



**CITY OF CHANDLER  
EMERGENCY RESPONDER RADIO COMMUNICATIONS  
(ERRC)  
INFORMATION PACKET**

The documents in this packet are designed to assist in the process of required testing, evaluation, and mitigation of in-building public safety radio coverage as required by both the International Fire Code and City of Chandler codes. The documents within provide information for general contractors, property owners, and testing and design vendors as they coordinate within the processes. These processes apply to all structures that meet the criteria defined in the following documents. Please review and feel free to reach out with any questions. These are step by step processes and it is understood that they take time, require financial investment, and installation process within both new and existing structures.

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  - a. This document details the technical and reporting requirements, applicable codes, vendor qualifications, and radio system details. This information should be provided to the vendor of choice.
3. Regional Wireless Cooperative (RWC) Emergency Responder Communication Coverage Systems Policy
  - a. ERCC policy requirements for the RWC network that the City of Chandler operates on as part of a region-wide cooperative radio system.



**CITY OF CHANDLER  
EMERGENCY RESPONDER COMMUNICATION COVERAGE  
(ERCC)  
INSPECTION AND SYSTEM INSTALLATION PROCESS**

**OVERVIEW**

This section defines the basic process required for inspection of buildings regarding providing adequate public safety radio system coverage for Police and Fire responders as required per international and City of Chandler fire codes. The safety of first responders as well as the citizens we serve depends upon reliable radio coverage inside structures within the City of Chandler. ***The City of Chandler does not provide either testing or system installation services, these are provided by a qualified vendor. A list of known vendors is available by request.*** All testing and installation of systems, if required, are the responsibility of the property owner. Note: Not every structure will require enhancement.

**INITIAL TESTING**

All structures that meet the criteria for testing (as defined in International Fire Code, section 510 and associated City of Chandler code amendments) are required to have an initial test performed to determine if enhancement will be needed. This consists of a vendor provided walk through of the building utilizing specialized signal measurement equipment to produce a report that indicates a pass or fail of the building's internal public safety signal levels. This test is submitted to the Fire Marshal for review. If the test passes, the building will be approved with no further action needed. The requirements and technical details for this testing and review are provided in the "**REQUIRED INITIAL TESTING PROCESS**" section of the **CITY OF CHANDLER TECHNICAL INFORMATION** document included in this packet.

**IF A SYSTEM IS REQUIRED**

In the case of failing initial testing, the property owner must engage a qualified vendor to design and install an ERCC system (**Beginning 8/1/2024 – The RWC requires vendors to be NICET certified**). There are several steps that must be taken as this process proceeds. The requirements and technical details for this testing and review are provided in the "**ERCC SYSTEM INSTALLATION PROCESS**" section of the **CITY OF CHANDLER TECHNICAL INFORMATION** document included in this packet.

It is our desire to support property owners and vendors throughout this process for a successful outcome. Please feel free to reach out with any questions or concerns.

Sincerely,

Aaron Huckstep

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CITY OF CHANDLER TECHNICAL INFORMATION**

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**1 - OVERVIEW**

The Chandler Police and Fire Department radio communication subscribers operate on the 700 MHz Regional Wireless Cooperative (RWC) system (<http://www.rwcaz.org/>). This is a MOTOROLA SmartZone™ Astro® 25 digital trunked system operating at 9600 baud. The Chandler Public Safety subscribers utilize Phase II TDMA modulation on the network.

The RWC operates this multi-zone system throughout the Maricopa County region and includes multiple simulcast areas. The City of Chandler operates in the Simulcast C area of the system. Simulcast C operates fully within the 700 MHz public safety spectrum.

**In-building coverage enhancements must be designed to support 700 MHz public safety band operations in both Phase I FDMA and Phase II TDMA. Note CLASS A BDA systems are required on all new installations, CLASS B is no longer allowed for new installs.**

**2 - APPLICABLE CODES**

*International Fire Code (IFC)* as adopted by the City of Chandler,

City of Chandler amendments to the IFC:

**Chapter 28 - FIRE PREVENTION**

**28-17. - Emergency responder radio communication.**

*Section 510.1 and 510.4.1.2* of the code are hereby amended to read as follows:

*510.1 Emergency responder radio communications.* Buildings shall have approved radio coverage for emergency responders within the building based upon the existing coverage levels of the public safety communication systems of the jurisdiction at the exterior of the building. The requirements of this Section 510 shall apply to all buildings and structures located in the City that satisfy any of the following characteristics:

1. Buildings or structures that are more than three (3) stories above ground level;
2. Buildings or structures totaling forty-five thousand (45,000) square feet or more on any single floor;
3. Buildings or structures that include a basement or other subterranean space totaling two hundred fifty (250) square feet or more; or
4. Buildings or structures that the fire code official has determined to have been constructed in a manner or with materials likely to limit the ability of emergency response personnel to effectively use radio communication while within that building or structure.

*Exception.* The requirements set forth in this Section 510.1 shall not apply to the following:

1. U occupancies and R3 occupancies that are single family detached residences.
2. Buildings and structures utilizing only wood framing; and
3. Buildings and structures that are less than thirty-five (35) feet above ground level and do not utilize any metal framing or metal roofing.

#### *510.4.1.2 Minimum signal strength out of the building.*

In keeping with applicable engineering practice specific to the architecture of the regional digital radio communications network, standardized Delivered Audio Quality (DAQ) measurements are specified to verify acceptable levels of signal strength exiting the building. Minimum signal strength out of the building must meet the requirements of the RWC (Regional Wireless Cooperative) working group.

### **3 - BUILDING AND/OR ENHANCEMENT SYSTEM TESTING, REPORTING, AND APPROVALS**

#### **REQUIRED INITIAL TESTING PROCESS**

- It is required that an initial test be completed by a qualified vendor (see section 4 - VENDOR QUALIFICATIONS below) utilizing the specifications listed below and submitted as indicated.
- Test results shall be submitted to the Fire Marshal at completion of first dry wall inspection.
- Test results must minimally include:
  - Point of contact information and physical address of the building location.
  - Point of contact information and physical address for the vendor providing the testing.
  - Make and model of the test equipment utilized to conduct the testing.
  - Gridded floor plan for each floor of the structure with numbered grids, minimum 20 grids per floor.
  - Gridded test result report of measured signal levels, overlaid on floorplan for each floor of the building indicating the dBm signal level for each grid of the currently active RWC Simulcast C Control Channel (see below).
  - Results must be submitted via email to [fire.prevention@chandleraz.gov](mailto:fire.prevention@chandleraz.gov).
  - These results will be reviewed.

**In the case of a passing initial test, an approval will be issued, and no further action will be needed.**

**In the case of a failing initial test, indicating the need for an ERCC system installation, the following processes must be followed. There are several steps that must be taken in the order shown as these processes proceed. Note these processes engage both City of Chandler personnel and the Regional Wireless Cooperative (RWC) which provides the radio network that our public safety radios operate on.**

#### **ERCC SYSTEM INSTALLATION PROCESS**

- It is required that ERCC system design and installation be completed by a qualified vendor (see section **4 - VENDOR QUALIFICATIONS** below).

- At this time the following must be notified of the contact information for the qualified vendor of choice: [fire.prevention@chandleraz.gov](mailto:fire.prevention@chandleraz.gov) and [chris.arneson@phoenix.gov](mailto:chris.arneson@phoenix.gov).
- *The RWC Radio Amplification System Rebroadcast Authorization Application*, a fillable electronic document, will be returned to begin the process ([https://img1.wsimg.com/blobby/go/e438a6b9-0dd2-45ca-965b-b100aed782f1/downloads/RWC\\_Radio\\_Amplification\\_System\\_Authorization\\_0.pdf?ver=1706894302826](https://img1.wsimg.com/blobby/go/e438a6b9-0dd2-45ca-965b-b100aed782f1/downloads/RWC_Radio_Amplification_System_Authorization_0.pdf?ver=1706894302826)).
- ERCC vendor provides the following in order to receive approval to begin the installation process:
  - A **PERMIT SHALL** be obtained through the City of Chandler Development Services. This will be submitted as a deferred submittal. To obtain a permit; EMAIL [plans.coordination@chandleraz.gov](mailto:plans.coordination@chandleraz.gov) and include the original permit#, a brief description, the PDF of the assembled plan sheets and separate PDF's for any cut-sheets. PDF's may be attached to the email if they are less than 30MB in size. For PDF's over 30MB you will need to send a file transfer link to documents. Submittal's to include the following:
    - Detailed design specifications for the proposed system including:
      - Completed first page of the *RWC Radio Amplification System Rebroadcast Authorization Application* as provided when the vendor was identified as above. (See section **8 - FCC REGULATIONS REGARDING AUTHORITY TO OPERATE SIGNAL BOOSTERS** section below.)
      - Full specifications sheet(s) for the BDA/DAS system being proposed.
      - Location of the BDA/DAS system head end within the structure.
      - Specifications for all antennas, splitters, combiners, other relevant components including the donor antenna.
      - Distribution layout with antenna locations for all proposed antenna locations within the structure.
      - Backup power system specifications.
      - Fire Alarm Control Panel (FACP) connectivity specifications.
  - This information must also be provided to [chris.arneson@phoenix.gov](mailto:chris.arneson@phoenix.gov).
  - Installation and any activation of the system may not commence until the City of Chandler and the Regional Wireless Cooperative have reviewed the above submitted items and issued approval to start installation (stamped set of plans).
  - The RWC will identify and provide the proper donor tower site location information.
  - Vendor must provide notice to the City of Chandler and the Regional Wireless Cooperative prior to activating the system for testing purposes.

### **ERRC SYSTEM INSPECTION AND APPROVAL**

- Once system installation is complete, an onsite inspection will need be scheduled with the ERCC installation vendor, Chandler Fire Department, and RWC technical staff to verify and perform required network signal adjustments.
- When this inspection is complete and approved by the RWC, a final post-test must be performed with the same requirements as the initial testing to verify system performance.
- These test results must be provided to [fire.prevention@chandleraz.gov](mailto:fire.prevention@chandleraz.gov) for review.
- If the posttest passes, approval will be issued along with a full approval packet including all specifications and test results returned to the Fire Marshal, RWC, ERCC vendor, and other relevant parties.
- The ERCC system shall be installed and approved via this process prior to a TCO or Certificate of Occupancy being issued.

### **4 - VENDOR QUALIFICATIONS**

Verification testing for in-building public safety communications, installation of enhancements if necessary, and validation of installed enhancements is the responsibility of the property owner and must be contracted with a

qualified communications system vendor. The vendor must meet the qualifications referenced in the IFC section 510.5.3. *Minimum qualifications of personnel* (see section 7 - IFC SECTION 510) (Beginning 8/1/2024 – The RWC requires vendors to be NICET certified)

## 5 - SYSTEM FREQUENCIES

The full list of Simulcast C frequencies is available from the FCC web site under the call sign WQSH547. The FCC General Menu Reports web link for call sign query is: [http://fjallfoss.fcc.gov/General\\_Menu\\_Reports/](http://fjallfoss.fcc.gov/General_Menu_Reports/)

The control frequency required for in-building testing will be one of the following (whichever one is emitting the control channel data stream at the time of testing, all frequencies in MHz):

### **WQSH547 - SIMULCAST C – CONTROL CHANNELS**

**770.10625 - 772.10625 - 770.35625 - 772.35625**

## 6 - TOWER LOCATIONS

Simulcast C utilizes a six-tower system as indicated in the table below, the appropriate donor site will be determined, and the location supplied by RWC personnel at the time of supplying the ERCC system design specifications and other required documentation.

CALLSIGN	LOCATION	LATITUDE	LONGITUDE	STREET ADDRESS	CITY
WQSH547	HAMILTON	33-17-34.9 N	111-49-55.6 W	911 S. HAMILTON	CHANDLER
WQSH547	TEMPE PD SOUTH	33-20-27.2 N	111-57-10.5 W	8201 S. HARDY DR	TEMPE
WQSH547	CHANDLER FIRE TRAINING	33-15-11.4 N	111-53-17.1 W	3550 S DOBSON RD	CHANDLER
WQSH547	TEMPE FIRE TRAINING	33-25-24.3 N	111-54-59.1 W	1342 E. UNIVERSITY	TEMPE
WQSH547	DPS SOUTH MOUNTAIN	33-19-57.2 N	112-04-00.5 W	SITE #13, MT SUPPOA	PHOENIX
WQWW222	CITY OF MARICOPA	33-03-55.7 N	112-03-39.4 W	45695 WEST EDISON ROAD	MARICOPA

## 7 - IFC SECTION 510

### **IFC SECTION 510 - EMERGENCY RESPONDER COMMUNICATION COVERAGE**

The International Code Council (ICC) offers the ability to view this fire code section for no fee at the following link:

[https://codes.iccsafe.org/content/IFC2021P1/chapter-5-fire-service-features#IFC2021P1\\_Pt03\\_Ch05\\_Sec510](https://codes.iccsafe.org/content/IFC2021P1/chapter-5-fire-service-features#IFC2021P1_Pt03_Ch05_Sec510)

## 8 - FCC REGULATIONS REGARDING AUTHORITY TO OPERATE SIGNAL BOOSTERS

Per Federal Communications Commission (FCC) regulations the operator (the installation vendor and/or property owner) of an ERRC system must secure the permission of the FCC licensee (the City of Phoenix) in order to rebroadcast their frequencies within a structure. This is accomplished via the Regional Wireless Cooperative Radio Amplification System **Rebroadcast Authorization Application** that will be provided and must be returned as part of the ERRC system design prior to installation. FCC section 90.219 (b) is included below:

### **Federal Communications Commission § 90.219 (b)**

(b) *Authority to operate.* PLMRS licensees for stations operating on assigned channels higher than 150 MHz may operate signal boosters, limited to the service band for which they are authorized, as needed anywhere within the PLMRS stations' service contour, but may not extend the stations' service contour.

(1) PLMRS licensees may also consent to operation of signal boosters by non-licensees (such as a building owner or a signal booster installation contractor) within their service contour and across their applicable frequencies but must maintain a reasonable level of control over these operations in order to resolve interference problems.

***(i) Non-licensees seeking to operate signal boosters must obtain the express consent of the licensee(s) of the frequencies for which the device or system is intended to amplify. The consent must be maintained in a recordable format that can be presented to an FCC representative or other relevant licensee investigating interference.***