



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

March 17, 2004

RE: Microwave Data Systems, Inc.

FCC ID: E5MDS-EL806-24

I have a few comments on the above referenced Application.

EMC Report

- 1) Please provide detailed information regarding the antennas for use with this device (gain, model, manufacturer, etc.). Although some specifications are given in the users manual, it appears the antennas may not be provided. For approval under part 15, please note that the device is expected to ship with an approved antenna. Additionally, please provide photographs or similar information to show the antennas to be approved with this application.
- 2) Some of the calculations given in the RF exposure (EIRP/Pd) exhibit do not appear correct. Please review and correct as necessary (i.e., for 27 dBm, 10 dBi, Pd = 0.997). Please note that while a distance < 20 cm may be calculated, this is not implied as the safe distance and the FCC has been asking that distance calculation information no longer be presented in mobile RF exposure exhibits.
- 3) It appears that professional installation will be used and is being justified, but the modular request letter mentions providing an adapter cable containing an N connector to customers. It is uncertain how professional installation will be maintained if a standard connector is being provided to customers. In addition, the users manual page 7 of 76 (labeled v) mentions all connections are non-standard while page 14 of 76 (labeled 6) offers additional cables with N connectors. This information appears contradictory. Please explain and/or correct exhibits as necessary.
- 4) The modular approval letter states the device depends on its laptop host for shielding. The users manual mentions this device is for use in RTU's, PLC's, etc and examples do not appear to show the device installed in a laptop. Normally if a device is approved as a LMA due to shielding, the host will be limited to a specific laptop model series or host as tested since shielding characteristics from device to device are difficult to quantify. Additionally the device also appears to have been tested in a stand alone configuration as shown in the test configuration photos. Please justify the shielding requirement mentioned in the modular approval letter.
- 5) The modular approval letter mentions a MiniPCI card, but the EUT does not appear to be of this form factor. Please explain.
- 6) Information in the modular approval letter mentions "The devices containing the module will be labeled with the FCC ID of the module". Information on page 7 of 76 (labeled v) in the users manual mentions " When this device is placed inside an enclosure, a durable label must be affixed to the outside of that enclosure indicating the unit's FCC ID Number". Please note that the label on the exterior of the device must not simply be labeled with "FCC ID: E5MDS-EL806-24", as this label denotes the device as approved (which is not the case once it is integrated). The label on any final assembled device should indicate that the approved transmitter is internal by using a format such as "Contains TX FCC ID: E5MDS-EL806-24" or similar. Please adjust the documentation to make this clear.
- 7) Page 24 of 76 (labeled 24) of the users manual mentions the users ensuring that certain antennas have 1 dB loss in the feedline. This is not consistent with the professional installation mentioned throughout the application as this is a professional installer issue, not the end users.
- 8) The users manual should instruct the OEM that their manual should NOT be provided any instructions on how to remove or install the device.
- 9) System receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals (2.1033(b)(10)/15.247(a)(1)). Please provide information that shows this device complies with this.
- 10) This device shall use a pseudorandomly ordered list of hopping frequencies. The theory of operation mentions the method of accomplishing this. To show compliance, please provide sample hopping tables (minimum of 2 if the device is capable of having multiple hopping tables).
- 11) Please provide information explaining compliance to 15.247(g)/(h).
- 12) Some pages in the test report appear to show the FCC ID with "2.4" vs "24". Please correct.
- 13) The minimum channel spacing shown on page 8 of 34 of the test report appears incorrect. Shouldn't this be the maximum 20 dB bandwidth measured?

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- 14) For the Channel Occupancy test, it appears the device was hopping on more channels than will typically be used during actual use. The theory of operation mentions between 64 and 128 channels. This test should have been performed using the smallest number of channels possible during actual use.
- 15) Page 19 of 34 of the test report appears to show numbers of 88.74 and 88.47. Which is correct?
- 16) Antenna conducted scans were shown up to 26 GHz, but the test equipment used does not appear capable of this.
- 17) It is assumed that the EUT obtains its power from host equipment. Therefore compliance with conducted emissions (15.107 & 15.207) still needs to be shown. See 15.107 (f) & 15.207 (d) for details.
- 18) FYI...Proposed grant notes (assuming there is not a dependency on shielding from a laptop)

Limited Modular Approval (LMA). Power Output listed is conducted. This device must be installed by Grantee, OEM integrator or professional installers - user installation is prohibited. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. OEM integrators and professional installers must be provided with antenna installation instructions. OEM integrators and end-users must be provided with transmitter operation conditions for satisfying RF exposure compliance. This grant is valid only when the device is sold to OEM integrators and the OEM integrators are instructed to ensure that the end user has no manual instructions to remove or install the device..



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The items indicated above must be submitted before processing can continue on the above referenced application. Failure to provide the requested information may result in application termination. Correspondence should be considered part of the permanent submission and may be viewed from the Internet after a Grant of Equipment Authorization is issued.

Please do not respond to this correspondence using the email reply button. In order for your response to be processed expeditiously, you must submit your documents through the AmericanTCB.com website. Also, please note that partial responses increase processing time and should not be submitted.

Any questions about the content of this correspondence should be directed to the sender.