

Introduction to NBEMS

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

For Canejo Valley Amateur Radio Club
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Edited for GERC 4-21-2014
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Objectives

At the end of this presentation you should be able to answer the following questions:


- ✓ Why use Digital Emergency Communications?
- ✓ What is the **Narrow Band Emergency Messaging System** (NBEMS)?
- ✓ How does the Narrow Band Emergency Messaging System work?
- ✓ What equipment is needed for NBEMS?
- ✓ How do we interface NBEMS with a computer?

Why Narrow Band Emergency Messaging System?

- Emergency Communications requires radio operators to pass high volume or very detailed information. Voice is too slow and error-prone.
- The evolution and wide spread use of the Personal Computer that includes an audio card for Digital Signal Processing (DSP) has allowed radio amateurs to develop new modes of digital communications.
- Traffic may include:
 - ✓ Detailed Damage Assessment
 - ✓ Numbers and Types of Injuries
 - ✓ Requests for provisions/supplies/medication/personnel
 - ✓ Directions to field locations

The Narrow Band Emergency Messaging System can handle this traffic at 20 characters/second, much faster than voice 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 Terminal Node Controller (TNC).
- * PC's sound goes into the radio's microphone
- * No need for a powerful new computer - older machines work just fine, even netbooks!
- * Radio's sound goes into PC's microphone
 - * **Or** use a sound interface, such as Easy Digi, Signalink, or Rigblaster (see next slide)

Sound Interfaces for NBEMS – Pick your price



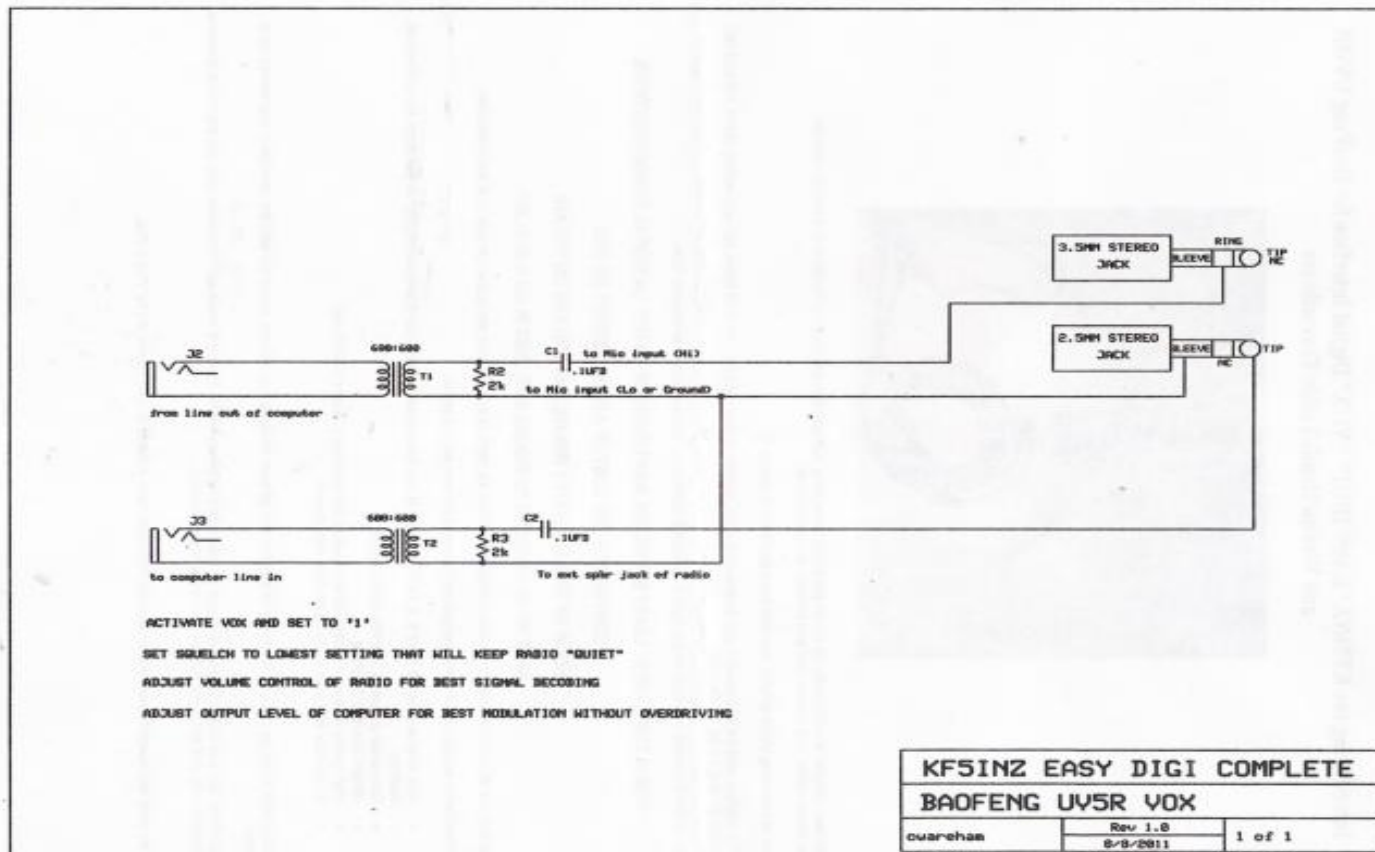
?

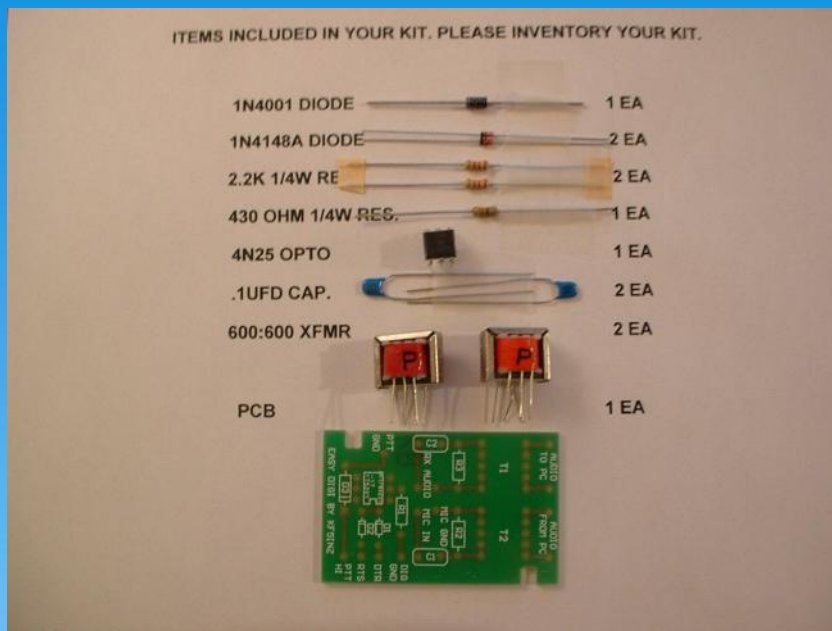


OR Build Your Own!

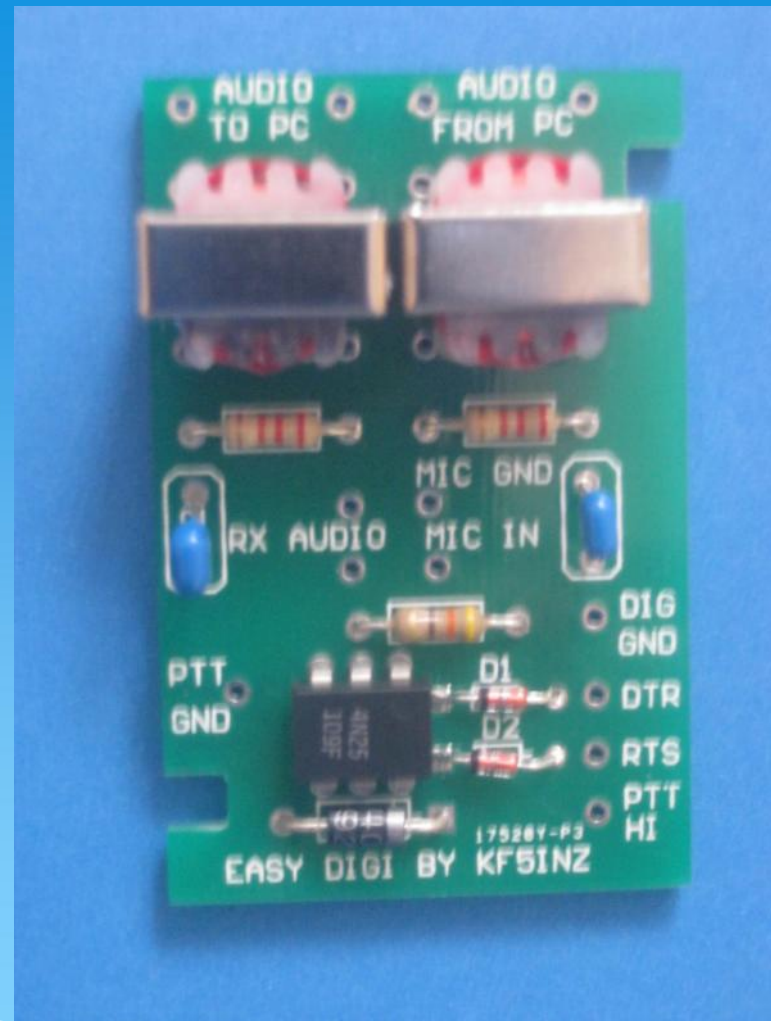
Recommended optional Digital VOX Sound Card Interface

KF5INZ Easy Digi Schematics for the Baofeng UV-5R





**Easy Digi Kit Components
are \$9.95 on E-Bay**



Built in 25 minutes!

**OR purchase a pre-built Easy Digi for your radio
- about \$35 on E-Bay**



All cables are included with the pre-built Easy Digi – be sure to email the seller your radio model number.

This one is built for the UV-5R



Equipment: UV-5R + Easy Digi Interface + Netbook





NBEMS Workshop - Norm K6YXH, and Naomi WB6OHW

9/10/2012

What's *REALLY* needed for NBEMS ?

To review:

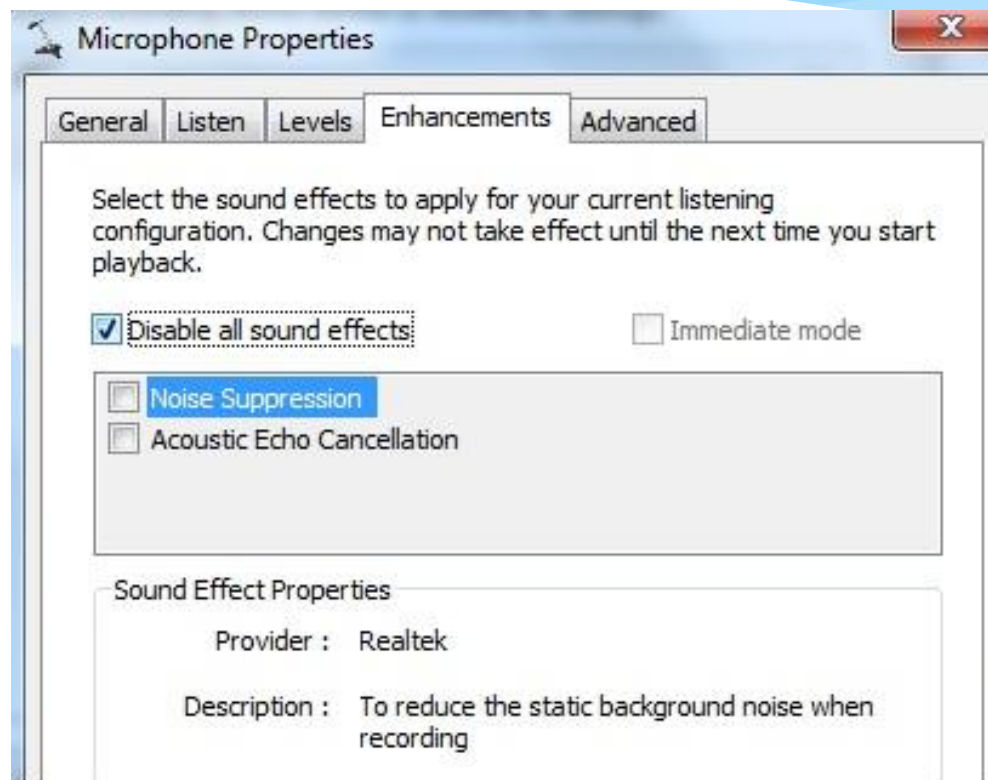
- * Any Computer – laptops and netbooks work just fine
 - * Some sound cards are known to distort input
 - * Turn off Windows 7 Enhancements, like Noise Reduction
- * Any radio with a microphone and speaker

AND

- * 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

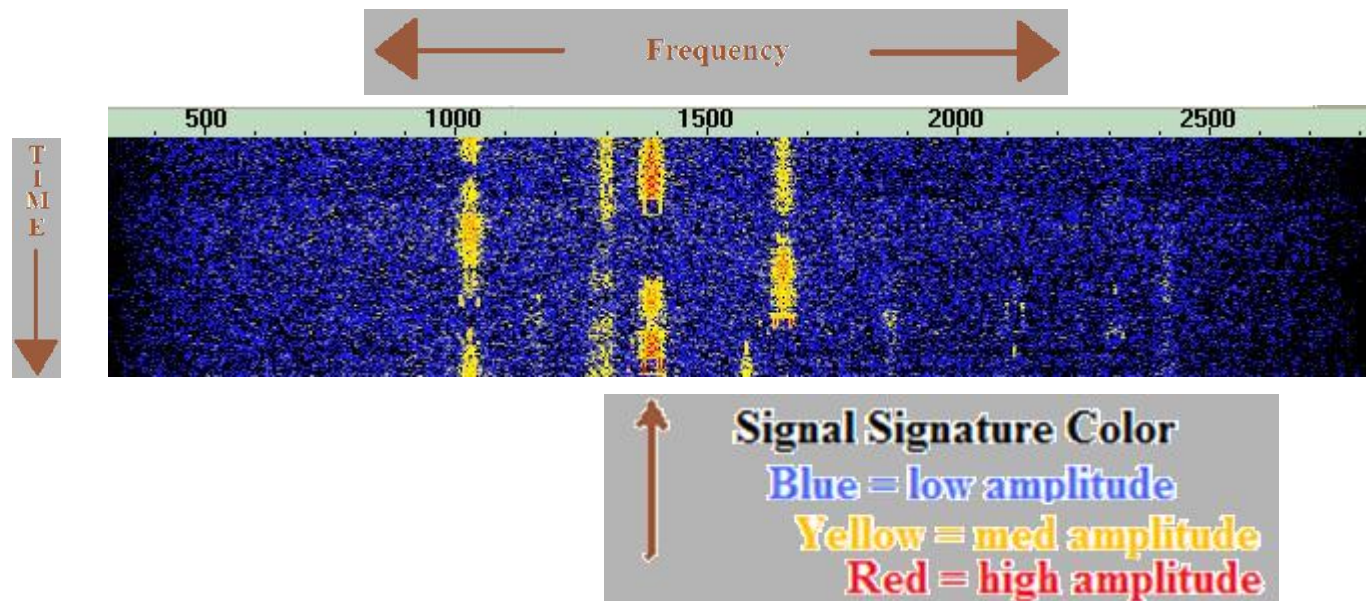
**You don't have an Interface?
No worries!**

- * **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, Easy Digi, home brew.
 - * Interfaces make things more reliable and **quieter**.

Is this is a Waterfall?

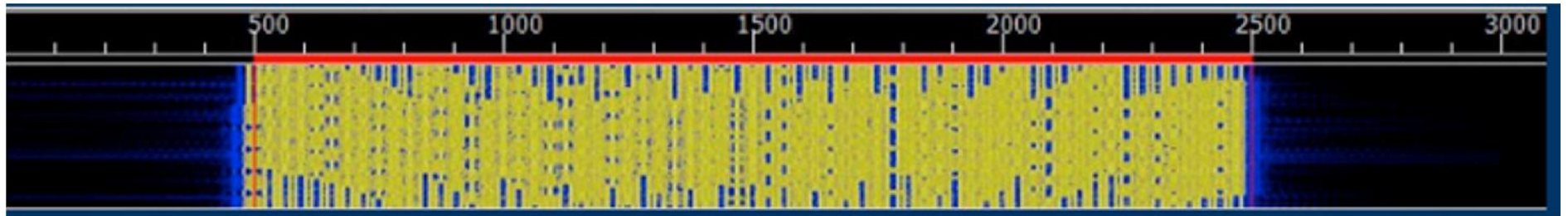


Here is a REAL waterfall...



The digital waterfall is a visual representation of time, frequency and amplitude.

MT63-2000 Waterfall

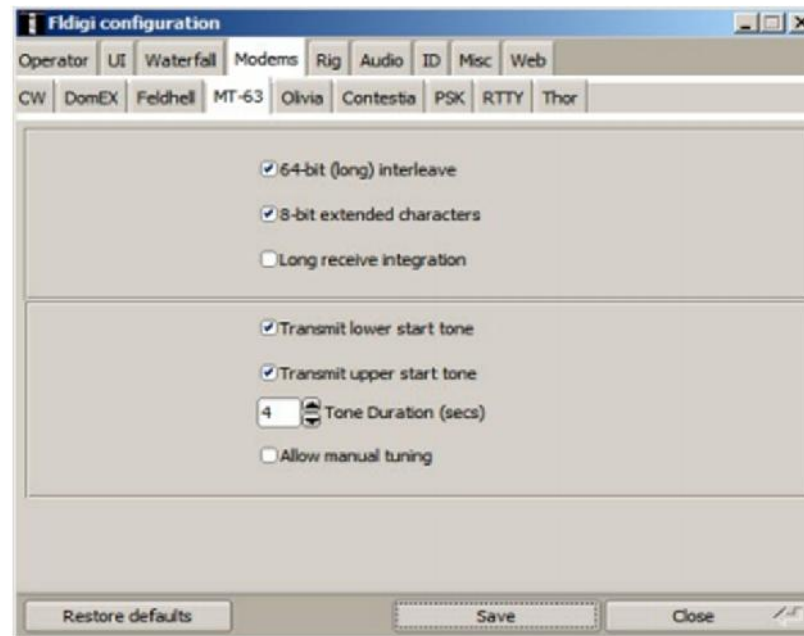


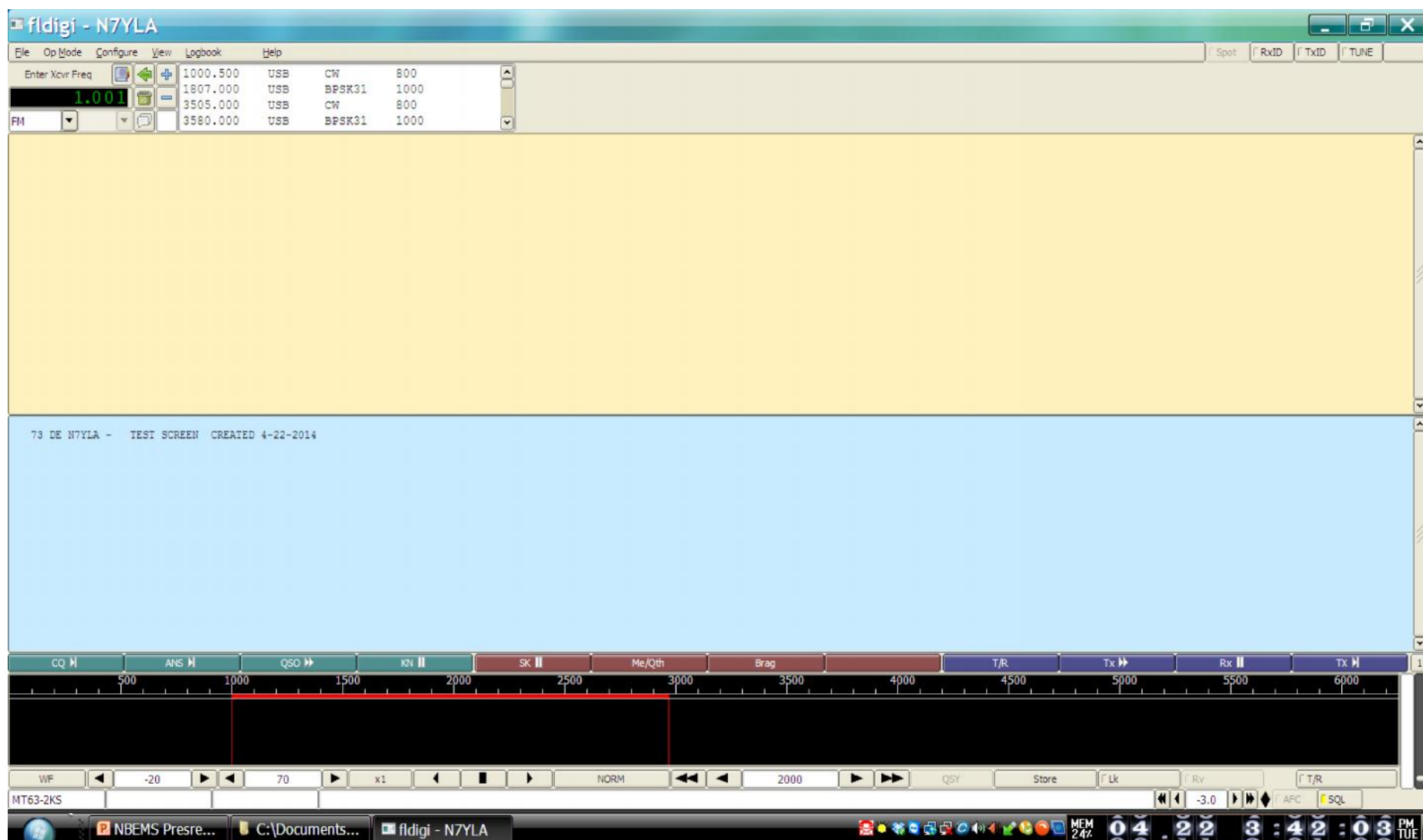
- * 64 tones sent at same time
- * Signal width is 2000 Hz
- * Offset frequency is always fixed at 1500 Hz
- * Fixed low frequency eliminates tuning errors
- * Sounds like a buzz saw



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**





FLDIGI SCREEN

Verification with Checksums

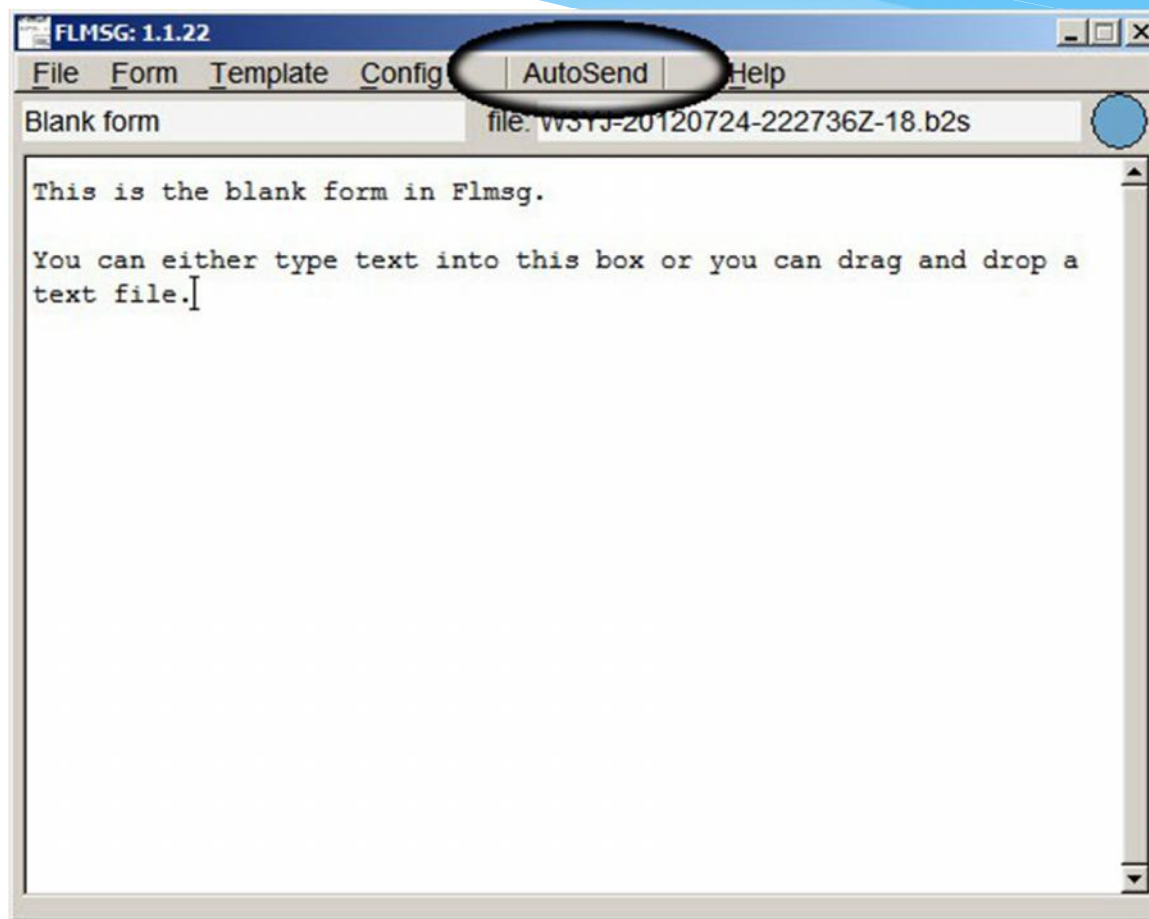
- * **Checksums allow you to be 100% sure your message was received accurately.**
- * Checksum is inserted into a file by **Flwrap**
- * Receiving station computes the checksum on the incoming file and... **if the two checksums are identical, the file was received without error.**
- * Allows multiple stations to receive and confirm data **100%**
- * 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

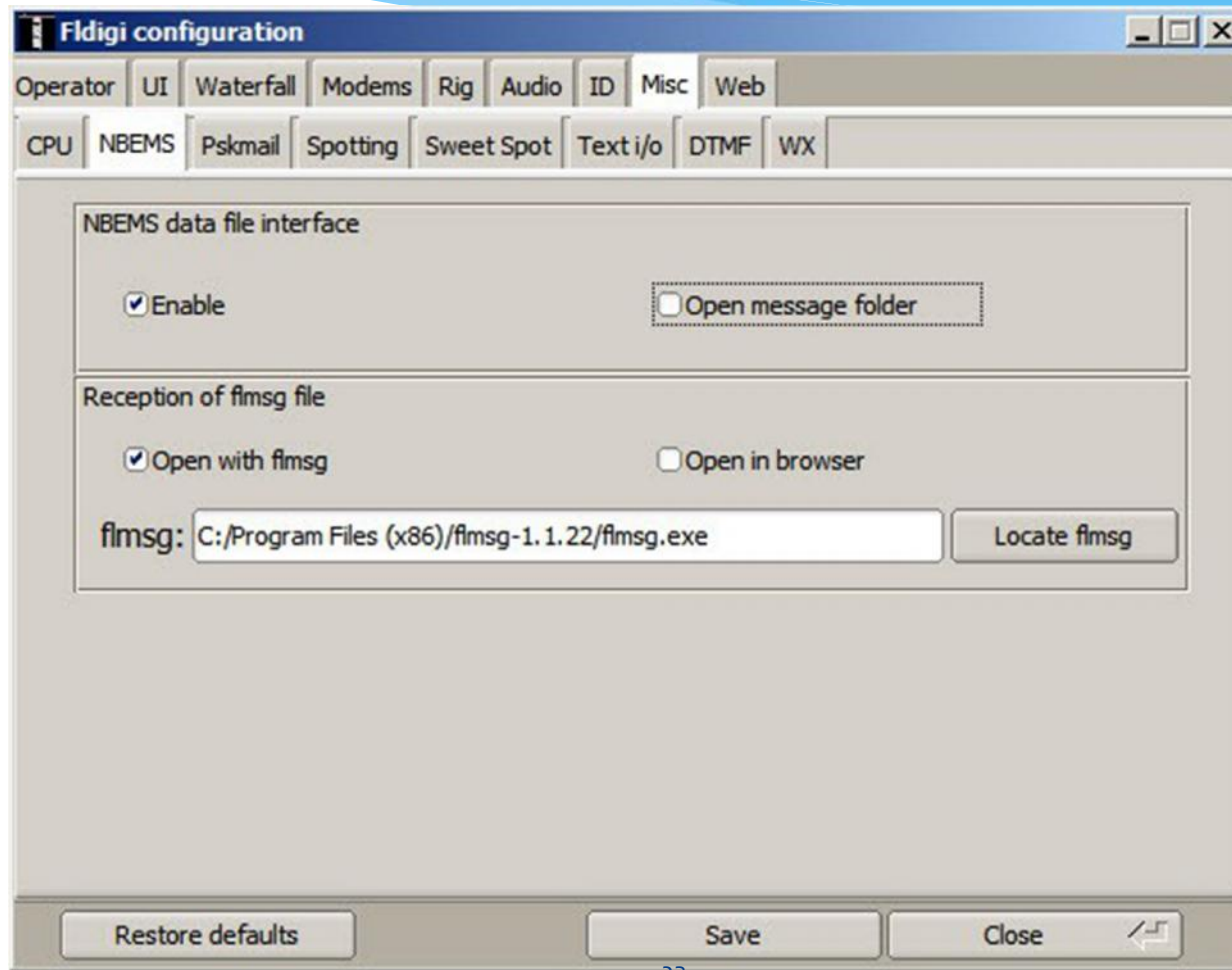
Blank Form



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



Configure **fldigi** Misc, NBEMS

Locate flmsg

- * **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) (spreadsheet)
- * LDS Welfare Message Form (under development???)

SCIRA
SARVODAYA COMMUNITY INTERNATIONAL
Service Volunteers

ERC MESSAGE FORM
(for use by Bishops' Storehouses, Stakes, Wards)

SCIRA
SARVODAYA COMMUNITY INTERNATIONAL
Service Volunteers

Instructions: When dictating the message, speak SLOWLY at about the same speed as if you were writing the message. Dictate the message in the order of the numbered boxes. For each box, state the box number first and then the information in the box. Use phonetics when requested to do so. When a Quick Report is requested by the Storehouse, report only the information asked for in the **SCID-Saved** boxes (1, 2, 3, 7, 8, 9, 10, 12, 13).

Message Number (given to you by the Storehouse receiving the report) [] []

1. Date:	2. Time:	3. Unit: [] Stake [] Ward [] Branch
4. Presiding Officer		5. Reporting Officer Call Sign
6. Emergency Type: <input type="checkbox"/> Fire <input type="checkbox"/> Earthquake <input type="checkbox"/> Power Loss <input type="checkbox"/> Radiation Hazard <input type="checkbox"/> Other: <input type="checkbox"/> Flood <input type="checkbox"/> Tornado <input type="checkbox"/> Biological Hazard <input type="checkbox"/> Terrorist Attack <input type="checkbox"/> Mud Slide <input type="checkbox"/> Hurricane <input type="checkbox"/> Chemical Hazard <input type="checkbox"/> Explosion		
7. Service Volunteers (#'s): Injured [] Missing [] Dead [] Okay []	8. Members (#'s) Injured [] Missing [] Dead [] Okay []	9. Church Property (#'s) Damage = Habitable, Inhabitable, Destroyed Main Facility Little/None [] Damaged [] Destroyed [] Facilities Little/None [] Damaged [] Destroyed [] Member Homes Little/None [] Damaged [] Destroyed []
10. Community Affected, Location and Extent of (City, County, Counties, State):		11. Utilities (Area wide): Power ON/OFF Water ON/OFF Gas ON/OFF
12. Assistance Needed (#'s): <input type="checkbox"/> Clothing <input type="checkbox"/> Shelter <input type="checkbox"/> Food <input type="checkbox"/> Water <input type="checkbox"/> Health / Medical <input type="checkbox"/> Other _____ <input type="checkbox"/> Power <input type="checkbox"/> Other _____ <input type="checkbox"/> Sanitation <input type="checkbox"/> Other _____ <input type="checkbox"/> Security <input type="checkbox"/> Other _____		13. Resources We Can Share:
14. Message / Tactical Traffic: Enter a "C" in box following last word of each sentence. <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> 1 _____ 4 _____ 11 _____ 18 _____ 25 _____ 31 _____ 36 _____ 41 _____ 48 _____ </div> <div style="width: 45%;"> 5 _____ 10 _____ 15 _____ 20 _____ 25 _____ 30 _____ 35 _____ 40 _____ 45 _____ 50 _____ </div> </div>		
15. Storehouse Receiving Report:		18. Received by:
16. Additional Notes Location:		(a) Name (d) Phone (b) Call Sign (c) Frequency (e) Location
17. To Whom is Message For Addressed:		19. Person Forwarded
[] SLC HQ [] Storehouse [] Amateur [] Other		(a) Name (d) Phone (b) Call Sign (c) Frequency (e) Location

Alpha Bravo, Charlie, Delta, Echo, Foxtrot, Golf, Hotel, India, Juliette, Kilo, Lima, Mike, November, Oscar, Papa, Quebec, Romeo, Sierra, Tango, Uniform, Victor, Whiskey, X-ray, Yankee, Zulu
www.scirac.org Rev 3.3

ERC Message Form 1.20.14

Box 1 – Date: 1/22/14

Box 2 - Time: 9:55:13 AM PST

Box 3 – Unit:

Box 4 - Presiding Officer:

Box 5 - Reporting Officer:

Box 6 - Emergency Type:

Box 7 - Location and Extent:

Box 8 – Members Injured: Missing:

Dead: Okay:

Box 9 – Service Volunteers Injured:

Missing: Dead: Okay:

Box 10 - Church Property Damage, Main

Facility: Facilities: Member Homes:

Box 11 - Utilities – Power (on/off):

Water(on/off): Gas(on/off):

Box 12 - Assistance Needed:

Box 13 - Resources We Can Share:

Box 14 – Message:

Box 15 – Storehouse Receiving Report:

Box 16 – Additional Notes Location:

Box 17 – To Whom is Message For

Addressed:

Box 18 – Received by (Name, Call Sign,

Frequency, Phone, Location):

Box 19 – Person Forwarded (Name, Call

Sign, Frequency, Phone Location):

LDS ERC Message Form



ERC Message text file using Notepad

FLMSG Information

Box 1 - Date: 1-22-2014

Box 2 - Time: 0800 PST

Box 3 - Unit: Glendora State

Box 4 - Presiding Officer: President John Doe

Box 5 - Reporting Officer: Bishop Joe Blow

Box 6 - Emergency Type: Earthquake

Box 7 - Location and Extent: South Hills, Glendora CA

Box 8 - Members Injured: none Missing:none Dead: none Okay: 60

Box 9 - Svc.Volunteers Injured: none Missing:none Dead:none Okay:8

Box 10 - Church Prop Damage (Habitable, Inhabitable, Destroyed): Main Facility: Habitable Facilities: Habitable Member Homes: 6 Inhabitable

Box 11 - Utilities Power(on/off):OFF Water(on/off):OFF Gas(on/off):OFF

Box 12 - Assistance Needed: Need a generator and water at Main Facility and Elwood facility

Box 13 - Resources We Can Share: Food, medical supplies

Box 14 - Message: 6 families have been displaced and are currently at Elwood facility

Box 15 - Storehouse Receiving Reporting: Los Angeles

Box 16 - Additional Notes Location: none

Box 17 - To Whom is Message (By Addressed, Date) (Matty)

Box 18 - Road (By Name, Call Sign, Frequency, Phone, Location): Vark Hayden, N7YLA, 146.711, 626-943-5065 Glendora CA

Box 19 - Person Forwarded (Name, Call Sign, Frequency, Phone, Location): Dale (Matty), AG46C, 144.360, 714-214-6676, Cypress CA

FLMSG: 1.1.32

File Form Template Config AutoSend Help

Red Cross Safety & Welfare file Sample_message_for_practice sws

Responsee Msgs-1 Msgs-2 Msgs-3

☒ Custom message

Box 3 - Unit: Glendora State
Box 4 - Presiding Officer: President John Doe
Box 5 - Reporting Officer: Bishop Joe Blow
Box 6 - Emergency Type: Earthquake
Box 7 - Location and Extent: South Hills, Glendora CA
Box 8 - Members Injured: none Missing:none Dead: none Okay: 60
Box 9 - Svc.Volunteers Injured: none Missing:none Dead:none Okay:8
Box 10 - Church Prop Damage (Habitable, Inhabitable, Destroyed): Main Facility: Habitable Facilities: Habitable Member Homes: 6 Inhabitable
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Box 12 - Assistance Needed: Need a generator and water at Main Facility and Elwood facility
Box 13 - Resources We Can Share: Food, medical supplies
Box 14 - Message: 6 families have been displaced and are currently at Elwood facility

☐ Comp base64 MT63-2KS 1689 bytes / 1 m 24

MS Word doc was automatically converted from this received FLMSG file

Filling in a Radiogram Form

FLMSG 1.0.5

File Template Config Help filename: new.m2s

ICS213 Radiogram
Message Records

SVC ☐ NR ☐ PREC ☐ HX ☐ STN ORIG ☐ CK ☐

☐ ROUTINE ☐ HX ☐ CK

PLACE OF ORIG TIME FILED MON DY

TO TEL

OP NOTE

ARL MSG

TXT

SIG OP NOTE

VIDEO: – How the Radiogram form is filled in.

An ARES Test of NBEMS



**VIDEO: NBEMS demonstration at the Cape Cod, Massachusetts
Red Cross Chapter**

NBEMS Workshop - Norm K6YXH, and Naomi WB6OHV

Questions?

Download NBEMS

- * Download Page:

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

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

Software Demonstration

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