



NEBRASKA CENTER FOR EXCELLENCE IN ELECTRONICS

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Response to Comments 111505:

1) It appears after additional testing that one antenna will only be used in high power mode, but not LP mode. Please explain compliance to 15.15 regarding final installations and the use of one antenna for one mode only. The concern is regarding the user having the ability to switch between modes (automatically, manually, through software, etc. by the user). It is uncertain if this ability can also be automatically done by the device itself. Please provide further information as necessary to support how an end user would not be able to switch modes once installed.

The mode of operation (LP/DTS) is configurable from the host processor. It is up to the OEM which mode is selected. The FCC-DTS user's manual states that it is the OEM's responsibility to ensure that a compliant antenna is used with the module's mode. If the OEM is configuring the unit to switch between modes, then the antenna selection would be limited based on that fact.

2) Output power is listed for LP mode as 0 dBm (test report section 2.1 & 2.3 and various other notations throughout the report) with a possible +3 dBi antenna. The operational description mentions -3 dBm for power in LP mode, test report appears to show -2 dBm conducted. Please comment/clarify/correct these discrepancies as necessary.

The references to 0dBm refer to a configuration setting of the EUT as noted in Section 2.3 of the report. The correct value in Section 2.1 should be -2dBm, 0dBm is a misprint and is corrected in "R062205-05C.pdf".

3) Section 2.0 mentions 14 dBm, while section 2.3 mentions 15 dBm. Please clarify. Note that the theory of operation suggests a typical of 11 dBm and maximum 14 dBm. Please comment/clarify/correct these discrepancies as necessary.

The references to 15dBm refer to a configuration setting of the EUT as noted in Section 2.3 of the report.

4) A 6 dB correction factor was applied to both DTS and LP modes. However the operational description only supports this factor for the DTS mode. Please review/correct as necessary as this affects the LP data provided.

The measurement tables have been reviewed and additional data collected to support the compliance of the average values of the harmonics to 54dB μ V/m and the peak values to 74dB μ V/m. The modulation technique used in the DTS and LP modes is similar and would thus have the same duty cycles.

5) Regarding the data for the 6 dB correction factor, there are still concerns about the highest data rate and its actual factor being 6 dB. It appears that the O-scope plots provide are not supporting actual on/off time but instead are simply showing the actual data bits (FSK modulation occurring during the transmit on time) and therefore does not support an on/off 50% relationship of the fundamental. To determine actual on-off time, larger oscscope spans may be necessary.

Additional data has been added to Appendix G of "R062205-05C.pdf".

6) Bandedge for DTS (> 20 dB below fundamental) can be determined from plots 25 and 29. However, for LP mode it is still not clear if all emissions meet the 50 dB down or 15.209 limits (200 μ V/m / 46 dB μ V/m) limits. Reviewing bandwidth data does not contain enough information to support compliance. I have provided an interpretation as a separate document that is similar but with minor deviations from the delta method that can be applied to show compliance for the LP mode. Please review.

Additional data was added to the report to address this in Appendix F of "R062205-05C.pdf". Operation of the transmitter in LP-mode has been changed to 83 channels with the lowest frequency channel becoming channel 1.

If any further information is required please let me know,

A handwritten signature in black ink, appearing to read "Doug Kramer". The signature is fluid and cursive, with a large initial "D" and "K".

Doug Kramer
NCEE Labs