

## Unit 1.9 Amateur Satellite: Operation

As a Technician Class licensee, you can make contacts via amateur radio satellites. Any amateur whose license privileges allow them to transmit on the satellite uplink frequency may be the control operator of a station communicating through an amateur satellite or space station! (T8B01)

Amateur satellites are basically repeaters in space. As such, they have an uplink frequency, which is the frequency on which you transmit and the satellite receives, and a downlink frequency, on which the satellite transmits and you receive. As with other transmissions, the minimum amount of power needed to complete the contact should be used on the uplink frequency of an amateur satellite or space station. (T8B02)

Often, the uplink frequency and downlink frequency are in different amateur bands. For example, when a satellite is operating in “mode U/V,” the satellite uplink is in the 70 cm band and the downlink is in the 2 meter band. (T8B08) The 70 cm band is in the UHF portion of the spectrum, while the 2 meter band is in the VHF portion of the spectrum.

The International Space Station often has amateur radio operators on board. Any amateur holding a Technician or higher class license may make contact with an amateur station on the International Space Station using 2 meter and 70 cm band amateur radio frequencies. (T8B04) Like most amateur satellites, the Space Station is in low earth orbit. When used to describe an amateur satellite, the initials LEO mean that the satellite is in a Low Earth Orbit. (T8B10)

Amateur satellites are often equipped with beacons. A satellite beacon is a transmission from a space station that contains information about a satellite. (T8B05) FM Packet is a commonly used method of sending signals to and from a digital satellite. (T8B11)

How do you know when you are able to communicate via an amateur satellite? A satellite tracking program can be used to determine the time period during which an amateur satellite or space station can be accessed. (T8B03) The Keplerian elements are inputs to a satellite tracking program. (T8B06)

Two problems that you must deal with when communicating via satellite is Doppler shift and spin fading. Doppler shift is an observed change in signal frequency caused by relative motion between the satellite and the earth station. (T8B07) Rotation of the satellite and its antennas causes “spin fading” of satellite signals. (T8B09)

### QUESTION POOL: (11)

T8B01	T8B02	T8B08	T8B04	T8B10	T8B05
T8B11	T8B03	T8B06	T8B07	T8B09	