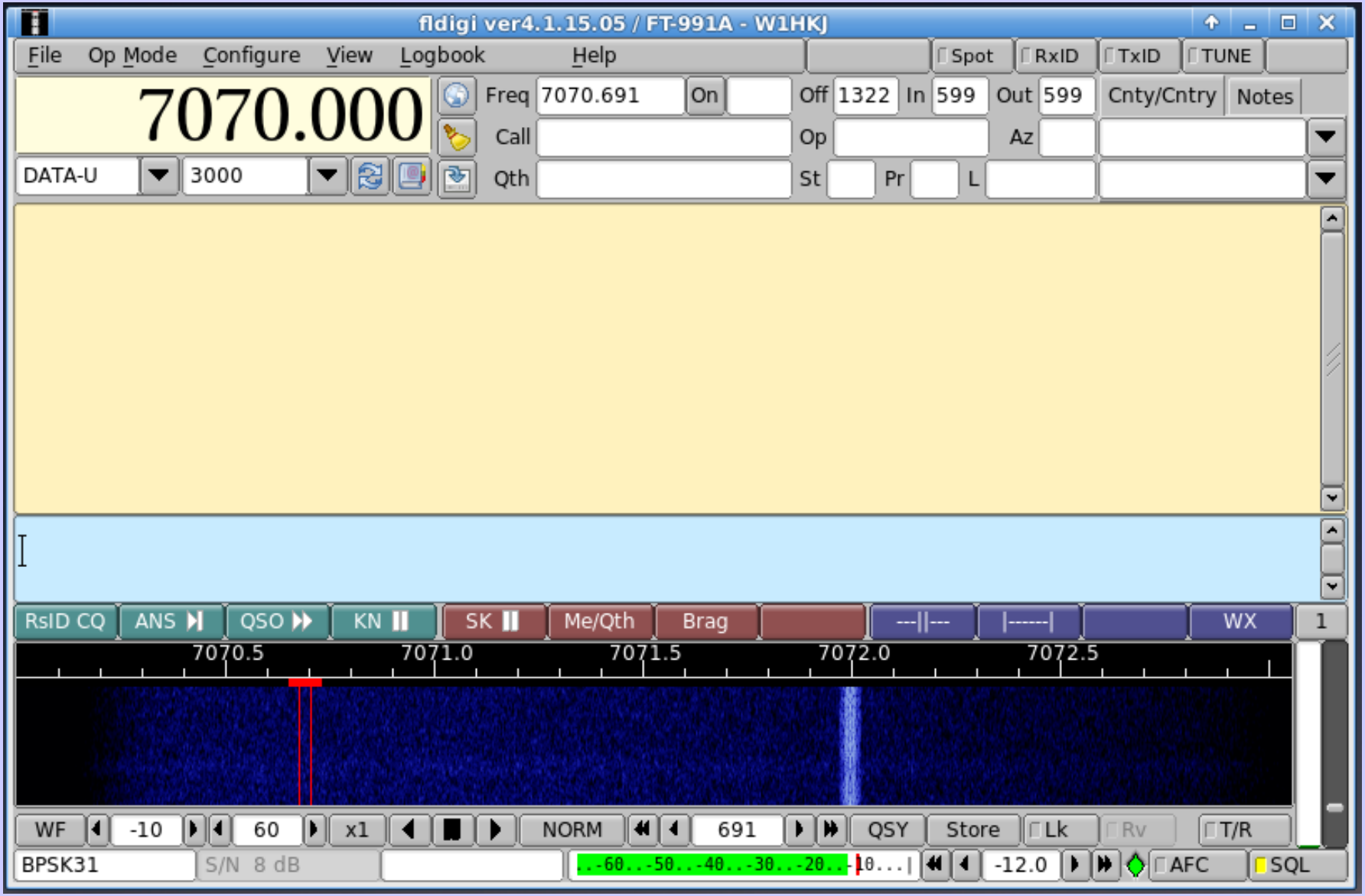
Fldigi


fldigi ver4.1.15.05 / FT-991A - W1HKJ
File
Op Mode
Configure
View
Logbook
Help
Spot
RxID
TxID
TUNE
7070.000
Freq
7070.691
On
Off
1322
In
599
Out
599
Cnty/Cntry
Notes
Call
Op
Az
DATA-U
3000
Qth
St
Pr
L
RsID CQ
ANS
QSO
KN
SK
Me/Qth
Brag
WX
1
7070.5
7071.0
7071.5
7072.0
7072.5
WF
-10
60
x1
NORM
691
QSY
Store
Lk
Rv
T/R
BPSK31
S/N 8 dB
-12.0
AFC
SQL

Application Suite

FLdigi – digital modem *
FLarq – Automated Repeat reQuest *
FLmsg – message management/transfer *
FLamp – Amateur Multicast Protocol *
FLrig – transceiver control *
FLwrap - file encapsulation *
FLwkey – Winkeyer control
FLnano – Mortty / Nano keyer interface
FLlog – logbook server
FLnet – net management
FDserver – field day server
FDclient – field day client
LinSim – propogation simulator

FL in acronym indicates GUI based on Fast Light Toolkit

* - collectively referred to as NBEMS suite

Operating Systems

- Linux / Unix
- Windows – Win-7 / Win-8 / Win10
- OS-X – i386 or x86 cpu
- Desktop / Notebook / Netbook / Tablet

Why Use Digital Modes

- Low Power – never need to run over 25 W
- Reliable comms – succeeds when even CW fails. Some modes work below -16 dB s/n
- Many modes – select mode depending on condition
- It's fun – adds another dimension to ham radio
- Error free data transfers for EMCOMM

Most Common Digital Modes

- PSK-31 – ideal for keyboard to keyboard casual comms
- Thor-16 – forward error correcting multi-tone; very easy to tune; excellent s/n performance; FAX image transfers
- Olivia – 8/500 & 16/500 – very slow for keyboard communications, excellent s/n performance
- Contestia – 8/500 – like Olivia, upper case only; great casual comms at marginal s/n
- MT63 – immune to interference – moderate speed
- RTTY – legacy digital mode; not for QRP; poor s/n performance; contesting

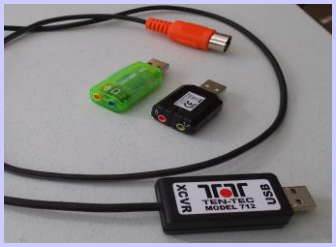
Hardware for Fldigi

Transceiver

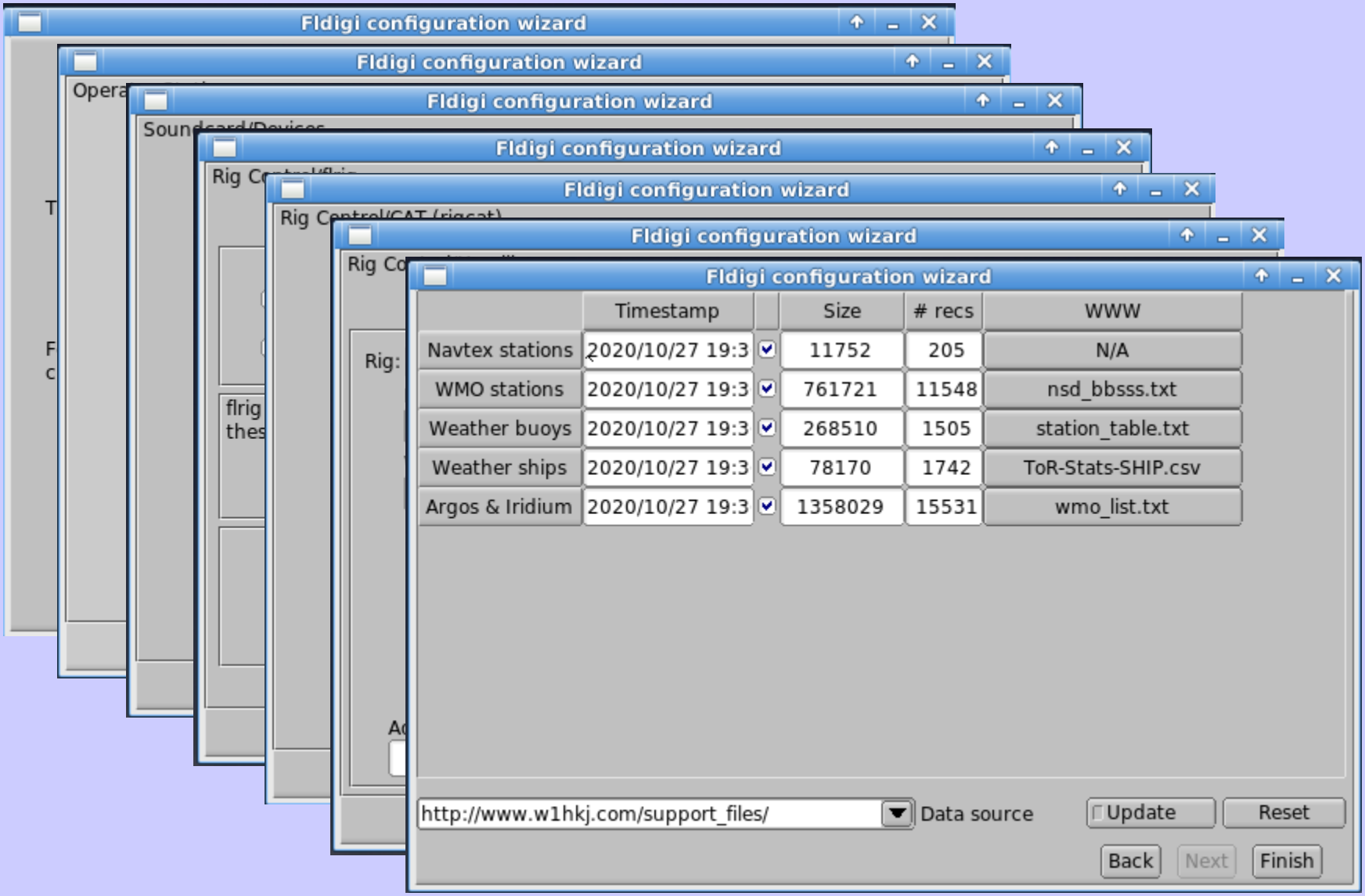
And sound card interface

Sound Card I/O

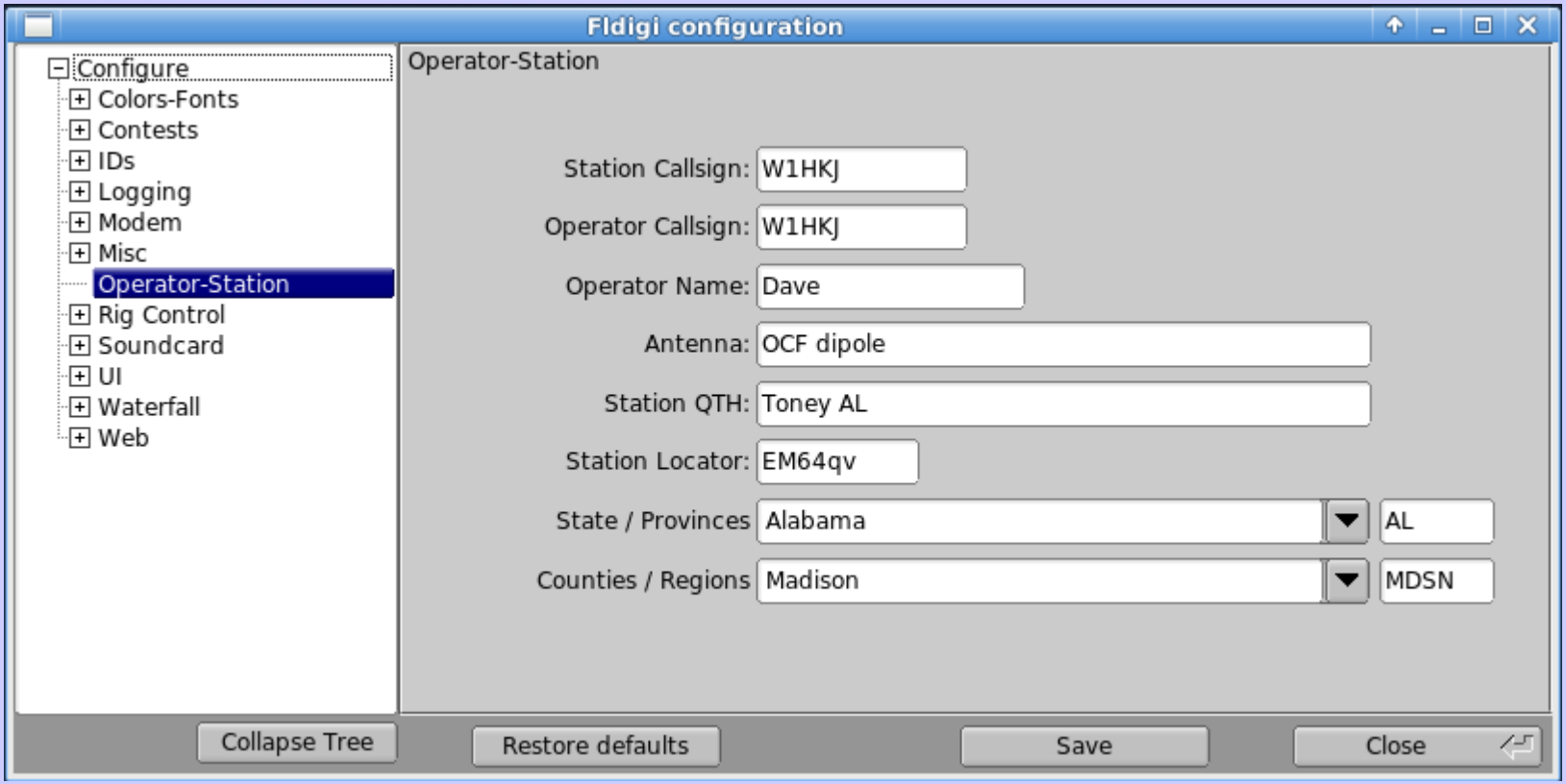
- Connects computer sound card to the radio
- RF isolation
- ground loop isolation (transformer coupling)
- Can automate the PTT when you transmit.



New Install Wizard

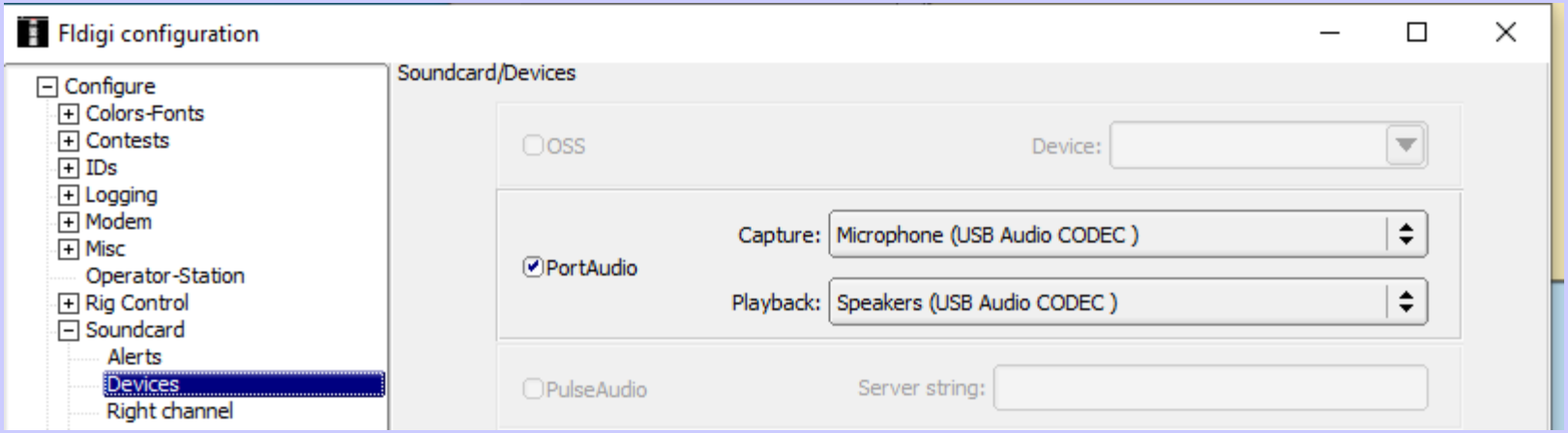


Configure Operator

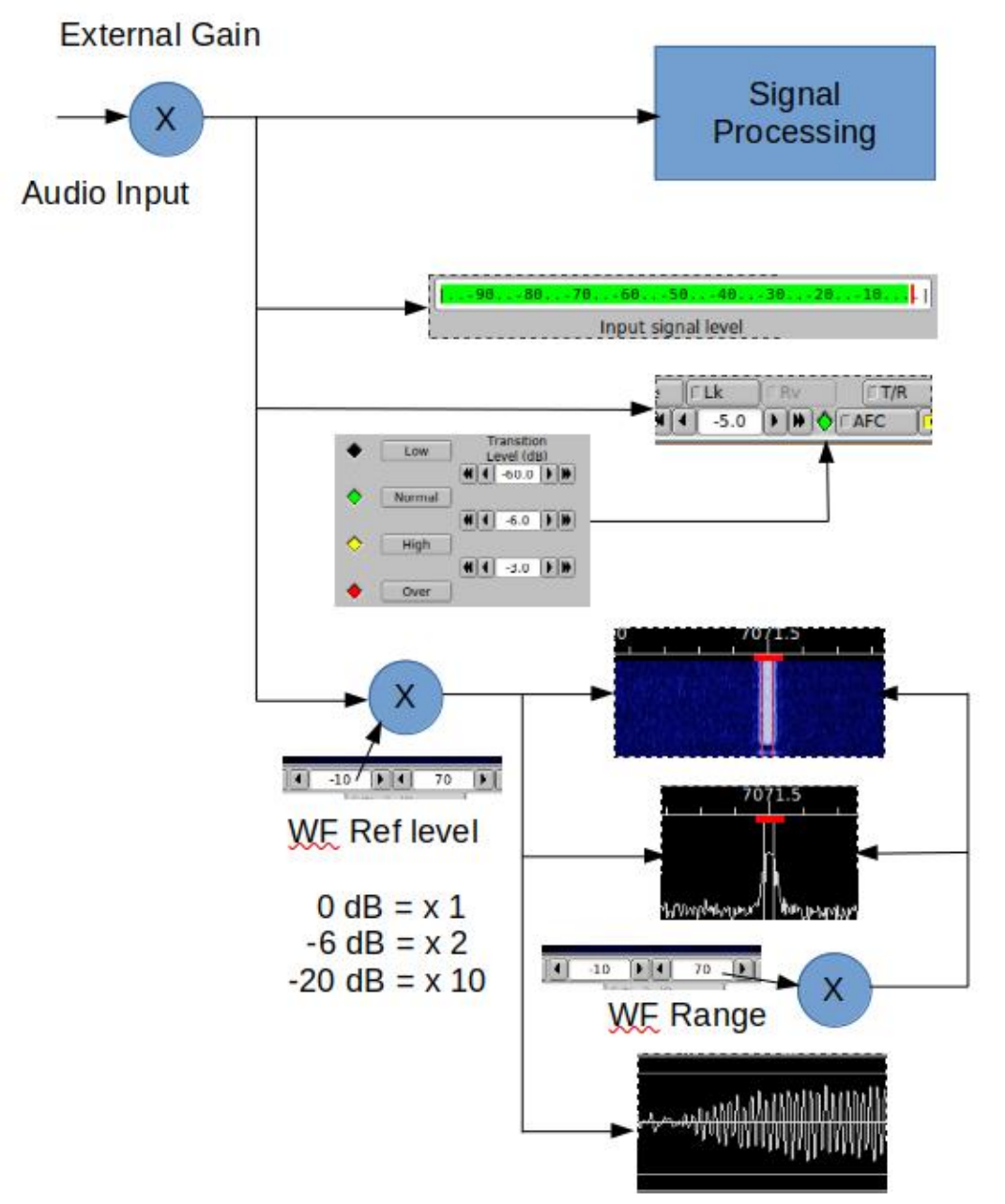


Fldigi Setup - audio

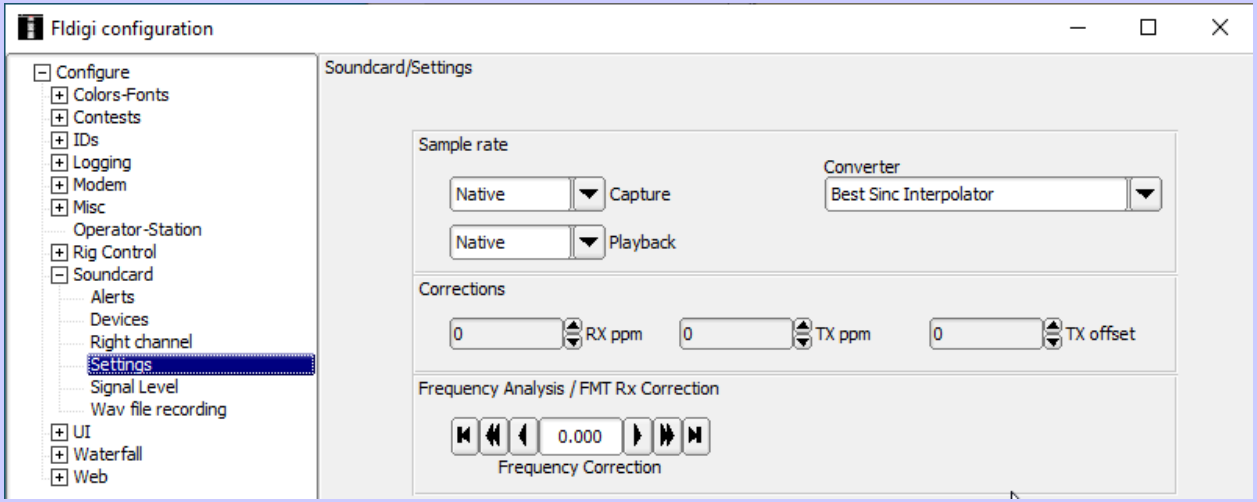
- Install audio device drivers for OS
- On Windows & Apple – select Portaudio listed device
- Shown for an IC-7100



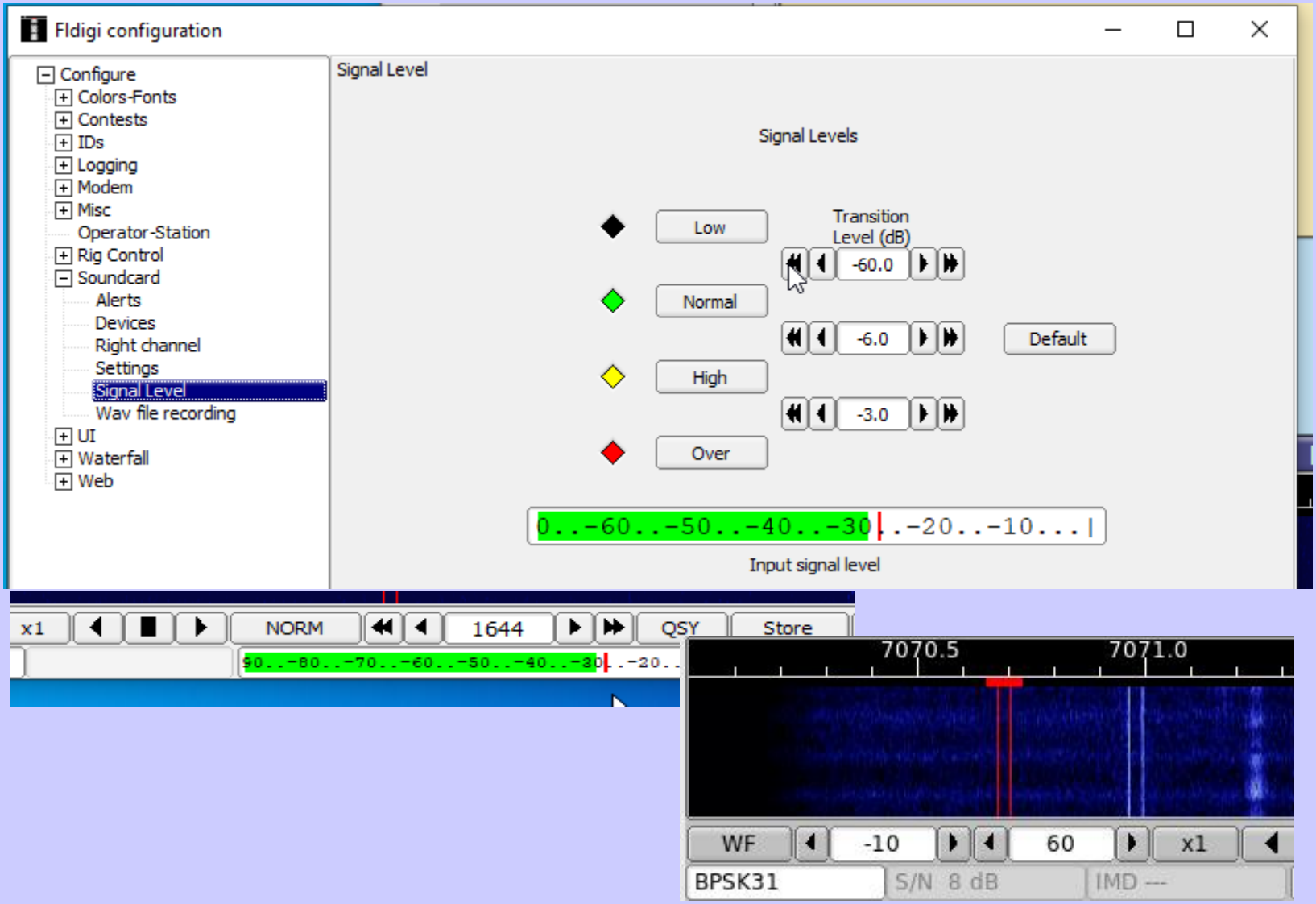
Received Audio Paths



Soundcard Settings



Input Signal Level



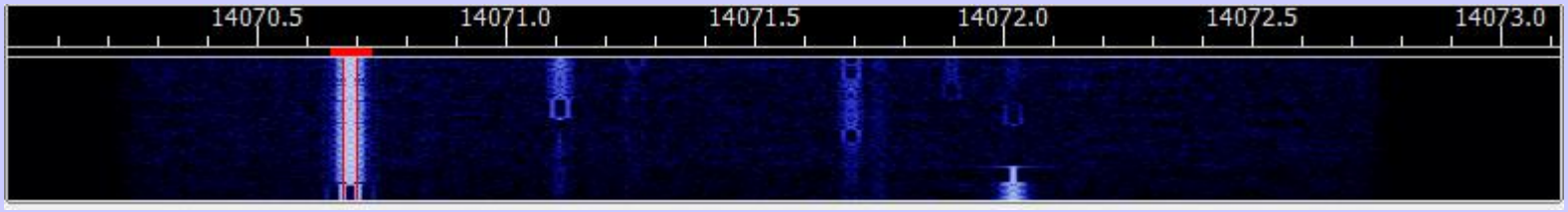
Check Input Audio on Waterfall

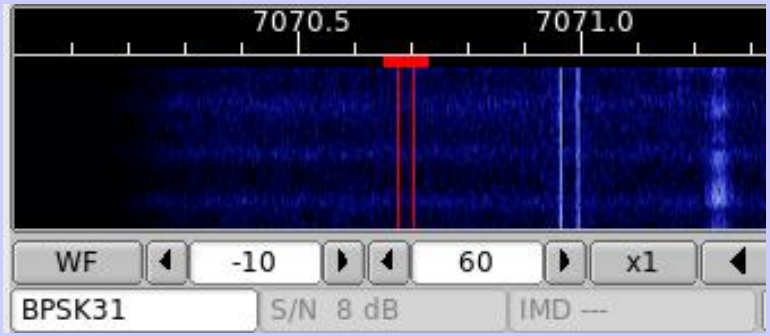
A visual representation of time,

- Frequency,
- Amplitude

Frequency

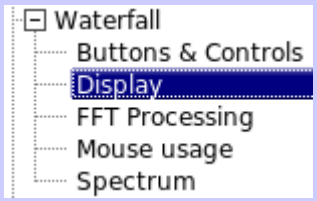
time

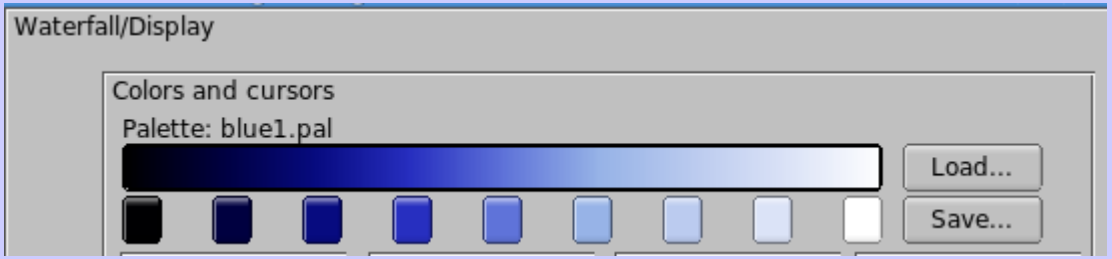




Color == Amplitude

- Blue = low amplitude
- White = medium amplitude
- Red = high amplitude

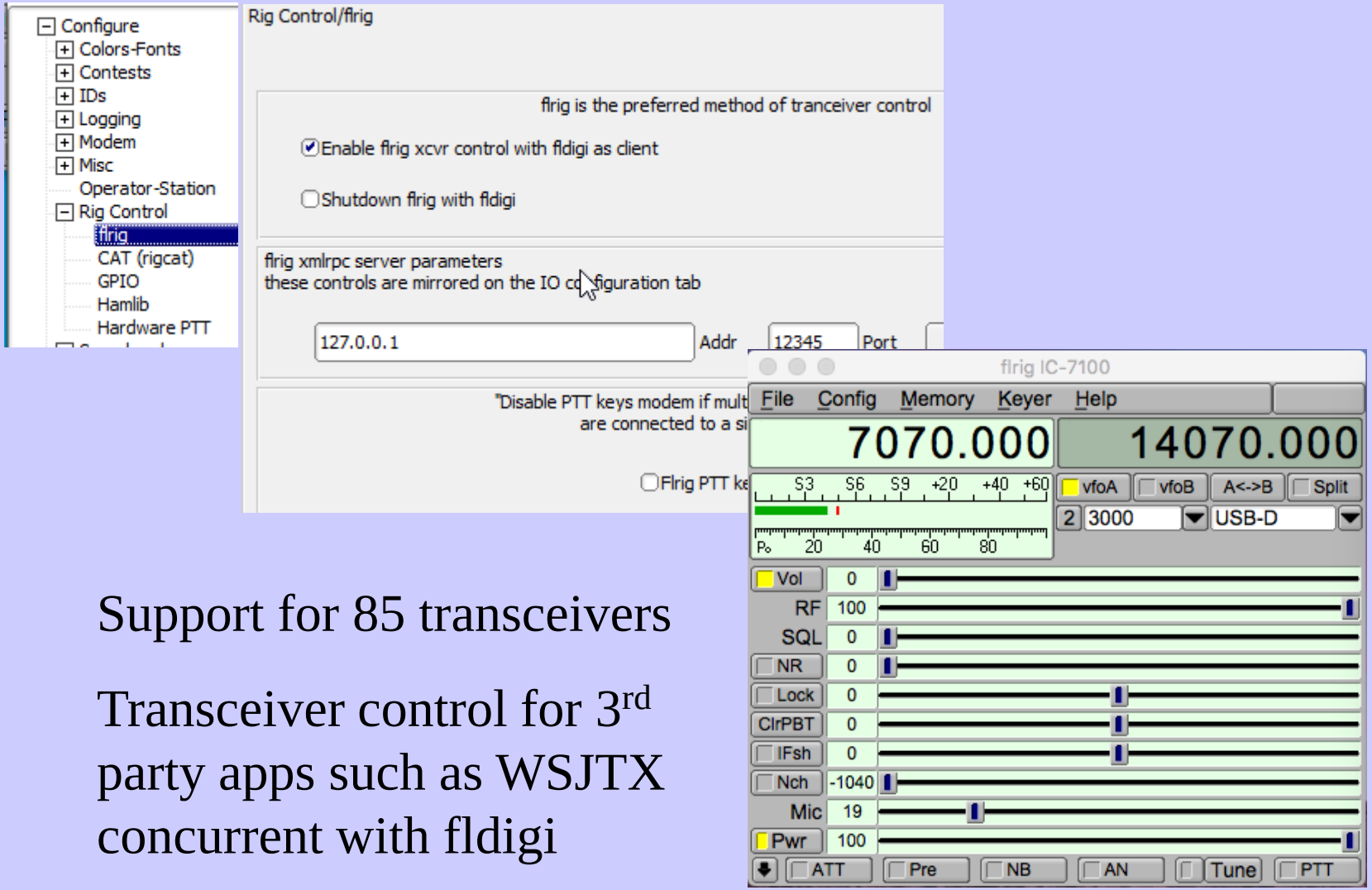




Transceiver Control

. flrig – separate application
. rigcat – fldigi user definable interface
. hamlib – public domain library
. 3rd party control access using remote procedure calls, xmlrpc

Transceiver Control - flrig



Support for 85 transceivers

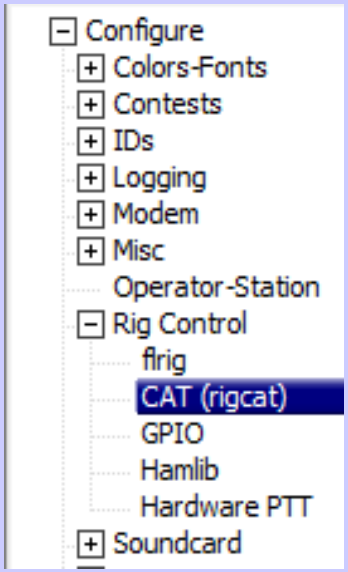
Transceiver control for 3rd party apps such as WSJTX concurrent with fldigi

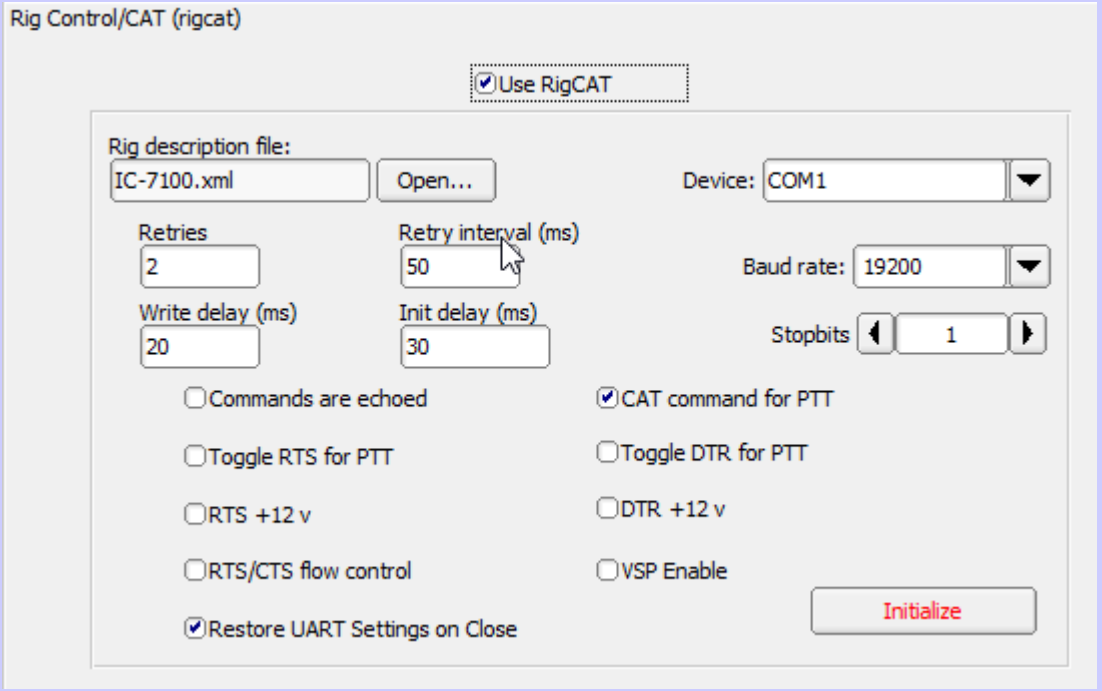
RigCAT Xcvr Controls

- Set/Read Frequency
- Set/Read Mode
- Set/Read Bandwidth
- Set/Read PTT
- Read/Display Smeter
- Read/Display SWR
- Read/Display Power Out
- Set Power level
- Set/Read Notch Frequency (on WF)

Transceiver Control

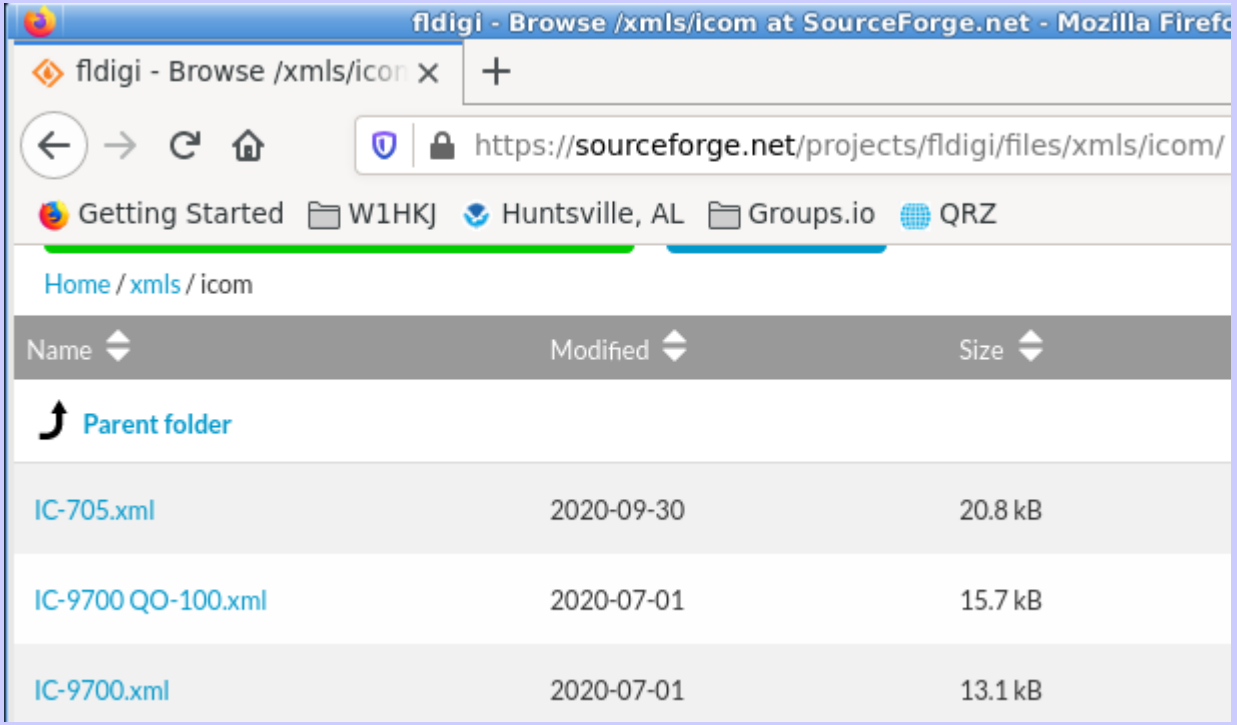
flrig - rigcat





RigCAT xcvr definition files

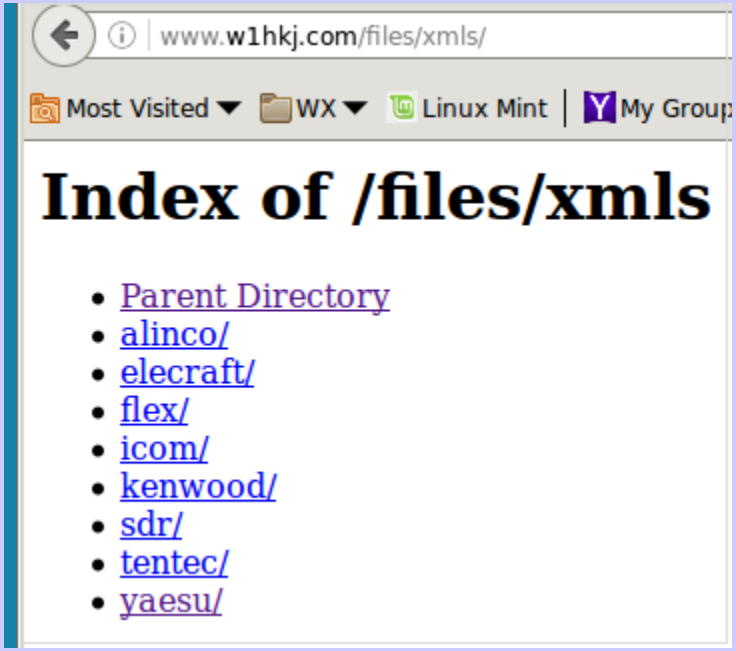
- Download the CAT definition file (xml) from Source Forge

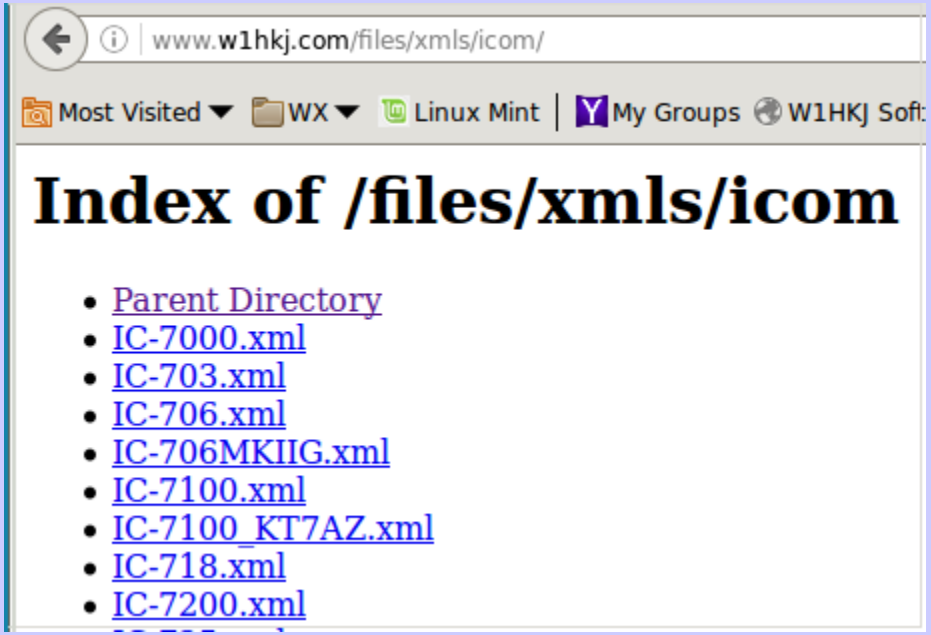


Copy file to the fldigi.files\rigs\ folder in your home folder

RigCAT xcvr control

Or from http://www.w1hkj.com/files/xmls/

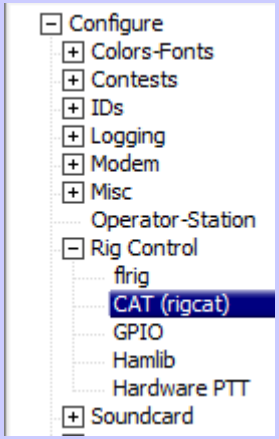


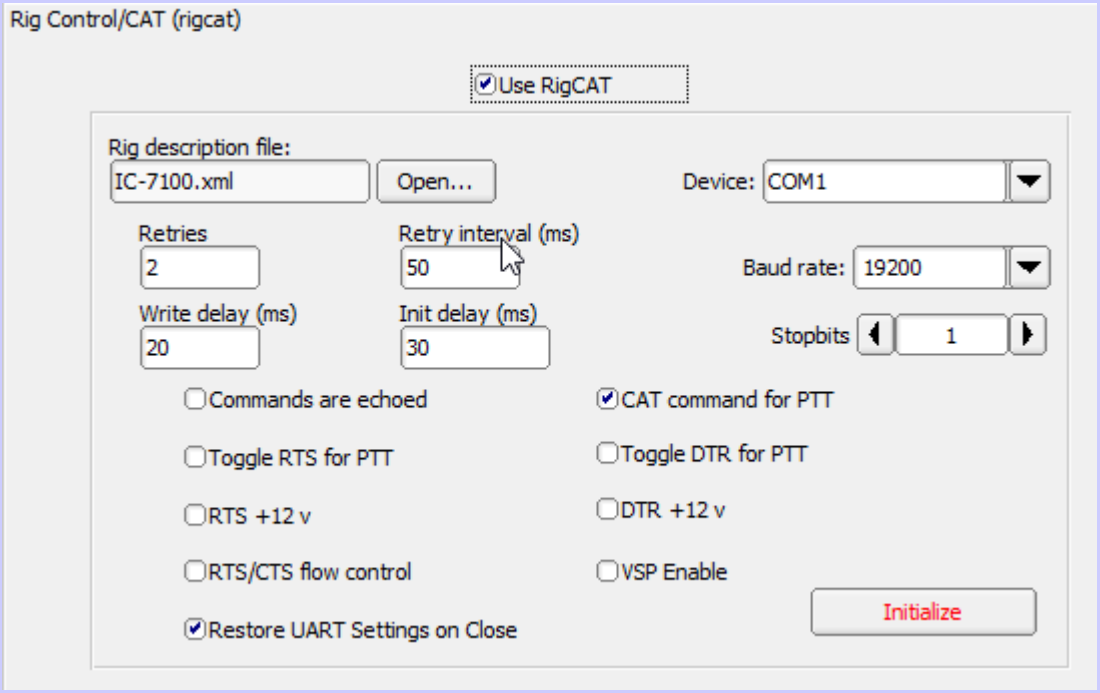


Copy file to the fldigi.files\rigs\ folder in your home folder

RigCAT xcvr setup

- Configure RigCAT tab





RigCAT xml file

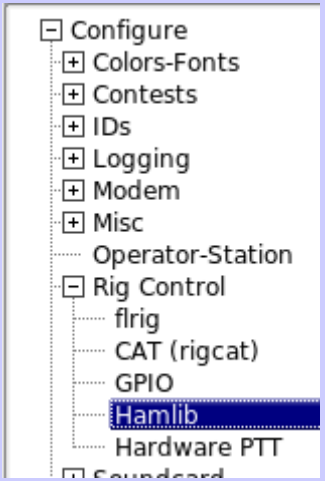
- Check the files interface spec's

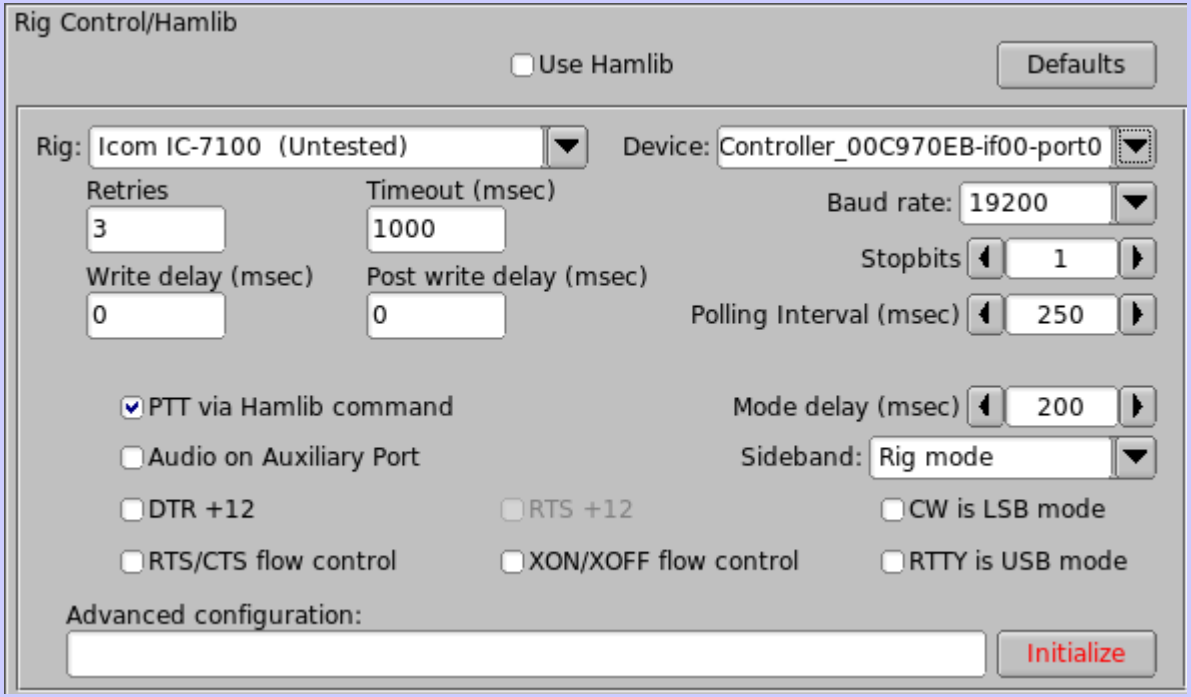
```
<!--
default settings for initial setup
-->
<TIMEOUT>50</TIMEOUT>
<RETRIES>2</RETRIES>
<WRITE_DELAY>50</WRITE_DELAY>
<INIT_DELAY>30</INIT_DELAY>
<BAUDRATE>19200</BAUDRATE>
<STOPBITS>1</STOPBITS>
<RTSCTS>false</RTSCTS>
<ECHO>true</ECHO>
<CMDPTT>true</CMDPTT>
```

- Baudrate should match xcvr (use fixed baud in xcvr)
- On Icom Xcvr make sure the xcvr is set to default CI-V addr. and that CI-V transceive is OFF.
- Other values have been verified by developer / tester

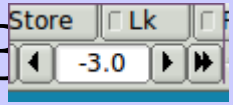
Transceiver Control

flrig - rigcat - hamlib

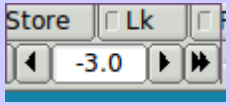




Transmit Level Control

- Set TX attenuator to -3 dB 

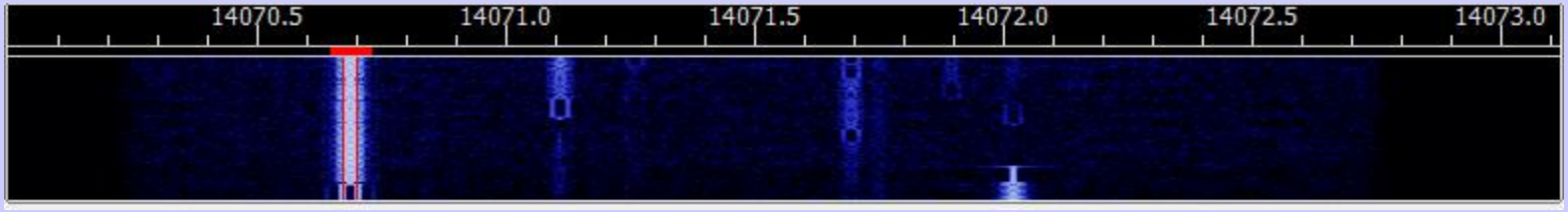
- Set xcvr power to max (usually 100 W)
- Open OS mixer control for xcvr device
- Press the fldigi “tune” button 

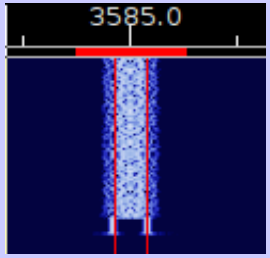
- Adjust the mixer control for desired pwr out
  25 W or less 

- Fine tune with fldigi TX attenuator
- Adjust for zero ALC => clean signal
- Repeat with on air tests

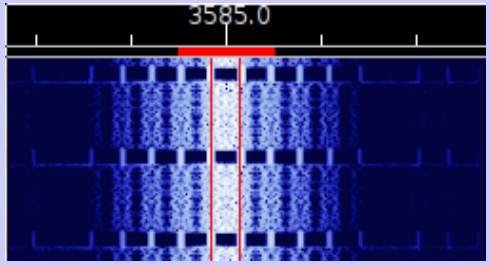
PSK – good neighbor

- You are sharing the spectrum
  do not splatter!



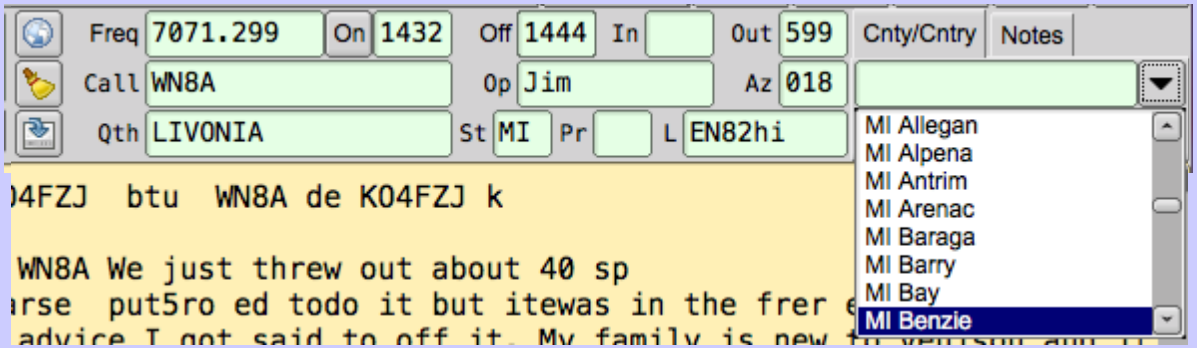


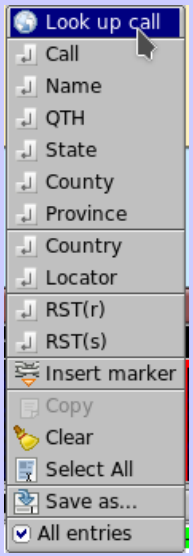
Ideal

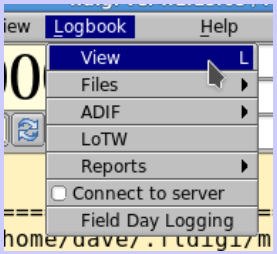


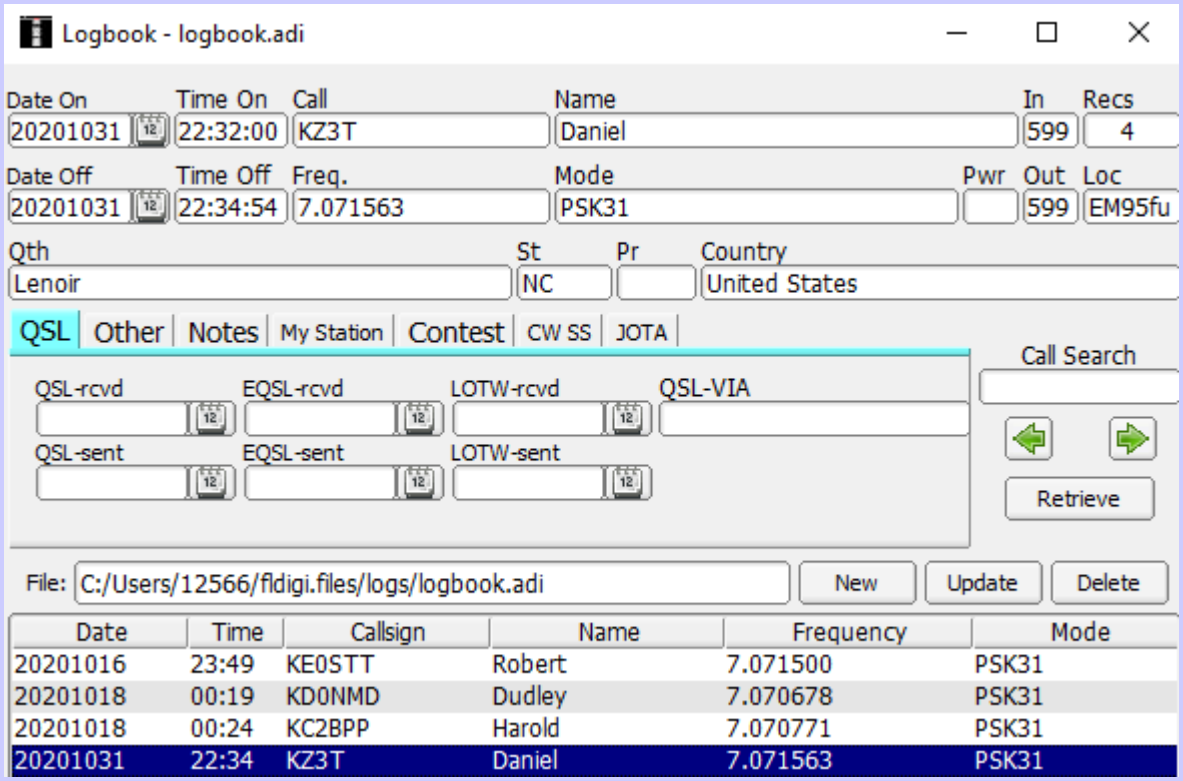
Overdriven - ALC

QSO Logging

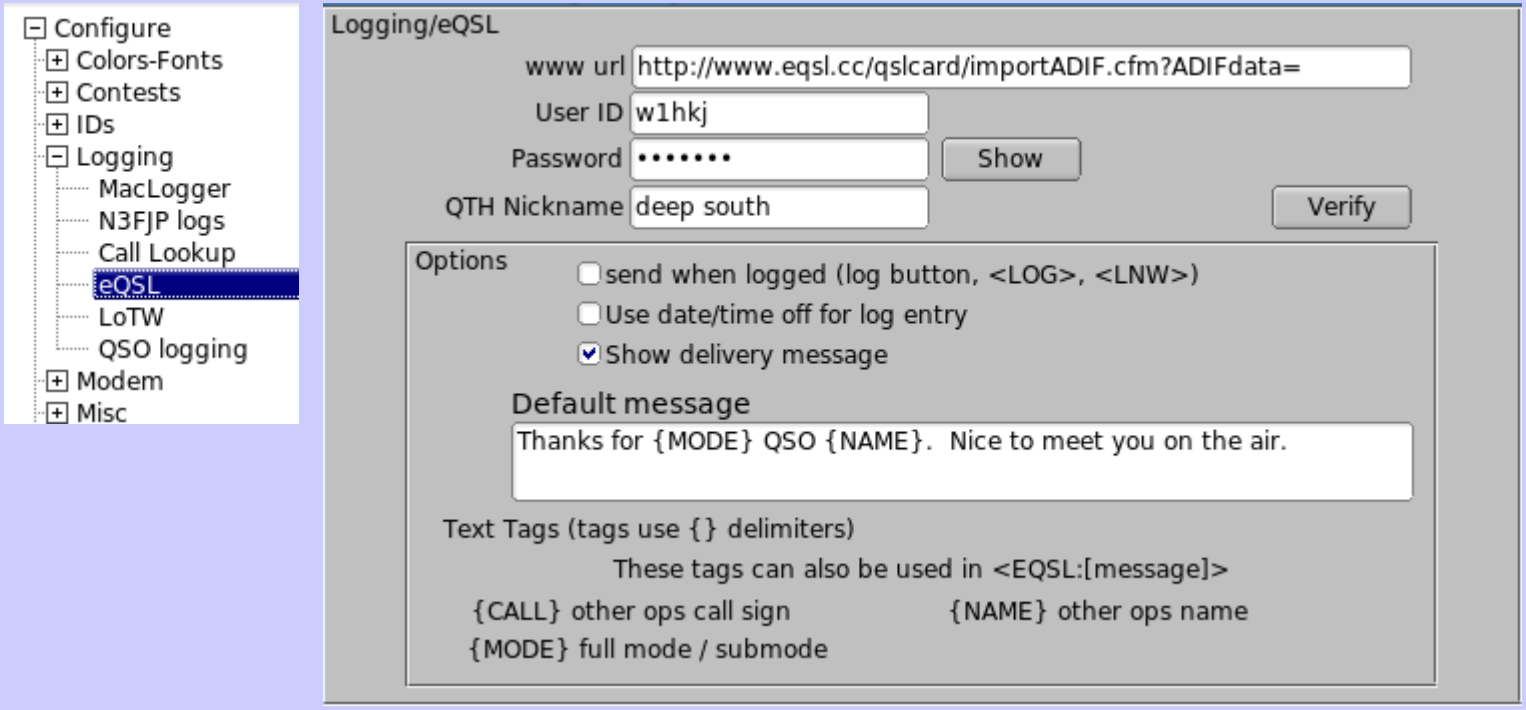

Freq 7071.299
On 1432
Off 1444
In
Out 599
Cnty/Cntry
Notes
Call WN8A
Op Jim
Az 018
Qth LIVONIA
St MI
Pr
L EN82hi
MI Allegan
MI Alpena
MI Antrim
MI Arenac
MI Baraga
MI Barry
MI Bay
MI Benzie
WN8A We just threw out about 40 sp


Look up call
Call
Name
QTH
State
County
Province
Country
Locator
RST(r)
RST(s)
Insert marker
Copy
Clear
Select All
Save as...
All entries

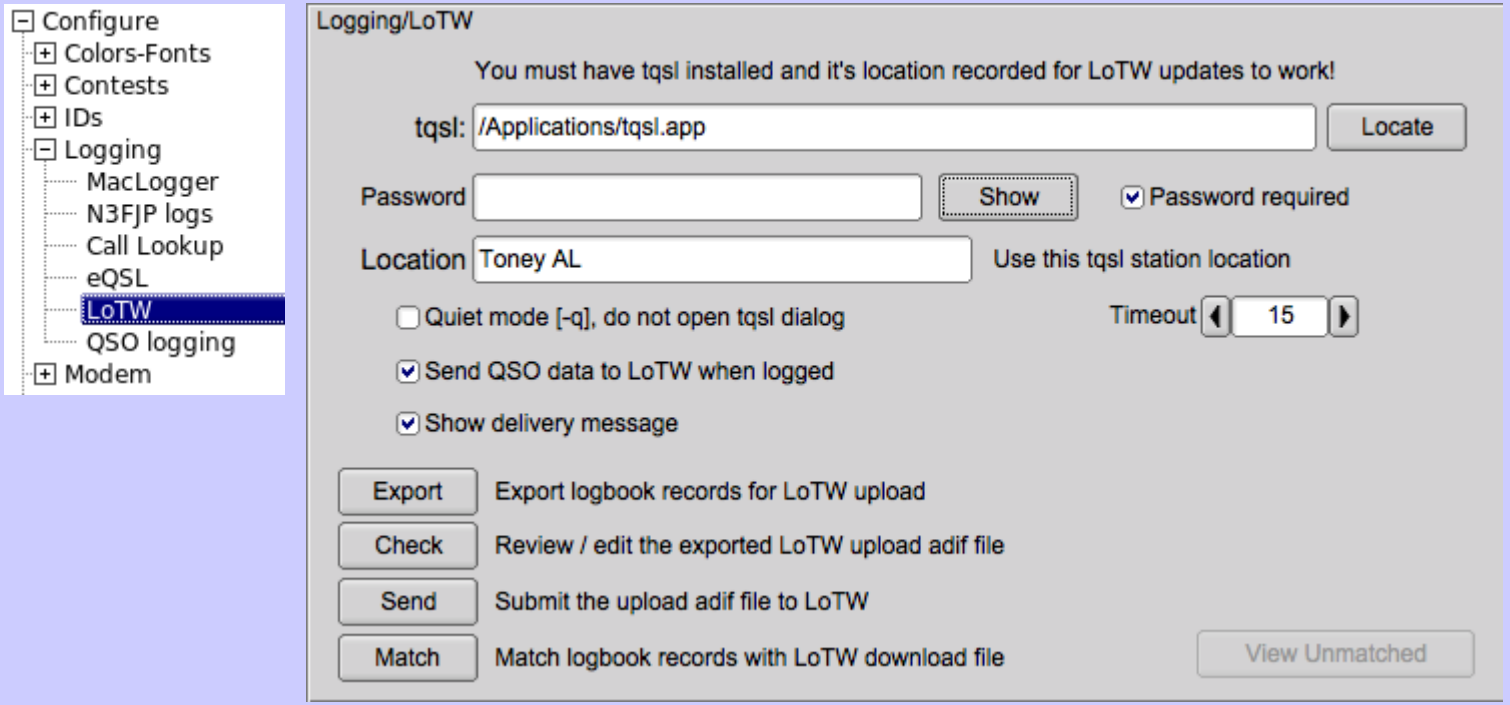

Logbook
Help
View
Files
ADIF
LoTW
Reports
Connect to server
Field Day Logging


Logbook - logbook.adi
Date On 20201031
Time On 22:32:00
Call KZ3T
Name Daniel
In 599
Recs 4
Date Off 20201031
Time Off 22:34:54
Freq. 7.071563
Mode PSK31
Pwr
Out 599
Loc EM95fu
Qth Lenoir
St NC
Pr
Country United States
QSL
Other
Notes
My Station
Contest
CW SS
JOTA
QSL-rcvd
EQSL-rcvd
LOTW-rcvd
QSL-VIA
QSL-sent
EQSL-sent
LOTW-sent
Call Search
Retrieve
File: C:/Users/12566/fldigi.files/logs/logbook.adi
New
Update
Delete
Date Time Callsign Name Frequency Mode
20201016 23:49 KE0STT Robert 7.071500 PSK31
20201018 00:19 KD0NMD Dudley 7.070678 PSK31
20201018 00:24 KC2BPP Harold 7.070771 PSK31
20201031 22:34 KZ3T Daniel 7.071563 PSK31

EQSL

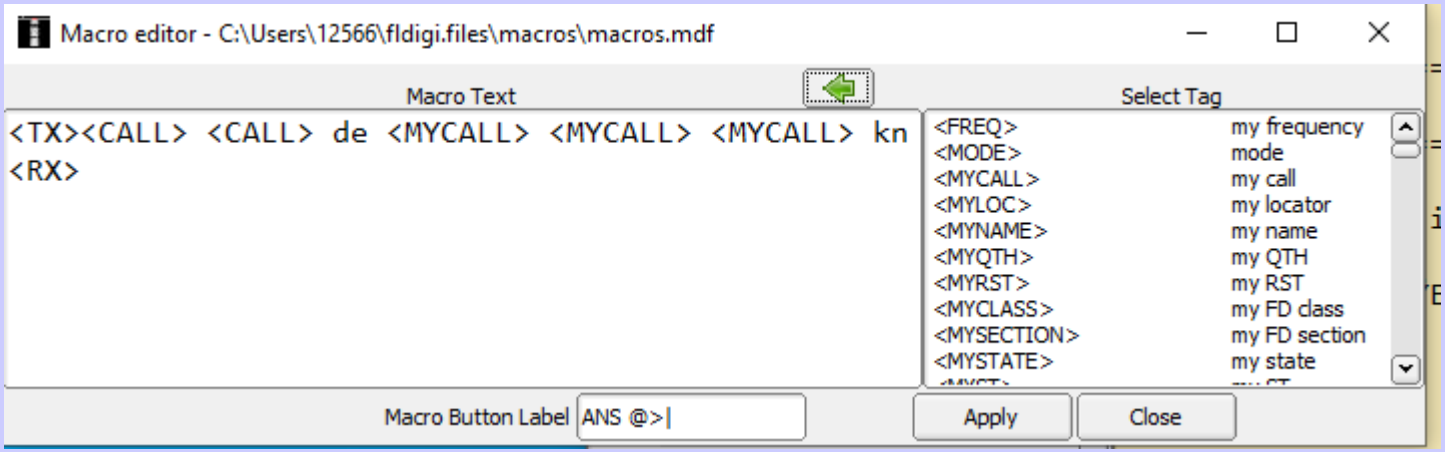

Configure
Colors-Fonts
Contests
IDs
Logging
MacLogger
N3FJP logs
Call Lookup
eQSL
LoTW
QSO logging
Modem
Misc
Logging/eQSL
www url
http://www.eqsl.cc/qslcard/importADIF.cfm?ADIFdata=
User ID
w1hkj
Password
Show
QTH Nickname
deep south
Verify
Options
send when logged (log button, <LOG>, <LNW>)
Use date/time off for log entry
Show delivery message
Default message
Thanks for {MODE} QSO {NAME}. Nice to meet you on the air.
Text Tags (tags use {} delimiters)
These tags can also be used in <EQSL:[message]>
{CALL} other ops call sign
{NAME} other ops name
{MODE} full mode / submode

LoTW


Configure
Colors-Fonts
Contests
IDs
Logging
MacLogger
N3FJP logs
Call Lookup
eQSL
LoTW
QSO logging
Modem
Logging/LoTW
You must have tqsl installed and it's location recorded for LoTW updates to work!
tqsl: /Applications/tqsl.app
Locate
Password
Show
Password required
Location Toney AL
Use this tqsl station location
Quiet mode [-q], do not open tqsl dialog
Timeout 15
Send QSO data to LoTW when logged
Show delivery message
Export
Export logbook records for LoTW upload
Check
Review / edit the exported LoTW upload adif file
Send
Submit the upload adif file to LoTW
Match
Match logbook records with LoTW download file
View Unmatched

Macros

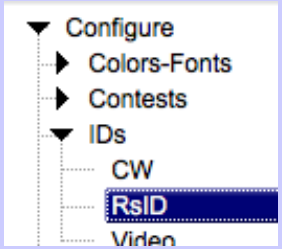
Ease routine operation – Facilitate contesting – Add program control

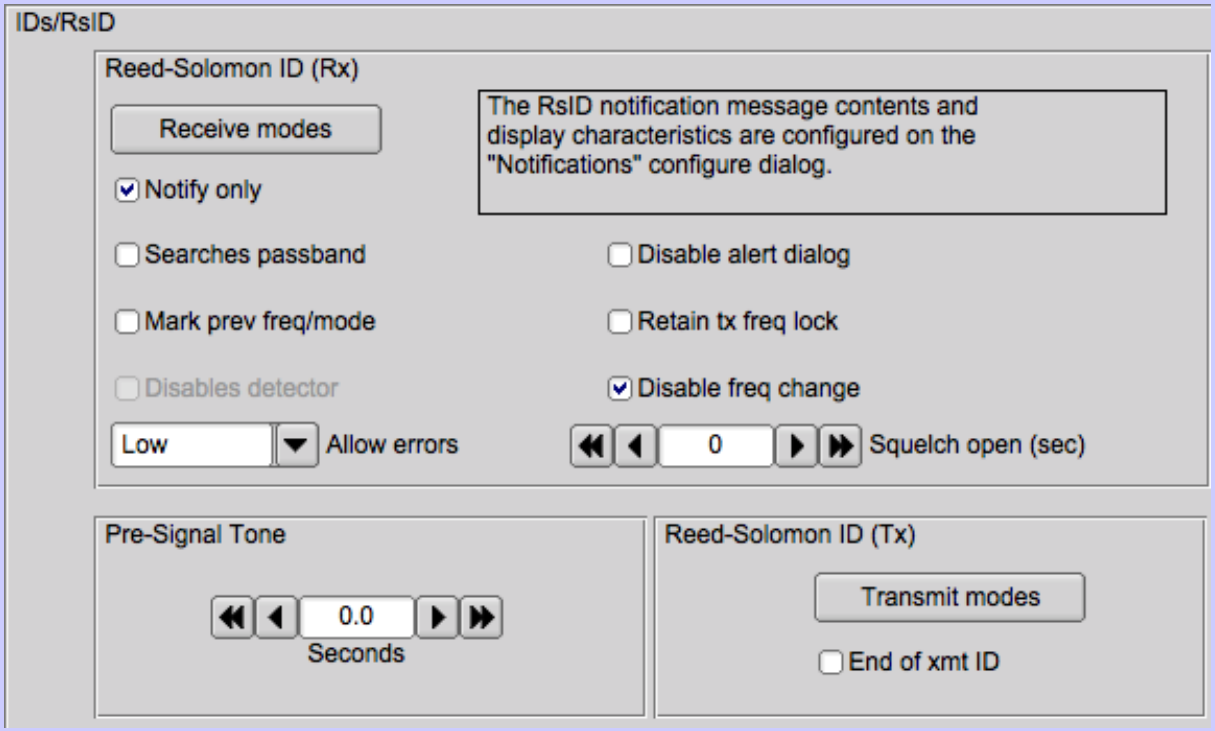


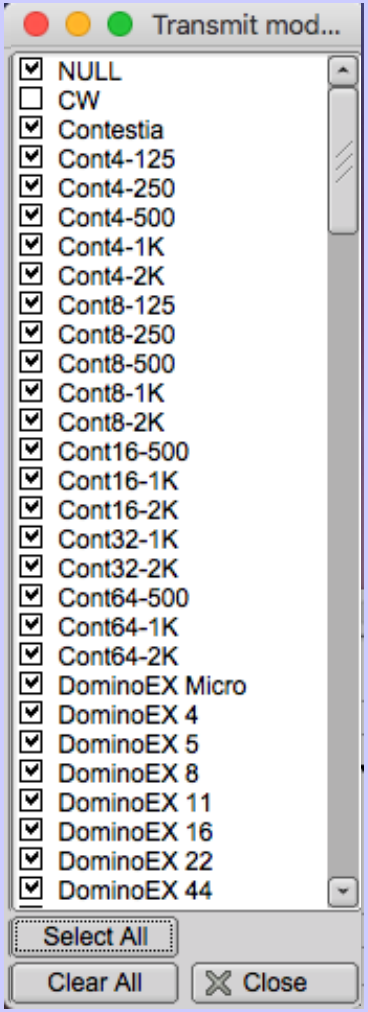
Reed Soloman Identifier (RsID)

- Sequence of 15/30 tones
- Reed Soloman encoding similar to that used by deep space probes
- Each mode uniquely identified by it's RsID
- Can be detected at -18 dB s/n
- Both Tx and Rx behavior configurable

Reed Soloman Identifier (RsID)

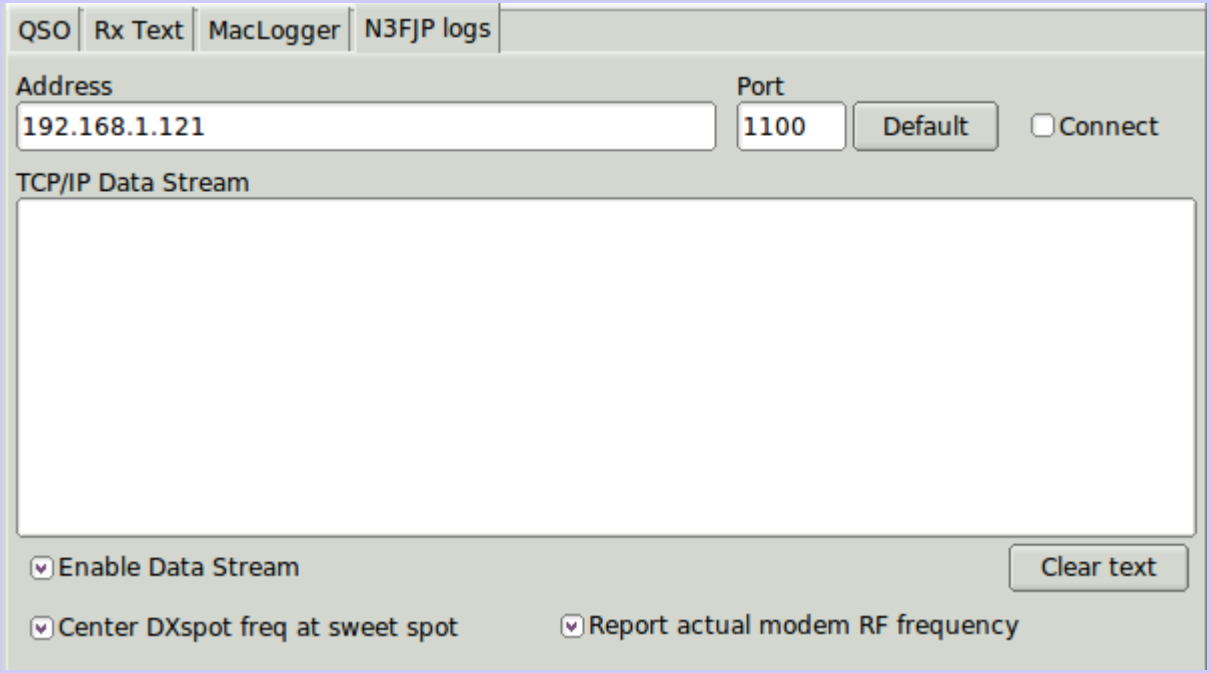




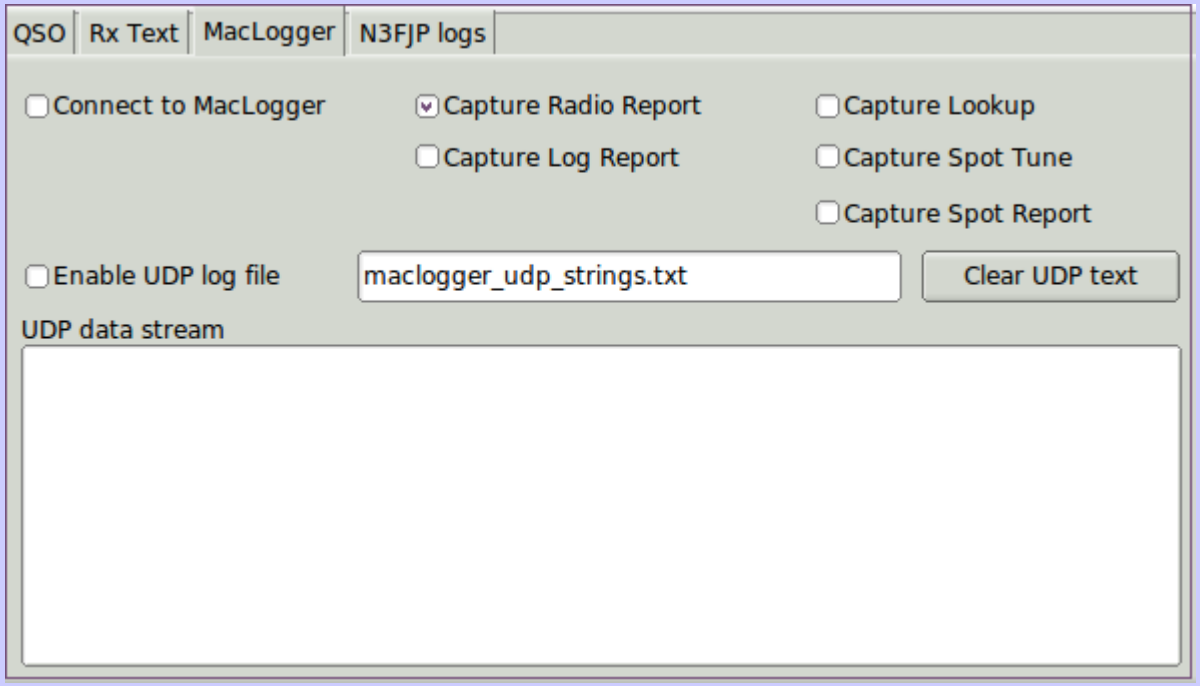


3rd Party Logging Programs

N3FJP Logger Support



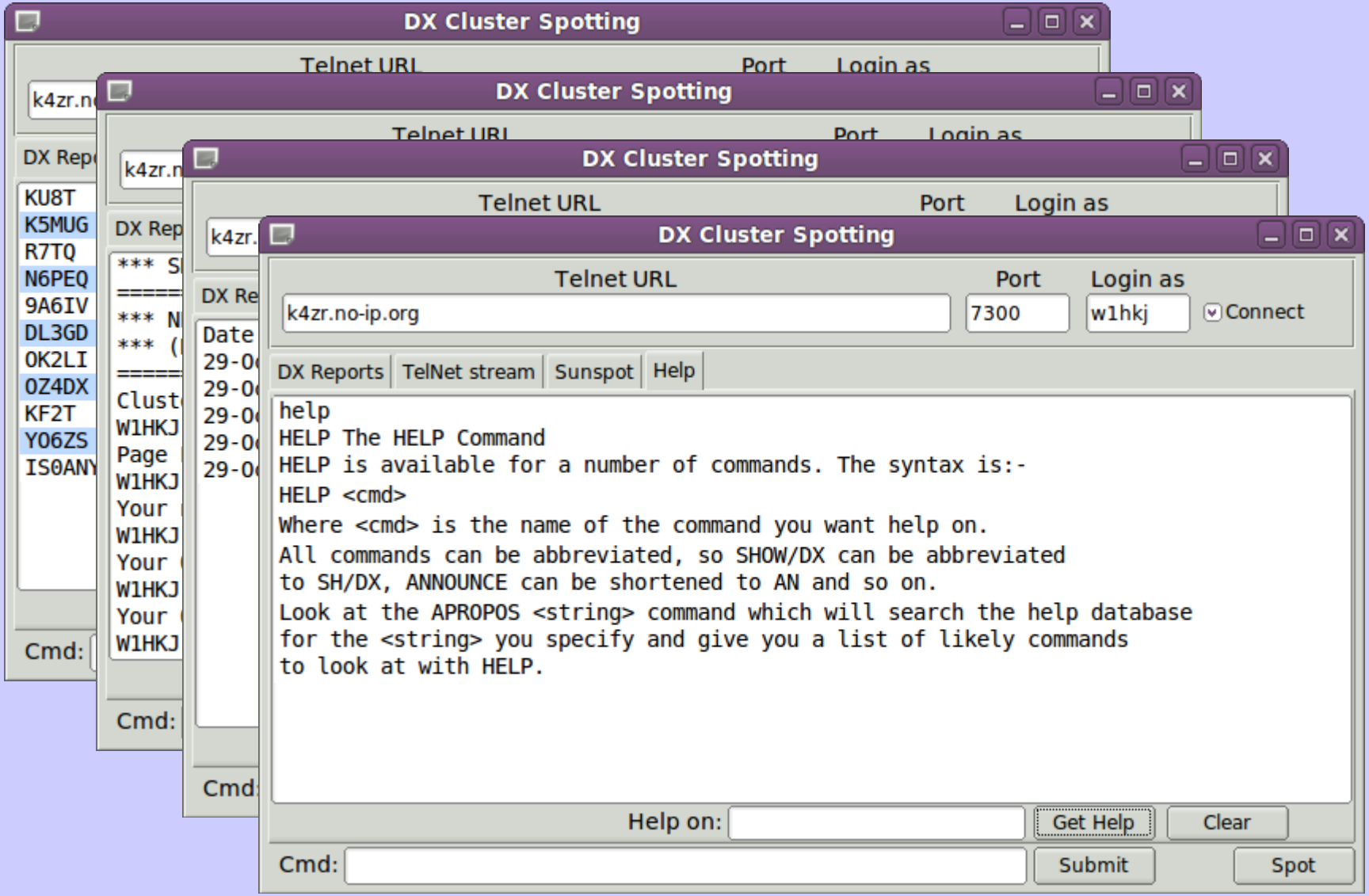
Maclogger program support



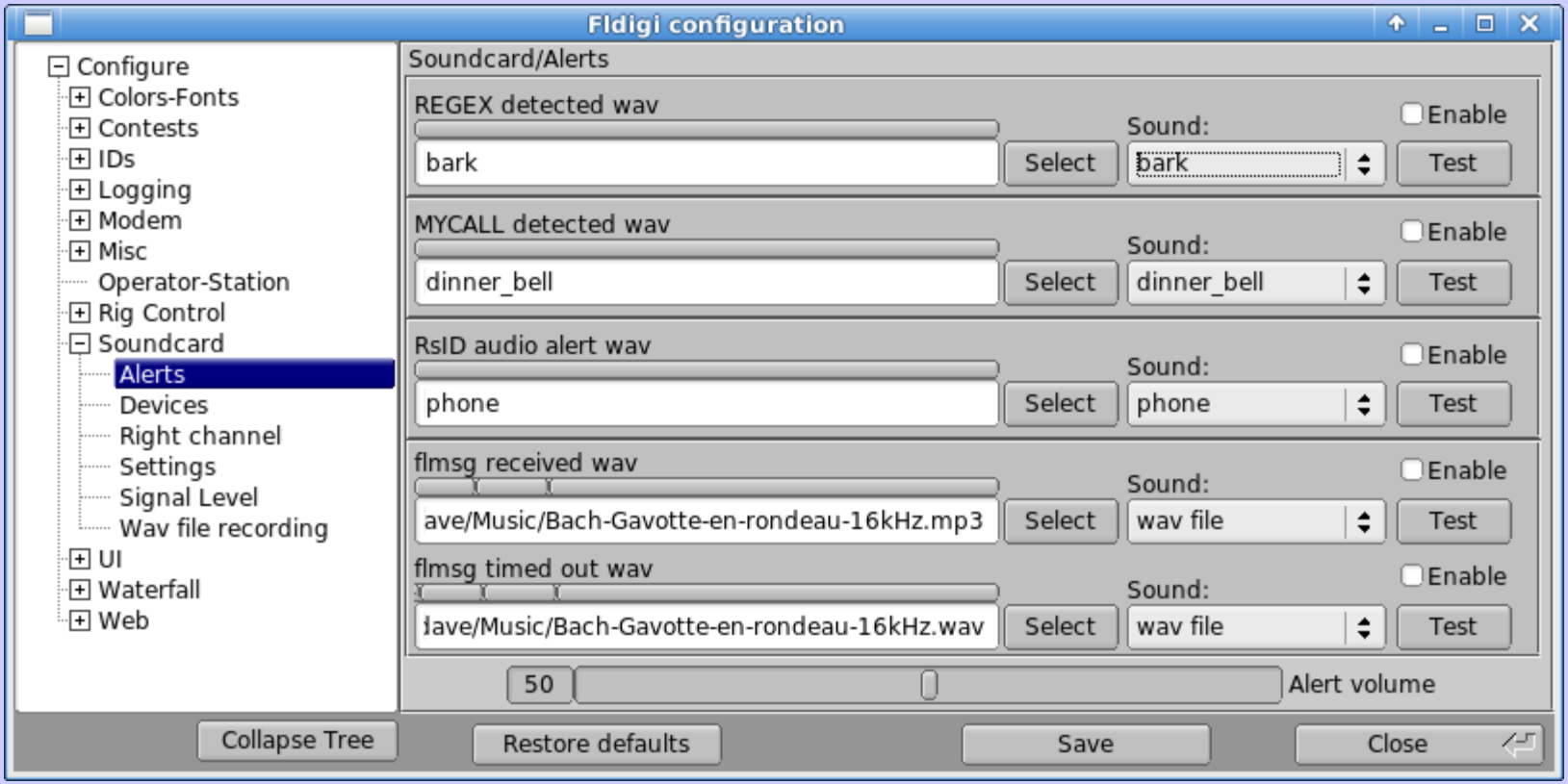
Fldigi fun features

- Built-in DX Cluster access
  - Acquire DX freq/mode from cluster report
- Audio alerts
- Audio monitor with tracking DSP filter
- Field Day Logger
- FMT – frequency measurement analyzer

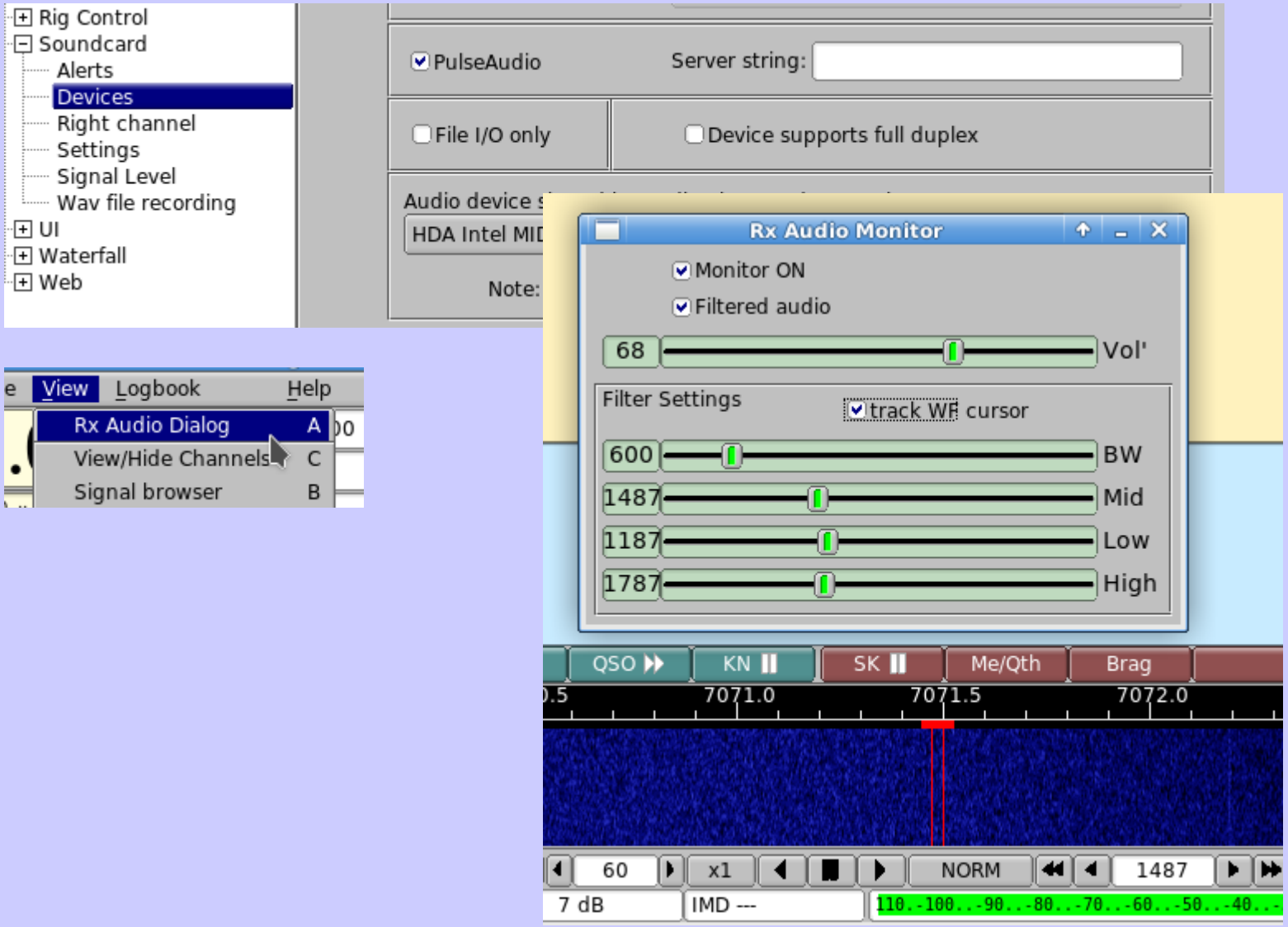
DxCluster


DX Cluster Spotting
Telnet URL
Port
Login as
k4zr.no-ip.org
7300
w1hkj
Connect
DX Reports
TelNet stream
Sunspot
Help
help
HELP The HELP Command
HELP is available for a number of commands. The syntax is:-
HELP <cmd>
Where <cmd> is the name of the command you want help on.
All commands can be abbreviated, so SHOW/DX can be abbreviated
to SH/DX, ANNOUNCE can be shortened to AN and so on.
Look at the APROPOS <string> command which will search the help database
for the <string> you specify and give you a list of likely commands
to look at with HELP.
Help on:
Get Help
Clear
Cmd:
Submit
Spot

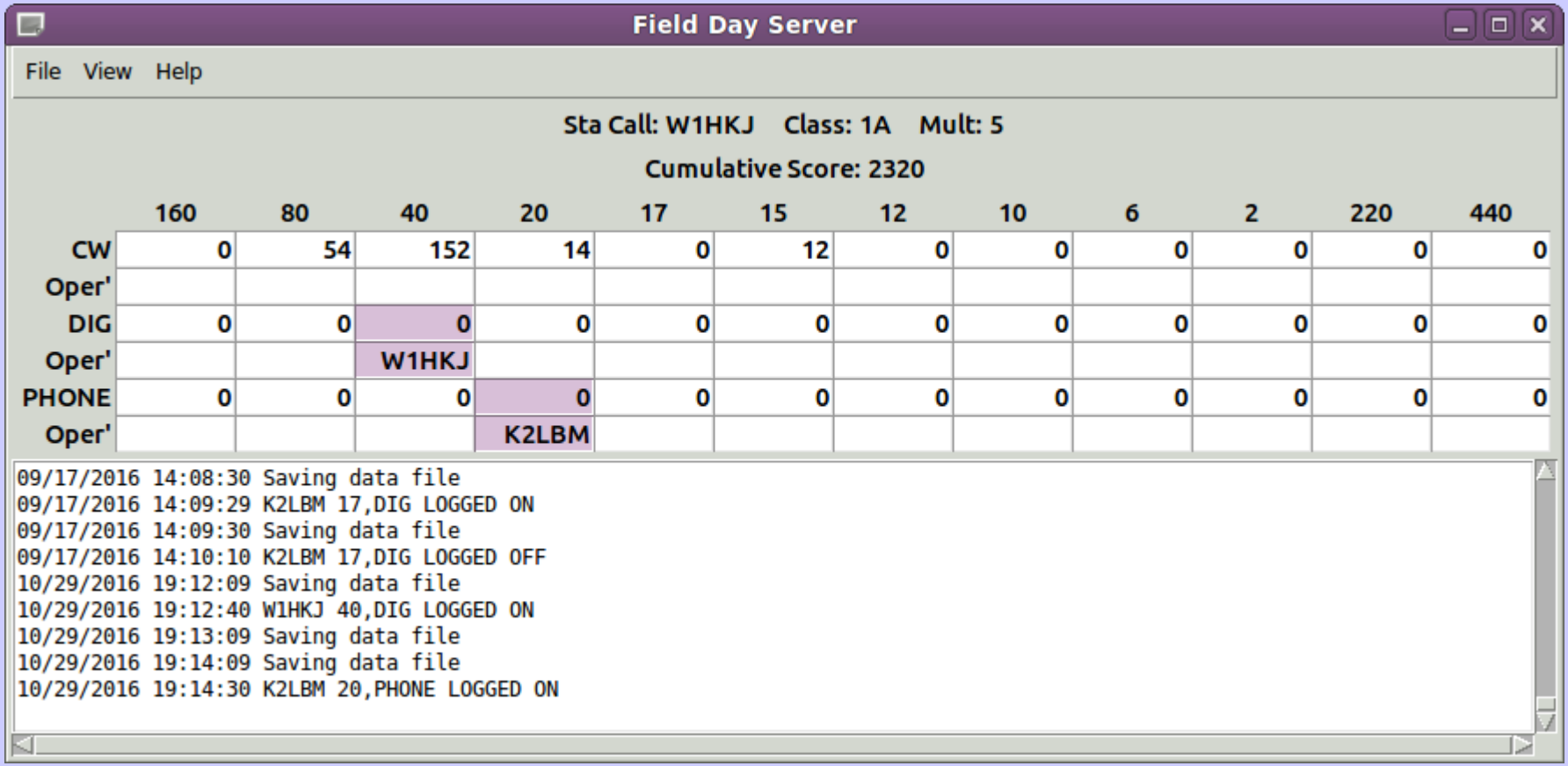
Audio Alerts



Audio Monitor

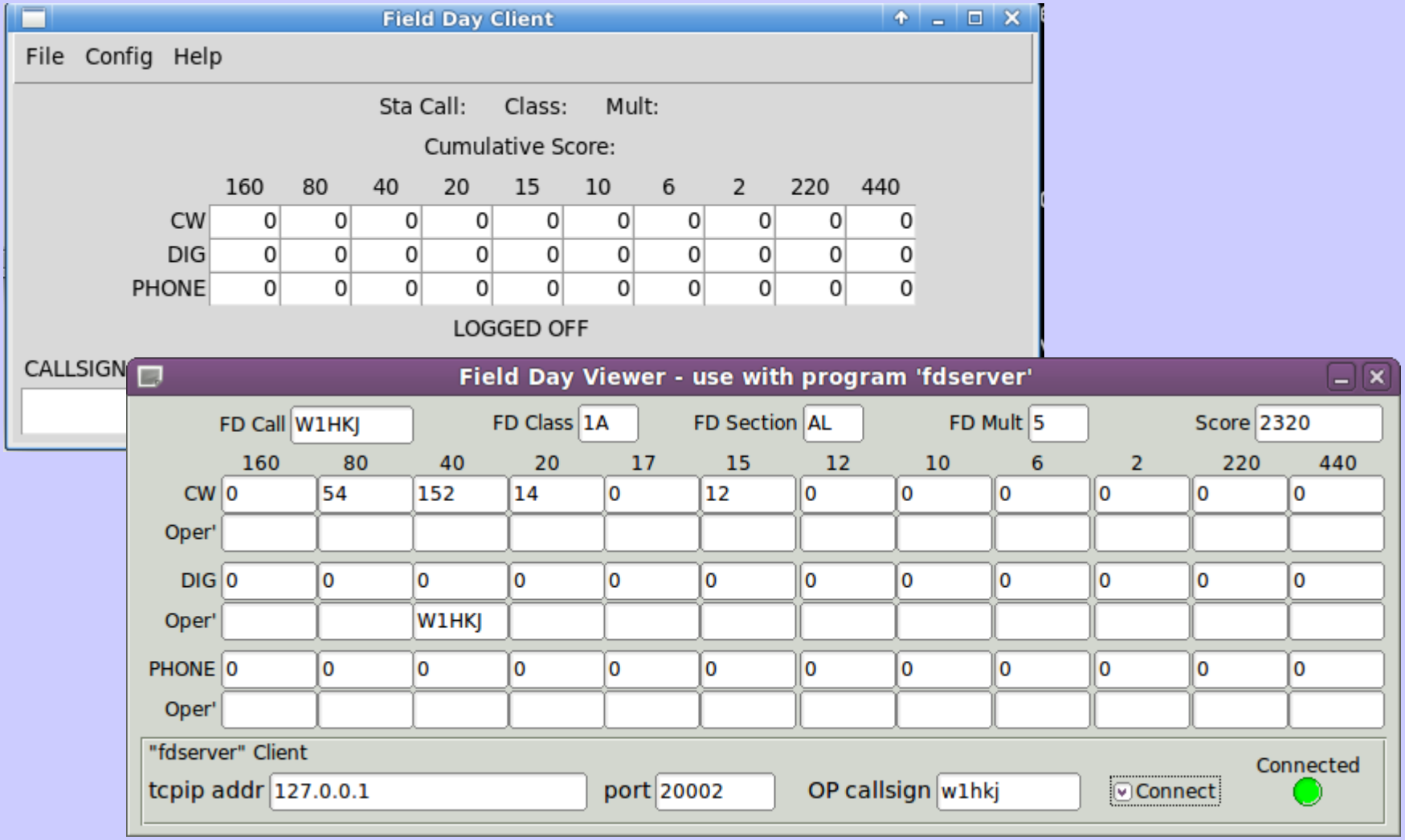


fd_server

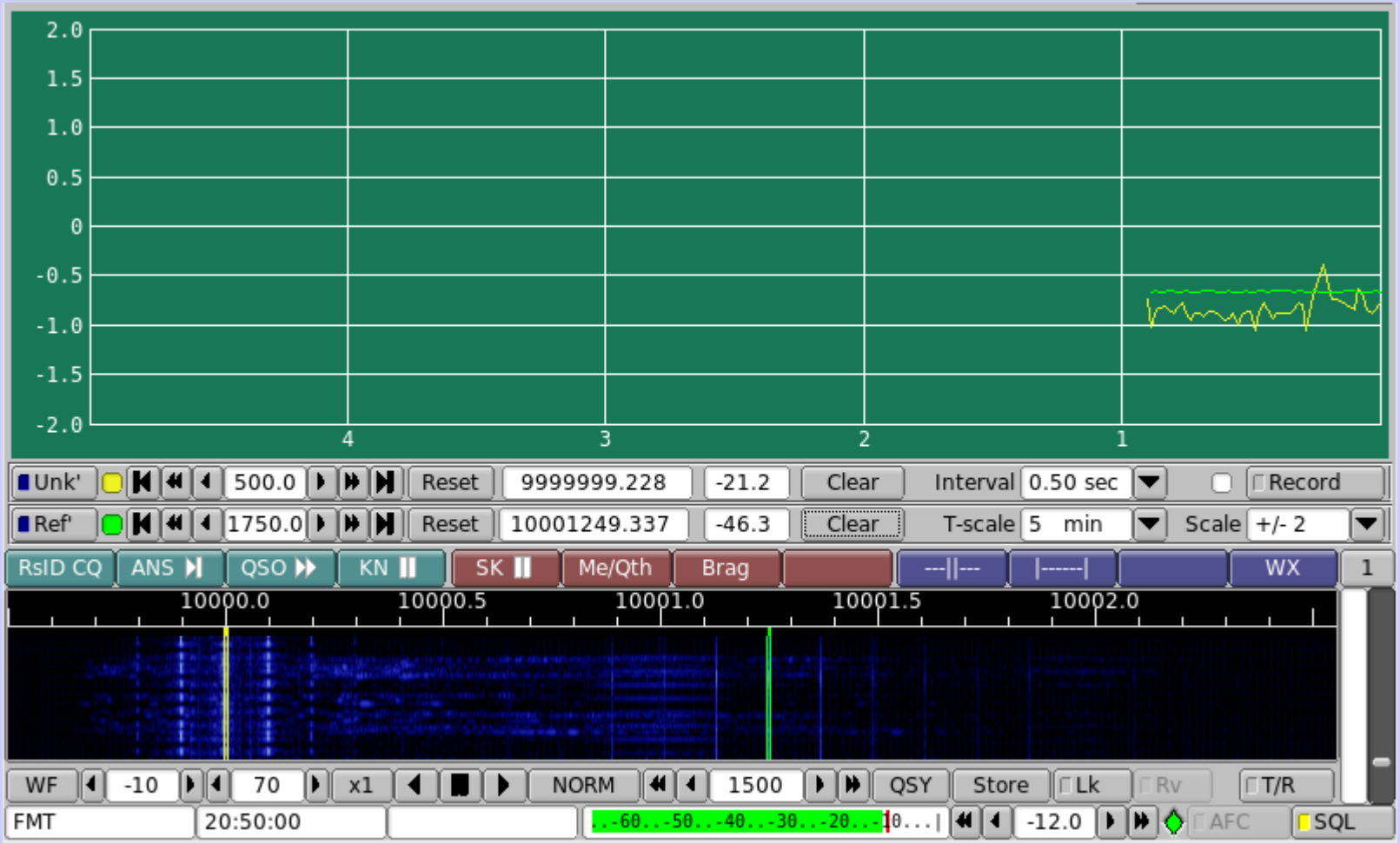


Field log support – tcltk script program
Compiled to a stand alone exe for Windows

Field Day Logger

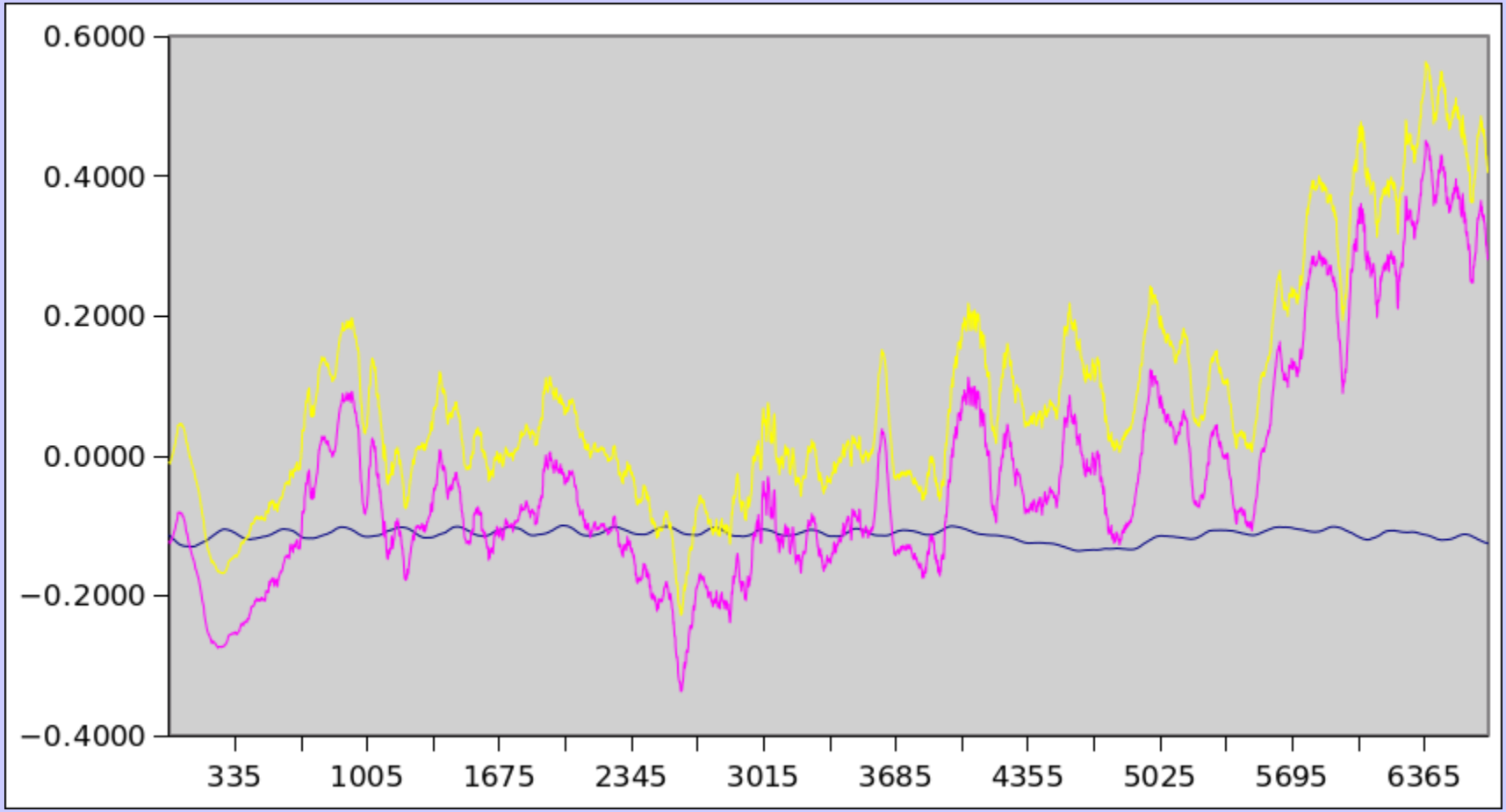


Frequency Measurement



Dual frequency measurement – milliHertz accuracy

Frequency Measurement

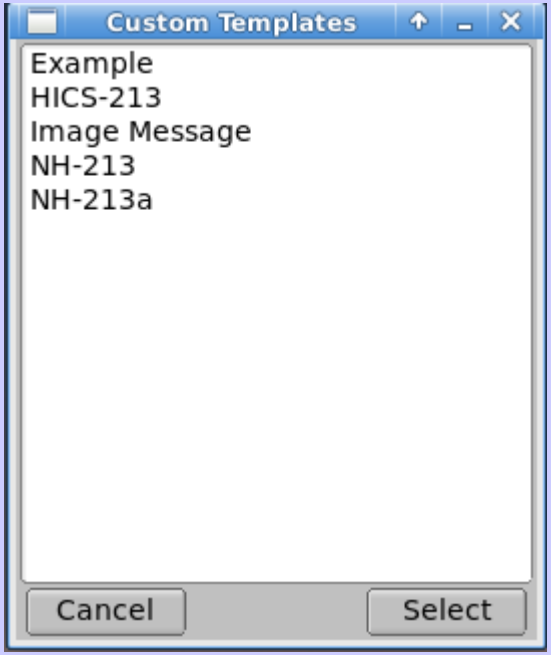


Dual frequency measurement – milliHertz accuracy

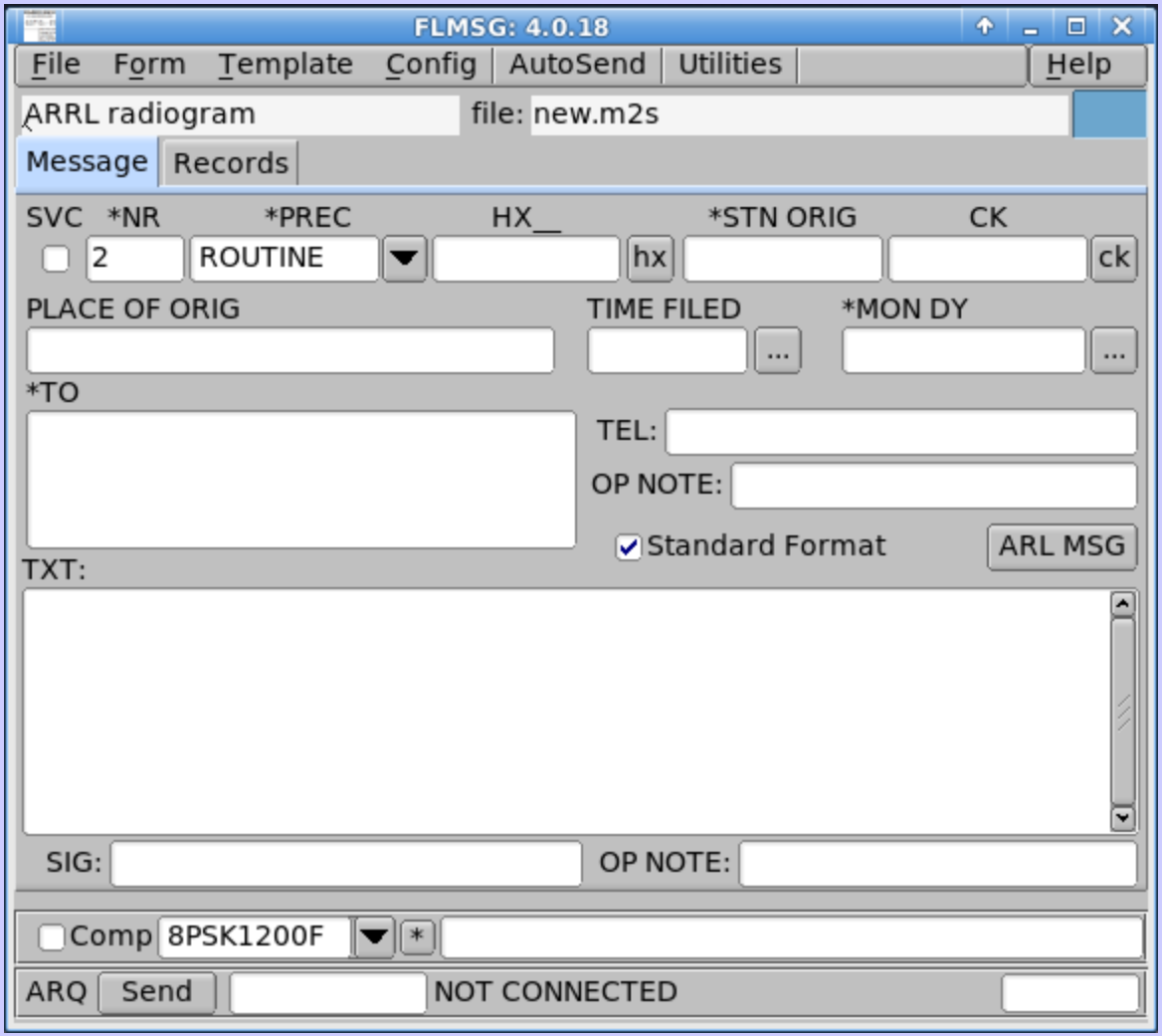
Flmsg

- Message manager
  - Generate
  - Store
  - Send
  - Receive
  - Fixed format
  - Custom html-5 format

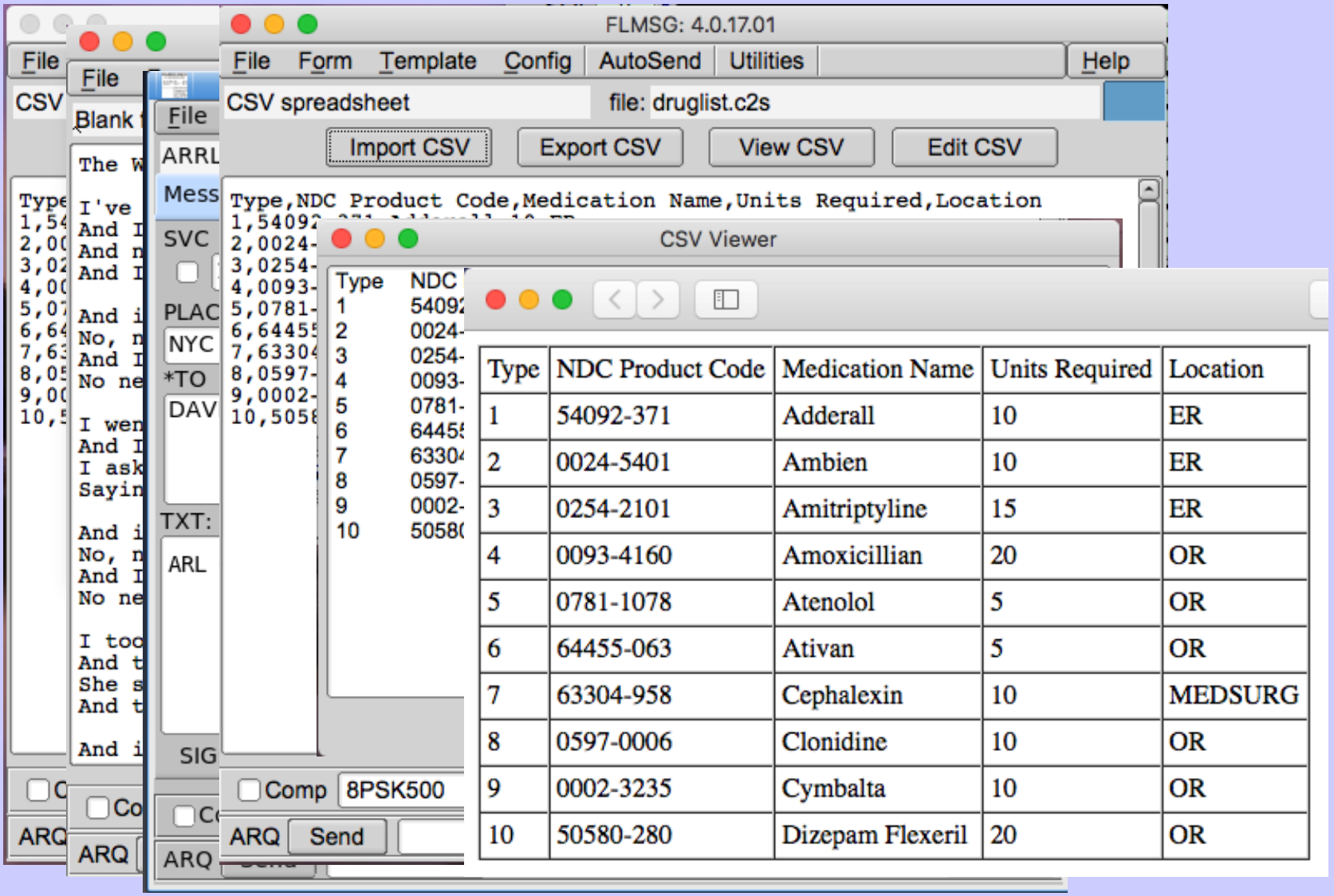
Tyro Interface



Flmsg – Expert Interface



Flmsg Built-in Forms



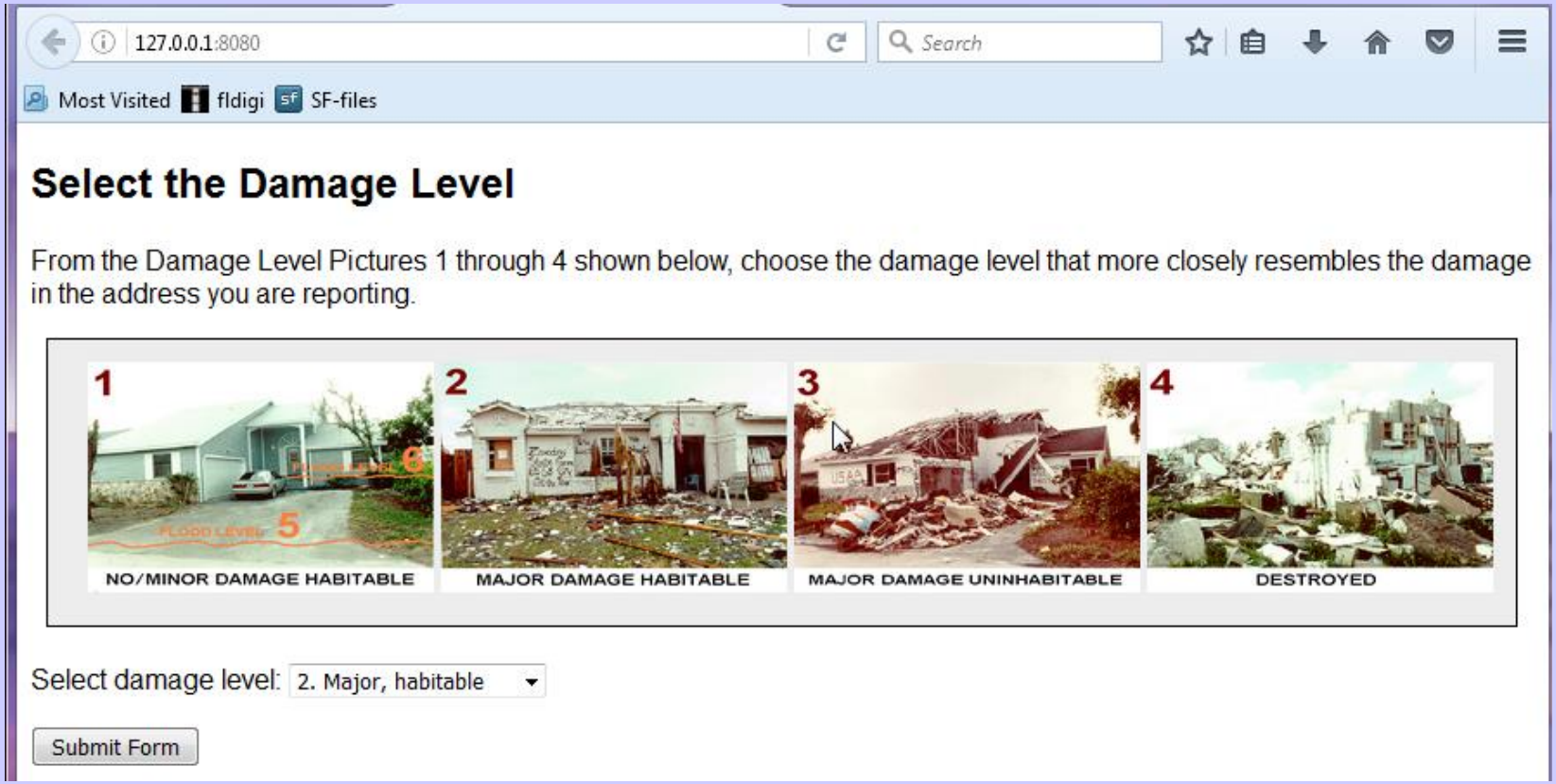
Type	NDC Product Code	Medication Name	Units Required	Location
1	54092-371	Adderall	10	ER
2	0024-5401	Ambien	10	ER
3	0254-2101	Amitriptyline	15	ER
4	0093-4160	Amoxicillian	20	OR
5	0781-1078	Atenolol	5	OR
6	64455-063	Ativan	5	OR
7	63304-958	Cephalexin	10	MEDSURG
8	0597-0006	Clonidine	10	OR
9	0002-3235	Cymbalta	10	OR
10	50580-280	Dizepam Flexeril	20	OR

Flmsg Custom Forms

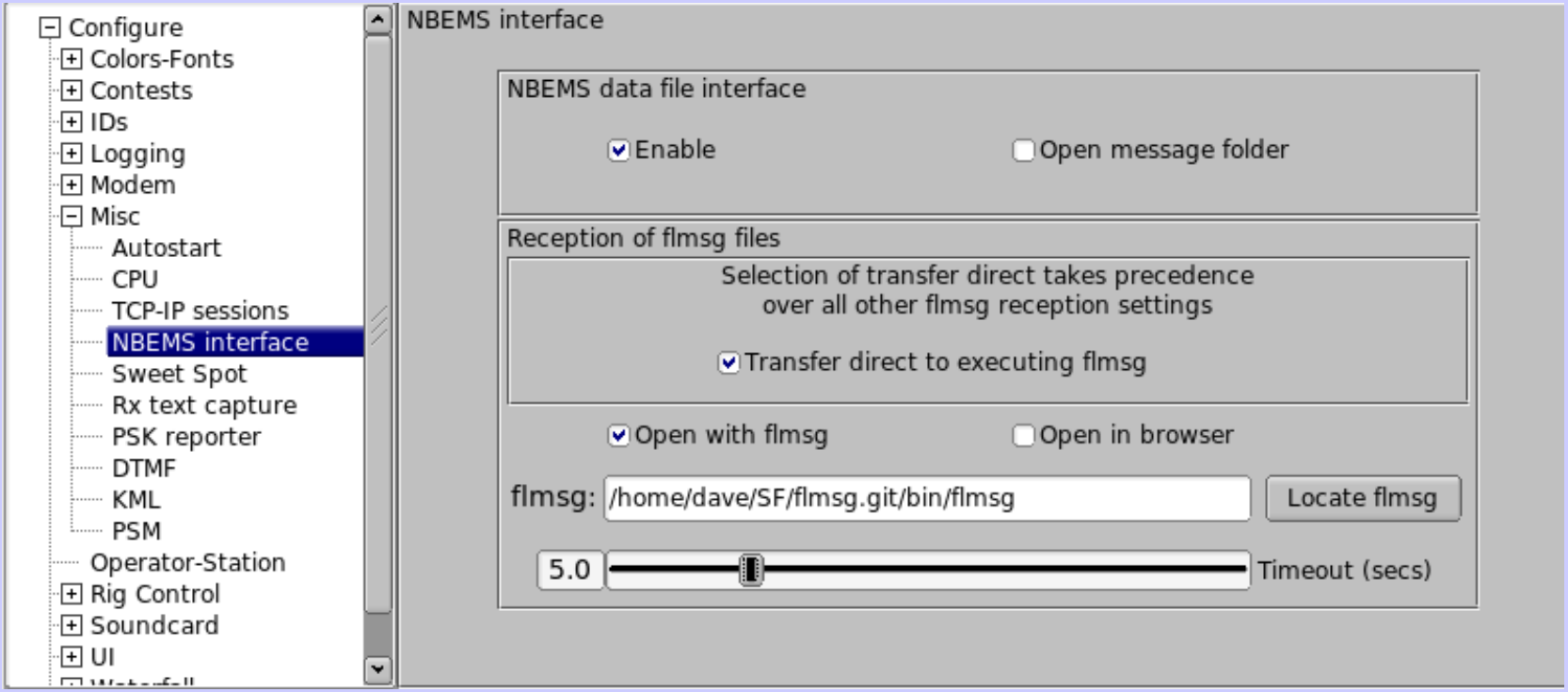
Used for all American Red Cross flmsg forms
Download from
http://www.w1hkj.com/files/flmsg/ARC_custom_forms/

- Parent Directory
- ARC-213_V1.1_01.18.17.html
- ARC_204_Work_Assignment_V1.0.html
- ARC_Client_Incident_Report_V1.0.html
- ARC_Daily_Shelter_Report.html
- ARC_Emergency_Welfare_Inquiry_Form_v_1.0.html
- ARC_Requisition_6409_V2.3.html
- ARC_Safe_and_Well_v1.1.html
- ARC_Staff_Injury_Illness_Record_V1.0.html
- ARC_Staff_Request_Form_V2.0.html
- ARC_Unaccompanied_Minor_Form_v_1.0.html
- ARC_custom_forms.zip
- Red_Cross_flmsg_installation_01-18-16.pdf
- Using_The_Red_Cross_Message_Utility.pdf

Flmsg Custom Forms



Configure Fldigi / Flmsg



Here are some useful links:

http://www.w1hkj.com

Source Forge fldigi site:
https://sourceforge.net/projects/fldigi

Source Forge files download
http://sourceforge.net/projects/fldigi/files/

Alternate site for files download
http://www.w1hkj.com/files/

Fldigi on-line mode identification – sights and sounds
http://www.w1hkj.com/modes/index.htm

NBEMS EMCOMM user group:
https://groups.io/g/nbems

Windows fldigi user group:
https://groups.io/g/winfldigi

Linux / OS-X fldigi user group:
https://groups.io/g/linuxham

Additional useful links:

Fldigi on-line help

Flrig on-line help

Flmsg on-line help

Pdf manuals at

fldigi_4.1.15-help.pdf
flrig-help.pdf
flmsg-help.pdf

Download this PPT at

http://www.w1hkj.com/lectures/2020.11.05.ppt