Surplus 6 GHz. Filters

We have acquired several 6 GHz 3 pole filters that are usable on 5760MHz. With the proper adjustment, these filters have less than 2.0 dB insertion loss and greater than 40 dB or better rejection of a standard LO frequency of 5616 when utilizing a 144 MHz IF in a transverter system.

The filters measure 5.8” long (including mounting flange) by 1.5” wide. Total height will depend on the length of tuning screw utilized but top of the SMA connector is under 1.25”. If purchased un-tuned, this document will provide the basic procedure to produce a 5760 MHz filter.

Stock Un-Tuned Filters:	**Part # 6GFILUT**	**$10**
Tuned Filters:	**Part # 6GFILT**	**$25**

Filter Mechanics:

Start by removing the 4 Gold tuning slugs with a 9/32” socket of wrench by loosening the lock nuts. Remove the lock nuts from the tuning slug and replace them in the filter. Run them all the way to the bottom of the thread and snug them with Pliers. Be careful not to damage the slug by bending it out of round. Next remove the 3 set screws by loosening the lock nut with a 3/16” socket or wrench. They are not usable. Replace with a 6-32 screw with a minimum thread length of ¾” and a lock nut. It can be made of any material. We have found no advantage of using Brass vs. Stainless Steel. It should look similar to the picture below.

Filter Tuning:

This is all you! Start with any form of signal generating swept or fixed at 5760 MHz and begin adjusting the Gold tuning slugs. They will be close to the bottom when complete. The 6-32 screws have minimal effect (2.0 dB or so) on the pass band of the filter so they are adjusted after the 4 tuning slugs have it in the desired range. BUT you will need to re-adjust all variables over again to obtain the best results of RF through put and LO frequency suppression in a transverter system. If utilized with a SDR system, adjust for best throughput and to eliminate offending frequencies in a receiver pass band.

Then, finally adjust the end slotted screws as shown in the picture. First loosen the 3/16” nut and most likely adjust the slotted screw inward for best return loss (VSWR) or minimum insertion loss. This may also require an additional adjustment of the end tuning slugs

This filter can be adjusted to have a very sharp knee and is possible to use it a system with an offending frequency much closer to the operating frequency if some additional insertion loss can be accepted. No additional advantage was found by adjusting the depth of the SMA connectors. All experiments have proven the height is optimum for 5760 MHz. Any adjustment that was made minimized the out of band insertion loss with minimal effect to the pass band. When all adjustments have been made, verify all lock nuts.

This filter has been tested with 10 watts of throughput without issues. It is possible it could be used with higher power but with 2.0 dB insertion loss, heating can be expected. Proper heat sinking can be accomplished and the filter may be mounted anywhere with two 6-32 screws.