

The City of New Haven has mandated that a “Public Safety Communication System Requirement”, shall be complied with by the installation of a radio-based communication system to enhance and guarantee coverage minimums for the Police and Fire radio communications systems throughout the City of New Haven.

The installation and operation of a radio based public safety communication system will be governed by this specification, which has been adopted by the City of New Haven.

No building structure shall be constructed, altered or changed in occupancy classification until such plans have been reviewed by the New Haven Public Safety Communications Center for compliance with the requirements contained in this ordinance.

Except as otherwise provided, no person shall erect, construct, change the use of or construct an addition of more than 50% in gross floor area to any building or structure of Type I or Type II construction which exceeds 10,000 square feet in gross floor area, including any portions thereof which may be located below grade, which fails to support adequate radio coverage. For the purposes of this ordinance, the term “building” shall be construed to include parking structures and stairwells.

Applicants shall forward the In-Building Radio Application to both the Director and Deputy Director, New Haven Public Safety Communications, 1 Union Ave. New Haven, CT 06519. Radio system drawings with technical parameters and equipment specifications shall accompany this application.

An approved permit is required prior to construction of the system. Unattended operation of the radio system is not permitted until final acceptance by the City of New Haven.

Revision: 1A

Effective Date:

1. Signal Strength

- 1.1 The in-building radio system is an integral component of the life safety equipment of a building or structure. The primary function is to provide reliable first responder communications at the required signal strength within the specified areas. The system is required to provide coverage at the specified level within 99% of a building's vital areas of importance identified by the New Haven Fire Department of importance and 90% in all other areas.
- 1.2 In-building radiation systems required by this ordinance must provide a signal strength that includes each of the following:
 - 1.2.1 A minimum signal strength of -95 dBm available in 99% of the vital areas of each floor when transmitted from the Public Safety Radio Systems.
 - 1.2.2 A minimum signal strength of -95 dBm received at the Public Safety Radio Systems from 99% of the identified vital areas of the building.

2. Permissible In-Building Radiation Systems

- 2.1 Building and structures shall be equipped with an FCC Certified Class B Bi-Directional Amplifier(s) as needed.
- 2.2 The distribution system may utilize a radiating cable system or an internal multiple antenna system.
- 2.3 The Public Safety Radio Systems pass band of the BDA shall operate in the 809-814 MHz band, the 854-860 MHz band and the 450-470 MHz band.
- 2.4 There shall be no connectivity between the in-building radiation system and the fire alarm system.
- 2.5 The system as installed must comply with all applicable sections of FCC Rules Part 22, Part 90 and Part 101.

3. Backup Power

- 3.1 The system shall be capable of operating on an independent battery for at least 24 hours.
- 3.2 The battery system shall automatically charge in the presence of external input.

4. Compliance Testing

- 4.1 Compliance testing for an in-building radiation system is required, upon completion of the installation.
- 4.2 The building owner shall have the in-building radiation system tested to ensure that two-way coverage on each floor of the building meets or exceeds the required 95%.
- 4.3 Each floor of the building shall be divided into a grid of approximately 20 grid or 40 grid process and the signal must be maintained to meet minimum downlink and uplink requirements. A spot located approximately in the center of a grid area will be selected for the test. Once the spot has been selected, prospecting for a better spot within the grid area may not be permitted. Field strength testing instruments are to be recently calibrated (one year) and of the frequency selective type incorporating a flexible antenna similar to the ones used on the hand-held transceivers (portable radios).
- 4.4 All compliance testing is to be completed with 50 ohm loads in place of the donor antenna to avoid inference to the fire alarm system. New Haven Public Safety Communications Center is to be notified prior to any testing at (203) 946-6237.
- 4.5 Delivered audio quality (DAQ) testing will be conducted by the New Haven Communications Center personnel during sample testing of the accuracy of the BDA Compliance Test Report. All test results and as built drawings are to be submitted when the sample test date is requested. At least five (5) business days notice is required prior to the test being conducted.
- 4.6 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.
- 4.7 In the event that the measurement results become lost, the building owner will be required to return the acceptance test to reestablish the gain.
- 4.8 A link budget for the installation will be provided to the New Haven Communications Center when requesting the site visit for sample testing.

5. Annual Tests

- 5.1 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.
- 5.2 Amplifiers shall be tested to ensure that the gain is the same as it was upon initial installation and acceptance.

- 5.3 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 actual outage.
- 5.4 Active components shall be checked to determine that they are operating within the manufacturer's specifications for their intended purpose.
- 5.5 Documentation of this testing shall be maintained on site and a copy forwarded to the both the Director and Deputy Director, City of New Haven Public Safety Communications.

6. Five Year Test

- 6.1 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 this ordinance. The procedure set forth in Section 4 shall apply to such tests.

7. Qualifications of Testing Personnel

- 7.1 All tests shall be conducted, documented, and signed by a person in possession of a current FCC General Radiotelephone Operator License, or technician certification issued by the Association of Public-Safety Communications Officials International (APCO) or the Personal Communications Industry Association (PCIA).

8. City of New Haven Inspections

- 8.1 City of New Haven Public Safety Communications Center personnel, after providing reasonable notice to the owner or their 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.

9. System Monitoring

- 9.1 Each amplifier unit will have a monitoring system that monitors amplifier operation and primary power. A failure will activate an audible device and white strobe light. The audible signal may be silenced but the strobe light must remain illuminated until the fault has been corrected.
- 9.2 The strobe light will be located in a public space authorized by the Director or designee of the New Haven Public Safety Communications. A sign will be located at the strobe light with the name and telephone number of the equipment maintenance contractor. The City of New Haven must be notified of any failures that extend past the two 2 hour limit.

- 9.3 An in-house building maintenance alarm system monitored 24/7/365, is acceptable in place of the audible/strobe requirement.

10. Component Installation

- 10.1 Assembly and installation of all components of the BDA System shall comply with all applicable sections of the National Electrical Code.
- 10.2 Survivability from attack by fire shall meet NFPA 72, National Fire Alarm and Signaling Code, Section 6.9.4.3, 2019 edition.

11. Antenna Distribution Network

- 11.1 A secondary user of the antenna distribution network must comply with all requirements of the City of New Haven so as not to degrade the operational standards of the system. Notice will be made to the City of New Haven as part of the permit application if the in-building radiation system will have non-New Haven Public Safety frequencies included.
- 11.2 Secondary users must furnish a complete list of transmit and receive frequencies along with an inter-modulation (IM) study that will accompany the permit application. The IM Study will consist of the following calculations: $IM=Q1 * F$, $IM=F1+F2+F3$, $IM=F1+F2-F3$, $IM=Q1 * F1+Q2 * F2$, and $IM=Q1 * F1-Q2 * F2$ for all frequencies up-link and down-link. These calculations will be done to the 5th order.

12. Modifications

- 12.1 Any modifications of an existing BDA System will require a written request to the New Haven Communications Center Radio Supervisor. The request will include; frequency list (transmit and receive), full IM study, and drawing showing intended modifications.

Upon written approval of the New Haven Public Safety Communications Center Director, the modifications can begin with the stipulation that during the construction period the Public Safety Radio Systems will always be operational at the required specifications or better.

- 12.2 After completion of any modification to a BDA a full acceptance test as required in this specification will be conducted and submitted for review.

13. Cancellation of Service Contract

- 13.1 The New Haven Public Safety Communications Center Director or Deputy Director shall be notified in writing at least thirty (30) days prior to cancellations of a BDA system

maintenance contract. Such notice shall contain the date and time such cancellation is to take effect.

- 13.2 It shall be the responsibility of the radio service provider to notify the Director of the New Haven Public Safety Communications Center regarding cancellations and/or procurements of contractual agreements relating to radio service covered by this specification.

14. Radio Call Signs

- 14.1 Contractors will be issued call signs for communicating with City of New Haven personnel on the Public Safety Radio Systems. These call signs are to be used only by properly licensed individuals.

15. Disclaimer

- 15.1 The City of New Haven does not endorse, recommend or specify any product, service provider or configuration as the means to comply with this specification.

16. Exemptions

- 16.1 This ordinance shall not apply to residential structures containing three or fewer dwelling units.

17. Violations

- 17.1 Any person(s) violating the provisions of this ordinance shall be fined \$100.00. Each day during or on which a violation occurs or continues shall constitute a separate offense.