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Tenant Design and Construction Review Requirements for Radio Systems. (DRAFT)

Prepared by Engineering Department, Electrical/ Electronics.
5/13/2020.

Compliance is required with Specifications of the Tenant Construction Manual, issued by PA Engineering Department, Quality Assurance Division (QAD) on December 2015, including the following requirements:

Radio Systems

1. Port Authority Public Safety Radio Systems: Any tenant construction or alteration involving interior space modifications or building/terminal expansions shall modify the existing Port Authority Public Safety in-building Distributed Antenna System (DAS) to meet the technical requirements herein.

Tenant construction in new buildings shall require the tenant to install a new DAS if no such system exists. A DAS typically consists of radio frequency (RF) booster-based signal regeneration equipment and a suitable in-building antenna system designed to provide 97% RF coverage reliability in 97% of locations with a minimum RF signal level of -90dBm or better and a Delivered Audio Quality (DAQ) of 3.4, pursuant to the TIA TSB-88 industry standard, latest edition, for both downlink and uplink radio signals. Submittals shall include complete design details and calculations subject to approval. Such Distributed Antenna Systems shall not be integrated with common carrier wireless communications systems.

All tenant antennas shall be installed a minimum of 10 feet from any Port Authority and/or common-carrier antennas. Coordination with other tenant-installed antennas shall be responsibility of the tenant.

2. Wireless communications systems:

a. Tenant unlicensed wireless systems design shall be identified with the operating frequencies, the specification, technology, height, weight, and locations of antennas, the antenna effective radiated power, and the associated equipment catalog cuts. Interference issues shall be coordinated.

b. Tenant licensed wireless systems design shall be identified with the operating frequencies, mode of operation (conventional, trunked, analog, digital, etc.), the specification, height, weight, and locations of antennas, the antenna effective radiated power for each operating frequency, RF interference study and the associated equipment catalog cuts. Outdoor and indoor radiation of RF signals shall be submitted with coverage maps. Maps shall include RSSI plots. Tenant licensed wireless systems shall not interfere with any PA licensed radio systems. In addition, tenant licensed wireless systems shall comply with Title 47, Chapter I of the Code of Federal Regulations. RSSI for 800 MHz band services shall not exceed -45 dBm on downlink.

(1) Any modifications of In-Building Distributed Antenna System (DAS) at the World Trade Center Site and other sites shall be coordinated with the existing DAS in place, and shall require a submission of a Tenant Alteration Application (TAA).

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(2) Any increase in the quantity of RF carriers from the approved configuration shall require a resubmission of the Tenant Alteration Application (TAA).

(3) Any increase in ERP or EIRP of RF carriers from present configuration shall require a resubmission of the Tenant Alteration Application (TAA).

(4) Any retunes of RF carriers from present configuration shall require a resubmission of the Tenant Alteration Application (TAA).

3. Command and Control Centers: Emergency communications capability with the Port Authority Public Safety shall be incorporated in Tenant command and control centers. Critical alarms shall be relayed to the Port Authority Public Safety through the Tenant's security reporting mechanism.

4. Airport Intrusion Detection System: Any tenant alterations or new construction introducing changes to boundaries between air-side and land-side spaces shall include supplementary changes to the Port Authority's existing Perimeter Intrusion Detection System.

5. Public Address System: Any tenant public address system coverage shall remain within the designated tenant space and operate at lower volume levels relative to surrounding PA public address system.

6. - Compliance is required with Codes and Standards specified in the Tenant Construction Manual, issued by PA Engineering Department, Quality Assurance Division (QAD) on December 2015, including the following:

- 1) The Code of Federal Regulations, Part 47 Telecommunication Chapter I Federal Communications Commission
- 2) Radio Site and Equipment Room Standards & Guidelines:
Site Grounding & Lightning Protection Guidelines; document number AE/LZT 123 4618/1; Harris Corporation, RF Communications Division; or Standards & Guidelines for Communications Sites; document number 68-81089E50; Motorola.
- 3) ANSI/EIA/TIA Structural Standard 222-G or latest revision for Antenna Supporting Structures and Antennas.
- 4) NFPA – National Protection Association:
75- Standard for the Fire Protection of Information Technology Equipment
76- Standard for the Telecommunications Facilities
1221- Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems
- 5) TIA -Telecommunications Industry Association TSB-88
Wireless Communication Systems – Performance in Noise and Interference-Limited Situations – Recommended Methods for Technology-Independent Modeling, Simulation and Verification
- 6) Federal Communications Commission (FCC) Rules and Regulations

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7. Tenant shall perform field verification of their radio system on the subject of Radio Frequencies Interference with Port Authorities Radio Systems as part of the System Acceptance Testing. Test Procedures shall be submitted for review and approval prior to test will commence. Representatives of Port Authority Radio Shop and Engineering shall be present during the field testing.

DETAILS OF RADIO SYSTEMS REVIEW

A.-Existing code violations in areas affected by the work.

B.-System Block Diagrams and detailed communications wiring with regard to radiation, electromagnetic interference, RF emissions, electrical safety, and fire hazards

C.-A letter shall be submitted by the tenant or its representative stating that the proposed system, whether licensed or unlicensed, once installed will not cause harmful interference to Port Authority Radio Services operating in the following frequency bands: VHF, UHF, 800 MHz, and 900 MHz

D -. Distributed Antenna Systems (DAS)

1)Performance criteria at demarcation points between the tenant modifications and the existing Port Authority DAS. Criteria shall include, but not be limited to, downlink and uplink propagation delay,uplink dynamic range, downlink signal levels, minimum and maximum uplink signal levels; carrier-to-noise (C/N) ratios, isolation between do not antenna and DAS antennas, and other parameters as will be required in course of review process.

2)Calculations, radio coverage predictions, and analyses to demonstrate the DAS design is in compliance with the requirements set forth herein.