

RGO ONE Variable bandpass crystal filter – 4 pole Jones type

Operating manual version 1.2

RGO ONE has a neat option - 4 pole crystal filter Jones type (invented by Lee J. Jones) which bandwidth is controlled by varactor diodes while input/output impedances remain relatively constant. Firmware generates proper voltage bias and this manner 10 fixed filters - 3kHz down to 220Hz are realized.

Variable bandwidth function is activated with short press of FLT button on the front panel. Then rotating encoder 1 (PWR) controls receiver bandwidth.

VBF is positioned in IF path right after first 9MHz (3kHz) roofing filter and first IF amplifier – board IF/AF, U1 GALI74. Since this is receive path it will act only on receive. If not engaged the signal passes thru 6db attenuator pad in order to equalize receiver gain in both cases (VBF-ON/VBF-OFF).

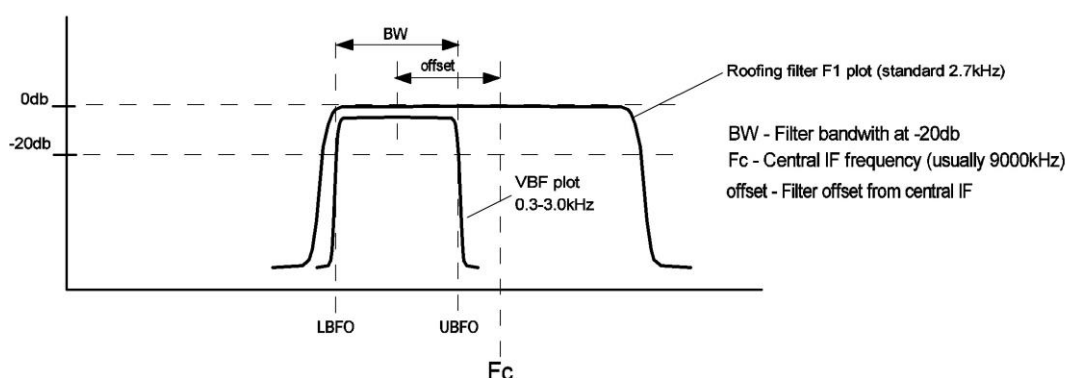
First roofing filter must always cover up and envelop the second crystal filter (VBF) in order to minimize the loss in IF selective chain. Nevertheless a significant signal loss is observed when narrowing the filter bandwidth. This is normal as the receiver AGC response depends on incoming signal which in crowded HF bands consist of heavy atmospheric and other (QRM and manmade) noises.

When choosing the bandwidth from B01 to B10, RGO ONE firmware instantly reschedule LO/BFO frequencies in order to keep up current mode, side band, CW settings and main frequency which is visualized on the display. Also selected pitch on CW remains unchanged. MENU functions 25 – 30 are intended to keep VBF characteristic and this way LO/BFO frequencies to be assigned when different filters are chosen by the operator.

Specifications:

- | | |
|---------------------------|---------------|
| - Filter bandwidth @-3db | 220 ÷ 2120Hz |
| - Offset from 9MHz IF | -60 ÷ -1160Hz |
| - Shape factor -6db/-60db | N.A. |
| - Input/output impedance | 50Ω |

Variable Bandwidth Filter 4 pole Jones type



Optional VBF Jones filter chart

Uopf,V	BW/-20db, Hz	offset, Hz	Filter selection on display	MENU 29, 30
1.0	460 ^{220/-3db}	-1160	B01	FB
2.0	600 ^{360/-3db}	-1080	B02	MENU 27, 28
3.0	960 ^{560/-3db}	-940	B03	
3.4	1080 ^{680/-3db}	-860	B04	
4.0	1400 ^{880/-3db}	-760	B05	FA
4.5	1660 ^{1100/-3db}	-620	B06	MENU 25, 26
5.0	1920 ^{1260/-3db}	-500	B07	
5.4	2240 ^{1520/-3db}	-360	B08	
5.9	2620 ^{1760/-3db}	-200	B09	
6.5	3100 ^{2120/-3db}	-60	B10	F2

Notes: Filter parameters for B01, B05 and B10 indicated above might be different for your unit. Use RGO ONE initial (factory) parameters and settings sheet supplied with your transceiver to retain respective menus

Three filter settings are needed for the firmware to realize all 10 fixed filters. These settings consist of bandwidth and offset from center IF (for RGO ONE it is 9MHz). All filter settings are factory pre-adjusted and aligned. But according to operators listening preferences – these settings might be slightly re-adjust, especially offset frequency in order to obtain equal audio sounding on opposite modes – LSB/USB; CW/CW-R.(Long press of MODE button)