

Amateur Radio Technician License Training

These presentations are sponsored by:

**Mendocino Auxiliary Communications Service (MACS)
Office of Emergency Services**

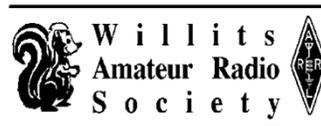
Mendocino County Amateur Radio Communications Service (McARCS)

Willits Amateur Radio Society (WARS)

Adventist Health

Public Health of Mendocino County

Long Valley Health Center



Section T1 – FCC Rules and Regulations

There are 67 questions in the question pool on Federal Communications Commission (FCC) Rules and regulations.

There will be six questions on the test on this topic.

Knowing the FCC rules and regulations is very important as a violation of these rules and regulations can result in the loss of your amateur radio license.

Who Makes the Rules and Why Should I follow Them?

In the United States, amateur radio is governed by the Federal Communications Commission, or simply the FCC, 47 Federal Code of Regulations part 97. While the office overseeing amateur radio located in Gettysburg, PA, much of your business with the FCC will be conducted over the internet at www.fcc.gov.

You must make your station records available when requested by the FCC.

*If you don't follow the FCC rules, they **can** revoke your license, fine you and even seize your radio equipment. Fortunately, this does not happen often.*

Who Makes the Rules and Why Should I follow Them?

Which agency regulates and enforces the rules for the Amateur Radio Service in the United States?

- A. FEMA
- B. Homeland Security
- C. *The FCC***
- D. All these choices are correct.

Who Makes the Rules and Why Should I follow Them?

When must the station licensee make the station and its records available for FCC inspection?

A. At any time ten days after notification by the FCC of such an inspection

B. At any time upon request by an FCC representative

C. Only after failing to comply with an FCC notice of violation

D. Only when presented with a valid warrant by an FCC official or government agent

Who Makes the Rules and Why Should I follow Them?

What, if any, are the restrictions concerning transmission of language that may be considered indecent or obscene?

A. The FCC maintains a list of words that are not permitted to be used on amateur frequencies

B. Any such language is prohibited

C. The ITU maintains a list of words that are not permitted to be used on amateur frequencies

D. There is no such prohibition

Broadcasting on Amateur Radio

How does the FCC define broadcasting for the Amateur Radio Services?

- A. Two-way transmissions by amateur stations
- B. Any transmission made by a licensed station
- C. Transmission of messages directed only to amateur operators
- D. Transmissions intended for reception by the general public**

Broadcasting on Amateur Radio

Under which of the following circumstances are one-way transmissions by an amateur station prohibited?

- A. In all circumstances
- B. *Broadcasting***
- C. International Morse Code practice
- D. Telecommand or transmissions of telemetry

Broadcasting on Amateur Radio

When may amateur radio operators use their stations to notify other amateurs of the availability of equipment for sale or trade?

A. Never

B. When the equipment is not the personal property of either the station licensee or the control operator or their close relatives

C. When no profit is made on the sale

D. When selling amateur radio equipment and not on a regular basis

Why Does Amateur Radio Exist?

Amateur radio doesn't exist just because it is a fun hobby. The government allows amateur operations because of the benefits it can provide society, such as:

- *Advancing skills in the technical and communication phases of the radio art*
- Improving international goodwill
- Providing means of emergency communications in the event of a natural disaster
- Encouraging people to develop skills based on personal interest; with no business or commercial use and no financial compensation.

Compensation for operating the station is only permitted when the communication is incidental to classroom instruction at an educational institution.

Why Does Amateur Radio Exist?

Which of the following is part of the Basis and Purpose of the Amateur Radio Service?

- A. Providing personal radio communications for as many citizens as possible
- B. Providing communications for international non-profit organizations
- C. Advancing skills in the technical and communication phases of the radio art**
- D. All these choices are correct

Why Does Amateur Radio Exist?

In which of the following circumstances may the control operator of an amateur station receive compensation for operating the station?

A. When the communication is related to the sale of amateur equipment by the control operator's employer

B. When the communication is incidental to classroom instruction at an educational institution

C. When the communication is made to obtain emergency information for a local broadcast station

D. All these choices are correct

Amateur Radio Licenses

The FCC currently issues only three classes of amateur radio licenses. These are *Technician, General, and Amateur Extra*. A written exam is required for each license. *A person may hold only ONE operator/primary station license.*

The FCC has eliminated the requirement for Morse code proficiency for ALL classes of amateur license.

Technician class privileges are limited to the relatively short-range VHF and UHF bands, where there is plenty of opportunity for exciting communications. Technician class licensees do have limited short-wave (or HF) privileges, although most of these are restricted to the CW (Morse code) only segments of those bands.

Amateur Radio Licenses

For which licenses classes are new licenses currently available from the FCC?

- A. Novice, Technician, General, Advanced
- B. Technician, Technician Plus, General, Advanced
- C. Novice, Technician Plus, General, Advanced
- D. Technician, General, Amateur Extra**

Amateur Radio Licenses

How many operator/primary station license grants may be held by any one person?

A. One

B. No more than two

C. One for each band on which the person plans to operate

D. One for each permanent station location from which the person plans to operate

Amateur Radio Licenses

An FCC amateur radio license is required before one can control the transmissions from an amateur radio station.

The license (and authority to transmit) is granted as soon as it is added to the FCC ULS database. That means you don't have to wait for the license to show up in the email to get on the air.

Unlicensed persons can talk over the radio, as long as a licensed amateur is present as the “control operator” for the station.

No license is required to listen in on amateur communications.

FCC DATA BASE: <https://wireless2.fcc.gov/UlsApp/UlsSearch/searchLicense.jsp>

Amateur Radio Licenses

What proves that the FCC has issued an operator/primary license grant?

A printed copy of the certificate of successful completion of examination

B. An email notification from the NCVEC granting the license

C. The license appears in the FCC ULS database

D. All these choices are correct

Amateur Radio Licenses

How soon after passing the examination for your first amateur radio license may you transmit on the amateur radio bands?

- A. Immediately on receiving your Certificate of Successful Completion of Examination (CSCE)
- B. As soon as your operator/station license grant appears on the ARRL website
- C. As soon as your operator/station license grant appears in the FCC's license database**
- D. As soon as you receive your license in the mail from the FCC

Amateur Radio License

Your license is valid for 10 years and is renewable without any further examinations required.

Renewal may be completed by mailing a completed copy of FCC form 605, along with a copy of your license, to the FCC office in Gettysburg, PA. All license modifications and renewals may also be processed via the FCC website.

During the term of the license, you must notify the FCC of any change of address or email address. If the FCC attempts to contact you by mail or email, and the correspondence is returned as undeliverable, the FCC may revoke the station license and suspend the operator license.

Amateur Radio License

What is the normal term for an FCC-issued amateur radio license?

- A. Five years
- B. Life
- C. Ten years**
- D. Twenty years

Amateur Radio License

What may happen if the FCC is unable to reach you by email?

- A. Fine and suspension of operator license
- B. Revocation of the station license or suspension of the operator license**
- C. Revocation of access to the license record in the FCC system
- D. Nothing; there is no such requirement

Amateur Radio License

Which of the following can result in revocation of the station license or suspension of the operator's license?

- A. Failure to inform the FCC of any changes in the amateur station following performance of an RF safety environmental evaluation
- B. Failure to provide and maintain a correct email address with the FCC**
- C. Failure to obtain FCC type acceptance prior to using a home-built transmitter
- D. Failure to have a copy of your license available at your station

Amateur Radio License

License renewals are accepted only during the last 90 days of the license term.

If you forget to renew your license before the expiration date, *you have a two-year grace period to renew without taking an exam.*

You are not allowed to transmit from your station during the grace period.

You must wait until the renewal is on file in the FCC database.

Amateur Radio License

What is the grace period for renewal if an amateur license expires?

- A. Two years**
- B. Three years
- C. Five years
- D. Ten years

Amateur Radio License

If your license has expired and is still within the allowable grace period, may you continue to operate a transmitter on amateur service frequencies?

- A. Yes, for up to two years
- B. Yes, as soon as you apply for renewal
- C. Yes, for up to one year
- D. No, you must wait until the license has been renewed**

Amateur Radio Call Signs

The FCC issues each amateur station a unique callsign, which is to be used to identify the station during operation. While the specifics can vary a bit, all US callsigns follow the same basic format. Each US call begins with one or two letters, with the first letter being either A, K, N, or W. This is followed by a single number (0-9), indicating the geographical region of the station where the license was issued.

All amateur callsigns issued in California contain the number 6, with other numbers designating other parts of the country. The call will then have one to three letters following the single number. A one-by-one call (single letter, number, single letter) may be issued by the FCC when requested for a special events station.

Amateur Radio Call Signs cont:

Some examples are:

W6MMM
K5GWT

WB9NJS
W1AW

N7L
AA4T

The FCC issues callsigns consecutively, with most new California calls currently starting with the prefix “KN6...”. It’s typical for everyone who passes the exam at the same session to have callsigns that differ by only the last letter, such as **KN6ABC** and **KN6ABD**.

After you receive your callsign, you can request a special or “vanity” call from the FCC. As a technician class licensee, you may request a 1 by 3 or 2 by 3 vanity callsign.

Amateur Radio Call Signs cont:

Which of the following is a valid Technician class call sign format?

- A. KF1XXX**
- B. KA1X
- C. W1XX
- D. All these choices are correct

Amateur Radio Call Signs cont:

Which of the following formats of a self-assigned indicator is acceptable when identifying using a phone transmission?

- A. KL7CC stroke W3
- B. KL7CC slant W3
- C. KL7CC slash W3
- D. All of these choices are correct**

Amateur Radio Call Signs cont:

Who may select a desired call sign under the vanity call sign rules?

- A. Only licensed amateurs with general or extra class licenses
- B. Only licensed amateurs with an extra class license
- C. Only an amateur licensee who has been licensed continuously for more than 10 years
- D. Any licensed amateur**

Amateur Radio Call Signs cont:

Which of the following is a requirement for the issuance of a club station license grant?

- A. The trustee must have an Amateur Extra class operator license grant
- B. The club must have at least four members**
- C. The club must be registered with the American Radio Relay League
- D. All these choices are correct

Frequency Coordination

The person who recommends transmit/receive frequencies for auxiliary and repeater stations is called the frequency coordinator.

The frequency coordinator is selected by amateur operators in a local or regional area whose stations are eligible to be auxiliary or repeater stations.

In Northern California, we rely on the Northern Amateur Relay Council of California (NARCC).

Frequency Coordination Cont:

Which of the following entities recommends transmit/receive channels and other parameters for auxiliary and repeater stations?

- A. Frequency Spectrum Manager
- B. Frequency Coordinator**
- C. FCC Regional Field Office
- D. International Telecommunications Union

Frequency Coordination Cont:

Who selects a Frequency Coordinator?

- A. The FCC Office of Spectrum Management and Coordination Policy
- B. The local chapter of the Office of National Council of Independent Frequency Coordinators
- C. Amateur operators in a local or regional area whose stations are eligible to be auxiliary or repeater stations**
- D. FCC Regional Field Office

What Frequencies Can I Use?

Each class of license has different operating frequencies available to it, with increasing privileges going from Technician, to General, to amateur Extra class.

It is VERY important that you know what frequencies you are allowed to transmit on if you are to avoid problems with the FCC.

The frequency segments or “bands” are typically referred to by the approximate wavelength of the radio wave. (i.e. 40M, 10M, 2M, etc.)

This is the distance (in meters) that the radio wave travels during the time it takes to complete one full cycle.

What Frequencies Can I Use? Cont:

Frequency is measured in Hertz (cycles per second), with radio frequencies usually in kilohertz, megahertz, or even gigahertz (KHz, MHz, or GHz).

To find the wavelength in meters, simply divide 300 by the frequency in MHz.

Example: at 50 MHz, one wavelength = $300/50 = 6$ meters.

The exam WILL have some questions regarding frequency privileges, so remember the following information.

What Frequencies Can I Use? Cont:

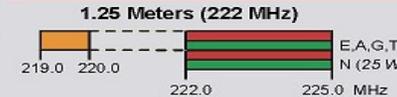
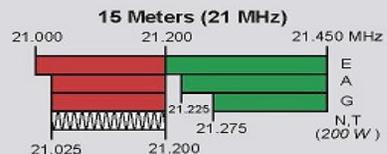
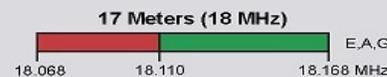
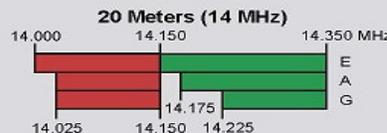
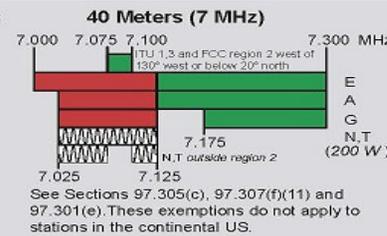
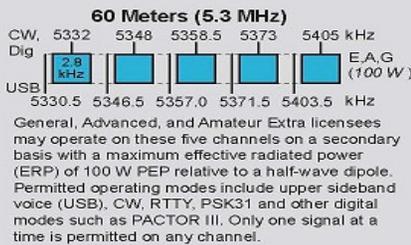
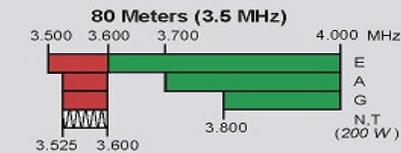
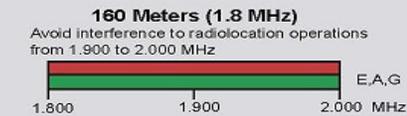
US Amateur Radio Bands

US AMATEUR POWER LIMITS — FCC 97.313 An amateur station must use the minimum transmitter power necessary to carry out the desired communications. (b) No station may transmit with a transmitter power exceeding 1.5 kW PEP.

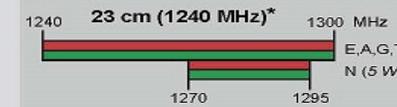


ARRL The national association for AMATEUR RADIO

Amateurs wishing to operate on either 2,200 or 630 meters must first register with the Utilities Technology Council online at <https://utc.org/pic-database-amateur-notification-process/>. You need only register once for each band.



*Geographical and power restrictions may apply to all bands above 420 MHz. See *The ARRL Operating Manual* for information about your area.



All licensees except Novices are authorized all modes on the following frequencies:

2300-2310 MHz	10.0-10.5 GHz ‡	122.25-123.0 GHz
2390-2450 MHz	24.0-24.25 GHz	134-141 GHz
3300-3500 MHz	47.0-47.2 GHz	241-250 GHz
5650-5925 MHz	76.0-81.0 GHz	All above 275 GHz

‡ No pulse emissions

KEY

Note: CW operation is permitted throughout all amateur bands.

MCW is authorized above 50.1 MHz, except for 144.0-144.1 and 219-220 MHz. Test transmissions are authorized above 51 MHz, except for 219-220 MHz

- = RTTY and data
- = phone and image
- = CW only
- = SSB phone
- = USB phone, CW, RTTY, and data
- = Fixed digital message forwarding systems only

- E = Amateur Extra
- A = Advanced
- G = General
- T = Technician
- N = Novice

See *ARRLWeb* at www.arrl.org for detailed band plans.

ARRL We're At Your Service

ARRL Headquarters:
860-594-0200 (Fax 860-594-0259)
email: hq@arrl.org

Publication Orders:
www.arrl.org/shop
Toll-Free 1-888-277-5289 (860-594-0355)
email: orders@arrl.org

Membership/Circulation Desk:
www.arrl.org/membership
Toll-Free 1-888-277-5289 (860-594-0338)
email: membership@arrl.org

Getting Started in Amateur Radio:
Toll-Free 1-800-328-3942 (860-594-0355)
email: news@arrl.org

Exams: 860-594-0300 email: vec@arrl.org

Copyright © ARRL 2017 rev. 9/22/2017

Technician Class VHF/UHF Privileges:

Band	Authorized Frequencies	Allowable modes, or other restrictions
6 meters	50.0 – 54.0 MHz	CW only 50.0 – 50.1; phone (voice) 50.1 – 54.0 MHz
2 meters	144 – 148 MHz	CW only 144.0 – 144.1; phone (voice) 144.1 – 148.0 MHz
1 ¼ meters	222 – 225 MHz	All modes available, including CW, voice, image and data
70 centimeters	420 – 450 MHz	All modes available, including CW, voice, image and data
33 centimeters	902 – 928 MHz	All modes available, including CW, voice, image and data
23 centimeters	1240 – 1300 MHz	All modes available, including CW, voice, image and data
13 centimeters	2300 – 2310 and 2390 – 2450 MHz	All modes available, including CW, voice, image and data

Technician Class HF Privileges:

Band	Authorized Frequencies	Allowable modes, or other restrictions
80 meters	3.525 – 3.600 MHz	CW only, 200 watts max power
40 meters	7.025 – 7.125 MHz	CW only, 200 watts max power
15 meters	21.025 – 21.200 MHz	CW only, 200 watts max power
10 meters	28.100 – 28.500 MHz	CW, RTTY, and data 28.100 – 28.300; CW, RTTY, data, and SSB phone 28.300 – 28.500; 200 watts max power

Technician Class Privileges cont:

Which frequency is within the 6 meter band?

- A. 49.00 MHz
- B. 52.525 MHz**
- C. 28.50 MHz
- D. 222.15 MHz

Technician Class Privileges cont:

How may amateurs use the 219 and 220 MHz Segment of the 1.25 meter band?

- A. Spread spectrum only
- B. Fast-scan television only
- C. Emergency traffic only
- D. Fixed digital message forwarding systems only**

Technician Class Privileges cont:

On which HF bands does a Technician class operator have phone privileges?

A. None

B. 10 meters only

C. 80 meters, 40 meters, 15 meters and 10 meters

D. 30 meters only

Technician Class Privileges cont:

Which of the following frequency ranges are available for phone operation by Technician Licensees?

- A. 28.050MHz to 28.150 MHz
- B. 28.100MHz to 28.300MHz
- C. 28.300 MHz to 28.500 MHz**
- D. 28.500 MHz to 28.600 MHz

Technician Class Privileges cont:

Which of the following VHF/UHF band segments are limited to CW only?

- A. 50.0 MHz to 50.1 MHz and 144.0 MHz to 144.1 MHz**
- B. 219 MHz to 220 MHz and 420.0 MHz to 420.1 MHz
- C. 902.0 MHz to 902.1 MHz
- D. All these choices are correct

Technician Class Privileges cont:

Where may SSB phone be used in amateur bands above 50MHz?

- A. Only in sub-bands allocated to General class or higher
- B. Only on repeaters
- C. In at least some segment of all these bands**
- D. On any band if the power limit is 25 watts

Technician Class Privileges cont:

Which amateur band includes 146.520 MHz

- A. 6 meters
- B. 20 meters
- C. 70 centimeters
- D. 2 meters**

Technician Class Privileges cont:

Why should you not set your transmit frequency to be exactly at the edge of an amateur band or sub-band?

- A. To allow for calibration error in the transmitter frequency display
- B. So that modulation sidebands do not extend beyond the band edge
- C. To allow for transmitter frequency drift
- D. All these choices are correct**

Power Usage

The term “watt” has been referred to several times. Watts are the unit of measure of power, and we’ll talk more about this later.

Transmitter power is usually expressed as “Peak Envelope Power” or PEP. This is defined as “the average power supplied to the antenna transmission line during one RF cycle at the crest of the modulation cycle”. *Except for the 200 watt limitations for Technician HF operation, radio controlled models, and beacon stations, the maximum allowable amateur power is 1500 watts PEP.*

There is a caveat to this, however, as amateurs are required to use only the power required to maintain communications. Hence don’t use 500 watts when 5 watts will do!

Power Usage cont:

What is the maximum peak envelope power output for Technician class operators using their assigned portions of the HF bands?

- A. 200 watts**
- B. 100 watts
- C. 50 watts
- D. 10 watts

Power Usage cont:

Except for some specific restrictions, what is the maximum peak envelope power output for Technician class operators using frequencies above 30 MHz?

- A. 50 watts
- B. 100 watts
- C. 500 watt
- D. 1500 watts**

International Agreements

The FCC, in conjunction with international agreements, establishes the amateur bands, and specifies some limitations on modes which can be used.

By international agreement, the world is divided into three *International Telecommunications Union (ITU)* regions by United Nations agreement.

North and South America, including all of the continental USA, is included in ITU zone 2.

You are allowed to operate your amateur station in a foreign country when the foreign country authorizes it.

International Agreements cont:

FCC-licensed amateur stations are prohibited from exchanging communications with any country whose administration has notified the International Telecommunications Union that it objects to such communications.

*You may operate from any vessel or craft located in international waters and **documented or registered in the United States.***

International Morse code, or CW, can be used anywhere on any band, with some band segments set aside for CW only.

On many of the VHF and UHF bands, the use of band segments or the “band plan” is determined by amateurs, in a “gentleman’s agreement”.

International Agreements cont:

From which of the following locations may an FCC-licensed amateur station transmit?

- A. From within any country that belongs to the International Telecommunications Union
- B. From within any country that is a member of the United Nations
- C. From anywhere within in International Telecommunications Union (ITU) Regions 2 and 3
- D. From any vessel or craft located in international waters and documented or registered in the United States**

International Agreements cont:

With which countries are FCC-licensed amateur stations prohibited from exchanging communications?

- A. Any country whose administration has notified the International Telecommunications Union that it objects to such communications**
- B. Any country whose administration has notified the American Radio Relay League (ARRL) that it objects to such communications
- C. Any country banned from such communications by the International Amateur Radio Union (IARU)
- D. Any country banned from such communications by the American Radio Relay League (ARRL)

International Agreements cont:

What types of international communications is an FCC-licensed amateur radio station permitted to make?

A. Communications incidental to the purposes of the Amateur Radio Service and remarks of a personal character

B. Communications incidental to conducting business or remarks of a personal nature

C. Only communications incidental to contest exchanges, all other communications are prohibited

D. Any communications that would be permitted by an international broadcast station

INTERMISSION

Get up and walk around

Get something to drink

Use the facilities

Be back in 10 minutes

Station Control Operators

The FCC requires that a licensed radio amateur be “in control” of the emissions from each amateur radio station. *A station is **NEVER** allowed to transmit without a control operator.*

The control operator may be you, the station licensee, or any licensed amateur chosen by the station licensee.

Both the control operator and the station licensee are responsible for the proper operation of an amateur station (i.e in accordance with FCC rules).

The control operator function is performed from the control point of an amateur station. This may be directly in front of the radio in use, or via a remote control link.

Station Control Operators cont:

The transmitting privileges of an amateur station depend on the class of operator license held by the control operator.

The operating privileges of the station follow the control operator. For example, if you allow an Extra class licensee to be the control operator of your Technician station, he may use any of the frequencies available to an Extra class licensee.

On the other hand, if you visit the station of an Extra class licensee, and you are the control operator of that station (licensee is not present and controlling the station), you may use only your Technician privileges when operating.

Station Control Operators cont:

What determines the transmitting privileges of an amateur station?

- A. The frequency authorized by the frequency coordinator
- B. The class of operator license held by the station licensee
- C. The highest class of operator license held by anyone on the premises
- D. The class of operator license held by the control operator**

Station Control Operators cont:

What is an amateur station control point?

- A. The location of the station's transmitting antenna
- B. The location of the station transmitting apparatus
- C. The location at which the control operator function is performed**
- D. The mailing address of the station licensee

Station Control Operators cont:

When is an amateur station permitted to transmit without a control operator?

- A. When using automatic control, such as in the case of a repeater
- B. When the station licensee is away and another licensed amateur is using the station
- C. When the transmitting station is an auxiliary station
- D. Never**

Station Control Operators cont:

Who must designate the station control operator?

- A. The station licensee**
- B. The FCC
- C. The frequency coordinator
- D. The ITU

Station Control Operators cont:

When the control operator is not the station licensee, who is responsible for the proper operation of the station?

- A. All licensed amateurs who are present at the operation
- B. Only the station licensee
- C. Only the control operator
- D. The control operator and the station licensee are equally responsible**

Station Control Operators cont:

Who does the FCC presume to be the control operator of an amateur station, unless documentation to the contrary is in the station records?

- A. The station custodian
- B. The third party participant
- C. The person operating the station equipment
- D. The station licensee**

Station Control Operators cont:

When, under normal circumstances, may a Technician Class licensee be the control operator of a station operating in an exclusive Amateur Extra Class operator segment of the amateur bands?

- A. At no time**
- B. When operating a special event station
- C. As part of a multi-operator contest team
- D. When using a club station whose trustee is an Amateur Extra Class operator licensee

Station Control Operators cont:

Which of the following is an example of automatic control?

- A. Repeater operation**
- B. Controlling the station over the Internet
- C. Using a computer or other device to send CW automatically
- D. Using a computer or other device to identify automatically

Station Control Operators cont:

Which of the following is an example of remote control as defined in Part 97?

- A. Repeater operation
- B. Operating the station over the Internet**
- C. Controlling a model aircraft, boat or car by amateur radio
- D. All of these choices are correct

Station Control Operators cont:

What type of amateur station simultaneously retransmits the signal of another amateur station on a different channel or channels?

- A. Beacon station
- B. Earth station
- C. Repeater station**
- D. Message forwarding station

Station Control Operators cont:

Who is accountable should a repeater inadvertently retransmit communications that violate the FCC rules?

- A. The control operator of the originating station**
- B. The control operator of the repeater
- C. The owner of the repeater
- D. Both the originating station and the repeater owner

Station Control Operators cont:

What types of amateur stations can automatically retransmit the signals of other amateur stations?

- A. Auxiliary, beacon, or Earth stations
- B. Repeater, auxiliary, or space stations**
- C. Beacon, repeater, or space stations
- D. Earth, repeater, or space stations

Station Control Operators cont:

Which of the following is true of remote control operation?

- A. The control operator must be at the control point
- B. A control operator is required at all times
- C. The control operator indirectly manipulates the controls
- D. All these choices are correct**

Station Identification

The FCC requires you to identify the transmissions from your station, by transmitting your callsign at least every 10 minutes, and at the end of a contact.

NOTE: There is no requirement to identify your station at the start of a contact.

Regardless of the language used to make the contact, identification must be made in English.

Identification (ID) is usually done in the mode being used, but can always be done using CW.

Station Identification cont:

No special designation is required for Technician HF operation, nor for portable or mobile operation, though it is common for mobile stations to identify as such.

The only time a special suffix (/KT, /AG or /AE) must be added to a callsign is when using new license privileges earned by CSCE while waiting for an upgrade to a previously issued license to appear in the FCC license database.

When operating in support of events, such as a bike race, *it is permissible to use tactical callsigns, such as “race headquarters” to identify your transmissions, as long as you include your FCC issued callsign at least every 10 minutes and the end of your transmission.*

Station Identification cont:

Since many letters have similar sounds when spoken (B, D, E), a phonetic alphabet is often used for callsigns when operating in phone mode. This is particularly helpful during noisy conditions, or if one of the operators has limited English speaking ability.

The phonetic alphabet uses a different word to represent each letter. Phonetics work best when everyone uses the same words.

The internationally recognized phonetic alphabet, shown below, is encouraged over “personalized” phonetics.

Station Identification cont:

A – alpha

B – bravo

C – charlie

D – delta

E – echo

F – foxtrot

G – golf

H – hotel

I – india

J – juliet

K – kilo

L – lima

M – mike

N – november

O – oscar

P – papa

Q – quebec

R – romeo

S – sierra

T – tango

U – uniform

V – victor

W – whiskey

X – x-ray

Y – yankee

Z – zulu

Station Identification cont:

One exception to the 10 minute ID rule is when you use amateur radio to control a model aircraft or vehicle, which is allowed on the 6 meter band. In this special case, you need only to have your callsign, name, and address affixed to the transmitter.

An important restriction for R/C operation is a maximum operating power of 1 watt.

Another exception to the ID rule applies to the transmission from space stations or satellites.

Station Identification cont:

When is an amateur station required to transmit its assigned call sign?

- A. At the beginning of each contact, and every 10 minutes thereafter
- B. At least once during each transmission
- C. At least every 15 minutes during and at the end of a communication
- D. At least every 10 minutes during and at the end of a communication**

Station Identification cont:

How often must you identify with your FCC assigned call sign when using tactical call signs such as “Race Headquarters”?

- A. Never, the tactical call is sufficient
- B. Once during every hour
- C. At the end of each communication and every ten minutes during a communication**
- D. At the end of every transmission

Station Identification cont:

What method of call sign identification is required for a station transmitting phone signals?

- A. Send the call sign followed by the indicator RPT
- B. Send the call sign using CW or phone emission**
- C. Send the call sign followed by the indicator R
- D. Send the call sign using only phone emission

Station Identification cont:

Which of the following is an acceptable language to use for station identification when operating in a phone sub-band?

- A. Any language recognized by the United Nations
- B. Any language recognized by the ITU
- C. The English language**
- D. English, French, or Spanish

Station Identification cont:

What are the FCC rules regarding the use of a phonetic alphabet for station identification in the Amateur Radio Service?

- A. It is required when transmitting emergency messages
- B. It is encouraged**
- C. It is required when in contact with foreign stations
- D. All these choices are correct

Station Identification cont:

When may an amateur station transmit without on-the-air identification?

- A. When the transmissions are of a brief nature to make station adjustments
- B. When the transmissions are unmodulated
- C. When the transmitted power level is below 1 watt
- D. When transmitting signals to control a model craft**

Third Party Station Use

In many cases, it is perfectly legal to forward messages from non-amateurs via amateur radio.

It is also permissible to allow a non-licensed person to talk over air on your station, as long as a licensed amateur is present as a control operator and continuously monitoring the 3rd party's participation.

This general rule, however, does not hold when international communications are involved.

Third Party Station Use cont:

Third party communication is defined as “a message sent between two amateur stations for someone else”, that “someone else” being the 3rd party.

The 3rd party could be a person sending or receiving the message, or both.

Before you can allow “3rd party traffic” to pass across the border, through your amateur station, you must first make sure that the US has a 3rd party agreement with the country at the other end, or that the 3rd party is qualified to be a control operator.

Third Party Station Use cont:

Identification procedures change slightly when international 3rd party messages are passed.

In these cases, the US station must give the callsign of both stations at the end of each communication.

A list of countries with 3rd party agreements with the US is published in the *Technician Class* text on page 42.

As with any service you provide with your amateur station, you are not allowed to accept any money for passing 3rd party messages.

Third Party Station Use cont:

Which of the following restrictions apply when a non-licensed person is allowed to speak to a foreign station using a station under the control of a Technician Class control operator?

A. The person must be a U.S. citizen

B. The foreign station must be one with which the U.S. has a third party agreement

C. The licensed control operator must do the station identification

D. All of these choices are correct

Third Party Station Use cont:

What is the definition of third party Communications?

- A. A message from a control operator to another amateur station control operator on behalf of another person**
- B. Amateur radio communications where three stations are in communications with one another
- C. Operation when the transmitting equipment is licensed to a person other than the control operator
- D. Temporary authorization for an unlicensed person to transmit on the amateur bands for technical experiments

One-Way Communications:

There are a few allowable forms of one-way communications.

One of these is transmission of bulletins or information pertaining to, or of interest to amateur radio. This is different from broadcasts intended for the general public.

Other permitted one-way transmissions include remote control of models, code practice sessions, and propagation beacons.

One-Way Communications cont:

Propagation beacons are stations which transmit communications for the purpose of observation of signal propagation and reception.

Beacon stations allow you to determine if a signal “path” exists between your station and the region where the beacon is located.

Beacon stations are limited to 100 watts PEP of transmitter power.

Any licensed amateur, including Technicians, can operate a beacon station within their operating privileges.

One-Way Communications cont:

What is the FCC Part 97 definition of a "beacon"?

- A. A government transmitter marking the amateur radio band edges
- B. A bulletin sent by the FCC to announce a national emergency
- C. A continuous transmission of weather information authorized in the amateur bands by the National Weather Service
- D. An amateur station transmitting communications for the purposes of observing propagation or related experimental activities**

Emergencies

Special rules apply for emergency communications.

A distress call may be made or answered on any frequency, even those outside your operating privileges. *A valid emergency, involving a threat to life or property, must exist, however.* This would be the only situation where a MAYDAY or SOS call should be used.

Under some circumstances, the FCC may make a declaration of a temporary state of emergency. Such a declaration would include any special conditions or rules to be followed during the emergency. When a disaster disrupts normal communications, transmissions should be limited to those necessary to meet essential communications needs and to facilitate relief activities.

Emergencies cont:

There are a number of amateur radio organizations that are included in the designation of emergency amateur radio services.

These include:

- Radio Amateur Civil Emergency Services (RACES)

- Amateur Radio Emergency Service (ARES)

- Auxiliary Communications Service (ACS)

Amateur radio organizations that work in conjunction with their local, county or state Office of Emergency Services (OES) are classed as emergency amateur radio services. OES are now considered as civil defense agencies.

Emergencies cont:

When may amateur stations transmit information in support of broadcasting, program production, or news gathering, assuming no other means is available?

- A. Only where such communications directly relate to the immediate safety of human life or protection of property**
- B. Only when broadcasting communications to or from the space shuttle
- C. Only where noncommercial programming is gathered and supplied exclusively to the National Public Radio network
- D. Never

Emergencies cont:

Which of the following describes the Radio Amateur Civil Emergency Service (RACES)?

- A. A radio service using amateur frequencies for emergency management or civil defense communications
- B. A radio service using amateur stations for emergency management or civil defense communications
- C. An emergency service using amateur operators certified by a civil defense organization as being enrolled in that organization
- D. All of these choices are correct**

Space Station Satellites

A unique aspect of amateur radio is the ability to communicate with “space stations”. *The FCC defines amateur space stations as “an amateur station located more than 50 km above the earth’s surface”.* This includes the International Space Station and amateur satellites.

Any licensed amateur can be the licensee of an amateur space station, regardless of license class. Most amateur satellites receive signals on one frequency band (the uplink) and retransmit the signal on another band (the downlink). *VHF and UHF bands are frequently used for amateur satellites, making them available for Technician class licensees.*

One Technician band that is unavailable for satellite operation is 6 meters.

Space Station Satellites:

What is the FCC Part 97 definition of a "space station"?

- A. Any satellite orbiting the earth
- B. A manned satellite orbiting the earth
- C. An amateur station located more than 50 km above the Earth's surface**
- D. An amateur station using amateur radio satellites for relay of signals

Space Station Satellites:

What is the only time an amateur station is authorized to transmit music using a phone emission?

- A. When incidental to an authorized retransmission of manned spacecraft communications**
- B. When the music produces no spurious emissions
- C. When the purpose is to interfere with an illegal transmission
- D. When the music is transmitted above 1280 MHz

Space Station Satellites:

When is it permissible to transmit messages encoded to hide their meaning?

A. Only during contests

B. Only when transmitting certain approved digital codes

C. Only when transmitting control commands to space stations or radio control craft

D. Never

Space Station Satellites:

Who may be the control operator of a station communicating through an amateur satellite or space station?

- A. Only an Amateur Extra class operator
- B. A General class or higher licensee who has a satellite operator certification
- C. Only an Amateur Extra class operator who is also an AMSAT member
- D. Any amateur whose license privileges allow them to transmit on the satellite uplink frequency**

Space Station Satellites:

Which amateurs may make contact the International Space Station (ISS) on VHF bands?

- A. Any amateur holding a General or higher-class license
- B. Any amateur holding a Technician or higher-class license**
- C. Any amateur holding a General or higher-class license who has applied for and received permission from NASA
- D. Any amateur holding a Technician or higher-class license who has applied for and received permission from NASA

Interference:

Just as there is congestion on some highways, some amateur bands become crowded.

If two amateurs wish to use the same frequency, both stations have equal rights to the frequency (no special privilege for higher class licensees).

Some amateur bands are actually shared with other services. In this case the FCC will designate primary and secondary users.

When amateurs are designated the secondary users, their operations must not cause interference to the primary users.

Interference cont:

When is willful interference to other amateur radio stations permitted?

- A. To stop another amateur station which is breaking the FCC rules
- B. At no time**
- C. When making short test transmissions
- D. At any time, stations in the Amateur Radio Service are not protected from willful interference

Interference cont:

How are US amateurs restricted in segments of bands where the Amateur Radio Service is secondary?

- A. U.S. amateurs may find non-amateur stations in those portions, and must avoid interfering with them**
- B. U.S. amateurs must give foreign amateur stations priority in those portions.
- C. International communications are not permitted in those portions
- D. Digital transmissions are not permitted in those portions

Conclusion:

There will be six questions on the test on rules and regulations.

Most of the FCC rules and regulations are common sense.

If you follow these rules, it will assist you in your contacts with other hams.

This concludes the Technician License presentation.

