



MOTOROLA

Date: August 17, 2009

Subject: Request for additional information regarding FCC ID: IHDP56KM4

Reference:

Correspondence Reference Number: IHD90681-A
Confirmation Number: 906010681-2
Date of Original Email: August 12, 2009

Prepared by:

Andrew Bachler, Principal Staff Engineer
Motorola Mobile Device Business
Libertyville, Illinois 60048

Questions and responses follow:

1. Thank you for your email. Regarding your response to question #2, we did not receive the Part 15B test report. Please submit it.

Response: [The Part 15B Computer Peripheral test report was uploaded to the TCB web site on August 7, 2009.](#)

2. Regarding your response to question #3, the 15.19 statement in the User's Manual is still incorrect. The 2.5 GHz transmitter is not the Part 15 device, rather, the pc peripheral portion of the EUT is the Part 15 device. The following statement should be removed from the manual: "For 2.5GHz operation, the WTM11000 device complies with Part 15 of the FCC Rules." Please do so, and resubmit the manual.

Response: [Please refer to the 2nd revised Exhibit 8.](#)

3. Multiple items in the Part 27 test report are listed as being past cal due at the time of testing. Please address.

Response: [The tests were completed in June and July, before the equipment was out of cal. Two cal dates were in error .Please refer to the following comments and attached cal certificates.](#)

Radiated Test Equipment

Asset #	Manufacturer	Model #	Description	Calibration Due
1277	HP	85650A	Quasi-peak Adapter (high band)	October 21, 2009
1273	HP	85662A	Spectrum Analyzer Display (high band)	NCR
0084	HP	8566B	Spectrum Analyzer (high band)	February 23, 2010
1035	HP	85685A	RF Preselector (high band)	January 29, 2010
0085	HP	85650A	Quasi-peak Adapter (low band)	July 7, 2009 (TESTS PERFORMED BEFORE JULY 7, 2009)
1629	HP	85662A	Spectrum Analyzer Display (low band)	NCR
1145	HP	8568B	Spectrum Analyzer (low band)	July 7, 2009 (TESTS PERFORMED BEFORE JULY 7, 2009)
0238	HP	85685A	RF Preselector (low band)	July 30, 2009 (TESTS PERFORMED BEFORE JULY 30, 2009)
1454	HP	8447D	RF Preamplifier	June 17, 2009 (TESTS PERFORMED BEFORE JUNE 17, 2009)
1497	Emco	3108	Biconical Antenna	April 16, 2010 (Typographical Error. Calibration certificates provided.)
1486	Emco	3147	Log Periodic Dipole Array Antenna	April 16, 2010 (Typographical Error. Calibration certificates provided.)
C026	none	none	Coaxial Cable (low band)	July 02, 2009 (TESTS PERFORMED BEFORE JULY 02, 2009)
C027	none	none	Coaxial Cable (high band)	July 02, 2009 (TESTS PERFORMED BEFORE JULY 02, 2009)

Radiated Test Equipment (retest)

Asset #	Manufacturer	Model #	Description	Calibration Due
1277	HP	85650A	Quasi-peak Adapter (high band)	October 21, 2009
1273	HP	85662A	Spectrum Analyzer Display (high band)	NCR
0084	HP	8566B	Spectrum Analyzer (high band)	February 23, 2010
1035	HP	85685A	RF Preselector (high band)	January 29, 2010
0085	HP	85650A	Quasi-peak Adapter (low band)	July 7, 2009 (TESTS PERFORMED BEFORE JULY 7, 2009)
(1629	HP	85662A	Spectrum Analyzer Display (low band)	NCR
1145	HP	8568B	Spectrum Analyzer (low band)	July 7, 2009 (TESTS PERFORMED BEFORE JULY 7, 2009)
0238	HP	85685A	RF Preselector (low band)	July 30, 2009 (TESTS PERFORMED BEFORE JULY 30, 2009)
1454	HP	8447D	RF Preamplifier	June 17, 2009 (TESTS PERFORMED BEFORE JUNE 17, 2009)
1497	Emco	3108	Biconical Antenna	April 16, 2010
1486	Emco	3147	Log Periodic Dipole Array Antenna	April 16, 2010
C026	none	none	Coaxial Cable (low band)	July 02, 2009 (TESTS PERFORMED BEFORE JULY 02, 2009)
C027	none	none	Coaxial Cable (high band)	July 02, 2009 (TESTS PERFORMED BEFORE JULY 02, 2009)

Microwave Radiated Test Equipment

Asset #	Manufacturer	Model #	Description	Calibration Due
0582	EMCO	3115	Ridge Guide Antenna	September 30, 2009
1529	Miteq	Antenna Mounted	Microwave Preamplifier (preamp 1)	June 30, 2009 (TESTS PERFORMED BEFORE JUNE 30, 2009)
0084	HP	8566B	Spectrum Analyzer	February 23, 2010
1273	HP	85662A	Spectrum Analyzer Display	NCR
1530	Miteq	None	Microwave Preamplifier (preamp 2)	June 30, 2009 (TESTS PERFORMED BEFORE JUNE 30, 2009)
C030	None	None	Coaxial Cable (MRE band)	June 30, 2009 (TESTS PERFORMED BEFORE JUNE 30, 2009)

4. Regarding your response to questions #6 and #12, the revised MPE report states that the source based time-averaged output power is 0.089 W. Where does this value come from? You reported a 25% duty cycle to the FCC, but 89 mW is not 25% of 196 mW. Please clarify, and revise if necessary.

Response: The MPE was calculated with the highest source based time-average output power that the hardware is capable of. The highest duty cycle that is capable is 45.5%. Peak power is 196 mW and utilizing a duty cycle of 45.5% results in 89 mW.

5. Regarding your response to question #7, it is not clear that the test lab is accredited to perform testing in accordance with ANSI/TIA 603-C (which must be used for licensed transmitters). The lab's Scope of Accreditation shown on the NIST website does not appear to list this procedure, nor does it appear to make reference to FCC Part 90. Please clarify.

Response: The NVLAP Accreditation Scope for "Professional Testing (EMI), Inc." is listed under Code: 200062-0. It includes:

[12/FCC2b1] TIA/EIA 603-C (2004) with 47 CFR Part 2
General Mobile Radio Services in 47 CFR Part 90

<http://ts.nist.gov/standards/scopes/2000620.htm>

6. Regarding your response to question #9, a source based time-averaged duty cycle of 25% is claimed. Please provide documentation/test data justifying this value.

Response: Please refer to the "Timing" section of the Appendix in the Part 27 Test Report. With a spectrum analyzer in "Zero Span" mode the period of the WiMax waveform is measured at approximately 5ms and the data frame is measured at approximately 1.25ms. Therefore the duty cycle is $(1.25\text{ms}/5\text{ms}) = 0.25$, or 25%.

7. Regarding your response to question #9, it appears that some of the peak emissions are close to being 6 dB above the limit. Please provide either tabular data, or plots using the marker function on these emissions, to clearly demonstrate compliance.

Response: Please refer to the follow tabular data:

QPSK Low 2501 MHz (5 MHz BW) 1 – 26 GHz Scan

Frequency	Level	Limit	Margin	Detector
(MHz)	(dBm)	(dBm)	(dB)	
7501.11	-21.34	-25		Peak
7501.11	-27.34	-25	2.34	Avg
7506.67	-19.412	-25		Peak
7506.67	-25.412	-25	0.412	Avg

QPSK Mid 2593 MHz (5 MHz BW) 1 – 26 GHz Scan

Frequency	Level	Limit	Margin	Detector
(MHz)	(dBm)	(dBm)	(dB)	
5186.67	-19.375	-25		Peak
5186.67	-25.375	-25	0.375	Avg
7781.11	-22.86	-25		Peak
7781.11	-28.86	-25	3.86	Avg

QPSK High 2687.5 MHz (5 MHz BW) 1 – 26 GHz Scan

Frequency	Level	Limit	Margin	Detector
(MHz)	(dBm)	(dBm)	(dB)	
5375.56	-25.07	-25		Peak
5375.56	-31.07	-25	6.07	Avg
13293.3	-23.034	-25		Peak
13293.3	-29.034	-25	4.034	Peak

16QAM Low 2501 MHz (5 MHz BW) 1 – 26 GHz Scan

Frequency	Level	Limit	Margin	Detector
(MHz)	(dBm)	(dBm)	(dB)	
7503.33	-20.046	-25		Peak
7503.33	-26.046	-25	1.046	Avg
7507.78	-20.327	-25		Peak
7507.78	-26.327	-25	1.327	Avg
13316.7	-23.96	-25		Peak
13316.7	-29.96	-25	4.96	Avg

16QAM Mid 2593 MHz (5 MHz BW) 1 – 26 GHz Scan

Frequency	Level	Limit	Margin	Detector
(MHz)	(dBm)	(dBm)	(dB)	
5186.67	-19.4	-25		Peak
5186.67	-25.4	-25	0.4	Avg
7782.22	-24.766	-25		Peak
7782.22	-30.766	-25	5.766	Avg
13298.9	-23.722	-25		Peak
13298.9	-29.722	-25	4.722	Avg

16QAM High 2687.5 MHz (5 MHz BW) 1 – 26 GHz Scan

Frequency	Level	Limit	Margin	Detector
(MHz)	(dBm)	(dBm)	(dB)	
5377.78	-24.257	-25		Peak
5377.78	-30.257	-25	5.257	Avg
13328.9	-23.509	-25		Peak
13328.9	-29.509	-25	4.509	Avg

QPSK Low 2501 MHz (10 MHz BW) 1 – 26 GHz Scan

Frequency	Level	Limit	Margin	Detector
(MHz)	(dBm)	(dBm)	(dB)	
7.503	-23.702	-25		Peak
7.503	-29.702	-25	4.702	Avg
13296.7	-23.569	-25		Peak
13296.7	-29.569	-25	4.569	Avg

QPSK Mid 2593 MHz (10 MHz BW) 1 – 26 GHz Scan

Frequency	Level	Limit	Margin	Detector
(MHz)	(dBm)	(dBm)	(dB)	
5190	-22.447	-25		Peak
5190	-28.447	-25	3.447	Avg

QPSK High 2685 MHz (10 MHz BW) 1 – 26 GHz Scan

Frequency	Level	Limit	Margin	Detector
(MHz)	(dBm)	(dBm)	(dB)	

16QAM Low 2501 MHz (10 MHz BW) 1 – 26 GHz Scan

Frequency	Level	Limit	Margin	Detector
(MHz)	(dBm)	(dBm)	(dB)	
13291	-24.201	-25		Peak
13291	-30.201	-25	5.201	Avg

16QAM Mid 2593 MHz (10 MHz BW) 1 – 26 GHz Scan

Frequency	Level	Limit	Margin	Detector
(MHz)	(dBm)	(dBm)	(dB)	
5184	-23.209	-25		Peak
5184	-29.209	-25	4.209	Avg
13343	-24.582	-25		Peak
13343	-30.582	-25	5.582	Avg

16QAM High 2685 MHz (10 MHz BW) 1 – 26 GHz Scan

Frequency	Level	Limit	Margin	Detector
(MHz)	(dBm)	(dBm)	(dB)	
13328.9	-23.814	-25		Peak
13328.9	-29.814	-25	4.814	Avg



Professional Testing (EMI), Inc.
 1601 N. A. W. Grimes Blvd., Suite B
 Round Rock, Texas 78664
 512/244-3371 Fax 512/244-1846

CERTIFICATE OF CALIBRATION

CERTIFICATE NO. 1497-09

Description: EMCO 3108 Bi-Conical Antenna

Serial No.: 2191

Asset No.: 1497

Dept.: EMC

Calibration Date: <u>April 16, 2009</u>	Calibration Interval: <u>12 Months</u>	Cal. Due Date: <u>April 16, 2010</u>
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Condition Received: <u>In calibration</u>	Condition Returned: <u>In calibration</u>
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Procedure: CP-0012-05. Three antenna method

Measurement Equipment Used:

<u>TYPE, Model</u>	<u>Asset No.</u>	<u>Cal. Due Date</u>
HP 8568B, Spectrum Analyzer	1270	Jan. 29, 2010
AR 10W1000, RF Power Amplifier	1225	NCR
JFW 50FHC-010-20 Attenuator	0925	NCR
JFW 50FHC-010-20 Attenuator	0931	NCR

Calibration Engineer: *Perry Burns* Reviewed By: *Robert McCollough*

All calibrations are performed using internationally recognized standards traceable to the National Institute of Standards and Technology (NIST) or the National Physical Laboratory (NPL), or using Natural physical constants or ratio calibration techniques. Our calibration system complies with ISO 17025 and ANSI/NCSL Z540-1. The information shown on this certificate applies only to the instrument identified above and may not be reproduced, except in full, without prior written consent from Professional Testing (EMI), Inc.

Dated: April 16, 2009

Attached: 2 pages, Calibration Data and Graph.



Professional Testing (EMI), Inc.
 1601 N. A. W. Grimes, Blvd., Suite B
 Round Rock, Texas 78664
 512/244-3371 Fax 512/244-1846

CERTIFICATE OF CALIBRATION

CERTIFICATE NO. 1497-08

Description: EMCO 3110B Bi-Conical Antenna

Serial No.: 2191

Asset No.: 1497

Dept.: EMC

Calibration Date: <u>April 16, 2008</u>	Calibration Interval: <u>12 Months</u>	Cal. Due Date: <u>April 16, 2009</u>
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Condition Received: <u>In calibration</u>	Condition Returned: <u>In calibration</u>
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Procedure: CP-0012-05, Three antenna method

Measurement Equipment Used:

<u>TYPE, Model</u>	<u>Asset No.</u>	<u>Cal. Due Date</u>
HP 8591E, Spectrum Analyzer	0410	December 2008
AR 10W1000, RF Power Amplifier	1225	NCR
JFW 50FHC-010-20 Attenuator	0925	NCR
JFW 50FHC-010-20 Attenuator	0931	NCR

Calibration Engineer: J.P. Fuller

Reviewed By: [Signature]

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Dated: April 18, 2008

Attached: 2 pages, Calibration Data and Graph.



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Round Rock, Texas 78664
512/244-3371 Fax 512/244-1846

CERTIFICATE OF CALIBRATION

CERTIFICATE NO. 1486-09

Description: EMCO 3147 Log Periodic Antenna

Serial No.: 9112-1052

Asset No.: 1486

Dept.: EMC

Calibration Date: <u>April 16, 2009</u>	Calibration Interval: <u>12 Months</u>	Cal. Due Date: <u>April 16, 2010</u>
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Condition Received: <u>In calibration</u>	Condition Returned: <u>In calibration</u>
---	---

Procedure: CP-0012-05, Three antenna method

Measurement Equipment Used:

<u>TYPE, Model</u>	<u>Asset No.</u>	<u>Cal. Due Date</u>
HP 8591E, Spectrum Analyzer	1270	Jan. 29, 2010
AR 10W1000, RF Power Amplifier	1225	NCR
JFW 50FHC-010-20 Attenuator	0925	NCR
JFW 50FHC-010-20 Attenuator	0931	NCR

Calibration Engineer: *Darryl Burns*

Reviewed By: *Robert McCullough*

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Dated: April 16, 2009

Attached: 2 pages, Calibration Data and Graph.



Professional Testing (EMI), Inc.

1601 FM 1460, Suite B
 Round Rock, Texas 78664
 512/244-3371 Fax 512/244-1846

CERTIFICATE OF CALIBRATION

CERTIFICATE NO. 1486-08

Description: EMCO 3147 Log Periodic Antenna

Serial No.: 9112-1052

Asset No.: 1486

Dept.: EMC

Calibration Date: <u>April 16, 2008</u>	Calibration Interval: <u>12 Months</u>	Cal. Due Date: <u>April 16, 2009</u>
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Condition Received: <u>In calibration</u>	Condition Returned: <u>In calibration</u>
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<u>TYPE, Model</u>	<u>Asset No.</u>	<u>Cal. Due Date</u>
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AR 10W1000, RF Power Amplifier	1225	NCR
JFW 50FHC-010-20 Attenuator	0925	NCR
JFW 50FHC-010-20 Attenuator	0931	NCR

Calibration Engineer: J.P. Zelle

Reviewed By: [Signature]

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Dated: April 18, 2008

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