FT8

What's the Big Deal?

Shel KFØUR

WHAT IS FT8?

- A new weak signal digital mode developed by Steve **F**ranke K9AN & Joe **T**aylor K1JT, released in June 2017.
- It uses **8**-FSK modulation
- Joe is a Nobel Prize winner in Physics from Princeton Univ. that developed previous weak signal modes such as JT-9, JT-65, FSK441 (meteor scatter) and more.
- It's 4x faster than JT-65, and sacrifices just a bit of sensitivity.
- You xmit for 15 seconds and then listen for 15 seconds instead of JT-65's 60 seconds. Rinse & Repeat.

WHAT'S THE BIG DEAL?

- In these days of few or no sunspots and very poor condx, FT8 allows you to make QSOs on a band that seems "dead".
- It effectively raises the Maximum Useable Frequency (MUF).
- It's easy to set up and use (and free).
- The QSOs are rather mechanical with a preset, limited sequence of info exchanged.
- But it allows QSOs where otherwise you'd be lonesome.

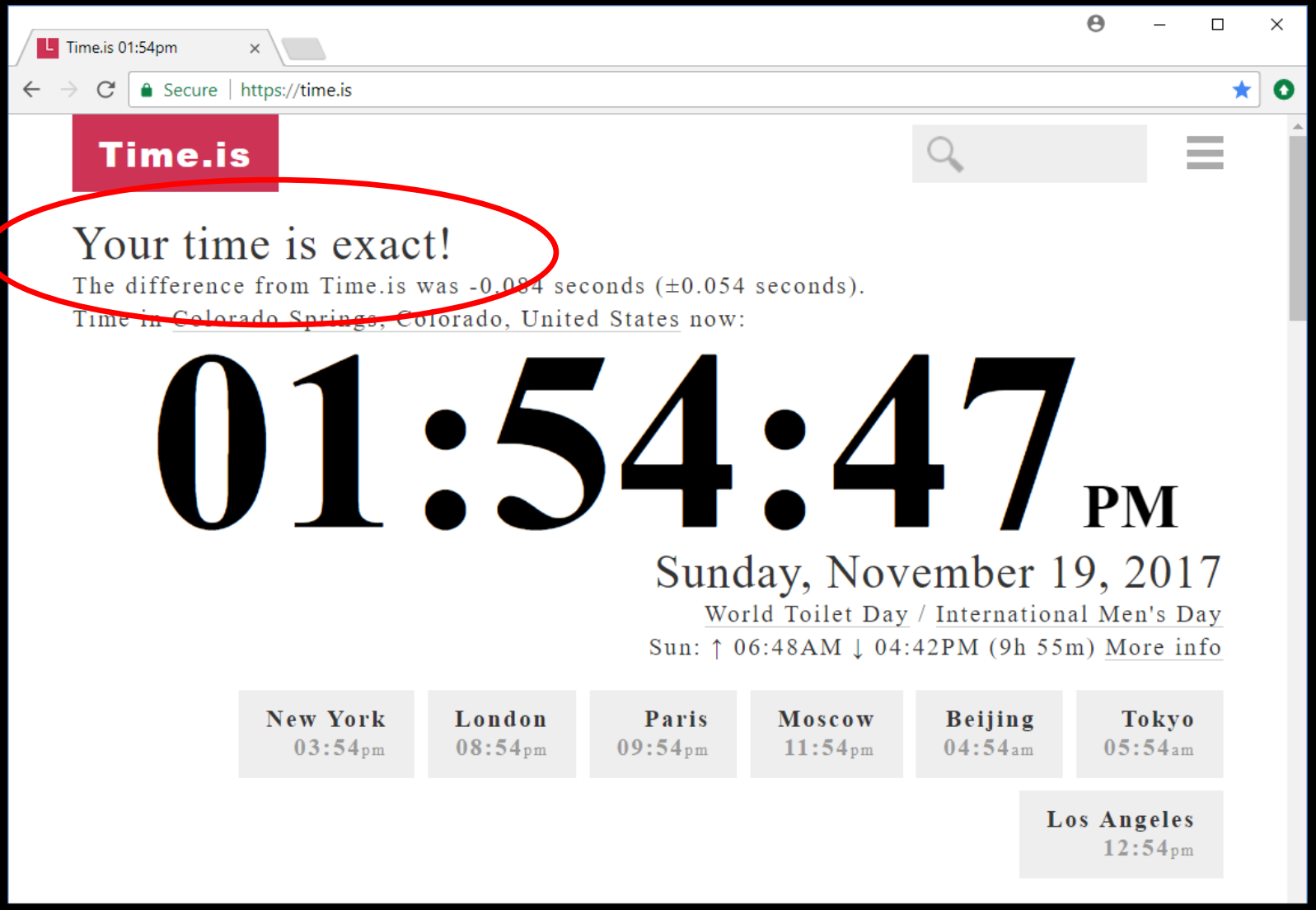
HOW TO SET IT UP & GET GOING

- It runs on Windows, OS-X, and Linux
- Everyone runs the same software: WSJT-X
- Download the software from Joe's Princeton University web site. Just search for WSJT-X. (https://physics.princeton.edu/pulsar/k1jt/wsjtx.html)
- Latest version is 1.9
- There's a Settings screen where you enter your call, grid, radio, and a few other optional things.
- As with all other "digital" modes, it sends and receives audio (USB). So any radio with USB can be used. CAT control is nice, but not required.

GOT THE TIME?

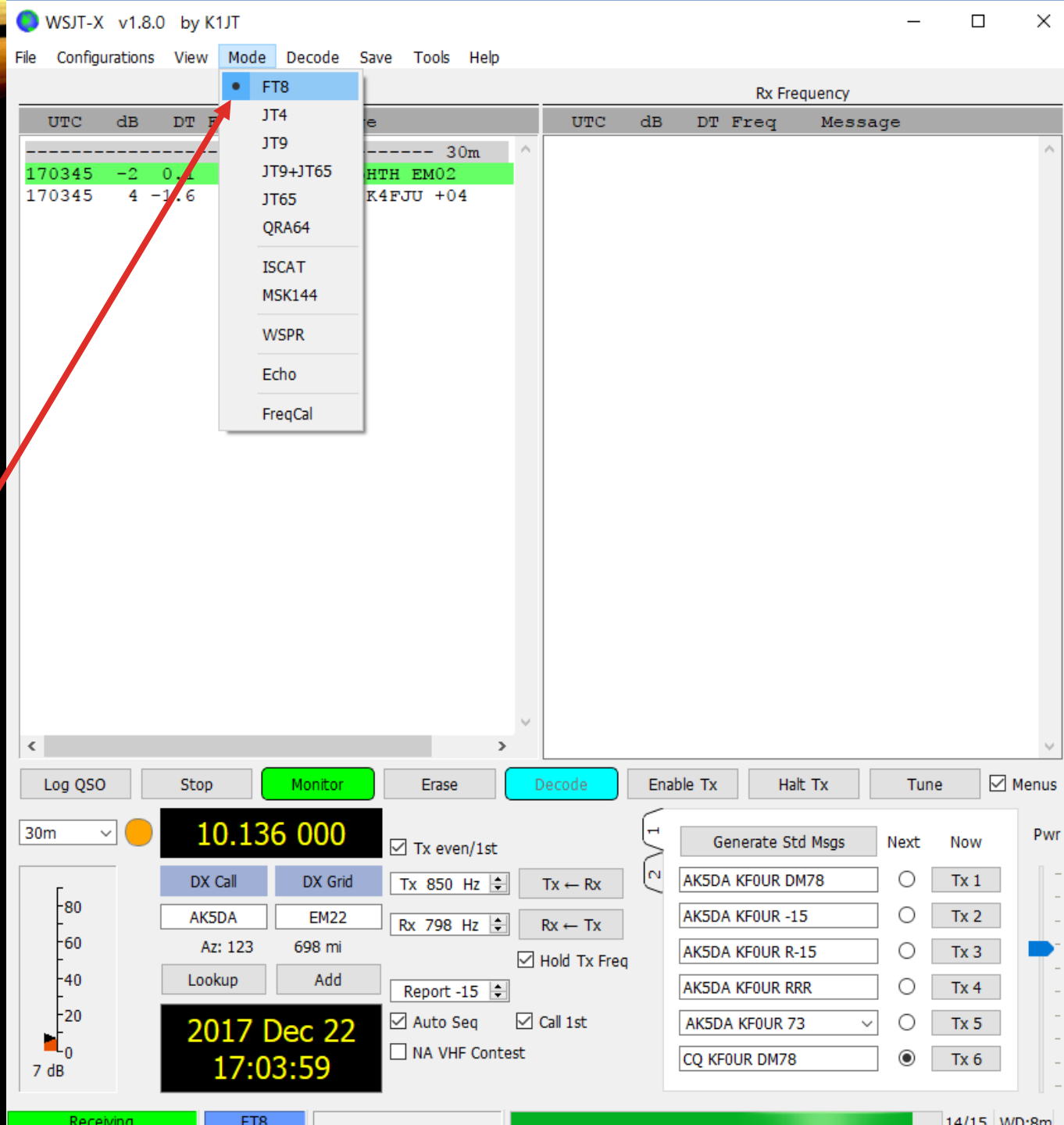
- Time synchronization is very important
- Everyone in the world needs to be sync'd "within a second or so"
- Built-in Windows time sync works to some degree, but it's not the best, even if you sync to NIST standard sites.
- Other free sync apps are recommended. Popular ones include:
  - **Dimension4**
  - **Meinberg**

TIME.IS IS A GOOD PLACE TO CHECK YOUR TIME

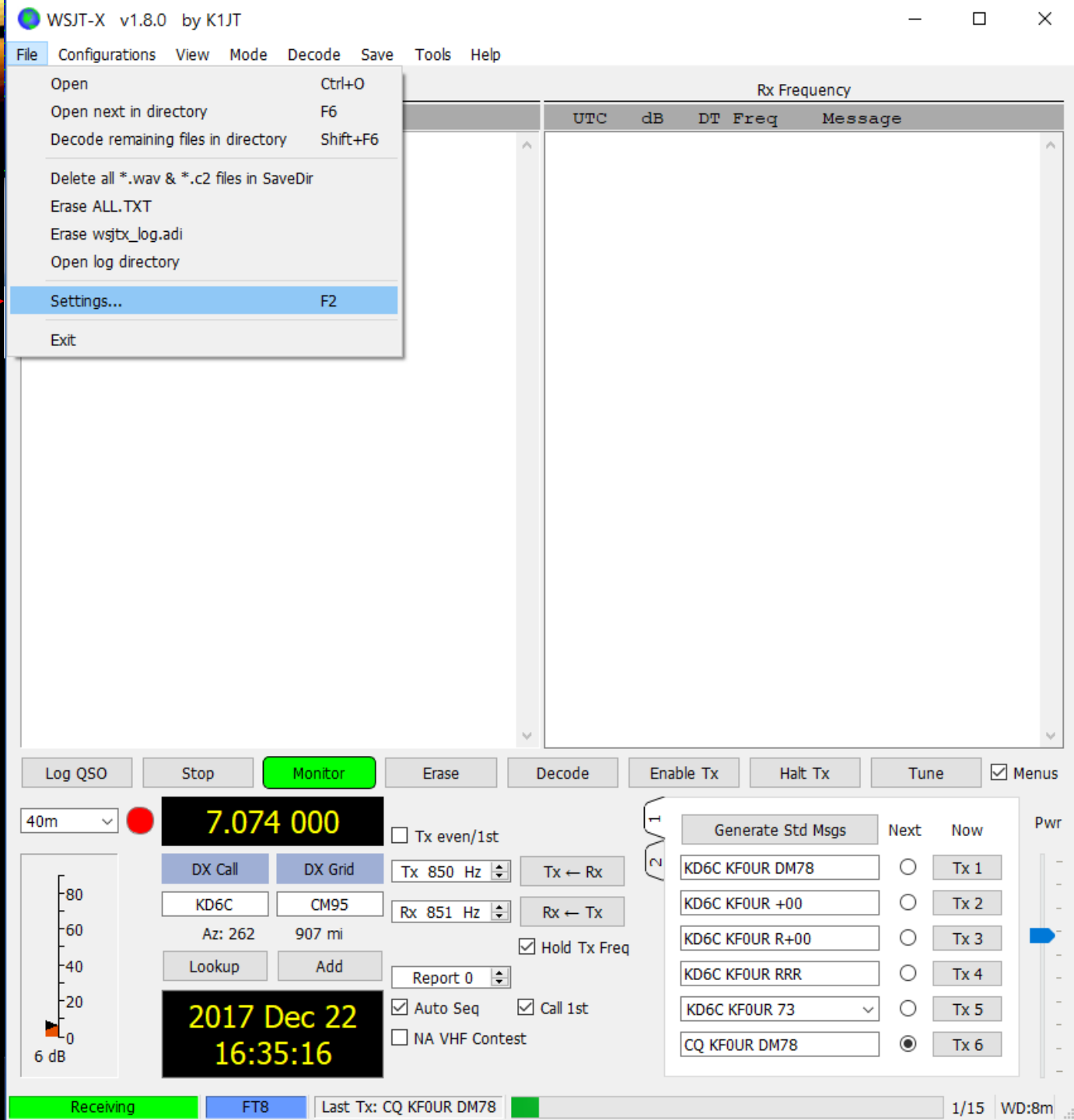


IN LIFE, YOU HAVE TO PICK YOUR FIGHTS.

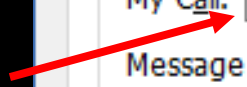
IN WSJT-X, YOU HAVE TO PICK YOUR MODE.



Next Click File / Settings to set up your info.



Enter Your Call & Grid



Settings

General | Radio | Audio | Tx Macros | Reporting | Frequencies | Colors | Advanced

Station Details

My Call: KF0UR My Grid: DM78 IARU Region: All

Message generation for type 2 compound callsign holders: Full call in Tx3

Display

- [x] Blank line between decoding periods
- [x] Display distance in miles
- [x] Tx messages to Rx frequency window
- [ ] Show DXCC entity and worked before status

Font...

Decoded Text Font...

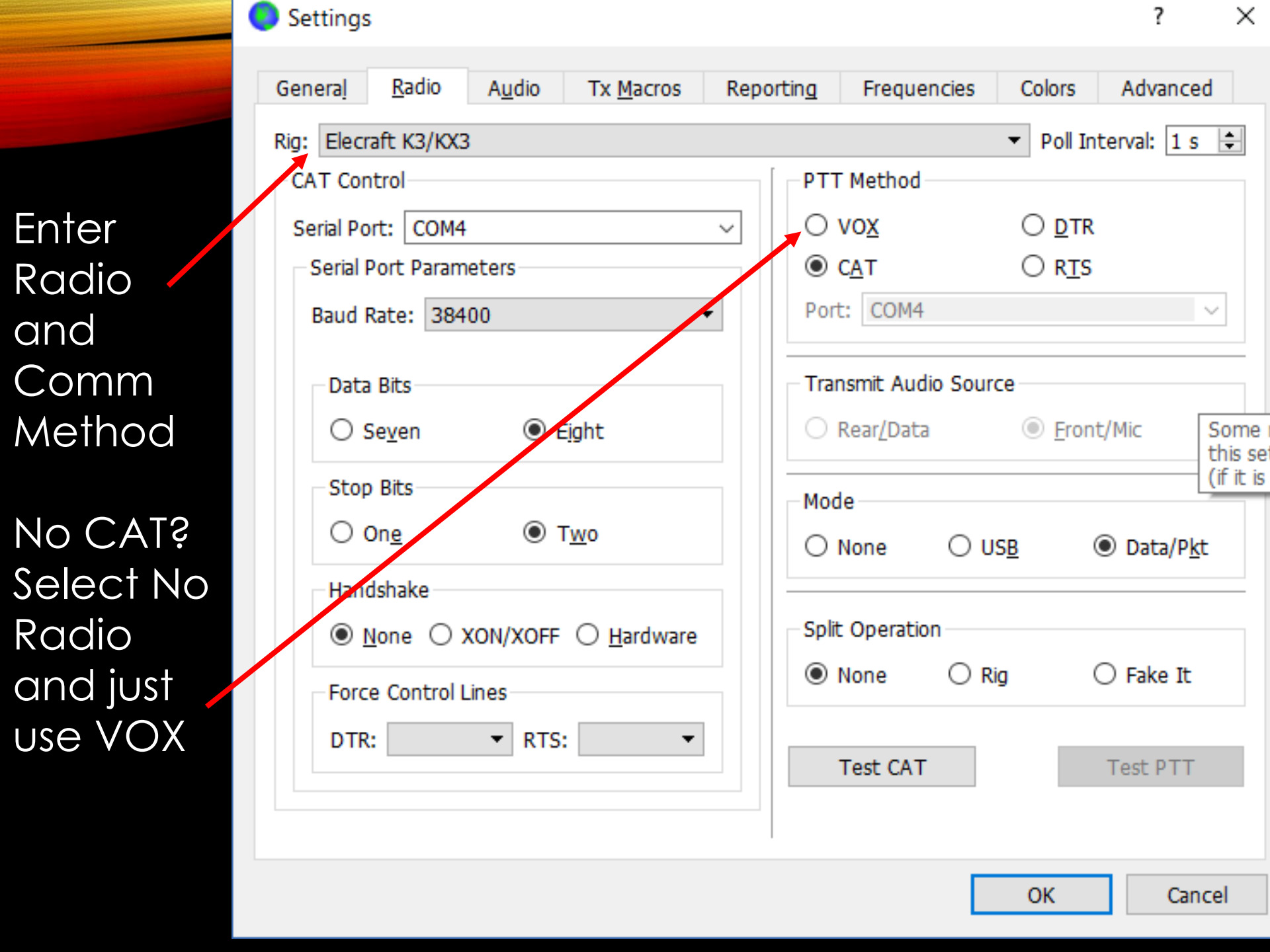
Behavior

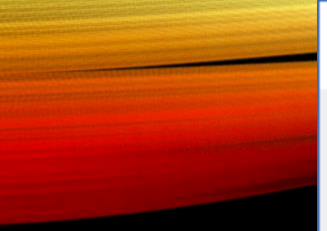
- [ ] Monitor off at startup
- [ ] Monitor returns to last used frequency
- [x] Double-click on call sets Tx enable
- [x] Disable Tx after sending 73
- [ ] CW ID after 73
- [ ] Enable VHF/UHF/Microwave features
- [ ] Allow Tx frequency changes while transmitting
- [ ] Single decode
- [ ] Decode after EME delay

Tx watchdog: 8 minutes

Periodic CW ID Interval: 0

OK Cancel


Enter Radio and Comm Method
No CAT? Select No Radio and just use VOX
Settings
General
Radio
Audio
Tx Macros
Reporting
Frequencies
Colors
Advanced
Rig: Elecraft K3/KX3
Poll Interval: 1 s
CAT Control
Serial Port: COM4
Serial Port Parameters
Baud Rate: 38400
Data Bits
Seven
Eight
Stop Bits
One
Two
Handshake
None
XON/XOFF
Hardware
Force Control Lines
DTR:
RTS:
PTT Method
VOX
DTR
CAT
RTS
Port: COM4
Transmit Audio Source
Rear/Data
Front/Mic
Mode
None
USB
Data/Pkt
Split Operation
None
Rig
Fake It
Test CAT
Test PTT
OK
Cancel



Select Audio In/ Out

Settings

General | Radio | Audio | Tx Macros | Reporting | Frequencies | Colors | Advanced

Soundcard

Input: Line In (IDT High Definition Audio CODEC) Mono

Output: Speakers / Headphones (IDT High Definition Audio CODEC) Mono

Save Directory

Location: C:/Users/Shel/AppData/Local/WSJT-X/save Select

Path to which .WAV files are saved.

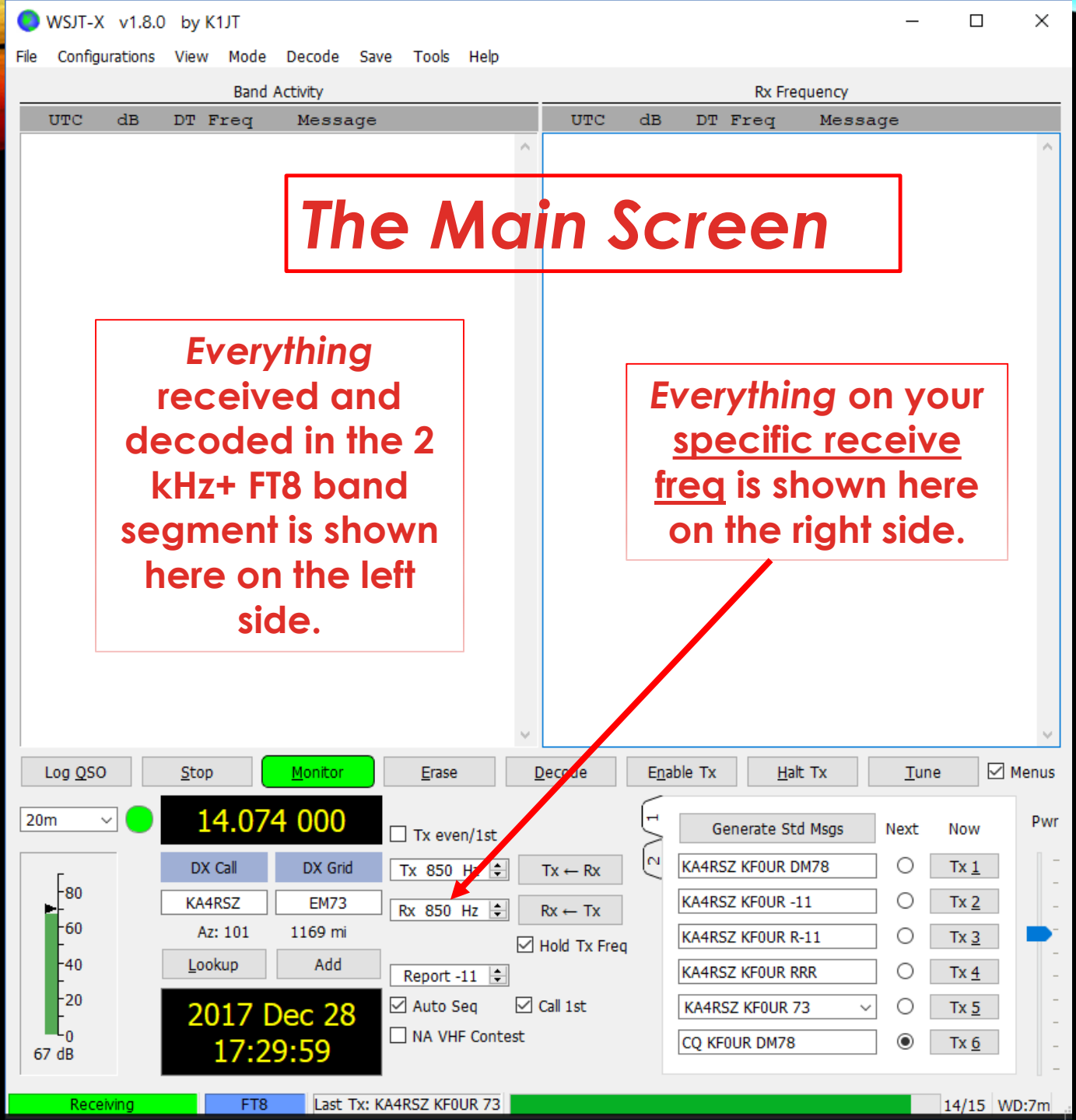
AzEl Directory

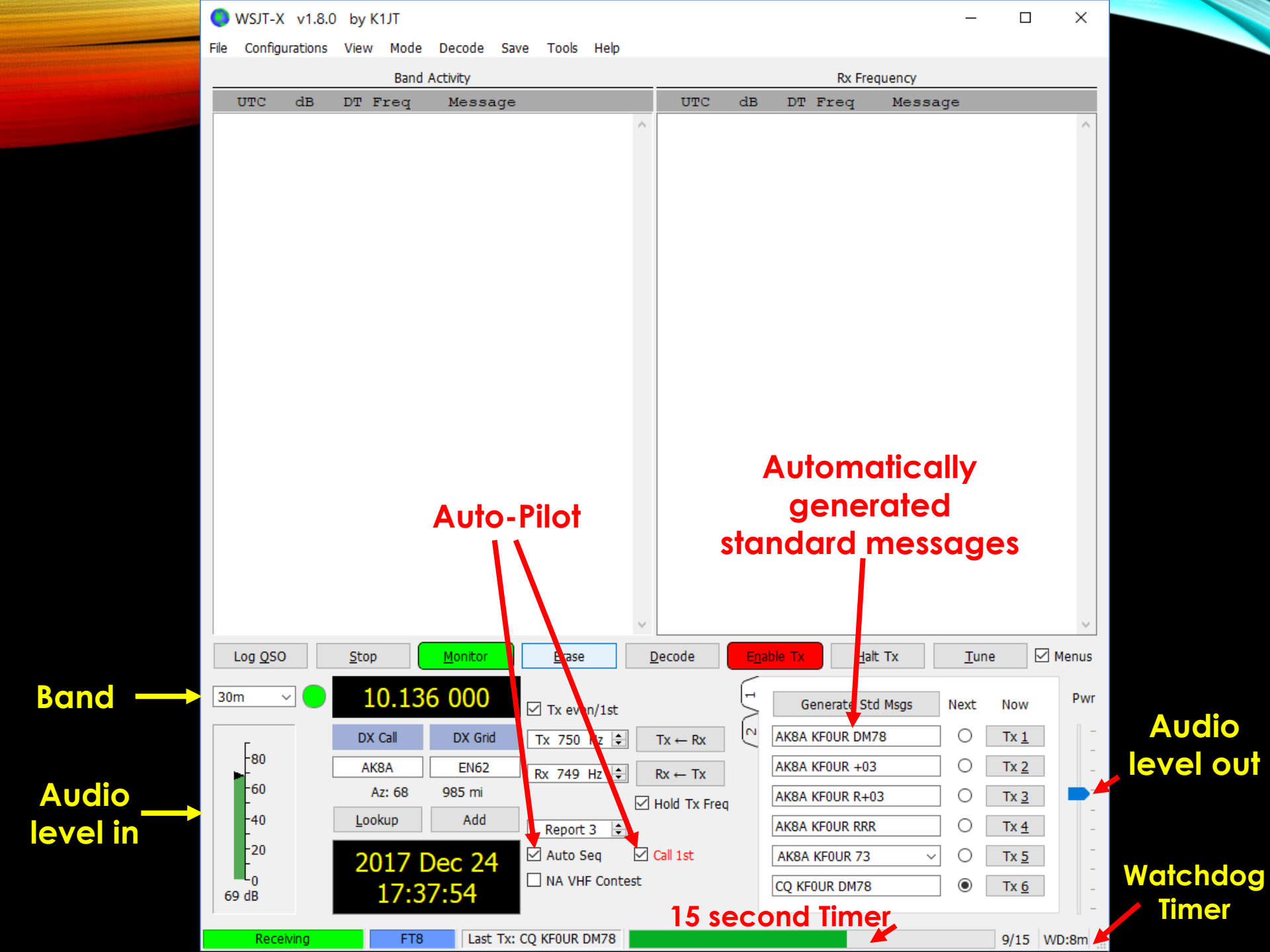
Location: C:/Users/Shel/AppData/Local/WSJT-X Select

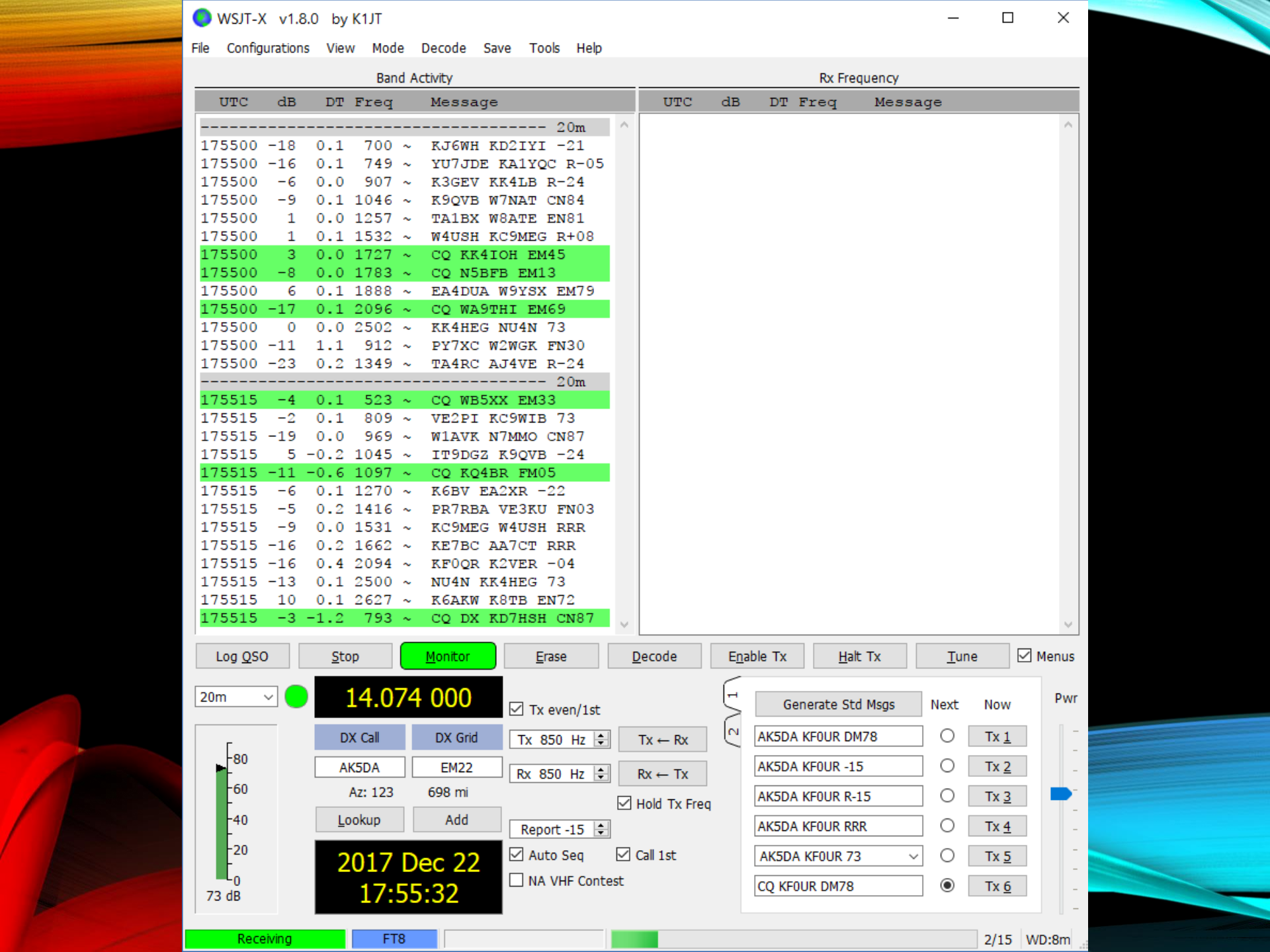
Remember power settings by band

Transmit Tune

OK Cancel


WSJT-X v1.8.0 by K1JT
File Configurations View Mode Decode Save Tools Help
Band Activity
UTC dB DT Freq Message
Rx Frequency
UTC dB DT Freq Message
The Main Screen
Everything received and decoded in the 2 kHz+ FT8 band segment is shown here on the left side.
Everything on your specific receive freq is shown here on the right side.
Log QSO
Stop
Monitor
Erase
Decode
Enable Tx
Halt Tx
Tune
Menus
20m
14.074 000
Tx even/1st
DX Call
DX Grid
Tx 850 Hz
Tx ← Rx
KA4RSZ
EM73
Rx 850 Hz
Rx ← Tx
Az: 101
1169 mi
Hold Tx Freq
Lookup
Add
Report -11
2017 Dec 28
17:29:59
Auto Seq
Call 1st
NA VHF Contest
80
60
40
20
0
67 dB
Generate Std Msgs
Next
Now
Pwr
KA4RSZ KF0UR DM78
KA4RSZ KF0UR -11
KA4RSZ KF0UR R-11
KA4RSZ KF0UR RRR
KA4RSZ KF0UR 73
CQ KF0UR DM78
Tx 1
Tx 2
Tx 3
Tx 4
Tx 5
Tx 6
Receiving
FT8
Last Tx: KA4RSZ KF0UR 73
14/15
WD:7m


WSJT-X v1.8.0 by K1JT
File Configurations View Mode Decode Save Tools Help
Band Activity
UTC dB DT Freq Message
Rx Frequency
UTC dB DT Freq Message
Auto-Pilot
Automatically generated standard messages
Log QSO Stop Monitor Erase Decode Enable Tx Halt Tx Tune Menus
Band
30m
10.136 000
Audio level in
80 60 40 20 0
69 dB
DX Call DX Grid
AK8A EN62
Az: 68 985 mi
Lookup Add
2017 Dec 24 17:37:54
Tx even/1st
Tx 750 Hz
Rx 749 Hz
Tx ← Rx
Rx ← Tx
Hold Tx Freq
Report 3
Auto Seq
Call 1st
NA VHF Contest
Generate Std Msgs
Next
Now
AK8A KF0UR DM78
AK8A KF0UR +03
AK8A KF0UR R+03
AK8A KF0UR RRR
AK8A KF0UR 73
CQ KF0UR DM78
Tx 1
Tx 2
Tx 3
Tx 4
Tx 5
Tx 6
Pwr
Audio level out
Watchdog Timer
15 second Timer
Receiving FT8 Last Tx: CQ KF0UR DM78 9/15 WD:8m


WSJT-X v1.8.0 by K1JT
File Configurations View Mode Decode Save Tools Help
Band Activity
UTC dB DT Freq Message
---------- 20m
175500 -18 0.1 700 ~ KJ6WH KD2IYI -21
175500 -16 0.1 749 ~ YU7JDE KA1YQC R-05
175500 -6 0.0 907 ~ K3GEV KK4LB R-24
175500 -9 0.1 1046 ~ K9QVB W7NAT CN84
175500 1 0.0 1257 ~ TA1BX W8ATE EN81
175500 1 0.1 1532 ~ W4USH KC9MEG R+08
175500 3 0.0 1727 ~ CQ KK4IOH EM45
175500 -8 0.0 1783 ~ CQ N5BFB EM13
175500 6 0.1 1888 ~ EA4DUA W9YSX EM79
175500 -17 0.1 2096 ~ CQ WA9THI EM69
175500 0 0.0 2502 ~ KK4HEG NU4N 73
175500 -11 1.1 912 ~ PY7XC W2WGK FN30
175500 -23 0.2 1349 ~ TA4RC AJ4VE R-24
---------- 20m
175515 -4 0.1 523 ~ CQ WB5XX EM33
175515 -2 0.1 809 ~ VE2PI KC9WIB 73
175515 -19 0.0 969 ~ W1AVK N7MMO CN87
175515 5 -0.2 1045 ~ IT9DGZ K9QVB -24
175515 -11 -0.6 1097 ~ CQ KQ4BR FM05
175515 -6 0.1 1270 ~ K6BV EA2XR -22
175515 -5 0.2 1416 ~ PR7RBA VE3KU FN03
175515 -9 0.0 1531 ~ KC9MEG W4USH RRR
175515 -16 0.2 1662 ~ KE7BC AA7CT RRR
175515 -16 0.4 2094 ~ KF0QR K2VER -04
175515 -13 0.1 2500 ~ NU4N KK4HEG 73
175515 10 0.1 2627 ~ K6AKW K8TB EN72
175515 -3 -1.2 793 ~ CQ DX KD7HSH CN87
Rx Frequency
UTC dB DT Freq Message
Log QSO
Stop
Monitor
Erase
Decode
Enable Tx
Halt Tx
Tune
Menus
20m
14.074 000
Tx even/1st
DX Call
DX Grid
Tx 850 Hz
Tx ← Rx
AK5DA
EM22
Rx 850 Hz
Rx ← Tx
Az: 123
698 mi
Hold Tx Freq
Lookup
Add
Report -15
2017 Dec 22
17:55:32
Auto Seq
Call 1st
NA VHF Contest
80
60
40
20
0
73 dB
Generate Std Msgs
Next
Now
Pwr
AK5DA KF0UR DM78
AK5DA KF0UR -15
AK5DA KF0UR R-15
AK5DA KF0UR RRR
AK5DA KF0UR 73
CQ KF0UR DM78
Tx 1
Tx 2
Tx 3
Tx 4
Tx 5
Tx 6
Receiving
FT8
2/15
WD:8m

A CLOSER LOOK.....

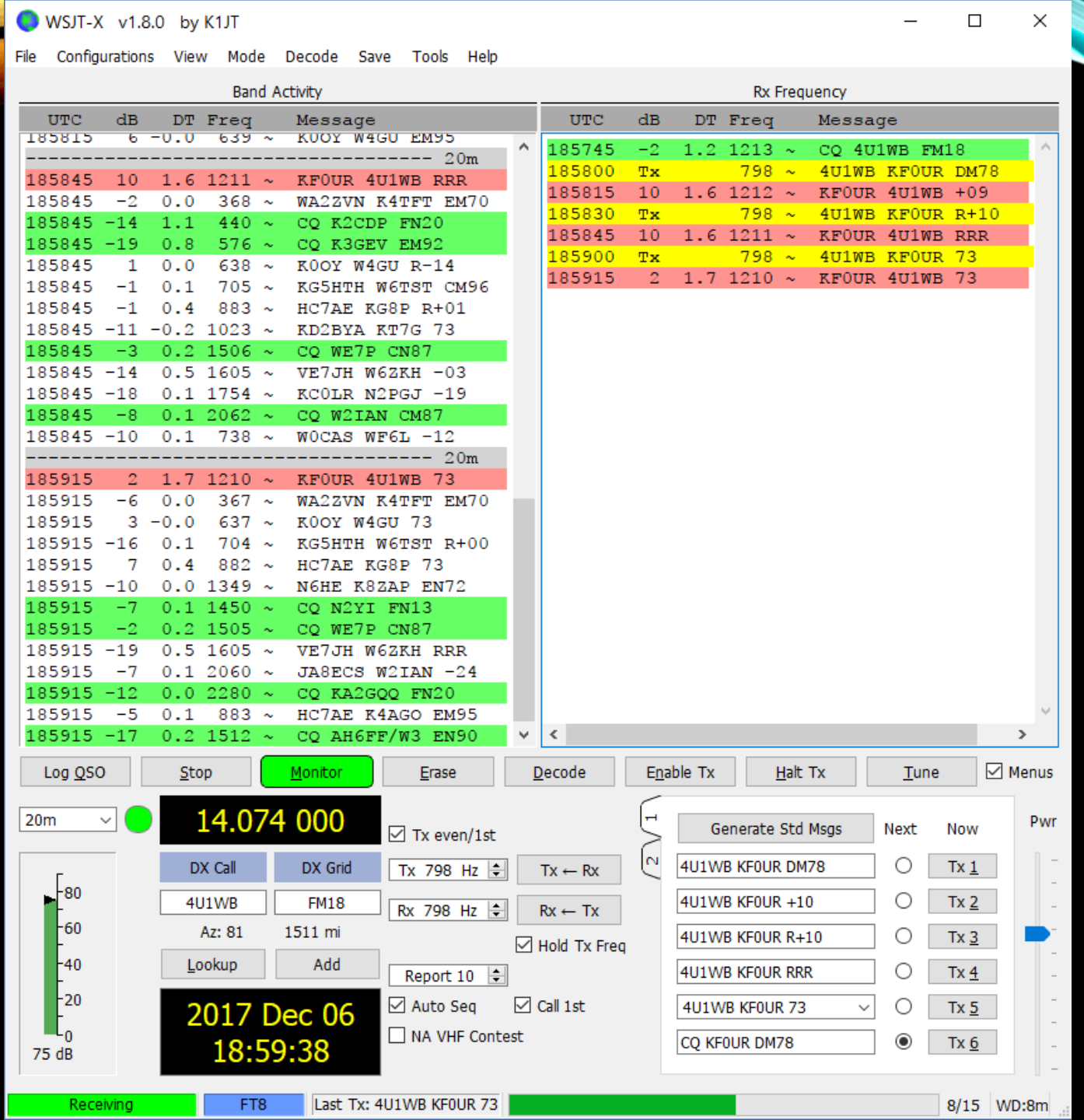
Band Activity

UTC	dB	DT	Freq		Message
----------					---------- 20m
175500	-18	0.1	700	~	KJ6WH KD2IYI -21
175500	-16	0.1	749	~	YU7JDE KA1YQC R-05
175500	-6	0.0	907	~	K3GEV KK4LB R-24
175500	-9	0.1	1046	~	K9QVB W7NAT CN84
175500	1	0.0	1257	~	TA1BX W8ATE EN81
175500	1	0.1	1532	~	W4USH KC9MEG R+08
175500	3	0.0	1727	~	CQ KK4IOH EM45
175500	-8	0.0	1783	~	CQ N5BFB EM13

A typical QSO where I answered someone.

4U1WB called CQ.

I double-clicked on his **green** CQ on the left (off screen). WSJT-X took over from there.



A CLOSER LOOK AT A TYPICAL QSO…..

Rx Frequency

UTC	dB	DT	Freq		Message
185745	-2	1.2	1213	~	CQ 4U1WB FM18
185800	Tx		798	~	4U1WB KF0UR DM78
185815	10	1.6	1212	~	KF0UR 4U1WB +09
185830	Tx		798	~	4U1WB KF0UR R+10
185845	10	1.6	1211	~	KF0UR 4U1WB RRR
185900	Tx		798	~	4U1WB KF0UR 73
185915	2	1.7	1210	~	KF0UR 4U1WB 73

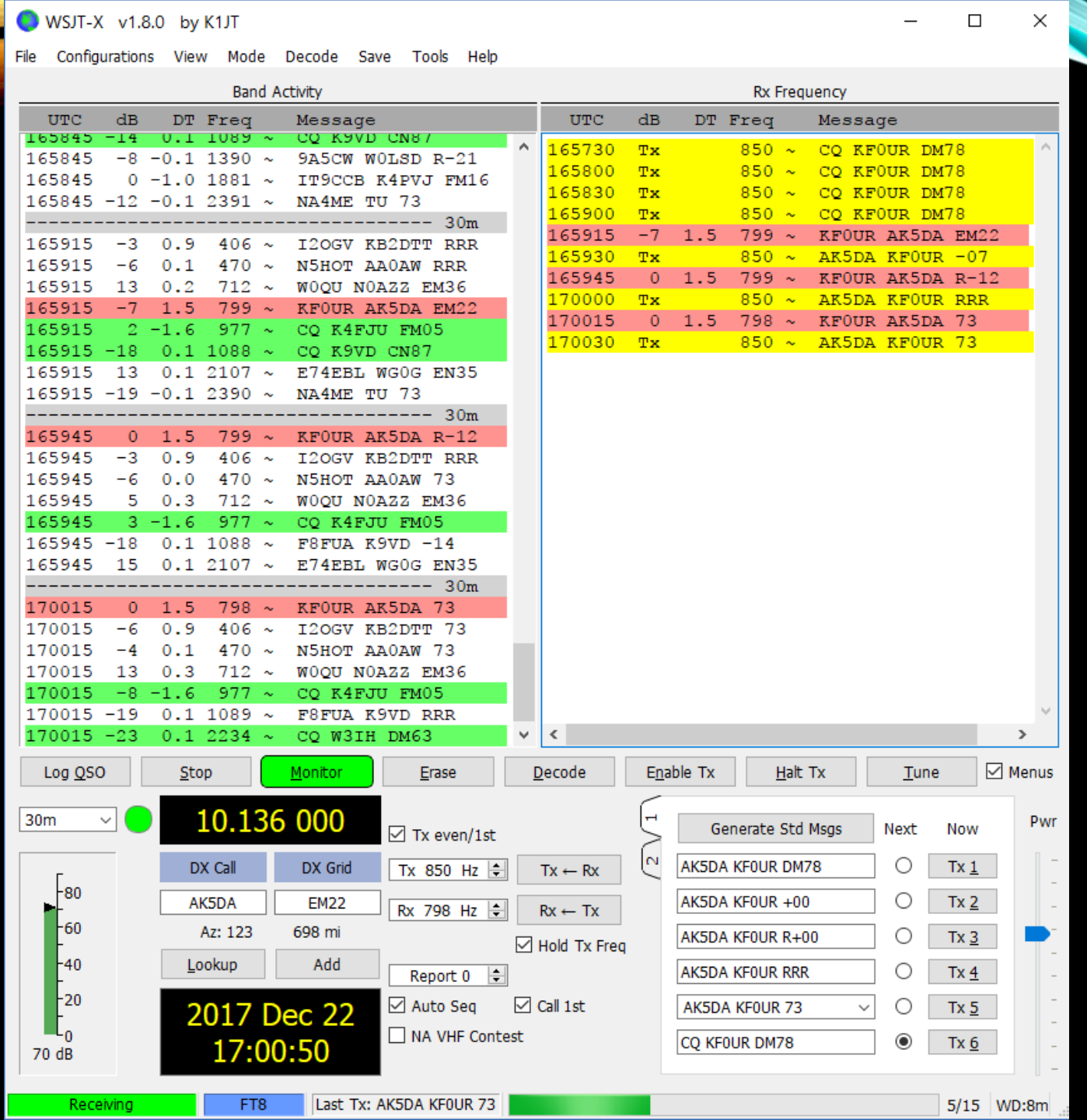
WSJT-X CAN BE ON AUTO-PILOT

- You can opt to have WSJT-X automatically sequence through the QSO exchange.
- It will automatically repeat things if necessary.
- It has a WatchDog timer so it will stop calling CQ after so many minutes
- It contains a log, with ADIF output. You can have it prompt you to log at the end of each QSO. You just have to click OK.

A typical QSO where I called CQ.

AK5DA answered me.

I just logged it at the end.



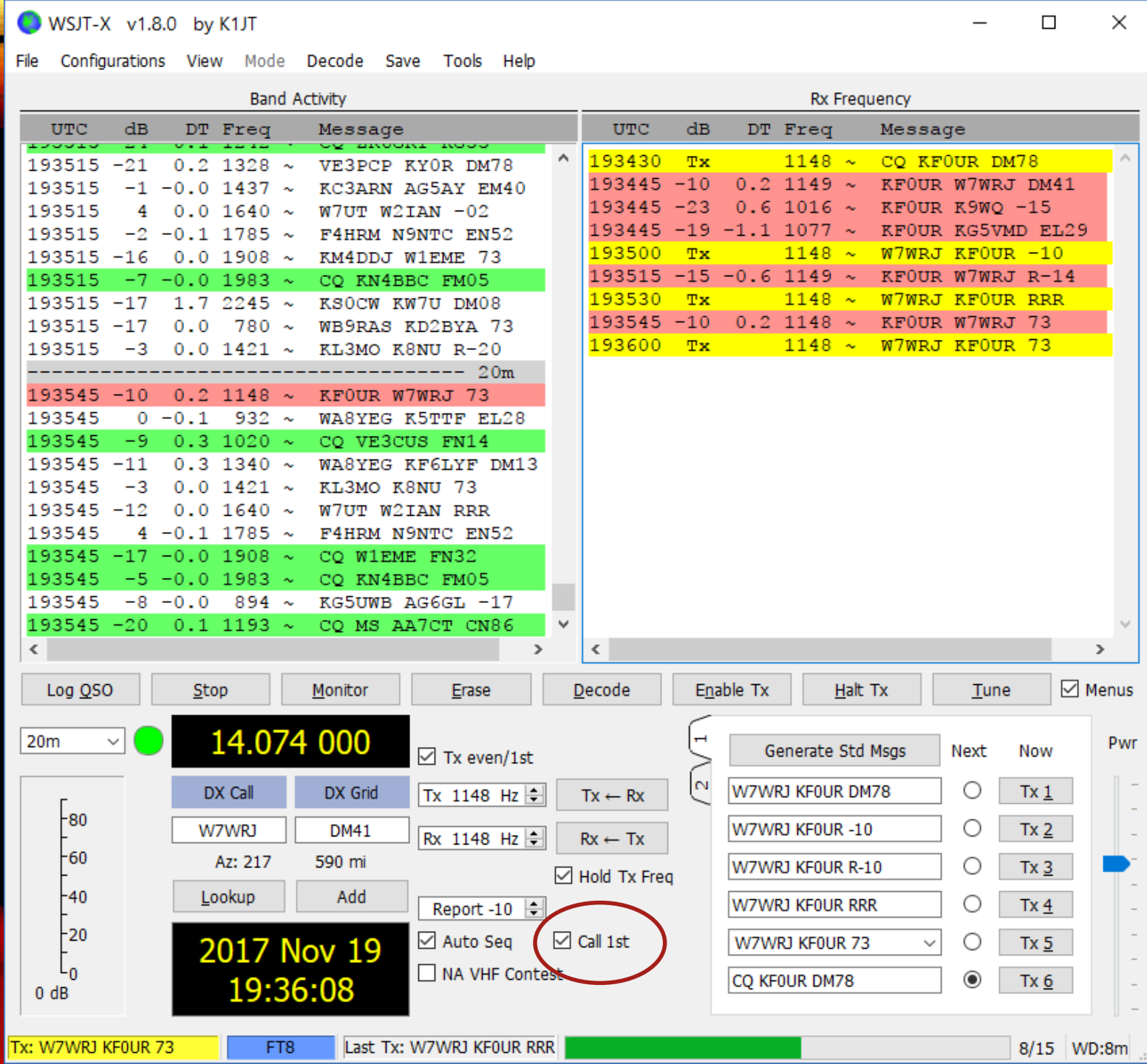
A CLOSER LOOK…..

Rx Frequency

UTC	dB	DT	Freq		Message
165730	Tx		850	~	CQ KF0UR DM78
165800	Tx		850	~	CQ KF0UR DM78
165830	Tx		850	~	CQ KF0UR DM78
165900	Tx		850	~	CQ KF0UR DM78
165915	-7	1.5	799	~	KF0UR AK5DA EM22
165930	Tx		850	~	AK5DA KF0UR -07
165945	0	1.5	799	~	KF0UR AK5DA R-12
170000	Tx		850	~	AK5DA KF0UR RRR
170015	0	1.5	798	~	KF0UR AK5DA 73
170030	Tx		850	~	AK5DA KF0UR 73

Multiple sigs can be decoded at a time

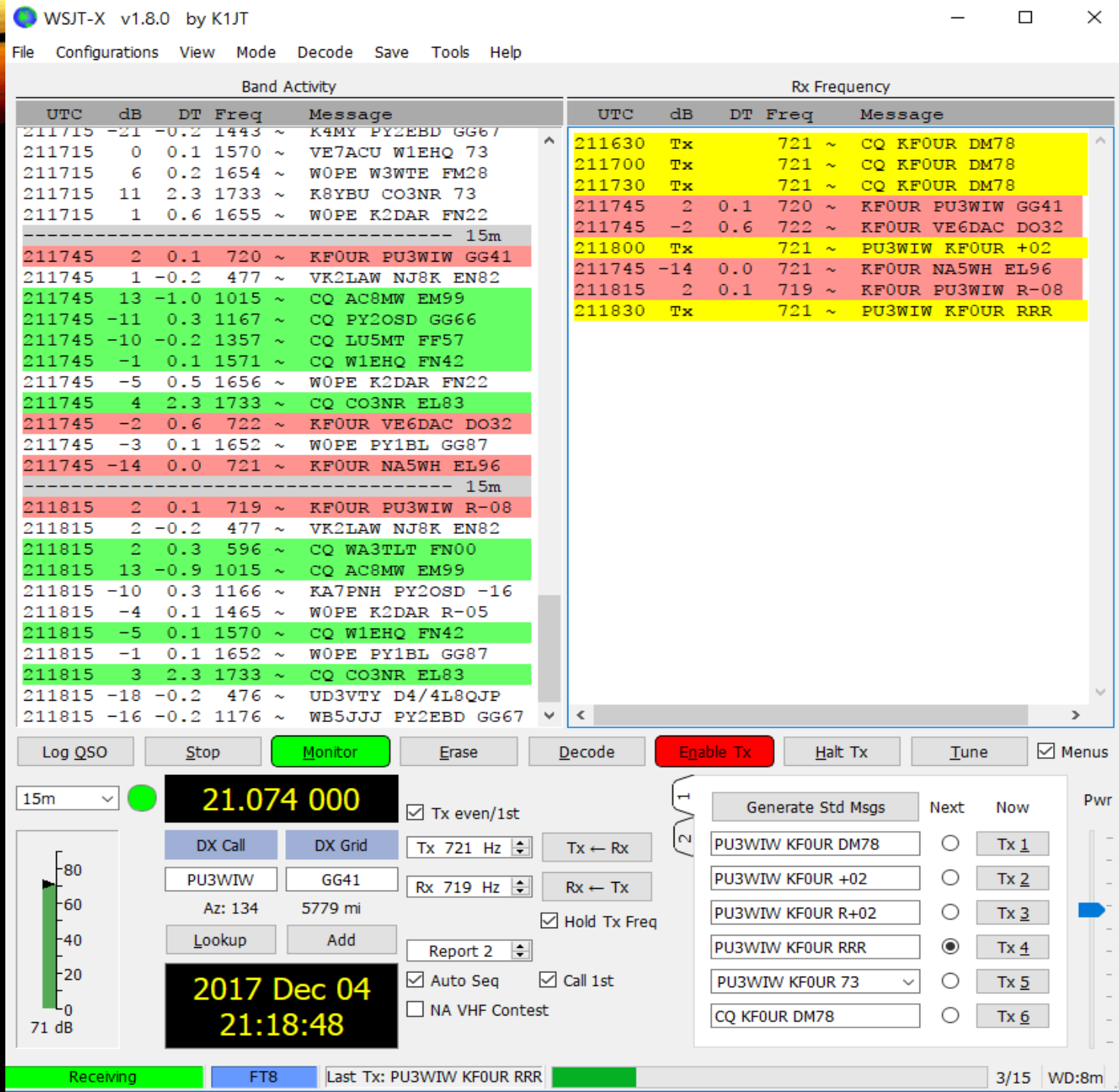
If Call 1st is checked, the first one is replied to (W7WRJ)



A CLOSER LOOK…..

Rx Frequency

UTC	dB	DT	Freq		Message
193430	Tx		1148	~	CQ KF0UR DM78
193445	-10	0.2	1149	~	KF0UR W7WRJ DM41
193445	-23	0.6	1016	~	KF0UR K9WQ -15
193445	-19	-1.1	1077	~	KF0UR KG5VMD EL29
193500	Tx		1148	~	W7WRJ KF0UR -10
193515	-15	-0.6	1149	~	KF0UR W7WRJ R-14
193530	Tx		1148	~	W7WRJ KF0UR RRR
193545	-10	0.2	1148	~	KF0UR W7WRJ 73
193600	Tx		1148	~	W7WRJ KF0UR 73

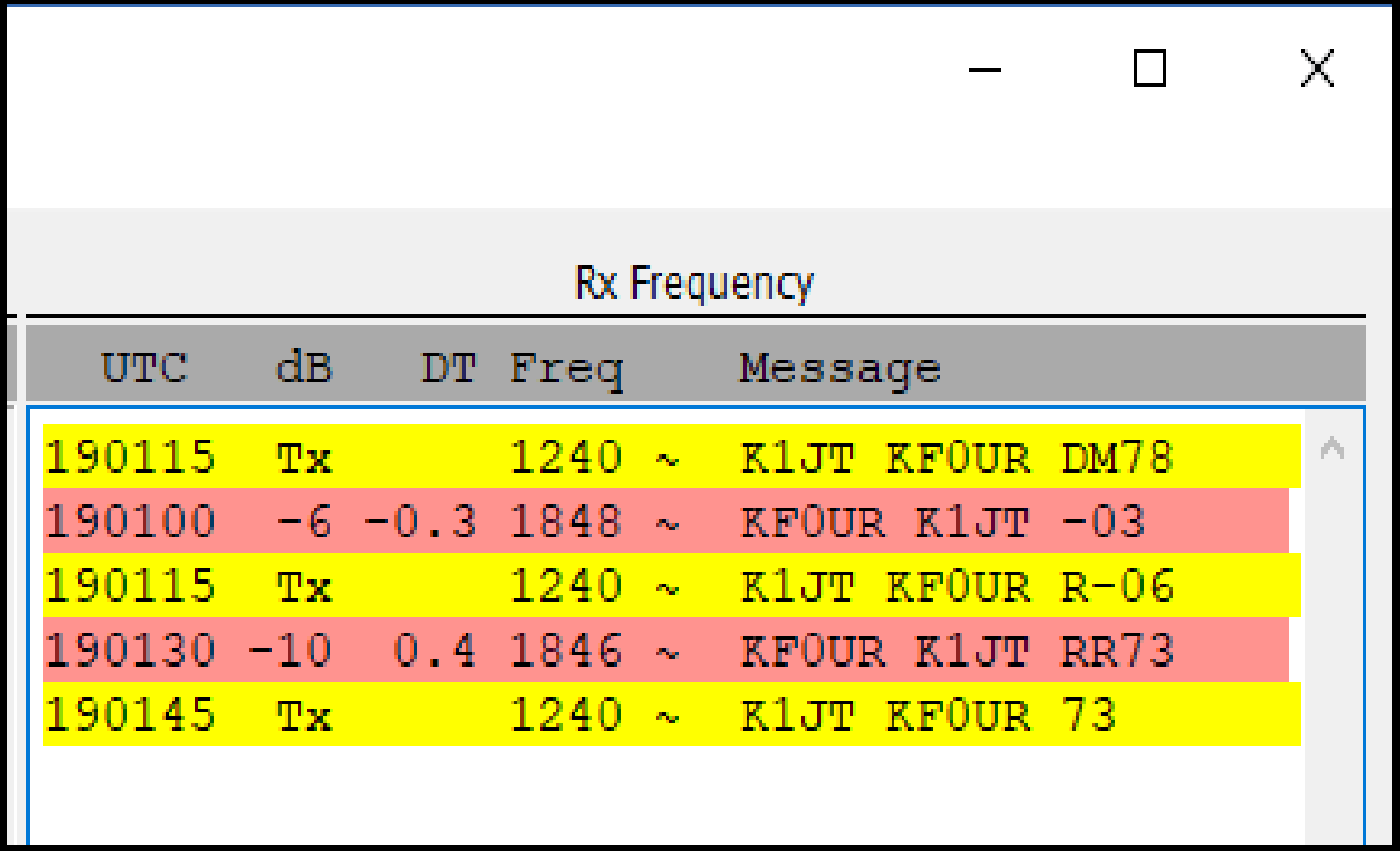

WSJT-X v1.8.0 by K1JT
File Configurations View Mode Decode Save Tools Help
Band Activity
UTC dB DT Freq Message
211715 -21 -0.2 1443 ~ K4MY PY2EBD GG67
211715 0 0.1 1570 ~ VE7ACU W1EHQ 73
211715 6 0.2 1654 ~ W0PE W3WTE FM28
211715 11 2.3 1733 ~ K8YBU CO3NR 73
211715 1 0.6 1655 ~ W0PE K2DAR FN22
15m
211745 2 0.1 720 ~ KF0UR PU3WIW GG41
211745 1 -0.2 477 ~ VK2LAW NJ8K EN82
211745 13 -1.0 1015 ~ CQ AC8MW EM99
211745 -11 0.3 1167 ~ CQ PY2OSD GG66
211745 -10 -0.2 1357 ~ CQ LU5MT FF57
211745 -1 0.1 1571 ~ CQ W1EHQ FN42
211745 -5 0.5 1656 ~ W0PE K2DAR FN22
211745 4 2.3 1733 ~ CQ CO3NR EL83
211745 -2 0.6 722 ~ KF0UR VE6DAC DO32
211745 -3 0.1 1652 ~ W0PE PY1BL GG87
211745 -14 0.0 721 ~ KF0UR NA5WH EL96
15m
211815 2 0.1 719 ~ KF0UR PU3WIW R-08
211815 2 -0.2 477 ~ VK2LAW NJ8K EN82
211815 2 0.3 596 ~ CQ WA3TLT FN00
211815 13 -0.9 1015 ~ CQ AC8MW EM99
211815 -10 0.3 1166 ~ KA7PNH PY2OSD -16
211815 -4 0.1 1465 ~ W0PE K2DAR R-05
211815 -5 0.1 1570 ~ CQ W1EHQ FN42
211815 -1 0.1 1652 ~ W0PE PY1BL GG87
211815 3 2.3 1733 ~ CQ CO3NR EL83
211815 -18 -0.2 476 ~ UD3VTY D4/4L8QJP
211815 -16 -0.2 1176 ~ WB5JJJ PY2EBD GG67
Rx Frequency
UTC dB DT Freq Message
211630 Tx 721 ~ CQ KF0UR DM78
211700 Tx 721 ~ CQ KF0UR DM78
211730 Tx 721 ~ CQ KF0UR DM78
211745 2 0.1 720 ~ KF0UR PU3WIW GG41
211745 -2 0.6 722 ~ KF0UR VE6DAC DO32
211800 Tx 721 ~ PU3WIW KF0UR +02
211745 -14 0.0 721 ~ KF0UR NA5WH EL96
211815 2 0.1 719 ~ KF0UR PU3WIW R-08
211830 Tx 721 ~ PU3WIW KF0UR RRR
Log QSO
Stop
Monitor
Erase
Decode
Enable Tx
Halt Tx
Tune
Menus
15m
21.074 000
Tx even/1st
DX Call
DX Grid
PU3WIW
GG41
Az: 134
5779 mi
Lookup
Add
Tx 721 Hz
Rx 719 Hz
Tx ← Rx
Rx ← Tx
Hold Tx Freq
Report 2
Auto Seq
Call 1st
NA VHF Contest
2017 Dec 04
21:18:48
80
60
40
20
0
71 dB
Generate Std Msgs
Next
Now
Pwr
PU3WIW KF0UR DM78
PU3WIW KF0UR +02
PU3WIW KF0UR R+02
PU3WIW KF0UR RRR
PU3WIW KF0UR 73
CQ KF0UR DM78
Tx 1
Tx 2
Tx 3
Tx 4
Tx 5
Tx 6
Receiving
FT8
Last Tx: PU3WIW KF0UR RRR
3/15
WD:8m

A CLOSER LOOK…..

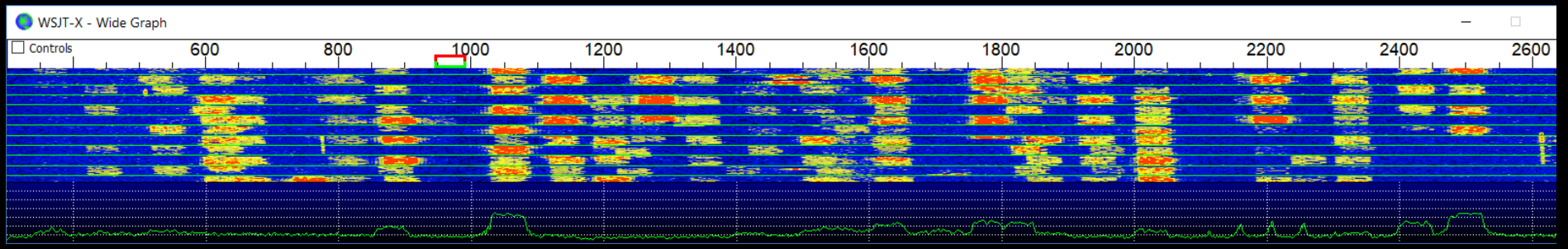
Rx Frequency

UTC	dB	DT	Freq		Message
211630	Tx		721	~	CQ KF0UR DM78
211700	Tx		721	~	CQ KF0UR DM78
211730	Tx		721	~	CQ KF0UR DM78
211745	2	0.1	720	~	KF0UR PU3WIW GG41
211745	-2	0.6	722	~	KF0UR VE6DAC DO32
211800	Tx		721	~	PU3WIW KF0UR +02
211745	-14	0.0	721	~	KF0UR NA5WH EL96
211815	2	0.1	719	~	KF0UR PU3WIW R-08
211830	Tx		721	~	PU3WIW KF0UR RRR

A CLOSER LOOK…..

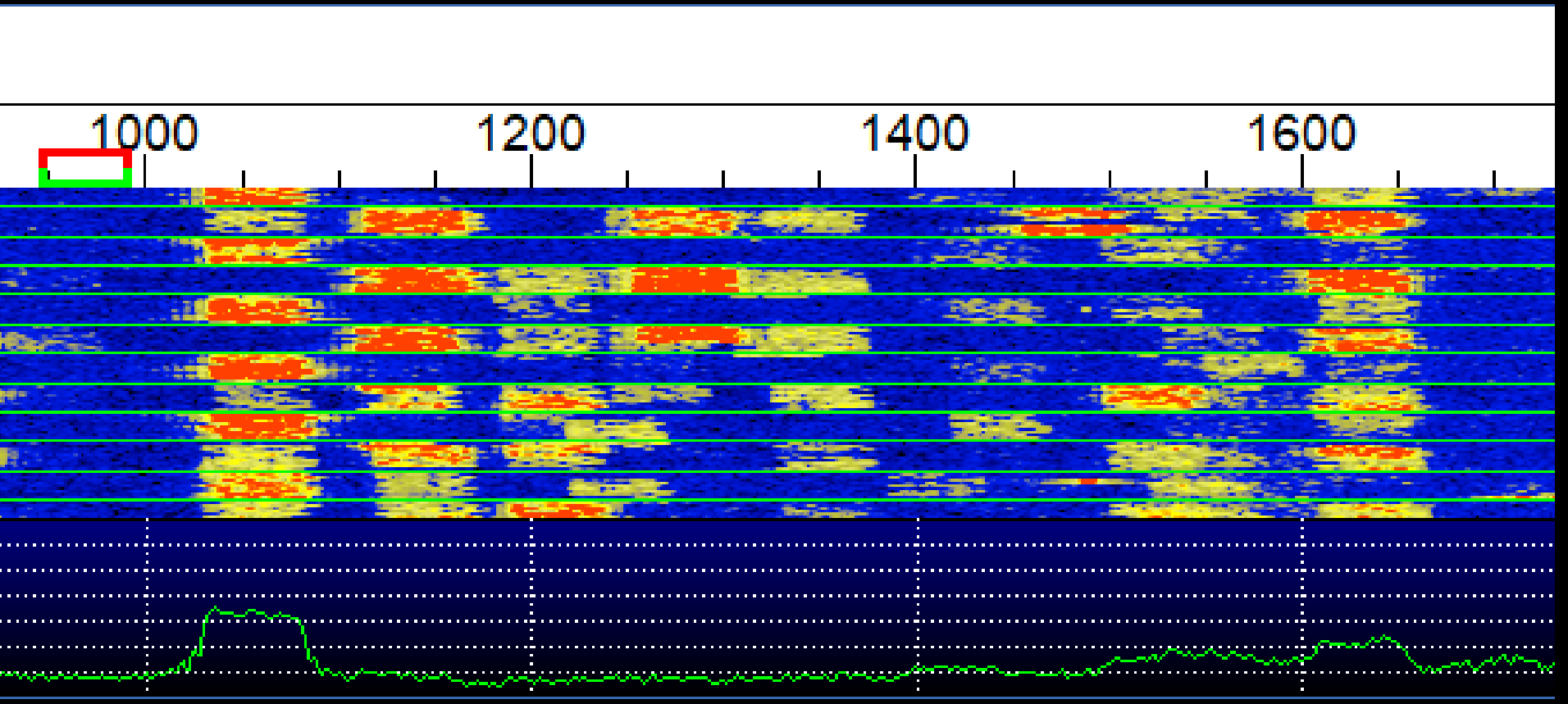


WSJT-X INCLUDES A SPECTRAL DISPLAY



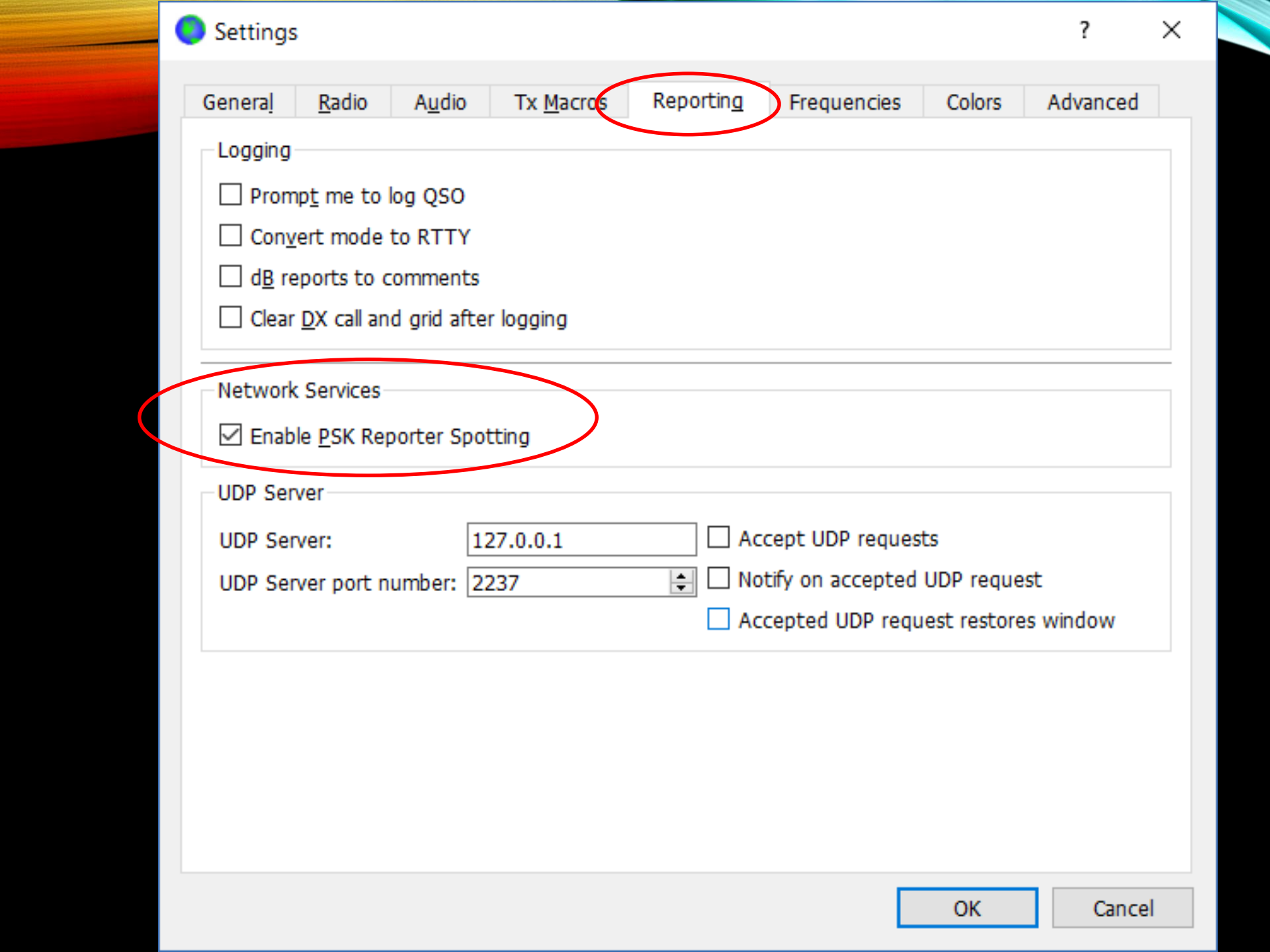
- Like WX Radar, strong sigs are bright red, weak ones are faded yellow.
- You may not see really weak ones at all
- The bandwidth of each sig is 50 Hz.
- My Xmit freq is the **red** goal post (~950 Hz above).
- My Receive freq is the **green** goal post (also ~950 Hz)

WSJT-X SPECTRAL DISPLAY

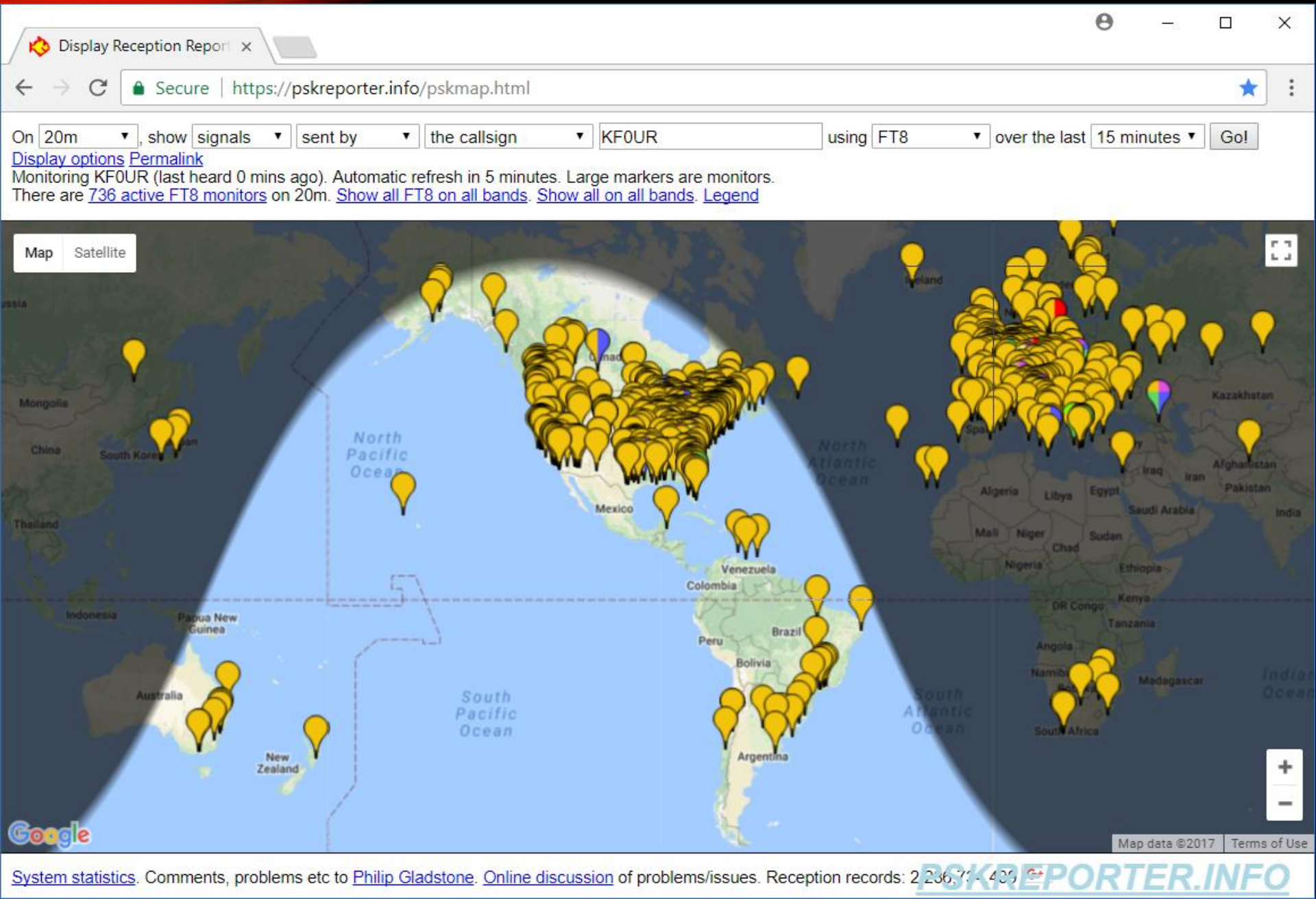


PSKREPORTER.INFO

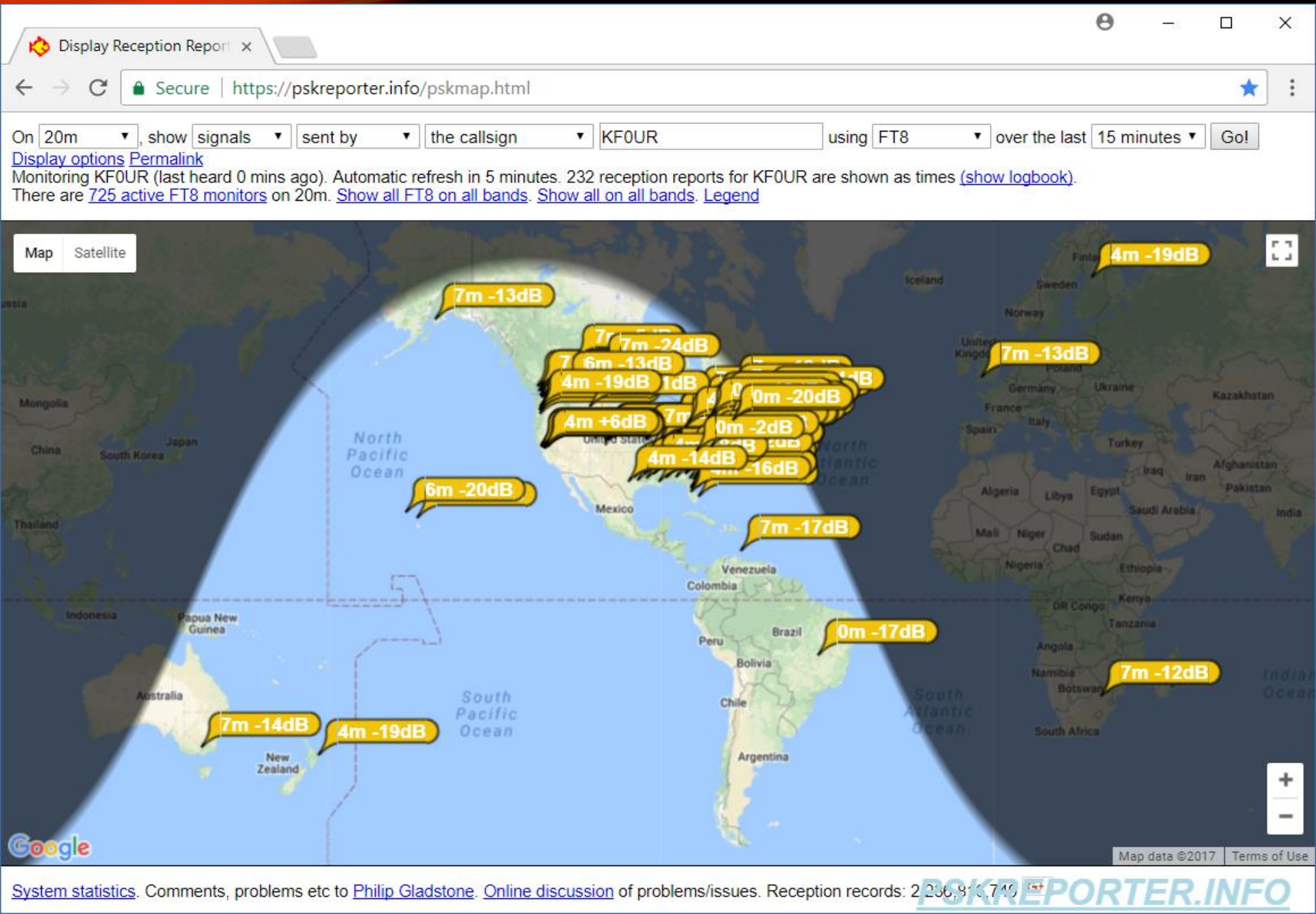
- PSKReporter.info, as the URL implies, is not new to FT8
- Stations anywhere, if connected to the internet, can optionally report what they hear to PSK Reporter.
- It's a world-wide skimmer! ***Very COOL!***
- It'll show you where you are heard and how strong.
- You can report what you hear just by clicking a checkbox in Settings.


Settings
General
Radio
Audio
Tx Macros
Reporting
Frequencies
Colors
Advanced
Logging
Prompt me to log QSO
Convert mode to RTTY
dB reports to comments
Clear DX call and grid after logging
Network Services
Enable PSK Reporter Spotting
UDP Server
UDP Server:
127.0.0.1
UDP Server port number:
2237
Accept UDP requests
Notify on accepted UDP request
Accepted UDP request restores window
OK
Cancel

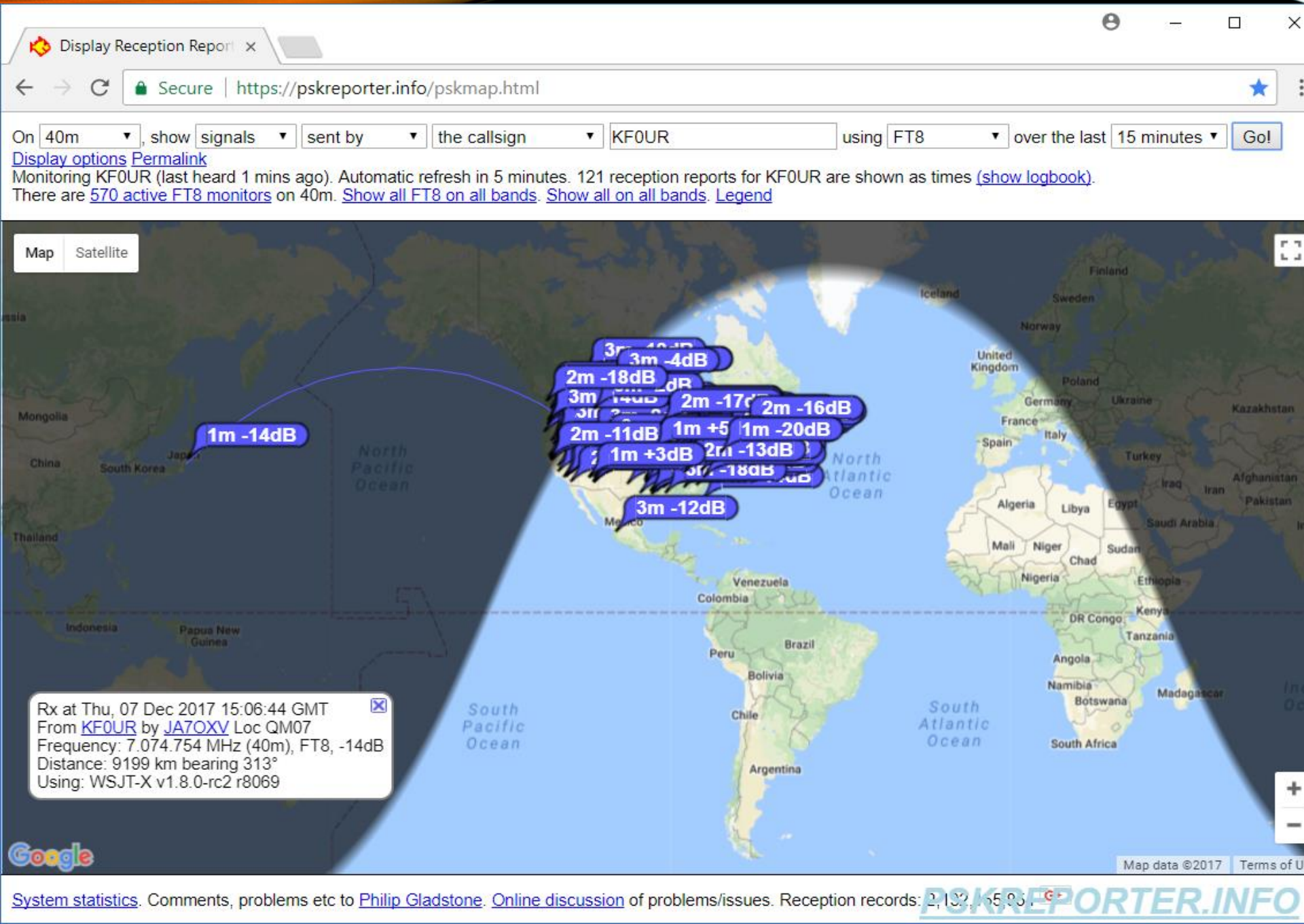
PSKReporter.info



PSKREPORTER.INFO



PSKREPORTER.INFO



PSKREPORTER.INFO

PSKREPORTER.INFO

Display Reception Report

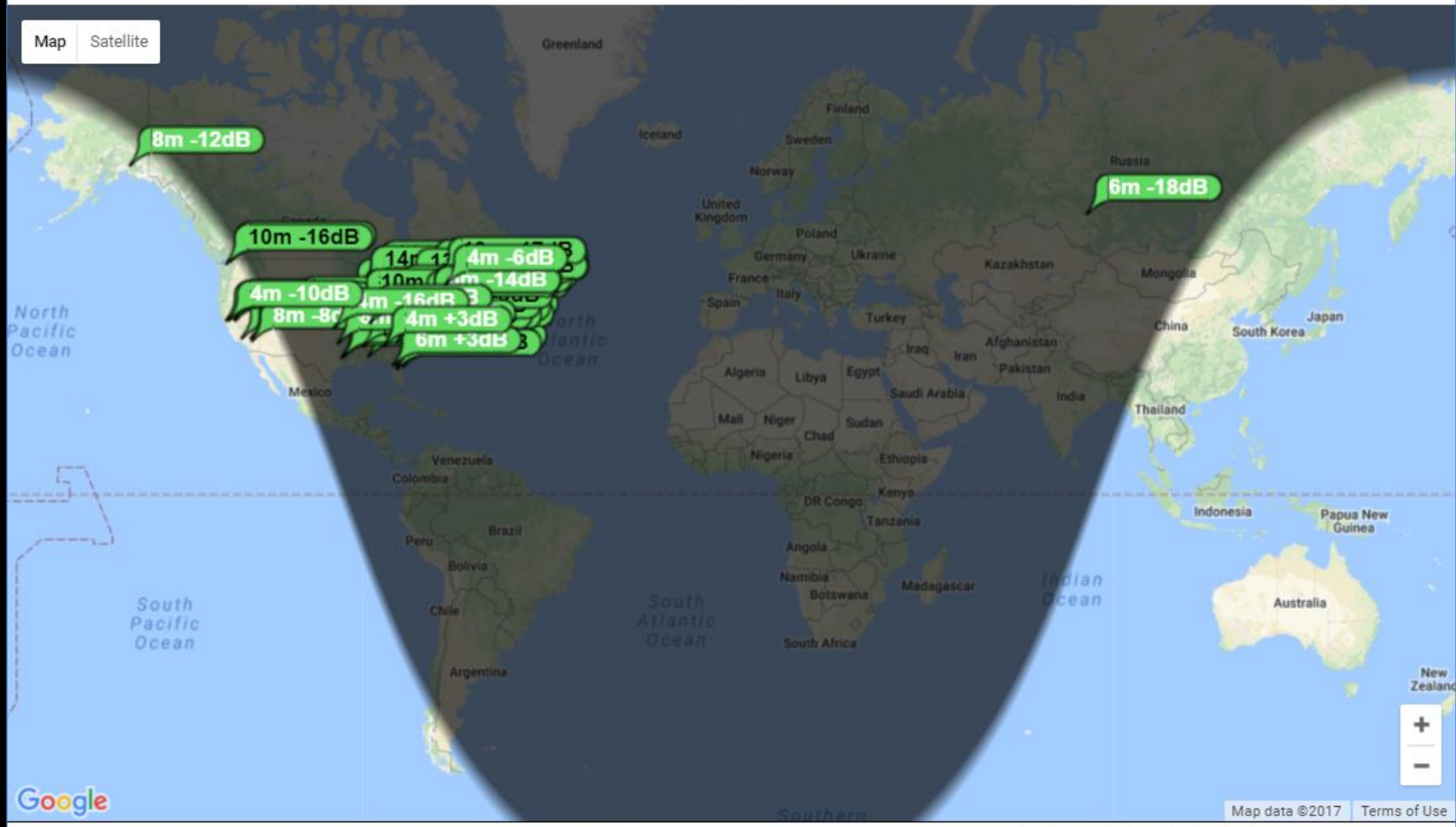
Secure | https://pskreporter.info/pskmap.html

On 30m, show signals sent by the callsign KF0UR using FT8 over the last 15 minutes Go!

Display options Permalink

Monitoring KF0UR (last heard 4 mins ago). Automatic refresh in 2 minutes. 81 reception reports for KF0UR are shown as times (show logbook).

There are 196 active FT8 monitors on 30m. Show all FT8 on all bands. Show all on all bands. Legend



System statistics. Comments, problems etc to Philip Gladstone. Online discussion of problems/issues. Reception records: 2,042,140,505

PSKREPORTER.INFO

Let's Take a Real-Time Look!

Colorado Springs, Colorado, USA

Elevation
6850 Feet