 Testing and Engineering Services Lab	Test Report Serial No.:	060605KBC-T646-E24G/E15B	Report Rev. No.:	Revision 0
	Test Date(s):	02Jun05 - 18Jul05	Report Issue Date:	07Dec05
	Test Type:	FCC §2, §15C, §22H, §24E	Industry Canada RSS-210/132/133	
	Lab Registration(s):	FCC Lab Reg. #714830	Industry Canada Lab File #3874	

CO-TRANSMIT SUPPLEMENTARY EMC TEST REPORT

FOR

ITRONIX CORPORATION

MODEL: IX325A775IWLBT

RUGGED TABLET PC

WITH

DUAL-BAND GSM GPRS/EDGE PCMCIA MODEM

UTILIZING

EXTERNAL MONOPOLE ANTENNA

CO-TRANSMITTING WITH

BLUETOOTH TRANSMITTER

UTILIZING

WELL GREEN TECHNOLOGY INTERNAL PIFA ANTENNA

FCC ID: KBCIX325A775IWLBT

IC: 1943A-IX325e

Test Report Serial Number

060605KBC-T646-E24G/E15B

Revision 0

Test Report Issue Date

December 07, 2005

Test Lab

Celltech Compliance Testing & Engineering Lab

(Celltech Labs Inc.)

1955 Moss Court

Kelowna, BC

Canada

V1Y 9L3




Test Report Serial No.:	060605KBC-T646-E24G/E15B	Report Rev. No.:	Revision 0
Test Date(s):	02Jun05 - 18Jul05	Report Issue Date:	07Dec05
Test Type:	FCC §2, §15C, §22H, §24E	Industry Canada RSS-210/132/133	
Lab Registration(s):	FCC Lab Reg. #714830	Industry Canada Lab File #3874	

DECLARATION OF COMPLIANCE

Test Lab		CELLTECH LABS INC. Testing and Engineering Services 1955 Moss Court Kelowna, B.C. Canada V1Y 9L3 Phone: 250-448-7047 Fax: 250-448-7048 e-mail: info@celltechlabs.com web site: www.celltechlabs.com			Applicant Information		ITRONIX CORPORATION 801 South Stevens Street Spokane, WA 99204 United States	
Laboratory Registration No.(s):				FCC:	714830	IC:	IC 3874	
Rule Part(s):		Dual Band GSM	FCC:	§2 ; §22H; §24E	IC:	RSS-133 Issue 3, RSS-132 Issue 1 (Provisional)		
		Bluetooth FHSS	FCC:	§15.247; §2.1091; §1.1310	IC:	RSS-210 Issue 5 - A1. 11/30/02		
Device Classification:		Dual Band GSM GPRS/EDGE			FCC:	- PCS Licensed Transmitter (PCB)		
					IC:	- 800 MHz Cellular Telephones Employing New Technologies - 2 GHz Personal Communication Services		
		Bluetooth FHSS			FCC:	- Part 15 Spread Spectrum Transmitter (DSS)		
					IC:	Low Power Licence-Exempt Transmitter		
Device Identification:		FCC ID:	KBCIX325A775IWLBT			IC ID:	1943A-IX325e	
DUT Description:								
Model:		IX325A775IWLBT						
Device Description:		Rugged Tablet PC with internal co-located transmitters (simultaneous transmit)						
Internal Transmitter(s):		Sierra Wireless AirCard 775 Dual-Band GSM GPRS/EDGE PCMCIA Modem						
		MSI MS-6837 Bluetooth						
Modulation Type(s):		Dual Band GSM	GMSK, 8-PSK					
		Bluetooth	GFSK1 Mbps 0.5 BT Gaussian					
Antenna Type(s):		Dual Band GSM	Sierra Wireless External Monopole					
		Bluetooth	Well Green Internal PIFA Bluetooth					
Tx Frequency Range(s):		Dual Band GSM	Cellular	824.2 - 848.8 MHz				
			PCS	1850.2 - 1909.8 MHz				
		Bluetooth	2402 - 2480 MHz					
				<u>Single Transmit</u>		<u>Co-transmit</u>		
Max. Peak Conducted RF Output Power:		Dual Band GSM	Cellular	+31.48 dBm	1.41 Watts	+31.56 dBm	1.43 Watts	
			PCS	+28.64 dBm	0.731 Watts	+28.60 dBm	0.724 Watts	
		Bluetooth			+4.09 dBm	0.00256 Watts	+3.88 dBm	0.00244 Watts
Max. Peak Field Strength @ 3 meters:		Dual Band GSM	Cellular	131.42 dBuV/m (+29.94 ERP)*		129.80 dBuV/m (+27.98 dBm ERP)		
			PCS	131.06 dBuV/m (+31.02 EIRP)*		127.68 dBuV/m (+28.24 dBm EIRP)		
		Bluetooth			99.61 dBuV/m*		99.40 dBuV/m*	
Worst-case Transmitter Spurious Emissions @ 3 meters:		Dual Band GSM	Cellular	62.72 dBuV/m		75.76 dBuV/m (-24.10 dBm ERP)		
			PCS	77.25 dBuV/m (-13.68 dBm EIRP)		73.68 dBuV/m (-23.69 dBm EIRP)		
		Bluetooth			62.92 dBuV/m average - restricted		-	
Worst-case Receiver Spurious Emissions		Dual Band GSM	Cellular	1.83 nW conducted*		-		
			PCS	4.96 nW conducted*		-		
		Bluetooth			51.41 dBuV/m peak @ 3 meters		-	
Power Supply:		Stationary:		Delta Electronics 75 Watt AC-DC Power Adapter (Model ADP-75 Rev 00)				
		Mobile:		11.1 V Internal Lithium-ion Battery, 3600 mAh (Model: T8M-E)				
				11.1 V External Second Lithium-ion Battery, 3600 mAh (Model: T8S-E)				

* referenced to single-transmit test report data (Test Report Serial No.s: 060605KBC-T646-E24G, 060605KBC-T646-E15B)

Applicant:	Itronix Corporation	Model:	IX325A775IWLBT	FCC ID:	KBCIX325A775IWLBT	IC ID:	1943A-IX325e
Rugged Tablet PC with Sierra Wireless AC775 GSM GPRS/EDGE Modem & Co-located MSI MS-6837 Bluetooth							
2005 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 2 of 30



	Test Report Serial No.:	060605KBC-T646-E24G/E15B	Report Rev. No.:	Revision 0
	Test Date(s):	02Jun05 - 18Jul05	Report Issue Date:	07Dec05
	Test Type:	FCC §2, §15C, §22H, §24E	Industry Canada RSS-210/132/133	
	Lab Registration(s):	FCC Lab Reg. #714830	Industry Canada Lab File #3874	

Attestations

This wireless portable device has demonstrated compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in FCC 47 CFR Parts 2, 15C, 22H, 24E, Industry Canada RSS 133 Issue 3, RSS-132 Issue 1 (Provisional), RSS-210 Issue 5; and ANSI TIA/EIA-603-C-2004.

I attest to the accuracy of the data. All measurements reported herein were performed by me or were 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.

This test report shall not be reproduced partially, or in full, without the prior written approval of Celltech Labs Inc. The results and statements contained in this report pertain only to the device(s) evaluated.

	
Russell Pipe Senior Compliance Technologist Celltech Labs Inc.	Duane M. Friesen EMC Manager Celltech Labs Inc.




Applicant:	Itronix Corporation	Model:	IX325A775IWLBT	FCC ID:	KBCIX325A775IWLBT	IC ID:	1943A-IX325e
Rugged Tablet PC with Sierra Wireless AC775 GSM GPRS/EDGE Modem & Co-located MSI MS-6837 Bluetooth							
2005 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 30

TABLE OF CONTENTS

1.0 SCOPE	6
2.0 REFERENCES	7
2.1 Normative References	7
3.0 TERMS AND DEFINITIONS	8
4.0 FACILITIES AND ACCREDITATIONS	9
5.0 GENERAL INFORMATION	9
5.1 Applicant Information	9
5.2 DUT Description.....	9
5.3 Co-Located Equipment	10
5.4 Cable Descriptions.....	10
5.5 Support Equipment	10
5.6 Clock Frequencies	11
5.7 Mode(s) of Operation Tested	12
5.8 Configuration Description.....	13
6.0 PASS/FAIL CRITERIA	13
APPENDICES.....	14
Appendix A - DUT Photographs.....	15
Appendix B - Bluetooth Peak Conducted RF Output Power Measurement	16
Appendix C - GSM Conducted RF Output Power Measurement	19
Appendix D - Radiated Spurious Emissions Measurement.....	22
END OF DOCUMENT	30

FIGURES

Figure B-1 - Setup Drawing	17
Figure C-1 - Setup Drawing	20
Figure D-1 - Setup Drawing	23

PHOTOGRAPHS

Photograph A-1 - Front of IX325 Tablet PC	15
Photograph A-2 - Edge of IX325 Tablet PC	15
Photograph A-3 - Transmitter Locations	15
Photograph A-4 - Antenna Locations	15
Photograph D-1 - 3115 Horn Antenna	24



Test Report Serial No.:	060605KBC-T646-E24G/E15B	Report Rev. No.:	Revision 0
Test Date(s):	02Jun05 - 18Jul05	Report Issue Date:	07Dec05
Test Type:	FCC §2, §15C, §22H, §24E	Industry Canada RSS-210/132/133	
Lab Registration(s):	FCC Lab Reg. #714830	Industry Canada Lab File #3874	

TEST SUMMARY

Referenced Standard: FCC CFR Title 47 Parts 2, 15, 22 & 24

Appendix	Test Description	Procedure Reference	Limit Reference	Test Start Date	Test End Date	Result
B	Bluetooth Peak Conducted RF Output Power	FCC 97-114	§15.247(b) (3)	2Jun05	6Jun05	Pass
C	GSM Conducted RF Output Power	FCC 97-114	§2.1046	24May05	2Jun05	n/a
D	Radiated Spurious Emissions	ANSI/TIA/EIA-603-C	§22.917 (a), §24.238 (a)	2Jun05	18Jul05	Pass



Referenced Standard: IC RSS-210 Issue 5, RSS-132 & RSS-133


B	Bluetooth Peak Conducted RF Output Power	RSS-210 § 10	RSS-210 A1 §(l)(iv) RSS-210 §6.2.2 (o)(b)	2Jun05	6Jun05	Pass
C	GSM Conducted RF Output Power	ANSI/TIA/EIA-603-C	RSS-132 §4.4 RSS-133 §6.2	24May05	2Jun05	n/a
D	Radiated Spurious Emissions	ANSI/TIA/EIA-603-C	RSS-132 §4.4 RSS-133 §6.3	2Jun05	18Jul05	Pass


REVISION LOG

Issue	Description	Implemented By	Implementation Date
1.0	Initial Release	Jonathan Hughes	07Dec05

SIGNATORIES


Prepared By:		Dec. 07, 2005
Name/Title	Duane M. Friesen, C.E.T. / EMC Manager	Date
Approved By:		Dec. 07, 2005
Name/Title	Jonathan Hughes / General Manager	Date


Applicant:	Itronix Corporation	Model:	IX325A775IWLBT	FCC ID:	KBCIX325A775IWLBT	IC ID:	1943A-IX325e
Rugged Tablet PC with Sierra Wireless AC775 GSM GPRS/EDGE Modem & Co-located MSI MS-6837 Bluetooth							
2005 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 30

	Test Report Serial No.:	060605KBC-T646-E24G/E15B	Report Rev. No.:	Revision 0
	Test Date(s):	02Jun05 - 18Jul05	Report Issue Date:	07Dec05
	Test Type:	FCC §2, §15C, §22H, §24E	Industry Canada RSS-210/132/133	
	Lab Registration(s):	FCC Lab Reg. #714830	Industry Canada Lab File #3874	

1.0 SCOPE

This report outlines the measurements made and results collected during electromagnetic emissions testing of the Itronix Corporation IX325 Rugged Tablet PC with the Sierra Wireless AirCard 775 Dual-Band GSM GPRS/EDGE PCMCIA Modem co-transmitting with an internal MSI MS-6837 Bluetooth transceiver. The Dual-Band GSM Modem was connected to a bendable monopole antenna attached to the exposed end of the modem card. The Bluetooth transceiver was connected to an internal PIFA antenna located in the left side front middle edge of the DUT. This report describes the inter-modulation product and related measurement results obtained with both transmitters installed in the IX325 Rugged Tablet PC as described, and transmitting simultaneously. The measurement results were applied against the applicable EMC requirements and limits outlined in the technical rules and regulations set forth in the Federal Communication Commission Code of Federal Regulations Title 47 Part 2, 15 Subpart C, 22 Subpart H and 24 Subpart E; and Industry Canada Radio Standards Specification RSS-210 Issue 5, RSS-132 Issue 1 (Provisional), and RSS-133 Issue 3.


Applicant:	Itronix Corporation	Model:	IX325A775IWLBT	FCC ID:	KBCIX325A775IWLBT	IC ID:	1943A-IX325e
Rugged Tablet PC with Sierra Wireless AC775 GSM GPRS/EDGE Modem & Co-located MSI MS-6837 Bluetooth							
2005 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 30


	Test Report Serial No.:	060605KBC-T646-E24G/E15B	Report Rev. No.:	Revision 0
	Test Date(s):	02Jun05 - 18Jul05	Report Issue Date:	07Dec05
	Test Type:	FCC §2, §15C, §22H, §24E	Industry Canada RSS-210/132/133	
	Lab Registration(s):	FCC Lab Reg. #714830	Industry Canada Lab File #3874	

2.0 REFERENCES

2.1 Normative References


ANSI/ISO 17025:1999	General Requirements for competence of testing and calibration laboratories
IEEE/ANSI C63.4:2003	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
IEEE/ANSI Std C95.1:1999	American National Standard Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields
ANSI/TIA/EIA-603-B:2002	Land Mobile FM or PM Communication Equipment Measurement and Performance Standards
CFR Title 47	Code of Federal Regulations
Part 2:2004	Title 47: Telecommunication
Part 15:2004	Part 2: Frequency Allocations and Radio Treaty Matters;
Part 22:2004	General Rules and Regulations
Part 24:2004	Part 15: Radio Frequency Devices
	Part 22: Public Mobile Services
	Part 24: Personal Communication Services
IC Spectrum Management & Telecommunications Policy	Radio Standards Specification
RSS-102 Issue 1	RSS-102 Issue 1 (Provisional) - Evaluation Procedure for Mobile and Portable Radio Transmitters with respect to Health Canada's Safety Code 6 for Exposure of Humans to Radio Frequency Fields
RSS-212 Issue 1	RSS-212 Issue 1 (Provisional) - Test Facilities & Test Methods for Radio Equipment
RSS-210 Issue 5 & Amendment	RSS-210 Issue 5 - Low Power Licence-Exempt Radiocommunication Devices: November 2001 & Amendment November 30, 2002
FCC Public Notice DA 00-705	Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems Released March 30, 2000
Celltech Labs Test Report	EMC Test Report For the Model IX325 Rugged Tablet PC with Sierra Wireless AirCard 775 Dual-Band GSM PCMCIA Modem Test Report Serial Number 060605KBC-T646-E24G Date: December 07, 2005
Celltech Labs Test Report	EMC Test Report For the Model IX325 Rugged Tablet PC with MSI MS-6837 Bluetooth Transmitter and Internal Antenna Test Report Serial Number 060605KBC-T646-E15B Date: December 08, 2005


Applicant:	Itronix Corporation	Model:	IX325A775IWLBT	FCC ID:	KBCIX325A775IWLBT	IC ID:	1943A-IX325e
Rugged Tablet PC with Sierra Wireless AC775 GSM GPRS/EDGE Modem & Co-located MSI MS-6837 Bluetooth							
2005 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 7 of 30

	Test Report Serial No.:	060605KBC-T646-E24G/E15B	Report Rev. No.:	Revision 0
	Test Date(s):	02Jun05 - 18Jul05	Report Issue Date:	07Dec05
	Test Type:	FCC §2, §15C, §22H, §24E	Industry Canada RSS-210/132/133	
	Lab Registration(s):	FCC Lab Reg. #714830	Industry Canada Lab File #3874	

3.0 TERMS AND DEFINITIONS

AV	Average
CDMA	Code Division Multiple Access
CFR	Code of Federal Regulations
dB	decibel
dBm	dB referenced to 1 mW
dBuV	dB referenced to 1 uV
DUT	Device under Test
dBc	dB down from carrier
EBW	Emission Bandwidth
EDGE	Enhanced Data Rates for GSM Evolution
EMC	Electromagnetic Compatibility
FCC	Federal Communication Commission
FHSS	Frequency Hopping Spread Spectrum
GSM	Global Systems for a Mobility Communication
GPRS	General Packet Radio Service
HP	Hewlett Packard
HPF	High Pass Filter
Hpol	Horizontal Polarization
Hz	Hertz
IC	Industry Canada
kHz	kilohertz
LNA	Low Noise Amplifier
m	meter
MHz	Megahertz
Mbps	megabits per second
na	not applicable
n/a	not available
PK	Peak
PPSD	Peak Power Spectral Density
QP	Quasi-peak
RBW	Resolution Bandwidth
R&S	Rohde & Schwarz
RSS	Radio Standard Specification
SA	Spectrum Analyzer
VBW	Video Bandwidth
Vpol	Vertical Polarization
WLAN	Wireless Local Area Network

Applicant:	Itronix Corporation	Model:	IX325A775IWLBT	FCC ID:	KBCIX325A775IWLBT	IC ID:	1943A-IX325e
Rugged Tablet PC with Sierra Wireless AC775 GSM GPRS/EDGE Modem & Co-located MSI MS-6837 Bluetooth							
2005 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 30

	Test Report Serial No.:	060605KBC-T646-E24G/E15B	Report Rev. No.:	Revision 0
	Test Date(s):	02Jun05 - 18Jul05	Report Issue Date:	07Dec05
	Test Type:	FCC §2, §15C, §22H, §24E	Industry Canada RSS-210/132/133	
	Lab Registration(s):	FCC Lab Reg. #714830	Industry Canada Lab File #3874	

4.0 FACILITIES AND ACCREDITATIONS

The facilities used in collecting the test results outlined in this report are located at 1955 Moss Court, Kelowna, British Columbia, Canada, V1Y 9L3. The radiated and conducted emissions sites conform with the requirements set forth in ANSI C63.4 and are filed and listed with the FCC under Registration Number 714830 and Industry Canada under File Number IC 3874.

5.0 GENERAL INFORMATION

5.1 Applicant Information


Company Name:	Itronix Corporation
Address:	801 South Stevens Street
	Spokane, WA 99204
	United States

5.2 DUT Description

The DUT consisted of the IX325 Rugged Tablet PC containing a Sierra Wireless AirCard 775 Dual-Band GSM GPRS/EDGE PCMCIA Modem connected to an External Monopole Antenna attached to the PCMCIA card. Co-located within the IX325 was the MSI MS-6837 Bluetooth Transmitter connected to an internal PIFA antenna installed in the front left side middle edge of the DUT. Photographs of the DUT placement and construction are shown in Appendix A.

Device:	Rugged Tablet PC		
Model:	IX325A775IWLBT		
Serial Number:	ZZGEG5073ZZ9782		
Identifier(s):	FCC ID:	KBCIX325A775IWLBT	IC ID: 1943A-IX325e
Power Source(s):	Delta Electronics 75 Watt AC-DC Power Supply Model: ADP-75 FB B Rev 00 (S/N: UCT030200307)		
	Internal Lithium-ion 11.1 V 3600 mAh Battery Model: T8M-E		
	External Second Lithium-ion 11.1 V 3600 mAh Battery Model: T8S-E		

Device:	Dual-Band GSM GPRS/EDGE PCMCIA Modem		
Model:	Sierra Wireless AirCard 775		
Serial Number:	X04122800475010		
Rule Part(s):	FCC:	§2.1091; §22.913, §22.917; §24.232(b), §24.238	
	IC:	RSS-133 Issue 3; RSS-132 Issue 1 (Provisional)	
Classification(s):	FCC:	PCS Licensed Transmitter (PCB)	
	IC:	800 MHz Cellular Telephones employing New Technologies (RSS-132)	
		2 GHz Personal Communication Services (RSS-133)	
Power Source:	Powered from the internal PC power supply		

Applicant:	Itronix Corporation	Model:	IX325A775IWLBT	FCC ID:	KBCIX325A775IWLBT	IC ID:	1943A-IX325e
Rugged Tablet PC with Sierra Wireless AC775 GSM GPRS/EDGE Modem & Co-located MSI MS-6837 Bluetooth							
2005 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 30



Test Report Serial No.:	060605KBC-T646-E24G/E15B	Report Rev. No.:	Revision 0
Test Date(s):	02Jun05 - 18Jul05	Report Issue Date:	07Dec05
Test Type:	FCC §2, §15C, §22H, §24E	Industry Canada RSS-210/132/133	
Lab Registration(s):	FCC Lab Reg. #714830	Industry Canada Lab File #3874	

Device:	2.4GHz FHSS Bluetooth Transmitter		
Model:	MSI MS-6837		
Serial Number:	BH5070000079		
Rule Part(s):	FCC:	§15.247; §2.1091; §1.1310	IC: RSS-210 Issue 5 - A1. 11/30/02
Classification(s):	FCC:	Spread Spectrum Transmitter (DSS)	IC: Low Power Licence-Exempt Transmitter
Power Source:	Powered from the internal PC power supply		

Name:	External Monopole Antenna
Manufacturer:	Sierra Wireless

Device:	Internal PIFA Bluetooth Antenna 3
Model:	Well Green Technology Bluetooth Antenna
Gain:	-0.81 dBi

5.3 Co-Located Equipment

Name:	GPS Receiver Module with attached Antenna (Receive only)
Model:	Leadtek P/N GPS9547

5.4 Cable Descriptions


ROUTING		Length	Model	Terminations		Shield Type	Shield Termination		Suppression
From	To	m		End 1	End 2		End 1	End 2	
PC modem port	Unterminated	1.0	n/a	RJ-11	RJ-11	None	na	na	None
PC Ethernet Port	Ethernet Hub	1.0	n/a	RJ-45	RJ-45	None	na	na	None

5.5 Support Equipment

The following equipment was used in support of the DUT.

CO-LOCATED SUPPORT EQUIPMENT LIST		
MANUFACTURER	MODEL	DESCRIPTION
D-Link	DE-809TC/	Ethernet hub
YNG YUH	YP-040	Hub power supply
MLi	699	Speakers
Polk Audio	n/a	Speaker-microphone
	K8255	Keyboard
Sanwa Supply	MA-MBUSB	Mouse

Applicant:	Itronix Corporation	Model:	IX325A775IWLBT	FCC ID:	KBCIX325A775IWLBT	IC ID:	1943A-IX325e
Rugged Tablet PC with Sierra Wireless AC775 GSM GPRS/EDGE Modem & Co-located MSI MS-6837 Bluetooth							
2005 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 30

	Test Report Serial No.:	060605KBC-T646-E24G/E15B	Report Rev. No.:	Revision 0
	Test Date(s):	02Jun05 - 18Jul05	Report Issue Date:	07Dec05
	Test Type:	FCC §2, §15C, §22H, §24E	Industry Canada RSS-210/132/133	
	Lab Registration(s):	FCC Lab Reg. #714830	Industry Canada Lab File #3874	


5.6 Clock Frequencies

5.6.1 DUT Clock Frequencies

Device:	Rugged Tablet PC
Clocks:	n/a
Device:	MSI MS-6837 Bluetooth
Clocks:	n/a
Device:	Dual-Band GSM Modem
Clocks:	n/a
Device:	External Monopole Antenna
Clocks:	None
Device:	Internal Surface-Mount Antenna
Clocks:	None

5.6.2 Co-Located Clock Frequencies

Device:	Peripherals
Clocks:	n/a

Applicant:	Ittronix Corporation	Model:	IX325A775IWLBT	FCC ID:	KBCIX325A775IWLBT	IC ID:	1943A-IX325e
Rugged Tablet PC with Sierra Wireless AC775 GSM GPRS/EDGE Modem & Co-located MSI MS-6837 Bluetooth							
2005 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 30

5.7 Mode(s) of Operation Tested

5.7.1 Dual-Band GSM GPRS/EDGE Modem

Customer supplied software was used to set the GSM Modem to the appropriate channel and power level for the specific measurement. To investigate any in-band anomalies, prescan measurements were made with the GSM modem set to each of the low, mid and high channels in each band while the Bluetooth was co-transmitting in its hopping mode. All three orthogonal DUT orientations were investigated along with the three possible GSM modem antenna positions to determine the worst-case orientation. Final measurements were made with the DUT and GSM antenna in the worst-case orientation, with the GSM modem transmitting at each of the highest power channels in each band while the Bluetooth was hopping. The following settings were used for each channel:

5.7.1.1 Cellular GSM

TX Frequency Range:	824.2 - 848.8 MHz Ch. 128 (824.200 MHz) & Ch. 251 (848.800 MHz) measured unless otherwise noted
Software Power Gain Settings:	The supplied software set the power for maximum rated output power.
RF Peak Conducted Output Power Tested:	Ch. 128 - +31.41 dBm Ch. 251 - +31.56 dBm
Modulation Type:	GMSK


5.7.1.2 PCS GSM

TX Frequency Range:	1850.2 - 1909.8 MHz Ch. 512 (1850.2 MHz) & Ch. 810 (1909.8 MHz) measured unless otherwise noted
Software Power Gain Settings:	The supplied software set the power for maximum rated output power.
RF Peak Conducted Output Power Tested:	Ch. 512 - +28.50 dBm Ch. 810 - +28.60 dBm
Modulation Type:	GMSK

5.7.2 Bluetooth Transmitter

Customer supplied software was used to set the Bluetooth transmitter to the appropriate mode, power level and modulation for the specific measurement. During the co-transmission testing, the Bluetooth transmitter was placed in hopping mode with the following settings:

TX Frequency Range:	2402 - 2480 MHz
Software Power Gain Settings:	Ch. 0 - 255 / 61 Ch. 39 - 255 / 63 Ch. 78 - 255 / 63* *gain settings used during hopping mode
RF Peak Conducted Output Power Tested:	Ch. 0 - +3.88 dBm Ch. 39 - +3.61 dBm Ch. 78 - +3.04 dBm
Modulation Type(s):	GFSK 0.5 BT Gaussian

	Test Report Serial No.:	060605KBC-T646-E24G/E15B	Report Rev. No.:	Revision 0
	Test Date(s):	02Jun05 - 18Jul05	Report Issue Date:	07Dec05
	Test Type:	FCC §2, §15C, §22H, §24E	Industry Canada RSS-210/132/133	
	Lab Registration(s):	FCC Lab Reg. #714830	Industry Canada Lab File #3874	

5.7.3 DUT Exercising Software Description

The DUT was configured and exercised using customer supplied test software that allowed an operator to set the parameters of the Bluetooth transmitter and Dual-Band GSM modem operation. The settings used are described in each appendix. More specific information on the configuration and exercising can be found in the referenced single-transmit test reports.

5.8 Configuration Description


The DUT was configured, as described by the client as being representative of what would be delivered to a final customer. Because the swivel dipole antenna orientation could be user configured, prescan evaluations were made to determine the configuration that resulted in the highest inter-modulation products (or highest carrier if no products were determined). A “horizontal, pointing back” orientation was used for the cellular band; “vertical, pointing up” was used for the PCS band. More specific details may be included in each appendix.


5.8.1 Configuration Justification

The DUT was tested in a configuration described by the client and determined in prescan investigations as being worst-case but typical of normal use.


6.0 PASS/FAIL CRITERIA


Unless otherwise noted in the Appendices, the pass/fail criteria is the limit set forth in the reference standards. A DUT is considered to have passed the requirements, if the data collected during the described measurement procedure is no greater than the specified limits as defined. The pass/fail statements made in this report only apply to the unit tested.

Applicant:	Itronix Corporation	Model:	IX325A775IWLBT	FCC ID:	KBCIX325A775IWLBT	IC ID:	1943A-IX325e
Rugged Tablet PC with Sierra Wireless AC775 GSM GPRS/EDGE Modem & Co-located MSI MS-6837 Bluetooth							
2005 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 13 of 30

	Test Report Serial No.:	060605KBC-T646-E24G/E15B	Report Rev. No.:	Revision 0
	Test Date(s):	02Jun05 - 18Jul05	Report Issue Date:	07Dec05
	Test Type:	FCC §2, §15C, §22H, §24E	Industry Canada RSS-210/132/133	
	Lab Registration(s):	FCC Lab Reg. #714830	Industry Canada Lab File #3874	

APPENDICES

Applicant:	Itronix Corporation	Model:	IX325A775IWLBT	FCC ID:	KBCIX325A775IWLBT	IC ID:	1943A-IX325e
Rugged Tablet PC with Sierra Wireless AC775 GSM GPRS/EDGE Modem & Co-located MSI MS-6837 Bluetooth							
2005 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 30

	Test Report Serial No.:	060605KBC-T646-E24G/E15B	Report Rev. No.:	Revision 0
	Test Date(s):	02Jun05 - 18Jul05	Report Issue Date:	07Dec05
	Test Type:	FCC §2, §15C, §22H, §24E	Industry Canada RSS-210/132/133	
	Lab Registration(s):	FCC Lab Reg. #714830	Industry Canada Lab File #3874	

Appendix A - DUT Photographs

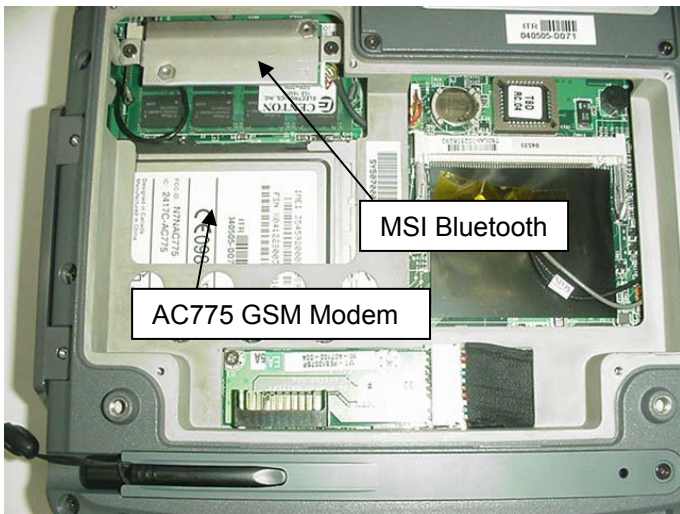
Photograph A-1 - Front of IX325 Tablet PC



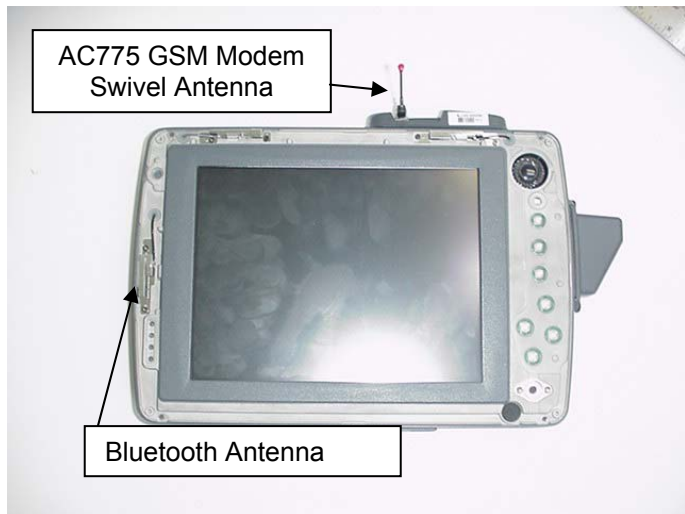
Photograph A-2 - Edge of IX325 Tablet PC





Photograph A-3 - Transmitter Locations



Photograph A-4 - Antenna Locations



Applicant:	Itronix Corporation	Model:	IX325A775IWLBT	FCC ID:	KBCIX325A775IWLBT	IC ID:	1943A-IX325e
Rugged Tablet PC with Sierra Wireless AC775 GSM GPRS/EDGE Modem & Co-located MSI MS-6837 Bluetooth							
2005 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 30

	Test Report Serial No.:	060605KBC-T646-E24G/E15B	Report Rev. No.:	Revision 0
	Test Date(s):	02Jun05 - 18Jul05	Report Issue Date:	07Dec05
	Test Type:	FCC §2, §15C, §22H, §24E	Industry Canada RSS-210/132/133	
	Lab Registration(s):	FCC Lab Reg. #714830	Industry Canada Lab File #3874	

Appendix B - Bluetooth Peak Conducted RF Output Power Measurement

B.1. REFERENCES

Normative Reference Standard	FCC CFR 47 §15.247(b) (3)
Procedure Reference	FCC 97-114

B.2. LIMITS

B.2.1. FCC CFR

§15.247(b): The maximum peak output power of the intentional radiator shall not exceed the following:
 §15.247(b) (3) For system using digital modulation in the 902 – 928 MHz, 2400 – 2483.5 MHz, and 5725 – 5850 MHz bands: 1 Watt.

*This measurement was made as a reference to determine the effects the co-transmission of the GSM Modem made to the output RF power of the Bluetooth transmitter.


B.3. ENVIRONMENTAL CONDITIONS


Temperature	25 +/- 2 °C
Humidity	35 +/- 2 %
Barometric Pressure	96 kPa

B.4. EQUIPMENT LIST

ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
00007	Gigatronics	8652A	Power Meter	18Oct04	18Oct05
00013	Gigatronics	80701A	Power Sensor	11Oct04	11Oct05
00075	Alpha Wire-J	9223	2ft. RG223/U RF Cable	na*	na
00076	Pasternack	PE7014-30	30dB 2 Watt Attenuator	na*	na

*Cable and attenuator verified with power meter prior to use

Applicant:	Itronix Corporation	Model:	IX325A775IWLBT	FCC ID:	KBCIX325A775IWLBT	IC ID:	1943A-IX325e
Rugged Tablet PC with Sierra Wireless AC775 GSM GPRS/EDGE Modem & Co-located MSI MS-6837 Bluetooth							
2005 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 30

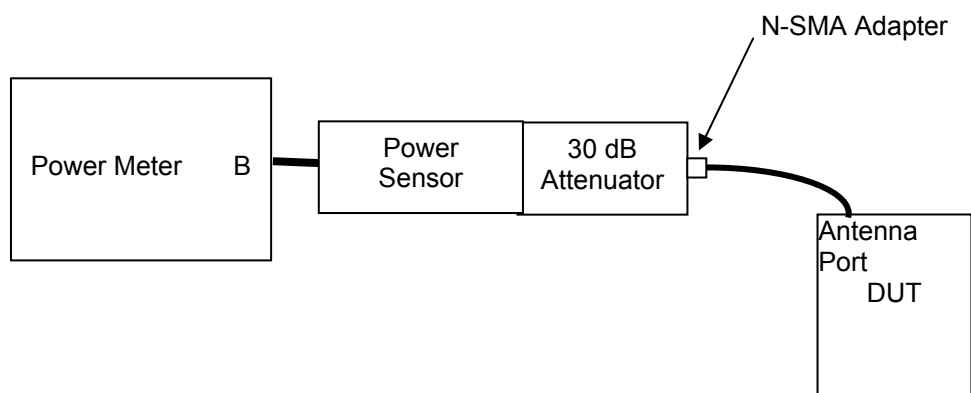
	Test Report Serial No.:	060605KBC-T646-E24G/E15B	Report Rev. No.:	Revision 0
	Test Date(s):	02Jun05 - 18Jul05	Report Issue Date:	07Dec05
	Test Type:	FCC §2, §15C, §22H, §24E	Industry Canada RSS-210/132/133	
	Lab Registration(s):	FCC Lab Reg. #714830	Industry Canada Lab File #3874	

B.5. MEASUREMENT EQUIPMENT SETUP

Measurement Equipment Connections	The equipment was connected as shown in the setup drawing in B.6.
Measurement Equipment Settings	To evaluate the maximum peak power, the power meter was set using the following setting: Mode: MAP

B.6. SETUP DRAWING

Figure B-1 - Setup Drawing





B.7. DUT OPERATING DESCRIPTION

With the AC775 transmitting on the channel with the highest conducted power, Bluetooth measurements were made at three channels throughout the band, Low Channel (0) (2402 MHz), Mid Channel (39) (2441 MHz), High Channel (78) (2480 MHz).

B.8. TEST RESULTS

Channel	Frequency	Single Bluetooth Transmitter			Bluetooth Co-transmitting with GSM Channel 251		
		Bluetooth Peak Conducted Power		Limit	Bluetooth Peak Conducted Power		Limit
	MHz	dBm	Watts	Watts	dBm	Watts	Watts
Low	2402	4.09	0.00256	1	3.88	0.00244	1
Mid	2441	3.73	0.00236	1	3.61	0.00230	1
High	2480	3.09	0.00203	1	3.04	0.00201	1

Applicant:	Itronix Corporation	Model:	IX325A775IWLBT	FCC ID:	KBCIX325A775IWLBT	IC ID:	1943A-IX325e
Rugged Tablet PC with Sierra Wireless AC775 GSM GPRS/EDGE Modem & Co-located MSI MS-6837 Bluetooth							
2005 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 30

	Test Report Serial No.:	060605KBC-T646-E24G/E15B	Report Rev. No.:	Revision 0
	Test Date(s):	02Jun05 - 18Jul05	Report Issue Date:	07Dec05
	Test Type:	FCC §2, §15C, §22H, §24E	Industry Canada RSS-210/132/133	
	Lab Registration(s):	FCC Lab Reg. #714830	Industry Canada Lab File #3874	

B.9. PASS/FAIL

In reference to the results outlined in B.8, the DUT passes the requirements as stated in the reference standards as follows:
FCC 15.247 (b) (3): The peak power did not exceed 1 Watt.

As a reference with the single transmit configuration, the conducted power levels varied no more than 0.21 dB when the GSM transmitter was activated.

B.10. SIGN-OFF


I attest to the accuracy of the data. All measurements reported herein were performed by me and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements.




Russell Pipe
Senior Compliance Technologist
Celltech Labs Inc.

6Jun05

Date

Applicant:	Itronix Corporation	Model:	IX325A775IWLBT	FCC ID:	KBCIX325A775IWLBT	IC ID:	1943A-IX325e
Rugged Tablet PC with Sierra Wireless AC775 GSM GPRS/EDGE Modem & Co-located MSI MS-6837 Bluetooth							
2005 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 30

	Test Report Serial No.:	060605KBC-T646-E24G/E15B	Report Rev. No.:	Revision 0
	Test Date(s):	02Jun05 - 18Jul05	Report Issue Date:	07Dec05
	Test Type:	FCC §2, §15C, §22H, §24E	Industry Canada RSS-210/132/133	
	Lab Registration(s):	FCC Lab Reg. #714830	Industry Canada Lab File #3874	

Appendix C - GSM Conducted RF Output Power Measurement

C.1. REFERENCES

Normative Reference Standard	FCC CFR 47 §2.1046
Procedure Reference	FCC CFR 47 §2.1046

C.2. LIMITS

For reference only to compare the effect the Bluetooth transmitter co-transmitting had on the GSM transmitter power. Single transmit conducted powers:


C.3. ENVIRONMENTAL CONDITIONS

Temperature	25 +/- 2 °C
Humidity	35 +/- 2 %
Barometric Pressure	96 kPa

C.4. EQUIPMENT LIST

ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
00007	Gigatronics	8652A	Power Meter	18Oct04	18Oct05
00013	Gigatronics	80701A	Power Sensor	11Oct04	11Oct05
00076	Pasternack	PE7014-30	30dB 2 Watt Attenuator	na*	na

*Cable and attenuator verified with power meter prior to use

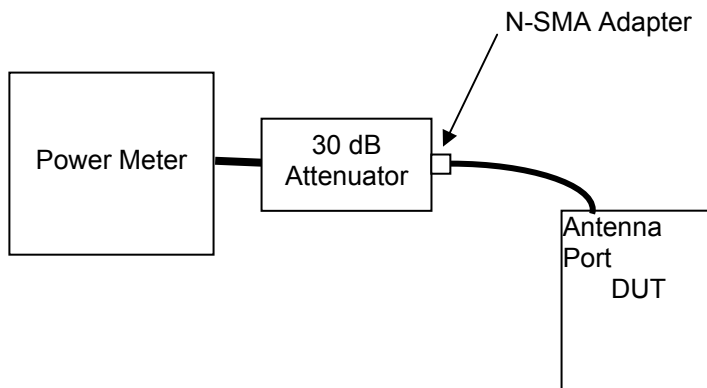
Applicant:	Itronix Corporation	Model:	IX325A775IWLBT	FCC ID:	KBCIX325A775IWLBT	IC ID:	1943A-IX325e
Rugged Tablet PC with Sierra Wireless AC775 GSM GPRS/EDGE Modem & Co-located MSI MS-6837 Bluetooth							
2005 Celltech Labs Inc	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.						Page 19 of 30


C.5. MEASUREMENT EQUIPMENT SETUP

Measurement Equipment Connections	The equipment was connected as shown in the setup drawing in C.6.
Measurement Equipment Settings	Power Meter Settings: Mode - BAP Frequency compensation set for carrier frequency Offset set appropriately for carrier frequency and attenuator characteristics
Measurement Procedure	The RF conducted power levels for both PCS and cellular bands were measured at the DUT antenna connector port using a Gigatronics 8652A Universal Power Meter in burst average power mode. An offset was entered into the power meter to correct for the losses of the attenuator and cable installed between the transmitter output port and the power sensor input. The DUT test software was used to set it to transmit in the GSM "always up" power control mode. All subsequent tests were performed using the same power measurement procedures.

C.6. SETUP DRAWING

Figure C-1 - Setup Drawing



	Test Report Serial No.:	060605KBC-T646-E24G/E15B	Report Rev. No.:	Revision 0
	Test Date(s):	02Jun05 - 18Jul05	Report Issue Date:	07Dec05
	Test Type:	FCC §2, §15C, §22H, §24E	Industry Canada RSS-210/132/133	
	Lab Registration(s):	FCC Lab Reg. #714830	Industry Canada Lab File #3874	

C.7. DUT OPERATING DESCRIPTION

During this evaluation, the Bluetooth transmitter was set to co-transmit in a hopping mode as described in section 5.7.2. Power measurements were then made of each channel in both the cellular and PCS bands, with the GSM modem set appropriately as described in section 5.7.1.

C.8. TEST RESULTS

Channel	Frequency	Single GSM Transmitter		GSM Co-transmitting with Bluetooth Hopping	
		GSM Peak Conducted Power		GSM Peak Conducted Power	
	MHz	dBm	Watts	dBm	Watts
Cellular					
128	824.2	31.29	1.3459	31.41	1.3836
190	836.6	31.20	1.3183	31.40	1.3804
251	848.8	31.48	1.4061	31.56	1.4322
PCS					
512	1850.2	28.45	0.6999	28.50	0.7080
661	1880.0	28.43	0.6966	28.42	0.6950
810	1909.8	28.64	0.7311	28.60	0.7244

C.9. PASS/FAIL

As a reference with the single transmit conducted RF power levels, the output of the GSM transmitter changed no more than 0.2 dB when co-transmitting with the Bluetooth transmitter.


C.10. SIGN-OFF


I attest to the accuracy of the data. All measurements reported herein were performed by me and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements.



Russell Pipe
Senior Compliance Technologist
Celltech Labs Inc.

2Jun05
Date

Applicant:	Itronix Corporation	Model:	IX325A775IWLBT	FCC ID:	KBCIX325A775IWLBT	IC ID:	1943A-IX325e
Rugged Tablet PC with Sierra Wireless AC775 GSM GPRS/EDGE Modem & Co-located MSI MS-6837 Bluetooth							
2005 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 30

	Test Report Serial No.:	060605KBC-T646-E24G/E15B	Report Rev. No.:	Revision 0
	Test Date(s):	02Jun05 - 18Jul05	Report Issue Date:	07Dec05
	Test Type:	FCC §2, §15C, §22H, §24E	Industry Canada RSS-210/132/133	
	Lab Registration(s):	FCC Lab Reg. #714830	Industry Canada Lab File #3874	

Appendix D - Radiated Spurious Emissions Measurement

D.1. REFERENCES

Normative Reference Standard	FCC CFR 47 §15.247(c)
Procedure Reference	ANSI C63.4; FCC 97-114

D.2. LIMITS

D.2.1. FCC CFR 47

FCC CFR 47 §22.917	(a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB
FCC CFR 47 §24.238	(a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.


* In reference to FCC Interpretation Database Item 20020405-001, the above limits are applied to all spurious emissions attributed to the composite device.

D.3. ENVIRONMENTAL CONDITIONS

Temperature	27 +/- 2 °C
Humidity	33 +/- 2 %
Barometric Pressure	96 +/- 0.2 kPa

D.4. EQUIPMENT LIST

RECEIVING EQUIPMENT						
ID	ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
1	00072	EMCO	2075	Mini-mast	na	na
2	00073	EMCO	2080	Turn Table	na	na
3	00071	EMCO	2090	Multi-Device Controller	na	na
4	00035	ETS	3115	Double Ridged Guide Horn	24Mar04	24Mar06
5	00051	HP	8566B	Spectrum Analyzer RF Section	12Apr05	12Apr06
6	00049	HP	85650A	Quasi-Peak Adapter	13Apr05	13Apr06
7	00047	HP	85685A	RF Preselector	13Apr05	13Apr06
8	00115	Miteq	J54-00102600-35-5A	LNA	8Jun04	08Jun06
9	00093	Microtronics	HPM50111	High Pass Filter	8Jun04	8Jun06
10	00119	INMAT	18AH-10	10dB attenuator	8Jun04	8Jun06
11	00048	GORE	65474	Microwave Cable (RX)	22Apr05	22Apr06
TRANSMITTING EQUIPMENT						
12	00034	ETS	3115	Double Ridged Guide Horn	24Mar04	24Mar06
13	00114	Amplifier Research	DC7154	Directional Coupler (0.8-4.2 GHz)	n/a	n/a
14	00078	Pasternack	PE2214-20	Directional Coupler (1-18 GHz)	n/a	n/a
15	00106	Amplifier Research	5S1G4	Power Amplifier (5W, 800MHz-4.2GHz)	n/a	n/a
16	00041	Amplifier Research	10W1000C	Power Amplifier (0.5 - 1 GHz)	n/a	n/a
17	00007	Gigatronics	8652A	Power Meter	18Oct04	18Oct05
18	00013	Gigatronics	80701A	Power Sensor	11Oct04	11Oct05

Applicant:	Itronix Corporation	Model:	IX325A775IWLBT	FCC ID:	KBCIX325A775IWLBT	IC ID:	1943A-IX325e
Rugged Tablet PC with Sierra Wireless AC775 GSM GPRS/EDGE Modem & Co-located MSI MS-6837 Bluetooth							
2005 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 30

D.5. MEASUREMENT EQUIPMENT SETUP

MEASUREMENT EQUIPMENT CONNECTIONS

For the field strength measurements, the measurement equipment was connected as shown in D.6. A number of antennas were used to cover the applicable frequency range tested¹. The ranges in which each antenna was used are as follows. For the final substitutions, the DUT was replaced with the appropriate antenna and fed from a CW signal source sufficient to replicate the received field strength of the emission being investigated.

Frequency Range	RX Antenna	TX Antenna
30 MHz – 1GHz	Bilog	Dipole
1 GHz – 18 GHz	ETS 3115 Horn	ETS 3115 Horn

MEASUREMENT EQUIPMENT SETTINGS

For the spurious out-of-band emissions, the spectrum analyzer was set to the following settings:

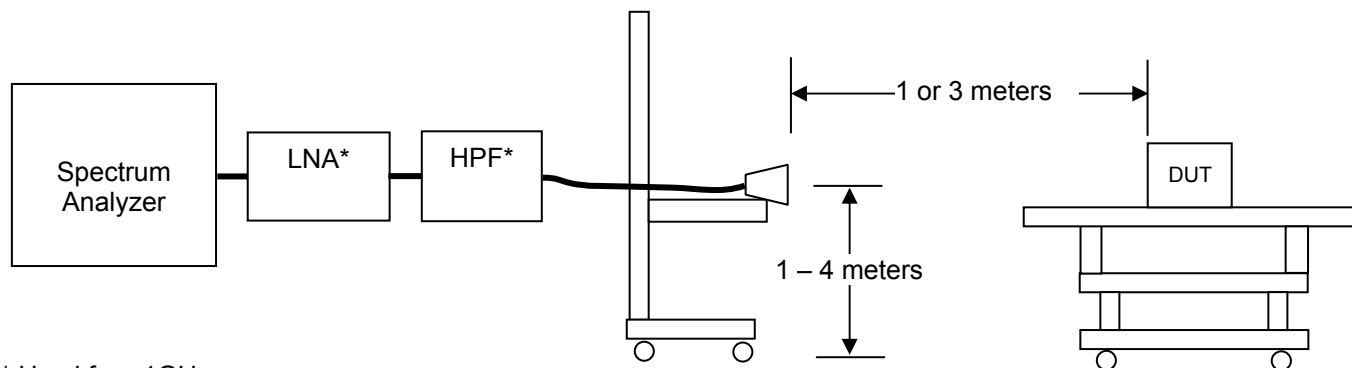
Mode	RBW	VBW	Detector
	kHz	kHz	
Cellular	100	300	Peak
PCS	1000	1000	Peak

Note 1: Only ranges where inter-modulation products might occur were investigated.

For the block-edge delta-marker radiated measurements, the spectrum analyzer was set for 3 kHz RBW and VBW (1% of EBW or greater) and measured at a 3-meter distance.

D.6. SETUP DRAWING

Figure D-1 - Setup Drawing



* Used for >1GHz

D.7. SETUP PHOTOGRAPHS

Photograph D-1 - 3115 Horn Antenna



D.8. DUT OPERATING DESCRIPTION

Measurements were made of the bands that may contain inter-modulation products with both the Bluetooth and GSM radios transmitting. Measurements were made for each combination of low and high GSM channel transmitting while the Bluetooth was in hopping mode. The Bluetooth power setting was set to worst-case (highest recorded conducted power) with the GSM modem power settings equivalent to those described in the referenced single-transmit test reports.

D.9. TEST RESULTS

All significant inter-modulations products or representative noise floor levels with field strengths within 20 dB of the theoretical limit were substituted and reported herein. The GSM block-edge is also presented. All Bluetooth band-edge measurements were greater than 20 dB below the applicable limit, so are not presented. All other spurious emissions are described in the appropriate sections of the individual reports referenced.

D.9.1. Cellular GSM Carrier Levels (Worst-case, Channel 128 co-transmitting with Bluetooth hopping)

Polarity	Distance	Substitution Antenna Type	Carrier Channel	Frequency	Corrected Field Strength	Substituted SA Signal Level (uncorrected)	Power Applied to Antenna	Antenna Gain	ERP Carrier Level		ERP Limit		Margin	Pass/Fail
	m			MHz	dBuV/m	dBuV	dBm	dBd	dBm	Watts	dBm	Watts	dB	
H	3	B_3121C	128	824.20	129.80	104.56	28.83	-0.85	27.98	0.628	38.45	7.00	10.47	PASS
V	3	B_3121C	128	824.20	123.04	97.80	23.83	-0.85	22.98	0.198	38.45	7.00	15.47	PASS

Note:

Dipole Antenna used for substitution

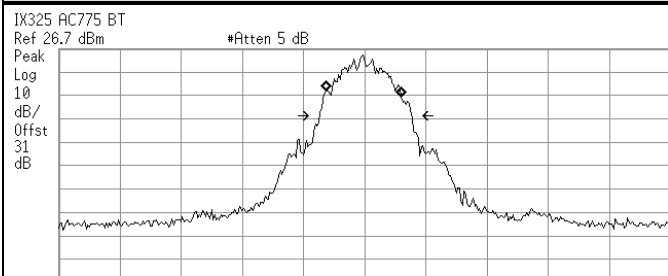
Formulae:

ERP Level (dBm) = Power Applied to Antenna (dBm) + Antenna Gain (dBd)

Margin (dB) = Limit (dBm) – Level (dBm)

D.9.2. Cellular GSM Spurious Emissions within 1 MHz of Block edge

Co-transmitting Emission Bandwidth - Channel 128

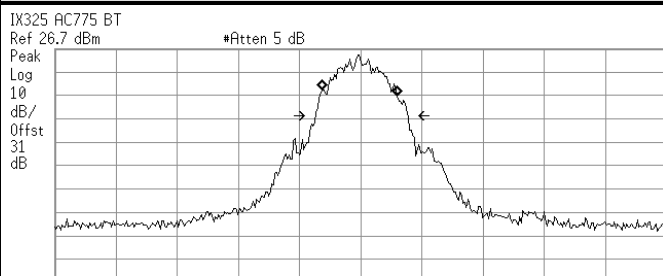


Center 824.2 MHz
#Res BW 3 kHz
#VBW 10 kHz
Sweep 483.1 ms (401 pts)

Occupied Bandwidth
245.660 kHz
Occ BW % Pwr 99.00 %

Transmit Freq Error -2.993 kHz
x dB Bandwidth 301.984 kHz

Co-transmitting Emission Bandwidth - Channel 251

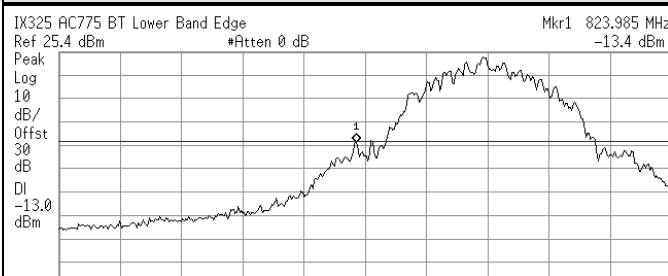


Center 848.8 MHz
#Res BW 3 kHz
#VBW 10 kHz
Sweep 483.1 ms (401 pts)

Occupied Bandwidth
245.5968 kHz
Occ BW % Pwr 99.00 %

Transmit Freq Error -2.962 kHz
x dB Bandwidth 301.933 kHz

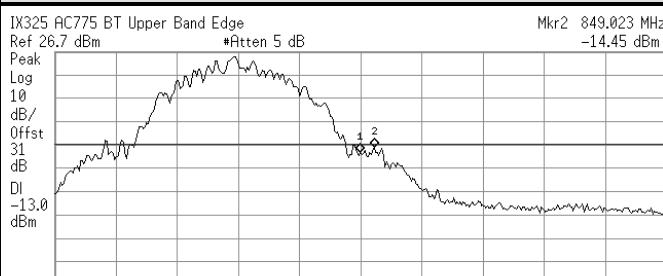
Co-transmitting Conducted Block-edge - Channel 128



Start 823.5 MHz
#Res BW 3 kHz
#VBW 3 kHz
Sweep 277.8 ms (401 pts)

Marker 1
Trace (1)
Type Freq
X Axis 823.985 MHz
Amplitude -13.4 dBm

Co-transmitting Conducted Block-edge - Channel 251



Start 848.5 MHz
#Res BW 3 kHz
#VBW 3 MHz
Sweep 241.6 ms (401 pts)

Marker 1
Trace (1)
Type Freq
X Axis 849.023 MHz
Amplitude -16.47 dBm

Polarity	Distance	Substitution Antenna Type	Carrier Channel	Frequency	Corrected Field Strength	Substituted SA Signal Level (uncorrected)	Power Applied to Antenna	Antenna Gain	ERP Emission Level	Limit	Margin	Pass/Fail
				MHz	dBuV/m	dBuV	dBm	dB	dBm	dBm or dBuV/m*	dB	
H	3	Horn SN6267	CH128 CoTx with BT - Ch 39	1651.33	55.41	23.26	-48.52	4.21	-44.31	-13.00	31.31	PASS
H	3	Horn SN6267	CH128 CoTx with BT - Ch 39	1574.14	52.92	21.24	-50.44	4.13	-46.31	-13.00	33.31	PASS
H	3	Horn SN6267	CH128 CoTx with BT - Ch 39	1657.13	55.97	23.78	-48.05	4.22	-43.83	-13.00	30.83	PASS
H	3	Horn SN6267	CH128 CoTx with BT - Ch 39	3296.60	47.49	39.86	-64.48	5.84	-58.64	-13.00	45.64	PASS
H	3	Horn SN6267	CH128 CoTx with BT - Ch 39	4121.37	49.55	39.16	-65.69	6.03	-59.66	-13.00	46.66	PASS
H	3	Horn SN6267	CH128 CoTx with BT - Ch 39	4945.33	53.76	41.58	-55.72	6.47	-49.25	-13.00	36.25	PASS
H	3	none	CH128 CoTx with BT - Ch 39	5769.18	45.90					84.4*	38.5*	PASS*
H	3	Horn SN6267	CH128 CoTx with BT - Ch 39	6593.91	52.28	37.10	-68.42	7.40	-61.02	-13.00	48.02	PASS
H	3	Horn SN6267	CH128 CoTx with BT - Ch 39	7417.42	52.92	35.37	-66.81	6.83	-59.98	-13.00	46.98	PASS
H	3	Horn SN6267	CH128 CoTx with BT - Ch 39	8241.78	63.51	44.61	-44.29	7.16	-37.13	-13.00	24.13	PASS
H	3	Horn SN6267	CH128 CoTx with BT - Ch 39	3168.47	75.76	68.62	-29.86	5.76	-24.10	-13.00	11.10	PASS
V	3	Horn SN6267	CH128 CoTx with BT - Ch 39	1652.10	53.53	21.38	-39.02	4.21	-34.81	-13.00	21.81	PASS
V	3	none	CH128 CoTx with BT - Ch 39	3296.86	55.93					84.4*	28.4*	PASS*
V	3	Horn SN6267	CH128 CoTx with BT - Ch 39	4121.69	59.97	49.58	-49.63	6.03	-43.60	-13.00	30.60	PASS
V	3	Horn SN6267	CH128 CoTx with BT - Ch 39	4945.41	52.52	40.34	-58.04	6.47	-51.57	-13.00	38.57	PASS
V	3	none	CH128 CoTx with BT - Ch 39	5769.35	49.72					84.4*	34.6*	PASS*
V	3	Horn SN6267	CH128 CoTx with BT - Ch 39	6592.98	58.47	43.30	-51.88	7.40	-44.48	-13.00	31.48	PASS
V	3	none	CH128 CoTx with BT - Ch 39	7417.81	53.55					84.4*	30.8*	PASS*
V	3	none	CH128 CoTx with BT - Ch 39	8241.80	65.12					84.4*	19.2*	PASS*
V	3	none	CH128 CoTx with BT - Ch 39	5201.61	43.45					84.4*	40.9*	PASS*

Note:

Formulae:

$$\text{ERP Emission Level (dBm)} = \text{Power applied to antenna (dBm)} + \text{Antenna Gain (dBd)}$$
$$\text{Margin (dB)} = \text{Limit (dBm)} - \text{ERP Emission Level (dBm)} \text{ or } \text{Theoretical Limit (dBuV/m)} - \text{Corrected Field Strength (dBuV/m)}$$

Theoretical Limit (V/m) = $\text{SQRT}(30 * P / r^2)$ where P is the total transmitted power (W), r is measurement distance (m)

D.9.4. PCS GSM Carrier Levels (Worst-case, Channel 512 co-transmitting with Bluetooth hopping)

Polarity	Distance	Substitution Antenna Type	Carrier Channel	Frequency	Corrected Field Strength	Substituted SA Signal Level (uncorrected)	Power Applied to Antenna	Antenna Gain	Carrier EIRP Level		EIRP Limit		Margin	Pass/Fail
	m			MHz	dBuV/m	dBuV	dBm	dBi	dBm	Watts	dBm	Watts	dB	
H	3	BBHA 9120-A	512	1850.20	127.68	94.34	19.24	9.00	28.24	0.667	33.01	2.00	4.77	PASS
V	3	BBHA 9120-A	512	1850.20	122.64	89.30	14.63	9.00	23.63	0.231	33.01	2.00	9.38	PASS

Note:

Standard Gain Horn Antenna used for substitution

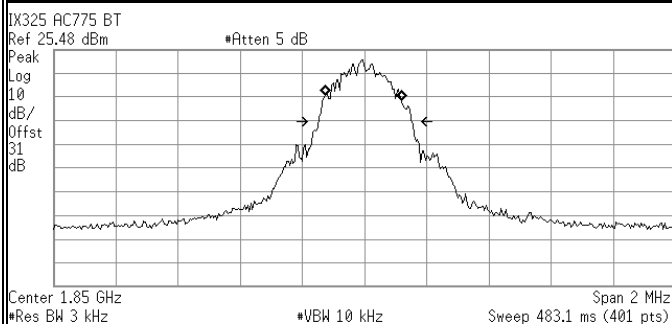
Formulae:

EIRP Level (dBm) = Power Applied to Antenna (dBm) + Antenna Gain (dBi)

Margin (dB) = Limit (dBm) – Level (dBm)

D.9.5. PCS GSM Spurious Emissions within 1 MHz of Block edge

Co-transmitting Emission Bandwidth - Channel 512

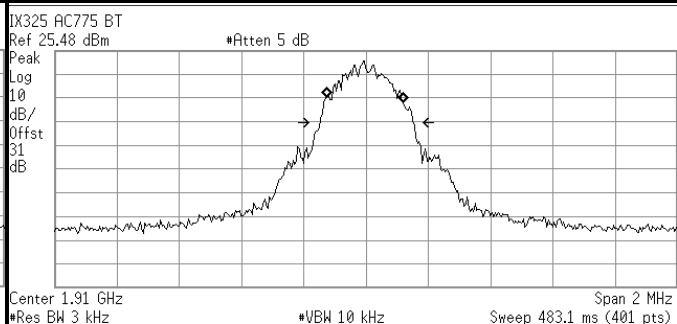


Occupied Bandwidth
244.9760 kHz

Occ BW % Pwr 99.00 %

Transmit Freq Error
x dB Bandwidth -3.992 kHz
299.963 kHz

Co-transmitting Emission Bandwidth - Channel 810

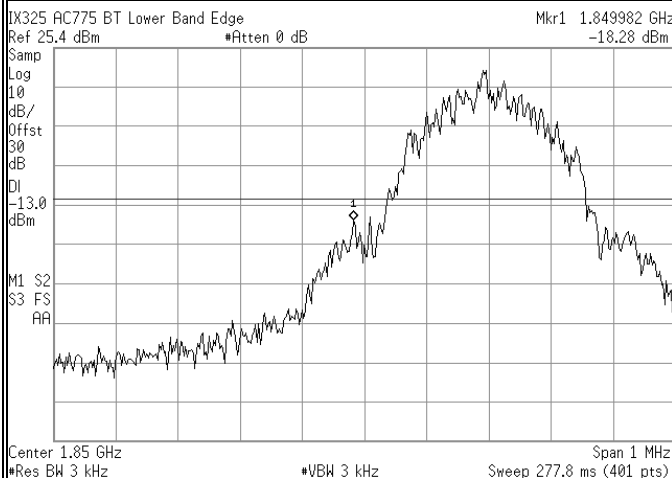


Occupied Bandwidth
244.4047 kHz

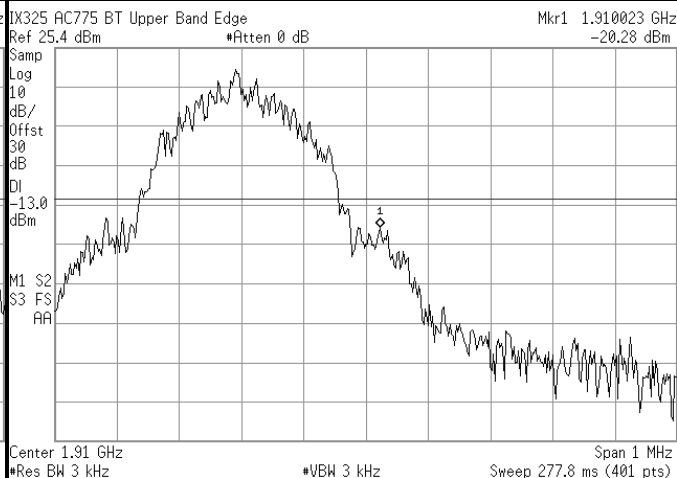
Occ BW % Pwr 99.00 %


Transmit Freq Error
x dB Bandwidth -4.075 kHz
300.047 kHz

Co-transmitting Conducted Block-edge - Channel 512



Co-transmitting Conducted Block-edge - Channel 810



	Test Report Serial No.:	060605KBC-T646-E24G/E15B	Report Rev. No.:	Revision 0
	Test Date(s):	02Jun05 - 18Jul05	Report Issue Date:	07Dec05
	Test Type:	FCC §2, §15C, §22H, §24E	Industry Canada RSS-210/132/133	
	Lab Registration(s):	FCC Lab Reg. #714830	Industry Canada Lab File #3874	

D.9.6. PCS GSM Spurious Emissions greater than 1 MHz from the Block edge
(Worst-case, PCS GSM Channel 512 with Bluetooth Hopping)

Polarity	Distance	Substitution Antenna Type	Carrier Channel	Frequency	Corrected Field Strength	Substituted SA Signal Level (uncorrected)	Power Applied to Antenna	Antenna Gain	EIRP Emission Level	Limit	Margin	Pass/Fail
				MHz	dBuV/m	dBuV	dBm	dBi	dBm	dBm or dBuV/m*	dB	
H	3	B_3121C	CH512 CoTx with BT - Ch 39	551.46	56.48	35.30	-37.89	1.59	-36.30	-13.00	23.30	PASS
H	3	B_3121C	CH512 CoTx with BT - Ch 39	627.42	58.45	35.20	-37.98	1.63	-36.35	-13.00	23.35	PASS
H	3	none	CH512 CoTx with BT - Ch 39	1224.17	50.33					82.2*	31.9*	PASS*
H	3	Horn SN6267	CH512 CoTx with BT - Ch 39	3700.34	68.16	59.00	-39.24	8.06	-31.18	-13.00	18.18	PASS
H	3	Horn SN6267	CH512 CoTx with BT - Ch 39	5550.67	52.56	38.80	-55.58	8.66	-46.92	-13.00	33.92	PASS
H	3	Horn SN6267	CH512 CoTx with BT - Ch 39	7400.63	54.63	37.00	-44.50	8.98	-35.52	-13.00	22.52	PASS
H	3	Horn SN6267	CH512 CoTx with BT - Ch 39	9250.85	67.18	46.20	-37.10	9.05	-28.05	-13.00	15.05	PASS
H	3	none	CH512 CoTx with BT - Ch 39	4252.55	43.43					82.2*	38.8*	PASS*
V	3	B_3121C	CH512 CoTx with BT - Ch 39	551.80	64.90	43.70	-30.02	1.59	-28.43	-13.00	15.43	PASS
V	3	B_3121C	CH512 CoTx with BT - Ch 39	630.59	58.69	35.50	-34.89	1.67	-33.22	-13.00	20.22	PASS
V	3	Horn SN6267	CH512 CoTx with BT - Ch 39	1294.50	63.88	33.26	-38.49	5.17	-33.32	-13.00	20.32	PASS
V	3	Horn SN6267	CH512 CoTx with BT - Ch 39	1218.35	52.02	21.60	-48.92	4.79	-44.13	-13.00	31.13	PASS
V	3	Horn SN6267	CH512 CoTx with BT - Ch 39	3700.12	67.86	58.70	-38.97	8.06	-30.91	-13.00	17.91	PASS
V	3	Horn SN6267	CH512 CoTx with BT - Ch 39	5550.54	57.16	43.40	-50.88	8.66	-42.22	-13.00	29.22	PASS
V	3	Horn SN6267	CH512 CoTx with BT - Ch 39	7401.30	56.83	39.20	-59.91	8.98	-50.93	-13.00	37.93	PASS
V	3	Horn SN6267	CH512 CoTx with BT - Ch 39	9251.12	73.68	52.70	-32.74	9.05	-23.69	-13.00	10.69	PASS
V	3	Horn SN6267	CH512 CoTx with BT - Ch 39	4253.69	42.23	31.70	-67.21	8.36	-58.85	-13.00	45.85	PASS
V	3	Horn SN6267	CH512 CoTx with BT - Ch 39	4945.39	43.58	31.40	-67.96	8.61	-59.35	-13.00	46.35	PASS

*Margin and Pass/Fail based on measured field strengths applied against a theoretical field strength limit.

Note:


The emissions reported above represent the highest emissions or noise floor measured within the frequency band of 30MHz and the 10th harmonic of the carrier with field strengths within 20 dB of the theoretical limit. All other emissions attributed to the EUT had field strengths greater than 20 dB below the theoretical limit and substitutions were not made.


Formulae:

EIRP Emission Level (dBm) = Power applied to antenna (dBm) + Antenna Gain (dBi)

Margin (dB) = Limit (dBm) – EIRP Emission Level (dBm) or Theoretical Limit (dBuV/m) – Corrected Field Strength (dBuV/m)

Theoretical Limit (V/m) = $\sqrt{30 * P / r^2}$ where P is the total transmitted power (W), r is measurement distance (m)

Applicant:	Itronix Corporation	Model:	IX325A775IWLBT	FCC ID:	KBCIX325A775IWLBT	IC ID:	1943A-IX325e
Rugged Tablet PC with Sierra Wireless AC775 GSM GPRS/EDGE Modem & Co-located MSI MS-6837 Bluetooth							
2005 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 30

	Test Report Serial No.:	060605KBC-T646-E24G/E15B	Report Rev. No.:	Revision 0
	Test Date(s):	02Jun05 - 18Jul05	Report Issue Date:	07Dec05
	Test Type:	FCC §2, §15C, §22H, §24E	Industry Canada RSS-210/132/133	
	Lab Registration(s):	FCC Lab Reg. #714830	Industry Canada Lab File #3874	

D.10. PASS/FAIL

In reference to the results outlined in D.9, the DUT passes the requirements as stated in the reference standards as follows:

FCC 22.917 (a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

FCC 24.238 (a): Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

D.11. SIGN-OFF


I attest to the accuracy of the data. All measurements reported herein were performed by me and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements.




Russell Pipe
Senior Compliance Technologist
Celltech Labs Inc.


18Jul05

Date

Applicant:	Itronix Corporation	Model:	IX325A775IWLBT	FCC ID:	KBCIX325A775IWLBT	IC ID:	1943A-IX325e
Rugged Tablet PC with Sierra Wireless AC775 GSM GPRS/EDGE Modem & Co-located MSI MS-6837 Bluetooth							
2005 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 30

	Test Report Serial No.:	060605KBC-T646-E24G/E15B	Report Rev. No.:	Revision 0
	Test Date(s):	02Jun05 - 18Jul05	Report Issue Date:	07Dec05
	Test Type:	FCC §2, §15C, §22H, §24E	Industry Canada RSS-210/132/133	
	Lab Registration(s):	FCC Lab Reg. #714830	Industry Canada Lab File #3874	

END OF DOCUMENT

Applicant:	Itronix Corporation	Model:	IX325A775IWLBT	FCC ID:	KBCIX325A775IWLBT	IC ID:	1943A-IX325e
Rugged Tablet PC with Sierra Wireless AC775 GSM GPRS/EDGE Modem & Co-located MSI MS-6837 Bluetooth							
2005 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 30 of 30