FTRESTORE

Yaesu FT Radio Configuration Restore Utility

VK2BYI

FTRestore is a Windows desktop application designed to upload, download and compare memory channels and menu settings in the Yaesu FTDX1200, FTDX3000, FTDX5000 and FT-991/FT-991A model transceivers.

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FTRestore

FTRestore is a Windows desktop application designed to upload, download and compare memory channels and menu settings in the Yaesu **FTDX1200**, **FTDX3000, FTDX5000 and FT-991/FT-991A** model transceivers. Details of the Regular Memory Channels, PMS Memory Channels and the Menu Settings can be uploaded from the transceiver into a worksheet grid control where they can be modified as required, before being saved in a Microsoft Excel compatible file or a Menu Settings file. The files can be opened later and have the memory channel and menu settings details downloaded again to the transceiver. There is also the ability to compare the memory channels and menu settings in *FTRestore* with the transceiver to detect any discrepancies before uploading or downloading.

This version of *FTRestore* adds support for the Yaesu FT-991A model transceiver. As far as saving, restoring and comparing memory channels and menu settings, there is no difference in behavior on the part of *FTRestore*. So, unless otherwise noted, any reference to the model FT-991 transceiver in this document can be assumed to apply equally to the FT-991A model.

Features

- Memory Channel worksheets can be saved in Microsoft Excel 97-2003, Excel 2007, Excel 2010 or Excel 2013 file format for your convenience.
- Memory Channel worksheets can be read from any version of Microsoft Excel 97-2003, Excel 2007, Excel 2010 or Excel 2013 file format.

  NOTE: Microsoft Excel is only required if you choose to edit the Memory Channel worksheet outside of *FTRestore*. The *FTRestore* Memory Channel worksheet grid can be used to edit all details in the worksheet without having to use any other program.

- The *FTRestore* application can have multiple Memory Channel worksheets opened at the same time with the model of transceiver (either FTDX1200, FTDX3000, FTDX5000 or FT-991) being automatically detected.
- The memory channel details can be uploaded from the transceiver on the COM port associated with the currently selected tab into the Memory Channel worksheet.
- The memory channel details can be compared to the transceiver on the COM port associated with the currently selected tab to the details in the Memory Channel worksheet.
- The memory channel details can be downloaded to the transceiver on the COM port associated with the selected tab from the details in the Memory Channel worksheet.
- The antenna selection (Ant1, Ant2, Ant3*, Ant4** or Ant Rx**) can be saved and restored with each memory for the FTDX1200, FTDX3000* and FTDX5000** transceiver.
- The CTCSS Tone Frequency can be saved and restored with each memory in the FT-991 transceiver.

- The Menu Setting details can be uploaded from the transceiver on the COM port associated with the currently selected Memory Channel worksheet tab into to the Menu Settings dialog.
- The Menu Setting details can be compared from the transceiver on the COM port associated with the currently selected Memory Channel worksheet tab to the details in the Menu Settings dialog.
- The Menu Setting details can be download to the transceiver on the COM port associated with the currently selected Memory Channel worksheet tab from the details in the Menu Settings dialog.
- The Menu Settings details can be saved in one or more files with a file type extension appropriate for each model transceiver.
- There are multi-level Undo/Redo editing capabilities in both the Memory Channel worksheet grid and the Menu Settings dialog grid. Each grid has its own Undo/Redo stack and clipboard for complete isolation of changes being made in each grid.
- Time and Date (if applicable) can be set in the FTDX1200, FTDX3000, FTDX5000 and FT-991 transceivers.
- *FTRestore* will record the filenames of all currently opened Memory Channel worksheets and their associated COM ports when the application is closed. The next time the *FTRestore* application is run it will automatically re-open and display the previously saved collection of worksheets, and it will also attempt to identify and connect to the transceivers plugged into the COM ports associated with each worksheet.
- *FTRestore* will record the filename of the last saved Menu Setting file for each model transceiver when the application is closed. The next time *FTRestore* application is run and the Menu Settings dialog is opened for any model transceiver, the last used Menu Settings file for that model transceiver will be automatically re-opened and displayed in the grid.

NOTE: This is an ongoing piece of work and is not intended to be a commercial venture. *FTRestore* is free to use although we may ask for a small contribution sometime in the future to help defray the costs of web hosting, maintaining the software and adding new features if sufficient interest is shown by our fellow amateurs.

System Requirements

FTRestore is a Windows desktop application that has been designed to use the *Microsoft .NET Framework 4.5.1* which is supported by Microsoft to run on the following workstation and server operating systems:

- Windows 10
- Windows 8.1
- Windows 8
- Windows 7 SP1
- Windows Vista SP2
- Windows Server 2012

- Windows Server 2008 R2 SP1[1]
- Windows Server 2008 SP2[2]

Windows 8.1 and Windows Server 2012 R2 come with the *Microsoft .NET Framework 4.5.1* pre-installed. The .NET Framework 4.5.1 will need to be downloaded and installed for the other operating system versions listed above if it hasn't already been installed by other .NET applications run on the server or workstation.

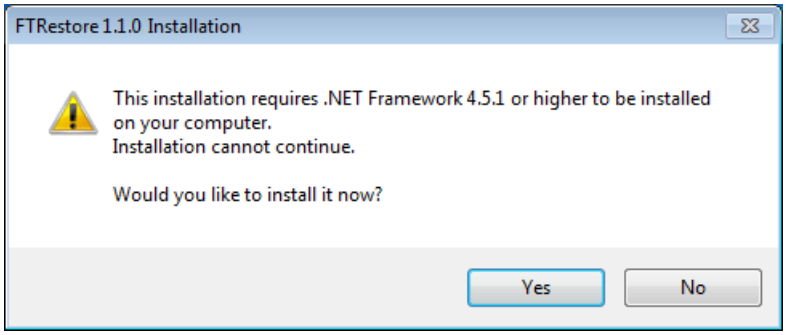
Hardware Requirements[3]

Processor:	1GHz (32-bit or 64-bit)
RAM:	512 MB
Disk space (minimum)	
32-bit:	850 MB
64-bit:	2 GB

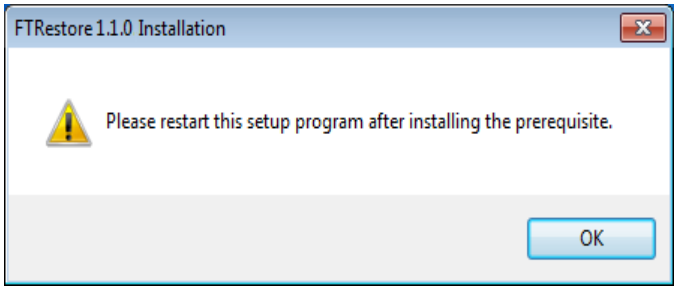
[1] The .NET Framework is supported in the Server Core Role with SP1 or later but isn't supported on Windows Server 2008 R2 for Itanium-Based Systems.
[2] The .NET Framework is not supported in the Server Core Role.
[3] The hardware requirements listed above are those specified by Microsoft for the .NET Framework 4.5.1 itself. The *FTRestore* application shouldn't place any additional burden on these requirements.

Installation

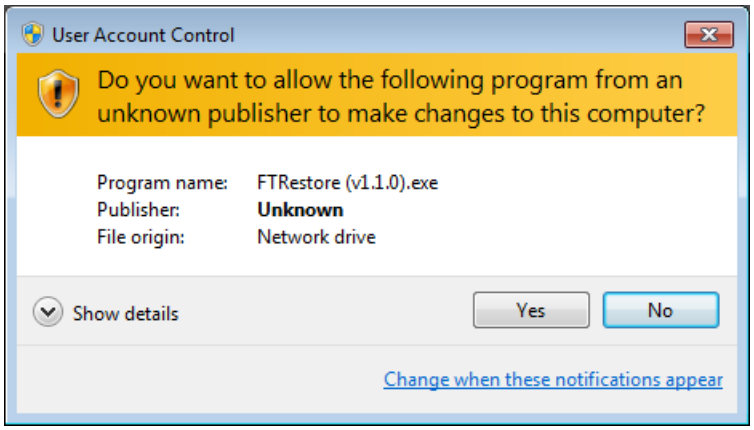
1. You can download the latest release of the *FTRestore* installation program from the *FTRestore* page at http://www.vk2byi.com.au/ftrestore.
2. After you have downloaded the file, run the installation program.
3. The installation program will check whether the Microsoft .NET Framework 4.5.1 is installed or not. If the correct version (or later) of the framework is installed, the installation program will continue at step 9.
4. If the correct version of the framework is not installed, the following warning will be displayed:



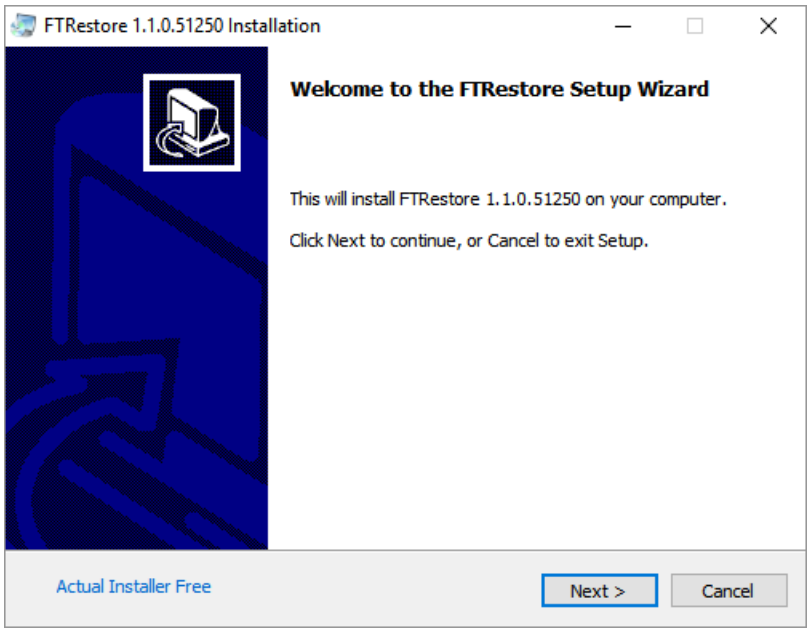
5. Click on the *Yes* button to start the installation on the framework. The following message will be displayed:



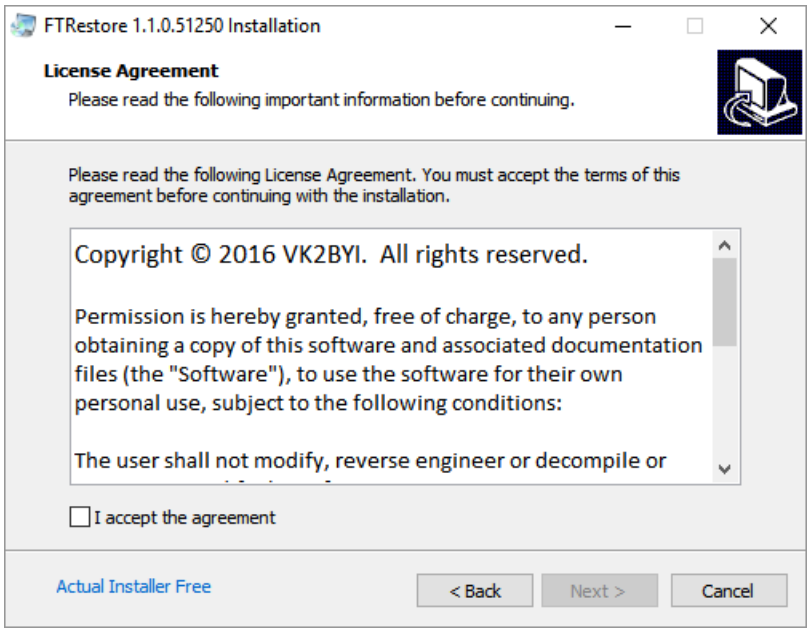
6. Click on the *OK* button and the installation program will launch the web browser and load the *Microsoft .NET Framework 4.5.1 (Web Installer)* page from the Microsoft Download Center. The installer program will then close.
7. You can refer to the Installing the Microsoft .NET Framework 4.5.1 section towards the end of this document and return here when it has been installed.
8. Run the *FTRestore* installation program again.
9. If you get a security warning like the following, click on the *Yes* button:



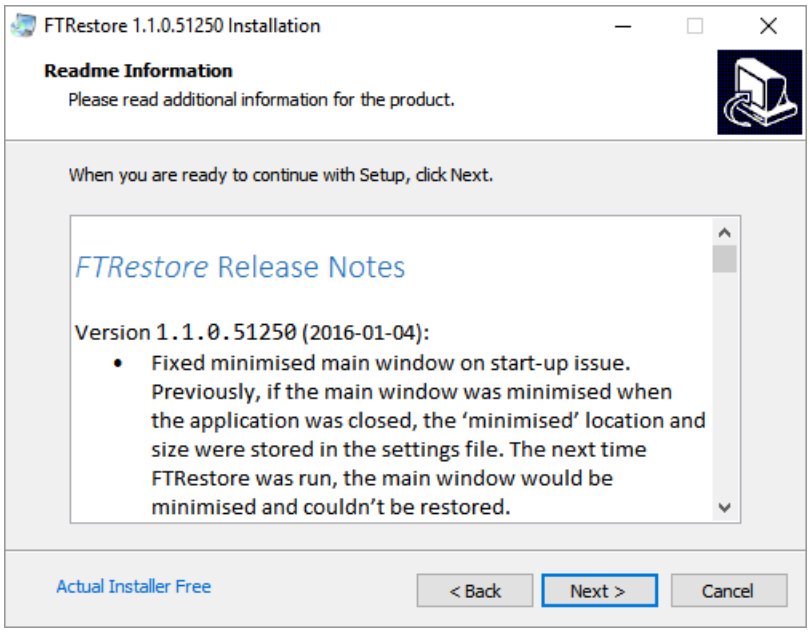
10. When the installation continues, it will display the following prompt. Click the *Next* button:



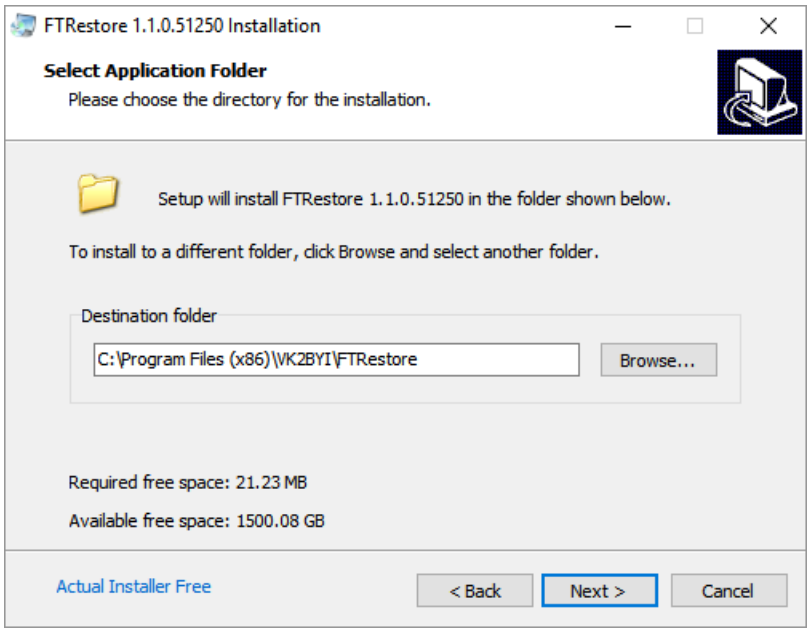
11. Read the license agreement and then click the *I accept the agreement* check box and click the *Next* button:



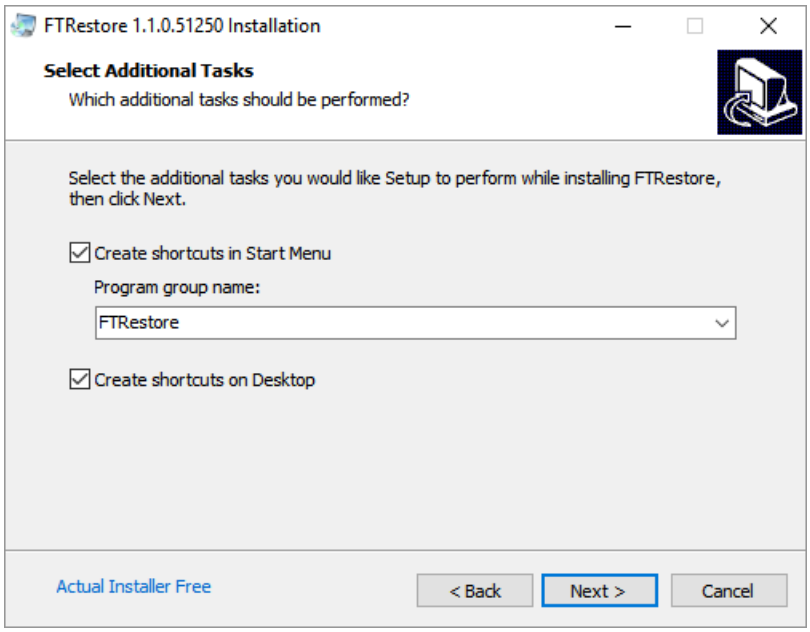
12. Read the release notes to see what has changed and then click the *next* button:



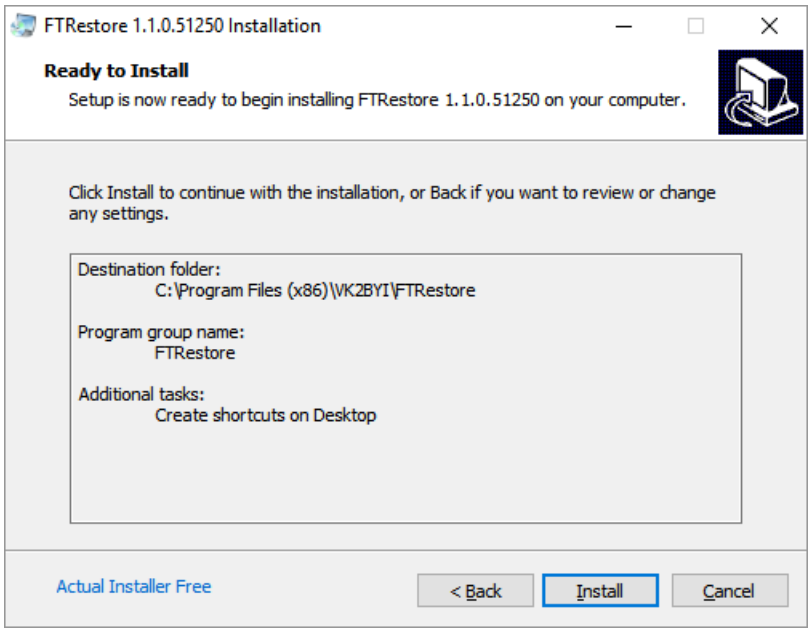
13. Use the recommended folder as the Destination Folder by clicking on the *Next* button:



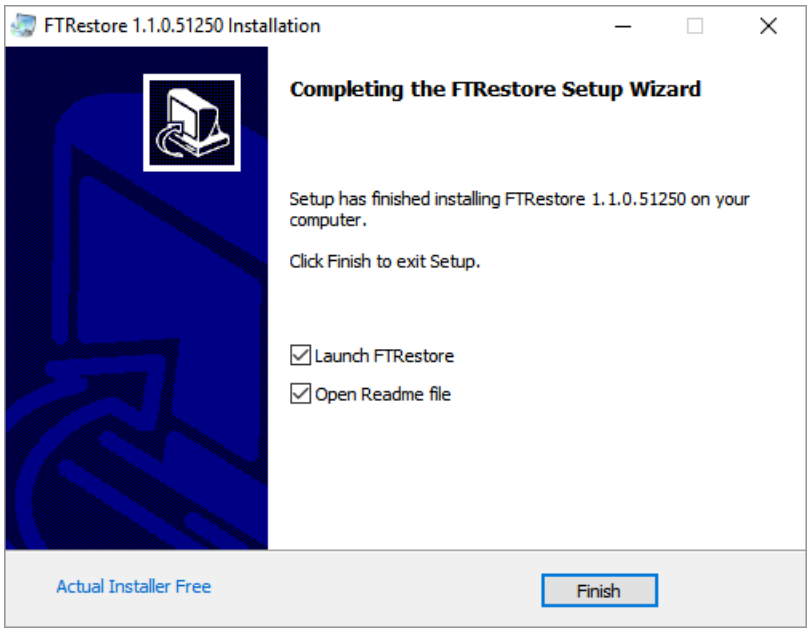
14. You can tick the checkboxes to create *Start Menu* or *Desktop* shortcuts for the *FTRestore* application as desired, and then click the *Next* button:



15. You can review your selections at this stage and use the *Back* button to make any changes. Otherwise, click on the *Install* button to continue with the installation:



16. After it has been installed, you have the options to launch *FTRestore* and/or open the *Readme* file by ticking the checkboxes as you prefer, and then clicking the *Finish* button:



17. The installation of the *FTRestore* application is now complete.

Getting Started

Before starting *FTRestore* you should check Menu number 41 on the **FTDX1200**, Menu number 40 on the **FTDX3000**, Menu number 34 on the **FTDX5000** or Menu number 33 on the **FT-991**, as you may have to DISABLE the RTS setting on the CAT port. It has been our experience that this is required for programs such as *Ham Radio Deluxe*.

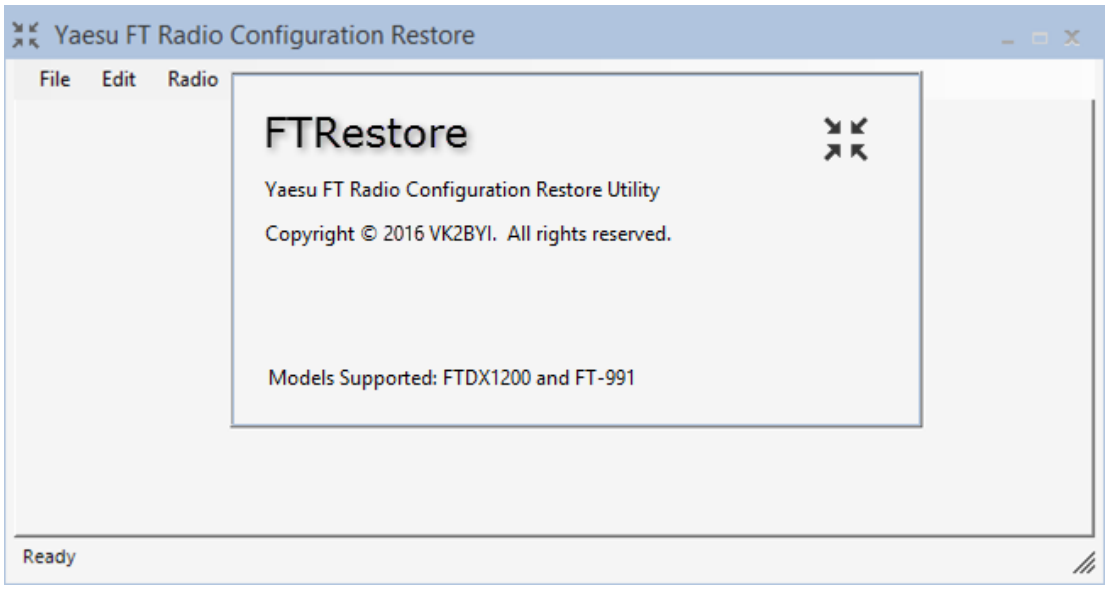
The author has a USB-63 cable that won't work unless the CAT RTS menu is set to DISABLE on his **FTDX1200**, although a colleague with the same cable and the same equipment can have the CAT RTS set to ENABLE and have *FTRestore* connect successfully with the transceiver.

In short, it may be prudent to simply set the CAT RTS setting to DISABLE after any Menu Reset or any Full Reset of the transceiver to avoid any issues. We have paid attention to the timing of CAT commands being sent to so as avoid overrunning the transceiver without flow control being required.

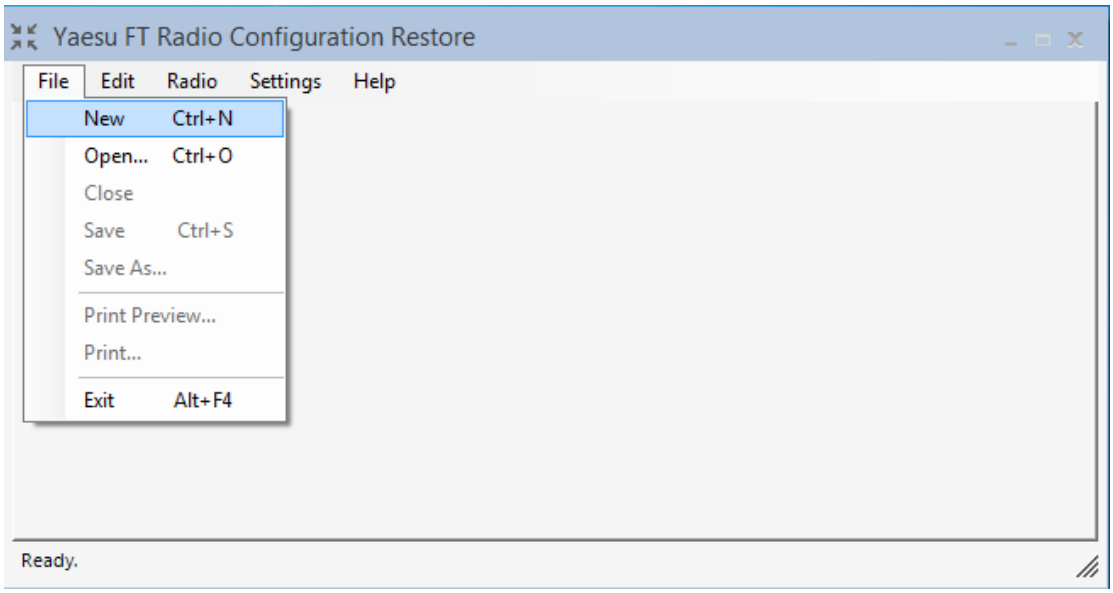
Starting FTRestore

The following shows the screen images of an *FTRestore* session using a Yaesu **FTDX1200**. Click on the *FTRestore* desktop shortcut to start the *FTRestore* application.

When the *FTRestore* application is started, a splash screen will display for a few seconds as the program initializes after which the main form will displayed:

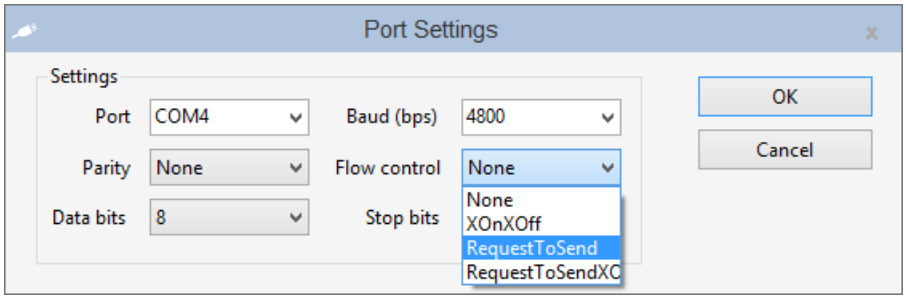


Select *New* on the *File* menu, or press Ctrl+N, to open a new worksheet:



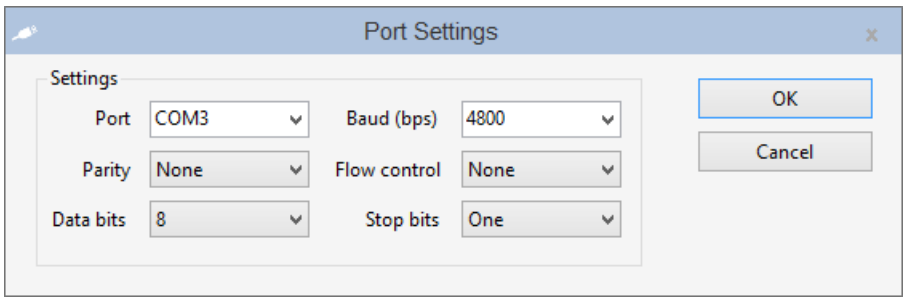
The Port Settings Dialog will be displayed. Select the COM port that is connected to a Yaesu **FTDX1200**, **FTDX3000**, **FTDX5000** or **FT-991** model transceiver and check that the Baud Rate matches the value set in the transceiver (typically 4,800 bps).

If you have a CAT interface cable that correctly passes the RTS signal through to the transceiver, you can set *RequestToSend* in the *Flow control* list box setting and leave the CAT RTS menu setting in your transceiver set to the default setting of ENABLE.



If this works in your situation, you won't have to change the CAT RTS setting after a Menu Reset or a Full Reset of the transceiver.

If you need to set the CAT RTS menu setting in your transceiver to DISABLE to work with other software such as Ham Radio Deluxe, then set the *Flow control* list box setting to *None*.



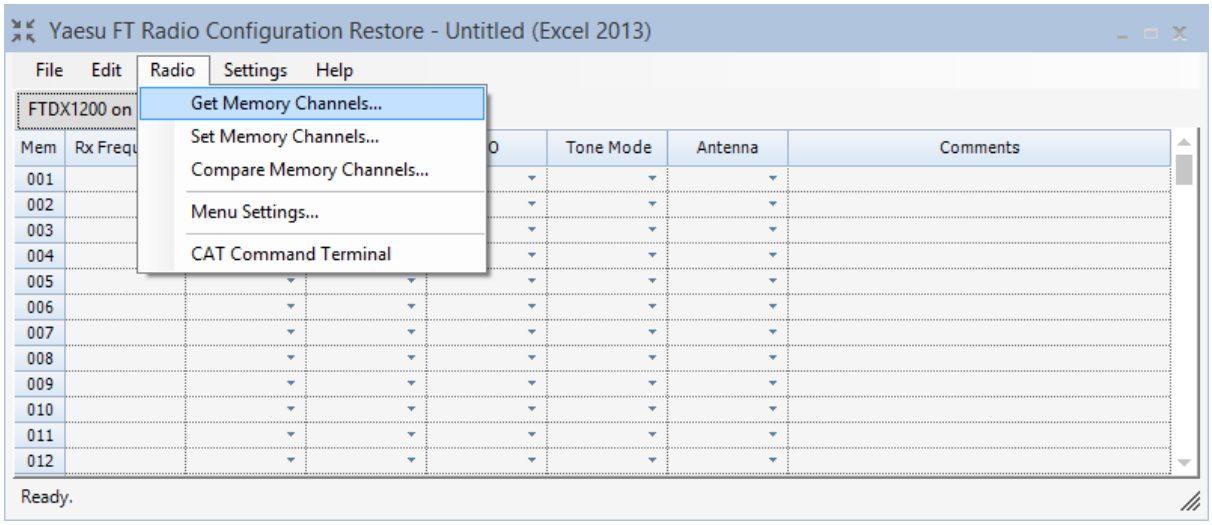
Don't change the *Parity* (None), *Data bits* (8) or *Stop bits* (1) from the default settings. Click the OK button to open a new worksheet and detect the transceiver model.

In this case an **FTDX1200** was automatically detected on COM4 and a blank *Untitled* worksheet is displayed with the transceiver model and COM port name on the worksheet tab:

If a transceiver cannot be detected, or the selected COM port is in use by another application, the tab name instead will be *Unsupported on COMn* where *n* is the port number.

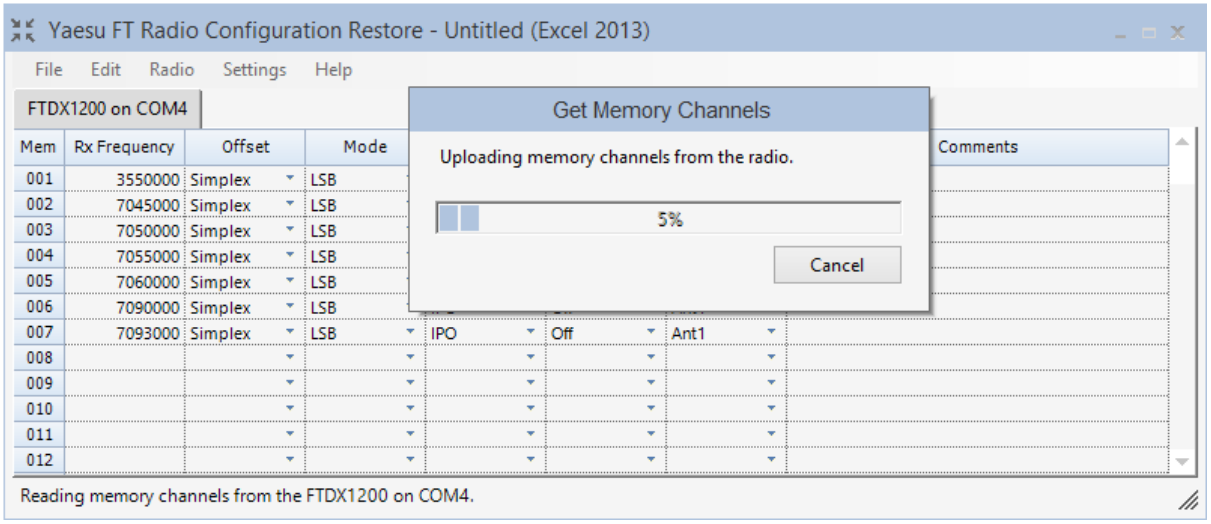
Uploading Memory Channels

Select *Get Memory Channels…* on the *Radio* menu to upload the current memory channel settings from the transceiver:

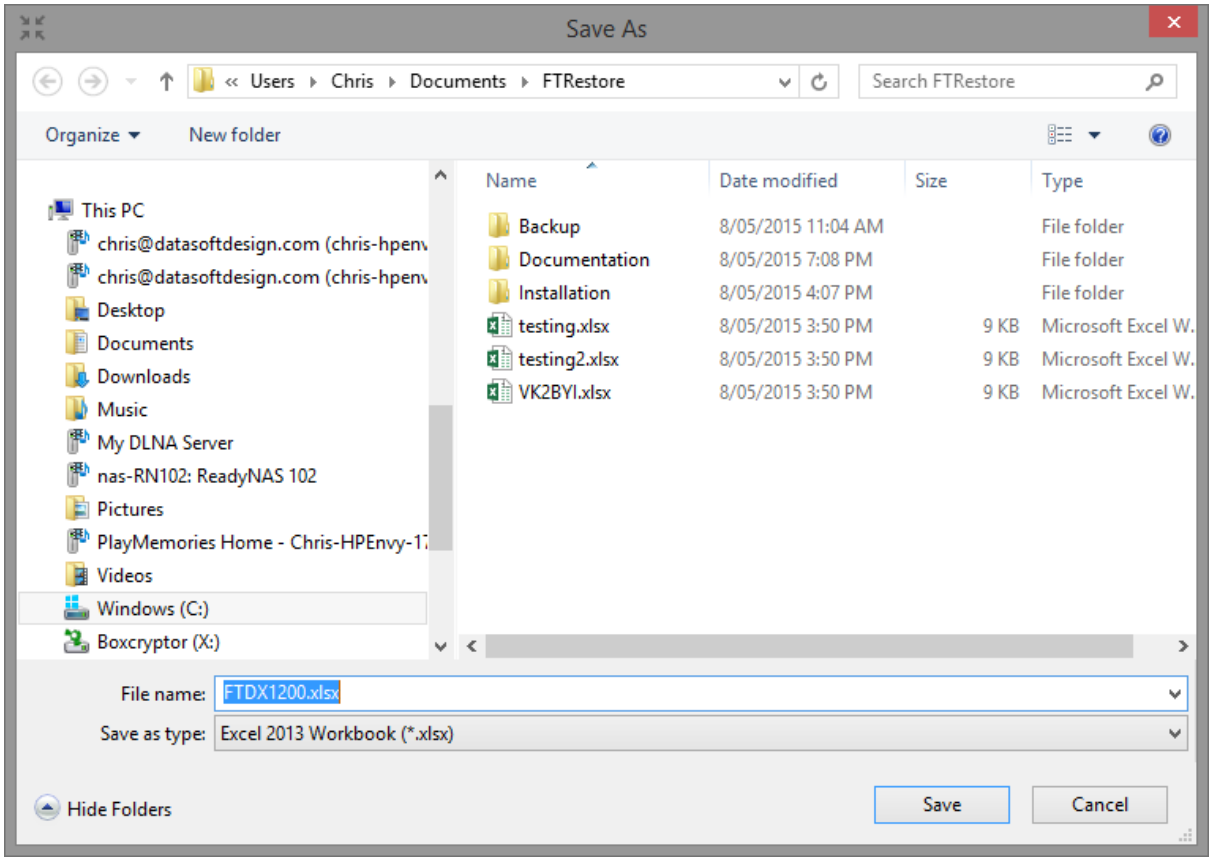


You will be warned that the current worksheet will be overwritten, so click on the *Yes* button to proceed. As the details are uploaded from the transceiver, you will see a progress bar and any occupied memories being filled in as rows in the worksheet in the background. If you click on the

Cancel button, the upload process will stop at the current point in time and the remaining memories will not be uploaded:



At this stage, it would be advisable to save the worksheet as an Excel spreadsheet file before continuing as the worksheet now contains the currently programmed memory channels from the transceiver. To save the worksheet select *Save As* from the *File* menu, specify a filename and the version of the Excel spreadsheet format you wish to write and click on the *Save* button:



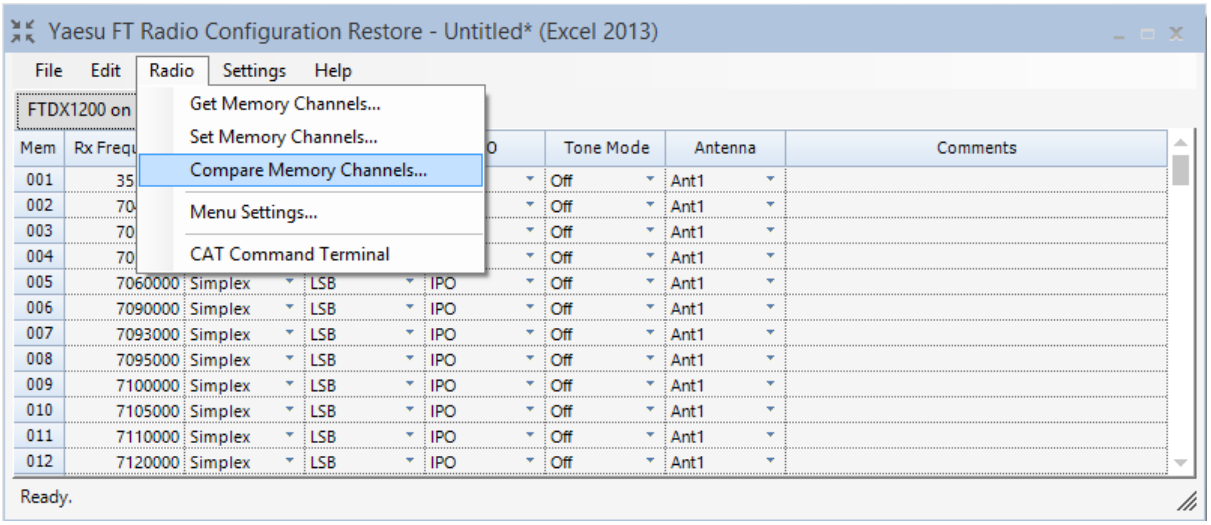
By default, files will be saved in a folder called *FTRestore* under the current user's personal Documents folder.

Changes can now be made to the memory channel details in the *FTRestore* worksheet grid. If you wish to remove the contents of a memory channel, just highlight the row and press the *Del* key. However, memory channels in the radio can only be removed by deleting the memory from the transceiver front panel. So, remember to clear any individual memories, or perform a full memory reset, in the transceiver before downloading a new configuration.

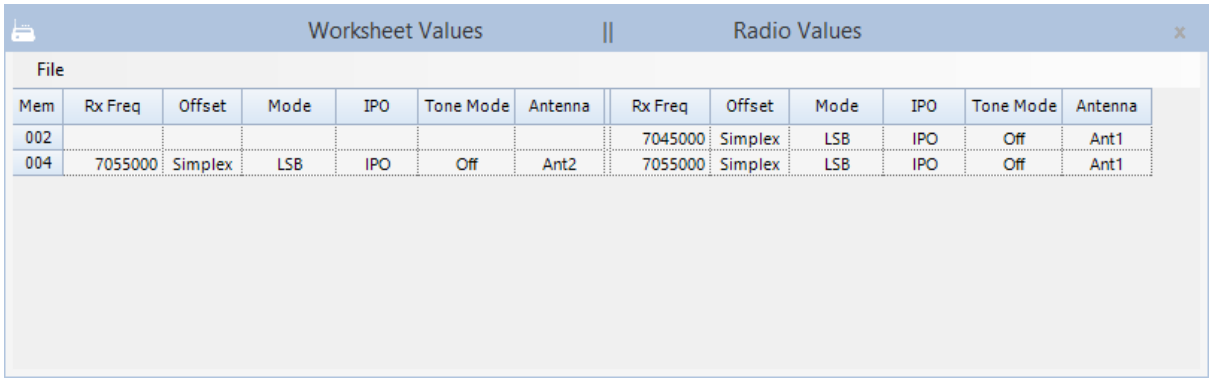
You can save the changes to the file by selecting the *Save* or *Save As* option from the *File* menu. However, before you download the changes, you may want to perform a comparison between the current memory channels in the transceiver and the memory channel details in the modified worksheet to see the impact of any changes.

Comparing Memory Channels

Select the *Compare Memory Channels…* option from the *Radio* menu to see if there are any differences between the worksheet and the transceiver:



A progress bar will be displayed as the rows in the worksheet are compared to the memory channels in transceiver. If you click on the *Cancel* button, the compare process will stop at the current point in time and the remaining memories will not be compared. If a difference is detected, a dialog will be displayed showing the worksheet values on the left and the transceiver values on the right:

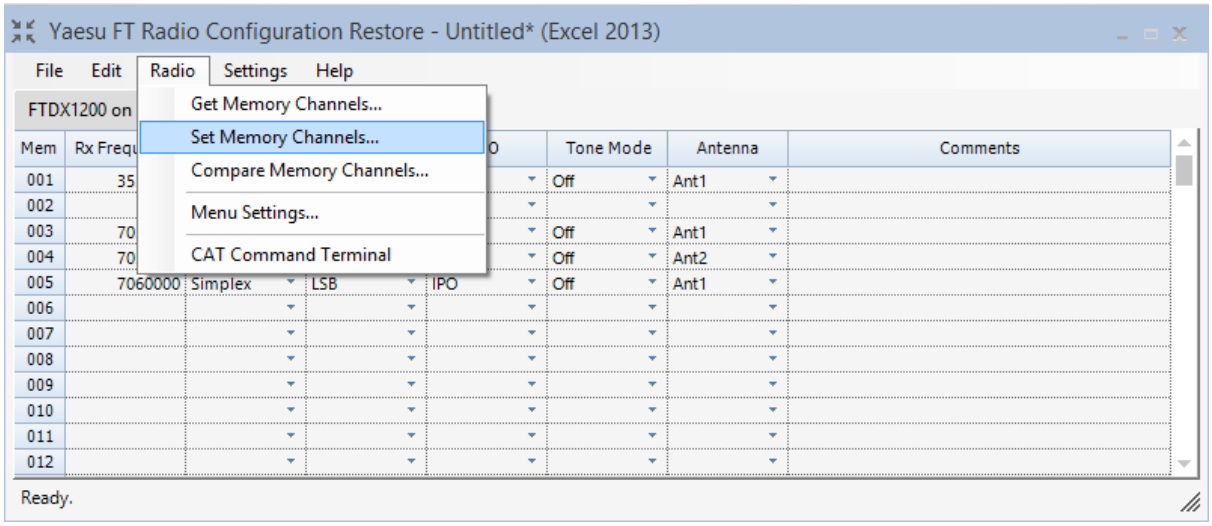


In this case, memory channel 002 was cleared from the worksheet, but it hasn't been manually deleted from the transceiver. Also, memory channel 004 has a different value for the antenna selection to that programmed for the same memory in the transceiver.

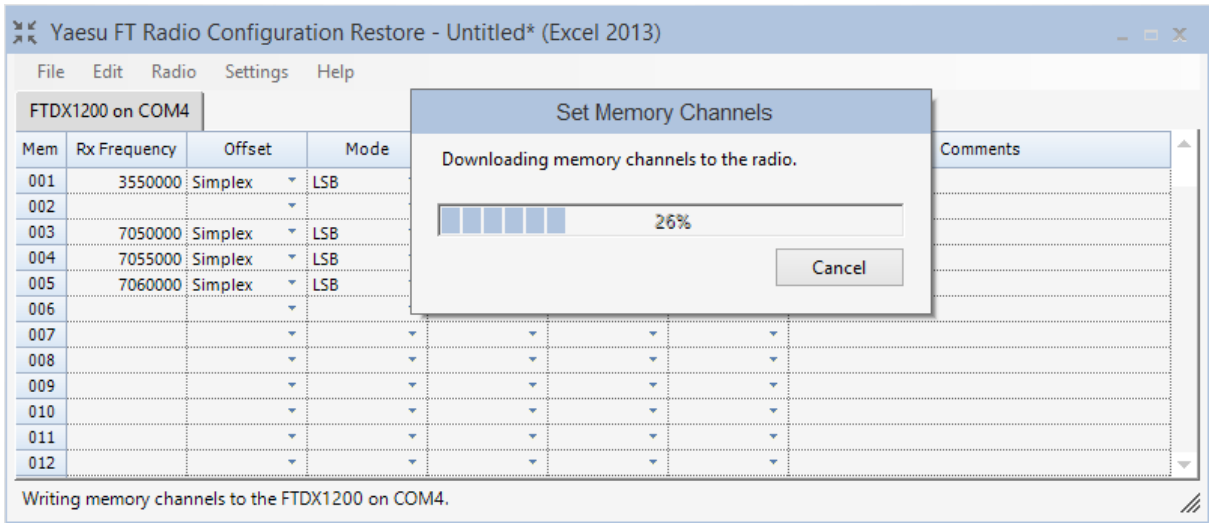
The comparison results can be viewed in a Print Preview dialog, or printed, by selecting the corresponding option on the *File* menu in the results dialog.

Downloading Memory Channels

Once you have the worksheet modified to your satisfaction, you can download the new memory channel details to the transceiver. Select the *Set Memory Channels…* option from the *Radio* menu:



A progress bar will be displayed as the currently populated rows in the worksheet are downloaded to the transceiver. If you click on the *Cancel* button, the download process will stop at the current point in time and the remaining memories will not be downloaded:



Remember, populated rows in the transceiver will only be updated by populated rows in the worksheet. Blank rows in the worksheet will not delete the corresponding memory channel in the

transceiver. So, you may want to delete the individual memories, or perform a full memory reset, in the transceiver before downloading a new configuration.

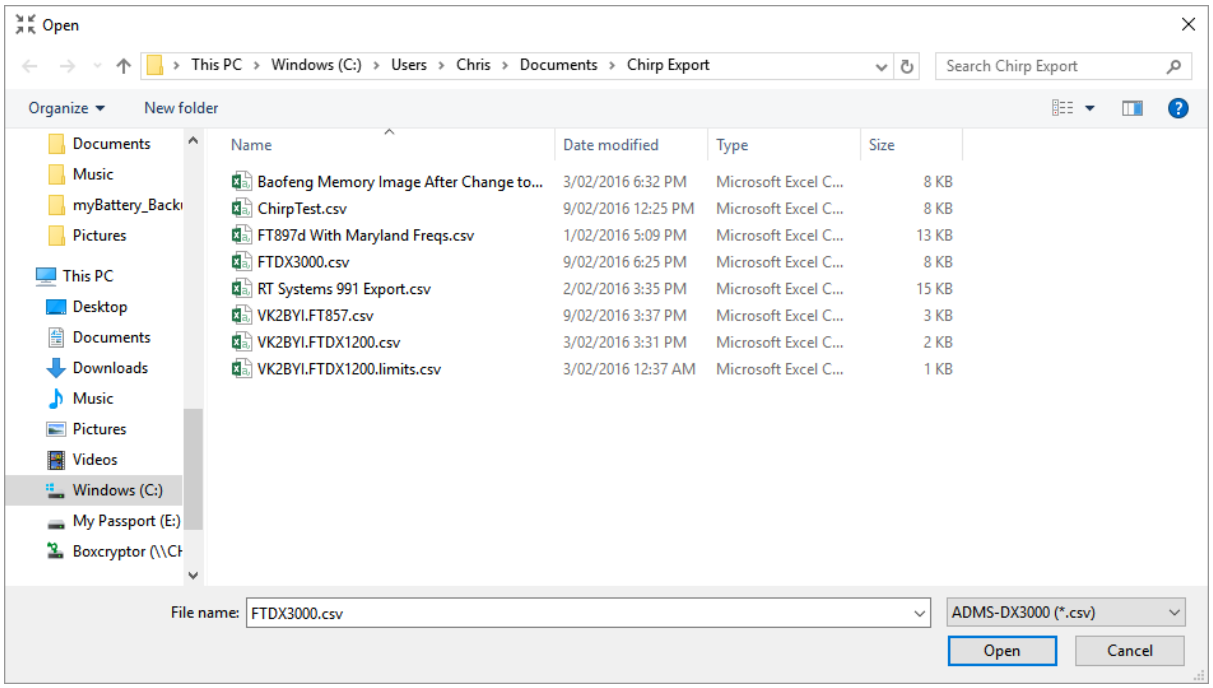
Importing Memory Channels

It is possible to import memory channel details from other applications that are used to program various transceiver models. Any one of the following supported CSV files formats can be imported into a worksheet associated with either an ***FTDX1200***, ***FTDX3000***, ***FTDX5000*** or ***FT-991*** model transceiver:

- RT Systems ADMS-DX1200 (***FTDX1200***) - Version 4.50.18
- RT Systems ADMS-DX3000 (***FTDX3000***) - Version 5.00.11
- RT Systems ADMS-991 (***FT1-991***) - Version 5.00.38
- RT Systems ADMS-4B (***FT-857/FT897***) - Version 4.50.39
- Chirp (various model transceivers) – Version daily-20190925

Individual lines in import files containing memory channels with receive frequencies greater than 54MHz, will only be imported into an ***FT-991*** worksheet, and will be ignored if the worksheet is for an **FTDX1200**, **FTDX3000** or **FTDX5000**. All entries with receive frequencies below 54MHz, can be imported into an **FTDX1200**, **FTDX3000**, **FTDX5000** or ***FT-991*** transceiver worksheet.

A new blank worksheet must be opened and connected to an **FTDX1200**, **FTDX3000**, **FTDX5000** or ***FT-991*** transceiver before the *Import…* option on the *File* will be enabled. To import one of the supported CSV file formats, select the *Import…* option from the *File* menu. In the file open dialog, select the CSV file to be imported, and **most importantly** select the type of CSV file from the dropdown list-box just above the *Open* pushbutton. In the following example a CSV Export file from the RT Systems ADMS-DX300 software has been selected and the ADMS-DX3000 (*.csv) selection has been made in list-box:



Click the *Open* pushbutton, and if the content of the file matches the selected CSV file type, the subset of column values that are relevant to *FTRestore* will be converted and inserted into the corresponding channel number in the currently opened worksheet. Only those lines with a channel number between 1 and 99 will be imported, with the rest being ignored.

Depending upon the model transciever that is the source of the CSV import file data, there may be some cases where an operating mode or other column value has no equivalent value in an **FTDX1200**, **FTDX3000**, **FTDX5000** or ***FT-991*** transceiver and a default value is substituted. Therefore, you should examine the results of the import for correctness before attempting to download the memory channel details to the attached transceiver.

The Memory Tag Feature

The **FTDX1200**, **FTDX3000**, **FTDX5000 and FT-991** model transceivers have a feature whereby an alphanumeric label or tag can be appended to individual memory channels. This is quite a useful feature as it makes it easier to recall a channel's purpose when operating.

FTDX1200, FTDX3000 and FTDX5000

Currently there is no support for reading or writing the memory channel tag with the **FTDX1200, FTDX3000** or **FTDX5000** model transceivers. Refer to the **FTDX1200**, **FTDX3000**, **FTDX5000** or **FTDX5000** operating manuals for details on how the tag can be entered manually.

Unfortunately, when you download the worksheet details to the transceiver by selecting the *Set Memory Channels…* option from the *Radio* menu, and as each memory channel is written, the corresponding tag in that memory channel is cleared. When you upload the memory channel details from the transceiver by selecting the *Get Memory Channels…* option from the *Radio* menu, there is no way to obtain the corresponding tag from each memory channel.

The Comments column was added to the worksheet, so you could keep text like the tag, but in the worksheet only. The contents of the Comments column are not sent to the transceiver during a *Set Memory Channel*s operation, and they are not overwritten during a *Get Memory Channels* operation. At least this way you can document the purpose of each memory channel.

If Yaesu should ever modify the firmware in the **FTDX1200**, **FTDX3000** or **FTDX5000** transceivers to make it possible to read and write memory channel tags via the CAT command interface, *FTRestore* will be updated so that the Comments column becomes the actual memory channel tag value. In the meantime, remember that this "tag" stays in the worksheet only for these model transceivers.

FT-991 and FT-991A

With version 02-18 or later MAIN firmware for the **FT-991**, or version 01-06 or later MAIN firmware for the **FT-991A**, Yaesu have implemented a new MT (Memory Channel Write/Tag) CAT command that can be used to read and write memory channel tags.

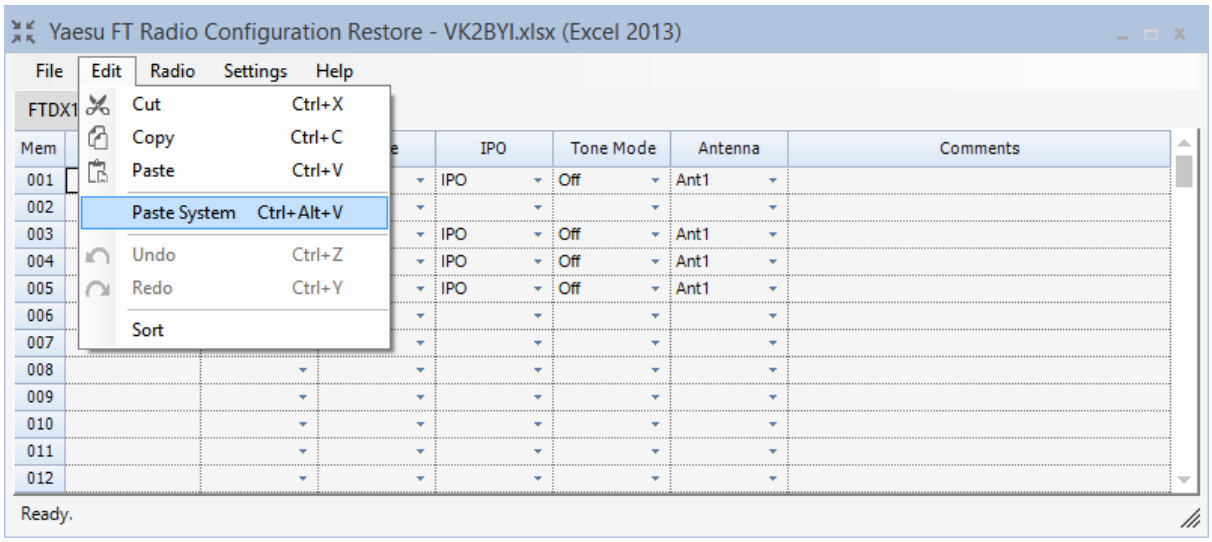
Now when you download the worksheet details to the transceiver by selecting the *Set Memory Channels…* option from the *Radio* menu, the first 12 characters in the Comments column will be used to set the tag. Any text less than 12 characters in length will be padded out with blanks to form a 12-character long tag. Any text beyond the first 12 characters will be ignored. When you upload the memory channel details from the transceiver by selecting the *Get Memory Channels…* option from the *Radio* menu, the tag will overwrite the first 12 characters in the Comments column in the worksheet. Any text beyond the first 12 characters will be left untouched.

The reading and writing of the memory channel tags can be enabled or disabled by a checkbox setting in the Preferences dialog. Refer to Preferences section for further details.

Cutting, Copying and Pasting Text

Each of the grid controls that are used in the Memory Channel, Menu Settings and Macro Definitions worksheets has its own local clipboard that allows text to be cut, copied and pasted within the grid using the Ctrl+X, Ctrl+C and Ctrl+V keyboard shortcuts, or the *Cut*, *Copy* and *Paste* options on the *Edit* menu.

Text that has been cut or copied onto the Windows system clipboard from another application, cannot be pasted into the grid control using Ctrl+V, or by selecting the *Paste* option on the *Edit* menu. However, there is a feature in the grid whereby text in the system clipboard can be pasted into the grid using a Ctrl+Alt+V keyboard shortcut, or by selecting the *Paste System* option on the *Edit* menu:



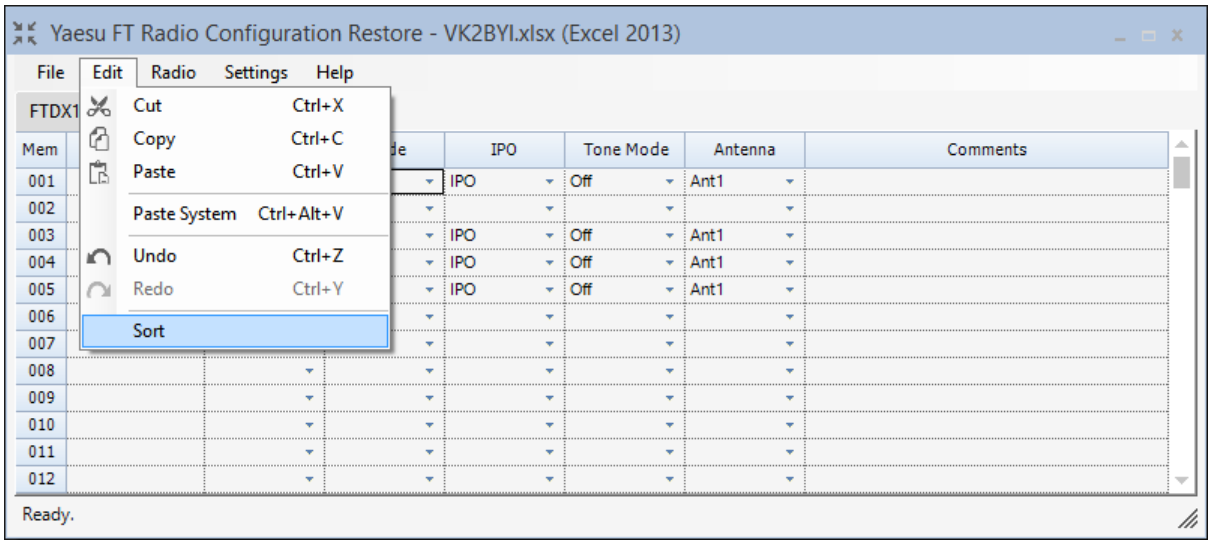
The following restrictions apply to system clipboard text being pasted into a grid in *FTRestore*:

- There first must be a selection made in the target grid which should be either a single cell, a single cell that is being edited, or a range of rows that matches the same number of rows (and columns) as the system clipboard data. Only single cell selections can have system clipboard text pasted into a cell in the Comments column of the Menu Settings worksheet grid;
- If a single cell is selected, or is being edited in the grid, and the system clipboard contains text, that text will be inserted at the current caret position replacing any currently selected text;
- If a single cell is selected, or is being edited in the grid, and the system clipboard contains one or more rows from a Microsoft Excel spreadsheet, or a table in Word, only the first column from the first row from the system clipboard will be pasted into the selected cell at the caret position replacing any currently selected text;
- When pasting one or more rows from a Microsoft Excel spreadsheet, or a table in Word, the number of rows selected in the grid must be the same, and the number of columns being pasted must match the width of the grid.

Any text cut or copied from a grid in *FTRestore*, can be pasted into another application via the system clipboard.

Sorting Regular Memory Channels

The Regular Memory Channel rows in the Memory Channel worksheet grid can be sorted by the Rx Frequency column values, by clicking on the Rx Frequency column header, or by selecting the *Sort* option from the *Edit* menu:



If the Memory Group menu setting (Menu number 42 on the **FTDX1200**, Menu number 41 on the **FTDX3000**, Menu number 36 on the **FTDX5000** or Menu number 34 on the **FT-991**) is currently set to DISABLE in the transceiver, then all Regular Memory Channels consisting of rows 1 through 99 of the grid will be compressed and sorted by the non-blank, Rx Frequency column values, followed by any remaining blank rows.

If the current Memory Group menu setting is currently set to ENABLE in the transceiver, then the five Regular Memory Channel groups consisting of rows 1 through 19, 20 through 39, 40 through 59, 60 through 79 and 80 through 99 will be similarly compressed and sorted by the non-blank, Rx Frequency columns values, followed by blanks rows, with each grouping being done separately.

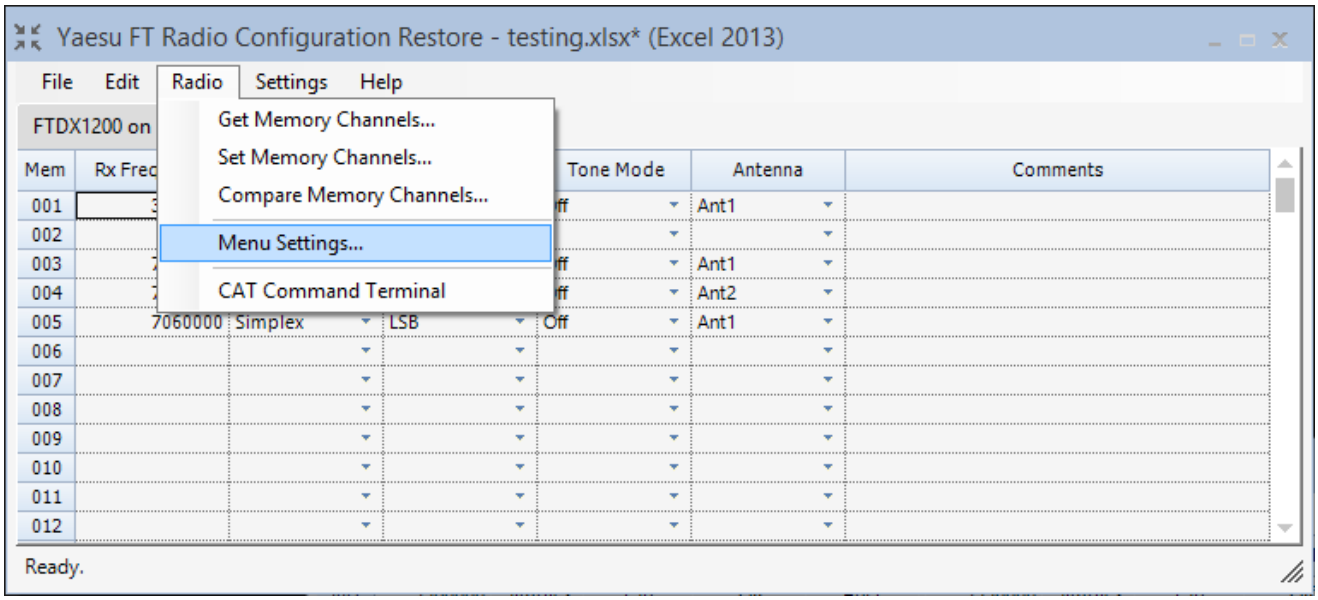
The sort direction can be changed alternatively between ascending and descending, by repeatedly clicking the Rx Frequency column header, or by selecting the *Sort* option from the *Edit* menu;

PMS Memory Channels in rows P-1L through P-9U of the Memory Channel worksheet grid are not included in sort operations, as their positions need to remain fixed.

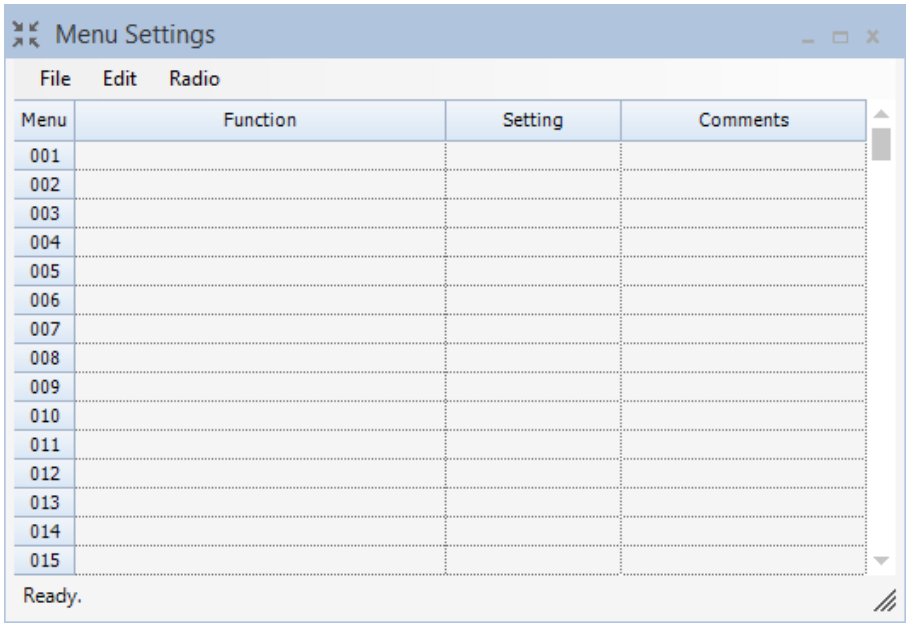
IMPORTANT: Memory Channels can be overwritten but cannot be erased via CAT control. They can only be erased via front panel control, or by carrying out a Memory Reset or a Full Reset of the transceiver. After you have sorted the Memory Channels worksheet, you should carry out a Memory Reset before writing the new configuration back to the radio, so any blank rows moved by the sort will have the corresponding Memory Channel in the transceiver blank as well.

Displaying the Menu Settings Dialog

Select the *Menu Settings…* option from the *Radio* menu to open the Menu Settings dialog for the transceiver associated with the currently selected worksheet tab in the main window:

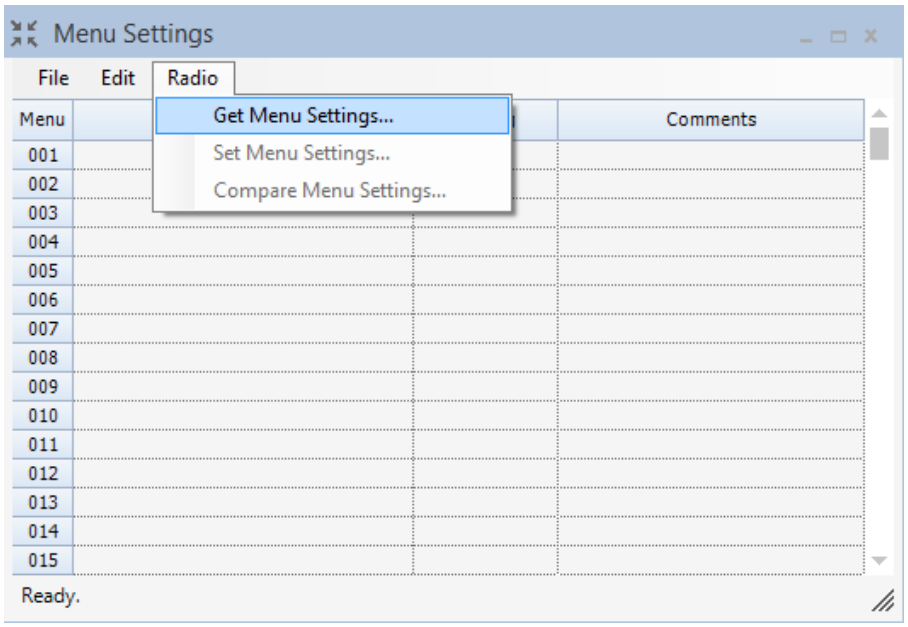


A blank grid will be displayed the first time the *Menu Settings* dialog is opened as a menu settings file has not yet been created:

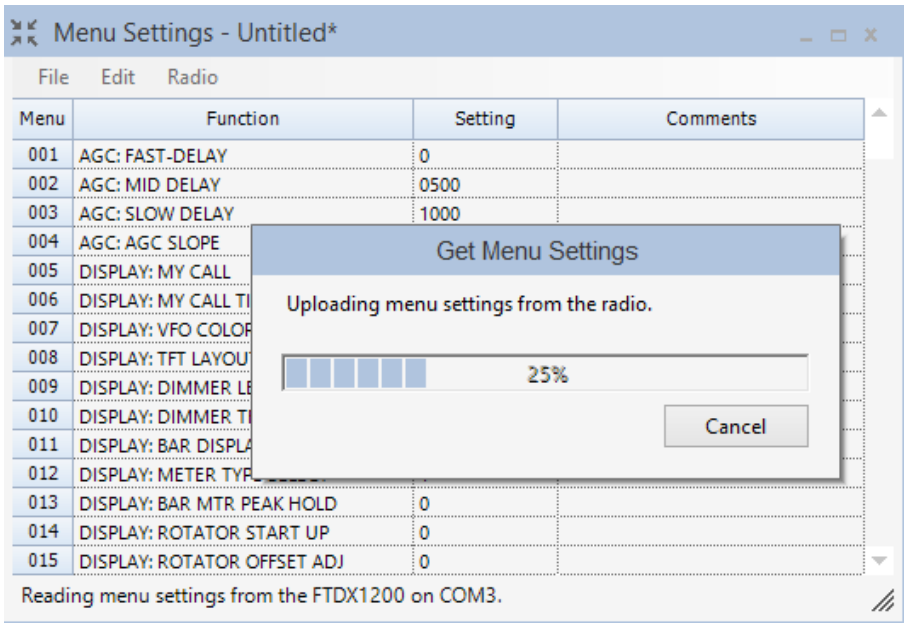


Uploading Menu Settings

Select *Get Menu Settings…* on the *Radio* menu in the Menu Settings dialog order to upload the current menu settings from the transceiver:



You will be warned that the current settings will be overwritten, so click on the *Yes* button to proceed. As the current menu setting details are uploaded from the transceiver, you will see a progress bar and the menu settings being filled in as rows in the grid in the background. If you click on the *Cancel* button, the upload process will stop at the current point in time and the remaining menus will not be uploaded:

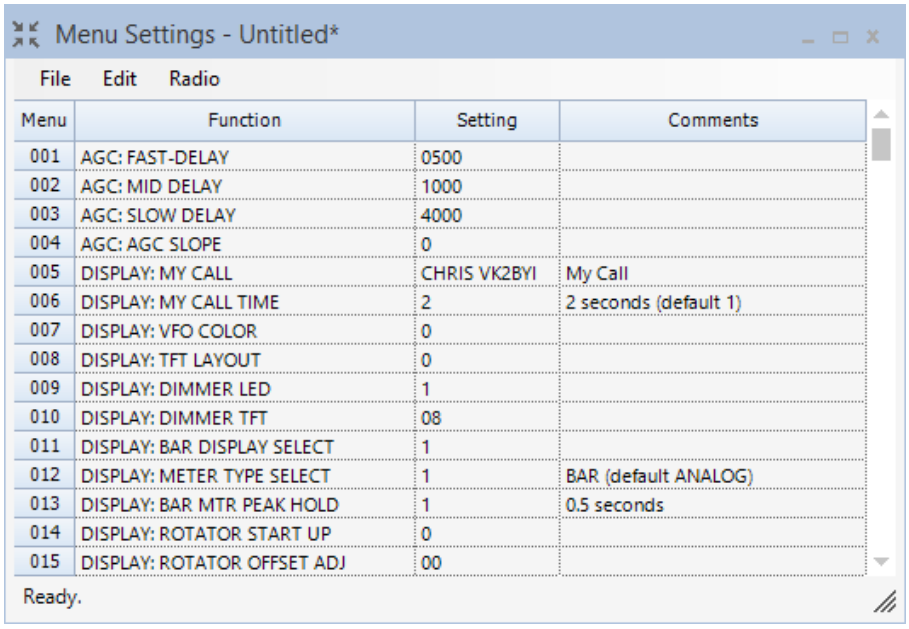


Once the menu settings have been uploaded, the only changes that can be made to the details in the grid is to add text in the *Comments* column. This is by design, because at this stage the setting values are just the raw responses to the CAT commands sent to the transceiver to obtain the current menu settings. If you are interested in what the values mean, you can refer to the CAT Operation Reference Book for your model transceiver that is downloadable from the Yaesu web site.

The settings have not been translated into selectable dropdown list box values or other style controls, but this may be a feature to be added in the future. In the meantime, *FTRestore* is still

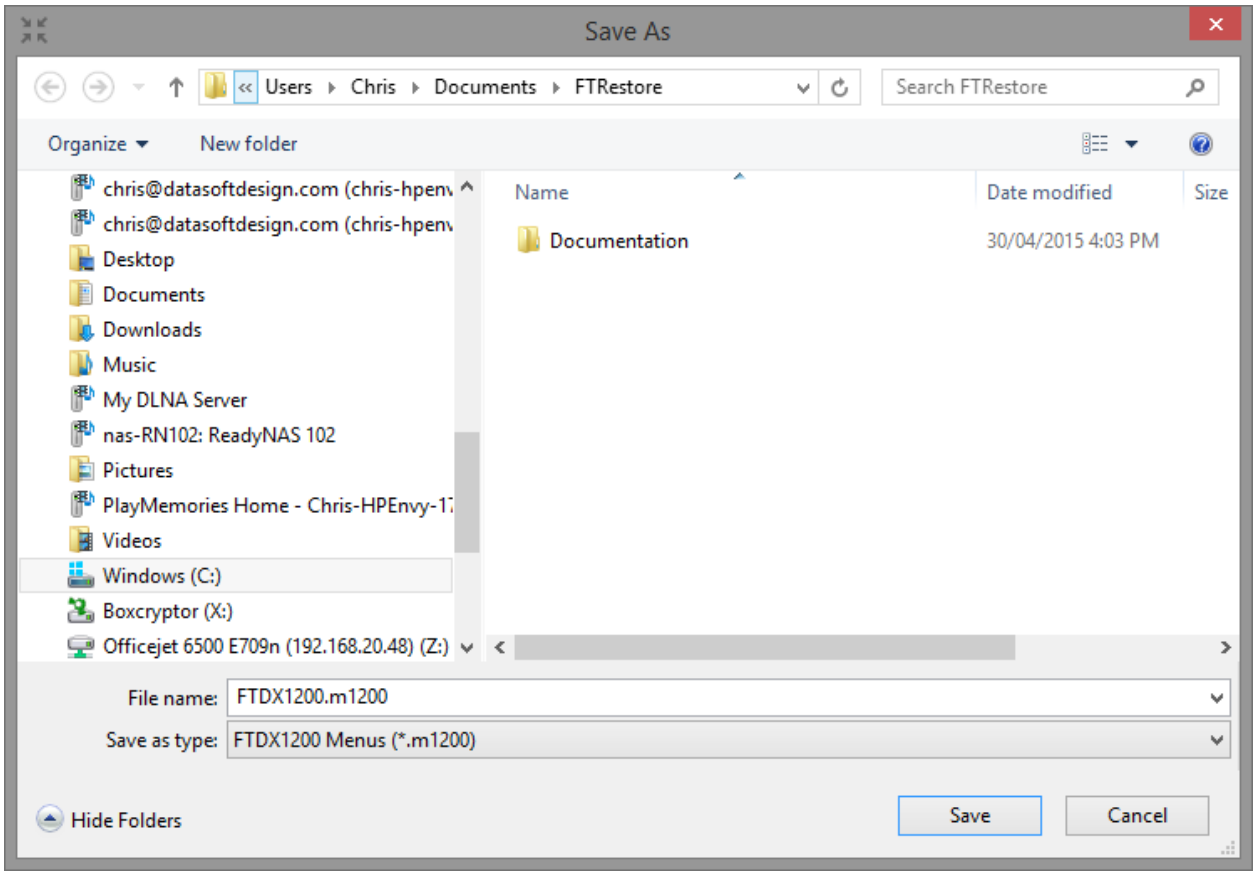
perfectly capable of saving and restoring menu settings between firmware updates and other operations that require your preferred menu settings to be quickly restored.

Therefore, it is recommended that you use the transceiver front panel to make any menu changes as desired from the factory defaults, and then perform the *Get Menu Settings…* upload again to get the changes into the grid before saving the contents as a Menu Settings file. Each time you perform the upload, any text in the *Comments* column for a menu setting will be preserved.



Menu	Function	Setting	Comments
001	AGC: FAST-DELAY	0500	
002	AGC: MID DELAY	1000	
003	AGC: SLOW DELAY	4000	
004	AGC: AGC SLOPE	0	
005	DISPLAY: MY CALL	CHRIS VK2BYI	My Call
006	DISPLAY: MY CALL TIME	2	2 seconds (default 1)
007	DISPLAY: VFO COLOR	0	
008	DISPLAY: TFT LAYOUT	0	
009	DISPLAY: DIMMER LED	1	
010	DISPLAY: DIMMER TFT	08	
011	DISPLAY: BAR DISPLAY SELECT	1	
012	DISPLAY: METER TYPE SELECT	1	BAR (default ANALOG)
013	DISPLAY: BAR MTR PEAK HOLD	1	0.5 seconds
014	DISPLAY: ROTATOR START UP	0	
015	DISPLAY: ROTATOR OFFSET ADJ	00	

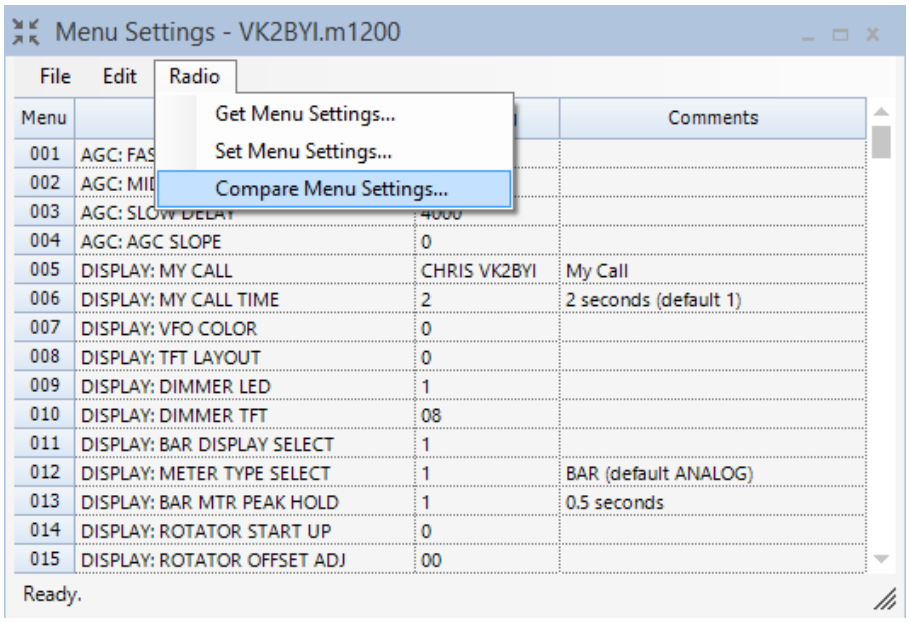
At this stage, it would be advisable to save the values read as a Menu Settings file before continuing as the grid should now contain the currently programmed menu settings from the transceiver as set for your requirements. To save the settings select *Save As* from the *File* menu, specify a filename but don't change the selected file type and click on the *Save* button:



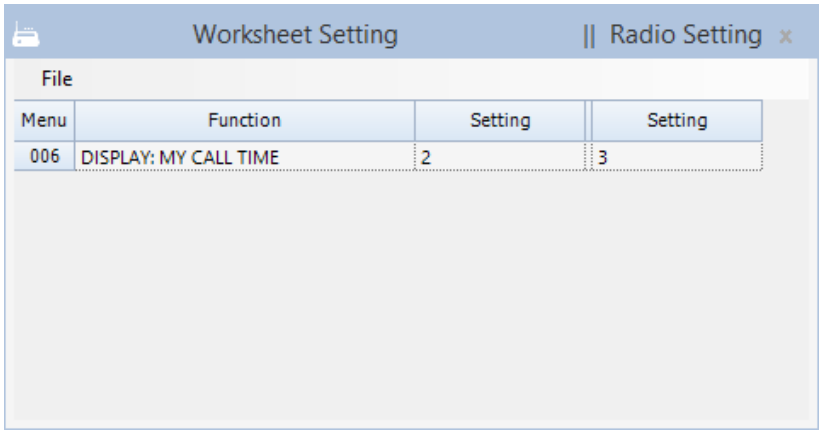
By default, files will be saved in a folder called *FTRestore* under the current user's personal Documents folder.

Comparing Menu Settings

Select the *Compare Menu Settings…* option from the *Radio* menu to see if there are any differences between the *Menu Settings* dialog and the menu settings in the transceiver:



A progress bar will be displayed as the rows in the worksheet are compared to the memory channels in transceiver. If you click on the *Cancel* button, the compare process will stop at the current point in time and the remaining menus will not be compared. If a difference is detected, a dialog will be displayed showing the worksheet values on the left and the transceiver values on the right:

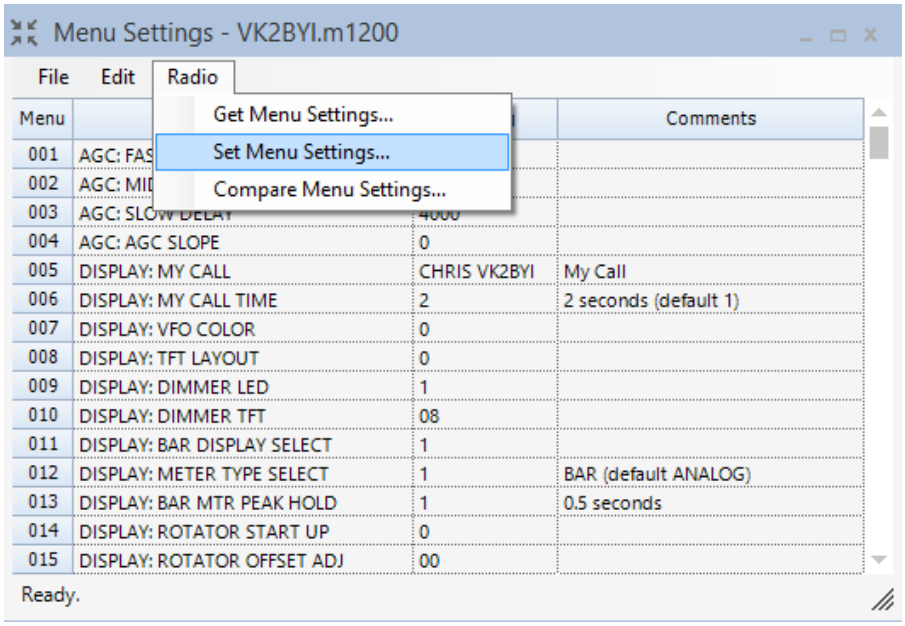


In this case, menu setting 006 was changed in the transceiver to 3 seconds before the comparison was run.

The comparison results can be viewed in a Print Preview dialog, or printed, by selecting the corresponding option on the *File* menu in the results dialog.

Downloading Menu Settings

Any time you need to restore your desired transceiver menu settings, you can download the details to the transceiver by using the previously saved menu settings files and selecting the *Set Menu Settings…* option from the *Radio* menu:

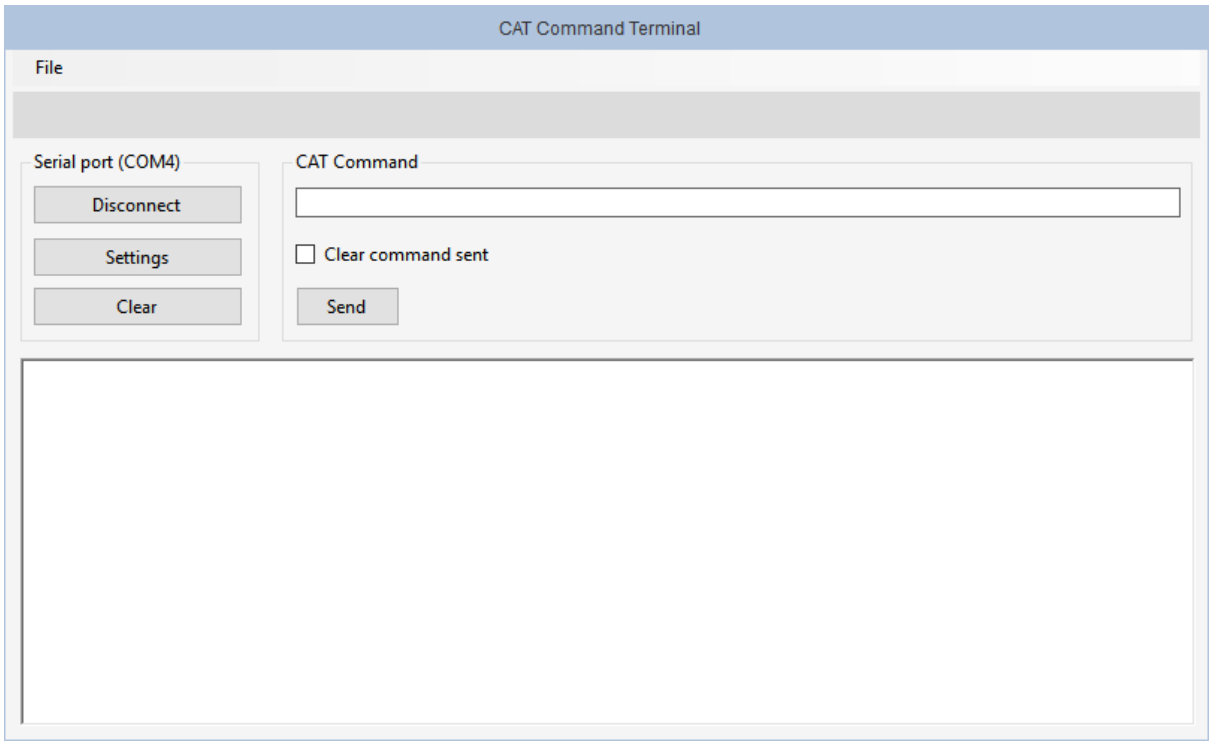


A progress bar will be displayed as the currently menu settings are downloaded to the transceiver. If you click on the *Cancel* button, the download process will stop at the current point in time and the remaining menus will not be downloaded

CAT Command Terminal

There is a built in serial terminal that can be used to send CAT commands to a radio and to display any response. Unless you know what you are doing, it is not recommended to arbitrarily 'play' with this feature. You can refer to the *CAT Operation Reference Book* for your model transceiver that is downloadable from the Yaesu web site to determine the correct syntax for the commands and the responses.

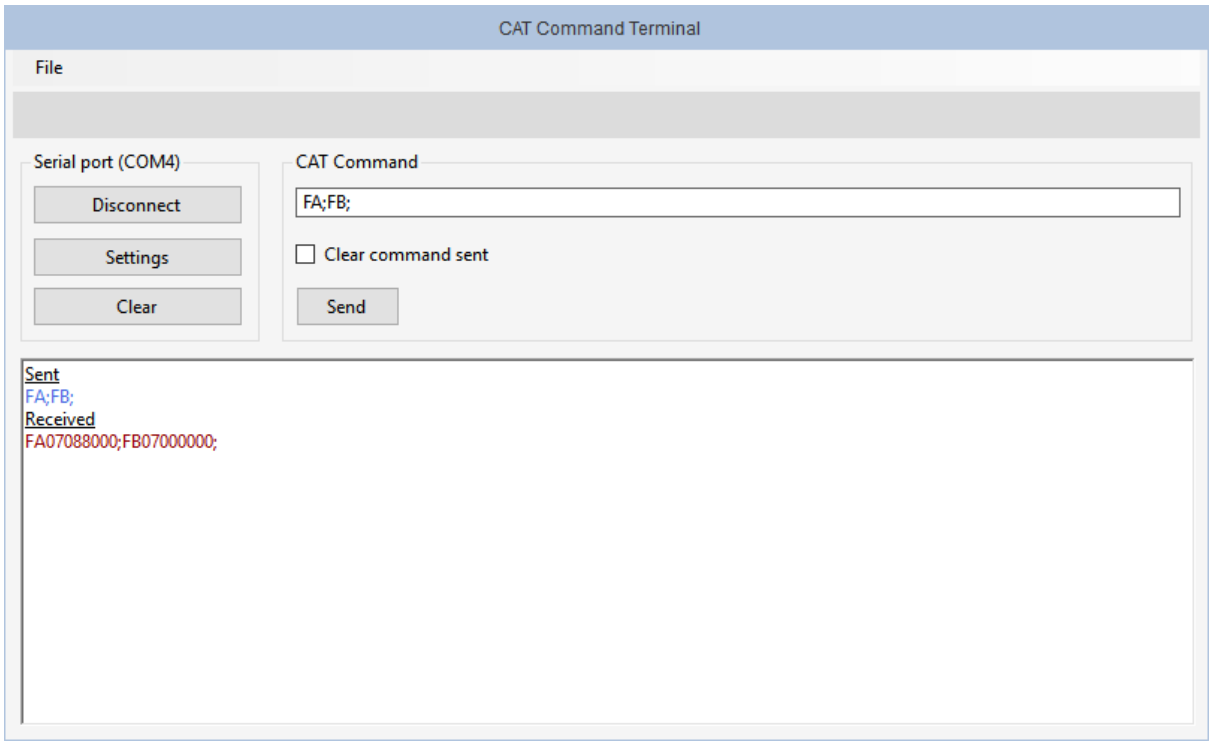
Select *CAT Command Terminal* from the *Radio* menu to open the terminal window. If there is an opened *Memory Channel* worksheet currently selected, *FTRestore* will automatically connect to the radio using the COM port settings associated with that worksheet. In this example the terminal has connected on the COM4 port:



Otherwise, click on the *Settings* pushbutton, specify the desired *Port Settings*, close the *Port Settings* dialog and then click on the *Connect* button. Once connected, the *Connect* button label will change to *Disconnect*.

Type the CAT command or commands to be sent to the radio in the *CAT Command* text box. Remember to end each command with a semicolon terminator and do not insert any spaces <u>between</u> successive commands (spaces can be valid as a part of some commands such as the Contest Memory Keyer commands). To send the command string to the radio, simply press the *Enter* key on your keyboard, or click the *Send* pushbutton.

In this example, FA;FB; was sent to the transceiver to read the current VFO A and VFO B frequencies:



Any commands sent to the radio will be displayed in a blue font in the rich text control, and responses received from the radio (if any), will be displayed in a red font. In this example the current VFO-A frequency is 7.088MHz and the current VFO-B frequency is 7.000MHz.

If the *Clear command sent* checkbox is ticked, the *CAT Command* textbox will be cleared each time the command string is sent. Otherwise the *CAT Command* textbox contents will be left unaltered and can be manually cleared or altered and sent again as desired.

The *Clear* pushbutton clears the rich text control that displays the sent and received text.

Select the *Exit* option from the *File* menu to close the *CAT Command Terminal* and return to the *FTRestore* main window.

Select the *Macro Definitions…* option from the *File* menu to create and maintain definition files used to populate the *Macro Toolbar* which is the gray bar just below the menu:

Macro Definitions - Sample.macro

File Edit

Macro	Label	Commands	Comments
001	KM1 - CQ	KM1CQ CQ CQ DE W6DXC K;	CQ in Keyer 1
002	Power Off	PS0;	Power offtransceiver
003			
004			
005			
006			
007			
008			
009			
010			

Ready.

The *Macro Definitions* editor is like a *Memory Channel* or *Menu* worksheet editor and has similar *File* and *Edit* menu options.

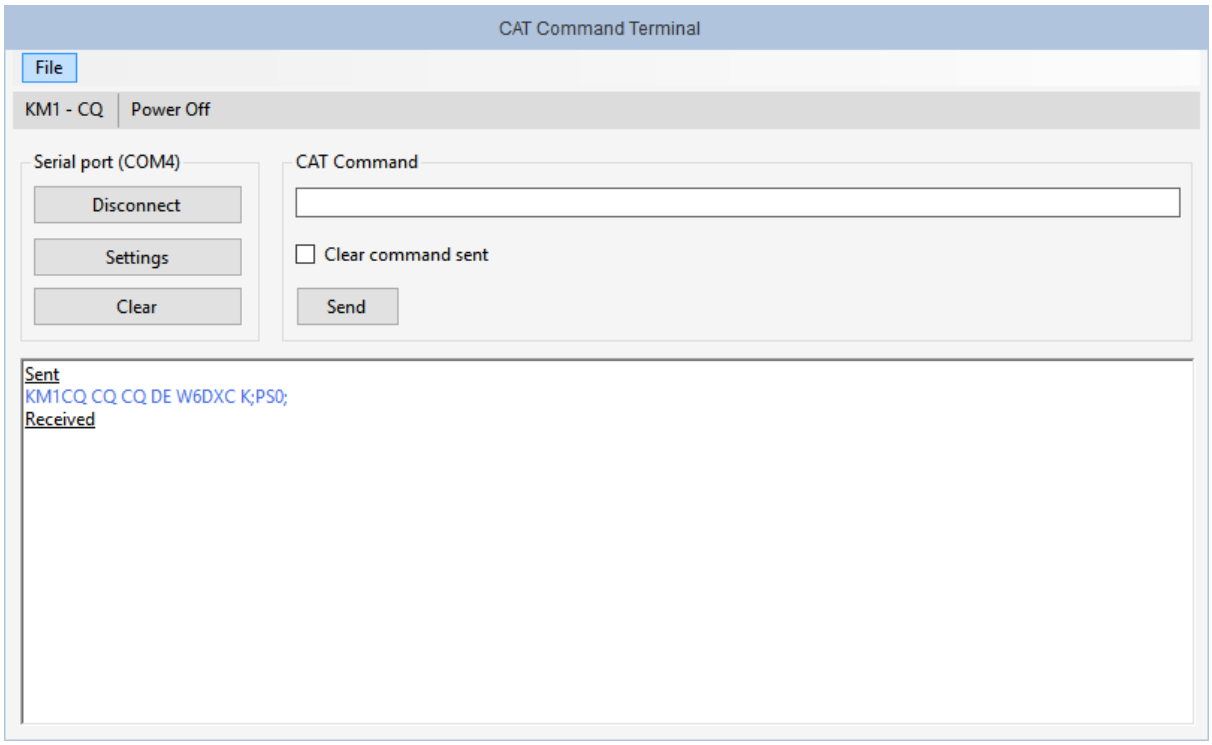
Enter up to 12 characters for the text that you wish to appear as the label for a macro toolbar pushbutton in the Label column and enter up to 100 characters for the CAT command string to be sent by that pushbutton in the *Commands* column. You enter whatever text you like in the *Comments* column which is purely for documentation purposes.

In this example, above, the first macro pushbutton will be labelled *KM1 – CQ* and will send the *KM1;* CAT command string to the radio to set CW Contest Memory Keyer number 1 to the value used as an example in the **FTDX1200**, **FTDX3000**, **FTDX5000 and FT-991** transceiver *Operating Manuals*. The second macro pushbutton will be labelled *Power Off* and will send the *PS0;* CAT command to power of the radio.

To save a definition file, select *Save As* from the *File* menu, specify a filename but don't change the selected file type and click on the *Save* button. You can enter a maximum of 10 macro definitions in a macro definition file, but you can have an unlimited number of definition files.

The most recently created or opened macro definition file will be used to populate the macro toolbar each time the *CAT Terminal Window* is opened.

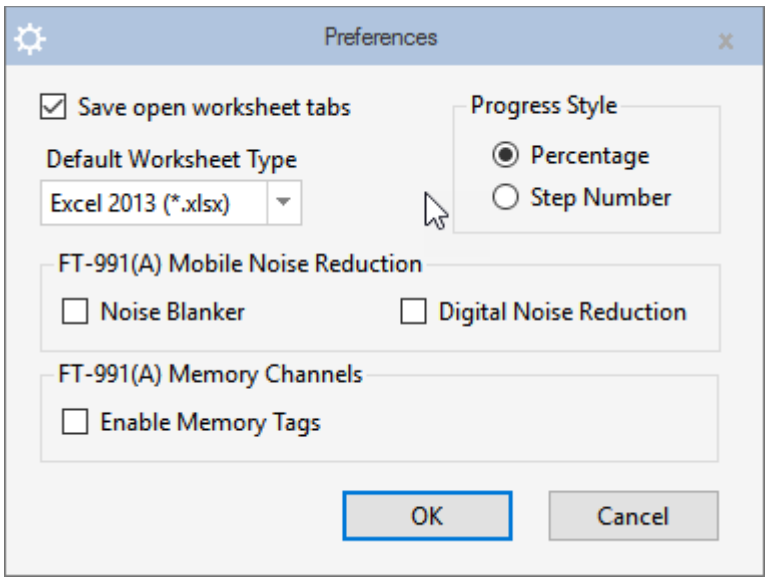
In this example the macro definition file described above has been used and the first and second macro pushbuttons have been pressed:



The *KM1CQ CQ CQ DE W6DXC K;* command string sets the contest memory keyer value and the absence of any response indicates that the command was accepted. The *PS0;* command string turns the radio off and once again the absence of any response indicates that the command was accepted. It would be obvious by the radio turning off that the command was accepted as well!

Preferences

The *FTRestore* application preference settings dialog can be displayed by selecting the *Preferences* option on the *Settings* menu.



The *Save open worksheet tabs* option determines whether *FTRestore* will save all currently opened worksheets or not when the application is closed. The next time the *FTRestore* application is run it

will automatically open the worksheets. Tick this checkbox setting to save the worksheet list when the application closes.

The *Default Worksheet Type* option is used to specify the Microsoft Excel spreadsheet file format to be selected by default in the File Save (and File Open) dialog. You can change the type in the actual File Save/Open dialogs each time you save/open a worksheet file, or you can set a new default preference with this setting. You would only change the *Default Worksheet Type* setting to a different value as a convenience when saving files for use with another application that cannot read the current file format. Otherwise, the value for this preference setting doesn't matter as *FTRestore* can read any of the types in the *Default Worksheet Type* list box.

The *Progress Style* option is used to select between *Percentage* completed, or *Step Number* of total steps, to be displayed on the progress bar when performing the various get, set and compare operations.

The *FT-991(A) Mobile Noise Reduction* feature was added in response to a user who owns a restored classic motor vehicle, originally built in the late 1940s, in which the ignition noise is considerable. He wanted the *Noise Blanker* and *Digital Noise Reduction* to be automatically turned on whenever he selected a previously programmed memory channel whilst operating mobile.

This is achieved by selecting the *Noise Blanker* and/or *Digital Noise Reduction* checkboxes as desired in the *Preferences* dialog before using the *Set Memory Channels* feature in *FTRestore*. As each channel is being written to the **FT-991**, and the mode is not one of the FM modes, the *Noise Blanker* and *Digital Noise Reduction* settings will be explicitly set to on in the channel by the corresponding check box being selected in the *Preferences* dialog. The Noise Blanker Level cannot be stored in a Memory Channel, so the level needs to be set while operating the radio. The DNR level is stored in the memory but can only be set via the **FT-991** front panels control. So, make sure you set the DNR Level before you run the *Set Memory Channel* operation.

The *Noise Blanker* and *Digital Noise Reduction* are disabled in the **FT-991** itself for any of the FM modes.

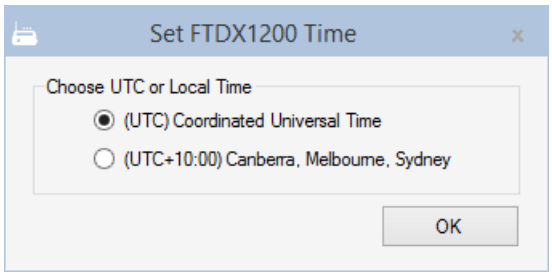
The *FT-991(A) Memory Channels* feature was added after Yaesu upgraded the firmware to allow the memory channel tag to be read and written by the CAT command interface. The *Enable Memory Tags* checkbox needs to be checked for the memory channel tags to be read and written. If the *Enable Memory Tags* checkbox is left unchecked, the memory channel tag will not be saved or restored. Refer to *The Memory Tag Feature* topic for further details.

Note: the MT (Memory Channel Write/tag) CAT command is only available in MAIN firmware version 02-18 or later for the **FT-991**, or version 01-06 or later for the **FT-991A** only. It is not currently available in the **FTDX1200**, **FTDX3000** or **FTDX5000** model transceivers.

Setting Time and Date

Once you have opened a worksheet and *FTRestore* has automatically detected the transceiver model connected to the specified COM port, the *Set Radio Time/Date* menu option will be enabled on the *Settings* menu. This will set the current Date and Time UTC, and the local time offset in multiples of 30 minutes, in a **FT-991** transceiver using the current time and date from the operating system.

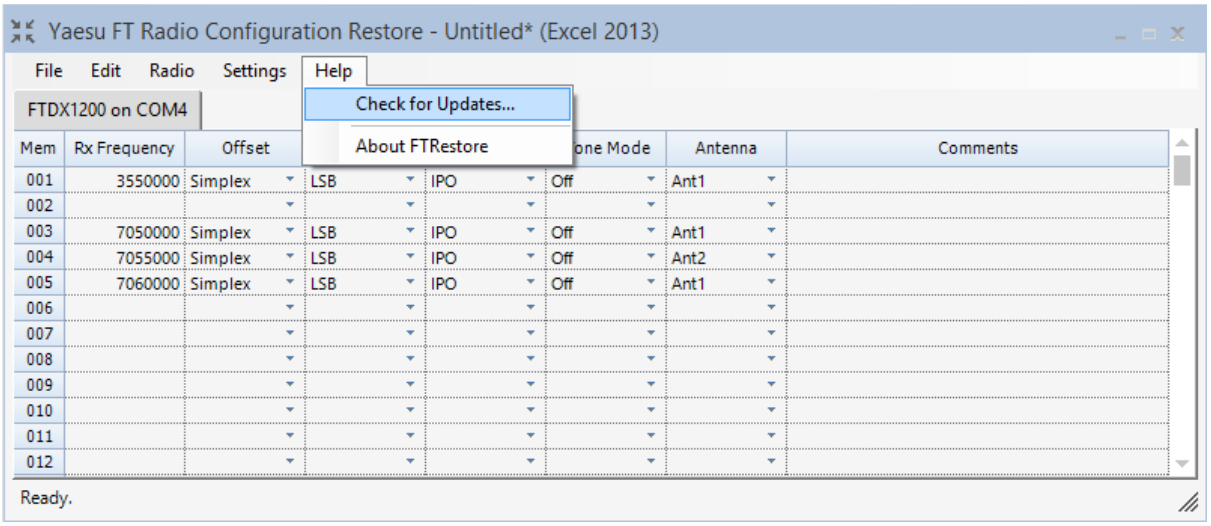
In the case of an **FTDX1200**, **FTDX3000** or an **FTDX5000**, only the time can be set in that transceiver. In this case, you will be prompted as to whether you want the clock in the transceiver to be set to Time UTC or your local time:



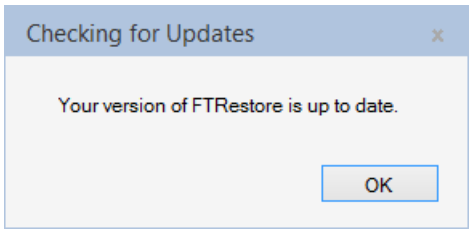
Select Coordinated Universal Time or your local time with the radio buttons and click on the *OK* button to set the time in the **FTDX1200**, **FTDX3000** or **FTDX5000** transceiver.

Check for Updates

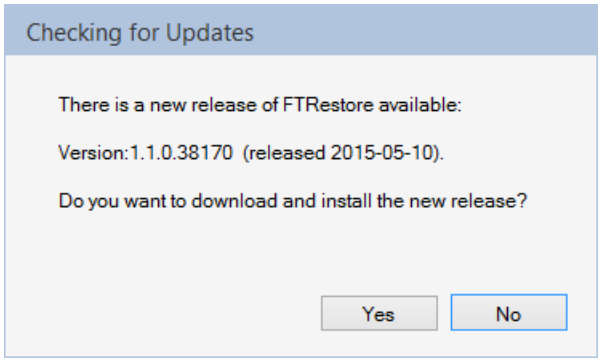
You can check periodically for new releases of *FTRestore* by selecting *Check for Updates…* from the *Help* menu:



If you are currently running the latest release of *FTRestore*, there is no further action required other than to click the *OK* button:

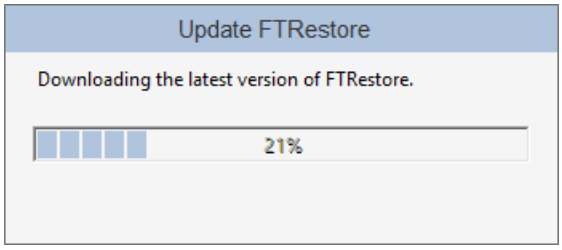


If a later release of FTRestore has been released, then details of the new release will be displayed in a dialog like the following:

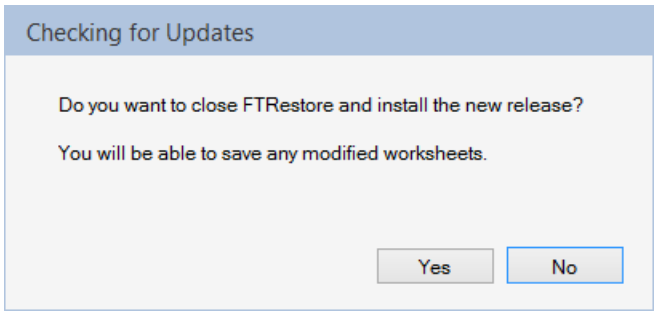


If you wish to postpone downloading the latest release, click on the *No* button. We would always encourage our users to download the latest release as it will most likely contain new features and/or fixes for defects.

To download and install the latest release, click on the *Yes* button. A progress dialog will display as the installation program is downloaded:



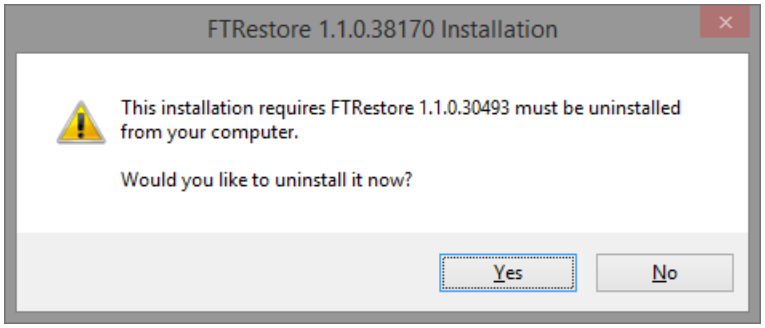
Once the installation program has finished being downloaded, the following dialog will be displayed:



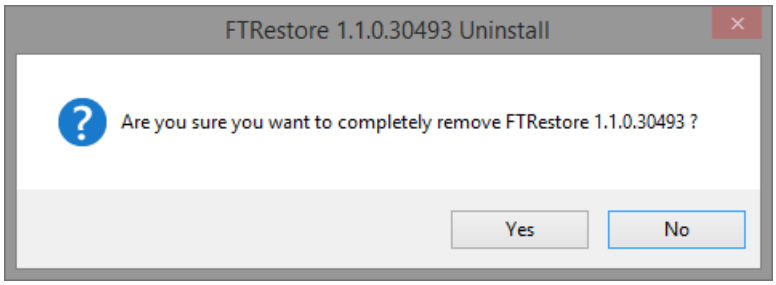
Once again you can postpone installing the latest release by clicking on the *No* button. To install the latest release, click on the *Yes* button.

The currently running version of *FTRestore* must be closed for the latest version to be installed. If you have any modified Memory Channel worksheets currently open, you will be given an opportunity to save them before *FTRestore* is automatically closed and the installation program is launched.

Once the installation program starts you will be warned that the current version will need to be uninstalled before continuing:



Click on the *Yes* button for the uninstallation to continue at which time a further confirmation dialog from will be displayed:



Click on the *Yes* button and all program files (executables and assemblies) from the current version will be uninstalled. All Memory Channel worksheets and Menu Settings files will not be removed.

Once the removal of the current version has completed, the installation of the new version will proceed in a similar way as described previously in the *Installation* section.

If a new release involves changes in the layout of memory channel worksheets, existing ones will be automatically updated the next time they are opened – either when they are loaded as *FTRestore* starts, or when they are manually opened by selecting Open… (Ctrl+O) on the *File* menu.

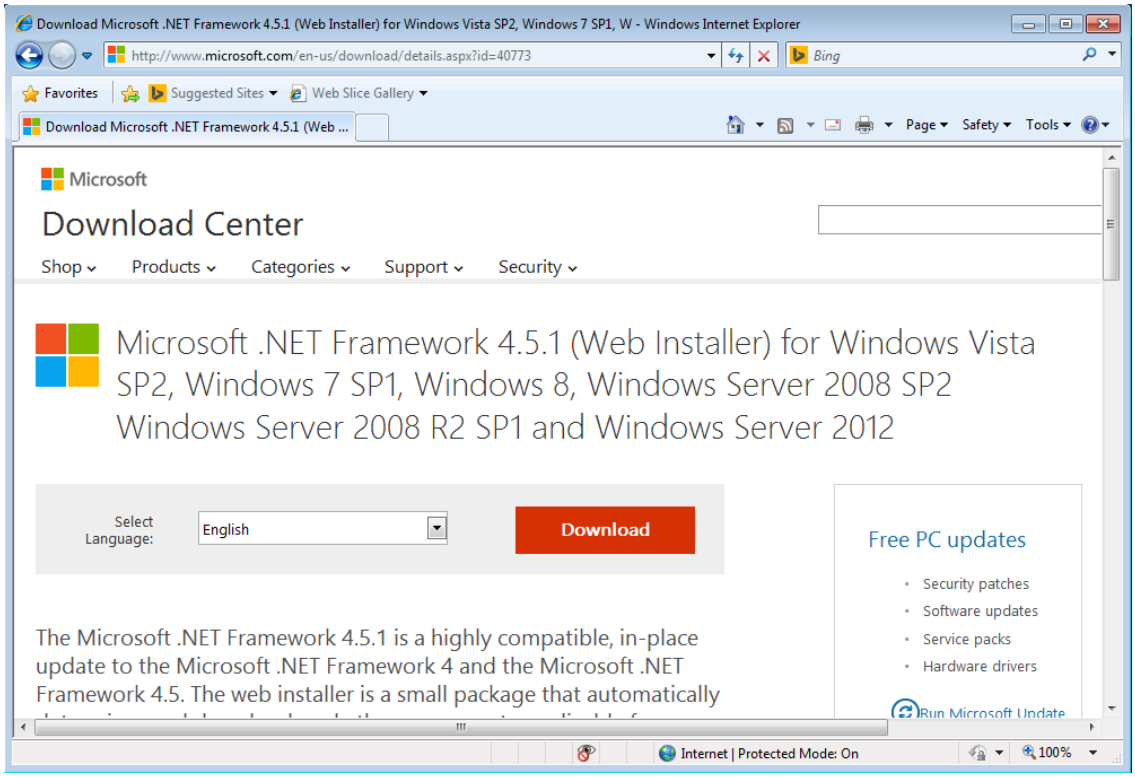
Additional Notes

Prior to applying firmware upgrades to either of these transceivers, it is highly recommended that a copy of the memory channels be uploaded to an *FTRestore* worksheet and saved, and a copy of the menu settings be uploaded and saved as a menu settings file. After the firmware upgrade to the transceiver is complete, the memory channels and menu settings can be downloaded again.

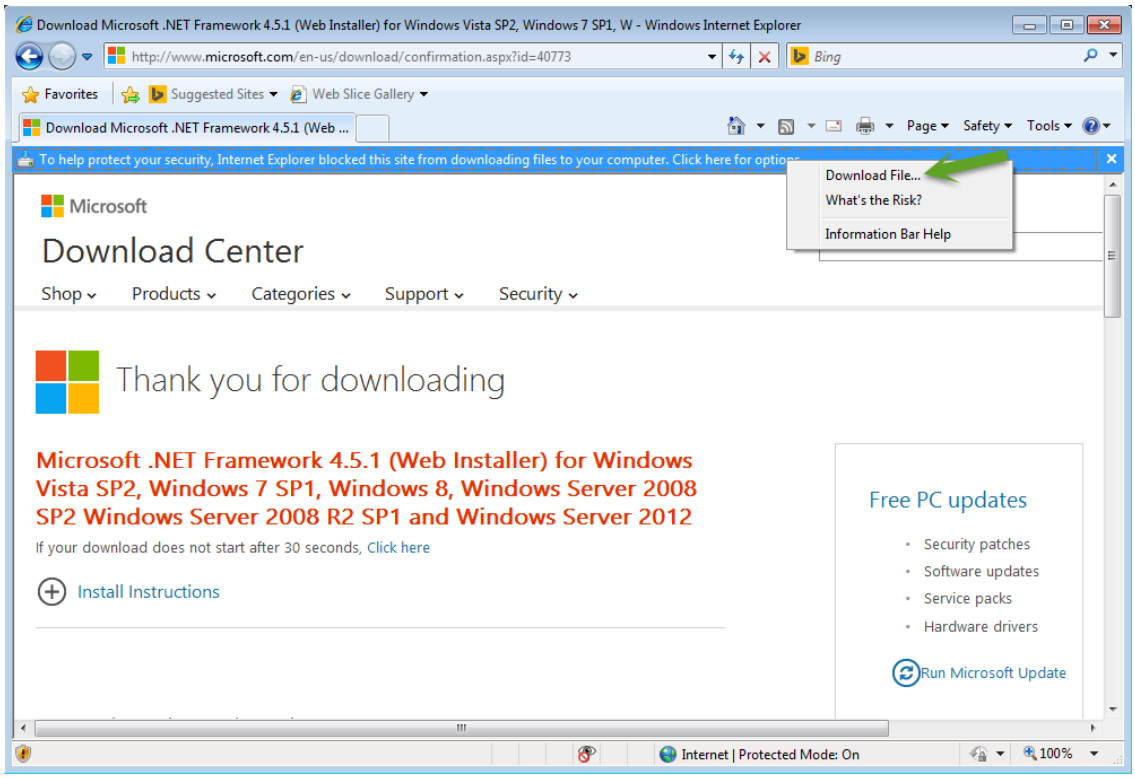
IMPORTANT: Memory Channels can be overwritten but cannot be erased via CAT control. They can only be erased via front panel control, or by carrying out a Memory Reset or a Full Reset of the transceiver. If you intend deleting any memory channels within *FTRestore*, then carry out a Memory Reset before writing the new configuration back to the radio, and NOT BEFORE getting the memory channel details from the transceiver

Installing the Microsoft .NET Framework 4.5.1

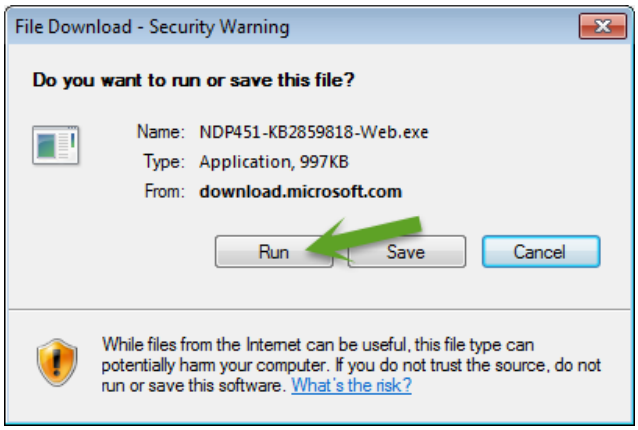
1. The *FTRestore* installation program will open the web browser at the correct page, or you can manually enter http://www.microsoft.com/en-us/download/details.aspx?id=40773 , to run the *Microsoft .NET Framework 4.5.1* web installer.
2. Click on the Download button to start the download:



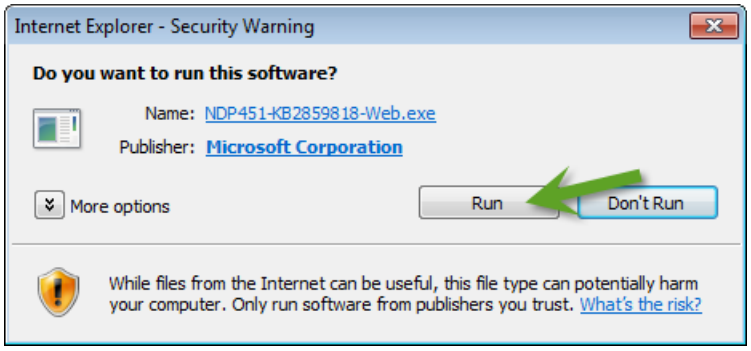
3. If you get the security warning from Internet Explorer, click where it says *Click here for options* and select *Download File…* from the menu:



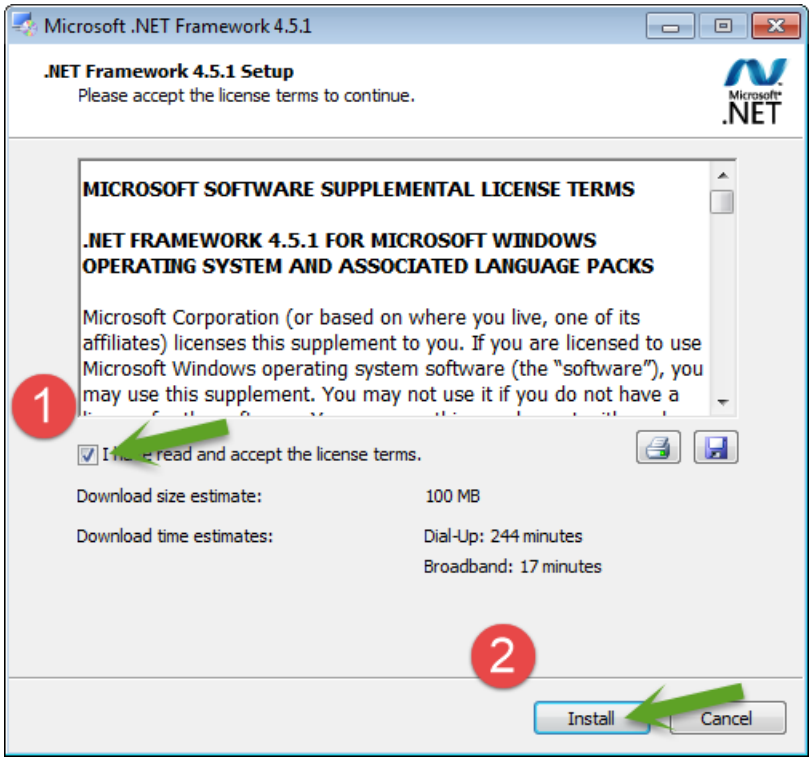
4. The web installer will download and when the following prompt appears, click on the *Run* button:



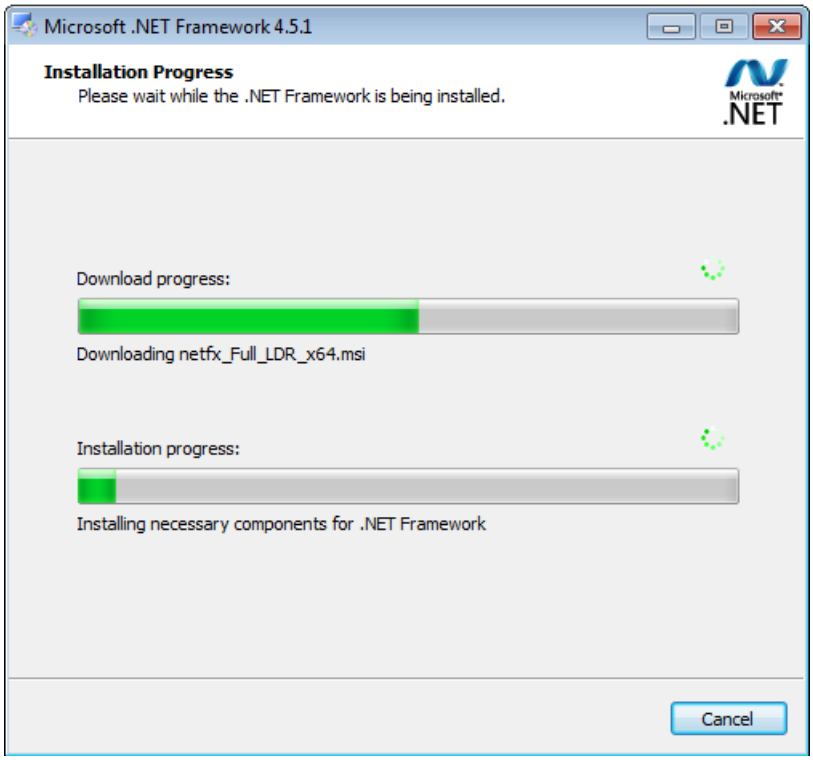
5. When the web installer runs, the following prompt or something similar may appear. Click on the *Run* (or *Yes*) button:



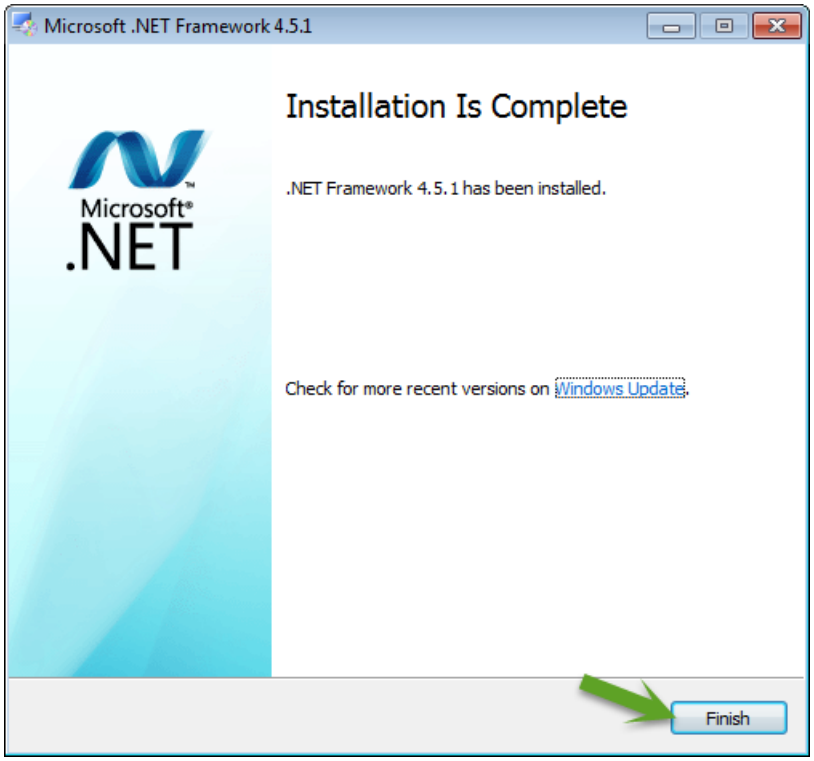
6. Accept the license terms by checking the box and then click *Install*:



7. The web installer will then start downloading and installing the Framework and will display the follow progress dialog:



8. Wait until the installation is complete and then click the *Finish* button:



The installation of the *Microsoft .NET Framework 4.5* is complete.