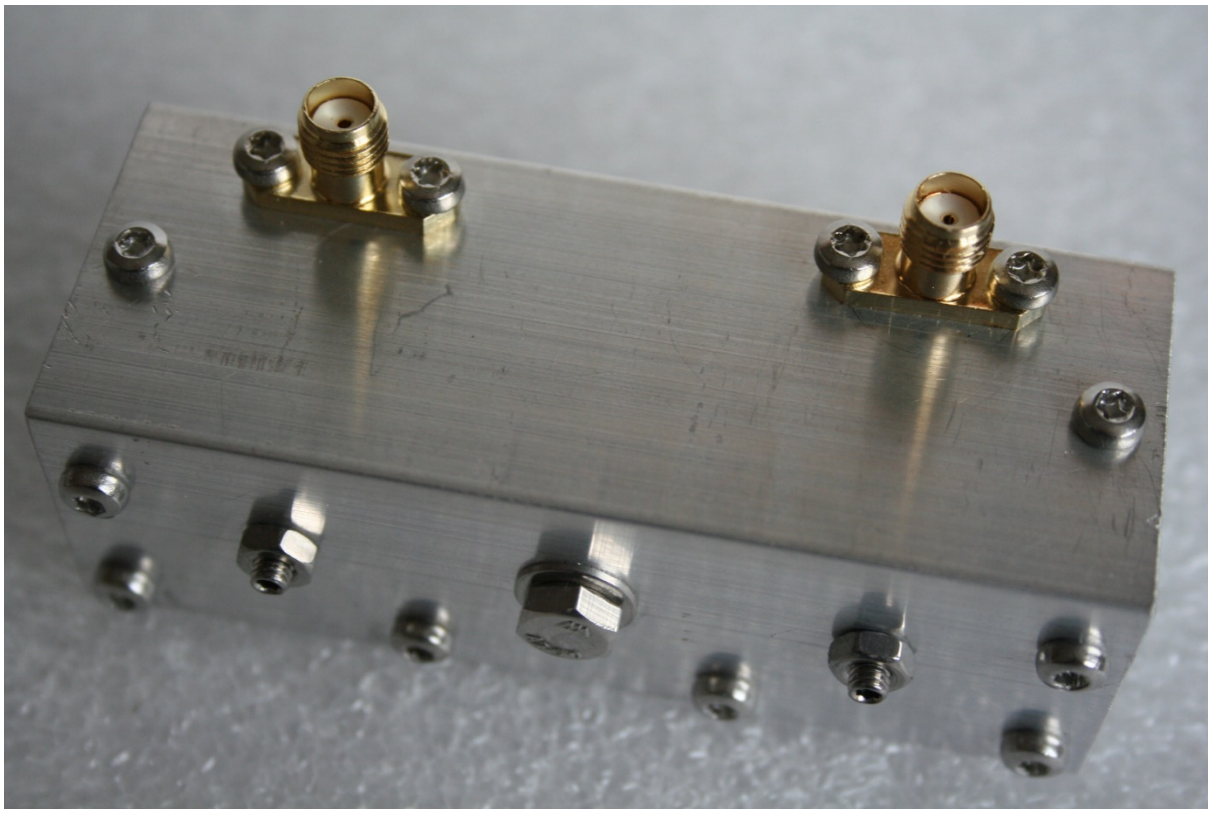
Aerial Parts of Colchester

3400MHz Interdigital Filter

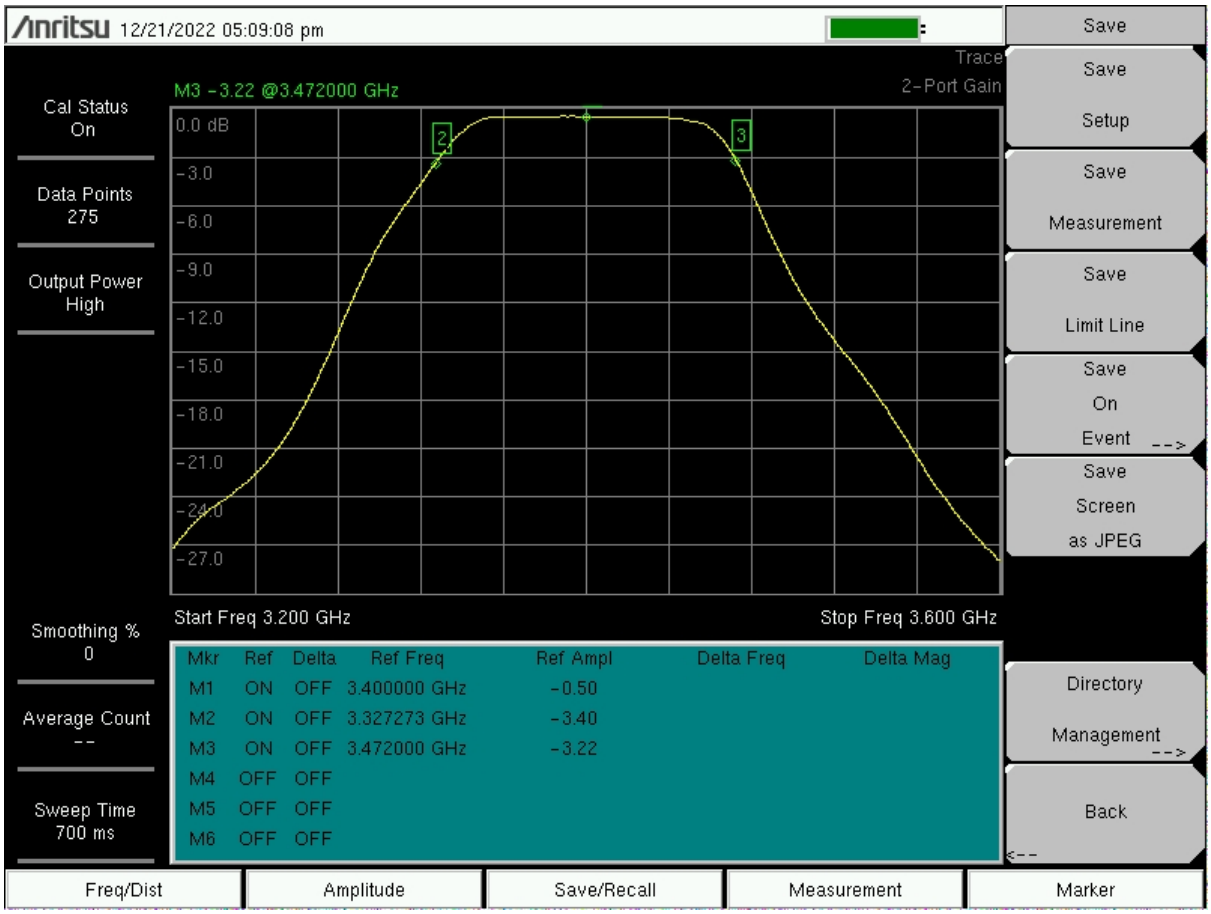
The quest for very low noise receive amplifiers on 3400MHz has led to designs which lack selectivity in front of the active device. At the same time, the UHF radio spectrum is increasingly populated by high numbers of powerful transmitters including digital terrestrial television and mobile phone base stations.

Close proximity of high power 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 and is often indistinguishable from transistor noise; it is broadband and without identifying modulation.

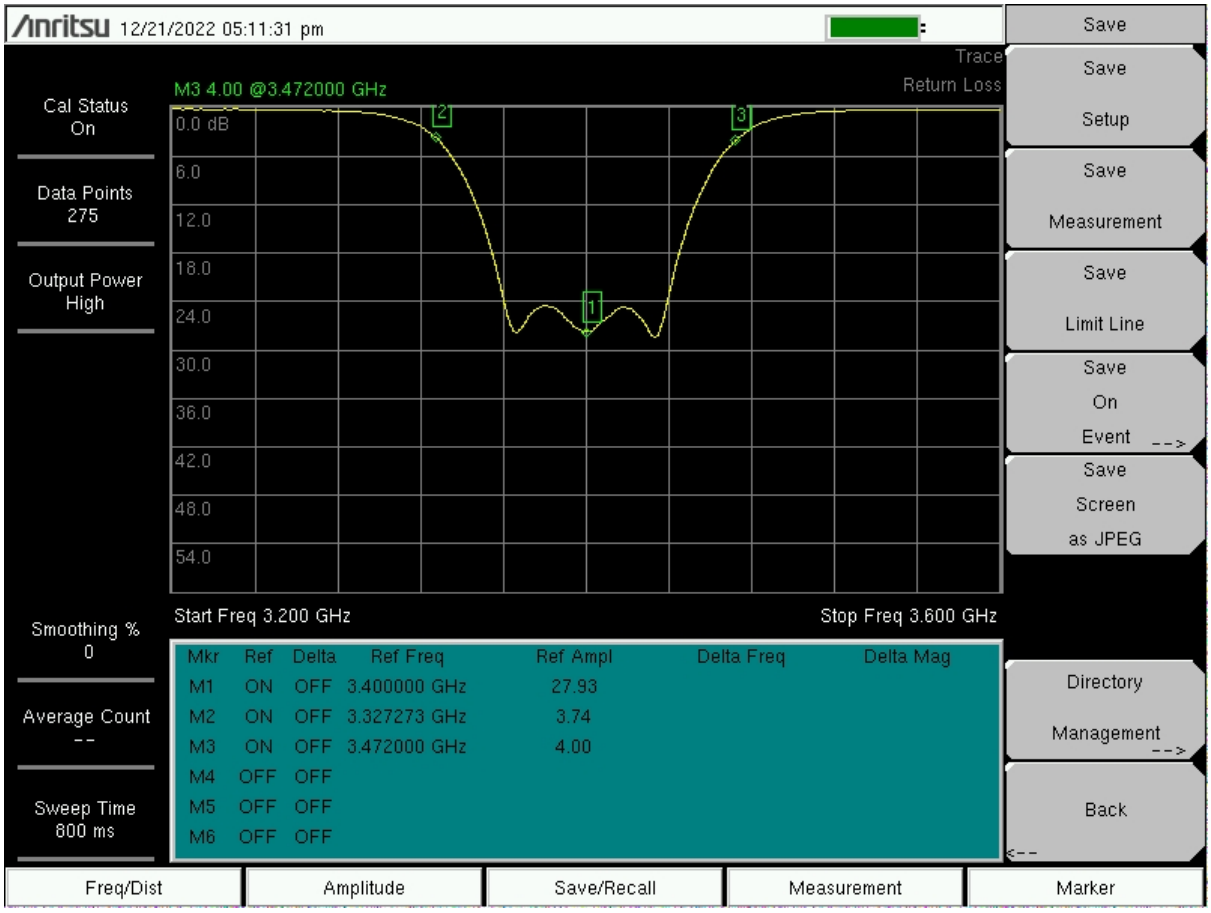
Intermodulation effects can be removed or reduced by placing a selective filter before the first stage of signal amplification. The filter needs to be low loss so as to have minimum impact on the system noise figure and sufficiently selective to reduce frequencies outside the amateur band to manageable levels. In addition, the Return Loss at both ports needs to be controlled so that 50 ohms is maintained throughout – doing so will ensure that the subsequent active device retains its noise figure. A carefully designed and constructed interdigital filter will fulfil these criteria.



- Filter type: 3 pole interdigital filter
- Through loss at 3400MHz: less than 0.7dB, typically 0.5dB
- 3dB bandwidth: nominal 150MHz
- Attenuation at 3200MHz: > 25dB
- Attenuation at 3600MHz: > 25dB
- Input return loss, both ports: > 15dB
- Size: 76 x 40 x 35mm
- Weight: 110g
- Connectors: SMA female



Typical response 3200 to 3600MHz



Typical Return Loss