

# FT8

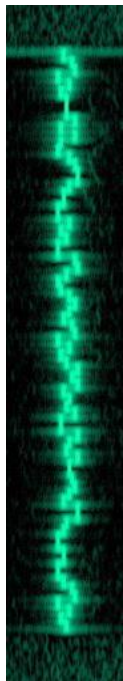
And other digital modes

# Agenda

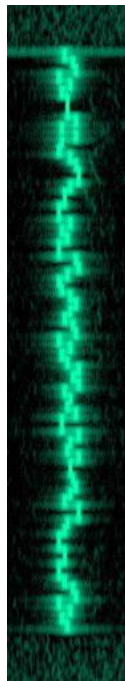
- Some of the modes we have
- FT8
- What is it?
- Characteristics
- How to use it?

# Various Digital Modes

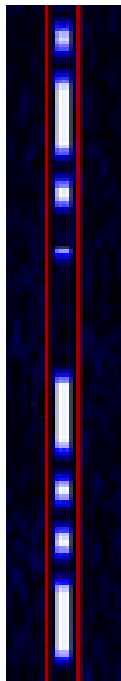
FT8



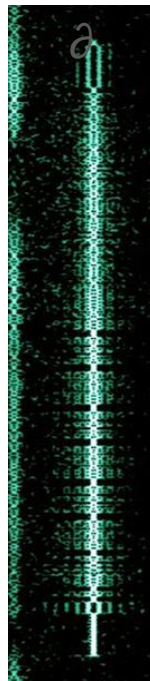
JS8



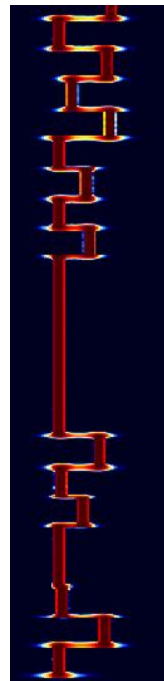
CW



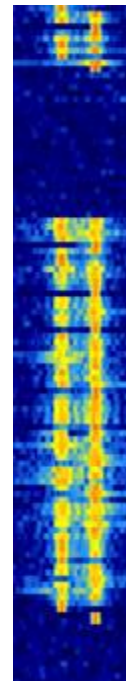
PSK31



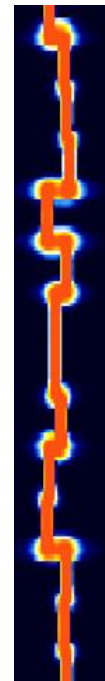
JT65



RTTY



JT9



Sun 4/21 ~1-3p CDT

Sun 5/26 4-6p CDT

Thu 6/20 7-9p CDT

Mon 7/22 1-3p CDT

Fri 8/16 2-4p CDT

Mode	Count
FT8	1,540,317
CW	9,921
JS8	3,666
PSK31	1,264
PSK63	754
JT65	515
RTTY	136
MSK144	97
ROS	79
JT9	51
OPERA	40

Mode	Count
FT8	1,030,053
CW	27,962
JS8	2,701
FT4	420
PSK31	384
OPERA	115
ROS	54
JT65	49
	35

Mode	Count
FT8	824,432
JS8	3,945
CW	1,820
PSK31	149
JT9	59
OPERA	33
A	
JT65	24

Mode	Count
FT8	1,017,376
FT4	33,041
CW	3,777
JS8	1466
PSK31	676
RTTY	132
PSK63	128
OPERA	69
MSK144	48

Mode	Count
FT8	1,441,168
FT4	117,732
CW	7,281
JS8	2,089
PSK31	939
MSK144	378
JT65	123
RTTY	90
OPERA	68
ROS	36
SIM31	31
PSK63	30
FSK441	28

7/15 2.1.0 General Release with FT4

# Weak-Signal S/N Limits

<u>Mode</u>	<u>(B = 2500 Hz)</u>	
SSB	~ +10 dB	
RTTY	-5	
MSK144	-8	
CW, "ear-and-brain"	~ -10	
<b>FT4</b>	<b>-17</b>	} Sweet Spot ?
<b>FT8</b>	<b>-21</b>	
JT4	-23	
JT65	-25	
JT9	-27	
QRA64	-27	
WSPR	-31	

# What is FT8?

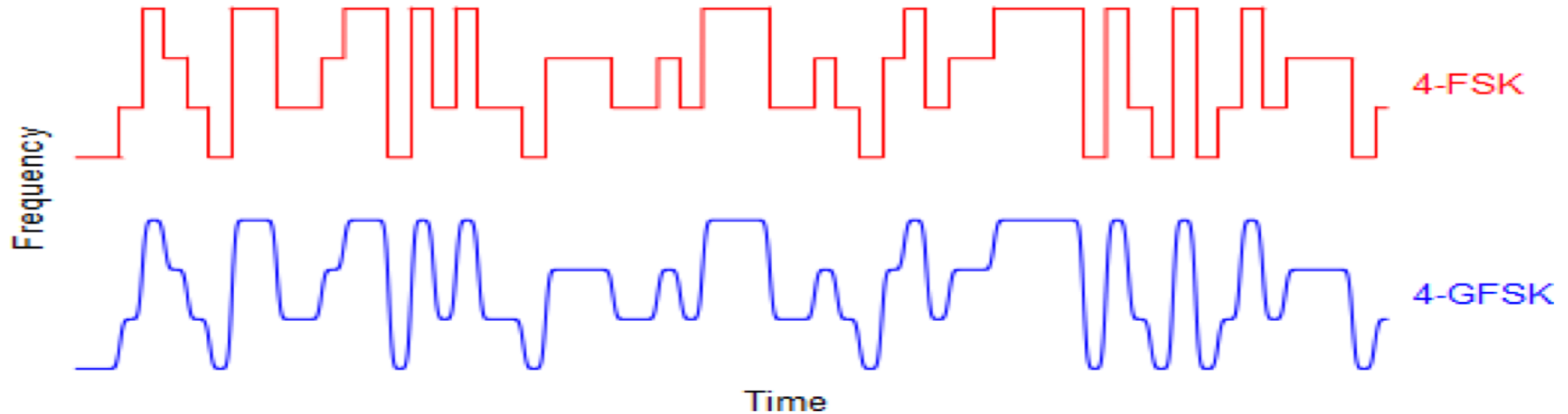
- Invented by Steve(K9AN) and Joe(K1JT) - July 2017
- Designed for multi-hop Es where
  - Signals may be weak and fading
  - Openings may be short
  - Want fast completion of reliable, confirmable QSOs
- Comparison with slow modes JT9, JT65, QRA64:
  - FT8 is a few dB less sensitive
  - Allows completion of QSOs four times faster
  - Bandwidth
    - Greater than JT9
    - About 1/4 of JT65A
    - Less than 1/2 QRA64.
- Comparison with fast modes JT9E-H:
  - FT8 is significantly more sensitive
  - Much smaller bandwidth
  - Uses the vertical waterfall
  - Offers multi-decoding over the full displayed passband
- Modes:
  - FT8: 8-GFSK BW: 50Hz
  - FT4: 4-GFSK BW 83Hz
  - RTTY: 2 tone, 250hz
  - JT9: 9-FSK BW: 20Hz Tone stops smaller than JT65
  - JT65A: BW: 180Hz

# Characteristics of FT8

- T/R sequence length: 15 s
- Message length: 77 bits (updated from 75 bits)
- FEC code: LDPC(174,91)
- Modulation: 8-GFSK, keying rate = tone spacing = 5.86 Hz
- Waveform: Continuous phase, constant envelope
- Occupied bandwidth: 47 Hz
- Decoding threshold: -20 dB (perhaps -24 dB with AP decoding, TBD)
  - I had a -25 db decode QSO during Mentorfest '18
- Operational behavior: similar to HF usage of JT9, JT65
- Multi-decoder: finds and decodes all FT8 signals in passband
- WSJT supports auto-sequencing after manual start of QSO

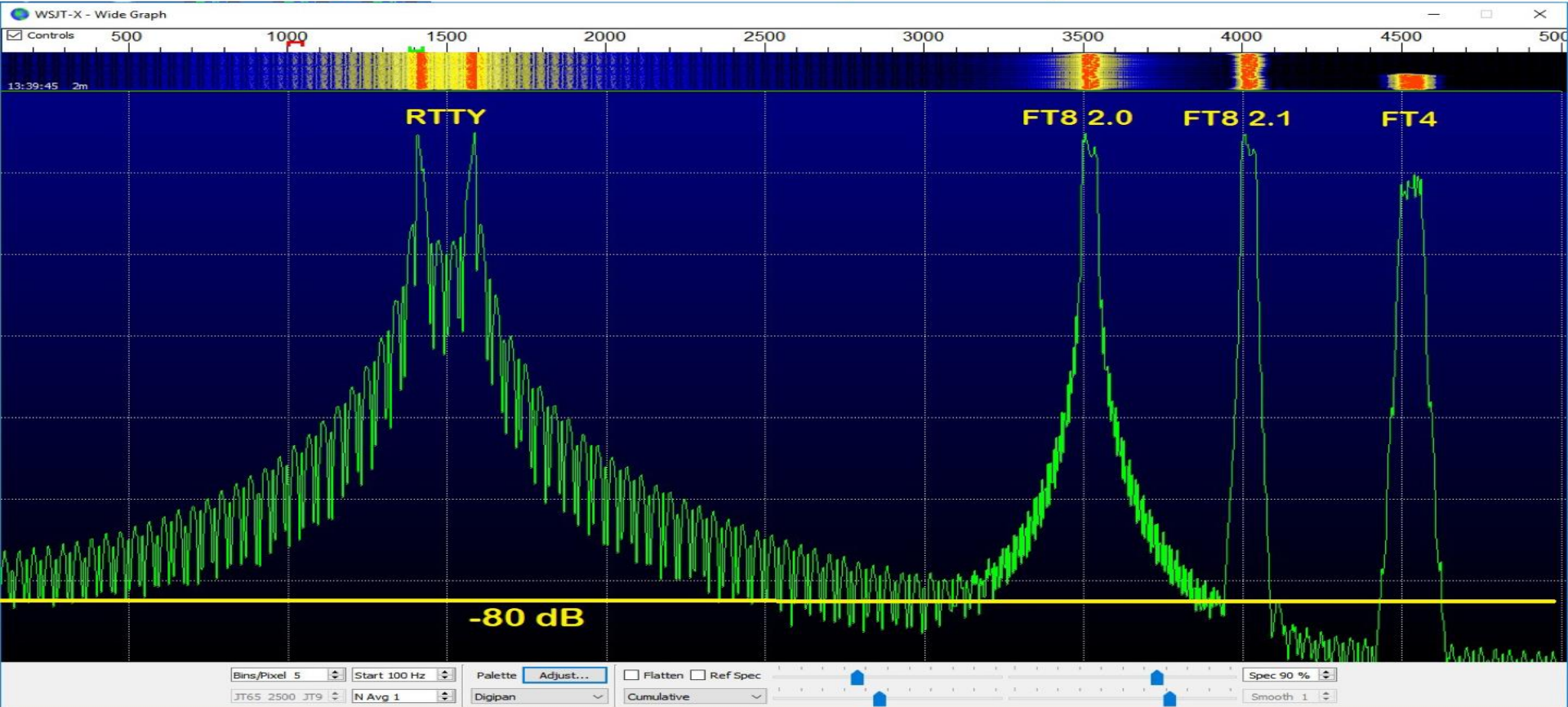
# GFSK

## Smoothed frequency transitions

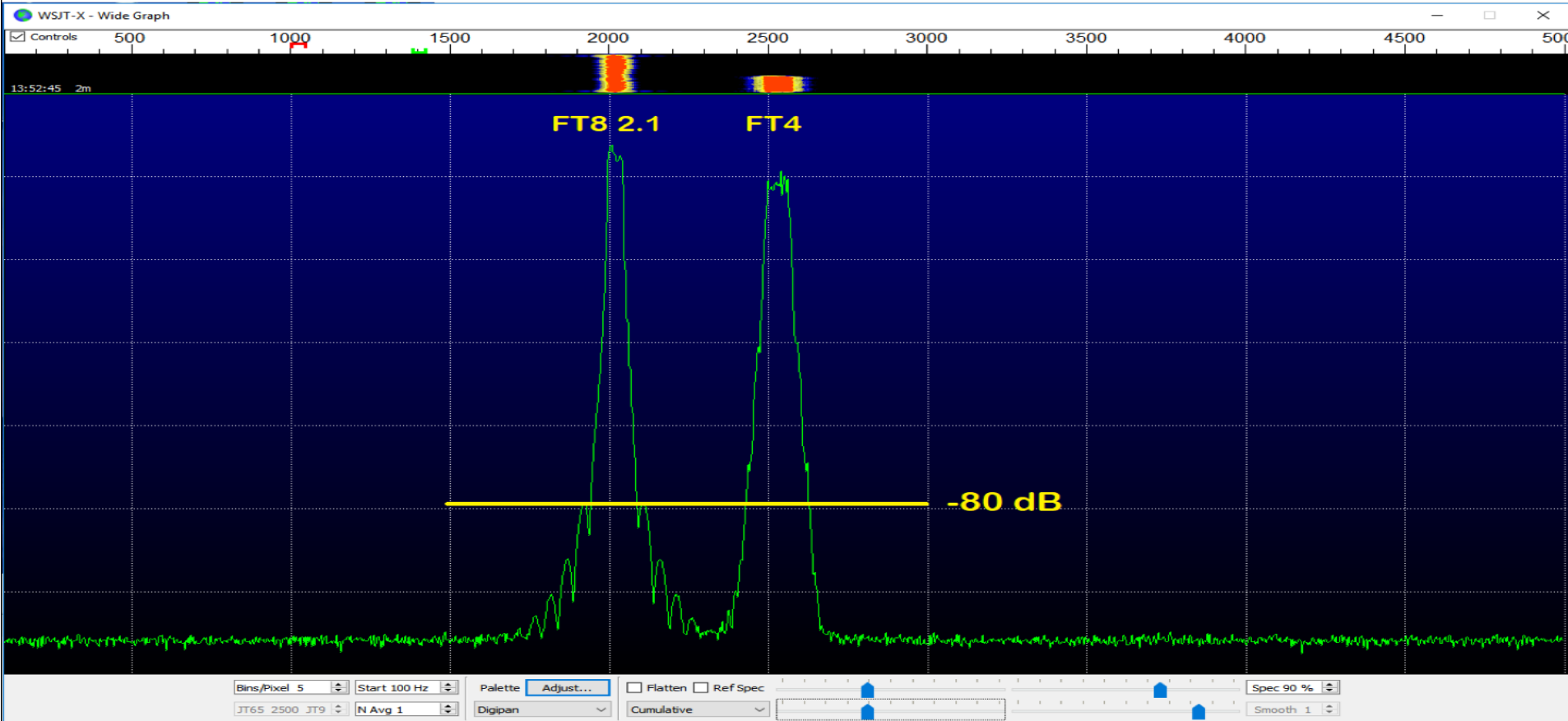


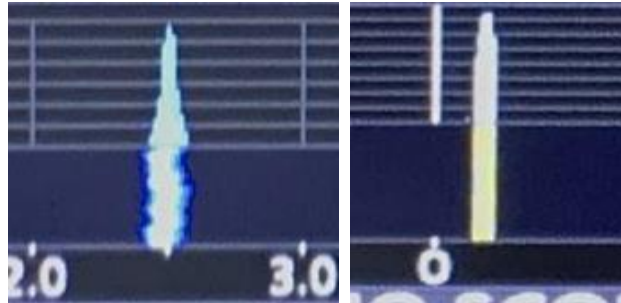
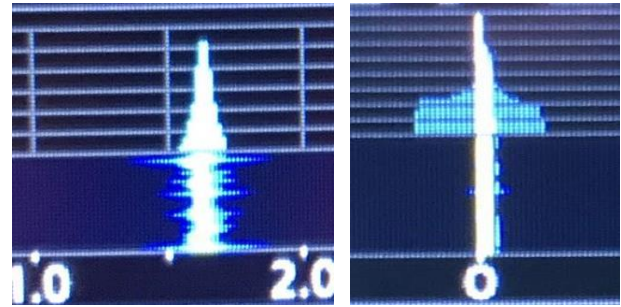
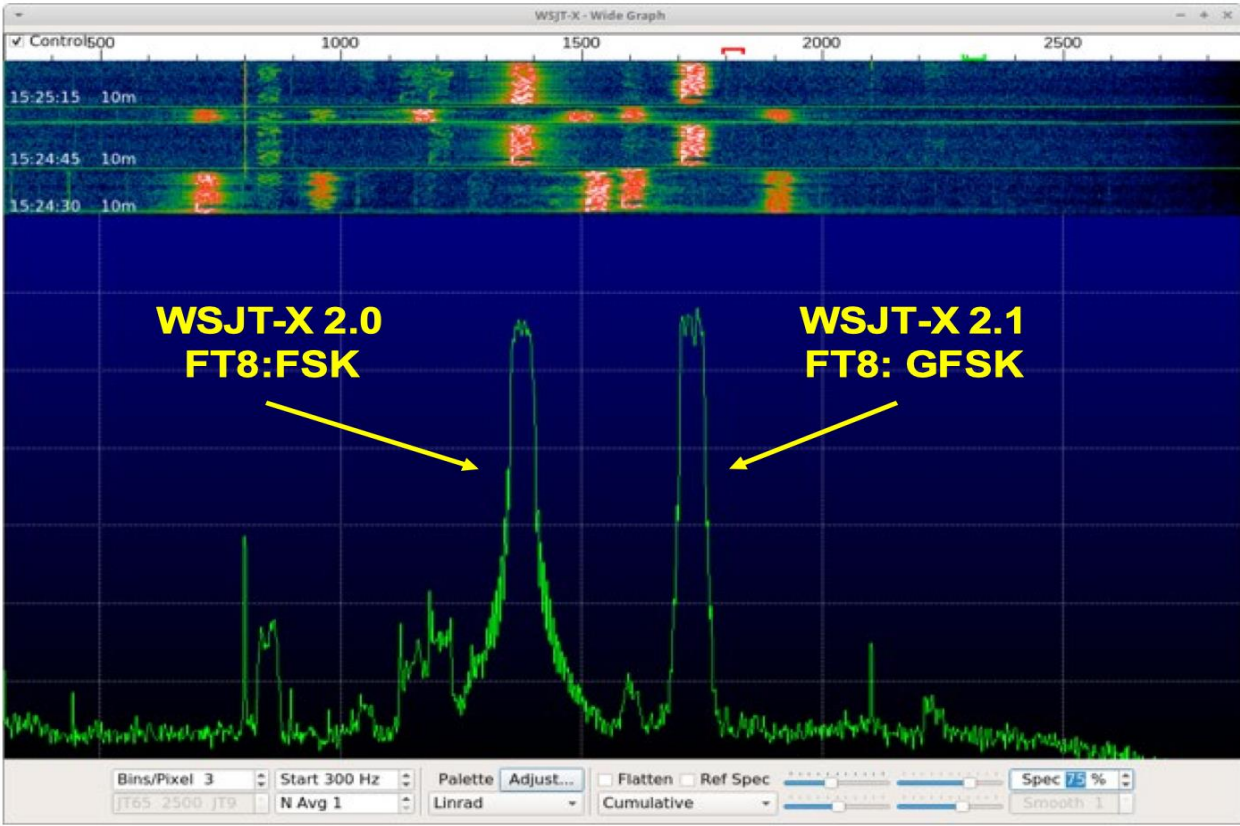


# Spectra: RTTY, FT8, FT4



# Spectra: FT8, FT4





*Image reused from K1JT presentation*

# Uses/Details of FT8

- Intended: Multi-hop E skip on VHF
- Actual: DX contact during poor propagation
- High noise tolerant
- Low power
  - QRP is common
  - 40w is loud
- Time slot based (Even 0:15,0:45/ Odd 0:00,0:30)
- Accurate time sync is critical
- Payload per message is small (13 characters)
- Free text is possible but not common
- No long QSOs

Odd  
Even (Dropped in late)

Odd (still decoded)

Even

Odd

Even

Odd

UTC	dB	DI	Freq	Message
010845	4	-0.2	1515 ~	CQ K5GCC EM13
010905	Tx		601 ~	K5GCC WE5TR EM12
010915	5	-0.2	1515 ~	WE5TR K5GCC +00
010930	Tx		601 ~	K5GCC WE5TR R+05
010945	5	-0.2	1515 ~	WE5TR K5GCC RRR
011000	Tx		601 ~	K5GCC WE5TR 73
011015	6	-0.2	1515 ~	WE5TR K5GCC 73

# Basic Setup



Normal rig setup with Antenna, tuner, etc



Modern(ish) PC, Mac, RPI, Linux

USB cable (modern rig)  
SignalLink or similar (audio into PC)



# How to use it?

- Required:

- WSJT-X / Operating Guide
- Time sync software
  - BktTimeSync
  - Dimension4
  - Meinberg NTP
  - (or similar)
- Rig to PC interface
  - Soundcard for audio - older radios
  - USB or Ethernet - newer radios
- Carefully set your PC audio levels
- Confirm speaker / mic settings

- Optional:

- JTAlertX - Call sign, grid square and prior QSO
- QSO Logging software - Give the QSO credit
- HamSpots.net (web)
- PSKReporter.info (web)
- Logging software
- Time.is (web)
- FT8 group on FaceBook (web)
- Other FT8 software such as JTDX

# A Typical Operating Setup

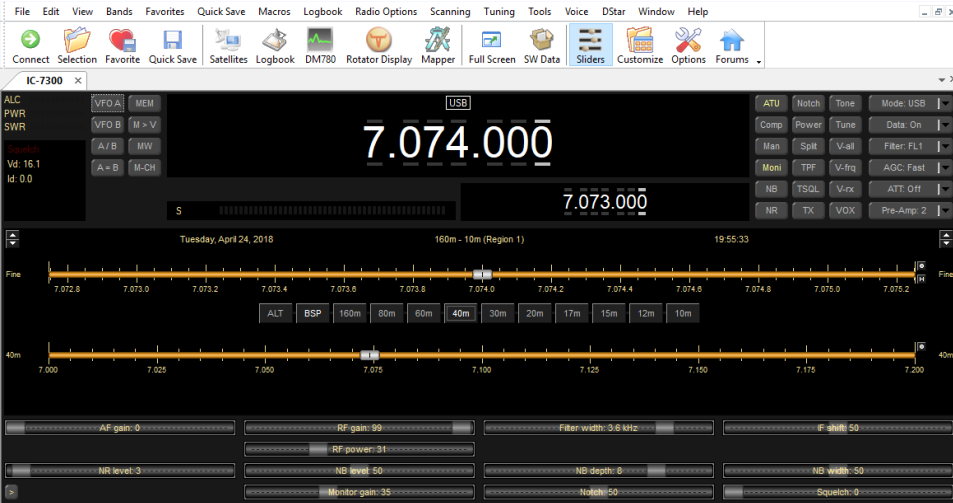
- Windows 10 Desktop
  - FT8 is not VM friendly
- Icom 7300
- Tuner
- Vertical antenna
  - HOA Friendly
  - Hidden near tree in backyard
  - 60m-6m
- 80m bent-dipole
  - HOA Friendly
  - Cause its too low (3m from ground)

WE5TR 2019.08.17

The screenshot displays a Windows 10 desktop environment used for radio operations. The primary application is 'CALLSIGN HISTORY' from hamspots.net, which shows a table of call signs and their locations. The table includes columns for 's', 'Age', 'DX', 'St', 'Country', 'Bnd', 'Mode', 'sig', 'DT', 'S', 'Age', 'Spot', and 'WESTR - Spotted by'. Below the table is a map of the United States with call sign markers. To the right is a 'PORTER INFO' window showing a list of call signs and their frequencies. At the bottom is a 'Log QSO' window showing a list of QSOs with columns for 'QSO date', 'Time on', 'Call', 'Mode', 'Sent', and 'Rcvd'. The desktop also shows various icons and a taskbar with the date 2018 Apr 25 02:13:49.

# IC-7300 FT8 Transmit

## HRD Rig Control - [IC-7300]



### Rig Items:

- Transmit power down
  - I'm typically 30w or less
- Generally:
  - Turn off signal conditioners
  - Widen filters

### Remote Operate:

- RF Power Control
- Other rig features



The coupon code is **LARA19**  
Free FlexControl with rig purchase



# Multiple Simultaneous Decodes

## Flex 6000 series

Only one transmit

The screenshots show the Flex 6000 software interface with multiple simultaneous decodes. Each window displays a waterfall view, a list of decoded signals, and a control panel for the active signal. The active signal in each window is highlighted in green.

Frequency (kHz)	Call Sign	Mode	Bandwidth (kHz)
50.313 000	2019 Apr 07 12:57:12	FT8	1.0
7.090 000	2019 Apr 07 12:57:12	FT8	1.0
10.136 000	2019 Apr 07 12:57:12	FT8	1.0
14.074 000	2019 Apr 07 12:57:12	FT8	1.0

The bottom of the screenshots shows a list of decoded signals with columns for Name, QTH, Grid, Comments, PWR, Time, Country Name, State, CQ, ITU, Cont, and QSL.

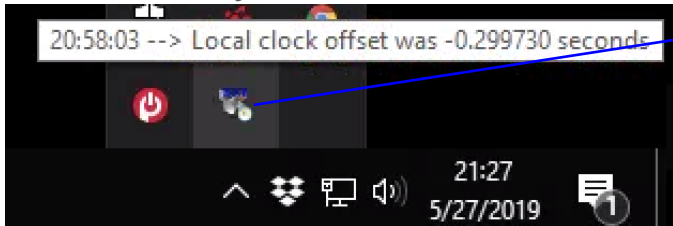
# Time Sync

If you see signals but fail to decode → Check your time sync

## Dimension 4



## BktTimeSync



Time.is

Your time is exact!  
The difference from Time.is was +0.039 seconds (±0.194 seconds).  
Time in Copell, Texas, United States now:

# 07:50:35 PM

Tuesday, April 24, 2018

Los Angeles	New York	London	Paris	Moscow	Beijing	Tokyo
05:50 pm	08:50 pm	01:50 am	02:50 am	03:50 am	08:50 am	09:50 am

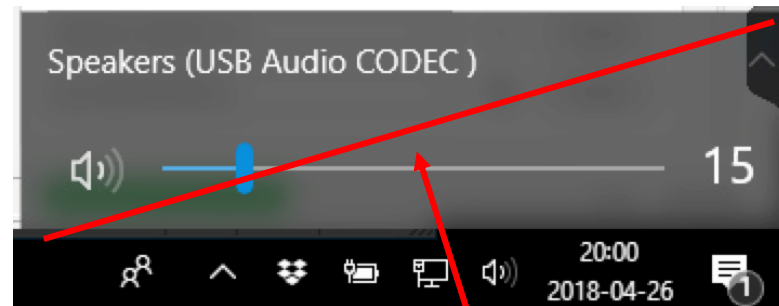
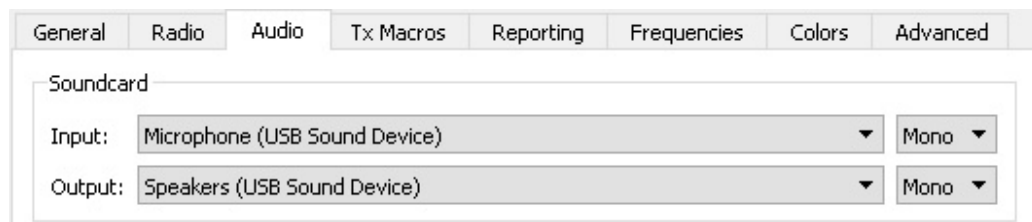
WHO DO YOU TRUST TO MANAGE YOUR GOOGLE CLOUD PLATFORM MIGRATION? Best way to migrate our company to rackspace

Share this page!

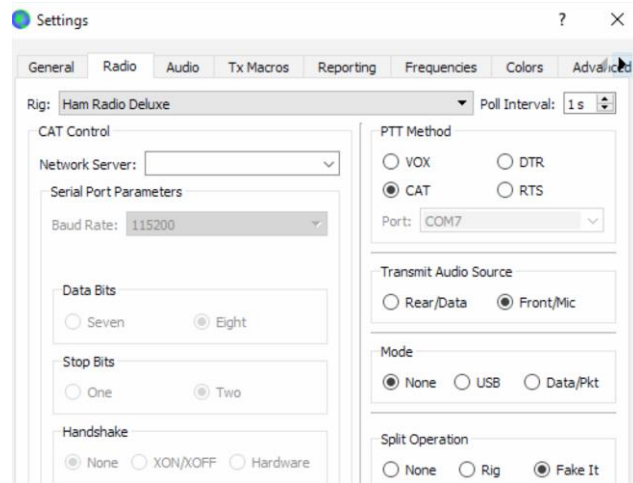
# WSJT-X Setup (IC7300)

## File...Settings

- Be sure to have audio settings match your setup
- Be sure the PC audio remains in the PC
  - Common problem to have PC sounds transmit out
- Set rig control
  - Radio
  - Ham Radio Deluxe
  - (or your rig control)

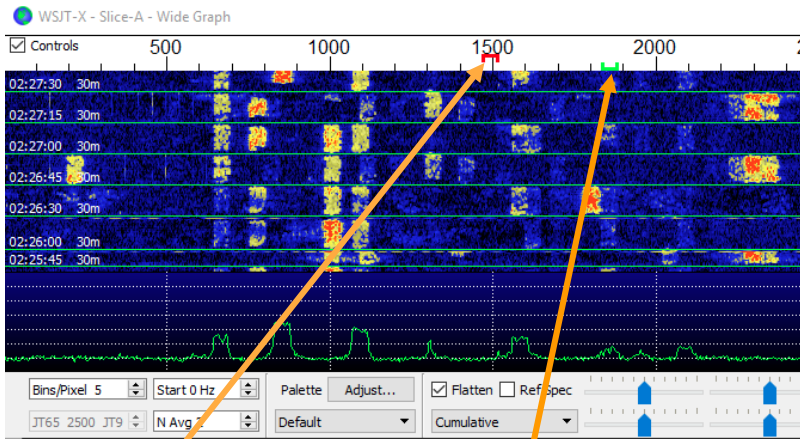


Confirm that windows main sound isn't set to radio's TX input



Delta Time  
FT8 can handle up to about 2.5s

# WSJT-X with QSO



WSJT-X - Slice-A v2.0.1 by K1JT

File Configurations View Mode Decode Save Tools Help

Band Activity					Rx Frequency				
UTC	dB	DT	Freq	Message	UTC	dB	DT	Freq	Message
----- 30m					022415	Tx		1934	~ RY9C W5TR EM12
022715	-22	0.5	509	~ CQ KR7DX DM22	022430	-13	0.6	2068	~ W5TR RY9C -10
022715	-4	0.4	647	~ KI0E W6ZO 73	022445	Tx		1934	~ RY9C W5TR R-13
022715	3	0.4	757	~ CQ N2DME DN40	022500	-15	0.6	2069	~ W5TR RY9C RR73
022715	-8	0.3	1094	~ CQ K1LHJ DM13	022515	Tx		1934	~ RY9C W5TR 73
022715	-3	2.0	1295	~ NO0B N6RNN R-08	022530	-15	0.6	2069	~ WE2DX RY9C -17
022715	-13	0.2	1396	~ CQ N2PEQ FN32	022530	-9	0.2	1834	~ CQ YV5ZV FK60
022715	-15	0.4	1676	~ RO9O K29DX EN61	022551	Tx		1934	~ YV5ZV W5TR EM12
022715	-11	0.3	2226	~ A45XR KD2KW EM13	022600	-13	0.8	1834	~ HC5F YV5ZV FK60
022715	7	0.3	2277	~ A45XR W7MEM DN17	022615	Tx		1934	~ YV5ZV W5TR EM12
022715	3	0.4	2329	~ A45XR W7CT DN41	022700	-10	0.8	1834	~ HC5F YV5ZV R-19
022715	-19	0.4	1187	~ RO9O WA4USA EM75					

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

30m   **10.136 000**   Tx even/1st   Tx 1469 Hz    Hold Tx Freq

-80   -60   -40   -20   0   70 dB

DX Call: YV5ZV   DX Grid: FK60   Rx 1834 Hz   Report -9    Auto Seq    Call 1st

**2019 Apr 07 02:27:40**

Receiving   FT8   Last Tx: YV5ZV W5TR EM12   10/15   WD:5m

1. Shift-click to set TX freq
  2. QSO with CQ double click sets RX
- OR-
2. JAlert double click
  3. Auto Seq can help or you can manually run
  4. I typically work split
    - a. "Hold Tx Freq"
    - b. Avoid QRming

Set band

"Auto" QSO

"Manual" QSO

# JTAlertX

- Helper app
- Shows worked before (gray)
- Allows blocked call signs (black)
- Alerts for various reasons (yellow)
- CQs (green)
- Shows LOTW/eQSL users
- Launch after WSJT

Halt WSJT-X TX	Alt+H
Out of Shack	Alt+S
<input checked="" type="checkbox"/>	Own Call
<input checked="" type="checkbox"/>	CQ and QRZ
	Wanted Callsign
<input checked="" type="checkbox"/>	Wanted US State
	Wanted DXCC
	Wanted Continent
	Wanted CQ Zone
	Wanted Grid
	Wanted Prefix
	Wanted CQ Marathon (2018)
	Decode Keywords
	End of TX/RX period
	Start of WSJT-X TX period
	Rx Frequency
<input checked="" type="checkbox"/>	TX Watchdog
	User Defined Alert
	Filters >
<input checked="" type="checkbox"/>	Show LoTW flags
<input checked="" type="checkbox"/>	Show eQSL flags
	Decoded Callsign Data Tooltip >
	Exit JTAlert

**X** JTAlertX 2.10.15 WE5TR [~,40m,ADIF,#1] (Updates!) | Alerts | Settings | View | Sound ON | ? | 60

▲	KN4DXD - FL	NO3K - GA	WW1I - NH	WY4I - FL	K0KRK - NC	KA9ENO - IN
	* K7ACW	K7VIC - MT	KD9HVT - B4	KC9LFD - WI	* CO8LY	

WB5K            EM13    low hanging dipole        0128    United States

QSO B4    Name    QTH    Grid    Comments    PWR    Time    Country Name

# Mac WSJT-X Operating

(Mac screenshots courtesy of KG5RJR)



3.1-Bridge 3.0.1 by SM0THU - Connected to MacLoggerDX

CQs																		
Time	Call	Area	Name	dB	Freq	Band	Mode	Entity	CQ	ITU	State	IOTA	Grid	LoTW	eQSL	Distance	Bearing	Contine
0057	WIHS		Steve	-24	1971	20M	FT8	United States	5	8	NH		FN33	LoTW	eQSL	1,428 mi	55°	NA
0057	VA7GEM		Barry Michael	-9	2522	20M	FT8	Canada	3	2	BC		CN89		eQSL	1,762 mi	317°	NA
0057	VA3VD		David	-17	316	20M	FT8	Canada	4	4	ON		FN05			1,229 mi	43°	NA
0057	HK3RAY		ROBERTO	-17	787	20M	FT8	Colombia	9	12			FJ2A			2,426 mi	141°	SA
0057	KE4ZMY		NIKOLCE	0	683	20M	FT8	United States	5	8	FL		EL96			1,073 mi	118°	NA
0057	VA7GEM		Barry Michael	-8	2522	20M	FT8	Canada	3	2	BC		CN89		eQSL	1,762 mi	317°	NA
Non CQs																		
Time	Call	Area	Name	dB	Freq	Band	Mode	Entity	CQ	ITU	State	IOTA	Grid	LoTW	eQSL	Distance	Bearing	Contine
0057	K1BZ		David H	-8	2426	20M	FT8	United States	5	8	MO		FM19	LoTW		1,144 mi	64°	NA
0057	WB2HNP		Robert L	0	2127	20M	FT8	United States	5	8	FL		EL98	LoTW	eQSL	969 mi	108°	NA
0057	WC7S		DALE E	-12	2305	20M	FT8	United States	3	6	WY		DN71	LoTW	eQSL	729 mi	321°	NA
0057	WB0HAT		RANDAL G	-16	795	20M	FT8	United States	4	7	SD		EN13			683 mi	356°	NA
0057	K1HTV		RICHARD V	-2	2576	20M	FT8	United States	5	8	VA		FM16	LoTW	eQSL	1,128 mi	67°	NA
0057	KB7OCG		Richard T	-10	1144	20M	FT8	United States	3	6	AZ		DM4			868 mi	269°	NA

WSJT-X connections: 1      CAT connections: 0

WSJT-X v2.0.1 by K1JT - Log QSO

Click OK to confirm the following QSO:

Call: NC7L      Start: 29/05/2019 01:02:30      End: 29/05/2019 01:03:45

Mode: FT8      Band: 20m      Rpt Sent: +02      Rpt Rcvd: -14      Grid:      Name:      Operator:      Rcvd:      Exch sent:      Comments: FT8 Sent: +02 Rcvd: -14

Buttons: Cancel      OK

MacLoggerDX:K5DX:QRZ XML



WSJT-X connections: 1

KEONRY 13°193' 841 mi 2019-05-29 00:57:30

Call KEONRY  
Local ...  
First Elizabeth  
Last A Wilson  
Street  
City PALM BAY  
Country Brevard  
State FL  
Country United States  
Email  
Notes FT8 Sent: -07 Rcvd: -05

Buttons: Look Up Previous Time On Time Off Log Map

Display  
Remove QSO from Selection

- Tag QSL Sent
- Tag QSL Received
- Change Selected
- Update with CallBook
- Delete in Club Log
- Update in Club Log
- Upload to Club Log
- Upload to eQSL
- eQSL Confirmations
- Upload to QRZ
- Update in QRZ
- Upload to LoTW
- LoTW Confirmations
- Delete in HRDLOG
- Update in HRDLOG
- Upload to HRDLOG
- On Air HRDLOG
- Tweet QSO
- Export to ADIF
- Delete
- Open Note File

MacLoggerDX:K5DX:QRZ XML



0059 LU9LTG  
 0059 AK9B  
 WSJT-X connections: 1

BRIAN A -13 1851 20M FT8  
 Gerardo -18 1937 20M FT8  
 RAYMOND E 5 1339 20M FT8

United States 5 8 FL  
 United States 3 6 CA  
 Argentina 13 14  
 United States 4 7 TX

EL87 LoTW eQSL 7,417 mi 236° OC  
 893 mi 115° NA  
 DM0 LoTW eQSL 1,322 mi 276° NA  
 GG02 4,860 mi 146° SA  
 DM61 LoTW 652 mi 260° NA

Channel02182018.csv  
 DCARA Members  
 Current...load.csv

CAT connections: 0

KEONRY Worked 2019-05-29 on 20M FT8

MacLoggerDX:K5DX:QRZ.XML

Radio Rotor

13°/193° 841 mi 2019-05-29 00:59:58 KG5RJR v6.24b9

Radio NOT Connected Filter: 2700 Hz.

7.196.80

VFO A  
 LSB  
 Split Off  
 Keyer

DX Contest

Call KEONRY Time On 2019-05-29 00:59:06  
 Local ... Time Off  
 First Elizabeth MHz 7.196.80 40M Mode LSB  
 Last A Wilson Power 75 RSTS 59TX RSTR  
 Street Grid EN34jw Locator Call.bm  
 City PALM BAY ITU 6... IOTA 10/10  
 County Brevard SOTA SKCC  
 State FL QSL Via LoTW CQ 3,....  
 Country United States DXCC 291 United States  
 Email URL  
 Notes FT8 Sent: -07 Rcvd: -05 DX de



KEONRY - United States

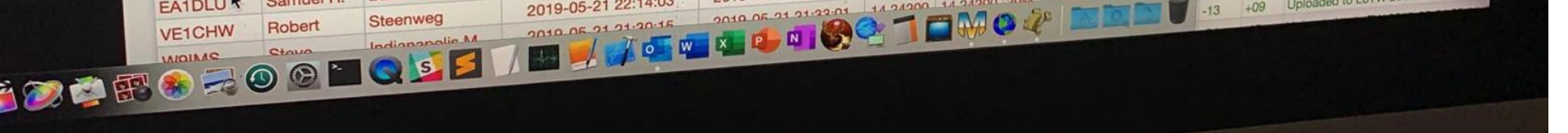
Look Up Previous Time On Time Off Log QSO Beam R + Stacking

Log Map Bands DXClusters Schedules Awards Memories QSL History Labels

QSO with KEONRY logged, 3438 Records in /Users/scottboutwell/Documents/MLDX\_Logs/MacLoggerDX.sql

Q~ Call Sign Q~ Band Q~ Mode Q~ Country Unconfirmed

Call Sign	First Name	Last Name	Time On	Time Off	Rx Freq	TX Freq	Band RX	Band TX	Mode	Power	RST S	RST R	QSL S
KEONRY	Elizabeth	A Wilson	2019-05-29 00:57:30	2019-05-29 00:58:30	14.07489	14.07489	20M	20M	FT8	10	-07	-05	
EA1DLU	Samuel R.	Basanta Barral	2019-05-24 06:32:23	2019-05-24 06:32:29	7.16700	7.16700	40M	40M	LSB	100	59	57	Uploaded to LoTW 2019-05-24 06:35, U
VE1CHW	Robert	Steenweg	2019-05-21 22:14:03	2019-05-21 22:15:31	14.15800	14.15800	20M	20M	USB	100	58	55	Uploaded to LoTW 2019-05-21 22:19, U
WQ1MS	Steve	Indianapolis M	2019-05-21 21:20:15	2019-05-21 21:22:01	14.24200	14.24200	20M	20M	USB	100	58	58	Uploaded to LoTW 2019-05-21 21:33, U
											-13	+09	Uploaded to LoTW 2019-05-21 03:23, U



FT4

WSJT-X - IC7300 - Wide Graph

Controls 500 1000 1500 2000 2500 3000 3500

WSJT-X - IC7300 v2.1.0 by K1JT

File Configurations View Mode Decode Save Tools Help

Band Activity

Band Activity					Rx Frequency				
UTC	dB	DT	Freq	Message	UTC	dB	DT	Freq	Message
003737	-11	-0.2	1140	W5FIX KF6F R-09	003300	-16	-1.4	1540	NEBZ JY51B -17
003737	-15	-0.1	1431	L21KU VE2ZT FN36	003530	-19	0.0	2417	CQ 007B JO11
003737	-4	0.0	1556	CO2VE WB6CZG R CM99	003549	Tx		2465	007B WESTR EM12
003737	-5	-0.0	2498	KC9YR OE1XTU RR73	003615	Tx		2465	007B WESTR EM12
----- 20m -----					003630	-21	-0.0	2417	WESTR 007B -07
003745	-6	-0.3	1429	CQ DX LZ1KU KN32	003645	Tx		2465	007B WESTR R-21
003745	-15	0.0	1689	CQ 5B4AMX KM65	003700	-19	-0.0	2416	WESTR 007B RRR
003745	7	-0.0	2084	AA3B N1EVK R-03	003715	Tx		2465	007B WESTR 73
----- 20m -----					003745	-15	0.0	1689	CQ 5B4AMX KM65
003800	-12	-0.6	1430	VE2DSB LZ1KU -11	003755	Tx		2303	5B4AMX WESTR EM12
003800	1	-0.4	2084	AA3B N1EVK 73	003807	Tx		2303	5B4AMX WESTR EM12

CQ only  Log QSO       Menus

Tx event/lst  
 Tx 2303 Hz  Hold Tx Freq

DX Call: 5B4AMX DX Grid: KM65 Rx 1689 Hz  
 Az: 39 6719 mi Report: -15  
   Auto Seq  Call list

Generate Std Msgs Next Now Pwr  
 5B4AMX WESTR EM12  Tx 1  
 5B4AMX WESTR -15  Tx 2  
 5B4AMX WESTR R-15  Tx 3  
 5B4AMX WESTR RR73  Tx 4  
 5B4AMX WESTR 73  Tx 5  
 CQ WESTR EM12  Tx 6

Tx: 5B4AMX WESTR EM12 **FT4** Last Tx: 5B4AMX WESTR EM12 Z/7.5 WD:5m

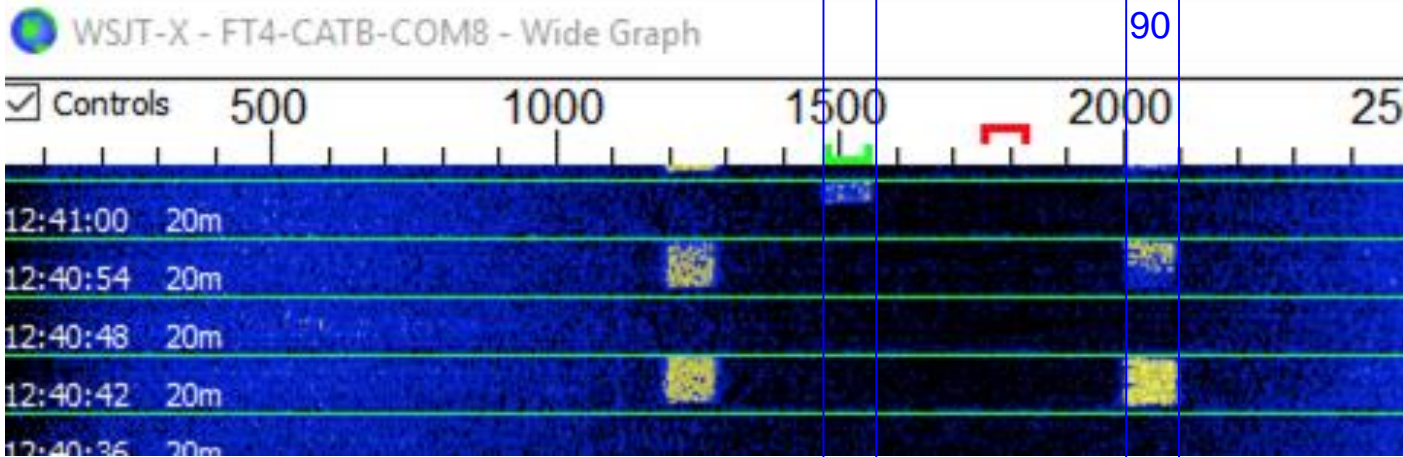
JTAlertX 2.13.8 WESTR [+20m,ACL,#1] [?] | Alerts | Settings | View | Sound ON | ? | 15 12 10

LZ1KU Bulgaria N1EVK - NH U.S.A.

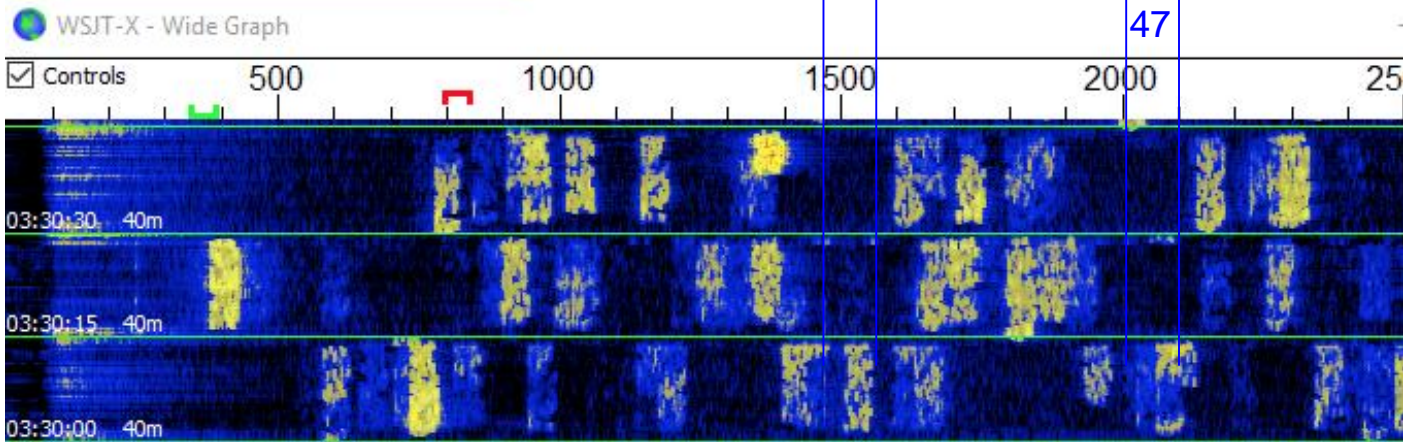
5B4AMX Andrey Si Paphos KM64ox 0037 Cyprus  
 First QSO Name QTH Grid Comments PWR Time Country Name State CQ ITU Cont. QSL

JT65 Band: 160 80 60 40 30 20 17 15 12 10 6 2 # : FT8 Band: 160 80 60 40 30 20 17 15 12 10 6 2 # : ✓ Wrk  
 Callsign: 0 : Callsign: 0 : ✓ Cfm

WE5TR 2019.08.17



6 s cycle - FT4



15 s cycle - FT8

# JS8Call

7.078 000  
2407 Hz

WESTR - EM12MX  
01:36:19  
2019 Apr 20

RX TX TUNE  
SPOT AUTO LOG

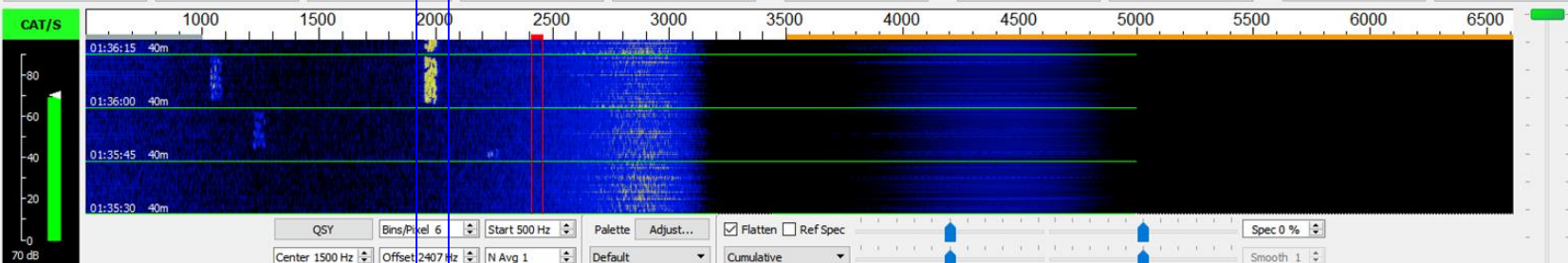
Offset	Age	SNR	Message(s)
1038 Hz	now	-10 dB	KJ7ABG: CQ CQ CQ DN40 ~
1222 Hz	15s	-13 dB	K7NWF: CQCQCQ ~
1956 Hz	now	+03 dB	K15AUX: WESTR
2102 Hz	1m	-07 dB	K7NWF: CQCQCQ ~

01:22:26 - (2157) - WESTR: K15AUX HW CPY? ~  
01:25:14 - (2957) - K15AUX: WESTR HW CPY? ~  
01:25:31 - (2407) - WESTR: K15AUX SNR +11 ~  
01:26:44 - (2957) - K15AUX: WESTR SNR +03 ~  
01:27:16 - (2407) - WESTR: K15AUX I AM RUNNING 40W THX FOR TESTING WITH ME ~  
01:28:29 - (2407) - +10 (3M) ~  
01:31:14 - (2957) - K15AUX: WESTR THANKS THIS IS WORKING! ~  
01:32:14 - (2407) - WESTR: K15AUX ROGER THAT. MY LOGGING PROGRAM KEEPS CHANGING MODE TO DIGU. JS8 IS NOW ACCEPTED ON QRZ BUT NOT ANYWHERE ELSE THAT IVE SEEN. BTU ~  
01:36:14 - (1956) - K15AUX: WESTR ~

★ Callsigns (60)	Age	SNR	Offset	✓	Name	Comment
KF7VUT	5m	-02 dB	2559 Hz			
KG0L	2h	-07 dB	558 Hz			
KG4JXH	1h	-01 dB	1407 Hz			
KG5SPR	1h	-13 dB	2252 Hz			
KG6VQH	56m	-14 dB	1554 Hz			
KG7QCY	12m	+02 dB	2183 Hz			
★ K15AUX	now	+03 dB	1956 Hz			
✎ KJ7ABG	now	-10 dB	1038 Hz			
KK4WTI	40m	-04 dB	1703 Hz			
KM4ACK	55m	-07 dB	2553 Hz			
KM4AZW	12m	-12 dB	1551 Hz			
KN4CRD	19m	-13 dB	1753 Hz			
KT4MT	12m	-16 dB	1637 Hz			

Type your outgoing directed message to K15AUX here.

HB CQ REPLY SNR INFO Saved Directed to K15AUX Deselect Send Halt



JS8Call - CAT-C-COM9 DE KN4CRD (v1.0.0)  
 File Configurations Decode Save Log View Control Help

**7.077 500**  
1907 Hz

**WESTR - EM12MX**  
01:32:52  
2019 Apr 20

RX TX TUNE  
SPOT AUTO LOG

Offset	Age	SNR	Message(s)
2038 Hz	1m	-08 dB	KJ7ABG: NSDWW THX FOR TRYING HOPE CUL ~
2483 Hz	1m	-12 dB	73... JOE RER ~
2694 Hz	15s	-03 dB	...8VYM HE'S GREAT. HEARD ... AIR. MUST SECURE ... NOW. TNX FER QSO 73 SK ~
2957 Hz	1m	+11 dB	KISALX: WESTR. THANKS THIS IS WORKING! ~

01:20:20 - (2957) - WESTR: KISALX HW CPY? ~  
 01:22:26 - (2157) - WESTR: KISALX HW CPY? ~  
 01:25:14 - (2957) - KISALX: WESTR HW CPY? ~  
 01:25:31 - (2407) - WESTR: KISALX SNR +11 ~  
 01:26:44 - (2957) - KISALX: WESTR SNR +03 ~  
 01:27:16 - (2407) - WESTR: KISALX I AM RUNNING 40W THX FOR TESTING WITH ME ~  
 01:28:29 - (2407) - +10 (3M) ~  
 01:31:14 - (2957) - KISALX: WESTR. THANKS THIS IS WORKING ~  
 01:32:14 - (2407) - WESTR: KISALX ROGER THAT. MY LOGGING PROGRAM KEEPS CHANGING MODE TO DIGU. JS8 IS NOW ACCEPTED ON QRZ BUT NOT ANYWHERE ELSE THAT IVE SEEN. BTU ~  
 WESTR: KISALX ROGER THAT. MY LOGGING PROGRAM KEEPS CHANGING MODE TO DIGU. JS8 IS NOW ACCEPTED ON QRZ BUT NOT ANYWHERE ELSE THAT IVE SEEN. BTU

★ Callsigns (59)	Age	SNR	Offset	✓	Name	Comment
KGOL	2h	-07 dB	558 Hz			
KG4JXH	1h	-01 dB	1407 Hz			
KG5SPR	1h	-13 dB	2252 Hz			
KG6VQH	53m	-14 dB	1554 Hz			
KG7QCY	8m	+02 dB	2183 Hz			
★ KISALX	1m	+11 dB	2957 Hz			
KJ7ABG	1m	-11 dB	2038 Hz			
KK4WTI	36m	-04 dB	1703 Hz			
KM4ACK	51m	-07 dB	2553 Hz			
KM4AZW	8m	-12 dB	1551 Hz			
KN4CRD	15m	-13 dB	1753 Hz			
KT4MI	8m	-16 dB	1637 Hz			
NOEOR	1h	-11 dB	1654 Hz			

HB CQ REPLY SNR INFO Saved Directed to KISALX Deselect Sending (3/8) Halt

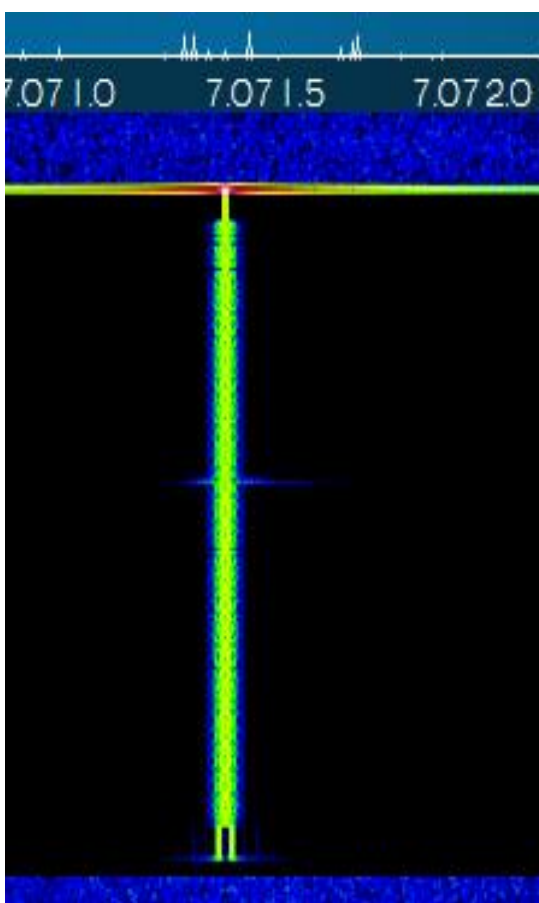
CAT/S

01:32:00 40m  
01:31:45 40m  
01:31:30 40m

QSY Bins/Pixel 6 Start 500 Hz Palette Adjust...  Flatten  Ref Spec  
 Center 1500 Hz Offset 2407 Hz N Avg 1 Default Cumulative Spec 0% Smooth 1

PSK31





sliceA ver4.1.01 / SmartSDR:FLEX-6000 [Slice A] (serial) - WE5TR

File Op Mode Configure View Logbook Help

Spot  RxD  TxID  TUNE

Freq 7071.724 On Off 0004 In 599 Out 599 Cnty/Cntry Notes

Call Op Az

DIGU Filter 2x3 Qth St Pr L

7070.000

-----  
 Read macros from: C:\Program Files (x86)\Fldigi-4.1.01\slicA\macros\macros.mdf  
 -----  
 chal urnel1htB 1X p ea `O h A2CCN de YV4DHS  
 Re  
 or : 599 599  
 Name : Homero.a. Homero qth Valencia Valencie... fkAF  
 BTU.. WA2C

7071.72 ro.yo qth Valencia Valencie... fkAF BS.. WA2C

CQ

3.0 Clear

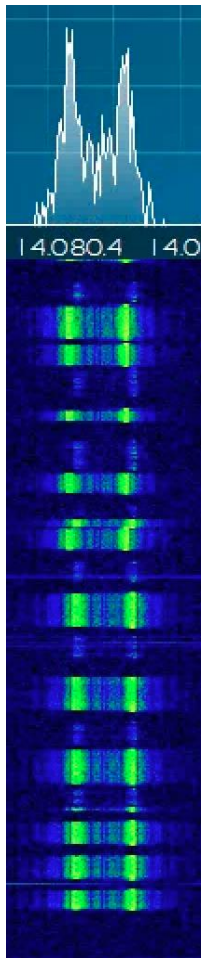
CQ ANS QSO KN SK Me/Qth Brag T/R Tx Rx TX 1

500 1000 1500 2000 2500 3000 3500

WF 0 60 x1 NORM 1724 QSY Store Lk Rv T/R

BPSK31 S/N 23 dB IMD -23 dB -3.0 AFC SQL

RTTY



sliceA ver4.1.01 / SmartSDR:FLEX-6000 [Slice A] (serial) - WE5TR

File Op Mode Configure View Logbook Help

14080.000

Spot RxID TxID TUNE

Freq 14082.050 On Off 0150 In 599 Out 599 Cnty/Cntry Notes

Call Op Az

DIGU Filter 2x3 Qth St Pr L

14082.16 K

14081.96 X

14081.78 X!#;3(BHZVUVWOU/-6;

PQDHACWUZASBZYRNBO5X0HCI YMWDXVJ  
 B  
 6 WT  
 QMINVFSI6-  
 D C& BHQNK8, CQ B QEXWK XFKJML  
 KTR KD6TR

JW  
 LULA  
 HX QMQ  
 KD6TR KD6TR

D/!:&/1: BXI  
 X QVZJPV Z SFBMPG TIM MD 7 7  
 N3QE AD4TJ 7 7 TJ TJ VA AD4TJ  
 LTW6SX W6SX W6SX

I

CQ

-6.0 Clear

CQ ANS QSO KN SK Me/Qth Brag T/R Tx Rx TX 1

500 1000 1500 2000 2500 3000 3500

WF 0 60 x1 NORM 1965 QSY Store Lk Rv T/R

RTTY 45.45/170 s/n -1 dB -3.0 AFC SQL

# WinLink HF

WINMOR Sound Card TNC Ver1.3.13.0 Port:8500 WESTR / K9EYZ-10

Help Hide Send ID

Connection State  
 IFS  
 TCP Capture OK

Transmit  
 0 Avg ACK Percentage 100  
 Xnt Frame:

Receive  
 Rcv Level:   
 Remote Station Offset: -1.4 Hz  
 Rcv Frame: 2 Car 4FSK control

Busy Detector  
 Squelch: 5

Waterfall  
 Waterfall  
 Spectrum  
 Disable

500 Waterfall 2KHz 2500 4FSK / 23

Winmor Winlink Session - WESTR

Exit Settings Switch to Peer-to-Peer Channel Selection Forecast Best chan. Next chan. Hide TNC Start Stop Abort

K9EYZ-10 Center Freq. (kHz): 7102.500 Dial Freq. (kHz): 7101.000 Bearing: 107 Quality: 44

Favorites: KC5TSU @ 3598.000 (99) Select Add to favorites Remove from favorites

00 In: 12/22 Out: 0/0 BPM: 0/0 Tune: -1 Connected - In receiving state

Connected to Winlink RMS: K9EYZ-10 @ 2019/08/08 01:52:16 USB Dial: 7101.000 at 2019/08/08 01:52:16  
 Station Bearing: 107, Range: 826 km

Winlink Express 1.5.22.0 - WESTR

WESTR Settings Message Attachments Move To: Saved Items Delete Open Session: Winmor Winlink Logs Help

In Winmor Winlink session.

	Date/Time	Message ID	Size	Source	Sender	Recipient	Subject
	2019/08/03 15:23	L13G8MNYPOCB	5979	KFSVO	KFSVO	ABSXS...	//WL2K Winlink Wednesday Check-ins - 7/31/2019
	2019/07/30 11:52	UQ4EY33M4L1N	1430	KFSVO	KFSVO	AB5VC...	//WL2K Winlink Wednesday - 7/30/2019
	2019/07/25 05:35	DESILFC7AKEL0	3872	KFSVO	KFSVO	AB5XS...	//WL2K Winlink Wednesday 7/24/2019 - List of check-ins
	2019/07/23 12:59	ASSZPLGPPK39	1041	KFSVO	KFSVO	AC5EZ...	//WL2K Winlink Wednesday 7/24/2019
	2019/07/09 12:28	IC56WH31XQ56	1076	KFSVO	KFSVO	K8AMH...	//WL2K Winlink Wednesdays

Message ID: L13G8MNYPOCB  
 Date: 2019/08/03 15:23  
 From: KFSVO  
 To: ABSXS; AC5EZ; AF4B; K5AJJ; K5ANP; K5EMB; K5JCE; K5JLG; K5P4V; K5QOI; K5TRK; K5YE; K5YFO; K5YK; K5NFT; K5SFB; K5LL; K5MAY; K5TSU; K5DZV; K5SDK; K5JTN; K5GUY; K5DTP; K5EFO; K5SIR; K5EFO; K5SUF; K5LD; K5SMU; K5SAM; K5GSI; K5MWW; K5SOB; K5QBI; K5ARJ; K5GLE; K5SBI; K5SFD; N5DCA; N5IMS; N5REB; N5TIM; N5ROI; N5JM; W5TE; W5CID; W5GWT; W5DTG; W5HRC; W5MCT; W5MDB; W5OKC; W5OYU; W54J; W5SNV; W5BYO; WESTR; A5OYV; K5AGO; K5IMO; K5LKR; K5TVV; K5WXR; K5AMH; K5DCD; K5YB; K5JSE; K5SNB; K5SLZ; K5OMH; K5SOB; K5SBI; K5SVO; K5SBC; K5GDM; K5MCC; K5QBI; K5SW; K5EVG; N5JT; N5KR; N5RDM; N5TIM; N5TC; W5DTX; W5OBN; W5RPS  
 Cc: k5vo@arrl.net  
 Source: KFSVO  
 Downloaded-from: Telnet:CMS-SSL  
 Subject: //WL2K Winlink Wednesday Check-ins - 7/31/2019

I apologize for the delay in sending the results. My wife was out of the country and returned on Thursday. Of course I had to make sure the house was clean, plus I had to work, and I didn't want to spend either of the first two nights she was home by being on a computer. For those of you new to the net, I try to send the results back either on Thursday or Friday, depending on what all I have going on.

We had a record number of check-ins for this week. Once again, thank you to everyone who did check in. I do enjoy reading the comments on

WESTR-AG  
 LAN None  
 Hustler  
 no2  
 no3  
 no4  
 no5  
 no6  
 no7

# Check Your Propagation

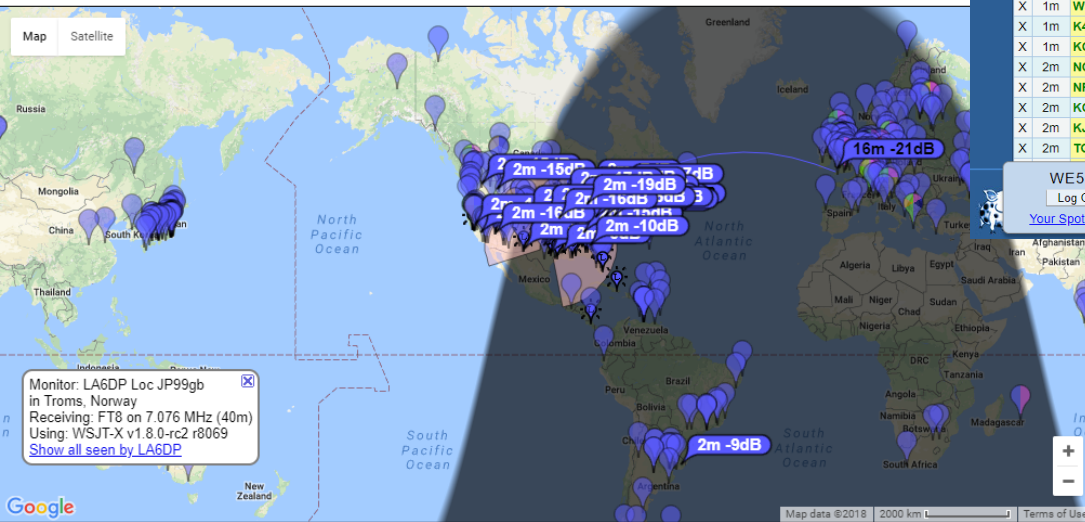
Display Reception Report X

Secure | <https://pskreporter.info/pskmap?callsign=we5tr&search=Find>

On 40m show signals sent/rcvd by the callsign we5tr using FT8 over the last 15 minutes

[Display options](#) [Permalink](#)

Monitoring WE5TR (last heard 2 mins ago). Automatic refresh in 3 minutes. Small markers are the 69 transmitters (show logbook) heard (distance chart) at W reports, 5 countries last 24 hours, 7048 reports, 20 countries last week). There are 529 active FT8 monitors on 40m. [Show all FT8 on all bands](#) [Show all on all bands](#) [Legend](#)



System statistics. Comments, problems etc to [Philip Gladstone](#). [Online discussion](#) of problems/issues. Reception records: 3206,871,870

WE5TR 2019.08.17

HamSpots [Callsign History X]

Secure | <https://hamspots.net/history/>

Information Settings Searches Digital Modes LOTW & eQSL BANDS My Spots Online? Call: Search

SF173, A, S, K, 2 Online : 72:21:25 \*\* CALLSIGN HISTORY \*\* 407 Online 01:07:10 : UTC

Auto refresh every 60 secs - Next refresh in 25 secs - Refresh Now

WE5TR : Calls You Spotted										WE5TR : Your Call Spotted									
S	Age	DX	St	Country	Bnd	Mode	Sig	DT		S	Age	Spotter	St	Country	Bnd	Mode	Sig	DT	
X	1m	WV2NY	NY	United States	40	FT8	-17	0.1		X	1m	AE8S	OH	United States	40	FT8	-20	0.0	
X	1m	VE3KQK	Canada	40	FT8	-15	2			T	1m	S51CP		Slovenia	40	FT8	-15	-0.2	
X	1m	N4JAH	GA	United States	40	FT8	-14	0.3		X	1m	K4DAY	TN	United States	40	FT8	00	0.0	
X	1m	A14FR	FL	United States	40	FT8	-09	0.0		X	1m	W3IH	NM	United States	40	FT8	-07	0.1	
X	1m	KE4JD	KY	United States	40	FT8	-05	0.1		X	1m	N4CLY	NC	United States	40	FT8	-12	0.5	
X	1m	NO0C	NE	United States	40	FT8	-13	0.1		T	1m	N1CNG	MA	United States	40	FT8	-09	0.0	
X	1m	VA3MJR	Canada	40	FT8	-16	0.1			X	1m	AB4BC	NC	United States	40	FT8	-12	0.1	
X	1m	K9GL	WI	United States	40	FT8	-03	0.1		X	1m	N4JAH	GA	United States	40	FT8	-15	0.1	
X	1m	AE4TI	NC	United States	40	FT8	-09	0.0		X	1m	WA7ZGZ	AZ	United States	40	FT8	-03	0.0	
X	1m	W9YK	IL	United States	40	FT8	-06	0.1		T	1m	TG9AJR		Guatemala	40	FT8	-08	0.4	
X	1m	K4DAY	TN	United States	40	FT8	-04	0.2		X	1m	W0PD	TX	United States	40	FT8	-11	0.1	
X	1m	KC5ZZX	OK	United States	40	FT8	+3	0.1		X	1m	K3DFL	PA	United States	40	FT8	-16	0.1	
X	2m	NO0C	NE	United States	40	FT8	-12	0.1		X	1m	KE5TD	AR	United States	40	FT8	-06	0.3	
X	2m	NF3R	PA	United States	40	FT8	-10	0.2		X	1m	KF2E	NJ	United States	40	FT8	-23	0.3	
X	2m	KO4O	AL	United States	40	FT8	-08	0.1		X	1m	N7ETI	OR	United States	40	FT8	-17	0.1	
X	2m	KJ4LAB	AL	United States	40	FT8	-13	0.1		X	1m	KJ3L	PA	United States	40	FT8	-15	0.1	
X	2m	TG9NSJ		Guatemala	40	FT8	-16	0.1		X	1m	K6GB	CA	United States	40	FT8	-11	0.1	

WE5TR Log Out Search Callsign spot history  
Callsign: Search

[Your Spot History](#) [Settings](#)

© 2018, HamSpots by VK3AMA

- JTAlert updates HamSpots
- WSJT-X updates PSKReporter

# References

## Operating:

- WSJT-X
  - Windows: <https://physics.princeton.edu/pulsar/k1jt/wsjsx-2.1.0-win32.exe>
  - Mac: <https://physics.princeton.edu/pulsar/k1jt/wsjsx-2.1.0-Darwin.dmg>
  - User Guide: <https://physics.princeton.edu/pulsar/k1jt/wsjsx-doc/wsjsx-main-2.1.0.html>
- BktTimeSync (Win)
  - Win: <https://www.maniaradio.it/en/bkttimesync.html>
- JTAlertX (Win)
  - Win: [https://dnl.hamapps.com/JTAlert/HamApps\\_JTAlert\\_2.14.2\\_Setup.exe](https://dnl.hamapps.com/JTAlert/HamApps_JTAlert_2.14.2_Setup.exe) (be sure to download support packages too)
- JT-Bridge (Mac)
  - Mac: <https://jt-bridge.eller.nu/download/JT-Bridge.app-3.0.1.zip>

## Logging:

- N3FJP ACLog (commercial) - 45 day trial
  - Win: <http://n3fjp.com/programs/ACLOGINST.exe>
- MacLoggerDX - 15 minute trial (unlimited runs of 15 min)
  - Mac: <http://www.dogparksoftware.com/files/MacLoggerDX.dmg>

## References:

- Facebook FT8/FT4/JT9: WSJT 2-Way Narrow Modes For Amateur Radio
  - <https://www.facebook.com/groups/FT8.Digital.Mode/>
- FT8 Manual
  - [http://www.g4ifb.com/FT8\\_Hinson\\_tips\\_for\\_HF\\_DXers.pdf](http://www.g4ifb.com/FT8_Hinson_tips_for_HF_DXers.pdf)

# Just Interesting

- I try to make sure other station has a clean end
- I'll try ~3 times then wait

173015	-12	0.2	1288	~	CQ AB5ZR DM77	~U.S.A.
173036	Tx		932	~	AB5ZR WESTR EM12	
173100	Tx		932	~	AB5ZR WESTR EM12	
173130	Tx		932	~	AB5ZR WESTR EM12	
173345	-9	0.2	1151	~	WE5TR AB5ZR +06	
173407	Tx		932	~	AB5ZR WESTR R-09	
173415	-10	0.2	1151	~	WE5TR AB5ZR +06	
173430	Tx		932	~	AB5ZR WESTR R-10	
173500	Tx		932	~	AB5ZR WESTR R-10	
173515	-10	0.2	1151	~	WE5TR AB5ZR RRR	
173536	Tx		932	~	AB5ZR WESTR 73	
173545	-14	0.2	1151	~	WE5TR AB5ZR RRR	
173607	Tx		932	~	AB5ZR WESTR 73	
173615	-7	0.2	1151	~	WE5TR AB5ZR RRR	
173630	Tx		932	~	AB5ZR WESTR 73	
173645	-5	0.2	1151	~	WE5TR AB5ZR 73	
173745	-8	0.2	1151	~	CQ AB5ZR DM77	



File Configurations View Mode Decode Save Tools Help

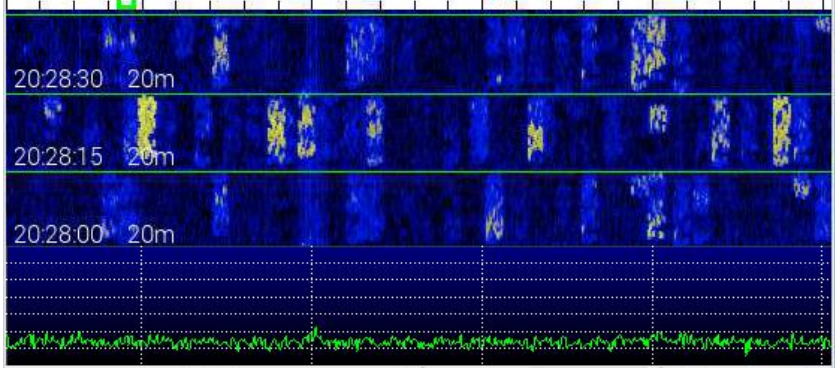
Band Activity

UTC	dB	DT	Freq	Message	UTC	dB
202815	-3	0.5	1638	~ CQ N2KI FN21	202130	-17
202815	-17	1.9	1867	~ PY2RTB W7IMP EL99	202800	-12
202815	-4	0.6	2179	~ CQ K10F FN31		
202815	-15	0.7	2263	~ CQ K9IG EM69		
202815	1	0.6	2358	~ CT1IUA N20ML R-17		
202815	-8	0.7	2418	~ CQ VE6BTC D033		
202815	-9	0.5	448	~ N8NVI W3SW FN22		
202815	-14	1.6	1666	~ XE2AU K9WWW CN88		

CQ only

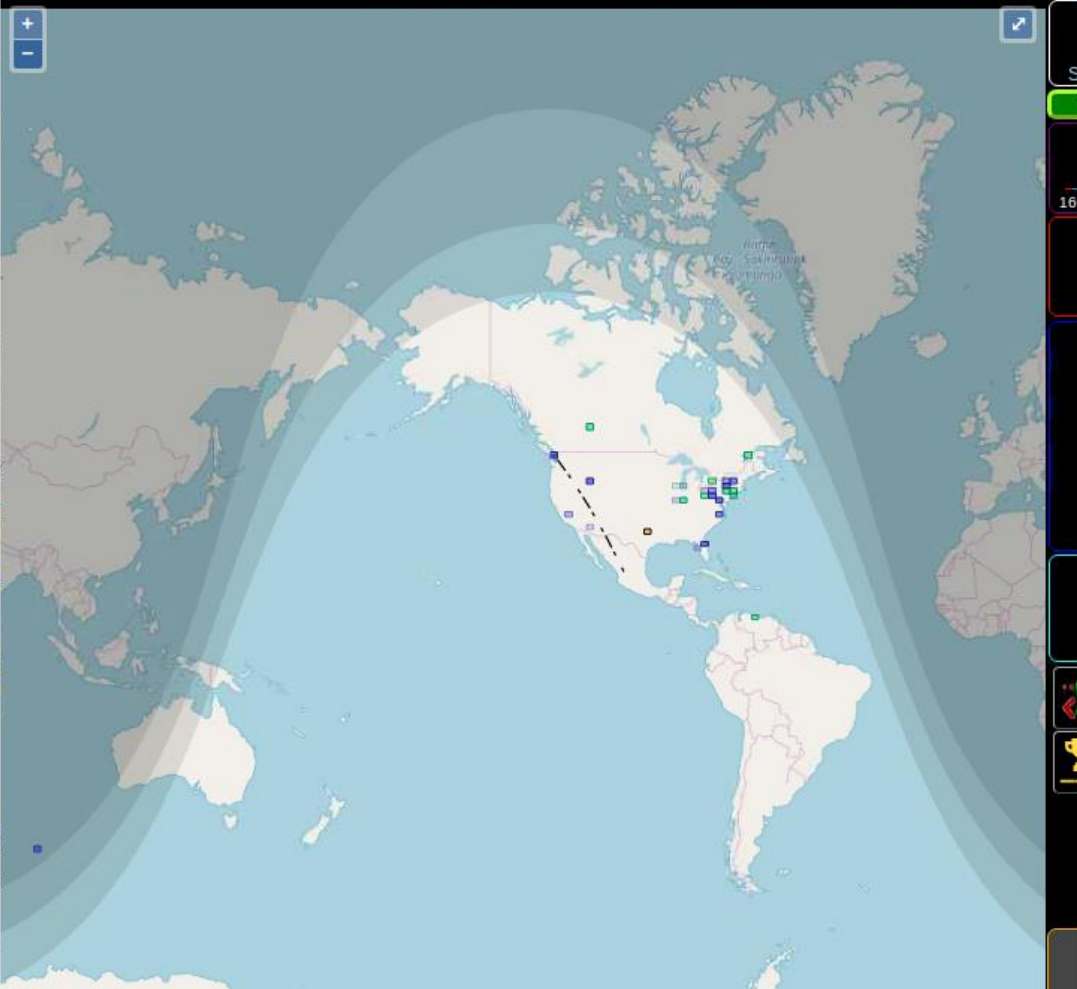
WSJT-X - Wide Graph

Contro500 1000 1500 2000 2500



Bins/Pixel 6 Start 100 Hz Palette Adjust...  Flatten  F  
 JT65 2500 JT9 N Avg 1 Default Cumulative

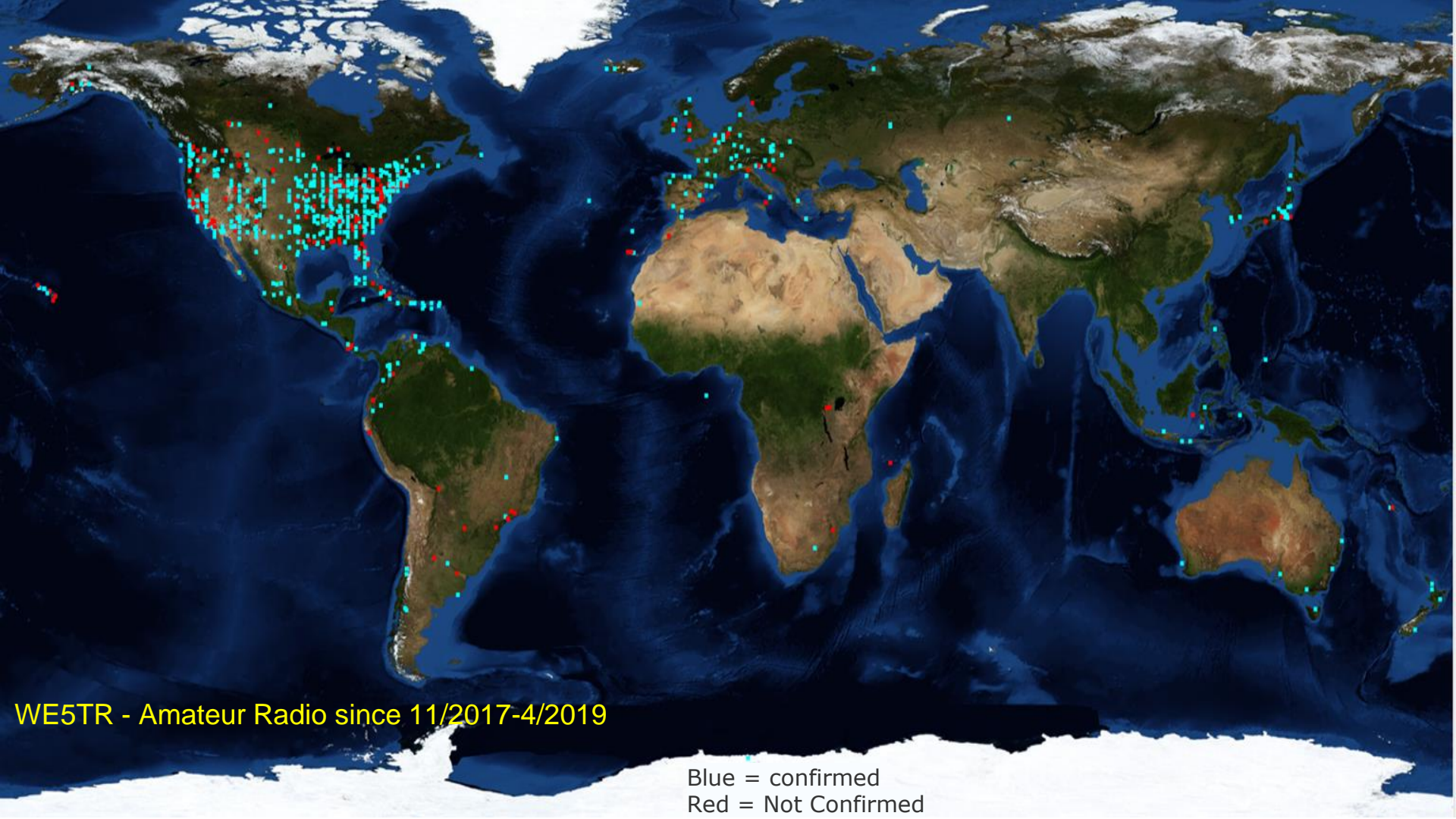
Reading samples in async mode...



Dipole (80m)

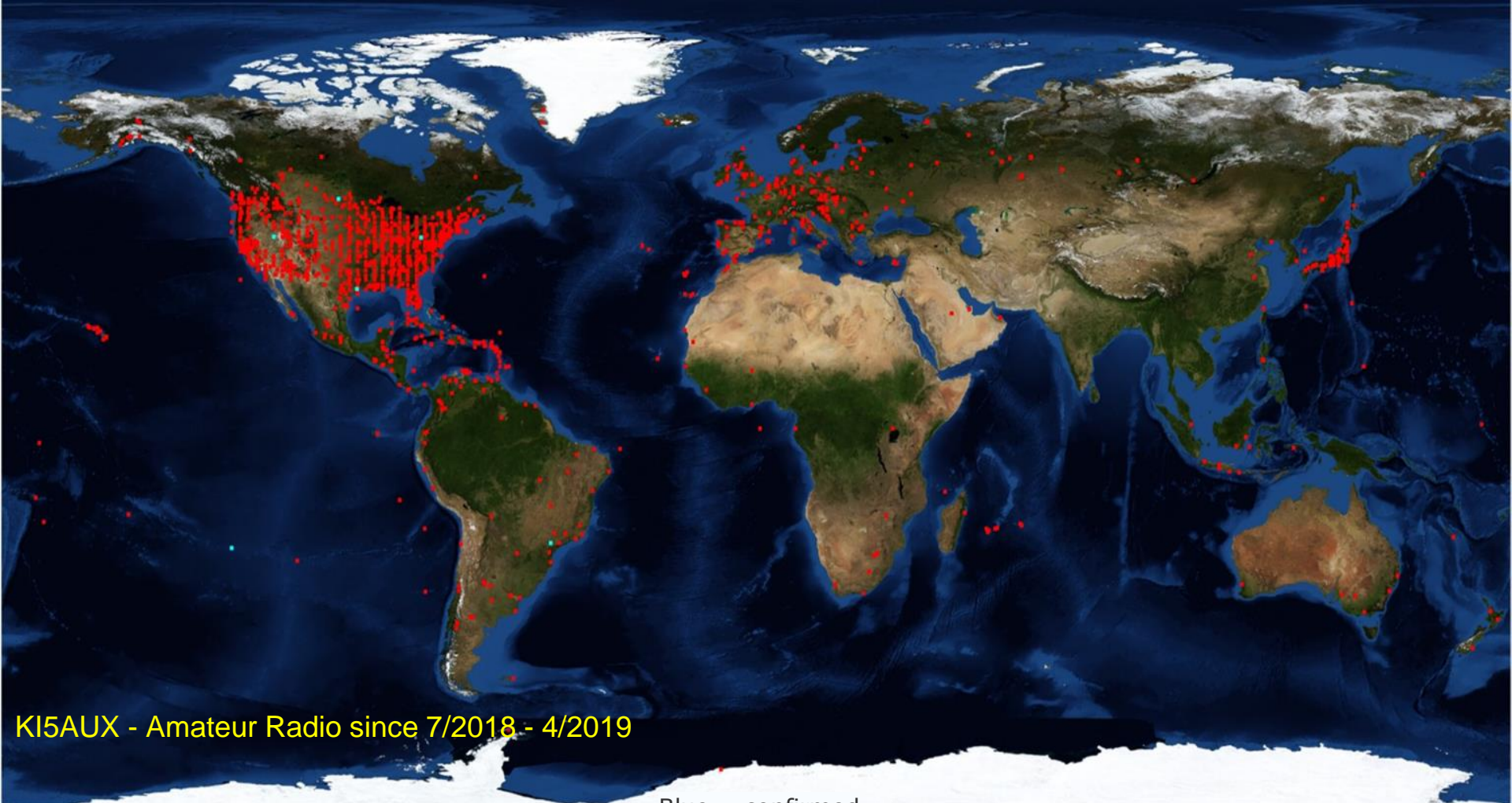
Vertical (40-6m)





WE5TR - Amateur Radio since 11/2017-4/2019

Blue = confirmed  
Red = Not Confirmed



KI5AUX - Amateur Radio since 7/2018 - 4/2019

Blue = confirmed  
Red = Not Confirmed