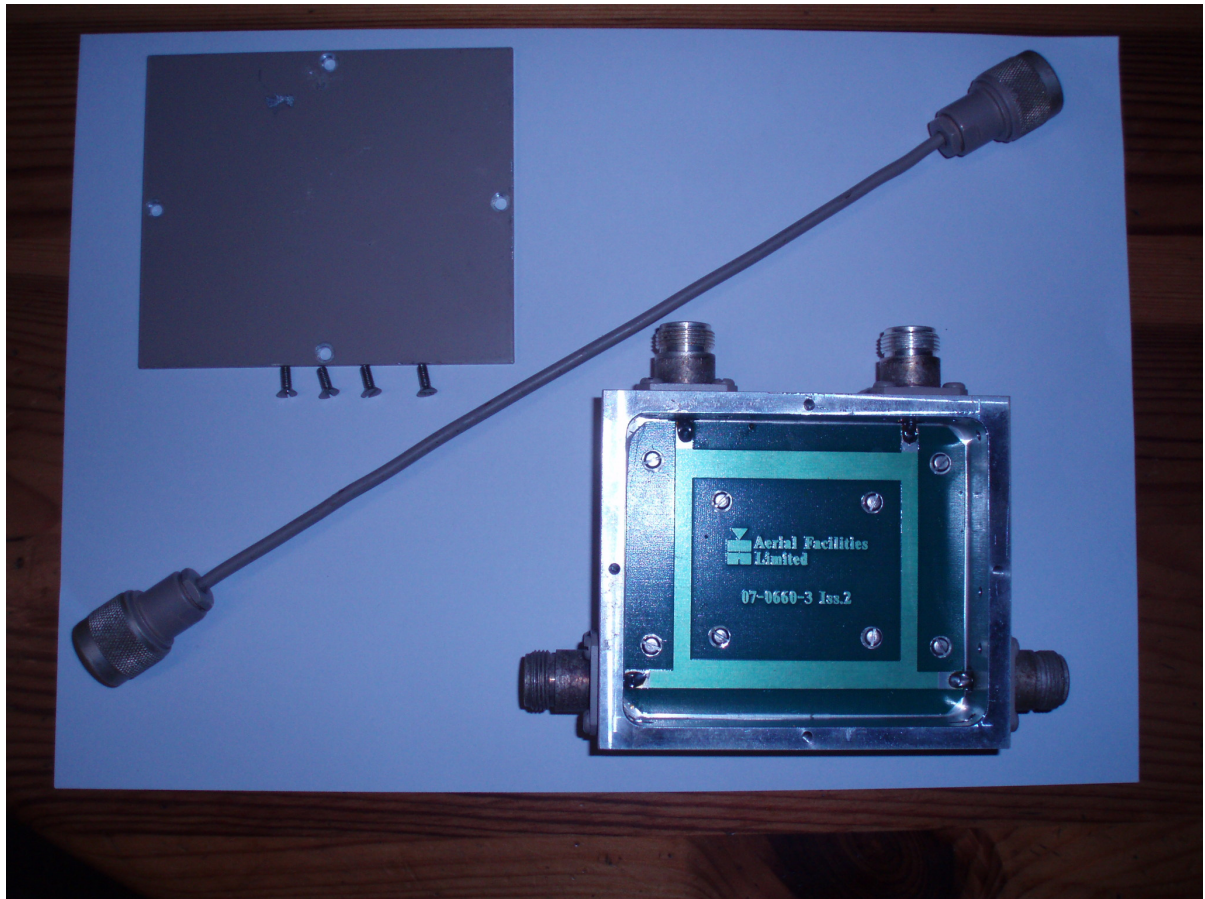


## A 1296mhz VSWR / Power Indicator from junk.

This article, intended for relative newcomers to microwave operating, gives details of how to make a VSWR / power indicator cheaply from industrial junk. Commercial VSWR / power meters for 1296mhz tend to be rather expensive; by this route a unit can be made for less than £10.

At the Sheffield RT in July this year, one trader (Ref. 1) was selling an interesting 4 port combiner / splitter. (photo 1). The unit comprised of 4 N bulkhead sockets, a short length of semi rigid with 2 N plugs, a milled enclosure and PCB, made by Aerial Facilities Limited. The unit was intended for around 900mhz---it would not work as intended at 1296mhz. However I thought the enclosure might be useful for other things—possibly to house a filter or for other projects; the N type sockets / plugs alone were worth the cost.

Photo 1

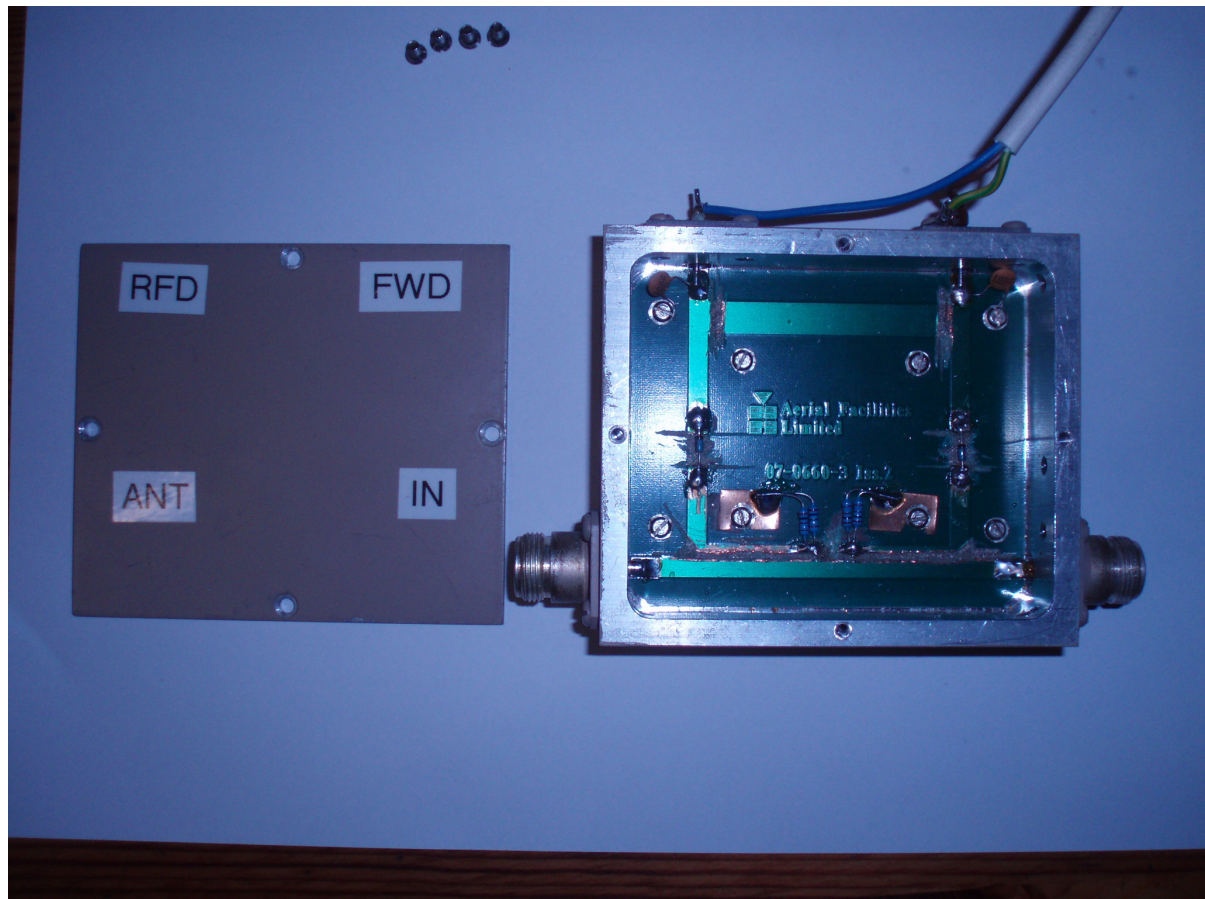


It just so happened that I was working on my 23cm equipment following the Sheffield RT and I was looking to make measurements related to power and VSWR. It occurred to me that I could easily modify the 900mhz combiner / splitter to make a dual directional coupler / reflectometer with which to make VSWR / power measurements.

Photo 2 shows the modified unit---this only took around 30 minutes to complete.

1. Unsolder and remove sockets.
2. Remove PCB.
3. Modify / cut PCB using craft or 'Stanley' type knife as shown.
4. Add a few resistors and a couple of diodes. ( Schottky diodes)
5. Refit PCB in enclosure and install 2 N sockets on 'through line'.
6. Fit covers fitted with 1nf feed-throughs and solder to tracks to diodes.

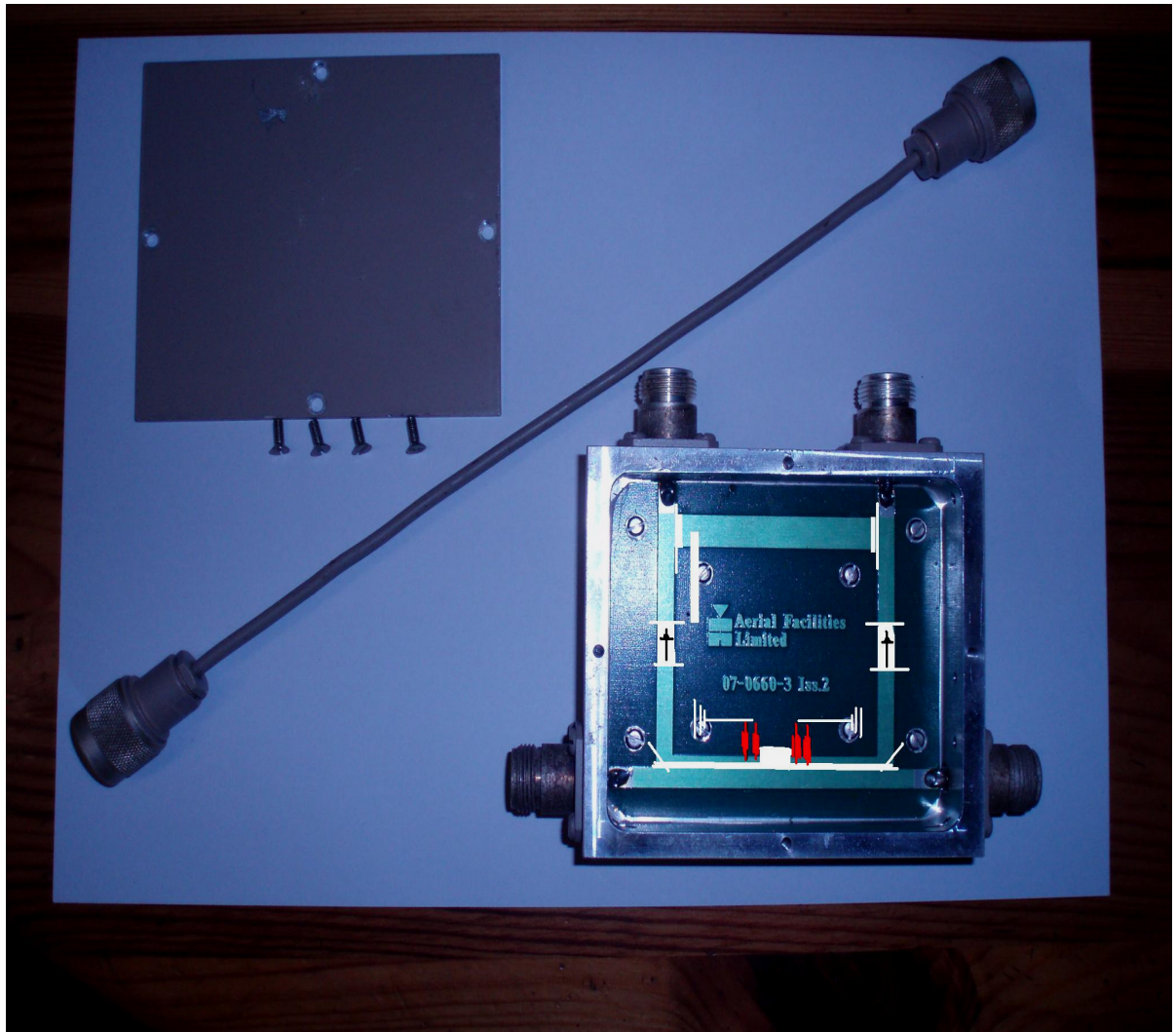
Photo 2



Once modified you will need a suitable meter, a variable resistor and a few other bits like a switch. (See ref. 2, 3 and 4 for details / ideas. Typically the meter should be around 50—100 micro amp, 1k with a variable resistor around 10k but may require some experimentation). I used a meter from my scrap box---it reads Depth below Transducer!!

For readers outside the UK your own surplus dealers may have similar power combiner/splitter units that could also be modified in a similar manner.

Photo 3 gives a clearer view of where to cut / modify the PCB and parts placement.



As modified the unit will work at 1296mhz with powers up to about 25w (coupling lines around 25mm, spacing from through line 3mm). This is ideal for the power from most commercial radios (10w) or transverters with single 'Mitsubishi type brick' PA's.

The unit could be calibrated for power and if you have 2 suitable meters it would display forward and reverse power at the same time. Whilst those readers who have 'been around' sometime will be aware of the shortcomings / problems associated with using directional couplers for VSWR / power measurements, for the newcomer the unit will provide reasonably accurate measurements. In any event its always good to see meters bounce around at the appropriate times; like LEDS incorporate them into your station at every opportunity. : )

1. Finningley ARC
2. VHF/UHF Handbook, 11.3
3. Microwave Handbook, Vol. 2, Test Equipment
4. UHF/Microwave Projects Manual, 11.15