Washington Laboratories, Ltd.

7560 LINDBERGH DRIVE
GAITHERSBURG, MD 20879
(301) 417 – 0220 FAX # (301) 417 - 9069

September 19, 2003

Mr. Dennis Ward
American Telecommunications Certification Body Inc.
6731 Whittier Ave
McLean, VA 22101

RE: Comments of September 4, 2003
APPLICATION: QP8-MEI915WLAN Mars Electronics, Inc.

Dear Mr. Ward:

Below are the comments that you have provided regarding the application for certification referenced above. Our responses to those comments are in ***bold italic***. Many responses refer you to additional exhibit(s) which has been uploaded to the application folder at the ATCB website.

Thank you for your attention. Please feel free to contact us for any additional information that you may require.

Regards,

Gregory M. Snyder
Chief EMC Engineer, Wireless/Telco Services Manager

Brian J. Dettling
Documentation Specialist WLL Project: 7008

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1) Please complete the 731 form. The power level for the transmitter has not been filled in.

R. Please see exhibit "EZ1 Form 731 Revised.pdf" that has been corrected to show the RF power.

2) Is this a simple FSK transmitter, or a Frequency Hopping Spread Spectrum device? The block diagram does not appear to be that of a typical FHSS device (i.e. FSK modulation is not in itself a FHSS modulation). Please explain. Please provide information on the chip rate for this device.

R. The MEI wireless LAN (WLAN) is a frequency hopping spread spectrum transceiver in which the carrier is modulated in a conventional manner with FSK. This causes a conventional spreading of the

RF energy. The carrier is not fixed but hops to one of 50 channel frequencies selected from a preordered list of 5 independent groups of 50 channels. There are a total of 250 channels possibilities between 902MHz-928MHz but only one group of 50 channel frequencies is selected from the preordered list of 5 independent groups of 50 channels for system use. Channel hopping occurs between the channels in the selected set with a maximum on channel time of 0.4S within any 20 second period, which is limited by 47 CFR 15.247.
The original block diagram did not indicate that the N register of the Phase Locked Loop (PLL) is programmable. This has been added to the block diagram to indicate that the N register is programmed from the controller DSP with the pseudorandom sequence generator. Since N determines the hop frequency it's then clear that frequency hopping is achieved by programming the N register in the PLL. Please see exhibit "EZ1 Block Diagram Revised.pdf."

3) Please note that the Frequency Hopping chart indicates that hopping may not pseudorandom as required but sequential in nature. (please note - 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, etc appear to be sequential hop characterizations - which is not allowed.). Please explain how this is a pseudorandom hopping sequence meeting the requirements of a spread spectrum device under 15.247.

R. The current ordered list of hopping channels has been changed to make the hop appear pseudorandom in nature. The new list is provided in the exhibit "EZ1 Operational Description Revised.pdf."

4) Please note that the recorded power level of this device is 1 Watt. This is rather close to the limit. Consequently power measurements using an analyzer (while allowed by the FCC) may not be adequate to report the actual power of the device. This is especially true when the trace shows readings at or very near the top graticule. Measurements under this condition (even with external attenuation) may actually be that of a compressed signal. What measures have been taken in measuring power to verify that the signal is not being compressed (i.e. inserting another 10dB pad in line to make sure that an exact 10dB reduction in signal occurs would be one indicator that the measurement is valid). Please provide evidence that this signal is not compressed.

R. The power has been re-measured using a diode detector and power meter. Please refer to the exhibit "EZ1 Test Report Revision 1.pdf".

5) Please note that when using an analyzer for peak power measurements, a resolution bandwidth correction factor must be used. This factor takes into account the measured 6dB bandwidth of the plot and the actual res bandwidth of the analyzer. Please note that in the conducted power plot the span is 20MHz. Thus each graticule is 2MHz wide. The 6dB bandwidth on this plot then would be approximately 3MHz. The resolution bandwidth correction factor would then be 10log(6dB BW/ actual Res BW or 1.7dB correction factor. This potentially puts the peak power over the 30dBm limit. Please verify the conducted output power is 30dBm or less by including any required resolution bandwidth correction factor or by measuring the peak power using a diode detector or peak power meter.

R. The power has been re-measured using a diode detector and power meter. Please refer to the revised test report.

6) Please note that you state the occupied bandwidth of this device is approximately 84kHz. Please note that it is unlikely that this meets the definition of a spread spectrum device.

R. The MEI wireless LAN (WLAN) frequency hopping spread spectrum transceiver operates in the occupied bandwidth of 26 MHz, ie. 902Mhz to 928 Mhz spectrum space. The 84kHz referred to is referencing 20dB channel bandwidth. The requirement is for this bandwidth to be less than 250kHz.

7) Please provide evidence that the receiver for this device meets the input bandwidth requirements for a spread spectrum receiver.

R. The 10.7MHz IF filter shown after the mixer (MURATA-SFECV10M7KA00-RO) has a 110KHz bandwidth which matches (with a small amount of excess) the hopping channel bandwidths of the transmitted signals (approximately 85KHz). The PLL is tuned to the correct frequency (10.7MHz + TX frequency) so that the received signal falls within the limits of this filter. Please refer to the revised block diagram.

8) Please note that on pages 34 to 36 of the report you have apparently mixed the uv/m and dBuv/m numbers in the limit column. Please explain and/or correct the column to be consistent.

R. The test report has been corrected so that the column heading indicates the appropriate units. Please see revised test report.