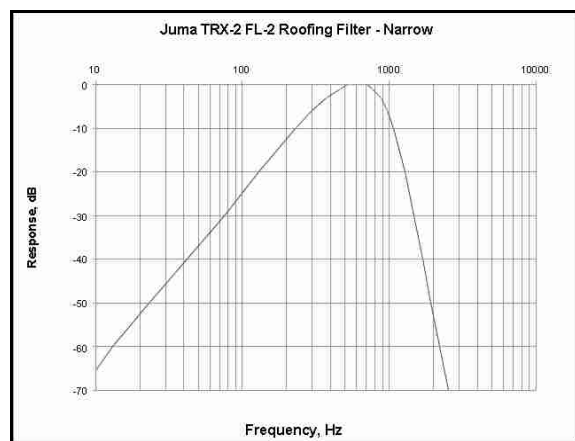
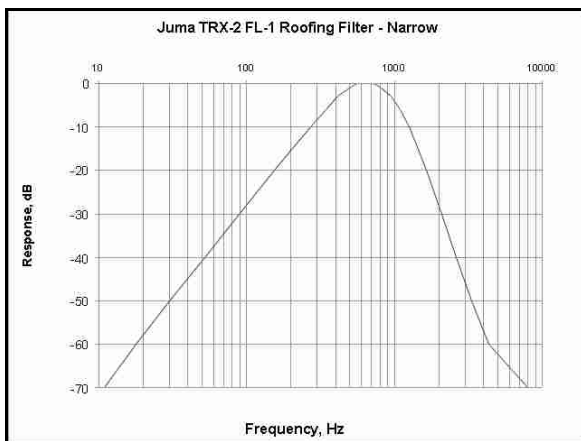


JUMA TRX-2 ROOFING FILTERS

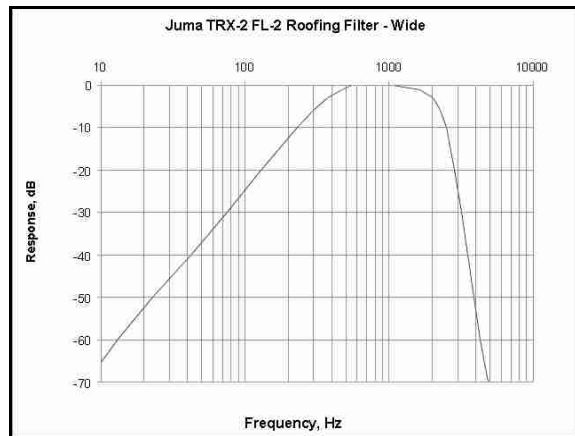
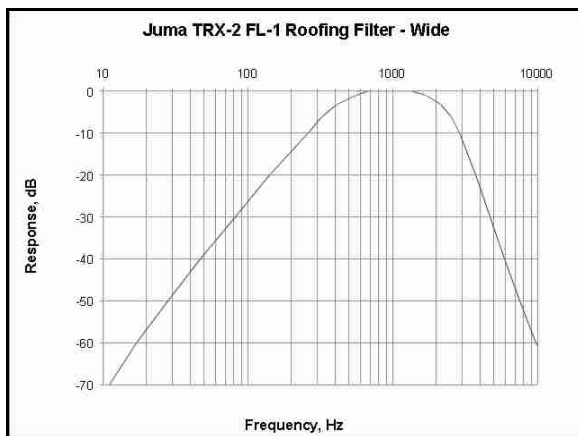
The Juma TRX-2 transceiver uses an active filter to establish the primary bandwidth of the receiver in front of the AGC system. The main bandwidth is determined by a switched capacitor filter whose cut-off frequency can be user adjusted, and which is arranged to give 3 bandwidths – Narrow, Medium, and Wide.

In order to improve the receiver's adjacent channel strong signal AGC capture performance, the roofing filter has recently been improved, and the FL-2 filter offers a significant enhancement to the receiver's performance.

Unfortunately no actual frequency performance data is available for either the original FL-1 filter or the new FL-2, and so I have investigated the performance of both of these filters.



On the left is the original filter, on the right the new filter. As you can see, the skirt response of the new filter is significantly steeper than the original, and its ultimate stop-band attenuation is also greater.



Once again, you can see the significant improvement of the skirt response of the new filter compared with the original.

The low-frequency responses of these filters is essentially unaltered, as this is largely determined by the value of the coupling capacitors used.

It has been shown that an extended low-frequency response does not improve the communication effectiveness of speech, as there is very little spectral energy below about 300Hz.

The main benefit of the new filter is that of enhancing the receiver's ability to resolve a weak signal in the presence of high levels of adjacent channel interference.

The gain of the new filter is the same as the original, and in my case was within 0.25dB of the original. Consequently, this is a straightforward plug-in replacement, no other adjustments being required.

One side effect of this new filter is that the Wide receiver bandwidth is now largely redundant, as the -6dB point of the new filter is 2.250kHz.

Because the receiver's AGC is always on, the filter's frequency response was measured in a test set-up. If you intend to repeat these tests, make sure that the source impedance of the audio generator is low. In my case I used the 50 Ω output of my 2Hz – 2MHz function generator. Equally, the filter's output must be terminated in a high impedance of at least 20K.

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