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Re: Co-located radios as submitted

An engineering evaluation of this system of co-located radios made the following observations:

1. These radios do not share a common antenna. As such a submittal of intermodulation test data is not required but an engineering evaluation is required per responsibilities of the host integrator.
2. The 1st radio is a cellular module using an external PCB antenna in a plane oriented 90 degrees from the main board.
3. The 2nd radio is a non-modular Bluetooth Low Energy (BTLE) design occupying a small area of the main circuit board with a printed circuit antenna of low gain (shortened inverted F) in the plane of the main circuit board.
4. The BTLE radio is located on the opposite side on the main board from the cellular modem module and its associated antenna.
5. The antennas of these radios are 5.6 cm apart
6. The antennas of these radios do not share a common geometric plane.
7. The cellular modem radio is rated at 250 mW power.
8. The BTLE radio power output measured at 0.05 mW.
9. The transmit power difference between these radios is 37 dB.
10. The antennas of these radios are mono-band each and are not designed to overlap in frequency.
11. The operating bands of these radios are not harmonically related.
12. Transmissions are short in nature (accounting/position data) and not intended to stream data for either radio.

Conclusions

The interaction between these radios are likely to be minimal and no worse than higher powered wireless devices that would randomly appear nearby (such as a cellular phones or similar). The design should be considered sufficient to prevent intermodulation artifacts during operation.

Signed:

Eric Lifsey

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