

Construction Permit Condition

WMNN-LD is filing this request for Program Test Authority for its construction permit, BPDTL-20130916AER. Because the WMNN-LD facility operates on Channel 14, Condition #2 of the construction permit requires WMNN-LD to adequately protect land mobile operators in the band just below Channel 14. It should be noted that the facility is already licensed to operate on Channel 14 and has been doing so without any known interference issues. The Construction Permit authorizes WMNN-LD to increase power from 0.425 kW to 1.97 kW at a nearby tower.

§73.687(e)(4)(ii) of the FCC rules requires Channel 14 stations to reduce emissions in the land mobile band to no greater than 17 dBu, measured over a 30 kHz bandwidth using vertical polarization. As demonstrated below, the filtering included in the WMNN-LD facility will afford this level of protection.

A signal strength of 17 dBu across a 50 ohm load is equivalent to -90 dBm. Therefore, filtering has been implemented to reduce the output level of WMNN-LD to at least this level in the lower adjacent spectrum.

The WMNN-LD construction permit authorizes a maximum effective radiated power of 1.97 kW. This power is equivalent to +62.9 dBm.

The as-built center of radiation is 118.9 meters above ground, which is the equivalent of 0.0739 mile. Thus, the minimum free space path loss at 470 MHz is 67.4 dB. As with other values employed in these calculations, this represents a “worst case” scenario because it does not take into account the vertical plane radiation pattern of the antenna and it assumes a location at the base of the WMNN-LD tower. All other locations will be further away and therefore, subject to increased values of free space path loss.

The signal transmitted by WMNN-LD will be horizontally polarized. However, the interference standard for the land mobile stations is based on vertical polarization. The generally agreed upon standard for cross-polarization losses is 20 dB.

The maximum effective radiated power value for WMNN-LD is based on average power over a 6 MHz channel. The land mobile protection is based on a 30 kHz channel. It is therefore necessary to employ a conversion factor to compensate for the differences in channel bandwidths. This results in an additional 23 db of attenuation.

Combining all these factors, results in the following:

| | |
|--------------------------------|-----------------|
| Transmitted Signal Level | +62.9 dBm |
| Minimum Free Space Path Loss | -67.4 dB |
| Cross-Polarization Loss | -20.0 dB |
| Bandwidth Conversion Factor | <u>-23.0 dB</u> |
| Land Mobile Interference Level | -47.5 dBm |

Therefore to achieve the required level of protection, -90 dBm, will require at least 42.5 dB of additional attenuation.

In addition to the above factors, the WMNN-LD transmitter will use a stringent mask filter. Section 74.794 requires this filter to provide 47 dB attenuation in the first 500 kHz from the edge of the channel, which in this case would be 470 MHz. This attenuation is based on a bandwidth of 500 kHz. Converting this to the 30 kHz land mobile channel provides an additional 12.2 dB of attenuation. This will provide a total of 59.2 dB of attenuation, which will further reduce the interference level to -106.7 dBm. This is the equivalent of 0.29 dBu making it 16.7 dB below the required land mobile protection level noted in §73.687(e)(4)(ii).

This exceeds the requirement to protect adjacent land mobile users without the need for any additional filtering. In the unlikely event, WMNN-LD receives any interference reports it will cooperate with other spectrum users to resolve the issue.

CERTIFICATION

I hereby certify, subject to penalties for perjury, that the contents of this Engineering Statement are true and accurate to the best of my knowledge and belief.

January 8, 2016

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