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

August 28, 2003

RE: Netgear Incorporated, FCC ID: PY3FVM318

After reviewing your comments on the above referenced Application, please find our responses below.

1) The test report states that "the ethernet ports were not connected, as these are not required for normal function of the Radio Portion". The FCC expects Part 15 devices to be tested under worse case conditions/configurations since it is uncertain if cables may contribute to the readings and the number of cables used by the end user is installation dependent. Note that ANSI C63.4 section 13.1.2 for intentional radiators references section 6.2 for configuration of the device. Additionally, please note that the original testing for this unit appears to have tested the device fully configured. Preliminary testing or additional testing should have been performed in order to evaluate the effect (if any) that these cables have on measurements > 1 GHz.

> Measurements were made without the cables connected based on the assumption that these ethernet cables would not have any significant effect on the radiated spurious emissions from the radio, only on those from the digital device.
>
> We have double-checked the measurements made at the fundamental and at the second harmonic with an ethernet cable connected and with the 5dBi antenna. The cable made no difference to the levels measured and so we do not see a need to repeat the complete series of tests with the cables connected.

2) It is uncertain which antennas may be directly connected to the radio, and which must use a cable without reviewing the RF exposure exhibit. Please update Addendum A OR page 8 of 16 of the test report to clearly show which antennas may be directly connected and which ones require a cable. Additionally, please include the loss of the minimum 1.5 meter length of cable with this information.

> Page 8 of the report has been updated to show the length of cable and the loss of the cable.

3) Note: Note all omni-directional antennas are created equal. We have seen where significant differences between 1/4 wave dipoles, 1/2 wave dipoles, monopoles, etc can occur, even for antennas of the same gain antennas. This is usually noticed at harmonic frequencies. Many of the antennas were labeled with 1/4 wave descriptions, but it is not certain on several exactly what type of omni-directional antenna they are. Comparison or additional testing may be necessary to any antennas which are not considered 1/4 wave dipoles. Please explain.

The selection of antennas was based on the selection of highest gain antennas plus the fact that the signal levels on the actual antenna port at the spurious emission frequencies were very low. This is supported by the act that for all of the antenna types tested the levels at the second, third and fourth harmonics are very similar to each other, suggesting that the main radiation mechanism at these frequencies is form the enclosure and not from the antenna.

Further, the original device was tested with a ¼ wave dipole style of antenna with a gain of 2dBi.

Based on the above we respectfully request that the measurement data collected be considered adequate for the proposed additional antennas.

4) For the RF exposure exhibit, please provide measurement units for appropriate columns (output power, cable length, cable loss, gain, etc.).

The rf exposure calculations have been revised to show the appropriate units at the top of each column.

5) For mobile devices, the FCC has requested that RF exposure information be calculated for the power density at 20 cm, instead of the safe distance. Please correct the RF exposure exhibit.

The rf exposure calculations have been revised to include the power density at 20cm from the product.

6) For purposes of bandedge measurements, the power of the fundamental should have been measured with typical RBW = VBW = 1 MHz for peak and RBW = 1 MHz, VBW = 10 Hz for AVG. However the tables on pages 6, 7, 9, 12,13,15,18,19, and 21 state 100 kHz. It appears that proper settings may have been used but not properly reported. Please explain.

> The measurement is made twice, once with RBW=VBW=100kHz and once with the RBW=1MHz, VBW = 1MHz or 10Hz. The 100kHz measurement listed at the top of the relevant tables is the reference measurement for measuring spurious emissions that fall outside of restricted bands. The 1MHz bandwidth measurements (detailed in the main body of the tables) are used for calculating the signal level at the band edges. The 1MHz measurements are only made on the top and bottom channels.
>
> The negligible difference between the 100kHz and 1MHz measurements can be attributed, in part, to the fact that the 100kHz RBW is a 3dB bandwidth and the 1MHz bandwidth is a 6dB bandwidth.

7) The polarization listed for the band-edge data on page 12 of 21 appear to be listed backwards. In other words, the results at 2390 MHz of 43.5 dBuV/m appear to be calculated from the vertical data, not the horizontal data. Please explain.

> This has been corrected in the revised report.

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

- MPE Calculations Updated.pdf
- R51925 Revised.pdf
- Response.pdf

If you have further questions please do not hesitate to contact me at doc@elliottlabs.com.

Regards

Mark Briggs
Director of Engineering