

## Editorial – Your favorite radio mode

As mentioned in the cover story, there are many amateur radio sub-topics in which to interest yourself. Considering only the radio portion of the hobby, which are your favorite modes to play with? Just so we're on the same page, an amateur radio **mode** is simply short for *modulation method*, meaning the way a signal is encoded within the RF envelope prior to being sent out to a potential receiving station that's listening using the same mode. This signal can be voice, CW, digital, text, data, image, and more.

We thought that a short list of these amateur radio modes might entice you to branch out a bit and explore some that might be a little out of your current comfort zone.

### FM

[Frequency modulation](#) is probably the first radio mode you might have encountered as a new ham because it's the voice mode used on most 2-meter and 70-cm repeaters. It's the same mode used by your favorite FM broadcast station to listen to tunes or the news.

### SSB

[Single sideband](#) is the voice mode you'll likely hear the most when you're exploring HF (from 160 meters to 10 meters). It's a subset of AM, but a lot more efficient, as far as required power and occupied bandwidth.

### CW

Morse code is a language made of dots and dashes, and [CW](#) (continuous wave) is the mode typically used for the transmission of the language. While transmitting a continuous sine wave of a selected frequency, the operator opens and closes a switch (key) to form the dots and dashes that make up Morse code.

### FT8

[FT8](#) is a digital mode used to communicate with stations around the world using a weak signal algorithm, allowing the software to detect and acknowledge a communication that's normally far below the noise level of SSB. It's perhaps the fastest-growing HF mode in popularity, since it allows contacts even when sunspot numbers are unfavorable.

### Winlink

[Winlink](#) is an amateur radio messaging system for sending and receiving emails over radio waves. Not



technically a mode, Winlink uses sub-modes such as VARA, ARDOP, and AX.25 to encode its messages. It's been used many times during emergencies to communicate short messages to loved ones, friends, and officials.

### APRS

[Automatic packet reporting system](#) is very popular among those who want to track friends, marathon runners, and aircraft by GPS coordinates being sent. All that's required is a ham radio and computer with a sound card, and the software performs the rest.

### DMR

[Digital mobile radio](#) was a very fast-growing digital protocol for VHF voice communication seen as an answer to the proprietary standards of the day. Today, its growth has slowed, possibly due to its programming complexity and in part due to its characteristically "boxy" sounding audio.

### YSF

[Yaesu System Fusion](#) is a high-speed and versatile Yaesu-proprietary C4FM protocol that's known for clear sound reproduction and reliable data integrity. The installed base of YSF repeaters and users are growing, but at a conservative pace.

### JS8Call

[JS8Call](#) is a keyboard-to-keyboard messaging protocol that uses amateur radio frequencies to communicate the messages similar to the FT8 protocol.

### D-STAR

[Digital Smart Technologies for Amateur Radio](#) is an Icom-proprietary VHF and UHF digital mode, most commonly used for the 2-meter, 70-cm, and 23-cm bands. It enjoyed great popularity at one time, but recent years have seen its use diminish, possibly due

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to inability of its expensive codec to be ported to radios of other manufacturers.

### AllStar

[AllStar](#) is a software-based system that connects amateur radios worldwide via the internet through a cell phone or computer using VOIP (voice over IP).

### PSK31

[PSK31](#) (phase-shift keying, 31 baud) is a popular digital mode for sending and receiving text messages during contests and Field Day due to its narrow bandwidth and usability during poor propagation conditions. Its usage is quickly being replaced by FT8 and JS8Call among major enthusiasts.

## Outdated or rare modes

There are a number of amateur radio modes that are not seeing nearly as much use as in past years, typically because their usefulness has been superseded by more modern modes and protocols.

### AM

[Amplitude modulation](#) is the same mode used by AM broadcast radio stations. Prior to the advent of SSB, AM ruled the amateur bands, but was soon replaced by the more efficient mode we use today. It's still permitted on amateur bands, but you'll rarely hear it.

### RTTY

[Radio teletype](#) is a mode that allows two computers with sound cards and RTTY software to communicate text messages over the internet. Once very popular, RTTY has largely been replaced by faster and more robust digital modes.

### PACKTOR

[Packet AMTOR](#) is a digital radio mode for sending text messages, and provides the underlying protocol for Winlink.

### JT65, JT9

[Dr. Joe Taylor](#) created several experimental weak-signal modes for decoding signals below the noise floor. These were forerunners of the currently popular FT8 and FT4.

### Olivia

[Olivia](#) is a digital protocol that uses MFSK to support RTTY for sending and receiving messages during less-than-ideal band conditions.



### ATV

[Amateur television](#) is a FSTV (fast-scan television) mode for transmitting images over amateur radio bands.

## Other modes

The remaining modes can either be classed as experimental or underlying support for some of the other modes.

### IRLP

[Internet Radio Linking Project](#) connects VHF / UHF repeaters together using VOIP nodes on the internet. Typically, an operator gets onto a VHF repeater like usual, then punches in a DTMF code on his radio to reach the node number, and sometimes an access number. He or she can then communicate by voice with any other IRLP repeater across the globe.

### EchoLink

[EchoLink](#) allows a licensed amateur to use a cell phone that has the EchoLink app installed, to communicate by voice with any VHF / UHF repeater that has an EchoLink node installed.

### ASK

[Amplitude shift keying](#) is a low data rate mode that combines digital information with AM.

### FSK

[Frequency shift keying](#) is a low data rate mode that combines digital information with FM.

### MFSK

[Multiple frequency shift keying](#) is a variation of FSK that uses more than two frequencies, and forms the underlying protocol for many modern modes, such as FT8.

Anything to add? Email [editor@utaharc.org](mailto:editor@utaharc.org)