



# Cavity Filters

30 MHz – 960 MHz



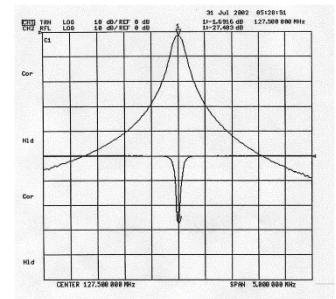
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**Need:** Busy antenna sites cause noise and interference and degrade receiver sensitivity.

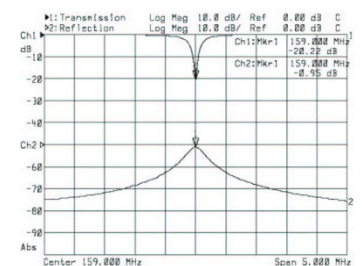
**Solution:** TX RX specializes in the production of high quality resonant cavity filters that can be used individually or cascaded together to minimize noise and interference. The wide variety allows for the selection of a filter for almost any application and the flexibility of the filters gives broad system design capability.

**How it Works:** In general, cavity filters pass a desired frequency and/or reject undesired frequencies. Resonance is adjusted by turning the threaded tuning rod to adjust the tuning probes in and out. The cavity response is determined by the type of loop used to couple the RF energy into the resonator. TX RX manufactures four types of cavity filters:

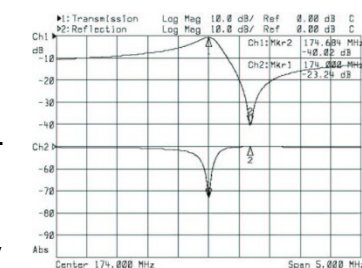
1. **Bandpass cavity filter** – Passes one narrow band of frequencies and attenuates all others with increasing attenuation above and below the pass frequency. A great filter for general transmitter spurious cleanup and sharpening of receiver front end selectivity with or without amplification. TX RX bandpass cavities (4", 6", and 10") have adjustable selectivity characteristics (rotatable loops) to allow a trade-off between insertion loss (0.5-3.0 dB) and selectivity. This filter is the best choice when interfering frequencies are not known to any degree of accuracy or when broad band filtering is needed.
2. **Series Notch (notch type)** – Passes a relatively wide band of frequencies while rejecting a very narrow band of frequencies. Notch depth is variable from 15-25 dB. Both pass and notch frequencies must be known. Best filter for very close separations. The wide passband can be an advantage when filtering multiple channel transmitters and receivers.
3. **Vari-notch (pass/notch type)** – Passes a relatively narrow band of frequencies and rejects (notches out) a relatively wide frequency band. This filter has the greatest notch depth when compared to other types. Notch depth is adjustable but is referenced to a passband insertion loss (0.3 dB or 0.6 dB typical). Best filter type for moderately close to wide separations.
4. **T-Pass** – A special type of filter for expandable combiner applications. Characteristics are identical to a bandpass filter but has a third port for coupling to other channels. This filter is not covered by this datasheet; contact TX RX Systems for more information.



Bandpass response



Series-notch response



Vari-notch response

## Benefits:

1. Wide variety of filter sizes (4", 6", and 10") and convertability between the types of filters (bandpass, series notch, vari-notch) means a filter can be made for almost any application. The same resonator can be converted into any filter type by changing out the loops.
2. Individual or cascaded filters can be used to clean up the performance of existing duplexers that have inadequate isolation or off-channel interference rejection.
3. Filters can be used to quiet noisy transmitters or prevent transmitter IM mixing at crowded antenna sites.
4. Receiver front-end selectivity can be greatly enhanced by the use of filters, which helps with desense, IM, and overload problems.
5. Cascading filters gives the effect of an arithmetic sum of individual filter attenuation.
6. Cavity filters serve as the building blocks of more complex systems such as duplexers and combiners.
7. TX RX filters are made of high quality materials. The 1/10" seamless aluminum pipe wall does not dent and detune. Hardened, silver plated, copper contact fingers and silver plated, brass movable tuning probes avoid the erratic tuning problems, noise, loss, and degraded selectivity caused by corrosion of tuning probe contacts.



**Specifications:** The below table contains a sample of the most popular models of cavity filters. For more information on our extensive list of cavity models or for assistance in choosing the correct model, please contact TX RX Systems.

Model Number	Cavity Type	Frequency Range	Diameter	Cavity Length	Impedance	VSWR	Temperature Range
11-37-01	Bandpass	144-174 MHz	6.625"	¼ wavelength	50 Ω	1.25:1 max	-30 to +60°C
11-37-05	Bandpass	144-174 MHz	10"	¼ wavelength	50 Ω	1.25:1 max	-30 to +60°C
11-65-01	Bandpass	406-430 MHz	6.625"	¼ wavelength	50 Ω	1.25:1 max	-30 to +60°C
11-70-01	Bandpass	450-470 MHz	6.625"	¼ wavelength	50 Ω	1.25:1 max	-30 to +60°C
11-70-09	Bandpass	450-470 MHz	4"	¼ wavelength	50 Ω	1.25:1 max	-30 to +60°C
11-70-11	Bandpass	450-470 MHz	6.625"	¾ wavelength	50 Ω	1.25:1 max	-30 to +60°C
11-70-25	Bandpass	450-470 MHz	10"	¾ wavelength	50 Ω	1.25:1 max	-30 to +60°C
11-83B-11	Bandpass	746-869 MHz	6.625"	¾ wavelength	50 Ω	1.25:1 max	-30 to +60°C
15-37-01	Vari-notch	144-174 MHz	6.625"	¼ wavelength	50 Ω	1.25:1 max	-30 to +60°C
15-37-05	Vari-notch	144-174 MHz	10"	¼ wavelength	50 Ω	1.25:1 max	-30 to +60°C
15-37-11	Vari-notch, 0.4dB insertion loss, Reject High	144-174 MHz	4"	¼ wavelength	50 Ω	1.25:1 max	-30 to +60°C
15-37-12	Vari-notch, 0.4dB insertion loss, Reject Low	144-174 MHz	4"	¼ wavelength	50 Ω	1.25:1 max	-30 to +60°C
15-70-01	Vari-notch	450-470 MHz	6.625"	¼ wavelength	50 Ω	1.25:1 max	-30 to +60°C
15-70-09	Vari-notch	450-470 MHz	4"	¼ wavelength	50 Ω	1.25:1 max	-30 to +60°C
15-88-11	Vari-notch	890-960 MHz	6.625"	¾ wavelength	50 Ω	1.25:1 max	-30 to +60°C
15-88-12	Dual Vari-notch	890-960 MHz	6.625"	¾ wavelength	50 Ω	1.25:1 max	-30 to +60°C
15-88-12-DM	Dual Vari-notch, deck mount	890-960 MHz	6.625"	¾ wavelength	50 Ω	1.25:1 max	-30 to +60°C
20-37-01	Series notch	144-174 MHz	6.625"	¼ wavelength	50 Ω	1.25:1 max	-30 to +60°C
20-70-01	Series notch	450-470 MHz	6.625"	¼ wavelength	50 Ω	1.25:1 max	-30 to +60°C