

# USERS MANUAL

Version 1.2

11/1/2024

The M17 protocol was designed by Wojciech Kaczmarek (SP5WWP). The M17 name was part of the address from Wojciech's ham club. The original firmware was programmed by Niccolo Izzo (IU2KIN), Silvano Seva (IU2KWO), Federico Amedeo Izzo (IU2NUO), and Federik Saraci (IU2NRO) Silvano Seva made the firmware compatible with our radios. The Codec 2, which is the Vocoder used in the Voice mode of the M17 was designed by David Rowe (VK5DGR).

There are three basic sections to what you see on the display as follows:

Screen with Frequency

Macro Menu

Menu

The Screen with frequency allows you to transmit and receive. You can change the frequency of the radio from that screen.

The Macro Menu allows you to change the following parameters:

CTCSS Transmit Tone (FM mode only)

When the Tones will be used (FM mode only)

Bandwidth (FM mode Only)

Mode (FM or M17)

Power output (1 Watt or 5 Watts)

Brightness of the display

Lock or Unlock **(Do not know what it means at this time)**

The Menu allows you to change various parameters. A summary of the screens is as follows:

- Banks
- Channels
- Contact
- Settings
  - Display
    - Brightness
    - Timer
  - Radio
    - Offset
    - Direction
    - Step
  - M17
    - Callsign
    - CAN
    - CAN Rx Check
  - Accessibility
    - Macro Latch
    - Voice
    - Phonetic
  - Default Settings
- Info
- About

On the assumption the open RTX is installed, the first screen that will be displayed is as follows:



If you enter your call sign in M17 Settings menu, then the screen will displayed as follows:



Followed by the screen that shows the mode and the frequency of the receiver. When the PTT is pressed, the display will show the frequency of the transmitter.



If the mode was FM then the following screen will be displayed



Pressing the up arrow will increase the frequency by an amount shown in the Step parameter of Radio Settings.

Pressing the down arrow will decrease the frequency by an amount shown in the Step parameter of Radio Settings.

When in the M17 mode, pressing the “#” key will allow you to change the destination of the radio. If it is set for “ALL”, then the destination is all radios that can hear you. The Channel Access Numbers have to

match unless you set it for promiscuous mode. If you change the destination address to something other than “ALL”, pressing the # key twice will set it back to “ALL”

The battery on the top right of the screen shows the charge of the battery. If it is all green, then the battery is fully charged.



When receiving a signal, there will be a white line just above the numbers on the bottom indicating the signal strength of the received signal.

The white line just below the frequency indicates the position of the volume control and is there whether or not you are receiving a signal.

**When in the M17 mode and another radio is transmitting, there is a green line between the signal strength and the volume control indication. That line means?**



When in the FM mode, there is a small orange line between the signal strength and the volume control indication. **That line means?**



When receiving a signal, there will be a white line just above the numbers on the bottom indicating the signal strength of the received signal.

The white line just below the frequency indicates the position of the volume control and is always there.

Pressing the TK1 button on the top left will then get the following screen:



Take a look at the ICON to the left of the “Macro Menu”. Pressing the TK1 and letting go of TK1 while that ICON is there will lock in the Macro Menu. Letting go of the TK1 while the ICON is not there will not lock in the Macro Menu. If already in the Macro Menu, a quick press of the TK1 will get you back to the main screen.

If you notice, there are numbers 1 through 9 on this screen. The numbers are defined as follows:

1. Set the CTCSS Encode down one position. The number to the right of the T- is the CTCSS Frequency. Decreasing the frequency when at 67.0 Hz wraps around to 254.1 Hz.
2. Set the CTCSS Encode up one position. Increasing the frequency when at 254.1 wraps around to 67.0 Hz.
3. Sets the CTCSS Mode. The interpretation is as follows:
  - a. Blank: No CTCSS used
  - b. D: CTCSS only use for decode (receiving)
  - c. E: CTCSS on used for encode (transmitting)
  - d. E+D CTCSS used for both decode and encode.
4. Bandwidth of the channel. Choice is 25 KHz and 12.5 KHz
5. Choice of FM mode or M17 mode
6. Power output. Choice is 1 watt or 5 watts.
7. Decrease the Screen Brightness. The number to the right of the B- is the screen brightness number. 100 indicates maximum brightness.
8. Increase the Screen Brightness
- 9. Choice of Lck or Unlk **WHAT DOES LOCK OR UNLOCK DO?****

If item #5 is set to M17 mode, item 1, 2, 3 and 4 are disabled.

The available CTCSS Codes are as follows:

67.0	103.4	159.8	199.5
69.3	107.2	162.2	203.5
71.9	110.9	165.5	206.5
74.4	114.8	167.9	210.7
77.0	118.8	171.3	218.1

79.7	123.0	173.8	225.7
82.5	127.3	177.3	229.1
85.4	131.8	179.9	233.6
88.5	136.5	183.5	241.8
91.5	141.3	186.2	250.3
94.8	146.2	189.9	254.1
97.4	151.4	192.8	
100.0	156.7	196.6	

Pressing the TK1 button gets you to the following screen if you are in the FM mode:



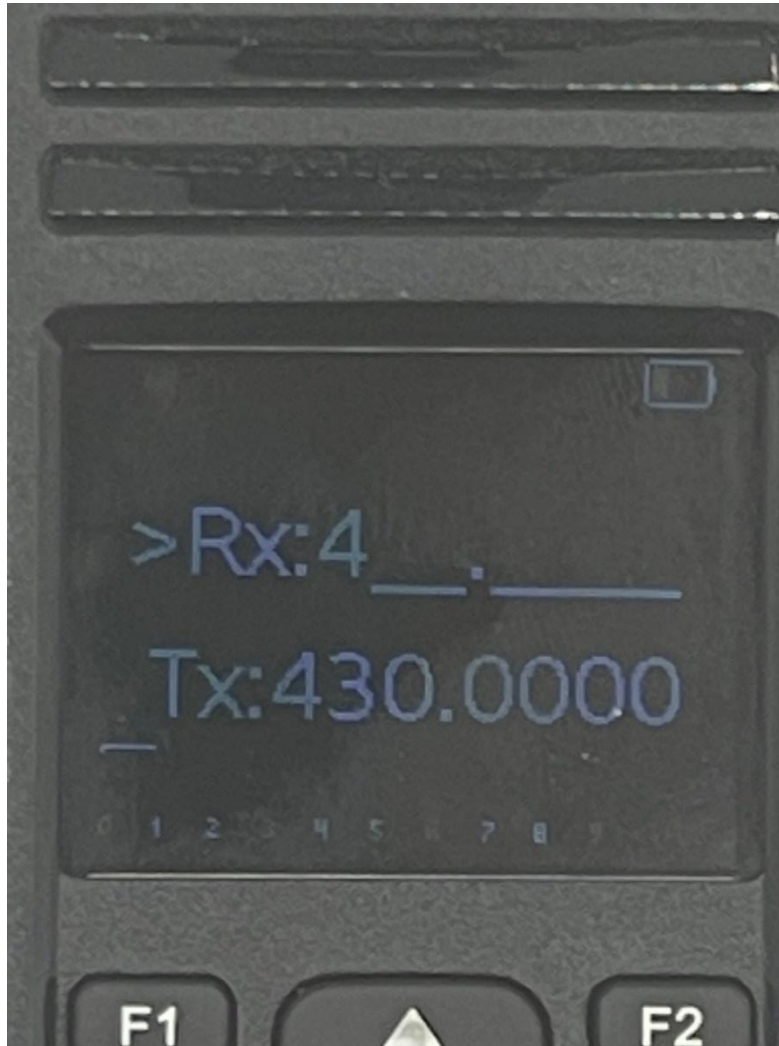
Now you can put in the Tx and Rx frequencies. If you are happy with the frequency displayed, do not enter any numbers.

Pressing the TK1 button gets you to the following screen if you are in the M17 mode:



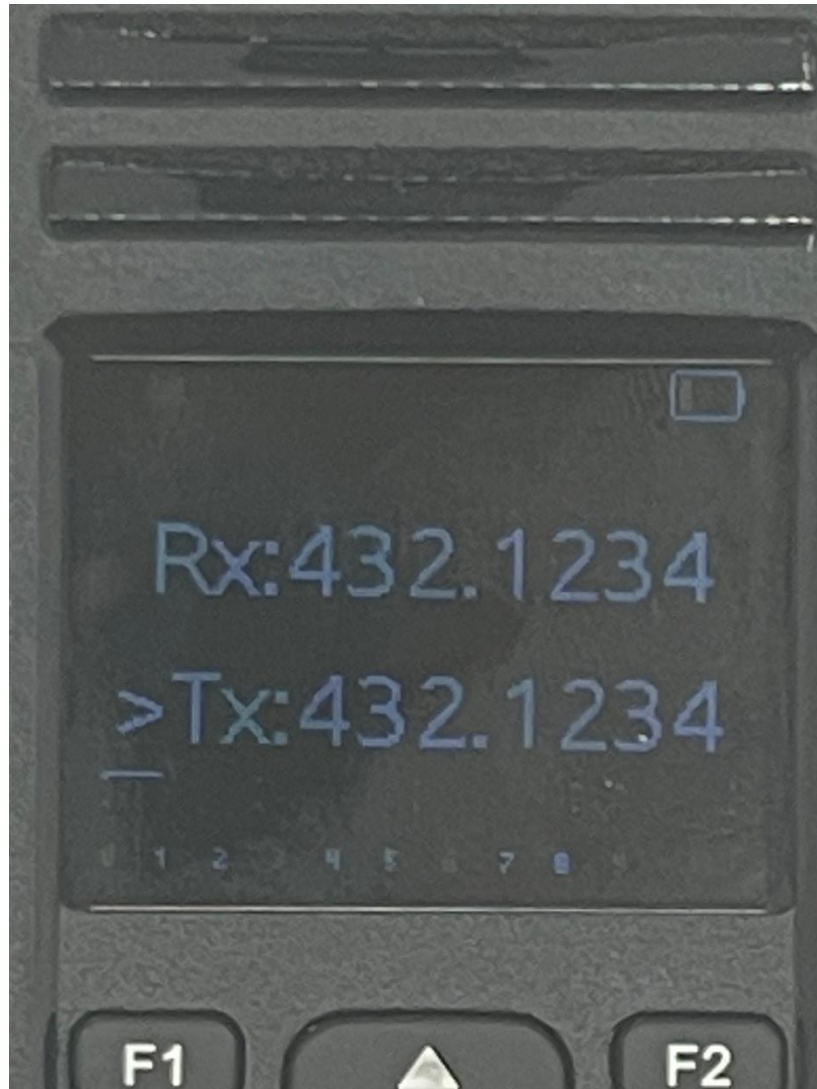
Now you can put in the TX and Rx frequencies. If you are happy with the frequency displayed, do not enter any numbers.

Start by putting in four or five as the frequency of this radio is 400-527 MHz. The top line is for the Rx Frequency and the bottom line is for the Tx Frequency. Pressing a number will now get the following screen:



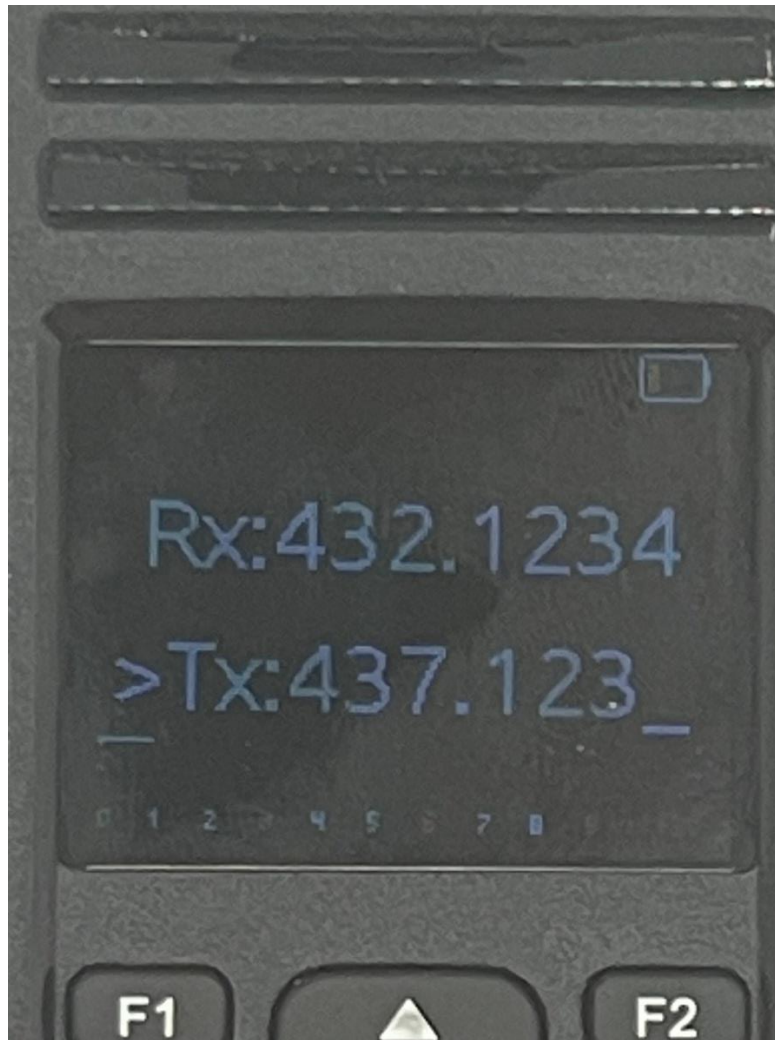
If you press the OK key before putting in all the digits, the radio will pad the rest of the digits with zeros. As an example, if you put in 4 like the screen above and press the OK key, the radio will give you a frequency of 400.0000.

This screen requires you to put in a total of 7 digits for both the Rx and Tx frequencies. After you put in the 7 digits for the Rx frequencies, a copy of the Rx frequency will be copied to the Tx frequency as shown below.





If you put in more numbers, then you will change the Tx frequency as shown in the screen below.



When you put in the last number for the Tx frequency, the screen will look as follows:



If you want to leave the Tx frequency and the Rx Frequency to be the same, press the OK button.

The radio is now ready to transmit!

Pressing the OK button at this time will get you the following screen:



Pressing the OK button now get to the following screen:



This feature is not supported at this time. Pressing the back key will get you back to where you came from.

Use the up and down arrow keys to select the feature you want. In this case we used the down arrow to get to the Channels.



Pressing the OK button now get to the following screen:



This feature is not supported at this time. Pressing the back key will get you back to where you came from.

Use the up and down arrow keys to select the feature you want. In this case we used the down arrow to get to the Contacts.



Pressing the OK button now get to the following screen:



This feature is not supported at this time. Pressing the back key will get you back to where you came from.



Use the up and down arrow keys to select the feature you want. In this case we used the down arrow to get to the Contacts.



Pressing the OK button now get to the following screen:



Use the up and down arrow keys to select the feature you want.

Pressing the OK button now get to the following screen:



Use the up and down arrow keys to select the feature you want to modify.

If you want to modify the Brightness, Press the OK button again and you get the following screen.



Use the up and down key to select the value you want. The values you can select is between 5 and 100 in increments of 5. The higher the number the brighter the display.

If you want to modify the Timer, highlight the timer as explained before and press the OK key and you will get the following screen:



Use the up and down key to select the value you want. The possible values are shown below. Setting to off keeps the display always on.

Off	25 Sec	4 Min	1 Hour
5 Sec	30 Sec	5 Min	
10 Sec	1 Min	15 Min	
15 Sec	2 Min	30 Min	
20 Sec	3 Min	45 Min	

Using the Back key, you get to the following screen:



Use the up and down arrow keys to select the feature you want

Pressing the OK button with the Radio Highlighted gets to the following screen:



Use the up or down key to get to the feature you want to modify.

Pressing the OK button with the Offset highlighted gets the following screen:



Use the numeric keys to enter your desired offset. Press the OK key to lock in your value. This feature is used to determine the frequency when you press the PTT. If the offset is zero, then the Rx and Tx frequency will be the same. If the offset is not zero, and the direction is “+” then the Tx frequency is going to be the Rx frequency plus the offset. If the offset is not zero, and the direction is “-” then the Tx frequency is going to be the Rx frequency minus the offset.



Pressing the OK button with the Direction highlighted gets the following screen:



Use the up and down arrow to select either “+” or “-”. Use the OK key to lock in the value.

Pressing the OK button with the Step highlighted gets the following screen:



Use the up and down arrow keys to select the step value. Use the OK key to lock in the value. The possible values are:

- |          |           |
|----------|-----------|
| 1.0 kHz  | 15.0 kHz  |
| 5.0 kHz  | 20.0 kHz  |
| 6.25 kHz | 25.0 kHz  |
| 10.0 kHz | 50.0 kHz  |
| 12.5 kHz | 100.0 kHz |

When you use the up and down arrow for changing frequency, this number gives the amount to change with each press.

Using the Back key, you get to the following screen:



Pressing the OK button with the M17 highlighted gets the following screen:



Use the up or down arrow to select the parameter you want to modify and then press the OK key to start the modification process.

Pressing the OK key with the Callsign highlighted gets the following Screen:



Use the numeric keys to enter your call sign. As an example, pressing the 1 will enter the “1” character. Pressing the 2 twice will get the “B” character. When finished, press the OK key to lock it in.

Once you enter in characters and you made a mistake, you can use the up or down arrow keys to back up one character at a time.

Pressing the OK key with the CAN highlighted gets the following Screen:



Use the up and down keys to select the value. The possible values are between 0 and 15. When finished, press the OK key to lock it in. The CAN is an abbreviation for Channel Access Number and is like a CTCSS number. If someone is transmitting to you and your CAN numbers do not match, then you will not hear them unless the CAN Rx Check is OFF.

Pressing the OK key with the CAN Rx Check highlighted gets the following Screen:



Use the up and down keys to select the value. The possible values are ON and OFF. When finished, press the OK key to lock it in. If set to OFF, then it acts like a promiscuous mode and will hear the other radio no matter what the CAN is set to.

Using the Back key, you get to the following screen:



Use the up and down arrow keys to select the feature you want.



With the Accessibility highlighted, pressing the OK key get to the following screen:



Use the up and down key to select the feature you want to modify.

Pressing the OK key with Macro Latch highlighted gets the following Screen:



Use the up and down keys to select the value. The possible values are ON and OFF. When finished, press the OK key to lock it in.

Pressing the OK key with voice highlighted gets the following Screen:



Use the up and down keys to select the value. The possible values are ON and OFF. When finished, press the OK key to lock it in.

Pressing the OK key with Phonetic highlighted gets the following Screen:



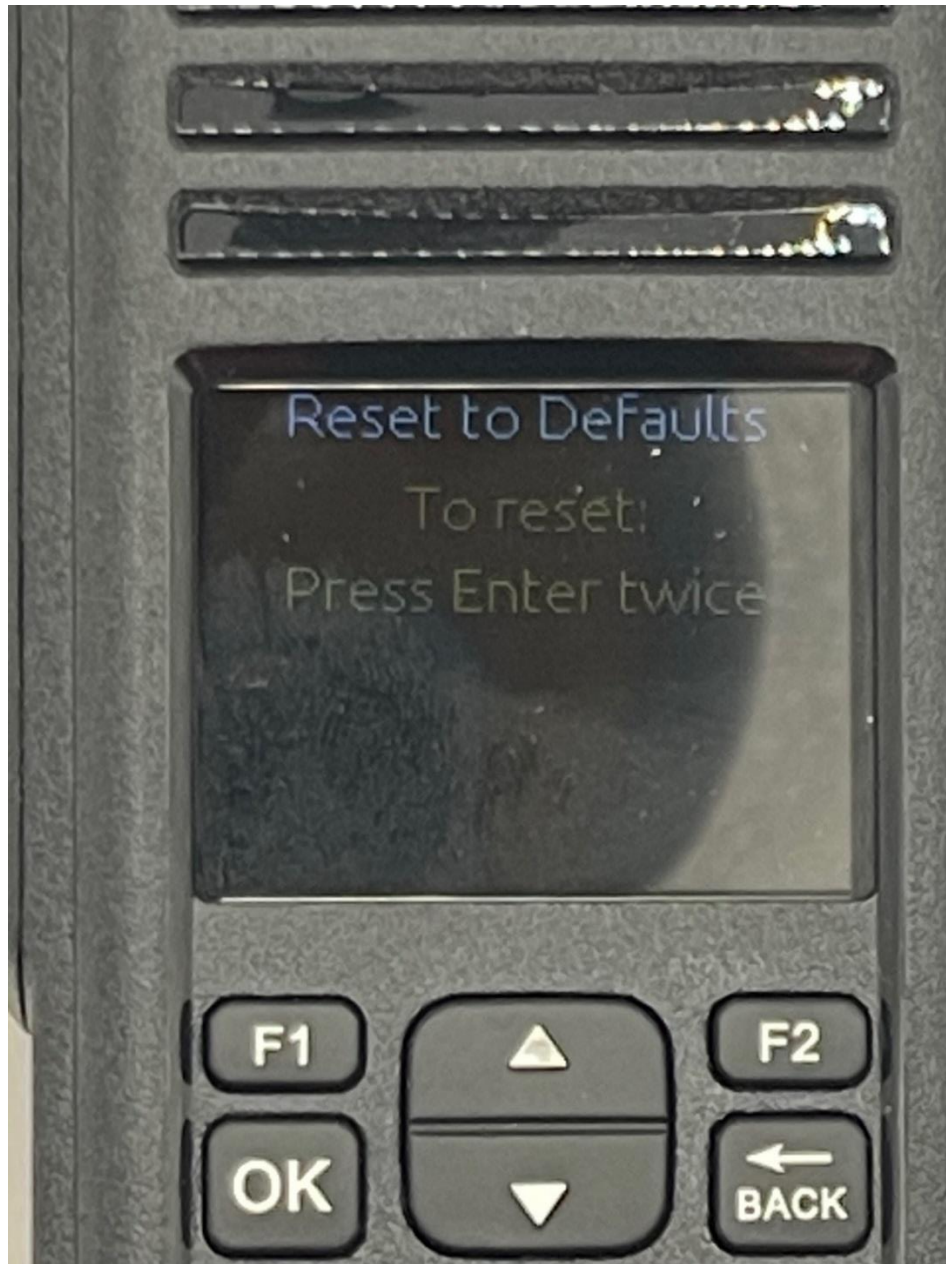
Use the up and down keys to select the value. The possible values are ON and OFF. When finished, press the OK key to lock it in.

Using the Back key, you get to the following screen:



Use the up and down arrow keys to select the feature you want.

With the Default Settings highlighted, press the OK key to reset the parameters screen. Press OK twice to reset the parameters.



Press the back key to get to the screen below.



Use the up and down keys to select the feature you want.

With Info highlighted, press the OK key to see the various parameters available.



You cannot change any of the parameters from this screen.

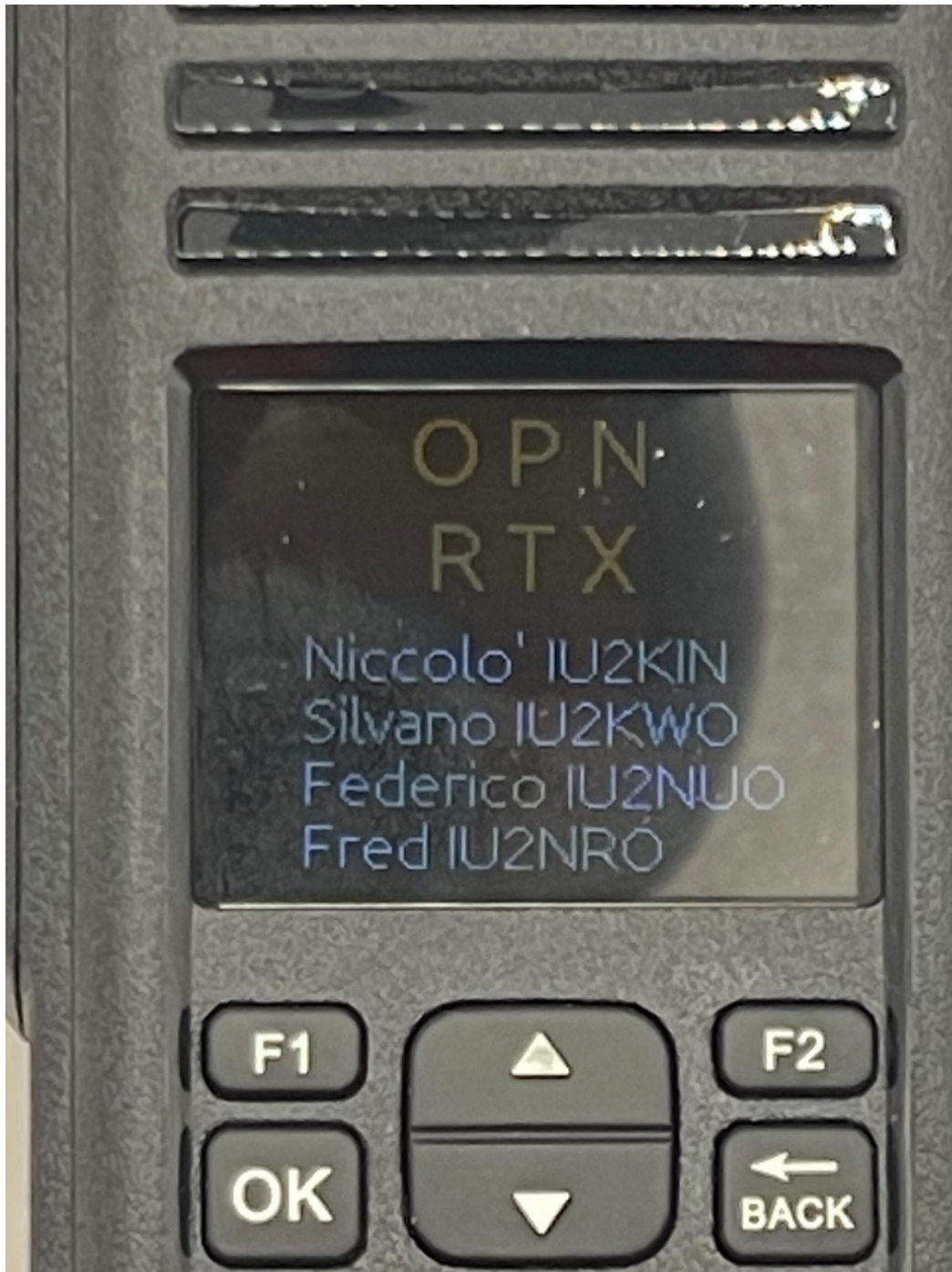


Press the back key to get to the screen below.



Use the up and down keys to select the feature you want.

With About highlighted, press the OK key to see the primary developers of the OPNRTX project.



Use the back key to go back to the menu selection.

# Changes

## Version Changes

<b>1.0</b>	<b>Initial Release</b>
<b>1.1</b>	<b>Added summary in front and short cuts and hints for some of the parameters. Added change log in back.</b>
<b>1.2</b>	<b>Gave more details about certain parameters and how the radio is used.</b>