

70cm band circulator Kathrein France CHF 05080

Matthias, DD1US, Updated January 15th 2023

Hello,

Recently I was able to acquire a surplus circulator from Kathrein. It is actually a double circulator with one of the circulators terminated acting as an isolator. The unit has the following marking: Kathrein France CHF 05080. The circulator has female N connectors at all three ports.

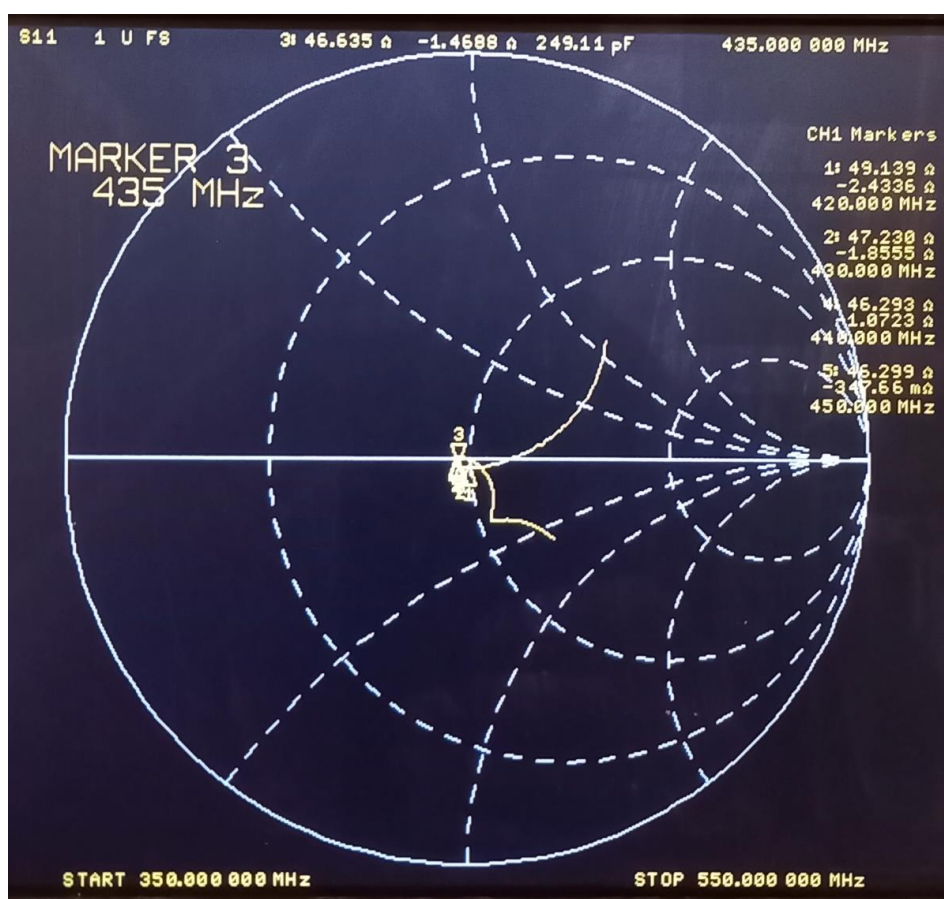
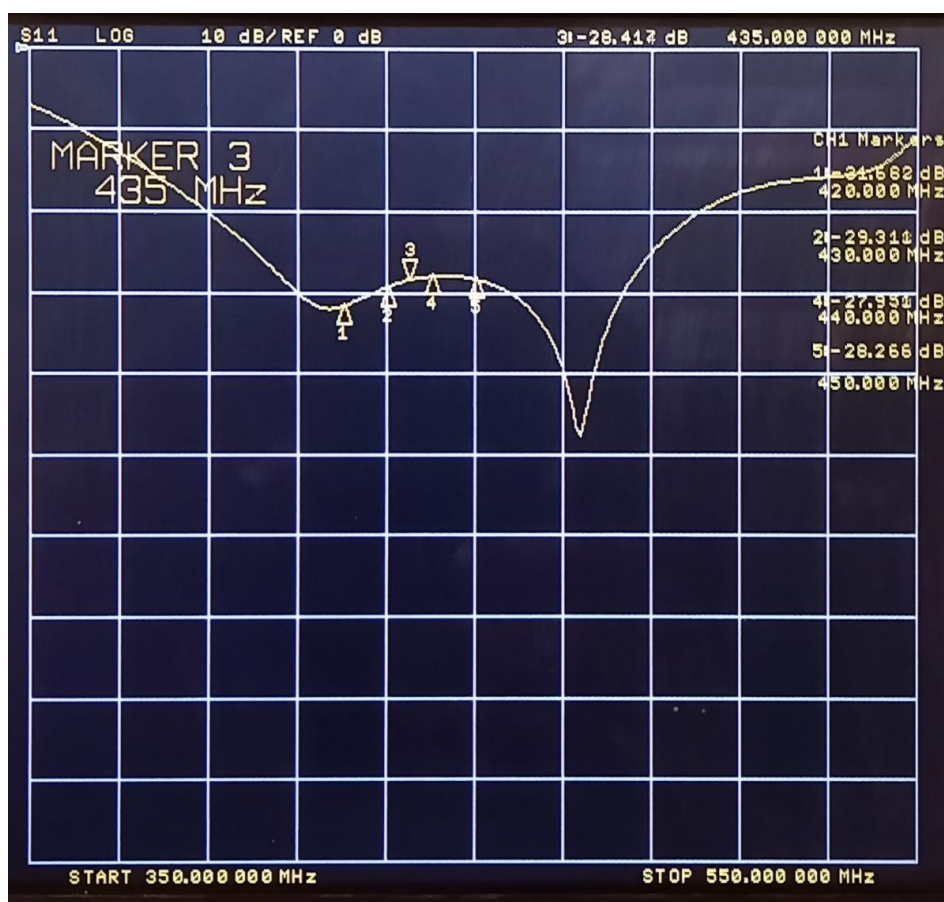
Here is a picture of the circulator:



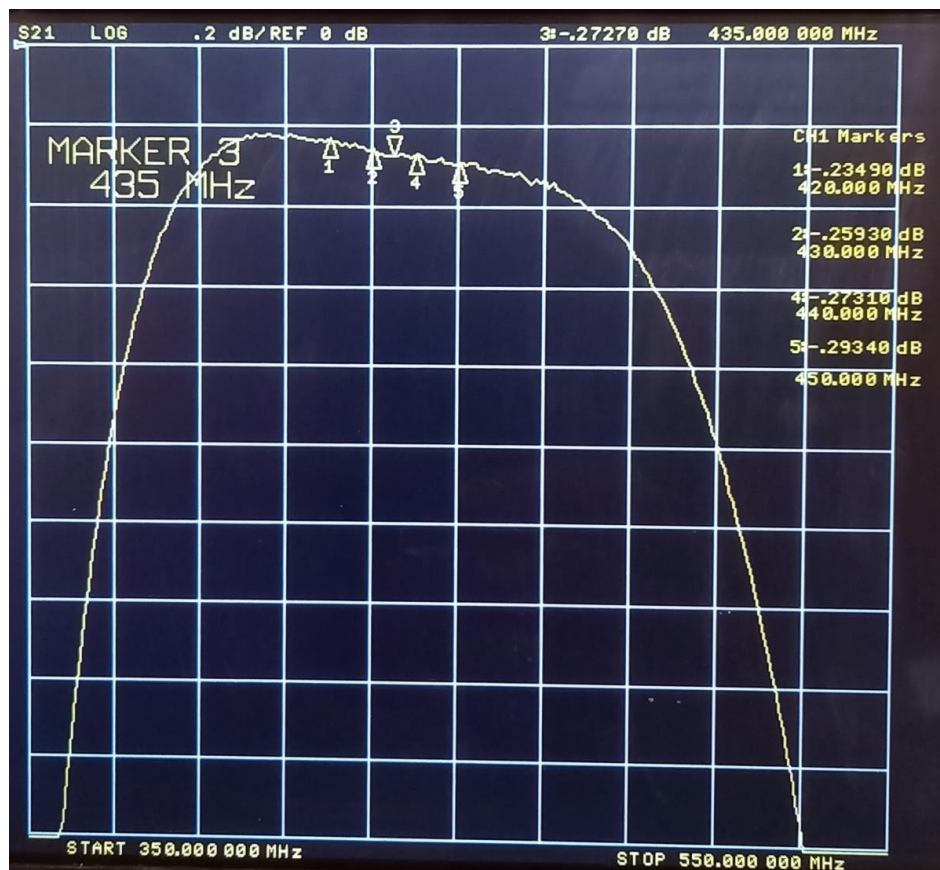
Below you will find some measurement results of this circulator for the 70cm band. In the first series of measurements the 3rd port was terminated with 50 Ohms.



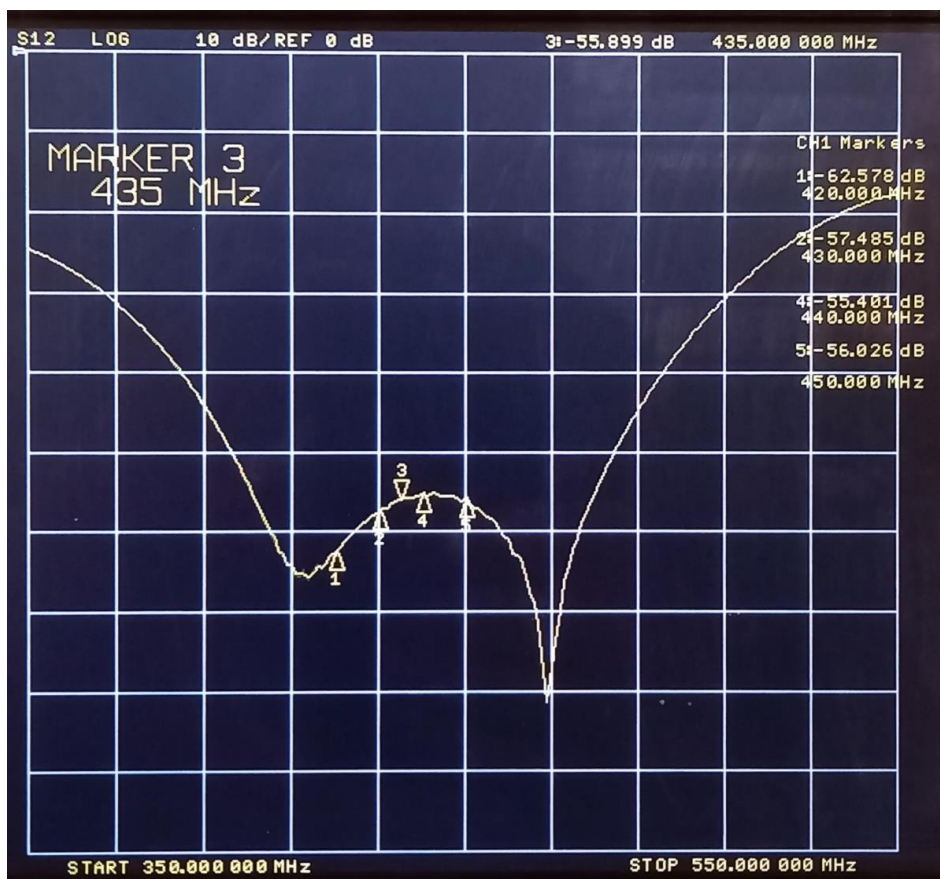
S11 input matching (return loss 28dB@435 MHz)



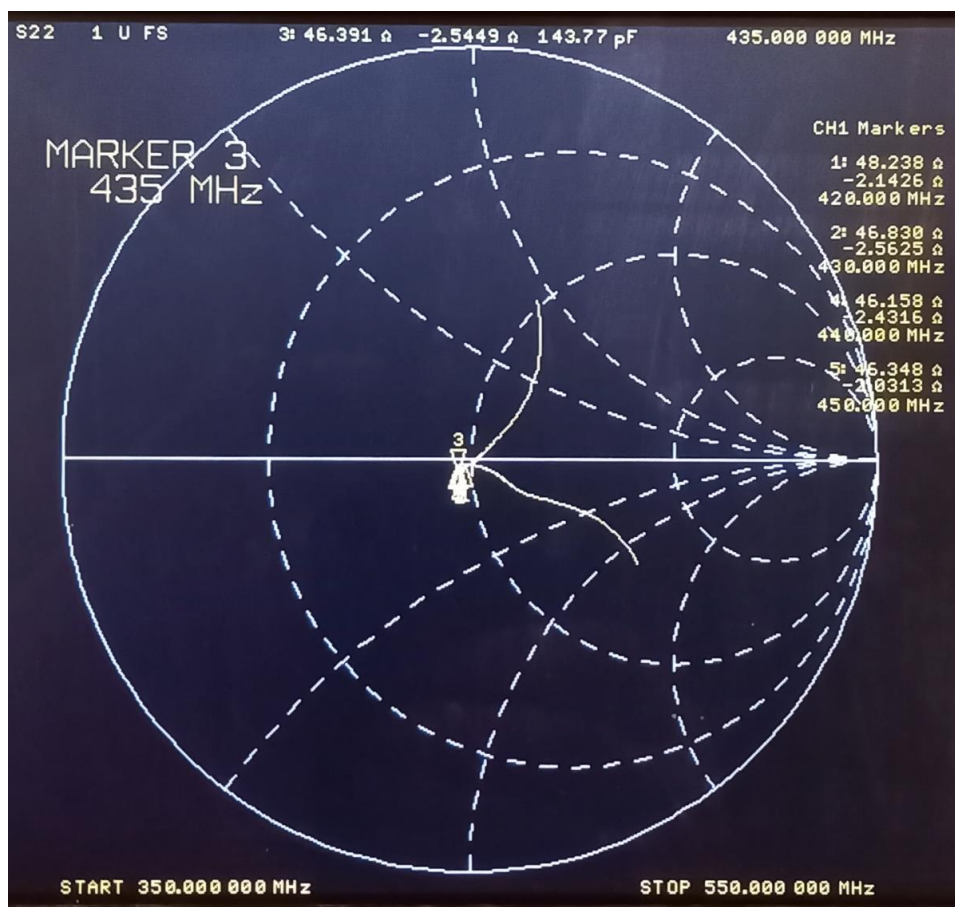
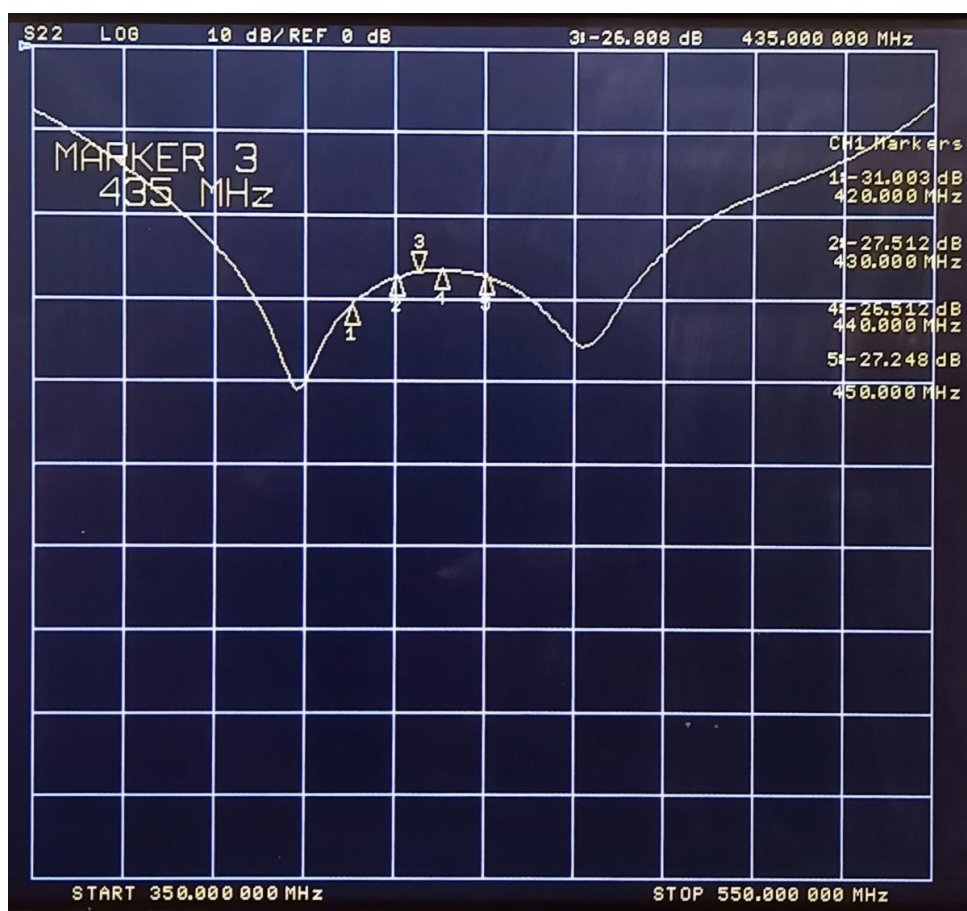
S21 forward transmission (insertion loss at 0.27dB@435MHz)



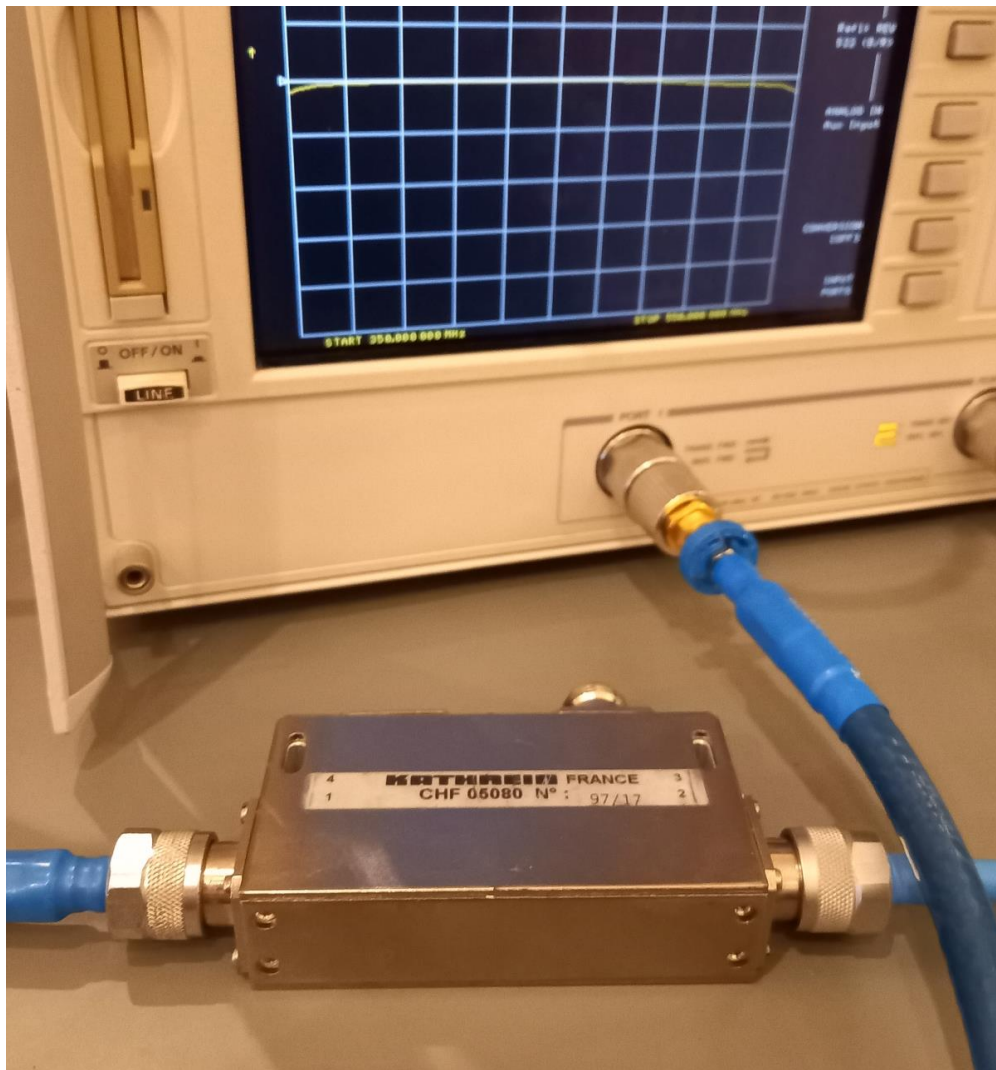
S12 reverse transmission (isolation is 55dB@435MHz)



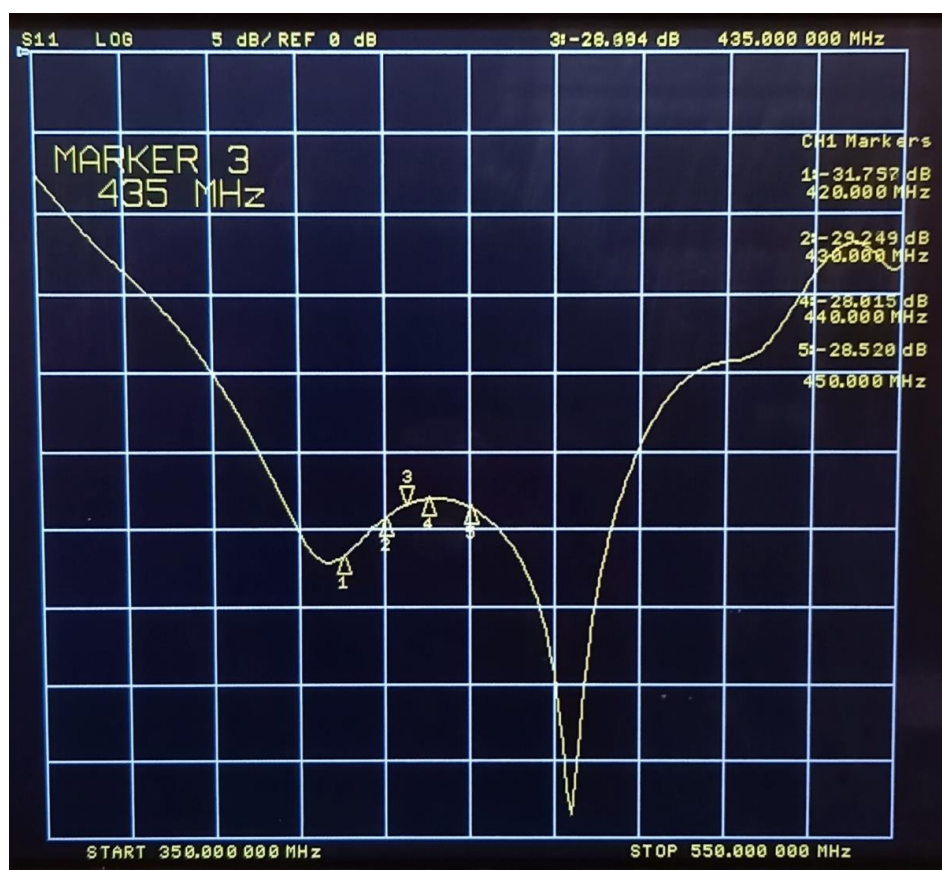
S22 output matching (return loss is 26.8dB@435MHz)



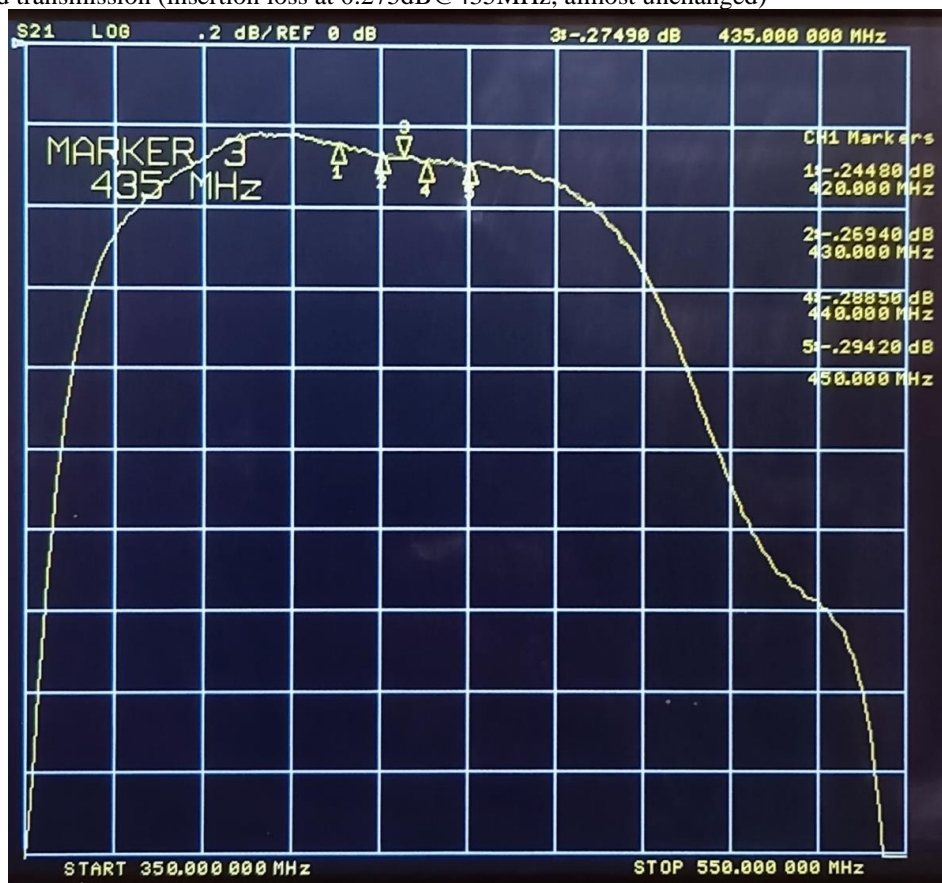
In the second series of measurements the 3rd port was left open.



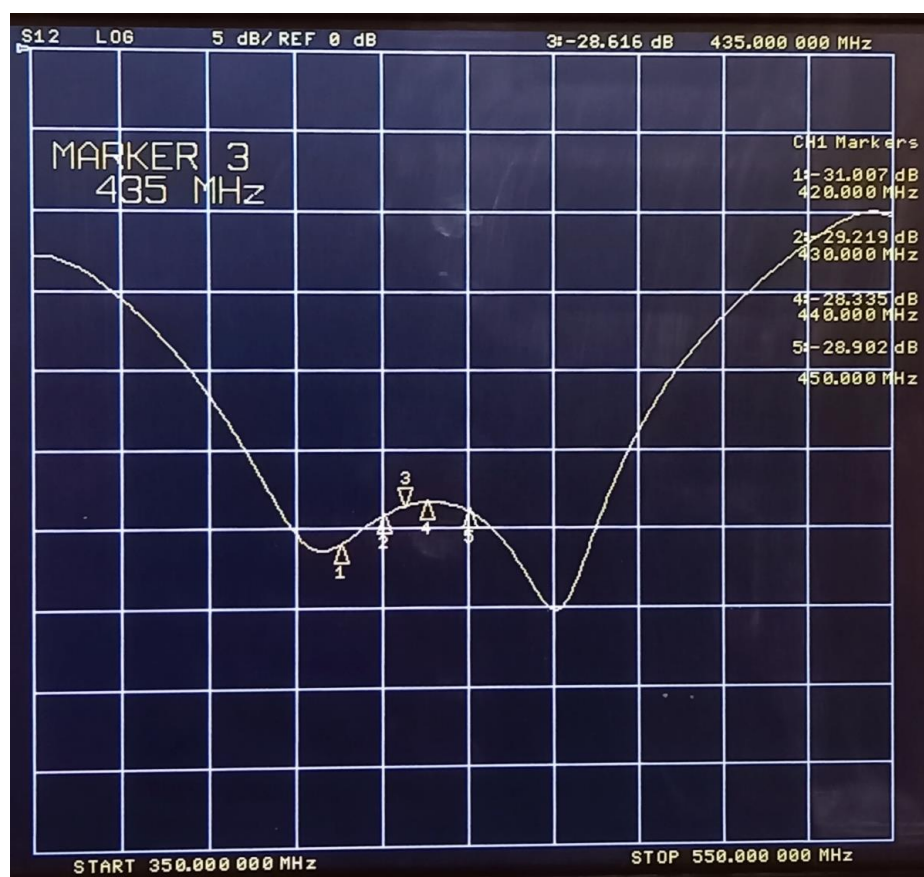
S11 input matching (return loss 28dB@435 MHz, same as with termination of port 3)



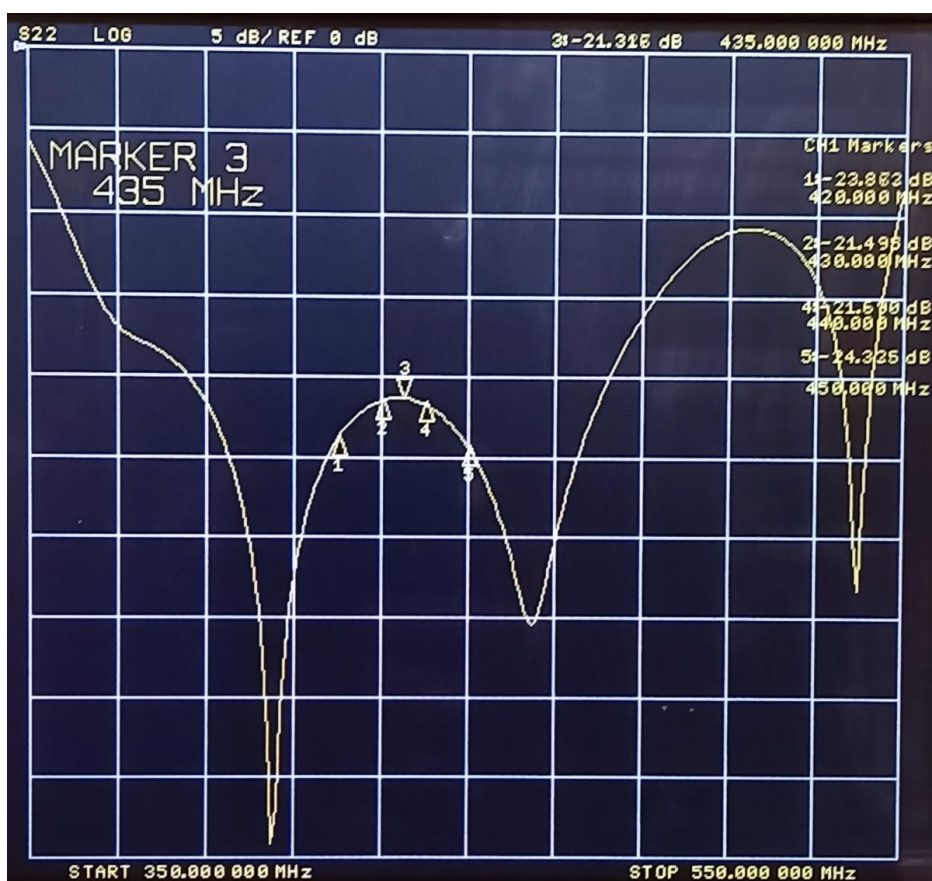
S21 forward transmission (insertion loss at 0.275dB@435MHz, almost unchanged)



S12 reverse transmission (isolation is 28.6dB@435MHz, much reduced due to the open port)



S22 output matching (return loss is 21.3dB@435MHz, also worse than with termination on port 3)



I did not find a datasheet for this circulator. It seems to be similar to the Kathrein 790215 circulator:

Circulator

380 – 430 MHz (TETRA, TETRAPOL)

400 – 470 MHz

KATHREIN
Antennen · Electronic

The circulator can be used:

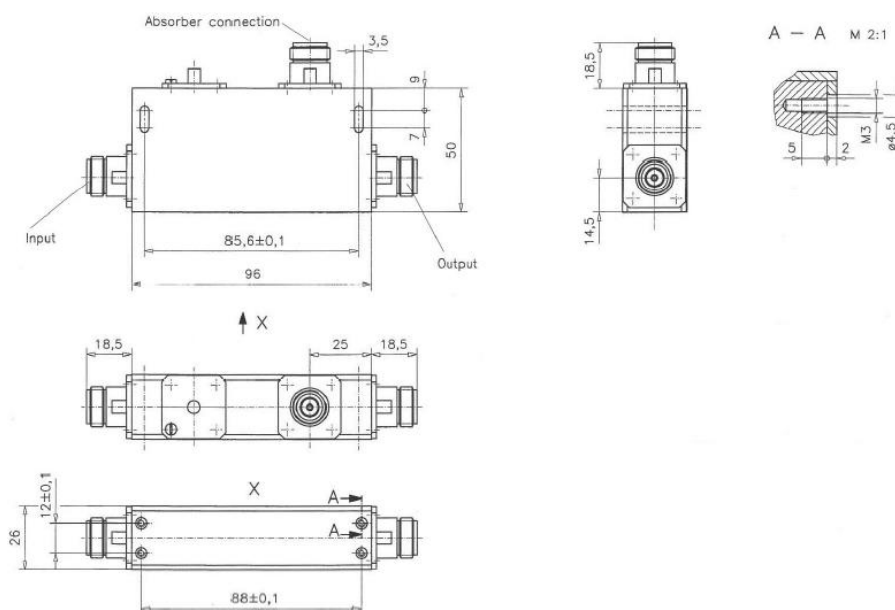
- to increase the coupling attenuation between transmitters, to reduce inter-modulation products,
- to prevent adverse effects of unmatched load impedance on amplifier performance.

Function:

Circulators are nonreciprocal components with low insertion loss in the forward direction (1 → 2) and high attenuation in the reverse direction (2 → 1). The impedance at the input (1) of the circulator is constant and independent of the impedance of the components following, since the reflected power is passed to the absorber port (3).



784 10175
790 215



Technical Data

Type No.	784 10175	790 215
Frequency range	380 – 430 MHz	400 – 470 MHz
Insertion loss 1 → 2	< 0.5 dB (typ. 0.4 dB)	< 0.5 dB (typ. 0.3 dB)
Isolation 2 → 1	> 45 dB	> 50 dB
VSWR 1, 2, 3	< 1.19	< 1.22
Impedance	50 Ω	50 Ω
Input power	< 200 W	< 100 W
Temperature range	–10 ... +55 °C	
Connectors	N female	
Mounting	With 2 screws (M3)	
Weight	635 g	
Packing size	160 mm x 90 mm x 40 mm	
Dimensions (w x h x d)	96 mm x 50 mm x 26 mm (without connectors)	

The measurements show performance equal or in most parameters better than the specification of the 790215 device. This double circulator shows excellent performance in the 70cm ham radio band. The maximum power is 100W.

If you might have a datasheet of the Kathrein France CHF 05080 isolator, I appreciate getting an electronic copy.

I will be happy to answer questions and always appreciate feedback. Many thanks in advance.

Best regards

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