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

September 17, 2003

RE: FCC ID: QFXNHL-8X
Attention: Steve May

I have a few comments on this Application.
Part 15.247 Bluetooth

1. Please note that the radiated emissions data on pages 16 through 19 and 43 through 47 of the report do not indicate if all factors associated with the measurement have been considered. There does not appear to be any indication that the cable factor, antenna factor or preamp factor (if used) have been considered in the final data. Since the emissions above 1GHz also appear to be at the noise floor, it may be necessary to include a preamplifier to make proper measurements. The report does not been clearly explained if this was done or not. Please note that 2.1033 (b)(6) states, "…The report **shall include** sample calculations showing how the measurement results were converted for comparison with the technical requirements." Please provide the required sample calculations and please show evidence that all factors associated with final data have been considered. If these factors are part of the analyzer setting, please show how the analyzer treats each of these factors (e.g. a sample calculation)
2. Please note that the reported plot on page 17 of the report shows a video bandwidth lower than the resolution bandwidth. Please note that the video band width in all but averaging mode is typically to be equal to or greater than the resolution bandwidth. While the setting used may not affect the readings by more than a fraction of a dB if at all, the analyzer video bandwidth should be equal to or greater than the res bandwidth. Please also note that this plot shows failing data but there is no indication if the tabular data on the preceding page of the report is associated with this failing data or not. Please explain why an incorrect video bandwidth was used and please explain why failing data is provided without clear reference to subsequent passing data..
3. Please note that it appears that you have incorrectly measured channel occupancy. The plot reported shows a span of 83MHz including all channels and a sweep time of 20ms. Please note that this does not match your stated measurement procedure in section 9. The correct measurement is to be done with zero span centered on a single channel and a sweep time of 30 seconds, while the device is in hopping mode. This is to be repeated sufficient number of time to count the maximum occupancy per channel over the specified time limit. Please also note that the dwell (channel occupancy) data reported does not agree with normal and/or typical Bluetooth characteristics. Bluetooth devices typically have three modes of operation including data mode and inquiry mode. Because inquiry mode hops through significantly fewer total channels, inquiry mode may actually be worse case. Please re-measure your channel occupancy following the accepted FCC measurement procedure guideline for channel occupancy found in DA-000705. Please account for the possibility of other than data mode being worse case.
4. Please note that power measurements are better done conducted, however, EIRP is acceptable if performed correctly. Please note that the report section 9 states ERP while the data states EIRP. The accepted FCC method in accordance with DA-000705 is EIRP. Please correct the confusion between the test procedure listed in section 9 of the report and the data on page 25 section 8.7.2. Due to the confusion mentioned above, it is not clear from the data that the correct antenna gain information was included. Please provide the calculations using the antenna gain of the substitution antenna used during testing. (See item 1 about the required sample calculations).
5. Please note that when using a resolution bandwidth narrower than the displayed device 6dB bandwidth for power measurements, a bandwidth correction factor may need to be employed to account for any error introduced in the measurement by this condition. The displayed device bandwidth shown in the plots show an approximate device 6dB bandwidth of about 1.5MHz and a resolution bandwidth of 1MHz. This means that a resolution bandwidth correction factor of 10log(displayed Bw/ res bandwith) or 1.75dB may have to be included. Please include this

correction factor of alternately verify if this is not needed (e.g measuring the power using a res band width of 2MHz; or by conducted measurements using a power meter or diode detector).

Part 24

6 Please note that the test methods listed on page 8 of the PCS report list part 15 test methods but do not list licensed device test methods (e.g TIA603). Please explain.

7 Please note that while the test procedure in section 9 indicates EIRP measurement methods were done, neither the actual data in the report nor the test procedures indicate how the associated antenna substitution factors have been applied. Please clarify and provide the antenna gain for the substitution antenna used and please show how this factor was applied to the actual results (i.e. entered into the analyzer settings and automatically calculated, calculated by test engineer or other calculation methods).

SAR report

none

Dennis Ward
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The items indicated above must be submitted before processing can continue on the above referenced application. Failure to provide the requested information may result in application termination. Correspondence should be considered part of the permanent submission and may be viewed from the Internet after a Grant of Equipment Authorization is issued.

Please do not respond to this correspondence using the email reply button. In order for your response to be processed expeditiously, you must submit your documents through the AmericanTCB.com website. Also, please note that partial responses increase processing time and should not be submitted.

Any questions about the content of this correspondence should be directed to the sender.