

BOSTON FIRE DEPARTMENT IN-BUILDING RADIO SPECIFICATION

A. GENERAL

The Superintendent of Fire Alarm or Boston Fire Department (BFD) Fire Marshall under BOSTON FIRE DEPARTMENT, FIRE ALARM ORDER 93-1, has the authority to waive the "Fire Department communication system" and substitute a radio communications system to achieve effective Fire Department radio communications throughout the protected premise. Voluntary adoption of this alternative is subject to the specifications contained within this document.

B. RADIO COVERAGE

For purposes of this section, adequate radio coverage shall include all of the following:

1. A minimum signal strength of -95 dBm available in 95% of the area of each floor when transmitted from the Boston Fire Department.
2. A minimum signal strength of -95 dBm received at the FIRE DEPARTMENT SYSTEM from 95% of the area of each floor of the building.

C. AMPLIFICATION SYSTEM ALLOWED

Buildings and structures shall be equipped with any of the following, in order to achieve the required radio coverage: a radiating cable system or an internal multiple antenna system with FCC Type Accepted Bi-Directional UHF Amplifiers as needed to encompass BFD UHF frequencies 483/486 (Channels 1 through 4). The system shall be capable of operating on an independent battery and/or generator system for a period of at least twelve (12) hours without external power input. The battery system shall automatically charge in the presence of external power input. There shall be no connectivity between the amplification system and fire alarm system.

D. ACCEPTANCE TEST PROCEDURES

Acceptance testing for an in-building radio amplification system is required, upon completion of installation. It is the building owner's responsibility to have the radio system tested to ensure that two-way coverage on each floor of the building is a minimum of 95%. Each floor of the building shall be divided into a grid of approximately forty (40) equal areas.

A maximum of two (2) nonadjacent areas will be allowed to fail the test. In the event that three (3) of the areas fail the test, in order to be more statistically accurate the floor may be divided into eighty (80) equal areas. In such event, a maximum of four (4) nonadjacent areas will be allowed to fail the test. After the eighty (80) area tests, if the system continues to fail, the building owner shall have the system altered to meet the 95% coverage requirement. Talk back testing from site to the Fire Alarm Office shall use a two (2) watt portable transceiver with speaker/microphone and flexible antenna. A spot located approximately in the center of a grid area will be selected for the test, then the radio will be keyed to verify two-way communication to and from the outside of

the building through the Fire Alarm Office. Once the spot has been selected, prospecting for a better spot within the grid area will not be permitted. Field strength testing instruments are to be recently calibrated (1 year) and of the frequency selective type incorporating a flexible antenna similar to the ones used on the hand held transceivers. The gain values of all amplifiers shall be measured and the results kept on file with the building owner so that the measurements can be verified each year during the annual tests. In the event that the measurement results become lost, the building owner will be required to rerun the acceptance test to reestablish the gain values. A representative of the Boston Fire Department Radio Shop will oversee the acceptance test. A Certificate of Occupancy will not be issued to any structure if the building fails to comply with this section.

E. ANNUAL TESTS

When an in-building radio system is installed, the building owner shall test all active components of the system including but not limited to amplifier, power supplies, and back-up batteries, a minimum of once every twelve (12) months. Amplifiers shall be tested to ensure that the gain is the same as it was upon initial installation and acceptance. Back-up batteries and power supplies shall be tested under load for a period of one (1) hour to verify that they will operate during an actual power outage. All other active components shall be checked to determine that they are operating within the manufacturers specifications for the intended purpose.

F. FIVE YEAR TEST

In addition to the annual test, the building owner shall perform a radio coverage test a minimum of once every five (5) years to ensure that the radio system continues to meet the requirements of the original acceptance. The procedure set forth above shall apply to such tests.

G. QUALIFICATIONS OF TESTING PERSONNEL

All tests shall be conducted, documented, and signed by a person in possession of a current FCC GENERAL RADIOTELEPHONE OPERATOR LICENSE. All test records shall be retained at the inspected premises by the building owner and a copy submitted to the BOSTON FIRE DEPARTMENT.

H. FIRE DEPARTMENT INSPECTIONS

Fire Department Radio personnel, after providing reasonable notice to the owner or his representative, shall have the right to enter onto the property to conduct field testing to be certain that the required level of radio coverage is present.

I. PROPERTY OWNER LETTER

At final acceptance the applicant shall supply a letter to the Superintendent of Fire Alarm, 59 Fenway, Boston, MA 02115, accepting the property owner's responsibilities. These responsibilities are as follows: upgrades to system as directed by the Boston Fire Department, maintenance contract in place with

name of contractor, who will provide a 24 hour by 7 day emergency response within two (2) hours after notification and contact personnel with phone numbers. This letter is to be on company letterhead signed by the property owner or a legal representative.

J. REQUEST FOR WAIVER

A WAIVER from the Superintendent of Fire Alarm or Boston Fire Department Fire Marshal is required for radio equipment usage in lieu of a telephone system in high rise occupancies. The applicant shall make a formal request in writing to the Superintendent of Fire Alarm, 59 Fenway, Boston, MA 02115. The request shall state address of property, property owner (responsible party), radio equipment vendor, contact personnel with telephone numbers, radio system drawings with technical parameters, and equipment specifications shall accompany the waiver request. Applicants will receive a written reply within thirty (30) days. This waiver is the initial step in this procedure and required before proceeding Voluntary adoption of this specification for buildings not covered by under BOSTON FIRE DEPARTMENT, FIRE ALARM ORDER 93-1 also requires a waiver.

K- REQUIRED FORMS

All required forms can be obtained from the Boston Fire Radio Shop, 59 Fenway, Boston, MA 02115, (617) 343-2875.

- A. Initial Acceptance Ten
- B. Annual Test
- C. Five Year Test

L. CABINET

The cabinet shall be a NEMA 4 painted steel cabinet. The color will be FIRE ENGINE RED and bear the lettering as follows: BOSTON FIRE DEPT. RADIO, 617-343-2875 in bright yellow. The cabinet will have a lock mechanism to keep the unit secure.

M. PRIMARY POWER

Connection to primary power can be done in two (2) manners. The first, a cord set with twist lock plug and receptacle or with metallic conduit. Each bi-directional amplifier shall be powered by its own twenty (20) ampere circuit.

N. SYSTEM MONITORING ALARM

Each amplifier unit will have a monitoring system that monitors amplifier operation and primary power. Upon failure a Sonalert audible warning device (90 dB minimum) will activate. Silencing of this alarm is the responsibility of the equipment maintenance contractor. The FIRE DEPT. is to be notified of any failures that extend past the two (2) hour time limit.