DECLARATION OF COMPLIANCE | SAR RF EXPOSURE EVALUATION | FCC & IC C2PC (LMA)

Test Lab Accreditation	**ISO 17025**	A2LA Test Lab Certificate No. 2470.01				
Test Lab Information	**Name**	**CELLTECH LABS INC.**				
	Address	21-364 Lougheed Road, Kelowna, B.C. V1X 7R8 Canada				
Company Information	**Name**	**GENERAL DYNAMICS ITRONIX CORPORATION**				
	Address	1000 Sawgrass Corp. Parkway, Suite 300, Sunrise, FL 33323 USA				
Standard(s) Applied	**FCC**	47 CFR §2.1093	**IC**	Health Canada Safety Code 6		
Procedure(s) Applied	**IC**	RSS-102 Issue 4				
	IEEE	1528-2003				
	IEC	62209-2:2010				
	FCC	OET 65, Supp. C (01-01)	KDB 447498	KDB 248227	KDB 865664	KDB 616217
Device Classification(s)	**FCC**	Digital Transmission System (DTS) - §15 Subpart C				
	FCC	Unlicensed National Information Infrastructure TX (NII) - §15 Subpart E				
	IC	Low Power License-Exempt Radiocommunication Device (RSS-210 Issue 8)				
Application Type(s)	**FCC/IC**	Class II Permissive Change (Limited Modular Approval) - Add GD3080 Host PC to IX-62205ANH & WT11 Modules				
Date of Rcpt & Evaluation	**Rcpt Date**	January 27, 2012	**Test Date(s)**	February 02-03, 2012		
Device Identifier(s)	**FCC ID:**	KBCIX-62205ANH	**IC:**	1943A-62205ANH		
Device Under Test (DUT)	**Module**	802.11a/b/g/n WLAN PCIe Half Mini Card	**Model**	IX-62205ANH		
	Grantee	General Dynamics Itronix Corporation	**Serial No.**	TA: G12784-007 (Production Unit)		
DUT Host Configuration(s)	**Host PC**	Rugged Tablet PC	**Model**	GD3080		
	Manuf.	General Dynamics Itronix Corporation	**Serial No.**	SY00000595		
Co-located Transmitter(s)	**Bluetooth**	Class 1	**Model**	WT11		
	FCC ID:	KBCIX-WT11	**IC:**	1943A-WT11		
	Grantee	General Dynamics Itronix Corporation	**Co-Transmit**	Supports co-transmission with IX-62205ANH		
	Tx Freq.	2402 - 2480 MHz	**Rated Power**	22 mW Peak Conducted (Original Certification)		
LCD Display Orientation(s)	**Host PC**	Mode 1: 0 Degrees Landscape		Mode 2: 90 Degrees Portrait		
Device Position(s) Tested	**Host PC**	Bottom Side Touch (WLAN MAIN & AUX Transmit Diversity Antennas)				
		Right Side Edge Touch - 90 Degrees Portrait (WLAN MAIN Transmit Diversity Antenna - Adjacent Edge)				
Transmitter Freq. Range(s)	**WLAN**	2412 - 2462 MHz	5180 - 5240 MHz	5260 - 5320 MHz	5500 - 5700 MHz	5745 - 5825 MHz
Antenna Type(s) Tested	**WLAN**	MAIN - Chain A	Internal - (Supports MIMO in 802.11n mode)	**Gain Specification**	-2.2 dBi (2 GHz Band)	
		AUX - Chain B	Internal - (Supports MIMO in 802.11n mode)		2.5 dBi (5 GHz Band)	
Antenna-to-Antenna Distance	**WLAN-BT**	WLAN MAIN (Chain A) to Bluetooth: 170 mm		WLAN AUX (Chain B) to Bluetooth: 68.7 mm		
Antenna-to-User Distance	**WLAN**	MAIN to Bottom Side: 34.3 mm	AUX to Bottom Side: 34.3 cm	MAIN to Adjacent Edge (90° Portrait) = 64.8 mm		
Power Source(s) Tested	**Host PC**	Lithium-ion Battery	11.1V	3900mAh	Model: T8M-E	
Max. SAR Levels Measured	**BODY (WLAN)**	**2.4 GHz Band**	**0.116 W/kg**	Peak SAR level measured from the area scan	Bottom Side of GD3080	
		5 GHz Band	**0.030 W/kg**	Peak SAR level measured from the area scan	Bottom Side of GD3080	
Spatial Peak SAR Limit	**BODY**	**1.6 W/kg**	**1g average**	**General Population / Uncontrolled Exposure**		

Celltech Labs Inc. declares under its sole responsibility that this wireless portable device is compliant with the Specific Absorption Rate (SAR) RF exposure requirements specified in FCC 47 CFR §2.1093 and Health Canada's Safety Code 6 for the General Population / Uncontrolled Exposure environment. 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 4, IEEE 1528-2003 and International Standard IEC 62209-2 (Edition 1.0 2010-03). 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.

The results and statements contained in this report pertain only to the device(s) evaluated.

Test Report Approved By		**Sean Johnston**	**Lab Manager**	**Celltech Labs Inc.**

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REVISION HISTORY			
REVISION NO.	**DESCRIPTION**	**IMPLEMENTED BY**	**RELEASE DATE**
1.0	1st Release	Jon Hughes	February 17, 2012

TEST REPORT SIGN-OFF			
DEVICE TESTED BY	**REPORT PREPARED BY**	**QA REVIEW BY**	**REPORT APPROVED BY**
Mike Meaker	Mike Meaker	Jon Hughes	Sean Johnston

1.0 INTRODUCTION

This measurement report demonstrates compliance of the General Dynamics Itronix Corporation IX-62205ANH 802.11a/b/g/n WLAN PCIe Half Mini Card, installed in General Dynamics Itronix Corporation GD3080 Rugged Tablet PC, with the SAR (Specific Absorption Rate) RF exposure requirements of 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]), Industry Canada RSS-102 Issue 4 (see reference [4]), IEEE Standard 1528-2003 (see reference [5]) and IEC International Standard 62209-2:2010 (see reference [6]) 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 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 head 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 utilizes a controller with built in VME-bus computer.

3.0 SAR PROBE CALIBRATION & MEASUREMENT FREQUENCY (150MHz - 3GHz)

The following procedures are recommended for measurements at 150 MHz - 3 GHz to minimize probe calibration and tissue dielectric parameter discrepancies. In general, SAR measurements below 300 MHz should be within ±50 MHz of the probe calibration frequency. At 300 MHz to 3 GHz, measurements should be within ±100 MHz of the probe calibration frequency. Measurements exceeding 50% of these intervals, ±25 MHz < 300 MHz and ±50 MHz ≥300 MHz, require additional steps (per FCC KDB 450824 D01 v01r01, SAR Probe Calibration and System Verification Considerations for Measurements at 150 MHz - 3 GHz - see reference [9]).

Probe Calibration Freq.	Device Measurement Freq.	Frequency Interval	±50 MHz ≥ 300 MHz
2450 MHz	2442 MHz	8 MHz	< 50 MHz
1. The probe calibration and measurement frequency interval is < 50 MHz; therefore the additional steps were not required.			

4.0 RF CONDUCTED OUTPUT POWER MEASUREMENTS

WLAN Mode	Channel	Freq. (MHz)	Data Rate	Duty Cycle	Conducted Average Power (dBm)	
					Main - Chain A	Aux - Chain B
2412-2462 MHz						
802.11b	1	2412	1 Mbps	99%	15.6	15.6
	7	2442	1 Mbps	99%	15.6	15.7
	11	2462	1 Mbps	99%	15.4	15.6
802.11g	1	2412	6 Mbps	99%	13.9	14
	7	2442	6 Mbps	99%	16.7	16.5
	11	2462	6 Mbps	99%	14.1	14
802.11n (20MHz)	1	2412	HT0	99%	13.1	13.2
	7	2442	HT0	99%	16.6	16.5
	11	2462	HT0	99%	12.6	13
802.11n (40MHz)	3F	2422	HT0	98%	9	9.6
	4F	2427	HT0	98%	10.4	11
	5F	2432	HT0	98%	12.5	13
	6F	2437	HT0	98%	15.7	16.2
	7F	2442	HT0	98%	12.5	12.8
	8F	2447	HT0	98%	10.6	11.7
	9F	2452	HT0	98%	9.6	10
5180-5240 MHz						
802.11a	36	5180	6 Mbps	99%	16.1	16.0
	40	5200	6 Mbps	99%	16.1	16.0
	44	5220	6 Mbps	99%	16.1	16.0
	48	5240	6 Mbps	99%	16.1	16.1
802.11n (20MHz)	36	5180	HT0	99%	15.5	15.7
	40	5200	HT0	99%	16.0	16.1
	44	5220	HT0	99%	16.0	16.2
	48	5240	HT0	99%	16.0	16.2
802.11n (40MHz)	38	5190	HT0	98%	11.0	11.1
	46	5230	HT0	98%	16.0	16.2
5260-5320 MHz						
802.11a	52	5260	6 Mbps	99%	16.1	16.0
	56	5280	6 Mbps	99%	16.2	16.2
	60	5300	6 Mbps	99%	16.2	16.2
	64	5320	6 Mbps	99%	16.2	16.2
802.11n (20MHz)	52	5260	HT0	99%	16.1	16.1
	56	5280	HT0	99%	16.0	16.0
	60	5300	HT0	99%	16.1	16.0
	64	5320	HT0	99%	16.2	16.1
802.11n (40MHz)	54	5270	HT0	98%	16.1	16.0
	62	5310	HT0	98%	11.2	11.1

CONDUCTED POWER MEASUREMENT SUMMARY (Cont.)

WLAN Mode	Channel	Freq. (MHz)	Data Rate	Duty Cycle	Conducted Average Power (dBm)	
					Main – Chain A	Aux – Chain B
5500-5700 MHz						
802.11a	100	5500	6 Mbps	99%	16.2	16.1
	104	5520	6 Mbps	99%	16.1	16.2
	108	5540	6 Mbps	99%	16.3	16.3
	112	5560	6 Mbps	99%	16.3	16.1
	116	5580	6 Mbps	99%	16.2	16.1
	120	5600	6 Mbps	99%	15.6	16.2
	124	5620	6 Mbps	99%	16.2	16.2
	128	5640	6 Mbps	99%	16.2	16.3
	132	5660	6 Mbps	99%	16.3	16.3
	136	5680	6 Mbps	99%	16.2	16.2
	140	5700	6 Mbps	99%	15.9	16.2
802.11n (20MHz)	100	5500	HT0	99%	16.0	16.1
	104	5520	HT0	99%	16.0	16.0
	108	5540	HT0	99%	15.9	16.1
	112	5560	HT0	99%	15.9	15.9
	116	5580	HT0	99%	16.1	16.1
	120	5600	HT0	99%	15.6	16.1
	124	5620	HT0	99%	16.1	16.1
	128	5640	HT0	99%	16.1	16.1
	132	5660	HT0	99%	16.1	16.1
	136	5680	HT0	99%	15.6	16.1
	140	5700	HT0	99%	15.7	16.1
802.11n (40MHz)	102	5510	HT0	98%	13.6	13.5
	118	5590	HT0	98%	16.0	16.2
	134	5670	HT0	98%	16.0	16.0
5745-5825 MHz						
802.11a	149	5745	6 Mbps	99%	16.1	15.8
	153	5765	6 Mbps	99%	16.2	15.8
	157	5785	6 Mbps	99%	16.2	15.7
	161	5805	6 Mbps	99%	16.1	15.7
	165	5825	6 Mbps	99%	15.9	15.8
802.11n (20MHz)	149	5745	HT0	99%	16.1	16.1
	153	5765	HT0	99%	16.2	15.8
	157	5785	HT0	99%	16.2	16.0
	161	5805	HT0	99%	16.0	16.0
	165	5825	HT0	99%	15.9	15.9
802.11n (40MHz)	151	5755	HT0	98%	16.0	15.8
	159	5795	HT0	98%	16.0	15.7

CONDUCTED POWER MEASUREMENT SUMMARY (Cont.)

Notes
1. The RF conducted output power levels of the DUT were measured by Celltech prior to the SAR evaluations using a Gigatronics 8652A Universal Power Meter at the antenna connector on the module in accordance with FCC 47 CFR §2.1046 (see reference [13]) and IC RSS-Gen (see reference [14]).
2. The RF conducted output power levels were also measured for the higher data rates and were not more than 0.25 dB > the conducted output power levels measured and reported for the lowest data rate; therefore SAR evaluations were not required for the higher data rates (per FCC KDB 248227 D01v01r02 - see reference [8]).
3. The test channels selected and evaluated for SAR are highlighted in yellow.

IX-62205ANH WLAN Data Rates		
802.11a/g	**802.11b**	**802.11n**
54, 48, 36, 24, 18, 12, 9, 6 Mbps	11, 5.5, 2, 1 Mbps	300, 270, 243, 240, 180, 150, 144, 135, 130, 120, 117, 115.5, 90, 86.667, 72.2, 65, 60, 57.8, 45, 43.3, 30, 28.9, 21.7, 15, 14.4, 7.2 Mbps

5.0 FLUID DIELECTRIC PARAMETERS

The dielectric parameters of the simulated tissue mixtures were measured prior to the SAR evaluations using a Dielectric Probe Kit and a Network Analyzer (see Appendix C).

FLUID DIELECTRIC PARAMETERS

Date: 02/02/2012		Frequency: 2450 MHz			Tissue: Body	
Freq	Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
2.350	50.76	1.88	52.7	1.95	-3.68%	-3.59%
2.360	50.85	1.86	52.7	1.95	-3.51%	-4.62%
2.370	50.66	1.88	52.7	1.95	-3.87%	-3.59%
2.380	50.81	1.92	52.7	1.95	-3.59%	-1.54%
2.390	50.71	1.91	52.7	1.95	-3.78%	-2.05%
2.400	50.66	1.9	52.7	1.95	-3.87%	-2.56%
2.410	50.76	1.93	52.7	1.95	-3.68%	-1.03%
2.420	50.67	1.94	52.7	1.95	-3.85%	-0.51%
2.430	50.58	1.95	52.7	1.95	-4.02%	0.00%
2.440	50.53	1.97	52.7	1.95	-4.12%	1.03%
2.442*	50.5	1.98	52.7	1.95	-4.17%	1.54%
2.450	50.52	2	52.7	1.95	-4.14%	2.56%
2.460	50.44	2.02	52.7	1.95	-4.29%	3.59%
2.470	50.71	2.01	52.7	1.95	-3.78%	3.08%
2.480	50.33	2.03	52.7	1.95	-4.50%	4.10%
2.490	50.43	2.04	52.7	1.95	-4.31%	4.62%
2.500	50.37	2.06	52.7	1.95	-4.42%	5.64%
2.510	50.38	2.04	52.7	1.95	-4.40%	4.62%
2.520	50.37	2.06	52.7	1.95	-4.42%	5.64%
2.530	50.42	2.04	52.7	1.95	-4.33%	4.62%
2.540	50.37	2.09	52.7	1.95	-4.42%	7.18%
2.550	50.31	2.11	52.7	1.95	-4.54%	8.21%

*Interpolated using DASY4 software

Test Date	Fluid Type	Ambient Temperature	Fluid Temperature	Fluid Depth	Atmospheric Pressure	Relative Humidity	ρ (Kg/m^3)
Feb 2	2450 Body	23.0°C	25.0°C	≥ 15 cm	101.1 kPa	30%	1000

FLUID DIELECTRIC PARAMETERS

Date: 02/03/2012		Frequency: 5 GHz			Tissue: Body	
Freq	Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
5.1	51.06	5.01	49	5.3	4.20%	-5.47%
5.11	50.8	5.11	49	5.3	3.67%	-3.58%
5.12	50.76	5.11	49	5.3	3.59%	-3.58%
5.13	50.68	5.12	49	5.3	3.43%	-3.40%
5.14	51.03	5.18	49	5.3	4.14%	-2.26%
5.15	50.88	5.13	49	5.3	3.84%	-3.21%
5.16	51.36	5.14	49	5.3	4.82%	-3.02%
5.17	51.26	5.17	49	5.3	4.61%	-2.45%
5.18	51.14	5.19	49	5.3	4.37%	-2.08%
5.19	50.83	5.11	49	5.3	3.73%	-3.58%
5.2	51.28	5.17	49	5.3	4.65%	-2.45%
5.21	50.8	5.21	49	5.3	3.67%	-1.70%
5.22	50.73	5.23	49	5.3	3.53%	-1.32%
5.23	50.62	5.19	49	5.3	3.31%	-2.08%
5.24	50.6	5.28	49	5.3	3.27%	-0.38%
5.25	50.64	5.3	49	5.3	3.35%	0.00%
5.26	50.74	5.27	49	5.3	3.55%	-0.57%
5.27	51.2	5.39	49	5.3	4.49%	1.70%
5.28	50.74	5.33	49	5.3	3.55%	0.57%
5.29	50.83	5.24	49	5.3	3.73%	-1.13%
5.3	50.7	5.39	49	5.3	3.47%	1.70%
5.4	50.31	5.52	48.6	5.65	3.52%	-2.30%
5.41	50.33	5.56	48.6	5.65	3.56%	-1.59%
5.42	50.38	5.57	48.6	5.65	3.66%	-1.42%
5.43	50.23	5.65	48.6	5.65	3.35%	0.00%
5.44	50.16	5.51	48.6	5.65	3.21%	-2.48%
5.45	49.99	5.58	48.6	5.65	2.86%	-1.24%
5.46	50.52	5.56	48.6	5.65	3.95%	-1.59%
5.47	50.44	5.59	48.6	5.65	3.79%	-1.06%
5.48	50.32	5.55	48.6	5.65	3.54%	-1.77%
5.49	50.22	5.65	48.6	5.65	3.33%	0.00%
5.5	50.14	5.56	48.6	5.65	3.17%	-1.59%
5.51	50.12	5.62	48.6	5.65	3.13%	-0.53%
5.52	49.87	5.68	48.6	5.65	2.61%	0.53%
5.53	50.16	5.64	48.6	5.65	3.21%	-0.18%
5.54	50.23	5.69	48.6	5.65	3.35%	0.71%
5.55	49.9	5.7	48.6	5.65	2.67%	0.88%
5.56	49.79	5.66	48.6	5.65	2.45%	0.18%
5.57	50.31	5.68	48.6	5.65	3.52%	0.53%
5.58	49.96	5.8	48.6	5.65	2.80%	2.65%
5.59	49.78	5.83	48.6	5.65	2.43%	3.19%
5.6	49.95	5.77	48.6	5.65	2.78%	2.12%

5.7	49.76	5.95	48.2	6	3.24%	-0.83%
5.71	49.66	5.95	48.2	6	3.03%	-0.83%
5.72	49.57	5.97	48.2	6	2.84%	-0.50%
5.73	49.79	5.97	48.2	6	3.30%	-0.50%
5.74	49.56	5.97	48.2	6	2.82%	-0.50%
5.75	49.76	5.89	48.2	6	3.24%	-1.83%
5.76	49.62	5.93	48.2	6	2.95%	-1.17%
5.765*	49.8	6	48.2	6	3.32%	0.00%
5.77	49.99	6.08	48.2	6	3.71%	1.33%
5.78	49.54	6	48.2	6	2.78%	0.00%
5.79	49.33	6.14	48.2	6	2.34%	2.33%
5.8	49.23	6.08	48.2	6	2.14%	1.33%
5.81	49.4	6.03	48.2	6	2.49%	0.50%
5.82	49.5	6.11	48.2	6	2.70%	1.83%
5.83	49.7	6.14	48.2	6	3.11%	2.33%
5.84	49.77	5.99	48.2	6	3.26%	-0.17%
5.85	49.42	6.14	48.2	6	2.53%	2.33%
5.86	49.5	6.19	48.2	6	2.70%	3.17%
5.87	49.62	6.19	48.2	6	2.95%	3.17%
5.88	49.25	6.22	48.2	6	2.18%	3.67%
5.89	49.29	6.29	48.2	6	2.26%	4.83%
5.9	49.31	6.25	48.2	6	2.30%	4.17%

*Interpolated using DASY4 software

Test Date	Fluid Type	Ambient Temperature	Fluid Temperature	Fluid Depth	Atmospheric Pressure	Relative Humidity	ρ (Kg/m^3)
Feb 3	5GHz Body	22.0°C	21.7°C	≥ 15 cm	101.1 kPa	32%	1000

6.0 SAR MEASUREMENT SUMMARY

BODY SAR MEASUREMENT RESULTS

Freq. Band	Test Plot #	Test Date	Mode	Mod.	Test Freq.	Ch.	Data Rate	Tablet PC Position to Planar Section of SAM	Tablet PC Distance to Planar Section of SAM	WLAN Transmit Diversity Antenna	Cond. Power Before Test	SAR Drift During Test[2]	Measured SAR Level[3]	
GHz					MHz						dBm	dB	W/kg	Av/Pk
2.4	B1	Feb 2	802.11b	DSSS	2442	7	1 Mbps	Bottom Side	Touch	Aux	15.7	-	**0.030**	**Peak**
	B2	Feb 2	802.11b	DSSS	2442	7	1 Mbps	Bottom Side	Touch	Main	15.6	-	0.004	Peak
	B3	Feb 2	802.11b	DSSS	2442	7	1 Mbps	90° Portrait	Touch	Main	15.6	-	0.004	Peak
	B4	Feb 2	802.11g	OFDM	2442	7	6 Mbps	Bottom Side	Touch	Aux	16.5	-	0.011	Peak
	B5	Feb 2	802.11g	OFDM	2442	7	6 Mbps	Bottom Side	Touch	Main	16.7	-	0.007	Peak
	B6	Feb 2	802.11g	OFDM	2442	7	6 Mbps	90° Portrait	Touch	Main	16.7	-	0.010	Peak
	B7	Feb 2	802.11n	OFDM	2442	7	HT0	Bottom Side	Touch	Aux	16.5	-	0.006	Peak
	B8	Feb 2	802.11n	OFDM	2442	7	HT0	Bottom Side	Touch	Main	16.6	-	0.006	Peak
	B9	Feb 2	802.11n	OFDM	2442	7	HT0	90° Portrait	Touch	Main	16.6	-	0.010	Peak
5.2	B10	Feb 3	802.11a	OFDM	5240	48	6 Mbps	Bottom Side	Touch	Aux	16.2	-	0.019	Peak
	B11	Feb 3	802.11a	OFDM	5240	48	6 Mbps	Bottom Side	Touch	Main	16.1	-	0.016	Peak
	B12	Feb 3	802.11a	OFDM	5240	48	6 Mbps	90° Portrait	Touch	Main	16.2	-	0.010	Peak
5.3	B13	Feb 3	802.11a	OFDM	5280	56	6 Mbps	Bottom Side	Touch	Aux	16.2	-	0.012	Peak
	B14	Feb 3	802.11a	OFDM	5280	56	6 Mbps	Bottom Side	Touch	Main	16.1	-	**0.116**	**Peak**
	B15	Feb 3	802.11a	OFDM	5280	56	6 Mbps	90° Portrait	Touch	Main	16.2	-	0.013	Peak
5.5-5.7	B16	Feb 3	802.11a	OFDM	5540	108	6 Mbps	Bottom Side	Touch	Aux	16.2	-	0.023	Peak
	B17	Feb 3	802.11a	OFDM	5540	108	6 Mbps	Bottom Side	Touch	Main	16.1	-	0.025	Peak
	B18	Feb 3	802.11a	OFDM	5540	108	6 Mbps	90° Portrait	Touch	Main	16.2	-	0.033	Peak
5.7-5.8	B19	Feb 3	802.11a	OFDM	5765	153	6 Mbps	Bottom Side	Touch	Aux	16.2	-	0.034	Peak
	B20	Feb 3	802.11a	OFDM	5765	153	6 Mbps	Bottom Side	Touch	Main	16.1	-	0.026	Peak
	B21	Feb 3	802.11a	OFDM	5765	153	6 Mbps	90° Portrait	Touch	Main	16.1	-	0.021	Peak

SAR LIMIT(S)		BODY	SPATIAL PEAK	RF EXPOSURE CATEGORY
FCC 47 CFR 2.1093	Health Canada Safety Code 6	1.6 W/kg	averaged over 1 gram	General Population / Uncontrolled

Notes

1. Detailed measurement data and plots showing the maximum SAR location of the DUT are reported in Appendix A.
2. The SAR drift of the DUT was measured at the reference point of the phantom with low SAR. The resulting drift value was inaccurate due to the SAR value at the reference point was close to the measurement noise floor and is therefore not reported.
3. The SAR levels measured and reported are the peak SAR levels measured from the area scan. The peak SAR of the DUT is so low that the RF noise level is competing with the SAR level; therefore, the zoom scan measurements leading away from the surface are no longer a curving slope and the extrapolation formula cannot accurately estimate the 1g average SAR. This avoids gross uncertainties in the 1g average SAR calculation while maintaining a conservative estimation of the SAR level.
4. Test Plots B1, B4, B6, B9, B14, B15, B18, and B19 have zoom scan data reported in Appendix A; however, the 1-gram values were not reported in the above table for the reason stated in note 3 above.

7.0 SAR LEVEL CORRECTION FOR FLUID DEVIATION - (IC RSS-102 / IEC 62209-2)

1g SAR levels are to be corrected for deviation of complex permittivity in accordance with Section 6.1.1 of IEC 62209-2:2010 (see reference [6]) in order to comply with the requirements of IC RSS-102. However, because only the peak SAR levels are reported for the DUT, the correction formula does not apply to this evaluation and correction is not required.

8.0 DETAILS OF SAR EVALUATION

1. The GD3080 Tablet PC contains plastic feet screwed to the bottom side of the device. The plastic feet provide additional separation distance from the bottom side of the GD3080 Tablet PC to the user's body and are removable by the user. The plastic feet were removed for the SAR measurements to evaluate the worst-case user configuration.
2. The DUT was evaluated for body SAR (lap-held) with the bottom side of the GD3080 Tablet PC parallel and touching the outer surface of the planar phantom.
3. The DUT was evaluated for body SAR with the WLAN MAIN antenna (Chain A) adjacent edge ("90° Portrait" LCD display orientation) of the GD3080 Tablet PC parallel and touching the outer surface of the planar phantom. The GPS Receiver housing and module was removed from the GD3080 Tablet PC in order to evaluate the worst-case user configuration.
4. The SAR evaluations for the WLAN MAIN (Chain A) and AUX (Chain B) transmit diversity antennas were performed individually (one at a time with the other disabled).
5. The test channels of the DUT were the maximum average output power channels selected in accordance with the procedures specified in FCC KDB 248227 (see reference [8]). The conducted output power levels were measured prior to the SAR evaluations (see Section 4.0).
6. The RF conducted output power levels measured in 802.11g and 802.11n mode (2.4 GHz) were more than 0.25 dB > 802.11b mode; therefore SAR evaluations were required for 802.11g and 802.11n mode per FCC KDB 248227 (see reference [8]).
7. The RF conducted output power levels measured for 802.11n mode in the 5 GHz band were not more than 0.25 dB > 802.11a mode; therefore SAR evaluations were not performed for 802.11n mode in the 5 GHz band.
8. The WLAN was evaluated for SAR with proprietary Intel DRTU test software for continuous transmission and selection of frequency band, mode, channel/freq., transmit antenna, output power setting and maximum duty cycle.
9. The internal battery of the GD3080 Tablet PC was fully charged prior to the SAR evaluations.
10. The fluid temperature remained within +/-2°C from the dielectric parameter measurement to the completion of the SAR evaluations.
11. The SAR evaluations in the 5 GHz band were performed in accordance with the procedures of FCC KDB 865664 (see reference [10]).

Procedures applied to determine device test configurations

The procedures for determining the appropriate device test configurations were applied in accordance with FCC KDB 447498 (see reference [7]) Section 4) b):

i) Each antenna is evaluated for bottom face exposure with the base/bottom of the tablet in direct contact with a flat phantom. ii) Antennas installed along the edges of a tablet are each evaluated with the corresponding edge in direct contact with a flat phantom. The applicable edge configurations include: (A) one fixed display orientation in either portrait or landscape configuration.

(1) For edge configuration (A): SAR is required for each antenna located within 5 cm of the tablet edge closet to the user for the applicable display orientation. For antenna(s) located ≥ 5 cm from this edge, the test reduction and exclusion procedures for laptop computers in KDB 616217 are applied.

Antenna Distance to Tablet PC Edge ("90° Portrait" LCD orientation) = 6.5 cm

The procedures for determining the number of tests required for edge configuration were applied in accordance with FCC KDB Publication 616217 (see reference 15]):

When antennas are ≥ 5 cm from users, frequency, power and distance are applied to determine test requirements. If an antenna is ≥ (5 + ½·n) cm from users and nearby persons the number of tests can be reduced by evaluating SAR only on the highest output power channel. The value of n is computed according to n = P/(60/f)-1; which is the number of times the antenna output power (P) is > 60/f. Both P and ½·n should be rounded respectively to the nearest mW and cm to determine the threshold distances.

Calculated Threshold Distances

5 cm (2.4 GHz)
6 cm (5.2/5.6 GHz)
7 cm (5.3/5.8 GHz)

9.0 CO-LOCATED TRANSMITTER(S)

The GD Itronix IX-62205ANH WLAN module can be co-located within the GD3080 Tablet PC with the following module:

Transmitter Type	Grantee	FCC ID	IC ID	Model	Co-Transmit
Class 1 Bluetooth	GD Itronix Corp.	KBCIX-WT11	1943A-WT11	WT11	Yes

10.0 SIMULTANEOUS TRANSMISSION ASSESSMENT

The provisions set forth in FCC KDB Publication 447498 (see reference [7]) Section 3)b)ii) were applied to determine simultaneous transmission SAR evaluations are not required based on the following:

WLAN Co-Transmission:	WLAN can transmit simultaneously with Bluetooth Bluetooth Output Power = 22 mW Peak (< 60/f mW)
Antenna-to-Antenna Distance:	WLAN MAIN (Chain A) to Bluetooth = 170 mm WLAN AUX (Chain B) to Bluetooth = 68.7 mm

Summary

SAR evaluation for simultaneous transmission of the WLAN and Bluetooth is not required based on the maximum conducted output power of the Bluetooth is < 60/f mW (for which stand-alone SAR evaluation not required) and the antenna-to-antenna separation distance is > 5 cm.

11.0 SAR 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 10mm x 10mm.

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 determine the values between the dipole center of the probe and the surface of the phantom. This data cannot be measured because the center of the dipole sensors is 1.0 mm away from the probe tip and the distance between the probe and the boundary must be larger than 25% of the probe diameter. The probe diameter is 2.4 mm. In the DASY4 software, the distance between the sensor center and phantom surface is set to 2.0 mm. This provides a distance of 1.0 mm between the probe tip and the surface. The extrapolation of the values between the dipole center and the surface of the phantom 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. For frequencies < 3 GHz a zoom scan volume of 24 mm x 24 mm x 24 mm (7x7x7 points) centered at the peak SAR location determined from the area scan was used and a zoom scan resolution of 5 mm x 5 mm x 5 mm was used.

h. For frequencies > 3 GHz a zoom scan volume of 24 mm x 24 mm x 20 mm (7x7x9 points) centered at the peak SAR location determined from the area scan was used and a zoom scan resolution of 4 mm x 4 mm x 2.5 mm was used.

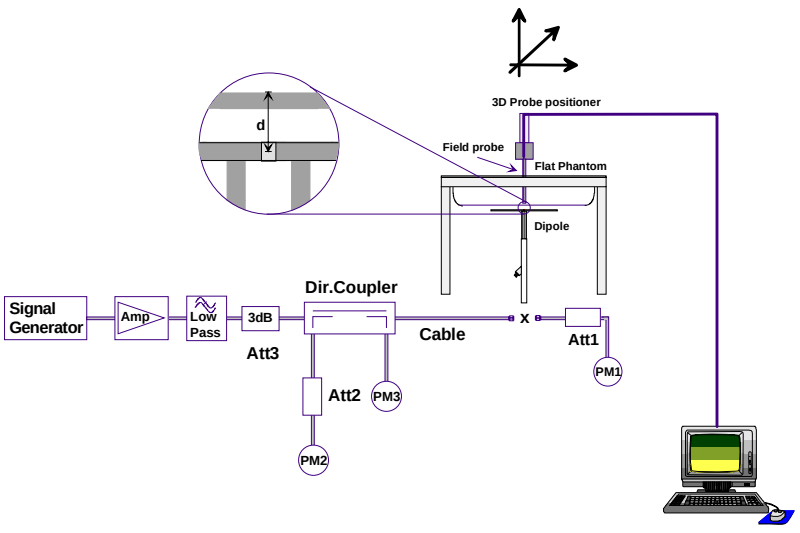
12.0 SYSTEM PERFORMANCE CHECK

Prior to the SAR evaluations, system checks were performed using the planar section of the SAM phantom with a SPEAG 2450 MHz validation dipole and a SPEAG 5GHz validation dipole (see Appendix B for system performance check plots) in accordance with the procedures described in IEEE Standard 1528-2003 (see reference [5]) and IEC International Standard 62209-2:2010 (see reference [6]). The dielectric parameters of the simulated tissue mixture were measured prior to the system performance check using a Dielectric Probe Kit and a Network Analyzer (see Appendix C). The SAR measurement system was verified to a tolerance of ±10% from the system manufacturer's dipole calibration target SAR value (see Appendix F for system manufacturer's dipole calibration procedures).

SYSTEM PERFORMANCE CHECK EVALUATION SUMMARY

Test Date	Freq. (MHz) / Fluid Type	SAR 1g (W/kg) Target	SAR 1g (W/kg) 1W	SAR 1g (W/kg) Meas.	SAR 1g (W/kg) Dev.	Dielectric Constant ε_r Target	Dielectric Constant ε_r Meas.	Dielectric Constant ε_r Dev.	Conductivity σ (mho/m) Target	Conductivity σ (mho/m) Meas.	Conductivity σ (mho/m) Dev.	Amb. Temp. (°C)	Fluid Temp. (°C)	Humid. (%)	Barom. Press. (kPa)
Feb 2	2450 Body	51.6 ±10% (Norm. 1W)	56.5	2.26	+9.5%	**52.7 ±5%**	50.52	-4.2%	**1.95 ±5%**	2.00	+2.6%	23.0	25.0	30	101.1
Feb 3	5200 Body	76.3 ±10% (Norm. 1W)	74.8	1.87	-2.0%	**49.0 ±5%**	51.28	+4.7%	**5.30 ±5%**	5.17	-2.5%	22.0	21.7	32	101.1
Feb 3	5500 Body	80.1 ±10% (Norm. 1W)	78.8	1.97	-1.6%	**48.6 ±5%**	50.14	+3.2%	**5.65 ±5%**	5.56	-1.6%	22.0	21.7	32	101.1
Feb 3	5800 Body	68.2 ±10% (Norm. 1W)	74.0	1.85	+8.5%	**48.2 ±5%**	49.23	+2.1%	**6.00 ±5%**	6.08	1.3%	22.0	21.7	32	101.1

Notes	
1.	The target SAR values are the measured values specified by the SAR system manufacturer in the dipole calibration (see Appendix F).
2.	The target dielectric parameters are the nominal values specified by the SAR system manufacturer in the dipole calibration (see Appendix F).
3.	The fluid temperature remained within +/-2°C from the dielectric parameter measurement to the completion of the system performance check.
4.	Input Power = 40 mW for 2450 MHz Dipole; 25 mW for 5 GHz Dipole
5.	Fluid Depth = ≥ 15 cm; ρ (Kg/m^3) = 1000



System Performance Check Measurement Setup Diagram (IEEE 1528-2003)

2.45 GHz Validation Dipole Setup

5 GHz Validation Dipole Setup

13.0 SIMULATED EQUIVALENT TISSUES

The 2450 MHz simulated equivalent tissue recipe shown in the table below is derived from the SAR system manufacturer's suggested recipe in the DASY4 manual (see reference [11]), in accordance with the procedures and requirements specified in IEEE Standard 1528-2003 (see reference [5]) and IEC 62209-2:2010 (see reference [6]). The ingredient percentage may have been adjusted marginally in order to achieve the appropriate target dielectric parameters within the specified tolerance. The 5 GHz simulated tissue mixture was provided by SPEAG and is listed below (see also Appendix C). The dielectric parameters (permittivity and conductivity) of the tissue mixture were measured prior to the SAR evaluations.

SIMULATED TISSUE MIXTURE (2450 MHz)	
INGREDIENT	**2450 MHz BODY**
Water	69.98 %
Glycol Monobutyl	30.00 %
Salt	0.02 %

SIMULATED TISSUE MIXTURE (5 GHz)	
INGREDIENT	**5 GHz BODY**
Water	64-78%
Mineral Oil	11-18%
Emulsifiers	9-15%
Additives and Salt	2-3%

14.0 SAR LIMITS

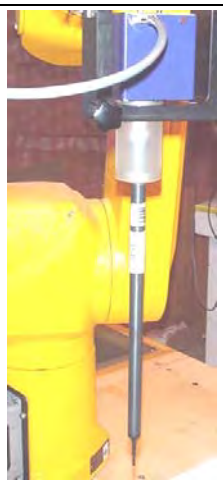
SAR RF EXPOSURE LIMITS			
FCC 47 CFR 2.1093	**Health Canada Safety Code 6**	**(General Population / Uncontrolled Exposure)**	**(Occupational / Controlled Exposure)**
Spatial Average (averaged over the whole body)		0.08 W/kg	0.4 W/kg
Spatial Peak (averaged over any 1 g of tissue)		**1.6 W/kg**	8.0 W/kg
Spatial Peak (hands/wrists/feet/ankles averaged over 10 g)		4.0 W/kg	20.0 W/kg
The Spatial Average value of the SAR averaged over the whole body.			
The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.			
The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.			
Uncontrolled environments are defined as locations where there is potential exposure of individuals who have no knowledge or control of their potential exposure.			
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.			

15.0 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	Measurement Software: DASY4, V4.7 Build 44
	Postprocessing Software: SEMCAD, V1.8 Build 171
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	EX3DV4
Serial No.	3600
Construction	Symmetrical design with triangular core
Frequency	10 MHz to 6 GHz
Linearity	±0.2 dB (30 MHz to 3 GHz)
Phantom(s)	
Type	SAM V4.0C
Shell Material	Fiberglass
Thickness	2.0 ±0.1 mm
Volume	Approx. 25 liters

16.0 PROBE SPECIFICATION (EX3DV4)

Construction:	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g. DGBE)
Calibration:	Basic Broadband Calibration in air: 10-3000 MHz Conversion Factors (CF) for HSL 900 and HSL 1750
Frequency:	10 MHz to >6 GHz; Linearity: ±0.2 dB (30 MHz to 3 GHz)
Directivity:	±0.3 dB in HSL (rotation around probe axis) ±0.5 dB in tissue material (rotation normal to probe axis)
Dynamic Range:	10 μW/g to >100 mW/g; Linearity: ±0.2 dB (noise: typically < 1 μW/g)
Dimensions:	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1.0 mm
Application:	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better than 30%.



EX3DV4 E-Field Probe

17.0 SAM TWIN PHANTOM V4.0C

The SAM Twin 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 H for specifications of the SAM Twin Phantom V4.0C).

SAM Twin Phantom V4.0C

18.0 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. For evaluations of larger devices a Plexiglas platform is attached to the device holder.

Device Holder

19.0 TEST EQUIPMENT LIST

TEST EQUIPMENT		ASSET NO.	SERIAL NO.	DATE CALIBRATED	CALIBRATION INTERVAL
USED	DESCRIPTION				
x	Schmid & Partner DASY4 System	-	-	-	-
x	-DASY4 Measurement Server	00158	1078	CNR	CNR
x	-Robot	00046	599396-01	CNR	CNR
x	-DAE4	00019	353	27Apr10	Biennial
x	-EX3DV4 E-Field Probe	00213	3600	23Jun11	Annual
x	-D2450V2 Validation Dipole	00219	825	17Apr09	Triennial
x	-D5GHzV2 Validation Dipole	00126	1031	29Apr09	Triennial
x	HP 85070C Dielectric Probe Kit	00033	none	CNR	CNR
x	Gigatronics 8652A Power Meter	00007	1835272	04May10	Biennial
x	Gigatronics 80701A Power Sensor	00014	1833699	04May10	Biennial
x	Gigatronics 80701A Power Sensor	00011	1833542	04May10	Biennial
x	Pasternack PE2214-20 Directional Coupler	229	none	CNR	CNR
x	30dB Attenuator	00102	none	CNR	CNR
x	HP 8753ET Network Analyzer	00134	US39170292	04May10	Biennial
x	Rohde & Schwarz SMR20 Signal Generator	00006	100104	CNR	CNR
Abbr.	CNR = Calibration Not Required				

20.0 JUSTIFICATION FOR EXTENDED SAR DIPOLE CALIBRATION

SAR dipoles calibrated less than two years ago but more than one year ago were confirmed by maintaining return loss (< -20dB, within 20% of prior calibration) and impedance (within 5Ω from prior calibration) requirements per extended calibrations in FCC KDB 450824 (see reference [9]).

SPEAG VALIDATION DIPOLE							
Freq. (MHz)	**TSL**	**Dipole**	**Measurement Date**	**Return Loss (dB)**	**Δ %**	**Impedance (Ω)**	**Δ Ω**
2450	Body	SPEAG Validation Dipole D2450V2 SN: 825	Apr. 17, 2009	-24.8		49.2	
			Apr. 17, 2010	-23.8	4.0%	54.2	5.0
			Apr. 17, 2011	-23.7	4.4%	54.2	5.0
5200	Body	SPEAG Validation Dipole D5GHzV2 SN: 1031	Apr. 29, 2009	-27.7		49.7	
			Apr. 29, 2010	-27.6	0.4%	48.5	1.2
			May 10, 2011	-26.5	4.4%	47.7	2.0
5500			Apr. 29, 2009	-21.4		57.2	
			Apr. 29, 2010	-22.7	6.1%	54.9	2.3
			May 10, 2011	-22.4	4.6%	54.3	2.9
5800			Apr. 29, 2009	-20.3		55.1	
			Apr. 29, 2010	-21.2	4.4%	55.2	0.1
			May 10, 2011	-21.1	4.0%	55.0	0.1

21.0 MEASUREMENT UNCERTAINTIES

UNCERTAINTY BUDGET FOR DEVICE EVALUATION (IEEE 1528-2003)

Uncertainty Component	IEEE 1528 Section	Uncertainty Value ±%	Probability Distribution	Divisor	ci 1g	ci 10g	Uncertainty Value ±% (1g)	Uncertainty Value ±% (10g)	V_i or V_{eff}
Measurement System									
Probe Calibration (2450 MHz)	E.2.1	6.0	Normal	1	1	1	6.0	6.0	∞
Axial Isotropy	E.2.2	4.7	Rectangular	1.732050808	0.7	0.7	1.9	1.9	∞
Hemispherical Isotropy	E.2.2	9.6	Rectangular	1.732050808	0.7	0.7	3.9	3.9	∞
Boundary Effect	E.2.3	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Linearity	E.2.4	4.7	Rectangular	1.732050808	1	1	2.7	2.7	∞
System Detection Limits	E.2.5	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Readout Electronics	E.2.6	0.3	Normal	1	1	1	0.3	0.3	∞
Response Time	E.2.7	0.8	Rectangular	1.732050808	1	1	0.5	0.5	∞
Integration Time	E.2.8	2.6	Rectangular	1.732050808	1	1	1.5	1.5	∞
RF Ambient Conditions	E.6.1	3	Rectangular	1.732050808	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.4	Rectangular	1.732050808	1	1	0.2	0.2	∞
Probe Positioning wrt Phantom Shell	E.6.3	2.9	Rectangular	1.732050808	1	1	1.7	1.7	∞
Extrapolation, interpolation & integration algorithms for max. SAR evaluation	E.5	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Test Sample Related									
Test Sample Positioning	E.4.2	2.9	Normal	1	1	1	2.9	2.9	12
Device Holder Uncertainty	E.4.1	3.6	Normal	1	1	1	3.6	3.6	8
SAR Drift Measurement	6.6.2	5	Rectangular	1.732050808	1	1	2.9	2.9	∞
Phantom and Tissue Parameters									
Phantom Uncertainty	E.3.1	4	Rectangular	1.732050808	1	1	2.3	2.3	∞
Liquid Conductivity (target)	E.3.2	5	Rectangular	1.732050808	0.64	0.43	1.8	1.2	∞
Liquid Conductivity (measured)	E.3.3	1.54	Normal	1	0.64	0.43	1.0	0.7	∞
Liquid Permittivity (target)	E.3.2	5	Rectangular	1.732050808	0.6	0.49	1.7	1.4	∞
Liquid Permittivity (measured)	E.3.3	4.17	Normal	1	0.6	0.49	2.5	2.0	∞
Combined Standard Uncertainty			**RSS**				**10.96**	**10.71**	
Expanded Uncertainty (95% Confidence Interval)			**k=2**				**21.92**	**21.41**	

Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2

MEASUREMENT UNCERTAINTIES (Cont.)

UNCERTAINTY BUDGET FOR DEVICE EVALUATION (IEC 62209-2:2010)

Source of Uncertainty	IEC 62209-2 Section	Tolerance / Uncertainty ±%	Probability Distribution	Divisor	ci 1g	ci 10g	Standard Uncertainty ±% (1g)	Standard Uncertainty ±% (10g)	V_i or V_{eff}
Measurement System									
Probe Calibration (2450 MHz)	7.2.2.1	6.0	Normal	1	1	1	6.0	6.0	∞
Isotropy	7.2.2.2	4.7	Rectangular	1.732050808	1	1	2.7	2.7	∞
Boundary Effect	7.2.2.6	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Linearity	7.2.2.3	4.7	Rectangular	1.732050808	1	1	2.7	2.7	∞
Detection Limits	7.2.2.5	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Readout Electronics	7.2.2.7	0.3	Normal	1	1	1	0.3	0.3	∞
Response Time	7.2.2.8	0.8	Rectangular	1.732050808	1	1	0.5	0.5	∞
Integration Time	7.2.2.9	2.6	Rectangular	1.732050808	1	1	1.5	1.5	∞
RF Ambient Conditions	7.2.4.5	3	Rectangular	1.732050808	1	1	1.7	1.7	∞
Probe Positioner Mechanical Restrictions	7.2.3.1	0.4	Rectangular	1.732050808	1	1	0.2	0.2	∞
Probe Positioning wrt Phantom Shell	7.2.3.3	2.9	Rectangular	1.732050808	1	1	1.7	1.7	∞
Post-processing	7.2.5	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Test Sample Related									
Test Sample Positioning	7.2.3.4.3	2.9	Normal	1	1	1	2.9	2.9	12
Device Holder Uncertainty	7.2.3.4.2	3.6	Normal	1	1	1	3.6	3.6	8
Drift of Output Power (meas. SAR drift)	7.2.2.10	5	Rectangular	1.732050808	1	1	2.9	2.9	∞
Phantom and Tissue Parameters									
Phantom Uncertainty	7.2.3.2	4	Rectangular	1.732050808	1	1	2.3	2.3	∞
SAR Correction Algorithm for deviations in permittivity and conductivity	7.2.4.3	1.2	Normal	1	1	0.81	1.2	0.97	∞
Liquid Conductivity (measured)	7.2.4.3	1.54	Normal	1	0.78	0.71	1.2	1.1	∞
Liquid Permittivity (measured)	7.2.4.3	4.17	Normal	1	0.23	0.26	1.0	1.1	∞
Liquid Permittivity - temp. uncertainty	7.2.4.4	1.23	Rectangular	1.732050808	0.78	0.71	0.6	0.5	∞
Liquid Conductivity - temp. uncertainty	7.2.4.4	0.93	Rectangular	1.732050808	0.23	0.26	0.1	0.1	∞
Combined Standard Uncertainty	**7.3.1**		**RSS**				**9.97**	**9.94**	
Expanded Uncertainty (95% Confidence Interval)	**7.3.2**		**k=2**				**19.93**	**19.88**	

Measurement Uncertainty Table in accordance with International Standard IEC 62209-2:2010

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2

MEASUREMENT UNCERTAINTIES (Cont.)

UNCERTAINTY BUDGET FOR DEVICE EVALUATION (DASY4 MANUAL)

Error Description	Uncertainty Value ±%	Probability Distribution	Divisor	ci 1g	ci 10g	Uncertainty Value ±% (1g)	Uncertainty Value ±% (10g)	V_i or V_{eff}
Measurement System								
Probe Calibration (5 GHz)	6.55	Normal	1	1	1	6.55	6.55	∞
Axial Isotropy	4.7	Rectangular	1.732050808	0.7	0.7	1.9	1.9	∞
Hemispherical Isotropy	9.6	Rectangular	1.732050808	0.7	0.7	3.9	3.9	∞
Boundary Effect	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Linearity	4.7	Rectangular	1.732050808	1	1	2.7	2.7	∞
System Detection Limits	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Readout Electronics	0.3	Normal	1	1	1	0.3	0.3	∞
Response Time	0.8	Rectangular	1.732050808	1	1	0.5	0.5	∞
Integration Time	2.6	Rectangular	1.732050808	1	1	1.5	1.5	∞
RF Ambient Conditions	3	Rectangular	1.732050808	1	1	1.7	1.7	∞
Probe Positioner Mechanical Restrictions	0.8	Rectangular	1.732050808	1	1	0.5	0.5	∞
Probe Positioning wrt Phantom Shell	5.7	Rectangular	1.732050808	1	1	3.3	3.3	∞
Post-processing	4	Rectangular	1.732050808	1	1	2.3	2.3	∞
Test Sample Related								
Device positioning	2.9	Normal	1	1	1	2.9	2.9	12
Device holder uncertainty	3.6	Normal	1	1	1	3.6	3.6	8
Power drift	5	Rectangular	1.732050808	1	1	2.9	2.9	∞
Phantom and Setup								
Phantom uncertainty	4	Rectangular	1.732050808	1	1	2.3	2.3	∞
Liquid conductivity (target)	5	Rectangular	1.732050808	0.64	0.43	1.8	1.2	∞
Liquid conductivity (measured)	0.71	Normal	1	0.64	0.43	0.5	0.3	∞
Liquid permittivity (target)	10	Rectangular	1.732050808	0.6	0.49	3.5	2.8	∞
Liquid permittivity (measured)	3.55	Normal	1	0.6	0.49	2.1	1.7	∞
Combined Standard Uncertainty		**RSS**				**12.11**	**11.80**	
Expanded Uncertainty (95% Confidence Interval)		**k=2**				**24.23**	**23.60**	

Measurement Uncertainty Table for the 5-6 GHz Range (SPEAG DASY4 Manual, Section 27.6, September 2005)

MEASUREMENT UNCERTAINTIES (Cont.)

UNCERTAINTY BUDGET FOR DEVICE EVALUATION (IEC 62209-2:2010)

Source of Uncertainty	IEC 62209-2 Section	Tolerance / Uncertainty ±%	Probability Distribution	Divisor	ci 1g	ci 10g	Standard Uncertainty ±% (1g)	Standard Uncertainty ±% (10g)	V_i or V_{eff}
Measurement System									
Probe Calibration (5 GHz)	7.2.2.1	6.55	Normal	1	1	1	6.55	6.55	∞
Isotropy	7.2.2.2	4.7	Rectangular	1.732050808	1	1	2.7	2.7	∞
Boundary Effect	7.2.2.6	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Linearity	7.2.2.3	4.7	Rectangular	1.732050808	1	1	2.7	2.7	∞
Detection Limits	7.2.2.5	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Readout Electronics	7.2.2.7	0.3	Normal	1	1	1	0.3	0.3	∞
Response Time	7.2.2.8	0.8	Rectangular	1.732050808	1	1	0.5	0.5	∞
Integration Time	7.2.2.9	2.6	Rectangular	1.732050808	1	1	1.5	1.5	∞
RF Ambient Conditions	7.2.4.5	3	Rectangular	1.732050808	1	1	1.7	1.7	∞
Probe Positioner Mechanical Restrictions	7.2.3.1	0.4	Rectangular	1.732050808	1	1	0.2	0.2	∞
Probe Positioning wrt Phantom Shell	7.2.3.3	2.9	Rectangular	1.732050808	1	1	1.7	1.7	∞
Post-processing	7.2.5	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Test Sample Related									
Test Sample Positioning	7.2.3.4.3	2.9	Normal	1	1	1	2.9	2.9	12
Device Holder Uncertainty	7.2.3.4.2	3.6	Normal	1	1	1	3.6	3.6	8
Drift of Output Power (meas. SAR drift)	7.2.2.10	5	Rectangular	1.732050808	1	1	2.9	2.9	∞
Phantom and Tissue Parameters									
Phantom Uncertainty	7.2.3.2	4	Rectangular	1.732050808	1	1	2.3	2.3	∞
SAR Correction Algorithm for deviations in permittivity and conductivity	7.2.4.3	1.2	Normal	1	1	0.81	1.2	0.97	∞
Liquid Conductivity (measured)	7.2.4.3	0.71	Normal	1	0.78	0.71	0.6	0.5	∞
Liquid Permittivity (measured)	7.2.4.3	3.55	Normal	1	0.23	0.26	0.8	0.9	∞
Liquid Permittivity - temp. uncertainty	7.2.4.4	0.68	Rectangular	1.732050808	0.78	0.71	0.3	0.3	∞
Liquid Conductivity - temp. uncertainty	7.2.4.4	0.38	Rectangular	1.732050808	0.23	0.26	0.1	0.1	∞
Combined Standard Uncertainty	**7.3.1**		**RSS**				**10.23**	**10.21**	
Expanded Uncertainty (95% Confidence Interval)	**7.3.2**		**k=2**				**20.45**	**20.42**	

Measurement Uncertainty Table in accordance with International Standard IEC 62209-2:2010

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2

22.0 REFERENCES

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

[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 - “Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)”, Radio Standards Specification RSS-102 Issue 4: March 2010.

[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] International Standard IEC 62209-2 Edition 1.0 2010-03 - “Human exposure to radio frequency fields from hand-held & body-mounted wireless communication devices - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)”.

[7] Federal Communications Commission, Office of Engineering and Technology - “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”; KDB 447498 D01v04: November 2009.

[8] Federal Communications Commission, Office of Engineering and Technology - “SAR Measurement Procedures for 802.11a/b/g Transmitters”; KDB 248227 D01v01r02: May 2007.

[9] Federal Communications Commission, Office of Engineering and Technology - “Application Note: SAR Probe Calibration and System Verification Considerations for Measurements at 150 MHz - 3 GHz”; KDB 450824 D01 v01r01: January 2007.

[10] Federal Communications Commission, Office of Engineering and Technology - “SAR Measurement Requirements for 3 - 6 GHz”; KDB 865664 Rev. 1.1: October 2006.

[11] Schmid & Partner Engineering AG - DASY4 Manual V4.6, Chapter 17 Application Note, Body Tissue Recipe: Sept. 2005.

[12] ISO/IEC 17025 - “General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:2005).”

[13] Federal Communications Commission - “Measurements Required: RF Power Output”; Rule Part 47 CFR §2.1046.

[14] Industry Canada - “General Requirements and Information for the Certification of Radiocommunication Equipment”, Radio Standards Specification RSS-Gen Issue 3: December 2010.

[15] Federal Communications Commission, Office of Engineering and Technology - “SAR Evaluation Considerations for Laptop Computers with Antennas Built-in on Display Screens”; KDB 616217 D01v01r01: November 2009.

[16] Federal Communications Commission, Office of Engineering and Technology - “Permissive Change Policies” - KDB Publication 178919 D01v05r01: June 2011.

APPENDIX A - SAR MEASUREMENT PLOTS

Date: 02/02/2012

TEST PLOT B1

DUT: GD Itronix; Type: GD3080 Tablet PC; Serial: SY00000595

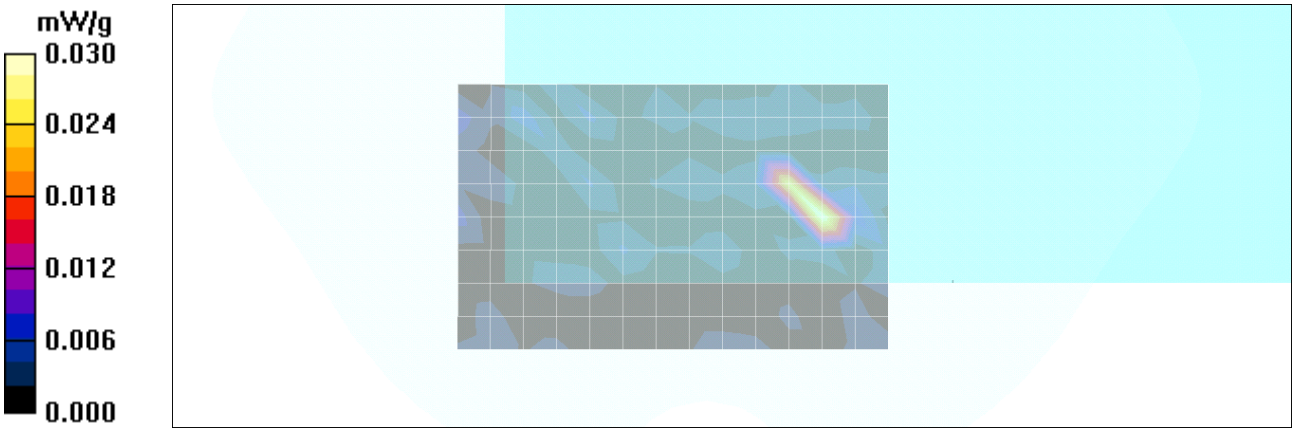
Ambient Temp: 23C; Fluid Temp: 25.0C; Barometric Pressure: 101.1 kPa; Humidity: 30%

Communication System: DSSS WLAN
Frequency: 2442 MHz; Duty Cycle: 1:1
Medium: M2450 Medium parameters used (interpolated): f = 2442 MHz; σ = 1.98 mho/m; ε_r = 50.5; ρ = 1000 kg/m^3

- Probe: EX3DV4 - SN3600; ConvF(6.15, 6.15, 6.15); Calibrated: 23/06/2011
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

802.11b - Ch. 7 - 1 Mbps - Aux - Bottom/Area Scan (9x14x1): Measurement grid: dx=10mm, dy=10mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.030 mW/g

802.11b - Ch. 7 - 1 Mbps - Aux - Bottom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.525 V/m; Power Drift = 3.66 dB
Peak SAR (extrapolated) = 0.005 W/kg
SAR(1 g) = 0.000363 mW/g; SAR(10 g) = 0.000159 mW/g



Date: 02/02/2012

TEST PLOT B2

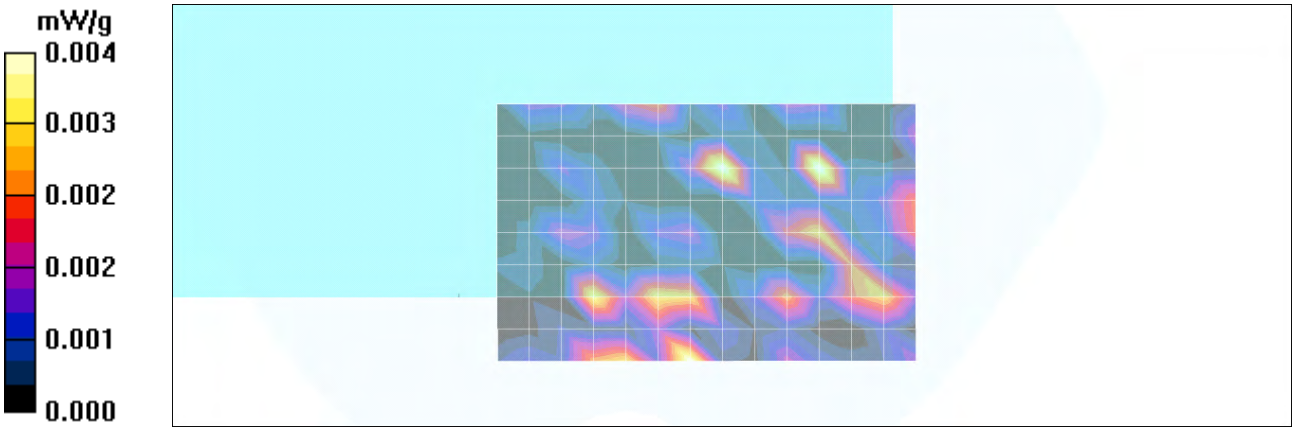
DUT: GD Itronix; Type: GD3080 Tablet PC; Serial: SY00000595

Ambient Temp: 23C; Fluid Temp: 25.0C; Barometric Pressure: 101.1 kPa; Humidity: 30%

Communication System: DSSS WLAN
Frequency: 2442 MHz; Duty Cycle: 1:1
Medium: M2450 Medium parameters used (interpolated): f = 2442 MHz; σ = 1.98 mho/m; ε_r = 50.5; ρ = 1000 kg/m^3

- Probe: EX3DV4 - SN3600; ConvF(6.15, 6.15, 6.15); Calibrated: 23/06/2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

802.11b - Ch. 7 - 1 Mbps - Main - Bottom/Area Scan (9x14x1): Measurement grid: dx=10mm, dy=10mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.004 mW/g



Date: 02/02/2012

TEST PLOT B3

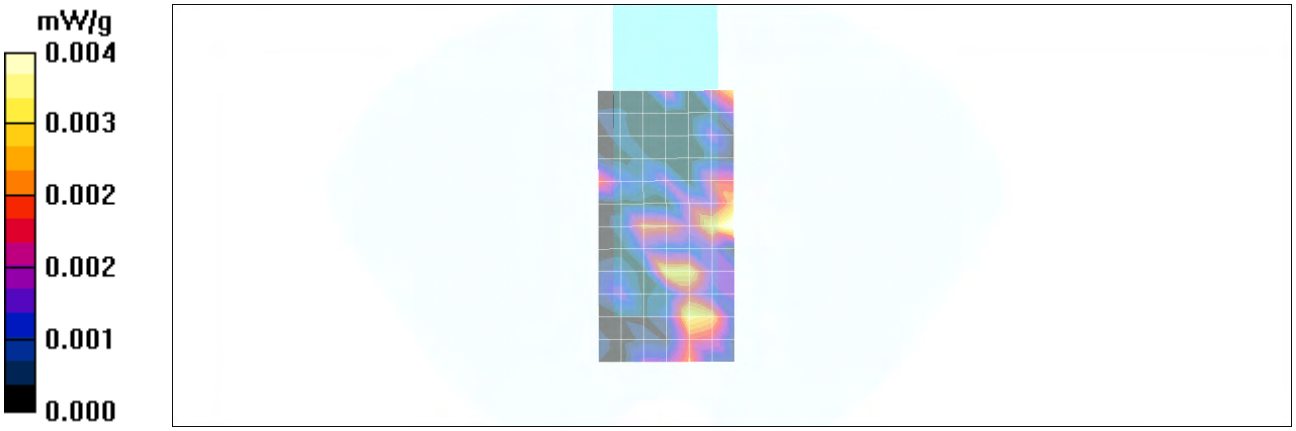
DUT: GD Itronix; Type: GD3080 Tablet PC; Serial: SY00000595

Ambient Temp: 23C; Fluid Temp: 25.0C; Barometric Pressure: 101.1 kPa; Humidity: 30%

Communication System: DSSS WLAN
Frequency: 2442 MHz; Duty Cycle: 1:1
Medium: M2450 Medium parameters used (interpolated): f = 2442 MHz; σ = 1.98 mho/m; ε_r = 50.5; ρ = 1000 kg/m^3

- Probe: EX3DV4 - SN3600; ConvF(6.15, 6.15, 6.15); Calibrated: 23/06/2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

802.11b - Ch. 7 - 1 Mbps - Main - Edge/Area Scan (13x7x1): Measurement grid: dx=10mm, dy=10mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.004 mW/g



Date: 02/02/2012

TEST PLOT B4

DUT: GD Itronix; Type: GD3080 Tablet PC; Serial: SY00000595

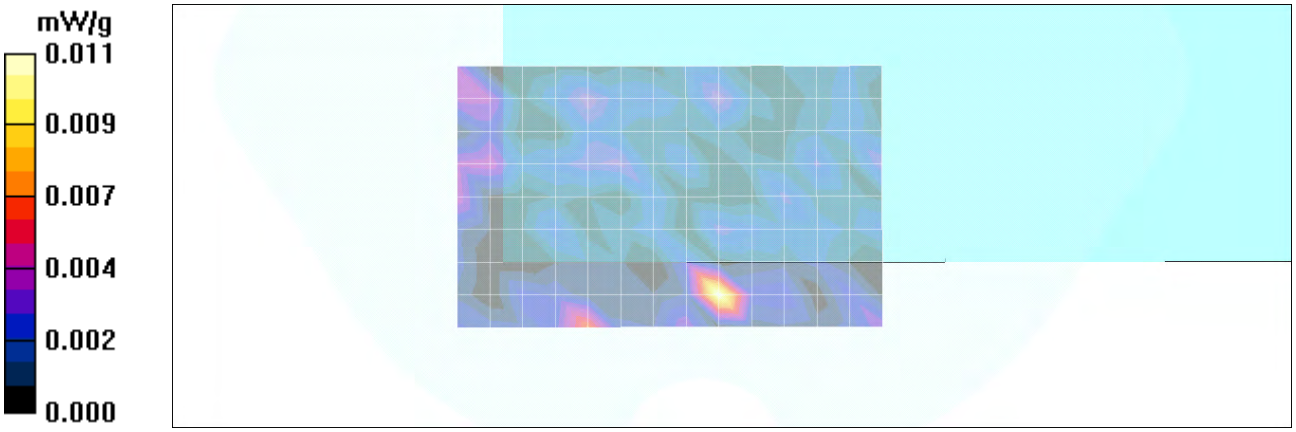
Ambient Temp: 23C; Fluid Temp: 25.0C; Barometric Pressure: 101.1 kPa; Humidity: 30%

Communication System: OFDM WLAN
Frequency: 2442 MHz; Duty Cycle: 1:1
Medium: M2450 Medium parameters used (interpolated): f = 2442 MHz; σ = 1.98 mho/m; ε_r = 50.5; ρ = 1000 kg/m^3

- Probe: EX3DV4 - SN3600; ConvF(6.15, 6.15, 6.15); Calibrated: 23/06/2011
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

802.11g - Ch. 7 - 6 Mbps - Aux - Bottom/Area Scan (9x14x1): Measurement grid: dx=10mm, dy=10mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.011 mW/g

802.11g - Ch. 7 - 6 Mbps - Aux - Bottom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.676 V/m; Power Drift = -6.97 dB
Peak SAR (extrapolated) = 0.008 W/kg
SAR(1 g) = 0.00204 mW/g; SAR(10 g) = 0.000924 mW/g



Date: 02/02/2012

TEST PLOT B5

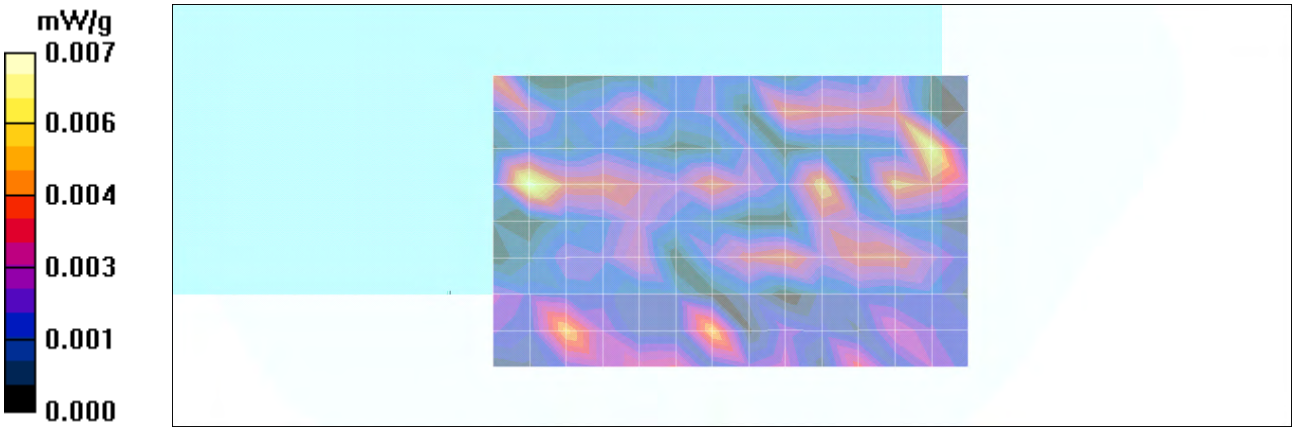
DUT: GD Itronix; Type: GD3080 Tablet PC; Serial: SY00000595

Ambient Temp: 23C; Fluid Temp: 25.0C; Barometric Pressure: 101.1 kPa; Humidity: 30%

Communication System: OFDM WLAN
Frequency: 2442 MHz; Duty Cycle: 1:1
Medium: M2450 Medium parameters used (interpolated): f = 2442 MHz; σ = 1.98 mho/m; ε_r = 50.5; ρ = 1000 kg/m^3

- Probe: EX3DV4 - SN3600; ConvF(6.15, 6.15, 6.15); Calibrated: 23/06/2011
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

802.11g - Ch. 7 - 6 Mbps - Main - Bottom/Area Scan (9x14x1): Measurement grid: dx=10mm, dy=10mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.007 mW/g



Date: 02/02/2012

TEST PLOT B6

DUT: GD Itronix; Type: GD3080 Tablet PC; Serial: SY00000595

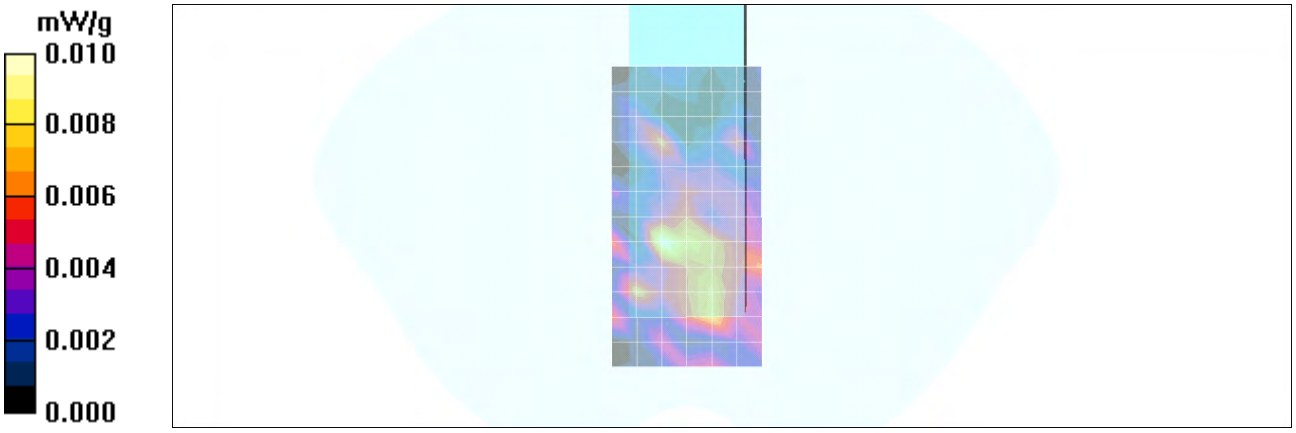
Ambient Temp: 23C; Fluid Temp: 25.0C; Barometric Pressure: 101.1 kPa; Humidity: 30%

Communication System: OFDM WLAN
Frequency: 2442 MHz; Duty Cycle: 1:1
Medium: M2450 Medium parameters used (interpolated): f = 2442 MHz; σ = 1.98 mho/m; ε_r = 50.5; ρ = 1000 kg/m^3

- Probe: EX3DV4 - SN3600; ConvF(6.15, 6.15, 6.15); Calibrated: 23/06/2011
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

802.11g - Ch. 7 - 6 Mbps - Main - Edge/Area Scan (13x7x1): Measurement grid: dx=10mm, dy=10mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.010 mW/g

802.11g - Ch. 7 - 6 Mbps - Main - Edge/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.18 V/m; Power Drift = -0.259 dB
Peak SAR (extrapolated) = 0.015 W/kg
SAR(1 g) = 0.00389 mW/g; SAR(10 g) = 0.00166 mW/g



Date: 02/02/2012

TEST PLOT B7

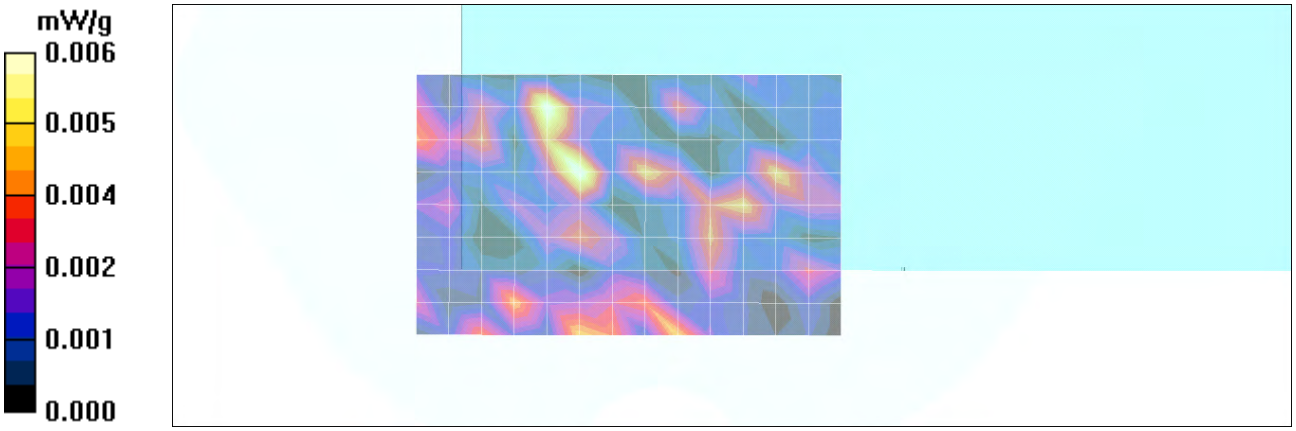
DUT: GD Itronix; Type: GD3080 Tablet PC; Serial: SY00000595

Ambient Temp: 23C; Fluid Temp: 25.0C; Barometric Pressure: 101.1 kPa; Humidity: 30%

Communication System: OFDM WLAN
Frequency: 2442 MHz; Duty Cycle: 1:1
Medium: M2450 Medium parameters used (interpolated): f = 2442 MHz; σ = 1.98 mho/m; ε_r = 50.5; ρ = 1000 kg/m^3

- Probe: EX3DV4 - SN3600; ConvF(6.15, 6.15, 6.15); Calibrated: 23/06/2011
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

802.11n 20MHz - Ch. 7 - HT0 - Aux - Bottom/Area Scan (9x14x1): Measurement grid: dx=10mm, dy=10mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.006 mW/g



Date: 02/02/2012

TEST PLOT B8

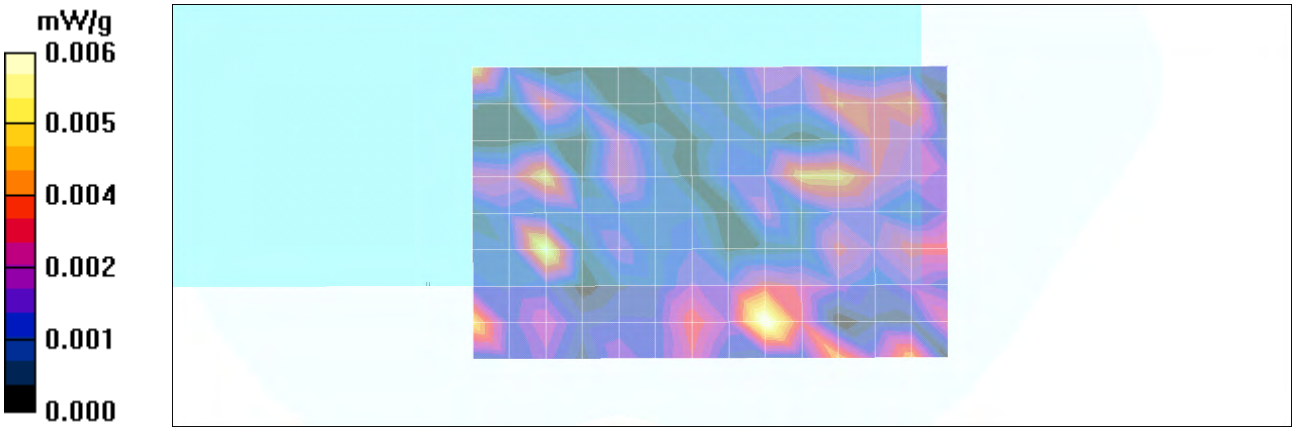
DUT: GD Itronix; Type: GD3080 Tablet PC; Serial: SY00000595

Ambient Temp: 23C; Fluid Temp: 25.0C; Barometric Pressure: 101.1 kPa; Humidity: 30%

Communication System: OFDM WLAN
Frequency: 2442 MHz; Duty Cycle: 1:1
Medium: M2450 Medium parameters used (interpolated): f = 2442 MHz; σ = 1.98 mho/m; ε_r = 50.5; ρ = 1000 kg/m^3

- Probe: EX3DV4 - SN3600; ConvF(6.15, 6.15, 6.15); Calibrated: 23/06/2011
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

802.11n 20MHz - Ch. 7 - HT0 - Main - Bottom/Area Scan (9x14x1): Measurement grid: dx=10mm, dy=10mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.006 mW/g



Date: 02/02/2012

TEST PLOT B9

DUT: GD Itronix; Type: GD3080 Tablet PC; Serial: SY00000595

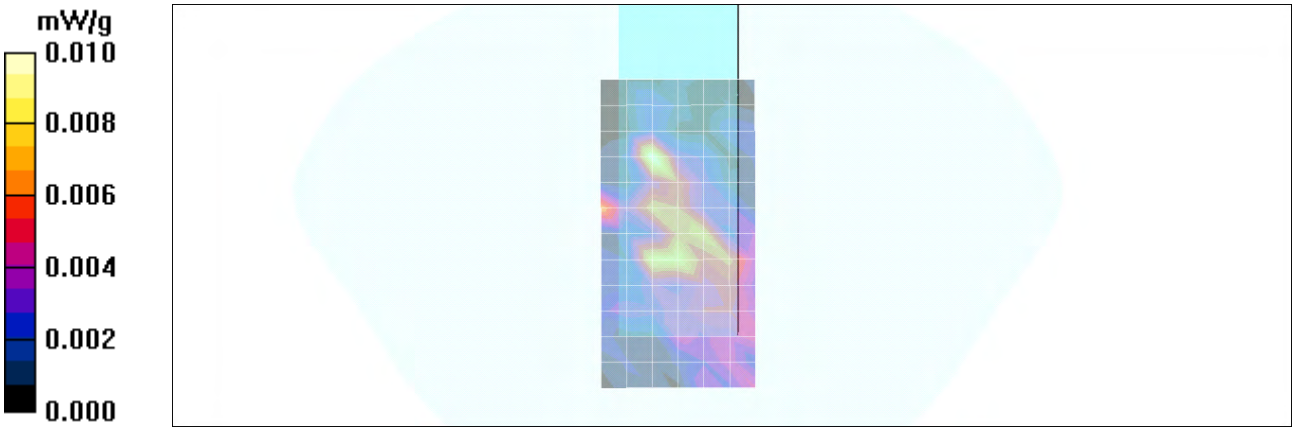
Ambient Temp: 23C; Fluid Temp: 25.0C; Barometric Pressure: 101.1 kPa; Humidity: 30%

Communication System: OFDM WLAN
Frequency: 2442 MHz; Duty Cycle: 1:1
Medium: M2450 Medium parameters used (interpolated): f = 2442 MHz; σ = 1.98 mho/m; ε_r = 50.5; ρ = 1000 kg/m^3

- Probe: EX3DV4 - SN3600; ConvF(6.15, 6.15, 6.15); Calibrated: 23/06/2011
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

802.11n 20MHz - Ch. 7 - HT0 - Main - Edge/Area Scan (13x7x1): Measurement grid: dx=10mm, dy=10mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.010 mW/g

802.11n 20MHz - Ch. 7 - HT0 - Main - Edge/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.12 V/m; Power Drift = -4.60 dB
Peak SAR (extrapolated) = 0.006 W/kg
SAR(1 g) = 0.00139 mW/g; SAR(10 g) = 0.000435 mW/g



Date: 02/03/2012

TEST PLOT B10

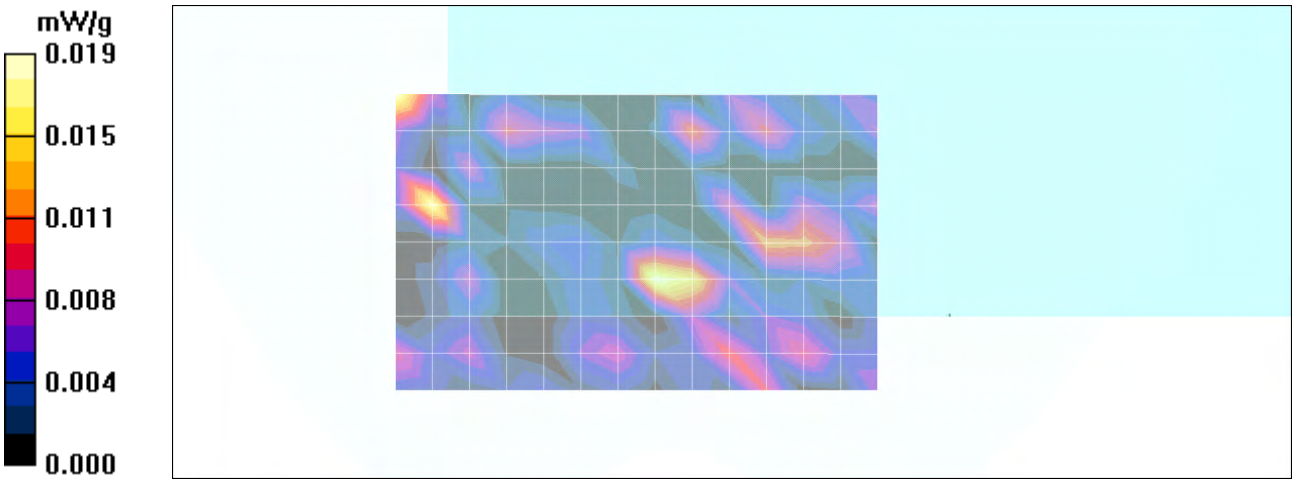
DUT: GD Itronix; Type: GD3080 Tablet PC; Serial: SY00000595

Ambient Temp: 22C; Fluid Temp: 21.7C; Barometric Pressure: 101.1 kPa; Humidity: 32%

Communication System: OFDM WLAN
Frequency: 5240 MHz; Duty Cycle: 1:1
Medium: M5200-5800 Medium parameters used: f = 5240 MHz; σ = 5.28 mho/m; ε_r = 50.6; ρ = 1000 kg/m^3

- Probe: EX3DV4 - SN3600; ConvF(3.91, 3.91, 3.91); Calibrated: 23/06/2011
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

802.11a - Ch. 48 - 6 Mbps - Aux - Bottom/Area Scan (9x14x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.019 mW/g



Date: 02/03/2012

TEST PLOT B11

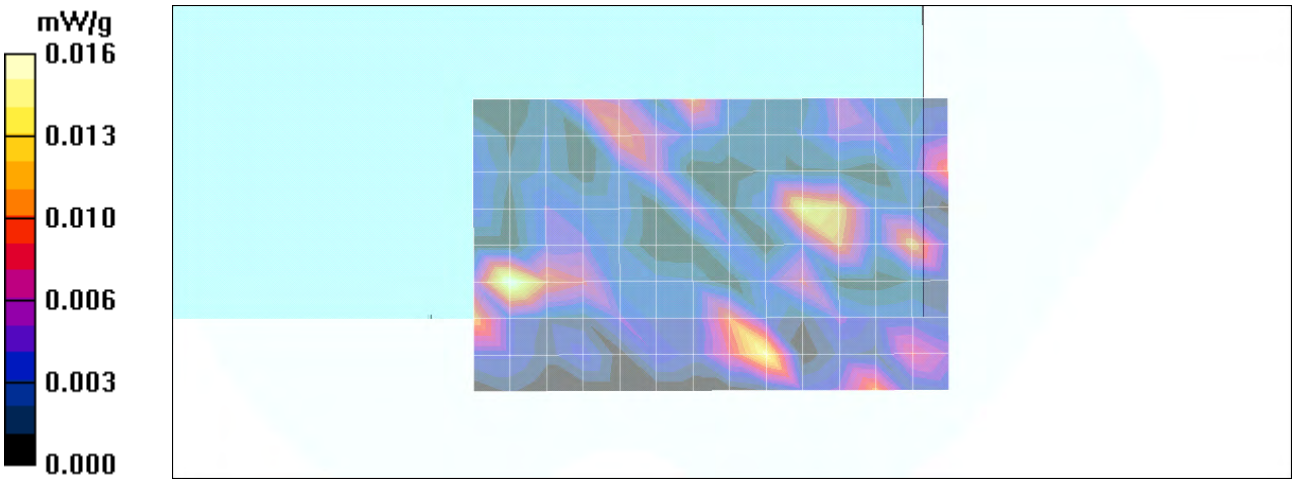
DUT: GD Itronix; Type: GD3080 Tablet PC; Serial: SY00000595

Ambient Temp: 22C; Fluid Temp: 21.7C; Barometric Pressure: 101.1 kPa; Humidity: 32%

Communication System: OFDM WLAN
Frequency: 5240 MHz; Duty Cycle: 1:1
Medium: M5200-5800 Medium parameters used: f = 5240 MHz; σ = 5.28 mho/m; ε_r = 50.6; ρ = 1000 kg/m^3

- Probe: EX3DV4 - SN3600; ConvF(3.91, 3.91, 3.91); Calibrated: 23/06/2011
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

802.11a - Ch. 48 - 6 Mbps - Main - Bottom/Area Scan (9x14x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.016 mW/g



Date: 02/03/2012

TEST PLOT B12

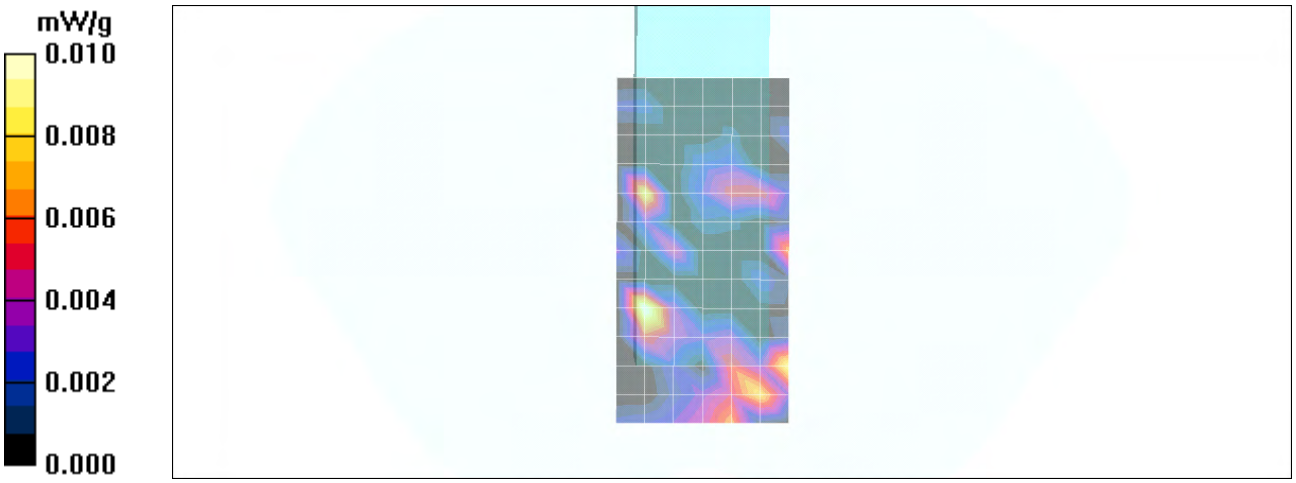
DUT: GD Itronix; Type: GD3080 Tablet PC; Serial: SY00000595

Ambient Temp: 22C; Fluid Temp: 21.7C; Barometric Pressure: 101.1 kPa; Humidity: 32%

Communication System: OFDM WLAN
Frequency: 5240 MHz; Duty Cycle: 1:1
Medium: M5200-5800 Medium parameters used: f = 5240 MHz; σ = 5.28 mho/m; ε_r = 50.6; ρ = 1000 kg/m^3

- Probe: EX3DV4 - SN3600; ConvF(3.91, 3.91, 3.91); Calibrated: 23/06/2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

802.11a - Ch. 48 - 6 Mbps - Main - Edge/Area Scan (13x7x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.010 mW/g



Date: 02/03/2012

TEST PLOT B13

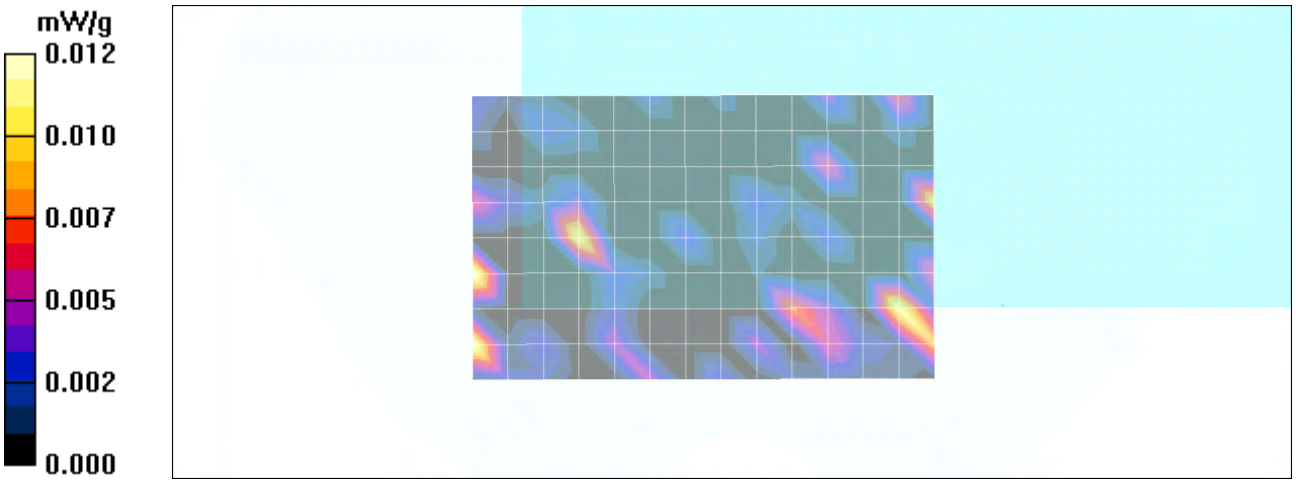
DUT: GD Itronix; Type: GD3080 Tablet PC; Serial: SY00000595

Ambient Temp: 22C; Fluid Temp: 21.7C; Barometric Pressure: 101.1 kPa; Humidity: 32%

Communication System: OFDM WLAN
Frequency: 5280 MHz; Duty Cycle: 1:1
Medium: M5200-5800 Medium parameters used: f = 5280 MHz; σ = 5.33 mho/m; ε_r = 50.7; ρ = 1000 kg/m^3

- Probe: EX3DV4 - SN3600; ConvF(3.91, 3.91, 3.91); Calibrated: 23/06/2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

802.11a - Ch. 56 - 6 Mbps - Aux - Bottom/Area Scan (9x14x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.012 mW/g



Date: 02/03/2012

TEST PLOT B14

DUT: GD Itronix; Type: GD3080 Tablet PC; Serial: SY00000595

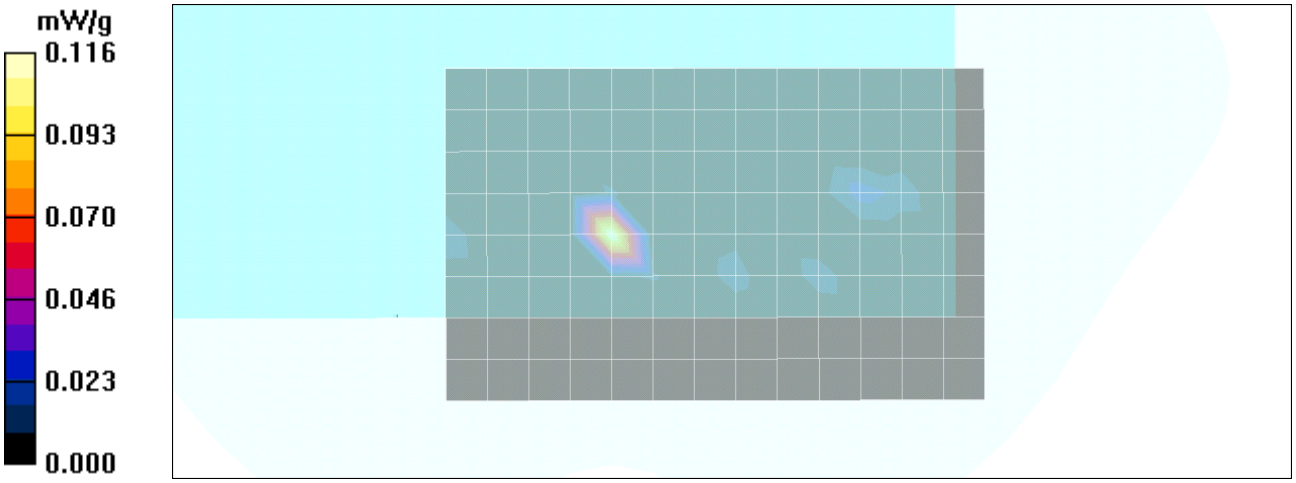
Ambient Temp: 22C; Fluid Temp: 21.7C; Barometric Pressure: 101.1 kPa; Humidity: 32%

Communication System: OFDM WLAN
Frequency: 5280 MHz; Duty Cycle: 1:1
Medium: M5200-5800 Medium parameters used: f = 5280 MHz; σ = 5.33 mho/m; ε_r = 50.7; ρ = 1000 kg/m^3

- Probe: EX3DV4 - SN3600; ConvF(3.91, 3.91, 3.91); Calibrated: 23/06/2011
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

802.11a - Ch. 56 - 6 Mbps - Main - Bottom/Area Scan (9x14x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.116 mW/g

802.11a - Ch. 56 - 6 Mbps - Main - Bottom/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 1.12 V/m; Power Drift = -5.90 dB
Peak SAR (extrapolated) = 0.025 W/kg
SAR(1 g) = 0.0038 mW/g; SAR(10 g) = 0.000825 mW/g



Date: 02/03/2012

TEST PLOT B15

DUT: GD Itronix; Type: GD3080 Tablet PC; Serial: SY00000595

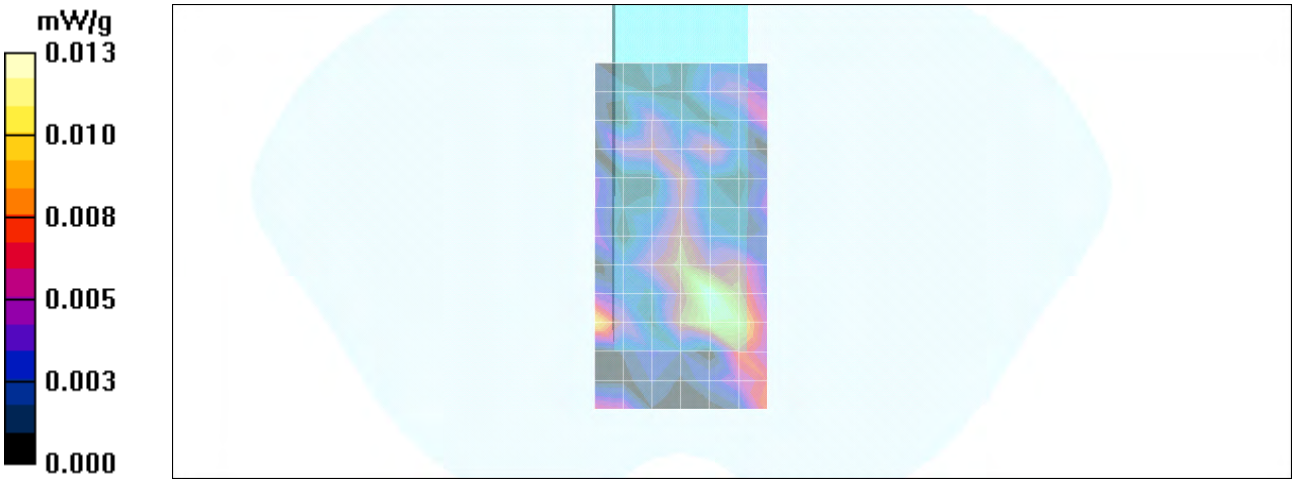
Ambient Temp: 22C; Fluid Temp: 21.7C; Barometric Pressure: 101.1 kPa; Humidity: 32%

Communication System: OFDM WLAN
Frequency: 5280 MHz; Duty Cycle: 1:1
Medium: M5200-5800 Medium parameters used: f = 5280 MHz; σ = 5.33 mho/m; ε_r = 50.7; ρ = 1000 kg/m^3

- Probe: EX3DV4 - SN3600; ConvF(3.91, 3.91, 3.91); Calibrated: 23/06/2011
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

802.11a - Ch. 56 - 6 Mbps - Main - Edge/Area Scan (13x7x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.013 mW/g

802.11a - Ch. 56 - 6 Mbps - Main - Edge/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 1.13 V/m; Power Drift = -0.685 dB
Peak SAR (extrapolated) = 0.054 W/kg
SAR(1 g) = 0.0042 mW/g; SAR(10 g) = 0.00207 mW/g



Date: 02/03/2012

TEST PLOT B16

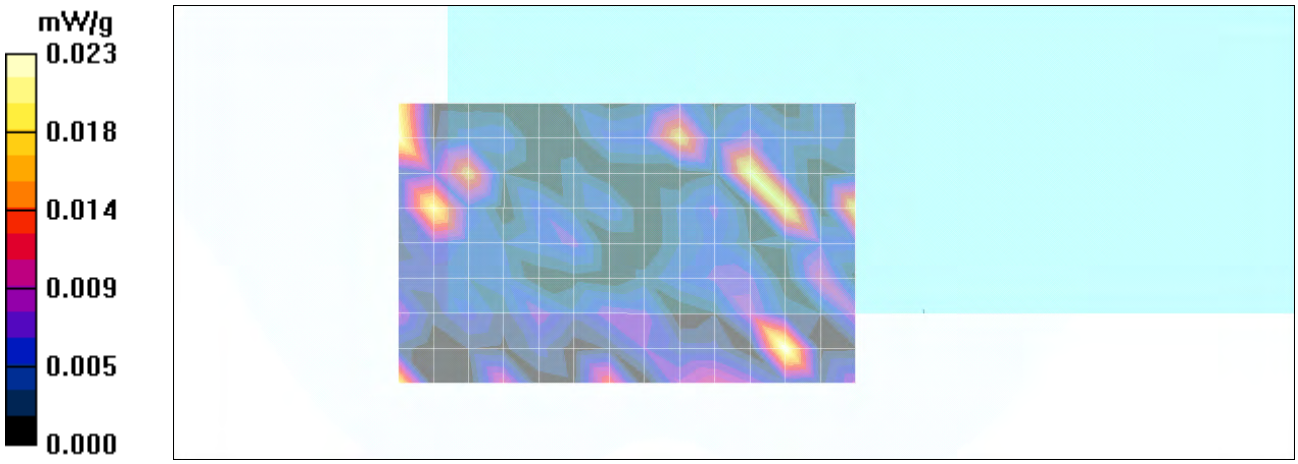
DUT: GD Itronix; Type: GD3080 Tablet PC; Serial: SY00000595

Ambient Temp: 22C; Fluid Temp: 21.7C; Barometric Pressure: 101.1 kPa; Humidity: 32%

Communication System: OFDM WLAN
Frequency: 5540 MHz; Duty Cycle: 1:1
Medium: M5200-5800 Medium parameters used: f = 5540 MHz; σ = 5.69 mho/m; ε_r = 50.2; ρ = 1000 kg/m^3

- Probe: EX3DV4 - SN3600; ConvF(3.38, 3.38, 3.38); Calibrated: 23/06/2011
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

802.11a - Ch. 108 - 6 Mbps - Aux - Bottom/Area Scan (9x14x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.023 mW/g



Date: 02/03/2012

TEST PLOT B17

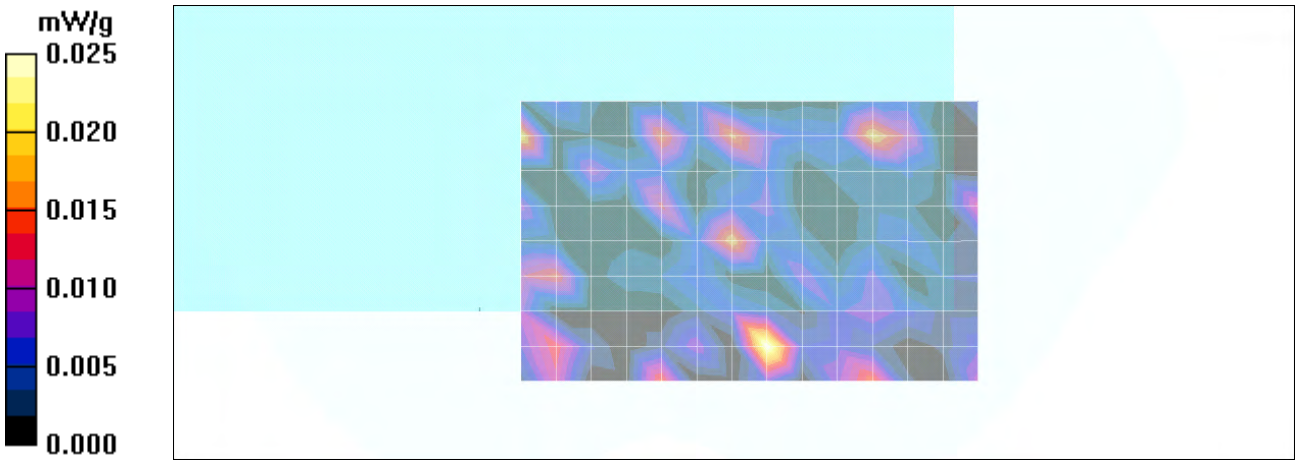
DUT: GD Itronix; Type: GD3080 Tablet PC; Serial: SY00000595

Ambient Temp: 22C; Fluid Temp: 21.7C; Barometric Pressure: 101.1 kPa; Humidity: 32%

Communication System: OFDM WLAN
Frequency: 5540 MHz; Duty Cycle: 1:1
Medium: M5200-5800 Medium parameters used: f = 5540 MHz; σ = 5.69 mho/m; ε_r = 50.2; ρ = 1000 kg/m^3

- Probe: EX3DV4 - SN3600; ConvF(3.38, 3.38, 3.38); Calibrated: 23/06/2011
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

802.11a - Ch. 108 - 6 Mbps - Main - Bottom/Area Scan (9x14x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.025 mW/g



Date: 02/03/2012

TEST PLOT B18

DUT: GD Itronix; Type: GD3080 Tablet PC; Serial: SY00000595

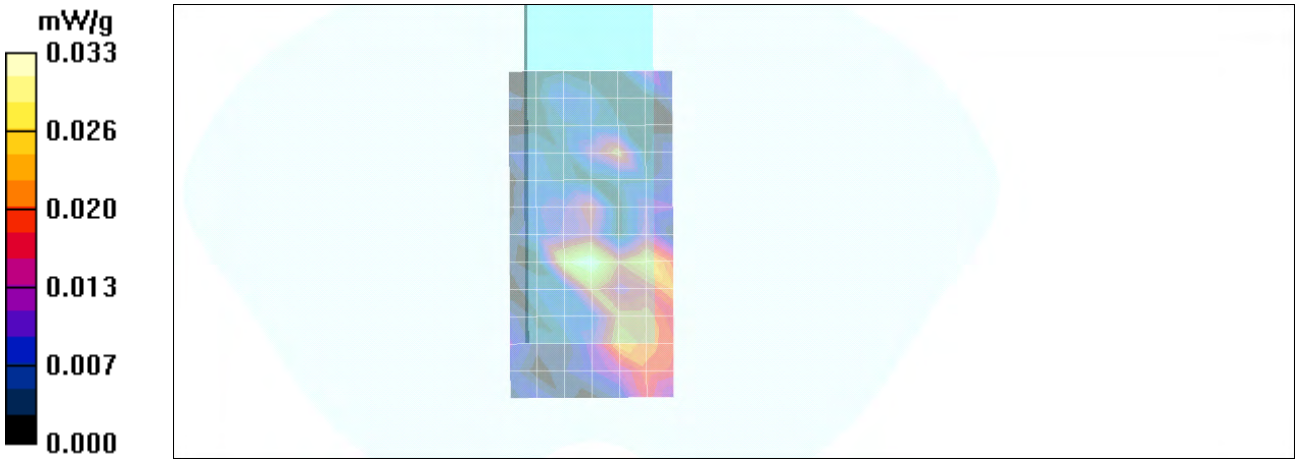
Ambient Temp: 22C; Fluid Temp: 21.7C; Barometric Pressure: 101.1 kPa; Humidity: 32%

Communication System: OFDM WLAN
Frequency: 5540 MHz; Duty Cycle: 1:1
Medium: M5200-5800 Medium parameters used: f = 5540 MHz; σ = 5.69 mho/m; ε_r = 50.2; ρ = 1000 kg/m^3

- Probe: EX3DV4 - SN3600; ConvF(3.38, 3.38, 3.38); Calibrated: 23/06/2011
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

802.11a - Ch. 108 - 6 Mbps - Main - Edge/Area Scan (13x7x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.033 mW/g

802.11a - Ch. 108 - 6 Mbps - Main - Edge/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0.988 V/m; Power Drift = 1.90 dB
Peak SAR (extrapolated) = 0.085 W/kg
SAR(1 g) = 0.015 mW/g; SAR(10 g) = 0.00876 mW/g



Date: 02/03/2012

TEST PLOT B19

DUT: GD Itronix; Type: GD3080 Tablet PC; Serial: SY00000595

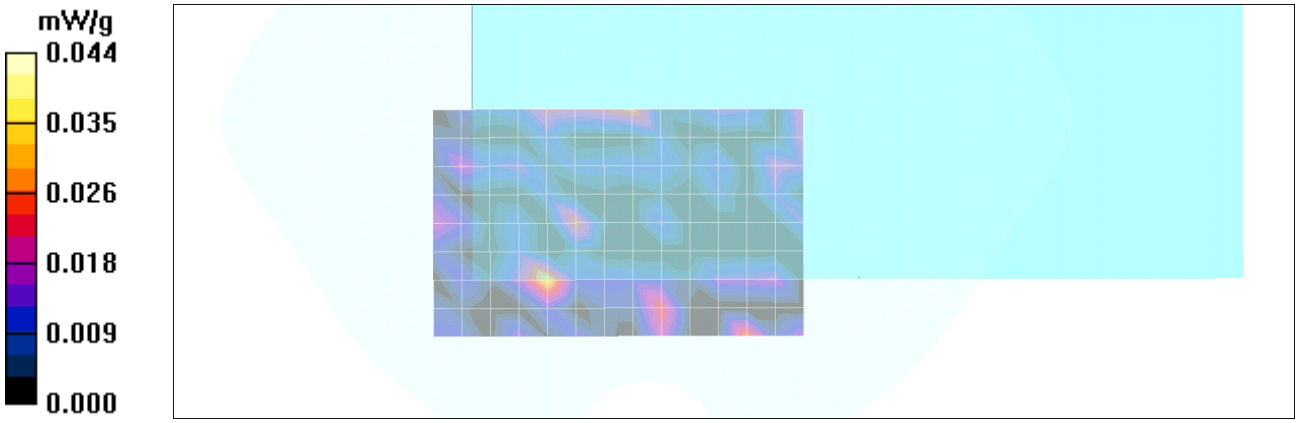
Ambient Temp: 22C; Fluid Temp: 21.7C; Barometric Pressure: 101.1 kPa; Humidity: 32%

Communication System: OFDM WLAN
Frequency: 5765 MHz; Duty Cycle: 1:1
Medium: M5200-5800 Medium parameters used (interpolated): f = 5765 MHz; σ = 6 mho/m; ε_r = 49.8; ρ = 1000 kg/m^3

- Probe: EX3DV4 - SN3600; ConvF(3.39, 3.39, 3.39); Calibrated: 23/06/2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

802.11a - Ch. 153 - 6 Mbps - Aux - Bottom/Area Scan (9x14x1): Measurement grid: dx=10mm, dy=10mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.034 mW/g

802.11a - Ch. 153 - 6 Mbps - Aux - Bottom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.56 V/m; Power Drift = -8.26 dB
Peak SAR (extrapolated) = 0.044 W/kg
SAR(1 g) = 0.012 mW/g; SAR(10 g) = 0.00613 mW/g



Date: 02/03/2012

TEST PLOT B20

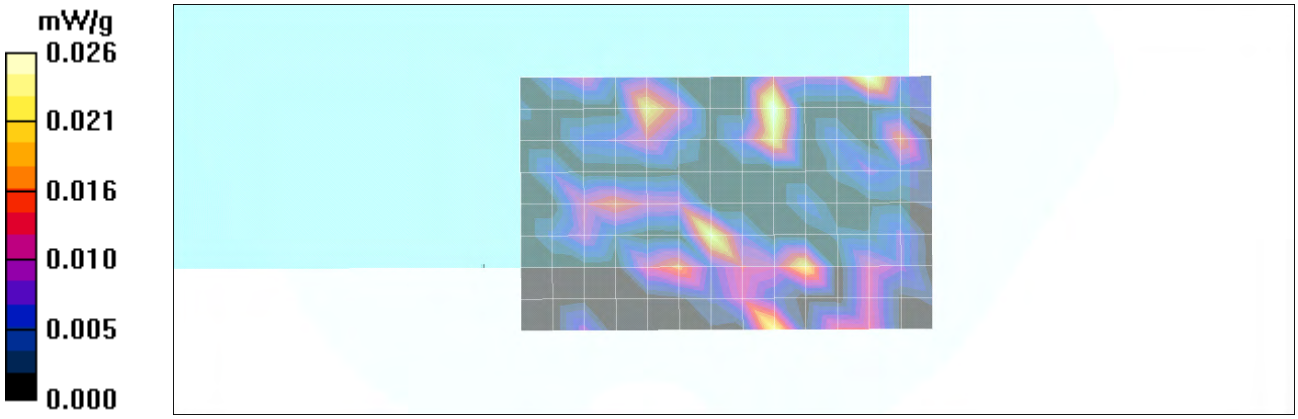
DUT: GD Itronix; Type: GD3080 Tablet PC; Serial: SY00000595

Ambient Temp: 22C; Fluid Temp: 21.7C; Barometric Pressure: 101.1 kPa; Humidity: 32%

Communication System: OFDM WLAN
Frequency: 5765 MHz; Duty Cycle: 1:1
Medium: M5200-5800 Medium parameters used (interpolated): f = 5765 MHz; σ = 6 mho/m; ε_r = 49.8; ρ = 1000 kg/m^3

- Probe: EX3DV4 - SN3600; ConvF(3.39, 3.39, 3.39); Calibrated: 23/06/2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

802.11a - Ch. 153 - 6 Mbps - Main - Bottom/Area Scan (9x14x1): Measurement grid: dx=10mm, dy=10mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.026 mW/g



Date: 02/03/2012

TEST PLOT B21

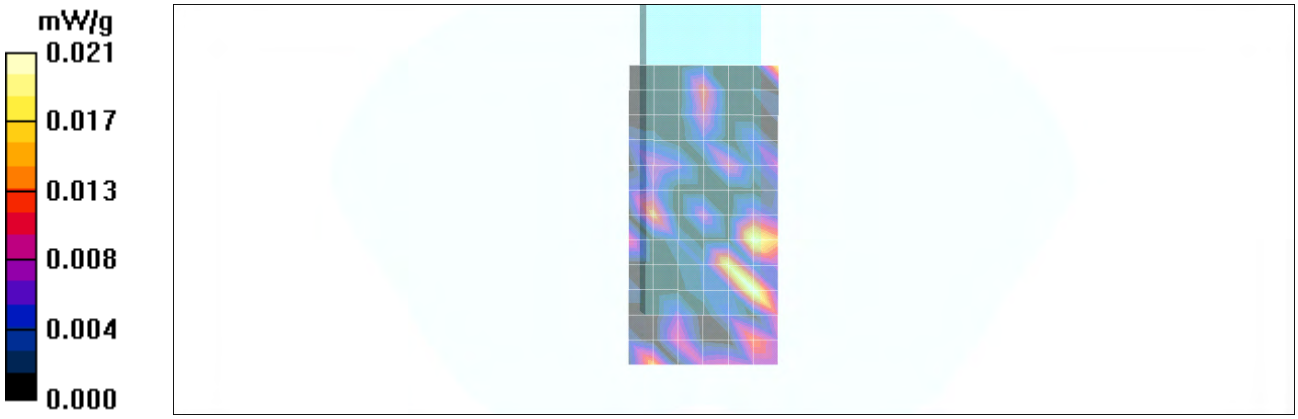
DUT: GD Itronix; Type: GD3080 Tablet PC; Serial: SY00000595

Ambient Temp: 22C; Fluid Temp: 21.7C; Barometric Pressure: 101.1 kPa; Humidity: 32%

Communication System: OFDM WLAN
Frequency: 5765 MHz; Duty Cycle: 1:1
Medium: M5200-5800 Medium parameters used (interpolated): f = 5765 MHz; σ = 6 mho/m; ε_r = 49.8; ρ = 1000 kg/m^3

- Probe: EX3DV4 - SN3600; ConvF(3.39, 3.39, 3.39); Calibrated: 23/06/2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

802.11a - Ch. 153 - 6 Mbps - Main - Edge/Area Scan (13x7x1): Measurement grid: dx=10mm, dy=10mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.021 mW/g



APPENDIX B - SYSTEM PERFORMANCE CHECK PLOTS

Date Tested: 02/02/2012

System Performance Check - 2450 MHz Dipole - Body

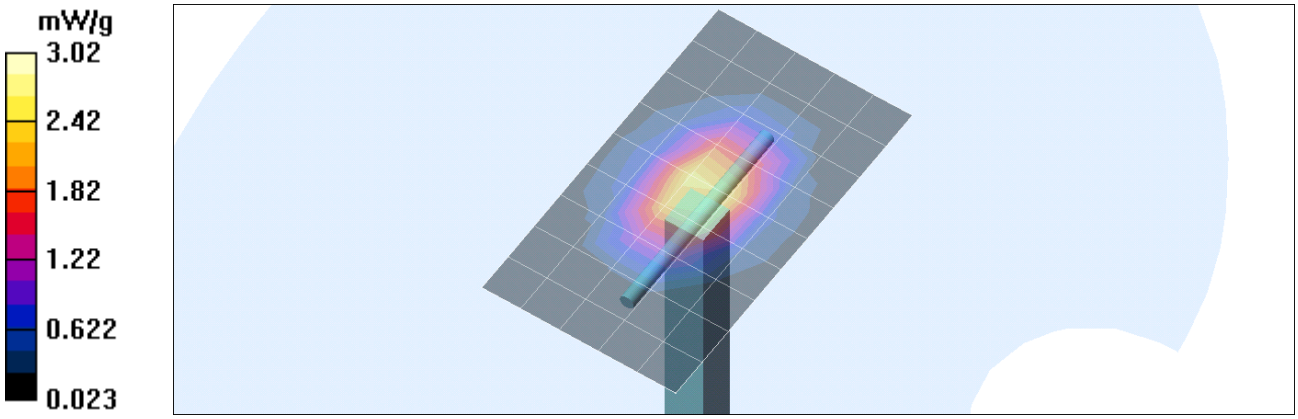
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 825; Calibrated: 17/04/2009

Ambient Temp: 23C; Fluid Temp: 25.0C; Barometric Pressure: 101.1 kPa; Humidity: 30%

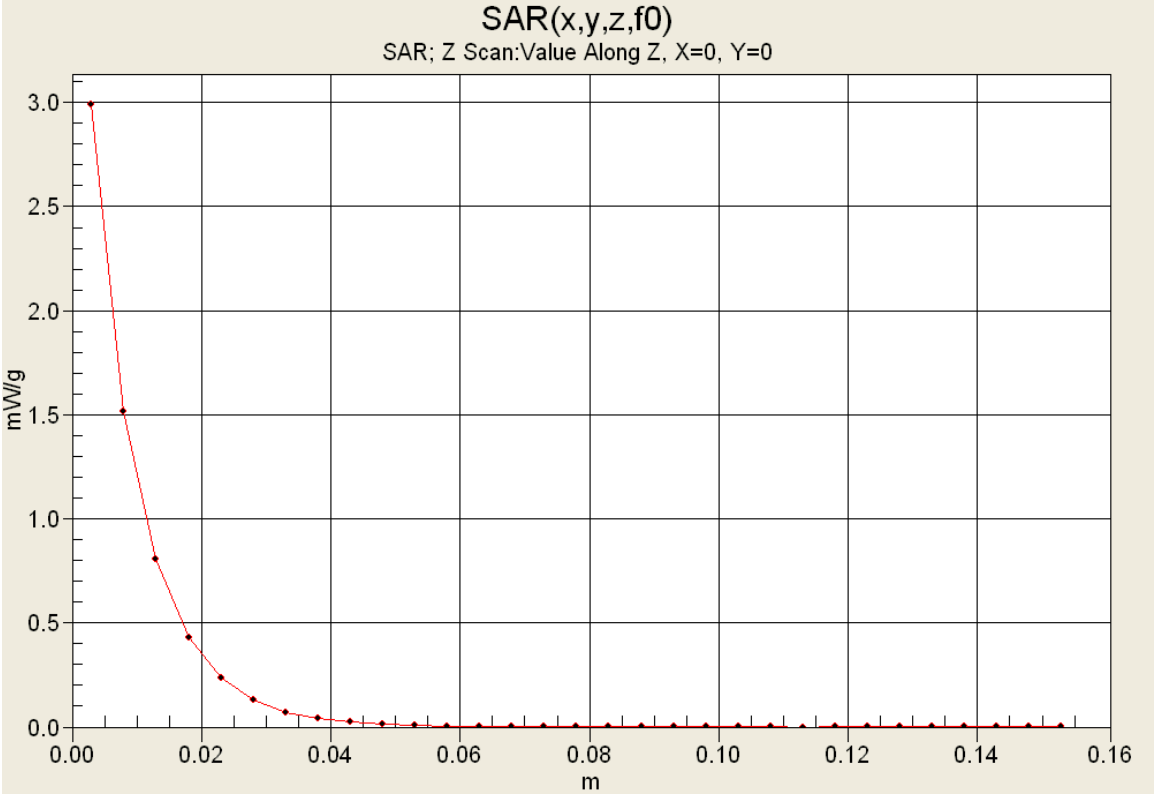
Communication System: CW
Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: M2450 Medium parameters used: f = 2450 MHz; σ = 2 mho/m; ε_r = 50.5; ρ = 1000 kg/m^3

- Probe: EX3DV4 - SN3600; ConvF(6.15, 6.15, 6.15); Calibrated: 23/06/2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

2450 MHz Dipole d=10mm P=40mW (25C Fluid)/Area Scan (6x10x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 2.53 mW/g
2450 MHz Dipole d=10mm P=40mW (25C Fluid)/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 39.0 V/m; Power Drift = -0.026 dB
Peak SAR (extrapolated) = 4.66 W/kg
SAR(1 g) = 2.26 mW/g; SAR(10 g) = 1.07 mW/g
Maximum value of SAR (measured) = 3.02 mW/g



Z-Axis Scan



Date Tested: 02/03/2012

System Performance Check - 5200 MHz Dipole - Body

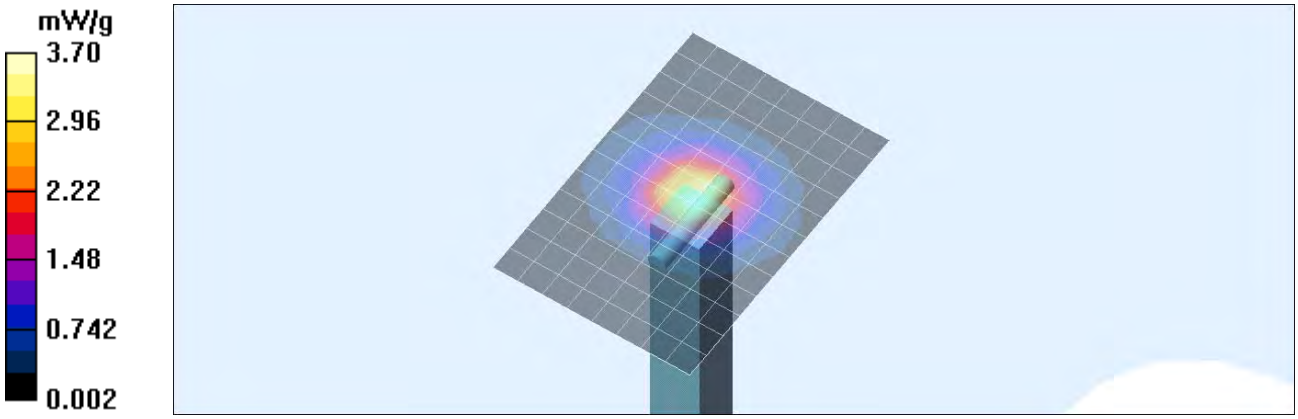
DUT: Dipole 5GHz; Type: D5GHzV2; Serial: 1031; Calibrated: 04/29/2009

Ambient Temp: 22C; Fluid Temp: 21.7C; Barometric Pressure: 101.1 kPa; Humidity: 32%

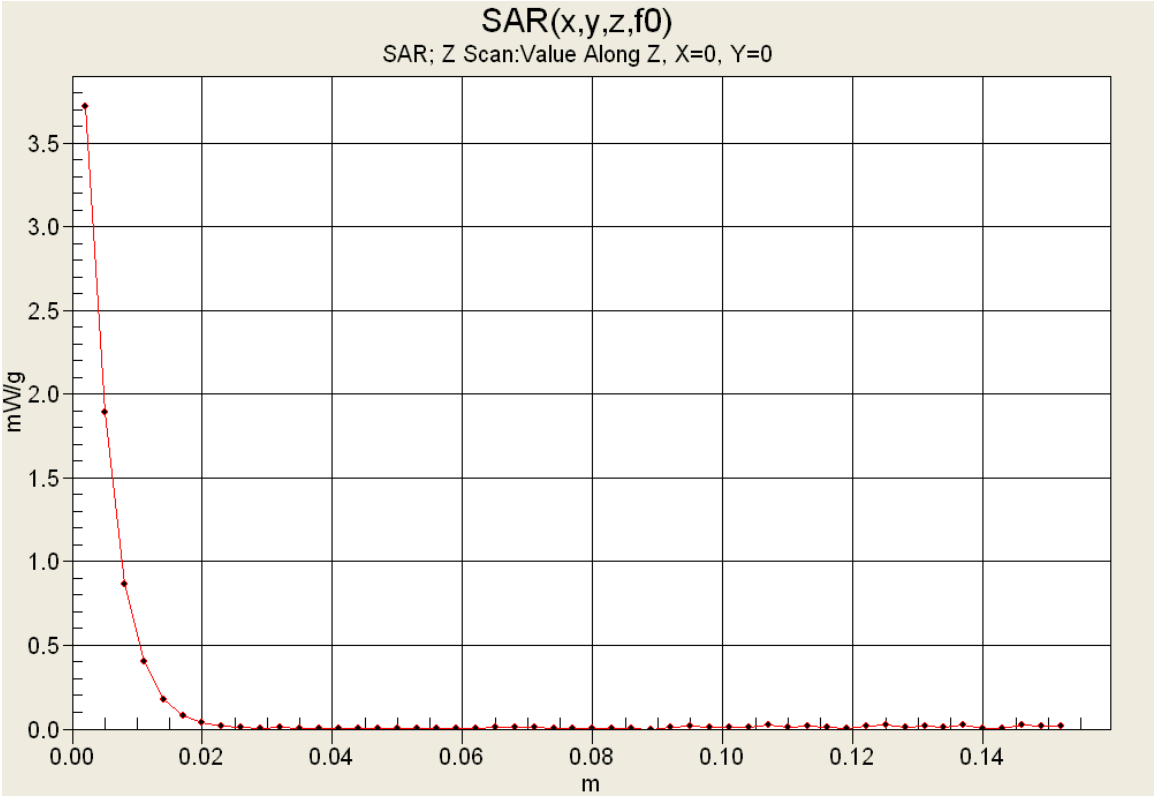
Communication System: CW
Frequency: 5200 MHz; Duty Cycle: 1:1
Medium: M5200-5800 Medium parameters used: f = 5200 MHz; σ = 5.17 mho/m; ε_r = 51.3; ρ = 1000 kg/m^3

- Probe: EX3DV4 - SN3600; ConvF(3.91, 3.91, 3.91); Calibrated: 23/06/2011
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

5200-5800 MHz Dipole d=10mm P=25mW/Area Scan (9x13x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of SAR (measured) = 3.60 mW/g
5200-5800 MHz Dipole d=10mm P=25mW/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 30.1 V/m; Power Drift = -0.097 dB
Peak SAR (extrapolated) = 5.95 W/kg
SAR(1 g) = 1.87 mW/g; SAR(10 g) = 0.554 mW/g
Maximum value of SAR (measured) = 3.70 mW/g



Z-Axis Scan



Date Tested: 02/03/2012

System Performance Check - 5500 MHz Dipole - Body

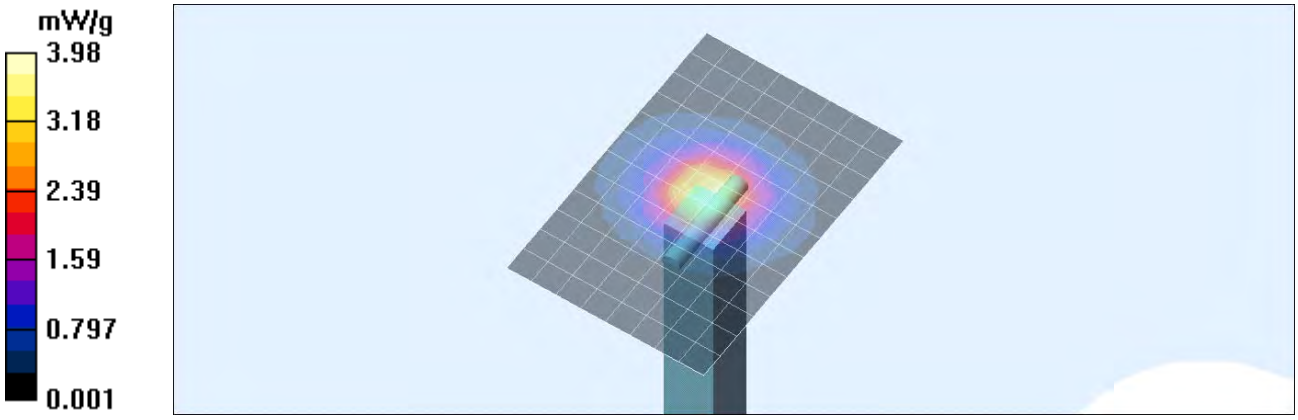
DUT: Dipole 5GHz; Type: D5GHzV2; Serial: 1031; Calibrated: 04/29/2009

Ambient Temp: 22C; Fluid Temp: 21.7C; Barometric Pressure: 101.1 kPa; Humidity: 32%

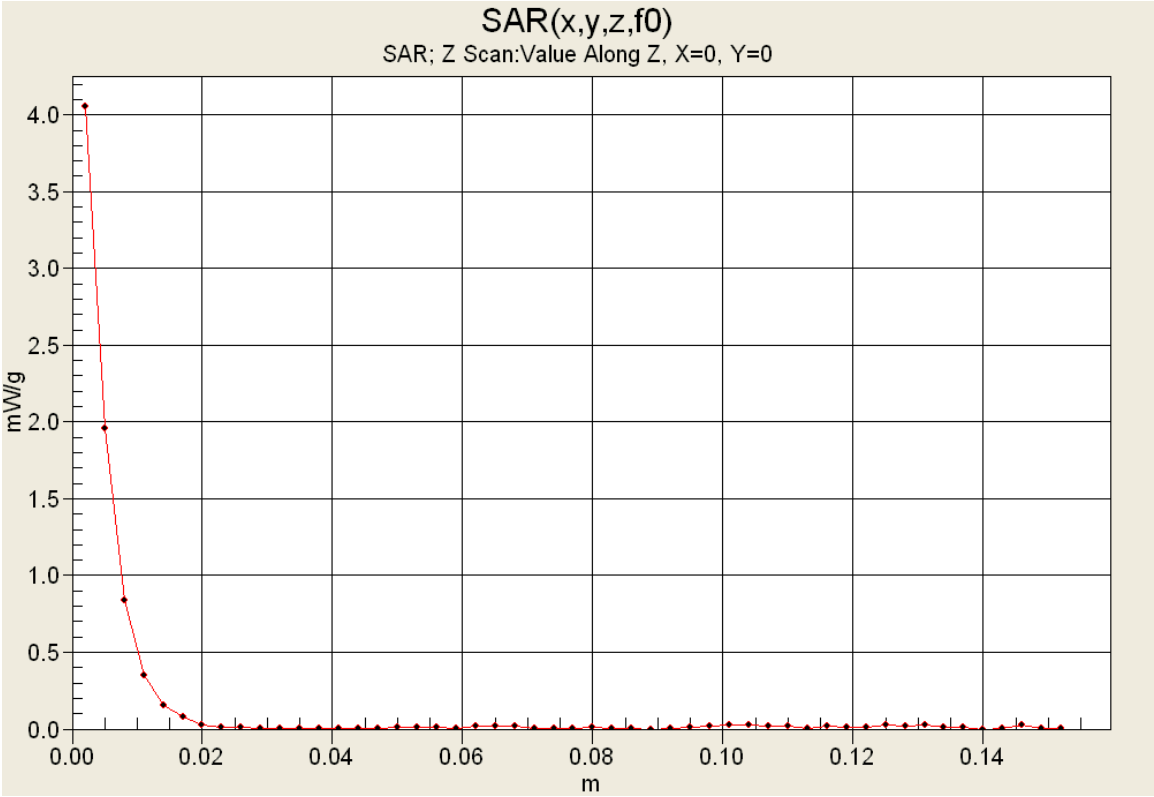
Communication System: CW
Frequency: 5500 MHz; Duty Cycle: 1:1
Medium: M5200-5800 Medium parameters used: f = 5500 MHz; σ = 5.56 mho/m; ε_r = 50.1; ρ = 1000 kg/m^3

- Probe: EX3DV4 - SN3600; ConvF(3.38, 3.38, 3.38); Calibrated: 23/06/2011
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

5200-5800 MHz Dipole d=10mm P=25mW/Area Scan (9x13x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of SAR (measured) = 3.82 mW/g
5200-5800 MHz Dipole d=10mm P=25mW/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 29.8 V/m; Power Drift = -0.034 dB
Peak SAR (extrapolated) = 6.51 W/kg
SAR(1 g) = 1.97 mW/g; SAR(10 g) = 0.571 mW/g
Maximum value of SAR (measured) = 3.98 mW/g



Z-Axis Scan



Date Tested: 02/03/2012

System Performance Check - 5800 MHz Dipole - Body

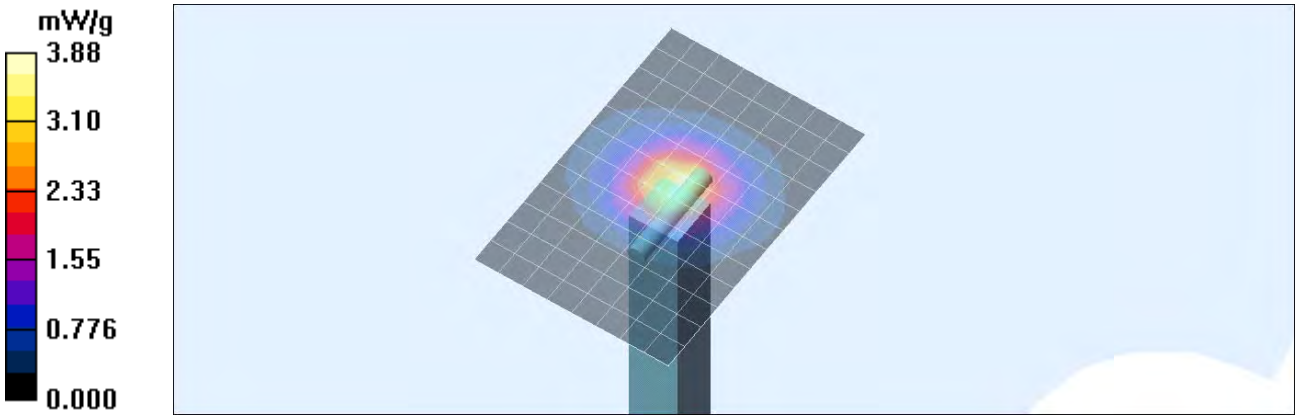
DUT: Dipole 5GHz; Type: D5GHzV2; Serial: 1031; Calibrated: 04/29/2009

Ambient Temp: 22C; Fluid Temp: 21.7C; Barometric Pressure: 101.1 kPa; Humidity: 32%

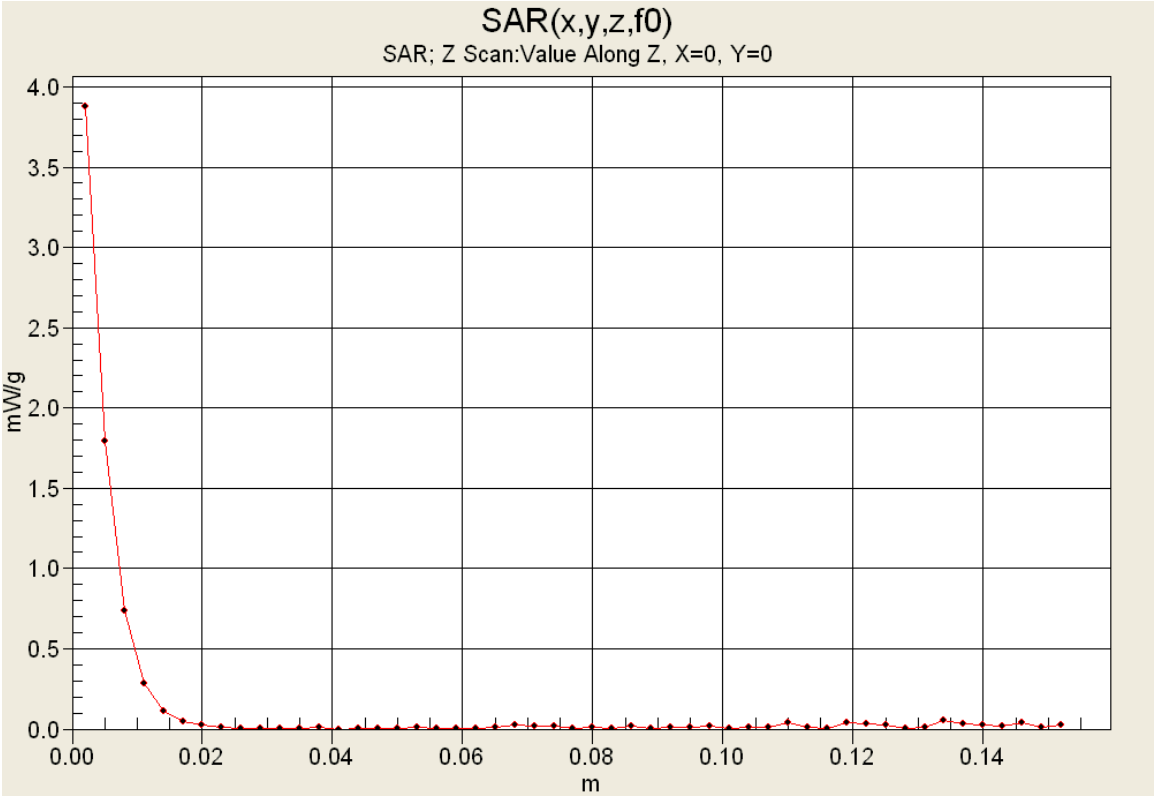
Communication System: CW
Frequency: 5800 MHz; Duty Cycle: 1:1
Medium: M5200-5800 Medium parameters used: f = 5800 MHz; σ = 6.08 mho/m; ε_r = 49.2; ρ = 1000 kg/m^3

- Probe: EX3DV4 - SN3600; ConvF(3.39, 3.39, 3.39); Calibrated: 23/06/2011
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

5200-5800 MHz Dipole d=10mm P=25mW/Area Scan (9x13x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of SAR (measured) = 3.57 mW/g
5200-5800 MHz Dipole d=10mm P=25mW/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 27.6 V/m; Power Drift = 0.067 dB
Peak SAR (extrapolated) = 6.36 W/kg
SAR(1 g) = 1.85 mW/g; SAR(10 g) = 0.533 mW/g
Maximum value of SAR (measured) = 3.88 mW/g



Z-Axis Scan



APPENDIX C - MANUFACTURER'S TISSUE SIMULANT DATA SHEET (5GHz)

Schmid & Partner Engineering AG

s p e a g

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

Material Safety Data Sheet

1 Identification of the substance and of the manufacturer / origin

Item	Head Tissue Simulation Liquid HSL5800 Muscle Tissue Simulation Liquid MSL 5800
Type No	SL AAH 580, SL AAM 580
Series No	N/A
Manufacturer / Origin	Schmid & Partner Engineering AG Zeughausstrasse 43 8004 Zürich Switzerland Phone +41 1 245 9700, Fax +41 1 245 9779, support@speag.com

Use of the substance:
Liquid simulating physical parameters of Head or Muscle Tissue in the RF range to 6GHz.

2 Composition / Information on ingredients

The Item is composed of the following ingredients:

Water	64 - 78%
Mineral Oil	11 - 18%
Emulsifiers	9 - 15%
Additives and Salt	2 - 3%

Safety relevant ingredients according to EU directives:

CAS-No 107-41-5	< 4%	2-Methyl-2,4-pentandiol (Hexylene Glycol): Xi irritant, R36/38 irritant for eyes and skin
CAS-No 770-35-4	< 2%	1-Phenoxy-2-propanol (Propylene Glycol Phenyl Ether): Xi irritant, R36 irritant for eyes
CAS-No 93-83-4	< 2%	N,N-bis(2-Hydroxyethyl)oleamide: Xi irritant, R36/38 irritant for eyes and skin
CAS-No 9004-95-9	< 0.5%	Polyethylene glycol cetyl ether: Xi irritant, R22 harmful if swallowed, R36/38 irritant for eyes and skin R50 Very toxic to aquatic organisms

According to EU guidelines and Swiss rules, the product is not a dangerous mixture and therefore not required to be marked by symbols.

3 Hazards identification

Identification not required.

4 First aid measures

The product reacts slightly alkaline.

After skin contact:	Wash with fresh water and mild sope
After eye contact:	Rinse out with plenty of water for several minutes with the eyelid held open. Consult an ophthalmologist if necessary.
After ingestion:	Do not induce vomiting. Get medical attention.

5 Fire-fighting measures

Firefighting media	CO2, foam, dry chemical
Combustion products	Carbon oxides, nitrogen and traces of oxides of chlorine and sulfur, HCl

Due to the high water content, the liquid is self-extinguishing.

6 Accidental release measures

Person-related precaution measures: wash with water and mild soap.
Environmental-protection measures: do not allow to enter sewerage system.
Procedures for cleaning / absorption: Use oil-binding agents., forward for disposal. Spills may cause slippery conditions.

7 Handling and storage

Handling: Keep in open container only for minimum required time in order to avoid water evaporation.
Storage: tightly closed, between >0 to 40°C. Avoid direct solar irradiation of the storage containers.

8 Exposure controls / personal protection

Protection measures are not generally required. For eye protection, industrial safety glasses are recommended.
Personal hygiene and clean working practices are sufficient.

9 Physical and chemical properties

Form:	liquid
Colour:	medium to dark brown, transparent to opaque
Odour:	almost odourless / slightly oily
pH-Value:	slightly alcalic
Boiling point:	100°C
Density:	1g/cm^3

10 Stability and reactivity

Conditions to be avoided: heating above 40°C
The product contains water and is not compatible with strong oxidizers or magnesium.

11 Toxicological information

LD50 > 40 g/kg
Further data: the product should be handled with the care usual when dealing with chemicals

12 Ecological information

Contains mineral oil. Do not allow to enter waters, waste water, or soil!

13 Disposal considerations

Disposal is possible by splitting the mineral oil from the emulsion with absorbing agents, with salt or ultra-filtration. Dispose as other mineral oil containing products according to local regulations.
Product packing must be disposed of in compliance with respect national regulations.

14 Transport information

Not subject to transport regulations.

15 Regulatory information

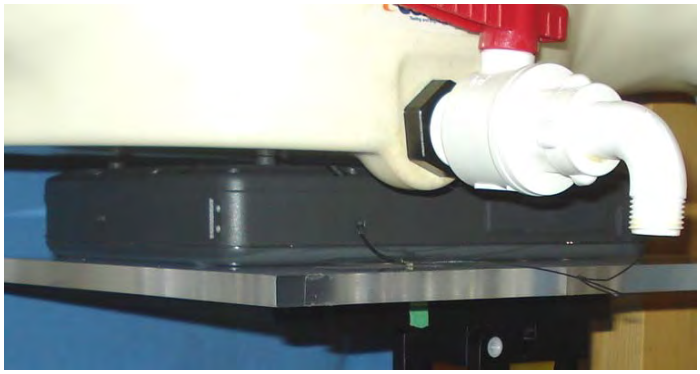
No special labelling required.

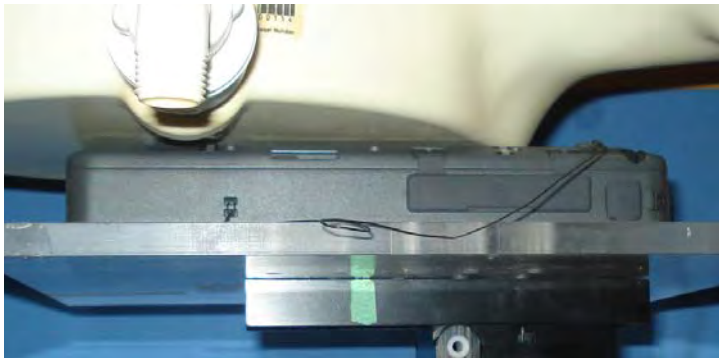
16 Other information

Release date:	6.1.2005
Responsible:	FB

APPENDIX D - SAR TEST SETUP PHOTOGRAPHS

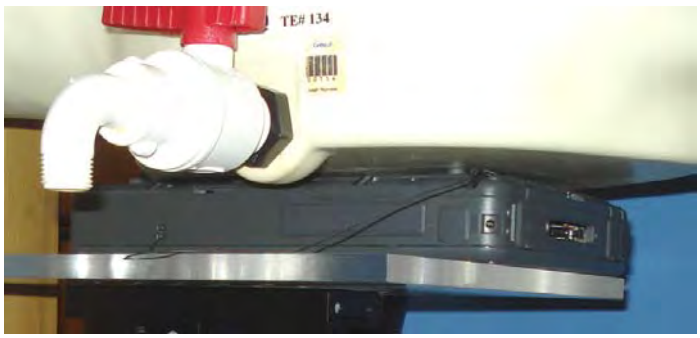
SAR TEST SETUP PHOTOGRAPHS





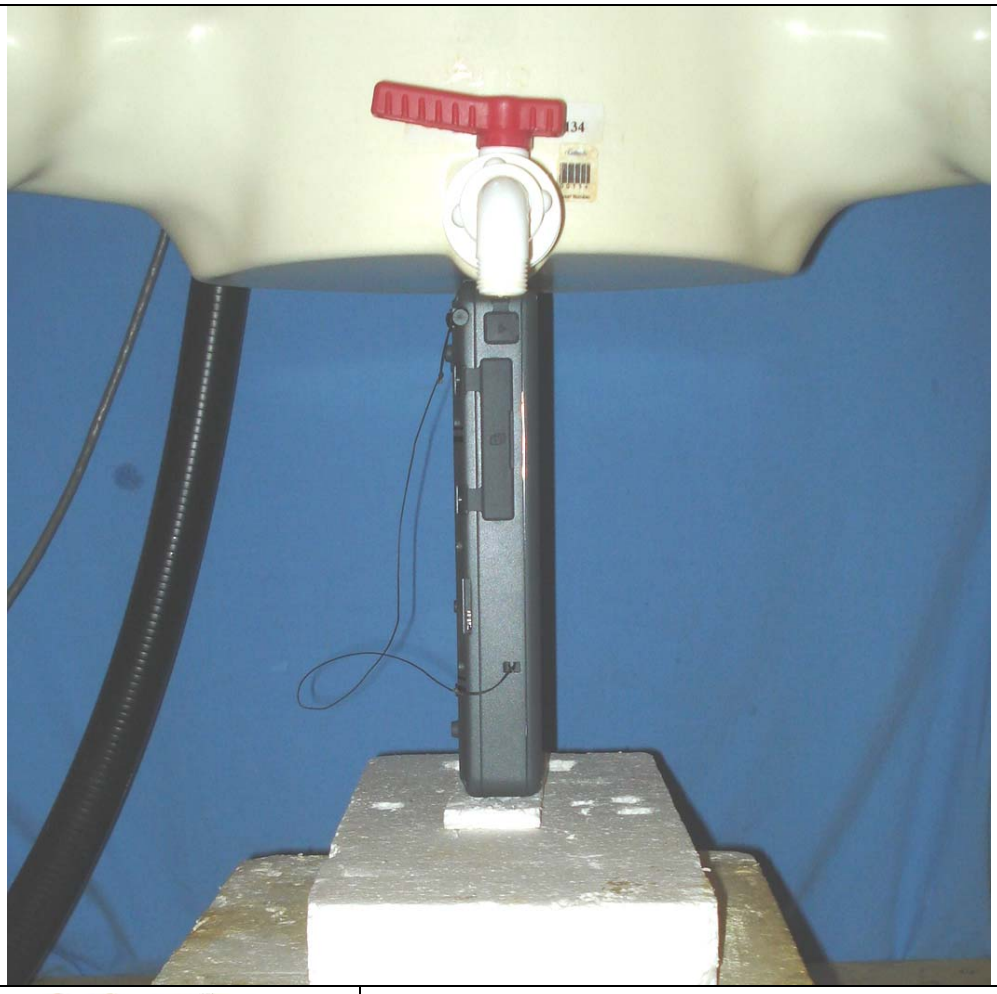
Bottom Side of DUT touching SAM phantom (planar section) – WLAN Aux Antenna

SAR TEST SETUP PHOTOGRAPHS



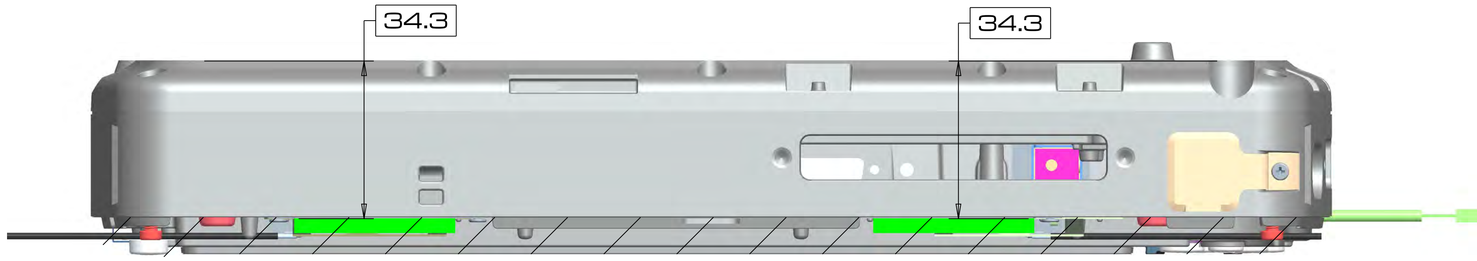
Bottom Side of DUT touching SAM phantom (planar section) – WLAN Main Antenna

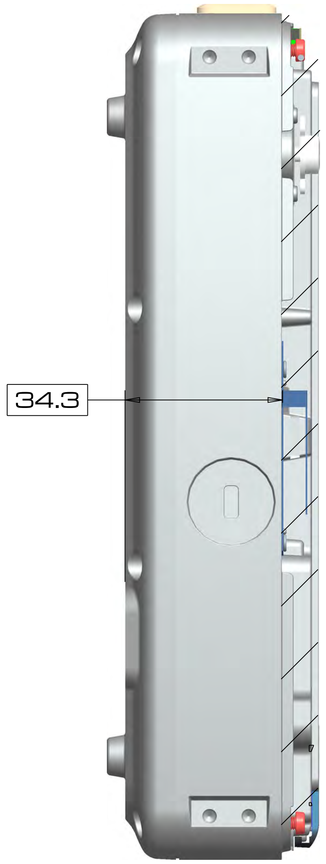
SAR TEST SETUP PHOTOGRAPHS

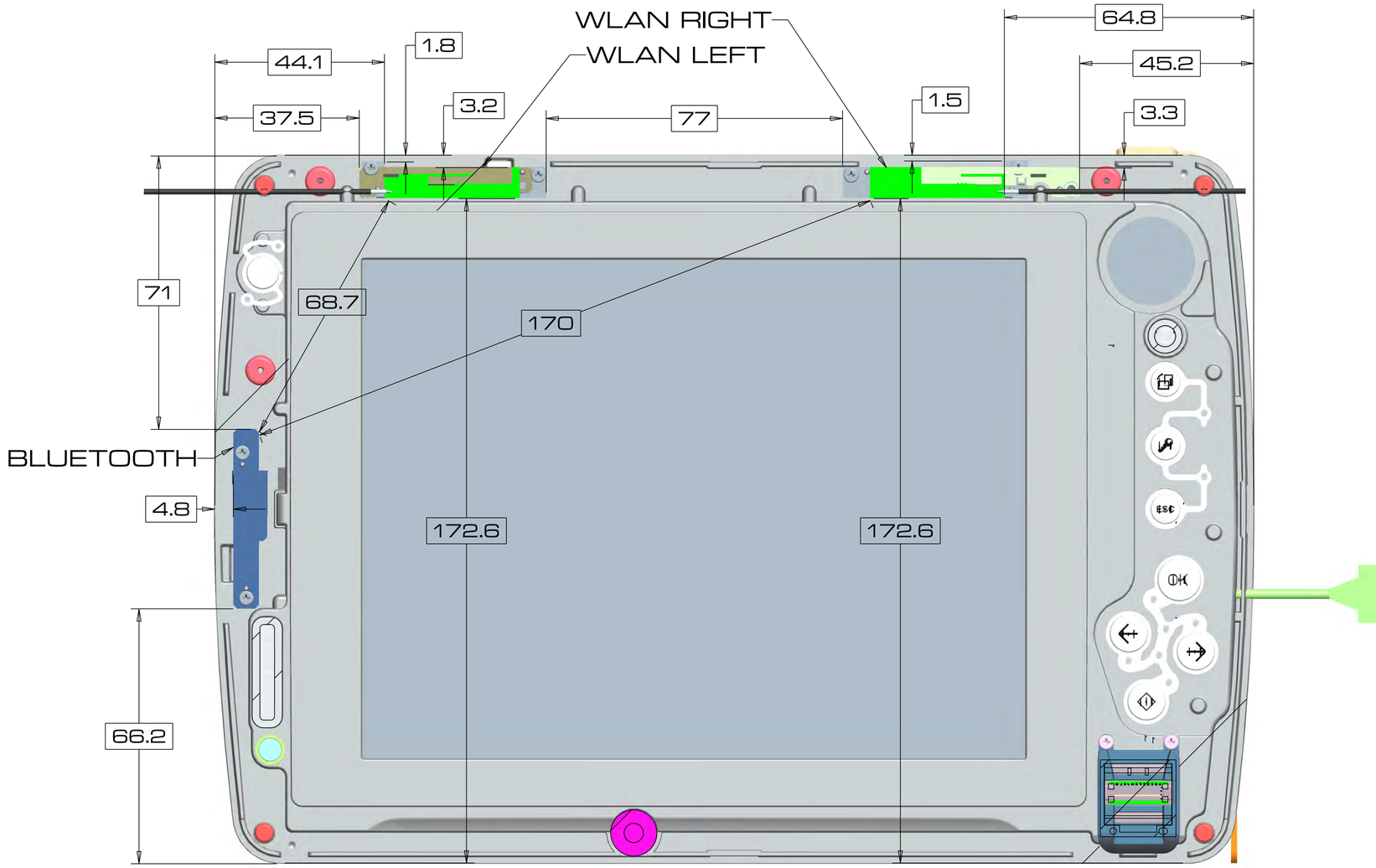


(“90° Portrait”) Adjacent Edge of DUT touching SAM phantom (planar section) – WLAN Main Antenna

APPENDIX E - ANTENNA DISTANCES


34.3
34.3


34.3


WLAN RIGHT
WLAN LEFT
64.8
44.1
1.8
45.2
37.5
3.2
77
1.5
3.3
71
68.7
170
BLUETOOTH
4.8
172.6
172.6
66.2

unit:mm

APPENDIX F - DIPOLE CALIBRATION

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client Celltech

Certificate No: D2450V2-825_Apr09

CALIBRATION CERTIFICATE

Object: D2450V2 - SN: 825

Calibration procedure(s): QA CAL-05.v7
Calibration procedure for dipole validation kits

Calibration date: April 17, 2009

Condition of the calibrated item: In Tolerance

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	08-Oct-08 (No. 217-00898)	Oct-09
Power sensor HP 8481A	US37292783	08-Oct-08 (No. 217-00898)	Oct-09
Reference 20 dB Attenuator	SN: 5086 (20g)	31-Mar-09 (No. 217-01025)	Mar-10
Type-N mismatch combination	SN: 5047.2 / 06327	31-Mar-09 (No. 217-01029)	Mar-10
Reference Probe ES3DV2	SN: 3025	28-Apr-08 (No. ES3-3025_Apr08)	Apr-09
DAE4	SN: 601	07-Mar-09 (No. DAE4-601_Mar09)	Mar-10

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-07)	In house check: Oct-09
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-08)	In house check: Oct-09

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: April 22, 2009

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "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 Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V5.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.0 ± 6 %	1.82 mho/m ± 6 %
Head TSL temperature during test	(22.0 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.6 mW / g
SAR normalized	normalized to 1W	54.4 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**53.7 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.29 mW / g
SAR normalized	normalized to 1W	25.2 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**25.0 mW /g ± 16.5 % (k=2)**

[1] Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.4 ± 6 %	1.98 mho/m ± 6 %
Body TSL temperature during test	(22.0 ± 0.2) °C	---	---

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	12.9 mW / g
SAR normalized	normalized to 1W	51.6 mW / g
SAR for nominal Body TSL parameters [2]	normalized to 1W	**51.6 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.05 mW / g
SAR normalized	normalized to 1W	24.2 mW / g
SAR for nominal Body TSL parameters [2]	normalized to 1W	**24.2 mW /g ± 16.5 % (k=2)**

[2] Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	54.5 Ω + 4.7 jΩ
Return Loss	- 24.1 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	49.2 Ω + 5.6 jΩ
Return Loss	- 24.8 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.160 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 11, 2008

DASY5 Validation Report for Head TSL

Date/Time: 17.04.2009 12:17:23

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN825

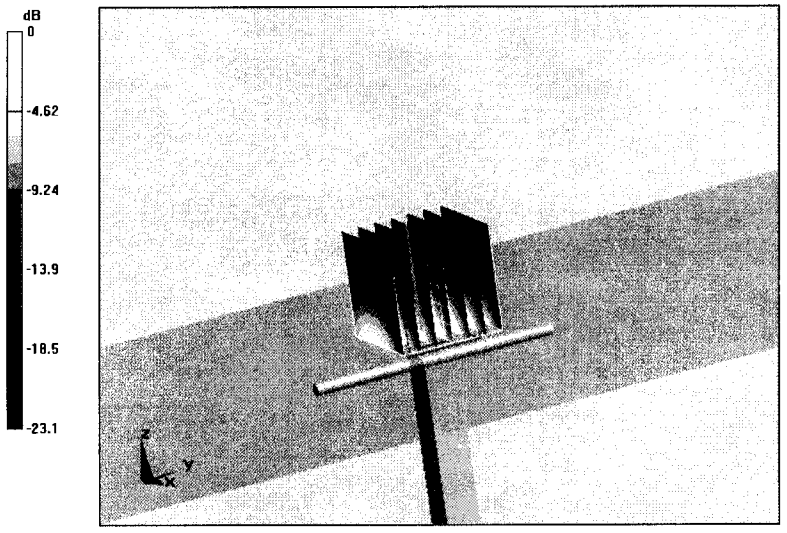
Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: HSL U10 BB
Medium parameters used: f = 2450 MHz; σ = 1.82 mho/m; ε_r = 38; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV2 - SN3025; ConvF(4.4, 4.4, 4.4); Calibrated: 28.04.2008
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.03.2009
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

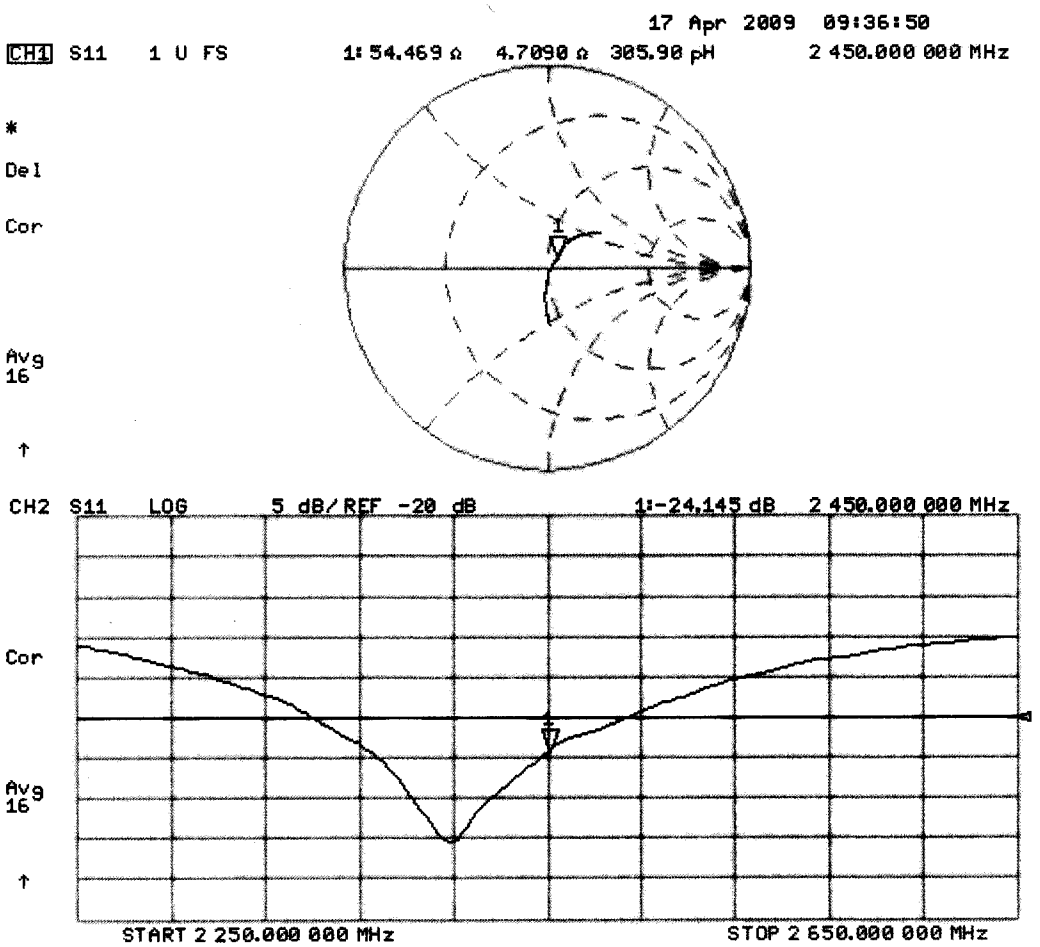
Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 97.1 V/m; Power Drift = 0.026 dB
Peak SAR (extrapolated) = 28.4 W/kg
SAR(1 g) = 13.6 mW/g; SAR(10 g) = 6.29 mW/g
Maximum value of SAR (measured) = 17.7 mW/g



0 dB = 17.7mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date/Time: 17.04.2009 14:54:34

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:825

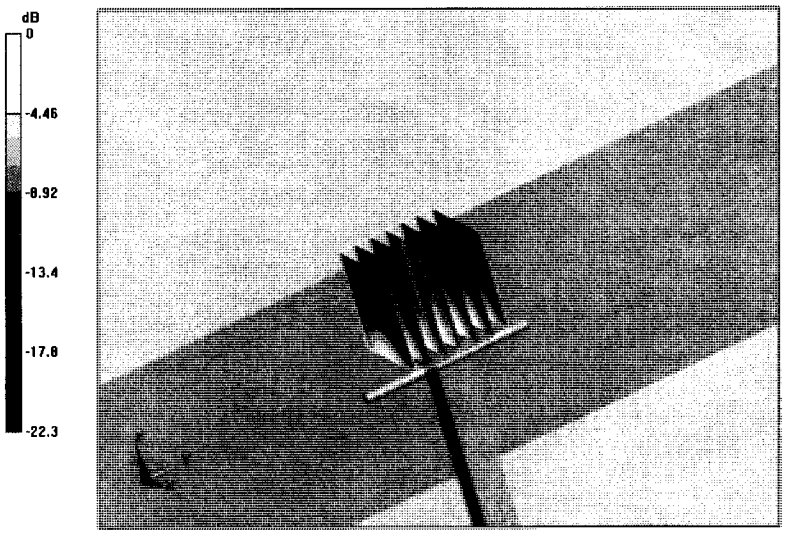
Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: MSL U10 BB
Medium parameters used: f = 2450 MHz; σ = 1.98 mho/m; ε_r = 54.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV2 - SN3025; ConvF(4.07, 4.07, 4.07); Calibrated: 28.04.2008
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.03.2009
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

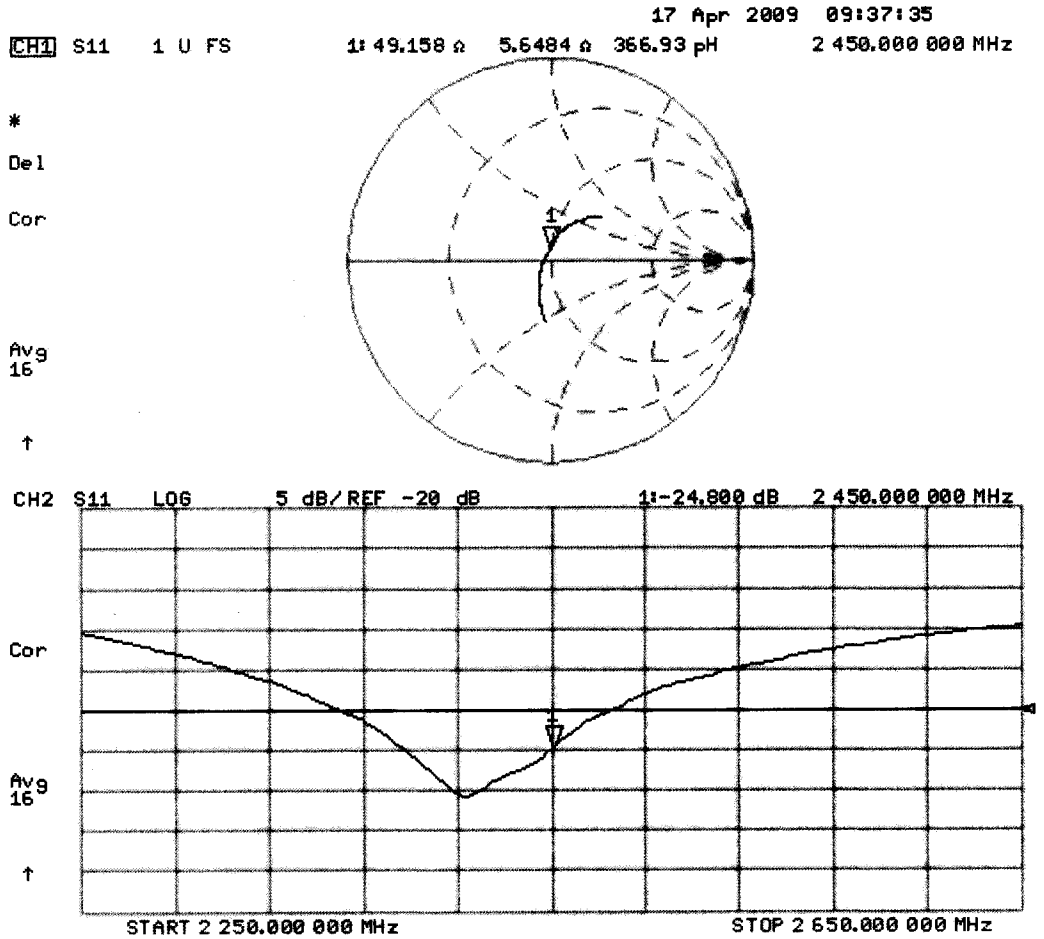
Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 91.6 V/m; Power Drift = 0.046 dB
Peak SAR (extrapolated) = 26.1 W/kg
SAR(1 g) = 12.9 mW/g; SAR(10 g) = 6.05 mW/g
Maximum value of SAR (measured) = 16.6 mW/g



0 dB = 16.6mW/g

Impedance Measurement Plot for Body TSL



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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client **Caltech**

Certificate No: D5GHzV2-1031_Apr09

CALIBRATION CERTIFICATE

Object	**D5GHzV2 - SN: 1031**
Calibration procedure(s)	**QA CAL-22.v1** **Calibration procedure for dipole validation kits between 3-6 GHz**
Calibration date:	**April 29, 2009**
Condition of the calibrated item	**In Tolerance**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	08-Oct-08 (No. 217-00898)	Oct-09
Power sensor HP 8481A	US37292783	08-Oct-08 (No. 217-00898)	Oct-09
Reference 20 dB Attenuator	SN: 5086 (20g)	31-Mar-09 (No. 217-01025)	Mar-10
Type-N mismatch combination	SN: 5047.2 / 06327	31-Mar-09 (No. 217-01029)	Mar-10
Reference Probe EX3DV4	SN: 3503	11-Mar-09 (No. EX3-3503_Mar09)	Mar-10
DAE4	SN: 601	07-Mar-09 (No. DAE4-601_Mar09)	Mar-10

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-07)	In house check: Oct-09
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-08)	In house check: Oct-09

	Name	Function	Signature
Calibrated by:	**Claudio Leubler**	**Laboratory Technician**	
Approved by:	**Katja Pokovic**	**Technical Manager**	

Issued: April 29, 2009

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEC Std 62209 Part 2, "Evaluation of Human Exposure to Radio Frequency Fields from Handheld and Body-Mounted Wireless Communication Devices in the Frequency Range of 30 MHz to 6 GHz: Human models, Instrumentation, and Procedures"; Part 2: "Procedure to determine the Specific Absorption Rate (SAR) for including accessories and multiple transmitters", Draft Version 0.9, December 2004

b) Federal Communications Commission Office of Engineering & Technology (FCC OET), "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 Bulletin 65

Additional Documentation:

c) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V5.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Area Scan resolution	dx, dy = 10 mm	
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 2.5 mm	
Frequency	5200 MHz ± 1 MHz 5500 MHz ± 1 MHz 5800 MHz ± 1 MHz	

Body TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	49.0	5.30 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	47.5 ± 6 %	5.37 mho/m ± 6 %
Body TSL temperature during test	(22.0 ± 0.2) °C	----	----

SAR result with Body TSL at 5200 MHz

SAR averaged over 1 cm³ (1 g) of Body TSL	condition	
SAR measured	100 mW input power	7.63 mW / g
SAR normalized	normalized to 1W	76.3 mW / g
SAR for nominal Body TSL parameters [1]	normalized to 1W	**75.8 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.13 mW / g
SAR normalized	normalized to 1W	21.3 mW / g
SAR for nominal Body TSL parameters [1]	normalized to 1W	**21.2 mW / g ± 19.5 % (k=2)**

[1] Correction to nominal TSL parameters according to c), chapter "SAR Sensitivities

Body TSL parameters at 5500 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.6	5.65 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.8 ± 6 %	5.74 mho/m ± 6 %
Body TSL temperature during test	(22.0 ± 0.2) °C	----	----

SAR result with Body TSL at 5500 MHz

SAR averaged over 1 cm³ (1 g) of Body TSL	condition	
SAR measured	100 mW input power	8.01 mW / g
SAR normalized	normalized to 1W	80.1 mW / g
SAR for nominal Body TSL parameters [1]	normalized to 1W	**79.5 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.22 mW / g
SAR normalized	normalized to 1W	22.2 mW / g
SAR for nominal Body TSL parameters [1]	normalized to 1W	**22.0 mW / g ± 19.5 % (k=2)**

Body TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.2	6.00 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.1 ± 6 %	6.13 mho/m ± 6 %
Body TSL temperature during test	(22.0 ± 0.2) °C	----	----

SAR result with Body TSL at 5800 MHz

SAR averaged over 1 cm³ (1 g) of Body TSL	condition	
SAR measured	100 mW input power	6.82 mW / g
SAR normalized	normalized to 1W	68.2 mW / g
SAR for nominal Body TSL parameters [1]	normalized to 1W	**67.7 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	1.89 mW / g
SAR normalized	normalized to 1W	18.9 mW / g
SAR for nominal Body TSL parameters [1]	normalized to 1W	**18.7 mW / g ± 19.5 % (k=2)**

[1] Correction to nominal TSL parameters according to c), chapter "SAR Sensitivities

Appendix

Antenna Parameters with Body TSL at 5200 MHz

Impedance, transformed to feed point	50.1 Ω - 6.7 jΩ
Return Loss	-23.5 dB

Antenna Parameters with Body TSL at 5500 MHz

Impedance, transformed to feed point	51.6 Ω - 3.3 jΩ
Return Loss	-29.0 dB

Antenna Parameters with Body TSL at 5800 MHz

Impedance, transformed to feed point	59.4 Ω - 3.5 jΩ
Return Loss	-20.8 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.197 ns

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

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	July 09, 2004

DASY5 Validation Report for Body TSL

29.04.2009 13:52:12

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHz; Serial: D5GHzV2 - SN:1031

Communication System: CW-5GHz; Frequency: 5200 MHzFrequency: 5500 MHzFrequency: 5800 MHz; Duty Cycle: 1:1
Medium: MSL 5800 MHz
Medium parameters used: f = 5200 MHz; σ = 5.37 mbo/m; ε_r = 47.5; ρ = 1000 kg/m^3
Medium parameters used: f = 5500 MHz; σ = 5.74 mbo/m; ε_r = 46.8; ρ = 1000 kg/m^3
Medium parameters used: f = 5800 MHz; σ = 6.13 mho/m; ε_r = 46.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

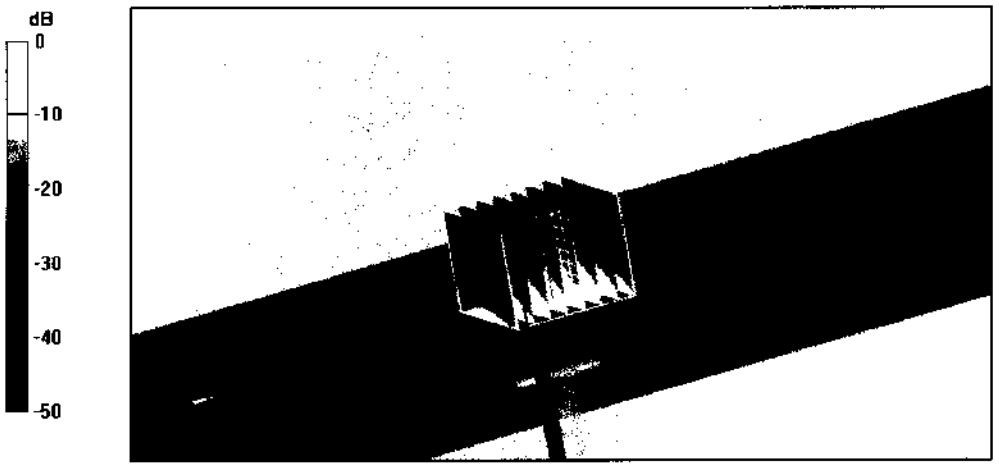
DASY5 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(4.88, 4.88, 4.88)ConvF(4.37, 4.37, 4.37)ConvF(4.57, 4.57, 4.57); Calibrated: 11.03.2009
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.03.2009
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

d=10mm, Pin=100mW, f=5200 MHz/Zoom Scan (8x8x10), dist=2mm (8x8x10)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 49.6 V/m; Power Drift = 0.00494 dB
Peak SAR (extrapolated) = 28.5 W/kg
SAR(1 g) = 7.63 mW/g; SAR(10 g) = 2.13 mW/g
Maximum value of SAR (measured) = 15.7 mW/g

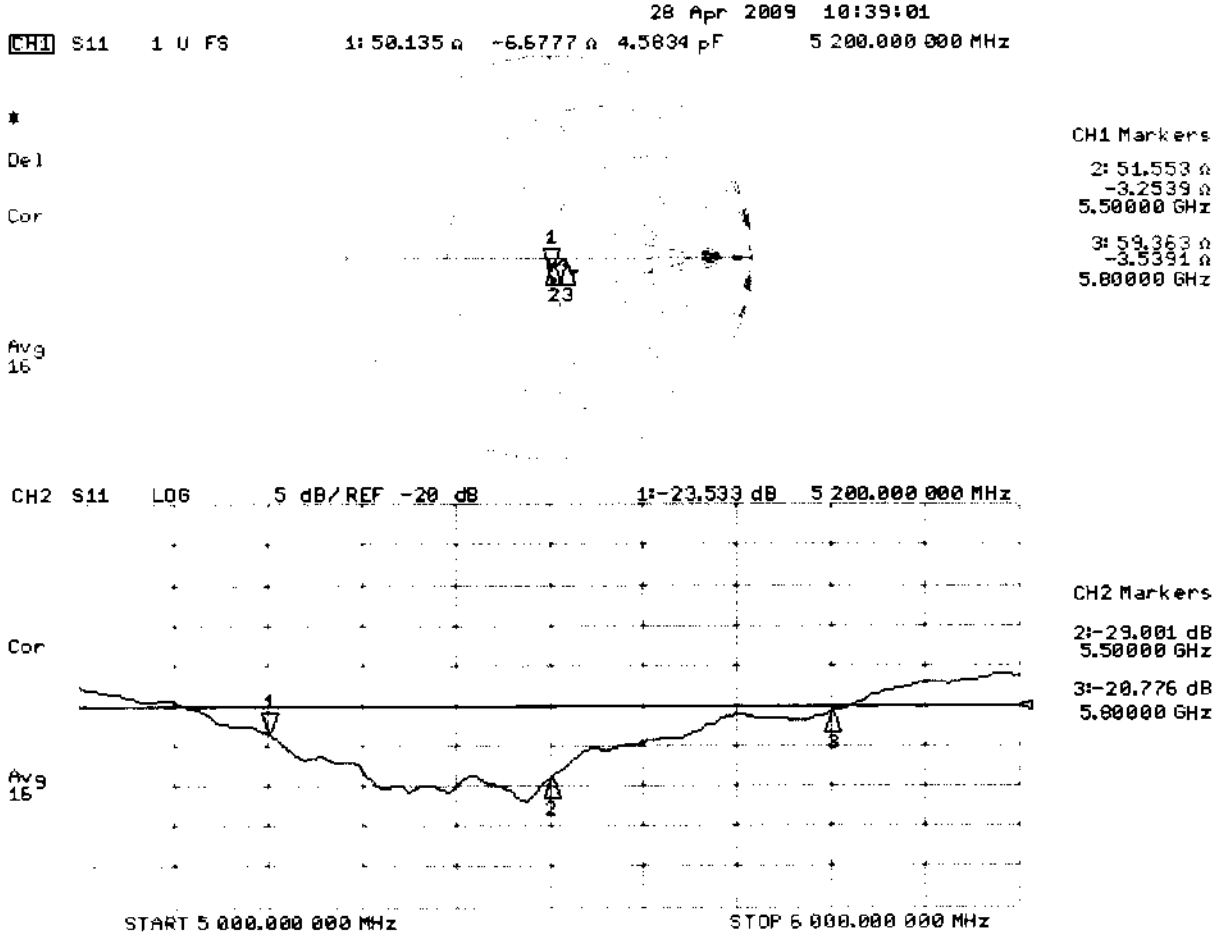
d=10mm, Pin=100mW, f=5500 MHz/Zoom Scan (8x8x10), dist=2mm (8x8x10)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 49 V/m; Power Drift = -0.016 dB
Peak SAR (extrapolated) = 32 W/kg
SAR(1 g) = 8.01 mW/g; SAR(10 g) = 2.22 mW/g
Maximum value of SAR (measured) = 16.8 mW/g

d=10mm, Pin=100mW, f=5800 MHz/Zoom Scan (8x8x10), dist=2mm (8x8x10)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 43.7 V/m; Power Drift = -0.029 dB
Peak SAR (extrapolated) = 28.9 W/kg
SAR(1 g) = 6.82 mW/g; SAR(10 g) = 1.89 mW/g
Maximum value of SAR (measured) = 14.4 mW/g



0 dB = 14.4mW/g

Impedance Measurement Plot for Body TSL



APPENDIX G - PROBE CALIBRATION

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client Celltech

Certificate No: EX3-3600_Jun11

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3600

Calibration procedure(s): QA CAL-01.v8, QA CAL-14.v3, QA CAL-23.v4, QA CAL-25.v4
Calibration procedure for dosimetric E-field probes

Calibration date: June 23, 2011

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	31-Mar-11 (No. 217-01372)	Apr-12
Power sensor E4412A	MY41498087	31-Mar-11 (No. 217-01372)	Apr-12
Reference 3 dB Attenuator	SN: S5054 (3c)	29-Mar-11 (No. 217-01369)	Apr-12
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Reference 30 dB Attenuator	SN: S5129 (30b)	29-Mar-11 (No. 217-01370)	Apr-12
Reference Probe ES3DV2	SN: 3013	29-Dec-10 (No. ES3-3013_Dec10)	Dec-11
DAE4	SN: 654	3-May-11 (No. DAE4-654_May11)	May-12
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-10)	In house check: Oct-11

	Name	Function	Signature
Calibrated by:	Katja Pokovic	Technical Manager	
Approved by:	Niels Kuster	Quality Manager	

Issued: June 23, 2011

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS) **Accreditation No.: SCS 108**
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z, VRx,y,z: A, B, C* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Probe EX3DV4

SN:3600

Manufactured: January 10, 2007
Calibrated: June 23, 2011

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3600

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.50	0.49	0.39	± 10.1 %
DCP (mV)[B]	97.5	102.4	99.3	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc[E] (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	119.9	±3.0 %
			Y	0.00	0.00	1.00	105.4	
			Z	0.00	0.00	1.00	102.1	

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 E^2-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3600

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
1810	40.0	1.40	7.38	7.38	7.38	0.69	0.66	± 12.0 %
1950	40.0	1.40	7.10	7.10	7.10	0.71	0.64	± 12.0 %
2450	39.2	1.80	6.55	6.55	6.55	0.56	0.73	± 12.0 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

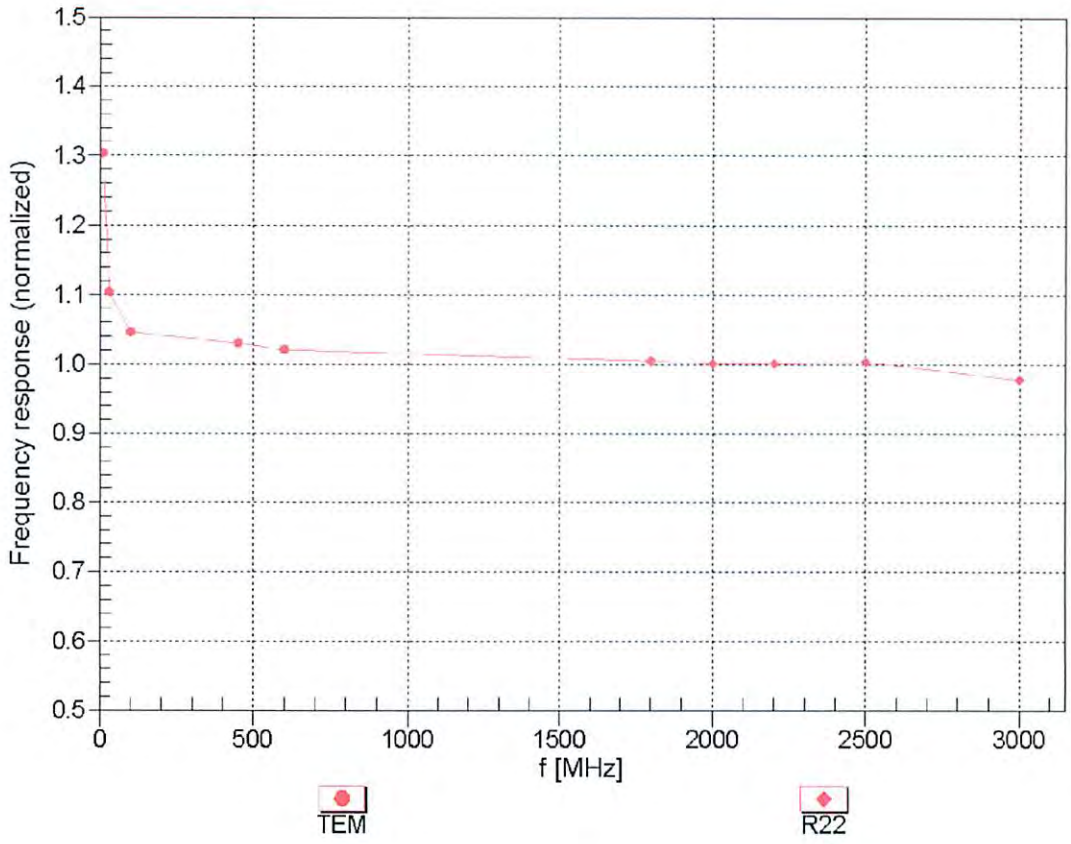
DASY/EASY - Parameters of Probe: EX3DV4- SN:3600

Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
1810	53.3	1.52	6.71	6.71	6.71	0.79	0.66	± 12.0 %
1950	53.3	1.52	6.61	6.61	6.61	0.79	0.64	± 12.0 %
2450	52.7	1.95	6.15	6.15	6.15	0.79	0.61	± 12.0 %
5200	49.0	5.30	3.91	3.91	3.91	0.50	1.90	± 13.1 %
5500	48.6	5.65	3.38	3.38	3.38	0.55	1.90	± 13.1 %
5800	48.2	6.00	3.39	3.39	3.39	0.60	1.90	± 13.1 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

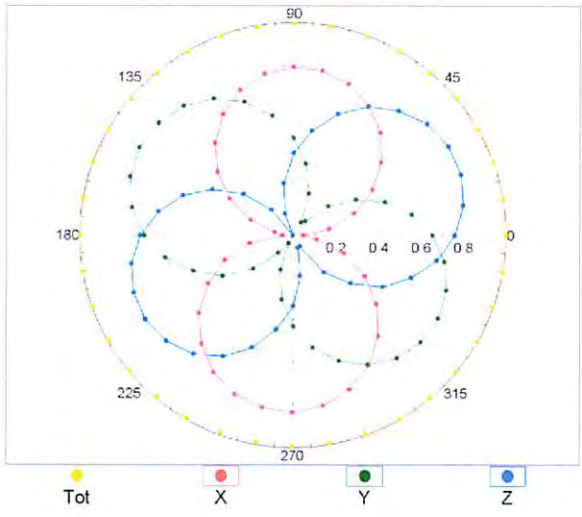
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



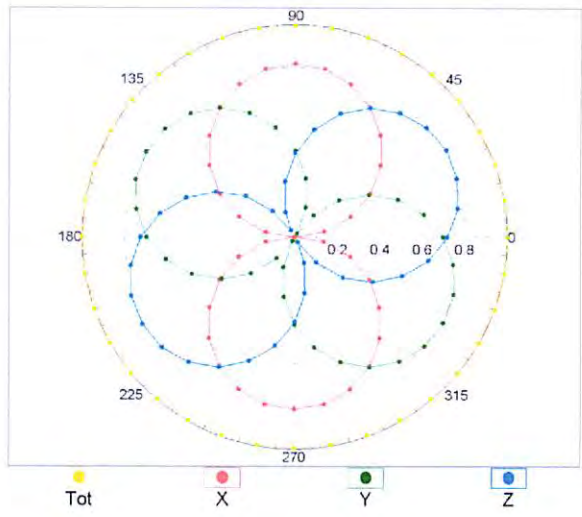
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

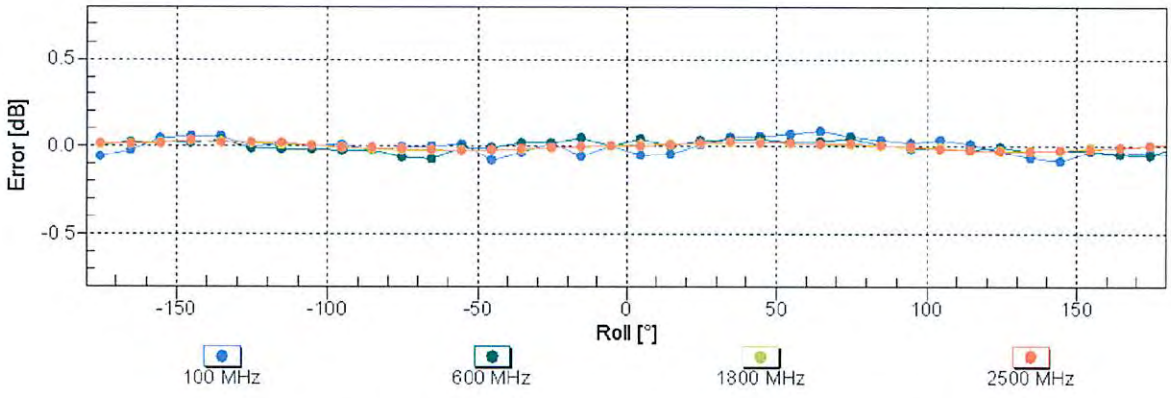
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



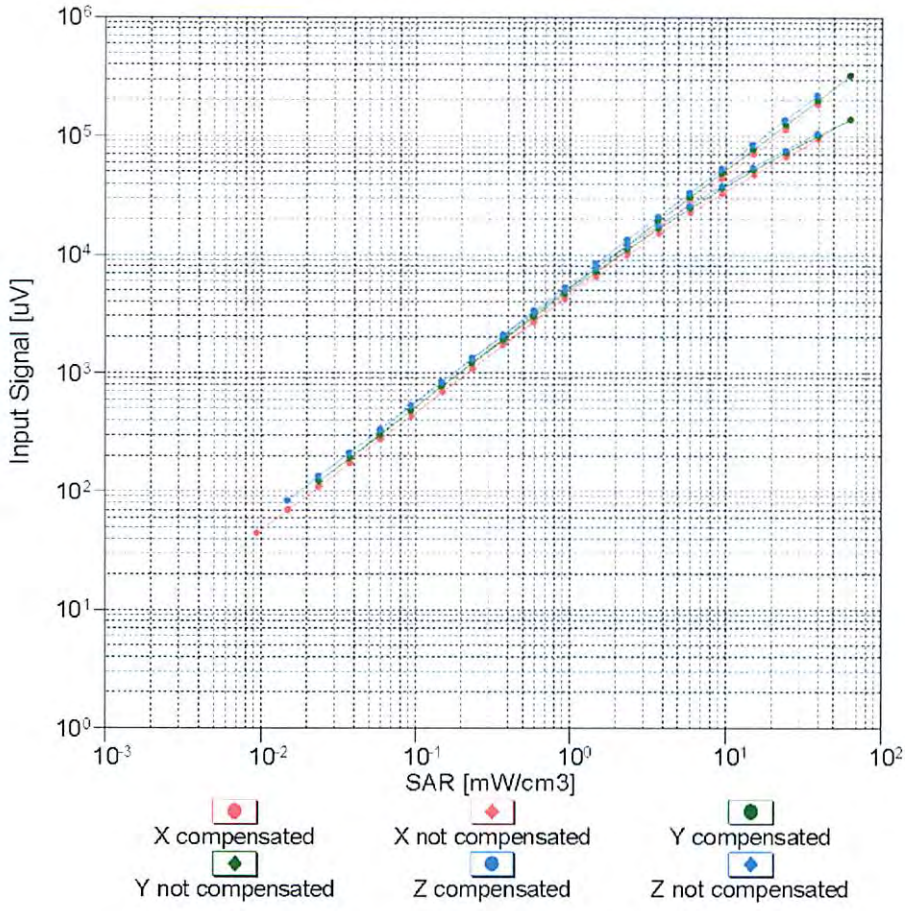
f=1800 MHz,R22

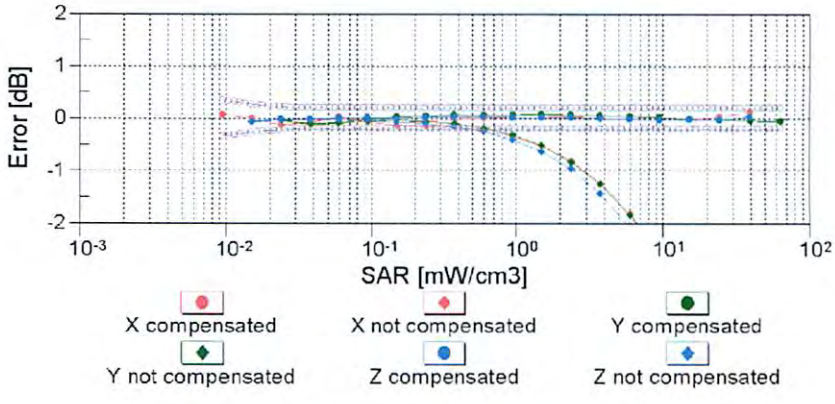




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})
(TEM cell , f = 900 MHz)

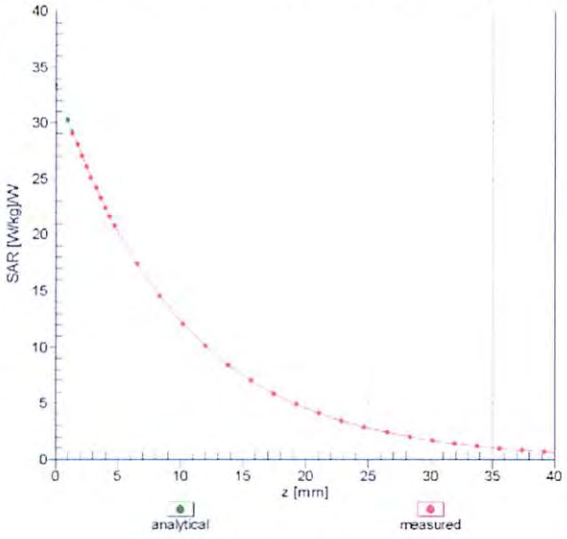




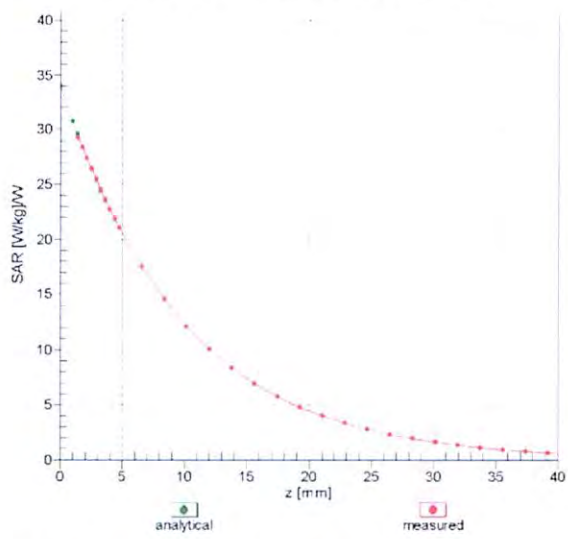
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment

f = 2450 MHz,WGLS R22 (H_convF)

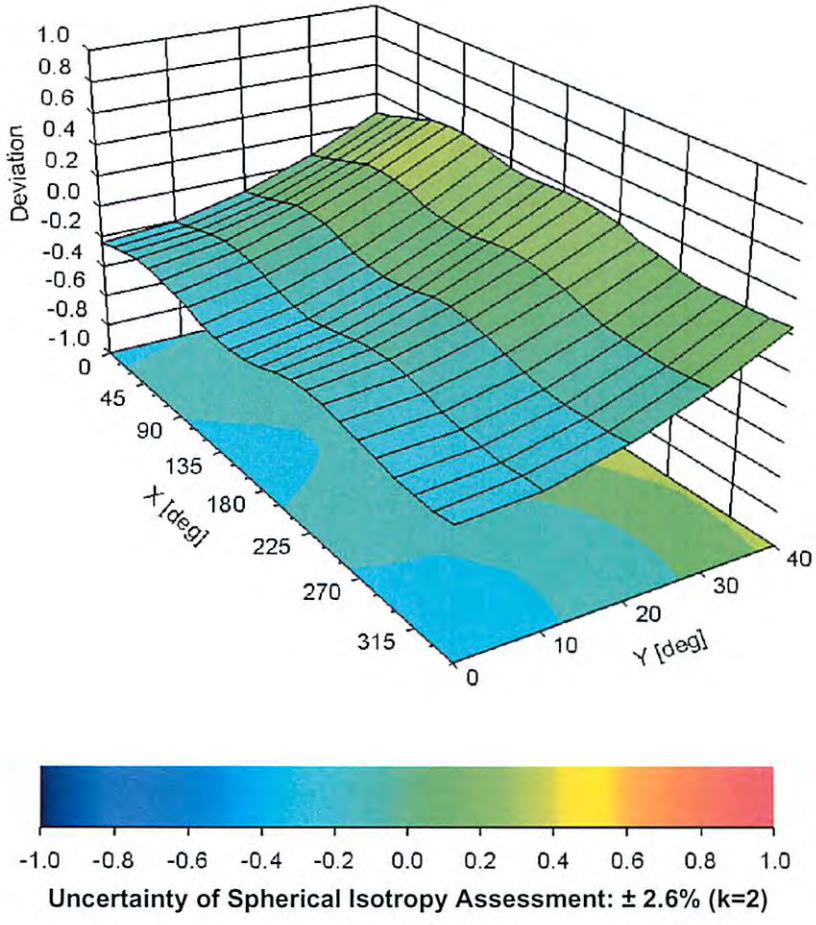


f = 2450 MHz,WGLS R22 (M_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3600

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	Not applicable
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	2 mm

APPENDIX H - SAM TWIN PHANTOM V4.0C 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
Zeughausstrasse 43, CH-8004 Zurich
Tel. +41 1 245 97 00, Fax +41 1 245 97 79