



FT8 Digital Mode DX Fun with Modest Equipment

David Haworth

WA9ONY


David A Haworth
27901 NE 63rd St
Camas, WA 98607
USA
Loc:CN85tq ITU:6 CQ:3 Clark County
David Haworth, WA9ONY, SKCC #16405
<http://www.stargazing.net/david>
<https://www.qrz.com/db/WA9ONY>



To: RI1ANC This confirms our 2-way FT8 QSO
Date: October 6, 2017 Time: 03:11 UTC
Band: 20M UR Sigs: -12

WA9ONY/KH6

David A Haworth
4531 Wailapa Rd
Kilauea, HI 96754
USA
Loc:BL02he ITU:61 CQ:31 Kauai County
IOTA:OC-019
73, David
www.qrz.com/db/WA9ONY/KH6
www.stargazing.net/david



To: SAMPLE This confirms our 2-way FT8 QSO
Date: February 10, 2018 Time: 00:00 UTC
Band: 20m UR Sigs: +00

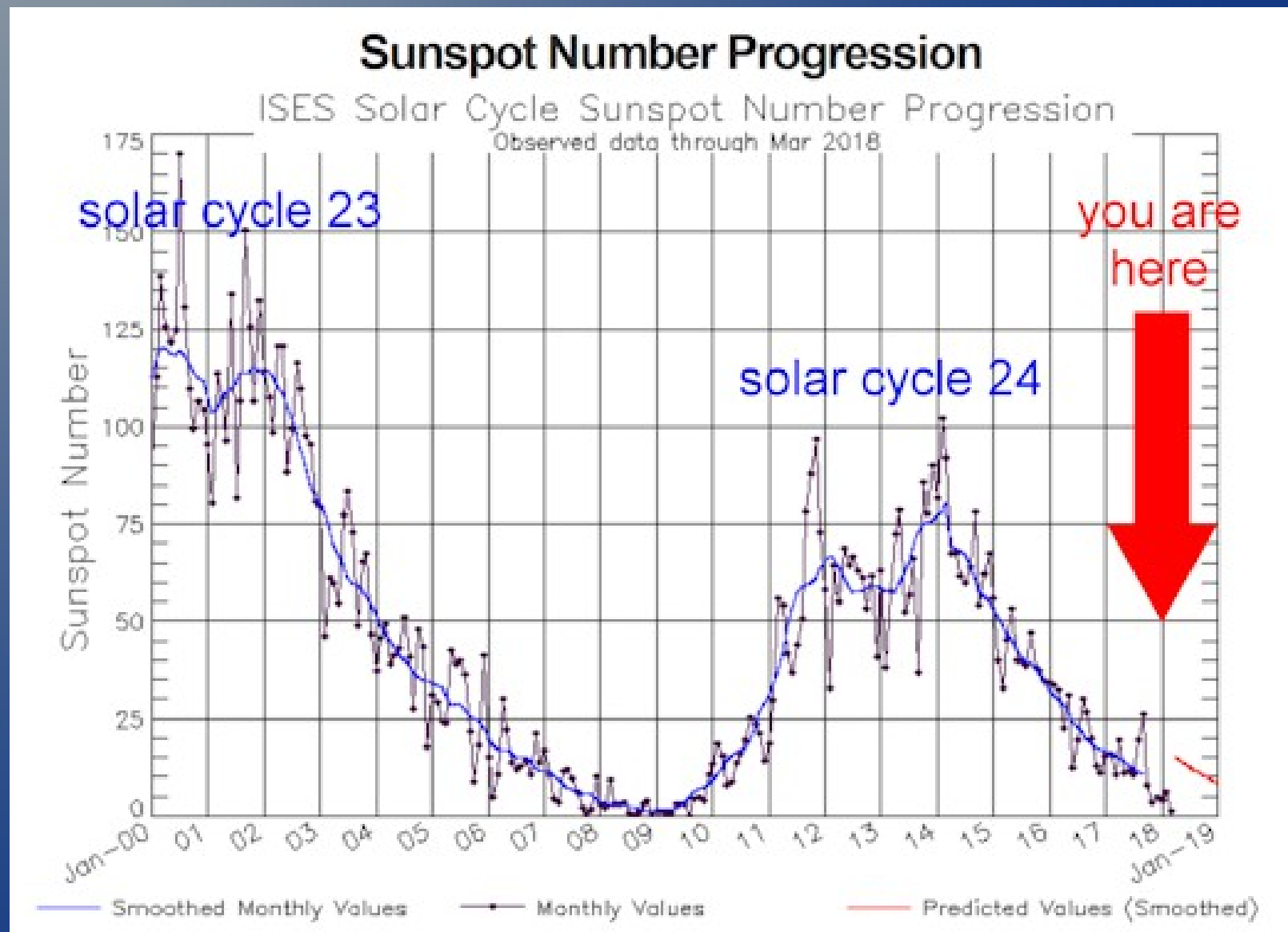
Agenda

- 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!”

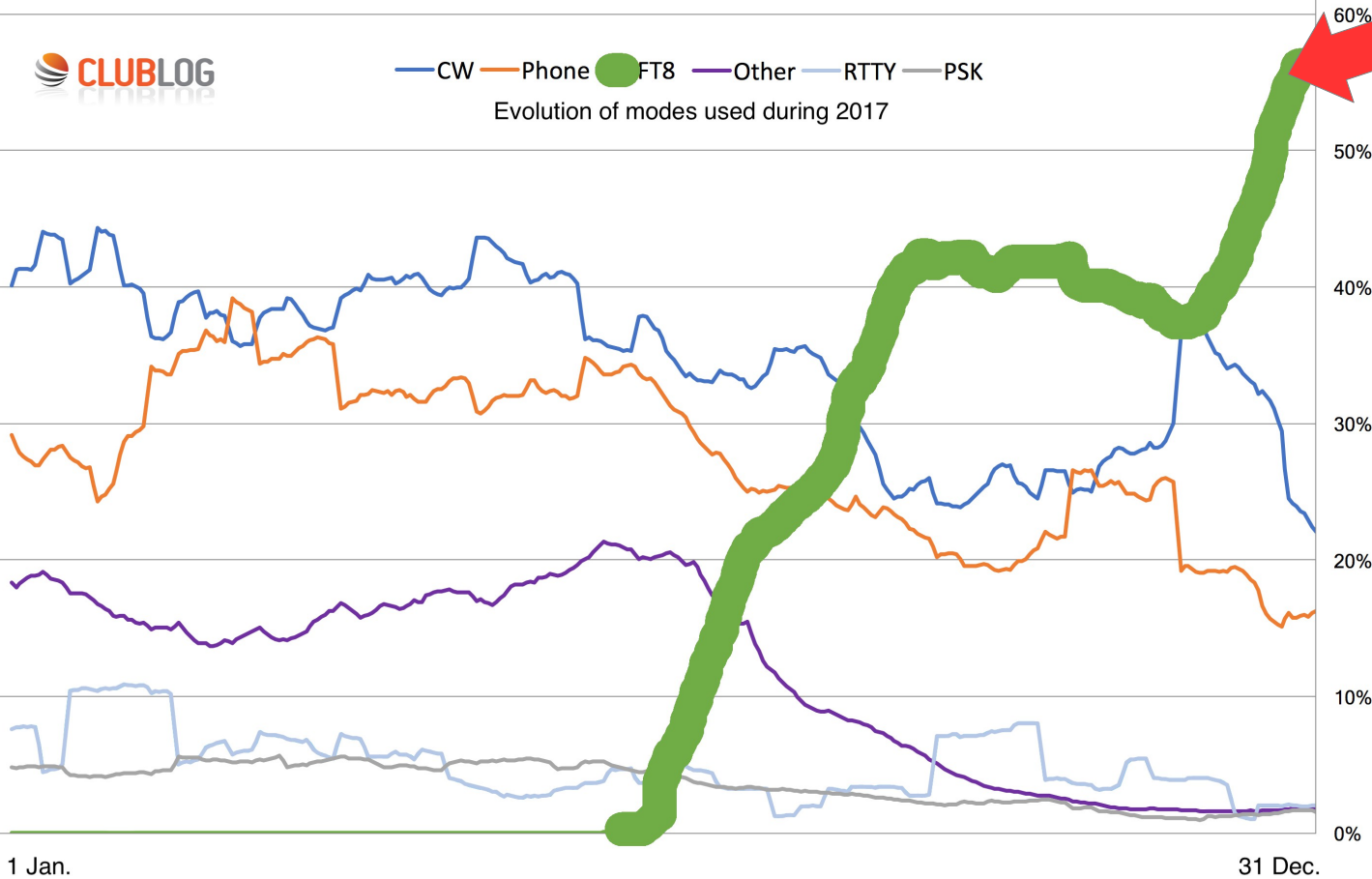
<http://www.arrl.org/news/new-digital-modes-changing-complexion-of-bands-and-perhaps-of-ham-radio>

2017 Club Log Modes

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



— CW — Phone — FT8 — Other — RTTY — PSK
Evolution of modes used during 2017



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



WA9ONY

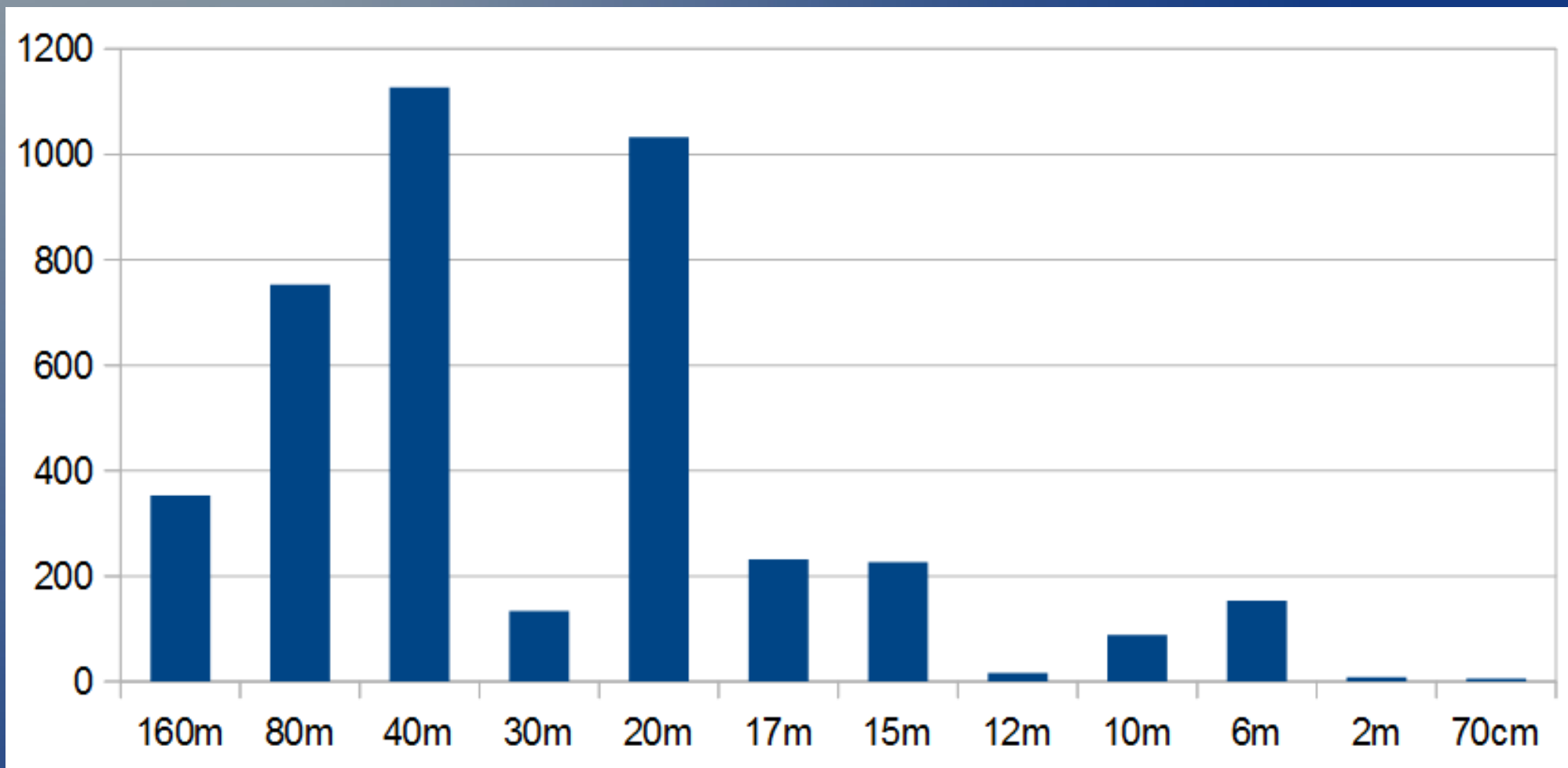
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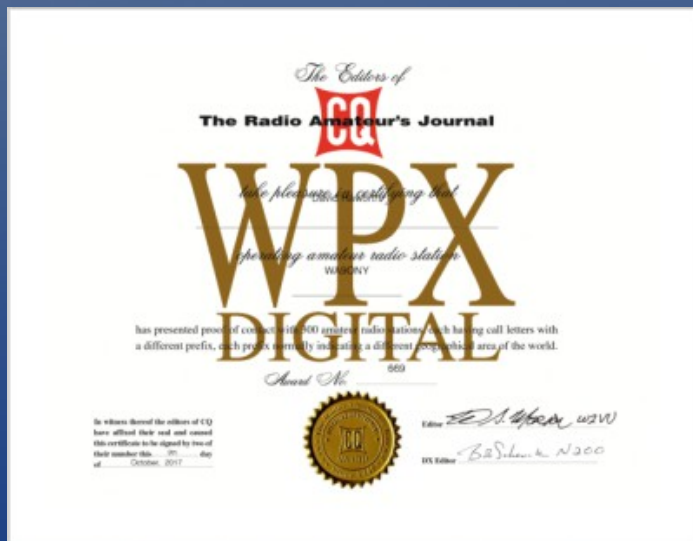
To: RI1ANC This confirms our 2-way FT8 QSO
Date: October 6, 2017 Time: 03:11 UTC
Band: 20M UR Sigs: -12

QSOs / Band



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



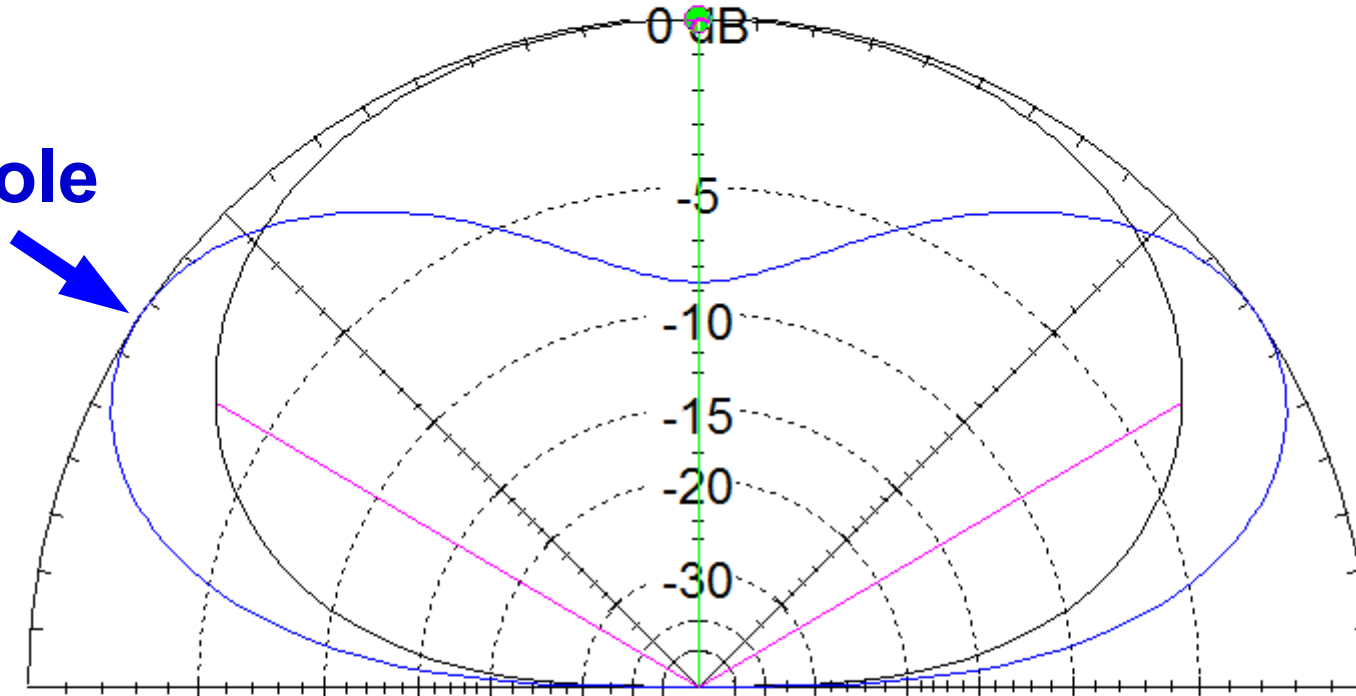
Total Field

EZNEC Demo

* Primary
Dipole20m30up

20m Dipole
up 15'

20m Dipole
up 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

Cursor Elev 90.0 deg.
Gain 6.73 dBi
0.0 dBmax

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

WA90NY 616 FT8 Grid Squares

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

VU2WJ
 SHALP.B
 PANANGAVIL HOUSE, KARIMKUTTY
 KOODARANJIKOZHICODE, 673604
 INDIA
 Loc:MK81ai ITU:41 CQ:22
 10-10:0
 FT-990, 100W,
 19 EL, 4 BAND YAGI

To: WA90NY This confirms our 2-way FT8 QSO
 Date: October 29, 2017 Time: 01:48 UTC
 Band: 20M UR Sigs: -09
 Thanks for the nice QSO. See you again on air. Pl. confirm qrz log



ZS6WN
 Karel G J Bezuidenhout
 161 Dalmade AH
 Polokwane, 0700
 South Africa
 Loc:KG46sc ITU:57 CQ:38
 Ex ZR6P, ZS6BP, ZS6BPJ/ZS3, ZS6CN
 XYL:ZS6ZL: Sons ZR0K ZR6G; ZUGWB
 Member of SARLEPC,DMC,FH,SKCC,30MDG
 Contest call ZR9C. Licenced since 1976

To: WA90NY This confirms our 2-way FT8 QSO
 Date: October 25, 2017 Time: 15:01 UTC
 Band: 40M UR Sigs: -16

WAZ 29 ITU 70 IOTA AN-016 AA: UA-10
 OTH: Vostok Base - East Antarctic Plateau - Antarctica
 7828° S 106°48' E W.WL: OStNm WAFI: RFF-016 WAP: RLS-13

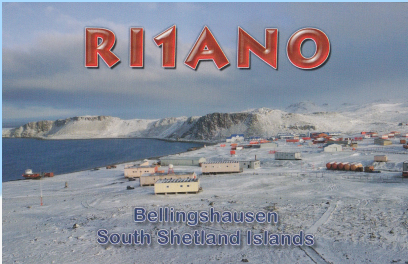
RI1ANC
 Operator: Alexey "Alex" Turkeev - RD1AV

To radio WA90NY Via: 
 Date: UTC Band Mode RST
 04-Oct-2017 03:30 20m FT8 - 08

Vostok Base is a Russian Antarctic research station. It is at the southern Pole of Cold, with the lowest reliably measured temperature on Earth of -89.2 °C (-128.6 °F). The station is at 3,488 meters above sea level and is the most isolated established research station on the Antarctic continent.

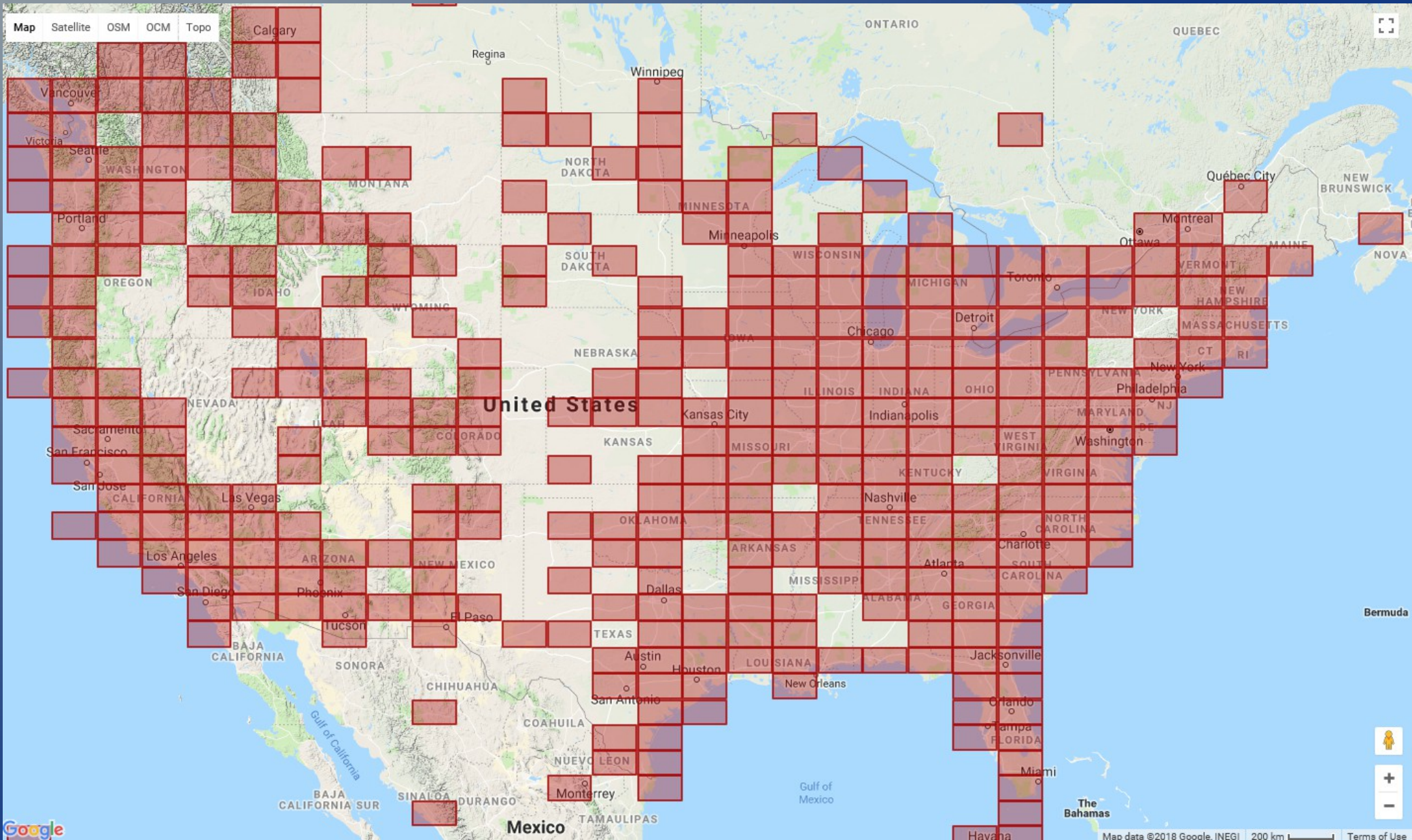
OSL via RYKON - Alexey Kur'manov P.O. Box 599
 Antargazhsk 10000 RUS204

731
 PSSE OSL TNX



WA9ONY FT8 Grid Squares

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



Laptop HDMI to 32" TV Display

JTAlertX 2.10.4 WA9ONY [~20m,ACL#1] (Up) Alerts | Settings | View | Sound OFF | ? 160 80 60 40 30 20 17 15 12 10 6

N6GAT - CA FO5QS - B4 JS3LSQ VK2BY - B4 VK2BC - B4 DU1/JH1FNS WH6BS - B4 VK1MA - B4 AH6GT - HI

JTAlertX

WSJT-X Main Decode WSJT-X v1.8.0 by K1JT

Band Activity				Rx Frequency					
UTC	dB	DT	Freq	Message	UTC	dB	DT	Freq	Message
061930	-9	-0.1	1956	~ CQ VK1MA QF44 Australia	061230	-17	0.1	200	~ WA9ONY VK2AKH QF56
062000	-10	0.1	1700	~ WA9ONY YF9CDL -22	061245	Tx		200	~ VK2AKH WA9ONY -17
062000	-9	0.1	505	~ CQ N6GAT CM97 ~U.S.A.	061300	-20	0.1	200	~ WA9ONY VK2AKH R-17
062000	-13	1.7	567	~ CQ FO5QS BH43 Marquessas Is.	061315	Tx		200	~ VK2AKH WA9ONY RRR
062000	-5	-0.1	1082	~ K7HRT VK2BY 73	061330	-24	0.1	200	~ WA9ONY VK2AKH 73
062000	-6	0.2	1312	~ JA8DIV VK2BC -18	061345	Tx		200	~ VK2AKH WA9ONY 73
062000	-3	0.2	1758	~ WH6BS VE7BEF 73	061415	Tx		200	~ CQ WA9ONY CN85
062000	-1	0.1	1799	~ CQ AA6MU CM87 U.S.A.	061445	Tx		200	~ CQ WA9ONY CN85
062000	-7	-0.1	1956	~ WL7CG QSY????	061430	-13	0.2	2020	~ CQ DX YF9CDL OI71
062030	-11	0.2	1699	~ WA9ONY YF9CDL RR73	061515	Tx		200	~ YF9CDL WA9ONY CN85
062030	-8	0.2	773	~ JH3QMF JS3LSQ +06	061545	Tx		200	~ YF9CDL WA9ONY CN85
062030	-7	-0.1	1082	~ CQ VK2BY QF56 Australia	061615	Tx		200	~ YF9CDL WA9ONY CN85
062030	-4	-0.2	1153	~ KU7T JA4FJL PM74	061930	-10	0.2	2021	~ CQ DX YF9CDL OI71
062030	-5	0.2	1313	~ JA8DIV VK2BC RRR	061630	-11	0.2	2020	~ S79LD YF9CDL RR73
062030	-13	0.6	1517	~ CQ DU1/JH1FNS PK04 ~Philippines	061645	Tx		200	~ YF9CDL WA9ONY CN85
062030	-16	0.1	1779	~ CQ AA6MU CM87 U.S.A.	061700	-9	0.1	2020	~ CQ DX YF9CDL OI71
062030	-4	-0.1	1956	~ CQ VK1MA QF44 Australia	061715	Tx		200	~ YF9CDL WA9ONY CN85
062030	3	0.2	2230	~ JE1BIG AH6GT -19	061730	-11	0.1	2021	~ CQ DX YF9CDL OI71
062030	-16	1.6	738	~ SA4AQW FO5QS -10	061745	Tx		200	~ YF9CDL WA9ONY CN85
062100	-15	0.1	505	~ JA3GAK N6GAT CM97	061800	-10	0.1	2021	~ CQ DX YF9CDL OI71
062100	-7	1.5	738	~ SA4AQW FO5QS R-10	061815	Tx		1700	~ YF9CDL WA9ONY CN85
062100	-6	0.1	773	~ JH3QMF JS3LSQ RR73	061830	-15	0.1	2021	~ CQ DX YF9CDL OI71
062100	-7	-0.1	1082	~ CQ VK2BY QF56 Australia	061845	Tx		1700	~ YF9CDL WA9ONY CN85
062100	-8	0.2	1313	~ JA8DIV VK2BC 73	061900	-13	0.2	2021	~ CQ DX YF9CDL OI71
062100	-14	0.5	1517	~ CQ DU1/JH1FNS PK04 ~Philippines	061915	Tx		1700	~ YF9CDL WA9ONY CN85
062100	-13	0.2	1640	~ 4F3OM WH6BS BL01	061930	-17	0.2	1700	~ WA9ONY YF9CDL -22
062100	-9	0.2	1962	~ CQ VK1MA QF44 Australia	061945	Tx		898	~ YF9CDL WA9ONY R-17
062100	4	0.2	2230	~ JE1BIG AH6GT RRR	062000	-10	0.1	1700	~ WA9ONY YF9CDL -22
					062015	Tx		1700	~ YF9CDL WA9ONY R-10
					062030	-11	0.2	1699	~ WA9ONY YF9CDL RR73
					062045	Tx		1700	~ YF9CDL WA9ONY 73

Log QSO Stop Monitor Erase Decode Enable Tx Halt Tx Tune Menu

20m 14.073 996 Tx even/1st

DX Call DX Grid Tx 1700 Hz Tx - Rx

YF9CDL OI71 Rx 1699 Hz Rx - Tx

Az: 289 8192 mi

Lookup Add Report -11 Hold Tx Freq

2018 May 16 06:21:16

Auto Seq Call 1st NA VHF Contest

Receiving FT8 Last Tx: YF9CDL WA9ONY 73 1/15 WD:30m

N3FJP's Amateur Contact Log

File Edit Settings Clear CallBook List Search Awards eLogs Recall Net View Help

Find Recent Contacts

Rec#	Call	Date / Time	Snt	Rec	Country	Grid	Bnd	ST	R Conf
901	YF9CDL	2017/09/18 14:41	-14	-15	Indonesia	OI71	40		LE

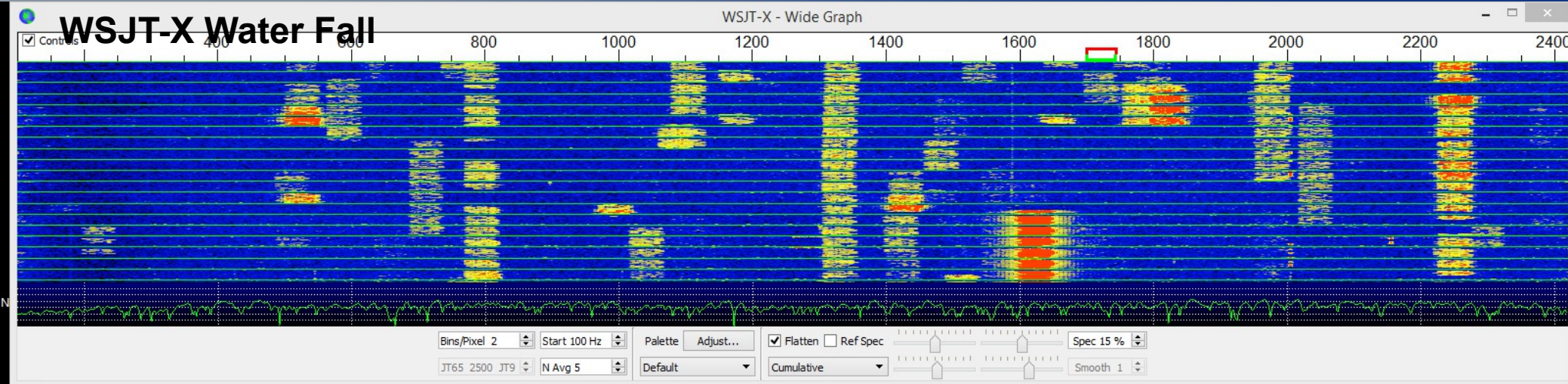
Call	Date	Band	Mode	Power	Time
YF9CDL	2018/05/16	20	FT8	80	06:15

Name	State	Frequency	Conf By S	Conf By R
Kadek Dwija	ID	14.074196		

Bearing: 288
Miles: 8,182
Cont: OC

Comments
FT-857DKadek Dwija Kusuma - JL. Pantai Purnama NO.65 Sukawati - Gi

Laptop Display



JTAlertX

SupportAssist

ft8-2017-3...

ODP

Recycle Bin



WSJT-X Log QSO

Click OK to confirm the following QSO:

Call	Start	End
YF9CDL	16/05/2018 06:19:15	16/05/2018 06:20:45

Mode	Band	Rpt Sent	Rpt Rcvd	Grid	Name
FT8	20m	-10	-22	OI71	

Tx power: 80 Retain

Comments: FT-857D Retain

OK Cancel

rsNTP (Precisely Simple NTP Client)

Server: 0.europe.pool.ntp.org 2018-05-16 06:21:16.0

synchronize periodically verbose output Add [s] 0.0

Synchronising..

```
2018-05-16 05:58:59.72 : Looking up 0.europe.pool.ntp.org
2018-05-16 05:58:59.72 : Querying 193.47.166.29
2018-05-16 05:58:59.95 : Received response :
  Originate time from NTP : 2018-05-16 05:58:59.722
  Receive time from NTP : 2018-05-16 05:58:59.852
  Transmit time from NTP : 2018-05-16 05:58:59.852
  Round trip : 0.233411 seconds
  Clock offset : 0.013494 seconds
2018-05-16 05:58:59.97 : Clock adjusted by 0.013494 sec
2018-05-16 06:19:04.31 : Clock adjusted by 0.003132 sec
```

Synchronize Exit Options Help

WA9ONY FT8 Software Setup

WSJT-X

rsNTP

JTAlertX

QRZ Info & Image

**Amateur
Contact
Log**

eQSL

LoTW

ADIF File

Club Log

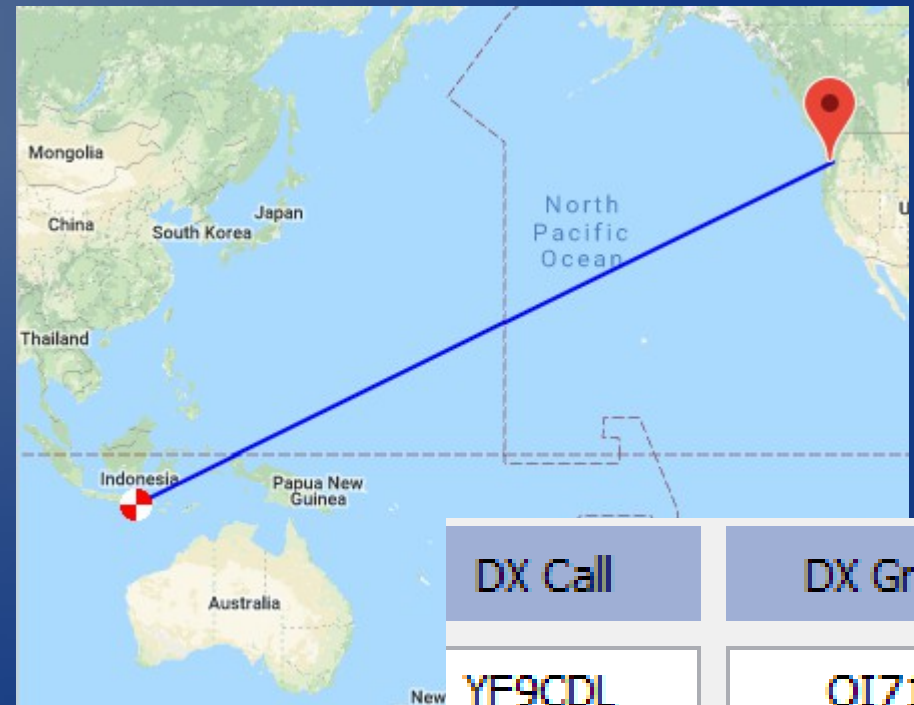
QRZ Log

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



DX Call	DX Grid
YF9CDL	OI71
Az: 289	8192 mi

FK8CE

Dominique HOARAU
 PO BOX: 138
 98870 BOURAIL
 NEW CALEDONIA
 Loc:RG28rj ITU:56 CQ:32
 IOTA:OC-032
 YAESH FT-350,100W. YAESU FT-450,100W.
 SHARCRAFT R-8 at 7 meters high.
 BEGALI "STEALTH" KEYSER.
 ACOM 1010.

RA0LX

Sergej V. Goncharenko
 Urickogo 7-92
 Lesozavodsk, 692036
 RUSSIA
 Loc:PN65H ITU:34 CQ:19
 RDA:PK-10

FT8 20m Log

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

VK2HCC

VK2HCC

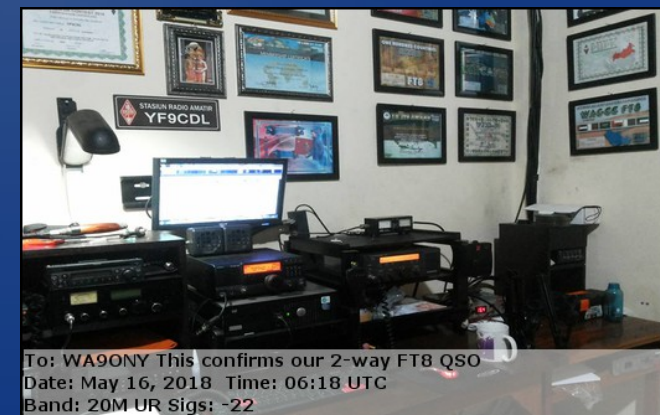
Tweed Heads West, NSW,
 Australia
 Loc:QG61ST ITU:59 CQ:30
 10-10:0

To: WA9ONY This confirms our 2-way FT8 QSO
 Date: May 16, 2018 Time: 05:41 UTC
 Band: 20m UR Sigs: -12
 Tnx for QSO, 73 Craig

ZL1BQD

Roly Runciman
 18 Lansell Drive
 Auckland, 2016
 NEW ZEALAND
 Loc:RF73lb ITU:60 CQ:32
 IOTA:OC-036 10-10:15039

To: WA9ONY This confirms our 2-way FT8 QSO
 Date: May 16, 2018 Time: 05:01 UTC
 Band: 20M UR Sigs: -11



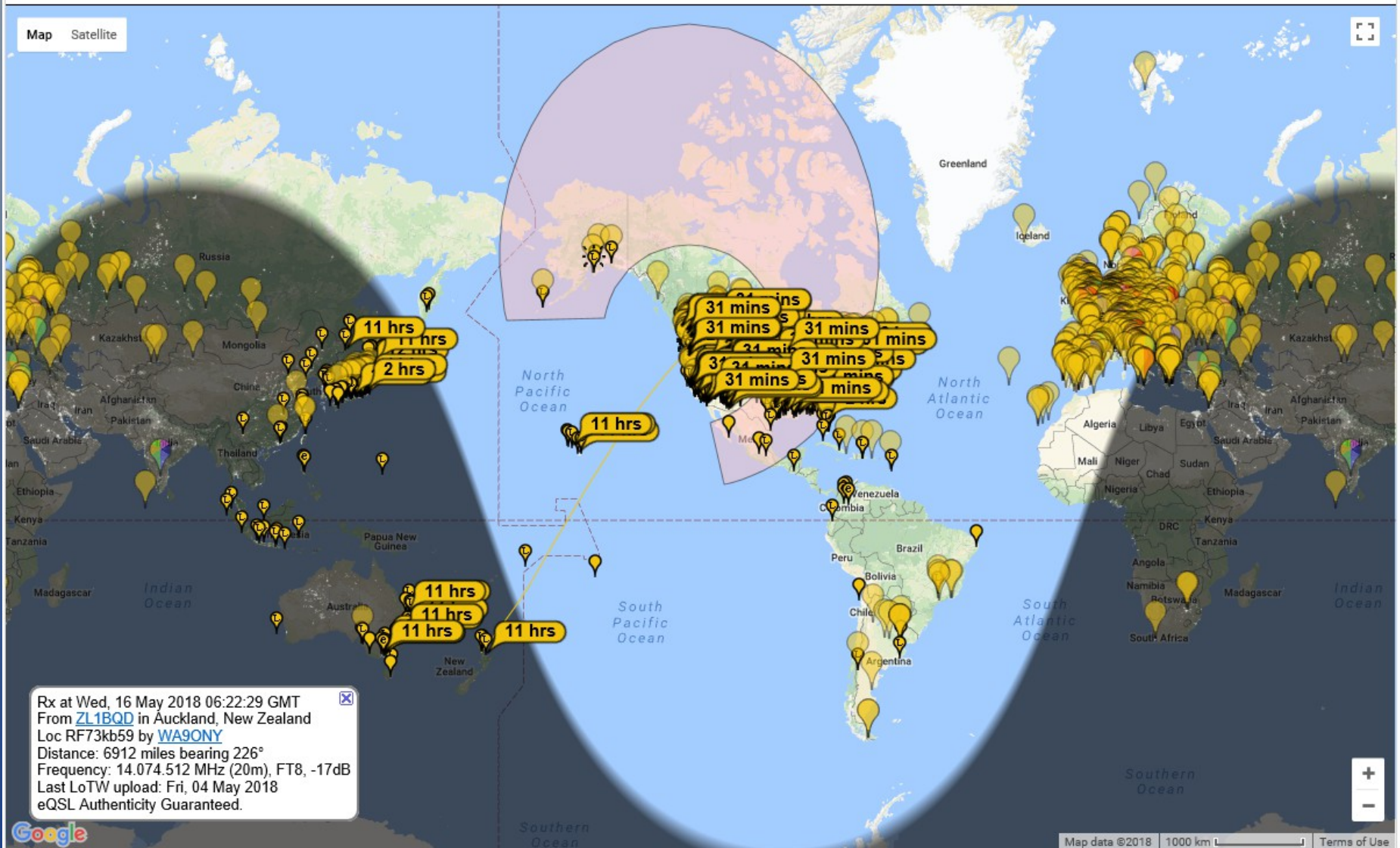
To: WA9ONY This confirms our 2-way FT8 QSO
 Date: May 16, 2018 Time: 06:18 UTC
 Band: 20M UR Sigs: -22

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

On show sent/rcvd by using over the last [Display options](#) [Permalink](#)
Monitoring WA9ONY (last heard 31 mins ago). Automatic refresh in 3 minutes. Small markers are the 829 transmitters ([show logbook](#)) heard ([distance chart](#)) at WA9ONY (6128 reports, 52 countries last 24 hours; 27322 reports, [63 countries](#) last week).
There are [1024 active FT8 monitors](#) on 20m. [Show all FT8 on all bands](#). [Show all on all bands](#). [Legend](#)



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

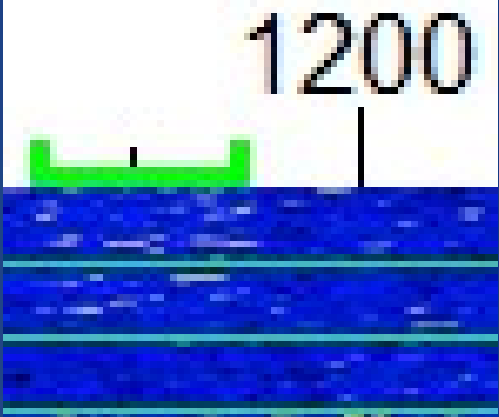


080015	Tx	806	~	CQ	WA9ONY	CN85
080045	Tx	806	~	CQ	WA9ONY	CN85
080115	Tx	806	~	CQ	WA9ONY	CN85
080130	-17	0.1	1724	~	WA9ONY	VK7BO -11
080145	Tx	806	~	VK7BO	WA9ONY	R-17
080200	-16	0.1	1724	~	WA9ONY	VK7BO RR73
080215	Tx	806	~	VK7BO	WA9ONY	73

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



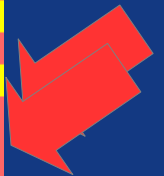
----- 160m
085330 -4 0.7 805 ~ WA9ONY W7USA DM33
085330 14 -0.1 1292 ~ CQ N7XS CN88 U.S.A.
----- 160m
085400 -6 1.2 805 ~ WA9ONY W7USA R-09
085400 14 -0.1 1292 ~ CQ N7XS CN88 U.S.A.
----- 160m
085430 -9 0.7 805 ~ WA9ONY W7USA 73
085430 14 -0.1 1292 ~ CQ N7XS CN88 U.S.A.
----- 160m
085500 15 -0.1 1292 ~ 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	2018/05/25 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	2018/05/25 10:58	+03	-07	Japan	PM63	80	
4035	VK5PO	2018/05/25 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



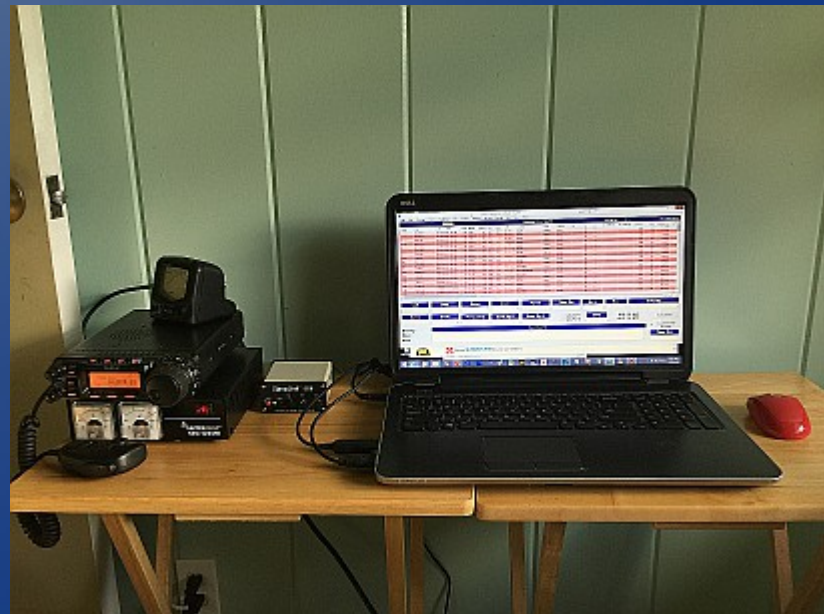
WA9ONY/KH6

David A Haworth
4531 Wailapa Rd
Kilauea, HI 96754
USA

Loc:BL02he ITU:61 CQ:31 Kauai County
IOTA:OC-019
73, David

www.qrz.com/db/WA9ONY/KH6
www.stargazing.net/david

To: SAMPLE This confirms our 2-way FT8 QSO
Date: February 10, 2018 Time: 00:00 UTC
Band: 20m UR Sigs: +00



WA9ONY/KH6 551 Grid Squares

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

MM0GAX
DAVE

TOTA EU-009

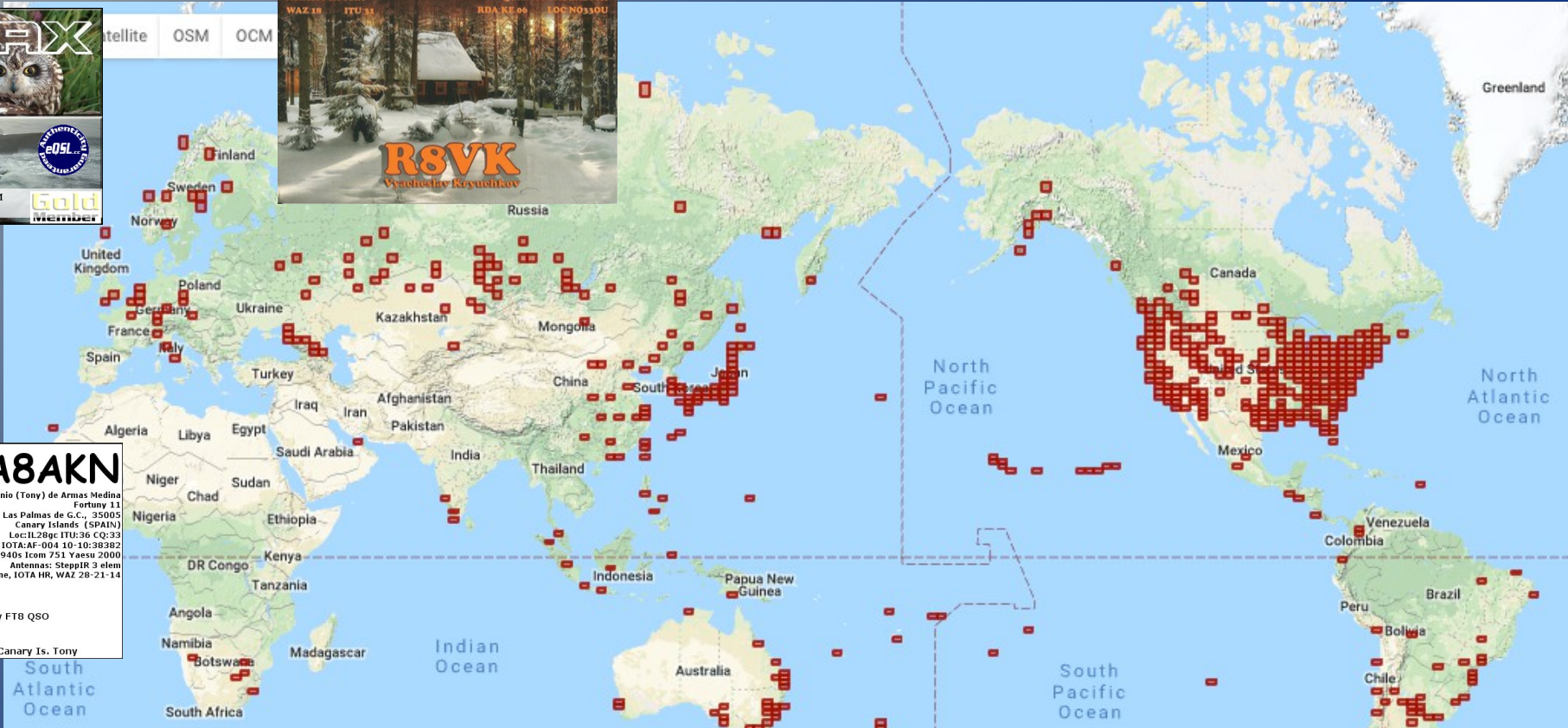
Gold Member

To: WA9ONY/KH6 Confirming 2-way FT8 QSO, Band: 20M
Date: February 21, 2018 Time: 17:40Z, RST: -20

ASIATIC RUSSIA
WAZ:18 ITU:33

QTH:NOVOKUZNETSK
RDA:KE-08 LOC:NO330U

RSVK
Vyacheslav Kevuchikov



EA8AKN

Antonio (Tony) de Armas Medina
Fortuny 11
Las Palmas de G.C., 35005
Canary Islands (SPAIN)
Loc:IL28gc ITU:36 CQ:33
IOTA:AF-004 10-10:38382
Rig: Kenwood TS-940s Icom 751 Yaesu 2000
Antennas: SteppIR 3 elem
DXCC 1 HR Phone, IOTA HR, WAZ 28-21-14

To: WA9ONY/KH6 This confirms our 2-way FT8 QSO
Date: February 12, 2018 Time: 17:35 UTC
Band: 20M UR Sigs: -18
TNX 1st FT8 QSO with Hawaii. Aloha from Canary Is. Tony

DP1POL

Nearmyer Station III
Antarctica

ZS6WR
West Rand Amateur

VK6OZ

Stephen Edward Hill
20 Farrington Road
Leeming, 6149
West Australia
ITU:58 CQ:33 Gnd:OF77ww
IOTA:00001

To: WA9ONY/KH6 Confirming 2-way FT8 QSO, Band: 20M
Date: January 29, 2018 Time: 02:09Z, RST: -15

To: WA9ONY/KH6 This confir
Date: February 11, 2018 Tim
Band: 20M UR Sigs: +11

ZL4CTS

Chris Shaw
10 Kiwi Burn Place, RD 1
Te Anau, 9679
New Zealand
Loc:RE34uu ITU:60 CQ:32
IOTA:OC-134
Rig: FT101E or IC-H700 Antenna: Dipole

To: WA9ONY/KH6 This confirms our 2-way FT8 QSO
Date: February 5, 2018 Time: 03:53 UTC
Band: 20M UR Sigs: -12

LW7EDH

EDUARDO HECTOR RODRIGUEZ
Calle 7 de A # 1457 - C.C. 107
Miramar, 7607 ARGENTINA
lv7edh@gmail.com
Loc:GF11br ITU:14 CQ:13
Yaesu FT-897 - Baofeng UV5R
Dipole G5RV - Direccional Moxon U-V
EPC#25575 - DMC#08522 - NDG#2344 -
BDM#5311 - CDG#1566 - ERC#1857

To: WA9ONY/KH6 This confirms our 2-way FT8 QSO
Date: February 1, 2018 Time: 02:44 UTC
Band: 20M UR Sigs: -06
Thanks for this QSO my friend (((73))) Gracias por este QSO, mi



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

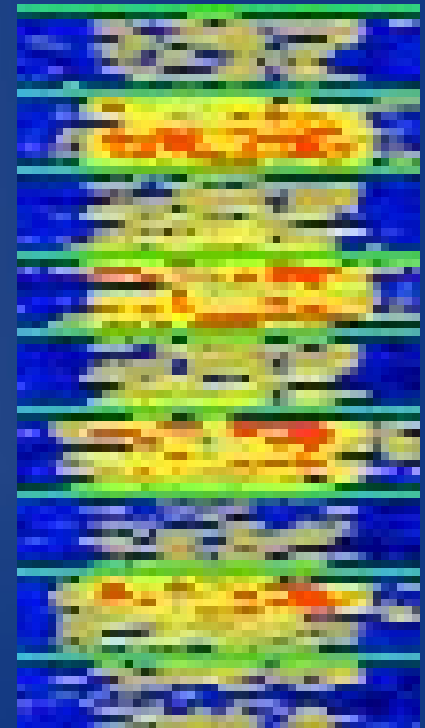
<https://ece.illinois.edu/directory/profile/s-franke>

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 bandwidth
- Fixed 72 bit payload
- 15 s transmit/receive sequence
 - 12.64 s transmit

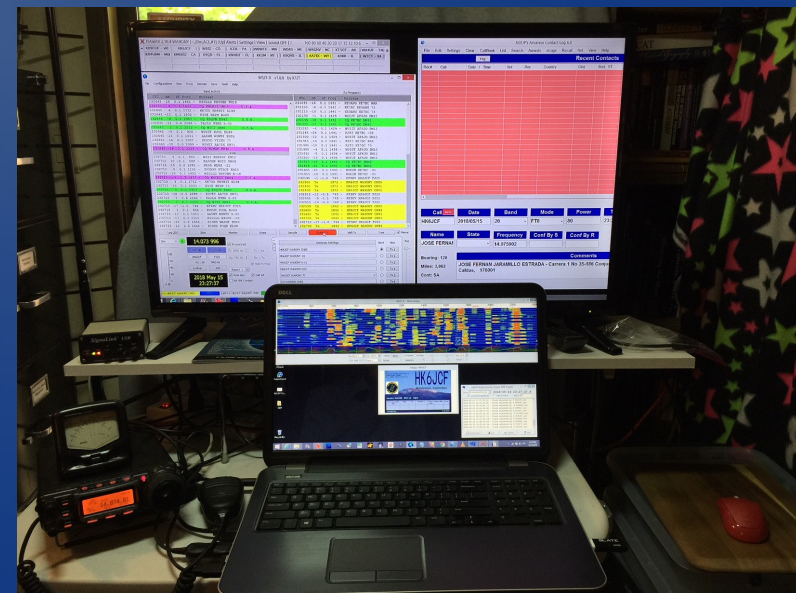


FT8 Characteristics

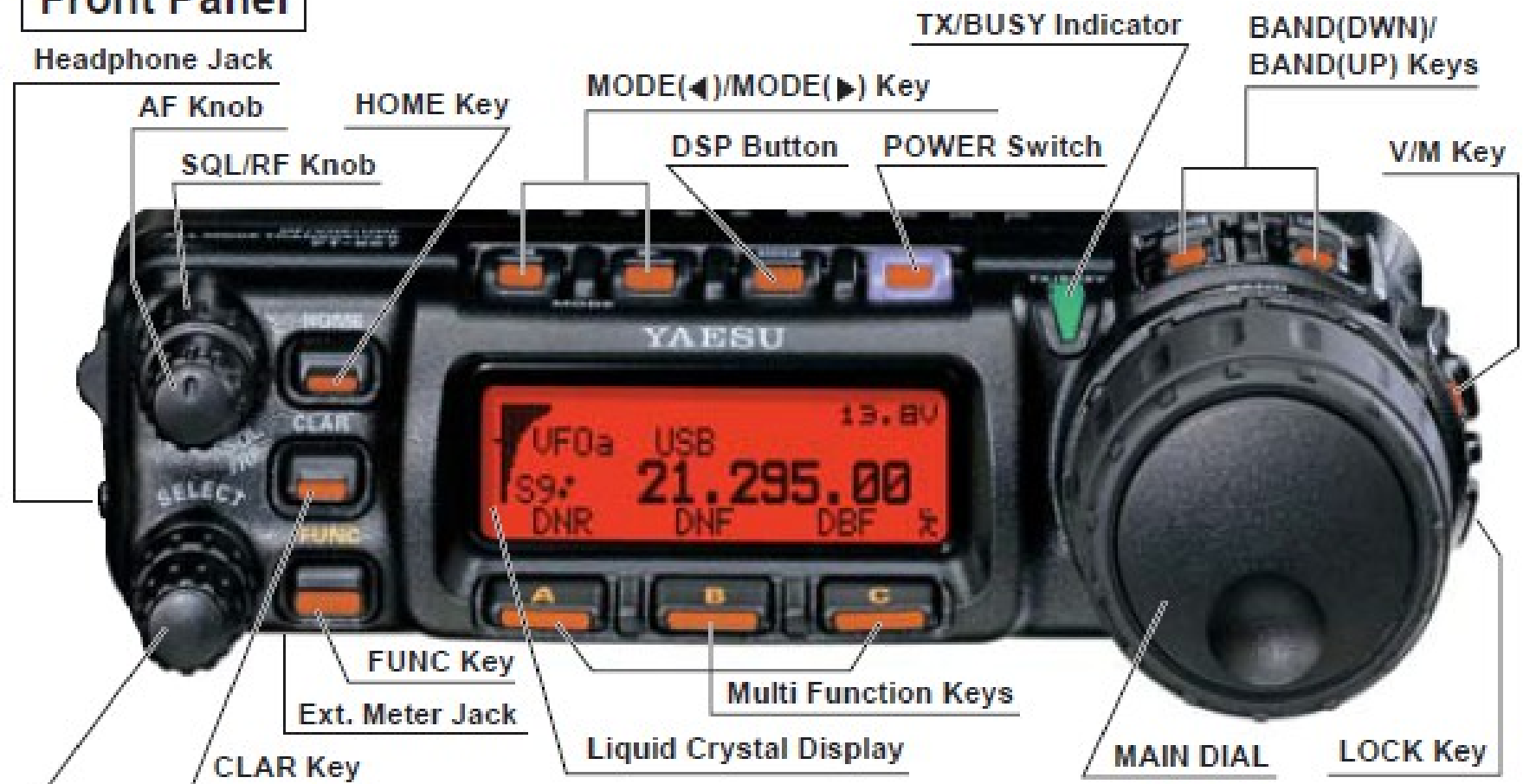
- DX expedition mode
 - Multi contacts at the same time
 - ~400 QSOs/hour, 6.7 QSOs/min.
 - Test #3 results
- NA VHF contest mode
 - Only grid square
 - No signal reports

WA9ONY FT8 Equipment

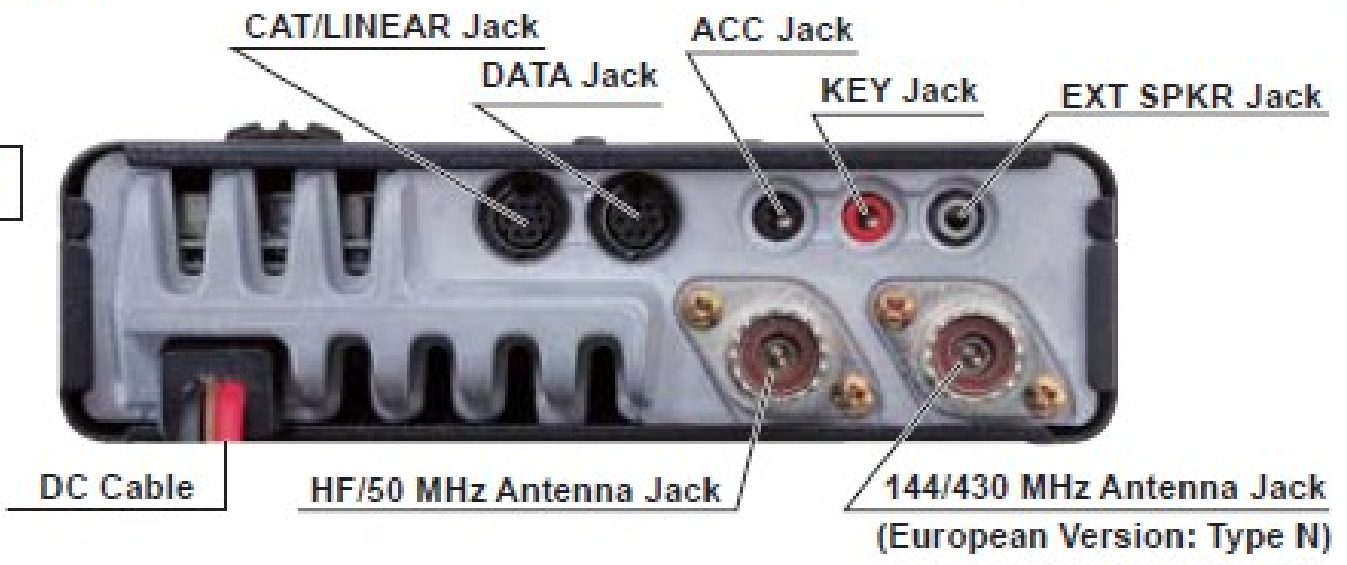
- WSJT-X V1.8 software
- Dell i7 64-bit 8.1 Windows laptop
- Transceiver with data & CAT ports
 - Yaesu FT-857D, AGC set fast
- SignalLink USB with TX & RX controls
- PC to transceiver CAT interface
- Diamond SWR power meter
- Dipoles antennas



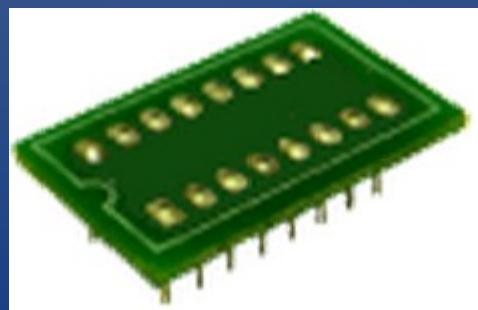
Front Panel



Rear Panel



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 v1.8.0 by K1JT

File Configurations View Mode Decode Save Tools Help

Band Activity

UTC	dB	DT	Freq	Message	Rx Frequency
201730	2	0.2	977	~ K29V KN3E FM17	
201730	-8	0.1	1163	~ CQ N6WKZ CM87 U.S.A.	
201730	-8	0.1	1214	~ YV6IA WSFKX EL49	
201730	-17	-0.4	1264	~ KC3AK WBSBHS EM35	
201730	-7	-0.1	1355	~ TA6P KOEZW DM78	
201730	-7	0.6	1408	~ CQ VE3NOO FN14 ~Canada	
201730	-17	0.2	1458	~ HK4GSO KG4YUS EM81	
201730	-6	0.7	1649	~ SV1IZY K4SHA EM72	
201730	-11	0.8	1762	~ K2CDP WSGOL R-10	
201730	-13	0.0	2006	~ CQ DX KC9LFD EN35 ~U.S.A.	
201730	-11	0.2	2246	~ WA0LJM WS6K -16	
201730	-11	0.0	2381	~ CQ W0QU EM48 U.S.A.	
201730	-12	0.2	1159	~ K32K KK5II EM26	
201730	-13	0.1	1401	~ SV8RYI KC9RDG EN62	
201730	-16	0.1	1357	~ HK4GSO KB4XT EM71	
----- 20m -----					
201745	-19	0.1	689	~ N4BRF K9DXR 73	
201745	-6	0.2	789	~ CQ AK2B CM98 ~U.S.A.	
201745	-14	0.1	1397	~ CQ VA2QA FN35 ~Canada	
201745	-7	0.1	1469	~ N7GRB K0SAZ DM78	
201745	8	0.1	1593	~ SV1IZY N6NKT CM97	
201745	-16	0.1	1676	~ 421RZ N9RMA EM49	
201745	9	0.0	2000	~ SV1IZY K6MKF CM97	
201745	-9	-0.0	2090	~ K5S2O KD7GX +02	
201745	-19	0.1	2155	~ CQ K8BL EN91 ~U.S.A.	
201745	-21	-0.0	2246	~ WS6K WA0LJM R-06	
201745	-24	0.2	1842	~ W4JFV CO2II EL83	
201745	-3	1.6	1998	~ SV1IZY NN6XX CM87	
201745	-15	0.1	2119	~ EA1BD JF1LMB PM95	
201745	-23	0.2	2262	~ CQ N9KFW EM58 U.S.A.	
201745	-24	0.1	2304	~ SV1IZY KD7WPJ CM97	

Log QSO Stop Monitor Erase Decode Enable Tx Halt Tx Tune Menus

WSJT-X - Wide Graph

400 600 800 1000 1200 1400 1600 1800 2000 2200 2400

14.073 996

Generate Std Msgs Next Now Pwr

10/15 WD:30m

Controls

Bins/Pixel 2 Start 100 Hz Palette Adjust... Flatten Ref Spec Spec 15 %

JT65 2500 JT9 N Avg 5 Default Cumulative Smooth 1

WSJT-X Software 2001 to 2018

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

FT8
JT4
JT9
JT9+JT65
JT65
QRA64
ISCAT
MSK144
WSPR
Echo
FreqCal

- 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/wsjt-x.html>



WSJT-X

[Home](#)
[WSJT-X](#)
[WSJT](#)
[MAP65](#)
[WSPR](#)
[SimJT](#)
[Program Development](#)
[References](#)
[Support](#)

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/wsjttx.html>

Windows

- Latest full release, Version 1.8: [wsjttx-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): [wsjttx 1.8.0 i386.deb](#)
 - Debian, Ubuntu, ... (64-bit): [wsjttx 1.8.0 amd64.deb](#)
 - Fedora, RedHat, ... (32-bit): [wsjttx-1.8.0.i686.rpm](#)
 - Fedora, RedHat, ... (64-bit): [wsjttx-1.8.0.x86_64.rpm](#)
 - Raspbian Jessie, ARMv6 ... : [wsjttx 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:

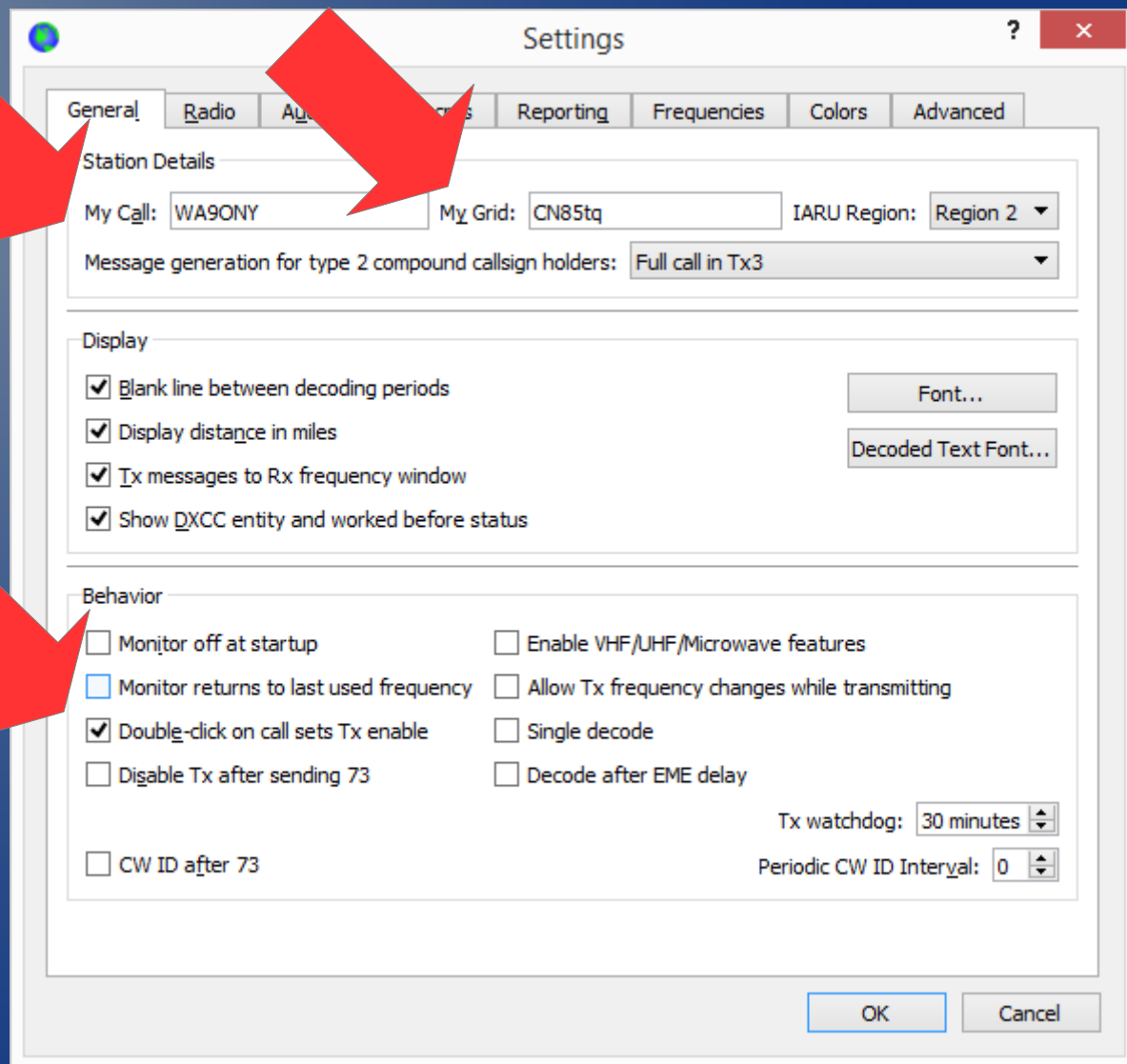
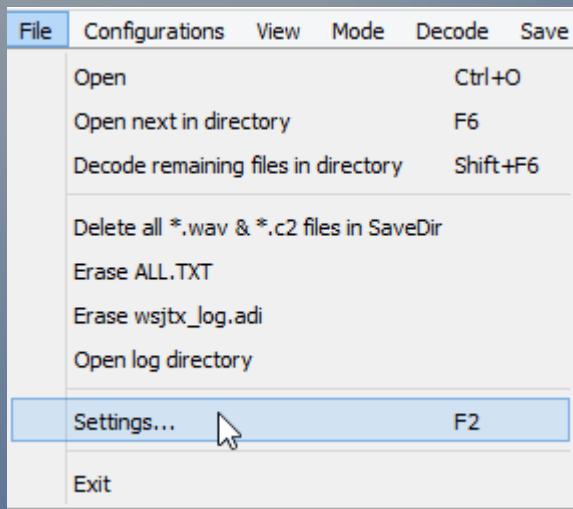
- Latest full release, Version 1.8
 - OS X 10.9 and later: [wsjttx-1.8.0-Darwin.dmg](#)

Source Code:

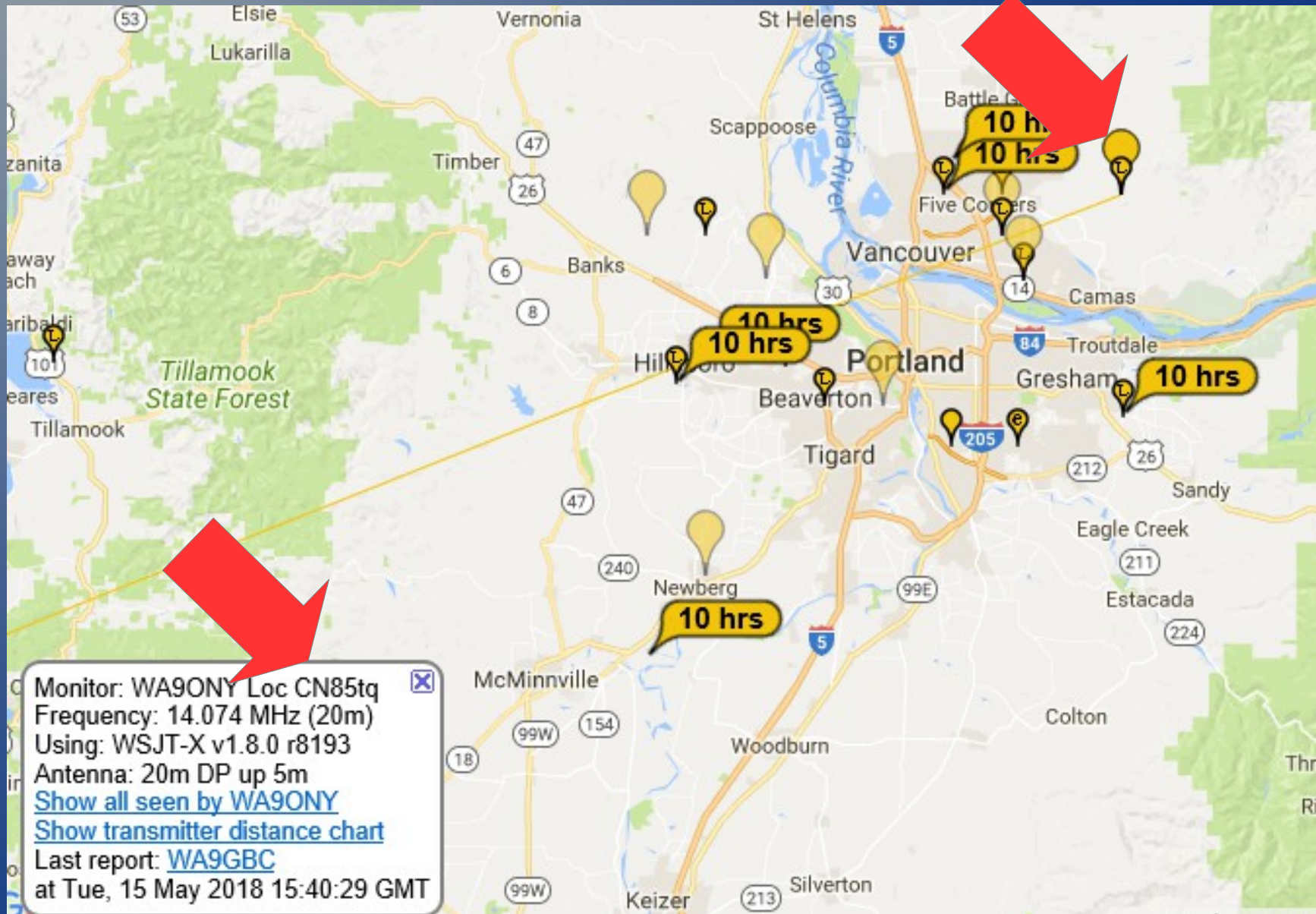
The package posted here contains all source code for *WSJT-X* as well as a snapshot of the Hamlib 3 sources and a CMake script to build *WSJT-X* on any supported platform.

- Latest full release, Version 1.8: [wsjttx-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

Amateur Radio Ham Radio Maidenhead Grid Square Locator Map



Enter any address, city & state or zip:

or Enter any call sign: Data provided by QRZ.com

Submit

or Enter any a 4 or 6 character grid square:

Clear

[?? How does this work? Why doesn't this work? ??](#)

AdChoices

[Ham Radio Grid Square](#)

[Maidenhead Grid Locator](#)

[What Is My Grid Square](#)

Call [WA9ONY](#) found for [DAVID A HAWORTH](#)

Address found: 27901 NE 63RD ST,CAMAS,WA,98607,United States

Latitude: 45.6685 / 45° 40' 6" N Longitude: -122.386 / 122° 23' 9" W

Grid: [CN85tq](#)



Find Your Grid Square

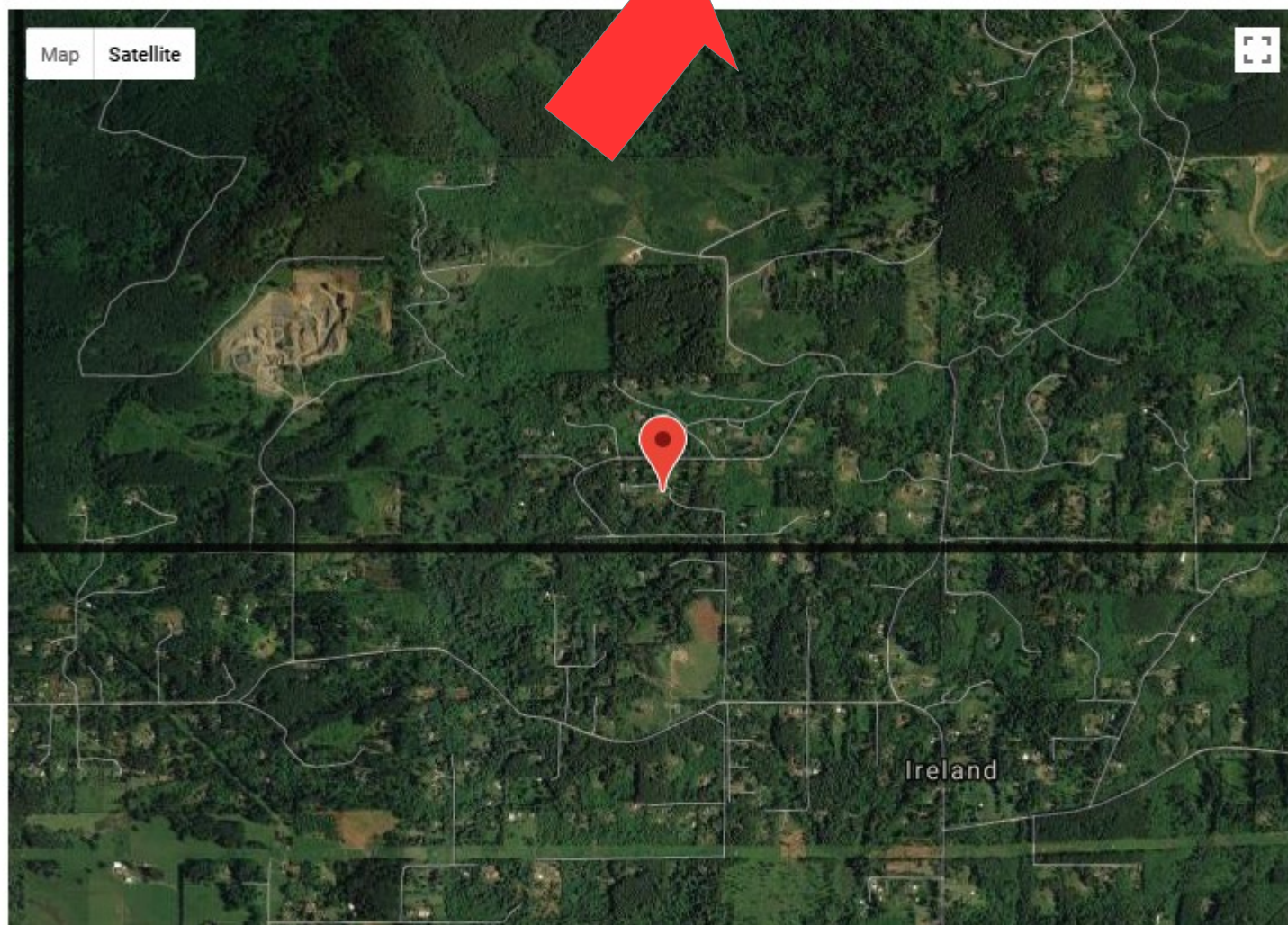
www.levinecentral.com/ham/grid_square.php

Call [WA9ONY](#) found for [DAVID A HAWORTH](#)

Address found: 27901 NE 63RD ST,CAMAS,WA,98607,United States

Latitude: 45.6685 / 45° 40' 6" N Longitude: -122.386 / 122° 23' 9" W

Grid: **CN85tq**





QRZ.COM

Enter Query... by Callsign

Search

Database

News

For

MFJ 1708SDR
SDR Transmit and Receive Switch



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www.randl.com

YAESU
The radio

AssociatedRad
800-497-1444

WA9ONY



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

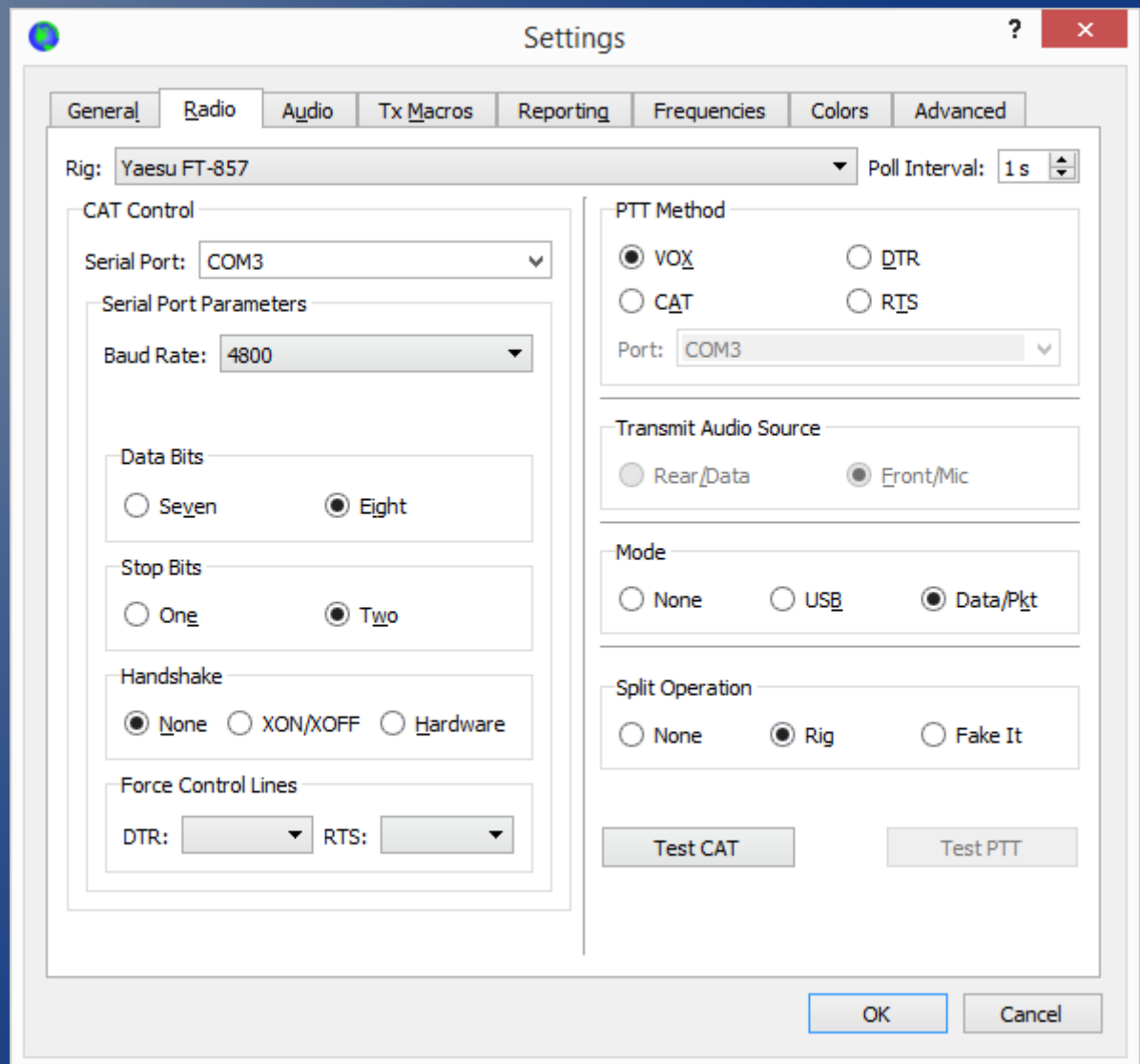
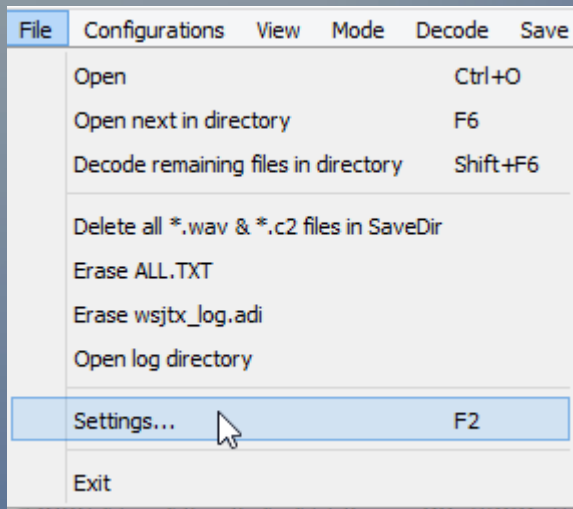
Expires 2027-01-27

Grid Square CN85tq

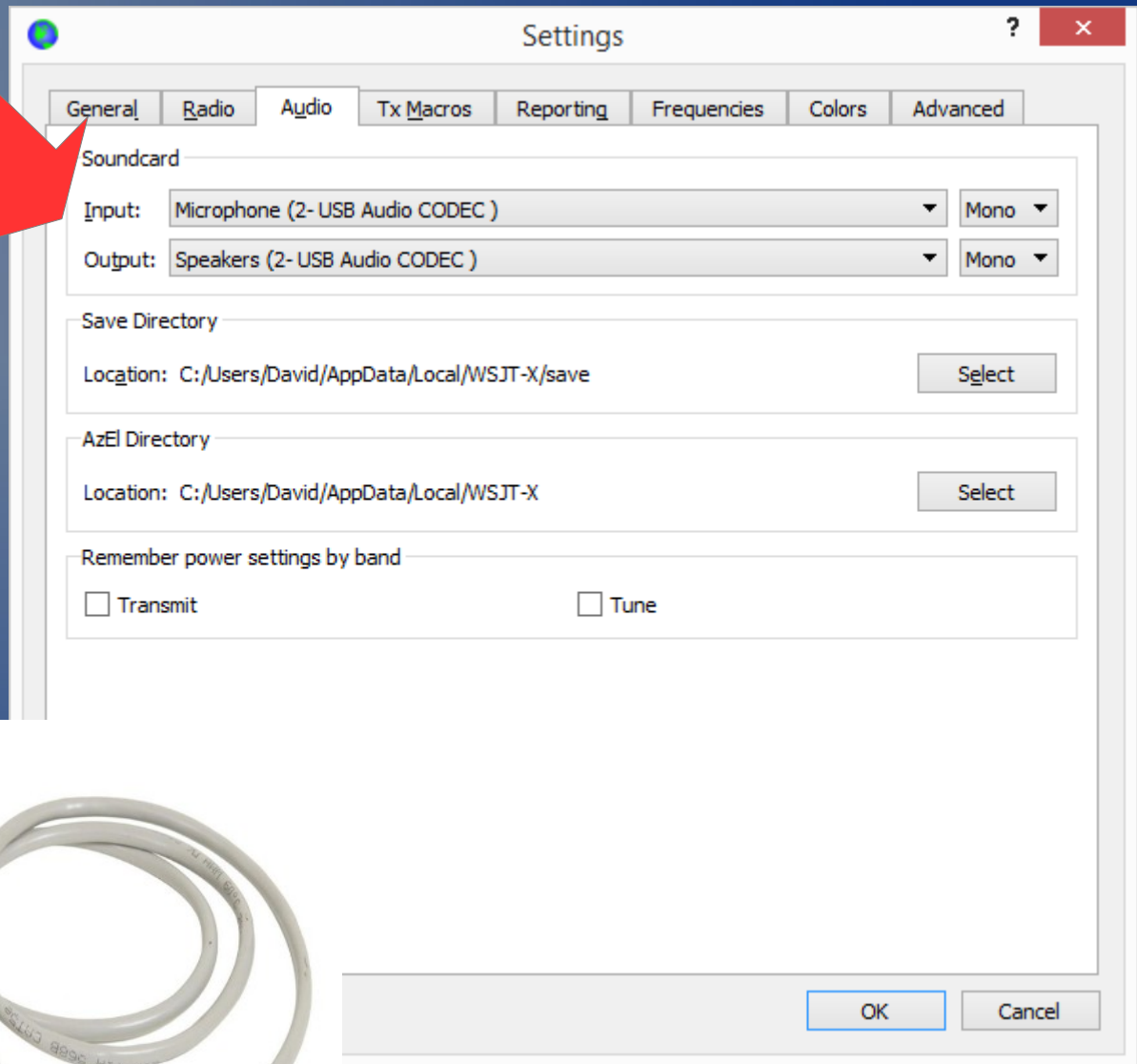
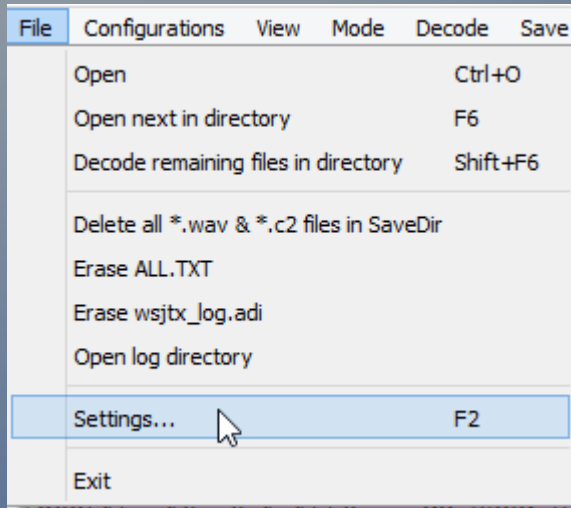
Geo Source Geocoded Address



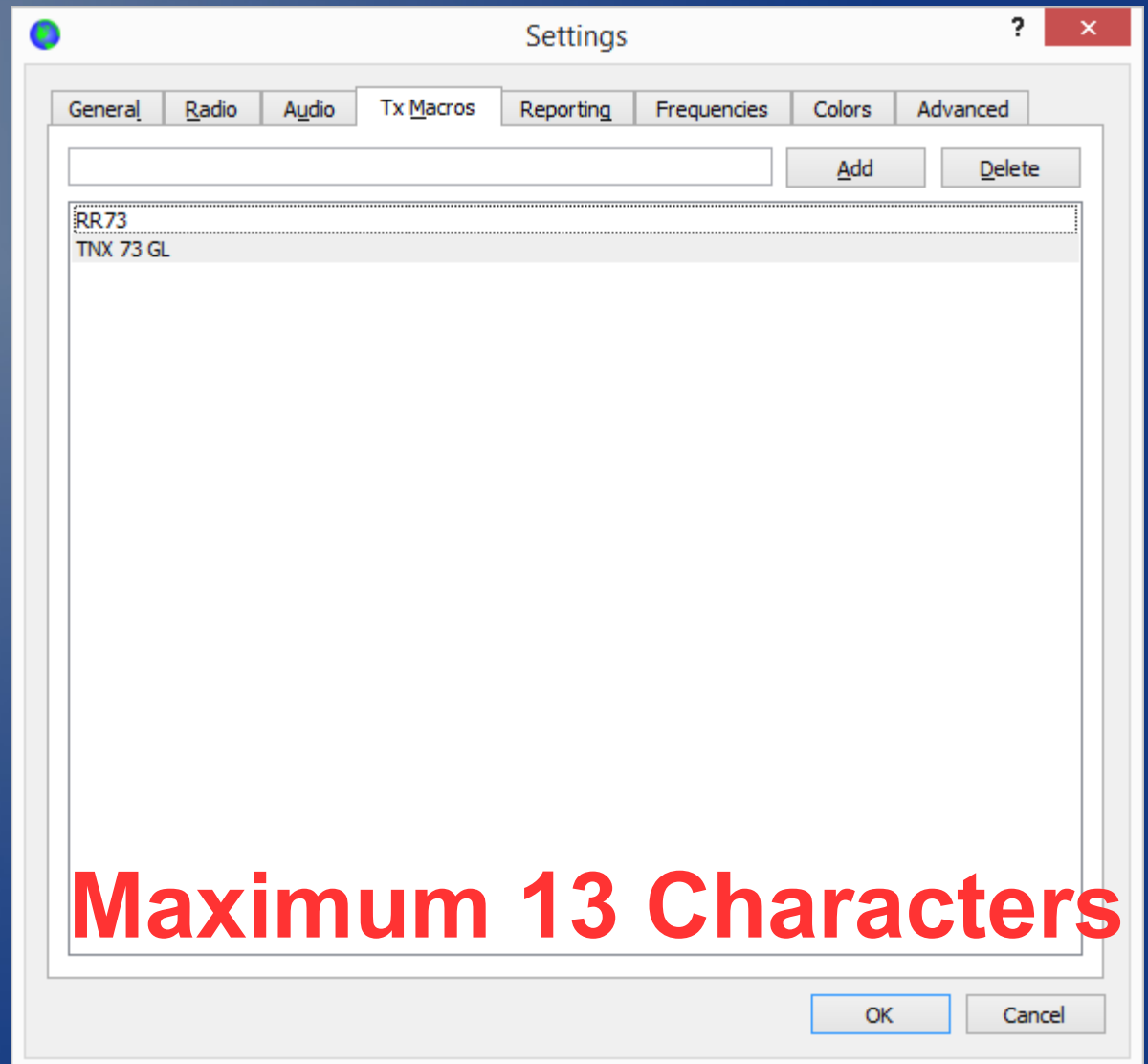
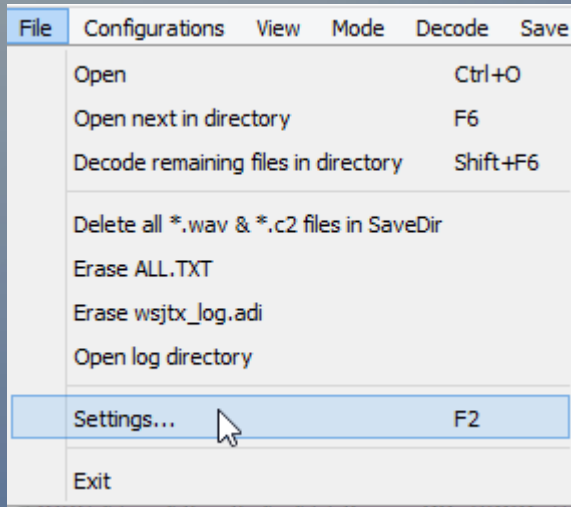
WSJT-X V1.8 Radio Setup



WSJT-X V1.8 Audio Setup



Free Text Messages Setup



TNX CLIFF 73G

SRI US QRM

QSY JT65 323

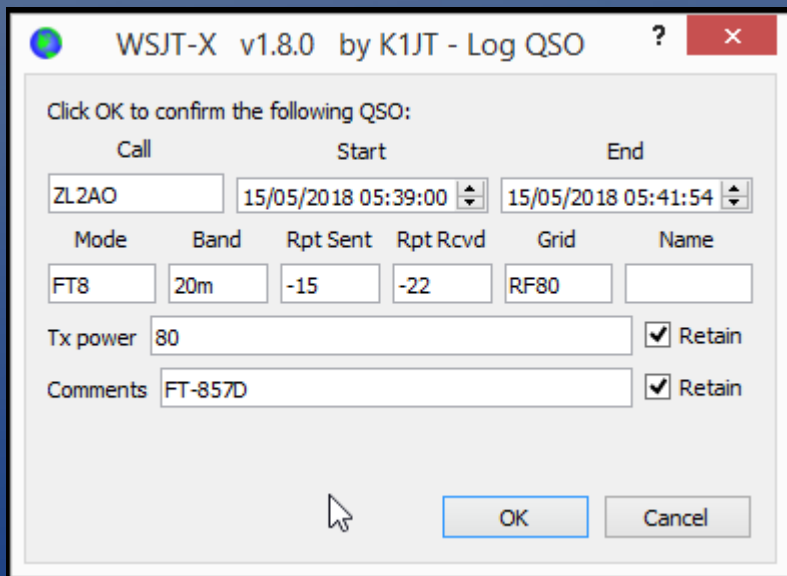
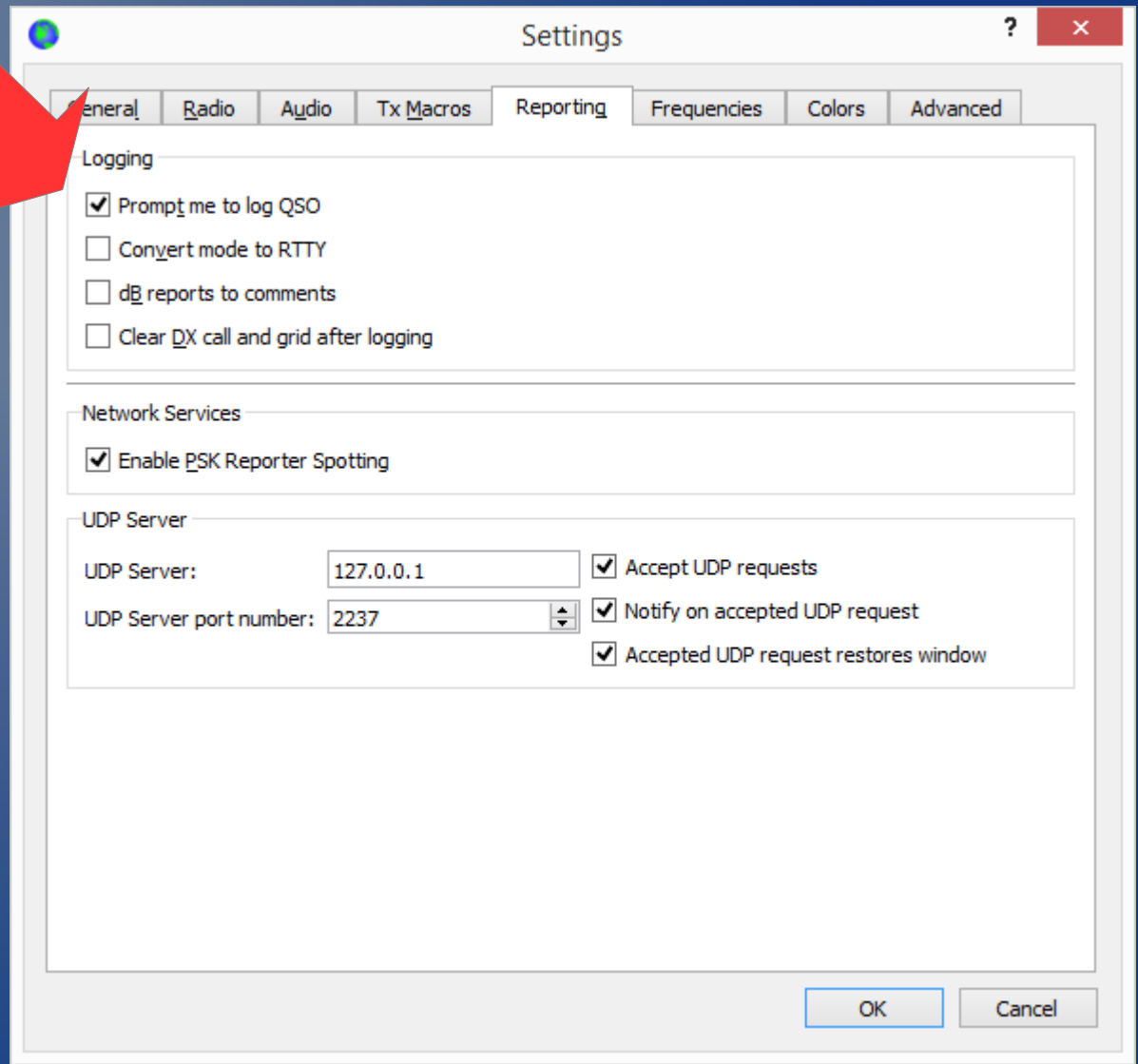
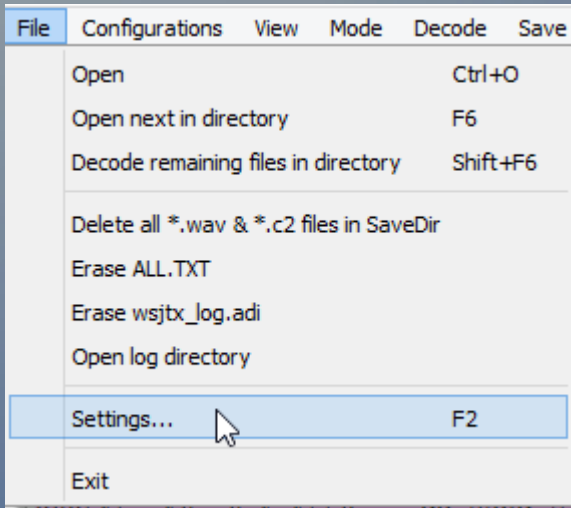
TNX LOTW 73

QSY AK TO FT9

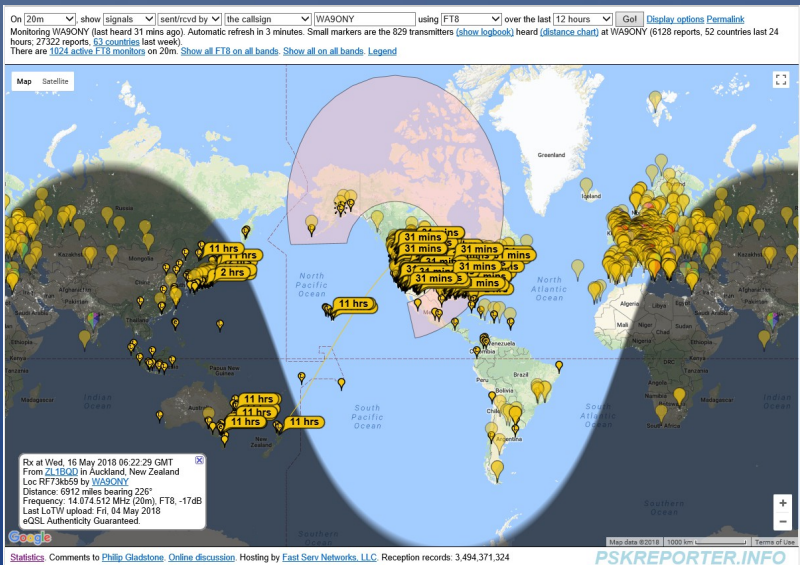
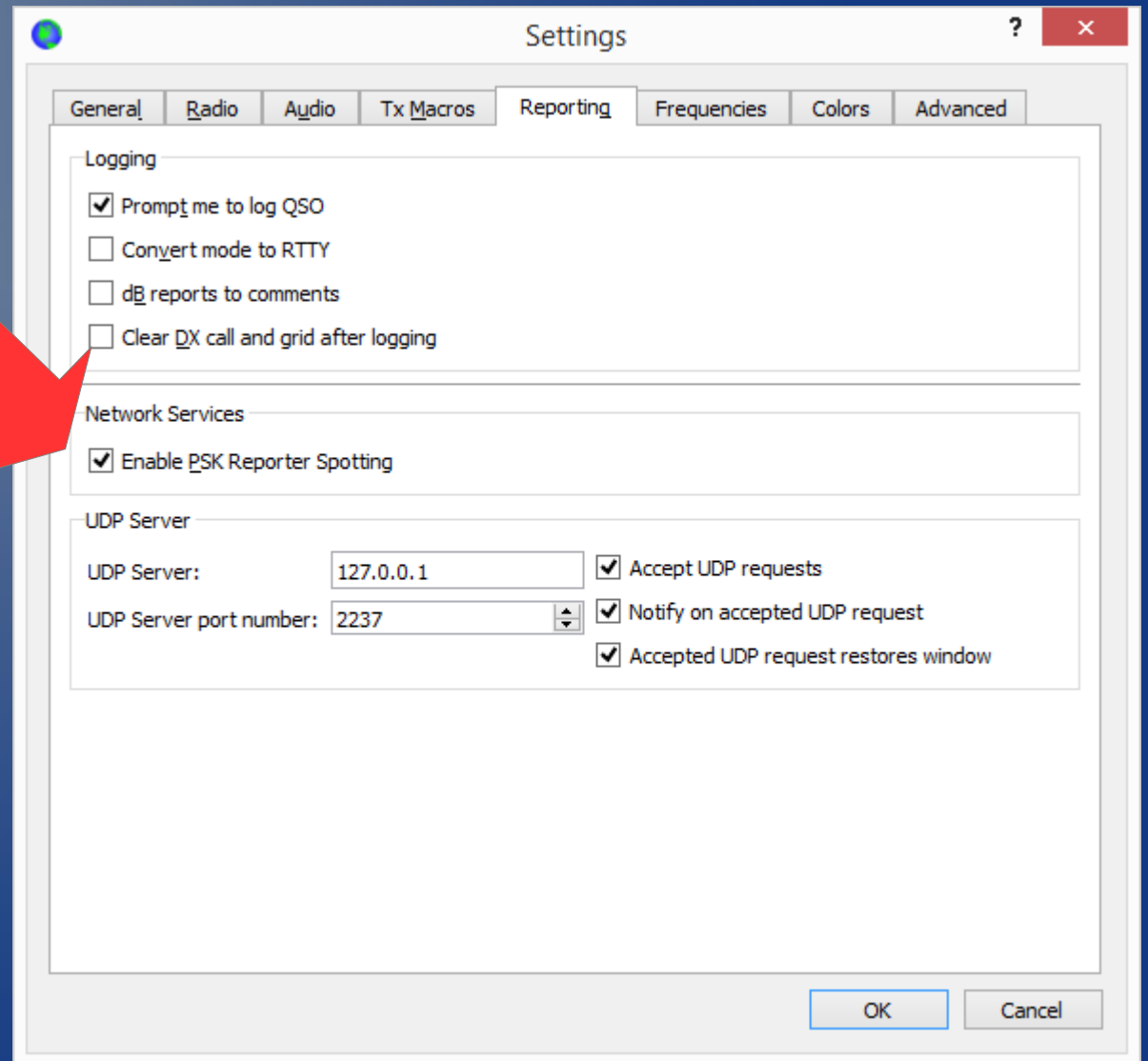
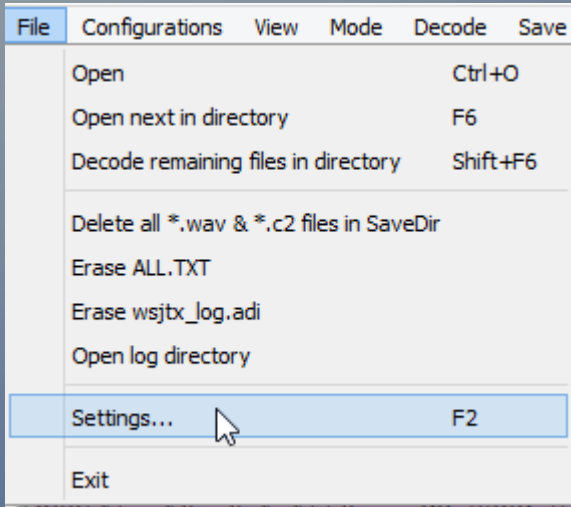
CHAI QSY 10M

Maximum 13 Characters

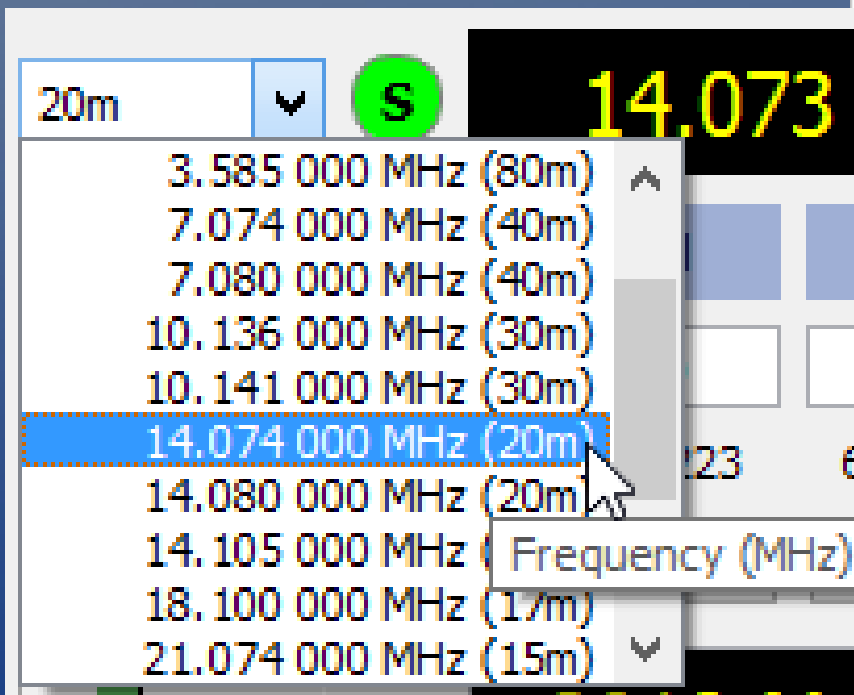
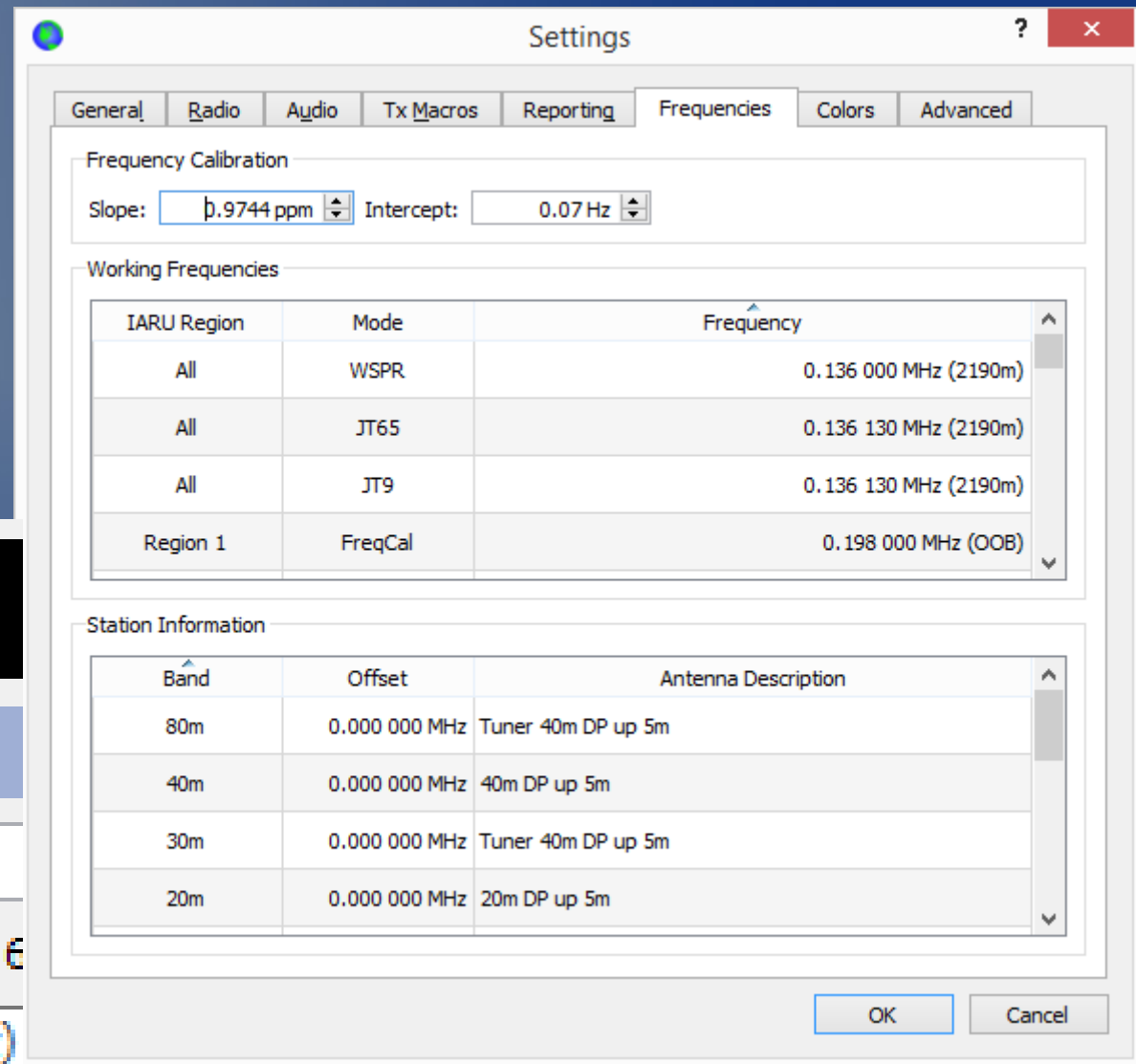
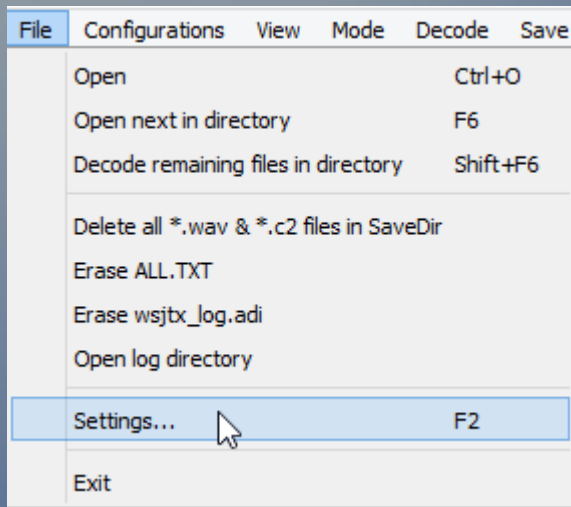
WSJT-X V1.8 Reporting Setup



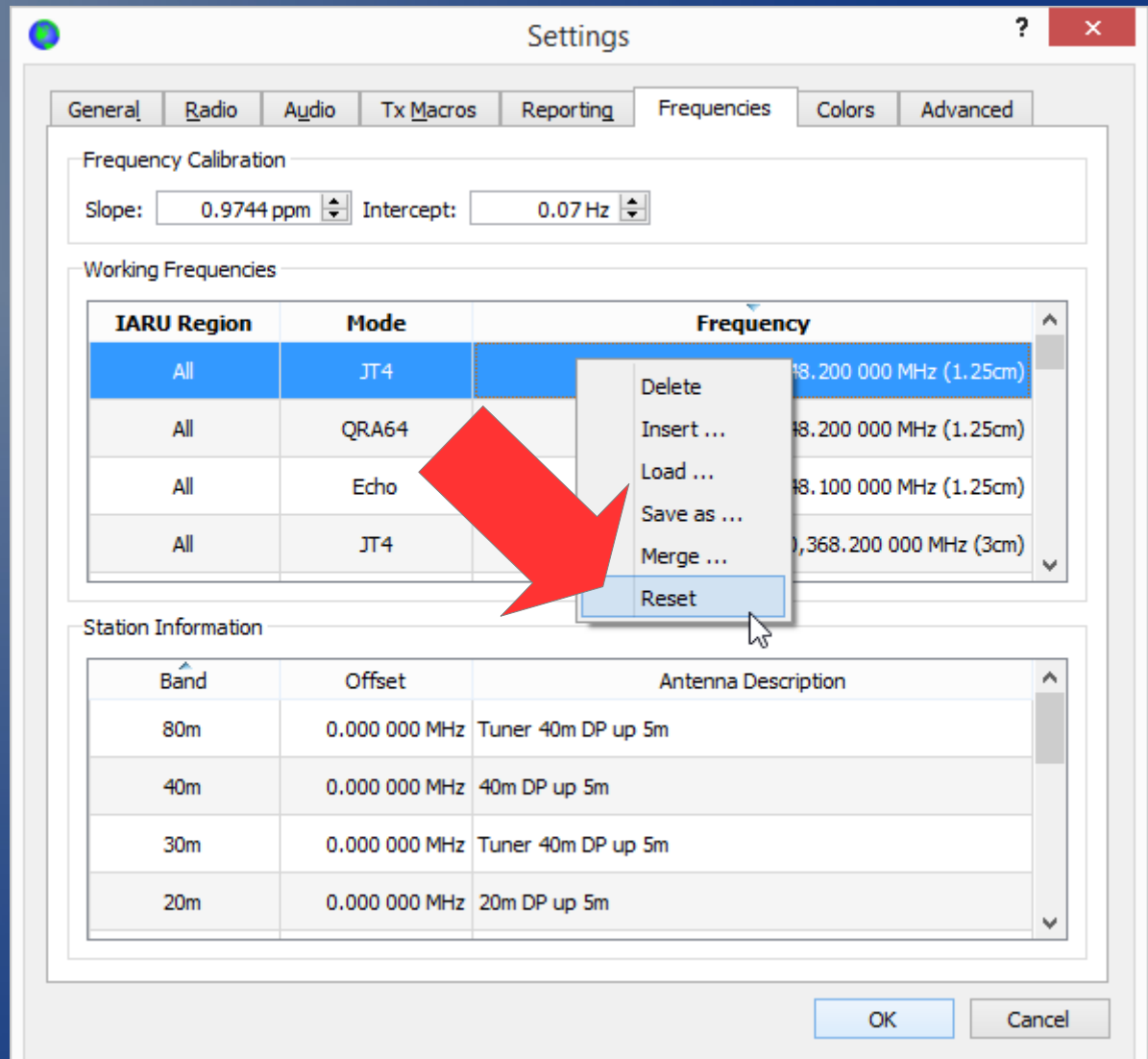
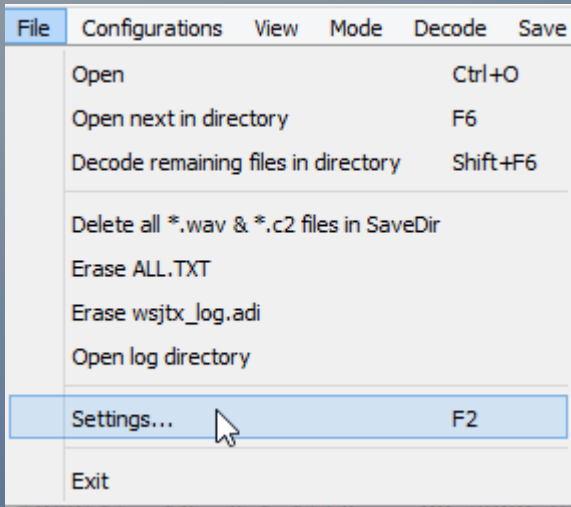
WSJT-X V1.8 Reporting Setup



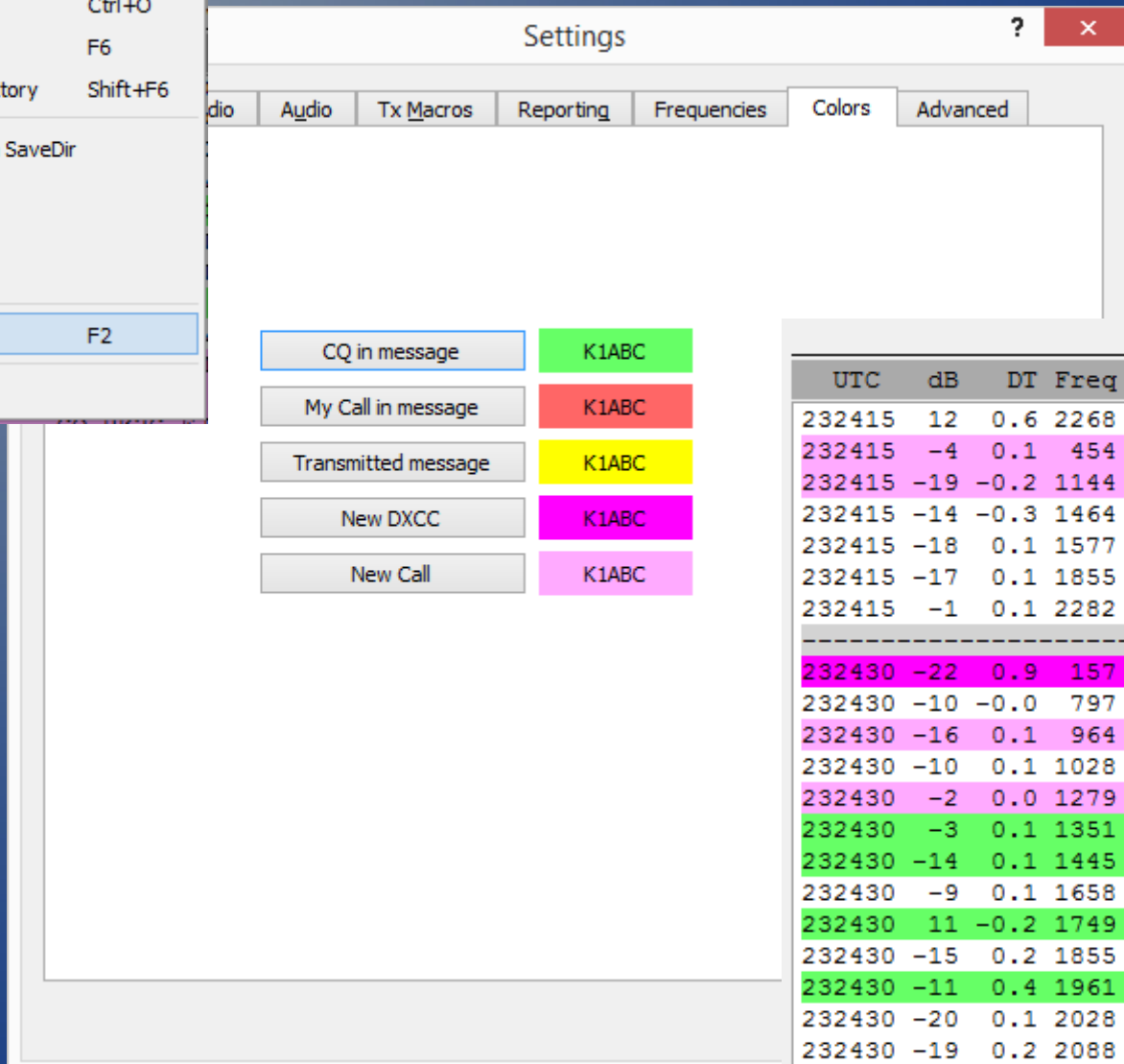
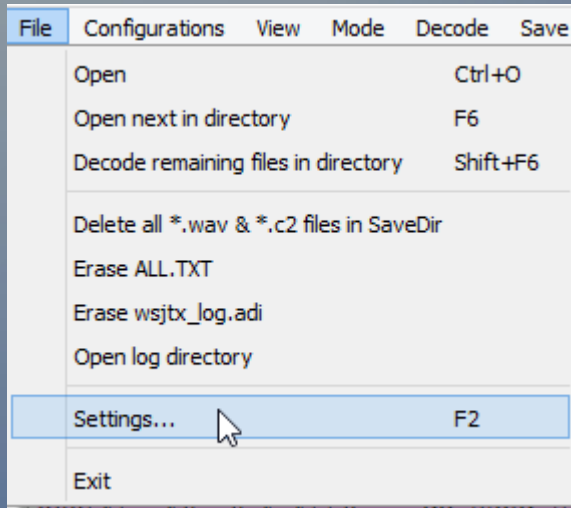
WSJT-X V1.8 Frequencies Setup



WSJT-X V1.8 Reset Frequencies



WSJT-X V1.8 Colors Setup



Band Activity

UTC	dB	DT	Freq	Message
232415	12	0.6	2268 ~	N3GX KI7RI CN85
232415	-4	0.1	454 ~	CQ W5KAL EM20 ~U.S.A.
232415	-19	-0.2	1144 ~	CQ K9CQS EM69 ~U.S.A.
232415	-14	-0.3	1464 ~	VE6TN JH1XYB 73
232415	-18	0.1	1577 ~	EI8GS WD1Z R+03
232415	-17	0.1	1855 ~	CE3CBM N6NKT 73
232415	-1	0.1	2282 ~	K7EII K7PPY DM33
----- 20m				
232430	-22	0.9	157 ~	CQ YS1CJA EK53 !El Salva
232430	-10	-0.0	797 ~	HK6JCF KM4JNR EM86
232430	-16	0.1	964 ~	CQ W8MSP EN72 ~U.S.A.
232430	-10	0.1	1028 ~	KE0N NOFON DN80
232430	-2	0.0	1279 ~	CQ PT2ARR GH54 ~Brazil
232430	-3	0.1	1351 ~	CQ AA1ON FN42 U.S.A.
232430	-14	0.1	1445 ~	CQ K3WW FN20 U.S.A.
232430	-9	0.1	1658 ~	K1GUY N7FKI CN85
232430	11	-0.2	1749 ~	CQ AA2MF EL87 U.S.A.
232430	-15	0.2	1855 ~	K2AQX CE3CBM -08
232430	-11	0.4	1961 ~	CQ KY7M DM52 U.S.A.
232430	-20	0.1	2028 ~	NE1D W4IHI EL87
232430	-19	0.2	2088 ~	KF1P W6OAT -14
232430	-17	0.1	2267 ~	K4WCK N3GX RRR
232430	-20	0.3	2320 ~	CQ WB3FSR FN20 U.S.A.

FT8 Color Decode

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

WSJT-X v1.8.0 by K1JT

UTC	dB	DT	Freq	Message
231700	-21	0.4	2195	~ CQ CO6CG EL92 Cuba
231715	-10	0.3	2195	~ CO6CG JR7TEQ -19
231730	-13	0.1	2057	~ JF2RDG VK7BO +01
231745	-16	0.3	2195	~ CO6CG JR7TEQ -19
231800	-14	0.1	2057	~ JF2RDG VK7BO RR73
231830	-10	0.1	2056	~ CQ VK7BO QE38 ~Australia
231900	-13	0.1	2056	~ CQ VK7BO QE38 ~Australia
231930	-9	0.1	2056	~ WA9ONY VK7BO -17

UTC	dB	DT	Freq	Message
231245	-7	0.1	898	~ CQ VK2CA QF47
231309	Tx		1248	~ VK2CA WA9ONY CN85
231315	-10	0.1	898	~ CQ VK2CA QF47
231330	Tx		1248	~ VK2CA WA9ONY CN85
231345	-14	0.1	898	~ WA9ONY VK2CA -07
231400	Tx		1248	~ VK2CA WA9ONY R-14
231415	-5	0.1	898	~ WA9ONY VK2CA RRR
231430	Tx		1248	~ VK2CA WA9ONY 73
231445	-8	0.1	898	~ WA9ONY VK2CA 73
231830	-10	0.1	2056	~ CQ VK7BO QE38
231849	Tx		1248	~ VK7BO WA9ONY CN85
231900	-13	0.1	2056	~ CQ VK7BO QE38
231915	Tx		1248	~ VK7BO WA9ONY CN85
231930	-9	0.1	2056	~ WA9ONY VK7BO -17
231945	Tx		1248	~ VK7BO WA9ONY R-09

Log QSO Stop Monitor Erase Decode Enable Tx Halt Tx Tune Menus

17m **S** **18.100 002**

Tx even/1st

DX Call: VK7BO DX Grid: QE38 Tx 1248 Hz Rx 2056 Hz Tx ← Rx Rx ← Tx

Az: 239 8186 mi Hold Tx Freq

Lookup Add Report -9 Auto Seq Call 1st NA VHF Contest

2018 May 09 23:20:02

38 dB

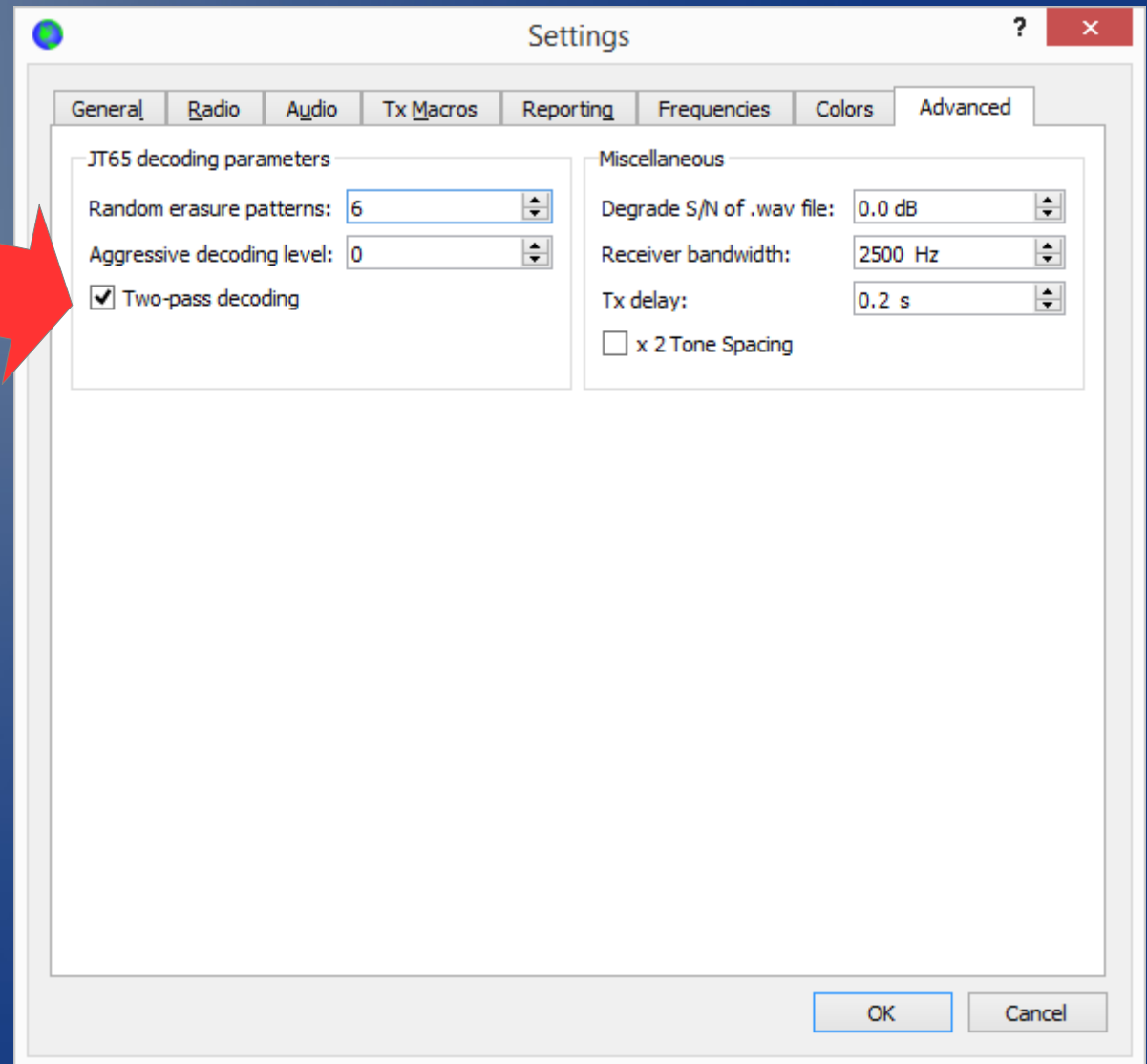
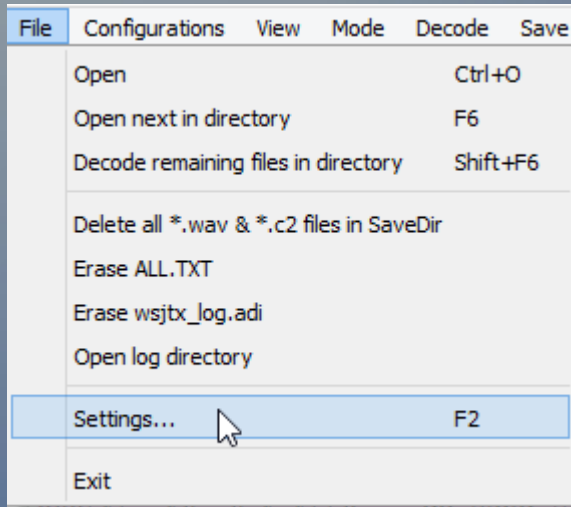
Generate Std Msgs

Next	Now
<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>
<input checked="" type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>

Pwr

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

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

2nd Pass

WSJT-X V1.8 Main Window Setup

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 Seq & Call 1st

Log QSO Stop **Monitor** Erase Decode Enable Tx Halt Tx Tune Menus

6m **S** **50.313 001** Tx even/1st

DX Call Grid Hz

N6NU Hold Tx Freq

Az: 183 56 Report Auto Seq Call 1st

Lookup Addr NA VHF Contest

2018 May 09 20:47:51

Generate Std Msgs

	Next	Now	Pwr
N6NU WA9ONY CN85	<input type="radio"/>	<input type="button" value="Tx 1"/>	
N6NU WA9ONY +12	<input type="radio"/>	<input type="button" value="Tx 2"/>	
N6NU WA9ONY R+12	<input type="radio"/>	<input type="button" value="Tx 3"/>	
N6NU WA9ONY RRR	<input type="radio"/>	<input type="button" value="Tx 4"/>	
N6NU WA9ONY 73	<input type="radio"/>	<input type="button" value="Tx 5"/>	
CQ WA9ONY CN85	<input checked="" type="radio"/>	<input type="button" value="Tx 6"/>	

Receiving FT8 6/15 WD:30m

WSJT-X V1.8 Main Window Setup

The screenshot displays the WSJT-X v1.8.0 software interface. The window title is "WSJT-X v1.8.0 by K1JT". The menu bar includes "File", "Configurations", "View", "Mode", "Decode", "Save", "Tools", and "Help".

The interface is divided into several sections:

- Band Activity** and **Rx Frequency**: Two large empty tables with columns for UTC, dB, DT, Freq, and Message.
- Control Buttons**: A row of buttons including "Log QSO", "Stop", "Monitor" (highlighted in green), "Erase", "Decode", "Enable Tx", "Halt Tx", "Tune", and "Menus".
- Frequency and Mode**: A dropdown menu set to "6m" and a frequency display showing "50.313 001".
- Call and Grid**: Fields for "DX Call" (N6NU), "DX Grid" (CM87), and "Tx" (105). A red arrow points to the "Rx 105" field.
- Hold Tx Freq**: A checked checkbox labeled "Hold Tx Freq".
- Message Queue**: A list of messages with "Next" and "Now" columns. The "Now" column has buttons labeled "Tx 1" through "Tx 6". The selected message is "CQ WA9ONY CN85".
- Time and Date**: A display showing "2018 May 09 20:47:51".
- Bottom Bar**: A status bar with "Receiving" (green), "FT8" (blue), and "6/15 WD:30m".

WSJT-X V1.8 Main Window Setup

WSJT-X v1.8.0 by K1JT

File Configurations View Mode Decode Save Tools Help

Band Activity				Rx Frequency					
UTC	dB	DT	Freq	Message	UTC	dB	DT	Freq	Message

Audio set to ~40 to 60

6m **S** **50.313 001** Tx even/1st

DX Call **DX Grid** Tx 1051 Hz Tx ← Rx

N6NU CM87 Rx 1051 Hz Rx ← Tx

Az: 183 564 mi Hold Tx Freq

Lookup Add Report 12 Auto Seq Call 1st

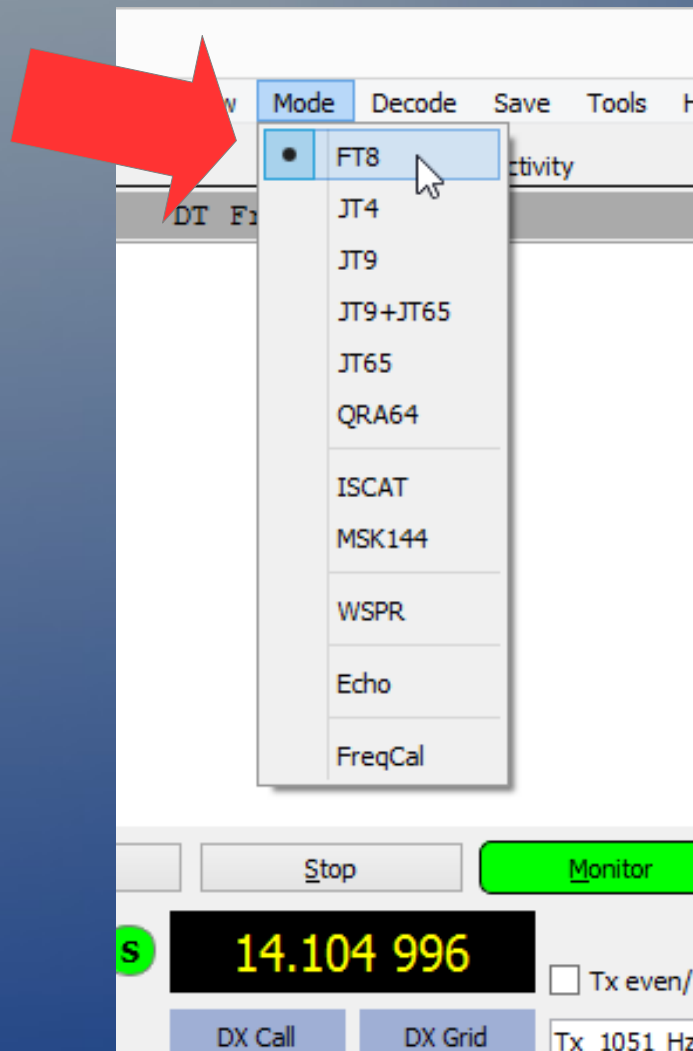
NA VHF Contest

2018 May 09 20:47:51

Generate Std Msgs		Next	Now	Pwr
N6NU WA9ONY CN85	<input type="radio"/>	<input type="radio"/>	Tx 1	
N6NU WA9ONY +12	<input type="radio"/>	<input type="radio"/>	Tx 2	
N6NU WA9ONY R+12	<input type="radio"/>	<input type="radio"/>	Tx 3	
N6NU WA9ONY RRR	<input type="radio"/>	<input type="radio"/>	Tx 4	
N6NU WA9ONY 73	<input type="radio"/>	<input type="radio"/>	Tx 5	
CQ WA9ONY CN85	<input checked="" type="radio"/>	<input type="radio"/>	Tx 6	

Receiving FT8 6/15 WD:30m

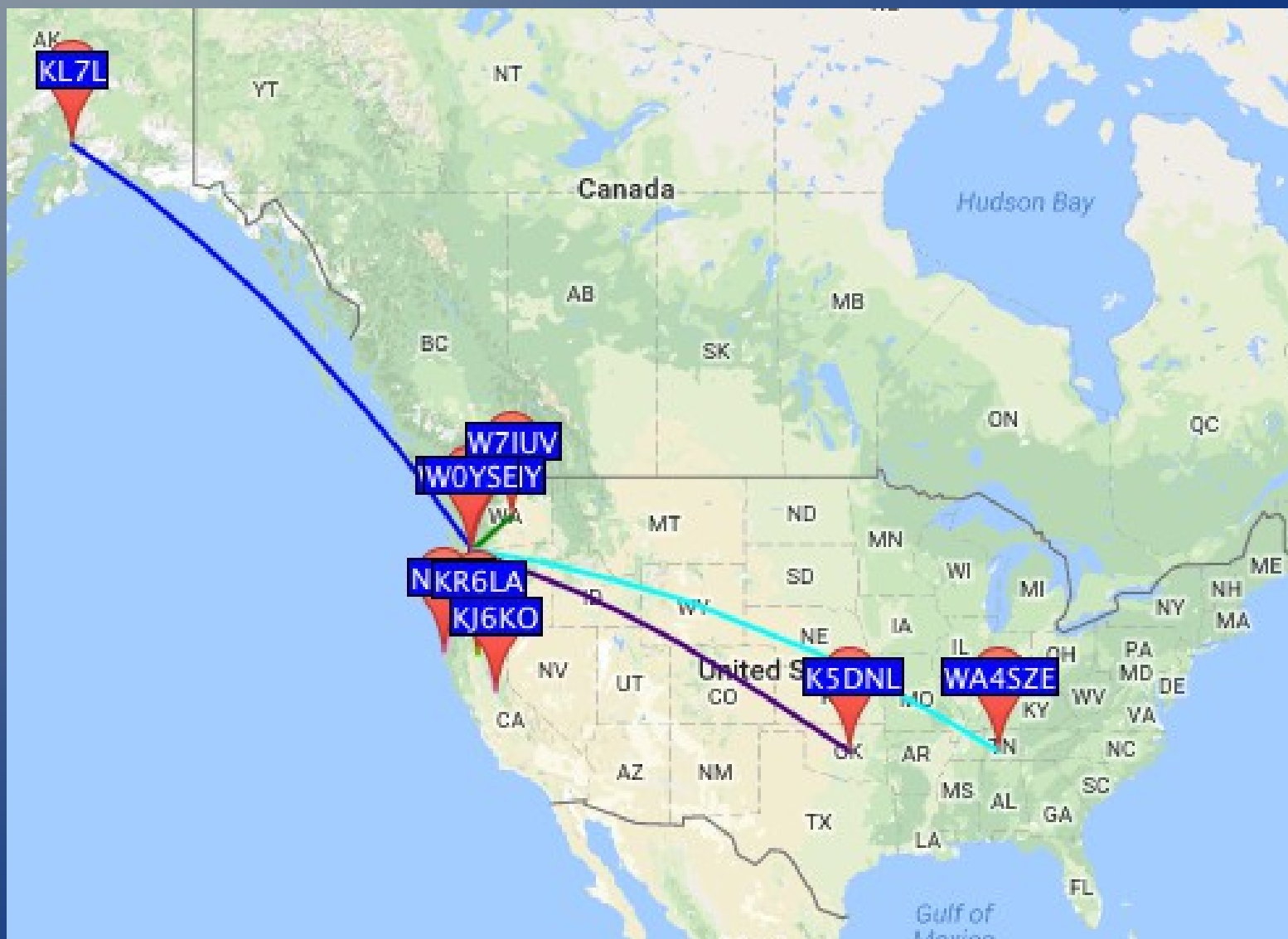
WSJT-X V1.8 Main Window Setup



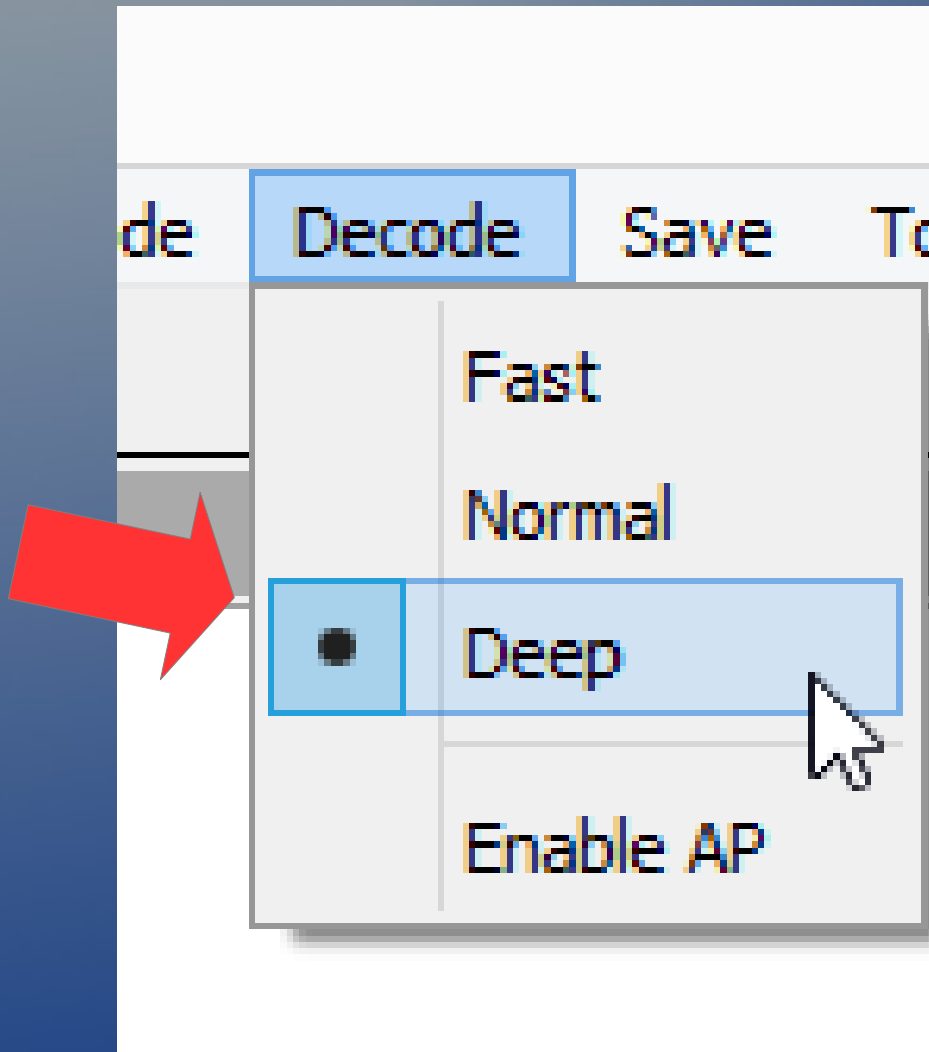
- WSJT-X has many digital modes of operation.
- After using FT8 try WSPR: Weak Signal Propagation Reporting

WSPR 630m Monitoring

WSPRnet wsprrnet.org/drupal/

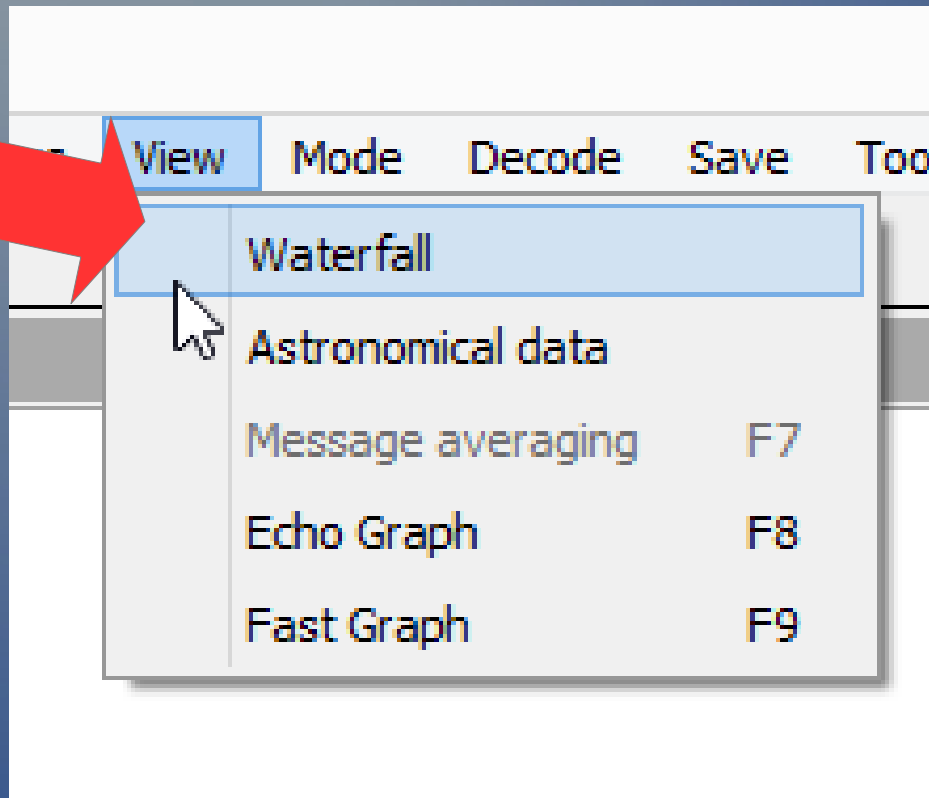


WSJT-X V1.8 Main Window Setup

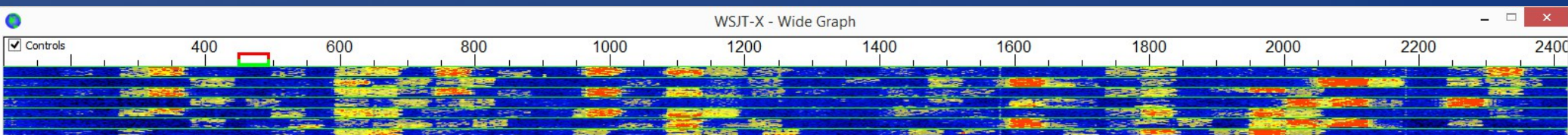


- Start with Deep
- Deep takes more computer processing power
- Select Normal or Fast if having decode problems with Deep

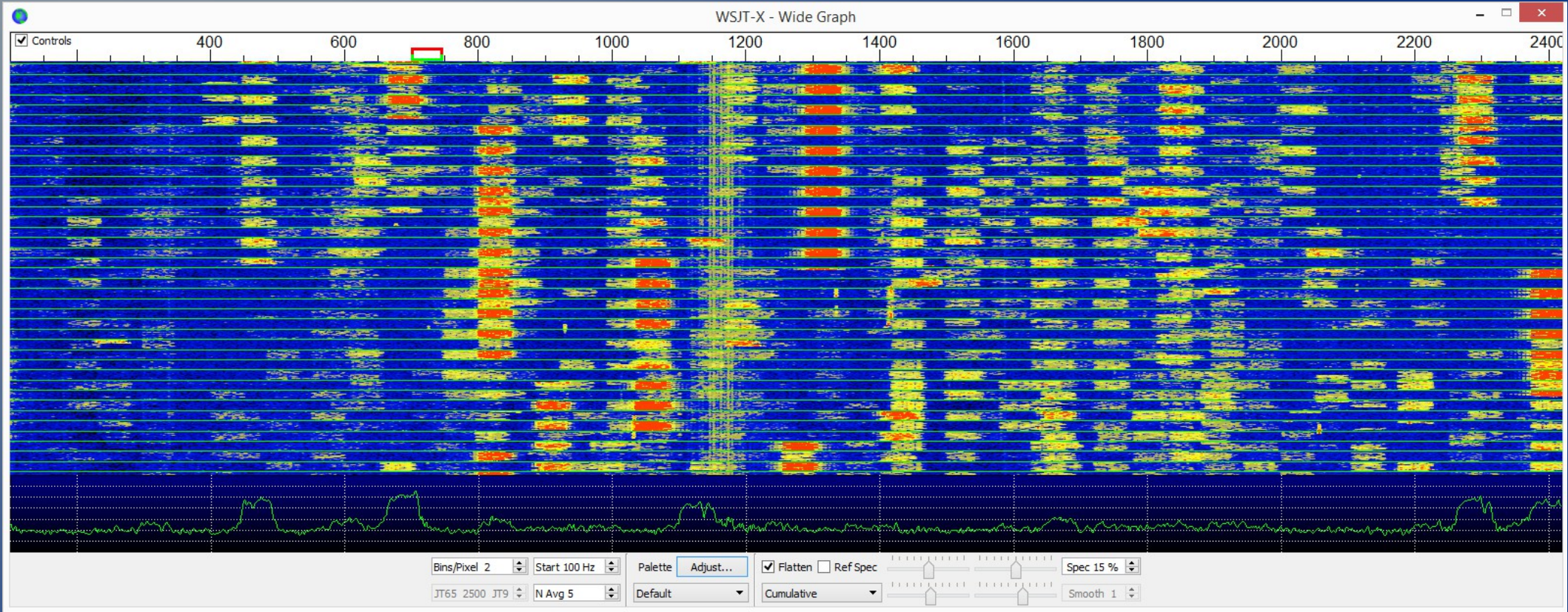
Turn On Waterfall Graph



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

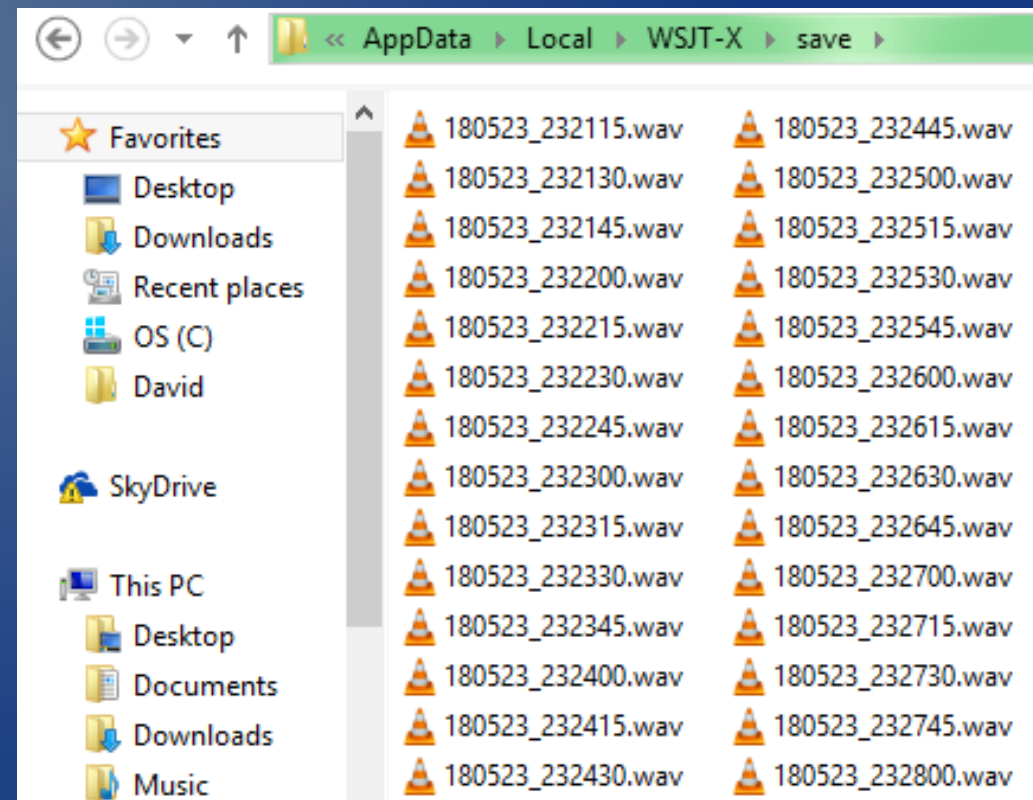
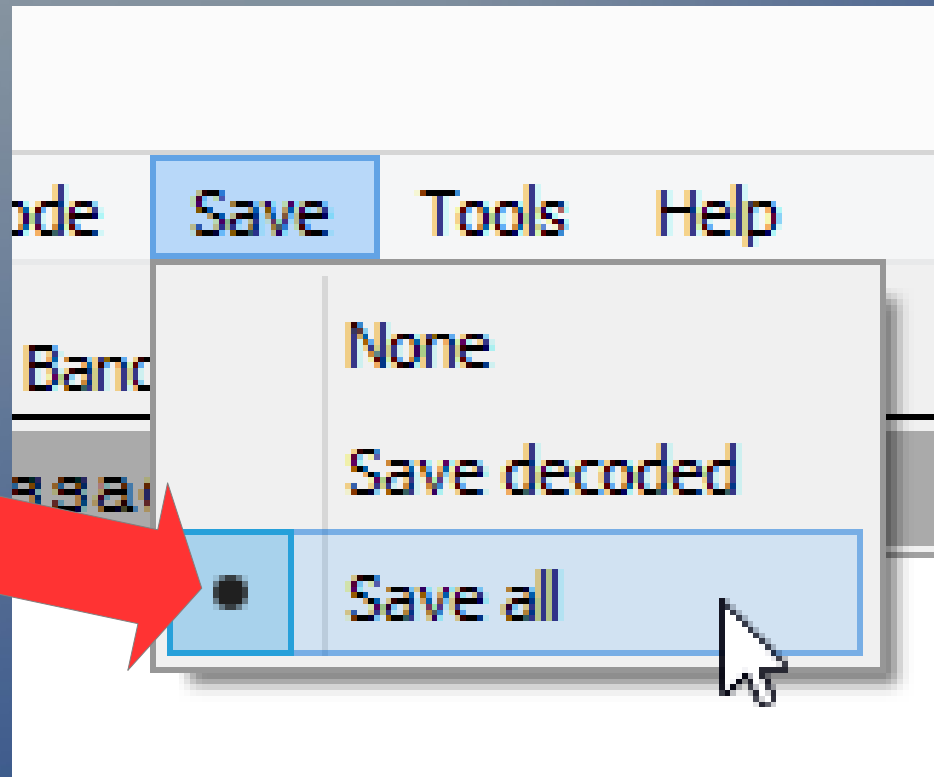


FT8 Waterfall Graph



WSJT-X V1.8 Main Window Setup

- Saves decode files
- Save audio files

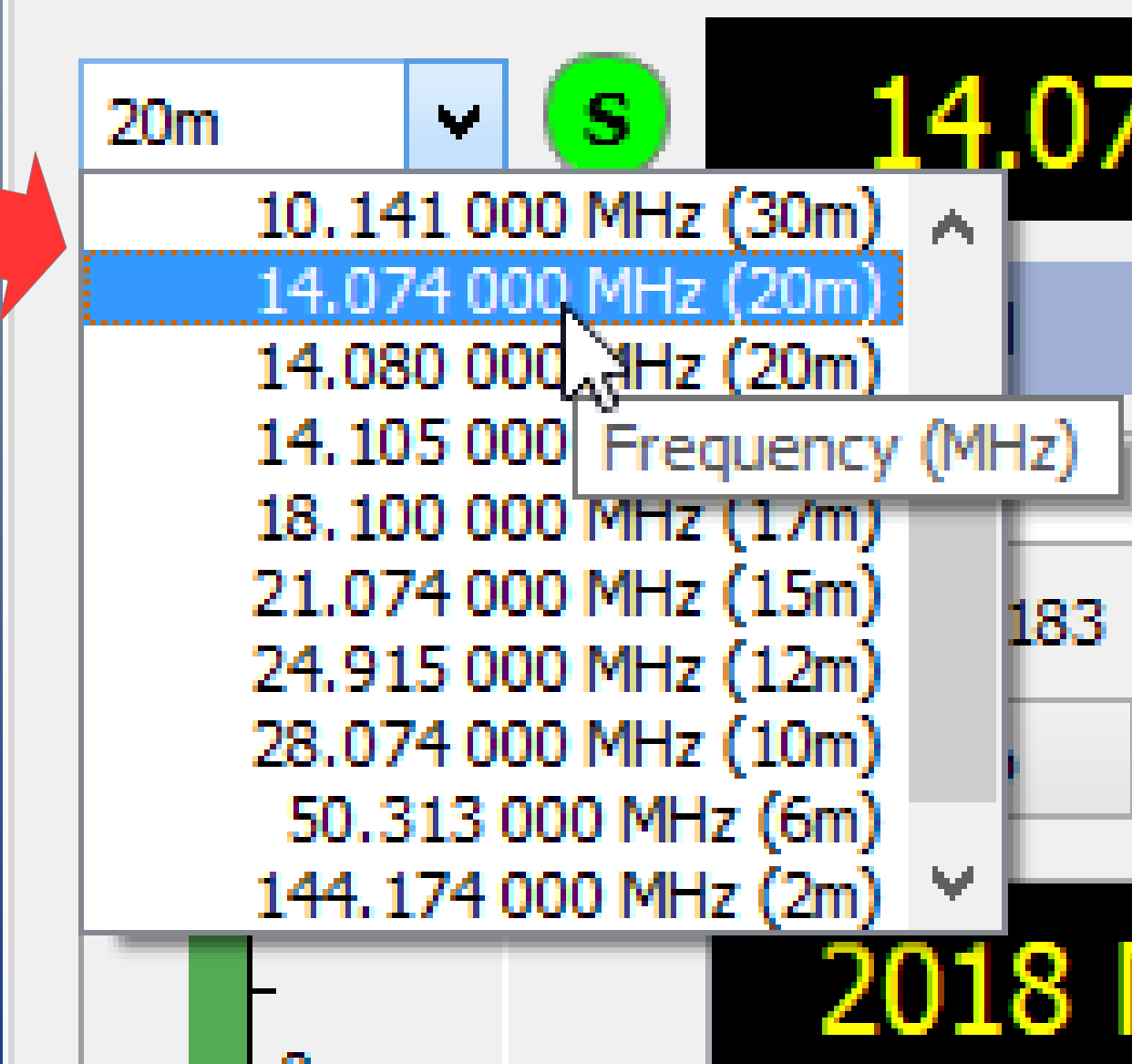


WSJT-X Saved Files

The screenshot shows a Windows File Explorer window titled "WSJT-X" with the address bar set to "David Haworth > AppData > Local > WSJT-X". The left sidebar shows "Favorites" and "This PC" sections. A red arrow points to the "Favorites" section. The main pane displays a list of files and folders. A second red arrow points to the file "wsjtx_log.adi". A context menu is open over this file, with "Open log directory" highlighted. The context menu includes options like "Open", "Settings...", and "Exit".

Name	Date modified	Type	Size
save	5/11/2018 3:02 PM	Folder	
ALL.TXT	5/11/2018 3:04 PM	Text Document	2 KB
ALL_WSPR.TXT	1/23/2018 7:35 PM	Text Document	101 KB
azel.dat	3/9/2018 4:41 PM	DAT File	4 KB
CALL3.OLD	1/20/2018 1:03 AM	DAT File	28 KB
CALL3.TXT	1/20/2018 1:03 AM	Text Document	2 KB
fcsl2.out	11/2/2017 5:02 PM	OUT File	1 KB
fmt.bak	11/2/2017 4:59 PM	Text Document	15 KB
FoxQSO.txt	4/10/2018 2:48 PM	Text Document	101 KB
freq.qrg	10/24/2017 9:32 AM	DAT File	2 KB
hashtable.txt	1/23/2018 7:35 PM	Text Document	101 KB
jt9_wisdom.dat	5/4/2018 1:02 PM	DAT File	4 KB
refspec.dat	9/1/2017 10:58 AM	DAT File	203 KB
timer.out	5/4/2018 1:02 PM	OUT File	1 KB
WSJT-X.ini	5/9/2018 5:42 PM	Configuration sett...	15 KB
wsjtx.log	5/9/2018 5:42 PM	Text Document	325 KB
wsjtx_log.adi	5/9/2018 5:42 PM	ADI File	1,063 KB
wsjtx_wisdom.dat	5/4/2018 1:02 PM	DAT File	4 KB
WSPR_history.txt	1/23/2018 7:35 PM	Text Document	101 KB
wspr_timer.out	1/23/2018 7:35 PM	OUT File	1 KB
wspr_wisdom.dat	1/23/2018 7:35 PM	DAT File	2 KB

WSJT-X V1.8 Band Setup



A screenshot of the WSJT-X V1.8 Band Setup interface. The main display shows '20m' in a dropdown menu, a green 'S' button, and a frequency of '14.07'. A red arrow points to the dropdown menu, which is open, showing a list of frequency bands. The selected band is '14.074 000 MHz (20m)'. A tooltip 'Frequency (MHz)' is visible over the list. Other bands listed include 10.141 000 MHz (30m), 14.080 000 MHz (20m), 14.105 000 MHz (20m), 18.100 000 MHz (17m), 21.074 000 MHz (15m), 24.915 000 MHz (12m), 28.074 000 MHz (10m), 50.313 000 MHz (6m), and 144.174 000 MHz (2m). The background shows a frequency display with '14.07' and a date display with '2018'.

Band	Frequency (MHz)	Bandwidth (m)
30m	10.141 000	30m
20m	14.074 000	20m
20m	14.080 000	20m
20m	14.105 000	20m
17m	18.100 000	17m
15m	21.074 000	15m
12m	24.915 000	12m
10m	28.074 000	10m
6m	50.313 000	6m
2m	144.174 000	2m

FT8 Monitor Mode

WSJT-X v1.8.0 by K1JT

File Configurations View Mode Decode Save Tools Help

Band Activity

UTC	dB	DT	Freq	Message
210845	-19	0.2	1922	EA7OWP RD3K02 EM20
210845	-19	0.1	1939	EA3IBK KE4JD RRR
210845	2	0.3	2070	TF3PPN WN4N EM80
210845	2	0.1	2172	VE7BEF K6KQV CM87
----- 20m				
210900	8	0.1	501	VP5/AK5Q WB6EWM
210900	-8	0.1	954	VE7BEF WB6VEX CM87
210900	-6	0.1	1028	WB5XX K1HLO DM23
210900	-18	0.4	1162	K3ZK WA0LJM EN27
210900	-19	-1.5	1658	KI4DLS AK5Q -05
210900	-10	0.1	1963	CQ N5KDV EM41 ~U.S.A.
----- 20m				
210915	-15	0.2	704	KI0IH N4LCH -17
210915	-11	0.1	922	K1GND KG7PQX DN40
210915	-14	0.1	1025	CQ WB5XX EM33 U.S.A.
210915	2	0.3	2070	TF3PPN WN4N EM80

Rx Frequency

UTC	dB	DT	Freq	Message
-----	----	----	------	---------

Log QSO Stop **Monitor** Erase Decode Enable Tx Halt Tx Tune Menus

20m **S** **14.073 996**

Tx every Tx 1051 Hz Rx 1051 Hz Hold Tx Freq

Auto Seq Call 1st NA VHF Contest

Report 12

DX Call: N6NU DX Grid: CM87 Az: 183 564 mi

Lookup Add

2018 May 09 21:09:37

Generate Std Msgs

Next	Now
<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>
<input checked="" type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>

Receiving FT8 7/15 WD:30m

Band Activity Window

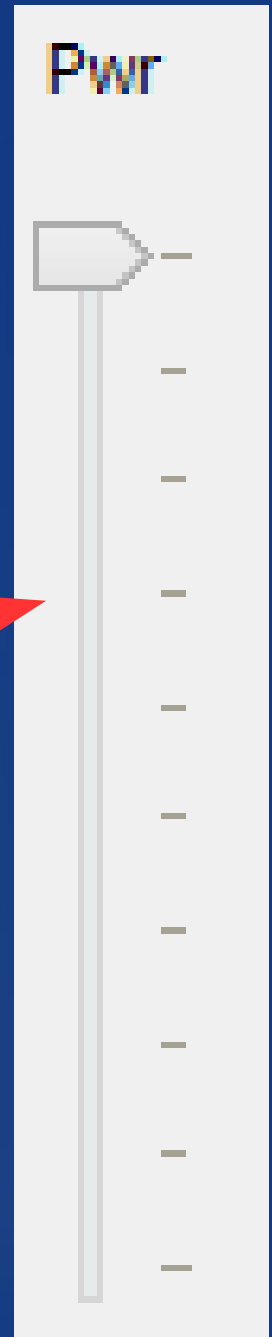
- UTC: Coordinated Universal Time
- dB: S/N in decibels
- DT: Delta Time
 - No decode for DT > ~ >2 sec.
- Freq: Frequency in Hz
- Message

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

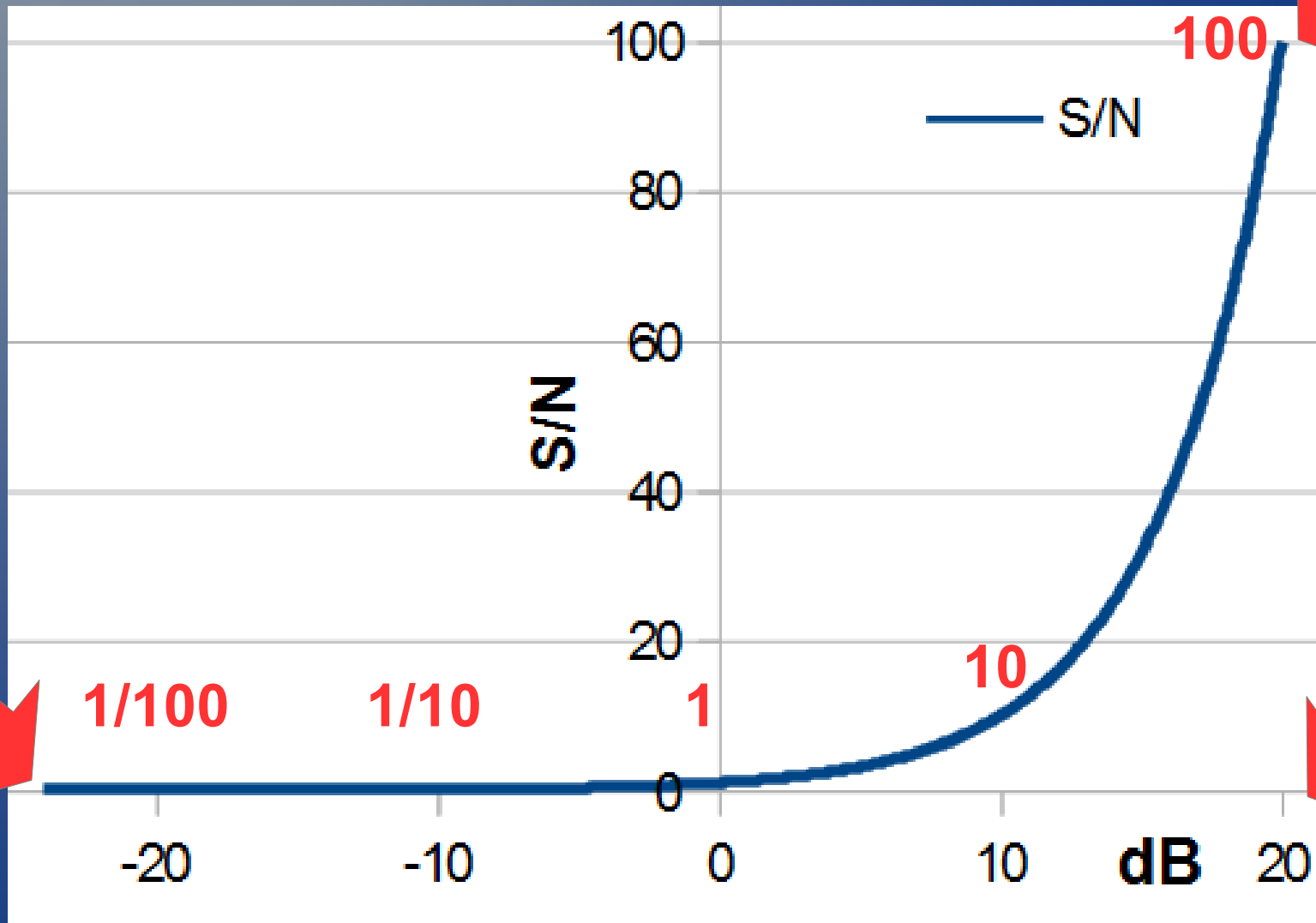
Tx Power

- Adjusted by transceiver
- Adjusted by SignalLink USB
 - SWR power meter
- Adjusted by WSJT-X
- Warning:
Most transceivers are not designed for 100% duty cycle



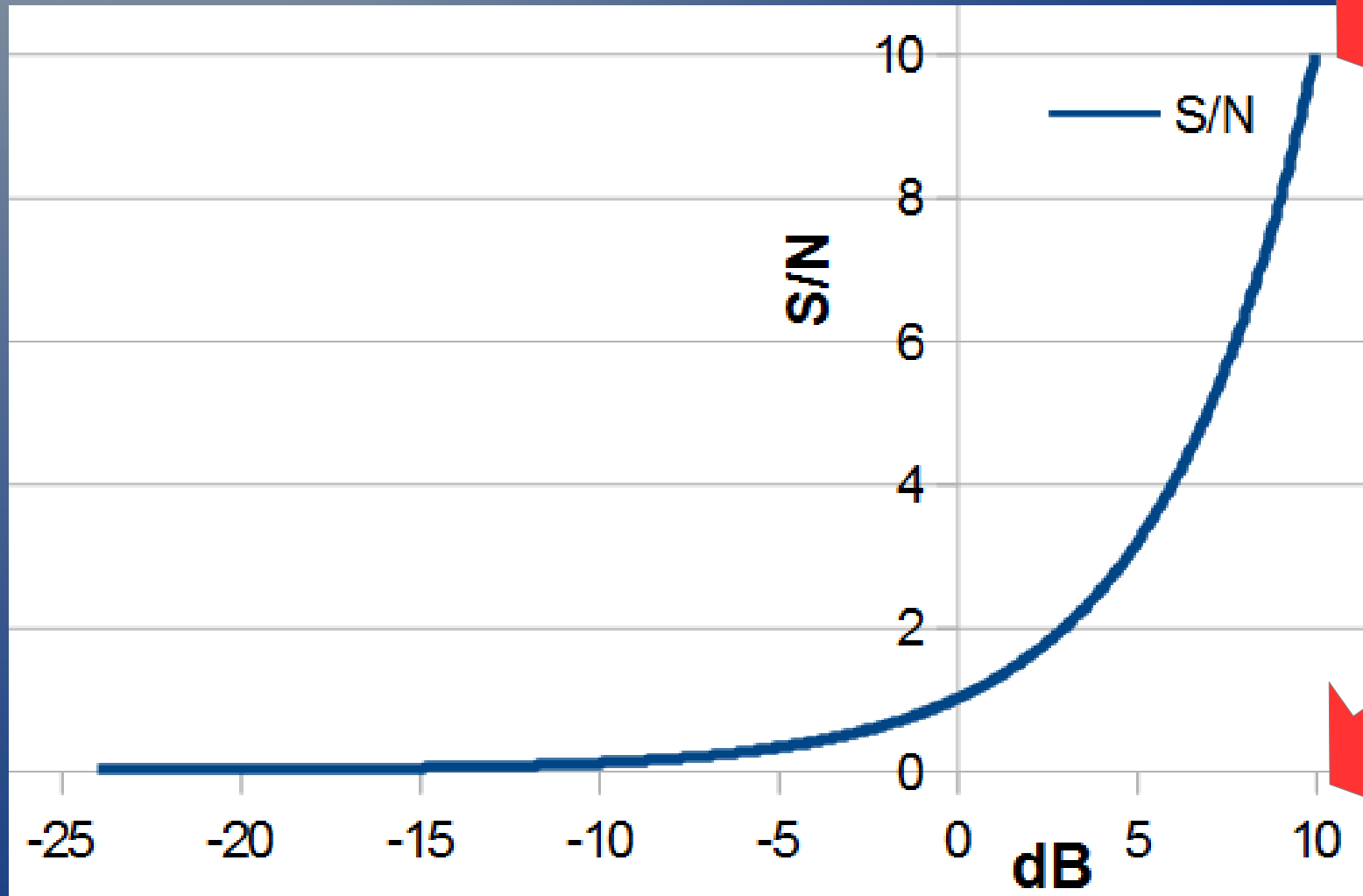
S/N: Signal Power/Noise Power

- $S/N \text{ dB} = 10 \log_{10}(\text{Signal/Noise})$



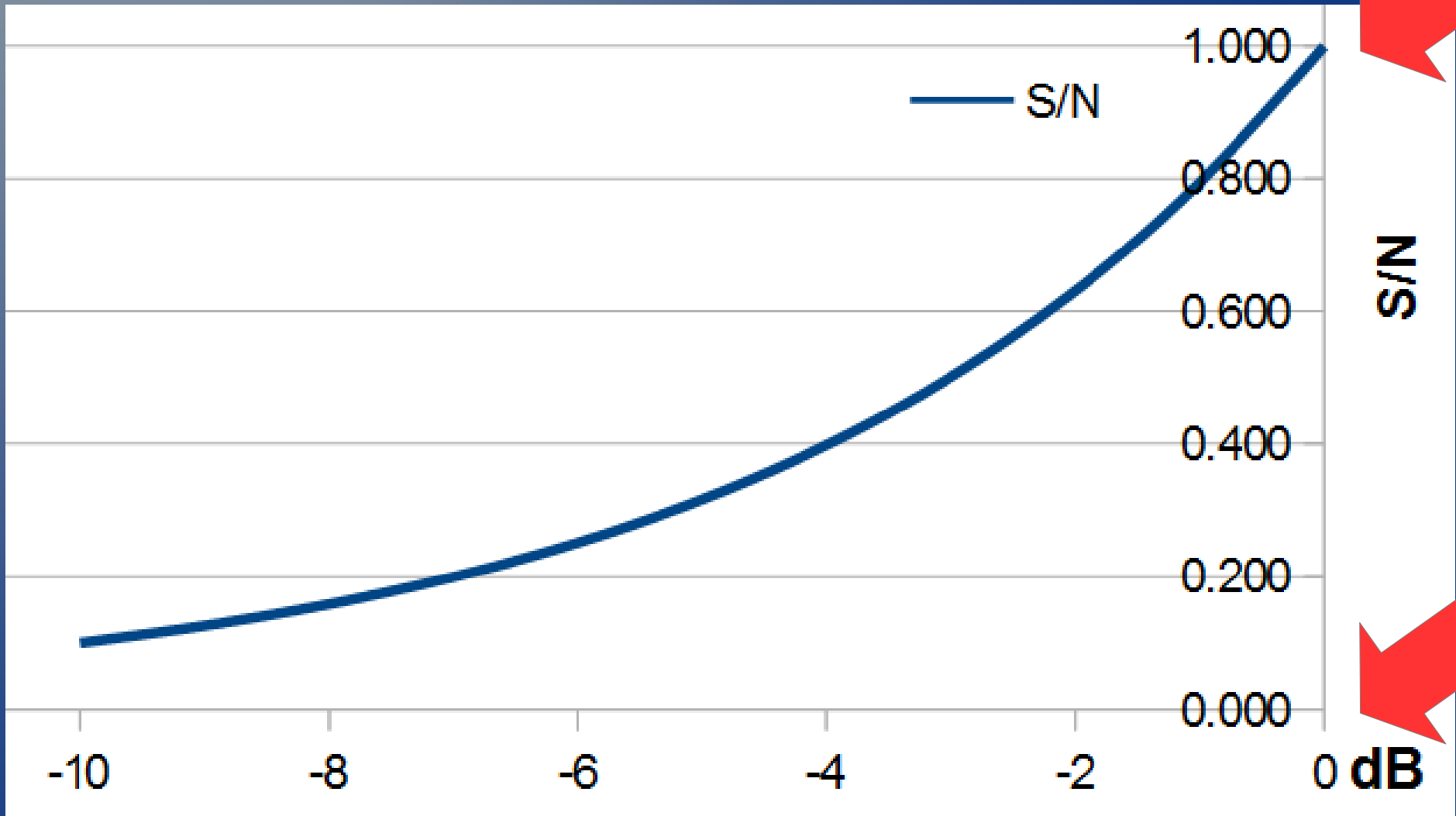
S/N: Signal Power/Noise Power

- $S/N \text{ dB} = 10 \log_{10}(\text{Signal/Noise})$



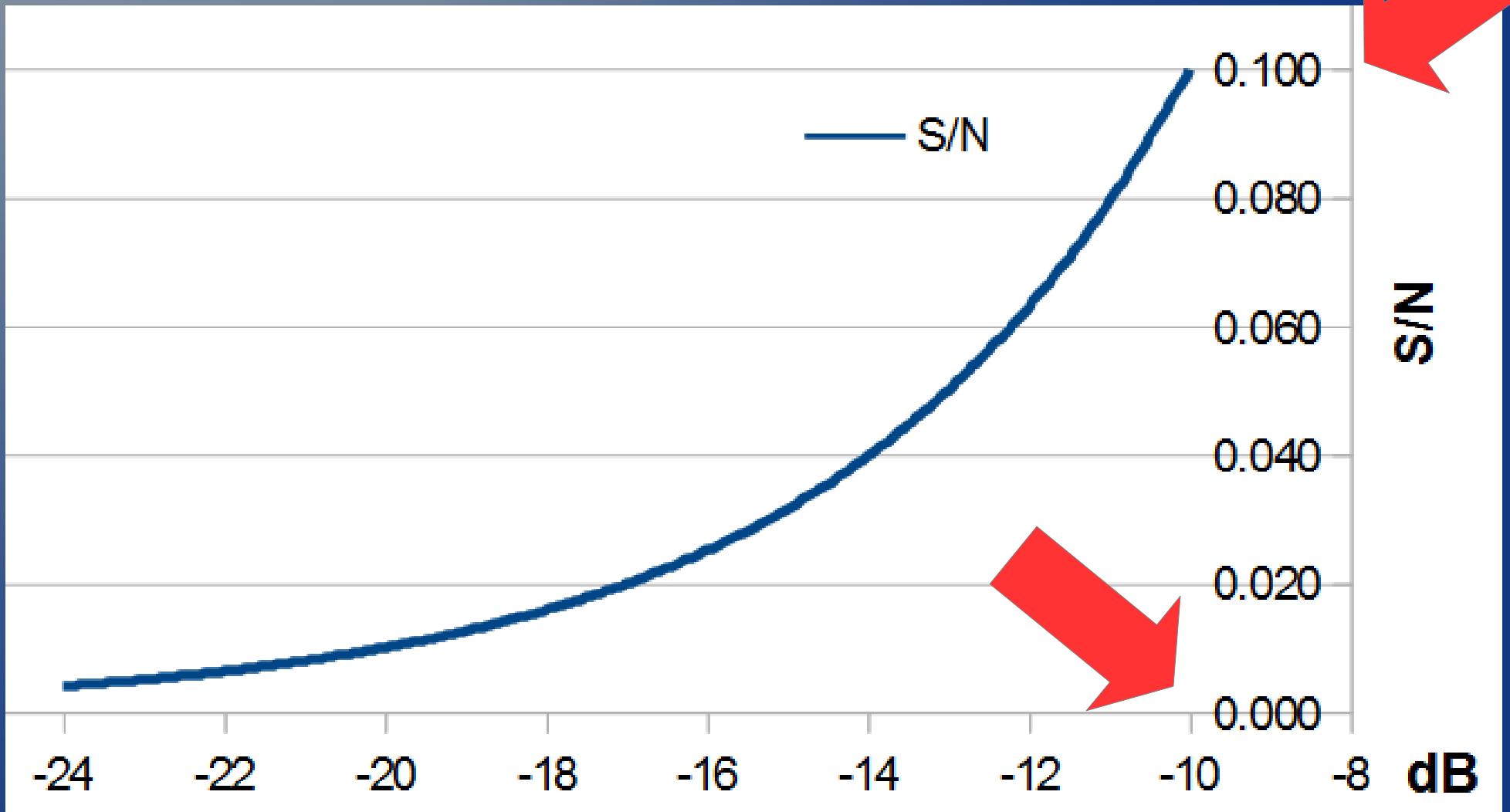
S/N: Signal Power/Noise Power

- $S/N \text{ dB} = 10 \log_{10}(\text{Signal/Noise})$



S/N: Signal Power/Noise Power

- $S/N \text{ dB} = 10 \log_{10}(\text{Signal/Noise})$



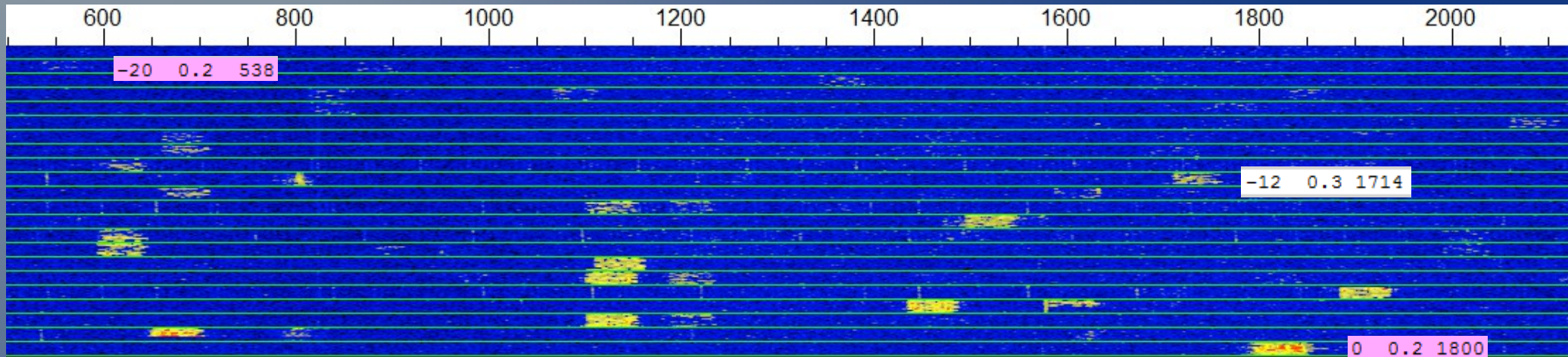
S/N: Signal Power/Noise Power

- $S/N \text{ dB} = 10 \log_{10}(\text{Signal/Noise})$

dB	S/N	dB	S/N	dB	S/N	dB	S/N	dB	S/N
20	100	10	10	0	1.000	-10	0.100	-20	0.010000
19	79.4	9	7.9	-1	0.794	-11	0.079	-21	0.007943
18	63.1	8	6.3	-2	0.631	-12	0.063	-22	0.006310
17	50.1	7	5.0	-3	0.501	-13	0.050	-23	0.005012
16	39.8	6	4.0	-4	0.398	-14	0.040	-24	0.003981
15	31.6	5	3.2	-5	0.316	-15	0.032	-25	0.003162
14	25.1	4	2.5	-6	0.251	-16	0.025	-26	0.002512
13	20.0	3	2.0	-7	0.200	-17	0.020	-27	0.001995
12	15.8	2	1.6	-8	0.158	-18	0.016	-28	0.001585
11	12.6	1	1.3	-9	0.126	-19	0.013	-29	0.001259

S/N on the Water Fall

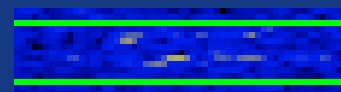
Top: Noise -20 -19 -18 -17 -16 -15 -14 -13 -12
 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 :Bottom



dB	DT	Freq
0	0.2	1800
-1	0.3	654
-2	0.2	1106
-3	0.1	1440
-4	-0.8	1888
-5	0.2	1105
-6	0.1	1114

-7	0.1	597
-8	0.1	597
-9	1.1	1500
-10	0.2	1106
-11	0.2	663
-12	0.3	1714
-13	0.1	598

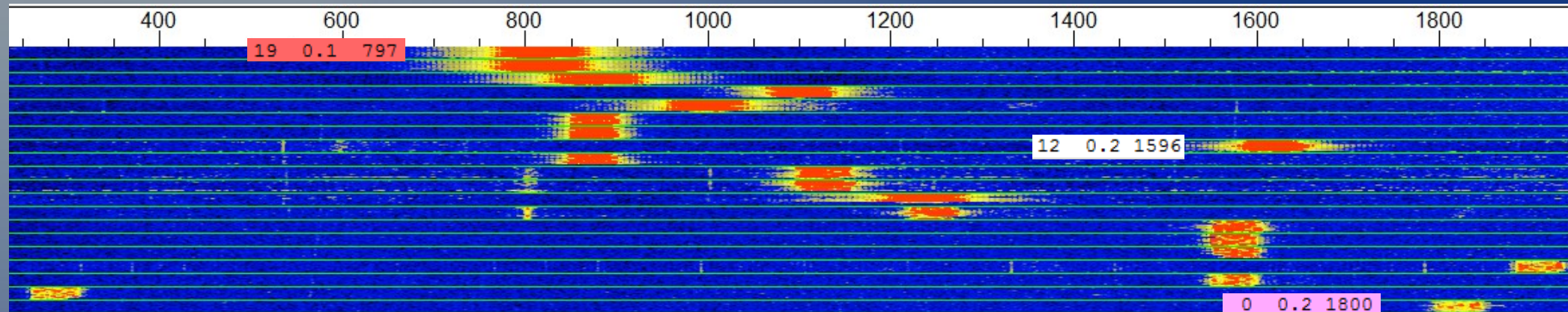
-14	0.2	663
-15	0.2	663
-16	0.1	2064
-17	0.1	815
-18	0.1	815
-19	0.1	1345
-20	0.2	538



Demo

S/N on the Water Fall

Top: 19 18 17 16 15 14 13 12 11 10
9 8 7 6 5 4 3 2 1 0 :Bottom



dB	DT	Freq
0	0.2	1800
1	0.0	264
2	0.1	1553
3	-0.9	1888
4	0.0	1556
5	-0.0	1553
6	0.3	1557

7	-0.1	1225
8	0.1	1214
9	0.2	1106
10	0.1	1106
11	0.1	852
12	0.2	1596
13	-0.2	854

14	-0.2	854
15	0.7	978
16	0.0	1080
17	0.1	855
18	0.1	796
19	0.1	797

QSO Success

Very Easy



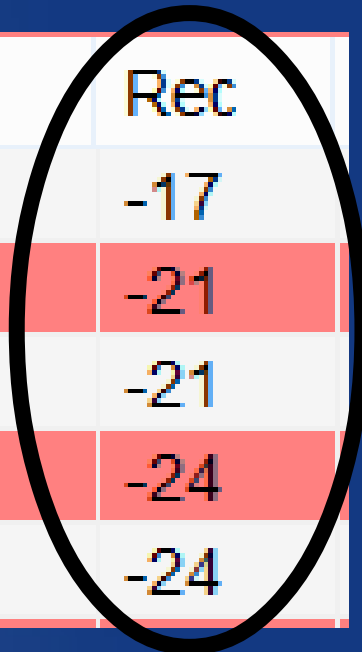
Very Hard

dB	S/N	dB	S/N	dB	S/N	dB	S/N	dB	S/N
20	100	10	10	0	1.000	-10	0.100	-20	0.010000
19	79.4	9	7.9	-1	0.794	-11	0.079	-21	0.007943
18	63.1	8	6.3	-2	0.631	-12	0.063	-22	0.006310
17	50.1	7	5.0	-3	0.501	-13	0.050	-23	0.005012
16	39.8	6	4.0	-4	0.398	-14	0.040	-24	0.003981
15	31.6	5	3.2	-5	0.316	-15	0.032		
14	25.1	4	2.5	-6	0.251	-16	0.025		
13	20.0	3	2.0	-7	0.200	-17	0.020		
12	15.8	2	1.6	-8	0.158	-18	0.016		
11	12.6	1	1.3	-9	0.126	-19	0.013		

FT8 is Weak Signal Mode

FT8 80m Log

Rec#	Call	Date / Time	Snt	Rec
4117	KB8MAF	2018/05/28 05:05	-11	-17
4116	W4JPV	2018/05/28 05:00	-07	-21
4115	W0JMP	2018/05/28 04:58	-07	-21
4114	K4GPC	2018/05/28 04:55	-14	-24
4113	AC4GW	2018/05/28 04:53	-14	-24

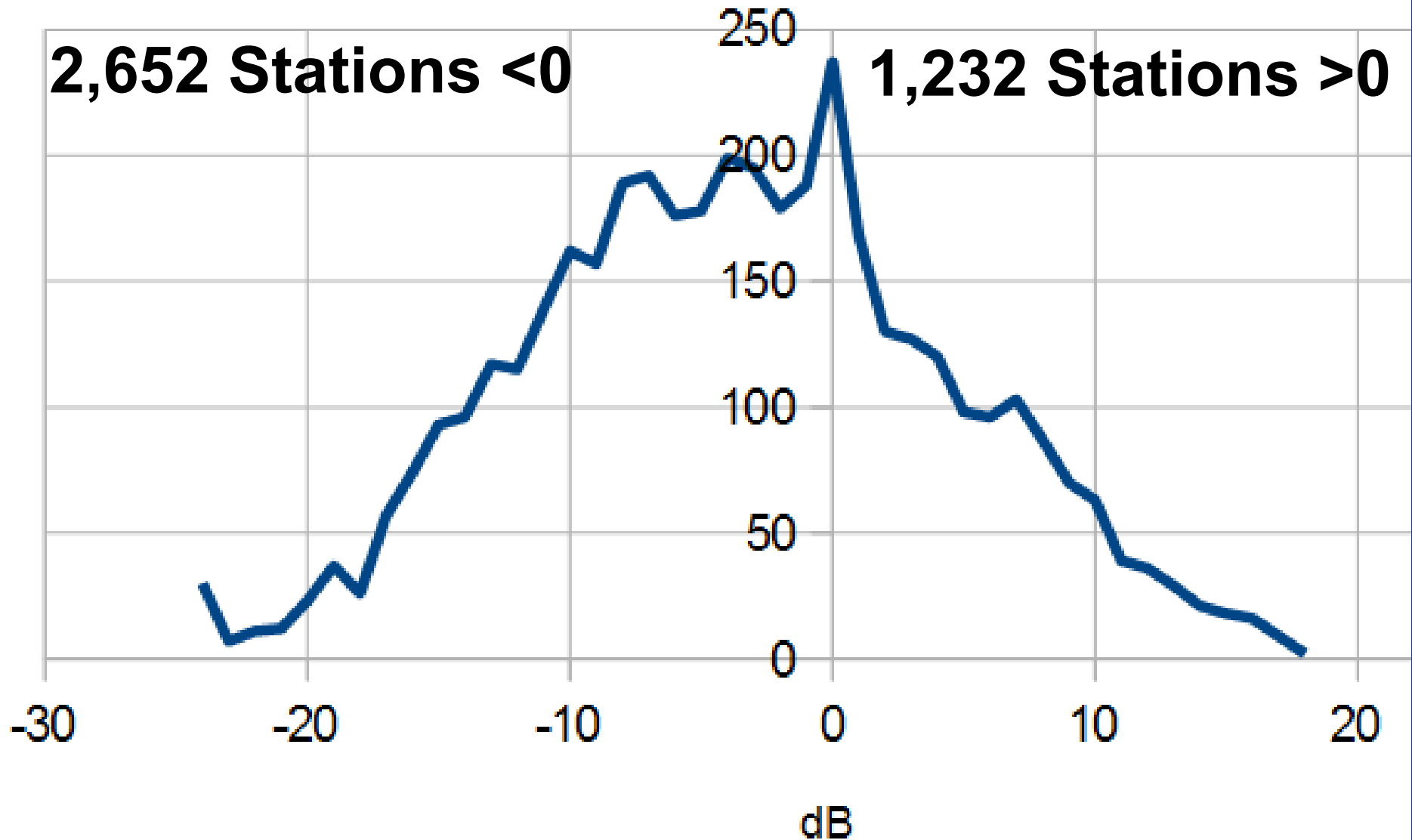


23 dB Difference In Signal Reports WA9ONY 200 X Weaker Signal

231215	1	-1.3	1904	~	CQ	KK4FZN	EM64
231230	Tx		370	~	KK4FZN	WA9ONY	CN85
231245	-1	-1.3	1905	~	WA9ONY	KK4FZN	-24
231300	Tx		370	~	KK4FZN	WA9ONY	R-01
231315	-1	-1.3	1904	~	WA9ONY	KK4FZN	RRR
231330	Tx		370	~	KK4FZN	WA9ONY	73
231345	-1	-1.3	1904	~	WA9ONY	KK4FZN	73

Signal Reports Sent

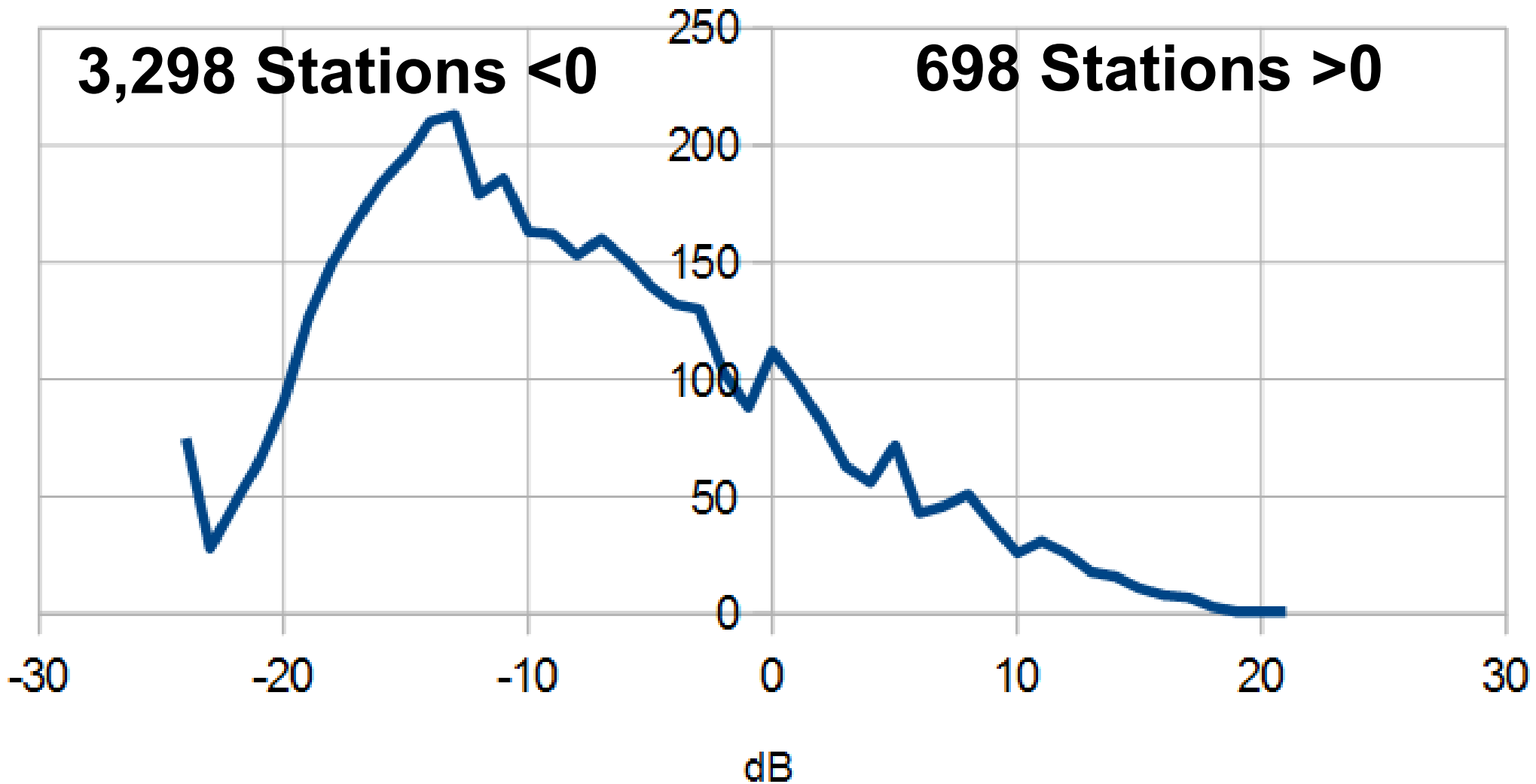
Histogram





Signal Reports Received

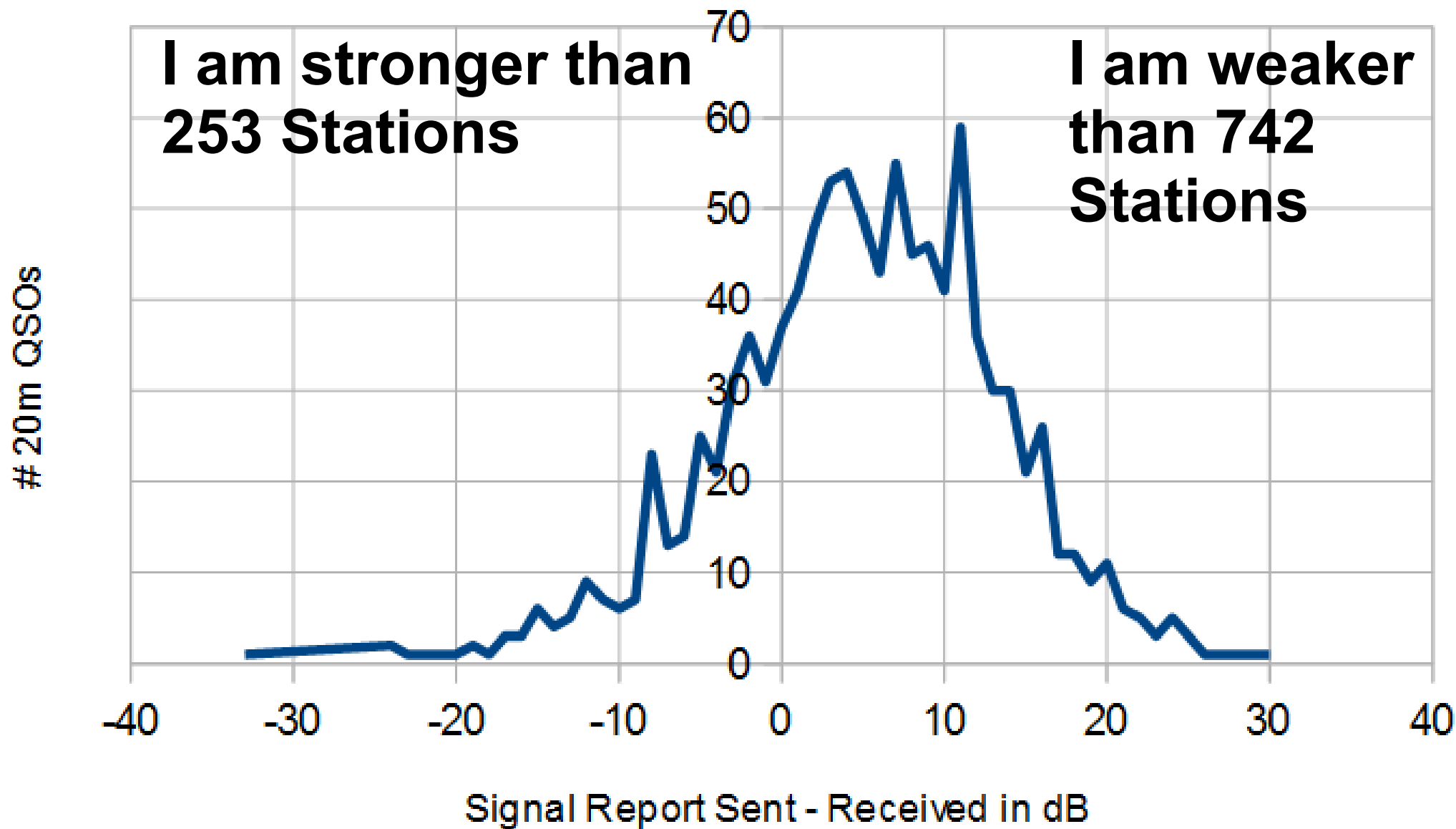
Histogram






Signal Reports: 20m

My Signal is Weaker than ~3/4 Stations on 20m

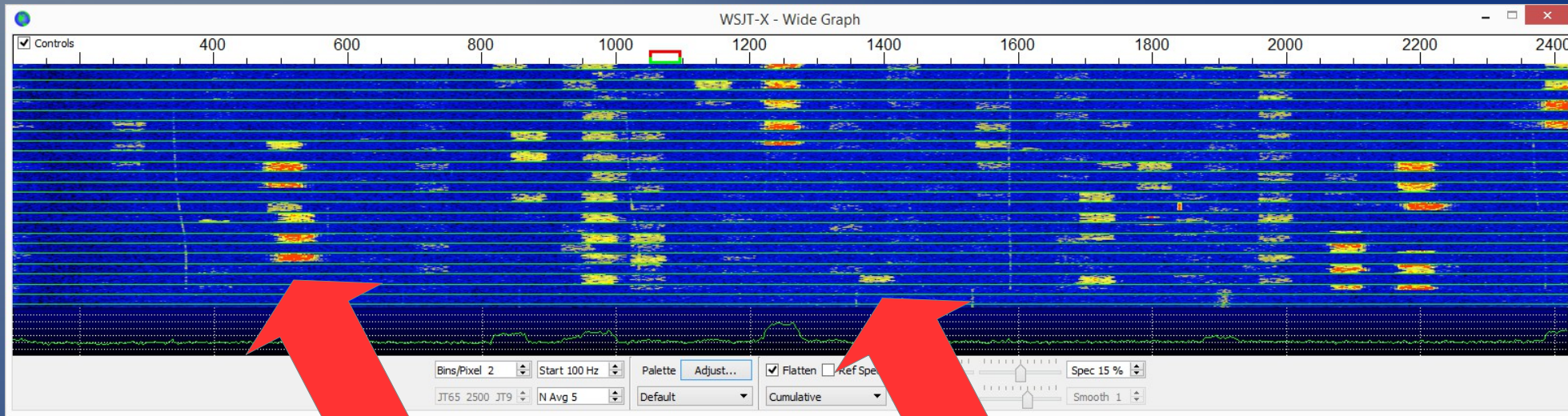


FT8 Signals on Water Fall

20m  14.073 996

0 Hz < Frequency in Hz > 2400 Hz

> Time <



50 Hz Bandwidth

15 sec time marks

Receiver bandwidth: 2500 Hz

Decoded signals to 2500 Hz

FT8 Signals on Water Fall

- See all FT8 signals in band pass vs time
- Select clear Tx freq.
- Strong signals are red, weak are faint white
- Rx shows all FT8 signals
- When Tx no received signals
 - Even/1st: 00 & 30 seconds
 - Odd/2nd: 15 & 45 seconds

Tx even/1st

Tx even/1st

FT8 Tx & Rx Frequencies

Ctrl-mouse click moves Tx & Rx

Shift-mouse click moves Tx

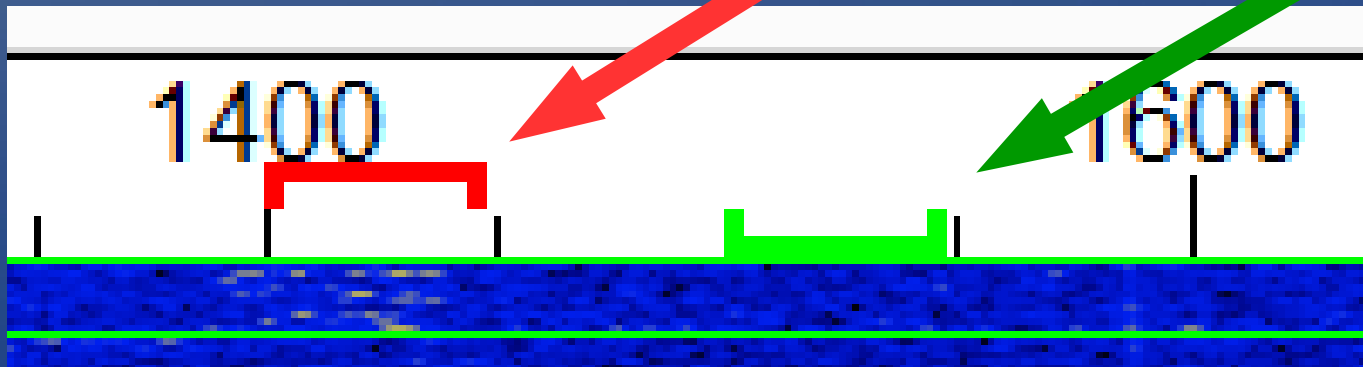
Alt-mouse click or mouse click moves Rx

Tx even/1st

Tx 1401 Hz

Rx 1500 Hz

Hold Tx Freq



Typical FT8 Contact

- Yellow WA9ONY xmit to K8BBE
- Red WA9ONY receiving K8BBE

071615	Tx		898	~	CQ WA9ONY CN85
071630	-15	0.9	898	~	WA9ONY K8BBE EN90
071645	Tx		898	~	K8BBE WA9ONY -15
071700	-15	0.9	899	~	WA9ONY K8BBE R-11
071715	Tx		898	~	K8BBE WA9ONY RRR
071730	-13	0.9	898	~	WA9ONY K8BBE 73
071745	Tx		898	~	K8BBE WA9ONY 73

RRR & 73 vs RR73 QSO

					Rx Frequency
UTC	dB	DT	Freq	Message	
231315	-10	0.1	898	~ CQ VK2CA QF47	
231330	Tx		1248	~ VK2CA WA9ONY CN85	
231345	-14	0.1	898	~ WA9ONY VK2CA -07	
231400	Tx		1248	~ VK2CA WA9ONY R-14	
231415	-5	0.1	898	~ WA9ONY VK2CA	RRR
231430	Tx		1248	~ VK2CA WA9ONY	73
231445	-8	0.1	898	~ WA9ONY VK2CA	73
231830	-10	0.1	2056	~ CQ VK7BO QE38	
231849	Tx		1248	~ VK7BO WA9ONY CN85	
231900	-13	0.1	2056	~ CQ VK7BO QE38	
231915	Tx		1248	~ VK7BO WA9ONY CN85	
231930	-9	0.1	2056	~ WA9ONY VK7BO -17	
231945	Tx		1248	~ VK7BO WA9ONY R-09	
232000	-15	0.1	2056	~ WA9ONY VK7BO	RR73
232015	Tx		1248	~ VK7BO WA9ONY	73

105 Sec
34 QSOs
Per hour

90 Sec
40 QSOs
Per hour

RRR, 73 & RR73 Std Messages

VK7BO WA90NY CN85

VK7BO WA90NY -15

VK7BO WA90NY R-15

VK7BO WA90NY RRR

VK7BO WA90NY 73

CQ WA90NY CN85

VK7BO WA90NY CN85

VK7BO WA90NY -15

VK7BO WA90NY R-15

VK7BO WA90NY RR73

VK7BO WA90NY 73

CQ WA90NY CN85

Using RR73 Message

WSJT-X v1.8.0 by K1JT

File Configurations View Mode Decode Save Tools Help

Band Activity					Rx Frequency				
UTC	dB	DT	Freq	Message	UTC	dB	DT	Freq	Message

Log QSO Stop **Monitor** Erase Decode Enable Tx Halt Tx Tune Menus

6m **S** **50.313 001** Tx even/1st

DX Call **DX Grid** Tx 1051 Hz Tx ← Rx
N6NU CM87 Rx 1051 Hz Rx ← Tx

Az: 183 564 mi Hold Tx Freq

Lookup Add Report 12 Auto Seq Call 1st
 NA VHF Contest

2018 May 09
20:55:22

Receiving FT8

7/15 WD:30m

Generate Std Msgs Now

N6NU WA9ONY CN85	<input type="radio"/>	Tx 1
N6NU WA9ONY +12	<input type="radio"/>	Tx 2
N6NU WA9ONY R+12	<input type="radio"/>	Tx 3
N6NU WA9ONY RR73	<input checked="" type="radio"/>	Tx 4
N6NU WA9ONY 73	<input type="radio"/>	Tx 5
CQ WA9ONY CN85	<input type="radio"/>	Tx 6

37 dB

Pwr

Double click on button
To change RRR to RR73

QSO Repeat of 73 Message

005415	10	0.3	1749	~	NU8B	KB7RUQ	73
005430	Tx		2198	~	KB7RUQ	WA9ONY	CN85
005500	Tx		2198	~	KB7RUQ	WA9ONY	CN85
005530	Tx		844	~	KB7RUQ	WA9ONY	CN85
005600	Tx		844	~	KB7RUQ	WA9ONY	CN85
005615	0	0.3	1749	~	WA9ONY	KB7RUQ	-10
005630	Tx		844	~	KB7RUQ	WA9ONY	R+00
005645	10	0.3	844	~	WA9ONY	KB7RUQ	RRR
005700	Tx		844	~	KB7RUQ	WA9ONY	73
005715	6	0.3	844	~	WA9ONY	KB7RUQ	RRR
005735	Tx		844	~	KB7RUQ	WA9ONY	73
005745	4	0.3	844	~	WA9ONY	KB7RUQ	73

YB8TK QSO Repeat 73


075830	-3	0.6	1230	~	CQ NA YB8TK PJ21	
075845	Tx		356	~	YB8TK WA9ONY CN85	
075900	-1	0.5	1230	~	CQ NA YB8TK PJ21	
075915	Tx		356	~	YB8TK WA9ONY CN85	
075930	-2	0.6	1230	~	CQ NA YB8TK PJ21	
075945	Tx		356	~	YB8TK WA9ONY CN85	
080000	-5	0.5	1230	~	CQ NA YB8TK PJ21	
080015	Tx		450	~	YB8TK WA9ONY CN85	
080030	-4	0.6	1230	~	WA9ONY YB8TK -11	
080045	Tx		450	~	YB8TK WA9ONY R-04	
080100	-3	0.5	1230	~	WA9ONY YB8TK RRR	
080115	Tx		450	~	YB8TK WA9ONY	73
080130	-4	0.6	1230	~	WA9ONY YB8TK RRR	
080151	Tx		450	~	YB8TK WA9ONY	73
080158	Tx		450	~	YB8TK WA9ONY	73
080200	-4	0.6	1230	~	WA9ONY YB8TK	73
080215	Tx		450	~	YB8TK WA9ONY	73
080230	-2	0.7	1231	~	KB6C YB8TK -01	

DX Call	DX Grid
YB8TK	PJ21
Az: 288	7220 mi

CQ & Tail Ending QSO

163115	Tx		1508	~	CQ WA9ONY CN85
163145	Tx		1508	~	CQ WA9ONY CN85
163200	10	0.1	1508	~	WA9ONY WJ6T DM05
163215	Tx		1508	~	WJ6T WA9ONY +10
163230	13	0.2	1508	~	WA9ONY WJ6T R+10
163245	Tx		1508	~	WJ6T WA9ONY RRR
163300	13	0.1	1508	~	WA9ONY WJ6T 73
163315	Tx		1508	~	WJ6T WA9ONY 73
163330	-3	0.6	1507	~	WA9ONY KF6LYF DM13
163345	Tx		1508	~	KF6LYF WA9ONY -03
163400	-7	0.6	1507	~	WA9ONY KF6LYF R-10
163415	Tx		1508	~	KF6LYF WA9ONY RRR
163430	-15	0.6	1508	~	WA9ONY KF6LYF 73
163445	Tx		1508	~	KF6LYF WA9ONY 73

2nd Pass Decode Works When Two Stations are Top of Each Other



215430	-9	1.0	1505	~	CQ	KI7VGZ	DM43
215454	Tx		339	~	KI7VGZ	WA9ONY	CN85
215500	-6	1.0	1506	~	CQ	KI7VGZ	DM43
215515	Tx		339	~	KI7VGZ	WA9ONY	CN85
215545	Tx		339	~	KI7VGZ	WA9ONY	CN85
215600	-7	1.0	1506	~	WA9ONY	KI7VGZ	-13
215600	-15	0.5	1511	~	CQ	KM5LY	EM12
215615	Tx		339	~	KI7VGZ	WA9ONY	R-07
215630	-7	1.0	1506	~	WA9ONY	KI7VGZ	RRR
215645	Tx		339	~	KI7VGZ	WA9ONY	73
215630	-16	0.5	1512	~	CQ	KM5LY	EM12
215700	-10	1.0	1506	~	WA9ONY	KI7VGZ	73
215700	-19	0.5	1512	~	CQ	KM5LY	EM12
215715	-6	0.1	584	~	WA9ONY	N5AVF	-18
215735	Tx		339	~	N5AVF	WA9ONY	-06
215800	Tx		339	~	N5AVF	WA9ONY	-06
215804	Tx		339	~	N5AVF	WA9ONY	R-06
215830	Tx		339	~	N5AVF	WA9ONY	R-06
215900	Tx		339	~	N5AVF	WA9ONY	R-06
215930	Tx		584	~	N5AVF	WA9ONY	R-06
215945	-12	0.1	584	~	WA9ONY	N5AVF	RRR
220000	Tx		584	~	N5AVF	WA9ONY	73
220015	-5	0.1	584	~	WA9ONY	N5AVF	73

Change Frequency if No Response

Tx 1868 Hz to 204 Hz

233315	Tx		1868	~	N7SCT WA9ONY CN85
233330	-7	-0.4	599	~	CQ N7SCT DN50
233345	Tx		1868	~	N7SCT WA9ONY CN85
233400	-15	-0.3	599	~	CQ N7SCT DN50
233415	Tx		1868	~	N7SCT WA9ONY CN85
233430	-10	-0.3	598	~	CQ N7SCT DN50
233445	Tx		204	~	N7SCT WA9ONY CN85
233500	-10	-0.3	598	~	WA9ONY N7SCT -11
233515	Tx		204	~	N7SCT WA9ONY R-10
233545	Tx		204	~	N7SCT WA9ONY R-10
233530	-10	-0.3	597	~	WA9ONY N7SCT RRR
233545	Tx		204	~	N7SCT WA9ONY 73
233600	-19	-1.1	597	~	WA9ONY N7SCT 73

Change Frequency if No Response

Tx 456 Hz to 953 Hz

234530	-4	0.1	2101	~	CQ KG5Y EM20
234545	Tx		456	~	KG5Y WA9ONY CN85
234600	-1	0.1	2101	~	CQ KG5Y EM20
234615	Tx		456	~	KG5Y WA9ONY CN85
234630	-4	0.1	2100	~	CQ KG5Y EM20
234645	Tx		456	~	KG5Y WA9ONY CN85
234700	-6	0.1	2100	~	CQ KG5Y EM20
234715	Tx		456	~	KG5Y WA9ONY CN85
234730	-5	0.1	2100	~	CQ KG5Y EM20
234745	Tx		953	~	KG5Y WA9ONY CN85
234800	-5	0.1	2100	~	WA9ONY KG5Y -15
234815	Tx		953	~	KG5Y WA9ONY R-05
234830	0	0.1	2100	~	WA9ONY KG5Y RRR
234845	Tx		953	~	KG5Y WA9ONY 73
234900	-3	0.1	2100	~	WA9ONY KG5Y 73

No Grid Location Received Contact

- ND4Q starts QSO with signal report
- ND4Q does not send grid location
- Causes problems when working complex call signs

003245	Tx		767	~	CQ WA9ONY CN85
003300	4	0.1	753	~	WA9ONY ND4Q -11
003315	Tx		767	~	ND4Q WA9ONY R+04
003330	10	0.1	753	~	WA9ONY ND4Q RR73
003345	Tx		767	~	ND4Q WA9ONY 73

75 Sec per QSO, 48 QSOs per hour

Tail Ending QSO

Get Grid When Station Calls CQ

004430	14	0.1	1400	~	W9YSX	AK2L	73
004457	Tx		317	~	AK2L	WA9ONY	CN85
004515	Tx		317	~	AK2L	WA9ONY	CN85
004530	-6	0.1	1399	~	WA9ONY	AK2L	-24
004545	Tx		317	~	AK2L	WA9ONY	R-06
004600	-2	0.1	1399	~	WA9ONY	AK2L	RRR
004615	Tx		317	~	AK2L	WA9ONY	73
004630	-5	0.1	1399	~	WA9ONY	AK2L	RRR
004648	Tx		317	~	AK2L	WA9ONY	73
004700	10	0.1	1399	~	WA9ONY	AK2L	73
004715	Tx		317	~	AK2L	WA9ONY	73
004730	-5	0.1	1399	~	CQ	AK2L	DM42

RA0LX QSO No Grid Send

062815	-19	0.1	2176	~	JA5BJS	RA0LX	73
062900	Tx		381	~	RA0LX	WA9ONY	CN85
062930	Tx		381	~	RA0LX	WA9ONY	CN85
062945	-21	0.1	380	~	WA9ONY	RA0LX	-18
063000	Tx		381	~	RA0LX	WA9ONY	R-21
063015	-22	0.1	380	~	WA9ONY	RA0LX	RR73
063030	Tx		381	~	RA0LX	WA9ONY	73

DX Call

DX Grid

RA0LX

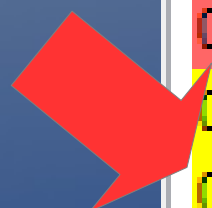
PN65|

Az: 313

4657 mi

FK/JS3LSQ Missing Message

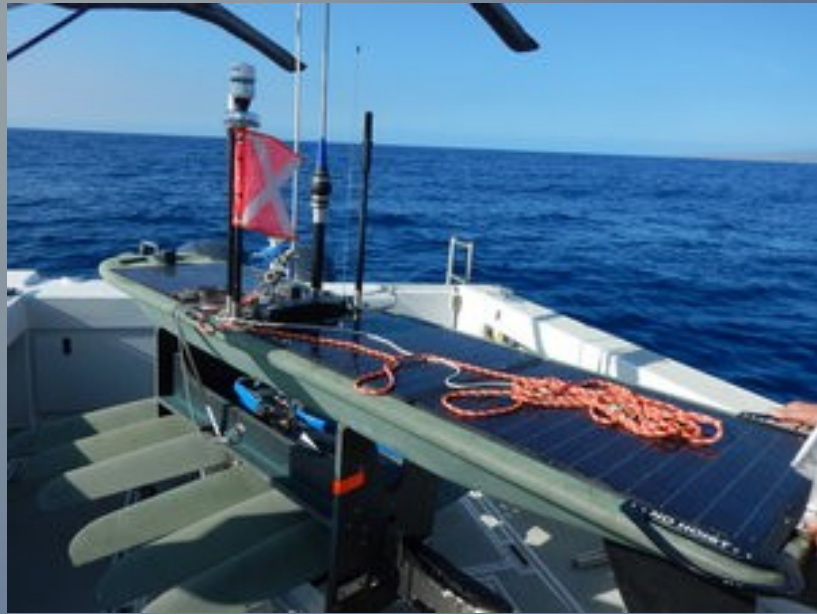
050300	-4	0.0	913	~	CQ FK/JS3LSQ
050330	-8	0.0	912	~	KW7M JS3LSQ +03
050345	Tx		353	~	FK/JS3LSQ WA9ONY
050400	-5	0.0	912	~	KW7M JS3LSQ RR73
050415	Tx		307	~	FK/JS3LSQ WA9ONY
050445	Tx		307	~	FK/JS3LSQ WA9ONY
050500	-9	0.0	912	~	WA9ONY JS3LSQ -02
050515	Tx		331	~	JS3LSQ WA9ONY R-09
050530	-8	0.0	913	~	WA9ONY JS3LSQ -02
050545	Tx		331	~	JS3LSQ WA9ONY R-08
050615	Tx		331	~	JS3LSQ WA9ONY R-08
050630	-9	0.0	912	~	WA9ONY JS3LSQ RR73
050645	Tx		331	~	JS3LSQ WA9ONY 73
050700	-8	0.0	913	~	CQ FK/JS3LSQ
050715	-22	0.1	916	~	FK/JS3LSQ VK4NJR



VE7/LB9YH Secondary Prefix QSO

085445	7	0.1	1891	~	CQ VE7/LB9YH	DN19
085500	Tx		598	~	LB9YH WA9ONY	CN85
085515	10	0.1	1891	~	WA9ONY LB9YH	+11
085530	Tx		598	~	LB9YH WA9ONY	R+10
085545	11	0.1	1891	~	WA9ONY LB9YH	RRR
085600	Tx		598	~	VE7/LB9YH	73
085615	11	0.1	1891	~	DE VE7/LB9YH	73

KH6JF/MM 20m QSO Wave Glider Drone



182200	-8	0.0	1012	~	CQ KH6JF/MM BK59
182221	Tx		1648	~	KH6JF WA9ONY CN85
182245	Tx		654	~	KH6JF WA9ONY CN85
182300	-7	0.0	1012	~	WA9ONY KH6JF -06
182315	Tx		654	~	KH6JF WA9ONY R-07
182330	-12	0.0	1013	~	WA9ONY KH6JF RRR
182345	Tx		654	~	KH6JF/MM 73
182400	-10	0.0	1013	~	DE KH6JF/MM 73

YF9CDL QSO Repeat Signal

DX Call	DX Grid	00	-9	0.1	2020	~	CQ DX YF9CDL OI71
		05	Tx		200	~	YF9CDL WA9ONY CN85
YF9CDL	OI71	00	-11	0.1	2021	~	CQ DX YF9CDL OI71
Az: 289	8192 mi	05	Tx		200	~	YF9CDL WA9ONY CN85
		061800	-10	0.1	2021	~	CQ DX YF9CDL OI71
		061815	Tx		1700	~	YF9CDL WA9ONY CN85
		061830	-15	0.1	2021	~	CQ DX YF9CDL OI71
		061845	Tx		1700	~	YF9CDL WA9ONY CN85
		061900	-13	0.2	2021	~	CQ DX YF9CDL OI71
		061915	Tx		1700	~	YF9CDL WA9ONY CN85
		061930	-17	0.2	1700	~	WA9ONY YF9CDL -22
		061945	Tx		898	~	YF9CDL WA9ONY R-17
		062000	-10	0.1	1700	~	WA9ONY YF9CDL -22
		062015	Tx		1700	~	YF9CDL WA9ONY R-10
		062030	-11	0.2	1699	~	WA9ONY YF9CDL RR73
		062045	Tx		1700	~	YF9CDL WA9ONY 73

YC2TTM QSO Repeat Signal Report

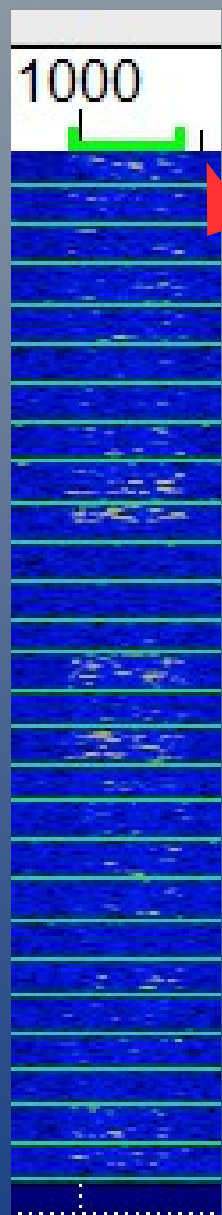
DX Call	DX Grid	30	-6	0.1	2043	~	CQ YC2TTM OI53
		57	Tx		2231	~	YC2TTM WA9ONY CN85
YC2TTM	OI53	00	-3	0.1	2044	~	CQ YC2TTM OI53
Az: 294	8269 mi	15	Tx		2231	~	YC2TTM WA9ONY CN85
		30	-4	0.1	2044	~	CQ YC2TTM OI53
		095145	Tx		2231	~	YC2TTM WA9ONY CN85
		095200	-4	0.1	2045	~	N5DG JH8ISO QN03
		095200	-5	0.1	2230	~	WA9ONY YC2TTM -14
		095215	Tx		2231	~	YC2TTM WA9ONY R-05
		095230	-6	0.1	2229	~	WA9ONY YC2TTM -14
		095245	Tx		2231	~	YC2TTM WA9ONY R-06
		095300	-11	0.1	2229	~	WA9ONY YC2TTM -14
		095315	Tx		2231	~	YC2TTM WA9ONY R-11
		095330	-5	0.1	2230	~	WA9ONY YC2TTM RR73
		095345	Tx		2231	~	YC2TTM WA9ONY 73

KH2L Pile Up

----- 80m									
103115	-4	0.1	608	~	KH2L	N4TB	EL97		
103115	-12	-0.3	804	~	KH2L	KV4PO	EM93		
103115	-3	0.0	888	~	KH2L	K9DT	EN51		
103115	-14	0.2	1015	~	KH2L	VK4SN	QG62		
103115	9	0.0	1556	~	KH2L	NL8F	AO63		
103115	-20	0.1	1749	~	N6HC	WA3SFR	FM19		
103115	1	0.2	2158	~	KH2L	WD6R	DM04		
103115	-18	0.1	455	~	N6HC	JH2GZY	73		
----- 80m									
103130	9	0.2	456	~	JH2GZY	N6HC	73		
103130	-4	0.1	888	~	CQ	KH2L	QK23		Guam

Rec#	Call	Date / Time	Snt	Rec	Country	Grid	Bnd	ST	R Conf By
3771	KH2L	2018/04/26 11:41	-02	-10	Guam	QK23	80		L

Weak Sig. QSB Needs Repeats



070000	-17	0.2	997	~	W4UAT	JA5RA	73
070027	Tx		452	~	JA5RA	WA9ONY	CN85
070045	Tx		452	~	JA5RA	WA9ONY	CN85
070115	Tx		452	~	JA5RA	WA9ONY	CN85
070145	Tx		452	~	JA5RA	WA9ONY	CN85
070200	-16	0.2	997	~	WA9ONY	JA5RA	-24
070215	Tx		452	~	JA5RA	WA9ONY	R-16
070245	Tx		452	~	JA5RA	WA9ONY	R-16
070315	Tx		452	~	JA5RA	WA9ONY	R-16
070345	Tx		452	~	JA5RA	WA9ONY	R-16
070415	Tx		452	~	JA5RA	WA9ONY	R-16
070445	Tx		452	~	JA5RA	WA9ONY	R-16
070515	Tx		452	~	JA5RA	WA9ONY	R-16
070545	Tx		452	~	JA5RA	WA9ONY	R-16
070600	-18	0.2	997	~	WA9ONY	JA5RA	RRR
070615	Tx		452	~	JA5RA	WA9ONY	73
070630	-20	0.2	997	~	WA9ONY	JA5RA	73
070645	Tx		452	~	JA5RA	WA9ONY	73

Messy QSO with QSB & QRM

101845	-12	0.1	1702	~	CQ	VK4FB	QG62
101943	Tx		851	~	VK4FB	WA9ONY	CN85
102000	Tx		851	~	VK4FB	WA9ONY	CN85
102030	Tx		851	~	VK4FB	WA9ONY	CN85
102100	Tx		851	~	VK4FB	WA9ONY	CN85
102115	-15	0.1	1702	~	WA9ONY	VK4FB	-19
102130	Tx		851	~	VK4FB	WA9ONY	R-15
102145	-16	0.3	1710	~	N6HC	W8ARE	EN80
102200	Tx		851	~	VK4FB	WA9ONY	R-15
102230	Tx		851	~	VK4FB	WA9ONY	R-15
102300	Tx		851	~	VK4FB	WA9ONY	R-15
102315	-15	0.1	1702	~	WA9ONY	VK4FB	RRR
102330	Tx		851	~	VK4FB	WA9ONY	73
102345	-15	0.1	1702	~	WA9ONY	VK4FB	RRR
102408	Tx		851	~	VK4FB	WA9ONY	73
102410	Tx		851	~	VK4FB	WA9ONY	73
102412	Tx		851	~	VK4FB	WA9ONY	73
102415	-15	0.1	1702	~	WA9ONY	VK4FB	RR73
102430	Tx		851	~	VK4FB	WA9ONY	73
102500	7	0.4	1704	~	CQ	N6HC	DM13

Messy TG9AJR QSO

UTC	dB	DT	Freq	Message
003445	-3	0.2	2007	~ WG8S TG9AJR R+10
003500	Tx		652	~ TG9AJR WA9ONY CN85
003530	Tx		652	~ TG9AJR WA9ONY CN85
003545	-6	0.2	2006	~ CQ TG9AJR EK44
003600	Tx		652	~ TG9AJR WA9ONY CN85
003615	-5	0.2	2006	~ WG8S TG9AJR R+09
003630	Tx		652	~ TG9AJR WA9ONY CN85
003645	-8	0.2	2006	~ WG8S TG9AJR 73
003700	Tx		753	~ TG9AJR WA9ONY CN85
003715	-7	0.2	2006	~ WA9ONY TG9AJR -17
003730	Tx		753	~ TG9AJR WA9ONY R-07
003745	-8	0.2	2006	~ WA9ONY TG9AJR -17
003800	Tx		753	~ TG9AJR WA9ONY R-08
003815	-7	0.2	2006	~ CQ TG9AJR EK44
003830	Tx		753	~ TG9AJR WA9ONY R-08
003845	-5	0.2	2006	~ W4MC TG9AJR +05
003900	Tx		753	~ TG9AJR WA9ONY R-08
003915	-9	0.2	2005	~ W4MC TG9AJR RR73
003930	Tx		753	~ TG9AJR WA9ONY CN85
003936	Tx		753	~ TG9AJR WA9ONY R-09
003945	-11	0.2	2005	~ WA9ONY TG9AJR -18
004000	Tx		753	~ TG9AJR WA9ONY R-11
004015	-6	0.2	2005	~ WA9ONY TG9AJR -18
004030	Tx		753	~ TG9AJR WA9ONY R-06
004045	-6	0.2	2005	~ WA9ONY TG9AJR R-18
004100	Tx		753	~ TG9AJR WA9ONY RRR
004115	-4	0.2	2005	~ WA9ONY TG9AJR RR73
004130	Tx		753	~ TG9AJR WA9ONY 73
004145	-5	0.2	2005	~ WA9ONY TG9AJR 73
004215	-9	0.2	2005	~ CQ TG9AJR EK44

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 TG9AJR
DXCC GUATEMALA (76)
CQ Zone 07
ITU Zone 11 (Inferred; user did not specify zone)
Grid EK44SL
Date/Time 2018-05-10 00:39:00
Mode FT8 (DATA)
Band 17M
Frequency 18.10075
QSL [2018-05-11 06:22:01](#)

Move to Other Station Freq

113300	7	0.1	1131	~	CQ JR1XIS QM05
113321	Tx		600	~	JR1XIS WA9ONY CN85
113330	7	0.0	1131	~	CQ JR1XIS QM05
113345	Tx		600	~	JR1XIS WA9ONY CN85
113415	Tx		600	~	JR1XIS WA9ONY CN85
113430	5	0.0	1131	~	WA9ONY JR1XIS -17
113445	Tx		600	~	JR1XIS WA9ONY R+05
113500	7	0.0	1131	~	WA9ONY JR1XIS -17
113515	Tx		600	~	JR1XIS WA9ONY R+07
113530	6	0.1	1131	~	WA9ONY JR1XIS -17
113545	Tx		600	~	JR1XIS WA9ONY R+06
113600	7	0.0	1131	~	WA9ONY JR1XIS -17
113615	Tx		600	~	JR1XIS WA9ONY R+07
113645	Tx		1131	~	JR1XIS WA9ONY R+07
113700	5	0.1	1131	~	WA9ONY JR1XIS RR73
113715	Tx		1131	~	JR1XIS WA9ONY 73
113730	5	0.0	1131	~	WA9ONY JR1XIS 73
113800	6	0.1	1131	~	CQ JR1XIS QM05

Persistence Pays Off

7 Minutes Contact

050415	-9	0.1	615	~	KV4N	KB8MAF	73
050442	Tx		701	~	KB8MAF	WA9ONY	CN85
050500	Tx		701	~	KB8MAF	WA9ONY	CN85
050530	Tx		701	~	KB8MAF	WA9ONY	CN85
050545	-10	0.1	701	~	WA9ONY	KB8MAF	-17
050600	Tx		701	~	KB8MAF	WA9ONY	R-10
050615	-9	0.1	701	~	WA9ONY	KB8MAF	-17
050630	Tx		701	~	KB8MAF	WA9ONY	R-09
050645	-9	0.1	701	~	WA9ONY	KB8MAF	-17
050700	Tx		701	~	KB8MAF	WA9ONY	R-09
050715	-11	0.1	701	~	WA9ONY	KB8MAF	-17
050730	Tx		701	~	KB8MAF	WA9ONY	R-11
050800	Tx		701	~	KB8MAF	WA9ONY	R-11
050830	Tx		701	~	KB8MAF	WA9ONY	R-11
050900	Tx		701	~	KB8MAF	WA9ONY	R-11
050930	Tx		701	~	KB8MAF	WA9ONY	R-11
051000	Tx		701	~	KB8MAF	WA9ONY	R-11
051015	-8	0.1	701	~	WA9ONY	KB8MAF	RRR
051030	Tx		701	~	KB8MAF	WA9ONY	73
051045	-10	-0.1	701	~	WA9ONY	KB8MAF	73
051100	Tx		701	~	KB8MAF	WA9ONY	73

Call sign	Worked	Date/Time	Band	Mode	Freq	QSL	
Details	WA9ONY	KW7E	2018-05-28 01:13:00	17M	FT8	18.10040	UNITED STATES OF AMERICA

19 Minute Contact

005230	-6	0.1	1399	~	NC4AB AK2L 73
005300	-12	0.1	1399	~	CQ AK2L DM42
005330	-8	0.1	1399	~	CQ AK2L DM42
005400	-10	0.1	1399	~	VK4BRT AK2L -24
005430	-3	-0.2	1399	~	VK4BRT AK2L RRR
005445	-7	0.1	1333	~	CQ KW7E DM33
005513	Tx		317	~	KW7E WA9ONY CN85
005515	-12	0.1	1334	~	CQ KW7E DM33
005530	Tx		317	~	KW7E WA9ONY CN85
005545	-15	0.1	1335	~	KQ0J KW7E +01
005600	Tx		317	~	KW7E WA9ONY CN85
005615	-13	0.1	1337	~	KQ0J KW7E RRR
005630	-16	0.1	1334	~	KW7E KQ0J 73
005645	-8	0.1	1340	~	KQ0J KW7E 73
005700	Tx		317	~	KW7E WA9ONY CN85
005715	-16	0.1	1343	~	CQ KW7E DM33
005730	Tx		317	~	KW7E WA9ONY CN85
005745	-15	0.1	1353	~	WA9ONY KW7E -21
005800	Tx		317	~	KW7E WA9ONY CN85
005811	Tx		317	~	KW7E WA9ONY R-07
005815	-13	0.1	1370	~	WA9ONY KW7E -21
005830	Tx		317	~	KW7E WA9ONY R-13
005900	Tx		317	~	KW7E WA9ONY R-13
005930	Tx		317	~	KW7E WA9ONY R-13
010000	Tx		317	~	KW7E WA9ONY R-13
010030	Tx		317	~	KW7E WA9ONY R-13
010100	Tx		317	~	KW7E WA9ONY R-13



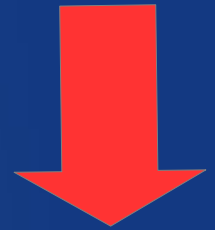
010730	Tx		317	~	KW7E WA9ONY R-09
010800	Tx		317	~	KW7E WA9ONY R-09
010830	Tx		317	~	KW7E WA9ONY R-09
010900	Tx		317	~	KW7E WA9ONY R-09
010815	-14	0.1	1220	~	CQ KW7E DM33
010913	Tx		317	~	KW7E WA9ONY CN85
010930	Tx		317	~	KW7E WA9ONY R-14
010945	-18	0.1	1221	~	KK0CQ KW7E R-21
011000	Tx		317	~	KW7E WA9ONY CN85
011015	-13	0.1	1222	~	KK0CQ KW7E R-21
011030	Tx		317	~	KW7E WA9ONY CN85
011033	Tx		317	~	KW7E WA9ONY R-14
011045	-13	0.1	1222	~	KK0CQ KW7E R-21
011100	Tx		317	~	KW7E WA9ONY R-14
011115	-10	0.1	1222	~	KK0CQ KW7E R-21
011130	Tx		317	~	KW7E WA9ONY R-14
011145	-13	0.1	1222	~	KK0CQ KW7E R-21
011200	Tx		317	~	KW7E WA9ONY R-14
011215	-16	0.1	1221	~	KK0CQ KW7E R-21
011230	Tx		317	~	KW7E WA9ONY R-14
011245	-9	0.1	1221	~	KK0CQ KW7E DM33
011300	Tx		317	~	KW7E WA9ONY R-14
011315	-6	0.1	1222	~	KK0CQ KW7E R-20
011330	Tx		317	~	KW7E WA9ONY R-14
011345	-15	0.1	1222	~	KK0CQ KW7E 73
011400	Tx		396	~	KW7E WA9ONY CN85
011406	Tx		396	~	KW7E WA9ONY R-15
011430	Tx		396	~	KW7E WA9ONY R-15
011500	Tx		396	~	KW7E WA9ONY R-15
011515	-8	0.1	1226	~	WA9ONY KW7E RRR
011530	Tx		396	~	KW7E WA9ONY 73
011545	-9	0.1	1227	~	WA9ONY KW7E RRR
011600	Tx		396	~	KW7E WA9ONY 73
011615	-11	0.1	1123	~	WA9ONY KW7E 73
011630	Tx		396	~	KW7E WA9ONY 73

Contact or No Contact?

UTC	dB	DT	Freq	Message
191730	-11	0.3	1487 ~	CQ KG6PH EM13
191745	Tx		1793 ~	KG6PH WA9ONY CN85
191800	-11	0.3	1487 ~	WA9ONY KG6PH -20
191815	Tx		1793 ~	KG6PH WA9ONY R-11
191830	-13	0.3	1487 ~	WA9ONY KG6PH -20
191845	Tx		1793 ~	KG6PH WA9ONY R-13
191900	-14	0.3	1487 ~	WA9ONY KG6PH -20
191915	Tx		1793 ~	KG6PH WA9ONY R-14
191930	-9	0.4	1487 ~	WA9ONY KG6PH -20
191945	Tx		1793 ~	KG6PH WA9ONY R-09
192000	-12	0.3	1487 ~	WA9ONY KG6PH -20
192015	Tx		1793 ~	KG6PH WA9ONY R-12
192030	-12	0.3	1487 ~	WA9ONY KG6PH -20
192045	Tx		1793 ~	KG6PH WA9ONY R-12
192100	-18	0.3	1487 ~	WA9ONY KG6PH -20
192115	Tx		1793 ~	KG6PH WA9ONY R-18
192145	Tx		1793 ~	KG6PH WA9ONY R-18
192200	-15	0.2	1487 ~	WA9ONY KG6PH -20
192215	Tx		1793 ~	KG6PH WA9ONY R-15
192230	-18	0.3	1487 ~	WA9ONY KG6PH -20
192245	Tx		1793 ~	KG6PH WA9ONY R-18
192300	-17	0.3	1487 ~	WA9ONY KG6PH -20
192315	Tx		1793 ~	KG6PH WA9ONY R-17
192330	-17	1.3	1487 ~	WA9ONY KG6PH -20
192345	Tx		1793 ~	KG6PH WA9ONY R-17
192400	-19	0.3	1488 ~	CQ KG6PH EM13

Be Careful Changing CQ

Only 2 letters: NA, SA, AS, OC, OR, WA, etc



```
233215 -24 0.1 1105 ~ CQ AQP NE9K !Pakistan
```

```
030030 2 0.2 671 ~ CQ ASIA WBGC !Pakistan
```

Use Standard 2 Letter State Codes

- Cannot double click on WM6X

Band Activity						
UTC	dB	DT	Freq		Message	
161545	-10	0.1	1382	~	MW3FLI K5DHY R-08	
161545	-13	0.1	1830	~	8Q7HI K1PTF FN22	
161545	-16	0.1	1928	~	WA7BRL VA3HP RRR	
161545	-3	-0.6	2168	~	CQ KYOR DM78	U.S.A.
161545	-16	0.1	597	~	CQ DEL WM6X E	!Germany

Valid CQs to Regions

Only 2 letters: NA, SA, AS, OC, OR, WA, etc



045545	7	-0.3	1051	~	CQ	DX	NF7E	DM45	~U.S.A.
052615	-10	0.1	573	~	CQ	EU	K6FOD	DM04	~U.S.A.
151545	-2	0.3	255	~	CQ	MD	WB4NFG	EM82	~U.S.A.
151745	-8	0.3	256	~	CQ	IN	WB4NFG	EM82	~U.S.A.
153330	-15	0.0	1587	~	CQ	VT	KB3HHA	FM19	~U.S.A.
202730	4	0.1	1452	~	CQ	ND	K7SWF	DM24	~U.S.A.
171130	-12	0.1	1163	~	CQ	WV	W4KCM	EM95	~U.S.A.

3 letters become a free form text message

Defective Grid Square QE3

- Cannot double click on VK7GL

```
053015 -10 0.1 1627 ~ CQ VK7GL QE3 ~Australia
```

KT7V on 2 Frequencies Could be Receiver Overload

UTC	dB	DT	Freq	Message
----- 80m				
121315	-2	-0.0	649 ~	CQ 7N45JX PM95
121315	-24	0.1	2084 ~	VK7AP KT7V CN85
121315	12	0.1	2204 ~	VK7AP KT7V CN85

Warning: FT8 Decode Errors

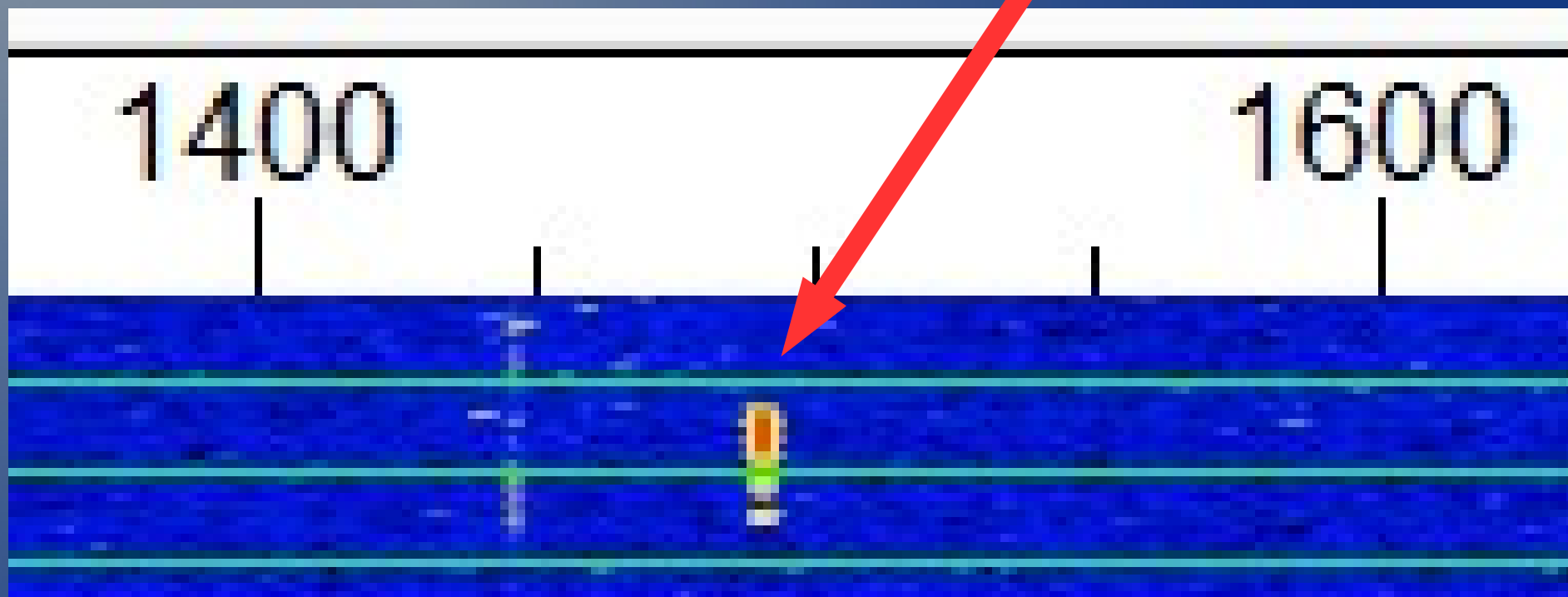
Sometimes Noise Signals are Decoded

Band Activity

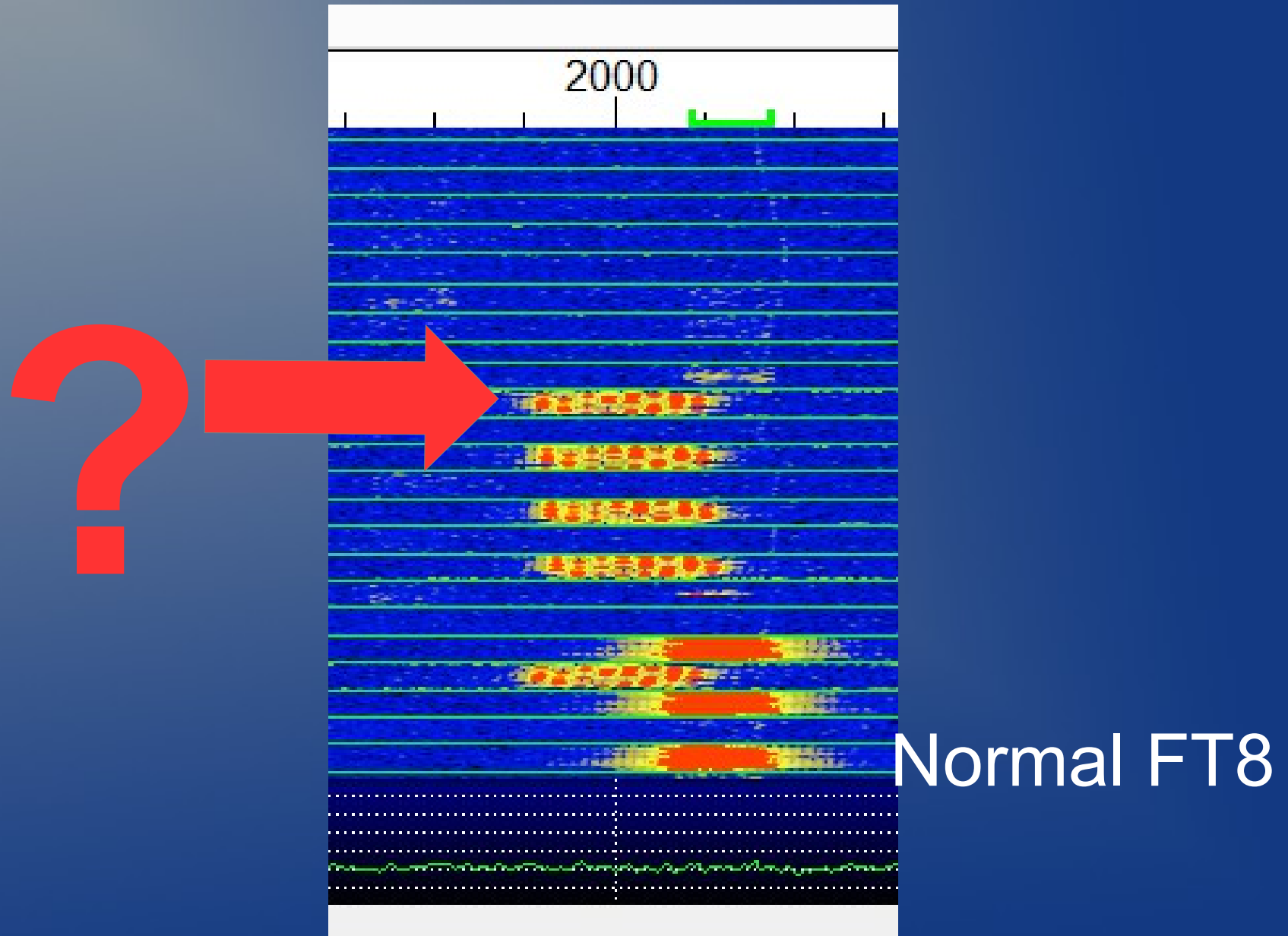
UTC	dB	DT	Freq	Message
-----	----	----	------	---------

-----								6m
103700	-24	2.3	1221	~	253ECM	1Z0GPG	EP06	
-----								6m
130030	-24	1.7	1634	~	Q05CVS	XR0IEE	IH88	

Example of FT8 Tx Tune

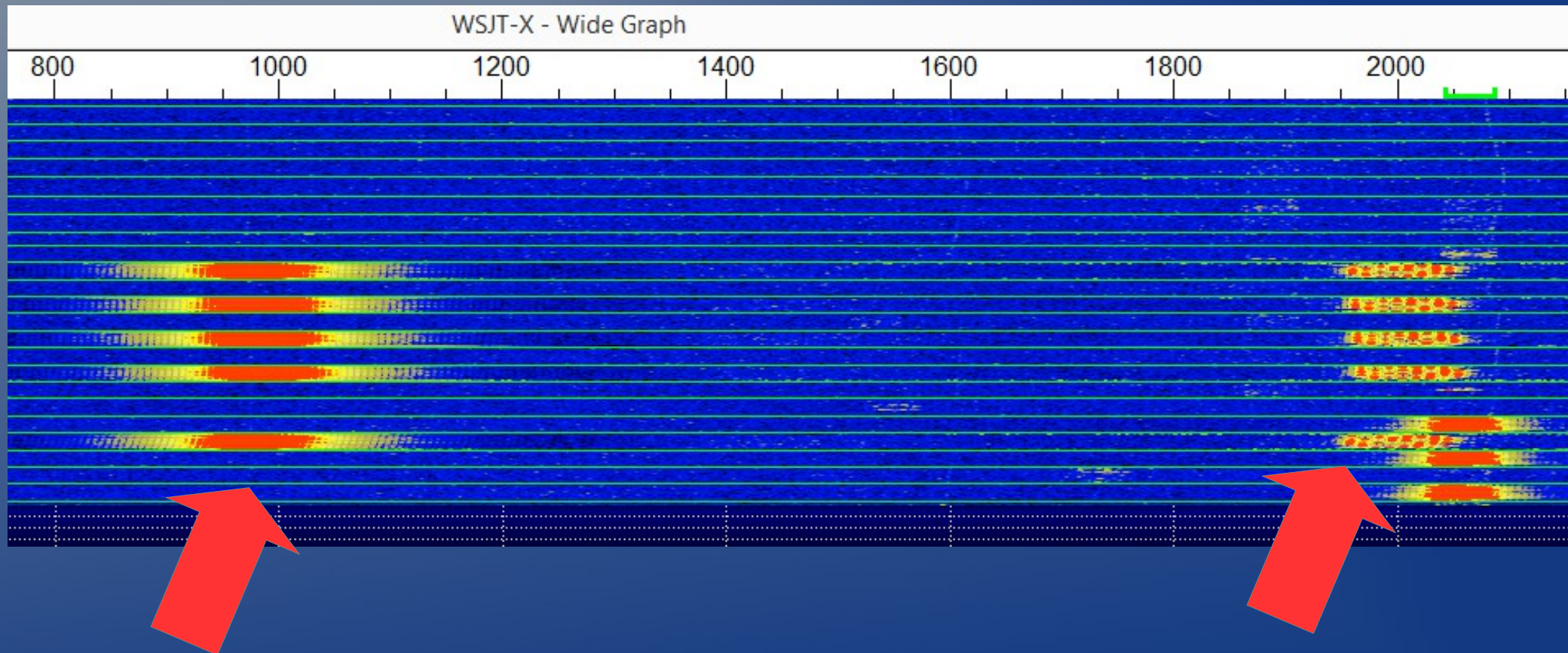


Strange 100 Hz Wide Signals



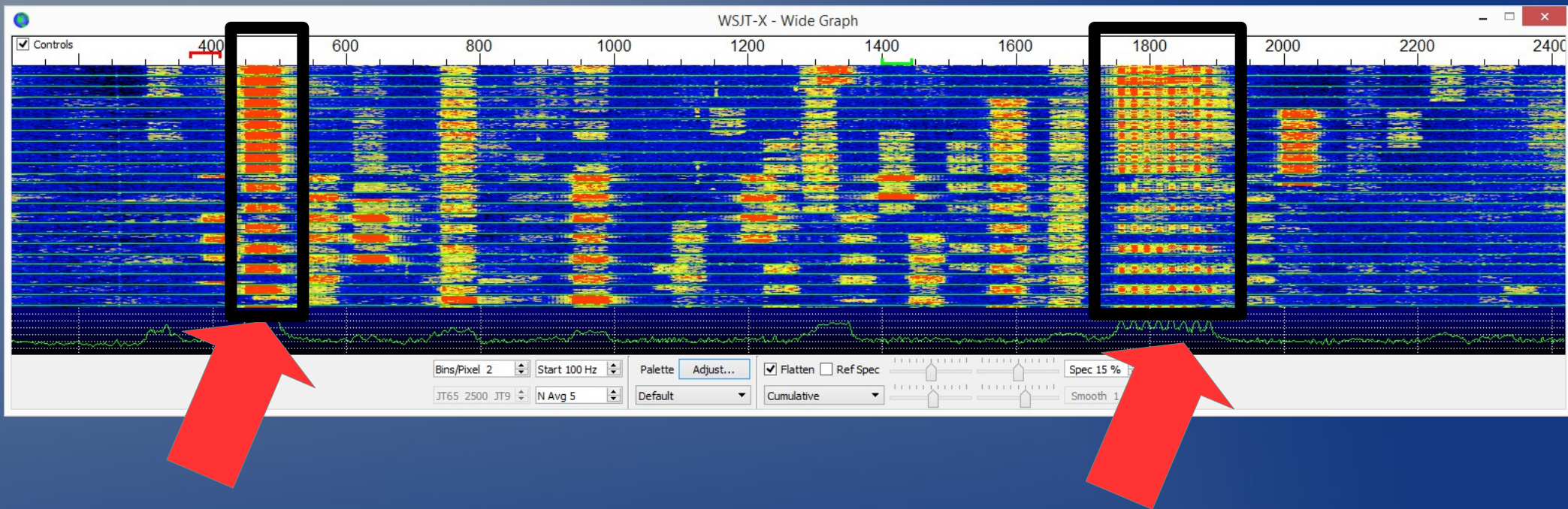
Transmitter Needs Adjustment

- Most likely the ALC needs to be reduced



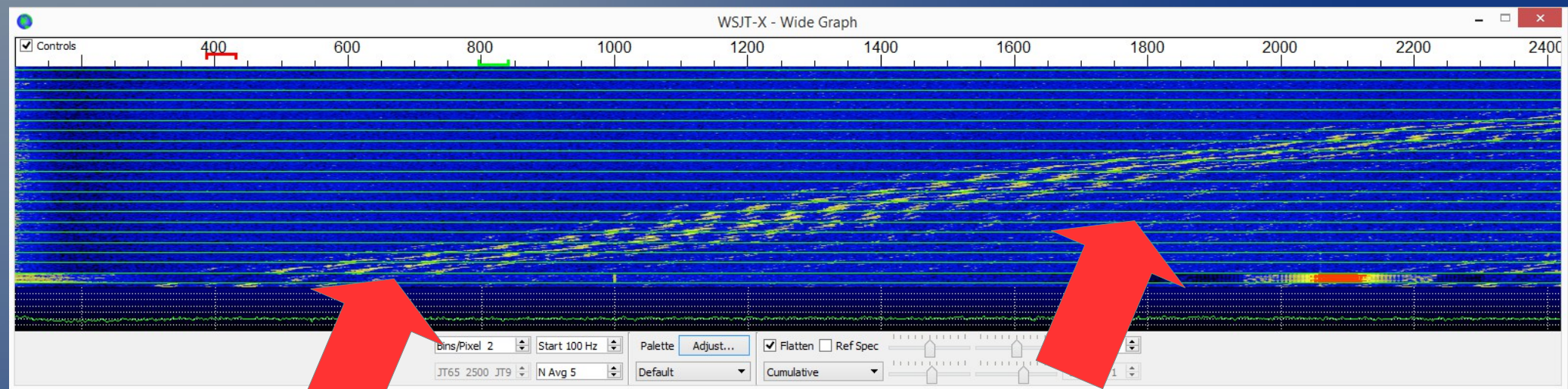
Transmitter Needs Adjustment

- Most likely the ALC needs to be reduced



QRN Drifting in Frequency

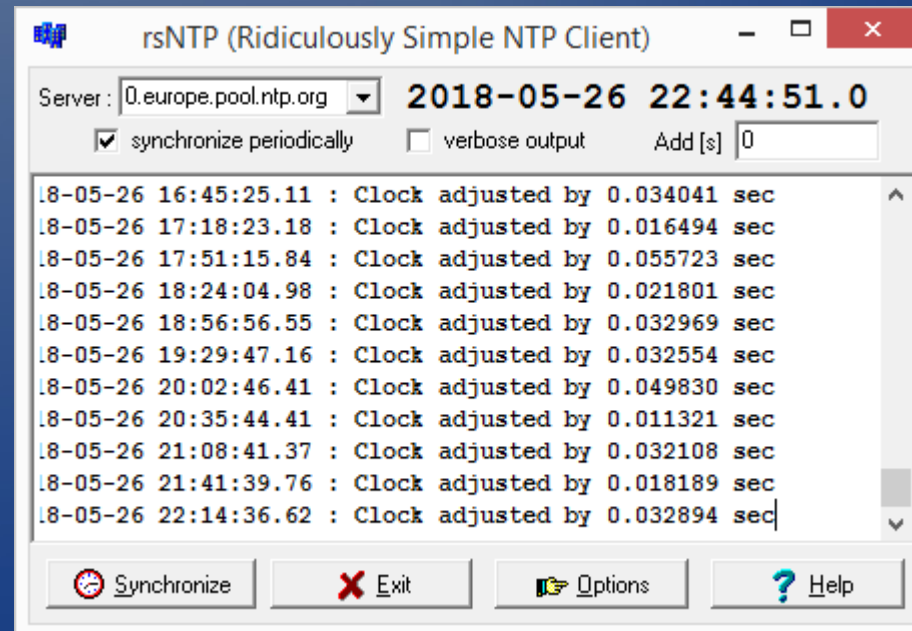
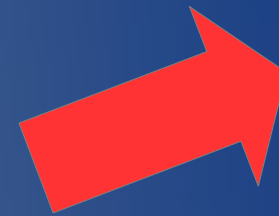
- Most likely AC/DC adapter power supply



FT8 Time Keeping

WSJT-X

rsNTP



rsNTP Software

www.qsl.net/dl4yhf/rsNTP/rsNTP.htm

Ridiculously Simple NTP Client

File: ?\rsNTP\rsNTP.htm
Web: www.qsl.net/dl4yhf/rsNTP/rsNTP.htm
Author: Wolfgang 'Wolf' DL4YHF
Date: 2016-05-29

Certain applications (like [WSPR](#), a weak-signal digital mode for amateur radio) require a precise timing, and thus a precisely set system clock (date and time). Since the available 'Internet Time' service provided by windows itself didn't work reliably, and other time-keeping software packages were difficult to install (and gave no indication of what they were doing, all they did was running as a blackbox aka 'service' in the background), the author wrote this implementation of a 'ridiculously simple NTP (Network Time Protocol) client'.

It needs no installation, doesn't install drivers, services, and other obscure stuff.

There is only one catch (Windows 7 / 8 / Vista users beware):

To successfully adjust the PC's system time to eliminate the clock error (offset in seconds) measured by NTP, it must be run 'as administrator'. The internet is full of how-to's about running a program 'as administrator', so there's no need for details here. Just in short form: After unpacking the software into a directory of your choice, right-click on 'NtpClient.exe', select 'properties', 'compatibility', set the checkmark 'run as administrator'.

This way, the program will be run 'as administrator' whenever you double-click its icon. The dreadful UAC may still prompt you with a warning whenever starting it this way - any suggestions how to get rid of this annoyance are most welcome.

When starting the program for the first time, select an NTP server in your country, or at least on your continent. The combo box in the upper left corner contains a list of popular servers, but you can type the hostname or numeric IP address ('dotted address') into that field.

For most parts of the world (and if you don't have access to an NTP server in your *local* network), it is recommended to use one of the [NTP Pool](#) addresses. By virtue of a DNS trick, the pool automatically picks the 'best' NTP server currently available for you.

The rsNTP window shows the current date and time *in UTC*, formatted according to ISO 8601, in the upper part.

To keep it simple, rsNTP doesn't care for 'local time' and national preferences to format date and time.



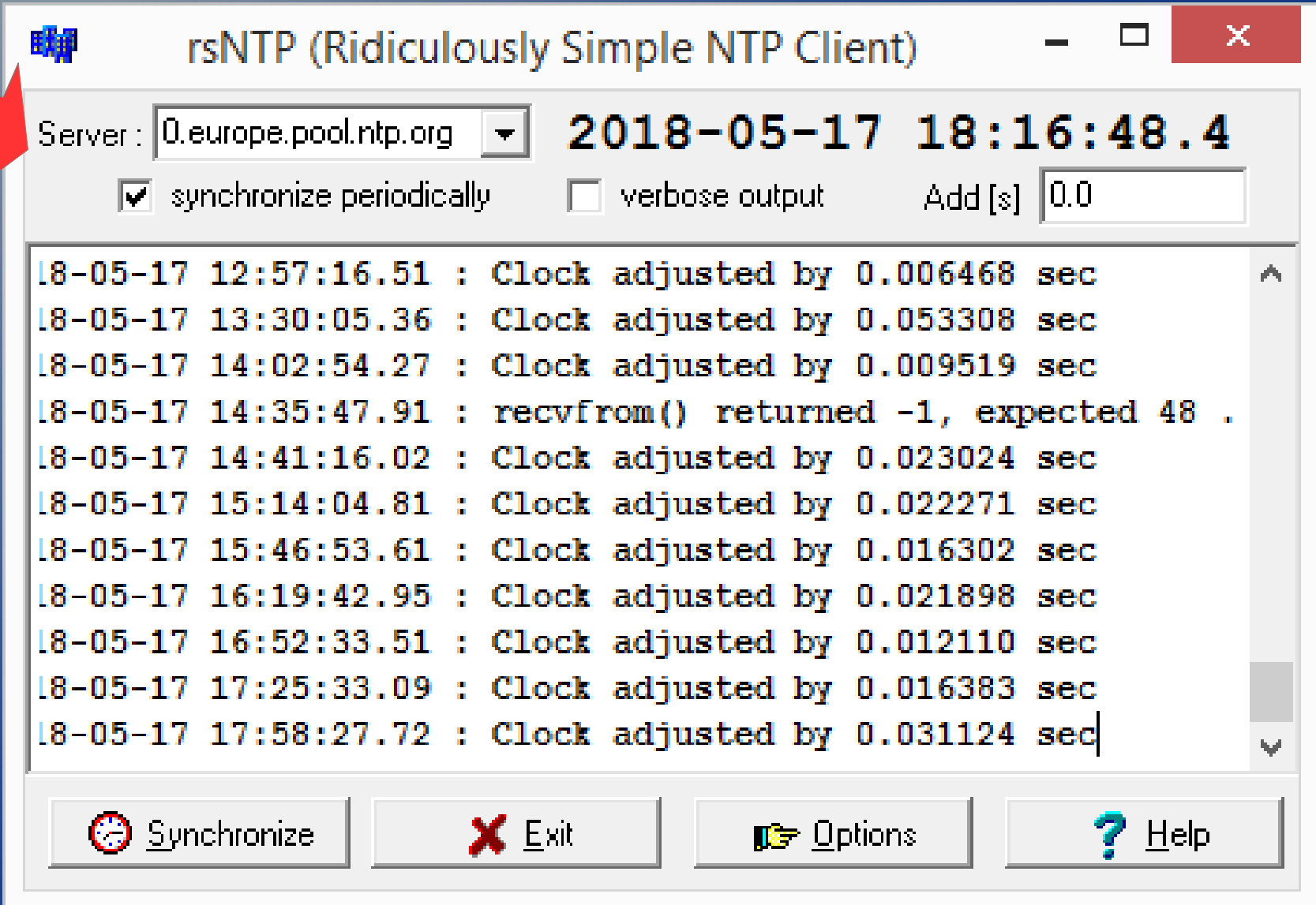
The program doesn't need an installer. It is provided together with the sourcecode (written in an ancient version of Borland C++Builder), which can be downloaded from [here](#).

Enjoy !

73, Wolfgang "Wolf" Buescher DL4YHF .

RsNTP Accurate Time

www.qsl.net/dl4yhf/rsNTP/rsNTP.htm



The screenshot shows the 'rsNTP (Ridiculously Simple NTP Client)' application window. A red arrow points to the 'Server' dropdown menu, which is currently set to '0.europe.pool.ntp.org'. The current time displayed is '2018-05-17 18:16:48.4'. Below the server selection, there are three checkboxes: 'synchronize periodically' (checked), 'verbose output' (unchecked), and 'Add [s]' with a value of '0.0'. The main area of the window contains a log of clock adjustments and network events. At the bottom, there are four buttons: 'Synchronize', 'Exit', 'Options', and 'Help'.

rsNTP (Ridiculously Simple NTP Client)

Server: 0.europe.pool.ntp.org 2018-05-17 18:16:48.4

synchronize periodically verbose output Add [s] 0.0

```
18-05-17 12:57:16.51 : Clock adjusted by 0.006468 sec
18-05-17 13:30:05.36 : Clock adjusted by 0.053308 sec
18-05-17 14:02:54.27 : Clock adjusted by 0.009519 sec
18-05-17 14:35:47.91 : recvfrom() returned -1, expected 48 .
18-05-17 14:41:16.02 : Clock adjusted by 0.023024 sec
18-05-17 15:14:04.81 : Clock adjusted by 0.022271 sec
18-05-17 15:46:53.61 : Clock adjusted by 0.016302 sec
18-05-17 16:19:42.95 : Clock adjusted by 0.021898 sec
18-05-17 16:52:33.51 : Clock adjusted by 0.012110 sec
18-05-17 17:25:33.09 : Clock adjusted by 0.016383 sec
18-05-17 17:58:27.72 : Clock adjusted by 0.031124 sec
```

Synchronize Exit Options Help

Adjust DT to 0.1 Match ND6H

055015	-6	1.3	1266	~	CQ ND6H CM97
055030	Tx		476	~	ND6H WA9ONY CN85
055045	-8	1.3	1266	~	WA9ONY ND6H -24
055100	Tx		476	~	ND6H WA9ONY R-08
055115	-8	1.3	1266	~	WA9ONY ND6H -24
055130	Tx		476	~	ND6H WA9ONY R-08
055200	Tx		476	~	ND6H WA9ONY R-08
055215	-3	0.1	1267	~	WA9ONY ND6H RRR
055230	Tx		476	~	ND6H WA9ONY 73
055245	1	0.1	1267	~	WA9ONY ND6H 73

The screenshot shows a window titled "NTP Client" with a close button. A red arrow points to the "Add [s]" input field, which contains the value "-1.3". Below the input field, the log text reads: "2018-05-16 05:51:50.04 : Received response :
Originate time from NTP : 2018-05-16 05:51:49.845
Receive time from NTP : 2018-05-16 05:51:48.696
Transmit time from NTP : 2018-05-16 05:51:48.696
Round trip : 0.197242 seconds
Clock offset : -1.246795 seconds
2018-05-16 05:51:48.80 : Clock adjusted by -1.246795 sec plus -1.300 s 'deliberate offset'". At the bottom of the window are four buttons: "Synchronize", "Exit", "Options", and "Help".

Adjust DT to 0.0 to Match VK2MZ

130315	Tx		353	~	CQ	WA9ONY	CN85
130330	-24	1.6	354	~	WA9ONY	VK2HDZ	QF57
130345	Tx		353	~	VK2HDZ	WA9ONY	-24
130415	Tx		353	~	VK2HDZ	WA9ONY	-24
130445	Tx		353	~	VK2HDZ	WA9ONY	-24
130515	Tx		353	~	VK2HDZ	WA9ONY	-24
130530	-20	-0.0	348	~	WA9ONY	VK2HDZ	R-18
130530	-9	-1.5	1318	~	WA9ONY	J11AJO	PM95
130545	Tx		353	~	VK2HDZ	WA9ONY	RRR
130600	-17	0.0	348	~	WA9ONY	VK2HDZ	73
130615	Tx		353	~	VK2HDZ	WA9ONY	73
130530	-9	-1.5	1318	~	WA9ONY	J11AJO	PM95
130646	Tx		353	~	J11AJO	WA9ONY	-09
130700	-7	0.1	1318	~	WA9ONY	J11AJO	R-13
130715	Tx		353	~	J11AJO	WA9ONY	RRR
130730	-6	0.2	1319	~	WA9ONY	J11AJO	73
130745	Tx		353	~	J11AJO	WA9ONY	73

(Ridiculously Simple NTP Client)

pool.ntp.org 2018-05-27 13:05:11.72 : 32.4

size periodically verbose output Add [s] -1.6

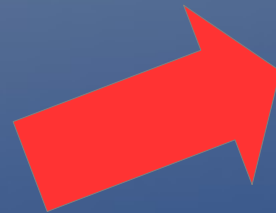
```
2018-05-27 13:05:11.72 : Looking up 0.europe.pool.ntp.org
2018-05-27 13:05:11.76 : Querying 212.83.158.83
2018-05-27 13:05:11.92 : Received response :
  Originate time from NTP : 2018-05-27 13:05:11.765
  Receive time from NTP  : 2018-05-27 13:05:10.301
  Transmit time from NTP : 2018-05-27 13:05:10.301
  Round trip             : 0.163097 seconds
  Clock offset           : -1.545552 seconds
2018-05-27 13:05:10.38 : Clock adjusted by -1.545552 sec
                        plus -1.600 s 'deliberate offset'
```

Synchronize Exit Options Help

FT8 Basic eLogging

WSJT-X

rsNTP



ADIF File

eQSL

LoTW

Club Log

QRZ Log

WSJT-X Logging FT8 QSO

- Will automatically pop up at end of QSO

Click OK to confirm the following QSO:

Call	Start	End	Mode	Band	Rpt Sent	Rpt Rcvd	Grid	Name
K8BBE	09/05/2018 07:16:30	09/05/2018 07:17:45	FT8	160m	-15	-11	EN90	

Tx power: 80 Retain

Comments: FT-857D Retain

OK Cancel

WSJT-X ADIF Directory

File	Configurations	View	Mode	Decode	Save
	Open			Ctrl+O	
	Open next in directory			F6	
	Decode remaining files in directory			Shift+F6	
<hr/>					
	Delete all *.wav & *.c2 files in SaveDir				
	Erase ALL.TXT				
	Erase wsjtx_log.adi				
	Open log directory				
	<hr/>				
	Settings...			F2	
	<hr/>				
	Exit				



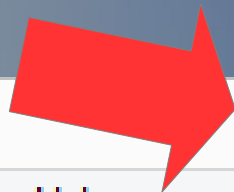
WSJT-X ADIF Log File

The screenshot shows a Windows File Explorer window titled "WSJT-X". The address bar indicates the path: "David Haworth > AppData > Local > WSJT-X". The left sidebar shows "Favorites" (Desktop, Downloads, Recent places, OS (C), David) and "This PC" (Desktop, Documents, Downloads, Music, Pictures, Videos, PATRIOT). The main pane displays a list of files and folders with columns for Name, Date modified, Type, and Size. The file "wsjtx_log.adi" is selected and highlighted in blue. A red arrow points from the "PATRIOT" folder in the sidebar to the selected file.

Name	Date modified	Type	Size
save	5/17/2018 10:46 AM	File folder	
ALL.TXT	5/17/2018 10:46 AM	Text Document	290,594 KB
ALL_WSPR.TXT	1/23/2018 7:35 PM	Text Document	214 KB
azel.dat	3/9/2018 4:41 PM	DAT File	1 KB
CALL3.OLD	1/20/2018 1:03 AM	OLD File	1 KB
CALL3.TXT	1/20/2018 1:03 AM	Text Document	1 KB
fcsl2.out	11/2/2017 5:02 PM	OUT File	3 KB
fmt.bak	11/2/2017 4:59 PM	BAK File	28 KB
FoxQSO.txt	4/10/2018 2:48 PM	Text Document	1 KB
freq.qrg	10/24/2017 9:32 AM	QRG File	3 KB
hashtable.txt	1/23/2018 7:35 PM	Text Document	2 KB
jt9_wisdom.dat	5/4/2018 1:02 PM	DAT File	28 KB
refspec.dat	9/1/2017 10:58 AM	DAT File	203 KB
timer.out	5/4/2018 1:02 PM	OUT File	1 KB
WSJT-X.ini	5/17/2018 10:19 AM	Configuration sett...	15 KB
wsjtx.log	5/17/2018 10:19 AM	Text Document	328 KB
wsjtx_log.adi	5/17/2018 10:19 AM	ADI File	1,072 KB
wsjtx_wisdom.dat	5/17/2018 12:05 AM	DAT File	4 KB
WSPR_history.txt	1/23/2018 7:35 PM	Text Document	101 KB
wspr_timer.out	1/23/2018 7:35 PM	OUT File	1 KB
wspr_wisdom.dat	1/23/2018 7:35 PM	DAT File	2 KB

21 items | 1 item selected | 1.04 MB

WSJT-X ADIF Log File



```
wsjtx_log.adi - Notepad
File Edit Format View Help
WSJT-X ADIF Export<eoh>
<call:5>K7KRW <gridsquare:4>DN41 <mode:3>FT8 <rst_sent:3>+05 <rst_rcvd:3>-0
<call:5>K7JBL <gridsquare:4>CN85 <mode:3>FT8 <rst_sent:3>+03 <rst_rcvd:3>-0
<call:6>KD8AJK <gridsquare:4>EN81 <mode:3>FT8 <rst_sent:3>-03 <rst_rcvd:3>-
<call:4>N3HI <gridsquare:4>DM03 <mode:3>FT8 <rst_sent:3>-03 <rst_rcvd:3>-17
<call:6>WB2REM <gridsquare:4>EL97 <mode:3>FT8 <rst_sent:3>-03 <rst_rcvd:3>-
<call:6>WA5TRL <gridsquare:4>EM20 <mode:3>FT8 <rst_sent:3>+08 <rst_rcvd:3>-
<call:4>W8EH <gridsquare:4>EM79 <mode:3>FT8 <rst_sent:3>+00 <rst_rcvd:3>-11
<call:5>WC6YJ <gridsquare:4>CM97 <mode:3>FT8 <rst_sent:3>+00 <rst_rcvd:3>+0
<call:6>WA7KPL <gridsquare:4>DM79 <mode:3>FT8 <rst_sent:3>+01 <rst_rcvd:3>+
<call:5>W6AER <gridsquare:4>CM87 <mode:3>FT8 <rst_sent:3>+07 <rst_rcvd:3>+0
<call:6>WA7KPL <gridsquare:4>DM79 <mode:3>FT8 <rst_sent:3>-02 <rst_rcvd:3>-
<call:5>K6LIE <gridsquare:4>DM65 <mode:3>FT8 <rst_sent:3>-09 <rst_rcvd:3>-0
```

ADIF Log File QSO

- <call:5>K7KRW
<gridsquare:4>DN41
<mode:3>FT8
<rst_sent:3>+05
<rst_rcvd:3>-08
<qso_date:8>20170827
<time_on:6>003000
<qso_date_off:8>20170827
<time_off:6>003149
<band:3>40m
<freq:8>7.074842
<station_callsign:6>WA9ONY
<my_gridsquare:4>CN85
<eor>

Advanced Logging

WSJT-X

rsNTP

JTAlertX

QRZ Info & Image

**Amateur
Contact
Log**

eQSL

LoTW

ADIF File

Club Log

QRZ Log

PSK Reporter

IrfanView



Advanced Logging JTAlertX & Amateur Contact Log

WSJT-X v1.8.0 by K1JT - Log QSO

Click OK to confirm the following QSO:


Call	Start	End
JG3RXZ	27/05/2018 11:33:30	27/05/2018 11:34:45

Mode	Band	Rpt Sent	Rpt Rcvd	Grid	Name
FT8	80m	-19	-17	PM74	

Tx power: 80 Retain

Comments: FT-857D Retain

JTAlertX : QSO to AC Log

 SUCCESS : QSO logged.

Callsign : JG3RXZ
Frequency : 3.573644 MHz
Logged Mode : FT8

[4]

N3FJP's Amateur Contact Log 6.0

File Edit Settings Clear CallBook List Search Awards eLogs Recall

Rec#	Call	Date / Time	Snt	Rec	Country	Grid
4057	JG3RXZ	2018/05/27 11:33	-19	-17	Japan	PM74
4056	JJ0MMP	2018/05/27 11:28	-08	-15	Japan	PM97

eLog Amateur Contact Log

N3FJP's Amateur Contact Log 6.0

[Search](#)
[Awards](#)
[eLogs](#)
[Recall](#)

[Club Log](#)

[eQSL](#)

[LoTW](#)

Rec	Count
-19	Japan

N3FJP's Amateur Contact Log 6.0 www.n3fjp.com

File Edit Settings Clear CallBook List Search Awards eLogs Recall Net View Help

Find Recent Contacts

Rec#	Call	Date / Time	Snt	Rec	Country	Grid	Bnd	ST	R Conf By	S Conf By	S	R
3959	WD6DBM	2018/05/19 10:12	-09	-22	USA	CM97	40	CA		EBL	Y	N
3958	K8LS	2018/05/19 10:08	+04	-15	USA	EM10	40	TX	EL	EBL	Y	Y
3957	YC2TTM	2018/05/19 09:51	-11	-14	Indonesia	OI53	40	TX	L	EBL	Y	Y
3956	JA1BAZ	2018/05/19 09:48	-01	-12	Japan	PM95	40		E	EBL	Y	N
3955	AA5AU	2018/05/19 09:39	-02	-11	USA	EL49	40	LA	EL	EBL	Y	Y
3954	VK2ALS	2018/05/19 09:33	-16	-03	Australia	QF57	40		E	EBL	Y	N
3953	LU5VV	2018/05/19 09:09	-14	-11	Argentina	FE48	40		L	EBL	Y	Y
3952	W4DOW	2018/05/19 09:03	-23	-08	USA	EM96	40	VA	EL	EBL	Y	Y
3951	KD6ELK	2018/05/19 08:54	-06	-02	USA	DM06	40	CA	EL	EBL	Y	Y
3950	VK2TTP	2018/05/19 08:50	-07	-09	Australia	QF56	40	NSW	EL	EBL	Y	Y
3949	VK2XAX	2018/05/19 08:38	-13	-13	Australia	QF56	40	NSW	EL	EBL	Y	Y
3948	AB5HA	2018/05/19 08:36	-13	-15	USA	EM32	40	LA		EBL	Y	N

JTAlertX QSL Status

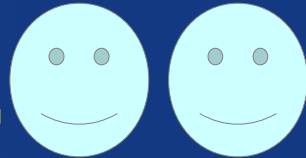
JTAlertX 2.10.4 WA9ONY [~,20m,ACL,#1] (Up| Alerts | Settings | View | Sound ON | ? | 160 80 60 40 30 20 17 15 12 10 6 - □ ×

N9VMO - IN	AK5Q - TX	AB6MB - CA	W5KAL - TX	KF2FK - NY	KM4FTK - VA	WP4AZT	WA9LEY - IL	KE0NCO - MN
W7ACI - OR	N0KUT - KS	NE4EA - SC	KG4Y - VA	WB9VGJ - B4	W0HU - UT	KD5RJZ - OK	WY7WYO - WY	K9TND - IA
W1HRG - B4	WD0AJG - B4	VA3HP	N7HOT - AZ	KD9DP - IN	KB6C - CA	KN0MES - SC	KB8U - MI	

LoTW

| N9VMO - IN |

eQSL



AK5Q - TX |

eQSL



LoTW

| W7ACI - OR

W0HU - UT



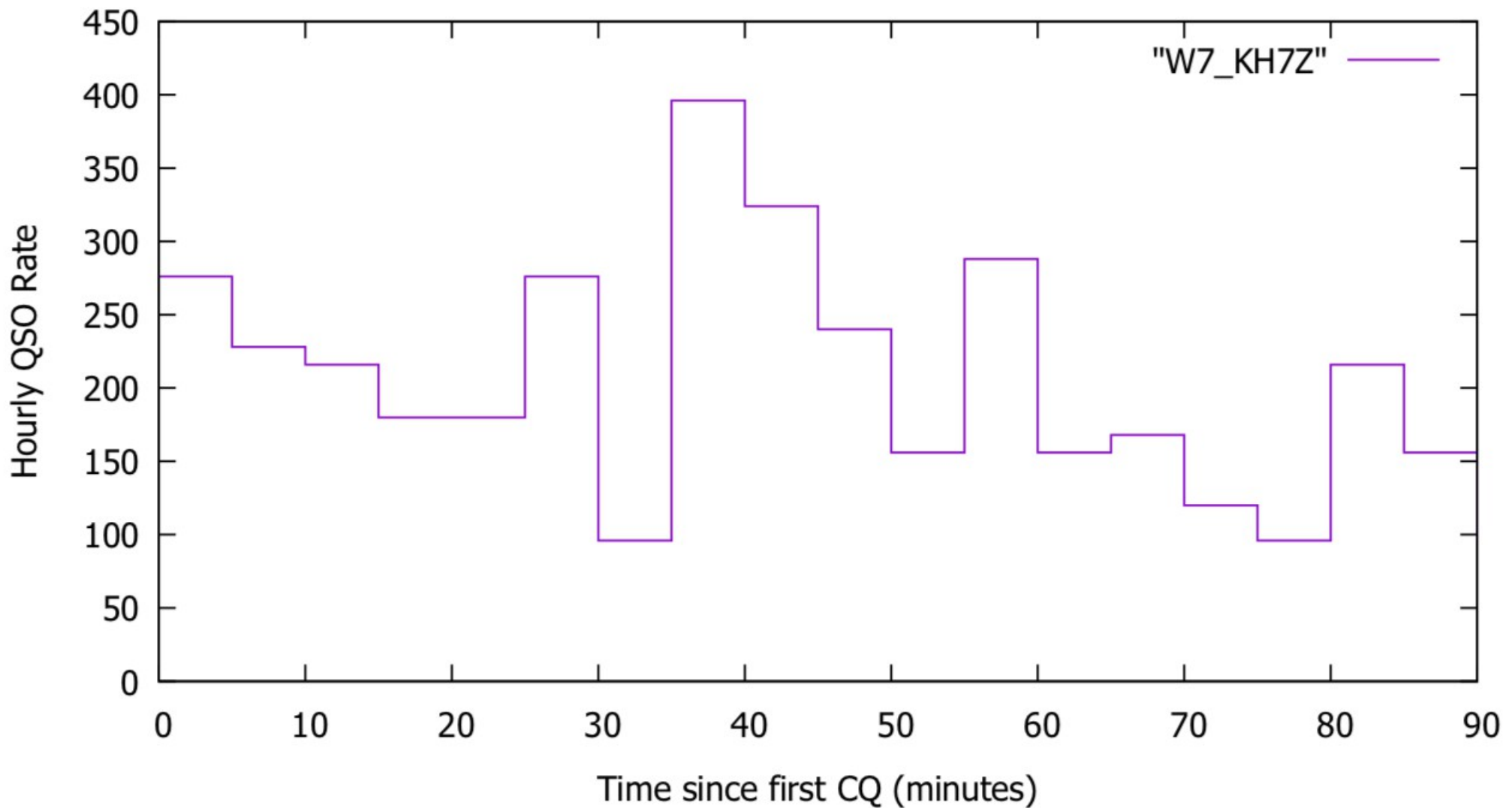
DX Expedition Mode

- Created for KH1/KH7Z Baker Island
 - June 27 – July 7, 2018
- Fox is DX station
 - Special FT8 frequencies for Fox
- Hound is you
- Fox works up to 5 hounds at once
- Fox is in low part (<1kHz) of the band
- Calling hounds are >1kHz to 4kHz
- Working hounds are auto QSY to <1kHz
- Requires WSJT-X v1.9

DX Expedition Mode Test #3

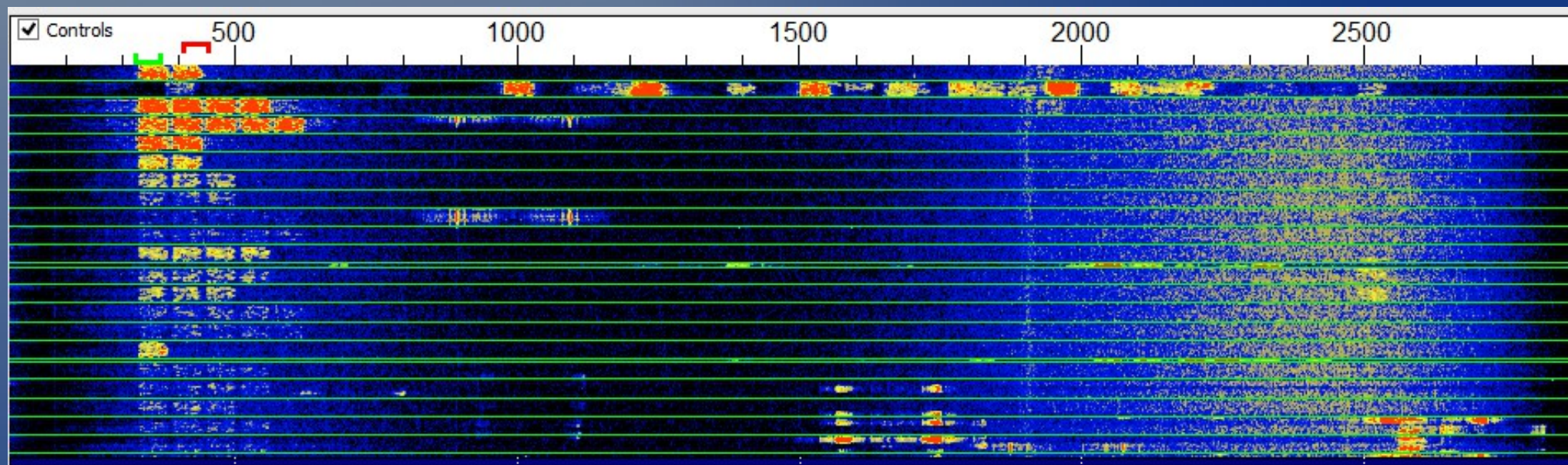
W7/KH7Z

Hourly QSO Rate for W7/KH7Z: May 5, 2018, 1425-1559 UTC



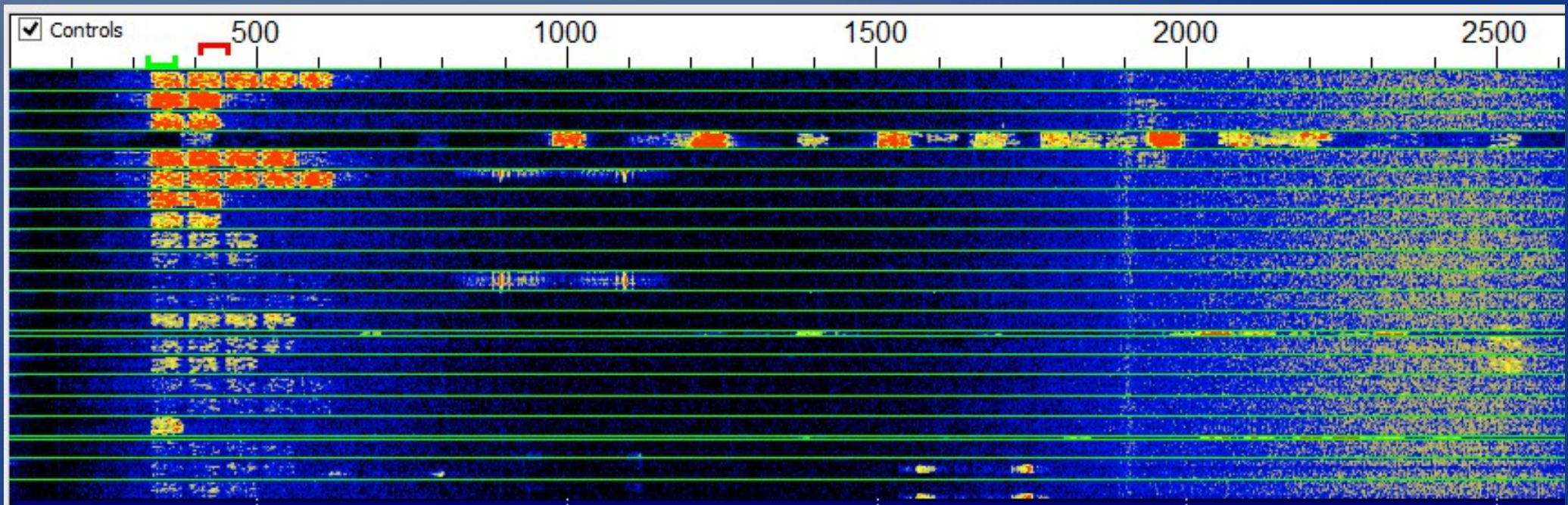
KH7Z -08 dB to WA9ONY

----- 20m				
155830	-3	0.1	333 ~	WA8CLT RR73; WA9ONY <W7/KH7Z> -08
155830	-3	0.1	393 ~	WA8CLT RR73; W4AS <W7/KH7Z> -08
155830	-15	0.1	1924 ~	V47KA W6NT +01
155745	Tx		1301 ~	KH7Z WA9ONY CN85
155800	-2	0.1	333 ~	VE3ERX RR73; M0GXM <W7/KH7Z> -07
155830	-3	0.1	333 ~	WA8CLT RR73; WA9ONY <W7/KH7Z> -08
155845	Tx		409 ~	KH7Z WA9ONY R-18



WA9ONY R-18 to KH7Z

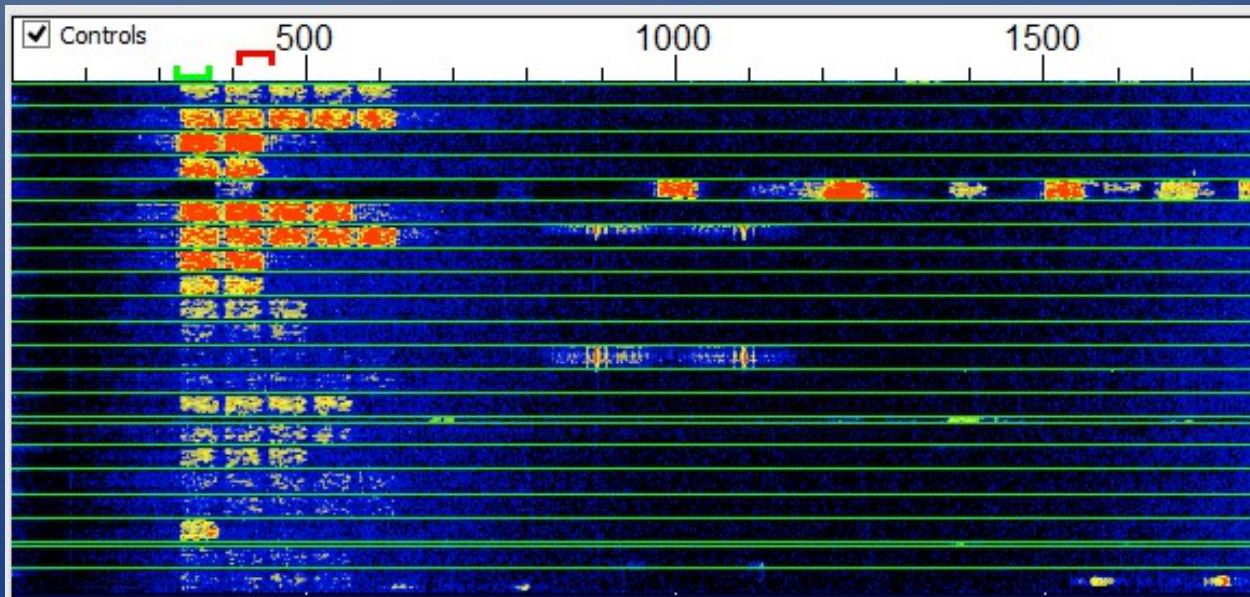
----- 20m											
155830	-3	0.1	333	~	WA8CLT RR73; WA9ONY <W7/KH7Z> -08	155630	-7	0.1	333	~	K4JW RR73; PAOWRS <W7/KH7Z> -02
155830	-3	0.1	393	~	WA8CLT RR73; W4AS <W7/KH7Z> -08	155645	Tx		1301	~	KH7Z WA9ONY CN85
155830	-15	0.1	1924	~	V47KA W6NT +01	155700	1	0.1	333	~	PAOWRS KH7Z RR73
----- 20m											
155900	4	0.1	333	~	HH2AA KH7Z RR73	155715	Tx		1301	~	KH7Z WA9ONY CN85
155900	6	0.1	393	~	W4AS KH7Z RR73	155730	-2	0.1	333	~	CQ W7/KH7Z
----- 20m											
155930	-2	0.1	333	~	W1SSN KH7Z +02	155745	Tx		1301	~	KH7Z WA9ONY CN85
155930	-1	0.1	394	~	WD9HSY KH7Z -02	155800	-2	0.1	333	~	VE3ERX RR73; M0GXM <W7/KH7Z> -07
155930	0	0.1	454	~	W3DLQ KH7Z -04	155830	-3	0.1	333	~	WA8CLT RR73; WA9ONY <W7/KH7Z> -08
155930	0	0.1	514	~	UB7K KH7Z -04	155845	Tx		409	~	KH7Z WA9ONY R-18
155930	-1	0.1	574	~	KC9MEG KH7Z -05	155900	4	0.1	333	~	HH2AA KH7Z RR73
						155915	Tx		409	~	KH7Z WA9ONY R-18
						155930	-2	0.1	333	~	W1SSN KH7Z +02
						155945	Tx		409	~	KH7Z WA9ONY R-18



KH7Z RR73 to WA9ONY

----- 20m						
155830	-3	0.1	333	~	WA8CLT RR73; WA9ONY <W7/KH7Z>	-08
155830	-3	0.1	393	~	WA8CLT RR73; W4AS <W7/KH7Z>	-08
155830	-15	0.1	1924	~	V47KA W6NT	+01
----- 20m						
155900	4	0.1	333	~	HH2AA KH7Z RR73	
155900	6	0.1	393	~	W4AS KH7Z RR73	
----- 20m						
155930	-2	0.1	333	~	W1SSN KH7Z	+02
155930	-1	0.1	394	~	WD9HSY KH7Z	-02
155930	0	0.1	454	~	W3DLQ KH7Z	-04
155930	0	0.1	514	~	UB7K KH7Z	-04
155930	-1	0.1	574	~	KC9MEG KH7Z	-05
----- 20m						
160000	-9	0.1	334	~	WA9ONY KH7Z RR73	
160000	-8	0.1	394	~	W1SSN KH7Z RR73	
160000	-8	0.1	454	~	KC9MEG KH7Z RR73	
160000	-9	0.1	514	~	UB7K KH7Z RR73	
160000	-8	0.1	574	~	W3DLQ KH7Z RR73	

155515	Tx	1301	~	KH7Z WA9ONY CN85		
155530	-16	0.1	333	~	VE3KOI RR73; W5MO <W7/KH7Z>	-05
155545	Tx	1301	~	KH7Z WA9ONY CN85		
155600	-14	0.1	333	~	KF5KK RR73; KM4HQE <W7/KH7Z>	-05
155615	Tx	1301	~	KH7Z WA9ONY CN85		
155630	-7	0.1	333	~	K4JJW RR73; PAOWRS <W7/KH7Z>	-02
155645	Tx	1301	~	KH7Z WA9ONY CN85		
155700	1	0.1	333	~	PAOWRS KH7Z RR73	
155715	Tx	1301	~	KH7Z WA9ONY CN85		
155730	-2	0.1	333	~	CQ W7/KH7Z	
155745	Tx	1301	~	KH7Z WA9ONY CN85		
155800	-2	0.1	333	~	VE3ERX RR73; M0GXM <W7/KH7Z>	-07
155830	-3	0.1	333	~	WA8CLT RR73; WA9ONY <W7/KH7Z>	-08
155845	Tx	409	~	KH7Z WA9ONY R-18		
155900	4	0.1	333	~	HH2AA KH7Z RR73	
155915	Tx	409	~	KH7Z WA9ONY R-18		
155930	-2	0.1	333	~	W1SSN KH7Z	+02
155945	Tx	409	~	KH7Z WA9ONY R-18		
160000	-9	0.1	334	~	WA9ONY KH7Z RR73	



WSJT-X v1.9.0-rc3 by K1JT - Log QSO

Click OK to confirm the following QSO:

Call	Start	End				
W7/KH7Z	07/04/2018 15:58:15	07/04/2018 16:00:14				
Mode	Band	Rpt Sent	Rpt Rcvd	Grid	Name	
FT8	20m	-18	-08			
Tx power	90				<input checked="" type="checkbox"/> Retain	
Comments	FT-857D				<input checked="" type="checkbox"/> Retain	
Operator	<input type="text"/>					

FT8 Digital Club

www.ft8dmc.eu/

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- Arrange schedule contacts
- Colorful awards
- Q&A on FT8 installations & operating
- Band conditions
- Post your awards and QSLs

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FT8 Digital Club on Facebook

www.facebook.com/groups/685845101611130/about/

The screenshot shows the Facebook interface for the FT8 Digital Mode Club. At the top, the search bar contains "FT8 Digital Mode Club" and the user profile "David" is visible. The main header area features a dark blue background with the text "Welcome To our facebook group" in white cursive, the "FT8 DMC" logo in large white outlined letters, and the website "www.ft8dmc.eu" at the bottom right. A vertical strip of colorful digital noise is on the far right. Below the header, there are buttons for "Joined", "Notifications", "Share", and "More". The left sidebar includes a search bar, a "Shortcuts" section with two group links, and a "Files" section. The main content area has an "About This Group" section with a description: "The FT8 Digital Mode Club (FT8-DMC) was founded 12.July 2017 by Jo Engelbrecht, OE4VIE and Hannes Grünsteidl, OE3SGU/OE1SGU after recognising a need for a club for FT8 users who would help newcomers and less-experienced opera... See More". To the right, there is an "ADD MEMBERS" section with an input field and a "RECENT GROUP FILES" section listing "LOTW Users.txt" by Jeffrey M. Swiger.

FT8 Digital Mode Club
Closed Group

About
Discussion
Members
Events
Videos
Photos
Files

Search this group

Joined ▾ Notifications ✓ Share ↗ More ⋮

About This Group

Description

The FT8 Digital Mode Club (FT8-DMC) was founded 12.July 2017 by Jo Engelbrecht, OE4VIE and Hannes Grünsteidl, OE3SGU/OE1SGU after recognising a need for a club for FT8 users who would help newcomers and less-experienced opera... See More

ADD MEMBERS

+ Enter name or email address...

RECENT GROUP FILES

LOTW Users.txt
Jeffrey M. Swiger updated on Sunday

FT8 Digital Club Awards

<https://ft8dmc.eu/AWARDS>

WORKED ALL CONTINENTS



WORKED ALL STATES



WORKED ALL NEW ZEALAND



WORKED GRID AWARD

WGA FT8



WORKED ALL SOUTH AMERICA



WORKED PHILIPPINES AWARD

WPA FT8



WA9ONY / KH6

0077 2018-03-08

is presented this award in recognition of having made two-way contact with at least 5 Amateur Radio Stations from the Philippines
Award Manager, OE1SGU Hannes Grunert



WORKED ALL JAPAN CALL AREA

WAJCA FT8



20 Meters

WA9ONY / KH6

0161 2018-03-26

is presented this award in recognition of having made two-way contact with Japanese Amateur Radio Stations of each Japanese Call Area listed: JA1, JA2, JA3, JA4, JA5, JA6, JA7, JA8
Award Manager, AS2AA, Yawar, Saitoh



WSJT Meteor Scatter and Weak Signal Yahoo! Group

[https://groups.yahoo.com/neo/groups/wsjtgroup/info?
guccounter=1](https://groups.yahoo.com/neo/groups/wsjtgroup/info?guccounter=1)

- Joe Taylor K1JT
- Other WSJT-X SW developers
- Bug reports
- New features requests
- New reversion releases
- DX Expedition mode testing

WSJT Meteor Scatter and Weak Signal Group

<https://groups.yahoo.com/neo/groups/wsjtgroup/info?guccounter=1>

guccounter=1

The screenshot shows the Yahoo Groups interface for the "WSJT Meteor Scatter and Weak Signal Group". The page features a navigation bar at the top with links to Home, Mail, Flickr, Tumblr, News, Sports, Finance, Entertainment, Lifestyle, Answers, Groups, Mobile, and More. Below the navigation bar is a search bar with "Search Conversations" and buttons for "Search Groups" and "Search Web". The group's name is prominently displayed in the center, with a background image of woven baskets. Below the group name, it indicates "Restricted Group, 4824 members". A navigation menu includes "Conversations", "Photos", "Files", "About", and "More". The "About Group" section is expanded, showing a "Join Group" button and a list of recent members. The "New Messages" section displays a message titled "Re: First Error running WSJT-X Version 1.9.0-rc4-8642" with a brief description of an error message issue. The "Trending Topics" section lists several discussion topics with their respective post counts.

Home Mail Flickr Tumblr News Sports Finance Entertainment Lifestyle Answers Groups Mobile More Upgrade your browser with the best o

YAHOO! GROUPS

Search Conversations Search Groups Search Web Sign in Mail

Browse Groups

Terms (Updated) Privacy (Updated) Guidelines Feedback Help Blog

WSJT Meteor Scatter and Weak Signal Group

Restricted Group, 4824 members

Conversations Photos Files About More

About Group [+ Join Group](#)

, added in the last 7 days

New Messages [See All](#)

Re: First Error running WSJT-X Version 1.9.0-rc4-8642
Hi Lance, unfortunately the important part of the error message is scrolled off the bottom of the error message box. When you do get a WSJT-X error message box
g4wjs 24 minutes ago

Trending Topics [See All >](#)

Re: New Windows 10 April 2018...	44 Posts
7QP Event	14 Posts
Frequency strangeness	17 Posts
Second Public Test of FT8...	23 Posts
New file uploaded to wsjtgroup	48 Posts

Work the World with WSJT-X - Dr. Joe Taylor

https://youtu.be/233HQs_8JGQ

The image shows a video player interface. The main content is a presentation slide with the following text and graphics:

- Work the World with *WSJT-X*** (in red text)
- A screenshot of the WSJT-X software interface showing a waterfall plot and a list of stations.
- Joe Taylor K1JT** (in blue text)
- MicroHAMS Digital Conference** (in blue text)
- March 24, 2018** (in blue text)

At the top right of the video frame, the text **MicroHAMS Digital Conference 2018** is displayed in purple. Below the slide, a smaller video inset shows a person presenting to an audience in a conference room.

At the bottom of the video player, there is a red and purple bar with the text **Work the World with WSJT-X** and **Joe Taylor, K1JT**. Below this bar is a control bar with the following elements:

- Play button
- Next button
- Volume icon
- Progress indicator: 1:03 / 1:17:04
- CC icon
- Settings icon
- Fullscreen icon
- Expand icon

WSJT-X User Guide

<https://physics.princeton.edu/pulsar/k1jt/wsjt-x-doc/wsjt-x-main-1.8.0.html>

Table of Contents

- 1. Introduction
 - 1.1. New in Version 1.8
 - 1.2. Documentation Conventions
 - 1.3. How You Can Contribute
- 2. System Requirements
- 3. Installation
 - 3.1. Windows
 - 3.2. Linux
 - 3.3. OS X and macOS
- 4. Settings
 - 4.1. General
 - 4.2. Radio
 - 4.3. Audio
 - 4.4. Tx Macros
 - 4.5. Reporting
 - 4.6. Frequencies
 - 4.7. Colors
 - 4.8. Advanced
- 5. Transceiver Setup
- 6. Basic Operating Tutorial
 - 6.1. Main Window Settings
 - 6.2. Download Samples
 - 6.3. Wide Graph Settings
 - 6.4. JT9
 - 6.5. JT9+JT65
 - 6.6. FT8
- 7. Making QSOs

WSJT-X User Guide

Joseph H Taylor, Jr, K1JT – Version 1.8.0

1. Introduction

WSJT-X is a computer program designed to facilitate basic amateur radio communication using very weak signals. The first four letters in the program name stand for “**W**ea**S**ig**J**nal communication by **K1JT**,” while the suffix “-X” indicates that *WSJT-X* started as an extended and experimental branch of the program *WSJT*.

WSJT-X Version 1.8 offers nine different protocols or modes: **FT8**, **JT4**, **JT9**, **JT65**, **QRA64**, **ISCAT**, **MSK144**, **WSPR**, and **Echo**. The first five are designed for making reliable QSOs under extreme weak-signal conditions. They use nearly identical message structure and source encoding. JT65 and QRA64 were designed for EME (“moonbounce”) on the VHF/UHF bands and have also proven very effective for worldwide QRP communication on the HF bands. QRA64 has a number of advantages over JT65, including better performance on the very weakest signals. We imagine that over time it may replace JT65 for EME use. JT9 was originally designed for the LF, MF, and lower HF bands. Its submode JT9A is 2 dB more sensitive than JT65 while using less than 10% of the bandwidth. JT4 offers a wide variety of tone spacings and has proven highly effective for EME on microwave bands up to 24 GHz. These four “slow” modes use one-minute timed sequences of alternating transmission and reception, so a minimal QSO takes four to six minutes — two or three transmissions by each station, one sending in odd UTC minutes and the other even. FT8 is operationally similar but four times faster (15-second T/R sequences) and less sensitive by a few dB. On the HF bands, world-wide QSOs are possible with any of these modes using power levels of a few watts (or even milliwatts) and compromise antennas. On

WSJT-X References

<https://physics.princeton.edu/pulsar/k1jt/refs.html>

[Home](#)
[WSJT-X](#)
[WSJT](#)
[MAP65](#)
[WSPR](#)
[SimJT](#)
[Program Development](#)
[References](#)
[Support](#)

Additional Reading

1. ["WSJT: New Software for VHF Meteor-Scatter Communication."](#) (QST, December 2001)
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5. ["WSJT: Meteors, Moonbounce, and More."](#) (Mid-Atlantic States VHF Conference, September 2005)
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11. ["Quest for Optimum Coding and Modulation Schemes for EME."](#) (13th International EME Conference, Florence, August 2008)
12. [Earth-Moon-Earth \(EME\) Communication](#) (from ARRL Handbook, 2010)
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20. ["Small Station EME at 10 and 24 GHz: GPS Locking, Doppler Correction, and JT4"](#) (Dubus, 2/2013).
21. ["Optimized Small-Station EME: X-pol at 432 MHz"](#) (16th International EME Conference, Pleumeur-Bodou, France, August 2014)
22. ["Optimized Small-Station EME: X-pol at 432 MHz"](#) (PowerPoint Slides: 16th International EME Conference, Pleumeur-Bodou, France, August 2014)
23. ["Moonbounce at W2PU"](#), (Mid-Atlantic States VHF Conference, September 2014).
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25. ["Open Source Soft-Decision Decoder for the JT65 \(63,12\) Reed-Solomon Code"](#) (QEX, May/June 2016)
26. ["WSJT-X: New Codes, Modes, and Tools for Weak-Signal Communication"](#) (PowerPoint Slides: 17th International EME Conference, Venice, August 2016)
27. ["High-Accuracy Prediction and Measurement of Lunar Echoes"](#) (QEX, November-December 2016, pp. 36-40)
28. ["The MSK144 Protocol for Meteor-Scatter Communication"](#) (QEX, September/October, 2017, pp. 8-14)
29. ["Work the World with WSJT-X, Part 1: Operating Capabilities"](#), (QST, October 2017, pp. 30-36)
30. ["Work the World with WSJT-X, Part 2: Codes, Modes, and Cooperative Software Development"](#), (QST, November 2017, pp. 34-39)



QST WSJT-X Articles Oct. & Nov. 2017

<https://physics.princeton.edu/pulsar/k1jt/refs.html>

Work the World with WSJT-X, Part 1: Operating Capabilities

The first of a two-part tutorial about the most popular digital software in use today, from the people who designed and developed it.

Joe Taylor, K1JT; Steve Franke, K9AN, and Bill Somerville, G4WJS

One of the greatest pleasures in Amateur Radio is the thrill of establishing two-way communication with like-minded hobbyists far away, using one's own equipment. We enjoy making such contacts on our own, without recourse to commercial carriers or infrastructure. Since the 1930s, amateurs have known that worldwide communication is possible on the HF bands (at least some of the time) with power levels no more than 100 W and antennas as simple as half-wave dipoles. Twenty-first century digital communication techniques based on information theory make these things possible at much lower power levels, even with compromise antennas. Optimized methods of coding and modulation enable these and many other surprising feats — for example, DXCC using low power and an indoor antenna; two-way contacts on the 6- and 2-meter bands at any time over distances of 500 – 1,300 miles (800 – 2,100 kilometers) using reflections from ionized meteor trails; and Earth-Moon-Earth (“moonbounce”) contacts over worldwide distances, whenever the Moon is up at both ends of a path.

Starting in 2001, the software program WSJT has facilitated making two-way contacts with extremely weak signals. The latest version of this open-source, multiple-author software package is called WSJT-X. It supports nine distinct protocols or modes, each optimized for a different frequency range or type of propagation. These modes

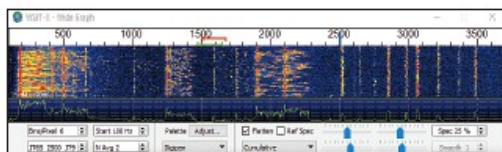


Figure 1 — Waterfall spectrogram recorded by WSJT-X at 14.076 MHz on September 19, 2015. The frequency scale gives audio frequencies in hertz above the transceiver dial frequency. Of the 23 decodable signals in this 1-minute recording, eight are so weak that they would be inaudible to a human — even if they were the only signal in the passband.

are not designed for long conversations, or “ragchewing.” Rather, they concentrate on efficient exchange of such basic information as call signs, Maidenhead grid locators, signal reports, and acknowledgments at the lowest possible signal-to-noise ratios, in the space of a few minutes or less. Short user messages are encoded into audio-frequency waveforms that can be transmitted and received with stan-

This mathematically sophisticated method of encoding information ensures that with very high probability, messages displayed by the decoding software will be exactly those that were originally encoded.

dard SSB transceivers. At the receiving end, recovered audio is converted back to digital samples and the software carries out a reverse transformation to decode the message. All transmissions are timed and synchronized with Coordinated Universal Time (UTC). Infor-

mation required for a minimal valid QSO (contact) is typically exchanged and acknowledged after two or three successful transmissions from each station.

The first publicly available version of WSJT¹ was designed for meteor scatter on the VHF bands. The software has been in continual development since 2001, with improved performance, added user-convenience features, and

new operating modes. The current program version supports four modes that use 1-minute transmit/receive (TR) sequences. Each of these “slow” modes — JT4, JT9, JT65, and QRA64 — uses a distinct coding and modulation scheme designed to optimize weak-signal communication on a particular type of propagation path, with high reliability and good bandwidth efficiency. The most recently introduced slow mode is

Work the World with WSJT-X, Part 2: Codes, Modes, and Cooperative Software Development

Here's how the weak-signal digital protocols in WSJT-X work, and an overview of how their software is developed.

Joe Taylor, K1JT, Steve Franke, K9AN, and Bill Somerville, G4WJS

Part 1 of this two-part article covered topics that highlight the capabilities of weak-signal communication program WSJT-X.¹ This software package provides tools for a wide range of Amateur Radio activities including low-power DXing, meteor scatter, moonbounce, and precise frequency measurement — all of them possible with relatively modest station equipment. Based on modern communication and information theory, the WSJT-X protocols and software can boost your signal's effective reach by the rough equivalent of 10 – 15 dB of added signal strength.

This concluding Part 2 outlines some digital communication theory funda-

Digital communication conveys digital information from an originating source to one or more destinations.

mentals, including examples to make the discussion accessible to most amateurs. We compare the eight weak-signal protocols in WSJT-X and explain how their impressive performance is achieved. Finally, we describe the tools and informal cooperative practices used for creating the WSJT-X software. We think it's important that dedicated enthusiasts devote their algorithmic and programming skills and interests to the good of the hobby.

We have found that many other hams would like to have a deeper understanding of how these weak-signal protocols work, and how they were developed. We hope this article satisfies that desire.

Digital Communication Fundamentals

Digital communication conveys digital information from an originating source to one or more destinations. Here the digital information is modulated onto a carrier and transferred over a radio channel. The basic unit of transmitted data is a *channel symbol*. The symbols represent numbers, in turn comprised of bits. The modulator may transmit m information bits in each symbol, using 2^m different waveforms to represent symbol values from 0 up to $2^m - 1$.

The different waveforms might have distinct amplitudes, phases, frequencies, or shapes. The WSJT-X waveforms are made of sinusoids with constant amplitude. The MSK144 protocol uses *Offset Quadrature Phase-Shift Keying* (OQPSK) with waveforms shaped to maintain a constant envelope. All other modes use frequency-shift keying (FSK), with a different tone frequency to represent each allowed symbol value. Binary modulation ($m = 1$) implies transmitting one bit at a time. Modulation schemes with larger m are used to an advantage in all but one of the WSJT-X modes.

Important benefits can be gained by adding controlled redundancy to a digital message so that transmission errors can be recognized and corrected. Simple repetition of each symbol is a trivial form of redundancy. But much more powerful redundancy can be arranged by mapping each sequence of k message symbols in a controlled way into a unique and longer sequence of n symbols called a codeword. This technique is called forward error correction (FEC). The WSJT-X protocols use block codes in which the values of n and k are fixed, and labeled as (n, k) codes. An integer parameter q can be used to define the range of available symbol values for a code, analogous to the m we used for modulation schemes. Parameter $Q = 2q$ is then referred to as the *alphabet size* of the code. The code symbol values range from 0 up to $Q - 1$, and each codeword conveys kq message bits. The amount of redundancy is characterized by the ratio n/k , and its reciprocal k/n is the *code rate*. The mathematics underlying design of such k -to- n mapping schemes and their corresponding n -to- k reverse transformations forms a major branch of modern communication theory.

Reception of transmitted symbols requires accurate synchronization of time and frequency between transmitting and receiving stations. To make this possible with typical amateur station equipment, each WSJT-X protocol includes a unique synchronizing pat-

FT8 Operating Guide by Gary Hinson ZL2iFB

<http://www.g4ifb.com/>

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ZL2iFB & ZM4G

ZM4G

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Intruders

Links

LK550

Logger32

LoTW

Pileups

QSL!

QTH

Kia ora from [Aotearoa](#) (73 from New Zealand). Hi, I'm Gary and I'm a radio amateur. My main hobby interest is [HF CW DXing](#) and [HF CW ragchewing](#). I also enjoy the odd [HF CW contest](#).

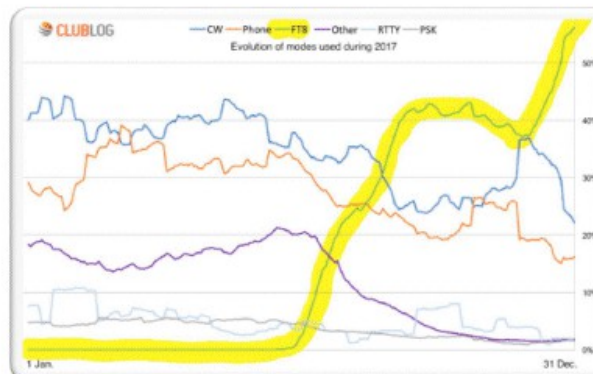
Lately I've been busy HF DXing with FT8. I've written an [FT8 Operating Guide](#) to help others having fun with the [digimode](#). Click the cover to download the PDF:

FT8 Operating Guide

Work the world on HF using the new digital mode

by Gary Hinson ZL2iFB Version 1.19 April 2018

Note: this document is actively maintained. The latest version is at www.g4ifb.com/FT8_Hinson_tips_for_HF_DXers.pdf



Hawke's Bay
North Island
New Zealand

39° 39' South x
176° 37½' East

Locator RF80HL

260m ASL

IOTA OC-036

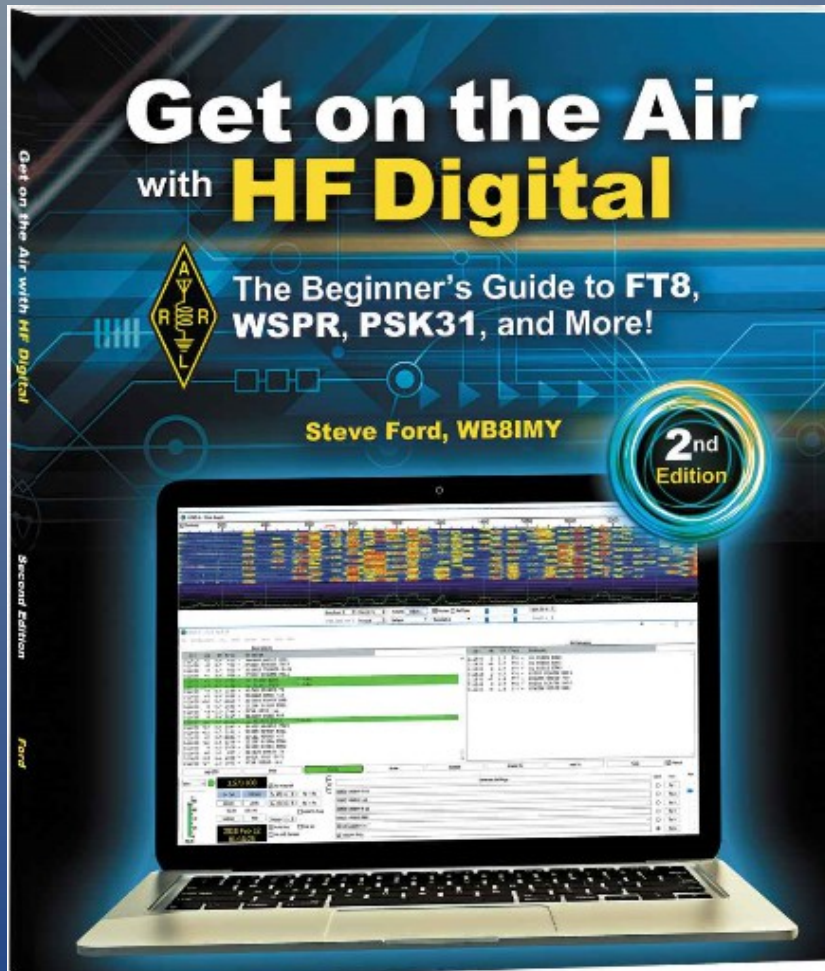
CQ zone 32

[A1 Ops](#)
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Get on the Air with HF Digital 2nd Edition

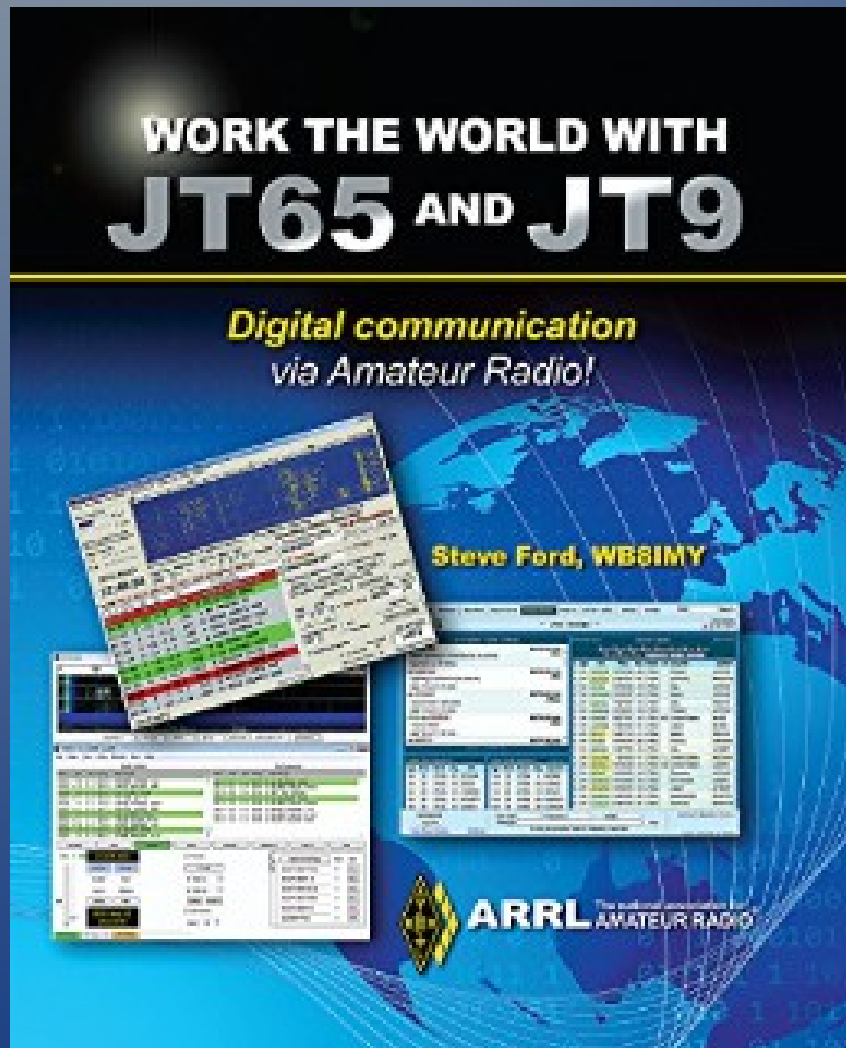
https://www.amazon.com/Get-Air-Digital-ARRL-Inc-ebook/dp/B07C47H5X1/ref=sr_1_2?s=books&ie=UTF8&qid=1525888805&sr=1-2&keywords=Get+on+the+Air+with+HF+Digital



- FT8 chapter
- WSPR chapter
- Good if you are just starting out on HF digital

Work the World with JT65 and JT9

https://www.amazon.com/Work-World-JT65-ARRL-Inc-ebook/dp/B01CGU79EQ/ref=pd_sbs_351_6?_encoding=UTF8&psc=1&refRID=FT20GCQEQRXBGQ87CYD



- FT8 is based on JT65 & JT9
- Book goes in detail on WSJT-X before FT8 was added to the software.

FT8 Start Simple

WSJT-X

rsNTP

Have Fun Adding Accessories

WSJT-X

rsNTP

JTAlertX

QRZ Info & Image

**Amateur
Contact
Log**

eQSL

LoTW

ADIF File

Club Log

QRZ Log

PSK Reporter

IrfanView

73

WA9ONY

**Presentation link is at
www.qrz.com/db/WA9ONY**

www.stargazing.net/david