

Ham Radio - Technician Class study guide

Chapter 1: Amateur Radio Basic Rules

Amateur Radio

1. Coordination
 - a. FCC - Federal Communications Commission, Part (chapter) 97 T1A02
 - b. Purpose of radio - advancing skills (1 of 5 purposes) T1A01
 - c. Licensing - operator/primary station - only ONE license per person T1A04
 - i. License is valid when it appears in the FCC database T1A05
 - d. Volunteer Frequency Coordinator is recognized by the locals T1A08
 - i. Selected by local amateur operators eligible to be repeaters T1A09
2. FCC Rules
 - a. Beacon - transmitting for the purpose of observing propagation T1A06
 - b. Space station - located more than 50 km above the earth T1A07
 - c. Phonetic alphabet is encouraged T1A03
 - d. Willful interference is NEVER permitted T1A11
3. RACES
 - a. Uses amateur frequencies, stations, and operators for emergency purposes T1A10

Ham Environments

1. Power Output and Your License

- a. Frequency (Hz) - HF,.....VHF, UHF (to be explained later)
- b. Power (W) - max 200 W,....1500 W T1B11, T1B12

2. Frequencies

- a. 6 meters: 50.0 - 54.0 MHz (52.525 Mhz) T1B03
- b. 2 meters: 144.0 - 148.0 MHz (146.52 MHz) T1B04
- c. 1.25 meters - part of this is used for fixed digital messages T1B05
- d. HF bands, you have some privileges here, but will be explained later
- e. Primary vs Secondary use on a band
 - i. When you are secondary, always avoid interfering T1B08

3. Transmissions

- a. Any amateur can contact the ISS (and satellites) T1B02
- b. All types of modes, such as CW and Phone, take up space. Avoid transmitting along edges of the band.
 - i. This is called modulated sideband
 - ii. Allow for calibration errors and frequency shifts T1B09

4. Emission Modes

- a. CW allowed on HF
 - i. 6 meters: 50.0 - 50.1 MHz T1B07
 - ii. 2 meters: 144.0 - 144.1 MHz T1B07
- b. Phone: 10 meters: 28.3 - 28.5 MHz T1B01, T1B06
 - i. Anything above 50 MHz allowed, but rare T1B10

Licensing and FCC Regulations

1. License class and term lengths
 - a. Technician, General, Amateur Extra T1C01
 - b. You can transmit as soon as your license appears in the FCC database T1C10
 - i. Valid for 10 years (must be renewed) T1C08
 - ii. If it expires, you have to wait until it is renewed to use it again T1C11
 - iii. If it expires, you have a 2 year "grace period" to renew T1C09
 - c. FCC must be able to contact you via email. If they can't, they may revoke or suspend your license. T1C04,T1C07
2. Call Signs
 - a. Technician has a 2x3 or 1x3 format T1C05
 - b. Vanity signs are optional, any amateur can request one T1C02
3. International Regulations
 - a. Only comments incidental to radio and personal remarks are allowed T1C03
 - b. Can transmit in international waters/airspace from any vessel or craft registered in the US T1C06

What's Allowed and What's Not

1. Music and Information
 - a. No music except for manned spacecraft T1D04
 - b. You may communicate with any country except a country that notifies the ITU that it objects (currently no countries object) T1D01
 - c. No obscure or encrypted communications, except control commands to a radio controlled craft (like a model airplane) T1D03
 - d. No indecent or obscene language T1D06
 - e. Only repeaters, auxiliary, or space stations can auto-transmit (*exact) T1D07
2. Sales and Compensation
 - a. Selling radio equipment over the air is allowed, but not on a regular basis T1D05
 - b. No payment ever, except for a classroom teacher with a radio station T1D08
3. Unidentified and One-Way Transmissions
 - a. Broadcasting: one-way signal intended for reception by the general public - NO T1D02,T1D10
 - b. Morse code practice, Telecommand/Telemetry (drones) - YES T1D02
 - c. In an emergency, when directly related to safety of human life - YES T1D09
 - d. Unidentified to a person - NO
 - e. Unidentified to a model craft - YES T1D11

Control Operator (who, what, where)

Note: The basic concept is that an amateur radio station must always have a control operator, and that the control operator is responsible for the proper operation of the station. The control operator is also USUALLY the station licensee.

1. Control point - where the control operator manipulates the controls, or where the control function is performed T1E05
2. Control operator - is required at all times, must be at the control point T1E09
 - a. Can directly (in person) or indirectly (remote) manipulate the controls
 - b. Indirect control - this can be done over the Internet or when automatically controlling a repeater T1E10,T1E08
3. Designation and Duties
 - a. Station licensee - is usually the control operator T1E11
 - i. Can designate another to be the control operator (like a visitor) T1E03
 - ii. BOTH are responsible for following the rules T1E07
 - b. NEVER transmit without a licensed control operator T1E01
4. Privileges and Eligibility
 - a. License class of control operator determines transmitting privileges T1E04
 - b. At no time can a Technician be a control operator of a higher class station T1E06
 - c. Any amateur operator can transmit to a satellite T1E02

Station Identification

1. Sending call sign
 - a. Send call sign at least every 10 minutes AND at end of contact T1F02,T1F03
 - b. Must identify in English (for USA) T1F04
 - c. Use either CW or phone T1F05
 - d. Use a suffix when appropriate for location (say stroke, slash, or slant) T1F06
 - e. FCC can inspect station and records at any time T1F01
2. Repeaters
 - a. Repeater station is one that retransmits the signal T1F09
 - b. Control operator using a repeater is responsible for the signal content T1F10
3. Club stations
 - a. Must have at least 4 members T1F11
4. Third-Party communications
 - a. A message from one control op. to another on behalf of a third person T1F08
 - i. Includes an unlicensed person at the microphone
 - b. Foreign station must have a third-party agreement with the USA T1F07