SETUP FOR USING Q65 ON VHF EME

INTRODUCTION

If you are already familiar with setting up the program with your equipment and have operated FT8 or the other modes in WSJT-X, you should be all set to operate Q65! You can read more information on how to set up WSJT-X in the on-line HELP manual, which you can access from the HELP drop down menu on the main WSJT-X screen. You also may find the official QUICK START GUIDE TO Q65 helpful:

https://wsjt.sourceforge.io/Q65_Quick_Start.pdf

GETTING READY

Please also refer to the following web page for additional information on WSJT-X and to download the most recent version:

https://wsjt.sourceforge.io/wsjtx.html

This page is also very useful in understanding the way to set up the WSJT-X Wide Graph, in the event your receiver does not provide a totally flat audio bandpass:

https://bobatkins.com/radio/wsjtx_wide_graph.html

It is even more important with Q65 to set the computer clock accurately! Meinberg NTP is highly recommended for this.

https://www.meinbergglobal.com/english/sw/ntp.htm#ntp_stable

Q65 was developed to be a sensitive mode that would include both callsigns in all messages. Standard QSOs exchange 4-character grid locators and optionally also dB signal reports. A comparison of JT65A and Q65 is discussed here:

http://www.bigskyspaces.com/w7gj/JT65A_And_Q65.pdf

To avoid unexpected settings changes when switching between modes in WSJT-X, it is recommend to set up a separate WSJT-X configurations for each mode.

SETUP AND OPERATING TIPS

1) On the MAIN SCREEN, I recommend NOT checking the SH box, which is used for special single tone messages unique to microwave. Please check the AUTO SEQUENCE box. The CALL FIRST box need NOT be checked if you are running a schedule with a particular station. Leave the MAX DRIFT at the default value of 0.

2) If you ARE running a schedule with a particular station, make sure you enter their callsign and gridsquare into the DX CALL and DX GRID boxes, press the GENERATE STD MSGS bar, and click on the round circle to the left of the message showing callsigns and your grid. That way you will start out your schedule properly calling your schedule station rather than wasting moon time calling CQ (which is the default message when you first start the program). In normal operation, you want to start with Tx1. With NA VHF, WW Digi, ARRL Digi, or Q65 Pileup selected, Tx1 will be grayed out; in that case you will want to start calling with Tx2.

3) On the FILE/SETTINGS screen, remember to choose ENABLE VHF AND SUBMODE FEATURES, and DECODE AFTER EME DELAY. Do **NOT** check DISABLE TX AFTER SENDING 73, since you may have to be sending it multiple times if the polarity does not immediately favor reception of your signals by the DX station. It

also is recommended that you do **NOT** check the SINGLE DECODE. Personally, I don't check the TX MESSAGES TO RX FREQUENCY WINDOW boxes, so that windows remains free for my received decodes, but some people find that option helpful as a reminder of whom you have been calling..

4) On the FILE/SETTINGS/ADVANCED screen, I set to MOST SENSITIVE. The other settings are not relevant to Q65.

5) On the main screen under DECODE, I choose ENABLE AVERAGING and FAST. If you see a trace on the waterfall and it does not decode you can double click on it with a narrow TOL, which will do a DEEP decode. Also check the option to AUTO CLEAR AVG AFTER DECODE, so that the displayed sequences in the AVERAGE window will reflect the new messages being decoded. Be sure to remember to press the CLEAR AVG button just before you start trying to decode a new station, or you will be including random noise into your average, and it will make decoding much more difficult!

6) On the WIDE GRAPH (waterfall), I set BINS/PIXEL=20, START=200 Hz, and SPECTRAL DISPLAY=Q65 SYNC. I find the display most sensitive if I set the N Avg = 20 if T/R=60s, or N Avg= 40 if T/R sequence is set to 120 seconds. Making the waterfall advance slowly provides the greatest visibility of callers' weak traces.

Selecting "Q65_Sync" on the Wide Graph will display an orange line with peaks that suggest potentially decodable Q65 signals in the most recent received sequence. When the accumulated average includes two or more reception intervals in the appropriate odd or even sequence, a red curve similarly shows potentially decodable signals in the AVERAGE window.

For me, the best PALETTE setting is DEFAULT – I adjust the waterfall display gain and zero sliders to show just a sprinkling of faint yellow dots with no signals present.

7) Try to keep the audio levels into WSJT-X around 40 on the audio "thermometer" in the lower left part of the main WSJT-X screen. You can do this by adjusting the recording level on your computer sound card. Some people have reported better sensitivity by using a higher incoming audio level, as long as there are no other strong signals present.

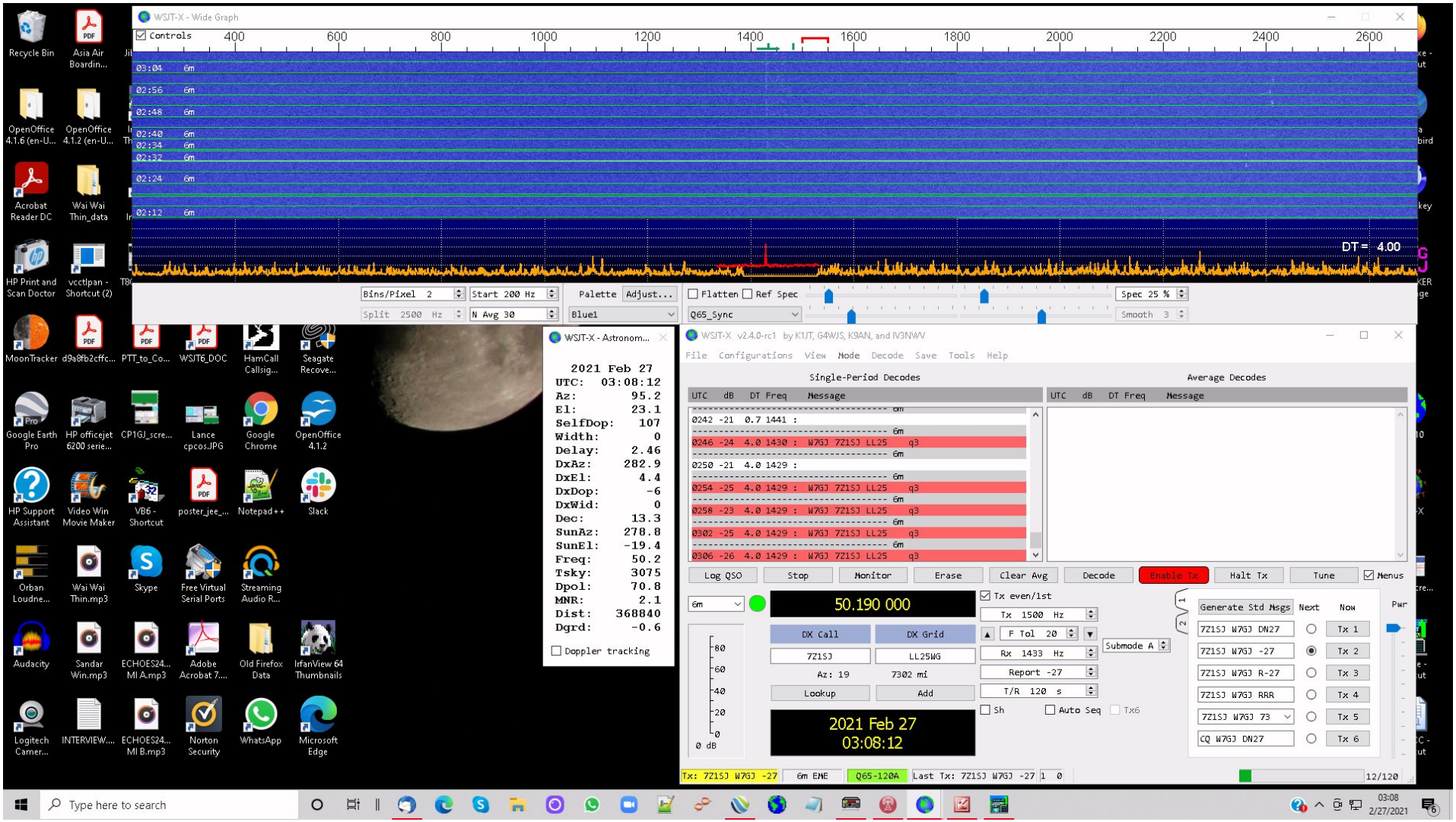
8) On the main screen, it is recommend to set FTOL = 20 and leave it there. Since you have NOT selected SINGLE DECODE, the entire bandpass shown on the Wide Graph will be decoded looking for signals. Yes, this decoding can take many seconds when SINGLE DECODE is unchecked as the multidecoder searches the entire bandpass after first quickly checking the frequency where you have the cursor set. When you see or have decoded a signal of interest, click on the waterfall to set RxFreq to the frequency of its lowest tone. Alternatively, you can double-click on a line of decoded text to set Rx Freq to its frequency. Double clicking on a frequency on the Wide Graph waterfall will cause that spot to be DECODED again.

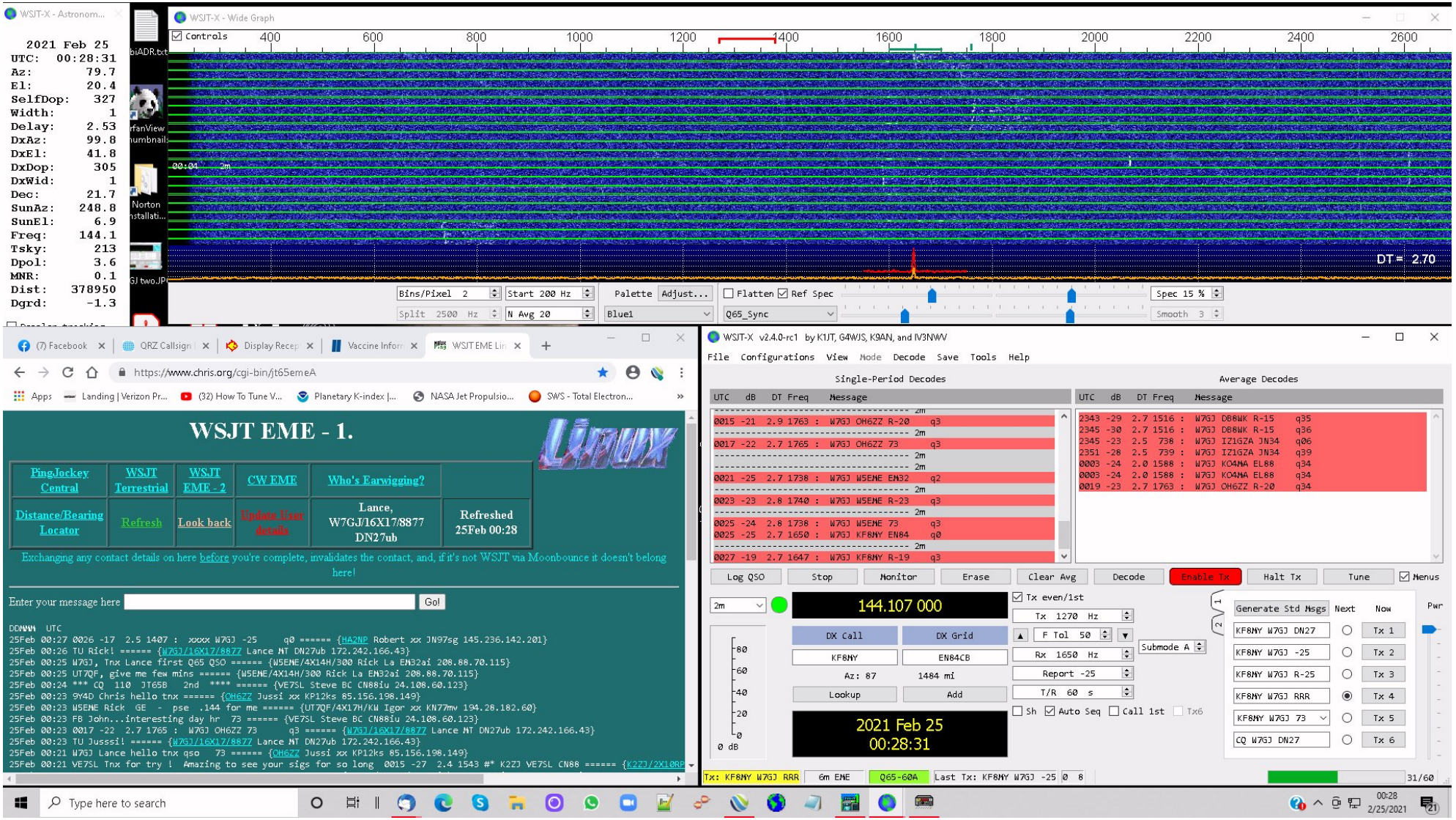
With the cursor on that station, decoding at that offset frequency with the narrow FTOL will take place first, and is fastest. Then the second pass with the multidecoder will display decodes of other possible signals, as well. It does not matter if decoding of such additional signals extends into the next T/R sequence.

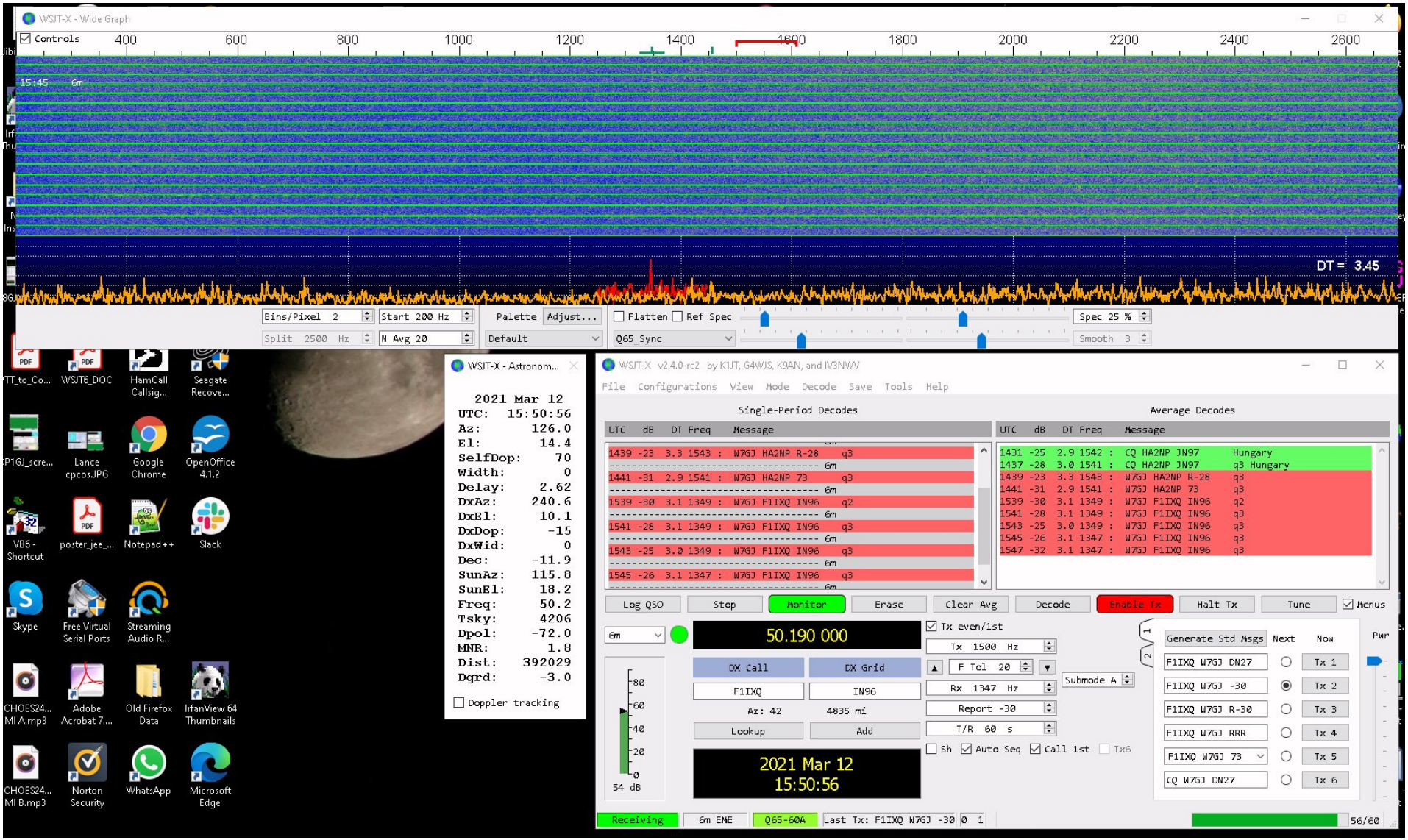
9) On the following pages are examples of screens showing what my setup looks like during Q65 EME contacts.

There also is a real-time demonstration of W7GJ using Q65-60A mode to work 6m EME stations. A recording of that Zoom session is here: https://youtu.be/vOrCXifwAsM

GL and VY 73, Lance, W7GJ


WSJT-X - Wide Graph
Controls
400
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
DT = 4.00
Bins/Pixel 2
Start 200 Hz
Split 2500 Hz
N Avg 30
Palette
Adjust...
Blue1
Flatten
Ref Spec
Spec 25 %
Q65_Sync
Smooth 3
WSJT-X - Astronom...
2021 Feb 27
UTC: 03:08:12
Az: 95.2
El: 23.1
SelfDop: 107
Width: 0
Delay: 2.46
DxAz: 282.9
DxEl: 4.4
DxDop: -6
DxWid: 0
Dec: 13.3
SunAz: 278.8
SunEl: -19.4
Freq: 50.2
Tsky: 3075
Dpol: 70.8
MNR: 2.1
Dist: 368840
Dgrd: -0.6
Doppler tracking
WSJT-X v2.4.0-rc1 by K1JT, G4WJS, K9AN, and IV3NWV
File Configurations View Mode Decode Save Tools Help
Single-Period Decodes
Average Decodes
UTC dB DT Freq Message
0242 -21 0.7 1441 :
0246 -24 4.0 1430 : W7GJ 7Z1SJ LL25 q3
0250 -21 4.0 1429 :
0254 -25 4.0 1429 : W7GJ 7Z1SJ LL25 q3
0258 -23 4.0 1429 : W7GJ 7Z1SJ LL25 q3
0302 -25 4.0 1429 : W7GJ 7Z1SJ LL25 q3
0306 -26 4.0 1429 : W7GJ 7Z1SJ LL25 q3
Log QSO
Stop
Monitor
Erase
Clear Avg
Decode
Enable Tx
Halt Tx
Tune
Menus
6m
50.190 000
Tx even/1st
Tx 1500 Hz
F Tol 20
Rx 1433 Hz
Report -27
T/R 120 s
Submode A
DX Call
DX Grid
7Z1SJ
LL25WG
Az: 19
7302 mi
Lookup
Add
Sh
Auto Seq
Tx6
2021 Feb 27
03:08:12
Generate Std Msgs
Next
Now
Pwr
7Z1SJ W7GJ DN27
7Z1SJ W7GJ -27
7Z1SJ W7GJ R-27
7Z1SJ W7GJ RRR
7Z1SJ W7GJ 73
CQ W7GJ DN27
Tx 1
Tx 2
Tx 3
Tx 4
Tx 5
Tx 6
Tx: 7Z1SJ W7GJ -27
6m ENE
Q65-120A
Last Tx: 7Z1SJ W7GJ -27
12/120
Type here to search
03:08
2/27/2021


WSJT-X - Astronom...
2021 Feb 25
UTC: 00:28:31
Az: 79.7
El: 20.4
SelfDop: 327
Width: 1
Delay: 2.53
DxAz: 99.8
DxEl: 41.8
DxDop: 305
DxWid: 1
Dec: 21.7
SunAz: 248.8
SunEl: 6.9
Freq: 144.1
Tsky: 213
Dpol: 3.6
MNR: 0.1
Dist: 378950
Dgrd: -1.3
WSJT-X - Wide Graph
Controls
DT = 2.70
Bins/Pixel 2
Start 200 Hz
Palette Adjust...
Flatten Ref Spec
Spec 15 %
Split 2500 Hz
N Avg 20
Blue1
Q65_Sync
Smooth 3
WSJT EME - 1.
PingJockey Central
WSJT Terrestrial
WSJT EME - 2
CW EME
Who's Earwigging?
Distance/Bearing Locator
Refresh
Look back
Update User details
Lance, W7GJ/16X17/8877 DN27ub
Refreshed 25Feb 00:28
Exchanging any contact details on here before you're complete, invalidates the contact, and, if it's not WSJT via Moonbounce it doesn't belong here!
Enter your message here
Go!
WSJT-X v2.4.0-rc1 by K1JT, G4WJS, K9AN, and IV3NWV
File Configurations View Mode Decode Save Tools Help
Single-Period Decodes
Average Decodes
Log QSO
Stop
Monitor
Erase
Clear Avg
Decode
Enable Tx
Halt Tx
Tune
Menus
144.107 000
Tx even/1st
Tx 1270 Hz
F Tol 50
Rx 1650 Hz
Report -25
T/R 60 s
Submode A
DX Call
DX Grid
KF8NY
EN84CB
Az: 87
1484 mi
Lookup
Add
Sh
Auto Seq
Call 1st
Tx6
2021 Feb 25
00:28:31
Generate Std Msgs
Next
Now
KF8NY W7GJ DN27
KF8NY W7GJ -25
KF8NY W7GJ R-25
KF8NY W7GJ RRR
KF8NY W7GJ 73
CQ W7GJ DN27
Tx 1
Tx 2
Tx 3
Tx 4
Tx 5
Tx 6
Tx: KF8NY W7GJ RRR
6m EME
Q65-60A
Last Tx: KF8NY W7GJ -25
31/60
Type here to search
00:28
2/25/2021



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