

# NBEMS Primer

The Narrow Band Emergency Messaging System (NBEMS - pronounced "N-beams") is a suite of software programs based around Fldigi and designed for point-to-point, fast, error-free, emergency messaging which takes up very little space on the ham bands.

The system is designed primarily for use on the VHF two-meter band or on HF with NVIS antennas. You do not require an interface between your radio and computer. The computer soundcard is used as the modem and the audio is relayed through it using the speakers and microphones of each device.

NOTE: This primer is a work in progress and will be updated when new information is obtained. Please check frequently for new updates.

## Computer Set UP

For best results you should set up your computer sound card. If you are using your computer for both NBEMS and for personal use you may want to set up a separate User Account for NBEMS since certain settings will restrict use of your sound card.

Turn off your windows sounds. You do not want various bongs, twirps and clangs being transmitted while sending a message.

Use your control panel to adjust the speaker volume to 80% and your microphone volume to 60%. Disable any enhanced features on your microphone such as noise canceling and boost.

For detailed instructions click the link for your operating system.

[Windows 8](#)

[Windows 7](#)

[Windows Vista](#)

[Windows XP](#)

## Software Set UP

Software versions for a variety of operating systems can be downloaded free of charge by clicking [this link](#).

Download page: updated 15 April 2013							
	Linux Binary	Windows Setup	OS X dmg	Puppy Pet (1)	Source	Help	Release Info
<a href="#">Fldigi / Flraq</a>	<a href="#">fldigi-3.21.70.bin</a> <a href="#">README</a>	<a href="#">fldigi-3.21.70.setup</a>	<a href="#">fldigi-3.21.70.dmg</a>	<a href="#">fldigi-3.21</a> <a href="#">flraq-4.3</a>  <a href="#">petlibs</a>	<a href="#">fldigi-3.21.70</a>   required for all fl__ applications	<a href="#">Fldigi-Help</a>  <a href="#">Flraq-Help</a>  <a href="#">fldigi manual (pdf)</a>	<a href="#">Maint'</a>
RigCat Xmls	<a href="#">xml archives</a>						
Flamp:	<a href="#">flamp-1.0.01.bin</a>	<a href="#">flamp-1.0.01.setup</a>	<a href="#">flamp-1.0.01.dmg</a>	<a href="#">flamp</a>	<a href="#">flamp-1.0.01</a>	<a href="#">Flamp-Help.html</a>  <a href="#">Flamp-Help - adobe reader</a>	
Flwrap:	<a href="#">flwrap-1.3.4.bin</a>	<a href="#">flwrap-1.3.4.setup</a>	<a href="#">flwrap-1.3.4.dmg</a>	<a href="#">flwrap</a>	<a href="#">flwrap-1.3.4</a>	<a href="#">Flwrap-Help</a>	<a href="#">Maint'</a>
Flmsg:	<a href="#">flmsg-1.1.29.bin</a>	<a href="#">flmsg-1.1.29.setup</a>	<a href="#">flmsg-1.1.29.dmg</a>	<a href="#">flmsg</a>	<a href="#">flmsg-1.1.29</a>	<a href="#">Flmsg-Help</a>  <a href="#">Flmsg-Help-PDF</a>	<a href="#">Maint'</a>
Flwkey:	<a href="#">flwkey-1.1.4.bin</a>	<a href="#">flwkey-1.1.4.setup</a>	<a href="#">flwkey-1.1.4.dmg</a>	<a href="#">flwkey</a>	<a href="#">flwkey-1.1.4</a>	<a href="#">Flwkey-Help</a>	<a href="#">Maint'</a>
Flrig:	<a href="#">flrig-1.3.11.bin</a>	<a href="#">flrig-1.3.11.setup</a>	<a href="#">flrig-1.3.11.dmg</a>	<a href="#">flrig-1.3.11</a>	<a href="#">flrig-1.3.11</a>	<a href="#">flrig-help</a>	<a href="#">Maint'</a>
<a href="#">Supported rigs</a>							
Fllog:	<a href="#">fllog-1.1.6.bin</a>	<a href="#">fllog-1.1.6.setup</a>	<a href="#">fllog-1.1.6.dmg</a>	<a href="#">fllog-1.1.6</a>	<a href="#">fllog-1.1.6</a>	<a href="#">fllog-help</a>	<a href="#">Maint'</a>

Once you are on the download page, click and install the indicated files:

fldigi-3.21.70.setup.exe - digital modem

flwrap-1.3.4.setup.exe - file encapsulation / compression

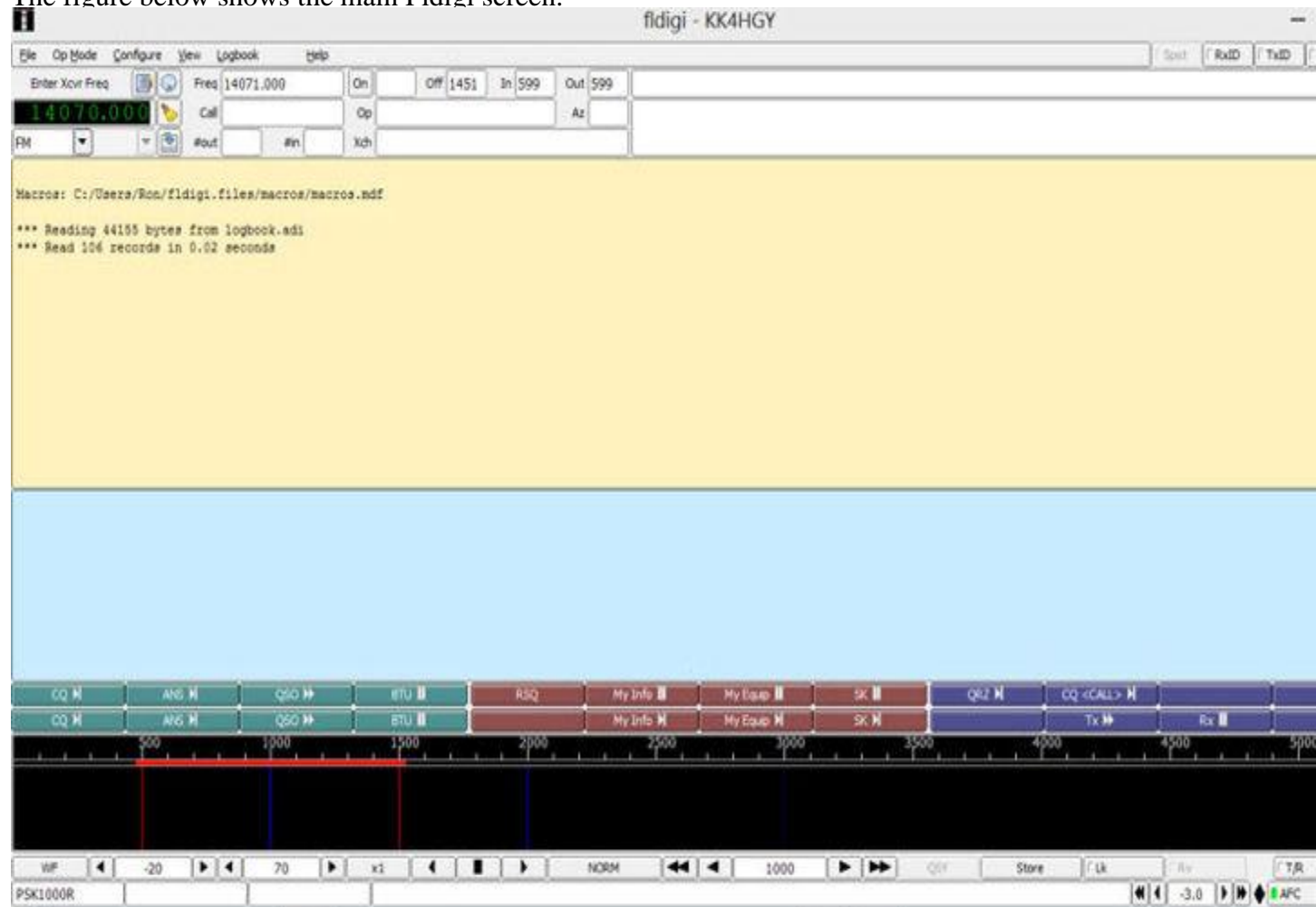
flmsg-1.1.29.setup.exe - message manager

The image shows a screenshot of the 'Fldigi configuration' window, specifically the 'Station' tab. The window has a blue title bar with the text 'Fldigi configuration' and standard window controls (minimize, maximize, close). Below the title bar is a tabbed interface with the following tabs: 'Operator', 'UI', 'Waterfall', 'Modems', 'Rig', 'Audio', 'ID', 'Misc', and 'Web'. The 'Station' tab is currently selected. Inside the 'Station' tab, there are five text input fields with labels to their left: 'Callsign:' with the value 'KK4HGY', 'Name:' with the value 'Ron', 'QTH:' with the value 'Live Oak, FL - Suwannee County', 'Locator:' with the value 'EM80jf', and 'Antenna:' with the value 'GSRV'. At the bottom of the window, there are three buttons: 'Restore defaults', 'Save', and 'Close'.

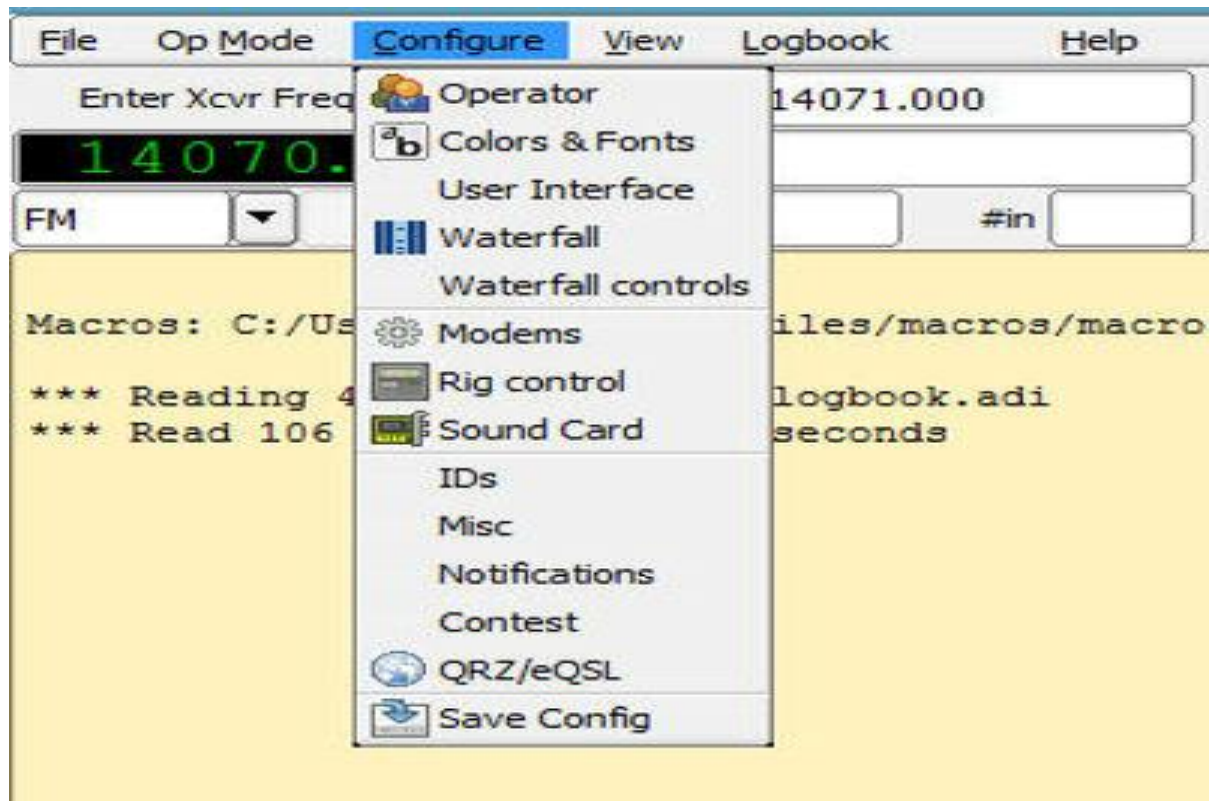
Field	Value
Callsign:	KK4HGY
Name:	Ron
QTH:	Live Oak, FL - Suwannee County
Locator:	EM80jf
Antenna:	GSRV

Next, complete the initial configuration with the entry of your Callsign, Name, QTH, Locator and Antenna.

The figure below shows the main Fldigi screen.



and the following figure shows the Fldigi Main Menu



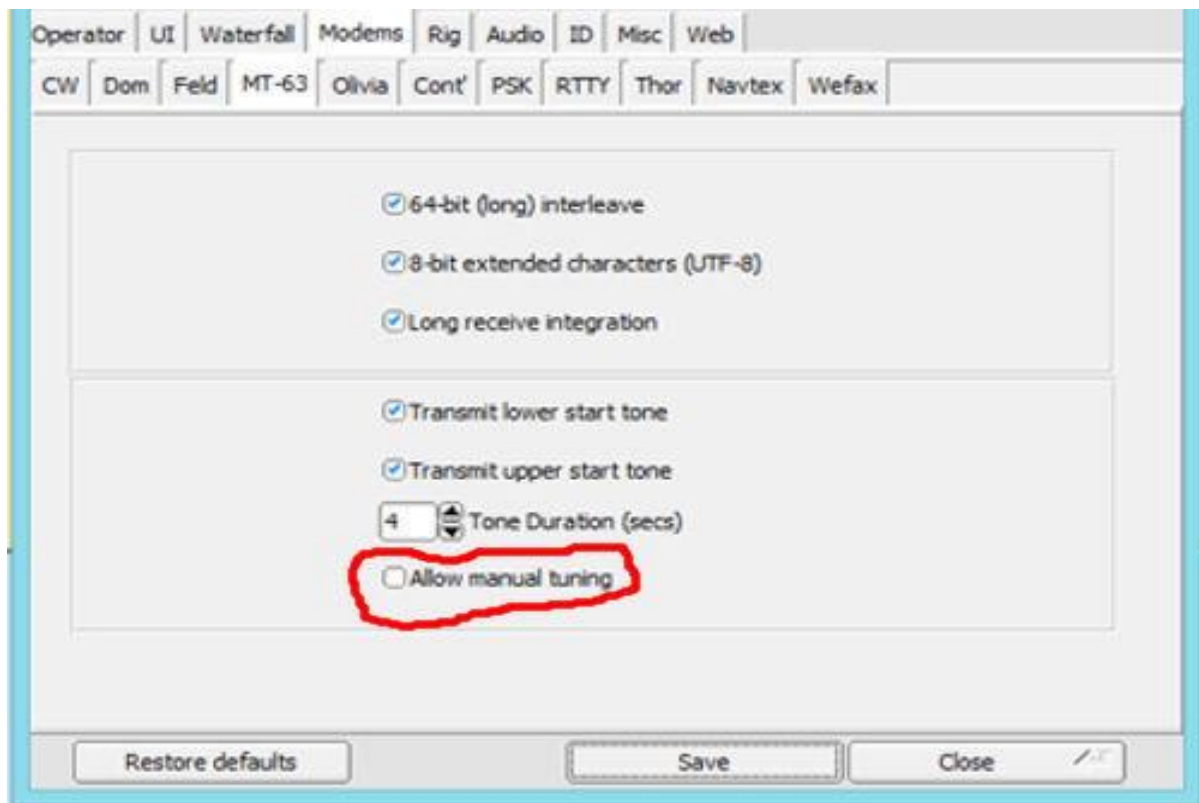
Click on **Configure** to reveal the drop down configuration menu.

Fldigi has many configuration menus and sub menus. Some menus can be ignored but others are needed to make critical changes.

The **Operator** menu should have automatically popped up when you installed Fldigi. If you have not already entered your Callsign, name and other pertinent information, do it now.

**Important** These instructions are intend to set up Fldigi for NBEMS operation. The settings may be different if you use Fldigi for other types of communication such as PSK-31 via HF.

Skip down to Modems and click it, then click MT-63.



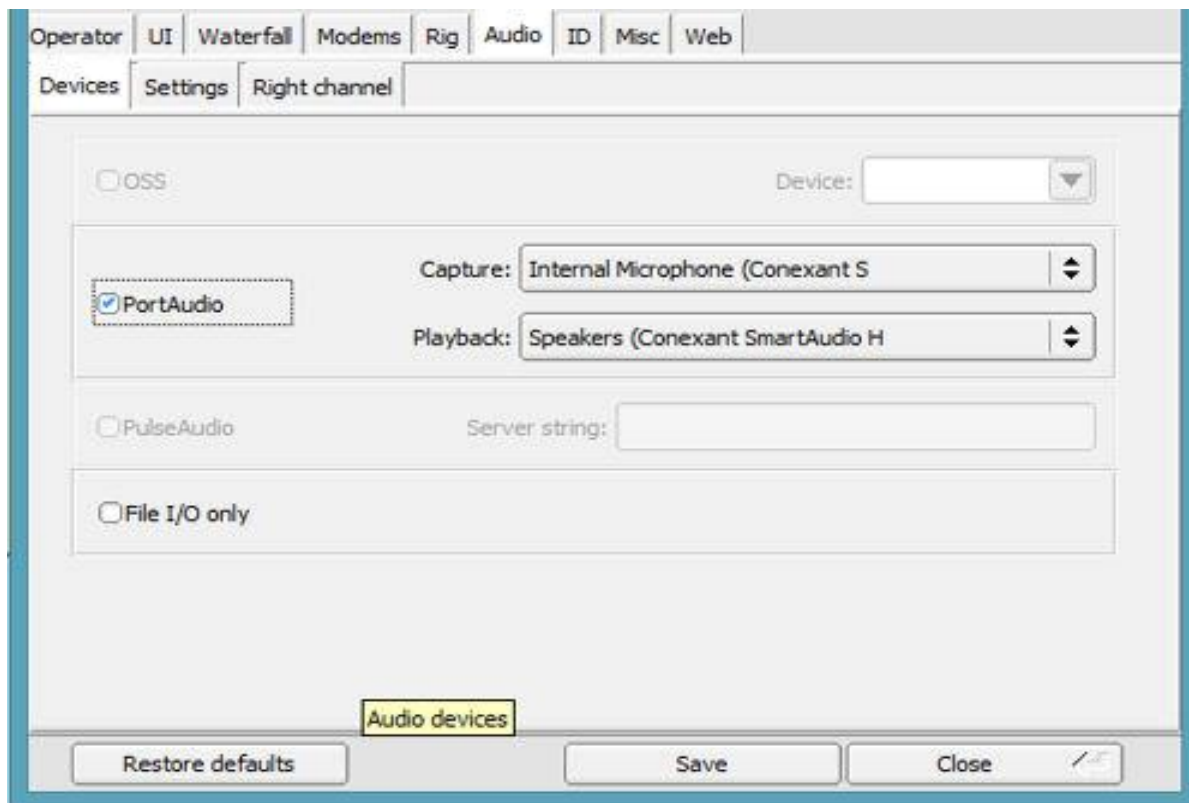
### Configure MT-63 Modem settings

Be sure all boxes are checked except **Allow manual tuning**, then click SAVE.

Olivia and PSK are two other popular modes used with NBEMS but no changes are needed to their configurations and the default values can be used.

Now click on the **Audio** configuration menu

and you will see the AUDIO screen shown below.



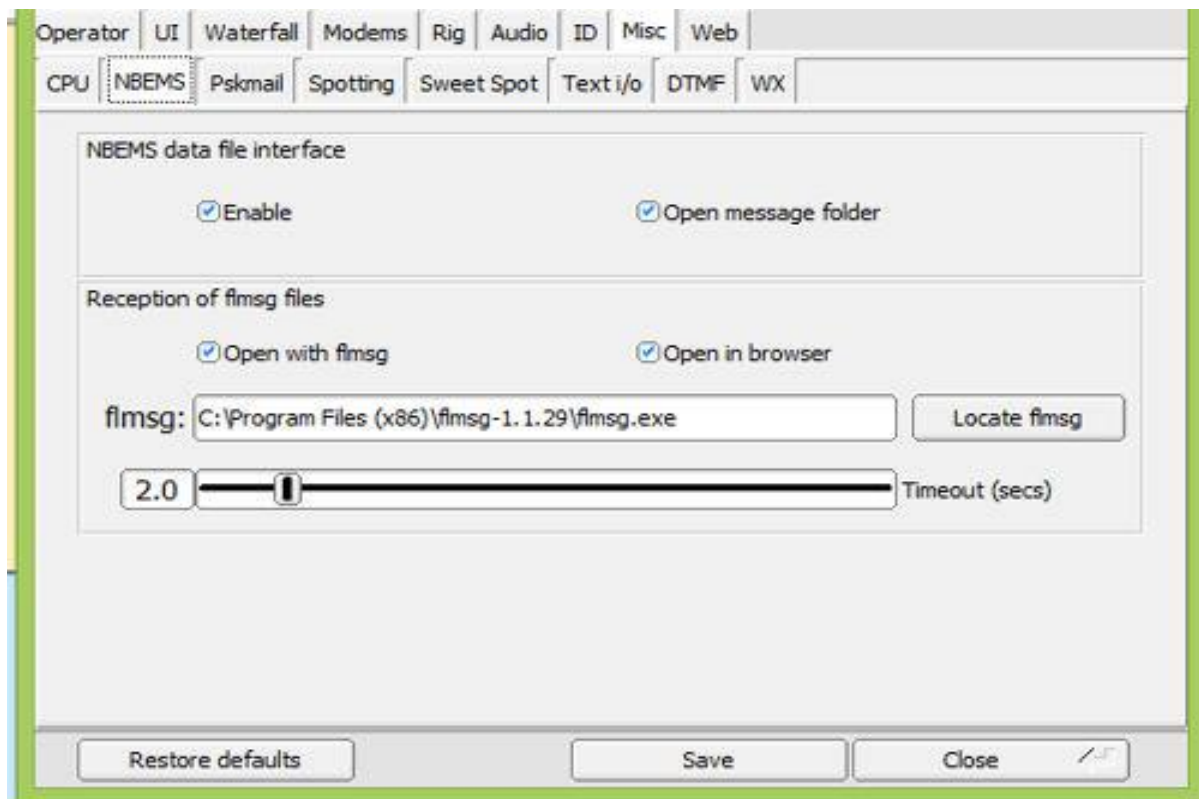
### Configure sound card audio settings

Be sure **Port Audio** is checked, then set the capture device to your PC microphone and set your playback device to your PC speakers. (if you choose to use an interface such as Signalink or Rigblaster, be sure the correct USB codec devices are selected.)

**File I/O** only should **not** be checked.

Click SAVE, then click MISC. Once you see the MISC menu, click the NBEMS tab to view the NBEMS setup menu.

NBEMS Setup Menu



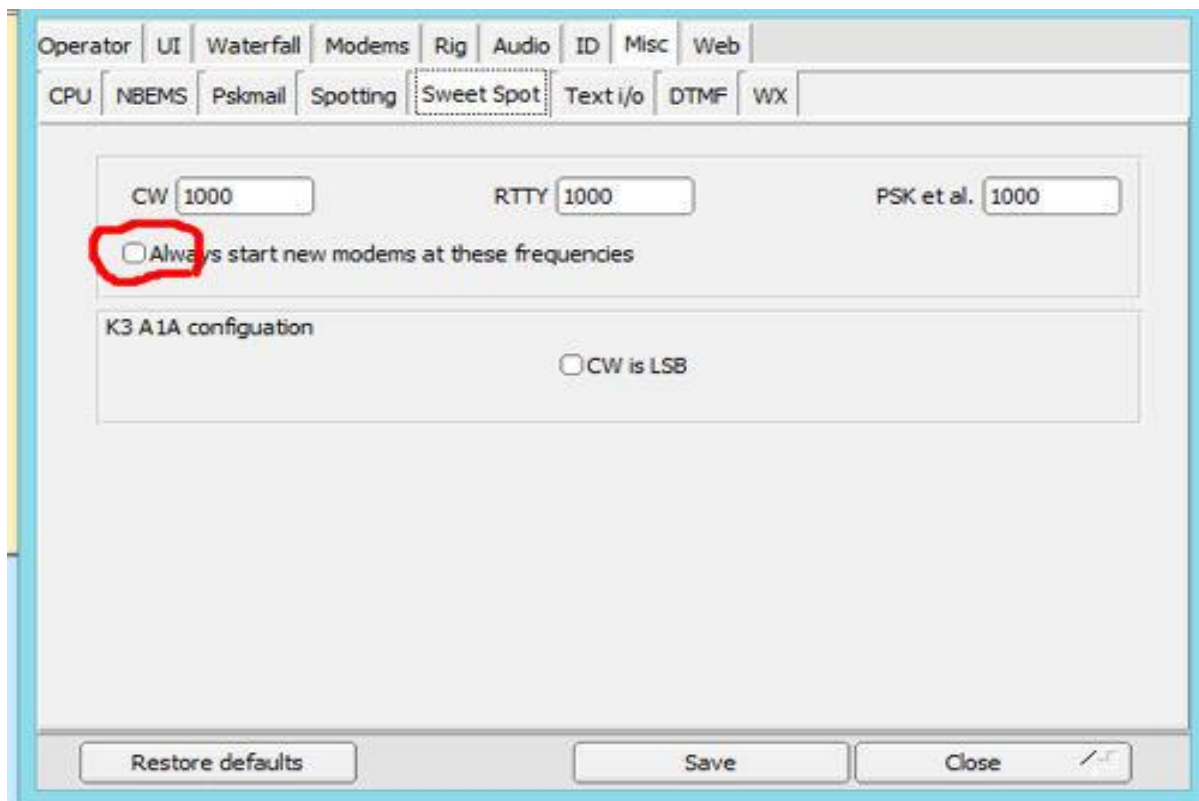
## Configure NBEMS settings

Once you are on the NBEMS setup menu check all boxes and then provide the path to flmsg.exe by clicking the **Locate flmsg** button - then click on flmsg.exe in the next dialog box and hit open - you should see the path field populated automatically, if not you can type in the location of flmsg.exe manually. Click SAVE when you are finished.

Now click on the Sweet Spot tab.

Sweet Spot setup





### Configure Sweet Spot settings

All three frequencies should be set to 1000. Be sure **Always start new modems at these frequencies** is NOT checked. Click SAVE if you have made a change.

### Conclusion

This concludes the setup procedure. Now you're ready to go right? Not so fast - if you're going to use these devices (Rig and PC) without an interface unit, your audio levels and the location of equipment is important.

The microphone of your PC must be close to the speaker of your rig and vice-versa. The audio levels should be reduced to a point where the "noise" of digital transmissions would be sufficient to modulate a carrier without filling the room. This would be important at an EOC where adding to the level of background noise would be discouraged.

A word about modes. You can select many different modes of digital operation in Fldigi from the Op Mode menu. Current NBEMS standards have MT-63 2000 for two meter FM and Olivia 8-500 for HF. This is evolving, with more robust modes being developed (such as PSKR the R is for robust) so adopt a flexible approach here. It's just a mouse click to select mode in Fldigi and any special NBEMS requirements for a mode (such as those for MT-63 see above) can be altered from the configure/modems menu.

### **Test Results**

We are still testing various modes and features of NBEMS, but we want to share what we have found so far.

We have 5 amateurs on our NBEMS testing team: Pat, WA4VKD, Joe KI4TRR, Pete N4KXG, Jon KD4AMP and Ron, KK4HGY.

We have sent messages using MT63-2K, Olivia and DominoEX-22. The first thing we found is that it is very important to place the computer microphone right on top of the radio's speaker and turn the radio volume up just enough to get reliable communication. The same goes with the radio microphone placement. It should be held up right next to the computer's speakers. Lower the volume on the computer speaker as well.

If you have stereo computer speakers, and most people do, we have found that one speaker produces a steady tone and the other speaker produces the buzzing or warbling message signal. Ideally, you should place both speakers next to each other and of course you should hold your microphone up to the speaker that is generating the message.

We also found that there is a big difference in the time it takes to send a message using the different modes. For instance, to send a 1000 character message, it took Olivia 6 minutes, MT63-2K 1 minute, DominoEX-22 1.5 minutes and PSKR-1000 only 22 seconds.

We have not made a full test of the PSKR-1000, so for now we feel that if you have full or nearly full quieting conditions you should use the MT63-2K mode and for less favorable conditions the DominoEX-22 should be used. Testing is continuing so these recommendations may change.

We get together on the Suwannee Amateur Radio Club repeater (145.270mhz, -600, PL 123) at 3:00pm Monday through Friday to send test messages and we also are now sending a test message after our Thursday nite net meeting at 8:30.

We welcome you all to join us, either on our repeater or yours. Try to check in with the NBEMS testing NET(s) and follow along. Let us know if you get 100% print.

For further information on the Suwannee Amateur Radio Club's NBEMS project click on the links below to send an email:

[Pat McDonnell, WA4VKD@arrl.net](mailto:Pat_McDonnell@arrl.net)

[Ron Austin, KK4HGY@arrl.net](mailto:Ron_Austin@arrl.net)