Celltech
Testing and Engineering Services Lab

May 28, 2001

Federal Communications Commission
Equipment Approval Services
7435 Oakland Mills Road
Columbia, MD 21046
Attn: Joe Dichoso

SUBJECT: Itronix Corporation
FCC ID: KBCIX250RIM902
Class II Permissive Change
731 Confirmation No.: EA100859
Correspondence Reference No.: 19382

Dear Joe:

On behalf of Itronix Corporation is an amendment in response to your e-mail dated May 22, 2001 requesting additional information for the subject application.

1. The conducted RF power measurement between the original application grant and Class II Permissive Change are different due to the following reason. On the original grant application the OEM was only able to supply a connector to measure the RF power at the PCMCIA card. On the Class II Permissive change, a new connector was available which made RF power measurements at the antenna port possible. Internal to the laptop computer is a coaxial cable running from the PCMCIA card to the antenna port with approximately 1.5dB loss at the appropriate frequency. For the Class II Permissive Change the conducted RF power for the radiated emissions and SAR measurements were measured at the antenna port. All conducted EMC measurements for both grant applications were performed at the PCMCIA card. Please find attached the revised radiated emissions and SAR test data pages listing the conducted power output without the cable loss as listed on the original filing.
2. The maximum operating duty cycle for this device is 25% (please see attached letter), which is the same as the original filing.
3. Attached is the users manual for the IX550 with appropriate RF exposure warning statements. Please note that the minimum separation distance required to satisfy RF exposure requirements for the Class II Permissive Change is the same as the original filing (4.0 cm).
4. Three of the six vehicle mount antennas for the Class II Permissive Change (Maxrad Z563, Z567, Z573) are identical to the three vehicle mount antennas in the original filing. The Class II Permissive Change also has three additional antennas for the IX550 model (Maxrad Z565, Z569, Z571).

If you have any further questions or comments, please do not hesitate to contact me.

Sincerely,

Shawn McMillen
General Manager
Celltech Research Inc.
Testing & Engineering Lab

cc: Itronix Corporation

3.1 TEST DATA

3.2 EFFECTIVE RADIATED POWER OUTPUT - §2.1046

Freq. Tuned	EUT Conducted Power	Max. Field Strength of EUT (dBm)	Dipole Gain	Dipole Forward Conducted Power	ERP of EUT Dipole Gain + Dipole Forward Conducted Power	
(MHz)	(dBm)	Vertical Pol.	(dBd)	(dBm)	dBm	Watts
896	33.0	- 9.961	- 0.94	32.72	31.78	1.51
901	33.0	- 9.444	- 0.94	33.29	32.35	1.72

Notes:

ERP Measurements by Substitution Method:

The EUT was placed on a turntable 3-meters from the receive antenna. The field of maximum intensity was found by rotating the EUT approximately 360 degrees and changing the height of the receive antenna from 1 to 4 meters. The field strength was recorded from a calibrated spectrum analyzer for each channel being tested. A half-wave dipole was substituted in place of the EUT. The dipole was fed through a directional coupler and the power at the coupler port was monitored. A signal generator and power amplifier controlled the dipole, and the input level of the dipole was adjusted to the same field strength level as the EUT. The feed point for the dipole 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 dipole antenna. The conducted power at the antenna feed point was recorded. The forward power for the dipole was then determined and the ERP level was determined by adding the forward dipole power and the dipole gain in dB. For readings above 1GHz the above method is repeated using standard gain horn antennas.

3.3 FIELD STRENGTH OF SPURIOUS RADIATION - 2.1053

Operating Frequency (MHz):	896
Channel:	Low
Measured Conducted Power:	33.0 dBm
Modulation:	Unmodulated Carrier
Distance:	3 Meters
Limit:	43 + 10 log (W) = 39.47 dBc

Frequency (MHz)	Field Strength of Spurious Radiation (dBm)	Horn Forward Cond. Pwr. (dBm)	Standard Gain Horn Antenna Gain (dBi)	POL (H/V)	EIRP (dBm)	ERP (dBm)	dBc
1792	≤ -97.03	-60.21	6.6	V	-53.61	-55.75	87.53
2688	≤ -96.58	-59.55	7.8	V	-51.75	-53.89	85.67
3584	≤ -96.17	-61.63	7.8	V	-53.88	-56.02	87.80
4480	≤ -98.38	-57.12	7.6	V	-49.52	-51.66	83.44
5376	≤ -100.21	-68.38	8.5	V	-59.88	-62.02	93.80
6272	≤ -102.39	-71.14	8.8	V	-62.34	-64.48	96.26
7168	≤ -103.16	-78.26	9.6	V	-68.66	-70.80	102.58
8064	≤ -101.67	-80.67	9.0	V	-71.67	-73.81	105.59
8960	≤ -102.93	-75.85	9.3	V	-66.55	-68.69	100.47

Notes:

Radiated Measurements by Substitution Method:

The EUT was placed on a turntable 3-meters from the receive antenna. The field of maximum intensity was found by rotating the EUT approximately 360 degrees and changing the height of the receive antenna from 1 to 4 meters. The field strength was recorded from a calibrated spectrum analyzer for each channel being tested. 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 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 power for the antenna was then determined and the EIRP level was determined by adding the forward power and the antenna gain in dB.

Operating Frequency (MHz): 901
Channel: High
Measured Conducted Power: 33.0 dBm
Modulation: Unmodulated Carrier
Distance: 3 Meters
Limit: 43 + 10 log (W) = 39.47 dBc

Frequency (MHz)	**Field Strength of Spurious Radiation** (dBm)	**Horn Forward Cond. Pwr.** (dBm)	**Standard Gain Horn Antenna Gain** (dBi)	**POL** (H/V)	**EIRP** (dBm)	**ERP** (dBm)	**dBc**
1802	≤ -97.88	-59.43	6.6	V	-52.83	-54.97	87.32
2703	≤ -96.61	-58.55	7.8	V	-50.75	-52.89	85.24
3604	≤ -99.66	-60.47	7.8	V	-52.72	-54.86	87.21
4505	≤ -99.43	-61.12	7.6	V	-53.52	-55.66	88.01
5406	≤ -101.76	-65.55	8.5	V	-57.05	-59.19	91.54
6307	≤ -103.09	-70.63	8.8	V	-61.83	-63.97	96.32
7208	≤ -104.54	-76.19	9.6	V	-66.59	-68.73	101.08
8109	≤ -102.16	-77.94	9.0	V	-68.94	-71.08	103.43
9010	≤ -103.21	-79.10	9.3	V	-69.8	-71.94	104.29

Notes:

Radiated Measurements by Substitution Method:

The EUT was placed on a turntable 3-meters from the receive antenna. The field of maximum intensity was found by rotating the EUT approximately 360 degrees and changing the height of the receive antenna from 1 to 4 meters. The field strength was recorded from a calibrated spectrum analyzer for each channel being tested. 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 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 power for the antenna was then determined and the EIRP level was determined by adding the forward power and the antenna gain in dB.

4.0 MEASUREMENT SUMMARY

The measurement results were obtained with the EUT tested in the conditions described in this report. Detailed measurement data and plots showing the maximum SAR location of the EUT are reported in Appendix A.

Freq. (MHz)	Mode Tested	Conducted Power (dBm)	Antenna Position	Phantom Position	Separation Distance (cm)	SAR (w/kg)	
						100%Duty Cycle	25% Duty Cycle
896	Unmod.	33.0	Vertical	Flat	4.0	0.714	0.1785
901	Unmod.	33.0	Vertical	Flat	4.0	0.748	0.187
Mixture Type: Muscle Dielectric Constant: 55.9 Conductivity: 0.97			ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Body SAR: 1.6 W/kg (averaged over 1 gram)				

Notes:

1. The SAR values found were below the maximum limit of 1.6 w/kg.
2. The highest SAR value found was 0.187 w/kg (25% duty cycle).
3. The EUT was tested for body SAR with a 4.0 cm separation distance between the antenna and the outer surface of the planar phantom.

5.0 SAR SAFETY LIMITS

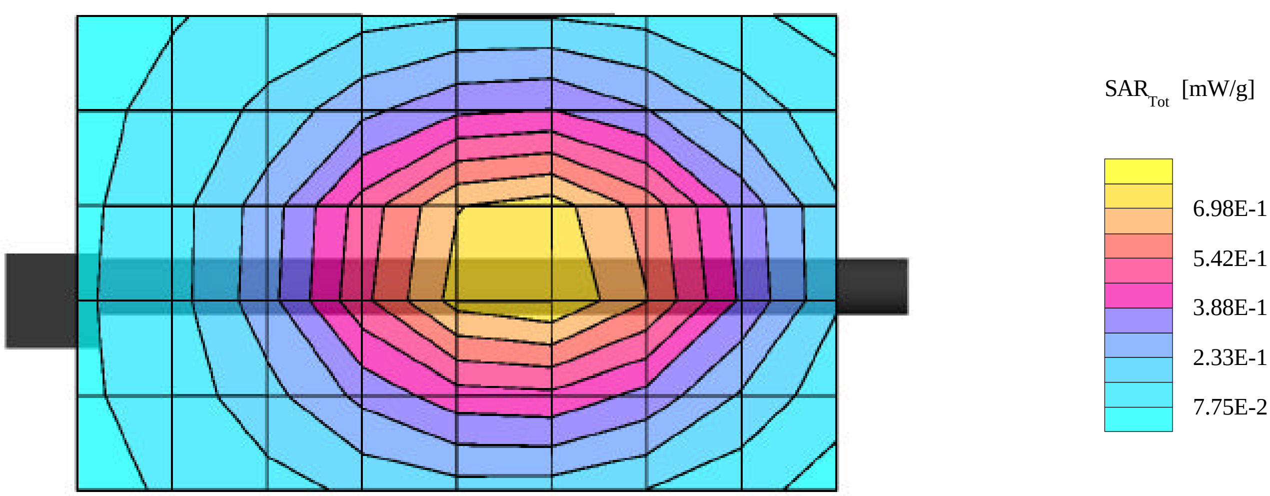
EXPOSURE LIMITS (General Population/Uncontrolled Exposure Environment)	**SAR** (W/Kg)
Spatial Average (averaged over the whole body)	0.08
Spatial Peak (averaged over any 1g of tissue)	1.60
Spatial Peak (hands/wrists/feet/ankles averaged over 10g)	4.00

Notes: 1. The FCC SAR safety limits specified in the table above apply to devices operated in the General Population / Uncontrolled Exposure environment.
2. Uncontrolled environments are defined as locations where there is exposure of individuals who have no knowledge or control of their exposure.

ITRONIX FCC ID: KBCIX250RIM902

Generic Twin Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(6.43,6.43,6.43); Crest factor: 1.0
Muscle 900MHz: σ = 0.97 mho/m ε_r = 56.1 ρ = 1.00 g/cm^3
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7:
SAR (1g): 0.714 mW/g, SAR (10g): 0.486 mW/g

Body SAR with 4.0cm Separation
Model: IX550 with RIM 902
Unmodulated Carrier
Low Channel [896.0 MHz]
Conducted Power: 33.0 dBm
Date Tested: April 3, 2001



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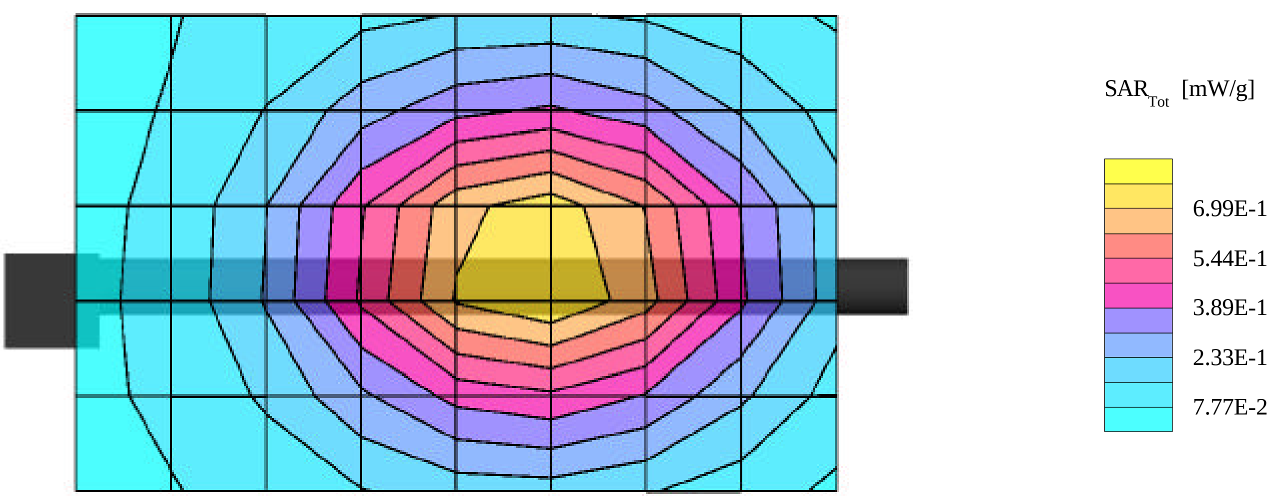
Probe: ET3DV6 - SN1387; ConvF(6.43,6.43,6.43); Crest factor: 1.0
Muscle 900MHz: σ = 0.97 mho/m ε_r = 56.1 ρ = 1.00 g/cm^3
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7:
SAR (1g): 0.748 mW/g, SAR (10g): 0.506 mW/g

Body SAR with 4.0cm Separation
Model: IX550 with RIM 902
Unmodulated Carrier
High Channel [901.0 MHz]
Conducted Power: 33.0 dBm
Date Tested: April 3, 2001



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May 25, 2001

Federal Communications Commission
Equipment Authorization Branch
7435 Oakland Mills Road
Columbia, MD 21046

In re: ITRONIX CORPORATION
FCC ID: KBCIX250RIM902

Gentlemen:

ltronix product identified as IX550 incorporates a RIM 902 radio. This radio operates on a 25% duty cycle. The SAR investigation conducted by Celltech Testing and Engineering Services located in Kelowna BC utilized the 25% duty cycle during this investigation. We hereby confirm that the factory-set duty cycle of all production units shall not exceed 25%.

Sincerely,

SIGNATURE
Fred Phillips
Certification Engineer

RIM 902M radio, an application that uses one of these protocols must be installed on the computer and configured to communicate on COM4.

Cisco Wireless LAN

- Go to your preferred LAN application and run normally

CAUTION While the radio is operating, the antenna must be at least 4.0 cm from all persons in order to comply with the FCC RF exposure limit. Radio (wireless modem) operators must make sure their radio unit is in compliance with these FCC regulations. See Optional Equipment and Accessories for important information about vehicle-mounted antennas.

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Power Management

GoBook Pro Help

5. Power Mangement Topics

Using the Battery

Monitoring Battery Power

There are two ways to monitor how much power the battery has left.

1. Click Start, Settings, Control Panel, Power Management (Power Options); then click the Power Meter tab.

2. Moving the cursor to the battery icon on the taskbar , without selecting anything, is the simplest way to check on battery power status. The status will show as a pop-up when you mouse-over the icon.

NOTE If you do not see the battery icon on the taskbar, enable it in Start, Settings, Control Panel, Power Management. Choose the Advanced tab and select “Always show icon on the taskbar.”

Low Battery Alarms

charging process is trying to put a little more capacity into the battery. External power can be removed at this time since the battery is virtually full.

- If your battery is new or has not been used for several weeks, rely on the indicator light to determine when the battery is fully charged. The gas gauge is unreliable in these cases; it may read 100 percent, but the actual capacity is only 10 percent.

Communicating with Other Devices

Connect the external device to either of the USB ports on the back of the cradle, and then place the GoBook Pro onto the vehicle cradle. You can install or remove the computer from the vehicle cradle without connecting or disconnecting the cables.

External Antennas

An external RF antenna also can be connected to the cradle using the TNC RF connector on the back of the vehicle cradle. FCC regulations require that users of vehicle-mounted antennas must use only antennas authorized for use with the GoBook Pro in order to meet FCC RF exposure limits. Please contact your organizations's help desk for a list of approved vehicle-mounted antennas. For mounting installation and/or mounting instructions for these types of antennas, see the instructions that accompany each antenna.

RF Antenna Placement

WARNING Improper installation and/or operating configurations of permanent and magnetic vehicle-mounted antennas may cause FCC RF exposure limits to be exceeded. Vehicle-mounted antennas must be placed at least 20 cm from operators and bystanders.

Placement of a vehicle-mounted antenna

1. Measure and identify an area 20 cm (8 inches) in from the edges of the vehicle roof (see diagram below).

2. Place the antenna within that area.

To maximize RF performance, position the antenna in the center of the vehicle roof.