



An S.W.R. bridge works by sampling the amount of power flowing in each direction along the aerial feeder. This is achieved by the use of a Maxwell bridge transmission line coupler, as shown in above sketch. The reactive arms of the bridge are formed by the distributed capacitance and mutual inductance of the coupled lines. The two sampling lines  $L_1$  &  $L_2$ , shown in the above circuit, are coupled to the main aerial feeds and respectively terminated at opposite ends by  $R_1$  and  $R_2$ , thus providing two outputs which are proportional to the forward and reflected signals present. Diodes  $D_1, D_2$  and capacitors  $C_1, C_2$  convert the sampled signals to d.c. for measurement on a conventional meter  $M_1$ . Potentiometer  $VR_1$  adjusts the sensitivity of the circuit and ferrite beads prevent stray r.f. pick-up in the wiring.

## VSWR meter contd.

### Construction:

The instrument can be built inside a small metal box, which also acts a screen. The depth should be sufficient to hold the meter. A tag strip is mounted so that the end connections are earthed via fixing screws, whilst the remaining ones are isolated. This is best done by using spacers between the screws.

It is important that the physical placement of the diodes, resistors and pickup lines is symmetrical: the better the symmetry, the better will be the electrical balance of the bridge. If matched resistors, diodes and capacitors are used, electrical balance will be even better than is possible with random selected components.

The germanium detector diodes should be matched for similar characteristics using the circuit provided. A pair of diodes should be chosen such that on test there is no appreciable meter deflection as the applied voltage is varied from 0 to 9V.

The coaxial line is made from a 140mm length of low-loss 50 ohms coaxial cable. Its outer P.V.C. sheath should first be carefully removed and the copper braid "bunched" to allow the two sampling lines to be introduced under it. The lines should be of equal length and should run inside the braid, with care being taken to keep them close together with no kinking. They should come out about 20mm from each end of the cable. The sampling lines are to be made from 250mm long 26 s.w.g. enamelled copper wire. For input/output sockets use genuine 50 ohms BNC connector.

### Calibration:

S.W.R	Reverse reading	S.W.R	Reverse reading
1:1	0	2.5:1	43
1.1:1	5	3:1	50
1.2:1	9	3.5:1	56
1.3:1	13	4:1	60
1.4:1	17	4.5:1	64
1.5:1	20	5:1	67
1.6:1	23	5.5:1	71
1.7:1	26	7:1	75
1.8:1	29	8:1	78
1.9:1	31	9:1	80
2:1	33	10:1	82

### Use:

Apply r.f power from the transmitter and adjust potentiometer for a full scale meter reading. Leaving the setting of the VR unchanged set switch to read reverse power: the meter will now indicate s.w.r. directly.

### From Editor:

Dear friends,

As the first year of our society is over and I have completed one year as your editor of 'On the air'. If this very humble approach has succeeded in bringing fellowship and information to the members the entire credit goes to you dear members. Although, there was one "Feed-Back" column in this bulletin but nothing was in the editor's P.O.Box from your end.

With these few words I am signing off as the editor of 'On the air'.

73 dear friends.