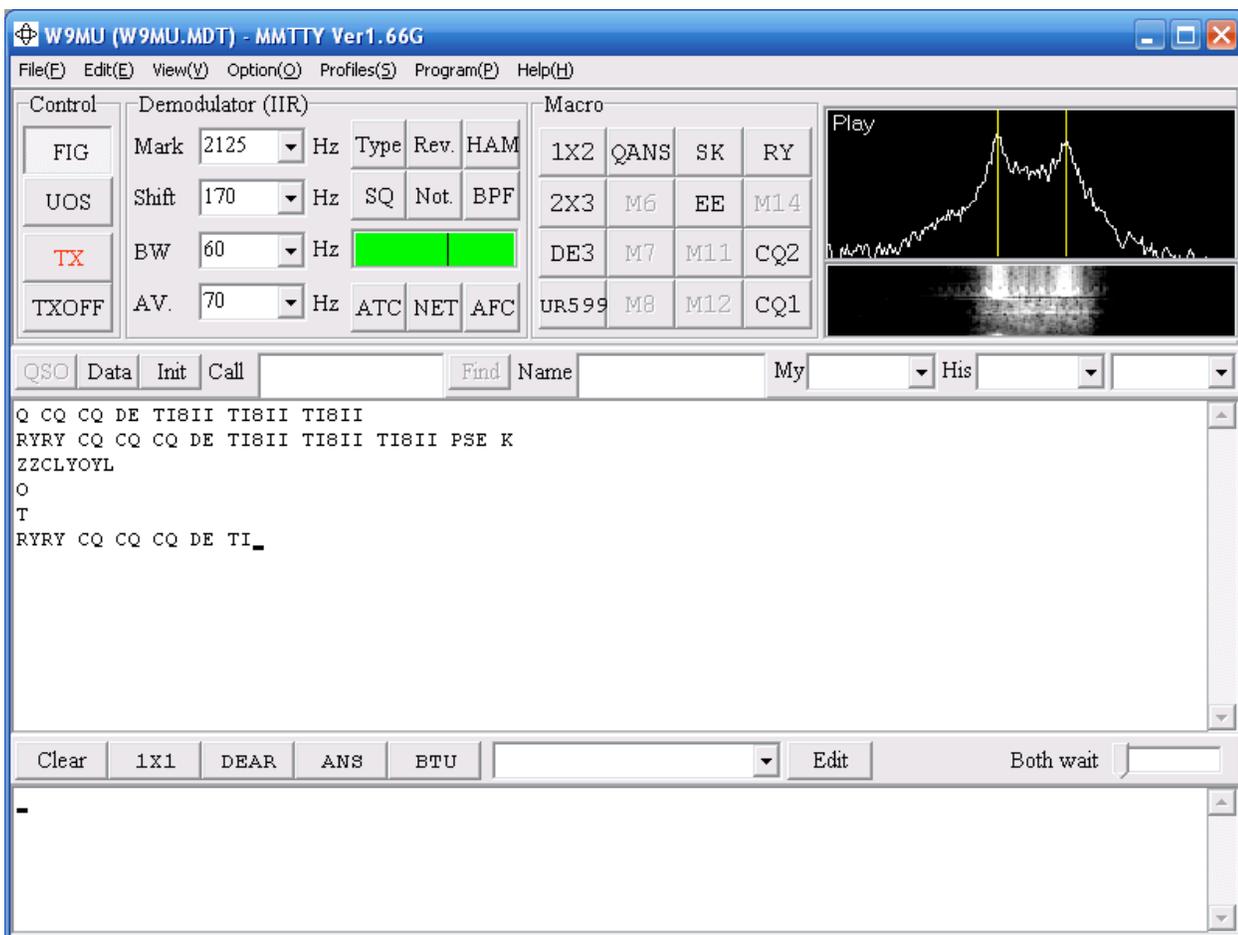


AFSK vs FSK

There tends to be a lot of confusion between AFSK and FSK for RTTY operation. The confusion arises because with a SSB transmitter using audio tones to modulate the transmitter looks just like the output you get when the transmitter is used in the FSK mode.

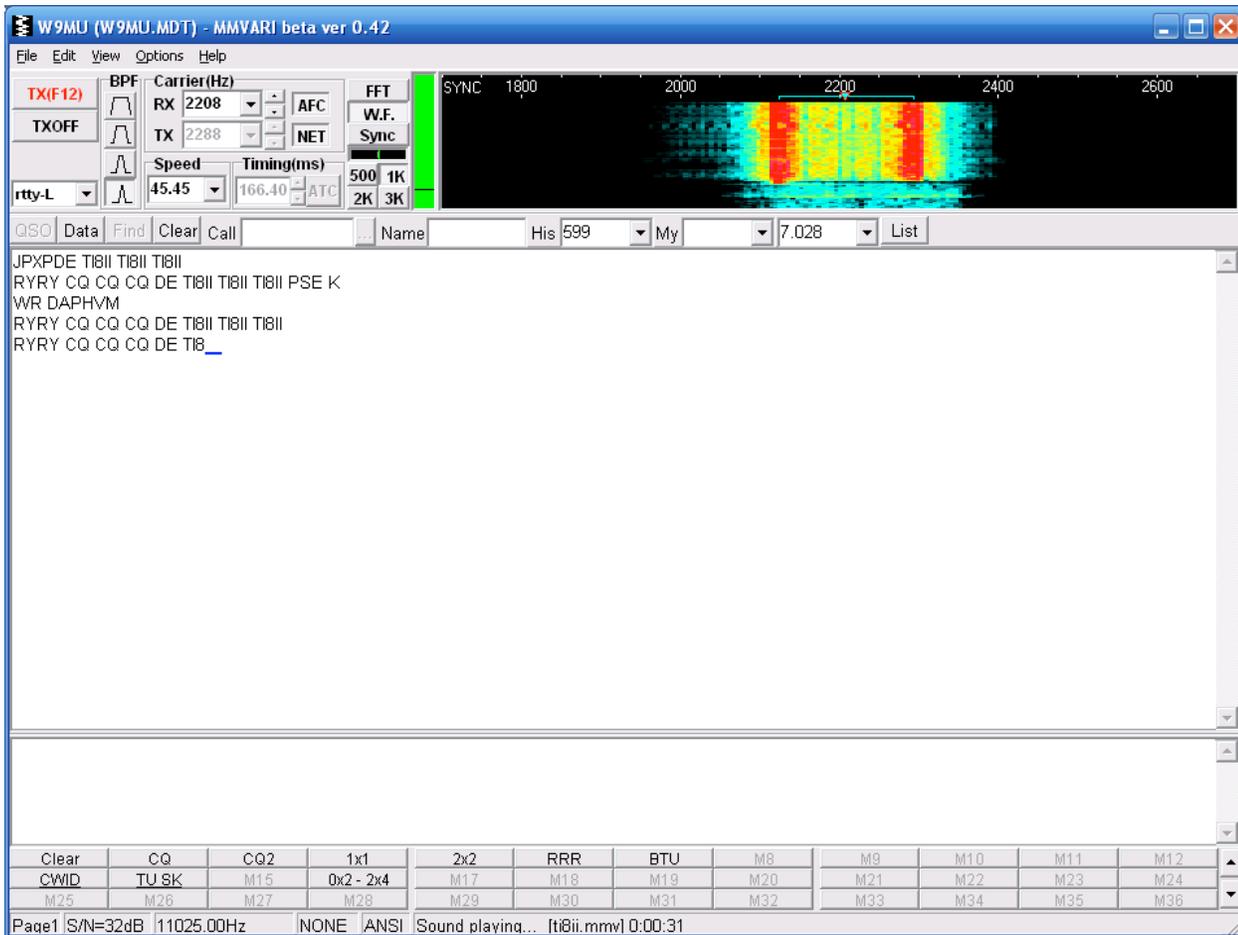
FSK or frequency shift keying simply take the transmitter and keys up a carrier and then changes the frequency of the carrier slightly. In the case of amateur RTTY the carrier is shifted 170 hz. The RTTY information signal is just a stream of one and zeros (or on's and off's) and the unshifted carrier represents one of those conditions and the shifted carrier the other. So if you were to look at RTTY signal in the frequency domain you would just see two spectral lines on representing the one input condition and the other representing the zero input condition.

In RTTY the one is usually called the mark frequency and the zero the space frequency.



As can be seen in this display window from MMTTY there are two peaks representing the mark (one) and the space (zero). This is a spectral display of a RTTY signal. The other way of seeing the signal is with a waterfall display.

In the display above the peaks being over the yellow lines indicates a "tuned in" signal.



This is a typical waterfall display showing the mark and space RTTY signal.

Now to the main idea. These RTTY signals have a mark and space and it is created by shifting the carrier as in FSK system. If you apply two shifting audio tones to an SSB transmitter you get the same signal that you would have with FSK. The trick is to convert the RTTY information signal, that is the string of one's and zero's to two audio tones representing mark and space. It is as if you took an audio carrier and shifted it 170 HZ and then applied that to the input of the SSB transmitter. The SSB transmitter effectively shifts the tone to the appropriate RF frequencies. That is AFSK.

The net effect on the receiving end is the same and it would be hard to tell if the signal was AFSK or FSK by looking at the spectrum. Detections circuits treat the signals the same when it extracts the received data.

You may use either system with RTTY and the computer will generate both signals. An audio signal is generated by the sound card for AFSK and the proper digital signal is sent to a com port for FSK. Depending on your radio interfaces audio can go into the microphone input (not recommended) or a separate audio in. Many radios have a separated FSK input on the back and this is very convenient because you don't have to worry about the levels into the radio as you do with audio in's.

Also helpful to look up Teleprinters and Radio teletype in Wikipedia. Good articles.