RF Energy Exposure Guide for Meteorcomm ITCnet 220 MHz Radios Installed in Vehicles or at Fixed Sites

IMPORTANT

Read this guide before installing, maintaining, or using your radio.

This guide contains important RF energy awareness and control information and operational instructions to ensure compliance with FCC or Industry Canada RF exposure guidelines.

Keep this guide with the radio after installation.

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Revision History

Revision	Date	Description
1.0	5/9/2011	First draft.
2.0	10/21/2011	Pre-release for ITCR 1.0. Content approved by FCC/IC.
3.0	11/30/2011	Released for ITCR 1.0.4.0.
4.0	1/18/2012	Released for ITCR 1.0.5.0. No content changes.
5.0	3/2/2012	Released to manufacturers. No content changes.
6.0	2/3/2017	Released to manufacturers. Updated formatting and legal disclaimers. No content changes.
7.0	12/13/2023	Released to manufacturers. Updated logo, formatting and legal disclaimers. Blank page notice added. No content changes except typo fixed on page 4.
H	12/2/2024	Updated document to add applicability to AR220DB
I	12/19/2024	Updates to Table 2

RF Exposure Awareness and Control Information and Operational Instructions for FCC/IC Occupational Use Requirements

Note: This radio is intended for use in occupational/controlled conditions, where users have full knowledge of their exposure and can exercise control over their exposure to meet FCC/IC limits. This radio device is NOT authorized for general population, consumer, or any other use.

This two-way radio uses electromagnetic energy in the radio frequency (RF) spectrum to provide communications between two or more users over a distance. It uses RF energy or radio waves to send and receive messages. RF energy is one form of electromagnetic energy. Other forms include, but are not limited to, sunlight and x-rays. RF energy, however, should not be confused with these other forms of electromagnetic energy, which when used improperly, can cause biological damage. Very high levels of x-rays, for example, can damage tissues and genetic material.

Experts in science, engineering, medicine, health, and industry work with organizations to develop standards for safe exposure to RF energy. These standards provide recommended levels of RF exposure for both workers and the general public. These recommended RF exposure levels include substantial margins of protection.

All two-way radios marketed in North America are designed, manufactured, and tested to ensure they meet government-established RF exposure levels. In addition, manufacturers also recommend specific operating instructions to users of two-way radios. These instructions are important because they inform users about RF energy exposure and provide simple procedures on how to control it. See the following web sites for more information on what RF energy exposure is and how to control your exposure to assure compliance with established RF exposure limits.

http://www.fcc.gov/general/fcc-policy-human-exposure

http://www.osha.gov/SLTC/radiofrequencyradiation/index.html

FCC/ Industry Canada Regulations

The FCC/IC rules require manufacturers to comply with the FCC/IC RF energy exposure limits for mobile two-way radios before they can be marketed in the U.S. or Canada as applicable. When two-way radios are used as a consequence of employment, the FCC/IC requires users to be fully aware of and able to control their exposure to meet occupational requirements. Your Meteorcomm user manuals and this RF Energy Exposure Guide include information and operating instructions required to control your RF exposure and to satisfy compliance requirements.

Compliance with RF Exposure Standard

Your Meteorcomm two-way radio is designed and tested to comply with a number of national and international standards and guidelines (following) regarding human exposure to radio frequency electromagnetic energy. This radio complies with the IEEE and ICNIRP exposure limits for occupational/controlled RF exposure environment at duty factors as shown in Tables 1 and 2 and is authorized by the FCC/IC for occupational use. In terms of measuring RF energy for compliance with the FCC/IC exposure guidelines, your radio antenna radiates measurable RF energy only while it is transmitting, not when it is receiving or in standby mode.

Your Meteorcomm two-way radio complies with the following RF energy exposure standards and guidelines as of the date of manufacture:

- U. S. Federal Communications Commission, Code of Federal Regulations; 47CFR Part 2 Subpart J
- Evaluating Compliance With FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields, OET Bulletin No. 65 (August 1997) and OET Bulletin No. 65 Supplement C (June 2001)
- Industry Canada RSS-102 Issue 4
- American National Standards Institute (ANSI) / Institute of Electrical and Electronic Engineers (IEEE) C95. 1-1992
- Institute of Electrical and Electronic Engineers (IEEE) C95.1-1999 Edition

Mobile Installations: RF Exposure Compliance, Control Guidelines, and Operating Instructions

To control exposure and to ensure compliance with occupational/controlled environment exposure limits, always adhere to the following procedures.

Guidelines

- These user awareness instructions should accompany the device or vehicle that it is installed in when transferred to other users.
- Do not use this device if the operational requirements described herein are not met.

Operator Instructions

- **Be aware that a transmitter may operate automatically at any time when functioning as a data radio.** People outside of the vehicle must maintain the recommended minimum lateral distance from the antennas at all times. It is the responsibility of the vehicle's operator to keep bystanders beyond the minimum lateral distance from the antennas in order to comply with the FCC RF exposure limits for an uncontrolled/general population environment.
- **Verify that people outside the vehicle are at least the recommended minimum lateral distance away, as shown in Table 1, from a properly installed externally-mounted antenna.**
- The transmitter power is adjustable to accommodate the various installations of this product. After the authorized ERP, antenna gain and the losses from feed line, connectors and any inline RF filters are known, the transmitter power must be evaluated and if necessary, set to a value that will ensure that the authorized ERP and RF exposure requirements are met. See the user manual for the particular radio model for additional information regarding power adjustment.

Table 1 lists the recommended lateral distances to be maintained between bystanders and approved, properly installed mobile transmitting antennas in an uncontrolled environment.

Table 1: Rated power and recommended lateral distance from transmitting antennas in mobile applications

Radio type	Antenna type	Antenna gain (dBi)	Nominal PEP (watts)	Maximum duty cycle	Recommended minimum lateral distance from transmitting antenna	
					cm	in
Wayside, AR220^{DB}	¼-wave dipole mounted to automobile roof or trunk	2.15	30	10%	31.6	12.4
Wayside, AR220^{DB}	½-wave dipole mounted to automobile roof or trunk	4.55	28.77	10%	40.4	15.9
Locomotive	Locomotive antenna 0 dBd mounted to locomotive roof	2.15	50	30%	70	27.6

IMPORTANT

The licensee is required to comply with limits on frequency use, antenna location, power and effective antenna height per 47CFR Subpart T §90.701 et. seq., or Industry Canada SRSP-512 §6.3 as applicable.

Note: As the vehicle operator, **you should know the location of each antenna on the vehicle** and know the minimum lateral distances applicable to each. If this information is not available, contact your installer to obtain it. Until this information is available, *keep bystanders at a distance beyond the largest lateral distance specified in Table 1 from every two-way radio antenna on the vehicle.*

Mobile Antenna Installation Guidelines

The following instructions apply only to vehicles with metal bodies or suitable ground plane:

- Mount each antenna connected to a transmitter in the center of the roof or trunk lid of the vehicle. When mounting an antenna to a trunk lid, be sure the minimum lateral separation distances (Table 1) are maintained with respect to back-seat passengers and people who might be standing next to a stationary vehicle.
- Install all antennas in accordance with the manufacturer's instructions.
- Always disable the transmitter when installing or servicing an antenna or transmission line or when working near an installed antenna.
- Use only Meteorcomm-approved or Meteorcomm-supplied antennas. Unauthorized antennas, modifications or attachments could damage the radio and their use may violate FCC or IC regulations.

Fixed Installations: RF Exposure Compliance, Control Guidelines, and Operating Instructions

To control RF exposure to yourself and others and to ensure compliance with RF exposure limits, always adhere to the following procedures:

- Base station or fixed antennas should be installed on permanent outdoor structures such as the roof of a building or an antenna tower.
- Install all antennas in accordance with the manufacturer's instructions.
- Always disable the transmitter when installing or servicing an antenna or transmission line or when working near an installed antenna.
- Use only Meteorcomm-approved or Meteorcomm-supplied antennas. Unauthorized antennas, modifications or attachments could damage the radio and their use may violate FCC regulations.
- RF exposure compliance at such sites must be addressed on a site-by-site basis. It is the responsibility of the licensee to ensure compliance is met.
- The transmitter power is adjustable to accommodate the various installations of this product. After the authorized ERP, antenna gain and the losses from feed line, connectors and any inline RF filters are known, the transmitter power must be evaluated and if necessary, set to a value that will ensure that the authorized ERP and RF exposure requirements are met. See the user manual for the particular radio model for additional information regarding power adjustment.

Table 2 lists the recommended lateral distances to be maintained between bystanders and approved, properly installed fixed transmitting antennas in an uncontrolled environment.

Table 2: Rated power and recommended lateral distance from transmitting antennas in fixed applications

Radio type	Antenna type	Antenna gain (dBi)	Nominal PEP (watts)	Maximum duty cycle	Recommended minimum lateral distance from transmitting antenna	
					cm	in
Wayside, AR220DB	2.0dBd exposed dipole tower leg-mounted fixed antenna	4.1	30	10%	39.6	15.6
Wayside, AR220DB	5.5dBd exposed dipole tower leg-mounted fixed antenna	7.6	14.26	10%	40.4	15.9
Base	4.5dBi exposed dipole tower leg-mounted fixed antenna	7.6	75	50%	275	108.3

IMPORTANT

The licensee is required to comply with limits on frequency use, antenna location, power and effective antenna height per 47CFR Subpart T §90.701 et. seq., or Industry Canada SRSP-512 §6.3 as applicable.

Approved Accessories

For a list of Meteorcomm-approved accessories, see the user manual or contact Meteorcomm.

Meteorcomm Contact Information

For additional information on exposure requirements or for other information, contact the Meteorcomm at (253) 872-2521 or visit the web site at http://www.meteorcomm.com.

You can also contact the Meteorcomm Service Desk:

- Log directly into the Service Desk at https://support.meteorcomm.com
  - After you have registered, you can see all tickets that have been opened by your company. Use an email address with your company as the domain; using personal email accounts (for example, Gmail or Yahoo) does not allow Meteorcomm to link you to your company's tickets in the Service Desk.
  - After you have registered, you can file support requests by accessing the Service Desk link. Support ticket activity is sent to your email account so that you can be notified as the ticket status is updated.
- Send email to support@meteorcomm.com
  - Your email automatically generates a ticket in the Service Desk system.
  - You can then interact with Meteorcomm Service Desk engineers through email or by logging into the system (using the Service Desk link) to continue working on the issue.