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RE: FCC ID: PHX-RDM25100_ATCB005237

1. Please note that 27.50(h)(i) states "Peak transmit power shall be measured over any interval of continuous transmission using instrumentation calibrated in terms of rms-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, etc., so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel." Please note that the requirements state that the use of "limited resolution bandwidth capability: is to be "properly adjusted". Please also note that this does not mention comparison with a power meter, but states it is required to use "instrumentation calibrated in terms of rms-equivalent voltage." Please also note that no information as to the power meter used is provided. Please note that both the expedience report and wi-max report show improper resolution use and improper comparison to the requirements of the rules. Please correct the reading as required in the rules. Alternately, please provide evidence that the power meter used does in fact meet the requirements of "instrumentation calibrated in terms of rms-equivalent voltage" and that it is in fact capable of measuring peak transmit power for the modulation methods used in the device.

- a. The peak transmitter power was measured with an Agilent E4440A spectrum analyzer utilizing the power measurement function software installed within the test equipment. The power meter and additional correction factors statement is in reference to an analysis that was performed for a previously submitted product that utilized the same TDD transmission capabilities with OFDM/QAM modulation (document uploaded to web site). The power meter setup that was used for this analysis contained an Agilent 8481A power sensor along with an Agilent EMP-441A power meter display unit. The Agilent 8481A is a thermocouple type power sensor. According to an Agilent Application note AN64-4D, *"Heat-based sensors such as thermistors and thermocouples depend on the process of absorbing all (except for tiny inefficiencies and reflections) of the RF and microwave signal energy, and sensing the resulting heat rise. Since the heat effect integrates all the signal power, such sensors are totally independent of the waveforms and spectrum content of the signal. Thus, they respond to the true average power of the signal, whether pulsed, CW, AM/FM, or other complex modulation, and including spiked power effects such as crest factor"*. Mathematically, the rms voltage times the rms current (or rms voltage² divided by resistance) is equal to the average power while transmitting. As such, a device that measures the "true average power" is responding to the rms-equivalent voltage. The Agilent 8481A thermocouple sensor device was included with the power measurement analysis because of its very wide bandwidth (10 MHz to 18 GHz) to ensure that all of the signal under test was included within the final power reading. The power measurements recorded while using the Agilent 8481A were then compared against the power readings from the Agilent E4440A spectrum analyzer. The outcome of this comparison concluded that the power measurements presented in the test report, made by the E4440A spectrum analyzer, are equivalent to the power measurements observed with the Agilent 8481A power sensor. As such no adjustments, other than external attenuation, have been applied to the spectrum analyzer transmitter power data.

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2. Please note that the maximum transmitter power allowed for this type device is 2W. Please note that the highest power level shown in the report "5A Test Report-Exped.pdf" is 33.48dBm or 2.23W. Please note that because the peak transmitter power exceeds that allowed in the rules, the device appears to be not certifiable as presented. Please appropriately correct the peak transmitter power to be in line with the rules.

- a. While the transmitter power data included within the application is above the limit for a product within the BRS/EBS services, it is the intent of the applicant to ensure that the power listing on the grant for the Expedience mode is for the full authorized level of 2 watts as allowed by the FCC rules. The device under test was selected at random from an initial production build. This test unit was calibrated as per the processes detailed in the "Transmitter Tune-Up Procedure" contained in section 12. As such, this test unit did not produce a transmitter power value at exactly the 2 watt level. Since all units are calibrated to ensure compliance to the two watt limit, the transmitter power of this test unit was increased by approximately 1 dB rather than "cherry" picking a unit that would produce an exact two watts of transmitter power.