

DECLARATION OF COMPLIANCE MPE EVALUATION REPORT

Test Lab

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Applicant Information

ITRONIX CORPORATION

801 South Stevens Street
Spokane, WA 99204
United States

FCC IDENTIFIER:

KBCIX260P-AC775BT

IC IDENTIFIER:

1943A-IX260Pe

Model(s):

IX260P-AC775BT

FCC Rule Part(s):

47 CFR §24(E), §22(H); §15.247; §2.1091; §1.1310

IC Rule Part(s):

**RSS-133 Issue 2, RSS-132 Issue 1 (Provisional),
RSS-210 Issue 5, RSS-102 Issue 1 (Provisional)**

FCC Classification:

PCS Licensed Transmitter (PCB)

IC Classification:

2 GHz Personal Communication Services (RSS-133)

Device Description:

**Rugged Laptop PC with Sierra Wireless AC775 GSM GPRS/EDGE Modem,
External Swivel Dipole Antenna, Vehicle-Mount Antenna, & Vehicle Cradle
(co-located with Cirronet BT2022 Bluetooth Transmitter & Internal Antenna)**

Tx Frequency Range(s):

**1850.2 - 1909.8 MHz (PCS Band)
824.2 - 848.8 MHz (Cellular Band)**

Max. RF Conducted Power Measured:

**28.9 dBm Peak (PCS GSM)
32.0 dBm Peak (Cellular GSM)**

Modulation Type(s) Evaluated:

GMSK

Max. No. of Time Slots Evaluated:

4 (Class 12)

Max. Source-Based Time-Av. Duty Cycle:

50 %

Max. Source-Based Time-Av. Cond. Pwr:

**25.9 dBm Peak (PCS GSM)
29.0 dBm Peak (Cellular GSM)**

Antenna Type(s) Evaluated:

**Itronix IX260+ External Swivel Dipole (GSM)
MaxRad 3 dBi Gain Vehicle-Mount P/N: WMLPVDB800/1900 (GSM)**

This mobile transmitting device was determined to be compliant with localized Maximum Permissible Exposure (MPE) for Uncontrolled Exposure / General Population limits specified in FCC 47 CFR §1.1310 and Industry Canada RSS-102 Issue 1 (Provisional), in accordance with the requirements of FCC OET Bulletin 65, Edition 97-01, Health Canada's Safety Code 6, ANSI / IEEE C95.1-1999, and ANSI / IEEE C95.3-2002.

I attest to the accuracy of data. All measurements and/or calculations 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 evaluation 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.



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1.1 MPE Calculation Data

1. Itronix IX260+ Swivel Dipole Antenna

PCS GSM Band

Source-Based Time-Averaged Power at Antenna Input Terminal:

Tx Frequency:	1880.0	(MHz)
	25.9	(dBm)
Antenna gain:	2.6	(dBi)

$S = 1.00$ (mW/cm²)
 $P = 389.0451$ (mW)
 $G = 1.82$ (numeric)

R = 7.51 (cm)

S (mw/cm²) at 20cm

0.140688749

Cellular GSM Band

Source-Based Time-Averaged Power at Antenna Input Terminal:

Tx Frequency:	848.8	(MHz)
	29.0	(dBm)
Antenna gain:	2.6	(dBi)

$S = 0.57$ (mW/cm²)
 $P = 794.3282$ (mW)
 $G = 1.82$ (numeric)

R = 14.26 (cm)

S (mw/cm²) at 20cm

0.287249557



Itronix IX260+ Swivel Dipole Antenna

MPE Calculation Data (Cont.)

2. MaxRad 3 dBi Gain Vehicle-Mount Antenna (P/N: WMLPVDB800/1900)

PCS GSM Band

Tx Frequency: **1880.0** (MHz)
 Source-Based Time-Averaged Power at Antenna Input Terminal: **25.9** (dBm)
 3 dBi Antenna Gain minus 2.80 dB cable loss for 17 ft cable: **0.20** (dBi)

S= **1.00** (mW/cm²)
 P= **389.0451** (mW)
 G= **1.05** (numeric)

R = 5.69 (cm)

S (mw/cm²) at 20cm

0.080957925



MaxRad 3 dBi Gain
 Vehicle-Mount Antenna
 P/N: WMLPVDB800/1900

Cellular GSM Band

Tx Frequency: **848.8** (MHz)
 Source-Based Time-Averaged Power at Antenna Input Terminal: **29.0** (dBm)
 3 dBi Antenna Gain minus 1.89 dB cable loss for 17 ft cable: **1.11** (dBi)

S= **0.57** (mW/cm²)
 P= **794.3282** (mW)
 G= **1.29** (numeric)

R = 12.01 (cm)

S (mw/cm²) at 20cm

0.203825899

2.1 Calculation to determine MPE

$$S = \frac{PG}{4\pi R^2}$$

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

S= power density
P= power input to the antenna
G= power gain of the antenna in the direction of interest relative to an isotropic radiator
R= distance to the center of radiation of the antenna

3.1 MPE Limits

According to FCC 47 CFR 1.1310: The criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b).

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (minutes)
(A)Limits For Occupational / Control Exposures				
30-300	61.4	0.163	1.0	6
300-1500	...	...	F/300	6
1500-100,000	...	...	5	6
(B)Limits For General Population / Uncontrolled Exposure				
30-300	27.5	0.073	0.2	30
300-1500	...	...	F/1500	30
1500-100,000	...	...	1.0	30

F = Frequency in MHz

4.1 Summary

The Maximum Permissible Exposure (MPE) limit (General Population / Uncontrolled Exposure environment) for the frequency range in the PCS GSM band (1850-1910 MHz) is 1.0 mW/cm²; the limit for the frequency range in the cellular GSM band (824-849 MHz) is 0.6 mW/cm² (F/1500). The data in this report demonstrates that the Itronix Corporation Model: IX260P-AC775BT Rugged Laptop PC FCC ID: KBCIX260P-AC775BT with internal Sierra Wireless AirCard 775 Dual-Band GSM GPRS/EDGE PCMCIA Modem, utilizing an external swivel dipole antenna and vehicle-mount antenna (co-located with internal Cirronet BT2022 Bluetooth Transmitter and internal surface-mount antenna), complies with the Maximum Permissible Exposure (MPE) requirements specified in FCC §2.1091, §1.1310, OET Bulletin 65 (Edition 97-01), and Health Canada's Safety Code 6 for the General Population / Uncontrolled Exposure environment.

Notes:

1. The 17 ft antenna cable is supplied with and connected to the vehicle antenna at time of purchase.
2. Please refer to the Co-Transmit Supplementary EMC report for MPE evaluation data with Bluetooth transmitter.
3. The internal co-located Bluetooth transmitter does not utilize the vehicle-mount antenna.