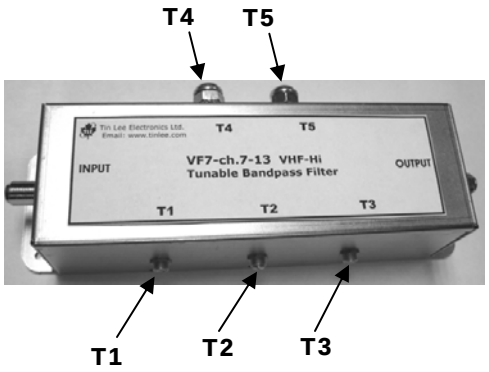
Description

Model VF7– ch.7-13 is a frequency tunable, 6 MHz, VHF-Hi bandpass filter. It is frequency tunable from 174 to 216 MHz. It provides good signal selectivity, low thru loss, and high rejection of out-of-band signals (sample graph below). Filter is user tunable. *

* Filter is best tuned while using RF instrument to view RF frequency response

Specifications

- VHF channel Pass band — 6 MHz (8 MHz option)
- Pass band insertion loss approx. 1.0 dB
- Stop band approx.15dB: ± 6 MHz from pass band edge
- Stop approx. 25dB: ± 12 MHz from pass band edge
- Return Loss: ≥16dB; VSWR 1.4 : 1 max *
- RF Power handling : 2 Watt max
- Standard Connectors: Type F female, 75 ohms (BNC 75 option)
- Option 50 ohms connectors: BNC, N, or SMA
- Temperature range: -15 to +40 ˚C



VF7-ch.7-13

Dimensions (in): 7.0 L x 4.0 W x 2.0 H

Turn Screws T1/T2/T3 to right for lower Fo

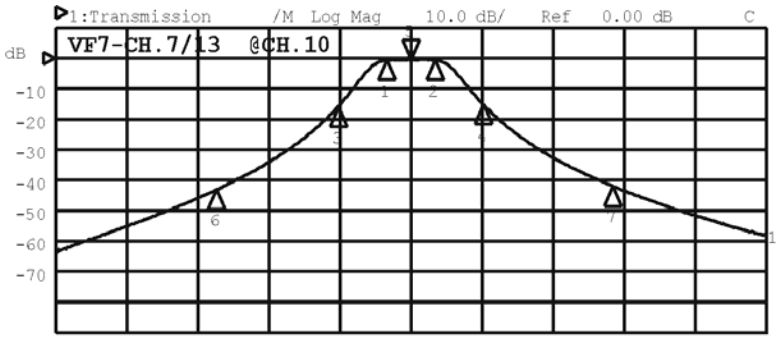
Turn Screw T1/T2/T3 to left for higher Fo

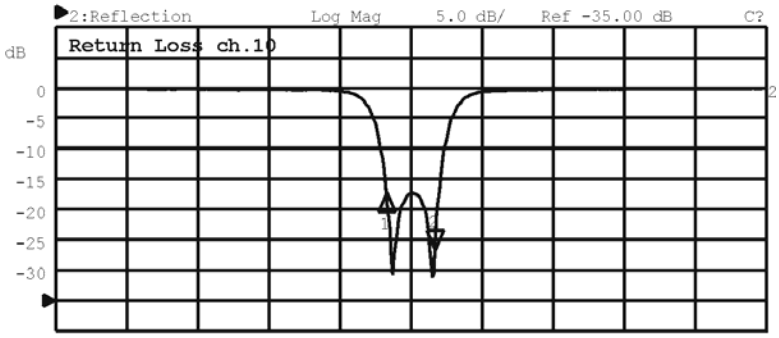
VF7-ch.7-13 Adjustments *

The frequency of pass band is changed by adjusting T1, T2, and T3, subsequently, the bandwidth and return loss of passband are changed, then, by adjusting T4 & T5 this can be corrected.
The details of VF7-ch.7-13 adjustments is described in section "VF7-ch.7-13 Passband Adjustments" .

* Filter is best tuned while using RF instrument to view RF frequency response.

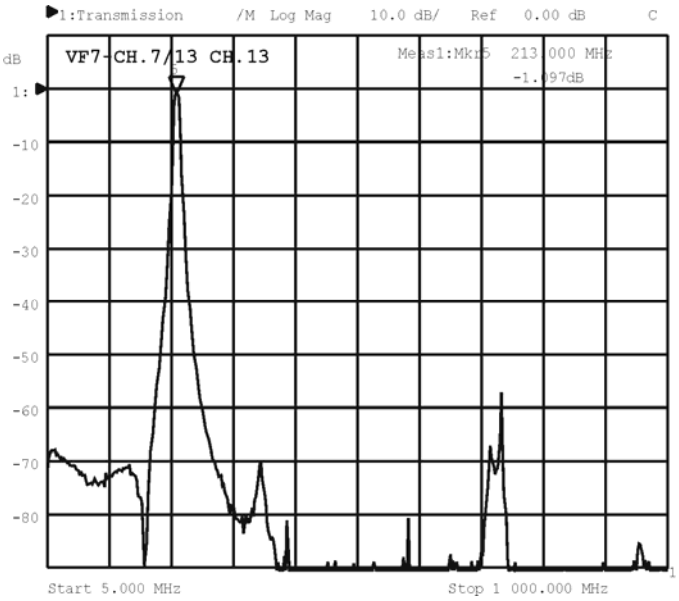
Example Graph shows VF7-ch.7-13 frequency response **ch.10**





1:Mkr (MHz)	dB	2:Mkr (MHz)	dB
1: 186.0000	-0.670	1: 186.0000	-17.242
2: 192.0000	-0.622	2> 192.0000	-26.766
3: 180.0000	-15.876		
4: 198.0000	-15.224		
5> 189.0000	-0.599		
6: 165.0000	-43.094		
7: 214.0000	-41.931		

Example Graph shows VF7-ch.7-13. ch.13 Stopband



VF7-ch.7-13 Adjustment

The passband of VF7-ch.7-13 can be tuned to any VHF-Hi band channel (7 thru 13). VF7-ch.7-13 includes three tuners: T1, T2 and T3, to adjust passband frequency, and, two mechanical tuners: T4 and T5 to optimize passband parameters: bandwidth, flatness and return loss (see photo 1). It is recommend tuning VF7-ch.7/13 with RF instrument to view frequency response.

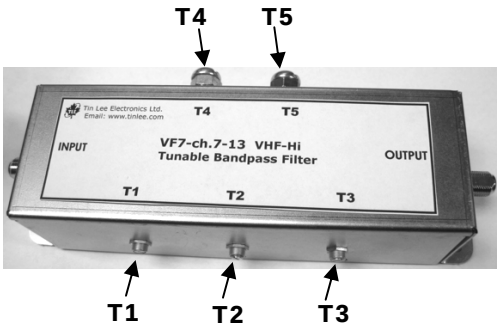


Photo 1. VF7-ch.7-13, Five Tuners

Frequency Adjustment

Use small flat head screw driver to tune T1, T2 and T3. Adjustments to T4 & T5 can be done with fingers.

Turn Screws T1/T2/T3 to right for lower Fo

Turn Screw T1/T2/T3 to left for higher Fo

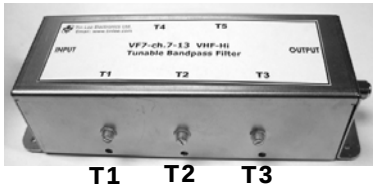
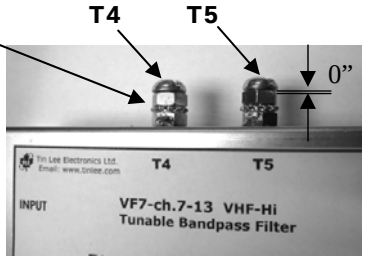


Photo 2. Frequency Tuners (174 to 216)

Example: To adjust VF7-ch.7-13 passband channel (frequency) from ch.7 to ch.13 (Fo =177 MHz to 213 MHz).

1. Turn T1 to right approx. 1 to 1.5 turns to change Fo=177 MHz to Fo=213 MHz; repeat this for T2 and T3. .
2. Fine tune to shape the 6 MHz passband— alternately adjust each screw at Fo, with small movements, approx. 1/10 turn, for "best" passband response.
3. Optimize return loss and passband flatness by adjusting position of T4 & T5.

Loosen locknut –finger tightened- T4 & T5 to turn (finger tighten after adjustments).



After bandpass is tuned to ch.13. Adjust T4 & T5 to position completely into chassis.

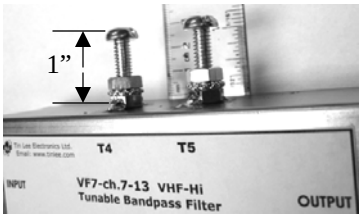
Photo 3. Screw position for ch.13

Optimizing Passband with T4 & T5

In general, after frequency of passband is changed, mechanical screws T4 and T5 are used to offset changes in the passband.* The passband is set at 6MHz at ch.7, it gradually widens when passband frequency changes from ch 7 towards ch.13.

Example ch.13 (photo 3). When the passband is tuned to ch.13, bandwidth is widest (approx 8 MHz).Turn T4 & T5 completely into the chassis to narrow passband to 6 MHz (16 dB R.L.).

Example ch.10 (photo 4). When the passband is tuned to ch.10, bandwidth is approx 7MHz . Turn T4 & T5 to position approx .1" from the chassis for 6 MHz bandwidth and Alternately fine tune T1,T2, and T3 for 16 dB R.L.

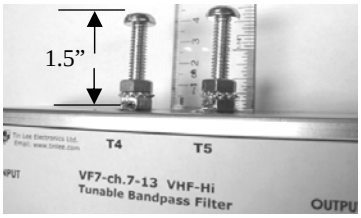


After bandpass is tuned to ch.10. Adjust T4 & T5 to position approx. 1" above chassis

Photo 4. Screw position for ch.10

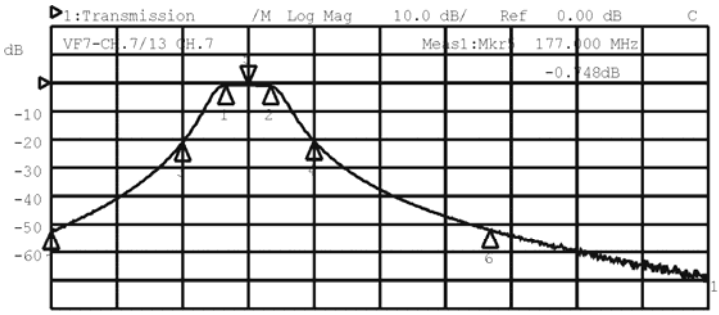
Example ch.7 (photo 5). When the passband is tuned to ch.7, Position T4 & T5 is positioned 1.5" from the chassis for 6 MHz Bandwidth. Alternately fine tune T1,T2, and T3 for 16 dB R.L.

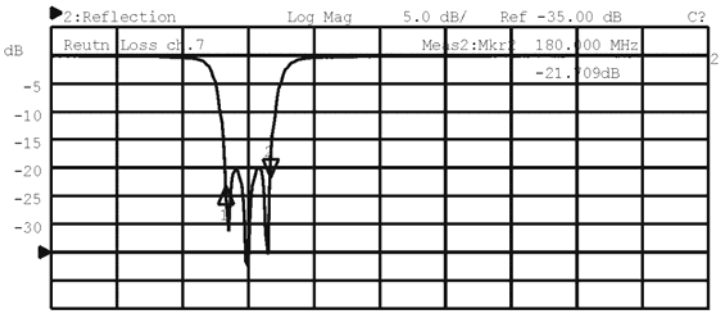
Note: Finger tightened mechanical lock nuts for T4 & T5 after tuning is complete.



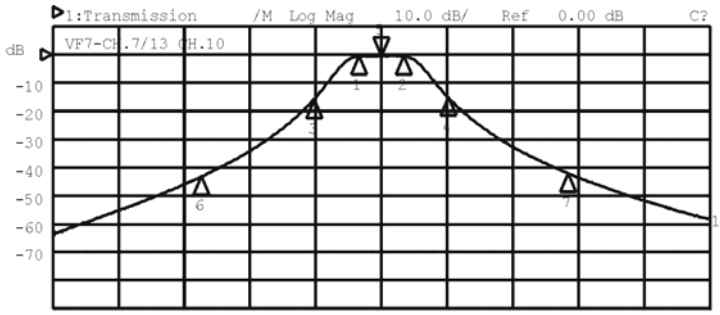
After bandpass is tuned to ch.7. Adjust T4 & T5 to position approx. 1.5" above chassis

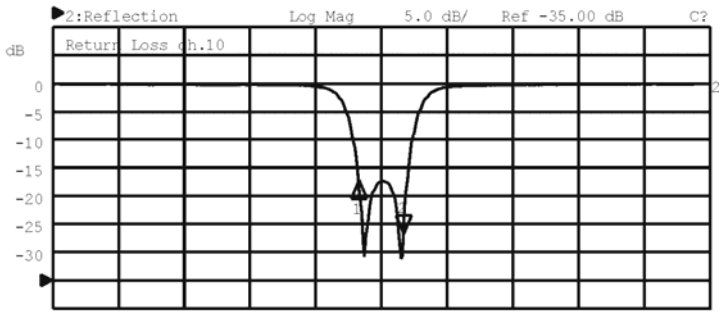
Photo 5. Screw head position for ch.7



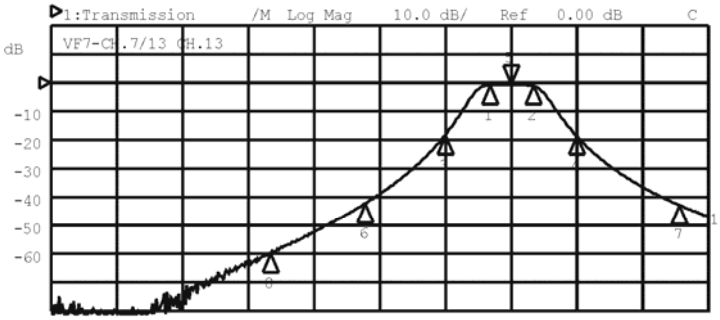


1:Mkr (MHz)	dB	2:Mkr (MHz)	dB
1: 174.0000	-0.869	1: 174.0000	-23.347
2: 180.0000	-1.082	2> 180.0000	-21.709
3: 168.0000	-21.217		
4: 186.0000	-20.379		
5> 177.0000	-0.748		
6: 210.0000	-51.876		
7: 150.0000	-52.414		





1:Mkr (MHz)	dB	2:Mkr (MHz)	dB
1: 186.0000	-0.670	1: 186.0000	-17.242
2: 192.0000	-0.622	2> 192.0000	-26.766
3: 180.0000	-15.876		
4: 198.0000	-15.224		
5> 189.0000	-0.599		
6: 165.0000	-43.094		
7: 214.0000	-41.931		



1:Mkr (MHz)	dB	2:Mkr (MHz)	dB
1: 210.0000	-0.840	1: 210.0000	-20.746
2: 216.0000	-1.090	2> 216.0000	-21.558
3: 204.0000	-18.299		
4: 222.0000	-18.620		
5> 213.0000	-0.727		
6: 193.0000	-42.322		
7: 236.0000	-42.766		
8: 180.0000	-60.038