

How to Become an Amateur (Ham) Radio Operator by W5AWS

1 Motivation

You want to become a radio operator licensed to transmit on the various segments of the radio spectrum reserved for the use of the amateur radio community.

2 Scope

Before you can get on the air, you need a license to operate and know the rules to operate legally. US licenses are good for 10 years before renewal and anyone may hold one except a representative of a foreign government.

There are three classes of license.

i. Technician

- Exam Requirement: 35-question Technician Written Exam (Element 2)
- Privileges: All VHF/UHF Amateur bands (frequencies above 30 MHz), and limited operations in certain HF bands.
- <https://www.arrl.org/getting-your-technician-license>.
Scan the QR code matrix for this link.



ii. General

iii. Amateur Extra

Entry to ham radio is via the Technician license. In this document we explain one method of getting licensed and familiar with the subject.

2.1 Quick-start: GOTA with GMRS

Most important is to Get On The Air (GOTA), which you can do with a General Mobile Radio Service (GMRS) operators license. No test needed. Just buy a \$35 operator's license from the Federal Communications Commission (FCC) and an inexpensive GMRS radio. One GMRS license is good for your whole family.

Advantage is that you can practice operating a radio and become part of the radio community while studying for your amateur radio Technician license, which makes available to you the much broader ham radio spectrum of operations. Visit this website for more information about how to become a GMRS operator:



<https://mygmrs.com/> Scan the QR-Code above right for the link.

On the front page of the web-site there is a link to an explanation of how to get a GMRS license through the FCC. There's also this explanation for getting an FRN; scan the QR-Code at right for the link:



<https://www.notarubicon.com/how-to-get-a-gmrs-license-easy-guide-to-gmrs-licensing-on-the-fcc-website/>

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3 Steps

With a license and a dual-band handheld transceiver, you can operate on the local VHF and UHF repeaters easily, join the available Nets, or just communicate with other operators.

3.1 Join a Local Amateur Radio Club

Benefit of a belonging to a radio club is that birds of a feather flock together where other hamsters gather to talk about and practice the art and science of communicating via radio transmission and reception.

The ARRL maintains a database of active radio clubs. You can find a club near you by using this search engine: <https://www.arrl.org/find-a-club>. Scan the QR code matrix for this link.



Once you have identified a club, visit the club web-site to see how the club operates. For example, I belong to the Tulsa Amateur Radio Club whose web-site you can visit here: <http://w5ias.com/> — enter *w5ias.com* in the URL window of your web-browser and let the DNS resolve the correct address.

Membership is usually a nominal cost, such as \$20 annually.

As a potential member, you will be welcome as a guest at the club meetings, which gives you the opportunity to assess whether membership in the club will work for you.

3.2 Join the Amateur Radio Relay League

The ARRL is the national association for Amateur Radio in the US. Founded in 1914 by Hiram Percy Maxim as The American Radio Relay League, ARRL is a noncommercial organization of radio amateurs.

➤ <https://www.arrl.org/about-arrl>



ARRL numbers within its ranks the vast majority of active radio amateurs in the nation and has a proud history of achievement as the standard-bearer in amateur affairs.

ARRL's underpinnings as Amateur Radio's witness, partner and forum are defined by five pillars: Public Service, Advocacy, Education, Technology, and Membership.

A *bona fide* interest in Amateur Radio is the only essential qualification of membership; an Amateur Radio license is not a prerequisite, although full voting membership is granted only to licensed radio amateurs in the US.

3.3 Subscribe to *On The Air* Magazine

With your new ARRL membership, subscribe to the bimonthly magazine *On The Air*. The magazine covers a range of ham radio interests and topics, delivering introductory techniques and stories to help anyone with a beginner-to-intermediate-level of experience. From making your first ra-



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dio contact to selecting the right equipment to project building and getting involved with public service or your local clubs, On the Air magazine and its suite of companion benefits will help you make the most of your amateur radio license.

- <https://www.arrl.org/On-the-Air-Magazine> — scan the QR code above, read more, and see a sample issue.

3.4 Study for the FCC License Examination

There are many resources for studying to pass the Technician license exam. A good place to begin is with the *ARRL Ham Radio License Manual*, which you can find here:



- <https://www.arrl.org/shop/Ham-Radio-License-Manual/?page=1> — scan the QR code here and open the link.

There are many video resources available via YouTube. One good place to start is the Technician licensing series by Dave Casler, KE0OG.

- <https://www.youtube.com/playlist?list=PLUSuplQSpnLCCFN4JDmXpUgVxBtdlBnNq> — scan the QR code here for the playlist.

In the US, the Federal Communications Commission (FCC) offers three Amateur Radio license levels or license classes; Technician class license, General class license and Extra class license.



Per FCC Rule 97.523 only one question pool may exist for each license examination level.

Each question pool must contain at least 10 times the number of questions required for a single examination.

The question pools are normally valid for 4 years.

The Technician license examination question pool you can download using this link:

- <https://www.arrl.org/question-pools> — scan the QR code for the link.



3.4.1 Flash Cards

Flash cards are the easiest way to prepare for license examinations when combined with other study materials. Even though you don't understand the questions, practice with Anki every day for less than an hour to become increasingly familiar with the material.

Anki is a free and open-source flashcard program using spaced repetition, a technique from cognitive science for fast and long-lasting memorization. “Anki” (暗記) is the Japanese word for “memorization”.



Download and install Anki for your device via this link:

- <https://apps.ankiweb.net/> — scan the QR code above for the link.

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You can build your own card-deck from the question pool. Building your own deck helps the learning process.

3.4.2 Ham Radio License Exam Practice

ARRL offers an online resource that allows users to take randomly generated practice exams using questions from the actual FCC examination question pool. *ARRL Exam Review for Ham Radio™* is free, and users do not need to be ARRL members. The only requirement is that users must first set up a site login, which is a different and separate login from your ARRL website user registration.

ARRL Exam Review includes all the questions for all three of the current FCC exam pools and provides different review options, so you can choose to review by chapter of the ARRL study manual or by question pool topic. Short explanations help you to understand the correct answer. The software also provides the option to produce—and print—as many practice exams as you would like.

Once you feel comfortable correctly answering the flash cards, keep taking the practice examination until you feel comfortable with the format, which follows what you will see in the official license exam. Seeing which questions you answer incorrectly is helpful to your program of study, and you can see how much progress you are making. See this URL for access to the practice examinations:

- <https://arrlexamreview.appspot.com/> — scan the QR code for the link.



When you are consistently passing the practice exam with at least 90-percent or better, then you are ready to sit the official license exam.

3.4.3 Exam Preparation

To prepare for the examination, you need to complete these items:

- i. Get a Federal Registration Number, which saves having to use your actual SSN on your application for examination. FRNs are now required by all examiners. This link explains to first-time exam applicants how to get an FRN:



- <https://www.arrl.org/news/first-time-exam-applicants-must-obtain-fcc-registration-number-before-taking-exam> — scan the QR code for the link.

- ii. You can do this at the examination center, but it is quicker when you complete the *NCVEC Quick-form 605 Application for Amateur Operator/Primary Station License* at home, print it, then take it with you when attending the examination. Here is the URL of the form as a PDF file:



- https://www.arrl.org/files/file/VES/605%20Form_2020_Fully%20Interactive.pdf — scan the QR code for the link.

- iii. Find an in-person exam session near you by searching the ARRL database, using this link:

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- <https://www.arrl.org/find-an-amateur-radio-license-exam-session> — scan the QR code for the link.



3.4.4 Ready to Take the Exam

Volunteers conduct examinations, working under direction of the FCC and a Volunteer Exam Coordinator (VEC). There will likely be a charge for taking the exam. The exam fee set by the VEC and is usually \$15 or less. Contact the exam-session administrator to determine the fee that applies to the exam session you plan to attend, the documents required, and to verify the session date and time. VEC organizations may have different policies regarding candidate procedures and requirements. As of this writing, the FCC does not charge a fee to issue an initial license or for standard changes to a license, but that is about to change with recent legislation. See this link for more information and what to bring to an ARRL exam session:

- <https://www.arrl.org/what-to-bring-to-an-exam-session> — scan the QR code for the link.



4 Conclusion

An Amateur Radio Operator's license is a license to learn. Ham radio is a journey of exploration and learning that never ends. At first, it all seems overwhelming, but getting a Technician license is a big step along the way. Well-prepared, you won't have any difficulty passing the test; and don't worry if you don't pass the first time, keep trying until you do. Young children, old people, and those in between pass the test every day.

This document should help you reach your initial objective of becoming licensed to get on the air.

4.1 What's Next

Your next task after becoming licensed is to choose a radio. Choose a relatively inexpensive dual-band VHF/UHF handheld transceiver. Discuss which radio with the other members of your club; you will receive many opinions, but be guided by these criteria:

- Ease of operation
- Cost
- Ask if someone is willing to lend you a transceiver, so that you can try before you buy.
- Used transceivers are often available at Hamfests, but seek advice before buying.

Get on the air via the repeater system, and involved with the various ham radio activities.

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The low ends of the 40- and 80-meter bands are available to Technician licensees for CW operation.

5 Glossary

apkg.....	Anki Package
CW.....	Continuous Wave, otherwise known as Morse code
DNS.....	Domain Name Service
FCC.....	Federal Communications Commission
FRN.....	Federal Registration Number
GMRS.....	General Mobile Radio Service
Hertz.....	Frequency in cycles per second
HF.....	High Frequency
MHz.....	Megahertz (Hertz $\times 10^6$)
NCVEC.....	National Conference of Volunteer Examiner Coordinators
PDF.....	Portable Document Format
QR.....	Quick Response
SSN.....	Social Security Number
UHF.....	Ultra High Frequency
URL.....	Universal Resource Locator
US.....	United States of America
VEC.....	Volunteer Examiner Coordinator
VHF.....	Very High Frequency
