

From: Don Motter

To: Hung Le  
Date: March 26, 2020

Subject: Request for Info - File # 0244-EX-CN-2020

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Message:

Your latest response:

"EIRP of -140.44 dBm/24MHz is at a distance of 233 ft, not 100 ft. Please see Section 8.3.27 of the NTIA Manual."

From the provided diagram, 233 feet is to the nearest INSIDE wall from the transmitting antenna. From the provided link budget worksheet, signal at the nearest inside wall is -140.44. Going beyond that inside wall to the outside 100 feet, signal is at -143.5418174 dBm.

Free space loss at operating frequency the inside wall distance of 233 feet = -73.44 dB  
Calculated radiated power (Avg receive power L1 North America + Total Sys gain) = -67 dBm  
Repeated signal power at inside wall 233 feet away from TX antenna = -140.44 dBm

Going beyond the wall and out 100 feet:  
 $= -1 * (36.6 + (20 * \text{LOG}_{10}(((233 + 100) / 5280) * 1575))) + (-67) = -143.5418174 \text{ dBm}$

Per NTIA 8.3.28, 6. The maximum equivalent isotropically radiated power (EIRP) must be such that the calculated emissions are no greater than -140 dBm/24 MHz as received by an isotropic antenna at a distance of 100 feet (30 meters) from the building where the test is being conducted. The calculations showing compliance with this requirement must be provided with the application for frequency assignment and should be based on free space propagation with no allowance for additional attenuation (e.g., building attenuation.)

Use of this Experimental RNSS Test Equipment will be limited to the purpose of testing GPS receivers on aircraft that are undergoing repairs and recertification.