PART 1 GENERAL

1.01 SUMMARY

A. The purpose of this specification is to establish the requirements and standards for initial survey for public safety radio signal strength per NFPA and IFC

B. Survey should be performed after the building is substantially completed, and prior to start of installation of electrical wiring.

C. Conduct a survey using a RF Spectrum Analyzer, a calibrated, system-compatible radio or another suitable instrument with traceable certificate of calibration to analyze the RF signal strength of Emergency Responder Radio Signal into the building and determine if amplification of the signal is required. Both inbound and outbound signal strength shall be determined, measured, calculated and documented as required by code.

1.02 SURVEY CRITERIA IF REQUIRED

A. The required Public Safety Radio Signal Level inside the Owner's facility must be determined per code, ordinance or AHJ

B. Survey shall be performed by an FCC licensed technician holding a current GROL license. Honeywell Fire have distributors that meet these requirements.

1.03 REGULATIONS

A. Codes, regulations and standards referenced in the Section are:

1. NFPA 1 – The National Fire Code (including Annex O from 2009)

2. NFPA 70 – The National Electrical Code

3. IFC 510- Emergency Responder Radio Coverage

4. NFPA 101, Life Safety Code, the Ohio Building Code, and Local Code and Building Authority requirements.

5. NFPA 72 National Fire Alarm Code

6. FCC 47 CFR Private Land Mobile Radio

7. 90.219 Services-Use of Signal Boosters

8. ICC International Fire Code, Code and Commentary

9. Local or State Promulgated Fire Code

10. ADA "Americans with Disabilities Act"

11. FCC's OET 65 Standards "Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields"

12. FCC Rules Part 22, Part 90 and Part 101

13. NFPA 1221 2016 Edition

14. International Building Code 2012 / 2015 / 2018

15. UL 2524

1.04 DEFINITIONS

A. Definitions:

1. Bi-Directional Amplifier BDA: Device used to amplify band-selective or multi-band RF signals in the uplink, to the base station and in the downlink from the base station to subscriber devices for enhanced signals and improved coverage.

2. Emergency Responder Radio Coverage System: A two-way radio communication system installed to assure the effective operation of radio communications systems for fire, emergency medical services, or law enforcement agencies within a building or structure. A system used by firefighters, police, and other emergency services personnel.

3. FCC: Federal Communications Commission

4. OET 65 Standards: FCC's Bulletin 65 provides Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.

5. Public Safety/First Responder: Public Safety or First Responder agencies that are charged with the responsibility of responding to emergency situations. These include, but are not limited to law enforcement departments, fire departments, and emergency medical companies.

6. RSSI: Received signal strength indicator RSSI is a measurement of the power present in a received radio signal.

7. BER: Bit Error Rate is the number of bit errors per unit time

8. GROL- FCC General Radio Operators License

9. ERRCES- Emergency Responder Radio Coverage Enhancement System

10. DAS-Distributed Antenna System

1.05 EXECUTION

A. Testing Procedures

1. Minimum Signal Strength: For testing system signal strength and quality, the testing shall be based on the. -95dBm nominal signal at 100%.

2. Spectrum Analyzer or Calibrated Handheld Radio shall be used as basis for signal measurements or other method as approved by AHJ.

3. Testing should be based on a minimum of 20 grid locations per floor OR maximum of 1600 SQ ft. areas if the floor exceeds 32,000 Sq. Ft. Also, testing should include all critical areas per NFPA. See 1.02 of this specification and NFPA 72 2013 or NFPA 1221 2016. OR per any method determined by the AHJ, local code or ordinance.

3. A minimum signal strength of -95 dBm shall be provided throughout the coverage area for both uplink and downlink by the Local Fire Department.

a. RSSI measurement only

1.06 SURVEY SUBMITTALS

A. Submit testing data for each level of the building.

1. An RF measurement drawing of each floor of the building which indicates relative RF field strength for each frequency band of interest must be submitted to the AHJ.

2. The drawing should indicate clearly the areas that have passed or failed based on the above parameters.

END OF SECTION