

APPENDIX A: RF EXPOSURE COMPLIANCE

FCC Rule Part: 47 CFR §90; §2.1091; §1.1310

General Information:

- FCC ID: SNR-830-00000-00
- Environment: Occupational (controlled) exposure
- Device category: Mobile transceiver per Part 2.1093

Antenna Type(s)

Frequency Range (MHz)	Antenna	Antenna Gain (dBi)	Antenna Gain (Numeric)
2412-2462	½ wave dipole	4.0	2.51
5150-5825	½ wave dipole	5.0	3.16

Operating Conditions:

The ADI Engineering Model Pronghorn 802.11 Application Platform is designed for wireless networks operating in the 2412-2462 MHz and 5150-5825 MHz bands.

Test Signal, Maximum Output Power for 100% Duty Cycle:

Frequency Range (MHz)	Modulation	Maximum Output Power (dBm)	Maximum Output Power (W)
2412-2462	DSSS/CCK	17.3	0.054
5150-5825	DSSS/CCK	13.9	0.025

From FCC 1.1310 table 1A, the maximum permissible RF exposure for an uncontrolled environment is 1 mW/cm².

The Electric field generated for a 1mW/cm² exposure (S) is calculated as follows:

$$S = \frac{E^2}{Z}$$

where:

S = Power density

E = Electric field

Z = Impedance

Therefore,

$$E(V/m) = \sqrt{S \times Z}$$

$$1 \text{ mW/cm}^2 = 10 \text{ W/m}^2$$

The impedance of free space is 337 ohms, where E and H fields are perpendicular.

Thus:

$$E(V/m) = \sqrt{10 \times 377} = 61.4 \text{ V/m}$$

Using the relationship between Electric Field E, Power in watts P, and the distance in meters d, the corresponding Antenna numeric gain G and the transmitter output power.

$$E = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power density: } P_d (\text{mW/cm}^2) = \frac{E^2}{3700}$$

MPE Calculation:

The maximum distance from the antenna at which MPE is met or exceeded is calculated from the equation relating field strength E in V/m, transmit power P in Watts, transmit antenna numeric gain G, and separation distance in meters above and solving for d below:

$$d = \frac{\sqrt{30 \times P \times G}}{E} \quad 0.033 \text{ m} = \frac{\sqrt{30 \times 0.054 \times 2.51}}{61.4}$$

The limit for general population/uncontrolled exposure environment is 1 mW/cm^2

Frequency Range (MHz)	Separation distance (cm)	Separation distance (in)
2412-2462	3.3	1.3
5150-5825	2.5	0.98