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Atmospheric Measurement Techniques Discussions

Interactive comment on "Potential radio frequency interference with the GPS L5 band for radio occultation measurements" *by* A. M. Wolff et al.

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Since transmitted EIRP should remains constant within a sphere (unless atmospheric attenuation), received power density at a certain distance d descreases with the area of the spherical surface at that distance. Therefore, it decreases with the square of d. This is the Friis equation. The term in your brackets (called space attenuation) should be powered by 2. Consequently, using your parameters, space attenuation can be evaluated around -115 dB, and received power around -75 dBW (instead of -107 dBW). In any case, the scenario you draw for a RO receiver seems correct. Applying the same theoretical Friis equation for a signal which propagates from Earth's surface to a RO receiver which is sounding the signal coming from the limb (d about 3000

km), a -124 dBW seems reasonable (considering a 1000 W transmitted peak power, a transmitting antenna max gain of 4 dB [not sure] and a receiving antenna max gain of 7 dB).

Interactive comment on Atmos. Meas. Tech. Discuss., 7, 4529, 2014.