Commercial L-Band Bandpassfilter Lorch 5DF6-1675/R50-S/SM

November 21st 2017 Matthias Bopp DD1US

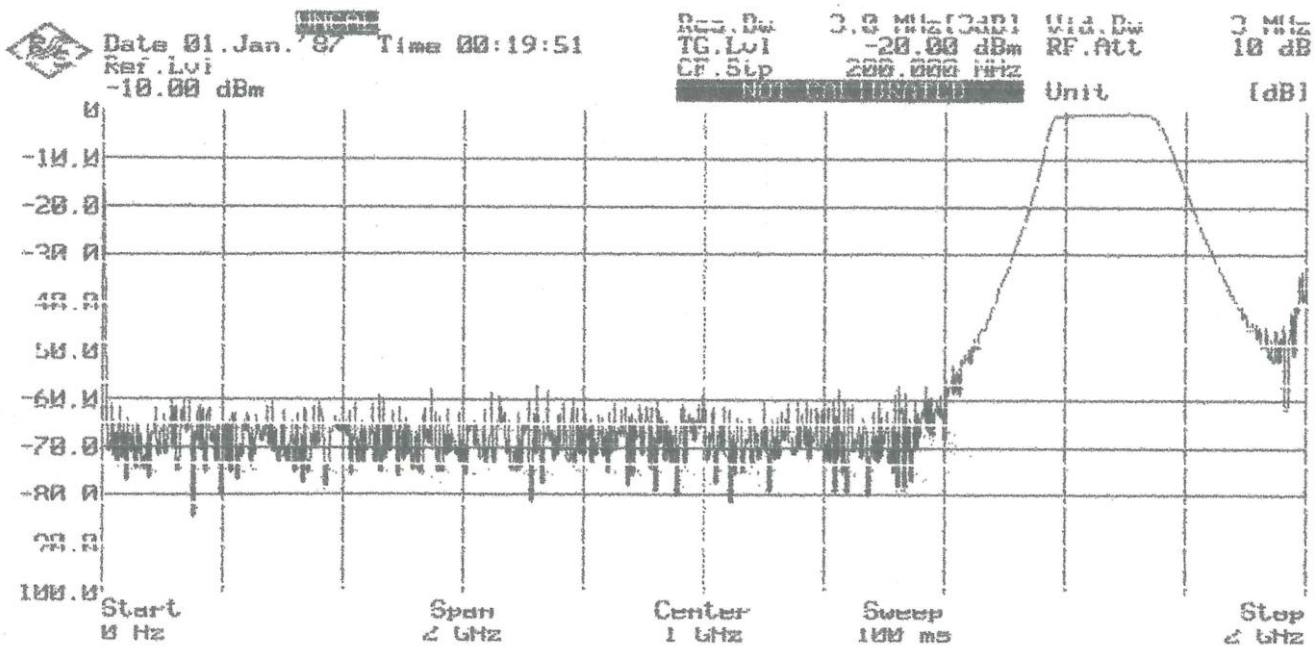
Hello,

two years ago I was already envisioning to give HRPT reception eventually a try and found a used bandpass filter for 15 USD on Ebay. The part number from Lorch is 5DF6-1675/R50-S/SM. Based on the part number encoding of Lorch the following information can be extracted: the filter is built with 5 sections, the center frequency is 1675 MHz, it is an equi-ripple filter design, input connector SMA female, output connector SMA male.

Here is a picture of the filter:

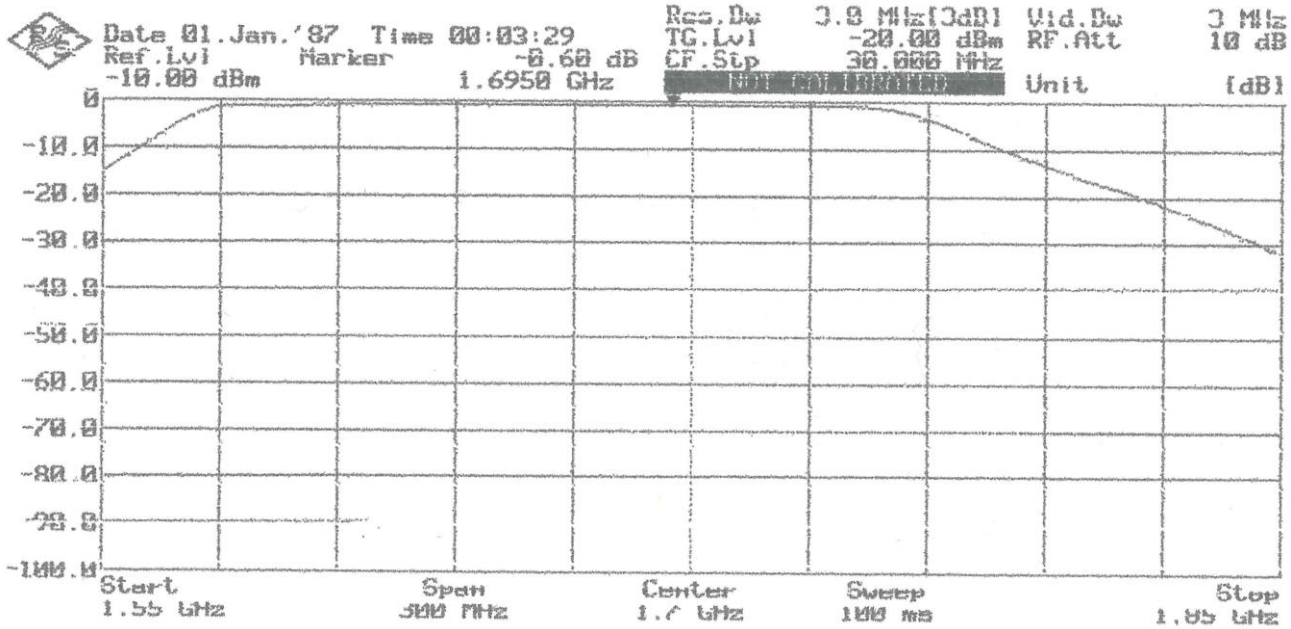
Using the tracking generator function of my FSA spectrum analyzer I measured the insertion loss / selectivity. All measurements were done with a center frequency of 1.7 GHz.

The first measurement was performed with the maximum span my FSA spectrum analyzer is supporting in order to see the out of band rejection of the filter. It is specified up to 1.8 GHz and operates with reduced performance up to 2 GHz. The vertical scale is 10dB/div.



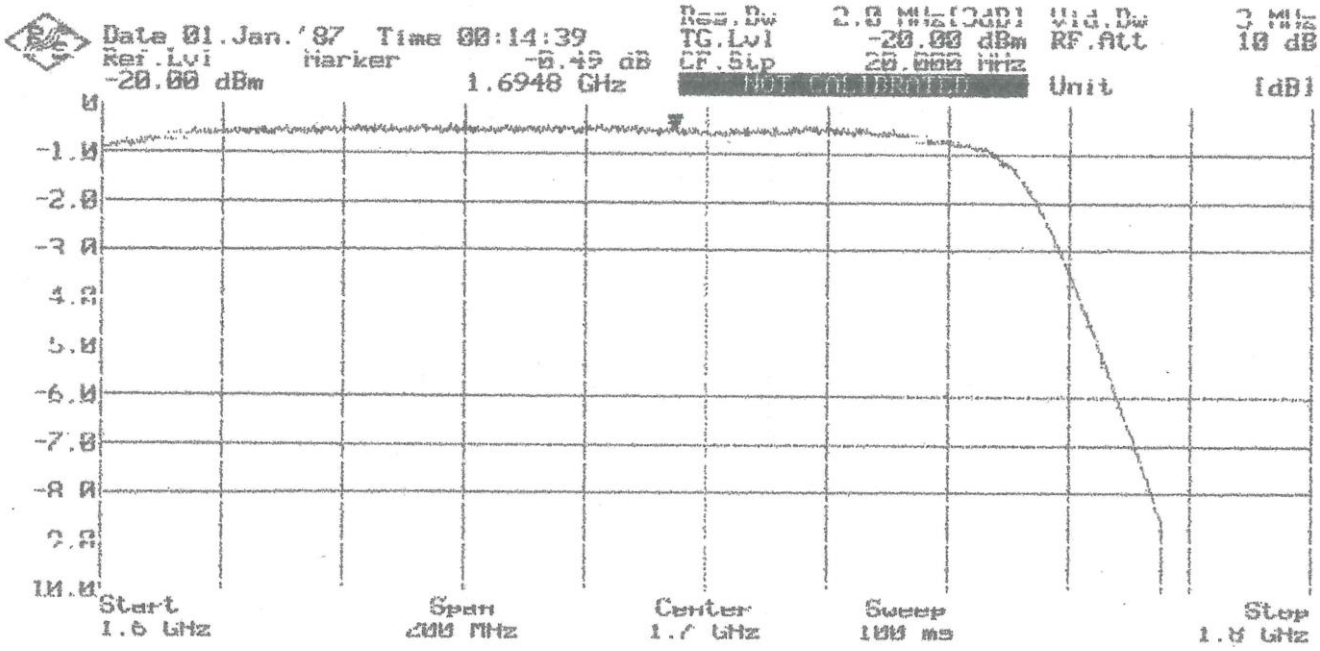
The filter suppresses signals below 1.4 GHz and above 2 GHz with more than 60dB.

The second measurement was performed with a span of 300 MHz so see especially the selectivity of the filter. The vertical scale is 10dB/div.



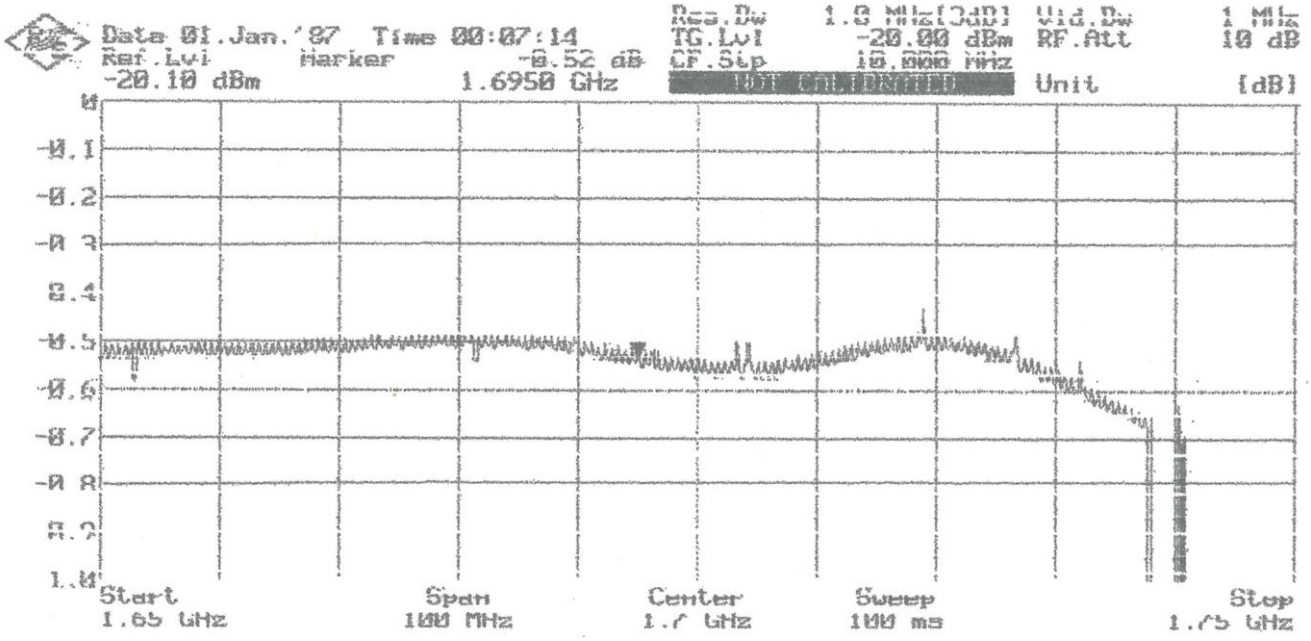
As can be seen the 3dB bandwidth is approx. 170 MHz. The center frequency is as expected 1675 MHz. At 1850 MHz the attenuation is already 30dB and increasing to higher frequencies. The insertion loss at 1695 MHz is 0.6dB.

The third measurement was performed with a span of 200 MHz to see the transfer characteristic within the passband. The vertical scale is 1dB/div.



The ripple between 1620 MHz and 1730 MHz is lower than the resolution in this measurement. The measured insertion loss at 1695 MHz is 0.5dB.

The final measurement was performed with a span of 100 MHz and a vertical scale of 0.1dB/div in order to see the ripple in the passband. Please ignore the measurement above 1735 MHz.



The ripple between 1650 MHz and 1730 MHz is approximately 0.1dB. The measured insertion loss at 1695 MHz is 0.5dB.

I am planning to use this filter as a frontend filter in my L-band weather satellite receiver setup.

I always appreciate feedback and additional information. Please send them to the Email address given below.

Best regards

Matthias Bopp

Email: dd1us@amsat.org Homepage: www.dd1us.de