DECLARATION OF COMPLIANCE
FCC PART 24(E) EMC MEASUREMENTS

Test Lab

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Applicant Information

ITRONIX CORPORATION
801 South Stevens Street
Spokane, WA 99204

FCC Rule Part(s):	**47 CFR §24(E), §2**
IC Rule Part(s):	**RSS-133 Issue 2**
Test Procedure(s):	**FCC 47 CFR §24(E), §2; ANSI TIA/EIA-603-A-2001**
FCC Device Classification:	**Part 24 Licensed Transmitter (PCB)**
IC Device Classification:	**2GHz Personal Communication Services**
Device Type:	**Rugged Laptop PC with Sierra Wireless AirCard 750 PCS GSM/GPRS Modem (co-located with Cisco Systems MPI-350 Mini-PCI DSSS WLAN Card & Mitsumi WML-C11 Bluetooth Transmitter), Vehicle Cradle, & Mobile Antenna**
FCC ID:	**KBCIX260A750MPIBT**
Model(s):	**IX260**
Tx Frequency Range:	**1850.2 - 1909.8 MHz**
Max. RF Output Power:	**0.385 Watts EIRP (25.85 dBm)**
Conducted Power Tested:	**27.9 dBm Peak (1850.2 MHz) 27.9 dBm Peak (1880.0 MHz) 27.8 dBm Peak (1909.8 MHz)**
Modulation:	**GMSK**
Emission Designator:	**271KGXW**
Antenna Type:	**Mobile Vehicle Antenna (MaxRad P/N: WMLPVDB800/1900 - 3 dBi Gain)**
Power Supply:	**12V Vehicle Battery**

This equipment 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 §24(E), §2, Industry Canada RSS-133 Issue 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.

Russell Pipe
Senior Compliance Technologist
Celltech Labs Inc.

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FCC PART 24(E) EMC MEASUREMENT REPORT

1.1 SCOPE

Measurement and determination of electromagnetic emissions (EME) from radio frequency devices for compliance with the technical rules and regulations of the Federal Communications Commission and Industry Canada.

1.2 GENERAL INFORMATION - §2.1033(a)

APPLICANT

ITRONIX CORPORATION
801 South Stevens Street
Spokane, WA 99204

FCC ID	KBCIX260A750MPIBT
Model(s)	IX260
Serial No.	Pre-production
EUT Type	Rugged Laptop PC with Sierra Wireless AirCard 750 PCS GSM/GPRS Modem (co-located with Cisco MPI-350 Mini-PCI DSSS WLAN Card & Mitsumi WML-C11 Bluetooth Transmitter) Vehicle Cradle, & Mobile Vehicle-Mount Antenna
Rule Part(s)	FCC 47 CFR §24(E), §2 IC RSS-133 Issue 2
FCC Classification	Part 24 Licensed Transmitter (PCB)
IC Classification	2GHz Personal Communication Services
Tx Frequency Range	1850.2 - 1909.8 MHz
Max. RF Output Power	0.385 Watts EIRP (25.85 dBm)
RF Conducted Output Power Tested	27.9 dBm Peak (1850.2 MHz) 27.9 dBm Peak (1880.0 MHz) 27.8 dBm Peak (1909.8 MHz)
Emission Designator	271KGXW
Frequency Tolerance	0.1 PPM
Power Supply	12V Vehicle Battery
Antenna Type	Mobile Vehicle-Mount Antenna (MaxRad P/N: WMLPVDB800/1900 - 3 dBi Gain)

2.1 MEASUREMENT PROCEDURES

2.2 RF OUTPUT POWER MEASUREMENT - §2.1046

The peak conducted power was measured with a Gigatronics 8650A 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 EUT was placed into test mode via internal software. All subsequent tests were performed using the same tune-up procedures.

2.3 EFFECTIVE ISOTROPIC RADIATED POWER OUTPUT - §24.232(b)

EIRP 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 EUT was placed on a turntable 3-meters from the receive antenna and tested with the EUT transmitting continuously on 4 time slots in GPRS mode via internal software at a full rated power. The field of maximum intensity was found by rotating the EUT 360 degrees and changing the height of the receive antenna from 1 to 4 meters. Once a peak was found the spectrum analyzer was set to peak hold and the value of the emission was extracted. The field strength was recorded for each channel being tested, and for both EUT antenna polarizations and modes. A standard gain horn antenna was substituted in place of the EUT. The antenna was fed through a directional coupler and the power at the coupler port was monitored. A signal generator and power amplifier controlled the signal to the antenna, and the input level of the antenna was adjusted to the same field strength level as the EUT. The feed point for the antenna was then connected to a calibrated power meter and the power adjusted to read the same as the coupler port previously recorded, this is to account for any mismatch in impedance, which may occur at the horn antenna. The conducted power at the antenna feed point was recorded. The forward conducted power for the horn antenna was then determined and the EIRP level was determined by adding the horn forward conducted power and the antenna gain in dB.

2.4 FIELD STRENGTH OF SPURIOUS RADIATION - §2.1053

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 EUT was tested with the EUT transmitting continuously on 4 time slots in GPRS mode via internal software at a full rated power. The EUT was placed on the turntable with the transmitter transmitting into a non-radiating load. A receiving antenna located 3 meters from the turntable received any signal radiated from the transmitter and its operating accessories. The receiving antenna was varied in height from 1 to 4 meters and the polarization was varied (horizontal and vertical) to determine the worst-case emission level. A standard gain horn antenna was substituted in place of the EUT. A modulated signal was fed through a directional coupler to the antenna and the power at the coupler port was monitored. A signal generator and power amplifier controlled the antenna, and the input level of the antenna was adjusted to the same field strength level as the EUT. The antenna feed point was then connected to a calibrated power meter and the power was adjusted to read the same power at the coupler port previously recorded, to account for any mismatch in impedance which may occur at the horn antenna. The conducted power at the antenna feed point was then recorded. The forward conducted power for the horn antenna was determined by measuring the power at the horn antenna feed point and reproducing the coupler power previously measured. The EIRP level was determined by adding the horn forward conducted power and the horn antenna gain. All spurious emissions from the lowest radio frequency generated in the equipment to the tenth harmonic of the carrier were investigated. The test data is shown on pages 7-9.

2.5 RADIATED MEASUREMENT TEST SETUP

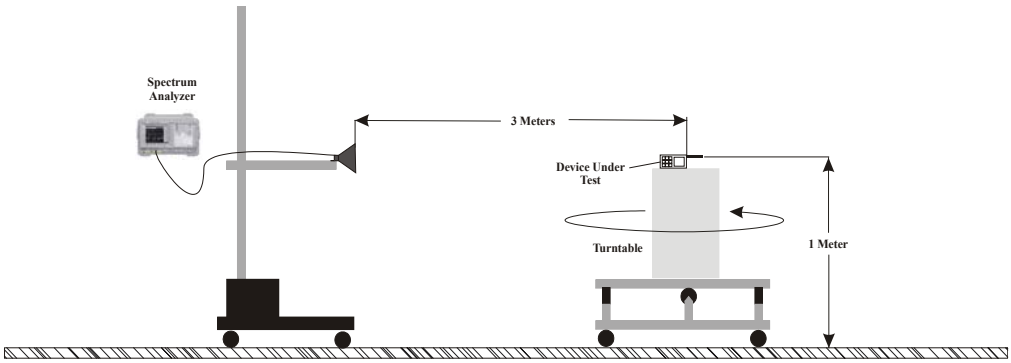

Figure 1. Radiated Measurement Test Setup Diagram

3.1 TEST DATA

3.2 EFFECTIVE ISOTROPIC RADIATED POWER OUTPUT - §24.232(b)

Freq. Tuned	EUT Peak Conducted Power	Maximum Field Strength of EUT	EUT & Horn Antenna Polariz.	Horn Gain	Horn Forward Conducted Power	EIRP of EUT Horn Gain + Horn Forward Conducted Power	
MHz	dBm	dBm	H / V	dBi	dBm	dBm	Watts
1850.2	27.9	-13.82	V	6.55	17.99	24.54	0.284
1880.0	27.9	-13.20	V	6.58	19.27	25.85	0.385
1909.8	27.8	-14.44	V	6.61	18.40	25.01	0.317

3.3 FIELD STRENGTH OF SPURIOUS RADIATION - §2.1053

Operating Frequency (MHz): 1850.2
Channel: 512 (Low)
EUT Conducted Pwr. (dBm): 27.90
Measured EIRP (dBm): 24.54
Modulation: GMSK
Distance: 3 Meters
Limit: 43 + 10 log (W) = 37.53 dBc

Frequency	Field Strength of Spurious Radiation	Horn Forward Cond. Pwr.	Standard Gain Horn Antenna Gain	POL	EIRP	ERP	dBc
MHz	dBm	dBm	dBi	H/V	dBm	dBm	
3700.40	-87.89	-55.00	6.6	V	-48.40	-50.54	75.08
5550.60	-87.31	-49.51	7.8	V	-41.71	-43.85	68.39
7400.80	-85.16	-48.58	7.8	V	-40.78	-42.92	67.46
9251.00	-85.77	-47.75	7.6	V	-40.15	-42.29	66.83
11101.20	-84.06	-47.70	8.5	V	-39.20	-41.34	65.88
12951.40	-80.20	-42.32	8.8	V	-33.52	-35.66	60.20
14801.60	-82.59	-44.71	9.6	V	-35.11	-37.25	61.79
16651.80	-82.89	-45.06	9.0	V	-36.06	-38.20	62.74
18502.00	-83.43	-47.22	9.3	V	-37.92	-40.06	64.60

Notes:
1. Radiated spurious measurements were performed using the Signal Substitution Method per ANSI/TIA/EIA-603-A-2001.
2. All other spurious emissions generated from the lowest frequency of the EUT to the tenth harmonic were investigated and found to be below the magnitude of each harmonic level.
3. Spurious emissions more than 20 dB below the limit are reported, though not required per §2.1051.

FIELD STRENGTH OF SPURIOUS RADIATION - §2.1053

Operating Frequency (MHz): 1880.0
Channel: 661 (Mid)
EUT Conducted Pwr. (dBm): 27.90
Measured EIRP (dBm): 25.85
Modulation: GMSK
Distance: 3 Meters
Limit: 43 + 10 log (W) = 38.85 dBc

Frequency	Field Strength of Spurious Radiation	Horn Forward Cond. Pwr.	Standard Gain Horn Antenna Gain	POL	EIRP	ERP	dBc
MHz	dBm	dBm	dBi	H/V	dBm	dBm	
3760.00	-86.97	-54.08	6.6	V	-47.48	-49.62	75.47
5640.00	-85.22	-47.42	7.8	V	-39.62	-41.76	67.61
7520.00	-82.94	-46.36	7.8	V	-38.56	-40.70	66.55
9400.00	-84.92	-46.90	7.6	V	-39.30	-41.44	67.29
11280.00	-84.85	-48.49	8.5	V	-39.99	-42.13	67.98
13160.00	-84.46	-46.58	8.8	V	-37.78	-39.92	65.77
15040.00	-81.73	-43.85	9.6	V	-34.25	-36.39	62.24
16920.00	-82.74	-44.91	9.0	V	-35.91	-38.05	63.90
18800.00	-82.02	-45.81	9.3	V	-36.51	-38.65	64.50

Notes:
1. Radiated spurious measurements were performed using the Signal Substitution Method per ANSI/TIA/EIA-603-A-2001.
2. All other spurious emissions generated from the lowest frequency of the EUT to the tenth harmonic were investigated and found to be below the magnitude of each harmonic level.
3. Spurious emissions more than 20 dB below the limit are reported, though not required per §2.1051.

FIELD STRENGTH OF SPURIOUS RADIATION - §2.1053

Operating Frequency (MHz): 1909.8
Channel: 810 (High)
EUT Conducted Pwr. (dBm): 27.80
Measured EIRP (dBm): 25.01
Modulation: GMSK
Distance: 3 Meters
Limit: 43 + 10 log (W) = 38.01 dBc

Frequency	Field Strength of Spurious Radiation	Horn Forward Cond. Pwr.	Standard Gain Horn Antenna Gain	POL	EIRP	ERP	dBc
MHz	dBm	dBm	dBi	H/V	dBm	dBm	
3819.60	-87.01	-54.12	6.6	V	-47.52	-49.66	74.67
5729.40	-86.31	-48.51	7.8	V	-40.71	-42.85	67.86
7639.20	-84.29	-47.71	7.8	V	-39.91	-42.05	67.06
9549.00	-85.76	-47.74	7.6	V	-40.14	-42.28	67.29
11458.80	-84.09	-47.73	8.5	V	-39.23	-41.37	66.38
13368.60	-84.96	-47.08	8.8	V	-38.28	-40.42	65.43
15278.40	-81.41	-43.53	9.6	V	-33.93	-36.07	61.08
17188.20	-81.82	-43.99	9.0	V	-34.99	-37.13	62.14
19098.00	-82.74	-46.53	9.3	V	-37.23	-39.37	64.38

Notes:
1. Radiated spurious measurements were performed using the Signal Substitution Method per ANSI/TIA/EIA-603-A-2001.
2. All other spurious emissions generated from the lowest frequency of the EUT to the tenth harmonic were investigated and found to be below the magnitude of each harmonic level.
3. Spurious emissions more than 20 dB below the limit are reported, though not required per §2.1051.

4.1 TEST EQUIPMENT LIST

TEST EQUIPMENT LIST			
Equipment Type	**Model**	**Serial No.**	**Calibration Due Date**
HP Signal Generator	8648D (9kHz-4.0GHz)	3847A00611	Feb 2004
Rohde & Schwarz Signal Generator	SMR40 (10MHz-40GHz)	835537/022	Nov 2003
Gigatronics Power Meter	8652A	1835272	Feb 2004
Gigatronics Power Sensor	80701A (0.05-18GHz)	1833535	Feb 2004
Gigatronics Power Sensor	80701A (0.05-18GHz)	1833542	Feb 2004
Amplifier Research Power Amp.	5S1G4 (5W, 800MHz-4.2GHz)	26235	N/A
Microwave System Amplifier	HP 83017A (0.5-26.5GHz)	3123A00587	N/A
Network Analyzer	HP 8753E (30kHz-3GHz)	US38433013	Feb 2004
Audio Analyzer	HP 8903B	3729A18691	Nov 2003
Modulation Analyzer	HP 8901A	3749A07154	July 2003
Frequency Counter	HP 53181A (3GHz)	3736A05175	May 2003
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)	6267	Oct. 2003
Double Ridged Horn Antenna	ETS 3115 (1-18GHz)	6276	Oct. 2003
Horn Antenna	Chase BBHA 9120-A (0.7-4.8GHz)	9120A-239	Sept 2003
Horn Antenna	Chase BBHA 9120-A (0.7-4.8GHz)	9120A-240	Sept 2003
Roberts Dipoles	Compliance Design (2 sets) 3121C		June 2003
Spectrum Analyzer	HP 8594E	3543A02721	Feb 2004
Spectrum Analyzer	HP E4408B	US39240170	Nov 2003
Shielded Screen Room	Lindgren R.F. 18W-2/2-0	16297	N/A
Environmental Chamber	ESPEC ECT-2 (Temperature/Humidity)	0510154-B	Feb 2004

5.1 CONCLUSION

The data in this measurement report shows that the ITRONIX CORPORATION Model: IX260 FCC ID: KBCIX260A750MPIBT Rugged Laptop PC with Sierra Wireless AirCard 750 PCS GSM/GPRS PCMCIA Modem Card (co-located with Cisco Systems MPI-350 Mini-PCI DSSS WLAN Card and Bluetooth Transmitter Module), Vehicle Cradle, and MaxRad Mobile Vehicle-Mount Antenna (P/N: WMLPVDB800/1900) complies with the requirements of FCC Rule Parts §24(E) and §2.