

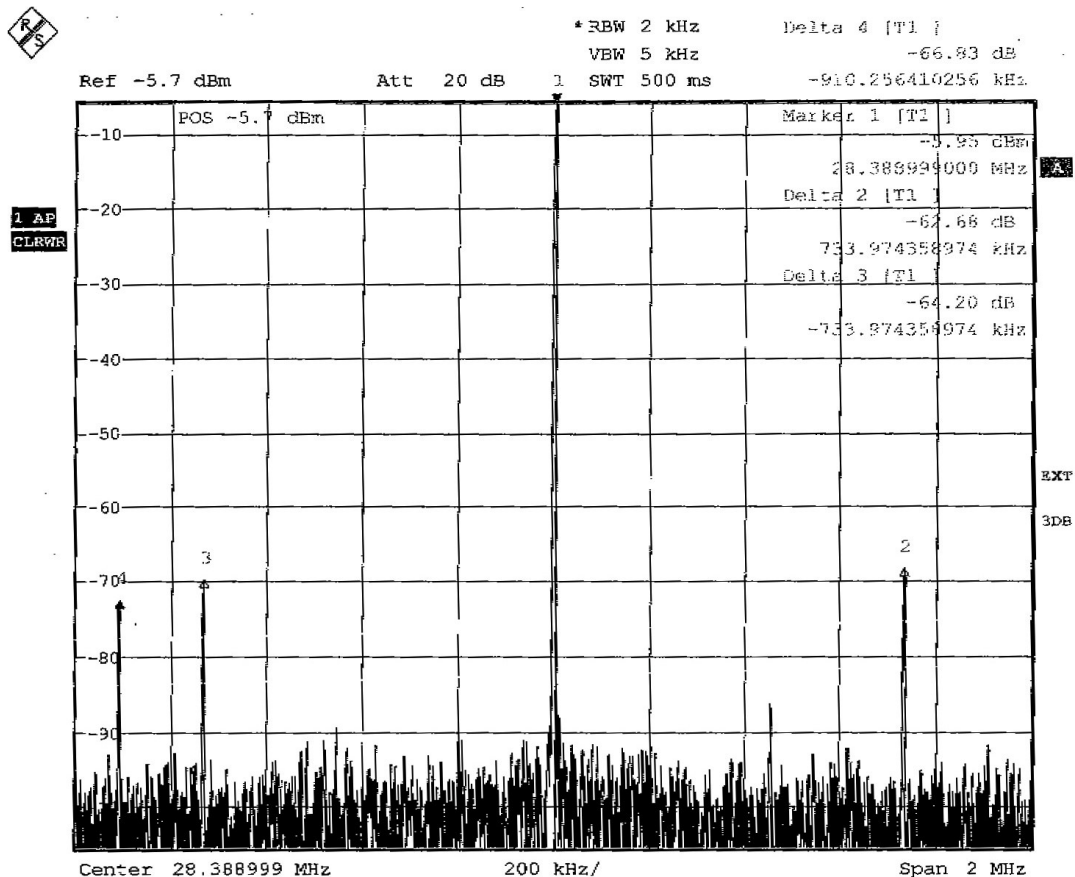
## Working with an IC7700 on 144MHz??

Last summer I decided to improve my 2m station, an IC765 with transverter, so I bought the newest transceiver from ICOM, an IC7700. The reason for this decision was the declared high IP, the low phase noise and the high dynamic range which I could read from the datasheets at the internet.

As I prefer to work on VHF and UHF, I cannot give any information about the performance on shortwave. I made less than 10 QSOs there Hi.



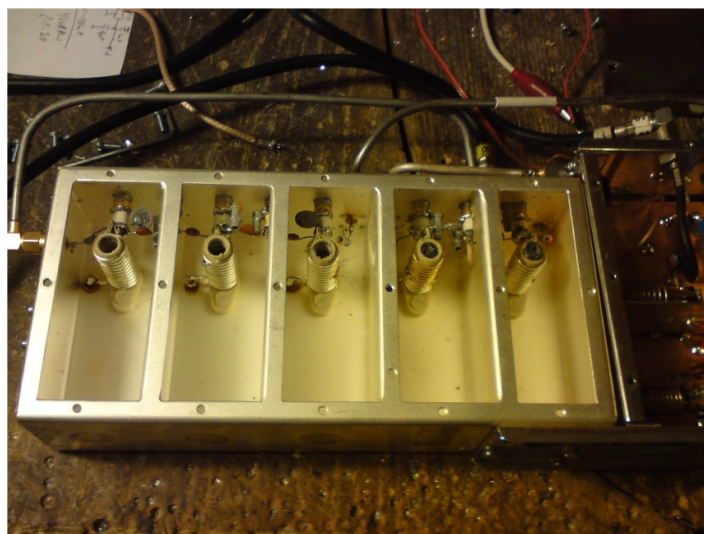
After getting this radio, my friend Mike, DB6NT, asked me to do some measurements because sometimes he gets requests how to connect several transceivers to the transverters which he is producing at his company. So it is a good idea to save the parameters like driving power and the reserve of the connectors. Below you can see the plot of the signal from the transverter- output at the back site of the IC7700. You can see that there are two signals plus and minus 730 KHz from the main carrier. The level is around 63dB lower in comparison to the main signal. ICOM declares that all unwanted signals are weaker than 60dB in comparison to the main signal. This claim is fulfilled.



If You will run this nice radio with a transverter and a high power linear amplifier, running the full legal power, here in Germany 750 Watts ( and not more!), you will also produce two unwanted signals, one approximately 730KHz higher, the other 730KHz lower, with an output from 750W minus 63dB. This is something around 400uW. A friend of mine, a famous 2m man, who lives in a distance from nearly 80Km to my QTH, was using the same rig and I was able to hear this unwanted signal. The big problem is, that if you are working around 144,300MHz, you will produce also a signal around 145.030 plus minus, this is the frequency- range for the local repeater input! I am sure that you will get trouble in a short time if you do this.

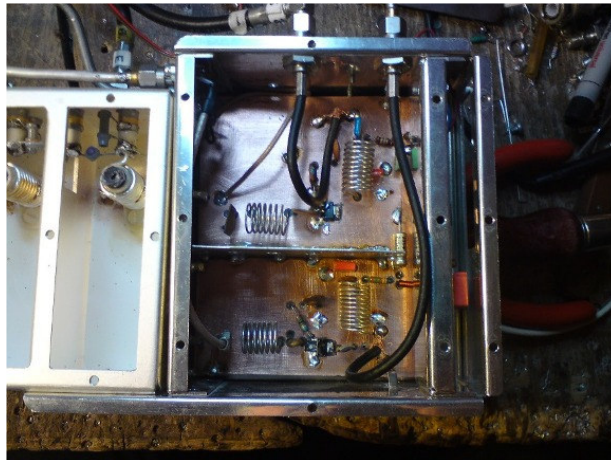
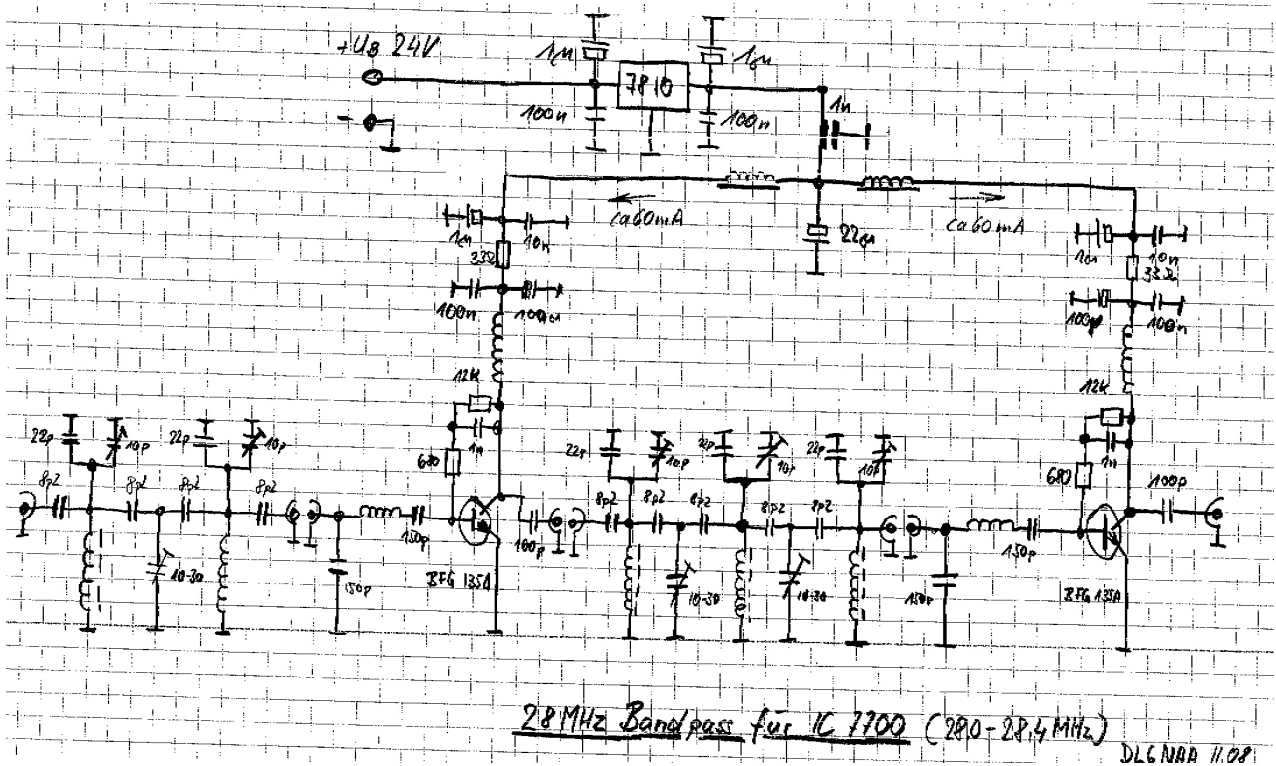
As this radio is rather expensive for me, I decided that I would not open the box and look for the reason, because I have only warranty if I did not open the radio. Looking for a way to eliminate this unwanted signals I decided to try it with a band pass- filter which I connected between the IC7700 and the transverter. ICOM declares that the output level for driving a transverter is abt -20dBm, on mine I measured a level from -6dBm. This is not enough for driving my transverters, so I decided to add an amplifier which is able to produce the required level. On the web- site from Drago, YU1AW I discovered a circuit with a BFG135, witch does a fine job.

In my stock I had some VHF- filters from Plisch witch were designed for the old TV- band 1, around 50MHz. I spent a lot of time to tune this filter to 28MHz because I have not so much measuring equipment here in my hamshak. My profession is something else but nothing with high frequencies Hi. Next picture shows the filter after alignment to run at 10meters.

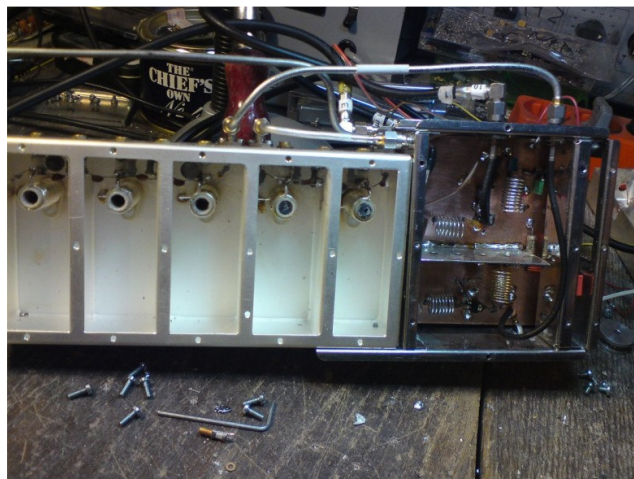


The filter consists of two parts, first one with two coils between the transceiver and the first IF- amplifier, the second one with three coils between the 1<sup>st</sup> amplifier and the output amplifier witch is necessary to bring the signal from the IC7700 minus the loss from the filters to the right level for driving the transverters. This unit is able to make 80mW power- output, a variable attenuator is responsible for giving the correct level. Next pictures show the complete diagram and my construction of the amplifiers. Sorry for missing the output capacitor 8p2 between the 2<sup>nd</sup> filter and the 2<sup>nd</sup> amplifier in the diagram.

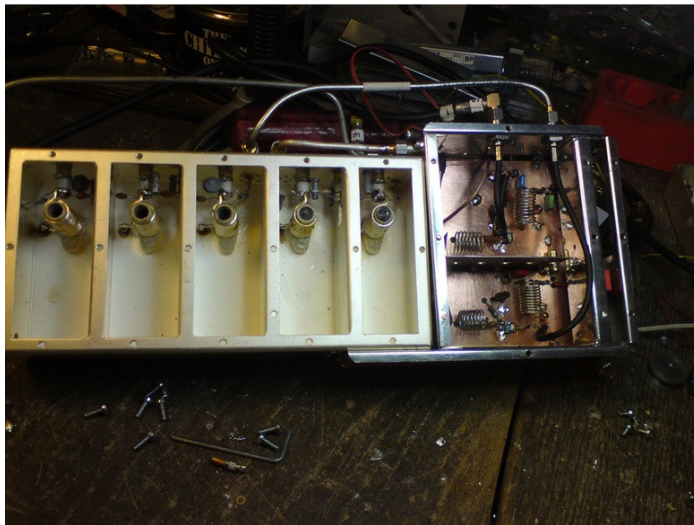
Both amps are mounted in a common box. This configuration works absolute stable. No self oscillation could be observed!



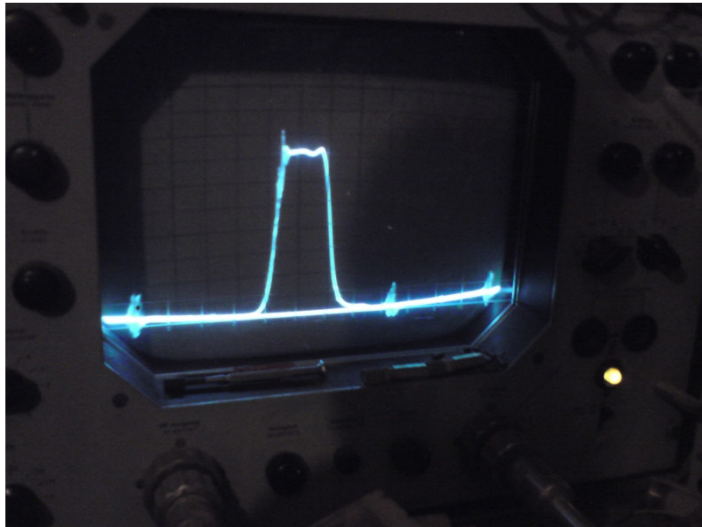
On the next both pictures you may have a view to the complete unit.



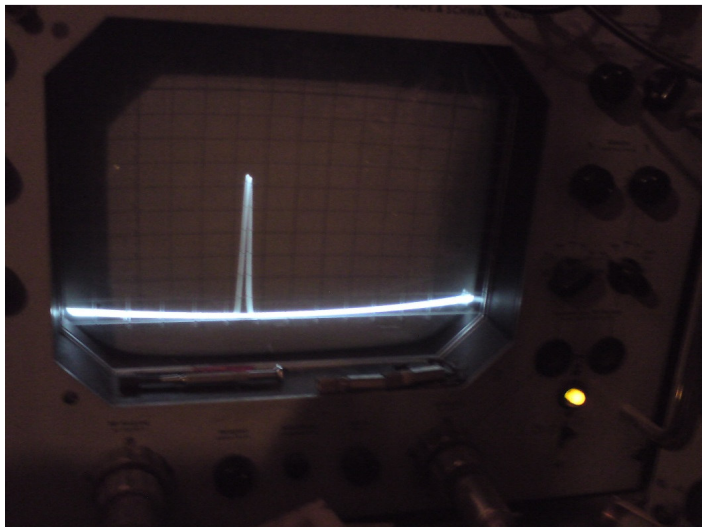




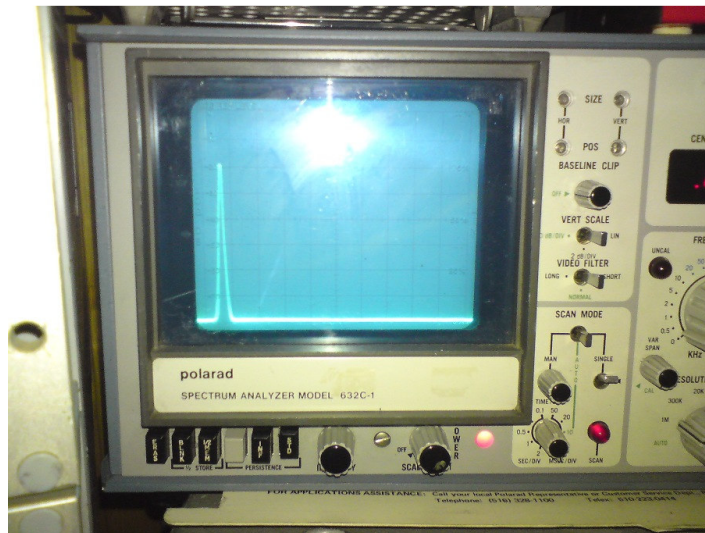
Now you can see how the filter works at the frequency range between 27 to 30 MHz. Do not laugh at me, I am still using my old Polyskop! Does anyone else use such a Dinosaurier??



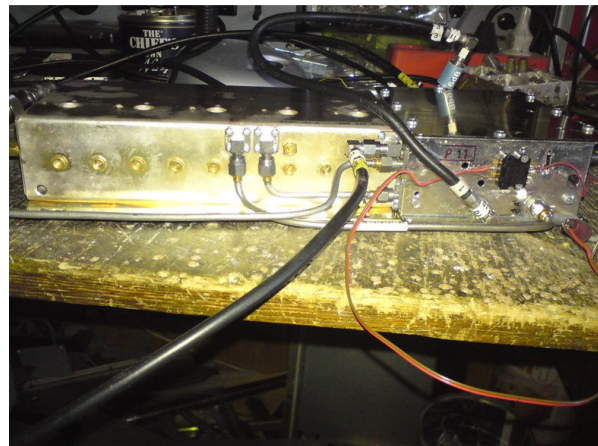
Next picture shows the frequency range from zero to 50MHz.



This screenshot shows the spectrum from the IC7700 with filter between zero and 100MHz



Last two pictures show my untidy workshop at the house where I am living, with the filter on the table. I am really happy that my wife does not enter this room so often!



The attenuation of this complete filter reaches more than 50dB at 29 MHz in comparison to 28.0 to 28.4 MHz. After connecting this filter between the IC7700 and my 2m transverter I was not able to hear the unwanted signals with a second 2m receiver.

Finally I must tell you that I am sure that I did not go the easiest way to reach this result. As I had this lovely unit from Plisch on my stock I did not calculate the coils and capacitors because I could not do so much mechanical reconstructions at this silver plated box. This article can be only a description how I managed to remove this problem.

vy 73  
Rene, DL6NAA

Note that in this description is no picture with beer!