






	<u>Date(s) of Evaluation</u> May 12 & 14, 2008	<u>Test Report Serial No.</u> 050508KBC-T901-S24C	<u>Test Report Revision No.</u> Rev. 1.0 (Initial Release)	  Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> June 06, 2008	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

## SAR TEST REPORT (FCC/IC)


RF EXPOSURE EVALUATION		SPECIFIC ABSORPTION RATE	
APPLICANT	GENERAL DYNAMICS ITRONIX CORPORATION		
DEVICE UNDER TEST (DUT)	DUAL-BAND CDMA/EVDO MINI-PCI EXPRESS CARD		
DEVICE MODEL(S)	IX-MC5725		
DEVICE IDENTIFIER(S)	FCC ID:	KBCIX-MC5725	IC: 1943A-MC5725
HOST PC	GD ITRONIX CORP. RUGGED HANDHELD PC MODEL: IX750		
APPLICATION TYPE	Class II Permissive Change (LMA) - Add IX750 Host PC		
STANDARD(S) APPLIED	FCC 47 CFR §2.1093		
	Health Canada Safety Code 6		
PROCEDURE(S) APPLIED	FCC OET Bulletin 65, Supplement C (01-01)		
	FCC OET SAR Measurement Procedures for 3G Devices (Rev. 2.0)		
	Industry Canada RSS-102 Issue 2		
	IEEE 1528-2003		
FCC DEVICE CLASSIFICATION(S)	PCS Licensed Transmitter (PCB)	47 CFR §24 Subpart E	
IC DEVICE CLASSIFICATION(S)	2 GHz Personal Communication Services	RSS-133 Issue 4	
	800 MHz Cellular Telephones Employing New Technologies	RSS-132 Issue 2	
RF EXPOSURE CATEGORY	General Population / Uncontrolled		
DATE(S) OF EVALUATION(S)	May 12 & 14, 2008		
TEST REPORT SERIAL NO.	050508KBC-T901-S24C		
TEST REPORT REVISION NO.	Revision 1.0	Initial Release	June 06, 2008
TEST REPORT SIGNATORIES	Testing Performed By		Test Report Prepared By
	Sean Johnston Celltech Labs Inc.		Jonathan Hughes Celltech Labs Inc.
TEST LAB AND LOCATION	Celltech Compliance Testing and Engineering Lab		
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	info@celltechlabs.com		www.celltechlabs.com
TEST LAB ACCREDITATION(S)	  Test Lab Certificate No. 2470.01		



Applicant:	GD Itronix Corporation	FCC ID:	KBCIX-MC5725	IC:	1943A-MC5725	
Model(s):	IX-MC5725	DUT Type:	Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC			
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## DECLARATION OF COMPLIANCE SAR RF EXPOSURE EVALUATION



<b>Test Lab Information</b>	<b>Name</b>	CELLTECH LABS INC.					
	<b>Address</b>	21-364 Lougheed Road, Kelowna B.C. V1X 7R8 Canada					
<b>Applicant Information</b>	<b>Name</b>	GENERAL DYNAMICS ITRONIX CORPORATION					
	<b>Address</b>	12825 E. Mirabeau Parkway, Spokane Valley, WA 92216 USA					
<b>Standard(s) Applied</b>	<b>FCC</b>	47 CFR §2.1093			<b>IC</b>	Health Canada Safety Code 6	
<b>Procedure(s) Applied</b>	<b>FCC</b>	OET Bulletin 65, Supplement C (01-01)			OET SAR Measurement Procedures for 3G Devices (Rev. 2.0)		
	<b>IC</b>	RSS-102 Issue 2			<b>IEEE</b>	1528-2003	
<b>Device Classification(s)</b>	<b>FCC</b>	PCS Licensed Transmitter (PCB)			47 CFR §24(E)		
	<b>IC</b>	2 GHz Personal Communication Services			RSS-133 Issue 4		
		800 MHz Cellular Telephones Employing New Technologies			RSS-132 Issue 2		
<b>Application Type</b>	<b>FCC/IC</b>	Class II Permissive Change		Add New Host PC - GD Itronix Corp. Rugged Handheld PC Model: IX750			
<b>Device Identifier(s)</b>	<b>FCC ID:</b>	KBCIX-MC5725		<b>IC:</b>	1943A-MC5725	<b>Model</b>	IX-MC5725
<b>Device Under Test (DUT)</b>	Dual-Band CDMA/EVDO Mini-PCI Express Card			<b>Modes</b>	CDMA 1xRTT	1xEv-Do Rev. 0	1xEv-DO Rev. A
<b>Host PC Description</b>	Rugged Handheld PC Model: IX750			<b>Manufacturer</b>	General Dynamics Itronix Corporation		
<b>Co-located Transmitter(s)</b>	IX-WL3945 802.11abg WLAN Mini-PCI Card			<b>FCC ID:</b>	KBCIX-WL3945	Does not co-transmit with IX-MC5725	
	IX-EYXFDC Class 2 Bluetooth Module			<b>FCC ID:</b>	KBCIX-EYXFDC	Does co-transmit with IX-MC5725	
	Note: The Bluetooth transmitter antenna output power is < 60/f <sub>(GHz)</sub> mW and is located > 5 cm from all other simultaneous transmitting antennas; therefore simultaneous transmission SAR evaluation is not required (per FCC OET "SAR Evaluation Considerations for Laptop Computers with Antennas Built-in on Display Screens" (FCC KDB 616217 D01 v01)).						
<b>Test Sample Serial No.(s)</b>	IX-MC5725	D240508313520	Production Unit	IX750 Host PC	ZZGEG8059ZZ7258	Identical Prototype	
<b>Transmit Frequency Range(s)</b>	<b>Cell Band</b>	824.70 - 848.31 MHz			<b>PCS Band</b>	1851.25 - 1908.75 MHz	
<b>Max. RF Output Power Tested</b>	<b>Band</b>	<b>Mode</b>	<b>Frequency</b>	<b>Channel</b>	<b>dBm</b>	<b>Watts</b>	<b>Method</b>
	PCS	1xEv-Do Rev. 0 (RTAP, 153.6 kbps)	1851.25 MHz	25	24.95	0.313	Av. Conducted
			1880.00 MHz	600	25.0	0.316	Av. Conducted
			1908.75 MHz	1175	24.8	0.302	Av. Conducted
	Cellular	1xEv-Do Rev. 0 (RTAP, 153.6 kbps)	824.70 MHz	1013	24.6	0.288	Av. Conducted
			836.52 MHz	384	24.6	0.288	Av. Conducted
			848.31 MHz	777	24.5	0.282	Av. Conducted
<b>Antenna Type(s) Tested</b>	Internal (Top Right Side of LCD Display)						
<b>Power Source(s) Tested</b>	Lithium-ion Rechargeable Smart Battery (Standard Capacity)			7.4V	4.0Ah	Model: IX750-29WHR	
	Note: Extended Capacity Smart Battery not tested due to thickness and increased spacing (2.5 cm antenna spacing)						
<b>Configuration(s) Tested</b>	Bottom Side of Handheld PC - 0.0 cm Separation Distance - LCD Display Lid Fully Extended - 2.0 cm antenna spacing						
<b>Max. SAR Level(s) Evaluated</b>	Body	<b>0.138 W/kg</b>	1g average	PCS Band	FCC/IC SAR Limit	1.6 W/kg	1g average
		<b>0.073 W/kg</b>	1g average	Cellular Band	FCC/IC SAR Limit	1.6 W/kg	1g average
Celltech Labs Inc. declares under its sole responsibility that this wireless 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), FCC OET SAR Measurement Procedures for 3G Devices (Rev. 2.0), Industry Canada RSS-102 Issue 2 and IEEE 1528-2003. 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.							
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<b>Test Report Approved By</b>			<b>Sean Johnston</b>	<b>Celltech Labs Inc.</b>			

<b>Applicant:</b>	GD Itronix Corporation	<b>FCC ID:</b>	KBCIX-MC5725	<b>IC:</b>	1943A-MC5725	
<b>Model(s):</b>	IX-MC5725	<b>DUT Type:</b>	Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC			
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	<u>Test Report Issue Date</u> June 06, 2008	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

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<b>Applicant:</b>	<b>GD Itronix Corporation</b>	<b>FCC ID:</b>	<b>KBCIX-MC5725</b>	<b>IC:</b>	<b>1943A-MC5725</b>	
<b>Model(s):</b>	<b>IX-MC5725</b>	<b>DUT Type:</b>	<b>Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC</b>			
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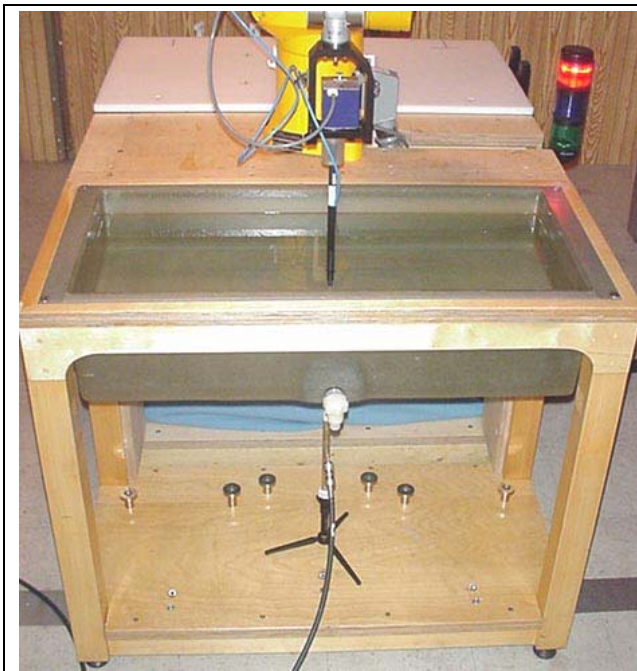
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## 1.0 INTRODUCTION

This measurement report demonstrates that the General Dynamics Itronix Corporation Model: IX-MC5725 Dual-Band CDMA/EVDO Embedded PC Card installed in the IX750 Rugged Handheld PC complies with the SAR (Specific Absorption Rate) RF exposure requirements specified in FCC 47 CFR §2.1093 (see reference [1]) and Health Canada's Safety Code 6 (see reference [2]) for the General Population / Uncontrolled Exposure environment. The test procedures described in FCC OET Bulletin 65, Supplement C, Edition 01-01 (see reference [3]), FCC OET SAR Measurement Procedures for 3G Devices, Rev. 2.0 (see reference [4], Industry Canada RSS-102 Issue 2 (see reference [6]) and IEEE 1528-2003 (see reference [7]) were employed. A description of the product and 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 brain and/or body SAR evaluations. The robot is a six-axis industrial robot performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF). A cell controller system contains the power supply, robot controller, teach pendant (Joystick), and remote control, is used to drive the robot motors. The Staubli robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the DASY4 measurement server. The DAE4 utilizes a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16-bit AD-converter and a command decoder and control logic unit. Transmission to the DASY4 measurement server is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe-mounting device includes two different sensor systems for frontal and sidewise probe contacts. The sensor systems are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer.





DASY4 Measurement System with Fiberglass Planar Phantom



DASY4 Measurement Server

<b>Applicant:</b>	GD Itronix Corporation	<b>FCC ID:</b>	KBCIX-MC5725	<b>IC:</b>	1943A-MC5725	
<b>Model(s):</b>	IX-MC5725	<b>DUT Type:</b>	Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC			
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### 3.0 OUTPUT POWER MEASUREMENTS

#### 1xEv-Do Rev. 0

##### Power Measurement Procedures

This procedure assumes the Agilent 8960 Series 10 E5515C Wireless Communications Test Set contains the following applications installed and with valid license.

Application	Rev. License
1xEv-Do Terminal Test	A.07.13, L


##### FTAP



- Call Setup → Shift & Preset
- Protocol Rev → 0 (1xEv-Do)
- Application Config → Enhanced Test Application Protocol → FTAP
- FTAP Rate → 307.2 kbps (2 Slot, QPSK)
- Access Network Info → Cell Parameters → Sector ID → 00840AC0 → Subnet Mask → 0
- Generator Info → Termination Parameters → Max Forward Packet Duration → 16 Slots
- Rvs Power Ctrl → All Bits Up (to get the maximum power)

##### RTAP

- Call Setup → Shift & Preset
- Protocol Rev → 0 (1xEv-Do)
- Application Config → Enhanced Test Application Protocol → RTAP
- RTAP Rate → 153.6 kbps
- Access Network Info → Cell Parameters → Sector ID → 00840AC0 → Subnet Mask → 0
- Generator Info → Termination Parameters → Max Forward Packet Duration → 16 Slots
- Rvs Power Ctrl → All Bits Up (to get the maximum power)

PRELIMINARY MEASUREMENTS								
Band	Freq. (MHz)	Channel	Average Conducted Output Power			Average Conducted Output Power		
			RTAP Rate (kbps)	dBm	Watts	FTAP Rate (kbps)	dBm	Watts
PCS	1880.00	600	9.6	24.8	0.302	307.2 (2 slot)	24.9	0.309
			19.2	24.7	0.295			
			38.4	24.8	0.302			
			76.8	24.9	0.309			
			<b>153.6</b>	<b>25.0</b>	<b>0.316</b>			
Cellular	836.52	384	9.6	23.4	0.219	307.2 (2 slot)	23.5	0.224
			19.2	23.5	0.224			
			38.4	23.7	0.234			
			76.8	24.1	0.257			
			<b>153.6</b>	<b>24.6</b>	<b>0.288</b>			
WORST-CASE MEASUREMENTS								
Band	Freq. (MHz)	Channel	Average Conducted Output Power			Average Conducted Output Power		
			RTAP Rate (kbps)	dBm	Watts	FTAP Rate (kbps)	dBm	Watts
PCS	1851.25	25	153.6	24.95	0.313	307.2 (2 slot)	-	-
	1880.00	600		25.0	0.316		24.9	0.309
	1908.75	1175		24.8	0.302		-	-
Cellular	824.70	1013	153.6	24.6	0.288	307.2 (2 slot)	-	-
	836.52	384		24.6	0.288		23.5	0.224
	848.31	777		24.5	0.282		-	-

<b>Applicant:</b>	<b>GD Itronix Corporation</b>	<b>FCC ID:</b>	<b>KBCIX-MC5725</b>	<b>IC:</b>	<b>1943A-MC5725</b>	
<b>Model(s):</b>	<b>IX-MC5725</b>	<b>DUT Type:</b>	<b>Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC</b>			
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## OUTPUT POWER MEASUREMENTS (Cont.)

### 1xEv-Do Rev. A

#### Power Measurement Procedures

This procedure assumes the Agilent 8960 Series 10 E5515C Wireless Communications Test Set contains the following applications installed and with valid license.

#### Application

1xEv-Do Terminal Test

#### Rev. License

A.07.13, L


#### FETAP




- Call Setup → Shift & Preset
- Protocol Rev → A (1xEv-Do-A)
- Application Config → Enhanced Test Application Protocol → FETAP
- FTAP Rate → 307.2 kbps (2 Slot, QPSK)
- Protocol Subtype Config → Release A Physical Layer Subtype → Subtype 0
- Access Network Info → Cell Parameters → Sector ID → 00840AC0 → Subnet Mask → 0
- Generator Info → Termination Parameters > Max Forward Packet Duration → 16 Slots
- Rvs Power Ctrl → All Bits Up (to get the maximum power)

#### RETAP

- Call Setup → Shift & Preset
- Protocol Rev → A (1xEv-Do-A)
- Application Config → Enhanced Test Application Protocol → RETAP
- F-Traffic Format → 4 (1024, 2,128) Canonical (307.2k, QPSK)
- R-Data Pkt Size → 4096
- Protocol Subtype Config → Release A Physical Layer Subtype → Subtype 2  
→ PL Subtype 2 Access Channel MAC Subtype → Default (Subtype 0)
- Access Network Info → Cell Parameters → Sector ID → 00840AC0 → Subnet Mask → 0
- Generator Info → Termination Parameters → Max Forward Packet Duration > 16 Slots  
→ ACK R-Data After > Subpacket 0 (All ACK)
- Rvs Power Ctrl → All Bits Up (to get the maximum power)

*(see next page for conducted output power measurement data)*

<b>Applicant:</b>	<b>GD Itronix Corporation</b>	<b>FCC ID:</b>	<b>KBCIX-MC5725</b>	<b>IC:</b>	<b>1943A-MC5725</b>	
<b>Model(s):</b>	<b>IX-MC5725</b>	<b>DUT Type:</b>	<b>Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC</b>			
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## OUTPUT POWER MEASUREMENTS (Cont.)

### 1xEV-Do Rev. A (Cont.)

PRELIMINARY MEASUREMENTS								
Band	Freq. (MHz)	Channel	Average Conducted Output Power			Average Conducted Output Power		
			RETAP Rate (bps)	dBm	Watts	FETAP Rate (kbps)	dBm	Watts
PCS	1880.00	600	128	24.4	0.275	307.2 (2 slot)	24.65	0.292
			256	24.6	0.288	307.2 (4 slot)	24.7	0.295
			512	24.6	0.288			
			768	24.65	0.292			
			1024	24.75	0.299			
			1536	24.8	0.302			
			2048	24.8	0.302			
			3072	24.9	0.309			
			4096	24.9	0.309			
			6144	24.9	0.309			
			8192	24.9	0.309			
12288	24.9	0.309						
Cellular	836.52	384	128	23.9	0.245	307.2 (2 slot)	24.2	0.263
			256	24.0	0.251	307.2 (4 slot)	24.2	0.263
			512	24.1	0.257			
			768	24.2	0.263			
			1024	24.3	0.269			
			1536	24.4	0.275			
			2048	24.3	0.269			
			3072	24.5	0.282			
			4096	24.5	0.282			
			6144	23.8	0.240			
			8192	23.6	0.229			
12288	23.5	0.224						
WORST-CASE MEASUREMENTS								
Band	Freq. (MHz)	Channel	Average Conducted Output Power			Average Conducted Output Power		
			RETAP Rate (bps)	dBm	Watts	FETAP Rate (kbps)	dBm	Watts
PCS	1851.25	25	12288 (16 Slots)	24.9	0.309	307.2 (4 slot)	-	-
	1880.00	600		24.9	0.309		24.7	0.295
	1908.75	1175		24.8	0.302		-	-
Cellular	824.70	1013	4096 (16 Slots)	24.5	0.282	307.2 (4 slot)	-	-
	836.52	384		24.5	0.282		24.2	0.263
	848.31	777		24.4	0.275		-	-

The maximum average output of each RF channel is less than that measured in Subtype 0/1 Physical Layer configurations for Rev. 0, therefore SAR evaluation is not required (per FCC OET SAR Measurement Procedures for 3G Devices Rev. 2.0).

<b>Applicant:</b>	GD Itronix Corporation	<b>FCC ID:</b>	KBCIX-MC5725	<b>IC:</b>	1943A-MC5725	
<b>Model(s):</b>	IX-MC5725	<b>DUT Type:</b>	Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC			
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## OUTPUT POWER MEASUREMENTS (Cont.)

### CDMA 1xRTT

#### Power Measurement Procedures

This procedure assumes the Agilent 8960 Series 10 E5515C Wireless Communications Test Set contains the following applications installed and with valid license.

#### Application

CDMA2000 Mobile Test

#### Rev. License


B.12.12, L

#### 1xRTT



- Call Setup → Shift & Preset
- Protocol Rev → 6 (IS-2000-0)
- Radio Config (RC) → RC3 (Fwd3, Rvs3)
- FCH Service Option (SO) Setup → SO55
- Traffic Data Rate → Full
- Cell info → Cell Parameters → System ID (SID) → 2238 (for Cellular) and 4145 (for PCS)  
→ Network ID (NID) → 65535
- Rvs Power Ctrl → All Bits Up (to get the maximum power)

AVERAGE CONDUCTED OUTPUT POWER							
WORST-CASE MEASUREMENTS							
Band	Freq. (MHz)	Channel	Rate (kbps)	Radio Config. (RC)	Service Option (SO)	dBm	Watts
PCS	1851.25	25	9600	RC3	SO32 (FCH+SCH)	24.8	0.302
	1880.00	600				25.0	0.316
	1908.75	1175				24.7	0.295
Cellular	824.70	1013	9600	RC3	SO32 (FCH+SCH)	24.4	0.275
	836.52	384				24.6	0.288
	848.31	777				24.7	0.295

The maximum average output of each channel is less than ¼ dB higher than that measured in Subtype 0/1 Physical Layer configurations for Rev. 0, therefore SAR evaluation is not required (per FCC OET SAR Measurement Procedures for 3G Devices Rev. 2.0).

<b>Applicant:</b>	GD Itronix Corporation	<b>FCC ID:</b>	KBCIX-MC5725	<b>IC:</b>	1943A-MC5725	
<b>Model(s):</b>	IX-MC5725	<b>DUT Type:</b>	Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC			
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## 4.0 MEASUREMENT SUMMARY



### BODY SAR EVALUATION RESULTS

Test Date	Band	Freq.	Chan.	Test Mode		Host PC Position to Planar Phantom	Host PC LCD Display Position	Antenna Distance to Planar Phantom	Conducted Power Before Test	SAR Drift During Test	Measured SAR 1g	
		MHz							dBm	dB	W/kg	
May 12	Cellular	824.70	1013	Ev-Do Rev. 0	RTAP 307.2 kbps (2 slot)	Bottom Side Touch	Extended	2.0 cm	24.6 Av.	-0.011	0.054	
May 12	Cellular	836.52	384	Ev-Do Rev. 0	RTAP 307.2 kbps (2 slot)	Bottom Side Touch	Extended	2.0 cm	24.6 Av.	-0.177	0.070	
May 12	Cellular	848.31	777	Ev-Do Rev. 0	RTAP 307.2 kbps (2 slot)	Bottom Side Touch	Extended	2.0 cm	24.5 Av.	0.055	0.073	
May 14	PCS	1851.25	25	Ev-Do Rev. 0	RTAP 307.2 kbps (2 slot)	Bottom Side Touch	Extended	2.0 cm	24.95 Av.	-0.058	0.099	
May 14	PCS	1880.00	600	Ev-Do Rev. 0	RTAP 307.2 kbps (2 slot)	Bottom Side Touch	Extended	2.0 cm	25.0 Av.	0.142	0.138	
May 14	PCS	1908.75	1175	Ev-Do Rev. 0	RTAP 307.2 kbps (2 slot)	Bottom Side Touch	Extended	2.0 cm	24.8 Av.	0.074	0.088	
<b>SAR LIMIT(S)</b>				<b>BODY</b>			<b>SPATIAL PEAK</b>		<b>RF EXPOSURE CATEGORY</b>			
<b>FCC 47 CFR 2.1093</b>		<b>Health Canada Safety Code 6</b>			<b>1.6 W/kg</b>			<b>1g average</b>		<b>General Population / Uncontrolled</b>		
<b>Test Date(s)</b>	May 12, 2008				May 14, 2008				<b>Measured Fluid Type</b>	<b>835 MHz</b>	<b>1880 MHz</b>	<b>Unit</b>
<b>Dielectric Constant <math>\epsilon_r</math></b>	<b>835 MHz Body</b>				<b>1880 MHz Body</b>				<b>Relative Humidity</b>	35	35	%
	<b>IEEE Target</b>	<b>Meas.</b>	<b>Dev.</b>	<b>IEEE Target</b>	<b>Meas.</b>	<b>Dev.</b>	<b>Atmospheric Pressure</b>	101.1	101.1	kPa		
	55.2	± 5%	55.8	+1.1%	53.3	± 5%	50.8	-4.7%	<b>Ambient Temperature</b>	22.0	24.5	°C
<b>Conductivity <math>\sigma</math> (mho/m)</b>	<b>835 MHz Body</b>				<b>1880 MHz Body</b>				<b>Fluid Temperature</b>	20.3	23.3	°C
	<b>IEEE Target</b>	<b>Meas.</b>	<b>Dev.</b>	<b>IEEE Target</b>	<b>Meas.</b>	<b>Dev.</b>	<b>Fluid Depth</b>	≥ 15	≥ 15	cm		
	0.97	± 5%	0.95	-2.0%	1.52	± 5%	1.48	-2.6%	<b><math>\rho</math> (Kg/m<sup>3</sup>)</b>	1000		

#### Notes

- The measurement results were obtained with the DUT tested in the conditions described in this report. Detailed measurement data and plots showing the maximum SAR location of the DUT are reported in Appendix A.
- The device modes tested and reported in the above test data table were selected based on the procedures described in FCC OET SAR Measurement Procedures for 3G Devices Rev. 2.0 (see reference [4]).
- The SAR evaluations were performed with the DUT communicating via airlink with the Agilent 8960 Series 10 E5515C Wireless Communications Test Set.
- The power drifts of the DUT measured by the DASY4 system during the SAR evaluations were <5% from the start power.
- The Host PC battery was fully charged prior to the SAR evaluations.
- The fluid temperature was measured prior to and after the SAR evaluations to ensure the temperature remained within +/-2°C of the fluid temperature reported during the dielectric parameter measurements.
- The dielectric parameters of the simulated tissue mixture were measured prior to the SAR evaluations using an HP 85070C Dielectric Probe Kit and an HP 8753ET Network Analyzer (see Appendix C).
- The SAR evaluations were performed within 24 hours of the system performance check.

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<b>Model(s):</b>	IX-MC5725	<b>DUT Type:</b>	Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC			
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## 5.0 DETAILS OF SAR EVALUATION

The General Dynamics Itronix Corporation Model: IX-MC5725 Dual-Band CDMA/EVDO Embedded PC Card installed in the IX750 Rugged Handheld PC was compliant for localized Specific Absorption Rate (Uncontrolled Exposure) based on the test provisions and conditions described below. The detailed test setup photographs are shown in Appendix D.

### Test Configuration(s)

- The DUT was tested for body SAR (lap-held) with the bottom side of the IX750 Handheld PC placed parallel to, and touching, the outer surface of the planar phantom. The LCD display lid was fully extended with a 2.0 cm spacing from the antenna to the planar phantom. Note: The DUT is not intended to transmit with the LCD display lid closed.

### Test Mode(s)

- The DUT was tested in continuous transmit operation with a modulated CDMA signal communicating via air-link with the Agilent 8960 Series 10 E5515C Wireless Communications Test Set at maximum power in "all bits up" power control mode.

### Power Level(s)


- The conducted power levels of the DUT were measured prior to the SAR evaluations using the Agilent 8960 Series 10 E5515C Wireless Communications Test Set and Gigatronix Universal Power Meter according to the procedures described in FCC OET SAR Measurement Procedures for 3G Devices (see reference [4]).



### Test Conditions

- The fluid temperature was measured prior to and after the SAR evaluations to ensure the temperature remained within  $\pm 2^{\circ}\text{C}$  of the fluid temperature reported during the dielectric parameter measurements.
- The dielectric parameters of the simulated tissue mixtures were measured prior to the SAR evaluations using an HP 85070C Dielectric Probe Kit and HP 8753ET Network Analyzer (see Appendix C).

## 6.0 EVALUATION PROCEDURES

- 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.
  - For body-worn and face-held devices a planar phantom was used.
- The SAR was determined by a pre-defined procedure within the DASY4 software. Upon completion of a reference and optical surface check, the exposed region of the phantom was scanned near the inner surface with a grid spacing of 15mm x 15mm.  
An area scan was determined as follows:
- 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.
- 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:
- Extrapolation is used to determine the values between the dipole center of the probe and the surface of the phantom. For E-Field Probe EX3DV4 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 (see probe calibration document in Appendix F). 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. For E-Field Probe ET3DV6 this data cannot be measured, since the center of the dipoles is 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.4 mm (see probe calibration document in Appendix F). The extrapolation 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.
- 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).
- A zoom scan volume of 32 mm x 32 mm x 30 mm (5 x 5 x 7 points) centered at the peak SAR location determined from the area scan is used for all zoom scans for devices with a transmit frequency  $< 800$  MHz. Zoom scans for frequencies  $\geq 800$  MHz are determined with a scan volume of 30 mm x 30 mm x 30 mm (7 x 7 x 7) to ensure complete capture of the peak spatial-average SAR.

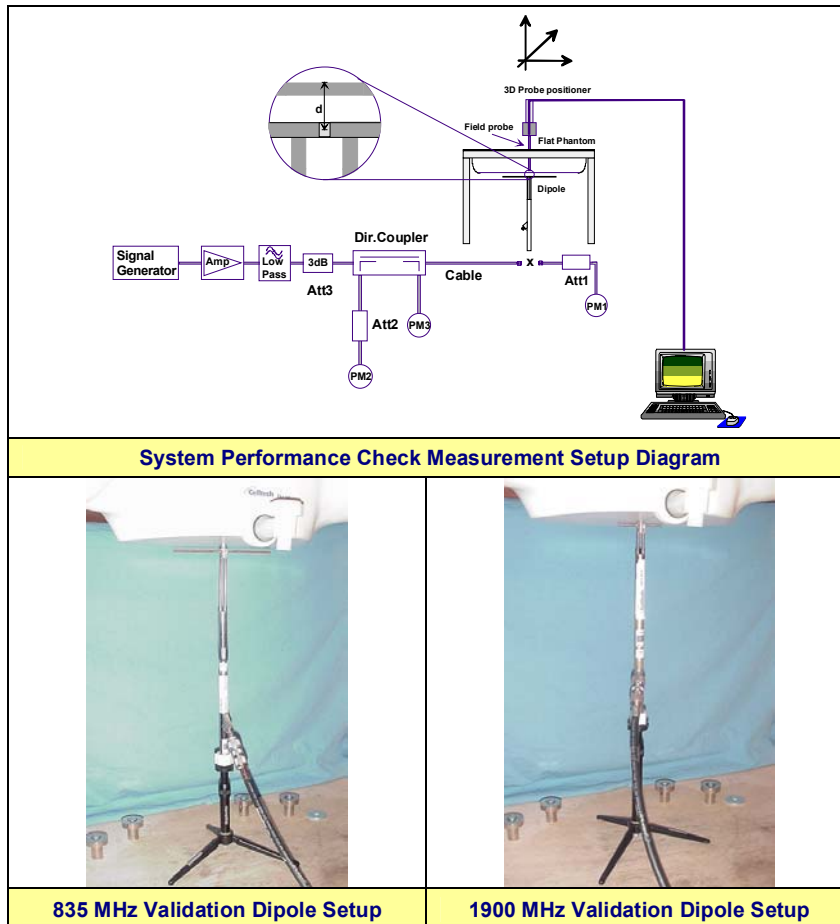
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<b>Model(s):</b>	<b>IX-MC5725</b>	<b>DUT Type:</b>	<b>Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC</b>			
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## 7.0 SYSTEM PERFORMANCE CHECK

Prior to the SAR evaluations, system checks were performed using a Fibreglas planar phantom with 835 MHz and 1900 MHz dipoles (see Appendix B for system performance check test plots). The dielectric parameters of the simulated tissue mixtures were measured prior to the system performance checks using an HP 85070C Dielectric Probe Kit and an HP 8753ET Network Analyzer (see Appendix C). A forward power of 250 mW was applied to the dipole and the system was verified to a tolerance of  $\pm 10\%$  from the system validation target SAR values (see Appendix E for system validation procedures).

SYSTEM PERFORMANCE CHECK EVALUATIONS																
Test Date	Fluid Freq.	SAR 1g (W/kg)			Dielectric Constant $\epsilon_r$			Conductivity $\sigma$ (mho/m)			$\rho$ (Kg/m <sup>3</sup> )	Amb. Temp. (°C)	Fluid Temp. (°C)	Fluid Depth (cm)	Humid. (%)	Barom. Press. (kPa)
	Body (MHz)	Sys. Val. Target	Meas.	Dev.	Sys. Val. Target	Meas.	Dev.	Sys. Val. Target	Meas.	Dev.						
May 12	835	2.53 $\pm 10\%$	2.48	-2.0%	57.5 $\pm 5\%$	55.8	-2.9%	0.97 $\pm 5\%$	0.95	-2.0%	1000	22.0	20.3	$\geq 15$	35	101.1
May 14	1900	10.3 $\pm 10\%$	10.3	0.0%	51.1 $\pm 5\%$	51.1	0.0%	1.51 $\pm 5\%$	1.51	0.0%	1000	24.5	23.3	$\geq 15$	35	101.1
Note(s)		1. The target SAR value is referenced from the System Validation procedure performed by Celltech Labs Inc. (see Appendix E). 2. The target dielectric parameters are referenced from the System Validation procedure performed by Celltech Labs Inc. (see Appendix E). 3. The fluid temperature was measured prior to and after the SAR evaluations to ensure the temperature remained within $\pm 2^\circ\text{C}$ of the fluid temperature reported during the dielectric parameter measurements. 4. The SAR evaluations were performed within 24 hours of the system performance check.														



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## 8.0 SIMULATED EQUIVALENT TISSUES


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




PCS BAND TISSUE MIXTURE		
INGREDIENT	1900 MHz Body	1880 MHz Body
	System Performance Check	DUT Evaluation
Water	69.85 %	69.85 %
Glycol Monobutyl	29.89 %	29.89 %
Salt	0.26 %	0.26 %

CELLULAR BAND TISSUE MIXTURE		
INGREDIENT	835 MHz Body	835 MHz Body
	System Performance Check	DUT Evaluation
Water	53.79 %	53.79 %
Sugar	45.13 %	45.13 %
Salt	0.98 %	0.98 %
Bactericide	0.10 %	0.10 %

## 9.0 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)		<b>1.6 W/kg</b>	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.			



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## 10.0 ROBOT SYSTEM SPECIFICATIONS

<b><u>Specifications</u></b>	
<b>Positioner</b>	Stäubli Unimation Corp. Robot Model: RX60L
<b>Repeatability</b>	0.02 mm
<b>No. of axis</b>	6
<b><u>Data Acquisition Electronic (DAE) System</u></b>	
<b><u>Cell Controller</u></b>	
<b>Processor</b>	AMD Athlon XP 2400+
<b>Clock Speed</b>	2.0 GHz
<b>Operating System</b>	Windows XP Professional
<b><u>Data Converter</u></b>	
<b>Features</b>	Signal Amplifier, multiplexer, A/D converter, and control logic
<b>Software</b>	Measurement Software: DASY4, V4.7 Build 44
	Postprocessing Software: SEMCAD, V1.8 Build 171
<b>Connecting Lines</b>	Optical downlink for data and status info.; Optical uplink for commands and clock
<b><u>DASY4 Measurement Server</u></b>	
<b>Function</b>	Real-time data evaluation for field measurements and surface detection
<b>Hardware</b>	PC/104 166MHz Pentium CPU; 32 MB chipdisk; 64 MB RAM
<b>Connections</b>	COM1, COM2, DAE, Robot, Ethernet, Service Interface
<b><u>E-Field Probe</u></b>	
<b><u>Probe (Cell Band)</u></b>	
<b>Model</b>	ET3DV6
<b>Serial No.</b>	1387
<b>Construction</b>	Triangular core fiber optic detection system
<b>Frequency</b>	10 MHz to 6 GHz
<b>Linearity</b>	±0.2 dB (30 MHz to 3 GHz)
<b><u>Probe (PCS Band)</u></b>	
<b>Model</b>	EX3DV4
<b>Serial No.</b>	3600
<b>Construction</b>	Symmetrical design with triangular core
<b>Frequency</b>	10 MHz to 6 GHz
<b>Linearity</b>	±0.2 dB (30 MHz to 3 GHz)
<b><u>Phantom(s)</u></b>	
<b>Type</b>	Planar Phantom
<b>Shell Material</b>	Fiberglas
<b>Thickness</b>	2.0 ±0.1 mm
<b>Dimensions</b>	94 cm (L) x 44 cm (W) x 22 cm (H)

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## 11.0 PROBE SPECIFICATIONS

### ET3DV6 E-Field Probe

**Construction:** Symmetrical design with triangular core  
Built-in shielding against static charges  
PEEK enclosure material (resistant to organic solvents, glycol)

**Calibration:** In air from 10 MHz to 2.5 GHz  
In brain simulating tissue at frequencies of 900 MHz and 1.8 GHz (accuracy  $\pm 8\%$ )

**Frequency:** 10 MHz to > 6 GHz; Linearity:  $\pm 0.2$  dB (30 MHz to 3 GHz)

**Directivity:**  $\pm 0.2$  dB in brain tissue (rotation around probe axis)  
 $\pm 0.4$  dB in brain tissue (rotation normal to probe axis)

**Dynamic Range:**  $5 \mu\text{W/g}$  to > 100 mW/g; Linearity:  $\pm 0.2$  dB

**Surface Detect:**  $\pm 0.2$  mm repeatability in air and clear liquids over diffuse reflecting surfaces

**Dimensions:** Overall length: 330 mm  
Tip length: 16 mm  
Body diameter: 12 mm  
Tip diameter: 6.8 mm  
Distance from probe tip to dipole centers: 2.7 mm

**Application:** General dosimetry up to 3 GHz  
Compliance tests of mobile phone



ET3DV6 E-Field Probe

### EX3DV4 E-Field Probe

**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:  $\pm 0.2$  dB (30 MHz to 3 GHz)

**Directivity:**  $\pm 0.3$  dB in HSL (rotation around probe axis)  
 $\pm 0.5$  dB in tissue material (rotation normal to probe axis)

**Dynamic Range:**  $10 \mu\text{W/g}$  to >100 mW/g; Linearity:  $\pm 0.2$  dB (noise: typically  $< 1 \mu\text{W/g}$ )

**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

## 12.0 PLANAR PHANTOM

The planar phantom is a Fibreglas shell phantom with a 2.0 mm (+/-0.2mm) thick device measurement area at the center of the phantom for SAR evaluations of devices with a larger surface area than the planar section of the SAM phantom. The planar phantom is mounted to the wooden table of the DASY4 compact system. The planar phantom is also used for system validations ( $\geq 835$  MHz). See Appendix G for the dimensions and specifications.




Planar Phantom



## 13.0 DEVICE HOLDER

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




Device Holder




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## 14.0 TEST EQUIPMENT LIST


TEST EQUIPMENT		ASSET NO.	SERIAL NO.	DATE CALIBRATED		CALIBRATION DUE DATE
USED	DESCRIPTION					
x	Schmid & Partner DASY4 System	-	-	-	-	-
x	-DASY4 Measurement Server	00158	1078	NA	NA	NA
x	-Robot	00046	599396-01	NA	NA	NA
x	-DAE4	00019	353	22Apr08	22Apr09	22Apr09
x	-EX3DV4 E-Field Probe	00213	3600	19Apr08	19Apr09	19Apr09
x	-ET3DV6 E-Field Probe	00016	1387	22Apr08	22Apr09	22Apr09
	-300 MHz Validation Dipole	00023	135	30Apr08	30Apr09	30Apr09
	-450 MHz Validation Dipole	00024	136	01May08	01May09	01May09
x	-835 MHz Validation Dipole	00022	411	Brain	07Jun07	07Jun08
				Body	02May08	02May09
	-900 MHz Validation Dipole	00020	054	Brain	07Jun07	07Jun08
				Body	20May08	20May09
	-1800 MHz Validation Dipole	00021	247	Brain	06Jun07	06Jun08
				Body	06Jun07	06Jun08
x	-1900 MHz Validation Dipole	00032	151	Brain	06Jun07	06Jun08
				Body	14May08	14May09
	-2450 MHz Validation Dipole	00025	150	Brain	16Jul07	16Jul08
				Body	08Jun07	08Jun08
	5GHz Validation Dipole	00126	1031	Body	21Apr08	21Apr09
				Body	21Apr08	21Apr09
				Brain	21Apr08	21Apr09
	-5200 MHz			Body	21Apr08	21Apr09
	-5500 MHz			Body	21Apr08	21Apr09
	-5800 MHz			Brain	21Apr08	21Apr09
				Body	21Apr08	21Apr09
	-SAM Phantom V4.0C	00154	1033	NA	NA	NA
x	-Barski Planar Phantom	00155	03-01	NA	NA	NA
	-Plexiglas Side Planar Phantom	00156	161	NA	NA	NA
	-Plexiglas Validation Planar Phantom	00157	137	NA	NA	NA
	ALS-PR-DIEL Dielectric Probe Kit	00160	260-00953	NA	NA	NA
x	HP 85070C Dielectric Probe Kit	00033	US39240170	NA	NA	NA
x	Gigatronics 8652A Power Meter	00007	1835272	23Apr08	23Apr09	23Apr09
x	Gigatronics 80701A Power Sensor	00014	1833699	23Apr08	23Apr09	23Apr09
x	HP 8753ET Network Analyzer	00134	US39170292	28Apr08	28Apr09	28Apr09
x	Rohde & Schwarz SMR20 Signal Generator	00006	100104	23Apr08	23Apr09	23Apr09
x	Amplifier Research 5S1G4 Power Amplifier	00106	26235	NR	NR	NR
	Amplifier Research 10W1000C Power Amplifier	00041	27887	NR	NR	NR
	Nextec NB00383 Microwave Amplifier	00151	0535	NR	NR	NR
x	Agilent E5515C Wireless Communication Test Set	1076274	GB46311309	27May07	13Jun09	13Jun09
Notes	NA = Not Applicable		NR = Not Required			

Applicant:	GD Itronix Corporation	FCC ID:	KBCIX-MC5725	IC:	1943A-MC5725	
Model(s):	IX-MC5725	DUT Type:	Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC			
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	Date(s) of Evaluation May 12 & 14, 2008	Test Report Serial No. 050508KBC-T901-S24C	Test Report Revision No. Rev. 1.0 (Initial Release)	 
	Test Report Issue Date June 06, 2008	Description of Test(s) Specific Absorption Rate	RF Exposure Category General Population	

## 15.0 MEASUREMENT UNCERTAINTIES

UNCERTAINTY BUDGET FOR DEVICE EVALUATION						
Error Description	Uncertainty Value ±%	Probability Distribution	Divisor	ci 1g	Uncertainty Value ±% (1g)	V <sub>i</sub> or V <sub>eff</sub>
<b>Measurement System</b>						
Probe calibration (835 MHz)	5.5	Normal	1	1	5.5	∞
Axial isotropy of the probe	4.7	Rectangular	1.732050808	0.7	1.9	∞
Spherical isotropy of the probe	9.6	Rectangular	1.732050808	0.7	3.9	∞
Spatial resolution	0	Rectangular	1.732050808	1	0.0	∞
Boundary effects	0.9	Rectangular	1.732050808	1	0.5	∞
Probe linearity	4.7	Rectangular	1.732050808	1	2.7	∞
Detection limit	1	Rectangular	1.732050808	1	0.6	∞
Readout electronics	0.3	Normal	1	1	0.3	∞
Response time	0.8	Rectangular	1.732050808	1	0.5	∞
Integration time	2.6	Rectangular	1.732050808	1	1.5	∞
RF ambient conditions	3	Rectangular	1.732050808	1	1.7	∞
Mech. constraints of robot	0.4	Rectangular	1.732050808	1	0.2	∞
Probe positioning	2.9	Rectangular	1.732050808	1	1.7	∞
Extrapolation & integration	1	Rectangular	1.732050808	1	0.6	∞
<b>Test Sample Related</b>						
Device positioning	2.9	Normal	1	1	2.9	12
Device holder uncertainty	3.6	Normal	1	1	3.6	8
Power drift	4.2	Rectangular	1.732050808	1	2.4	∞
<b>Phantom and Setup</b>						
Phantom uncertainty	4	Rectangular	1.732050808	1	2.3	∞
Liquid conductivity (target)	5	Rectangular	1.732050808	0.64	1.8	∞
Liquid conductivity (measured)	2	Normal	1	0.64	1.3	∞
Liquid permittivity (target)	5	Rectangular	1.732050808	0.6	1.7	∞
Liquid permittivity (measured)	1.1	Normal	1	0.6	0.7	∞
<b>Combined Standard Uncertainty</b>					<b>10.33</b>	
<b>Expanded Uncertainty (k=2)</b>					<b>20.66</b>	
Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003 (see reference [7])						


Applicant:	GD Itronix Corporation	FCC ID:	KBCIX-MC5725	IC:	1943A-MC5725	
Model(s):	IX-MC5725	DUT Type:	Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC			
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	Test Report Issue Date June 06, 2008	Description of Test(s) Specific Absorption Rate	RF Exposure Category General Population	

## MEASUREMENT UNCERTAINTIES (Cont.)


UNCERTAINTY BUDGET FOR DEVICE EVALUATION						
Error Description	Uncertainty Value ±%	Probability Distribution	Divisor	ci 1g	Uncertainty Value ±% (1g)	V <sub>i</sub> or V <sub>eff</sub>
<b>Measurement System</b>						
Probe calibration (1810 MHz)	5.5	Normal	1	1	5.5	∞
Axial isotropy of the probe	4.7	Rectangular	1.732050808	0.7	1.9	∞
Spherical isotropy of the probe	9.6	Rectangular	1.732050808	0.7	3.9	∞
Spatial resolution	0	Rectangular	1.732050808	1	0.0	∞
Boundary effects	0.2	Rectangular	1.732050808	1	0.1	∞
Probe linearity	4.7	Rectangular	1.732050808	1	2.7	∞
Detection limit	1	Rectangular	1.732050808	1	0.6	∞
Readout electronics	0.3	Normal	1	1	0.3	∞
Response time	0.8	Rectangular	1.732050808	1	0.5	∞
Integration time	2.6	Rectangular	1.732050808	1	1.5	∞
RF ambient conditions	3	Rectangular	1.732050808	1	1.7	∞
Mech. constraints of robot	0.4	Rectangular	1.732050808	1	0.2	∞
Probe positioning	2.9	Rectangular	1.732050808	1	1.7	∞
Extrapolation & integration	1	Rectangular	1.732050808	1	0.6	∞
<b>Test Sample Related</b>						
Device positioning	2.9	Normal	1	1	2.9	12
Device holder uncertainty	3.6	Normal	1	1	3.6	8
Power drift	3.4	Rectangular	1.732050808	1	2.0	∞
<b>Phantom and Setup</b>						
Phantom uncertainty	4	Rectangular	1.732050808	1	2.3	∞
Liquid conductivity (target)	5	Rectangular	1.732050808	0.64	1.8	∞
Liquid conductivity (measured)	2.6	Normal	1	0.64	1.7	∞
Liquid permittivity (target)	5	Rectangular	1.732050808	0.6	1.7	∞
Liquid permittivity (measured)	4.7	Normal	1	0.6	2.8	∞
<b>Combined Standard Uncertainty</b>					<b>10.63</b>	
<b>Expanded Uncertainty (k=2)</b>					<b>21.27</b>	
Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003 (see reference [7])						



Applicant:	GD Itronix Corporation	FCC ID:	KBCIX-MC5725	IC:	1943A-MC5725	
Model(s):	IX-MC5725	DUT Type:	Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC			
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	Date(s) of Evaluation May 12 & 14, 2008	Test Report Serial No. 050508KBC-T901-S24C	Test Report Revision No. Rev. 1.0 (Initial Release)	 
	Test Report Issue Date June 06, 2008	Description of Test(s) Specific Absorption Rate	RF Exposure Category General Population	

## MEASUREMENT UNCERTAINTIES (Cont.)


UNCERTAINTY BUDGET FOR SYSTEM VALIDATION						
Error Description	Uncertainty Value $\pm\%$	Probability Distribution	Divisor	$c_i$ 1g	Uncertainty Value $\pm\%$ (1g)	$V_i$ or $V_{eff}$
<b>Measurement System</b>						
Probe calibration (835 MHz)	5.5	Normal	1	1	5.5	$\infty$
Axial isotropy of the probe	4.7	Rectangular	1.732050808	1	2.7	$\infty$
Spherical isotropy of the probe	0	Rectangular	1.732050808	1	0.0	$\infty$
Spatial resolution	0	Rectangular	1.732050808	1	0.0	$\infty$
Boundary effects	0.9	Rectangular	1.732050808	1	0.5	$\infty$
Probe linearity	4.7	Rectangular	1.732050808	1	2.7	$\infty$
Detection limit	1	Rectangular	1.732050808	1	0.6	$\infty$
Readout electronics	0.3	Normal	1	1	0.3	$\infty$
Response time	0	Rectangular	1.732050808	1	0.0	$\infty$
Integration time	0	Rectangular	1.732050808	1	0.0	$\infty$
RF ambient conditions	3	Rectangular	1.732050808	1	1.7	$\infty$
Mech. constraints of robot	0.4	Rectangular	1.732050808	1	0.2	$\infty$
Probe positioning	2.9	Rectangular	1.732050808	1	1.7	$\infty$
Extrapolation & integration	1	Rectangular	1.732050808	1	0.6	$\infty$
<b>Dipole</b>						
Dipole Positioning	2	Normal	1.732050808	1	1.2	$\infty$
Power & Power Drift	4.7	Normal	1.732050808	1	2.7	$\infty$
<b>Phantom and Setup</b>						
Phantom uncertainty	4	Rectangular	1.732050808	1	2.3	$\infty$
Liquid conductivity (target)	5	Rectangular	1.732050808	0.64	1.8	$\infty$
Liquid conductivity (measured)	2	Normal	1	0.64	1.3	$\infty$
Liquid permittivity (target)	5	Rectangular	1.732050808	0.6	1.7	$\infty$
Liquid permittivity (measured)	2.9	Normal	1	0.6	1.7	$\infty$
<b>Combined Standard Uncertainty</b>					<b>8.77</b>	
<b>Expanded Uncertainty (k=2)</b>					<b>17.55</b>	
Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003 (see reference [7])						



Applicant:	GD Itronix Corporation	FCC ID:	KBCIX-MC5725	IC:	1943A-MC5725	
Model(s):	IX-MC5725	DUT Type:	Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC			
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	Test Report Issue Date June 06, 2008	Description of Test(s) Specific Absorption Rate	RF Exposure Category General Population	

## MEASUREMENT UNCERTAINTIES (Cont.)


UNCERTAINTY BUDGET FOR SYSTEM VALIDATION						
Error Description	Uncertainty Value ±%	Probability Distribution	Divisor	ci 1g	Uncertainty Value ±% (1g)	V <sub>i</sub> or V <sub>eff</sub>
<b>Measurement System</b>						
Probe calibration (1810 MHz)	5.5	Normal	1	1	5.5	∞
Axial isotropy of the probe	4.7	Rectangular	1.732050808	1	2.7	∞
Spherical isotropy of the probe	0	Rectangular	1.732050808	1	0.0	∞
Spatial resolution	0	Rectangular	1.732050808	1	0.0	∞
Boundary effects	0.2	Rectangular	1.732050808	1	0.1	∞
Probe linearity	4.7	Rectangular	1.732050808	1	2.7	∞
Detection limit	1	Rectangular	1.732050808	1	0.6	∞
Readout electronics	0.3	Normal	1	1	0.3	∞
Response time	0	Rectangular	1.732050808	1	0.0	∞
Integration time	0	Rectangular	1.732050808	1	0.0	∞
RF ambient conditions	3	Rectangular	1.732050808	1	1.7	∞
Mech. constraints of robot	0.4	Rectangular	1.732050808	1	0.2	∞
Probe positioning	2.9	Rectangular	1.732050808	1	1.7	∞
Extrapolation & integration	1	Rectangular	1.732050808	1	0.6	∞
<b>Dipole</b>						
Dipole Positioning	2	Normal	1.732050808	1	1.2	∞
Power & Power Drift	4.7	Normal	1.732050808	1	2.7	∞
<b>Phantom and Setup</b>						
Phantom uncertainty	4	Rectangular	1.732050808	1	2.3	∞
Liquid conductivity (target)	5	Rectangular	1.732050808	0.64	1.8	∞
Liquid conductivity (measured)	0	Normal	1	0.64	0.0	∞
Liquid permittivity (target)	5	Rectangular	1.732050808	0.6	1.7	∞
Liquid permittivity (measured)	0	Normal	1	0.6	0.0	∞
<b>Combined Standard Uncertainty</b>					<b>8.49</b>	
<b>Expanded Uncertainty (k=2)</b>					<b>16.98</b>	
Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003 (see reference [7])						



Applicant:	GD Itronix Corporation	FCC ID:	KBCIX-MC5725	IC:	1943A-MC5725	
Model(s):	IX-MC5725	DUT Type:	Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC			
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	<u>Date(s) of Evaluation</u> May 12 & 14, 2008	<u>Test Report Serial No.</u> 050508KBC-T901-S24C	<u>Test Report Revision No.</u> Rev. 1.0 (Initial Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> June 06, 2008	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	


## 16.0 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] Federal Communications Commission - "SAR Measurement Procedures for 3G Devices": Lab. Div., OET, October 2007 (Rev. 2.0).
- [5] Federal Communications Commission - "SAR Evaluation Considerations for Laptop Computers with Antennas Built-in on Display Screens" (KDB 616217 D01 v01): Lab. Div., OET, December 2007.
- [6] Industry Canada - "Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)", Radio Standards Specification RSS-102 Issue 2: November 2005.
- [7] 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.

<b>Applicant:</b>	<b>GD Itronix Corporation</b>	<b>FCC ID:</b>	<b>KBCIX-MC5725</b>	<b>IC:</b>	<b>1943A-MC5725</b>	
<b>Model(s):</b>	<b>IX-MC5725</b>	<b>DUT Type:</b>	<b>Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC</b>			
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	<u>Test Report Issue Date</u> June 06, 2008	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

**APPENDIX A - SAR MEASUREMENT DATA**

<b>Applicant:</b>	<b>GD Itronix Corporation</b>	<b>FCC ID:</b>	<b>KBCIX-MC5725</b>	<b>IC:</b>	<b>1943A-MC5725</b>	
<b>Model(s):</b>	<b>IX-MC5725</b>	<b>DUT Type:</b>	<b>Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC</b>			
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	<u>Test Report Issue Date</u> June 06, 2008	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Date Tested: 05/12/2008

**Body SAR - Cellular Band - EV-DO Rev. 0 - 824.7 MHz - Ch. 1013 - LCD Display Fully Extended**

**DUT: General Dynamics Itronix Corp.; Type: IX750 Handheld PC with CDMA/EV-DO; Serial: ZZGEG8059ZZ7258**

Ambient Temp: 22°C; Fluid Temp: 20.3°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

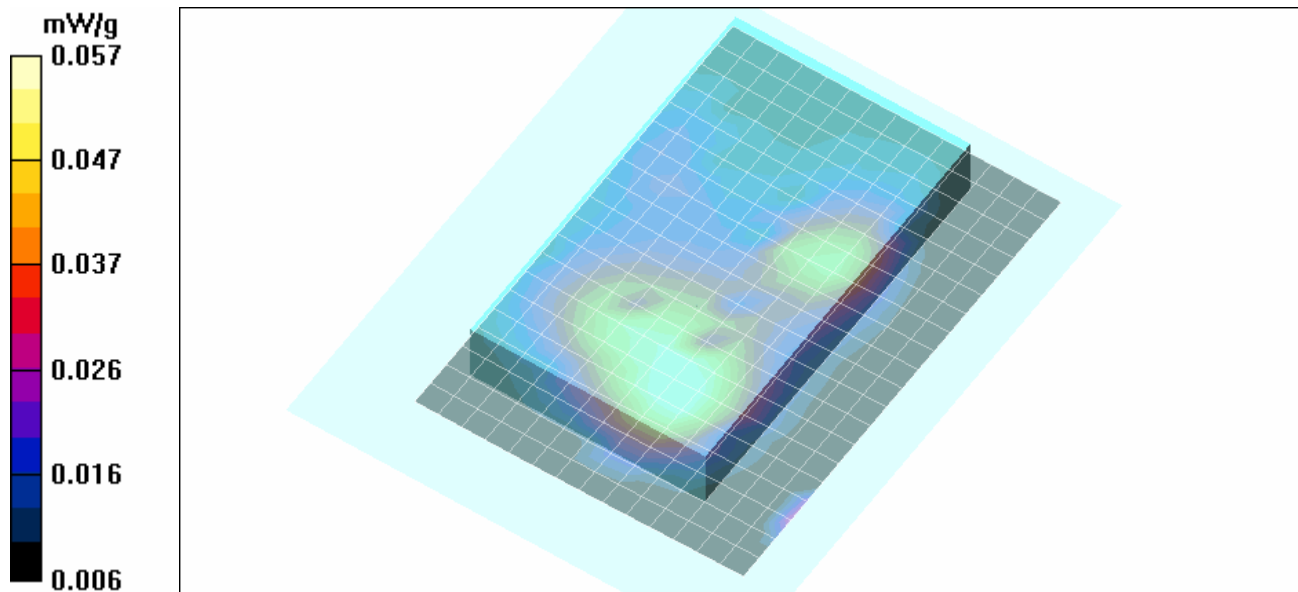
Communication System: Cellular CDMA  
Frequency: 824.70 MHz; Duty Cycle: 1:1  
RF Output Power: 24.6 dBm (Conducted)  
7.4V, 4.0Ah Li-ion Smart Battery (Model: IX750-29WHR)  
Medium: M835 Medium parameters used:  $f = 824.7 \text{ MHz}$ ;  $\sigma = 0.95 \text{ mho/m}$ ;  $\epsilon_r = 55.8$ ;  $\rho = 1000 \text{ kg/m}^3$


- Probe: ET3DV6 - SN1387; ConvF(5.96, 5.96, 5.96); Calibrated: 22/04/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171



**Body SAR - Bottom Side of PC Touching Planar Phantom - 2.0 cm Spacing from Antenna to Phantom - Ch. 1013 Area Scan (15x22x1):** Measurement grid: dx=15mm, dy=15mm

**Body SAR - Bottom Side of PC Touching Planar Phantom - 2.0 cm Spacing from Antenna to Phantom - Ch. 1013 Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.24 V/m; Power Drift = -0.011 dB  
Peak SAR (extrapolated) = 0.081 W/kg  
**SAR(1 g) = 0.054 mW/g; SAR(10 g) = 0.041 mW/g**  
Maximum value of SAR (measured) = 0.057 mW/g



<b>Applicant:</b>	GD Itronix Corporation	<b>FCC ID:</b>	KBCIX-MC5725	<b>IC:</b>	1943A-MC5725	
<b>Model(s):</b>	IX-MC5725	<b>DUT Type:</b>	Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC			
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	<u>Test Report Issue Date</u> June 06, 2008	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Date Tested: 05/12/2008

**Body SAR - Cellular Band - EV-DO Rev. 0 - 835.52 MHz - Ch. 384 - LCD Display Fully Extended**

**DUT: General Dynamics Itronix Corp.; Type: IX750 Handheld PC with CDMA/EV-DO; Serial: ZZGEG8059ZZ7258**

Ambient Temp: 22°C; Fluid Temp: 20.3°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: Cellular CDMA

Frequency: 836.52 MHz; Duty Cycle: 1:1

RF Output Power: 24.6 dBm (Conducted)

7.4V, 4.0Ah Li-ion Smart Battery (Model: IX750-29WHR)

Medium: M835 Medium parameters used:  $f = 836.52 \text{ MHz}$ ;  $\sigma = 0.95 \text{ mho/m}$ ;  $\epsilon_r = 55.8$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1387; ConvF(5.96, 5.96, 5.96); Calibrated: 22/04/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

**Body SAR - Bottom Side of PC Touching Planar Phantom - 2.0 cm Spacing from Antenna to Phantom - Ch. 384 Area Scan (15x22x1):** Measurement grid: dx=15mm, dy=15mm

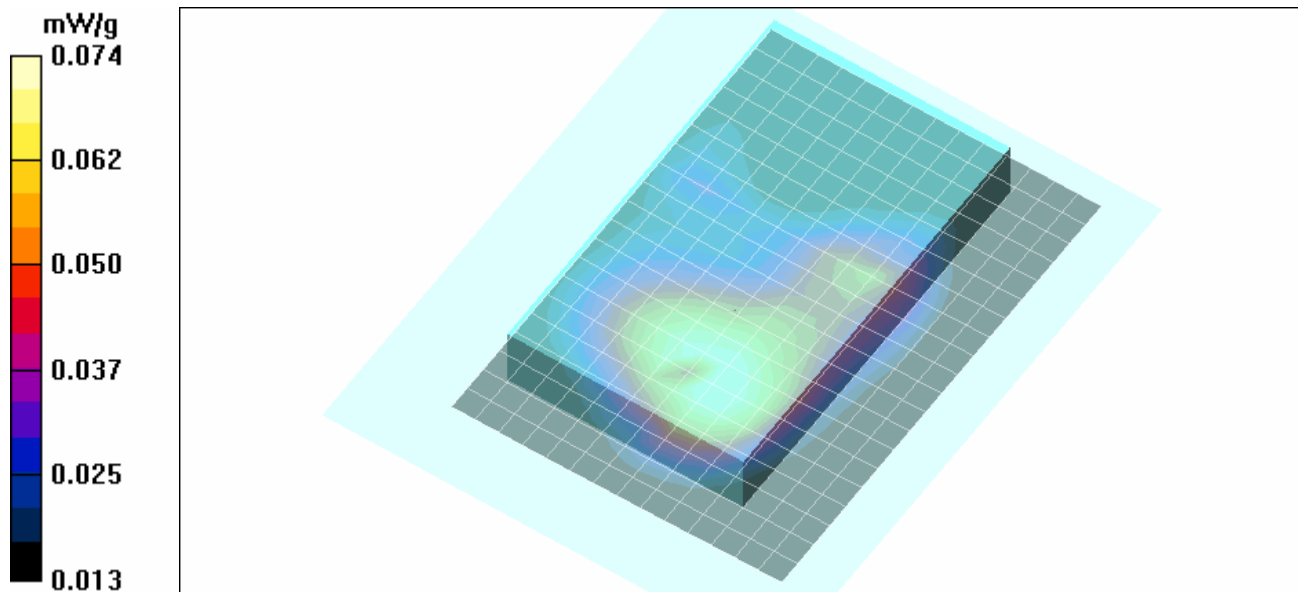
**Body SAR - Bottom Side of PC Touching Planar Phantom - 2.0 cm Spacing from Antenna to Phantom - Ch. 384 Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm


Reference Value = 9.43 V/m; Power Drift = -0.177 dB



Peak SAR (extrapolated) = 0.086 W/kg

**SAR(1 g) = 0.070 mW/g; SAR(10 g) = 0.054 mW/g**

Maximum value of SAR (measured) = 0.074 mW/g



<b>Applicant:</b>	<b>GD Itronix Corporation</b>	<b>FCC ID:</b>	<b>KBCIX-MC5725</b>	<b>IC:</b>	<b>1943A-MC5725</b>	
<b>Model(s):</b>	<b>IX-MC5725</b>	<b>DUT Type:</b>	<b>Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC</b>			
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	<u>Test Report Issue Date</u> June 06, 2008	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Date Tested: 05/12/2008

**Body SAR - Cellular Band - EV-DO Rev. 0 - 848.31 MHz - Ch. 777 - LCD Display Fully Extended**

**DUT: General Dynamics Itronix Corp.; Type: IX750 Handheld PC with CDMA/EV-DO; Serial: ZZGEG8059ZZ7258**

Ambient Temp: 22°C; Fluid Temp: 20.3°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

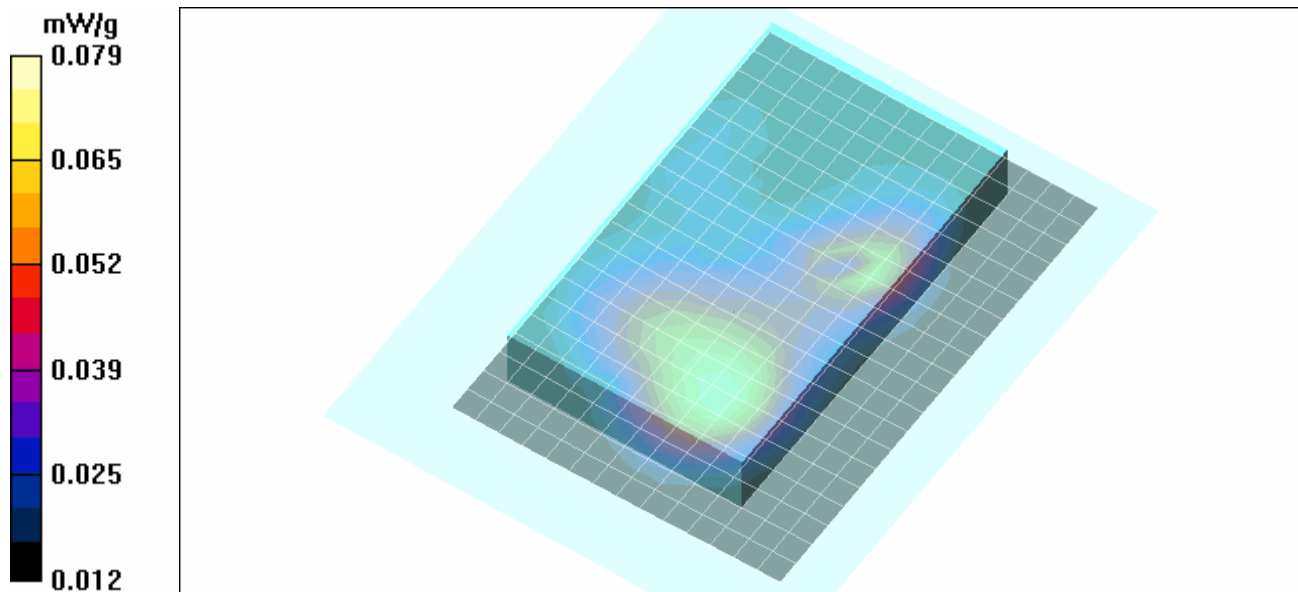
Communication System: Cellular CDMA  
 Frequency: 848.31 MHz; Duty Cycle: 1:1  
 RF Output Power: 24.5 dBm (Conducted)  
 7.4V, 4.0Ah Li-ion Smart Battery (Model: IX750-29WHR)  
 Medium: M835 Medium parameters used:  $f = 848.31 \text{ MHz}$ ;  $\sigma = 0.95 \text{ mho/m}$ ;  $\epsilon_r = 55.8$ ;  $\rho = 1000 \text{ kg/m}^3$


- Probe: ET3DV6 - SN1387; ConvF(5.96, 5.96, 5.96); Calibrated: 22/04/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

**Body SAR - Bottom Side of PC Touching Planar Phantom - 2.0 cm Spacing from Antenna to Phantom - Ch. 777 Area Scan (15x22x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

**Body SAR - Bottom Side of PC Touching Planar Phantom - 2.0 cm Spacing from Antenna to Phantom - Ch. 777 Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

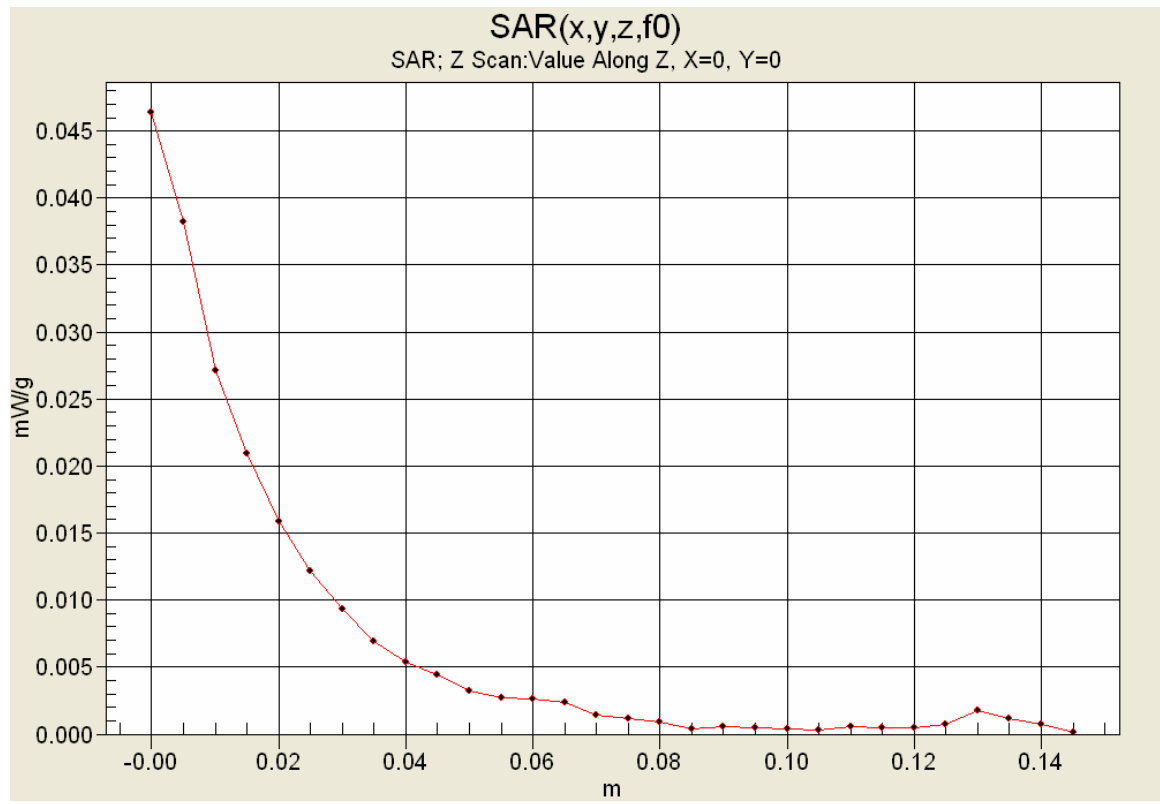
Reference Value = 9.36 V/m; Power Drift = 0.055 dB  
 Peak SAR (extrapolated) = 0.092 W/kg  
**SAR(1 g) = 0.073 mW/g; SAR(10 g) = 0.055 mW/g**  
 Maximum value of SAR (measured) = 0.079 mW/g





<b>Applicant:</b>	<b>GD Itronix Corporation</b>	<b>FCC ID:</b>	<b>KBCIX-MC5725</b>	<b>IC:</b>	<b>1943A-MC5725</b>	
<b>Model(s):</b>	<b>IX-MC5725</b>	<b>DUT Type:</b>	<b>Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC</b>			
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**Z-Axis Scan**



	<u>Date(s) of Evaluation</u> May 12 & 14, 2008	<u>Test Report Serial No.</u> 050508KBC-T901-S24C	<u>Test Report Revision No.</u> Rev. 1.0 (Initial Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> June 06, 2008	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Date Tested: 05/14/2008

**Body SAR - PCS Band - EV-DO Rev. 0 - 1851.25 MHz - Ch. 25 - LCD Display Fully Extended**

**DUT: General Dynamics Itronix Corp.; Type: IX750 Handheld PC with CDMA/EV-DO; Serial: ZZGEG8059ZZ7258**

Ambient Temp: 24.5°C; Fluid Temp: 23.3°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: PCS CDMA

Frequency: 1851.25 MHz; Duty Cycle: 1:1

RF Output Power: 24.95 dBm (Conducted)

7.4V, 4.0Ah Li-ion Smart Battery (Model: IX750-29WHR)

Medium: M1900 Medium parameters used:  $f = 1851.25 \text{ MHz}$ ;  $\sigma = 1.48 \text{ mho/m}$ ;  $\epsilon_r = 50.8$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: EX3DV4 - SN3600; ConvF(7.45, 7.45, 7.45); Calibrated: 19/04/2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

**Body SAR - Bottom Side of PC Touching Planar Phantom - 2.0 cm Spacing from Antenna to Phantom - Ch. 25 Area Scan (15x22x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

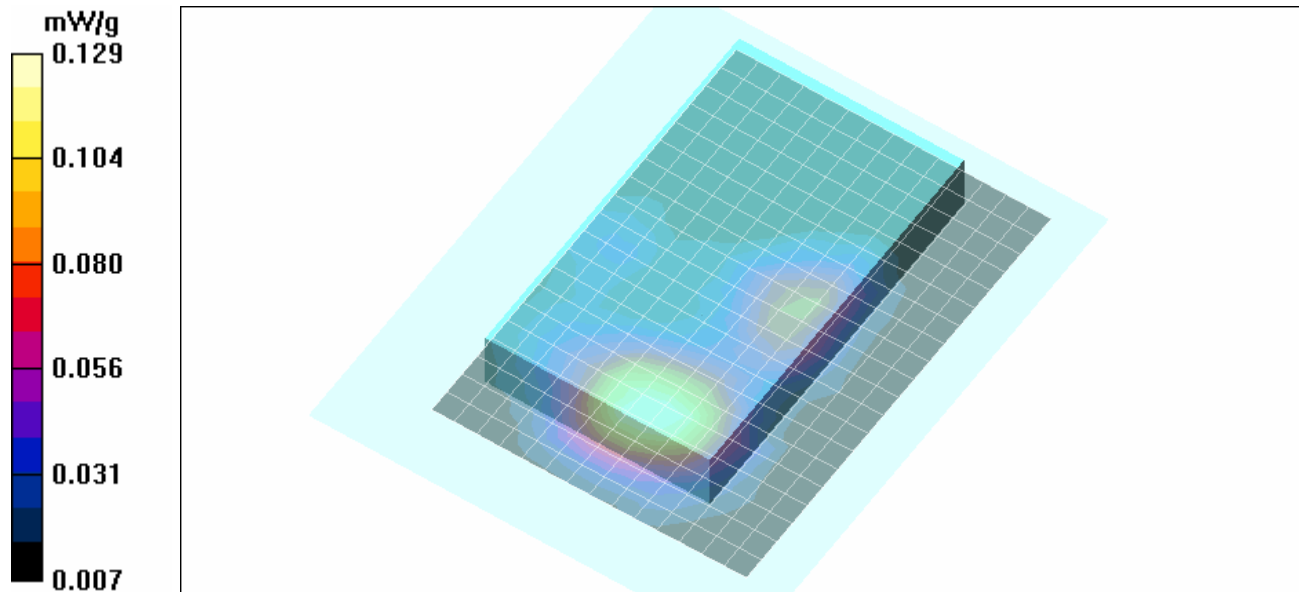
**Body SAR - Bottom Side of PC Touching Planar Phantom - 2.0 cm Spacing from Antenna to Phantom - Ch. 25 Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$


Reference Value = 8.16 V/m; Power Drift = -0.058 dB



Peak SAR (extrapolated) = 0.158 W/kg

**SAR(1 g) = 0.099 mW/g; SAR(10 g) = 0.069 mW/g**

Maximum value of SAR (measured) = 0.129 mW/g



<b>Applicant:</b>	GD Itronix Corporation	<b>FCC ID:</b>	KBCIX-MC5725	<b>IC:</b>	1943A-MC5725	
<b>Model(s):</b>	IX-MC5725	<b>DUT Type:</b>	Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC			
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	<u>Date(s) of Evaluation</u> May 12 & 14, 2008	<u>Test Report Serial No.</u> 050508KBC-T901-S24C	<u>Test Report Revision No.</u> Rev. 1.0 (Initial Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> June 06, 2008	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Date Tested: 05/14/2008

**Body SAR - PCS Band - EV-DO Rev. 0 - 1880 MHz - Ch. 600 - LCD Display Fully Extended**

**DUT: General Dynamics Itronix Corp.; Type: IX750 Handheld PC with CDMA/EV-DO; Serial: ZZGEG8059ZZ7258**

Ambient Temp: 24.5°C; Fluid Temp: 23.3°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: PCS CDMA

Frequency: 1880 MHz; Duty Cycle: 1:1

RF Output Power: 25.0 dBm (Conducted)

7.4V, 4.0Ah Li-ion Smart Battery (Model: IX750-29WHR)

Medium: M1900 Medium parameters used:  $f = 1880 \text{ MHz}$ ;  $\sigma = 1.48 \text{ mho/m}$ ;  $\epsilon_r = 50.8$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: EX3DV4 - SN3600; ConvF(7.45, 7.45, 7.45); Calibrated: 19/04/2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

**Body SAR - Bottom Side of PC Touching Planar Phantom - 2.0 cm Spacing from Antenna to Phantom - Ch. 600 Area Scan (15x22x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

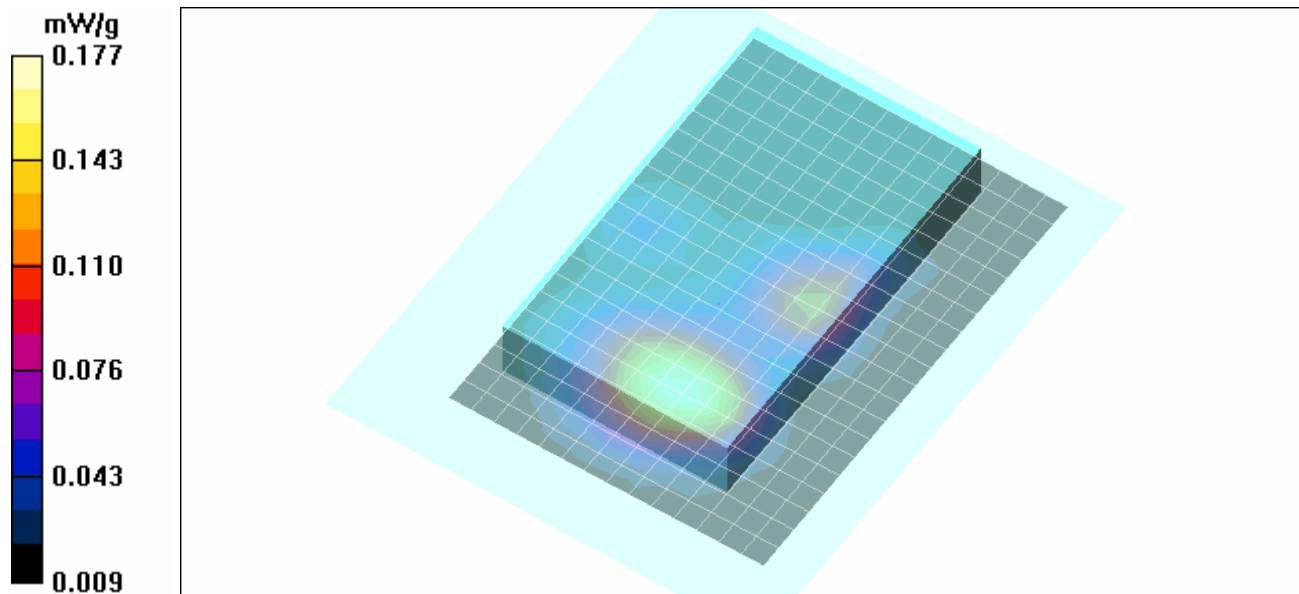
**Body SAR - Bottom Side of PC Touching Planar Phantom - 2.0 cm Spacing from Antenna to Phantom - Ch. 600 Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$


Reference Value = 9.80 V/m; Power Drift = 0.142 dB

Peak SAR (extrapolated) = 0.212 W/kg

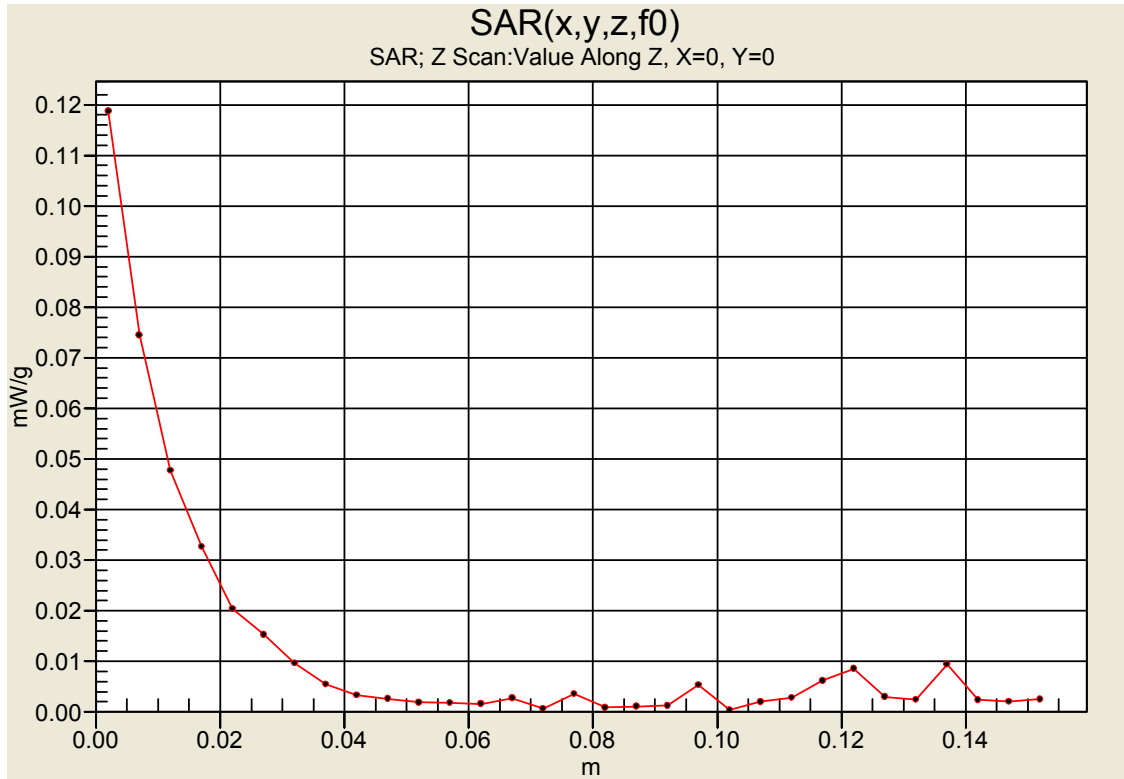
**SAR(1 g) = 0.138 mW/g; SAR(10 g) = 0.092 mW/g**



Maximum value of SAR (measured) = 0.177 mW/g



<b>Applicant:</b>	GD Itronix Corporation	<b>FCC ID:</b>	KBCIX-MC5725	<b>IC:</b>	1943A-MC5725	
<b>Model(s):</b>	IX-MC5725	<b>DUT Type:</b>	Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC			
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### Z-Axis Scan



	<u>Date(s) of Evaluation</u> May 12 & 14, 2008	<u>Test Report Serial No.</u> 050508KBC-T901-S24C	<u>Test Report Revision No.</u> Rev. 1.0 (Initial Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> June 06, 2008	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Date Tested: 05/14/2008

**Body SAR - PCS Band - EV-DO Rev. 0 - 1908.75 MHz - Ch. 1175 - LCD Display Fully Extended**

**DUT: General Dynamics Itronix Corp.; Type: IX750 Handheld PC with CDMA/EV-DO; Serial: ZZGEG8059ZZ7258**

Ambient Temp: 24.5°C; Fluid Temp: 23.3°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: PCS CDMA

Frequency: 1908.75 MHz; Duty Cycle: 1:1

RF Output Power: 24.8 dBm (Conducted)

7.4V, 4.0Ah Li-ion Smart Battery (Model: IX750-29WHR)

Medium: M1900 Medium parameters used:  $f = 1908.75 \text{ MHz}$ ;  $\sigma = 1.48 \text{ mho/m}$ ;  $\epsilon_r = 50.8$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: EX3DV4 - SN3600; ConvF(7.45, 7.45, 7.45); Calibrated: 19/04/2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

**Body SAR - Bottom Side of PC Touching Planar Phantom - 2.0 cm Spacing from Antenna to Phantom - Ch. 1175 Area Scan (15x22x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

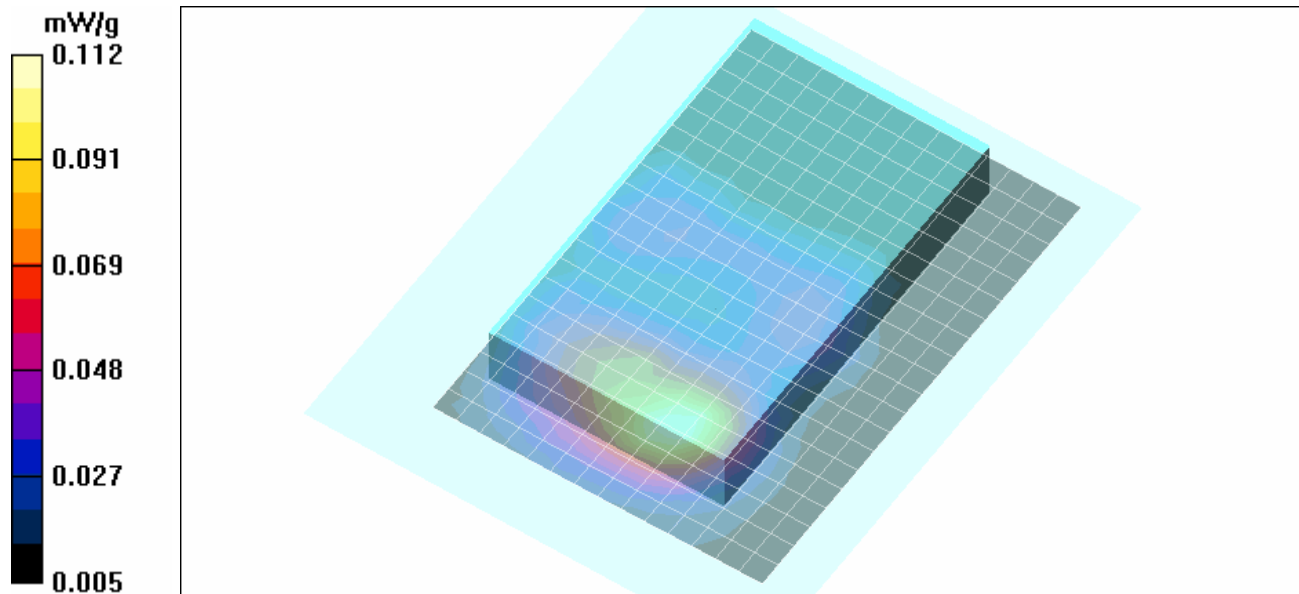
**Body SAR - Bottom Side of PC Touching Planar Phantom - 2.0 cm Spacing from Antenna to Phantom - Ch. 1175 Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$


Reference Value = 7.93 V/m; Power Drift = 0.074 dB



Peak SAR (extrapolated) = 0.137 W/kg

**SAR(1 g) = 0.088 mW/g; SAR(10 g) = 0.057 mW/g**


Maximum value of SAR (measured) = 0.112 mW/g





<b>Applicant:</b>	GD Itronix Corporation	<b>FCC ID:</b>	KBCIX-MC5725	<b>IC:</b>	1943A-MC5725	
<b>Model(s):</b>	IX-MC5725	<b>DUT Type:</b>	Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC			
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	<u>Date(s) of Evaluation</u> May 12 & 14, 2008	<u>Test Report Serial No.</u> 050508KBC-T901-S24C	<u>Test Report Revision No.</u> Rev. 1.0 (Initial Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> June 06, 2008	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

**APPENDIX B - SYSTEM PERFORMANCE CHECK DATA**

<b>Applicant:</b>	<b>GD Itronix Corporation</b>	<b>FCC ID:</b>	<b>KBCIX-MC5725</b>	<b>IC:</b>	<b>1943A-MC5725</b>	
<b>Model(s):</b>	<b>IX-MC5725</b>	<b>DUT Type:</b>	<b>Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC</b>			
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	<u>Date(s) of Evaluation</u> May 12 & 14, 2008	<u>Test Report Serial No.</u> 050508KBC-T901-S24C	<u>Test Report Revision No.</u> Rev. 1.0 (Initial Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> June 06, 2008	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Date Tested: 05/12/2008

## System Performance Check - 835 MHz Dipole - MSL

**DUT: Dipole 835 MHz; Asset: 00022; Serial: 411; Validation: 05/02/2008**

Ambient Temp: 22°C; Fluid Temp: 20.3°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: CW

Forward Conducted Power: 250 mW

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.95 \text{ mho/m}$ ;  $\epsilon_r = 55.8$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1387; ConvF(5.96, 5.96, 5.96); Calibrated: 22/04/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASy4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

### 835 MHz Dipole - System Performance Check

**Area Scan (6x10x1):** Measurement grid:  $dx=10\text{mm}$ ,  $dy=10\text{mm}$

### 835 MHz Dipole - System Performance Check

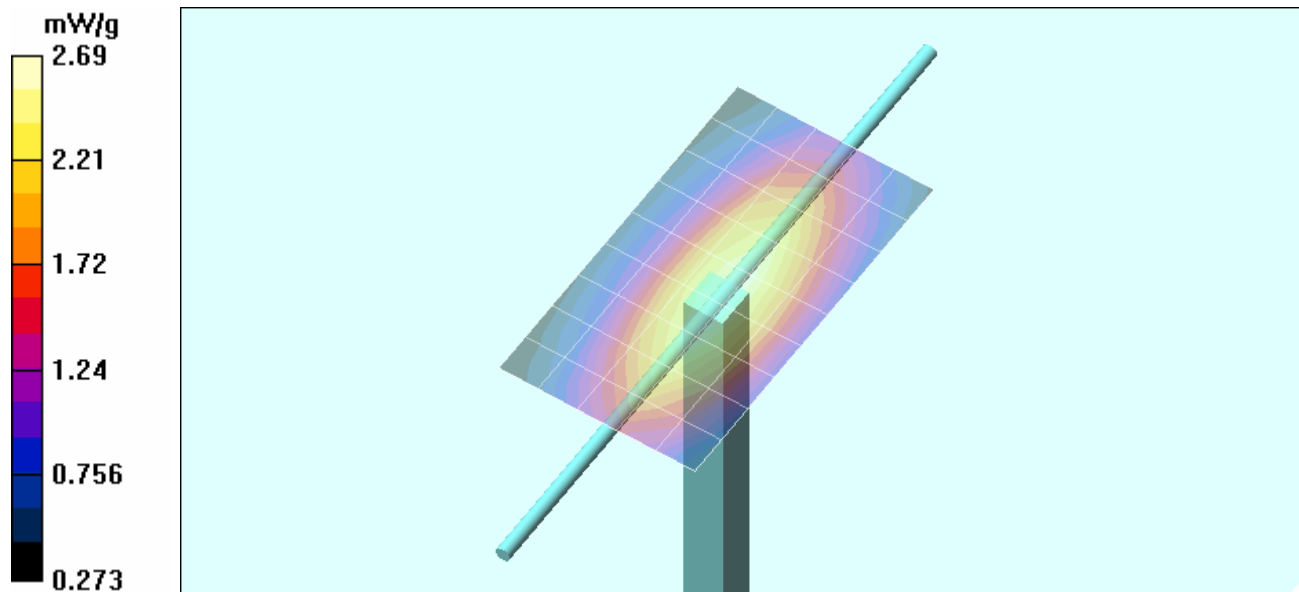
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$


Reference Value = 55.0 V/m; Power Drift = -0.052 dB



Peak SAR (extrapolated) = 3.44 W/kg

**SAR(1 g) = 2.48 mW/g; SAR(10 g) = 1.65 mW/g**

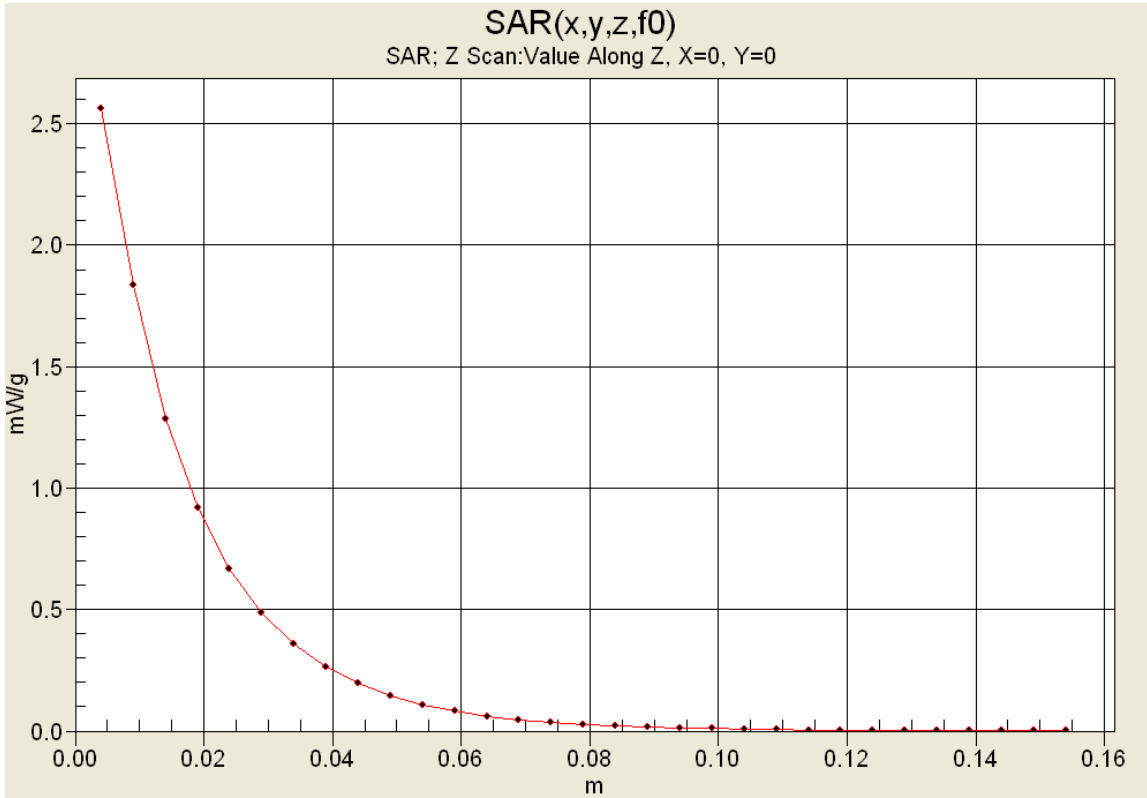
Maximum value of SAR (measured) = 2.69 mW/g




<b>Applicant:</b>	GD Itronix Corporation	<b>FCC ID:</b>	KBCIX-MC5725	<b>IC:</b>	1943A-MC5725	
<b>Model(s):</b>	IX-MC5725	<b>DUT Type:</b>	Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC			
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	<u>Date(s) of Evaluation</u> May 12 & 14, 2008	<u>Test Report Serial No.</u> 050508KBC-T901-S24C	<u>Test Report Revision No.</u> Rev. 1.0 (Initial Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> June 06, 2008	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

### Z-Axis Scan



<b>Applicant:</b>	<b>GD Itronix Corporation</b>	<b>FCC ID:</b>	<b>KBCIX-MC5725</b>	<b>IC:</b>	<b>1943A-MC5725</b>	
<b>Model(s):</b>	<b>IX-MC5725</b>	<b>DUT Type:</b>	<b>Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC</b>			
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	<u>Date(s) of Evaluation</u> May 12 & 14, 2008	<u>Test Report Serial No.</u> 050508KBC-T901-S24C	<u>Test Report Revision No.</u> Rev. 1.0 (Initial Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> June 06, 2008	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Date Tested: 05/14/2008

## System Performance Check - 1900 MHz Dipole - MSL

**DUT: Dipole 1900 MHz; Asset: 00032; Serial: 151; Validation: 05/14/2008**

Ambient Temp: 24.5°C; Fluid Temp: 23.3°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: CW

Forward Conducted Power: 250 mW

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: M1900 Medium parameters used:  $f = 1900 \text{ MHz}$ ;  $\sigma = 1.51 \text{ mho/m}$ ;  $\epsilon_r = 51.1$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: EX3DV4 - SN3600; ConvF(7.45, 7.45, 7.45); Calibrated: 19/04/2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASy4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

### 1900 MHz Dipole - System Performance Check

**Area Scan (5x8x1):** Measurement grid: dx=15mm, dy=15mm

### 1900 MHz Dipole - System Performance Check

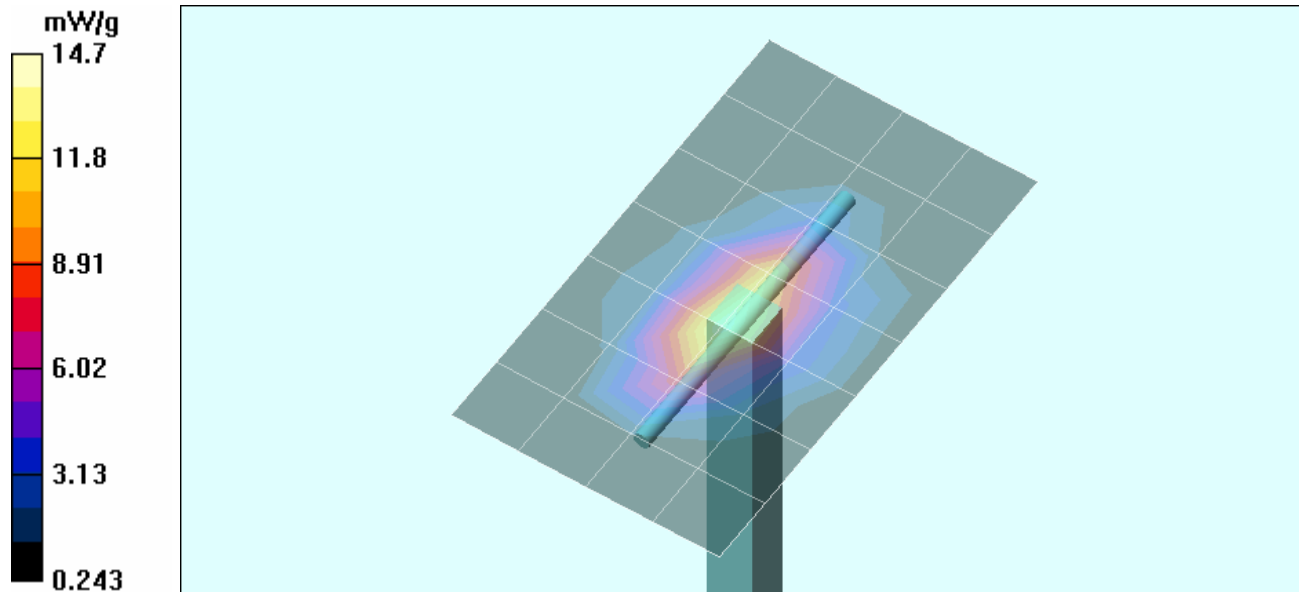
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm


Reference Value = 96.5 V/m; Power Drift = -0.069 dB



Peak SAR (extrapolated) = 19.2 W/kg

**SAR(1 g) = 10.3 mW/g; SAR(10 g) = 5.26 mW/g**

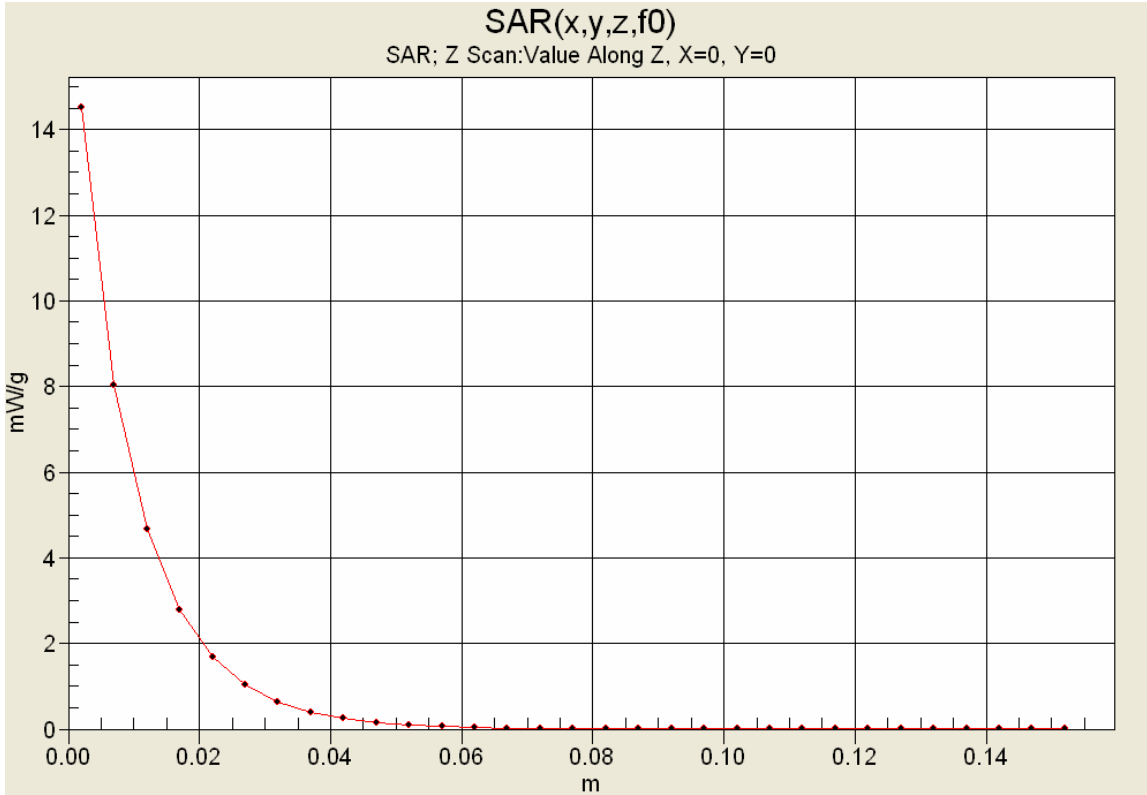
Maximum value of SAR (measured) = 14.7 mW/g






<b>Applicant:</b>	GD Itronix Corporation	<b>FCC ID:</b>	KBCIX-MC5725	<b>IC:</b>	1943A-MC5725	
<b>Model(s):</b>	IX-MC5725	<b>DUT Type:</b>	Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC			
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	<u>Date(s) of Evaluation</u> May 12 & 14, 2008	<u>Test Report Serial No.</u> 050508KBC-T901-S24C	<u>Test Report Revision No.</u> Rev. 1.0 (Initial Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> June 06, 2008	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	


### Z-Axis Scan





<b>Applicant:</b>	GD Itronix Corporation	<b>FCC ID:</b>	KBCIX-MC5725	<b>IC:</b>	1943A-MC5725	
<b>Model(s):</b>	IX-MC5725	<b>DUT Type:</b>	Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC			
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	<u>Date(s) of Evaluation</u> May 12 & 14, 2008	<u>Test Report Serial No.</u> 050508KBC-T901-S24C	<u>Test Report Revision No.</u> Rev. 1.0 (Initial Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> June 06, 2008	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

## APPENDIX C - MEASURED FLUID DIELECTRIC PARAMETERS

<b>Applicant:</b>	<b>GD Itronix Corporation</b>	<b>FCC ID:</b>	<b>KBCIX-MC5725</b>	<b>IC:</b>	<b>1943A-MC5725</b>	
<b>Model(s):</b>	<b>IX-MC5725</b>	<b>DUT Type:</b>	<b>Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC</b>			
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	<u>Date(s) of Evaluation</u> May 12 & 14, 2008	<u>Test Report Serial No.</u> 050508KBC-T901-S24C	<u>Test Report Revision No.</u> Rev. 1.0 (Initial Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> June 06, 2008	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	


### 835 MHz System Performance Check & DUT Evaluation (Body)



\*\*\*\*\*

Celltech Labs Inc.  
 Test Result for UIM Dielectric Parameter  
 Mon 12/May/2008  
 Frequency (GHz)  
 FCC\_eB FCC Limits for Body Epsilon  
 FCC\_sB FCC Limits for Body Sigma  
 Test\_e Epsilon of UIM  
 Test\_s Sigma of UIM

\*\*\*\*\*

Freq	FCC_eB	FCC_sB	Test_e	Test_s
0.7350	55.59	0.96	56.35	0.85
0.7450	55.55	0.96	56.68	0.85
0.7550	55.51	0.96	56.74	0.88
0.7650	55.47	0.96	56.51	0.87
0.7750	55.43	0.97	56.37	0.89
0.7850	55.39	0.97	56.18	0.90
0.7950	55.36	0.97	56.27	0.92
0.8050	55.32	0.97	56.14	0.91
0.8150	55.28	0.97	55.72	0.93
0.8250	55.24	0.97	55.89	0.94
0.8350	55.20	0.97	55.80	0.95
0.8450	55.17	0.98	55.57	0.96
0.8550	55.14	0.99	55.74	0.98
0.8650	55.11	1.01	55.56	0.99
0.8750	55.08	1.02	55.29	1.00
0.8850	55.05	1.03	55.26	1.01
0.8950	55.02	1.04	55.47	1.02
0.9050	55.00	1.05	55.04	1.02
0.9150	55.00	1.06	55.23	1.04
0.9250	54.98	1.06	55.00	1.04
0.9350	54.96	1.07	54.83	1.05

<b>Applicant:</b>	<b>GD Itronix Corporation</b>	<b>FCC ID:</b>	<b>KBCIX-MC5725</b>	<b>IC:</b>	<b>1943A-MC5725</b>	
<b>Model(s):</b>	<b>IX-MC5725</b>	<b>DUT Type:</b>	<b>Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC</b>			
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	<u>Date(s) of Evaluation</u> May 12 & 14, 2008	<u>Test Report Serial No.</u> 050508KBC-T901-S24C	<u>Test Report Revision No.</u> Rev. 1.0 (Initial Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> June 06, 2008	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	


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



\*\*\*\*\*

Celltech Labs Inc.  
 Test Result for UIM Dielectric Parameter  
 Wed 14/May/2008  
 Frequency (GHz)  
 FCC\_eB FCC Limits for Body Epsilon  
 FCC\_sB FCC Limits for Body Sigma  
 Test\_e Epsilon of UIM  
 Test\_s Sigma of UIM


\*\*\*\*\*



Freq	FCC_eB	FCC_sB	Test_e	Test_s
1.8000	53.30	1.52	51.30	1.41
1.8100	53.30	1.52	51.39	1.40
1.8200	53.30	1.52	51.28	1.43
1.8300	53.30	1.52	51.24	1.42
1.8400	53.30	1.52	51.17	1.44
1.8500	53.30	1.52	51.18	1.44
1.8600	53.30	1.52	51.15	1.47
1.8700	53.30	1.52	51.03	1.49
1.8800	53.30	1.52	50.83	1.48
1.8900	53.30	1.52	50.91	1.50
1.9000	53.30	1.52	51.06	1.51
1.9100	53.30	1.52	51.07	1.53
1.9200	53.30	1.52	50.85	1.53
1.9300	53.30	1.52	50.83	1.55
1.9400	53.30	1.52	50.89	1.55
1.9500	53.30	1.52	50.93	1.54
1.9600	53.30	1.52	50.73	1.56
1.9700	53.30	1.52	50.85	1.57
1.9800	53.30	1.52	50.72	1.58
1.9900	53.30	1.52	50.78	1.62
2.0000	53.30	1.52	50.77	1.63

<b>Applicant:</b>	GD Itronix Corporation	<b>FCC ID:</b>	KBCIX-MC5725	<b>IC:</b>	1943A-MC5725	
<b>Model(s):</b>	IX-MC5725	<b>DUT Type:</b>	Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC			
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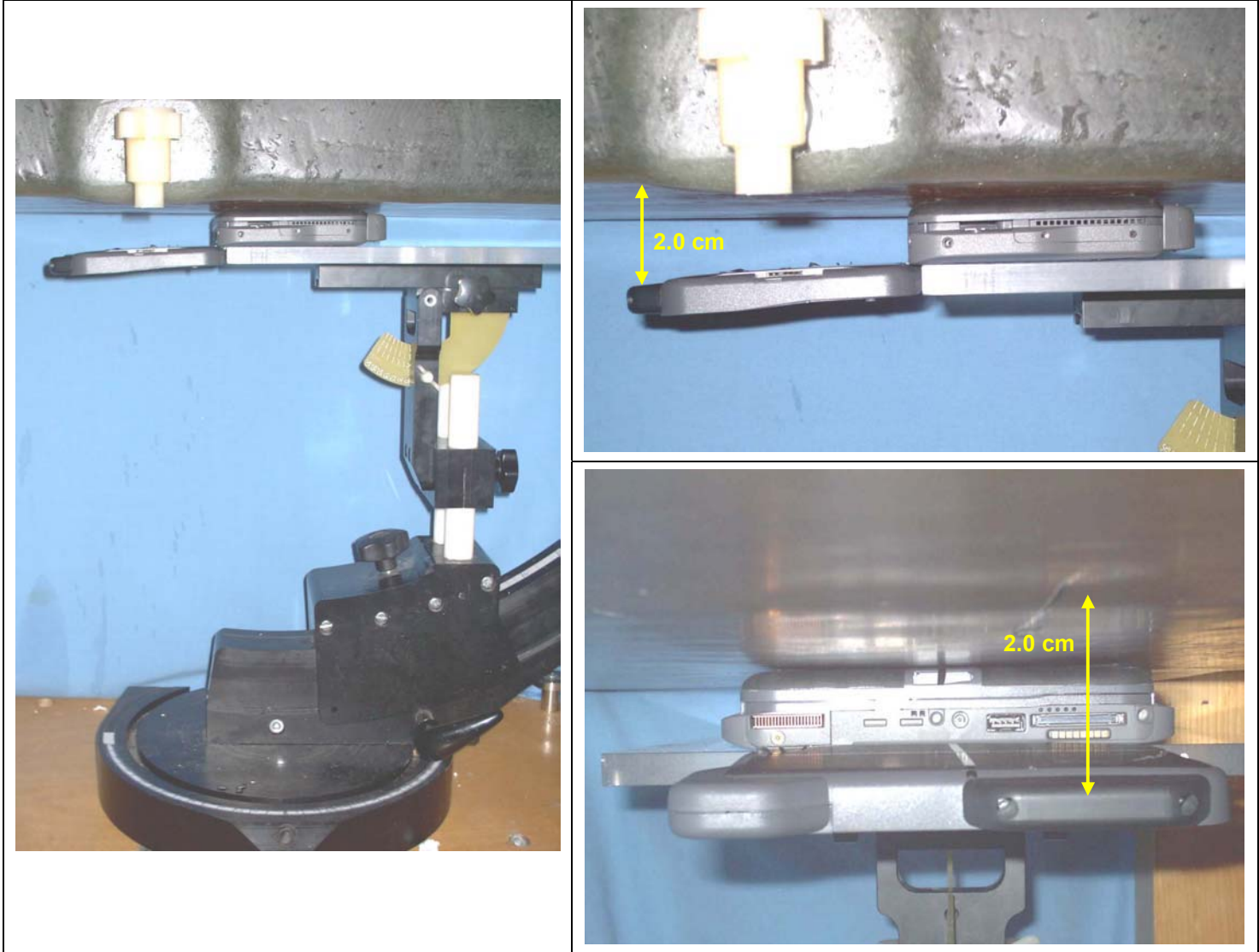
	<u>Date(s) of Evaluation</u> May 12 & 14, 2008	<u>Test Report Serial No.</u> 050508KBC-T901-S24C	<u>Test Report Revision No.</u> Rev. 1.0 (Initial Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> June 06, 2008	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

**APPENDIX D - SAR TEST SETUP PHOTOGRAPHS**



<b>Applicant:</b>	<b>GD Itronix Corporation</b>	<b>FCC ID:</b>	<b>KBCIX-MC5725</b>	<b>IC:</b>	<b>1943A-MC5725</b>	
<b>Model(s):</b>	<b>IX-MC5725</b>	<b>DUT Type:</b>	<b>Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC</b>			
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	<u>Date(s) of Evaluation</u> May 12 & 14, 2008	<u>Test Report Serial No.</u> 050508KBC-T901-S24C	<u>Test Report Revision No.</u> Rev. 1.0 (Initial Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> June 06, 2008	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	


**BODY SAR TEST SETUP PHOTOGRAPHS**  
**2.0 cm Spacing from DUT Antenna to Planar Phantom**  
**Bottom Side of PC Touching Phantom - LCD Lid Extended**



<b>Applicant:</b>	<b>GD Itronix Corporation</b>	<b>FCC ID:</b>	<b>KBCIX-MC5725</b>	<b>IC:</b>	<b>1943A-MC5725</b>	
<b>Model(s):</b>	<b>IX-MC5725</b>	<b>DUT Type:</b>	<b>Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC</b>			
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	<u>Date(s) of Evaluation</u> May 12 & 14, 2008	<u>Test Report Serial No.</u> 050508KBC-T901-S24C	<u>Test Report Revision No.</u> Rev. 1.0 (Initial Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> June 06, 2008	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

**APPENDIX E - SYSTEM VALIDATION**

<b>Applicant:</b>	<b>GD Itronix Corporation</b>	<b>FCC ID:</b>	<b>KBCIX-MC5725</b>	<b>IC:</b>	<b>1943A-MC5725</b>	
<b>Model(s):</b>	<b>IX-MC5725</b>	<b>DUT Type:</b>	<b>Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC</b>			
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	Date of Evaluation:	May 02, 2008	Document Serial No.:	SV835M-050208-R1.0		
	Evaluation Type:	System Validation	Validation Dipole:	835 MHz	Fluid Type:	Body

## 835 MHz SYSTEM VALIDATION

Type:

**835 MHz Validation Dipole**

Asset Number:

**00022**

Serial Number:

**411**

Place of Validation:

**Celltech Labs Inc.**

Date of Validation:

**May 02, 2008**

**Celltech Labs Inc. certifies that the 835 MHz System Validation was performed on the date indicated above.**

Performed by:

**Sean Johnston**

Signature:

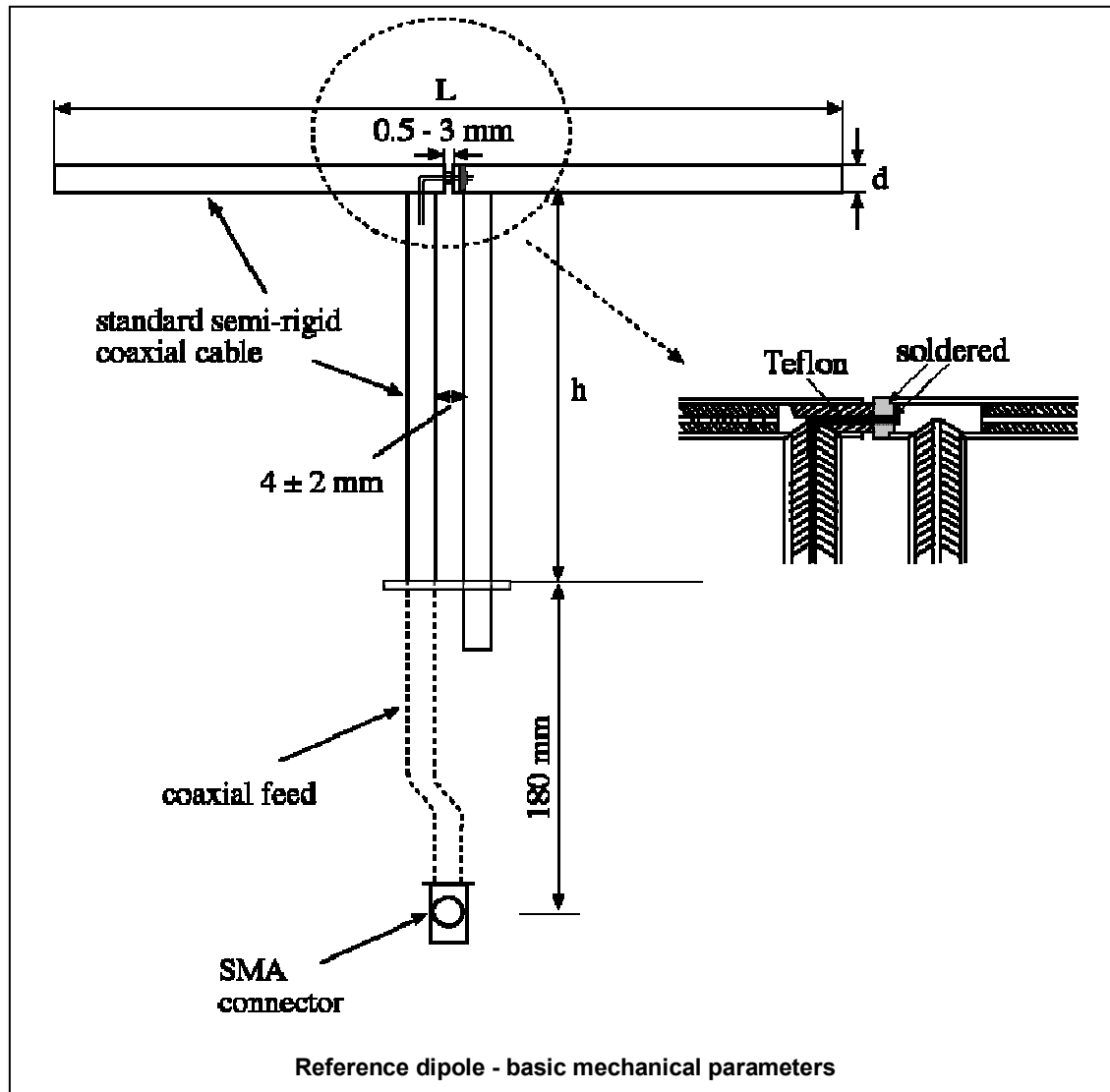


## 1. Dipole Construction & Electrical Characteristics

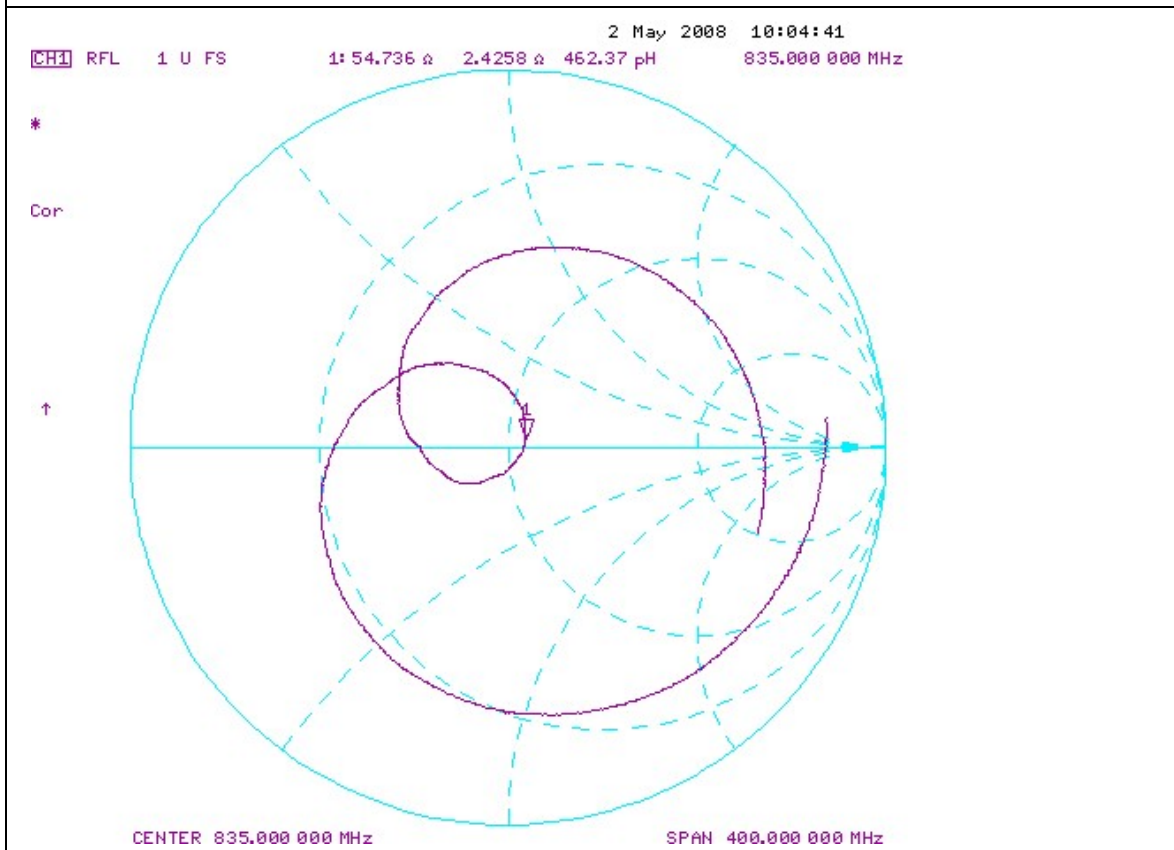
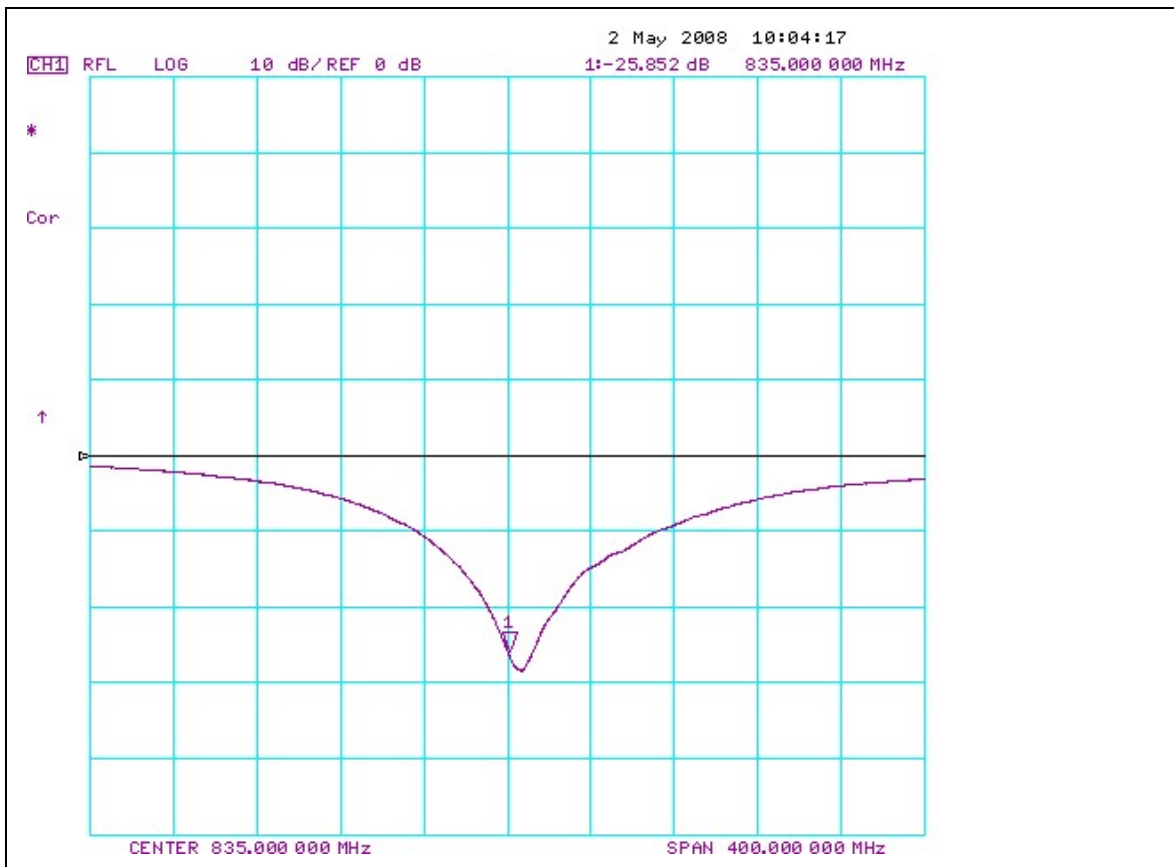
The validation dipole was constructed in accordance with the requirements specified in IEEE Standard 1528-2003 and International Standard IEC 62209-1:2005. The electrical properties were measured using an HP 8753ET Network Analyzer. The network analyzer was calibrated to the validation dipole N-type connector feed point using an HP85032E Type N calibration kit. The dipole was placed parallel to a planar phantom at a separation distance of 15.0mm from the simulating fluid using a loss-less dielectric spacer. The measured input impedance is:

Feed point impedance at 835 MHz       $\text{Re}\{Z\} = 54.736\Omega$   
 $\text{Im}\{Z\} = 2.4258\Omega$

Return Loss at 835 MHz                      -25.852dB



## 2. Validation Dipole VSWR Data



### 3. Validation Dipole Dimensions

Frequency (MHz)	L (mm)	h (mm)	d (mm)
300	396.0	250.0	6.0
450	270.0	167.0	6.0
<b>835</b>	<b>161.0</b>	<b>89.8</b>	<b>3.6</b>
900	149.0	83.3	3.6
1450	89.1	51.7	3.6
1800	72.0	41.7	3.6
1900	68.0	39.5	3.6
2000	64.5	37.5	3.6
2450	51.5	30.4	3.6
3000	41.5	25.0	3.6

### 4. Validation Phantom

The validation phantom is a Fiberglass shell planar phantom manufactured by Barski Industries Ltd. The phantom is in conformance with the requirements defined by IEEE SCC34-SC2 for the dosimetric evaluations of body-worn and lap-held operating configurations. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids.

**Shell Thickness:** 2.0 ± 0.1 mm  
**Filling Volume:** Approx. 55 liters  
**Dimensions:** 94 cm (L) x 44 cm (W) x 22 cm (H)

### 5. Test Equipment List

TEST EQUIPMENT	ASSET NO.	SERIAL NO.	DATE OF CAL.	CAL. DUE DATE
SPEAG DASY4 Measurement Server	00158	1078	N/A	N/A
SPEAG Robot	00046	599396-01	N/A	N/A
SPEAG DAE4	00019	353	22Apr08	22Apr09
SPEAG ET3DV6 E-Field Probe	00016	1387	22Apr08	22Apr09
835 MHz Validation Dipole	00022	411	02May08	02May09
Barski Planar Phantom	00155	03-01	N/A	N/A
ALS-PR-DIEL Dielectric Probe Kit	00160	260-00953	N/A	N/A
Gigatronics 8652A Power Meter	00007	1835272	23Apr08	23Apr09
Gigatronics 80701A Power Sensor	00014	1833699	23Apr08	23Apr09
HP 8753ET Network Analyzer	00134	US39170292	28Apr08	28Apr09
HP 8648D Signal Generator	00005	3847A00611	NCR	NCR
Amplifier Research 5S1G4 Power Amplifier	00106	26235	NCR	NCR

	Date of Evaluation:	May 02, 2008	Document Serial No.:	SV835M-050208-R1.0		
	Evaluation Type:	System Validation	Validation Dipole:	835 MHz	Fluid Type:	Body

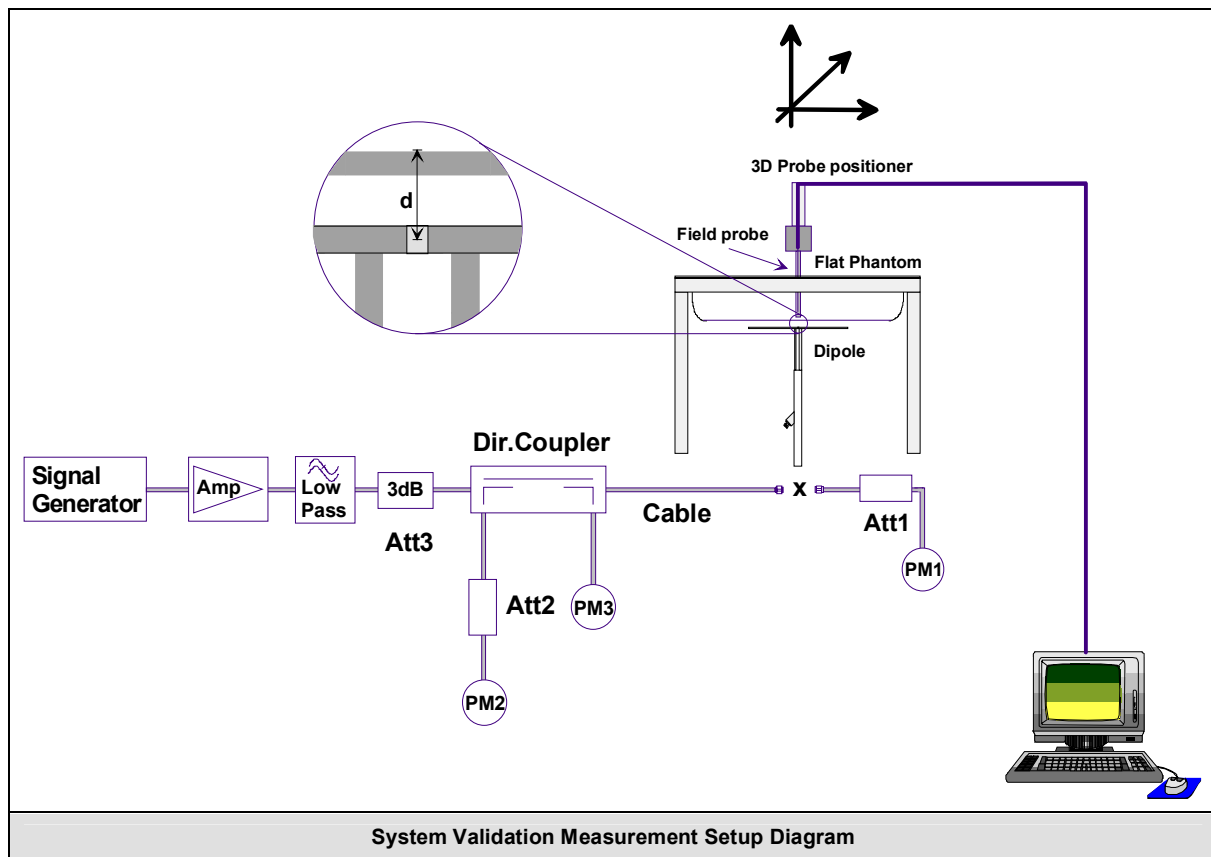
**6. 835 MHz Validation Dipole & Planar Phantom**



## 7. SAR Measurement

Measurements were made using a dosimetric E-field probe ET3DV6 (S/N: 1387, Conversion Factor 5.96). The SAR measurement was performed with the E-field probe in mechanical and optical surface detection mode. The setup and determination of the forward power into the dipole was performed using the following procedures.

First the power meter PM1 (including attenuator Att1) is connected to the cable to measure the forward power at the location of the dipole connector (X). The signal generator is adjusted for the desired forward power at the dipole connector (taking into account the attenuation of Att1) as read by power meter PM2. After connecting the cable to the dipole, the signal generator is readjusted for the same reading at power meter PM2. If the signal generator does not allow adjustment in 0.01dB steps, the remaining difference at PM2 must be taken into consideration. PM3 records the reflected power from the dipole to ensure that the value is not changed from the previous value. The reflected power should be 20dB below the forward power.



## 8. Measurement Conditions

The planar phantom was filled with 835 MHz Body tissue simulant.

Relative Permittivity: 57.5 (+4.2% deviation from target)  
 Conductivity: 0.97 mho/m (0.0% deviation from target)  
 Fluid Temperature: 20.3 °C (Start of Test) / 20.5 °C (End of Test)  
 Fluid Depth: ≥ 15.0 cm

Environmental Conditions:

Ambient Temperature: 22.0°C  
 Barometric Pressure: 101.1 kPa  
 Humidity: 35%

The 835 MHz Body tissue simulant consisted of the following ingredients:

Ingredient	Percentage by weight	
Water	53.79%	
Sugar	45.13%	
Salt	0.98%	
Dowicil 75	0.10%	
<b>IEEE/IEC Target Dielectric Parameters (835 MHz):</b>	<b><math>\epsilon_r = 55.2 (+/- 5\%)</math></b>	<b><math>\sigma = 0.97 \text{ S/m (+/- 5\%)}</math></b>

## 9. System Validation SAR Results

SAR @ 0.25W Input averaged over 1g (W/kg)				SAR @ 1W Input averaged over 1g (W/kg)			
SPEAG Target		Measured	Deviation	SPEAG Target		Measured	Deviation
<b>2.43</b>	<b>+/- 10%</b>	2.53	+4.2%	<b>9.71</b>	<b>+/- 10%</b>	10.1	+4.2%
SAR @ 0.25W Input averaged over 10g (W/kg)				SAR @ 1W Input averaged over 10g (W/kg)			
SPEAG Target		Measured	Deviation	SPEAG Target		Measured	Deviation
<b>1.60</b>	<b>+/- 10%</b>	1.69	+5.6%	<b>6.38</b>	<b>+/- 10%</b>	6.76	+6.0%

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

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

	Date of Evaluation:	May 02, 2008	Document Serial No.:	SV835M-050208-R1.0		
	Evaluation Type:	System Validation	Validation Dipole:	835 MHz	Fluid Type:	Body

Date Tested: 05/02/2008

## System Validation - 835 MHz Dipole - MSL

**DUT: Dipole 835 MHz; Asset: 00022; Serial: 411; Validation: 05/02/2008**

Ambient Temp: 22°C; Fluid Temp: 20.3°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: CW

Forward Conducted Power: 250 mW

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.97 \text{ mho/m}$ ;  $\epsilon_r = 57.5$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1387; ConvF(5.96, 5.96, 5.96); Calibrated: 22/04/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Barski Industries; Type: Fiberglas Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

### 835 MHz Dipole - System Validation

**Area Scan (6x10x1):** Measurement grid:  $dx=10\text{mm}$ ,  $dy=10\text{mm}$

Maximum value of SAR (measured) = 2.74 mW/g

### 835 MHz Dipole - System Validation

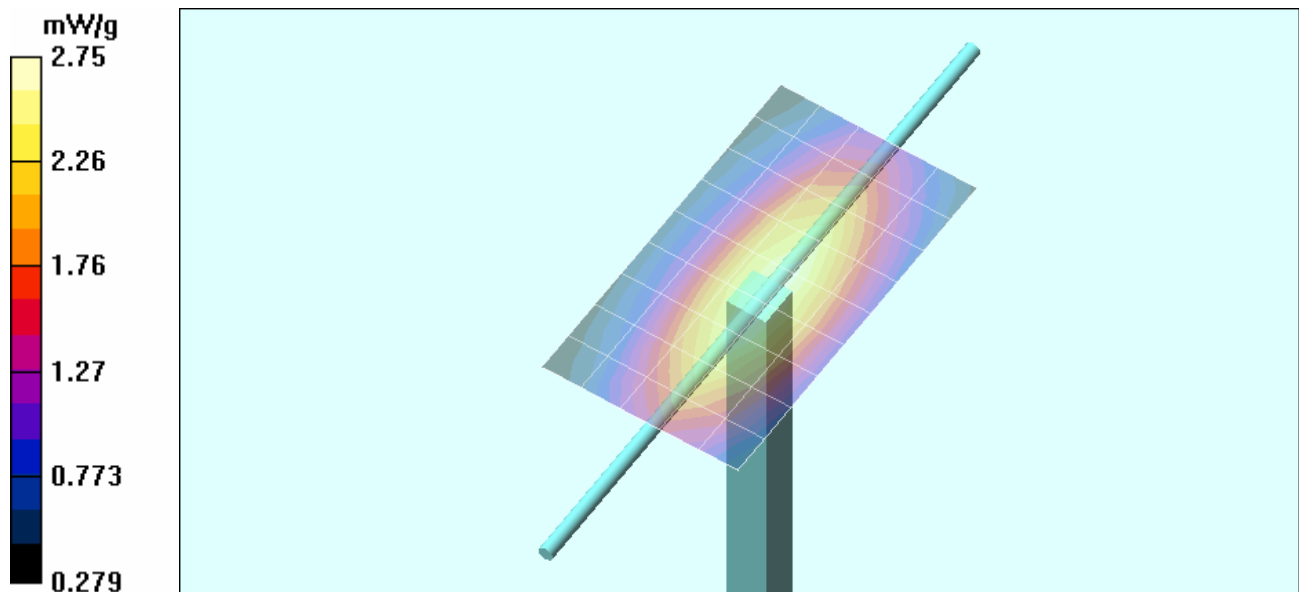
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 55.0 V/m; Power Drift = -0.052 dB

Peak SAR (extrapolated) = 3.52 W/kg

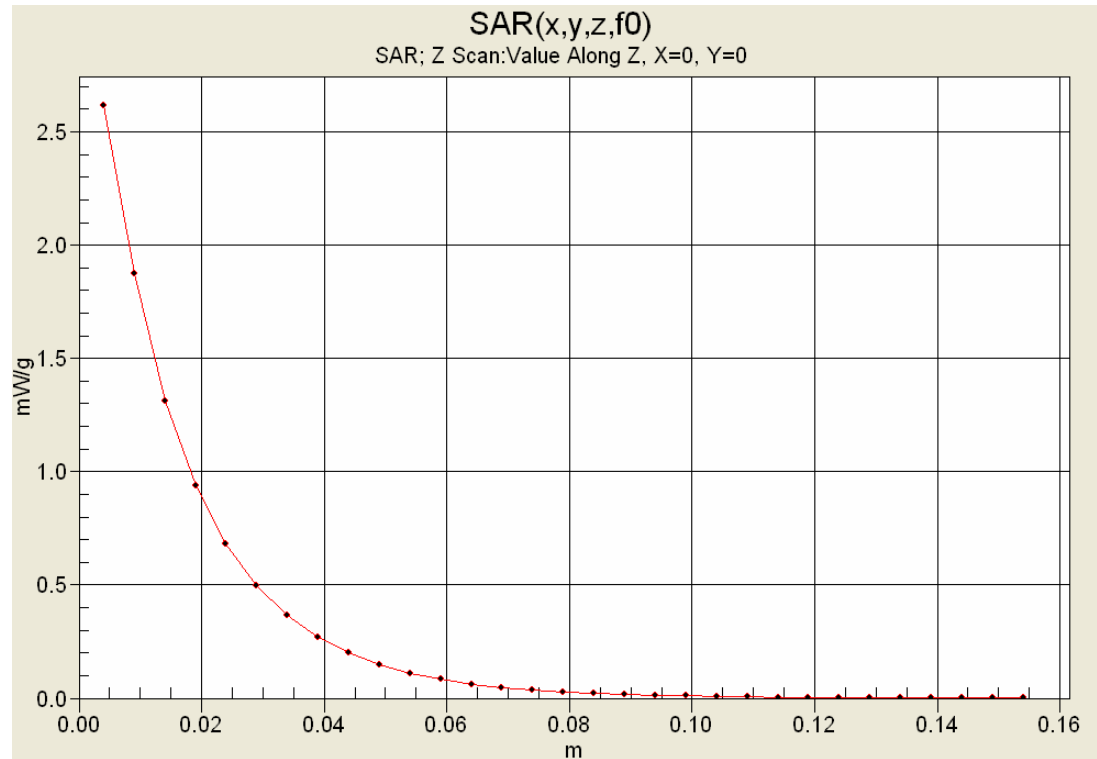
**SAR(1 g) = 2.53 mW/g; SAR(10 g) = 1.69 mW/g**

Maximum value of SAR (measured) = 2.75 mW/g





## Z-Axis Scan



## 10. Measured Fluid Dielectric Parameters

### System Validation - 835 MHz (Body)

\*\*\*\*\*  
 Celltech Labs Inc.  
 Test Result for UIM Dielectric Parameter  
 Fri 02/May/2008  
 Frequency (GHz)  
 IEEE 1528-2003 Limits for Body Epsilon  
 IEEE 1528-2003 Limits for Body Sigma  
 Test\_e Epsilon of UIM  
 Test\_s Sigma of UIM  
 \*\*\*\*\*

Freq	IEEE_eB	IEEE_sB	Test_e	Test_s
0.7350	55.59	0.96	57.99	0.86
0.7450	55.55	0.96	57.98	0.88
0.7550	55.51	0.96	57.89	0.90
0.7650	55.47	0.96	58.17	0.92
0.7750	55.43	0.97	57.98	0.92
0.7850	55.39	0.97	57.68	0.91
0.7950	55.36	0.97	57.63	0.94
0.8050	55.32	0.97	57.57	0.95
0.8150	55.28	0.97	57.80	0.96
0.8250	55.24	0.97	57.64	0.96
0.8350	55.20	0.97	57.51	0.97
0.8450	55.17	0.98	57.41	1.00
0.8550	55.14	0.99	57.24	1.00
0.8650	55.11	1.01	57.30	1.00
0.8750	55.08	1.02	57.27	1.01
0.8850	55.05	1.03	57.21	1.03
0.8950	55.02	1.04	56.98	1.03
0.9050	55.00	1.05	56.68	1.04
0.9150	55.00	1.06	56.71	1.06
0.9250	54.98	1.06	56.72	1.08
0.9350	54.96	1.07	56.69	1.08

## 11. Measurement Uncertainties

UNCERTAINTY BUDGET FOR SYSTEM VALIDATION						
Error Description	Uncertainty Value ±%	Probability Distribution	Divisor	ci 1g	Uncertainty Value ±% (1g)	V <sub>i</sub> or V <sub>eff</sub>
<b>Measurement System</b>						
Probe calibration (835 MHz)	5.5	Normal	1	1	5.5	∞
Axial isotropy of the probe	4.7	Rectangular	1.732050808	1	2.7	∞
Spherical isotropy of the probe	0	Rectangular	1.732050808	1	0.0	∞
Spatial resolution	0	Rectangular	1.732050808	1	0.0	∞
Boundary effects	0.9	Rectangular	1.732050808	1	0.5	∞
Probe linearity	4.7	Rectangular	1.732050808	1	2.7	∞
Detection limit	1	Rectangular	1.732050808	1	0.6	∞
Readout electronics	0.3	Normal	1	1	0.3	∞
Response time	0	Rectangular	1.732050808	1	0.0	∞
Integration time	0	Rectangular	1.732050808	1	0.0	∞
RF ambient conditions	3	Rectangular	1.732050808	1	1.7	∞
Mech. constraints of robot	0.4	Rectangular	1.732050808	1	0.2	∞
Probe positioning	2.9	Rectangular	1.732050808	1	1.7	∞
Extrapolation & integration	1	Rectangular	1.732050808	1	0.6	∞
<b>Dipole</b>						
Dipole Positioning	2	Normal	1.732050808	1	1.2	∞
Power & Power Drift	4.7	Normal	1.732050808	1	2.7	∞
<b>Phantom and Setup</b>						
Phantom uncertainty	4	Rectangular	1.732050808	1	2.3	∞
Liquid conductivity (target)	5	Rectangular	1.732050808	0.64	1.8	∞
Liquid conductivity (measured)	0	Normal	1	0.64	0.0	∞
Liquid permittivity (target)	5	Rectangular	1.732050808	0.6	1.7	∞
Liquid permittivity (measured)	4.2	Normal	1	0.6	2.5	∞
<b>Combined Standard Uncertainty</b>					<b>8.87</b>	
<b>Expanded Uncertainty (k=2)</b>					<b>17.74</b>	
<b>Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003 and IEC Standard 62209-1:2005</b>						

	Date of Evaluation:	May 14, 2008	Document Serial No.:	SV1900M-051408-R1.0		
	Evaluation Type:	System Validation	Validation Dipole:	1900 MHz	Fluid Type:	Body

## 1900 MHz SYSTEM VALIDATION

Type:

**1900 MHz Validation Dipole**

Asset Number:

**00032**

Serial Number:

**151**

Place of Validation:

**Celltech Labs Inc.**

Date of Validation:

**May 14, 2008**

**Celltech Labs Inc. certifies that the 1900 MHz System Validation was performed on the date indicated above.**

Performed by:

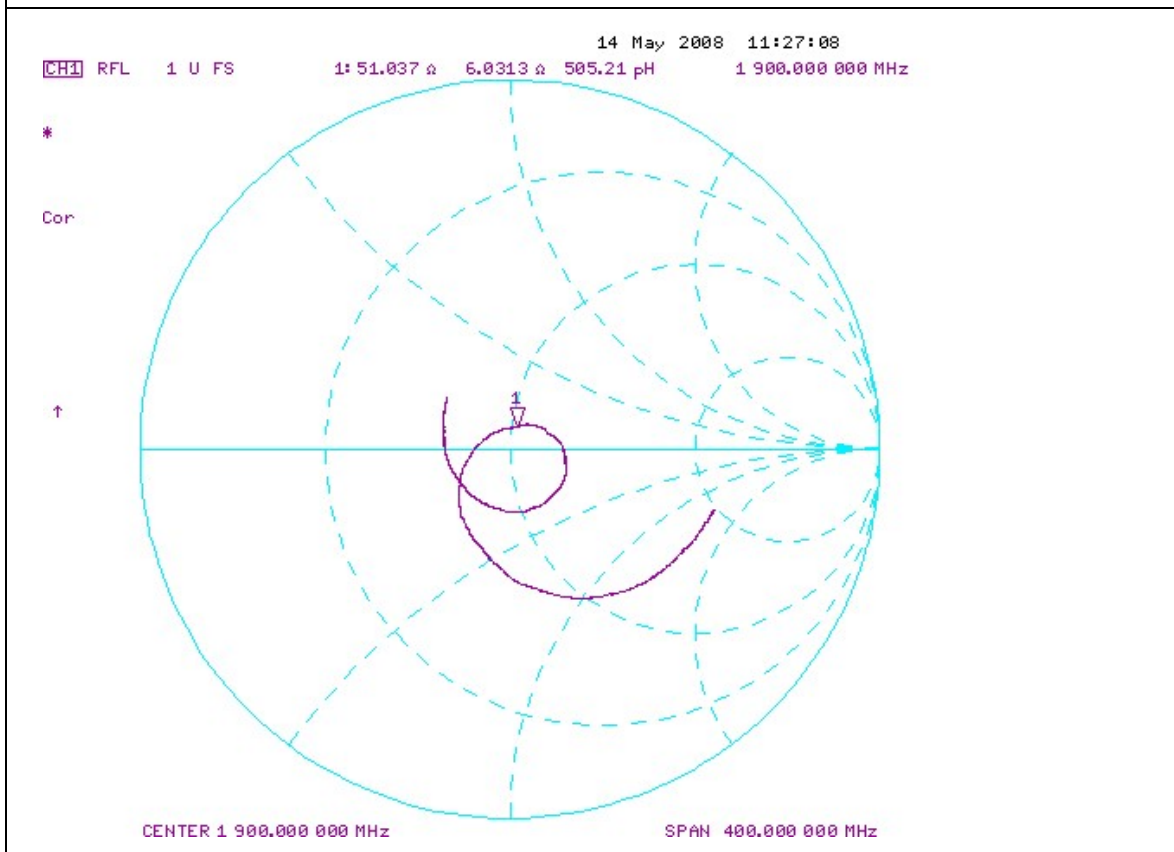
**Sean Johnston**

Signature:





## 2. Validation Dipole VSWR Data



### 3. Validation Dipole Dimensions

Frequency (MHz)	L (mm)	h (mm)	d (mm)
300	396.0	250.0	6.0
450	270.0	167.0	6.0
835	161.0	89.8	3.6
900	149.0	83.3	3.6
1450	89.1	51.7	3.6
1800	72.0	41.7	3.6
<b>1900</b>	<b>68.0</b>	<b>39.5</b>	<b>3.6</b>
2000	64.5	37.5	3.6
2450	51.5	30.4	3.6
3000	41.5	25.0	3.6

### 4. Validation Phantom

The validation phantom is a Fiberglass shell planar phantom manufactured by Barski Industries Ltd. The phantom is in conformance with the requirements defined by IEEE SCC34-SC2 for the dosimetric evaluations of body-worn and lap-held operating configurations. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids.

**Shell Thickness:** 2.0 ± 0.1 mm  
**Filling Volume:** Approx. 55 liters  
**Dimensions:** 94 cm (L) x 44 cm (W) x 22 cm (H)

### 5. Test Equipment List

TEST EQUIPMENT	ASSET NO.	SERIAL NO.	DATE OF CAL.	CAL. DUE DATE
SPEAG DASY4 Measurement Server	00158	1078	N/A	N/A
SPEAG Robot	00046	599396-01	N/A	N/A
SPEAG DAE4	00019	353	22Apr08	22Apr09
EX3DV4 E-Field Probe	00213	3600	19Apr08	19Apr09
1900 MHz Validation Dipole	00032	151	14May08	14May09
Barski Planar Phantom	00155	03-01	N/A	N/A
ALS-PR-DIEL Dielectric Probe Kit	00160	260-00953	N/A	N/A
Gigatronics 8652A Power Meter	00007	1835272	23Apr08	23Apr09
Gigatronics 80701A Power Sensor	00014	1833699	23Apr08	23Apr09
HP 8753ET Network Analyzer	00134	US39170292	28Apr08	28Apr09
HP 8648D Signal Generator	00005	3847A00611	NCR	NCR
Amplifier Research 5S1G4 Power Amplifier	00106	26235	NCR	NCR

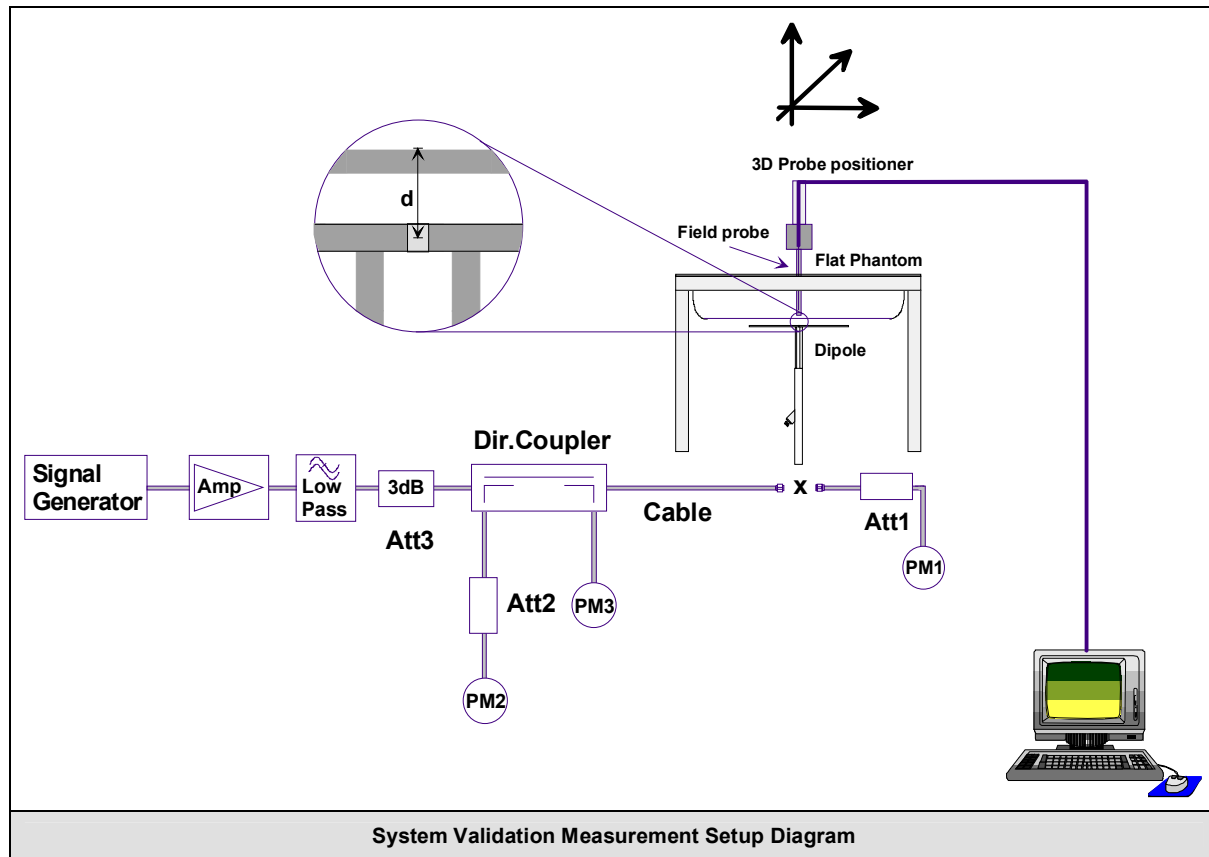
## 6. 1900 MHz Validation Dipole & Planar Phantom



## 7. SAR Measurement

Measurements were made using a dosimetric E-field probe EX3DV4 (S/N: 3600, Conversion Factor 7.45). The SAR measurement was performed with the E-field probe in mechanical detection mode only. The setup and determination of the forward power into the dipole was performed using the procedures described below.

First the power meter PM1 (including attenuator Att1) is connected to the cable to measure the forward power at the location of the dipole connector (X). The signal generator is adjusted for the desired forward power at the dipole connector (taking into account the attenuation of Att1) as read by power meter PM2. After connecting the cable to the dipole, the signal generator is readjusted for the same reading at power meter PM2. If the signal generator does not allow adjustment in 0.01dB steps, the remaining difference at PM2 must be taken into consideration. PM3 records the reflected power from the dipole to ensure that the value is not changed from the previous value. The reflected power should be 50dB below the forward power.





## 8. Measurement Conditions

The planar phantom was filled with 1900 MHz Body tissue simulant.

Relative Permittivity: 51.1 (-4.1% deviation from target)  
 Conductivity: 1.51 mho/m (-0.6% deviation from target)  
 Fluid Temperature: 23.3 °C (Start of Test) / 23.2 °C (End of Test)  
 Fluid Depth: ≥ 15.0 cm  
 Environmental Conditions:  
 Ambient Temperature: 24.5 °C  
 Barometric Pressure: 101.1 kPa  
 Humidity: 35%

The 1900 MHz Body tissue simulant consisted of the following ingredients:

Ingredient	Percentage by weight	
Water	69.85%	
Glycol	29.89%	
Salt	0.26%	
<b>IEEE/IEC Target Dielectric Parameters (1900 MHz):</b>	<b><math>\epsilon_r = 53.3 (+/-5\%)</math></b>	<b><math>\sigma = 1.52 \text{ S/m (+/-5\%)}</math></b>

## 9. System Validation SAR Results

SAR @ 0.25W Input averaged over 1g (W/kg)				SAR @ 1W Input averaged over 1g (W/kg)			
SPEAG Target		Measured	Deviation	SPEAG Target		Measured	Deviation
<b>9.95</b>	<b>+/- 10%</b>	10.3	+3.6%	<b>39.8</b>	<b>+/- 10%</b>	41.2	+3.6%
SAR @ 0.25W Input averaged over 10g (W/kg)				SAR @ 1W Input averaged over 10g (W/kg)			
SPEAG Target		Measured	Deviation	SPEAG Target		Measured	Deviation
<b>5.20</b>	<b>+/- 10%</b>	5.26	+1.2%	<b>20.8</b>	<b>+/- 10%</b>	21.04	+1.2%

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

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

	Date of Evaluation:	May 14, 2008	Document Serial No.:	SV1900M-051408-R1.0		
	Evaluation Type:	System Validation	Validation Dipole:	1900 MHz	Fluid Type:	Body

Date Tested: 05/14/2008

## System Validation - 1900 MHz Dipole - MSL

**DUT: Dipole 1900 MHz; Asset: 00032; Serial: 151; Validation: 05/14/2008**

Ambient Temp: 24.5°C; Fluid Temp: 23.3°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: CW

Forward Conducted Power: 250 mW

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: M1900 Medium parameters used:  $f = 1900 \text{ MHz}$ ;  $\sigma = 1.51 \text{ mho/m}$ ;  $\epsilon_r = 51.1$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: EX3DV4 - SN3600; ConvF(7.45, 7.45, 7.45); Calibrated: 19/04/2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Barski Industries; Type: Fiberglas Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

### 1900 MHz Dipole - System Validation

**Area Scan (5x8x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

### 1900 MHz Dipole - System Validation

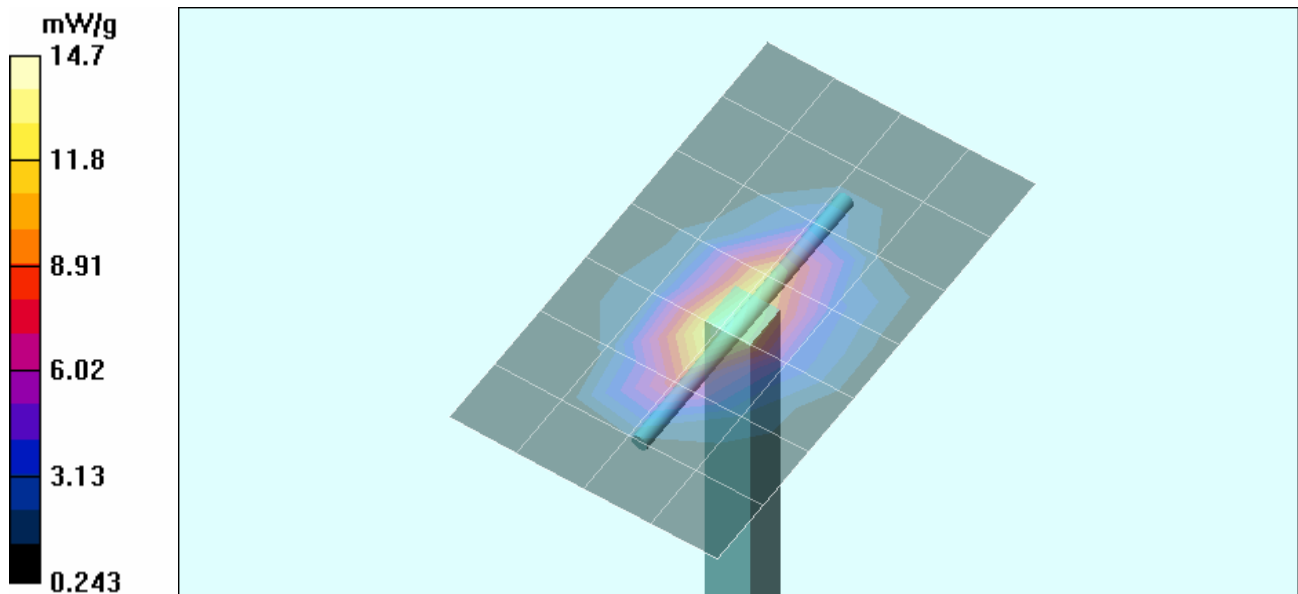
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 96.5 V/m; Power Drift = -0.069 dB

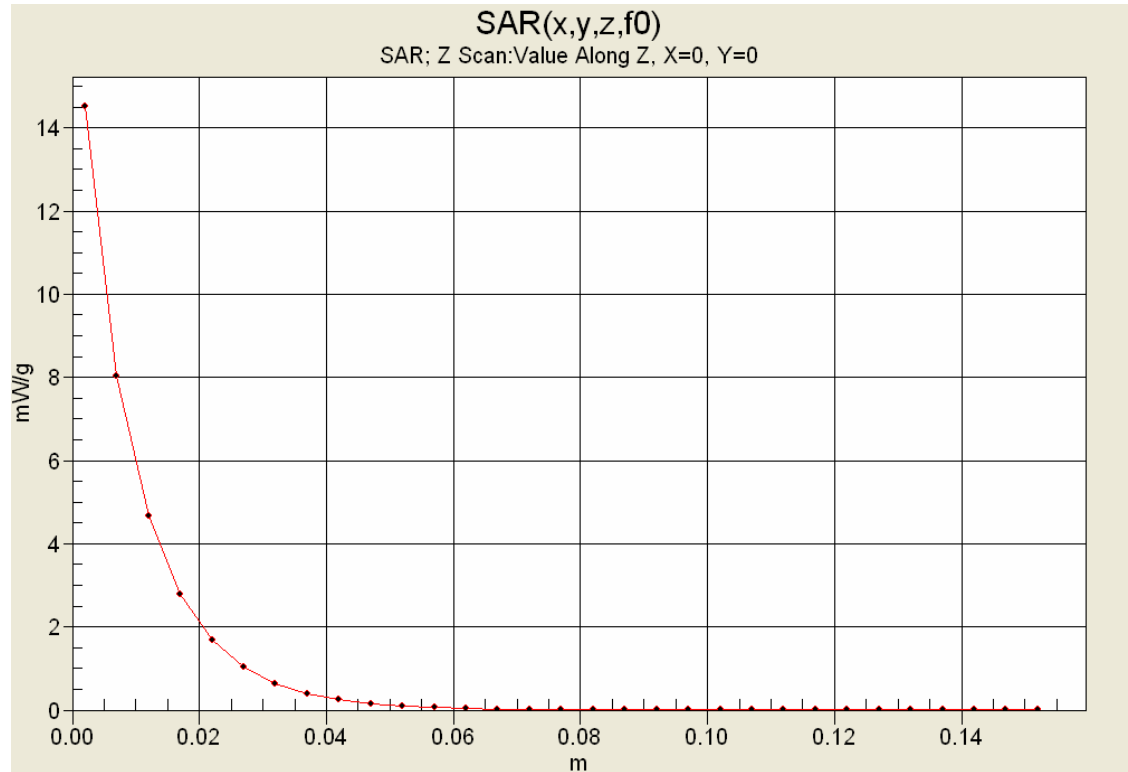
Peak SAR (extrapolated) = 19.2 W/kg

**SAR(1 g) = 10.3 mW/g; SAR(10 g) = 5.26 mW/g**

Maximum value of SAR (measured) = 14.7 mW/g



## Z-Axis Scan



## 10. Measured Fluid Dielectric Parameters



### System Validation - 1900 MHz (Body)

\*\*\*\*\*  
 Celltech Labs Inc.  
 Test Result for UIM Dielectric Parameter  
 Wed 14/May/2008  
 Frequency (GHz)  
 FCC\_eB FCC Limits for Body Epsilon  
 FCC\_sB FCC Limits for Body Sigma  
 Test\_e Epsilon of UIM  
 Test\_s Sigma of UIM  
 \*\*\*\*\*


Freq	FCC_eB	FCC_sB	Test_e	Test_s
1.8000	53.30	1.52	51.30	1.41
1.8100	53.30	1.52	51.39	1.40
1.8200	53.30	1.52	51.28	1.43
1.8300	53.30	1.52	51.24	1.42
1.8400	53.30	1.52	51.17	1.44
1.8500	53.30	1.52	51.18	1.44
1.8600	53.30	1.52	51.15	1.47
1.8700	53.30	1.52	51.03	1.49
1.8800	53.30	1.52	50.83	1.48
1.8900	53.30	1.52	50.91	1.50
1.9000	53.30	1.52	51.06	1.51
1.9100	53.30	1.52	51.07	1.53
1.9200	53.30	1.52	50.85	1.53
1.9300	53.30	1.52	50.83	1.55
1.9400	53.30	1.52	50.89	1.55
1.9500	53.30	1.52	50.93	1.54
1.9600	53.30	1.52	50.73	1.56
1.9700	53.30	1.52	50.85	1.57
1.9800	53.30	1.52	50.72	1.58
1.9900	53.30	1.52	50.78	1.62
2.0000	53.30	1.52	50.77	1.63

## 11. Measurement Uncertainties

UNCERTAINTY BUDGET FOR SYSTEM VALIDATION						
Error Description	Uncertainty Value $\pm\%$	Probability Distribution	Divisor	ci 1g	Uncertainty Value $\pm\%$ (1g)	$V_i$ or $V_{eff}$
<b>Measurement System</b>						
Probe calibration (1810 MHz)	5.5	Normal	1	1	5.5	$\infty$
Axial isotropy of the probe	4.7	Rectangular	1.732050808	1	2.7	$\infty$
Spherical isotropy of the probe	0	Rectangular	1.732050808	1	0.0	$\infty$
Spatial resolution	0	Rectangular	1.732050808	1	0.0	$\infty$
Boundary effects	0.2	Rectangular	1.732050808	1	0.1	$\infty$
Probe linearity	4.7	Rectangular	1.732050808	1	2.7	$\infty$
Detection limit	1	Rectangular	1.732050808	1	0.6	$\infty$
Readout electronics	0.3	Normal	1	1	0.3	$\infty$
Response time	0	Rectangular	1.732050808	1	0.0	$\infty$
Integration time	0	Rectangular	1.732050808	1	0.0	$\infty$
RF ambient conditions	3	Rectangular	1.732050808	1	1.7	$\infty$
Mech. constraints of robot	0.4	Rectangular	1.732050808	1	0.2	$\infty$
Probe positioning	2.9	Rectangular	1.732050808	1	1.7	$\infty$
Extrapolation & integration	1	Rectangular	1.732050808	1	0.6	$\infty$
<b>Dipole</b>						
Dipole Positioning	2	Normal	1.732050808	1	1.2	$\infty$
Power & Power Drift	4.7	Normal	1.732050808	1	2.7	$\infty$
<b>Phantom and Setup</b>						
Phantom uncertainty	4	Rectangular	1.732050808	1	2.3	$\infty$
Liquid conductivity (target)	5	Rectangular	1.732050808	0.64	1.8	$\infty$
Liquid conductivity (measured)	0.6	Normal	1	0.64	0.4	$\infty$
Liquid permittivity (target)	5	Rectangular	1.732050808	0.6	1.7	$\infty$
Liquid permittivity (measured)	4.1	Normal	1	0.6	2.5	$\infty$
<b>Combined Standard Uncertainty</b>					<b>8.85</b>	
<b>Expanded Uncertainty (k=2)</b>					<b>17.69</b>	
<b>Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003 and IEC Standard 62209-1:2005</b>						

	<u>Date(s) of Evaluation</u> May 12 & 14, 2008	<u>Test Report Serial No.</u> 050508KBC-T901-S24C	<u>Test Report Revision No.</u> Rev. 1.0 (Initial Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> June 06, 2008	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

## APPENDIX G - PLANAR PHANTOM CERTIFICATE OF CONFORMITY

<b>Applicant:</b>	<b>GD Itronix Corporation</b>	<b>FCC ID:</b>	<b>KBCIX-MC5725</b>	<b>IC:</b>	<b>1943A-MC5725</b>	
<b>Model(s):</b>	<b>IX-MC5725</b>	<b>DUT Type:</b>	<b>Dual-Band CDMA/EVDO Card in IX750 Rugged Handheld PC</b>			
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Web: [www.bcfiberglass.com](http://www.bcfiberglass.com)

## FIBERGLASS FABRICATORS

### Certificate of Conformity

Item : Flat Planar Phantom Unit # 03-01  
Date: June 16, 2003  
Manufacturer: Barski Industries (1985 Ltd)

Test	Requirement	Details
Shape	Compliance to geometry according to drawing	Supplied CAD drawing
Material Thickness	Compliant with the requirements	2mm +/- 0.2mm in measurement area
Material Parameters	Dielectric parameters for required frequencies Based on Dow Chemical technical data	100 MHz-5 GHz Relative permittivity < 5 Loss Tangent < 0.05

#### Conformity

Based on the above information, we certify this product to be compliant to the requirements specified.

Signature: \_\_\_\_\_

A handwritten signature in black ink, appearing to read 'Daniel Chailer', is written over a horizontal line.

Daniel Chailer



**Fiberglass Planar Phantom - Top View**



**Fiberglass Planar Phantom - Front View**

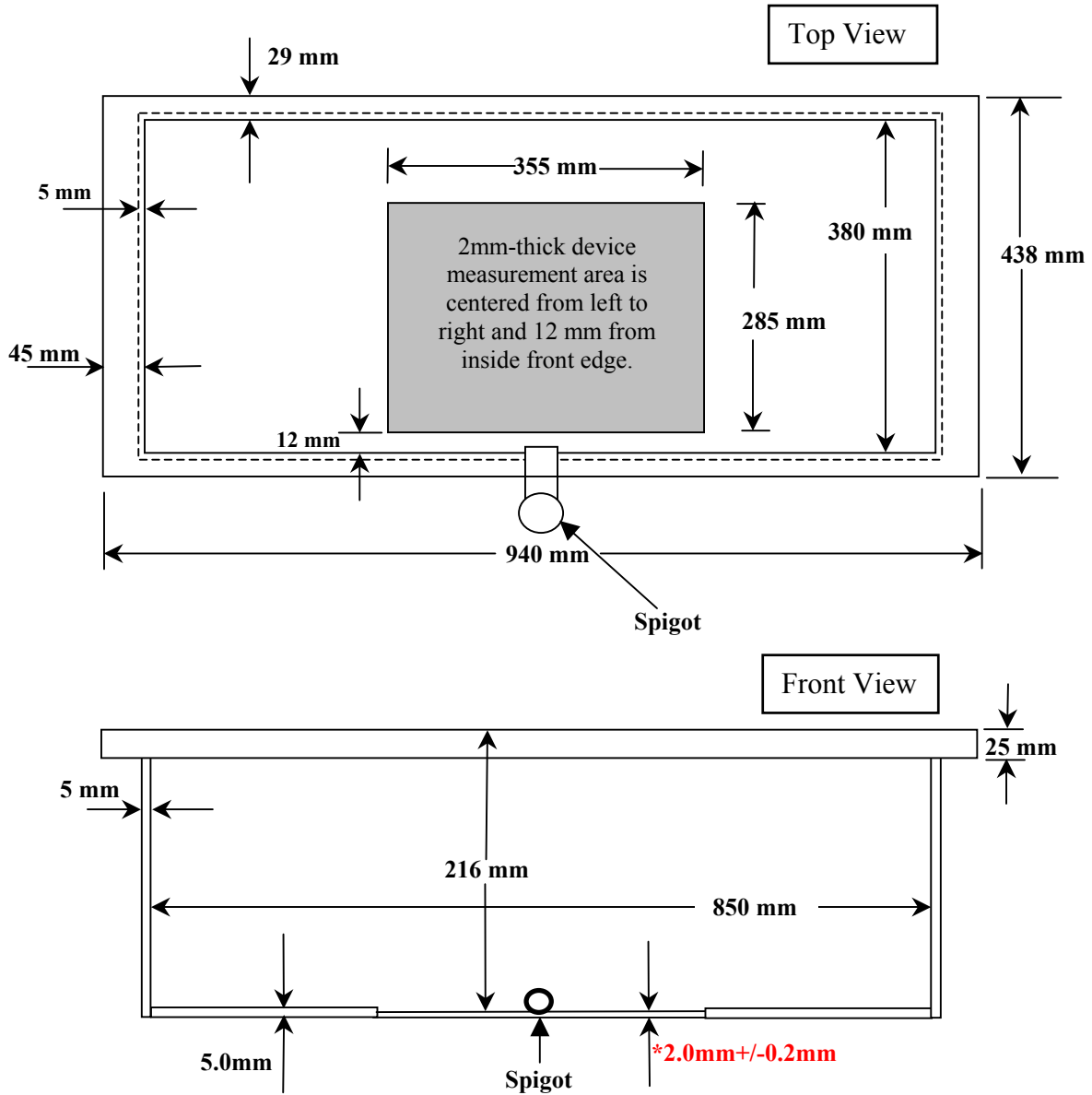


**Fiberglass Planar Phantom - Back View**



**Fiberglass Planar Phantom - Bottom View**

### Dimensions of Fiberglass Planar Phantom (Manufactured by Barski Industries Ltd. - Unit# 03-01)



**Note: Measurements that aren't repeated for the opposite sides are the same as the side measured.  
This drawing is not to scale.**