NEBRASKA CENTER FOR EXCELLENCE IN ELECTRONICS
4740 Discovery Drive
Lincoln, NE 68521
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18 February 2004

Response to ATCB Review
RE: KarlNet, Inc.
FCC ID: Q7O-0003

Mr Johnson:
Below you will find the a response to your letter dated 9 February 2004:

1) The modular request letter mentions different software loads. What is the difference in software (i.e. does the software load affect power or any other parameters affecting FCC compliance).

A revised modular request letter has been uploaded to the ATCB website. The software loads effect the duty cycle of the product, testing was performed at the maximum duty cycle possible with the product.

2) The modular request letter mentions specific configurations are requested to be approved; different software loads.

A revised modular request letter has been uploaded to the ATCB website. The software loads are designed to allow the product to interface with specific hardware and to allow a customer to purchase a product geared more towards their particular application. The software loads do not affect the RF characteristics.

3) It is uncertain why a modular application is being requested. Currently the grant would be limited to KarlNet applications only, in enclosures as specified in the application, and only to specific interface boards. It seems you would have more flexibility with a normal grant. Please call to discuss.

Tim, thank you for your input and clarification in on phone conversation Monday February 10th. At this time the plan is to continue with the modular approval.

4) The modular approval letter limits the use of the approval to specific antennas, interface cards, etc. However the operational description mentions "various end-use items". This does not agree with the intent of the modular approval. Please adjust the documentation accordingly.

The various end “use items” are all supplied by KarlNet, Inc. and are or will be incorporated in the table shown in the modular approval letter.

5) Please provide external photographs of the antenna/device.

Uploaded back and front pictures of Arc Wireless 19dBi system on 10 February 2004.

6) Please provide a sample label for the exterior of the device. This should include appropriate statements as specified by 15.18.

A sample label for the exterior of the device has been uploaded for compliance to 15.19 on 17 February 2004.

7) The parts lists should clearly show that the card is OEM equipment from another manufacturer. Additionally, is confidentiality requested for the parts list? If so, please adjust the confidentiality letter.

KarlNet has agreed to alter the parts list to specify FCC ID: IXMPCBAG, or equivalent as item 4. The “Item Master” form from the KarlNet inventory control software has been uploaded to show this. Also a modified letter of confidentiality was uploaded 17 February 2004.

8) Internal photographs of the PCMCIA card must be provided as part of the internal photographs, including photographs under all subshields. Many of these photos appear in the test report. Please provide as part of the separate exhibit for internal photographs.

Uploaded top and bottom pictures with and without shielding on 10 February 2004.

9) Please provide specifications sheets for each of the proposed antennas. Please provide additional photographs of the antennas if the spec. sheets do not clearly show the antennas.

Specifications information on the four antennas listed was uploaded to the ATCB servers 17 February 2004.

10) Please provide test photographs for the radiated tests as a separate exhibit.

Uploaded one radiated test photo and two conducted test photos on 10 February 2004.

11) Section 2.3 of the test report appears to mention a modification. It is assumed that this will be implemented into all production units. Please clarify.

The modification as discussed was previously implemented in production and the unit that is shipped with products contains this modification. The power supply provided for testing was an older unit and did not have the ferrite.

12) Pages 6-7 mention bandedge peak/average emissions. It appears the peak are in excess of the average readings. Additionally these measurements appear over the limits. Please explain.

This is due to the duty cycle as discussed, the VBW settings were changed and the measurement repeated per your suggestion and the new figures have been incorporated in the report.

13) For AC line conducted measurements, the AC line cord appears to be draping to the floor vs. tied down as specified in ANSI C63.4. Please adjust and retest as necessary.

Retested results and photos have been placed in the report. There was no significant change in the results.

14) Please explain why the automated scans may have shown higher values than the manual scans.

The results are placed on the figure manually after being verified and corrected, the figures in question were not corrected. The correct plots have been added to the report.

15) The test report states "The conducted average measurements were affected by the non-continuous signal from the RF transmitter" (page 7). However page 5, section 4.2 implies the device can be set to continuous mode. Please explain. Note that normally the peak/average delta for these types of devices is about 8-11 dB, while the radiated results submitted appear around 19 dB between peak and average by looking at the fundamental. This suggests the device was not continuously transmitting and the VBW must be carefully selected during testing. Note that the FCC test methods are expecting the device to be placed into 100% TX mode of operation. Therefore, please confirm what VBW settings were used for average measurements > 1 GHz? Note that the use of 10 Hz expects the device to be placed into 100% TX with no associated duty cycle. If a duty cycle is present, the VBW must be > than the 1/Txon time. Please provide information regarding the TX on/off time and period.

Duty cycle information and discussion has been added to the report in Section 4.5 and Appendix F.

16) There are concerns with the average bandedge emissions data. Peak bandedge emissions appear correct. The average fundamental and other readings appear affected by the duty cycle and therefore appear erroneous. If the device has an inherent source based duty cycle, it would be best to use this information and determine a correction factor rather than average measurements because of the concern raised in item 15) above.

Duty cycle information and discussion has been added to the report in Section 4.5 and Appendix F.

17) FYI…Page 17 of the report shows the limit for < 1 GHz as QP/AVG. Note that the limit is actually peak/QP.

This is part of the name of file that is used for the limit line. The Page 17 is showing measurements above 1GHz, these measurements are peak/AVG.

18) The power measurements appear to be taken using a 10 MHz RBW/VBW. The RBW used should be greater than the 6 dB bandwidth. Please call to discuss.

The plots in question have been replaced by plots made using RBW=1MHz, VBW=3MHz and RF channel power BW=13MHz.

19) Please adjust the RF exposure exhibit
a) as necessary for item 18) above.
b) using the power measured in the test report, not from the previous filing.
c) Note results appear to be miscalculated for the information provided. Please review.

KarlNet recommends a 2-meter separation from the antenna. The RF exposure statement has been modified to use the measured power level and uploaded to the ATCB servers on 19 February 2004.

20) The users manual appears to be missing the information required by 15.21. Please provide a modified users manual

The required information has been added to the users manual and a revised copy has been uploaded to the ATCB servers on 17 February 2004.

21) The manual requires information specified by 15.247 (b)(iii). Please provide a modified users manual.

The required information has been added to the users manual and a revised copy has been uploaded to the ATCB servers on 17 February 2004.

22) It is uncertain how the end use device is being authorized under the rules. I.E. Class A/Class B emissions for the digital device portion of the device. The users manual does not appear to define this in the users manual as given by 15.105. Please provide a modified users manual.

The required information has been added to the users manual and a revised copy has been uploaded to the ATCB servers on 17 February 2004.

Tim, thank you for your continued assistance in this process,

Doug Kramer
Lab Manager
NCEE