

A Homebrew UHF SWR Bridge

By G8MNY

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For work over 300MHz the standard SWR bridge pickup are too large. The clue to going higher in frequency is mainly that of size.

Here is a homemade design I use inside kit at 23cms 1st published 5/93 in UK's BATC CQTV mag No 162 page 25. Although this one was only used @ 24cms the small size enables it to be used at higher frequencies.

INTERNAL SWR BRIDGE FOR 23cms

External SWR bridges and power meters are ways; fiddly to connect up, lossy, & expensive pieces of test gear, that you always need connected when they're not. This bridge design has been used inside "Brick PAs" & "1 Watt exciters".

SMALL.

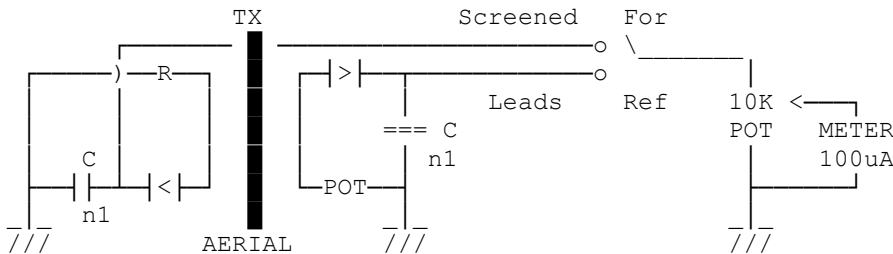
The only difference in a 23cm SWR bridge to a VHF one, is the reduced scale. So if the miniature bridge pickups are small enough, they can be placed over, only a few millimetres of 50 ohm track, which can be found on most PA layouts. As both length of pickup line & frequency determines sensitivity, the small size is not a problem for picking off enough power to drive the meter OK as RF just leaks of the PCB!

COMPONENTS.

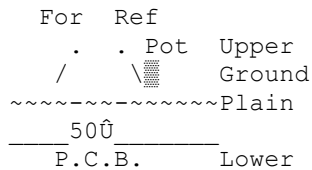
All the components are mounted with minimum lead lengths. There are better diodes than 1N4148, but these do give surprisingly good performance at these frequencies.

The forward signal terminating resistor is not critical, but a very small one should be used in an attempt to get the "100Ω" required at 1296MHz.

The reflected terminating resistor is too critical to guess at, so a very small preset trim pot was used. This was a high value plastic 1k, but worked OK. The RF pickup wires should be about 6mm-10mm long.



EDGE VIEW OF PCB



CALIBRATION.

- 1/ Adjust the calibration pot to give no meter reading on a GOOD LOAD.
- 2/ With reduced output (PA run on 10V) & NO load connected, adjust pickup distances so that forward & reflected give the same reading.
- 3/ As 2 but with a FULL SHORT connected, adjust distances for best compromise in forward & reflected readings.
- 4/ Re-check 2.
- 5/ With full power set the sensitivity pot for FSD.

Meter scale

| | | | | | | | | |
|--------------|-----|-----|----|-----|-----|-----|------|---|
| Deflection % | 100 | 80 | 72 | 50 | 33 | 20 | 8 | 0 |
| SWR 1: | Inf | 9 | 6 | 3 | 2 | 1.5 | 1.2 | 1 |
| Loss dB | Inf | 4.4 | 3 | 1.3 | 0.5 | 0.2 | .035 | 0 |

Why don't U send an interesting bul?

73 De John, G8MNY @ GB7CIP