



Amateur Radio License: Technician Class

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Who selects a Frequency Coordinator?

Amateur operators in a local or regional area whose stations are eligible to be auxiliary or repeater stations

See REF2551

What emission modes are permitted in the mode-restricted sub-bands at 50.0 to 50.1 MHz and 144.0 to 144.1 MHz?

CW only

See REF2551

Who may select a vanity call sign for a club station?

Only the person named as trustee on the club station license grant

See REF2551

What determines the transmitting privileges of an amateur station?

The class of operator license held by the control operator

See REF2551

Which indicator is required by the FCC to be transmitted after a station call sign?

/KT, /AE or /AG 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

See REF2551

Which of the following is an FCC rule regarding power levels used in the amateur bands, under normal, non-distress circumstances?

While not exceeding the maximum power permitted on a given band, use the minimum power necessary to carry out the desired communication

See REF2551

What is one way to recharge a 12-volt lead-acid station battery if the commercial power is out?

Connect the battery in parallel with a vehicle's battery and run the engine

See REF2551

What term is commonly used to describe the rapid fluttering sound sometimes heard from mobile stations that are moving while transmitting?

Picket fencing

See REF2551

What is the approximate velocity of a radio wave as it travels through free space?

300,000,000 meters per second

See REF2551

Where must a filter be installed to reduce harmonic emissions from your station?

Between the transmitter and the antenna

See REF2551

What is the advantage of having multiple receive bandwidth choices on a multimode transceiver?

Permits noise or interference reduction by selecting a bandwidth matching the mode

See REF2551

What term describes the number of times per second that an alternating current reverses direction?

Frequency

See REF2551

What is the ability to store energy in a magnetic field called?

Inductance

See REF2551

What is the resistance of a circuit that draws 4 amperes from a 12-volt source?

3 ohms

See REF2551

Which of the following battery types is rechargeable?

Nickel-metal hydride

Lithium-ion

Lead-acid gel-cell

All of these choices are correct.

See REF2551

What is component 2 in figure T1?

Transistor

See REF2551

What component is commonly used to change 120V AC house current to a lower AC voltage for other uses?

Transformer

See REF2551

What device increases the low-power output from a handheld transceiver?

An RF power amplifier

See REF2551

What, in general terms, is standing wave ratio (SWR)?

A measure of how well a load is matched to a transmission line

See REF2551

Which of the following might damage a multimeter?

Attempting to measure voltage when using the resistance setting

See REF2551

What is the typical bandwidth of analog fast-scan TV transmissions on the 70 cm band?

About 6 MHz

See REF2551

Which of the following is good procedure when contacting another station in a radio contest?

Send only the minimum information needed for proper identification and the contest exchange

See REF2551

What is PSK31?

A low-rate data transmission mode

See REF2551

What is a reason to use a properly mounted 5/8 wavelength antenna for VHF or UHF mobile service?

It offers a lower angle of radiation and more gain than a 1/4 wavelength antenna and usually provides improved coverage

See REF2551

What is connected to the green wire in a three-wire electrical AC plug?

Safety ground

See REF2551

What is considered to be a proper grounding method for a tower?

Separate eight-foot long ground rods for each tower leg, bonded to the tower and each other

See REF2551

How does RF radiation differ from ionizing radiation (radioactivity)?

RF radiation does not have sufficient energy to cause genetic damage

See REF2551

What is the FCC Part 97 definition of an amateur station?

A station in the Amateur Radio Service consisting of the apparatus necessary for carrying on radio communications

See REF2551

Why are frequency assignments for U.S. stations operating maritime mobile not the same everywhere in the world?

Amateur frequency assignments can vary among the three ITU regions

See REF2551

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

Any country whose administration has notified the ITU that it objects to such communications

See REF2551

What is an amateur station control point?

The location at which the control operator function is performed

See REF2551

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

Repeater station

See REF2551

Which of the following is a guideline to use when choosing an operating frequency for calling CQ?

Listen first to be sure that no one else is using the frequency

Ask if the frequency is in use

Make sure you are in your assigned band

All of these choices are correct.

See REF2551

What should be done to insure that voice message traffic containing proper names and unusual words are copied correctly by the receiving station?

Such words and terms should be spelled out using a standard phonetic alphabet

See REF2551

What type of wave carries radio signals between transmitting and receiving stations?

Electromagnetic

See REF2551

Why are direct (not via a repeater) UHF signals rarely heard from stations outside your local coverage area?

UHF signals are usually not reflected by the ionosphere

See REF2551

Where should an in-line SWR meter be connected to monitor the standing wave ratio of the station antenna system?

In series with the feed line, between the transmitter and antenna

See REF2551

Which of the following is an appropriate receive filter bandwidth to select in order to minimize noise and interference for SSB reception?

2400 Hz

See REF2551

How many milliamperes is 1.5 amperes?

1,500 milliamperes

See REF2551

What is the basic unit of inductance?

The henry

See REF2551

What is the current flow in a circuit with an applied voltage of 120 volts and a resistance of 80 ohms?

1.5 amperes

See REF2551

Which of the following battery types is not rechargeable?

Carbon-zinc

See REF2551

What is component 3 in figure T1?

Lamp

See REF2551

Which of the following is commonly used as a visual indicator?

LED

See REF2551

Where is an RF preamplifier installed?

Between the antenna and receiver

See REF2551

What reading on an SWR meter indicates a perfect impedance match between the antenna and the feed line?

1 to 1

See REF2551

Which of the following measurements are commonly made using a multimeter?

Voltage and resistance

See REF2551

What is the approximate maximum bandwidth required to transmit a CW signal?

150 Hz

See REF2551

What is a grid locator?

A letter-number designator assigned to a geographic location

See REF2551

Which of the following may be included in packet transmissions?

A check sum which permits error detection

A header which contains the call sign of the station to which the information is being sent

Automatic repeat request in case of error

All of these choices are correct.

See REF2551

Why are VHF or UHF mobile antennas often mounted in the center of the vehicle roof?

A roof mounted antenna normally provides the most uniform radiation pattern

See REF2551

What is the purpose of a fuse in an electrical circuit?

To interrupt power in case of overload

See REF2551

Why should you avoid attaching an antenna to a utility pole?

The antenna could contact high-voltage power wires

See REF2551

If the averaging time for exposure is 6 minutes, how much power density is permitted if the signal is present for 3 minutes and absent for 3 minutes rather than being present for the entire 6 minutes?

2 times as much

See REF2551

When is willful interference to other amateur radio stations permitted?

At no time

See REF2551

Which emission may be used between 219 and 220 MHz?

Data

See REF2551

On which of the following occasions may an FCC-licensed amateur station exchange messages with a U.S. military station?

During an Armed Forces Day Communications Test

See REF2551

Under what type of control do APRS network digipeaters operate?

Automatic

See REF2551

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

The control operator of the originating station

See REF2551

What is the term used to describe an amateur station that is transmitting and receiving on the same frequency?

Simplex communication

See REF2551

What do RACES and ARES have in common?

Both organizations may provide communications during emergencies

See REF2551

Which of the following is a likely cause of irregular fading of signals received by ionospheric reflection?

Random combining of signals arriving via different paths

See REF2551

Which of the following might be happening when VHF signals are being received from long distances?

Signals are being refracted from a sporadic E layer

See REF2551

Which of the following would be connected between a transceiver and computer in a packet radio station?

Terminal node controller

See REF2551

Which of the following is an appropriate receive filter bandwidth to select in order to minimize noise and interference for CW reception?

500 Hz

See REF2551

What is another way to specify a radio signal frequency of 1,500,000 hertz?

1500 kHz

See REF2551

What is the unit of frequency?

Hertz

See REF2551

What is the current flowing through a 100-ohm resistor connected across 200 volts?

2 amperes

See REF2551

What class of electronic components is capable of using a voltage or current signal to control current flow?

Transistors

See REF2551

What is component 4 in figure T1?

Battery

See REF2551

Which of the following is used together with an inductor to make a tuned circuit?

Capacitor

See REF2551

What can you do if you are told your FM handheld or mobile transceiver is over-deviating?

Talk farther away from the microphone

See REF2551

What is the approximate SWR value above which the protection circuits in most solid-state transmitters begin to reduce transmitter power?

2 to 1

See REF2551

Which of the following types of solder is best for radio and electronic use?

Rosin-core solder

See REF2551

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

Any amateur whose license privileges allow them to transmit on the satellite uplink frequency

See REF2551

How is access to an IRLP node accomplished?

By using DTMF signals

See REF2551

What code is used when sending CW in the amateur bands?

International Morse

See REF2551

Which of the following terms describes a type of loading when referring to an antenna?

Inserting an inductor in the radiating portion of the antenna to make it electrically longer

See REF2551

Why is it unwise to install a 20-ampere fuse in the place of a 5-ampere fuse?

Excessive current could cause a fire

See REF2551

Which of the following is true concerning grounding conductors used for lightning protection?

Sharp bends must be avoided

See REF2551

Which of the following is a permissible use of the Amateur Radio Service?

Allowing a person to conduct radio experiments and to communicate with other licensed hams around the world

See REF2551

Which type of call sign has a single letter in both its prefix and suffix?

Special event

See REF2551

When is the transmission of codes or ciphers that hide the meaning of a message allowed by an amateur station?

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

See REF2551

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

The control operator and the station licensee are equally responsible

See REF2551

To which foreign stations do the FCC rules authorize the transmission of non-emergency third party communications?

Any station whose government permits such communications

See REF2551

What is the term used to describe the use of a sub-audible tone transmitted with normal voice audio to open the squelch of a receiver?

CTCSS

See REF2551

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

A radio service using amateur frequencies for emergency management or civil defense communications

A radio service using amateur stations for emergency management or civil defense communications

An emergency service using amateur operators certified by a civil defense organization as being enrolled in that organization

All of these choices are correct.

See REF2551

Which of the following results from the fact that skip signals refracted from the ionosphere are elliptically polarized?

Either vertically or horizontally polarized antennas may be used for transmission or reception

See REF2551

What is a characteristic of VHF signals received via auroral reflection?

The signals exhibit rapid fluctuations of strength and often sound distorted

See REF2551

How is a computer's sound card used when conducting digital communications using a computer?

The sound card provides audio to the microphone input and converts received audio to digital form

See REF2551

Which of the following describes the common meaning of the term "repeater offset"?

The difference between the repeater's transmit and receive frequencies

See REF2551

How many volts are equal to one kilovolt?

One thousand volts

See REF2551

What does the abbreviation "RF" refer to?

Radio frequency signals of all types

See REF2551

What is the current flowing through a 24-ohm resistor connected across 240 volts?

10 amperes

See REF2551

What electronic component allows current to flow in only one direction?

Diode

See REF2551

What is component 6 in figure T2?

Capacitor

See REF2551

What is the name of a device that combines several semiconductors and other components into one package?

Integrated circuit

See REF2551

What would cause a broadcast AM or FM radio to receive an amateur radio transmission unintentionally?

The receiver is unable to reject strong signals outside the AM or FM band

See REF2551

What does an SWR reading of 4:1 indicate?

Impedance mismatch

See REF2551

What is the characteristic appearance of a cold solder joint?

A grainy or dull surface

See REF2551

How much transmitter power should be used on the uplink frequency of an amateur satellite or space station?

The minimum amount of power needed to complete the contact

See REF2551

What is the maximum power allowed when transmitting telecommand signals to radio controlled models?

1 watt

See REF2551

Which of the following can be used to transmit CW in the amateur bands?

Straight Key

Electronic Keyer

Computer Keyboard

All of these choices are correct.

See REF2551

Why is it important to have a low SWR in an antenna system that uses coaxial cable feed line?

To allow the efficient transfer of power and reduce losses

See REF2551

What is a good way to guard against electrical shock at your station?

Use three-wire cords and plugs for all AC powered equipment
Connect all AC powered station equipment to a common safety ground
Use a circuit protected by a ground-fault interrupter
All of these choices are correct.

See REF2551

Which of the following establishes grounding requirements for an amateur radio tower or antenna?

Local electrical codes

See REF2551

What is the FCC Part 97 definition of telecommand?

A one-way transmission to initiate, modify or terminate functions of a device at a distance

See REF2551

Which of the following is a valid US amateur radio station call sign?

W3ABC

See REF2551

What is the only time an amateur station is authorized to transmit music?

When incidental to an authorized retransmission of manned spacecraft communications

See REF2551

Which of the following is an example of automatic control?

Repeater operation

See REF2551

How many persons are required to be members of a club for a club station license to be issued by the FCC?

At least 4

See REF2551

Which of the following describes the muting of receiver audio controlled solely by the presence or absence of an RF signal?

Carrier squelch

See REF2551

Which of the following is an accepted practice to get the immediate attention of a net control station when reporting an emergency?

Begin your transmission by saying "Priority" or "Emergency" followed by your call sign

See REF2551

What may occur if data signals propagate over multiple paths?

Error rates are likely to increase

See REF2551

Which of the following propagation types is most commonly associated with occasional strong over-the-horizon signals on the 10, 6, and 2 meter bands?

Sporadic E

See REF2551

Which type of conductor is best to use for RF grounding?

Flat strap

See REF2551

What is the function of automatic gain control or AGC?

To keep received audio relatively constant

See REF2551

How many volts are equal to one microvolt?

One one-millionth of a volt

See REF2551

What is a usual name for electromagnetic waves that travel through space?

Radio waves

See REF2551

What is the voltage across a 2-ohm resistor if a current of 0.5 amperes flows through it?

1 volt

See REF2551

Which of these components can be used as an electronic switch or amplifier?

Transistor

See REF2551

What is component 8 in figure T2?

Light emitting diode

See REF2551

What is the function of component 2 in Figure T1?

Control the flow of current

See REF2551

Which of the following may be a cause of radio frequency interference?

Fundamental overload

Harmonics

Spurious emissions

All of these choices are correct.

See REF2551

What happens to power lost in a feed line?

It is converted into heat

See REF2551

What is probably happening when an ohmmeter, connected across an unpowered circuit, initially indicates a low resistance and then shows increasing resistance with time?

The circuit contains a large capacitor

See REF2551

Which of the following are provided by satellite tracking programs?

Maps showing the real-time position of the satellite track over the earth

The time, azimuth, and elevation of the start, maximum altitude, and end of a pass

The apparent frequency of the satellite transmission, including effects of Doppler shift

All of these answers are correct.

See REF2551

What is required in place of on-air station identification when sending signals to a radio control model using amateur frequencies?

A label indicating the licensee's name, call sign and address must be affixed to the transmitter

See REF2551

What is an ARQ transmission system?

A digital scheme whereby the receiving station detects errors and sends a request to the sending station to retransmit the information

See REF2551

What is the impedance of the most commonly used coaxial cable in typical amateur radio installations?

50 ohms

See REF2551

Which of these precautions should be taken when installing devices for lightning protection in a coaxial cable feed line?

Ground all of the protectors to a common plate which is in turn connected to an external ground

See REF2551

Which of the following is good practice when installing ground wires on a tower for lightning protection?

Ensure that connections are short and direct

See REF2551

What must you do if you are operating on the 23 cm band and learn that you are interfering with a radiolocation station outside the United States?

Stop operating or take steps to eliminate the harmful interference

See REF2551

What types of international communications are permitted by an FCC-licensed amateur station?

Communications incidental to the purposes of the amateur service and remarks of a personal character

See REF2551

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

When the equipment is normally used in an amateur station and such activity is not conducted on a regular basis

See REF2551

What type of control is being used when the control operator is at the control point?

Local control

See REF2551

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

At any time upon request by an FCC representative

See REF2551

Which of the following common problems might cause you to be able to hear but not access a repeater even when transmitting with the proper offset?

The repeater receiver may require an audio tone burst for access

The repeater receiver may require a CTCSS tone for access

The repeater receiver may require a DCS tone sequence for access

All of these choices are correct.

See REF2551

Which of the following is an accepted practice for an amateur operator who has checked into an emergency traffic net?

Remain on frequency without transmitting until asked to do so by the net control station

See REF2551

Which part of the atmosphere enables the propagation of radio signals around the world?

The ionosphere

See REF2551

Which of the following effects might cause radio signals to be heard despite obstructions between the transmitting and receiving stations?

Knife-edge diffraction

See REF2551

Which of the following could you use to cure distorted audio caused by RF current flowing on the shield of a microphone cable?

Ferrite choke

See REF2551

Electrical current is measured in which of the following units?

Amperes

See REF2551

Which of the following is equivalent to 500 milliwatts?

0.5 watts

See REF2551

What is the formula used to calculate electrical power in a DC circuit?

Power (P) equals voltage (E) multiplied by current (I)

See REF2551

What is the voltage across a 10-ohm resistor if a current of 1 ampere flows through it?

10 volts

See REF2551

Which of the following components can be made of three layers of semiconductor material?

Transistor

See REF2551

What is component 9 in figure T2?

Variable resistor

See REF2551

What is a simple resonant or tuned circuit?

An inductor and a capacitor connected in series or parallel to form a filter

See REF2551

Which of the following is a way to reduce or eliminate interference by an amateur transmitter to a nearby telephone?

Put a RF filter on the telephone

See REF2551

What instrument other than an SWR meter could you use to determine if a feed line and antenna are properly matched?

Directional wattmeter

See REF2551

Which of the following precautions should be taken when measuring circuit resistance with an ohmmeter?

Ensure that the circuit is not powered

See REF2551

Which amateur stations may make contact with an amateur station on the International Space Station using 2 meter and 70 cm band amateur radio frequencies?

Any amateur holding a Technician or higher class license

See REF2551

How might you obtain a list of active nodes that use VoIP?

From a repeater directory

See REF2551

What is a beam antenna?

An antenna that concentrates signals in one direction

See REF2551

Why is coaxial cable used more often than any other feed line for amateur radio antenna systems?

It is easy to use and requires few special installation considerations

See REF2551

What safety equipment should always be included in home-built equipment that is powered from 120V AC power circuits?

A fuse or circuit breaker in series with the AC hot conductor

See REF2551

What type of radiation are VHF and UHF radio signals?

Non-ionizing radiation

See REF2551

What is the ITU?

A United Nations agency for information and communication technology issues

See REF2551

When are you allowed to operate your amateur station in a foreign country?

When the foreign country authorizes it

See REF2551

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

Any such language is prohibited

See REF2551

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

Operating the station over the Internet

See REF2551

What is the most common repeater frequency offset in the 2 meter band?

Plus or minus 600 kHz

See REF2551

What determines the amount of deviation of an FM (as opposed to PM) signal?

The amplitude of the modulating signal

See REF2551

Which of the following is a characteristic of good emergency traffic handling?

Passing messages exactly as received

See REF2551

What is the name for the distance a radio wave travels during one complete cycle?

Wavelength

See REF2551

What mode is responsible for allowing over-the-horizon VHF and UHF communications to ranges of approximately 300 miles on a regular basis?

Tropospheric scatter

See REF2551

What is the source of a high-pitched whine that varies with engine speed in a mobile transceiver's receive audio?

The alternator

See REF2551

Electrical power is measured in which of the following units?

Watts

See REF2551

If an ammeter calibrated in amperes is used to measure a 3000-milliampere current, what reading would it show?

3 amperes

See REF2551

How much power is being used in a circuit when the applied voltage is 13.8 volts DC and the current is 10 amperes?

138 watts

See REF2551

What is the voltage across a 10-ohm resistor if a current of 2 amperes flows through it?

20 volts

See REF2551

Which of the following electronic components can amplify signals?

Transistor

See REF2551

What is component 4 in figure T2?

Transformer

See REF2551

Which of the following is a common reason to use shielded wire?

To prevent coupling of unwanted signals to or from the wire

See REF2551

How can overload of a non-amateur radio or TV receiver by an amateur signal be reduced or eliminated?

Block the amateur signal with a filter at the antenna input of the affected receiver

See REF2551

Which of the following is the most common cause for failure of coaxial cables?

Moisture contamination

See REF2551

Which of the following precautions should be taken when measuring high voltages with a voltmeter?

Ensure that the voltmeter and leads are rated for use at the voltages to be measured

See REF2551

What is a satellite beacon?

A transmission from a space station that contains information about a satellite