Mobile Communications America

PUBLIC SAFETY MODEL CODES

MODEL CODES

		IFC			NFPA		
	Sections	***2015 IFC 510*** *(202,510,604,11)*	***2018 IFC 510*** *(202,510,1203)*	***2021 IFC 510*** *(202,510,1203)*	***2013 NFPA 72*** *(24.3, 24.5)*	***2016 NFPA 72*** *(24.9)*	***2019 NFPA 72*** *(24.9)*
	Subcode		2016 NFPA 1221 (9.6, TIA 16-2)	2019 NFPA 1221 (3, 9.6, 11.3) UL2524		*2016 NFPA 1221 (9.6, TIA 16-2)*	*2019 NFPA 1221 (3, 9.6, 11.3)*
Code Requirement	Cost--->	$	$$$$$	$$$	$$$	$$$$$	$$$
AHJ Approval & Permit		YES 510.1 & 510.3	YES 510.1 & 510.3	YES 510.1 & 510.3	YES 24.5.2.1.2	YES 24.9.1.2	YES 9.6.6.1
PathWay Survivability		NONE	Must Match Building Pathway Survivability TIA 9.6.2.1.1.1	NONE	Must be L1, L2, or L3 24.3.6.8.1	Must Match Building Pathway Survivability TIA 9.6.2.1.1.1	NONE
Cable Fire Rating		N/A	Riser & Feeder Must Match Fire Rating of Building TIA 9.6.2.1.1.1	Plenum 9.6.2.1	Plenum 24.3.6.8.1.1	Riser & Feeder Must Match Fire Rating of Building TIA 9.6.2.1.1.1	Plenum 9.6.2.1
Riser Cable Enclosure		N/A	Riser Cables in 2Hr Rated enclosure 9.6.2.1.3	Backbone cable must match Fire Rating of Building 9.6.2.3	Riser Cables in 2Hr Rated enclosure 24.3.6.8.3	Riser Cables in 2Hr Rated enclosure 9.6.2.1.3	Backbone cable must match Fire Rating of Building 9.6.2.3
Tapper Enclosures		N/A	Riser & Feeder Cables shall Meet in Enclosure that matches Building Fire Rating 9.6.2.1.4	Backbone & Antenna Cables shall meet in Enclosure that Matches Fire Rating of Bldg. 9.6.2.4	Riser & Feeder Cables shall Meet in Enclosure that matches Building Fire Rating 24.3.6.8.4	Riser & Feeder Cables shall Meet in Enclosure that matches Building Fire Rating 9.6.2.1.4	Backbone & Antenna Cables shall meet in Enclosure that Matches Fire Rating of Bldg. 9.6.2.4
Annual Recertification		YES 510.6.1	Performed, documented & Signed Annually 11.3.9	Annual System Check & DAQ testing every 5 years 11.3.9.2.3.1 & .2	NO but Permit Renewable 24.5.2.1.2	Performed, documented & Signed Annually 11.3.9	Annual System Check & DAQ testing every 5 years 11.3.9.2.3.1 & .2
Inbound RSSI		-95dBm 510.4.1.1	RSSI Set by AHJ DAQ>= 3.0 510.4.1.1	RSSI Set by AHJ DAQ>= 3.0 9.6.8.1.1 & .2	-95dBm or AHJ Level 24.5.2.3.1	RSSI Set by AHJ DAQ>= 3.0 9.6.8.1	RSSI Set by AHJ DAQ>= 3.0 9.6.8.1.1 & .2
Outbound RSSI		-95dBm at Donor Site 510.4.1.2	RSSI Set by AHJ DAQ>= 3.0 510.4.1.2	RSSI Set by AHJ DAQ>= 3.0 9.6.8.2.1 & .2	-95dBm at Donor Site or AHJ Level 24.5.2.3.2	RSSI Set by AHJ DAQ>= 3.0 9.6.8.2	RSSI Set by AHJ DAQ>= 3.0 9.6.8.2.1 & .2
General Area Coverage		95% 510.4.1	95% 510.4.1	95% 9.6.7.4 & 510.4.1	90% 24.5.2.2.2	90% 9.6.7.5	90% 9.6.7.4
Critical Area Coverage		N/A	99% 9.6.7.4	99% 9.6.7.3 & 510.4.1	99% 24.5.2.2.1	99% 9.6.7.4	99% 9.6.7.3
Donor Antenna Isolation		N/A (15dB min)	20dB > Gain 510.4.2.4(4)	20dB > Gain 510.4.2.4(4)	15dB > Gain 24.5.2.3.3	20dB > Gain 9.6.9	20dB > Gain 9.6.9
Battery Backup		Standby Power for 24 Hours 510.4.2.3	12 Hour Battery or Generator + 2Hr Batt. 510.4.2.3	12 Hour Battery or Generator + 2Hr Batt. 510.4.2.3	12 Hr. Batt or 12 Hr Generator & 2 Hr. Batt 24.5.2.5.5.2	12 Hour Battery or 12 Hr. AHJ approved Alternative 9.6.12.2	12 Hour Battery or 12 Hr. AHJ approved Alternative 9.6.12.2
External Filters		N/A	YES 9.6.11.2	YES 9.6.11.2.1	NO 24.5.2.5.3	YES 9.6.11.2	YES 9.6.11.2.1
Electronics Enclosure		NEMA 4 510.4.2.4	NEMA 4 510.4.2.4(1)	NEMA 4 510.4.2.4(1)	NEMA 4 / 4x 24.5.2.5.2	NEMA 4 / 4x 9.6.11.2	NEMA 4 / 4x 9.6.11.2.1
Battery Enclosure		NEMA 4 510.4.2.4	NEMA 3R 510.4.2.4(2)	NEMA 3R 510.4.2.4(2)	NEMA 4 / 4x 24.5.2.5.2	NEMA 4 / 4x 9.6.11.2	NEMA 3R 9.6.11.2.2
Fire Panel Alarm Interconnect		Monitored by Supervisory Service 510.4.2.4(3)	YES 9.6.13.1	YES 9.6.13.1	YES 24.5.2.6.1	YES 9.6.13.1	YES 9.6.13.1
Fire Command Center Annunciator Panel		N/A	YES 9.6.13.2	YES 9.6.13.2	YES 24.5.2.6.2	YES 9.6.13.2	YES 9.6.13.2
Donor Ant Monitor		N/A	YES 9.6.13.1(2)(a)	YES 9.6.1.13 (2) (b)	YES 24.5.2.6.1(2)(a)	YES 9.6.13.1(2)(a)	YES 9.6.1.13 (2) (b)
20 Grid Test		YES 510.5.3	YES 510.5.3(1)	YES 510.5.4(1)	NO	NO	NO
FCC GROL		YES 510.5.2(1)	YES 510.5.2(1)	YES 510.5.3(1)			
Equipment UL Listed		N/A	N/A	YES 510.4			
Donor Mount Sign		N/A	N/A	YES 510.5.1			

*These are highlighted code requirements. The list does NOT represent all of the requirements. Please refer to the actual code documents.

20 Grid Test: Process to divide a floor of a building into equal parts for RSSI/DAQ testing.

AHJ (Authority Having Jurisdiction): is "an organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure."

Backbone Cable: A communications cable in an in-building radio enhancement system that carries wideband signals important to the entire building, from the donor antenna, through the amplifiers, and to the distribution antenna lines.

BDA (bi-directional amplifier): Signal booster that takes an outside signal from a donor antenna and amplifies within a building through a series of antennas

DAQ (Delivered Audio Quality): is a common measurement used to assess signal quality. The DAQ scale includes a scale ranging from 1 to 5, with 1 being unusable audio output and 5 being perfect.

DAS (Distributed Antenna System): A network of spatially separated antennas that provides wireless service within a geographic area or structure with improved reliability. A distributed antenna system may be deployed indoors (an iDAS) or outdoors (an oDAS).

Distribution Cable: A communications cable that carries RF energy in both directions along its length to distribution antennas in one or more places in the building.

Donor Antenna: Antenna used with two-way radio communication enhancement systems that provide the connection between the wide-area communications system of interest and the in-building system.

Donor Site: The local public safety base station, repeater tower, or cellular tower site that the BDA/DAS system communicates with to provide RF the structure.

ERRCS (Emergency Responder Radio Communication System): Term used for public safety or first responder DAS

FCC GROL (General Radiotelephone Operator License): a license granted by the U.S. Federal Communications Commission (FCC), which is required to operate certain radio equipment.

Feeder Cable: See Distribution Cable

IFC 510 (International Fire Code): International Code Council model building code for Fire Protection for Emergency Responder Radio Coverage.

NEMA 4: A standard for equipment housings and enclosures that stipulates watertight construction capable of withstanding 65GPM of water from a 1" nozzle from no less than 10 feet for 5 minutes.

NFPA 1221: The National Fire Protection Association code that covers Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems

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NFPA 72: The National Fire Protection Associations code that covers emergency communication systems and signaling. it specifies the application, installation, location, performance, inspection, testing, and maintenance of fire alarm systems, fire warning equipment, emergency warning equipment, and their components.

PathWay Survivability: is defined in NFPA 72 as the ability of any conductor, optic fiber, radio carrier, or other means for transmitting system information to remain operational during fire conditions. In summary, survivability as intended by NFPA 72 is intended to mean that the fire alarm circuit will properly perform and remain operational, even when under attack by fire.

Plenum Cable: is electrical cable that is laid in the plenum spaces of buildings. Plenum cable is jacketed with a fire-retardant plastic jacket. Plenum spaces are part of a building that can facilitate air circulation for heating and air conditioning systems, by providing pathways for either heated/conditioned or return airflows, usually at greater than atmospheric pressure. Space between the structural ceiling and the dropped ceiling or under a raised floor is typically considered plenum.

Riser Cable: A type of inside cable intended for use in non-plenum vertical applications such as between floors of a building.

RSSI (Receive Signal Strength Indicator): is the measurement of the received signal power in a wireless network

Tapper: RF Tapper is a device used to split an input signal into two parts and is bi-directional and is used to connect antennas in DAS systems.

TIA (Tentative Interim Amendment): is an adopted amendment to the NFPA model code that is adopted between code releases. It expires with the next formal release of model code.

UL Listed: Underwriters Laboratory Listing means equipment has been tested to meets specific, defined requirements. These requirements are often based on UL's published and nationally recognized Standards for Safety.