

UV-17 Pro GPS Modified CPS 1.2.4j Release Notes

January 2024

This document provides information about the modified CPS programming software for the Baofeng UV-17 Pro GPS amateur radios. Some additional information about these radios is also provided for user convenience.

Revision/Update Information: 1.2.4j

Revision/Update Information: This is a revised manual. Major changes from the 1.2.4i manual are shown with a vertical bar in the margin.

<https://www.miklor.com/UV17pro/Mod124.php>

December 23, 2023

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1 Primary reasons for a modified CPS

1.1 The radio was not supported by CHIRP

At the time this modified CPS project started, the UV-17 Pro GPS (and similar new Baofeng models) were not supported by CHIRP. Requests for this radio were opened (for example, here: <https://chirp.danplanet.com/issues/10648>). It took some time before support was added to CHIRP. During that period, many features were added to the modified CPS.

The CHIRP FAQ points out that not all settings are supported on all radios:

"CHIRP's focus is to support reading and writing the memory channels of as many radio models as possible. This provides the ability to exchange your programming information between dissimilar radios. It does not focus on supporting every single knob and setting that each radio supports. Doing so would severely limit the amount of developer time available to supporting a wider-range of models."

The modified CPS includes features unlikely to appear in CHIRP because they are specific to the UV-17 Pro GPS radio. Among those are:

- Programming software dedicated to the UV-17 Pro GPS.
- Startup picture upload utility.
- Voice Pack Editor utility.

1.2 Aircraft band support

The initial reason for modifying the factory CPS was to add support for entering aircraft band frequencies. The factory software will report an error when trying to configure a channel with a frequency below 136MHz. I realized that this could probably be fixed with a simple hex editor, which led to my first modified version. I called that version 1.2.4a to distinguish it from the factory version 1.2.4.

1.3 Channel list Cut / Paste function

Even with aircraft band support added, the factory CPS was lacking in features that people had come to expect. The main missing feature was the ability to cut and paste channel settings, both within the CPS program and to external CSV files. This was quite a complex feature to add to a program that did not originally have that function, but 1.2.4f introduced full Cut / Copy / Paste functionality.

1.4 **Other useful changes**

There are quite a few other changes in the modified CPS. A complete list of the changes can be found in Chapter 5.

2

Useful sites

The following list of sites will be useful to UV-17 Pro GPS owners:

- Miklor page for this modified CPS:
<https://www.miklor.com/UV17pro/Mod124.php>
- Miklor page for the UV-17 Pro GPS:
<https://www.miklor.com/UV17pro>
- Main Miklor page:
<https://www.miklor.com>
- Facebook Baofeng UV-17 Pro GPS group:
<https://www.facebook.com/groups/5869547629812965>
- Facebook Baofeng Owner's Club group:
<https://www.facebook.com/groups/808920029174333>
- CHIRP programming software page:
<https://chirp.danplanet.com>
- CSV2DAT converter page: <https://csv2dat.onrender.com>

3 Installing the modified CPS

Visit <https://www.miklor.com/UV17pro/Mod124.php> to download the latest modified CPS Zip file. Most Windows versions have built-in support for Zip files. You may also have a utility such as 7-Zip, WinRAR, or WinZip installed on your computer.

3.1 Supported Windows versions

The modified CPS has been tested on various Windows versions from Windows XP through Windows 11, with the majority of testing being done on Windows 10 and Windows XP. Specific limitations or restrictions that have been discovered are noted below:

- On Windows XP, if you want to enter Chinese characters in channel or zone names, you must have the optional Windows "East Asian language support" feature installed. Installing this feature requires the original Windows XP setup disc.
- On Windows 11, some programming cables will require manual driver installation. Refer to your programming cable's documentation and Section 4.9 of this manual for more information.
- Starting with version 1.2.4h of the modified CPS, more styling is inherited from the current Windows Desktop Theme. Therefore, the appearance of the modified CPS may vary between different Windows users or PCs.

Note: Configuring a Windows Desktop Theme is beyond the scope of this manual. Search the web for "customize Windows *nn* desktop theme", where *nn* is your Windows version, for more information.

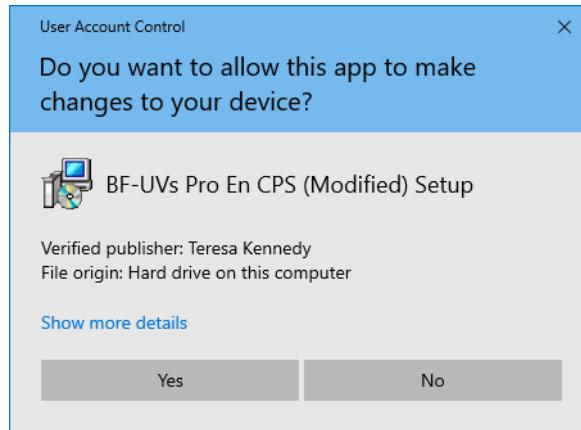
3.2 Performing the installation

Once you have extracted the *setup.exe* program, click on it to launch the installer.

The installer will create a new Start Menu group named "BF-UVs Pro En CPS (Modified)". This is a completely separate installation from the standard "BF-UVs Pro En CPS", which you may already have installed. They will appear as two separate entries in Control Panel / Programs and Features, and you may uninstall either one without affecting the other in any way.

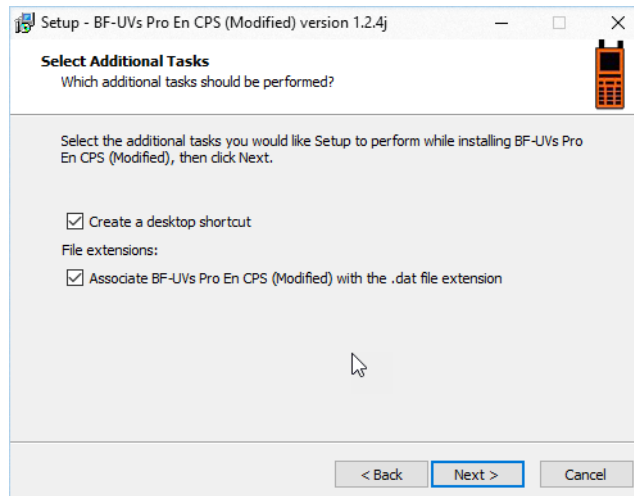
The installer is digitally signed to show that it is from a verified publisher and that it has not been tampered with. The first dialog box will display the publisher info and ask whether you want to proceed with the installation:

Installing the modified CPS

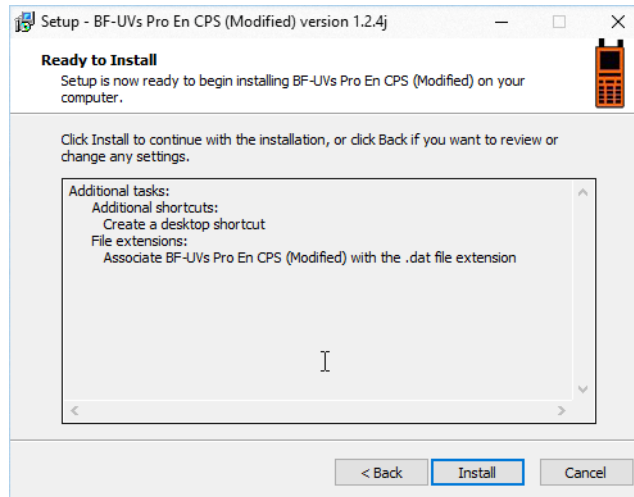


Next, the setup program will ask if you want to create a shortcut on the Windows desktop and whether or not .dat files should be associated with the modified CPS:

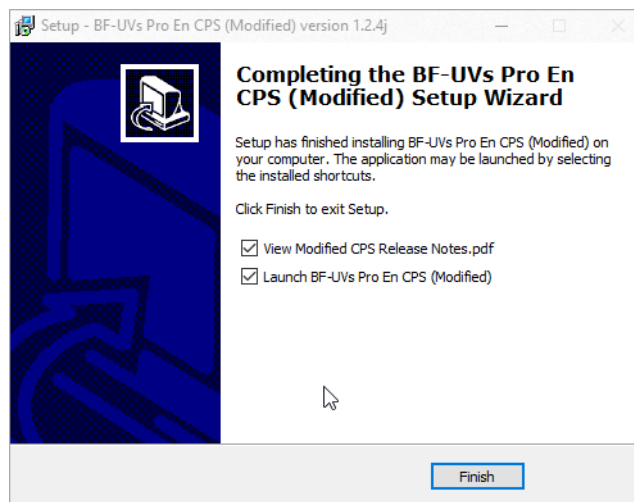
Note: If you already have another program that associates with .dat files, you should leave that checkbox unchecked.



The setup program will then ask if you want to proceed with installation:



Finally, the setup program will ask you if you would like to read the release notes or launch the modified CPS program after installation:



If you decide to uninstall the modified CPS, you may do it via the Windows Control Panel / Programs and Features (Add or Remove Programs in older versions of Windows) or from the Windows Start Menu.

4

Tips and hints for using CPS features

This chapter contains information on various features of the modified CPS that may not be obvious to new users.

4.1 Cut / Copy / Paste operation

The modified CPS uses the normal Windows Cut / Copy / Paste right-click dropdown menu method for managing data. If you cut or copy channel information from the channel list, you can paste it back into the channel list, either in the same zone or a different zone. The data is stored in the Windows Clipboard as CSV (Comma-Separated Value) text, so you can also paste it into Notepad or your editor of choice. Similarly, you can cut or copy from the Clipboard and paste it into the modified CPS.

Notes: These functions are only available when your mouse pointer is hovering over a channel number, and you click on a single channel (or multiple channels using the **Shift** or **Ctrl** key) and then right-click. Clicking on a textbox item within a channel will only select that item, not the entire channel. Likewise, right-click on a channel number to begin the paste operation at that channel.

When pasting multiple channels, just right-click on the channel number for the first channel. The CPS will automatically fill in the additional channels for you.

The modified CPS attempts to validate the data you paste into it. It may not be entirely successful.

The following formatting is supported:

- Any lines beginning with a semicolon (";") are treated as comments and ignored.
- A line consisting only of 12 commas (",,,,,,,,,,,,") is used as a placeholder to indicate that a channel is to be skipped and left empty. This lets you copy/paste groups of channels with empty channels in them.
- A line with other than 13 fields (12 commas) is treated as an error and reported.

Note: This means you cannot have a comma in the Name field. If this causes problems, it may be possible to address it in a future release.

- An invalid value in a dropdown field (everything other than Tx Freq, Rx Freq, and Name) will report the name of the invalid field as well as the line in error and the channel number it was being pasted into.
- Out-of-range Tx or Rx Freq values will paste into the channel, but the modified CPS will report an error when attempting to edit that channel.

Tips and hints for using CPS features

- An attempt to paste to a channel number higher than 100 will report an error.

Note: While you cannot paste directly into a channel number higher than 100, if you are pasting a group of channels, the paste could overflow the zone. For example, attempting to paste ten channels starting at channel 92.

The modified CPS does **NOT** use the same CSV format as CHIRP. You cannot directly use this CSV data in CHIRP (or the reverse). Refer to Section 4.11 for a way of importing CHIRP CSV data.

4.1.1 Using Cut / Paste to rearrange channels

One of the most commonly requested features for the modified CPS is the ability to insert one or more new channels in the middle of an existing set or, conversely, to delete one or more channels. You can use the Cut / Paste feature to accomplish the same thing, although it takes a bit more work.

As an example, assume you have a list of 15 channels numbered 1 through 15. You discover you forgot to add a channel while you were entering them, and you actually have 16 channels. Worse, you would like to insert the missing channel as channel 8. In a program like CHIRP, you would just click on the existing channel 8 and then right-click and select "Insert row above". To accomplish the same thing in the modified CPS, click on channel 8 and then shift-click on channel 15. With the desired channels selected, right-click and use the Cut function. Now click on channel 9 and right-click again, but select Paste this time. Your channels have now been moved down by one, and you have an empty channel 8, where you can insert your missing channel.

Note: You may be able to "confuse" the modified CPS and either be unable to paste or encounter an "Unhandled exception" error. I recommend saving your configuration to a file frequently. If you do encounter an unhandled exception, please report it as shown in Chapter 9.

4.1.2 Sample CSV data

This is sample CSV data exported from the modified CPS. Comment lines are added by the modified CPS to show the version of CPS that created it, the zone number and name the data was exported from, and a timestamp of when the data was exported.

```

; Exported from UV-17/18/19/20/21/22 Pro CPS 1.2.4j
; Zone 3 - GMRS/FRS on 12/17/2023 3:08:21 PM
462.56250,OFF,462.56250,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS/FRS 1
462.58750,OFF,462.58750,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS/FRS 2
462.61250,OFF,462.61250,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS/FRS 3
462.63750,OFF,462.63750,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS/FRS 4
462.66250,OFF,462.66250,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS/FRS 5
462.68750,OFF,462.68750,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS/FRS 6
462.71250,OFF,462.71250,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS/FRS 7
467.56250,OFF,467.56250,OFF,L,N,Add,QT/DQT,OFF,1,OFF,OFF,GMRS/FRS 8
467.58750,OFF,467.58750,OFF,L,N,Add,QT/DQT,OFF,1,OFF,OFF,GMRS/FRS 9
467.61250,OFF,467.61250,OFF,L,N,Add,QT/DQT,OFF,1,OFF,OFF,GMRS/FRS 10
467.63750,OFF,467.63750,OFF,L,N,Add,QT/DQT,OFF,1,OFF,OFF,GMRS/FRS 11
467.66250,OFF,467.66250,OFF,L,N,Add,QT/DQT,OFF,1,OFF,OFF,GMRS/FRS 12
467.68750,OFF,467.68750,OFF,L,N,Add,QT/DQT,OFF,1,OFF,OFF,GMRS/FRS 13
467.71250,OFF,467.71250,OFF,L,N,Add,QT/DQT,OFF,1,OFF,OFF,GMRS/FRS 14
462.55000,OFF,462.55000,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS/FRS 15
462.57500,OFF,462.57500,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS/FRS 16
462.60000,OFF,462.60000,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS/FRS 17
462.62500,OFF,462.62500,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS/FRS 18
462.65000,OFF,462.65000,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS/FRS 19
462.67500,OFF,462.67500,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS/FRS 20
462.70000,OFF,462.70000,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS/FRS 21
462.72500,OFF,462.72500,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS/FRS 22
462.55000,OFF,467.55000,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS RPT 15
462.57500,OFF,467.57500,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS RPT 16
462.60000,OFF,467.60000,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS RPT 17
462.62500,OFF,467.62500,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS RPT 18
462.65000,OFF,467.65000,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS RPT 19
462.67500,OFF,467.67500,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS RPT 20
462.70000,OFF,467.70000,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS RPT 21
462.72500,OFF,467.72500,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS RPT 22

```

4.1.3 Additional features available when importing CSV data

When pasting CSV data into the CPS, several additional convenience features are available:

- A Tx frequency of "OFF" or "0" is interpreted the same as leaving the Tx frequency blank. This improves compatibility with other programs (such as Microsoft Excel) that generate CSV data to be pasted into the modified CPS. For example, the following three lines are equivalent:

```

462.56250,OFF,OFF,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS/FRS 1
462.56250,OFF,0,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS/FRS 1
462.56250,OFF,,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS/FRS 1

```

- Instead of specifying a Tx frequency directly, you can enter an offset value to calculate the Tx frequency using the Rx frequency. For example, the following two lines are equivalent:

```

462.55000,OFF,467.55000,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS RPT 15
462.55000,OFF,5,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS RPT 15

```

- You can leave either of the Rx or Tx QT/DQT columns empty. The paste operation will then fill those in as "OFF". For example, the following two lines are equivalent:

```

462.55000,OFF,467.55000,OFF,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS RPT 15
462.55000,,467.55000,,H,W,Add,QT/DQT,OFF,1,OFF,OFF,GMRS RPT 15

```

Tips and hints for using CPS features

- When pasting CSV data, if an error is detected, the CPS will report a message of the form "Invalid setting in channel X: *Field Name*" followed by the entire line being pasted. This should help you find the error in the CSV data being pasted. You can click **OK** to continue the paste operation on the next channel or **Cancel** to stop the paste operation. **Cancel** allows you to stop a "runaway paste" where multiple channels contain invalid settings.

4.1.4 CSV limitations in the modified CPS

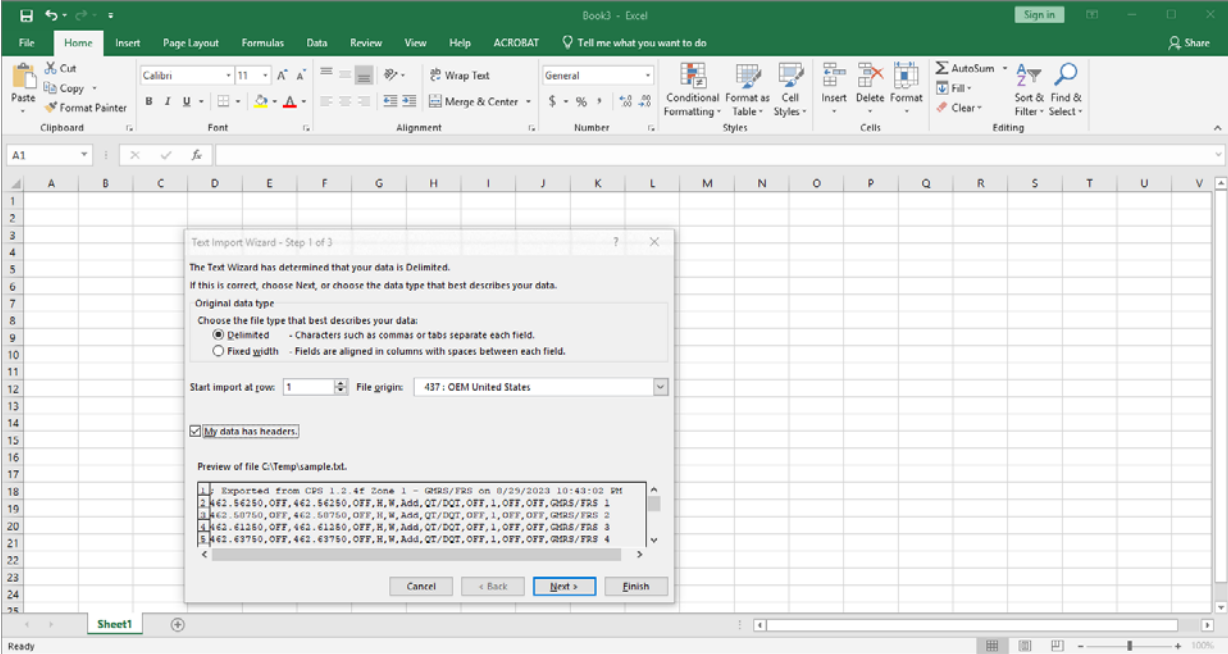
CSV support was never envisioned by Baofeng when they created the factory CPS. It has been added on while making as few changes as possible to the original CPS. The CPS does not treat pasted data the same as data typed on the keyboard. This causes at least one limitation:

- Pasting from CSV data does not fully validate the data being pasted. For example, pasting an Rx frequency of 800MHz will not generate an error until you click on the Rx Freq column and then click on a different column or channel.

Note: There are likely more of this sort of thing lurking about.

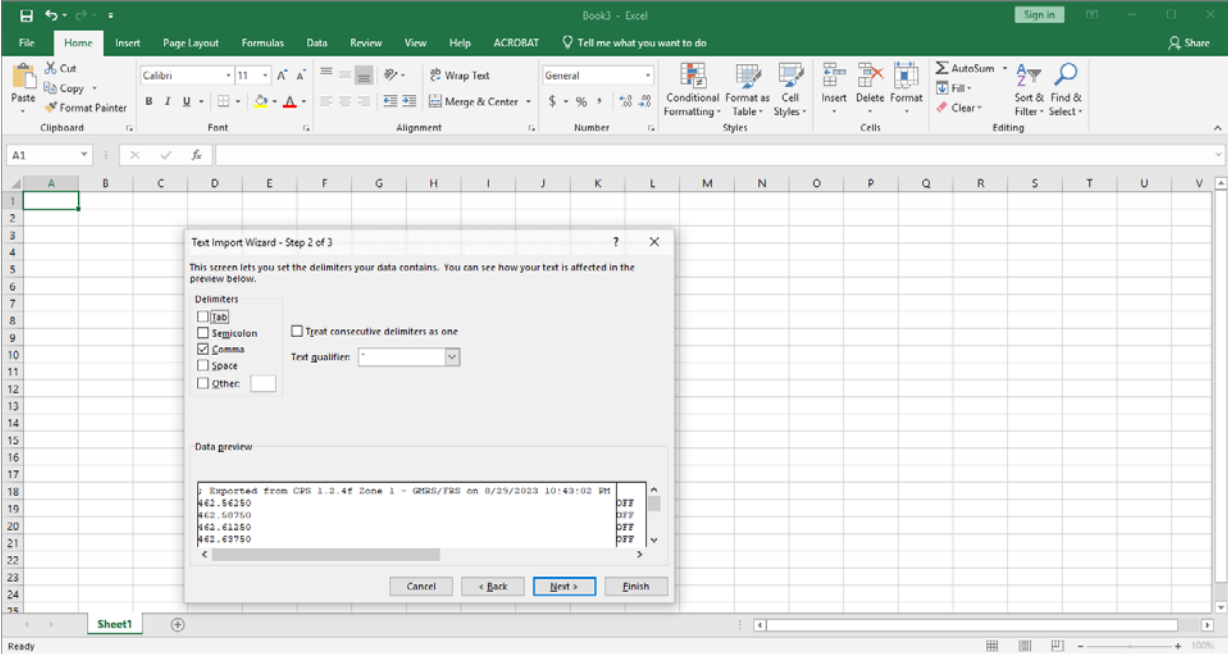
4.1.5 Working with CSV data in Microsoft Excel

Once you have saved your channel data to a text file, you can import it into Microsoft Excel to manipulate it by using macros or for other purposes. First, open the text file with Excel. Excel will display the "Text Import Wizard - Step 1 of 3" dialog box. Make sure that the file type option is set to "Delimited" and that the "My data has headers" checkbox is selected, then click on the **Next** button:



In step 2 of 3, make sure that the only checkbox selected is "Comma", then click on the **Finish** button:

Note: It is not necessary to use Step 3 of 3.

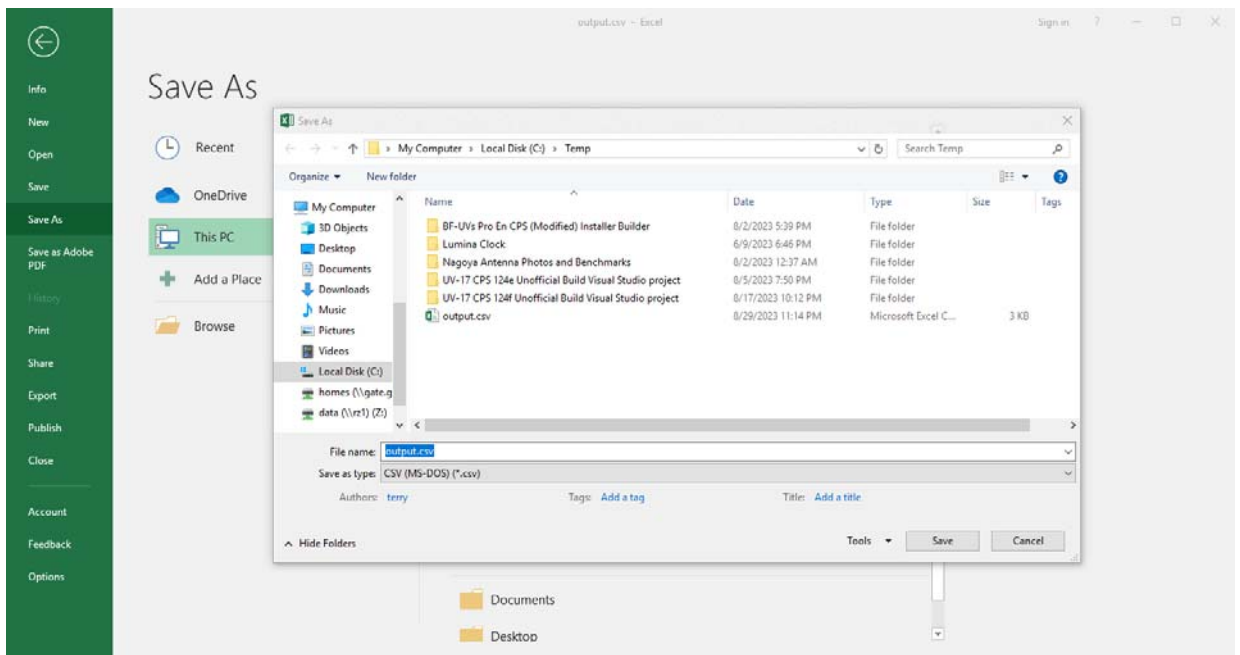


Your data should be successfully imported into Excel as shown below:

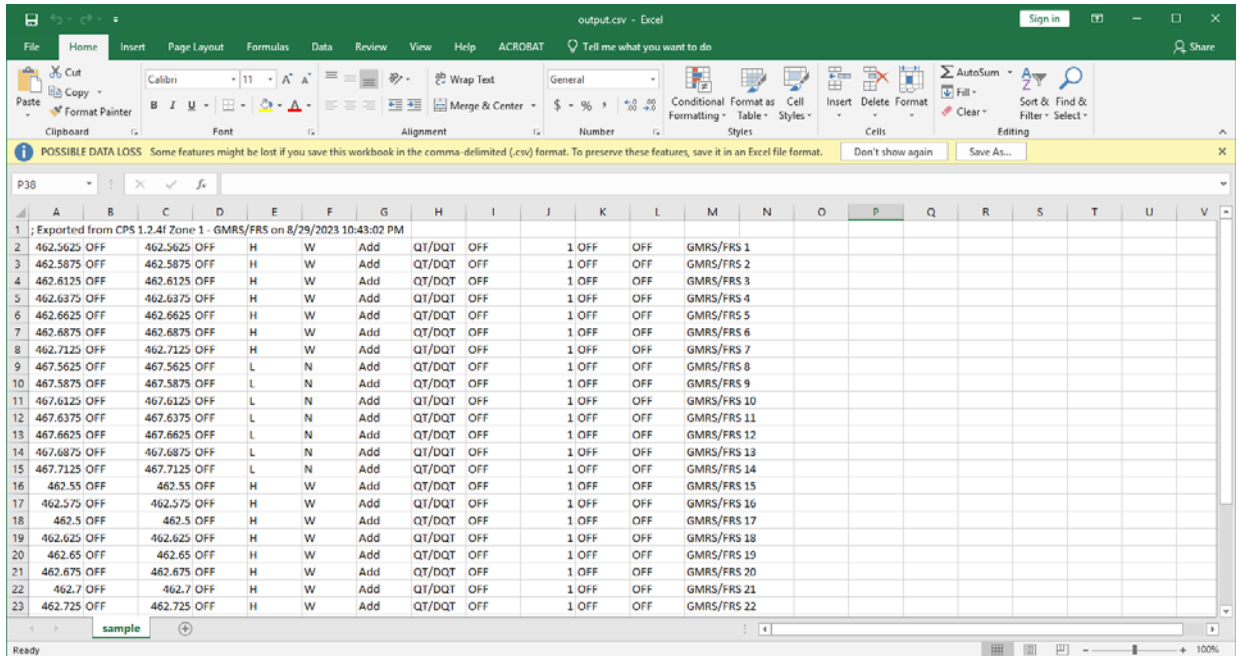
Tips and hints for using CPS features

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V			
1	: Exported from CPS 1.2.4f Zone 1 - GMR5/FRS on 8/29/2023 10:43:02 PM																								
2	462.5625	OFF	462.5625	OFF	H	W	Add	QT/DQT	OFF		1	OFF	OFF	GMR5/FRS 1											
3	462.5875	OFF	462.5875	OFF	H	W	Add	QT/DQT	OFF		1	OFF	OFF	GMR5/FRS 2											
4	462.6125	OFF	462.6125	OFF	H	W	Add	QT/DQT	OFF		1	OFF	OFF	GMR5/FRS 3											
5	462.6375	OFF	462.6375	OFF	H	W	Add	QT/DQT	OFF		1	OFF	OFF	GMR5/FRS 4											
6	462.6625	OFF	462.6625	OFF	H	W	Add	QT/DQT	OFF		1	OFF	OFF	GMR5/FRS 5											
7	462.6875	OFF	462.6875	OFF	H	W	Add	QT/DQT	OFF		1	OFF	OFF	GMR5/FRS 6											
8	462.7125	OFF	462.7125	OFF	H	W	Add	QT/DQT	OFF		1	OFF	OFF	GMR5/FRS 7											
9	467.5625	OFF	467.5625	OFF	L	N	Add	QT/DQT	OFF		1	OFF	OFF	GMR5/FRS 8											
10	467.5875	OFF	467.5875	OFF	L	N	Add	QT/DQT	OFF		1	OFF	OFF	GMR5/FRS 9											
11	467.6125	OFF	467.6125	OFF	L	N	Add	QT/DQT	OFF		1	OFF	OFF	GMR5/FRS 10											
12	467.6375	OFF	467.6375	OFF	L	N	Add	QT/DQT	OFF		1	OFF	OFF	GMR5/FRS 11											
13	467.6625	OFF	467.6625	OFF	L	N	Add	QT/DQT	OFF		1	OFF	OFF	GMR5/FRS 12											
14	467.6875	OFF	467.6875	OFF	L	N	Add	QT/DQT	OFF		1	OFF	OFF	GMR5/FRS 13											
15	467.7125	OFF	467.7125	OFF	L	N	Add	QT/DQT	OFF		1	OFF	OFF	GMR5/FRS 14											
16	462.55	OFF	462.55	OFF	H	W	Add	QT/DQT	OFF		1	OFF	OFF	GMR5/FRS 15											
17	462.575	OFF	462.575	OFF	H	W	Add	QT/DQT	OFF		1	OFF	OFF	GMR5/FRS 16											
18	462.5	OFF	462.5	OFF	H	W	Add	QT/DQT	OFF		1	OFF	OFF	GMR5/FRS 17											
19	462.625	OFF	462.625	OFF	H	W	Add	QT/DQT	OFF		1	OFF	OFF	GMR5/FRS 18											
20	462.65	OFF	462.65	OFF	H	W	Add	QT/DQT	OFF		1	OFF	OFF	GMR5/FRS 19											
21	462.675	OFF	462.675	OFF	H	W	Add	QT/DQT	OFF		1	OFF	OFF	GMR5/FRS 20											
22	462.7	OFF	462.7	OFF	H	W	Add	QT/DQT	OFF		1	OFF	OFF	GMR5/FRS 21											
23	462.725	OFF	462.725	OFF	H	W	Add	QT/DQT	OFF		1	OFF	OFF	GMR5/FRS 22											
24	462.55	OFF	467.55	OFF	H	W	Add	QT/DQT	OFF		1	OFF	OFF	GMR5 RPT 15											
25	467.575	OFF	467.575	OFF	H	W	Add	QT/DQT	OFF		1	OFF	OFF	GMR5 RPT 16											

You can now manipulate the data in Excel. When you are finished, use Excel's "Save As" function to save it in the "CSV (MS-DOS)" format:



You may see a warning from Excel about "POSSIBLE DATA LOSS". It is OK to ignore this warning:



The resulting CSV file can be pasted back into the modified CPS (assuming no changes were made to the data format).

4.2 Disabling transmission on specific channels

If you are familiar with CHIRP, it uses "Duplex=off" to indicate that the radio should never transmit on a particular channel. In the CPS, this is done by blanking out the Tx Freq column.

Note: When entering a frequency that the radio can transmit on into a blank channel, the Tx Freq column is automatically copied from the value you enter in the Rx Freq column. Otherwise, the Tx Freq column is left blank.

4.3 Specifying frequency offsets for repeaters

You can enter an offset instead of the actual frequency in the Tx Freq column. Offsets from -10MHz to 10MHz are allowed. When you tab or click out of the Tx Freq column, the software will automatically calculate the actual frequency and replace the value in the Tx Freq column with the calculated frequency. For more complicated scenarios, a frequency calculator utility is described in Section 4.6.

4.4 Malformed .dat files created by other programs

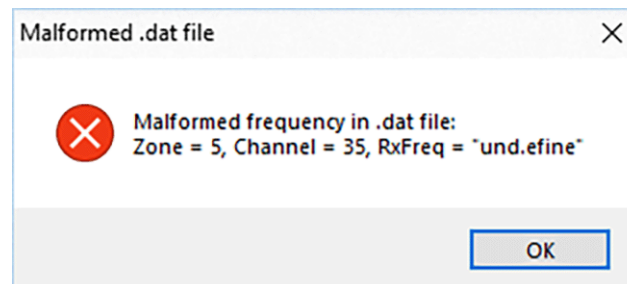
A number of other programs that claim to create .dat files for the UV-17 Pro GPS can produce malformed .dat files. As these are reported, the CPS has been modified to automatically correct these when possible and to report the error when automatic correction is not possible or could produce unexpected results. Some of these cases are listed below.

4.4.1 10-character channel name length limit

One program that creates .dat files incorrectly treats channel names as having a 10-character length limit. The CPS would load these .dat files, but Cut or Copy operations would be missing channels. This was corrected in version 1.2.4g.

4.4.2 Invalid characters in Rx or Tx frequencies

A different program that creates .dat files allows invalid frequencies such as "89.norma" and "und.efine". The CPS will change invalid Rx frequencies to "400.00000" and invalid Tx frequencies to "" (empty / Tx disabled). This will be reported in an error message that provides the zone number, channel number and invalid frequency data:

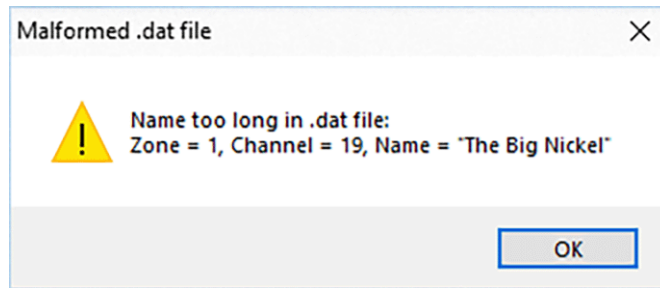


This check was added in version 1.2.4i.

Note: These errors are only reported when the CPS displays a zone. When loading .dat files produced by other programs, you are advised to use the **Next** button to cycle through all ten zones and check for errors before attempting to write the configuration to the radio or save the .dat file.

4.4.3 Arbitrarily long channel names

The same program described in Section 4.4.2 does not enforce any limit on the length of channel names. As the radio can only display names of 12 characters or less, the CPS will shorten names to 12 characters and display a warning message reporting the zone number, channel number and channel name:



This check was added in version 1.2.4i.

Note: These errors are only reported when the CPS displays a zone. When loading .dat files produced by other programs, you are advised to use the **Next** button to cycle through all ten zones and check for errors before attempting to write the configuration to the radio or save the .dat file.

4.5

Moving configurations between different radio models

You will normally use the CPS to read a configuration either from the radio or a .dat file, modify it, and write it back to the same model of radio. However, you may have different radio models (such as the UV-17 Pro GPS and the BF-18H) which are supported by this CPS. You can write a configuration from one model to a different model by using the following steps:

- 1 Read the configuration from the source radio and save it to a .dat file. (Optional)
- 2 Load a .dat file with your desired configuration.
- 3 Change the radio model in the Model dropdown to match the radio model you will be programming.
- 4 Make any configuration changes you desire. (Optional)
- 5 Use the **Write** button to write the configuration to the radio.
- 6 Save this configuration to a new .dat file. (Optional)

Hint: The radio model in the Model dropdown always needs to match the radio model being programmed.

Caution: This procedure assumes that the radio models have compatible configuration memory layouts. Indiscriminate usage of this procedure can allow incompatible configurations to be loaded into the radio.

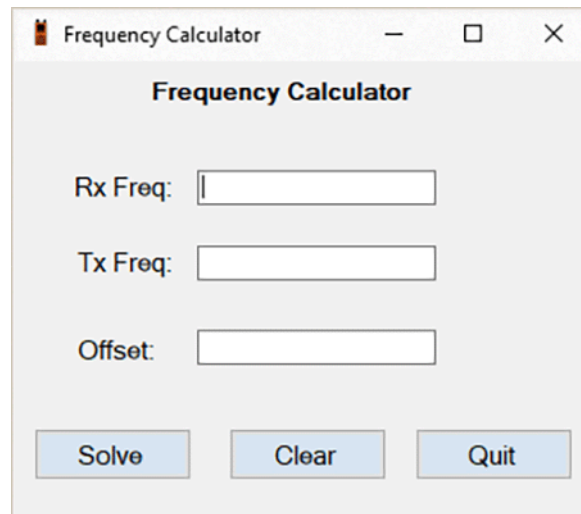
4.6 The frequency calculator utility

The CPS configures each channel starting with the Rx frequency. If the Rx frequency and offset are known, the Tx frequency can be automatically calculated, as shown in the above section. However, you may only know the Tx frequency and offset, leading to cumbersome manual calculations to determine the necessary value to enter in the Rx Freq column.

To make this easier, a frequency calculator utility has been added, accessible via the "Tools / Frequency calculator" dropdown menu. It has input boxes for Rx Freq, Tx Freq, and Offset. Enter any two values and click the **Solve** button to calculate the third value. Clicking the **Clear** button will clear all three values.

Note: The frequency calculator does not verify whether or not the result is valid for any given radio band - for example, entering an Rx frequency of 173 and an offset of 5 will give a result of 178.00000, which is out of the 136-174 band on the radio.

The frequency calculator assumes that the Tx Freq is higher than the Rx Freq. For example, entering a Tx Freq of 446.660 and an Offset of 5 will calculate an Rx Freq of 441.66000 when you click the **Solve** button. If your Tx Freq is lower than the Rx Freq, enter offsets with a negative Offset. In the above example, entering an Offset of -5 will calculate the Rx Freq as 451.66000.



4.7 The upload startup picture utility

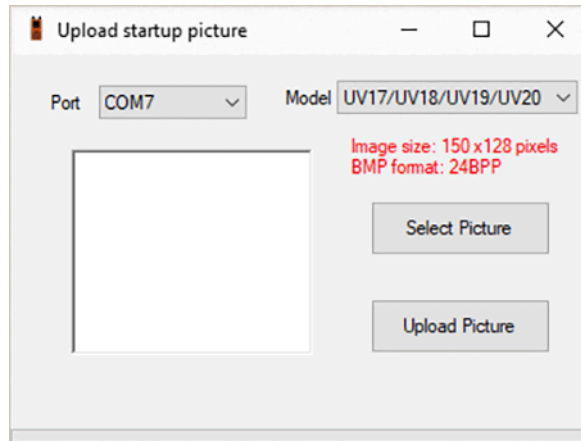
The upload startup picture utility is available via the "Tools / Upload startup picture to radio" dropdown menu. This utility allows you to replace the stock Baofeng logo screen displayed when the radio is powered on.

Note: The length of time the startup image is displayed is controlled by the radio firmware and cannot be changed.

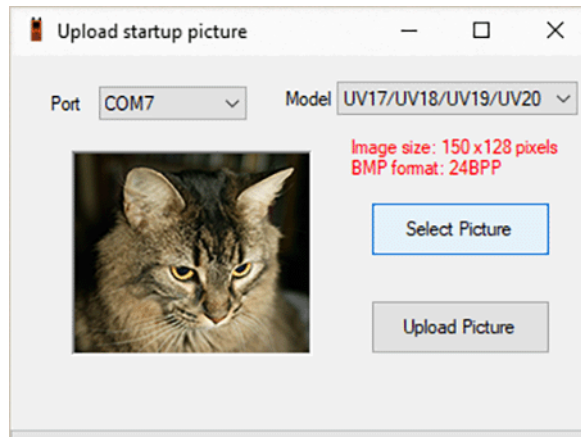
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Startup pictures must be in 24-bit-per-pixel BMP format and exactly 150 pixels wide by 128 pixels high. The image can be created in Microsoft Paint, Adobe Photoshop, or any other image editing utility that can create BMP files.

Once the utility has been launched, change the COM port in the dropdown to select the correct port if necessary, then click the **Select Picture** button. Use the File Explorer window to select the desired image to upload:

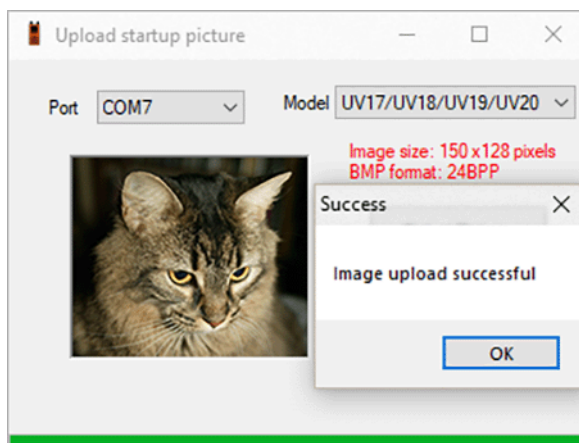


If the dimensions and format of the image are correct, a preview will be displayed by the utility so you can confirm you have selected the desired image:



After confirming that the correct COM port has been selected, the programming cable is connected to the radio, and the radio is turned on, click the **Upload Picture** button to upload your image to the radio. A green progress bar will show the progress of the upload, and after the upload completes, the utility will display the message "Image upload successful":

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If you want to go back to a Baofeng logo startup picture, two are available in the following location:

C:\Program Files (x86)\BF-UVs Pro En CPS (Modified)

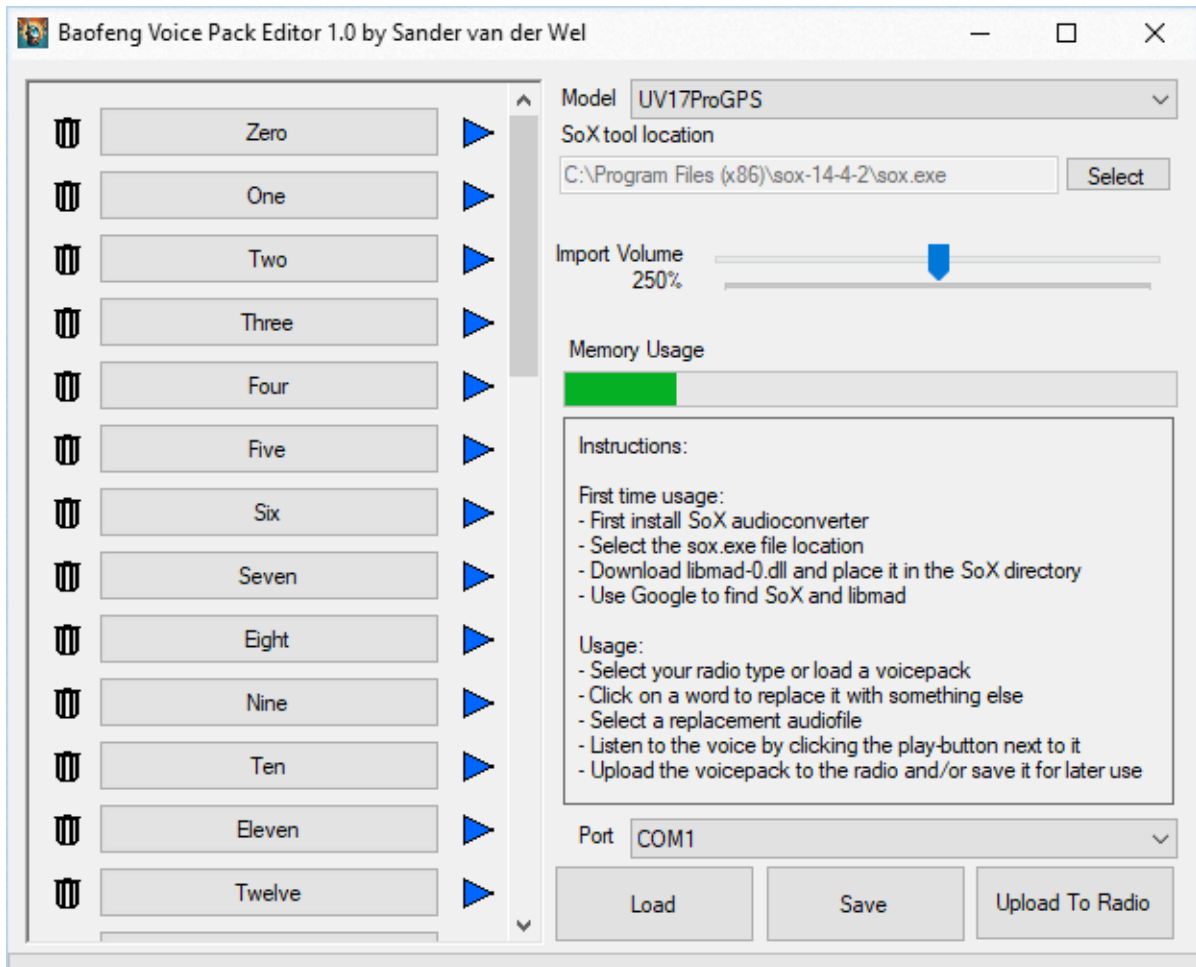
- *Baofeng Logo Original Startup Image.bmp* is the original startup image with blue text on a white background.
- *Baofeng Logo Fancy Startup Image.bmp* is a fancier startup image from a different Baofeng model. It has black text on a blue background with a subtle wave detail below the Baofeng logo.

4.8 The Voice Pack Editor utility

A Voice Pack Editor utility is available via the "Tools / Voice Pack Editor" dropdown menu. This utility, which was contributed by Sander van der Wel, allows you to replace one, several, or all English voice prompts on the radio.

Note: At present, only the English voice prompts can be edited. Editing the Chinese voice prompts is under consideration for a future release, depending on user requests for this feature, as well as the availability of a translator.

The following illustration shows the layout of the editor:



4.8.1 The right-hand side items

The right-hand side of the editor window contains a number of separate controls and informational displays. From the top to the bottom, they are:

4.8.1.1 Model selection

This dropdown box selects the radio model you are manipulating voices for. At present, only the "UV17ProGPS" model is supported by this modified CPS.

4.8.1.2 SoX tool location

The editor relies on an audio converter tool named "SoX" and possibly one or more media conversion libraries, depending on the format of the voice prompts you will be importing.

Notes: If you will only be loading one of the supplied ready-to-use voice packs, you will not need to install SoX or any additional libraries. SoX is needed to import voice prompts from files, and the libmad-0.dll library is needed (in addition to SoX) if you will be importing voice prompts from .mp3 files.

Installing SoX and the conversion libraries is rather complicated. I hope to be able to integrate Sox and conversion library installation into a future version of the modified CPS *setup.exe* program, but negotiations are ongoing and I didn't want to delay making the voice pack editor available.

The SoX package can be downloaded from:
<https://sourceforge.net/projects/sox/files/latest/download>

The libmad-0.dll library can be downloaded from:
<https://archive.org/compress/libmad-0.dll>

After downloading and installing these packages, verify that the "SoX tool location" shown in the editor matches the location where you installed SoX. If it does not, use the button and the file explorer window to select the correct installation location.

4.8.1.3 Import volume selection

The volume slider controls the volume of user-supplied voice prompts loaded into the editor. The default setting is 100%, meaning that the volume is not changed when voice prompts are loaded. It can be adjusted up to 400% louder. You can either click and drag the slider for precise control, or click to the left or right of the slider to decrease or increase the volume in steps of 5%.

Notes: 400% does not mean "four times as loud". An explanation of the psychoacoustics involved is outside the scope of this manual.

You should use the minimum volume that produces acceptable results on the radio.

This volume adjustment controls the volume of individual prompts when they are loaded into the editor. When loading an existing voice pack (either one of the ready-to-use ones or one you created yourself) the volume is pre-set and this adjustment has no effect.

4.8.1.4 Memory usage graph

The green bar graph in the Memory Usage section provides a graphical representation of how much space the selected voice prompts will occupy in the radio's memory.

Notes: The available space should be more than sufficient for any reasonable set of voice prompts.

If you upload a very long prompt to the radio (for example, a 10-minute-long song for the "Channel Mode" prompt), you will need to wait for the radio to play the whole song every time you turn on the radio, as voice prompts are not interruptable once the radio begins playing one.

4.8.1.5 The Instructions panel

This area provides a condensed version of these instructions.

4.8.1.6 The COM port selection

This dropdown selects which COM port will be used for communicating with the radio programming cable.

4.8.1.7 Function buttons

This section of the window contains the , , and buttons. Load and Save will load a pre-existing voice pack from disk or save a voice pack to disk, respectively. Upload to Radio will upload the currently-loaded voice pack to the radio.

Note: There is no "Download from Radio" function (the radio firmware does not support it), so be sure to save any modified voice packs you create using the button, so you don't need to load all of the prompts again if you wish to modify the voice pack in the future.

If you want to return to the stock Baofeng voice pack, launch the editor without loading a voice pack or any prompts and upload it to the radio. The editor has the stock voice prompts built in.

Seven ready-to-use voice packs are available in the following location:

C:\Program Files (x86)\BF-UVs Pro En CPS (Modified)

- *ATT Crystal16 Voice Pack.vpa* was generated with the royalty-free AT&T Natural Voices 5.1 Crystal16 voice.
- *ATT Mike16 Voice Pack.vpa* was generated with the royalty-free AT&T Natural Voices 5.1 Mike16 voice.
- *MS David Voice Pack.vpa* was generated with the royalty-free Microsoft David Desktop SAPI 5 voice.
- *MS Zira Voice Pack.vpa* was generated with the royalty-free Microsoft Zira Desktop SAPI 5 voice.
- *TTSMaker_com Henry Australian Voice Pack.vpa* was generated with the royalty-free TTSMaker.com Henry Australian voice.
- *TTSMaker_com Jennifer United Kingdom Voice Pack.vpa* was generated with the royalty-free TTSMaker.com Jennifer United Kingdom voice.
- *TTSMaker_com Grace Irish Voice Pack.vpa* was generated with the royalty-free TTSMaker.com Grace Irish voice.

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You can also either record your own voice prompts or use any one of the many text-to-speech applications available either for Windows or online.

Note: While you can generally use these applications to generate speech for your own use, it is common for there to be a prohibition on making that speech available to others, even for free. This is the reason that no "Darth Vader" sample voice pack is provided.

4.8.2 The left-hand side items

The left-hand side of the editor window shows a scrollable list of the various voice prompts used by the radio, along with delete (trash can icon) and play buttons. A button with a gray background shows a factory default prompt, while a button with a green background shows that a custom prompt has been loaded into the voice pack. The utility "remembers" which custom prompts were previously installed when using the **Load** button to load a saved voice pack file, and will set the button colors accordingly. Clicking on a voice prompt button will display a file selection dialog box. Currently, .flac, .mp3, and .wav files are supported (assuming SoX and its libmad plugin have been installed as described in Section 4.8.1.2). If a voice prompt in an unsupported format is selected or the prompt file is corrupted, the editor will report "Error reading voice file". If loading a voice prompt would cause the size of the created voice pack to be too large to fit in the radio, the error message "The voicepack is too big" will be displayed.

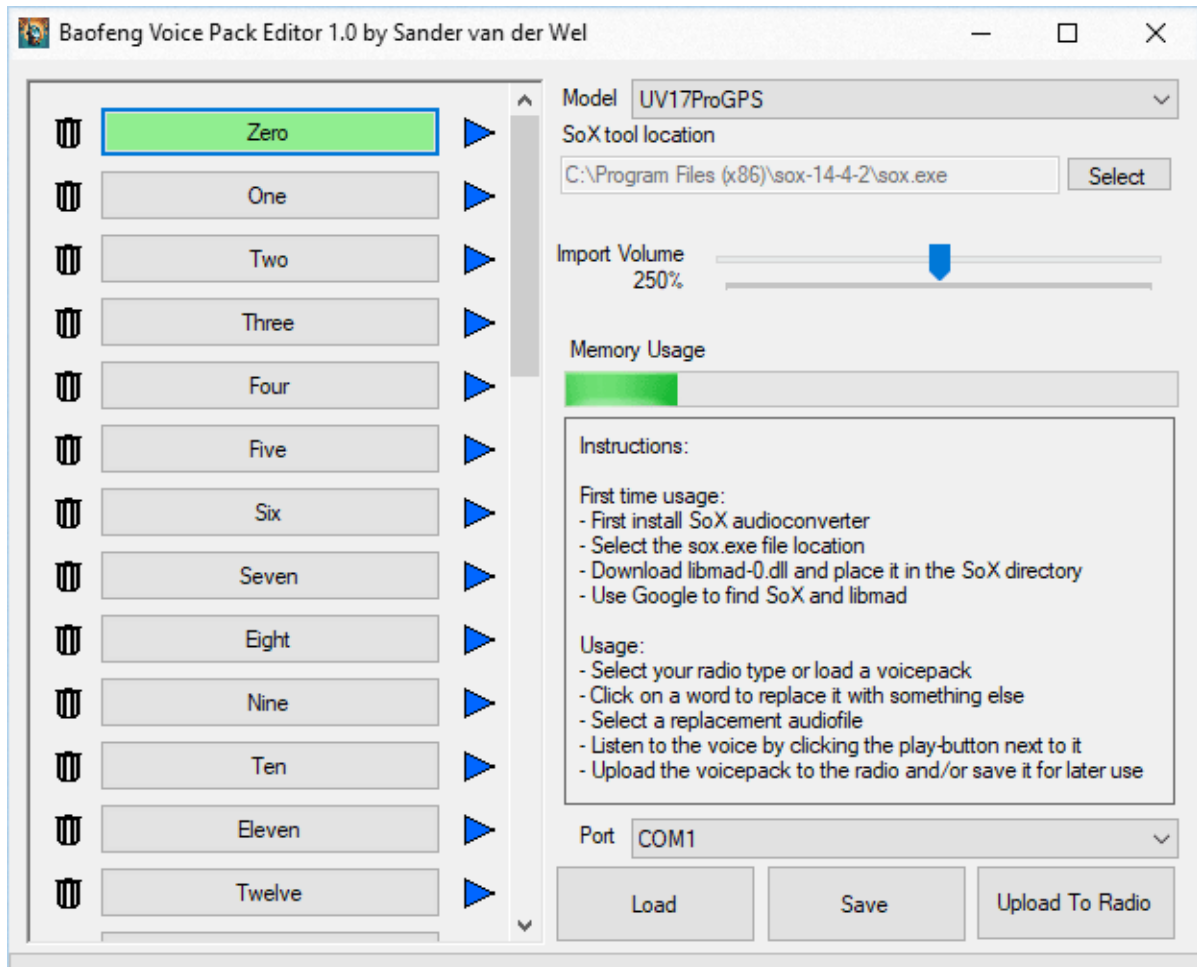
Notes: If there are user requests for other formats, it may be possible to add them in a future release. In the meantime, use another utility to convert your prompts to one of the three supported formats.

To the left of each voice prompt button is a delete (trash can icon) button. This is used to restore the factory default prompt. It can also be used to stop a "runaway" playback of an overly long (or annoying) sample.

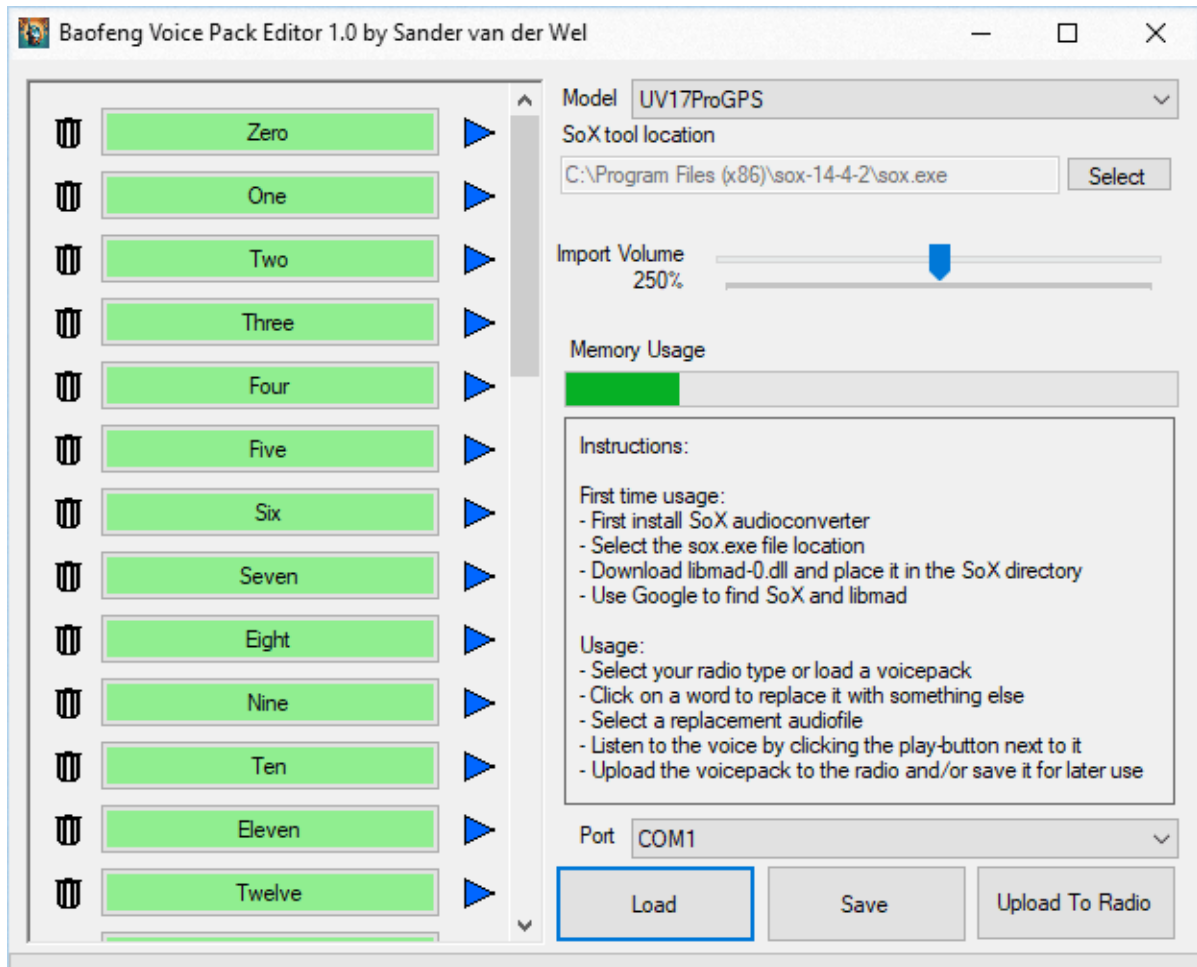
To the right of each prompt button is a play button. This is used to listen to the voice prompt file you have loaded, to confirm it contains the correct prompt at the expected volume.

Note: The play button uses a somewhat simple default Windows player. Playback sounds may appear "tinny" or "hissy". Upload the voice pack to the radio to verify acceptable voice prompt playback. You may want to temporarily use a button such as "Channel Mode" as that is normally used when the radio is turned on, making it easy to verify the volume and sound quality.

The following screenshot shows the editor with one custom sample loaded:



The following picture shows the editor with a complete set of custom samples loaded (in this case, the Crystal16 voice pack file provided by the modified CPS):



4.8.3 Selectively disabling voice prompts

Several users have requested the ability to "turn off" one or more voice prompts while retaining the other voice prompts. While the radio does not offer this function directly, you can upload a file containing silence to any desired voice prompt. A file named *Silence.mp3* is provided for this purpose, in the same directory as the voice pack files.

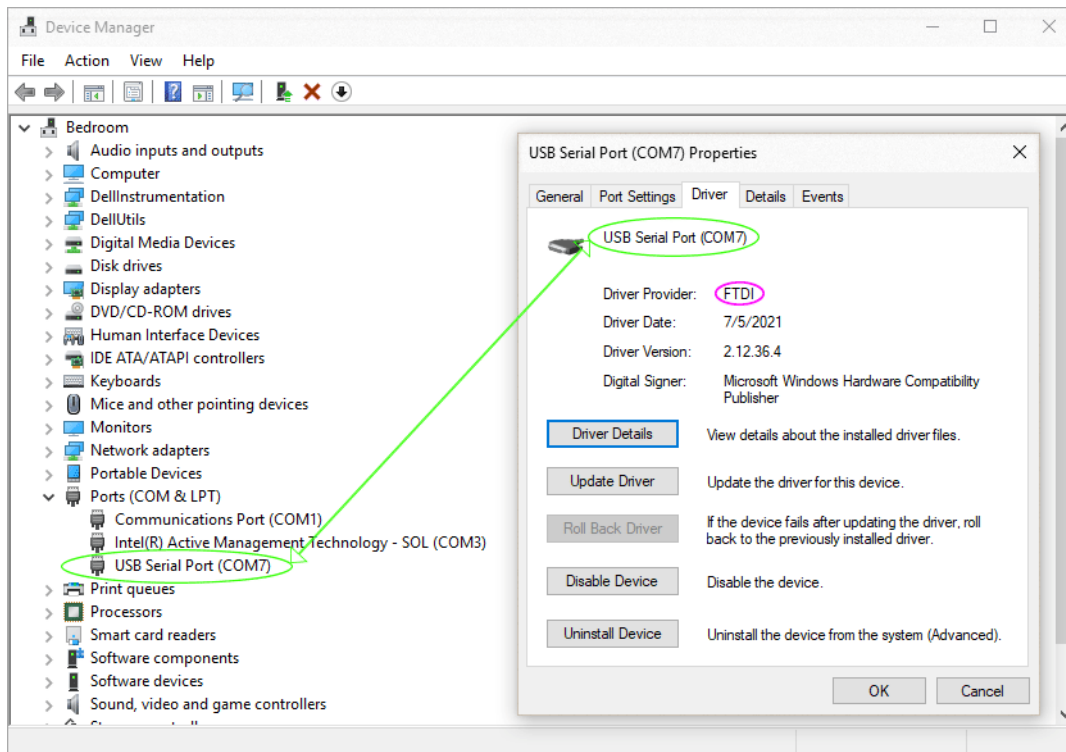
4.9 Finding the correct COM port

One of the most commonly reported issues with the CPS is the inability to find the correct COM port. While there are many different types of programming cables, this section should help you identify the correct port.

First, make sure the USB programming cable is plugged into your PC. You don't need to connect the other end to your radio yet. If this is the first time you've plugged the cable into that particular USB port, you will likely hear the two-tone note indicating a device is being added, along with some indication that a device driver is being installed.

Note: Windows thinks that all USB ports are different - plugging the same programming cable into a different USB port may create an additional COM port with a different number. You may want to label the USB port you're using to avoid this problem.

Open the Windows Device Manager by clicking the Windows Start button and typing *device manager* into the search box. Device Manager is also available via the Windows Control Panel if your version of Windows doesn't have a search box. Scroll down to "Ports (COM & LPT)" and double-click on it to expand the list of ports. You should see at least one COM port (and possibly more, depending on your PC). You are looking for one with a name like "USB Serial Port". The exact name may vary - the important thing is that it says both "USB" and "Serial" or "UART" (the technical name for a serial device). Double-click on it to open the Properties window, then click on the Driver tab as shown here:



The above example shows a cable with an FTDI chip. A cable with a CH340 chip will display a manufacturer of "wch.cn". A cable with a SiLabs chip will display a manufacturer of "Silicon Laboratories". If you have a cable with a Prolific chip, you may see a message such as "PL2303x PHASED OUT SINCE 2012." or "PL2303x DO NOT SUPPORT WINDOWS 11 OR LATER". Ideally, you could return that cable for a

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full refund from your supplier. If that is not possible for some reason, you can find instructions for manually installing an older driver at: https://www.miklor.com/COM/UV_Drivers.php

Note: Installing an older driver does not provide a complete fix - plugging the cable into a different USB port or even just updating Windows is likely to break things again.

Once you verify that you have the correct driver installed for your cable, note the COM port number shown in Device Manager. In the above example, the port is COM7. Whatever number your system displays is the port number you should use in the CPS program.

4.10 Trimming your programming cable

The connector on the UV-17 Pro GPS radio is more recessed than on other Baofeng models. This can cause the programming cable to not fully seat in the radio's connector. This can cause a variety of issues, ranging from a failure message from the CPS program all the way to the radio staying on even after you turn the volume control to the off position.

At some point in the future, manufacturers of programming cables may update their cable designs to prevent this issue. For now, it is likely that you will need to trim the plastic on the programming cable's connector to allow it to plug all the way into the radio. The following picture shows the area that needs to be trimmed.

Note: There is some variation between different radios and cables - a cable that works in one radio may need to be trimmed further to work in a different radio.



4.11 The CSV2DAT utility

Robert Odell has written a web-based CSV2DAT utility that allows the import of CSV files created by CHIRP and writing them out as CPS .dat files. You can find that utility at <https://csv2dat.onrender.com>

Note: CSV2DAT is not associated with either the CHIRP or modified CPS projects. It is mentioned here for user convenience.

5

Summary of modifications by version

This chapter provides a list of new and changed features in the various releases of the modified CPS.

5.1 Changes in 1.2.4j

1.2.4j provides an updated manual, adds additional radio support, and a few other features and bug fixes.

- An additional ready-to-use voice pack with the "Grace" Irish voice has been added.
- A bug which caused "Malformed frequency" error messages to appear for international locales that use a comma as a decimal point has been fixed.
- A *Silence.mp3* voice prompt is installed, allowing users to selectively disable various voice prompts as desired.
- The BF-18H has been added as a supported radio model.
- Support for the "Dis ANI" setting (added in radio firmware 1.28) has been added to the Radio Function window.
- A section has been added to the manual describing how to move configurations between different radio models in the UV-17 Pro GPS family.

5.2 Changes in 1.2.4i

1.2.4i adds a voice pack editor / upload utility from Sander van der Wel, as well as several bug fixes.

- A Voice Pack Editor utility is now available in the Tools menu. This utility lets users create and upload customized voice prompts to the radio.
- Six ready-to-use voice packs are provided with the modified CPS.
- Handle cases where invalid frequencies in .dat files generated by a 3rd-party app could cause the CPS to exit with no error message.
- Handle cases where channel names in .dat files generated by a 3rd-party app are not limited to 12 characters.
- When reading an invalid channel frequency from the radio's memory, the CPS no longer exits with no error message.
- The CPS toolbar that shows the supported frequencies no longer changes to show an incomplete list of frequencies after a read from the radio.

Summary of modifications by version

- Reset channel selection (for Cut/Copy) when switching between zones.

5.3 Changes in 1.2.4h

1.2.4h adds a working picture upload tool and a major redesign of the channel list visual style as well as a number of bugfixes and tidying up of loose ends.

- Restore "Upload startup picture to radio" in the Tools menu, as it has been fixed.
- Two different Baofeng logo startup pictures have been added - the original one shipped with the radio and an alternative version.
- The visual style of the channel list has been redesigned to make it easier to use. The specific design elements are:
 - Channels are now highlighted in a 2-color format when selected, instead of all selected channels being highlighted in Moccasin. The new 2-color format will follow the currently selected Windows theme, such as the high contrast theme for the visually impaired.
 - The contrast between alternating rows of channels has been increased.
 - The column header text background is now Light Gray instead of Moccasin.
 - Use the system Sans Serif font throughout the CPS. Previously, the radio bands, channel list, and about box used a variety of harder-to-read fonts.
 - Use the system theme for the scroll bar instead of forcing the scroll bar to always be blue.
 - The QT/DQT values are now centered in their columns.
 - The QT/DQT dropdown menu background colors now correctly match the background color of the channel.
 - An obsolete library is no longer used, saving over 5MB of disk space in the installed CPS.
- The settings in the Settings toolbar dropdown (COM port number, CPS language, and default Scan Add behavior) are now saved and will be restored whenever the CPS is started.

Note: The saved COM port is not shared with the "Upload startup picture to radio" or "Voice Pack Editor" applets. You will need to select the correct COM port each time you upload a startup picture or voice pack.

- Correctly preserve the GPS time zone setting when reading / writing the radio and when opening / saving .dat files.

Note: .dat files written with CPS versions prior to 1.2.4h have the time zone set to -12.

- Add "GPS Time Zone" combo box in the Radio Function window to allow configuring the GPS time zone.

Summary of modifications by version

- The first option name in the Radio Function window item "Backlight" has been changed to "Always On".
- Tabbing between fields in the Radio Function window now proceeds as expected instead of sometimes jumping between different areas of the window.
- Items in the Radio Function window are now spaced evenly instead of having variably sized gaps between them.
- Items in the Radio Function window have been rearranged into more logical groups.
- Some Radio Function window items have been renamed to more accurately reflect the radio's menu naming.
- The ability to configure the radio for Chinese menus / voice has been restored. It was broken in 1.2.4f and 1.2.4g.

Note: This refers to the setting in the Radio Function window. The CPS has its own language option, but most CPS messages are English-only. Translation assistance is welcome.

- A new setting, "Voice Prompts", has been added to the Radio Function window. Previously, this setting could be changed on the radio but not in the CPS.
- The Radio Function window item "Send ID Delay" ("PTT-DLY" on the radio's menu) has been corrected to support the full range of settings supported by the radio (100 ms to 3000 ms in 100 ms increments).
- The Radio Function window item "Beep" now only allows the "OFF" and "ON" settings provided on the UV-17 Pro GPS radio.
- The VFO Mode window items "VFO A Step" and "VFO B Step" have had the missing 100KHz setting added.
- Correct the handling of CSV data with unexpected uppercase / lowercase formatting.
- Add a "Cancel" button to Paste Error message boxes.
- Entering a frequency with more than one decimal point in a channel no longer generates multiple "Error in frequency format" error messages.
- Entering an invalid frequency in a channel no longer deletes the existing channel settings after displaying the error message.
- The CPS can now be used with Windows "Open with..." dialogs.
- The setup program offers to optionally associate .dat files with the CPS.
- Unique error codes are now reported when a communication failure is encountered while reading from or writing to the radio. This should assist in locating places in the communication process that are prone to errors.
- A bug that caused the program to exit with no message after a new / write sequence has been fixed.

Summary of modifications by version

- A radio communication handshake error no longer causes the program to exit with no message. Instead, a message box requesting the user to report the bug is displayed.
- An attempt to read from or write to a radio using an incorrect COM port or with a cable that is not completely inserted in the radio is now detected and generates a useful diagnostic message.
- An attempt to read from or write to a radio with a cable that is not completely inserted in the radio now generates a useful diagnostic message when using certain programming cables.

Note: This condition can not be detected on all programming cables. Some cables will report the generic COM port / cable error message.

- The radio read / write progress bar now properly auto-closes after the user clicks "OK" on an error message.
- A bug that prevented pasting lines with channel names containing Unicode text has been fixed.

Note: The radio only has font characters for English and Chinese. Other characters will be displayed as a blank space.

- Pasting channel data into apps such as Notepad in older Windows versions no longer pastes as one long line of text.
- Trailing CR/LF characters are now added to the last line of cut / copied text.
- The README (this document) is now available from within the CPS via the Help / README for Modified CPS toolbar dropdown.
- The default channel list (generated when clicking the button in the Channel Information window) now auto-fills the GMRS/FRS channels instead of factory test channels.

Note: This data is provided as an example only - the radio is not type approved to transmit on these channels in the US, and these frequencies may be used for other purposes outside the US.

- The default value for the Channel Information column "Scan Add" can now be set via the Settings / Default Scan Add behavior dropdown.
- Various checks for corrupted data have been added when loading a .dat file.
- Various checks for corrupted data have been added when doing a cut or copy operation.
- Unused code has been removed from the CPS build.

5.4 Changes in 1.2.4g

The major new feature in 1.2.4g is the ability to specify a frequency offset in the Tx frequency column. A frequency calculator utility has also been added. 1.2.4g also includes fixes for a number of issues reported in previous versions.

- Add the ability to specify an offset for Tx frequency.
- A frequency calculator utility has been added.
- Fix an error when entering a frequency such as "146."
- Fix to actually exit the program when doing File / Exit.
- Fix occasional exceptions when trying to save to a read-only or otherwise invalid file.
- Report successful completion after saving a data file.
- Include the program build date/time in Help / About.
- Accept additional line delimiters when pasting from CSV files.
- Make error messages and window titles uniform and add unique codes when an error message can be generated in multiple places.
- Fix a problem where cutting a channel and then entering an Rx frequency into the same channel does not auto-fill the remaining fields as expected.
- Only auto-fill the Tx frequency for bands the radio can transmit on.

Note: While the radio is marketed as being able to transmit on 200-260MHz, the actual output power in that frequency band is only a few milliwatts, and prolonged transmission is likely to cause permanent damage to the radio. Therefore, the modified CPS does not auto-fill the Tx Freq in that band. If you really want to transmit on a frequency in that band, manually enter the frequency in the Tx Freq column.

- Fix a number of unhandled exceptions when entering frequencies or offsets in the VFO Mode window.
- Limit the range of valid offsets to -10Mhz to 10MHz in the VFO Mode window.

Note: It is still possible to get an unhandled exception or an incorrect offset frequency in the VFO Mode window. Work in this area is ongoing at a lower priority than other fixes.

- Only auto-fill the Tx QT/DQT column from Rx QT/DQT if the current Tx QT/DQT is set to "OFF". This solves a problem where changing the Rx QT/DQT on an already-populated channel inadvertently changes the Tx QT/DQT.
- Handle a case where .dat files generated by a 3rd-party app caused Cut / Copy operations to not populate all of the selected channels.

Summary of modifications by version

- Correct an issue where attempting to add a new channel with a data file loaded could cause the error message "InvalidArgument=Value of '-1' is not valid for 'index'."
- Sort the list of COM ports in the Settings / Port dropdown.

Note: This may change the default COM port to a different one than the default COM port in earlier versions.

- Correctly handle cases where software such as Microsoft Excel reformats numbers, for example, by changing "462.57500" to "462.575" and that data is then pasted into the CPS.

Note: Existing saved .dat files from 1.2.4f will not be automatically corrected. Simply select all of the channels in each affected zone and do a Cut followed by a Paste to reformat them properly.

- Correct a bug that caused reported "Invalid setting in channel X" errors to show an incorrect channel number (one lower than expected).
- Do additional validation of frequencies and QT/DQT tones when pasting data into the modified CPS.
- Allow empty Tx and/or Rx QT/DQT in CSV paste, treated as "OFF".
- Add "OFF" and "0" as synonyms for an empty Tx Freq in CSV paste to improve compatibility with other programs.
- Add the ability to specify a Tx Freq as an offset in CSV paste. Values from -10 to +10 are accepted.
- It is no longer necessary to click in the Rx Freq column of pasted data in order to enable editing of the other columns in that channel.
- A bug was corrected where pasting one or more channels would reset the channel's Tx Freq to the pasted Rx Freq and both Tx and Rx QT/DQT to "OFF" when the channel's Rx Freq was clicked on.
- The "Attempt to paste beyond Channel 100" error message will only be displayed once per paste operation instead of once for each channel past 100.

5.5 Changes in 1.2.4f

The most significant new feature in 1.2.4f is full Cut / Copy / Paste support.

- Add full Cut / Copy / Paste functionality - within zones, between zones, and to/from CSV (Comma-Separated Value) files.
- Fix VFO window scan range limits to 108-136/136-174/200-260/350-390/400-520 to match the radio's capability.
- Display an informational message when selecting a scan range between 108-136 or 350-390 to warn about a bug in the radio firmware that prevents their use.
- Fix VFO Channel A & B frequency box validation to accept all valid frequencies.

- Fix Channel window frequency input columns to accept all valid frequencies.
- Change the window top menu strip to show the actual radio frequency bands of 108-136/136-174/200-260/350-390/400-520.
- Change the default language for the radio in empty configs to English.
- Add a pop-up if selecting a radio model other than UV-17 to request feedback, as I have not tested those models.
- Fix the write progress bar to auto-close after the user clicks "OK" in the completion pop-up.
- Restore the ability to install on Windows XP (broken since 1.2.4d).
- Restore the correct 136.5 CTCSS tone (broken since 1.2.4d).
- Accept frequencies ending with a decimal point (like "146.") instead of generating an "Error in frequency format" error message.
- Both the setup program and CPS are digitally signed to prove their authenticity and that they have not been modified or damaged.
- Provide a complete manual (this document) in PDF form instead of text README file.

5.6 Changes in 1.2.4e

- Temporarily disable "Import Picture to Radio" in the Tools menu, as it is not working.
- More internal fixes for aircraft band support.
- Change the default icon to orange (from John Miklor) and retain the original as an alternate icon.
- Use the orange icon in Control Panel / Programs and Features instead of a generic setup icon.
- Auto-close the COM port dialog after the port is selected.
- Start CPS in normal window mode instead of fullscreen mode and adjust the window size accordingly.
- Change the ordering of zone selection buttons in the channel window, rename "Last" to "Previous" to correctly reflect function.
- Fix SK2 setting reverting to FM after reading from the radio.
- Provide a complete *setup.exe* installer instead of just distributing the modified CPS executable.

5.7 Changes in 1.2.4d

1.2.4d changed from simple hex edits of the executable to a full compilation of the reconstructed source code. This allows many more fixes and improvements. It underwent extensive testing to make sure nothing was adversely affected by the change to full compilation.

- Change "Bank" labels to "Zone" to be consistent with the radio's display.
- Change the lower frequency limit to 108MHz on the VFO page.
- Change the default radio model to UV17PRO.
- Add text to the Help / About window to make it more clear that this is a modified version.
- Change the main window title to show that this is a modified version.
- Fix another issue with aircraft band support where frequencies would be marked invalid after reading from the radio.
- Correct various spelling/grammar issues in English messages.
- Change various Chinese-only error messages to English.
- Change Properties / Details to provide information about the executable.
- Improved the error message displayed when trying to open a read-only *.dat* file.

5.8 Changes in 1.2.4c

- Change the window top menu strip to show 108-174 instead of 136-174.

5.9 Changes in 1.2.4b

- Fix additional locations where the aircraft frequency is validated.

5.10 Changes in 1.2.4a

Version 1.2.4a was the first modified version of the CPS. It proved that minor changes were possible and introduced (incomplete) support for entering aircraft band frequencies in the channel list.

- Change the lower VHF frequency limit from 136MHz to 108MHz.
- Change "Frecence is invalid" error message to "Invalid Frequency!".
- Change "ZONEE 5" text typo to "ZONE 5" in default settings.
- Change "?????" (Chinese text 'Read Failed!') to "ERR1!" when unable to open a file.

6

Known CPS issues (not yet corrected)

If you encounter an issue in the modified CPS, please test to see if it also appears in the original factory CPS. In either case, please email details about the issue to terri-cps@glaver.org so I can add it here. The more complete your report is, the easier it will be to reproduce the problem and put it on the list to be fixed.

There are a number of known issues with the factory CPS, which also appear in the modified CPS. They are listed here both to inform users about them and to keep track of them for investigation so they can be addressed in a possible future modified CPS release.

- You need to Tab out of the Zone Name textbox after making any changes to the zone name, or it will not take effect. This likely affects other textboxes as well.
- Using the Shift + Spacebar keys in the name of a channel does not generate a blank space as expected. This can be encountered when you are holding down the Shift key while typing "ABC DEF". The result will be "ABCDEF".
- Multiple users report that trying to read from a "new in the box" radio causes CPS to exit with no message. This can be avoided by writing an empty config to the radio before making any changes. This problem is believed to be corrected in CPS 1.2.4h and later.
- Invalid data not detected by the CPS (for example, unusual characters in an ANI ID) may cause the CPS to exit without an error message when writing the config to the radio and possibly leave the radio in a partially programmed state. This problem is believed to be corrected in CPS 1.2.4h and later.

7

Known radio firmware issues

There are a number of misfeatures / minor bugs / annoyances in the radio firmware. As these are in the firmware inside the radio, it is not possible to fix them with modifications to the CPS software. As of this writing, the newest radio firmware versions are 1.27 and 1.28, depending on the hardware in the radio. If you encounter any firmware issues not already listed here, please email me at terri-cps@glaver.org so that I can add them.

Note: It is unknown whether Baofeng will make any future changes to the radio firmware. Even if they do, there is no assurance that they will make such updated firmware (and the update utility) available for existing radios.

- It is not possible to select different zones for the A (upper) and B (lower) radio channels.
- The radio's zone names revert to default values of "BANK x" after changing the ANI ID on the radio.
- Some users report that audio is garbled when switching back to an aircraft band frequency after using the FM broadcast radio function.
- Some users report that additional radio GPS settings, such as the on/off status and GPS / Beidou selection, randomly revert to defaults when other settings on the radio are changed.
- If a scan range between 108-136MHz or 350-390MHz is set, the radio will reset the range and disable scanning after a warm restart or power cycle. This prevents entering these frequencies via the CPS since the last step of writing to the radio performs a warm restart.
- There are a number of typos in on-screen messages. For example, "POGER" instead of "ROGER" and "Freq Ranger" instead of "Freq Range".
- The GPS coordinates displayed by the radio are prefaced by N / S and E / W instead of using the more common minus sign when needed.
- The reported GPS altitude displayed by the radio can be inaccurate. This generally manifests as an altitude of 6500m or higher.
- The radio does not store the GPS almanac, so any warm restart or power-on of the radio takes an extended time to acquire an initial GPS fix.
- Both the requesting and responding radios need to be on their GPS screen in order for one radio to request the GPS position of another radio.
- The radio is marketed as being able to transmit on 200-260MHz. However, the actual output power in that frequency band is only a few milliwatts, and prolonged transmission is likely to cause permanent damage to the radio.

Known radio firmware issues

- The radio's display will not time out and turn off if you are listening to a weather frequency using the 0 / cloud key on the radio. The radio treats weather frequencies the same as reception on other frequencies - it lights the green receive activity LED and keeps the display on.
- While the radio is scanning, either in channel mode or VFO mode, the radio keypad and other functions such as flashlight on/off are disabled until the scan is stopped.
- The radio will sometimes get stuck in a mode where it continuously transmits GPS requests. This has been observed to happen when the radio display is in GPS mode when a config or startup picture is being uploaded by the CPS, but it may also happen at other times. The solution is to power off the radio and then turn it back on.
- Programming the radio using CPS may fail randomly if the battery is not close to fully charged while programming.
- Using the radio while a USB charging cable is connected may reduce sensitivity or cause unclear reception due to high-frequency noise on the USB cable.

Note: The radio manual recommends leaving the radio powered off while charging, either with the charging cradle or via USB.

- The radio will display the power high/low and offset "+" symbols for a channel that has transmit disabled. You can confirm that transmit is disabled by briefly pressing the radio's PTT key. If transmit is disabled, you will receive the transmit disabled beep, the red Tx LED on the top of the radio will not illuminate, and the RSSI bargraph on the display will show no activity.

Note: If you look at the channel's transmit frequency, it will read "166.666665MHz" to indicate that transmit is disabled. This frequency cannot be entered, either via CPS channel settings or on the radio - if you look carefully, there are six digits after the decimal point, while the CPS and radio only allow five.

- Not all options that can be configured by the CPS appear in the radio's menus. An example is the Radio Function window's "Menu Quit Timer", which controls how long menus will be displayed before the radio reverts to the normal display.
- The duration of the startup image display is fixed (and very short).

8

General tips for using the radio

This chapter contains a number of tips for using radio functions that are not described in the manual supplied with the radio. While these are unrelated to the CPS program, it was felt that including them here would be helpful. If you have any additional tips, please send them to terri-cps@glaver.org so they can be included in future versions of this manual.

8.1 Requesting the GPS location of another radio

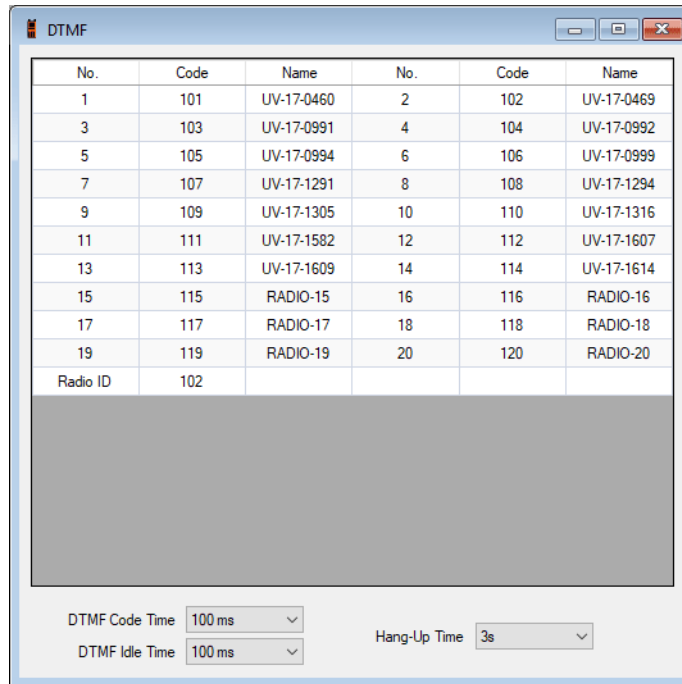
In the CPS DTMF window, assign a name to each of your radios, starting with Code 101. Make sure the Radio ID on the bottom of the list is set to 101 and upload it to the first radio. Then, change the Radio ID to 102 and upload it to the second radio. Repeat for any other radios.

Notes: At present, the GPS function only communicates with other UV-17 Pro GPS radios. It does not support generic data formats like APRS.

The need to change the Radio ID means that you cannot just repeatedly upload the same configuration to multiple radios if you plan on using this feature. You will need to change the Radio ID before uploading the configuration to each additional radio.

If you do not need GPS functionality, you can extend the radio's operating time between charges by setting the "GPS Switch" function to "OFF" in the CPS Radio Function menu to disable the GPS receiver.

General tips for using the radio



Once you have programmed your radios, make sure that they are set to the same frequency and that it is a frequency that you are permitted to transmit on. Use a long press of the radio's blue function key to place each radio into GPS display mode.

Note: You will need to do this on all radios that will interchange GPS information. A radio that isn't in GPS display mode will not respond to GPS location requests.

The radio's GPS information display will probably show "My Place". Use the up or down arrow keys to select the radio you want to locate. The screen will show both the radio number (codes 101-120 will display as 1-20) and the programmed name. The code for your radio will also be marked "(Host)". Press and hold the radio's transmit button until you hear the tone burst being transmitted, then release the transmit button. If the other radio hears the request, that radio has obtained a GPS fix, and the ID being requested matches its ID, it will respond by transmitting its position, which will be displayed on your radio's screen.

Note: If a radio has not obtained a GPS fix, it will not respond even if its ID matches the request from the other radio.

A short push of the green function key will switch to displaying a compass circle and the approximate position of / distance to the other radio.

Note: The compass does not rotate to point to true north. Just because the other radio is (for example) to your west does not necessarily mean it is to your left.

8.2 Channel mode channel name/frequency display

A common complaint among Baofeng users is the inability to easily switch between displaying a channel's name and its frequency. A workaround used by many users is to use the Radio Function window's "Channel Display Type" setting to (for example) set Channel A to "Name" and Channel B to "Frequency". In that configuration, if both Channel A and B are set to the same channel number, you can see both the channel name and frequency. One method of using this is to step through the names on Channel A until you find the channel of interest. Note the channel number shown on the screen. Use the blue function key to switch between Channel A and B, and then use the numeric keypad to set the Channel B number to the same channel number as Channel A. You can then use the blue function key to switch back to Channel A and change it to another channel number if desired.

Note: Channel numbers must be entered as three digits when using the numeric keypad. For example, channel 4 would be entered as 004.

8.3 Frequencies supported by the radio

The descriptions by sellers don't always reflect the actual frequencies supported by the radio. The following were determined by experimenting using a radio with hardware version 1.30 and firmware version 1.27. Other versions may differ.

- 65.0-108.0MHz - FM broadcast (Rx only)
- 108.0 - 135.9975MHz - VHF Aircraft band (AM, Rx only)
- 136.0 - 173.9975MHz - VHF 2m (Tx / Rx)
- 200.0 - 259.9975MHz - VHF 1.25m (Tx / Rx)
- 350.0 - 389.9975MHz - UHF (Rx only)
- 400.0 - 519.9975MHz - UHF 70cm (Tx / Rx)

Notes: Just because the radio is capable of transmitting on a frequency does not give you authorization to do so. Discussions of legality are beyond the scope of this manual, but in general, the radio needs to be approved by your country for the intended usage, *and* you will require the appropriate license to transmit on a particular frequency or range of frequencies.

The radio is marketed as being able to transmit on 200-260MHz, but the actual output power in that frequency band is only a few milliwatts, and prolonged transmission is likely to cause permanent damage to the radio.

8.4 Screen protector

It is unlikely that any screen protector manufacturer will create a custom tempered glass version for the UV-17 radio family. The closest fit I've found is designed for the Garmin inReach Mini. It leaves an unprotected border around the edges but covers the entire display area (and then some). The specific ones I'm using are from TUSITA on Amazon: <https://www.amazon.com/dp/B07PFSTNJ>

Notes: Be sure to peel off the factory plastic protective film from the radio's screen before applying the protector!

It is a bit of an art form to install the protector perfectly centered. You get two protectors in the Amazon item listed above. If you don't succeed the first time, you have a spare to try again.



8.5 Differences between firmware versions

This section will note any observed differences between radio firmware versions.

- Version 1.28 of the radio firmware allows on-the-fly changing of transmit power via the key on the radio.
- Version 1.28 of the radio firmware adds a new menu option, "Dis ANI", to the Radio Setting menu.

Note: Version 1.28 started showing up in radios shipped in early November, 2023. At this time there is no firmware update available for existing radios, and no indication that an update will ever be provided.

9

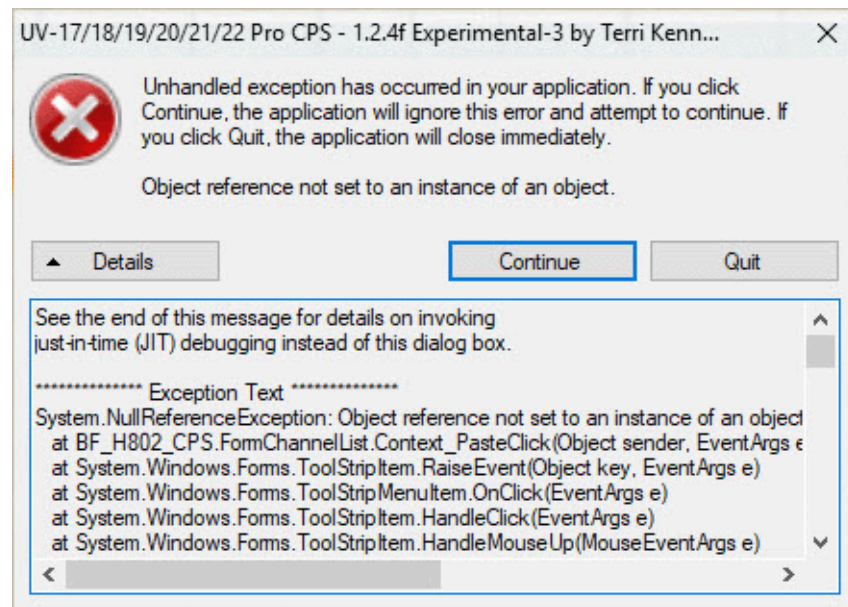
Reporting problems or making suggestions

If you encounter an issue in the modified CPS, please test to see if it also appears in the original factory CPS. In either case, please email details about the issue to terri-cps@glaver.org so I can add it to my issue tracker.

Note: I may ask you to run additional troubleshooting steps to further pinpoint the problem.

9.1 Fatal programming errors

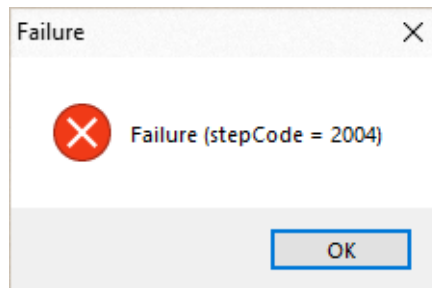
If the modified CPS encounters a fatal programming error, it should display an error pop-up similar to the one shown below. Please click on the "Details" button and send the complete contents of the detail text (you can copy it directly from the error pop-up into your email client) to me to help pinpoint the problem.



9.2 Radio communication errors

If the modified CPS encounters an error while communicating with the radio, it will display a failure message with a stepCode. Please report the stepCode number, as well as what you were doing that caused it to appear, and any other relevant information to me.

Reporting problems or making suggestions



9.3 Suggestions and comments

I would also be interested in any suggestions you might have regarding additional improvements to the modified CPS. Please send them to the same email address provided above.

10 Support for other radios and different versions of CPS

At this time, I do not plan on making similar changes to the CPS programs for other radio models. It is probably possible to do so, at least for new-style Baofeng models (full-color screen, etc.).

I am open to discussing providing my modifications to the factory or performing the same modifications to other CPS programs. I would need to be paid for either of those options as I invested quite some time in modifying the current CPS.

Notes: The modified UV-17 Pro CPS is and will always remain free.

Any charge would be for my expertise and consulting time and is not a charge for the actual CPS software since the copyright remains with Baofeng.

I am also available for other consulting projects.

A

Acknowledgements

I would like to specifically thank the following people:

- John Miklor, for his testing and also hosting my modified CPS.
- Manfred Vives, for his extremely thorough testing and suggestions.
- Timothy Ver Voorn, for finding a mistake of mine regarding the 136.5 CTCSS tone.
- Ty Lu, for his testing.
- Steven Davidson, for reporting a problem when importing some CSV data.
- Sander van der Wel, for finding the problem with the startup picture tool, locating where the GPS time zone was stored in the radio, and for the Voice Pack Editor utility.
- Ray Torella, for noting a discrepancy with the "Beep" function setting.

Additionally, I would like to thank the many members of the Facebook groups "Baofeng UV-17 Pro GPS" and "Baofeng Owner's Club" for their suggestions, bug reports, and testing.