### 📡 What ERRCS Is

An **Emergency Responder Radio Communication Coverage System (ERRCS)** — often implemented with **Bi-Directional Amplifiers (BDA)** or **Distributed Antenna Systems (DAS)** — is a system installed inside buildings to ensure that emergency responders' radios work reliably throughout the structure. It compensates for poor radio signal penetration due to modern building materials and layouts. These systems support public safety communications (fire, police, EMS) during emergencies.

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### 🧱 Applicable Codes & Standards in San Francisco

#### 🔹 Base Codes

San Francisco adopts the **California Fire Code (CFC)** with local amendments. ERRCS design, installation, testing, and maintenance must meet:

- **San Francisco Fire Code Section 510** — Local standard for ERRCS (formerly referred to as ERCES under Administrative Bulletins).
- **NFPA 1225 (2022)** — Standard for emergency responder communications systems. This is referenced in SF and guides performance and installation.
- **SFFD Administrative Bulletin 2.01 Addendum G** — Further details submittal and compliance requirements for ERRCS.

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### 🛠️ Requirements in San Francisco

#### ✅ 1. New Buildings

- **ERRCS must be installed** in buildings where fire code requires it (typically where adequate public safety radio signal isn't present).
- ERRCS must be **certified by an OSHA NRTL-recognized testing organization** (such as UL).
- The **certification document or placard must be mounted at the ERRCS/BDA panel**.

**Note:** Adequate in-building coverage can sometimes be demonstrated by a field test to avoid installation under some conditions.

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#### 📜 2. Existing Buildings

- Buildings that already have an ERRCS must obtain certification from an OSHA-recognized testing laboratory.
- Certification deadlines per **San Francisco Fire Code Section 510.6.1.2** were:
    - **High-rise buildings:** by **June 1, 2023**

    - **All other buildings with ERRCS:** by **September 1, 2023**
- Documentation of the certification must also be placed at the system panel.

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### 📝 3. Certification Requirements

All ERRCS vendors, designers, installers, testers, and maintainers must be **credentialed/certified**. The certificate must be included in permit plans submitted to the San Francisco Fire Department (SFFD) for review.

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### 🧪 Testing, Maintenance & Operation

While San Francisco code focuses on installation and certification, the **International Fire Code (IFC 510)** and related standards require ongoing testing and maintenance:

#### 🗓️ Annual Operational Testing

- Annual testing and inspection by qualified personnel is required.
- Tests must confirm that signal coverage meets required criteria throughout the building.
- Records of tests (signal strength data, certificates) should be retained on site and provided to the fire department upon request.

#### 🔌 Backup Power & Monitoring

- The system must remain fully operational at all times.
- Backup power (e.g., batteries) must be maintained and tested annually.
- System status should be monitored, and any impairment reported immediately to the fire department.

#### 🧠 Maintenance

- Prevent unapproved modifications that could degrade signal (e.g., new walls, window coatings) without re-testing and approval.

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### 🪪 Permits & Documentation

#### 🔧 Operational Permits

- An **Operational Permit** is required to operate an ERRCS within San Francisco.

#### 🗂️ Plan Submissions

- Plans for ERRCS install/alterations must be submitted to SFFD for review under the Fire Alarm/Signaling plan check process.

### 🚧 Temporary Occupancy

- For high-rise or phased occupancy, the ERRCS or approved alternative wired communication system must be operational and approved before occupancy permits are issued.

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### 📊 Performance/Coverage Expectations (by reference to IFC/NFPA)

Though San Francisco references NFPA 1225 and Section 510, jurisdictions typically follow performance targets similar to IFC/NFPA guidelines:

- **≈90% minimum radio coverage** for general areas.
- **≈99% or 100% coverage** in critical areas (stairwells, fire command centers).
- System design should consider the **specific radio system used by local responders** (frequencies, power levels).

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### 🧠 Summary Checklist

| Requirement | Applies to | Key Point |
|---|---|---|
| Installation | New buildings | ERRCS must be installed if required by Fire Code |
| Certification | New & existing | OSHA NRTL certificate required; placard on BDA |
| Testing | Ongoing | Annual test & documentation |
| Permitting | All installations/alterations | SFFD review & operational permit |
| Coverage | Code subject to test | Meets NFPA/IFC performance goals |