Aerial Parts of Colchester

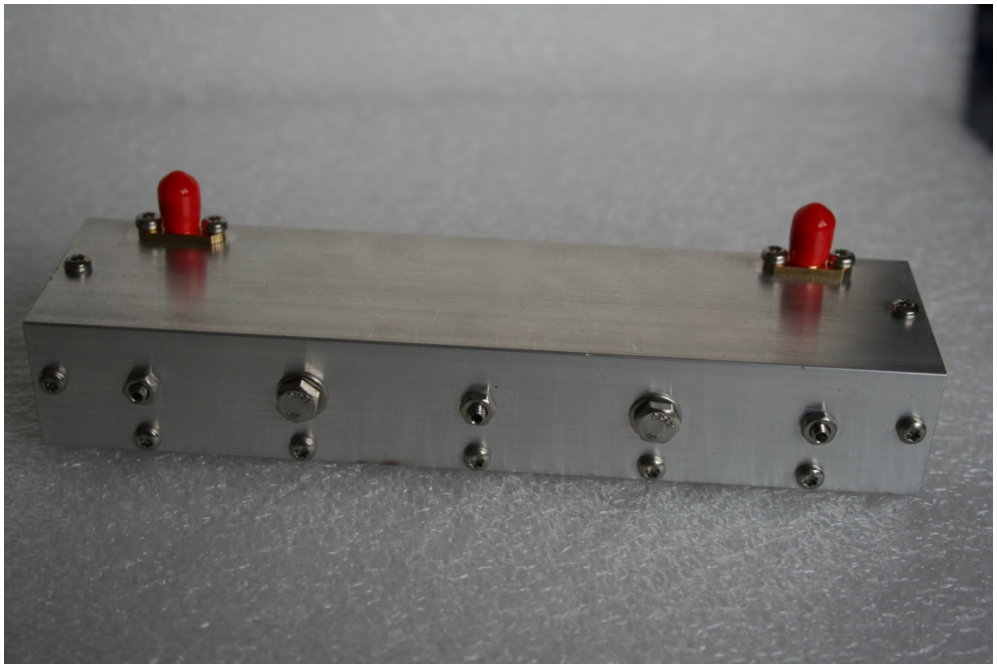
2320MHz Interdigital Filter – Narrow Bandwidth Model

The quest for very low noise receive amplifiers on 2320MHz has led to designs which lack selectivity in front of the active device. At the same time, the UHF/SHF radio spectrum is increasingly populated by high numbers of powerful transmitters including digital terrestrial television and mobile phone base stations.

Close proximity of these transmitters to a radio amateur station can lead to intermodulation in the front end or in subsequent receiver stages. Intermodulation can present itself as a rise in noise level on various beam headings including those which are offset from the source. It is often indistinguishable from transistor noise; it is broadband and without identifying modulation.

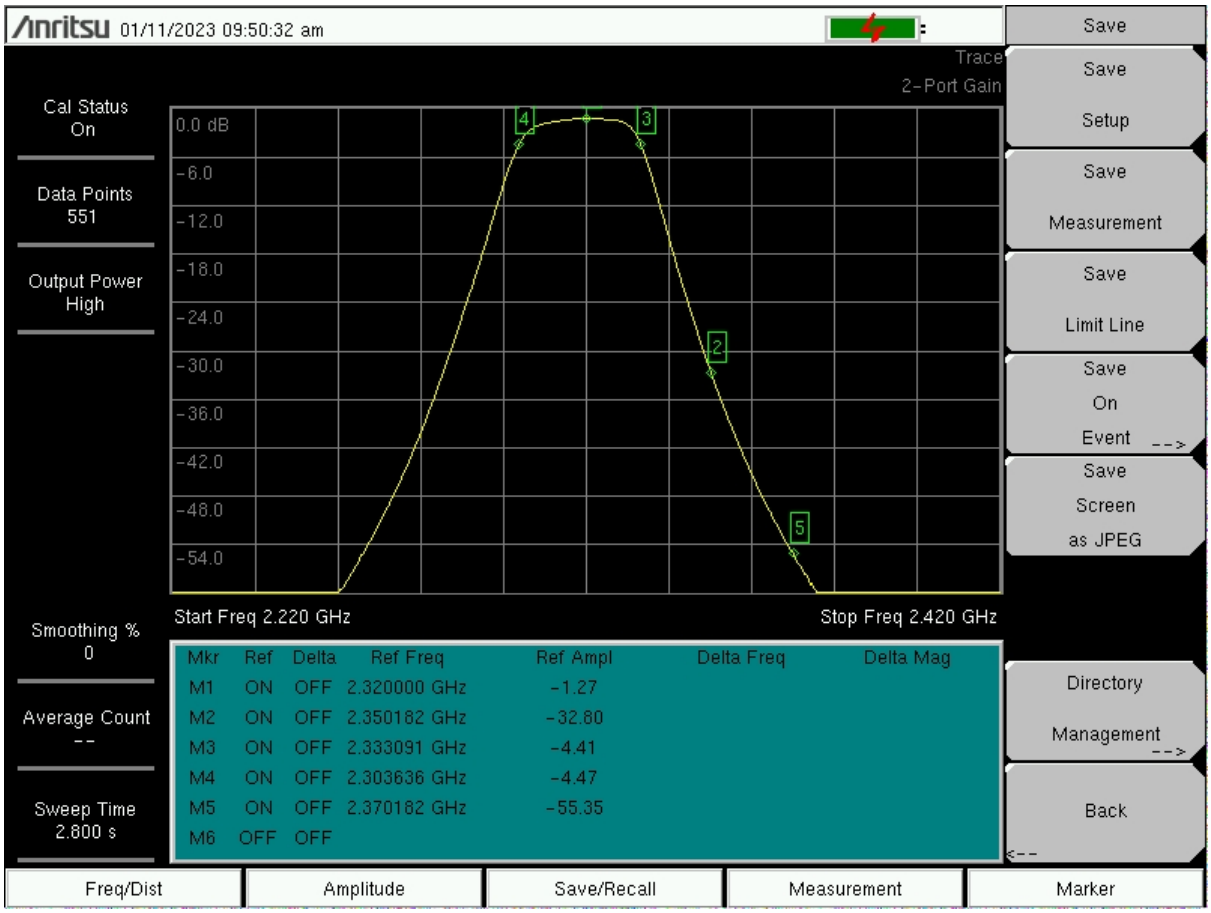
Intermodulation effects can be removed or reduced by placing a selective filter before the first stage of signal amplification. The filter needs to be low loss so as to have minimum impact on the system noise figure and sufficiently selective to reduce frequencies outside the amateur band to manageable levels. A carefully designed and constructed interdigital filter will fulfil these criteria.

In difficult situations a narrow bandwidth filter may be necessary. This filter provides useful attenuation of signals around 2350MHz (mobile phone) and excellent rejection of Wi Fi signals at 2.4GHz. Through loss is just over 1dB, which makes it a practical compromise to install this filter in front of the first active device.



- Filter type: 5 pole interdigital filter
- Centre frequency: 2320MHz
- Through loss at 2320MHz: less than 1.5dB, typically 1.2dB
- 3dB bandwidth: nominal 30MHz
- Attenuation at 2150MHz (mobile phone): 60dB minimum
- Attenuation at 2350MHz (mobile phone): 25dB minimum
- Attenuation at 2600MHz (mobile phone): 60dB minimum
- Input return loss at centre frequency, both ports: better than 15dB
- Size: 152 x 48 x 35mm
- Weight: 290g
- Connectors: SMA female
- Mounting holes: for M3 screws, maximum penetration 5mm

Typical response 2220 to 2420MHz, S21



Typical response, S11