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SAW Filter Mfg.
Supplier of IF and bandpass SAW fil resonators
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Receiver for Jupiter

| Home | Dual Dipole Array | RFI Survey | Guru Receiver | Softwares | Links |

| RF Amp | Narrow Band Pass Filter | Mixer | Low Pass Filter | Audio Preamp | Audio Power Amp |

Narrow Bandpass Filter

The RFI survey shows that there are SW broadcasts from 21.5 MHz as well as there is SW broadcast at 19MHz. So band between 19 to 21.5 MHz is clean for observations. So to attenuate the strong out of band stations and to avoid interference from these SW stations the Narrow Band pass filter is necessary.

For this purpose the filter having bandwidth 0.5 MHz is desirable centered at 20.1 MHz. Since this is narrow band pass filter having Quality Factor Q= 40, it is necessary to realize this filter using the coupled resonator configuration. Also the requirement of high Q causes more attenuation in pass band. Also to reject the SW broadcasts to sufficient level the filter is designed for the 5th order.

Narrow band pass filters can be designed by using coupling techniques where parallel tuned circuits are interconnected by coupling elements such as inductors or capacitors. Coupled resonator configurations are desirable for filters having Qs of 10 or more. The design method is based on the assumption that the coupling elements have constant impedance with frequency. This assumption is approximately accurate over narrow bandwidths. The response shape will be steeper on the low frequency side of the pass band.

In actual realization the inductive coupled configuration is used. This helps us in using a single value inductor of standard value (1microH in this case) and then adjusts the appropriate capacitance in shunt. The filter is designed using the software known as Eagle Ware.

Narrow bandpass filter
Couple Resonator
Center Frequency= 20.1 MHz
Bandwidth = 0.7 MHz
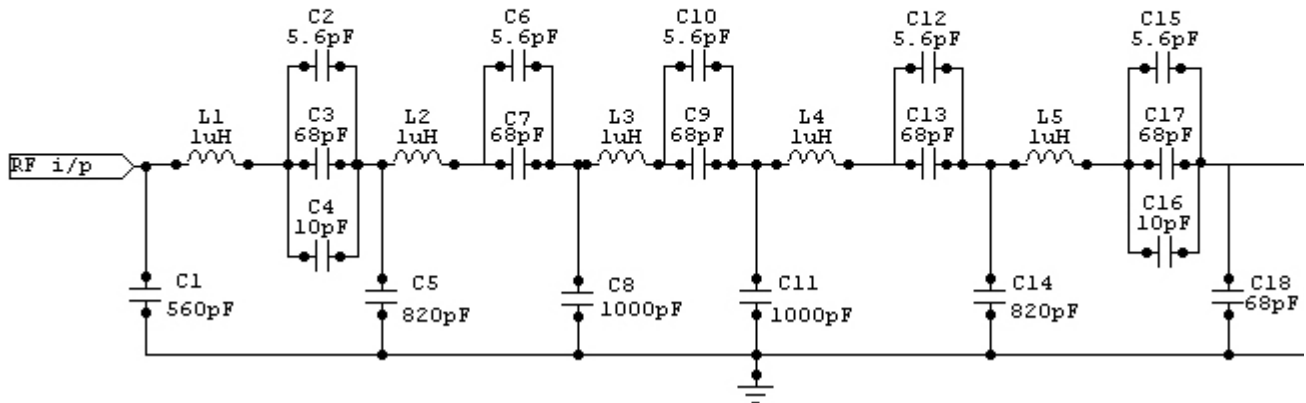
Filter Transmission

Filter Reflection

Since this filter has attenuation of 6.6dB in passband it is necessary to put some gain after the filter. For this I am using the same J310 RF amplifier after the filter. So the overall frontend is the cascaded combination of RFamp- Filter -RF amp. The overall response of the front end can be seen on the following links.

Frontend Transmission

Frontend Reflection

3rd Order Bandpass Filter

Receiver Considerations for Jupiter

Block Diagram of Receiver

Block Diagram with Specifications

Receiver Photos