

Test Report S/N:	100504KBC-T565-E15B			
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			

FCC PART 15.247 EMC TEST REPORT FOR THE ITRONIX RUGGED LAPTOP PC MODEL: IX260PNL3054BT WITH CIRRONET BT2022 BLUETOOTH TRANSMITTER AND INTERNAL RANGESTAR SURFACE-MOUNT ANTENNA CO-LOCATED WITH SENAO NL-3054MP 802.11B/G 2.4 GHz DSSS WLAN MINI-PCI CARD AND INTERNAL RANGESTAR SURFACE-MOUNT ANTENNA

TRSN 100504KBC-T565-E15B Issue 1.0

Celltech Compliance Testing & Engineering Lab (Celltech Labs Inc.) 1955 Moss Court Kelowna, BC Canada V1Y 9L3

October 22, 2004



Test Report S/N:	100504KBC-T565-E15B			
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Lab Registration(s):	FCC #714830 IC Lab File #3874			

			DEC	LARATION O	F COMPL	IANC	E	
<u>Test Lab</u> Phone: Fax: e-mail: web site:	CELLTECH LABS INC. Testing and Engineering Services 1955 Moss Court Kelowna, B.C. Canada V1Y 9L3Phone:250-448-7047Fax:250-448-7048e-mail:info@celltechlabs.com		Applicant I	nform	ation	ITRONIX CORPORATION 801 South Stevens Street Spokane, WA 99204 United States		
Laboratory Regist	Laboratory Registration No.(FCC: 714830		IC:	IC 387	4
Rule Part(s):		FCC:	§15.247; §2.1091; §1.1310			IC:	RSS-2	10 Issue 5 - A1. 11/30/02
Device Classificatio	<u>n:</u>	FCC:	Spread Spectrum Transmitter (DSS		tter (DSS)	IC:	Low Po	ower Licence-Exempt Transmitter
Device Identification	Device Identification: FCC			KBCIX260PNL3054BT			1943A	-IX260Pa
DUT Description:								
Model(s):		IX2	IX260PNL3054BT					
Device Description	1:	Ru	Rugged Laptop PC with internal Cirronet BT2022 Bluetooth Transmitter and internal antenna					
Co-located Transm	nitter(s	s): Ser	nao NL-30	54MP 802.11b/g 2.4	4 GHz DSSS	WLAN	Mini-PCI	Card and internal antenna
Tx Frequency Rang	ge:	240)2 - 2480 I	MHz				
Max. RF Output Po	wer:	0.0	364 Watts	/ 15.61 dBm (Peak	Conducted)			
Mode(s) of Operation	on:	Fre	quency H	opping Spread Spec	ctrum (FHSS)			
Modulation Type(s):	GF	SK 1 Mbp	s 0.5 BT Gaussian				
		Blu	etooth: Ra	angeStar P/N: 10092	29 Internal Su	rface-N	lount (up	per left side edge of LCD Display)
Antenna Type(s):		WL	AN: Rang	eStar P/N: 100929	Internal Surf	ace-Mo	ount (upp	er right side edge of LCD Display)
Power Supply:		90	Watt AC F	Power Adapter				

This mobile transmitting 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 and Industry Canada RSS-210 Issue 5.

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.

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Pural W. Pupe

Russell Pipe Senior Compliance Technologist Celltech Labs Inc.

Duane M. Friesen EMC Manager Celltech Labs Inc.



Applicant:	Itronix Corporation	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa
Rugged	Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN						
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	Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN							ITRONIX	
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TEST SUMMARY							
	Referer	ced Standard: FCC CFF	R Title 47 Part 15				
<u>Appendix</u>	Test Description	Procedure Reference	Limit Reference	<u>Test Start</u> <u>Date</u>	Test End Date	<u>Result</u>	
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	
E	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	
			310.217(0)	2200001	22Oct04	1 466	
	Restricted Band Emissions FCC 97-114	FCC 97-114	§15.205 (a), (b) §15.209 (a)	22Sep04	01Oct04	Pass	
				2200004	22Oct04		
J	Maximum Permissible Exposure	FCC CFR 47 § 2.1091 IEEE Std C95.1-1999	§1.1310 Table 1 (b)	13Oct04	13Oct04	Pass	
	<u>Refe</u>	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	
E	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	Dedicted Sourious Emissions	RSS-212, ANSI C63.4	DSS 210 S6 2 2 (a)(a1)	22Sep04	01Oct04	Pass	
П	Radiated Spurious Emissions	ROO-212, ANOI 000.4	RSS-210 §6.2.2 (o)(e1)		22Oct04		
	Restricted Band Emissions	RSS-212, ANSI C63.4	RSS-210 §6.3	22Sep04	01Oct04	- Pass	
1					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	22Oct04	

SIGNATORIES

Prepared By	D2	Oct. 22, 2004
Name/Title	Duane M. Friesen, C.E.T. / EMC Manager	Date
Approved By	H	Oct. 22, 2004
Name/Title	Jon Hughes / General Manager	Date

Applicant:	Itronix Corporation	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN				ITRONIX			
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1.0 <u>SCOPE</u>

This report outlines the measurements made and results collected during electromagnetic emissions testing of the Itronix Corporation IX260+ Rugged Laptop PC with internal Cirronet BT2022 Bluetooth Transmitter and RangeStar internal surface-mount antenna, co-located with internal Senao NL-3054MP 802.11b/g 2.4 GHz DSSS WLAN Mini-PCI Card and Rangestar internal surface-mount antenna. The Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN can transmit simultaneously. The Senao NL-3054MP 802.11b/g WLAN was disabled during the Cirronet BT2022 Bluetooth measurements referenced in this report. Please refer to the Co-Transmit Supplementary EMC Test Report submitted within this application for the 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 <u>REFERENCES</u>

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
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 & Telecommunications Policy	Radio Standards Specification 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	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa
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3.0 TERMS AND DEFINITIONS

AVG CFR dB dBm dBuV DUT dBc EBW EMC FCC FHSS HP HPF Hpol Hz IC kHz LNA m MHz Mbps na n/a PK PPSD QP RBW R&S RSS SA	Average Code of Federal Regulations decibel dB referenced to 1 mW dB referenced to 1 uV Device under Test dB down from carrier Emission Bandwidth Electromagnetic Compatibility Federal Communication Commission Frequency Hopping Spread Spectrum Hewlett Packard High Pass Filter Horizontal Polarization Hertz Industry Canada kilohertz Low Noise Amplifier meter Megahertz megabits per second not applicable not available Peak Peak Power Spectral Density Quasi-peak Resolution Bandwidth Rohde & Schwarz Radio Standard Specification Spectrum Analyzer
RSS	Radio Standard Specification
SA VBW	Spectrum Analyzer 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 IX260+ Rugged Laptop PC with the Cirronet BT2022 Bluetooth Transmitter connected to the RangeStar Internal Surface-Mount Antenna installed in the upper left side rear edge of the LCD display. The IX260+ Rugged Laptop PC also incorporates a co-located Senao NL-3054MP 802.11b/g 2.4 GHz DSSS WLAN Mini-PCI Card with RangeStar Internal Surface-Mount Antenna installed in the upper right side rear edge of the LCD display. Photographs of the DUT placement and construction are shown in Appendix A.

Device:	Rugged La	Rugged Laptop PC				
Model:	IX260PNL	(260PNL3054BT				
Serial Number:	ZZGEG41	ZZGEG4196ZZ6473				
Identifier(s):	FCC ID:	FCC ID: KBCIX260PNL3054BT IC: 1943A-IX260Pa				
Power Source:	Delta Elect	Delta Electronics Model ADP-90AB Rev B 90 Watt AC-DC power supply				

Device:	2.4GHz FH	2.4GHz FHSS Bluetooth Transmitter					
Model:	Cirronet B	Cirronet BT2022					
Serial Number:	n/a	- 1/a					
Rule Part(s):	FCC:	§15.247; §2.1091; §1.1310	IC:	RSS-210 Issue 5 - A1. 11/30/02			
Classification:	FCC:	FCC: Spread Spectrum Transmitter (DSS) IC: Low Power Licence-Exempt Transmit					
Power Source:	Powered fr	Powered from the internal PC power supply					

Device:	Internal Surface-Mount Antenna (upper left side rear edge of LCD display)					
Model:	RangeStar P/N: 100929					
Gain:	4.5 dBi					

Applicant:	Itronix Corporation	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa
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5.3 Co-Located Equipment

Device:	2.4GHz	2.4GHz DSSS WLAN Mini-PCI Card (802.11b/g)				
Model:	Senao	Senao NL-3054MP PLUS ARIES (F) 1.00				
Serial Number:	048253)48253621				
Rule Part(s):	FCC:	FCC: §15.247; §2.1091; §1.1310 IC: RSS-210 Issue 5				
Classification:	FCC: Digital Transmission System (DTS) IC: Low Power Licence-Exempt Transmission					
Power Source:	Powe	red from the internal PC power supply				
Device:	Intern	Internal Surface-Mount Antenna (upper right side rear edge of LCD display)				
Model:	Range	RangeStar P/N: 100929				
Gain:	4.5 dE	4.5 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 DUT Clock Frequencies

Device:	Rugged Laptop PC
Clocks:	1.6 GHz processor
Device:	2.4GHz FHSS Cirronet Bluetooth
Clocks:	n/a
Device:	802.11b/g WLAN Mini-PCI Card
Clocks:	n/a
Device:	Internal Surface-Mount Antenna
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 place the Bluetooth radio module 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-Ion, 6.0Ah (Model: A2121-2)

5.7.1 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 module's operation. The settings used are described in each appendix.

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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 worse 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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APPENDIX

	Applicant:	Itronix Corporation	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa
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Appendix A - DUT Photographs



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



Photograph A-2 - Back 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				

Applicant:	Itronix Corpora	ation Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa	
Rugged	Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN							
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Test Report S/N:	100504KBC-T565-E15B				
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			

B.5. MEASUREMENT EQUIPM	IENT 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	 measurement. A drawing of the equipment setup is shown in B.7 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	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa
Rugged	Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN						
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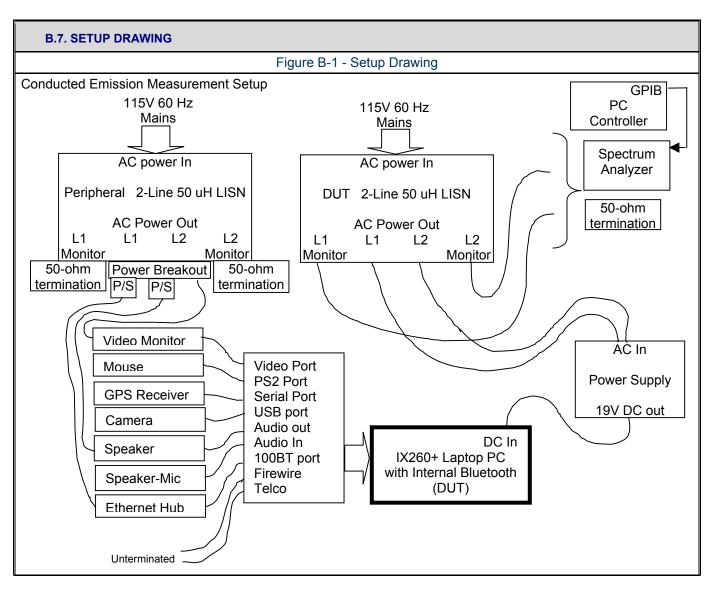
Test Report S/N:	100504KBC-T565-E15B				
Test Date(s):	21Sept04 - 14Oct04, 22Oct04				
Test Type(s):	FCC §15.247 IC RSS-210 Issue 5				
Lab Registration(s):	FCC #714830 IC Lab File #3874				

B.6. SETUP PHOTOS
Photograph B-1 - AC Powerline Conducted Emission Configuration
Photograph B-2 - AC Powerline Conducted Emission Cable Placement

Applicant:	Itronix Corporation	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa	
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN								
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Test Report S/N:	100504KBC-T565-E15B				
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			



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.					

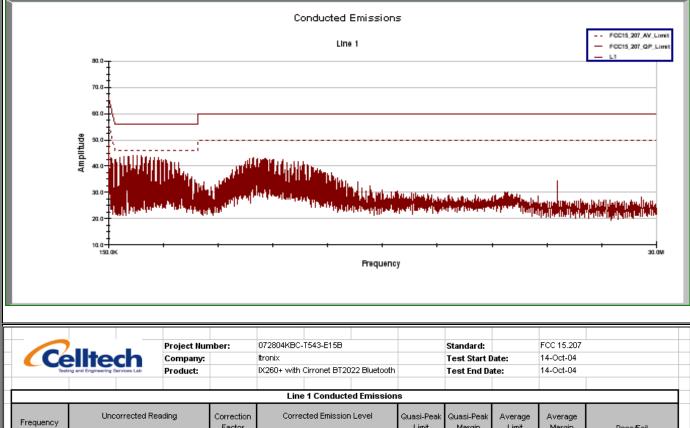
Applicant:	Itronix Corporation	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa
Rugged	Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN						
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Test Type(s):	FCC §15.247 IC RSS-210 Issue 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.

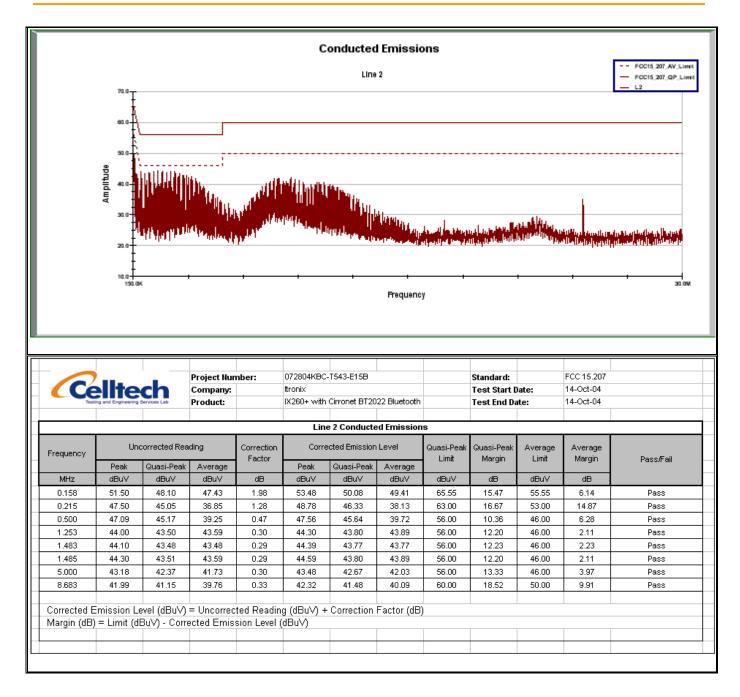


Frequency	Une	corrected Real	ding	Correction Factor			Quasi-Peak Quasi-Peak Average Average Limit Marqin Limit Marqin			DeeevEeil		
	Peak	Quasi-Peak	Average	ractor	Peak	Quasi-Peak	Average		wargin	LIIIIL	iviargin	Pass/Fail
MHz	dBuV	dBuV	dBu∀	dB	dBu∀	dBu∀	dBu∀	dBu∀	dB	dBuV	dB	
0.159	50.40	47.24	45.54	1.98	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
		evel (dBuV) : BuV) - Corre		,	· · ·	Correction	Factor (dB))				
					,							

Applicant:	Itronix Corporation	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN							
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Test Report S/N:	100504KBC-T565-E15B				
Test Date(s):	21Sept04 - 14Oct04, 22Oct04				
Test Type(s):	FCC §15.247 IC RSS-210 Issue \$				
Lab Registration(s):	FCC #714830 IC Lab File #387				



Applicant:	Itronix Corporation	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN							
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Test Report S/N:	100504KBC-T565-E15B				
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				

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

Applicant:	Itronix Corporation	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa	
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN								
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Test Report S/N:	100504KBC-T565-E15B			
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.*

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

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. EQUIPME	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					

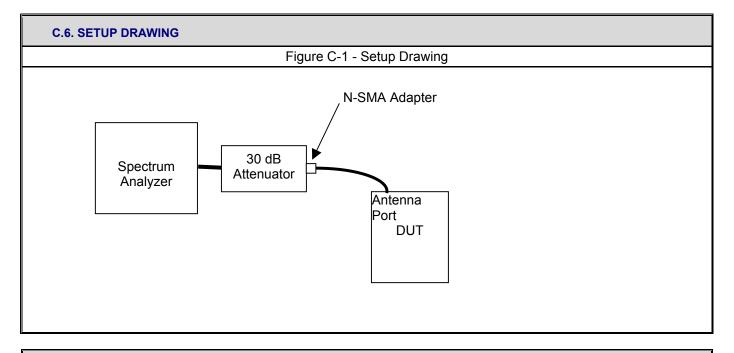
*Attenuator verified with power meter prior to use

Applicant:	Itronix Corporation	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa	
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN								
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Test Report S/N:	100504KBC-T565-E15B					
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 Corporatio	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN						ITRONIX	
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Test Report S/N:	100504KBC-T565-E15B					
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 Limit				
	MHz	dBm	Watts			
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

Applicant:	Itronix Corporation	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN						ITRONIX	
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Test Report S/N:	100504KBC-T565-E15B				
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 D - Adjacent Channel Separation

D.1. REFERENCES		
Normative Reference Standard	FCC CFR 47 §15.2	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

Applicant:	Itronix Corporation	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN						ITRONIX	
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Test Report S/N:	100504KBC-T565-E15B					
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 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

Applicant:	Itronix Corpora	ation Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa
Rugged	Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN						
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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 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 Corpo	oration	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN								ITRONIX
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Test Report S/N:	100504KBC-T565-E15B			
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 G - 20 dB Bandwidth Measurement

G.1. REFERENCES		
Normative Reference Standard	FCC CFR 47 §15.2	47 (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	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN						ITRONIX	
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Test Type(s):	FCC §15.247 IC RSS-210 Issue 5				
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			

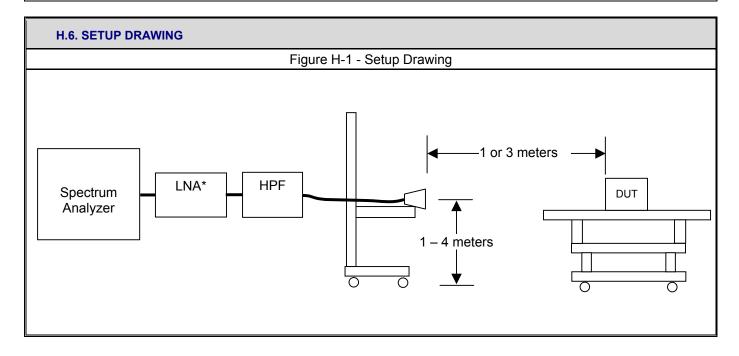
H.4. EQUIPMENT LIST								
ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE			
00072	EMCO	2075	Mini-mast	n/a	n/a			
00073	EMCO	2080	Turn Table	n/a	n/a			
00071	EMCO	2090	Multi-Device Controller	n/a	n/a			
00035	ETS	3115	Double Ridged Guide Horn	24Mar04	24Mar05			
00202	ETS	3160-09	Small 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	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa
Rugged	Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN						
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Test Type(s):	FCC §15.247	IC RSS-210 Issue 5		
Lab Registration(s):	FCC #714830	IC Lab File #3874		

H.5. MEASUREM	ENT EQUIPMENT SETUP									
MEASUREMENT				n in H.6. A number of antennas w in which each antenna was used						
EQUIPMENT	Frequency	Range		Antenna						
CONNECTIONS	1 GHz – 1	8 GHz		ETS 3115 Horn						
	18 GHz– 2	6GHz		ETS 3160-09 Horn						
	The spectrum analyzer was set to the following settings:									
	Frequency Range	RBW	RBW VBW							
	MHz	kHz		kHz	Detector					
MEASUREMENT EQUIPMENT	> 1000	1000 ¹	1000 ¹ 1000							
SETTINGS	applicable limit v MHz RBW. Wh	was applied to mea	asure asure	suitable margin could be realiz ements made with a peak dete ement was reported, it was ma /BW of 1 Hz.	ctor using a 1					

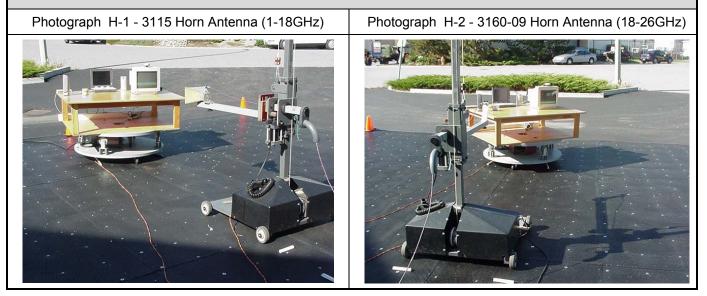


Applicant:	Itronix Corporation	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa			
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN										
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Test Report S/N:	1	100504KBC-T565-E15B					
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					

H.7. SETUP PHOTOGRAPHS



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 worse case, the band-edge measurements were made of the low and high channels with data stream modulation.

Applicant:	Itronix Corporation	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa				
Rugged	Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN										
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Test Report S/N:	1	00504KBC-T565-E15B				
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				

.9.1. Lower	Band	l-ed	lge Ei	missio	n Field	Strer	ngths	@ Spe	ecified Di	stance								
					Note:	(Uppe	r Ban	d-edge ((Restricted	d) is in .	Appen	dix I)						
					Cł	nanne	el 0 -	Condu	icted Bar	d-edg	e Plot	s						
				🔆 Agil	ent 12:57	7:57 Oct	22, 200	04			мі	r2 2.402	00 CU→					
				Ref 21.4 Peak	dBm		#At	ten 0 dB			1.12		8 dBm					
				Log 10														
				dB/ Offst 31								M	v V					
				dB							1R	N						
				-	mmm			m	mun	mm.m	Ame							
				-														
				Start 2. #Res BW				VBW	30 kHz	s	weep 34.	Stop 2.40 72 ms (40						
				Marker 1R		Type Fred Fred	4	X Axis 2.40000 GH 2.00 MH	Hz	Amplitu -35.33 d 50.72	de Bm							
				1 <u>0</u> 2	(1)	Fred		2.40200 GH		15.38 d								
					С	hanne	10 - F	Radiated	Carrier F	ield Str	engths							
	Polarity	ee			le						Other	Total	Field					
		Distance	Rx A	ntenna	Channel	Freq	uency	SA Leve	el Rx AF	Rx CL	Other Rx	Total Rx CF	Field Strength	Detector				
							Hz	dBuV	dB/m	dB	dB	dB/m	dBuV/m	(PK/QP/AVG)				
	н	m 3	Horn S	SN6276	0		2.00	83.90	-	3.48	0.00	33.72	117.62	PK				
	н	H 3 Horn SN		SN6276	0	2402.00	2402.	2402.00	2402.00	2402.00	42.30	30.24	3.48	0.00	33.72	76.02	AV	
	V	3	Horn S	SN6276	0	240	2.00	75.50	30.24	3.48	0.00	33.72	109.22	PK				
	۷	3	Horn S	SN6276	0	240	2.00	38.70	30.24	3.48	0.00	33.72	72.42	AV				
-				Char	nnel 0 –	Calcu	lated	Band-e	dge (Out-	of-Band	d) Field	l Streng	gths					
Polarity istance			nnel	F	Ra	arrier diated	or	Marker-	Calculated		nit D	Limit	Calculate	d	Pass/Fail			
Distance	Rx Anter	ma	Channe	Frequer	· •	-ield rength	Detector	Delta	Bandedge Fi	Dista		istance prrection	Limit	Margin	Pass/Fall			
m Ll 2 Llo	rn SN6	270	0	MHz	dE	8uV/m	– PK	dB	dBuV/m 66.9	m		dB	dBuV/m		Dass			
H 3 Ho	rn SN6	6276	0	2400. 2400.		17.62 6.02	AV	50.72 50.72	25.3	3		0	97.62 56.02	30.72 30.72	Pass Pass			
	orn SN6 orn SN6			2400. 2400.)9.22 2.42	PK AV	50.72 50.72	58.5 21.7	3		0	97.62 56.02	39.12 34.32	Pass Pass			
V O HO		210	Ŭ	2100.		<u></u>	7.0	00.72	21.7			0	00.02	04.02	1 435			
ae:																		
F (dB) = Anten trength (dBuV/								r (Amplifie	er Gain, Filte	er Loss,	etc) (dE	I)						
istance Correi									orf>30 MHz	; where	d1 is th	ie meas	urement d	listance and	d2 is the pub			
iBuV/m) = Pub (dB) = Limit (d						nce CO	mectic	лт (0 В)										
asurements	and	cal	rulativ	on refe	rence t	he Ma	rkor-	Delta M	ethod De	scriber	l in FC	C Pub	lic Notic)5			
asurements	anu	cait	Juiati		ence l		1 4 61 -			scribet	a in FC	J P UD						
nt: Itroni	x Cor	por	ation	Mod	lel:	IX26		3054BT	FCC	ID:	KBC	IX260F	NL3054	BT IC I	D: 1943A			
									nd Senao						ITRC			



Test Report S/N:	100504KBC-T565-E15B					
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				

Cell	le	Company: Product:					304KBC- iix 60+ with								Standard: Test Start Da Test End Dat		FCC15.247 21Sep04 12Oct04	7c
IX260+ with Bluetooth																		
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/Fai
		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 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 BT-Low	V	3	Horn SN6276 Horn SN6276	7207.22	57.30 44.50		38.17 45.52	6.21 10.28	-34.32 -32.09	-20.00	-9.93 3.71	47.37 48.21	PK PK	3.00 3.00	0.00 9.54	83.21 92.75	35.85 44.54	PASS PASS
B1-LOW	v	1	HUITI SINO270	1/6/4.00	44.50		45.52	10.26	-32.09	-20.00	3.71	40.21	PK	3.00	9.04	92.75	44.04	PASS
BT-Mid	н	3	Horn SN6276	2000.00	14.40		29.60	3.18	0.00	-20.00	12.78	27.18	PK	3.00	0.00	88.31	61.13	PASS
BT-Mid BT-Mid	н	3	Horn SN6276	4882.41	55.90	x	29.60 35.46	5.04	-34.09	-20.00	-13.59	42.31	PK	3.00	0.00	88.31	46.00	PASS
BT-Mid BT-Mid	н	3	Horn SN6276	7323.65	50.00		38.38	6.32	-34.09	-20.00	-9.62	42.31	PK	3.00	0.00	88.31	40.00	PASS
BT-Mid 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	97.85	49.03	PASS
BT-Mid BT-Mid	v	3	Horn SN6276	2000.00	17.00	¥	29.60	3.18	0.00	-20.00	12.78	29.78	PK	3.00	0.00	83.21	53.43	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	83.21	47.00	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	83.21	37.03	PASS
BT-Mid 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	83.21	40.35	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	92.75	44.47	PASS
BT-High	н	3	Horn SN6276	2000.00	14.40	x	29.60	3.18	0.00	-20.00	12.78	27.18	PK	3.00	0.00	88.31	61.13	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	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	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	92.75	44.11	PASS

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 Correction (dB) =

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.

Applicant:	Itronix Corporation	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa				
Rugged	Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN										
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Test Type(s):	FCC §15.247	IC RSS-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.

Jusul W. Pupe

Russell Pipe Senior Compliance Technologist Celltech Labs Inc.

22Oct04 Date

Applicant:	Itronix Corporation	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa				
Rugged	Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN										
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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 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 (c frequency bands listed below:	d) of this section, only spurious	emissions are perm	itted 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 and shall be 0.490–0.510 MHz. (d) and (e), the field strength of pown in 15.209. At frequencies etc.	equal to or less than	1000 MHz, compliance
	with the limits in Section 15.209 shall quasi-peak detector. Above 1000 demonstrated based on the average measurements.	MHz, compliance with the e	mission limits in Se	ction 15.209 shall be
FCC CFR 47 §15.209	(a) Except as provided elsewhere in the field strength levels specified in t		om an intentional rad	iator shall not exceed
	Frequency	Field Strength	Measu	rement 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	tighter limit applies at the band	l edges.	

Applicant:	Itronix Corporation	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN							
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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				

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

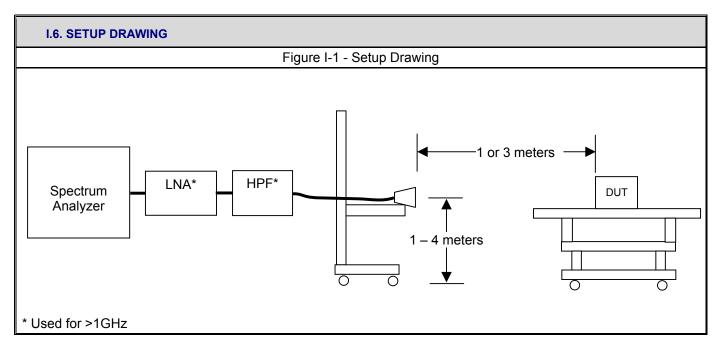
I.4. EQUIPMEN	I.4. EQUIPMENT LIST								
ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE				
00072	EMCO	2075	Mini-mast	n/a	n/a				
00073	EMCO	2080	Turn Table	n/a	n/a				
00071	EMCO	2090	Multi-Device Controller	n/a	n/a				
00085	EMCO	6502	Loop Antenna	10Aug04	10Aug05				
00050	Chase	CBL-6111A	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				

Applicant:	Itronix Corporation	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa
Rugged	Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN						
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Lab Registration(s):	FCC #714830 IC Lab File #3874				

I.5. MEASUREMENT EQUIPMENT SETUP								
		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 – 3	0 MHz		EMCO 6502 Loop				
CONNECTIONS	30 MHz –	1 GHz		CBL-6111A Bilog				
	1 GHz – 1	8 GHz		ETS 3115 Horn				
	18 GHz– 2		ETS 3160-09 Horn					
	The spectrum analyzer was set to the following settings:							
	Frequency Range	Frequency Range RBW		Quasi-Peak BW	Detector			
	MHz	kHz	kHz	kHz				
	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			
0LT III CO	> 1000	> 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 worse case measurement, when suitable margin could be realized, the average limit was applied to measurements made with a peak detector.							

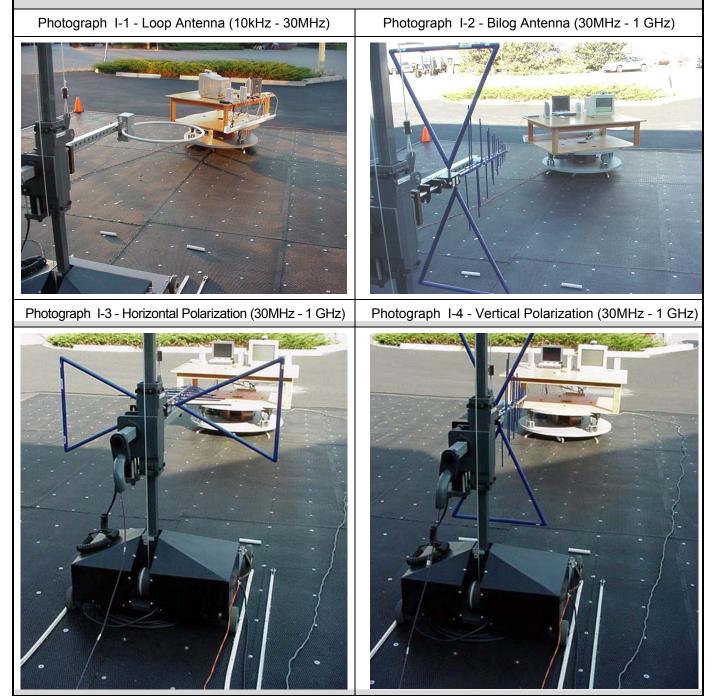


Applicant:	Itronix Corporation	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN							
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Lab Registration(s):	FCC #714830 IC Lab File #3874				

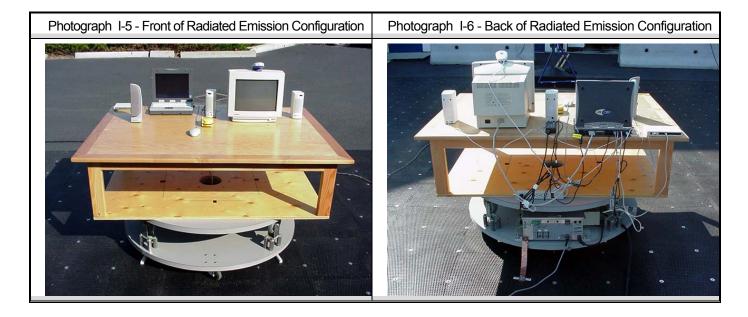
I.7. SETUP PHOTOGRAPHS



Applicant:	Itronix Corporatio	n Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN							
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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 worse case, the band-edge measurements were made of the low and high channels with data stream modulation.

Applicant:	Itronix Corporation	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa
Rugged	Laptop PC with interna	al Cirronet E	3T2022 Bluetooth and	Senao NL-3	054MP 802.11b/g WLAN		ITRONIX
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Lab Registration(s):	FCC #714830	IC Lab File #3874

Note: (Lower Band-edge (Out-of-Band) is in Appendix H) Channel 79 - Conducted Band-edge Plots Meri 2009 Meri 2009 Meri 2009 Meri 2009 Meri 2009 Meri 2009 Meri 2009 Meri 2009 Meri 2009 Meri 2009 Meri 2009 Meri 2009 Meri 2009 Meri 2009 Meri 2009 State 2009 State 2009 State 2009 <th col<="" th=""><th>Channel 79 - Conducted Band-edge Plots Mr1 2.4800 GHz 15.8 dB Sup 2.485 GHz 64: GB MHz Sup 2.485 GHz 64: GB MHz WB 30 Hz Sup 2.485 GHz 64: GB MHz MET 2.48 MHz MET 2.48 MHz MET 2.48 MHz Sup 2.485 MHz MET 2.48 MHz</th><th>Channel 79 - Conducted Band-edge Plots Mart 2.4.6881 (Hz 15.13.689 Supp 2.445 (Hz 15.13.689 Mart 15.13.689 Mart 15.13.689 Mart 15.13.689 New 15.13.689 Mart 15.13.689 Mart 15.13.689 Mart 15.13.689 Mart 15.13.689 Mart 15.13.689 Mart 16.13.73.73.51 Mart 16.140</th><th>9.1. Upp</th><th>er</th><th>Ban</th><th>d-eo</th><th>dge En</th><th>nissio</th><th>n Fie</th><th>ld Streng</th><th>gths (</th><th>@ Spe</th><th>cified [</th><th>Distanc</th><th>ce</th><th></th><th></th><th></th><th></th></th>	<th>Channel 79 - Conducted Band-edge Plots Mr1 2.4800 GHz 15.8 dB Sup 2.485 GHz 64: GB MHz Sup 2.485 GHz 64: GB MHz WB 30 Hz Sup 2.485 GHz 64: GB MHz MET 2.48 MHz MET 2.48 MHz MET 2.48 MHz Sup 2.485 MHz MET 2.48 MHz</th> <th>Channel 79 - Conducted Band-edge Plots Mart 2.4.6881 (Hz 15.13.689 Supp 2.445 (Hz 15.13.689 Mart 15.13.689 Mart 15.13.689 Mart 15.13.689 New 15.13.689 Mart 15.13.689 Mart 15.13.689 Mart 15.13.689 Mart 15.13.689 Mart 15.13.689 Mart 16.13.73.73.51 Mart 16.140</th> <th>9.1. Upp</th> <th>er</th> <th>Ban</th> <th>d-eo</th> <th>dge En</th> <th>nissio</th> <th>n Fie</th> <th>ld Streng</th> <th>gths (</th> <th>@ Spe</th> <th>cified [</th> <th>Distanc</th> <th>ce</th> <th></th> <th></th> <th></th> <th></th>	Channel 79 - Conducted Band-edge Plots Mr1 2.4800 GHz 15.8 dB Sup 2.485 GHz 64: GB MHz Sup 2.485 GHz 64: GB MHz WB 30 Hz Sup 2.485 GHz 64: GB MHz MET 2.48 MHz MET 2.48 MHz MET 2.48 MHz Sup 2.485 MHz MET 2.48 MHz	Channel 79 - Conducted Band-edge Plots Mart 2.4.6881 (Hz 15.13.689 Supp 2.445 (Hz 15.13.689 Mart 15.13.689 Mart 15.13.689 Mart 15.13.689 New 15.13.689 Mart 15.13.689 Mart 15.13.689 Mart 15.13.689 Mart 15.13.689 Mart 15.13.689 Mart 16.13.73.73.51 Mart 16.140	9.1. Upp	er	Ban	d-eo	dge En	nissio	n Fie	ld Streng	gths (@ Spe	cified [Distanc	ce									
Image: second	Wint 2.48881 Bit 15.8 dBit 15.8	Solution Note: 12:00:00 Note: 12:00:0							Note	: (Lower I	Band-	edge (Out-of-B	and) is	in App	endix H)								
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H 3 Horn SN6276 79 2483.5 75.68 AV 66.18 9.5 3 0 53.98 44.48 Pass			Н 3	Н	orn Sl	N627	76 79	2483	8.5	75.68	AV	66.18	9.5	;	3	0	53.98	3 44.48	Pass						
		V 5 Hom Stoczro 73 2405.5 72.50 AV 00.10 0.0 5 0 55.50 41.10 Pass		_													-								
	Interna Factor (dB)+ Cable Factor (dB) + Other Factor (Amplifier Gain, Filter Loss, etc) (dB)		trength (dE	ЭuV	//m) =	SA F	Reading	(dBuV)	+ Tota	I CF (dB/m))														
F (dB) = Antenna Factor (dB)+ Cable Factor (dB) + Other Factor (Amplifier Gain, Filter Loss, etc) (dB) trength (dBuV/m) = SA Reading (dBuV) + Total CF (dB/m)	(BuV/m) = SA Reading (dBuV) + Total CF (dB/m)	ength (dBuV/m) = SA Reading (dBuV) + Total CF (dB/m)				· ·			r .		-	· /	orf≻30N	1Hz; wh	ere d1 i	s the mea	surement	distance and i	d2 is the pub						
F (dB) = Antenna Factor (dB)+ Cable Factor (dB) + Other Factor (Amplifier Gain, Filter Loss, etc) (dB) trength (dBuV/m) = SA Reading (dBuV) + Total CF (dB/m) istance 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 p	IBuV/m) = SA Reading (dBuV) + Total CF (dB/m) 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 publ	ength (dBuV/m) = SA Reading (dBuV) + Total CF (dB/m) stance 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 publ																							
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F (dB) = Antenna Factor (dB) + Cable Factor (dB) + Other Factor (Amplifier Gain, Filter Loss, etc) (dB) trength (dBuV/m) = SA Reading (dBuV) + Total CF (dB/m) 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 p dBuV/m) = Published Limit (dBuV/m) + Limit Distance Correction (dB) (dB) = Limit (dBuV/m) - Field Strength (dBuV/m)	IBuV/m) = SA Reading (dBuV) + Total CF (dB/m) 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 publ = Published Limit (dBuV/m) + Limit Distance Correction (dB) mit (dBuV/m) - Field Strength (dBuV/m)	ength (dBuV/m) = SA Reading (dBuV) + Total CF (dB/m) stance 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 publ 3uV/m) = Published Limit (dBuV/m) + Limit Distance Correction (dB) dB) = Limit (dBuV/m) - Field Strength (dBuV/m)	BuV/m) = (dB) = Lim	ent																					
lae: F (dB) = Antenna Factor (dB)+ Cable Factor (dB) + Other Factor (Amplifier Gain, Filter Loss, etc) (dB) Strength (dBuV/m) = SA Reading (dBuV) + Total CF (dB/m) 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 p dBuV/m) = Published Limit (dBuV/m) + Limit Distance Correction (dB) (dB) = Limit (dBuV/m) - Field Strength (dBuV/m) easurements and calculation reference the Marker-Delta Method Described in FCC Public Notice DA 00-705	IBuV/m) = SA Reading (dBuV) + Total CF (dB/m) 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 publ = Published Limit (dBuV/m) + Limit Distance Correction (dB) mit (dBuV/m) - Field Strength (dBuV/m)	ength (dBuV/m) = SA Reading (dBuV) + Total CF (dB/m) stance 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 publ 3uV/m) = Published Limit (dBuV/m) + Limit Distance Correction (dB) dB) = Limit (dBuV/m) - Field Strength (dBuV/m)	BuV/m) = (dB) = Lim	ent																					
F (dB) = Antenna Factor (dB) + Cable Factor (dB) + Other Factor (Amplifier Gain, Filter Loss, etc) (dB) trength (dBuV/m) = SA Reading (dBuV) + Total CF (dB/m) istance 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 p dBuV/m) = Published Limit (dBuV/m) + Limit Distance Correction (dB) (dB) = Limit (dBuV/m) - Field Strength (dBuV/m) easurements and calculation reference the Marker-Delta Method Described in FCC Public Notice DA 00-705	IBuV/m) = SA Reading (dBuV) + Total CF (dB/m) 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 publ = Published Limit (dBuV/m) + Limit Distance Correction (dB) mit (dBuV/m) - Field Strength (dBuV/m) ments and calculation reference the Marker-Delta Method Described in FCC Public Notice DA 00-705	ength (dBuV/m) = SA Reading (dBuV) + Total CF (dB/m) stance 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 publ BuV/m) = Published Limit (dBuV/m) + Limit Distance Correction (dB) dB) = Limit (dBuV/m) - Field Strength (dBuV/m) asurements and calculation reference the Marker-Delta Method Described in FCC Public Notice DA 00-705	BuV/m) = (dB) = Lim asureme		ix Co	orpo	ration	Mo	del:	IX260)PNL	3054B	r FC	C ID:	K	SCIX260	PNL3054		D: 1943/						



Test Report S/N:	1	00504KBC-T565-E15B
Test Date(s):	21Sept	t04 - 14Oct04, 22Oct04
Test Type(s):	FCC §15.247	IC RSS-210 Issue 5
Lab Registration(s):	FCC #714830	IC Lab File #3874

9.2. Spurious Emission Field Strengths @ Specified Distance								cifie	d Dista	ince								
Cell	te	ch		Company: Product:		Itron	304KBC iix 60+ with								Standard: Test Start Da Test End Dat		FCC15.209 21Sep04 12Oct04	1
									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	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	x	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	Â	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 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 BT-Mid	v	3	Horn SN6276	2000.00	17.00	v	29.60	3.18	0.00	-20.00	12.78	29.78	PK	3.00	0.00	53.98	24.20	PASS
BT-Mid BT-Mid	v	3	Horn SN6276	2390.00	50.30	Â	30.22	3.47	-20.40	-20.00	-6.71	43.59	PK	3.00	0.00	53.98	10.39	PASS
BT-Mid BT-Mid	v	3	Horn SN6276	2483.50	45.90		30.37	3.51	-20.40	-20.00	-6.37	39.53	PK	3.00	0.00	53.98	14.45	PASS
BT-Mid 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 BT-Mid	v	3	Horn SN6276	7323.74	49.80 55.80		38.38	6.32	-34.09	-20.00	-9.62	46.18	PK	3.00	0.00	53.98	7.80	PASS
BT-Mid BT-Mid	V	3	Horn SN6276	9764.87	49.40		40.30	7.41	-34.32	-20.00	-9.62	40.18	PK	3.00	0.00	53.98	11.12	PASS
BT-Mid BT-Mid	V	3	Horn SN6276	18000.00	49.40		40.30	10.48	-34.25	-20.00	-0.54 4.38	42.80	PK	3.00	9.54	63.52	11.12	PASS
DI-Milu	v	-	110111 0110270	10000.00	40.00		+0.00	10.40	-52.00	-20.00	4.50	40.20	T IX	5.00	0.04	00.02	13.24	1 400
BT-High	н	3	Horn SN6276	2000.00	14.40	-	29.60	3.18	0.00	-20.00	12.78	27.18	PK	3.00	0.00	53.98	26.80	PASS
BT-High BT-High	н	3	Horn SN6276	2390.00	50.50	^	30.22	3.10	-20.40	-20.00	-6.71	43.79	PK	3.00	0.00	53.98	20.80	PASS
BT-High BT-High	Н	3	Horn SN6276	2390.00	46.40		30.22	3.47	0.00	-20.00	13.89	60.29	PK	3.00	0.00	73.98	13.69	PASS
BT-High BT-High	н	3	Horn SN6276	2483.50	26.60		30.37	3.51	0.00	-20.00	13.89	40.49	PK	3.00	0.00	53.98	13.69	PASS
÷	н Н	3	Horn SN6276 Horn SN6276	2483.50 4960.48	26.60 52.20	\vdash	30.37	3.51 5.06	-34.10	-20.00	-13.42	40.49 38.78	PK PK	3.00	0.00	53.98 53.98	13.49	PASS
BT-High BT High	H	3		4960.48 17862.00	52.20 44.70					-20.00	-13.42		PK PK	3.00	9.54	63.52		PASS
BT-High	H V		Horn SN6276				45.49	10.28	-32.10	-20.00		48.37	PK PK	3.00	9.54		15.16 24.20	
BT-High	V	3	Horn SN6276	2000.00	17.00	×	29.60	3.18	0.00		12.78	29.78	PK PK			53.98		PASS
BT-High	V	3	Horn SN6276	2390.00	48.00		30.22	3.47	-20.40	-20.00	-6.71	41.29		3.00	0.00	53.98	12.69	PASS
BT-High		3	Horn SN6276	2483.50	40.30	\vdash	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 V	3	Horn SN6276	2483.50	24.10		30.37	3.51	0.00	-20.00	13.89	37.99	AV	3.00	0.00	53.98	15.99	PASS
BT-High		3	Horn SN6276	4960.39	50.80		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		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

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. 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.

Applicant:	Itronix Corporation	poration Model: IX260PNL3054BT FCC ID: KBCIX260PNL3054BT IC ID: 1943A-IX260							
Rugged	Laptop PC with interna	al Cirronet E	3T2022 Bluetooth and	Senao NL-3	054MP 802.11b/g WLAN		ITRONIX		
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Test Report S/N:	1	00504KBC-T565-E15B
Test Date(s):	21Sept	t04 - 14Oct04, 22Oct04
Test Type(s):	FCC §15.247	IC RSS-210 Issue 5
Lab Registration(s):	FCC #714830	IC Lab File #3874

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 W. Pupe

Russell Pipe Senior Compliance Technologist Celltech Labs Inc.

> 22Oct04 Date

Applicant:	Itronix Corporation	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa
Rugged	Laptop PC with interna	al Cirronet E	3T2022 Bluetooth and	Senao NL-3	054MP 802.11b/g WLAN		ITRONIX
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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. EQUIPMENT LIST							
ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE		
na							

J.5. MEASUREMENT	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	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN						ITRONIX	
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Test Type(s):	FCC §15.247 IC RSS-210 Issue 5			
Lab Registration(s):	FCC #714830 IC Lab File #3874			

J.9. EVALUATION RESULTS							
Calculation:	Calculation:						
Rangestar Int	ernal Surface-Moun	<u>t Antenna:</u>					
	RF Outpu R =	G=	Antenna gain: 1.00 (mW/cm^2) 3915 (mW) 2.82 (numeric) (cm)	2441 (MHz) (dBm) (dBi)			
Formulae:							
$S = \frac{PG}{4\pi R^2}$ $R = \sqrt{\frac{P}{4\pi S}}$	 (S = Power Density P = Power Applied S = Numeric Anter R = Distance from	d to the Antenna nna Gain				
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		

Α	pplicant:	Itronix Corporation	n Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa
	Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN						ITRONIX	
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Test Report S/N:	100504KBC-T565-E15B				
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Test Type(s):	FCC §15.247 IC RSS-210 Issue 5				
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

Applicant:	Itronix Corporation	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN						ITRONIX	
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Test Report S/N:	100504KBC-T565-E15B				
Test Date(s):	21Sept04 - 14Oct04, 22Oct04				
Test Type(s):	FCC §15.247 IC RSS-210 Issue 5				
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END OF DOCUMENT

Applicant:	Itronix Corporation	Model:	IX260PNL3054BT	FCC ID:	KBCIX260PNL3054BT	IC ID:	1943A-IX260Pa
Rugged Laptop PC with internal Cirronet BT2022 Bluetooth and Senao NL-3054MP 802.11b/g WLAN							
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