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
Station Details My Call: IX2HKT My Grid: IN45vs AutoGrid IARU Region: Region 1 Image: Compound callsign holders: Full call in Tx3 Image: Compound
My Call: IX2HKT My Grid: JN45Vs AutoGrid IARU Region: Region 1 Image: Compound callsign holders: Full call in Tx3 Image: Compound callsign holders: Full call in Tx3 Image: Compound callsign holders: Full call in Tx3 Image: Compound callsign holders: Image: Compound callsign holders: Full call in Tx3 Image: Compound callsign holders: Iman
Message generation for type 2 compound callsign holders: Full call in Tx3 Display Image: Second callsign holders: Pisplay Font Display distance in miles Font Tx messages to Rx frequency window Decoded Text Font Show principal prefix instead of country name Behavior Behavior Enable VHF/UHF/Microwave features
Message generation for type 2 compound callsign holders: Full call in Tx3 Display Image: Compound callsign holders: Display Font Display distance in miles 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 Enable VHF/UHF/Microwave features
Display 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 Enable VHF/UHF/Microwave features
Image: Start Start Font Image: Start Start Start Font Image: Start Start Start Decoded Text Font Image: Start St
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 Enable VHF/UHF/Microwave features
Display distance in miles Decoded Text Font T x messages to Rx frequency window Show DXCC entity and worked before status Show principal prefix instead of country name Behavior Behavior Enable VHF/UHF/Microwave features
Tx messages to Rx frequency window Show DXCC entity and worked before status Show principal prefix instead of country name Behavior Behavior Enable VHF/UHF/Microwave features
Show DXCC entity and worked before status Show principal prefix instead of country name Behavior Monitor off at startup Enable VHF/UHF/Microwave features
Behavior Monitor off at startup Enable VHF/UHF/Microwave features
Behavior Monitor off at startup Enable VHF/UHF/Microwave features
Behavior Monitor off at startup Enable VHF/UHF/Microwave features
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
CAN ID after 72
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	g Frequencies Colors Advanced
Rig: Kenwood TS-2000	Poll Interval: 1 s 🚊
CAT Control	PTT Method
Serial Port: COM4	O VOX O DTR
Serial Port Parameters	CAT CRTS
Baud Rate: 38400	Port: COM109
Data Bits	
C Default C Seven C Eight	C Rear/Data C Front/Mic
Stop Bits	
C Default C One C Two	Mode
	None OB OData/Pkt
C XON/XOFF C Hardware	Split Operation
	None Rig Fake It
Force Control Lines	
DTR: TRTS:	Test CAT Test PTT
	OK Cancel

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

octungs	<u> </u>
General Radio Audio Tx Macros Reporting Frequencies Colors Advanced	
Soundcard	
Input: DAX Audio RX 1 (FlexRadio Syste	10 -
Output: DAX Audio TX (FlexRadio Systems Mo	10 -
Save Directory	
Location: C:/Users/STEFANO/AppData/Local/WSJT-X/save	ct
Azel Directory	
Location: C:/Users/STEFANO/AppData/Local/WSJT-X	ct
Remember power settings by band	
Transmit Tune	

2121

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

Settings		? ×
General Radio Audi	Tx Macros Reporting Frequencies Colors Advanced	
Logging Prompt me to log QSO Convert mode to RTTY dB reports to comment Clear DX call and grid	рр Call: [IК2НКТ] s after logging	
Network Services	potting	
UDP Server		
UDP Server:	127.0.0.1 I Accept UDP requests	
UDP Server port number:	2237 I Notity on accepted UDP request Accepted UDP request restores window	
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-

	-w	or	king	Freq	uen	cie
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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):	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	rs	Miscellaneous					
Random	n erasure pa	atterns: 6		-	Degrade S/N of .	wav file:	0,0 dB	<u>.</u>		
Aggress	sive decodin	g level: 0		×	Receiver bandwi	<u> </u>				
П тис	Two-pass decoding					Tx delay: 0,2 s				
					🗖 x 2 Tone Spacing					
					🗌 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	wnload - Versione 1.9.1	
Qu	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	Elenco Server	ort : 123 Correz Timeo	tione : +0.00 Abilita NTP	7						
Porta Seriale: COM1	BAUD : 4800 Bit :	8 Bit di Stop 1	Parità N 💌							
	DN Errore Max:	0.3 S	Correzione +0.00 s							
Coordinate :	Alt	Protocollo titudine :	WW Locator :							
Opzioni Generali										
Avvia all'avvio di Windows Image: Avvia in system tray Image: Sinc. all'avvio Sinc. ogni 1 minuti (0 sinc. manuale) al secondo 10 Se errore NTP prova con il GP?										
Correzzione massima	ore (0 = no limite) Controlla	aggiornamenti ogni	30 giorni (0 disabilita)	_						
Visualizza notifiche	Abilita BktClock	Log Diagnost	ico Cancella Log Diag	•						
Log sincronizzazione	C:\Users\STEFANO\Docum	nents\BktTimeSyncLo	g.bd Visualizza							
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										
			Þ							
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.

١	WSJT-X v	1.9.	0-rc4	by K	IJT							
File	Configurati	ions	View	Mode	Decode	Save	Tools	Help				
	Band Activity											
	UTC (dB	DT	Free	q Message							

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 !

١	NSJT-X	v1.9.	0-rc4	by K1J	T											_	
File	Configur	rations	View	Mode D	ecode S	ave Too	ols Help										
Band Activity												Rx Fr	requei	ncy			
	UTC	dB	DT	Freq	Me	ssage			UTC	dB	DT	Freq	N	Message			
							20.		130330	3	0.5	314	~ (CQ 9X0Y	KI58		A
1	30330	3	0.5	314	~ CQ	9X0Y	KI58		<mark>130345</mark>	Тx		1700	~ (9X0Y IK	2нкт С	JN45	
Ŀ		1		1					<u></u>			_					<u> </u>
	Log QSO)	Sto	pp	Mon	itor	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		1202	. тх		1700 ~	9X0Y IKZHKI			
-						20m	1304	00 3	0.5	314 ~	IK2HKT 9X0Y +15			
1	.30400	3	0.5	314 ~	IK2HKT 9X0Y	+15	1304	15 Tx	1	314 ~	9X0Y IK2HKT R+04			
						-						-		
	I					►						•		
	Log QSO		Sto	op	Monitor Er	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

🥥 WSJT-X 🛛 v1.9	.0-rc4 by K1JT										
File Configurations View Mode Decode Save Tools Help											
	Band A	Activity	Rx Frequency								
UTC dB	DT Freq	Message		UTC	dB	DT	Freq	Message			
130330 3 130400 3	0.5 314 ~ 0.5 314 ~	CQ 9X0Y KI58 20m IK2HKT 9X0Y +15 20m		130330 130345 130400	3 Tx 3 Tx 3	0.5	314 ~ 1700 ~ 314 ~ 314 ~	CQ 9X0Y KI5 9X0Y IK2HKT IK2HKT 9X0Y 9X0Y IK2HKT	8 A		
130430 3	0.5 313 ~	IK2HKT 9X0Y RR73		130430	5		1				
Log QSO	Stop	Monitor	D	ecode	Enat	le Tx	Halt	Tx Tune	Menus		

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											
	OK	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.

			0		'	,	_ 0			
SJT-X v1.9.0-rc4 by K1JT										
File	onfigura	ations	View	Mode	Decode	Save	Tools	Help		
				E	and Activ	/ity				
T	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.