

# Interdigital Bandpassfilter

3 GHz / 50 MHz Mechanical Bandpass Filter



## Specification:

Electrical	Center Frequency	3.00 GHz	Note: Compare with figure one and two.
	Bandwidth	52 MHz	
	Insertion loss	1.00 dB	
	Impedance	50 Ohm	
Mechanical	Number of sections	5	Note: Compare with the drawings.
	Connectors	SMA	
	Dimensions(L x W x H)	146.3mm x 35mm x 25mm	
	Material	Aluminum	

The design was made with the “Interdigital Bandpass Filter Designer” from this website<sup>1</sup>. The rods are made of copper, everything else is aluminum. We use SMA sockets as connections.

<sup>1</sup>) [http://www.changpuak.ch/electronics/interdigital\\_bandpass\\_filter\\_designer.php](http://www.changpuak.ch/electronics/interdigital_bandpass_filter_designer.php)

Problems faced during assembly :

I used aluminum rods but it was nearly impossible to solder them. To avoid this problem we now use copper rods, which work much better.

But the main problem wasn't the material; it was the limited space between the rods and the case (3 mm). For the next Filter it's important to increase this space.

I also had some small errors in the design. I forgot, for example, that the initial and final rods are one millimeter longer. Furthermore I planned to use a Tool which they don't have in the workshop.

With a bit redesign it worked out very well.

The measurements were made with a Rhode&Schwarz ZNB4 Vector Network Analyzer (ETH Number: 03496-14976).

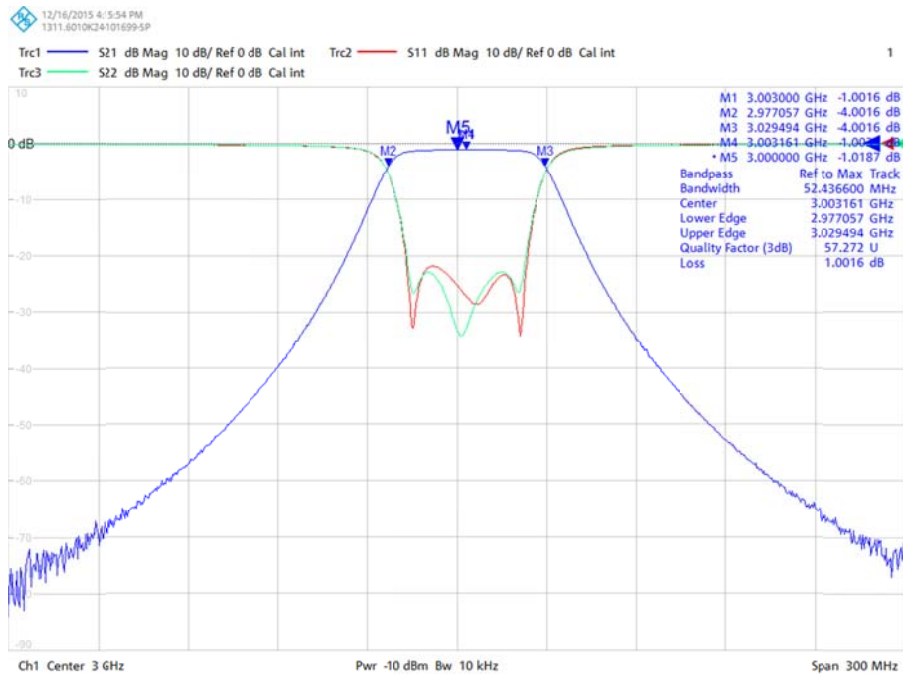


Figure 1: Frequency Response

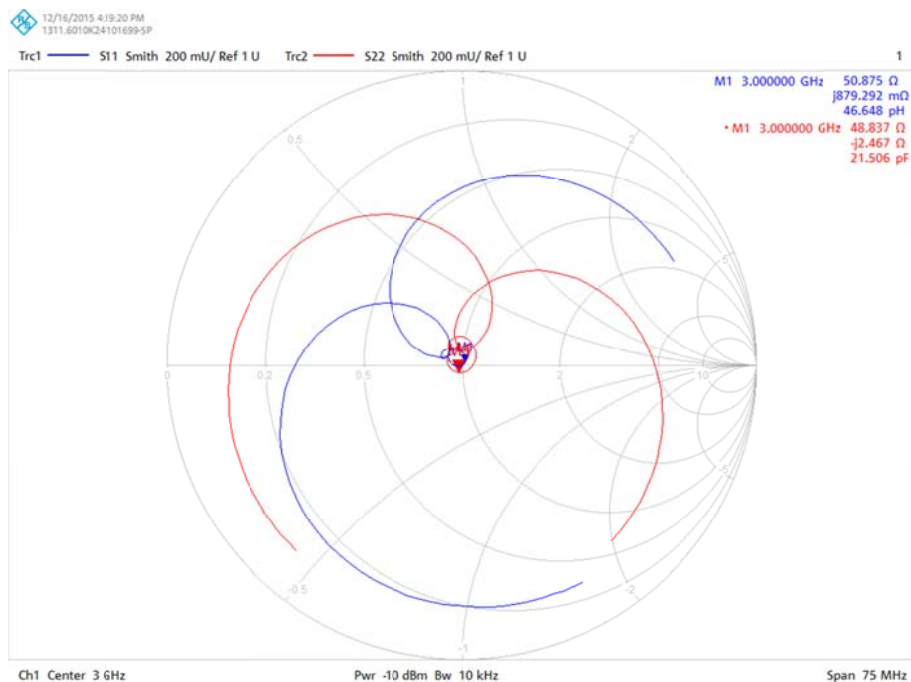


Figure 2: Smith Chart

Dimensions:

