



kamilsss655 /
uv-k5-firmware-custom



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40 - Spectrum analyzer

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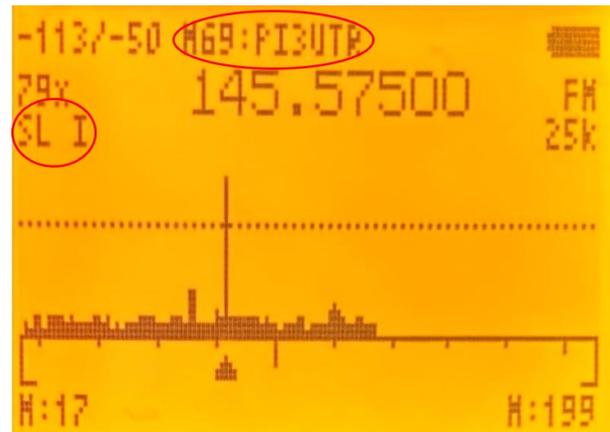
ErikS-web edited this page on Feb 2 · 72 revisions

Additions: Extra functionality

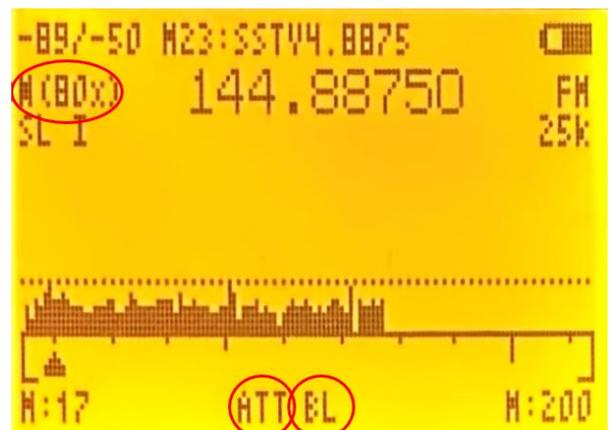
Some mods introduced by me on the spectrum functionality.

- **Spectrum channel scan mode** enter by going into memory mode and press F+5, this allows *SUPER fast channel scanning* (4.5x faster than regular scanning).

Regular scan of 200 memory channels takes roughly 18 seconds, spectrum memory scan takes roughly 4 seconds, if you have less channels stored i.e 50 - the spectrum memory scan will take only 1 second.



- Show **channel number and channel name** of the peak frequency in spectrum
- Pressing **PTT** exits the spectrum and fine tuning screen and copy current peak frequency, modulation, step, bandwidth to VFO. Also entering spectrum will carry these settings from VFO (full integration). Now to enter fine tuning screen in spectrum press **MENU**. This allows you to save and respond to the frequencies found much faster.
- Green **RX LED** turns on in spectrum only when $B1Max > 7$, to improve user experience in *low light conditions*
- **Squelch Tail tone Elimination** works in spectrum (if matches settings in menu- `SqTone`)
- **Mode indicators** (*top-left* of the screen and *bottom center*)
 - `N(0x)` - **normalization** function applied indicator
 - `ATT` - **attenuation** applied indicator
 - `BL` - **blacklist** applied indicator



These functions

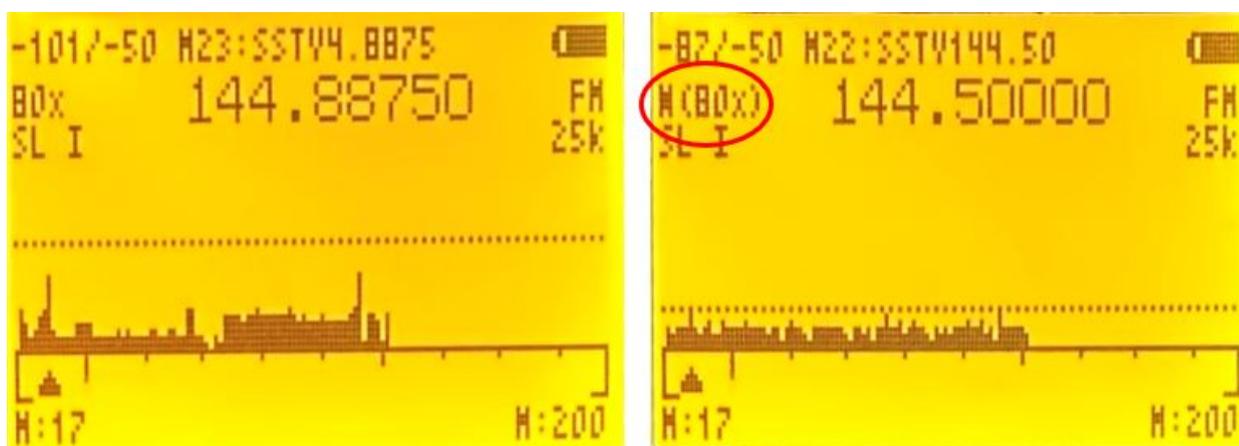
- are available in all spectrum-modes (channel/frequency/scan range)
- **reset** when *switching in spectrum mode*
- **Attenuate** function
 - sometimes there is a channel that has some interference, opening squelch randomly etc., before we had to either blacklist such channel or move the squelch threshold line higher, with this feature we can just attenuate particular channel

- in order to use it press **FN2** when RX is on, it will apply attenuation to the currently listened channel. You'll see a **ATT** indicator at the bottom of the screen.

Note

- attenuate usage has been simplified so now it can be applied anytime to current peak bar
- when a spectrum scan has more than 128x samples, the spectrum *attenuate* function cannot be activated (to prevent errors)

- **Normalization** auto-adjusts screen, when activated. **N(0x)** on screen



Button functions

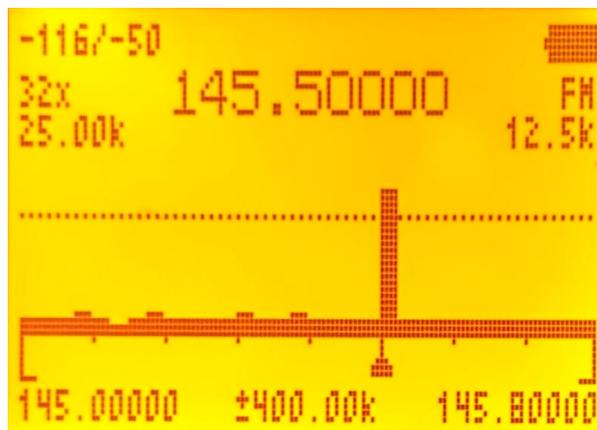
- In *Memory Channel mode* press **F+5** to enter **SUPER FAST** spectrum channel mode
- In *VFO-mode* long press **5** to enter *scan range mode* (ScnRng on display)
- In *VFO-mode* long press **5** then press **F+5** to enter *spectrum scan range mode*
- **2** toggles *spectrum channel mode normalization function*, that brings up all of the RSSI readings to the peak value. Resolves the 'valley problem' with channels hiding behind other channels of higher noise floor
 - **To use it**, wait until there are *no active TX peaks* across the whole spectrum and press **2**
 - **To turn it off** press **2** again or use the reset blacklist **UP/DOWN** buttons
- **3 / 9** **vertical scale**; adjusts the scaling of the spectrums (y-axis) between -130 and 10 dB (default is 50 dB). The value is displayed in the top left part of the screen.
- **4** toggles **scanlist** SL 1, SL 2, All. This can be actually useful to have different scanlists for different modulations, as spectrum channel scan uses single modulation for the whole scan.
- **6** toggles the **bandwidth** between 5, 6.25, 8.33, 12.5 and 25 kHz

- 8 **backlight** toggle
- * and F adjusts the **squelch level** which is represented by the dotted line.
- FN1 will put the *current peak channel* on the **BlackList**. You'll see a BL indicator at the bottom of the screen.
- FN2 will apply **Attenuation** to the *current peak channel*. You'll see a ATT indicator at the bottom of the screen.

Spectrum Sweep screen

Press F + 5 to enter the *spectrum mode* of the **Spectrum analyzer**.

The current VFO/Memory frequency will be the **start frequency** of the spectrum sweep



- spectrum frequency **change step is auto-adjusted** to half a spectrum bandwidth
- Spectrum analyzer can also be used with [ScnRng mode](#)

Note

- in this mode **Blacklist** is limited to **200** frequencies

Button functions

- 1 / 7 - increases/decreases *frequency step* between consecutive bars
- 2 - *normalization function* (don't press until *no active TX peaks* in spectrum)
- 4 -
 - From *VFO-mode*: toggles the number of bars (channels) in the graph.
 - From *Memory-channel-mode*: toggles **scanlist** SL 1, SL 2, All.
- 5 - shows a *frequency input box* for lower sweep frequency (value in **MHz**, * - decimal point)
- 3 / 9 **vertical scale**: adjusts the scaling of the spectrums (*v-axis*) between -130 and 10

- **5 / 0** - **Vertical scale**, adjust the scaling of the spectrum (y axis) between **-100** and **100** dB (default is 50 dB). The value is displayed in the top left part of the screen.
- **6** - toggles receiver **bandwidth**
- **8** - toggle **backlight**
- *** / F** - increase/decreases **squelch level**
- **0** - toggles **modulation type** (FM/AM/USB)
- Side Button I - **_excludes_** current frequency in the spectrum scan (add to **blacklist**). You'll see a **BL** indicator at the bottom of the screen.
- Side Button II - **Attenuation** to the currently listened channel. You'll see a **ATT** indicator at the bottom of the screen.
- **UP** and **DOWN** keys in spectrum channel mode now **resets the exclude frequencylist** (blacklist) and **normalization function**
- **Menu** to enter **fine tuning mode** (see Detail Monitor Screen)
- **EXIT** - exits to the previous screen/function
- **PTT** - will copy current **modulation, step, frequency, bw** and enter **VFO mode**

Detail Monitor screen



Button functions

M - scrolls through the parameters displayed at the bottom of the screen which can be adjusted with **UP/DOWN**

- **LNA\$** - Low Noise Amplifier \$hort
- **LNA** - Low Noise Amplifier
- **PGA** - Programmable Gain Amplifier

REG_10<15:0>	0x0038	REG_10<15:0> 0x0038 Rx AGC Gain Table[0]. (Index Max->Min is 3,2,1,0,-1) <9:8>=LNA Gain Short 11=0dB; 10=-11dB; 01=-16dB; 00=-19dB. <7:5>=LNA Gain 111=0dB; 110=-2dB; 101=-4dB; 100=-6dB; 011=-9dB; 010=-14dB; 001=-19dB; 000=-24dB. <4:3>=MIXER Gain 11=0dB; 10=-3dB; 01=-6dB; 00=-8dB. <2:0>=PGA Gain 111=0dB; 110=-3dB; 101=-6dB; 100=-9dB; 011=-15dB; 010=-21dB; 001=-27dB; 000=-33dB.
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- PGA - Programmable Gain Amplifier
- MIX - MIXER Gain

- EXIT - exits to the previous screen of the spectrum analyzer

Documentation

- Instruction for the Spectrum Analyzer (*initial version*)
[QuanSheng.UV.K5.Spectrum.analyzer.guide.EN.pdf](#)

Note

- When spectrum analyzer is *active*, you *cannot communicate with Chirp*

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