

Description of the LTE Blocking Filter 67510

Matthias, DDIUS, April 23rd 2018

Hello,

Recently I bought one of those cheap LTE blocking filters to give it a try. You can find them easily in the internet, for instance on Ebay. The part number is 67510 and in Germany it is sold by Wentronic GmbH.

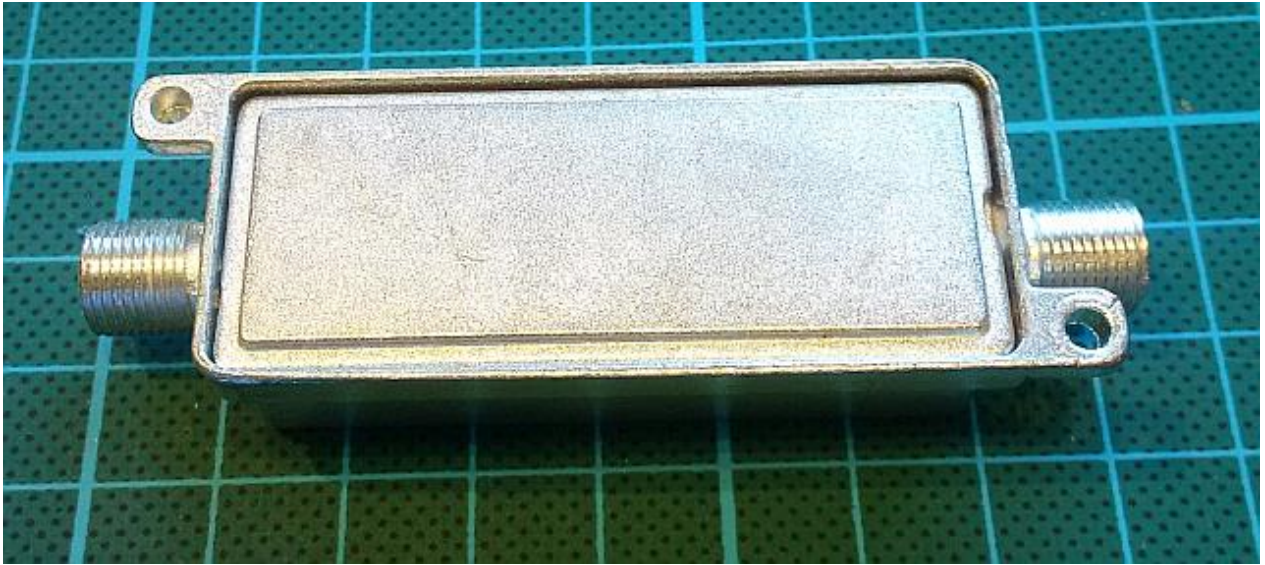
The filter has F-jack connectors for input and output which suggests that the filter is designed for a 75 Ohm system.

The passband is specified to be 7-790 MHz with an insertion loss of typically 1dB.
The stopband is starting at >820MHz with a specified rejection of 50dB.

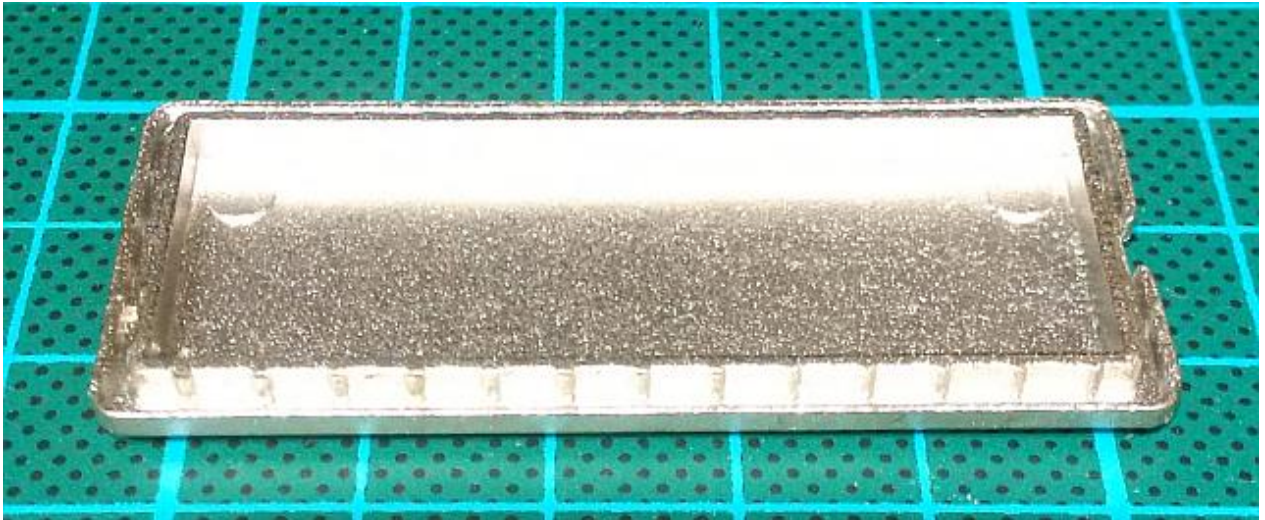
So I was curious to test such a filter and possibly use it to reject the cellphone band from 800-1000 MHz.

Here are some pictures of the device:

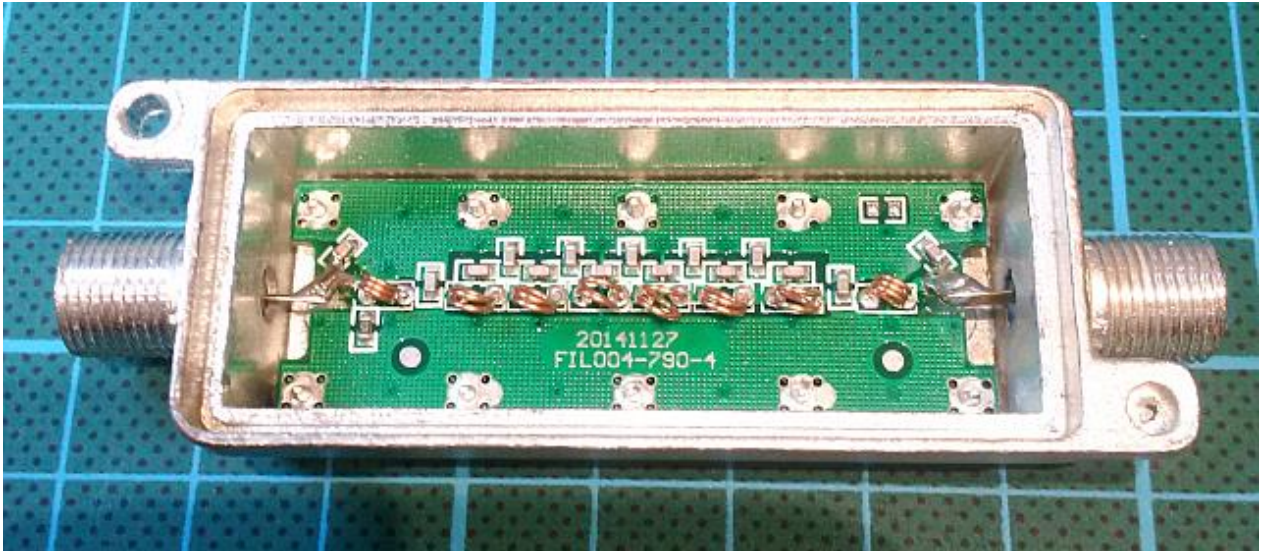


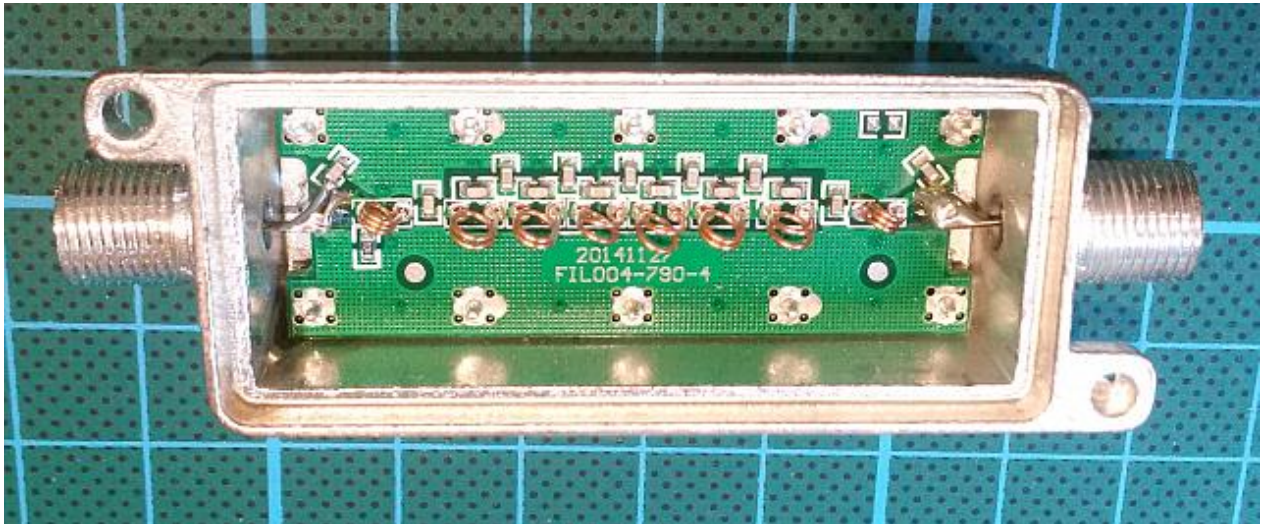


The filter can easily be opened by removing the lid on the bottom which is clamped.

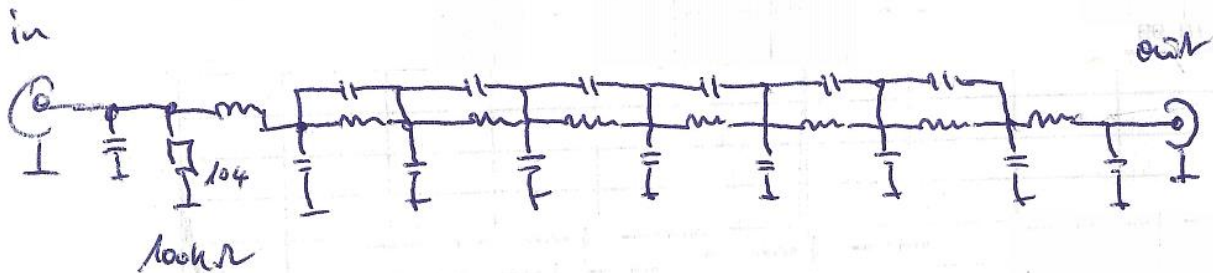


Here is a view inside the filter:



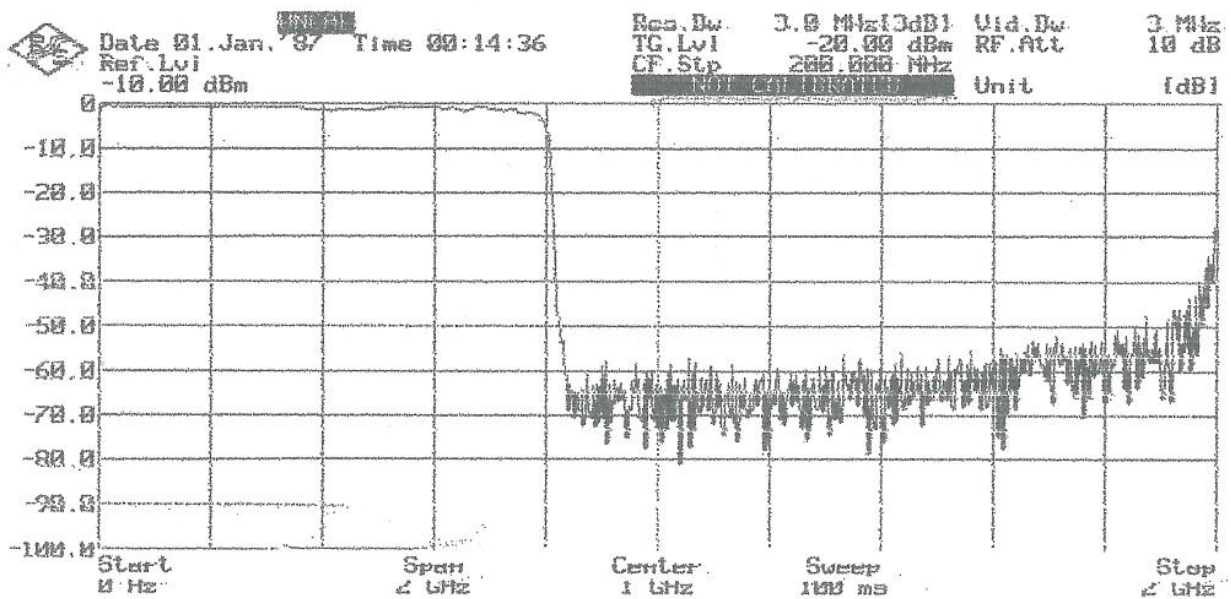


The filter consists of 6 parallel resonant tank circuits which are connected in series and in between are capacitors to ground. Thus the filter is a multipole low-pass filter above the resonance frequency of the parallel tank circuits. Here is a sketch of the schematic:



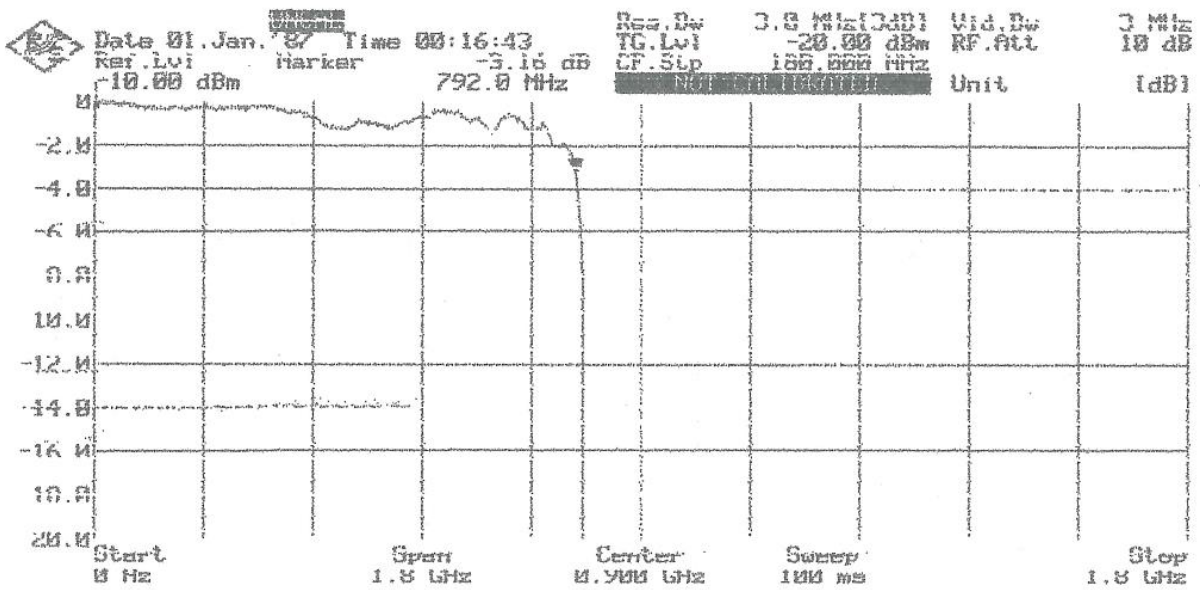
The filter provides a DC-path from the output to the input which can be used to power for instance an amplifier using a phantom feed via the coaxial cable. The 100kOhms resistor at the input can avoid that an isolated antenna builds up a static voltage (not to be confused with a discharge impulse generated by lightning).

Here is the transfer characteristics of the filter measured from DC to 2 GHz in a 50 Ohm system:



Above 800 MHz the rejection is more than 60dB. The strong increase above 1800 MHz is due to the measurement setup.

Here is a zoomed view of the passband with a higher resolution of the insertion loss:



The 3dB bandwidth of the low-pass filter is 792 MHz. The insertion loss below 720 MHz is approximately 1dB.

I am quite happy with the performance of the filter and will certainly use it when a rejection of the cellphone band is needed. I did not test the filter in a 75 Ohms system but possibly the insertion loss is even lower.

Sorry for the poor quality of the screenshots.

I always appreciate feedback. Many thanks in advance.

Best regards

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