



Emergency Responder Radio Coverage Systems

During emergencies, firefighters and other emergency response personnel use portable radios to communicate while inside of buildings and structures. Buildings and structures may interfere with the emergency responder's ability to effectively communicate due to construction types and materials. These features can absorb or block the radio frequency energy used to carry the signals inside or outside of the building. This poses a significant safety hazard to emergency response personnel and building occupants.

As a safety solution, the International Fire Code (IFC) sets forth requirements for certain new and existing buildings to be equipped with an Emergency Responder Radio Coverage System.

EMERGENCY RESPONDER RADIO COVERAGE

All new buildings shall have approved radio coverage for emergency responders within the building. When radio coverage within a building does not meet minimum signal strength requirements, an Emergency Responder Radio Coverage System must be installed in accordance with the IFC and with applicable provisions of NFPA 72, National Fire Alarm Signaling Code. This section shall not require improvement of the existing public safety communication system.

Exceptions:

1. Buildings and area of buildings that have minimum radio coverage signal strength levels of the King County Regional 800 MHz Radio System within the building.
2. Buildings constructed primarily of wood frame that do not have storage or parking areas extending more than one level below grade.
3. Buildings thirty-five (35') feet high (as defined by International Building Code) or less that do not have below grade storage or parking areas extending more than one level below grade. Should construction that is thirty-five (35') feet high or less including subterranean storage or parking, then the requirements shall apply only to the subterranean areas.
4. One- and two-family dwellings and townhouses.

EMERGENCY RESPONDER RADIO COVERAGE IN EXISTING BUILDINGS

Buildings constructed prior to the implementation of this code shall not be required to comply with the emergency responder radio coverage provisions except as follows:

1. Whenever an existing wired communication system cannot be repaired or is being replaced.
2. Buildings undergoing substantial alteration as determined by the Fire Code Official.

3. When buildings, classes of buildings or specific occupancies do not have minimum radio coverage signal strength, and the Fire or Police Chief determine a lack of minimum signal-strength poses an undue risk to emergency responders that cannot be reasonably mitigated by other means.

CONSTRUCTION PERMIT REQUIRED

A construction permit for the installation of or modification to Emergency Responder Radio Coverage Systems and related equipment is required. Plans shall be submitted for approval prior to installation.

RADIO SIGNAL STRENGTH

General building areas: General building areas shall be provided with 90% floor area radio coverage.

Critical building areas: Critical areas, such as the fire command center(s), the fire pump room(s), exit stairs, exit passageways, elevator lobbies, and other areas deemed critical by the authority having jurisdiction, shall be provided with 99% floor area radio coverage.

MINIMUM SIGNAL STRENGTH INTO THE BUILDING

A minimum inbound signal strength of -95 dBm shall be provided throughout the coverage area.

MINIMUM SIGNAL STRENGTH OUT OF THE BUILDING

A minimum outbound signal strength of -95 dBm shall be provided from the coverage area.

SYSTEM DESIGN AND INSTALLATION

The Emergency Responder Radio Coverage System shall be designed and installed in accordance with the applicable sections of the IFC and NFPA 72.

AMPLIFICATION SYSTEMS ALLOWED

Buildings and structures which cannot support the required level of radio coverage shall be equipped with:

1. A radiating cable system and/or
2. An internal multiple antenna system with FCC certificated bi-directional 800 MHz amplifiers.

FREQUENCY RANGE

List of assigned frequencies: The authority having jurisdiction shall maintain a list of all inbound/outbound frequency pairs for distribution to system designers.

POWER SUPPLY

Power supplies shall conform to NFPA 72, (Power Supplies). If any part of the installed system or systems contains an electrically powered component. The installed system or systems shall be provided with an independent battery system or an emergency generator capable of operating 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.

ADDITIONAL FREQUENCIES AND CHANGE OF FREQUENCIES

The building owner shall modify or expand the frequency range at their expense in the event frequency changes are required by the FCC or additional frequencies are made available by the FCC. Prior approval of a public Safety Radio Coverage System on previous frequencies does not exempt this requirement.

SYSTEM MONITORING SHALL BE IN ACCORDANCE WITH NFPA72

MINIMUM QUALIFICATIONS OF PERSONNEL

The system designer, lead installation personnel and personnel conducting radio system tests shall be qualified to perform the work. Design documents and all tests shall be documented and signed by a person in possession of a current FCC General Radio Telephone Operator License and a certificate or certification issued by the:

1. Associated Public Safety Communications Officials International (APCO), or
2. National Association of Business and Education Radio (NABER) or
3. Personal Communications Industry Association (PCIA), or
4. Manufacturer of the equipment being installed.

ACCEPTANCE TEST PROCEDURE

Acceptance testing for Emergency Responder Radio Amplification System is required upon completion of installation. It is the building owner's responsibility to have the radio system tested by qualified personnel to ensure a minimum of 90 percent two-way coverage on each floor of the building.

A report shall be submitted to South King Fire & Rescue (SKFR) at the conclusion of acceptance testing containing a floor plan and the signal strengths at each location tested and other relevant information including as-built drawings.

FINAL INSPECTION

After the acceptance testing is successfully conducted by the building owner and after the electrical permit has been sign-off, SKFR Inspectors shall confirm installation of system components, required signage and conduct talk-back testing for selected areas of the building using SKFR radios for verification of radio function.

FCC COMPLIANCE

Federal Communications Commission (FCC) Registration Requirement BDA/DAS system owners are required by the FCC to register their BDA/DAS system (which the FCC identifies as 'signal boosters') with the FCC. This applies to those systems already placed in operation, in permitting or under construction. The FCC Rule requiring registration is CFR 47, FCC Part 90.219(d)(5). Additional information may be found at:

<http://wireless.fcc.gov/signal-boosters/part-90-boosters/index.html>

MAINTENANCE

The emergency Responder Radio Coverage System shall be maintained operational at all times.

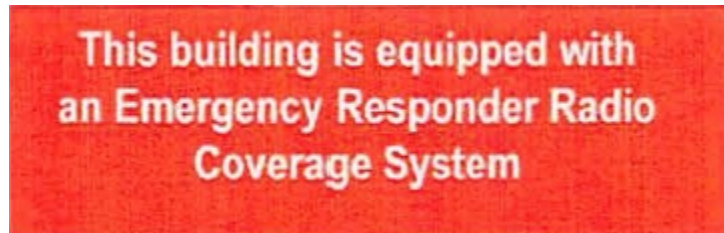
TESTING AND PROOF OF COMPLIANCE

The emergency Responder Radio Coverage System shall be inspected and tested annually, or whenever structural changes occur to the building that would materially change the original field performance tests. Performance test shall include at minimum a floor plan and the signal strength in various locations of the building.

IDENTIFICATION

Buildings equipped with an Emergency Responder Radio Coverage system shall be identified by a sign located on or near the Fire Alarm Control Panel stating: "This building is equipped with an Emergency Responder Radio Coverage System." As a general rule, fire protection and related equipment are identified by a red sign with minimum one-inch white letters as shown below.

Example:



FIELD TESTING

Police and fire personnel shall at any time have the right to enter onto the property to conduct their own field-testing to be certain that the required level of radio coverage is present.