[Ham Basics](#) [About The Test](#) [References](#) **Study Sections**

Under Construction: VA7FI is editing this section, please do not edit it until this notice is taken down.

Recall

- [Modulation](#)

Receivers

There are three main characteristics of a receiver: sensitivity, selectivity, and stability.

Sensitivity

A signal is always accompanied by some sort of noise, and very roughly speaking, if the signal is stronger than the noise, then it can be heard. To quantify this, we use a term called 🔊 [Signal-to-Noise Ratio](#) (SNR or S/N):

$$\text{SNR} = \frac{\text{Signal}}{\text{Noise}}$$

Since SNR is a ratio:

- If SNR > 1, then the signal is stronger than the noise.
- If SNR = 1, then the signal and the noise have the same strength.
- If SNR < 1, then the noise is stronger than the signal.

Like other ratios, we often express SNR in [decibel](#) so that:

- If SNR > 0 dB, then the signal is stronger than the noise.
- If SNR = 0 dB, then the signal and the noise have the same strength.
- If SNR < 0 dB, then the noise is stronger than the signal.

Now back to the receiver. The sensitivity of a receiver is its ability to pick out weak signals from the noise. That is, it indicates how faint an input signal can be and still be successfully received by the receiver.

For example, here's the specs sheet from the IC-7300:

For example, a receiver with a sensitivity of -123 dBm can pick out a signal of 0.0000000000005 mW.[1]

Selectivity

Recall from the intro section that radio signals always take up some bandwidth on the radio spectrum:

- 🔊CW takes the least amount of "space" because it's essentially just a single note being turned on and off.
- 🔊RTTY is a digital mode that uses two notes to represent 0s and 1s, thus it takes a little bit more space than CW, but not as much as
- SSB, which needs about 2.7 kHz of space to encode human voice.
- FM, needs about 20 kHz, which is why FM radio stations sound better than AM radio stations.
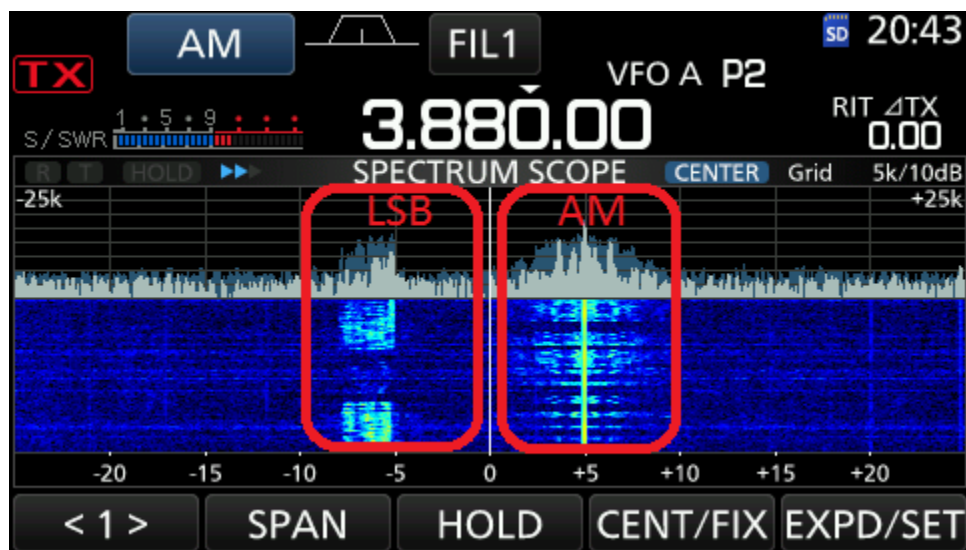
Now back to the receiver. The selectivity of a receiver is its ability to pass only the signal of interest and reject everything else.

Stability

Transmitters

Questions

- B-003-009-001 → B-003-008-006

[1)]

-123 dBm = $10^{-12.3}$ mW ≈ 5 × 10^{-13} mW

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