# Overview

The EOTSS Interoperable Communications Bureau (ICB) is responsible for the modernization of the Commonwealth of Massachusetts Interoperable Radio System (CoMIRS). CoMIRS is the interoperable backbone for public safety radio communications in the Commonwealth. The Commonwealth of Massachusetts is the Federal Communications Commission (F.C.C). licensee for CoMIRS systems.

The Agency Having Jurisdiction (AHJ) is a CoMIRS user requiring the installation of a signal booster system to improve CoMIRS radio coverage benefiting the AHJ.

# Signal Boosters

Part 90 Signal Boosters are a type of Industrial Signal Booster defined by the Federal Communications Commission (FCC) as a system that automatically receives, amplifies, and retransmits signals from wireless stations into and out of building interiors, tunnels, shielded outdoor areas and other locations where these signals would otherwise be too weak for reliable communications. **Signal Boosters are commonly referred to as Bi-Directional Amplifiers (BDA) and Distributed Antenna Systems (DAS).**

Signal booster systems may contain both Class A and Class B signal boosters as components.

* Class A signal booster. A signal booster designed to retransmit signals on one or more specific channels. A signal booster is deemed to be a Class A signal booster if none of its passbands exceed 75 kHz. (Sometimes referred to as channelized)
* Class B signal booster. A signal booster designed to retransmit any signals within a wide frequency band. A signal booster is deemed to be a Class B signal booster if it has a passband that exceeds 75 kHz. (Sometimes referred to as broadband)

All Part 90 Signal Boosters sold and marketed starting on March 1, 2014 must meet FCC Part 90.219 requirements. These requirements include:

* A non-licensee operator of Class A or Class B signal boosters (applicant) must obtain the express consent of the F.C.C. licensee (Commonwealth) of the frequencies for which the device or system is intended to amplify.
* In addition to the requirement for express consent from the F.C.C. licensee, Class B Signal Boosters must be registered directly with the FCC before being used. Registration is a joint responsibility of the Owner/Operator and the Commonwealth.

# Obtaining express consent to operate signal booster on CoMIRS

Clarification of FCC rules to make it clear that non-licensees who seek to operate signal boosters must obtain the consent of the FCC licensee whose signals they intend to amplify. (See 90.219(b)(1)(i) of the FCC rules)

The application must include AHJ, administrative and technical contacts for the proposed signal booster system, and list the intended primary CoMIRS users (i.e. Anytown Fire Department).

The ICB will provide the applicant with recommended donor site information, based on CoMIRS site configuration.

The integrator/technical contact must provide the ICB a copy of the design and engineering documents, including the manufacturer of the amplifier, overall gain, raw UL transmit power level and whether it is channelized (Class A) broadband (Class B).

After installation and before unattended operation, the integrator/installer must perform an isolation test by generating a signal into the donor antenna at a preset level (i.e. 0 dBm) and measure the signal received by the indoor antenna system (i.e. -95 dBm). There must be isolation between the two antenna systems of at least the gain of the amplifier (i.e. 80 dB) + a 15 dB protection window. In this example, you pass the test with 0 dBm in, 80 dB gain, 15 dB protection, received strength by the inside antennas should be -95 dBm or less. Test results should be sent electronically to [CoMIRS@mass.gov](mailto:CoMIRS@mass.gov)

Upon receipt of the test result information, the (ICB) will generate a letter acknowledging the installation of the signal booster and granting consent to use the signal booster to repeat frequencies licensed to the Commonwealth under FCC Part 90 rules.

# Maintenance and support

Signal boosters are active electronic devices that require periodic maintenance and support to ensure proper operation, compliance with FCC rules and prevention of harmful interference with other systems. Maintenance and support of an installed signal booster system is the responsibility of the owner/operator. As the licensee, the Commonwealth of Massachusetts may require documentation of maintenance and support activities.

# FCC Registration of signal booster system

All Part 90 licensees and signal booster operators must register existing Part 90 Class B signal boosters with the Commission by November 1, 2014. In addition, any new Class B signal booster installed after November 1, 2014, must be registered prior to operation. (See 90.219(d)(5)1 of the FCC's rules).

Signal booster registration is the joint responsibility of the licensee and the AHJ. The Commonwealth of Massachusetts (licensee) will register any Class B signal booster system with the FCC. The technical contact must provide the relevant information required for registration in the space provided below.

## Agency Having Jurisdiction (AHJ)

|  |  |
| --- | --- |
| Agency |  |
| Point of Contact Name |  |
| Address |  |
| City, State, Zip |  |
| Telephone |  |
| Email |  |
| FAX: |  |

**Administrative Contact (Owner/Operator)-Applicant**

|  |  |
| --- | --- |
| Company or Agency |  |
| Point of Contact Name |  |
| Address |  |
| City, State, Zip |  |
| Telephone |  |
| Email |  |
| FAX: |  |

## Technical Contact (Integrator/Installer)

|  |  |
| --- | --- |
| Company |  |
| Point of Contact Name |  |
| Address |  |
| City, State, Zip |  |
| Telephone |  |
| Email |  |
| FAX: |  |

## Intended User Departments:

|  |  |
| --- | --- |
| Commonwealth of Massachusetts Interoperable Radio System (CoMIRS) users |  |
|  |  |
|  |  |
|  |  |

## Signal booster information

|  |  |
| --- | --- |
| Class A or Class B |  |
| Manufacturer |  |
| Model Number |  |
| Signal booster location address |  |
| Latitude (decimal degrees) |  |
| Longitude (decimal degrees) |  |
| Call Sign 1 (ICB provided) |  |
| Call Sign 2 (ICB provided) |  |
| Call Sign 3 (ICB Provided) |  |
| Frequencies repeated (ICB provided) | See Page 5 |
| Donor site 1 name (ICB provided) |  |
| Donor site Latitude (ICB provided) |  |
| Donor site Longitude (ICB provided) |  |
| Donor antenna azimuth (ICB provided) |  |
| Predicted Signal level at BDA location (ICB provided) |  |

## Location description

*i.e. Anytown Library utility closet first floor. Receptionist has access key*

**Frequencies:**