

City of Irvine California

Signal Booster Ordinance

CHAPTER 6. PUBLIC SAFETY RADIO SYSTEM COVERAGE

Sec. 5-9-601. Intent and purpose.

The intent of the chapter is to provide a regulatory framework for the purpose of providing effective 800 MHz Countywide Coordinated Communication System coverage throughout the City of Irvine for police and fire emergency services. (Ord. No. 05-09, § 1, § 1, 5-10-05)

Sec. 5-9-602. Definitions.

The following words, terms, and phrases when used in this chapter shall have the meanings ascribed to them in this section, except where the context clearly indicates a differing meaning:

City of Irvine Public Safety Radio System Coverage Specifications: Those specifications designed to provide optimum coverage and radio effectiveness within buildings and structures under the Countywide Coordinated Communication System.

Countywide Coordinated Communication System: That radio system used by local law enforcement, fire, lifeguard, and public works departments within the County of Orange for emergency and non-emergency radio communication on the 800 MHz radio band.

FCC-Certified Technician: An individual who is qualified with a General Radiotelephone Operator License (GROL/PG), or equivalent, to review design plans and perform tests in affected structures to measure City of Irvine Public Safety Radio System Coverage Specifications.

Local Fire Department: That fire agency that provides fire protective services and rescue/paramedic services for the City of Irvine (e.g. OCFA).

OCFA : Orange County Fire Authority.

OCSD/Communications : Orange County Sheriff-Coroner Department/Communications Division.

Special Inspector: An FCC-certified technician who is approved by the City of Irvine.

(Ord. No. 05-09, § 1, § 1, 5-10-05)

Sec. 5-9-603. Use and occupancy.

Except as otherwise provided, no person shall own, erect, construct or occupy, any building or structure, or any part thereof, or cause the same to be done, which fails to support adequate radio coverage for City emergency service workers operating on the 800 MHz Countywide Coordinated Communication System. Further, owners must maintain a reasonable standard of reliable radio communication within their buildings and structures once a Certificate of Occupancy is issued. For the purposes of this section, adequate radio coverage shall include those specifications in the City of Irvine Public Safety Radio System Coverage Specifications, attached and incorporated herein as Exhibit A (see end of this Chapter).

(Ord. No. 05-09, § 1, § 1, 5-10-05)

Sec. 5-9-604. Testing procedures.

Test of radio coverage will be conducted pursuant to those specifications in the City of Irvine Public Safety Radio System Coverage Specifications, attached and incorporated herein as Exhibit A, as summarized below.

A. *Initial tests.* Initial tests will be performed by FCC-certified technicians in accordance with test standards as listed in the City of Irvine Public Safety Radio System Coverage Specifications, attached and incorporated herein as Exhibit A. A Certificate of Occupancy shall not be issued if said structure, or any part thereof, fails to comply with these test standards.

B. *Annual tests.* Annual tests will be conducted by OCFA, the local fire department personnel, or their agent in accordance with the test standards as listed in the City of Irvine Public Safety Radio System Coverage Specifications, attached and incorporated herein as Exhibit A.

(Ord. No. 05-09, § 1, § 1, 5-10-05)

Sec. 5-9-605. Amplification systems allowed.

Buildings and structures that cannot support the required level of radio coverage shall be equipped with amplification systems as specified in the City of Irvine Public Safety Radio System Coverage Specifications, attached and incorporated herein as Exhibit A, or any other system approved by the OCSD/Communications, in writing.

(Ord. No. 05-09, § 1, 5-10-05)

Sec. 5-9-606. Exemptions.

This chapter shall not apply to the following:

- (1) Existing buildings or structures;
- (2) Elevators; and
- (3) Structures that are three stories or less without subterranean storage or parking.
- (4) Wood-constructed residential structures four stories or less without subterranean storage or parking.

Should construction that is three stories or less include subterranean storage or parking, then this ordinance shall apply only to the subterranean areas.

(Ord. No. 05-09, § 1, 5-10-05)

Sec. 5-9-607. Costs.

The FCC-certified technician is the special inspector who shall be employed by the owner, the engineer or architect of record, or agent of the owner, but not the contractor or any other person responsible for the building or structure construction.

(Ord. No. 05-09, § 1, 5-10-05)

Sec. 5-9-608. Noncompliance.

After discovery of noncompliance, the building owner is provided six months to remedy the deficiency and gain compliance.

(Ord. No. 05-09, § 1, 5-10-05)

EXHIBIT A. CITY OF IRVINE PUBLIC SAFETY RADIO SYSTEM COVERAGE SPECIFICATIONS

1. *Performance.* Specifications are provided to assist property owners in satisfying a delivered audio quality (DAQ) of three with a 90 percent reliability factor for emergency personnel using radio communication in their buildings and structures. Property owners who can demonstrate full compliance with the reliability factor without adhering to all of the following specifications may be excused from all or part of these provisions. Property owners who adhere to all of the specifications and fail to reach the reliability factor must employ all resources necessary to ensure full compliance. Performance and compliance will be inspected annually as part of the Orange County Fire Authority's Fire Inspection.

2. *Signal strength, signal rejection, modulation compatibility, and delivered audio quality.* The following defines the minimum required level of radio signal strength:

- A minimum signal strength of (-95dBm) in 90 percent of the area of each floor of the building from both the 800 MHz Countywide Communications Systems and from within the building is required.
- The frequency range supported *from* the 800 MHz Countywide Communications System shall be 851 - 869 MHz (base transmitter frequencies).
- The frequency range supported *to* the 800 MHz Countywide Communications System shall be 806 - 824 MHz (radio field transmit frequencies).
- A public safety radio amplification system shall include filters to reject frequencies below 851 MHz and frequencies above 869 MHz by a minimum of 35 dB.

- All system components must be 100 percent compatible with analog and digital modulations after installation without additional adjustments or modifications. The systems must be capable of encompassing the frequencies stated herein and capable of future modifications to a frequency range subsequently established by the City of Irvine. If the system is not capable of modification to future frequencies, then a new system will need to be installed to accommodate the new frequency band.
- Active devices shall have a minimum of -50 dB 3rd order intermodulation protection.
- All active in-building coverage devices shall be FCC Part 90 Type Certified.
- UL listing is required for any AC operated power supplies.
- Active devices shall include a minimum of 12 hours of battery backup power.
- Any in-building coverage system shall be installed by a City approved, manufacturer-trained and certified installer.

The delivered audio quality is defined below:

DAQ Delivered Audio Quality	Subjective Performance Description
1	Unusable, speech present but unreadable.
2	Understandable with considerable effort. Frequent repetition due to noise/distortion.
3	Speech understandable with slight effort. Occasional repetition required due to noise/distortion.
3.5	Speech understandable with repetition only rarely required. Some noise/distortion.
4	Speech easily understood. Occasional noise/distortion.
4.5	Speech easily understood. Infrequent noise/distortion.
5	Speech easily understood.

3. *Remedies to achieve compliance (acceptable amplification systems).* If needed to ensure compliance with the 90 percent reliability factor, the property owner must install each of the following:

- An in-building coverage system composed of a radiating cable system or an internal multiple antenna system with FCC-certified bi-directional 800 MHz amplifier(s), distribution system, and subcomponents.
- Any active devices (e.g. signal booster(s)) must be encased in a NEMA 4 (or equivalent) dust/waterproof case and clearly labeled "City of Irvine Public Safety Radio."
- Multi-band pass filters as required.

In the event of a power outage, all electrical components must be equipped with independent auxiliary battery power or generators to function at full capacity for at least 12 hours.

Once a system is installed, a Spectrum Analyzer will be used to evaluate the system for harmful interference to the 800 MHz Countywide Coordinated Communications System backbone initially, and annually thereafter by an OCSD/Communications Division FCC-certified technician. Any interference must be identified and removed before the system can be accepted.

4. *Applicable Federal Communications Commission rule compliance.* All active devices used to provide extended coverage must be FCC certificated at the time of quotation.

A. *Test standards.* Design review and certification.

1. Prior to issuance of a building permit, the applicant shall:
 - i. Retain an FCC-certified technician who will review construction plans in order to ensure that such plans meet aforementioned radio communication criteria, and recommend, if needed, an in-building solution for reliable radio communication;
 - ii. Submit copies of plans certified with the signature of the technician to the Chief Building Official of the City of Irvine, OCFA and OCSD/Communications;
2. Prior to issuance of a Certificate of Occupancy, the applicant shall:
 - i. Retain an FCC-certified technician who will test all areas of the building or structure, verify installation and operation of in-building solutions, if needed, and certify all of the findings stated herein on the date of inspection with his/her

signature. A passing test is one that demonstrates DAQ 3 with a 90 percent reliability factor on each floor. Owners of buildings that fail to meet this standard will not be in compliance with this ordinance.

ii. The building owner must retain all records of initial and annual inspections and submit copies to the Chief Building Official of the City of Irvine, OCFA, and OCSD/Communications.

B. *Initial test procedure.* For purposes of testing, each floor of the building shall be divided into a grid of approximately 20 equal areas. A maximum of two nonadjacent areas will be permitted to fail the test. In the event that three of the areas fail the test, and to provide greater statistical accuracy, the floor may be divided into 40 equal areas. In such an event, a maximum of four nonadjacent areas will be permitted to fail the test. As specified by the authority having jurisdiction, the test shall be conducted by using a Motorola XTS 3000/XTS 5000 or equivalent portable radio talking through the 800 MHz Countywide Coordinated Communications System. A spot located approximately in the center of a grid area will be selected for the test. The radio will then be keyed to verify two-way communication to and from the outside of the building through the 800 MHz Countywide Communications System. Once the spot has been selected, prospecting for a better spot within the grid area will not be permitted.

All auxiliary power systems shall be tested under load for a period of one hour to verify that the system will operate properly in the event of a power outage. The testing technician reserves the discretion to determine whether or not the battery exhibits symptoms of failure. The FCC-certified technician will ultimately decide if the auxiliary system needs to be replaced or upgraded.

C. *Annual test procedure.* After a Certificate of Occupancy is issued, the OCFA Inspector or appointed agent will annually test the in-building system components to determine general functional operability. If noncompliance is found, an approved FCC-technician will reassess the improvement upon scheduling by the building owner.

D. Every two years battery back-up systems shall be replaced per manufacturer's specifications.

5. *Additional equipment feature requirements.* Active devices shall be alarmed. A phone line (plain old telephone service or POTS) will provide dial tone to an alarm device. The alarm device will be programmed to activate a pager on the County of Orange's 900 MHz paging system. Access to the active components of the in-building

coverage system (if any) is required 24 hours a day by County technicians/engineers. The minimum alarms will indicate loss of AC failure and operational failure. The device shall also have modem access to allow remote monitoring.

6. *New building construction.* All new building construction shall have a two-inch conduit installed between the first and bottom subterranean floor and said conduit shall extend along the center of the building to the roof. At each floor and the roof, an opening shall be made to afford easy access to the conduit from the ceiling. Access in either the form of drop ceiling or conduit shall be made available along hallways and through firewalls. All subterranean parking garages shall have a similar conduit installation. (Ord. No. 05-09, § 1, 5-10-05)