SEAPAC®

FT8 Digital Mode
DX Fun with Modest Equipment

David Haworth

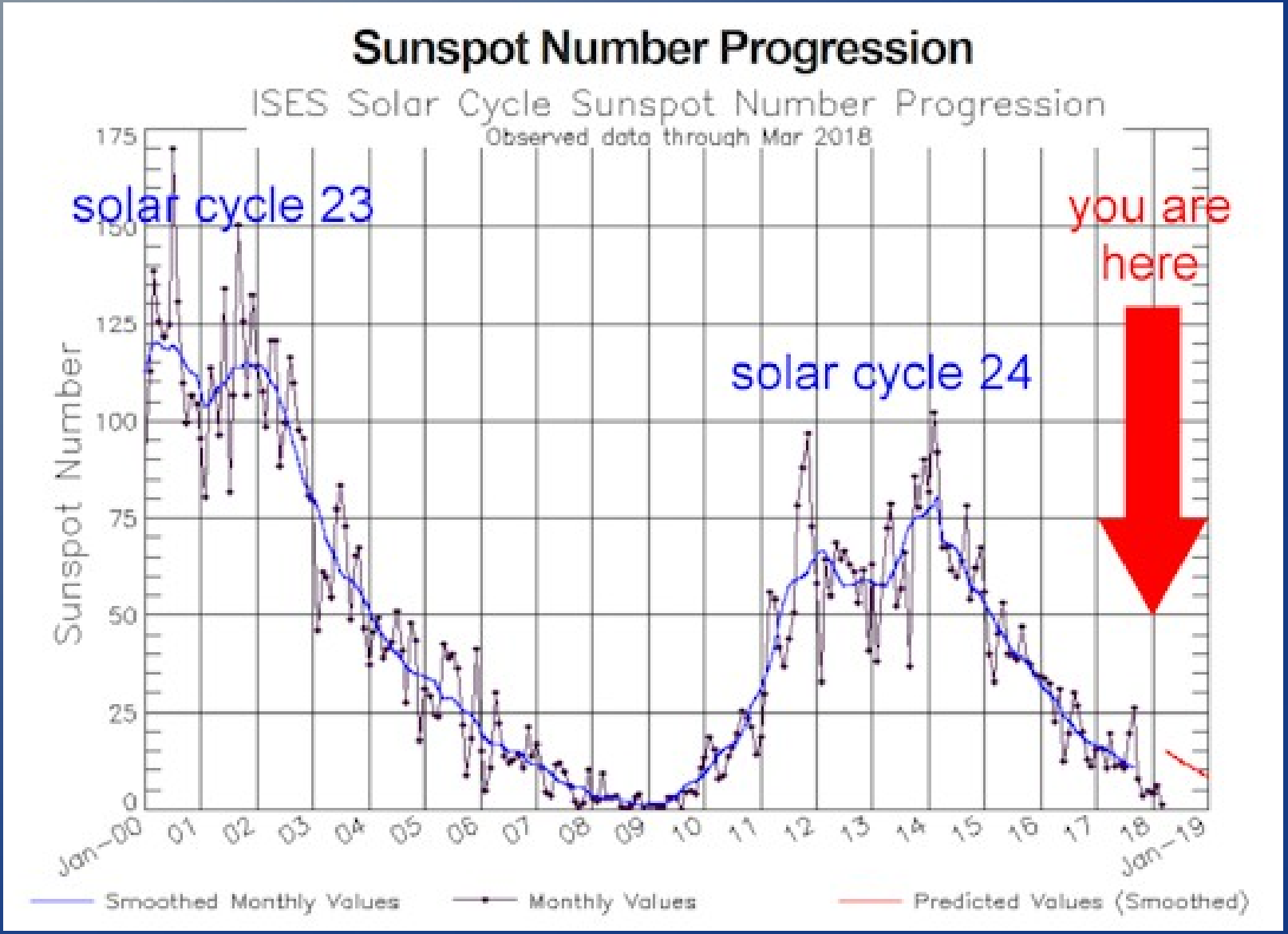
Agenda

- Introduction
- Software
- Setup
- Operation
- Email lists for getting help
- More FT8 information

Who has used FT8?

Sunspots Vanishing Faster than Expected

https://spaceweatherarchive.com/2018/05/01/sunspots-vanishing-faster-than-expected/



Joe Taylor K1JT

- Taylor would agree. As he sees it, FT8 won't replace modes such as CW or SSB. "Nevertheless, it's clear that — at least in the short term — many hams enjoy making rapid-fire minimal QSOs with other hams, all over the world, **using modest ham equipment**," he said. "For this purpose, FT8 shines."

http://www.arrl.org/news/new-digital-modes-changing-complexion-of-bands-and-perhaps-of-ham-radio

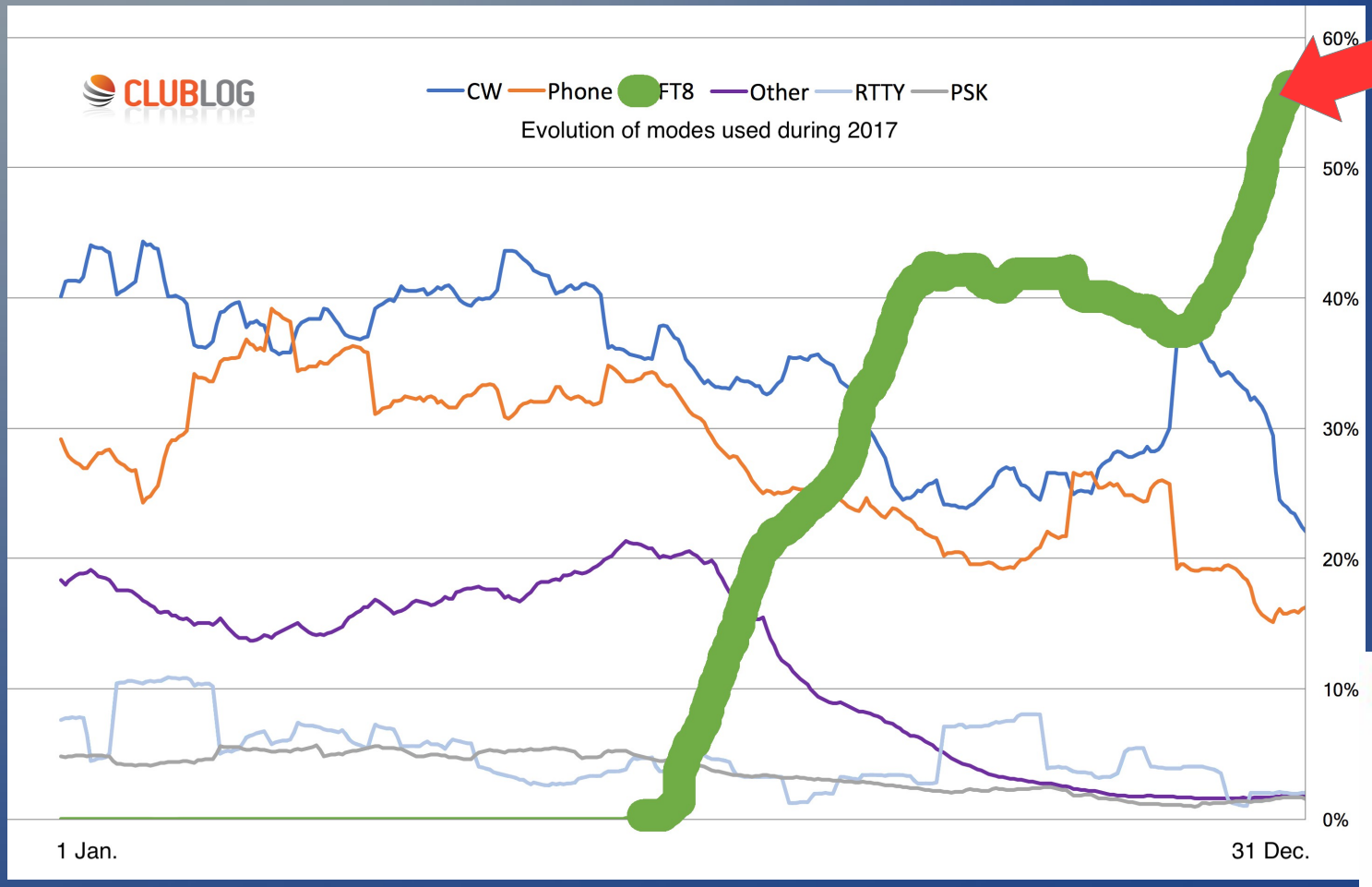
Joe Taylor K1JT

- “It is allowing people who have **smaller stations** the opportunity to get on and use their radios and a computer to **make contacts they never would have been able to make**. This is great for ham radio!”

http://www.arrl.org/news/new-digital-modes-changing-complexion-of-bands-and-perhaps-of-ham-radio

2017 Club Log Modes

https://g7vjr.org/2018/01/proportion-of-modes-used-on-the-air-2017-update/



Weak-Signal S/N Limits

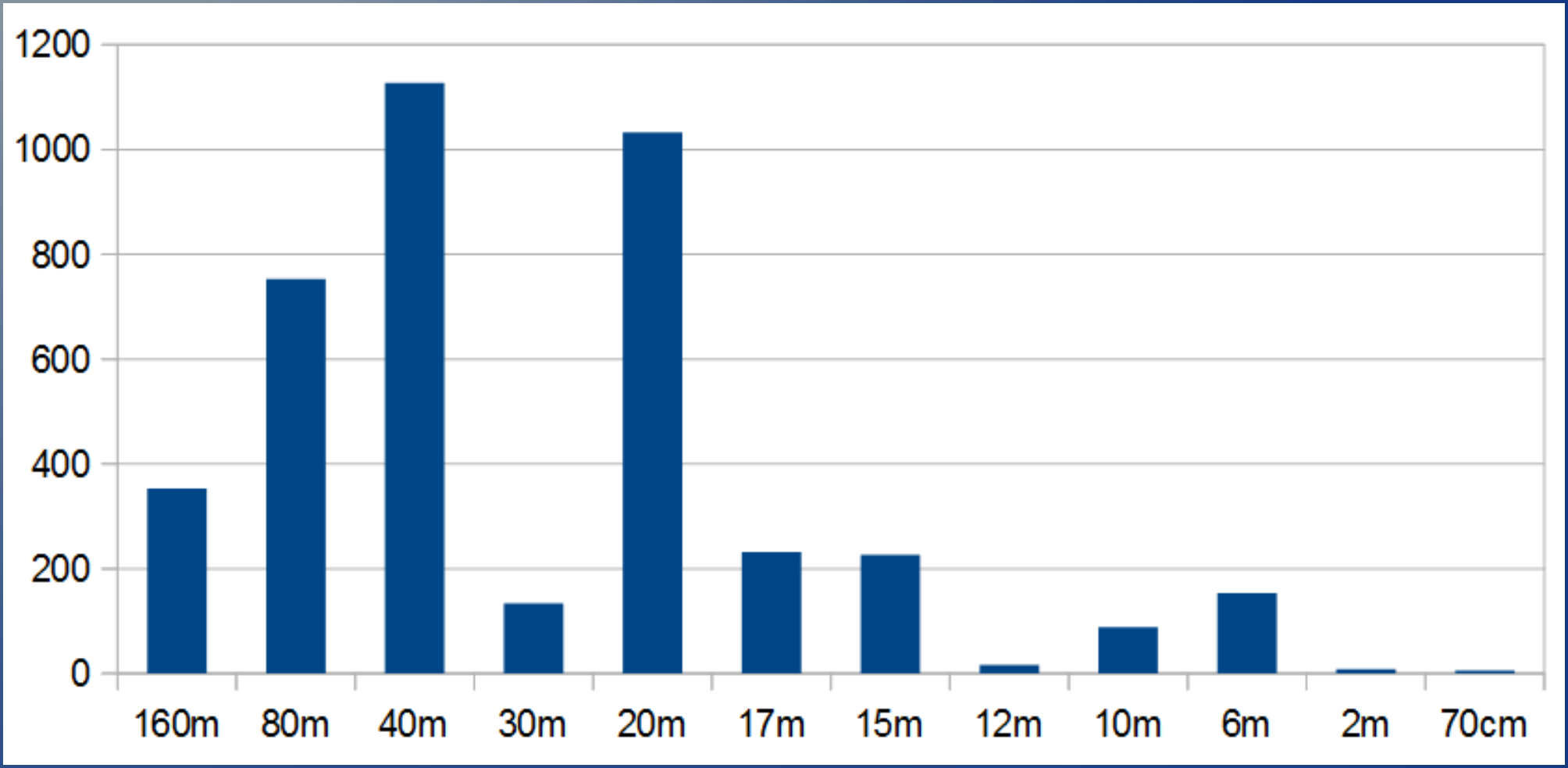
Mode	(B = 2500 Hz)
SSB	~+10 dB
MSK144	- 8
CW, "ear-and-brain"	-15
FT8	-21
JT4	-23
JT65	-25
JT9	-27
QRA64	-27
WSPR	-31

Work the World with WSJT-X Dr. Joe Taylor

WA9ONY

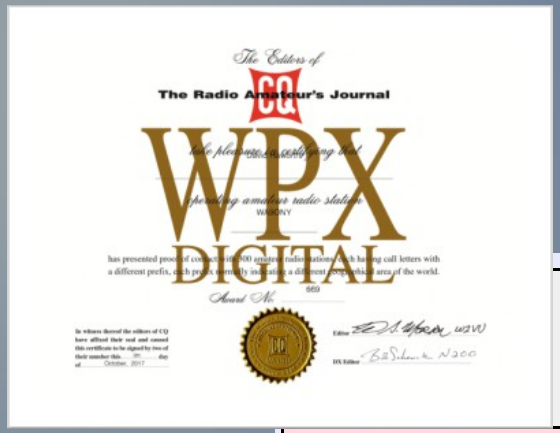
- CN85tq, Camas WA
- >4,100 FT8 QSOs since 2017/8/25
  - 160m to 70cm
  - No FT8 on 60m & 1.25m yet
- www.qrz.com/db/WA9ONY

QSOs / Band


1200
1000
800
600
400
200
0
160m
80m
40m
30m
20m
17m
15m
12m
10m
6m
2m
70cm

WA9ONY

- Many awards using FT8
- CQ WPX Digital using only FT8
  - 300 Dec. 2017, #669
  - Honor Roll 640 March 2018
    - Rank 49th
- www.qrz.com/db/WA9ONY



WPX LoTW Status

CQ WPX Award	New LoTW QSLs	LoTW QSLs in Process	CQ WPX Credits Awarded	Total
WPX Digital	48	0	653	701
WPX Digital 160M	69	0	53	122
WPX Digital 80M	85	0	188	273
WPX Digital 40M	58	0	296	354
WPX Digital 30M	58	0	22	80
WPX Digital 20M	27	0	306	333
WPX Digital 17M	87	0	55	142
WPX Digital 15M	85	0	39	124
WPX Digital 12M	10	0	3	13
WPX Digital 10M	29	0	11	40
WPX Digital 6M	51	0	1	52
WPX Digital North America	36	0	457	493
WPX Digital South America	6	0	46	52
WPX Digital Europe	0	0	2	2
WPX Digital Africa	0	0	2	2
WPX Digital Asia	5	0	75	80
WPX Digital Oceania	12	0	38	50

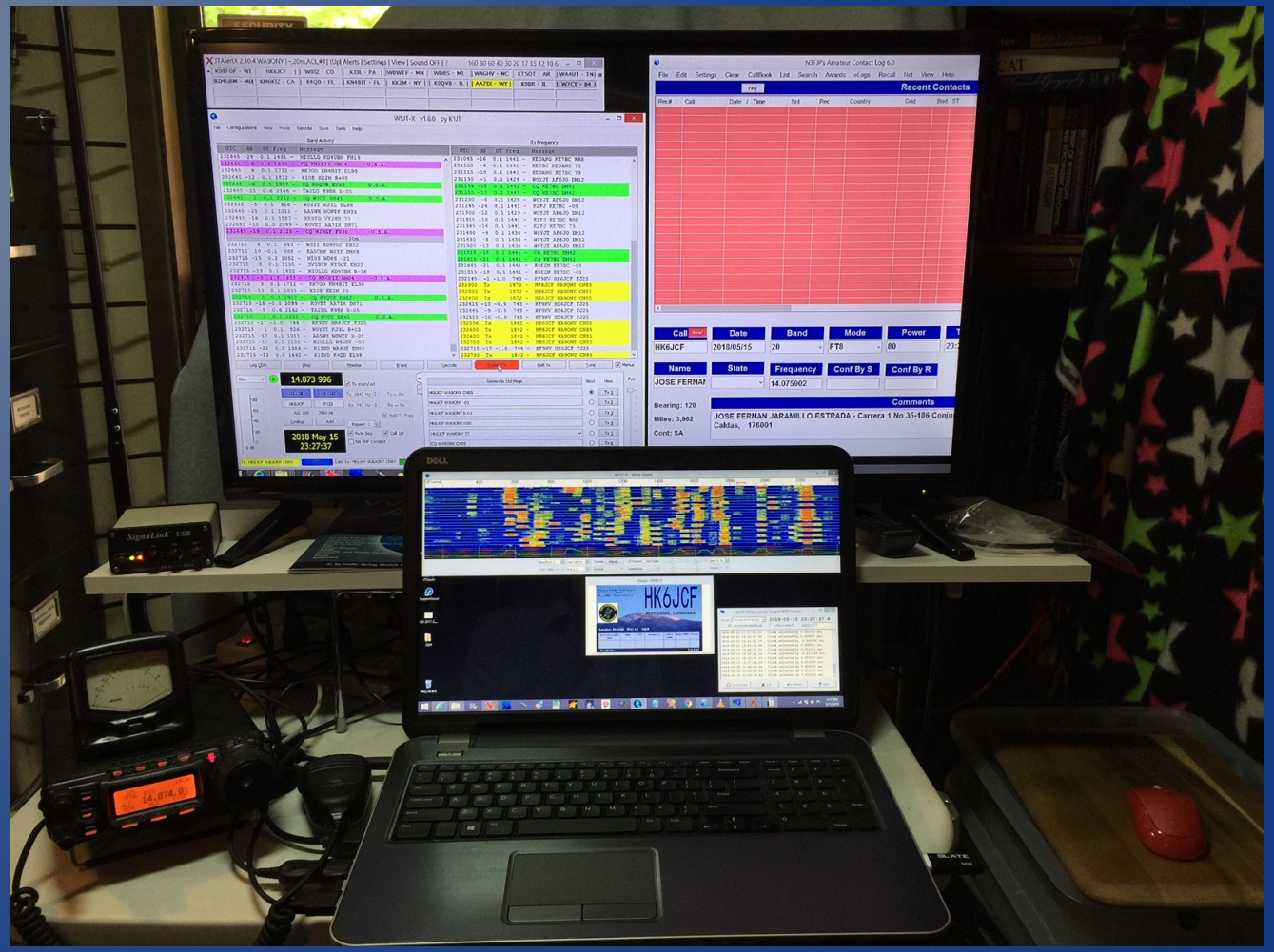
WAS LoTW Status

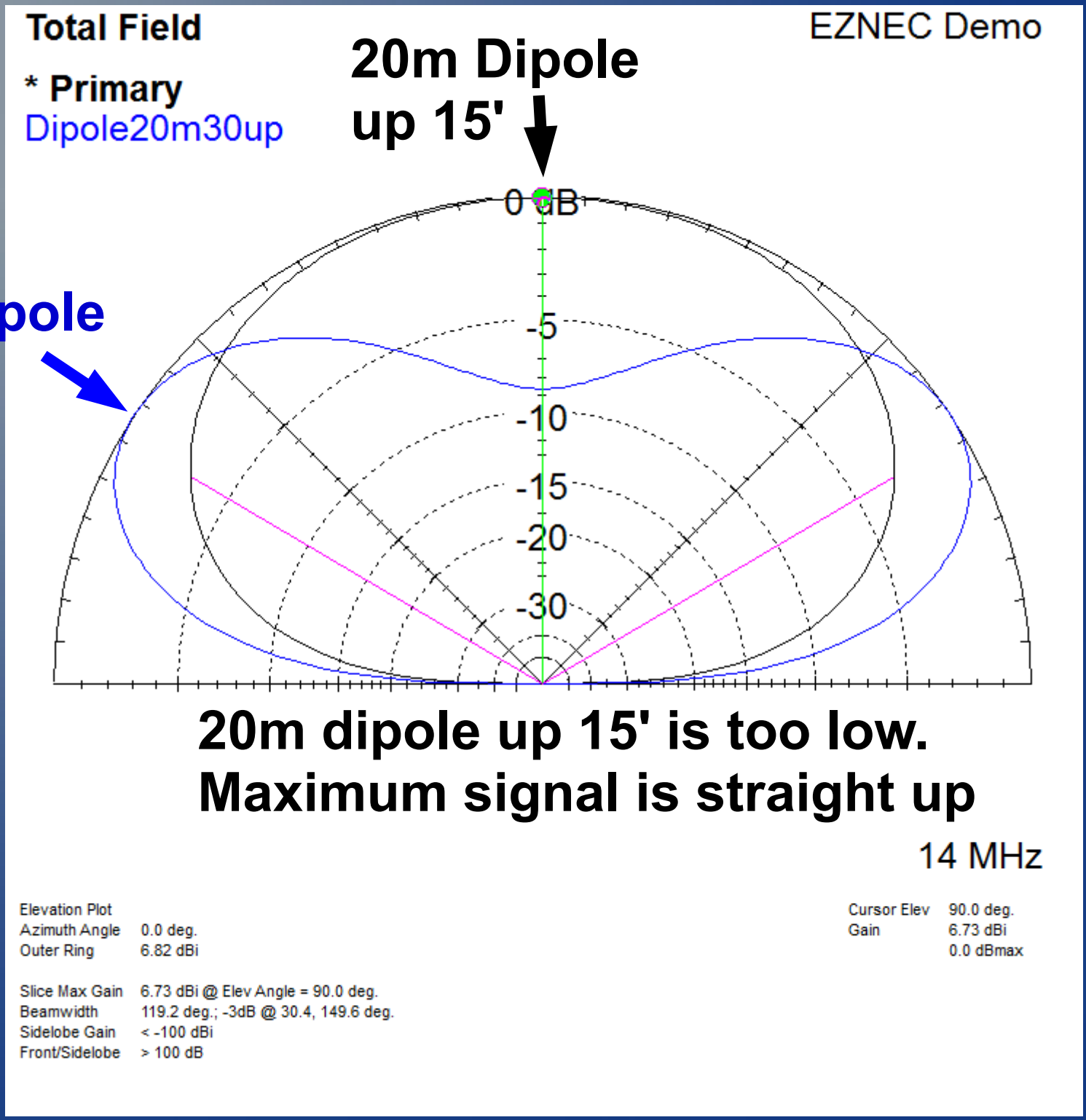
WAS Award	New LoTW QSLs	LoTW QSLs in Process	WAS Credits Awarded	Total
Digital *	0	0	50	50
FT8 *	0	0	50	50
Digital 160M	45	0	0	45
80M Digital	48	0	0	48
40M Digital	48	0	0	48
30M Digital	37	0	0	37
20M Digital	50	0	0	50
17M Digital	43	0	0	43
15M Digital	31	0	0	31
12M Digital	5	0	0	5
10M Digital	7	0	0	7
Phone 6M	1	0	0	1
Digital 6M	8	0	0	8
Digital 2M	2	0	0	2

WA9ONY

www.qrz.com/db/WA9ONY

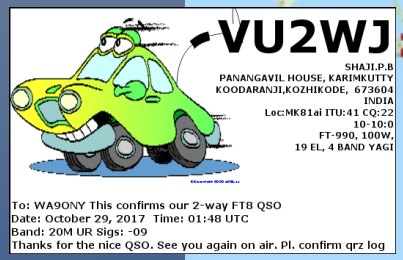
- Dipoles
- 6m up 22 ft
- 10m up 20 ft
- 15m up 22 ft
- 20m up 15 ft
- 40m up 22 ft
- 80m up 22 ft
- 180m up 22 ft

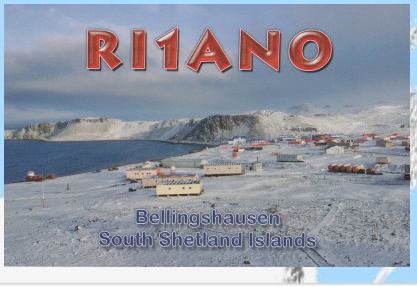



Total Field
* Primary
Dipole20m30up
EZNEC Demo
20m Dipole
up 15'
20m Dipole
up 30'
0 dB
-5
-10
-15
-20
-30
20m dipole up 15' is too low.
Maximum signal is straight up
14 MHz
Elevation Plot
Azimuth Angle 0.0 deg.
Outer Ring 6.82 dBi
Slice Max Gain 6.73 dBi @ Elev Angle = 90.0 deg.
Beamwidth 119.2 deg.; -3dB @ 30.4, 149.6 deg.
Sidelobe Gain < -100 dBi
Front/Sidelobe > 100 dB
Cursor Elev 90.0 deg.
Gain 6.73 dBi
0.0 dBmax

WA9ONY 616 FT8 Grid Squares

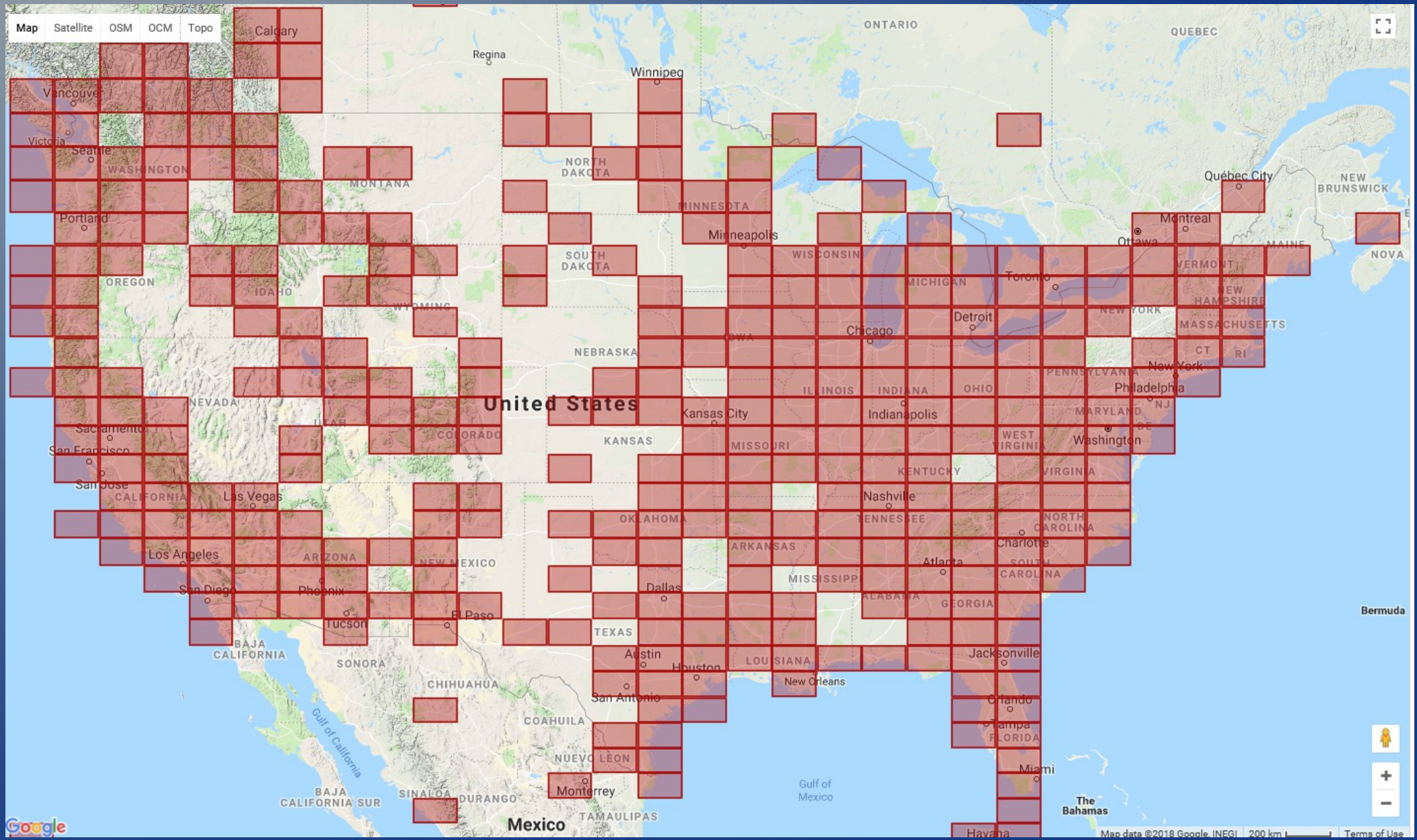
http://tools.adventureradio.de/analyzer/



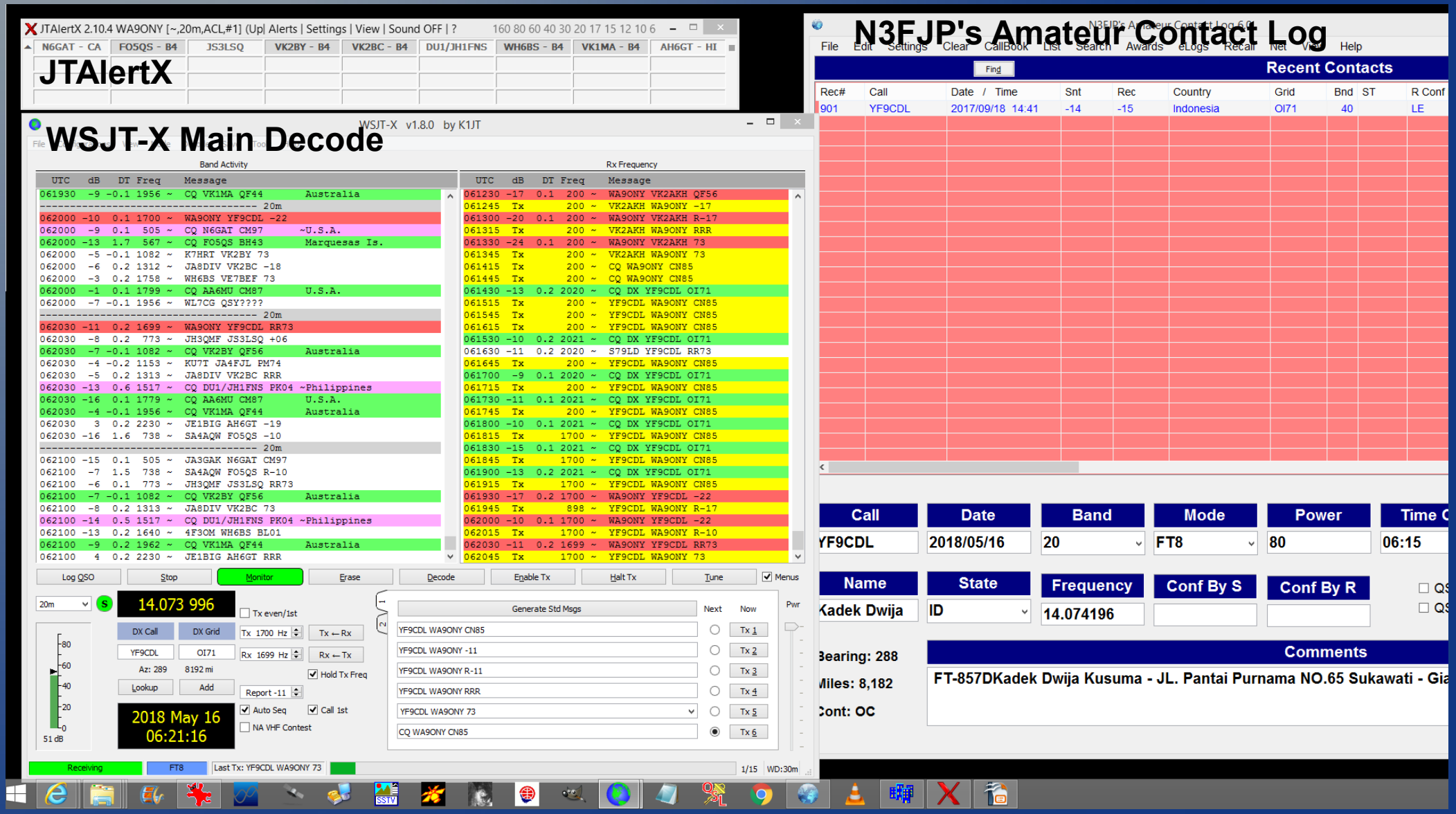


WA9ONY FT8 Grid Squares

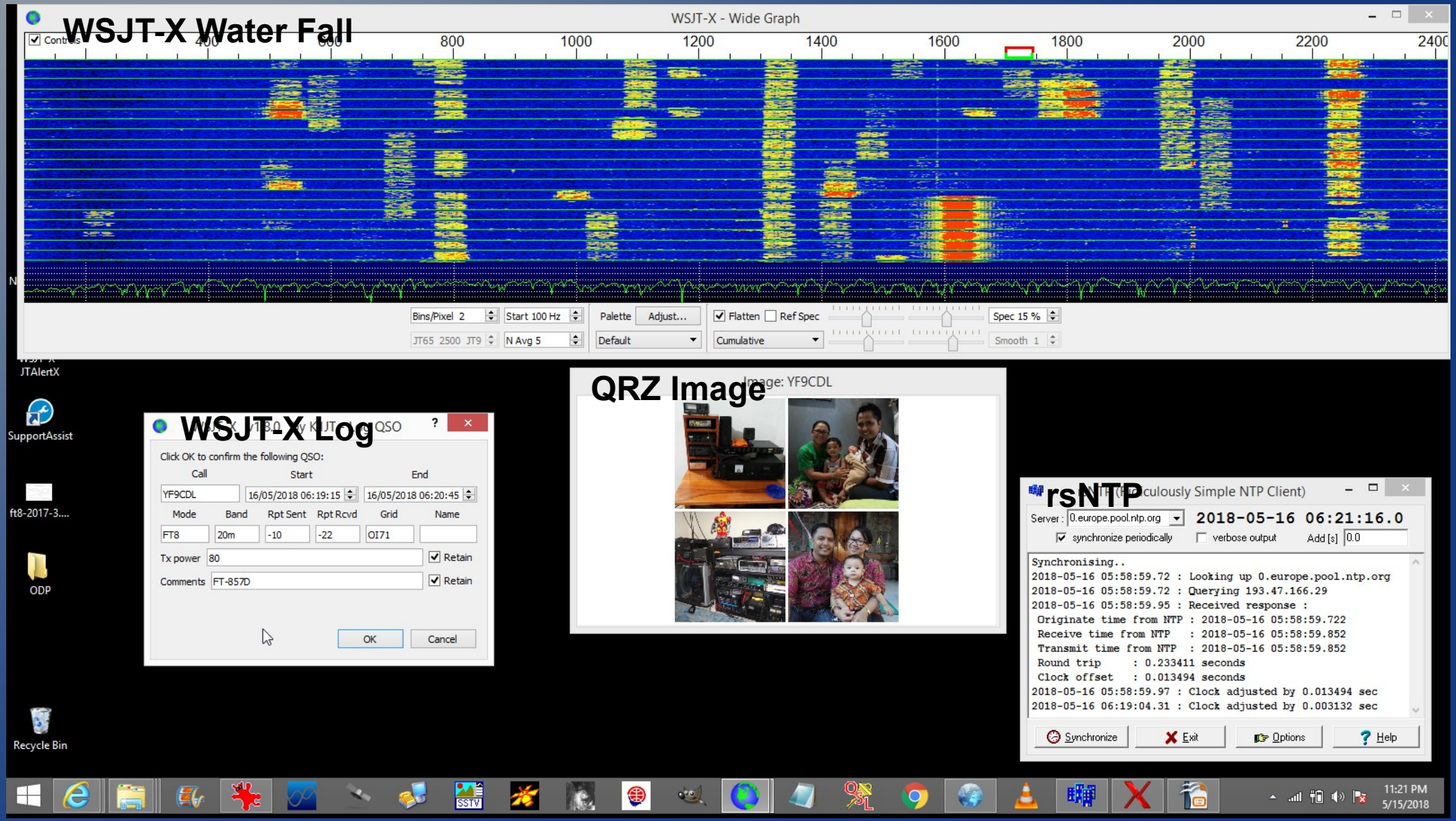
http://tools.adventureradio.de/analyzer/



Laptop HDMI to 32” TV Display



Laptop Display



WA9ONY FT8 Software Setup

WSJT-X

rsNTP

JTAlertX

QRZ Info & Image

Amateur Contact Log

eQSL

LoTW

Club Log

ADIF File

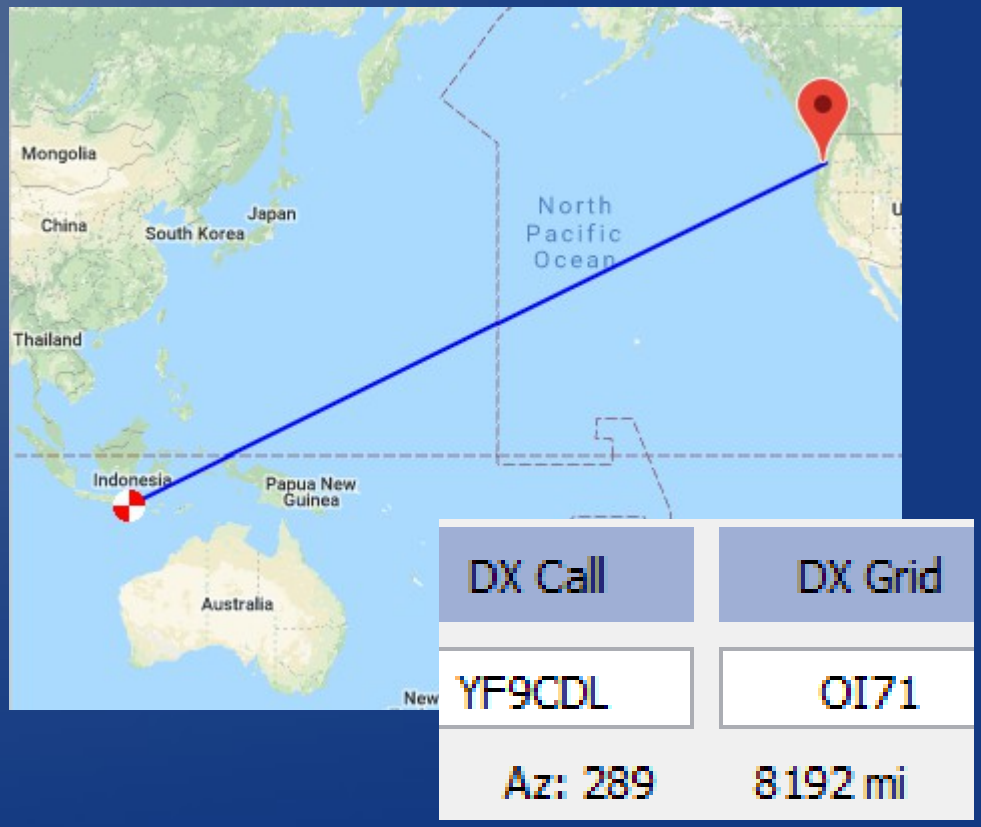
QRZ Log

PSK Reporter

IrfanView

Typical Evening on FT8 20m

- First contact CN85 KI7HMV
- ZL1BQD signal report R -11, S -10
- FK/JS3LSQ R-02 S-08
- Several CA stations
- VK2HCC R-12 S-09
- FK8CE R-03 S-08
- VK2AKH R-17 S-17
- YF9CDL R-22 S-10
- Last RA0LX R-18 S-21



Demo

FK8CE

Dominique HOARAU
PO BOX: 138
98870 BOURAIL
NEW CALEDONIA
Loc:RG28rj ITU:56 CQ:32
IOTA:OC-032
YAESU FT-950,100W. YAESU FT-450,100W.
VERTICAL CUSHCRAFT R-8 at 7 meters high.
BEGALI "STEALTH" KEYER.
ACOM 1010.

To: WA9ONY This confirms our 2-way FT8 QSO
Date: May 16, 2018 Time: 05:43 UTC
Band: 20M UR Sigs: -03

FT8 20m Log

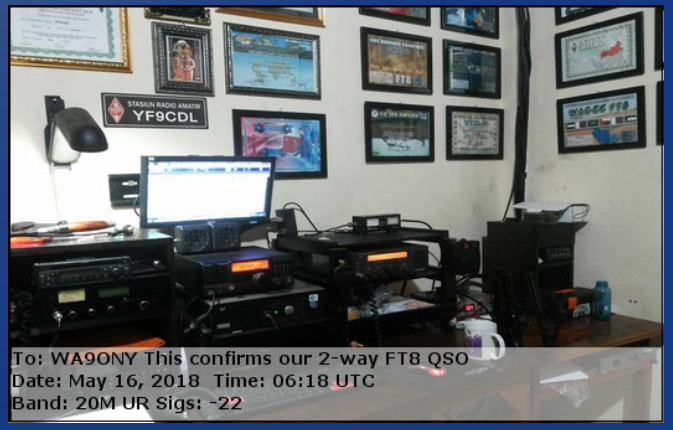
RAØLX

Sergej V. Goncharenko
Urickogo 7-92
Lesozavodsk, 692036
RUSSIA
Loc:PN65rl ITU:34 CQ:19
RDA:PK-10

To: WA9ONY This confirms our 2-way FT8 QSO
Date: May 16, 2018 Time: 06:30 UTC
Band: 20M UR Sigs: -18
TNX For QSO TU 73!.

an Electronic QSL from eQSL.cc

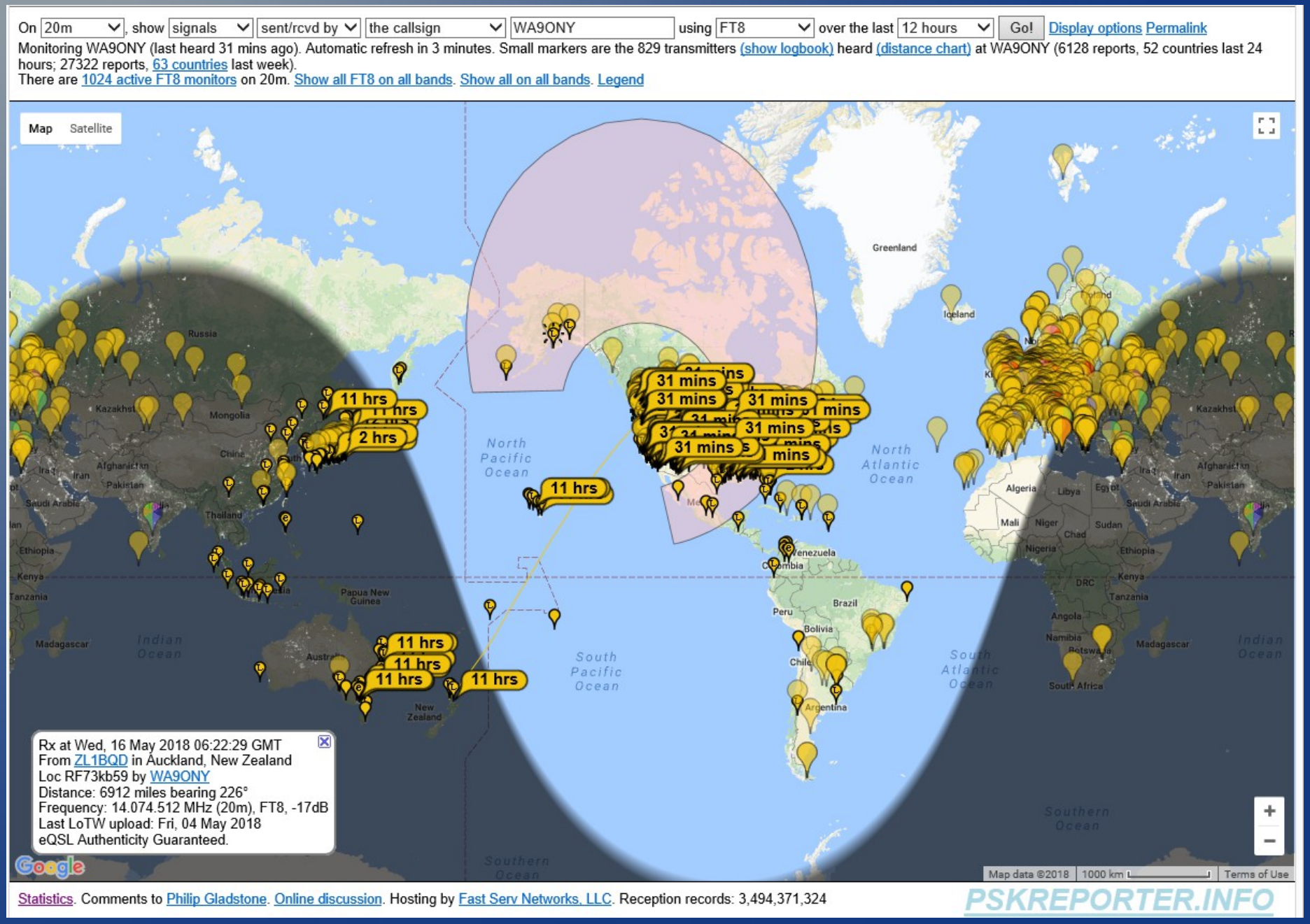
Rec#	Call	Date / Time	Snt	Rec	Country	Grid	Bnd	ST	R Conf
3917	RA0LX	2018/05/16 06:29	-21	-18	Asiatic Russia	PN65	20	PK	EL
3916	YF9CDL	2018/05/16 06:19	-10	-22	Indonesia	OI71	20		EL
3915	VK2AKH	2018/05/16 06:12	-17	-17	Australia	QF56	20		
3914	ND6H	2018/05/16 05:50	-08	-24	USA	CM97	20	CA	
3913	FK8CE	2018/05/16 05:43	-08	-03	New Caledonia	RG28	20		E
3912	VK2HCC	2018/05/16 05:41	-09	-12	Australia	QG61	20	NSW	EL
3911	N6GD	2018/05/16 05:25	-05	+06	USA	CM87	20	CA	
3910	W6JPG	2018/05/16 05:23	-05	-02	USA	DM04	20		
3909	KF6JXM	2018/05/16 05:20	-12	-03	USA	DM13	20	CA	EL
3908	W6JPG	2018/05/16 05:18	-01	+03	USA	DM04	20	CA	L
3907	K6NR	2018/05/16 05:15	-06	+01	USA	DM14	20	CA	L
3906	FK/JS3LSQ	2018/05/16 05:04	-08	-02	New Caledonia		20		
3905	ZL1BQD	2018/05/16 05:01	-10	-11	New Zealand	RF73	20		EL
3904	KI7HMV	2018/05/16 04:42	-04	-08	USA	CN85	20	OR	L



FT8 QSOs

054045	-10	0.1	1329	~	CQ VK2HCC QG61
054130	Tx		476	~	VK2HCC WA9ONY CN85
054145	-9	1.2	1328	~	WA9ONY VK2HCC -12
054200	Tx		476	~	VK2HCC WA9ONY R-09
054215	-11	0.1	1327	~	WA9ONY VK2HCC RRR
054230	Tx		476	~	VK2HCC WA9ONY 73
054245	-4	0.1	1327	~	WA9ONY VK2HCC 73
054245	-9	0.3	725	~	CQ FK8CE RG28
054315	-7	0.3	725	~	CQ FK8CE RG28
054330	Tx		476	~	FK8CE WA9ONY CN85
054345	-8	0.3	726	~	WA9ONY FK8CE -03
054400	Tx		476	~	FK8CE WA9ONY R-08
054415	-8	0.3	726	~	WA9ONY FK8CE RR73
054430	Tx		476	~	FK8CE WA9ONY 73
054445	-10	0.3	726	~	CQ FK8CE RG28

Who Heard WA9ONY FT8 20m



DXCC Most Wanted List (Club Log)
USA is Last

Rank	Prefix	Entity Name
1.	P5	DPRK (NORTH KOREA)
2.	3Y/B	BOUVET ISLAND
3.	FT5/W	CROZET ISLAND
4.	BS7H	SCARBOROUGH REEF
5.	KH1	BAKER HOWLAND ISLANDS

337.	UA	EUROPEAN RUSSIA
338.	DL	FEDERAL REPUBLIC OF GERMANY
339.	I	ITALY
340.	K	UNITED STATES OF AMERICA

Exciting for DX Station VK7BO Reply to My CQ on 80m

DX Call	DX Grid
VK7BO	QE38
Az: 239	8186 mi

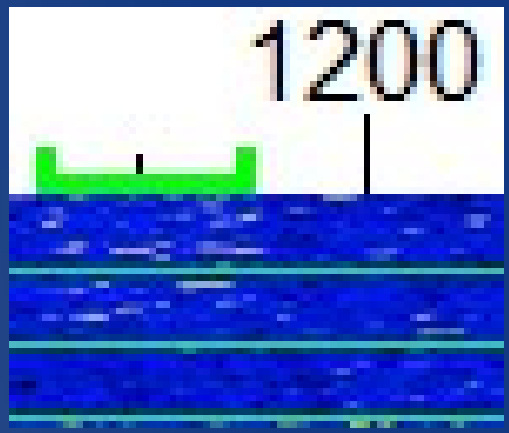

```
080015   Tx                 806 ~  CQ WA9ONY CN85
080045   Tx                 806 ~  CQ WA9ONY CN85
080115   Tx                 806 ~  CQ WA9ONY CN85
080130  -17   0.1 1724 ~  WA9ONY VK7BO -11
080145   Tx                 806 ~  VK7BO WA9ONY R-17
080200  -16   0.1 1724 ~  WA9ONY VK7BO RR73
080215   Tx                 806 ~  VK7BO WA9ONY 73
```

Exciting for DX Station ZL2RX Reply to My CQ on 160m

Station	
Call Sign	WA9ONY
DXCC	UNITED STATES OF AMERICA (291)
CQ Zone	03
ITU Zone	06
Grid	CN85TQ
State	Washington (WA)
County	Clark
Worked Station	
Worked	ZL2RX
DXCC	NEW ZEALAND (170)
CQ Zone	32
ITU Zone	60
IOTA	OC-134
Grid	RE68PR
Date/Time	2018-01-08 08:58:00
Mode	FT8 (DATA)
Band	160M
Frequency	1.84080
QSL	2018-01-08 09:49:02

Record ID 895012677 **Received:** 2018-01-08 09:20:03

DX Call	DX Grid
ZL2RX	RE68
Az: 224	7200 mi




```
---------------------------------- 160m
085330  -4  0.7  805 ~  WA9ONY W7USA DM33
085330  14 -0.1 1292 ~  CQ N7XS CN88          U.S.A.
---------------------------------- 160m
085400  -6  1.2  805 ~  WA9ONY W7USA R-09
085400  14 -0.1 1292 ~  CQ N7XS CN88          U.S.A.
---------------------------------- 160m
085430  -9  0.7  805 ~  WA9ONY W7USA 73
085430  14 -0.1 1292 ~  CQ N7XS CN88          U.S.A.
---------------------------------- 160m
085500  15 -0.1 1292 ~  CQ N7XS CN88          U.S.A.
---------------------------------- 160m
085530  14 -0.1 1292 ~  CQ N7XS CN88          U.S.A.
---------------------------------- 160m
085800 -19  0.3 1127 ~  WA9ONY ZL2RX RE68
---------------------------------- 160m
085900 -17  0.3 1127 ~  WA9ONY ZL2RX R-16
---------------------------------- 160m
090430 -19  0.3 1129 ~  WA9ONY ZL2RX 73
```

```
085745  Tx          805 ~  CQ WA9ONY CN85
085800 -19  0.3 1127 ~  WA9ONY ZL2RX RE68
085815  Tx          805 ~  ZL2RX WA9ONY -19
085845  Tx          805 ~  ZL2RX WA9ONY -19
085900 -17  0.3 1127 ~  WA9ONY ZL2RX R-16
085915  Tx          805 ~  ZL2RX WA9ONY RRR
085945  Tx          805 ~  ZL2RX WA9ONY RRR
090015  Tx          805 ~  ZL2RX WA9ONY RRR
090045  Tx          805 ~  ZL2RX WA9ONY RRR
090115  Tx          805 ~  ZL2RX WA9ONY RRR
090145  Tx          805 ~  ZL2RX WA9ONY RRR
090215  Tx          805 ~  ZL2RX WA9ONY RRR
090245  Tx          805 ~  ZL2RX WA9ONY RRR
090315  Tx          805 ~  ZL2RX WA9ONY RRR
090345  Tx          805 ~  ZL2RX WA9ONY RRR
090415  Tx          805 ~  ZL2RX WA9ONY RRR
090430 -19  0.3 1129 ~  WA9ONY ZL2RX 73
090445  Tx          805 ~  ZL2RX WA9ONY 73
```

Fun Being Chased on 80m

UTC	dB	DT	Freq		Message
105315	-16	0.1	2170	~	CQ KF9KV EN52
105330	Tx		600	~	KF9KV WA9ONY CN85
105400	Tx		600	~	KF9KV WA9ONY CN85
105430	Tx		600	~	KF9KV WA9ONY CN85
105500	Tx		600	~	KF9KV WA9ONY CN85
105515	-18	0.1	1170	~	WA9ONY KF9KV -06
105530	Tx		600	~	KF9KV WA9ONY R-18
105600	Tx		600	~	KF9KV WA9ONY R-18
105615	-18	0.1	1170	~	WA9ONY KF9KV RRR
105615	-5	0.1	1942	~	WA9ONY VK5PO PF95
105630	Tx		600	~	KF9KV WA9ONY 73
105645	3	1.6	1415	~	WA9ONY JA5BZL -07
105645	-4	0.1	1942	~	WA9ONY VK5PO PF95
105715	-6	0.1	1942	~	WA9ONY VK5PO PF95
105715	3	1.6	1415	~	WA9ONY JA5BZL -07
105730	Tx		600	~	VK5PO WA9ONY -06
105745	-8	0.1	1942	~	WA9ONY VK5PO R-09
105800	Tx		600	~	VK5PO WA9ONY RRR
105815	-6	0.1	1942	~	WA9ONY VK5PO 73
105830	Tx		600	~	VK5PO WA9ONY 73
105645	3	1.6	1415	~	WA9ONY JA5BZL -07
105845	3	1.6	1415	~	WA9ONY JA5BZL -07
105845	-11	0.1	600	~	WA9ONY JA9CHI PM86
105900	Tx		600	~	JA5BZL WA9ONY R+03
105915	2	1.5	1415	~	WA9ONY JA5BZL RR73
105915	-8	0.1	600	~	WA9ONY JA9CHI PM86
105930	Tx		600	~	JA5BZL WA9ONY 73
105945	1	1.6	1415	~	WA9ONY JA5BZL RR73
105945	1	0.1	600	~	WA9ONY JA9CHI PM86
105945	-9	0.0	1696	~	WA9ONY UA0ZEO QO93
110015	0	1.6	1415	~	WA9ONY JA5BZL 73
110015	2	0.1	600	~	WA9ONY JA9CHI PM86
110015	-8	0.0	1696	~	WA9ONY UA0ZEO QO93
110038	Tx		600	~	UA0ZEO WA9ONY -08
110045	3	0.1	600	~	WA9ONY JA9CHI PM86
110100	Tx		600	~	UA0ZEO WA9ONY -08
110115	-7	0.0	1696	~	WA9ONY UA0ZEO R-13
110130	Tx		600	~	UA0ZEO WA9ONY RRR

UTC	dB	DT	Freq		Message
110130	Tx		600	~	UA0ZEO WA9ONY RRR
110145	-3	0.0	1696	~	WA9ONY UA0ZEO 73
110200	Tx		600	~	UA0ZEO WA9ONY 73
110045	3	0.1	600	~	WA9ONY JA9CHI PM86
110230	Tx		600	~	JA9CHI WA9ONY +03
110245	3	0.1	600	~	WA9ONY JA9CHI PM86
110300	Tx		600	~	JA9CHI WA9ONY +03
110315	3	0.1	600	~	WA9ONY JA9CHI R-09
110330	Tx		600	~	JA9CHI WA9ONY RRR
110345	1	0.1	600	~	WA9ONY JA9CHI 73
110400	Tx		600	~	JA9CHI WA9ONY 73
110415	1	0.2	600	~	WA9ONY JH3QMF PM74
110415	-8	0.1	483	~	WA9ONY JH1APK -11
110415	1	0.2	600	~	WA9ONY JH3QMF PM74
110445	4	0.2	599	~	WA9ONY JH3QMF PM74
110445	-3	0.1	484	~	WA9ONY JH1APK -11
110500	Tx		600	~	JH3QMF WA9ONY +04
110515	1	0.2	599	~	WA9ONY JH3QMF R-16
110530	Tx		600	~	JH3QMF WA9ONY RRR
110545	1	0.2	599	~	WA9ONY JH3QMF 73
110600	Tx		600	~	JH3QMF WA9ONY 73
110445	-3	0.1	484	~	WA9ONY JH1APK -11
110615	-4	0.1	484	~	WA9ONY JH1APK -11
110630	Tx		600	~	JH1APK WA9ONY R-04
110645	-3	0.1	483	~	WA9ONY JH1APK RRR
110700	Tx		600	~	JH1APK WA9ONY 73
110715	-1	0.1	483	~	WA9ONY JH1APK 73

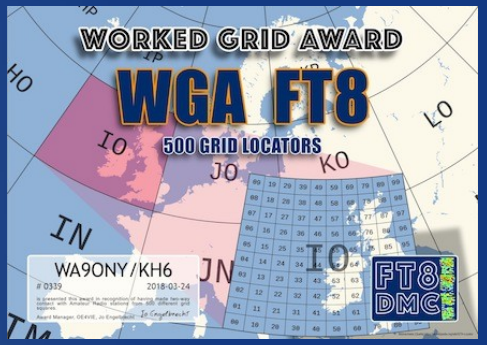
Fun Being Chased on 80m Log

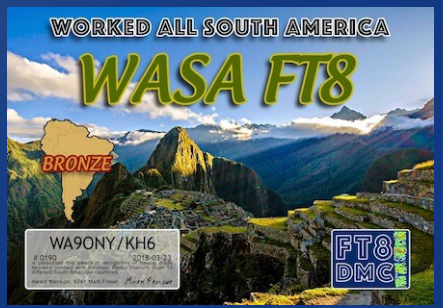
Rec#	Call	Date / Time	Snt	Rec	Country	Grid	Bnd	ST
4047	JA4UMN	2018/05/25 11:59	-03	-14	Japan	PM64	80	
4046	NC7B	2018/05/25 11:53	+07	+11	USA	DM43	80	AZ
4045	W5VOM/5	2018/05/25 11:46	-07	-07	USA		80	
4044	N4PT	2018/05/25 11:42	+11	+10	USA	DM42	80	AZ
4043	JR1XIS	2018/05/25 11:34	+07	-17	Japan	QM05	80	
4042	WB5OZA	2018/05/25 11:31	-13	-14	USA	EM30	80	LA
4041	KE5IRK	2018/ 11:24	-02	+00	USA	EM04	80	OK
4040	JH1APK	2018/05/25 11:06	-04	-11	Japan	PM95	80	
4039	JH3QMF	2018/05/25 11:04	+04	-16	Japan	PM74	80	
4038	JA9CHI	2018/05/25 11:02	+03	-09	Japan	PM86	80	
4037	UA0ZEO	2018/05/25 11:00	-08	-13	Asiatic Russia	QO93	80	
4036	JA5BZL	2018/ 10:58	+03	-07	Japan	PM63	80	
4035	VK5PO	2018/05/2 10:57	-06	-09	Australia	PF95	80	
4034	KF9KV	2018/05/25 10:55	-18	-06	USA	EN52	80	WI
4033	JH0EQN	2018/05/25 10:51	-05	-05	Japan	PM97	80	

9 minutes of hectic fun

WA9ONY/KH6
Feb. 2018 Kauai

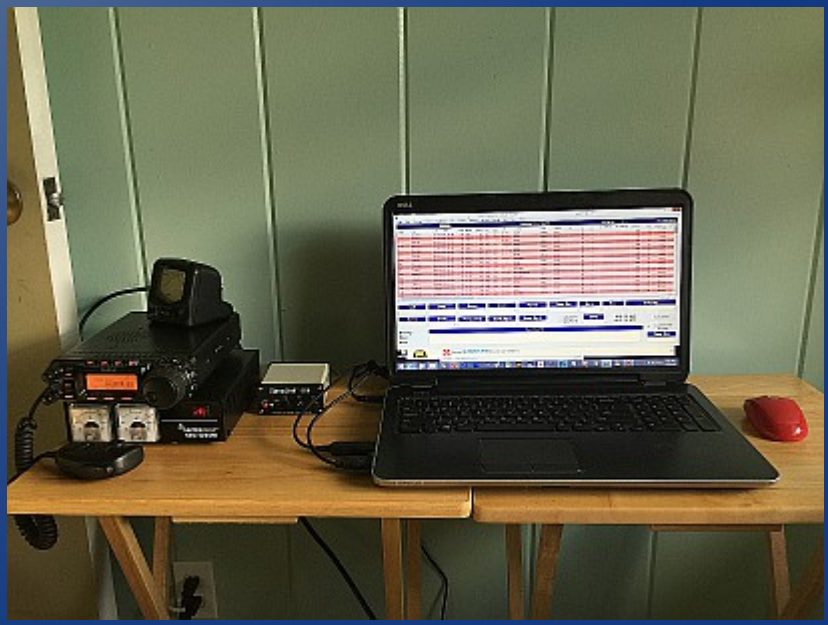
- 2,331 FT8 20m QSOs
  - LoTW 1,428 QSLs 61%
  - EQSL 1,287 55%
  - QRZ.com 653 28%
  - ~2/3 QSOs non USA stations
- 21 awards with 8 endorsements
  - WAS 20m FT8 took 13 days
- 3rd/9K ARRL IGC Feb. 20m FT8
- www.qrz.com/db/WA9ONY/KH6





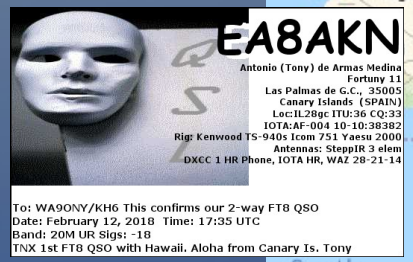
Kauai Vacation WA9ONY/KH6

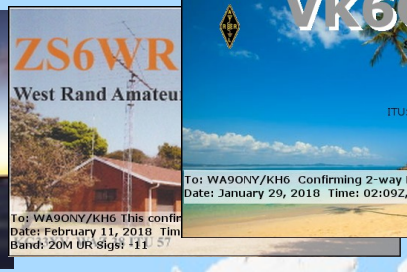
www.qrz.com/db/WA9ONY/KH6

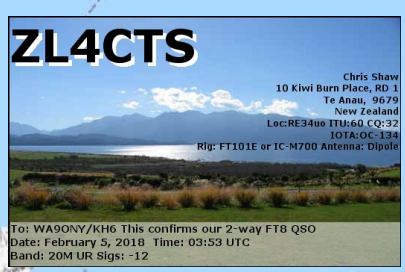


WA9ONY/KH6 551 Grid Squares

http://tools.adventureradio.de/analyzer/







FT8 is a Digital Mode
Released July 2017

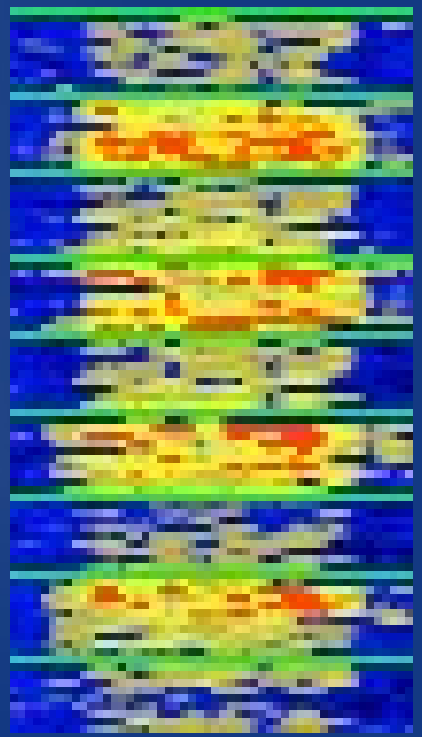
- Created by
  - Steve **F**ranke, K9AN
  - Joe **T**aylor, K1JT
  - **8** tones - FSK modulation
- Quick weak signal communication
  - “touch and go” DX contacts
  - Not for “chewing the rag”
- Typical contact
  - Call signs, location, signal report, 73

https://ece.illinois.edu/directory/profile/s-franke

https://en.wikipedia.org/wiki/Joseph_Hooton_Taylor_Jr.

FT8 Characteristics

- Decoding S/N threshold down to -24 dB
- Complete waterfall decode
  - Two pass decoding
- DSP & forward error correction (FEC)
  - Almost error free
- 50 Hz bandwith
- Fixed 72 bit payload
- 15 s transmit/receive sequence
  - 12.64 s transmit



FT8 Characteristics

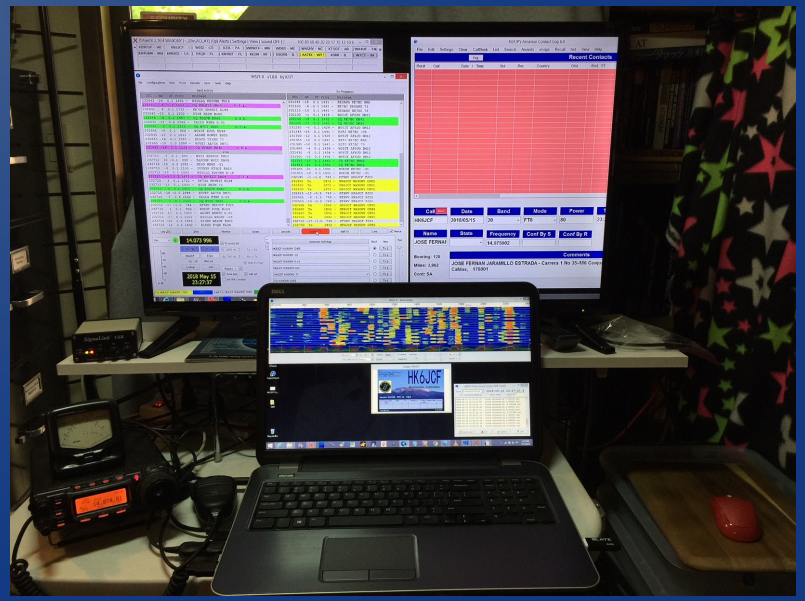
- DX expedition mode
  - Multi contacts at the same time
  - ~400 QSOs/hour, 6.7 QSOs/min.
    - Test #3 results
- NA VHF contest mode
  - Only grid square
  - No signal reports

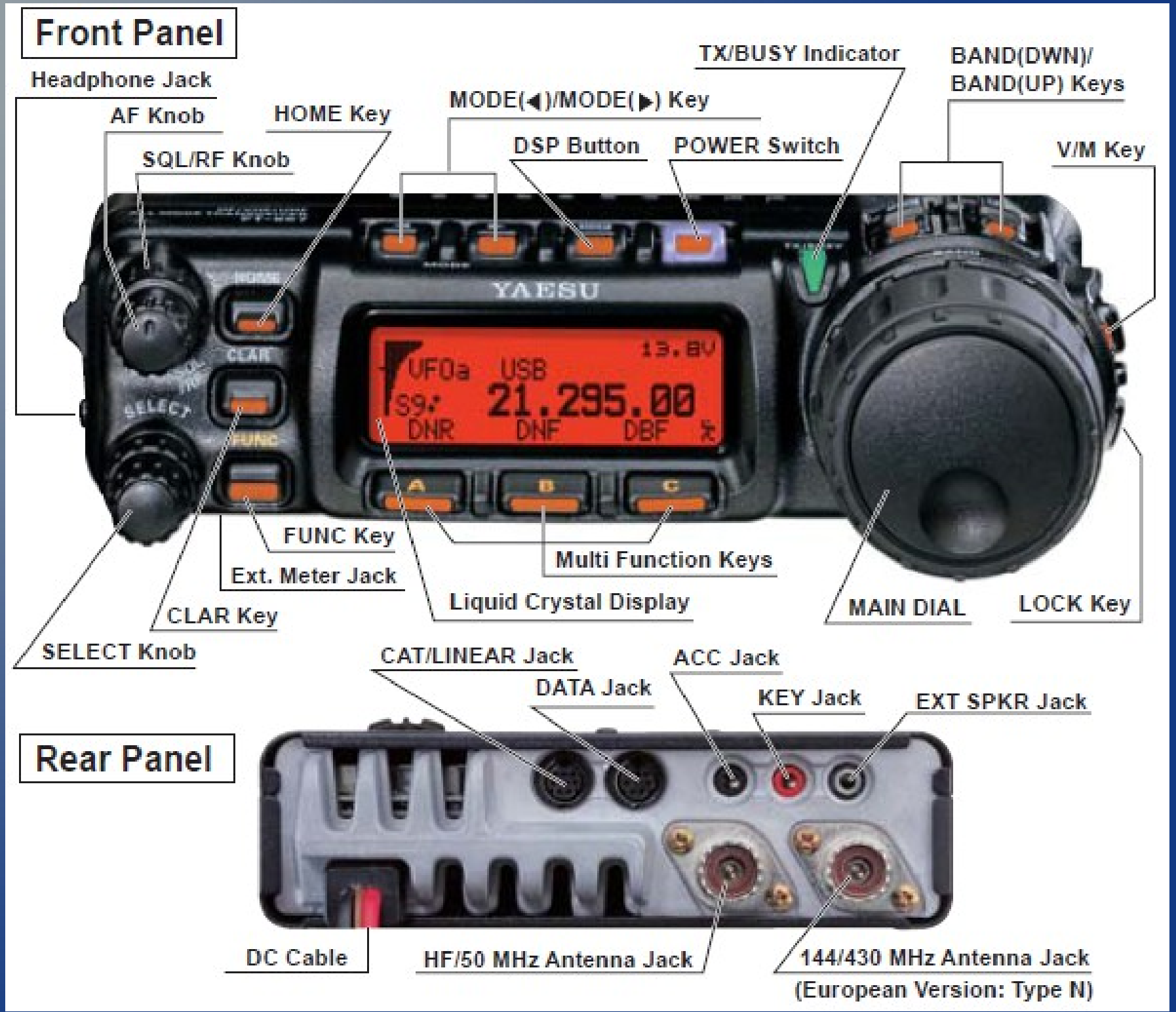
FT8 Messages Every 15 Seconds

```
------------------------------------- 160m
073130   -9   0.0   700 ~  CQ KF8YO EM88          U.S.A.
------------------------------------- 160m
073145  -14   0.2   701 ~  KF8YO W4RTT EM78
------------------------------------- 160m
073200   -9  -0.0   701 ~  W4RTT KF8YO +12
------------------------------------- 160m
073215  -12   0.2   894 ~  KF8YO W4RTT R+02
------------------------------------- 160m
073230   -8  -0.0   701 ~  W4RTT KF8YO RRR
------------------------------------- 160m
073245  -14   0.1   894 ~  KF8YO W4RTT 73
------------------------------------- 160m
073300   -9  -0.0   701 ~  W4RTT KF8YO 73
------------------------------------- 160m
```

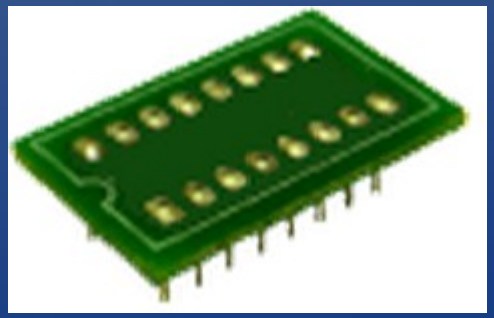
WA9ONY FT8 Equipment

- WSJT-X V1.8 software
- Dell i7 64-bit 8.1 Windows laptop
- Transceiver with data & CAT ports
  - Yaesu FT-857D, AGC set fast
- SignalLink USB with TX & RX controls
- PC to transceiver CAT interface
- Diamond SWR power meter
- Dipoles antennas




Front Panel
Headphone Jack
AF Knob
SQL/RF Knob
HOME Key
MODE(◀)/MODE(▶) Key
DSP Button
POWER Switch
TX/BUSY Indicator
BAND(DWN)/
BAND(UP) Keys
V/M Key
YAESU
13.8V
VFOa USB
S9:
21.295.00
DNR DNF DBF
CLAR
FUNC
A
B
C
FUNC Key
Ext. Meter Jack
CLAR Key
SELECT Knob
Multi Function Keys
Liquid Crystal Display
MAIN DIAL
LOCK Key
Rear Panel
CAT/LINEAR Jack
DATA Jack
ACC Jack
KEY Jack
EXT SPKR Jack
DC Cable
HF/50 MHz Antenna Jack
144/430 MHz Antenna Jack
(European Version: Type N)

SignaLink USB



www.amazon.com/gp/product/B01LWKQB7D/ref=oh_aui_detailpage_o05_s00?ie=UTF8&psc=1

MAXTOP

MAXTOP APCUSB-YM62 FTDI USB Programming Cable for Yaesu FT-100 FT-817 FT-857 FT-897 FT-100D FT-817ND FT-857D as CT-62

5 customer reviews

Price: $23.50 & **FREE Shipping**

Get $40 off instantly: Pay $0.00 upon approval for the Amazon.com Store Card.

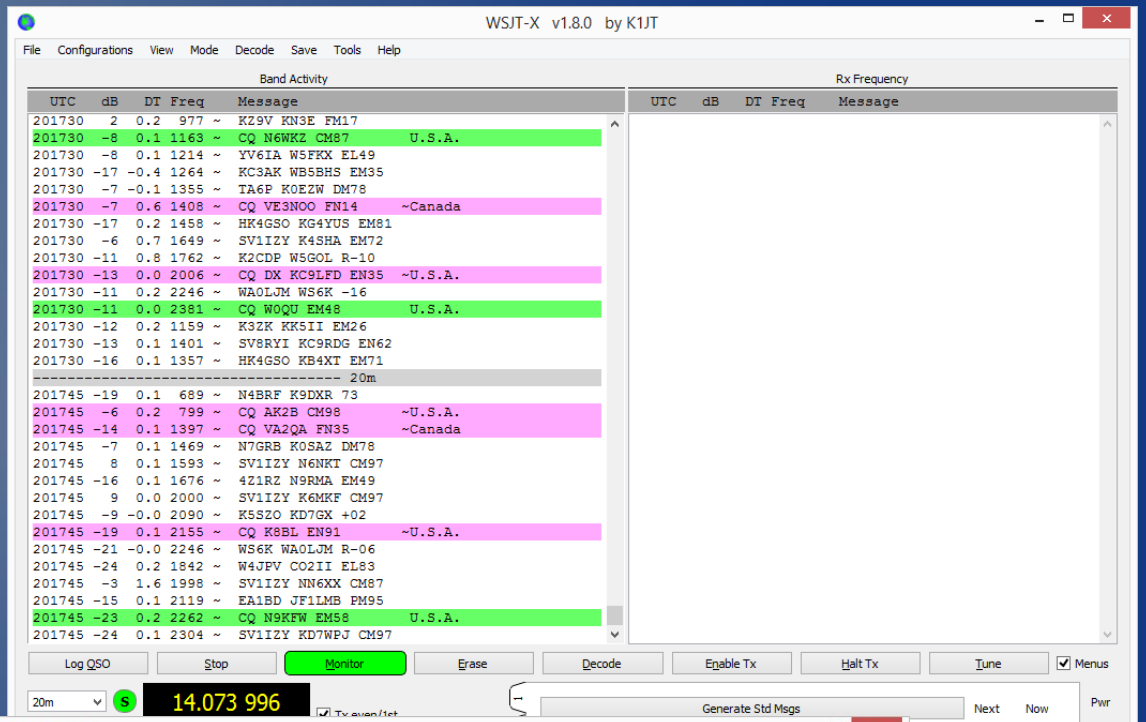
In Stock.

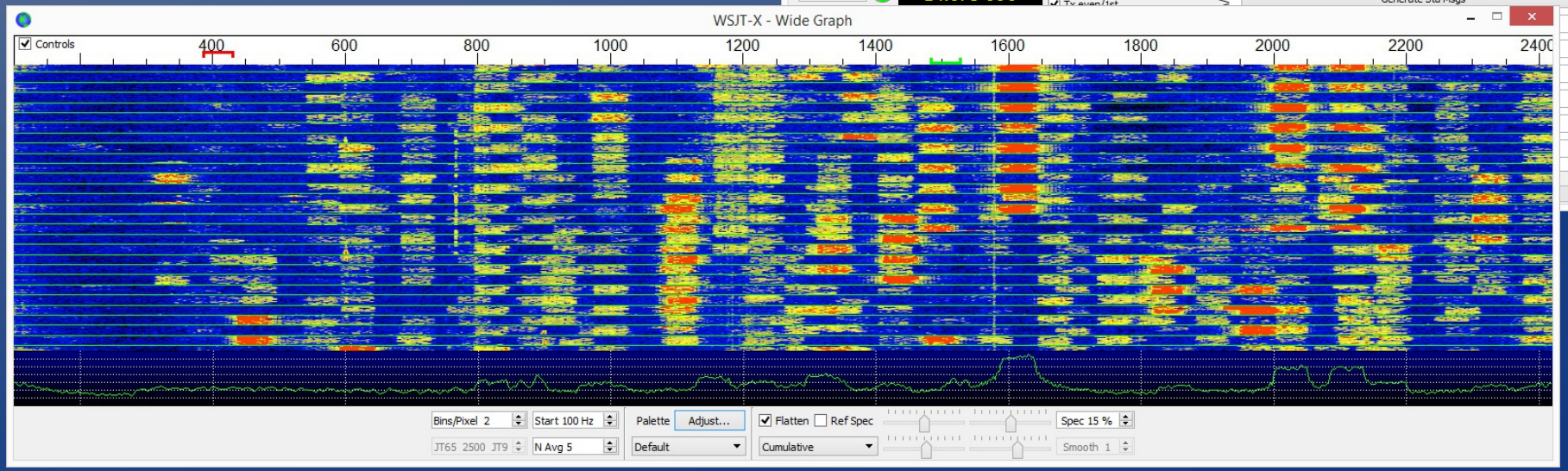
Get it as soon as May 18 - 25 when you choose **Economy Shipping** at checkout.
Ships from and sold by BOMMEOW Radio.

- Quality that sells itself: Built-in FTDI Chipset that offers unparalleled flexibility & assurance
- On-Board Activity LED light – it just helped making your job a lot more efficient!
- Ease of use with Plug-n-Play [internet connection must be present]
- OEM of Yaesu CT-62
- Specification: Yaesu FT-100 and similar sockets

Required FT8 Software

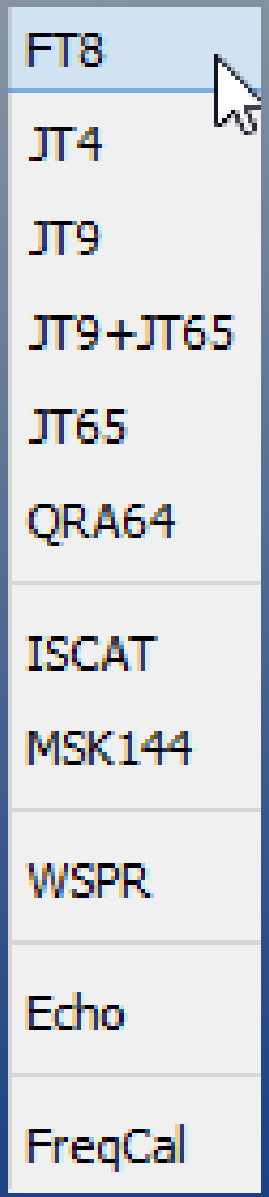
WSJT-X





WSJT-X Software 2001 to 2018

https://en.wikipedia.org/wiki/WSJT_(amateur_radio_software)



- Weak Signal Joe Taylor - eXtend
- >15,000 users in any given week
- Weak signal communications with DSP
- Block structure vs char. by char.
- Slow & fast communication modes
  - Moon bounce JT65
  - High speed meteor scatter MSK144
  - WSPR beacon
    - Weak Signal Propagation Reporter
- FT8 added in July 2017

FT8 WSJT-X Software

https://physics.princeton.edu/pulsar/k1jt/wsjtx.html

WSJT-X

Description

WSJT-X implements communication protocols or "modes" called **FT8, JT4**, **JT9**, **JT65**, **QRA64**, **ISCAT**, **MSK144**, and **WSPR**, as well as one called **Echo** for detecting and measuring your own radio signals reflected from the Moon. These modes were all designed for making reliable, confirmed QSOs under extreme weak-signal conditions. All but **ISCAT** use nearly identical message structure and "source encoding," the efficient compression of standard messages used to make minimal QSOs. **JT65** and **QRA64** were designed for EME ("moonbounce") on the VHF/UHF bands; **JT65** has also proved very popular and effective for worldwide QRP communication at HF. **JT9** is optimized for the LF, MF, and HF bands. It is about 2 dB more sensitive than **JT65** while using less than 10% of the bandwidth. With either **JT9** or **JT65**, world-wide QSOs are possible with power levels of a few watts and compromise antennas. **JT4** and **QRA64** are optimized for EME on the VHF and higher bands, and especially the microwave bands from 2.3 to 24 GHz. **FT8** is operationally similar to **JT65** but is much faster, using T/R cycles only 15 s long. **MSK144** is used for Meteor Scatter on the VHF bands. Finally, as described more fully on its own page, **WSPR** mode implements a protocol designed for probing potential propagation paths with low-power transmissions. **WSPR** is now fully implemented within *WSJT-X*, including automatic band-hopping.

FT8 WSJT-X Software

https://physics.princeton.edu/pulsar/k1jt/wsjtx.html

Windows

- Latest full release, Version 1.8: wsjtx-1.8.0-win32.exe. (runs on Win XP, Vista, Win 7, Win 8, Win10, both 32- and 64-bit).

Linux

Installation instructions for Linux can be found here in the User Guide. Download the package file appropriate for your system, from the list below. (Versions installable with "apt-get" and "yum" will be made available as soon as our package maintainers create the packages.)

- Latest full release, Version 1.8
  - Debian, Ubuntu, ... (32-bit): wsjtx_1.8.0_i386.deb
  - Debian, Ubuntu, ... (64-bit): wsjtx_1.8.0_amd64.deb
  - Fedora, RedHat, ... (32-bit): wsjtx-1.8.0.i686.rpm
  - Fedora, RedHat, ... (64-bit): wsjtx-1.8.0.x86_64.rpm
  - Raspbian Jessie, ARMv6 ... : wsjtx_1.8.0_armhf.deb

Macintosh OS X:

Installation instructions for version 1.8 can be found here in the User Guide. Download the package file appropriate for your system:

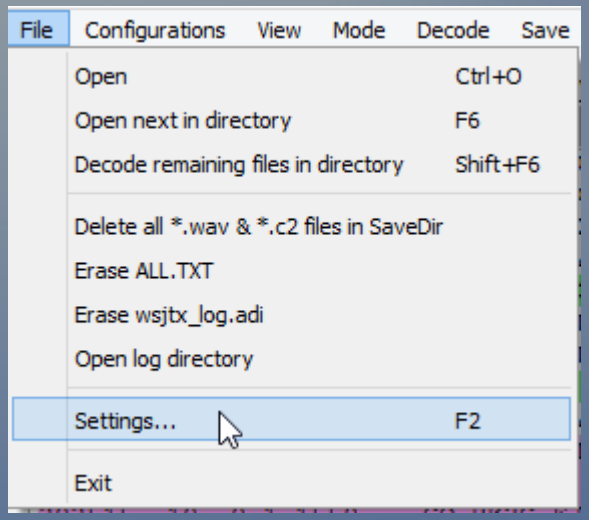
- Latest full release, Version 1.8
  - OS X 10.9 and later: wsjtx-1.8.0-Darwin.dmg

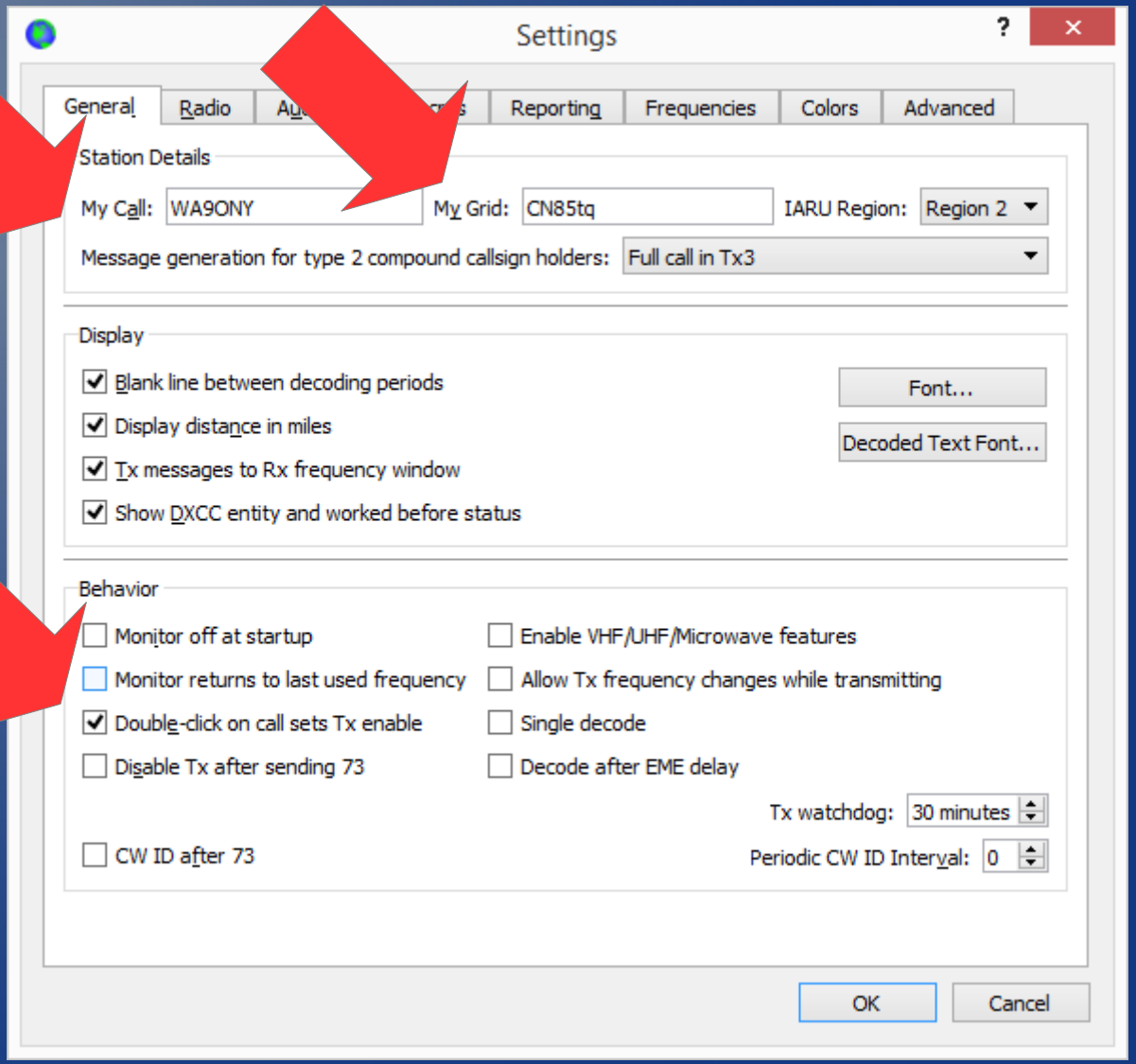
Source Code:

The package posted here contains all source code for *WSJT-X* as well as a snapshot of the Hamlib 3 sources and a CMake script to build *WSJT-X* on any supported platform.

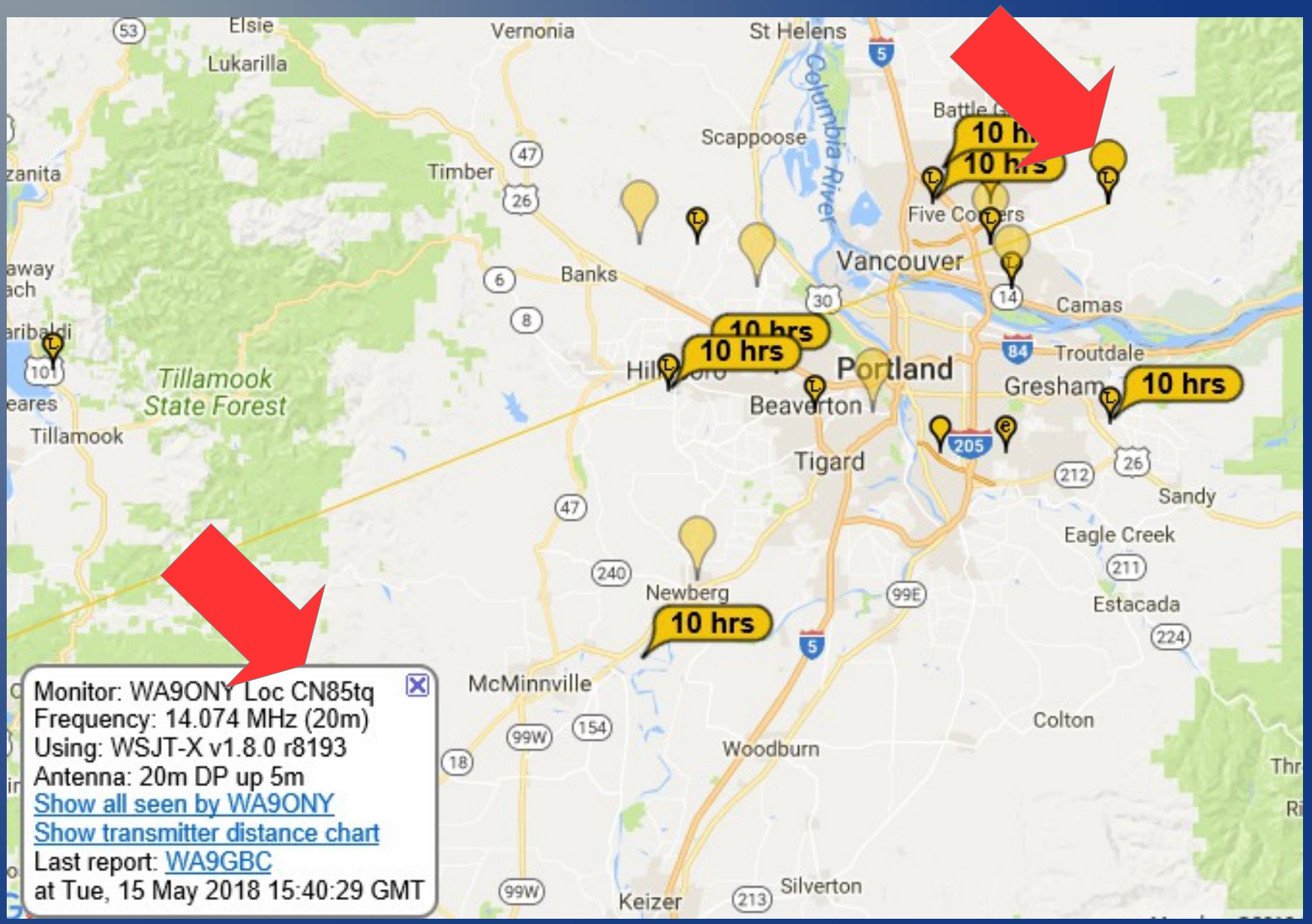
- Latest full release, Version 1.8: wsjtx-1.8.0.tgz

WSJT-X V1.8 General Setup



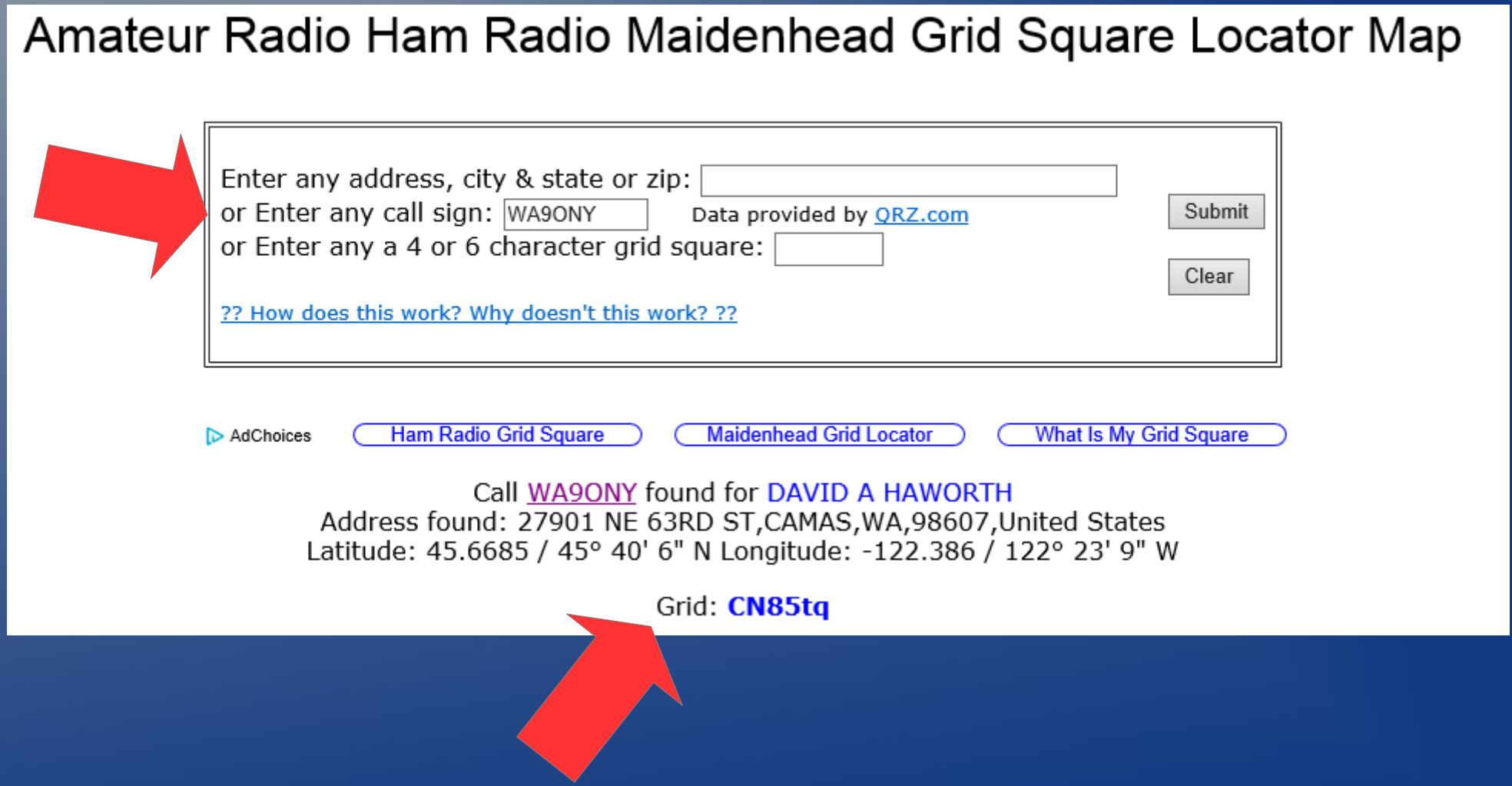


Use 6 Characters Grid Square
For PSK Reporter



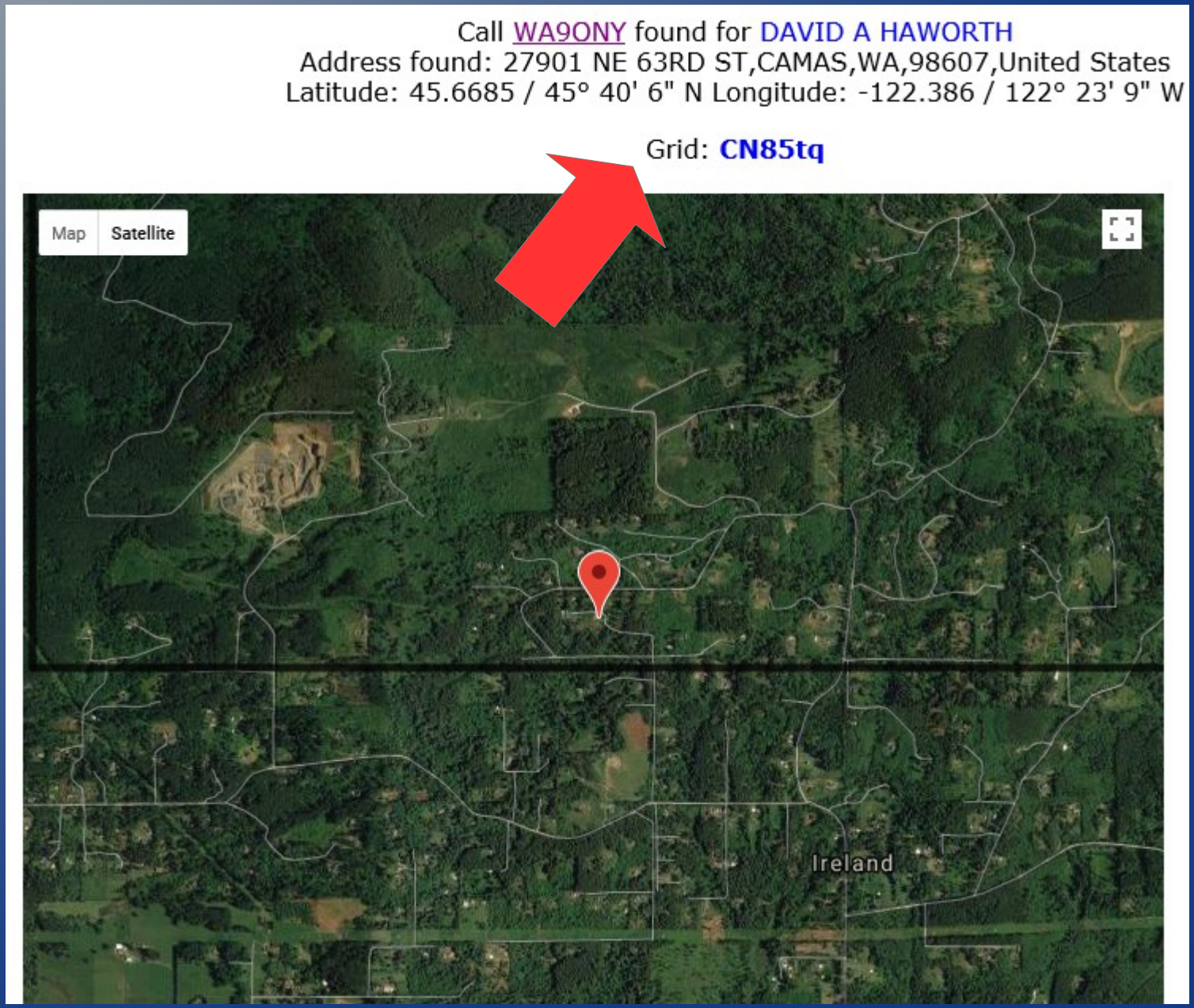
Find Your Grid Square

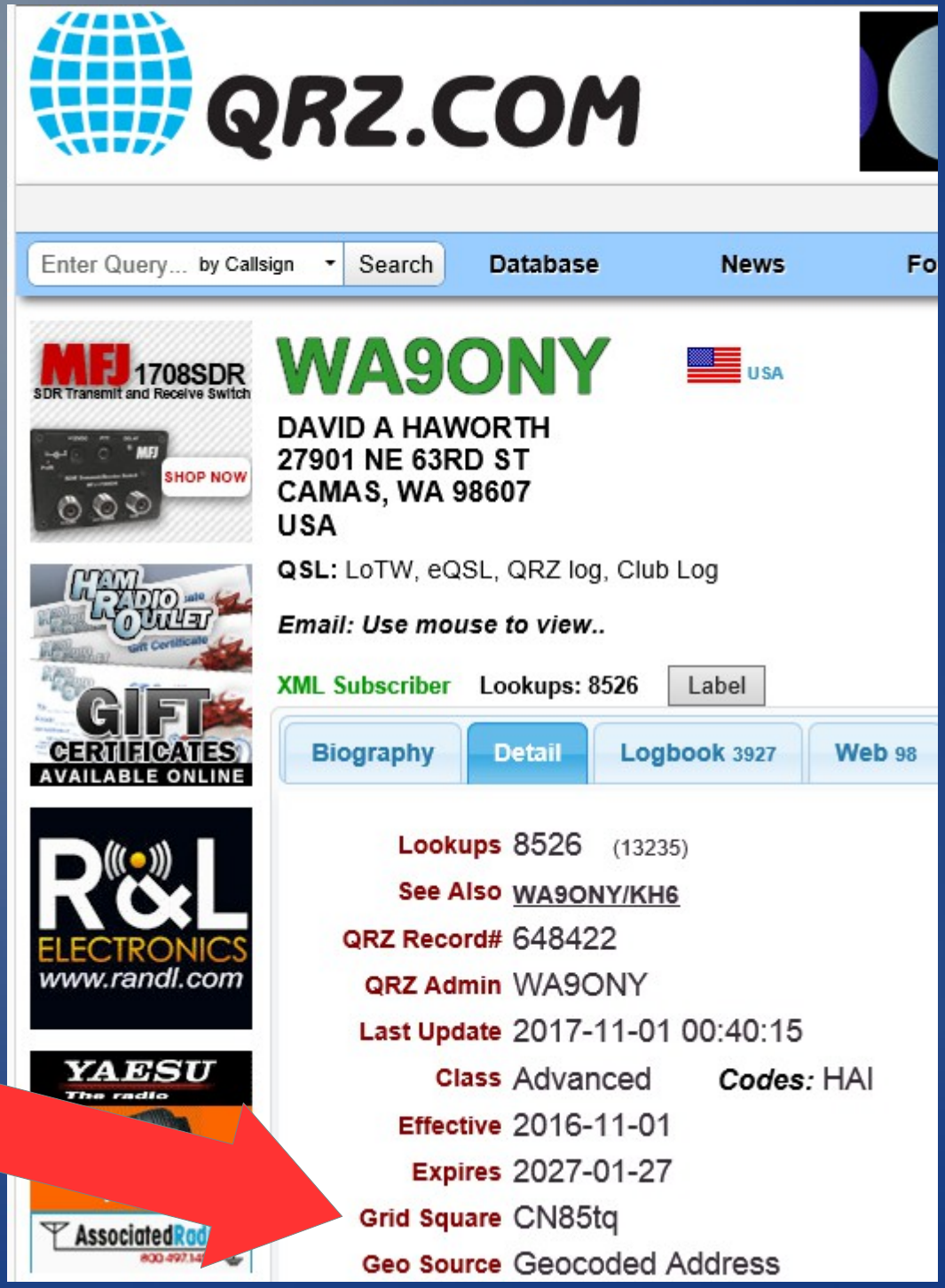
www.levinecentral.com/ham/grid_square.php



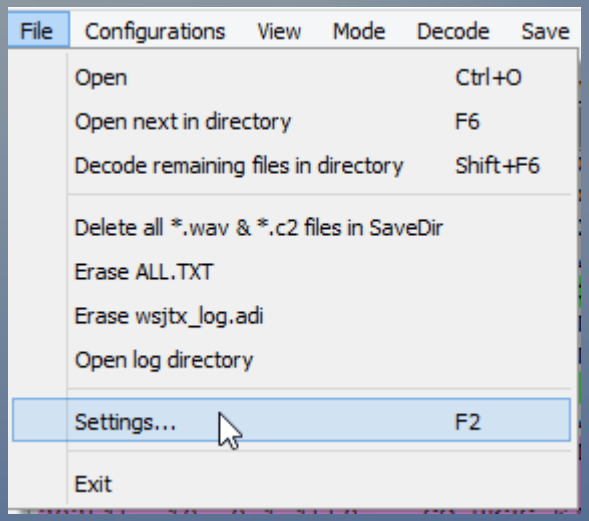
Find Your Grid Square

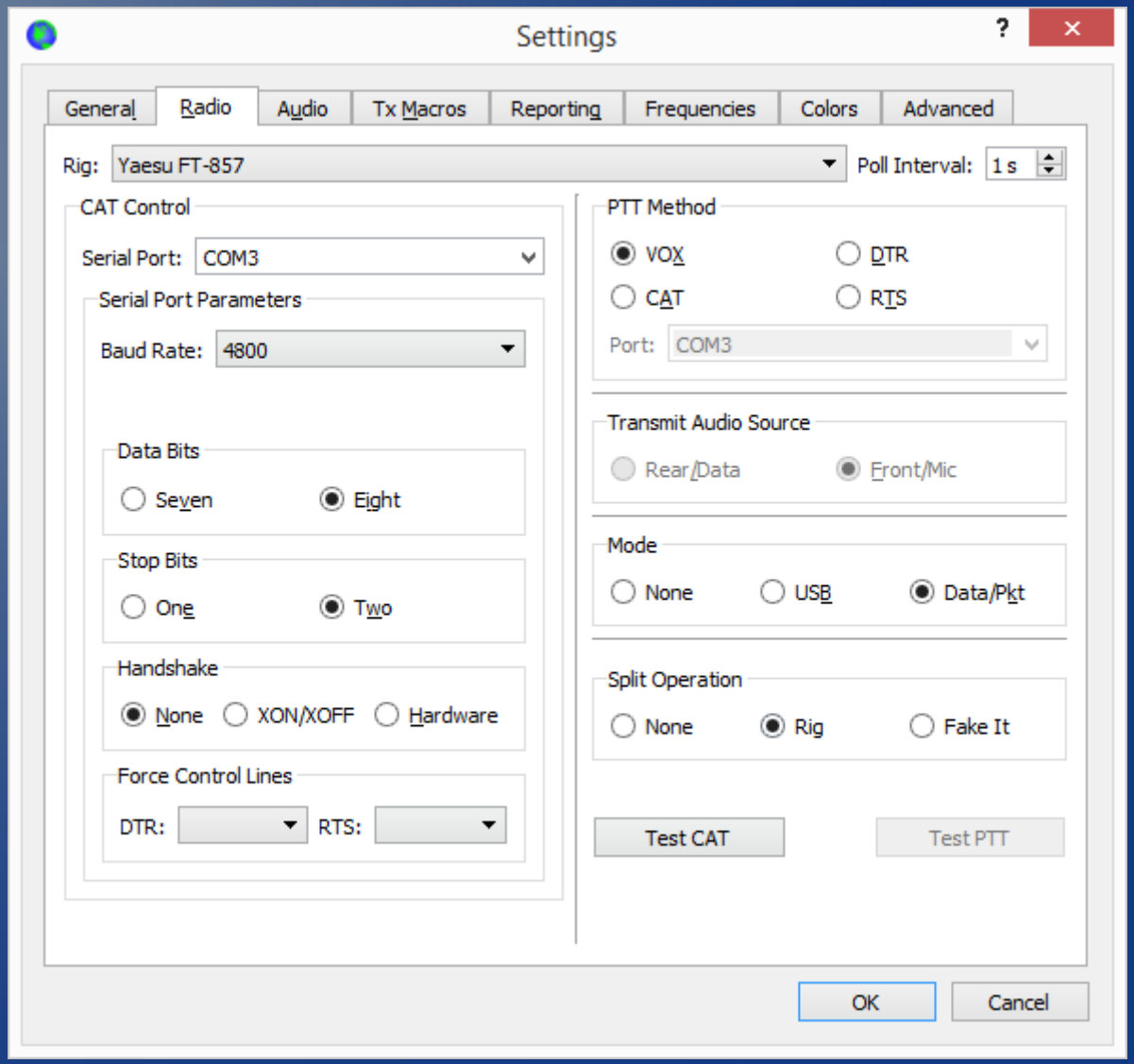
www.levinecentral.com/ham/grid_square.php



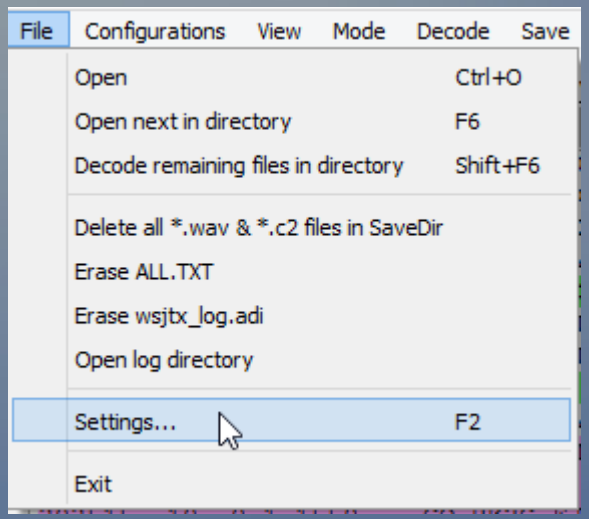

QRZ.COM
Enter Query... by Callsign
Search
Database
News
MFJ 1708SDR
SDR Transmit and Receive Switch
SHOP NOW
HAM RADIO OUTLET
GIFT CERTIFICATES
AVAILABLE ONLINE
R&L ELECTRONICS
www.randl.com
YAESU
The radio
AssociatedRad
WA9ONY
USA
DAVID A HAWORTH
27901 NE 63RD ST
CAMAS, WA 98607
USA
QSL: LoTW, eQSL, QRZ log, Club Log
Email: Use mouse to view..
XML Subscriber
Lookups: 8526
Label
Biography
Detail
Logbook 3927
Web 98
Lookups 8526 (13235)
See Also WA9ONY/KH6
QRZ Record# 648422
QRZ Admin WA9ONY
Last Update 2017-11-01 00:40:15
Class Advanced
Codes: HAI
Effective 2016-11-01
Expires 2027-01-27
Grid Square CN85tq
Geo Source Geocoded Address

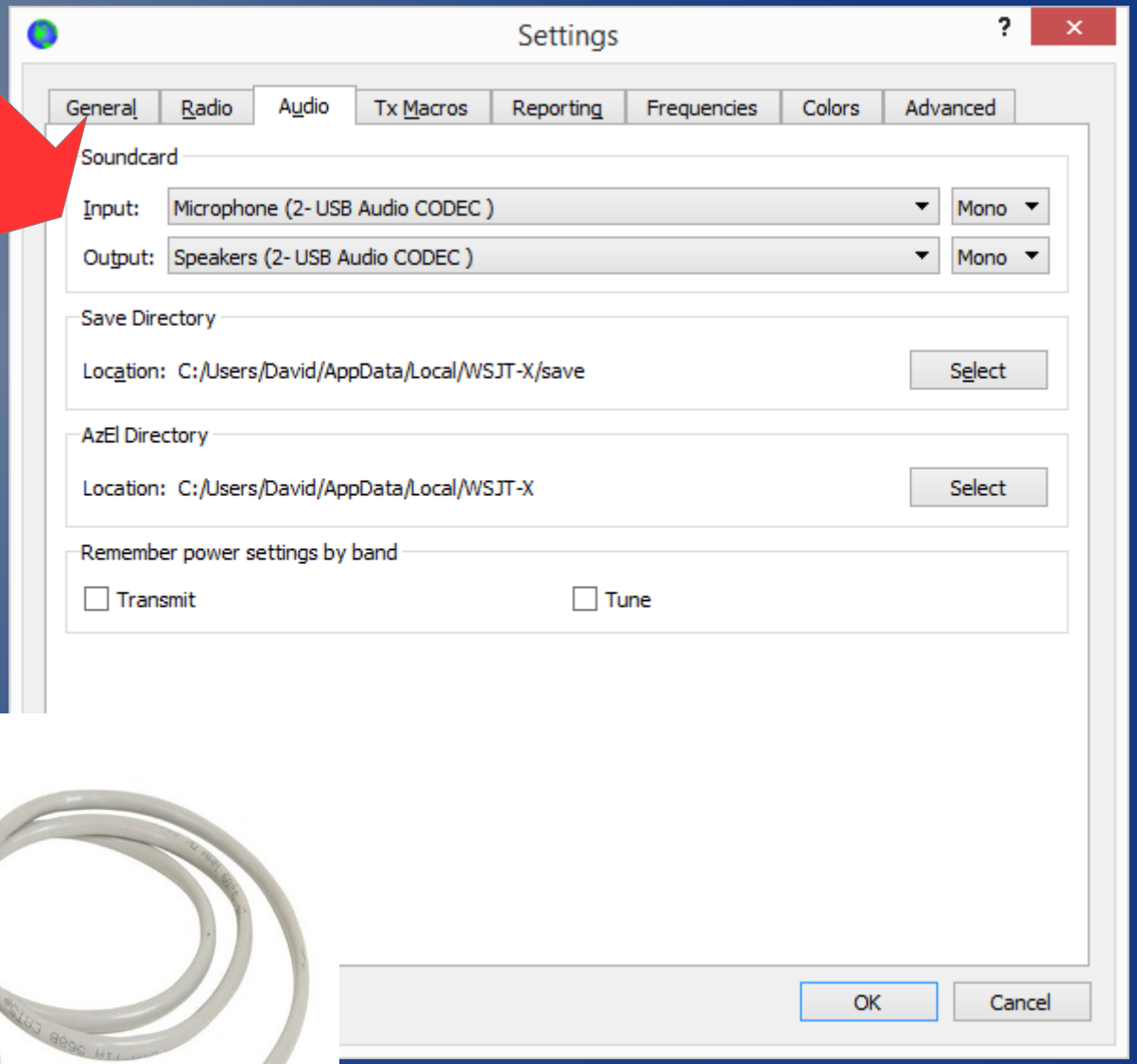
WSJT-X V1.8 Radio Setup



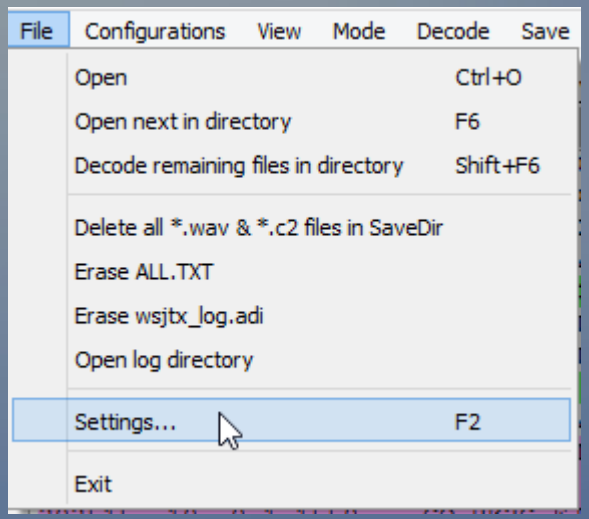


WSJT-X V1.8 Audio Setup





Free Text Messages Setup



TNX CLIFF 73G

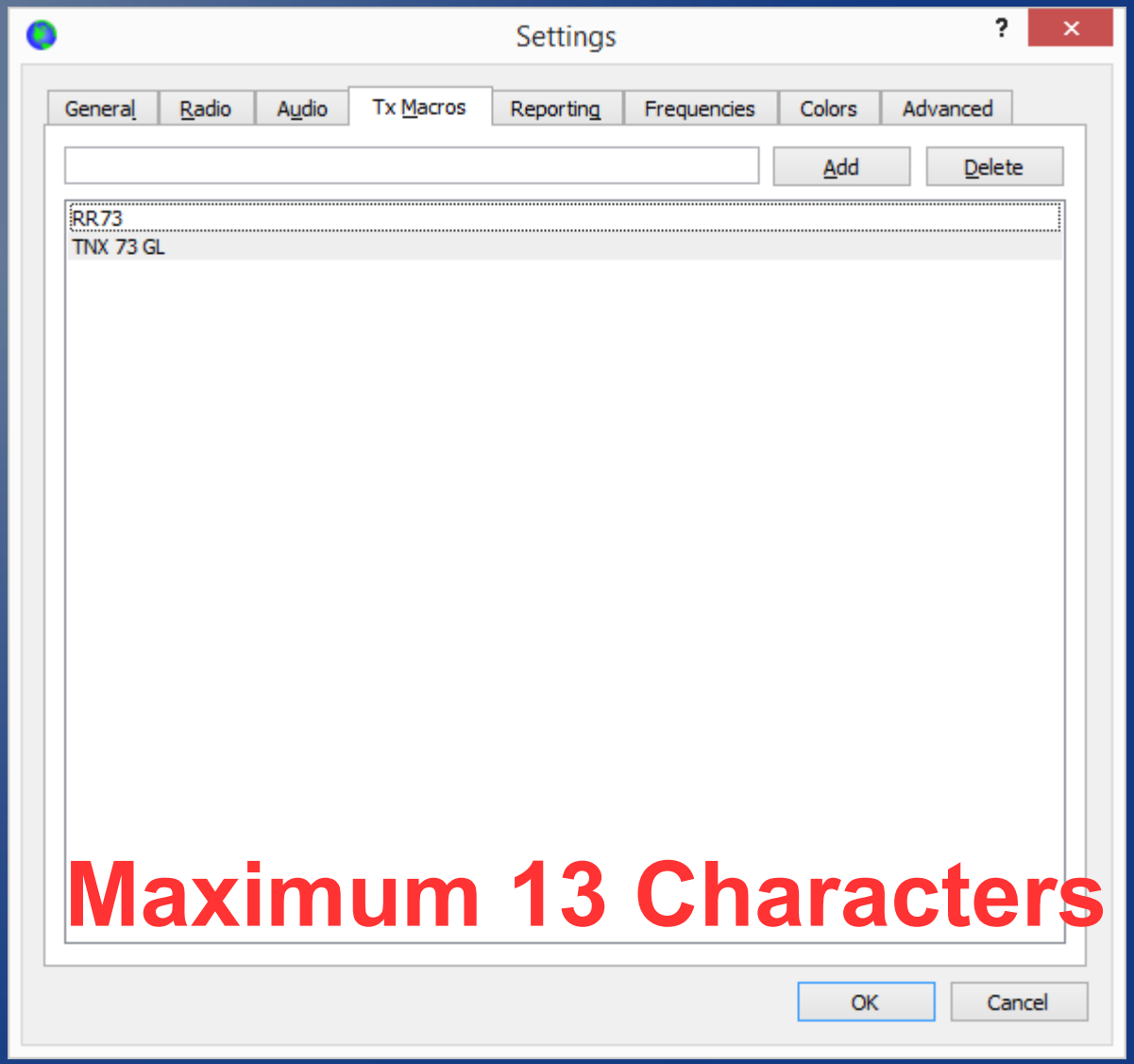
SRI US QRM

QSY JT65 323

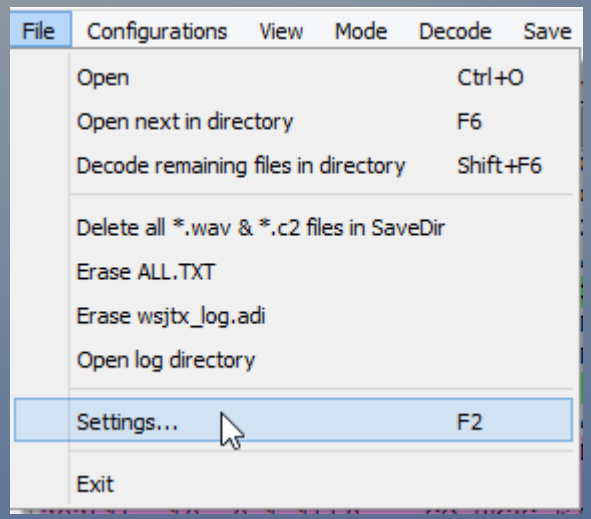
TNX LOTW 73

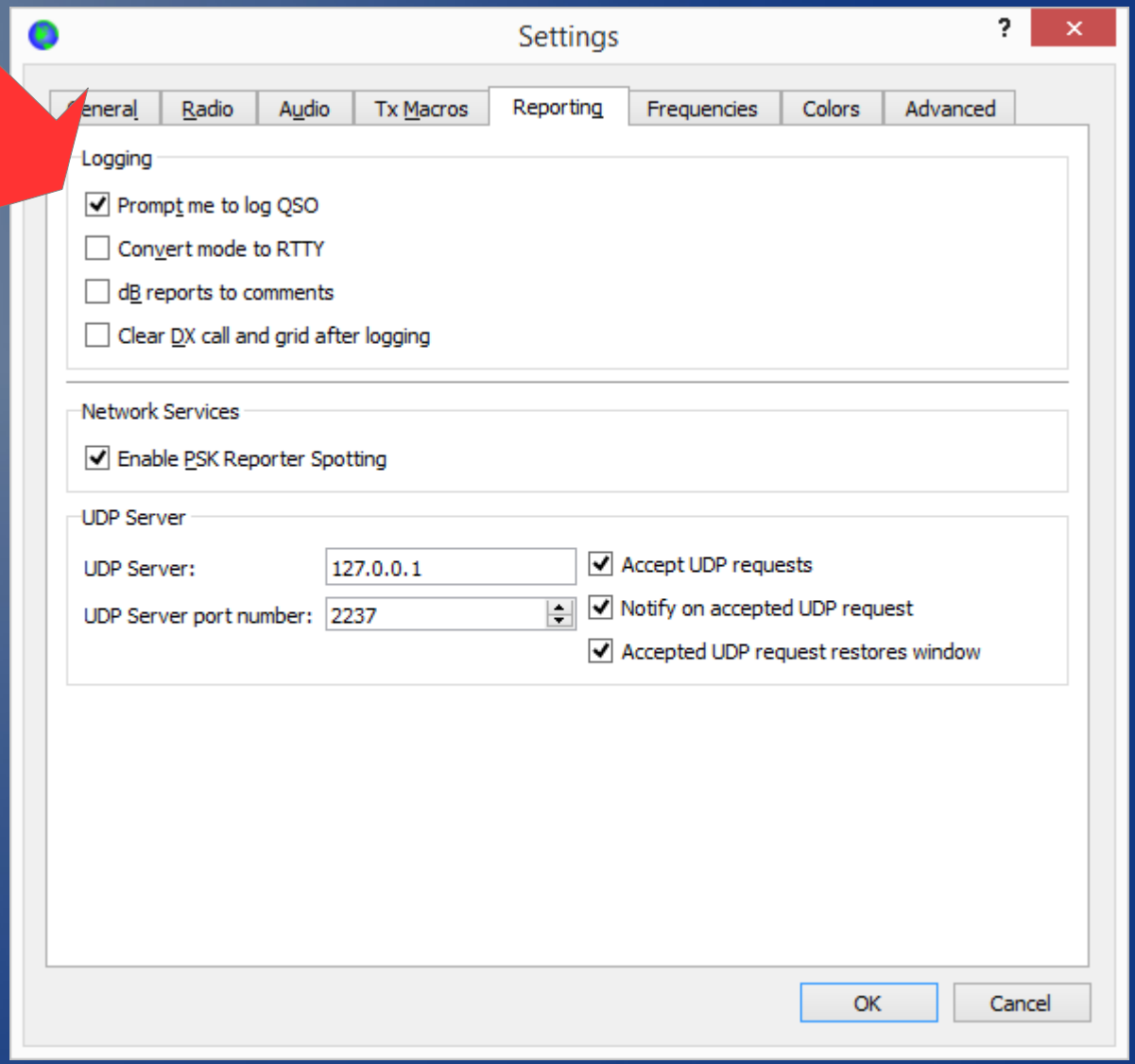
QSY AK TO FT9

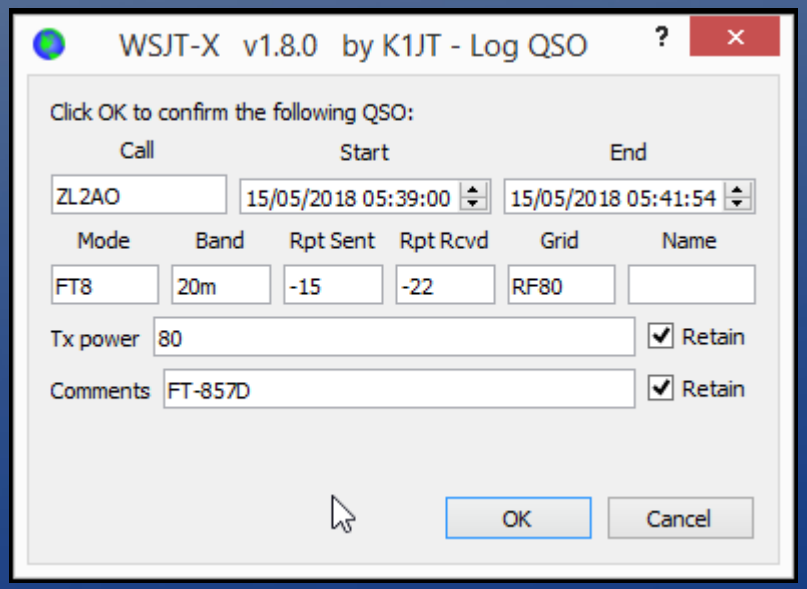
CHAI QSY 10M



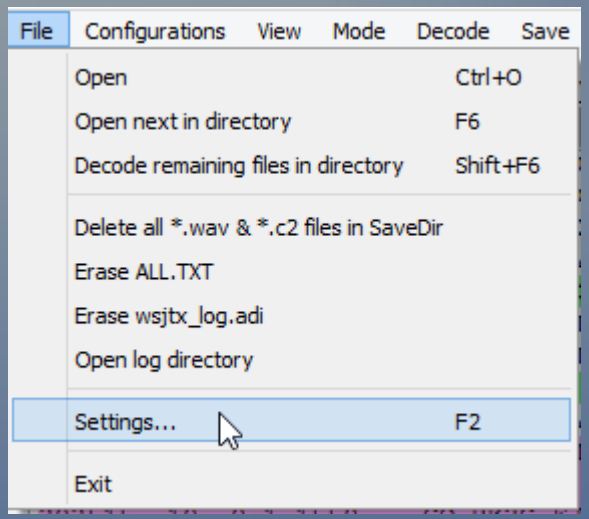
WSJT-X V1.8 Reporting Setup

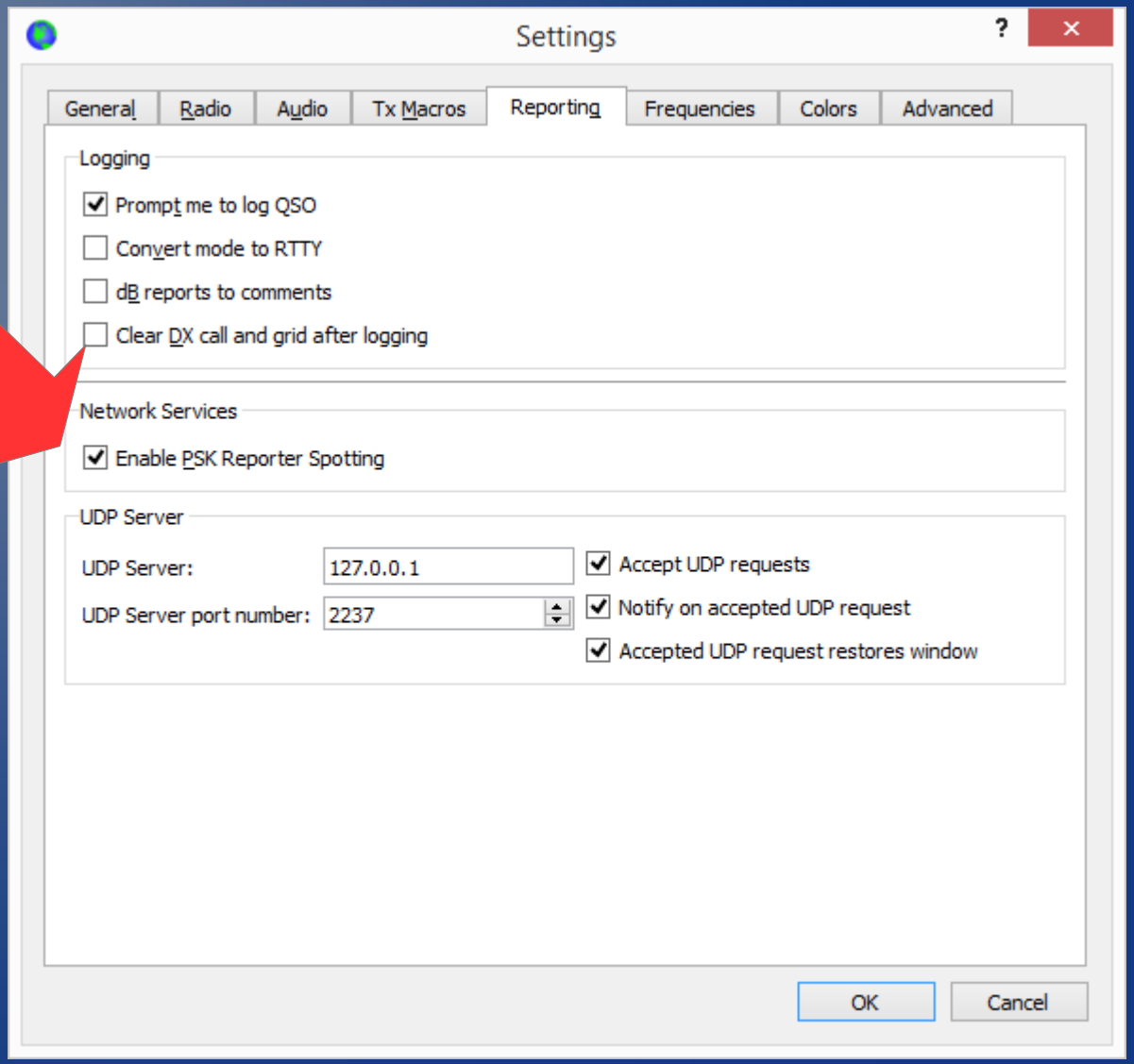


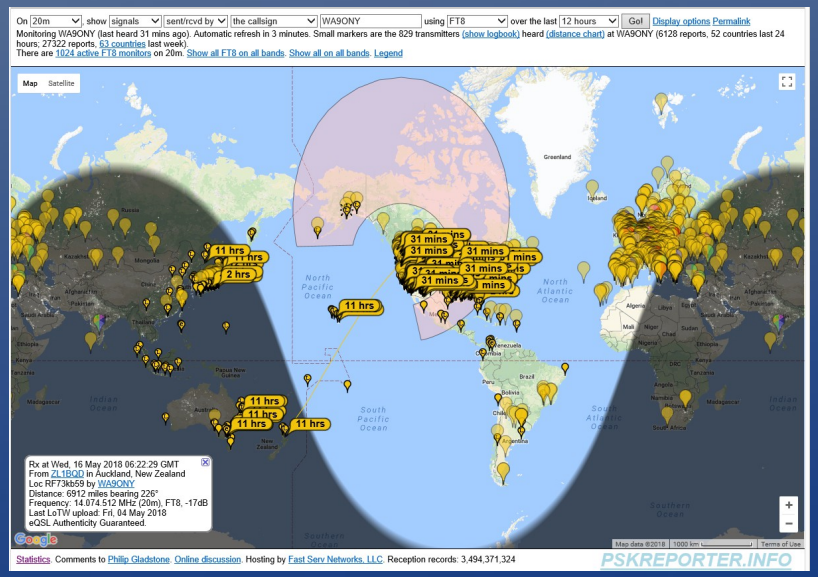




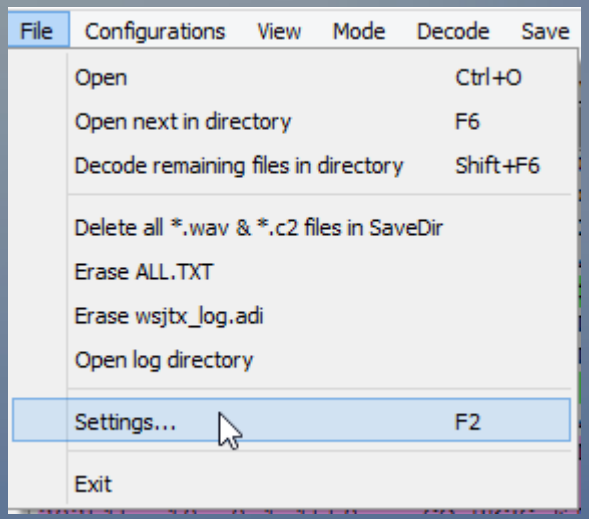
WSJT-X V1.8 Reporting Setup

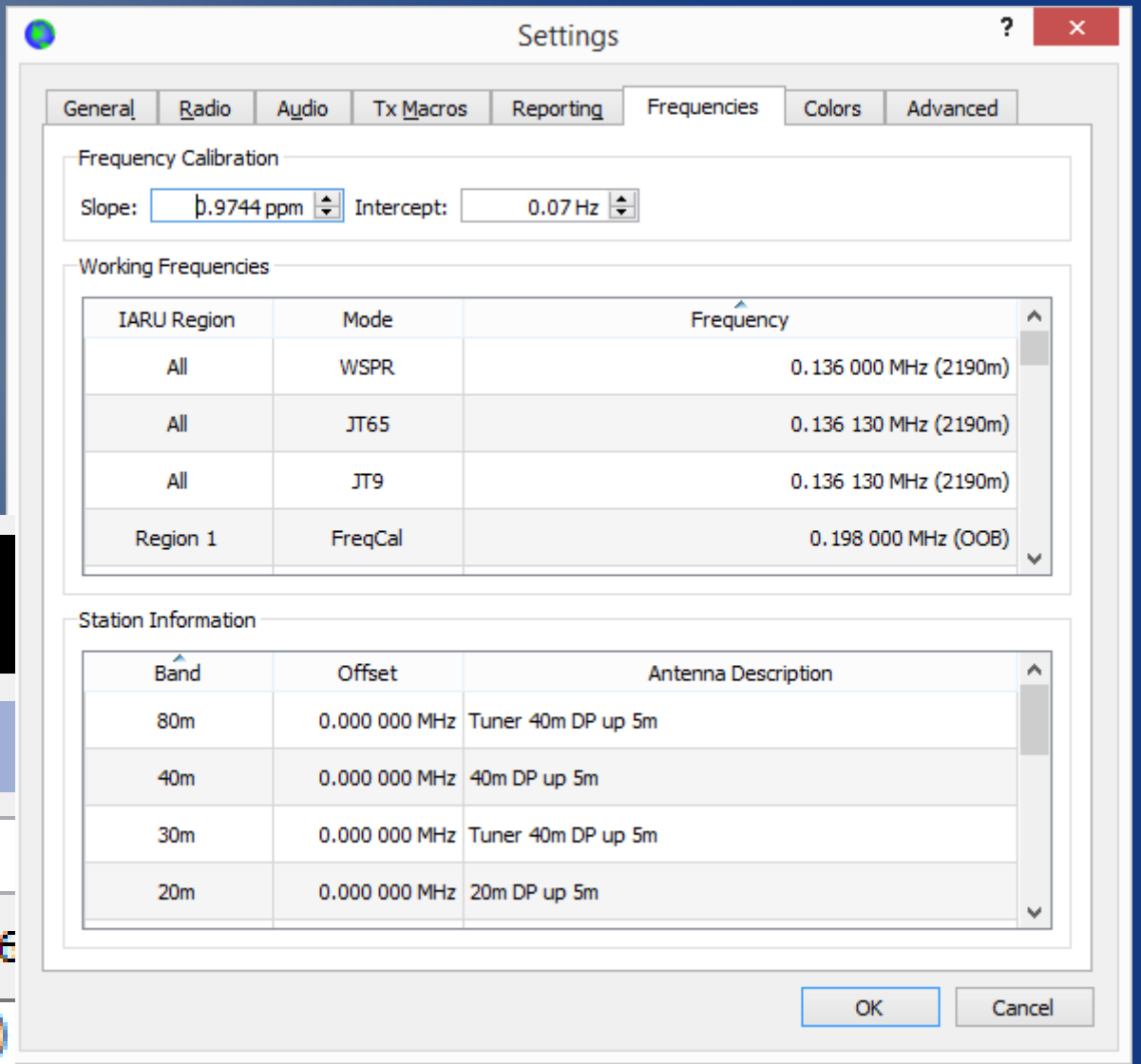


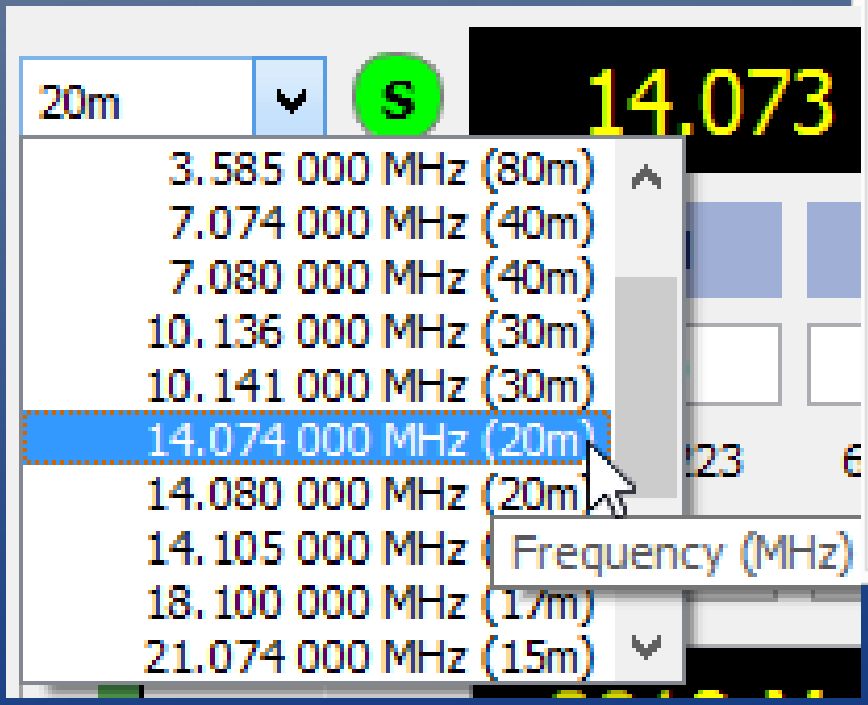




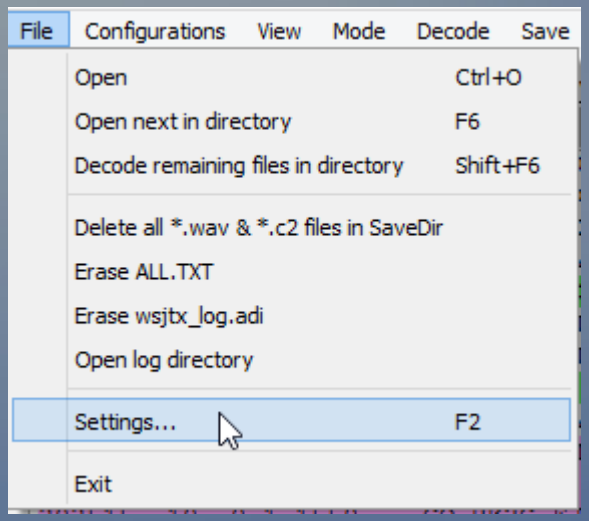
WSJT-X V1.8 Frequencies Setup

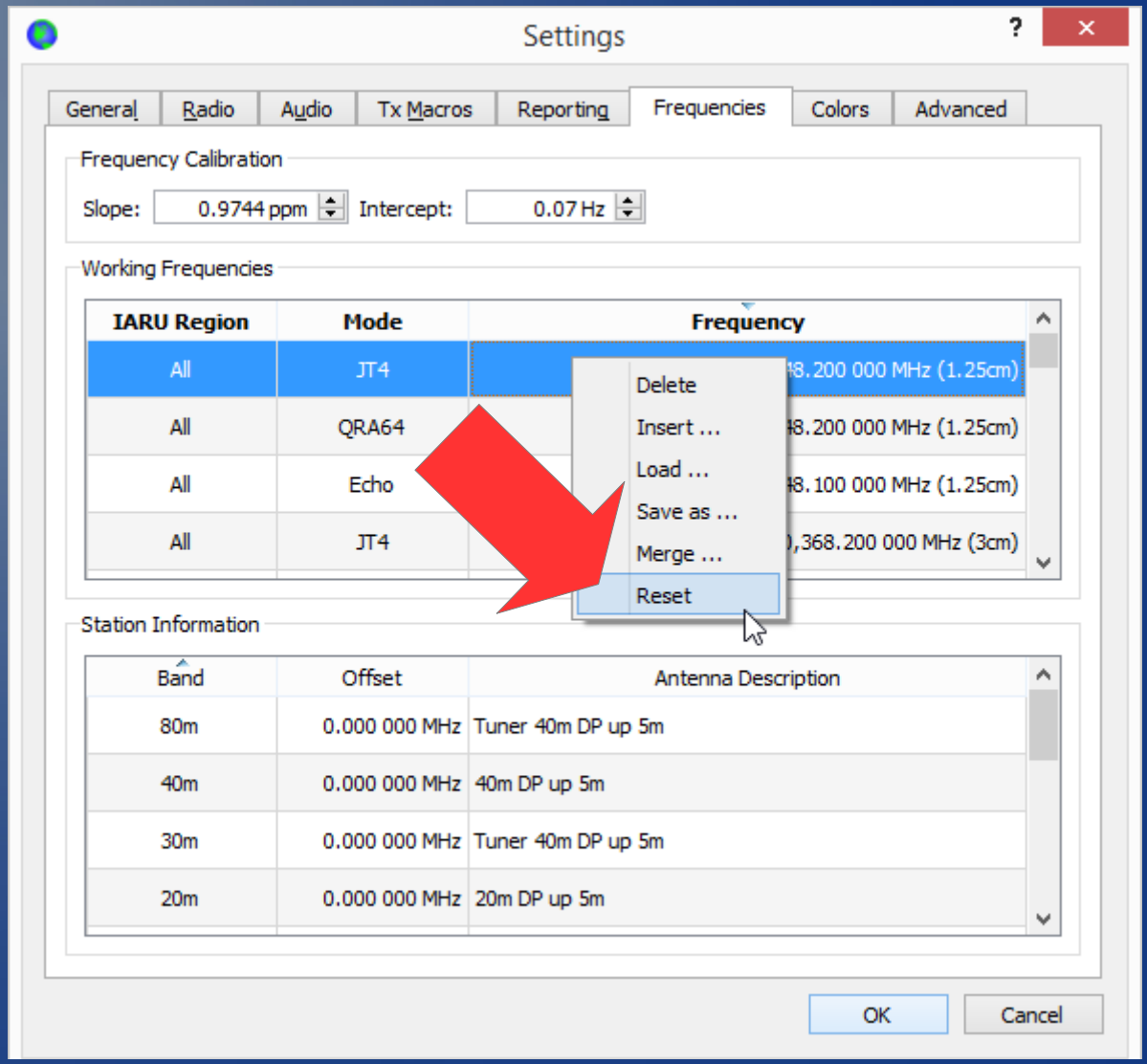




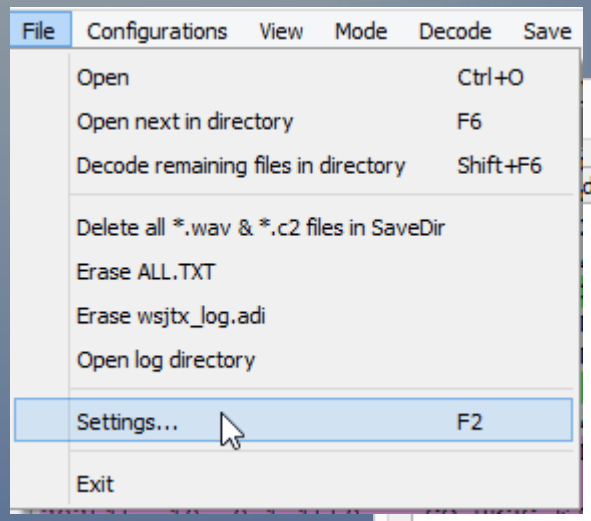


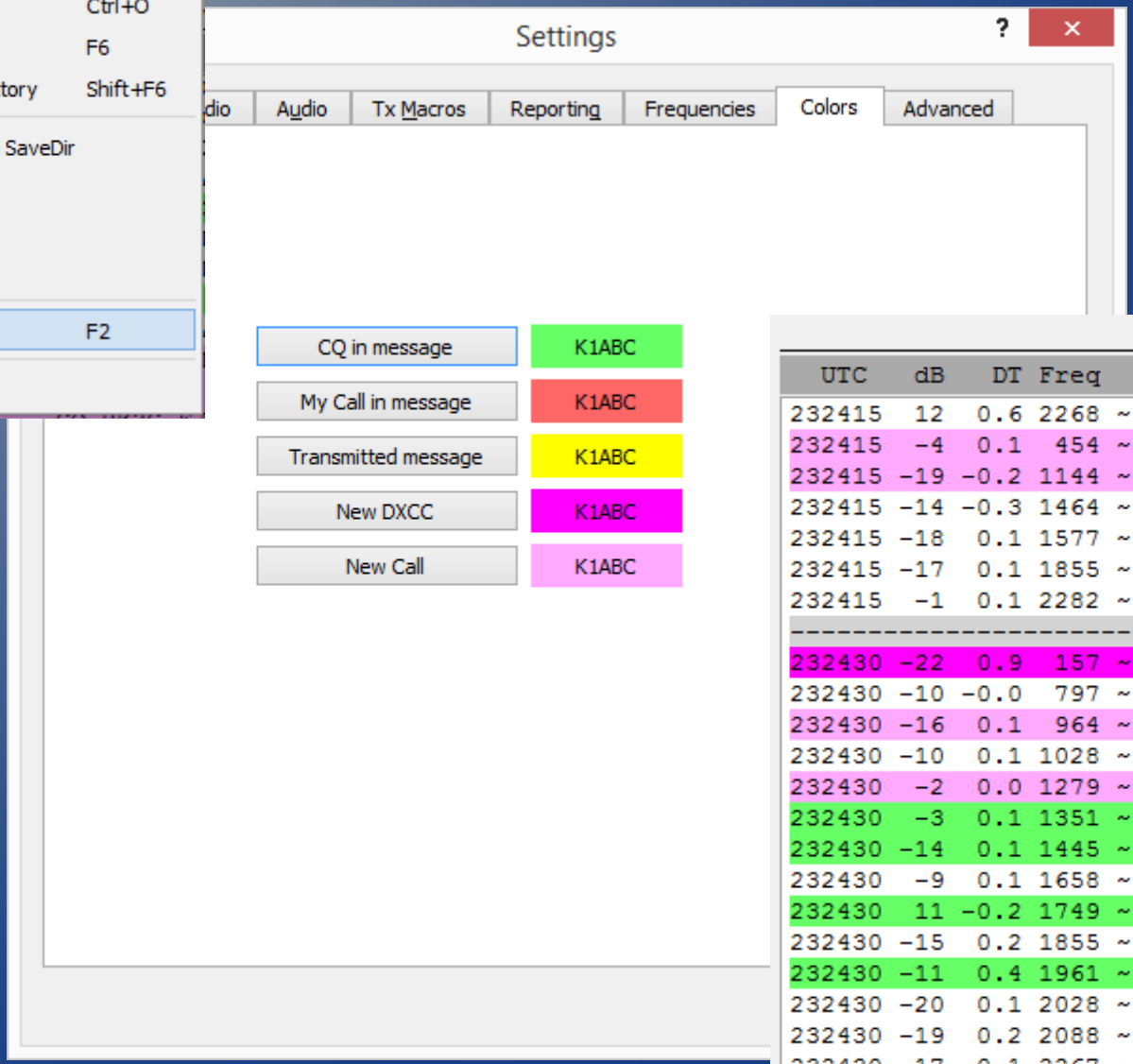
WSJT-X V1.8 Reset Frequencies

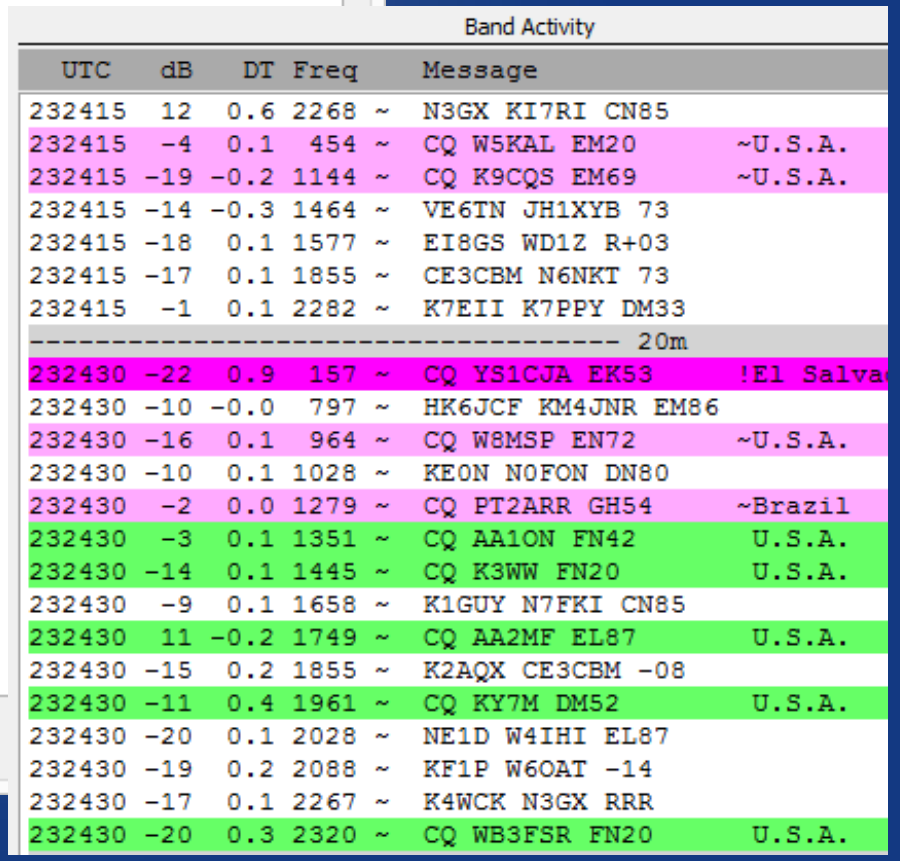




WSJT-X V1.8 Colors Setup

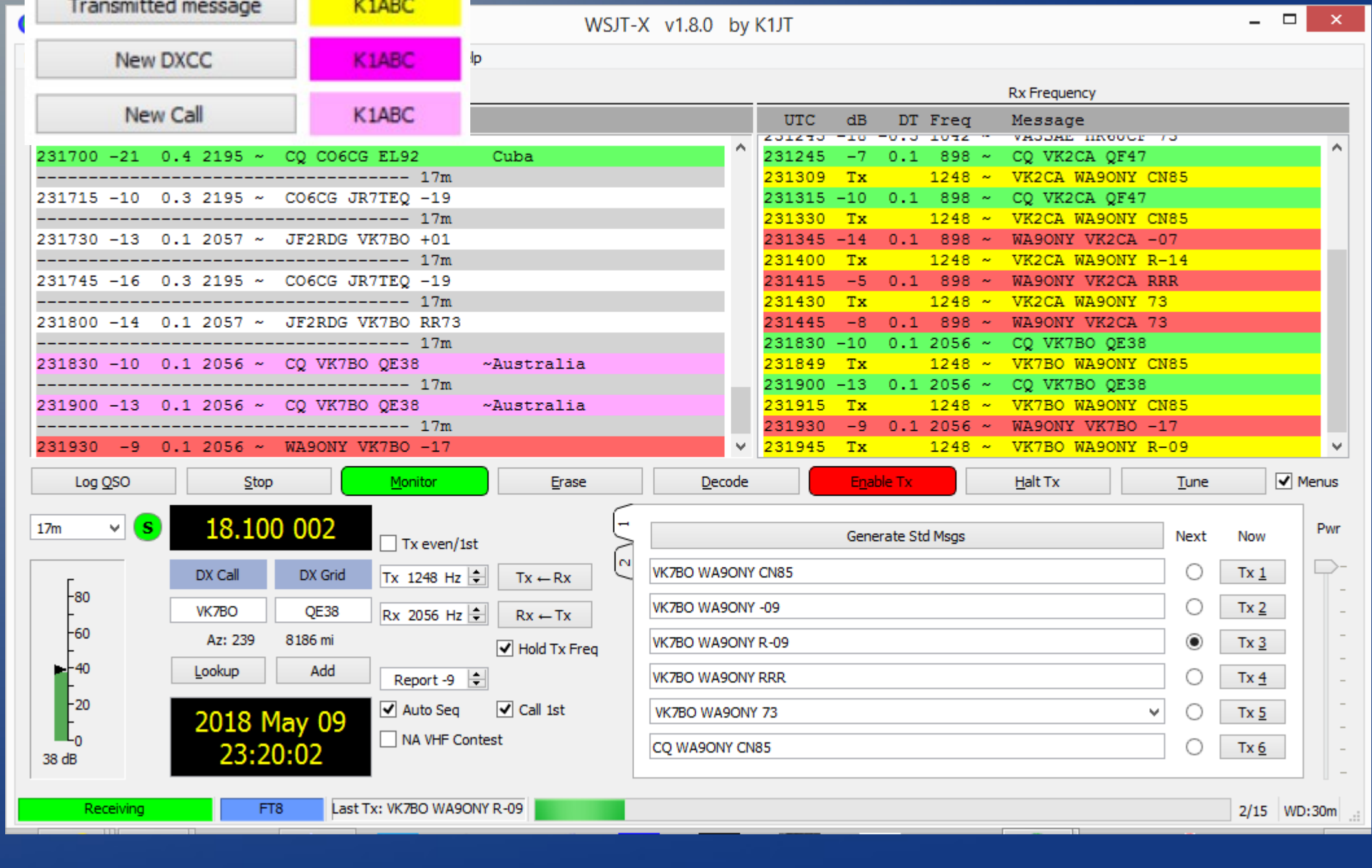




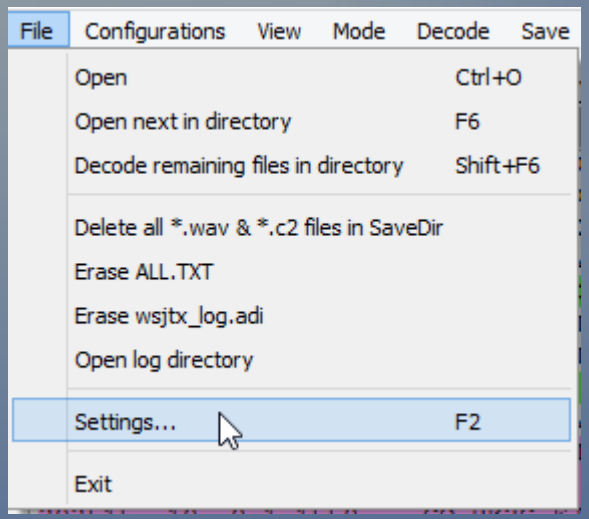


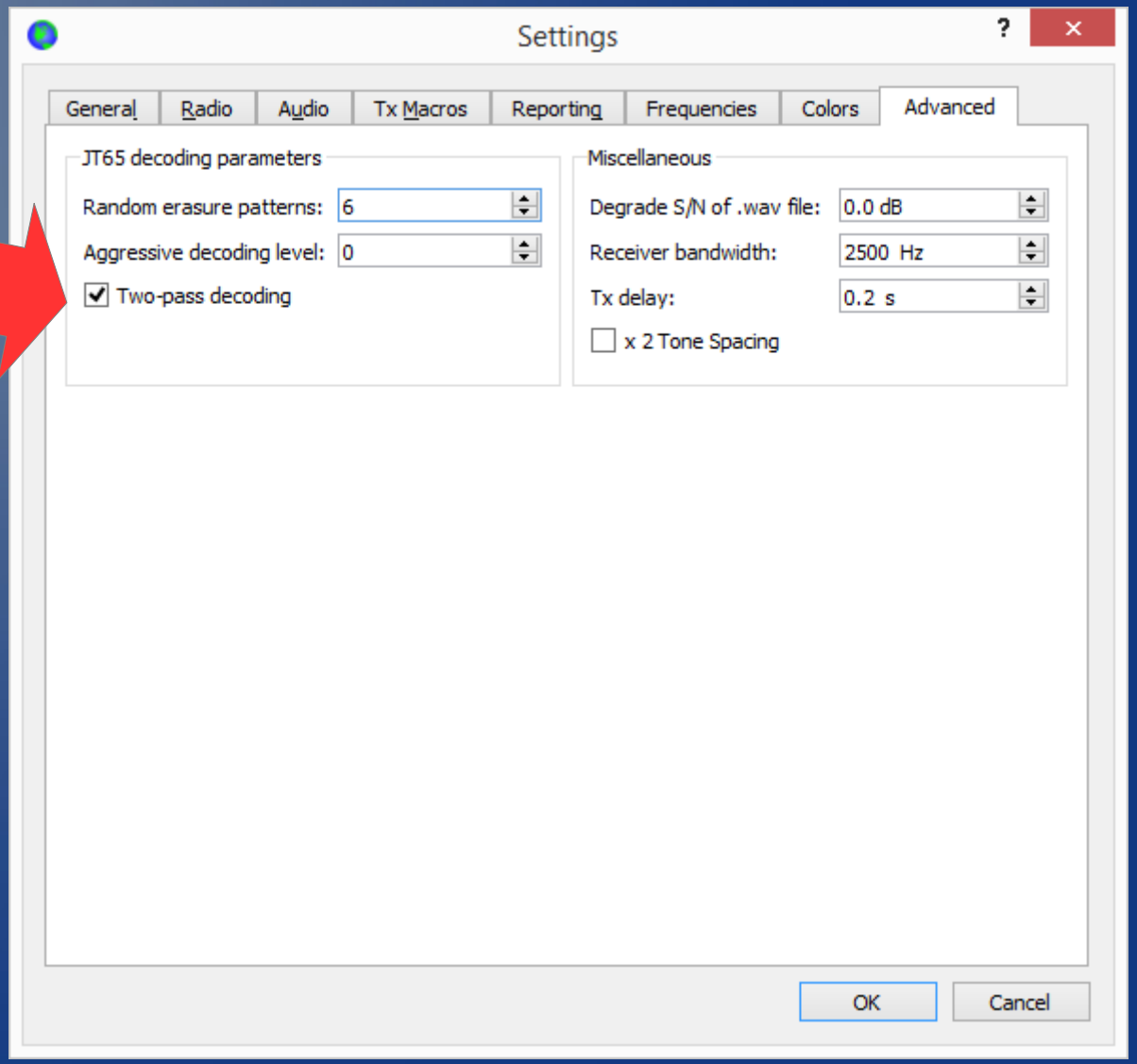
FT8 Color Decode

CQ in message	K1ABC
My Call in message	K1ABC
Transmitted message	K1ABC
New DXCC	K1ABC
New Call	K1ABC



WSJT-X V1.8 Advanced Setup
2 Pass Decode





WSJT-X 2 Pass Decode

1st Pass

2nd Pass

UTC	dB	DT	Freq		Message	
----------					---------- 20m	
015445	-15	0.1	462	~	VE2FCR W6NWS -01	
015445	-8	0.1	577	~	VU2IBI W8VS EN82	
015445	-1	0.1	707	~	CQ KF6JXM DM13	U.S.A.
015445	-1	0.1	839	~	AP2AM KF8PD -09	
015445	-6	-0.2	932	~	K9IJ K6PAD DM13	
015445	-10	0.1	1004	~	KD3K W5DTX EM12	
015445	-23	0.1	1094	~	K6ZVA WA2HIP 73	
015445	-6	0.8	1200	~	KB7RUQ AG4EX 73	
015445	-24	0.1	1251	~	NK2B N5RB EM54	
015445	-4	-0.2	1352	~	XP3A K9GL EN52	
015445	1	0.1	1461	~	AP2NK W4DXX -22	
015445	-12	0.1	1607	~	NK2B N9XHN EN50	
015445	-17	0.1	1712	~	KE0OVX K3WW -05	
015445	-16	0.1	1764	~	AP2NK WA3LAB FN20	
015445	-3	0.1	2013	~	RK4FF KB7MA R+01	
015445	-10	0.2	2243	~	CQ WB9VGJ DM34	U.S.A.
015445	6	0.2	2336	~	AP2NK W6MYN DM03	
015445	-19	0.9	285	~	WA4GBT TG9ADV -08	
015445	-24	0.1	363	~	AP2NK K1PTF FN22	
015445	-19	0.3	424	~	AP2NK KQ9H EN53	
015445	-18	0.1	481	~	K3UA K5MFP R-04	
015445	-19	0.3	866	~	VU2CPL N6AR 73	
015445	-11	0.1	1354	~	XP3A K9ATX EN53	
015445	-9	0.1	1437	~	VU2CPL W8ASA EM79	
015445	-19	-0.1	1664	~	VU2CPL K2YYY DM79	

Decoding 2 Stations K9GL & K9TX On Top of Each Other

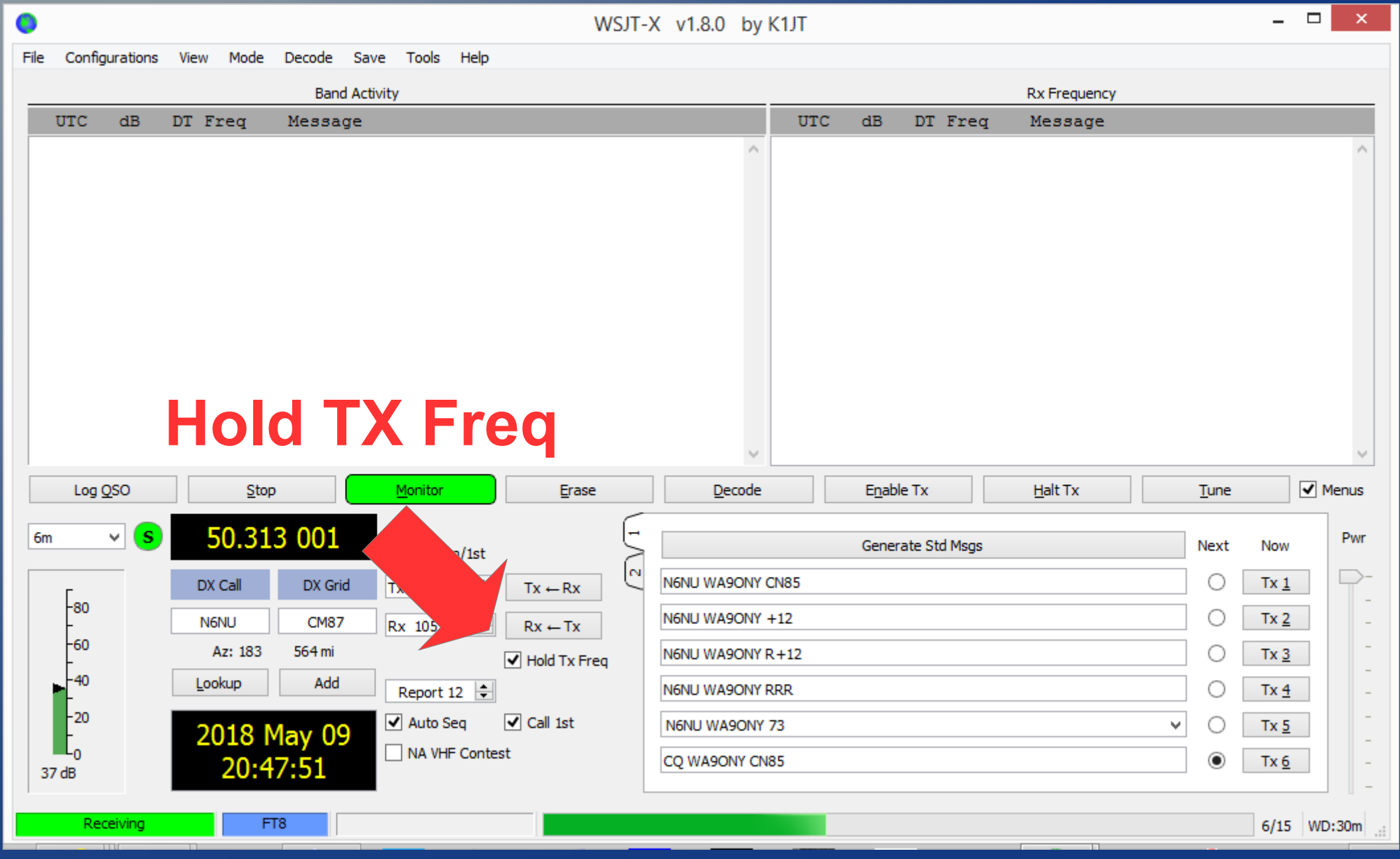
1st Pass

2nd Pass

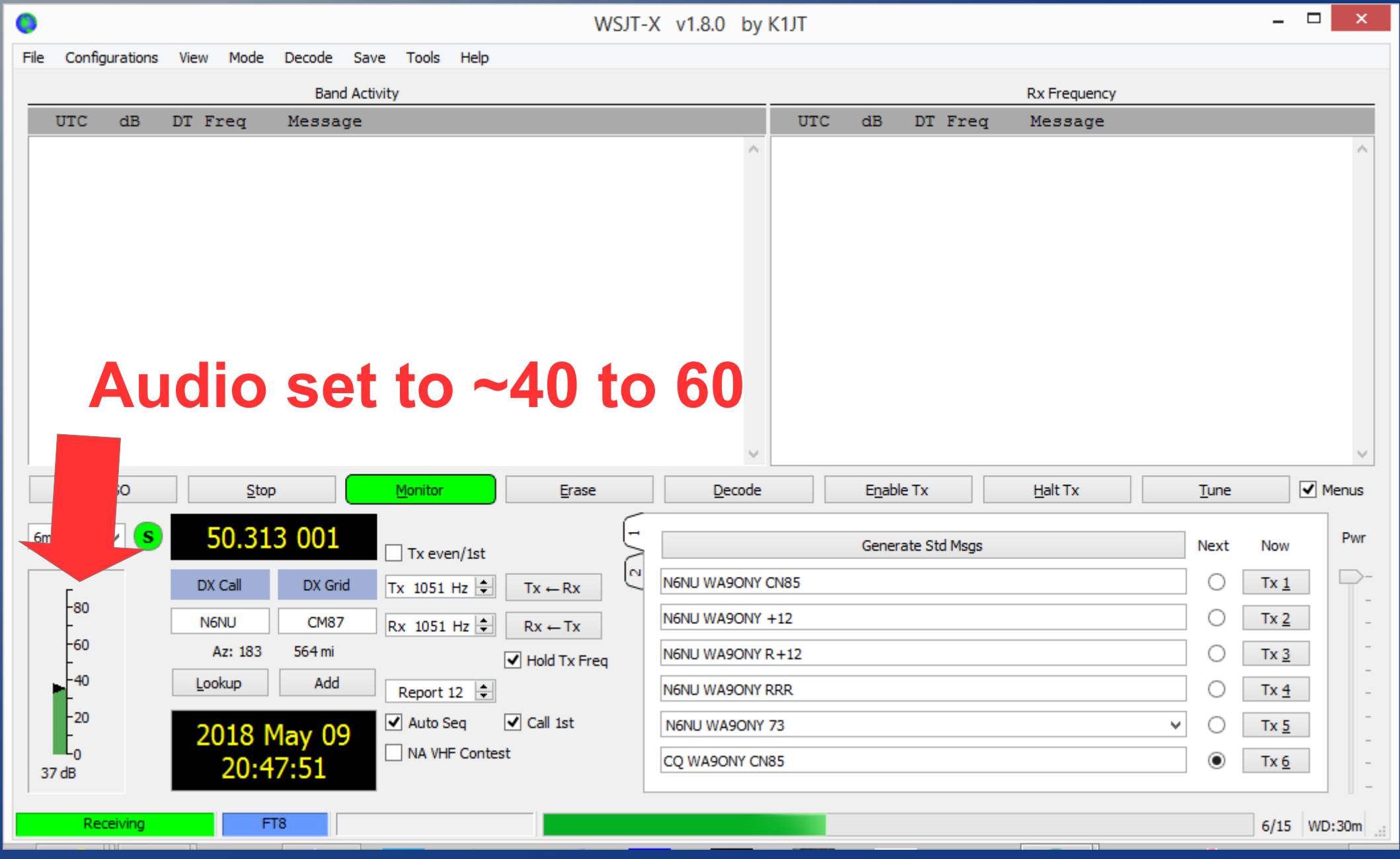
UTC	dB	DT	Freq		Message	
----------					---------- 20m	
015445	-15	0.1	462	~	VE2FCR W6NWS -01	
015445	-8	0.1	577	~	VU2IBI W8VS EN82	
015445	-1	0.1	707	~	CQ KF6JXM DM13	U.S.A.
015445	-1	0.1	839	~	AP2AM KF8PD -09	
015445	-6	-0.2	932	~	K9IJ K6PAD DM13	
015445	-10	0.1	1004	~	KD3K W5DTX EM12	
015445	-23	0.1	1094	~	K6ZVA WA2HIP 73	
015445	-6	0.8	1200	~	KB7RUQ AG4EX 73	
015445	-24	0.1	1251	~	NK2B N5RB EM54	
015445	-4	-0.2	1352	~	XP3A K9GL EN52	
015445	1	0.1	1461	~	AP2NK W4DXX -22	
015445	-12	0.1	1607	~	NK2B N9XHN EN50	
015445	-17	0.1	1712	~	KE0OVX K3WW -05	
015445	-16	0.1	1764	~	AP2NK WA3LAB FN20	
015445	-3	0.1	2013	~	RK4FF KB7MA R+01	
015445	-10	0.2	2243	~	CQ WB9VGJ DM34	U.S.A.
015445	6	0.2	2336	~	AP2NK W6MYN DM03	
015445	-19	0.9	285	~	WA4GBT TG9ADV -08	
015445	-24	0.1	363	~	AP2NK K1PTF FN22	
015445	-19	0.3	424	~	AP2NK KQ9H EN53	
015445	-18	0.1	481	~	K3UA K5MFP R-04	
015445	-19	0.3	866	~	VU2CPL N6AR 73	
015445	-11	0.1	1354	~	XP3A K9ATX EN53	
015445	-9	0.1	1437	~	VU2CPL W8ASA EM79	
015445	-19	-0.1	1664	~	VU2CPL K2YYY DM79	

WSJT-X V1.8 Main Window Setup

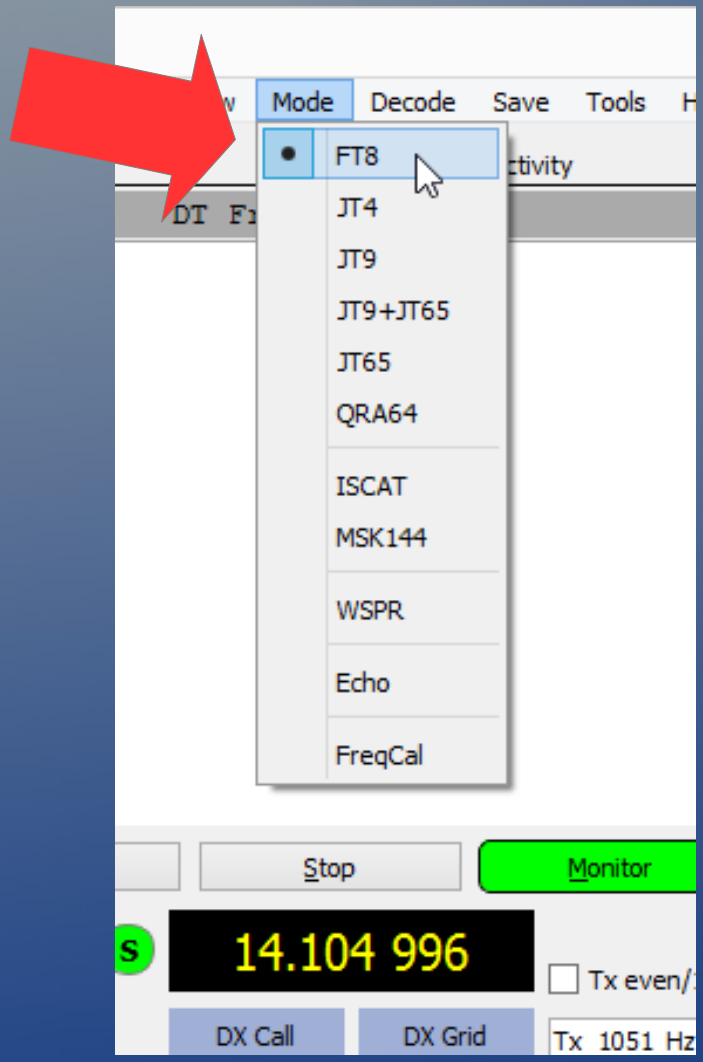
WSJT-X V1.8 Main Window Setup



WSJT-X V1.8 Main Window Setup



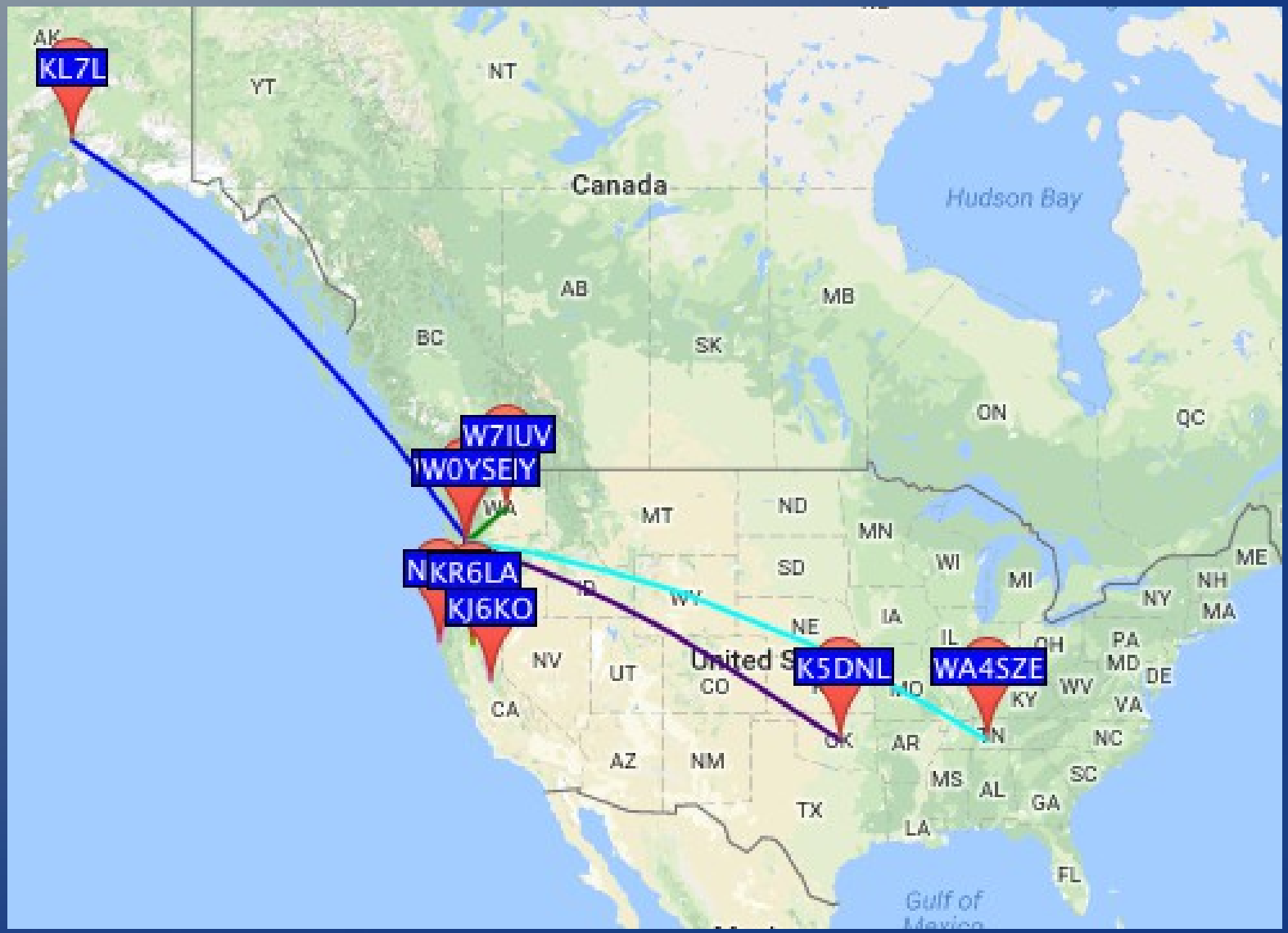
WSJT-X V1.8 Main Window Setup



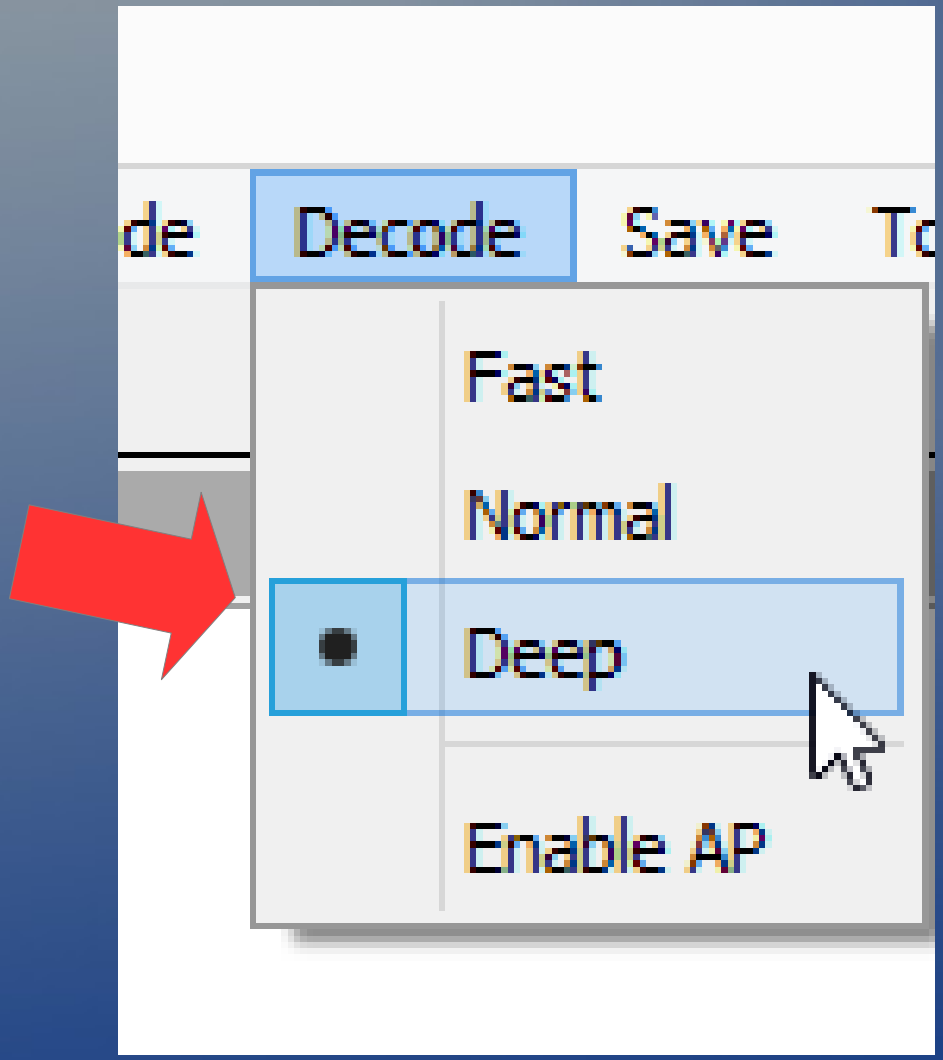
- WSJT-X has many digital modes of operation.
- After using FT8 try WSPR: Weak Signal Propagation Reporting

WSPR 630m Monitoring

WSPRnet wsprnet.org/drupal/

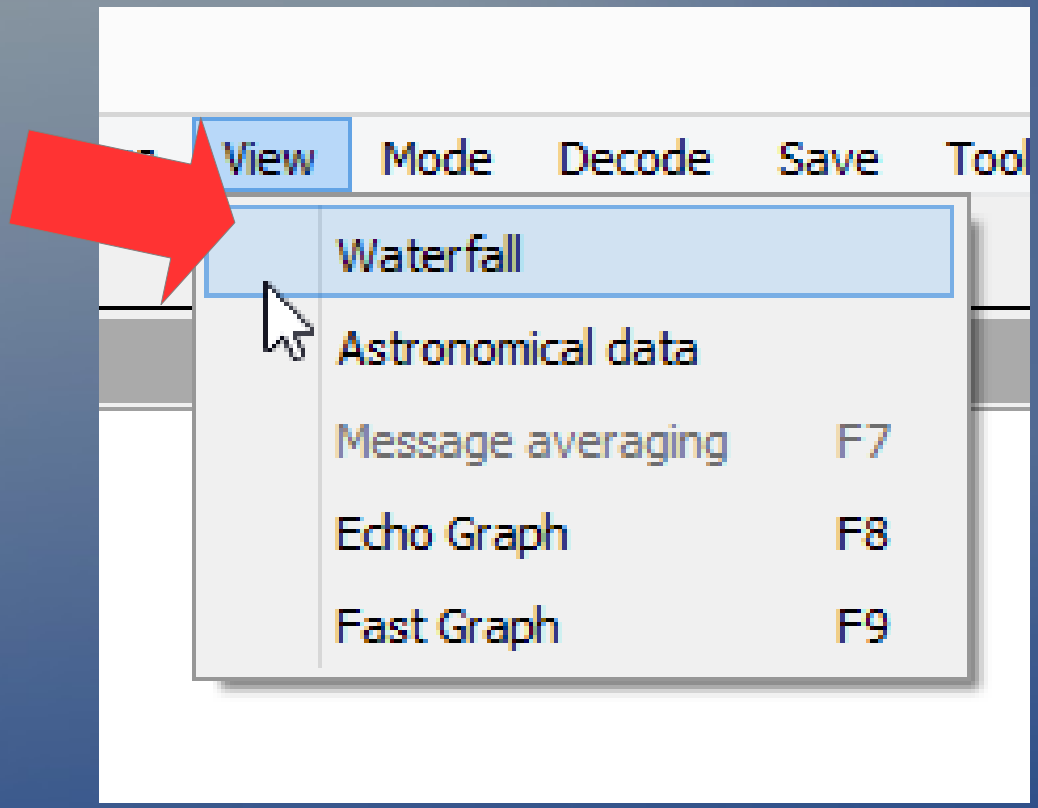


WSJT-X V1.8 Main Window Setup

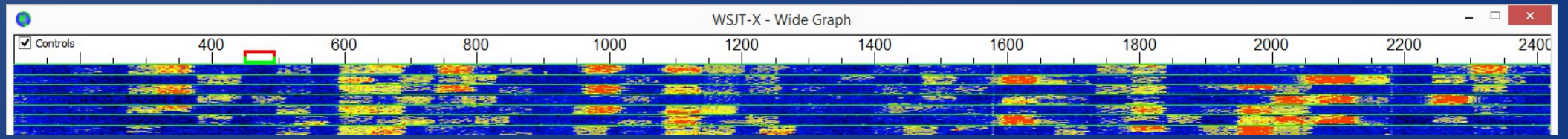


- Start with Deep
- Deep takes more computer processing power
- Select Normal or Fast if having decode problems with Deep

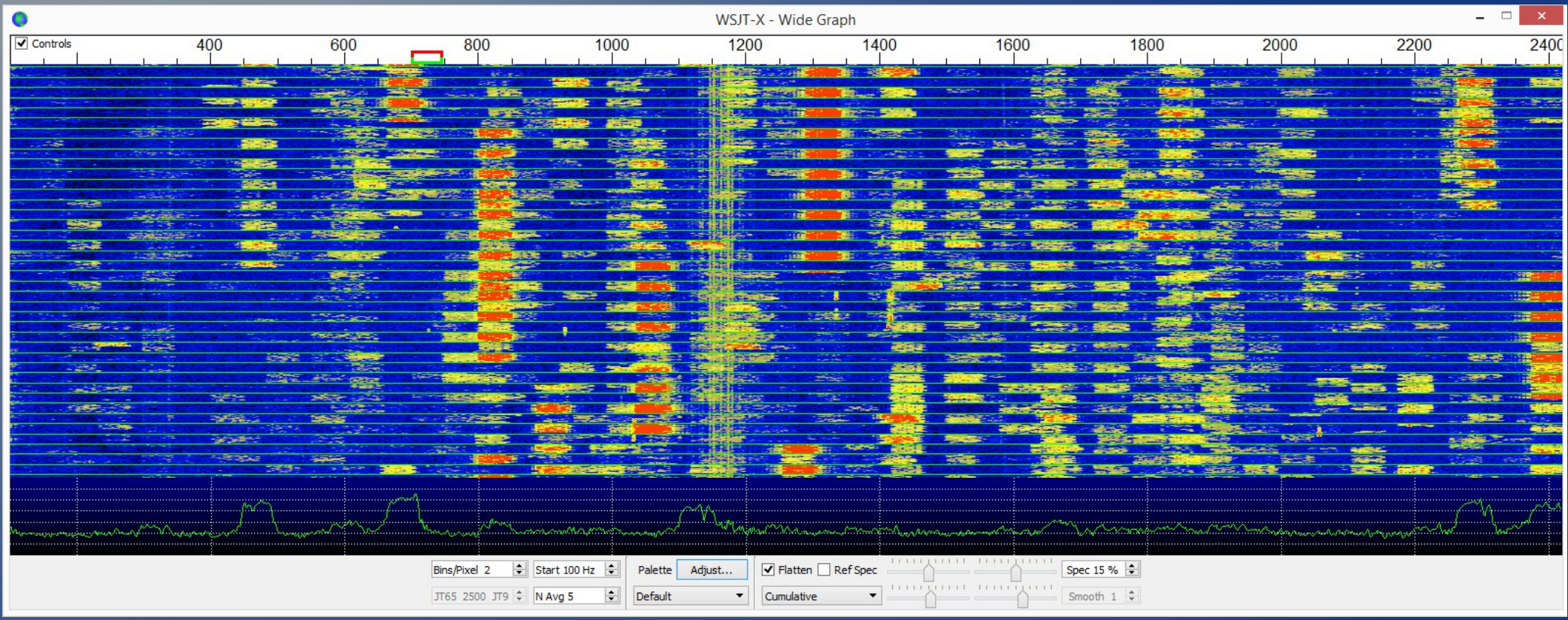
Turn On Waterfall Graph



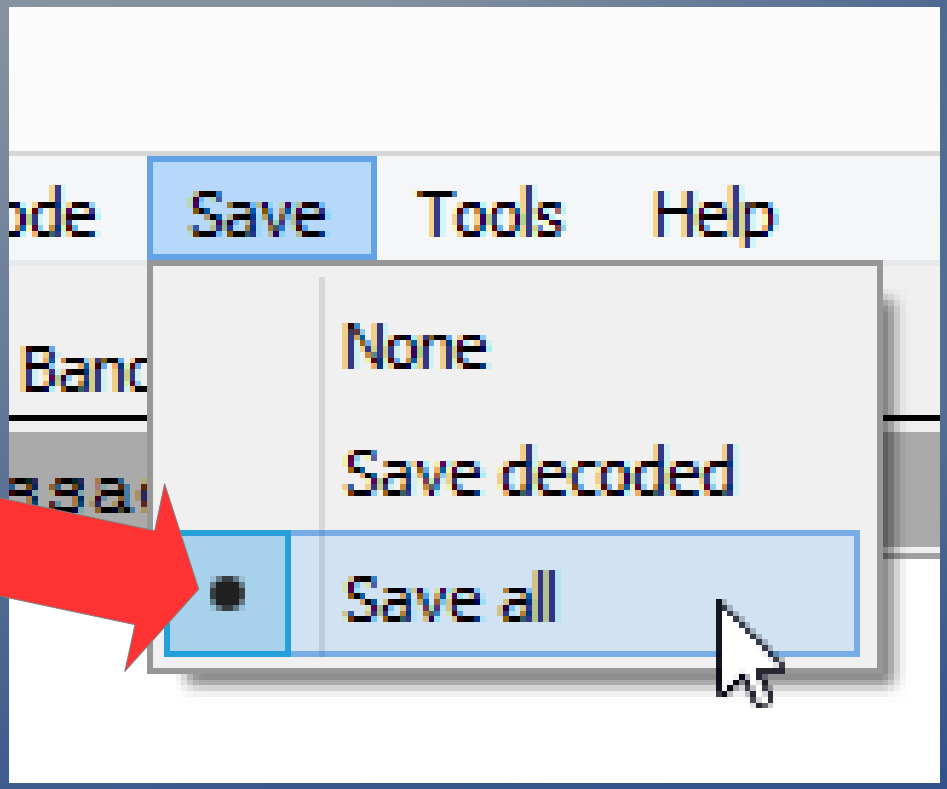
- Shows all signals in the bandpass versus time
- Shows received signals
- Used to select clear frequency to call stations or CQ



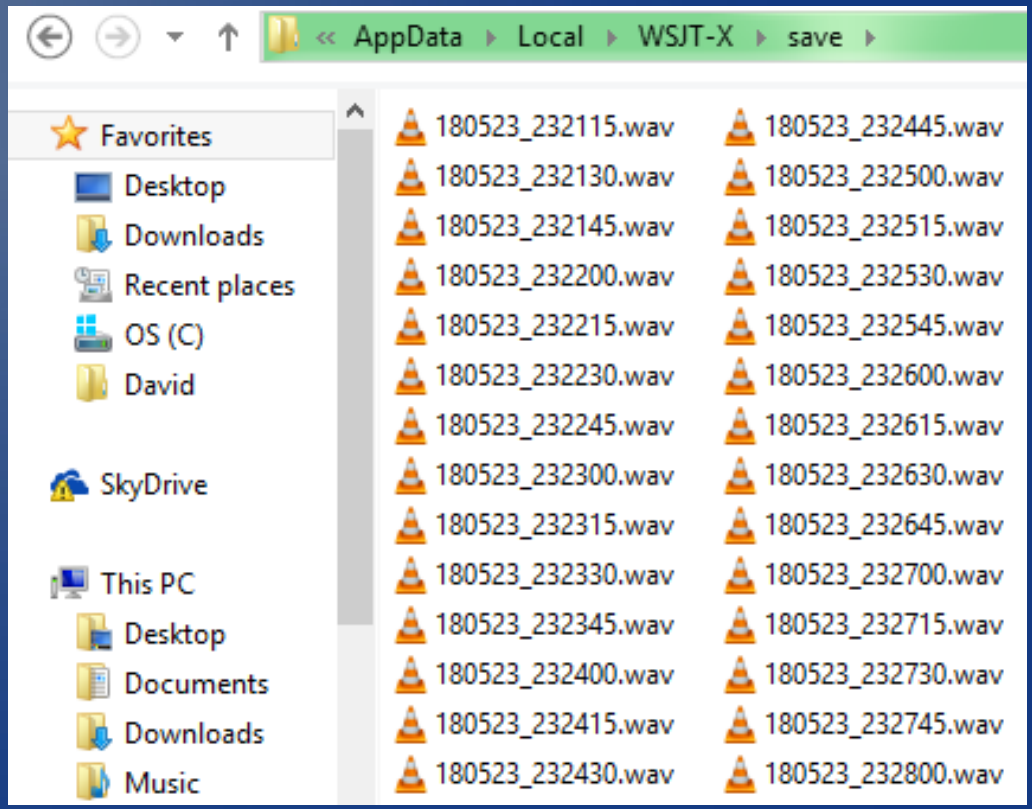
FT8 Waterfall Graph



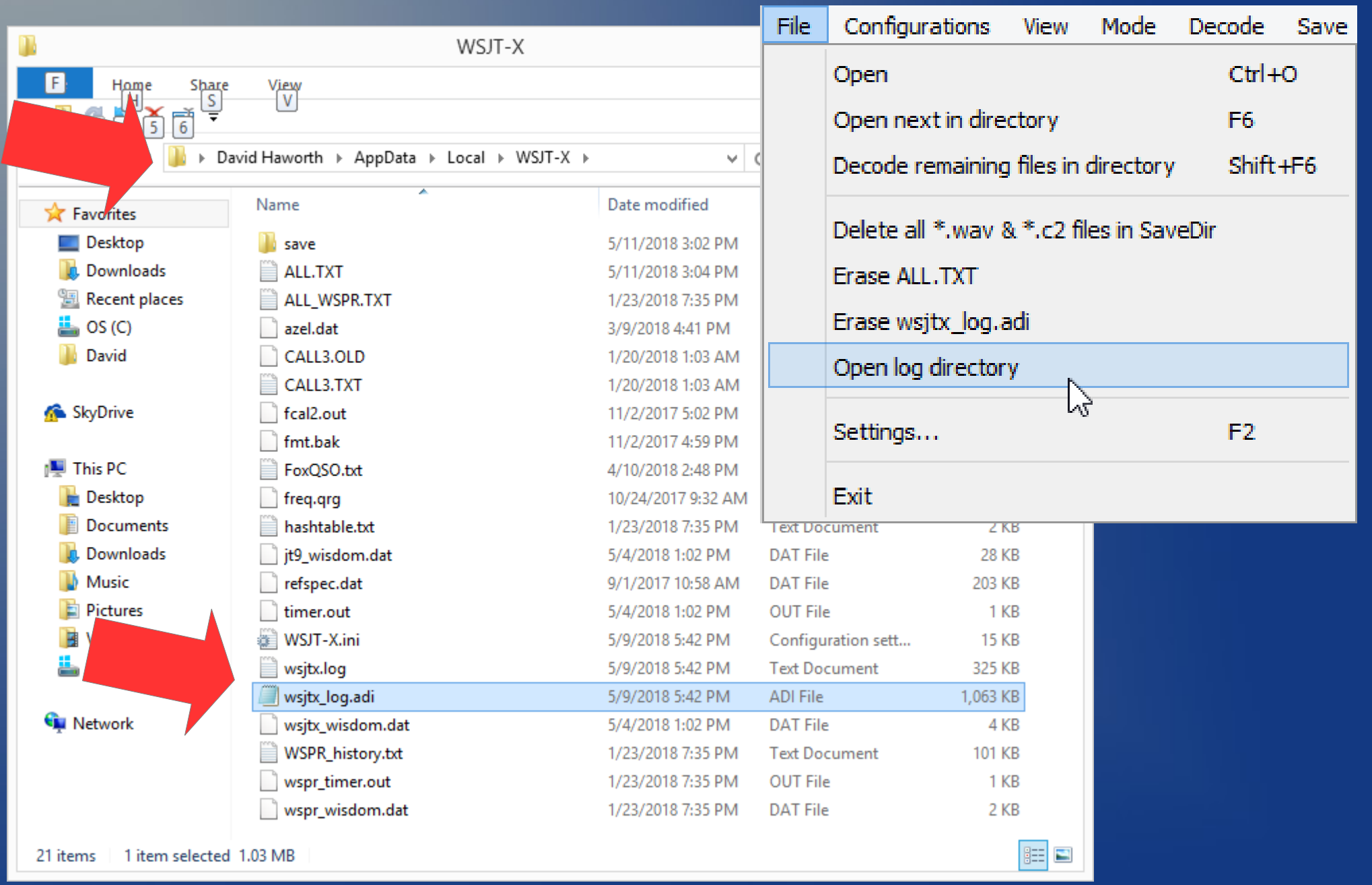
WSJT-X V1.8 Main Window Setup



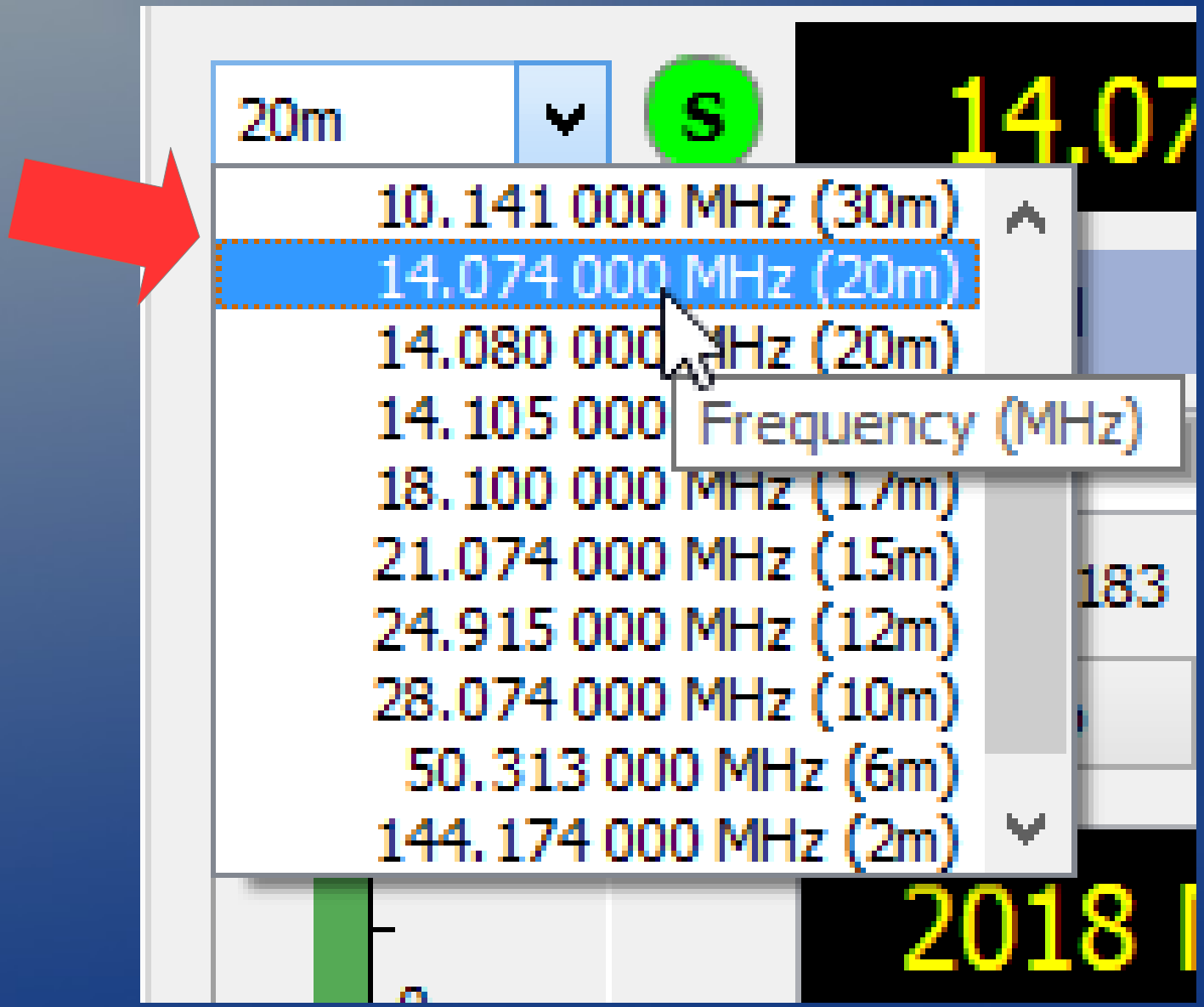
- Saves decode files
- Save audio files



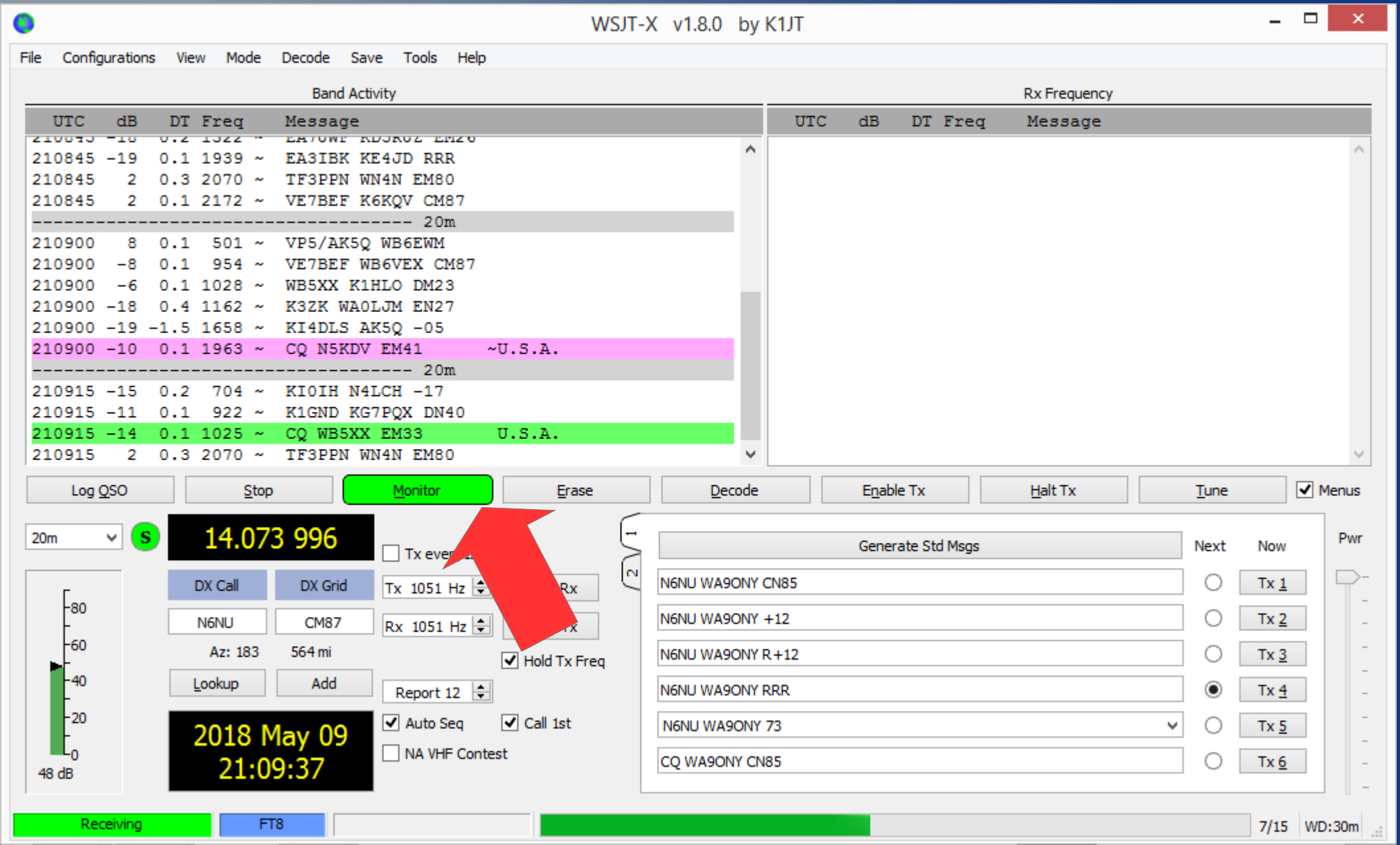
WSJT-X Saved Files



WSJT-X V1.8 Band Setup



FT8 Monitor Mode



Band Activity Window

- UTC: Coordinated Universal Time
- dB: S/N in decibels
- DT: Delta Time
  - No decode for DT > ~ >2 sec.
- Freq: Frequency in Hz
- Message

Band Activity

UTC	dB	DT	Freq		Message	
----------					20m	
182315	1	1.0	339	~	CQ N6IQY CM99	U.S.A.
182315	-11	1.0	605	~	CQ WB5DW EM30	~U.S.A.
182315	12	0.2	739	~	VA6MNT K7YVO CN85	