



# MARTIN COUNTY FIRE RESCUE

Fire Prevention  
800 SE Monterey Road  
Stuart, FL 34994  
772 288-5633



## Fire Prevention Division

### Two Way Radio Communications Enhancement System / Bi-Directional Amplifier (BDA)

#### Check List

1. Approved Plans to include written sequence of operation, as-built drawings, and operation and maintenance manuals on site. (NFPA 72-14.6.1.1)
2. Disciplines on site for testing: \_\_\_ Fire Alarm Co. \_\_\_ DAS/ BDA Installer \_\_\_ MCFD Fire Insp.
3. Organization responsible for the electrical system shall be identified.(NFPA 70-110.21)
4. Masts and metal structures supporting the antennae are grounded and Lightning Protection as required by the National Electric Code. (NFPA 70-810.21)
5. Openings and penetrations properly sealed.(NFPA 70-820.26)
6. Pathway of survivability as per plan. (NFPA 72-12.4/24.3.6.8) \*On plan set-different criteria for FS bldg. and Level identified.
7. System components are approved and compatible with the public safety radio system, included are repeaters, transmitters, receivers, signal boosters, cabling and the finer distributed antenna system. (NFPA 72-24.5.2.5.1)
8. All repeaters, transmitters, receivers, signal booster components and battery system components are contained and installed in a UL approved NEMA 4 or 4 X Type enclosures.(NFPA 72-24.5.2.5.2)
9. Fire Alarm system supervisory and trouble signals were activated and annunciated by the FA panel for the following (NFPA 72-24.5.2.6.1 (2) and (3)):
 

• <b>Antenna Malfunction</b>	<input type="radio"/> FA system supervisory	<input type="radio"/> Signal booster trouble indicated
• <b>Signal Booster Failure</b>	<input type="radio"/> FA system supervisory	<input type="radio"/> Signal booster trouble indicated
• <b>Low-battery capacity, alarming at 70% of capacity</b> (Factory Tested for this percentage –Label on inside of battery back enclosure)	<input type="radio"/> FA system supervisory	<input type="radio"/> Power supply trouble indicated
• <b>Loss of normal AC Power</b>	<input type="radio"/> FA system supervisory	<input type="radio"/> Power supply trouble indicated
• <b>Failure of Battery Charger</b>	<input type="radio"/> FA system supervisory	<input type="radio"/> Power supply trouble indicated
10. Integrity of the circuit monitoring signal boosters and power supplies shall comply with section 10.6.9 and 12.6.
  - All monitoring of system components must provide notification of system integrity automatically within 200 seconds (3 min 20 seconds) (NFPA 72-24.5.2.6.1 (1), NFPA 72-12.6.1)



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11. A Dedicated monitoring panel providing visual and labeled notifications is located in the Emergency Command Center and provided indications of the following occurrences for each signal booster:

(NFPA 72-24.5.2.6.2: (BDA disconnect notification needs to be immediate to 3 minutes and 20 seconds.)

- Loss of A/C Power
- BDA-Signal Booster Trouble
- BDA- AC Power Fail
- BDA-Failure of Battery Charger
- BDA-Low Battery Capacity
- Remove BDA-Antenna Fail

12. Radio coverage was provided throughout the building as a percentage of floor area as follows:  
(Verify signal heat map for internal antennae locations, contact Dispatch for a testing radio channel and test areas throughout the bldg. with 1 Insp in BDA Equipment room, 1 insp outside and 1 insp walking the building with the map performing radio tests to other inspectors.( Verify signal strength from the signal strength chart from installer)

a. **Critical Areas 99% floor area radio coverage** ( NFPA 72-24.5.2.2.1):

- Emergency Command Center
- Fire pump room
- Elevator lobbies
- Sprinkler sectional valve locations
- Exit Stairs
- Exit Passageways
- Standpipe cabinets
- Other areas deemed critical by the AHJ

Areas that did not pass: \_\_\_\_\_

b. **General Building Areas 90% floor area radio coverage** ( NFPA 72-24.5.2.2.2):

Verify plan to heat map  Areas that did not pass: \_\_\_\_\_

13. Two (2) independent and reliable power supplies provided and functioned, 1 primary and 1 secondary. (NFPA72-10.6.3.2/24.5.2.5.5) as follows:

a. **Primary (one of the following)**

- Commercial light and power
- Engine driven or equivalent and where person trained to operate is on duty at all times
- Engine driven generator or equivalent arranged for cogeneration with commercial light and power.

b. **Secondary (one of the following)**

A storage of batteries dedicated to the system with at least 12 hours of 100% system operation capacity and arranged per NFPA 72-10.6.10.



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\_\_\_ Automatic-starting engine-driven generator serving the dedicated branch circuit or the system with at least 12 hours of 100% system operation capacity and storage batteries dedicated to the system with at least 2 hours of 100% system operation capacity and arranged in accordance with 10.6.11.3. (NFPA 72-24.5.2.5.5.2)

- 14. The minimum signal strength inbound -95dBm provided throughout coverage area. (NFPA 72-24.5.2.3.1)
- 15. The minimum signal strength outbound -95dBm provided at donor site from the coverage area. (NFPA 72-24.5.2.3.2)
- 16. Donor Antenna – isolation is maintained between donor antennae and all inside antennas and shall be a minimum of 15dB above the signal booster gain under all operating conditions (NFPA 72-24.5.2.3.3)
- 17. Signal boosters shall have FCC certified and verified by approved paperwork provided. (NFPA 72-24.5.2.5.4)
- 18. Signal boosters are compatible with both analog and digital communications simultaneously at the time of installation. (NFPA 72-24.5.2.5.4)
- 19. Provide signage where the signal booster equipment is located and FD accessible (10.18.3.2) with the following:
  - Fire Department Signal Booster Permit Number and Service Provider Name and Contact Number
- 20. **In DAS/BDA Equipment Room- in Labeled Binder for DAS/BDA Equipment :** (NFPA 72-14.6.1.1)
  - \_\_\_ As Built drawings \_\_\_ Manufacturer specifications \_\_\_ Post Signal Heat Map \_\_\_ Maintenance Repair Log
  - \_\_\_ Post repair signal strength measurements \_\_\_ ORCAT Approval Copy \_\_\_ Maintenance Contract
  - Note:** This DAS/BDA records are separate from FA records, as different installer and repair technicians
- 21. Provide NFPA 72 Completion Paper Work for install from fire alarm contractor and/or master electrical. (FS 489)
- 22. Provide documentation that a maintenance and service agreement has been entered into between the property owner and service provider for the fire alarm radio transmitter. All components and signal strength level testing is required annually. (NFPA 72-14.4.10.1 and 14.4.10.6, NFPA 72-14.6.1.1)



**Inspection Passed**



**Inspection Failed** (\_\_\_ Re-schedule \_\_\_ Fire Only)

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