The Windfreak Technologies FT108 is a USB, UART and Trigger tunable 15 band RF Filter with a lot of features. In general, the software GUI provided with the hardware makes it easy for a user to control the basic features of the hardware.

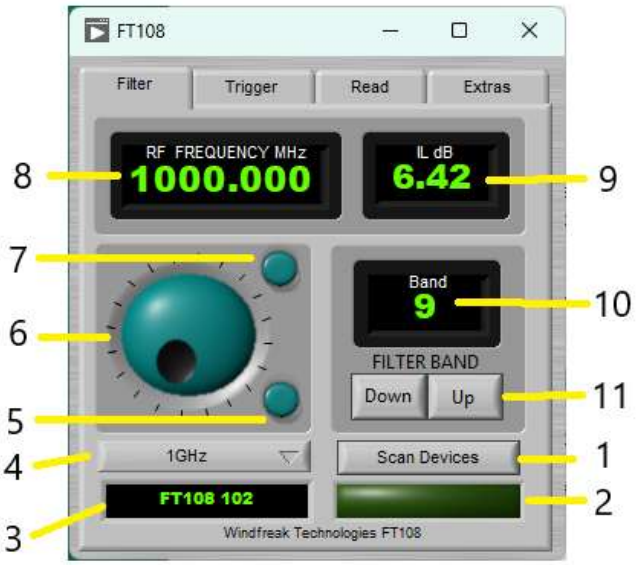

Figure 1 – Filter Tab

The **Filter Tab** (figure 1) is the main place to tune to one of the 15 sub octave filter bands.

1. **Scan Devices.** This button will scan for new devices if you have plugged or unplugged FT108s. In general, the software will release the COM port if nothing is going on with the GUI. This allows you to plug and unplug without shutting down the GUI. When you click Scan Devices, all the variables from the hardware will load into the GUI. Otherwise, the GUI will be out of sync with newly added hardware. Once you power down a FT108 and re-power the device, it loads all the variables from internal nonvolatile memory, not from the software that is open. This also requires clicking Scan Devices to get the software back in sync with the hardware.
2. **Com Error.** This is an indicator showing that there are USB communications errors. All attempts are made to clear errors in the software and hardware when these occur, but this doesn't always work with all computers. If you have tried to control a device when none are plugged in, it could cause problems that may require restarting the GUI or restarting the PC.
3. **Device Under Control.** When first loaded, the FT108 GUI will attempt to find FT108 hardware plugged in via USB. If a device is detected, it will display here

and show the serial number for that device. If it finds more than 1 device, the software will ask you which device you want to control. Use one GUI to control many devices, or multiple GUI's if desired.

4. **Step Size.** Frequency has a step size adjustment dropdown box to adjust the resolution of the knob. Select the proper step size for your application.
5. **Step Down.** Frequency has round buttons to the right of the knob that will increment or decrement by one step size for fine tuning.
6. **Frequency Knob.** Dial the Frequency knob to change the frequency selection of the FT108. Frequency will increment or decrement as per the Step Size dropdown box. The FT108 will pick the best filter band based on insertion loss for this frequency. This knob can be adjusted with a wheel mouse by hovering over it.
7. **Step Up.** Frequency has round buttons to the right of the knob that will increment or decrement by one step size for fine tuning.
8. **Frequency Display.** Highlight the numbers in the display and type in the frequency (in MHz) with your keyboard.
9. **Insertion Loss Display.** Gives an estimate of insertion loss at the frequency specified.
10. **Band Select.** Highlight the Band Select and enter the desired band with your keyboard. The FT108 will switch to that band and update the Frequency display and Insertion Loss numbers to the middle of that band.
11. **Filter Band Up/Down.** Increment up or down the filter band of the FT108.

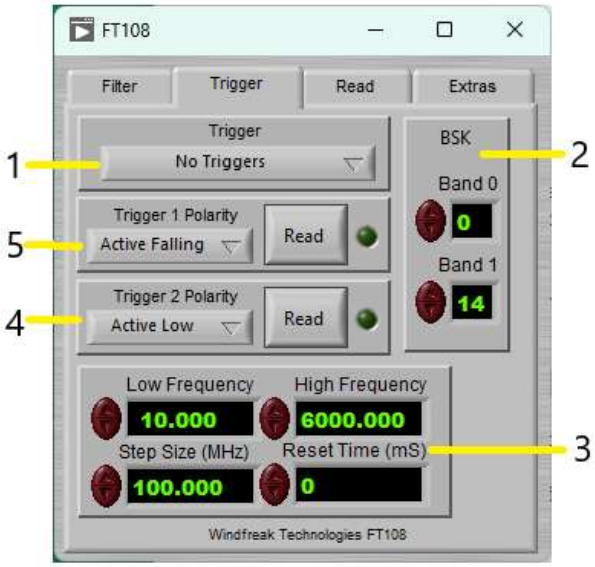

Figure 2 – Trigger Tab

1. **Trigger Type Tab.** Choose Trigger from the drop-down Tab:
   a. **No Triggers.**
   b. **Analog Tune.** Use an analog voltage between 0 and 3.3V to select a band.
   c. **Encoder Tune.** Use a mechanical encoder knob to tune bands.

d. **Band Step.** Step band up or step band down with a pulse on Trigger 1 and a level on Trigger 2.
e. **Frequency Step.** Step frequency up or step frequency down with a pulse on Trigger 1 and a level on Trigger 2. This is based on the sweep settings in #3 below.
f. **Band Shift Keying.** Switch quickly between two bands set in #2 below.

2. **Band Shift Keying Bands.** Enter Band 0 and Band 1 choices for quickly switching between the two bands. Used with Trigger 1 level.
3. **Frequency Sweep Details.** Use these settings for triggered frequency sweeping, possibly in junction with a signal generator. Reset Time is for resetting to the Low Frequency using a pulse longer than the Reset Time entry. Leave Reset Time at zero to disable. Frequency is in MHz. Low frequency is always less than high frequency.
4. **Trigger 1 Polarity.** Set to active Falling or Rising. Read button will read the current state of the Trigger 1 pin.
5. **Trigger 2 Polarity.** Set to active Low or High. Read button will read the current state of the Trigger 2 pin.

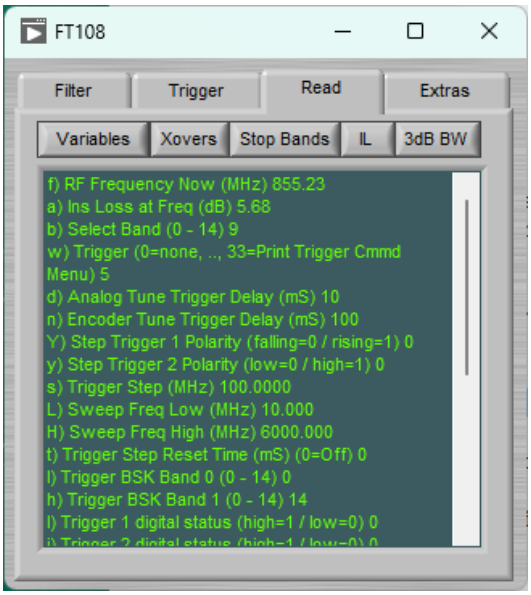

Figure 3 – Read Tab

The **Read Tab** (figure 3) is the place to read data from the FT108. The Variables button reads out all firmware settings for the FT108. The Xovers button shows the crossover frequencies between bands based on insertion loss. The Stop Bands button shows the -30dB frequencies on either side of each band. The Insertion Loss button shows the insertion loss of each band between crossover frequencies. The 3dB bandwidth button shows the 3dB bandwidth of each band.

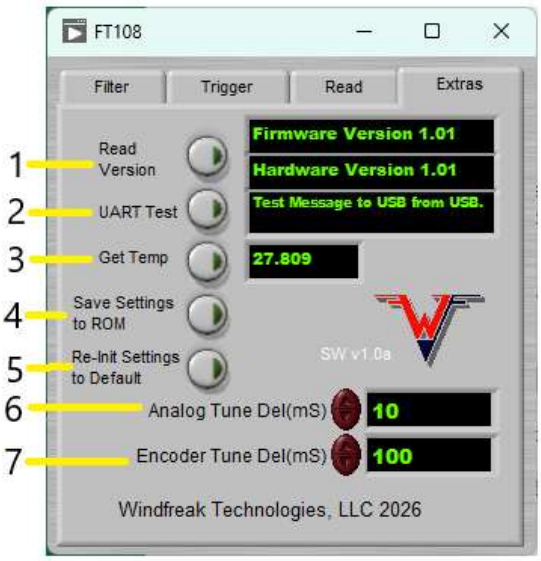

Figure 4 – Extras Tab

1. **Read Version.** Click to get the Firmware and Hardware versions of the FT108. Official FT108 firmware can only be updated at the Windfreak Technologies Headquarters in Florida. Older firmware operating with newer software may have problems with some features.
2. **UART Test.** Click and the FT108 will send messages to its USB and UART ports for UART troubleshooting. This works when hooked to USB or UART. When hooked to USB the device will send “Test Message to USB from USB” back to the USB Port and send “Test Message to UART from USB” to the UART Port. When attached to UART the device will send “Test Message to USB from UART” to the USB Port and send “Test Message to UART from UART” back to the UART Port.
3. **Get Temperature.** Click to read the internal temperature of the device.
4. **Save Settings to ROM.** Save all settings from the GUI to the FT108 hardware nonvolatile memory bank. These settings will be remembered, even after powering down the hardware. The device can fire up without a computer in any state.
5. **ReInit Settings to Default.** Resets the FT108 such that it boots from it hard coded default settings and erases old settings.
6. **Analog Tune Delay (mS).** Use with Analog Tune Trigger to reduce noise.
7. **Encoder Tune Delay (mS).** Use with Encoder Tune Trigger to debounce and reduce noise.

Please send questions to:
David Goins
Chief Technology Officer
Windfreak Technologies, LLC.
dgoins@windfreaktech.com
727-490-8812