CITY OF RIVERSIDE, CALIFORNIA

PUBLIC-SAFETY RADIO
AMPLIFICATION SYSTEM

The City Council of the City of Riverside does ordain as follows:
Section 1: Title 16 of the Riverside Municipal Code is hereby amended to add the following new chapter:

CHAPTER 16.36 PUBLIC-SAFETY RADIO AMPLIFICATION SYSTEM

This Chapter shall be known as the City of Riverside "Public-Safety Radio Amplification System."

Section 16.36.010 Purpose.
The purpose of this section is to require minimum standards to ensure a reasonable degree of reliability for radio communications of the City's Public Safety Emergency Services from within certain buildings and structures within the City.

Section 16.36.020 Applicability.
This article applies to construction permits issued after the effective date of this article.

Section 16.36.030 Scope.
The provisions of this section shall apply to:
(1) New buildings greater than fifty thousand (50,000) square feet;

(2) Existing buildings greater than fifty thousand (50,000) square feet when modifications or repairs exceed fifty percent (50%) of the value of the existing building(s) and are made within any twelve (12) month period or the usable floor area is expanded or enlarged by more than fifty percent (50%); and

(3) All basements where the occupant load is greater than fifty (50), regardless of the occupancy, or sub-level parking structures over ten thousand (10,000) square feet.

Section 16.36.035 Definitions.
"City Certified Persons" - A person skilled and factory trained on in-building RF distribution systems and approved by the City of Riverside. Typically, these will be person possessing a current FCC or a current technician certification issued by the Associated Public¬Safety Communications Officials International (APeO).

"Radio Frequency (RF) Distribution System" - Any system designed to receive radio signals outside of the Building and radiate it throughout the Building and conversely, receive a radio signal generated within the Building and re-radiate a signal outside of the Building.

"Downlink" - Radio frequencies traveling FROM outside the structure to inside the structure. Typically, the signals transmitted from a distant repeater to a portable radio inside a building.

"Radiating Cable System" - A system that feeds a series of amplifiers and radiating cable antennas spread through the building using special radiating (leaky) coaxial cable.

"Signal Booster" - A specialized radio frequency amplifier, also known as a "Bi¬Directional Amplifier" or "BDA," that receives specific radio frequency signals from an antenna and amplifies and retransmits these signals.

"Uplink" - Radio frequencies traveling from inside the structure to outside the structure. "Voter-Receiver System" - Receivers installed at multiple tower sites which feed audio to a comparator or voter at a central site. The comparator selects the receiver with the best signal and sends that audio to the dispatcher.

Section 16.36.040 Radio Coverage
(a) No person shall erect, construct, modify, or repair any building or structure or any part thereof, or cause the same to be done which restricts or blocks adequate radio coverage for the City of Riverside radio communications system, including but not limited to firefighters and police officers.

(b) For the purpose of this section, adequate radio coverage shall constitute a successful communications test between the equipment in the building and the communications center and shall include all of the following:

(i) A minimum signal strength of -95 dBm available in 90% of the area of each floor of the building when transmitted from the Public-Safety Communications Center; and

(ii) A minimum average signal strength of -107 dBm for analog and -95 dBm for digital systems as received by the City's Public-Safety Communications Center when transmitted from 90% of the floor area of the building.

(c) As used in this section, ninety percent (90%) coverage or reliability means the radio will transmit and receive communications ninety percent (90%) of the time at the field strength and levels as defined in this article.

Section 16.36.050 FCC Authorization.
If amplification is used in the system, all FCC regulated equipment shall have a current FCC Certification. The FCC certification numbers must be provided in writing to the Riverside Telecommunications Department. If required, additional FCC authorizations must be obtained prior to use of the system. A copy of these authorizations shall be provided to the City of Riverside' s Frequency Coordinator.

Section 16.36.060 Enhanced amplifications systems.
(a) Where buildings and structures are required to provide amenities to achieve adequate signal strength, they shall be equipped with any ofthe following to achieve the required adequate radio coverage for public safety channels; radiating cable system(s), internal multiple antenna system(s) with amplification system(s) as needed, voting receiver system(s) as needed, or any other City approved system(s).

(b) If any part of the installed system or systems contains an electrically powered component, the system shall be capable of operating on an independent battery and/or generator system for a period of at least eight (8) hours without external power input. The battery system shall automatically charge in the presence of external power.

(c) Amplification equipment must have adequate environmental controls to meet the heating, ventilation, cooling, and humidity requirements of the equipment that will be utilized to meet the requirements of this code. The area where the amplification equipment is located also must be free of hazardous materials. The location of the amplification equipment must be in an area that has twenty-four-hour, seven day a week access for the City's authorized communications personnel without prior notice. All communications equipment including amplification systems, cable, and antenna systems shall be grounded with a single point ground system of five ohms or less. The ground system must include an internal tie point within three feet of the amplification equipment. System transient suppression for the telephone circuits, ac power, radio frequency (RF) cabling and grounding protection are required as needed.

(d) The use of Signal Boosters operating on appropriate Riverside frequencies for the purpose of this article approved when required and are subject to the following conditions:

(i) The signal booster must have a current FCC certification for the City of Riverside frequencies it will amplify and no others.

(ii) FCC Class B (broadband) amplifiers will use filters specifically tuned to City of Riverside frequencies and reject adjacent frequencies in the direction of the signals going into the structure one (1) MHz or more from the closest City frequency by at least 35 dB. The City shall provide a list of current operating frequencies.

(iii) Signal boosters must have the capability of changing frequencies or adding frequencies as may be required in the future by the frequencies the FCC authorizes the City to use.

(iv) Signal boosters shall have the optional capability to send failure alarms to numeric City pagers or via a TCPIIP connection. The requirement of this option will be determined by the City based on a variety of factors including the nature of the occupancy and types of material s stored.

(v) Unless otherwise approved by the City, signal boosters, associated filters, and options (except battery back-ups) shall be enclosed with a single NEMA 12 or better cabnet. The cabinets shall not have openings.

(e) The following information shall be provided to the City representative by the building owner:

(i) A blueprint showing the location of the amplification equipment and associated antenna systems, including a view showing building access to the equipment; and

(ii) Schematic drawings of the electrical, backup power, and antenna system.

Section 16.36.070 Testing procedures - method to conduct tests.

(a) Tests shall be made by a City certified person(s) using test frequencies within the same band. If testing is done on the actual frequencies, then this testing must be coordinated within the City's Public-Safety Communications Center. All testing must be done on frequencies authorized by the FCC. A valid FCC license will be required if testing is done on frequencies different from the police, fire, or emergency medical frequencies.

(b) Measurements shall be made using the following guidelines:

(i) With a service monitor using a unity gain antenna on a small ground plane;

(ii) Measurements shall be made with the antenna held in a vertical position as three (3) to four (4) feet above the floor;

(iii) A calibrated service monitor (with a factor calibration dated within twenty-four (24)) months may be used to do the test;

(iv) A Public-Safety Communications representative for the City may also make simultaneous measurements to verify that the equipment is making accurate measurements. A variance of 3 dB between the instruments will be allowed; and

(v) If measurements in one location are varying, then average measurements may be used.

Section 16.36.075 Initial Tests.

(a) A copy of such certification(s) shall be provided to the City's frequency coordinator.

All compliance testing shall be the responsibility of the building or structure owner and shall be done at no expense to the City.

(b) Signal strength, both downlink (inbound) and uplink (outbound), shall be measure on each and every floor above and below ground including stairwells, basements, penthouse facilities, and parking areas of the structure. The structure shall be divided into fifty (50) foot grids and the measurements shall be taken at the center of each grid. In police substations and fire command posts, the grids shall be subdivided into four (4) twenty-five (25) foot grids in place of each fifty (50) foot grid

Section 16.36.080 Annual tests.

When an in-building system is installed, all active components must be tested by City certified person(s) a minimum of once every twelve (12) months. If communications appear to have degraded or if the tests fail to demonstrate adequate system performance, the owner of the building or structure is required to remedy the problem and restore the system in a manner consistent with the original approval criteria. The re-testing will be done at no expense to the City as required in the original testing procedures. Annual tests results shall be sent to the City's frequency coordinator.

City staff may, at any time during routine business hours, conduct independent testing of the in-building system to verify proper operation.

Section 16.34.090 Enforcement

The provisions of this Chapter may be enforced by procedures set forth in Chapter 1.17, by criminal prosecution, by civil injunction, or any other remedy provided by law.