METEORCOMM LLC

RF Energy Exposure Guide for Meteorcomm MCC-545C Radios Installed in Vehicles or at Fixed Sites

IMPORTANT

BEFORE INSTALLING, MAINTAINING OR USING YOUR RADIO, READ THIS GUIDE WHICH CONTAINS IMPORTANT RF ENERGY AWARENESS AND CONTROL INFORMATION AND OPERATIONAL INSTRUCTIONS TO ENSURE COMPLIANCE WITH FCC OR INDUSTRY CANADA RF EXPOSURE GUIDELINES.

IMPORTANT

RETAIN THIS GUIDE AT THE LOCATION OF THE RADIO INSTALLATION.

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Revision History

Revision	Date	Description
0.1	2/15/2012	Creation.

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

NOTICE: 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. Please refer to 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/oet/rfsafety/rf-faqs.html

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 MCC 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 standards

Your MCC two-way radio is designed and tested to comply with a number of national and international standards and guidelines (listed below) regarding human exposure to radio frequency electromagnetic energy. This radio complies with the IEEE and ICNIRP exposure limits for uncontrolled vechicular environments as shown in Table 1 and occupational/controlled fixed site environments as shown in Table 2. 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 MCC 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
- 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

General 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.
- The rated output power of the MCC-545C is 100 W. Maximum measured output power may range as high as the values listed in the tables below.

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

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

- **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.**
- Once 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, attenuated to a value that will ensure that the authorized ERP and RF exposure requirements are met.

Table 1 below 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 – uncontrolled environment.

Radio Type	Antenna Type	Antenna gain (dBi)	Maximum Power (watts)	Maximum Duty Cycle	Recommended minimum lateral distance from transmitting antenna	
					cm	in.
MCC-545C	¼-wave vertical whip antenna roof-mounted on car or truck	2.15	123	10%	89.6	35.3
MCC-545C	0 dBd gain antenna roof-mounted on locomotive cab	2.15	123	10%	89.6	35.3

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Note: You, as the vehicle operator, **should be knowledgeable of the location of each of the antennas on the vehicle** and of the minimum lateral distances applicable to each. If this information is not available to you, contact your installer to obtain this information. Until this information is available to you, *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 to vehicles with metal bodies or suitable ground plane:

- Mount each antenna connected to a transmitter in the center of the metal roof of the 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 MCC-approved or MCC-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 exposure to yourself and others and to ensure compliance with RF exposure limits, always adhere to the following procedures:

- **Be aware that a transmitter may operate automatically at any time when functioning as a data radio.** Always disable the transmitter when installing or servicing an antenna or transmission line or when working near an installed antenna.
- Base station or fixed antennas should be installed on permanent outdoor structures, such as the roof of a normally-unoccupied building or an antenna tower.
- Install all antennas in accordance with the manufacturer's instructions.
- Use only MCC-approved or MCC-supplied antennas. Unauthorized antennas, modifications or attachments could damage the radio and their use may violate FCC regulations.
- Once 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, attenuated to a value that will ensure that the authorized ERP and RF exposure requirements are met.
- RF Exposure compliance at multiple-transmitter sites must be addressed on a site-by-site basis. It is the responsibility of the licensee to ensure compliance is met.

Table 2 below lists the recommended lateral distances to be maintained between employees and approved, properly installed fixed transmitting antennas in a controlled/occupational exposure environment.

Table 2: Rated Power and Recommended Lateral Distance from Transmitting Antennas in Fixed Applications – controlled/occupational exposure environment.

Radio Type	Antenna Type	Antenna gain (dBi)	Maximum Power (watts)	Maximum Duty Cycle	Recommended minimum lateral distance from transmitting antenna	
					cm	in.
MCC-545C	2.0dBd exposed dipole fixed to tower leg	4.1	123	10%	50.2	19.7
MCC-545C	5.5dBd exposed dipole fixed to tower leg	7.6	123	10%	75.0	29.5
MCC-545C	7.8 dBd Yagi fixed to tower top	9.95	123	10%	98.4	38.7

Approved accessories

For a list of MCC-approved accessories, refer to the user manual, or contact MCC.

Meteorcomm LLC contact information

For additional information on exposure requirements or other information, contact the MCC factory at (253) 872-2521. You may also visit the MCC web site at www.meteorcomm.com.