

## DECLARATION OF COMPLIANCE FCC PART 90 EMC MEASUREMENTS

### Test Lab

**CELLTECH LABS INC.**  
Testing and Engineering Services  
1955 Moss Court  
Kelowna, B.C.  
Canada V1Y 9L3  
Tel.: 250-448-7047  
Fax: 250-448-7046  
e-mail: info@celltechlabs.com  
web site: www.celltechlabs.com

### Applicant Information

**ITRONIX CORPORATION**  
801 South Stevens Street  
Spokane, WA 99210  
United States

**FCC IDENTIFIER:** KBCIX260PLUSBM390  
**Model(s):** IX260PLUSBM3900

**FCC Rule Part(s):** 47 CFR §90, §2  
**Test Procedure(s):** FCC 47 CFR §90, §2; ANSI TIA/EIA-603-A-2001  
**Device Classification:** Licensed Non-Broadcast Station Transmitter (TNB)  
**Device Description:** Rugged Laptop PC with Wavenet BM3-900M Mobitex Radio Modem & Dipole Antenna with (3) Vehicle-Mount Antennas, & Vehicle Cradle  
**Tx Frequency Range:** 896.0 - 901.0 MHz  
**Rx Frequency Range:** 935.0 - 940.0 MHz  
**Max. ERP Measured:** 2.87 Watts (34.58 dBm) - Itronix Swivel Dipole Antenna Model: IX260+  
0.668 Watts (28.25 dBm) - MaxRad Vehicle-Mount Antenna Model: Z563  
1.33 Watts (31.25 dBm) - MaxRad Vehicle-Mount Antenna Model: Z567  
1.88 Watts (32.74 dBm) - MaxRad Vehicle-Mount Antenna Model: Z573  
**Max. Conducted Power Tested:** 33.2 dBm  
**Max. Duty Cycle Tested:** 30 % (Source-Based Time-Averaged)  
**Source-Based Time-Aver. Power:** 28.0 dBm (Conducted)  
**Modulation Type:** GMSK  
**Emission Designator(s):** 12K0F1D  
**Frequency Tolerance(s):** ± 0.00015 %  
**Antenna Type(s) Tested:** Itronix IX260+ External Swivel Dipole  
MaxRad Z563 Vehicle-Mount - Unity Gain  
MaxRad Z567 Vehicle-Mount - 5 dBd Gain  
MaxRad Z573 Vehicle-Mount - 5 dBd Gain  
**Power Source(s) Tested:** 11.1 V Lithium-ion Battery, 6.0 Ah (Model: A2121-2)  
12 V Vehicle Battery (for Vehicle Cradle)

This 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 §90, §2, and ANSI TIA/EIA-603-A-2001.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

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.



**Duane M. Friesen**  
EMC Manager  
Celltech Labs Inc.



<b>TABLE OF CONTENTS</b>			
<b>Section</b>	<b>DESCRIPTION</b>		<b>Page #</b>
<b>1.1</b>	<b>SCOPE</b>		<b>3</b>
<b>2.1</b>	<b>GENERAL INFORMATION &amp; DEVICE DESCRIPTION</b>		<b>3</b>
<b>3.1</b>	<b>TEST EQUIPMENT LIST</b>		<b>4</b>
<b>Appendix</b>	<b>MEASUREMENT PROCEDURES &amp; DATA</b>	<b>FCC Rule Part(s)</b>	<b>Page #</b>
<b>A</b>	<b>RF Output Power</b>	<b>§2.1046</b>	<b>5</b>
<b>B</b>	<b>Effective Radiated Power Output</b>	<b>§90.635 §2.1046</b>	<b>6-8</b>
<b>C</b>	<b>Field Strength of Spurious Radiation</b>	<b>§2.1053 §90.210j</b>	<b>9-13</b>
<b>D</b>	<b>Radiated Test Setup Photographs</b>		<b>14-17</b>

## FCC PART 90 EMC MEASUREMENT REPORT

### 1.1 SCOPE

This report describes the measurements made and results collected during the Electromagnetic emissions testing of the Itronix Corporation IX260+ Rugged Laptop PC incorporating the internal Wavenet BM3-900M Mobitex Radio Modem with external swivel dipole antenna, (3) vehicle-mount antennas, and vehicle cradle. The measurement 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 Parts 90, and 2.

### 2.1 GENERAL INFORMATION / DEVICE DESCRIPTION

APPLICANT	ITRONIX CORPORATION		801 South Stevens Street, Spokane, WA 99210			
FCC IDENTIFIER	KBCIX260PLUSBM390					
Model(s)	IX260PLUSBM3900					
Serial No.(s)	ZZGEG4196ZZ6470		Production Unit		IX260+ Laptop PC	
	BM315099WT440		Production Unit		Mobitex Radio Modem	
Device Type	Rugged Laptop PC with Wavenet BM3-900M Mobitex Radio Modem, External Swivel Dipole Antenna, (3) Vehicle-Mount Antennas, & Vehicle Cradle					
FCC Rule Part(s)	47 CFR §90, §2					
FCC Classification	Licensed Non-Broadcast Station Transmitter (TNB)					
Tx Frequency Range	896.0 - 901.0 MHz					
Rx Frequency Range	935.0 - 940.0 MHz					
Antenna Type(s) Tested	Model Number	Type / Description		Max. ERP Measured		
	Itronix IX260+	External Swivel Dipole		2.87	W	34.58 dBm
	MaxRad Z563	Unity Gain Mobile Vehicle-Mount		0.668	W	28.25 dBm
	MaxRad Z567	5 dBd Gain Mobile Vehicle-Mount		1.33	W	31.25 dBm
	MaxRad Z573	5 dBd Gain Mobile Vehicle-Mount		1.88	W	32.74 dBm
Max. RF Conducted Output Power Measured	33.2 dBm Peak	Mobitex	Max. Source-Based Time-Averaged Conducted Power			28.0 dBm Peak
Max. Duty Cycle Tested	30 %		Source-Based Time-Averaged			
Emission Designator(s)	12K0F1D					
Frequency Tolerance	± 0.00015 %					
Modulation	GMSK					
Power Source(s) Tested	Lithium-ion Battery		11.1 V, 6.0 Ah		Model: A2121-2	
	Vehicle Battery		12 V		(For Vehicle Cradle)	

### 3.1 TEST EQUIPMENT LIST

Equipment Type	Model	Serial No.	Calibration Due Date
HP Signal Generator	8648D (9kHz-4.0GHz)	3847A00611	April 2005
Rohde & Schwarz Signal Generator	SMR 20 (10MHz-40GHz)	100104	April 2005
Gigatronics Power Meter	8651A	8650137	April 2005
Gigatronics Power Meter	8652A	1835267	April 2005
Gigatronics Power Sensor	80701A (0.05-18GHz)	1833535	April 2005
Gigatronics Power Sensor	80701A (0.05-18GHz)	1833542	April 2005
Gigatronics Power Sensor	80701A (0.05-18GHz)	1834350	April 2005
Amplifier Research Power Amp.	5S1G4 (5W, 800MHz-4.2GHz)	26235	N/A
Amplifier Research Power Amp.	10W1000C (0.5 – 1 GHz)	27887	N/A
Microwave System Amplifier	HP 83017A (0.5-26.5GHz)	3123A00587	N/A
Network Analyzer	HP 8753E (30kHz-3GHz)	US38433013	April 2005
Frequency Counter	HP 53181A (3GHz)	3736A05175	April 2005
DC Power Supply	HP E3611A	KR83015294	N/A
Multi-Device Controller	EMCO 2090	9912-1484	N/A
Mini Mast	EMCO 2075	0001-2277	N/A
Turntable	EMCO 2080-1.2/1.5	0002-1002	N/A
Double Ridged Horn Antenna	ETS 3115 (1-18GHz) TX Substitution Antenna (Horn SN6267)	6267	Oct 2004
Double Ridged Horn Antenna	ETS 3115 (1-18GHz)	6276	Oct 2004
Standard Gain Horn Antenna	ETS 3160-09 TX Substitution Antenna (3160-09)	9810-1123	N/A
Standard Gain Horn Antenna	ETS 3160-09	1263	N/A
Bilog Antenna	Schaffner CBL6111A	1607	Jan 2005
Roberts Dipole Antenna	3121C-DB4 TX Substitution Antenna (B_3121C)	0003-1494	Dec 2004
Roberts Dipole Antenna	3121C-DB4	0003-1498	Dec 2004
Spectrum Analyzer	HP 8594E	3543A02721	April 2005
Spectrum Analyzer	HP E4408B	US39240170	Dec 2004
Shielded Screen Room	Lindgren R.F. 18W-2/2-0	16297	N/A
Environmental Chamber	ESPEC ECT-2 (Temperature/Humidity)	0510154-B	Feb 2005
Directional Coupler	Amplifier Research DC7154 (0.8-4.2 GHz)	26197	N/A
Directional Coupler	Pasternack PE2214-20	00078	N/A
High Pass Filter	Microwave Circuits HIG318G1	0001DC0020	N/A
High Pass Filter	Microwave Circuits H02G18G1	0001DC0020	N/A
30 dB Attenuator	Pasternack PE7019-30	00065	N/A

## APPENDIX A - RF OUTPUT POWER MEASUREMENT - §2.1046

### A.1. MEASUREMENT PROCEDURE

The peak conducted power levels were measured at the Wavenet BM3-900M Mobitex radio modem RF port with a Gigatronics 8652A Universal Power Meter in burst average power mode. An offset was entered into the power meter to correct for the losses of the attenuator and cable installed before the sensor input. The transmitter terminal was coupled to the power meter and the DUT was placed in test mode using the Wavenet BM3-900M Mobitex test software installed in the IX260+ Laptop PC with the internal transmitter in modulated carrier mode (30% duty cycle) at a full rated power. All subsequent tests were performed using the same power measurement procedures.

### A.2. MEASUREMENT DATA

Conducted Power Measurements	
Frequency (MHz)	Peak Power (dBm)
896.0	33.2
901.0	33.2

## APPENDIX B - EFFECTIVE RADIATED POWER OUTPUT - §90.635; §2.1046

### B.1. MEASUREMENT PROCEDURE

ERP measurements were performed using the Signal Substitution Method in accordance with ANSI TIA/EIA-603-A-2001 on a 3-meter open area test site. The DUT was placed in test mode using the Wavenet BM3-900M Mobitex test software installed in the IX260+ Laptop PC with the internal transmitter in modulated carrier mode (30% duty cycle) at a full rated power. The DUT was placed on a turntable 3 meters from the receive antenna. For the swivel dipole evaluation, the DUT was placed on a Styrofoam support at the center of the turntable, 1 meter above the ground plane. For the vehicle-mount antenna evaluations, the antenna was fixed on a 50 cm x 50 cm ground plane on a Styrofoam support placed on a wooden table, at a distance of 3 meters from the biconilog receive antenna, and connected to the vehicle cradle via a 17-foot LMR-195 cable representing a typical vehicle-mount installation. The IX260+ Laptop PC was installed in the vehicle cradle and placed on the wooden table. The maximum field intensity was determined by rotating the DUT approximately 360 degrees and changing the height of the biconilog receive antenna from 1 to 4 meters. Once the maximum emission was found, the spectrum analyzer was set to peak hold and the uncorrected emission value recorded for each of the low, mid and high channels tested. The DUT was then substituted with a dipole antenna. A signal, simulating the DUT emission was generated, amplified, and fed through a directional coupler to the substitution antenna. The height and direction of the receive antenna as well as the direction of the substitution dipole was adjusted for a maximum received signal. The power applied to the dipole was then adjusted to give the same field strength reading as previously recorded for the DUT and the power at the forward coupler port recorded. The substitution antenna was then replaced with a calibrated power sensor, the forward coupler port power level confirmed and the power applied to the dipole antenna recorded. The ERP level was determined by correcting the applied feed point power with the addition of the dipole gain.

(See next pages for measurement data)

### B.2. MEASUREMENT SETUP

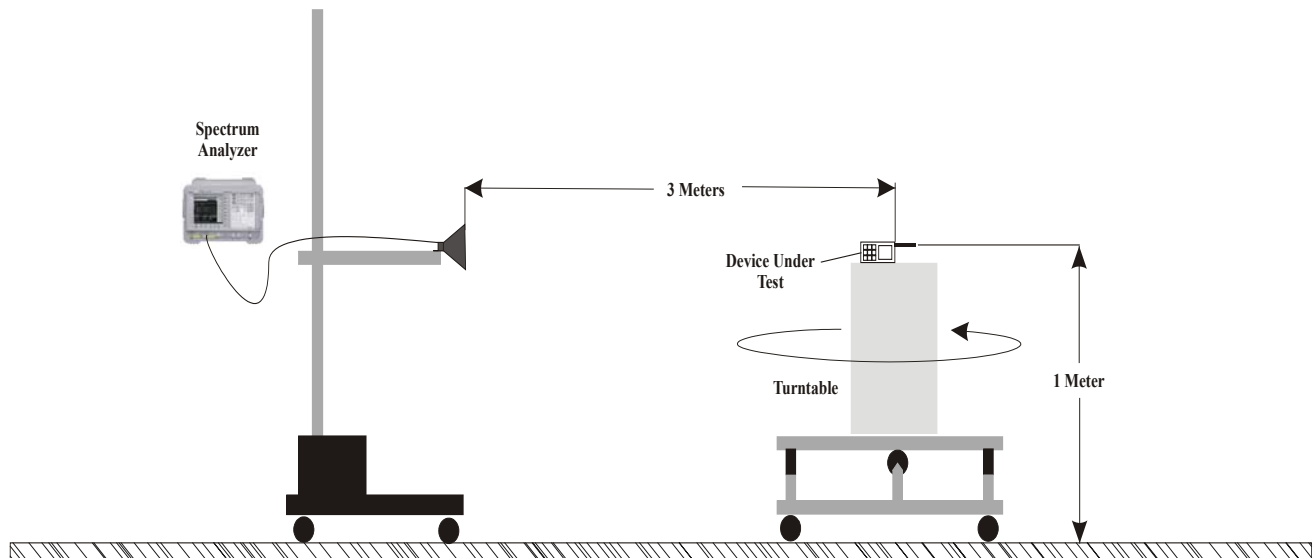




Figure 2. Radiated Power Measurement Test Setup Diagram

## EFFECTIVE RADIATED POWER OUTPUT - §90.635; §2.1046 (Continued)

### B.3. MEASUREMENT DATA

		<b>Project Number:</b>	090104KBC-T553-E90M		<b>Standard:</b>	FCC90.635d								
		<b>Company:</b>	Itronix		<b>Test Start Date:</b>	3-Sep-04								
		<b>Product:</b>	IX260+ with Wavenet Mobitex		<b>Test End Date:</b>	20-Sep-04								
IX260+ with Wavenet Mobitex & Attached Swivel Dipole Antenna Carrier Power Levels														
Polarity	Distance	Substitution Antenna Type	Carrier	Frequency	Corrected Field Strength	Substituted SA Signal Level (uncorrected)	Power Applied to Antenna	Antenna Gain	Carrier ERP Level		ERP Limit		Margin	Pass/Fail
				MHz	dBuV/m	dBuV	dBm	dBi	dBm	Watts	dBm	Watts	dB	
H	3	B_3121C	Lowest	896.00	131.95	106.20	34.25	2.25	34.36	2.73	50.00	100.00	15.64	PASS
H	3	B_3121C	Highest	901.00	132.38	106.48	34.43	2.29	34.58	2.87	50.00	100.00	15.42	PASS
V	3	B_3121C	Lowest	896.00	126.89	101.14	32.36	2.25	32.47	1.77	50.00	100.00	17.53	PASS
V	3	B_3121C	Highest	901.00	127.40	101.50	32.73	2.29	32.88	1.94	50.00	100.00	17.12	PASS
Note: Dipole Antenna used for substitution														
Formulae: ERP Level (dBm) = Power applied to Antenna (dBm) + Antenna Gain (dBi) - 2.14 Margin (dB) = Limit (dBm) - Level (dBm)														


		<b>Project Number:</b>	090104KBC-T553-E90M		<b>Standard:</b>	FCC90.635d	
		<b>Company:</b>	Itronix		<b>Test Start Date:</b>	3-Sep-04	
		<b>Product:</b>	IX260+ with Wavenet Mobitex		<b>Test End Date:</b>	17-Sep-04	


IX260+ with Wavenet Mobitex & Z563 Mobile Antenna and Cradle Carrier Power Levels														
Polarity	Distance	Substitution Antenna Type	Carrier	Frequency	Corrected Field Strength	Substituted SA Signal Level (uncorrected)	Power Applied to Antenna	Antenna Gain	Carrier ERP Level		ERP Limit		Margin	Pass/Fail
				MHz	dBuV/m	dBuV	dBm	dBi	dBm	Watts	dBm	Watts	dB	
H	3	B_3121C	Lowest	896.00	117.05	91.30	18.94	2.25	19.06	0.080	50.00	100.00	30.94	PASS
H	3	B_3121C	Highest	901.00	118.00	92.10	19.55	2.29	19.70	0.093	50.00	100.00	30.30	PASS
V	3	B_3121C	Lowest	896.00	122.15	96.40	27.96	2.25	28.07	0.642	50.00	100.00	21.93	PASS
V	3	B_3121C	Highest	901.00	122.20	96.30	28.10	2.29	28.25	0.668	50.00	100.00	21.75	PASS

Note: Dipole Antenna used for substitution													
Formulae: ERP Level (dBm) = Power applied to Antenna (dBm) + Antenna Gain (dBi) - 2.14 Margin (dB) = Limit (dBm) - Level (dBm)													

## EFFECTIVE RADIATED POWER OUTPUT - §90.635; §2.1046 (Continued)

### B.3. MEASUREMENT DATA (Cont.)

		<b>Project Number:</b>	090104KBC-T553-E90M		<b>Standard:</b>	FCC90.635d								
		<b>Company:</b>	Itronix		<b>Test Start Date:</b>	3-Sep-04								
		<b>Product:</b>	IX260+ with Wavenet Mobitex		<b>Test End Date:</b>	17-Sep-04								
<b>IX260+ with Wavenet Mobitex &amp; Z567 Mobile Antenna and Cradle Carrier Power Levels</b>														
Polarity	Distance	Substitution Antenna Type	Carrier	Frequency	Corrected Field Strength	Substituted SA Signal Level (uncorrected)	Power Applied to Antenna	Antenna Gain	Carrier ERP Level		ERP Limit		Margin	Pass/Fail
	m			MHz	dBuV/m	dBuV	dBm	dBi	dBm	Watts	dBm	Watts	dB	
H	3	B_3121C	Lowest	896.00	118.45	92.70	20.42	2.25	20.53	0.113	50.00	100.00	29.47	PASS
H	3	B_3121C	Highest	901.00	117.40	91.50	18.95	2.29	19.10	0.081	50.00	100.00	30.90	PASS
V	3	B_3121C	Lowest	896.00	125.25	99.50	31.14	2.25	31.25	1.33	50.00	100.00	18.75	PASS
V	3	B_3121C	Highest	901.00	124.50	98.60	30.42	2.29	30.56	1.14	50.00	100.00	19.44	PASS
Note: Dipole Antenna used for substitution														
Formulae: ERP Level (dBm) = Power applied to Antenna (dBm) + Antenna Gain (dBi) - 2.14 Margin (dB) = Limit (dBm) - Level (dBm)														

		<b>Project Number:</b>	090104KBC-T553-E90M		<b>Standard:</b>	FCC90.635d								
		<b>Company:</b>	Itronix		<b>Test Start Date:</b>	3-Sep-04								
		<b>Product:</b>	IX260+ with Wavenet Mobitex		<b>Test End Date:</b>	20-Sep-04								
<b>IX260+ with Wavenet Mobitex &amp; Z573 Mobile Antenna and Cradle Carrier Power Levels</b>														
Polarity	Distance	Substitution Antenna Type	Carrier	Frequency	Corrected Field Strength	Substituted SA Signal Level (uncorrected)	Power Applied to Antenna	Antenna Gain	Carrier ERP Level		ERP Limit		Margin	Pass/Fail
	m			MHz	dBuV/m	dBuV	dBm	dBi	dBm	Watts	dBm	Watts	dB	
H	3	B_3121C	Lowest	896.00	112.69	86.94	14.59	2.25	14.70	0.029	50.00	100.00	35.30	PASS
H	3	B_3121C	Highest	901.00	112.64	86.74	14.31	2.29	14.46	0.028	50.00	100.00	35.54	PASS
V	3	B_3121C	Lowest	896.00	122.71	96.96	28.49	2.25	28.60	0.725	50.00	100.00	21.40	PASS
V	3	B_3121C	Highest	901.00	126.52	100.62	32.59	2.29	32.74	1.88	50.00	100.00	17.26	PASS
<div>Note: Dipole Antenna used for substitution</div> <div>Formulae: ERP Level (dBm) = Power applied to Antenna (dBm) + Antenna Gain (dBi) - 2.14 Margin (dB) = Limit (dBm) - Level (dBm)</div>														



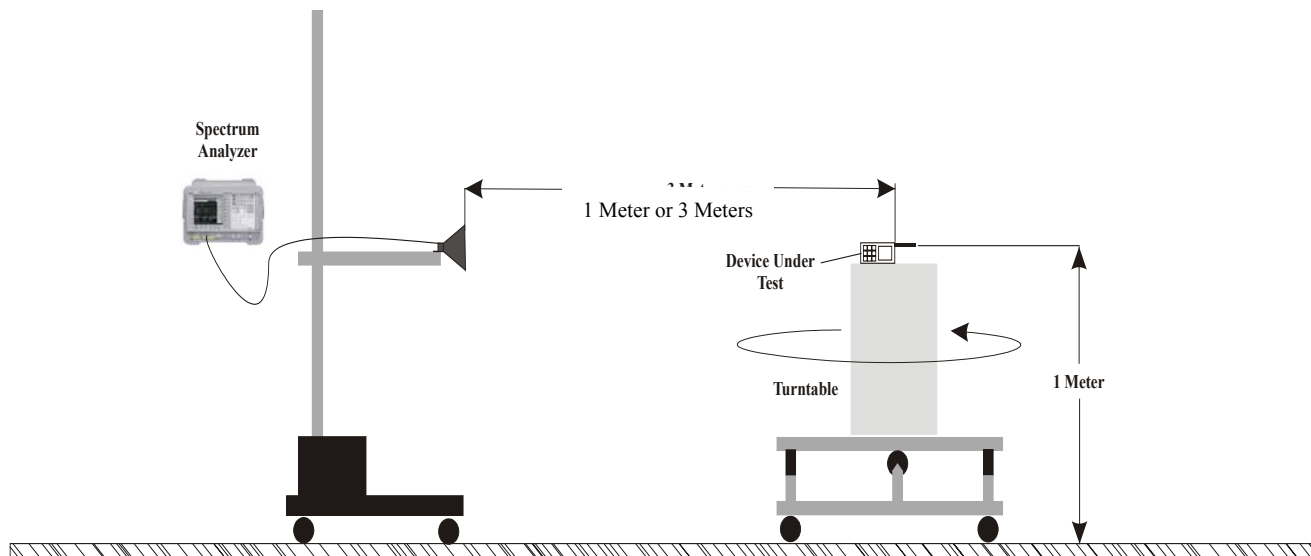
## APPENDIX C - FIELD STRENGTH OF SPURIOUS RADIATION - §90.210j; §2.1053

### C.1. MEASUREMENT PROCEDURE

Radiated spurious emissions were measured on a 3-meter open area test site using the Signal Substitution Method in accordance with ANSI TIA/EIA-603-A-2001. The DUT was placed in the vehicle cradle and programmed in test mode using the Wavenet BM3-900M Mobitex test software installed in the IX260+ Laptop PC with the internal transmitter in modulated carrier mode (30% duty cycle) at a full rated power. For the swivel dipole evaluation, the DUT was placed on a Styrofoam support at the center of the turntable, 1 meter above the ground plane. For the vehicle-mount antenna evaluations, the antenna was fixed on a 50 cm x 50 cm ground plane on a Styrofoam support placed on a wooden table, at a distance of 3 meters from the receive antenna, and connected to the vehicle cradle via a 17-foot LMR-195 cable representing a typical vehicle-mount installation. The IX260+ Laptop PC was installed in the vehicle cradle and placed on the wooden table. A frequency band from just above the highest transmitted frequency to just above the 10<sup>th</sup> harmonic of the highest transmitted frequency was divided into smaller bands corresponding to measurement equipment setups and capabilities. The measurement equipment including carrier blocking filters, was optimized for maximum sensitivity for each band while ensuring no saturation occurred in any gain stages that may be present. The maximum field intensity in each of these bands were determined by rotating the DUT approximately 360 degrees and changing the height of the receive antenna from 1 to 4 meters while maintaining the spectrum analyzer trace in max hold. The stored trace was then evaluated to determine any significant emissions that should be evaluated by substitution. The frequency and uncorrected field strength level for each significant emission was recorded. To describe the noise floor, the maximum level associated with a number of frequencies within the band were also recorded. The DUT was then substituted with a transmit antenna. A signal simulating the DUT emission was generated for each of the signals recorded; it was amplified and fed through a directional coupler to the substitution antenna. The height and direction of the receive antenna as well as the direction of the substitution horn was adjusted for a maximum received signal. The power applied to the transmit antenna was then adjusted to give the same field strength reading as previously recorded for the DUT and the power at the forward coupler port recorded. The substitution antenna was then replaced with a calibrated power sensor, the forward coupler port power level confirmed and the power applied to the horn antenna recorded. The radiated power level was determined by correcting the applied feed point power with the addition of the antenna gain.

(See next pages for measurement data)


### C.2. MEASUREMENT SETUP



**Figure 3. Radiated Spurious Measurement Test Setup Diagram**  
(3 Meters for Frequencies < 10 GHz - 1 Meter for Frequencies ≥ 10 GHz)

## FIELD STRENGTH OF SPURIOUS RADIATION - §90.210j; §2.1053 (Continued)

### C.3. MEASUREMENT DATA



**Project Number:** 090104KBC-T553-E90M

**Company:** Itronix

**Product:** IX260+ with Wavenet Mobitex

**Standard:** FCC90.210j

**Test Start Date:** 3-Sep-04

**Test End Date:** 20-Sep-04

IX260+ with Wavenet Mobitex & Attached Swivel Dipole Antenna Spurious Emissions												
Polarity	Distance	Substitution Antenna Type	Carrier	Frequency	Corrected Field Strength	Substituted SA Signal Level (uncorrected)	Power Applied to Antenna	Antenna Gain	Emission ERP Level	ERP Limit	Margin	Pass/Fail
	m			MHz	dBuV/m	dBuV	dBm	dBi	dBm	dBm*	dB	
H	3	Horn SN6267	Lowest	1108.00	73.47	44.40	-33.43	4.24	-31.33	-20.00	11.33	PASS
H	3	Horn SN6267	Lowest	1793.00	81.30	49.60	-27.97	6.49	-23.62	-20.00	3.62	PASS
H	3	Horn SN6267	Lowest	5378.00	94.29	52.80	-40.61	8.60	-34.15	-20.00	14.15	PASS
V	3	Horn SN6267	Lowest	1793.00	80.60	48.90	-27.68	6.49	-23.33	-20.00	3.33	PASS
V	3	Horn SN6267	Lowest	1890.00	66.45	34.30	-40.67	6.59	-36.22	-20.00	16.22	PASS
V	3	Horn SN6267	Lowest	5378.00	61.61	55.60	-38.78	8.60	-32.32	-20.00	12.32	PASS
H	3	Horn SN6267	Highest	1998.00	72.27	39.60	-37.26	6.70	-32.70	-20.00	12.70	PASS
H	3	Horn SN6267	Highest	5408.00	63.27	57.20	-36.38	8.60	-29.92	-20.00	9.92	PASS
V	3	Horn SN6267	Highest	2000.00	72.38	39.70	-36.62	6.70	-32.06	-20.00	12.06	PASS
V	3	Horn SN6267	Highest	5408.00	62.47	56.40	-41.19	8.60	-34.73	-20.00	14.73	PASS

Note:

Horn Antenna used for substitution

All applicable frequency ranges were investigated up to the carrier tenth harmonic and any significant emissions or noise floor level reported for each range.

Formulae:


Limit = 50 + 10\*log(Fundamental Power Level, in watts) below the Fundamental peak power gives -20 dBm

ERP Level (dBm) = Power applied to Antenna (dBm) + Antenna Gain (dBi) - 2.14

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

## FIELD STRENGTH OF SPURIOUS RADIATION - §90.210j; §2.1053 (Continued)

### C.3. MEASUREMENT DATA (Cont.)



Project Number:

090104KBC-T553-E90M

Company:

Itronix

Product:

IX260+ with Wavenet Mobitex

Standard:

FCC90.210j

Test Start Date:

3-Sep-04

Test End Date:

17-Sep-04

IX260+ with Wavenet Mobitex & Z563 Antenna Spurious Emissions												
Polarity	Distance	Substitution Antenna Type	Carrier	Frequency	Corrected Field Strength	Substituted SA Signal Level (uncorrected)	Power Applied to Antenna	Antenna Gain	Emission ERP Level	ERP Limit	Margin	Pass/Fail
	m			MHz	dBuV/m	dBuV	dBm	dBi	dBm	dBm*	dB	
H	3	Horn SN6267	Lowest	1889.00	71.75	39.60	-37.22	6.59	-32.77	-20.00	12.77	PASS
H	3	Horn SN6267	Lowest	1897.00	76.18	44.00	-32.23	6.60	-27.77	-20.00	7.77	PASS
H	3	Horn SN6267	Lowest	2452.00	60.30	63.20	-32.93	7.69	-27.38	-20.00	7.38	PASS
H	3	Horn SN6267	Lowest	5378.00	60.11	54.10	-38.92	8.60	-32.46	-20.00	12.46	PASS
V	3	Horn SN6267	Lowest	1797.00	75.41	43.70	-33.37	6.50	-29.01	-20.00	9.01	PASS
V	3	Horn SN6267	Lowest	1889.00	71.35	39.20	-37.30	6.59	-32.85	-20.00	12.85	PASS
V	3	Horn SN6267	Lowest	5378.00	64.91	58.90	-34.90	8.60	-28.44	-20.00	8.44	PASS
H	3	Horn SN6267	Highest	1994.00	66.75	34.10	-39.81	6.69	-35.26	-20.00	15.26	PASS
H	3	Horn SN6267	Highest	5408.00	57.67	51.60	-43.55	8.60	-37.09	-20.00	17.09	PASS
V	3	Horn SN6267	Highest	1803.00	78.14	46.40	-31.31	6.50	-26.95	-20.00	6.95	PASS
V	3	Horn SN6267	Highest	1953.00	66.54	34.10	-40.27	6.65	-35.76	-20.00	15.76	PASS
V	3	Horn SN6267	Highest	5408.00	63.37	57.30	-40.32	8.60	-33.86	-20.00	13.86	PASS

Note:

Horn Antenna used for substitution

All applicable frequency ranges were investigated up to the carrier tenth harmonic and any significant emissions or noise floor level reported for each range.

Formulae:


Limit = 50 + 10\*log(Fundamental Power Level, in watts) below the Fundamental peak power gives -20 dBm

ERP Level (dBm) = Power applied to Antenna (dBm) + Antenna Gain (dBi) - 2.14

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


## FIELD STRENGTH OF SPURIOUS RADIATION - §90.210j; §2.1053 (Continued)

### C.3. MEASUREMENT DATA (Cont.)

		<b>Project Number:</b>		090104KBC-T553-E90M		<b>Standard:</b>		FCC90.210j				
		<b>Company:</b>		Itronix		<b>Test Start Date:</b>		3-Sep-04				
		<b>Product:</b>		IX260+ with Wavenet Mobitex		<b>Test End Date:</b>		17-Sep-04				
<b>IX260+ with Wavenet Mobitex &amp; Z567 Mobile Antenna and Cradle Spurious Emissions</b>												
Polarity	Distance	Substitution Antenna Type	Carrier	Frequency	Corrected Field Strength	Substituted SA Signal Level (uncorrected)	Power Applied to Antenna	Antenna Gain	Emission ERP Level	ERP Limit	Margin	Pass/Fail
	m			MHz	dBuV/m	dBuV	dBm	dBi	dBm	dBm*	dB	
H	3	Horn SN6267	Lowest	1998.00	73.27	40.50	-36.14	6.70	-31.58	-20.00	11.58	PASS
H	3	Horn SN6267	Lowest	5378.00	58.11	52.00	-41.40	8.60	-34.94	-20.00	14.94	PASS
H	3	Horn SN6267	Lowest	7986.00	55.82	45.70	-55.66	9.29	-48.51	-20.00	28.51	PASS
V	3	Horn SN6267	Lowest	1793.00	78.49	46.90	-29.65	6.49	-25.30	-20.00	5.30	PASS
V	3	Horn SN6267	Lowest	1998.00	72.77	40.00	-36.23	6.70	-31.67	-20.00	11.67	PASS
V	3	Horn SN6267	Lowest	5378.00	64.51	58.40	-35.49	8.60	-29.03	-20.00	9.03	PASS
H	3	Horn SN6267	Highest	1994.00	72.05	39.30	-37.87	6.69	-33.32	-20.00	13.32	PASS
H	3	Horn SN6267	Highest	5408.00	58.67	52.50	-41.93	8.60	-35.47	-20.00	15.47	PASS
V	3	Horn SN6267	Highest	1668.00	58.38	27.50	-39.62	6.37	-35.39	-20.00	15.39	PASS
V	3	Horn SN6267	Highest	1801.00	81.63	50.00	-27.62	6.50	-23.26	-20.00	3.26	PASS
V	3	Horn SN6267	Highest	5408.00	64.67	58.50	-38.63	8.60	-32.17	-20.00	12.17	PASS
<p>Note: Horn Antenna used for substitution</p> <p>All applicable frequency ranges were investigated up to the carrier tenth harmonic and any significant emissions or noise floor level reported for each range.</p> <p>Formulae:</p> <p>Limit = 50 + 10*log(Fundamental Power Level, in watts) below the Fundamental peak power gives -20 dBm</p> <p>ERP Level (dBm) = Power applied to Antenna (dBm) + Antenna Gain (dBi) - 2.14</p> <p>Margin (dB) = Limit (dBm) - Level (dBm)</p>												

## FIELD STRENGTH OF SPURIOUS RADIATION - §90.210j; §2.1053 (Continued)

### C.3. MEASUREMENT DATA (Cont.)



**Project Number:** 090104KBC-T553-E90M

**Company:** Itronix

**Product:** IX260+ with Wavenet Mobitex

**Standard:** FCC90.210j

**Test Start Date:** 3-Sep-04

**Test End Date:** 20-Sep-04

IX260+ with Wavenet Mobitex & Z573 Mobile Antenna and Cradle Spurious Emissions												
Polarity	Distance	Substitution Antenna Type	Carrier	Frequency	Corrected Field Strength	Substituted SA Signal Level (uncorrected)	Power Applied to Antenna	Antenna Gain	Emission ERP Level	ERP Limit	Margin	Pass/Fail
	m			MHz	dBuV/m	dBuV	dBm	dBi	dBm	dBm*	dB	
H	3	Horn SN6267	Lowest	1793.00	61.20	29.50	-40.77	6.49	-36.42	-20.00	16.42	PASS
H	3	Horn SN6267	Lowest	1998.00	71.57	38.90	-37.86	6.70	-33.30	-20.00	13.30	PASS
H	3	Horn SN6267	Lowest	5378.00	61.61	55.60	-37.26	8.60	-30.80	-20.00	10.80	PASS
V	3	Horn SN6267	Lowest	1793.00	80.60	48.90	-27.67	6.49	-23.32	-20.00	3.32	PASS
V	3	Horn SN6267	Lowest	1998.00	72.67	40.00	-36.37	6.70	-31.81	-20.00	11.81	PASS
V	3	Horn SN6267	Lowest	5378.00	65.31	59.30	-34.37	8.60	-27.91	-20.00	7.91	PASS
H	3	Horn SN6267	Highest	2000.00	72.28	39.60	-37.25	6.70	-32.69	-20.00	12.69	PASS
H	3	Horn SN6267	Highest	5408.00	57.37	51.30	-43.54	8.60	-37.08	-20.00	17.08	PASS
V	3	Horn SN6267	Highest	1998.00	71.97	39.30	-37.23	6.70	-32.67	-20.00	12.67	PASS
V	3	Horn SN6267	Highest	5408.00	63.27	57.20	-40.21	8.60	-33.75	-20.00	13.75	PASS

Note:

Horn Antenna used for substitution

All applicable frequency ranges were investigated up to the carrier tenth harmonic and any significant emissions or noise floor level reported for each range.

Formulae:

Limit = 43 + 10\*log(Fundamental Power Level, in watts) below the Fundamental peak power gives -13 dBm

ERP Level (dBm) = Power applied to Antenna (dBm) + Antenna Gain (dBi) - 2.14

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