

06 October, 1999

Federal Communications Commission
Equipment Approval Service
P.O. Box 358315
Pittsburgh, PA 15251-5315

Re: **Applicant:** Itronix Corporation
Product: T5200 Handheld PC
FCC ID: KBCT5200RIM
731 Confirmation #: EA94542
Correspondence Ref. # 9394

Gentlemen:

Pursuant to e-mail from your Frank Coperich to Richard Sargent of Itronix on Thursday, August 26, 1999 6:07 AM, which was subsequently forwarded to myself at APREL Laboratories on Tuesday, August 31, 1999 12:34 PM, here are APREL Laboratories' responses.

To simplify cross-referencing these to the original comments I am including the August 26th e-mail from Frank Coperich to Richard Sargent below, with comments:

To: Richard Sargent, null
From: Frank Coperich
...
Date of Original E-Mail: 08/26/1999

1.) This application is incomplete. Please submit all of the information required by Section 2.933 of the Commission's R&R.

(To be addressed by Itronix)

2.) This unit uses a RIM (Research in Motion) module, EAS 83666 that was approved for 2.4 W at the antenna terminal for meeting mobile MPE limits. Itronix is filing SAR to use this module with a laptop computer, requesting 2 W conducted output. I believe most of RIM's modules have a fixed peak output, the requested 2 W needs to be confirmed. The current filing also uses an integrated antenna, is ERP needed or can we go with conducted?

The RIM R900M-2-O modules (EAS83666) have a fixed 2 Watt output. The revised SAR report (ITRB-T5200 R900M2O-3190&3301) attached, in PDF format, includes scaling of the results from the nominal 2W to the 2.4W worst case (this accounts for the 1dB QA uncertainty that RIM determined existed at that time for their output power determination in production.) ERP measurements were also performed and the pertinent report (ITRB-T5200 R900M2O-3303) is attached in PDF format. The maximum ERP measured was 2.2W (33.5dBm).

3.) They need to upload another copy of the SAR report. The plots are not

readable due to scanning of rather dark copies of the original report.

The attached PDF version of the SAR report should rectify this problem.

4.) Based on information that can be read from the SAR report, the following should be clarified or incorporated into the SAR report that will be subsequently uploaded

(a) The device was tested using a duty factor of 45.45% but SAR compliance was based on a 100% duty factor by extrapolation. If the device will be used at 100% duty factor, it needs to be tested at 100% duty factor. Otherwise, it will be approved at 45.45% duty factor, or lower is applicable and supportable by the data. Please also clarify if any duty factor was allowed on the original RIM approval.

The firmware in the test sample limits the on time to 5 minutes which made the performance of area scans at 100% impractical, and made zoom scans onerous. We have since improved our data gathering routines to allow us to perform each zoom scan in less than 5 minutes. The SAR report has been rewritten to include the 100% data in the determination of the maximum 1g SAR. No duty factor was allowed in the original RIM approval (confirmed with RIM's Masud Attayi on 28 Sept. 1999).

(b) The highest SAR values on the curves in figures 9 and 10 are inconsistent with the values reported in section 6.2 of the SAR report, more clarification is needed to determine how these numbers support each other.

Figure 10 of the original SAR report is a version in which the separation vs SAR data has been scaled up to 100%. The revised report including the 100% zoom and depth measurements resolve these inconsistencies.

(c) In the last table in section 6.2(5), the frequency appears to be in error.

You are correct – the correct frequency is 896MHz.

(d) The 1-g averaging in section 6.2(6) appears low compared to the 4.064 W/kg peak SAR indicated in 6.2(5), please clarify (also check figures 9 and 10).

See the revised report which incorporates 100% duty factor data. In the original report the 1-g average SAR reported was for a 27mm separation while the 4.064 W/kg peak SAR was obtained with an 11mm separation. In addition, these two values and figure 9 are for a 45.45% duty factor, while figure 10 was scaled up to 100%.

(e) This device has a rotatable antenna. The picture in the report is not clear on the antenna setup during the SAR tests, its orientation with respect to the device (laptop) and the phantom. Does the test position cover WORST case exposure with respect to the allowable operating positions of the antenna?

The antenna mount is designed to allow the antenna to rotate through 90° in a plane perpendicular to the keyboard. The antenna's intended transmitting position is vertical and its storage position is folded horizontally on top of the folded display (see pictures in Appendix

B of the SAR report). Therefore, the test position did cover the worst case exposure with respect to the allowable operation positions of the antenna.

Thank you for your cooperation,

Sincerely,

Paul G. Cardinal, Ph.D.
Director, Laboratory Operations