

Safer Buildings Coalition's Position Paper – Minimum Qualifications of Personnel

January 20, 2024

Only competent, independent organizations should evaluate and document the competency of individuals seeking qualification according to industry best-practice standards.

FCC rules and adopted codes and standards require that qualifications of personnel must focus on the training, experience, and verification of individuals, not the organizations they work for.

The continuing evolution of ERCES technology, best practices, codes, and standards require that programs affirming the qualifications of personnel must provide for continuous and ongoing validation to maintain efficacy throughout the qualification period which is vital for both AHJ's and Frequency License Holders.

Key Points:

1. Emergency Responder Communications Enhancement Systems (ERCES) aim to protect first responders, building occupants, and structures. Additional care is needed for safeguarding public safety radio networks outside buildings.
2. ERCES, a relatively new requirement, faces rapid growth due to code adoption and enforcement, potentially leading to confusion, policy conflicts, and unintended consequences.
3. A significant lack of competency, especially in RF expertise, jeopardizes public safety radio networks. Essential training and qualification of personnel are necessary.
4. Federal Communication Commission (FCC) rules, enforced by frequency license holders within jurisdictions, govern ERCES operation, making local fire and building codes secondary for ERCES. Jurisdiction's frequency license holders must oversee ERCES deployments.
5. Qualifications of Personnel, mandated by both the FCC rules and the codes, rely on the skills, experience, training, and qualification of individuals, not organizations.
6. RF concepts and skills are crucial for ERCES safety and efficacy. Organizations affirming individual knowledge must be competent, particularly in RF skills.
7. Programs that do not *continuously* validate the competency of individuals and their direct association with their organization are inadequate to assure proper design and operation of ERCES and therefore do not meet the qualification of personnel requirement established in fire codes/standards.
8. The ISO/IEC 17024:2012 standard contains principles and requirements for a body certifying individuals against specific requirements, and includes the development and maintenance of a best-practice certification scheme for these individuals.

Background:

The International Fire Code (IFC) outlines minimum qualifications for ERCES personnel, currently requiring a valid FCC-issued general radio operator's license (GROL) and documentation of in-building system training. These qualifications are earned by individuals, not organizations. Likewise, the FCC has a competency regime for licensing of individuals, one of which is the GROL.

Fire and Life Safety Systems demand competent personnel for designing, installing, testing, and maintaining systems to ensure reliable and effective performance when lives are at stake.

Systems such as fire and smoke protection, alarm systems, and sprinkler systems are vital for safeguarding building occupants and structures. ERCES, as part of fire and life safety systems, must be correctly installed to prevent risks to the building, occupants, and critical public safety radio networks.

Improperly functioning ERCES, operating via RF signals, can disrupt public safety radio operations for miles around the subject building.

Example: ERCES Disruption in Florida

In April 2015, an ERCES problem interfered with five public safety radio coverage areas in Florida, affecting Miami-Dade County, City of Miami, City of Hialeah, City of Aventura, Broward County, and the State of Florida radio systems. A 45-story building downtown had activated Bi-Directional Amplifiers (BDAs) causing issues. FCC field responders traced and resolved the problem.

Instances like these are increasing with the enforcement of IFC and NFPA codes, attracting inexperienced companies to the ERCES industry.

The minimum qualifications of personnel contained in the IFC is a good start, but the GROL is inadequate. While there is general RF knowledge covered in the GROL exam, there is no discussion of in-building public safety communications and other topic central to a competent ERCES design and deployment. A more robust credential is needed.

The demand for competent, certified staff capable of ERCES design, installation, testing, and maintenance has never been higher.

The Root of the Problem: Fire Code vs FCC Rules

Fire and building codes focus on specific building infrastructure, enforced by Authorities Having Jurisdiction (AHJs). The education and training of these professionals are primarily with physical infrastructure within structures.

Fire codes and standards, with variations across jurisdictions, primarily address building infrastructure. In contrast, ERCES must achieve the expectations of adequate in-building coverage established by codes and standards, but must do so without causing harm to public safety radio networks operated under FCC authority.

Under FCC rules, no ERCES system rebroadcasting licensed public safety frequencies may operate without the express written consent of the Frequency License Holder. Recent codes and standards revisions aim to restore ERCES operation control to Frequency License Holders governed by FCC Rules.

Appropriate Roles of AHJs and Frequency License Holders:

AHJs should:

- Determine if adequate, code-compliant public safety radio coverage exists in the building through proper RF evaluation best practices.
- If inadequate, require the building owner to deploy a corrective solution.
- Collaborate with Frequency License Holders and Industry Contractors to determine the best corrective solution.
- Validate that competent and certified individuals currently work for system integrator on each project being designed, installed, or maintained in their jurisdiction.
- Provide written guidance on local processes, adopted codes, and standards.
- Collaborate in evaluating ERCES submittals.
- Inspect deployed systems for compliance with codes and standards.
- Inspect test results confirmed by Frequency License Holders.
- Participate in periodic maintenance inspections.
- Administer local policies and ordinances.

Frequency License Holders should:

- Establish necessary frequencies and radio performance criteria for ERCES.
- Conduct RF testing and submittal reviews.
- Provide final RF testing and documentation processes.
- Collaborate with AHJs and Industry Contractors to determine the best corrective solution.
- Validate that competent and certified individuals currently work for system integrator on each project being designed, installed, or maintained in their jurisdiction.
- Issue documents providing provisional and operational permission for rebroadcasting licensed frequencies.
- Maintain operational oversight and control of the radio network and the ERCES deployment process per FCC rules.

SBC Qualifications of Personnel Principles:

1. Adopted codes require qualifications of personnel, which means individuals, not organizations.
2. ERCES are essential life-safety systems. The potential for these systems to cause disrupting interference to public safety communication networks demands that RF competency is paramount in determining qualifications of personnel.
3. Bodies certifying the qualifications of individuals must be competent to do so.
 - a. The minimum acceptable principles and requirements for a body certifying persons against specific requirements are detailed in the ISO/IEC 17024:2012 standard.

- b. The standard includes the development and maintenance of a certification scheme for persons.
- 4. Competency of individuals must be evidence-based.
 - a. Competency evaluation and validation process must be:
 - i. Independent
 - ii. Objective
 - iii. Without conflicts of interest
 - b. All submittals must be validated
 - i. Skills performance
 - ii. Relevant work history
 - iii. Personal recommendations
 - c. Minimum acceptable principles for knowledge test development are detailed in the ISO/IEC 17024:2012 standard.
 - d. Direct observation of necessary practical skills is required. Acceptable methods:
 - i. Practical skills demonstrated to and attested by a qualified reviewer.
 - ii. Manufacturer Hands-on Training and Certification.
- 5. Credentials must be publicly accessible for inspection and verification, providing most current level(s), status, issued date, and expiration date.
- 6. Bodies certifying qualifications of individuals should require continuing education, ensuring continued competencies and accomplishments that align with affirming organization's requirements.
- 7. Bodies certifying qualifications of individuals must utilize a discipline process to enable performance feedback and corrective action.
 - a. Elements must include processes for complaint, review, appeal, revocation, and restoration.

Conclusion:

ERCES' purpose is to protect first responders, building occupants, and structures. Additional care is crucial for safeguarding public safety radio networks. The RF competency of individuals involved in ERCES design, installation, testing, and maintenance is central to this effort.

SBC's foundational principle of qualification of personnel for ERCES is intended to ensure the safety and efficacy of these systems, while providing assurance to all stakeholders that individuals engaged in ERCES work are continuously competent to do so.

Any lesser standard fails to comply with fire and building codes, FCC rules, and widely-accepted standards, jeopardizing the safety of first responders and the communities they protect.