A simplified Guide to the FT8 Dxpedition mode

By Stefano IK2HKT - Rel. 2.0.0 - January 2019

1 Download and configuration

- 1.1 Download and install WSJT-X (release 2.0.0 or higher) from: <u>https://physics.princeton.edu/pulsar/k1jt/wsjtx.html</u> NOTE: Some screen shot that follow are for rel. 1.9.0 but they are the same for rel 2.0.0
- 1.2 Lunch the program, then press F2
- 1.3 Click on "General", enter your data and check appropriate entries (see image below)

ettings			
ieneral Radio Audio Tx Macros	Reporting Frequencies 0	Colors Ad	Ivanced
Station Details			
My Call: K2HKT My Grid: Message generation for type 2 compound call		Grid IARU R	egion: Region 1
message generation for type 2 compound can			
Display			
Blank line between decoding periods			Font
Display distance in miles			
Tx messages to Rx frequency window		1	Decoded Text Font
Show DXCC entity and worked before stat	us		
Show principal prefix instead of country na			
Show principal prenx instead of country ha	ine		
Behavior			
Monitor off at startup	Enable VHF/UHF/Microwave featu	ures	
Monitor returns to last used frequency			
✓ Double-click on call sets Tx enable	Single decode		,
Disable Tx after sending 73	Decode after EME delay		
Disable 1x after sending 73	Decode after EME delay		
		Tx wate	hdog: 3 minutes 芸
CW ID after 73		Periodic C	CW ID Interval: 0 🚊

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)

g: Kenwood TS-2000	[PTT_Method		Poll Interval: 1 s 📩
Serial Port: COM4	vox	D	TR
Serial Port Parameters	CAT	C R	TS
Baud Rate: 38400	Port: COM109		×
Data Bits © Default © Seven 💽 Eight	Transmit Audio So	urce 🖝 F	ront/Mic
Stop Bits C Default C One C Two	Mode		
Handshake	None	USB	 Data/Pkt
C Default None	- Split Operation		
C XON/XOFF C Hardware	None	C Rig	🔎 Fake It
Force Control Lines	Test CAT		Test PTT
	Test CAT		Test PTT

-

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

settings
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
AzEl Directory
Location: C:/Users/STEFANO/AppData/Local/WSJT-X Select
Remember power settings by band
Transmit Tune

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

Settings	? ×
General Radio Audio Tx Macros Reporting Frequencies Colors Advanced	1
Logging Prompt me to log QSO Convert mode to RTTY dB reports to comments Clear DX call and grid after logging	
Network Services	51
Enable PSK Reporter Spotting	
UDP Server	
UDP Server: 127.0.0.1 CAccept UDP requests	
UDP Server port number: 2237	
Accepted UDP request restores window	
N1MM Logger+ Broadcasts	51.
Enable logged contact ADIF broadcast	
N1MM Server name or IP address: 127.0.0.1	
N1MM Server port number: 2333	
OK Cancel	

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

-Wor	king	Frequ	lencie
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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). (On our website you'll find the full list of operationg frequency for all bands). Click OK

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

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

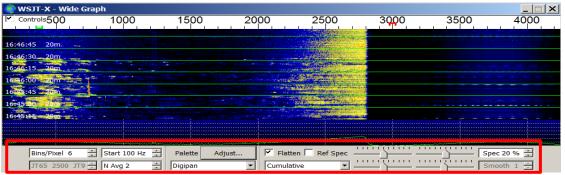
(NOTE: uncheck the box to return to a "normal" mode).

		r r	1	1	
General Radio	Audio Tx Macros	Reporting	Frequencies Colors A	Advanced	
JT65 VHF/UHF/Microwa	ave decoding paramete	ers	Miscellaneous		
Random erasure patte	erns: 6	-	Degrade S/N of .wav file:	0,0 dB	*
Aggressive decoding le	evel: 0		Receiver bandwidth:	5000 Hz	-
Two-pass decodin	g		Tx delay:	0,2 s	*
			Tone spacing		
			□ x 2	□ x 4	
Special operating a	ctivity: Generation of I	T8 and MSK144	messages		
C Fox		0	Hound		
O NA VHF Contest		0	ARRL Field Day	FD Exch:	
C EU VHF Contest		0	ARRL RTTY Roundup	RTTY RU Exch:	

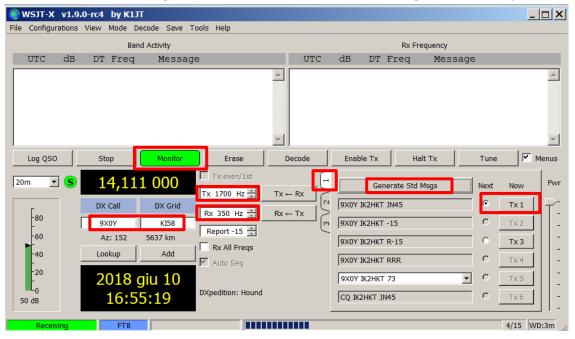
1.10

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

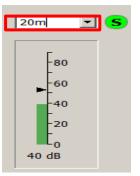
Configure the WideGraph window as in the image below



1.13 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"



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



1.15 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 TR 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 minu Correzzione massima	ore $(0 = n_0)$	aggiornamenti ogni	9 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.

\varTheta WSJT-X v1.9.0-rc4 by K1JT											
File	e Configu	urations	View	Mode	Decode S	ave	Tools	Help			
	Band Activity										
	UTC	dB	DT	Free	n Me	ssa	ige				

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										
Band 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								
File	Configur	ations	View	Mode Deco	de Save Tools Help							
				Band A	ctivity	Rx Frequency						
	UTC	dB	DT	Freq	Message		UTC	dB	DT I	Freq	Message	
						20m 🔺	130330	3	0.5	314 ~	CO 9X0Y KI58	
1	.30330	3	0.5	314 ~	CQ 9X0Y KI58		1200	тх		1700 ~	9X0Y IKZHKI	
-						20m	130400	3	0.5	314 ~	IK2HKT 9X0Y +15	
1	.30400	3	0.5	314 ~	IK2HKT 9X0Y +	·15	130415	Тx		314 ~	9X0Y IK2HKT R+04	
						-					V	
	I					►	4					
	Log QSO		Sto	op	Monitor Era		Decode	Enat	ole Tx	Halt	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 View	w Mode De	code Save To	ols Help									
Band Activity							Rx Frequency						
UTC	dB I)T Freq	Message			UTC	dB	DT	Freq	Message			
130330	30.	.5 314	~ CQ 9X0Y	20m KI58 20m		130330 130345	3 Tx	0.5	314 ~ 1700 ~	CQ 9X0Y KI5 9X0Y IK2HKT			
130400	30.	.5 314	~ IK2HKT	9X0Y +15		130400			314 ~	1K2HKT 9X0Y 9X0Y IK2HKT	KTUT		
130430 ∢	30.	.5 313	~ ІК2НКТ	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									

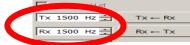
4 Note for newcomers

- 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.

	•		0		'	,	_ 0			
- W	SJT-X	v1.9.	0-rc4	by K1JT						
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 "Special operating activity" 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:
 http://www.g4ifb.com/html/ft8_tips.html
- 4.10 Italian Dxpedition Team operator 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 link mentioned in our webpage. 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.