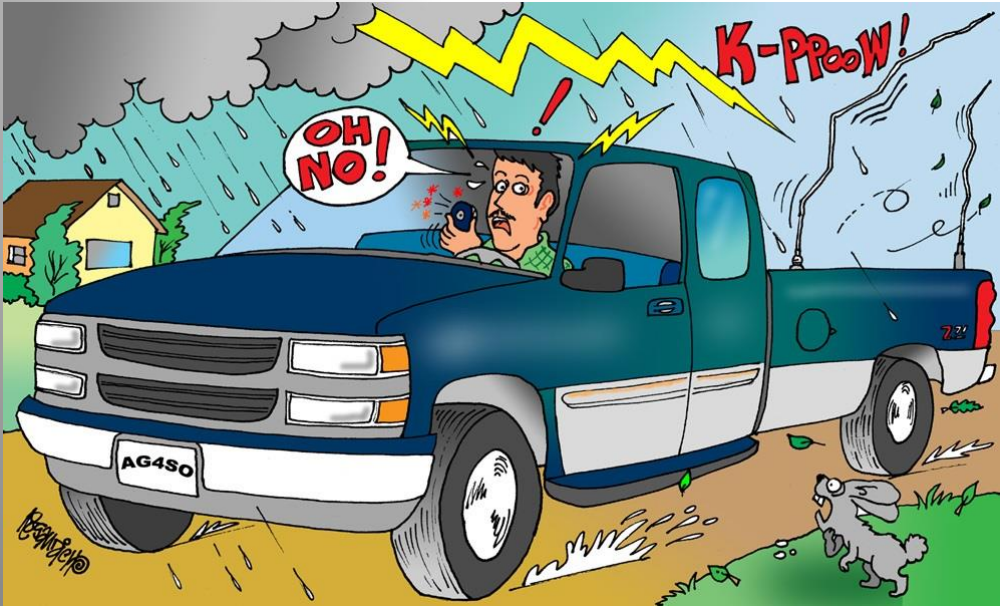


FLDIGI Training Net

K3EUI Barry

Updated May 2025



Overview

- FLDIGI setup and configuration
- What sound cards work best
- What modes can you use
- Where to look for help:
 - FLGIDI IO Groups
- FLDIGI Training Net
 - Saturdays on 3583 kHz and 7068 kHz
 - (1st and 3rd Saturday of each month)

Zoom Link:

<https://us02web.zoom.us/j/7950991313?pwd=NFVJN1lQaDVIZUZQNGFnYTRiR0orQT09>

FLDIGI
(Fast Light Digi)

Narrow Bandwidth
Emergency Message System

Download and Install FLDIGI: W1HKJ.com

W1HKJ Software

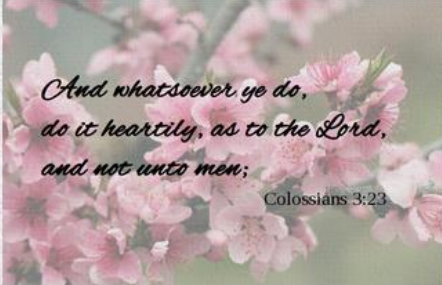
www.w1hkj.org

Software By W1HKJ & Associates

9 July 2024

- fldigi / flarq - modem / arq
- flamp - Amateur Multicast Protocol - file transfer program
- flwrap - file encapsulation / compression
- flmsg - NBEMS messaging system, forms manager/designer and transport front end
- flrig - rig control program, cooperates with fldigi
- flwkey - modem program for the K1EL Winkeyer series
- fllog - can use same data file as fldigi
- flnet - voice net controller database / check-in application
- flcluster - telnet client to remote DX cluster servers
- flaa - Rig Expert Antenna Analyzer control program
- kcat - Kachina 505DSP controller
- kcts - Kachina 505DSP test suite
- test suite - includes linsim, comptext and comptty

[Support fldigi](#)
[contribute to your favorite charity](#)



*And whatsoever ye do,
do it heartily, as to the Lord,
and not unto men;
Colossians 3:23*

All source, dmg, and Windows setup files are now available on this [site](#) and at [Source Forge](#)

Mode specifications, waterfall & audio clips at [Sights & Sounds of Digital Modes](#)

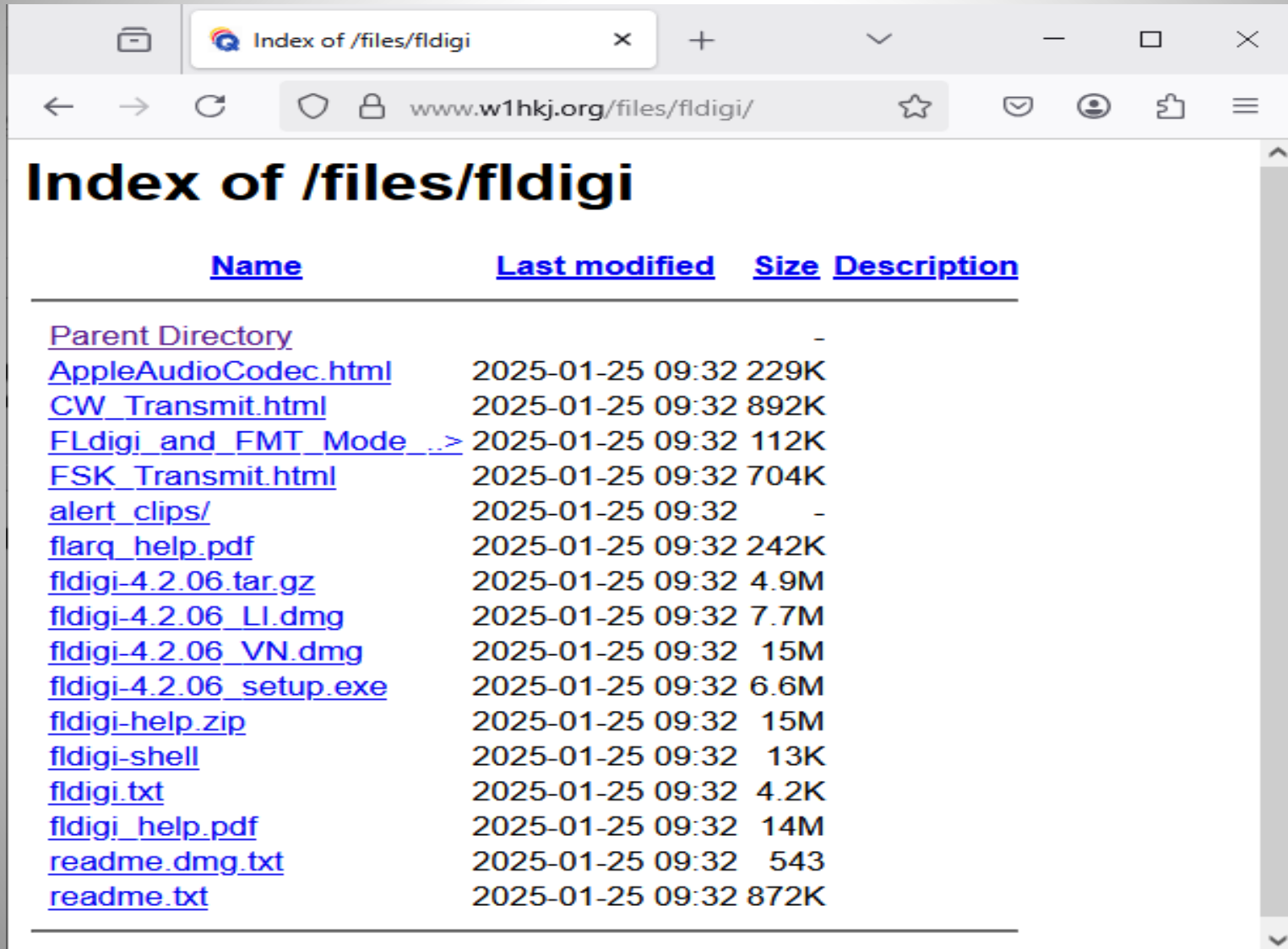
Visit and contribute to the [fldigi wiki](#).

[Privacy statement](#)

Software	Version	Date	Download @ W1HKJ	On-Line Help @ W1HKJ	US English Manual (pdf)	Ukrainian Manual (pdf)
fldigi/flarq	4.2.05 / 4.3.9	04/23/2024	fldigi	fldigi help	fldigi (pdf)	flarq_uk (pdf)
flrig	2.0.04	10/11/2023	flrig	flrig help	flrig (pdf)	flrig_uk (pdf)
flmsg	4.0.23	09/02/2023	flmsg	flmsg help	flmsg (pdf)	flmsg_uk (pdf)
flamp	2.2.13	07/09/2024	flamp	flamp help	flamp (pdf)	flamp_uk (pdf)

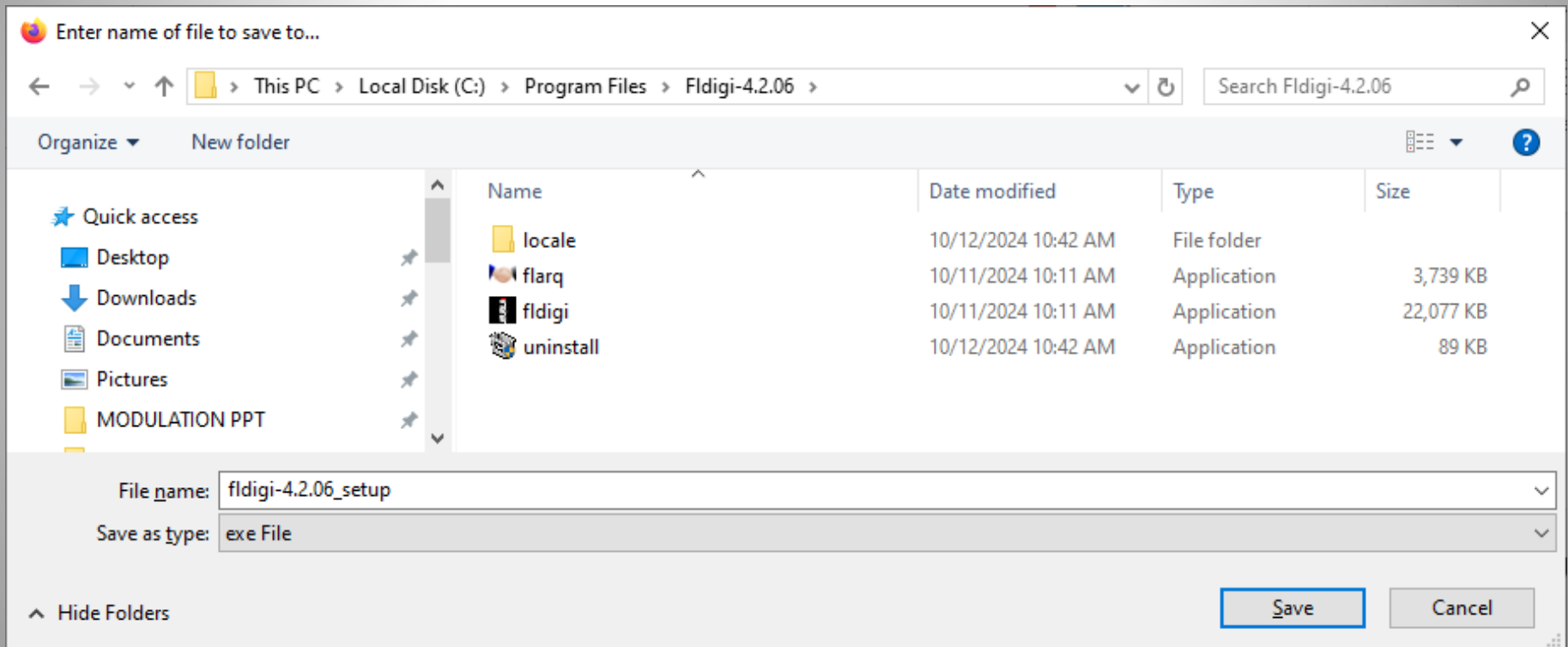
Index of FLDIGI

Download appropriate file



<u>Name</u>	<u>Last modified</u>	<u>Size</u>	<u>Description</u>
Parent Directory		-	
AppleAudioCodec.html	2025-01-25 09:32	229K	
CW_Transmit.html	2025-01-25 09:32	892K	
FLdigi_and_FMT_Mode_...>	2025-01-25 09:32	112K	
FSK_Transmit.html	2025-01-25 09:32	704K	
alert_clips/	2025-01-25 09:32	-	
flarq_help.pdf	2025-01-25 09:32	242K	
fldigi-4.2.06.tar.gz	2025-01-25 09:32	4.9M	
fldigi-4.2.06_LI.dmg	2025-01-25 09:32	7.7M	
fldigi-4.2.06_VN.dmg	2025-01-25 09:32	15M	
fldigi-4.2.06_setup.exe	2025-01-25 09:32	6.6M	
fldigi-help.zip	2025-01-25 09:32	15M	
fldigi-shell	2025-01-25 09:32	13K	
fldigi.txt	2025-01-25 09:32	4.2K	
fldigi_help.pdf	2025-01-25 09:32	14M	
readme.dmg.txt	2025-01-25 09:32	543	
readme.txt	2025-01-25 09:32	872K	

Install in Windows: Program Files



FLDIGI

FREE program

Works on Windows, Linux, Macs

Updated regularly

Good for casual qso, DX or EMCOMM

Low memory required

Works on older laptops/desktops

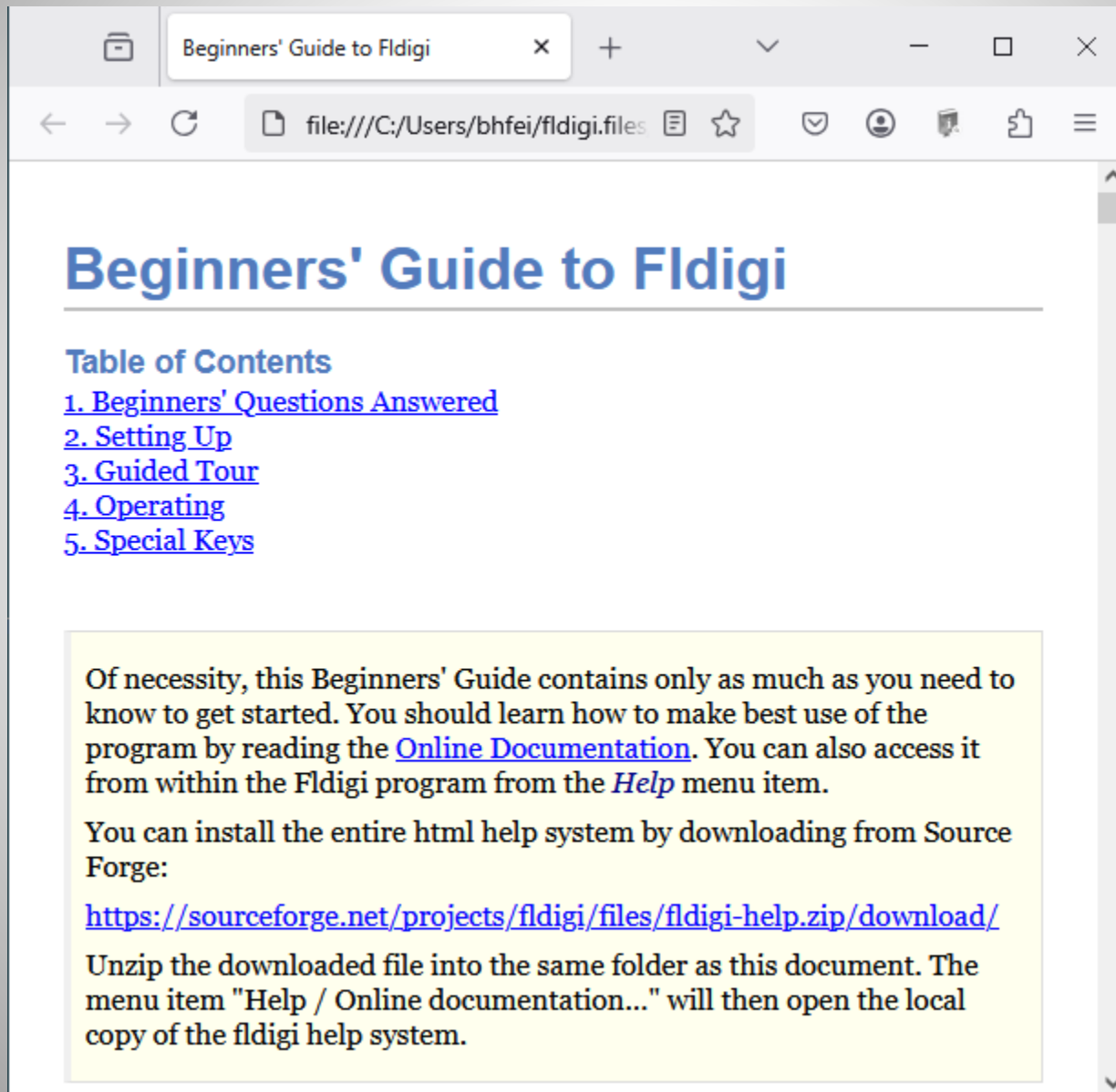
Does NOT do

VARA, Pactor, JT modes

Components of FLDIGI

- FLDIGI - main sound card program
- FLMSG - preformed message types
- FLAMP - sends longer files in blocks
- FLRIG - CAT or Rig Control options
- FLLOG - logging program

Beginner's Guide to Fldigi



Beginners' Guide to Fldigi

Beginners' Guide to Fldigi

Table of Contents

- [1. Beginners' Questions Answered](#)
- [2. Setting Up](#)
- [3. Guided Tour](#)
- [4. Operating](#)
- [5. Special Keys](#)

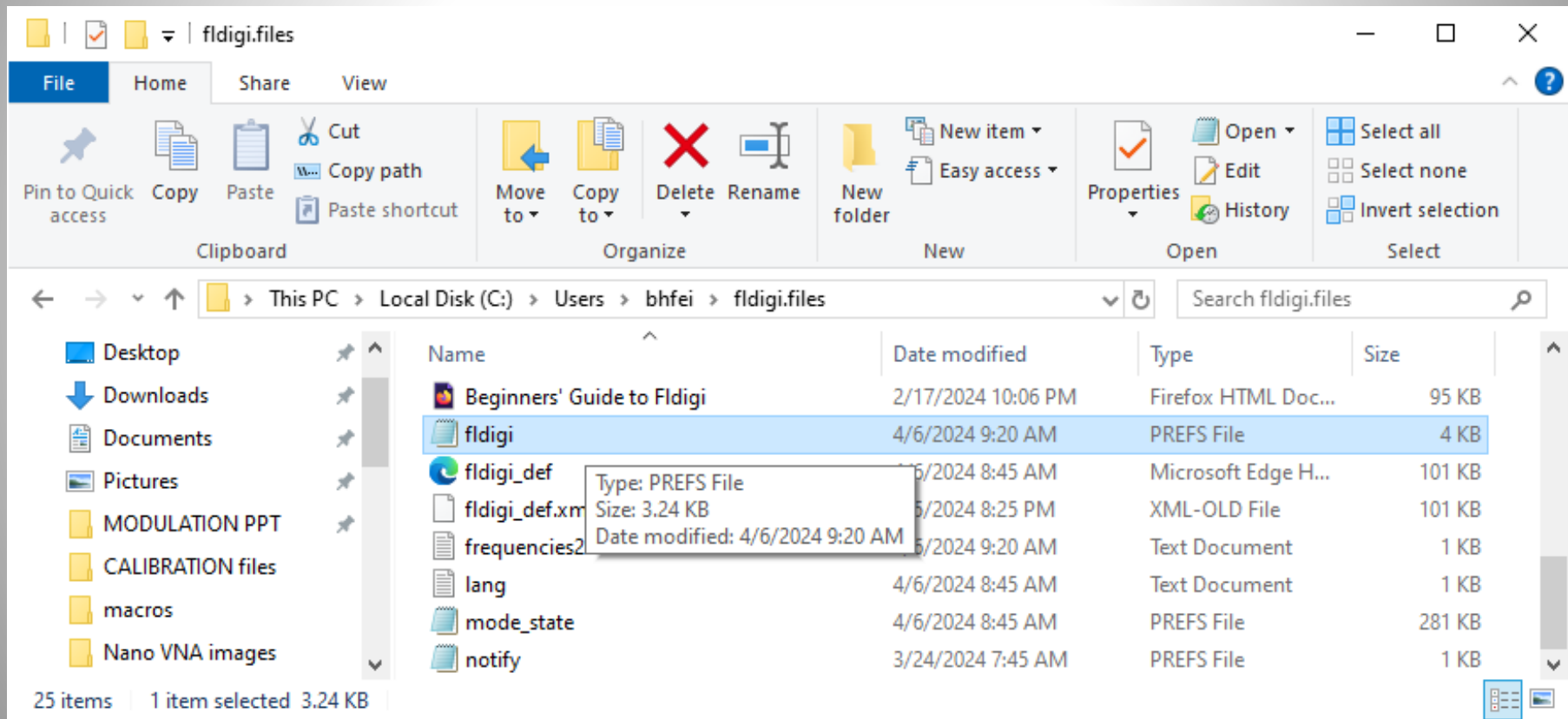
Of necessity, this Beginners' Guide contains only as much as you need to know to get started. You should learn how to make best use of the program by reading the [Online Documentation](#). You can also access it from within the Fldigi program from the *Help* menu item.

You can install the entire html help system by downloading from Source Forge:

<https://sourceforge.net/projects/fldigi/files/fldigi-help.zip/download/>

Unzip the downloaded file into the same folder as this document. The menu item "Help / Online documentation..." will then open the local copy of the fldigi help system.

Fldigi "prefs" file
stores all of your config setup
updating Fldigi does not alter prefs file



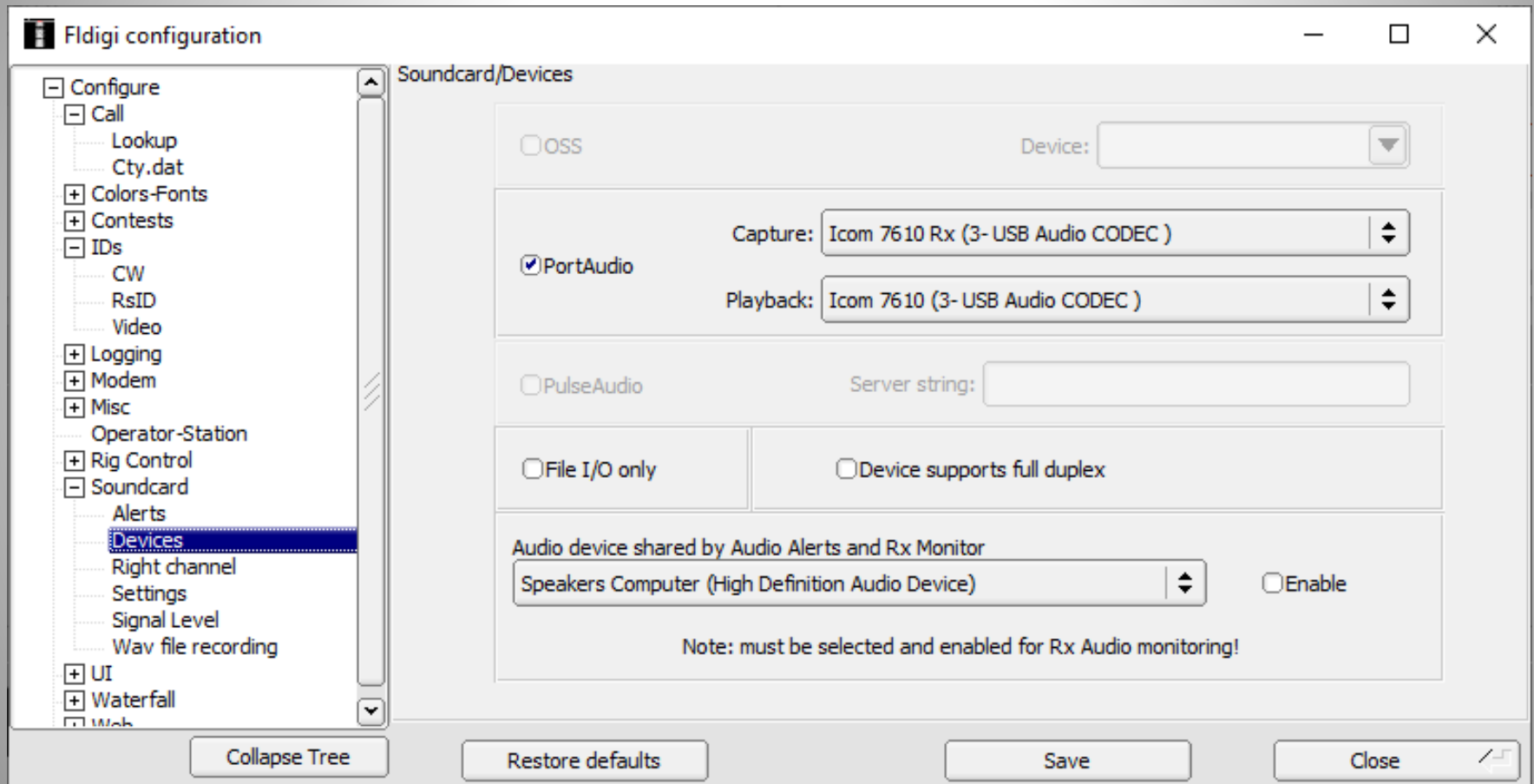
Configure Fldigi: operator and station

The screenshot shows the Fldigi configuration window with the 'Operator-Station' section selected in the left-hand tree. The configuration fields are as follows:

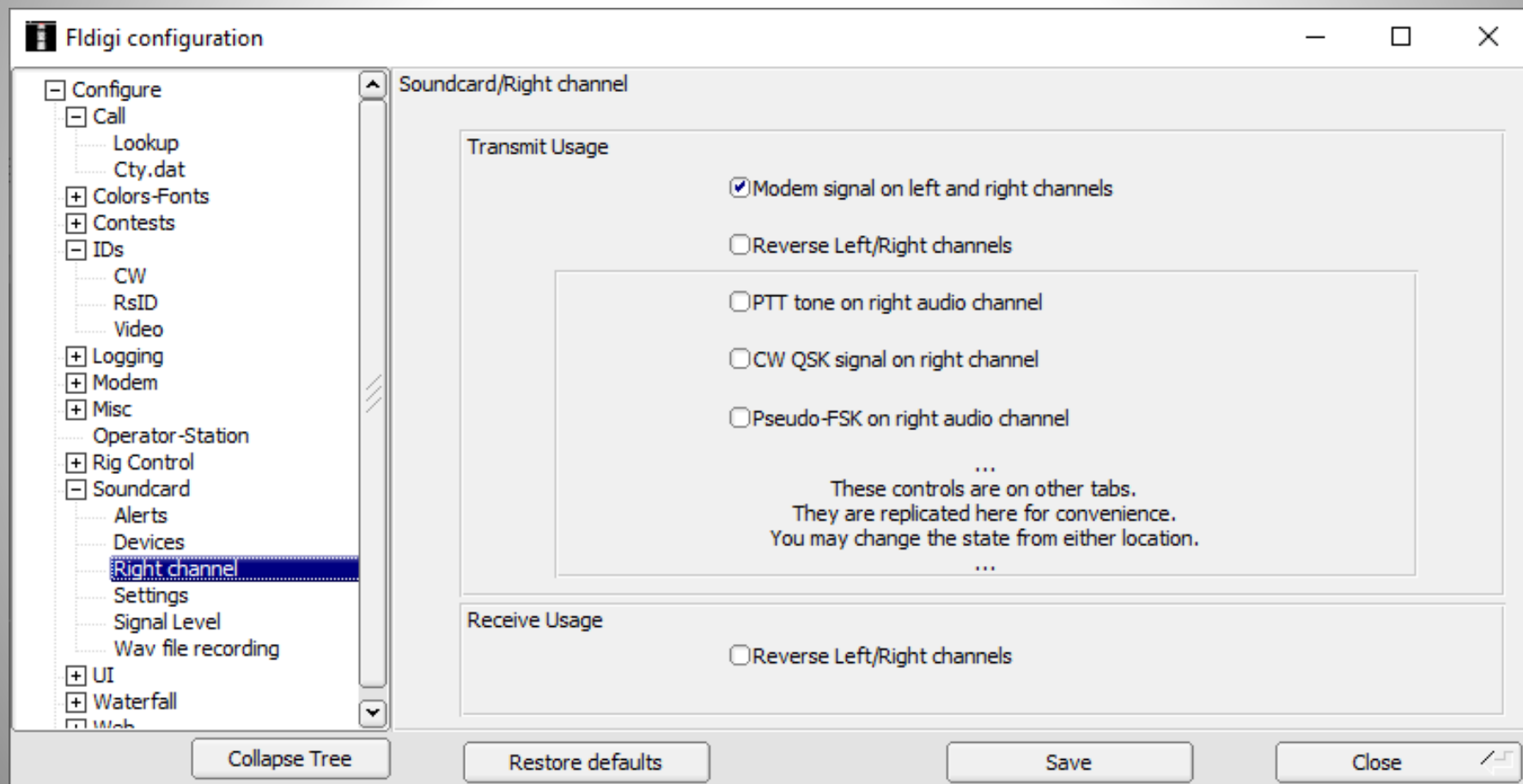
Field	Value
Station Callsign	K3EUI
Operator Callsign	K3EUI
Operator Name	Barry
Antenna	dipole or vertical
Station City	West Chester Chester County PA
Station Locator	FM29ew
State/Prov./Country	Pennsylvania PA
Counties / Regions	Chester CHE

At the bottom of the window, there are four buttons: 'Collapse Tree', 'Restore defaults', 'Save', and 'Close'.

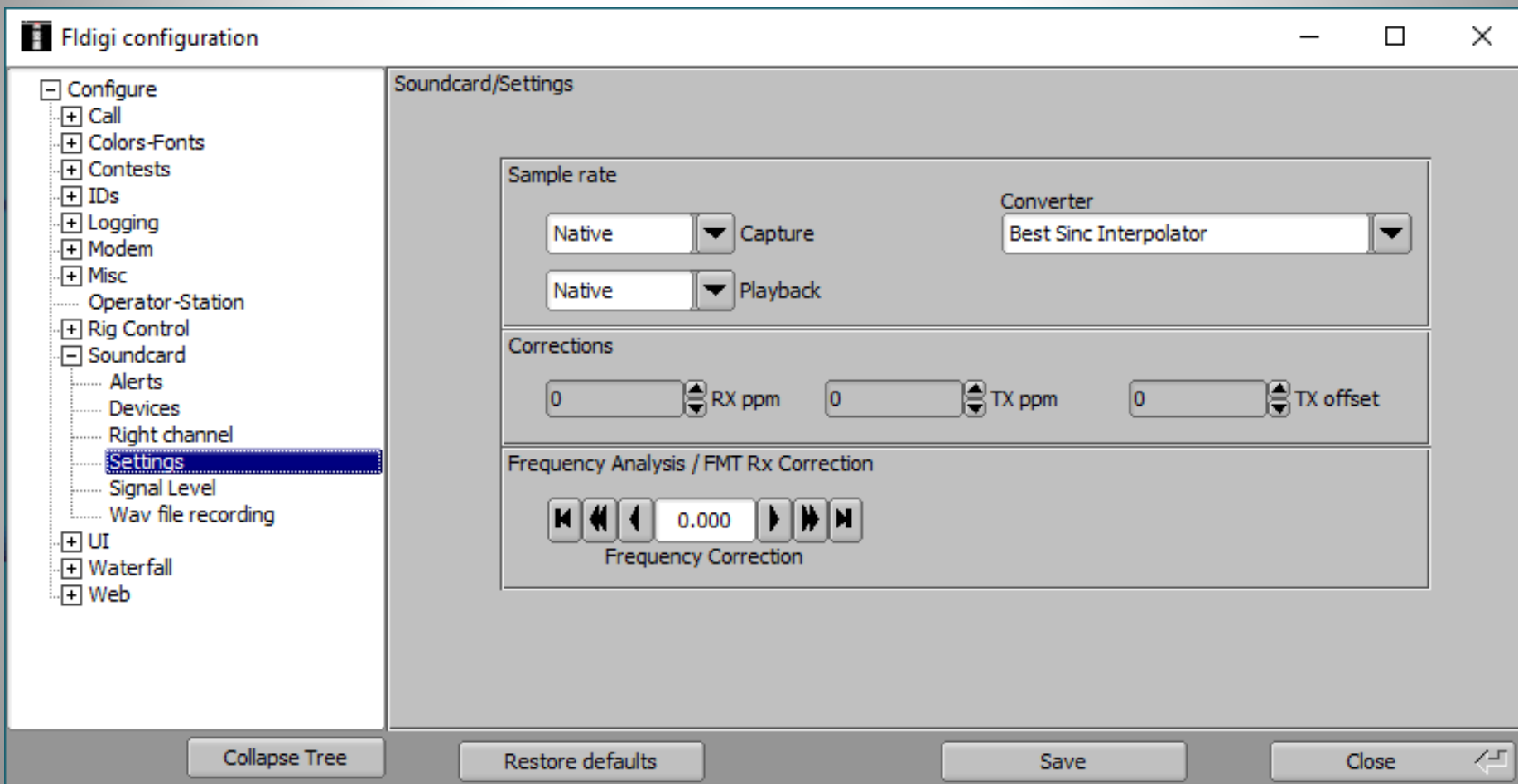
Pick your Sound "CARD"
Capture = RX Playback = TX



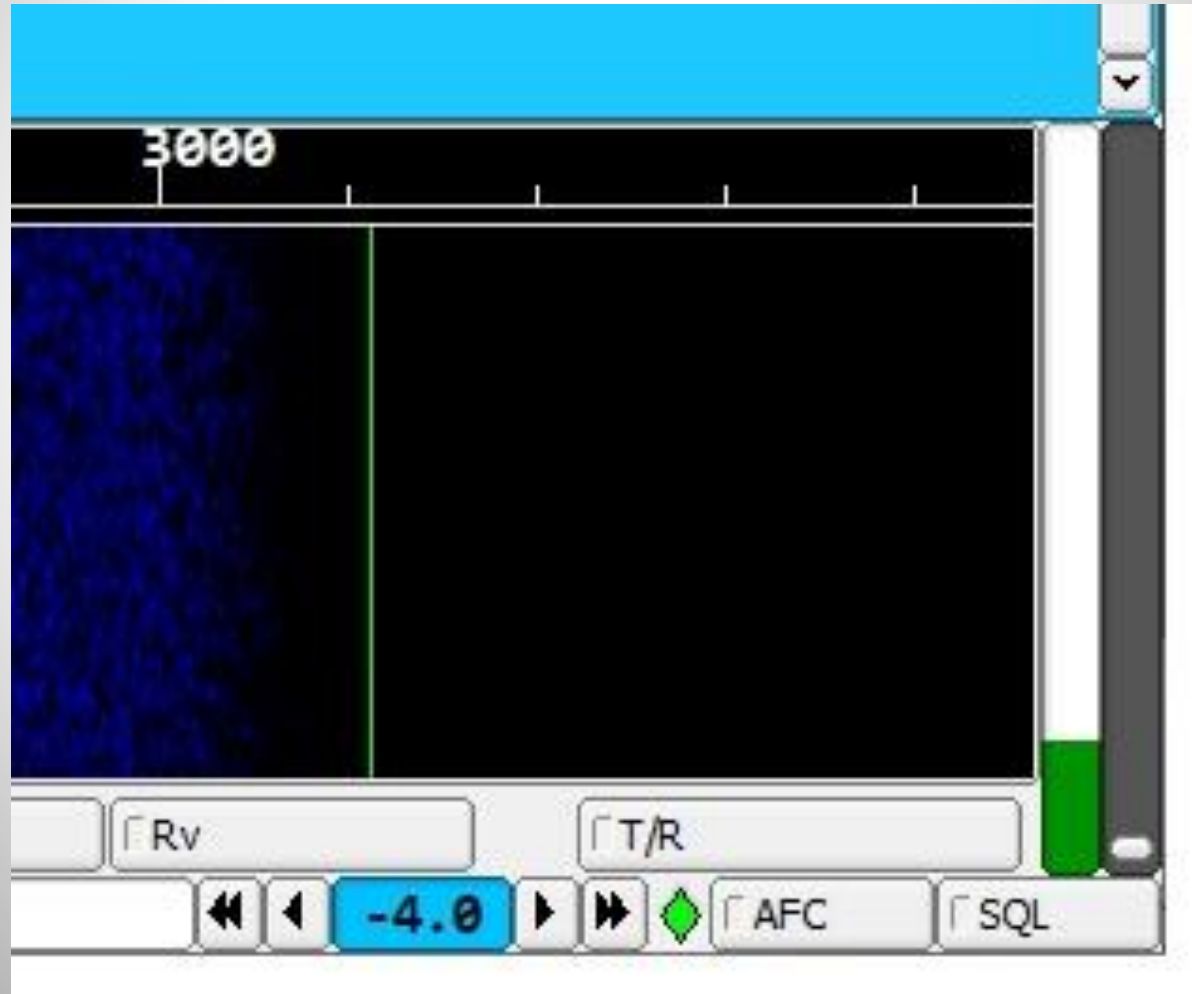
Enable TX audio on BOTH LEFT/RIGHT channels
some sound cards are "MONO"
Signalink is LEFT channel only



Choose "Sample rate" for your sound card (Native is best)



DIAMOND color indicates level of RX audio
AFC option (auto freq control) on SSB radios
Digital Squelch option: set slider into the white area



Receive LEVEL meter (aim for a -20 dB INPUT)

The screenshot shows the 'Fldigi configuration' window with the 'Signal Level' section expanded. The left sidebar contains a tree view with categories like Contestia, Olivia, Psk, TTY, Misc, Rig Control, Soundcard, and UI. The 'Signal Level' section is currently selected and highlighted in blue.

The main area of the 'Signal Level' section is titled 'Signal Levels' and contains the following controls:

- A diamond-shaped icon (black, green, blue, or red) next to a button labeled 'Low', 'Normal', 'High', or 'Over'.
- A 'Transition Level (dB)' control with a slider and numerical display. The current value is -60.0.
- A 'Default' button.
- An 'Input signal level' meter showing a scale from 0 to -10 dB. The scale is divided into segments: 0..-60 (green), -50..-40 (green), -30.. (green), and 20..-10 (white). A red vertical line is positioned at -20 dB.
- An unchecked checkbox labeled 'Use wsjtx scale'.

At the bottom of the window, there are four buttons: 'Collapse Tree', 'Restore defaults', 'Save', and 'Close'.

New RX audio scale in dB with 2nd Darkwood PEAK LEVEL meter

The screenshot displays the fldigi software interface. At the top left, a red box shows a signal level of 0.000. Below this is a menu bar and a grid of call signs. A large blue area occupies the center of the screen. In the bottom right corner, a 'Peak Level' window is open, showing a vertical scale from 0 to -24 dB. Two green bars indicate a signal level of -19.0 dB. A blue arrow points from the text 'New Scale: -40 dB to 90 dB' to the peak level meter. At the bottom, a spectrum analyzer shows a signal at 1500 Hz. The Windows taskbar is visible at the very bottom, showing the time as 6:42 PM on 12/22/2022.

0.000

Peak Level

over

0
-4
-8
-12
-16
-20
-24
dB

-19.0 -19.0

Max. Peak

New Scale: -40 dB to 90 dB

500 1000 1500 2000 2500 3000 3500

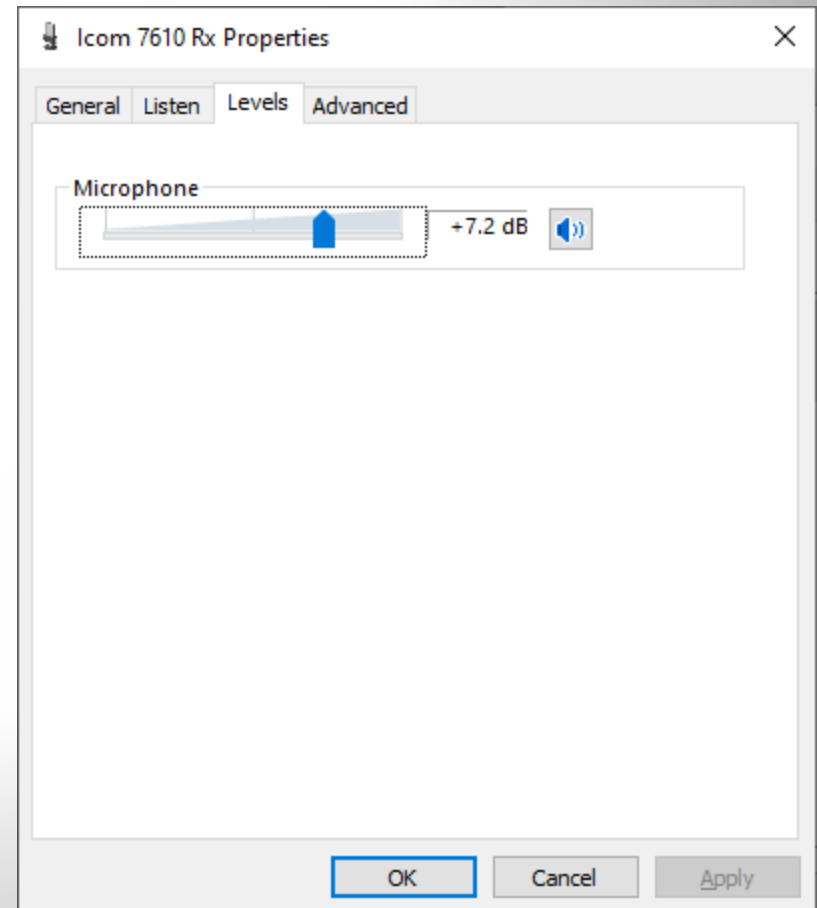
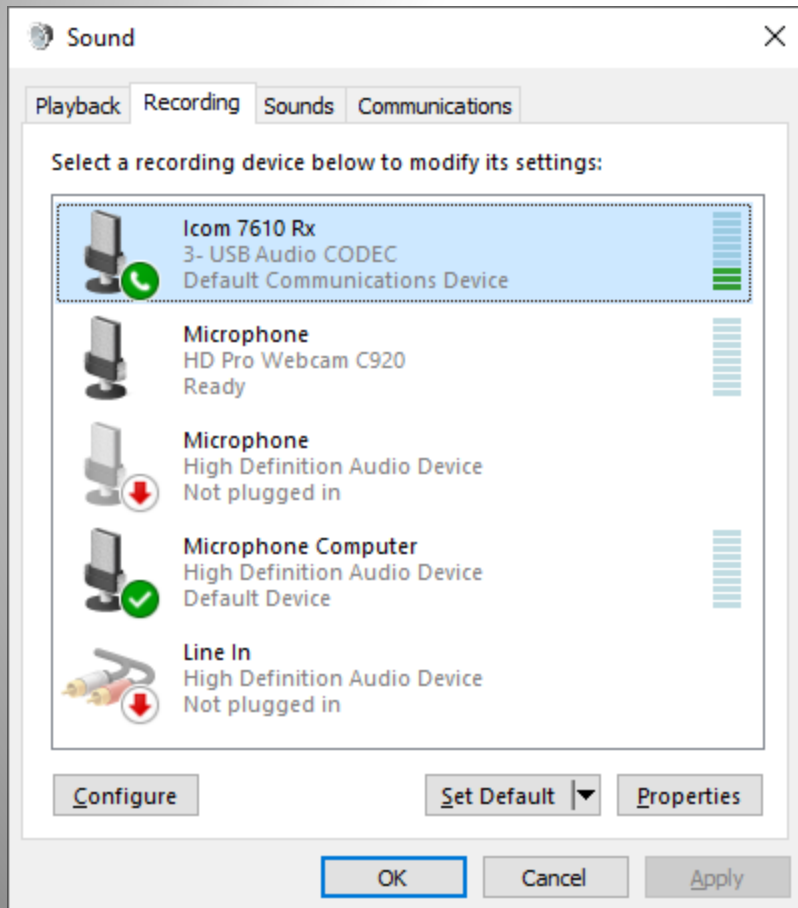
WF -20 70 x2 NORM 1500 QSY Store CLK Rv T/R

THOR22 s/n -21 dB FEC: 0%

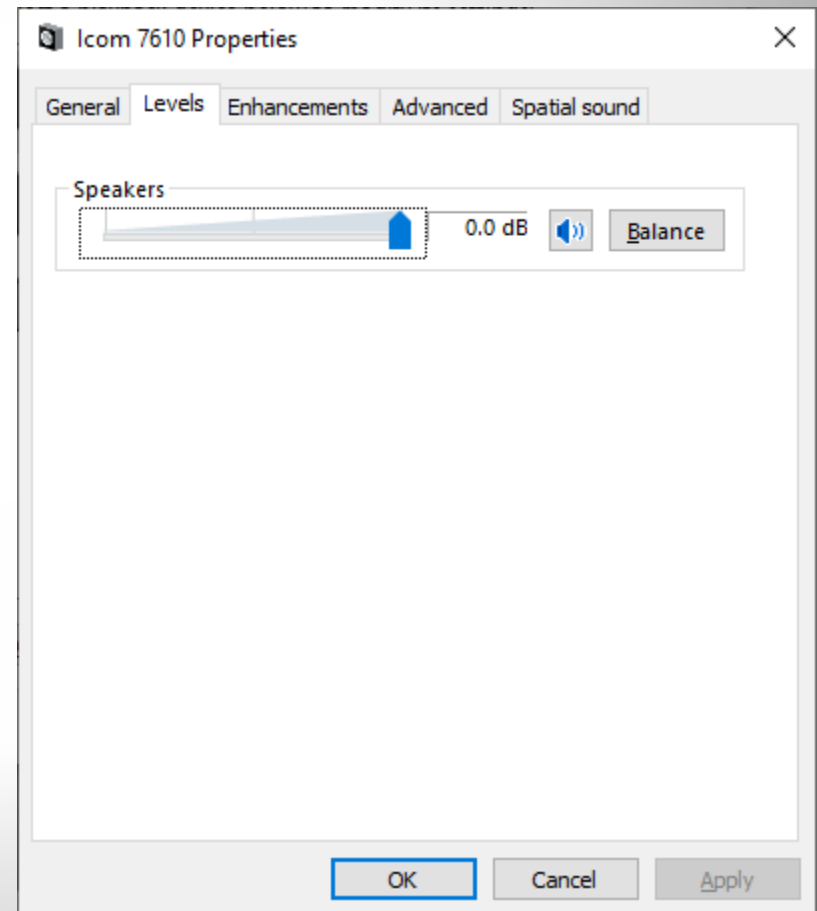
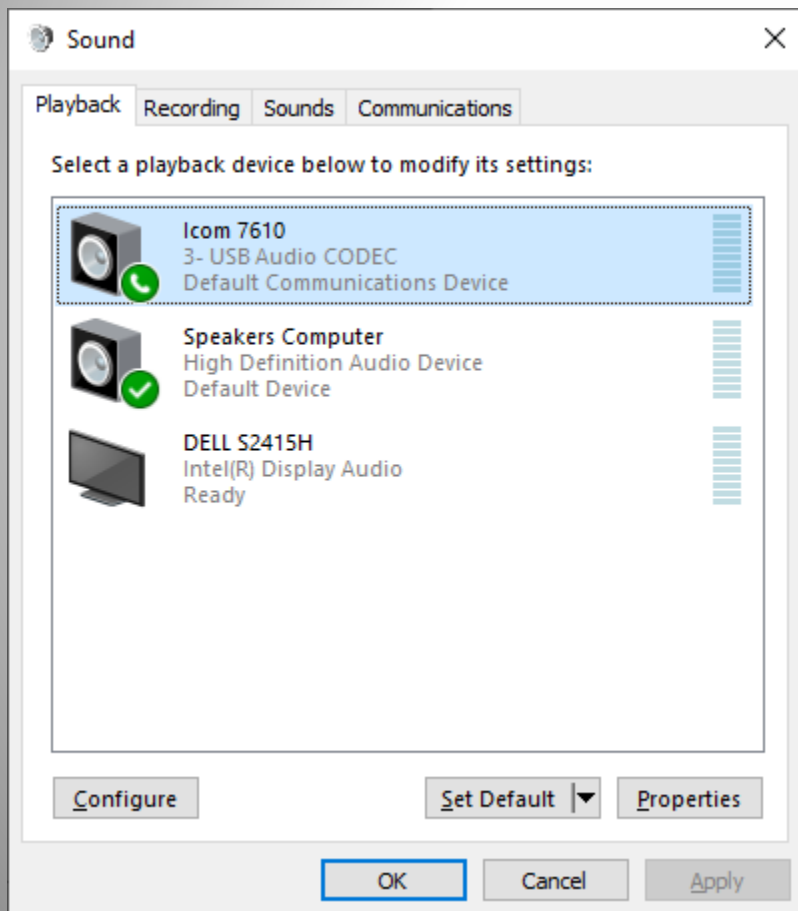
Type here to search

Sleeping now 6:42 PM 12/22/2022

Set Windows **RECORDING** level (RX)
SET **DEFAULT** device as your computer MIC
Set Default **COM** Device as your sound card (radio)
Set **MIC** level as needed

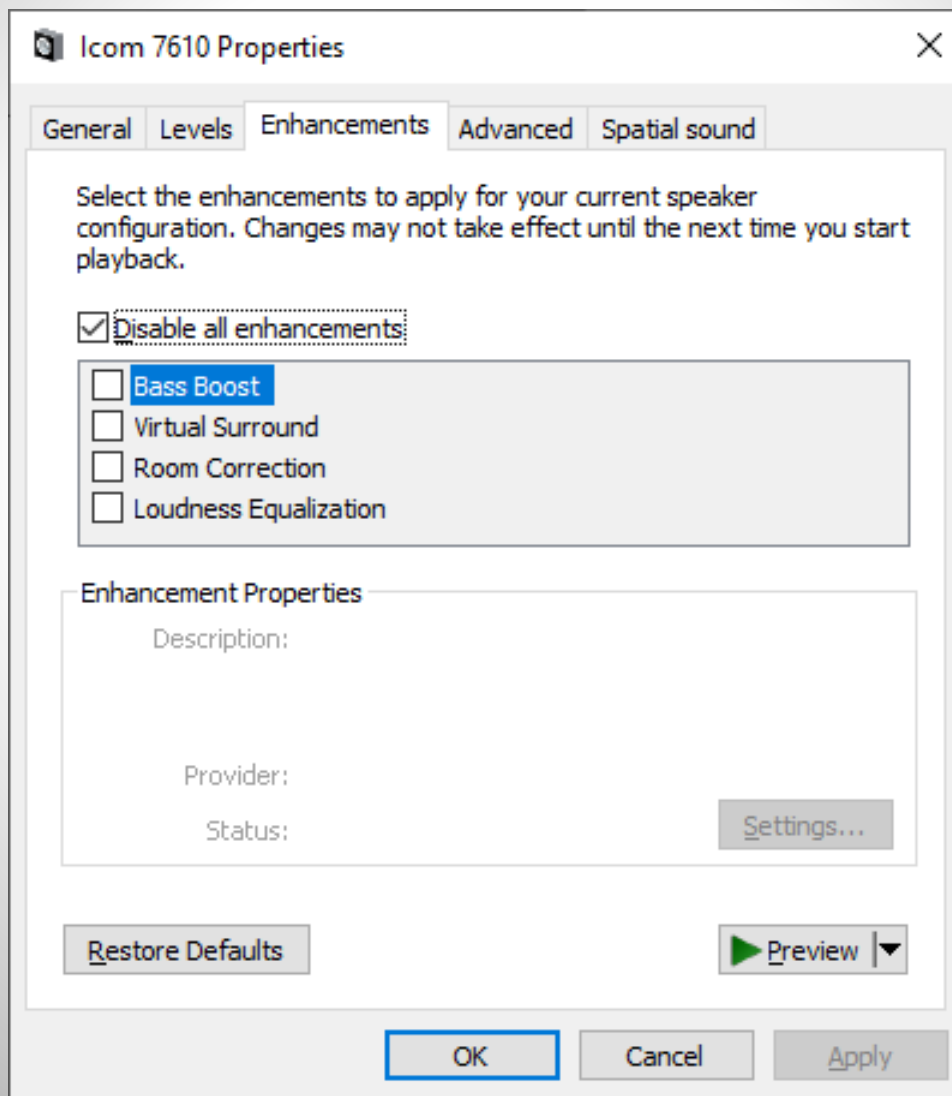


Set Windows **PLAYBACK** (TX) level
DEFAULT Device = computer speaker
DEFAULT COM device = sound card (radio)
Set **Speaker Level** as needed

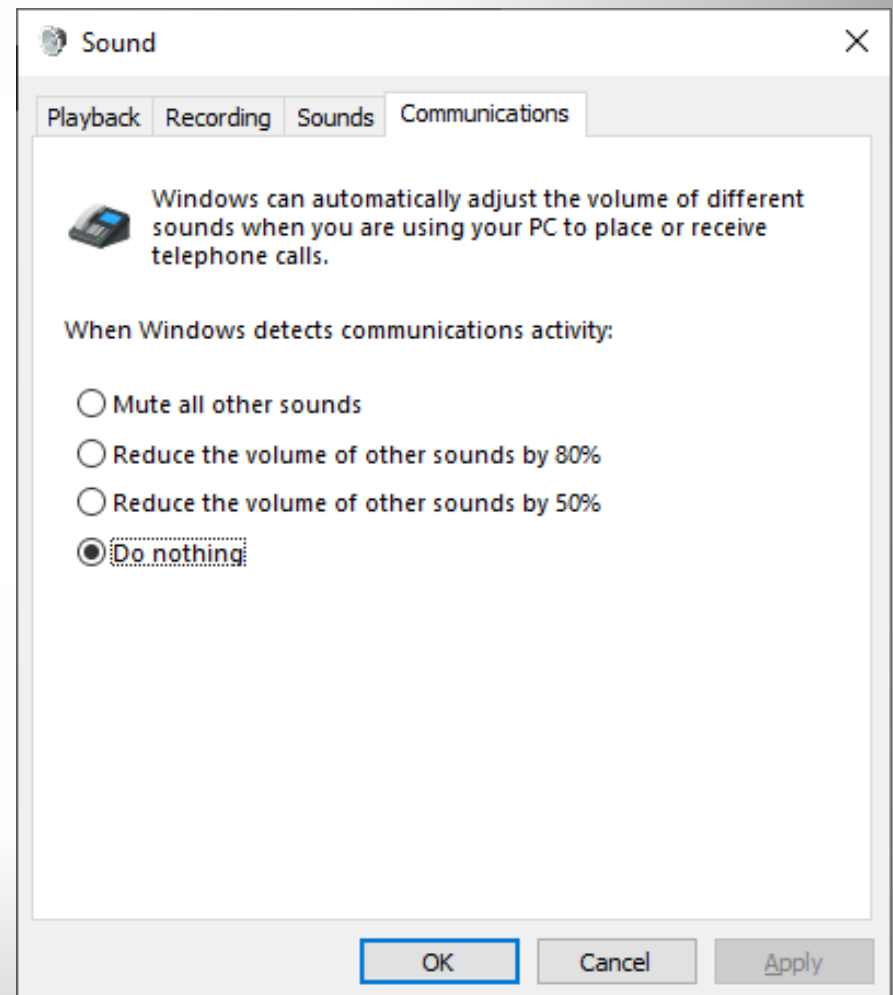
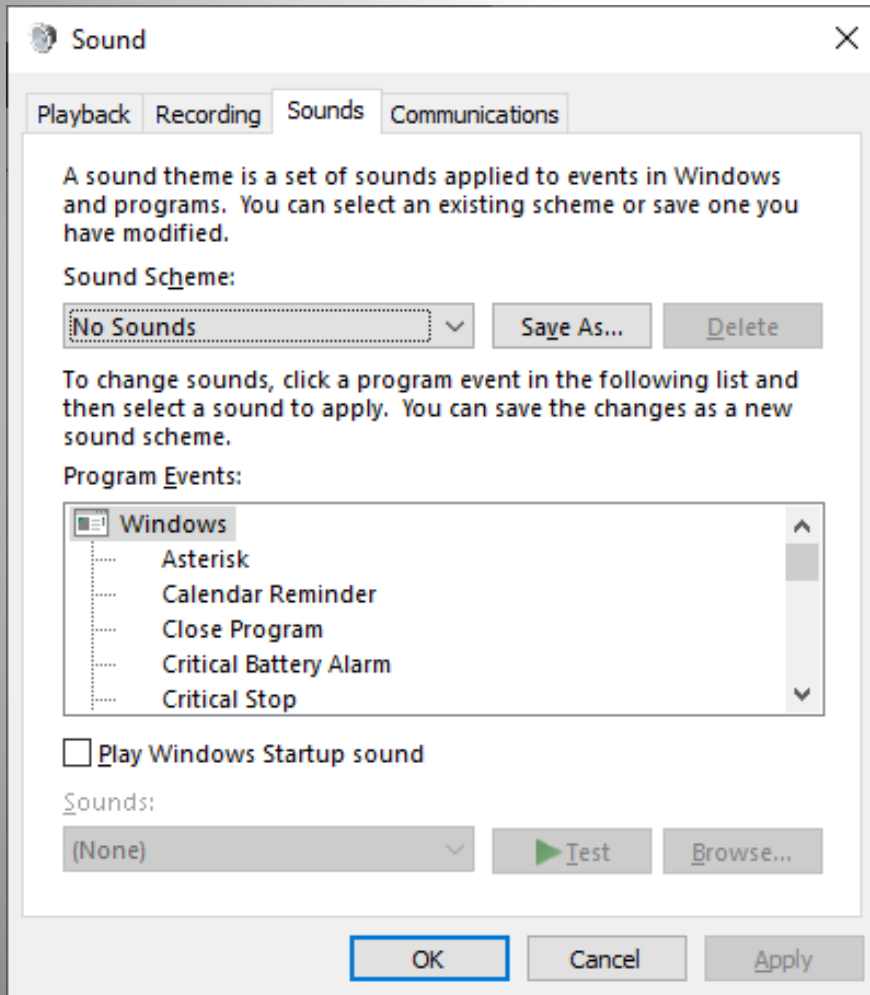


Windows Enhancements

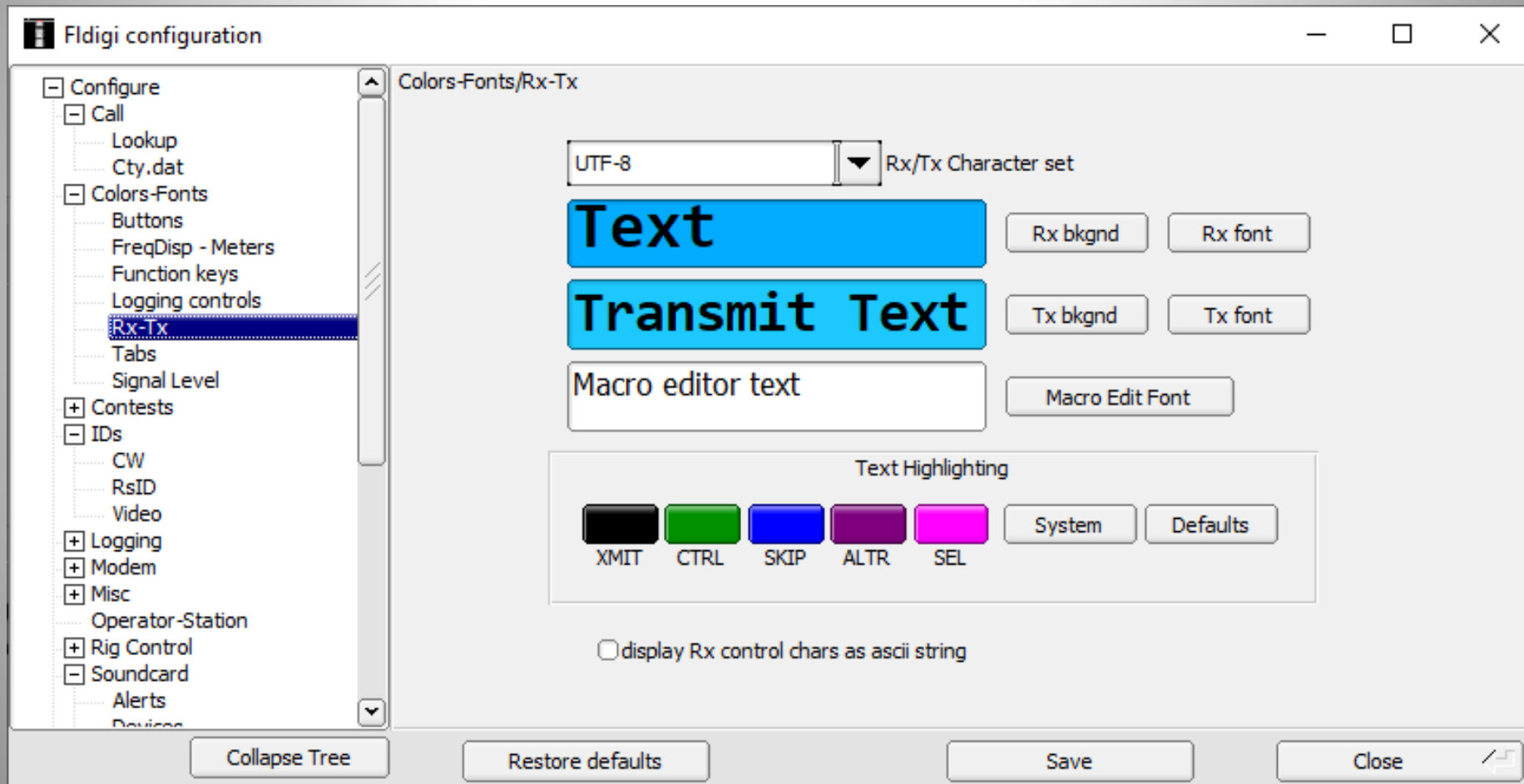
check option: Disable enhancements for digi modes



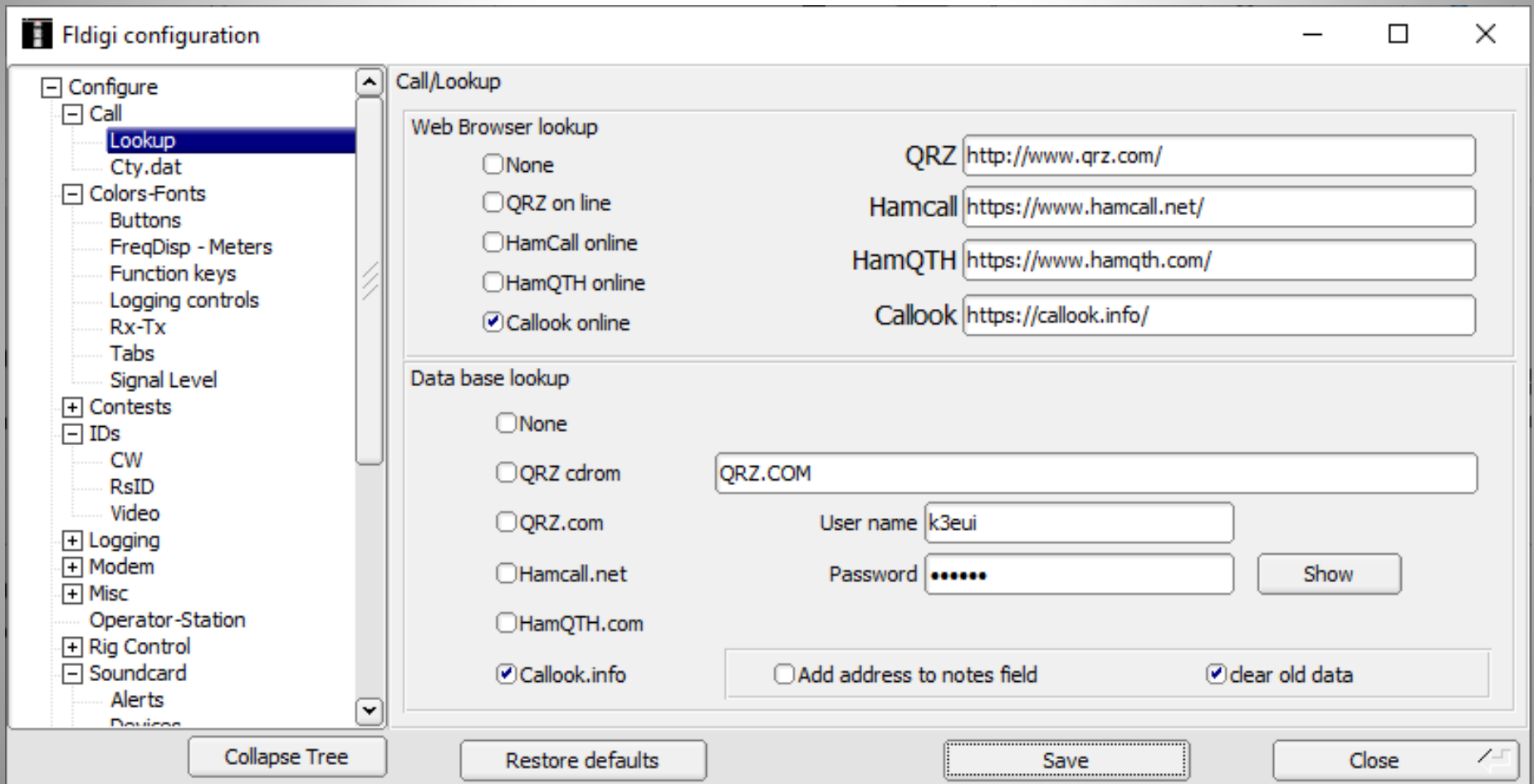
To AVOID any Windows sounds sent to your radio's sound card => sound scheme = "NO SOUNDS"



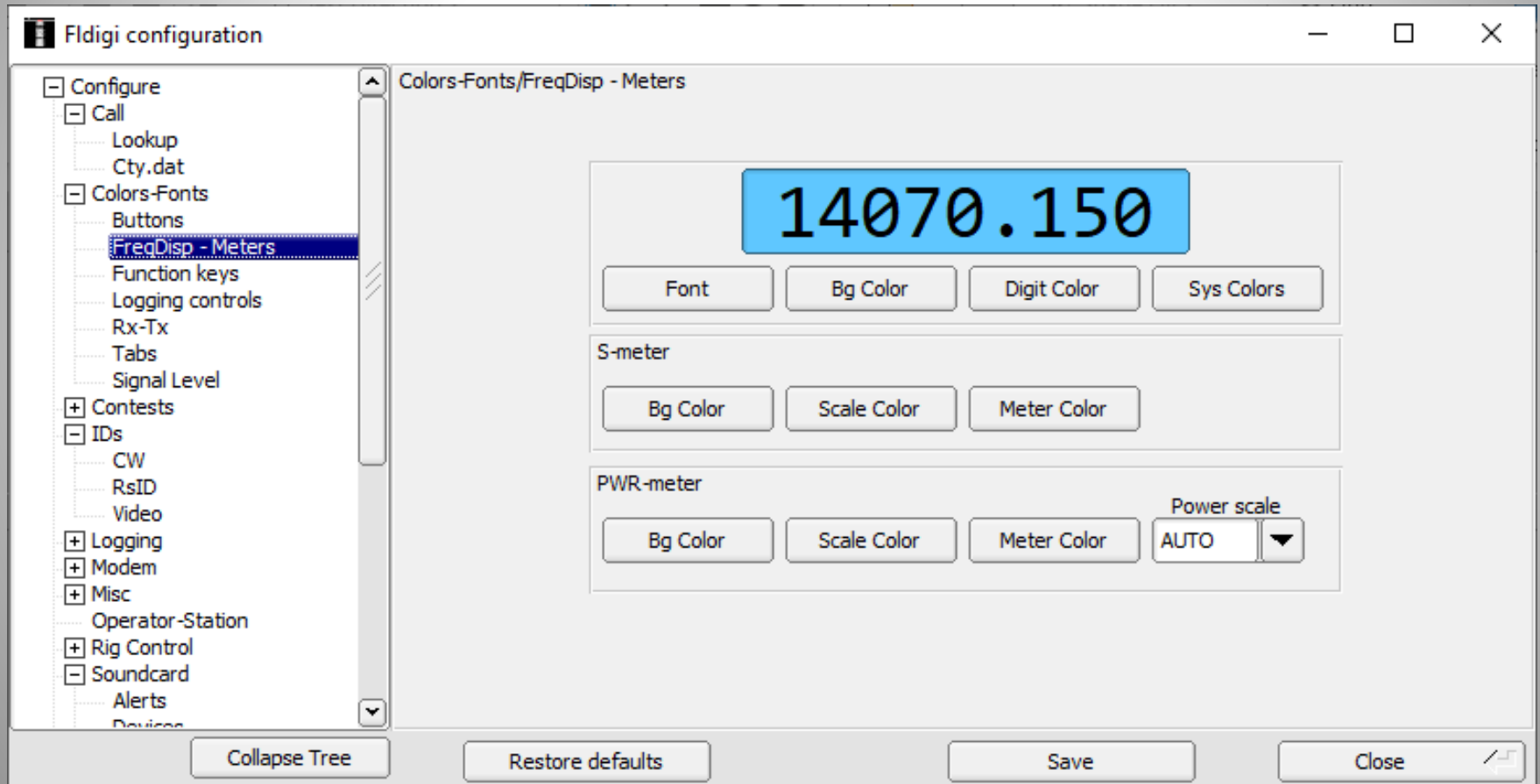
Set the size/color of fonts and background colors



CALL letters "lookup" source options



Set Color/font of meters



FLDIGI - rig control

Options for Rig Control (vfo, mode, power)

FLRIG

RigCat

HamLib

PTT (send) options with Fldigi

CAT "command" to transmit (if radio allows)

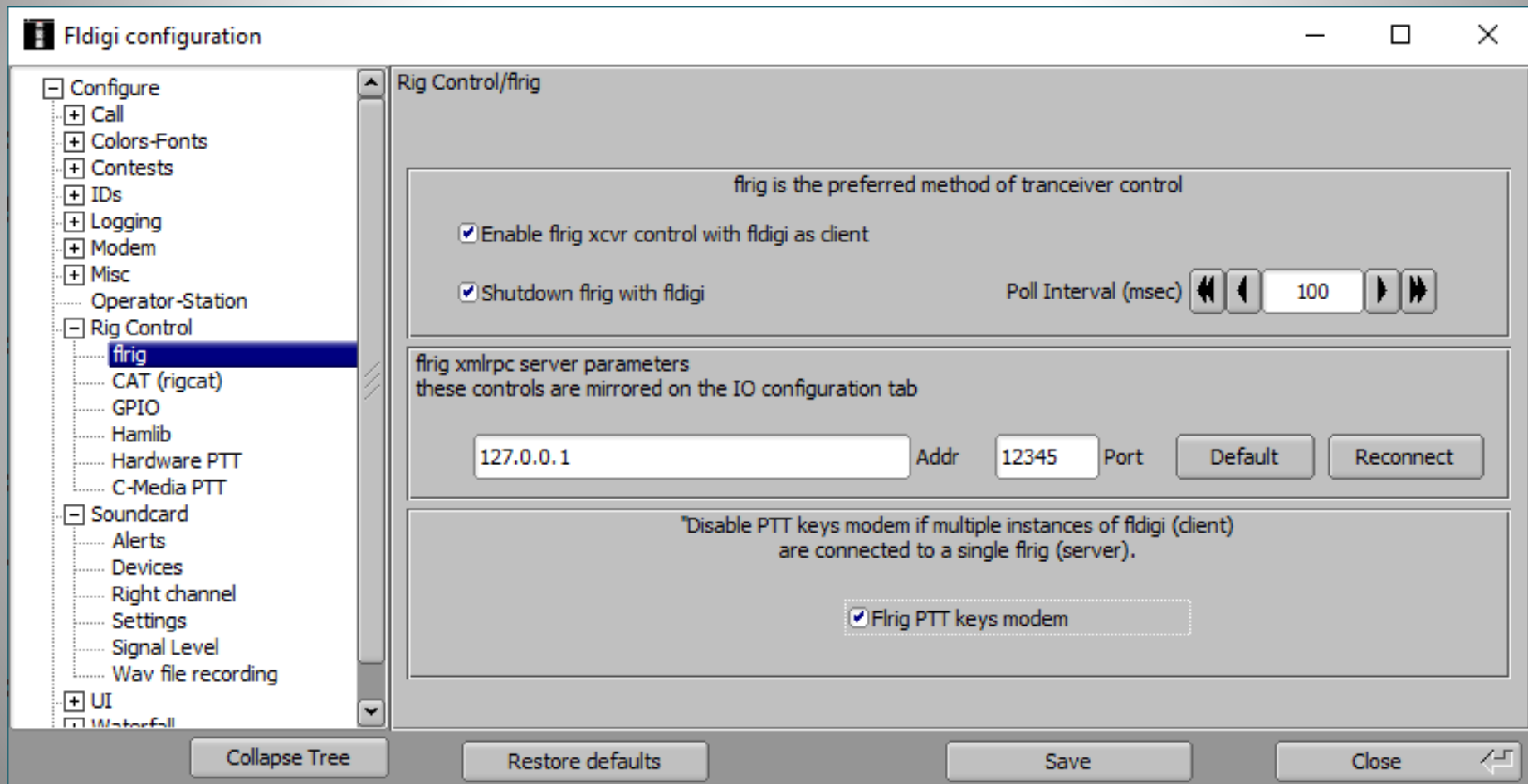
options: FLRIG, RigCAT, HamLib

(dumb) COM port: RTS pin if sound card can interpret RTS (+V) to trip PTT relay

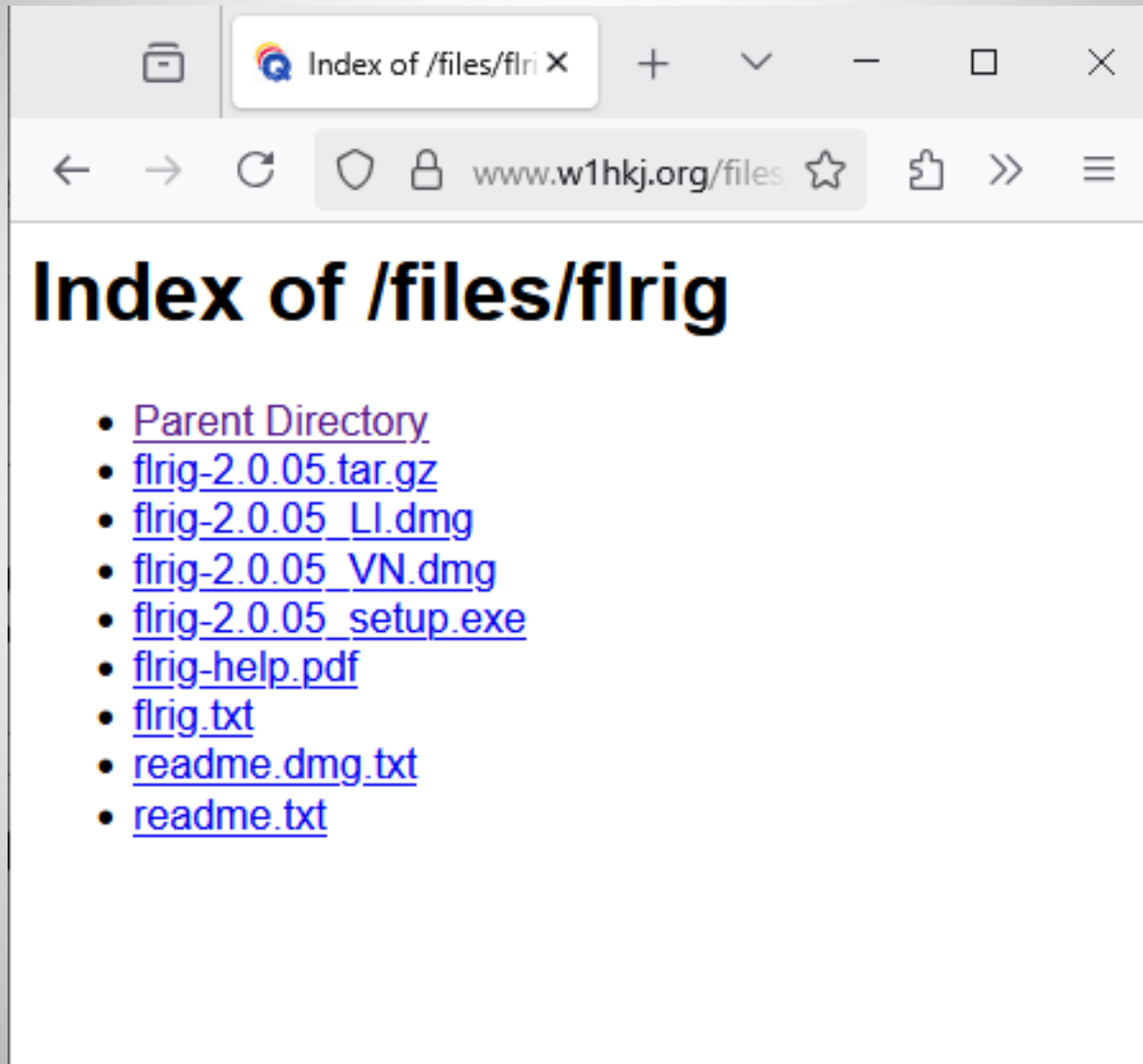
RA adapter - DRA sound cards (C-Media)

VOX - Tx audio trips a PTT relay (Signalink)

FLRIG ==> Rig Control option (requires installation of FLRIG first)



Download FLRIG



Index of /files/flrig

- [Parent Directory](#)
- [flrig-2.0.05.tar.gz](#)
- [flrig-2.0.05_LI.dmg](#)
- [flrig-2.0.05_VN.dmg](#)
- [flrig-2.0.05_setup.exe](#)
- [flrig-help.pdf](#)
- [flrig.txt](#)
- [readme.dmg.txt](#)
- [readme.txt](#)

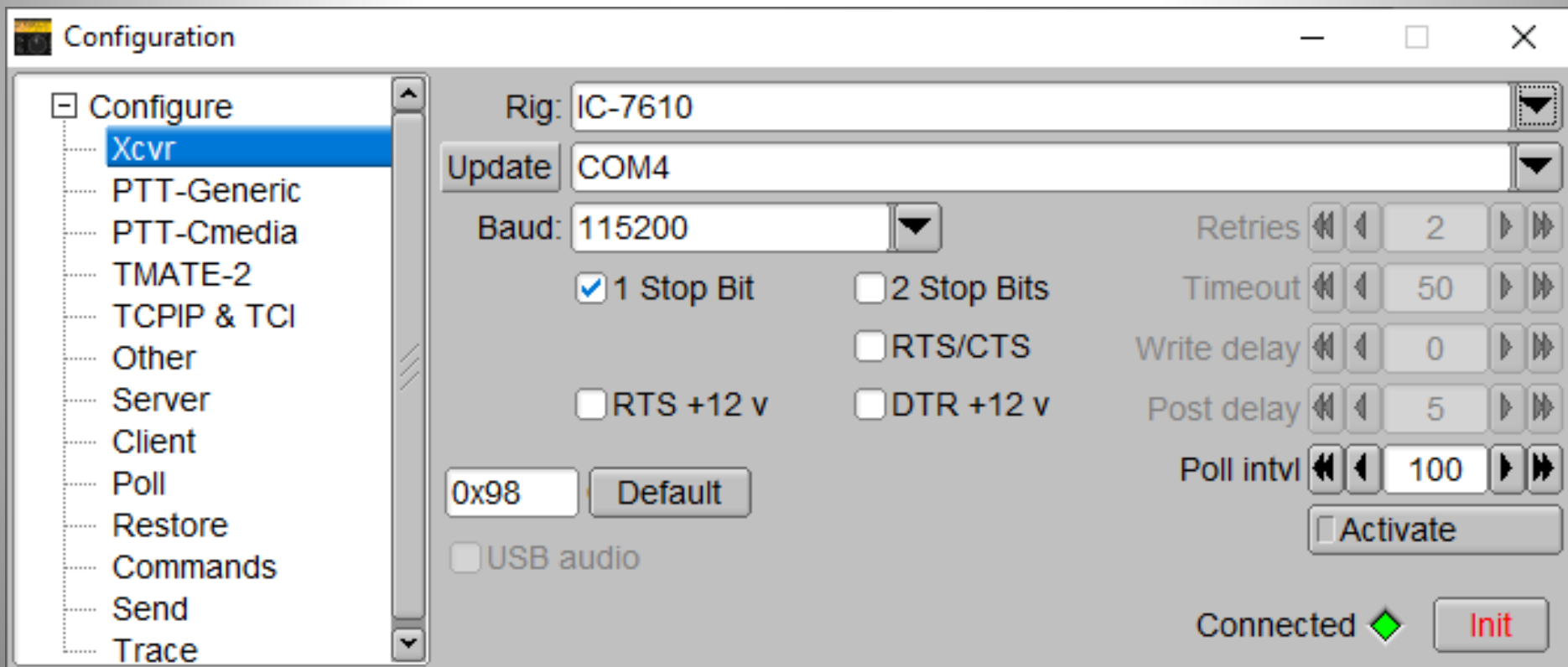
FLRIG creates a new Window VFO/mode/bandwidth/noise reduction/tune

The screenshot displays the flrig IC-7610 software interface. At the top, the window title is "flrig IC-7610". Below the title bar is a menu bar with "File", "Config", "Memory", "Keyer", and "Help". The main display area features two large digital frequency readouts, both showing "14070.000". Below these readouts are two horizontal scales: the top one is labeled "S3 S6 S9 +20 +40 +60" and the bottom one is labeled "Po 5 10 15 20". To the right of the scales are buttons for "vfoA" (checked), "vfoB", "A/B", and "Split". Below these are dropdown menus for "1 3000" and "USB-D1". The interface includes several sliders and checkboxes for various settings:

Control	Value
Vol	47
FST	100
SQL	14
NR	0
Lock	0
ClrPBT	0
Nch	0
Mic	0
Pwr	50

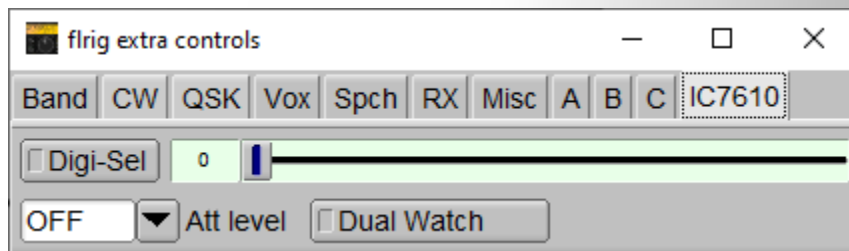
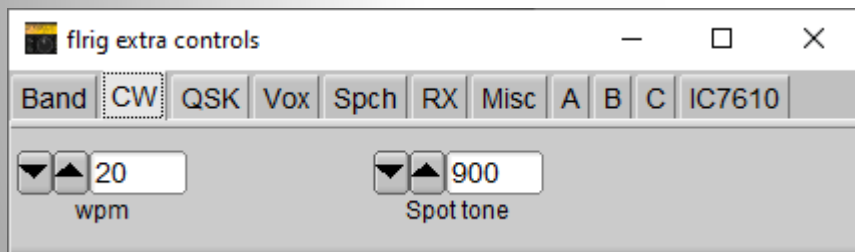
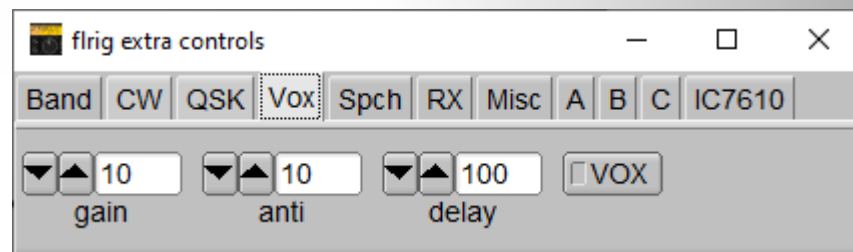
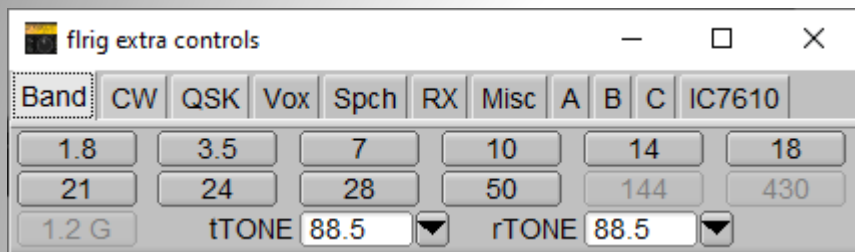
At the bottom of the interface, there are buttons for "PRE", "NB", "AN", "Tune" (checked), and "PTT".

FLRIG - needs CONFIG to your rig
Set COM port, baud, stop bits
Icom rigs need a "CI-V" address
press INIT - look for yellow "connected" color

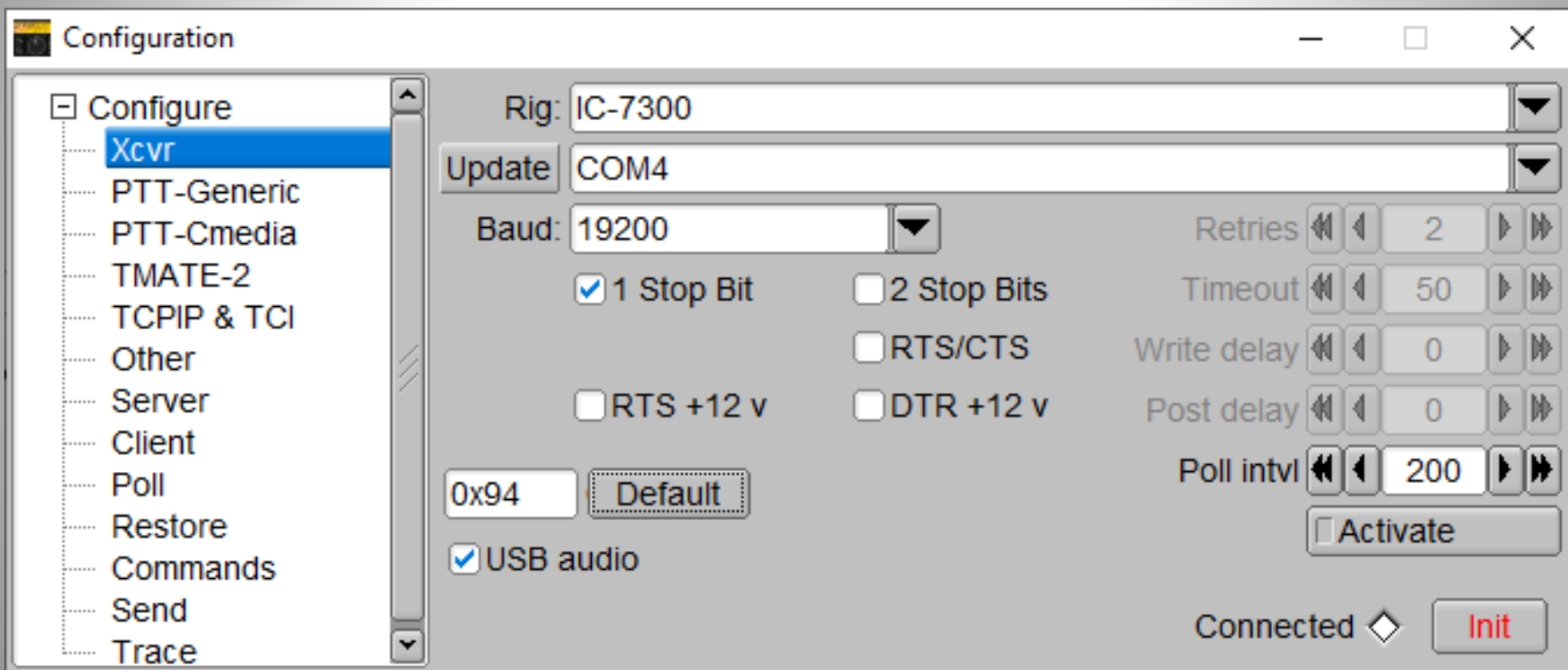


FLRIG - Options (depends on rig)

CW, Band, PL tone, VOX

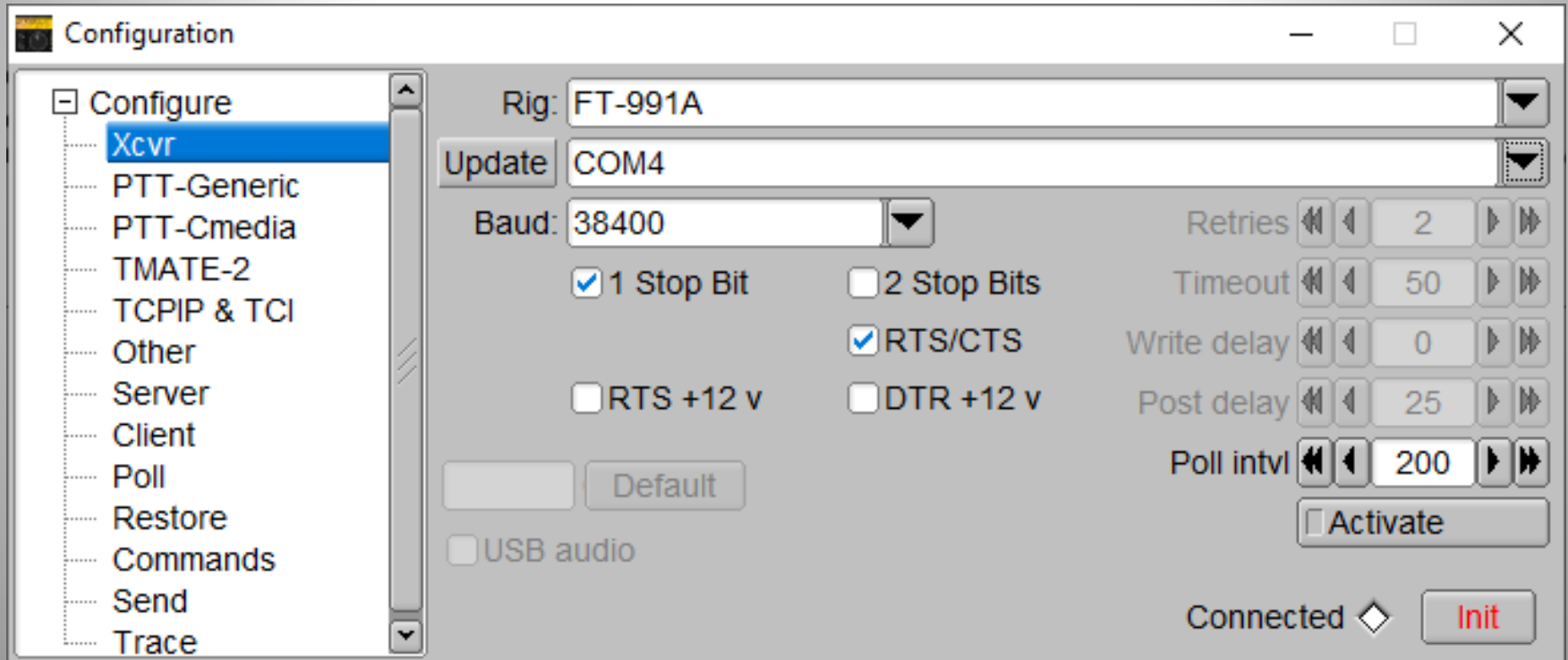


FLRIG config for Icom 7300
note the COM port number, Baud, CI-V address
USB audio checked
Click the INIT button

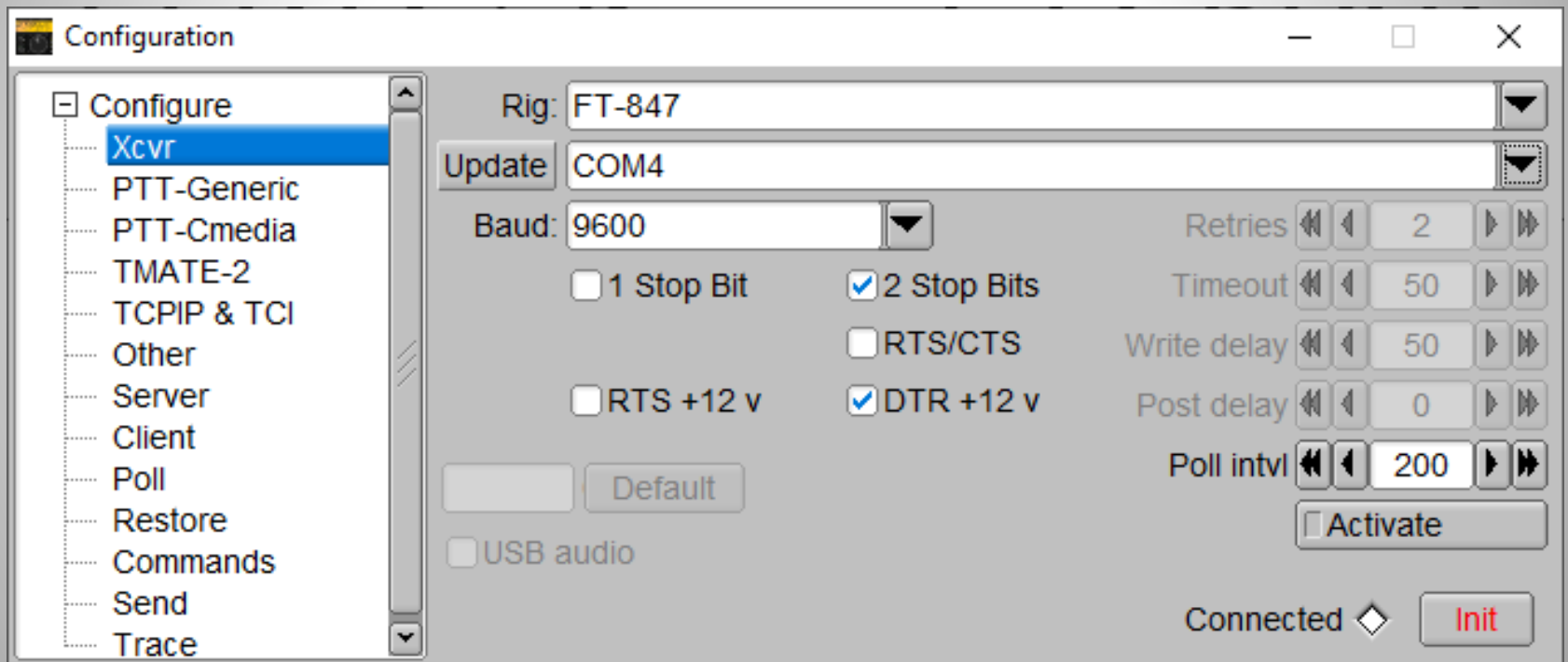


FLRIG: Config for Yaesu FT991A

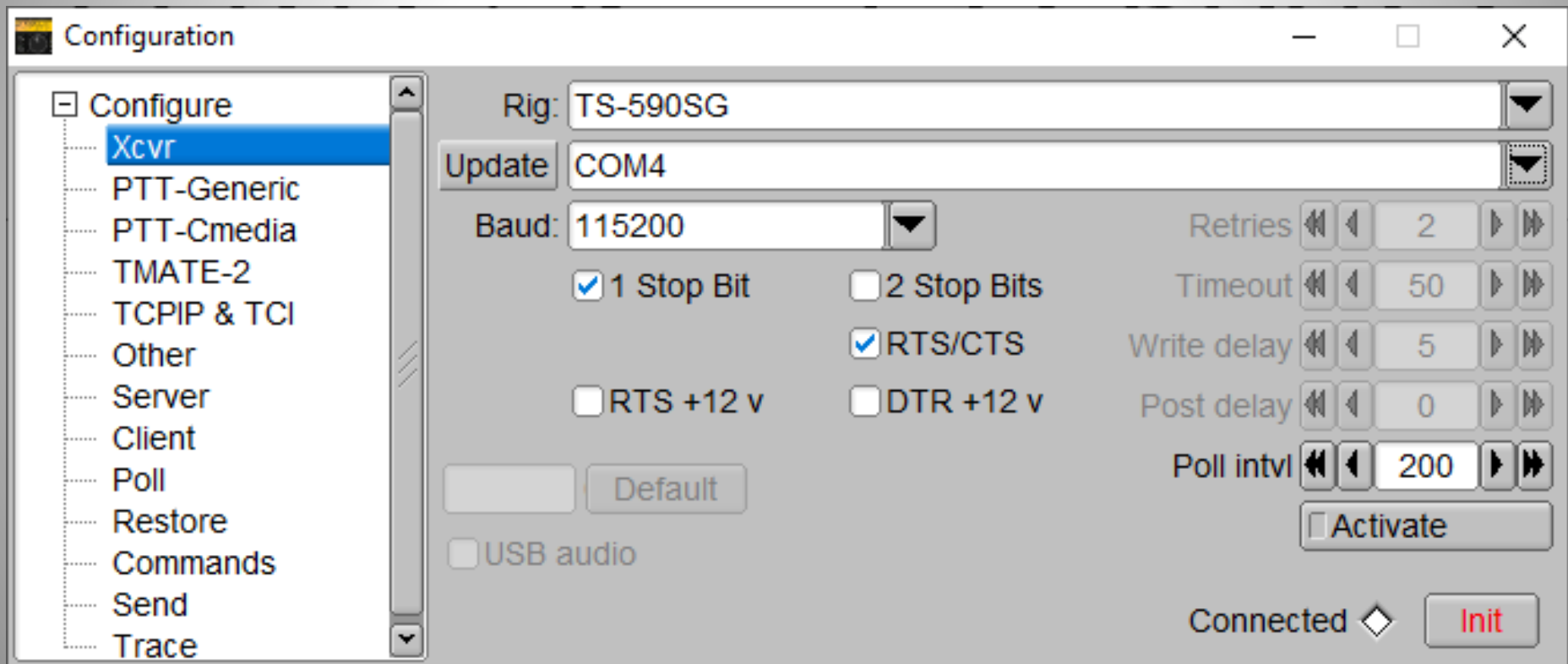
note the RTS/CTS pins are "enabled"
Yaesu prefers 38,400 baud on CAT port
Click on the INIT button



FLRIG Yaesu FT847 (older rigs have DB9 serial port)

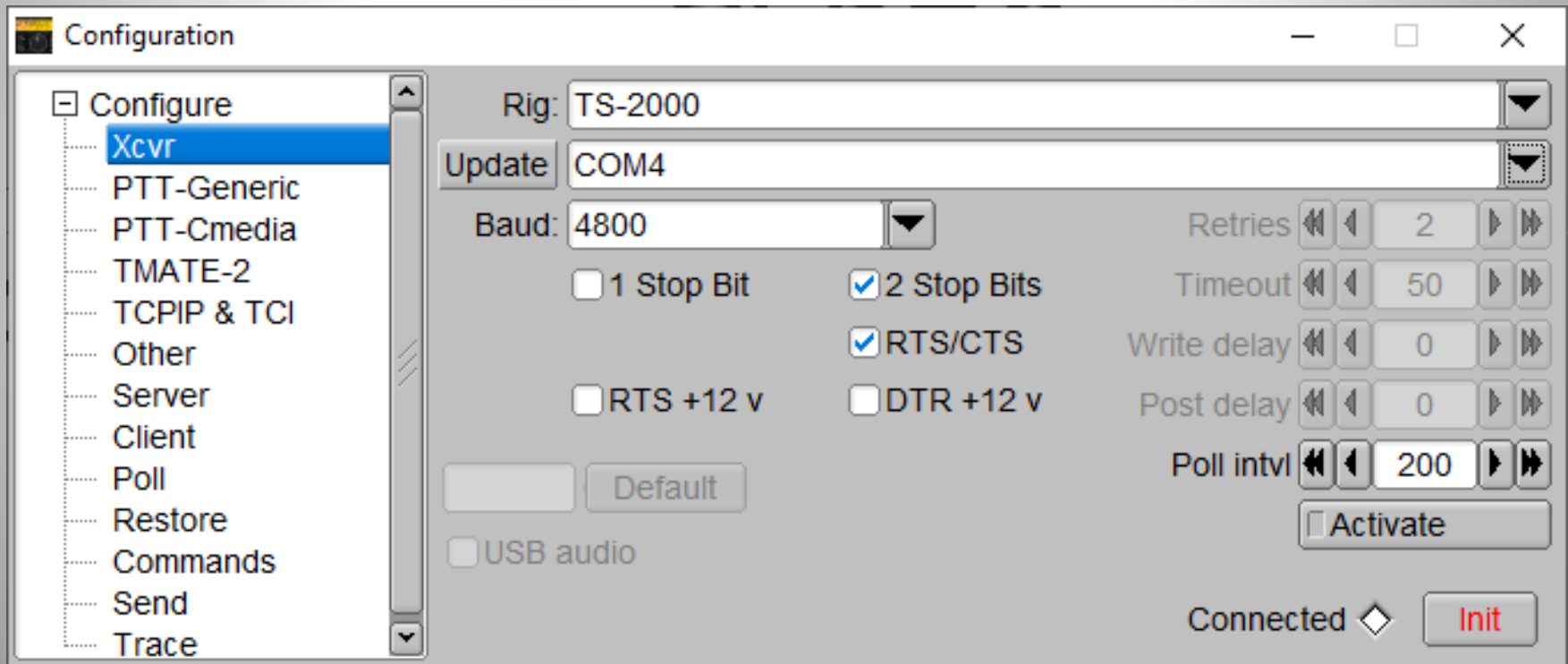


FLRIG: Knwd TS590SG
(try Default values first)
you may need to check RTS/CTS pins



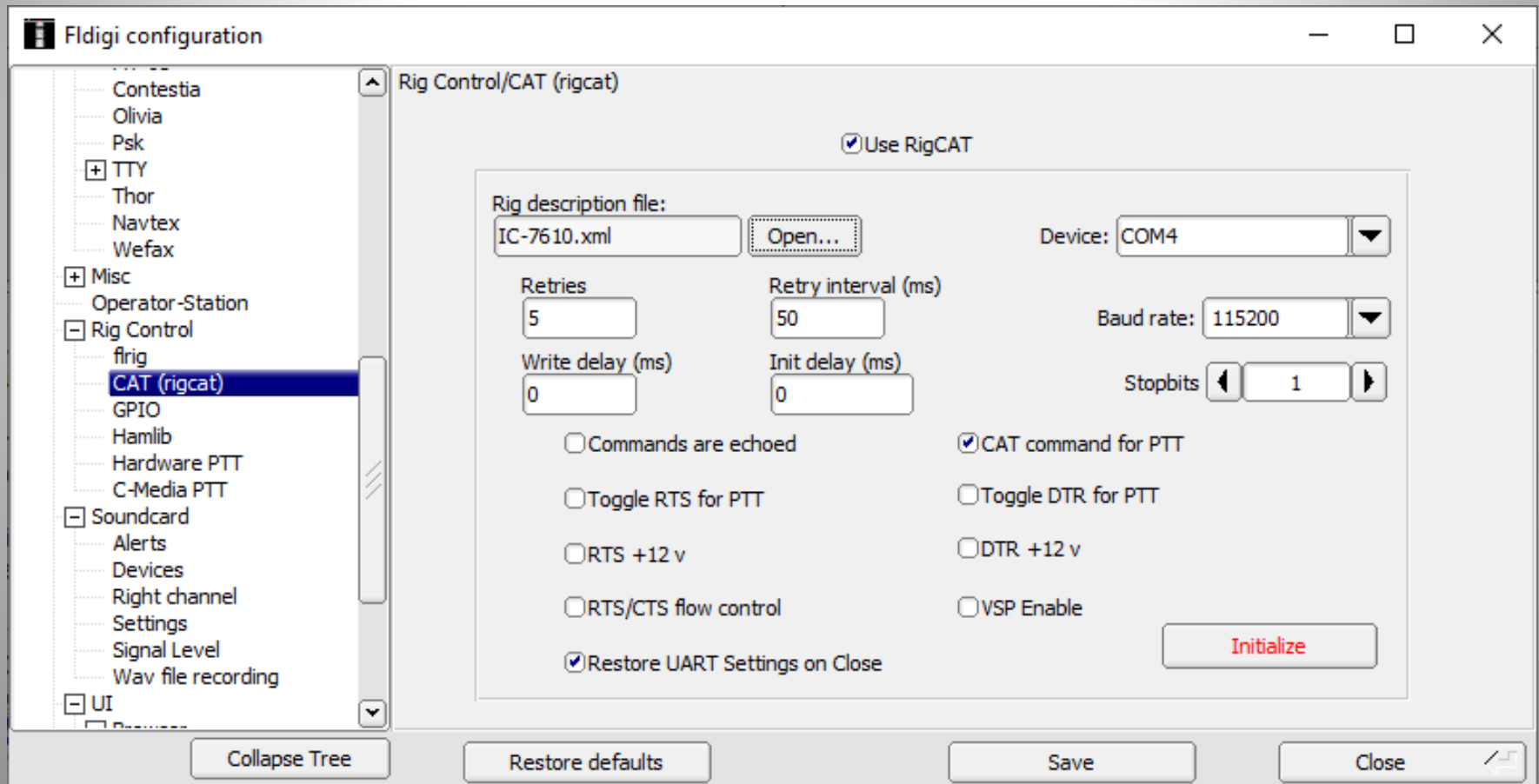
FLRIG: older Knwd TS2000

note: 4800 baud, 2 stop bit, RTS/CTS enabled

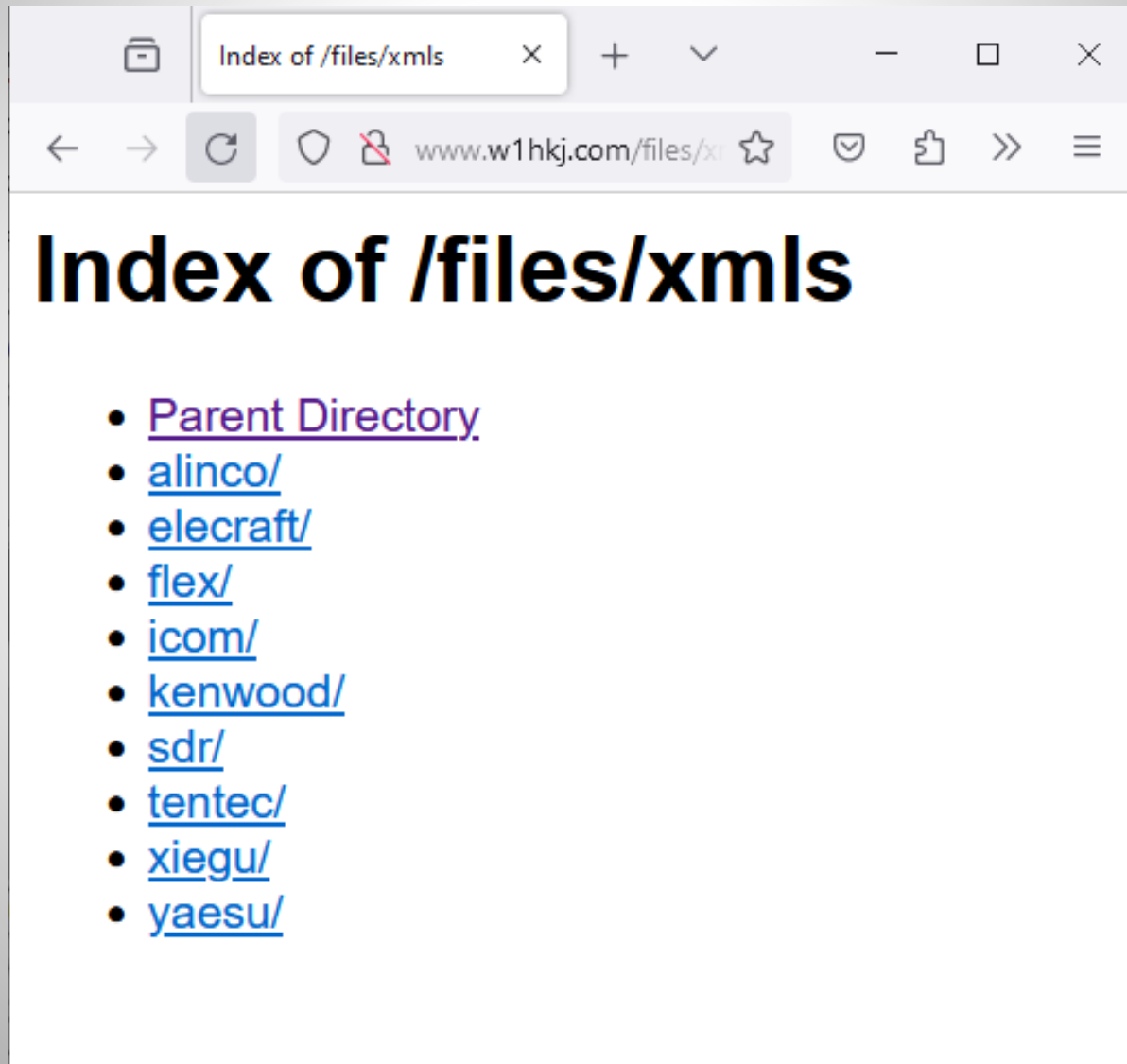


RigCat: CAT option in FLDIGI

Choose Rig.XML file, Com port, baud
Check CAT command for PTT



Download XML files for your rig at w1hkj.com

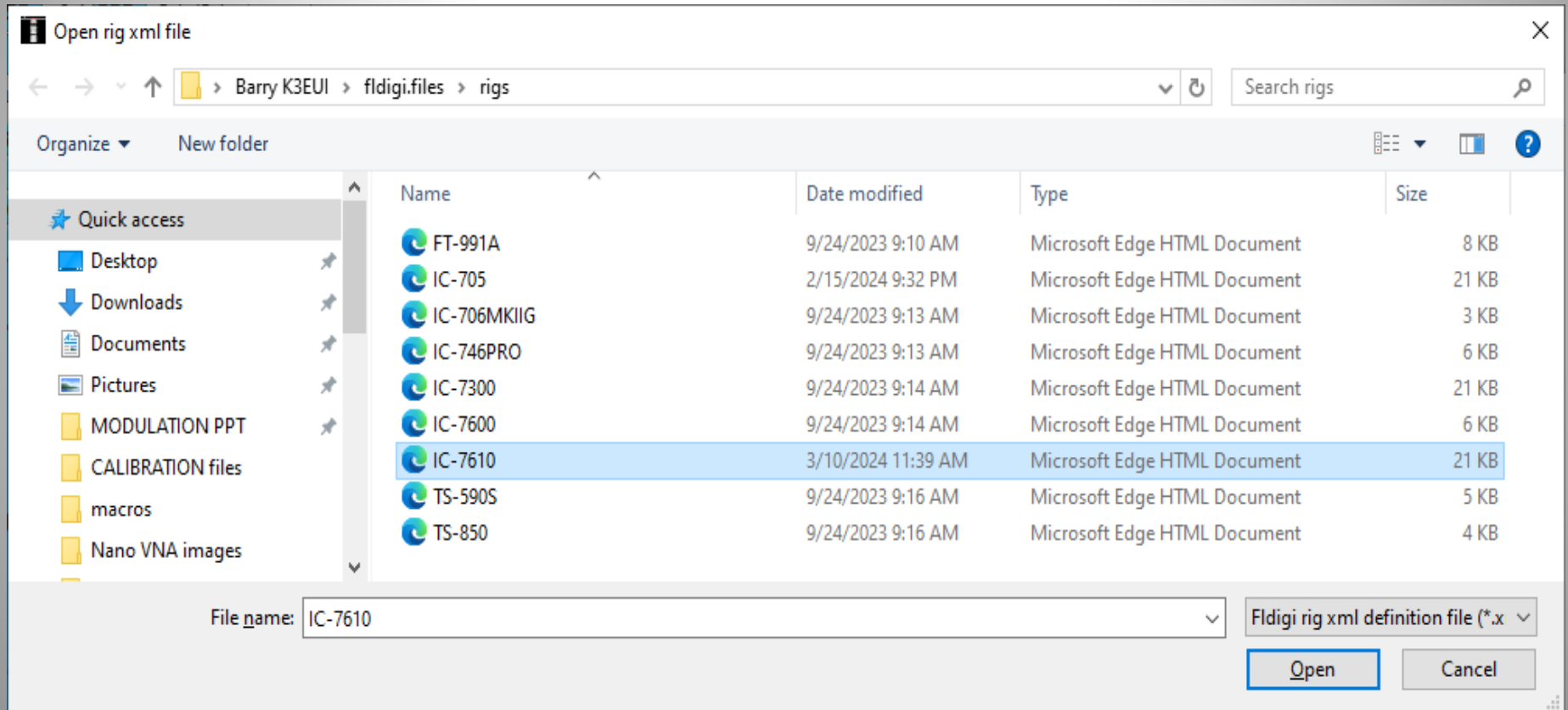


The image shows a screenshot of a web browser window. The address bar displays the URL www.w1hkj.com/files/xmls. The page title is "Index of /files/xmls". The main content of the page is a list of directory entries, each preceded by a bullet point and underlined. The entries are: Parent Directory, alinco/, elecraft/, flex/, icom/, kenwood/, sdr/, tentec/, xiegu/, and yaesu/.

Index of /files/xmls

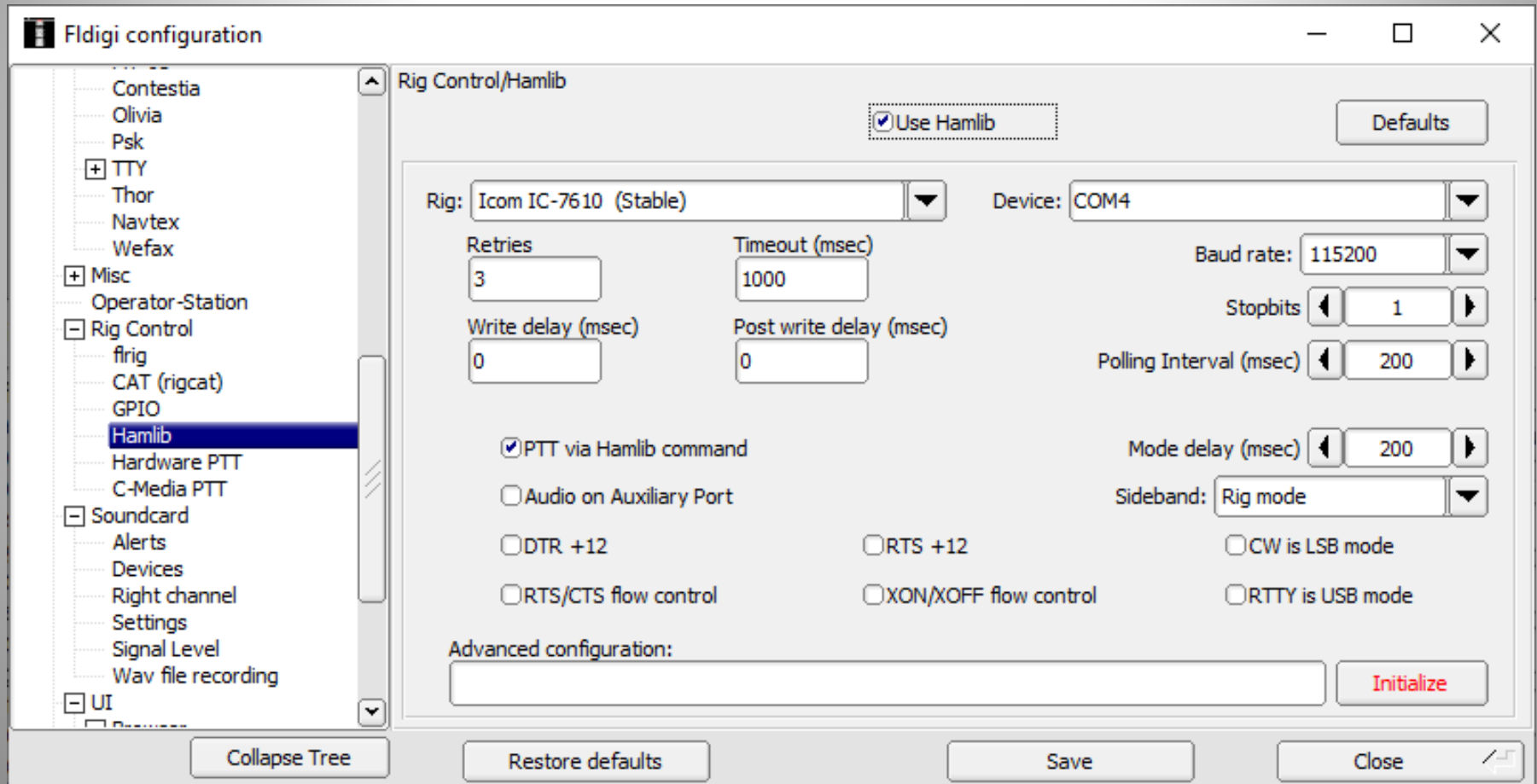
- [Parent Directory](#)
- [alinco/](#)
- [elecraft/](#)
- [flex/](#)
- [icom/](#)
- [kenwood/](#)
- [sdr/](#)
- [tentec/](#)
- [xiegu/](#)
- [yaesu/](#)

RigCAT requires proper XML files (stored in /fldigi.files/rigs)

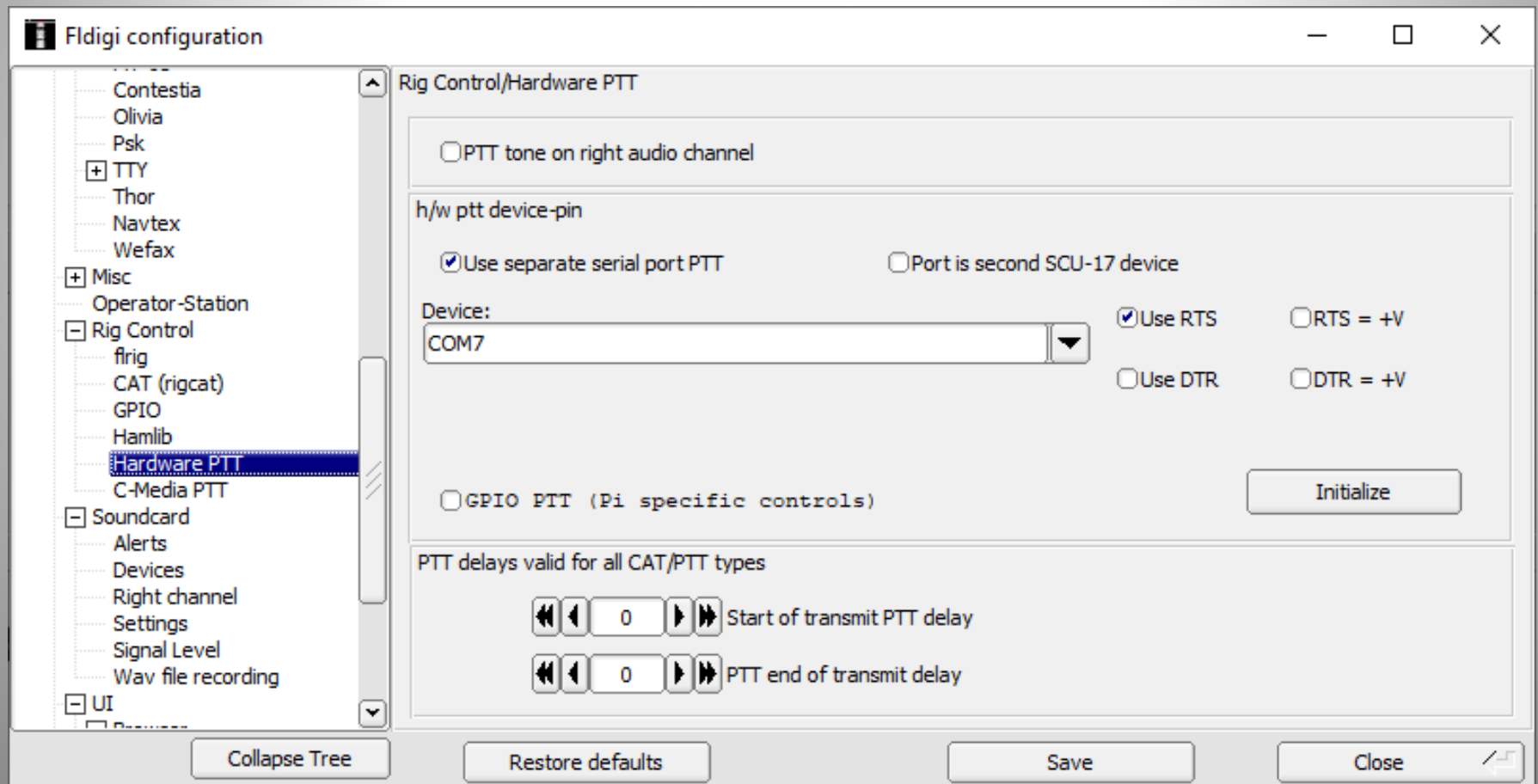


Hamlib option for CAT control

Choose Rig and com port, baud, etc.
Pick PTT via Hamlib command



Simple choice: **Hardware PTT (send)**
option to PTT via a "dumb" COM port
Pick either RTS pin or DTR pin
Press Initialize



Sound Card Options



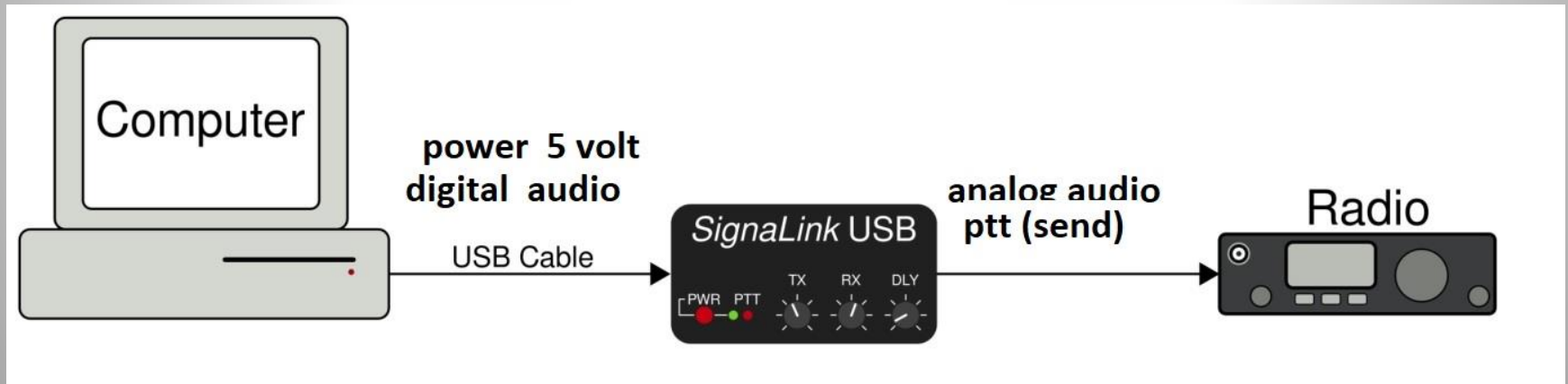
How does "digital" work?

- Computer generates the digital code
- Sound card converts digi to analog audio
- Interface treats audio levels and sets up a PTT (send)

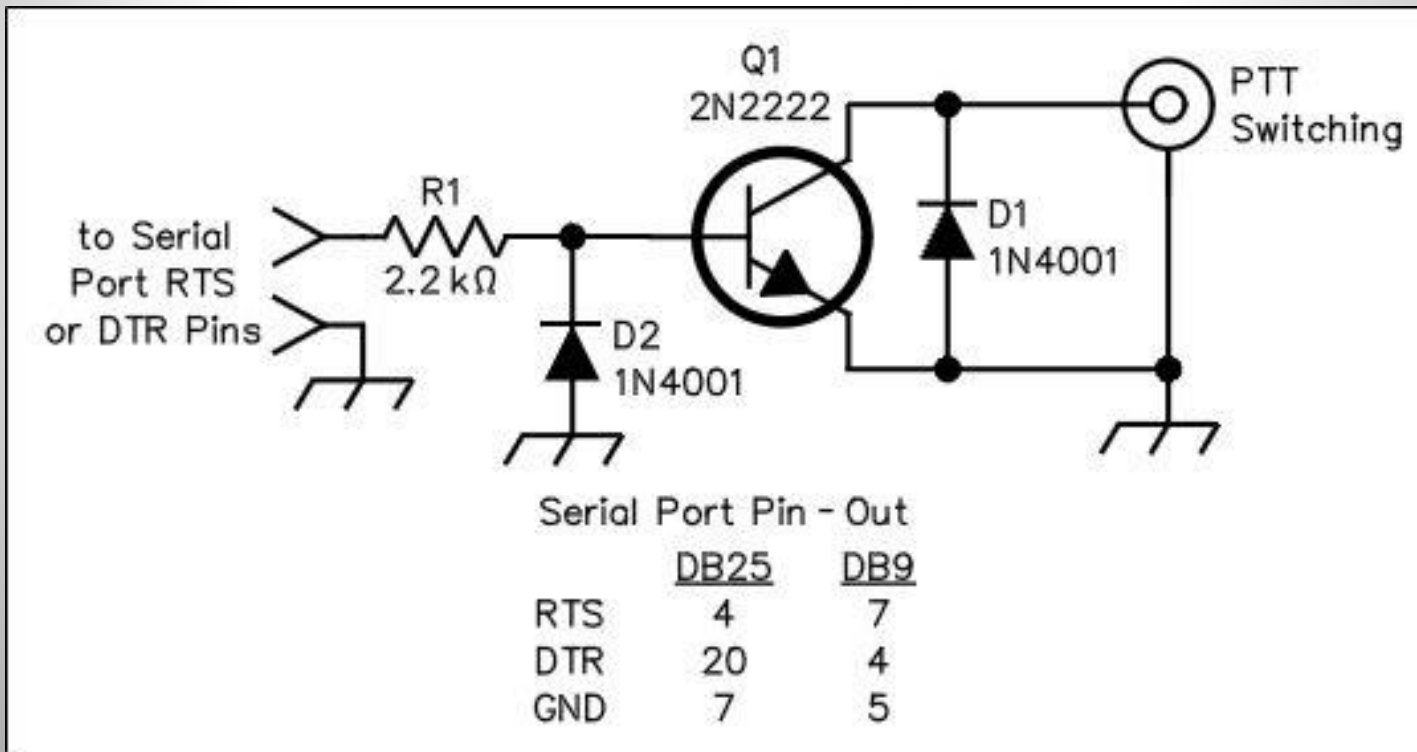
- Radio's often have a DATA port for Tx audio, Rx audio, PTT, and ground

Typical setup with external sound card
digital - usb cable to computer
analog - audio cable to radio

advantage: PTT by VOX (no COM port)



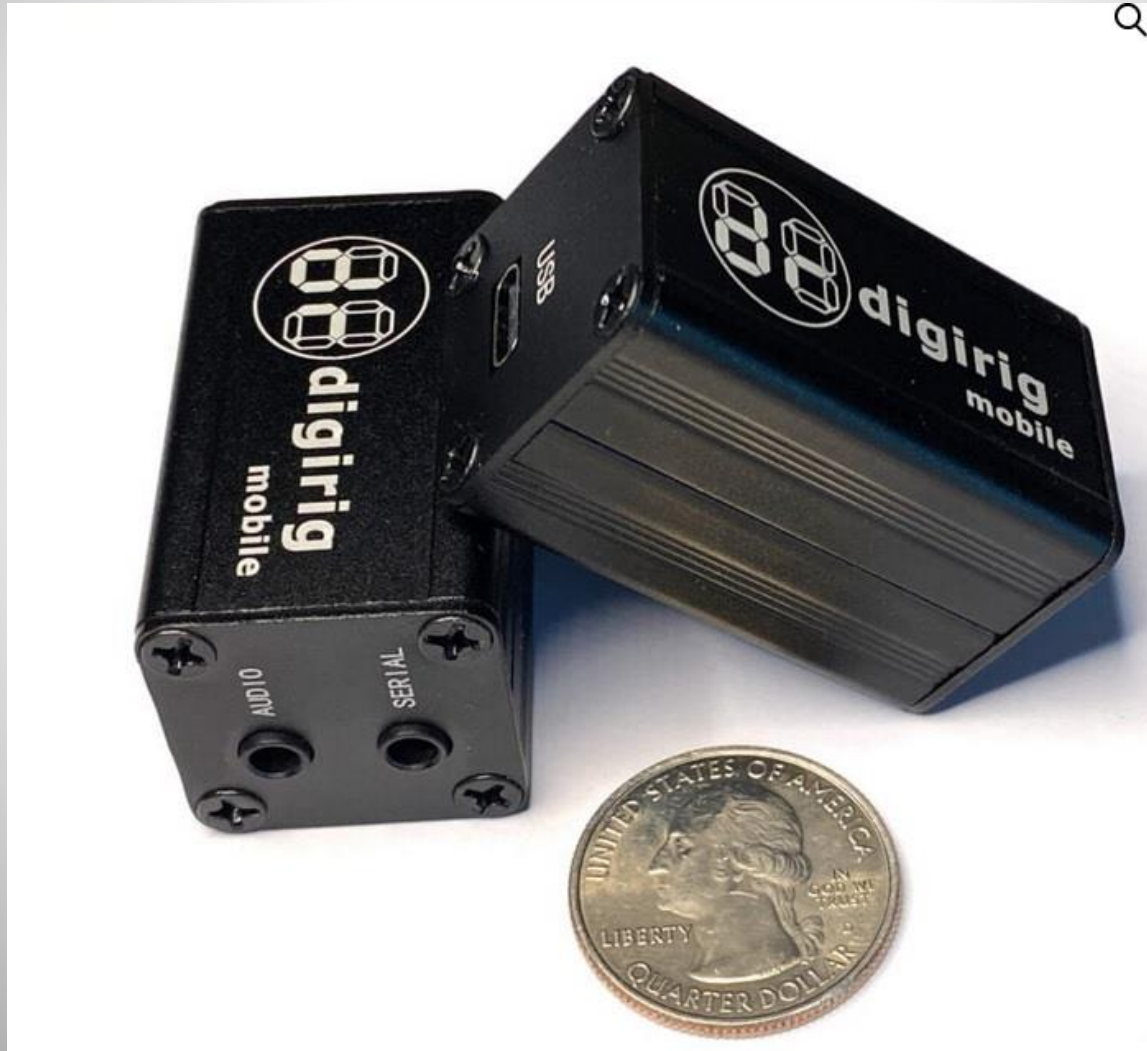
Simple PTT (send) Circuit
using a serial COM port
Positive voltage on pins (RTS or DTR)
grounds the PTT switching circuit



Many modern rigs have built-in sound cards
(only cable is a USB from rig to computer)



DigiRig Mobile complete sound card
with serial COM port and TX/RX audio and PTT
requires special TRRS cables



Simplest: DigiRig "lite" (no COM port)
unique cable for each radio

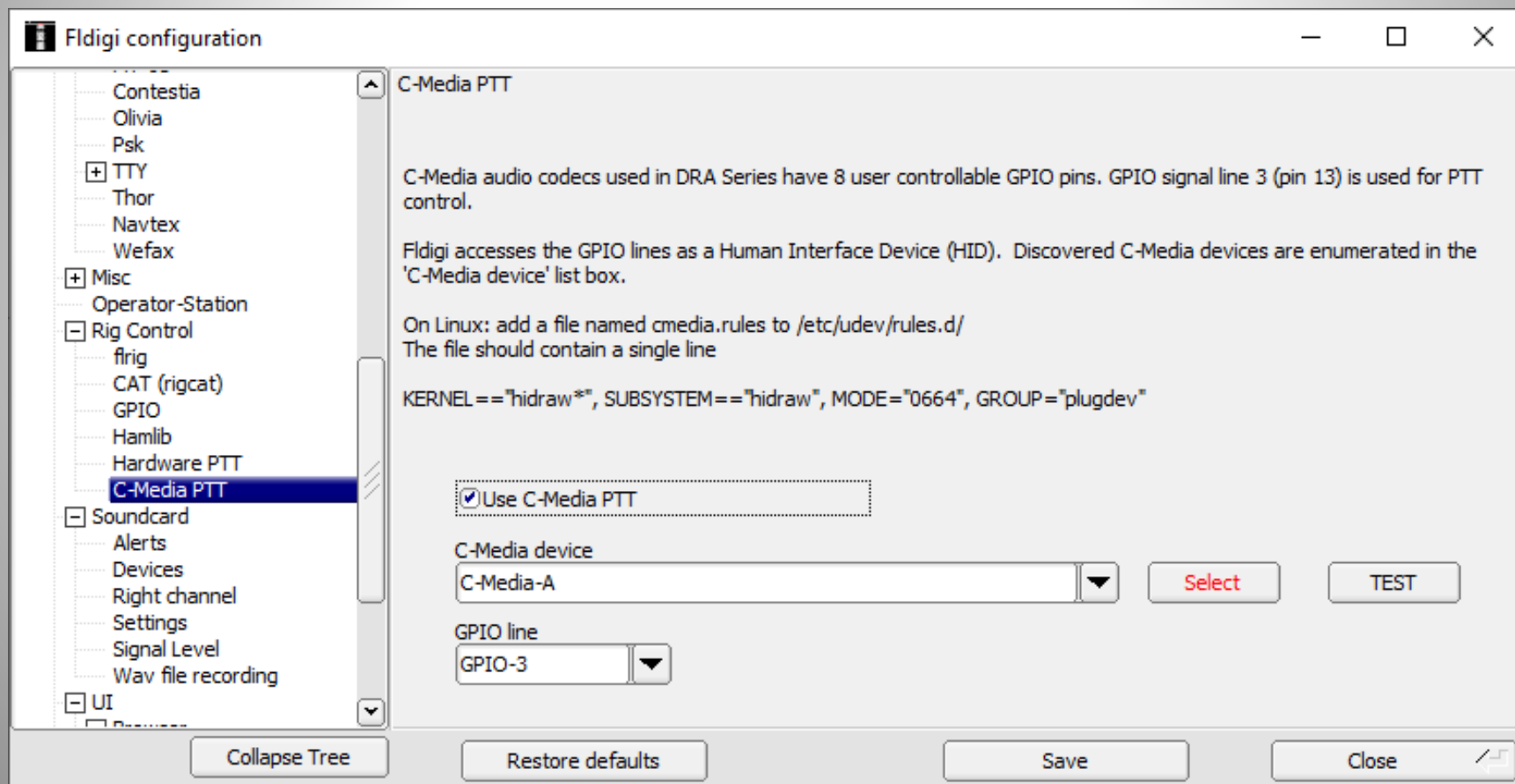


Masters Communications: high performance

DRA-100 Series Black



RA adapter for PTT available on some newer sound cards with **C-Media** sound chips PRESS TEST button to check



Simple Rigblaster interface and 2m FM rig
uses radio's MIC and SPKR jacks



Rigblaster Advantage model
sound card, COM port, CAT port
CW keying, RTTY FSK keying



Rigblaster Advantage - rear view

USB or Serial RS232 Com Port

CAT (rig control)

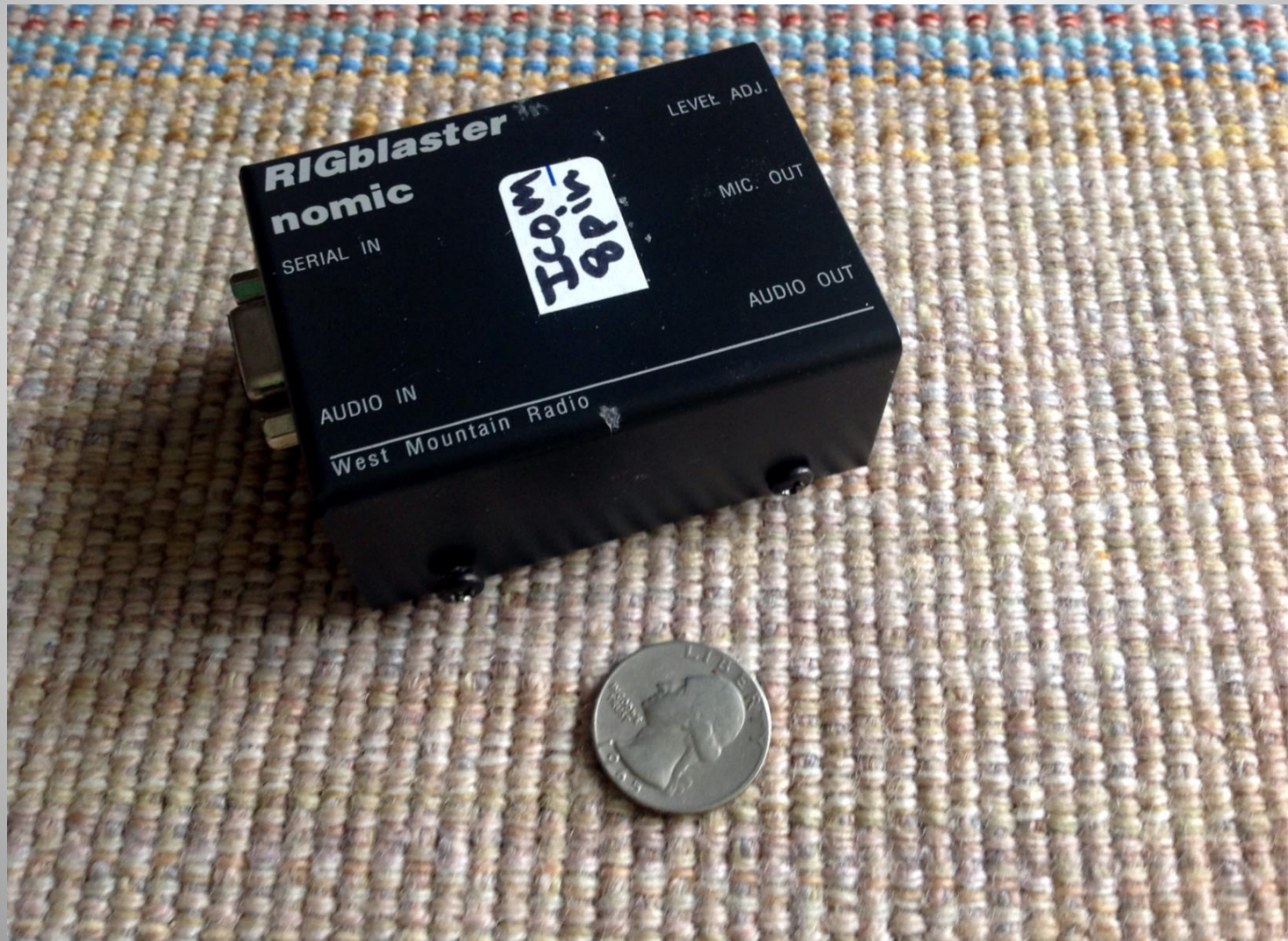
CW keying or FSK keying for RTTY

LINE in (receive audio)

PTT (external switch) and MIC (to radio's MIC jack)



Rigblaster "nomic" interface COM port for PTT
(uses your laptop's sound card)



Simple USB Sound Card
but PTT may be a challenge



Tigertronics - **Signalink** (no COM port)

USB sound card: adaptable to many radios

Has its own internal VOX circuit for PTT and Delay

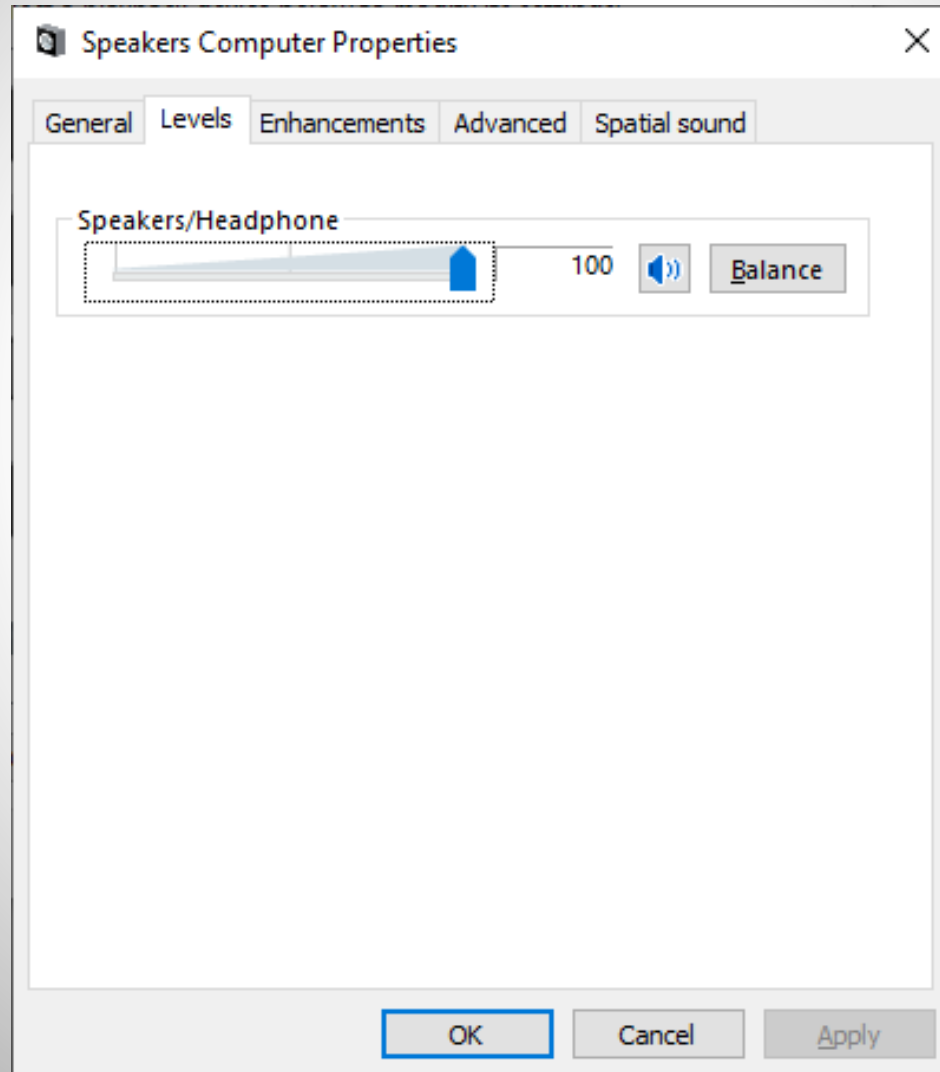
Rx and TX audio level adjustments

Radio Cable: specific for radio model

In FLDIGI config => choose **NONE** of the options for PTT



Warning: SignalLinks are mono only (left) so keep the Windows Sound Control Panel for PLAYBACK (TX audio) at 100% level to have proper level PTT signal



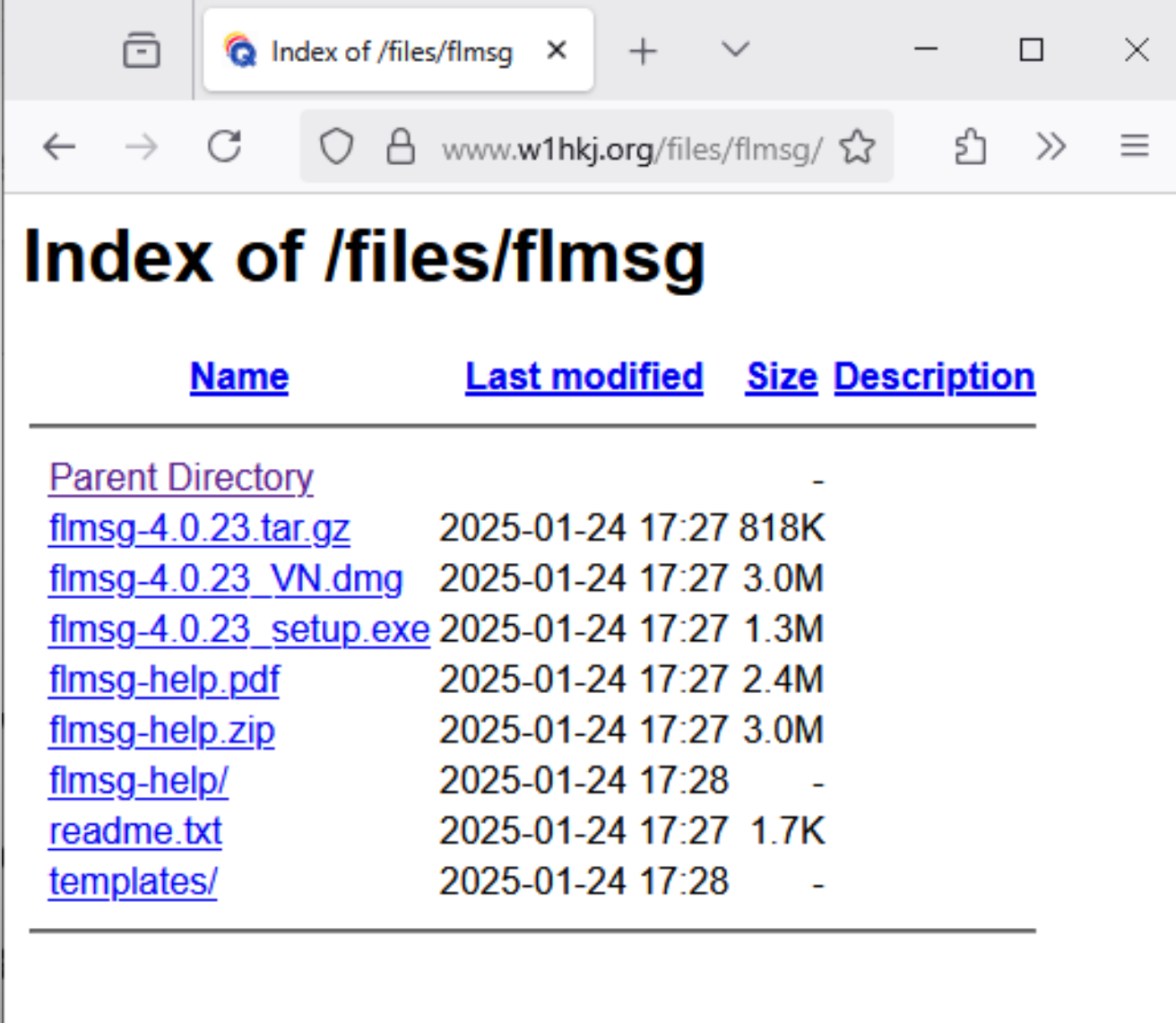
Rig Expert: lots of features



Sending FILES

- FLMSG - standard templates
- FLAMP - sending files in small 'blocks'

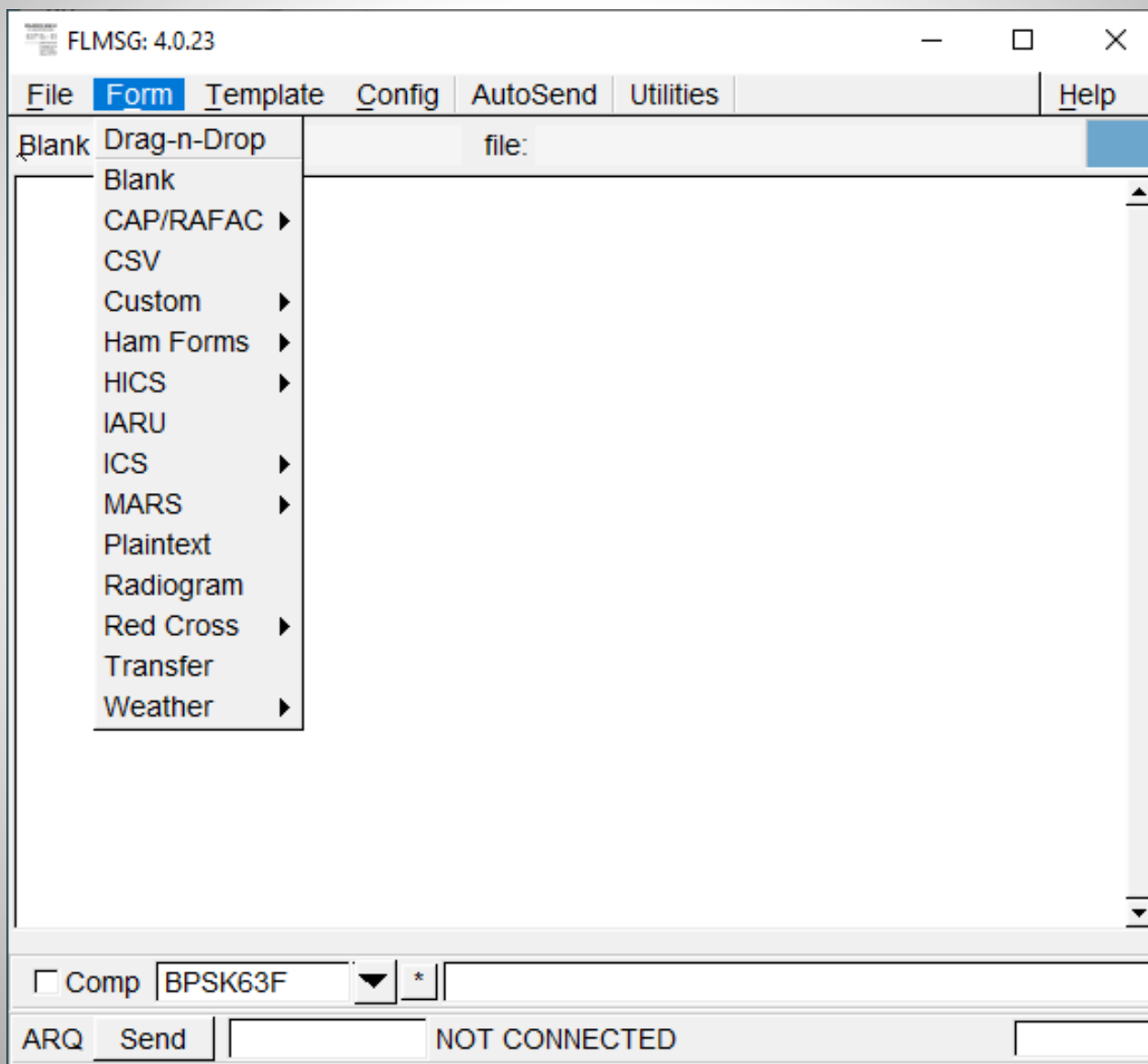
Download FLMSG



The screenshot shows a web browser window with the address bar displaying "www.w1hkj.org/files/flmsg/". The page title is "Index of /files/flmsg". Below the title is a table listing files and directories. The table has four columns: Name, Last modified, Size, and Description. The files listed include "flmsg-4.0.23.tar.gz", "flmsg-4.0.23_VN.dmg", "flmsg-4.0.23_setup.exe", "flmsg-help.pdf", "flmsg-help.zip", "flmsg-help/", "readme.txt", and "templates/".

<u>Name</u>	<u>Last modified</u>	<u>Size</u>	<u>Description</u>
Parent Directory		-	
flmsg-4.0.23.tar.gz	2025-01-24 17:27	818K	
flmsg-4.0.23_VN.dmg	2025-01-24 17:27	3.0M	
flmsg-4.0.23_setup.exe	2025-01-24 17:27	1.3M	
flmsg-help.pdf	2025-01-24 17:27	2.4M	
flmsg-help.zip	2025-01-24 17:27	3.0M	
flmsg-help/	2025-01-24 17:28	-	
readme.txt	2025-01-24 17:27	1.7K	
templates/	2025-01-24 17:28	-	

FLMSG Forms



FL Message: FLMSG

FILES are "wrapped" for error detection

Weather reports

American Red Cross messages

ICS emergency messages

Spreadsheets (CSV files)

ARRL RadioGram

CUSTOM FORMS - (local WX)

FLMSG: Severe Weather Reports

FLMSG: 4.0.23

File Form Template Config AutoSend Utilities Help

Severe Wx Report file: default.s2s

Report Narrative

Date 2025-05-04 Time 1911 EDT Meas. Est.

State/Province PA, Pennsylvania

County Chester (029)

City Kennett Square

Tornado

Funnel cloud

Wall cloud

Hail Size 0.50 (0.5")

High Wind Wind Speed Meas' Est'

Flood

Flash Flood Any damage? Yes No

Other Any injuries? Yes No

Comp THOR32 * 437 bytes / 51 secs

ARQ Send NOT CONNECTED

ICS 213 emergency message

FLMSG: 4.0.17

File Form Template Config AutoSend Utilities Help

ICS-213 report file: ICS_213_WCU_Shelter_Report_Drill.213

Originator Responder

Inc: ICS 213 Shelter Report West Chester University auditorium

To: W3EOC Pos: Chester County EOC

Fm: Shelter manager via k3eui Pos: amateur radio operator

Sub: Daily Report from West Chester University Shelter

Message: Date: 2020-11-24 Time: 0940L

This is a morning report from the West Chester University Shelter.

The shelter now has 22 occupants: 15 adults and 7 children including two pets (dogs).

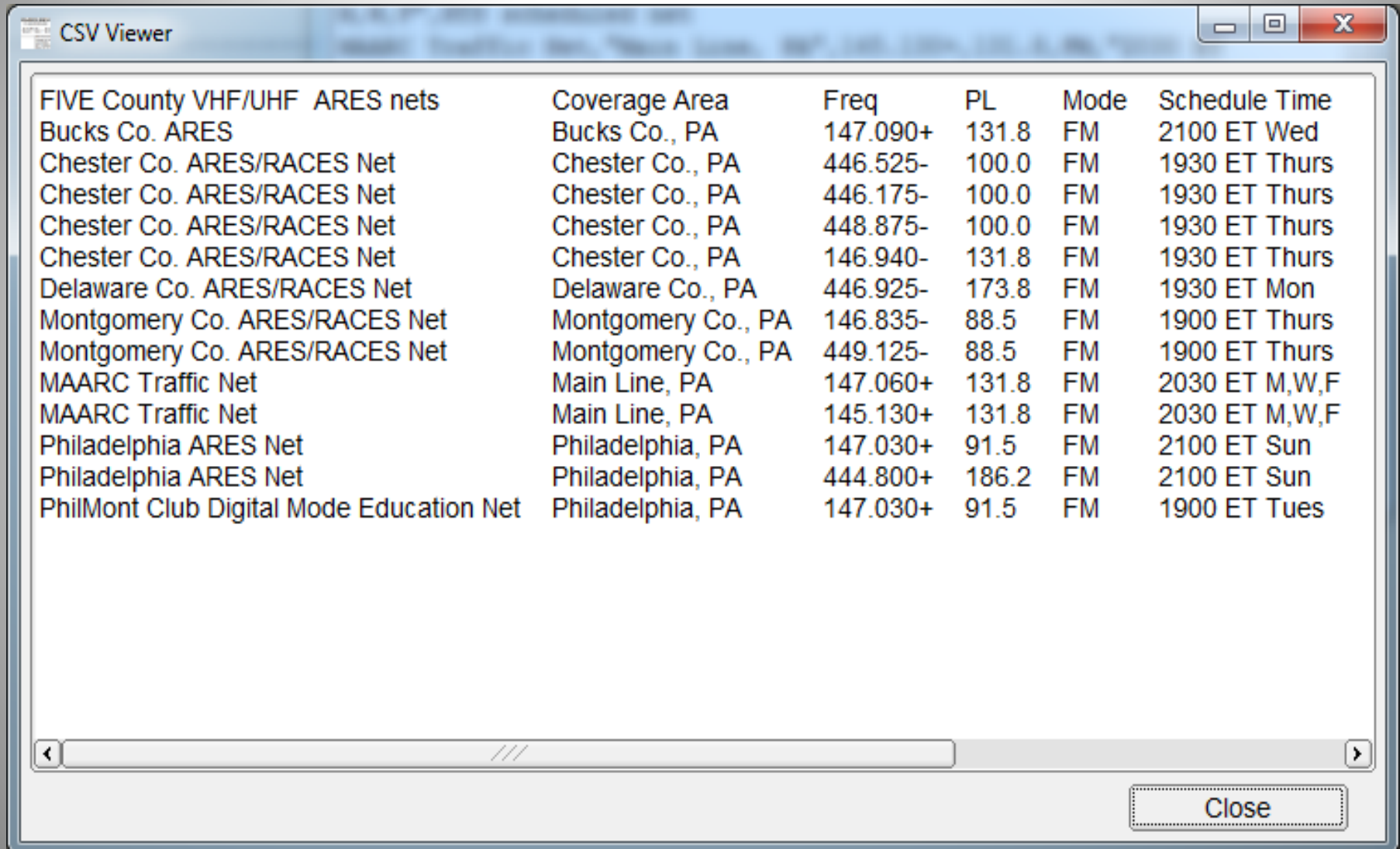
We have enough cots and food for 35 occupants.
We have need for two additional first aid kits.
No immediate medical conditions to report.
The shelter has two DES officials and two volunteers.

App'd: Shelter Manager Pos:

Comp 8PSK1000F * 839 bytes / 3 secs

ARQ Send NOT CONNECTED

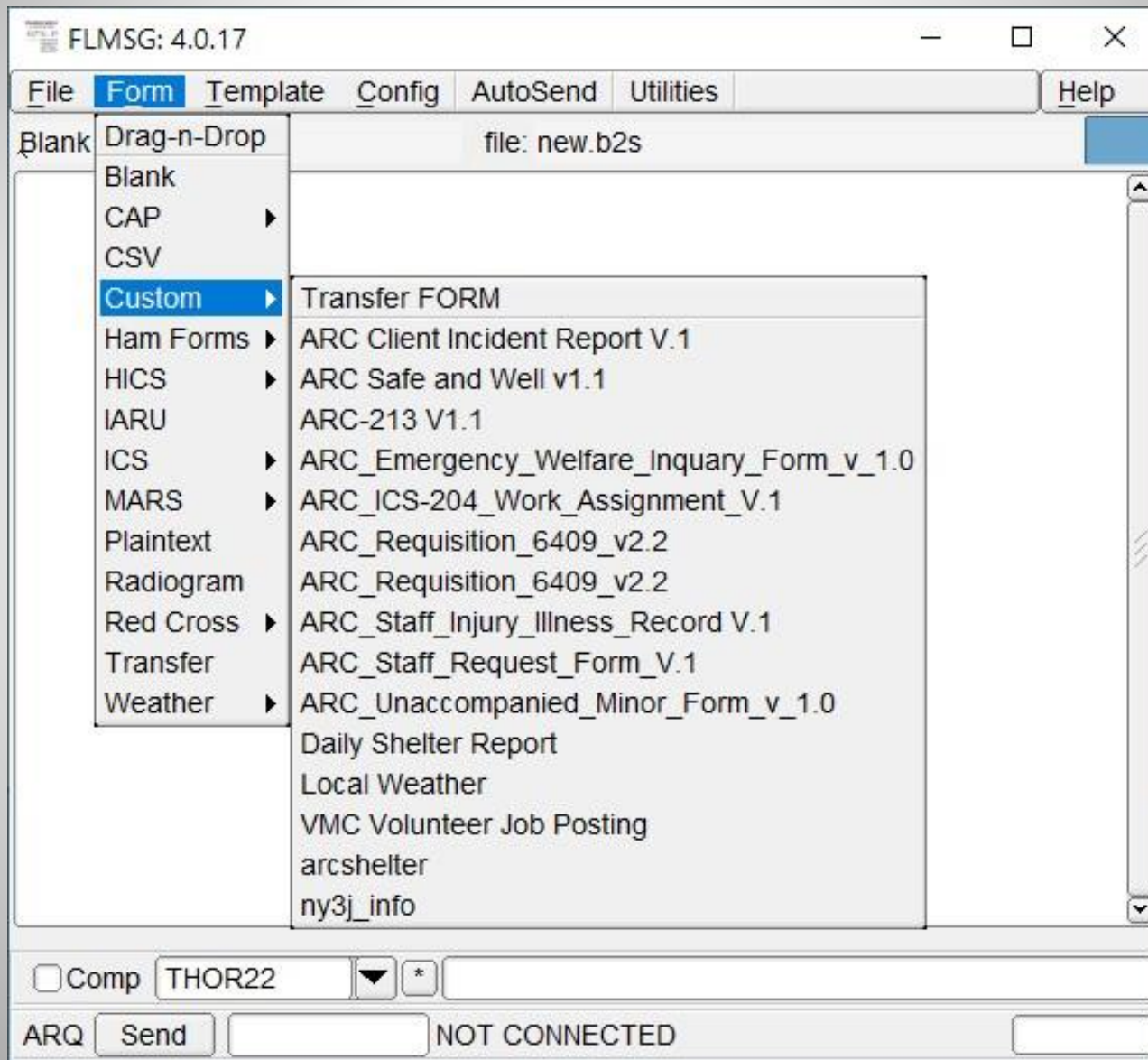
Spreadsheets (csv files)



The image shows a screenshot of a 'CSV Viewer' window. The window title bar includes the text 'CSV Viewer' and standard Windows window controls (minimize, maximize, close). The main content area displays a table with seven columns: 'Coverage Area', 'Freq', 'PL', 'Mode', and 'Schedule Time'. The first column is unlabeled but contains the names of various radio nets. The table lists 14 different radio nets, including ARES nets in Bucks, Chester, Delaware, and Montgomery counties, as well as MAARC Traffic Net, Philadelphia ARES Net, and PhilMont Club Digital Mode Education Net. The 'Schedule Time' column shows various times and days of the week, such as '2100 ET Wed', '1930 ET Thurs', '1900 ET Mon', '2030 ET M,W,F', and '1900 ET Tues'. A scrollbar is visible at the bottom of the table area, and a 'Close' button is located in the bottom right corner of the window.

	Coverage Area	Freq	PL	Mode	Schedule Time
FIVE County VHF/UHF ARES nets					
Bucks Co. ARES	Bucks Co., PA	147.090+	131.8	FM	2100 ET Wed
Chester Co. ARES/RACES Net	Chester Co., PA	446.525-	100.0	FM	1930 ET Thurs
Chester Co. ARES/RACES Net	Chester Co., PA	446.175-	100.0	FM	1930 ET Thurs
Chester Co. ARES/RACES Net	Chester Co., PA	448.875-	100.0	FM	1930 ET Thurs
Chester Co. ARES/RACES Net	Chester Co., PA	146.940-	131.8	FM	1930 ET Thurs
Delaware Co. ARES/RACES Net	Delaware Co., PA	446.925-	173.8	FM	1930 ET Mon
Montgomery Co. ARES/RACES Net	Montgomery Co., PA	146.835-	88.5	FM	1900 ET Thurs
Montgomery Co. ARES/RACES Net	Montgomery Co., PA	449.125-	88.5	FM	1900 ET Thurs
MAARC Traffic Net	Main Line, PA	147.060+	131.8	FM	2030 ET M,W,F
MAARC Traffic Net	Main Line, PA	145.130+	131.8	FM	2030 ET M,W,F
Philadelphia ARES Net	Philadelphia, PA	147.030+	91.5	FM	2100 ET Sun
Philadelphia ARES Net	Philadelphia, PA	444.800+	186.2	FM	2100 ET Sun
PhilMont Club Digital Mode Education Net	Philadelphia, PA	147.030+	91.5	FM	1900 ET Tues

American Red Cross - Custom forms



American Red Cross: Daily Shelter Report

Index of /files/flamp
ARC shelter

file:///C:/Users/bhfei/NBEMS.files/CUSTOM/
70%

American Red Cross Daily Shelter Report

Date Incident/ DR # Shelter Name/County

SHELTER INFORMATION

Shelter Address

Shelter Phone Number (s)

VA0A0 Please fill out this field.

SHELTERING STAFF

POSITION	NAME	PHONE
Shelter Manager	<input type="text"/>	<input type="text"/>
Day Shift Supervisor	<input type="text"/>	<input type="text"/>
2nd Shift Supervisor	<input type="text"/>	<input type="text"/>
Night Shift Supervisor	<input type="text"/>	<input type="text"/>

Total Number of Sheltering Workers Day Shift 2nd Shift Night Shift

OTHER FUNCTIONS OR ACTIVITIES STAFF

# Disaster Health Services <input type="checkbox"/>	# Casework and Recover Planning <input type="checkbox"/>
# Disaster Mental Health <input type="checkbox"/>	# Feeding <input type="checkbox"/>
# Disaster Spiritual Care <input type="checkbox"/>	Other <input type="text"/> # <input type="text"/>

SHELTER POPULATION

Age Groups (years)	0-3	4-7	8-12	13-18	19-65	65 +
Nighttime Population Submitted Last Night	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Daytime Population Today	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Total NEW Shelter Dormitory Registrations Since Last Night: <input type="text"/>						

OPERATIONAL REPORTING

	Breakfast	Lunch	Dinner	Snacks/ Drinks	Cots	Blankets	Comfort Kits	Clean-up Kits	Other Bulk Items	Signage Kits		
# Used Today	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
# Available Tomorrow	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
# Needed Tomorrow	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

NOTES

Preparer Name: Preparer Signature:

[Adapted from National Mass Care Strategy.](#)

DCS JT RES Daily Shelter Report V.1.0 2016.07.18
Modified from the Winlink Daily Shelter_Report

FLAMP

Larger File is broken into multiple smaller **BLOCKS**

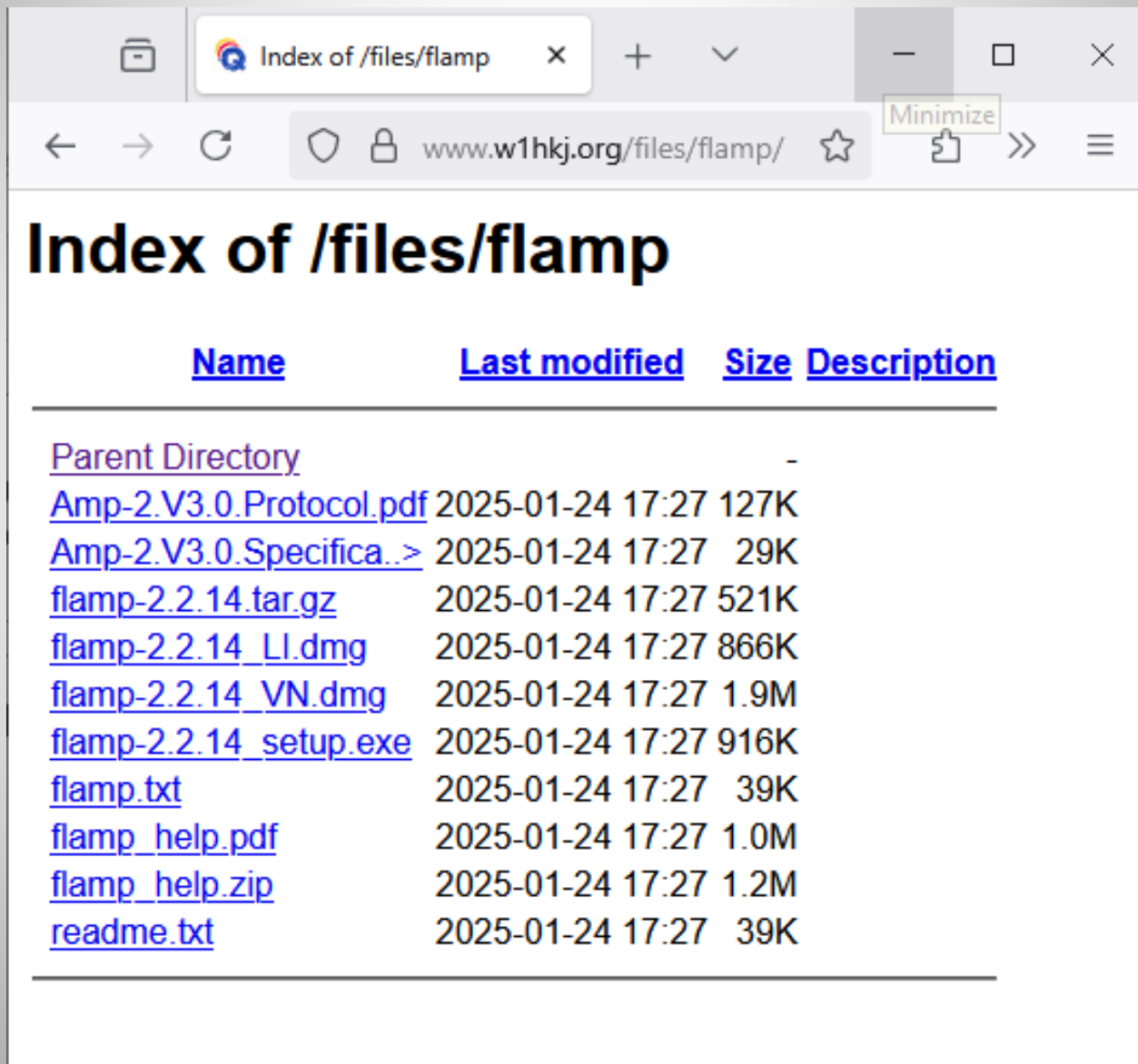
Each "BLOCK" has its own check-sum

Missing Blocks? Send a REPORT

Resend only the "missing blocks"

..... save time

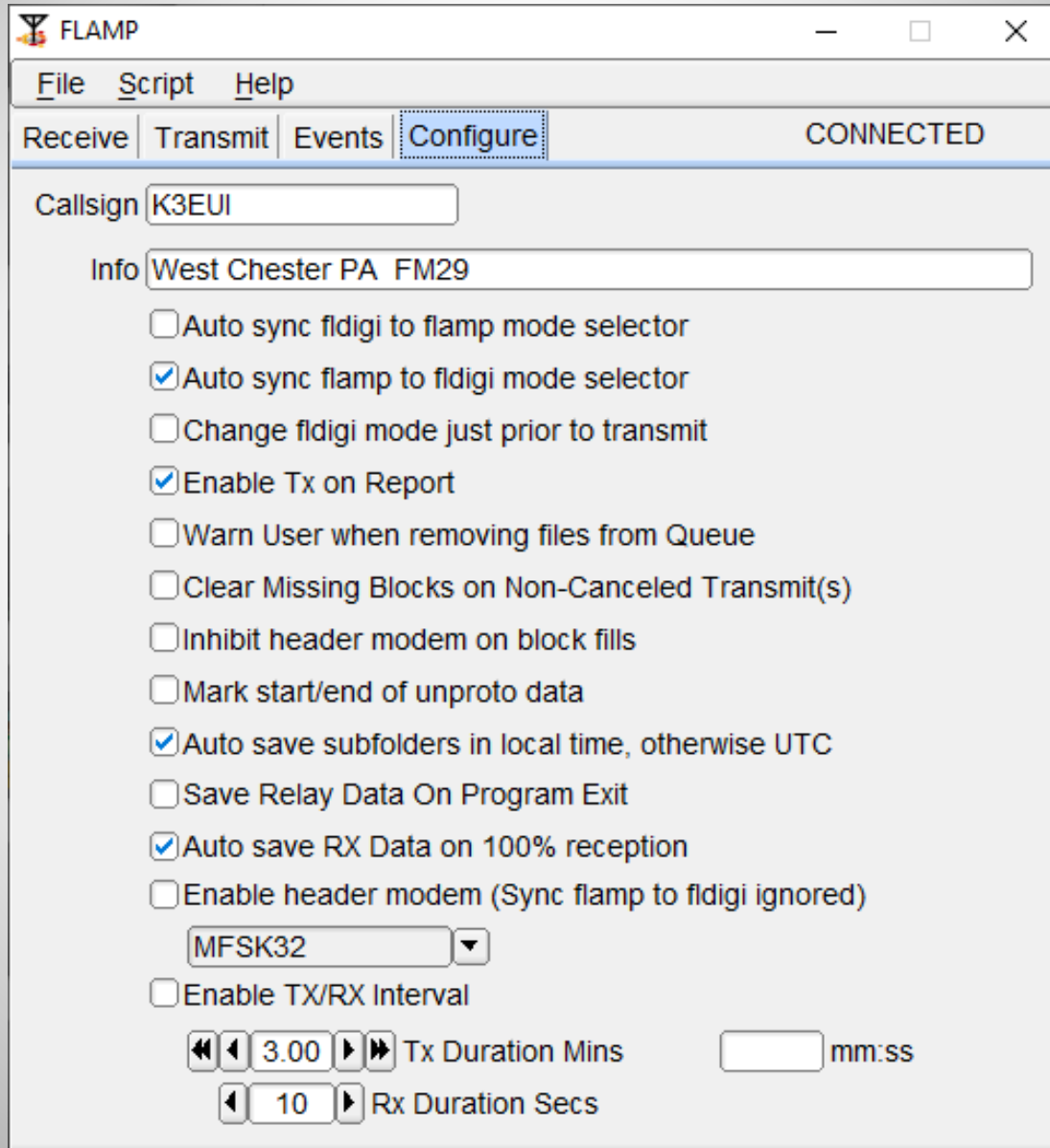
Download FLAMP



Index of /files/flamp

<u>Name</u>	<u>Last modified</u>	<u>Size</u>	<u>Description</u>
Parent Directory		-	
Amp-2.V3.0.Protocol.pdf	2025-01-24 17:27	127K	
Amp-2.V3.0.Specifica..>	2025-01-24 17:27	29K	
flamp-2.2.14.tar.gz	2025-01-24 17:27	521K	
flamp-2.2.14_LI.dmg	2025-01-24 17:27	866K	
flamp-2.2.14_VN.dmg	2025-01-24 17:27	1.9M	
flamp-2.2.14_setup.exe	2025-01-24 17:27	916K	
flamp.txt	2025-01-24 17:27	39K	
flamp_help.pdf	2025-01-24 17:27	1.0M	
flamp_help.zip	2025-01-24 17:27	1.2M	
readme.txt	2025-01-24 17:27	39K	

Configure FLAMP



FLAMP

File Script Help

Receive Transmit Events **Configure** CONNECTED

Callsign

Info

- Auto sync fldigi to flamp mode selector
- Auto sync flamp to fldigi mode selector
- Change fldigi mode just prior to transmit
- Enable Tx on Report
- Warn User when removing files from Queue
- Clear Missing Blocks on Non-Canceled Transmit(s)
- Inhibit header modem on block fills
- Mark start/end of unproto data
- Auto save subfolders in local time, otherwise UTC
- Save Relay Data On Program Exit
- Auto save RX Data on 100% reception
- Enable header modem (Sync flamp to fldigi ignored)

▼

- Enable TX/RX Interval

⏪ ⏩ 3.00 ⏪ ⏩ Tx Duration Mins mm:ss

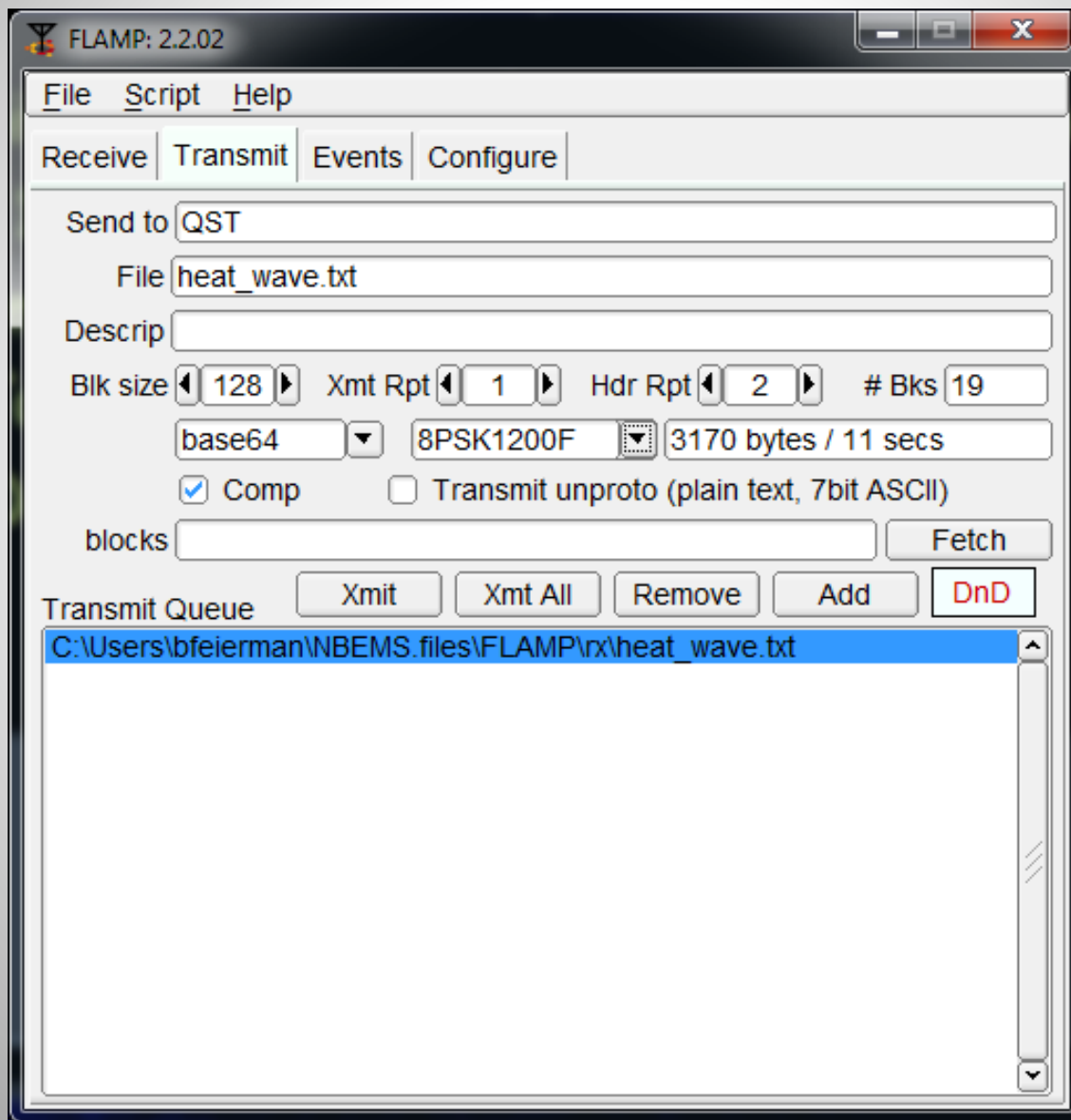
⏪ 10 ⏩ Rx Duration Secs

Click the Add button to load a file
or drop file into the DnD box (drag n drop)

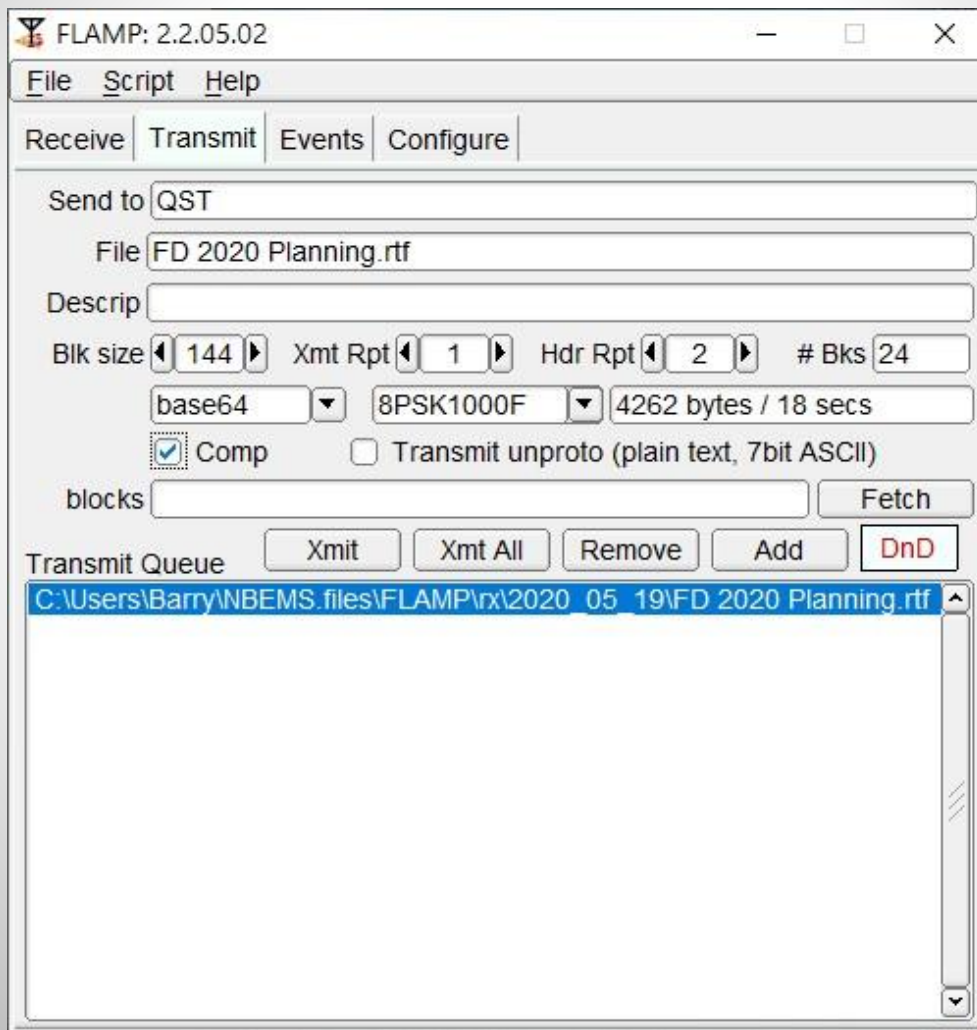
The screenshot shows the FLAMP application window with the following elements:

- Window Title:** FLAMP
- Menu Bar:** File, Script, Help
- Tab Bar:** Receive, Transmit (selected), Events, Configure
- Status:** CONNECTED
- Send to:** QST
- File:** (empty text box)
- Descrip:** (empty text box)
- Blk size:** 464
- Xmt Rpt:** 1
- Hdr Rpt:** 1
- # Blks:** (empty text box)
- Encoding:** base64
- Protocol:** THOR32
- Options:**
 - Comp
 - Transmit unproto (plain text, 7 bit ASCII)
- blocks:** (empty text box)
- Buttons:** Xmit, Xmt All, Remove, Add, Fetch
- DnD:** A red button labeled "DnD" for drag-and-drop file upload.
- Transmit Queue:** A large empty rectangular area at the bottom of the window.

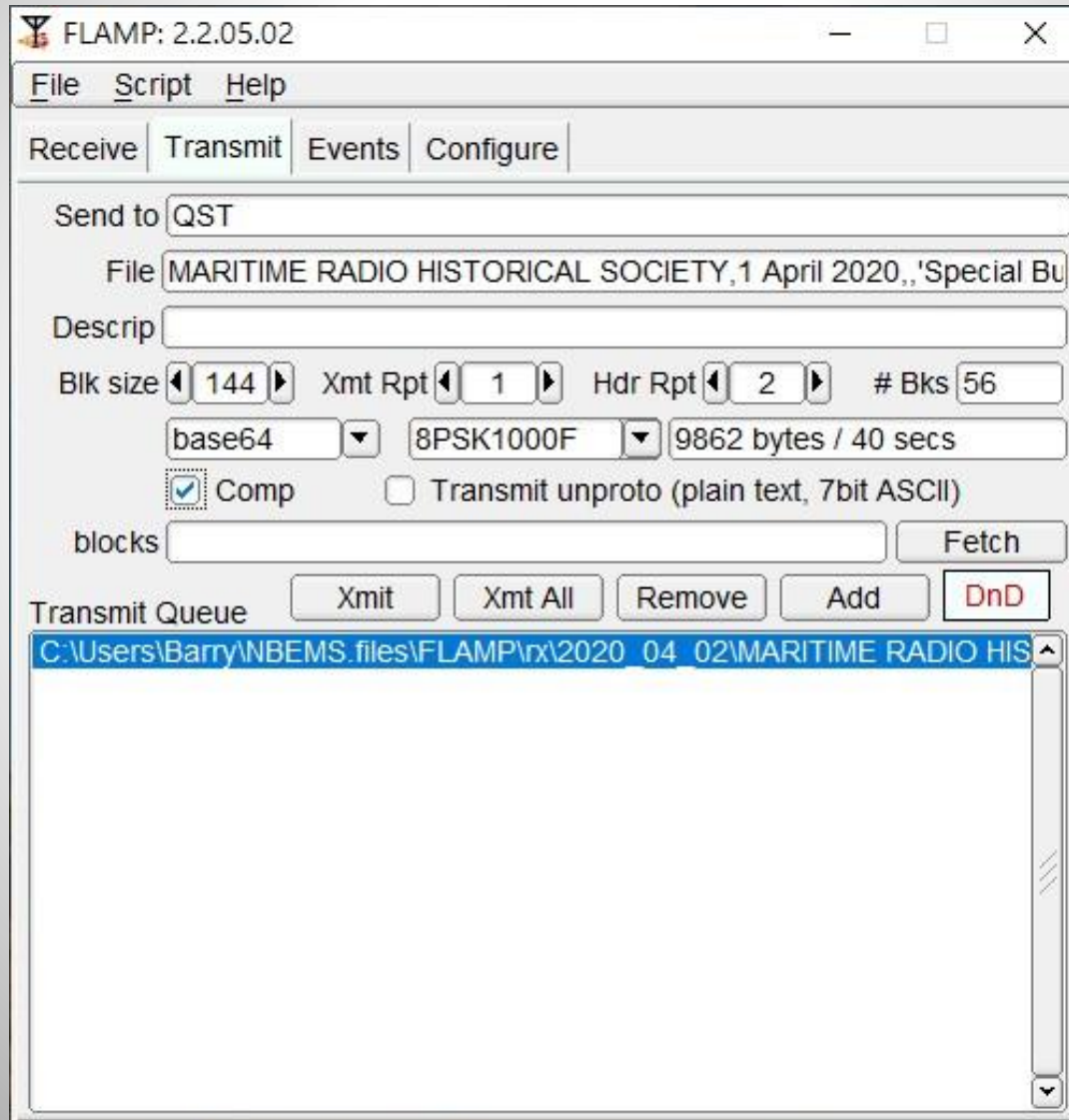
FLAMP: breaks a longer message into "blocks"
3.17 kB file is sent in 11 seconds with 8PSK1200F on FM



FLAMP: Rich Text Format 4.2 kB file (24 blocks)
sent compressed via 2m FM repeater by
8PSK1000F in 18 seconds



FLAMP: 9.8 kB email (eml) file sent on UHF FM repeater
56 blocks sent in 40 seconds via 8PSK1000F



Popular FLDIGI Modes for EMCOMM

Thor - multi-tone, constant amplitude, strong FEC

MFSK - multi-tone, constant amplitude, strong FEC

Olivia - multi-tone, constant amplitude, strong FEC

MT63 64 carriers, PSK modulation

8PSK - very fast (up to 3000 wpm) for FM VHF/UHF

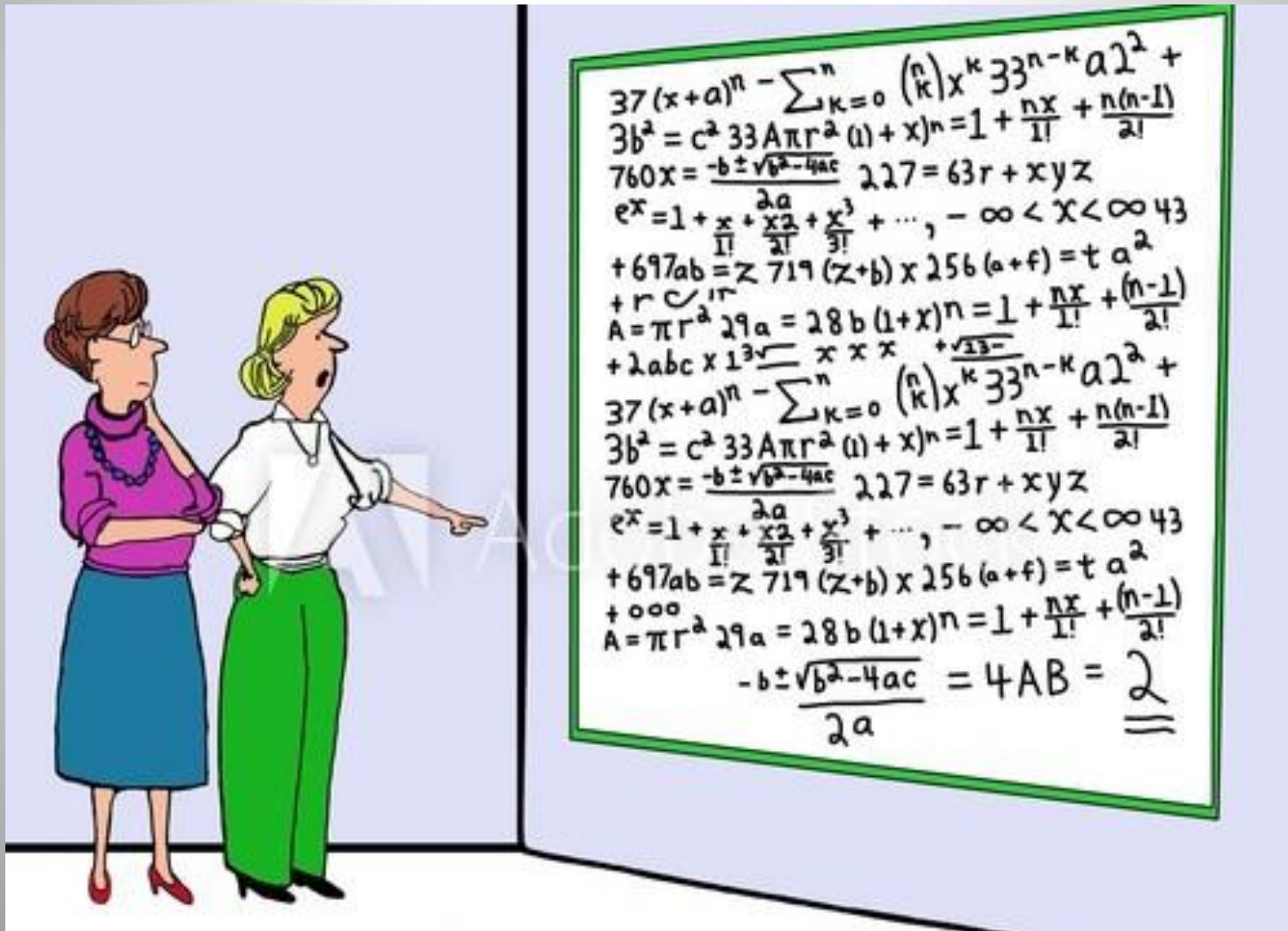
Modes not covered by FLDIGI

OFDM - Orthogonal Frequency Division Multiplex

VARA HF SSB and **VARA FM** (VHF/UHF)

Pactor III - requires a special TNC (hardware)

Symbols, Baud, Bits, Speed



Baud: number of changes per second
made to a radio carrier's
amplitude, frequency or phase

Also called "symbol rate"

(in a two-state system like RTTY or CW)

Current debate with FCC rules on HF bands
baud vs. bandwidth

BAUD and Word/minute

CW	20 baud = 24 wpm
PSK31	31 baud = 50 wpm
RTTY 45	45 baud = 60 wpm
Olivia 8 / 500	63 baud = 30 wpm
MFSK 32	32 baud = 120 wpm
THOR 22	22 baud = 78 wpm
8PSK 1000F	1000 baud = 3386 wpm

Bandwidth (99% of energy)

AM phone	= 6 kHz (double sideband)
SSB phone	= 2-3 kHz
CW	= 100 - 300 Hz
PSK 31	= 50 Hz
Olivia 8/500	= 500 Hz
FT8	= 50 Hz
MT63-2K	= 2000 Hz
THOR 100	= 1800 Hz
MFSK 128	= 1920 Hz
Pactor III	= 2400 Hz
VARA	= 500 Hz or 2300 Hz

Modulation - adds information or content to a radio frequency (RF) electromagnetic wave by altering at least one of these

amplitude
frequency
phase

Modulation Methods

AM and CW are

amplitude shifts

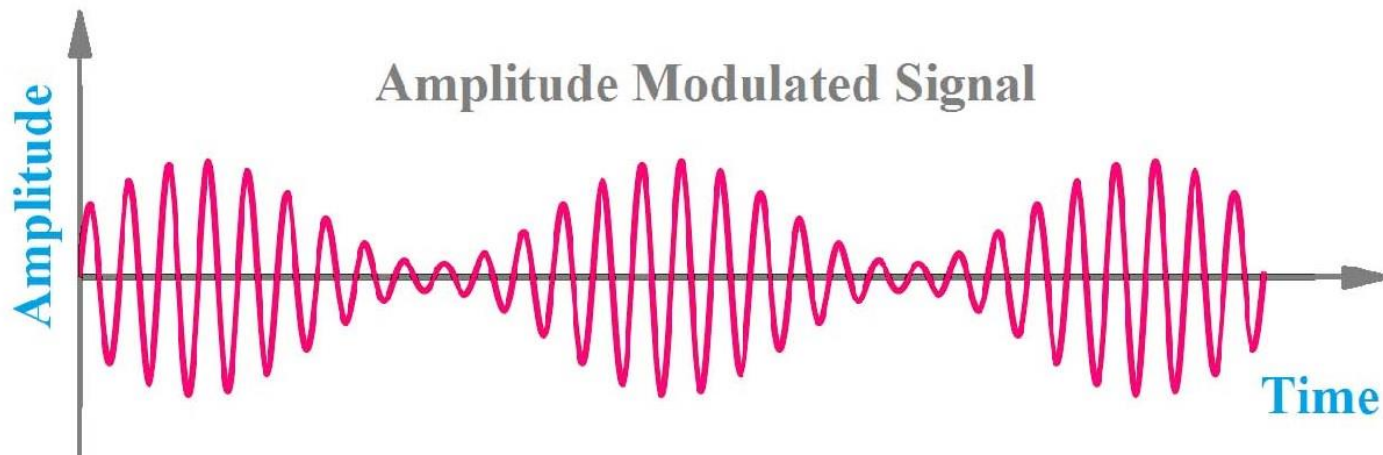
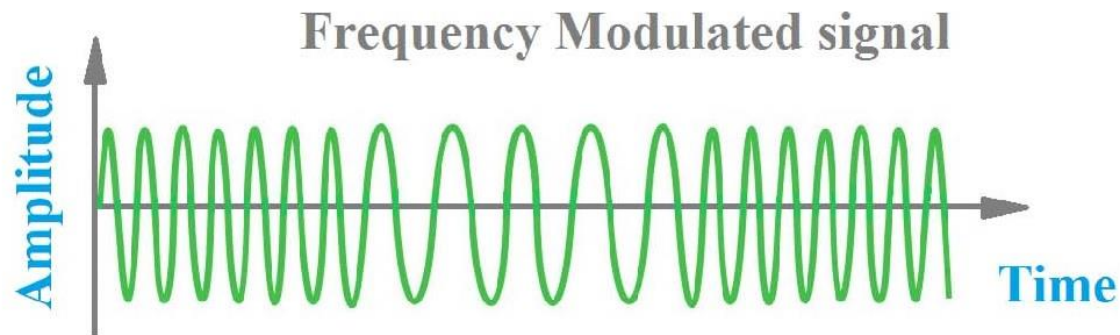
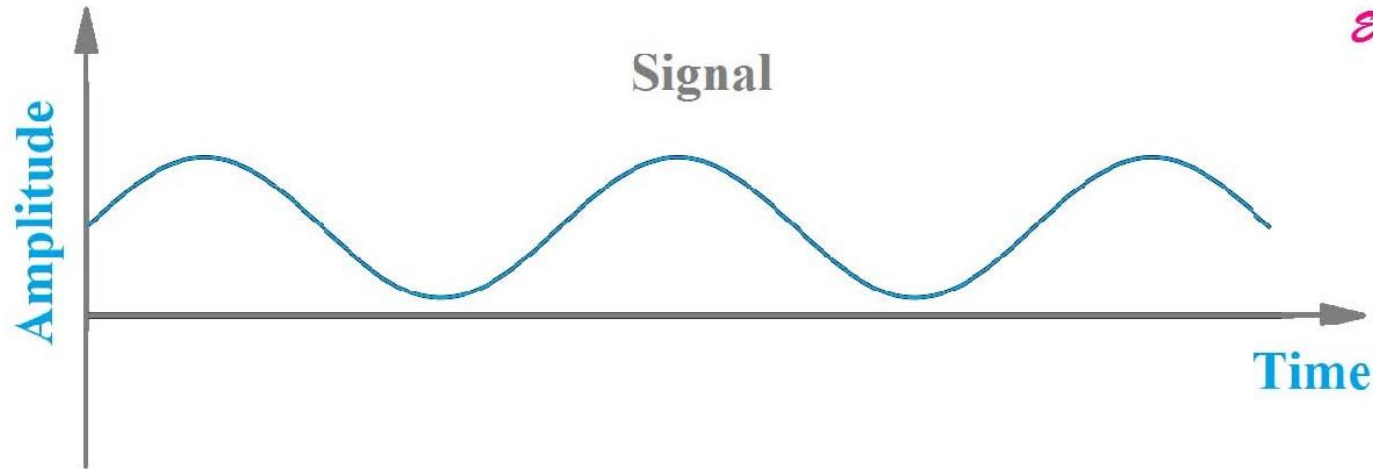
RTTY, Olivia, Thor, MFSK, FT8

frequency shifts

(mostly constant amplitude)

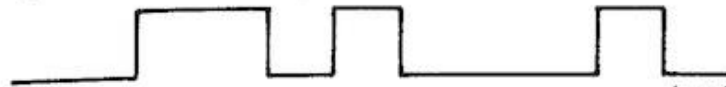
PSK, VARA, 8PSK, and MT63

phase and amplitude shifts



Sending DATA via AM,FM,PM

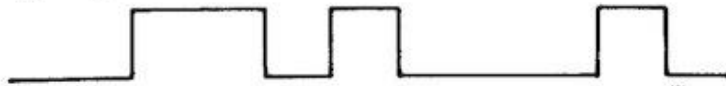
0 0 1 1 0 1 0 0 0 1 0



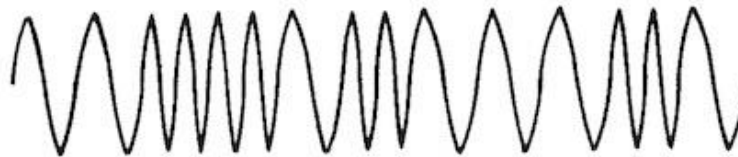
Amplitude-Shift Keying



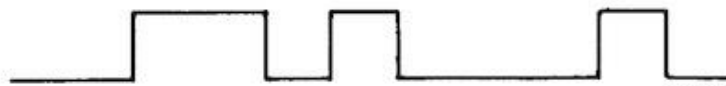
0 0 1 1 0 1 0 0 0 1 0



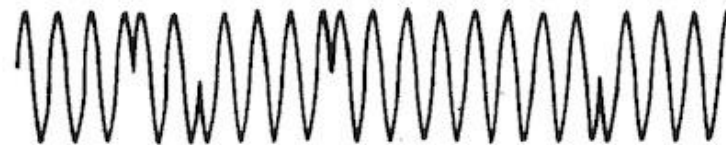
Frequency-Shift Keying



0 0 1 1 0 1 0 0 0 1 0



Phase-Shift Keying

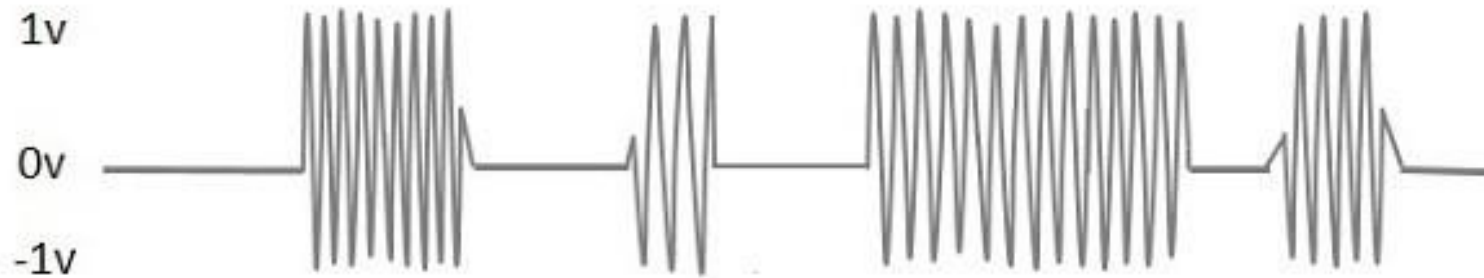


CW or ASK or OOK

(amplitude shift keying, on/off keying)

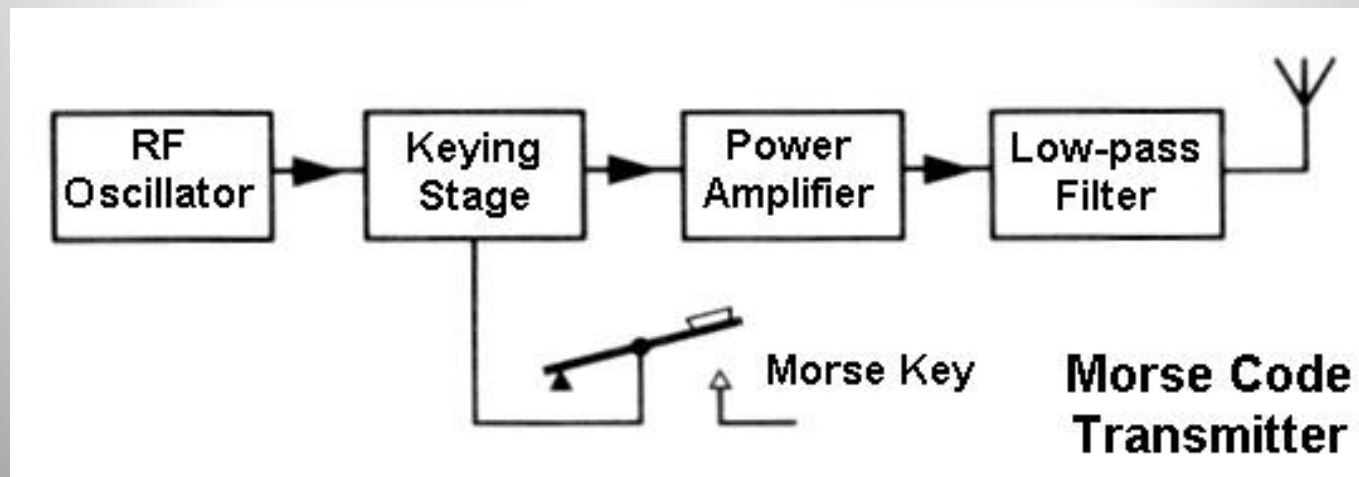
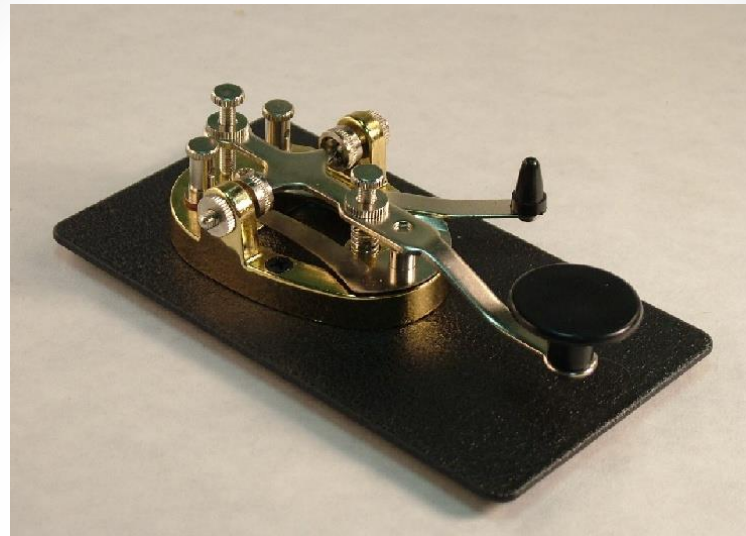


Input binary sequence



ASK Modulated output wave

Typical method of generating a CW signal
Turn RF on/off by a mechanical switch

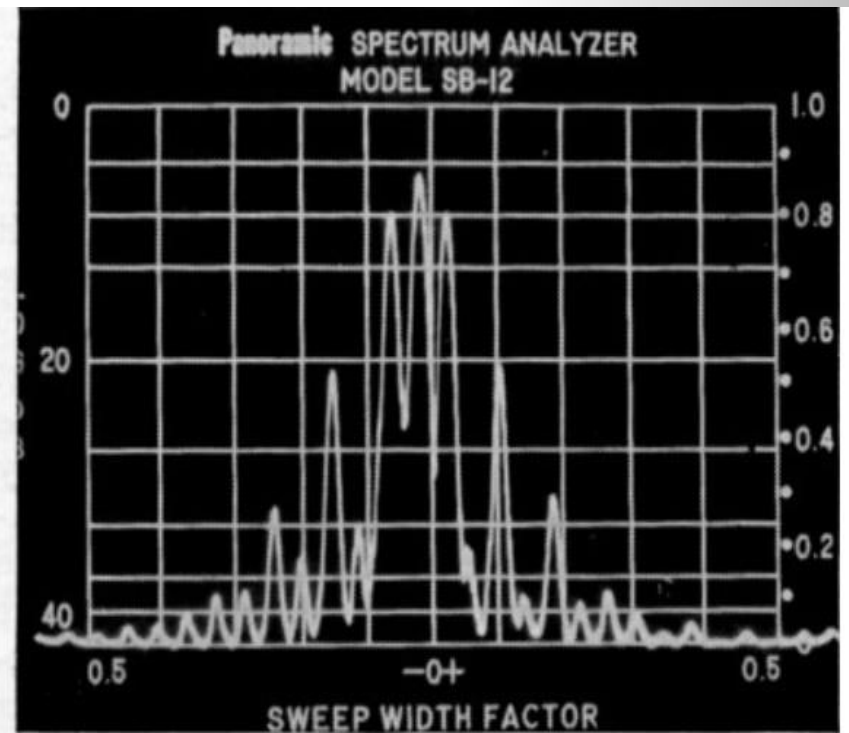
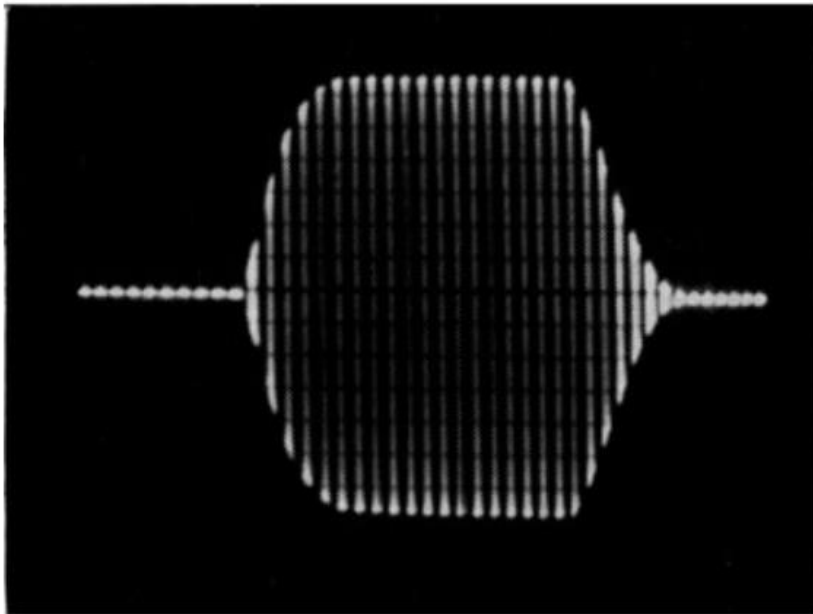


CW keying shape and keying speed

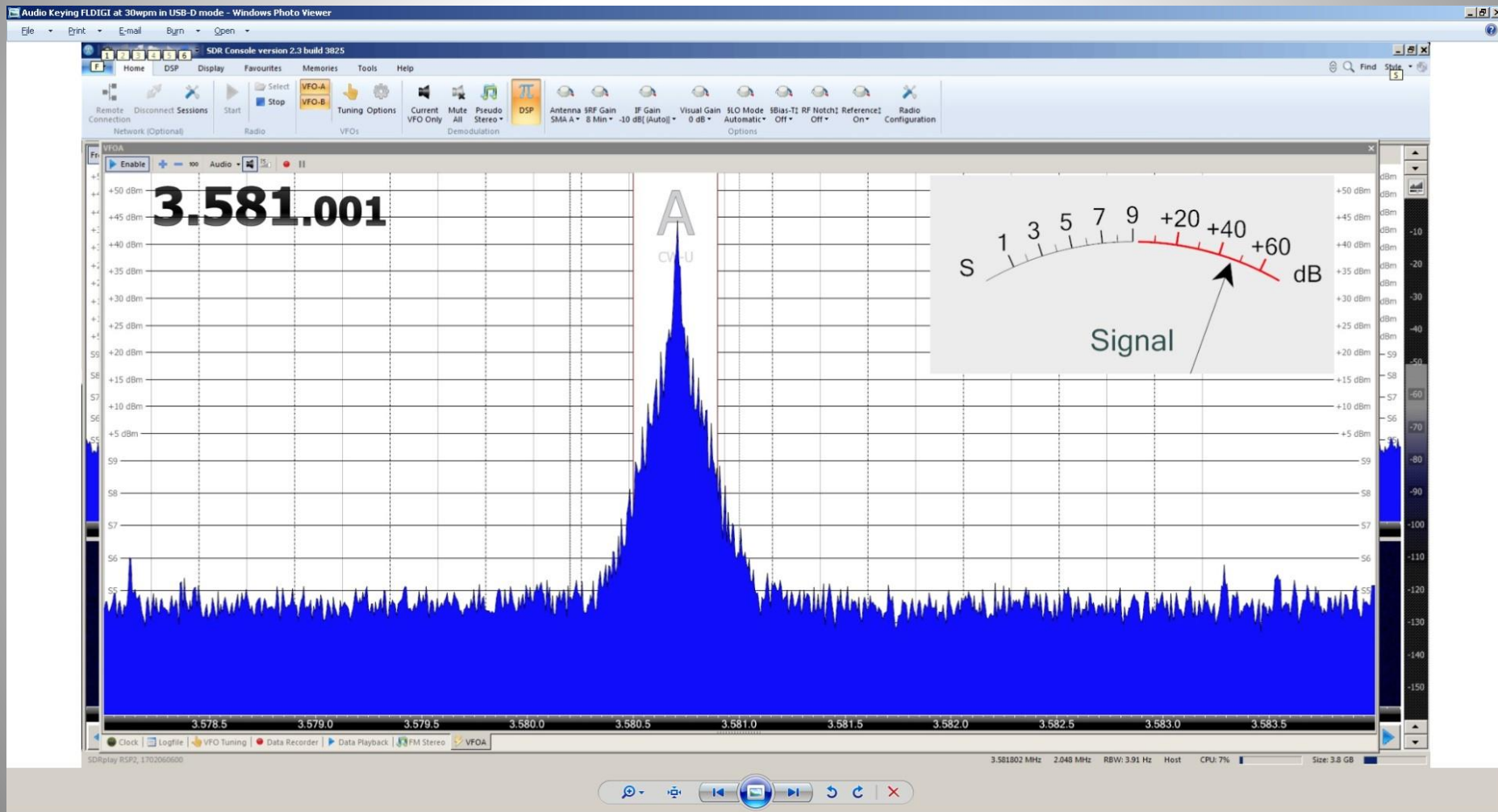
Rise and Fall times of RF about 4-6 milliseconds

too long ==> mushy sound

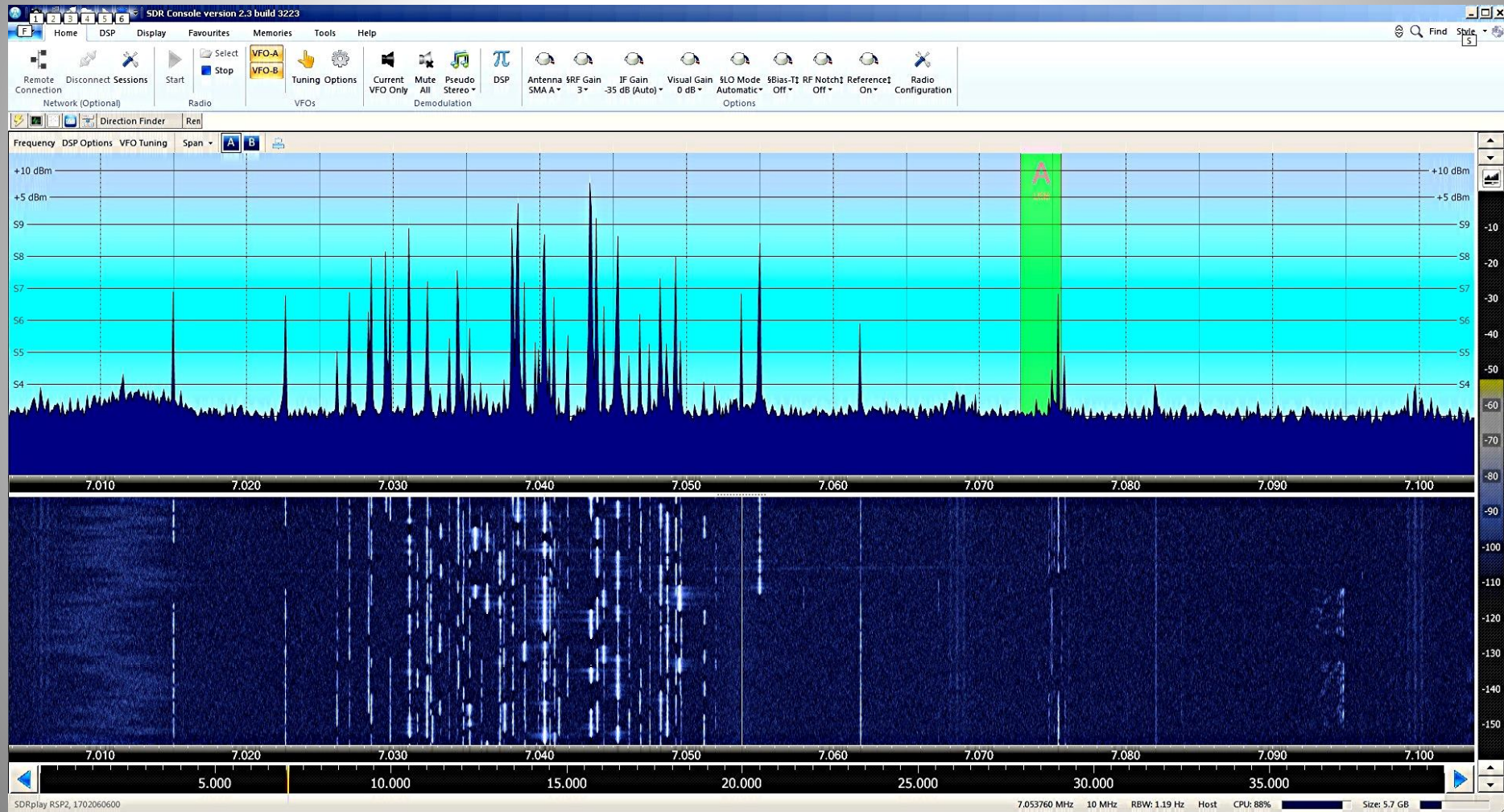
too short ==> key clicks



Bandwidth of W1AW CW RF signal (20 wpm) received at k3eui on 3581.5 kHz



CW is still "alive" on fickle 40 meters
Was this a CW contest?
(note only 2 CW signals 7000 - 7025 kHz)



CW is binary because

0 = no RF (silence)

1 = RF (sound)

The dit (short sound) is represented by **1**

The dah (long sound) is represented by **111**

standard dash/dot ratio is a 3:1

You need the 0 to represent silence

Binary nature of CW

E = 1

T = 111

I = 101

M = 1110111

S = 10101

O = 11101110111

H = 1010101

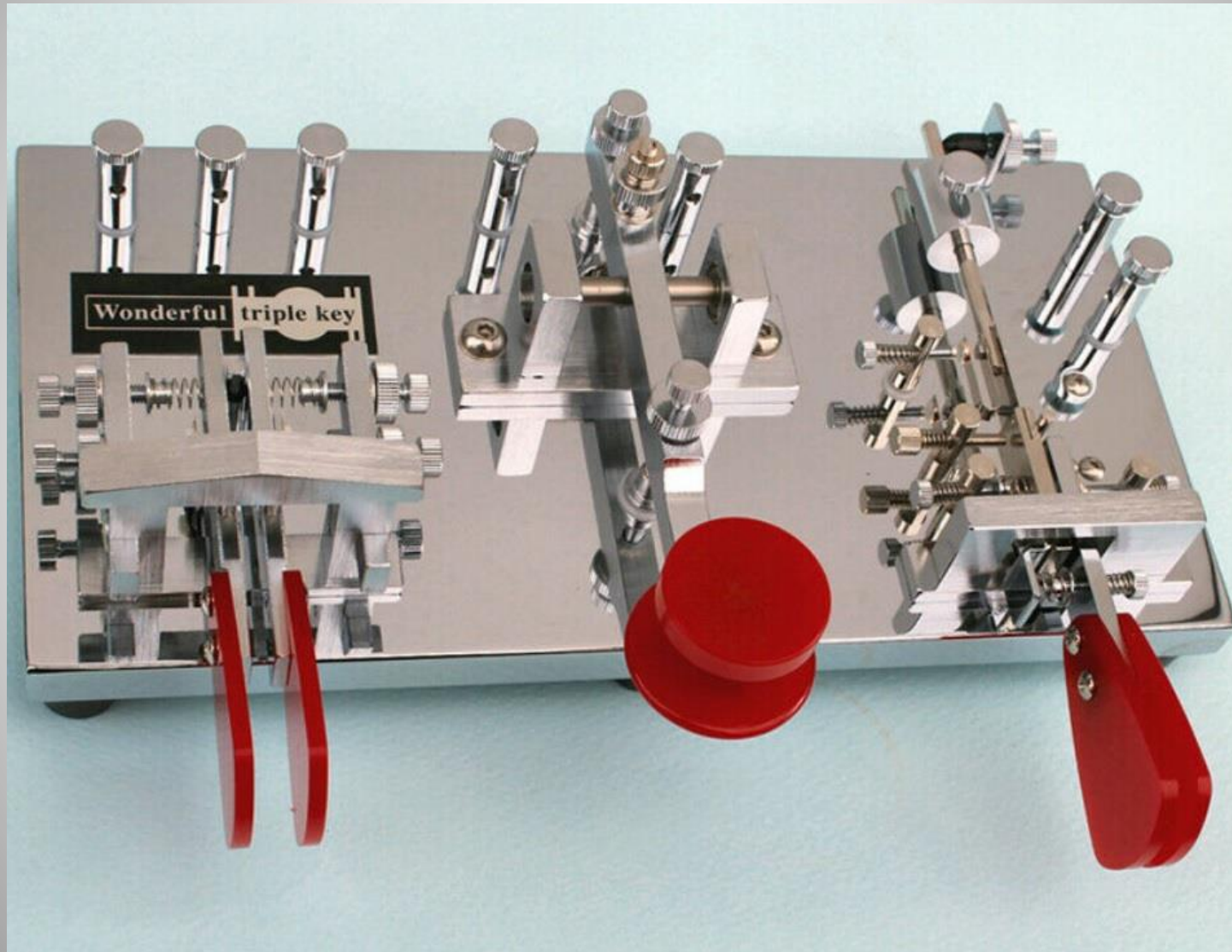
Longer spaces between letters: 000

Longer spaces between words: 00000

More advanced: mechanical "bug"
(sliding weight controls speed of the dits)



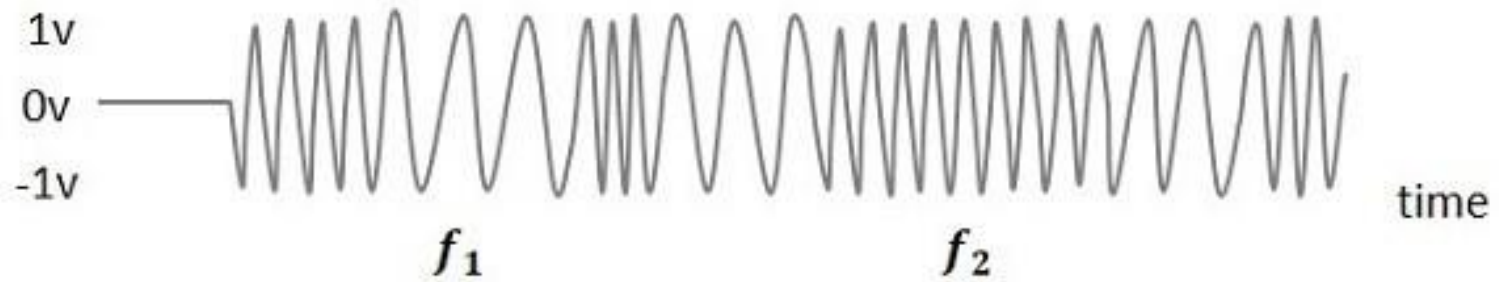
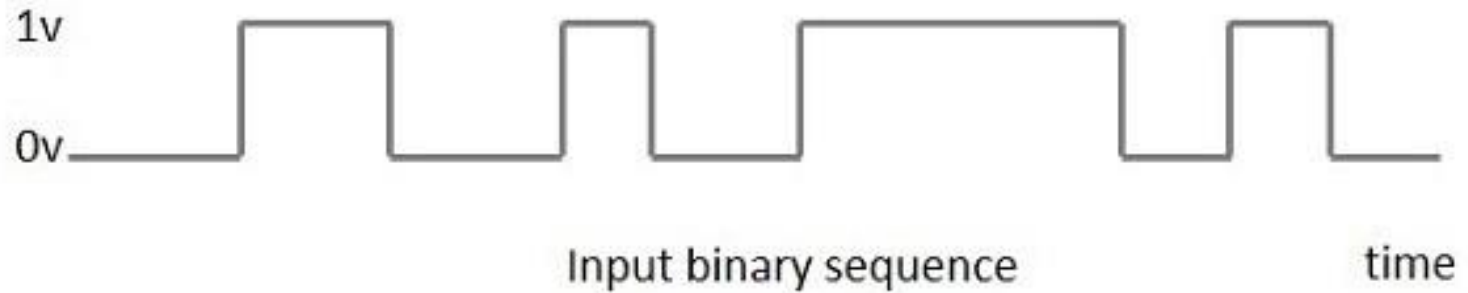
For those who like a choice in sending CW



FREQUENCY modulation

0 = F_1 1 = F_2 (one at a time)

note: there is no time of silence



FSK Modulated output wave

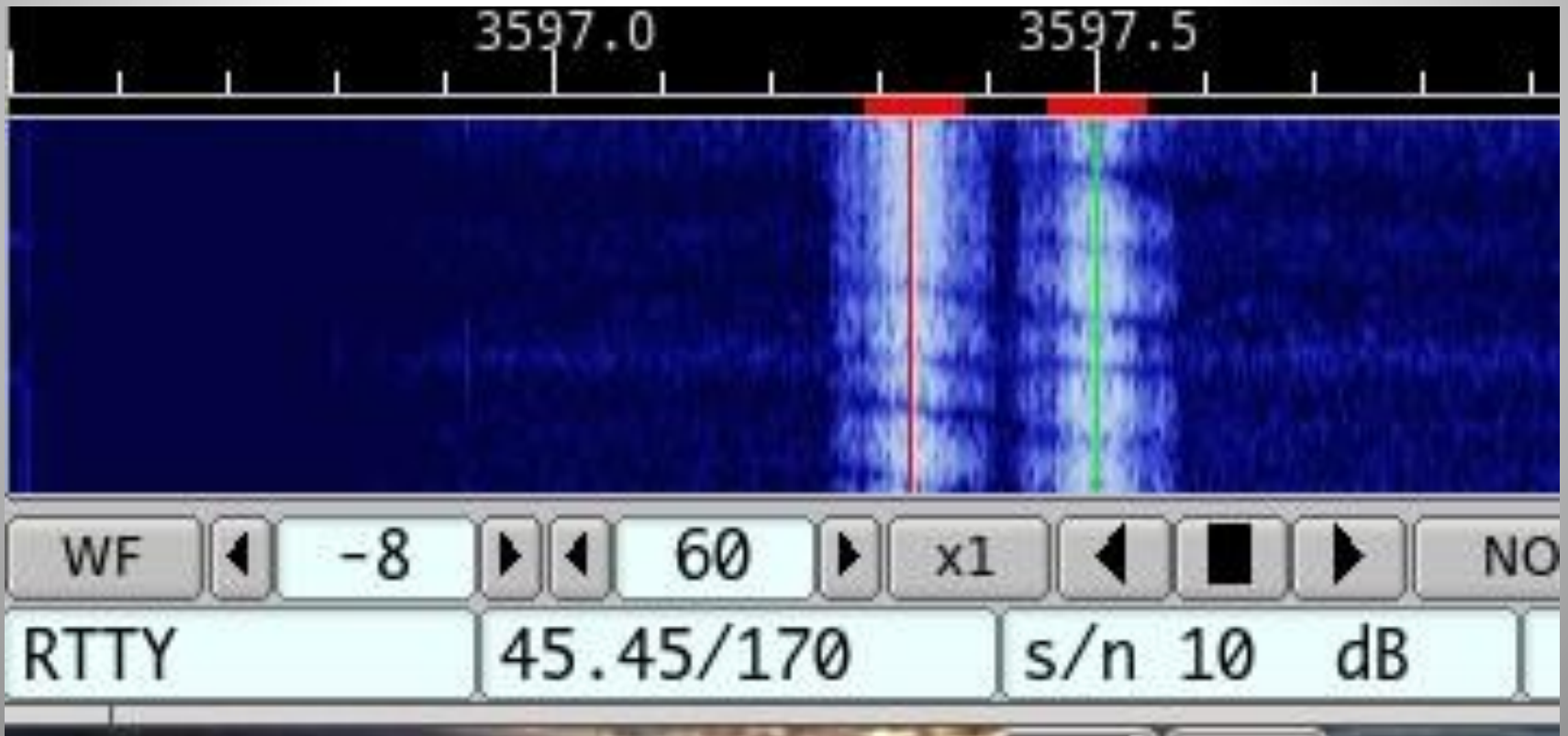
Two methods to generate RTTY

FSK - RTTY - direct frequency shift keying by DATA pulses TNC
VFO changes by 170 Hz: MARK / SPACE
Note: not all HF rigs have FSK keying option

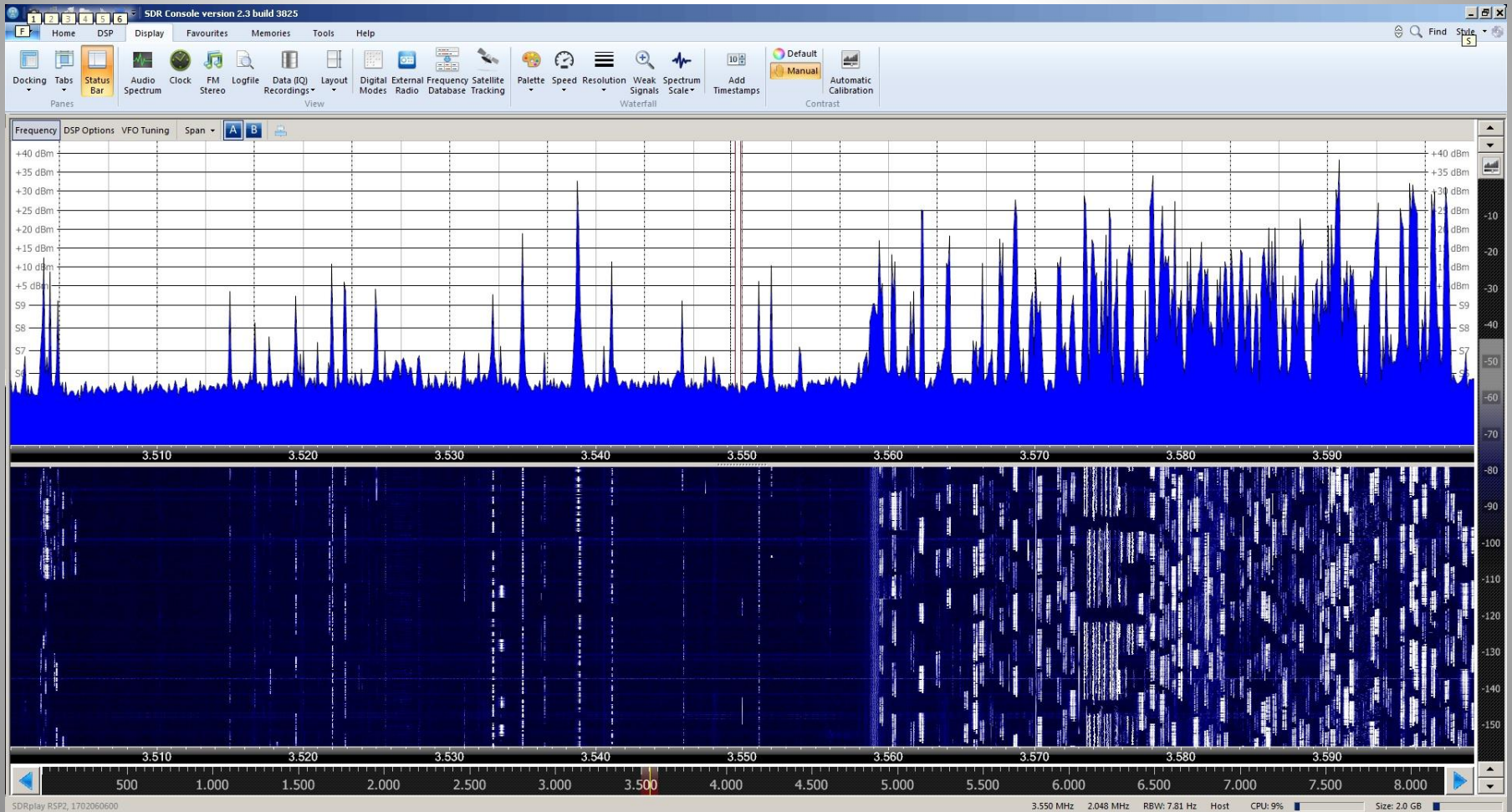
AFSK - RTTY - audio frequency shift keying
sound card emits two different audio frequencies (pitch)
audio fed to any **SSB** rig (either USB/LSB mode)

Results: FSK and AFSK are nearly identical (sort of)
(watch that transmitter ALC reads zero with AFSK)

Common **AFSK RTTY** - waterfall image
AFSK RTTY: two audio tones converted two RF waves
2 parallel tracks, 170 Hz separation
45.45 baud, 60 wpm



Was this a RTTY contest? 80 meters



Frequency Modulation: Multiple Tone Modes sent one tone at a time

JT 65, FT8, FT4

MFSK

THOR

OLIVIA

MMSSTV



Multiple Tone modes common on HF SSB
 compare time to send a 1.6 kB file
 (Gettysburg Address txt file)

MODE	FILE size	Time	Bandwidth (Hz)	Emission Type
MFSK16	1.6 kB	4m 40s	316	16 FSK
MFSK32	1.6 kB	2min 20s	630	16 FSK
MFSK64	1.6 kB	1m 10s	1260	16 FSK
MFSK128	1.6 kB	36 s	1920	16 FSK
THOR 16	1.6 kB	4m 38s	355	18 carriers
THOR 22	1.6 kB	3m 22s	524	18 carriers
THOR 50x1	1.6 kB	1m 31s	900	18 carriers
THOR 25x4	1.6 kB	3m 02s	1800	18 carriers
THOR 100	1.6 kB	46s	1800	18 carriers
OFDM500F	1.6 kB	51	500	4-PSK
OFDM750F	1.6 kB	30	750	3-PSK

THOR (18 tones) and IFSK modulation

THOR - "incremental frequency shift keying"

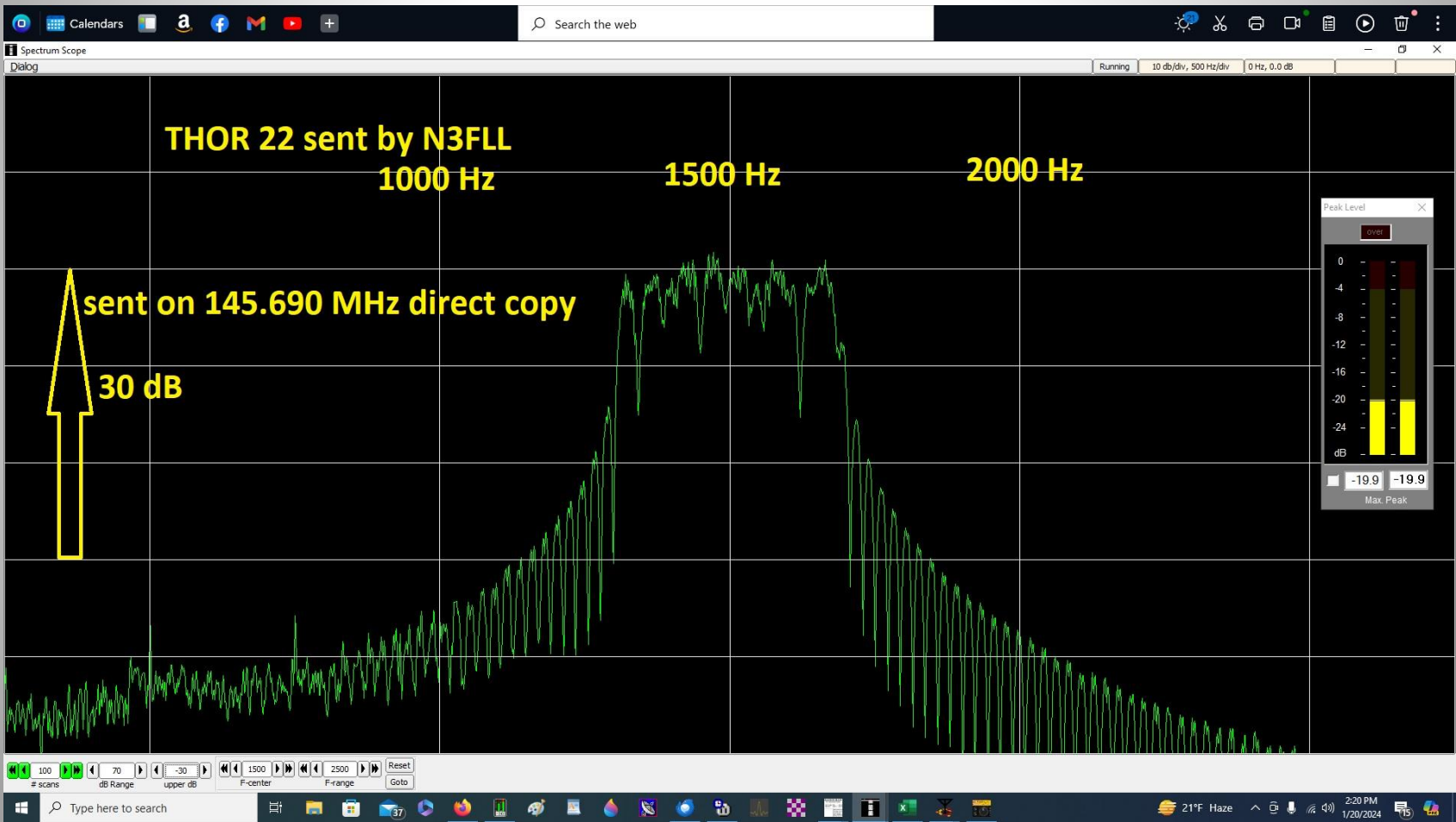
CHANGE in frequency from one tone to the next tone determines the characters to be printed on screen

THOR has FEC (forward error correction)

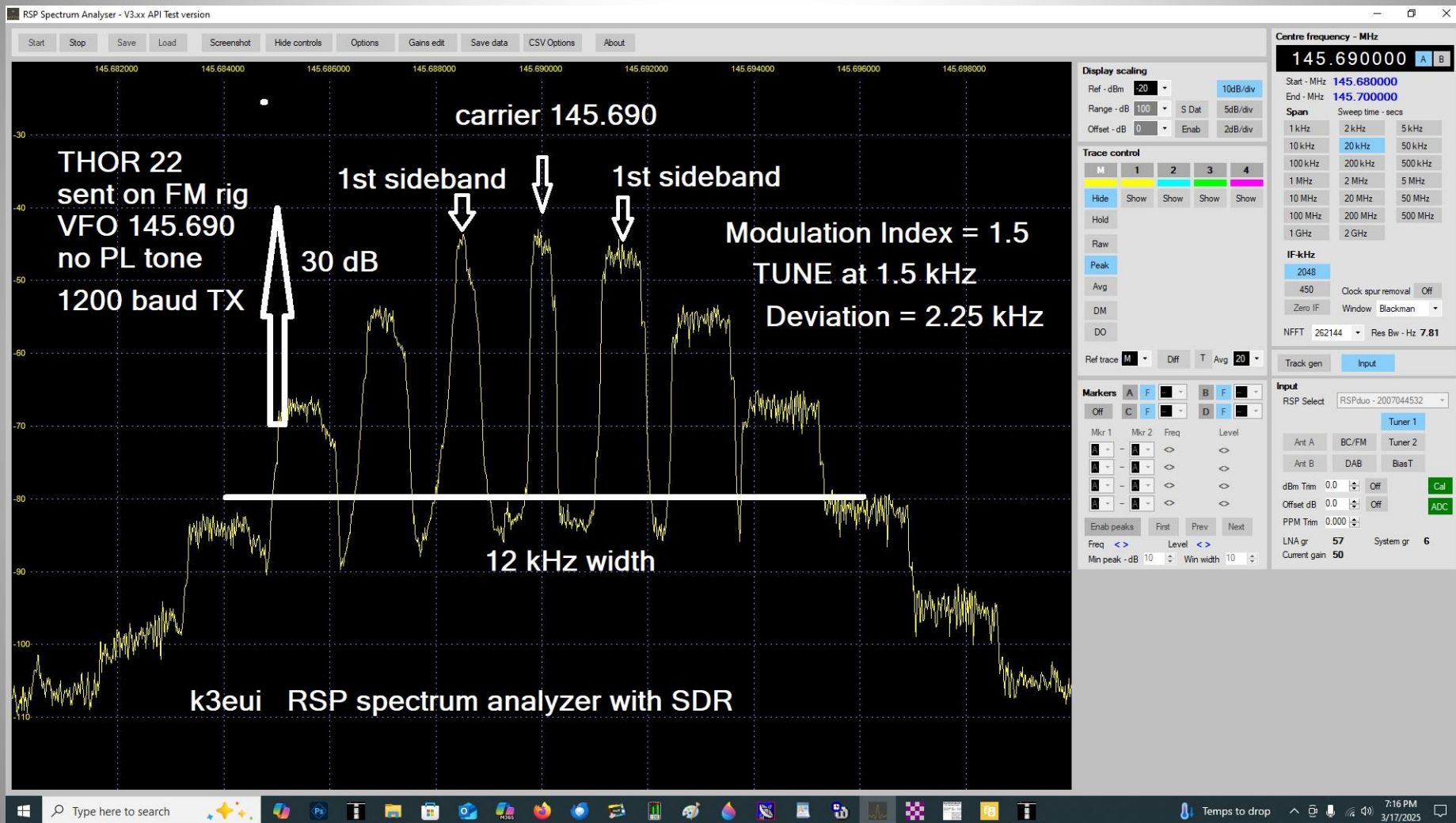
THOR has a "second" audio channel where you can display your call, name, qth

Thor can send small images

Audio Spectrum THOR 22 - 500 Hz wide sent on 2m FM radio



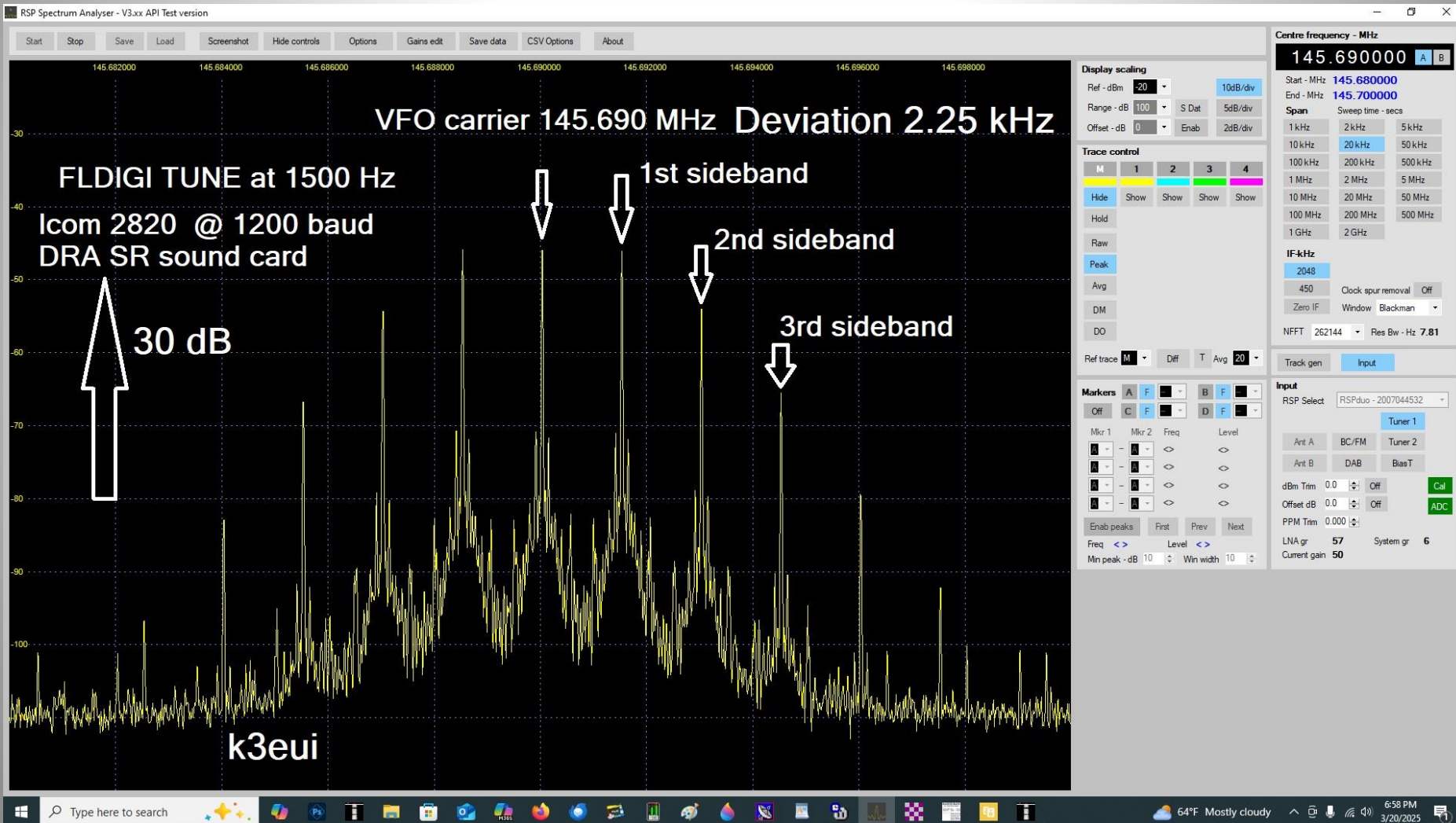
Radio Spectrum: THOR 22 sent over 2 meter band FM note the wider bandwidth when sent via FM modulation



Setting optimum TX audio level

- On SSB, adjust for ZERO ALC
- Aim for a 25W TUNE with 100W PEP rig
- On FM, adjust for a 2 kHz deviation
Use the Bessel Method to determine the deviation using the RF spectrum

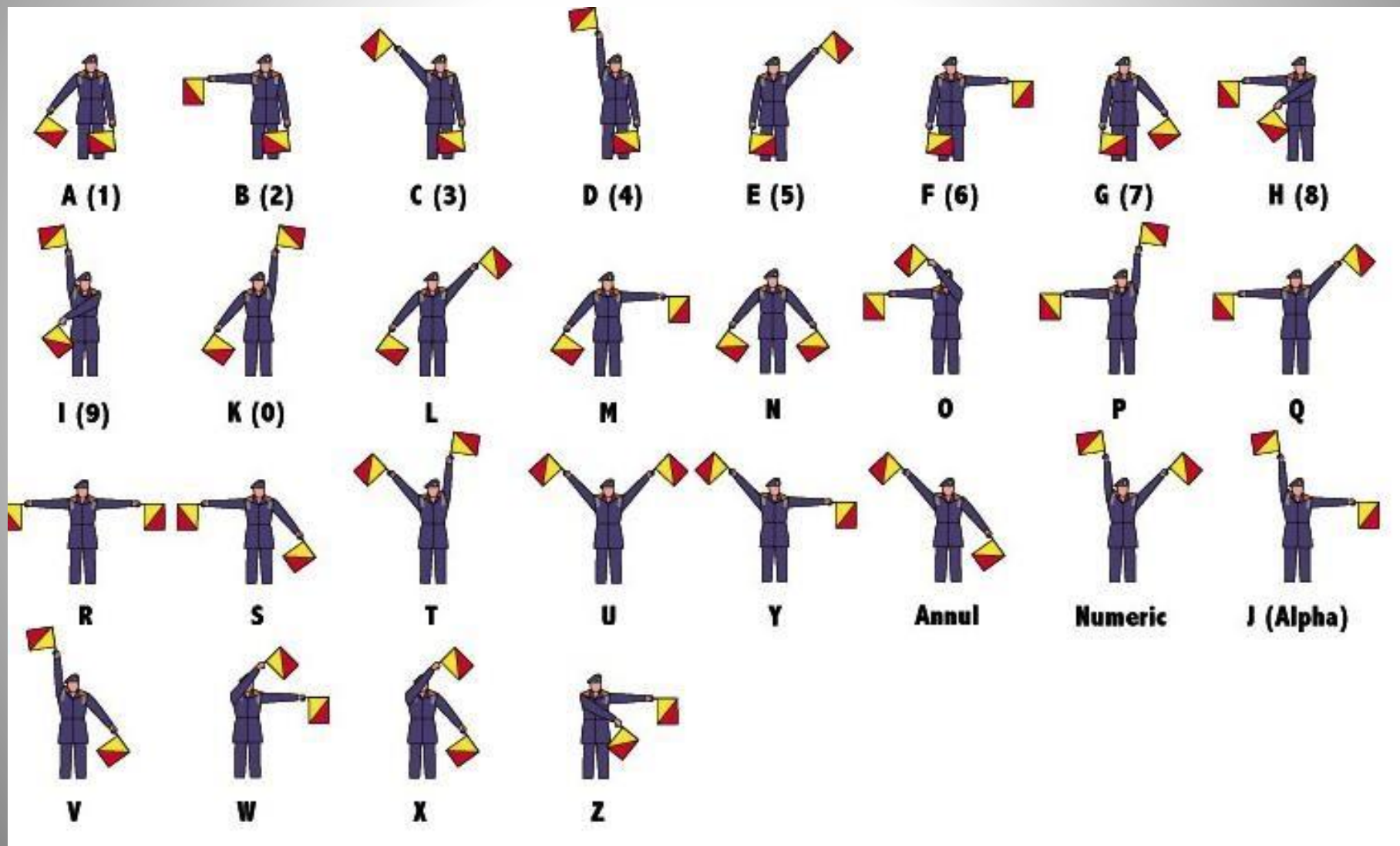
Setting proper TX levels on FM using TUNE
when 1st pair sidebands amplitude equals carrier amplitude
the deviation is 2.2 kHz at 1500 Hz audio



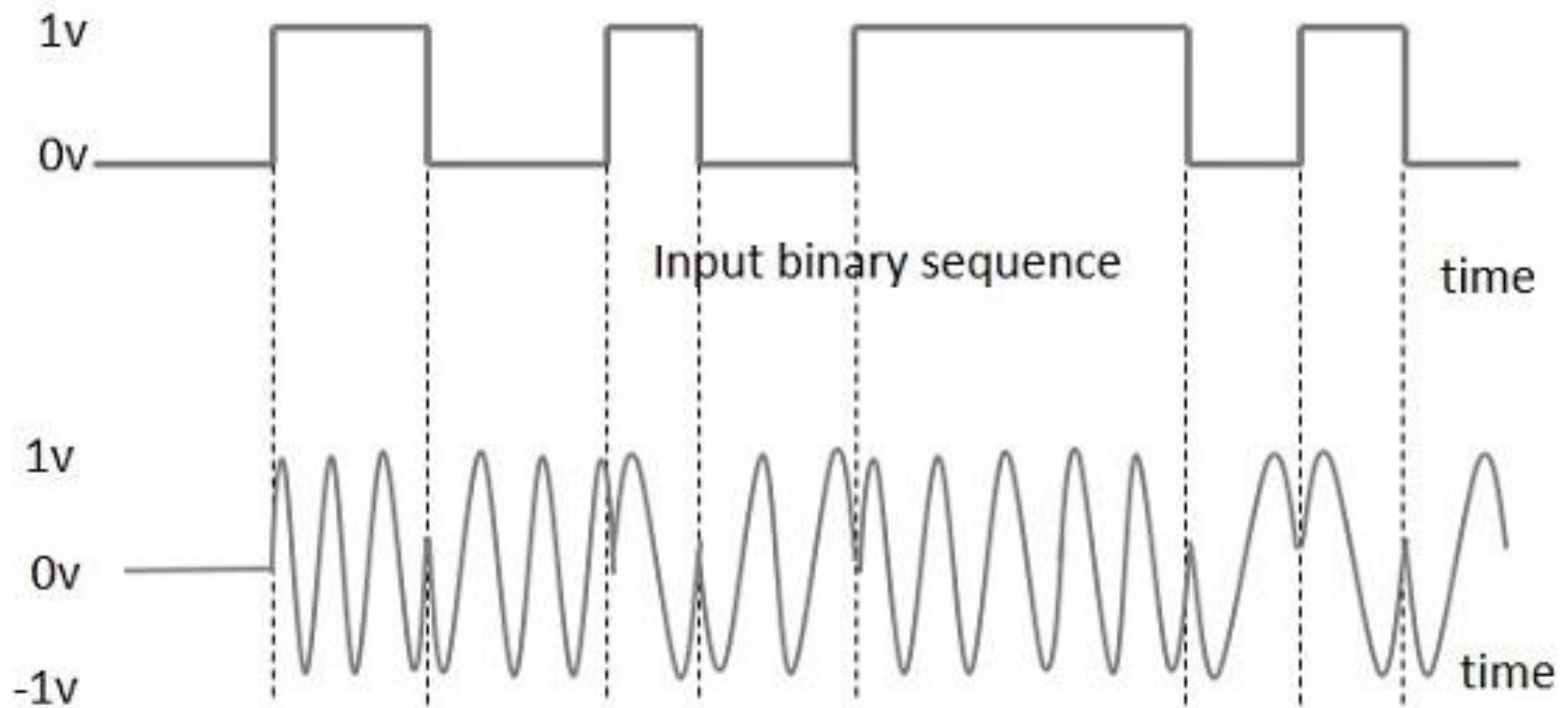
PHASE-SHIFT KEYING MODULATION

what is it?

An example of PHASE-SHIFT KEYING by altering position (phase) of two flags



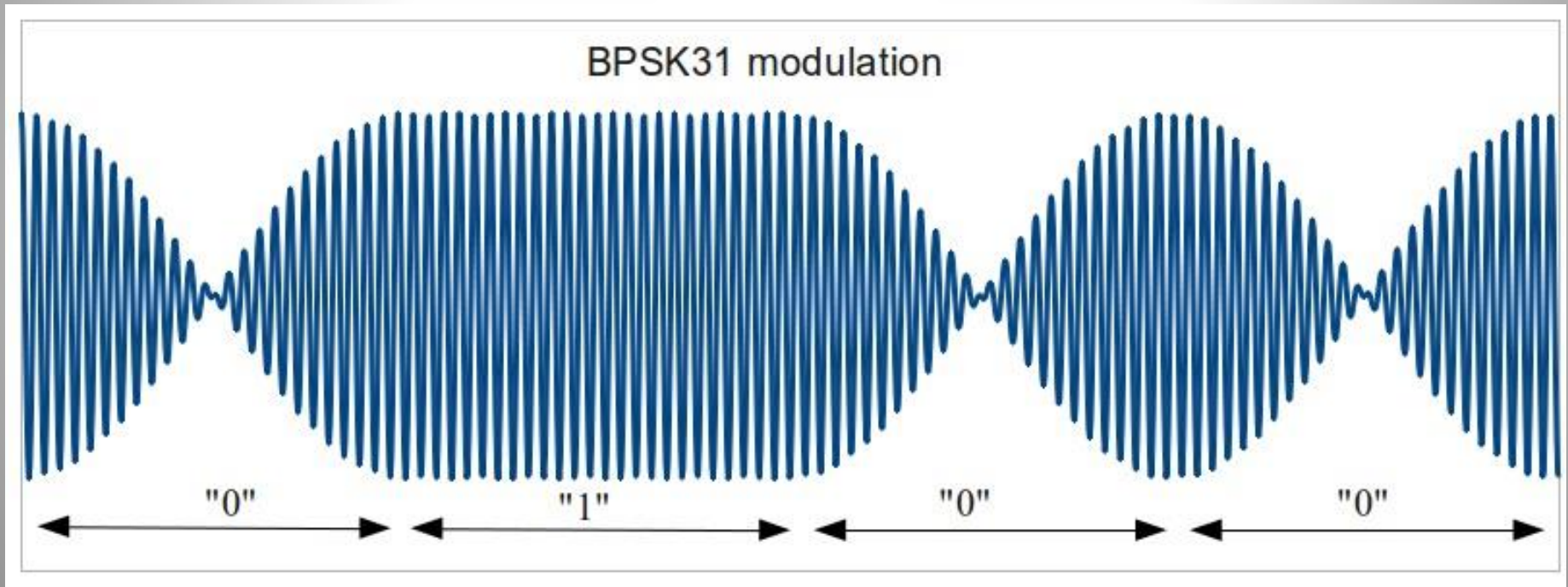
PSK (Phase Shift Keying)



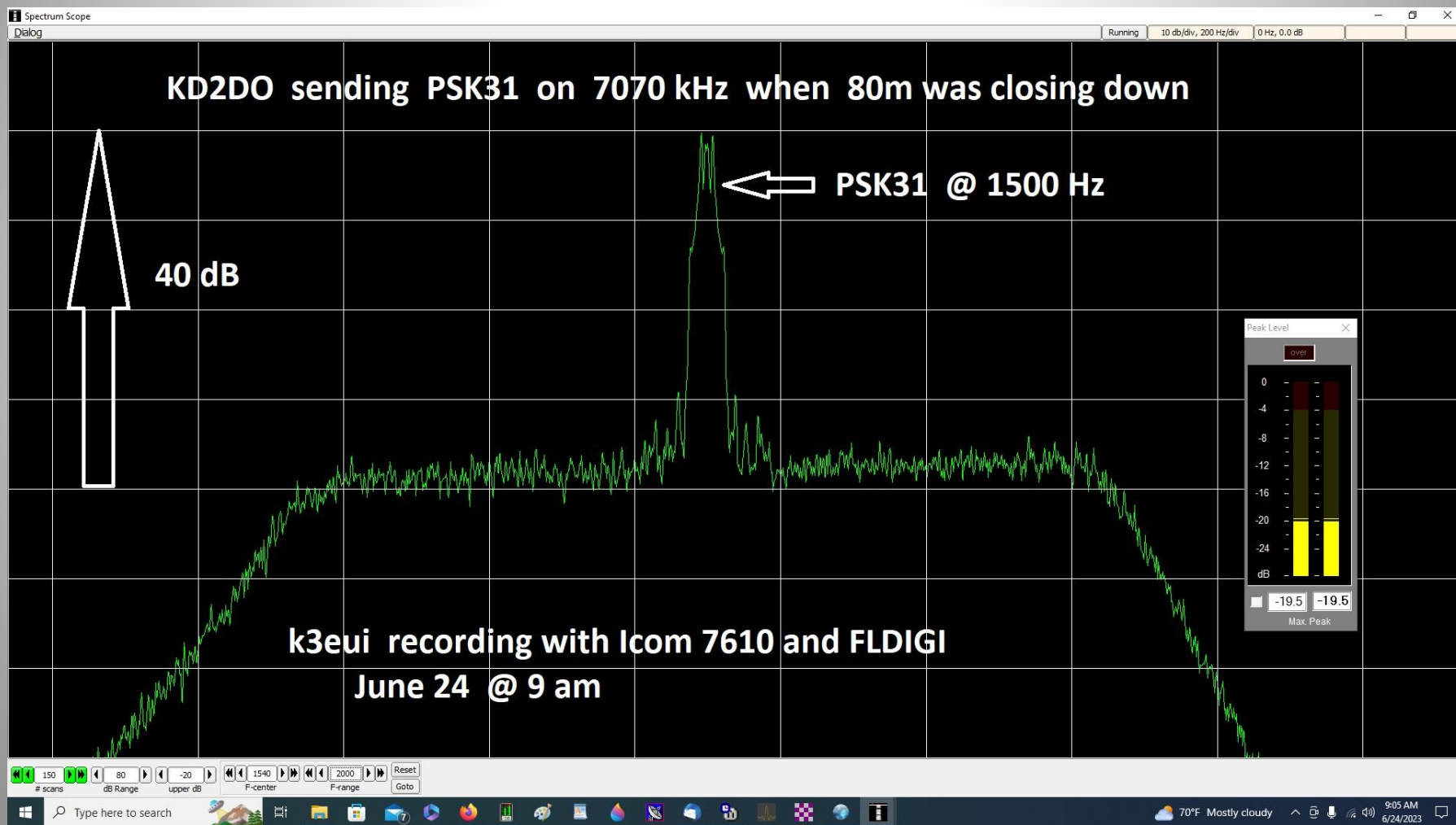
BPSK Modulated output wave

BPSK31 mode

Amplitude changes accompany phase changes to minimize the bandwidth



BPSK31 mode: <100 Hz BW and 50 word/minute sent over 40m SSB



Watering Holes for PSK31

Typical HF frequencies

80 meters: 3.580 MHz

40 meters: 7.070 MHz

20 meters: 14.070 MHz

15 meters: 21.070 MHz

10 meters: 28.120 MHz

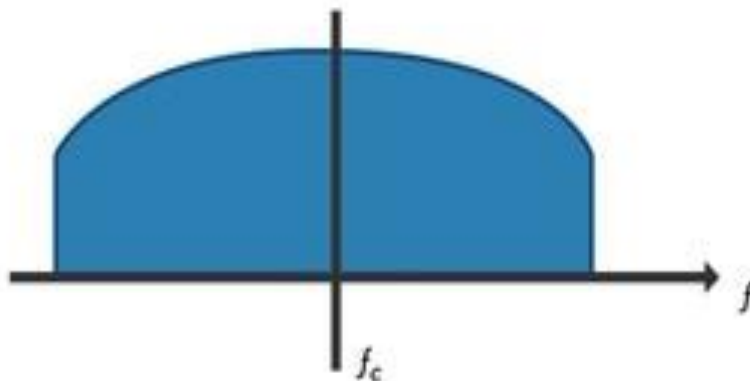
Multiple PSK "carriers"

multiple sub-carriers (parallel signals)

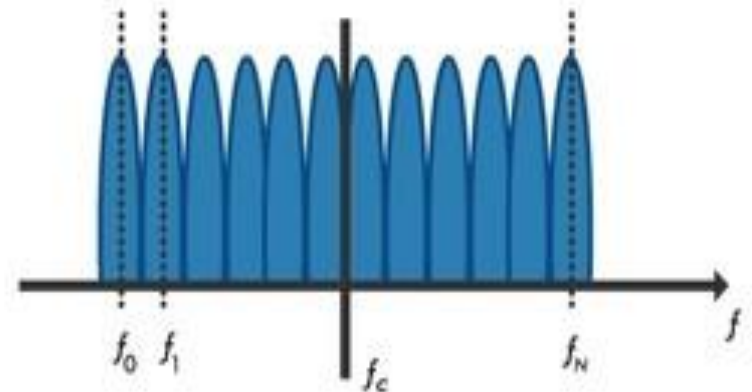
Each sub-carrier could be phase-shifted independently from its neighbor, but at a common baud

Thus, more information per second And more bandwidth !

Single Carrier Modulation

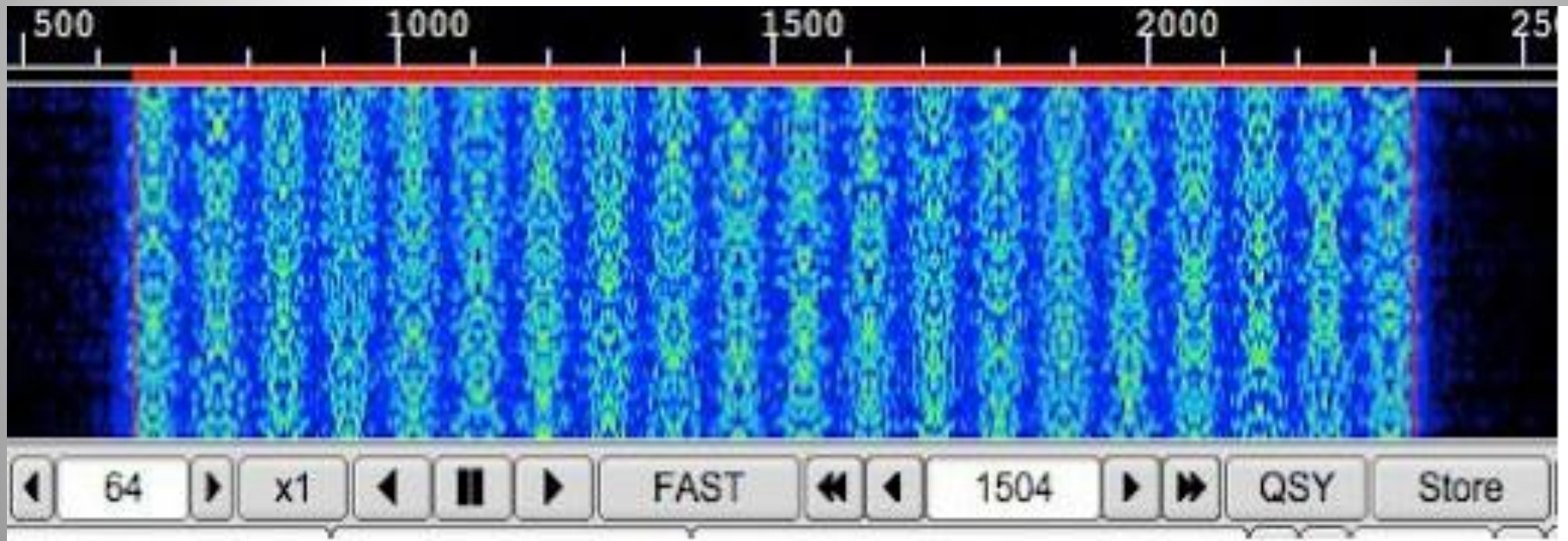


Multiple Carrier Modulation

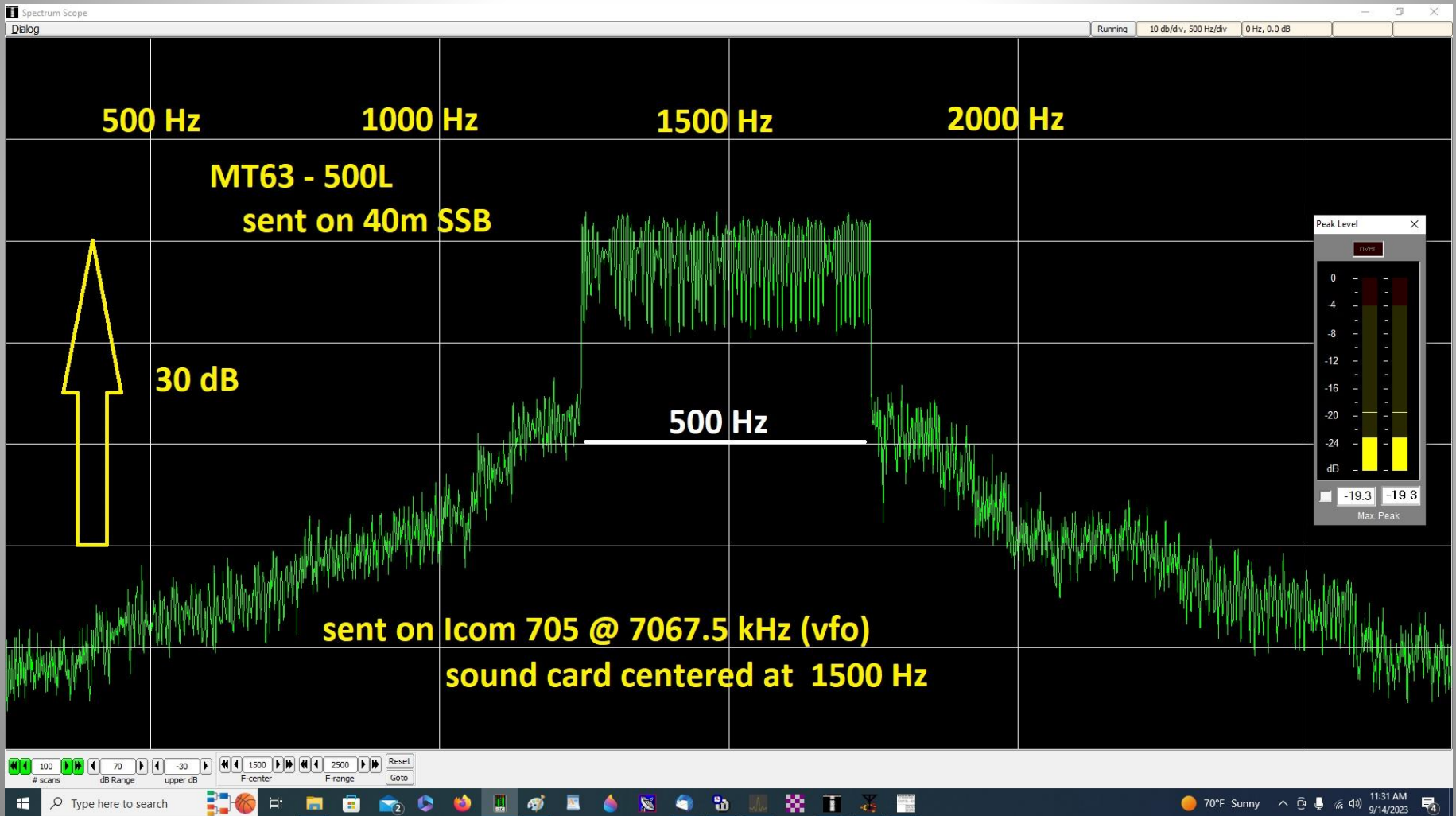


PSK modulation with 20 sub-carriers

More data per second
but at a cost of greater bandwidth

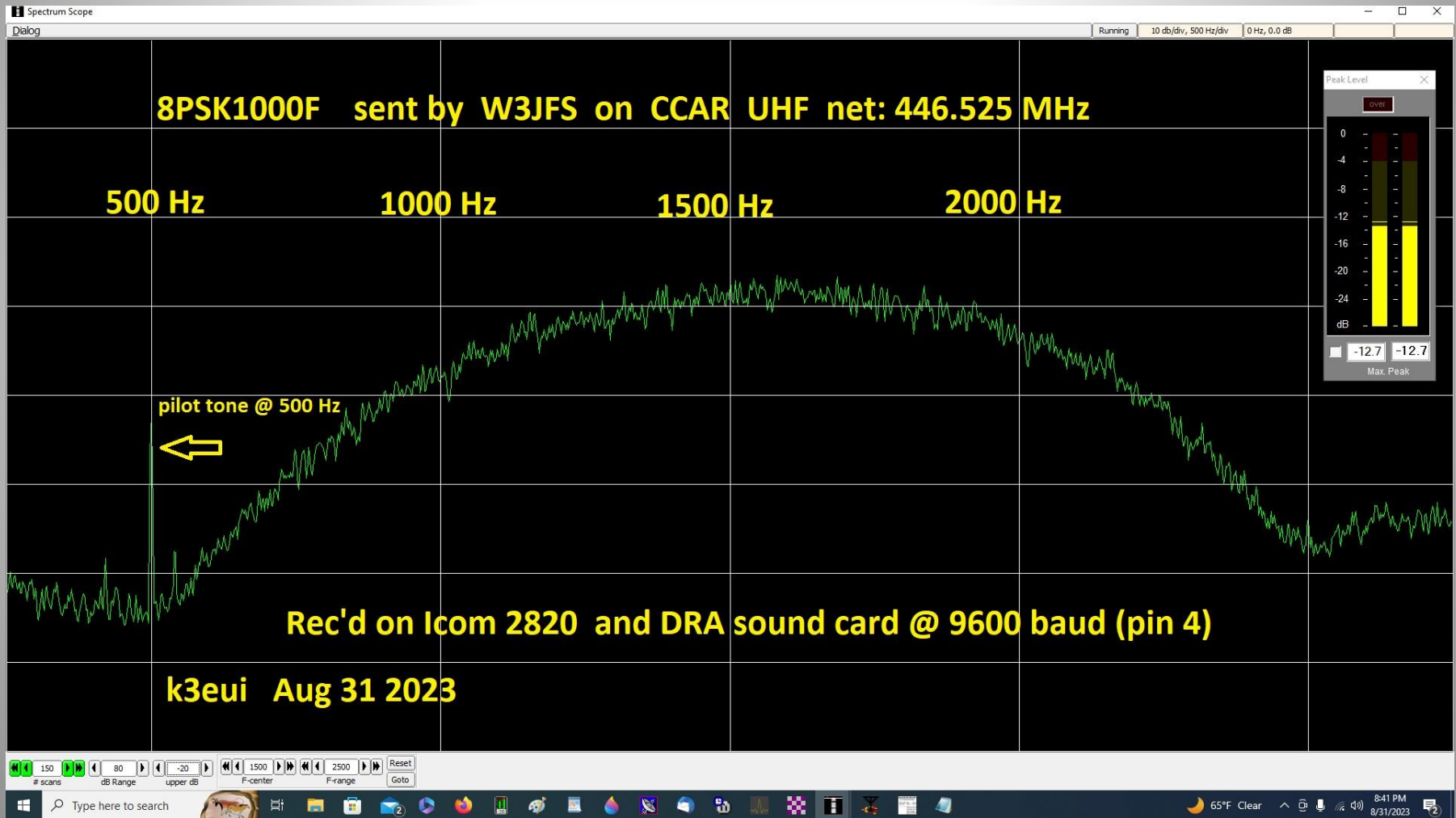


MT63-500L: 64 sub-carriers, 500 Hz bandwidth sent over 40m SSB

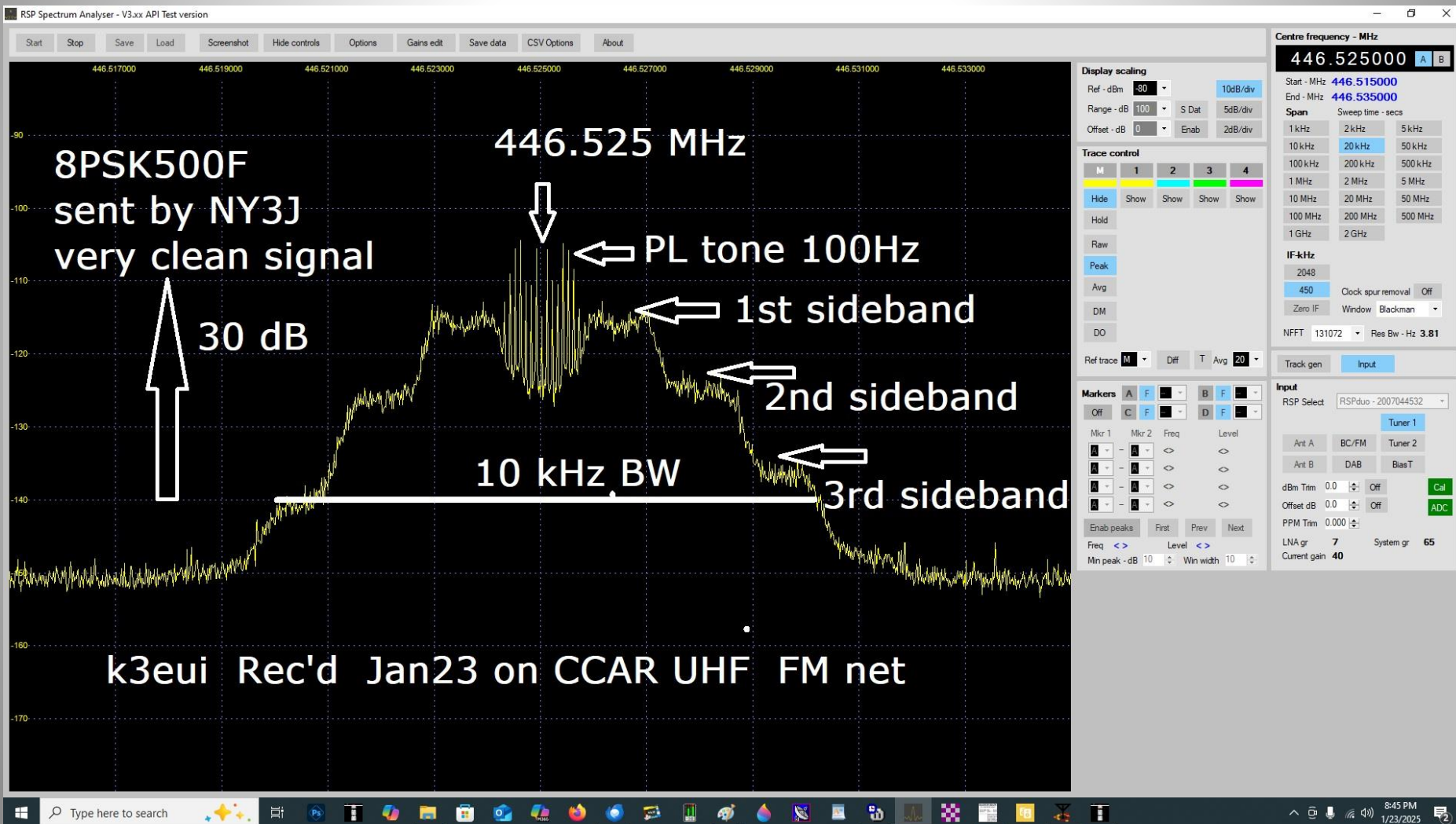


Change the amplitude as well
as the phase for more data

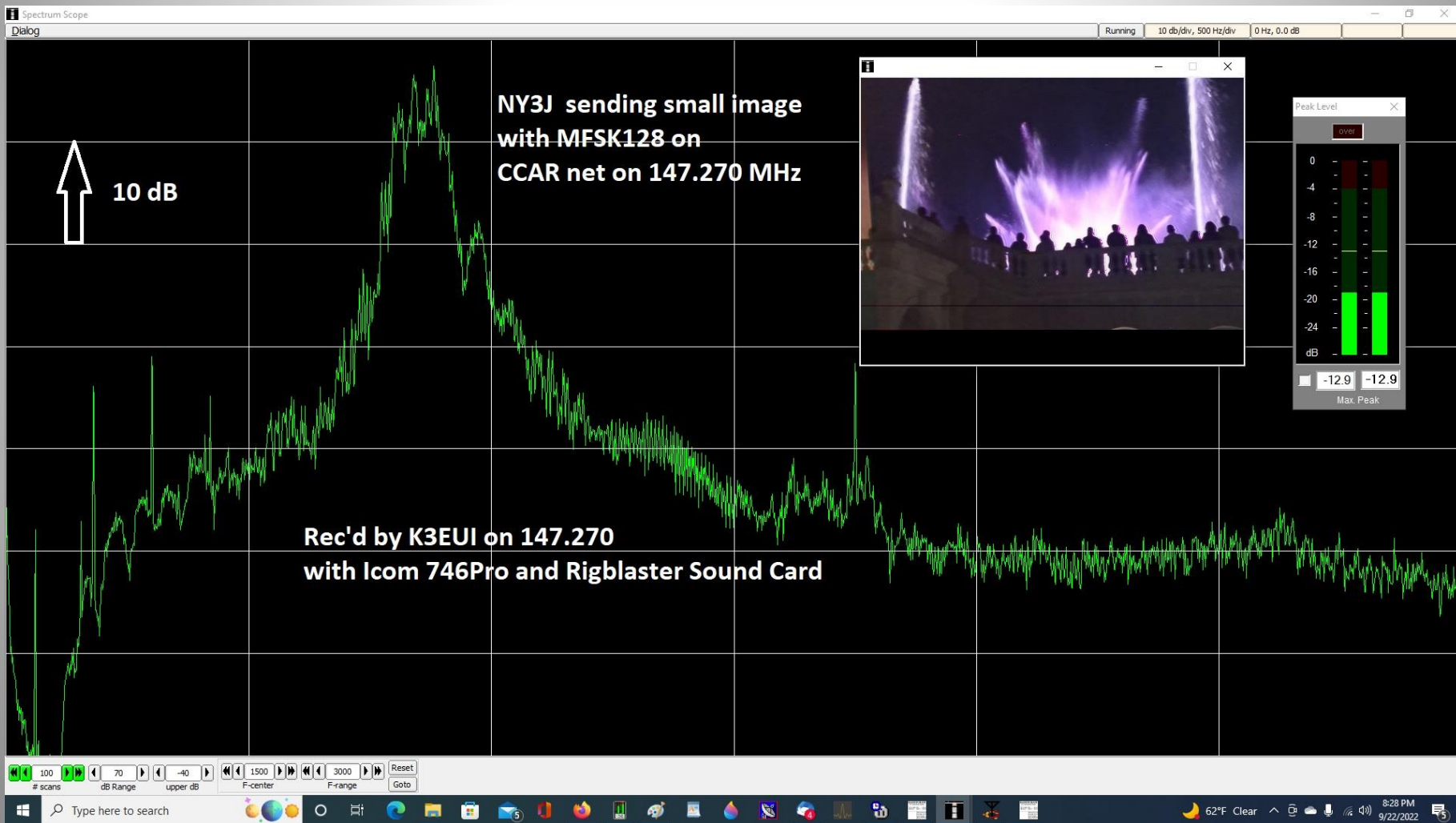
Audio Spectrum: 8PSK1000F (super fast) sent over 70cm FM band



Radio Spectrum: 8PSK500F fast and robust mode used on FM note larger bandwidth on FM



Sending small images with MFSK128 on 2m FM



Small image sent with
MFSK128 on 2m FM in 2 minutes



PA NBEMS 80m net

Sunday mornings: 7:30 am to 9 am

Frequency: 3583.0 kHz (VFO / USB)

Mode: THOR 22 for check-in

MFSK32 and THOR32 for traffic

Propagation: NVIS (skywave) 10-300 miles

Many stations check in QRP (5W)

Antennas of choice: low elev dipole 130 ft

PA NBEMS net information

<https://groups.io/g/panbems>

Net control ops in Eastern PA

NY3J Ron Bucks County

K3EUI Barry2 Chester County

W3JFS John Chester County

KC3DOW Steven Gillette Central PA

PA NBEMS net

Stations check in first from PA by region

Emergency, QRP, EOC

WPA, CPA, and EPA (by county)

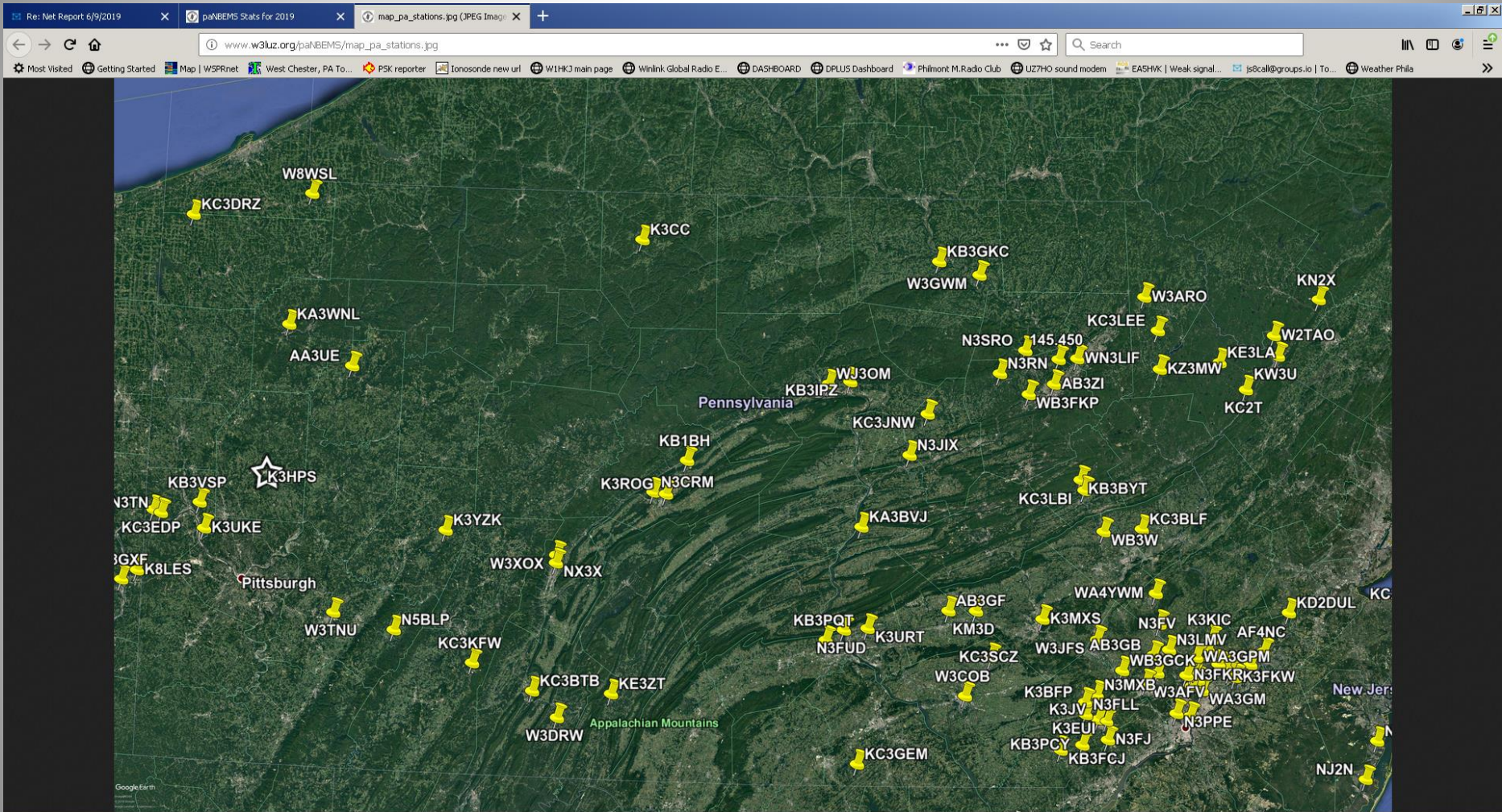
FCC call regions 1,2,3,4,8,9, Canada

Propagation via NVIS: 10 to 400 miles

Typical Log 30-60 stations

- **Group Email Addresses**
- Post: panbems@groups.io
- Subscribe: panbems+subscribe@groups.io
- Unsubscribe:
panbems+unsubscribe@groups.io
- Group Owner: panbems+owner@groups.io
- Help: panbems+help@groups.io

Pa stations checking in regularly on 80m



HF NBEMS regional nets: all use upper sideband
Thor22 is checkin mode

NH Digital Net Saturday 7:00 AM 3582 kHz

NY NBEMS Saturday 8:00 AM 3583 kHz

Pa NBEMS Sunday 7:30 AM 3583 kHz

NJ NBEMS Sunday 9:00 am 3582 kHz

MidAtlantic Sunday 10:00 AM 7068 kHz

Time for Questions

