



114 OLINDA DRIVE • BREA, CALIFORNIA 92823 • (714) 579-0500 • FAX (714) 579-1850

May 20, 2005
FCC-ID: JRRWES

1) The block diagram should show the frequencies of all oscillators in the TX device (CFR 2.1033(a)(5)), unless this portion of the device is an OEM part from a different manufacturer. Please provide either the block diagram for the TX portion, or alternatively provide a parts list that shows that this part is provided by another manufacturer. Please update the list of confidential exhibits if necessary.

Response: Uploaded is the block diagram for the Tx portion.

2) The schematics do not include the RF mini-PCI card. Note that a schematic for the TX portion of the device is required as specified 2.1033(b)(5) for the RF section. Please provide either a schematic for the mini-PCI card or as an alternative, you may provide a parts list that lists that shows that this part is provided by another manufacturer. Please provide either a schematic or parts list as specified. If necessary, please update the confidentiality letter to include the parts list.

Response: Uploaded will be the schematics for the Tx portion.

3) 2 antennas are integrated, while one is external. Please provide information regarding 15.203 for the external antenna.

Response: The dish (external) antenna uses a passive reflector with no electrical connection.

4) Maximum gain of antennas appears to be 24 dBi, while MPE uses a higher number. Note that all information in the application must be consistent. Please review, explain, and correct as necessary.

Response: The MPE Calculations has been revised to show 24 dBi, which is what the maximum gain of the dish antenna is.

5) It appears that one of the emails correct the antenna gain of the larger panel antenna. Kindly update the reports for the correct gain of the antenna.

Response: The UNII Report has been revised to show the correct gain for the larger panel antenna, which is 12.2 dBi. The E-mail does NOT correct any gains for the DTS portion.

6) Peak to average measurements made for both reports show as much as 30 dB apart (for the DTS portion - Dish Antenna, Bandedge for UNII band - page 74). This delta is considered very excessive and suggests that the device may have been transmitting with a duty cycle associated with the carrier instead of the carrier having a 100% on time during testing (which is specified by the recommended test procedures from the FCC). Additionally, please note that certain plots (i.e. bandwidth plots) support that the carrier was not on 100% during test and did have an associated duty cycle associated with the modulation. Note that the use of VBW = 10 Hz is only considered valid if the duty cycle associated with any duty cycle is $VBW > 1/T_{on}$ time. You may need to provide information regarding carrier T_{on} vs. T_{off} time and increase the VBW to be considered valid. Please review, correct, or remeasure as necessary as it appears that average measurement may not have been correctly taken and if so, this can significantly affect the results reported.

Response: This is still being discussed with the Client. We are sending these responses so that we can clear up the other issues except this one so we know how to proceed with this issue.



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7) Given the high level of the digital emissions meeting the Class A limits, please explain what precautions were taken to measure Transmitter emissions < 1 GHz to meet Class B levels given the dynamic range of the digital device emissions exceeds class B levels.

Response: Any emission that was tested to Class A was done with the transmitter turned off. The transmitter was then turned on and the emission investigated again to insure the emission did not go higher.

8) The application mentions different power levels for different antennas, but it does not appear to address or document what these levels are with what antennas. Please explain.

Response: The 731 form only shows the highest power allowed. Let us know if you want us to revise the 731 form to show the highest power for each individual antenna.

9) Operation in the 5725-5850 MHz bands does not appear to require power reduction (15.247(b)(4)(ii)). However, bandedge emissions within the DTS report appear to have been performed at 2 power level. Was reduction necessary for this band? If so, please explain.

Response: The bandedge emissions did not require a reduction of power for the DTS. These bandedges were performed radiated with each antenna (Small Panel, Medium Panel, and Dish Antenna) for both Normal and Turbo Modes.

10) It is not certain that receiver emissions were measured up to 3 times the fundamental an/or local oscillator (RSS-210, section 7). Tables in both DTS and UNII do not clearly identify frequency bands investigated. Please provide or explain where this information may be found.

Response: The Receive Mode was checked from 30 MHz to 40 GHz. The data sheets have been revised to show the frequency range and that they were checked in both vertical and horizontal polarization.

11) Please explain compliance to 15.407(c).

Response: This same question was asked of the OEM manufacturer of the RF module (Later granted FCC ID, NKRCM9) in a letter from ATCB dated May 27, 2004. The Microtek WES design uses the same firmware code for implementation of this requirement.

Answer: "Data transmission is always initiated by software, which is then passed through the MAC, through the digital and analog baseband, and finally to the RF chip. Several special packets(ACKs, CTS, PSpoll, etc...) are initiated by the MAC. These are the only ways by which the digital baseband portion will turn on the RF transmitter, which it then turns off at the end of the packet. Therefore, the transmitter will be on only while one of the aforementioned packets is being transmitted."



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12) The dish antenna does not appear to have been tested for the UNII bands of 5250-5350. Please confirm. If this antenna is not used in this band, then please explain compliance to 15.15 for this device given the channels are simply changed via a rotary switch (i.e. – what stops the user from being able to select these channels if they have this antenna installed. Lower channels should be blocked in firmware to avoid use of these channels if they are not approved.

Response: The customer is given a unit based on what type of antenna he or she wants. In other words, the customer will not be able to change the antenna. If a customer purchases a unit with the dish antenna, the unit will have a jumper that causes the firmware to lock out the UNII bands. If the customer tries to select a channel normally used for UNII, the unit will default to channel 149 (Low channel of the DTS band).

13) The test report mentions that the low channel will not be used for the patch antenna. Please explain compliance to 15.15 of the FCC rules for this configuration, given the channel is simply changed via a rotary switch. This channel should be blocked via firmware to avoid use of this channel.

Response: The customer is given a unit based on what type of antenna he or she wants. In other words, the customer will not be able to change the antenna. If a customer purchases a unit with the patch antenna, the unit will have a jumper that causes the firmware to lock out channel 52. If the customer tries to select a channel that corresponds to channel 52, the unit will default to channel 56.

14) The application and installation manual should clearly define the minimum length cable between the TX and the dish antenna (cables appear to be listed as N/A for this antenna in the DTS report). This minimum length should also correlate to the minimum length tested. Please explain, document, and correct as necessary.

Response: The dish antenna uses a passive reflector with no electrical connection. In other words, the only cable used is the 3 ½ inch cable inside the EUT. This cable is used for all 3 antennas.

15) Please explain which power method was used for UNII measurements. If method 3 was used, please provide information to support $VBW > 1/T$ time as specified in the document (see attachment).

Response: The worst case "T" is for the small pulse in Turbo Mode, which is 24.04809 μ S. $1/T = 41583.34$. The VBW was adjusted to 50 kHz ($50000 > 41583.34$). Please see the Revised Test Report for the data sheets.



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16) Please explain which method was used (see attachment) for spectral density tests. Note that the methods state video averaging should not be used, while it appears that the test performed for the FCC method did use video averaging. A quick comparison the data for IC vs. the FCC limit and method shows the FCC data may be out of compliance using the proper method. Please review.

Response: The RMS Detector was used on the EMI Receiver and NOT video averaging as the test procedure states in the UNII test report. The test report has been revised to state that an RMS Detector was used instead of video averaging. Note: the 1RM on the right hand side of the FCC Spectral Density pots means that RMS Detection was used. Also attached will be the application note from the EMI Receiver which explains how the RMS Detection works.

17) Please explain which method was used for peak excursion UNII measurements. For peak excursion, the first trace should be accomplished with a VBW $\geq$ 3 MHz (see attachment). Also, please justify settings used for 2nd trace per the FCC public notice. It appears that proper settings were not used for this measurement. Please review.

Response: This test has been re-measured so that "The first trace was established using an RBW of 1 MHz and a VBW of 3 MHz. The second trace was established using an RBW of 1 MHz and a VBW using method #3 of the peak conducted transmit power test per FCC public notice DA 02-2138. The delta marker function was used to determine that the difference between the two traces in any 1 MHz band on any frequency was not greater than 13 dB." Please see the revised data sheets in the revised test report.

18) For RSS-210, please explain compliance to RSS-210 6.2.2(q1)(iv)(b).

Response: The RSS-210 Spectrum Density was done with a peak detector with no averaging performed. Thus, no transmission exceeds the average value by more than 3 dB.

19) Users manual appears to be missing information specified by RSS-210 6.2.2(q1)(iv)(g).

Response: The user's manual has been updated on page 3 to address this issue. Please see the Revised Owner's Manual Exhibit.