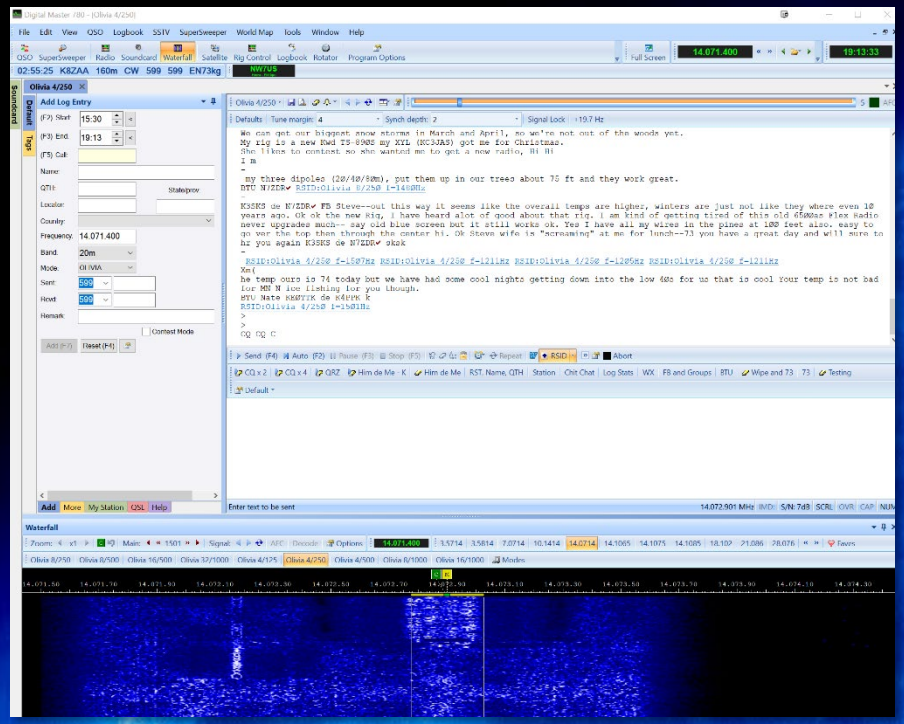


Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

Olivia – The Original Robust Digital DX Chat Mode

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

Have you dived into the crowded but fun pool of FT8 operation--or one of the other Joe Taylor modes (such as JT65, FT8, or JT9)?

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

If you are excited about digital modes, here is something you might enjoy exploring, as well.

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

The JT/FT digital modes do an incredible job under marginal propagation conditions.

But, there are other modes that offer keyboard-to-keyboard conversational QSO opportunities that can overcome rough shortwave radio propagation conditions.

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

While making a quick QSO (exchange of signal report, callsign, location) is possible with modes like FT8…

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

FT8 does not allow for a true two-way conversation, say, cultural exchange, or an emergency message.

Olivia is a chat mode, and in some cases, just as capable as FT8 in terms of signal-to-noise.

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

When you desire to get to know people from other areas of the world, or if you need to establish networks around the world for passing information...

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

...perhaps an emergency net in support of the Red Cross--or if you are motivated by any other of a myriad reasons to establish a keyboard-to-keyboard conversation by way of the ionosphere, modes like Olivia are great candidates for your consideration.

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

Olivia – The Original Robust Digital DX Chat Mode

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

Olivia is an MFSK

-- *Multi-Frequency Shift Keying* --

radioteletype protocol designed to work in difficult conditions on shortwave bands.

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

The Olivia digital mode is commonly used by amateur radio operators to reliably transmit ASCII characters over noisy channels using the high frequency (i.e., 3 MHz to 30 MHz; HF; shortwave) spectrum.

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

The typical Olivia signal is decoded when the amplitude of the noise is over ten times that of the digital signal!

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

In 2005, SP9VRC, Pawel Jalocha, released to the world a mode that he developed starting in 2003 to overcome difficult radio signal propagation conditions on the shortwave (high-frequency, or HF) bands.

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

By difficult, we are talking significant phase distortions and low signal-to-noise ratios (SNR) plus multipath propagation effects.

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

The Olivia-modulated radio signals are decoded even when it is up to eighteen dB below the noise floor. Yes, -18dB and we can still decode!

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

That means that Olivia is decoded when the amplitude of the noise is slightly over three times that of the digital signal!

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

When the propagation of digital signals is sub-optimal, such as when the signal experiences low signal-to-noise ratio, and/or the path between the transmitting station and receiver experiences multipath propagation, many digital modes suffer the loss of data.

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

Olivia decodes well under other conditions that are a complex mix of atmospheric noise, signal fading (QSB), interference (QRM), polar flutter caused by a radio signal traversing a polar path.

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

Olivia even is capable when the signal is affected by auroral conditions (including the Sporadic-E Auroral Mode, where signals are refracted off of the highly-energized E-region in which the Aurora is active).

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

Currently, the only other digital modes that match or exceed Olivia in their sensitivity are some of the modes designed by Joe Taylor as implemented in the WSJT programs, including FT8, JT65A, and JT65-HF--each of which are certainly limited in usage and definitely not able to provide true conversation capabilities.

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

Olivia is useful for emergency communications, unlike JT65A or the highly popular FT8.

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

A look at Olivia mode options:

The standard Olivia formats (shown as the number of tones/bandwidth in Hz) are 8/250, 8/500, 16/500, 8/1000, 16/1000, and 32/1000.

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

A look at Olivia mode options:

Some even use 16/2000 for series emergency communication. The most commonly-used formats are 16/500, 8/500, and 8/250, and 16/1000.

What do these numbers mean?

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

Take Olivia 8/250:

The 8 represents the number of tones used to encode the ASCII characters.

The 250 represents the bandwidth in which these 8 tones are interspersed; 8 tones in a 250-Hz window.

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

Take Olivia 16/500:

The 16 represents the number of tones used to encode the ASCII characters.

The 500 represents the bandwidth in which these 16 tones are interspersed; 500 Hz.

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

These different choices in bandwidth and tone settings can cause some confusion and problems with so many formats and so many other digital modes.

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

After getting used to the sound and look of Olivia in the waterfall, though, it becomes easier to identify the format when you encounter it.

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

To aid in your detection of what mode is being used, there is a feature of many digital-mode software implementation suites: the RSID -- ***the Reed-Solomon Identification*** (RSID)

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

Olivia 8/250

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

Olivia 8/500

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

Olivia 8/250
QSO –
signals from Japan into Ohio

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

Olivia – The Original Robust Digital DX Chat Mode

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

TEST results (SNR<0, BW<500Hz) v8.1 2010-08-17

Mode and format	BW	Typing Speed [wpm] (declared)	TEST1 (poor conditions) SNR [dB]	TEST2 (disturbed NVIS) SNR [dB]	TEST3 (moderate conditions) SNR [dB]	TEST4 (Flutter fading) SNR [dB]	
Olivia							HLD/AWG
125/2 125/4 125/8	125	9.5 9.5 7	-8 -15 -18	 -15 -17	 -14	 -16 -17	
250/2 250/4 250/8	250	19.1 20.8 14.4 (14.6)	-4 -10 -14	 -10 -15	 -14	 -15	 /-14
500/2 500/4 500/8 500/16 500/32	500	37.5 37.4 28.5 (29.3) 19.0 (19.5) 12.2	>0 -7 -11 -14 -17	 np -10 -14 -17	 -10 -14	 -12 -14 -17	 -13/ -15/

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

Voluntary Olivia Channelization

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

Since Olivia signals can be decoded even when received signals are extremely weak, (signal to noise ratio of about -14db), signals strong enough to be decoded are sometimes below the noise floor and therefore impossible to search for manually.

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

As a result, amateur radio operators have voluntarily decided upon channelization for this mode. This channelization allows even imperceptibly weak signals to be properly tuned for reception and decoding.

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

By common convention amateur stations initiate contacts utilizing 8/250, 16/500, or 32/1000 configuration of the Olivia mode.

After negotiating the initial exchange, sometimes one of the operators will suggest switching to other configurations to continue the conversation at more reliable settings, or faster when conditions allow.

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

Olivia (CENTER) Frequencies (kHz) for Calling

It is often best to get on standard calling frequencies with this mode because you can miss a lot of weak signals if you don't.

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

Olivia (CENTER) Frequencies (kHz) for Calling

However, with Olivia activity on the rise AND all the other modes vying for space, a good deal of the time you can operate wherever you can find a clear spot--as close as you can to a standard calling frequency.

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

Note: some websites publish frequencies in this band, that are right on top of weak-signal JT65, JT9, and FT8 segments.

DO NOT QRM weak-signal QSOs!

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

We (active Olivia community members) suggest 8/250 as the *starting* settings when calling CQ on the USB frequencies designated as

"Calling Frequencies."

A Calling Frequency is a center frequency on which you initially call...

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

Q: What's a 'CENTER' Frequency? Is That Where I Set My Radio's Dial?

For those new to waterfalls:

the CENTER frequency is the CENTER of the cursor shown by common software.

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

The cursor is what you use to set the transceiver frequency on the waterfall. If your software waterfall shows the frequency, then you simply place the cursor so that its center is right on the center frequency.

Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

OLIVIA DIGITAL MODE HF *SUGGESTED* CALLING FREQUENCIES

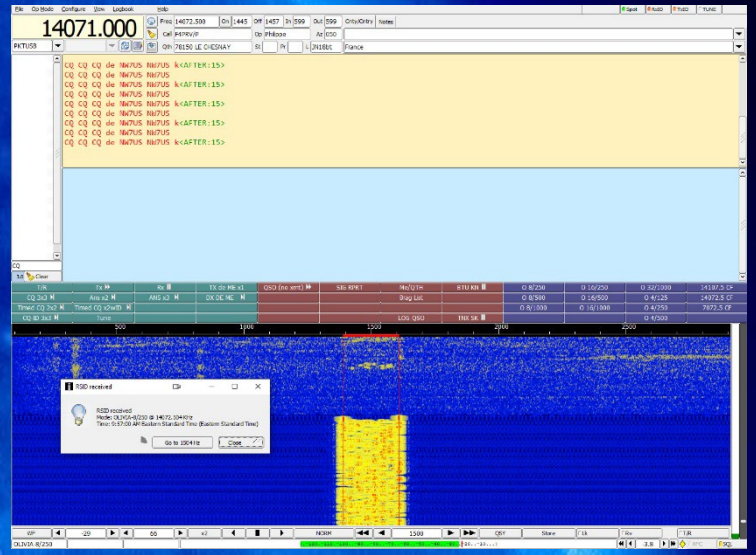
The following are ONLY suggestions to aid in finding other Olivia signals

This listing shows **CENTER**, then **DIAL**, then the **number of tones** and **bandwidth**

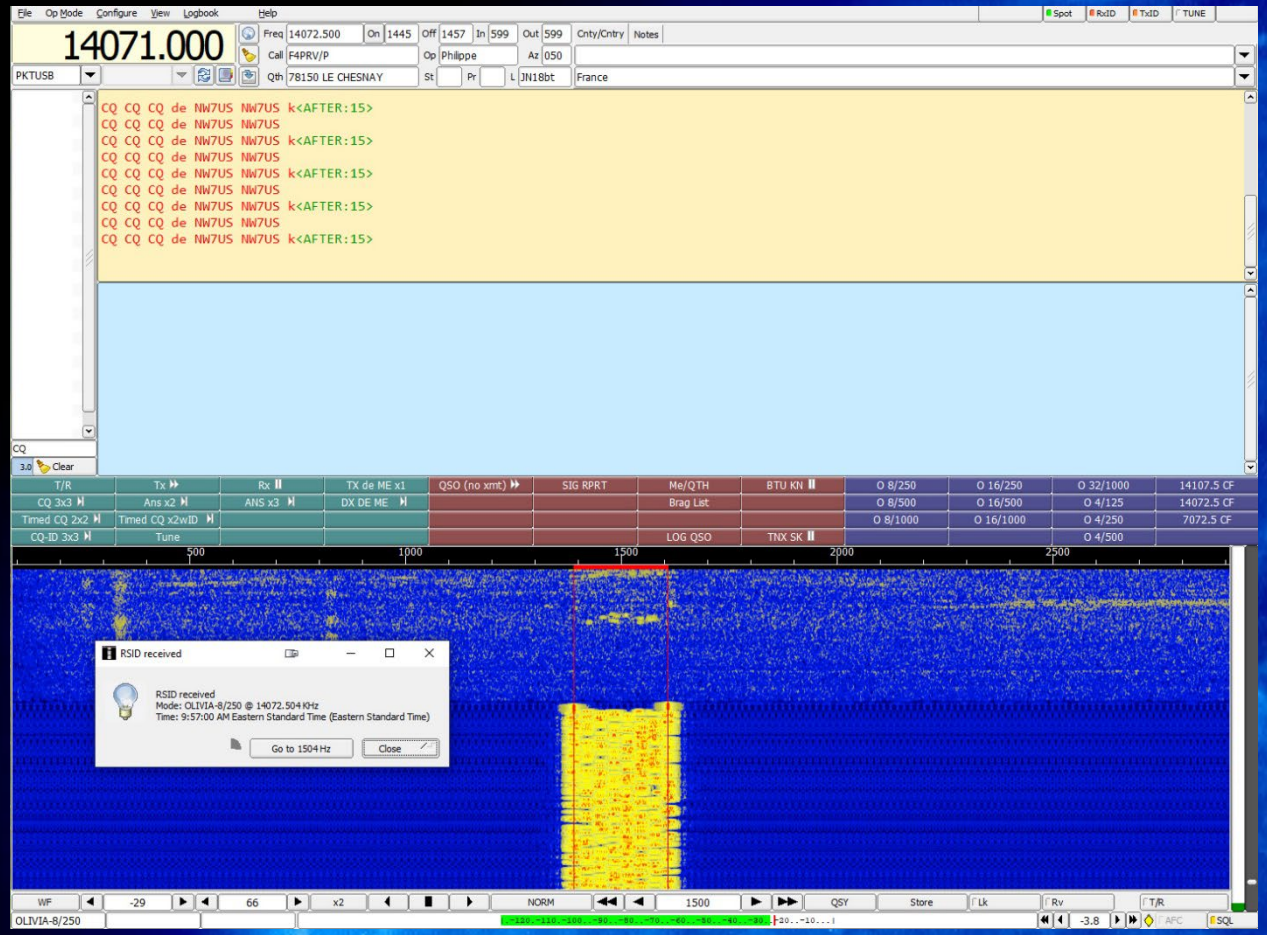
CENTER	DIAL	# of Tones/Bandwidth
1.8390 MHz	1.8375 MHz	8/250 (ITU Region 1, etc.; Primary International)
1.8270 MHz	1.8255 MHz	8/250 (ITU Region 2; Secondary)
3.5830 MHz	3.5815 MHz	8/250
7.0400 MHz	7.0385 MHz	8/250 (ITU Region 2, etc., Primary International)
7.0730 MHz	7.0715 MHz	8/250 (Secondary)
10.1430 MHz	10.1415 MHz	8/250
10.1440 MHz	10.1425 MHz	16/1000 (Potential - be mindful of other stations)
14.0730 MHz	14.0715 MHz	8/250
14.1075 MHz	14.1060 MHz	32/1000
18.0990 MHz	18.0975 MHz	8/250
21.0730 MHz	21.0715 MHz	8/250
24.9230 MHz	24.9215 MHz	8/250
28.1230 MHz	28.1215 MHz	8/250

As Of July 7, 2023
Suggested "Starting Frequencies"

NOTE: **CENTER** is where you place *the center of the software's cursor* on the **waterfall**, and then *click to select* that *center frequency on the waterfall*. If you use the **DIAL** frequency from this list, then place your waterfall cursor center at the **1500-Hz offset** up the waterfall (to the right of the left margin of the waterfall), and *click to select* that **center frequency on the waterfall**. This results in the software and transceiver being correctly tuned for the listed, *suggested calling **CENTER** frequency*.



Introducing: the Olivia Digital Chat Mode for Shortwave (HF)



Introducing: the Olivia Digital Chat Mode for Shortwave (HF)

Olivia – Visit Our Website

https://OliviaDigitalMode.org