

Fldigi and NBEMS for VHF Operations

A Hands-on Workshop for ARES/RACES Users

By Ross Mazzola, KC2LOC

Digital Messaging Systems

APRS

- VHF 144.39 MHz simplex
- Utilizes “Digpeaters”
- Requires TNC or software (AGWPE)
- Good for short text messages

Winlink

- VHF 145.01 MHz simplex and certain HF freqs
- Utilizes RMS packet and HF pactor stations
- Requires TNC or software (AGWPE)
- Good for email
- Files can be attached to email

NBEMS/Fldigi

- Can utilize any VHF/UHF simplex freq, repeaters, HF
- Uses “acoustic coupling” for interface but hardwired interfaces can also be used
- Good for text messages, forms, files

Why Fldigi for Digital Modes?

- No cost software
- Versions available for Windows, Mac and Linux
- No hardware interface required on VHF and MT-63 mode
- Very well supported
- When integrated with NBEMS extensions, message handling becomes fast, accurate and easy

What You'll Need

Software

- NBEMS

- Fldigi/Flarq

- Flwrap

- Flmsg

<http://www.w1hkj.com/download.html>

- Sound Card Calibration

- CheckSR

<http://www.pa-sitrep.com/checksr/CheckSR.exe>

Equipment

Computer

Optional but Recommended
Ext. Microphone



Radio

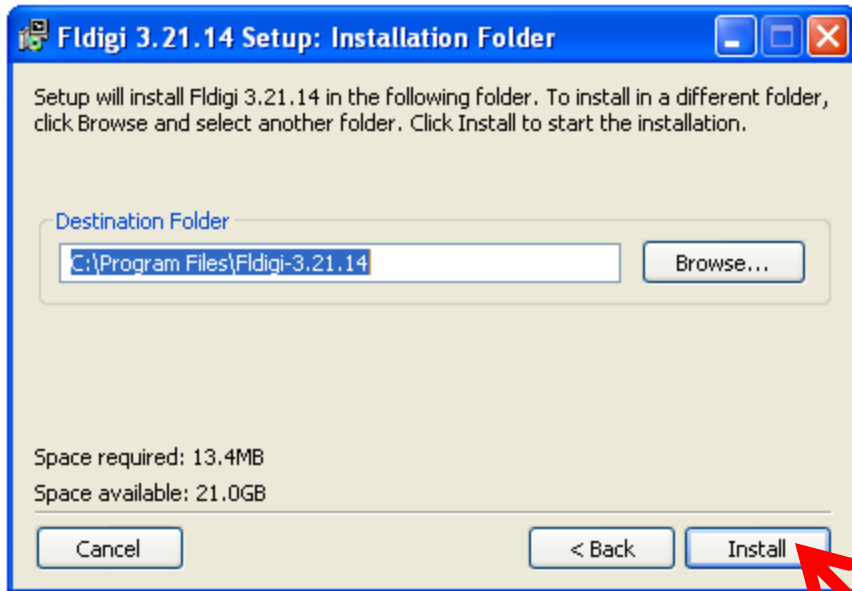
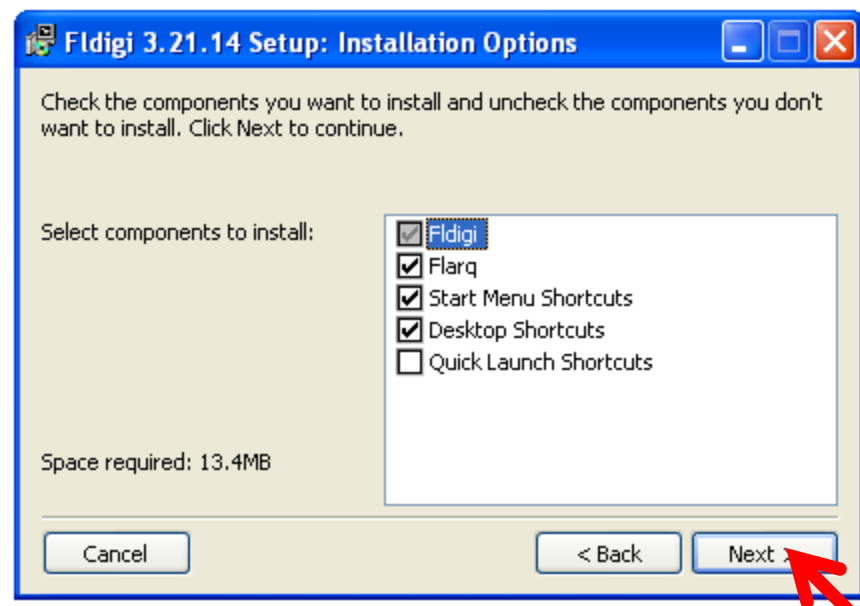
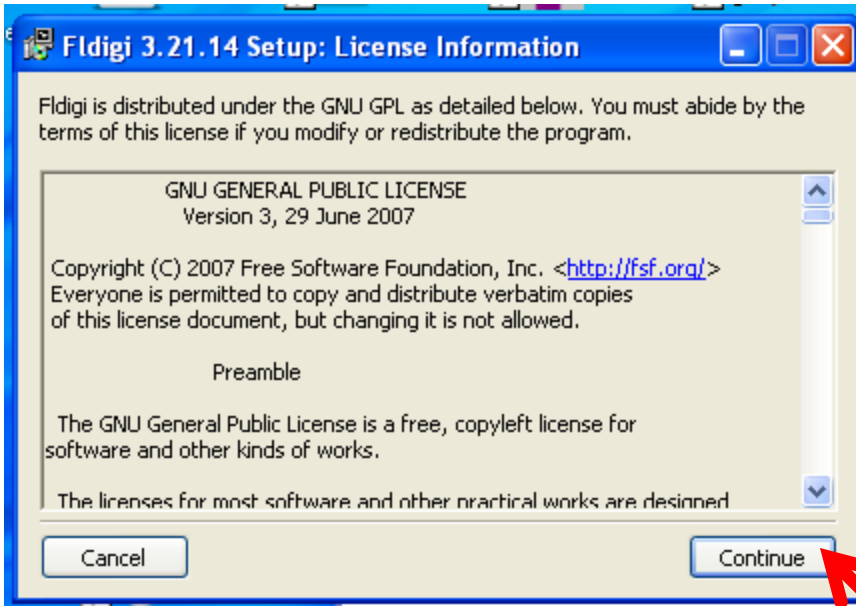
Ext. Speaker
Optional but Recommended

Installing and Configuring the Software

Download and Install Fldigi/Flarq

The screenshot shows a Windows Internet Explorer browser window with the address bar displaying <http://www.w1hkj.com/download.html>. The page title is "Download page - updated 4 September 2011". The page content includes a navigation menu with links for Linux Binary, Windows Setup, OS X dmg, Puppy Pet (1), Source, Help, and Release Info. Below the menu, there are links for "Fldigi / Flarq" and "fldigi-3.21.14", with a red arrow pointing to the latter. A "File Download - Security Warning" dialog box is open, displaying the file name "fldigi-3.21.14_setup.exe", its type "Application, 3.89MB", and its source "www.w1hkj.com". The dialog box has "Run", "Save", and "Cancel" buttons, with a red arrow pointing to the "Run" button. The background page also shows links for "RigCat Xmls", "Flwrap", "Flmsg", and "Flwkey", each with sub-links for binaries and help files.

	Linux Binary	Windows Setup	OS X dmg	Puppy Pet (1)	Source	Help	Release Info
Fldigi / Flarq:	fldigi-3.21.14 bin	fldigi-3.21.14				Fldigi-Help	Maint'
	README					Flarq-Help	
						fldigi pdf file	
						fldigi pdf help	
						Beginners Guide	
						pdf file	
						applications	
						1 to present	
RigCat Xmls	xml archives	updated on 21 July 2011					
Flwrap:	flwrap-1.3.1 bin	flwrap-1.3.1	flwrap-1.3.1	flwrap	flwrap-1.3.1	Flwrap-Help	Maint'
Flmsg:	flmsg-1.1.6 bin	flmsg-1.1.6	flmsg-1.1.6	flmsg	flmsg-1.1.6	Flmsg-Help	Maint'
Flwkey:	flwkey-1.0.0 bin	flwkey-1.0.0	flwkey-1.0.0	flwkey	flwkey-1.0.0	Flwkey-Help	Initial



1

2

3

4

Download and Install Flwrap

The screenshot shows a Mozilla Firefox browser window with the address bar displaying `http://www.w1hkj.com/download.html`. The page content includes a title "Download page: updated 4 September 2011" and several sections of links. A dialog box titled "Opening flwrap-1.3.1_setup.exe" is open, displaying the message: "You have chosen to open flwrap-1.3.1_setup.exe which is a: Binary File from: http://www.w1hkj.com. Would you like to save this file?". The dialog has "Save File" and "Cancel" buttons, with a red arrow pointing to "Save File". Another red arrow points to the link "flwrap-1.3.1" in the "Flwrap:" section of the page.

Download page: updated 4 September 2011

Linux Binary Windows Setup OS X

[Fldigi / Flarc:](#) [fldigi-3.21.14.bin](#) [fldigi-3.21.14](#) [fldigi-3.21.1](#)

[README](#)

[Fldigi pdf file](#)

[Zipped help](#)

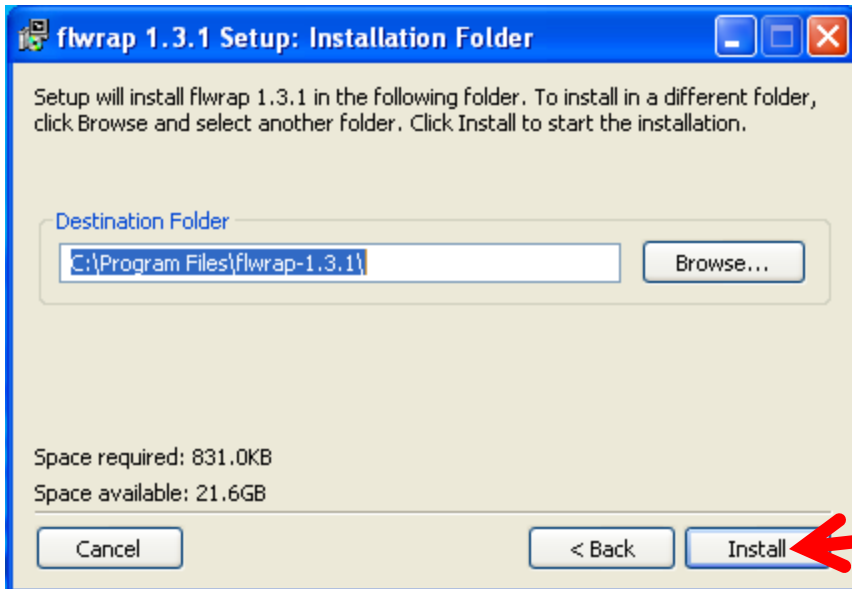
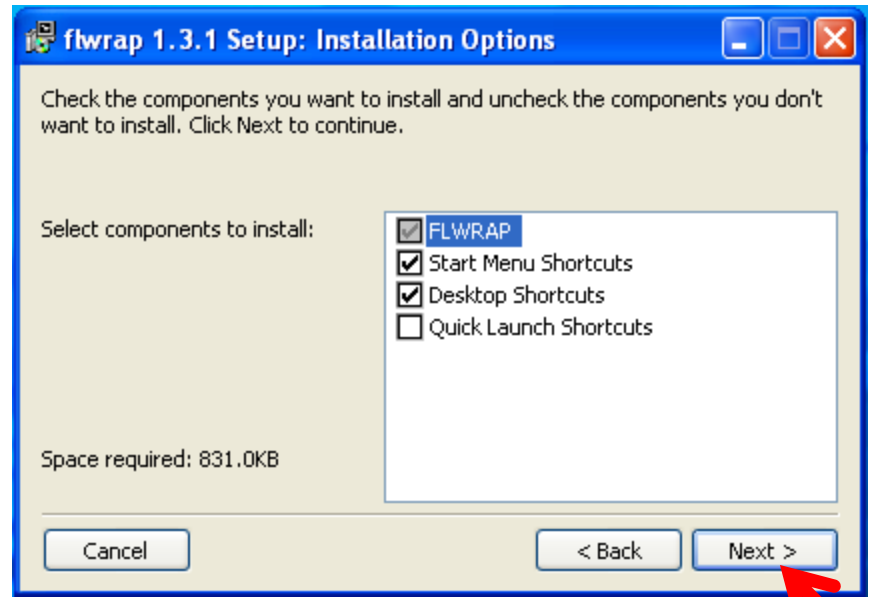
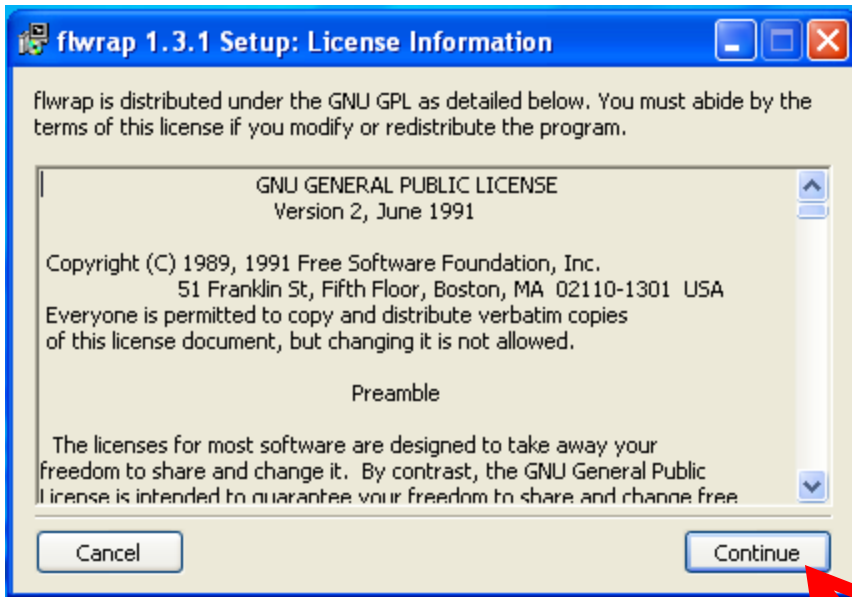
[Beginners Guide pdf file](#)

[pet libs](#) required for all fl__ applications

[Legacy Source](#) 3.20.11 to present

RigCat Xmls [xml archives](#) updated on 21 July 2011

Flwrap: [flwrap-1.3.1.bin](#) [flwrap-1.3.1](#) [flwrap-1.3.1](#) [flwrap](#) [flwrap-1.3.1](#) [Flwrap-Help](#) Maint'



Close

4

Download and Install Flmsg

Download page - Windows Internet Explorer provided by HARRIS IT Services

http://www.w1hkj.com/download.html

Download page: updated 4 September 2011

	Linux Binary	Windows Setup	OS X dmg	Puppy Pet (1)	Source	Help	Release Info
Fldigi / Flarq:	fldigi-3.21.14 bin	fldigi-3.21.14				Fldigi-Help	Maint'
	README					Flarq-Help	
						fldigi pdf file	
						digi pdf help	
						Beginners Guide	
						pdf file	
						applications	
						1 to present	
RigCat Xmls	xml archives	updated on 21 July 2011					
Flwrap:	flwrap-1.3.1 bin	flwrap-1.3.1	flwrap-1.3.1	flwrap	flwrap-1.3.1	Flwrap-Help	Maint'
Flmsg:	flmsg-1.1.6 bin	flmsg-1.1.6	flmsg-1.1.6	flmsg	flmsg-1.1.6	Flmsg-Help	Maint'
Flwkey:	flwkey-1.0.0 bin	flwkey-1.0.0	flwkey-1.0.0	flwkey	flwkey-1.0.0	Flwkey-Help	Initial

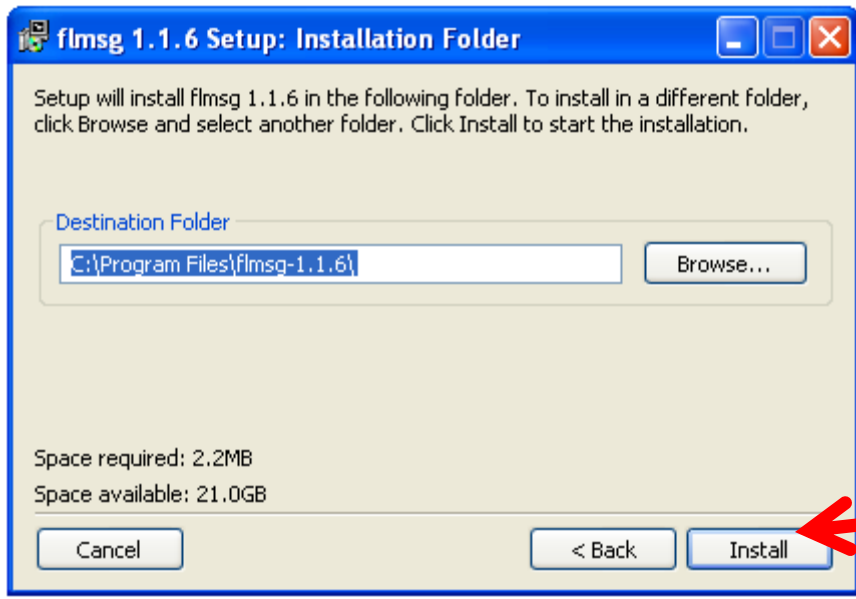
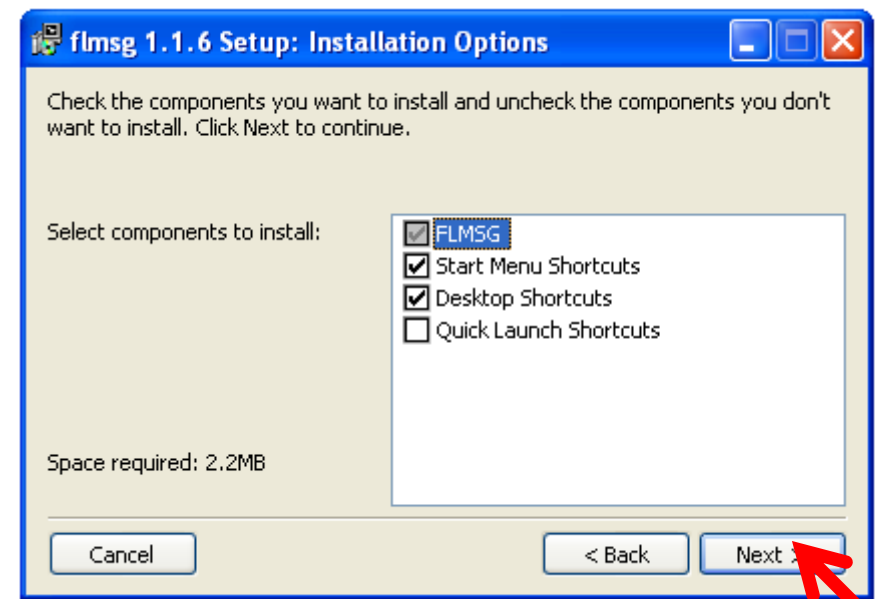
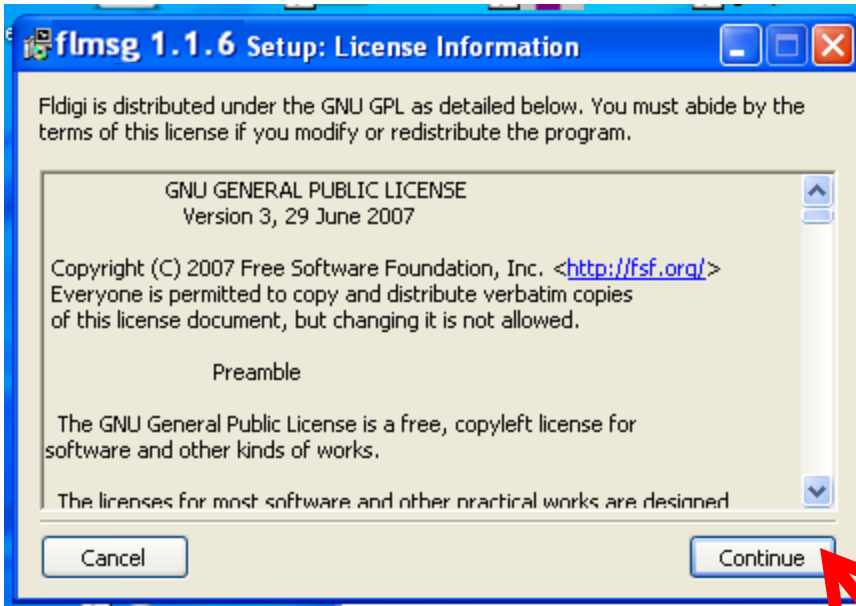
File Download - Security Warning

Do you want to run or save this file?

Name: flmsg-1.1.6_setup.exe
Type: Application, 706KB
From: www.w1hkj.com

Run Save Cancel

While files from the Internet can be useful, this file type can potentially harm your computer. If you do not trust the source, do not run or save this software. [What's the risk?](#)



1

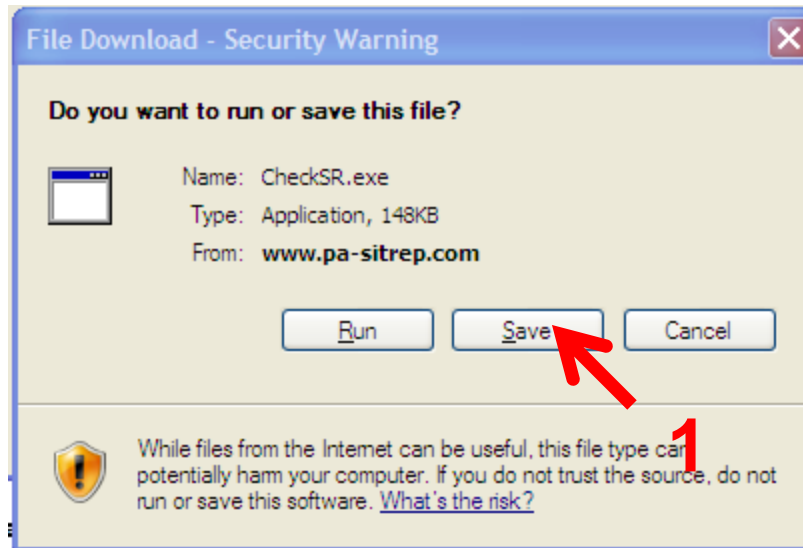
2

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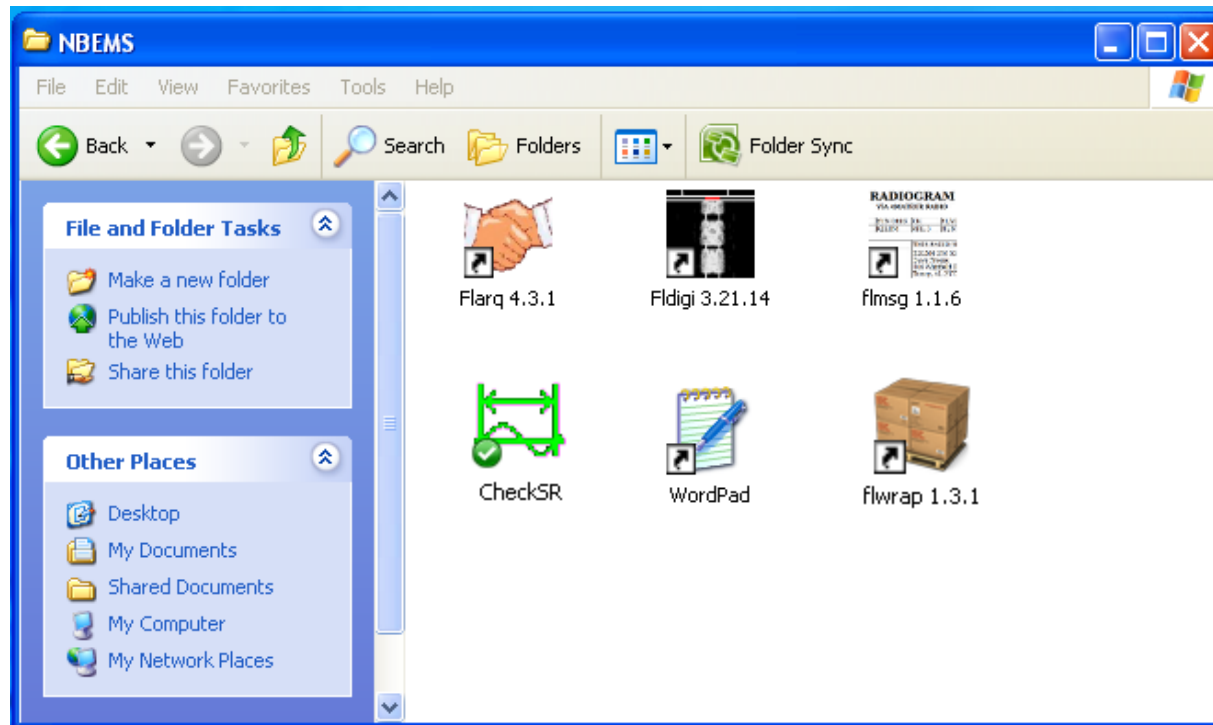
4

Download CheckSR

<http://www.pa-sitrep.com/checksr/CheckSR.exe>



Create an NBEMS Desktop Folder



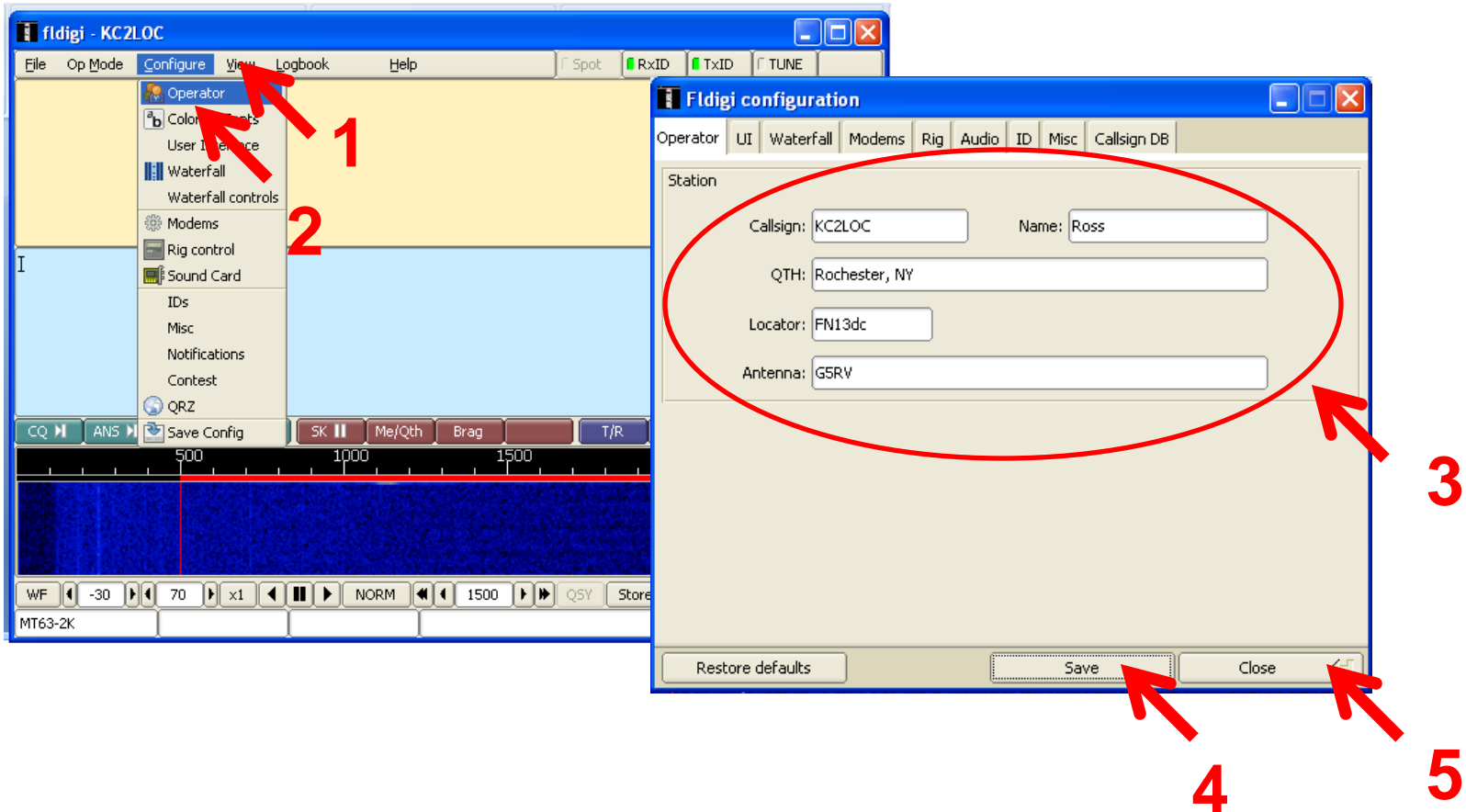
Start FLdigi

- Double-click the Fldigi desktop icon or select from the program Start Menu



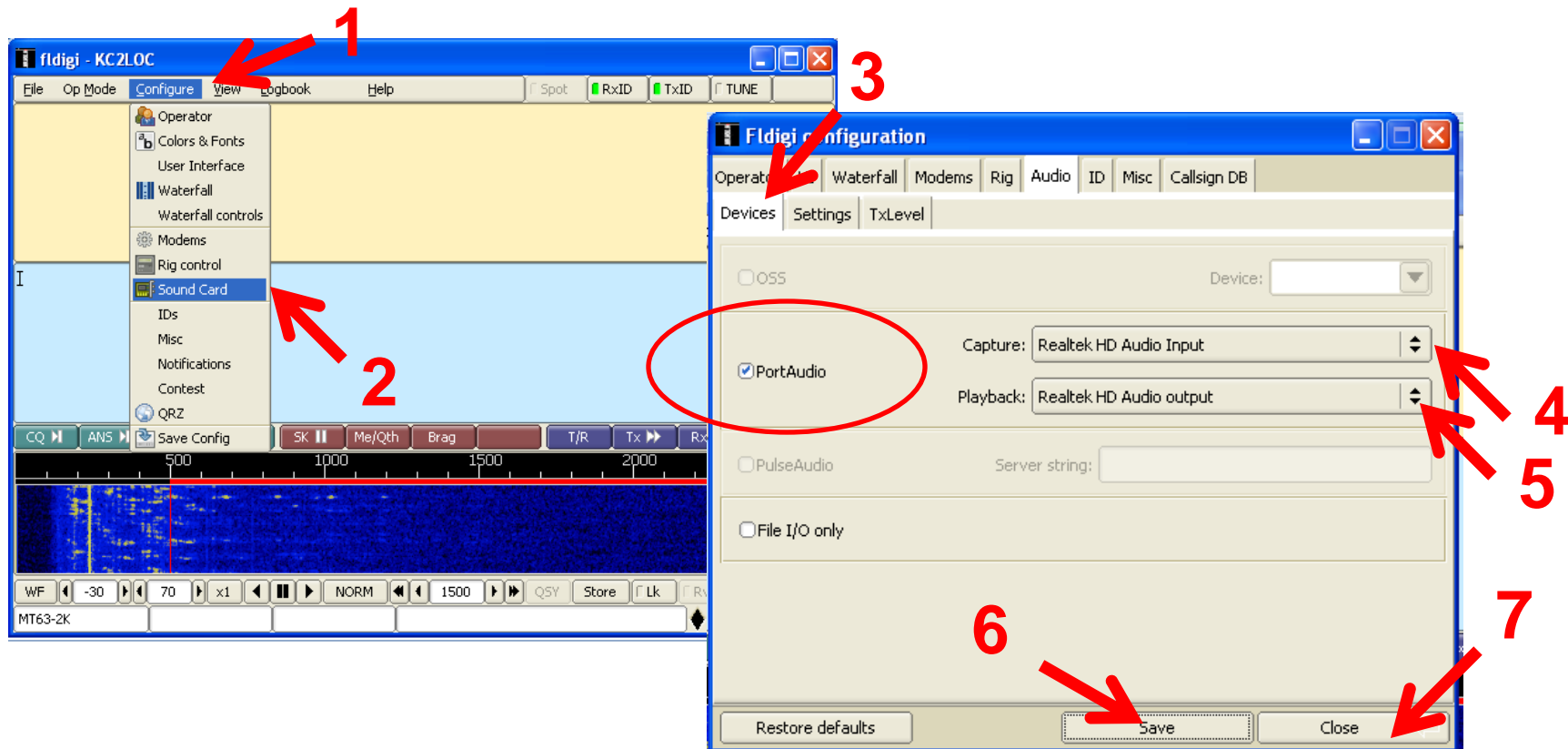
Enter Your Personal Data

- If you skip this on install you can do it later

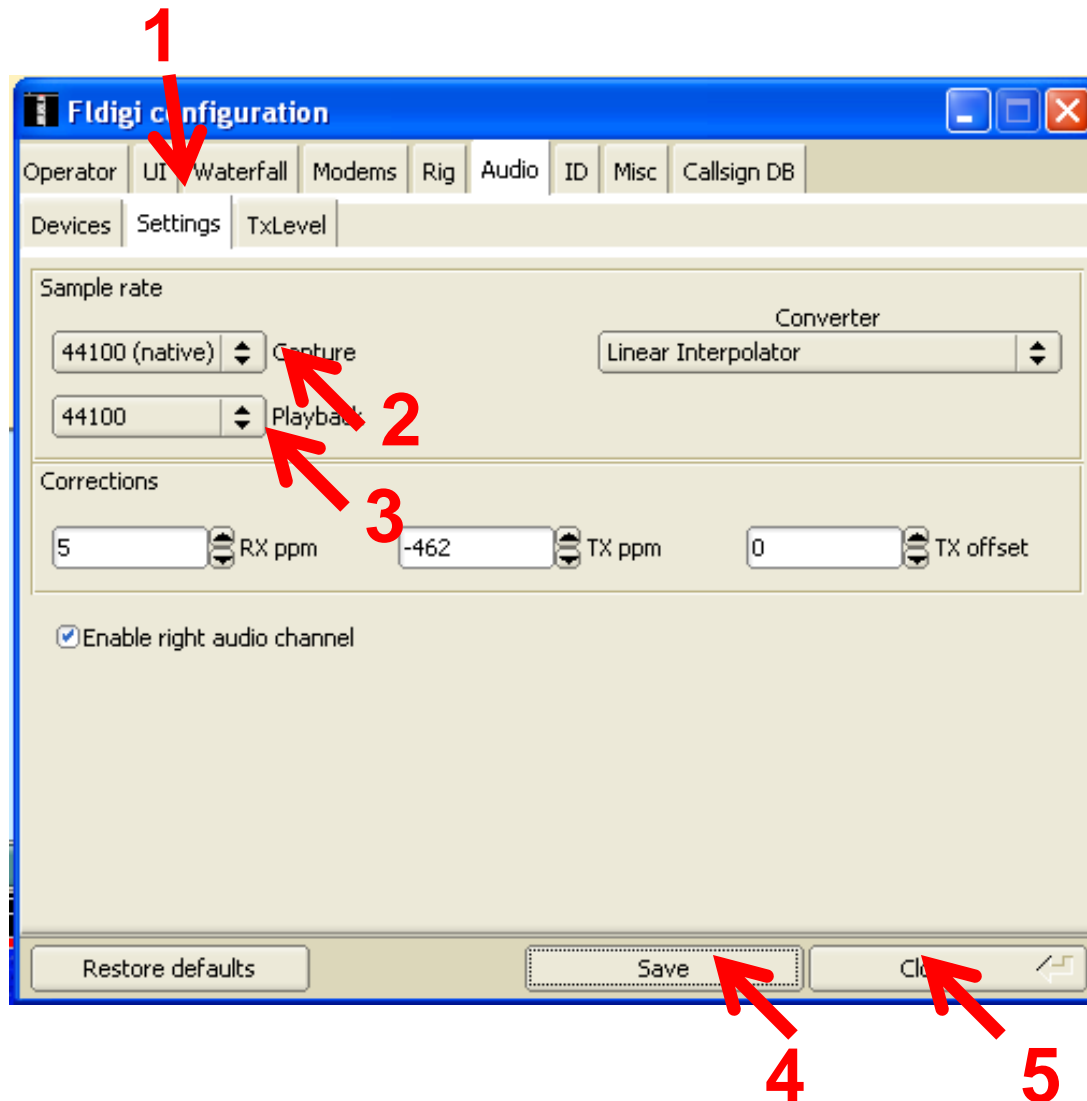


Select Your Computer's Sound Card

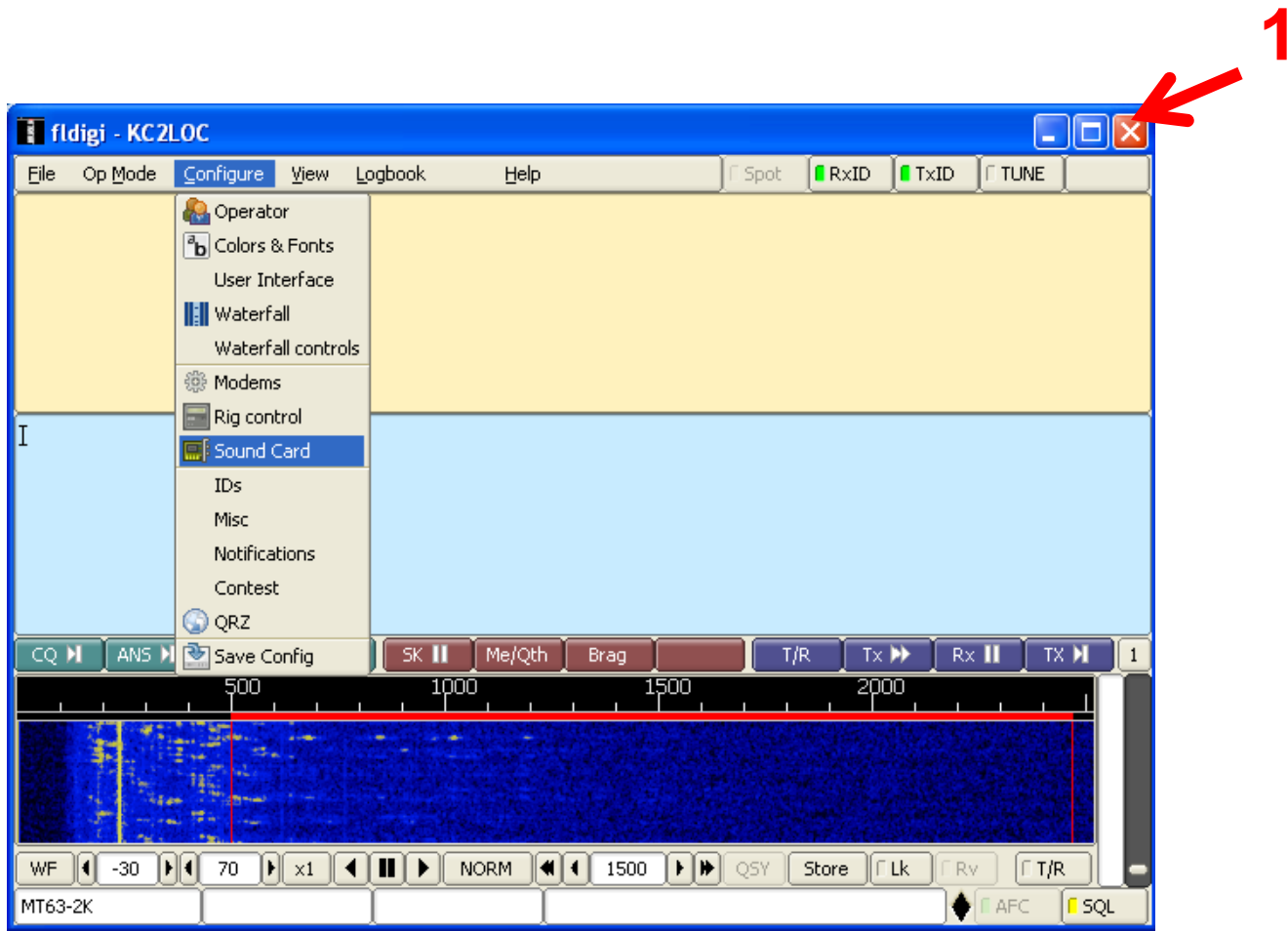
- With audio coupling you will use your PC's internal soundcard



Set your Sound Card Settings

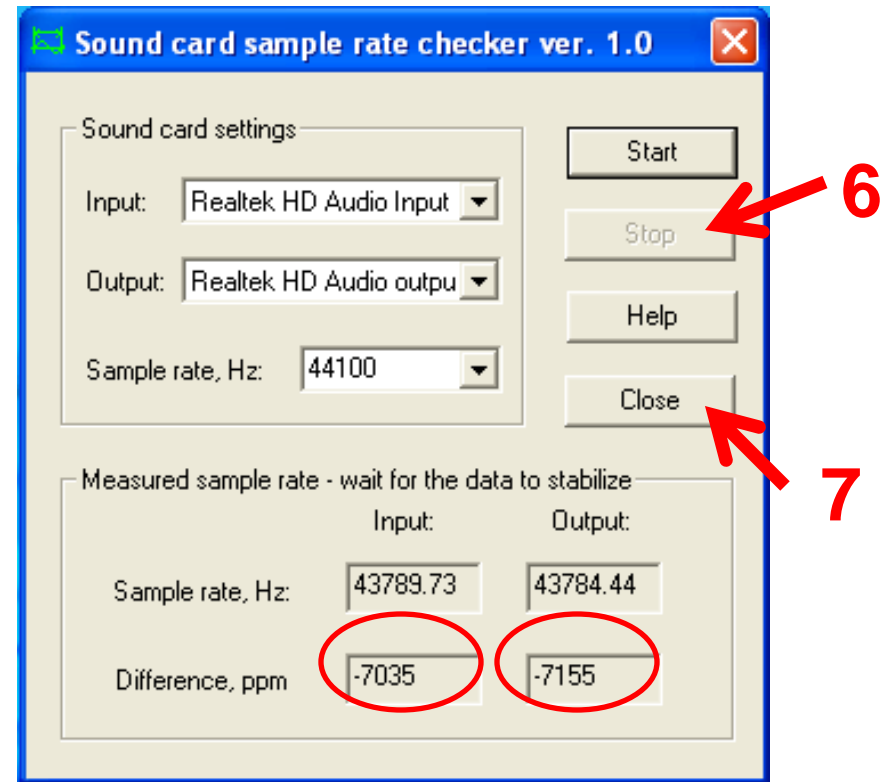
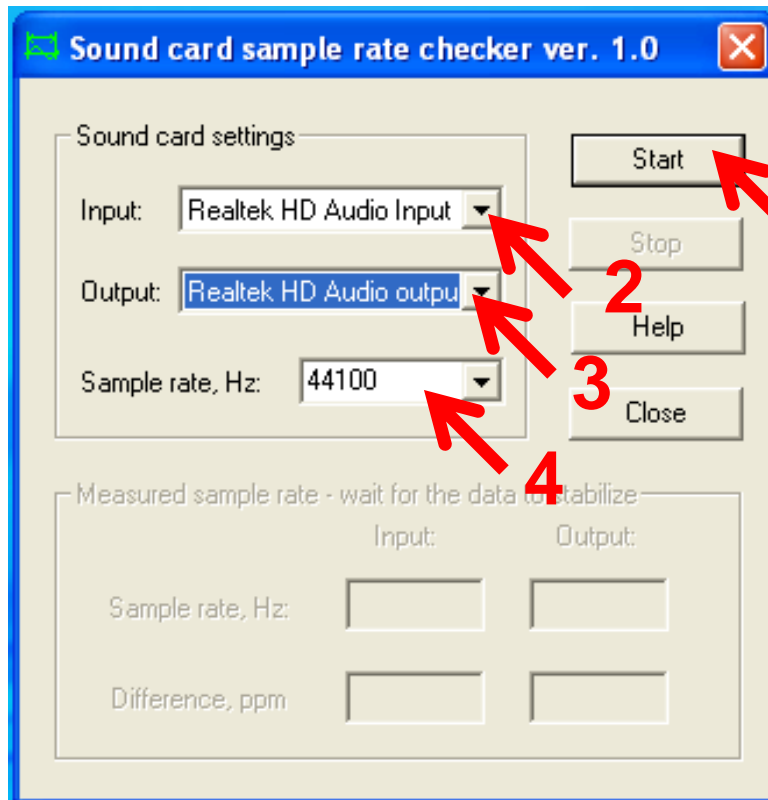


Exit Fldigi



Check Your Sound Card Sample Rate

Video demonstration: <http://www.youtube.com/watch?v=-1wZ7uIA-Qs&feature=related>



Start Fldigi Again

- Double-click the Fldigi desktop icon or select from the program Start Menu



Adjust the Sound Card Settings

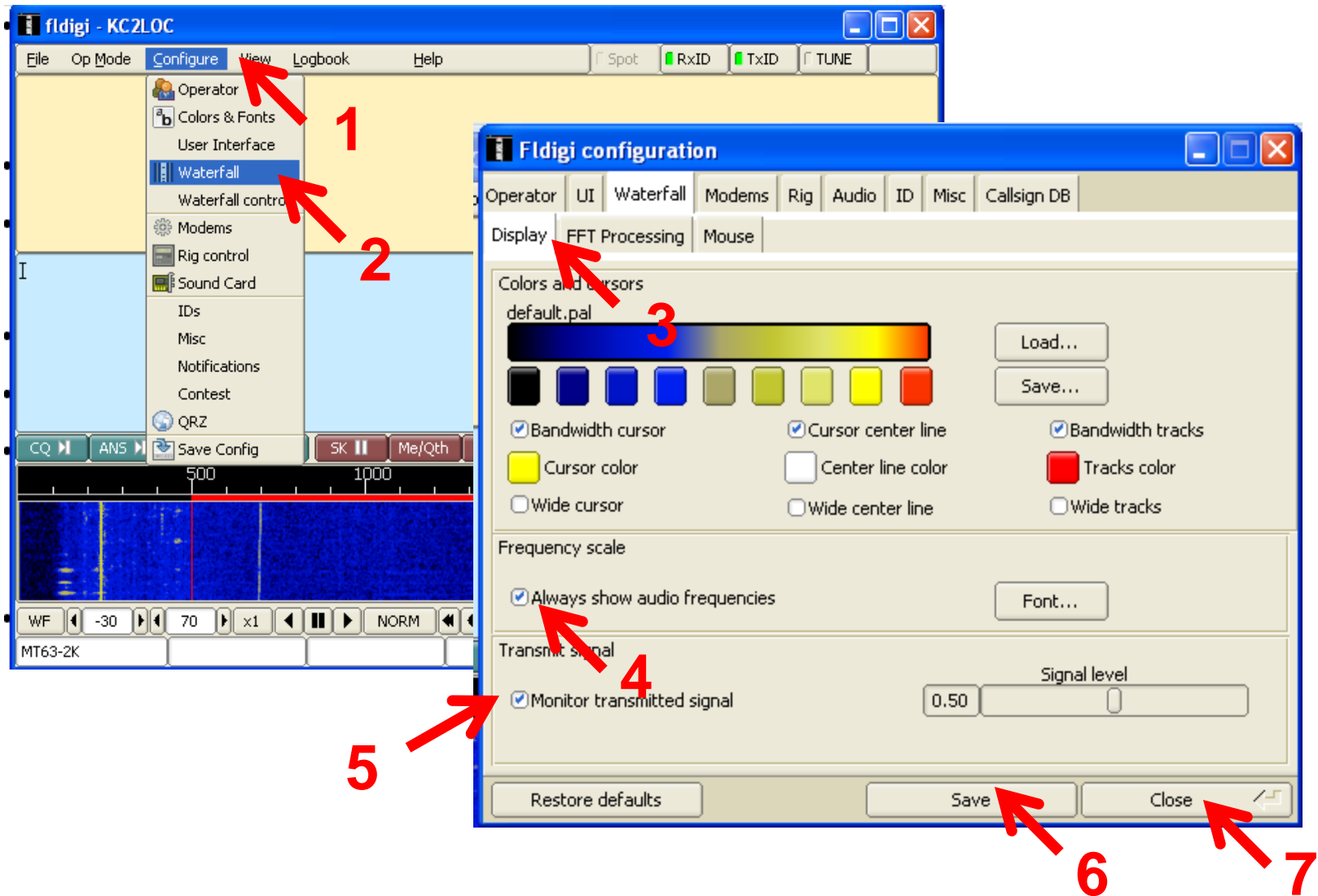
The image shows the Fldigi software interface with the 'FIdigi configuration' dialog box open. The 'Audio' tab is selected, showing settings for sample rate, corrections, and audio channels. Red arrows and numbers 1 through 7 highlight the following elements:

- 1**: Points to the 'Configure' menu in the main application window.
- 2**: Points to the 'Sound Card' option in the left sidebar.
- 3**: Points to the 'Audio' tab in the configuration dialog.
- 4**: Points to the 'RX ppm' input field, which is set to 5.
- 5**: Points to the 'TX ppm' input field, which is set to -462.
- 6**: Points to the 'Save' button at the bottom of the dialog.
- 7**: Points to the 'Close' button at the bottom of the dialog.

Additional visible settings in the 'Audio' tab include:

- Sample rate: 44100 (native) for Capture and 44100 for Playback.
- Converter: Linear Interpolator.
- Corrections: TX ppm set to -462, TX offset set to 0.
- Enable right audio channel: checked.

Configure Waterfall



Configure Identification Settings

The image shows the fldigi software interface with the 'Configure' menu open. The 'IDs' option is selected in the left sidebar. The 'Fidigi configuration' dialog box is open, showing the 'ID' tab. The 'Video Preamble ID' section has 'Transmit mode ID' and 'Transmit video text' (set to 'CQ') checked. The 'CW Preamble ID' section has 'Transmit callsign' (set to '18') checked. The 'Reed-Solomon ID (Rx)' section has 'Detector searches entire passband' and 'Mark previous frequency and mode' checked. The 'Reed-Solomon ID (Tx)' section has 'Transmit modes' checked. The 'Pre-Signal Tone' section has a value of '0.0' seconds. The 'Save' and 'Close' buttons are highlighted with red arrows and numbered 3 and 4 respectively. Red circles and arrows highlight the 'Transmit callsign' and 'Detector searches entire passband' options, with the text 'Not Checked' written in red next to them. Red numbers 1 and 2 point to the 'Configure' menu and the 'IDs' option in the sidebar.

1

2

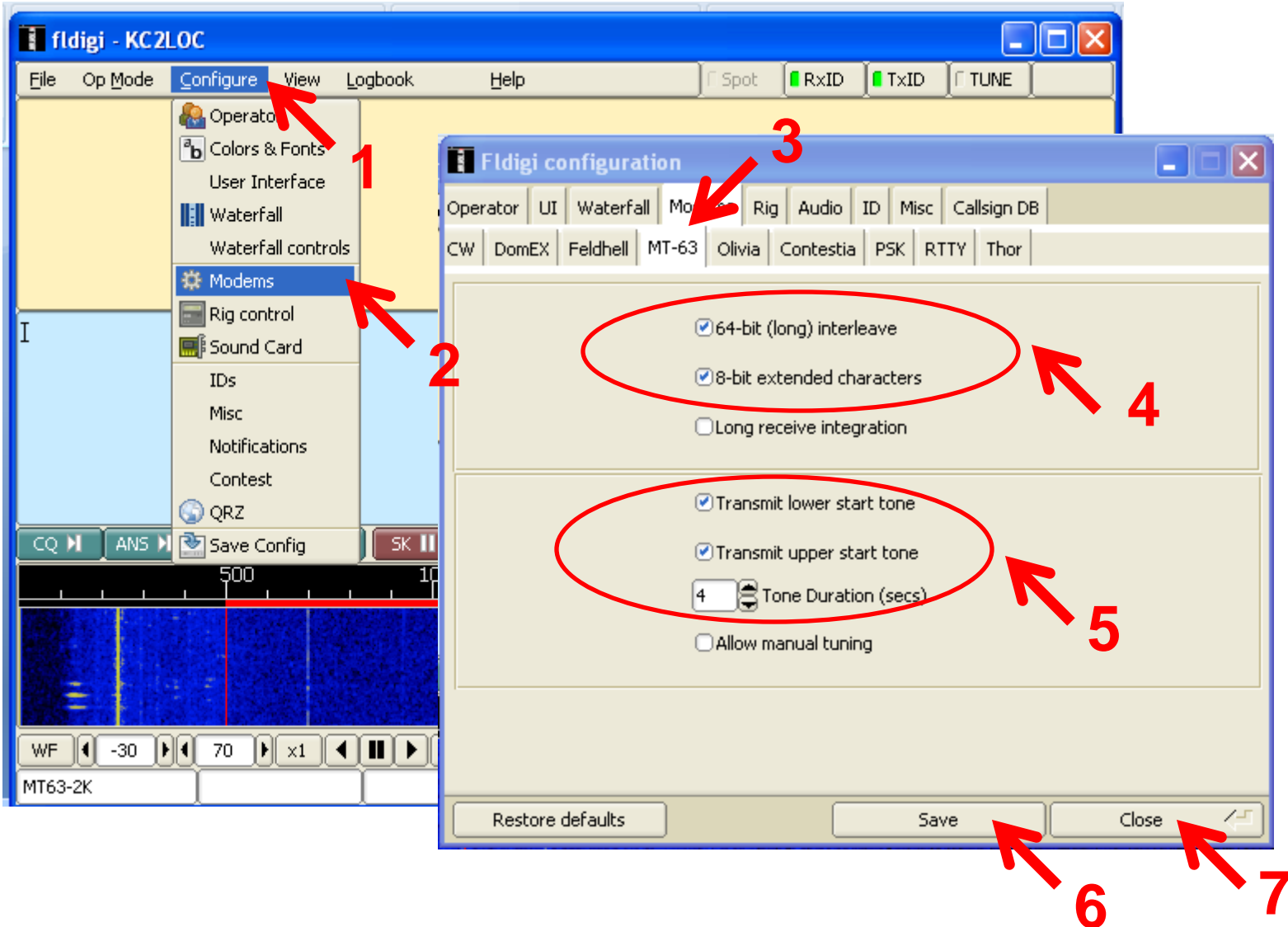
Not Checked

Not Checked

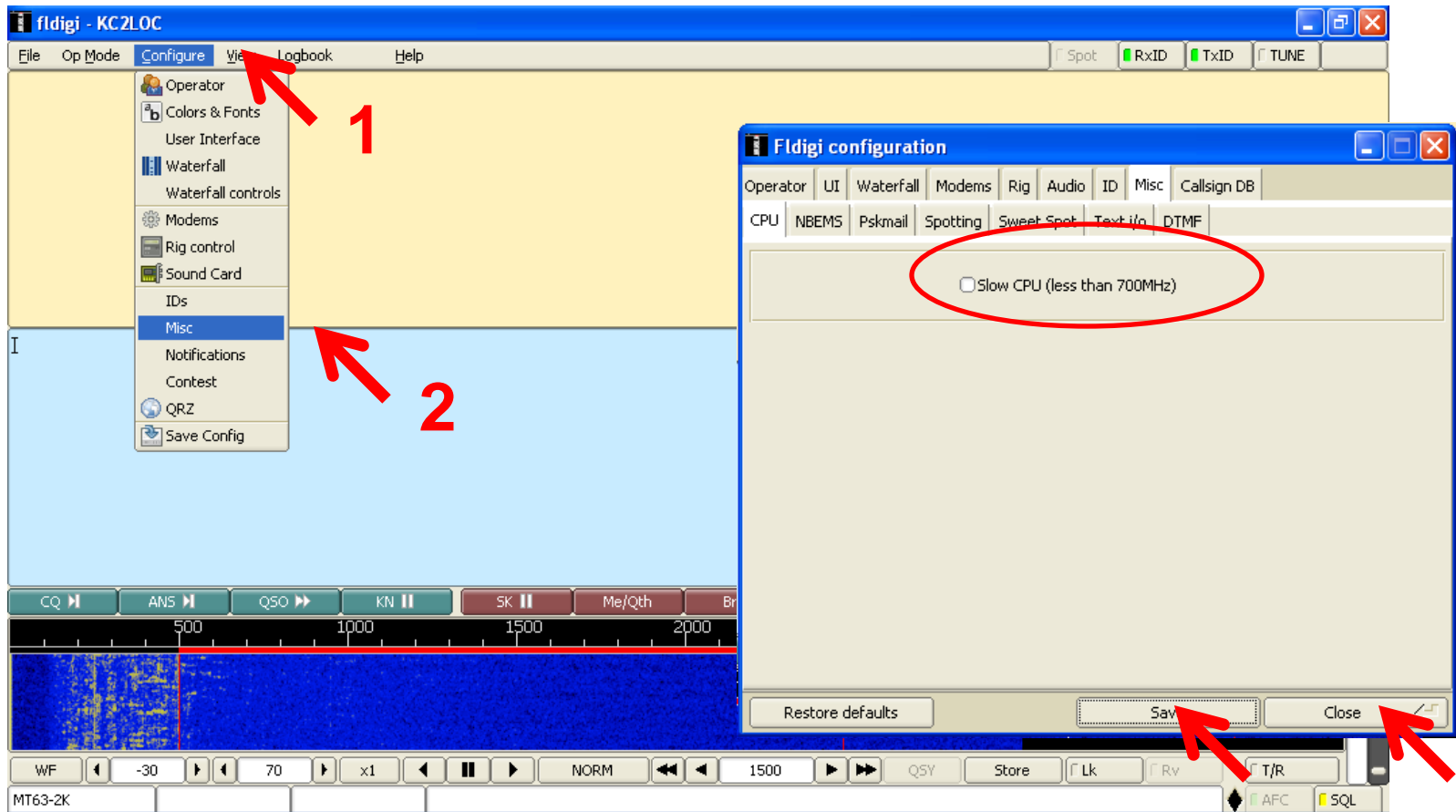
3

4

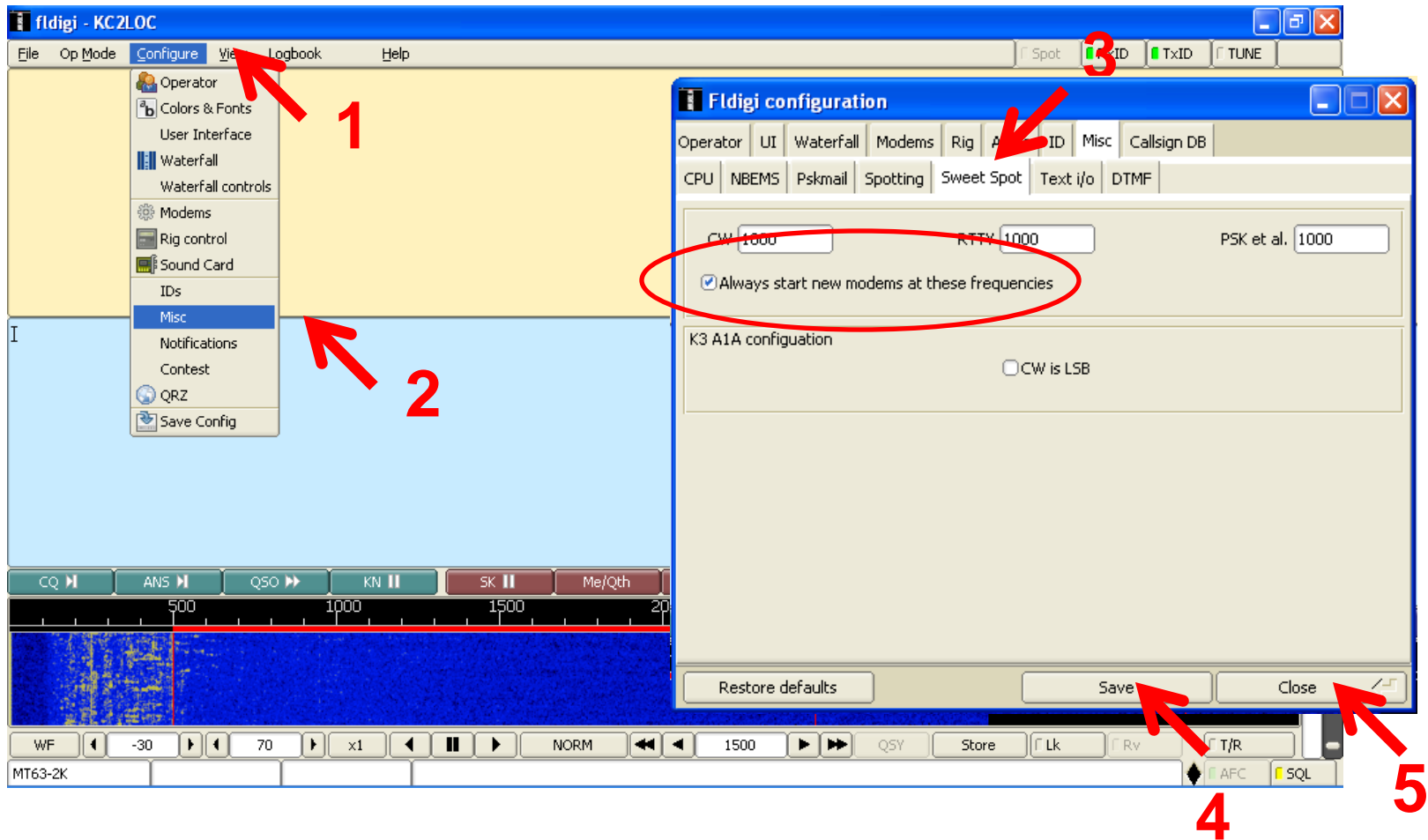
Configure the Modem



Using an Old Computer?

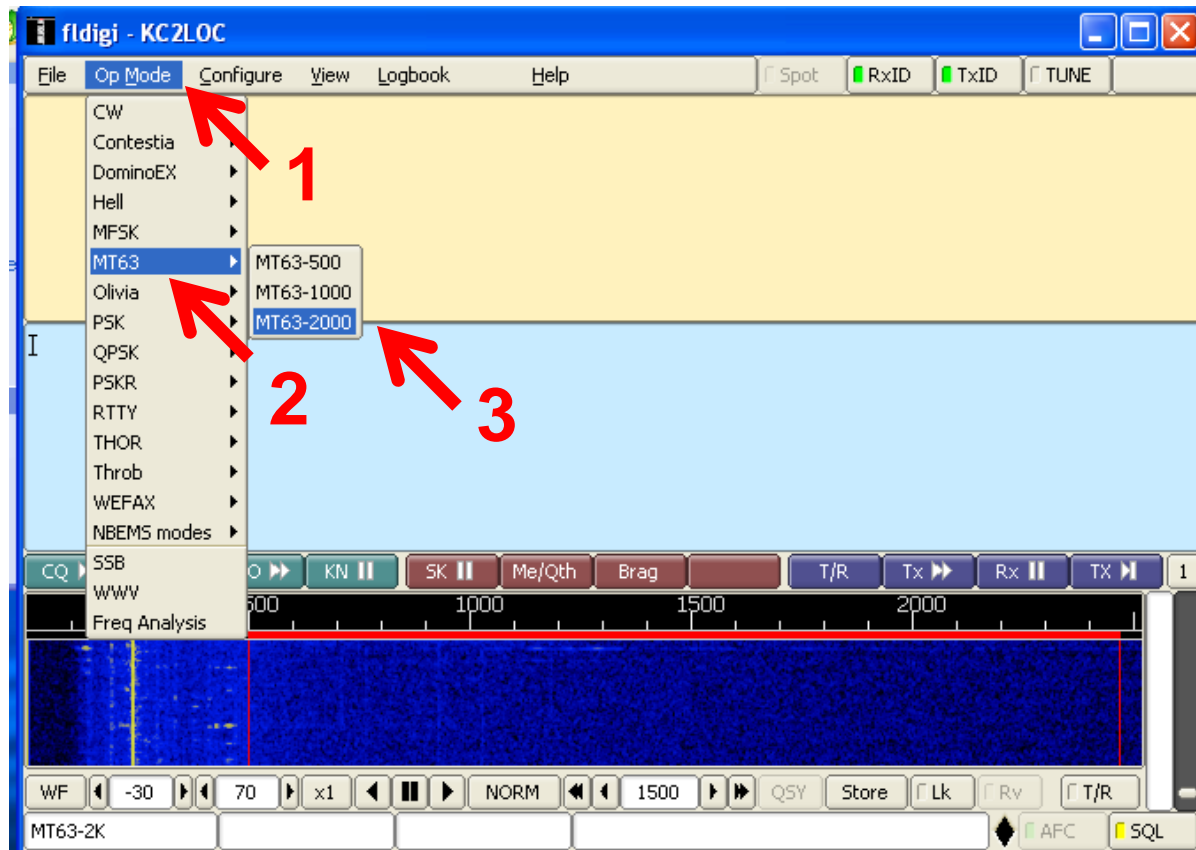


Set the Modem Starting Point



Set the Digital Operating Mode

- For VHF nets use MT63-2000



Enable NBEMS Features

The image shows the fldigi software interface with the 'Configure' menu open and the 'fldigi configuration' dialog box displayed. Red arrows and numbers 1 through 7 highlight the steps to enable NBEMS features:

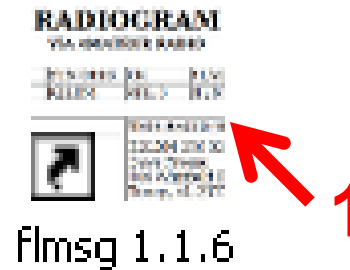
- 1: Click on the 'Configure' menu item.
- 2: Click on the 'Misc' option in the configuration menu.
- 3: Click on the 'NBEMS' tab in the configuration dialog.
- 4: Check the 'Enable' checkbox under 'NBEMS data file interface'.
- 5: Check the 'Open message folder' checkbox under 'NBEMS data file interface'.
- 6: Click the 'Save' button at the bottom of the dialog.
- 7: Click the 'Close' button at the bottom of the dialog.

Additional settings shown in the dialog include:

- Reception of fldmsg file:
 - Open with fldmsg
 - Open in browser
- fldmsg: C:/Program Files/fldmsg-1.1.6/fldmsg.exe
- Local fldmsg

Start Flmsg

- Double-click the Flmsg desktop icon or select from the program Start Menu



Configure Flmsg

The image shows the FLMSG 1.1.5 application window with the 'flmsg configure' dialog box open. The dialog box contains the following settings:

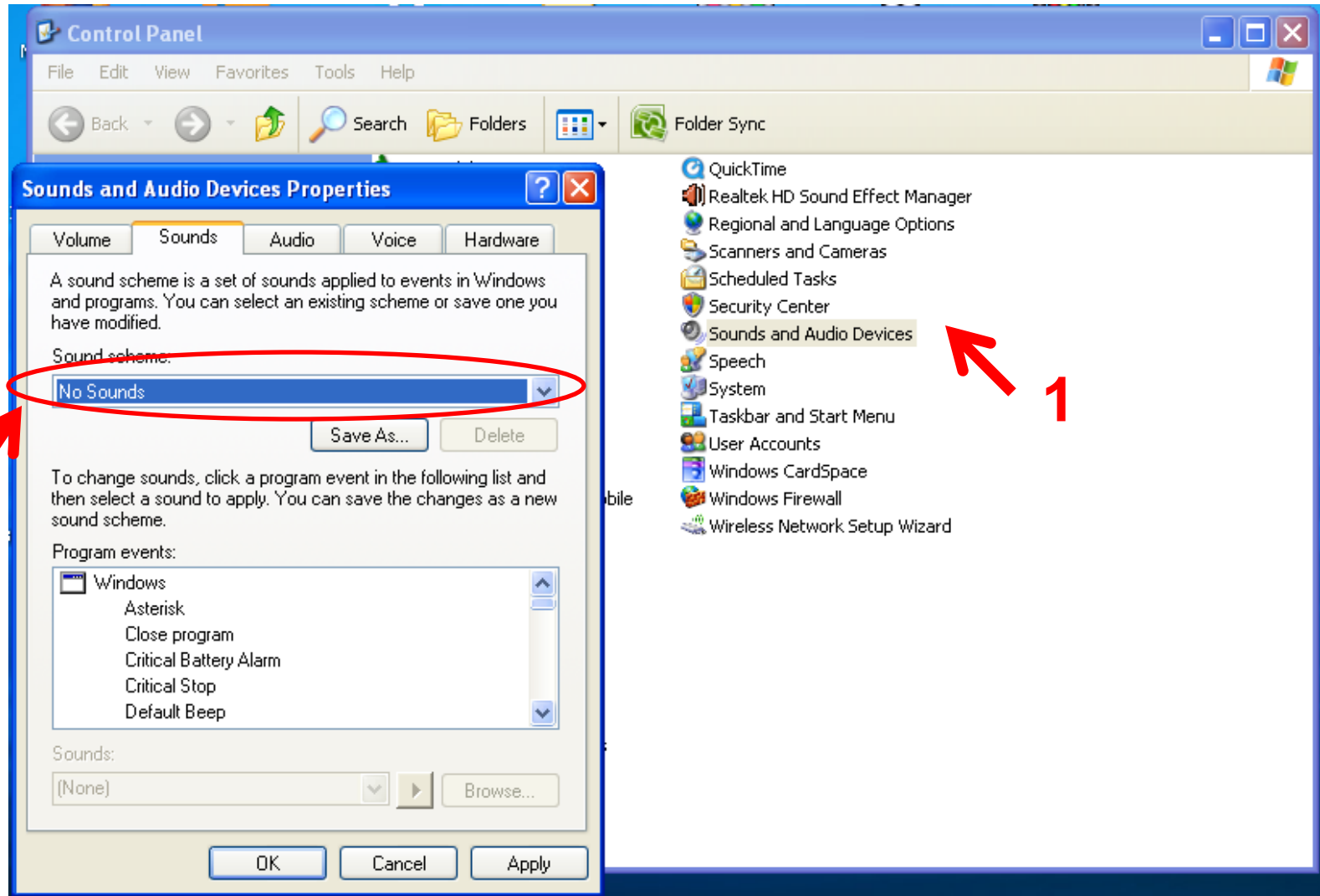
- Date:** YYYY-DD-MM, MM/DD/YY, DD/MM/YY
- Time:** hhmmL, hh:mmL, hhmmZ, hh:mmZ, hhmm UTC, hh:mm UTC
- Radiogram format:** Call: Tel: Name: Addr: City/St/Zip: message words/line
- Wrap:** Open folder when exporting
- Naming Files:** Callsign, Date-time, Serial #, Next #
- Radiograms:** Auto incr', Next #
- Buttons:** close

Red arrows and numbers indicate the following points of interest:

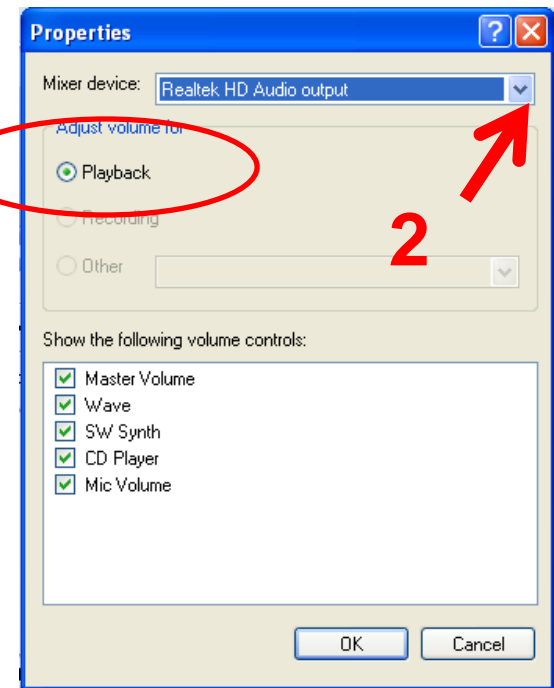
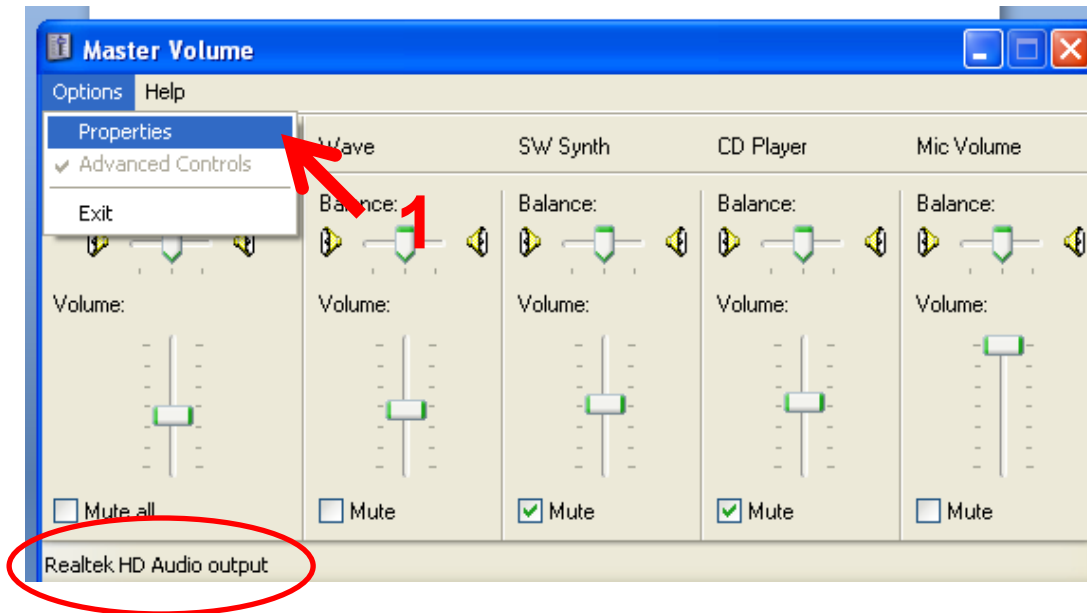
- 1:** Points to the 'Blank' menu item in the application's menu bar.
- 2:** Points to the 'Wrap' checkbox in the dialog box.
- 3:** Points to the 'Callsign' and 'Date-time' checkboxes in the 'Naming Files' section.
- 4:** Points to the window title bar and the 'close' button.

Computer Sound Adjustments

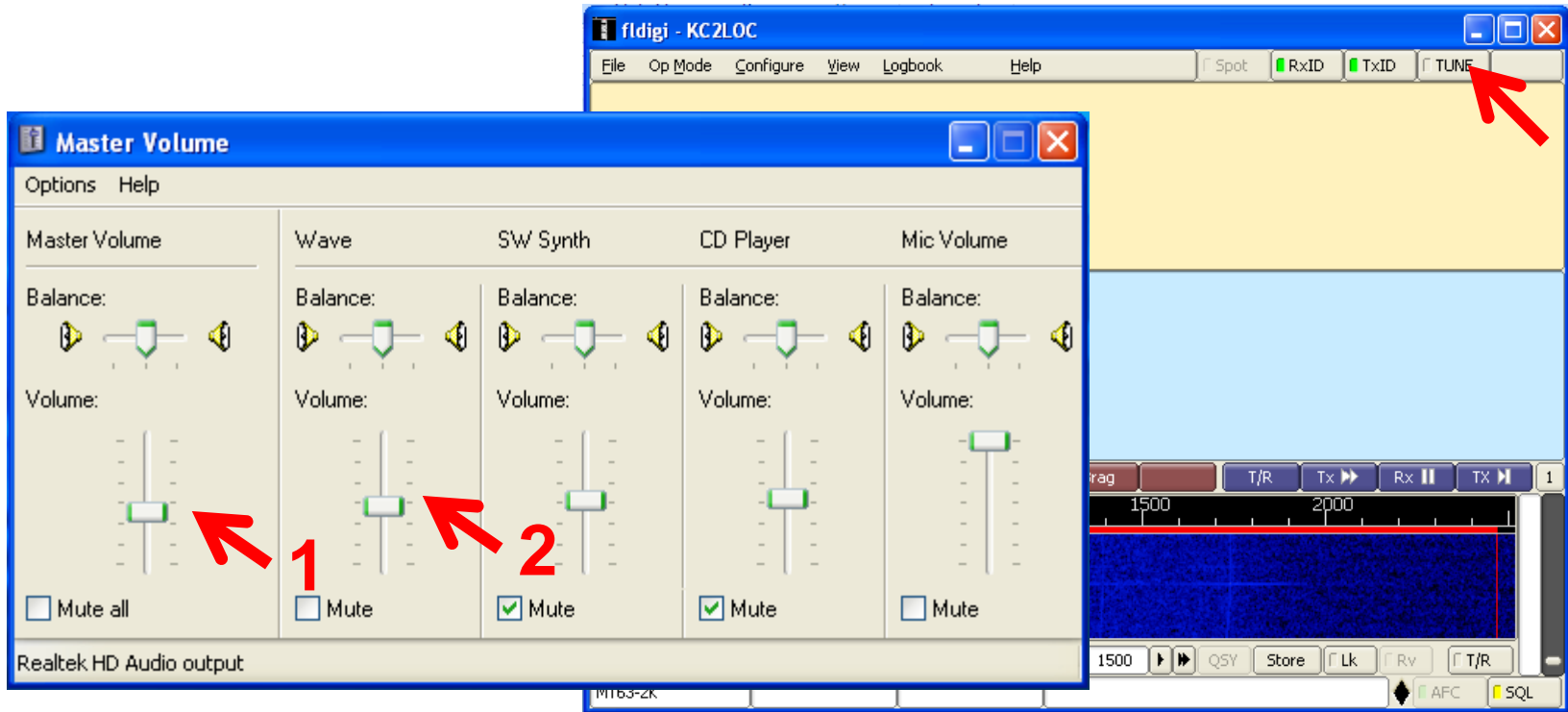
Turn Off Windows Sounds



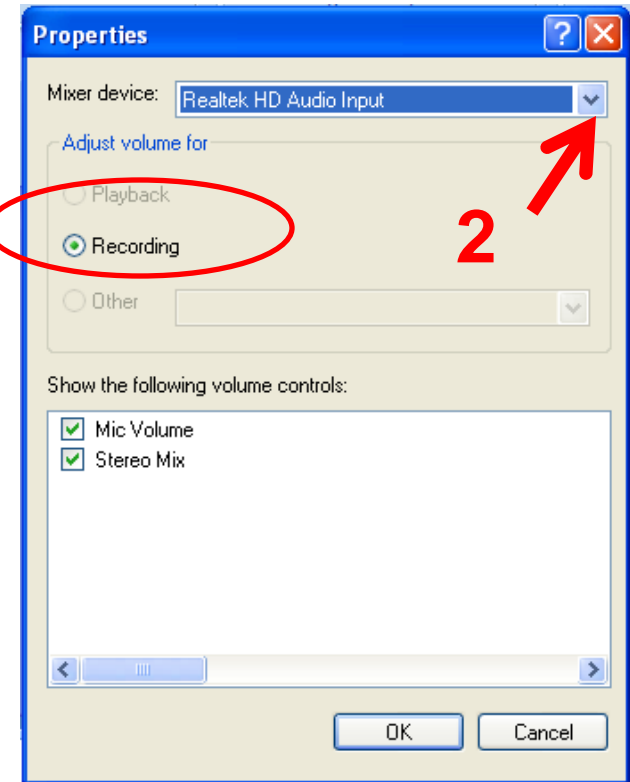
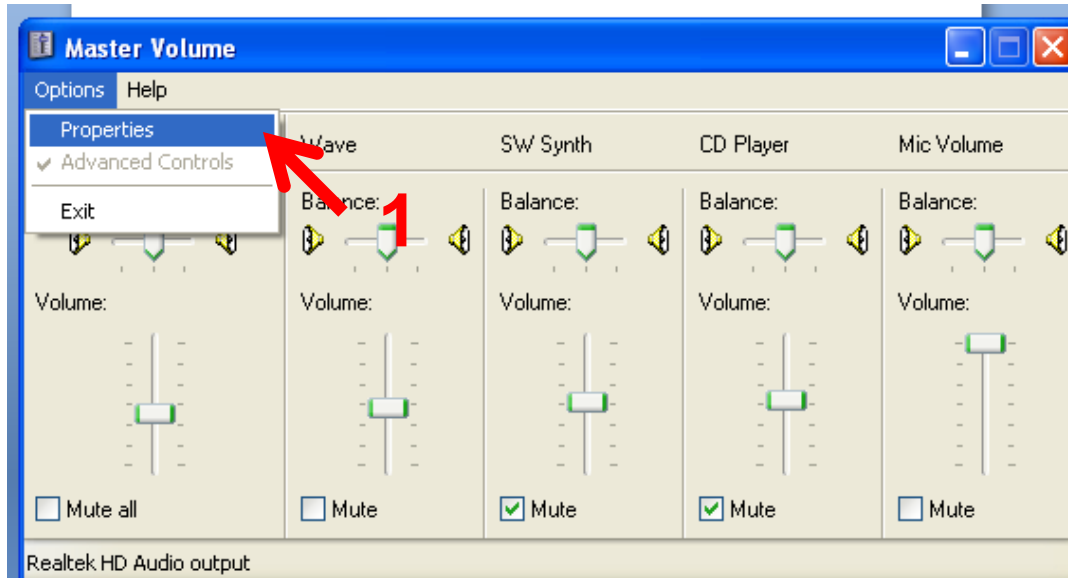
Select the Computer Playback Device



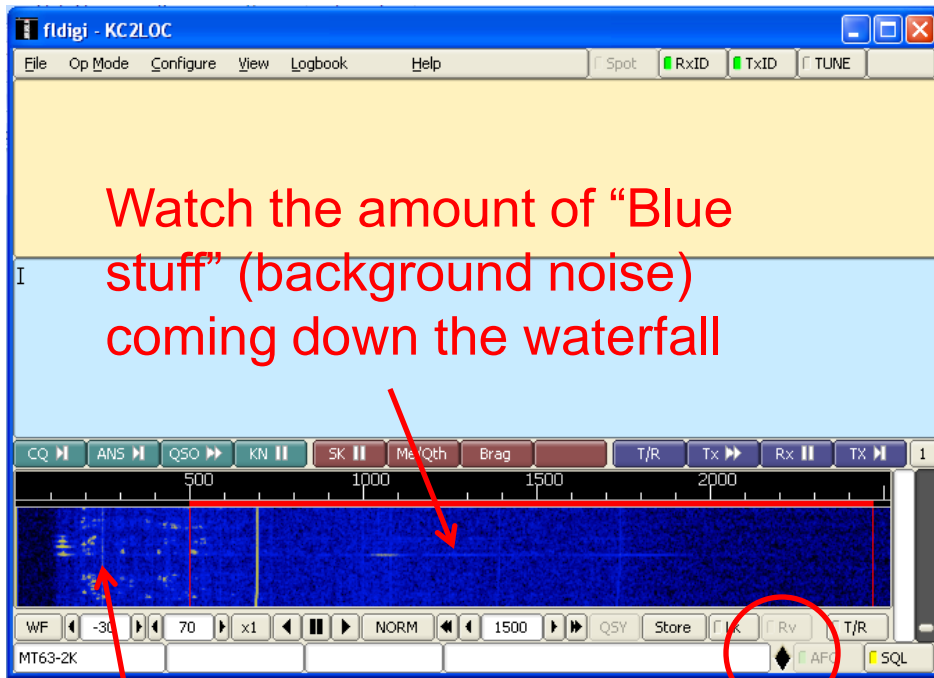
Adjust the Computer Playback Volume



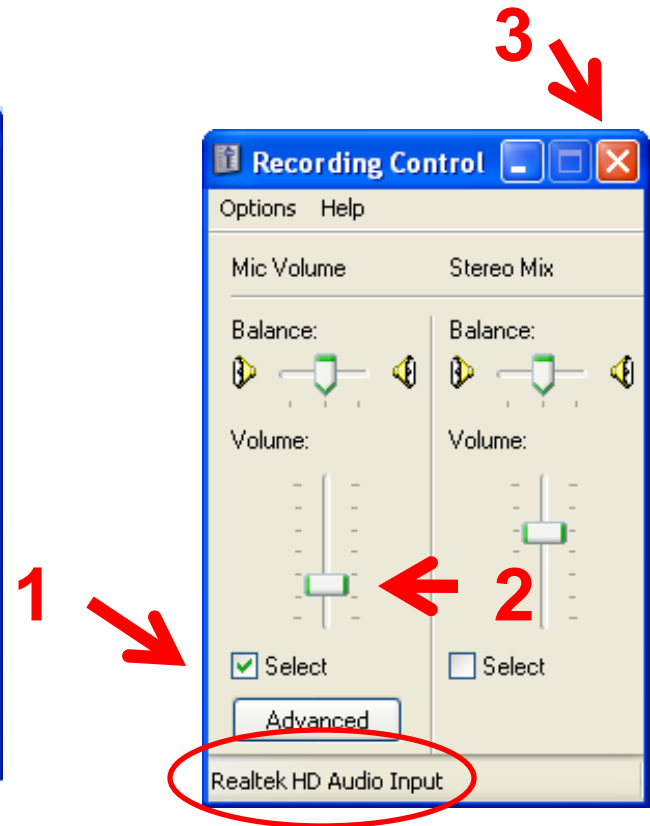
Select the Computer Recording Device



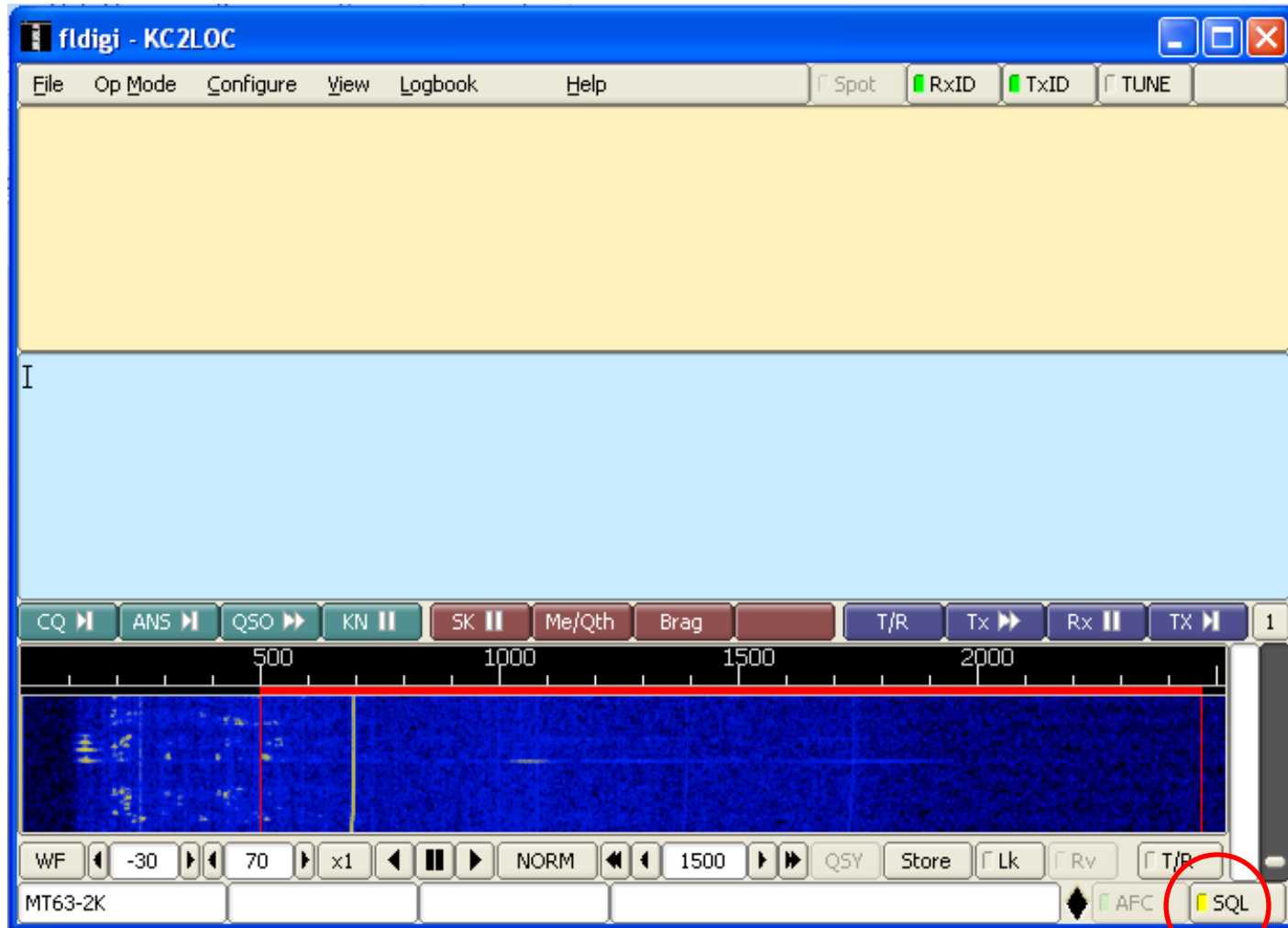
Adjust Computer Recording Volume



Level is too high if you see any yellow here or red here



Adjust Squelch Settings



← 2

1

It's Demo Time!

FLMSG: 1.1.0a

File Template Config Help filename: MedEm_001.f2s

ICS Radiogram Generic Blank

203 205 206 213

Originator Responder

To k2lbn Pos. O'Hara Township

Fm w1hkj Pos.

Sub. Situation Report - F3 tornado

Message: Date 2009-09-29 Time 00:03 UTC

1. # injured 4 at O'Hara Township
2. # casualties 2 & "4" unknown
3. # displaced 30
4. Available doctors 1
5. Available nurses 2
6. Request:
a. shelter 30
b. morgue transport 2
c. ambulance transport 4, from Hazel Green UMC to City Hosp.

Sig. Dave Freese Pos. On scene manager

Let's Move Some Traffic



Sending a Message using Fldigi

1. Start the Fldigi program
2. Compose your message in the light blue area or drag & drop a text file. Leave a few carriage returns at the beginning of the message
3. On your radio, announce something like “This is KC2LOC, prepare to copy one routine MT-63 2000. Over.” and wait for response
4. Click on TX >| macro button
5. When sound starts coming from computer speaker, press your radio mic PTT button and hold it near the speaker.
6. When sound stops, release the PTT button

Receiving a Message

1. Have Fldigi program open
2. When digital sounds starts coming from your radio, hold it in the vicinity of the computer microphone
3. As the message is being decoded, you will see the text appear in the Fldigi receive pane

NBEMS Messages

FLMSG: 1.1.0a

File Template Config Help filename: MedEm_001.f2s

ICS Radiogram Generic Blank

203 205 206 213

Originator Responder

To k2lbn Pos. O'Hara Township

Fm w1hkj Pos.

Sub. Situation Report - F3 tornado

Date 2009-09-29 Time 00:03 UTC

Message:

1. # injured 4 at O'Hara Township
2. # casualties 2 & "4" unknown
3. # displaced 30
4. Available doctors 1
5. Available nurses 2
6. Request:
 - a. shelter 30
 - b. morgue transport 2
 - c. ambulance transport 4, from Hazel Green UMC to City Hosp.

Sig. Dave Freese Pos. On scene manager

Sending a Message using Flmsg

1. Start Fldigi and Flmsg programs
2. Compose your message on one of the forms
3. Click on File, Wrap, Autosend
4. When sound starts coming from computer speaker, press your radio mic PTT button and hold it near the speaker.
5. When sound stops, release the PTT button

Help & Support

- Software and Help Sheets
 - <http://www.w1hkj.com/download.html>
- Support
 - paNBEMS YAHOO Group
 - ny-nbems YAHOO Group
 - <http://www.wpanbems.org/>
 - YouTube videos, search for “NBEMS”

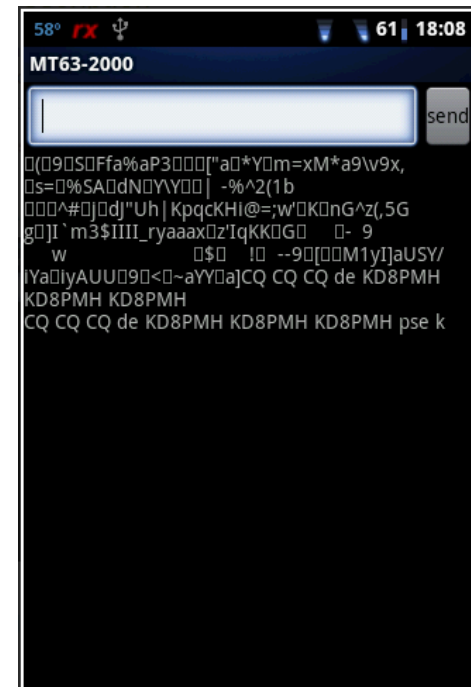
Where to Get Practice

- **Sunday**
 - paNBEMS Traffic/Ragchew Net starts at **10:00 AM** local time every Sunday morning with Net Control call on 3.5835 MHz USB using 8/500 Olivia, 1000 Hz center waterfall frequency.
 - wpaNBEMS Net UHF Sunday Eve FM net starts at **8:00 PM** local on **W3YJ-R - Echolink Node #443450** (Pittsburgh) with testing of MT63 2k long (2000 Hz, 64 bit long interleave).
 - Ontario County RACES Training net starts at **8:00 PM** local on W2ONT repeater (144.850 / 145.450 pl 110.9) MT63 2k long (2000 Hz, 64 bit long interleave) and voice.
- **Tuesday**
 - paNBEMS Formal/Directed Net starts at **6:00 PM** local time every Tuesday evening with Net Control call on 3.5835 MHz USB using 8/500 Olivia, 1000 Hz center waterfall frequency. Our backup frequency is 3.592 USB.
- **Wednesday**
 - U.S. EASTERN AREA NBEMS NET from 7:00 pm - 8:00 pm every Wednesday evening on 7.036 Mhz USB / Waterfall Spot 1 Khz at 7PM EST/EDT
Notes: Start with Olivia 8/500 mode. Keep your RSID turned on for any mode changes.

What's Next?

- Digital Modes on your Phone

- <https://market.android.com/details?id=net.thinkindifferent.mt63>
- <http://www.appbrain.com/app/droidpsk-psk31/com.wolphi.psk31>



Thank you et 73



Ross Mazzola, KC2LOC