

IFCC

STATION CLASS CODES

CONSEQUENCE & DEFINITIONS

BY CHRISTINE PHELPS



PHOTO MARK C. IDE

Radios intended to be used in motion, defined as mobile, fall into the MO Station Class.

Station class codes on a radio station license define the type of system being used and indicate if the licensee is using a simplex operation, a repeater, a telemetry system, etc. It's extremely important that the correct station class codes, which properly reflect the communications system, be submitted to the FCC for licensing. Systems that cause interference may be investigated by the FCC's Enforcement Bureau, and if the licensee is operating with incorrect parameters, huge daily fines may be imposed by the Commission.

The station class codes come into play when the FCC Form 601 application is submitted to the public safety frequency coordinator for a radio station license. The frequency coordinators will need to know what type of system is being requested and how the system will be used in order to properly coordinate frequencies for the applicant and to protect licensed incumbents in the area.

The station class codes defined in this article¹ are listed in the instructions for the FCC Form 601 (p. 5: www.fcc.gov/Forms/Form601/601h.pdf). Form 601 is used for applying for new station licenses, modifications to active call signs, renewals, assignment authorizations and more. A few station class codes listed on the FCC's Web site are not normally used in public safety systems, but the codes most often used by public safety applicants are:

FB STATION CLASS

Defined as fixed base stations, this class refers to units that don't move from one location to another. A fixed base station is often seen in a cabinet or on a desk or table. It usually transmits to mobiles out in the field and receives transmissions from the mobile units, all on the same frequency, hence, two-way radio communications. A fixed base can also transmit to paging units, but the pagers don't talk back to the fixed base. This type of communications is called a simplex operation.

Some radio systems also use a non-repeating base station for semi-duplex operations, in which the base transmits on one frequency and receives on another. These configurations may allow mobiles to break into a telecommunicator's transmission, or may be done to avoid direct conversation between mobile users.

MO STATION CLASS

The FCC considers units in this class, defined as mobile, as those intended to be used in motion, such as vehicular, portable/handheld, aircraft and marine units. Mobiles transmit to a base station or other mobile units.

MO8 STATION CLASS

Defined as trunked centralized mobiles, this station class is used only in frequency bands below 512 MHz. This class operates in the same manner as regular mobiles in trunked system mode and is centralized. (Also see definition below of FB8 Station Class).

FB2 STATION CLASS

This class is defined as repeater/mobile relay. Repeaters or mobile relay stations are base stations authorized to retransmit automatically on mobile service frequency communications, which originate on the transmitting frequency of the mobile station. Repeaters/mobile relay stations are often used to increase the coverage of mobile units.

A temporary repeater or a field-deployable repeater is designated as an FB2T, while a standby repeater that is not regularly used is an FB2S. A series of interoperability repeaters mounted in a trailer or one that could be packed in a box and deployed at a tactical situation would be an FB2T, not MO3.

FB8 STATION CLASS

Defined as trunked centralized repeater, this station class is used only in frequency bands below 512 MHz, just like the repeater/mobile relay, but it operates in trunked system mode and is used when the system is centralized.

In a centralized system, the base station provides dynamic channel assignments by automatically searching for and assigning to a user an open channel within that system. It does not monitor the frequencies for co-channel users.

By comparison, a decentralized trunked system would monitor communications within its assigned channels for activity both within and outside of the trunked system and transmit only when an available path is found.

FB4 STATION CLASS

Defined as a community repeater, this type of system would be the same as a repeater/mobile relay, but it is used by several agencies within a fairly small area. The agencies may be small communities that don't necessarily have enough users to manage their own system. Needless to say, the cost of a system may not be in their budget. These agencies/communities will sign mutual agreements, and one would be designated to manage the radio system. Typically, a community repeater uses a tone panel that would allow the repeater to function with a number of different CTCSS or CDCSS codes. Each user agency would have a unique CTCSS or CDCSS and must manually wait for another user to finish using the repeater before they can use it.

FX1 STATION CLASS

This class is defined as a control station, an operational fixed station whose transmissions are used to automatically control the emissions or operation of another radio station at a specific location. Control stations are used with repeaters/mobile relay stations when the base might be too far away from where the mobiles operate. The base would transmit on one frequency through the control station, and the control station would retransmit to the mobiles on a different frequency, or vice versa.

Control stations are also used for links to systems requiring retransmission of frequencies to cover areas affected by terrain or distance.

A 20-foot rule applies to control stations that work with repeaters only. If the control station antenna is 20' (6.1 meters) or less, it can be shown on a license as "6.1," with an "X" for area of operation and the state in which it operates. The Commission only needs to know what state it is operating in, but this does not mean that these control stations can operate throughout a state. Also, UHF T-Band control stations and control stations north of Line A, or in "Alaska east of Line C" (Canadian regions) must be shown as fixed locations rather than "6.1". The FCC requires all applicable site information as if adding a fixed base. Wireline control stations do not need to be licensed because they don't use frequencies. All fixed bases, repeaters, etc. must be shown

FCC STATION CLASS CODES

on a license with all applicable site information, whether the antenna is under or over 20' (6.1 meters).

Control stations should not be confused with control points. Control points are locations where a transmitter's functions may be controlled, such as a dispatch location. All licenses are required to have at least one control point.²

FX2 STATION CLASS

Defined as fixed relay, this class refers to a station at a specific site used to communicate with another station at another specific site. A relay is a device that receives a signal from a low-power or distant transmitter and retransmits it on the same or different frequency in order to increase the coverage area. For example, the signal from a base situated in a valley would propagate only within that valley. A relay site at the top of a nearby mountain would rebroadcast the original signal to a wider area. An FX2 may also be the master unit in a SCADA system, which repeats commands to other FXO stations within the system.

MO3 STATION CLASS

This class refers to a mobile or vehicular repeater, that is, a mobile station authorized to retransmit automatically on a mobile service frequency with communications to or from hand-carried transmitters. A typical system would be a mobile repeater unit in a vehicle, which allows transmissions to portables/handhelds in the field that may be too far away from their base repeater/mobile relay. The MO3 uses the power and antenna of the mobile radio as a bridge between one or several portable radios and the rest of the communications system. A portable fire-ground or tactical repeater that can be readily deployed at an incident or inside a building is typically licensed as a FB2T, not an MO3.

FXO STATION CLASS

Defined as an operational fixed station, this class refers to a fixed station not open to public correspondence, that is operated by and for the sole use of those agencies operating their own radio communications facilities in public safety and other services. This station class is often used for telemetry systems



The MO3 Station Class refers to a mobile or vehicular repeater that allows transmissions to portables/handhelds that may be too far away from their base repeater/mobile relay.

PHOTO MARK C. DE

transmitting non-voice signals for the purpose of automatically indicating or recording measurements at a distance from the measuring instrument. Telemetry systems may include water monitoring at wastewater treatment plants or monitoring runways at airports for specific conditions.

FXO systems may also be used as point-to-point links carrying both voice and data, where permitted. These systems have been referred to as "poor man's microwave" because they provide low-density interconnections between voting receivers and comparators or to base stations similar to a DS-0 microwave link or leased telephone circuit.

On 4.9 GHz, an FXO station indicates a secondary use low-density link system that does not support end-to-end broadband data.

FX3 STATION CLASS

Defined as secondary fixed signaling, an FX3 station is typically a telemetry transmitter that operates on the licensee's frequencies to provide data back to the user. An example may be an annunciator that announces an intrusion alarm on the air when someone enters a radio site or announces the generator is running. An FX3 station may also transmit polled data back to a central location. Examples: battery voltage and activation information from a tornado siren. An FX3 station allows public safety users to employ voice announcement systems for these various alarm conditions but with specific limits

on transmission times and repetitions. FCC Rule 90.235(k) does not allow tying up a dedicated radio frequency just for these types of devices.

FXB STATION CLASS

Defined as primary permanent fixed stations, this station class is used for frequencies in the 4.9 GHz frequency band in the PA radio service. This is a newly established station class code used to indicate permanent fixed stations or links that meet the requirements for primary status. Secondary permanent fixed stations or links must use the existing station class code FXO. The 4.9 GHz frequencies are used to deliver broadband service, such as a fixed video surveillance link used to monitor a high-risk target or environment, or to provide broadband voice, data and video connectivity between PSAPs. An example would be sending VoIP-based 9-1-1 telephony and CAS/RMS data from PSAP to PSAP through equipment that presents with an RJ45 connector at each end. Many original PA service licenses were obtained using FXO station classes for each component. Some may be eligible to change to primary status depending on equipment, use, and emission.

FINAL NOTE

Some station classes will include a "T" for temporary operations, "I" for itinerant, "S" for standby, "C" for interconnect, "J" for temporary interconnect, "K" for standby interconnect and "L" for

itinerant interconnect after the regular station class code.

It's critical that public safety communications personnel indicate the correct station class code on their FCC frequency license application. The failure

to do so could result in the imposition of large fines. ,PSC,

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REFERENCES

- McMillian Jr. JR: The Primer of Public Safety Telecommunications Systems, 3rd ed. Daytona Beach, FL:APCO International, 2000.
- FCC Part 90 Code of Federal Regulations.

D CLASS SCHEDULE



APCO Institute | 351 N. Williamson Blvd.
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Active Shooter Incidents for Public Safety Communications

Class #	Location	Date(s)	Price
28446	Culpeper, Va.	May 6	\$199
28822	Houston, Texas	July 31*	

Communications Center Supervisor \$349

28797	Fargo, N.D.	May 10-12	
27404	Web Class	Starts May 12	
28868	Talladega, Ala.	May 17-19	
28872	Ballston Spa, N.Y.	May 18-20	
28873	Rock Hill, S.C.	June 2-4	
27493	Web Class	Starts June 9	
27503	Web Class	Starts July 14	
29005	Austin, Texas	Aug. 16-18	

Communications Training Officer \$259

27403	Web Class	Starts May 5	
27492	Web Class	Starts June 2	
28699	Conway, Ark.	June 15-17	
28951	Tampa, Fla.	June 16-18	
28949	Clarksville, Tenn.	June 22-24	
27502	Web Class	Starts July 7	
28820	Houston, Texas	July 29-31*	
28916	Gallatin, Tenn.	Nov. 8-10	

Communications Training Officer Instructor \$459

28948	Greenfield, Ind.	May 17-21	
28907	Elkton, Md.	May 24-28	
27489	Web Class	Starts May 26	
28942	Daytona Beach., Fla.	June 7-11	
27498	Web Class	Starts June 30	

NEW! Crisis Negotiations for Telecommunicators \$199

28836	Web Class	Starts May 5	
28837	Web Class	Starts June 30	
28823	Houston, Texas	July 31*	

Customer Service in Today's Public Safety

Communications Center \$249

28791	New Albany, Ohio	May 13	
27989	Web Class	Starts May 19	
27990	Web Class	Starts July 21	
28821	Houston, Texas	July 31*	

NEW! EMD Manager \$199

28828	Web Class	Starts May 19	
28829	Web Class	Starts June 16	
28830	Web Class	Starts July 14	

Emergency Medical Dispatcher \$379

27486	Web Class	Starts June 2	
27505	Web Class	Starts July 21	
28824	Houston, Texas	July 29-Aug. 1*	

Emergency Medical Dispatch Instructor \$459

28913	Greenfield, Ind.	May 17-21	
27490	Web Class	Starts May 26	
28943	Daytona Beach., Fla.	June 7-11	
27499	Web Class	Starts June 30	

Fire Service Communications 1st Ed. \$379

28794	Yorkville, Ill.	May 4-7	
27405	Web Class	Starts May 12	
28445	Deerfield Beach, Fla.	May 18-21	
27494	Web Class	Starts June 9	
27504	Web Class	Starts July 14	

Fire Service Communications 1st Ed. Instructor \$459

28947	Greenfield, Ind.	May 17-21	
27488	Web Class	Starts May 26	
28941	Daytona Bch., Fla.	June 7-11	
27497	Web Class	Starts June 30	

Leadership Certificate Program:

Registered Public Safety Leader** \$995

28219	Web Class	Starts June 16	
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Public Safety Communications Staffing & Employee Retention \$199

28283	Web Class	Starts June 16	
28284	Web Class	Starts July 28	

Public Safety Telecommunicator 1, 6th Edition \$309

27402	Web Class	Starts May 5	
28950	Tampa, FL	May 24-28	
27491	Web Class	Starts June 5	
28952	Country Club Hills, Ill.	June 7-11	
27501	Web Class	Starts July 7	

Public Safety Telecommunicator 1, 6th Ed. Instructor \$459

28946	Greenfield, Ind.	May 17-21	
27487	Web Class	Starts May 26	
28940	Daytona Beach, Fla.	June 7-11	
27496	Web Class	Starts June 30	
27506	Web Class	Starts July 28	

Radio Technician Test \$99

28330	Web Class	May 2010	
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Telecommunicator's Role in Homeland Security \$199

27680	Web Class	Starts Aug. 18	
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*These classes are pre-conference courses offered prior to the 76th Annual APCO Conference & Exposition in Houston.

**This course is by invitation only.

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D CDE EXAM #28293: FCC STATION CLASS CODES

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|--|--|
| <p>1. What is the station class code for repeater/mobile relay? _____

 _____</p> <p>2. What is the station class code for a community repeater? _____

 _____</p> <p>3. What is the station class code for a SCADA (telemetry) system? _____

 _____</p> <p>4. What is the proper station class code for link system (backhaul)? _____

 _____</p> <p>5. What is the station class code for an exclusive trunked system (centralized)? _____

 _____</p> | <p>6. Define the difference between station class codes MO and MO8. _____

 _____</p> <p>7. What is the station class code for a simplex system? _____

 _____</p> <p>8. What is the station class code for secondary fixed signaling? _____

 _____</p> <p>9. What is the station class code for fixed relay? _____

 _____</p> <p>10. What is the station class code for control station? _____

 _____</p> |
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