



Why upgrade to the General Class License?

LIGHTNING TALK

Here are just a few reasons to upgrade

- ▶ DX “Long Distance Communication”
 - ▶ Associated Awards (DXCC)
 - ▶ POTA, SOTA, IOTA and DXpedition's
- ▶ Multiple Modes: USB, LSB, AM, CW, RTTY, FT8 and many digital modes
- ▶ Contesting
 - ▶ SARA has an entire SIG (Special Interest Group) for contesting
- ▶ Various Net's and groups (formal and informal) to participate in
- ▶ Discovering all aspects of propagation
- ▶ Building and deploying HF antennas
 - ▶ Hint: This can be done for a few bucks of wire and some coax, if on a budget

Spectrum

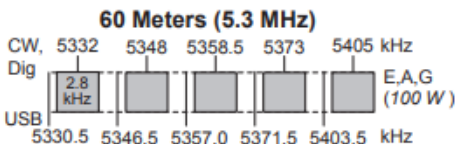
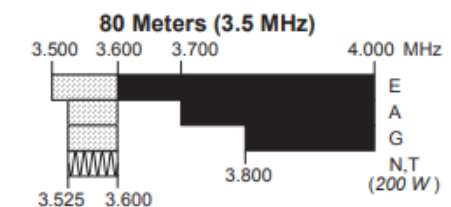
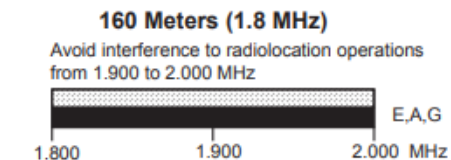
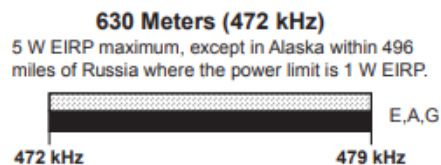
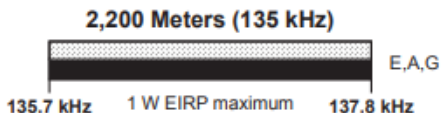
- ▶ With a General Class license you have access to a large portion of spectrum starting all the way down at 2,200 meters (135 kHz) and extending up through 10 meters (28 MHz)
- ▶ There is an interesting and fun learning curve if you're new to operating on the HF frequencies.
 - ▶ As one example, due to skip zones, you will often times hear a reasonably loud station talking to someone, but hear little or nothing from the other station. This is something you get used to, and why you always listen, listen and then listen some more before asking if the frequency is clear.
- ▶ Our friendly SARA members are here to help guide you through the process and help with equipment selection and other aspects related to becoming a new General Class license holder.

US Amateur Radio Bands

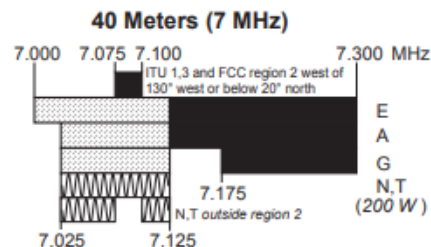
US AMATEUR POWER LIMITS

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

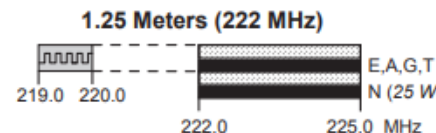
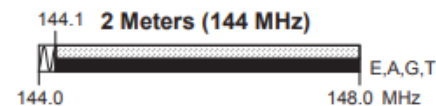
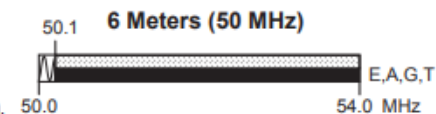
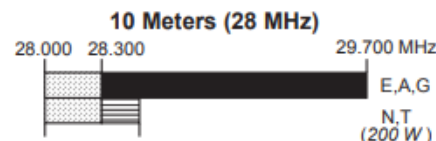
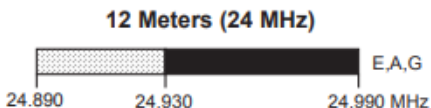
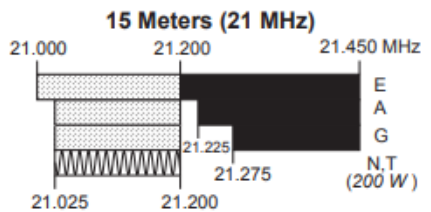
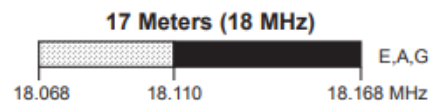
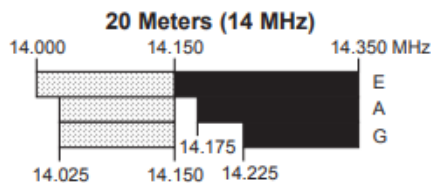
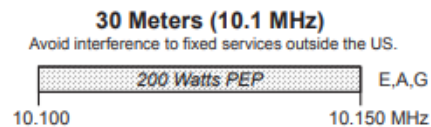
Amateurs wishing to operate on either 2,200 or 630 meters must first register with the Utilities Technology Council online at <https://utc.org/plc-database-amateur-notification-process/>. You need only register once for each band.



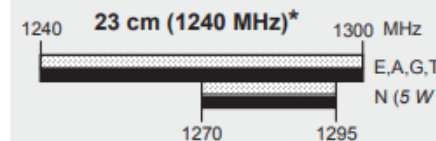
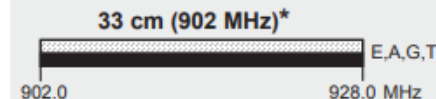
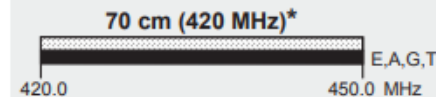
General, Advanced, and Amateur Extra licensees may operate on these five channels on a secondary basis with a maximum effective radiated power (ERP) of 100 W PEP relative to a half-wave dipole. Permitted operating modes include upper sideband voice (USB), CW, RTTY, PSK31 and other digital modes such as PACTOR III. Only one signal at a time is permitted on any channel.



See Sections 97.305(c), 97.307(f)(11) and 97.301(e). These exemptions do not apply to stations in the continental US.



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



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

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

± No pulse emissions



ARRL The national association for AMATEUR RADIO®

KEY

Note:
 CW operation is permitted throughout all amateur bands.

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

Test transmissions are authorized above 51 MHz, except for 219-220 MHz

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

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

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

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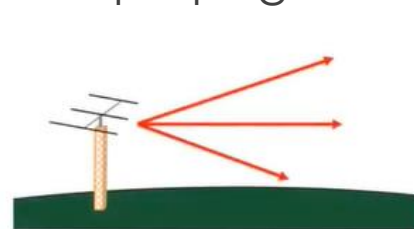
Getting Started in Amateur Radio:
 Toll-Free 1-800-326-3942 (860-594-0355)
 email: newham@arrl.org

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

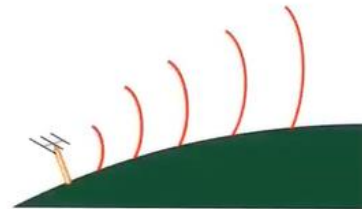
Propagation

- ▶ HF Propagation can be highly variable compared to other frequencies
- ▶ The greatest challenge in HF is finding the optimum frequency for the intended destination and current propagation conditions
- ▶ There are three main propagation modes:

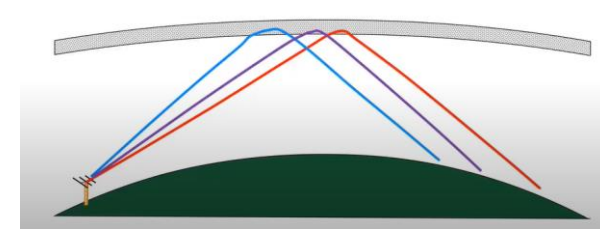
- ▶ Line of sight
- ▶ Groundwave
- ▶ Skywave



Line of Sight



Groundwave



Skywave

Wire and other Antennas

- ▶ Half the fun of HF is buying or building, then deploying a wire antenna.
 - ▶ If you have a yard with some room and a tree or two, you would be amazed at the types of wire antennas you can use.
 - ▶ If you're more restricted, you can still operate with wire antennas in attics and other inside spaces.
 - ▶ Verticals also work well in semi confined outside areas
 - ▶ And if you have the room, the willingness and of course a few wheelbarrows full of cash, you can put up a tower and beam(s). Actually, with gently used equipment and the right planning, it can be much less expensive than you would imagine.

General Class License Details

- ▶ Exam Requirements: 35 Question General Written Exam (Element 3)
- ▶ License Privileges: All VHF/UHF Amateur Bands and most HF privileges (10-160) meters
- ▶ The General Class license is the second of three US Amateur Radio licenses. To upgrade to General Class, you must already hold a Technician Class license (or have recently passed the Technician license exam). Upgrading to a General license--which conveys extensive HF privileges—only requires passing a written examination. Once you do, the entire range of operating modes and the majority of the amateur spectrum below 30 MHz become available to you. The FCC grants exam Element 3 credit to individuals that previously held certain older types of licenses.

General Class License Study Resources

- ▶ Your first resource for study aids is probably the ARRL. Access the ARRL website online and you'll find just about everything you'll need.
- ▶ If you prefer to use a book, you can order the ARRL General Class License Manual 9th edition, from their website, or on Amazon.
- ▶ There are also Apps for your smartphone available. One free app called HRE-General can be downloaded. The app has all the test questions, that you can review, take practice section tests, and take full practice tests, all on your phone. It will score you each time so you'll know when you are ready to take the real test.

Final Thoughts plus Q&A

- ▶ Why upgrade to the General Class License? Why not? It's relatively easy, not that much harder than the Technician license, and it opens up many new areas to discover in Amateur Radio.
- ▶ Q&A