

# Workshop: NBEMS

Narrow Band Emergency Messaging System  
----- Using Sound Card Technology -----

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# Why Narrow Band Emergency Messaging System?

- We need a way to pass high volume, or very detailed information that is better suited for digital mode than voice. Voice is too slow and error-prone.
- Traffic may include:
  - ✓ Detailed Damage Assessment
  - ✓ Numbers and Types of Injuries
  - ✓ Requests for provisions/supplies/medication/personnel
  - ✓ Directions to field locations

NBEMS can handle this traffic at 20 characters/second, that's 200 wpm, much faster than voice with phonetics for all but the simplest messages.

# Narrow Band Emergency Messaging System **is**

- ✓ Simple
  - ✓ Open Source  (free)
    - ✓ Infrastructure independent: Windows, Mac, Linux
  - ✓ Compatible: any computer, any radio
  - ✓ Accurate (uses 'check sum' technology)
  - ✓ Efficient – takes advantage of the full bandwidth
  - ✓ Effective on VHF/UHF FM and HF SSB
  - ✓ Fun!
  - ✓ Works on Simplex and Repeaters
- 
- ✓ **Download: <http://w1hkj.com/download.html>**

## How Narrow Band Emergency Messaging System works

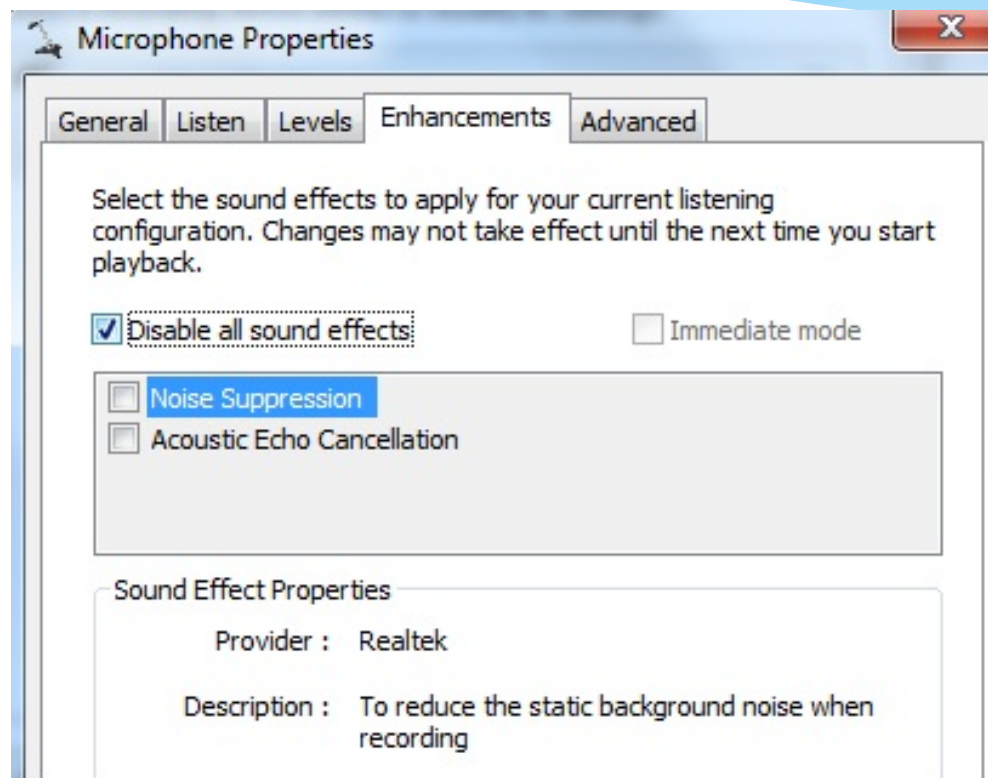
- \* PC's Sound card generates and decodes signals
- \* Computer does all the work, no need for a TNC
- \* PC's sound goes into the radio's microphone
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  - \* Or use an electrical interface, such as KH6TY or Signalink
- \* No need for a powerful new computer - older machines work just fine, even netbooks!

## What's needed for NBEMS ?

- \* Any Computer – laptops and netbooks work just fine
  - \* Some sound cards are known to distort input
  - \* Turn off Windows 7 Enhancements, like Noise Reduction
- \* Any radio with a microphone and speaker
- \* Free Open Source Software
  - \* FLDIGI (**F**ast **L**ight **D**igital Modem application)
  - \* FLMSG (**F**ast **L**ight **M**sg – Forms Manager)
  - \* FLWRAP (**F**ast **L**ight **W**rapper – File encapsulation)

# Turn off Windows 7 Microphone Enhancements

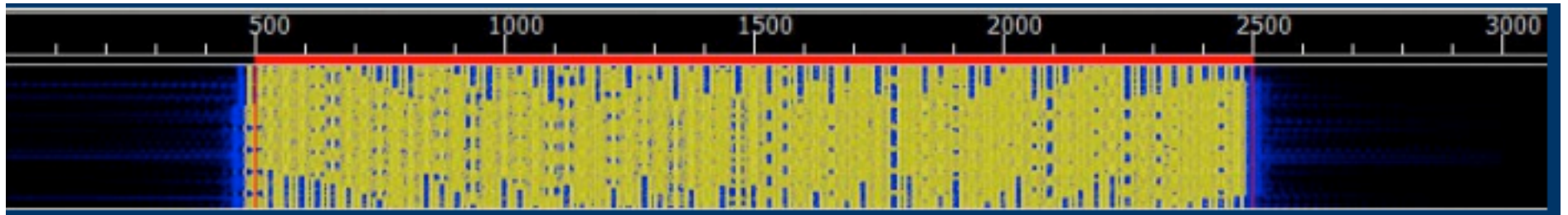
**Disable all sound effects**



## Interfacing NBEMS with Computer

- \* No interface required – in case of an emergency:
  - \* Hold the radio's speaker up to the computer's microphone and the message is automatically decoded.
  - \* Hold the radio microphone up to the computer speaker press PTT and play the message from the PC!
- \* Interface options for computer:
  - \* Rigblaster, Signalink, KH6TY, home brew.
- \* Interfaces make things more reliable and quieter.

# MT63-2000 Waterfall



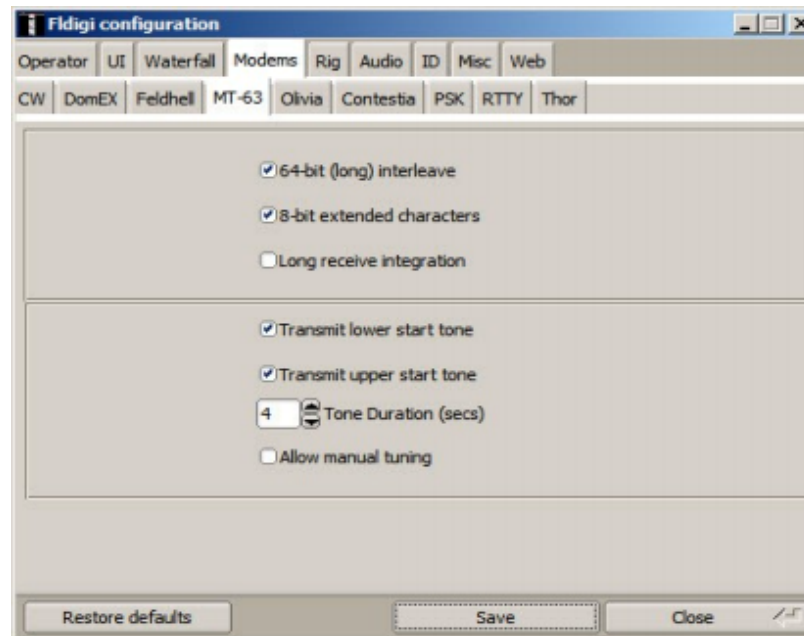
- \* 64 tones sent at same time
- \* Signal width is 2000 Hz
- \* Offset frequency is always fixed at 1500 Hz
- \* Fixed low frequency eliminates tuning errors
- \* Sounds like a buzz saw





# Fldigi Configuration

- \* **Tabs: Modems/MT-63**
- \* **64 bit (long) interleave, 8-bit char extended characters (UTF-8)**
  - \* Provides extra data redundancy, both stations must have same interleave setting.
- \* **Uncheck “Allow manual tuning” for VHF/UHF**



# Verification with Checksums

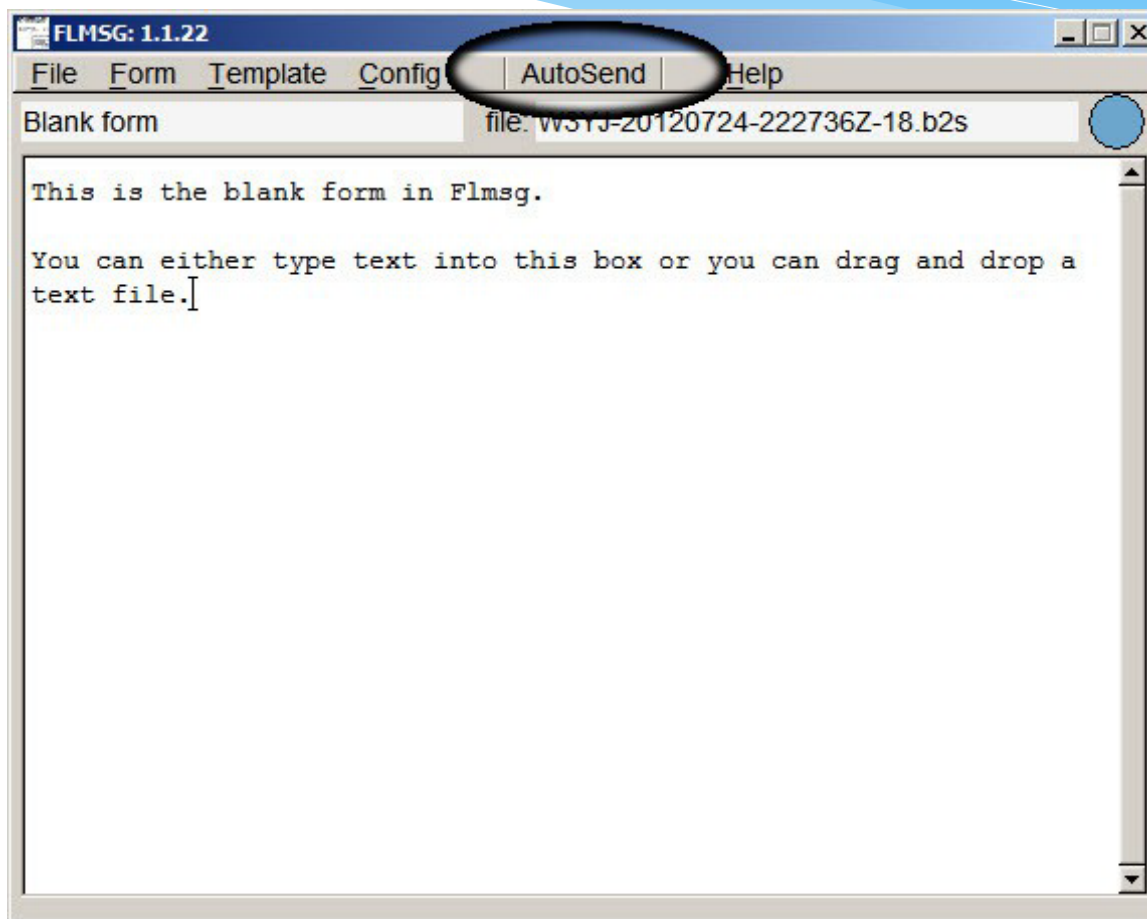
- \* **Checksums allow you to be 100% sure your message was received accurately.**
- \* Checksum is inserted into a file by **Flwrap**
- \* Receiving station computes the checksum on the incoming file and... **if the two checksums are identical, the file was received without error.**
- \* Allows multiple stations to receive and confirm data 100% (also consider flamp for multi-cast).
- \* Great for bulletins like situation updates, weather reports, road closures, lists of contact info.

# Flmsg – Autosend Workflow

- \* One click sending!
- \* Enter text directly into large empty box (or form)
- \* Can also drag-and-drop a text file into box
- \* Push the AutoSend menu
- \* Will be prompted to save file with automatically assigned unique filename
- \* Flmsg will cause Flwrap to wrap (checksum) and Fldigi to automatically send the message

# Flmsg – AutoSend

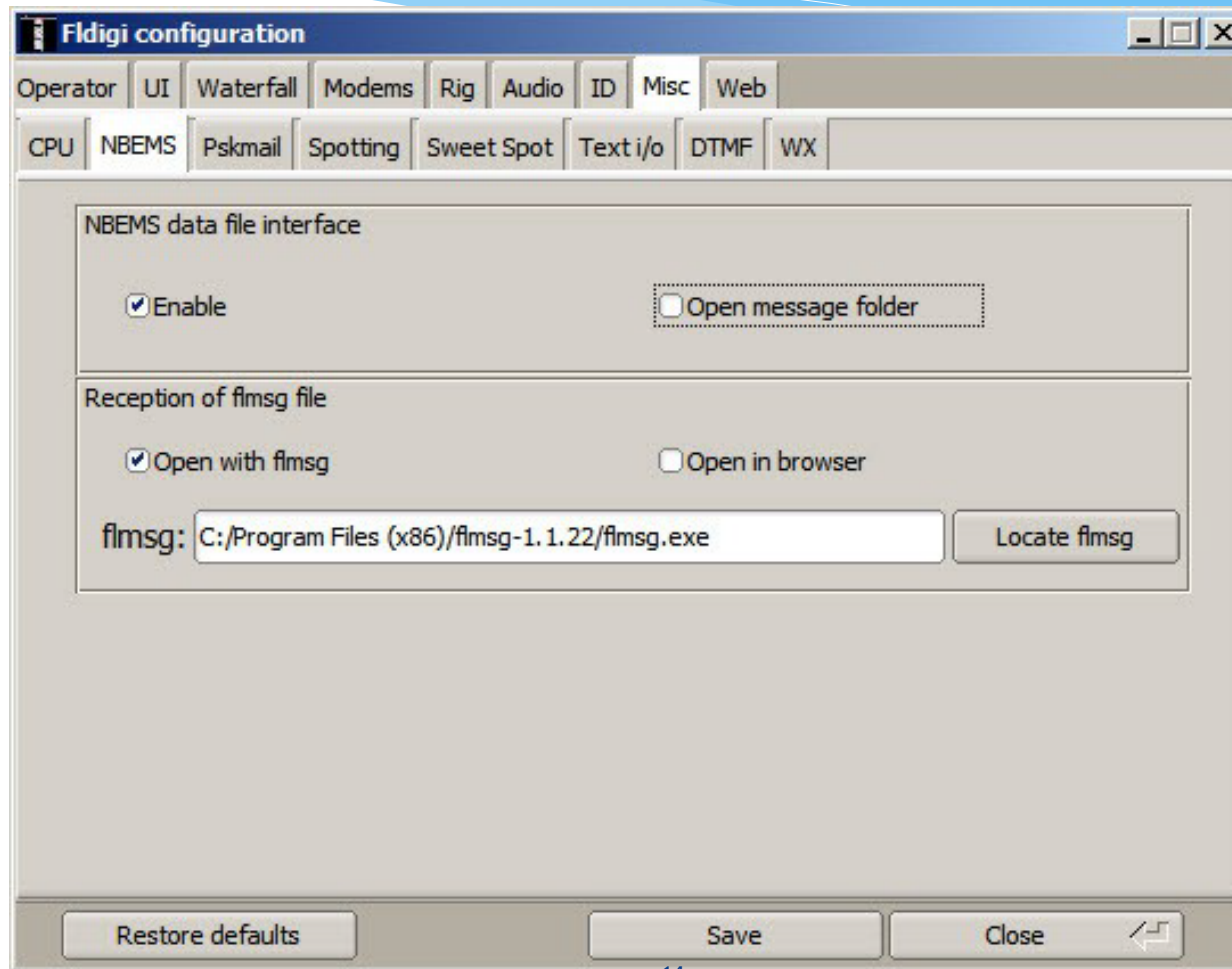
## Blank Form



# Flmsg – Auto Display

- \* Incoming messages automatically opened in Flmsg!
- \* Auto open messages in browsers!
- \* Walk away and come back to see messages!
- \* Display in browser - great for EOC or Served Agency
- \* Configuration:
  - \* In Fldigi, Config->Misc, choose NBEMS tab
    - \* Check appropriate boxes
    - \* Check “Enable NBEMS data interface”
  - \* Enter complete path to flmsg

# Configure **fldigi** Misc, NBEMS Locate flmsg



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- \* **Mac (OS X)** - A file browser is opened to the "Applications" folder. Locate the flmsg icon, and right click on it. Select "Show Package Contents". Double click "Contents". Double click on "MacOS". You will be viewing an icon labeled "flmsg". Drag and drop the icon on to the "flmsg:" entry box and the value will be correctly entered. Example:  
**/Applications/flmsg-1.1.22.app/Contents/MacOS/flmsg**
- \* **PC (Windows 7)** – Find the .exe file, right click on flmsg.exe and choose **Select**. Example:  
**"C:\\Program Files (x86)\\flmsg-1.1.22\\flmsg.exe"**

# Flmsg – more Configuration

**Personal data**

Call:

Tel:

Name:

Addr:

City/St/Zip:

**Configure date/time**

☒ YYYY-MM-DD    ☐ hhmmL

☐ YYYY-DD-MM    ☐ hh:mmL

☐ MM/DD/YY    ☒ hhmmZ

☐ DD/MM/YY    ☐ hh:mmZ

☐    ☐ hhmm UTC

☐    ☐ hh:mm UTC

**Configure files & formatting**

Wrap

☐ Open folder when exporting

Naming Files

☒ Callsign    ☒ Date-time

☒ Serial #     Next #

MARS roster file

Html message text

☒ Word wrap at     characters

**Configure radiogram**

message words/line

☒ Auto incr'

Next #

☒ Show ARL desc'



# Flmsg - Forms

- \* Blank: no fields, just text, but checksum and filed
- \* Plaintext: Title, To, Fm, Sub, Date, Time, Message
- \* ICS: 203, 205, 205A, 206, 213, 214, 216
- \* HICS: 203, 206, 213, 214
- \* Radiograms: IARU, ARRL
- \* Red Cross – Welfare, 5739, 5739A, 5739B
- \* Comma Separated List (CSV)

# Activity two: Transmit message

Fldigi call CQ!

# Activity 3: Forms

- Receive Forms
- Display in flmsg
- Convert to printable HTML format
- All automatically!

# Download NBEMS

- \* Download Page:

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

- \* Also download Help files, including details on more features.