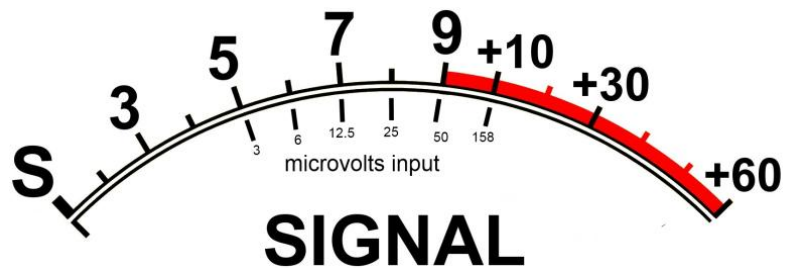


# Understanding Your 'S Meter'

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Most receivers and transceivers boast some form of S (Signal Units) Meter; the indicator type can be a moving coil meter, a bar graph style indicator using LED's or an LCD or even a graphical image on a computer display. In some cases the meter is multi-function and used to measure other parameters like RF power ALC and VSWR. What does this S Meter tell us?



**An S Meter measures the signal level at the antenna input terminals.**

Firstly let us look at the scale. The scale is a logarithmic function and scaled as follows -- S units start at S0 and range to S9, above the S9 point the units are in decibels above S9 and generally in 20 dB steps up to 60dB (some meters read up to 80dB above S9).

S Units	Volts	Power (dBm)
S9+60	50mV	-13
S9+40	5mV	-33
S9+20	500uV	-53
S9+6	100uV	-67
S9	50uV	-73
S8	25uV	-79
S7	12.5uV	-85
S6	6.25uV	-91
S5	3.125uV	-97
S4	1.56uV	-103
S3	0.78uV	-109
S2	0.39uV	-115
S1	0.195uV	-121

A correctly calibrated S Meter reading of S9 is equivalent to a signal of 50uV (or -73dBm) at the antenna-input terminals. A reading of S1 is equivalent to a signal of 0.195uV (or -121dBm) and a reading of 20dB over S9 is equivalent to 500uV (or -53dBm).

Each S unit represents a signal level variation of 6dB or a power difference of four times. For example on an antenna A you are reading a signal at S5 and you change to antenna B the signal reads S6 the improvement is 6dB or 3.125uV. This means antenna B has a gain of 6dB over antenna A.

Correct interpretation of your S Meter can be a valuable tool for station operation. You can use it for antenna comparison, antenna noise measurements, receiver adjustment and of course the passing of signal reports.

Worth noting -- if you are operating your transmitter at a power of 100 watts and you wish to increase the receiving station's signal by 1 S point you will need to increase your transmit power to 400 watts (10 \*Log(<sup>400</sup>/<sub>100</sub> )=6dB). Think about it!

For reference 0dBm = 1mW or 0.225 volts into a 50 ohm load.