Ham 153 - Rs signal report

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How's my signal? This is perhaps the most asked question in ham radio?

As we have pointed out many times, a fundamental application of ham radio is experimenting or research. This includes determining how well a signal is working with a particular set of equipment, installation, and conditions. The question of signal strength is the primary way that the non-commercial radio community evaluates signal quality.

The signal strength is usually pretty subjective with a two number description called "R-S".
R = readability or how well the message is understandable. The scale runs 1 to 5.
S = strength or how far above noise floor. The scale runs 1 to 9.
T = tone is used in CW, but means nothing to voice, so it is not reported.

R S Number	R = Readability	S = Signal Strength
1	Unreadable	Faint—signals barely perceptible
2	Barely readable, occasional words distinguishable	Very weak signal
3	Readable with considerable difficulty	Weak signal
4	Readable with practically no difficulty	Fair signal
5	Perfectly readable	Fairly good signal
6		Good signal
7		Moderately strong signal
8		Strong signal
9		Extremely strong signal

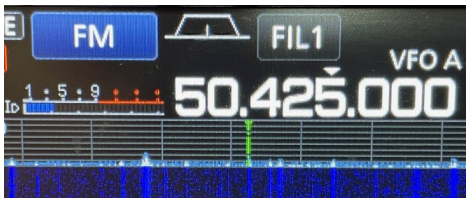
So, a 5-9 signal report would be what? Perfectly readable + Extremely strong signal.
Similarly, a 5-5 signal is Perfectly readable + Fairly good signal.
As you can see, there is very little difference in adjacent signal strength.

As a practical matter, most of the scale is ignored.
Actually, 1 to 5 makes more sense for voice, but that is not tradition.

The S-unit meter on the radio provides a more consistent indicator.
S-unit = signal unit.
1 S-unit = 6 dB

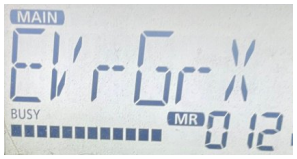
1 S-unit = 6 dB = 4 times power.

Changing power by 3 dB = doubling the power.
Going from 5 W to 10 W = doubling, so it is 3 dB increase.
Going from 5 W to 20 W = doubling twice is 6 dB. That is only 1 S-unit. So, it is barely distinguishable.
Going from 5W to 50 W = 10 dB, not even 2 S-Units.



Observe the color photo of an HF radio.
The scale to the left of the 50 MHz frequency is the S-units.
The blue bars are about S3.
Looking at other frequencies across the band, the noise floor is about S1.
The signal is S2 over noise of S1, so that would be a strong signal.
Since it is FM, readability is most always 4 or 5.
AM and Sideband tend to be noisier and less readable.

Observe the black and white photo of an VHF radio.
The scale to the left of channel 012 is the S-units.
The first 9 bars are each one S-unit.
Each of the last three is for 10 over, just like the HF.



A signal report with S-units is more common on FM.
R-S is used more for AM and SB. RST is used with CW.
But there are no 'you gottas' so you may hear anything.

Does that clarify the usage?

Life is good. Enjoy!