Elliott Laboratories Inc.
www.elliottlabs.com
684 West Maude Avenue
Sunnyvale, CA 94085-3518
408-245-7800 Phone
408-245-3499 Fax

September 8, 2003

RE: Netgear Incorporated, FCC ID: PY3-ANT24BX

Our responses to your comments on the above referenced application, are embedded with the issues that you raised.

1) The last note on the MPE exhibit regarding point to point applications should include both the 12 and 18 dBi gain antenna. Reference only to the 18 dBi gain antenna is not correct. Note that the 12 dBi gain has not be reduced in a 1 to 1 ratio as is implied by the current exhibit.

> MPE calculation has been updated to reflect point-to-point operation for both panel antennas.

2) Please explain why the ANT2405 5 dBi Ceiling antenna requires the use of a 1.5 meter cable, when the device contains a Reverse SMA connector.

> The connector is at the end of a 1.5m cable that is integral to the antenna.

3) Your response mentioned an adjustment to the firmware of the device was performed for the high gain antennas. It is not clear if this adjustment is required only for the high gain antennas or if this change that is implemented for all units. Additionally, it is not clear if this change affects the output power of the device, etc. Please provide further information.

> The firmware change was in the test software that generated a continuous transmission stream for performing FCC and related tests. The original version was unstable in the test mode and did not adequately suppress the carrier and led to the rather large differences between peak and average measurements. It also generated side-band noise which affected the band edge marker delta measurements. The updated version provided a more stable signal with correct carrier suppression that more accurately depicts the actual 802.11 transmission signal. It did not affect the output power from the Access point.
>
> The latest test report includes data taken on all configurations with updated software.

4) The measurement of the output of the booster was 27.1 dBm. However the operational description mentions a maximum output of 27.5. Given that the power limit for the 18 dBi gain antenna is 26.0 dBm, and using the 27.1dBm is at the limit, any higher power out of the booster will exceed the limits. What assurance can Netgear provide that all booster units will actually be output 27.1 dBm and lower? It seems that this may not be the highest expected power given the rating is higher than measured.

> For all units measured the output power did not exceed 27.1 dBm. It appears that the specification for the booster supplied was optimistic in stating the output power to be 27.5 dBm max. To ensure that the output power does not exceed 27.1 dBm the manufacturer will implement a control check during the tuning of the devices to limit the maximum output power to 27.1dBm.

5) Please include the antenna specification information for the panel antennas referenced in your latest reply (antenna specs Part 3 (Panel Antennas).pdf). This was not provided in the last set of uploads.

> The specification sheet has been uploaded.

6) The amplifier appears to contain some sort of AGC circuit. Note that AGC amplifiers must be investigated for maximum and minimum gain conditions. It appears that only the minimum gain condition only has been investigated. Please provide test data that shows that the system still meets with the AGC amplifier under a maximum gain condition (i.e. testing of worse case results with added attenuation or cable length before the amplifier to create minimum expected input condition. Note: Do not do this by directly adjusting the main TX output power).

> The test data states that a configuration with the maximum length of cable (10m plus 1.5m plus booster) between the Access Point and the bi-directional amplifier was pre-tested. This configuration would provide the lowest level input power to the bi-directional amplifier that would be encountered. The test lab reported that the emissions in this mode were lower than those reported for the systems that used the shortest available cable lengths between Access Point and amplifier.

7) Run 11 for the high channel 18 dBi gain antenna contains lower than expected emissions at the 2nd harmonic, given comparisons to the 9 dBi gain dipole and other 18 dBi gain runs at the lower and middle channels. Please explain.

> The average level is 3.6dB lower than the low channel and 6.7dB lower than the center channel second harmonic levels. The measurements were as reported. The only explanation for this would be that either the emission is from the enclosure of the product and the location of antenna relative to the enclosure was such that it caused the reduction in expected level at the second harmonic of the high channel OR the gain of the 18dBi antenna at this frequency is much lower than that at the lower frequencies for the panel antenna and all frequencies for the 9dBi omni.

8) The band-edge calculations for the 5 dBi gain antenna do use the worse case results for the channel 11 calculations based upon pages 121 and 130. Please correct.

The data has been corrected and uploaded.

The following files have been uploaded to the ATCB website to support the above responses:

- antenna specs Part 3 (Panel Antennas).pdf
- F341402- Part 3 of 3 (revised).pdf
- MPE Calculations (revised).pdf

If you have any additional questions please do not hesitate to contact me via doc@elliottlabs.com.

Regards,

Mark Briggs
Director of Engineering