



ATCB
6731 Whittier Avenue
McLean, VA 22101

26 Apr 2006

RE: FCC ID: RFKCBAHPNEX_ATCB003332

Attention: Dennis Smith

In response to your letter dated April 9, 2006. Responses are listed below after each question.

0. Overall all comment, the report submitted was identical in form to a previously submitted project through ATCB (reference on FCC authorization page RFJTG-806). During the painful process of this submittal it was recognized that amps and signal boosters do not have clear cut requirements and we had tried to come up with a standard package at that time. It would appear that we are still trying to hit a moving target. As the above project was handled through ATCB and was accepted by the FCC I would like to request some latitude in this process. As this is a learning curve I will strive to incorporate suggestions to improve the process on future submittals as much as is practicable.
1. Please note that the 731 states this is a single channel amplifier. However, it also give a frequency range covering many channels. The test report also covers all channels in the 806-821 MHz and 851-866MHz part 90 range. The antenna input also appears not to control the input signal to restrict use on only one channel. In other words, the device appears to amplify any number of signals present at the input antenna. Please explain.
 - 1A. To be provided by submittor.
2. Please note that as this is a Booster/Amplifier, power listed on the grant would be conducted power. The power listed on the 731 appears to be the ERP power using the 12dBi antenna. Please provide a 731 form using conducted power at the antenna terminal.
 - 2A. To be provided by submittor.
Report has been corrected to reference Rated Conducted Power.
3. Please note that as this is a Booster/amplifier, power measurements must include both the input and output levels. Please provide information (i.e. plots) of the input signals for the power measurements performed.
 - 3A. Actually, both input and output plots have been provided in the report. The input plots are provided in the occupied bandwidth section. The input levels were derived by using the maximum input available for each modulation type at the point where there was no more gain at the output. Therefore in accordance with FCC 2-11-04/EAB/RF the



maximum power rating has been supplied for each modulation type and it has been verified to “Meet power limits of 90.219 for Part 90 booster operations”. The information in this section is identical to the information as provided in previously approved reports (RV48068-004 FCC ID RFJTG-806).

4. Please note that the input to the amplifier during power tests must also show that the minimum input level specified by the manufacturer yields the stated output and that the maximum input specified by the manufacturer does not overdrive the amplifier. Please show these conditions.
 - 4A. Is this a new requirement? I can not find this requirement listed under Part 90.219 or in FCC 2-11-04/EAB/RF. Minimum input level to published gain data is a performance specification and not a regulatory specification that I can find in the FCC requirements.
5. Please note that ERP for part 90 devices is not a calculated value. ERP is required to be a measured value using the antenna substitution method. While the ERP for this device is not needed as mentioned in item 2 above, when reporting ERP you must use the accepted test procedures as specified in TIA603. Please correct the report to provide ERP as correctly measured using the antenna substitution method stated.
 - 5A. References to ERP power have been removed from the Output Power section of the report. Radiated spurious ERP measurements were made using the substitution method however the data does not show the calculations used. The column dBm READ was the corrected values already calculated. The report has been corrected and a better explanation of test procedure and calculations have been provided to avoid confusion.
6. Please note that the intermodulation test data shows three signals at or around 13-17dBm and corresponding intermod products just under the limit of -13dBm. The power out of the device is listed as 25dBm (page 13 of the report). However, the test signal used for the intermod test shows a power level that is a full 10 dB lower than that shown for the amplifier. As the intermod products are fairly close to the limit as shown in the test data, please explain and verify that this test was done with the amplifier output at its highest and with the amplifier ‘working’ hardest. Otherwise, please retest with the amplifier input and out put adjusted for a maximum power available from the device.
 - 6A. This device has a maximum power output which when multiple input signals are present reduces the available power per channel. The input levels used for the intermod test were three signals of the same input level for the power output tests. By using this power level the device reduces the gain on subsequent channels in the same band and produces intermod products. A brief description of the amplifier section has been attached as an additional document which clearly states the effect on the output stage of the amplifier and why during intermod tests the levels appear lower than other single channel tests.



7. Please note that while the explanation of ERP spurious emissions helps, the actual test data appears not to give sufficient data to determine how the procedure fits with the reported measured data. For example, the table only states “dBm read” (see pages 93-98 of the report). However, no information is given in the report to explain what this term means or how it was derived. Please provide an explanation of how this term is derived. Please provide a sample calculation to support proper antenna substitution methods (i.e. sig gen reading + ant – cable).
- 7A. Radiated spurious ERP measurements were made using the substitution method however the data does not show the calculations used. The column dBm READ was the corrected values already calculated. The report has been corrected and a better explanation of test procedure and calculations have been provided to avoid confusion.
8. Please note that the MPE report states that the manual has a minimum 4meter separation distance requirement. Please note that section 3 and 5 of the manual only states a minimum of 50cm. Please that while the device is safe at 30cm per the rf exposure exhibit, documentation needs to be consistent. Please correct either the manual or the report and MPE exhibit to show the same information.
- 8A. Customer has corrected the manual.

Sincerely,

A handwritten signature in blue ink, appearing to read 'C L Payne III'.

C L Payne III
Sr Engineering Manager
DNB Engineering Inc