

Introduction to FT8



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What is FT8?

- ❑ FT8 is a digital mode that uses the sound card in your computer or radio
- ❑ All contacts are made from your keyboard/mouse, no microphone or Morse code key needed
- ❑ It was developed by [Joe Taylor](#), [W1JT](#), Nobel Physics laureate
- ❑ There are related protocols that work with even lower signal levels but take a longer time. Example: Moon bounce
- ❑ FT8 is a tradeoff that allows making contacts with weak signals (-20dB) and in a short time (60 seconds best case)

Why Would You Use It?

- ❑ All contacts are made from your keyboard/mouse, no microphone or Morse code key needed
 - ❖ No “mic fright”
- ❑ Since it works with very weak signals, you can use simple antennas
- ❑ It works in the presence of RF noise (QRM & QRN) so the impact of your neighbors LED lights, grow lights, ... is lessened
- ❑ A full contact takes one-minute best case which increases your QSO rate
- ❑ It is VERY popular, lots of stations all over the world are on 24/7



Hardware You Need

❑ An HF transceiver

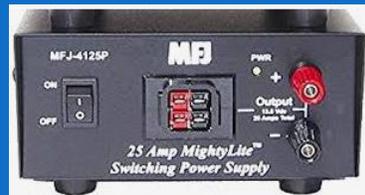
- ❖ Older HF rigs work just fine. There is a robust used market
- ❖ Generally people run 50Watts which is half power for a typical HF rig



- ❖ Newer models have the sound card built into the radio

❑ A power supply for the HF transceiver

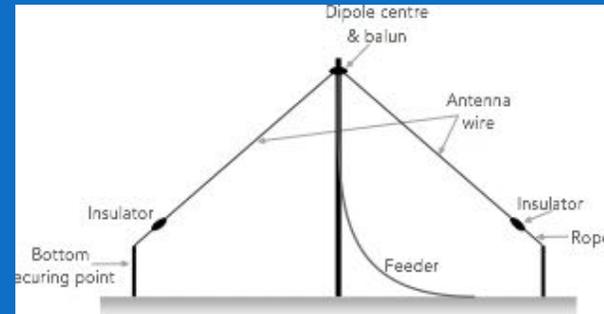
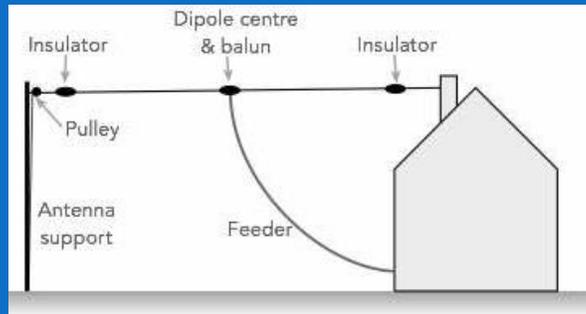
- ❖ “12Vdc” (really 13.7Vdc) at 23 Amps. Many used supplies are available.



Hardware You Need

❑ Coax and antenna

- ❖ Dipoles, inverted Vees, verticals all work well. You can build them for next to nothing. Plenty of help available from our members.
- ❖ There are so many antennas that it is impossible to list them all. Don't let the need for an antenna scare you off



❑ A computer or laptop

- ❖ A Windows 7, 8 or 10 computer should be fine. Increasing memory to 6 or 8GB will help. The larger the display the better.
- ❖ You need at least 2 USB ports

Hardware You Need

- ❑ An audio interface from the computer to the radio
 - ❖ Some radios have a sound card built in that uses a USB port
 - ❖ If not there are interfaces that use a USB port
 - Signalink USB
 - MFJ (multiple models)
 - Rig Blaster (multiple models)



- ❑ A way for the computer to control the radio
 - ❖ Send band & frequency changes to the radio
 - ❖ Read band and frequency from the radio
 - ❖ These are implemented via a USB port or a Com port
 - ❖ You do not need this device if you are willing to enter this info into your logging program



TS-450

Software You Need

- ❑ It is all FREE, yes FREE!

- ❑ Dimension 4
 - ❖ FT8 requires precise time sync, Dimension 4 provides that service

- ❑ WSJT-X
 - ❖ The main program
 - ❖ Performs the coding and decoding for every QSO in the sound card's spectrum
 - ❖ Shows stations, QSO's audio waterfall

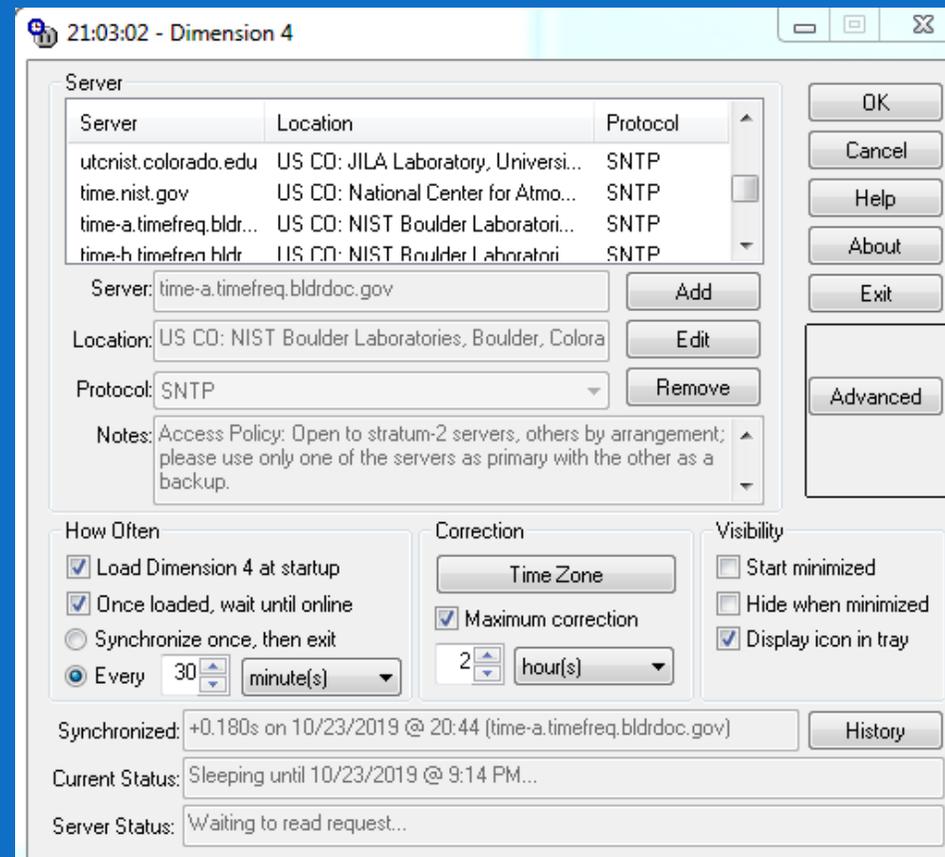
- ❑ Log4OM Logging program
 - ❖ Keeps a log of your contacts and their details
 - ❖ Tracks QSLs and awards

- ❑ JTAlert
 - ❖ A helper program
 - ❖ Interfaces to many logging programs
 - ❖ Generates alerts for countries, states, call signs, grid squares, etc

Software You Need

❑ Time synchronization

- ❖ FT8 requires precise time sync, Dimension 4 provides that service
- ❖ Requires an Internet connection



Software You Need

❑ WSJT-X

- ❖ This is the main program, it does the coding, decoding and timing. Plus much more.

WSJT-X v2.1.0 by K1JT

File Configurations View Mode Decode Save Tools Help

Band Activity					Rx Frequency				
UTC	dB	DT	Freq	Message	UTC	dB	DT	Freq	Message
210315	-4	0.1	3138	AK4FL AD5AL EM89	205545	-7	-1.8	1840	AI4FR PJ7PL -07
210315	-5	0.3	1086	KB2M KD5QHV 73	205600	9	0.1	1839	PJ7PL WA2HIP -16
210315	-21	0.0	1434	CQ W5MRE EM54 U.S.A.	205600	0	-0.0	1844	PJ7PL KA5GIS EM46
210315	-5	0.2	2199	JA8DKJ KN9C EM69	205615	-1	-1.8	1840	AI4FR PJ7PL -07
210315	-10	-0.1	2187	WA6YOU KW0G 73	205630	11	0.1	1839	PJ7PL WA2HIP -16
----- 20m -----					205630	3	0.0	1845	PJ7PL KA5GIS EM46
210330	-5	0.2	1839	FJ7PL W6QUV DM79	205645	-5	-1.8	1840	AI4FR PJ7PL RR73
210330	-10	0.2	555	CQ WP4IRV FK67 CQ Zone 8	205700	6	0.1	1839	PJ7PL WA2HIP -16
210330	-15	0.2	667	VK7XX KA4M EM72	205715	-2	-1.8	1840	KOTRL PJ7PL -06
210330	6	0.1	848	CE5MMS AK4FL EM89	205730	4	0.1	1839	PJ7PL WA2HIP -16
210330	5	0.1	900	CQ K8BL EN91 U.S.A.	205745	-8	-1.8	1840	KOTRL PJ7PL RR73
210330	13	0.1	992	W0VXV WA2HIP -15	205815	-9	-1.8	1840	CQ PJ7PL FK88 CQ Z
210330	5	0.2	1042	CQ KC1DFB FN43 CQ Zone 5	205830	15	0.2	1841	PJ7PL KU1RT FN32
210330	-16	0.1	1185	CQ N7JFF DN46 CQ Zone 3	205845	-9	-1.8	1840	WB4GLI PJ7PL -11
210330	-20	0.7	1303	N1SER LU9DCB -16	205915	-15	-1.8	1840	WB4GLI PJ7PL RR73
210330	-12	0.2	1361	KC2EZJ KC4CL EL89	205930	3	0.2	1840	PJ7PL KN9C EM69
210330	-5	0.1	1493	JA6VZ VE9CD R-09	205945	-3	-1.8	1840	CQ PJ7PL FK88 CQ Z
210330	-3	0.2	1541	CX7BBR K4KE EM78	210000	4	0.2	1840	PJ7PL KN9C EM69
210330	9	0.1	1788	PJ7PL KG5WTU EM35	210015	-2	-1.8	1840	N4UQ PJ7PL R-02
210330	6	-0.0	1917	PJ7PL N6MDA DM04	210045	4	-1.8	1840	N4UQ PJ7PL R-02
210330	-17	-0.1	2089	CQ JA VO2NS CQ Zone 2	210115	2	-1.8	1840	N4UQ PJ7PL 73
210330	-14	0.2	717	JE3RNC KF6JXM DM13	210145	-5	-1.8	1840	W4MG PJ7PL -02
210330	-4	0.1	804	CQ W4IOP FM02 CQ Zone 5	210200	-6	0.1	1840	PJ7PL KOMBC EM20
210330	-8	0.2	880	KI7URL KR7DX RR73	210215	-2	-1.8	1840	W4MG PJ7PL RR73
210330	-18	0.1	1349	J13MJK AI2I FM29	210245	0	-1.8	1840	W8QBD PJ7PL -12
210330	-4	-0.3	1824	PJ7PL W8QBD R-04	210330	-5	0.2	1839	FJ7PL W6QUV DM79
210330	-3	0.1	1898	CQ K54OT EM83 CQ Zone 5					

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

20m S 14.074 000 Tx even/1st Tx 1017 Hz Hold Tx Freq Rx 1848 Hz Report -8 Auto Seq Call 1st

DX Call: S79VU DX Grid: Lookup Add

2019 Oct 23 21:03:49

Generate Std Msgs Next Now Pwr

S79VU WB4EHG EL96	<input checked="" type="radio"/>	Tx 1
S79VU WB4EHG -08	<input type="radio"/>	Tx 2
S79VU WB4EHG R-08	<input type="radio"/>	Tx 3
S79VU WB4EHG RR73	<input type="radio"/>	Tx 4
S79VU WB4EHG 73	<input type="radio"/>	Tx 5
CQ WB4EHG EL96	<input type="radio"/>	Tx 6

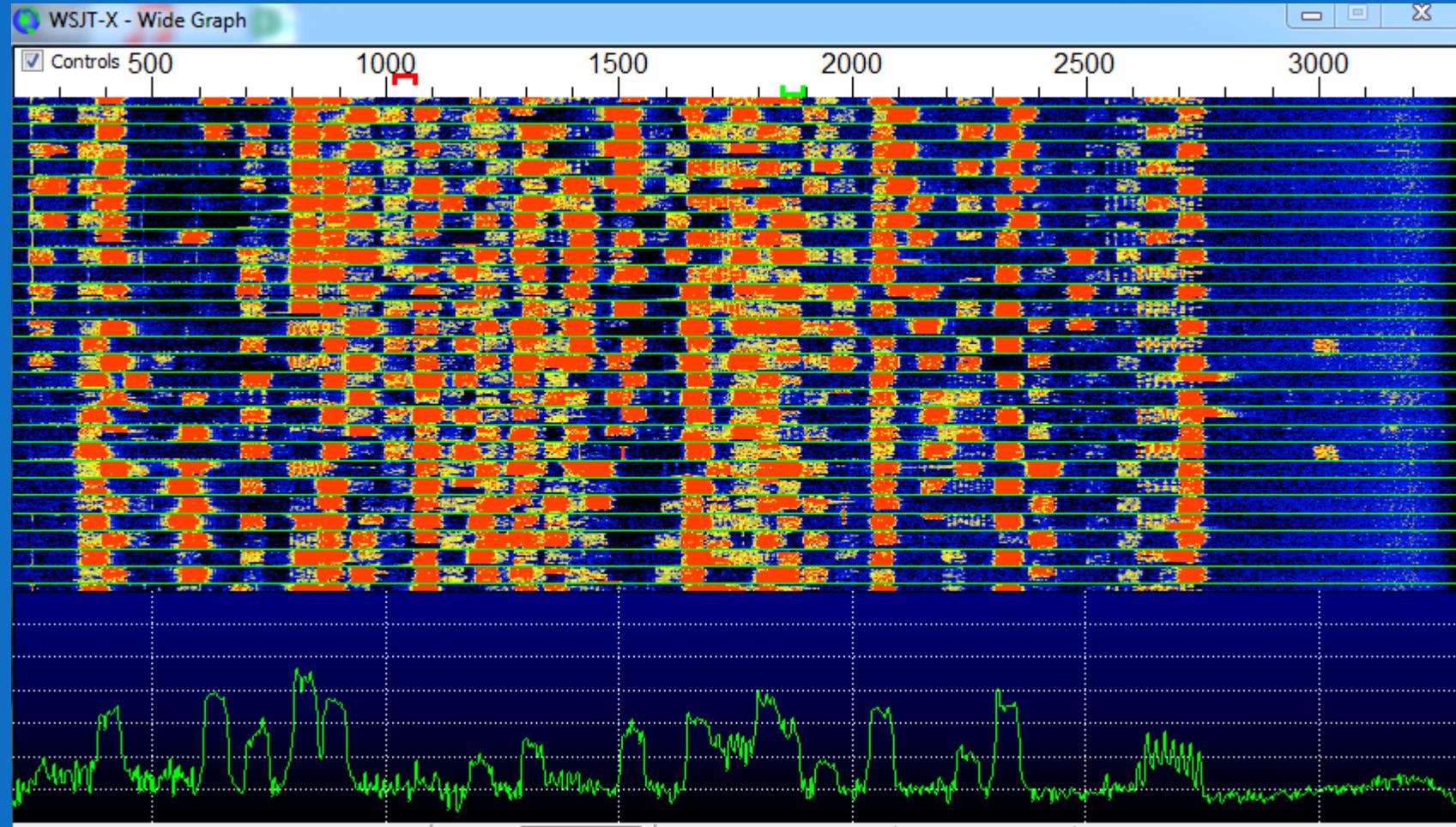
Receiving FT8 Last Tx: S79VU WB4EHG EL96 4/15 WD:0m



Software You Need

❑ WSJT-X

- ❖ Also shows the audio spectrum
- ❖ Frequency increases from left to right
- ❖ The top is a waterfall. Each column is a QSO. Bright colors are stronger signals
- ❖ The bottom shows the instantaneous amplitude of each signal



Software You Need

❑ JTAAlert

- ❖ A helper program
- ❖ Interfaces to many logging programs
- ❖ Generates alerts for countries, states, call signs, grid squares, etc
- ❖ Shows details about each station decoded in the previous 15 sec period

The screenshot shows the JTAAlert 2.14.5 software interface. The main window displays a grid of call signs and their corresponding locations. The call signs are arranged in a grid, with some highlighted in yellow and others in red. The locations are listed below each call sign. The interface also includes a menu bar, a toolbar, and a status bar.

Call Sign	Location
WP4IRV	Puerto Rico
KA4M - AL	U.S.A.
KF6JXM - CA	U.S.A.
* K8BL - OH	U.S.A.
WA2HIP - B4	U.S.A. - ME
KC1DFB - NH	U.S.A.
WA9TDQ - IN	U.S.A.
KC4CL - FL	U.S.A.
VE9CD	Canada
N5SD - KS	U.S.A.
W8QBD - FL	U.S.A.
N6MDA - CA	U.S.A.
K4KE - KY	U.S.A.
KC1CXP - NH	U.S.A.
* YV5DRN	Venezuela
KW0G - NE	U.S.A.
K7AOI - WA	U.S.A.
K3NDM - MD	U.S.A.
* IK4LZH	Italy
WV8DOH - WV	U.S.A.
W6QUV - CO	U.S.A.
* KS4OT - GA	U.S.A.
KZ4KX - KY	U.S.A.
LU8EX	Argentina

Below the grid, there is a form for entering station details:

S79VU Ravi Shar Mobile: +248 : LI75rk 0.3 1939 Seychelles 39 53 AF Q

New Band Name QTH Grid Comments PWR Time Country Name State CQ ITU Cont. QSL

FT8 Band : 160 80 60 40 30 20 17 15 12 10 6 2 # : FT4 Band : 160 80 60 40 30 20 17 15 12 10 6 2 # : ✓ Wrk
Callsign : □ ✓ 1 : Callsign : U : ✓ Cfm

Software You Need

Log4OM

- ❖ A free logging program
- ❖ Very capable, I like it
- ❖ Downloads from popular on-line loggers
- ❖ Tracks QSLs
- ❖ Tracks awards
- ❖ Integrated spotting
- ❖ Usable for all modes

Log4OM [User Profile: na4dc first session] [Solar data info K: 1 A: 3 SFI: 66 Sunspot: 0]

File QSO Manager QSL tools Radio Utilities Settings Help

Call sign: [] Name: [] Sent: 59 Rcvd: 59

QSO info (F1) Country IOTA SOTA (F2) Club and Awards (F3) Contest (F4) Extended info & QSL (F5) SAT/Prop (F6)

Comment: [] Note: [] Mode: SSB TX Power: 100.000 Band: 20m

Start: 10/23/2019 21:18:43 End: 21:18:43

QSO Information (F7) Recent QSO (F8) Cluster (F9) Cluster Scanner (F10) Browser (F11)

Call sign	QSO date	QSO start time	Band	Mode	Country	State	RST sent	RST rcvd	Operator
4L8A	10/20/2019	18:53:00	20m	FT8	Georgia		-09	-14	WB4EHG
KD2QPU	10/20/2019	18:40:15	20m	FT8	United States	NY	+00	+01	WB4EHG
EA8AFB	10/20/2019	18:30:00	20m	FT8	Canary Is.		-18	-09	WB4EHG
W3KM	10/20/2019	18:24:00	20m	FT8			-03	-04	WB4EHG
ND8G	10/20/2019	18:14:00	20m	FT8	United States	KY	-14	-02	WB4EHG
EA3EW	10/20/2019	18:13:00	20m	FT8	Spain		-18	-11	WB4EHG
AB2EZ	10/20/2019	18:06:30	20m	FT8	United States	NJ	-11	+03	WB4EHG
PD1EVP	10/20/2019	17:59:00	20m	FT8	Netherlands		-16	-04	WB4EHG
EA7ZY	10/20/2019	17:57:45	20m	FT8	Spain		-09	-08	WB4EHG
M0URL	10/20/2019	17:54:30	20m	FT8	England		-14	-04	WB4EHG
KC3AHR	10/20/2019	17:46:00	20m	FT8	United States	PA	-03	+01	WB4EHG
KD8MEY	10/20/2019	17:40:00	20m	FT8	United States	MI	-09	-11	WB4EHG
EA5GDY	10/20/2019	17:20:00	20m	FT8	Spain		-08	-19	WB4EHG
F5RMK	10/20/2019	17:17:15	20m	FT8	France		-08	-24	WB4EHG
IK8WJZ	10/20/2019	17:12:00	20m	FT8	Italy		-03	-16	WB4EHG
KA2KAR	10/20/2019	17:09:00	20m	FT8	United States	NJ	-01	+01	WB4EHG
N3NVA	10/20/2019	17:07:15	20m	FT8	United States	PA	+05	-06	WB4EHG
OO8O	10/20/2019	16:58:15	20m	FT8	Belgium		-11	-19	WB4EHG
W3KM	10/20/2019	16:49:15	20m	FT8	United States	PA	+02	-08	WB4EHG
TI2LX	10/20/2019	16:33:15	20m	FT8	Costa Rica	AI	-09	-09	WB4EHG
RA1AOB	10/20/2019	16:12:00	20m	FT8	European Russia		+02	-09	WB4EHG

Distance: 0 Mi

SP: [] Country: [] LP: []

Locator: [] IOTA: []

Ext. Browser: Look up Web Site

Latest spots: Digital CW Phone

5K0K	28440.0
J6/KM2L	10109.0 Saint Lucia
VR6R	21023.0 Pitcairn Is.
*SQ9KFZ	144174.0 Poland
*KG5TBI	14310.0 United States
5K0K	18100.0
*K5LBJ	14265.0 United States
KF5CRF	14290.0 United States
I14MNU	7021.0 Italy
D68CCC	7113.0 Comoros
*JA8DKJ	14074.0 Japan
5K0K	14093.9
PA3BIY	144174.0 Netherlands
EV1P	3573.0 Belarus
DG4AZ	144324.8 Fed. Republic
*KN4BBD	7253.0 United States
VR6R	21023.0 Pitcairn Is.
W7U	14250.0 United States
OX1AA	10111.1 Greenland
*VK7XX	14074.0 Australia
KM4RE	7238.0 United States
*SV9RNG	10123.0 Crete
N8TUW	7210.0 United States

Layout Refresh Search Parameters Records found: 119 Detach Grid Display limit (0 = all) 5000

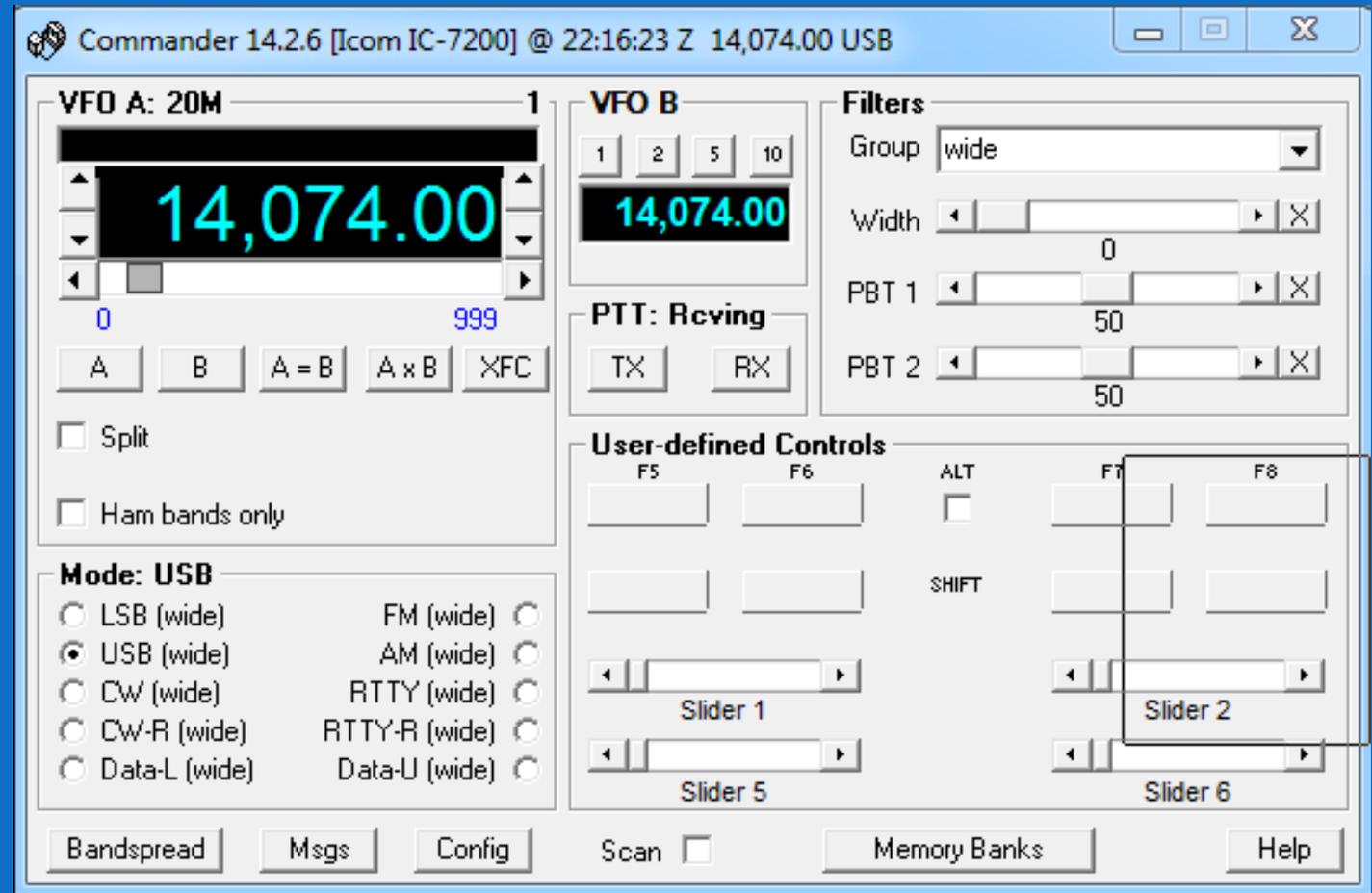
QSO: 119 CAT status | HRDLog ON AIR | Cluster | Super Cluster | WinKeyer

C:\Users\default.DESKTOP-VRF2EI6\Documents\NA4DC Log4OM database.SQLite Hide >>

205 x 818 x 24 BPP 4/7 100 % 137.00 KB / 2.82 MB 10/23/2019 / 17:20:26

Software You Need

- ❑ DX Labs Commander
 - ❖ A free CAT program
 - ❖ Supports many radios
 - ❖ Lets you control your radio from your computer
 - ❖ !! May be optional for FT8 operating
- ❑ DX Labs also has a free logging program



CAT is computer control of your radio. The amount of control depends on the radio manufacturer. Newer radios have more controllability

Questions

