



AmericanTCB
6731 Whittier Ave
McLean, VA 22101

RE: FCC ID: KE3-PROTX1PLUS_ATCB003011

Attention: Dennis Ward

I have a few comments on this Application. Please note that further comments may arise in response to answers provided to the questions below.

1. Please note that the report states that modifications have been done to the device during compliance testing. However, it is not clear if this was done prior to the transmitter testing and thus would be required for 15C certification, or if it only applies to FCC class B limits for unintentional radiators. Please explain and please provide a confirmation letter from the manufacturer stating that the associated modifications will be implemented in all subsequently manufactured devices.

The modifications made to the EUT were implemented to bring the product into compliance with FCC Part 15 Class B conducted emissions requirements.

Uploaded is a statement by the manufacturer confirming implementation of the changes into production.

2. Please note that the column heading (uV/m) on page 15 of the report is in error. Please note that it appears that the 20.1 uV/m was calculated using an incorrect factor. Please note that below 30MHz the roll off allowed is 40dB/decade (roughly $40\log(d/d)$). Thus the correction from 300m to 10 m should be $40*\log(300/10)$ or 59dB (see 15.31(f)(2)). It appears the you used $60\log(d/d)$ which is not allowed in the current rules. Please note that for

measurements below 30MHz 15.31 clearly states “when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade).” Please note that using the data in the table and the estimated 60dB correction factor for distance the device appears to fail. Consequently, you have two choices. You can take measurements at 2 or more distances and apply a best fit straight line approximation of the value at 300meters which would probably closer approximate the 60dB/decade, or you must measure the fundamental again using the correct 40dB/decade allowed.

In order to save time and additional cost of testing for our client, we are requesting that the 60 dB/decade conversion factor be implemented for the following reasons:

- A. The entire history of applications for this client has continually allowed a 60 dB/decade ($60 \log(300/10)$) conversion factor for frequencies below 30 MHz. This conversion was a result of conversations with Greg Czumak of the FCC as early as the early 90's. An interpretation was posted on the FCC review database, allowing for this conversion at 60 dB/decade.
- B. A copy of slides presented by the FCC to TCB reviewers is uploaded showing a copy of the Question and answer from the FCC database, allowing the 60 dB/decade conversion. This interpretation has since been lost on the old database.
- C. The reviewers at the FCC that have allowed this type of conversion (Greg Czumak) are no longer available to confirm the correction factor we seek to use.

D. Employing the Average FCC Limit of 225.4 uV/m at 300 m, and reverse calculating the factor necessary for a -65.22 dBm measured value at 10 m (not 3m, which will be corrected in Table 3. Actual testing was done at 10m, and the table has a typo) to be compliant, the actual conversion factor is -67.6 dB. This yields an $X(\log(300/10))$ where $X = 45.8$. This value is very close to the $40 \log(300/10)$ which you are requesting.

For these reasons, we are requesting that you allow the 60 dB/decade conversion for Fundamental, and harmonic spurious emissions, even though the harmonics do pass with the 40 dB/decade conversion.

3. Please note that for frequencies below 30MHz the allowed roll off is 40dB/decade. Please note that your radiated spurious emissions data table on page 17 of the report shows the use of 60dB/decade. Please note that this is not allowed in the current rules. Please see item 2 above for the rule part reference. Please correct your data to show use of either the correct 40dB/decade allowed or by showing the actual distance roll off by making at least two different distance measurements.

Please see item 2 response above.

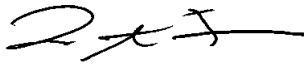
4. Please note that there is nothing in the report that states measurements below 30MHz were performed using the required magnetic loop antenna. Since the table of equipment listed on page 13 of the report (i.e. Table 2) has no such antenna listed, it is assumed that measurements were not performed using the required magnetic loop antenna. Please re-measure all frequencies below 30MHz using the required magnetic loop antenna and using the correct distance correction factor.

Actually, all testing below 30 mHz was conducted with a magnetic loop antenna. Please refer to the test photos for verification of correct antenna used.

5. Please provide a manual, which contains the required non-modification statement per 15.21.

This correction will be uploaded upon receipt from Radio Systems. Please address our response to items 1-4 above, as we gather this last item.

Please contact me with any further questions you may have.

A handwritten signature in black ink, appearing to read 'L. Feudi', with a stylized flourish at the end.

Louis A. Feudi
Operations Manager
US Technologies
(US Tech Authorized Agent for Axonn, LLC)

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