JT65-HF Setup and Use Guide

JT65-HF is based on code from The WSJT Project and would not be possible without the efforts of K1JT and others within the WSJT development group.

JT65-HF **is not** part of the WSJT project. Any questions or issues with JT65-HF should not be addressed to The WSJT Development Group, they will have no idea what you are asking about.

JT65-HF Source code is available from;

http://code.google.com/p/w6cqz-hf-wsjt/

JT65-HF Support group is available at;

http://groups.google.com/group/jt65-hf/

Real-time chat and information my be found at;

http://jt65.w6cqz.org

Reverse Beacon reports may be seen at;

http://jt65.w6cqz.org/receptions.php

and

http://jt65.w6cqz.org

and

http://hamspots.net/jt65/

and

http://pskreporter.info/pskmap.html?preset&callsign=ZZZZZ&what=all&mode=JT65A&timerange=1800&hidelight=1&sparktime=5

I would also like to offer special thanks to all those who have helped and provided vital assistance during the Alpha testing phase. You know who you are. Thank you all!

Before beginning the specific setup instructions for JT65-HF I would like to cover some basic concepts that applies equally to all programs implementing the JT65 protocol.

First and most important is that of time synchronization.

You can not successfully have a JT65 QSO without a close synchronization of your local computer's time value to UTC. Period. End of discussion.

If you have internet access there is NO EXCUSE for not having a properly synchronized clock. Free solutions to this issue are readily available.

Many use;

http://www.thinkman.com/dimension4/

http://www.thinkman.com/dimension4/download.htm

I use a more complicated solution, but, one that can offer better long term stability and reliability of the clock synchronization. If you're reasonably computer literate you should be able to mange it.

See;

http://www.meinberg.de/english/sw/ntp.htm

Specifically you'd need;

NTP for Windows NT/2000/XP/2003/Vista/Windows 7

and

NTP Time Server Monitor

I present those as options versus a recommendation. For most, D4 is more than enough.

The built in time synchronization software with Windows XP (and beyond) is usually not sufficient to maintain a high degree of accuracy. Trusting those methods will likely leave you routinely out of temporal sync and make your enjoyment (and others as well) of JT65 much lessened.

If you do not have internet access your only option is to try to maintain a manual sync by some broadcast time service. If you can get (and maintain) accuracy within +/- 1 second of UTC you should be able to work other stations. The closer to perfect the better.

Also. Do not assume your PC's clock is stable. Many have highly inaccurate clocks that gain/lose time at a substantial rate.

Considerations for transmitting JT65.

JT65 is indeed an FSK mode in that it transmits distinct single tones from a tone set of 65 values. But. **JT65 is NOT TRANSMITTED using FSK. It uses AFSK and this is a critical distinction.** Avoid ALC action if possible with an AFSK signal. Much like any other audio input to an SSB transmitter JT65 can generate a poor signal if over driven.

JT65 is a weak signal mode. Its primary purpose is to facilitate EME (Earth->Moon->Earth) communications. For use on HF you need to re-think your power levels. Often a few milliwatts will do amazing things. Some situations call for much higher power levels, but in day to day HF usage, 10 to 20 watts is probably enough, if not too much.

Another operating tip is to spread out from the center point on the spectrum display or, as it is commonly called, DF 0 (Delta Frequency Zero). You may use TX DF offset to accomplish this or tune you dial frequency to some spot other than (for example) 14076. Look at the spectrum display and, if available, RB Reports to get a picture in your mind of where other stations lie in your pass band, both those you can can can not see. Picking a clear area will lead to much happier operating conditions for all concerned!

Now to the real purpose of this document.

Note: I will update the graphics that no longer reflect the current GUI revision as of 1.0.4 before this document is finalized.

JT65-HF Setup

Please refer to the following graphic as you work through this guide.
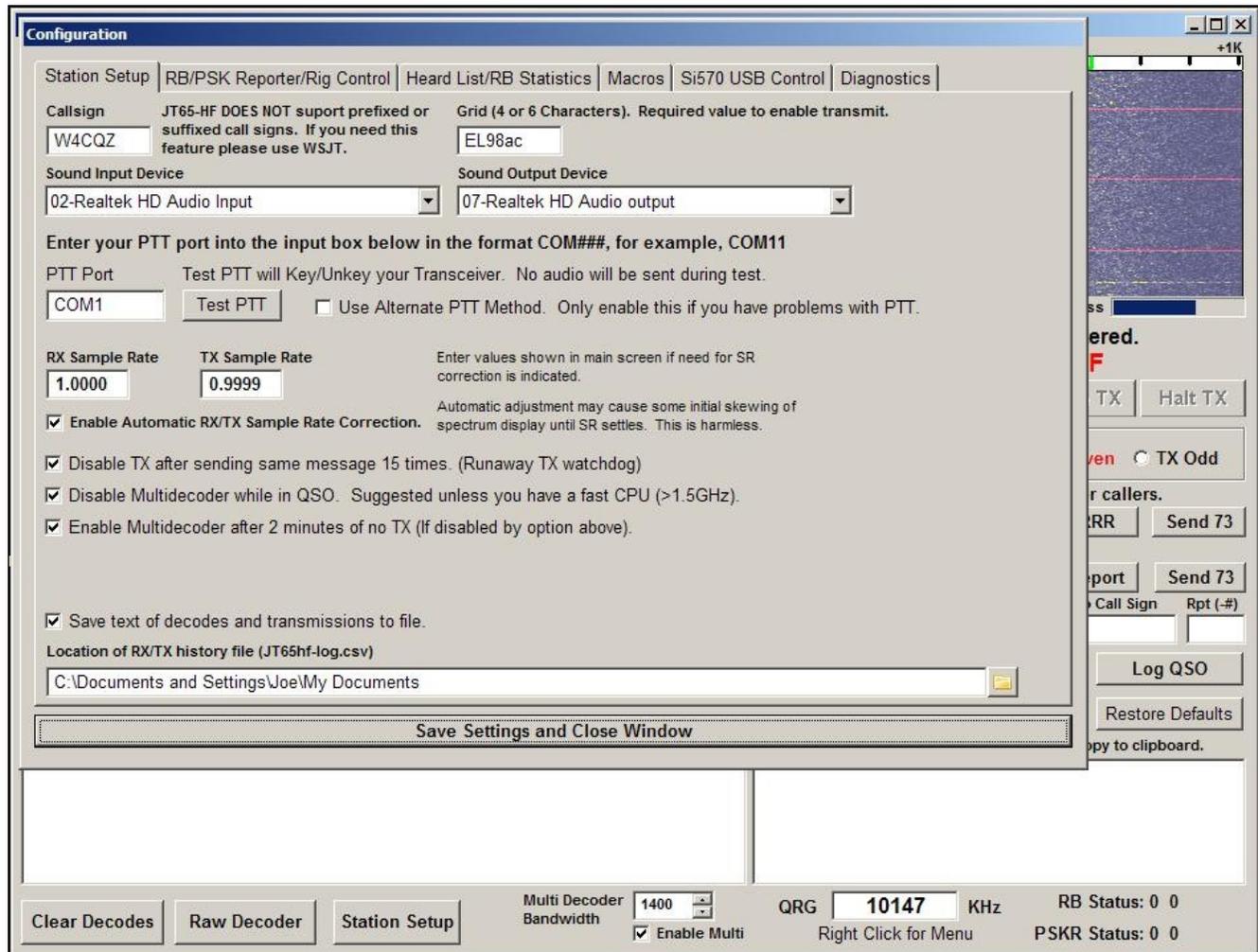
Items to configure (Required Items);

Callsign
Grid
Sound Input and Output devices

Your Callsign must be entered before TX functions will be enabled. **JT65-HF does not support calls with either a suffix or prefix at this time.** Your callsign must contain only the letters A … Z and digits 0 … 9. Any other characters will result in the input box being cleared and a warning message issued. If you must have suffix or prefix support you will need to use WSJT until such time as JT65-HF supports this.

You Maidenhead Grid Square is also a required input. You may enter either a 4 or 6 character value. If you do not know your Grid you will need to find someone who can help you with finding this information.

The default value for Sound In/Out devices is often correct, but you should confirm this.

Next comes PTT Port. If you have used WSJT or another digital mode program and successfully configured PTT by serial port you should have no difficulty in doing so with JT65-HF. JT65-HF uses the identical PTT code as is contained in WSJT. You may enter either a number (like 1 or 10 or 120) or a fully specified device string (like COM2 or COM20 or COM234). If you use VOX to control your rig leave the PTT Port set to its default value of NONE. Future versions will support PTT via rig control, but, for now this is not implemented. You will need a physical port or VOX. PTT via Parallel Port is not implemented and likely never will be, at least for Windows builds.

Once you have set you PTT Port you can click the "Test PTT" button to quickly toggle your transceiver from RX to TX to RX. No tone will be generated for the test, it simply toggles the PTT line for about 1/10th second.

Warning: Some systems have shown issue with the PTT routines where the TX will come up but not return to RX. In some cases where PTT errors occur you will need to check the box for "Use Alternate PTT Method". In most cases PTT works well with the default or alternate method. Linux users running JT65-HF under Wine should take note of this. It seems the Alternate PTT method works more reliably than the default. Linux users should also see the following URL if using USB<->Serial devices as those will not be available to JT65-HF without following the procedure listed here;

http://wiki.jswindle.com/index.php/Advanced_Wine_User_Installation#USB_access

After setting and confirming operation of PTT the next option involves the measure of sound card sample rate error for both the RX and TX sides. Sample rate error is a complex issue and can lead to very poor performance (and in some cases a total failure) of the JT65 decoder. For most users you may check the box labeled "Enabled Automatic RX/TX Sample Rate Correction" and let JT65-HF worry about SR corrections. In some cases due to issues beyond the scope of this document you will find that your SR error is not a steady state. By this I mean that it never settles on a value that is either unchanging or very close to a fully steady state. When the program first begins the SR for both TX and RX will begin at some point, usually, far removed from 1.0 and, with Auto SR enabled, slowly come to a steady state for both values. If after several minutes the SR indicators have not achieved a steady state you MUST disable Auto SR correction and manually enter a value that represents an average value and hope for the best. I can not overstate the problems a wildly unstable SR error will yield. *This is something you should look at often until you are certain JT65-HF is stable with the Auto SR enabled.* It is my intent to write a much more detailed paper on this issue at a later date as, second only to UTC time sync, this is a misunderstood and critical issue with JT65 whether it be with JT65-HF, WSJT or MultiPSK.

The remaining options are of far less importance than those previous.

"Disable TX after sending same message 15 times" should, generally, be left ticked. This simply stops TX cycles after transmitting, for instance, CQ W4CQZ EL98, 15 times without change. This handles the unfortunate event where you've accidentally left TX enabled in error.

"Disable Multidecoder while in QSO" should, generally, be left ticked. This will disable the multidecoder when you double click on a line in the output window to engage a QSO. Disabling the multiple decodes can make it easier to focus on your QSO and leave enough time to do a decode cycle, setup messages and be ready to TX on time. It also provides a mechanism to decode EME or Shorthand Message sequences as the multiple decoder DOES NOT decode these.

"Enable Multidecoder after 2 minutes of no TX" should be left ticked. It multiple decodes was turned off due to the previous option this option will automatically enable it again after 2 minutes of no TX.

The last option is; "Save text of decodes and transmissions to file".

If enabled a file will be written named JT65-hf-log.csv and its format is as follows;

"Date","Time","QRG","Sync","DB","DT","DF","Decoder","Exchange"
"2010-01-17","17:42","14076000","5","-17","0.2","32","B","CQ IK5FKF JN54"
"2010-01-17","17:43","0","4","-14","0.2","32","B","IK5FKF M6ZOO IO90"
"2010-01-17","17:43","0","6","-5","-0.0","237","B","CQ F8RZ IN95"
"2010-01-20","02:04","-","-","-","-","T","CQ W4CQZ EL98   "

The first line is the field definitions while the remaining lines store received and transmitted sequences.

Using the following line as an example...

"2010-01-17","17:42","14076000","5","-17","0.2","32","B","CQ IK5FKF JN54"

I heard IK5FKF at 17:42 on 1/17/2010 UTC with a dial QRG of 14.076MHz calling from Grid JN54. His sync strength level was 5, his signal level was -17dB, his timing offset was .2 seconds,his DF from dial QRG was 32 hertz and, finally, the decode was made using the B[M] error correction code. If the signal had not been decoded with B[M] it might have indicated K for K[V] decoder.

For transmitted sequences the format is...

"2010-01-20","02:04","-","-","-","-","T","CQ W4CQZ EL98   "

I transmitted CQ W4CQZ EL98 at 02:04 UTC on 1/20/2010. I will likely add the QRG and offset field to this as well as I hadn't realized it wasn't there until I started writing this document.

So. That is the TX/RX log format. If you chose to use it you should likely use the last input box to have it saved somewhere convenient. The default value is not an easy place to get to for most users. To change, click on the Folder Icon graphic at end of input box. Be aware that this file can become quite large quickly, especially with multiple decoder enabled on a busy band.

Switching to the tab labeled "RB/PSK Reporter/Rig Control" you will see the following;
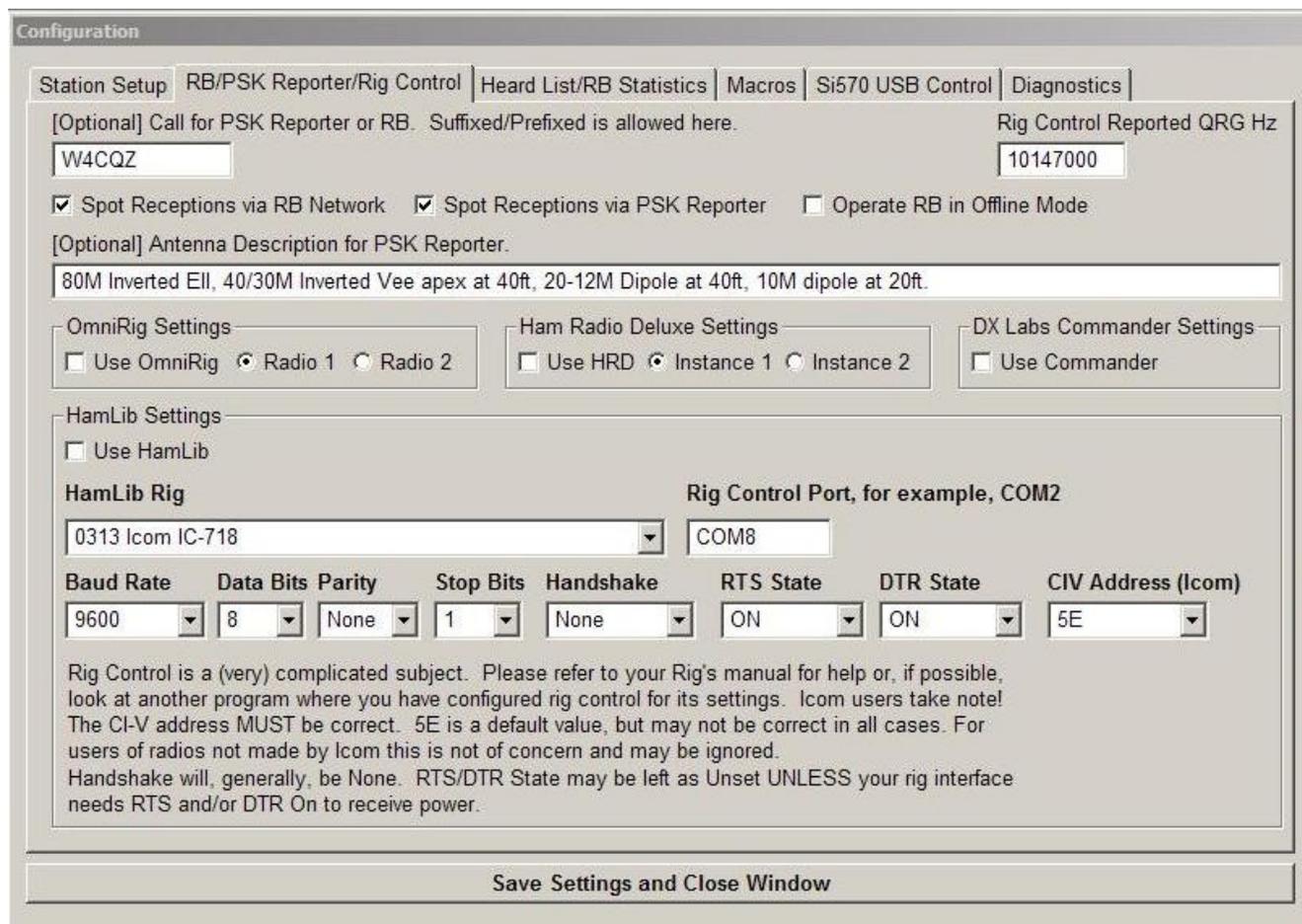
You may enter a callsign here that is specifically used in spotting receptions to PSK Reporter or The RB Network. It may contain suffix or prefix data.

The text box located in the screen's upper right corner labeled "Rig Control Reported QRG Hz" is a read only field mainly intended to show that rig control (if enabled) is working.

Next come three tick boxes;

"Spot Receptions via RB Network", "Spot Receptions via PSK Reporter" and "Operate RB in Offline Mode".

If you do not wish to submits your reception reports to either The RB Network of PSK Reporter then do not have a tick mark on either. You may elect to send spots to both, neither or either but be aware this requires a constant Internet connection, unless you enable the option to "Operate RB in Offline Mode". In offline mode the RB reports will be saved for later upload.

Next comes a description of your antenna. At this time it is only passed to PSK Reporter, but will soon be passed to the RB Network as well. In any case it's an optional value.

JT65-HF supports five methods of determining your dial frequency setting. The four seen in setup and manual control. The three external rig control interfaces offer some simplicity in use as there is no real configuration within JT65-HF.

OmniRig;

http://www.dxatlas.com/OmniRig/

Ham Radio Deluxe (HRD)

http://www.ham-radio-deluxe.com/

DX Lab Commander

http://www.dxlabsuite.com/

HamLib and manual control require no external software not included within the JT65-HF installer.

There is no preferred method. Each has its own positive/negative points. If you have one of the three listed above working already and running you should be able to tick the box and have it work. Of course, this is not always the case, but I'm still working on that.

HamLib requires a lot of knowledge about your ports and your rig's communication parameters but tends to work well if it works at all.

For the ultimate in reliability, especially for those who run RB stations around the clock, I would suggest manual control. It always works, does not lose connection with the rig and required no extra software. Its only drawback is forgetting to change the QRG when you QSY.

That being said, I will continue the details of configuring rig control on the next page.

If you wish to use manual control be sure that none of the tick boxes have a tick mark as seen in the graphic above.

For OmniRig tick the appropriate box and select Radio 1 or Radio 2. OnmiRig must be running and properly configured.

For HRD tick the appropriate box and select Instance 1 or Instance 2. This instance thing is somewhat complicated. HRD supports more than one rig under its control in a single Instance (or run of the program if you like), but, *only the rig currently selected in HRD* is available to external programs. If you wish to have HRD control multiple rigs and have all those accessible to external DDE interfaced programs you must run multiple copies of HRD with each copy supporting one rig. In JT65-HF you may have HRD read from either the first or second instance of HRD. This is certainly a poor way to do things, but at this time it is the only way to do so. A solution to this may be forthcoming, but, honestly, I can only spend so much time on coding and need to concentrate on the most common case of users having only one or two rigs or none at all under rig control.

For Commander tick the appropriate box and that's all. I believe Commander can support more than one rig but have not yet researched the particulars.

Now to the most complicated. HamLib.

Configuration

Station Setup | RB/PSK Reporter/Rig Control | Heard List/RB Statistics | Macros | Si570 USB Control | Diagnostics

[Optional] Call for PSK Reporter or RB. Suffixed/Prefixed is allowed here.

W4CQZ

Rig Control Reported QRG Hz

10147000

☑ Spot Receptions via RB Network   ☑ Spot Receptions via PSK Reporter   ☐ Operate RB in Offline Mode

[Optional] Antenna Description for PSK Reporter.

80M Inverted Ell, 40/30M Inverted Vee apex at 40ft, 20-12M Dipole at 40ft, 10M dipole at 20ft.

OmniRig Settings
☐ Use OmniRig ⦿ Radio 1 ◯ Radio 2

Ham Radio Deluxe Settings
☐ Use HRD ⦿ Instance 1 ◯ Instance 2

DX Labs Commander Settings
☐ Use Commander

HamLib Settings
☐ Use HamLib

HamLib Rig

0313 Icom IC-718

Rig Control Port, for example, COM2

COM8

Baud Rate	Data Bits	Parity	Stop Bits	Handshake	RTS State	DTR State	CIV Address (Icom)
9600	8	None	1	None	ON	ON	5E

Rig Control is a (very) complicated subject. Please refer to your Rig's manual for help or, if possible, look at another program where you have configured rig control for its settings. Icom users take note! The CI-V address MUST be correct. 5E is a default value, but may not be correct in all cases. For users of radios not made by Icom this is not of concern and may be ignored. Handshake will, generally, be None. RTS/DTR State may be left as Unset UNLESS your rig interface needs RTS and/or DTR On to receive power.
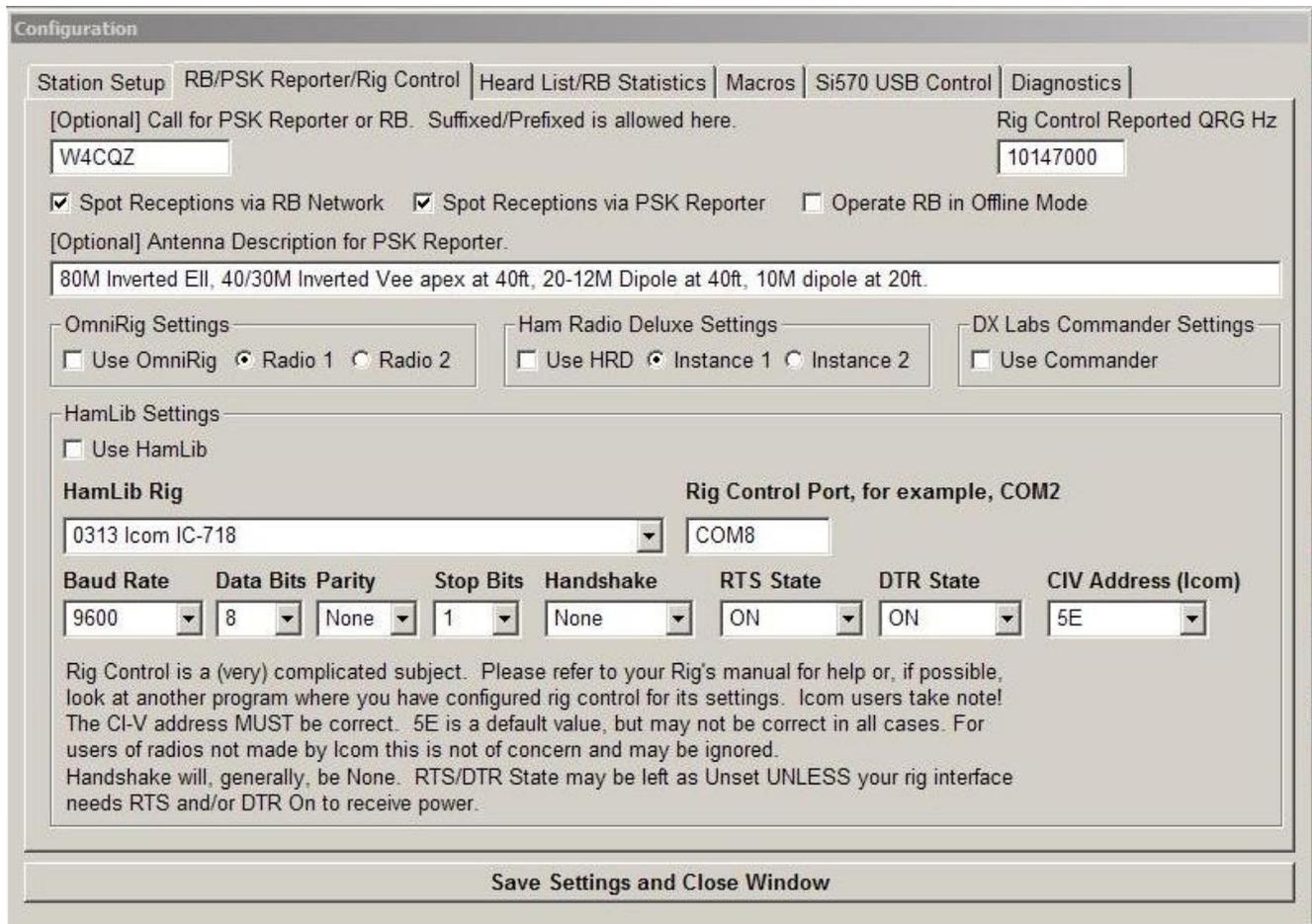
Save Settings and Close Window

Before selecting HamLib take time to set all the proper parameters starting with your Rig's model then the port you speak to it over. **This port should not be same as PTT port**. PTT via rig control is not yet supported but I am working on it. Will be a feature for 1.1.x versions.

Baud Rate, Data Bits, Parity, Stop Bits and Handshake will likely be values listed in individual rig's documentation.

RTS/DTR state can usually be left in state of Unset or Off, but, if your rig interface receives power from the RTS or DTR line then one or both must be On.

CI-V Address. This is an Icom only value. You will have to refer to your manual for specifics on this and do not assume the default value listed for an Icom rig is the value yours holds. Your documentation should show how to see what value yours is set to and also what other parameters is configured as.

The next tab is Heard List/RB Statistics. It's really self explanatory so I will not bother with a picture of descriptions.

Next comes "Macros"
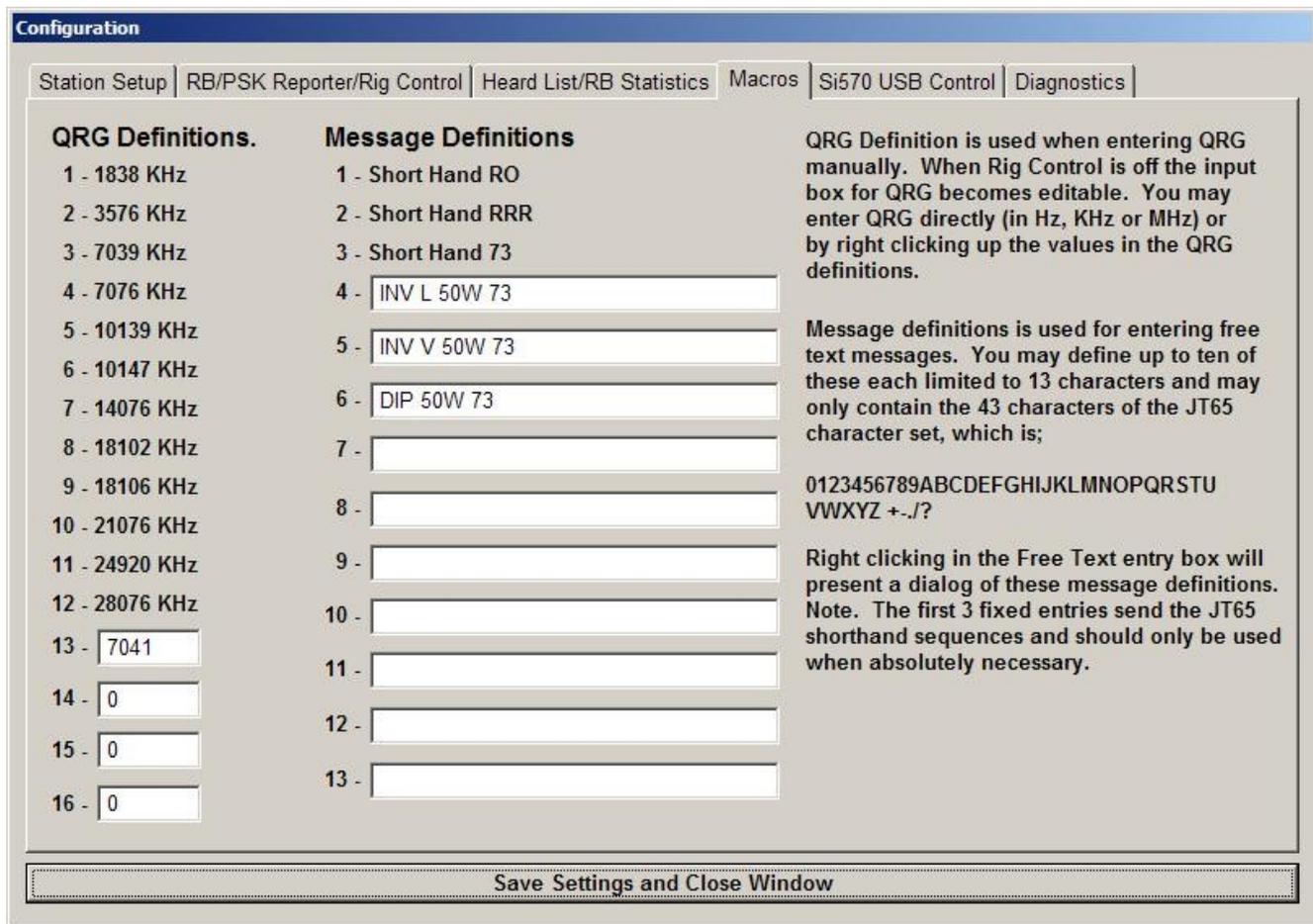
Reasonably simple. If using manual QRG control a right click on the main screen's QRG entry box will bring up a menu for the 12 predefined frequencies plus the 4 user definable options. *Eventually this will allow a rig controlled instance to QSY by clicking as well.*

Message Definitions is used in the TX Text input box on main screen by right clicking the input box. The first 3 send EME or Shorthand sequences for RO, RRR and 73. The remaining 10 may be user defined subject to the length and character restrictions of the JT65 protocol.

Do not begin any free text macro with 73 RRR or RO as those will be sent as shorthand messages even if you define more text.

This will be corrected in future revisions. For now remember that this works;
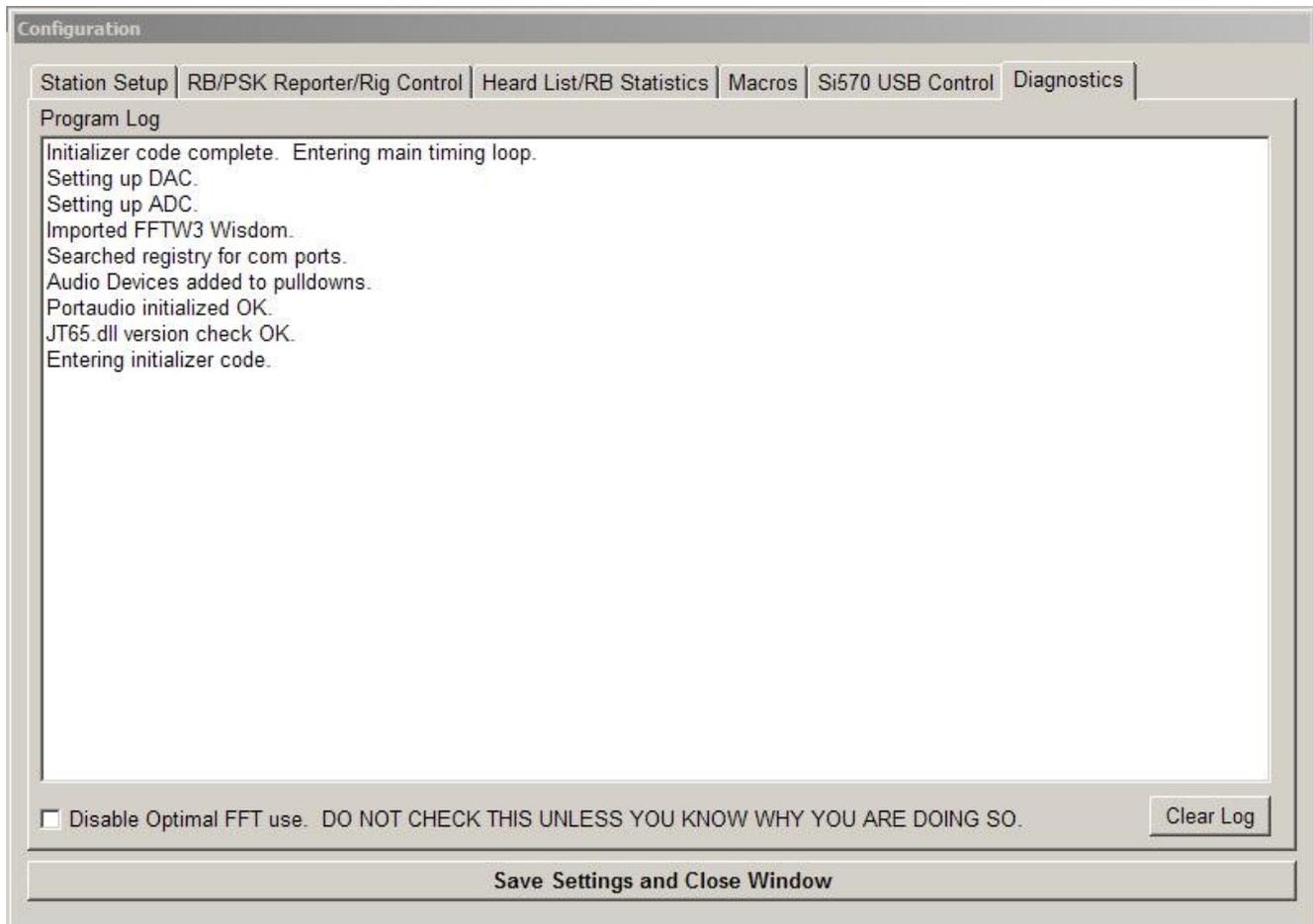
DE JOE 73

And this DOES NOT;

73 DE JOE

The second message would go out as a shorthand 73 sequence.

The next tab "Si570 USB Control" is not yet ready for use.

This leaves the last tab "Diagnostics".

The only option on this screen is "Disable Optimal FFT use". As its title suggests you should not tick this box without specific reason and understanding of its implication.

Seen in the output box is what one would typically see just after the program has started. It indicates all was setup properly and the program is in its normal run state.

Any additional messages will, I hope, be self explanatory.

That is all for the setup.
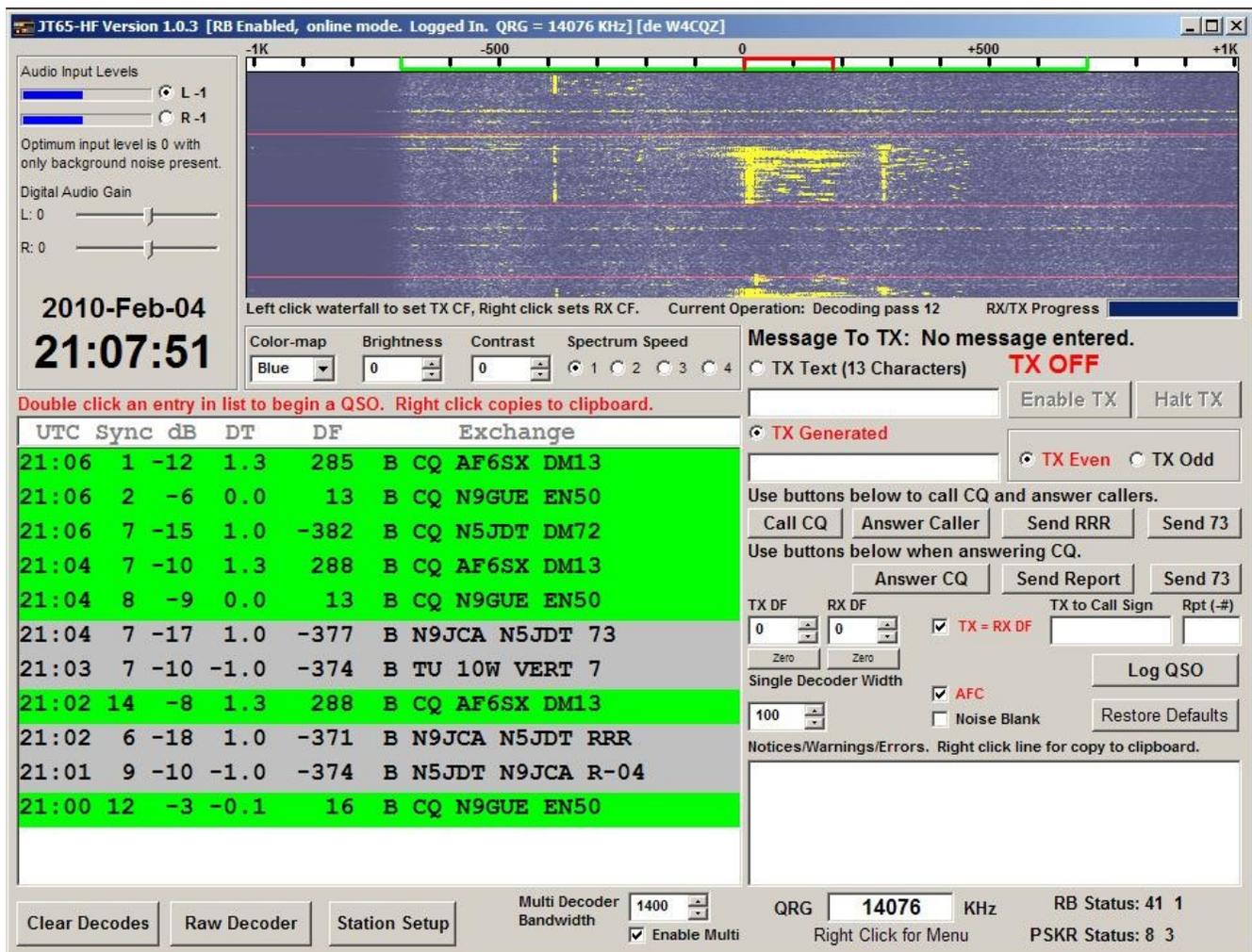
The graphic above represents the main operation screen for JT65-HF. It has a lot going on, but I have done my best to group things in a, perhaps, logical fashion and make it as easy to use as possible.

Starting from the top you have items that need attention, especially as a new user. This is the audio input selector and levels. In WSJT there is no selection for Left or Right Channel audio input. In JT65-HF I have intentionally provided control of this as it offers interesting possibility for future expansion (for instance, two rigs, one input on left and the other on right with a separate decoder and transmitter control for each). For now that remains a goal far far in the future, if ever. None the less, you must insure you are reading audio on the selected input channel. Some rig interfaces will show as mine with same audio on both sides, others will only show one channel active. Select the one with audio showing on its bar graph or, if both have audio, flip a coin.

Your numeric input should be, for best results, between -2 to +1 with no signals present. Use of the digital gain controls should be a case of last resort. If your audio input level under normal no signal background conditions is too high use the hardware mixer control to lessen it. If you find your audio input is so high that you have to lower the hardware mixer control to a very low value you should strongly consider a simple resistive attenuator on your input line. It's beyond the scope of this document to go into minute details of how to optimize your input

ADC usage, but, you should see a good noise only input on JT65-HF with your hardware mixer at about mid-scale as this leaves headroom for very strong signals and sensitivity for very weak signals within the sound card's ADC. If all else fails use Digital Audio Gain controls, but, it comes at a price when using extreme levels, that being 1 to 2 dB loss of decoder sensitivity.

Keep this in mind above all else. If the audio level indicators show Red you have a potential problem. Too much audio will wreck the spectrum display and lead to less success in decoding. Too little will not provide enough audio to see anything and also lead to no decodes.

A crucial difference for users accustomed to WSJT comes in the spectrum display.

There is no double clicking the spectrum to decode a signal.

A single left click will set your TX offset while a single right click will set your RX offset as indicated by the green and red indicators that run along the spectrum scale. Users of WSJT may see this as a severe handicap, but this is not necessarily so. The multiple decoder addresses much of the need for double clicking the spectrum and the other reasons for doing so do not, yet, have any application to JT65-HF. For now, WSJT users must forget about double clicking and right clicking. JT65-HF is quite different. *Eventually JT65-HF will allow for re-decoding a previous sequence, but that is not yet implemented.*

Moving down from the spectrum display you will see the decoder's output area.

```
Double click an entry in list to begin a QSO.  Right click copies to clipboard.
 UTC  Sync dB   DT      DF         Exchange
21:26   6 -11  1.4      22    B CQ AF6SX DM13
21:26   1 -10  1.2    -369    B CQ N5JDT DM72
21:25   4  -4  0.2    -393    B N5JDT N6BM
21:24   4 -11  1.4      24    B CQ AF6SX DM13
21:24   4 -15  1.2    -377    B N6BM N5JDT -04
21:23   8  -7  0.0    -393    B N5JDT N6BM
21:22   3 -12  1.4      24    B CQ AF6SX DM13
21:22   4 -17  1.2    -385    B N6BM N5JDT -04
21:21   5  -7  0.0    -393    B N5JDT N6BM
21:20   7 -11  1.4      24    B CQ AF6SX DM13
21:20  10 -15  1.2    -390    B N6BM N5JDT -04
21:19   4 -10  0.0    -393    B N5JDT N6BM CM97
21:18   4 -12  1.3      24    B CQ AF6SX DM13
```

Lines with a Green background indicate stations calling for a contact while those in gray indicate stations in QSO. Not seen on this capture is the case of a line with a [very] bright red

background. This indicates a sequence directed at your callsign. As indicated, you should double click a line to begin a QSO. If the line is a Green or Red line the program will setup what it computes to be a correct response, set the proper TX segment to even/odd (First/Second), [if enabled] set the proper transmit tone offset (TxDF in WSJT speak) and enable the transmitter. If you click on a Gray line all of the above will happen but TX will not be enabled. As long as the sent sequence makes sense to the program you can work a QSO with nothing more than double clicks in the decoder output box.

For example I see;

21:46 12 -8 -0.3   277 B CQ KC4NGO EL88

If I double click that I be setup to send at 21:47 with;

KC4NGO W4CQZ EL98

If he then answered with

W4CQZ KC4NGO -01 and I double clicked that I would send;

KC4NGO W4CQZ R-02

and I should then see (if I got through)

W4CQZ KC4NGO RRR and double clicking that would generate;

KC4NGO W4CQZ 73

and I should then see (again, if I got through)

W4CQZ KC4NGO 73

End of QSO. Easy enough. This follows the so called perfect JT65 QSO format.

Of course, we live in an imperfect world. I might have to repeat some sequences a few times or receive something JT65-HF can not understand, but, that is what your brain is for. JT65-HF is not an automatic system. It requires your input for each sequence sent, just as in WSJT. The only difference is that I have attempted to make it easier.

Leaving the realm of the double click method we come to QSO by buttons and the ever exciting world of "Plain Text" messages. Looking to the right of the decoder output area you see the following;

Notice the two rows of Buttons... Call CQ, Answer Caller, Send RRR, Send 73 and Answer CQ, Send Report, Send 73.

Also take note of the two input boxes "TX Text (13 Characters)" And "TX Generated".

The TX Generated box holds messages generated by JT65-HF and is READ ONLY. You can not edit the text and there is very good reason for this that will come later.

The "TX Text" box allows you to enter free text messages limited to the JT65 protocol limit of 13 characters. It also offers a right click menu of common items and user defined items as discussed in the Setup portion.

Next locate the boxes labeled "TX to Call Sign" and "Rpt(-#)".

When you double click a decoder output line those should be populated with the callsign of the station you wish to call and the proper signal report value. In some cases this fails due to poor formatting of message on the sending end or, perhaps, you'd like to send a different number for report. Since you can't edit the generated messages box how can you fix it if it's incorrect? Use "TX to Call Sign" and "RPT(-#)". Then, if you were indeed answering a CQ, press the Answer CQ button. This will generate a proper response using the data you may have changed from what JT65-HF computed to be correct. I do not generally use the double click decoder output method to run QSOs myself. I double click to setup the first sequence then use the buttons to Send Report and Send 73. Works either way.

Now to some more advanced topics.

When JT65-HF has not been 'instructed' to generate a message by double click it becomes your choice in setting certain options. TX Even will send on even numbered minutes [0, 2, 4, etc] while TX Odd will do so on odd minutes [1, 3, 5, etc]. Above the HF bands you will find some fairly strict conventions on what stations should transmit on even/odd periods, but on HF no such convention really exists or even makes sense. With experience you will realize the best use of even/odd sequence choice is to transmit on sequences where you have very strong signals in your RX so you can hear weak signals.

Now to "TX DF", "RX DF" and the check box for "TX=RX DF". A graphic from the spectrum display area will help here.

The spectrum display runs from -1000 to +1000 Hertz. Zero represents the default tone location of a JT65 transmission which is 1270.5 Hz. If your dial QRG is 14076 KHz the zero point would represent (if using USB) 14077270.5 hertz or 14077.2705 KHz. This is a standard convention in much of the JT65 world. A dial QRG as a reference with an offset to signal specified.

A JT65A transmission is about 175Hz wide and this is represented by the Red marker. The Green marker represents your RX range and will be discussed in much more detail later. In single decoder mode the Green line will, usually, be much more narrow than the 1.4KHz shown in the graphic above.

Having a grasp of the spectrum we can now look at an example showing signals.
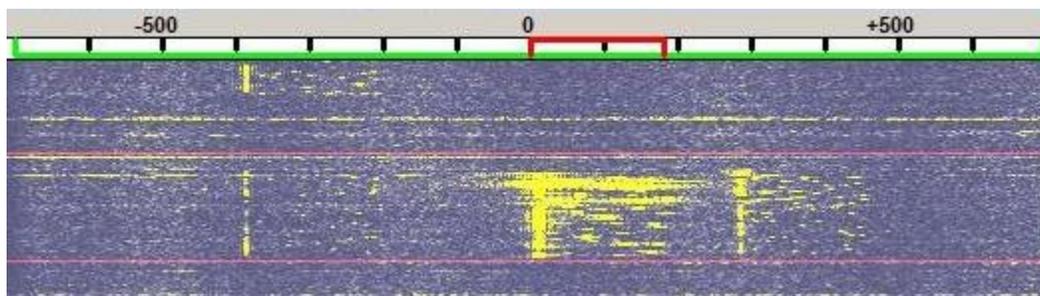
In this example you can see three JT65A signals in one sequence with a sequence defined by the image between two horizontal red lines.

In this case you have a very strong signal at about DF 0, a medium strength signal at about +300 and a much weaker trace at -400. The strong horizontal Yellow smears in the upper portions is from Lightning discharges around 100 miles from me.

Assume all three signals decoded and were valid for starting a QSO... you interest in the most leftward signal and double click the *text decoder output* to setup a QSO. If you have the box labeled TX = RX DF ticked your transmit offset will be moved to match the signal, around -400 hertz and your RX range will also be set to match at a 100 Hz bandwidth. [If and only if you have selected the option to turn multiple decoder off while in QSO or were not in multiple decode mode]. If you did not have TX = RX DF ticked you would transmit at either offset zero (the default) or your last entered TX offset. Assume it's at zero.. you'd be transmitting to a station at -400 on zero offset and where another station had been calling. A bad thing.

It is not a good idea to operate 'split' with JT65. It wastes spectrum and creates confusion so you should generally have TX = RX DF enabled. Of course, almost every rule has its exceptions. It may be necessary to work with offset not matched when QRM/QRN is present. With experience you will easily learn how to do so and when it is necessary.

*There is one other instance where TX = RX DF **should not** be enabled.*

When calling CQ TX = RX DF should not be enabled. The reasoning behind this is, again, subtle. Assume you are calling CQ with TX=RX DF enabled and you double click a call who has answered your CQ. Further assume that the caller is offset 50 hertz from your TX. If you have TX=RX DF on you will shift your TX frequency 50 hertz to match the other station. Does not sound like a problem, but, add another assumption. Assume the station calling you is using JT65-HF with TX=RX DF on or otherwise zero beating to your TX. When you answer you will have shifted 50 Hertz... if he double clicks your message he will then shift to match you... if you double click to answer his reply you will likely shift again and it will continue as you march up or down the pass band. With some experience this should become obvious and JT65-HF should handle the small offset you see from time to time. This offset can come from those using other programs that don't match the DF precisely as JT65-HF attempts to or even from transceivers that have a slight difference between their TX and RX frequency value.

Message To TX: No message entered.

○ TX Text (13 Characters)   **TX OFF**

[Enable TX]   [Halt TX]

◉ TX Generated

○ TX Even   ◉ TX Odd

Use buttons below to call CQ and answer callers.

[Call CQ]   [Answer Caller]   [Send RRR]   [Send 73]

Use buttons below when answering CQ.

[Answer CQ]   [Send Report]   [Send 73]

TX DF   RX DF   TX to Call Sign   Rpt (-#)

[0]   [0]   ☑ TX = RX DF

[Zero]   [Zero]   [Log QSO]

Single Decoder Width

[50]   ☑ AFC   [Restore Defaults]

☐ Noise Blank

This leaves the following items to discuss;

TX Text, Single Decoder Width, AFC, Noise Blank, Log QSO and Restore Defaults.

TX Text was covered somewhat in the text above. Take note that the buttons by the captions determine the buffer you will TX and the "Message To TX: " label will indicate the message you will TX.

Single Decoder width defines the band width the decoder will evaluate when running in single decode mode. It can range from 25 to 600 Hertz. 50 or 100 is a good general use value. With experience will come the knowledge for when different values will be of use.

AFC is generally seen as a EME only thing. HF does not have meaningful Doppler shift as we use it, but, I have found AFC to actually be quite useful. It will track a sender with a drifting TX and over long use I have found it to be a plus and never run with it off. I leave it up to you to decide if you think it's of use as what works well for one station does not always work so well for all.

Noise blank can offer some help with heavy static crashes such as seen with lightning in the area. I seldom use it.

Restore defaults will reset some of the options to 'sane' values.

Log QSO is a new feature and under heavy development. I will add an addendum to this once it's more stable. For now you can click it, see how it works and where it saves its output and, maybe, even import that output to another logging program. More to come on this as it becomes fully developed.

I have covered most of what you need to get started with JT65-HF and, hopefully, make some QSOs. Now it's time for some secondary topics, namely the RB Network and PSK Reporter.

If you do not plan to ever send your reception reports to either network you may skip over this part, but, I would like one moment to 'sell' you the spot submission idea.

If you have an always on Internet connection and would not incur some sort of traffic expense due to you net usage I would hope you will consider submitting your spots to the RB Network. Every spot sent helps others find activity and helps to show we JT65 users not only actively use the mode but do so regularly. Many in the Amateur community can not understand what use a mode has that can not be used for Emergency Communications or even to have a conversation. JT65 on HF is so limited in what you can say that many think it has no place on the HF bands. Explaining the fun one can have with JT65 on HF to others is often an exercise in futility, but, having activity reports sent from around the globe shows (a) we run this mode constantly and (b) it's not just 2 or 3 guys who can't quit playing with JT65 on HF.

The following graphic illustrates the lower portion of the main screen.

Clear Decodes will clear the decoder text output area.
Raw Decoder will be explained shortly.
Station Setup brings up the configuration dialog.

Multi Decoder Bandwidth.

This is where you define your search range for the multiple decoder. It can range from a minimum of 600 Hertz to a maximum of 2000 Hertz. If you change this value (and Enable Multi is checked) you will see the Green marker atop the spectrum display track your change. There is no correct or suggested value for this setting. Larger value could yield more decodes but also takes more time to compute. You will have to experiment with this setting and figure out your own 'correct' value.

Next is QRG input area. If you have rig control enabled this will be a disabled input. If in manual control you will see a label "Right Click for Menu" and the box will be enabled for entry. Using the right click menu is (a) easy and (b) less error prone but offers only minimal flexibility in setting undefined QRG values. If you enter a manual frequency you must follow this guideline. Frequency is in Kilo Hertz. 14076.3 is good. 14.0763 or 14076300 is bad. My apologies to those who use the , as decimal separator. You will need to use the . as decimal indicator.

If you have PSK Reporter enabled and / or RB Network enabled you will see two additional items;

RB Status : #

PSKR Status: #

The # portion will indicate number of reports sent for the current running session. I usually see numbers around 1400 sent over a busy 24 hours monitoring.

The numbers for PSKR will almost certainly only be a fraction of that for RB. PSK Reporter does not accept EVERY decode and save it as the RB Network does. PSK Reporter only accepts a call it considers new. New is defined as not sent before or, if sent before, sent more than 30 minutes previous. PSK Reporter can also request the client buffer data to be sent later if its server is overloaded.

And finally, one last button, "Raw Decoder". Raw Decoder presents a screen showing the decoder's output which, unlike the primary display, will displayed failed decodes as well as successful decodes. It can help diagnose cases where signal seems good but no decode is obtained. It's a bit of an art to interpret this data and I will write more about this in another document.

Known Issues and Differences Between JT65-HF and WSJT

JT65-HF is not intended to be a replacement for WSJT or even an equal to WSJT. I believe that JT65-HF does do some things in a more user friendly manner than WSJT, but, it is in almost all other aspects inferior to WSJT *if you need the most advanced functions WSJT offers*.

JT65-HF only implements one mode of those offered in WSJT, specifically JT65A.

JT65-HF does not, nor will it ever, implement deep search or sequence averaging.

JT65-HF does not support suffixed/prefixed calls and does not allow you (easily) to have a QSO with stations using suffixed or prefixed calls. This will change, eventually. I plan to support QSO with stations using call suffix or prefix then add support for using a suffixed or prefixed call as your own call. This will not come quickly and for those who must have this functionality you will have to use WSJT or another program that does support such.

JT65-HF does not have CW ID. This too will change, but, so far, it has been a very low priority item and will continue to be unless it is found a substantial user base needs this functionality. Please understand need versus want. You need CW ID if your rules require a CW ID with JT65 transmissions. I have not, yet, received any communication expressing this as a legal requirement thus keeping them from using JT65-HF.

JT65-HF does not implement DSEC or Shift 5 function. This is being worked on as well, but, waiting until these functions have an implementation would delay JT65-HF from a general release. While desirable functions to have their omission does not warrant even more delay in releasing JT65-HF for general use. It's been two years of alpha testing already. One year with myself as the sole alpha tester and another with an ever increasing group contributing their input and time to help get this ready for general use.

JT65-HF is too big for my screen or too small. Can't I just re-size it?

If only it were that simple. Too many things on the main screen need to be a specific size and allowing free form resizing would be a nightmare to implement. For those needing a smaller screen you should run the Small GUI variant.

JT65-HF is too different from WSJT. I don't like it, can't it look/act more like WSJT?

No. It is different and that is the entire point of its existence. Some love it, others not so much. If it is too 'alien' for your tastes then stick with what you know. I make no apologies for JT65-HF's user interface. It has gone through many changes and compromises since its inception, some by necessity and others by group suggestion.

73 – Joe – W4CQZ ex W6CQZ