



Date: 13th July 2010

Gregory Czumak
PCTEST Engineering Laboratory, Inc.
6660-B Dobbin Road
Columbia, MD 21045

Re: Correspondence Number AZ4100806 with FCC ID: AZ492FT7039
Confirmation Number: Y1007010806

Dear Mr. Czumak;

Motorola Inc., 8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322, herein submits its response to the 8TH July 2010 request for information in Correspondence Number AZ4100806.

Q1. Please revise the block diagram on p. 2 of the BLD document to include the clock/oscillator/XTAL values.

R1. [Enclosed please find revised block diagram.](#)
[There is no clock/oscillator/XTAL is involved on page #2.](#)



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Q2. The digital device (pc peripheral) portion of the EUT is exempt from authorization requirements, pursuant to Section 15.103. Therefore, please remove both the Section 15.19 statement and the FCC DoC logo from the FCC ID label and resubmit it.

R2. [Enclosed please find revised label](#)



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Q3. Please submit an Operational Description that describe the functionality of the RF section of the transmitter (how RF is generated, what modulation is applied, how are levels controlled, how are spurious emissions attenuated, etc.).

R3. [Enclosed please find revised Operational Descriptions.](#)



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Q4. The schematic diagrams appear to only show the antenna connections. Please submit complete schematics for the EUT.

R4. [Enclosed please find complete schematic diagrams](#)



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Q5. Please submit the Tune- Up Procedure for the EUT, listing the maximum output power target levels as set at the factory (including permissible tolerance) for each WiMAX emission type.

R5. [Please find Beceem output power calibration, we are following the instructions provided by Beceem. The calibration is done to output power of 29.5dBm with +/-0.5dB tolerance \(The Beceem internal attenuator has 0.25dB accuracy\).](#)



BC1-ENG-SYS-60-v3
p0p1_Calibration_Rel

Q6. The EUT utilizes 2 antennas- is MIMO operation employed? If so, please verify whether MIMO operation uses spatial multiplexing, in which elements are always driven incoherently at each frequency, or not, and, if not, please include any required directional array gain calculations with the reported antenna gains.

R6. [The WiMAX in EUT is actually MISO, multiple inputs, single output. This means that device has two receivers and one transmitter. This transmitter can transmit either with Antenna 1 or Antenna 2.](#)

Q7. The WiMAX conducted output power measurement tables include varying antenna gains for each channel. Where do these values come from? The application indicates an antenna with max gain of +5 dBi.

R7. See table below

Channel	Frequency [MHz]	Output Power* [dBm]	Output Power* [mW]	Antenna Gain** [dBi]	EIRP calculated [dBm]	Limit [dBm]	Margin [dB]
WiMAX 802.16e (5MHz), OFDMA, 16 QAM, Duty Cycle 32%							
Low	2497.5	29.23	837.53	1.71	30.94	33	-2.06
Middle	2600.0	29.61	914.11	2.55	32.16	33	-0.84
High	2687.5	29.21	833.68	1.71	30.92	33	-2.08
WiMAX 802.16e (10MHz), OFDMA, 16 QAM, Duty Cycle 27%							
Low	2500	29.34	859.01	1.71	31.05	33	-1.95
Middle	2600	29.22	835.60	2.55	31.77	33	-1.23
High	2685	28.83	763.84	1.73	30.56	33	-2.44

* Corrected for external attenuations.

** As provided by the manufacturer (including cable loss).

The variations of antenna gains are the actual gains according to different frequencies, taking into account the cable loss.

- Q8. The application lists an external antenna for use with the EUT with a max gain of +5 dBi. The use of an antenna with this gain would result in EIRP levels that exceed the 2 EIRP limit specified in Section 27.50(h)(2). Please address.
- R8. We need to take into account the Antenna cable, which has 12 feet length (The length should not be modified by installer). The cable loss is ~2.5dB. So total power is $29.5 - 2.5 + 5 = 32\text{dBm}$.
- Q9. It appears that conducted output power, occupied bandwidth and bandedge measurements were not performed on all 4 of the EUT's emission types (QPSK and 16QAM, 5 and 10 MHz bandwidths). All 4 of these must be listed on the grant of certification with their own line entry, thus, this data is required. Please submit this data for all 4 of the EUT's WiMAX emissions.
- R9. The revised Test Report will follow in a separate email.
- Q10. Please confirm that spurious radiated and conducted emissions were investigated in all operating modes (both modulations, both bandwidths) and that the data submitted represents the worst-case results.
- R10. On test report section 3.4 mentioned the reason that means worst case result is determined for applicable modulation types and data rates. Pre-scan has been conducted to determine the worst-case.
- Q11. The MPE calculations use a 46% duty cycle for WiMAX operation (which differs from the 27% and 32% duty cycles used in the EMC report). Where does this value come from? Is this a source-based duty cycle? Please justify this value and its usage in the MPE calculations.
- R11. The network provider may choose one of the UL/DL ratios as shown on Table 11. Usually it is 33% since more throughput is needed for DL. We have no information how the network provider will configure it. As for now there is no provider. Please also refer to 4.1.1.7 of the enclosed WiMAX Forum™ Mobile System Profile



wimax_forum_mobile
_system_profile_v1_

Please contact me at (954) 723-5793 if you require any additional information.

Sincerely,
/s/ Mike Ramnath (signed)
Manager, Regulatory Compliance
Email: Mike.Ramnath@motorola.com