Radio operation

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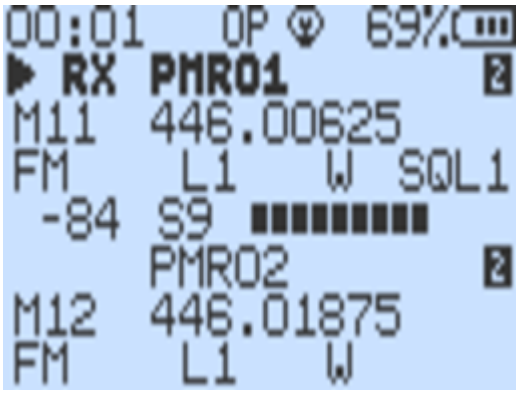
Basic operation & configuration

Radio display is split into upper VFO and lower VFO. You can change upper/lower selection by pressing `F + 2 A/B` (or by long press `2 A/B`).

Each VFO can operate independently of each other function in either frequency or channel mode. To switch modes select the desired VFO and press `F + 3 VFO/MR` (or long press `3 VFO/MR`).



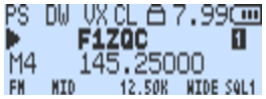
In the `frequency mode` you manually type in the frequency with the keypad. You can also switch different options for that VFO in the menu (first 13 menu entries). If you setup the VFO, the settings can be saved to a memory channel by going into the menu `ChSave` and choosing the memory channel the VFO should be saved into.

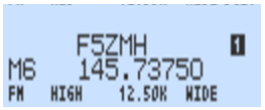
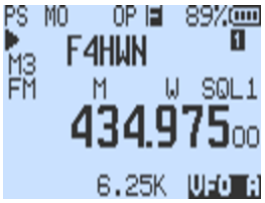
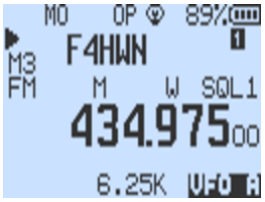
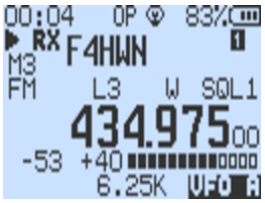
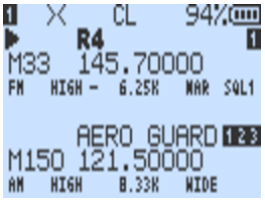
In the `channel mode` you can switch between saved memory channels. Memory channels can be added manually as mentioned before or with a computer with `CHIRP`.

> ⚠ Warning
>
> Do not use Quansheng CPS it overwrites custom settings.

Status bar

At the top of the screen, on the first line, appears the status bar. It displays many information. Here are some examples:

Screenshot	Description
	PS means PowerSave is activated, DW means RxMode is set to MAIN TX / DUAL RX, VX means Vox is activated, OP means PTT is set to ONEPUSH, the lock icon means the keypad is locked and you see the battery percentage.
	PS means PowerSave is activated, DW means RxMode is set to MAIN TX / DUAL RX, VX means Vox is activated, CL means PTT is

	set to CLASSIC, the lock icon means the keypad is locked and you see the battery voltage.
	PS means PowerSave is activated, MO means RxMode is set to MAIN ONLY, OP means PTT is set to ONEPUSH, the F icon in reverse video means the F function key is activated and you see the battery percentage.
	MO means RxMode is set to MAIN ONLY, OP means PTT is set to ONEPUSH, the Light icon means the manual Backlight control is activated, and you see the battery percentage.
	The RX timer on the left indicates how long it has been since you received a signal, OP means PTT is set to ONEPUSH, the Light icon means the manual Backlight control is activated and you see the battery percentage.
	The small 1 in reverse video and >< means you're currently scanning LIST 1, OP means PTT is set to ONEPUSH, the Light icon means the manual Backlight control is activated, and you see the battery percentage.
	The infinit icon means you're currently scanning ALL channels, MO means RxMode is set to MAIN ONLY, OP means PTT is set to ONEPUSH, the Light icon means the manual Backlight control is activated and you see the battery percentage.

> Note
>
> About RxMode, MO means MAIN ONLY, DW means MAIN TX / DUAL RX, DWR means DUAL RX RESPOND and XB means CROSS BAND.

About the FLock and TXLock menus

In the past, there were a few band plans in the F Lock menu to meet various requests: PMR 446, FRS/GMRS/MURS, etc. However, adding new F Lock options always took up a lot of memory: new options in the F Lock menu, storing frequencies (for specialists, these are uint32_t each time, so they are very memory-consuming), etc.

Now, it must be recognized that it was complicated, if not impossible, to offer band plans that could cover and meet all expectations. There are too many variations from one country to another. Additionally, nothing is planned for combining multiple frequency plans from the F

another. Additionally, nothing is planned for combining multiple frequency plans from the F Lock menu. For example, opening both the PMR 446 and LPD bands. In summary, F Lock is too limited and not scalable.

Here is the solution:

1 - Select the most suitable band plan from the F Lock menu. For example, if you have a callsign and live in Europe, select CE HAM. If you don't have a callsign and are just an SWL, select DISABLE ALL, which is safer.

2 - If you still want to transmit on a memory channel that isn't open by the band plan (e.g., PMR 446, FRS/GMRS/MURS, Freenet, etc.), go to the TXLock menu and choose OFF. This will create an exception and allow you to transmit on this channel.

In a nutshell :

- In memory channel or VFO mode, if the frequency is inside the band plan selected in FLock, you can transmit.
- In memory channel or VFO mode, if the frequency is outside the band plan selected in FLock,
  - you can transmit only if TXLock is OFF
  - you cannot transmit if TXLock is ON

Note that if a memory channel or VFO is outside the band plan and TXLock is ON, there will be a small padlock to the left of the name.

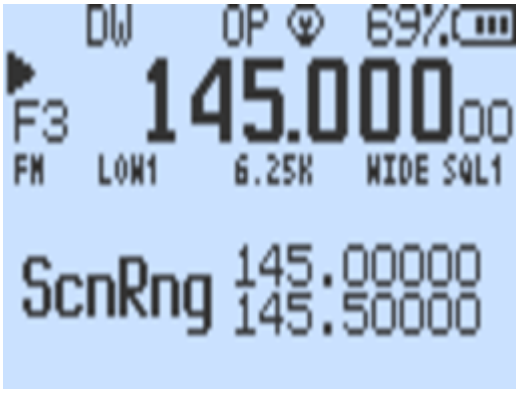
Frequency / Memory scanning

Frequency scanning

To start a frequency scan switch a VFO in frequency mode. Set a start frequency. Set a frequency step (menu `Step`). Start scanning with custom button scan function or by long pressing the `* Scan` button.

Scan frequency range function

- switch to frequency mode
- set upper and lower VFO frequencies to scan range boundaries
- long-press `5 NOAA`, `ScnRng` label should show up
- start scan with long-press `* Scan`
- it will scan between given boundaries
- long-press `5 NOAA` or `EXIT`, or switch VFOs to exit `ScnRng` mode



`ScnRng` function is also supported by spectrum analyzer. If you activated the function just start spectrum analyzer.

Memory channels scanning

To scan channels saved in the radio memory switch the VFO to Memory mode.

The radio has 3 scanning lists. Each memory-channel can belong to 0, 1, 2 or 3 lists. To add / delete a channel to / from a list switch current VFO to desired channel and go to a menu `ScAdd1`, `ScAdd2` or `ScAdd3`, alternatively you can long press `5 NOAA` button, you will see icons `1`, `2`, `12`, `3`, `13`, `23`, `123`, `0` toggling on and off on the right side of the channel label.

If you set up the scanning lists you can start scanning by using custom button scan function or by long pressing `* Scan` button. If you press the function button or long press `* Scan` while scanning, the scanning list will be switched, you will see corresponding icon on the top left of the screen: `0`, `1`, `2`, `3`, `123` or `ALL`. Active scanning list can also be changed with menu `SList`. You can view scan lists and its channels by going to menu: `SList1`, `SList2` and `SList3`.

Note that, during scan, you can change scan list by toggle key 0 (List 0), 1 (List 1), 2 (List 2), 3 (List 3), 4 (List 123), 5 (ALL).

Finally, you can exclude a memory channel during the scan with a long press on `M` button.

Common frequency / channel scanning features

You can change the scan direction while scanning with `UP` and `DOWN` buttons.

The scan can be stopped with the `EXIT` button, the search result will be ignored and frequency / channel will return to the one that was set before scan begun. Alternatively you can stop the scan with `PTT` or `MENU` button in which case the frequency / channel will be set to the last channel where transmission was found.

Single frequency scanning (frequency

Single frequency scanning (frequency copy), DCS / CTCSS scanning

This function will allow you to find out and copy frequency and coding settings. The frequency search will only work for strong signals. The transmitting radio has to be close. To start a frequency copy (FC) function use `4 FC` function button. Scanner screen will open. Push and hold a PTT button on the other radio. Wait couple of seconds until frequency and code (if used) appears on the screen. The settings can be saved with the `MENU` button. The settings will be save either to a channel or the main VFO, depending in which mode you started the scan.

You can also search only the DCS / CTCSS code for a frequency set on the main VFO. Choose desired frequency or channel and press `F + * SCAN`. The same screen will appear, but the frequency search will be omitted, instead the frequency of the main VFO will be used. Wait for a signal to appear or press the PTT on the other radio. It takes 1-2sec for the code to be found. The save procedure is the same as above.

There is another option of DCS / CTCSS code scanning. Choose desired frequency or a channel. Go to the menu `RxDCS` or `RxCTCS`. Enter the menu option and press `* SCAN` button. A SCAN label will appear. Wait for a radio signal or press the PTT button on the other radio. When code is found the SCAN label will disappear, to save confirm the option with the `MENU` button. It doesn't matter on which of the two menu items you start the scan. Both DCS and CTCSS will always be found, and the menu entry will be changed to the correct one.

1750 Hz toneburst for repeater access

When the `PTT` is pressed, the 1750 Hz can be activated by pressing `Side button 2️⃣`.

Air Copy

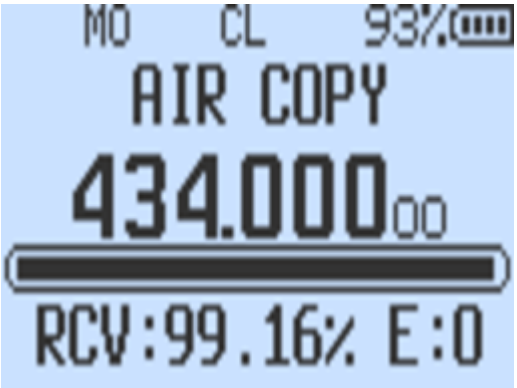
Air Copy is activated by holding PTT + SIDE BUTTON 2️⃣ while turning on the radio and than Release All Keys.

This feature allows you to reproduce memory channels from one radio (source) to another (target) using FSK modulation. By default, transmission takes place on the LPD band (434.000 MHz) at very low power (a few milliwats).

On the target radio, press `EXIT` key to start reception. On the source radio, press the `M` key to start transmission.

Wait for 120 packets to be sent from the source to the target. You may see a few packets lost, but this is not really important. Even if you lose 3 packets, that's a 2.5% loss. Out of 200 memory channels, this means that 195 will have been replicated correctly. It's often enough to

memory channels, this means that 195 will have been replicated correctly. It's often enough to repeat the operation a second time to have 100% of the channels replicated.



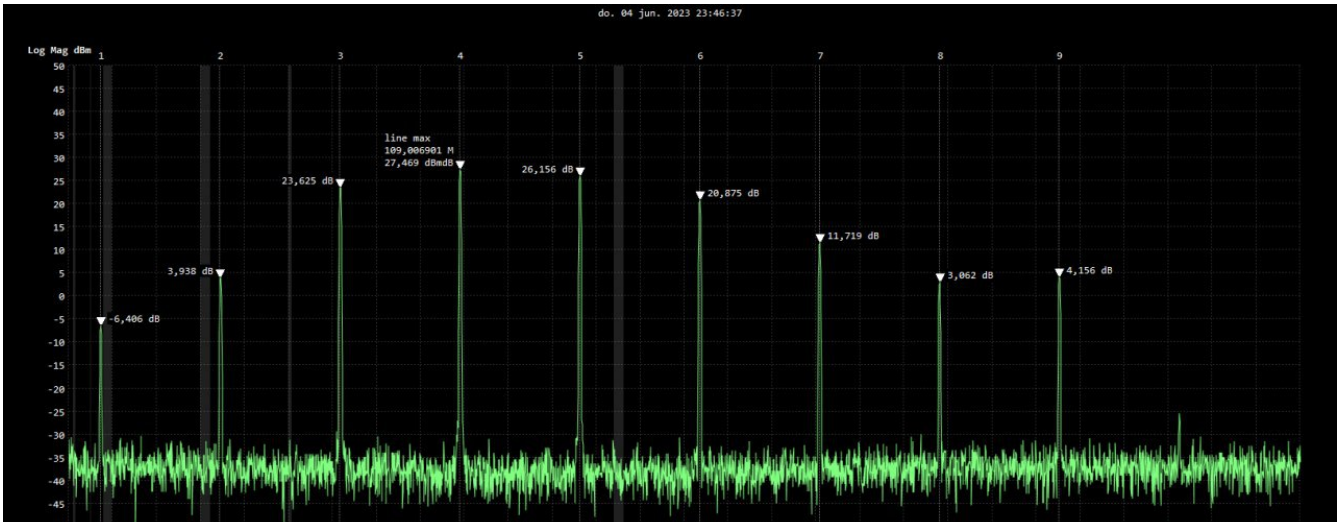
TX on all bands

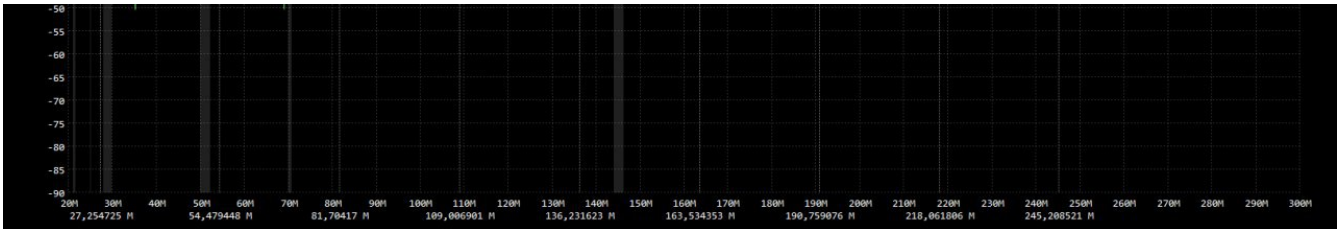
Warning

This modification is UNTESTED and is for RESEARCH PURPOSES ONLY, to explore the capabilities of the device and its chipset. DO NOT transmit on illegal frequencies. DO use a dummy load. The author(s) and contributor(s) of this repository are NOT liable for any damages, litigation, or other consequences of the misuse of this research firmware and do not accept any culpability. By installing any firmware from this repository, you accept full responsibility for any consequences that may arise and waive the right to pursue legal action against the author(s).

This option won't give you ability to transmit in any other modulation than FM, this is a hardware limitation. Switching to AM or SSB only switches AF audio output mode of a RF IC. It doesn't switch the whole IC into AM / SSB mode. This is for listening only. This firmware is also built with additional lock that blocks TX when AM or SSB is on.

As an example against using this for actual communications, consider the following chart for transmission power for a transmission at 27.254MHz:





- 27.254MHz -> **228 microwatts**
- 54 Mhz -> 2.4 milliwatts
- 81 Mhz -> 230 milliwatts
- 109 Mhz -> 558 milliwatts
- 136 Mhz -> 412 milliwatts
- 163 Mhz -> 122 milliwatts
- 190 Mhz -> 14.8 milliwatts
- 218 Mhz -> 2 milliwatts
- And finally, on 245 Mhz -> 2.6 milliwatts.

CREDITS: https://github.com/Tunas1337/UV-K5-Modded-Firmwares#even-bigger-warning

How to unlock TX on all bands

1. Go to hidden menu
2. Enter menu `F-Lock`
3. Choose option `UNLOCK ALL`
4. Repeat steps 2-3 **3 times**. Do it carefully, if you confirm any other option in the process counter will get zeroed and you will have to repeat that **3 times** more.

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