



## Belize Amateur Radio

### **What is Amateur Radio?**

Amateur Radio is the most powerful communications service available to the private citizen anywhere on Earth - or even above it!

Amateur Radio is a recognized national asset, providing trained operators, technical specialist and emergency communications in time of need. It was created for people who have an interest in radio communications. Some hams (Amateur Radio Operators) prefer to focus on the technology and science of radio. Competitive events and award programs hold the interest of others. Some train to use radio in support of emergency relief efforts or to keep in touch with family. There are many hams who simply like to talk with other hams, too.

In order to keep businesses or municipalities from unfairly exploiting the amateur bands, amateurs are strictly forbidden from receiving compensation for their activities. That means you can talk with a co-worker about an assignment, for example. If you provide communications for a parade or charity event, you can't accept a fee. This keeps radio amateurs free to explore and improve and train.

Amateur Radio Operators have created their own wireless data networks, position reporting systems, and even a radio-based e-mail network that enables the most solitary ham to "log in" from anywhere in the world. Voice communications hop between Internet and radio links to connect hams on the opposite sides of the globe using only handheld transmitters less powerful than a flashlight!

There are many Amateur Radio satellites whirling through orbit, connecting hams on the ground by voice, Morse code and data signals.

When disaster strikes, you will find hams responding quickly and capably in support of public safety agencies and relief organizations such as the Red Cross. Amateur Radio is an important part of many disaster relief efforts. Between emergencies, hams turn out to provide communications for other public occasions.

Amateur Radio has grown to become a worldwide communications service with millions of licenses.

### **Who Can Be An Amateur Radio Operator?**

Anyone can become a one! It does not matter how old you are or how much you know about radio when you begin. There are also thousands of people with disabilities for whom ham radio is a new

window to the world. Operators range in age from very young to very old. While some are technically skilled, holding positions as scientists, engineers, or technicians, all walks of life are represented on the airwaves.

## **Amateur Radio Clubs and Organizations**

Helping newcomers is one of Amateur radio's oldest traditions. Nearly every operator has mentored or another operator at one time or another. You'll be amazed at the amount of sharing within the ham community. Your ham radio support group comes in many forms — a fellow student or classmate, a nearby ham, a club or even a nationwide organization. All of them are resources for you, not only during your studies for the licensing exam, but also after you have your call sign and are learning how to be an amateur operator.

In Belize, the Belize Amateur Radio Club is an International Amateur Radio Union (IARU) affiliated Club and their representative for this country. Get in contact with them and attend a meeting sometime (<https://barc.bz>). Many clubs make an extra effort to offer special assistance to aspiring and new amateur operators.

## **What Makes Amateur Radio Different?**

There are lots of other types of two-way radios you can buy in a store — Citizen's Band, handheld FRS/GMRS "walkabouts," marine radio for boaters, Land Mobile Licensed Private & Commercial radios — what is it about Amateur Radio that sets it apart? In a word — variety. Each of the radio types listed here are designed for just a few purposes and they might do that well. Amateur Radio is especially flexible with many different types of signals and radio bands. As an operator, you're not restricted to any one combination; you can experiment and try different things as much as you want to get the job done.

## **The PUC and Licensing**

The Public Utilities Commission (PUC) is charged with administering all of the radio signals transmitted by Belize radio stations. The PUC also coordinates these transmissions with other countries as part of the International Telecommunication Union (ITU). While you may not need a license to use an FRS radio, the vast majority of radio users must have a license or be employed by a company that has a license. This section explains how licensing works for Amateur Radio.

## **Why Get A License?**

Amateurs are free to choose from many types of radios and activities — that's what you get in return for passing the license exam. If you can learn the basics of radio and the rules of Amateur Radio, then the opportunities of ham radio are all yours! Just remember that the license is there to ensure that you understand the basics before transmitting. This helps keep Amateur Radio useful and enjoyable to everyone.

Why don't people just buy radios and transmit anyway? (This is called "bootlegging" or "pirating.") First of all, it's quite apparent to operators who have and who have not passed a license exam. You'll find yourself attracting the attention of the PUC but more importantly, you won't fit in and you won't have fun. One of the most important benefits to being licensed is that you have the right to be protected

from interference by signals from unlicensed devices. Your right to use the amateur bands is similarly protected. The protection does not work perfectly all the time, but nevertheless, as a licensed amateur operator, your license is recognized by law. This is a big improvement over unlicensed radio users. It's definitely worth the effort to get that license!

## **Licensing Overview**

The PUC has a different set of rules for each type of radio use. These uses are called services. Each service was created for a specific purpose — Land Mobile, Aviation and Broadcasting, for example. Nearly all services require that a license be obtained before transmissions are made. These are called licensed services and the Amateur service is one such service.

Most services do not require an examination to be licensed. This is because strict technical standards apply for the radio equipment used in these services and restricts how those radios maybe used. This trade-off reduces the training required for those radio users. Licensing in these services is primarily a method to control access to the airwaves.

Amateurs have great freedom in how they use radios. Operators can build and repair their own radios. The procedures operators use to communicate are completely up to them. They can operate however they want, with few restrictions. This flexibility, in order to not cause interference to other radio services, requires that amateurs be more knowledgeable than the typical user in other services. That is why amateurs have to pass a licensing examination.

## **Amateur Licenses**

In Belize, the PUC Telecom Sector administers the exams for Amateur Radio licenses. The exams are patterned from the American Radio Relay League (ARRL) Ham Radio Manual and questions are derived from a pool of questions based on the content of the study manual.

The result of passing the exam is an operator license granted by the PUC. The license specifies a call sign that becomes your radio identity. There are two classes of license being granted: the Technician (Novice) - V32-XX, and General - V31-XX.

Passing each level grants the licensee more privileges. A V31-XX License grants the user full privileges. Technician V32-XX licensees are granted privileges on the radio airwaves referred to as the "VHF and UHF bands" and a few privileges on the "HF bands."

## Local Amateur Exam

### Exam Design

These exams are in the form of 35 multiple choice questions. The passing grade is attained by successfully answering 26 questions.

### Exam Topics covered per level

#### ***Technician level:***

- Amateur Radio Service; Authorized frequencies; Operator Licensing; Station Identification
- VHF/UHF operating practices; Station Operation
- Authorized and prohibited transmissions
- Radio Wave characteristics; Radio and Electromagnetic wave properties; Propagation modes
- Station setup; operating controls
- Electrical principles, units, and terms; Math for electronics; Electronic principles; Ohm's law
- Electrical components; Semiconductors; Circuit diagrams; Component functions
- Station equipment; Common transmitter and receiver problems; Antenna measurements and troubleshooting; basic repair and testing
- Modulation modes; Amateur Satellite Operation; Operating activities. Non-Voice Communications
- Antennas; Feed Lines
- Power Circuits and Hazards; Antenna Safety; RF Hazards

#### ***General Level:***

- General Class control operator frequency privileges; primary and secondary allocations
- Antenna structure limitations; good engineering and good amateur practice
- Transmitter power and data emissions
- Harmful interference
- Operating procedures
- Radio Wave propagation
- Amateur Radio principles
- Electrical principles
- Circuit components
- Practical Circuits
- Signals and Emissions
- Antennas and Feed Lines
- Electrical and RF Safety

Information for exams are generalized in scope and are based on the ARRL question study manuals for Technician and General Class Amateur level exams curriculum. Study guide support is readily available online and can also be accessed through the local Belize Amateur Radio Club (BARC).

## **Exam Information:**

Exam fee: BZ\$20 per attempt per exam

Where examinee is not successful, there is a waiting period of three (3) months before a next attempt is possible. There is no restriction on number of attempts made.

Exams must be provided based on appointment. Exam days: Mondays and Wednesdays.  
(Subject to change where necessary upon review of suitability)

Exams will be invigilated. Duration of the exam is one and a half hours (1 1/2 hrs).  
Exam results can be provided on the same day.

Sequence to attain General Class license from a non license holder of any class:

1. Must first pass the Technician Level exam
2. Must pass the General Level exam

Exams can be taken consecutively on the same day once the fee per exam is paid.

Once successful on exams (Technician or both levels), the license can be processed upon payment of requisite license fee.

## **Taking the Exam**

Exam question books will be provided to each examinee based on level.

Each examinee will be given a multiple choice answer sheet to indicate their answers.

Each question booklet has a corresponding code which the examinee must include on their answer sheet in addition to other required identification information.

## **Note: The examinee must not write in the question booklet**

Extra work paper will to be made available to examinees if needed.

Standard calculators are allowed. Phones are not to be used to substitute for calculators.

**Commencement date:**

Exams will be offered starting April 2020.

**Contact PUC for more information or to make an appointment for the exam:**

Contact person:

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