


4. Provide direct grounding from the unit, the mounting bracket, the antenna, and the Ethernet cable surge protection to the same ground bus on the building. Use the grounding screws provided for terminating the ground wires.

1.5 FCC and IC Notices (USA & Canada)

1. The Model RDL-2000 and its antenna must be professionally installed.
2. FCC regulations governing deployment of 5.8 GHz band PTP systems in the USA require that device transmit power is a maximum peak conducted power of +30 dBm.
3.  WARNING -- FCC & IC RF Exposure Warnings

To satisfy FCC and IC RF exposure requirements for RF transmitting devices, the following distances should be maintained between the antenna of this device and persons during device operation:

Table 1: Notices: FCC & IC RF Recommended Safe Separation Distances		
Frequency (GHz)	Mode	Separation Distance
5.8 Band	PTP	354 cm (140 in) or more

To ensure compliance, operation at closer than these distances is not recommended. The antenna used for this transmitter must not be collocated in conjunction with any other antenna or transmitter.

4. High power radars are allocated as primary users (meaning they have priority) of 5.650 - 5.850 GHz and these radars could cause interference and/or damage to LE-LAN devices.
5. FCC Information to Users @ FCC 15.105:

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Where DFS is required by regional regulations, this function is permanently enabled at the factory and can not be disabled by the installer or end-user.

6. FCC Information to Users @ FCC 15.21:
Warning: Changes or modifications not expressly approved by Redline Communications could void the user's authority to operate the equipment.

4.8. RF EXPOSURE REQUIRMENTS @ FCC 15.247(I), 1.1307(B)(1)

4.8.1. Limits

- **FCC 15.247(i):** Systems operating under provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission’s guidelines. See @ 1.1307(b)(1).
- **FCC 1.1310:-** The criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in 1.1307(b).

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (minutes)
(A) Limits for Occupational/Control Exposures				
1500-100,000	5	6
(B) Limits for General Population/Uncontrolled Exposure				
1500-100,000	1.0	30

F = Frequency in MHz

4.8.2. Method of Measurements

Refer to FCC @ 1.1310, 2.1091

- Spread spectrum transmitters operating under section 15.247 are categorically from routine environmental evaluation to demonstrating RF exposure compliance with respect to MPE and/or SAR limits. These devices are not exempted from compliance (As indicated in Section 15.247(b)(5), these transmitters are required to operate in a manner that ensures that exposure to public users and nearby persons) does not exceed the Commission’s RF exposure guidelines (see Section 1.1307 and 2.1093). Unless a device operates at substantially low power levels, with a low gain antenna(s), supporting information is generally needed to establish the various potential operating configurations and exposure conditions of a transmitter and its antenna(s) in order to determine compliance with the RF exposure guidelines.
- In order to demonstrate compliance with MPE requirements (see Section 2.1091), the following information is typically needed:
 - (1) Calculation that estimates the minimum separation distance (20 cm or more) between an antenna and persons required to satisfy power density limits defined for free space.
 - (2) Antenna installation and device operating instructions for installers (professional/unskilled users), and the parties responsible for ensuring compliance with the RF exposure requirement
 - (3) Any caution statements and/or warning labels that are necessary in order to comply with the exposure limits
 - (4) Any other RF exposure related issues that may affect MPE compliance

Calculation Method of RF Safety Distance:

$$S = PG/4\pi r^2 = EIRP/4\pi r^2$$

Where: P: power input to the antenna in mW
EIRP: Equivalent (effective) isotropic radiated power.
S: power density mW/cm²
G: numeric gain of antenna relative to isotropic radiator
r: distance to centre of radiation in cm

FCC radio frequency exposure limits may be exceeded at distances closer than r cm from the antenna of this device

$$r = \sqrt{PG/4\pi S}$$

FCC radio frequency exposure limits may not be exceeded at distances closer than r cm from the antenna of this device

- For portable transmitters (see Section 2.1093), or devices designed to operate next to a person's body, compliance is determined with respect to the SAR limit (define in the body tissues) for near-field exposure conditions. If the maximum average output power, operating condition configurations and exposure conditions are comparable to those of existing cellular and PCS phones, an SAR evaluation may be required in order to determine if such a device complies with SAR limit. When SAR evaluation data is not available, and the additional supporting information cannot assure compliance, the Commission may request that a SAR evaluation be performed, as provided for in Section 1.1307(d)

4.8.3. Test Data

Frequency (MHz)	Maximum Conducted Peak Power at the Antenna Terminal (dBm)	Maximum Antenna Gain (dBi)	Maximum Measured Total EIRP (dBm)	Laboratory's Recommended Minimum RF Safety Distance r (cm)
5845	29.96	32.0	61.96	354

Note 1: RF EXPOSURE DISTANCE LIMITS: $r = (PG/4\Pi S)^{1/2} = (EIRP/4\Pi S)^{1/2}$
 Limits for General Population/Uncontrolled Exposure: $S = 1.0 \text{ mW/cm}^2$

Evaluation of RF Exposure Compliance Requirements	
RF Exposure Requirements	Compliance with FCC Rules
Minimum calculated separation distance between antenna and persons required: 3.54 meters	Manufacturer' instruction for separation distance between antenna and persons required: 3.54 meters
Antenna installation and device operating instructions for installers (professional/unskilled users), and the parties responsible for ensuring compliance with the RF exposure requirement	Antenna is required to be professionally installed