Intermec

A UNOVA Company

Intermec Technologies Corporation
Amtech Systems Division
8600 Jefferson St. NE
Albuquerque, NM 87113
Phone: (505) 856-8054
Fax: (505) 857-0715
E-mail: wmays@asctmd.com

June 12, 2000

Federal Communications Commission
Equipment Authorization Division
7435 Oakland Mills Road
Columbia, Maryland 20146

Re: Amtech Systems Division of Intermec Technologies Corp.
Amendment to Application for Equipment Authorization
Proposed FCC I.D. No. FIH-F4-06476-LP
Correspondence Reference Number: 14398
` 731 Confirmation Number: EA97485

To the Commission:

In response to your e-mail transmitted to Amtech on 6/5/00 from Mr. Errol Chang (Ref. No. 14398), concerning the pending grant of certification of the F4 printer (operating as a frequency hopping radio in the 2400-2483.5 MHz band), we are submitting the following amendments and clarifications to our application as described herein:

1. **Minimum Channel Separation requirement 15.247(a)(1):**
The µP module programs the frequency hopping source in a pre-determined pattern in accordance with the pseudo random sequence outlined in the IEEE 802.11 standard. A phased locked loop (PLL) source synthesizes the 79 discrete frequencies (channels) in the 2402 – 2480 MHz band. This produces a channel separation of 1 MHz.

2. **Channel Occupancy 15.247(a)(1)(ii):**
The hopping time is controlled by the µP module that commands the synthesized PLL source to provide a single RF signal. Each hop time is set to be 381 mS by the timing circuitry in the µP. Therefore, with the 79 discrete frequencies, the channel occupancy meet the 30 second period as specified in §15.247(a)(1)(ii).

3. **Peak Power (15.247(b)(2):**
The transmitter power measurement was inadvertently omitted from the test report by Rogers Labs, Inc. A Test Report Addendum prepared by Rogers Labs, Inc. shows that the peak power is 129.17 dBµV. A 6 dB attenuator used in the measurement system produces a signal of 135.17 dBµV (28.17 dBm or 0.66 watts) at the device terminal. This measurement was performed at the mid band frequency of 2441 MHz. The Test Report Addendum has been transmitted to the commission under separate cover.

4. **Input bandwidth of the receiver matches that of the transmitter §15.247(a)(1)**
   The reader communicates with the tag through a spread spectrum, frequency hopping signal. The reader modulates the carrier that is decoded by the tag. The tag then imposes modulation upon the carrier and reflects the carrier (modulated backscatter) to the reader. The receiver operates in a homodyne mode. The received signals pass through a pre-selector filter designed to eliminate high frequency interference including the harmonics generated in the transmitter. The local oscillator used in the receiver is the same frequency hopping oscillator used to generate the carrier signal that is transmitted to the tag, modulated by the tag, and back scattered to the receiver. Therefore, both signals are hopping at exactly the same frequency. Since the receiver operates simultaneously with the reader transmission, the system receiver will shift frequency in synch with the transmitter signal. The received signals are directly converted to baseband in the homodyne. The down converted signals are band limited by a series of active filters that provide a 3 dB pass band of approximately 6 kHz to 120 kHz. The filters provide the receiver with a 20 dB IF bandwidth of 400 kHz. Since each received signal is down converted and band limited at baseband, the IF bandwidth, and hence the front end bandwidth of the receiver, exactly match the transmitted signal from the tag.

Thank you for bringing these deficiencies in our application to our attention. Please contact me if there are any additional questions. I may be reached by email at wmays@asctmd.com or by phone at (505) 856-8054.

Sincerely,

Wes Mays
Manager, Microwave Design