A simplified Guide to the FT8 Dxpedition mode

By Stefano IK2HKT – Versione 1.10 Giugno 2018

1 Download and configuration

- 1.1 Download and install WSJT-X (release 1.9.0 or higher) from: https://physics.princeton.edu/pulsar/k1jt/wsjtx.html
- 1.2 Lunch the program, then press F2
- 1.3 Click on "General", enter your data and check appropriate entries (see image below)

General Radio Audio Tx Macros Reporting Frequencies Colors Advanced Station Details My Grid: JN45vs AutoGrid IARU Region: Region 1 My Call: IK2HKT My Grid: JN45vs AutoGrid IARU Region: Region 1 Message generation for type 2 compound callsign holders: Full call in Tx3 Image: Colors Image: Colors Advanced Display Blank line between decoding periods Font Image: Colors Font Image: Colors Image: Colors Image: Colors Image: Colors Advanced Image: Colors Image: Colors
My Call: IN2HKT My Grid: JN45vs AutoGrid IARU Region: Region 1 Message generation for type 2 compound callsign holders: Full call in Tx3 Display Display Blank line between decoding periods Display distance in miles Tx messages to Rx frequency window Show DXCC entity and worked before status Show principal prefix instead of country name Behavior
Message generation for type 2 compound callsign holders: Full call in Tx3 Display Image: Compound callsign holders: Image: Compound callsign holders: Full call in Tx3 Image: Compound callsign holders: Font Image: Compound callsign holders: Full call in Tx3 Image: Com
Message generation for type 2 compound callsign holders: Full call in Tx3 Display Image: Second callsign holders: Pisplay
Display Font Blank line between decoding periods Font Display distance in miles Decoded Text Font T x messages to Rx frequency window Decoded Text Font Show DXCC entity and worked before status Show principal prefix instead of country name Behavior Behavior
Blank line between decoding periods Font Display distance in miles Decoded Text Font Tx messages to Rx frequency window Decoded Text Font Show DXCC entity and worked before status Show principal prefix instead of country name Behavior Behavior
Blank line between decoding periods Font Display distance in miles Decoded Text Font Tx messages to Rx frequency window Decoded Text Font Show DXCC entity and worked before status Show principal prefix instead of country name Behavior Behavior
Display distance in miles Font Display distance in miles Decoded Text Font Y Tx messages to Rx frequency window Show DXCC entity and worked before status Decoded Text Font Behavior Behavior
Image: Show DXCC entity and worked before status Image: Show principal prefix instead of country name Behavior
Show DXCC entity and worked before status Show principal prefix instead of country name Behavior
Behavior
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
Tx watchdog: 3 minutes 🗮
CW ID after 73 Periodic CW ID Interval: 0 🚓
Periodic CW ID Interval: 10
OK Cancel

1.4 Click on "Radio", enter your radio type and settings of the CAT port.

Check entries as on the image below (Stop bits: One or Two, according to radio type)

Settings	<u>?</u> ×
General Radio Audio Tx Macros Reporting	Frequencies Colors Advanced
Rig: Kenwood TS-2000	▼ Poll Interval: 1 s 📩
CAT Control	PTT Method
Serial Port: COM4	C VOX O DTR
Serial Port Parameters	CAT CRTS
Baud Rate: 38400	Port: COM109
Data Bits	Transmit Audio Source
C Default C Seven Eight	C Rear/Data C Front/Mic
Stop Bits	
C Default C One C Two	Mode
Handshake	None OB Data/Pkt
C Default	Split Operation
C XON/XOFF C Hardware	
Force Control Lines	None Rig Fake It
DTR: RTS: T	Test CAT Test PTT
	OK Cancel

1.5 Click on "Audio" and select the Sound Card used for RX and TX

- Sectings	~
General Radio Audio Tx Macros Reporting Frequencies Colors Advanced	
Soundcard	
Input: DAX Audio RX 1 (FlexRadio Syste	
Output: DAX Audio TX (FlexRadio Systems Mono	
Save Directory	
Location: C:/Users/STEFANO/AppData/Local/WSJT-X/save Select	
AzEl Directory	
Location: C:/Users/STEFANO/AppData/Local/WSJT-X Select	
Remember power settings by band	
Transmit Tune	

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1.6 Click on "Reporting" and check the box. Enter your Call sign

Settings		? ×
General Radio Audi	Tx Macros Reporting Frequencies Colors Advance	ed
Logging Prompt me to log QSO Convert mode to RTTY dB reports to comment Clear DX call and grid	s	
Network Services	potting	
UDP Server		
UDP Server:	127.0.0.1 Accept UDP requests	
UDP Server port number:	2237 Notify on accepted UDP request Accepted UDP request restores winde	ow
N1MM Logger+ Broadcasts		
Enable logged contact	ADIF broadcast	
N1MM Server name or IP a	ddress: 127.0.0.1	
N1MM Server port number	2333 *	
	ок	Cancel

Click on "Frequencies" and scan the frequency list (see image below) 1.7 es-

 Working Frequencie
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IARU Region	Mode	Frequency 🛆 📥
All	JT9	14,078 000 MHz (20m)
All	FT8	14,094 000 MHz (20m)
All	WSPR	14,095 600 MHz (20m)
All	FreqCal	14,670 000 MHz (OOB) 👻

Right-click the last line (14,670 MHz) and select "Insert". Select "Mode=FT8" and enter in 1.8 "Frequency" the Dxpedition frequency (in the example 14,111 MHz). Click OK

All	WSPR	🧶 WSJT-X - Add	Frequency ? X	14,095 600 MHz (20
All	FreqCal	IARU Region:	All	14,670 000 MHz (O
egion 1	FreqCal	Mode: Frequency (MHz):	FT8 •	14,996 000 MHz (O
nformation —		OK	Cancel	
and \triangle	Offset			escription

1.9 Click on "Advanced" : check "Hound" (see image) <u>ONLY IF</u> you want to contact a Dxpedition which used this mode.

(NOTE: uncheck the box to return to a "normal" mode).

Settings								? ×
General	Radio	Audio	Tx Macros	Reporting	Frequencies	Colors	Advanced	
JT65 VH	F/UHF/Micr	owave deco	oding parameter	s	Miscellaneous			
Random	erasure pa	atterns: 6		-	Degrade S/N of .	wav file:	0,0 dB	
Aggress	ive decodin	g level: 0		×	Receiver bandwi	dth:	2700 Hz	<u> </u>
П тис	-pass deco	ding			Tx delay:		0,2 s	÷
					🗌 x 2 Tone Spa	acing		
					🗌 x 4 Tone Spa	acing		
FT8 DXp	edition mo	Hound						

- 1.10 Click "OK"
- 1.11 Arrange the two windows of the program at will.

Configure the WideGraph window as in the image below



1.12 Configure the WSJT-X window as in the image below, inserting the callsign of the Dx station (the locator is not necessary, but it allows to get the beam heading and distance in KM to the Dx station). Enter the TX and RX frequencies shown in this image and then clik on "1", then click on "Generate Std Msgs". Click on "Monitor" (it should be filled green) and finally on "TX1"



1.13 Click on the pointer (triangle) next to the band and select the frequency of the Dxpedition as entered in 1.8 above



1.14 The configuration for QSOs in DxPedition Mode in completed. You may close WSJT-X program.

2 Download and configuration for accurate program timing

- 2.1 Go to website <u>http://www.maniaradio.it/en/bkttimesync.html</u>
- 2.2 Select language (in the example : Italian)



2.3 At the bottom of the page click "Download – Versione 1.9.1"

START NOW		3 Easy Steps: 1) Click "Start Now" 2) Download on our website 3) Track Flight Status Online	▷ × free.flightsearchapp.com
	Do	ownload - Versione 1.9.1	
iesto programma è gratuito, se v I pulsante "Donate". Grazie.	olete aiuta	rmi nello sviluppo fare una piccola (donazione tramite PayPal cliccando

2.4 Install and configure as per image below

👫 BktTimeSync by IZ2BI	CT - Version 1.9.1		×							
Configurazione Internet Server NTP ntp1.inrim.it Configurazione GPS	Elenco Server	ort : 123 Correzio Timeou	Adiita NTP V							
Porta Seriale: COM1	BAUD : 4800 Bit :	8 Bit di Stop 1	Parità N 💌							
RTS: ON DTR:	ON Errore Max: Sconnetti GPS	0.3 s	Correzione +0.00 s							
Coordinate : Opzioni Generali		titudine :	WW Locator :							
Avvia all'avvio di Windows	Avvia in syste		Sinc. all'avvio							
	Sinc. ogni 1 minuti (0 sinc. manuale) al secondo 10 Geterrore NTP prova con il GP Correzzione massima 12 ore (0 = no limite) Controlla aggiornamenti ogni 30 giorni (0 disabilita)									
Visualizza notifiche	Abilita BktClock	Log Diagnostic								
L'orologio è stato correttamente sincronizzato usando il server NTP La differenza di orario è 0.000764 secondi Ultima Sincronizzazione :domenica 10 giugno 2018 17:04:10 L'orologio è stato correttamente sincronizzato usando il server NTP La differenza di orario è 0.001240 secondi Ultima Sincronizzazione : domenica 10 giugno 2018 17:05:10 L'orologio è stato correttamente sincronizzato usando il server NTP La differenza di orario è 0.001644 secondi										
Change Language	Sito Web	Forum	Donate							
Riduci nella System Tray	Sinc. adesso	F1 - Aiuto	Chiudi							

- 2.5 Click on "Sync. Now" and then on "Shrink to System Tray"
- 2.6 Click on the WSJT-X icon and re-launch the FT8 program.Click the "Mode" tab and select FT8 from the pull-down menu.

SJT-X v1.9.0-rc4 by K1JT											
File	e Configu	urations	View	Mode	Decode S	ave	Tools	Help			
Band Activity											
	UTC	dB	DT	Free							

3 Example: a QSO

3.1 Wait for the Dx station to call CQ. Click twice on the line displayed in the Band Activity window (purple color). <u>NOTE: DO NOT call until CQ appears in the window</u>: if there are other QSOs ongoing, your message cannot be decoded !

) V	NSJT-X	v1.9.	0-rc4	by K1J	Т										_	
File	Configur	rations	View	Mode D	ecode Sa	ave Too	ls Help									
				Ban	d Activity						Rx Fi	eque	ency			
	UTC	dB	DT	Freq	Mes	ssage		UTC	dB	DT	Freq	1	Message			
							Lu.	130330	3	0.5	314	~ (CQ 9X0Y	KI58		
1.	30330	3	0.5	314	~ CQ	9X0Y	KI58	<mark>130345</mark>	Тx		1700	~ !	9X0Y IK	2HKT (JN45	
Ľ		1		1	<u>г</u>			<u></u>			_					<u> </u>
	Log QSO		Sto	op	Moni	tor	Erase	 Decode	Ena	ble Tx	н	alt Tx	<	Tune		Menus

3.2 At this point all happens automatically, no more actions are required. If the Dx station decodes your message, after 15 seconds from its transmission you will see the red strip in the Rx Frequency window with the signal strength received by the Dx. At this point your radio will transmit the signal strength received by you (yellow line)

۲	WSJT-X	v1.9.	0-rc4	by K1JT								<u> </u>			
File	Configur	ations	View	Mode Deco	de Save Tools Help										
	Band Activity								Rx Frequency						
	UTC	dB	DT	Freq	Message		UT	C dB	DT	Freq	Message				
						20m 🧕	1303	30 3	0.5	314 ~	CO 9X0Y KI58				
1	.30330	3	0.5	314 ~	CQ 9X0Y KI58		1200	IA		1700 ~	9X0Y IKZHKI				
-						20m	1304		0.5	314 ~					
1	.30400	3	0.5	314 ~	IK2HKT 9X0Y	+15	1304	15 Tx	1	314 ~	9X0Y IK2HKT R+04				
						-						-			
	I					►						►			
	Log QSO		Sto	op		rase	Decode		n <mark>able T</mark> x	Hal	t Tx Tune	Menus			

3.3 To finish the QSO, the Dx station will confirm with RR73 (see last red line) and the QSO is completed

ile Configur	ations Vie	w Mode	Decod	le Save Too	ls Help										
Band Activity								Rx Frequency							
UTC	dB 1	DT Freq	1	Message			UTC	dB	DT	Freq	Message				
130330	30	.5 314	~	CQ 9X0Y	20m KI58 20m		130330 130345	3 Tx		314 ~ 1700 ~	CQ 9X0Y KI58 9X0Y IK2HKT	JN45			
130400	30	.5 314	- 1	IK2HKT	9X0Y +15		130400			314 ~	1K2HKT 9X0Y 9X0Y IK2HKT	KTUT			
130430 ∢	3 0	.5 313	3~	IK2HKT	9X0Y RR73		130430	3	0.5	313 ~	IK2HKT 9X0Y	RR73			

3.4 The log window open automatically and you can choose to save the QSO in the log file of WSJT-X (click "OK") or discard it (click "Cancel")

📀 WSJT-X 🛛 v1.9	.0-rc4 by K1JT - Log (QSO X										
Click OK to confirm the following QSO:												
Call	Start	End										
9X0Y	11/06/2018 13:03:45 🕂	11/06/2018 13:04:44 📑										
Mode Band	Rpt Sent Rpt Rcvd Gr	rid Name										
FT8 20m	+04 +15 KI58											
Tx power 70		Retain										
Comments		Retain										
Operator IK2HKT												
	ОК	Cancel										

4 Note for newcomers

- 4.1 The QSO timing is referenced to the internal clock of your computer. It is mandatory that it be perfectly synchronized. For this reason it is recommended to install a program handling the whole procedure automatically. Among the different sync programs, the one used in this manual is show in Section 2.
- 4.2 Before carrying out a QSO, make sure that the level of your audio card are set to reasonable values for RX and TX. Overloading may prevent decoding on both sides (see the online Help of the WSJT-X program).
- 4.3 The Watchdog (a timer) is set at 3 minutes (see Sect.3). After transmitting for 3 minutes the program switch to StandBy, in which case you have to double-click on the CQ strip of the Dx station to restart the QSO sequence. You may increase/decrease this value a will.
- 4.4 Using the radio CAT is essential, althought not necessary. You may tray the "manual" mode, but this requires being familiar with the frequency-change procedure during the QSO (see the online Help of the WSJT-X program).
- 4.5 If the QSO is logged in WSJT-X the corresponding ADIF file can be found by clicking on File \rightarrow Open log directory \rightarrow wsjtx_log.adi.

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- W	SJT-X	v1.9.	0-rc4	by K	1JT					
File	onfigura	ations	View	Mode	Decode	Save	Tools	Help		
				E	Band Activ	/ity				
τ	UTC	dB	DT	Free	d I	lessa	age			

You can then copy and import it into your station log.

- 4.6 If the Dx station is calling by call areas (e.g. CQ NA for north America, CQ AS for Asia ...) DO NOT answer unless you are in the correct call area. Your message will <u>NOT</u> decoded.
- 4.7 Keep in mind that the Dx station can answer at the same time a miximum of 5 different stations. This has no effect on the procedure and you should do nothing specific. You will observe that your radio might change frequency automatically: no worries, this is correct. Let the QSO complete by itself !
- 4.8 If you wish to use the software in "normal" mode, you should remove the check mark from the "Hound" box (see Sect. 1.9). Remember to enter new reference frequencies in the main window as image below (see Sect. 1.12).



- 4.9 You can find many manuals on the web that can help you understand how FT8 work. Try to read the one from ZL2IFB that you can download from this website: <u>http://www.g4ifb.com/html/ft8_tips.html</u>
- 4.10 9X0Y will work with the "NO DUPE" function activated. If you have been logged before, your call will not be acknowledged. Barring problems with the internet connection, the online log will be updated each minute at this link

http://win.i2ysb.com/logonline/default.asp?ID_dxpedition=50

Open the page and enter your call, then click "Search". Verify the last upload time (in the yellow windows), click "Continue" and if your QSO was logged before that time, you will see it confirmed.

At this point enter the QSO time (HHMM) and click on "Next" to proceed requesting your QSL card via OQRS.