



Clark County Fire Department

FIRE PREVENTION BUREAU

Inspection Guide: Emergency Responder Radio Coverage (ERRC) Testing

Clark County Fire Department requirements for the acceptance testing of the Emergency Responder Radio Coverage (ERRC) system.

INITIAL ACCEPTANCE TESTING PROCEDURE:

VERIFY AND RECIEVE THE FOLLOWING

- 1) Heat Map (spectrum analyzer report) to be provided by contractor before testing. Each floor shall be divided up into approximately 20 zones.
- 2) Verify that the installing contractor has an approved set of plans on site.
- 3) Require the testing company to provide a representative with a spectrum analyzer or other suitable test equipment and the analyzer report.
- 4) Have a minimum number of inspectors based on size of property and availability of inspectors, work with your DFM.
- 5) Have the fire alarm company and the ERRC installation company representative present during testing of the ERRC
- 6) Verify 2 radios have been provided to CCFD, per current CCFD standards, and an additional 1 for every 1 million square feet of building. See Radio section for specifics.

INITIAL ACCEPTANCE TESTING PROCEDURE:

- 1) Go to fire command and verify that the unit is not in alarm or in trouble status.
 - a) Start the 24-hr. Backup test and verify that the head in unit and the remote units are all on backup power still. Verify that the signal for loss of normal power supply is monitored. Test team will test functionality after power has been restored.
 - b) The test team will verify the model for the BDA and DAS system as per the approved plans.
 - c) Verify the BDA (Bi-Directional Amplifier – head end unit), DAS (Distributed Antenna System - remote) and battery system components shall be contained in a NEMA 4 or NEMA 4X type enclosure.
 - d) The test team shall verify a dedicated panel with visual and labeled indications of the monitored signals.
 - e) The test team will verify that the riser has the approved survivability requirement as per the approved plans, NFPA 70, NFPA 1221 and IFC 2018. The riser coaxial cables shall be rated as riser cables and routed through a 2-hour-rated enclosure. Feeder cables do not need to match this requirement.
 - f) The test team will verify that the BDA (head end unit) and DAS (remotes) are in a secured area in areas with a fire resistance rating of 2-hrs. or what the construction of the building's fire rating requirements are. Verify the BDA is not below grade level as per NFPA 1221.

- g) The test team shall visually inspect the donor antenna and verify it's properly secured and grounded.
- 2) Return to fire command either 24-hrs. later and verify the signal for the loss of power is still on the panel.
- a) One inspector will stay in FCC to repeat and confirm the radio communication for the testing in the field.
 - b) The team will split up with at least one member of the installing company walking with the radio and the spectrum analyzer verifying the coverage meets 95 percent of the floor of the building as per IFC 2018 Section 510.5.3.
 - i) >-95dbm for the signal strength always, sending and receiving. (reminder >-95dbm is -80, -50, -30, negative number means lower is better strength)
 - ii) The test areas shall be the 20 zones per floor.
 - iii) The test team will test from the approximate center of each zone. A voice check shall be performed and verification of signal strength, a failure is a failure of that zone, and no further testing of that zone is allowed.
 - iv) If more than 2 areas fail per floor the zones may be divided up into 40 sections. Failure of not more than two adjacent test areas shall not result in a failure. If coverage failure at 40 zones, system needs to be reworked.
 - c) All critical areas shall be tested for 99% coverage.
 - i) Emergency Command Centers
 - ii) Fire Pump Rooms
 - iii) Exit Stairs
 - iv) Exit Passageways
 - v) Elevator Lobbies
 - vi) Standpipe Cabinets
 - vii) Sprinkler Sectional Valve Locations
 - d) A test team shall find a remote antenna and in coordination with another tester at a point farthest from an antenna, double click the radio while directly under the antenna to verify the system does not oscillate and lock up the BDA.
 - e) The test team shall verify and test the following signals are monitored at the dedicated panel and at the FCC panel.
 - i) Normal AC power
 - ii) Loss of normal AC power
 - iii) Battery charge failure
 - iv) Low battery capacity (to 70 percent depletion)
 - v) Donor Antenna malfunction
 - vi) Active RF emitting device malfunction.
 - vii) System component malfunction
 - viii) Supervisory Signals required by NFPA 1221

- f) Test team shall verify that all signals have cleared, and all power supplies have been restored prior to completing the test.
- g) The lead team member shall provide the testing narrative in the resulting of the permit. Provide the spectrum analyzer report for CCFD and submit to be scanned.
- h) Verify Maintenance contract providing 24hr emergency response 7 days a week.

ANNUAL RENEWABLE PERMIT TESTING PROCEDURE:

PROVIDE THE FOLLOWING:

- 1) Have the installing contractor present for the testing of the ERRC.
- 2) Verify that the installing contractor has approved set of plans on site.
- 3) Verify Maintenance testing was performed under backup power for a minimum of 1 hour.
- 4) Verify an updated heat map is provided.
- 5) If testing is required based on construction changes or alterations to coverage.
 - a) Go to fire command and verify that the unit is not in alarm or in trouble status.
 - b) Follow testing procedures for a new install listed above if changes to the building have been made. Testing signals is required in areas that are affected by a building change.
 - c) Spot checking other areas may also be performed at this time.
- 6) The lead team member shall provide the testing narrative in the resulting of the permit.
 - a) Provide the (heat Map) spectrum analyzer report for CCFD and submit to be scanned.
 - b) Copy to be maintained on site for three years.
- 7) Verify Maintenance contract providing 24hr emergency response 7 days a week.

RADIOS TO BE PROVIDED

Section 510.6.6 Fire Department Radios states “The owner shall provide the fire department with portable radios in accordance with this section when the emergency responder radio coverage system is installed in a new building. Radios are not required for existing buildings being retrofitted with an emergency responder radio coverage system.”

*Inspectors **should not be approving** inspections on ERRC systems installed in **new** buildings without confirming that the radios have been provided to CCFD as required by 510.6.6. The requirement for providing radios as part of the installation on new buildings has not changed.

Section 510.6.6.1 Number of Radios states “A minimum of 2 radios, and no less than one radio for every 1 million square feet of building area, shall be provided to the fire department.”

*Minimum 2 radios required with possible additional radios required based on increased square footage.

Section 510.6.6.2 Radio Model states “Radios shall be approved by the fire code official” As listed Below.



CLARK COUNTY FIRE DEPT SNACC APPROVED APX8000 RADIOS

Line #	Item Number	Description
	APX™ 8000 Series	
1	H91TGD9PW6AN	APX 8000 ALL BAND PORTABLE MODEL 2.5.
1a	QA01648AA	ADD: HW KEY SUPPLEMENTAL DATA.
1b	Q806CB	ADD: ASTRO DIGITAL CAI OPERATION.
1c	Q361AN	ADD: P25 9600 BAUD TRUNKING.
1d	Q667BB	ADD: ADP ONLY (NON-P25 CAP COMPLIANT) (US ONLY).
1e	QA02006AC	ENH: APX8000XE RUGGED RADIO.
1f	QA00580AA	ADD: TDMA OPERATION.
1g	QA05509AA	DEL: DELETE UHF BAND.
1h	H38BS	ADD: SMARTZONE OPERATION.
1i	G996AP	ADD: PROGRAMMING OVER P25 (OTAP).
1j	HA00025AH	ADD: 5Y ESSENTIAL ACCIDENTAL DAMAGE.
1k	QA01427AG	ALT: APX8000/XE HOUSING GREEN.
	Standalone Items	
2	NNTN8860A	CHARGER, SINGLE-UNIT, IMPRES 2, 3A, 115VAC, US/NA.
3	PMMN4106D	XE500 REMOTE SPKR MIC WITH CHANNEL KNOB, HIGH IMPACT GREEN.