

QUESTION POOL

ELEMENT 2 - TECHNICIAN CLASS

Who makes and enforces the rules for the amateur service in the United States?

The Federal Communications Commission (FCC)

What are two of the five fundamental purposes for the amateur service in the United States?

To increase the number of trained radio operators and electronics experts, and improve international goodwill

What is the definition of an amateur station?

A radio station in the amateur service used for radio communications

When is an amateur station authorized to transmit information to the general public?

Never

When is an amateur station authorized to transmit music?

Amateurs may not transmit music, except as an incidental part of an authorized rebroadcast of space shuttle communications

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

Codes and ciphers may not be used to obscure the meaning of a message, although there are special exceptions

Which of the following one-way communications may NOT be transmitted in the amateur service?

Broadcast intended for reception by the general public

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Broadcasts intended for reception by the general public

What is an amateur space station?

An amateur station located more than 50 kilometers above the Earth's surface

Who may be the control operator of an amateur space station?

Any licensed amateur operator

When may false or deceptive signals or communications be transmitted by an amateur station?

Never

When may an amateur station transmit unidentified communications?

Only when sent from a space station or to control a model craft

What is an amateur communication called that does NOT have the required station identification?

Unidentified communications or signals

What is a transmission called that disturbs other communications?

Harmful interference

What does the term broadcasting mean?

Transmissions intended for reception by the general public, either direct or relayed

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Why is indecent and obscene language prohibited in the Amateur Service?

All of these choices are correct

Which of the following is a prohibited amateur radio transmission?

Using an auto-patch to pick up business messages

What are the frequency limits of the 6-meter band in ITU Region 2?

50.0 - 54.0 MHz

What are the frequency limits of the 2-meter band in ITU Region 2?

144.0 - 148.0 MHz

What are the frequency limits of the 1.25-meter band in ITU Region 2?

222.0 - 225.0 MHz

What are the frequency limits of the 70-centimeter band in ITU Region 2?

420.0 - 450.0 MHz

What are the frequency limits of the 33-centimeter band in ITU Region 2?

902 - 928 MHz

What are the frequency limits of the 23-centimeter band in ITU Region 2?

1240 - 1300 MHz

What are the frequency limits of the 13-centimeter band in ITU Region 2?

2300 - 2310 MHz and 2390 - 2450 MHz

If the FCC rules say that the amateur service is a secondary user of a frequency band, and another service is a primary user, what does this mean?

Amateurs are allowed to use the frequency band only if they do not cause harmful interference to primary users

What rule applies if two amateur stations want to use the same frequency?

Both station operators have an equal right to operate on the frequency

If you are operating on 28.400 MHz, in what amateur band are you operating?

10 meters

If you are operating on 223.50 MHz, in what amateur band are you operating?

1.25 meters

When are you allowed to communicate with an amateur in a foreign country?

At any time, unless it is not allowed by either government

If you are operating FM phone on the 23-cm band and learn that you are interfering with a radio location station outside the US, what must you do?

Stop operating or take steps to eliminate this harmful interference

What does it mean for an amateur station to operate under reciprocal operating authority?

The amateur is operating in a country other than his home country

What are the frequency limits for the amateur radio service for stations located north of Line A in the 70-cm band?

430 - 450 MHz

Which of the following is required before you can operate an amateur station in the US?

The FCC must grant you an amateur operator/primary station license

What are the US amateur operator licenses that a new amateur might earn?

Technician, Technician with Morse code, General, Amateur Extra

How soon after you pass the examination elements required for your first Amateur Radio license may you transmit?

As soon as the FCC grants you a license and the data appears in the FCC's ULS data base

How soon before the expiration date of your license may you send the FCC a completed Form 605 or file with the Universal Licensing System on the World Wide Web for a renewal?

No more than 90 days

What is the normal term for an amateur station license grant?

10 years

What is the "grace period" during which the FCC will renew an expired 10-year license?

2 years

What is your responsibility as a station licensee?

You are responsible for the proper operation of the station in accordance with the FCC rules

Where does a US amateur license allow you to operate?

Wherever the amateur service is regulated by the FCC

Under what conditions are amateur stations allowed to communicate with stations operating in other radio services?

When authorized by the FCC or in an emergency

To what distance limit may Technician class licensees communicate?

There is no distance limit

If you forget to renew your amateur license and it expires, may you continue to transmit?

No, transmitting is not allowed

Who can become an amateur licensee in the US?

Anyone except a representative of a foreign government

What age must you be to hold an amateur license?

There are no age limits

What government agency grants your amateur radio license?

The Federal Communications Commission

What element credit is earned by passing the Technician class written examination?

Element 2

If you are a Technician licensee who has passed a Morse code exam, what is one document you can use to prove that you are authorized to use certain amateur frequencies below 30 MHz?

A Certificate of Successful Completion of Examination showing that you have passed a Morse code exam

What is a Volunteer Examiner (VE)?

An amateur, accredited by one or more VECs, who volunteers to administer amateur license exams

What minimum examinations must you pass for a Technician amateur license?

A single 35 question multiple choice written exam, Element 2

How may an Element 1 exam be administered to an applicant with a physical disability?

By using a vibrating surface or flashing light

What is the purpose of the Element 1 examination?

To test Morse code comprehension at 5 words-per-minute

If a Technician class licensee passes only the 5 words-per-minute Morse code test at an exam session, how long will this credit be valid for license upgrade purposes?

365 DAYS

Which of the following call signs is a valid US amateur call?

KB3TMJ

What letters must be used for the first letter in US amateur call signs?

A, K, N and W

What numbers are normally used in US amateur call signs?

A single digit, 0 through 9

In which ITU region is Alaska?

ITU Region 2

In which ITU region is Guam?

ITU Region 3

What must you transmit to identify your amateur station?

Your call sign

How might you obtain a call sign made up of your initials?

Under the vanity call sign program

How may an amateur radio licensee change his call sign without applying for a vanity call?

By requesting a systematic call sign change on an NCVEC Form 605

How may an amateur radio club obtain a station call sign?

You must apply through a Club Station Call Sign Administrator

Amateurs of which license classes are eligible to apply for temporary use of a 1-by-1 format Special Event call sign?

Any FCC-licensed amateur

How does the FCC issue new amateur radio call signs?

By ITU prefix letter(s), call sign district numeral and a suffix in strict alphabetic order

Which station call sign format groups are available to Technician Class amateur radio operators?

Group C and D

What happens to a signal's wavelength as its frequency increases?

It gets shorter

How does the frequency of a harmonic compare to the desired transmitting frequency?

It is exactly two, or three, or more times the desired frequency

What does 60 hertz (Hz) mean?

60 cycles per second

What is the name for the distance an AC signal travels during one complete cycle?

C. Wavelength

What is the fourth harmonic of a 50.25 MHz signal?

201.00 MHz

What is a radio frequency wave?

Electromagnetic oscillations or cycles that repeat more than 20,000 times per second

What is an audio-frequency signal?

Electromagnetic oscillations or cycles that repeat between 20 and 20,000 times per second

In what radio-frequency range do amateur 2-meter communications take place?

VHF, Very High Frequency range

Which of the following choices is often used to identify a particular radio wave?

The frequency or the wavelength of the wave

How is a radio frequency wave identified?

All of these choices are correct

How fast does a radio wave travel through space (in a vacuum)?

At the speed of light

What is the standard unit of frequency measurement?

A hertz

What is the basic principle of radio communications?

A radio wave is combined with an information signal and is transmitted; a receiver separates the two

How is the wavelength of a radio wave related to its frequency?

Wavelength gets shorter as frequency increases

What term means the number of times per second that an alternating current flows back and forth?

Frequency

What is the basic unit of frequency?

The hertz

What are the frequency limits of the 80-meter band in ITU Region 2 for Technician class licensees who have passed a Morse code exam?

3675 - 3725 kHz

What are the frequency limits of the 10-meter band in ITU Region 2 for Technician class licensees who have passed a Morse code exam?

28.100 - 28.500 MHz

What name does the FCC use for telemetry, tele-command or computer communications emissions?

Data

What does "connected" mean in a packet-radio link?

A transmitting station is sending data to only one receiving station; it replies that the data is being received correctly

What emission types are Technician control operators who have passed a Morse code exam allowed to use from 7100 to 7150 kHz in ITU Region 2?

CW only

What emission types are Technician control operators who have passed a Morse code exam allowed to use on frequencies from 28.3 to 28.5 MHz?

CW and single-side-band phone

What emission types are Technician control operators allowed to use on the amateur 1.25-meter band in ITU Region 2?

All amateur emission privileges authorized for use on the band

What term describes the process of combining an information signal with a radio signal?

Modulation

What is the name of the voice emission most used on VHF/UHF repeaters?

Frequency-modulated phone

What does the term "phone transmissions" usually mean?

AM, FM or SSB voice transmissions by radiotelephony

Which side band is commonly used for 10-meter phone operation?

Upper side band

What is the most transmitter power a Technician control operator with telegraphy credit may use on the 10-meter band?

200 watts PEP output

What name does the FCC use for voice emissions?

Phone

What emission privilege is permitted a Technician class operator in the 219 MHz - 220 MHz frequency range?

Point-to-point digital message forwarding

Which side band is normally used for VHF/UHF SSB communications?

Upper side band

Which of the following descriptions is used to describe a good signal through a repeater?

Full quieting

What emissions do a transmitter using a reactance modulator produce?

Phase-modulated phone

What other emission does phase modulation most resemble?

Frequency modulation

What is the name of the area of the atmosphere that makes long-distance radio communications possible by bending radio waves?

Ionosphere

Which ionosphere region is closest to the Earth?

The D region

Which region of the ionosphere is mainly responsible for absorbing MF/HF radio signals during the daytime?

The D region

Which region of the ionosphere is mainly responsible for long-distance sky-wave radio communications?

F2 region

When a signal travels along the surface of the Earth, what is this called?

Ground-wave propagation

What type of solar radiation is most responsible for ionization in the outer atmosphere?

Ultraviolet

What is the usual cause of sky-wave propagation?

Signals are bent back to Earth by the ionosphere

What type of propagation has radio signals bounce several times between Earth and the ionosphere as they travel around the Earth?

Multi-hop

What effect does the D region of the ionosphere have on lower-frequency HF signals in the daytime?

It absorbs the signals

How does the signal loss for a given path through the troposphere vary with frequency?

The path loss increases as the frequency increases

When a signal is returned to Earth by the ionosphere, what is this called?

Sky-wave propagation

How does the range of sky-wave propagation compare to ground-wave propagation?

It is much longer

When a signal travels in a straight line from one antenna to another, what is this called?

Line-of-sight propagation

What can happen to VHF or UHF signals going towards a metal-framed building?

They can be reflected by the building

Ducting occurs in which region of the atmosphere?

Troposphere

What causes VHF radio waves to be propagated several hundred miles over oceans?

A widespread temperature inversion

In which of the following frequency ranges does sky-wave propagation least often occur?

UHF

Why should local amateur communications use VHF and UHF frequencies instead of HF frequencies?

To minimize interference on HF bands capable of long-distance communication

How does the number of sunspots relate to the amount of ionization in the ionosphere?

The more sunspots there are, the greater the ionization

How long is an average sunspot cycle?

11 years

Which of the following frequency bands is most likely to experience summertime sporadic-E propagation?

6 meters

Which of the following emission modes are considered to be weak-signal modes and have the greatest potential for DX contacts?

Single side-band and CW

What is the condition of the ionosphere above a particular area of the Earth just before local sunrise?

Ionization is at a minimum

What happens to signals that take off vertically from the antenna and are higher in frequency than the critical frequency?

They pass through the ionosphere

In relation to sky-wave propagation, what does the term "maximum usable frequency" (MUF) mean?

The highest frequency signal that will reach its intended destination

When may you operate your amateur station aboard a cruise ship?

Only with the approval of the master of the ship and not using the ship's radio equipment

When may you operate your amateur station somewhere in the US besides the address listed on your license?

Whenever you want to

What penalty may the FCC impose if you fail to provide your correct mailing address?

Your amateur license could be revoked

Under what conditions may you transmit from a location different from the address printed on your amateur license?

If the location is under the control of the FCC, whenever the FCC Rules allow

Why must an amateur operator have a current US postal mailing address?

To follow the FCC rules and so the licensee can receive mail from the FCC

What is one way to notify the FCC if your mailing address changes?

Fill out an FCC Form 605 using your new address, attach a copy of your license, and mail it to the FCC office in Gettysburg, PA

What do FCC rules require you to do if you plan to erect an antenna whose height exceeds 200 feet?

Notify the Federal Aviation Administration and register with the FCC

Which of the following is NOT an important consideration when selecting a location for a transmitting antenna?

Polarization of the feed line

What is the height restriction the FCC places on Amateur Radio Service antenna structures without registration with the FCC and FAA?

200 feet

When may you operate your amateur station aboard an aircraft?

Only with the approval of the pilot in command and not using the aircraft's radio equipment

What is the definition of a control operator of an amateur station?

Any licensed amateur operator who is responsible for the station's transmissions

What is the FCC's name for the person responsible for the transmissions from an amateur station?

Control operator

When must an amateur station have a control operator?

Whenever the station is transmitting

What is the term for the location at which the control operator function is performed?

The control point

What is the control point of an amateur station?

The location at which the control operator function is performed

When you operate your transmitting equipment alone, what is your official designation?

Control operator

When does the FCC assume that you authorize transmissions with your call sign as the control operator?

At all times

What is the name for the operating position where the control operator has full control over the transmitter?

Control point

When is the FCC allowed to conduct an inspection of your amateur station?

At any time

How many transmitters may an amateur licensee control at the same time?

Any number

If you have been informed that your amateur radio station causes interference to nearby radio or television broadcast receivers of good engineering design, what operating restrictions can FCC rules impose on your station?

Require that you discontinue operation on frequencies causing interference during certain evening hours and on Sunday morning (local time)

How could you best keep unauthorized persons from using your amateur station at home?

Use a key-operated on/off switch in the main power line

How could you best keep unauthorized persons from using a mobile amateur station in your car?

Disconnect the microphone when you are not using it

If you hear a voice distress signal on a frequency outside of your license privileges, what are you allowed to do to help the station in distress?

You are allowed to help on a frequency outside your privileges in any way Possible

When may you use your amateur station to transmit an "SOS" or "MAYDAY"?

In a life- or property-threatening emergency

If a disaster disrupts normal communication systems in an area where the FCC regulates the amateur service, what kinds of transmissions may stations make?

Those that are necessary to meet essential communication needs and facilitate relief actions

What information is included in an FCC declaration of a temporary state of communication emergency?

Any special conditions and special rules to be observed during the emergency

If you are in contact with another station and you hear an emergency call for help on your frequency, what should you do?

Stop your QSO immediately and take the emergency call

What is the proper way to interrupt a repeater conversation to signal a distress call?

Say "BREAK" once, then your call sign

What is one reason for using tactical call signs such as "command post" or "weather center" during an emergency?

They are more efficient and help coordinate public-service communications

What type of messages concerning a person's well being are sent into or out of a disaster area?

Health and welfare traffic

What are messages called that are sent into or out of a disaster area concerning the immediate safety of human life?

Emergency traffic

Why is it a good idea to have a way to operate your amateur station without using commercial AC power lines?

So you may provide communications in an emergency

What is the most important accessory to have for a hand-held radio in an emergency?

Several sets of charged batteries

Which type of antenna would be a good choice as part of a portable HF amateur station that could be set up in case of an emergency?

A dipole

How must you identify messages sent during a RACES drill?

As drill or test messages

With what organization must you register before you can participate in RACES drills?

The responsible civil defense organization

If you are the control operator at the station of another amateur who has a higher-class license than yours, what operating privileges are you allowed?

Only the privileges allowed by your license

Assuming you operate within your amateur license privileges, what restrictions apply to operating amateur equipment?

You may operate any amateur equipment

When an amateur station is transmitting, where must its control operator be, assuming the station is not under automatic control?

At the station's control point

Where will you find a detailed list of your operating privileges?

In FCC Part 97

If you transmit from another amateur's station, who is responsible for its proper operation?

Both of you

If you let another amateur with a higher class license than yours control your station, what operating privileges are allowed?

Any privileges allowed by the higher license, as long as proper identification procedures are followed

If a Technician class licensee uses the station of a General class licensee, how may the Technician licensee operate?

Within the limits of a Technician class license

What type of amateur station does not require the control operator to be present at the control point?

An automatically controlled station

Why can't unlicensed persons in your family transmit using your amateur station if they are alone with your equipment?

They must be licensed before they are allowed to be control operators

If you own a dual-band mobile transceiver, what requirement must be met if you set it up to operate as a cross band repeater?

There must be a control operator at the system's control point

How often must an amateur station be identified?

At least every ten minutes during and at the end of a contact

What identification, if any, is required when two amateur stations end communications?

Each station must transmit its own call sign

What is the longest period of time an amateur station can operate without transmitting its call sign?

10 minutes

What is the term for the average power supplied to an antenna transmission line during one RF cycle at the crest of the modulation envelope?

Peak envelope power

What amount of transmitter power must amateur stations use at all times?

The minimum legal power necessary to communicate

If you are using a language besides English to make a contact, what language must you use when identifying your station?

English

If you are helping in a communications emergency that is being handled by a net control operator, how might you best minimize interference to the net once you have checked in?

Do not transmit on the net frequency until asked to do so by the net operator

What are the station identification requirements for an amateur transmitter used for tele command (control) of model craft?

Station identification is not required if the transmitter is labeled with the station licensee's name, address and call sign

Why is transmitting on a police frequency as a "joke" called harmful interference that deserves a large penalty?

It blocks police calls that might be an emergency and interrupts police communications

If you are using a frequency within a band assigned to the amateur service on a secondary basis, and a station assigned to the primary service on that band causes interference, what action should you take?

Change frequencies; you may be causing harmful interference to the other station, in violation of FCC rules

If you answer someone on the air and then complete your communication without giving your call sign, what type of communication have you just conducted?

Unidentified communication

What is one example of one-way communication that Technician class control operators are permitted by FCC rules?

Transmission for radio control of model craft

What kind of payment is allowed for third-party messages sent by an amateur station?

No payment of any kind is allowed

What is the definition of third-party communications?

A message sent between two amateur stations for someone else

When are third-party messages allowed to be sent to a foreign country?

When the US has a third-party agreement with the foreign country or the third party is qualified to be a control operator

If you let an unlicensed third party use your amateur station, what must you do at your station's control point?

You must continuously monitor and supervise the third-party's participation

Besides normal identification, what else must a US station do when sending third-party communications internationally?

The US station must transmit both call signs at the end of each communication

If an amateur pretends there is an emergency and transmits the word "MAYDAY," what is this called?

False or deceptive signals

If an amateur transmits to test access to a repeater without giving any station identification, what type of communication is this called?

An illegal unidentified transmission

When may you deliberately interfere with another station's communications?

Never

If an amateur repeatedly transmits on a frequency already occupied by a group of amateurs in a net operation, what type of interference is this called?

Harmful or malicious interference

What device is commonly used to retransmit amateur radio signals?

A repeater

What is the advantage of using the International Telecommunication Union (ITU) phonetic alphabet when identifying your station?

The words are internationally recognized substitutes for letters

What is one reason to avoid using "cute" phrases or word combinations to identify your station?

They are not easily understood by non-English-speaking amateurs

What should you do before you transmit on any frequency?

Listen to make sure others are not using the frequency

How do you call another station on a repeater if you know the station's call sign?

Say the station's call sign, then identify your own station

What does RST mean in a signal report?

Readability, signal strength, tone

What is the meaning of: "Your signal report is five nine plus 20 d .."?

A relative signal-strength meter reading is 20 decibels greater than strength 9

What is the meaning of the procedural signal "CQ"?

Calling any station

What is a QSL card in the amateur service?

A written acknowledgment of communications between two amateurs

What is the correct way to call CQ when using voice?

Say "CQ" three times, followed by "this is," followed by your call sign spoken three times

How should you answer a voice CQ call?

Say the other station's call sign once, followed by "this is," then your call sign given phonetically

What is the meaning of: "Your signal is full quieting...?"

Your signal is strong enough to overcome all receiver noise

What is meant by the term "DX"?

Distant station

What is the meaning of the term "73"?

Best regards

Which list of emission types is in order from the narrowest bandwidth to the widest bandwidth?

CW, RTTY, SSB voice, FM voice

What is the usual bandwidth of a single-side band amateur signal?

Between 2 and 3 kHz

What is the usual bandwidth of a frequency-modulated amateur signal?

Between 10 and 20 kHz

What is the usual bandwidth of a UHF amateur fast-scan television signal?

About 6 MHz

What name is given to an amateur radio station that is used to connect other amateur stations with the Internet?

A gateway

What is a band plan?

A voluntary guideline beyond the divisions established by the FCC for using different operating modes within an amateur band

At what speed should a Morse code CQ call be transmitted?

Any speed at which you can reliably receive

What is the meaning of the procedural signal "DE"?

"From" or "this is," as in "W0AIH DE KA9FOX"

What is a good way to call CQ when using Morse code?

Send the letters "CQ" three times, followed by "DE," followed by your call sign sent three times

How should you answer a Morse code CQ call?

Send the other station's call sign twice, followed by "DE," followed by your call sign twice

What is the meaning of the procedural signal "K"?

"Any station transmit"

What is one meaning of the Q signal "QRS"?

"Send more slowly"

What is meant by receiver overload?

Interference caused by strong signals from a nearby source

What type of filter might be connected to an amateur HF transmitter to cut down on harmonic radiation?

A low-pass filter

What type of filter should be connected to a TV receiver as the first step in trying to prevent RF overload from an amateur HF station transmission?

High-pass

What effect might a break in a cable television transmission line have on amateur communications?

TV interference may result when the amateur station is transmitting, or interference may occur to the amateur receiver

If you are told that your amateur station is causing television interference, what should you do?

First make sure that your station is operating properly, and that it does not cause interference to your own television

If harmonic radiation from your transmitter is causing interference to television receivers in your neighborhood, who is responsible for taking care of the interference?

You alone are responsible, since your transmitter is causing the problem

If signals from your transmitter are causing front-end overload in your neighbor's television receiver, who is responsible for taking care of the interference?

The owner of the television receiver is responsible

What circuit blocks RF energy above and below certain limits?

A band-pass filter

If someone tells you that signals from your hand-held transceiver are interfering with other signals on a frequency near yours, what may be the cause?

Your hand-held may be transmitting spurious emissions

What may happen if an SSB transmitter is operated with the microphone gain set too high?

It may cause splatter interference to other stations operating near its frequency

What may cause a buzzing or hum in the signal of an HF transmitter?

A bad filter capacitor in the transmitter's power supply

What is the major cause of telephone interference?

The telephone was not equipped with interference protection when it was manufacture

What is the name for the flow of electrons in an electric circuit?

Current

What is the name of a current that flows only in one direction?

A direct current

What is the name of a current that flows back and forth, first in one direction, then in the opposite direction?

An alternating current

What is the basic unit of electrical power?

The watt

What is the basic unit of electric current?

The ampere

How much voltage does an automobile battery usually supply?

About 12 volts

What limits the current that flows through a circuit for a particular applied DC voltage?

Resistance

What is the basic unit of resistance?

The ohm

What is the basic unit of inductance?

The henry

What is the basic unit of capacitance?

The farad

Which of the following circuits changes an alternating current signal into a varying direct current signal?

Rectifier

What formula shows how voltage, current and resistance relate to each other in an electric circuit?

Ohm's Law

If a current of 2 amperes flows through a 50-ohm resistor, what is the voltage across the resistor?

100 volts

If a 100-ohm resistor is connected to 200 volts, what is the current through the resistor?

2 amperes

If a current of 3 amperes flows through a resistor connected to 90 volts, what is the resistance?

30 ohms

If you increase your transmitter output power from 5 watts to 10 watts, what decibel (dB) increase does that represent?

3 dB

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

3 amperes

How many hertz are in a kilohertz?

1000

If a dial marked in megahertz shows a reading of 3.525 MHz, what would it show if it were marked in kilohertz?

3525 kHz

How many micro-farads is 1,000,000 pico-farads?

1 micro-farad

If you have a hand-held transceiver with an output of 500 milli-watts, how many watts would this be?

0.5

What type of electric circuit uses signals that can vary continuously over a certain range of voltage or current values?

An analog circuit

What type of electric circuit uses signals that have voltage or current values only in specific steps over a certain range?

A digital circuit

Which of the following is an example of an analog communications method?

Frequency-modulated (FM) voice

Which of the following is an example of a digital communications method?

Radio-teletype (RTTY)

Most humans can hear sounds in what frequency range?

20 - 20,000 Hz

Why do we call electrical signals in the frequency range of 20 Hz to 20,000 Hz audio frequencies?

Because the human ear can sense sounds in this range

What is the lowest frequency of electrical energy that is usually known as a radio frequency?

20,000 Hz

Electrical energy at a frequency of 7125 kHz is in what frequency range?

Radio

If a radio wave makes 3,725,000 cycles in one second, what does this mean?

The radio wave's frequency is 3725 kilohertz

Which component can amplify a small signal using low voltages?

A PNP transistor

Which component can amplify a small signal but normally uses high voltages?

A vacuum tube

Which of the following lists include three good electrical conductors?

Gold, silver, aluminum

What is one reason resistors are used in electronic circuits?

To control the amount of current that flows for a particular applied voltage

If two resistors are connected in series, what is their total resistance?

The sum of the individual resistor values

What is one reason capacitors are used in electronic circuits?

To block the flow of direct current while allowing alternating current to pass

If two equal-value capacitors are connected in parallel, what is their total capacitance?

Twice the value of one capacitor

What does a capacitor do?

It stores energy electro-statically and opposes a change in voltage

Which of the following best describes a variable capacitor?

Two sets of rotating conducting plates separated by an insulator, which can be varied in surface area exposed to each other

What does an inductor do?

It stores energy electro-magnetically and opposes a change in current

What component controls current to flow in one direction only?

A diode

What is one advantage of using ICs (integrated circuits) instead of vacuum tubes in a circuit?

ICs usually combine several functions into one package

Which symbol of Figure T7-1 represents a fixed resistor?

Symbol 3

In Figure T7-1, which symbol represents a variable resistor or potentiometer?

Symbol 2

In Figure T7-1, which symbol represents a single-cell battery?

Symbol 13

In Figure T7-1, which symbol represents an NPN transistor?

Symbol 4

Which symbol of Figure T7-1 represents a fixed-value capacitor?

Symbol 1

In Figure T7-1, which symbol represents an antenna?

Symbol 7

In Figure T7-1, which symbol represents a fixed-value iron-core inductor?

Symbol 6

In Figure T7-2, which symbol represents a single-pole, double-throw switch?

Symbol 4

In Figure T7-2, which symbol represents a double-pole, single-throw switch?

Symbol 3

What two bands are most commonly used by "dual band" hand-held transceivers?

2 meters and 70 cm

If your mobile transceiver works in your car but not in your home, what should you check first?

The power supply

Which of the following devices would you need to conduct Amateur Radio communications using a data emission?

A computer

Which of the following devices would be useful to create an effective Amateur Radio station for weak-signal VHF communication?

A multi-mode VHF transceiver

What would you connect to a transceiver for voice operation?

A microphone

What would you connect to a transceiver to send Morse code?

A telegraph key

What do many amateurs use to help form good Morse code characters?

An electronic keyer

Why is it important to provide adequate power supply filtering for a CW transmitter?

To eliminate modulation of the RF signal by AC hum

Why is it important to provide adequate DC source supply filtering for a mobile transmitter or transceiver?

To reduce stray noise and RF pick-up

What would you connect to a transceiver for RTTY operation?

A modem and a teleprinter or computer system

What might you connect between your transceiver and an antenna switch connected to several antennas?

An SWR meter

What might happen if you set your receiver's signal squelch too low while attempting to receive packet mode transmissions?

Noise may cause the TNC to falsely detect a data carrier

What is one common method of transmitting RTTY on VHF/UHF bands?

Modulate a conventional FM transmitter with a modem

What would you use to connect a dual-band antenna to a mobile transceiver that has separate VHF and UHF output connectors?

A duplexer

Can a transceiver designed for FM phone operation also be used for single Side-band in the weak-signal portion of the 2-meter band?

Only if the radio is a "multi-mode" radio

How is a CW signal usually transmitted?

By on/off keying an RF signal

What purpose does block 1 serve in the simple CW transmitter pictured in Figure T8-1?

It controls the transmitter frequency

What circuit is pictured in Figure T8-1 if block 1 is a variable-frequency oscillator?

A VFO-controlled transmitter

What circuit is shown in Figure T8-2 if block 1 represents a reactance modulator?

An FM transmitter

How would the output of the FM transmitter shown in Figure T8-2 be affected if the audio amplifier failed to operate (assuming block 1 is a reactance modulator)?

The output would be an un-modulated carrier

What minimum rating should a dummy antenna have for use with a 100-watt, single-Side-band-phone transmitter?

100 watts continuous

A mobile radio may be operated at home with the addition of which piece of equipment?

A power supply

What might you use instead of a power supply for home operation of a mobile radio?

A 12-volt battery

What device converts 120 V AC to 12 V DC?

A power supply

What device could boost the low-power output from your hand-held radio up to 100 watts?

A power amplifier

What is the result of over deviation in an FM transmitter?

Out-of-channel emissions

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

Talk farther away from the microphone

In Figure T8-3, if block 1 is a transceiver and block 3 is a dummy antenna, what is block 2?

An antenna switch

In Figure T8-3, if block 1 is a transceiver and block 2 is an antenna switch, what is block 3?

A dummy antenna

In Figure T8-4, if block 1 is a transceiver and block 2 is an SWR meter, what is block 3?

An antenna tuner

In Figure T8-4, if block 1 is a transceiver and block 3 is an antenna tuner, what is block 2?

An SWR meter

In Figure T8-4, if block 2 is an SWR meter and block 3 is an antenna tuner, what is block 1?

A transceiver

What type of circuit does Figure T8-5 represent if block 1 is a product detector?

A simple CW and SSB receiver

If Figure T8-5 is a diagram of a simple single-side-band receiver, what type of circuit should be shown in block 1?

A product detector

What circuit is pictured in Figure T8-6, if block 1 is a frequency discriminator?

An FM receiver

What is block 1 in the FM receiver shown in Figure T8-6?

A frequency discriminator

What would happen if block 1 failed to function in the FM receiver diagram shown in Figure T8-6?

There would be no audio output

What circuit function is found in all types of receivers?

A detector

What is one accurate way to check the calibration of your receiver's tuning dial?

Tune to one of the frequencies of station WWV or WWVH

What circuit combines signals from an IF amplifier stage and a beat-frequency oscillator (BFO), to produce an audio signal?

A detector circuit

Why is FM voice so effective for local VHF/UHF radio communications?

It has audio that is less affected by interference from static-type electrical noise than the AM modes

Why do many radio receivers have several IF filters of different bandwidths that can be selected by the operator?

Because some emission types need a wider bandwidth than others to be received properly

What is the function of a mixer in a super-heterodyne receiver?

To shift the frequency of the received signal so that it can be processed by IF stages

What frequency or frequencies could the radio shown in Figure T8-7 receive?

147.0 MHz and 168.4 MHz

What type of receiver is shown in Figure T8-7?

Single-conversion super-heterodyne

What emission mode could the receiver in Figure T8-7 detect?

FM

Where should the squelch be set for the proper operation of an FM receiver?

At the point that just silences background noise

Which of the following will improve the operation of a hand-held radio inside a vehicle?

An external antenna on the roof

Which is true of "rubber duck" antennas for hand-held transceivers?

They are much less efficient than a quarter-wavelength telescopic antenna

What would be the length, to the nearest inch, of a half-wavelength dipole antenna that is resonant at 147 MHz?

37 inches

How long should you make a half-wavelength dipole antenna for 223 MHz (measured to the nearest inch)?

25 inches

How long should you make a quarter-wavelength vertical antenna for 146 MHz (measured to the nearest inch)?

19 inches

How long should you make a quarter-wavelength vertical antenna for 440 MHz (measured to the nearest inch)?

6 inches

Which of the following factors has the greatest effect on the gain of a properly designed Yagi antenna?

Boom length

Approximately how long is the driven element of a Yagi antenna?

1/2 wavelength

In Figure T8-8, what is the name of element 2 of the Yagi antenna?

Driven element

In Figure T8-8, what is the name of element 3 of the Yagi antenna?

Director

In Figure T8-8, what is the name of element 1 of the Yagi antenna?

Reflector

What is a cubical quad antenna?

Two or more parallel four-sided wire loops, each approximately one-electrical wavelength long

What does horizontal wave polarization mean?

The electric lines of force of a radio wave are parallel to the Earth's surface

What does vertical wave polarization mean?

The electric lines of force of a radio wave are perpendicular to the Earth's surface

If the ends of a half-wavelength dipole antenna (mounted at least a half-wavelength high) point east and west, which way would the antenna send out radio energy?

Mostly north and south

What electromagnetic wave polarization do most repeater antennas have in the VHF and UHF spectrum?

Vertical

What electromagnetic wave polarization is used for most satellite operation?

Circular

Which antenna polarization is used most often for weak signal VHF/UHF SSB operation?

Horizontal

How will increasing antenna gain by 3 dB affect your signal's effective radiated power in the direction of maximum radiation?

It will double it

What is one advantage to using a multi-band antenna?

You can operate on several bands with a single feed line

What could be done to reduce the physical length of an antenna without changing its resonant frequency?

Add a loading coil

What device might allow use of an antenna on a band it was not designed for?

An antenna tuner

What does standing-wave ratio mean?

The ratio of maximum to minimum voltages on a feed line

What instrument is used to measure standing wave ratio?

An SWR meter

What would an SWR of 1:1 indicate about an antenna system?

That the impedance of the antenna and its transmission line were matched

What does an SWR reading of 4:1 mean?

An impedance mismatch; something may be wrong with the antenna system

What does an antenna tuner do?

It matches a transceiver output impedance to the antenna system impedance

What is a coaxial cable?

A center wire inside an insulating material covered by a metal sleeve or shield

Why should you use only good quality coaxial cable and connectors for a UHF antenna system?

To keep RF loss low

What is parallel-conductor feed line?

Two wires side-by-side held apart by insulating material

Which of the following are some reasons to use parallel-conductor, open-wire feed line?

It will operate well even with a high SWR and has less loss than coaxial cable

What does "balun" mean?

Balanced to unbalanced

Where would you install a balun to feed a dipole antenna with 50-ohm coaxial cable?

Between the coaxial cable and the antenna

What happens to radio energy when it is sent through a poor quality coaxial cable?

It is converted to heat in the cable

What is an unbalanced line?

A feed line with one conductor connected to ground

What point in an antenna system is called the feed point?

At the point where the feed line joins the antenna

Which instrument would you use to measure electric potential or electromotive force?

A voltmeter

How is a voltmeter usually connected to a circuit under test?

In parallel with the circuit

What happens inside a voltmeter when you switch it from a lower to a higher voltage range?

Resistance is added in series with the meter

How is an ammeter usually connected to a circuit under test?

In series with the circuit

Which instrument would you use to measure electric current?

An ammeter

What test instrument would be useful to measure DC resistance?

An ohmmeter

What might damage a multi-meter that uses a moving-needle meter?

Measuring voltage when using the ohms setting

For which of the following measurements would you normally use a multi-meter?

Voltage, current and resistance

What is used to measure relative signal strength in a receiver?

An S meter

With regard to a transmitter and antenna system, what does "forward power" mean?

The power traveling from the transmitter to the antenna

With regard to a transmitter and antenna system, what does "reflected power" mean?

The power returned towards the source on a transmission line

At what line impedance do most RF watt meters usually operate?

50 ohms

If a directional RF wattmeter reads 90 watts forward power and 10 watts reflected power, what is the actual transmitter output power?

80 watts

What is the minimum FCC certification required for an amateur radio operator to build or modify their own transmitting equipment?

A Technician class license

What safety step should you take when soldering?

All of these choices are correct

Where would you connect a voltmeter to a 12-volt transceiver if you think the supply voltage may be low when you transmit?

At the 12-volt plug on the chassis of the equipment

If your mobile transceiver does not power up, what might you check first?

The 12-volt fuses

What device produces a stable, low-level signal that can be set to a desired frequency?

A signal generator

In Figure T8-9, what circuit quantity would meter B indicate?

The current flowing through the resistor

In Figure T8-9, what circuit quantity is meter A reading?

Battery voltage

In Figure T8-9, how would the power consumed by the resistor be calculated?

Multiply the value of the resistor times the square of the reading of meter

What is the purpose of repeater operation?

To help mobile and low-power stations extend their usable range

What is a courtesy tone, as used in repeater operations?

A sound used to indicate when a transmission is complete

During commuting rush hours, which type of repeater operation should be discouraged?

Third-party communications nets

Which of the following is a proper way to break into a conversation on a repeater?

Say your call sign during a break between transmissions

When using a repeater to communicate, which of the following do you need to know about the repeater?

Its input frequency and offset

Why should you pause briefly between transmissions when using a repeater?

To listen for anyone wanting to break in

Why should you keep transmissions short when using a repeater?

A long transmission may prevent someone with an emergency from using the repeater

How could you determine if a repeater is already being used by other stations?

Ask if the frequency is in use, then give your call sign

What is the usual input/output frequency separation for repeaters in the 2-meter band?

600 kHz

What is the usual input/output frequency separation for repeaters in the 70-centimeter band?

5.0 MHz

What does it mean to say that a repeater has an input and an output frequency?

The repeater receives on one frequency and transmits on another

What is the most likely reason you might hear Morse code tones on a repeater frequency?

The repeater's identification

What is the common amateur meaning of the term "simplex operation"?

Transmitting and receiving on the same frequency

When should you use simplex operation instead of a repeater?

When a contact is possible without using a repeater

If you are talking to a station using a repeater, how would you find out if you could communicate using simplex instead?

See if you can clearly receive the station on the repeater's input frequency

What is it called if the frequency coordinator recommends that you operate on a specific repeater frequency pair?

Repeater frequency coordination

What is the purpose of a repeater time-out timer?

It limits the amount of time a repeater can transmit continuously

What should you do if you hear a closed repeater system that you would like to be able to use?

Contact the control operator and ask to join

Who pays for the site rental and upkeep of most repeaters?

The repeater owner and donations from its users

If a repeater is causing harmful interference to another amateur repeater and a frequency coordinator has recommended the operation of both repeaters, who is responsible for resolving the interference? The licensee of the repeater that has been recommended for the longest period of time

Both repeater licensees

What is an amateur station called that transmits communications for the purpose of observation of propagation and reception?

A beacon

Which of the following is true of amateur radio beacon stations?

All of these choices are correct

The control operator of a station communicating through an amateur satellite must hold what class of license?

Any class

How does the Doppler effect change an amateur satellite's signal as the satellite passes overhead?

The signal's frequency increases or decreases

Why do many amateur satellites operate on the VHF/UHF bands?

Because VHF and UHF signals easily pass through the ionosphere

Which antenna system would NOT be a good choice for an EME (moon-bounce) station?

A ground-plane antenna

What does the term "apogee" refer to when applied to an Earth satellite?

The most distant point from the Earth in the satellite's orbit

What does the term "perigee" refer to when applied to an Earth satellite?

The closest point to the Earth in the satellite's orbit

What mathematical parameters describe a satellite's orbit?

Its Keplerian elements

What is the typical amount of time an amateur has to communicate with the International Space Station?

4 to 6 minutes per pass

Which of the following would be the best emission mode for two-way EME contacts?

CW

What minimum information must be on a label affixed to a transmitter used for Tele-command (control) of model craft?

Station call sign and the station licensee's name and address

What is an auto-patch?

A device that allows radio users to access the public telephone system

Which of the following statements about Amateur Radio auto-patch usage is true?

Communication through the auto-patch is not private

Which of the following will allow you to monitor Amateur Television (ATV) on the 70-cm band?

A cable ready TV receiver

When may slow-scan television be transmitted through a 2-meter repeater

At any time, providing the repeater control operator authorizes this unique transmission

What is the definition of tele-command?

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

What provisions must be in place for the legal operation of a tele-command station?

All of these choices are correct

What is a continuous tone-coded squelch system (CTCSS) tone (sometimes called PL -- a Motorola trademark)?

A sub-audible tone, added to a carrier, which may cause a receiver to accept the signal

What does it mean if you are told that a tone is required to access a repeater?

You must use a subaudible tone-coded squelch with your signal to operate I

What is the term that describes a repeater that receives signals on one band and retransmits them on another band?

A cross-band repeater

What is the minimum voltage that is usually dangerous to humans?

30 volts

Which electrical circuit draws high current?

A short circuit

What could happen to your transceiver if you replace its blown 5 amp AC line fuse with a 30 amp fuse?

The transceiver could use more current than 5 amps and a fire could occur

How much electrical current flowing through the human body will probably be fatal?

As little as 1/10 of an ampere

Which body organ can be fatally affected by a very small amount of electrical current?

The heart

For best protection from electrical shock, what should be grounded in an amateur station?

All station equipment connected to a common ground

Which potential does the green wire in a three-wire electrical plug represent?

Ground

What is an important consideration for the location of the main power switch?

Everyone should know where it is located in case of an emergency

What circuit should be controlled by a safety interlock switch in an amateur transceiver or power amplifier?

The power supply

What type of electrical circuit is created when a fuse blows?

An open circuit

Why would it be unwise to touch an ungrounded terminal of a high voltage capacitor even if it's not in an energized circuit?

You could receive a shock from a residual stored charge

What safety equipment item should you always add to home built equipment that is powered from 110 volt AC lines?

A fuse or circuit breaker in series with the equipment

When fuses are installed in 12-volt DC wiring, where should they be placed?

At the voltage source

How can an antenna system best be protected from lightning damage?

Ground all antennas when they are not in use

How can amateur station equipment best be protected from lightning damage?

Disconnect all equipment from the power lines and antenna cables

Why should you wear a hard hat and safety glasses if you are on the ground helping someone work on an antenna tower?

To protect your head from something dropped from the tower

What safety factors must you consider when using a bow and arrow or slingshot and weight to shoot an antenna-support line over a tree?

All of these choices are correct

Which of the following is the best way to install your antenna in relation to overhead electric power lines?

Always be sure your antenna and feed line are well clear of any power lines

What should you always do before attempting to climb an antenna tower?

Put on your safety belt and safety glasses

What is the most important safety precaution to take when putting up an antenna tower?

Look for and stay clear of any overhead electrical wires

What should you consider before you climb a tower with a leather climbing belt?

If the leather is old, it is probably brittle and could break unexpectedly

What should you do before you climb a guyed tower?

All of these choices are correct

What should you do before you do any work on top of your tower?

All of these choices are correct

What is radio frequency radiation?

Waves of electric and magnetic energy between 3 kHz and 300 GHz

Why is it a good idea to adhere to the FCC's Rules for using the minimum power needed when you are transmitting with your hand-held radio?

To reduce the level of RF radiation exposure to the operator's head

Which of the following units of measurement are used to specify the power density of a radiated RF signal?

Milliwatts per square centimeter

Over what frequency range are the FCC Regulations most stringent for RF radiation exposure?

Frequencies between 30 MHz and 300 MHz

Which of the following categories describes most common amateur use of a hand-held transceiver?

Portable devices

From an RF safety standpoint, what impact does the duty cycle have on the minimum safe distance separating an antenna and people in the neighboring environment?

All of these answers are correct

Why is the concept of "duty cycle" one factor used to determine safe RF radiation exposure levels?

It takes into account the amount of time the transmitter is operating at full power during a single transmission

What factors affect the resulting RF fields emitted by an amateur transceiver that expose people in the environment?

All of these answers are correct

What unit of measurement specifies RF electric field strength?

Volts per meter (V/m)

Which of the following is considered to be non-ionizing radiation?

Radio frequency radiation

What do the FCC RF radiation exposure regulations establish?

Maximum permissible exposure limits

Which of the following steps would help you to comply with RF-radiation exposure guidelines for uncontrolled RF environments?

Reduce transmitting times within a 30-minute period to reduce the station duty cycle

Which of the following steps would help you to comply with RF-exposure guidelines for controlled RF environments?

Reduce transmitting times within a 6-minute period to reduce the station duty cycle

To avoid excessively high human exposure to RF fields, how should amateur antennas generally be mounted?

As far away from accessible areas as possible

What action can amateur operators take to prevent exposure to RF radiation in excess of the FCC-specified limits?

All of these choices are correct

Which of the following radio frequency emissions will result in the least RF radiation exposure if they all have the same peak envelope power (PEP)?

Two-way exchanges of single-side-band (SSB) telephony

Why is the concept of "specific absorption rate (SAR)" one factor used to determine safe RF radiation exposure levels?

It takes into account the rate at which the human body absorbs RF energy at a particular frequency

Why must the frequency of an RF source be considered when evaluating RF radiation exposure?

The human body absorbs more RF energy at some frequencies than at others

What is the maximum power density that may be emitted from an amateur station under the FCC RF radiation exposure limits?

The FCC Rules specify exposure limits, not emission limits

What factors must you consider if your repeater station antenna will be located at a site that is occupied by antennas for transmitters in other services?

Your radiated signal must be considered as part of the total RF radiation from the site when determining RF radiation exposure levels

Why do exposure limits vary with frequency?

The body's ability to absorb RF energy varies with frequency

Why might mobile transceivers produce less RF radiation exposure than hand-held transceivers in mobile operations?

When mounted on a metal vehicle roof, mobile antennas are generally well shielded from vehicle occupants

In the far field, as the distance from the source increases, how does power density vary?

The power density is proportional to the inverse square of the distance

In the near field, how does the field strength vary with distance from the source?

It depends on the type of antenna being used

Why should you never look into the open end of a microwave feed horn antenna while the transmitter is operating?

You may be exposing your eyes to more than the maximum permissible exposure of RF radiation

What factors determine the location of the boundary between the near and far fields of an antenna?

Wavelength and the physical size of the antenna

Referring to Figure T0-1, which of the following equations should you use to calculate the maximum permissible exposure (MPE) on the Technician (with code credit) HF bands for a controlled RF radiation exposure environment?

Maximum permissible power density in mw per square cm equals 900 divided by the square of the operating frequency, in MHz

Referring to Figure T0-1, what is the formula for calculating the maximum permissible exposure (MPE) limit for uncontrolled environments on the 2-meter (146 MHz) band?

There is no formula, MPE is a fixed power density of 0.2 milliwatt per square centimeter averaged over any 30 minutes

What is the minimum safe distance for a controlled RF radiation environment from a station using a half-wavelength dipole antenna on 7 MHz at 100 watts PEP, as specified in Figure T0-2?

1.4 foot

What is the minimum safe distance for an uncontrolled RF radiation environment from a station using a 3-element "triband" Yagi antenna on 28 MHz at 100 watts PEP, as specified in Figure T0-2?

24.5 feet

What is the minimum safe distance for a controlled RF radiation environment from a station using a 146 MHz quarter-wave whip antenna at 10 watts, as specified in Figure T0-2?

1.7 feet

What is the minimum safe distance for a controlled RF radiation environment from a station using a 17-element Yagi on a five-wavelength boom on 144 MHz at 100 watts, as specified in Figure T0-2?

32.4 feet

What is the minimum safe distance for an uncontrolled RF radiation environment from a station using a 446 MHz 5/8-wave ground plane vertical antenna at 10 watts, as specified in Figure T0-2?

4.3 feet

If you do not have the equipment to measure the RF power densities present at your station, what might you do to ensure compliance with the FCC RF radiation exposure limits?

Use one or more of the methods included in the amateur supplement to FCC OET Bulletin 65

Where will you find the applicable FCC RF radiation maximum permissible exposure (MPE) limits defined?

FCC Part 1 and Office of Engineering and Technology (OET) Bulletin 65

To determine compliance with the maximum permitted exposure (MPE) levels, safe exposure levels for RF energy are averaged for an "uncontrolled" RF environment over what time period?

30 minutes

To determine compliance with the maximum permitted exposure (MPE) levels, safe exposure levels for RF energy are averaged for a "controlled" RF environment over what time period?

6 minutes

Why are Amateur Radio operators required to meet the FCC RF radiation exposure limits?

To ensure a safe operating environment for amateurs, their families and neighbors

At what frequencies do the FCC's RF radiation exposure guidelines incorporate limits for Maximum Permissible Exposure (MPE)?

All frequencies between 300 kHz and 100 GHz

On what value are the maximum permissible exposure (MPE) limits based?

The whole-body specific absorption rate (SAR)

What is one biological effect to the eye that can result from RF exposure?

It can cause heating, which can result in the formation of cataracts

Which of the following effects on the human body are a result of exposure to high levels of RF energy?

Possible heating of body tissue

Why should you not stand within reach of any transmitting antenna when it is being fed with 1500 watts of RF energy?

You could accidentally touch the antenna and be injured

What is one effect of RF non-ionizing radiation on the human body?

Heating of body tissues

Is it necessary for you to perform mathematical calculations of the RF radiation exposure if your VHF station delivers more than 50 watts peak envelope power (PEP) to the antenna?

No, there are alternate means to determine if your station meets the RF radiation exposure limits

What is one method that amateur radio licensees may use to conduct a routine station evaluation to determine whether the station is within the Maximum Permissible Exposure guidelines?

Direct measurement of the RF fields

What document establishes mandatory procedures for evaluating compliance with RF exposure limits?

There are no mandatory procedures

Which category of transceiver is NOT excluded from the requirement to perform a routine station evaluation?

VHF base station transmitters that deliver more than 50 watts peak envelope power (PEP) to an antenna

Which of the following antennas would (generally) create a stronger RF field on the ground beneath the antenna?

A 1/2 wave dipole antenna 5 meters above ground

How may an amateur determine that his or her station complies with FCC RF-exposure regulations?

Any of these choices

Below what power level at the input to the antenna are amateur radio operators categorically excluded from routine evaluation to predict if the RF exposure from their VHF station could be excessive?

50 watts peak envelope power (PEP)

(Above what power level is a routine RF radiation evaluation required for a VHF station?)

50 watts peak envelope power (PEP) measured at the antenna input

What must you do with the records of a routine RF radiation exposure evaluation?

Though not required, records may prove useful if the FCC asks for documentation to substantiate that an evaluation has been performed

Which of the following instruments might you use to measure the RF radiation exposure levels in the vicinity of your station?

A calibrated field strength meter with a calibrated field strength sensor

What effect does the antenna gain have on a routine RF exposure evaluation?

Antenna gain is part of the formulas used to perform calculations

As a general rule, what effect does antenna height above ground have on the RF exposure environment?

The higher the antenna the less the RF radiation exposure at ground level

Why does the FCC consider a hand-held transceiver to be a portable device when evaluating for RF radiation exposure?

Because it's transmitting antenna is generally within 20 centimeters of the human body

Which of the following factors must be taken into account when using a computer program to model RF fields at your station?

Ground interactions

In which of the following areas is it most difficult to accurately evaluate the effects of RF radiation exposure?

In the near field