



## EMERGENCY RESPONDER RADIO COVERAGE

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These guidelines are to be followed when an Emergency Responder Radio Coverage system is required within the City of Rockwall. These guidelines are not to be interpreted as containing all data required for proper design, installation, or approval.

All Emergency Responder Radio Coverage systems shall conform to the 2021 International Fire Code, Section 510, as adopted by the City of Rockwall. These guidelines are not intended to replace, nor supersede any codes and/or ordinances adopted by the City of Rockwall, or determinations and positions of the Rockwall Fire Prevention Education and Investigation (FPE&I) Division.

### **Where required**

All new buildings shall have approved radio coverage for emergency responders within the building based upon the existing coverage levels of the public safety communication system in the City of Rockwall at the exterior of the building.

### **Building Department Permit submittal**

The following notes must be added to the **architectural drawings** for buildings required to meet the requirements for emergency responder radio coverage as listed above:

- 1) This project is required to meet the requirements in the 2021 International Fire Code, Section 510 for Emergency Responder Radio Coverage.
- 2) If this building does not meet the signal strength requirement of -95 dB into and out of the building in 95% of all areas on each floor of the building, a radiating cable system, a distributed antenna system with FCC certified signal boosters, or other system approved by the Fire Marshal will be provided to achieve the required coverage.

**Electrical plans** must include an approved secondary source of power required for the emergency responder radio coverage system.

### **Fire Department Permit submittal**

A permit for the installation of or modification to emergency responder radio coverage systems and related equipment is required through the Rockwall FPE&I Division. See our website for all submittal requirements. Maintenance performed in accordance with the International Fire Code is not considered a modification and does not require a permit.

### **Design Criteria:**

#### **Radio coverage system**

Buildings that cannot support the required level of radio coverage must be equipped with one of the following:

- 1) A radiating cable system,
- 2) An internal multiple antenna system with Federal Communications Commission (FCC)- certified bi-directional amplifiers, or
- 3) Systems otherwise approved by the City in order to achieve the required radio coverage.



## EMERGENCY RESPONDER RADIO COVERAGE

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### Radio signal strength

- 1) The building shall be considered to have acceptable in-building, two-way emergency responder communication system coverage where signal strength measurements in 95 percent of all areas and 99 percent of areas designated as critical areas by the fire code official on each floor of the building meet the signal strength requirements in IFC Sections 510.4.1.1 through 510.4.1.3.

### Frequency information

#### Rockwall County Interoperable Radio Network Frequency Allocation for P25 Phase II System

Channel 1	800.01875 TX 770.01875 RX	Channel 2	801.06875 TX 771.06875 RX
Channel 3	802.06875 TX 772.06875 RX	Channel 4	802.76875 TX 772.76875 RX
Channel 5	803.24375 TX 773.24375 RX	Channel 6	804.43125 TX 774.43125 RX

Any question during design as to radio frequencies or radio system shall be directed to the Public Safety Communication Superintendent John Vermillion at (972) 772-6463.

### Standby power

An approved secondary source of power must be provided for radio coverage systems. The standby power supply shall be capable of operating the radio coverage system for at least 24 hours. The standby power supply shall be either a battery system, UPS or an emergency generator. All batteries must be contained within a National Electrical Manufacturer's Association (NEMA) 4-type waterproof cabinet.

### Signal Booster

If used, signal boosters must be contained within a NEMA 4-type waterproof case. The signal booster and battery system must be electronically supervised and monitored by a supervisory service (tied into fire alarm system as a supervisor trouble signal).

### Approval prior to installation



## EMERGENCY RESPONDER RADIO COVERAGE

---

No amplification system capable of operating on frequencies used by the City of Rockwall may be installed without prior coordination and approval of the radio system licensee, City of Rockwall. Any such system shall comply with any standards adopted by the city.

### **Installation**

The system designer and the lead installation personnel must have the following minimum qualifications:

- 1) A valid FCC-issued general radio operator license and
- 2) Certification of in-building system training issued by a nationally recognized organization, school such as Associated Public Safety Communications Officials International (APCO), National Association of Business and Education Radio (NABER), Personal Communications Industry Association (PCIA) or the International Association for Radio, Telecommunications and Electromagnetics, Inc. (iNARTE) or a certificate issued by the manufacturer of the equipment being installed

### **Acceptance test**

Upon completion of the installation, the system is required to be tested after construction is complete in order to ensure that the two-way coverage on each floor of the building is a minimum of 90%. The test procedure shall be as follows:

- 1) Each floor of the building must be divided into a grid of 20 approximately equal test areas.
- 2) The test shall be conducted using a calibrated portable radio of the latest brand and model used by the agency of jurisdiction talking through the agency's radio communications system in both receive and transmit modes.
- 3) Failure of a maximum of two nonadjacent test areas shall not result in failure of the test.
- 4) In the event that three of the test areas fail the test, the floor shall be permitted to be divided into 40 equal test areas. Failure of a maximum of four nonadjacent test areas shall not result in failure of the test. If the system fails the 40-area test, the system must be altered to meet the 90% coverage requirement.
- 5) A test location approximately in the center of each test area must be selected for the test, with the radio enabled to verify two-way communications to and from the outside of the building through the radio communications system. Once the test location has been selected, that location shall represent the entire test area. Failure in the selected test location is considered a failure of that test area. Additional test locations are not permitted.
- 6) The gain values of all amplifiers shall be measured and the test measurement results shall be kept on file with the building owner so that the measurements can be verified during annual tests.
- 7) As part of the installation, a spectrum analyzer or other suitable test equipment shall be utilized to ensure spurious oscillations are not being generated by the subject signal booster. This test shall be conducted at the time of installation.
- 8) Installed systems must be registered with the FCC. Proof of registration must be provided to the Rockwall FPE&I Division.
- 9) Rockwall FPE&I Division shall witness the final acceptance test.

### **Final Report**



## EMERGENCY RESPONDER RADIO COVERAGE

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Prior to issuance of a certificate of occupancy, a final acceptance report shall be submitted to the Rockwall FPE&I Division containing a floor plan and the signal strengths at each location tested and other relevant information stamped and signed by the FCC-certified technician or Engineer with a statement specifying that the building complies with all of the requirements of the International Fire Code section 510.

### **Annual testing**

Testing is required both annually and whenever structural modifications are made that will impact the system. All components and system shall comply with Section 510.6.1 of the 2021 International Fire Code.