



# Technician License Class

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# Technician Class

## Chapter 7 Licensing Regulations

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# Licensing Terms

## Part 97.

- Federal Communications Commission (FCC).
  - The FCC is the federal agency that:
    - Makes the rules that govern amateur radio in the United States & US territories.
    - Issues station and operator licenses.
    - Enforces the rules.

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# Licensing Terms

## Part 97.

- All of the FCC rules and regulations are found in Title 47 of the *Code of Federal Regulations (CFR)*.
- The primary rules governing the Amateur Radio Service are found in Part 97 of CFR Title 47.

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# Licensing Terms

## Part 97.

- Other parts of the FCC rules also affect amateur radio, especially:
  - Part 2.
  - Part 15.
  - Part 17.

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### **T1A01 -- Which of the following is part of the Basis and Purpose of the Amateur Radio Service?**

- A. Providing personal radio communications for as many citizens as possible
- B. Providing communications for international non-profit organizations
- ➔ C. Advancing skills in the technical and communication phases of the radio art
- D. All these choices are correct

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# Licensing Terms

## Part 97.

- Basis and purpose of the Amateur Radio Service.
  - The very first rule lays the foundation for the Amateur Radio Service by listing the 5 basic principles upon which amateur radio is founded.
    - Explains the “mission” of amateur radio.
    - Justifies the allocation of valuable RF spectrum to amateur radio.

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# Licensing Terms

### **§97.1 Basis and purpose.**

The rules and regulations in this part are designed to provide an amateur radio service having a fundamental purpose as expressed in the following principles:

- (a) Recognition and enhancement of the value of the amateur service to the public as a voluntary noncommercial communication service, particularly with respect to providing emergency communications.
- (b) Continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art.
- (c) Encouragement and improvement of the amateur service through rules which provide for advancing skills in both the communication and technical phases of the art.
- (d) Expansion of the existing reservoir within the amateur radio service of trained operators, technicians, and electronics experts.
- (e) Continuation and extension of the amateur's unique ability to enhance international goodwill.

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# Licensing Terms

## Part 97.

- Definitions.
  - Amateur service -- §97.3(a)(4) A radiocommunication service for the purpose of self-training, intercommunication and technical investigations carried out by amateurs, that is, duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest.

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# Licensing Terms

## Part 97.

- Definitions.
  - Amateur operator -- §97.3(a)(1) A person named in an amateur operator/primary license station grant on the ULS consolidated licensee database to be the control operator of an amateur station.
  - Amateur station-- §97.3(a)(5) A station in an amateur radio service consisting of the apparatus necessary for carrying on radiocommunications.

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**T1A02 -- Which agency regulates and enforces the rules for the Amateur Radio Service in the United States?**

- A. FEMA
- B. Homeland Security
- C. The FCC
- D. All of these choices are correct

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## Licensing Terms

### Types and Classes of Licenses.

- An Amateur Radio License actually is two licenses in one:
  - Operator license.
    - Authorizes an individual to operate an amateur radio station.
  - Station license.
    - Authorizes an individual to establish an amateur radio station.
- This combined license is called an amateur *operator/primary station license*.

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# Licensing Terms

## Types and Classes of Licenses.

- An individual can only have one operator/primary station license.

UNITED STATES OF AMERICA FEDERAL COMMUNICATIONS COMMISSION AMATEUR RADIO LICENSE			
<b>K5XYZ</b>			
Joe Ham 129 Main Street Anywhere USA			
<small>FCC Registration Number (FRN): 000000000</small>			
<small>Special Conditions - Endorsements</small>			
<small>SCORE</small>			
<small>Grant Date</small>	<small>Effective Date</small>	<small>Print Date</small>	<small>Expiration Date</small>
01/01/2000	01/01/2017	01/01/2000	01/01/2017
<small>ID Number</small>	<small>Operator Privilege</small>	<small>Station Privilege</small>	
00000000	General	PRIMARY	
<small>THIS LICENSE IS NOT TRANSFERABLE.</small>			
<i>Joe Ham</i>			
<small>Licensor's Signature</small>			<small>FCC-605 - May 2007</small>

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# Licensing Terms

## Types and Classes of Licenses.

- Clubs can also have station licenses.
  - Clubs must have at least 4 members.
  - Clubs must have a document of organization.
  - A club can only have a station license, no operator privileges are included.
  - A trustee is designated who is legally responsible for the operation of the station.

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# Licensing Terms

## Types and Classes of Licenses.

- Anyone can get a US amateur radio license.
  - Must pass a written exam.
  - Must have a US mailing address.
  - There are no other requirements or restrictions.
    - Exception – The individual cannot be a representative of a foreign government.

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# Licensing Terms

## Types and Classes of Licenses.

- Currently there are 3 classes of operator licenses:
  - Technician Class.
    - All privileges above 50 MHz.
    - Limited HF privileges.
  - General Class.
    - Privileges on all amateur bands.
    - Privileges are limited to certain portions of some bands.
  - Amateur Extra Class.
    - All amateur privileges.

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# Licensing Terms

## Types and Classes of Licenses.

- Previous classes of operator privileges.
  - No new licenses are being issued, but existing licenses may be renewed.
    - Novice.
      - Entry-level license.
      - Limited CW privileges on 80m, 40m, 15m, & 10m.
      - Limited phone privileges on 10m, 1.25m, & 23cm.
    - Advanced.
      - More phone privileges than General Class.

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# Licensing Terms

## Types and Classes of Licenses.

- Previous classes of operator privileges:
  - No longer exist.
    - Technician Plus.
      - Combination of Novice & Technician.
      - Converted to Technician Class.
    - Conditional.
      - Same privileges as General Class.
      - Converted to General Class.

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**T1A04 -- How many operator/primary station license grants may be held by any one person?**

- A. One
- B. No more than two
- C. One for each band on which the person plans to operate
- D. One for each permanent station location from which the person plans to operate

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**T1C01 -- For which license classes are new licenses currently available from the FCC?**

- A. Novice, Technician, General, Amateur Extra
- B. Technician, Technician Plus, General, Amateur Extra
- C. Novice, Technician Plus, General, Advanced
- D. Technician, General, Amateur Extra

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**T1F11 -- Which of the following is a requirement for the issuance of a club station license grant?**

- A. The trustee must have an Amateur Extra class operator license grant
- B. The club must have at least four members
- C. The club must be registered with the American Radio Relay League
- D. All of these choices are correct

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# Licensing Terms

## Examinations.

- To earn a new license, or to upgrade an existing one, you must pass one or more written examinations called *elements*.

License Class	Element 2 (35 Questions)	Element 3 (35 Questions)	Element 4 (50 Questions)
Technician	X		
General	X	X	
Amateur Extra	X	X	X

The passing grade for a 35-question test is at least 26 questions answered correctly.  
The passing grade for a 50-question test is at least 37 questions answered correctly.

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# Licensing Terms

## Examinations.

- Proof of a license grant consists of the presence of the license in the FCC database:
  - <http://fcc.gov/uls>
- New licensees can operate as soon as a call sign is assigned by the FCC and their license appears in the FCC database.

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# Licensing Terms

## Examinations.

- Existing amateurs who upgrade to a higher license class can use their new privileges immediately.
  - <call>/KT = upgrade to Technician.
  - <call>/ AG = upgrade to General.
  - <call>/ AE = upgrade to Amateur Extra.


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**T1A05 -- What proves that the FCC has issued an operator/primary license grant?**

- A. A printed copy of the certificate of successful completion of examination
- B. An email notification from the NCVEC granting the license
-  C. The license appears in the FCC ULS database
- D. All these choices are correct

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**T1C10 -- How soon after passing the examination for your first amateur radio license may you transmit on the amateur radio bands?**

- A. Immediately on receiving your Certificate of Successful Completion of Examination (CSCE)
- B. As soon as your operator/station license grant appears on the ARRL website
-  C. As soon as your operator/station license grant appears in the FCC's license database
- D. As soon as you receive your license in the mail from the FCC

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# Licensing Terms

## Term of License and Renewal.

- Licenses are issued for a term of 10 years.
- Licenses may be renewed for additional 10-year terms without re-examination.
  - Cannot renew prior to 90 days before or later than 2 years after the expiration date.
    - A 2-year “grace period” allows renewal without having to take the examination again.
    - However, after your license has expired, you can **NOT** operate until you have renewed your license.

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# Licensing Terms

## Term of License and Renewal.

- The FCC is no longer mailing paper licenses.
- You can download a .pdf file of your license from the FCC website.


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**T1C08 -- What is the normal term for an FCC-issued amateur radio license?**

- A. Five years
- B. Life
-  C. Ten years
- D. Eight years

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**T1C09 -- What is the grace period for renewal if an amateur license expires?**

-  A. Two years
- B. Three years
- C. Five years
- D. Ten years

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**T1C11 -- If your license has expired and is still within the allowable grace period, may you continue to transmit on the amateur radio bands?**

- A. Yes, for up to two years
- B. Yes, as soon as you apply for renewal
- C. Yes, for up to one year
- D. No, you must wait until the license has been renewed

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## Licensing Terms

### License Fees.

- On April 19, 2022, the FCC started collecting an application fee of \$35 for certain amateur radio license applications.

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# Licensing Terms

## License Fees.

- The \$35 dollar fee is required for the following types of applications:
  - Applications for a new license.
  - Applications to renew an existing license.
  - Applications for a vanity call sign.

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# Licensing Terms

## License Fees.

- There is no fee for the following types of applications:
  - Applications to upgrade an existing license operator class.
  - Applications for an administrative update to an existing license.
    - Change name, mailing address, e-mail address, or phone number.
  - Applications for a new sequentially-issued call sign.

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# Licensing Terms

## Volunteer Examiners.

- Volunteer Examiner Coordinator (VEC).
  - A VEC is an organization that has a contract with the FCC to coordinate amateur radio examinations.
    - Currently there are 14 VECs nationwide.
  - A VEC accredits volunteer examiners (VEs).
  - A VEC receives examination session paperwork from VEs for processing.
  - A VEC uploads successful candidate applications to the FCC for processing.

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# Licensing Terms

## Volunteer Examiners.

- Volunteer Examiner (VE).
  - A volunteer examiner (VE) is an individual accredited by a VEC to prepare and/or administer amateur radio examinations.
  - To be eligible to be a VE, an individual must:
    - Hold general or higher class amateur radio license.
    - Be at least 18 years old.
    - Never have had their license suspended or revoked.

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# Licensing Terms

## Volunteer Examiners.

- Volunteer Examiner (VE).
  - A team of at least three (3) VEs is required to administer an examination.



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# Licensing Terms

## Volunteer Examiners.

- Volunteer Examiner (VE).
  - The operator class of a VEs license determines what elements they can prepare or administer.

VE License Class	Element 2	Element 3	Element 4
General	X		
Advanced	X	X	
Amateur Extra	X	X	X

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# Licensing Terms

## Taking the Exam.

- To find a nearby test session:
  - <http://www.arrl.org/find-an-amateur-radio-license-exam-session>
  - <http://www.laurelvec.com>
  - Contact the VE team to pre-register, if required.
- Arrive at the exam session location at the scheduled time.
- Bring all required documents & materials.

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# Licensing Terms

## Taking the Exam.

- What to bring to the exam.
  - Your FCC Registration Number (FRN).
  - A photo ID.
  - A copy of any existing license.
    - Some VEC's do not require that you bring a copy of your license.
  - The original & a photocopy of any CSCEs to be used for element credit.
  - Copies of any other supporting documentation to be used for element credit.

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# Licensing Terms

## Taking the Exam.

- What to bring to the exam.
  - Calculator.
    - The calculator's memory must be cleared.
    - You **cannot** use the calculator in a cell phone.
  - Pen for filling out & signing application.
  - Pencils for filling out test answer sheets.
- Cash or a check to pay the exam fee (if any).
  - Not all VECs charge a fee – Laurel VEC does not.

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# Licensing Terms

## CSCE and Form 605.

- Certificate of Successful Completion of Examination (CSCE).
  - A CSCE is issued to certify that an applicant has passed one or more examination elements and/or earned a specific class of license.
  - The CSCE is signed by all 3 of the administering VE's.
  - The CSCE is signed by the applicant.

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# Licensing Terms

## CSCE and Form 605.

**American Radio Relay League VEC**  
Certificate of Successful Completion of Examination

**ARRL**

Test Site: \_\_\_\_\_ Test Date: \_\_\_\_\_

CONGRATULATIONS! YOU HAVE PASSED THE EXAMINATION AND EARNED YOUR LICENSE. YOU ARE NOW A LICENSED AMATEUR RADIO OPERATOR. YOU MAY NOW OPERATE YOUR STATION IN ACCORDANCE WITH THE FCC RULES AND REGULATIONS. YOUR LICENSE IS VALID FOR 10 YEARS FROM THE DATE OF EXPIRATION OF YOUR PREVIOUS LICENSE OR THE DATE OF EXPIRATION OF YOUR PREVIOUS EXAMINATION. YOUR LICENSE IS VALID FOR 10 YEARS FROM THE DATE OF EXPIRATION OF YOUR PREVIOUS LICENSE OR THE DATE OF EXPIRATION OF YOUR PREVIOUS EXAMINATION.

**LICENSE UPGRADE NOTICE:** If you are upgrading your license, you must pass the exam for the higher class. You must also pass the exam for the lower class if you are upgrading from a lower class to a higher class.

**LICENSE STATUS INDICATOR:** This certificate is valid for 10 years from the date of issuance. If you are upgrading your license, you must pass the exam for the higher class. You must also pass the exam for the lower class if you are upgrading from a lower class to a higher class.

Operator's Name: \_\_\_\_\_ Call Sign: \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP: \_\_\_\_\_

**CERTIFICATE OF SUCCESSFUL COMPLETION OF EXAMINATION**  
Lured Amateur Radio Club, Inc., P.O. Box 0146, Laurel, Maryland 20725-0146

Date: \_\_\_\_\_ Test Site: \_\_\_\_\_

The Applicant Named Below Has Passed The Indicated Elements:				The Applicant Is Eligible To Receive The Indicated Class License:			
Technician	General	Extra	None	Technician	General	Extra	None
2	3	4					

This certificate is not valid unless all elements other than the ones checked are crossed out. This certificate is valid for 100 days from the date of issue. Please retain this certificate for your records.

**Listing of the license grant on the FCC Universal Licensing System (ULS) establishes you as an amateur operator and covers your amateur operation. If you hold a valid FCC-issued Amateur Radio License, this certificate allows you to operate in all privileges of your new operator class until your license has been granted by the FCC or for a period of 180 days from the date of issue of this certificate, whichever occurs first.**

Applicant Information: Name, Call Sign, Address, City, State, ZIP, Signature, Date

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# Licensing Terms

## CSCE and Form 605.

- NCVEC Form 605.
- Used by all VECs instead of the FCC Form 605.
- VECs may modify by adding a logo, but the basic form is the same.
- Single page & easy to understand.
- FCC Form 605 is multiple pages plus attachments.

**NCVEC QUICK-FORM 605 APPLICATION**  
AMATEUR OPERATOR/PRIMARY STATION LICENSE

**SECTION 1 - TO BE COMPLETED BY APPLICANT**

Applicant Name: \_\_\_\_\_ Date of Birth: \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP: \_\_\_\_\_

Signature of Applicant: \_\_\_\_\_ Date Signed: \_\_\_\_\_

**SECTION 2 - TO BE COMPLETED BY ALL ADMINISTERING VECs**

Applicant is qualified for operator license class:

NO NEW LICENSE OR UPGRADE WAS EARNED

TECHNICIAN Element 2

GENERAL Elements 2 and 3

AMATEUR EXTRA Elements 2, 3 and 4

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# Licensing Terms

## CSCE and Form 605.

- Following the test session, the VE team will forward the paperwork to the VEC for processing.
- The VEC will check the session paperwork & upload the data for successful applicants to the FCC for processing.
- The FCC processes the data file & issues the licenses.

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# Licensing Terms

## Your Responsibilities.

- You must operate your station in accordance with the FCC rules.
- You must maintain a current, valid e-mail address with the FCC at all times.
  - If an e-mail is returned to the FCC as undeliverable, your license may be suspended or revoked.


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**T1C04 -- What may happen if the FCC is unable to reach you by email?**

- A. Fine and suspension of operator license
-  B. Revocation of the station license or suspension of the operator license
- C. Revocation of access to the license record in the FCC system
- D. Nothing; there is no such requirement

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**T1C07 -- Which of the following can result in revocation of the station license or suspension of the operator license?**

- A. Failure to inform the FCC of any changes in the amateur station following performance of an RF safety environmental evaluation
-  B. Failure to provide and maintain a correct email address with the FCC
- C. Failure to obtain FCC type acceptance prior to using a home-built transmitter
- D. Failure to have a copy of your license available at your station

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# Licensing Terms

## Station Inspection.

- You must make your station available for inspection upon request by a representative of the FCC.

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### **T1F01 -- When must the station licensee make the station and its records available for FCC inspection?**

- A. At any time ten days after notification by the FCC of such an inspection
- B. At any time upon request by an FCC representative
- C. Only after failing to comply with an FCC notice of violation
- D. Only when presented with a valid warrant by an FCC official or government agent

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# Licensing Terms

## The FCC CORES Website.

- The Commission Registration System (CORES).
  - CORES is a comprehensive database of all individuals, companies, and organizations that have ever done business with the FCC.
    - <http://fcc.gov/core>
  - Before you can apply for an amateur radio license, you must create a CORES account and be issued an FRN.

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# Licensing Terms

## The FCC ULS Website.

- The Universal Licensing System (ULS).
  - The ULS is a comprehensive database of all licenses issued by the FCC's Wireless Telecommunications Bureau (WTB).
    - <http://fcc.gov/uls>

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# Licensing Terms

## The FCC ULS Website.

- The Universal Licensing System (ULS).
  - After registering with the ULS, you can:
    - View your license information.
    - Print your license.
    - Modify your personal information (address, etc.)
    - Renew your license.

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# Bands and Privileges

## Frequency Privileges.

- To prevent interference between radio services, the RF spectrum is divided into “bands”.
  - Each radio service is allocated access to one or more bands.
- Radio bands are named after their approximate wavelength.

$$Band = \frac{300}{Freq(MHz)}$$

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## Bands and Privileges

### Frequency Privileges.

- Access to the various amateur radio bands is determined by the license class.
- The Technician Class license.
  - Primarily gives access to VHF & UHF bands used for local communications and for experimentation.
  - Give some limited access to HF bands.

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## Bands and Privileges

### Frequency Privileges.

- Technician Class VHF & UHF frequency bands.

	Band (Wavelength)	Frequency Limits
<b>VHF</b>	6m	50-54 MHz
	2m	144-148 MHz
	1.25m	219-220 MHz & 222-225 MHz
<b>UHF</b>	70cm	420-450 MHz
	33cm	902-928 MHz
	23cm	1240-1300 MHz
	13cm	2300-2310 MHz & 2390-2450 MHz

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## Bands and Privileges

### Frequency Privileges.

- Technician Class HF frequency bands.
  - Power limited to 200W PEP.

Band (Wavelength)	Frequency Limits	Mode
80m	3525-3600 kHz	CW
40m	7025-7125 kHz	CW
15m	21.025-21.200 MHz	CW
10m	28.000-28.300 MHz 28.300-28.500 MHz	CW, Data CW, Data, SSB


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**T1B01 -- Which of the following frequency ranges are available for phone operation by Technician licensees?**

- A. 28.050 MHz to 28.150 MHz
- B. 28.100 MHz to 28.300 MHz
- C. 28.300 MHz to 28.500 MHz
- D. 28.500 MHz to 28.600 MHz


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**T1B03 -- Which frequency is in the 6 meter amateur band?**

- A. 49.00 MHz
-  B. 52.525 MHz
- C. 28.50 MHz
- D. 222.15 MHz

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**T1B04 -- Which amateur band includes 146.52 MHz?**

- A. 6 meters
- B. 20 meters
- C. 70 centimeters
-  D. 2 meters

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**T1B06 -- On which HF bands does a Technician class operator have phone privileges?**

- A. None
- B. 10 meter band only
- C. 80 meter, 40 meter, 15 meter and 10 meter bands
- D. 30 meter band only

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## **Bands and Privileges**

### **Emission Privileges.**

- Amateur radio operators can use many different type of signals to communicate.
- The various types of signals are called *emissions*.

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## Bands and Privileges

### Emission Privileges.

#### Amateur Emission Types

<i>Emission</i>	<i>Description</i>
CW	Morse code telegraphy
Data	Computer-to-computer communication modes, usually called <i>digital modes</i>
Image	Television (fast-scan and slow-scan) and facsimile or fax
MCW	Tone-modulated CW, Morse code generated by keying an audio tone
Phone	Speech or voice communications
Pulse	Communications using a sequence of pulses whose characteristics are modulated in order to carry information.
RTTY	Narrow-band, direct-printing telegraphy received by automatic equipment, such as a computer or teleprinter.
SS	Spread-spectrum communications in which the signal is spread out over a wide band of frequencies
Test	Transmissions containing no information

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## Bands and Privileges

### Emission Privileges.

- On some bands, certain emissions may only be used in a specified portion of the band.
- Mode-restricted sub-bands prevent incompatible modes of communications from interfering with each other.
- Bands with emission frequency limitations are:
  - HF -- 80m, 40m, 20m, 17m, 15m, 12m, & 10m.
  - VHF -- 6m, 2m, 1.25m.

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## Bands and Privileges

### Emission Privileges.

- The following segments on the HF bands are restricted to CW & data only:

Band	Segment	Band	Segment
80m	3500-3600 kHz	17m	18.068-18.110 MHz
40m	7000-7125 kHz	15m	21.000-21.200 MHz
30m	10.100-10.150 MHz	12m	24.890-25.930 MHz
20m	14.000-14.150 MHz	10m	28.000-28.300 MHz

- 60m is restricted to CW, data, & USB only.

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## Bands and Privileges

### Emission Privileges.

- Restricted segments on the VHF bands are:
  - 6m: 50.0 MHz to 50.1 MHz – CW only.
  - 2m: 144.0 MHz to 144.1 MHz – CW only.
  - 1.25m: 219.0 MHz to 220 MHz – Data only.
    - Fixed digital message forwarding systems only.
    - 50 Watts PEP maximum power output.
    - 100 kHz maximum bandwidth.

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## Bands and Privileges

### Emission Privileges.

- Technician class operators have:
  - All emission privileges on VHF & UHF.
  - Limited emission privileges on HF.

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## Bands and Privileges

### Emission Privileges.

- Beacon stations.
  - Beacon stations are stations which transmit a signal for observation of propagation and other experimental uses.
  - One-way communications.
  - Limited to 100W PEP.
  - Limited to certain portions of the band.


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**T1A06 -- What is the FCC Part 97 definition of a beacon?**

- A. A government transmitter marking the amateur radio band edges
- B. A bulletin sent by the FCC to announce a national emergency
- C. A continuous transmission of weather information authorized in the amateur bands by the National Weather Service
-  D. An amateur station transmitting communications for the purposes of observing propagation or related experimental activities

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**T1B05 -- How may amateurs use the 219 to 220 MHz segment of 1.25 meter band?**

- A. Spread spectrum only
- B. Fast-scan television only
- C. Emergency traffic only
-  D. Fixed digital message forwarding systems only

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**T1B07 -- Which of the following VHF/UHF band segments are limited to CW only?**

- A. 50.0 MHz to 50.1 MHz and 144.0 MHz to 144.1 MHz
- B. 219 MHz to 220 MHz and 420.0 MHz to 420.1 MHz
- C. 902.0 MHz to 902.1 MHz
- D. All of these choices are correct

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# Break



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## Bands and Privileges

### Power Limits.

- Output power from an amateur radio transmitter is usually specified in terms of *peak envelope power (PEP)*.
  - The average power at the peak of the modulating waveform.
- On the 60 meter band, the maximum power is specified in terms of *effective radiated power (ERP)*, which takes into account antenna gain.

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## Bands and Privileges

### Power Limits.

- With a few exceptions, amateur radio stations are authorized a maximum transmitter power of 1500W PEP.
  - Technician class licensees are limited to 200W PEP on HF.
  - The 60m band is limited to 100W ERP.
  - The 30m band is limited to 200W PEP.
  - The frequency range 219-220 MHz is limited to 50W PEP.
  - Beacon stations are limited to 100W PEP.
  - Other miscellaneous limits.

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## Bands and Privileges

### Power Limits.

- However, regardless of the maximum power allowed.....

§97.313(a) -- An amateur station must use the minimum transmitter power necessary to carry out the desired communications.

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**T1B11 -- What is the maximum peak envelope power output for Technician class operators in their HF band segments?**

- A. 200 watts
- B. 100 watts
- C. 50 watts
- D. 10 watts

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**T1B12 -- Except for some specific restrictions, what is the maximum peak envelope power output for Technician class operators using frequencies above 30 MHz?**

- A. 50 watts
- B. 100 watts
- C. 500 watts
- D. 1500 watts

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## **Bands and Privileges**

### **Primary and Secondary Allocations.**

- Some frequencies are shared with other services.
  - 60m, 30m, and 70cm & up.
- Primary user.
  - Has priority on the use of the frequency.
  - Is protected from interference by secondary users.
- Secondary user.
  - Must not cause interference to the primary user.
  - Must accept interference from the primary user.

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## Bands and Privileges

### Primary and Secondary Allocations.

- 1965 US-Canada Agreement -- A, B, C, & D lines.



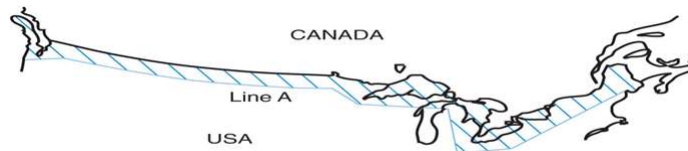
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## Bands and Privileges

### Primary and Secondary Allocations.

- The "A line" is a line roughly parallel to and approx. 50 miles south of the US-Canadian border.
- US amateurs may not transmit between 420 MHz and 430 MHz if they are north of the "A line".



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## T1B08 -- How are US amateurs restricted in segments of bands where the Amateur Radio Service is secondary?

- A. U.S. amateurs may find non-amateur stations in those segments, and must avoid interfering with them
- B. U.S. amateurs must give foreign amateur stations priority in those segments
- C. International communications are not permitted in those segments
- D. Digital transmissions are not permitted in those segments

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## Bands and Privileges

### Repeater Coordination.

- To avoid interference, VHF & UHF repeaters and auxiliary stations are “coordinated” by an individual or a group of individuals selected by the repeater operators in a given area to assign repeater frequencies. This group or individual is called a *Frequency Coordinator*.

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## Bands and Privileges

### Repeater Coordination.

- Coordinating a repeater is considered good amateur practice.
  - If interference occurs between a coordinated repeater and an uncoordinated repeater, the uncoordinated repeater is responsible for correcting the situation.

**§ 97.101(a)** In all respects not specifically covered by FCC Rules each amateur station must be operated in accordance with good engineering and good amateur practice.

83

**T1A08 -- Which of the following entities recommends transmit/receive channels and other parameters for auxiliary and repeater stations?**

- A. Frequency Spectrum Manager appointed by the FCC
- B. Volunteer Frequency Coordinator recognized by local amateurs
- C. FCC Regional Field Office
- D. International Telecommunications Union

84

## T1A09 -- Who selects a Frequency Coordinator?

- A. The FCC Office of Spectrum Management and Coordination Policy
- B. The local chapter of the Office of National Council of Independent Frequency Coordinators
- C. Amateur operators in a local or regional area whose stations are eligible to be repeater or auxiliary stations
- D. FCC Regional Field Office

85



## International Rules

### International Regulations.

- Radio is international by its very nature.
- The FCC only has jurisdiction in the US & its territories.
  - The FCC also has, jurisdiction on US-registered ships or aircraft operating in international waters or airspace.
- Each country regulates amateur radio operations in its own territory.
- Who establishes international regulations?

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## International Rules

### International Telecommunications Union (ITU).

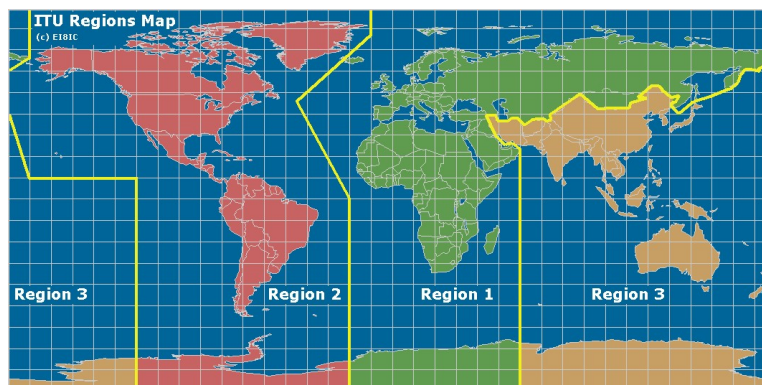
- The ITU is a United Nations agency which:
  - Administers international treaties & laws.
  - Determines frequency allocations.
  - Assigns one or more blocks of call signs to member states.
- The ITU has divided the world into 3 regions.
  - All 50 US states are in Region 2.
  - All US territories are either in Region 2 or Region 3.

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## International Rules

### International Telecommunications Union (ITU).



88



## International Rules

### International Telecommunications Union (ITU).

- Frequency allocations vary between regions.
  - e.g. -- 7.200 MHz to 7.300 MHz is allocated to the amateur radio service in ITU Region 2, but to the broadcast service in Regions 1 & 3.
- Radio rules change at region boundaries.
  - Regardless of citizenship.
  - Regardless of nation of registry of vessel or aircraft.

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## International Rules

### International Amateur Radio Union (IARU).

- The IARU is an organization of national amateur radio organizations around the world.
  - e.g. – ARRL, RAC, RSGB, JARL, etc.
- Acts as a voice before the ITU and national governments.

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## International Rules

### Permitted Contacts and Communications.

- Any amateur radio station may communicate with any other amateur radio station anywhere in the world, except:
  - Some countries do not permit any amateur radio operations at all.
  - Some countries prohibit communications with amateur radio stations in certain countries.

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## International Rules

### Permitted Contacts and Communications.

- All communications must be limited to remarks of a personal nature or related to the purposes of amateur radio.
  - If agreed to by the countries involved, this may be relaxed temporarily for humanitarian reasons during major emergencies.
    - Earthquakes, tsunamis, etc.

92

**T1C03 -- What types of international communications is an FCC-licensed amateur radio station permitted to make?**

- A. Communications incidental to the purposes of the Amateur Radio Service and remarks of a personal character
- B. Communications incidental to conducting business or remarks of a personal nature
- C. Only communications incidental to contest exchanges, all other communications are prohibited
- D. Any communications that would be permitted by an international broadcast station

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**T1D01 -- With which countries are FCC-licensed amateur radio stations prohibited from exchanging communications?**

- A. Any country whose administration has notified the International Telecommunication Union (ITU) that it objects to such communications
- B. Any country whose administration has notified the American Radio Relay League (ARRL) that it objects to such communications
- C. Any country banned from such communications by the International Amateur Radio Union (IARU)
- D. Any country banned from making such communications by the American Radio Relay League (ARRL)

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## International Rules

### International Operating.

- Operating in other countries can be a lot of fun.
- You can operate from any country whose government authorizes it.
- You may operate if you are on board a US-registered ship or aircraft in international waters or airspace.
- If not in international waters or airspace, you must have permission of that country.

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## International Rules

### International Operating.

- There are four ways of getting permission to operate in another country:
  - Reciprocal operating agreement.
  - IARP.
  - CEPT.
  - Obtain a license or permit from the foreign country.

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## International Rules

### International Operating.

- Reciprocal Operating Authority.
  - Some countries have agreed to recognize amateur radio licenses issued by the US as valid for operating in their country and vice-versa.
    - You must carry a copy of your US license.
      - No other documentation is required.
    - The host country's rules apply.
    - A list of the countries with a reciprocal agreement with the US is available at:
      - <http://www.arrl.org/bilateral-reciprocal-agreements>

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## International Rules

### International Operating.

- International Amateur Radio Permit (IARP).
  - An IARP allows US amateurs to operate in some Central American and South American countries.
  - An IARP is issued by a member society of the International Amateur Radio Union (IARU).
    - American Radio Relay League.
  - An IARP has 2 classes of permit:
    - A Class 1 permit is equivalent to an Amateur Extra class license.
    - A Class 2 permit is equivalent to a Technician class license.

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## International Rules

### International Operating.

- European Conference of Postal and Telecommunications Administrations (CEPT).
  - A CEPT allows US amateurs to operate in most European countries & territories.
    - You must carry a copy of your US license.
    - You must carry proof of US citizenship.
      - Passport.
    - You must carry a copy of the CEPT agreement.

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## International Rules

### International Operating.

- European Conference of Postal and Telecommunications Administrations (CEPT).
  - A CEPT authorizes 2 classes of operation:
    - Class 1 is equivalent to an Amateur Extra class license.
    - Class 2 is equivalent to a Technician class license.

100



# International Rules

## International Operating.

- Foreign Country License.
  - Many countries will issue an amateur radio license based on a US license with no examination.
    - A call sign is issued for use while in the country issuing the license.
    - Fees vary from a few dollars to several hundred dollars.
  - Some countries will only issue an operator permit for use while in the country.
    - No call sign issued.
    - Must operate from an existing station in the country.

101



# International Rules

## International Operating.

- Station license.





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## International Rules

### International Operating.

- Operator permit.

AMATEUR RADIO OPERATOR'S CERTIFICATE FOR VISITORS				No T615
Name	RAYMOND ANDREWS			
Nationality	U. S. A.	Passport No	135017812	
Date of Birth	14 Apr 1945	Sex	Male	
Home License	Class 1	No	Home Callsign	K9DUR
Official Remarks				
Issued Date				

103

### T1C06 -- From which of the following locations may an FCC-licensed amateur station transmit?

- A. From within any country that belongs to the International Telecommunications Union
- B. From within any country that is a member of the United Nations
- C. From anywhere within International Telecommunications Union (ITU) Regions 2 and 3
- D. From any vessel or craft located in international waters and documented or registered in the United States

104



# Call Signs

## Radio Call Signs.

- Every radio station is assigned a call sign.
- Call signs uniquely identify a radio station within each radio service.
  - e.g. – No two amateur radio stations in the world will have the same call sign.
  - Although rare, it is possible for stations in different services to have the same call sign:
    - N4AA – Amateur radio station call sign.
    - N4AA – Aircraft radio station call sign.

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# Call Signs

## Prefix and Suffix.

- Every country is assigned one or more blocks of call signs by the ITU.
  - Every call sign issued by that country, regardless of the radio service, must begin with characters that fall within an assigned block.
  - The blocks assigned to the US are:
    - AAA-ALZ, KAA-KZZ, NAA-NZZ, & WAA-WZZ.

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# Call Signs

## Prefix and Suffix.

- An amateur radio call sign consists of 3 parts:
  - A prefix in the block of call signs assigned by the ITU to that country.
    - US = AA-AL, K, KA-KZ, N, NA-NZ, W, or WA-WZ.
  - A number.
    - US = 0-9.
    - In other countries, may be more than one digit
  - A suffix.
    - US = 1, 2, or 3 letters.

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# Call Signs

## US Call Districts and Call Signs.

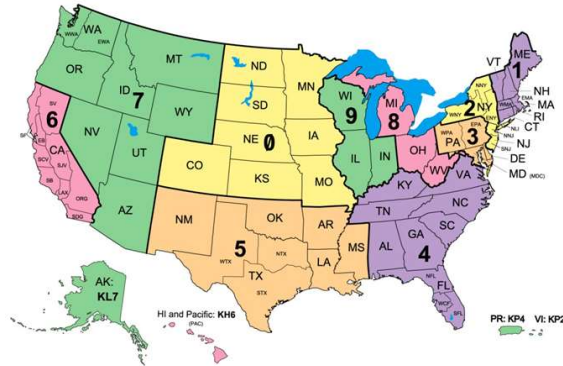
- In the US, the numeral in an amateur radio call sign denotes the call district where the amateur resides – maybe.
  - When a new license is issued, the numeral corresponds to the call district where the mailing address is located.
  - If you move to a different call district, you do not have to change your call sign.
  - You can get a vanity call with any numeral regardless of where you live.

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# Call Signs

US Call Districts and Call Signs.



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# Call Signs

US Call Districts and Call Signs.

- Certain prefixes are restricted to amateurs residing in Alaska, Hawaii, & the US territories.

Prefix	Numeral	State or Territory
AH, KH, NH, or WH	6 or 7	Hawaii
AH, KH, NH, or WH	1-5, 8-0	Pacific Insular Areas
AL, KL, NL, or WL	0-9	Alaska
KP, NP, or WP	2	US Virgin Islands
KP, NP, or WP	3 or 4	Puerto Rico
KP, NP, or WP	1, 5-0	Caribbean Insular Areas
KG	4	Guantanamo Bay (2x2 only)

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# Call Signs

## US Call Districts and Call Signs.

- The format of a US amateur call sign is tied to the license class.

Group	Format	License Class	Groups
A	1x2, 2x1, 2x2 (1 <sup>st</sup> letter "A")	Amateur Extra	A, B, C, or D
B	2x2 (1 <sup>st</sup> letter "K", "N", or "W")	Advanced	B, C, or D
C	1x3	General	C, or D
D	2x3 (1 <sup>st</sup> letter "K" or "W")	Technician	C, or D
		Novice	D

111



# Call Signs

## US Call Districts and Call Signs.

- Call sign designators.
  - If operating in another country, you must add a portable designator to your call sign.
    - If in Canada, add "VE" and the Canadian call sign district **after** your call.
      - e.g. – K9DUR/VE3 if in Ontario.
    - If in any other country, add that country's prefix **before** your call.
      - e.g. – XE1/K9DUR if in Mexico.

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# Call Signs

## US Call Districts and Call Signs.

- Call sign designators.
  - You may add any desired designator to your call.
    - The designator must not conflict with a prefix assigned to any other country or with a designator specified in the FCC Rules.

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# Call Signs

## US Call Districts and Call Signs.

- Call sign designators.
  - If operating portable, you may add a designator to your call sign to signify the portable operation.
    - e.g. – K9DUR/W4 if in 4<sup>th</sup> call district.
  - If operating mobile, you may add a designator to your call sign to signify the mobile operation.
    - e.g. – K9DUR/MOB.

114



# Call Signs

## US Call Districts and Call Signs.

- Call sign designators.
  - When you upgrade an existing license, you may start using your new privileges immediately.

115



# Call Signs

## US Call Districts and Call Signs.

- Call sign designators.
  - When using your new privileges before the upgrade shows up in the FCC database, you must add a designator to indicate the pending upgrade.
    - /KT = Upgrade to Technician.
    - /AG = Upgrade to General.
    - /AE = Upgrade to Amateur Extra.

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# Call Signs

## Choosing a Call Sign.

- You may choose your own call sign under the vanity call system.
  - May choose any call available to the Amateur Radio Service, provided.
    - The call must never have been issued or has been expired or canceled for at least 2 years.
    - The call sign must be in a group available to your license class.

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# Call Signs


## Choosing a Call Sign.

- You may choose any available call sign whose format is authorized to your license class.

Group	Format	License Class	Groups
A	1x2, 2x1, 2x2 (1 <sup>st</sup> letter "A")	Amateur Extra	A, B, C, or D
B	2x2 (1 <sup>st</sup> letter "K", "N", or "W")	Advanced	B, C, or D
C	1x3	General	C, or D
D	2x3 (1 <sup>st</sup> letter "K" or "W")	Technician	C, or D
		Novice	D


118

**T1C02 -- Who may select a desired call sign under the vanity call sign rules?**

- A. Only a licensed amateur with a General or Amateur Extra class license
- B. Only a licensed amateur with an Amateur Extra class license
- C. Only a licensed amateur who has been licensed continuously for more than 10 years
-  D. Any licensed amateur

119

**T1C05 -- Which of the following is a valid Technician class call sign format?**

-  A. K1XXX
- B. KA1X
- C. W1XX
- D. All of these choices are correct

120



# Call Signs

## Club and Special Event Call Signs.

- Amateur radio clubs can obtain station licenses.
  - A club must have at least 4 members.
  - A club must have a document of organization.
  - A club is initially issued a call sign from Group D, but can change the call sign using the vanity call system.
  - The club must designate a trustee.
    - The club station privileges are determined by the license class of the trustee.
    - The trustee is responsible for proper operation of the station.

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# Call Signs

## Club and Special Event Call Signs.

- Any amateur or club can obtain a temporary 1x1 call sign for a special event.
  - Period of operation cannot exceed 15 days.
  - Call sign of the individual or club obtaining the special call must be transmitted at least once an hour.

122



# Call Signs

Club and Special Event Call Signs.



**Special Event Station**  
**K9T**

Commemorating the 200th anniversary of the death of the Shawnee chieftain, Tecumseh, who was killed on October 5, 1813 during the Battle of the Thames in the War of 1812.

**Indiana District 7 ARES**  
Washington County, Indiana USA

**Tecumseh**  
March 1768 — October 5, 1813    Grid: EM59ap    CQ Zone: 4    ITU Zone: 8

123



# Questions?



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# Technician Class

**Next Week**  
**Chapter 8**  
**Operating Regulations**

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**Chapter 9**  
**Safety**