   FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH   FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e   Epsilon  of  UIM
Test_s   Sigma of UIM
************************************************************
```

Freq	FCC_eH	FCC_sH	Test_e	Test_s
0.7350	42.02	0.89	41.68	0.81
0.7450	41.97	0.89	41.51	0.82
0.7550	41.92	0.89	41.88	0.81
0.7650	41.86	0.89	41.33	0.83
0.7750	41.81	0.90	41.38	0.82
0.7850	41.76	0.90	41.56	0.85
0.7950	41.71	0.90	41.14	0.84
0.8050	41.66	0.90	40.64	0.85
0.8150	41.60	0.90	41.04	0.88
0.8250	41.55	0.90	40.81	0.88
0.8350	41.50	0.90	40.65	0.90
0.8450	41.50	0.91	40.67	0.90
0.8550	41.50	0.92	40.66	0.92
0.8650	41.50	0.93	40.49	0.92
0.8750	41.50	0.94	40.03	0.93
0.8850	41.50	0.95	39.96	0.95
0.8950	41.50	0.96	40.02	0.92
0.9050	41.50	0.97	39.72	0.95
0.9150	41.50	0.98	39.60	0.97
0.9250	41.48	0.98	39.52	0.96
0.9350	41.46	0.99	39.44	0.97

2450 MHz System Performance Check & DUT Evaluation (Body)

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Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
Fri 26/Aug/2005
Freq 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
2.3500	52.83	1.85	50.86	1.81
2.3600	52.82	1.86	50.84	1.79
2.3700	52.81	1.87	50.77	1.82
2.3800	52.79	1.88	50.66	1.79
2.3900	52.78	1.89	50.82	1.84
2.4000	52.77	1.90	50.90	1.85
2.4100	52.75	1.91	50.66	1.88
2.4200	52.74	1.92	50.52	1.90
2.4300	52.73	1.93	50.46	1.88
2.4400	52.71	1.94	50.58	1.89
2.4500	52.70	1.95	50.74	1.92
2.4600	52.69	1.96	50.44	1.90
2.4700	52.67	1.98	50.56	1.91
2.4800	52.66	1.99	50.75	1.92
2.4900	52.65	2.01	50.52	1.97
2.5000	52.64	2.02	50.44	2.00
2.5100	52.62	2.04	50.36	2.00
2.5200	52.61	2.05	50.58	2.00
2.5300	52.60	2.06	50.30	2.01
2.5400	52.59	2.08	50.12	2.03
2.5500	52.57	2.09	50.15	2.08

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

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Celltech Labs Inc.s
Test Result for UIM Dielectric Parameter
Tue 30/Aug/2005
Freq 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	51.23	1.53
1.8100	53.30	1.52	51.04	1.48
1.8200	53.30	1.52	51.21	1.51
1.8300	53.30	1.52	51.26	1.51
1.8400	53.30	1.52	51.03	1.53
1.8500	53.30	1.52	51.02	1.55
1.8600	53.30	1.52	50.94	1.55
1.8700	53.30	1.52	50.98	1.58
1.8800	53.30	1.52	50.89	1.58
1.8900	53.30	1.52	50.75	1.59
1.9000	53.30	1.52	50.69	1.59
1.9100	53.30	1.52	50.89	1.58
1.9200	53.30	1.52	50.73	1.64
1.9300	53.30	1.52	50.44	1.61
1.9400	53.30	1.52	50.45	1.64
1.9500	53.30	1.52	50.55	1.64
1.9600	53.30	1.52	50.49	1.64
1.9700	53.30	1.52	50.33	1.67
1.9800	53.30	1.52	50.47	1.67
1.9900	53.30	1.52	50.35	1.70
2.0000	53.30	1.52	50.24	1.70

835 MHz System Performance Check & DUT Evaluation (Body)

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Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
Tue 30/Aug/2005
Freq 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	54.78	0.86
0.7450	55.55	0.96	54.67	0.88
0.7550	55.51	0.96	54.55	0.89
0.7650	55.47	0.96	54.60	0.91
0.7750	55.43	0.97	54.46	0.92
0.7850	55.39	0.97	54.26	0.92
0.7950	55.36	0.97	54.46	0.93
0.8050	55.32	0.97	54.13	0.94
0.8150	55.28	0.97	54.17	0.92
0.8250	55.24	0.97	54.17	0.95
0.8350	55.20	0.97	53.82	0.97
0.8450	55.17	0.98	53.48	0.98
0.8550	55.14	0.99	53.54	0.99
0.8650	55.11	1.01	53.69	1.00
0.8750	55.08	1.02	53.73	1.01
0.8850	55.05	1.03	53.31	1.02
0.8950	55.02	1.04	52.98	1.03
0.9050	55.00	1.05	53.32	1.04
0.9150	55.00	1.06	53.03	1.05
0.9250	54.98	1.06	53.13	1.05
0.9350	54.96	1.07	52.86	1.07

2450 MHz System Performance Check & DUT Evaluation (Body)

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Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
Tue 30/Aug/2005
Freq 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
2.3500	52.83	1.85	50.71	1.84
2.3600	52.82	1.86	50.74	1.87
2.3700	52.81	1.87	50.70	1.87
2.3800	52.79	1.88	50.61	1.89
2.3900	52.78	1.89	50.56	1.91
2.4000	52.77	1.90	50.45	1.93
2.4100	52.75	1.91	50.49	1.94
2.4200	52.74	1.92	50.43	1.96
2.4300	52.73	1.93	50.31	1.96
2.4400	52.71	1.94	50.30	1.98
2.4500	52.70	1.95	50.30	2.01
2.4600	52.69	1.96	50.30	2.03
2.4700	52.67	1.98	50.37	2.05
2.4800	52.66	1.99	50.31	2.06
2.4900	52.65	2.01	50.22	2.07
2.5000	52.64	2.02	50.24	2.11
2.5100	52.62	2.04	50.25	2.12
2.5200	52.61	2.05	50.12	2.15
2.5300	52.60	2.06	50.15	2.16
2.5400	52.59	2.08	50.11	2.17
2.5500	52.57	2.09	50.04	2.20

APPENDIX G - SAM PHANTOM CERTIFICATE OF CONFORMITY

Schmid & Partner
Engineering AG

Zeughausstrasse 43, 8004 Zurich, Switzerland, Phone +41 1 245 97 00, Fax +41 1 245 97 79

Certificate of conformity / First Article Inspection

Item	SAM Twin Phantom V4.0
Type No	QD 000 P40 BA
Series No	TP-1002 and higher
Manufacturer / Origin	Untersee Composites Hauptstr. 69 CH-8559 Fruthwilen Switzerland

Tests

The series production process used allows the limitation to test of first articles.
Complete tests were made on the pre-series Type No. QD 000 P40 AA, Serial No. TP-1001 and on the series first article Type No. QD 000 P40 BA, Serial No. TP-1006. Certain parameters have been retested using further series units (called samples).

Test	Requirement	Details	Units tested
Shape	Compliance with the geometry according to the CAD model.	IT'IS CAD File (*)	First article, Samples
Material thickness	Compliant with the requirements according to the standards	2mm +/- 0.2mm in specific areas	First article, Samples
Material parameters	Dielectric parameters for required frequencies	200 MHz – 3 GHz Relative permittivity < 5 Loss tangent < 0.05.	Material sample TP 104-5
Material resistivity	The material has been tested to be compatible with the liquids defined in the standards	Liquid type HSL 1800 and others according to the standard.	Pre-series, First article

Standards

[1] CENELEC EN 50361
[2] IEEE P1528-200x draft 6.5
[3] IEC PT 62209 draft 0.9
(*) The IT'IS CAD file is derived from [2] and is also within the tolerance requirements of the shapes of [1] and [3].

Conformity

Based on the sample tests above, we certify that this item is in compliance with the uncertainty requirements of SAR measurements specified in standard [1] and draft standards [2] and [3].

Date 18.11.2001

Signature / Stamp Schmid & Partner Engineering AG
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