

General Class Unit 1A

Question Pool §1

Commission's Rules



5 Questions

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1

What's in it for me?





- All amateur radio bands
- A majority of all amateur radio frequencies
- Around the world communications
- More operating and communications challenges!

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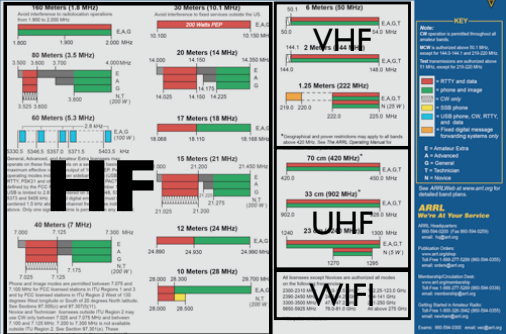
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2

US Amateur Radio Bands

Effective Date: March 5, 2012





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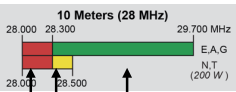
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New Privileges

- Full Bands
- 160 meters (1.800 – 2.000 MHz)
- 60 meters (5 frequencies)
- 30 meters (10.100 - 10.150 MHz)
- 17 meters (18.068 - 18.168 MHz)
- 12 meters (24.890 - 24.990 MHz)
- 10 meters (28.000 - 29.700 MHz)
- 28.250 MHz
- 28.550 MHz
- 28.550 MHz




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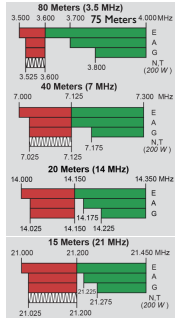
G1A01 G1A10



New Privileges




- Partial Bands
 - 80 meters
3.525 – 3.600 CW/Data (3560 kHz)
 - 75 meters
3.800 – 4.000 Phone (3900 kHz)
 - 40 meters
7.025 – 7.125 CW/Data
7.175 – 7.300 Phone (7.250 MHz)
 - 20 meters
14.025 – 14.150 CW/Data
14.225 – 14.350 Phone (14305 kHz)
 - 15 meters
21.025 – 21.200 CW/Data
21.275 – 21.450 Phone (21300 kHz)




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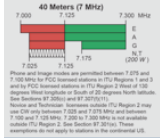
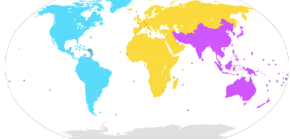
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G1A08 G1A06 G1A05 G1A07 G1A09



Band Details




- In areas under FCC jurisdiction outside of ITU Region 2, frequency allocations may differ.
- The ITU region that applies to radio amateurs operating in North and South America is Region 2.

Region 1
Region 2
Region 3


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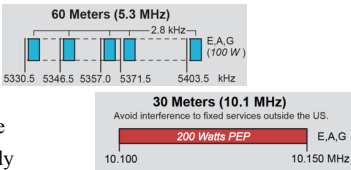
G1A14 G1E06
7.200 – 7.300 is not allowed in ITU Regions 1 & 3, but is allowed in region 2.



Band Details




- 60 meters
 - 5 specific channels on USB
 - 2.8 kHz maximum bandwidth
- 30 meters
 - No phone or image
 - CW and digital only
 - Maximum of 200 watts PEP output




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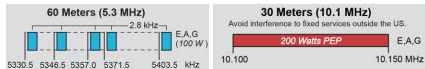
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G1A04 G1C03 G1A02 G1C01



Band Details





- Secondary User
 - 30 meters and 60 meters are a secondary allocation.
 - Services operating in secondary allocations must not cause harmful interference to, and must accept interference from, primary service stations.
 - Amateur stations are allowed to use the band only if they do not cause harmful interference to primary users.
 - If a primary user is using the frequency, move to a clear frequency or stop transmitting.

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G1A12 G1A13



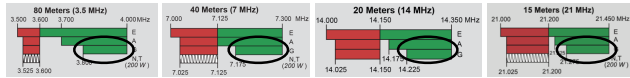
Band Details



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G1A11

- When General class licensees are not permitted to use the entire voice portion of a particular band, they use *the upper frequency end*.



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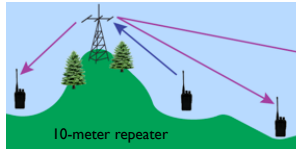
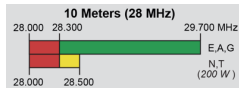
10 Meter Repeaters



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G1A15

- On the 10 meter band, repeaters can operate only within *the portion above 29.5 MHz*.



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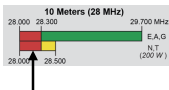
Beacon Stations



11

G1B03 G1B02 G1B10 G1B09

- A beacon station is an amateur station transmitting communications for the purposes of *observation of propagation and reception*.
- There must be no more than one beacon signal transmitting in the same band from the same station location.
- Power output for a beacon is limited to *100 watts PEP output*.
- Some HF frequencies where automatically controlled beacons are permitted are *28.20 MHz to 28.30 MHz*.



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Antenna Regulations



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G1B01 G1B06

- The maximum height above ground to which an antenna structure may be erected without requiring notification to the FAA and registration with the FCC, provided it is not at or near a public use airport, is *200 feet*.



- State and local governments are permitted to regulate Amateur Radio antenna structures such that *Amateur Service communications must be reasonably accommodated, and regulations must constitute the minimum practicable regulation to accommodate a legitimate purpose of the state or local entity*.



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Review of Transmissions



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G1B05 G1B07 G1B04

- One-way transmissions are prohibited except *transmissions necessary to assist learning the International Morse code.*
- Use of abbreviations or procedural signals in the Amateur Service are permitted only *if they do not obscure the meaning of a message.*
- Part 97 rules allow for the *occasional retransmission of weather and propagation forecast information from U.S. government stations.*

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Operating Best Practices



14

G1B08

- When choosing a transmitting frequency, what should you do to comply with good amateur practice?
- *Ensure that the frequency and mode selected are within your license class privileges.*
- *Follow generally accepted band plans agreed to by the Amateur Radio community.*
- *Monitor the frequency before transmitting.*

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Operating Best Practices



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G1B11 G1B12

- *The FCC determines what is “good engineering and good amateur practice” as applied to the operation of an amateur station in all respects not covered by the Part 97 rules.*
- *It is permissible to communicate with amateur stations in countries outside the areas administered by the Federal Communications Commission when the contact is with amateurs in any country except those whose administrations have notified the ITU that they object to such communications.*

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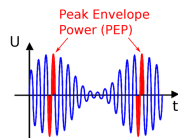
Transmit Power Limits



16

G1C15 G1C04
G1C02 – 12-meter band – 1500 watts PEP
G1C05 – 28 MHz band – 1500 watts PEP
G1C06 – 1.8 MHz band – 1500 watts PEP

- The measurement that is specified by FCC rules that regulate maximum power output is *PEP* (Peak Envelope Power).




- The limitation for transmitter power on every amateur band is that *only the minimum power needed to complete your transmission should be used.*
- Maximum transmitter power is *1500 watts PEP output.* (Except 30 and 60 meters as well as experimental bands 630 meters and 2,200 meters)


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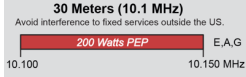
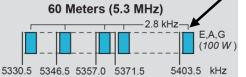
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Transmit Power & Bandwidth Limits




- 30 meters is limited to *200 watts PEP output*.
- 60 meters is limited to *ERP of 100 watts PEP with respect to a dipole*.
- When operating in the 60-meter band, *if you are using an antenna other than a dipole, you must keep a record of the gain of your antenna*.
- The maximum bandwidth permitted by FCC rules for Amateur Radio stations transmitting on USB frequencies in the 60-meter band is *2.8 kHz*.


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G1C01 G1C14 G1C12 G1C03



Digital Communications




- Before using a new digital protocol on the air one must *publicly document the technical characteristics of the protocol*.
- Baud is the rate of symbol changes made to the transmission medium using a digitally modulated signal.
- Baud is measured in symbols/second or pulses/second.
- RTTY and digital mode communications are limited to a maximum baud rate depending on what frequencies they are being used on.
- Faster baud rates will use more bandwidth.


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G1C13



Digital Communications




Band Meters	Frequency MHz	Maximum Rate Baud
1.25 & 0.70 meter UHF	220 – 450 MHz	56 kilobaud
6 & 2 meter VHF	50 – 148 MHz	19.6 kilobaud
10 meter HF	28 – 30 MHz	1200 baud
160 – 12 meter HF	1.8 – 28 MHz	300 baud


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G1C07 G1C08 G1C09 G1C10 G1C11



Volunteer Examiners





- A volunteer examiner (VE) must be accredited by a (VEC), an organization called a *Volunteer Examiner Coordinator*.
- A VE must be at least *18 years* of age.
- A VE can only administer elements of classes lower than their license class, except for Amateur Extra which can administer all levels of exams.

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G1D07 G1D10



Volunteer Examiners



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G1D04 G1D02 G1D05 G1D08

- The requirement for administering a Technician class license examination is *at least three General class or higher VEs must observe the examination.*
- When you are an accredited VE holding a General class operator license, you may administer *Technician only.*
- An administering VE for a Technician class license examination must have an *FCC General class or higher license and VEC accreditation.*
- For a non-U.S. citizen to be an accredited Volunteer Examiner *the person must hold an FCC granted Amateur Radio license of General class or above.*

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CSCEs



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G1D09

- Certificate of Successful Completion of Examination
- Issued when you pass one or more elements and is valid for *365 days.*

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CSCEs



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G1D03 G1D06

- If you are a Technician class operator and have a CSCE for General class privileges, you may immediately operate *on any General or Technician class band segment.*
- Until it is posted in the FCC ULS database, you must indicate your new license with the identifier “AG” *whenever you operate using General class frequency privileges.*
 - KB1ABC/AG – a station just upgraded to general
 - KB1ABC/AE – a station just upgraded to amateur extra
- Use the word stroke, slash, slant, etc. for the / character.

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Regaining an Expired License



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G1D01 G1D11

- In the case of expired FCC issued amateur radio licenses with advanced elements, partial credit may be given to *any person who can demonstrate that they once held an FCC issued General, Advanced, or Amateur Extra class license that was not revoked by the FCC.*
- If a person has an expired FCC issued amateur radio license of General Class or higher and the two-year grace period has passed, *the applicant must pass the current Element 2 exam.*

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Third Party Traffic



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<http://www.arrl.org/third-party-operating-agreements>

- Third party traffic is a message which is sent or received on behalf of someone who is not one of the operators completing the communication.
- Third party traffic is prohibited with every country unless there is a third party agreement in effect with that country except for messages directly involving emergencies or disaster relief communications, or if the third party is a licensed amateur.
- Third party agreements currently exist with 50 countries.
- Verify that we have a third party agreement with that country before handling third party traffic.



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Third Party Traffic



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G1E01 G1E05 G1E09

- Which of the following would disqualify a third party from participating in stating a message over an amateur station? *The third party's amateur license has been revoked and not reinstated.*
- *Only messages relating to Amateur Radio or remarks of a personal character, or messages relating to emergencies or disaster relief* may be sent for a third party.
- *Under no circumstances* are messages that are sent via digital modes exempt from Part 97 third party rules that apply to other modes of communication.



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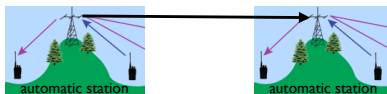


Automatic Stations



27

G1E11 G1E03



- On what bands may automatically controlled stations transmitting RTTY or data emissions communicate with other automatically controlled digital station? *Anywhere in the 6-meter or shorter wavelength bands, and in limited segments of some of the HF bands.*
- When conducting communications with a digital station operating under automatic control outside the automatic control band segments, *the station initiating the contact must be under local or remote control.*

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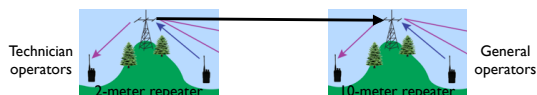


Repeaters & Beacons



28

G1E02 G1E10



- A 10-meter repeater may retransmit the linked 2-meter signal from a station that has a Technician class control operator *only if the 10-meter repeater control operator holds at least a General class license.*
- An amateur operator should normally avoid transmitting on 14.100, 18.110, 21.150, 24.930 and 28.200 MHz because *a system of propagation beacon stations operates on those frequencies.*

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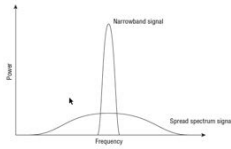
Wi-Fi



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G1E07 G1E08

- In *no part* of the 13-centimeter band may an amateur station (Part 97) communicate with non-licensed (Part 15) Wi-Fi stations.
- The maximum PEP output allowed for spread spectrum transmissions is *10 watts*.



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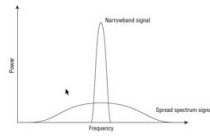
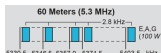
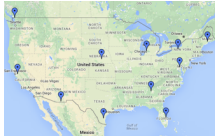
Interference



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G1E04

- A station licensee should take specific steps to avoid harmful interference to other users or facilities when:
 - *operating within one mile of an FCC Monitoring Station*
 - *using a band where the Amateur Service is secondary*
 - *a station is transmitting spread spectrum emissions*



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Can you 20 meters?



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