



**WSJ I-X FT8**

**JS8Call**

**AN INTRODUCTION**

03/15/2019

# What is WSJT-X?

- ▶ *WSJT-X* is software that 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.
- ▶ Written by K1JT (Weak Signal Joe Taylor – WSJT)
- ▶ First released in 2001
- ▶ Download: <https://physics.princeton.edu/pulsar/k1jt/wsjtx.html>

# What is WSJT-X?

- ▶ The current release of WSJT-X is version 2.0.1
- ▶ New FT8 and MSK144 protocols with 77-bit payloads permit these enhancements:
- ▶ Optimized contest messages for NA VHF, EU VHF, Field Day, RTTY Roundup
- ▶ Full support for "/R" and "/P" calls in relevant contests
- ▶ New logging features for contesting
- ▶ Integration with N1MM Logger+ and Writelog for contesting
- ▶ Improved support for compound and nonstandard callsigns
- ▶ Nearly equal (or better) sensitivity compared to old protocols (-30db)
- ▶ Lower false decode rates
- ▶ Improved color highlighting of received messages
- ▶ Improved WSPR sensitivity
- ▶ Expanded and improved UDP messages sent to companion programs

# What is WSJT-X?

- ▶ The current release of WSJT-X is version 2.0.1
- ▶ Note that for FT8 and MSK144 there is no backward compatibility with WSJT-X 1.9.1 and earlier. Everyone using these modes should upgrade to WSJT-X 2.0 by January 1, 2019.
- ▶ Timing is **EVERYTHING!!!!!!**

# What is Dimension 4?

- ▶ Windows time service is not accurate enough
- ▶ Dimension 4 uses a low level internet protocol, called SNTP, to connect with special purpose Internet Time Servers that have been keeping the rest of the web on-time for the last 20+ years. These time servers typically have direct access to their very own time source, or they are connected directly to other Internet Time Servers that do.
- ▶ Download: <http://www.thinkman.com/dimension4/download.htm>

# What is Dimension 4?

- ▶ Dimension 4
- ▶ Sync every few minutes

8:35:10 pm - Dimension 4

Server	Location	Protocol
tock.greyscale.com	US TX: Greyscale Automation Pro...	SNTP
ntppub.tamu.edu	US TX: Texas A&M University, C...	SNTP
tick.uh.edu	US TX: University of Houston, H...	SNTP
nist1-dc.nslasau.com	IIS VA: Ahovenet Vienna VA	SNTP

Server: tick.uh.edu    Add

Location: US TX: University of Houston, Houston, TX    Edit

Protocol: SNTP    Remove

Notes: Access Policy: open access to stratum-2 servers and to UH clients  
Contacts: Rich Schmidt (res@tuttle.usno.navy.mil), Alan Pfeiffer-

**How Often**

Load Dimension 4 at startup

Once loaded, wait until online

Synchronize once, then exit

Every 2 minute(s)

**Correction**

Time Zone

Maximum correction

2 hour(s)

**Visibility**

Start minimized

Hide when minimized

Display icon in tray

Synchronized: +0.150s on 3/7/2019 @ 10:16 PM (tick.uh.edu)    History

Current Status: Error binding socket to address and port! Will try again in a moment. [10013: An attempt

Server Status: Error binding socket to address and port! [10013: An attempt was made to access a so

Buttons: Sync Now, Help, About, Exit, Settings

# What is FT8?

- ▶ **FT8 stands for** "Franke-Taylor design, 8-FSK modulation" and was created by Joe Taylor, K1JT and Steve Franke, K9AN. It **is** described as being designed for "multi-hop Es where signals may be weak and fading, openings may be short, and you want fast completion of reliable, confirmable QSO's".
- ▶ Great for DXCC, WAS, and any awards type contacts
- ▶ Transmit for 12.6 seconds and decode for 2.4 seconds
- ▶ Your computers clock **MUST** be set correctly! Dimension 4!





# What is FT8?

## ► FT8 application

The screenshot displays the WSJT-X software interface. The top window, titled "WSJT-X - Wide Graph", shows a frequency spectrum plot with a frequency scale from 500 to 2500 Hz. Below the plot are various control options such as "Bins/Pixel 4", "Start 0 Hz", "Palette", "Adjust...", "Flatten", "Ref Spec", "Spec 50%", "JT65 2500 JT9", "N Avg 5", "Default", "Cumulative", and "Smooth 1".

The main window, titled "WSJT-X v2.0.1 by K1JT", has a menu bar with "File", "Configurations", "View", "Mode", "Decode", "Save", "Tools", and "Help". The "Mode" menu is open, showing a list of modes: FT8 (selected), JT4, JT9, JT9+JT65, JT65, QRA64, ISCAT, MSK144, WSPR, Echo, and FreqCal.

Below the menu, there are two columns of data tables. The left column has headers "UTC", "dB", "DT", and "F". The right column has headers "UTC", "dB", "DT", "Freq", and "Message".

At the bottom, there are several control buttons: "CQ only", "Log QSO", "Stop", "Monitor" (highlighted in green), "Erase", "Decode", "Enable Tx", "Halt Tx", "Tune", and "Menus".

The central display area shows a frequency of **3.806 000** Hz. Below this, there are fields for "Tx 1554 Hz" and "Rx 1458 Hz". A "Report -15" button is also visible. A large black box displays the date and time: **2019 Mar 13 03:39:53**.

On the right side, there is a "Generate Std Msgs" section with a list of message templates and a "Next" button. The list includes:
 

- W4BCX W5MF EM20
- W4BCX W5MF -15
- W4BCX W5MF R-15
- W4BCX W5MF RR73
- W4BCX W5MF 73
- CQ W5MF EM20

The bottom status bar shows "Receiving" and "FT8" mode, along with a signal strength indicator and the text "8/15 WD:6m".

# What is FT8?

- ▶ FT8 application
- ▶ Waterfall at top
- ▶ All stations on left
- ▶ Current rec frequency on right. See green bracket in water fall. Red bracket in water fall is transmit.

The screenshot displays the WSJT-X v2.0.1 interface. At the top, a waterfall plot shows frequency activity from 500 to 2500 kHz. A red bracket on the plot indicates the transmit frequency, and a green bracket indicates the receive frequency. Below the plot, the 'Band Activity' table lists stations with their UTC, dB, DT, Freq, and Message. The 'Rx Frequency' table is empty. The interface includes various controls for monitoring and transmitting, such as 'Monitor', 'Erase', 'Decode', 'Enable Tx', and 'Halt Tx'. The current frequency is 7.074 000 MHz, and the date and time are 2019 Mar 11 01:23:36.

UTC	dB	DT	Freq	Message
012315	-6	0.1	1893	~ YV5ZV KG4BCN EL87
012315	-13	0.1	2038	~ VESKEL WA9WSJ 73
012315	0	0.1	2212	~ PD0ADC K2PS -15
012315	-20	0.1	2301	~ CQ VE6BTC DO33
012315	3	0.1	2391	~ AB7OI K4RHO EM64
012315	-3	-0.2	2506	~ K9GE CM8NMN -04
012315	-20	0.1	438	~ W6AER PT2PAG R-15
012315	-8	0.3	532	~ CQ AF6SA CM98
012315	-10	0.7	713	~ CQ K6DHL CM97
012315	-23	-0.5	997	~ W9TD NG2G +00
012315	-10	0.7	1044	~ KOEKA XE2JS -17
012315	-20	0.2	1093	~ CQ HP1CDW FJ09
012315	-7	-0.9	1387	~ KS0AA CO6SRS 73
012315	-22	0.1	2139	~ AI5II N1TRK RR73
012315	-5	0.0	576	~ K5PQ AE7QT DM33

UTC	dB	DT	Freq	Message
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# What is FT8?

- ▶ FT8 application
- ▶ File □ Settings
- ▶ General
- ▶ Check Double Click

The screenshot displays the WSJT-X v2.0.1 software interface. The main window shows a wide graph with a frequency range from 500 to 2500 kHz. A settings dialog box is open, showing the 'General' tab. The 'Station Details' section includes 'My Call: W5MF', 'My Grid: EM20', and 'AutoGrid' checked. The 'Display' section has 'Display distance in miles' checked and 'Tx messages to Rx frequency window' checked. The 'Behavior' section has 'Double-click on call sets Tx enable' checked. The main window shows a table of band activity with columns for UTC, dB, DT, Freq, and Message. The current frequency is 7.074 000 MHz. The interface also shows a 'Monitor' button, a '40m' band selection, and a 'Generate Stx Msgs' list with various call signs and grids.

**WSJT-X - Wide Graph**

Controls: 500 1000 1500 2000 2500

Settings

General Radio Audio Tx Macros Reporting Frequencies Colors Advanced

Station Details

My Call: W5MF My Grid: EM20  AutoGrid IARU Region: All

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

Display

Start new period decodes at top

Blank line between decoding periods

Display distance in miles

Tx messages to Rx frequency window

Show DXCC, grid, and worked-before status  Show principal prefix instead of country name

Behavior

Monitor off at startup  Enable VHF/UHF/Microwave features

Monitor returns to last used frequency  Allow Tx frequency changes while transmitting

Double-click on call sets Tx enable  Single decode

Disable Tx after sending 73  Decode after EME delay

Alternate F1-F5 bindings Tx watchdog: 6 minutes

CW ID after 73 Periodic CW ID Interval: 0

WSJT-X v2.0.1 by K1JT

File Configurations View Mode Decode Save Tools Help

Band Activity

UTC	dB	DT	Freq	Message
012900	-9	0.1	1495	~ PY5ZD AA4R FM05
012900	1	0.1	1568	~ KE7G AF4Z EL98
012900	-15	0.1	1620	~ NG2G KB1EFS -16
012900	-3	0.3	1697	~ CQ KSOAA EM28
012900	1	0.1	1773	~ CQ KE0QPG EM17
012900	-8	-0.8	1875	~ KALBUC NP3OT -18
012900	-9	0.5	1892	~ AF1RM YV5ZV R-15
012900	-16	-0.2	2160	~ CQ AB7OI DN41
012900	-21	0.2	2208	~ PY5ZD N2RJB FM05
012900	-12	0.1	2301	~ VE6BTC KD4FW FM18
012900	-6	0.1	2375	~ LU2FDA AK6R R-16
012900	-10	0.2	2604	~ CQ AQ KC9LFD EN35
012900	-9	0.3	2651	~ DC9YH WC3W EL96
012900	-24	0.1	997	~ CQ WE2LEW FN13
012900	-13	0.3	1713	~ AB4WL KASGTM R-21

CQ only Log QSO Stop Monitor

40m 7.074 000

Dx Call DX Grid

TO3Z FK96

Az: 106 2350 mi

Lookup Add  Auto Seq  Call 1st

2019 Mar 11 01:29:17

Tx 1500 Hz  Hold Tx Freq

Rx 1401 Hz Report -15

Generate Stx Msgs

Stx Msgs	INEXT	INOW
TO3Z W5MF EM20	<input type="radio"/>	Tx 1
TO3Z W5MF -15	<input type="radio"/>	Tx 2
TO3Z W5MF R-15	<input type="radio"/>	Tx 3
TO3Z W5MF RR73	<input type="radio"/>	Tx 4
TO3Z W5MF 73	<input type="radio"/>	Tx 5
CQ W5MF EM20	<input checked="" type="radio"/>	Tx 6

Receiving FT8 2/15 WD:6m

# What is FT8?

- ▶ FT8 application
- ▶ File Settings
- ▶ Radio configuration

The screenshot displays the WSJT-X v2.0.1 software interface. The main window shows a wide graph with a frequency range from 500 to 2500 Hz. Below the graph is a message log table with columns for UTC, dB, DT, Freq, and Message. The log shows several messages, with the most recent one being '012930 -8 0.0 1202 ~ CQ AE7QT DM33'. A settings dialog box is open over the interface, showing the 'Radio' tab. The dialog is configured for an Elecraft K3/KX3 rig, with a serial port of COM11 and a baud rate of 38400. The PTT method is set to RTS, and the transmit audio source is set to Front/Mic. The mode is set to USB, and the split operation is set to None. The status bar at the bottom indicates 'Receiving' and 'FT8' mode, with a frequency of 7.074 000 and a signal strength of 62 dB.

UTC	dB	DT	Freq	Message
012930	1	0.1	1568	~ KE7G AF4Z EL98
012930	-4	0.2	1697	~ CQ KS0AA EM28
012930	6	0.1	1773	~ CQ KE0QPG EM17
012930	3	0.1	1995	~ HP1CDW AK4R EM65
012930	-15	-0.2	2160	~ CQ AB7OI DN41
012930	-19	0.2	2208	~ PY5ZD N2RJB FM05
012930	-14	0.1	2302	~ VE6BTC KD4FW FM18
012930	-12	0.2	2456	~ WV5MT W8MCW EN82
012930	-9	0.2	2589	~ K2DSW K8MRD EN82
012930	-10	0.2	2604	~ CQ AQ KC9LFD EN35
012930	-11	-1.4	299	~ PY5ZD WA3BMX FM29
012930	-15	-0.0	422	~ CE2FME KK6I R-12
012930	-8	0.0	1202	~ CQ AE7QT DM33
012930	-15	0.3	1712	~ AB4WL KA5GTM R-21
012930	-20	0.3	2301	~ VE6BTC N2ADV FN23

# What is FT8?

- ▶ FT8 application
- ▶ File Settings
- ▶ Audio Configuration

The screenshot shows the WSJT-X v2.0.1 interface. The main window displays a waterfall plot with a frequency range from 500 to 2500 kHz. Below the plot is a band activity table with columns for UTC, dB, DT, Freq, and Message. The current frequency is 7.074 000 MHz, and the mode is FT8. The Settings dialog box is open, showing the Audio tab with the following configuration:

- Soundcard: Audio interface settings
- Input: Navigator (USB Audio CODEC) Mono
- Output: Navigator (USB Audio CODEC) Mono
- Save Directory: C:/Users/Marty/AppData/Local/WSJT-X/save
- AzEl Directory: C:/Users/Marty/AppData/Local/WSJT-X
- Remember power settings by band:  Transmit,  Tune

The band activity table shows the following data:

UTC	dB	DT	Freq	Message
013015	-7	0.1	1495	~ IZ8JFA NI2E 73
013015	2	0.1	1742	~ WJ7WJ KOMBC EM20
013015	-8	0.1	1968	~ K2PAL KG4BCN 73
013015	-15	0.1	2159	~ AB7OI PT2PAG GH64
013015	2	0.1	2212	~ CQ K2PS EL98
013015	-17	0.1	2301	~ KI7WKZ VE6BTC DO33
013015	8	0.1	2589	~ HP1CDW K2DSW 73
013015	0	-0.3	2726	~ K6KEC AB4WL -09
013015	-15	0.2	603	~ CQ N9XHN EN50
013015	-8	-0.9	1388	~ KI5CEY CO6SRS FL02
013015	-13	0.1	1604	~ CQ SC W4EIO EM95
013015	-15	0.2	1620	~ NOYPD KB2ZPB -11
013015	-6	0.3	1772	~ KE0QPG N4HEK R+01
013015	-19	0.2	1825	~ CQ IK4ISR JN54
013015	-6	-0.9	1754	~ K50AA HK4NDF FJ26

The control panel shows the frequency 7.074 000 MHz, a signal strength indicator, and a list of transmit messages:

- TO3Z W5MF EM20
- TO3Z W5MF -15
- TO3Z W5MF R-15
- TO3Z W5MF RR73
- TO3Z W5MF 73
- CQ W5MF EM20

The status bar at the bottom indicates "Receiving" and "FT8" mode.

# What is FT8?

- ▶ FT8 application
- ▶ File Settings
- ▶ Color Configuration

The screenshot displays the WSJT-X software interface. The main window shows a wide graph with a frequency range from 500 to 2500 kHz. Below the graph is a table of band activity. A settings dialog box is open, showing the 'Decode Highlighting' tab. The dialog box has several tabs: General, Radio, Audio, Tx Macros, Reporting, Frequencies, Colors, and Advanced. The 'Decode Highlighting' tab is active, showing a list of decoding rules with checkboxes and color swatches. The 'Logbook of the World User Validation' section is also visible, showing the 'Users CSV file URL' and 'Age of last upload less than'.

**Band Activity Table:**

UTC	dB	DI	Freq	Message
013200	-9	0.1	1269	~ W4YZZ W6DE CM98
013200	-22	0.2	1547	~ K6GAN KOYES -14
013200	-16	0.3	1712	~ K8IG KA5GTM -16
013200	4	0.1	1773	~ HK4NDF KEOQPG -22
013200	-13	0.2	1825	~ IK4ISR KN4COE EM79
013200	-8	-0.1	1891	~ CQ YV5ZV FK60
013200	3	0.1	1947	~ CE2FME AK4R EM65
013200	4	0.1	2214	~ N1TRK K4RHO EM64
013200	-13	0.3	2302	~ VE6BTC N2ADV FN23
013200	-14	0.1	2375	~ CQ AK6R DM13
013200	-10	0.2	2604	~ CQ AQ KC9LFD EN35
013200	-11	0.7	2650	~ CQ KE4QVB EL88
013200	-6	0.1	405	~ NC6W W3DJS 73
013200	-22	0.5	1269	~ W4YZZ K7HCP DN41
013200	-18	0.2	2656	~ IK4ISR W8MCW EN82

**Decode Highlighting Settings:**

- My Call in message [f/g unset]
- New Continent [f/g unset]
- New Continent on Band [f/g unset]
- New CQ Zone [f/g unset]
- New CQ Zone on Band [f/g unset]
- New ITU Zone [f/g unset]
- New ITU Zone on Band [f/g unset]
- New DXCC [f/g unset]
- New DXCC on Band [f/g unset]
- New Grid [f/g unset]
- New Grid on Band [f/g unset]
- New Call [f/g unset]
- New Call on Band [f/g unset]
- LotW User [b/g unset]

**Logbook of the World User Validation:**

Users CSV file URL:  Fetch Now

Age of last upload less than:

**Current Settings:**

Tx 1500 Hz, Rx 1401 Hz, Report -15, Auto Seq checked, Call 1st unchecked.

**Logbook Entries:**

Generate	Next	Now
<input type="text" value="TO3Z W5MF EM20"/>	<input type="radio"/>	Tx 1
<input type="text" value="TO3Z W5MF -15"/>	<input type="radio"/>	Tx 2
<input type="text" value="TO3Z W5MF R-15"/>	<input type="radio"/>	Tx 3
<input type="text" value="TO3Z W5MF RR.73"/>	<input type="radio"/>	Tx 4
<input type="text" value="TO3Z W5MF 73"/>	<input type="radio"/>	Tx 5
<input type="text" value="CQ W5MF EM20"/>	<input checked="" type="radio"/>	Tx 6

# What is FT8?

- ▶ FT8 application
- ▶ Advanced
- ▶ Special operating activity
- ▶ Contesting
- ▶ DX Expedition mode also known as Fox-Hound

The screenshot displays the WSJT-X software interface. At the top, a wide graph shows signal activity across a frequency range from 500 to 2500 kHz. Below the graph, there are controls for Bins/Pixel (4), Start (0 Hz), and a Palette (Default). The main window title is "WSJT-X v2.0.1 by K1JT".

A "Settings" dialog box is open, showing the "Advanced" tab. The "Special operating activity: Generation of FT8 and MSK144 messages" section is highlighted with a red box. It includes radio buttons for "Fox" and "Hound" (selected), and checkboxes for "NA VHF Contest", "ARRL Field Day", "EU VHF Contest", and "ARRL RTTY Roundup". There are also input fields for "FD Exch:" and "RTTY RU Exch: TX".

Below the settings, a "Band Activity" table is visible, listing received signals with columns for UTC, dB, DT, Freq, and Message. The table contains the following data:

UTC	dB	DT	Freq	Message
013245	-14	0.1	1434	~ CQ AI5II EM72
013245	-3	0.1	1503	~ CQ NW0Q EM58
013245	-6	-1.0	1661	~ KE0QPG HK4NDF R-10
013245	4	0.1	1742	~ WJ7WJ KOMBC R-08
013245	-17	0.3	1968	~ WS4AM K2PAL -13
013245	-9	0.1	2212	~ CQ K2PS EL98
013245	-10	0.2	2232	~ KA5GTM N9ZTS EN82
013245	-10	0.1	2301	~ CQ VE6BTC DO33
013245	-6	0.2	2440	~ YV5ZV KE7NR DM33
013245	10	0.1	2589	~ CQ K2DSW EN31
013245	-14	0.2	2656	~ AE7QT W8MCW EN82
013245	-14	-0.0	426	~ WA6MNV CE2FME RR73
013245	-9	0.2	532	~ K9EGS AF6SA -05
013245	-14	0.2	603	~ CQ N9XHN EN50
013245	-17	0.1	1623	~ N0YPD KI1TK FN42

At the bottom of the interface, there are controls for "CQ only", "Log QSO", "Stop", and "Monitor". The current frequency is 7.074 000 MHz. The interface also shows a "Generate SW Msgs" section with a list of messages and a "Tx" button.

# What is FT8?

- ▶ FT8 application
- ▶ DX Expedition mode also known as Fox-Hound
- ▶ DXpedition station (the fox) and their callers (the hounds). A single fox transmitter can now generate multiple FT8 signals simultaneously, making multiple QSOs in parallel on one rig and band.
- ▶ Add DXpedition FT8 frequencies to the frequency table *e.g.* 14.090 (*not* the usual FT8 frequencies!) under **F2 Settings** → **Frequencies**. Right-click the table, then insert the DXpedition FT8 frequencies. Leave the usual FT8 frequencies alone (it's OK to have multiple FT8 frequencies on each band - set up a separate configuration for DXpeditions if that helps).



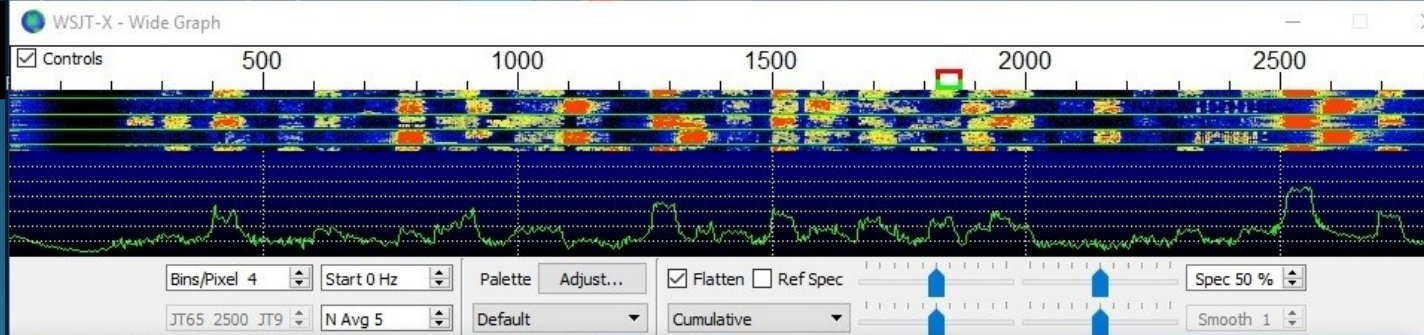
# WSJT-X

- ▶ WSJT-X add on applications
- ▶ WSJT-X JT Alert <https://hamapps.com/>
- ▶ Grid Tracker <https://tagloomis.com/grid-tracker/>

# WSJT-X

## ▶ WSJT-X JT Alert

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WSJT-X 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
013930	-14	0.1	1415	~ R9ODI F2YT -06	013430	Tx		1825	~ IK4ISR W5MF EM20
013930	-8	0.2	1504	~ KE0EF K8MRD -04	013500	Tx		1825	~ IK4ISR W5MF EM20
013930	0	0.1	1568	~ CO6SRS AF4Z -02	013530	Tx		1825	~ IK4ISR W5MF EM20
013930	-12	1.1	1702	~ CQ NP3OT FK78	013600	Tx		1825	~ IK4ISR W5MF EM20
013930	-12	0.1	1744	~ XE2JS N1TGE FN31	013615	-14	0.1	1824	~ WOTDT IK4ISR RRR
013930	-3	-0.1	1877	~ CE2FME KZ5AT R-17	013630	-11	0.1	1825	~ IK4ISR WOTDT 73
013930	-20	0.1	2070	~ N9ZTS K6KEC -19	013645	-14	0.1	1824	~ WOTDT IK4ISR 73
013930	-2	0.1	2138	~ KB0PQP W6DE 73	013700	-5	0.1	1825	~ IK4ISR WOTDT 73
013930	9	0.1	2589	~ LW9EZK K2DSW RR73	013715	-17	0.1	1824	~ CQ IK4ISR JN54
013930	-11	0.6	2657	~ CQ KE4QVB EL88	013730	-10	0.2	1825	~ IK4ISR HP1CDW -16
013930	-16	0.1	1404	~ CQ NV8G DM42	013745	-18	0.1	1824	~ HP1CDW IK4ISR R-24
013930	-6	0.1	1606	~ NW0Q AB6RT DM14	013815	-15	0.1	1824	~ HP1CDW IK4ISR R-24
013930	-12	-0.1	1890	~ KC4EZN YV5ZV -07	013845	-17	0.1	1825	~ HP1CDW IK4ISR R-24
013930	-2	0.2	2604	~ CQ AQ KC9LFD EN35	013915	-14	0.1	1825	~ HP1CDW IK4ISR R-24
013930	-15	0.2	1626	~ CQ N2PEQ FN32					

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

40m   7.074 000   Tx even/1st   Tx 1825 Hz   Hold Tx Freq   Rx 1825 Hz   Report -18   Auto Seq   Call 1st

DX Call: IK4ISR   DX Grid: JN54   Az: 44   5487 mi   2019 Mar 11 01:39:54   63 dB

Generate Std Msgs: IK4ISR W5MF EM20, IK4ISR W5MF -18, IK4ISR W5MF R-18, IK4ISR W5MF RR73, IK4ISR W5MF 73, CQ W5MF EM20

Receiving   FT8   Last Tx: IK4ISR W5MF EM20   9/15   WD:3m

JTAlertX 2.12.10 W5MF [~.40m,NO Log,#1]

Alerts Settings View Sound ON Help

WD4FJF	N5OTL	W4GRN	K8SJM	PT2PAG	WG4P	F2YT	K8MRD
AF4Z	NP3OT	N1TGE	KZ5AT	K6KEC	W6DE	K2DSW	KE4QVB

# WSJT-X

## ▶ WSJT-X JT Alert

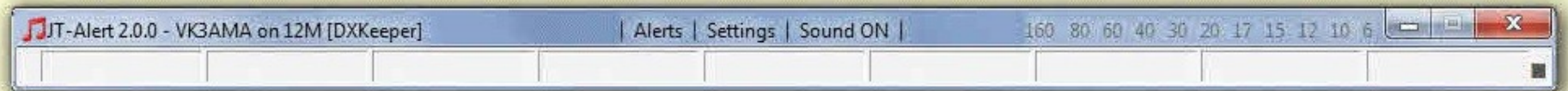
19

The screenshot displays the WSJT-X v2.0.1 interface. At the top, a 'Wide Graph' shows a frequency spectrum from 500 to 2500 Hz. Below the graph is a control panel with settings like 'Bins/Pixel 4', 'Start 0 Hz', 'N Avg 5', and 'Spec 50 %'. The main window is divided into two tables: 'Band Activity' and 'Rx Frequency'. The 'Band Activity' table lists received signals with columns for UTC, dB, DT, Freq, and Message. Several entries are highlighted in green, including '014015 -1 0.3 2698 ~ CQ AC9HP EM69' and '014015 -14 0.1 1825 ~ CQ IK4ISR JN54'. A context menu is open over the 'Band Activity' table, listing options such as 'Send Spots to HamSpots.net', 'Enable Debug Recording', and 'Wanted CallSigns ...'. The 'Rx Frequency' table shows received messages, with '013715 -17 0.1 1824 ~ CQ IK4ISR JN54' highlighted. At the bottom, there are buttons for 'Monitor', 'Erase', 'Decode', 'Enable Tx', 'Halt Tx', and 'Tune', along with a 'Generate Std Msgs' section containing a list of message templates like 'IK4ISR W5MF EM20' and 'CQ W5MF EM20'.

Band Activity					Rx Frequency				
UTC	dB	DT	Freq	Message	UTC	dB	DT	Freq	Message
014015	-1	0.3	2698	~ CQ AC9HP EM69	013015	-11	0.1	1824	~ W0TDT IK4ISR RRK
014015	-14	0.1	1825	~ CQ IK4ISR JN54	013630	-11	0.1	1825	~ IK4ISR W0TDT 73
014015	-16	0.0	298	~ RZ9O PY5ZD GG54	013645	-14	0.1	1824	~ W0TDT IK4ISR 73
014015	-9	0.0	424	~ KOVET CE2FME -16	013700	-5	0.1	1825	~ IK4ISR W0TDT 73
014015	-1	0.2	1321	~ NP4EB WA6LIE CM96	013715	-17	0.1	1824	~ CQ IK4ISR JN54
014015	-6	0.1	1404	~ NV8G KB1EFS FN42	013730	-10	0.2	1825	~ IK4ISR HP1CDW -16
014015	-8	0.1	1604	~ CQ W4EIO EM95	013745	-18	0.1	1824	~ HP1CDW IK4ISR R-24
014030	-17	0.1	1825	~ IK4ISR KN4LWI FM14	013815	-15	0.1	1824	~ HP1CDW IK4ISR R-24
014030	-15	0.1	589	~ CE2FME K6DHL CM97	013845	-17	0.1	1825	~ HP1CDW IK4ISR R-24
014030	-2	0.1	770	~ NC6W W4GRN 73	013915	-14	0.1	1825	~ HP1CDW IK4ISR R-24
014030	-4	0.2	902	~ NG2G K8SJM RRR	013945	-8	-1.0	1815	~ N3OCO HK4NDF RR73
014030	-4	0.2	902	~ NG2G K8SJM RRR	013945	-14	0.1	1825	~ CQ IK4ISR JN54
014030	-4	0.2	902	~ NG2G K8SJM RRR	014015	-7	-0.9	1815	~ K2DSW HK4NDF FJ26
014030	-4	0.2	902	~ NG2G K8SJM RRR	014015	-14	0.1	1825	~ CQ IK4ISR JN54
014030	-4	0.2	902	~ NG2G K8SJM RRR	014030	-17	0.1	1825	~ IK4ISR KN4LWI FM14

# WSJT-X

► WSJT-X JT Alert



**KOTPP : JT65 QSOs - 7 on 7 bands**  
LoTW: Yes - eQSL(AG): Yes

160M : 17M : Worked	15M : Worked
80M : Worked	12M : <b>New Band</b>
60M :	10M : Worked
40M : Worked	6M :
30M : Worked	2M :
20M : Worked	

(Last QSO : 15M JT65, 2011-MAY-22)

**JT-Alert : QSO log to DXKeeper**

SUCCESS : QSO logged.

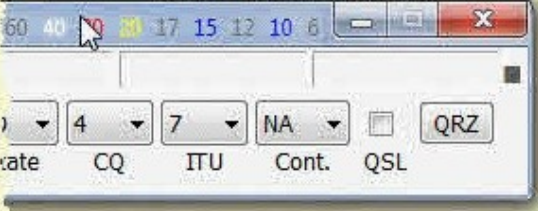
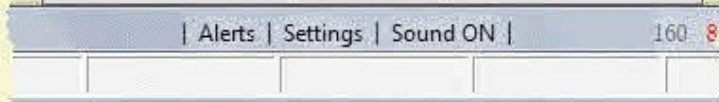
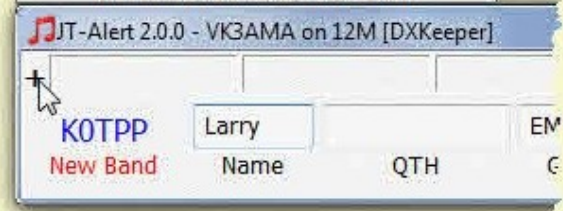
Callsign : VK3TC  
Frequency : 24.917  
Logged Mode : JT65

[3]

**Callsigns Spotting per Band**  
SFI 97 : A 2 : K 0

160M : 5	17M :
80M : 14	15M : 3
60M :	12M :
40M : 50, -1	10M : 2
30M : 12	6M :
20M : 34, -1	

(Last Update : 06-Nov, 05:39 utc)



# WSJT-X

- ▶ Grid Tracker
- ▶ Can only run JT Alert or Grid Tracker

The screenshot shows the GridTracker software interface. At the top, the title bar reads "GridTracker ©2019 Stephen Loomis / NØTTL (A WSJT-X Companion) v1.19.0226". The main window features a world map with grid lines and various data panels.

**Right Panel:**

- GridTracker by NØTTL
- 7.074.000 hz (40m) FT8
- Mon 11 Mar 2019 01:43:49 UTC
- RECEIVE
- PSK-Reporter Band Activity
- 180 80 60 40 30 20 17 15 12 10 6 4
- W5MF EM20
- Calling
- IK4ISR JN54 -18
- Italy 5476mi 44°
- Grids 44 Calls 67
- DXCCs 12 QSO 0
- LCD 0 QSL 0
- Decodes 124 Last 25
- Clear Live Clear QSOs
- Clear Paths Clear All
- QSO/Live View
- Band Auto
- Mode FT8
- Icons: Signal strength, Earth, Alert, Home, MH 4, QSO LIVE, Trophy, Ear, Graph, Gear, Key, ADIF, Info, PSK 24F, i, Arrow

**Legend:**

- QRZ (Yellow)
- QSO (Green)
- QSL (Red)
- CO (Light Green)
- CQDX (Cyan)
- QSX (Blue)
- QTH (Orange)
- WSRP (Purple)

**Bottom Panel:**

- Report -18
- IK4ISR W5MF R-18 Tx 3
- IK4ISR W5MF RR.73 Tx 4
- Auto Seq  Call 1st

# WSJT-X

- ▶ Grid Tracker
- ▶ Settings
- Logging

GridTracker ©2019 Stephen Loomis / NØTTL (A WSJT-X Companion) v1.19.0226

General Lookups Audio Map **Logging** Alerts Changes About

Logtype	Menu?	Startup?	Log QSO?	Details	Test	Test Result
GridTracker		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	GridTracker QSO Logfile		
File		<input type="checkbox"/>				
PSK-Reporter	<input checked="" type="checkbox"/>	<input type="checkbox"/>		24 Hour History		
QRZ.com	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	API Key <input type="text"/>	Test	
LotW	<input type="checkbox"/>	<input type="checkbox"/>		Login <input type="text"/> Password <input type="text"/>	Test	
ClubLog	<input type="checkbox"/>	<input type="checkbox"/>		Email <input type="text"/> Password <input type="text"/>	Test	
HRDLOG.net			<input type="checkbox"/>	Callsign <input type="text"/> Upload Code <input type="text"/> >> How to get upload code <<	Test	

**N1MM Logger+**

IP

Port

Enabled

**Log4OM Logger**

IP

Port

Enabled

**Amateur Contact Log**

IP

Port

Enabled

Report -18 IK4ISR W5MF R-18 Tx 3

# WSJT-X

- ▶ Grid Tracker
- ▶ Settings □ Alerts

GridTracker ©2019 Stephen Loomis / NØTTL (A WSJT-X Companion) v1.19.0226

General Lookups Audio Map Logging Alerts Changes About

Alert Type	Value	Notify Type	Repeat
Callsign	TO3R	Text-to-speech	Until Deleted

ADD Added

Type	Value	Notify	Repeat	Filename	Alerted	Last Message	When	Reset	Delete
Call	TO3R	TTS	Inf	-	No	-	-	⏻	🗑️

**IK4ISR JN54 -18**  
Italy 5476mi 44°

Grids **73** Calls **118**  
DXCCs **18** QSO **0**  
LCD **0** QSL **0**  
Decodes **614** Last **19**

Clear Live Clear QSOs  
Clear Paths Clear All

QSO/Live View  
Band **Auto**  
Mode **FT8**

Legend **QRZ** **QSO**  
**QSL** **CQ** **CQDX**  
**QSX** **QTH** **WSPR**

What is FT8?

▶ FT8 Live Demo



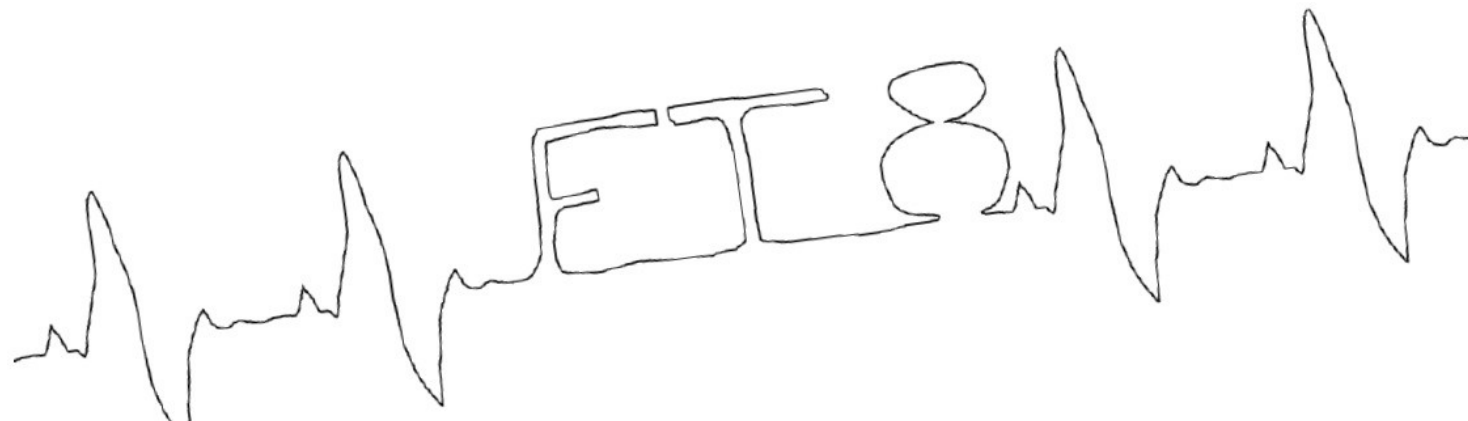
# What is FT8?

- ▶ FT8 More Info
- ▶ Google ZL2IFB

## FT8 Operating Guide

Weak signal HF DXing ... **enhanced**

by Gary Hinson ZL2iFB Version 2.16



# What is JS8 Call?

- ▶ *JS8 Call* is an **experiment** to test the feasibility of a digital mode with the robustness of FT8, combined with a messaging and network protocol layer for weak signal *communication* on HF, using a keyboard messaging style interface. It designed for connecting amateur radio operators who are operating under weak signal conditions.
- ▶ JS8Call uses a custom FT8 modulation called JS8 (Jordan Sherer KN4CRD designed 8-FSK modulation). This is the base RF transport. There is a “directed calling” protocol laid over top the base RF transport to support free-form and directed message passing. Hence JS8 + Directed Calling = JS8Call. And in case you didn't get that:
  - ▶ **JS8** is the mode
  - ▶ **JS8Call** is the software
  - ▶ <https://groups.io/g/js8call>

# How does JS8 Call work?

- ▶ JS8Call transmits in 15 second transmission “frames”
- ▶ Highly compressed textual data is transmitted in back-to-back frames
- ▶ Software stitches everything back together into a communication stream
- ▶ “Directed commands” can be sent to instruct stations in the network with automatic replies to things like:
  - ▶ What is my SNR?
  - ▶ What is your GRID?
  - ▶ Please relay this message to JY1

# What is JS8 Call?

## ► JS8 Call

JS8Call DE KN4CRD (v1.0.0-rc1)

File Configurations Decode Save Log View Control Help

7.078 000 W5MF  
1950 Hz 02:08:22 2019 Mar 11

RX TX TUNE  
SPOT AUTO LOG

Offset	Age	SNR	Message(s)
1219 Hz	now	-08 dB	K6GAN: CQCQCQ CM96 ~ N1DH: K6GAN
1605 Hz	30s	-13 dB	WD9DUI: N7GYL SNR? ~

Incoming and outgoing messages will appear here.

Received band activity is displayed with time since last heard, SNR, and the text received for each frequency offset in the passband.

Type your outgoing messages here.

Callsigns (3)  
K6GAN  
N1DH  
WD9DUI

HB CQ REPLY SNR INFO Saved Directed Deselect Send Halt

CAT

800 1000 1200 1400 1600 1800 2000

02:08:15 40m  
02:08:00 40m  
02:07:45 40m  
02:07:30 40m

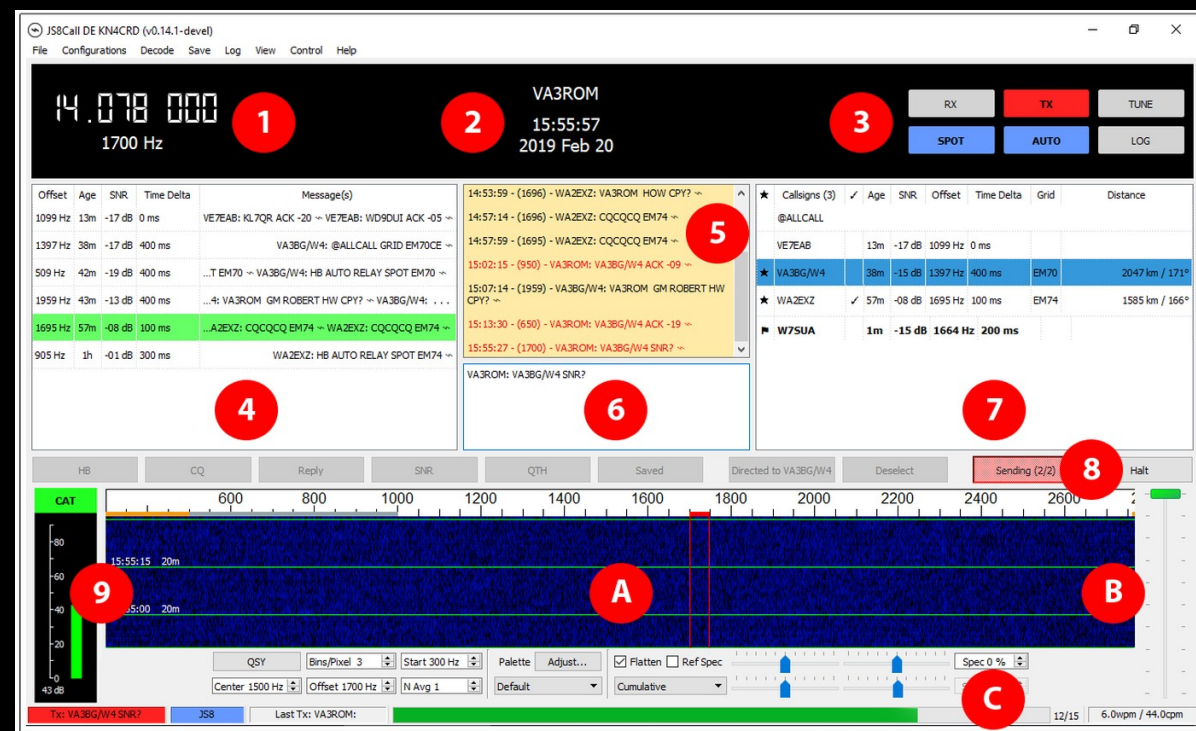
QSY Bins/Pixel 2 Start 500 Hz Palette Adjust... Flatten Ref Spec Spec 0 %  
Center 1500 Hz Offset 1950 Hz N Avg 1 Default Cumulative Smooth 1

Receiving JS8 7/15

Type here to search 9:08 PM 3/10/2019

# What is JS8 Call?

- ▶ 1. Transmitter's dial frequency (carrier) and base audio tone offset added to carrier (all additional tonal shifts are up).
- ▶ 2. Station identification with current computer UTC time/date.
- ▶ 3. Various user selectable transceive control functions/features.
- ▶ 4. Signal decoding monitor.
- ▶ 5. Receive message buffer.
- ▶ 6. Transmit message buffer.
- ▶ 7. Stations heard with their basic information.
  - ▶ a. A flag next to a station call indicates a stored message from it is waiting for you in your message inbox.
  - ▶ b. A star next to a station call indicates that it and you hear the other.
  - ▶ c. A checkmark next to a station call indicates that you've logged a prior two-way contact on the current JS8 frequency/hand with it.



# What is JS8 Call?

- ▶ 8. Transmit “macro” buttons (become active and inactive, as required).
- ▶ 9. Signal strength and computer aided transceiver (CAT) control status.
- ▶ A. Signal waterfall monitor and various settings. The grey area between 500 to 1000 hertz (Hz) is reserved for “heartbeat” (HB) beacons and any replies from JS8 stations hearing them, or replies to station queries. Bottom 500 Hz (orange area) is the JT65 data mode sub-band. Do NOT transmit JS8 normal communications below 1000 Hz unless absolutely necessary (must change default station setup option allows this). The idea is to separate normal KB-KB activity from specific JS8Call features not available in other data modes but minimize inter-mode interference with other data modes including JS8.
- ▶ B. Transmitter output audio tone level slider adjustment.
- ▶ C. Current and past transceive activity status.

The screenshot shows the JS8Call DE KN4CRD software interface. The window title is "JS8Call DE KN4CRD (v0.14.1-devel)". The interface includes a top status bar with a frequency display (14.078 000), a call sign (VA3ROM), and a timestamp (15:55:57 2019 Feb 20). Below this is a control panel with buttons for RX, TX, TUNE, SPOT, AUTO, and LOG. The main display area is divided into several sections:

- 1:** Frequency display (14.078 000) and mode (1700 Hz).
- 2:** Call sign and timestamp (VA3ROM, 15:55:57 2019 Feb 20).
- 3:** Control buttons (RX, TX, TUNE, SPOT, AUTO, LOG).
- 4:** A table of received messages with columns for Offset, Age, SNR, Time Delta, and Message(s).
- 5:** A call log table with columns for Callsigns, Age, SNR, Offset, Time Delta, Grid, and Distance.
- 6:** A text box for VA3ROM: VA3BG/W4 SNR?.
- 7:** A text box for VA3ROM: VA3BG/W4 SNR?.
- 8:** A status bar with buttons for CAT, CQ, Reply, SNR, QTH, Saved, Directed to VA3BG/W4, Deselect, Sending (2/2), and Halt.
- 9:** A waterfall monitor showing signal strength across a frequency range from 600 to 2600 Hz.
- A:** A slider for transmitter output audio tone level adjustment.
- B:** A status bar showing current and past transceive activity.
- C:** A status bar showing current and past transceive activity.

# What is JS8 Call?

- ▶ *JS8 Call*
- ▶ *Settings*

The screenshot displays the JS8Call software interface. A 'Settings' dialog box is open, showing the 'Station' tab. The 'Station Details' section includes fields for 'My Callsign' (W5MF), 'My Maidenhead Grid Locator' (EM20), and 'Callsign Groups (comma separated)' (@GROUP1, ...). A checkbox 'Do not participate in the @ALLCALL group' is checked. The 'Station Messages' section includes fields for 'CQ Message' (CQCQCQ <MYGRID4>), 'Reply Message' (HW CPY?), and 'Station Info (Rig, Antenna, Location, etc)'. The main software window shows a frequency display at 7.07 MHz, a waterfall plot, and a list of callsigns (K6GAN, N1DH, N3RUM, WD9DUI). The interface includes buttons for RX, TX, TUNE, SPOT, AUTO, LOG, Deselect, Send, and Halt. The status bar at the bottom indicates 'Receiving' and 'JS8'.

# What is JS8 Call?

- ▶ JS8 Call
- ▶ More information coming
- ▶ By Robert C. Mazur, VA3ROM
- ▶ [va3rom@gmail.com](mailto:va3rom@gmail.com)



# What is JS8 Call?

- ▶ JS8 Call Video

# What is JS8 Call?

- ▶ JS8 Call Live Demo

# Presentation by W5MF?

- ▶ Acknowledgements – Information from the following authors:
- ▶ Joe Taylor K1JT
- ▶ Steve Franke K9AN
- ▶ Jordan Sherer KN4CRD
- ▶ Robert C. Mazur VA3ROM
- ▶ Brian Derx N5BA

Presentation by W5MF?

▶ Questions?