



Washington Laboratories, Ltd.

7560 LINDBERGH DRIVE
GAITHERSBURG, MD 20879
(301) 417 – 0220 FAX # (301) 417 - 9069

March 10, 2005

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

RE: Comments of January 22, 2005
APPLICATION: NB5-MB-49-HP YDI Wireless

Dear Mr. Graff:

Below are the comments that you have provided regarding the application for certification referenced above. Our responses to those comments are in ***bold italic***. Many responses refer you to additional exhibit(s) which has been uploaded to the application folder at the ATCB website.

Thank you for your attention. Please feel free to contact us for any additional information that you may require.

Regards,

Mike Violette
President

WLL Project: 8441

~~Please confirm that this device is intended to operate under the provisions of Part 90 Subpart Y. The following questions are based upon this assumption.~~

WLL:

1.) This device is described as a point-to-point or point-to-multipoint system. Is the Applicant aware of the potential site license limitations imposed by 90.1207(d)?

R. The applicant states that the site limitations imposed by 90.1207(d)

2.) Kindly show how this device will meet the channelization requirements of 90.1213. Please provide a complete list of all channels and their associated bandwidths.

R. The unit is a single channel at 4965MHz with an occupied bandwidth of 20MHz. Reference Revision 1 of test report.

3.) Please provide information on the peak transmit power and the associated bandwidth per 90.1215(a). Please provide evidence of compliance with the spectral power density requirements also found in this subsection.

R. See Section 5 of Revision 1 of Test Report.

4.) Please note the method for power measurement in 90.1215(b). Your report identifies the diode detector/signal generator substitution technique for power measurement. If RMS equivalent measurements are not possible please specify how your method is equivalent. A presentation of oscilloscope plots showing the EUT fundamental and the reference levels measured and used would be helpful.

R. We used the internal function of the HP 8564E to perform these measurements per the requirements of 90.1215(b). See Section 5 of Revision 1 of Test Report.

5.) Given the channel bandwidths of 90.1213 please reconsider the occupied bandwidth masks presented in the Test Report. In addition, please provide vertical graticule on figures 3, 4, 17, and 20.

R. See Section 5 of Revision 1 of Test Report.

6.) Licensed radios must show all applicable emission designators and the applicable frequency range and power for each designator. Please modify your Form 731.

R. Form 731 modified to reflect correct emissions designator.

7.) The label is incorrect for a Licensed radio transmitter also which contains a receiver. The user has rights to non-interference that are not extended to Unlicensed Part 15 products. Therefore the labeling of 15.19(a)(1) would be more appropriate.

R. Label Information has been uploaded.

8.) The Parts List is incomplete and does not cover the 802.11a/g radio.

R. Parts list for the 802.11a/b radio is uploaded.

9.) The Tune Up procedure is inadequate. Please describe how this device is tuned up during production and what assurances are available that RF power and frequency limitations to be specified on the Grant of Equipment Authorization are maintained.

R. This device is "Calibrated" at production time with a unique non-public SW. This SW (Cannonball) connects the RF output into a Power Meter, and, for the released final-assemblies, calibrates each allowed frequency to its certified power output. It also "sets" the respective final-assembly number into the device. Production operators, using this SW, select which final-assembly they wish to calibrate, from a list of released final-assemblies, created from FCC-Grants.

This procedure is implemented on all the Marquee products (our main product line, of which the 4.9GHz Hi-Pwr is a subset).

Users of our equipment, with our published configurator SW, are allowed to only "select" the programmed frequency from a pull-down menu. They CANNOT select a frequency not in the list, nor are they able to exceed Max-RF-Power that is programmed into at the Final Assembly. This maintains the RF-power and frequency limitations specified on the Grant.

Additionally, our label maker SW recovers the final-assembly number from the device and the correct label is printed onto the final-assembly (containing the correct FCC ID).

For an additional check, each final-unit is connected OverTheAir with a reference unit, to verify that the unit is operating and receiving RF correctly.

10.) Frequency stability was performed using a 120vac supply. However, the operational description indicated this device runs off of 48VDC. In instances where DC power only is available, it would be prudent to do frequency stability testing using a DC supply. Please provide frequency stability data using the DC supply only.

R. The unit is supplied with an AC/DC power supply which is connected to a DC Power Injector (also provided) which puts DC on Ethernet and then is supplied to the unit. Therefore, AC power frequency stability measurements are appropriate.

11.) In addition to the RF Exposure evaluation, a statement confirming compliance with the RF Safety requirements for both fundamental and unwanted emissions must be submitted. Please see 90.1217.

R. We disagree, 90.1217 applies to “mobile or portable” devices. These units are “fixed-wireless” so the rule does not apply.

12.) The RF Exposure exhibit also indicates that additional antennas may be used with the system. Please note the allowed transmit power may change when antennas greater than 9dBi are utilized. See 90.1215(a).

R. We disagree. 90.1217 allows an exception for “point-to-point and point-to-multipoint, both fixed and temporary fixed”. These units are “fixed-wireless” and as such are covered under the exception where we are allowed to use antennas with directional gain up to 26 dBi WITHOUT any corresponding reduction in transmitter power or spectral density.

13.) Please provide photographs of all antennas for which approval is sought at this time.

R. This is a licensed, professionally-installed device. Terabeam does not have any antennas for sale with this system, nor is any specific approval with an antenna is sought at this time.

14.) Per 2.1033(c)(7) please identify the maximum power rating as defined in the applicable part(s) of the rules.

R. See Section 5 of the Revision of the Test Report.

15.) Per 2.1033(c)(8) please provide the dc voltages applied to and dc currents into the several elements of the final radio frequency amplifying device for normal operation over the power range.

R. The dc voltage range for the “final radio frequency amplifying device” is 36V – 60V DC (nominal voltage is 48VDC) and takes a nominal dc current of 60mA.

16.) Please provide a data sheet including filter response on the external filter used for harmonic suppression. This should be included in the Parts List.

R. The unit no longer contains an external filter. This filter has been incorporated on the board. Reference Revision 1 of test report and supporting photographs.

17.) Please clarify if both the 2.4GHz 802.11g and 5GHz 802.11a signals are used by this device and fed to the amplifier. It is unclear if both portions of the 802.11b/g card are utilized. A more detailed description indicating how the 802.11b/g radio signal is up converted to the 4.9GHz band would be helpful.

R. That is a negative. Only 4.9GHz signals are generated by the radio module in this unit and the same 4.9GHz signal is amplified by the internally installed amplifier.

There is no up/down conversion from any other frequency.

The “production tune-up procedure” (we call it calibration procedure), described earlier details this process.

18.) Was the Terrabeam radio rotated about it's axis on three orthogonal planes for spurious emission testing? The Test Setup photographs do not give me a clear indication.

R. The unit was tested for case radiated spurious emissions only. The unit was mounted per the mounting instructions

19.) Since this broadband radio has two bandwidths with two emission designators, and since the limits of 90.210(l) is expressed in terms of dBm/MHz, it would be prudent to measure the radiated spurs on both applicable bandwidths. Please review.

R. This submission only covers a single bandwidth.

20.) FYI: For your convenience, I am also attaching portions of 90.210(l), Part 90 Subpart Y, and portions of the Frequency Allocation table in Part 2.

R. Updated Rules are submitted as “FCC R&O DA-04-265 with mask p 12” with this submission. The New FCC Part 90 Rules are referenced as FCC 04-265, released November 12, 2004. A copy of this R&O is supplied as “FCC R&O DA-04-265 with mask p 12” in this submission.