City of Phoenix

Explanatory Policy – Emergency Responder Radio Coverage

SUBJECT:	EFFECTIVE DATE:
Emergency Responder Radio Coverage	December 2019
REFERENCES:	**REVIEW DATE:**
The Phoenix Fire Code (2018 Edition) Section 510 NFPA 1221 (2016 Edition)	July 2022
APPROVED: John Mertens, Fire Marshal	

Scope:

First responders must be able to maintain communication throughout a building in an emergency situation. Whether they are responding to a fire, medical emergency, or domestic threat, they cannot be in a situation where their radios fail to communicate. A minimum radio signal strength for emergency responder communications shall be provided and maintained.

Section 510 of the Phoenix Fire Code (PFC) requires that new and existing buildings be provided with Emergency Responder Radio Coverage Systems (ERRCS) designed to provide radio coverage in areas of buildings and structures where signal strength does not meet the minimum criteria due to building construction features and/or location.

When in-building radio signal strength fails to meet the minimum requirements of the Phoenix Fire Code, ERRCS shall be provided. These systems are also referred to as Bi-Directional Amplifier (BDA) and Distributed Antenna Systems (DAS).

ERRCS shall be designed, installed, maintained, and repaired by qualified personnel to ensure that they meet the coverage reliability requirements of the PFC and NFPA 1221. ERRCS shall not cause unintended harmful interference to the Phoenix radio system and other users of the Radio Frequencies (RF) spectrum licensed by the Federal Communication Commission (FCC).

Application:
This policy applies to all new and existing buildings that meet any of the following conditions:
- There are more than three stories above grade plane (as defined by the Building Code, Section 201).
- The total building area is greater than 50,000 square feet.

- Any building with a basement or underground level(s). ·
- Where required by the fire code official and radio coverage signal strength levels do not meet the minimum levels set forth in PFC Section 510.

Testing and Compliance Procedure:

Technical criteria are provided to contractors on the Fire Prevention website. If contractors have questions they can contact Fire Prevention or the City of Phoenix Information Technology Department (602) 262-7034. The City of Phoenix recommends providing a ERCCS backbone for all new buildings for which this policy applies. Testing is not required on VHF systems because VHF enhancements are not required by Phoenix Fire Department at this time.

Testing for radio coverage compliance shall be conducted after the completion of the building envelope; this includes, but is not limited to all doors, windows, interior walls, and exterior openings. In buildings with significant internal signal impairments such as rack storage, wire mesh security screens or other interior or exterior features, all internal construction shall be completed prior to compliance testing.

If the test demonstrates compliance with the PFC, the Certificate of Radio Coverage Compliance shall be provided to the fire code official. If testing demonstrates non-compliance with the PFC, ERRCS shall be installed.

Permit Requirements:

A construction permit is required to be obtained from the Phoenix Fire Department for the installation or modification to an ERRCS and related equipment.

Technical Requirements:

Systems, components, and equipment required to provide the ERRCS shall comply with Sections 510.4.1through 510.4.2.8 of the PFC.

Installation Requirements:

The installation of ERRCS shall be in accordance with NFPA 1221 and Sections 510.5.1through 510.5.4 of the PFC.

Minimum Qualifications of Personnel:

The minimum qualifications of the system designer, lead installation personnel, and personnel conducting radio system tests shall include possession of both of the following:

1. A valid FCC-issued general radio operators license; and
2. Certification of in-building systems training issued by one of the following:

a. Associated Public Safety Communications Officials

b. National Association of Business Education Radio

c. Personal Communications Industry Association

d. The Manufacturer of the equipment being installed

e. The designer shall be certified in approved design/propagation software (for example, iBwave and Randplan)

All design documents and all tests shall be documented and signed by a person meeting the minimum qualifications noted in this section.

Certificate of Radio Coverage Compliance:

Prior to issuance of the building Certificate of Occupancy, a Certificate of Radio Coverage Compliance shall be submitted to the fire code official; on a case-by-case basis, a temporary Certificate of Occupancy may be issued. The Certificate of Radio Coverage Compliance shall be signed and sealed by a Professional Engineer licensed in the State of Arizona, knowledgeable in ERCCS. On a case-by-case basis, a temporary Certificate of Occupancy may be issued.

[A] 104.7.2 Technical assistance.

To determine the acceptability of technologies, processes, products, facilities, materials and uses attending the design, operation or use of a building or premises subject to inspection by the fire code official, the fire code official is authorized to require the owner or agent to provide, without charge to the jurisdiction, a technical opinion and report. The opinion and report shall be prepared by a qualified engineer, specialist, laboratory or fire safety specialty organization acceptable to the fire code official and shall analyze the fire safety properties of the design, operation or use of the building or premises and the facilities and appurtenances situated thereon, to recommend necessary changes. The fire code official is authorized to require design submittals to be prepared by, and bear the stamp of, a registered design professional.

Maintenance:

The ERRCS shall be maintained operational at all times in accordance with Section 510.6 of the PFC. ERRCS shall be tested annually by personnel meeting the minimum qualifications below.

City of Phoenix
FIRE DEPARTMENT
FIRE PREVENTION DIVISION

CERTIFICATE OF RADIO COVERAGE COMPLIANCE

Project Name: _____

Project Address: _____

Design Professional/Engineer of Record: _____

Test Date & Time: _____

(Testing for radio coverage shall be conducted after the completion of building envelope and all doors, windows, and exterior openings are closed. In buildings with significant internal signal impairments such as rack storage, wire mesh security screens or other interior features, all internal construction shall be completed prior to final testing for radio coverage).

I hereby affirm and certify that the building identified above was tested for emergency responder radio coverage and meets the requirements set forth in the Phoenix Fire Code (PFC) Section 510 Emergency Responder Radio Coverage. To the best of my knowledge, information and belief, the radio coverage levels for this building meet or exceed those required by the Phoenix Fire Code.

Professional Certification: I hereby certify that these documents were prepared or approved by me, and I am a duly licensed Professional Engineer under the laws of the State of Arizona.

Respectfully submitted,

License Number _____   Expiration Date _____

Signature and Seal of Design Professional Engineer of Record