

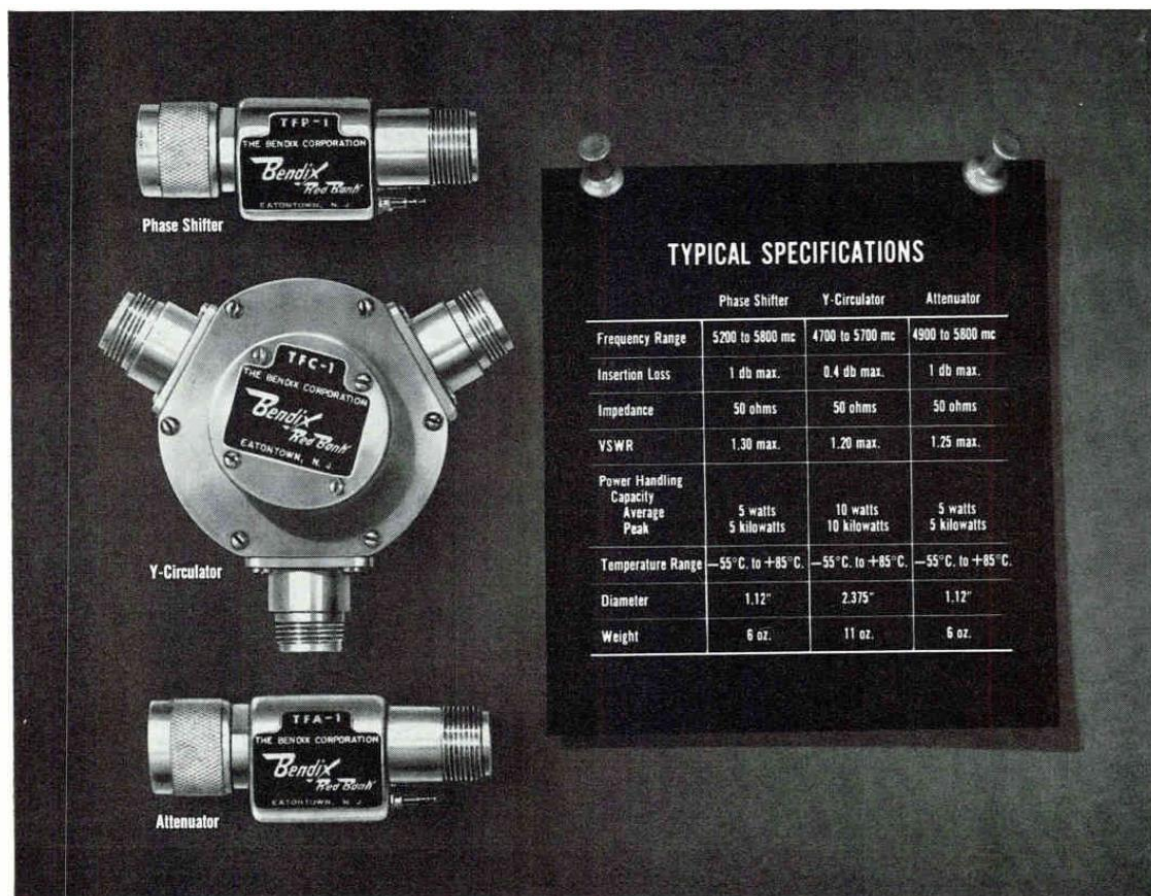
6cm Circulator TFC-6 from Bendix

April 25th 2024, Matthias, DD1US, Rev 1.0

Hi,

Recently a friend gave an old circulator and now I found the time to do some investigations. The part number is TFC-6 from company called Bendix which was located in Eatontown, N.J., USA.

Searching the inter net I did not find any data of this circulator. However, I found an advertisement in the Electronics Magazine from 1960 for a similar device, the TFC-1 from Bendix, Red Bank Division:



NEW BENDIX® MICROWAVE FERRITE DEVICES.* 1 The Electrically Variable Phase Shifter, TFP-1, can produce phase shifts in excess of 90° over a minimum bandwidth of 10%. Chief uses are as phase modulator, fast shift, and in a wide variety of r-f direction finding devices. 2 The Y-Circulator, TFC-1, offers at least 20 db isolation with less than 0.4 db insertion over bandwidth exceeding 20%. Ideal for use with masers, and parametric amplifiers. 3 The Electrically Variable Attenuator, TFA-1, has a range exceeding 25 db over a minimum bandwidth of 15%. Useful in fast AGC circuits and remote level control applications. Write today.

*PAT. PENDING

ELECTRON TUBE PRODUCTS
Red Bank Division
 EATONTOWN, NEW JERSEY



The TFC-1 circulator features a frequency range of 4700 – 5700MHz, an insertion loss of <0.4dB and an isolation of >20dB. Maximum average power is 10W, maximum peak power is 10kW.

The size of the TFC-1 and the TFC-6 is about the same (diameter = 2.375”).

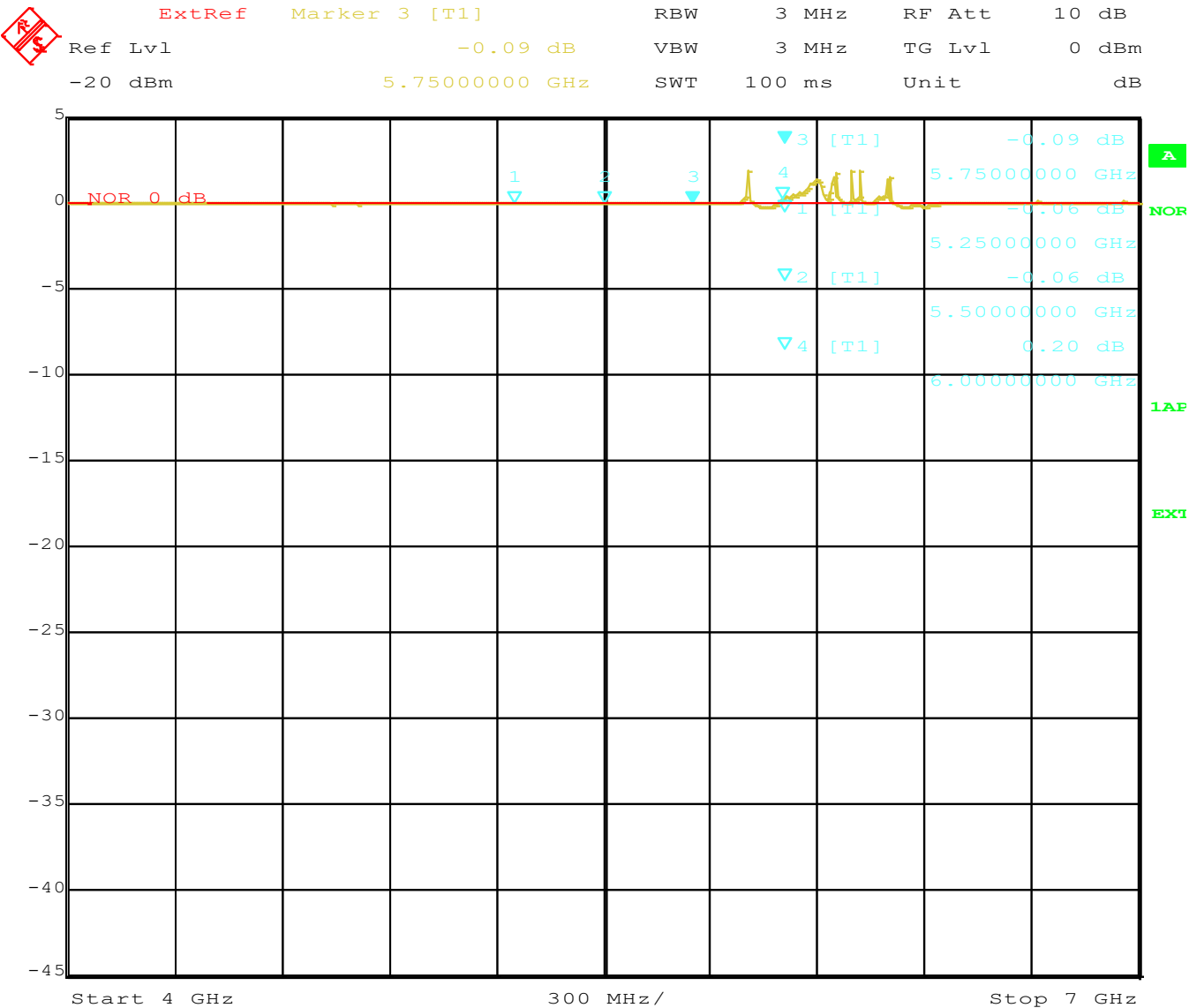
Here are some pictures of the TFC-6, which is in a metal housing with silver plated N-jacks at all 3 ports.







First, I measured insertion loss S21 in the frequency range 4 – 7GHz using my spectrum analyzer with tracking generator.

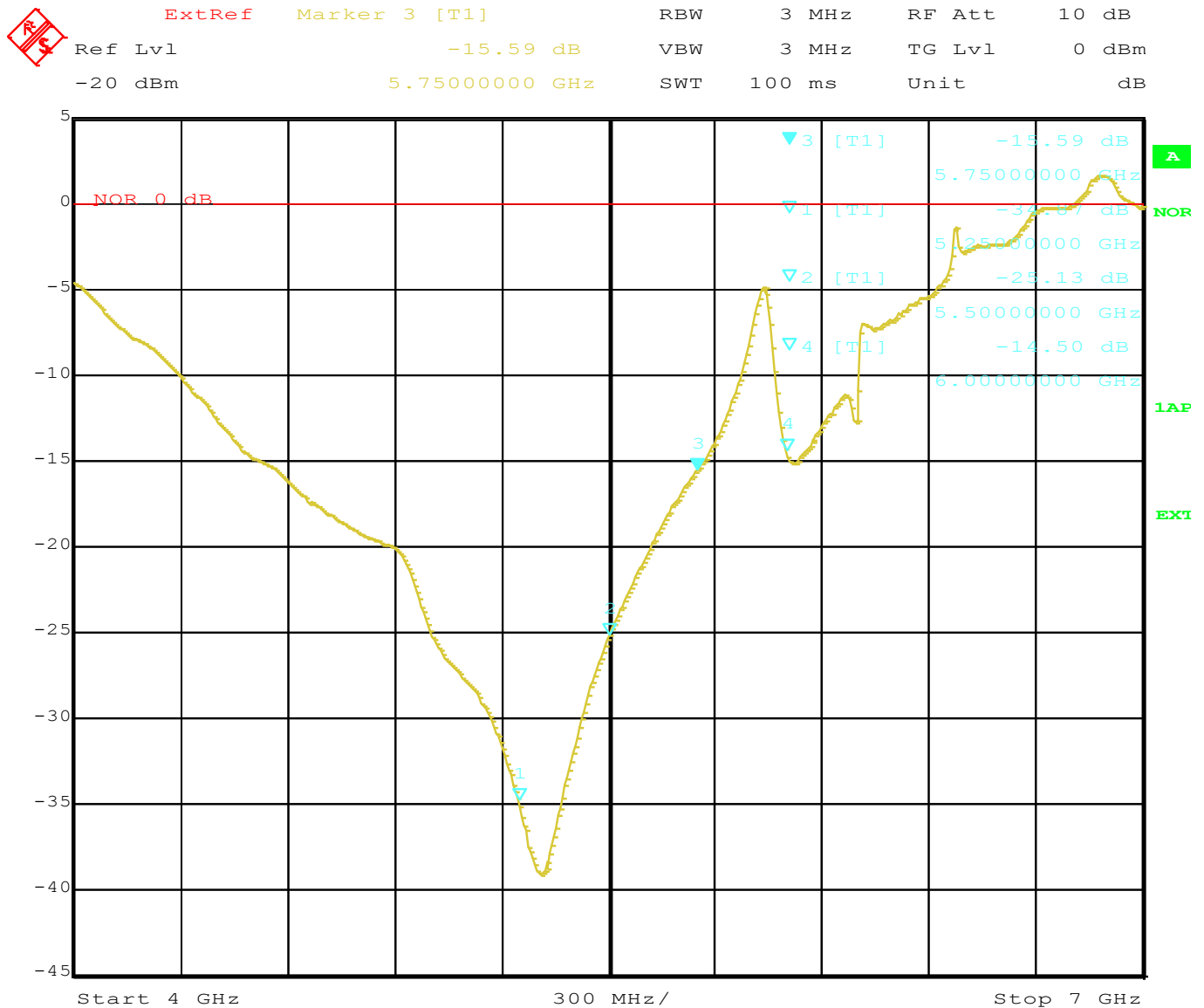


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The measurement uncertainty of the insertion loss is probably +/- 0.3dB but as can be seen in the screenshot S21 is very flat. Please ignore the little peaks in the curve between 5850 and 6350 MHz which are measurement artefacts.

I would estimate that actual insertion loss is <0.3dB in the frequency range 5 - 6GHz.

Next, I measured isolation S12 in the same frequency range.



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Maximum isolation is 38dB @5320MHz. Unfortunately, isolation is already much lower in the next Amateur Radio band (6cm = 5650 – 5850MHz) with about 13 – 17dB.

I have not tried to retune the device in order to shift the maximum isolation to 5750MHz. I may try this sometime in the future.

If anyone has a datasheet and/or experience with such a device, I appreciate any information.

Please send it to my Email address below.

Kind regards

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