Introduction

Transmission of data via Amateur Radio

- Definition and requirements.
- Data (characters, numbers & special characters) is encoded and transmitted via your radio.
- Per the FCC, digital voice (Dstar, DMR, etc.) is considered voice transmissions.
- The data rate was limited to 300 baud within bands lower than 2M. The use of an antiquated baud rate had stymied innovation for years. In May 2024, the FCC removed the baud definition and only restricts these signals to a 2,800 Hz bandwidth. Most signals now use 2750 as their upper limit.
- Some radios have a few modes built-in, mostly RTTY and/or PSK31, few FT8.
- In other cases, you use a computer to encode the data and generate the modulated signal via a sound card device. You can still buy hardware modems (PACTOR) to encode the data.
- The data is encoded (transformed) into audio frequencies using a computer. Originally, the two primary encoding techniques were Phase Shift Keying and Frequency Shift Keying. Today, they are using all three modes; Phase, Frequency and Amplitude modulation, all in one modem (mixed/multi mode). Because it is in the audio spectrum, this is referred to as audio versions of the modulation.
- In some cases, the encoding includes error detection and/or error correction. These both add addition bits to the data.
- This modulated audio is fed/received to/from your radio via the microphone and speaker connectors or via an auxiliary interface.
- The interface also includes a method to key the PTT in order to transmit.
- Some way for the computer to control the radio dial frequency is really nice. After you forget to set it a few times, you will consider it essential.