



What SWR Means to You

Why isn't your signal getting out? The answer may be right here.

WHEN you start thinking of antenna systems for a Citizens Band or amateur station something called standing-wave ratio, or SWR, is likely to come to mind. A high ratio is bad. A low one (1:1 is the lowest possible) is good. But few of us ever try to calculate the exact effect of SWR on a signal.

Handbooks say the ratio of maximum to minimum voltage along a transmission line is called the *voltage standing-wave ratio*—shortened simply to *standing-wave ratio*. A more graphic definition might say SWR is an indication of how much of a transmitter's output power will get into the antenna.

For instance, if you have a transmission line with an SWR of 3 to 1 and your transmitter is delivering 100 watts of RF, how much signal is actually getting up where it counts?

A quick check of our chart shows an SWR of 3:1 gives you a power transfer efficiency of 75 per cent. So only 75 of your 100 watts is being transferred from transmitter to antenna. The remaining 25 watts is reflected back, dissipated as heat in the feedline and in the transmitter's output circuit.

SWR can change the apparent input impedance of a feedline, making it appear either higher or lower than the characteristic value. RG8/U coax, for instance, has a characteristic impedance of 52 ohms. Even though your transmitter is designed to work into 52 ohms

it still may not be able to transfer maximum RF power into the antenna system if SWR is excessive.

SWR readings usually are taken at the transmitter end of the feedline with special RF voltmeters (SWR meters). More accurate figures can be obtained with an SWR bridge circuit, which is more complicated and more expensive.

Look up your own SWR figure in our chart and then check the matching percentage of power transfer. It just may tell you why you're not getting out as well as you'd like.—Bert Mann —

STANDING WAVE RATIO	PERCENTAGE OF POWER TRANSFER
1:1	100
1.2:1	99
1.4:1	97
1.6:1	95
1.8:1	92
2:1	89
2.5:1	82
3:1	75
4:1	64
5:1	56
6:1	49
8:1	40
10:1	33

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