

Test Report S/N:	022305KBC-T616-E15B		Issue 1.0
Test Date(s):	21Sept04 - 14Oct04, 22Oct04		
Test Type(s):	FCC §15.247 IC RSS-210 Issue :		
Lab Registration(s):	FCC #714830	IC Lab	File #3874

EMC MEASUREMENT REPORT FOR THE ITRONIX RUGGED LAPTOP PC MODEL: IX260PNLA580BT WITH CIRRONET BT2022 BLUETOOTH TRANSMITTER AND INTERNAL RANGESTAR SURFACE-MOUNT ANTENNA CO-LOCATED WITH SENAO 802.11B/G 2.4 GHz DSSS WLAN MINI-PCI CARD AND INTERNAL RANGESTAR SURFACE-MOUNT ANTENNA CO-LOCATED WITH SIERRA WIRELESS DUAL-BAND CDMA PCMCIA MODEM AND ITRONIX EXTERNAL SWIVEL DIPOLE ANTENNA

TRSN 022305KBC-T616-E15B Issue 1.0

Celltech Compliance Testing & Engineering Lab
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April 20, 2005



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DECLARATION OF COMPLIANCE Test Lab Applicant Information CELLTECH LABS INC. ITRONIX CORPORATION Testing and Engineering Services 801 South Stevens Street 1955 Moss Court Spokane, WA 99204 Kelowna, B.C. **United States** Canada V1Y 9L3 Phone: 250-448-7047 250-448-7048 Fax: e-mail: info@celltechlabs.com www.celltechlabs.com web site: **Laboratory Registration No.(s):** 714830 IC: IC 3874 §15.247; §2.1091; §1.1310 IC: Rule Part(s): FCC: RSS-210 Issue 5 FCC: Spread Spectrum Transmitter (DSS) IC: Low Power Licence-Exempt Transmitter **Device Classification: Device Identification:** FCC ID: KBCIX260PNLA580BT IC: 1943A-IX260Pf **DUT Description:** Model: **IX260PNI A580BT Device Description:** Rugged Laptop PC Cirronet BT2022 Bluetooth **Internal Transmitter Tested: Transmitter Frequency Range:** 2402 - 2480 MHz Max. RF Output Power Measured: 0.0364 Watts / 15.61 dBm (Peak Conducted) **Mode(s) of Operation:** Frequency Hopping Spread Spectrum (FHSS) **Modulation Type(s):** GFSK 1 Mbps 0.5 BT Gaussian Bluetooth: RangeStar P/N: 100929 Internal Surface-Mount (upper left side rear of LCD Display) **DUT Antenna Type(s):** WLAN: RangeStar P/N: 100929 Internal Surface-Mount (upper right side rear of LCD Display) CDMA: Itronix IX260+ External Swivel Dipole (upper right side edge of LCD Display) 90 Watt AC Power Adapter (Model: ADP-90AB) Power Source(s): 11.1V Lithium-ion Battery, 6.0Ah (Model: A2121-2)

This wireless mobile 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 Part 15.247, Industry Canada RSS-210 Issue 5, and ANSI TIA/EIA-603-B-2002.

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	FCC ID:	KBCIX260PNLA580BT	IC ID:	1943A-IX260Pf		
Rugged Lapto	ed Laptop PC with internal Cirronet BT2022 Bluetooth Transmitter		Model: IX260PNLA580BT		ITRONIX		
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Rugged Laptop PC with internal Cirronet BT2022 Bluetooth Transmitter		Model:	IX260PNLA580BT	ITRONIX		



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Rugged Laptop PC with internal Cirronet BT2022 Bluetooth Transmitter		Model:	IX260PNLA580BT	ITRONIX		



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TEST SUMMARY							
	Referen	ced Standard: FCC CFF	R Title 47 Part 15				
Appendix	Test Description	Procedure Reference	Limit Reference	Test Start Date	Test End Date	Result	
В	Powerline Conducted Emissions	ANSI C63.4	§15.207	14Oct04	14Oct04	Pass	
С	Peak Conducted RF Power	FCC 97-114	§15.247 (b) (1)	21Sep04	21Sep04	Pass	
D	Adjacent Channel Separation	Note 1	§15.247 (a) (1)	Note 1	Note 1	Pass	
Е	Number of Hopping Channels	Note 1	§15.247 (a) (1) (iii)	Note 1	Note 1	Pass	
F	Channel Dwell Time	Note 1	§15.247 (a) (1) §15.247 (a) (1) (iii)	Note 1	Note 1	Pass	
G	20 dB Bandwidth	Note 1	§15.247 (a) (1) (iii)	Note 1	Note 1	Pass	
Н	Radiated Spurious Emissions	FCC 97-114	§15.247(c)	22Sep04	01Oct04	Pass	
	radiated oparious Emissions	10001114	310.241(0)	2200p0+	22Oct04		
1	Restricted Band Emissions	FCC 97-114	§15.205 (a), (b)	22Sep04	01Oct04	Pass	
'	Nestricted Darid Efficiency	1 00 97-114	§15.209 (a)	220ep04	22Oct04	1 433	
J	Maximum Permissible Exposure	FCC CFR 47 § 2.1091 IEEE Std C95.1-1999	§1.1310 Table 1 (b)	13Oct04	13Oct04	Pass	
	Refe	renced Standard: IC RS	S-210 Issue 5	_			
В	Powerline Conducted Emissions	RSS-212, ANSI C63.4	RSS-210 §6.6	14Oct04	14Oct04	Pass	
С	Peak Conducted RF Power	RSS-210 § 10	RSS-210 §6.2.2 (o)(a3)	21Sep04	21Sep04	Pass	
D	Adjacent Channel Separation	RSS-210 § 10	RSS-210 A1 §I (ii)	Note 1	Note 1	Pass	
Е	Number of Hopping Channels	RSS-210 § 10	RSS-210 A1 §I (ii)	Note 1	Note 1	Pass	
F	Channel Dwell Time	RSS-210 § 10	RSS-210 A1 §I (ii)	Note 1	Note 1	Pass	
G	20 dB Bandwidth	RSS-210 § 10	RSS-210 A1 §I (ii)	Note 1	Note 1	Pass	
Н	Radiated Spurious Emissions	RSS-212, ANSI C63.4	RSS-210 §6.2.2 (o)(e1)	22Sep04	01Oct04	Daga	
П	Radiated Spurious Emissions	K33-212, ANSI C03.4	R33-210 go.2.2 (0)(e1)	223ep04	22Oct04	- Pass	
1	Restricted Band Emissions	RSS-212, ANSI C63.4	RSS-210 §6.3	22Sep04 -	01Oct04	Pass	
'	Restricted Darid Linissions	133-212, ANSI 603.4	N33-2 10 gu.3	223ep04	22Oct04		
J	Maximum Permissible Exposure	RSS-102	RSS-210 §14 Safety Code 6 2.2.1(a) Table 5	13Oct04	13Oct04	Pass	

Note 1: The test procedures used and the results obtained are referenced to the ACS Test Report Number 03-0193-15BC.

REVISION LOG

Issue	Description	Implemented By	Implementation Date		
1.0	Initial Release	Jon Hughes	20Apr05		

SIGNATORIES

Prepared By	D2-	April 20, 2005
Name/Title	Duane M. Friesen, C.E.T. / EMC Manager	Date
Approved By	GR-	April 20, 2005
Name/Title	Jon Hughes / General Manager	Date

Applicant:	Itronix Corporation	FCC ID:	KBCIX260PNLA580BT	IC ID:	1943A-IX260Pf			
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth Transmitter				Model:	IX260PNLA580BT	ITRONIX		
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Lab Registration(s):	FCC #714830 IC Lab File #387			

1.0 <u>SCOPE</u>

This report outlines the measurements made and results collected during electromagnetic emissions testing of the Itronix Corporation Rugged Laptop PC including the internal Cirronet BT2022 Bluetooth Transmitter with internal surface-mount antenna located in the upper left side rear of the LCD display. The DUT also incorporates an internal Senao NL-3054MP 802.11b/g 2.4 GHz DSSS WLAN Mini-PCI Card with internal surface-mount antenna located in the upper right side rear of the LCD display. The DUT also incorporates an internal co-located Sierra Wireless AirCard 580 Dual-Band CDMA PCMCIA Modem with external swivel dipole antenna located at the upper right side edge of the LCD display. The Cirronet BT2022 Bluetooth and the Senao NL-3054MP 802.11b/g WLAN can transmit simultaneously. The Cirronet BT2022 Bluetooth and the Sierra Wireless AirCard 580 Dual-Band CDMA Modem can transmit simultaneously. The Senao NL-3054MP 802.11b/g WLAN and the Sierra Wireless AirCard 580 Dual-Band CDMA Modem were disabled during the Cirronet BT2022 Bluetooth measurements referenced in this report. Please refer to the Supplementary EMC test reports for simultaneous transmit measurement data. The results were applied against the 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 15 Subpart C, and Industry Canada Radio Standards Specification RSS-210 Issue 5.

2.0 REFERENCES

2.1 Normative References

ANSI/ISO 17025:1999 G	General Requirements f	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

CFR Title 47 Part 2:2003 Code of Federal Regulations

Title 47: Telecommunication

Part 2: Frequency Allocations and Radio Treaty Matters;

General Rules and Regulations

CFR Title 47 Part 15:2003 Code of Federal Regulations

Title 47: Telecommunication

Part 15: Radio Frequency Devices

IC Spectrum Management &

Management & Radio Standards Specification

Telecommunications Policy RSS-212 Issue 1 (Provisional) - Test Facilities & Test Methods for Radio Equipment

RSS-210 Issue 5 - Low Power Licence-Exempt Radiocommunication Devices:

November 2001 & Amendment November 30, 2002

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

ACS Test Report FCC Part 15 Certification Test Report

2.4 GHz Frequency Hopping Spread Spectrum (Modular Approval)

ACS Report Number 03-0193-15BC

Issue Date: January 5, 2004

Applicant:	Itronix Corporation	FCC ID:	KBCIX260PNLA580BT	IC ID:	1943A-IX260Pf		
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth Transmitter				Model:	IX260PNLA580BT	ITRONIX	
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3.0 TERMS AND DEFINITIONS

AVG Average

CFR Code of Federal Regulations

dB decibel

dBmdB referenced to 1 mWdBuVdB referenced to 1 uVDUTDevice under TestdBcdB down from carrierEBWEmission Bandwidth

EMC Electromagnetic Compatibility

FCC Federal Communication Commission FHSS Frequency Hopping Spread Spectrum

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 not applicable 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



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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
ddress:	801 South Stevens Street
	Spokane, WA 99204
	United States

5.2 DUT Description

The DUT consisted of the Rugged Laptop PC with the Cirronet BT2022 Bluetooth Transmitter connected to the RangeStar Internal Surface-Mount Antenna installed in the upper left side rear of the LCD display. Co-located within the Rugged Laptop PC is a Senao NL-3054MP 802.11b/g 2.4 GHz DSSS WLAN Mini-PCI Card connected to the RangeStar Internal Surface-Mount Antenna installed in the upper right side rear of the LCD display. The DUT also incorporates an internal co-located Sierra Wireless AirCard 580 Dual-Band CDMA PCMCIA Modem with external swivel dipole antenna located at the upper right side edge of the LCD display. Photographs of the DUT placement and construction are shown in Appendix A.

Device:	Rugged La	Rugged Laptop PC					
Model:	IX260PNLA	X260PNLA580BT					
Serial Number:	ZZGEG419	ZZGEG4196ZZ6473					
Identifier(s):	FCC ID:	FCC ID: KBCIX260PNLA580BT IC: 1943A-IX260Pf					
Power Source(s):	Delta Elect	Delta Electronics Model: ADP-90AB Rev B 90 Watt AC-DC power supply					
. 5.75. 554766(6).	11.1V Lithiu	um-ion Battery, 6.0Ah (Model: A2121-2)					

Device:	2.4GHz FH	2.4GHz FHSS Bluetooth Transmitter					
Model:	Cirronet B	Cirronet BT2022					
Serial Number:	none						
Rule Part(s):	FCC:	FCC: §15.247; §2.1091; §1.1310 IC: RSS-210 Issue 5					
Classification:	FCC:	FCC: Spread Spectrum Transmitter (DSS) IC: Low Power Licence-Exempt Transmitter					
Power Source:	Powered fr	om the internal PC power supply					
Antenna Type:	Internal S	Surface-Mount (upper left side rear of LCD) displa	y)			
Model:	RangeSta	RangeStar P/N: 100929					
Gain:	+4.5 dBi						

Applicant:	Itronix Corporation	FCC ID:	KBCIX260PNLA580BT	IC ID:	1943A-IX260Pf		
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth Transmitter			Model:	IX260PNLA580BT		TRONIX	
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5.3 Co-Located Equipment

Device:	2.4GHz DSSS WLAN Mini-PCI Card (802.11b/g)
Model:	Senao NL-3054MP
Serial Number:	048253621
Antenna Type:	Internal Surface-Mount Antenna (upper right side rear of LCD display)
Model:	RangeStar P/N: 100929
Gain:	+4.5 dBi

Device:	Dual-Band PCS/Cellular CDMA PCMCIA Modem
Model:	Sierra Wireless AirCard 580
Serial Number:	63013A85
Antenna Type:	External Swivel Dipole Antenna (upper right side edge of LCD display)
Model:	Itronix IX260+
Gain:	+2.6 dBi

Device:	GPS Receiver Module and Antenna (Receive only)
Model:	Leadtek P/N GPS9547

5.4 Cable Descriptions

ROUTING		Length	Model	Terminations		Shield Type	Shield Termination		Suppression
From	То	m		End 1	End 2		End 1	End 2	
PC Fire Wire Port	Unterminated	1.0	Copartner E119932	IEEE-1528	Fire wire	n/a	n/a	n/a	None
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			
DeLorme	Tripmate	GPS Receiver			
Intel	CS-430	Camera			
Logitech	M-S34	Mouse			

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5.6 Clock Frequencies

5.6.1 <u>DUT Clock Frequencies</u>

Device:	Rugged Laptop PC
Clocks:	1.6 GHz processor
Device:	2.4GHz FHSS Cirronet Bluetooth
Clocks:	none
Device:	Internal Surface-Mount Antenna
Clocks:	None

5.6.2 Co-Located Clock Frequencies

Device:	Peripherals
Clocks:	n/a

5.7 Mode(s) of Operation Tested

Customer supplied software was used to set the Bluetooth transmitter at the appropriate channel with the power level and modulation for the specific measurement.

TX Frequency Range	2402 - 2480 MHz Ch. 0 (2402 MHz), Ch. 39 (2441 MHz) & Ch. 78 (2480 MHz) measured unless otherwise noted)
Software Power Gain Settings	Ch. 0 - 250 / 40 Ch. 39 - 250 / 44 Ch. 78 - 220 / 45
RF Peak Conducted Output Power Tested	Ch. 0 - +15.40 dBm Ch. 39 - +15.61 dBm Ch. 78 - +15.34 dBm
Modulation Type	GFSK 0.5 BT Gaussian
Modulation Frequency	1000
Battery Type(s)	11.1V Lithium-lon, 6.0Ah (Model: A2121-2)

5.7.1 <u>DUT Exercising Software Description</u>

The DUT was configured and exercised using customer supplied test software that allowed an operator to set the parameters of the Bluetooth module's operation. The settings used are described in each appendix.

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Rugged Laptop PC with internal Cirronet BT2022 Bluetooth Transmitter			Model:	IX260PNLA580BT		TRONIX	
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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. More specific details may be included in each appendix.

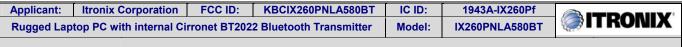
5.8.1 Configuration Justification

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

Prescan measurements were made with the Bluetooth transmitter set at each of three frequencies describing the frequency band of operation; low (2402 MHz), mid (2441 MHz) and high (2480 MHz) to determine the highest emission present in each band. The transmit power setting for each of these frequencies was set to closely match that defined in the modular certification. A representative modulation of 1000 was applied when applicable. Unless otherwise specified in the applicable appendices, these settings were used for the measurements described in this report.

6.0 PASS/FAIL CRITERIA

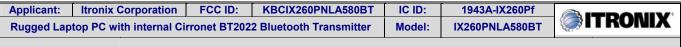
Unless otherwise noted in the Appendices, the pass/fail criteria is the limit set forth in the reference standards. A DUT is considered to have passed the requirements, if the data collected during the described measurement procedure is no greater than the specified limits as defined. The pass/fail statements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





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APPENDICES





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Appendix A - DUT Photographs

Photograph A-1 - Front of Open IX260+ Laptop PC

Photograph A-2 - Back of Open IX260+ Laptop PC





Photograph A-3 - Left Side of Open IX260+ Laptop PC



Photograph A-4 - Right Side of Open IX260+ Laptop PC





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Appendix B - Conducted Powerline Emissions Measurement

B.1. REFERENCES	
Normative Reference Standard	CFR 47 FCC Part 15 §15.207
Procedure Reference	ANSI C63.4

B.2. LIMITS

§15.207: Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each powerline and ground at the power terminal.

Frequency of Emission (MHz)	Conducted Limit (dBuV)			
	Quasi-Peak	Average		
0.15 – 0.5	66 to 56*	56 to 46*		
0.50 - 5.0	56	46		
5.0 – 30.0	60	50		

^{*}Decreases with the logarithm of the frequency

B.3. ENVIRONMENTAL CONDITIONS			
Temperature	+26 <u>+</u> 5 °C		
Humidity	31 % <u>+</u> 10% RH		
Barometric Pressure	101.4 kpa		

B.4. EQUIPMENT LIST						
ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE	
00063	HP	85662A	Spectrum Analyzer Display	na	na	
00051	HP	8566B	Spectrum Analyzer RF Section	18May04	18May05	
00049	HP	85650A	Quasi-Peak Adapter	18May04	18May05	
00047	HP	85685A	Preselector	18May04	18May05	
00083	EMCO	3825/2	Line Impedance Stabilization Network	29Apr04	29Apr05	
00084	EMCO	3825/2	Line Impedance Stabilization Network	29Apr04	29Apr05	

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Test Type(s):	FCC §15.247	IC RSS-2	210 Issue 5
Lab Registration(s):	FCC #714830	IC Lab	File #3874

B.5. MEASUREMENT EQUIPMENT SETUP					
MEASUREMENT EQUIPMENT CONNECTIONS	The conducted emissions were measured on each of the two AC powerline leads connected to the DUT's power supply brick. A two line LISN was used to make this measurement. A drawing of the equipment setup is shown in B.7				
MEASUREMENT EQUIPMENT SETTINGS	Each of the monitor ports from the 2-line LISN was connected in turn to the spectrum analyzer. The port not connected to the analyzer was terminated in a 50-ohm load. A pre-scan of the peak emission levels was made of the 150 kHz – 30 MHz range split into 4 equal frequency bands. The following were the instrumentation settings: Spectrum Analyzer: Start Frequency and Stop Frequency set by software for each of the four bands RBW: 100 kHz VBW: 300 kHz Sweep: 500 mS Quasi-Peak Adapter: Normal - Automatic Bandwidth Setting: 9 kHz The resulting data from each band was corrected and collected by software and presented in the graphical representations shown in B.9 for the two leads. A defined set of frequency points of interest on each lead were used by software to optimize a set of readings for each type of detector (peak, quasi-peak and average).				
	This data was corrected by the software and is presented in the tables shown in section B.9.				

Applicant:	Itronix Corporation	FCC ID:	KBCIX260PNLA580BT	IC ID:	1943A-IX260Pf	
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth Transmitter			Model:	IX260PNLA580BT	ITRONIX®	



Test Report S/N:	022305KBC-1	022305KBC-T616-E15B		
Test Date(s):	21Sept04 - 14Oct04, 22Oc			
Test Type(s):	FCC §15.247 IC RSS-210 Issue			
Lab Registration(s):	FCC #714830	IC Lab	File #3874	

B.6. SETUP PHOTOS

Photograph B-1 - AC Powerline Conducted Emission Configuration



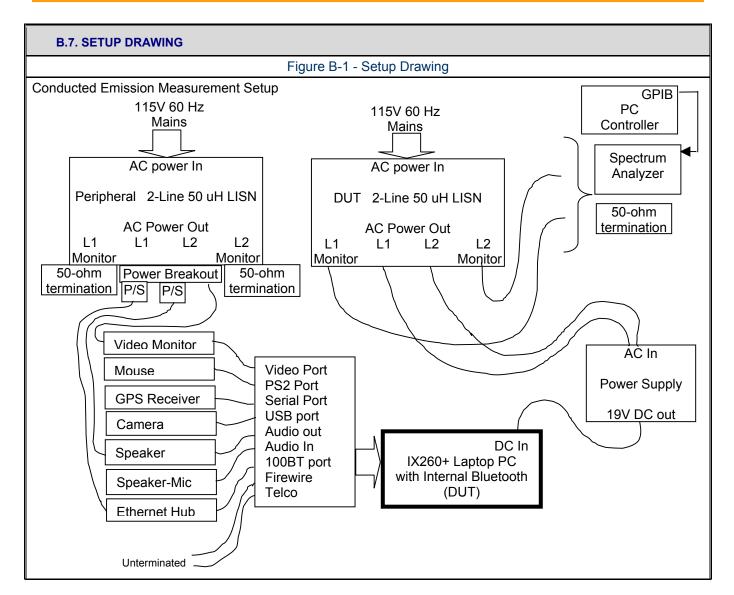
Photograph B-2 - AC Powerline Conducted Emission Cable Placement



Applicant:	Itronix Corporation	FCC ID:	KBCIX260PNLA580BT	IC ID:	1943A-IX260Pf	
Rugged Lap	top PC with internal Ci	rronet BT202	2 Bluetooth Transmitter	Model:	IX260PNLA580BT	ITRONIX
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Test Report S/N:	022305KBC-1	Issue 1.0	
Test Date(s):	21Sept	4, 22Oct04	
Test Type(s):	FCC §15.247 IC RSS-210 Iss		
Lab Registration(s):	FCC #714830	IC Lab	File #3874



B.8. DUT OPERATING D	B.8. DUT OPERATING DESCRIPTION						
Bluetooth	The Bluetooth transmitter was set to transmit at full power on Channel 39 (2441 MHz) with a 1000 modulation setting.						
PC	Other than operating the Bluetooth software and running MS windows, no PC exercising was performed.						
Peripherals	All peripherals were active, but no specific traffic was initiated.						

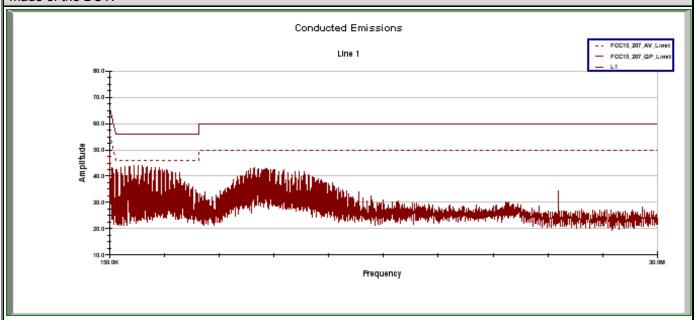
Applicant:	Itronix Corporation	FCC ID:	KBCIX260PNLA580BT	IC ID:	1943A-IX260Pf		
Rugged Lap	top PC with internal C	irronet BT202	2 Bluetooth Transmitter	Model:	IX260PNLA580BT		TRONIX
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Test Report S/N:	022305KBC-1	Issue 1.0	
Test Date(s):	21Sept	4, 22Oct04	
Test Type(s):	FCC §15.247	210 Issue 5	
Lab Registration(s):	FCC #714830	IC Lab	File #3874

B.9. TEST RESULTS

Following are peak emission plots and tabular data describing the peak, quasi-peak and average measurements made of the DUT.

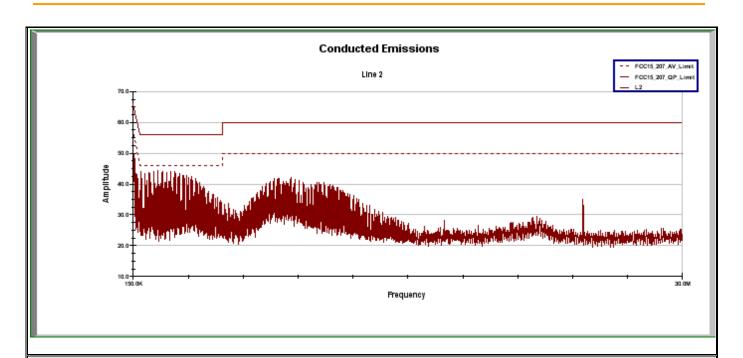


			Project Number:		072804KBC	-1543-E15B			Standard:		FCC 15.207	
CCE	Project Number: 072804KBC-T543-E15B Standard: FCC 15.2 Company: Itronix Test Start Date: 14-Oct-C				14-Oct-04							
Test	ng and Engineering I	Services Lab	Product:		IX260+ with	Cirronet BT20	22 Bluetooth		Test End Da	te:	14-Oct-04	
					Line	e 1 Conducte	d Emission	s				
Frequency	Und	orrected Rea	ding	Correction Factor	Corre	cted Emission	Level	Quasi-Peak Limit	Quasi-Peak Margin	Average Limit	Average Margin	Pass/Fail
	Peak	Quasi-Peak	Average	1 dolor	Peak	Quasi-Peak	Average	Littill	Mar giri	LIIIIL	Margin	rass/i all
MHz	dBu∀	dBu∀	dBu∀	dB	dBu∀	dBu∀	dBu∀	dBu∀	dB	dBu∀	dB	
0.159	50.40	47.24	45.54	1.98	52.38	49.22	47.52	65.53	16.31	55.53	8.01	Pass
1.251	43.60	43.04	43.15	0.31	43.91	43.35	43.46	56.00	12.66	46.00	2.55	Pass
1.252	43.80	43.14	43.29	0.30	44.10	43.44	43.59	56.00	12.56	46.00	2.41	Pass
1.486	44.00	43.19	43.32	0.29	44.29	43.48	43.61	56.00	12.52	46.00	2.39	Pass
1.718	43.80	43.15	43.18	0.29	44.09	43.44	43.47	56.00	12.57	46.00	2.54	Pass
1.722	44.00	43.34	43.50	0.28	44.29	43.63	43.78	56.00	12.38	46.00	2.22	Pass
1.957	44.10	43.25	43.34	0.28	44.38	43.53	43.62	56.00	12.47	46.00	2.38	Pass
8.055	43.40	41.99	39.94	0.32	43.72	42.31	40.26	60.00	17.69	50.00	9.74	Pass
						Correction	Factor (dB))				
Margin (dB) = Limit (dBuV) - Corrected Emission Level (dBuV)												

Applicant:	Itronix Corporation	FCC ID:	KBCIX260PNLA580BT	IC ID:	1943A-IX260Pf	
Rugged Lapto	pp PC with internal Ci	rnal Cirronet BT2022 Bluetooth Transmitter		Model:	IX260PNLA580BT	ITRONIX
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Test Report S/N:	022305KBC-1	Issue 1.0		
Test Date(s):	21Sept04 - 14Oct04, 22Oct			
Test Type(s):	FCC §15.247 IC RSS-210 Issue			
Lab Registration(s):	FCC #714830	IC Lab	File #3874	



CE	etili	ch	Company:		ltronix				Test Start D	ate:	14-Oct-04	
Test	ng and Engineering	Services Lab	Product:		IX260+ with	Cirronet BT20:	22 Bluetooth		Test End Date:		14-Oct-04	
					Line	e 2 Conducte	d Emission	ıs				
requency	Und	corrected Rea	ding	Correction Factor	Corre	ected Emission	Level	Quasi-Peak Limit	Quasi-Peak Margin	Average Limit	Average Margin	Pass/Fail
	Peak	Quasi-Peak	Average	1 dotor	Peak	Quasi-Peak	Average	Liiiik	margari	Liiii	marg	r assir all
MHz	dBu∀	dBu∀	dBu∀	dB	dBu∀	dBu∀	dBu∀	dBu∀	dB	dBu∀	dB	
0.158	51.50	48.10	47.43	1.98	53.48	50.08	49.41	65.55	15.47	55.55	6.14	Pass
0.215	47.50	45.05	36.85	1.28	48.78	46.33	38.13	63.00	16.67	53.00	14.87	Pass
0.500	47.09	45.17	39.25	0.47	47.56	45.64	39.72	56.00	10.36	46.00	6.28	Pass
1.253	44.00	43.50	43.59	0.30	44.30	43.80	43.89	56.00	12.20	46.00	2.11	Pass
1.483	44.10	43.48	43.48	0.29	44.39	43.77	43.77	56.00	12.23	46.00	2.23	Pass
1.485	44.30	43.51	43.59	0.29	44.59	43.80	43.89	56.00	12.20	46.00	2.11	Pass
5.000	43.18	42.37	41.73	0.30	43.48	42.67	42.03	56.00	13.33	46.00	3.97	Pass
8.683	41.99	41.15	39.76	0.33	42.32	41.48	40.09	60.00	18.52	50.00	9.91	Pass
		evel (dBuV) : BuV) - Corre				Correction	Factor (dB))				
		_ , _ ,				Correction	Factor (dB))				

Applicant:	Itronix Corporation	FCC ID:	KBCIX260PNLA580BT	IC ID:	1943A-IX260Pf		- POLIIV
Rugged Lapt	op PC with internal Ci	rronet BT202	2 Bluetooth Transmitter	Model:	IX260PNLA580BT		FRONIX
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Test Report S/N:	022305KBC-1	Issue 1.0		
Test Date(s):	21Sept04 - 14Oct04, 22Oct0			
Test Type(s):	FCC §15.247 IC RSS-210 Issue			
Lab Registration(s):	FCC #714830	IC Lab	File #3874	

B.10. PASS/FAIL

In reference to the results outlined in B.9 the DUT passes the requirements as stated in the reference standards as follows: The RF voltage measured in reference to ground on each of the power line conductors does not exceed the limits as outline in FCC 15 207

B.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.

Duane M. Friesen, C.E.T.

EMC Manager Celltech Labs Inc.

12Oct04

Date



Test Report S/N:	022305KBC-T616-E15B		Issue 1.0
Test Date(s):	21Sept04 - 14Oct04, 22Oct04		
Test Type(s):	FCC §15.247 IC RSS-210 Issue		
Lab Registration(s):	FCC #714830	IC Lab	File #3874

Appendix C - Peak Conducted RF Output Power Measurement

C.1. REFERENCES	
Normative Reference Standard	FCC CFR 47 §15.247(b) (1)
Procedure Reference	FCC 97-114

C.2. LIMITS

C.2.1. FCC CFR 47

§15.247(b): The maximum peak output power of the intentional radiator shall not exceed the following: §15.247(b) (1) For frequency hopping systems operating in the 2400 – 2483.5 MHz band employing at least 75 hopping channels, and all frequency hopping systems in the 5725 – 5850 MHz bands: 1 Watt.*

Note: When a reference is made to conducted results outlined in the ACS test report they will be referenced to the conducted power measurements outlined in section 6.4 of that report. The conducted power measurements reported herein were made for correlation purposes and are applicable as references for the measurements described in this report.

C.3. ENVIRONMENTAL CONDITIONS		
Temperature	25.2 +/- 2 °C	
Humidity	35 +/- 2 %	
Barometric Pressure	96.34 kPa	

C.4. EQUIPMENT LIST						
ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE	
00015	Agilent	E4408B	Spectrum Analyzer	29Dec03	29Dec04	
00076	Pasternack	PE7014-30	30dB 2 Watt Attenuator	08Jul04*	24Jun05	

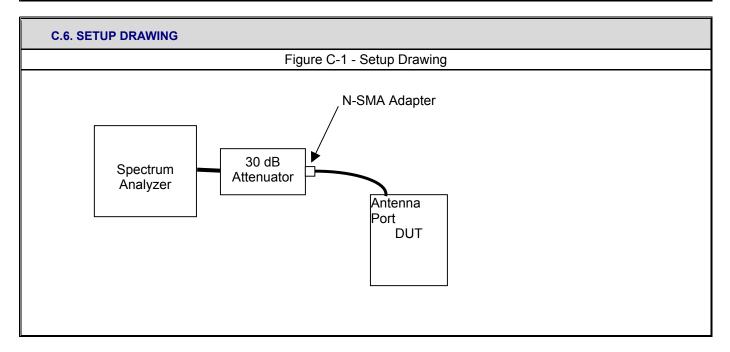
^{*}Attenuator verified with power meter prior to use

^{*}Appendix E results confirm the number of hopping channels is at least 75.



Test Report S/N:	022305KBC-T616-E15B Issue 1		Issue 1.0
Test Date(s):	21Sept04 - 14Oct04, 22Oct04		
Test Type(s):	FCC §15.247 IC RSS-210 Issue 5		
Lab Registration(s):	FCC #714830	IC Lab	File #3874

C.5. MEASUREMENT	C.5. MEASUREMENT EQUIPMENT SETUP			
Measurement Equipment Connections	The equipment was connected as shown in the setup drawing in C.6.			
Measurement Equipment Settings	The power is measured within the band with the following spectrum analyzer settings: RBW – 100 kHz VBW – 1 MHz Detector – Peak Average – Power			



C.7. DUT OPERATING DESCRIPTION

The unmodulated carrier was set to each of the three frequencies representing the frequency band of operation.

Applicant:	Itronix Corporation	FCC ID:	KBCIX260PNLA580BT	IC ID:	1943A-IX260Pf		
Rugged Lap	op PC with internal Cirronet BT2022 Bluetooth Transmitter		Model:	IX260PNLA580BT		TRONIX	
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Test Report S/N:	022305KBC-T616-E15B		Issue 1.0
Test Date(s):	21Sept04 - 14Oct04, 22Oct04		
Test Type(s):	FCC §15.247 IC RSS-210 Issue 5		
Lab Registration(s):	FCC #714830	IC Lab	File #3874

C.8. TEST RESULTS					
Channel	Frequency	Peak Conducted Power Lin			
	MHz	dBm Watts Wat			
Low	2402	15.40	.0347	1	
Mid	2441	15.61	.0364	1	
High	2480	15.34	.0342	1	

C.9. PASS/FAIL

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

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.

Duane M. Friesen, C.E.T.

EMC Manager Celltech Labs Inc.

14Oct04

Date



Test Report S/N:	022305KBC-T616-E15B		Issue 1.0	
Test Date(s):	21Sept04 - 14Oct04, 22Oct04			
Test Type(s):	FCC §15.247 IC RSS-210 Issue			
Lab Registration(s):	FCC #714830			

Appendix D - Adjacent Channel Separation

D.1. REFERENCES	
Normative Reference Standard	FCC CFR 47 §15.247 (a) (1)
Test Reference	ACS Test Report: FCC Part 15 Certification Test Report - FCC ID: HSW-BT2022M 2.4 GHz Frequency Hopping Spread Spectrum (Modular Approval) ACS Report Number 03-0193-15BC Issue Date: January 5, 2004

D.2. LIMITS

§15.247(a) (1): Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or 20 dB bandwidth of the hopping channel, whichever is greater.

Note: The 20 dB bandwidth of the hopping channel is described to be 1 MHz as outlined in section 6.5.4 of the ACS report. Therefore the channel separation must be 1 MHz.

D.3. TEST PROCEDURE & RESULTS

The test method used to show compliance to the applicable parts and the results obtained are outlined in the ACS reference test report number 03-0193-15BC section 6.5.1. A channel separation of 1.0 MHz was reported for all channels.

D.4. PASS/FAIL



Test Report S/N:	022305KBC-T616-E15B		Issue 1.0
Test Date(s):	21Sept04 - 14Oct04, 22Oct04		
Test Type(s):	FCC §15.247 IC RSS-210 Issue		
Lab Registration(s):	FCC #714830	IC Lab	File #3874

Appendix E - Number of Hopping Channels

E.1. REFERENCES				
Normative Reference Standard	FCC CFR 47 §15.247 (a) (1) (iii)			
Test Reference	ACS Test Report: FCC Part 15 Certification Test Report - FCC ID: HSW-BT2022M 2.4 GHz Frequency Hopping Spread Spectrum (Modular Approval) ACS Report Number 03-0193-15BC Issue Date: January 5, 2004			

E.2. LIMITS

§15.247 (a) (1) (iii): Frequency hopping systems in the 2400 – 2483.5 MHz band shall use at least 15 non-overlapping channels.

E.3. TEST PROCEDURE & RESULTS

The test method used to show compliance to the applicable parts and the results obtained are outlined in the ACS reference test report number 03-0193-15BC section 6.5.2

The results outlined in the reference test report show that the number of hopping channels is at least 75; which implies an applicable power limit of 1 watt be applied to the results outlined in Appendix C.

E.4. PASS/FAIL





Test Report S/N:	022305KBC-1	Issue 1.0	
Test Date(s):	21Sept04 - 14Oct04, 22Oct04		
Test Type(s):	FCC §15.247 IC RSS-210 Issue		210 Issue 5
Lab Registration(s):	FCC #714830	IC Lab	File #3874

Appendix F - Channel Dwell Time

F.1. REFERENCES				
Normative Reference Standard	FCC CFR 47 §15.247 (a) (1), FCC CFR 47 §15.247 (a) (1) (iii)			
Test Reference	ACS Test Report: FCC Part 15 Certification Test Report - FCC ID: HSW-BT2022M 2.4 GHz Frequency Hopping Spread Spectrum (Modular Approval) ACS Report Number 03-0193-15BC Issue Date: January 5, 2004			

F.2. LIMITS

§15.247 (a) (1):The system shall hop to channel frequencies that are selected at the hopping rate from a pseudorandomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. §15.247 (a) (1) (iii):The average time of occupancy on any channel shall be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

F.3. TEST PROCEDURE & RESULTS

The test method used to show compliance to the applicable parts and the results obtained are outlined in the ACS reference test report number 03-0193-15BC section 6.5.3. A channel dwell of 10 mS each 20 seconds was reported.

F.4. PASS/FAIL

Applicant:	Itronix Corporation	FCC ID:	KBCIX260PNLA580BT	IC ID:	1943A-IX260Pf	
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth Transmitter				Model:	IX260PNLA580BT	ITRONIX®



Test Report S/N:	022305KBC-T616-E15B		Issue 1.0
Test Date(s):	21Sept04 - 14Oct04, 22Oct04		
Test Type(s):	FCC §15.247 IC RSS-210 Issue		210 Issue 5
Lab Registration(s):	FCC #714830	IC Lab	File #3874

Appendix G - 20 dB Bandwidth Measurement

G.1. REFERENCES				
Normative Reference Standard	FCC CFR 47 §15.247 (a) (1) (iii)			
Test Reference	ACS Test Report: FCC Part 15 Certification Test Report - FCC ID: HSW-BT2022M 2.4 GHz Frequency Hopping Spread Spectrum (Modular Approval) ACS Report Number 03-0193-15BC Issue Date: January 5, 2004			

G.2. LIMITS

§15.247 (a) (1) (iii): Frequency hopping systems in the 2400 – 2483.5 MHz band shall use at least 15 non-overlapping channels.

Note: The channel width as referenced in the results outlined in Appendix C and D is 1 MHz, therefore to be non-overlapping, the 20 dB bandwidth must be no greater than 1 MHz for the system to comply.

G.3. TEST PROCEDURE & RESULTS

The test method used to show compliance to the applicable parts and the results obtained are outlined in the ACS reference test report number 03-0193-15BC section 6.5.4. A 20 dB bandwidth measurement of 1 MHz was reported.

G.4. PASS/FAIL

Applicant:	Itronix Corporation	FCC ID:	KBCIX260PNLA580BT	IC ID:	1943A-IX260Pf	
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth Transmitter				Model:	IX260PNLA580BT	ITRONIX



Test Report S/N:	022305KBC-1	Issue 1.0	
Test Date(s):	21Sept04 - 14Oct04, 22Oct04		
Test Type(s):	FCC §15.247 IC RSS-210 Issue		
Lab Registration(s):	FCC #714830	IC Lab	File #3874

Appendix H - Radiated Spurious Emissions Measurement

H.1. REFERENCES	
Normative Reference Standard	FCC CFR 47 §15.247(c)
Procedure Reference	ANSI C63.4; FCC 97-114

H.2. LIMITS

H.2.1. FCC CFR 47

§15.247 (c): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in 15.209 (a) is not required.

Note

Spurious emissions within the restricted bands are reported in Appendix I.

The maximum carrier field strength @ 3m was determined to be in the horizontal orientation with transmitter set for the mid channel (2441 MHz). The field strength in this configuration was 108.31 dBuV/m and was used as the limit reference. Therefore the calculated limit used was 88.31 dBuV/m (Limit (dBuV/m) = 108.31 (dBuV/m) – 20 dB) for the horizontal polarization and 83.21 dBuV/m (Limit (dBuV/m) = 103.21 (dBuV/m) – 20 dB) for vertical.

H.3. ENVIRONMENTAL CONDITIONS			
Temperature	27.4 +/- 2 °C		
Humidity	33 +/- 2 %		
Barometric Pressure	96.24 +/- 0.2 kPa		

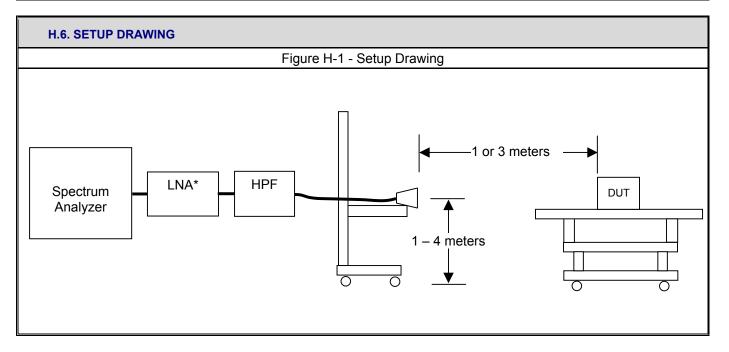
H.4. EQUIPMENT LIST						
ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE	
00072	EMCO	2075	Mini-mast	n/a	n/a	
00073	EMCO	2080	Turn Table	n/a	n/a	
00071	EMCO	2090	Multi-Device Controller	n/a	n/a	
00035	ETS	3115	Double Ridged Guide Horn	24Mar04	24Mar05	
00202	ETS	3160-09	Small Horn Antenna	27May04	27Jun05	
00015	Agilent	E4408B	Spectrum Analyzer	29Dec03	29Dec04	
00049	HP	8566B	Spectrum Analyzer RF Section	18May04	18May05	
00048	Gore	65474	Microwave Cable	20May04	20May05	
00030	HP	83017A	LNA	20May04	20May05	

Applicant:	Itronix Corporation	FCC ID:	KBCIX260PNLA580BT	IC ID:	1943A-IX260Pf	
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth Transmitter			Model:	IX260PNLA580BT	ITRONIX	



Test Report S/N:	022305KBC-T	616-E15B	Issue 1.0	
Test Date(s):	21Sept04 - 14Oct04, 22Oct0			
Test Type(s):	FCC §15.247	IC RSS-2	210 Issue 5	
Lab Registration(s):	FCC #714830	IC Lab	File #3874	

MEASUREMENT		The measurement equipment was connected as shown in H.6. A number of antennas were used to cover the applicable frequency range test. The ranges in which each antenna was used are as follows:							
EQUIPMENT	Frequency	Range	Antenna						
CONNECTIONS	1 GHz – 1	8 GHz	ETS 3115 Ho	orn					
	18 GHz – 2	26GHz	ETS 3160-09	ETS 3160-09 Horn					
	The spectrum analyzer was set to the following settings:								
	Frequency Range	RBW	VBW	Detector					
	MHz	kHz	kHz						
MEASUREMENT EQUIPMENT	> 1000	1000 ¹	1000	Peak ²					
SETTINGS		was applied to me	hen suitable margin could be rea asurements made with a peak d easurement was reported, it was	etector using a 1					







Test Report S/N:	022305KBC-1	616-E15B	Issue 1.0	
Test Date(s):	21Sept04 - 14Oct04, 22Oct			
Test Type(s):	FCC §15.247	IC RSS-2	210 Issue 5	
Lab Registration(s):	FCC #714830	IC Lab	File #3874	

H.7. SETUP PHOTOGRAPHS

Photograph H-1 - 3115 Horn Antenna (1-18GHz)



Photograph H-2 - 3160-09 Horn Antenna (18-26GHz)



H.8. DUT OPERATING DESCRIPTION

Measurements were made at three channels throughout the band, Low Channel (2402 MHz), Mid Channel (2441 MHz), High Channel (2480 MHz). The configuration used was with a gain setting of 250/40 for the low channel, 250/44 for mid channel and 220/45 for the high channel. The modulation was set to 1000. As a worst-case, the band-edge measurements were made of the low and high channels with data stream modulation.



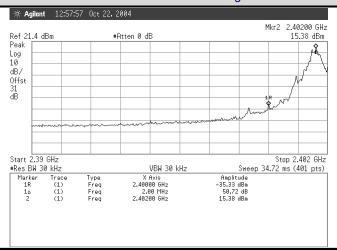
Test Report S/N:	022305KBC-1	616-E15B	Issue 1.0
Test Date(s):	21Sept	t04 - 14Oct0	4, 22Oct04
Test Type(s):	FCC §15.247	IC RSS-2	210 Issue 5
Lab Registration(s):	FCC #714830	IC Lab	File #3874

H.9. TEST RESULTS

H.9.1. Lower Band-edge Emission Field Strengths @ Specified Distance

Note: (Upper Band-edge (Restricted) is in Appendix I)

Channel 0 - Conducted Band-edge Plots



Channel 0 - Radiated Carrier Field Strengths

Polarity	Distance	Rx Antenna	Channel	Frequency	SA Level	Rx AF	Rx CL	Other Rx	Total Rx CF	Field Strength	Detector
	m			MHz	dBuV	dB/m	dB	dB	dB/m	dBuV/m	(PK/QP/AVG)
Н	3	Horn SN6276	0	2402.00	83.90	30.24	3.48	0.00	33.72	117.62	PK
Н	3	Horn SN6276	0	2402.00	42.30	30.24	3.48	0.00	33.72	76.02	AV
٧	3	Horn SN6276	0	2402.00	75.50	30.24	3.48	0.00	33.72	109.22	PK
٧	3	Horn SN6276	0	2402.00	38.70	30.24	3.48	0.00	33.72	72.42	AV

Channel 0 - Calculated Band-edge (Out-of-Band) Field Strengths

Polarity	Distance	Rx Antenna	Channel	Frequency	Carrier Radiated Field Strength	Detector	Marker- Delta	Calculated Bandedge Field Strength	Limit Distance	Limit Distance Correction	Calculated Limit	Margin	Pass/Fail
	m			MHz	dBuV/m		dB	dBuV/m	m	dB	dBuV/m	dB	
Н	3	Horn SN6276	0	2400.0	117.62	PK	50.72	66.9	3	0	97.62	30.72	Pass
Н	3	Horn SN6276	0	2400.0	76.02	AV	50.72	25.3	3	0	56.02	30.72	Pass
٧	3	Horn SN6276	0	2400.0	109.22	PK	50.72	58.5	3	0	97.62	39.12	Pass
٧	3	Horn SN6276	0	2400.0	72.42	AV	50.72	21.7	3	0	56.02	34.32	Pass

Formulae

Total CF (dB) = Antenna Factor (dB) + Cable Factor (dB) + Other Factor (Amplifier Gain, Filter Loss, etc) (dB)

Field Strength (dBuV/m) = SA Reading (dBuV) + Total CF (dB/m)

Limit Distance Correction (dB) = 40 * log(d1/d2) for f < 30 MHz, 20*log(d1/d2) for f > 30 MHz; where d1 is the measurement distance and d2 is the published limit Limit (dBuV/m) = Published Limit (dBuV/m) + Limit Distance Correction (dB)

Margin (dB) = Limit (dBuV/m) - Field Strength (dBuV/m)

Note: Measurements and calculation reference the Marker-Delta Method Described in FCC Public Notice DA 00-705

Applicant:	Itronix Corporation	Corporation FCC ID: KBCIX260PNLA580BT IC ID: 1943A-IX260Pf						
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth Transmitter					IX260PNLA580BT	ITRONIX		
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Test Report S/N:	022305KBC-1	616-E15B	Issue 1.0		
Test Date(s):	21Sept04 - 14Oct04, 22Oct				
Test Type(s):	FCC §15.247	IC RSS-2	210 Issue 5		
Lab Registration(s):	FCC #714830	IC Lab	File #3874		

H.9.2. Spurious Emission Field Strengths @ Specified Distance

Celltech

Company: 072804KBC-T543-E15B
Product: Itronix

itronix

IX260+ with Bluetooth

Standard: FCC15.247c
Test Start Date: 21Sep04
Test End Date: 12Oct04

									IX2	60+ with Blueto	oth							
Channel	Polarity	Distance	Rx Antenna	Frequency	SA Level	Noise Floor	Rx AF	Rx CL	Other Rx	*Duty Cycle Correction	Total Rx CF	Field Strength	Detector	Limit Distance	Limit Distance Correction	Calculated Limit	Margin	Pass/Fail
		m		MHz	dBuV		dB/m	dB	dB	dB	dB/m	dBuV/m	(PK/QP/AV)	m	dB	dBuV/m	dB	
BT-Low	Н	3	Horn SN6276	2000.00	14.40	х	29.60	3.18	0.00	-20.00	12.78	27.18	PK	3.00	0.00	88.31	61.13	PASS
BT-Low	Н	3	Horn SN6276	7206.72	52.40		38.17	6.21	-34.32	-20.00	-9.94	42.46	PK	3.00	0.00	88.31	45.85	PASS
BT-Low	Н	1	Horn SN6276	17986.00	44.90		45.86	10.43	-32.01	-20.00	4.28	49.18	PK	3.00	9.54	97.85	48.68	PASS
BT-Low	V	3	Horn SN6276	2000.00	17.00	х	29.60	3.18	0.00	-20.00	12.78	29.78	PK	3.00	0.00	83.21	53.43	PASS
BT-Low	V	3	Horn SN6276	4804.58	52.70		35.31	4.96	-34.08	-20.00	-13.81	38.89	PK	3.00	0.00	83.21	44.32	PASS
BT-Low	V	3	Horn SN6276	4804.46	50.80		35.31	4.96	-34.08	-20.00	-13.81	36.99	PK	3.00	0.00	83.21	46.22	PASS
BT-Low	V	3	Horn SN6276	7207.22	57.30		38.17	6.21	-34.32	-20.00	-9.93	47.37	PK	3.00	0.00	83.21	35.85	PASS
BT-Low	V	1	Horn SN6276	17874.00	44.50		45.52	10.28	-32.09	-20.00	3.71	48.21	PK	3.00	9.54	92.75	44.54	PASS
BT-Mid	Н	3	Horn SN6276	2000.00	14.40	х	29.60	3.18	0.00	-20.00	12.78	27.18	PK	3.00	0.00	88.31	61.13	PASS
BT-Mid	Н	3	Horn SN6276	4882.41	55.90		35.46	5.04	-34.09	-20.00	-13.59	42.31	PK	3.00	0.00	88.31	46.00	PASS
BT-Mid	Н	3	Horn SN6276	7323.65	50.00		38.38	6.32	-34.32	-20.00	-9.62	40.38	PK	3.00	0.00	88.31	47.93	PASS
BT-Mid	Ι	1	Horn SN6276	17992.00	44.50		45.88	10.45	-32.01	-20.00	4.32	48.82	PK	3.00	9.54	97.85	49.03	PASS
BT-Mid	٧	3	Horn SN6276	2000.00	17.00	х	29.60	3.18	0.00	-20.00	12.78	29.78	PK	3.00	0.00	83.21	53.43	PASS
BT-Mid	٧	3	Horn SN6276	4882.23	49.80		35.46	5.04	-34.09	-20.00	-13.59	36.21	PK	3.00	0.00	83.21	47.00	PASS
BT-Mid	/	3	Horn SN6276	7323.74	55.80		38.38	6.32	-34.32	-20.00	-9.62	46.18	PK	3.00	0.00	83.21	37.03	PASS
BT-Mid	٧	3	Horn SN6276	9764.87	49.40		40.30	7.41	-34.25	-20.00	-6.54	42.86	PK	3.00	0.00	83.21	40.35	PASS
BT-Mid	٧	1	Horn SN6276	18000.00	43.90		45.90	10.48	-32.00	-20.00	4.38	48.28	PK	3.00	9.54	92.75	44.47	PASS
BT-High	Н	3	Horn SN6276	2000.00	14.40	х	29.60	3.18	0.00	-20.00	12.78	27.18	PK	3.00	0.00	88.31	61.13	PASS
BT-High	Ι	3	Horn SN6276	4960.48	52.20		35.62	5.06	-34.10	-20.00	-13.42	38.78	PK	3.00	0.00	88.31	49.53	PASS
BT-High	Н	1	Horn SN6276	17862.00	44.70		45.49	10.28	-32.10	-20.00	3.67	48.37	PK	3.00	9.54	97.85	49.49	PASS
BT-High	V	3	Horn SN6276	2000.00	17.00	х	29.60	3.18	0.00	-20.00	12.78	29.78	PK	3.00	0.00	83.21	53.43	PASS
BT-High	V	3	Horn SN6276	4960.39	50.80		35.62	5.06	-34.10	-20.00	-13.42	37.38	PK	3.00	0.00	83.21	45.83	PASS
BT-High	V	3	Horn SN6276	7440.88	49.80		38.59	6.43	-34.32	-20.00	-9.29	40.51	PK	3.00	0.00	83.21	42.70	PASS
BT-High	٧	1	Horn SN6276	17936.00	44.70		45.71	10.28	-32.04	-20.00	3.94	48.64	PK	3.00	9.54	92.75	44.11	PASS

Formulae

Total CF (dB) = Antenna Factor (dB)+ Cable Factor (dB) + Other Factor (Amplifier Gain, Filter Loss, etc) (dB)

Field Strength (dBuV/m) = SA Reading (dBuV) + Total CF (dB/m)

Limit Distance Correction (dB) = 40 * log(d1/d2) for f < 30 MHz, 20*log(d1/d2) for f >30 MHz; where d1 is the measurement distance and d2 is the published limit distance

Limit (dBuV/m) = Published Limit (dBuV/m) + Limit Distance Correction (dB)

 $Margin \ (dB) = Limit \ (dBuV/m) - Field \ Strength \ (dBuV/m)$

Duty Cycle Correction (dB) = 20 * log (duty cycle ratio*)

Duty Cycle ratio = maximum time on in any 100 mS period (in mS) / 100 mS

*DUT duty cyle = 10 mS in each 10 seconds

*The frequency points reported, describe the highest emission measured in each of the ranges tested and are used to describe the measured spectrum as a whole. Emissions that may be present in the restricted bands are evaluated against the appropriate limits in Appendix I. No out-of-band emissions were measured above the levels noted.



Test Report S/N:	022305KBC-1	616-E15B	Issue 1.0	
Test Date(s):	21Sept04 - 14Oct04, 22Oc			
Test Type(s):	FCC §15.247	IC RSS-2	210 Issue 5	
Lab Registration(s):	FCC #714830	IC Lab	File #3874	

H.10. PASS/FAIL

In reference to the results outlined in H.9, the DUT passes the requirements as stated in the reference standards as follows: FCC 15.247 (c): All emissions within any 100 kHz bandwidth outside the operating frequency band are greater than 20 dB below the maximum 100 kHz bandwidth signal within the operating band.

H.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

M W. Pyse

Celltech Labs Inc.

22Oct04

Date



Test Report S/N:	022305KBC-1	616-E15B	Issue 1.0	
Test Date(s):	21Sept04 - 14Oct04, 22Oc			
Test Type(s):	FCC §15.247	IC RSS-2	210 Issue 5	
Lab Registration(s):	FCC #714830	IC Lab	File #3874	

Appendix I - Restricted Band Emissions Measurement

I.1. REFERENCES	
Normative Reference Standard	FCC CFR 47 §15.205 (a) (b), FCC CFR 47 §15.209 (a)
Procedure Reference	FCC 97-114

I.2. LIMITS				
FCC CFR 47 §15.205	(a) Except as shown in paragraph (d) frequency bands listed below:	of this section, only spurious	s emissions are permit	ted in any of the
	MHz	MHz	MHz	GHz
	0.090–0.110	16.69475–16.69525 16.80425–16.80475 25.5–25.67 37.5–38.25 73–74.6 74.8–75.2 108–121.94 123–138 149.9–150.05 156.52475–156.52525 156.7–156.9 162.0125–167.17 167.72–173.2 240–285 322–335.4 d shall be 0.490–0.510 MHz. d) and (e), the field strength of the in 15.209. At frequencies of the demonstrated using measuments.	equal to or less than 10 urement instrumentation emission limits in Sec	000 MHz, compliance n employing a CISPR tion 15.209 shall be
FCC CFR 47 §15.209	(a) Except as provided elsewhere in the the field strength levels specified in the		om an intentional radia	ator shall not exceed
	Frequency	Field Strength	Measure	ement Distance
	MHz	uV/m		Meters
	.009 – 0.490	2400/F(kHz)		300
	0.490 - 1.705	24000/F(kHz)		30
	1.705 – 30.0	30		30
	30 – 88	100		3
	88 – 216	150		3
	216 - 960	200		3
	Above 960	500		3
	(b) In the emission table above, the tig	ohter limit applies at the band	d edaes	

Applicant:	Itronix Corporation	orporation FCC ID: KBCIX260PNLA580BT IC ID: 1943A-IX260Pf						
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth Transmitter				Model:	IX260PNLA580BT	ITRONIX		
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Test Report S/N:	022305KBC-1	Issue 1.0		
Test Date(s):	21Sept04 - 14Oct04, 22Oct04			
Test Type(s):	FCC §15.247	CC §15.247 IC RSS-210 Issue		
Lab Registration(s):	FCC #714830	IC Lab	File #3874	

I.3. ENVIRONMENTAL CONDITIONS				
Temperature	27.4 +/- 2 °C			
Humidity	33 +/- 2 %			
Barometric Pressure	96.24 +/- 0.2 kPa			

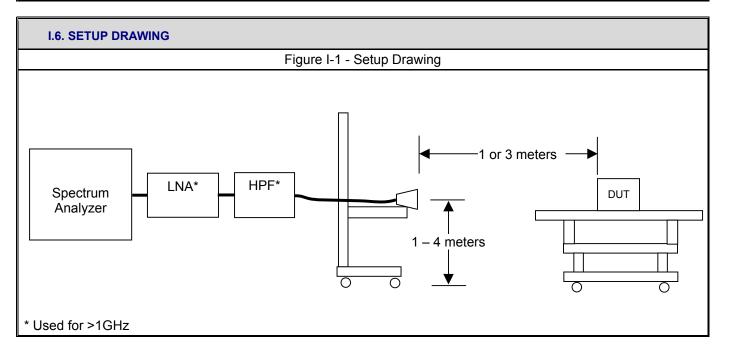
I.4. EQUIPMENT LIST								
ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE			
00072	EMCO	2075	Mini-mast	n/a	n/a			
00073	EMCO	2080	Turn Table	n/a	n/a			
00071	EMCO	2090	Multi-Device Controller	n/a	n/a			
00085	EMCO	6502	Loop Antenna	10Aug04	10Aug05			
00050	Chase	CBL-6111A	Bilog Antenna	30Apr04	30Apr05			
00035	ETS	3115	Double Ridged Guide Horn	24Mar04	24Mar05			
00202	ETS	3160-09	Small Horn Antenna	27May04	27Jun05			
00015	Agilent	E4408B	Spectrum Analyzer	29Dec03	29Dec04			
00049	HP	8566B	Spectrum Analyzer RF Section	18May04	18May05			
00049	HP	85650A	Quasi-peak Adapter	18May04	18May05			
00047	HP	85685A	RF Preselector	18May04	18May05			
00048	Gore	65474	Microwave Cable	20May04	20May05			
00030	HP	83017A	LNA	20May04	20May05			





Test Report S/N:	022305KBC-1	Issue 1.0		
Test Date(s):	21Sept04 - 14Oct04, 22Oct04			
Test Type(s):	FCC §15.247	FCC §15.247 IC RSS-210 Issue		
Lab Registration(s):	FCC #714830	IC Lab	File #3874	

		The measurement equipment was connected as shown in I.6. A number of antennas were used to cover the applicable frequency range test. The ranges in which each antenna was used are as follows:						
MEASUREMENT	Frequency	Range		Antenna				
EQUIPMENT	10 kHz – 30	0 MHz		EMCO 6502 Loop				
CONNECTIONS	30 MHz – 1	1 GHz		CBL-6111A Bilog				
	1 GHz – 18	3 GHz		ETS 3115 Horn				
	18 GHz– 2		ETS 3160-09 Horn					
	The spectrum analyzer was set to the following settings:							
	Frequency Range RBW		VBW	Quasi-Peak BW	Detector			
	MHz	kHz	kHz	kHz	20.00.01			
	0.01 - 0.15	3 ¹	30	0.2	Peak ²			
MEASUREMENT	0.15 – 30	100 ¹	300	3	Peak ²			
EQUIPMENT SETTINGS	30 – 1000	1000 ¹	300	120	Peak ²			
021111100	> 1000	1000	1000	na	Peak ²			
	Note 1: The Quasi-peak adapter was placed in normal for all measurements below 1000 MHz, therefore its bandwidths take precedence. Note 2: As a worst-case measurement, when suitable margin could be realized, the average limit was applied to measurements made with a peak detector.							



Applicant:	Itronix Corporation	FCC ID:	KBCIX260PNLA580BT	A580BT IC ID: 1943A-IX260Pf				
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth Transmitter				Model:	IX260PNLA580BT	ITRONIX		
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Test Report S/N:	022305KBC-1	Issue 1.0		
Test Date(s):	21Sept04 - 14Oct04, 22Oct04			
Test Type(s):	FCC §15.247 IC RSS-210 Issue			
Lab Registration(s):	FCC #714830	IC Lab	File #3874	

I.7. SETUP PHOTOGRAPHS

Photograph I-1 - Loop Antenna (10kHz - 30MHz)

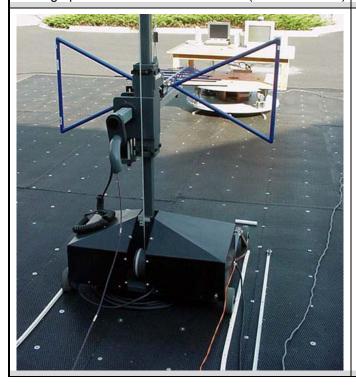


Photograph I-2 - Bilog Antenna (30MHz - 1 GHz)



Photograph I-3 - Horizontal Polarization (30MHz - 1 GHz)







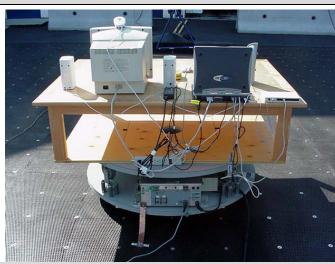


Test Report S/N:	022305KBC-1	Issue 1.0		
Test Date(s):	21Sept04 - 14Oct04, 22Oct04			
Test Type(s):	FCC §15.247 IC RSS-210 Issue			
Lab Registration(s):	FCC #714830	IC Lab	File #3874	

Photograph I-5 - Front of Radiated Emission Configuration

Photograph I-6 - Back of Radiated Emission Configuration





I.8. DUT OPERATING DESCRIPTION

Measurements were made at three channels throughout the band, Low Channel (2402 MHz), Mid Channel (2441 MHz), High Channel (2480 MHz). The configuration used was with a gain setting of 250/40 for the low channel, 250/44 for mid channel and 220/45 for the high channel. The modulation was set to 1000. As a worst-case, the band-edge measurements were made of the low and high channels with data stream modulation.



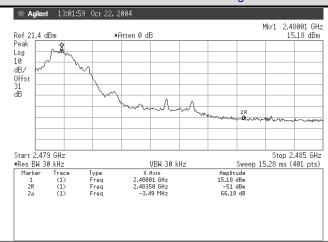
Test Report S/N:	022305KBC-1	Issue 1.0		
Test Date(s):	21Sept04 - 14Oct04, 22Oct04			
Test Type(s):	FCC §15.247 IC RSS-210 Issue			
Lab Registration(s):	FCC #714830	IC Lab	File #3874	

I.9. TEST RESULTS

1.9.1. Upper Band-edge Emission Field Strengths @ Specified Distance

Note: (Lower Band-edge (Out-of-Band) is in Appendix H)

Channel 79 - Conducted Band-edge Plots



Channel 0 - Radiated Carrier Field Strengths

Polarity	Distance	Rx Antenna	Channel	Frequency	SA Level	Rx AF	Rx CL	Other Rx	Total Rx CF	Field Strength	Detector
	m			MHz	dBuV	dB/m	dB	dB	dB/m	dBuV/m	(PK/QP/AVG)
Н	3	Horn SN6276	79	2480.00	83.00	30.37	3.51	0.00	33.88	116.88	PK
Н	3	Horn SN6276	79	2480.00	41.80	30.37	3.51	0.00	33.88	75.68	AV
٧	3	Horn SN6276	79	2480.00	76.70	30.37	3.51	0.00	33.88	110.58	PK
٧	3	Horn SN6276	79	2480.00	39.10	30.37	3.51	0.00	33.88	72.98	AV

Channel 0 - Calculated Band-edge (Out-of-Band) Field Strengths

Polarity	Distance	Rx Antenna	Channel	Frequency	Carrier Radiated Field Strength	Detector	Marker- Delta	Calculated Bandedge Field Strength	Limit Distance	Limit Distance Correction	Calculated Limit	Margin	Pass/Fail
	m			MHz	dBuV/m		dB	dBuV/m	m	dB	dBuV/m	dB	
Н	3	Horn SN6276	79	2483.5	116.88	PK	66.18	50.7	3	0	73.98	23.28	Pass
Н	3	Horn SN6276	79	2483.5	75.68	AV	66.18	9.5	3	0	53.98	44.48	Pass
٧	3	Horn SN6276	79	2483.5	110.58	PK	66.18	44.4	3	0	73.98	29.58	Pass
٧	3	Horn SN6276	79	2483.5	72.98	AV	66.18	6.8	3	0	53.98	47.18	Pass

Formulae

Total CF (dB) = Antenna Factor (dB) + Cable Factor (dB) + Other Factor (Amplifier Gain, Filter Loss, etc) (dB)

Field Strength (dBuV/m) = SA Reading (dBuV) + Total CF (dB/m)

Limit Distance Correction (dB) = 40 * log(d1/d2) for f < 30 MHz, 20*log(d1/d2) for f > 30 MHz; where d1 is the measurement distance and d2 is the published limit Limit (dBuV/m) = Published Limit (dBuV/m) + Limit Distance Correction (dB)

Margin (dB) = Limit (dBuV/m) - Field Strength (dBuV/m)

Note: Measurements and calculation reference the Marker-Delta Method Described in FCC Public Notice DA 00-705

Applicant:	Itronix Corporation	FCC ID:	KBCIX260PNLA580BT	IC ID:	IC ID: 1943A-IX260Pf					
Rugged Lap	top PC with internal Ci	rronet BT202	Model:	IX260PNLA580BT		RONIX				
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Test Report S/N:	022305KBC-1	Issue 1.0		
Test Date(s):	21Sept04 - 14Oct04, 22Oct0			
Test Type(s):	FCC §15.247	IC RSS-210 Issue 5		
Lab Registration(s):	FCC #714830	IC Lab File #3874		

I.9.2. Spurious Emission Field Strengths @ Specified Distance

Celltech

Company: 072804KBC-T543-F15B Product:

IX260+ with Bluetooth

FCC15.209 Standard: Test Start Date: 21Sep04 Test End Date: 12Oct04

									IX2	:60+ with Blueto	ooth							$\overline{}$
Channel	Polarity	Distance	Rx Antenna	Frequency	SA Level	Noise Floor	Rx AF	Rx CL	Other Rx	*Duty Cycle Correction	Total Rx CF	Field Strength	Detector	Limit Distance	Limit Distance Correction	Calculated Limit	Margin	Pass/Fail
		m		MHz	dBuV		dB/m	dB	dB	dB	dB/m	dBuV/m	(PK/QP/AV)	m	dB	dBuV/m	dB	
BT-Low	Н	3	Horn SN6276	2000.00	14.40	Х	29.60	3.18	0.00	-20.00	12.78	27.18	PK	3.00	0.00	53.98	26.80	PASS
BT-Low	Н	3	Horn SN6276	2390.00	36.40		30.22	3.47	0.00	-20.00	13.69	50.09	PK	3.00	0.00	53.98	3.89	PASS
BT-Low	Н	3	Horn SN6276	2483.00	50.90		30.37	3.51	-20.26	-20.00	-6.37	44.53	PK	3.00	0.00	53.98	9.45	PASS
BT-Low	Н	3	Horn SN6276	7206.72	52.40		38.17	6.21	-34.32	-20.00	-9.94	42.46	PK	3.00	0.00	53.98	11.52	PASS
BT-Low	Н	1	Horn SN6276	17986.00	44.90		45.86	10.43	-32.01	-20.00	4.28	49.18	PK	3.00	9.54	63.52	14.35	PASS
BT-Low	V	3	Horn SN6276	2000.00	17.00	х	29.60	3.18	0.00	-20.00	12.78	29.78	PK	3.00	0.00	53.98	24.20	PASS
BT-Low	V	3	Horn SN6276	2390.00	29.20		30.22	3.47	0.00	-20.00	13.69	42.89	PK	3.00	0.00	53.98	11.09	PASS
BT-Low	V	3	Horn SN6276	2483.00	44.00		30.37	3.51	-20.26	-20.00	-6.37	37.63	PK	3.00	0.00	53.98	16.35	PASS
BT-Low	V	3	Horn SN6276	4804.58	52.70		35.31	4.96	-34.08	-20.00	-13.81	38.89	PK	3.00	0.00	53.98	15.09	PASS
BT-Low	V	3	Horn SN6276	4804.46	50.80		35.31	4.96	-34.08	-20.00	-13.81	36.99	PK	3.00	0.00	53.98	16.99	PASS
BT-Low	V	3	Horn SN6276	7207.22	57.30		38.17	6.21	-34.32	-20.00	-9.93	47.37	PK	3.00	0.00	53.98	6.61	PASS
BT-Low	V	1	Horn SN6276	17874.00	44.50		45.52	10.28	-32.09	-20.00	3.71	48.21	PK	3.00	9.54	63.52	15.31	PASS
BT-Mid	Н	3	Horn SN6276	2000.00	14.40	х	29.60	3.18	0.00	-20.00	12.78	27.18	PK	3.00	0.00	53.98	26.80	PASS
BT-Mid	Н	3	Horn SN6276	2390.00	47.20		30.22	3.47	-20.40	-20.00	-6.71	40.49	PK	3.00	0.00	53.98	13.49	PASS
BT-Mid	Н	3	Horn SN6276	2483.50	51.60		30.37	3.51	-20.26	-20.00	-6.37	45.23	PK	3.00	0.00	53.98	8.75	PASS
BT-Mid	Н	3	Horn SN6276	4882.41	55.90		35.46	5.04	-34.09	-20.00	-13.59	42.31	PK	3.00	0.00	53.98	11.67	PASS
BT-Mid	Н	3	Horn SN6276	7323.65	50.00		38.38	6.32	-34.32	-20.00	-9.62	40.38	PK	3.00	0.00	53.98	13.60	PASS
BT-Mid	Н	1	Horn SN6276	17992.00	44.50		45.88	10.45	-32.01	-20.00	4.32	48.82	PK	3.00	9.54	63.52	14.70	PASS
BT-Mid	V	3	Horn SN6276	2000.00	17.00	Х	29.60	3.18	0.00	-20.00	12.78	29.78	PK	3.00	0.00	53.98	24.20	PASS
BT-Mid	V	3	Horn SN6276	2390.00	50.30		30.22	3.47	-20.40	-20.00	-6.71	43.59	PK	3.00	0.00	53.98	10.39	PASS
BT-Mid	V	3	Horn SN6276	2483.50	45.90		30.37	3.51	-20.26	-20.00	-6.37	39.53	PK	3.00	0.00	53.98	14.45	PASS
BT-Mid	V	3	Horn SN6276	4882.23	49.80		35.46	5.04	-34.09	-20.00	-13.59	36.21	PK	3.00	0.00	53.98	17.77	PASS
BT-Mid	V	3	Horn SN6276	7323.74	55.80		38.38	6.32	-34.32	-20.00	-9.62	46.18	PK	3.00	0.00	53.98	7.80	PASS
BT-Mid	V	3	Horn SN6276	9764.87	49.40		40.30	7.41	-34.25	-20.00	-6.54	42.86	PK	3.00	0.00	53.98	11.12	PASS
BT-Mid	V	1	Horn SN6276	18000.00	43.90		45.90	10.48	-32.00	-20.00	4.38	48.28	PK	3.00	9.54	63.52	15.24	PASS
BT-High	Н	3	Horn SN6276	2000.00	14.40	х	29.60	3.18	0.00	-20.00	12.78	27.18	PK	3.00	0.00	53.98	26.80	PASS
BT-High	Н	3	Horn SN6276	2390.00	50.50	lacksquare	30.22	3.47	-20.40	-20.00	-6.71	43.79	PK	3.00	0.00	53.98	10.19	PASS
BT-High	Н	3	Horn SN6276	2483.50	46.40	<u> </u>	30.37	3.51	0.00	-20.00	13.89	60.29	PK	3.00	0.00	73.98	13.69	PASS
BT-High	Н	3	Horn SN6276	2483.50	26.60	$ldsymbol{ldsymbol{ldsymbol{eta}}}$	30.37	3.51	0.00	-20.00	13.89	40.49	PK	3.00	0.00	53.98	13.49	PASS
BT-High	Н	3	Horn SN6276	4960.48	52.20		35.62	5.06	-34.10	-20.00	-13.42	38.78	PK	3.00	0.00	53.98	15.19	PASS
BT-High	Н	1	Horn SN6276	17862.00	44.70		45.49	10.28	-32.10	-20.00	3.67	48.37	PK	3.00	9.54	63.52	15.16	PASS
BT-High	V	3	Horn SN6276	2000.00	17.00	х	29.60	3.18	0.00	-20.00	12.78	29.78	PK	3.00	0.00	53.98	24.20	PASS
BT-High	V	3	Horn SN6276	2390.00	48.00	<u> </u>	30.22	3.47	-20.40	-20.00	-6.71	41.29	PK	3.00	0.00	53.98	12.69	PASS
BT-High	V	3	Horn SN6276	2483.50	40.30	lacksquare	30.37	3.51	0.00	-20.00	13.89	54.19	PK	3.00	0.00	73.98	19.79	PASS
BT-High	V	3	Horn SN6276	2483.50	24.10	L	30.37	3.51	0.00	-20.00	13.89	37.99	AV	3.00	0.00	53.98	15.99	PASS
BT-High	V	3	Horn SN6276	4960.39	50.80	$ldsymbol{ldsymbol{ldsymbol{eta}}}$	35.62	5.06	-34.10	-20.00	-13.42	37.38	PK	3.00	0.00	53.98	16.59	PASS
BT-High	V	3	Horn SN6276	7440.88	49.80	<u> </u>	38.59	6.43	-34.32	-20.00	-9.29	40.51	PK	3.00	0.00	53.98	13.47	PASS
BT-High	V	1	Horn SN6276	17936.00	44.70		45.71	10.28	-32.04	-20.00	3.94	48.64	PK	3.00	9.54	63.52	14.88	PASS

Total CF (dB) = Antenna Factor (dB)+ Cable Factor (dB) + Other Factor (Amplifier Gain, Filter Loss, etc) (dB)

Field Strength (dBuV/m) = SA Reading (dBuV) + Total CF (dB/m)

Limit Distance Correction (dB) = 40 * log(d1/d2) for f < 30 MHz, 20*log(d1/d2) for f > 30 MHz; where d1 is the measurement distance and d2 is the published limit distance

Limit (dBuV/m) = Published Limit (dBuV/m) + Limit Distance Correction (dB)

Margin (dB) = Limit (dBuV/m) - Field Strength (dBuV/m)

Duty Cycle Correction (dB) = 20 * log (duty cycle ratio*)

Duty Cycle ratio = maximum time on in any 100 mS period (in mS) / 100 mS

*DUT duty cyle = 10 mS in each 10 seconds

*The frequency points reported, describe the highest emission measured in each of the ranges tested and are used to describe the measured spectrum as a whole. Though a frequency point detailed may not be in a restricted band, it was the highest emission present in the band measured therefore infers that all emissions that may be present within the restricted bands are in compliance if it is in compliance.



Test Report S/N:	022305KBC-T616-E15B Issue 1.				
Test Date(s):	21Sept04 - 14Oct04, 22Oct04				
Test Type(s):	FCC §15.247	IC RSS-2	210 Issue 5		
Lab Registration(s):	FCC #714830	IC Lab File #387			

I.10. PASS/FAIL

In reference to the results outlined in I.9, the DUT passes the requirements as stated in the reference standards as follows: FCC 15.205 (a) (b) and 15.209 (a): No emissions were measured within the restricted bands as outlined in 15.205 that exceeded the limits stated in 15.209.

I.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

Russell W. Ryse

Celltech Labs Inc.

22Oct04

Date



Test Report S/N:	022305KBC-1	Issue 1.0		
Test Date(s):	21Sept04 - 14Oct04, 22Oct04			
Test Type(s):	FCC §15.247	IC RSS-210 Issue 5		
Lab Registration(s):	FCC #714830	IC Lab	File #3874	

Appendix J - Maximum Permissible Exposure Calculation

J.1. REFERENCES	
Normative Reference Standard	FCC CFR 47§1.1310 IEEE Std C95.1-1999
Procedure Reference	FCC CFR 47§2.1091

J.2. LIMITS	
FCC CFR 47§1.1310 Table 1(b)	1.0 mW/cm ²

J.3. ENVIRONMENTAL CONDITIONS							
Temperature	na						
Humidity	na						
Barometric Pressure	na						

J.4. EQUIPME	J.4. EQUIPMENT LIST										
ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE						
na					·						

J.5. MEASUREMENT EQUIPMENT SETUP								
MEASUREMENT EQUIPMENT CONNECTIONS	The results described herein were determined by the following calculation, so no measurement equipment was used.							
MEASUREMENT EQUIPMENT SETTINGS	na							

J.6. SETUP PHOTOS	
na	

J.7. SETUP DRAWINGS	
na	

J.8. DUT OPERATING DESCRIPTION	
na	

Applicant:	Itronix Corporation	FCC ID:	KBCIX260PNLA580BT	IC ID:	1943A-IX260Pf	
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth Transmitter		Model:	IX260PNLA580BT	ITRONIX		
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Lab Registration(s):	FCC #714830	IC Lab	File #3874

J.9. EVALUATION RESULTS

Calculation:

RangeStar Internal Surface-Mount Antenna:

Tx Frequency: RF Output Power at Antenna Input Terminal: Antenna gain:

2441 (MHz) 15.61 (dBm) 24.50 (dBi)

S= 1.00 (mW/cm^2) P= 36.3915 (mW) G= 2.82 (numeric)

R = 2.86 (cm)

S at 20cm: 0.02038259 (mW/cm^2)

Formulae:

S = PG $A_{\pi}P^{2}$

where: S = Power Density Limit

P = Power Applied to the Antenna

 $R = \sqrt{\frac{P}{4\pi S}}$

G = Numeric Antenna Gain R = Distance from Antenna

Results:

-							
	Channel	RF Conducted Output Power	Antenna Gain	MPE Distance	Power Density at 20 cm	Power Density Limit	
		dBm	dBi	cm	mW/cm ²	mW/cm ²	
	39	15.61	+4.5	2.86	0.020	1.0	

Applicant: Itronix Corporation FCC ID: KBCIX260PNLA580BT IC ID: 1943A-IX260Pf
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth Transmitter Model: IX260PNLA580BT

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Lab Registration(s):	FCC #714830	IC Lab	File #3874

J.10. PASS/FAIL

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

1) The DUT must comply with the minimum spacing requirement of 20 cm to ensure an exposure of not more than 1 mW/cm².

J.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.

Duane M. Friesen, C.E.T.

EMC Manager Celltech Labs Inc.

09Oct04

Date



Test Report S/N:	022305KBC-T616-E15B		Issue 1.0
Test Date(s):	21Sept04 - 14Oct04, 22Oct04		
Test Type(s):	FCC §15.247	IC RSS-210 Issue 5	
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END OF DOCUMENT

