

## Integrator Design Elements: Antennas

### Antenna

---

#### Host Antenna Requirements

When designing the antenna system for the EM120 the gain of the host antenna must not exceed the following:

PCS Band: 8.44 dBi

Cell Band: 9.99 dBi

## EM120 Regulatory Notice

### Safety Warning

---

The EM120 may not be used in an environment where radio frequency equipment is prohibited or restricted in its use. This includes aircraft/airports, hospitals, and other sensitive electronic areas.

**Do not operate RF devices in an environment that may be susceptible to radio interference resulting in danger, specifically:**

- **Areas where prohibited by the law**  
Follow any special rules and regulations and obey all signs and notices. Always turn off the host device when instructed to do so, or when you suspect that it may cause interference or danger.
- **Where explosive atmospheres may be present**  
Do not operate your modem in any area where a potentially explosive atmosphere may exist. Sparks in such areas could cause an explosion or fire resulting in bodily injury or even death. Be aware and comply with all signs and instructions.
- **Users are advised not to operate the modem while at a refueling point or service station.**  
Users are reminded to observe restrictions on the use of radio equipment in fuel depots (fuel storage and distribution areas), chemical plants or where blasting operations are in progress.
- **Areas with a potentially explosive atmosphere are often but not always clearly marked.**  
Potential locations can include gas stations, below deck on boats, chemical transfer or storage facilities, vehicles using liquefied petroleum gas (such as propane or butane), areas where the air contains chemicals or particles, such as grain, dust or metal powders, and any other area where you would normally be advised to turn off your vehicle engine.
- **Near Medical and life support equipment**  
Do not operate your modem in any area where medical equipment, or life support equipment may be located, or near any equipment that may be susceptible to any form of radio interference. In such areas, the host communications device must be turned off. The modem may transmit signals that could interfere with this equipment.
- **On an aircraft, either on the ground or airborne**  
In addition to FAA requirements, many airline regulations state that you must suspend wireless operations before boarding an airplane. Please ensure that the host device is turned off and your modem is removed from the card slot prior to boarding aircraft in order to comply with these regulations. The modem can transmit signals that could interfere with various onboard systems and controls.
- **While operating a vehicle**  
The driver or operator of any vehicle should not operate a wireless data device. Doing so will detract from the driver or operator's control and operation of that vehicle. In some countries, operating such communication devices while in control of a vehicle is an offence.

Under extended operation the EM120 modem will generate a noticeable amount of heat. Like all PC Cards, the modem generates heat during normal operation and will be heated by the host computer. For this reason it is recommended that after extended periods of operation, prior to removal and handling, you allow the modem to cool down.

## **FCC (Federal Communication Commission)**

---

The EM120 is compliant to the relevant sections of the FCC rules:

- FCC CFR47 Part 2 (General Rules and Regulations, RF Exposure Evaluation)
- FCC CFR47 Part 15 (All Radio Frequency Devices)
- FCC CFR47 Part 24 (Narrow and wideband PCS modules)
- FCC CFR47 Part 22 (Cellular Service)

## **Labeling Notice for End Use Products**

---

For any end use product that the Novatel EM120 modem is used in, a label containing the following information must be placed visibly on the outside of the product.

**This device contains FCC ID: PKRNVWE120 and IC: 3229B-E120**

All instructions relating to the integration of the module described on the FCC Grant notes must be followed.

## **Radio Frequency Exposure Requirements**

---

Per §2.1091 of the FCC rules, embedded modules are defined as “mobile devices”

At least 20cm (8 inches) of separation between the antenna and the users body must be maintained at all times. If this device is intended for use in a portable device, you (the user) are responsible for separate approval to satisfy the SAR (RF Exposure) requirements of FCC Part 2.1093 and Industry Canada RSS-102/Safety Code 6.

## **Federal Communications Commission Notice (FCC—United States)**

---

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.
- Contact your service provider for help.

Notice to Consumers: Changes or modifications made to this equipment not expressly approved by Novatel Wireless may void the FCC authorization to operate this equipment.

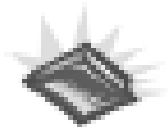
This device complies with Part 15 of the FCC Rules and with Industry Canada ICES-003.

Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

## **Technical Support Contacts**

---



**WWW:** <http://www.nvtl.com/support/index.html>

Email: [support@novatelwireless.com](mailto:support@novatelwireless.com)