







	Date(s) of Evaluation February 14-18, 2011	Test Report Serial No. 020911Q2G-T1079-S24M	Test Report Revision No. Rev. 1.1 (2nd Release)	
	Test Report Issue Date April 24, 2012	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

DECLARATION OF COMPLIANCE		SAR RF EXPOSURE EVALUATION			FCC & IC C2PC			
Test Lab Information	Name	CELLTECH LABS INC.		Address	21-364 Lougheed Road, Kelowna B.C. V1X 7R8 Canada			
Test Lab Accreditation	ISO 17025	A2LA Test Lab Certificate No. 2470.01						
Applicant Information	Name	XPLORE TECHNOLOGIES CORP.		Address	14000 Summit Drive, Suite 900, Austin, Texas, 78728 USA			
Standard(s) Applied	FCC	47 CFR §2.1093		IC	Health Canada Safety Code 6			
Procedure(s) Applied	FCC	OET Bulletin 65, Supplement C (Edition 01-01)		KDB 447498	KDB 941225	KDB 178919		
	IC	RSS-102 Issue 4		IEEE 1528-2003	IEC 62209-2:2010			
Application Type	FCC/IC	Class II Change - Add Xplore iX104C5 Host Tablet PC & SkyCross High Gain Antenna (P/N: 25.90A14.001)						
Device-Under-Test Sample	Rcpt Date	February 09, 2011		Test Dates	February 14-18, 2011			
Device Identifier(s)	FCC ID:	Q2GGOBI3K-XPL		IC:	4596A-GOBI3KXPL			
Device Under Test (DUT)	WWAN	GPRS/EDGE/CDMA/WCDMA/HSPA Module		Model	GOBI3000			
	HSPA	HSDPA Release 7	HSUPA Release 6		Serial No.	IMEI 012412000101751		
	Grantee	Xplore Technologies						
DUT Host Configuration(s)	Host PC	Rugged Tablet PC		Model	iX104C5			
	Manuf.	Xplore Technologies		Serial No.	N4 (Identical Prototype)			
Co-located Transmitter 1	WLAN	802.11a/b/g/n WLAN Mini-PCI Module		Model	622ANHMW (MAC: 002314DB62B4)			
	FCC ID:	Q2GI6200-XPL		IC:	4596A-I6200XPL			
	Grantee	Xplore Technologies		Co-Transmit	Supports co-transmission with WWAN			
	Tx Freq.	2412 - 2462 MHz	5180 - 5240 MHz	5260 - 5320 MHz	5500 - 5700 MHz	5745 - 5825 MHz		
Co-located Transmitter 2	Bluetooth	Class 2 Bluetooth		Model	BCM92070MD_REF			
	FCC ID:	QDS-BRCM1043		IC:	4324A-BRCM1043			
	Manuf.	Broadcom Corporation		Co-Transmit	Supports co-transmission with WWAN			
	Tx Freq.	2402 - 2480 MHz		Cond. Pwr.	1.49 dBm (Conducted)			
User LCD Orientation(s)	Host PC	0 Degrees Landscape		90 Degrees Portrait				
Device Position(s) Tested	Host PC	Bottom Side Touch (0 cm)						
Transmit Frequency Range(s)	Cell Band	824.2-848.8 MHz (GPRS/EDGE)		826.4-846.6 MHz (WCDMA/HSPA)		824.70-848.31 MHz (CDMA/EV-DO)		
	PCS Band	1850.2-1909.8 MHz (GPRS/EDGE)		1852.4-1907.5 MHz (WCDMA/HSPA)		1851.25-1908.75 MHz (CDMA/EV-DO)		
	AWS Band	1712.4-1752.6 ( WCDMA/HSPA)						
Max. Duty Cycle(s) Tested	GPRS	25% (2 Uplink Slots) Class 10		WCDMA	100%	EV-DO	100%	
Antenna Type(s) Tested	WWAN	SkyCross High-Gain Antenna		P/N: 25.90A14.001		Gain Specification: -3 dBi		
Antenna-to-Antenna Spacing	WWAN	WWAN to WLAN MAIN = 16 mm		WWAN to WLAN AUX = 94.2 mm		WWAN to Bluetooth = 179 mm		
Antenna-to-User Distance(s)	WWAN	WWAN to Bottom Side = 1.6 cm		WWAN to Right Side Edge (90° Portrait) = 18.8 cm				
Power Source(s) Tested	Host PC	Lithium-ion Battery 7.4V		7600mAh		Model: iX104		
Max. SAR Level(s) Evaluated	BODY	0.348 W/kg	1g average	850 Band		FCC/IC Spatial Peak SAR Limit	1.6 W/kg (1g average) General Population / Uncontrolled Exposure	
		0.389 W/kg	1g average	1900 Band				
		0.283 W/kg	1g average	AWS Band				
<p>Celltech Labs Inc. declares under its sole responsibility that this wireless portable device is compliant with the Specific Absorption Rate (SAR) RF exposure requirements specified in FCC 47 CFR §2.1093 and Health Canada's Safety Code 6 for the General Population / Uncontrolled Exposure environment. The device was tested in accordance with the measurement standards and procedures specified in FCC OET Bulletin 65, Supplement C (Edition 01-01), Industry Canada RSS-102 Issue 4, IEEE 1528-2003 and International Standard IEC 62209-2 (Edition 1.0 2010-03). All measurements were performed in accordance with the SAR system manufacturer recommendations.</p> <p>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.</p> <p>The results and statements contained in this report pertain only to the device(s) evaluated.</p> <p>This test report shall not be reproduced partially, or in full, without the prior written approval of Celltech Labs Inc.</p>								
Test Report Approved By			Sean Johnston	Lab Manager	Celltech Labs Inc.			

Applicant:	Xplore Technologies Corp.	FCC ID:	Q2GGOBI3K-XPL	IC:	4596A-GOBI3KXPL	
DUT Type:	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.		This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.				Page 1 of 73


	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	



<b>TABLE OF CONTENTS</b>	
1.0 INTRODUCTION	4
2.0 SAR MEASUREMENT SYSTEM	4
3.0 SAR PROBE CALIBRATION & MEASUREMENT FREQUENCIES	4
4.0 RF OUTPUT POWER MEASUREMENTS	5
RF OUTPUT POWER MEASUREMENTS (Cont.)	6
RF OUTPUT POWER MEASUREMENTS (Cont.)	7
RF OUTPUT POWER MEASUREMENTS (Cont.)	8
RF OUTPUT POWER MEASUREMENTS (Cont.)	9
RF OUTPUT POWER MEASUREMENTS (Cont.)	10
RF OUTPUT POWER MEASUREMENTS (Cont.)	11
5.0 FLUID DIELECTRIC PARAMETERS	12
FLUID DIELECTRIC PARAMETERS (Cont.)	13
FLUID DIELECTRIC PARAMETERS (Cont.)	14
FLUID DIELECTRIC PARAMETERS (Cont.)	15
FLUID DIELECTRIC PARAMETERS (Cont.)	16
6.0 SAR MEASUREMENT SUMMARY	17
7.0 CO-LOCATED TRANSMITTER(S)	18
8.0 SIMULTANEOUS TRANSMISSION ASSESSMENT	18
9.0 SAR LEVEL ADJUSTMENT FOR FLUID SENSITIVITY & PROBE CALIBRATION	19
10.0 SAR LEVEL CORRECTION for FLUID DEVIATION (IC RSS-102 / IEC 62209-2)	20
11.0 DETAILS OF SAR EVALUATION	21
12.0 SAR EVALUATION PROCEDURES	21
13.0 SYSTEM PERFORMANCE CHECK	22
14.0 SIMULATED EQUIVALENT TISSUES	23
15.0 SAR LIMITS	26
16.0 ROBOT SYSTEM SPECIFICATIONS	27
17.0 PROBE SPECIFICATIONS	28
18.0 BARSKI PLANAR PHANTOM	28
19.0 DEVICE HOLDER	28
20.0 TEST EQUIPMENT LIST	29
21.0 JUSTIFICATION FOR EXTENDED SAR DIPOLE CALIBRATION	30
22.0 MEASUREMENT UNCERTAINTIES (IEEE 1528-2003)	31
MEASUREMENT UNCERTAINTIES (Cont.)	32
MEASUREMENT UNCERTAINTIES (Cont.)	33
MEASUREMENT UNCERTAINTIES (Cont.)	34
MEASUREMENT UNCERTAINTIES (Cont.)	35
23.0 MEASUREMENT UNCERTAINTIES (IEC 62209-2:2010)	36
MEASUREMENT UNCERTAINTIES (Cont.)	37
MEASUREMENT UNCERTAINTIES (Cont.)	38
MEASUREMENT UNCERTAINTIES (Cont.)	39
MEASUREMENT UNCERTAINTIES (Cont.)	40
24.0 REFERENCES	41
APPENDIX A - SAR MEASUREMENT PLOTS	42
APPENDIX B - SYSTEM PERFORMANCE CHECK PLOTS	57
APPENDIX C - SAR TEST SETUP PHOTOGRAPHS	68
APPENDIX D - ANTENNA DISTANCES	70
APPENDIX E - DIPOLE CALIBRATION	71
APPENDIX F - PROBE CALIBRATION	72
APPENDIX G - BARSKI PLANAR PHANTOM CERTIFICATE OF CONFORMITY	73

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

### REVISION HISTORY

REVISION NO.	DESCRIPTION	IMPLEMENTED BY	RELEASE DATE
1.0	1st Release	Jon Hughes	February 03, 2012
1.1	2nd Release	Jon Hughes	April 24, 2012
	Added HSPA Rel. No. (Page 1)		

<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 3 of 73

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

## 1.0 INTRODUCTION

This measurement report demonstrates that the Xplore Technologies Corporation Model: iX104C5 Tablet PC, incorporating the GOBI3000 WWAN Mini-PCI Express Card FCC ID: Q2GGOBI3K-XPL and SkyCross High Gain Antenna, complies with the SAR (Specific Absorption Rate) RF exposure requirements of FCC 47 CFR §2.1093 (see reference [1]) and Health Canada's Safety Code 6 (see reference [2]) for the General Population / Uncontrolled Exposure environment. The test procedures described in FCC OET Bulletin 65, Supplement C, Edition 01-01 (see reference [3]), Industry Canada RSS-102 Issue 4 (see reference [4]), IEEE Standard 1528-2003 (see reference [5]) and IEC International Standard 62209-2:2010 (see reference [6]) were employed. A description of the product, operating configuration, detailed summary of the test results, methodology and procedures used in the evaluation, equipment used, and the various provisions of the rules are included within this test report.

## 2.0 SAR MEASUREMENT SYSTEM


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



## 3.0 SAR PROBE CALIBRATION & MEASUREMENT FREQUENCIES

The following procedures are recommended for measurements at 150 MHz - 3 GHz to minimize probe calibration and tissue dielectric parameter discrepancies. In general, SAR measurements below 300 MHz should be within  $\pm 50$  MHz of the probe calibration frequency. At 300 MHz to 3 GHz, measurements should be within  $\pm 100$  MHz of the probe calibration frequency. Measurements exceeding 50% of these intervals,  $\pm 25$  MHz < 300 MHz and  $\pm 50$  MHz  $\geq 300$  MHz, require additional steps (per FCC KDB 450824 D01 v01r01, SAR Probe Calibration and System Verification Considerations for Measurements at 150 MHz - 3 GHz - see reference [11]).

Probe Calibration Freq.	Device Measurement Freq.	Frequency Interval	$\pm 50$ MHz $\geq 300$ MHz
<b>835 MHz</b>	836.6 MHz	1.6 MHz	< 50 MHz
	836.4 MHz	1.4 MHz	< 50 MHz
	836.52 MHz	1.52 MHz	< 50 MHz
<b>1800 MHz</b>	1732.6 MHz	67.4 MHz	> 50 MHz*
<b>1900 MHz</b>	1880.0 MHz	20 MHz	< 50 MHz
<b>2450 MHz</b>	2442.0 MHz	8 MHz	< 50 MHz

\* See Section 9.0

<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 4 of 73

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

## 4.0 RF OUTPUT POWER MEASUREMENTS

### GPRS Mode


#### Procedure used to establish test signal



The following setting was used to configure the Agilent 8960 Series E5515C wireless communications test set.

Service Selection > Test Mode A - Auto Slot Config. > off  
 Main Service > Packet Data  
 Network Support > GSM+GPRS  
 Slot Config > 33 dBm (GSM850) & 30 dBm (GSM1900)  
 BAP: Burst Average Power  
 Pavg: Average power over all time slots

RF CONDUCTED OUTPUT POWER MEASUREMENT RESULTS – GPRS Mode									
2 Uplink Slots (Multislot Class 10)									
Mode / Band	Channel	Freq. (MHz)	Burst-Average Power		Mode / Band	Channel	Freq. (MHz)	Burst-Average Power	
			dBm	Watts				dBm	Watts
GPRS 850	128	824.2	32.3	1.70	GPRS 1900	512	1850.2	29.8	0.95
	190	836.6	32.6	1.82		661	1880.0	29.9	0.98
	251	848.8	32.5	1.78		810	1909.8	29.7	0.93

Note: The EDGE mode conducted power levels specified by Qualcomm for the Gobi3000 WWAN module are ~ 5 dB lower in 850 band and ~ 3 dB lower in 1900 band than the conducted output power levels specified for GPRS mode and therefore EDGE mode was not evaluated.

<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 5 of 73

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

## RF OUTPUT POWER MEASUREMENTS (Cont.)

### WCDMA Mode

#### Procedure used to establish test signal

This procedure assumes the Agilent 8960 Series E5515C wireless communications test set has the following applications installed and with valid license.

Application: WCDMA Mobile Test

Rev, License: A.07.13, L

Call Setup > Shift & Preset

Cell Parameters: PS Domain Information > Present  
ATT (IMSI Attach) Flag State > Set

Security Parameter - System Operations > None

Channel Type: RMC - 12.2k, 64k, 144k, 384k  
AMC - 12.2k UL / 64 DL AM RMC,  
12.2k UL / 144 DL AM RMC,  
12.2k UL / 384 DL AM RMC

Paging Service: RB Test Mode

Channel Parameters (UARFCN):


DL Channel: PCS: 9662 / 9800 / 9938  
Cell: 4357 / 4407 / 4458



UL Channel: PCS: 9262 / 9400 / 9538  
Cell: 4132 / 4182 / 4233

DL DTCH Data: All Ones  
RLC Reestablish: Off  
Call Limit State: Off  
Call Drop Timer: Off  
SRB Config: 13.6k DCCH  
UE Target Power: 25 dBm  
UL CL Pwr Ctrl Mode: All Up Bits

### RF CONDUCTED OUTPUT POWER MEASUREMENT RESULTS – WCDMA Mode

Channel Type: 12.2k RMC									
Mode / Band	Channel	Freq. (MHz)	Channel Power		Mode / Band	Channel	Freq. (MHz)	Channel Power	
			dBm	Watts				dBm	Watts
WCDMA 850 (Band V)	4132	826.4	24.1	0.26	WCDMA 1900 (Band II)	9262	1852.4	23.9	0.25
	4182	836.4	24.1	0.26		9400	1880.0	24.1	0.26
	4233	846.6	23.8	0.24		9538	1907.6	23.9	0.25

<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 6 of 73

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	



## RF OUTPUT POWER MEASUREMENTS (Cont.)

### RF CONDUCTED OUTPUT POWER MEASUREMENT RESULTS – WCDMA Mode (Cont.)

Channel Type: 12.2k RMC				
Mode / Band	Channel	Freq. (MHz)	Channel Power	
			dBm	Watts
WCDMA AWS (Band IV)	1312	1712.4	23.9	0.25
	1413	1732.6	24.0	0.25
	1513	1752.6	23.8	0.24

Note: The maximum conducted power levels for HSPA mode specified by Qualcomm Inc. for the Gobi3000 WWAN module are lower than the maximum conducted output power levels specified for WCDMA mode; therefore HSPA modes were not evaluated.



	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

## RF OUTPUT POWER MEASUREMENTS (Cont.)

### 1xEv-Do Rel. 0 Mode

#### Procedure used to establish test signal

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

<b><u>Application</u></b>	<b><u>Rev. License</u></b>
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)

## RF CONDUCTED OUTPUT POWER MEASUREMENT RESULTS - 1xEv-Do Rel. 0 Mode

FTAP Rate = 307 kbps (2 slot) / RTAP Rate = 76.8 kbps									
Mode / Band	Channel	Freq. (MHz)	Channel Power		Mode / Band	Channel	Freq. (MHz)	Channel Power	
			dBm	Watts				dBm	Watts
1xEv-Do Rel. 0 (850)	1013	824.70	24.3	0.27	1xEv-Do Rel. 0 (1900)	25	1851.25	24.3	0.27
	384	836.52	24.5	0.28		600	1880.00	24.5	0.28
	777	848.31	24.3	0.27		1175	1908.75	24.4	0.28

<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 8 of 73



	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

## RF OUTPUT POWER MEASUREMENTS (Cont.)

### 1xEv-Do Rev. A Mode

#### Procedure used to establish test signal

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)

### RF CONDUCTED OUTPUT POWER MEASUREMENT RESULTS - 1xEv-Do Rev. A Mode

FETAP Rate = 307 kbps (2 slot) / RETAP Rate = 2048 bps									
Mode / Band	Channel	Freq. (MHz)	Channel Power		Mode / Band	Channel	Freq. (MHz)	Channel Power	
			dBm	Watts				dBm	Watts
1xEv-Do Rev. A (850)	1013	824.70	24.2	0.26	1xEv-Do Rev. A (1900)	25	1851.25	24.3	0.27
	384	836.52	24.4	0.28		600	1880.00	24.4	0.28
	777	848.31	24.1	0.26		1175	1908.75	24.2	0.26

SAR for Subtype 2 Physical Layer configurations is not required for Rev. A when the maximum average output of each RF channels is less than that measured in Subtype 0/1 Physical Layer configurations (FCC KDB 941225 - see reference [9]).

<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 9 of 73

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

## RF OUTPUT POWER MEASUREMENTS (Cont.)

### CDMA 1xRTT Mode

#### Procedure used to establish test signal

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)

### RF CONDUCTED OUTPUT POWER MEASUREMENT RESULTS - 1xRTT Mode

RC3, SO55									
Mode / Band	Channel	Freq. (MHz)	Channel Power		Mode / Band	Channel	Freq. (MHz)	Channel Power	
			dBm	Watts				dBm	Watts
1xRTT 850	1013	824.70	24.2	0.26	1xRTT 1900	25	1851.25	24.3	0.27
	384	836.52	24.4	0.28		600	1880.00	24.4	0.28
	777	848.31	24.4	0.28		1175	1908.75	24.2	0.26


SAR is not required for 1xRTT when 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 (FCC KDB 941225 - see reference [9]).



<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 10 of 73

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

## RF OUTPUT POWER MEASUREMENTS (Cont.)

<b>622ANHMW WLAN Module</b>			
<b>2.4 GHz Band</b>			
<b>802.11n</b>	HT0	OFDM	
Duty Cycle	99%		
		<b>Conducted Average Power (dBm)</b>	
<b>Channel</b>	<b>Frequency (MHz)</b>	<b>MAIN - Chain A</b>	<b>AUX - Chain B</b>
7	2442	16.8	16.8
<b>5.3 GHz Band</b>			
<b>802.11n</b>	HT0	OFDM	
Duty Cycle	99%		
		<b>Conducted Average Power (dBm)</b>	
<b>Channel</b>	<b>Frequency (MHz)</b>	<b>MAIN - Chain A</b>	<b>AUX - Chain B</b>
60	5300	16.7	16.7


<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 11 of 73



	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

## 5.0 FLUID DIELECTRIC PARAMETERS

FLUID DIELECTRIC PARAMETERS						
Date: Feb 14, 2011		Frequency: 835 MHz			Tissue: Body	
Freq (GHz)	Test_e	Test_s	835MHz Target_e	835MHz Target_s	Deviation Permittivity	Deviation Conductivity
0.735	53.49	0.79	55.2	0.97	-3.10%	-18.56%
0.745	53.73	0.86	55.2	0.97	-2.66%	-11.34%
0.755	53.72	0.88	55.2	0.97	-2.68%	-9.28%
0.765	53.52	0.89	55.2	0.97	-3.04%	-8.25%
0.775	53.57	0.9	55.2	0.97	-2.95%	-7.22%
0.785	53.58	0.91	55.2	0.97	-2.93%	-6.19%
0.795	53.44	0.91	55.2	0.97	-3.19%	-6.19%
0.805	53.47	0.93	55.2	0.97	-3.13%	-4.12%
0.815	53.15	0.93	55.2	0.97	-3.71%	-4.12%
0.825	53.44	0.94	55.2	0.97	-3.19%	-3.09%
0.835	53.12	0.96	55.2	0.97	-3.77%	-1.03%
0.8365*	53.1	0.96	55.2	0.97	-3.80%	-1.03%
0.845	53.21	0.96	55.2	0.97	-3.61%	-1.03%
0.855	53.97	0.96	55.2	0.97	-2.23%	-1.03%
0.865	52.79	0.99	55.2	0.97	-4.37%	2.06%
0.875	52.57	1	55.2	0.97	-4.76%	3.09%
0.885	52.73	1.01	55.2	0.97	-4.47%	4.12%
0.895	52.51	1.01	55.2	0.97	-4.87%	4.12%
0.905	52.75	1.01	55.2	0.97	-4.44%	4.12%
0.915	52.53	1.01	55.2	0.97	-4.84%	4.12%
0.925	52.29	1.04	55.2	0.97	-5.27%	7.22%
0.935	51.48	1.07	55.2	0.97	-6.74%	10.31%



\*Interpolated using DASY4 Software

<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOB13K-XPL	<b>IC:</b>	4596A-GOB13KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 12 of 73

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

## FLUID DIELECTRIC PARAMETERS (Cont.)


FLUID DIELECTRIC PARAMETERS						
Date: Feb 18, 2011		Frequency: 1900 MHz			Tissue: Body	
Freq (GHz)	Test_e	Test_s	1900MHz Target_e	1900MHz Target_s	Deviation Permittivity	Deviation Conductivity
1.8	51.32	1.42	53.3	1.52	-3.71%	-6.58%
1.81	51.41	1.45	53.3	1.52	-3.55%	-4.61%
1.82	51.36	1.44	53.3	1.52	-3.64%	-5.26%
1.83	51.26	1.47	53.3	1.52	-3.83%	-3.29%
1.84	51.35	1.46	53.3	1.52	-3.66%	-3.95%
1.85	51.16	1.47	53.3	1.52	-4.02%	-3.29%
1.86	51.25	1.48	53.3	1.52	-3.85%	-2.63%
1.87	51.18	1.49	53.3	1.52	-3.98%	-1.97%
1.88	51.2	1.51	53.3	1.52	-3.94%	-0.66%
1.89	51.1	1.51	53.3	1.52	-4.13%	-0.66%
1.9	51.13	1.52	53.3	1.52	-4.07%	0.00%
1.91	51.03	1.54	53.3	1.52	-4.26%	1.32%
1.92	50.94	1.52	53.3	1.52	-4.43%	0.00%
1.93	51.01	1.53	53.3	1.52	-4.30%	0.66%
1.94	51.01	1.54	53.3	1.52	-4.30%	1.32%
1.95	50.97	1.57	53.3	1.52	-4.37%	3.29%
1.96	50.92	1.58	53.3	1.52	-4.47%	3.95%
1.97	50.82	1.59	53.3	1.52	-4.65%	4.61%
1.98	51	1.61	53.3	1.52	-4.32%	5.92%
1.99	51.06	1.63	53.3	1.52	-4.20%	7.24%
2	50.77	1.62	53.3	1.52	-4.75%	6.58%



	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

## FLUID DIELECTRIC PARAMETERS (Cont.)

FLUID DIELECTRIC PARAMETERS						
Date: Feb 15, 2011		Frequency: 1800 MHz			Tissue: Body	
Freq (GHz)	Test_e	Test_s	1800MHz Target_e	1800MHz Target_s	Deviation Permittivity	Deviation Conductivity
1.65	52.22	1.36	53.4	1.49	-2.21%	-8.72%
1.66	52.04	1.37	53.4	1.49	-2.55%	-8.05%
1.67	52.29	1.38	53.4	1.49	-2.08%	-7.38%
1.68	52.08	1.39	53.4	1.49	-2.47%	-6.71%
1.69	52.25	1.42	53.4	1.49	-2.15%	-4.70%
1.7	52.13	1.43	53.4	1.49	-2.38%	-4.03%
1.71	52.01	1.44	53.4	1.49	-2.60%	-3.36%
1.72	51.93	1.44	53.4	1.49	-2.75%	-3.36%
1.73	52.14	1.45	53.4	1.49	-2.36%	-2.68%
1.7326*	52.14	1.45	53.4	1.49	-2.36%	-2.68%
1.74	51.7	1.45	53.4	1.49	-3.18%	-2.68%
1.75	51.85	1.46	53.4	1.49	-2.90%	-2.01%
1.76	51.86	1.47	53.4	1.49	-2.88%	-1.34%
1.77	51.87	1.5	53.4	1.49	-2.87%	0.67%
1.78	51.66	1.5	53.4	1.49	-3.26%	0.67%
1.79	51.76	1.51	53.4	1.49	-3.07%	1.34%
1.80	51.65	1.51	53.4	1.49	-3.28%	1.34%
1.81	51.58	1.52	53.4	1.49	-3.41%	2.01%
1.82	51.62	1.52	53.4	1.49	-3.33%	2.01%
1.83	51.5	1.53	53.4	1.49	-3.56%	2.68%
1.84	51.49	1.57	53.4	1.49	-3.58%	5.37%
1.85	51.41	1.56	53.4	1.49	-3.73%	4.70%

\*Interpolated using DASY4 Software


<b>Applicant:</b>	<b>Xplore Technologies Corp.</b>	<b>FCC ID:</b>	<b>Q2GGOBI3K-XPL</b>	<b>IC:</b>	<b>4596A-GOBI3KXPL</b>	
<b>DUT Type:</b>	<b>Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC</b>					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 14 of 73

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	



## FLUID DIELECTRIC PARAMETERS (Cont.)

FLUID DIELECTRIC PARAMETERS						
Date: Feb 16, 2011		Frequency: 2450 MHz			Tissue: Body	
Freq	Test e	Test s	Target e	Target s	Deviation Permittivity	Deviation Conductivity
2.35	50.84	1.85	52.7	1.95	-3.53%	-5.13%
2.36	50.75	1.85	52.7	1.95	-3.70%	-5.13%
2.37	50.64	1.87	52.7	1.95	-3.91%	-4.10%
2.38	50.44	1.87	52.7	1.95	-4.29%	-4.10%
2.39	50.75	1.88	52.7	1.95	-3.70%	-3.59%
2.4	50.75	1.89	52.7	1.95	-3.70%	-3.08%
2.41	50.66	1.91	52.7	1.95	-3.87%	-2.05%
2.42	50.43	1.91	52.7	1.95	-4.31%	-2.05%
2.43	50.63	1.93	52.7	1.95	-3.93%	-1.03%
2.44	50.45	1.96	52.7	1.95	-4.27%	0.51%
2.442*	50.5	1.97	52.7	1.95	-4.17%	1.03%
2.45	50.45	1.99	52.7	1.95	-4.27%	2.05%
2.46	50.43	1.98	52.7	1.95	-4.31%	1.54%
2.47	50.63	2	52.7	1.95	-3.93%	2.56%
2.48	50.52	2.01	52.7	1.95	-4.14%	3.08%
2.49	50.33	1.99	52.7	1.95	-4.50%	2.05%
2.5	50.34	2.04	52.7	1.95	-4.48%	4.62%
2.51	50.36	2.06	52.7	1.95	-4.44%	5.64%
2.52	50.37	2.06	52.7	1.95	-4.42%	5.64%
2.53	50.29	2.09	52.7	1.95	-4.57%	7.18%
2.54	50.18	2.2	52.7	1.95	-4.78%	12.82%
2.55	50.27	2.2	52.7	1.95	-4.61%	12.82%

\*Interpolated using DASY4 Software


<b>Applicant:</b>	<b>Xplore Technologies Corp.</b>	<b>FCC ID:</b>	<b>Q2GGOB13K-XPL</b>	<b>IC:</b>	<b>4596A-GOB13KXPL</b>	
<b>DUT Type:</b>	<b>Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC</b>					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 15 of 73





	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

## FLUID DIELECTRIC PARAMETERS (Cont.)

FLUID DIELECTRIC PARAMETERS						
Date: Feb 17, 2011		Frequency: 5 GHz			Tissue: Body	
Freq (GHz)	Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
5.2	50.36	5.23	49	5.3	2.78%	-1.32%
5.22	50.33	5.23	49	5.3	2.71%	-1.28%
5.24	50.57	5.17	49	5.3	3.20%	-2.45%
5.26	50.25	5.26	49	5.3	2.55%	-0.74%
5.28	50.34	5.30	49	5.3	2.73%	0.00%
5.3	50.97	5.32	49	5.3	4.02%	0.38%
5.32	51.05	5.45	49	5.3	4.18%	2.83%
5.34	51.09	5.54	49	5.3	4.27%	4.53%
5.36	51.08	5.51	48.6	5.65	5.10%	-2.48%
5.38	51.25	5.62	48.6	5.65	5.45%	-0.53%
5.4	51.04	5.58	48.6	5.65	5.02%	-1.24%
5.42	50.9	5.62	48.6	5.65	4.73%	-0.53%
5.44	50.99	5.78	48.6	5.65	4.92%	2.30%

<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.		This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.				Page 16 of 73

	Date(s) of Evaluation February 14-18, 2011	Test Report Serial No. 020911Q2G-T1079-S24M	Test Report Revision No. Rev. 1.1 (2nd Release)	
	Test Report Issue Date April 24, 2012	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## 6.0 SAR MEASUREMENT SUMMARY

### BODY SAR MEASUREMENT RESULTS

Test Date	Freq. Band	Test Plot #	Test Freq.	Ch.	Test Mode		Transmitter Module	Tablet PC Position to Planar Phantom	Start Power (Conducted)		SAR Drift During Test	Measured SAR Levels	
	MHz		MHz						dBm	Mode		dB	W/kg
Feb 14	850	B1	836.6	190	GPRS Class 10	2 Uplink Slots	Gobi3000	Bottom Touch	32.6	BAP	-0.053	0.348	1g
		B2	836.4	4182	WCDMA Rel99	12.2k RMC	Gobi3000	Bottom Touch	24.1	MAP	0.056	0.252	1g
		B3	836.52	384	EV-DO Rel. 0	FTAP 2 slot 307 kbps	Gobi3000	Bottom Touch	24.5	MAP	0.022	0.298	1g
Feb 15	1750	B4	1732.6	1413	WCDMA Rel99	12.2k RMC	Gobi3000	Bottom Touch	24.0	MAP	0.056	0.283	1g
Feb 18	1900	B5	1880.0	661	GPRS Class 10	2 Uplink Slots	Gobi3000	Bottom Touch	29.9	BAP	0.023	0.232	1g
		B6	1880.0	9400	WCDMA Rel99	12.2k RMC	Gobi3000	Bottom Touch	24.1	MAP	0.029	0.389	1g
		B7	1880.0	600	EV-DO Rel. 0	FTAP 2 slot 307 kbps	Gobi3000	Bottom Touch	24.5	MAP	-0.092	0.351	1g
Feb 16	2450	B8	2442.0	7	802.11n OFDM	HT0	622ANHMW	Bottom Touch	16.8	Aver.	-0.011	0.463	1g
Feb 17	5300	B9	5300.0	60	802.11n OFDM	HT0 20	622ANHMW	Bottom Touch	16.7	Aver.	-0.080	0.601	1g

#### SAR LIMIT(S)

#### BODY

#### SPATIAL PEAK

#### RF EXPOSURE CATEGORY

FCC 47 CFR 2.1093

Health Canada Safety Code 6

1.6 W/kg


1g average



General Population / Uncontrolled

Test Date	$\rho$ (Kg/m <sup>3</sup> )	Ambient Temperature	Fluid Temperature	Fluid Depth	Relative Humidity	Atmospheric Pressure
Feb. 14, 2011	1000	23.5 °C	22.1 °C	≥15 cm	35 %	101.1 kPa
Feb. 15, 2011	1000	23.8 °C	22.5 °C	≥15 cm	34 %	101.1 kPa
Feb. 16, 2011	1000	23.8 °C	23.5 °C	≥15 cm	34 %	101.1 kPa
Feb. 17, 2011	1000	23.8 °C	23.5 °C	≥15 cm	34 %	101.1 kPa
Feb. 18, 2011	1000	23.6 °C	23.4 °C	≥15 cm	35 %	101.1 kPa

#### Notes

1. Detailed measurement data and plots showing the maximum SAR location of the DUT are reported in Appendix A.
2. The SAR evaluations for the 622ANHMW were performed in the maximum SAR level configuration evaluated in the 2.4 GHz and 5 GHz bands from the original single-transmit SAR evaluations as reported in Celltech test report serial no. 092110Q2G-T1046-S15W (FCC ID: Q2G16200-XPL - Limited Modular Approval - Class II Permissive Change - Granted: 12/23/2010).
3. The SAR evaluations for the Gobi3000 were performed at the highest output channel per test mode configuration (in accordance with FCC KDB 447498 Section 1) e)).
4. The measured SAR levels for the Gobi3000 were < 0.8 W/kg; therefore SAR evaluations for the remaining channels were not required (per FCC KDB 447498 Section 1) e)).
5. The SAR drift of the DUT was measured by the DASY4 system.
6. The Tablet PC battery was fully charged prior to the SAR evaluations.
7. The fluid temperature remained within +/-2°C from the dielectric parameter measurement to the completion of the SAR evaluations.
8. 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.

<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.		This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.				Page 17 of 73

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

## 7.0 CO-LOCATED TRANSMITTER(S)

The iX104C5 Tablet PC incorporating the GOBI3000 WWAN Mini-PCI Express Card FCC ID: Q2GGGOBI3K-XPL can be co-located with the following transmitters:

Transmitter Type	Grantee	FCC ID	IC ID	Model	Co-Transmit
802.11abgn WLAN	Xplore Tech.	Q2GI6205-XPL	4596A-I6205XPL	62205ANHMMW	No
802.11abgn WLAN	Xplore Tech.	Q2GI6200-XPL	4596A-I6200XPL	622ANHMMW	Yes
Class 2 Bluetooth	Broadcom	QDS-BRCM1043	4324A-BRCM1043	BCM92070MD_REF	Yes

<b>Antenna-to-Antenna Spacing</b>	WWAN to WLAN MAIN = 16 mm	WWAN to WLAN AUX = 94.2 mm	WWAN to Bluetooth = 179 mm
-----------------------------------	---------------------------	----------------------------	----------------------------

## 8.0 SIMULTANEOUS TRANSMISSION ASSESSMENT

This device contains multiple transmitters that may operate simultaneously and therefore, require a simultaneous transmission analysis according to the KDB Publication 447498 4) b) iii) procedures.


iii) For each edge positioned closest to the user, simultaneous transmission SAR evaluation is not required when the simultaneous transmitting antennas along that edge are:



(1) located < 5 cm from the edge and the sum of the stand-alone 1-g SAR is < the SAR limit for these antennas or the SAR to peak location separation ratios are < 0.3 for all antenna pairs.

Simultaneous Transmission	Tablet PC Configuration	GPRS 850 SAR (W/kg) 1g	2.4 GHz 802.11n WLAN MAIN SAR (W/kg) 1g	5.3 GHz 802.11n WLAN MAIN SAR (W/kg) 1g	Σ SAR 1g (W/kg)
Body SAR	Bottom Side	0.348	0.463	n/a	0.811
Body SAR	Bottom Side	0.348	n/a	0.601	0.949
Simultaneous Transmission	Tablet PC Configuration	UMTS Band V 850 SAR (W/kg) 1g	2.4 GHz 802.11n WLAN MAIN SAR (W/kg) 1g	5.3 GHz 802.11n WLAN MAIN SAR (W/kg) 1g	Σ SAR 1g (W/kg)
Body SAR	Bottom Side	0.252	0.463	n/a	0.715
Body SAR	Bottom Side	0.252	n/a	0.601	0.853
Simultaneous Transmission	Tablet PC Configuration	UMTS Band IV 1750 SAR (W/kg) 1g	2.4 GHz 802.11n WLAN MAIN SAR (W/kg) 1g	5.3 GHz 802.11n WLAN MAIN SAR (W/kg) 1g	Σ SAR 1g (W/kg)
Body SAR	Bottom Side	0.283	0.463	n/a	0.746
Body SAR	Bottom Side	0.283	n/a	0.601	0.884
Simultaneous Transmission	Tablet PC Configuration	UMTS Band II 1900 SAR (W/kg) 1g	2.4 GHz 802.11n WLAN MAIN SAR (W/kg) 1g	5.3 GHz 802.11n WLAN MAIN SAR (W/kg) 1g	Σ SAR 1g (W/kg)
Body SAR	Bottom Side	0.389	0.463	n/a	0.852
Body SAR	Bottom Side	0.389	n/a	0.601	0.990

The sum of the stand-alone 1-g SAR is < 1.6 W/kg; therefore simultaneous transmission evaluations are not required.

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

<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 18 of 73

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

## 9.0 SAR LEVEL ADJUSTMENT FOR FLUID SENSITIVITY & PROBE CALIBRATION

For test B4 the probe calibration and measurement frequency interval is > 50 MHz; therefore the following additional steps were implemented (per FCC KDB 450824 D01v01r01 - see reference [11]): The measured 1-g SAR may be compensated with respect to +5% tolerances in e and -5% tolerances in s, computed according to valid SAR sensitivity data, to reduce SAR underestimation and maintain conservativeness. SAR sensitivity adjustment methodology is specified in Chapter 22 of the SPEAG DASY4 Manual (see reference [14]).

$$\% \text{ Change in SAR} = \text{Sensitivity} * \% \text{ Change in Value}$$

Measured Fluid Parameters:



Test Plot #	Freq	Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
B4	1.7326*	52.14	1.45	53.4	1.49	-2.36%	-2.68%

The Sensitivity for permittivity at 1800 MHz is -0.52  
 The Sensitivity for conductivity at 1800 MHz is 0.51

$$\% \text{ Change in SAR} = (-0.52 * -2.36\%) + (0.43 * -2.68\%) = 1.23\%$$

Measured SAR is adjusted for Sensitivity calculation:

$$\text{SAR} = 0.283 * 1.23\% = \mathbf{0.286 \text{ W/kg}}$$

	Date(s) of Evaluation February 14-18, 2011	Test Report Serial No. 020911Q2G-T1079-S24M	Test Report Revision No. Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	Test Report Issue Date April 24, 2012	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## 10.0 SAR LEVEL CORRECTION for FLUID DEVIATION (IC RSS-102 / IEC 62209-2)

The SAR levels are corrected for deviation of complex permittivity in accordance with Section 6.1.1 of IEC 62209-2:2010 (see reference [6]) as shown below.

Test Plot #	Test Freq. (MHz)	Test <sub>e</sub>	Test <sub>s</sub>	Target <sub>e</sub>	Target <sub>s</sub>	Deviation Permittivity	Deviation Conductivity	Measured SAR Level 1g (W/kg)	Corrected SAR Level 1g (W/kg)
B1	836.6	53.1	0.96	55.2	0.97	-3.80%	-1.03%	0.348	0.348
B2	836.4	53.1	0.96	55.2	0.97	-3.80%	-1.03%	0.252	0.252
B3	836.52	53.1	0.96	55.2	0.97	-3.80%	-1.03%	0.298	0.298
B4	1732.6	52.14	1.45	53.4	1.49	-2.36%	-2.68%	0.283	0.283
B5	1880.0	51.2	1.51	53.3	1.52	-3.94%	-0.66%	0.232	0.233
B6	1880.0	51.2	1.51	53.3	1.52	-3.94%	-0.66%	0.389	0.391
B7	1880.0	51.2	1.51	53.3	1.52	-3.94%	-0.66%	0.351	0.353
B8	2442.0	50.5	1.97	52.7	1.95	-4.17%	1.03%	0.463	0.47
B9	5300.0	50.97	5.32	49.0	5.3	4.02%	0.38%	0.601	0.601

SAR Correction Formula (IEC 62209-2:2010 Section 6.1.1)

$$\Delta SAR = c_e \Delta \epsilon_r + c_\sigma \Delta \sigma \quad (F.1)$$

where

$c_e = \partial(\Delta SAR) / \partial(\Delta \epsilon_r)$  is the coefficients representing the sensitivity of SAR to permittivity where SAR is normalized to output power;

$c_\sigma = \partial(\Delta SAR) / \partial(\Delta \sigma)$  is the coefficients representing the sensitivity of SAR to conductivity, where SAR is normalized to output power.


The values of  $c_e$  and  $c_\sigma$  have a simple relationship with frequency that can be described using polynomial equations. For the 1 g averaged SAR  $c_e$  and  $c_\sigma$  are given by



$$c_e = -7,854 \times 10^{-4} f^3 + 9,402 \times 10^{-3} f^2 - 2,742 \times 10^{-2} f - 0,2026 \quad (F.2)$$

$$c_\sigma = 9,804 \times 10^{-3} f^3 - 8,661 \times 10^{-2} f^2 + 2,981 \times 10^{-2} f + 0,7829 \quad (F.3)$$

where

$f$  is the frequency in GHz.

Applicant:	Xplore Technologies Corp.	FCC ID:	Q2GGOBI3K-XPL	IC:	4596A-GOBI3KXPL	
DUT Type:	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 20 of 73

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

## 11.0 DETAILS OF SAR EVALUATION

### Test Configuration(s)

- The DUT was tested for body SAR (lap-held) with the bottom side of the Tablet PC parallel and touching the outer surface of the planar phantom.
- The detailed test setup photographs are shown in Appendix C.

### Test Mode(s)


- The SAR evaluations for GPRS mode were performed with an air-link communication established with the Agilent 8960 Series 10 E5515C Wireless Communications Test Set with 2 uplink slots (Multi-slot Class 10).
- The SAR evaluations in WCDMA mode were performed with an air-link communication established with the Agilent 8960 Series 10 E5515C Wireless Communications Test Set with 12.2 kbps RMC channel and the TPC bits configured to all "1s".
- The SAR evaluations in EV-DO mode were performed with an air-link communication established with the Agilent 8960 Series 10 E5515C Wireless Communications Test Set at maximum power in "all bits up" power control mode.
- The SAR evaluations for the WLAN were performed using proprietary Intel CRTU test software for continuous transmission and selection of frequency band, mode, channel/frequency, transmit antenna, output power setting and maximum duty cycle.



### Power Level(s)

- The conducted output power levels of the DUT were measured prior to the SAR evaluations (see Section 4.0).

## 12.0 SAR 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 E). 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 ≥ 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.

<b>Applicant:</b>	<b>Xplore Technologies Corp.</b>	<b>FCC ID:</b>	<b>Q2GGOBI3K-XPL</b>	<b>IC:</b>	<b>4596A-GOBI3KXPL</b>	
<b>DUT Type:</b>	<b>Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC</b>					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 21 of 73

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

### 13.0 SYSTEM PERFORMANCE CHECK


Prior to the SAR evaluations, daily system checks were performed using a planar phantom with 835 MHz, 1800 MHz, 1900 MHz, 2450 MHz and 5 GHz SPEAG dipoles (see Appendix B for system performance check evaluation plots) in accordance with the procedures described in IEEE Standard 1528-2003 (see reference [5]). 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). The SAR measurement system was verified to a tolerance of  $\pm 10\%$  from the system manufacturer's dipole calibration target SAR value (see Appendix D for system manufacturer's dipole calibration procedures).

#### SYSTEM PERFORMANCE CHECK EVALUATIONS

Test Date	Fluid Freq. Body (MHz)	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)
		Target	Meas.	Dev.	Target	Meas.	Dev.	Target	Meas.	Dev.						
Feb 14	835	2.49 $\pm 10\%$	2.53	1.6%	55.2 $\pm 5\%$	53.1	-3.77%	0.97 $\pm 5\%$	0.96	-1.0%	1000	23.5	22.1	$\geq 15$	35	101.1
Feb 15	1800	9.64 $\pm 10\%$	9.96	3.3%	53.3 $\pm 5\%$	51.7	-3.3%	1.49 $\pm 5\%$	1.51	1.34%	1000	23.8	22.5	$\geq 15$	34	101.1
Feb 16	2450	51.6 $\pm 10\%$ (Norm. 1W)	55.2	7.0%	52.7 $\pm 5\%$	50.45	-4.27%	1.95 $\pm 5\%$	1.99	2.05%	1000	23.8	23.5	$\geq 15$	34	101.1
Feb 17	5200	76.3 $\pm 10\%$ (Norm. 1W)	70.6	-7.5%	49.0 $\pm 5\%$	50.36	2.78%	5.30 $\pm 5\%$	5.23	-1.32%	1000	23.8	23.5	$\geq 15$	34	101.1
Feb 18	1900	10.6 $\pm 10\%$	10.0	-5.7%	53.3 $\pm 5\%$	51.1	-4.1%	1.52 $\pm 5\%$	1.52	0.0%	1000	23.6	23.4	$\geq 15$	35	101.1

#### Notes

- The target SAR values are the measured values specified by the SAR system manufacturer in the dipole calibration (see Appendix D).
- The target dielectric parameters are the nominal values specified by the SAR system manufacturer in the dipole calibration (see Appendix D).
- The fluid temperature remained within  $\pm 2^\circ\text{C}$  from the dielectric parameter measurement to the completion of the system performance check.
- Input Power = 250 mW (except 50 mW input power at 5.2 GHz)

<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOB13K-XPL	<b>IC:</b>	4596A-GOB13KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.		This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.				Page 22 of 73



## 14.0 SIMULATED EQUIVALENT TISSUES

The simulated equivalent tissue recipes listed in the table below are derived from the SAR system manufacturer's suggested recipe in the DASY4 manual (see reference [13]) in accordance with the procedures and requirements specified in IEEE Standard 1528-2003 (see reference [5]). The ingredient percentage may have been adjusted marginally in order to achieve the appropriate target dielectric parameters within the specified tolerance. The 5 GHz simulated tissue mixture was provided by SPEAG and is listed below. The dielectric parameters of the fluid (permittivity and conductivity) were measured prior to the SAR evaluations. See next pages for SPEAG 5GHz fluid data sheet.



835 MHz TISSUE MIXTURE	
INGREDIENT	835 MHz BODY
Water	53.79 %
Sugar	45.13 %
Salt	0.98 %
Bactericide	0.10 %

1800 MHz TISSUE MIXTURE	
INGREDIENT	1900 MHz BODY
Water	70.17 %
Glycol Monobutyl	29.43 %
Salt	0.40 %

1900 MHz TISSUE MIXTURE	
INGREDIENT	1900 MHz BODY
Water	69.85 %
Glycol Monobutyl	29.89 %
Salt	0.26 %

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

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

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

Schmid & Partner Engineering AG

**s p e a g**

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

## Material Safety Data Sheet

### 1 Identification of the substance and of the manufacturer / origin

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

Use of the substance:

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

### 2 Composition / Information on ingredients

The Item is composed of the following ingredients:

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

Safety relevant ingredients according to EU directives:

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

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

### 3 Hazards identification

Identification not required.

### 4 First aid measures


The product reacts slightly alkaline.



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

### 5 Fire-fighting measures

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

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

<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 24 of 73

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

## 6 Accidental release measures

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

## 7 Handling and storage

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

## 8 Exposure controls / personal protection

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

## 9 Physical and chemical properties

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

## 10 Stability and reactivity

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

## 11 Toxicological information

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

## 12 Ecological information

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

## 13 Disposal considerations

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

## 14 Transport information


Not subject to transport regulations.



## 15 Regulatory information

No special labelling required.

## 16 Other information


Release date: 6.1.2005  
 Responsible: FB



<b>Applicant:</b>	<b>Xplore Technologies Corp.</b>	<b>FCC ID:</b>	<b>Q2GGOB13K-XPL</b>	<b>IC:</b>	<b>4596A-GOB13KXPL</b>	
<b>DUT Type:</b>	<b>Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC</b>					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 25 of 73

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

## 15.0 SAR LIMITS


SAR RF EXPOSURE LIMITS		
FCC 47 CFR 2.1093	(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.		



<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 26 of 73

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

## 16.0 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 (850 Band)</u></b>	
<b>Model</b>	ET3DV6
<b>Serial No.</b>	1590
<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 (1900 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>	Barski Planar Phantom
<b>Shell Material</b>	Fiberglass
<b>Thickness</b>	2.0 ±0.1 mm
<b>Volume</b>	Approx. 70 liters

<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.		This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.				Page 27 of 73

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

## 17.0 PROBE SPECIFICATIONS

### ET3DV6 E-Field Probe

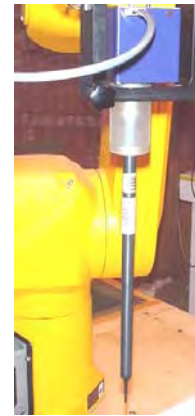
Construction:	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, glycol)
Calibration:	In air from 10 MHz to 2.5 GHz In brain simulating tissue at frequencies of 900 MHz and 1.8 GHz (accuracy $\pm 8\%$ )
Frequency:	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 $\mu$ 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 $\mu$ W/g to >100 mW/g; Linearity: $\pm 0.2$ dB (noise: typically < 1 $\mu$ 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

## 18.0 BARSKI PLANAR PHANTOM

The Barski planar phantom is a fiberglass 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 integrated in a wooden table. The Barski planar phantom was used for the DUT SAR evaluations and the system performance check evaluations. See Appendix F for dimensions and specifications of the Barski planar phantom.




Barski Planar Phantom

## 19.0 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


<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 28 of 73





	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

## 20.0 TEST EQUIPMENT LIST

TEST EQUIPMENT		ASSET NO.	SERIAL NO.	DATE CALIBRATED	CALIBRATION INTERVAL
USED	DESCRIPTION				
x	Schmid & Partner DASY4 System	-	-	-	-
x	-DASY4 Measurement Server	00158	1078	CNR	CNR
x	-Robot	00046	599396-01	CNR	CNR
x	-DAE4	00019	353	27Apr10	Biennial
x	-ET3DV6 E-Field Probe	00017	1590	15Jul10	Annual
x	-EX3DV4 E-Field Probe	00213	3600	29Apr10	Annual
x	-D835V2 Validation Dipole	00217	4d075	20Apr09	Triennial
x	-D1900V2 Validation Dipole	00218	5d107	21Apr09	Triennial
x	-D2450V2 Validation Dipole	00219	825	17Apr09	Triennial
x	-D5GHzV2 Validation Dipole	00126	1031	29Apr09	Triennial
x	-Barski Planar Phantom	00155	03-01	CNR	CNR
x	HP 85070C Dielectric Probe Kit	00033	none	CNR	CNR
x	Gigatronics 8652A Power Meter	00007	1835272	04May10	Biennial
x	Gigatronics 80701A Power Sensor	00014	1833699	04May10	Biennial
x	Gigatronics 80701A Power Sensor	00011	1833542	04May10	Biennial
x	Pasternack PE2214-20 Directional Coupler	229	none	CNR	CNR
x	10dB Attenuator	00102	none	CNR	CNR
x	HP 8753ET Network Analyzer	00134	US39170292	04May10	Biennial
x	Agilent 8960 Series 10 Communication Test Set	N/A	GB46311315	CNR	CNR
x	Rohde & Schwarz SMR20 Signal Generator	00006	100104	CNR	CNR
x	Nextec NB00383 Microwave amplifier	00151	0535	CNR	CNR
x	Amplifier Research 5S1G4 Power Amplifier	00106	26235	CNR	CNR
Abbr.	CNR = Calibration Not Required; N/A = Not Applicable				

<b>Applicant:</b>	<b>Xplore Technologies Corp.</b>	<b>FCC ID:</b>	<b>Q2GGOBI3K-XPL</b>	<b>IC:</b>	<b>4596A-GOBI3KXPL</b>	
<b>DUT Type:</b>	<b>Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC</b>					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 29 of 73





	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

## 21.0 JUSTIFICATION FOR EXTENDED SAR DIPOLE CALIBRATION

SAR dipoles calibrated less than two years ago but more than one year ago were confirmed by maintaining return loss (< -20dB, within 20% of prior calibration) and impedance (within 5Ω from prior calibration) requirements per extended calibrations in FCC KDB 450824 (see reference [11]).

SPEAG VALIDATION DIPOLE							
Freq.	TSL	Dipole	Measurement Date	Return Loss (dB)	Δ %	Impedance (Ω)	Δ Ω
835 MHz	Body	SPEAG Validation Dipole D835V2 SN: 4d075	April 20, 2009	-26.7		48.0	
			April 20, 2010	-23.3	14.5%	52.3	4.3
1900 MHz	Body	SPEAG Validation Dipole D1900V2 SN: 5d107	April 21, 2009	-22.1		45.9	
			April 20, 2010	-25.4	15.0%	45.5	0.4
2450 MHz	Body	SPEAG Validation Dipole D2450V2 SN: 825	Apr. 17, 2009	-24.8		49.2	
			Apr. 17, 2010	-23.8	4.0%	54.2	5.0
5200 MHz	Body	SPEAG Validation Dipole D5GHzV2 SN: 1031	Apr. 29, 2009	-27.7		49.7	
			Apr. 29, 2010	-27.6	0.4%	48.5	1.2



	Date(s) of Evaluation February 14-18, 2011	Test Report Serial No. 020911Q2G-T1079-S24M	Test Report Revision No. Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	Test Report Issue Date April 24, 2012	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## 22.0 MEASUREMENT UNCERTAINTIES (IEEE 1528-2003)

UNCERTAINTY BUDGET FOR DEVICE EVALUATION									
Uncertainty Component	IEEE 1528 Section	Uncertainty Value ±%	Probability Distribution	Divisor	ci 1g	ci 10g	Uncertainty Value ±% (1g)	Uncertainty Value ±% (10g)	V <sub>i</sub> or V <sub>eff</sub>
<b>Measurement System</b>									
Probe Calibration (835 MHz)	E.2.1	5.5	Normal	1	1	1	5.5	5.5	∞
Axial Isotropy	E.2.2	4.7	Rectangular	1.732050808	0.7	0.7	1.9	1.9	∞
Hemispherical Isotropy	E.2.2	9.6	Rectangular	1.732050808	0.7	0.7	3.9	3.9	∞
Boundary Effect	E.2.3	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Linearity	E.2.4	4.7	Rectangular	1.732050808	1	1	2.7	2.7	∞
System Detection Limits	E.2.5	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Readout Electronics	E.2.6	0.3	Normal	1	1	1	0.3	0.3	∞
Response Time	E.2.7	0.8	Rectangular	1.732050808	1	1	0.5	0.5	∞
Integration Time	E.2.8	2.6	Rectangular	1.732050808	1	1	1.5	1.5	∞
RF Ambient Conditions	E.6.1	3	Rectangular	1.732050808	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.4	Rectangular	1.732050808	1	1	0.2	0.2	∞
Probe Positioning wrt Phantom Shell	E.6.3	2.9	Rectangular	1.732050808	1	1	1.7	1.7	∞
Extrapolation, interpolation & integration algorithms for max. SAR evaluation	E.5	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
<b>Test Sample Related</b>									
Test Sample Positioning	E.4.2	2.9	Normal	1	1	1	2.9	2.9	12
Device Holder Uncertainty	E.4.1	3.6	Normal	1	1	1	3.6	3.6	8
SAR Drift Measurement	6.6.2	5	Rectangular	1.732050808	1	1	2.9	2.9	∞
<b>Phantom and Tissue Parameters</b>									
Phantom Uncertainty	E.3.1	4	Rectangular	1.732050808	1	1	2.3	2.3	∞
Liquid Conductivity (target)	E.3.2	5	Rectangular	1.732050808	0.64	0.43	1.8	1.2	∞
Liquid Conductivity (measured)	E.3.3	1.03	Normal	1	0.64	0.43	0.7	0.4	∞
Liquid Permittivity (target)	E.3.2	5	Rectangular	1.732050808	0.6	0.49	1.7	1.4	∞
Liquid Permittivity (measured)	E.3.3	3.8	Normal	1	0.6	0.49	2.3	1.9	∞
<b>Combined Standard Uncertainty</b>			<b>RSS</b>				<b>10.62</b>	<b>10.39</b>	
<b>Expanded Uncertainty (95% Confidence Interval)</b>			<b>k=2</b>				<b>21.24</b>	<b>20.78</b>	

**Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003**


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



	Date(s) of Evaluation February 14-18, 2011	Test Report Serial No. 020911Q2G-T1079-S24M	Test Report Revision No. Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	Test Report Issue Date April 24, 2012	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## MEASUREMENT UNCERTAINTIES (Cont.)

UNCERTAINTY BUDGET FOR DEVICE EVALUATION									
Uncertainty Component	IEEE 1528 Section	Uncertainty Value ±%	Probability Distribution	Divisor	ci 1g	ci 10g	Uncertainty Value ±% (1g)	Uncertainty Value ±% (10g)	V <sub>i</sub> or V <sub>eff</sub>
<b>Measurement System</b>									
Probe Calibration (1900 MHz)	E.2.1	5.5	Normal	1	1	1	5.5	5.5	∞
Axial Isotropy	E.2.2	4.7	Rectangular	1.732050808	0.7	0.7	1.9	1.9	∞
Hemispherical Isotropy	E.2.2	9.6	Rectangular	1.732050808	0.7	0.7	3.9	3.9	∞
Boundary Effect	E.2.3	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Linearity	E.2.4	4.7	Rectangular	1.732050808	1	1	2.7	2.7	∞
System Detection Limits	E.2.5	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Readout Electronics	E.2.6	0.3	Normal	1	1	1	0.3	0.3	∞
Response Time	E.2.7	0.8	Rectangular	1.732050808	1	1	0.5	0.5	∞
Integration Time	E.2.8	2.6	Rectangular	1.732050808	1	1	1.5	1.5	∞
RF Ambient Conditions	E.6.1	3	Rectangular	1.732050808	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.4	Rectangular	1.732050808	1	1	0.2	0.2	∞
Probe Positioning wrt Phantom Shell	E.6.3	2.9	Rectangular	1.732050808	1	1	1.7	1.7	∞
Extrapolation, interpolation & integration algorithms for max. SAR evaluation	E.5	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
<b>Test Sample Related</b>									
Test Sample Positioning	E.4.2	2.9	Normal	1	1	1	2.9	2.9	12
Device Holder Uncertainty	E.4.1	3.6	Normal	1	1	1	3.6	3.6	8
SAR Drift Measurement	6.6.2	5	Rectangular	1.732050808	1	1	2.9	2.9	∞
<b>Phantom and Tissue Parameters</b>									
Phantom Uncertainty	E.3.1	4	Rectangular	1.732050808	1	1	2.3	2.3	∞
Liquid Conductivity (target)	E.3.2	5	Rectangular	1.732050808	0.64	0.43	1.8	1.2	∞
Liquid Conductivity (measured)	E.3.3	0.66	Normal	1	0.64	0.43	0.4	0.3	∞
Liquid Permittivity (target)	E.3.2	5	Rectangular	1.732050808	0.6	0.49	1.7	1.4	∞
Liquid Permittivity (measured)	E.3.3	3.94	Normal	1	0.6	0.49	2.4	1.9	∞
<b>Combined Standard Uncertainty</b>			<b>RSS</b>				<b>10.63</b>	<b>10.40</b>	
<b>Expanded Uncertainty (95% Confidence Interval)</b>			<b>k=2</b>				<b>21.25</b>	<b>20.79</b>	
<b>Measurement Uncertainty Table in accordance with IEEE 1528-2003</b>									

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

Applicant:	Xplore Technologies Corp.	FCC ID:	Q2GGOBI3K-XPL	IC:	4596A-GOBI3KXPL	
DUT Type:	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.		This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.				Page 32 of 73

	Date(s) of Evaluation February 14-18, 2011	Test Report Serial No. 020911Q2G-T1079-S24M	Test Report Revision No. Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	Test Report Issue Date April 24, 2012	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	


## MEASUREMENT UNCERTAINTIES (Cont.)



### UNCERTAINTY BUDGET FOR DEVICE EVALUATION

Uncertainty Component	IEEE 1528 Section	Uncertainty Value $\pm\%$	Probability Distribution	Divisor	ci 1g	ci 10g	Uncertainty Value $\pm\%$ (1g)	Uncertainty Value $\pm\%$ (10g)	$V_i$ or $V_{eff}$
<b>Measurement System</b>									
Probe Calibration (1800 MHz)	E.2.1	5.5	Normal	1	1	1	5.5	5.5	$\infty$
Axial Isotropy	E.2.2	4.7	Rectangular	1.732050808	0.7	0.7	1.9	1.9	$\infty$
Hemispherical Isotropy	E.2.2	9.6	Rectangular	1.732050808	0.7	0.7	3.9	3.9	$\infty$
Boundary Effect	E.2.3	1	Rectangular	1.732050808	1	1	0.6	0.6	$\infty$
Linearity	E.2.4	4.7	Rectangular	1.732050808	1	1	2.7	2.7	$\infty$
System Detection Limits	E.2.5	1	Rectangular	1.732050808	1	1	0.6	0.6	$\infty$
Readout Electronics	E.2.6	0.3	Normal	1	1	1	0.3	0.3	$\infty$
Response Time	E.2.7	0.8	Rectangular	1.732050808	1	1	0.5	0.5	$\infty$
Integration Time	E.2.8	2.6	Rectangular	1.732050808	1	1	1.5	1.5	$\infty$
RF Ambient Conditions	E.6.1	3	Rectangular	1.732050808	1	1	1.7	1.7	$\infty$
Probe Positioner Mechanical Tolerance	E.6.2	0.4	Rectangular	1.732050808	1	1	0.2	0.2	$\infty$
Probe Positioning wrt Phantom Shell	E.6.3	2.9	Rectangular	1.732050808	1	1	1.7	1.7	$\infty$
Extrapolation, interpolation & integration algorithms for max. SAR evaluation	E.5	1	Rectangular	1.732050808	1	1	0.6	0.6	$\infty$
<b>Test Sample Related</b>									
Test Sample Positioning	E.4.2	2.9	Normal	1	1	1	2.9	2.9	12
Device Holder Uncertainty	E.4.1	3.6	Normal	1	1	1	3.6	3.6	8
SAR Drift Measurement	6.6.2	5	Rectangular	1.732050808	1	1	2.9	2.9	$\infty$
<b>Phantom and Tissue Parameters</b>									
Phantom Uncertainty	E.3.1	4	Rectangular	1.732050808	1	1	2.3	2.3	$\infty$
Liquid Conductivity (target)	E.3.2	5	Rectangular	1.732050808	0.64	0.43	1.8	1.2	$\infty$
Liquid Conductivity (measured)	E.3.3	2.68	Normal	1	0.64	0.43	1.7	1.2	$\infty$
Liquid Permittivity (target)	E.3.2	5	Rectangular	1.732050808	0.6	0.49	1.7	1.4	$\infty$
Liquid Permittivity (measured)	E.3.3	2.36	Normal	1	0.6	0.49	1.4	1.2	$\infty$
<b>Combined Standard Uncertainty</b>			<b>RSS</b>				<b>10.59</b>	<b>10.34</b>	
<b>Expanded Uncertainty (95% Confidence Interval)</b>			<b>k=2</b>				<b>21.17</b>	<b>20.68</b>	

**Measurement Uncertainty Table in accordance with IEEE 1528-2003**

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

<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 33 of 73

	Date(s) of Evaluation February 14-18, 2011	Test Report Serial No. 020911Q2G-T1079-S24M	Test Report Revision No. Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	Test Report Issue Date April 24, 2012	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	


## MEASUREMENT UNCERTAINTIES (Cont.)



### UNCERTAINTY BUDGET FOR DEVICE EVALUATION

Uncertainty Component	IEEE 1528 Section	Uncertainty Value ±%	Probability Distribution	Divisor	ci 1g	ci 10g	Uncertainty Value ±% (1g)	Uncertainty Value ±% (10g)	V <sub>i</sub> or V <sub>eff</sub>
<b>Measurement System</b>									
Probe Calibration (2450 MHz)	E.2.1	5.5	Normal	1	1	1	5.5	5.5	∞
Axial Isotropy	E.2.2	4.7	Rectangular	1.732050808	0.7	0.7	1.9	1.9	∞
Hemispherical Isotropy	E.2.2	9.6	Rectangular	1.732050808	0.7	0.7	3.9	3.9	∞
Boundary Effect	E.2.3	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Linearity	E.2.4	4.7	Rectangular	1.732050808	1	1	2.7	2.7	∞
System Detection Limits	E.2.5	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Readout Electronics	E.2.6	0.3	Normal	1	1	1	0.3	0.3	∞
Response Time	E.2.7	0.8	Rectangular	1.732050808	1	1	0.5	0.5	∞
Integration Time	E.2.8	2.6	Rectangular	1.732050808	1	1	1.5	1.5	∞
RF Ambient Conditions	E.6.1	3	Rectangular	1.732050808	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.4	Rectangular	1.732050808	1	1	0.2	0.2	∞
Probe Positioning wrt Phantom Shell	E.6.3	2.9	Rectangular	1.732050808	1	1	1.7	1.7	∞
Extrapolation, interpolation & integration algorithms for max. SAR evaluation	E.5	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
<b>Test Sample Related</b>									
Test Sample Positioning	E.4.2	2.9	Normal	1	1	1	2.9	2.9	12
Device Holder Uncertainty	E.4.1	3.6	Normal	1	1	1	3.6	3.6	8
SAR Drift Measurement	6.6.2	5	Rectangular	1.732050808	1	1	2.9	2.9	∞
<b>Phantom and Tissue Parameters</b>									
Phantom Uncertainty	E.3.1	4	Rectangular	1.732050808	1	1	2.3	2.3	∞
Liquid Conductivity (target)	E.3.2	5	Rectangular	1.732050808	0.64	0.43	1.8	1.2	∞
Liquid Conductivity (measured)	E.3.3	1.03	Normal	1	0.64	0.43	0.7	0.4	∞
Liquid Permittivity (target)	E.3.2	5	Rectangular	1.732050808	0.6	0.49	1.7	1.4	∞
Liquid Permittivity (measured)	E.3.3	4.17	Normal	1	0.6	0.49	2.5	2.0	∞
<b>Combined Standard Uncertainty</b>			<b>RSS</b>				<b>10.67</b>	<b>10.42</b>	
<b>Expanded Uncertainty (95% Confidence Interval)</b>			<b>k=2</b>				<b>21.34</b>	<b>20.85</b>	

Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003


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



<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 34 of 73

	Date(s) of Evaluation February 14-18, 2011	Test Report Serial No. 020911Q2G-T1079-S24M	Test Report Revision No. Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	Test Report Issue Date April 24, 2012	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## MEASUREMENT UNCERTAINTIES (Cont.)

UNCERTAINTY BUDGET FOR DEVICE EVALUATION								
Error Description	Uncertainty Value ±%	Probability Distribution	Divisor	ci 1g	ci 10g	Uncertainty Value ±% (1g)	Uncertainty Value ±% (10g)	V <sub>i</sub> or V <sub>eff</sub>
<b>Measurement System</b>								
Probe Calibration (5 GHz)	6.55	Normal	1	1	1	6.55	6.55	∞
Axial Isotropy	4.7	Rectangular	1.732050808	0.7	0.7	1.9	1.9	∞
Hemispherical Isotropy	9.6	Rectangular	1.732050808	0.7	0.7	3.9	3.9	∞
Boundary Effect	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Linearity	4.7	Rectangular	1.732050808	1	1	2.7	2.7	∞
System Detection Limits	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Readout Electronics	0.3	Normal	1	1	1	0.3	0.3	∞
Response Time	0.8	Rectangular	1.732050808	1	1	0.5	0.5	∞
Integration Time	2.6	Rectangular	1.732050808	1	1	1.5	1.5	∞
RF Ambient Conditions	3	Rectangular	1.732050808	1	1	1.7	1.7	∞
Probe Positioner Mechanical Restrictions	0.8	Rectangular	1.732050808	1	1	0.5	0.5	∞
Probe Positioning wrt Phantom Shell	5.7	Rectangular	1.732050808	1	1	3.3	3.3	∞
Post-processing	4	Rectangular	1.732050808	1	1	2.3	2.3	∞
<b>Test Sample Related</b>								
Device positioning	2.9	Normal	1	1	1	2.9	2.9	12
Device holder uncertainty	3.6	Normal	1	1	1	3.6	3.6	8
Power drift	5	Rectangular	1.732050808	1	1	2.9	2.9	∞
<b>Phantom and Setup</b>								
Phantom uncertainty	4	Rectangular	1.732050808	1	1	2.3	2.3	∞
Liquid conductivity (target)	5	Rectangular	1.732050808	0.64	0.43	1.8	1.2	∞
Liquid conductivity (measured)	0.38	Normal	1	0.64	0.43	0.2	0.2	∞
Liquid permittivity (target)	5	Rectangular	1.732050808	0.6	0.49	1.7	1.4	∞
Liquid permittivity (measured)	4.02	Normal	1	0.6	0.49	2.4	2.0	∞
<b>Combined Standard Uncertainty</b>		<b>RSS</b>				<b>11.78</b>	<b>11.58</b>	
<b>Expanded Uncertainty (95% Confidence Interval)</b>		<b>k=2</b>				<b>23.57</b>	<b>23.15</b>	
<b>Measurement Uncertainty Table for the 5-6 GHz Range (SPEAG DASY4 Manual, Section 27.6, September 2005)</b>								

<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 35 of 73

	Date(s) of Evaluation February 14-18, 2011	Test Report Serial No. 020911Q2G-T1079-S24M	Test Report Revision No. Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	Test Report Issue Date April 24, 2012	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## 23.0 MEASUREMENT UNCERTAINTIES (IEC 62209-2:2010)



### UNCERTAINTY BUDGET FOR DEVICE EVALUATION

Source of Uncertainty	IEC 62209-2 Section	Tolerance / Uncertainty ±%	Probability Distribution	Divisor	ci 1g	ci 10g	Standard Uncertainty ±% (1g)	Standard Uncertainty ±% (10g)	V <sub>i</sub> or V <sub>eff</sub>
<b>Measurement System</b>									
Probe Calibration (835 MHz)	7.2.2.1	5.5	Normal	1	1	1	5.5	5.5	∞
Isotropy	7.2.2.2	4.7	Rectangular	1.732050808	1	1	2.7	2.7	∞
Boundary Effect	7.2.2.6	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Linearity	7.2.2.3	4.7	Rectangular	1.732050808	1	1	2.7	2.7	∞
Detection Limits	7.2.2.5	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Readout Electronics	7.2.2.7	0.3	Normal	1	1	1	0.3	0.3	∞
Response Time	7.2.2.8	0.8	Rectangular	1.732050808	1	1	0.5	0.5	∞
Integration Time	7.2.2.9	2.6	Rectangular	1.732050808	1	1	1.5	1.5	∞
RF Ambient Conditions	7.2.4.5	3	Rectangular	1.732050808	1	1	1.7	1.7	∞
Probe Positioner Mechanical Restrictions	7.2.3.1	0.4	Rectangular	1.732050808	1	1	0.2	0.2	∞
Probe Positioning wrt Phantom Shell	7.2.3.3	2.9	Rectangular	1.732050808	1	1	1.7	1.7	∞
Post-processing	7.2.5	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
<b>Test Sample Related</b>									
Test Sample Positioning	7.2.3.4.3	2.9	Normal	1	1	1	2.9	2.9	12
Device Holder Uncertainty	7.2.3.4.2	3.6	Normal	1	1	1	3.6	3.6	8
Drift of Output Power (meas. SAR drift)	7.2.2.10	5	Rectangular	1.732050808	1	1	2.9	2.9	∞
<b>Phantom and Tissue Parameters</b>									
Phantom Uncertainty	7.2.3.2	4	Rectangular	1.732050808	1	1	2.3	2.3	∞
SAR Correction Algorithm for deviations in permittivity and conductivity	7.2.4.3	1.2	Normal	1	1	0.81	1.2	0.97	∞
Liquid Conductivity (measured)	7.2.4.3	1.03	Normal	1	0.78	0.71	0.8	0.7	∞
Liquid Permittivity (measured)	7.2.4.3	3.8	Normal	1	0.23	0.26	0.9	1.0	∞
Liquid Permittivity - temp. uncertainty	7.2.4.4	1.23	Rectangular	1.732050808	0.78	0.71	0.6	0.5	∞
Liquid Conductivity - temp. uncertainty	7.2.4.4	0.93	Rectangular	1.732050808	0.23	0.26	0.1	0.1	∞
<b>Combined Standard Uncertainty</b>	<b>7.3.1</b>		<b>RSS</b>				<b>9.62</b>	<b>9.60</b>	
<b>Expanded Uncertainty (95% Confidence Interval)</b>	<b>7.3.2</b>		<b>k=2</b>				<b>19.25</b>	<b>19.20</b>	

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

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



	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	


## MEASUREMENT UNCERTAINTIES (Cont.)

### UNCERTAINTY BUDGET FOR DEVICE EVALUATION



Source of Uncertainty	IEC 62209-2 Section	Tolerance / Uncertainty ±%	Probability Distribution	Divisor	ci 1g	ci 10g	Standard Uncertainty ±% (1g)	Standard Uncertainty ±% (10g)	V <sub>i</sub> or V <sub>eff</sub>
<b>Measurement System</b>									
Probe Calibration (1900 MHz)	7.2.2.1	5.5	Normal	1	1	1	5.5	5.5	∞
Isotropy	7.2.2.2	4.7	Rectangular	1.732050808	1	1	2.7	2.7	∞
Boundary Effect	7.2.2.6	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Linearity	7.2.2.3	4.7	Rectangular	1.732050808	1	1	2.7	2.7	∞
Detection Limits	7.2.2.5	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Readout Electronics	7.2.2.7	0.3	Normal	1	1	1	0.3	0.3	∞
Response Time	7.2.2.8	0.8	Rectangular	1.732050808	1	1	0.5	0.5	∞
Integration Time	7.2.2.9	2.6	Rectangular	1.732050808	1	1	1.5	1.5	∞
RF Ambient Conditions	7.2.4.5	3	Rectangular	1.732050808	1	1	1.7	1.7	∞
Probe Positioner Mechanical Restrictions	7.2.3.1	0.4	Rectangular	1.732050808	1	1	0.2	0.2	∞
Probe Positioning wrt Phantom Shell	7.2.3.3	2.9	Rectangular	1.732050808	1	1	1.7	1.7	∞
Post-processing	7.2.5	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
<b>Test Sample Related</b>									
Test Sample Positioning	7.2.3.4.3	2.9	Normal	1	1	1	2.9	2.9	12
Device Holder Uncertainty	7.2.3.4.2	3.6	Normal	1	1	1	3.6	3.6	8
Drift of Output Power (meas. SAR drift)	7.2.2.10	5	Rectangular	1.732050808	1	1	2.9	2.9	∞
<b>Phantom and Tissue Parameters</b>									
Phantom Uncertainty	7.2.3.2	4	Rectangular	1.732050808	1	1	2.3	2.3	∞
SAR Correction Algorithm for deviations in permittivity and conductivity	7.2.4.3	1.2	Normal	1	1	0.81	1.2	0.97	∞
Liquid Conductivity (measured)	7.2.4.3	0.66	Normal	1	0.78	0.71	0.5	0.5	∞
Liquid Permittivity (measured)	7.2.4.3	3.94	Normal	1	0.23	0.26	0.9	1.0	∞
Liquid Permittivity - temp. uncertainty	7.2.4.4	1.23	Rectangular	1.732050808	0.78	0.71	0.6	0.5	∞
Liquid Conductivity - temp. uncertainty	7.2.4.4	0.93	Rectangular	1.732050808	0.23	0.26	0.1	0.1	∞
<b>Combined Standard Uncertainty</b>	<b>7.3.1</b>		<b>RSS</b>				<b>9.61</b>	<b>9.59</b>	
<b>Expanded Uncertainty (95% Confidence Interval)</b>	<b>7.3.2</b>		<b>k=2</b>				<b>19.21</b>	<b>19.17</b>	

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

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

<b>Applicant:</b>	<b>Xplore Technologies Corp.</b>	<b>FCC ID:</b>	<b>Q2GGOBI3K-XPL</b>	<b>IC:</b>	<b>4596A-GOBI3KXPL</b>	
<b>DUT Type:</b>	<b>Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC</b>					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 37 of 73



	Date(s) of Evaluation February 14-18, 2011	Test Report Serial No. 020911Q2G-T1079-S24M	Test Report Revision No. Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	Test Report Issue Date April 24, 2012	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	


## MEASUREMENT UNCERTAINTIES (Cont.)



### UNCERTAINTY BUDGET FOR DEVICE EVALUATION

Source of Uncertainty	IEC 62209-2 Section	Tolerance / Uncertainty $\pm\%$	Probability Distribution	Divisor	ci 1g	ci 10g	Standard Uncertainty $\pm\%$ (1g)	Standard Uncertainty $\pm\%$ (10g)	$V_i$ or $V_{eff}$
<b>Measurement System</b>									
Probe Calibration (1800 MHz)	7.2.2.1	5.5	Normal	1	1	1	5.5	5.5	$\infty$
Isotropy	7.2.2.2	4.7	Rectangular	1.732050808	1	1	2.7	2.7	$\infty$
Boundary Effect	7.2.2.6	1	Rectangular	1.732050808	1	1	0.6	0.6	$\infty$
Linearity	7.2.2.3	4.7	Rectangular	1.732050808	1	1	2.7	2.7	$\infty$
Detection Limits	7.2.2.5	1	Rectangular	1.732050808	1	1	0.6	0.6	$\infty$
Readout Electronics	7.2.2.7	0.3	Normal	1	1	1	0.3	0.3	$\infty$
Response Time	7.2.2.8	0.8	Rectangular	1.732050808	1	1	0.5	0.5	$\infty$
Integration Time	7.2.2.9	2.6	Rectangular	1.732050808	1	1	1.5	1.5	$\infty$
RF Ambient Conditions	7.2.4.5	3	Rectangular	1.732050808	1	1	1.7	1.7	$\infty$
Probe Positioner Mechanical Restrictions	7.2.3.1	0.4	Rectangular	1.732050808	1	1	0.2	0.2	$\infty$
Probe Positioning wrt Phantom Shell	7.2.3.3	2.9	Rectangular	1.732050808	1	1	1.7	1.7	$\infty$
Post-processing	7.2.5	1	Rectangular	1.732050808	1	1	0.6	0.6	$\infty$
<b>Test Sample Related</b>									
Test Sample Positioning	7.2.3.4.3	2.9	Normal	1	1	1	2.9	2.9	12
Device Holder Uncertainty	7.2.3.4.2	3.6	Normal	1	1	1	3.6	3.6	8
Drift of Output Power (meas. SAR drift)	7.2.2.10	5	Rectangular	1.732050808	1	1	2.9	2.9	$\infty$
<b>Phantom and Tissue Parameters</b>									
Phantom Uncertainty	7.2.3.2	4	Rectangular	1.732050808	1	1	2.3	2.3	$\infty$
SAR Correction Algorithm for deviations in permittivity and conductivity	7.2.4.3	1.2	Normal	1	1	0.81	1.2	0.97	$\infty$
Liquid Conductivity (measured)	7.2.4.3	2.68	Normal	1	0.78	0.71	2.1	1.9	$\infty$
Liquid Permittivity (measured)	7.2.4.3	2.36	Normal	1	0.23	0.26	0.5	0.6	$\infty$
Liquid Permittivity - temp. uncertainty	7.2.4.4	1.23	Rectangular	1.732050808	0.78	0.71	0.6	0.5	$\infty$
Liquid Conductivity - temp. uncertainty	7.2.4.4	0.93	Rectangular	1.732050808	0.23	0.26	0.1	0.1	$\infty$
<b>Combined Standard Uncertainty</b>	<b>7.3.1</b>		<b>RSS</b>				<b>9.79</b>	<b>9.73</b>	
<b>Expanded Uncertainty (95% Confidence Interval)</b>	<b>7.3.2</b>		<b>k=2</b>				<b>19.58</b>	<b>19.46</b>	

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

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

<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 38 of 73

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	



## MEASUREMENT UNCERTAINTIES (Cont.)

### UNCERTAINTY BUDGET FOR DEVICE EVALUATION

Source of Uncertainty	IEC 62209-2 Section	Tolerance / Uncertainty ±%	Probability Distribution	Divisor	ci 1g	ci 10g	Standard Uncertainty ±% (1g)	Standard Uncertainty ±% (10g)	V <sub>i</sub> or V <sub>eff</sub>
<b>Measurement System</b>									
Probe Calibration (2450 MHz)	7.2.2.1	5.5	Normal	1	1	1	5.5	5.5	∞
Isotropy	7.2.2.2	4.7	Rectangular	1.732050808	1	1	2.7	2.7	∞
Boundary Effect	7.2.2.6	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Linearity	7.2.2.3	4.7	Rectangular	1.732050808	1	1	2.7	2.7	∞
Detection Limits	7.2.2.5	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Readout Electronics	7.2.2.7	0.3	Normal	1	1	1	0.3	0.3	∞
Response Time	7.2.2.8	0.8	Rectangular	1.732050808	1	1	0.5	0.5	∞
Integration Time	7.2.2.9	2.6	Rectangular	1.732050808	1	1	1.5	1.5	∞
RF Ambient Conditions	7.2.4.5	3	Rectangular	1.732050808	1	1	1.7	1.7	∞
Probe Positioner Mechanical Restrictions	7.2.3.1	0.4	Rectangular	1.732050808	1	1	0.2	0.2	∞
Probe Positioning wrt Phantom Shell	7.2.3.3	2.9	Rectangular	1.732050808	1	1	1.7	1.7	∞
Post-processing	7.2.5	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
<b>Test Sample Related</b>									
Test Sample Positioning	7.2.3.4.3	2.9	Normal	1	1	1	2.9	2.9	12
Device Holder Uncertainty	7.2.3.4.2	3.6	Normal	1	1	1	3.6	3.6	8
Drift of Output Power (meas. SAR drift)	7.2.2.10	5	Rectangular	1.732050808	1	1	2.9	2.9	∞
<b>Phantom and Tissue Parameters</b>									
Phantom Uncertainty	7.2.3.2	4	Rectangular	1.732050808	1	1	2.3	2.3	∞
SAR Correction Algorithm for deviations in permittivity and conductivity	7.2.4.3	1.2	Normal	1	1	0.81	1.2	0.97	∞
Liquid Conductivity (measured)	7.2.4.3	1.03	Normal	1	0.78	0.71	0.8	0.7	∞
Liquid Permittivity (measured)	7.2.4.3	4.17	Normal	1	0.23	0.26	1.0	1.1	∞
Liquid Permittivity - temp. uncertainty	7.2.4.4	1.23	Rectangular	1.732050808	0.78	0.71	0.6	0.5	∞
Liquid Conductivity - temp. uncertainty	7.2.4.4	0.93	Rectangular	1.732050808	0.23	0.26	0.1	0.1	∞
<b>Combined Standard Uncertainty</b>	<b>7.3.1</b>		<b>RSS</b>				<b>9.63</b>	<b>9.61</b>	
<b>Expanded Uncertainty (95% Confidence Interval)</b>	<b>7.3.2</b>		<b>k=2</b>				<b>19.26</b>	<b>19.22</b>	

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

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

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	


## MEASUREMENT UNCERTAINTIES (Cont.)



### UNCERTAINTY BUDGET FOR DEVICE EVALUATION

Source of Uncertainty	IEC 62209-2 Section	Tolerance / Uncertainty ±%	Probability Distribution	Divisor	ci 1g	ci 10g	Standard Uncertainty ±% (1g)	Standard Uncertainty ±% (10g)	V <sub>i</sub> or V <sub>eff</sub>
<b>Measurement System</b>									
Probe Calibration (5 GHz)	7.2.2.1	6.55	Normal	1	1	1	6.55	6.55	∞
Isotropy	7.2.2.2	4.7	Rectangular	1.732050808	1	1	2.7	2.7	∞
Boundary Effect	7.2.2.6	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Linearity	7.2.2.3	4.7	Rectangular	1.732050808	1	1	2.7	2.7	∞
Detection Limits	7.2.2.5	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Readout Electronics	7.2.2.7	0.3	Normal	1	1	1	0.3	0.3	∞
Response Time	7.2.2.8	0.8	Rectangular	1.732050808	1	1	0.5	0.5	∞
Integration Time	7.2.2.9	2.6	Rectangular	1.732050808	1	1	1.5	1.5	∞
RF Ambient Conditions	7.2.4.5	3	Rectangular	1.732050808	1	1	1.7	1.7	∞
Probe Positioner Mechanical Restrictions	7.2.3.1	0.4	Rectangular	1.732050808	1	1	0.2	0.2	∞
Probe Positioning wrt Phantom Shell	7.2.3.3	2.9	Rectangular	1.732050808	1	1	1.7	1.7	∞
Post-processing	7.2.5	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
<b>Test Sample Related</b>									
Test Sample Positioning	7.2.3.4.3	2.9	Normal	1	1	1	2.9	2.9	12
Device Holder Uncertainty	7.2.3.4.2	3.6	Normal	1	1	1	3.6	3.6	8
Drift of Output Power (meas. SAR drift)	7.2.2.10	5	Rectangular	1.732050808	1	1	2.9	2.9	∞
<b>Phantom and Tissue Parameters</b>									
Phantom Uncertainty	7.2.3.2	4	Rectangular	1.732050808	1	1	2.3	2.3	∞
SAR Correction Algorithm for deviations in permittivity and conductivity	7.2.4.3	1.2	Normal	1	1	0.81	1.2	0.97	∞
Liquid Conductivity (measured)	7.2.4.3	0.38	Normal	1	0.78	0.71	0.3	0.3	∞
Liquid Permittivity (measured)	7.2.4.3	4.02	Normal	1	0.23	0.26	0.9	1.0	∞
Liquid Permittivity - temp. uncertainty	7.2.4.4	0.68	Rectangular	1.732050808	0.78	0.71	0.3	0.3	∞
Liquid Conductivity - temp. uncertainty	7.2.4.4	0.38	Rectangular	1.732050808	0.23	0.26	0.1	0.1	∞
<b>Combined Standard Uncertainty</b>	<b>7.3.1</b>		<b>RSS</b>				<b>10.23</b>	<b>10.21</b>	
<b>Expanded Uncertainty (95% Confidence Interval)</b>	<b>7.3.2</b>		<b>k=2</b>				<b>20.45</b>	<b>20.42</b>	

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


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



<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.		This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.				Page 40 of 73

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	


## 24.0 REFERENCES



- [1] Federal Communications Commission - "Radiofrequency radiation exposure evaluation: portable devices", Rule Part 47 CFR §2.1093.
- [2] Health Canada - "Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz", Safety Code 6: 1999.
- [3] Federal Communications Commission - "Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields", OET Bulletin 65, Supplement C (Edition 01-01), FCC, Washington, D.C.: June 2001.
- [4] Industry Canada - "Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)", Radio Standards Specification RSS-102 Issue 4: March 2010.
- [5] IEEE Standard 1528-2003 - "Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques": December 2003.
- [6] International Standard IEC 62209-2 Edition 1.0 2010-03 - "Human exposure to radio frequency fields from hand-held & body-mounted wireless communication devices - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)".
- [7] Federal Communications Commission, Office of Engineering and Technology - "Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies"; KDB 447498 D01v04: November 2009.
- [8] Federal Communications Commission, Office of Engineering and Technology - "Permissive Change Policies"; KDB 178919 D01v05r01: June 2011.
- [9] Federal Communications Commission - "SAR Measurement Procedures for 3G Devices"; KDB 941225 D01v02: October 2007.
- [10] Federal Communications Commission, Office of Engineering and Technology - "SAR Measurement Procedures for 802.11a/b/g Transmitters"; KDB 248227 D01v01r02: May 2007.
- [11] Federal Communications Commission, Office of Engineering and Technology - "Application Note: SAR Probe Calibration and System Verification Considerations for Measurements at 150 MHz - 3 GHz"; KDB 450824 D01 v01r01: January 2007.
- [12] Federal Communications Commission, Office of Engineering and Technology - "SAR Measurement Requirements for 3 - 6 GHz"; KDB 865664 Rev. 1.1: October 2006.
- [13] Schmid & Partner Engineering AG - DASY4 Manual V4.6, Chapter 17 Application Note, Body Tissue Recipe: Sept. 2005.
- [14] Schmid & Partner Engineering AG - DASY4 Manual V4.6, Chapter 22 Application Note, SAR Sensitivities: Sept. 2005.
- [15] ISO/IEC 17025 - "General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:2005)."

<b>Applicant:</b>	<b>Xplore Technologies Corp.</b>	<b>FCC ID:</b>	<b>Q2GGOBI3K-XPL</b>	<b>IC:</b>	<b>4596A-GOBI3KXPL</b>	
<b>DUT Type:</b>	<b>Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC</b>					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 41 of 73

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

## APPENDIX A - SAR MEASUREMENT PLOTS

<b>Applicant:</b>	<b>Xplore Technologies Corp.</b>	<b>FCC ID:</b>	<b>Q2GGOBI3K-XPL</b>	<b>IC:</b>	<b>4596A-GOBI3KXPL</b>	
<b>DUT Type:</b>	<b>Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC</b>					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 42 of 73

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

Date Tested: 02/14/2011

## Test Plot #B1

**DUT: Xplore Technologies; Type: GOBI3000 in iX104C5; Serial: IMEI 012412000101751**

Ambient Temp: 23.5°C; Fluid Temp: 22.1°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: GPRS 2 Uplink

Frequency: 836.6 MHz; Duty Cycle: 1:4.16

Medium: M835 Medium parameters used (interpolated):  $f = 836.6 \text{ MHz}$ ;  $\sigma = 0.96 \text{ mho/m}$ ;  $\epsilon_r = 53.1$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.33, 6.33, 6.33); Calibrated: 15/07/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- 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 Tablet PC Touching Planar Phantom

#### GPRS – Mid Ch - Main - Bottom Side/Area Scan (9x15x1):

Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

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

Maximum value of SAR (measured) = 0.340 mW/g

#### GPRS – Mid Ch - Main - Bottom Side /Zoom Scan (7x7x7)/Cube 0:

Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

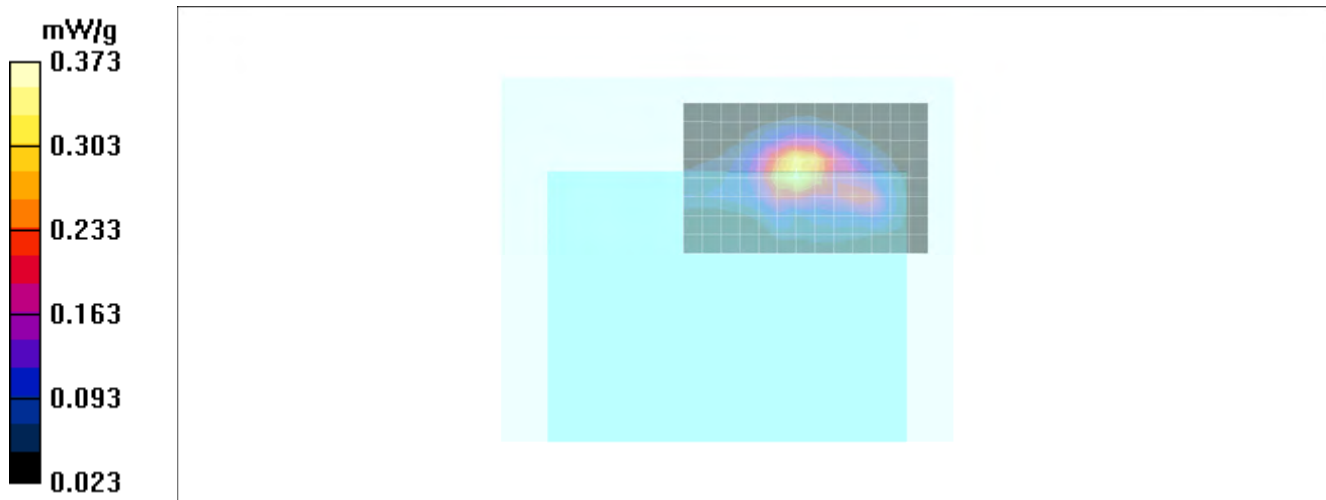
Reference Value = 20.2 V/m; Power Drift = -0.053 dB


Peak SAR (extrapolated) = 0.478 W/kg

**SAR(1 g) = 0.348 mW/g; SAR(10 g) = 0.232 mW/g**

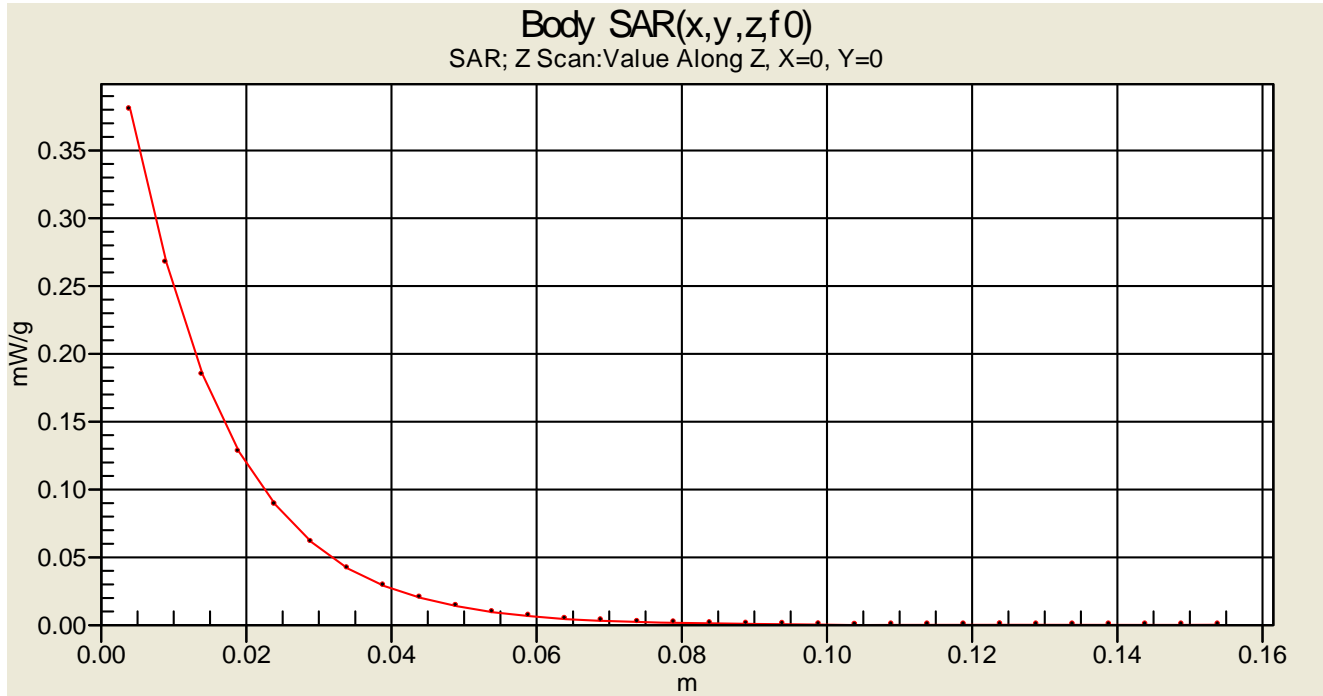
Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.373 mW/g





<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GG0BI3K-XPL	<b>IC:</b>	4596A-G0BI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 43 of 73

### Z-Axis Scan





	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

Date Tested: 02/14/2011

## Test Plot #B2

**DUT: Xplore Technologies; Type: GOBI3000 in iX104C5; Serial: IMEI 012412000101751**

Ambient Temp: 23.5°C; Fluid Temp: 22.1°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: WCDMA Rel99

Frequency: 836.4 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used (interpolated):  $f = 836.4$  MHz;  $\sigma = 0.96$  mho/m;  $\epsilon_r = 53.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: ET3DV6 - SN1590; ConvF(6.33, 6.33, 6.33); Calibrated: 15/07/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: Barski Industries; Type: Fiberglas Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

### Body SAR - Bottom Side of Tablet PC Touching Planar Phantom

#### WCDMA Rel99 – Mid Ch - Main - Bottom Side /Area Scan (10x15x1):

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

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

Maximum value of SAR (measured) = 0.257 mW/g

#### WCDMA Rel99 – Mid Ch - Main - Bottom Side /Zoom Scan (7x7x7)/Cube 0:

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

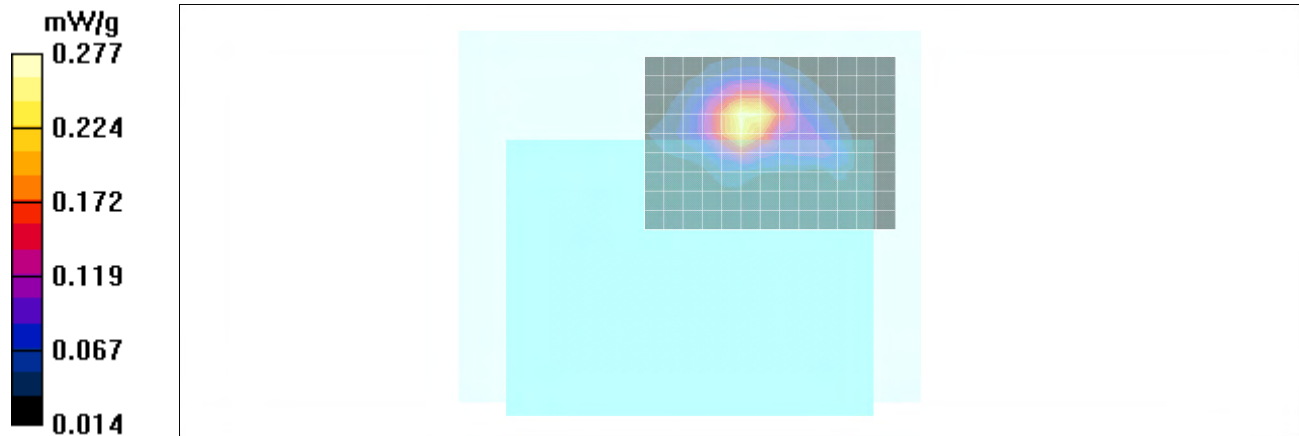
Reference Value = 16.9 V/m; Power Drift = 0.056 dB


Peak SAR (extrapolated) = 0.341 W/kg



**SAR(1 g) = 0.252 mW/g; SAR(10 g) = 0.167 mW/g**

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

Maximum value of SAR (measured) = 0.277 mW/g



<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 45 of 73

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

Date Tested: 02/14/2011

## Test Plot #B3

**DUT: Xplore Technologies; Type: GOBI3000 in iX104C5; Serial: IMEI 012412000101751**

Ambient Temp: 23.5°C; Fluid Temp: 22.1°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: EVDO Rel. 0

Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used (interpolated):  $f = 836.52 \text{ MHz}$ ;  $\sigma = 0.96 \text{ mho/m}$ ;  $\epsilon_r = 53.1$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.33, 6.33, 6.33); Calibrated: 15/07/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DAS4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

### Body SAR - Bottom Side of Tablet PC Touching Planar Phantom

#### EVDO Rel. 0 – Mid Ch - Main - Bottom Side /Area Scan (10x15x1):

Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

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

Maximum value of SAR (measured) = 0.305 mW/g

#### EVDO Rel. 0 – Mid Ch - Main - Bottom Side /Zoom Scan (7x7x7)/Cube 0:

Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

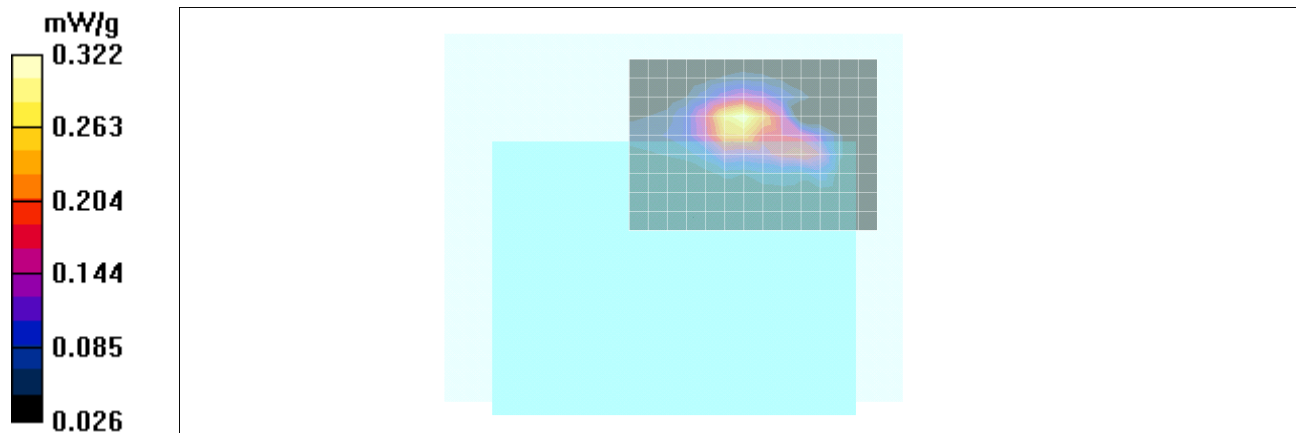
Reference Value = 17.9 V/m; Power Drift = 0.022 dB


Peak SAR (extrapolated) = 0.413 W/kg



**SAR(1 g) = 0.298 mW/g; SAR(10 g) = 0.198 mW/g**

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

Maximum value of SAR (measured) = 0.322 mW/g



<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 46 of 73

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

Date Tested: 02/15/2011

## Test Plot #B4

**DUT: Xplore Technologies; Type: GOBI3000 in iX104C5; Serial: IMEI 012412000101751**

Ambient Temp: 23.8°C; Fluid Temp: 22.5°C; Barometric Pressure: 101.1 kPa; Humidity: 34%

Communication System: WCDMA Rel99

Frequency: 1732.6 MHz; Duty Cycle: 1:1

Medium: M1750 Medium parameters used (interpolated):  $f = 1732.6 \text{ MHz}$ ;  $\sigma = 1.45 \text{ mho/m}$ ;  $\epsilon_r = 52.1$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: EX3DV4 - SN3600; ConvF(6.47, 6.47, 6.47); Calibrated: 29/04/2010
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)) Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: 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 Tablet PC Touching Planar Phantom

**WCDMA Rel99 – Mid Ch - Main - Bottom Side /Area Scan (11x15x1):**

Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

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

Maximum value of SAR (measured) = 0.326 mW/g

**WCDMA Rel99 – Mid Ch - Main - Bottom Side /Zoom Scan (7x7x7)/Cube 0:**

Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

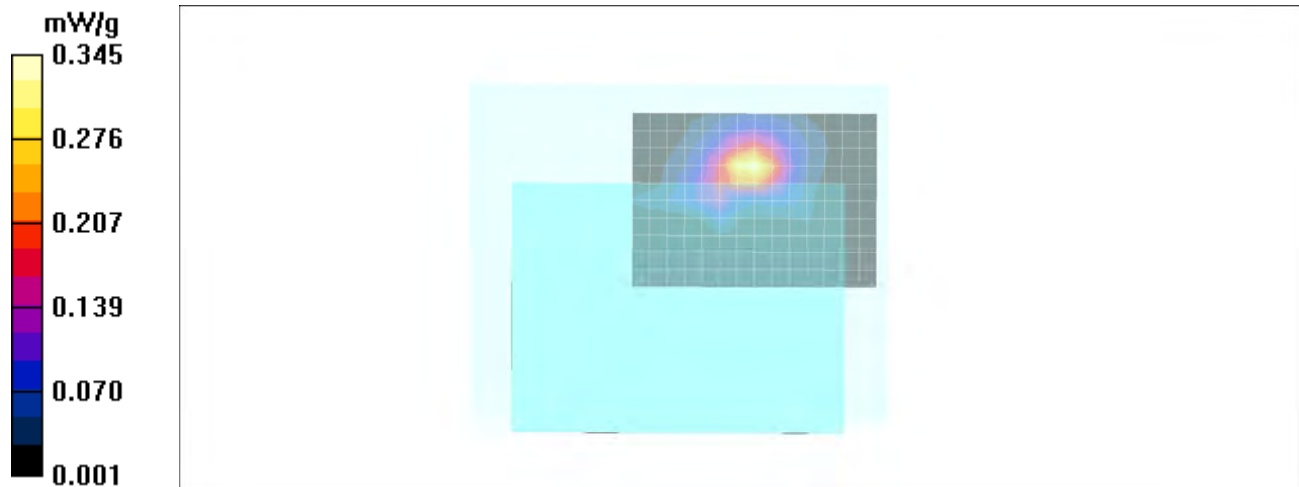
Reference Value = 14.4 V/m; Power Drift = 0.056 dB


Peak SAR (extrapolated) = 0.454 W/kg

**SAR(1 g) = 0.283 mW/g; SAR(10 g) = 0.183 mW/g**

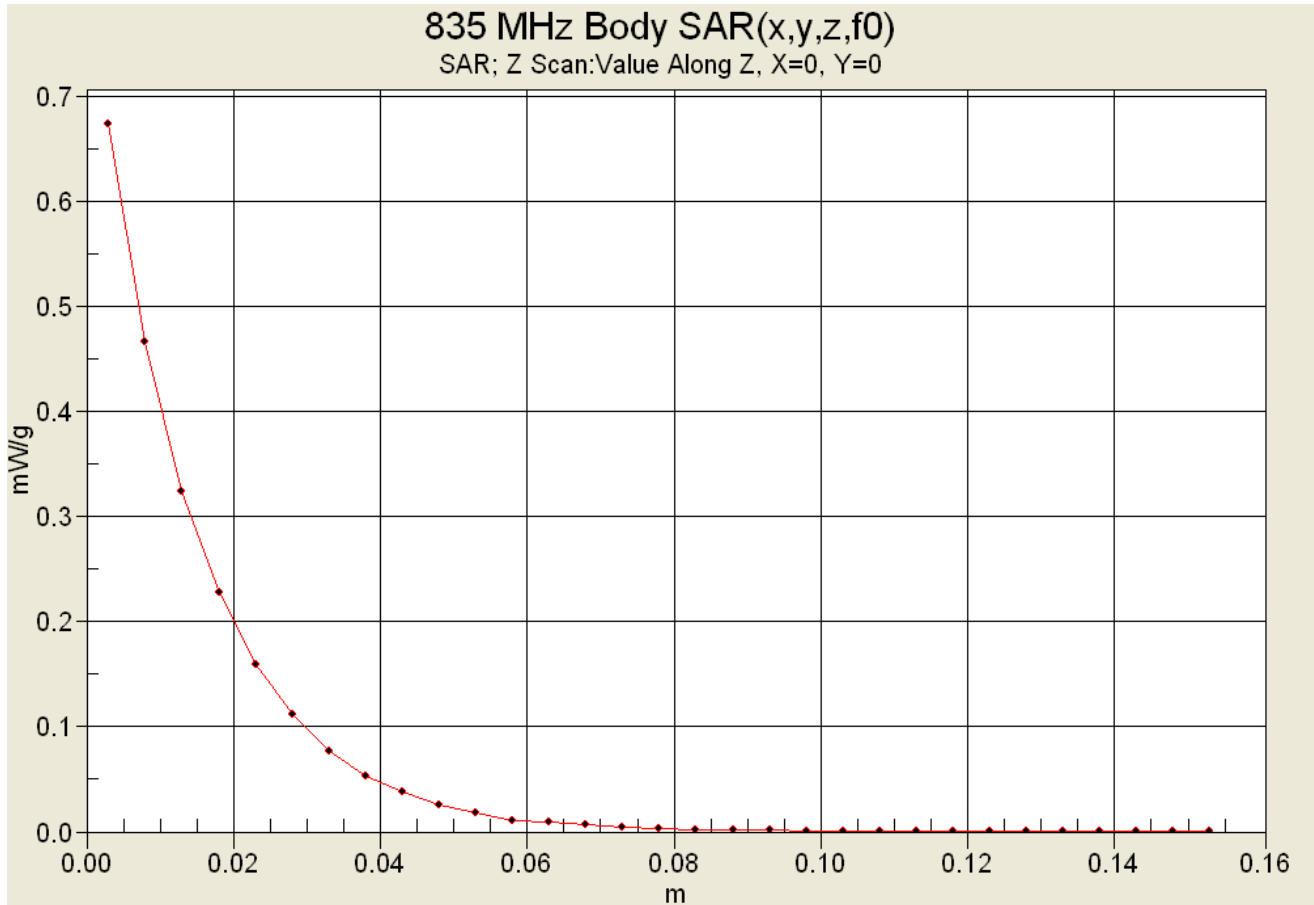
Info: [Interpolated medium parameters used for SAR evaluation.](#)



Maximum value of SAR (measured) = 0.345 mW/g



<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 47 of 73

### Z-Axis Scan



	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

Date Tested: 02/18/2011

## Test Plot #B5

**DUT: Xplore Technologies; Type: GOBI3000 in iX104C5; Serial: IMEI 012412000101751**

Ambient Temp: 23.6°C; Fluid Temp: 23.4°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: GPRS 2 Uplink

Frequency: 1880 MHz; Duty Cycle: 1:4.16

Medium: M1900 Medium parameters used:  $f = 1880 \text{ MHz}$ ;  $\sigma = 1.51 \text{ mho/m}$ ;  $\epsilon_r = 51.2$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: EX3DV4 - SN3600; ConvF(6.53, 6.53, 6.53); Calibrated: 29/04/2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: Barski Industries; Type: Fibreglas Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

### Body SAR - Bottom Side of Tablet PC Touching Planar Phantom

#### GPRS – Mid Ch - Main - Bottom Side /Area Scan (11x15x1):

Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (measured) = 0.237 mW/g

#### GPRS – Mid Ch - Main - Bottom Side/Zoom Scan (7x7x7)/Cube 0:

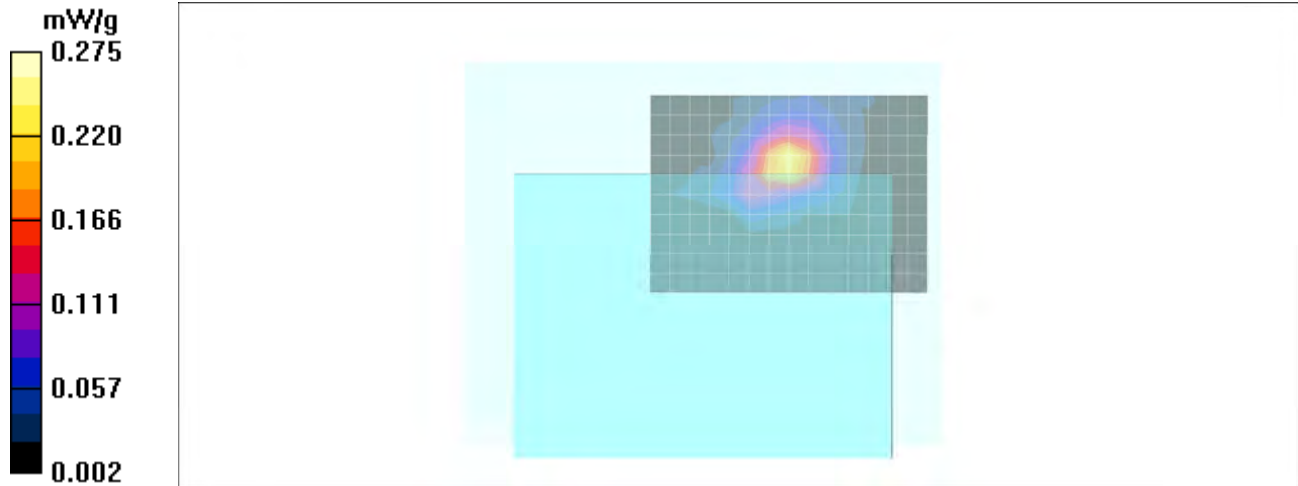
Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$


Reference Value = 12.2 V/m; Power Drift = 0.023 dB



Peak SAR (extrapolated) = 0.377 W/kg

**SAR(1 g) = 0.232 mW/g; SAR(10 g) = 0.138 mW/g**

Maximum value of SAR (measured) = 0.275 mW/g



<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 49 of 73

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

Date Tested: 02/18/2011

## Test Plot #B6

**DUT: Xplore Technologies; Type: GOBI3000 in iX104C5; Serial: IMEI 012412000101751**

Ambient Temp: 23.6°C; Fluid Temp: 23.4°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: WCDMA Rel99

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: M1900 Medium parameters used:  $f = 1880 \text{ MHz}$ ;  $\sigma = 1.51 \text{ mho/m}$ ;  $\epsilon_r = 51.2$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: EX3DV4 - SN3600; ConvF(6.53, 6.53, 6.53); Calibrated: 29/04/2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- 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 Tablet PC Touching Planar Phantom

#### WCDMA Rel99 – Mid Ch - Main - Bottom Side /Area Scan (11x15x1):

Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (measured) = 0.430 mW/g

#### WCDMA Rel99 - Mid Ch - Main - Bottom Side /Zoom Scan (7x7x7)/Cube 0:

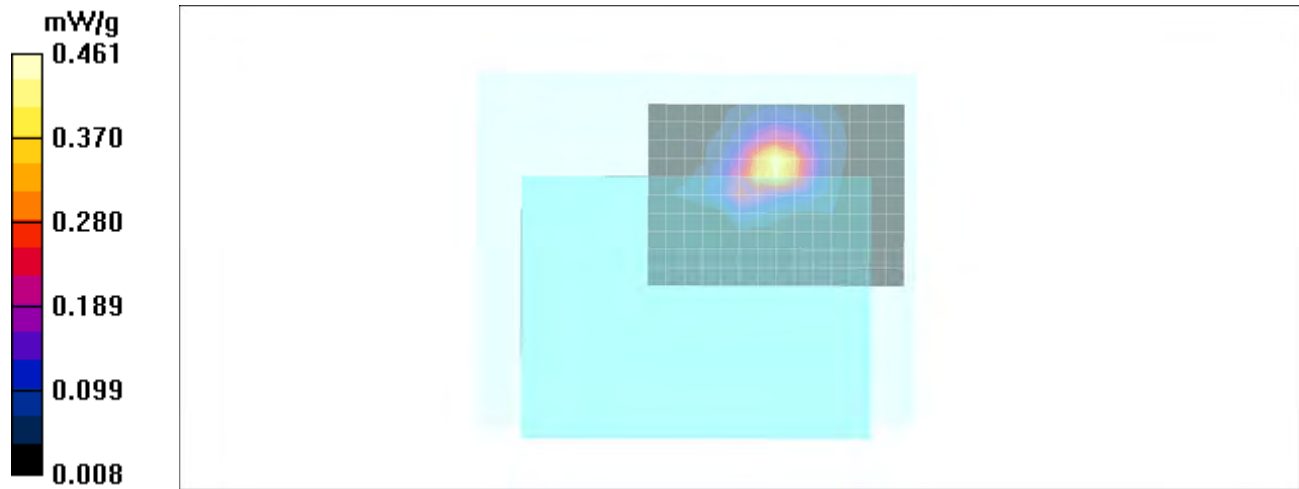
Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$


Reference Value = 16.7 V/m; Power Drift = 0.029 dB

Peak SAR (extrapolated) = 0.621 W/kg

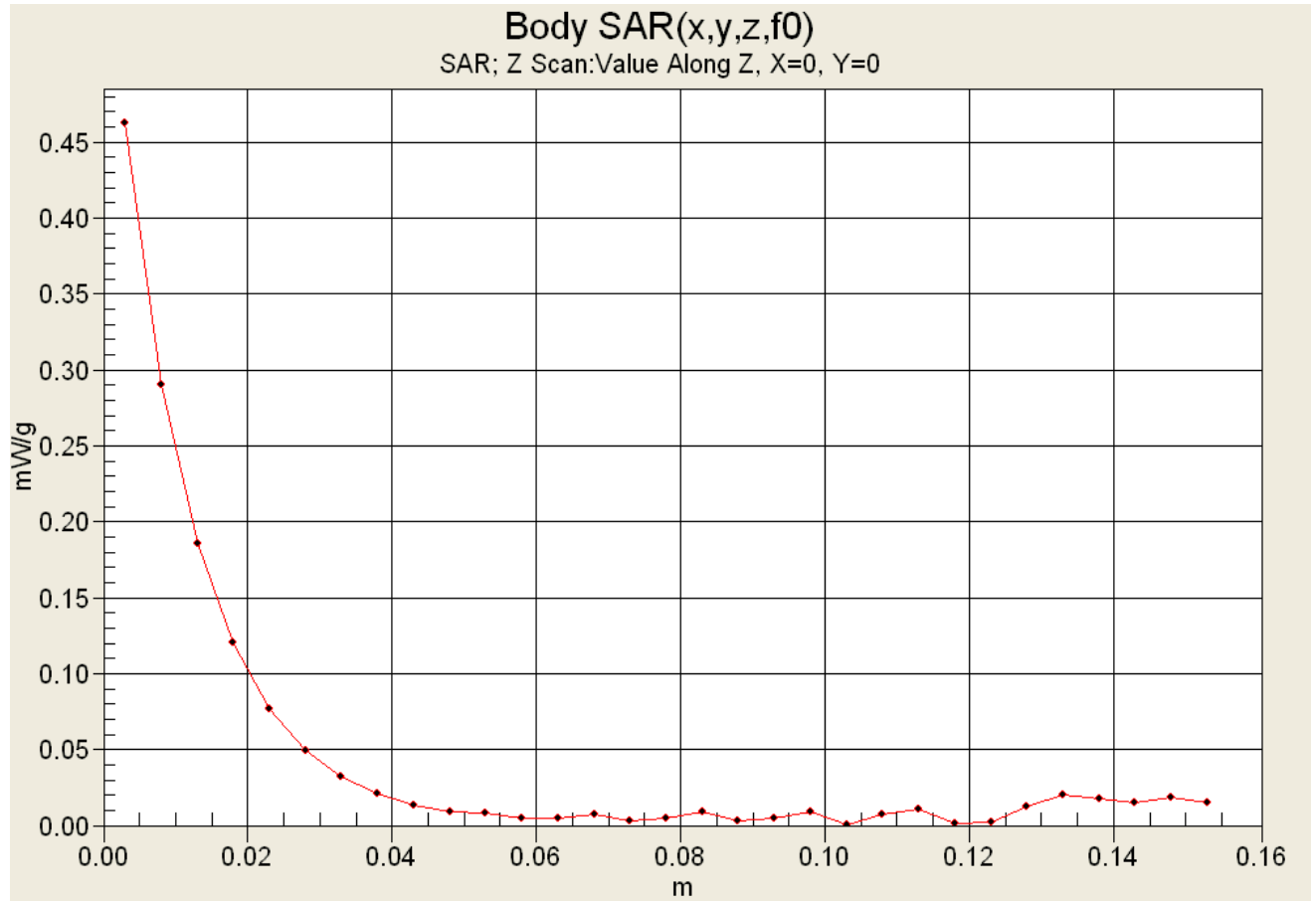
**SAR(1 g) = 0.389 mW/g; SAR(10 g) = 0.238 mW/g**

Maximum value of SAR (measured) = 0.461 mW/g





<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 50 of 73

### Z-Axis Scan





	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

Date Tested: 02/18/2011

## Test Plot #B7

**DUT: Xplore Technologies; Type: GOBI3000 in iX104C5; Serial: IMEI 012412000101751**

Ambient Temp: 23.6°C; Fluid Temp: 23.4°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: EVDO Rel. 0

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: M1900 Medium parameters used:  $f = 1880 \text{ MHz}$ ;  $\sigma = 1.51 \text{ mho/m}$ ;  $\epsilon_r = 51.2$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: EX3DV4 - SN3600; ConvF(6.53, 6.53, 6.53); Calibrated: 29/04/2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DAS4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

### Body SAR - Bottom Side of Tablet PC Touching Planar Phantom

#### EVDO Rel. 0 – Mid Ch - Main - Bottom Side /Area Scan (11x15x1):

Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (measured) = 0.382 mW/g

#### EVDO Rel. 0 – Mid Ch - Main - Bottom Side /Zoom Scan (7x7x7)/Cube 0:

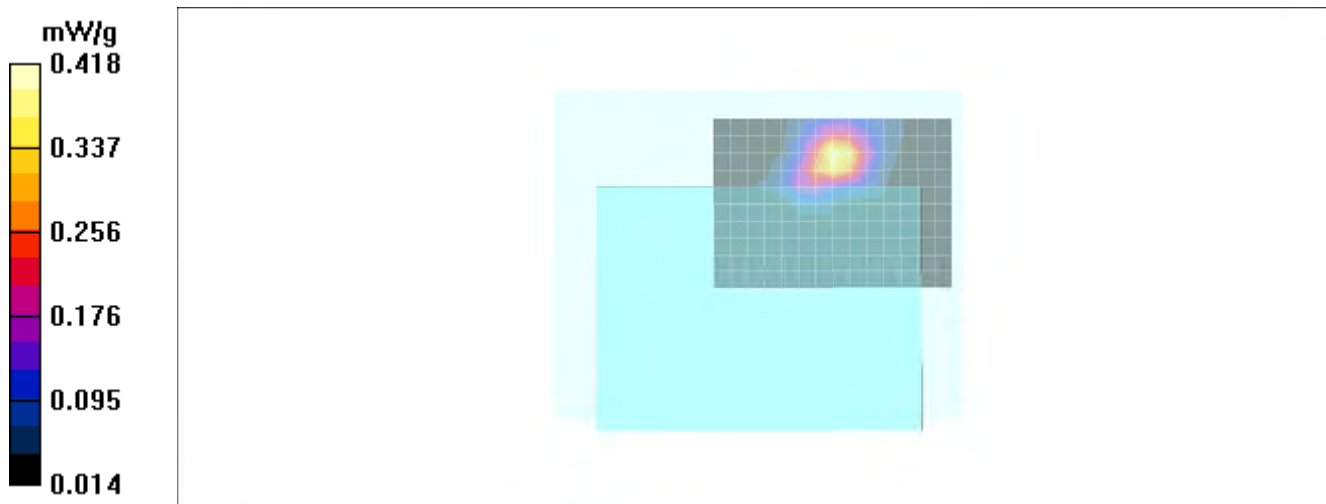
Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$


Reference Value = 15.9 V/m; Power Drift = -0.092 dB




Peak SAR (extrapolated) = 0.560 W/kg

**SAR(1 g) = 0.351 mW/g; SAR(10 g) = 0.214 mW/g**

Maximum value of SAR (measured) = 0.418 mW/g



<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 52 of 73

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

Date Tested: 02/16/2011

## Test Plot #B8

**DUT: Xplore Technologies; Type: 622ANHMW 802.11a/b/g/n in iX104C5; Serial: MAC 002314DB62B4**

Ambient Temp: 23.8°C; Fluid Temp: 23.5°C; Barometric Pressure: 101.1 kPa; Humidity: 34%

Communication System: OFDM WLAN

Frequency: 2442 MHz; Channel: 7; Duty Cycle: 1:1.01

Medium: M2450 Medium parameters used (Interpolated):  $f = 2442$  MHz;  $\sigma = 1.97$  mho/m;  $\epsilon_r = 50.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: EX3DV4 - SN3600; ConvF(6.24, 6.24, 6.24); Calibrated: 29/04/2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- 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 Tablet PC Touching Planar Phantom

**Area Scan (9x13x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.601 mW/g

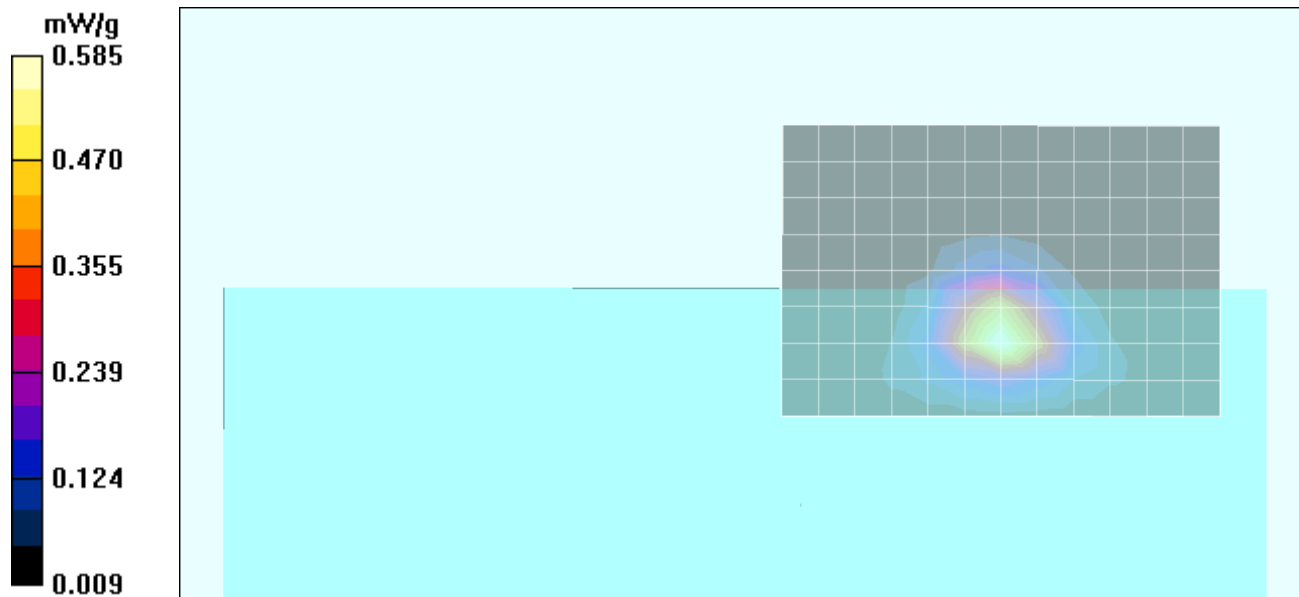
**Zoom Scan (8x8x8)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=3mm


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

Peak SAR (extrapolated) = 0.955 W/kg

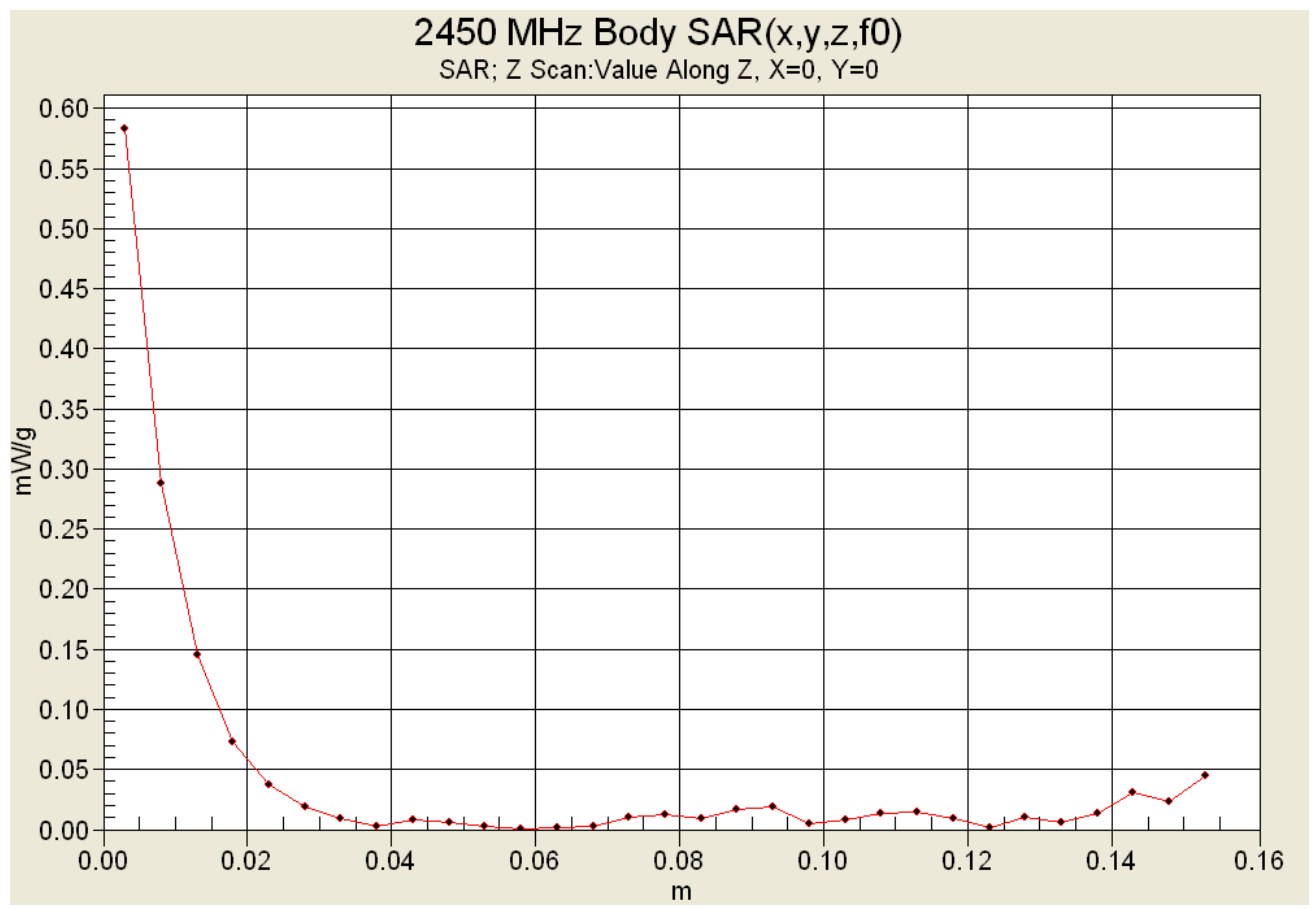
**SAR(1 g) = 0.463 mW/g; SAR(10 g) = 0.208 mW/g**



Maximum value of SAR (measured) = 0.585 mW/g



<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 53 of 73

### Z-Axis Scan



	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

Date Tested: 02/17/2011

### Test Plot #B9

**DUT: Xplore Technologies; Type: 622ANHMW 802.11a/b/g/n in iX104C5; Serial: MAC 002314DB62B4**

Ambient Temp: 23.8°C; Fluid Temp: 23.5°C; Barometric Pressure: 101.1 kPa; Humidity: 34%

Communication System: OFDM WLAN

Frequency: 5300 MHz; Channel: 60; Duty Cycle: 1:1.01

Medium: M5200-5800 Medium parameters used:  $f = 5300$  MHz;  $\sigma = 5.32$  mho/m;  $\epsilon_r = 51$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: EX3DV4 - SN3600; ConvF(3.73, 3.73, 3.73); Calibrated: 29/04/2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: Barski Industries; Type: Fiberglas Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

#### Body SAR - Bottom Side of Tablet PC Touching Planar Phantom

**Area Scan (9x13x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.832 mW/g

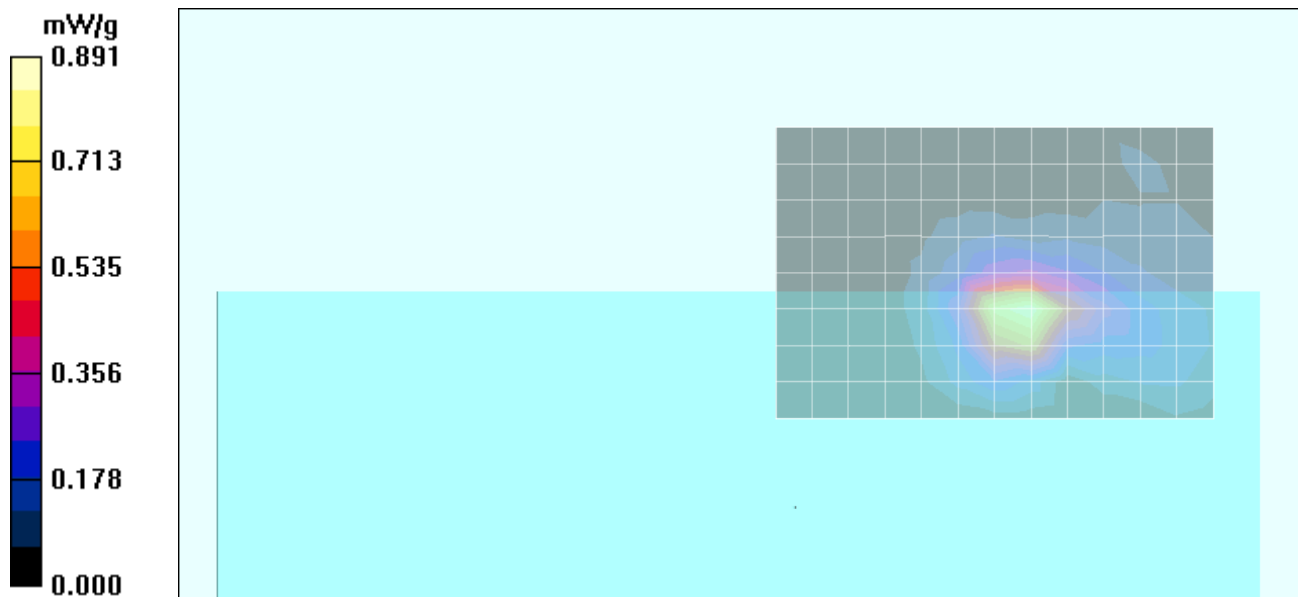
**Zoom Scan (8x8x8)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=3mm

Reference Value = 13.1 V/m; Power Drift = -0.080 dB

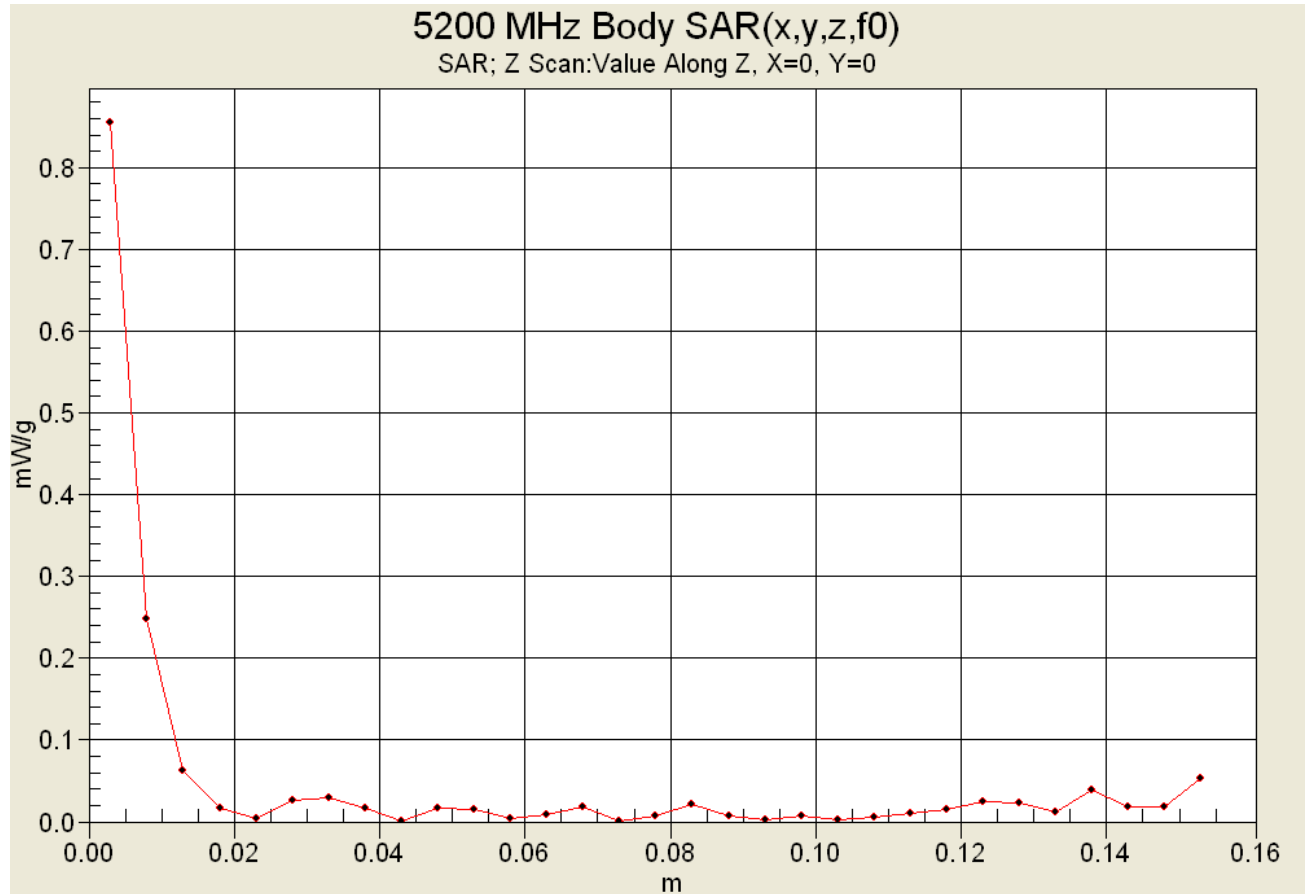
Peak SAR (extrapolated) = 1.54 W/kg



**SAR(1 g) = 0.601 mW/g; SAR(10 g) = 0.228 mW/g**

Maximum value of SAR (measured) = 0.891 mW/g






### Z-Axis Scan



	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

**APPENDIX B - SYSTEM PERFORMANCE CHECK PLOTS**

<b>Applicant:</b>	<b>Xplore Technologies Corp.</b>	<b>FCC ID:</b>	<b>Q2GGOBI3K-XPL</b>	<b>IC:</b>	<b>4596A-GOBI3KXPL</b>	
<b>DUT Type:</b>	<b>Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC</b>					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 57 of 73

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

Date Tested: 02/14/2011

## System Performance Check - 835 MHz Dipole - Body

**DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d075; Calibrated: 20/04/2009**

Ambient Temp: 23.5°C; Fluid Temp: 22.1°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: CW

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.96 \text{ mho/m}$ ;  $\epsilon_r = 53.1$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.33, 6.33, 6.33); Calibrated: 15/07/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- 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 System Performance Check /Area Scan (6x10x1):

Measurement grid:  $dx=10\text{mm}$ ,  $dy=10\text{mm}$

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

### 835 MHz System Performance Check /Zoom Scan (7x7x7)/Cube 0:

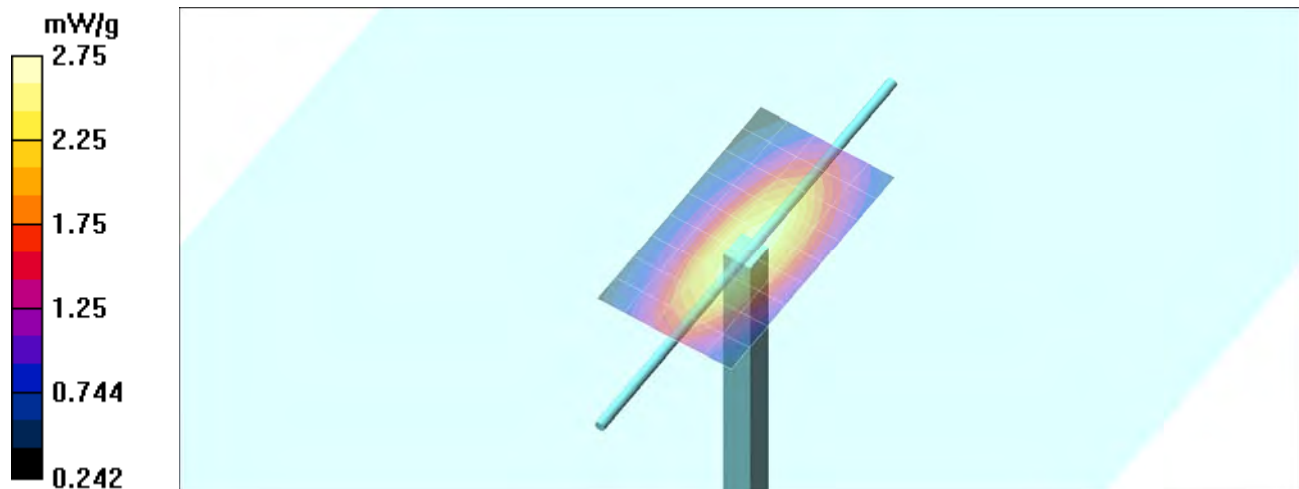
Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$


Reference Value = 54.4 V/m; Power Drift = -0.097 dB

Peak SAR (extrapolated) = 3.66 W/kg

**SAR(1 g) = 2.53 mW/g; SAR(10 g) = 1.65 mW/g**

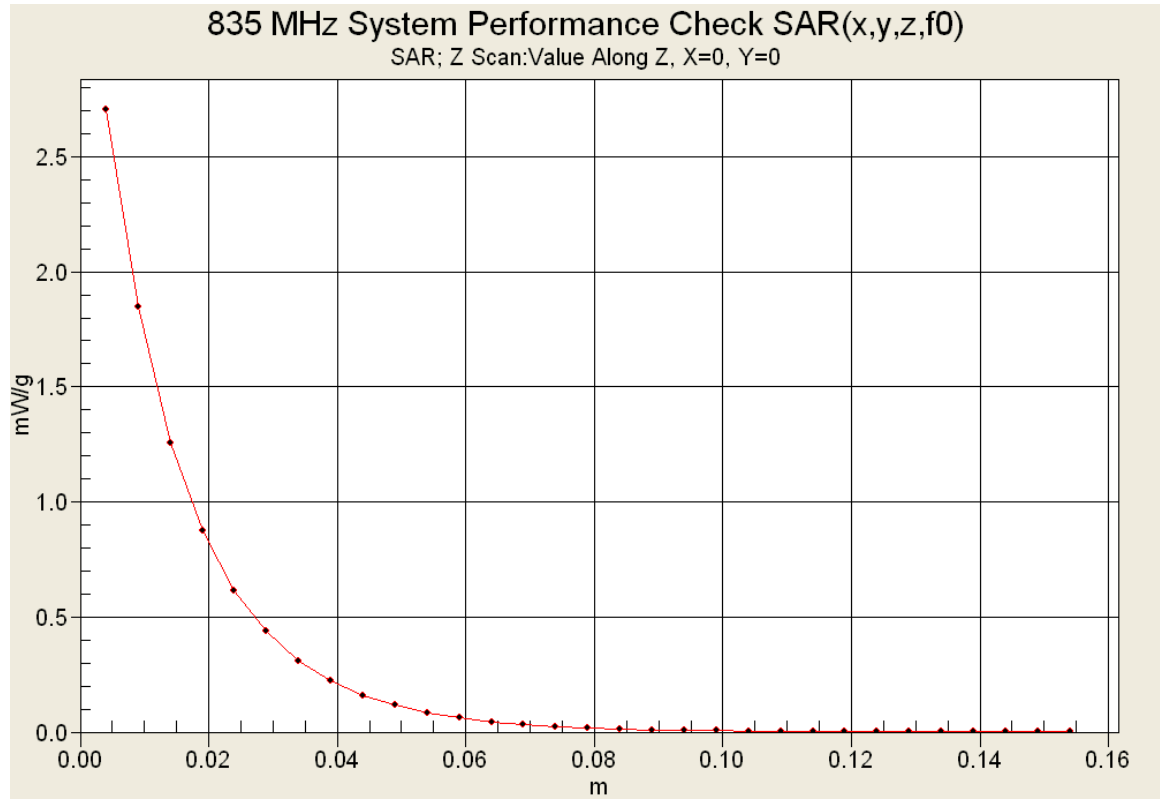
Maximum value of SAR (measured) = 2.75 mW/g





<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 58 of 73



**Z-Axis Scan**



	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

Date Tested: 02/15/2011

## System Performance Check - 1800 MHz Dipole - Body

**DUT: Dipole 1800 MHz; Type: D1800V2; Serial: 247; Calibrated: 28/04/2010**

Ambient Temp: 23.8°C; Fluid Temp: 22.5°C; Barometric Pressure: 101.1 kPa; Humidity: 34%

Communication System: CW

Frequency: 1800 MHz; Duty Cycle: 1:1

Medium: M1800 Medium parameters used:  $f = 1800 \text{ MHz}$ ;  $\sigma = 1.51 \text{ mho/m}$ ;  $\epsilon_r = 51.7$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: EX3DV4 - SN3600; ConvF(6.47, 6.47, 6.47); Calibrated: 29/04/2010
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

**1800 MHz System Performance Check/Area Scan (5x8x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (measured) = 12.4 mW/g

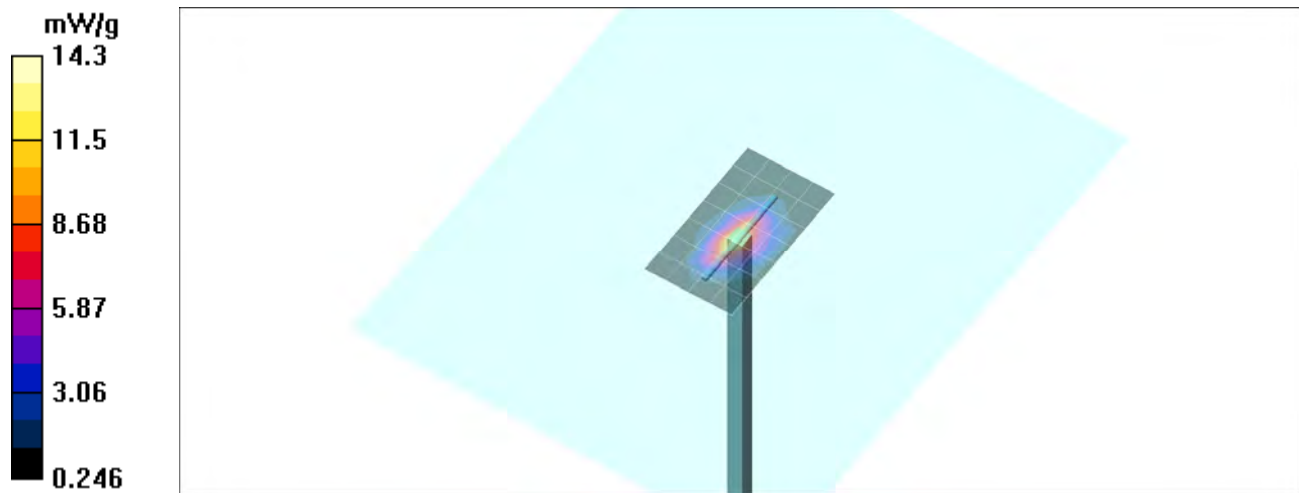
**1800 MHz System Performance Check/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$


Reference Value = 90.8 V/m; Power Drift = -0.013 dB

Peak SAR (extrapolated) = 18.4 W/kg

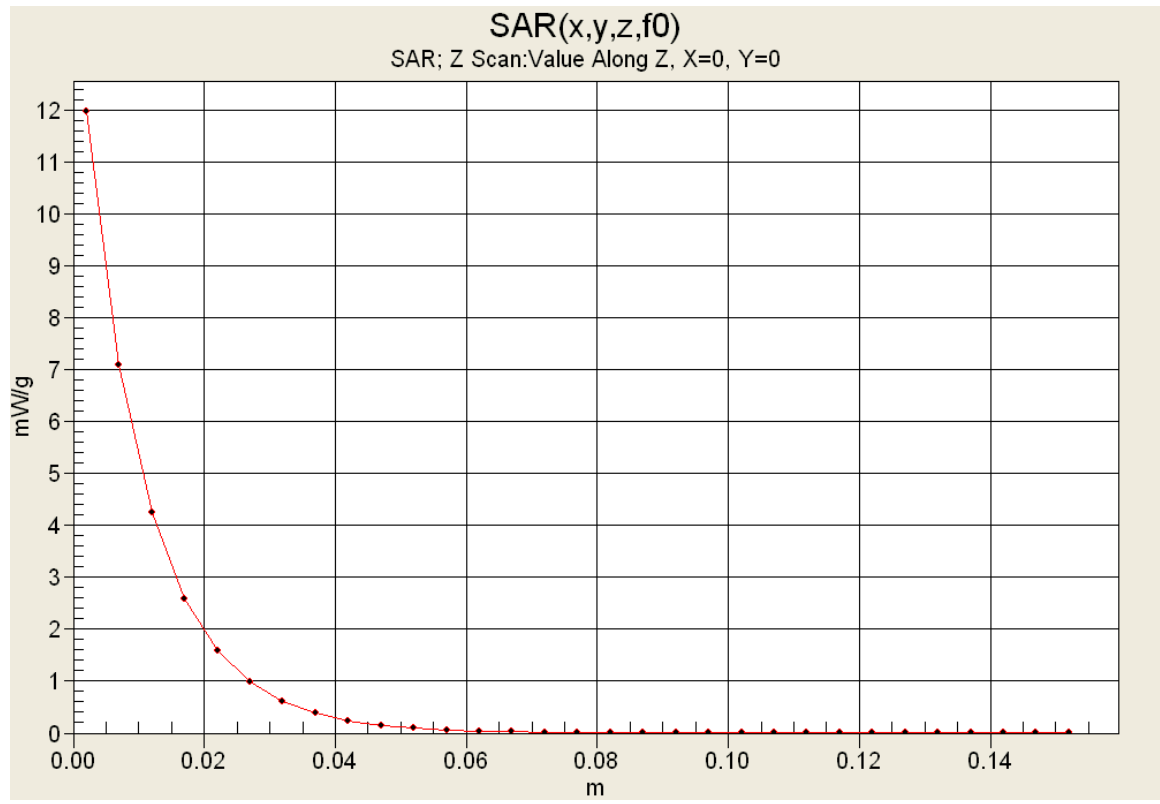
**SAR(1 g) = 9.96 mW/g; SAR(10 g) = 5.21 mW/g**



Maximum value of SAR (measured) = 14.3 mW/g



<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOB13K-XPL	<b>IC:</b>	4596A-GOB13KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 60 of 73

**Z-Axis Scan**



	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

Date Tested: 02/16/2011

## System Performance Check - 2450 MHz Dipole - Body

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

Ambient Temp: 23.8C; Fluid Temp: 23.5C; Barometric Pressure: 101.1 kPa; Humidity: 34%

Communication System: CW

Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: M2450 Medium parameters used:  $f = 2450 \text{ MHz}$ ;  $\sigma = 1.99 \text{ mho/m}$ ;  $\epsilon_r = 50.5$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: EX3DV4 - SN3600; ConvF(6.24, 6.24, 6.24); Calibrated: 29/04/2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: Barski Industries; Type: Fiberglas Planar; Serial: 03-01
- Measurement SW: DASy4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

**2450 MHz System Performance Check/Area Scan (6x10x1):** Measurement grid:  $dx=10\text{mm}$ ,  $dy=10\text{mm}$

Maximum value of SAR (measured) = 17.7 mW/g

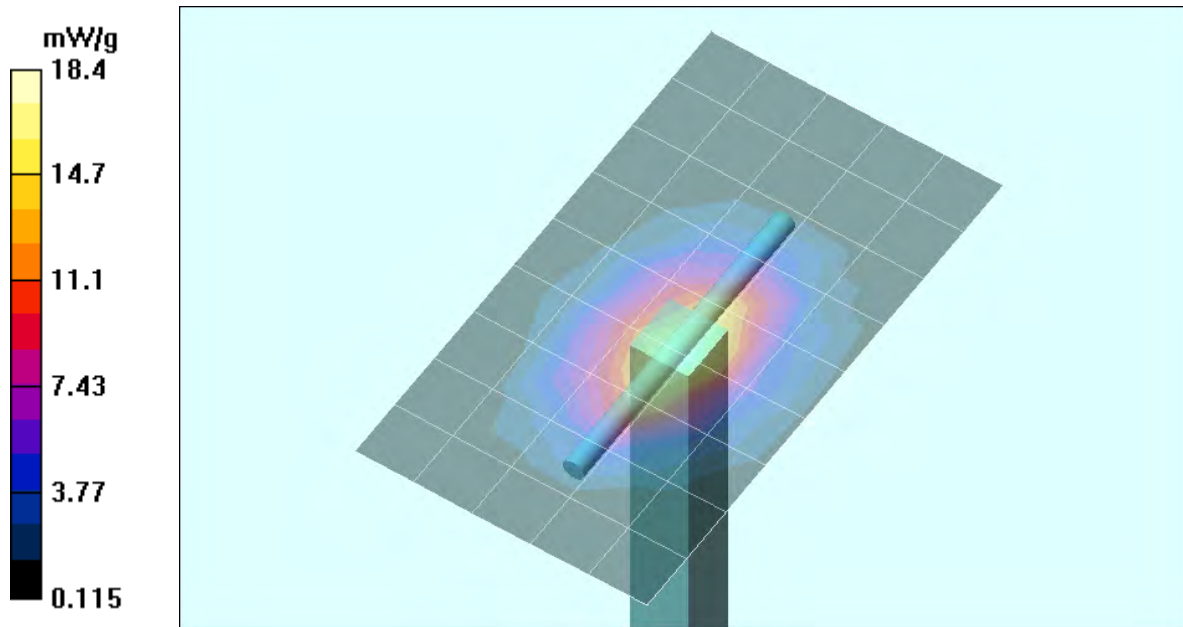
**2450 MHz System Performance Check/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$


Reference Value = 90.1 V/m; Power Drift = -0.031 dB

Peak SAR (extrapolated) = 28.5 W/kg

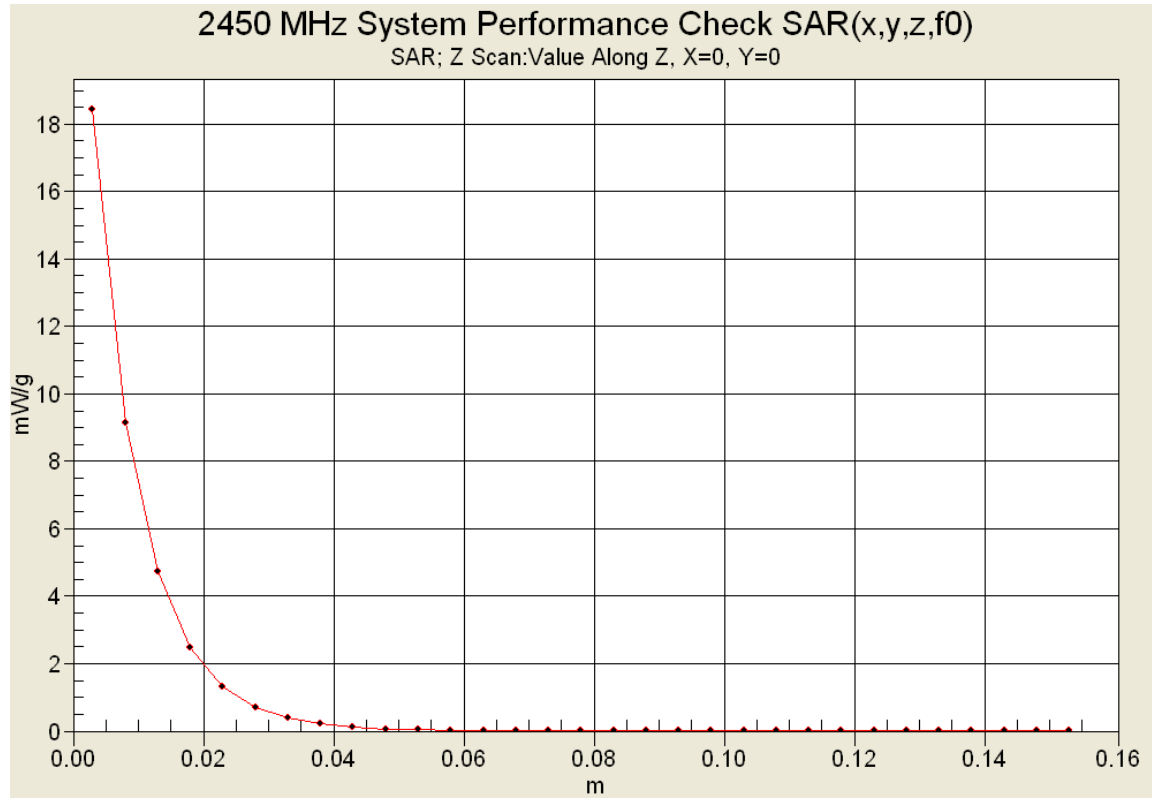
**SAR(1 g) = 13.8 mW/g; SAR(10 g) = 6.38 mW/g**



Maximum value of SAR (measured) = 18.4 mW/g



<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 62 of 73

### Z-Axis Scan



	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

Date Tested: 02/17/2011

## System Performance Check - 5 GHz Dipole - Body

**DUT: Dipole 5GHz; Type: D5GHZV2; Serial: 1031; Calibrated: 04/29/2009**

Ambient Temp: 23.8C; Fluid Temp: 23.5C; Barometric Pressure: 101.1 kPa; Humidity: 34%

Communication System: CW

Frequency: 5200 MHz; Duty Cycle: 1:1

Medium: M5200-5800 Medium parameters used:  $f = 5200$  MHz;  $\sigma = 5.23$  mho/m;  $\epsilon_r = 50.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: EX3DV4 - SN3600; ConvF(3.73, 3.73, 3.73); Calibrated: 29/04/2010
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASy4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

**5200 MHz System Performance Check - 50 mW/Area Scan (9x13x1):** Measurement grid: dx=5mm, dy=5mm  
 Maximum value of SAR (measured) = 6.94 mW/g

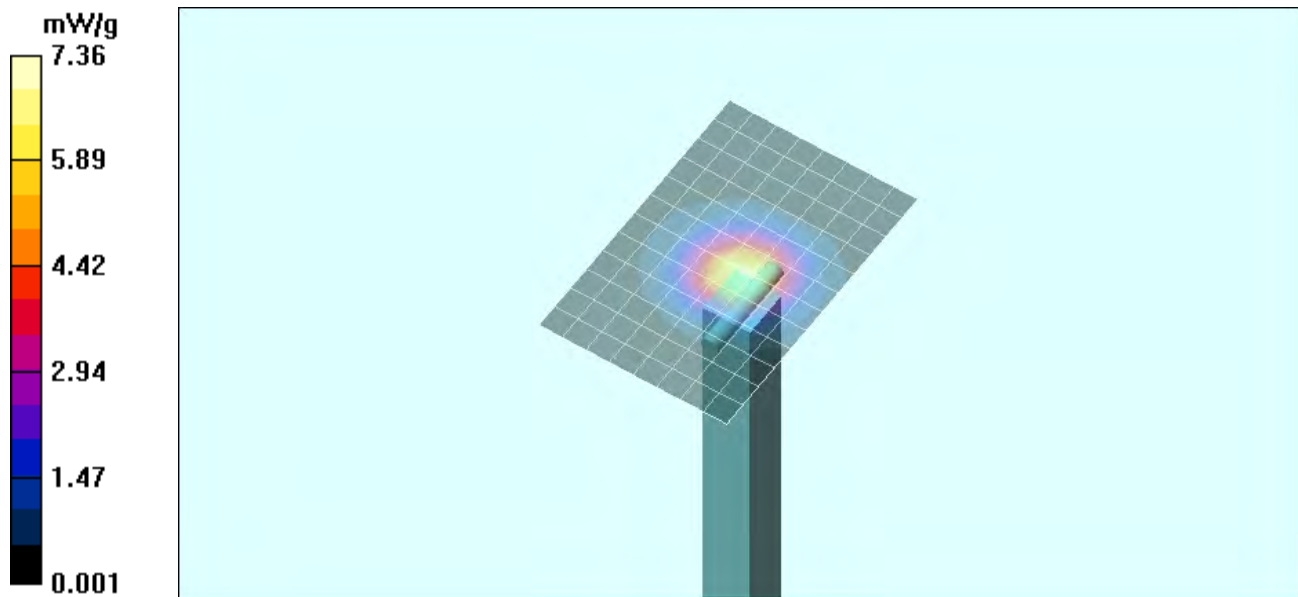
**5200 MHz System Performance Check - 50 mW/Zoom Scan (7x7x9)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2.5mm


Reference Value = 39.3 V/m; Power Drift = 0.037 dB



Peak SAR (extrapolated) = 13.1 W/kg

**SAR(1 g) = 3.53 mW/g; SAR(10 g) = 1.000 mW/g**

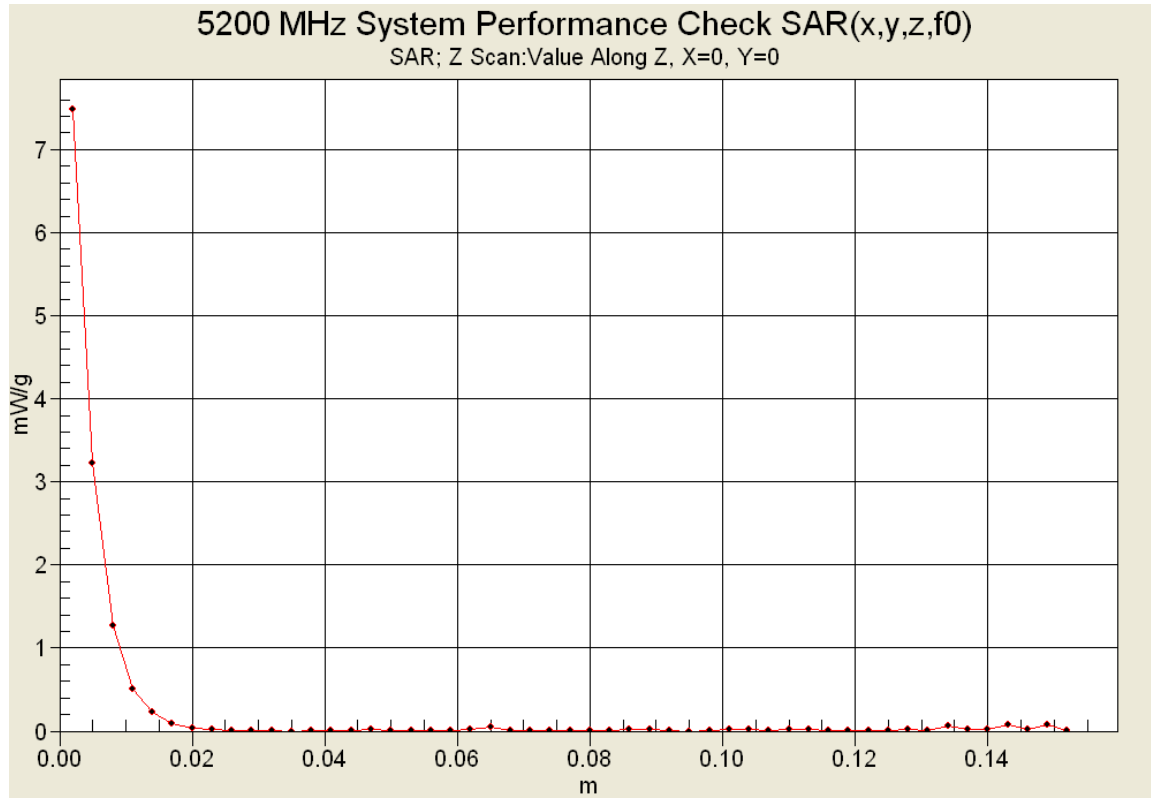
Maximum value of SAR (measured) = 7.36 mW/g




<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOB13K-XPL	<b>IC:</b>	4596A-GOB13KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 64 of 73



	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

### Z-Axis Scan



<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOBI3K-XPL	<b>IC:</b>	4596A-GOBI3KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 65 of 73



	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

Date Tested: 02/18/2011

## System Performance Check - 1900 MHz Dipole - Body

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d107; Calibrated: 21/04/2009**

Ambient Temp: 23.6C; Fluid Temp: 23.4C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: CW

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: M1900 Medium parameters used:  $f = 1900 \text{ MHz}$ ;  $\sigma = 1.52 \text{ mho/m}$ ;  $\epsilon_r = 51.1$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: EX3DV4 - SN3600; ConvF(6.53, 6.53, 6.53); Calibrated: 29/04/2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- 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 System Performance Check Feb 15, 2011/Area Scan (5x8x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
 Maximum value of SAR (measured) = 11.7 mW/g

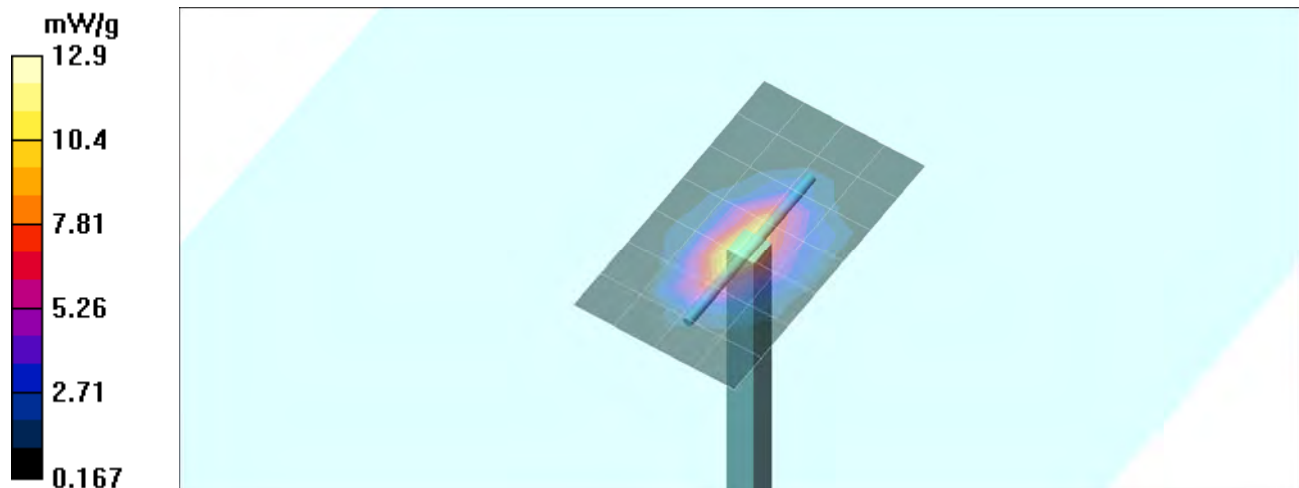
**1900 MHz System Performance Check Feb 15, 2011/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$


Reference Value = 82.1 V/m; Power Drift = -0.113 dB

Peak SAR (extrapolated) = 19.4 W/kg

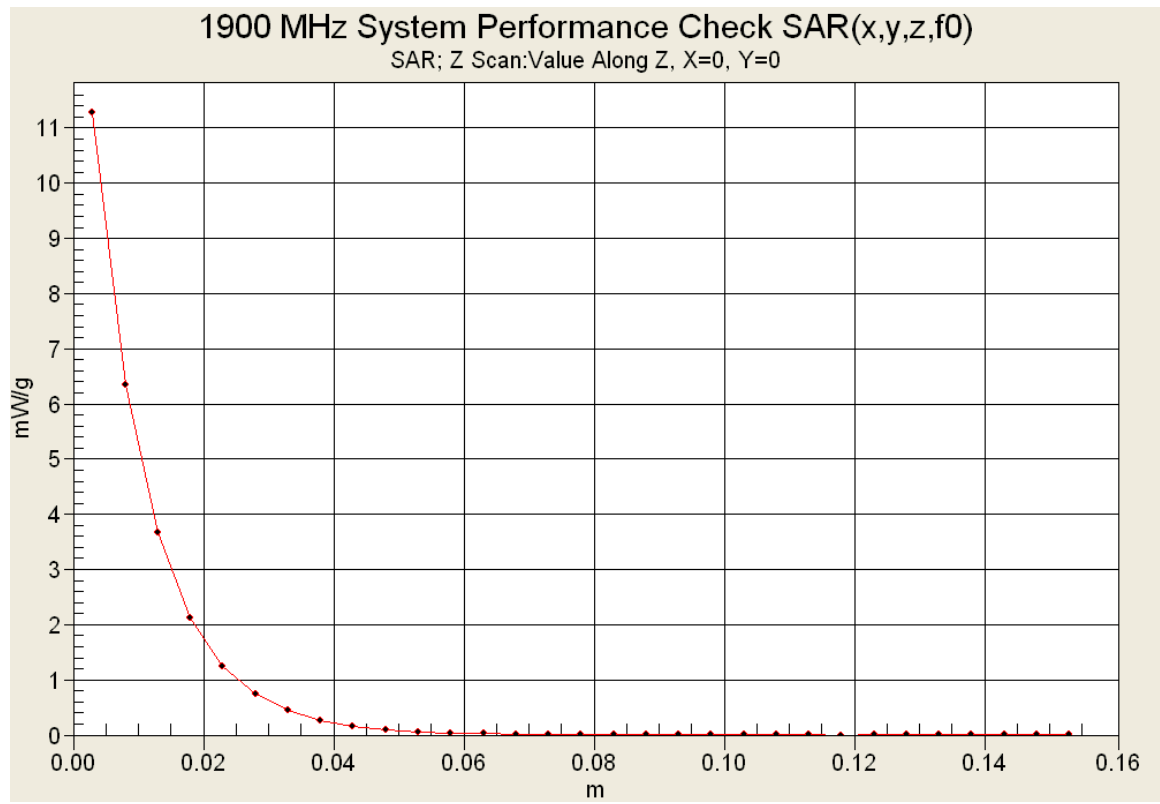
**SAR(1 g) = 10 mW/g; SAR(10 g) = 5.08 mW/g**



Maximum value of SAR (measured) = 12.9 mW/g




<b>Applicant:</b>	Xplore Technologies Corp.	<b>FCC ID:</b>	Q2GGOB13K-XPL	<b>IC:</b>	4596A-GOB13KXPL	
<b>DUT Type:</b>	Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 66 of 73



**Z-Axis Scan**



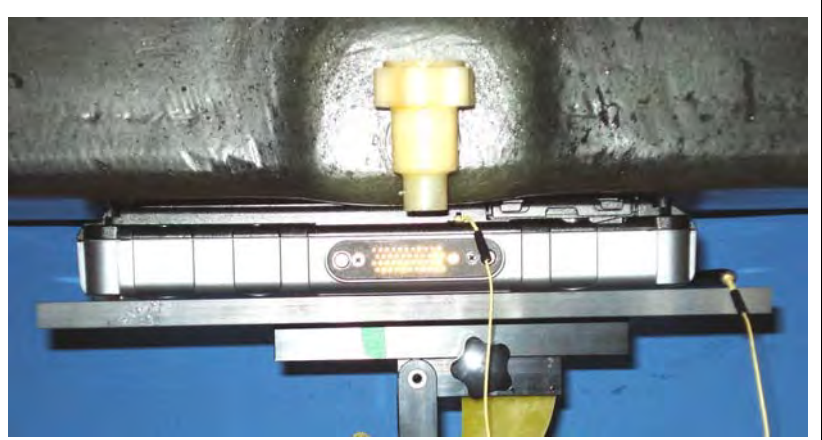
	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	



**APPENDIX C - SAR TEST SETUP PHOTOGRAPHS**

<b>Applicant:</b>	<b>Xplore Technologies Corp.</b>	<b>FCC ID:</b>	<b>Q2GGOBI3K-XPL</b>	<b>IC:</b>	<b>4596A-GOBI3KXPL</b>	
<b>DUT Type:</b>	<b>Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC</b>					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 68 of 73


	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

**BODY (LAP-HELD) SAR TEST SETUP PHOTOGRAPHS**  
**Bottom Side of Tablet PC Touching Planar Phantom**

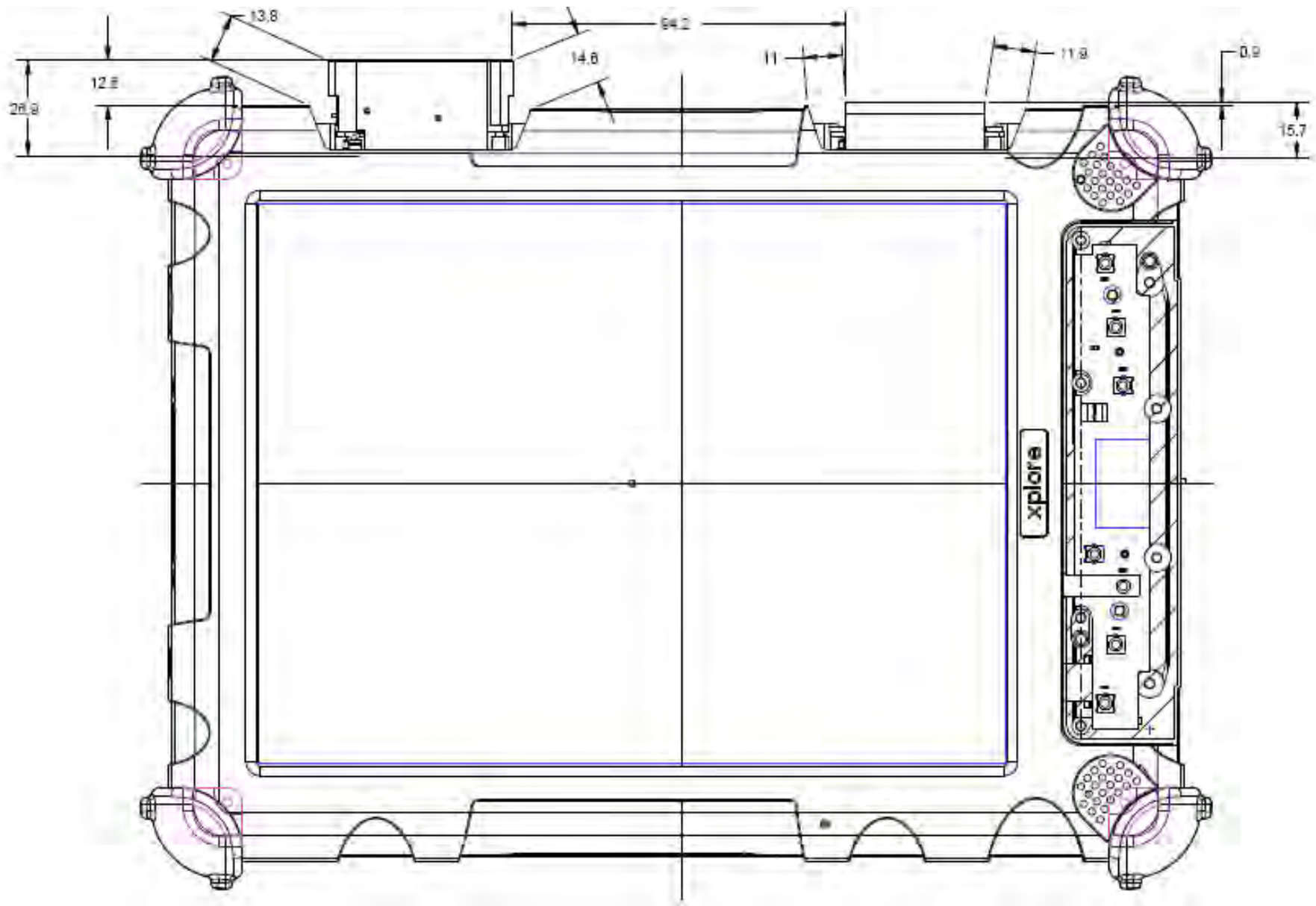


	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

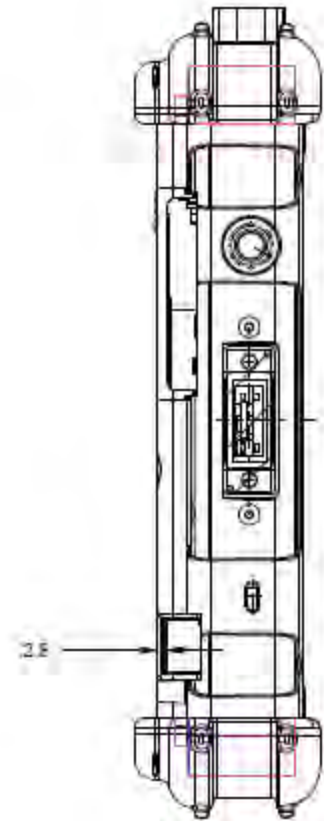
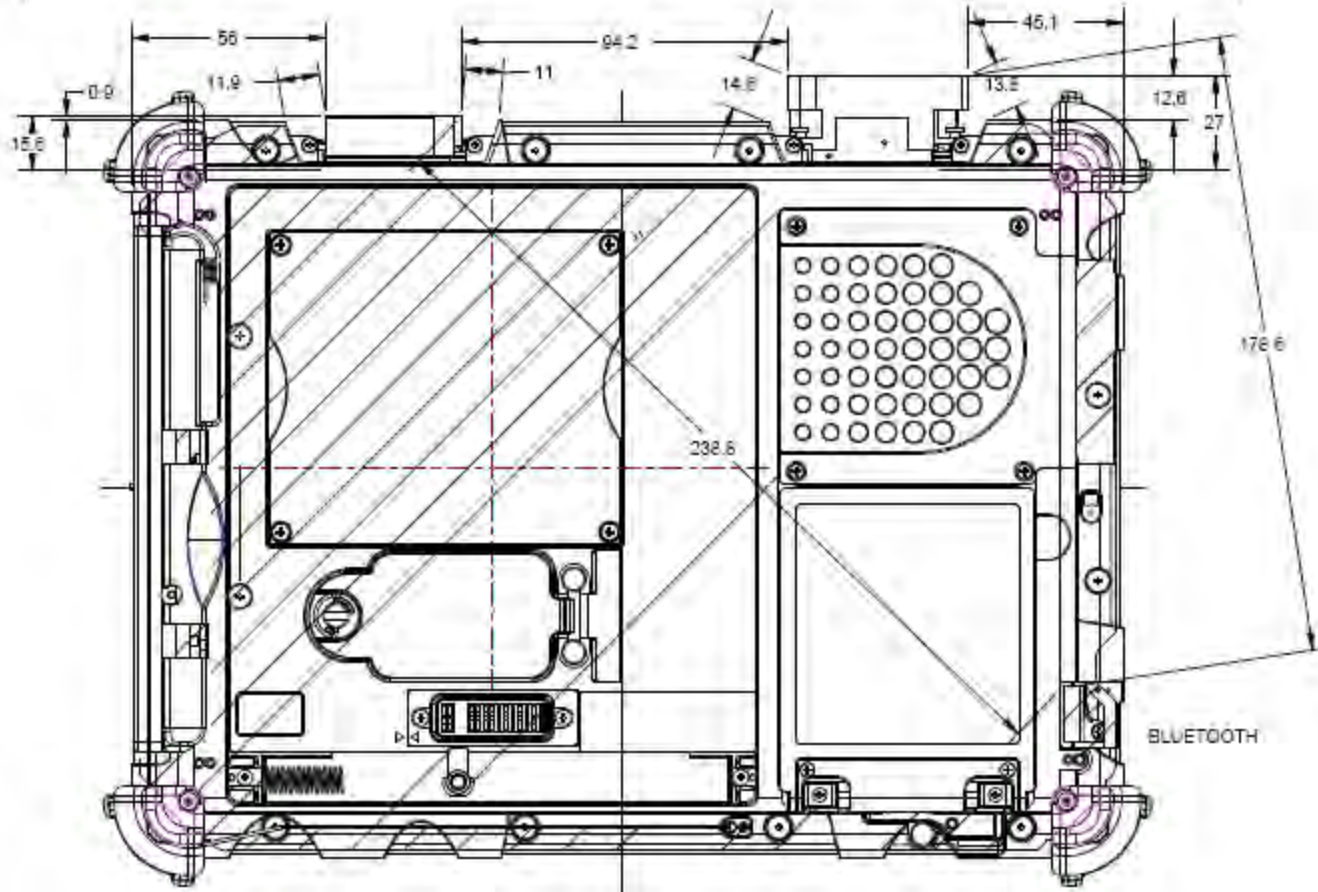
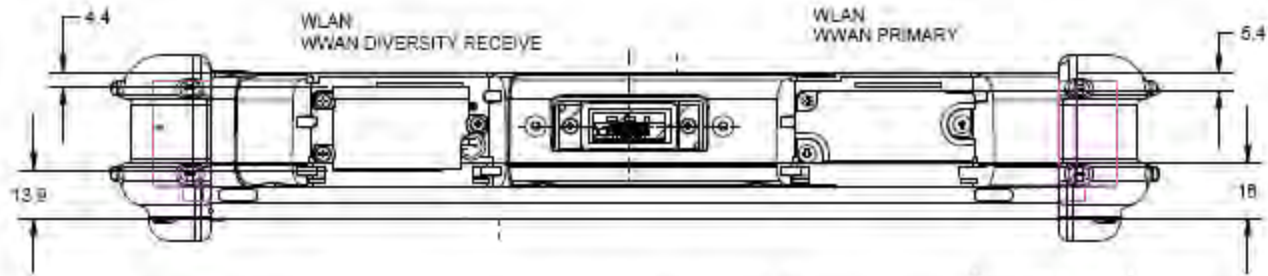
**APPENDIX D - ANTENNA DISTANCES**

<b>Applicant:</b>	<b>Xplore Technologies Corp.</b>	<b>FCC ID:</b>	<b>Q2GGOBI3K-XPL</b>	<b>IC:</b>	<b>4596A-GOBI3KXPL</b>	
<b>DUT Type:</b>	<b>Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC</b>					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 70 of 73



# Antenna-to-Antenna Distance / Antenna Distance to Tablet PC edges










	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

## APPENDIX E - DIPOLE CALIBRATION

<b>Applicant:</b>	<b>Xplore Technologies Corp.</b>	<b>FCC ID:</b>	<b>Q2GGOBI3K-XPL</b>	<b>IC:</b>	<b>4596A-GOBI3KXPL</b>	
<b>DUT Type:</b>	<b>Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC</b>					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 71 of 73



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

Accreditation No.: **SCS 108**

Client **Celltech**

Certificate No: **D835V2-4d075\_Apr09**

## CALIBRATION CERTIFICATE

Object **D835V2 - SN: 4d075**

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

Calibration date: **April 20, 2009**

Condition of the calibrated item **In Tolerance**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	08-Oct-08 (No. 217-00898)	Oct-09
Power sensor HP 8481A	US37292783	08-Oct-08 (No. 217-00898)	Oct-09
Reference 20 dB Attenuator	SN: 5086 (20g)	31-Mar-09 (No. 217-01025)	Mar-10
Type-N mismatch combination	SN: 5047.2 / 06327	31-Mar-09 (No. 217-01029)	Mar-10
Reference Probe ES3DV2	SN: 3025	28-Apr-08 (No. ES3-3025_Apr08)	Apr-09
DAE4	SN: 601	07-Mar-09 (No. DAE4-601_Mar09)	Mar-10
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-07)	In house check: Oct-09
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-08)	In house check: Oct-09

Calibrated by:	Name <b>Jeton Kastrati</b>	Function <b>Laboratory Technician</b>	Signature 
Approved by:	Name <b>Katja Pokovic</b>	Function <b>Technical Manager</b>	Signature 

Issued: April 22, 2009

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.



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

Accreditation No.: **SCS 108**

**Glossary:**

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

**Calibration is Performed According to the Following Standards:**

- a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

**Additional Documentation:**

- d) DASY4/5 System Handbook

**Methods Applied and Interpretation of Parameters:**

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

## Measurement Conditions

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

<b>DASY Version</b>	DASY5	V5.0
<b>Extrapolation</b>	Advanced Extrapolation	
<b>Phantom</b>	Modular Flat Phantom V4.9	
<b>Distance Dipole Center - TSL</b>	15 mm	with Spacer
<b>Zoom Scan Resolution</b>	dx, dy, dz = 5 mm	
<b>Frequency</b>	835 MHz $\pm$ 1 MHz	

## Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
<b>Nominal Head TSL parameters</b>	22.0 °C	41.5	0.90 mho/m
<b>Measured Head TSL parameters</b>	(22.0 $\pm$ 0.2) °C	41.1 $\pm$ 6 %	0.89 mho/m $\pm$ 6 %
<b>Head TSL temperature during test</b>	(22.1 $\pm$ 0.2) °C	---	---

## SAR result with Head TSL

<b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Head TSL</b>	Condition	
SAR measured	250 mW input power	2.35 mW / g
SAR normalized	normalized to 1W	9.40 mW / g
SAR for nominal Head TSL parameters <sup>1</sup>	normalized to 1W	<b>9.46 mW / g <math>\pm</math> 17.0 % (k=2)</b>

<b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Head TSL</b>	condition	
SAR measured	250 mW input power	1.54 mW / g
SAR normalized	normalized to 1W	6.16 mW / g
SAR for nominal Head TSL parameters <sup>1</sup>	normalized to 1W	<b>6.19 mW / g <math>\pm</math> 16.5 % (k=2)</b>

<sup>1</sup> Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

## Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	53.9 ± 6 %	1.01 mho/m ± 6 %
Body TSL temperature during test	(22.1 ± 0.2) °C	----	----

## SAR result with Body TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.49 mW / g
SAR normalized	normalized to 1W	9.96 mW / g
SAR for nominal Body TSL parameters <sup>2</sup>	normalized to 1W	<b>9.61 mW / g ± 17.0 % (k=2)</b>

SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.64 mW / g
SAR normalized	normalized to 1W	6.56 mW / g
SAR for nominal Body TSL parameters <sup>2</sup>	normalized to 1W	<b>6.39 mW / g ± 16.5 % (k=2)</b>

<sup>2</sup> Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

## Appendix

### Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.8 $\Omega$ - 3.1 j $\Omega$
Return Loss	- 29.1 dB

### Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.0 $\Omega$ - 4.1 j $\Omega$
Return Loss	- 26.7 dB

### General Antenna Parameters and Design

Electrical Delay (one direction)	1.401 ns
----------------------------------	----------

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

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

Manufactured by	SPEAG
Manufactured on	November 09, 2007

## DASY5 Validation Report for Head TSL

Date/Time: 14.04.2009 11:20:38

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d075**

Communication System: CW-835; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL 900 MHz

Medium parameters used:  $f = 835$  MHz;  $\sigma = 0.89$  mho/m;  $\epsilon_r = 41.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV2 - SN3025; ConvF(5.97, 5.97, 5.97); Calibrated: 28.04.2008
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.03.2009
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

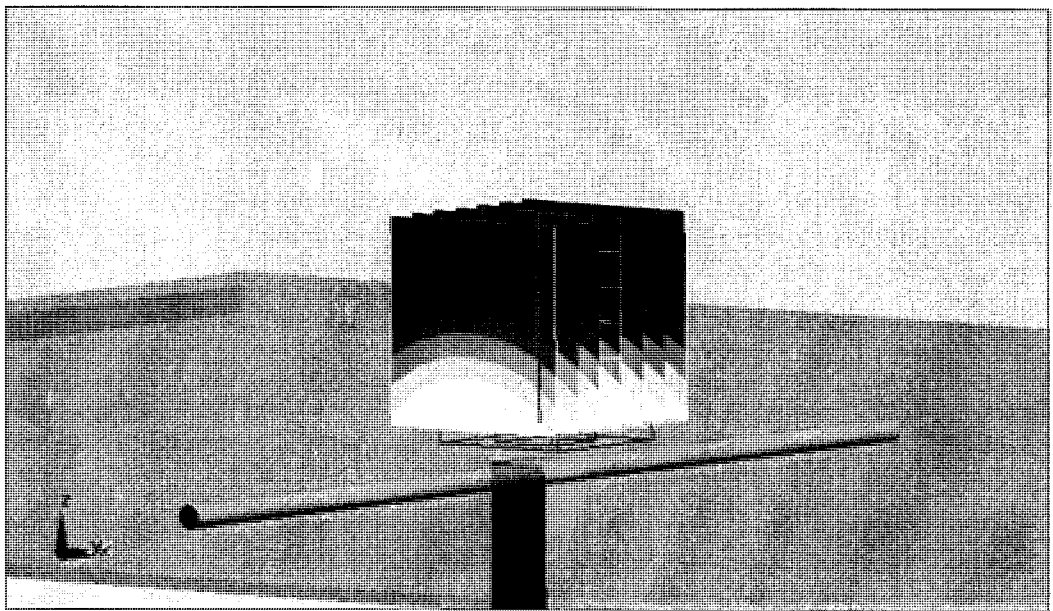
**Pin=250mW; dip=15mm/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 57 V/m; Power Drift = 0.011 dB

Peak SAR (extrapolated) = 3.47 W/kg

**SAR(1 g) = 2.35 mW/g; SAR(10 g) = 1.54 mW/g**

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



0 dB = 2.74mW/g



# Impedance Measurement Plot for Head TSL

14 Apr 2009 09:17:58

CH1 S11 1 U FS

1: 51.762  $\Omega$  -3.1074  $\Omega$  61.339 pF

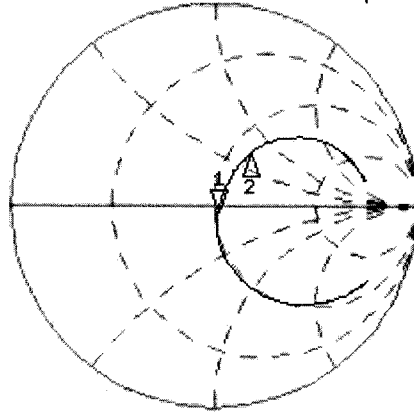
835.000 000 MHz

\*  
Del

Cor

Avg  
16

↑



CH1 Markers

2: 60.352  $\Omega$   
33.270  $\Omega$   
900.000 MHz

CH2 S11 LOG

5 dB/REF -20 dB

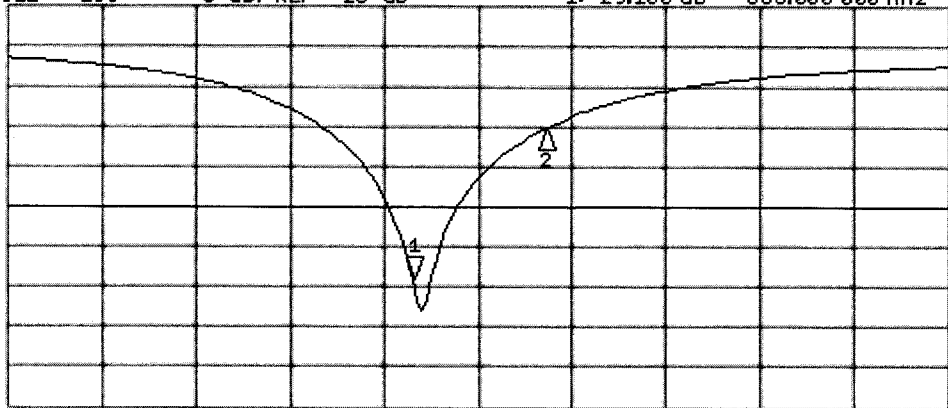
1: -29.100 dB

835.000 000 MHz

Cor

Avg  
16

↑



CH2 Markers

2: -10.391 dB  
900.000 MHz

START 635.000 000 MHz

STOP 1 100.000 000 MHz

## DASY5 Validation Report for Body TSL

Date/Time: 20.04.2009 09:57:39

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d075**

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: MSL900

Medium parameters used:  $f = 835$  MHz;  $\sigma = 1.01$  mho/m;  $\epsilon_r = 53.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC)

### DASY5 Configuration:

- Probe: ES3DV2 - SN3025; ConvF(5.9, 5.9, 5.9); Calibrated: 28.04.2008
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.03.2009
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

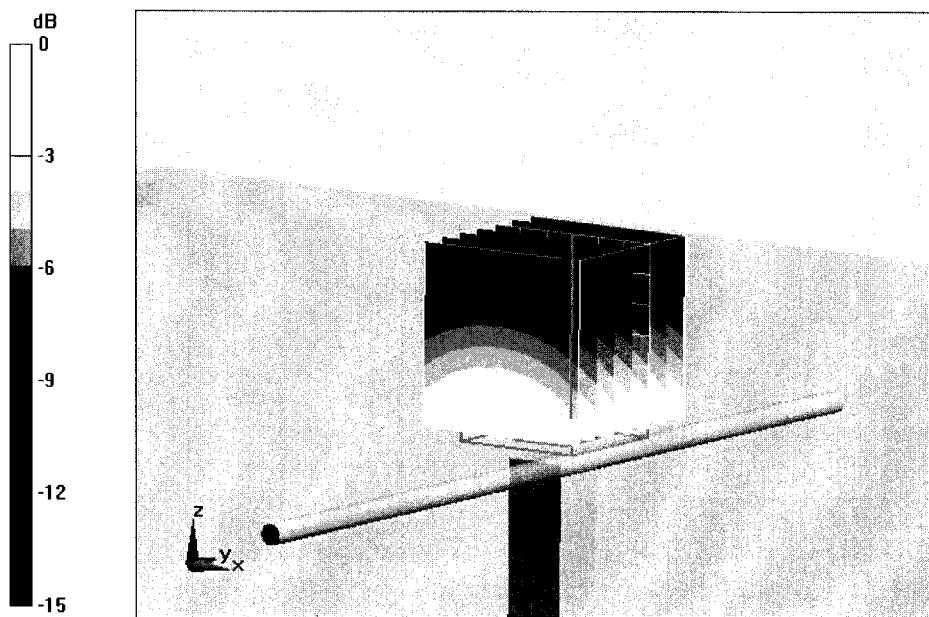
**Pin = 250mW, d = 15mm/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 55.4 V/m; Power Drift = -0.00173 dB

Peak SAR (extrapolated) = 3.61 W/kg

**SAR(1 g) = 2.49 mW/g; SAR(10 g) = 1.64 mW/g**

Maximum value of SAR (measured) = 2.9 mW/g



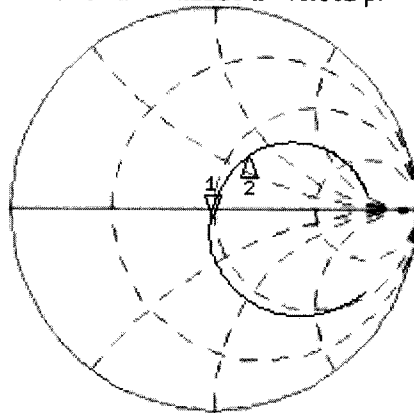
0 dB = 2.9mW/g

# Impedance Measurement Plot for Body TSL

20 Apr 2009 08:13:09

CH1 S11 1 U FS 1: 48.037  $\Omega$  -4.1113  $\Omega$  46.361 pF 835.000 000 MHz

\*  
Del  
Cor



CH1 Markers  
2: 59.180  $\Omega$   
32.740  $\Omega$   
900.000 MHz

Avg  
16

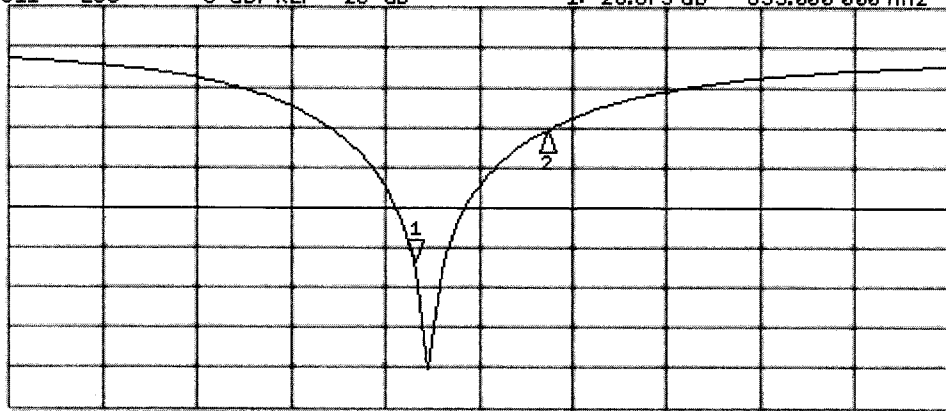
↑

CH2 S11 LOG 5 dB/REF -20 dB 1: -26.673 dB 835.000 000 MHz

Cor

Avg  
16

↑



CH2 Markers  
2: -10.507 dB  
900.000 MHz

START 635.000 000 MHz

STOP 1 100.000 000 MHz



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

Accreditation No.: **SCS 108**

Client **Celltech**

Certificate No: **D1800V2\_247\_Apr10**

## CALIBRATION CERTIFICATE

Object **D1800V2 - SN: 247**

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

Calibration date: **April 28, 2010**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-09 (No. 217-01086)	Oct-10
Power sensor HP 8481A	US37292783	06-Oct-09 (No. 217-01086)	Oct-10
Reference 20 dB Attenuator	SN: 5086 (20g)	30-Mar-10 (No. 217-01158)	Mar-11
Type-N mismatch combination	SN: 5047.2 / 06327	30-Mar-10 (No. 217-01162)	Mar-11
Reference Probe ES3DV3	SN: 3205	26-Jun-09 (No. ES3-3205_Jun09)	Jun-10
DAE4	SN: 601	02-Mar-10 (No. DAE4-601_Mar10)	Mar-11
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-09)	In house check: Oct-10

Calibrated by: **Dimce Iliev** **Laboratory Technician**

Approved by: **Katja Pokovic** **Technical Manager**

Signature  
*D. Iliev*

*Katja Pokovic*

Issued: April 29, 2010

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 108**

The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

### Glossary:

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

### Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

### Additional Documentation:

- DASY4/5 System Handbook

### Methods Applied and Interpretation of Parameters:

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

## Measurement Conditions

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

<b>DASY Version</b>	DASY5	V5.2
<b>Extrapolation</b>	Advanced Extrapolation	
<b>Phantom</b>	Modular Flat Phantom V5.0	
<b>Distance Dipole Center - TSL</b>	10 mm	with Spacer
<b>Zoom Scan Resolution</b>	dx, dy, dz = 5 mm	
<b>Frequency</b>	1800 MHz ± 1 MHz	

## Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
<b>Nominal Head TSL parameters</b>	22.0 °C	40.0	1.40 mho/m
<b>Measured Head TSL parameters</b>	(22.0 ± 0.2) °C	40.5 ± 6 %	1.35 mho/m ± 6 %
<b>Head TSL temperature during test</b>	(22.2 ± 0.2) °C	---	---

## SAR result with Head TSL

<b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Head TSL</b>	Condition	
SAR measured	250 mW input power	9.20 mW / g
SAR normalized	normalized to 1W	36.8 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	<b>37.7 mW / g ± 17.0 % (k=2)</b>

<b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Head TSL</b>	condition	
SAR measured	250 mW input power	4.85 mW / g
SAR normalized	normalized to 1W	19.4 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	<b>19.6 mW / g ± 16.5 % (k=2)</b>

## Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
<b>Nominal Body TSL parameters</b>	22.0 °C	53.3	1.52 mho/m
<b>Measured Body TSL parameters</b>	(22.0 ± 0.2) °C	54.8 ± 6 %	1.47 mho/m ± 6 %
<b>Body TSL temperature during test</b>	(22.0 ± 0.2) °C	----	----

## SAR result with Body TSL

<b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Body TSL</b>	Condition	
SAR measured	250 mW input power	9.64 mW / g
SAR normalized	normalized to 1W	38.6 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	<b>39.6 mW / g ± 17.0 % (k=2)</b>

<b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Body TSL</b>	condition	
SAR measured	250 mW input power	5.16 mW / g
SAR normalized	normalized to 1W	20.6 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	<b>20.9 mW / g ± 16.5 % (k=2)</b>



## Appendix

### Antenna Parameters with Head TSL

Impedance, transformed to feed point	48.6 $\Omega$ - 3.5 j $\Omega$
Return Loss	- 28.4 dB

### Antenna Parameters with Body TSL

Impedance, transformed to feed point	44.6 $\Omega$ - 3.7 j $\Omega$
Return Loss	- 23.2 dB

### General Antenna Parameters and Design

Electrical Delay (one direction)	1.192 ns
----------------------------------	----------

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

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

Manufactured by	SPEAG
Manufactured on	August 25, 1999

## DASY5 Validation Report for Head TSL

Date/Time: 28.04.2010 11:41:11

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN:247**

Communication System: CW; Frequency: 1800 MHz; Duty Cycle: 1:1

Medium: HSL U11 BB

Medium parameters used:  $f = 1800$  MHz;  $\sigma = 1.35$  mho/m;  $\epsilon_r = 40.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.25, 5.25, 5.25); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 57

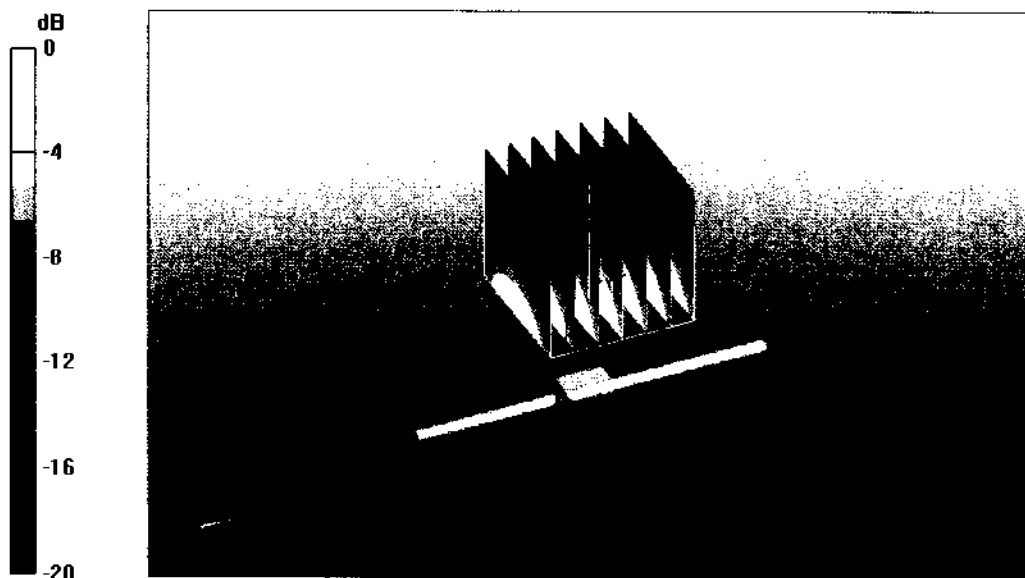
**Pin=250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 96.2 V/m; Power Drift = 0.00286 dB

Peak SAR (extrapolated) = 16.6 W/kg

**SAR(1 g) = 9.2 mW/g; SAR(10 g) = 4.85 mW/g**

Maximum value of SAR (measured) = 11.7 mW/g



0 dB = 11.7mW/g

# Impedance Measurement Plot for Head TSL

28 Apr 2010 09:49:53  
CH1 S11 1 U FS 1: 48.555  $\Omega$  -3.4578  $\Omega$  25.577 pF 1 800.000 000 MHz

\*  
De1  
Cor

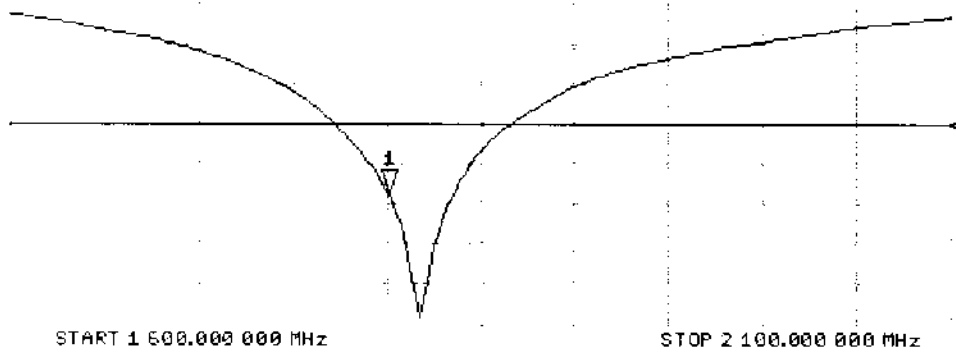
Avg  
16



CH2 S11 LOG 5 dB/REF -20 dB 1: -28.408 dB 1 800.000 000 MHz

Cor

Avg  
16



## DASY5 Validation Report for Body

Date/Time: 28.04.2010 12:33:53

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN:247**

Communication System: CW; Frequency: 1800 MHz; Duty Cycle: 1:1

Medium: MSL U 10 BB

Medium parameters used:  $f = 1800$  MHz;  $\sigma = 1.47$  mho/m;  $\epsilon_r = 54.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.8, 4.8, 4.8); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 57

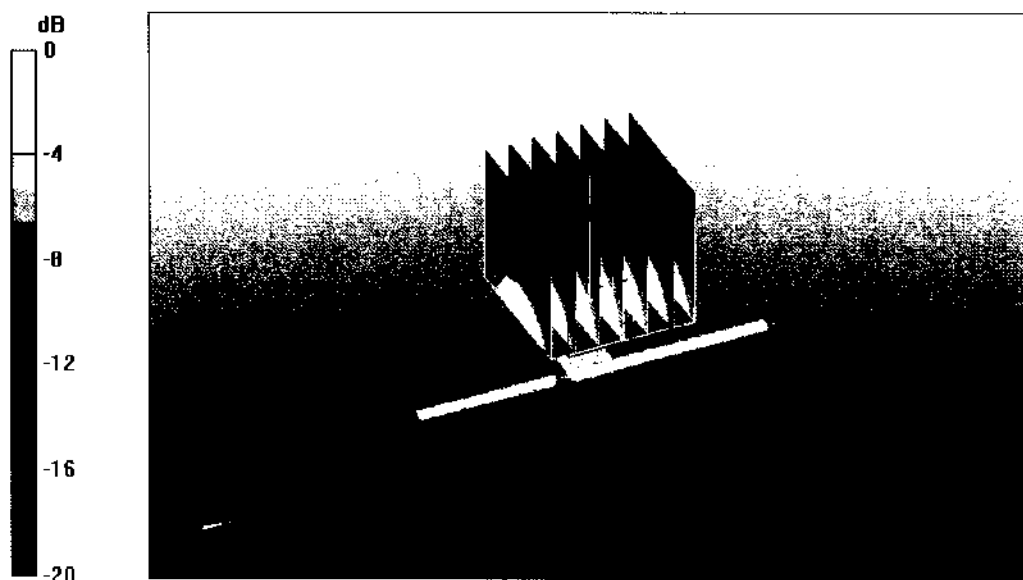
**Pin250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 94.8 V/m; Power Drift = -0.033 dB

Peak SAR (extrapolated) = 16.6 W/kg

**SAR(1 g) = 9.64 mW/g; SAR(10 g) = 5.16 mW/g**

Maximum value of SAR (measured) = 12.1 mW/g



0 dB = 12.1mW/g

# Impedance Measurement Plot for Body TSL

28 Apr 2010 09:50:44

CH1 S11 1 U FS 1: 44.637  $\Omega$  -3.7246  $\Omega$  23.739 pF 1 800.000 000 MHz

\*

Del

Cor

Avg  
16

↑

CH2 S11 LOG 5 dB/REF -20 dB 1: -23.231 dB 1 800.000 000 MHz

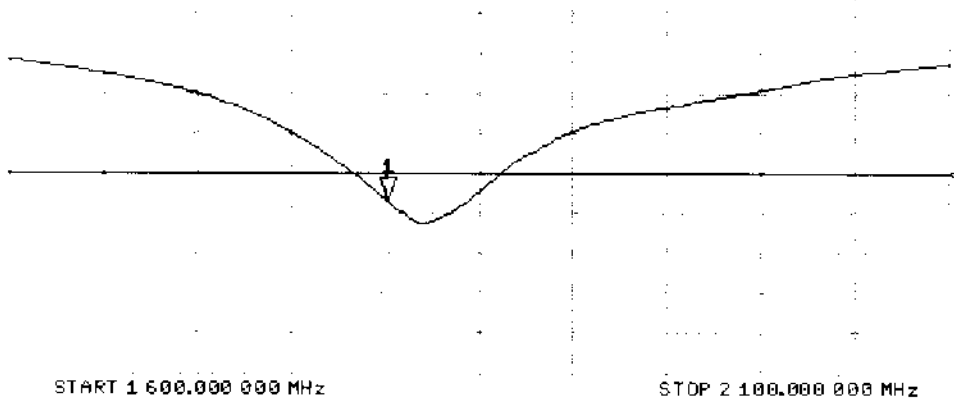
Cor

Avg  
16

↑

START 1 600.000 000 MHz

STOP 2 100.000 000 MHz





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

Accreditation No.: **SCS 108**

Client **Celltech**

Certificate No: **D1900V2-5d107-Apr09**

## CALIBRATION CERTIFICATE

Object **D1900V2 - SN: 5d107**

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

Calibration date: **April 21, 2009**

Condition of the calibrated item **In Tolerance**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	08-Oct-08 (No. 217-00898)	Oct-09
Power sensor HP 8481A	US37292783	08-Oct-08 (No. 217-00898)	Oct-09
Reference 20 dB Attenuator	SN: 5086 (20g)	31-Mar-09 (No. 217-01025)	Mar-10
Type-N mismatch combination	SN: 5047.2 / 06327	31-Mar-09 (No. 217-01029)	Mar-10
Reference Probe ES3DV2	SN: 3025	28-Apr-08 (No. ES3-3025_Apr08)	Apr-09
DAE4	SN: 601	07-Mar-09 (No. DAE4-601_Mar09)	Mar-10
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-07)	In house check: Oct-09
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-08)	In house check: Oct-09

Calibrated by: **Claudio Leubler**      **Laboratory Technician**      Signature

Approved by: **Katja Pokovic**      **Technical Manager**

Issued: April 24, 2009

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.



Accredited by the Swiss Accreditation Service (SAS)

The Swiss Accreditation Service is one of the signatories to the EA  
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

### Glossary:

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

### Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001
- Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

### Additional Documentation:

- DASY4/5 System Handbook

### Methods Applied and Interpretation of Parameters:

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

## Measurement Conditions

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

<b>DASY Version</b>	DASY5	V5.0
<b>Extrapolation</b>	Advanced Extrapolation	
<b>Phantom</b>	Modular Flat Phantom V5.0	
<b>Distance Dipole Center - TSL</b>	10 mm	with Spacer
<b>Zoom Scan Resolution</b>	dx, dy, dz = 5 mm	
<b>Frequency</b>	1900 MHz $\pm$ 1 MHz	

## Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
<b>Nominal Head TSL parameters</b>	22.0 °C	40.0	1.40 mho/m
<b>Measured Head TSL parameters</b>	(22.0 $\pm$ 0.2) °C	38.6 $\pm$ 6 %	1.47 mho/m $\pm$ 6 %
<b>Head TSL temperature during test</b>	(22.0 $\pm$ 0.2) °C	---	---

## SAR result with Head TSL

<b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Head TSL</b>	condition	
SAR measured	250 mW input power	10.6 mW / g
SAR normalized	normalized to 1W	42.4 mW / g
SAR for nominal Head TSL parameters <sup>1</sup>	normalized to 1W	<b>40.9 mW / g <math>\pm</math> 17.0 % (k=2)</b>

<b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Head TSL</b>	Condition	
SAR measured	250 mW input power	5.45 mW / g
SAR normalized	normalized to 1W	21.8 mW / g
SAR for nominal Head TSL parameters <sup>1</sup>	normalized to 1W	<b>21.4 mW / g <math>\pm</math> 16.5 % (k=2)</b>

<sup>1</sup> Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"



## Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.9 ± 6 %	1.56 mho/m ± 6 %
Body TSL temperature during test	(21.3 ± 0.2) °C	---	---

## SAR result with Body TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	10.6 mW / g
SAR normalized	normalized to 1W	42.4 mW / g
SAR for nominal Body TSL parameters <sup>2</sup>	normalized to 1W	42.1 mW / g ± 17.0 % (k=2)

SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.62 mW / g
SAR normalized	normalized to 1W	22.5 mW / g
SAR for nominal Body TSL parameters <sup>2</sup>	normalized to 1W	22.4 mW / g ± 16.5 % (k=2)

<sup>2</sup> Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

## Appendix

### Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.0 $\Omega$ + 5.5 j $\Omega$
Return Loss	- 25.2 dB

### Antenna Parameters with Body TSL

Impedance, transformed to feed point	45.9 $\Omega$ + 6.3 j $\Omega$
Return Loss	- 22.1 dB

### General Antenna Parameters and Design

Electrical Delay (one direction)	1.200 ns

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

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

Manufactured by	SPEAG
Manufactured on	March 28, 2008

## DASY5 Validation Report for Head TSL

Date/Time: 15.04.2009 15:01:47

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d107**

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL U10 BB

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.47$  mho/m;  $\epsilon_r = 38.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC)

### DASY5 Configuration:

- Probe: ES3DV2 - SN3025; ConvF(4.9, 4.9, 4.9); Calibrated: 28.04.2008
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.03.2009
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

**Pin = 250 mW; dip = 10 mm, scan at 3.0 mm/Zoom Scan (dist=3.0 mm, probe 0deg)**

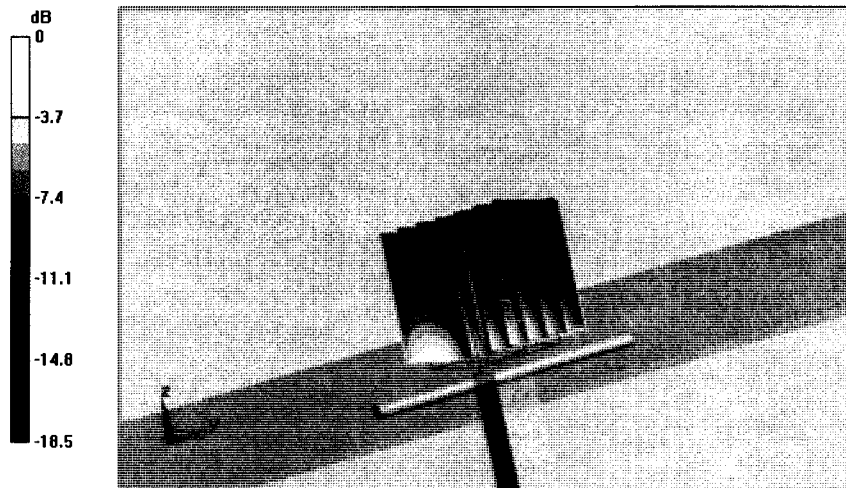
**(7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 96.7 V/m; Power Drift = 0.031 dB

Peak SAR (extrapolated) = 20 W/kg

**SAR(1 g) = 10.6 mW/g; SAR(10 g) = 5.45 mW/g**

Maximum value of SAR (measured) = 13.2 mW/g



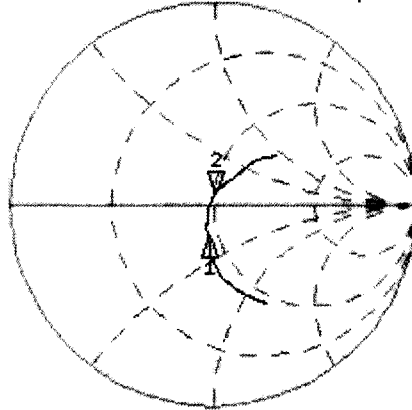
0 dB = 13.2mW/g

# Impedance Measurement Plot for Head TSL

15 Apr 2009 15:06:04

CH1 S11 1 U FS 2: 50.000 Ω 5.4746 Ω 458.58 pH 1 900.000 000 MHz

\*  
Del  
Cor



CH1 Markers  
1: 45.176 Ω  
-14.889 Ω  
1.80000 GHz

Avg  
16

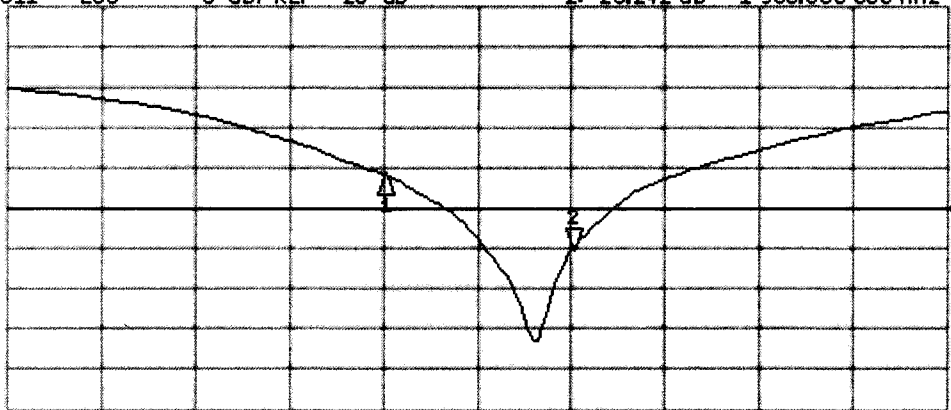
↑

CH2 S11 LOG 5 dB/ REF -20 dB 2: -25.242 dB 1 900.000 000 MHz

Cor

Avg  
16

↑



CH2 Markers  
1: -15.784 dB  
1.80000 GHz

START 1 600.000 000 MHz

STOP 2 100.000 000 MHz

## DASY5 Validation Report for Body TSL

Date/Time: 21.04.2009 15:29:55

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d107**

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: MSL U10 BB

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.56$  mho/m;  $\epsilon_r = 55$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV2 - SN3025; ConvF(4.5, 4.5, 4.5); Calibrated: 28.04.2008
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.03.2009
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

**Pin = 250 mW; dip = 10 mm, scan at 3.0mm/Zoom Scan (dist=3.4mm, probe 0deg)**

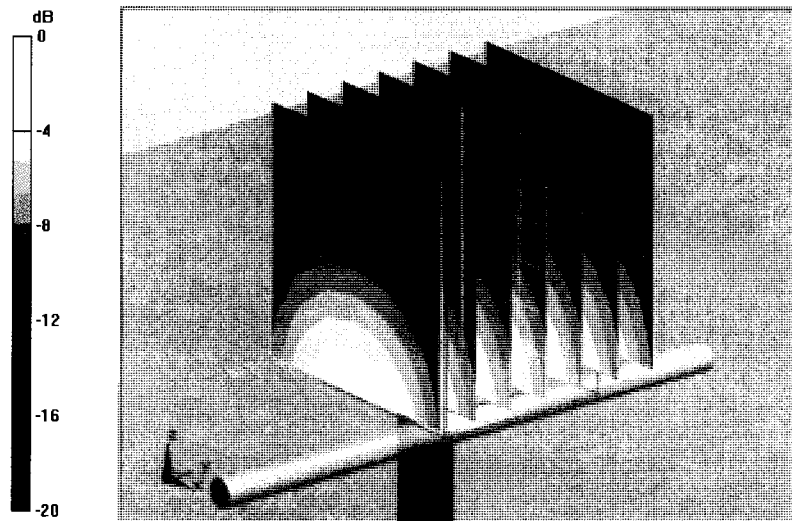
**(7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 96.6 V/m; Power Drift = -0.00425 dB

Peak SAR (extrapolated) = 18.7 W/kg

**SAR(1 g) = 10.6 mW/g; SAR(10 g) = 5.62 mW/g**

Maximum value of SAR (measured) = 13.5 mW/g



0 dB = 13.5mW/g

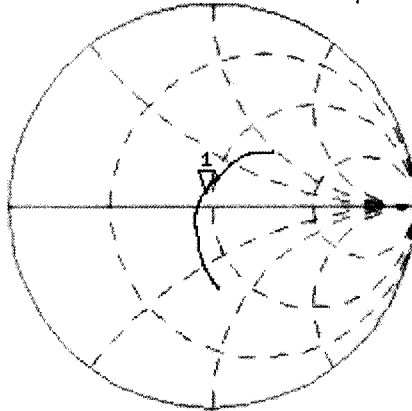
# Impedance Measurement Plot for Body TSL

21 Apr 2009 11:38:33

[CH1] S11 1 U FS

1: 45.930  $\Omega$  6.3203  $\Omega$  529.43 pF 1 900.000 000 MHz

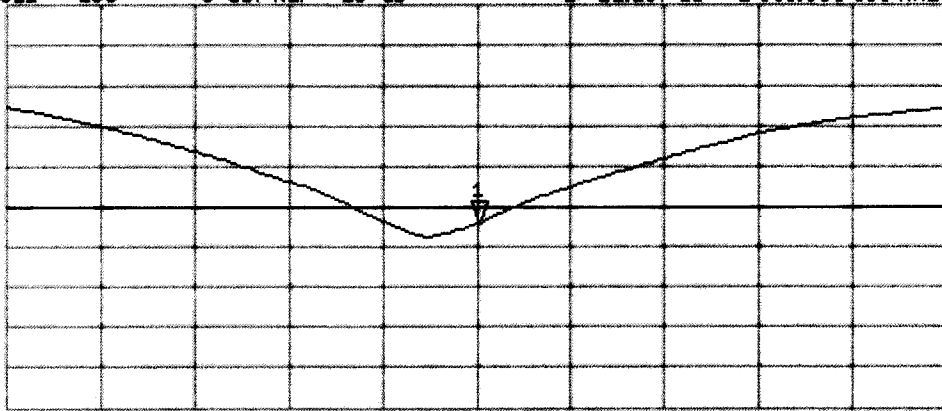
\*  
Del  
CA



Avg  
16  
↑

CH2 S11 LOG 5 dB/REF -20 dB 1:-22.137 dB 1 900.000 000 MHz

CA  
Avg  
16  
↑



CENTER 1 900.000 000 MHz

SPAN 400.000 000 MHz



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

Accreditation No.: **SCS 108**

Client **Celltech**

Certificate No.: **D2450V2-825\_Apr09**

## CALIBRATION CERTIFICATE

Object **D2450V2 - SN: 825**

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

Calibration date: **April 17, 2009**

Condition of the calibrated item **In Tolerance**

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

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

Calibration Equipment used (M&TE critical for calibration)

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

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

	Name	Function	Signature
Calibrated by:	<b>Claudio Leubler</b>	<b>Laboratory Technician</b>	
Approved by:	<b>Katja Pokovic</b>	<b>Technical Manager</b>	

Issued: April 22, 2009

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.



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

Accreditation No.: **SCS 108**

### Glossary:

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

### Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

### Additional Documentation:

- DASY4/5 System Handbook

### Methods Applied and Interpretation of Parameters:

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



## Measurement Conditions

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

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

## Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
<b>Nominal Head TSL parameters</b>	22.0 °C	39.2	1.80 mho/m
<b>Measured Head TSL parameters</b>	(22.0 $\pm$ 0.2) °C	38.0 $\pm$ 6 %	1.82 mho/m $\pm$ 6 %
<b>Head TSL temperature during test</b>	(22.0 $\pm$ 0.2) °C	---	---

## SAR result with Head TSL

<b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Head TSL</b>	Condition	
SAR measured	250 mW input power	13.6 mW / g
SAR normalized	normalized to 1W	54.4 mW / g
SAR for nominal Head TSL parameters <sup>1</sup>	normalized to 1W	<b>53.7 mW / g <math>\pm</math> 17.0 % (k=2)</b>

<b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Head TSL</b>	condition	
SAR measured	250 mW input power	6.29 mW / g
SAR normalized	normalized to 1W	25.2 mW / g
SAR for nominal Head TSL parameters <sup>1</sup>	normalized to 1W	<b>25.0 mW / g <math>\pm</math> 16.5 % (k=2)</b>

<sup>1</sup> Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

## Body TSL parameters

The following parameters and calculations were applied.

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

## SAR result with Body TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	12.9 mW / g
SAR normalized	normalized to 1W	51.6 mW / g
SAR for nominal Body TSL parameters <sup>2</sup>	normalized to 1W	51.6 mW / g ± 17.0 % (k=2)

SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.05 mW / g
SAR normalized	normalized to 1W	24.2 mW / g
SAR for nominal Body TSL parameters <sup>2</sup>	normalized to 1W	24.2 mW / g ± 16.5 % (k=2)

<sup>2</sup> Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

## Appendix

### Antenna Parameters with Head TSL

Impedance, transformed to feed point	54.5 $\Omega$ + 4.7 j $\Omega$
Return Loss	- 24.1 dB

### Antenna Parameters with Body TSL

Impedance, transformed to feed point	49.2 $\Omega$ + 5.6 j $\Omega$
Return Loss	- 24.8 dB

### General Antenna Parameters and Design

Electrical Delay (one direction)	1.160 ns
----------------------------------	----------

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

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 11, 2008

## DASY5 Validation Report for Head TSL

Date/Time: 17.04.2009 12:17:23

Test Laboratory: SPEAG, Zurich, Switzerland

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

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: HSL U10 BB

Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.82$  mho/m;  $\epsilon_r = 38$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC)

### DASY5 Configuration:

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

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

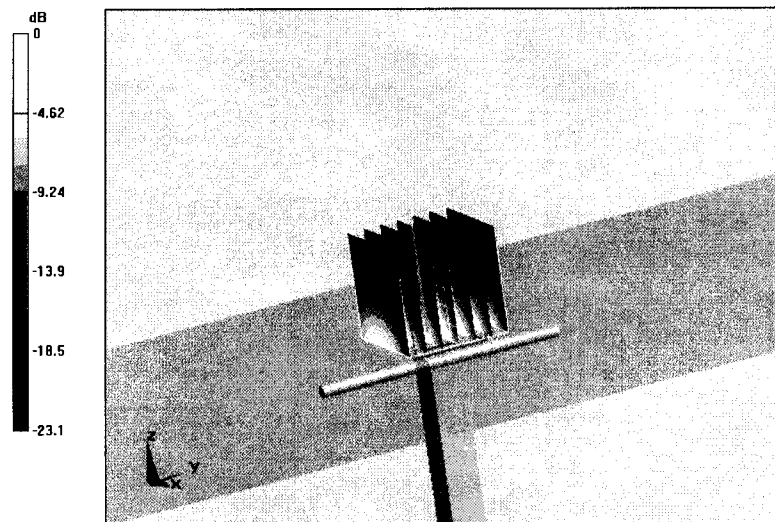
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 97.1 V/m; Power Drift = 0.026 dB

Peak SAR (extrapolated) = 28.4 W/kg

**SAR(1 g) = 13.6 mW/g; SAR(10 g) = 6.29 mW/g**

Maximum value of SAR (measured) = 17.7 mW/g



0 dB = 17.7mW/g

# Impedance Measurement Plot for Head TSL

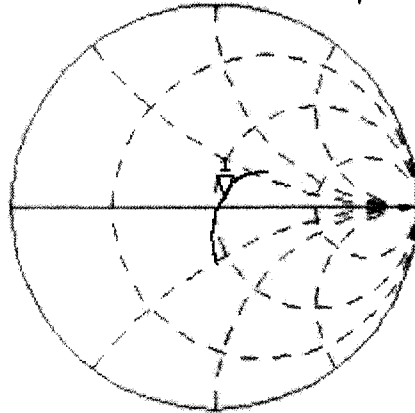
17 Apr 2009 09:36:50

CH1 S11 1 U FS

1: 54.469  $\Omega$  4.7090  $\Omega$  305.90 pF

2 450.000 000 MHz

\*  
De1  
Cor



Avg  
16

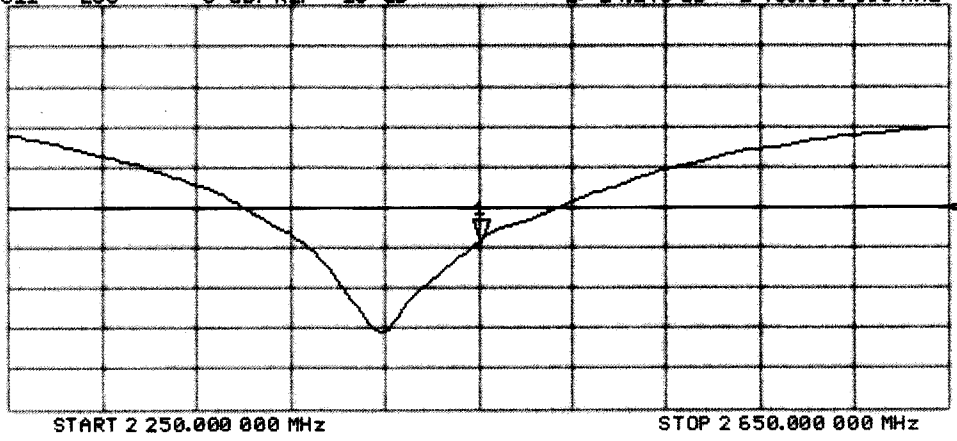
↑

CH2 S11 LOG 5 dB/REF -20 dB 1:-24.145 dB 2 450.000 000 MHz

Cor

Avg  
16

↑



## DASY5 Validation Report for Body TSL

Date/Time: 17.04.2009 14:54:34

Test Laboratory: SPEAG, Zurich, Switzerland

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

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: MSL U10 BB

Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.98$  mho/m;  $\epsilon_r = 54.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC)

### DASY5 Configuration:

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

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

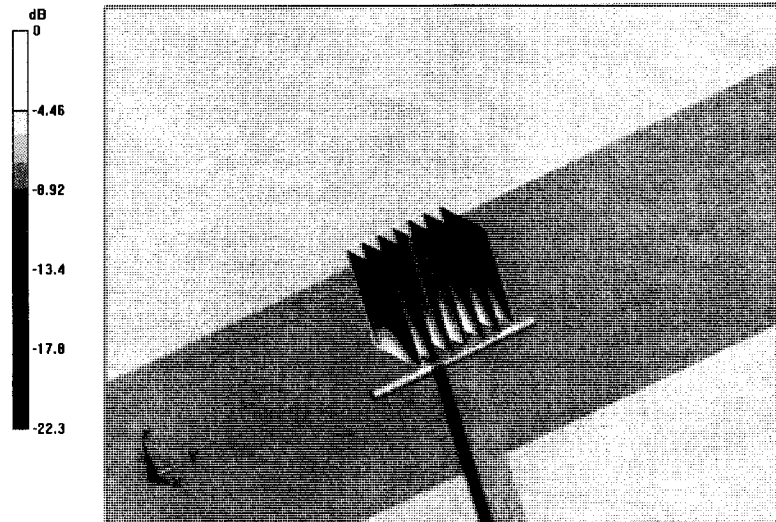
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 91.6 V/m; Power Drift = 0.046 dB

Peak SAR (extrapolated) = 26.1 W/kg

**SAR(1 g) = 12.9 mW/g; SAR(10 g) = 6.05 mW/g**

Maximum value of SAR (measured) = 16.6 mW/g



0 dB = 16.6mW/g

# Impedance Measurement Plot for Body TSL

17 Apr 2009 09:37:35

CH1 S11 1 U FS

1: 49.158  $\Omega$  5.6484  $\Omega$  366.93  $\mu\text{H}$

2 450.000 000 MHz

\*

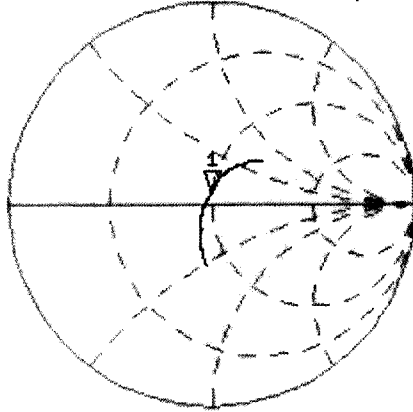
Del

Cor

Avg

16

↑



CH2

S11

LOG

5 dB/REF -20 dB

1:-24,800 dB

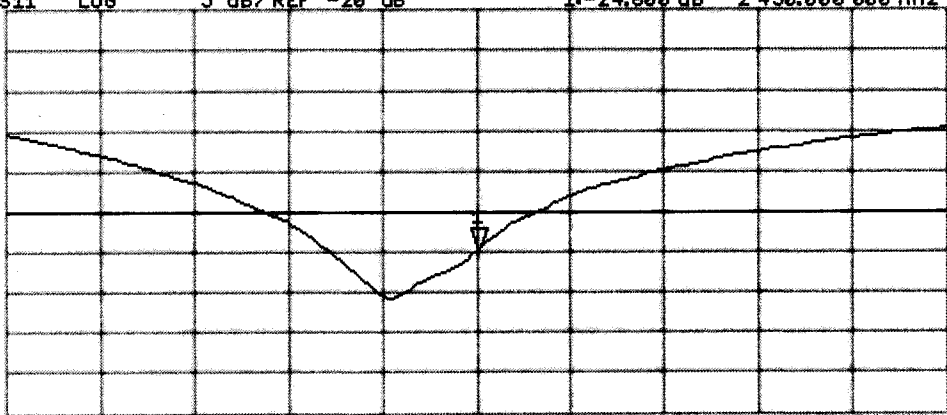
2 450.000 000 MHz

Cor

Avg

16

↑



START 2 250.000 000 MHz

STOP 2 650.000 000 MHz



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

Accreditation No.: **SCS 108**

Client **Comtech**

Certificate No: **D5GHzV2-1031\_Apr09**

## CALIBRATION CERTIFICATE

Object **D5GHzV2 - SN: 1031**

Calibration procedure(s) **QA CAL-22.v1  
Calibration procedure for dipole validation kits between 3-6 GHz**

Calibration date: **April 29, 2009**

Condition of the calibrated item **In Tolerance**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	08-Oct-08 (No. 217-00898)	Oct-09
Power sensor HP 8481A	US37292783	08-Oct-08 (No. 217-00898)	Oct-09
Reference 20 dB Attenuator	SN: 5086 (20g)	31-Mar-09 (No. 217-01025)	Mar-10
Type-N mismatch combination	SN: 5047.2 / 06327	31-Mar-09 (No. 217-01029)	Mar-10
Reference Probe EX3DV4	SN: 3503	11-Mar-09 (No. EX3-3503_Mar09)	Mar-10
DAE4	SN: 601	07-Mar-09 (No. DAE4-601_Mar09)	Mar-10
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-07)	In house check: Oct-09
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-08)	In house check: Oct-09

Calibrated by: **Claudio Leubler**      Name: **Claudio Leubler**      Function: **Laboratory Technician**

Signature

Approved by: **Katja Pokovic**      Name: **Katja Pokovic**      Function: **Technical Manager**

Issued: April 29, 2009

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.





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

Accreditation No.: **SCS 108**

### Glossary:

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

### Calibration is Performed According to the Following Standards:

- a) IEC Std 62209 Part 2, "Evaluation of Human Exposure to Radio Frequency Fields from Handheld and Body-Mounted Wireless Communication Devices in the Frequency Range of 30 MHz to 6 GHz: Human models, Instrumentation, and Procedures"; Part 2: "Procedure to determine the Specific Absorption Rate (SAR) for including accessories and multiple transmitters", Draft Version 0.9, December 2004
- b) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

### Additional Documentation:

- c) DASY4/5 System Handbook

### Methods Applied and Interpretation of Parameters:

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

## Measurement Conditions

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

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

## Body TSL parameters at 5200 MHz

The following parameters and calculations were applied.

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

## SAR result with Body TSL at 5200 MHz

<b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Body TSL</b>	condition	
SAR measured	100 mW input power	7.63 mW / g
SAR normalized	normalized to 1W	76.3 mW / g
SAR for nominal Body TSL parameters <sup>1</sup>	normalized to 1W	<b>75.8 mW / g ± 19.9 % (k=2)</b>

<b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Body TSL</b>	condition	
SAR measured	100 mW input power	2.13 mW / g
SAR normalized	normalized to 1W	21.3 mW / g
SAR for nominal Body TSL parameters <sup>1</sup>	normalized to 1W	<b>21.2 mW / g ± 19.5 % (k=2)</b>

<sup>1</sup> Correction to nominal TSL parameters according to c), chapter "SAR Sensitivities"

### Body TSL parameters at 5500 MHz

The following parameters and calculations were applied.

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

### SAR result with Body TSL at 5500 MHz

SAR averaged over 1 cm <sup>3</sup> (1 g) of Body TSL	condition	
SAR measured	100 mW input power	8.01 mW / g
SAR normalized	normalized to 1W	80.1 mW / g
SAR for nominal Body TSL parameters <sup>1</sup>	normalized to 1W	<b>79.5 mW / g ± 19.9 % (k=2)</b>

SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.22 mW / g
SAR normalized	normalized to 1W	22.2 mW / g
SAR for nominal Body TSL parameters <sup>1</sup>	normalized to 1W	<b>22.0 mW / g ± 19.5 % (k=2)</b>

### Body TSL parameters at 5800 MHz

The following parameters and calculations were applied.

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

### SAR result with Body TSL at 5800 MHz

SAR averaged over 1 cm <sup>3</sup> (1 g) of Body TSL	condition	
SAR measured	100 mW input power	6.82 mW / g
SAR normalized	normalized to 1W	68.2 mW / g
SAR for nominal Body TSL parameters <sup>1</sup>	normalized to 1W	<b>67.7 mW / g ± 19.9 % (k=2)</b>

SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL	condition	
SAR measured	100 mW input power	1.89 mW / g
SAR normalized	normalized to 1W	18.9 mW / g
SAR for nominal Body TSL parameters <sup>1</sup>	normalized to 1W	<b>18.7 mW / g ± 19.5 % (k=2)</b>

<sup>1</sup> Correction to nominal TSL parameters according to c), chapter "SAR Sensitivities"

## Appendix

### Antenna Parameters with Body TSL at 5200 MHz

Impedance, transformed to feed point	50.1 $\Omega$ - 6.7 j $\Omega$
Return Loss	-23.5 dB

### Antenna Parameters with Body TSL at 5500 MHz

Impedance, transformed to feed point	51.6 $\Omega$ - 3.3 j $\Omega$
Return Loss	-29.0 dB

### Antenna Parameters with Body TSL at 5800 MHz

Impedance, transformed to feed point	59.4 $\Omega$ - 3.5 j $\Omega$
Return Loss	-20.8 dB

### General Antenna Parameters and Design

Electrical Delay (one direction)	1.197 ns
----------------------------------	----------

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

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

Manufactured by	SPEAG
Manufactured on	July 09, 2004

## DASY5 Validation Report for Body TSL

29.04.2009 13:52:12

Test Laboratory: SPEAG, Zurich, Switzerland

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

Communication System: CW-5GHz; Frequency: 5200 MHz Frequency: 5500 MHz Frequency: 5800 MHz;  
Duty Cycle: 1:1

Medium: MSL 5800 MHz

Medium parameters used:  $f = 5200$  MHz;  $\sigma = 5.37$  mbo/m;  $\epsilon_r = 47.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Medium parameters used:  $f = 5500$  MHz;  $\sigma = 5.74$  mbo/m;  $\epsilon_r = 46.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Medium parameters used:  $f = 5800$  MHz;  $\sigma = 6.13$  mho/m;  $\epsilon_r = 46.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

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

**d=10mm, Pin=100mW, f=5200 MHz/Zoom Scan (8x8x10), dist=2mm (8x8x10)/Cube 0:**

Measurement grid: dx=4mm, dy=4mm, dz=2.5mm

Reference Value = 49.6 V/m; Power Drift = 0.00494 dB

Peak SAR (extrapolated) = 28.5 W/kg

**SAR(1 g) = 7.63 mW/g; SAR(10 g) = 2.13 mW/g**

Maximum value of SAR (measured) = 15.7 mW/g

**d=10mm, Pin=100mW, f=5500 MHz/Zoom Scan (8x8x10), dist=2mm (8x8x10)/Cube 0:**

Measurement grid: dx=4mm, dy=4mm, dz=2.5mm

Reference Value = 49 V/m; Power Drift = -0.016 dB

Peak SAR (extrapolated) = 32 W/kg

**SAR(1 g) = 8.01 mW/g; SAR(10 g) = 2.22 mW/g**

Maximum value of SAR (measured) = 16.8 mW/g

**d=10mm, Pin=100mW, f=5800 MHz/Zoom Scan (8x8x10), dist=2mm (8x8x10)/Cube 0:**

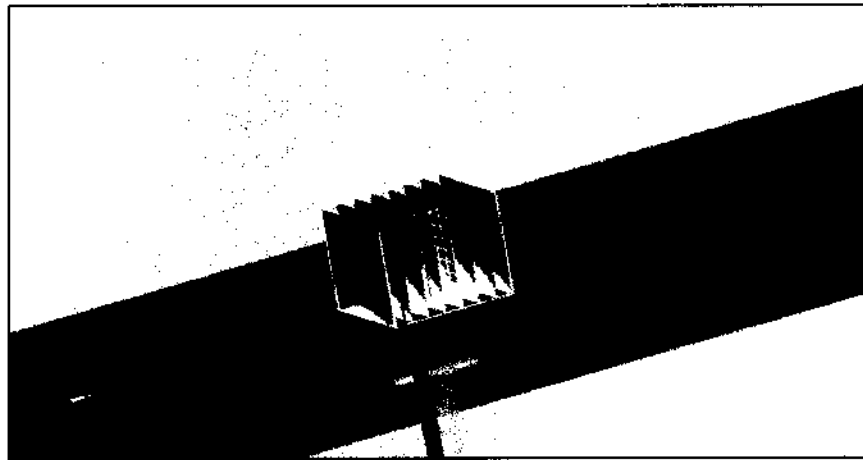
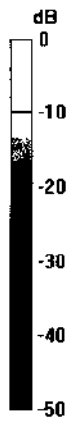
Measurement grid: dx=4mm, dy=4mm, dz=2.5mm

Reference Value = 43.7 V/m; Power Drift = -0.029 dB

Peak SAR (extrapolated) = 28.9 W/kg

**SAR(1 g) = 6.82 mW/g; SAR(10 g) = 1.89 mW/g**

Maximum value of SAR (measured) = 14.4 mW/g



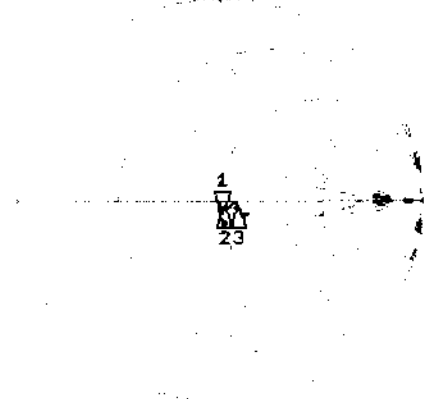
0 dB = 14.4mW/g

# Impedance Measurement Plot for Body TSL

28 Apr 2009 10:39:01

CH1 S11 1 U FS 1: 50.135  $\Omega$  -6.6777  $\Omega$  4.5834 pF 5 200.000 000 MHz

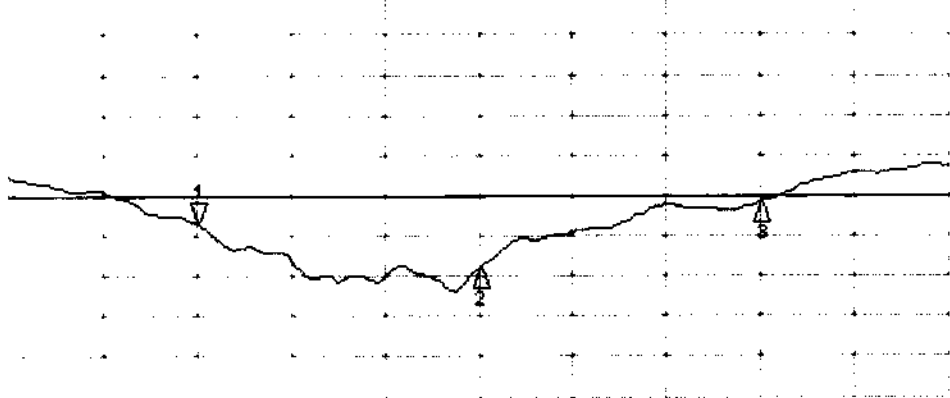
\*  
De1  
Cor  
Avg  
16



CH1 Markers  
2: 51.553  $\Omega$   
-3.2539  $\Omega$   
5.50000 GHz  
3: 59.363  $\Omega$   
-3.5391  $\Omega$   
5.00000 GHz

CH2 S11 LOG 5 dB/REF -20 dB 1: -23.533 dB 5 200.000 000 MHz



Cor  
Avg  
16




CH2 Markers  
2: -23.001 dB  
5.50000 GHz  
3: -20.776 dB  
5.00000 GHz

START 5 000.000 000 MHz

STOP 6 000.000 000 MHz

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

## APPENDIX F - PROBE CALIBRATION

<b>Applicant:</b>	<b>Xplore Technologies Corp.</b>	<b>FCC ID:</b>	<b>Q2GGOBI3K-XPL</b>	<b>IC:</b>	<b>4596A-GOBI3KXPL</b>	
<b>DUT Type:</b>	<b>Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC</b>					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 72 of 73





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

Accreditation No.: **SCS 108**

Client **Calltech**

Certificate No: **ET3-1590\_Jul10**

## CALIBRATION CERTIFICATE

Object **ET3DV6 - SN:1590**

Calibration procedure(s) **QA CAL-01.v6, QA CAL-12.v6, QA CAL-23.v3 and QA CAL-25.v2  
Calibration procedure for dosimetric E-field probes**

Calibration date: **July 15, 2010**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	1-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41495277	1-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41498087	1-Apr-10 (No. 217-01136)	Apr-11
Reference 3 dB Attenuator	SN: S5054 (3c)	30-Mar-10 (No. 217-01159)	Mar-11
Reference 20 dB Attenuator	SN: S5086 (20b)	30-Mar-10 (No. 217-01161)	Mar-11
Reference 30 dB Attenuator	SN: S5129 (30b)	30-Mar-10 (No. 217-01160)	Mar-11
Reference Probe ES3DV2	SN: 3013	30-Dec-09 (No. ES3-3013_Dec09)	Dec-10
DAE4	SN: 660	20-Apr-10 (No. DAE4-660_Apr10)	Apr-11
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-09)	In house check: Oct10

Calibrated by **Jeton Kastrati** **Laboratory Technician**

Approved by: **Katja Pokovic** **Technical Manager**

Signature

Issued: July 15, 2010

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 108**

The Swiss Accreditation Service is one of the signatories to the EA  
Multilateral Agreement for the recognition of calibration certificates

## Glossary:

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

## Calibration is Performed According to the Following Standards:

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

## Methods Applied and Interpretation of Parameters:

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

# Probe ET3DV6

## SN:1590

Manufactured:	March 19, 2001
Last calibrated:	July 16, 2009
Recalibrated:	July 15, 2010

Calibrated for DASY/EASY Systems

(Note: non-compatible with DASY2 system!)

**DASY/EASY - Parameters of Probe: ET3DV6 SN:1590****Basic Calibration Parameters**

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ( $\mu\text{V}/(\text{V}/\text{m})^2$ ) <sup>A</sup>	1.86	2.06	1.77	$\pm 10.1\%$
DCP (mV) <sup>B</sup>	91.4	92.4	83.5	

**Modulation Calibration Parameters**

UID	Communication System Name	PAR		A dB	B dBuV	C	VR mV	Unc <sup>E</sup> (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	300.0	$\pm 1.5\%$
			Y	0.00	0.00	1.00	300.0	
			Z	0.00	0.00	1.00	300.0	

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

<sup>A</sup> The uncertainties of NormX,Y,Z do not affect the E<sup>2</sup>-field uncertainty inside TSL (see Pages 5 and 6)

<sup>B</sup> Numerical linearization parameter: uncertainty not required.

<sup>E</sup> Uncertainty is determined using the maximum deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

## DASY/EASY - Parameters of Probe: ET3DV6 SN:1590

### Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz]	Validity [MHz] <sup>c</sup>	Permittivity	Conductivity	ConvF X	ConvF Y	ConvF Z	Alpha	Depth Unc (k=2)
450	± 50 / ± 100	43.5 ± 5%	0.87 ± 5%	7.25	7.25	7.25	0.20	2.19 ± 13.3%
835	± 50 / ± 100	41.5 ± 5%	0.90 ± 5%	6.27	6.27	6.27	0.32	2.49 ± 11.0%
900	± 50 / ± 100	41.5 ± 5%	0.97 ± 5%	6.12	6.12	6.12	0.27	2.86 ± 11.0%

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

## DASY/EASY - Parameters of Probe: ET3DV6 SN:1590

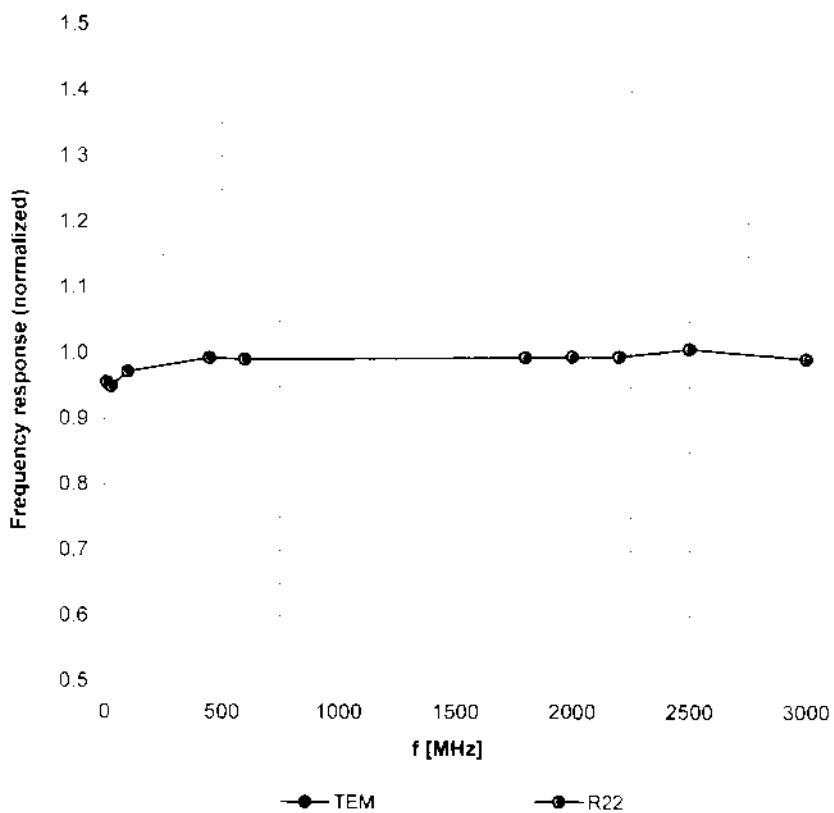
### Calibration Parameter Determined in Body Tissue Simulating Media

f [MHz]	Validity [MHz] <sup>C</sup>	Permittivity	Conductivity	ConvF X	ConvF Y	ConvF Z	Alpha	Depth Unc (k=2)
450	± 50 / ± 100	56.7 ± 5%	0.94 ± 5%	7.73	7.73	7.73	0.13	2.06 ± 13.3%
835	± 50 / ± 100	55.2 ± 5%	0.97 ± 5%	6.33	6.33	6.33	0.22	3.60 ± 11.0%
900	± 50 / ± 100	55.0 ± 5%	1.05 ± 5%	6.15	6.15	6.15	0.28	2.94 ± 11.0%

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

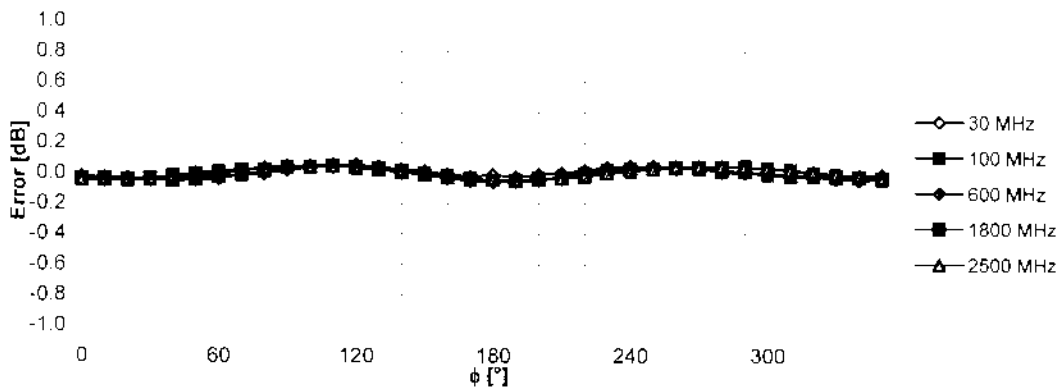
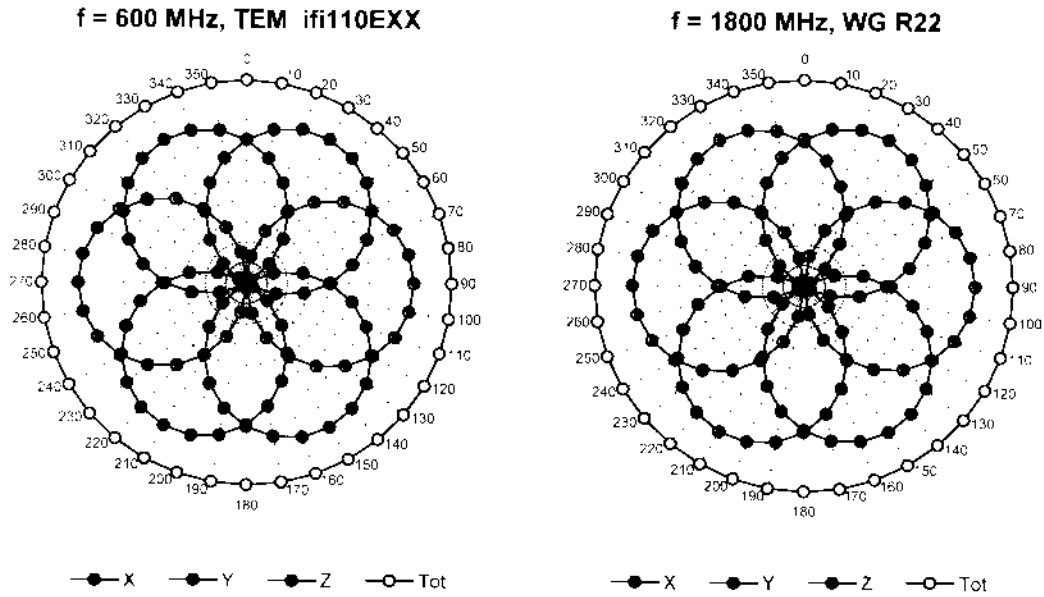
### Frequency Response of E-Field

(TEM-Cell: ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field:  $\pm 6.3\%$  ( $k=2$ )

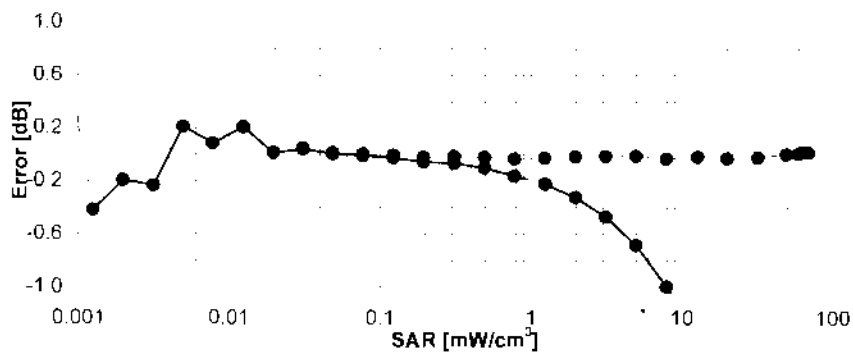
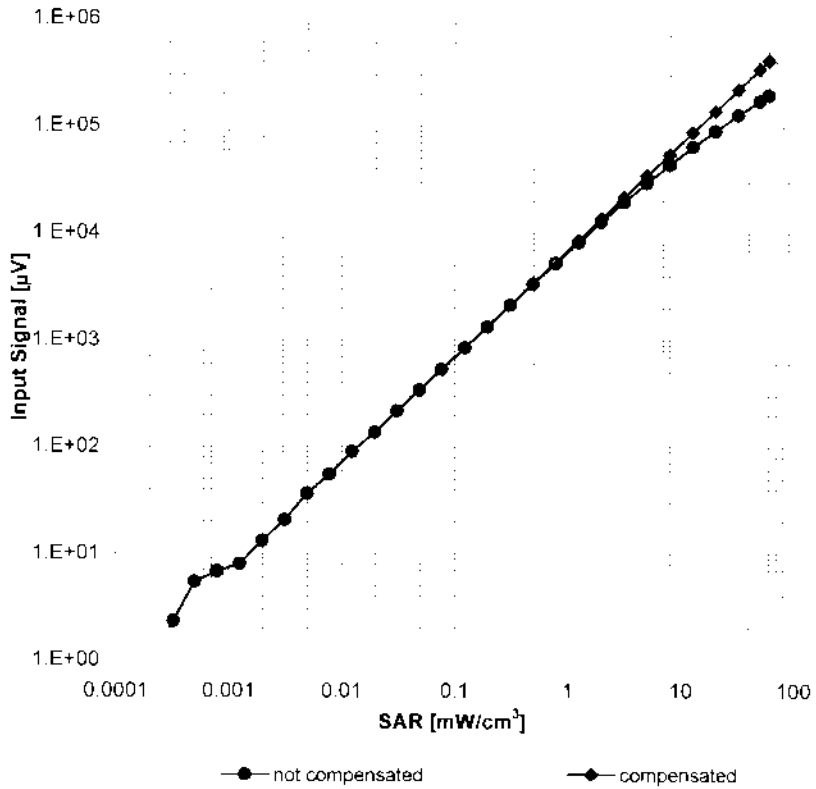
### Receiving Pattern ( $\phi$ ), $\vartheta = 0^\circ$



Uncertainty of Axial Isotropy Assessment:  $\pm 0.5\%$  ( $k=2$ )

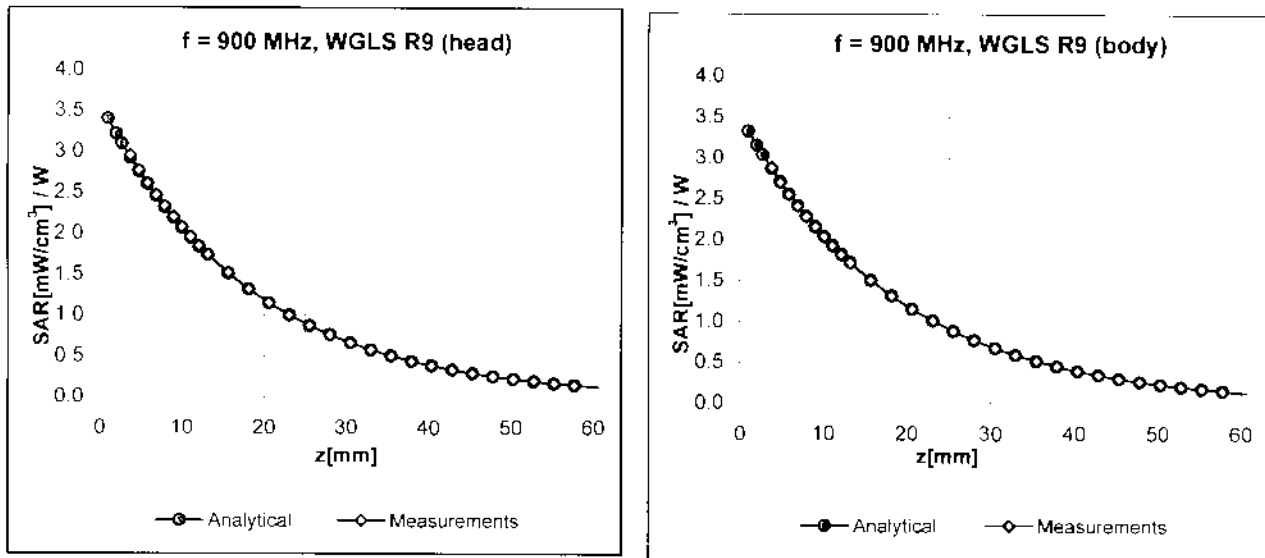


### Dynamic Range $f(SAR_{head})$ (Waveguide R22, $f = 1800$ MHz)



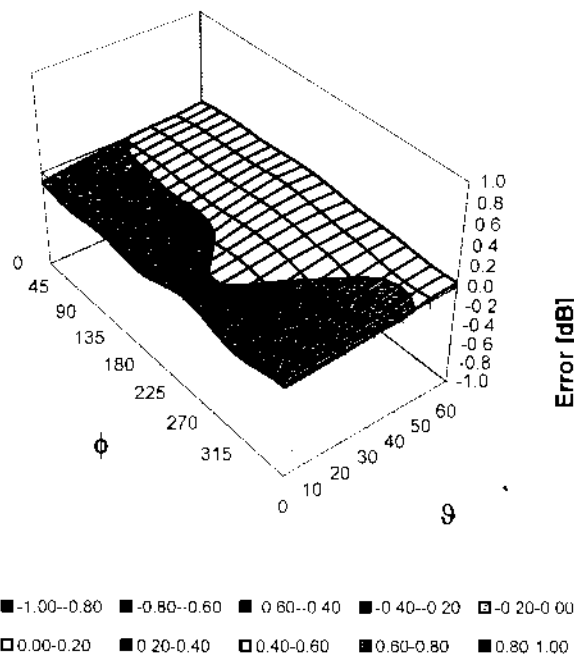
Uncertainty of Linearity Assessment:  $\pm 0.6\%$  ( $k=2$ )

### Conversion Factor Assessment



### Deviation from Isotropy in HSL

Error ( $\phi, \theta$ ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment:  $\pm 2.6\%$  (k=2)

## Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	Not applicable
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	enabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	6.8 mm
Probe Tip to Sensor X Calibration Point	2.7 mm
Probe Tip to Sensor Y Calibration Point	2.7 mm
Probe Tip to Sensor Z Calibration Point	2.7 mm
Recommended Measurement Distance from Surface	4 mm

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



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

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

Accreditation No.: **SCS 108**

Client **Celltech**

Certificate No: **EX3-3600\_Apr10**

## CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:3600**

Calibration procedure(s) **QA CAL-01.v6, QA CAL-14.v3, QA CAL-23.v3 and QA CAL-25.v2  
Calibration procedure for dosimetric E-field probes**

Calibration date: **April 29, 2010**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	1-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41495277	1-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41498087	1-Apr-10 (No. 217-01136)	Apr-11
Reference 3 dB Attenuator	SN: S5054 (3c)	30-Mar-10 (No. 217-01159)	Mar-11
Reference 20 dB Attenuator	SN: S5086 (20b)	30-Mar-10 (No. 217-01161)	Mar-11
Reference 30 dB Attenuator	SN: S5129 (30b)	30-Mar-10 (No. 217-01160)	Mar-11
Reference Probe ES3DV2	SN: 3013	30-Dec-09 (No. ES3-3013_Dec09)	Dec-10
DAE4	SN. 660	29-Sep-09 (No. DAE4-660_Sep09)	Sep-10

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-09)	In house check: Oct10

Calibrated by: **Katja Pokovic**      Name: **Katja Pokovic**      Function: **Technical Manager**

Approved by: **Niels Kuster**      Name: **Niels Kuster**      Function: **Quality Manager**

Signature

Issued: April 29, 2010

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.



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

Accreditation No.: **SCS 108**

### Glossary:

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

### Calibration is Performed According to the Following Standards:

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

### Methods Applied and Interpretation of Parameters:

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

# Probe EX3DV4

## SN:3600

Manufactured:	January 10, 2007
Last calibrated:	April 28, 2009
Recalibrated:	April 29, 2010

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

**DASY - Parameters of Probe: EX3DV4 SN:3600****Basic Calibration Parameters**

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ( $\mu\text{V}/(\text{V}/\text{m})^2$ ) <sup>A</sup>	0.51	0.51	0.40	± 10.1%
DCP (mV) <sup>B</sup>	90.5	88.5	85.2	

**Modulation Calibration Parameters**

UID	Communication System Name	PAR		A dB	B dBuV	C	VR mV	Unc <sup>E</sup> (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	300	± 1.5%
			Y	0.00	0.00	1.00	300	
			Z	0.00	0.00	1.00	300	

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

<sup>A</sup> The uncertainties of NormX,Y,Z do not affect the E<sup>2</sup>-field uncertainty inside TSL (see Pages 5 and 6).

<sup>B</sup> Numerical linearization parameter: uncertainty not required.

<sup>E</sup> Uncertainty is determined using the maximum deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

## DASY - Parameters of Probe: EX3DV4 SN:3600

### Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz]	Validity [MHz] <sup>c</sup>	Permittivity	Conductivity	ConvF X	ConvF Y	ConvF Z	Alpha	Depth Unc (k=2)
900	± 50 / ± 100	41.5 ± 5%	0.97 ± 5%	7.79	7.79	7.79	0.74	0.61 ± 11.0%
1810	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	6.79	6.79	6.79	0.59	0.70 ± 11.0%
1950	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	6.46	6.46	6.46	0.57	0.72 ± 11.0%
2450	± 50 / ± 100	39.2 ± 5%	1.80 ± 5%	6.15	6.15	6.15	0.34	0.89 ± 11.0%

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



## DASY - Parameters of Probe: EX3DV4 SN:3600

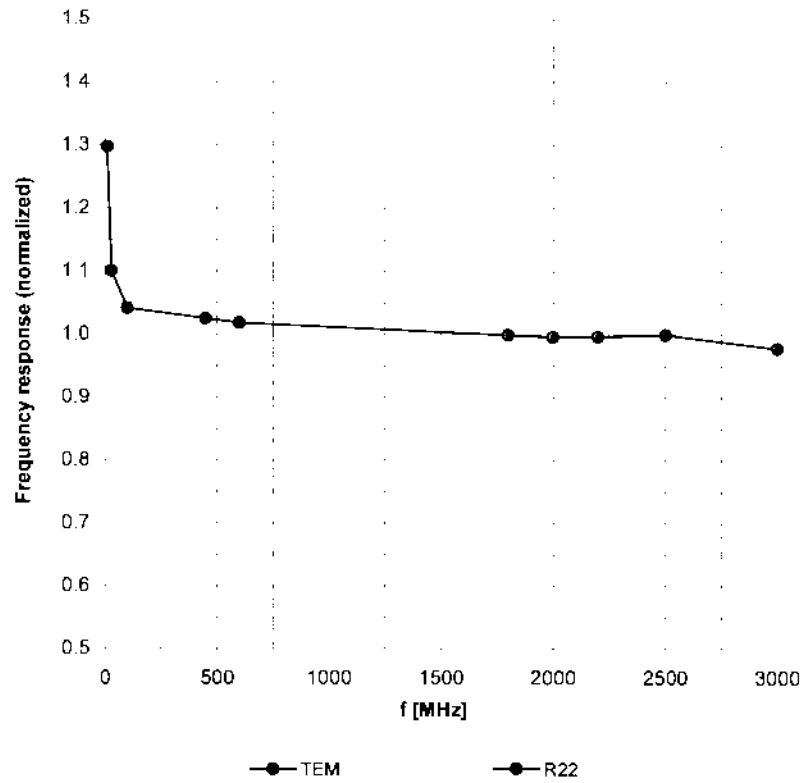
### Calibration Parameter Determined in Body Tissue Simulating Media

f [MHz]	Validity [MHz] <sup>c</sup>	Permittivity	Conductivity	ConvF X	ConvF Y	ConvF Z	Alpha	Depth Unc (k=2)
900	± 50 / ± 100	55.0 ± 5%	1.05 ± 5%	7.92	7.92	7.92	0.50	0.77 ± 11.0%
1810	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	6.47	6.47	6.47	0.70	0.64 ± 11.0%
1950	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	6.53	6.53	6.53	0.64	0.67 ± 11.0%
2450	± 50 / ± 100	52.7 ± 5%	1.95 ± 5%	6.24	6.24	6.24	0.43	0.87 ± 11.0%
5200	± 50 / ± 100	49.0 ± 5%	5.30 ± 5%	3.73	3.73	3.73	0.52	1.95 ± 13.1%
5500	± 50 / ± 100	48.6 ± 5%	5.65 ± 5%	3.30	3.30	3.30	0.58	1.95 ± 13.1%
5800	± 50 / ± 100	48.2 ± 5%	6.00 ± 5%	3.44	3.44	3.44	0.63	1.95 ± 13.1%

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

### Frequency Response of E-Field

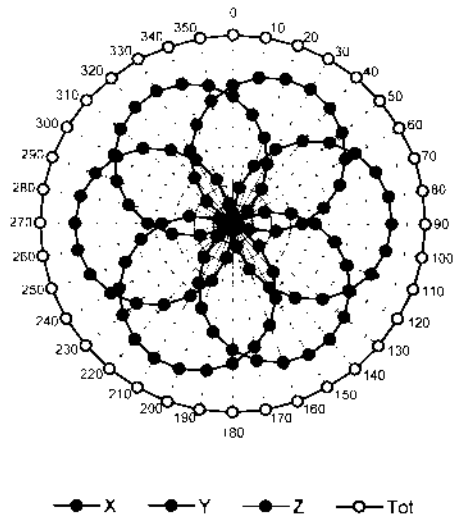
(TEM-Cell:ifi110 EXX, Waveguide: R22)



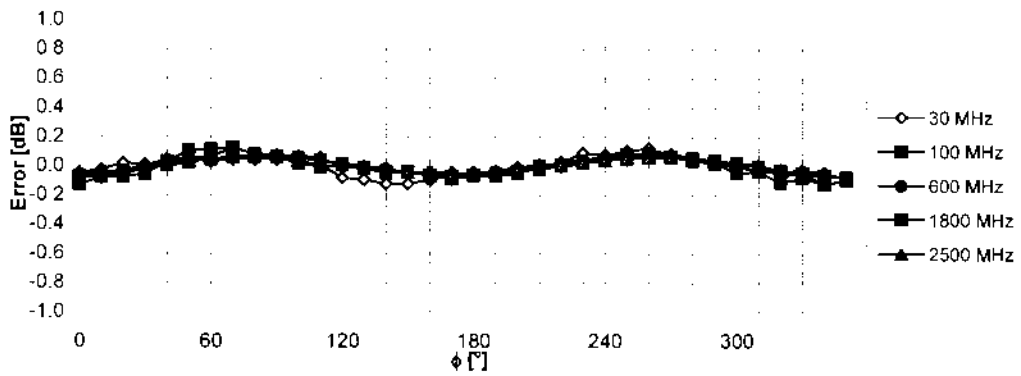
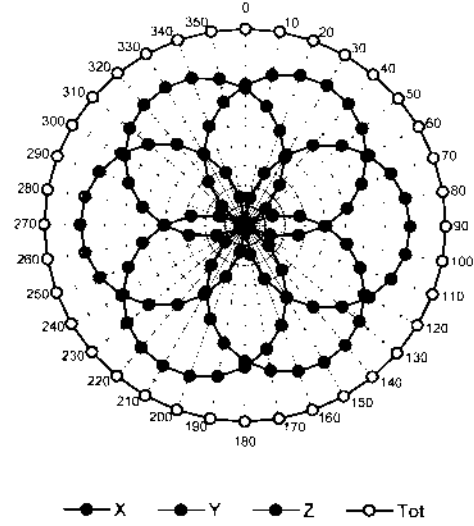
Uncertainty of Frequency Response of E-field:  $\pm 6.3\%$  (k=2)

### Receiving Pattern ( $\phi$ ), $\vartheta = 0^\circ$

f = 600 MHz, TEM if110EXX

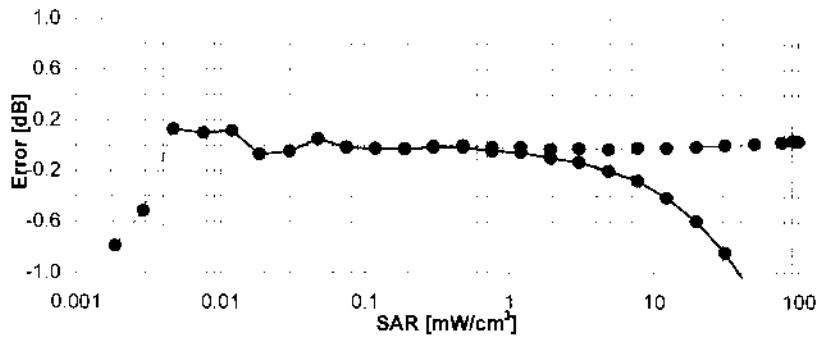
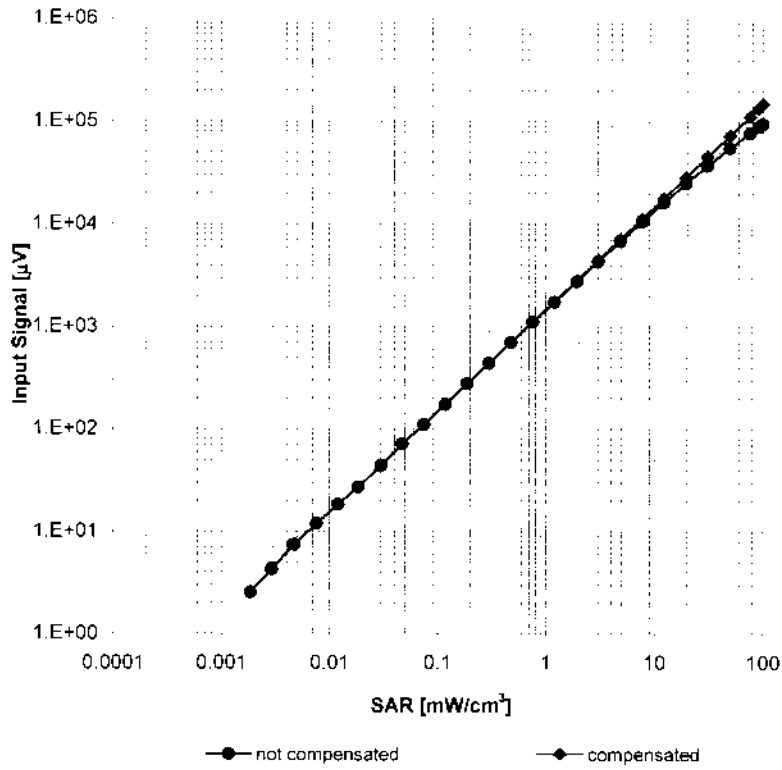


f = 1800 MHz, WG R22



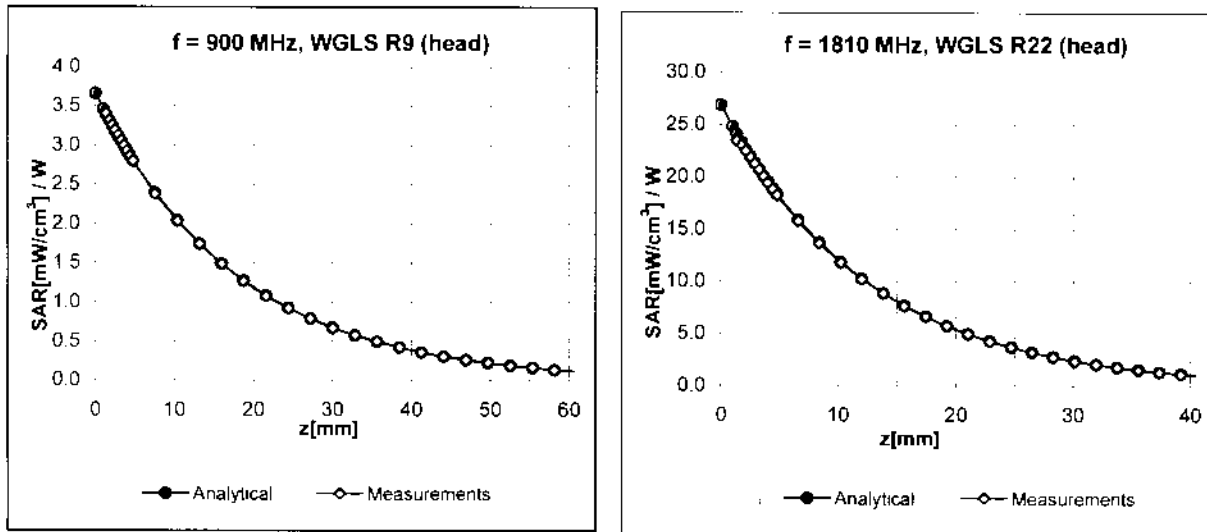
Uncertainty of Axial Isotropy Assessment:  $\pm 0.5\%$  (k=2)

### Dynamic Range f(SAR<sub>head</sub>) (Waveguide R22, f = 1800 MHz)



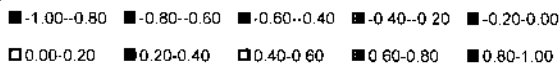
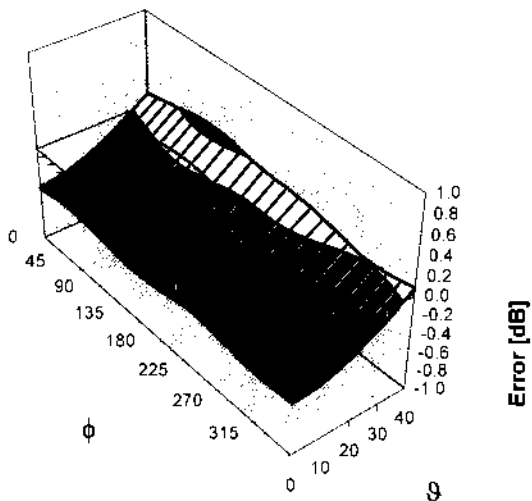
Uncertainty of Linearity Assessment:  $\pm 0.6\%$  (k=2)

### Conversion Factor Assessment



### Deviation from Isotropy in HSL



Error ( $\phi, \theta$ ), f = 900 MHz




Uncertainty of Spherical Isotropy Assessment:  $\pm 2.6\%$  (k=2)

## Other Probe Parameters

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

	<u>Date(s) of Evaluation</u> February 14-18, 2011	<u>Test Report Serial No.</u> 020911Q2G-T1079-S24M	<u>Test Report Revision No.</u> Rev. 1.1 (2nd Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> April 24, 2012	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

**APPENDIX G - BARSKI PLANAR PHANTOM CERTIFICATE OF CONFORMITY**

<b>Applicant:</b>	<b>Xplore Technologies Corp.</b>	<b>FCC ID:</b>	<b>Q2GGOBI3K-XPL</b>	<b>IC:</b>	<b>4596A-GOBI3KXPL</b>	
<b>DUT Type:</b>	<b>Xplore Gobi3000 Mini-PCI Express WWAN Module installed in Xplore iX104C5 Rugged Tablet PC</b>					
2012 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.					Page 73 of 73

2378 Westlake Road  
Kelowna, B.C. Canada  
V1Z-2V2



Ph. # 250-769-6848  
Fax # 250-769-6334  
E-mail: [barskiind@shaw.ca](mailto:barskiind@shaw.ca)  
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 Chailier', is written over a horizontal line.

Daniel Chailier





**Fiberglass Planar Phantom - Top View**



**Fiberglass Planar Phantom - Front View**

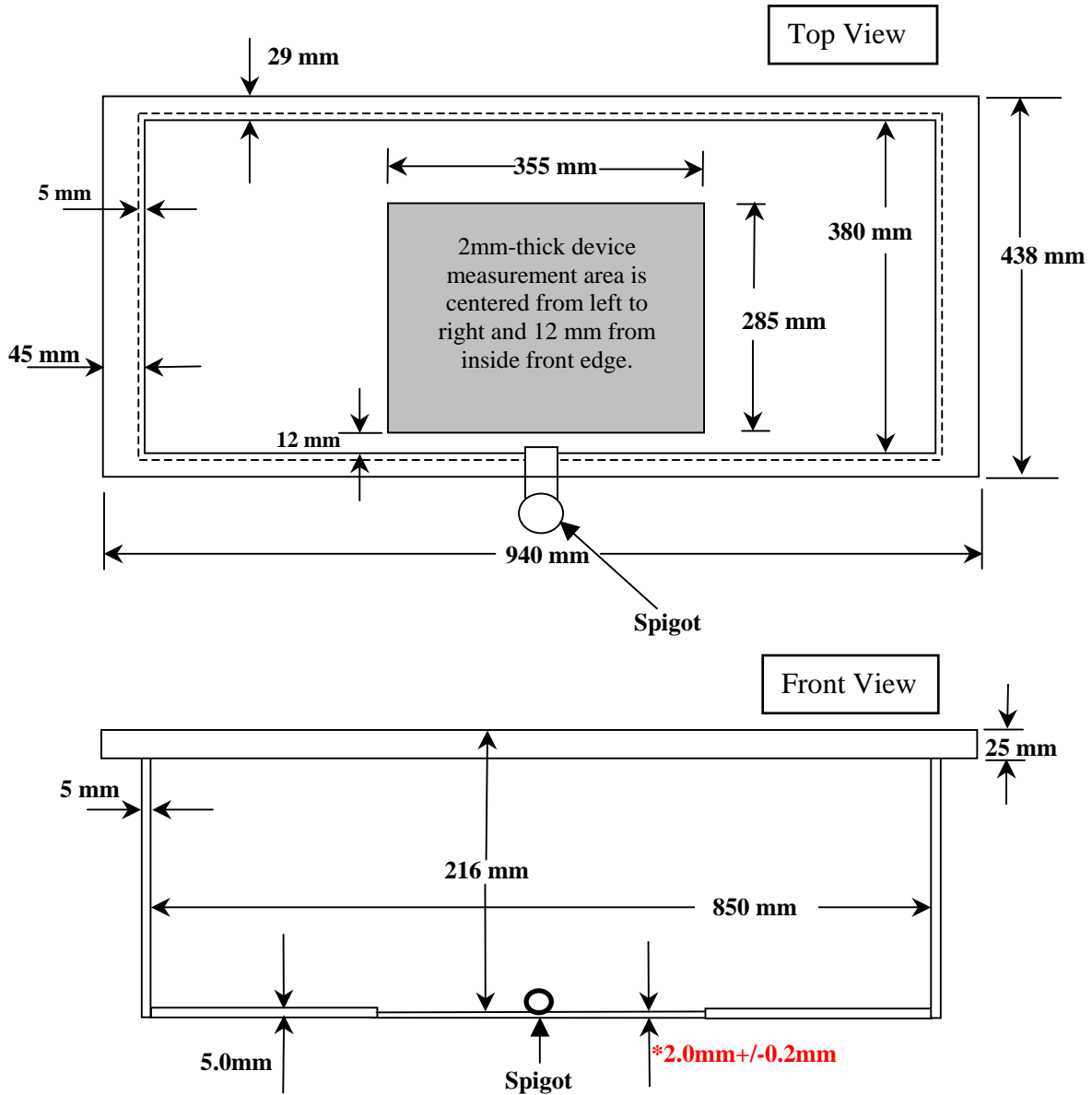


**Fiberglass Planar Phantom - Back View**



**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.**