

NBEMS

Narrow Band Emergency Messaging System

----- Utilizing Sound Card Technology -----



Introduction

- Your Name
- Your Call sign
- Your Location



What is NBEMS?

Jack Tsujimura KH6DQ Aug. 2012

- (NBEMS) is an Open Source software suite that allows amateur radio operators to reliably send and receive data using nearly any computer (Windows, Mac, and Linux) and any analog radio without requiring a dedicated digital infrastructure or specialized modem hardware.
- NBEMS works on both VHF/UHF FM.



NBEMS – Where is It Used?

Jack Tsujimura KH6DQ Aug. 2012

- ❑ **HI State CD**
- ❑ **DEM-RACES**
- ❑ **HealthComm**
- ❑ **Disaster**
- ❑ **Exercise**



NBEMS – Programs?

Jack Tsujimura KH6DQ Aug. 2012

- ❑ **FLDIGI**
- ❑ **FLMSG**
- ❑ **FLWRAP**



FLDIGI

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- **Fast Light Digital Modem Application**
- **Is a cross-platform modem program that supports most of the digital modes used on the amateur radio bands.**



NBEMS Modes

Jack Tsujimura KH6DQ Aug. 2012

- | | |
|----------------------------------------|----------------------------------|
| <input type="checkbox"/> CW | <input type="checkbox"/> QPSK + |
| <input type="checkbox"/> Contestia + | <input type="checkbox"/> PSKR + |
| <input type="checkbox"/> DominoEX + | <input type="checkbox"/> RTTY + |
| <input type="checkbox"/> Hell + | <input type="checkbox"/> Thor + |
| <input type="checkbox"/> MFSK + | <input type="checkbox"/> Throb + |
| <input type="checkbox"/> MT63 + | |
| <input type="checkbox"/> Olivia + | |
| <input type="checkbox"/> PSK + | |



Where Do I Get NBEMS Software?

Jack Tsujimura KH6DQ Aug. 2012

Software By W1HKJ & Associates

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

It's FREE!



NBEMS Emcomm Modes

Jack Tsujimura KH6DQ Aug. 2012

- ❑ MT63-500-L (VHF/UHF)
- ❑ MT63-1000-L (VHF/UHF)
- ❑ MT63-2000-L (VHF/UHF)



NBEMS Links

- <http://groups.yahoo.com/group/NBMS>
- <http://groups.yahoo.com/group/NBMS-HI>

Monthly VHF/UHF Fldigi Net initialing using digital mode MT-63 on the 4th Thursday of every month at 8:00 p.m. to 9:00 p.m.

The following repeaters will be linked via Allstar:

- 147.020 pl 103.5**
- 147.040 pl 103.5**
- 147.060 pl 103.5**
- 444.350 pl 103.5**
- 444.325 pl 103.5**
- 146.760**
- 146.980 pl 88.5**



Why Digital EmComm?

Jack Tsujimura KH6DQ Aug. 2012

- ❑ Think back to your last public service event, drill, or deployment.
- ❑ You probably passed a lot of traffic best suited for voice communications but...
- ❑ What if you had been asked to pass:
 - Weather report
 - Red Cross report
 - Roster of evacuees
 - Required prescription medications
 - Directions to a disaster scene



Why Digital EmComm?

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- ❑ The needs of our Served Agencies have changed.
- ❑ They still need voice communications but...
- ❑ There's an increasing need for data communications.
- ❑ We need to be able to provide more than just voice communications from a ham with an HT.



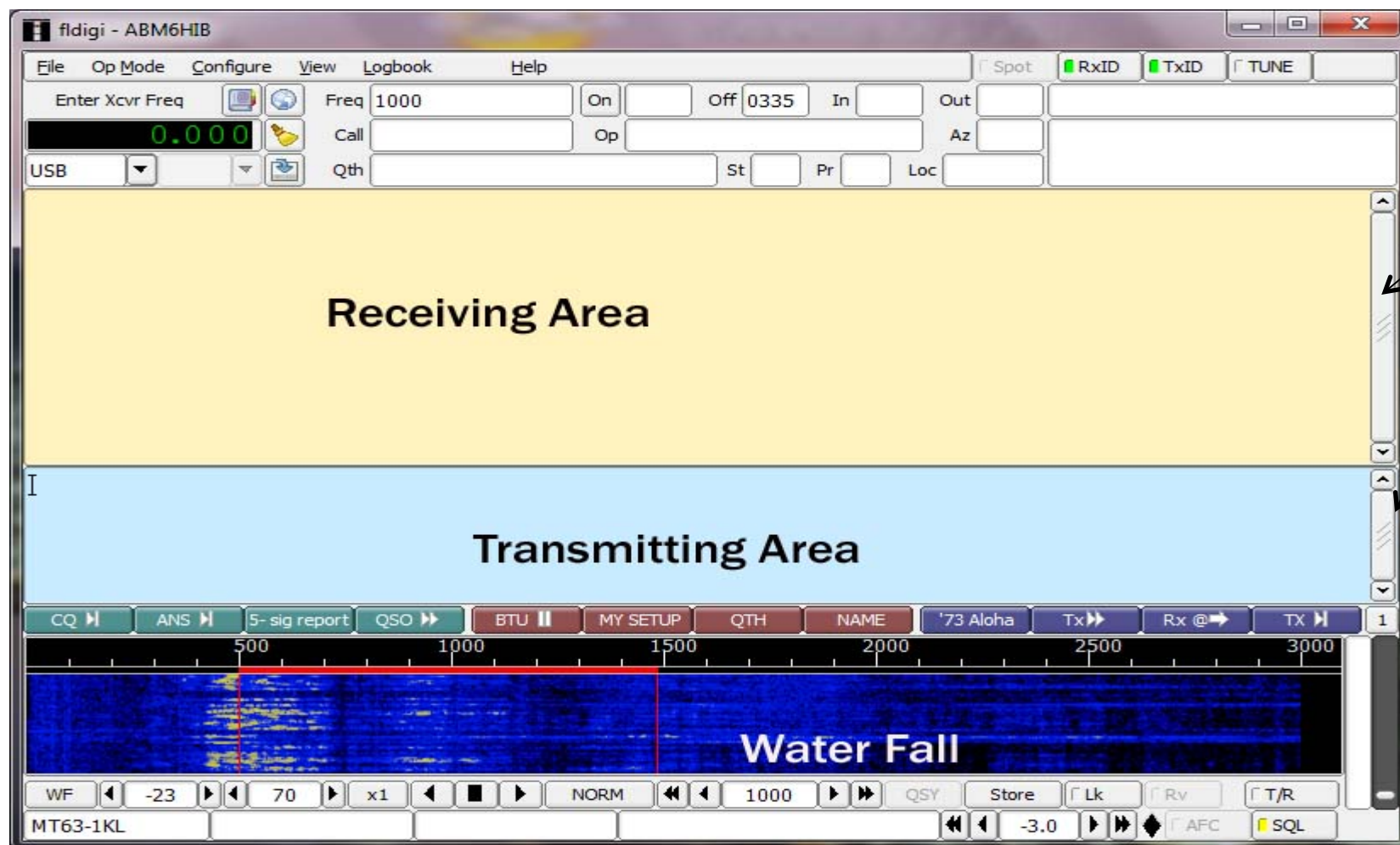
NBEMS philosophy

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- ❑ Keep it cheap.
- ❑ Keep it simple.
- ❑ Use Open Source software.
- ❑ **Don't depend upon infrastructure.**
- ❑ Make it fun to use between drills and disasters.
- ❑ Any type of radio

Fldigi

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How it works

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- ❑ Fldigi uses your computer's sound card to generate and decode digital signals.
- ❑ All work is done by your computer, don't need an external Terminal Node Controller (TNC).
- ❑ Audio from your computer speakers go into your radio's mike input for transmission.
- ❑ Audio from your radio goes into your computer's mike or line-in for decoding.
- ❑ Don't need an extremely powerful new computer, older machines work just fine. (Need a Microphone on your computer).



Acoustic Interface

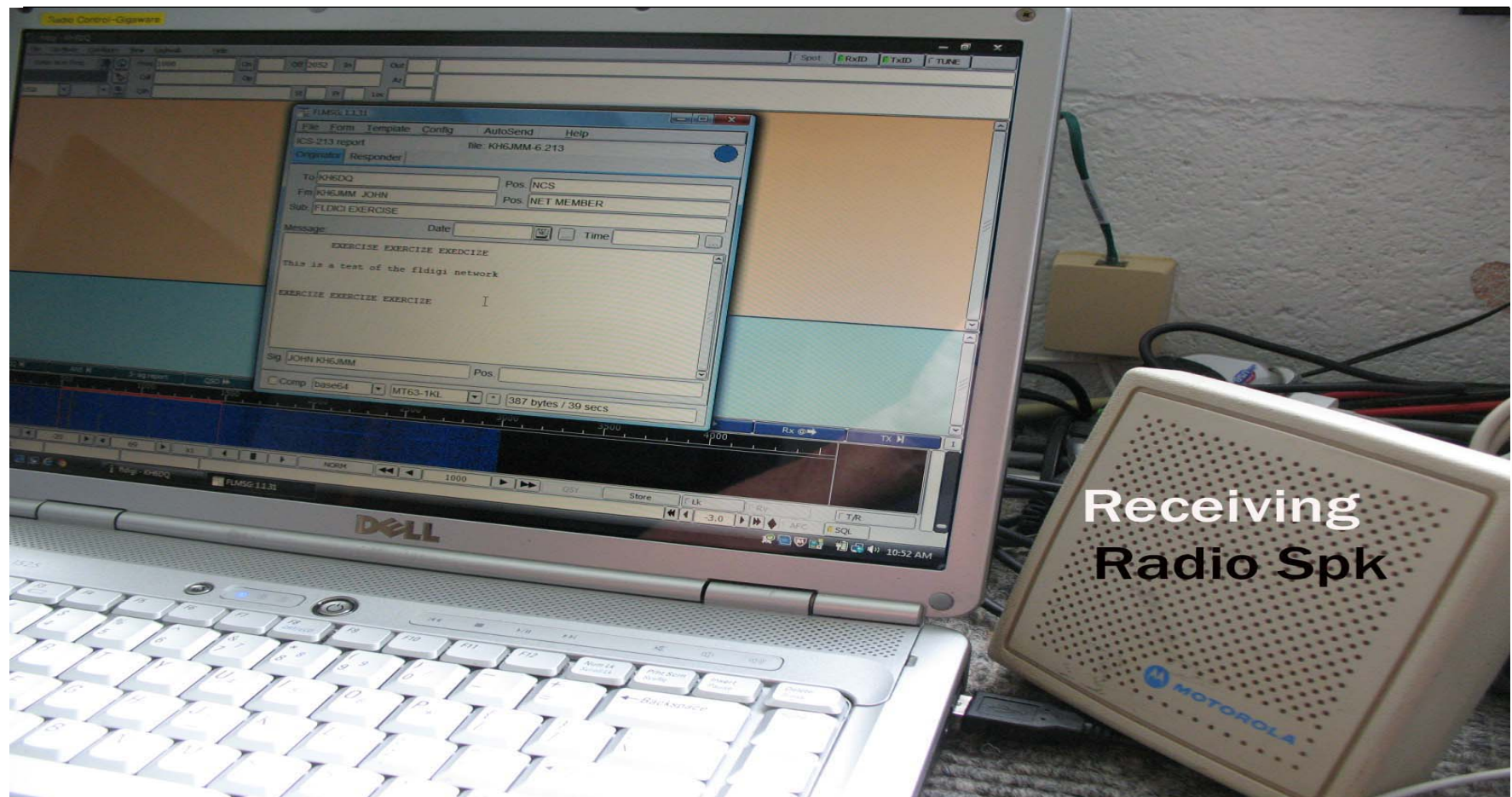
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- ❑ Easiest way to interface radio to computer is to...
- ❑ Hold radio mike up to computer speakers.
- ❑ Hold radio speaker up to computer mike.
- ❑ You do PTT manually.
- ❑ Works especially well with VHF/UHF FM.
- ❑ Allows you to easily send data using any radio.
- ❑ Disable all DSP “enhancement” programs on mic.
- ❑ Hams can participate who do not have a soundcard interface.
- ❑ MT63 is sufficiently robust to deal with background noise, even in a noisy Hospital EOC or field site.

*Typical Acoustic Interface **TRX** setup*



Acoustic Interface to Receive



NBEMS **STOP** Setup Fldigi

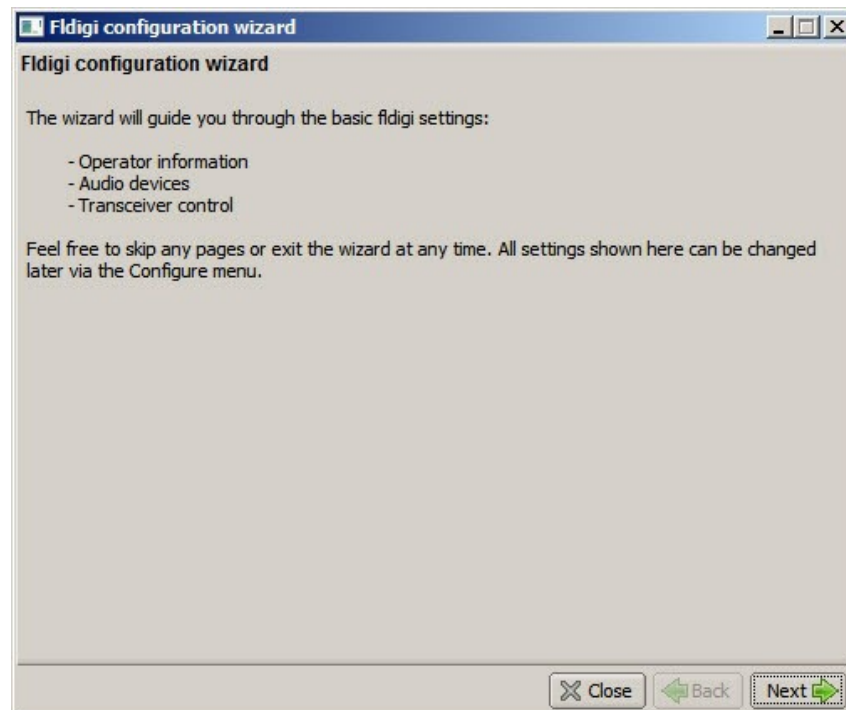
Stupid computer
keeps saying
"you got mail"



Configuring Fldigi

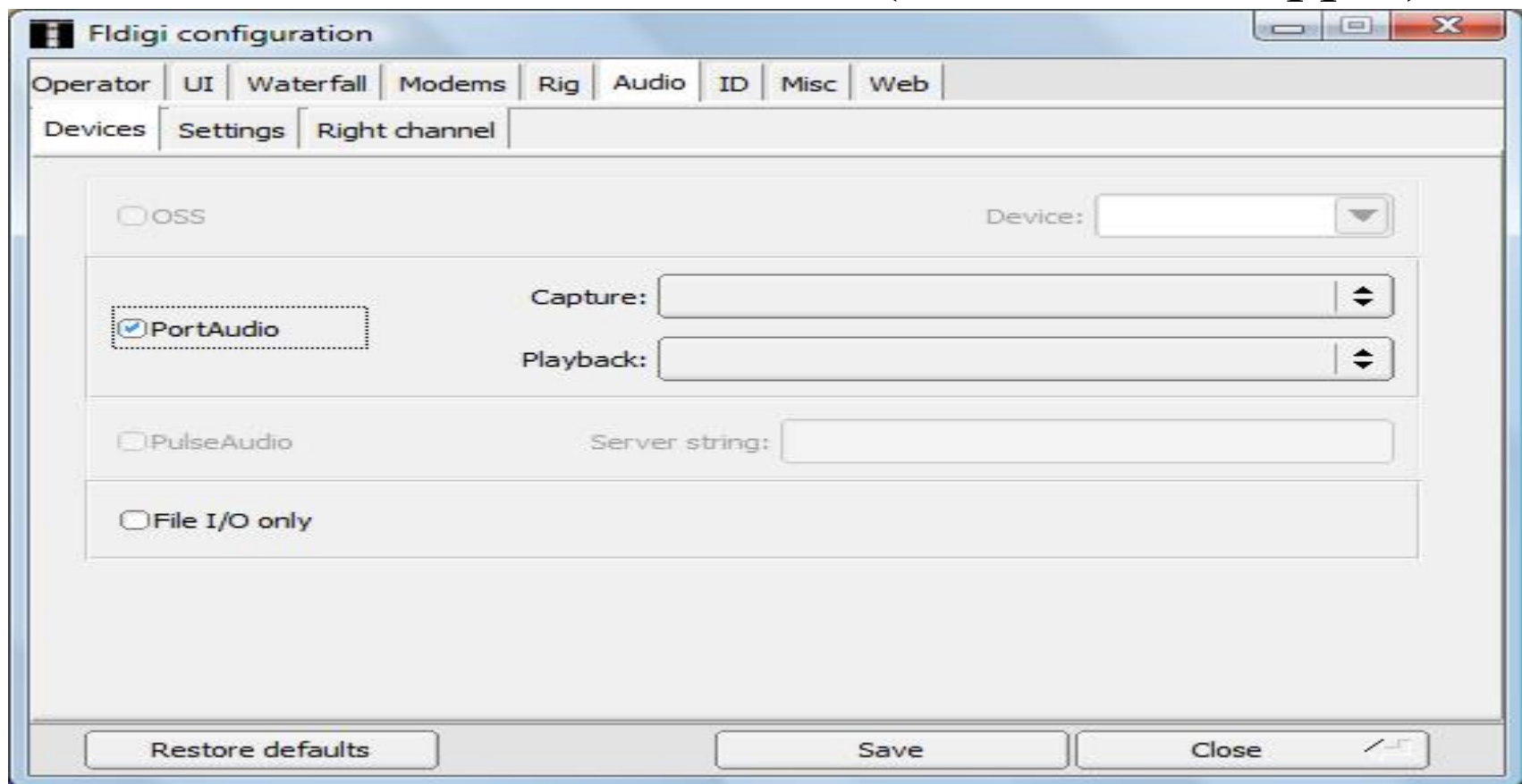
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- ❑ First time through, wizard is run.
- ❑ Enter your personal info.
- ❑ Also configure soundcard, radio interface, and modems



Fldigi Configuration/ Audio

- ❑ Check on PORTAUDIO/ (MS Sound Mapper)



Important MT63 configuration

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- ❑ Be sure to set 64 bit interleave and 8-bit char.
- ❑ Provides extra data redundancy.
- ❑ Both stations must have same interleave setting
- ❑ **Don't check** (allow manual tuning)

The screenshot shows the MT63 configuration window with the following settings:

- Operator:** UI
- Waterfall:** Modems
- Rig:** Audio
- ID:** ID
- Misc:** Misc
- Web:** Web
- CW:** Dom
- Dom:** Feld
- Feld:** MT-63
- MT-63:** Olivia
- Olivia:** Cont'
- Cont':** PSK
- PSK:** RTTY
- RTTY:** Thor
- Thor:** Navtex
- Navtex:** Wefax
- Wefax:**

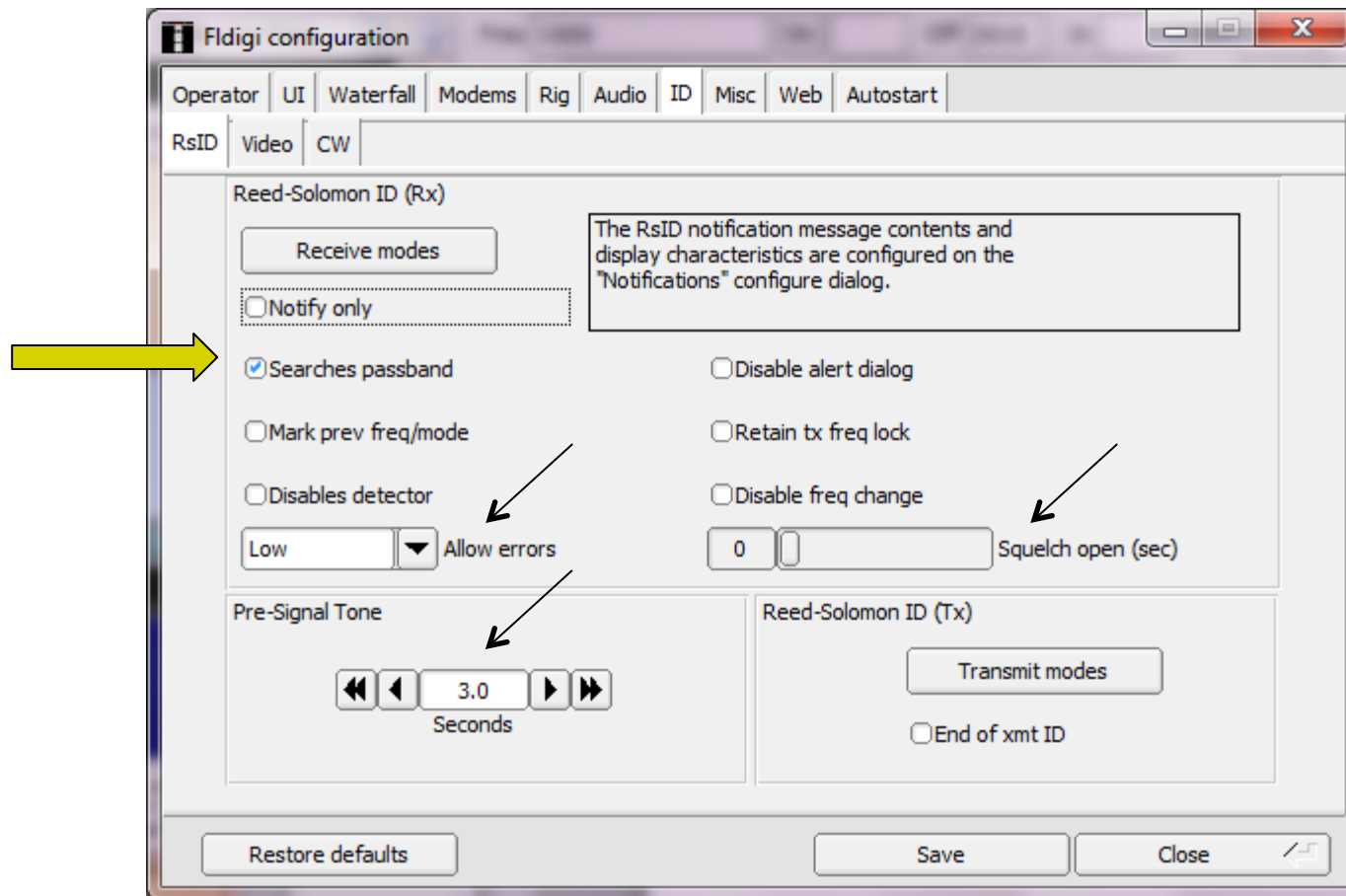
Configuration options:

- ☒ 64-bit (long) interleave
- ☒ 8-bit extended characters (UTF-8)
- ☒ Long receive integration
- ☒ Transmit lower start tone
- ☒ Transmit upper start tone
- ☐ Allow manual tuning

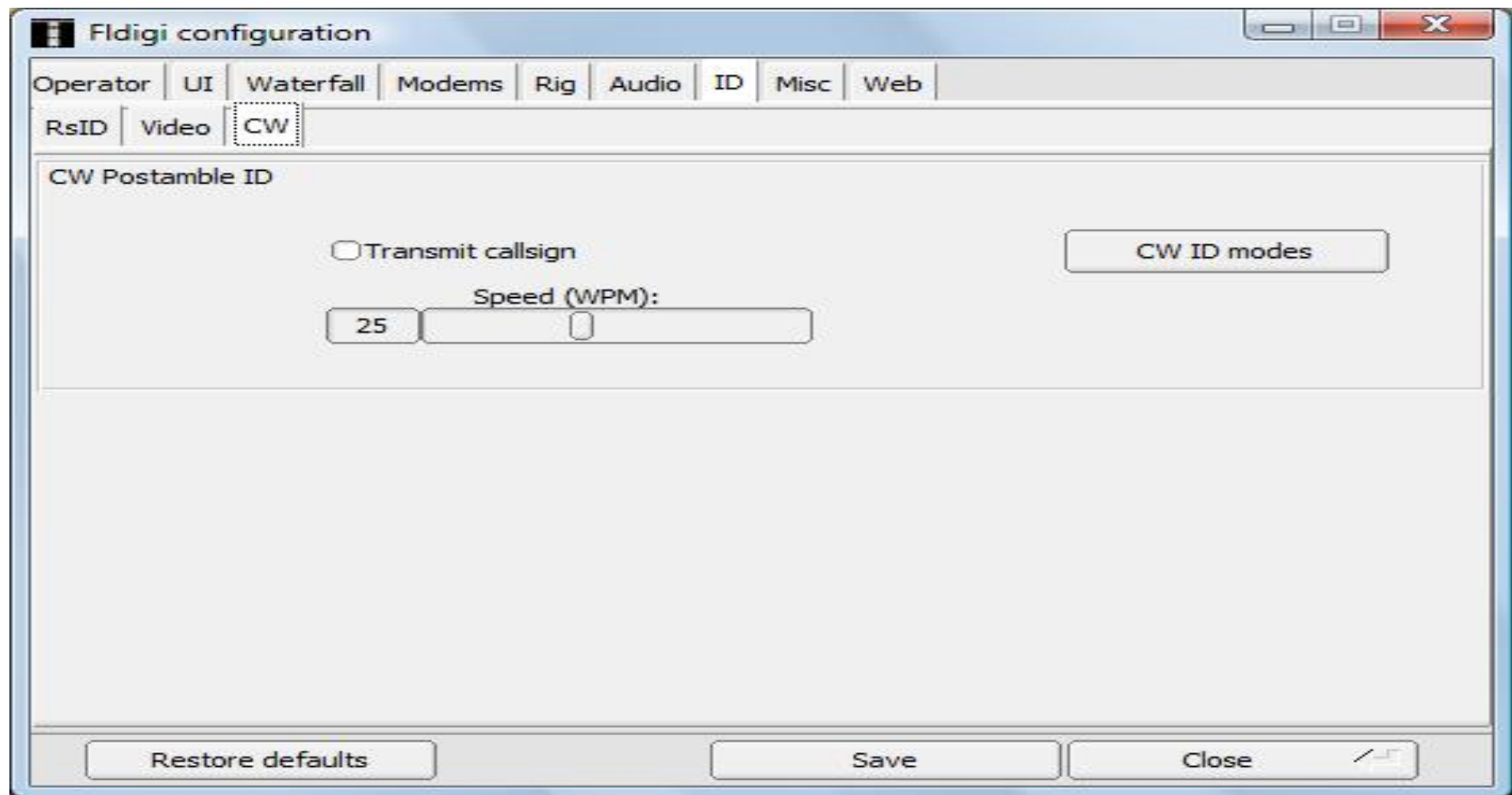
Tone Duration (secs): 4

Buttons: Restore defaults, Save, Close

Your ID- RsID



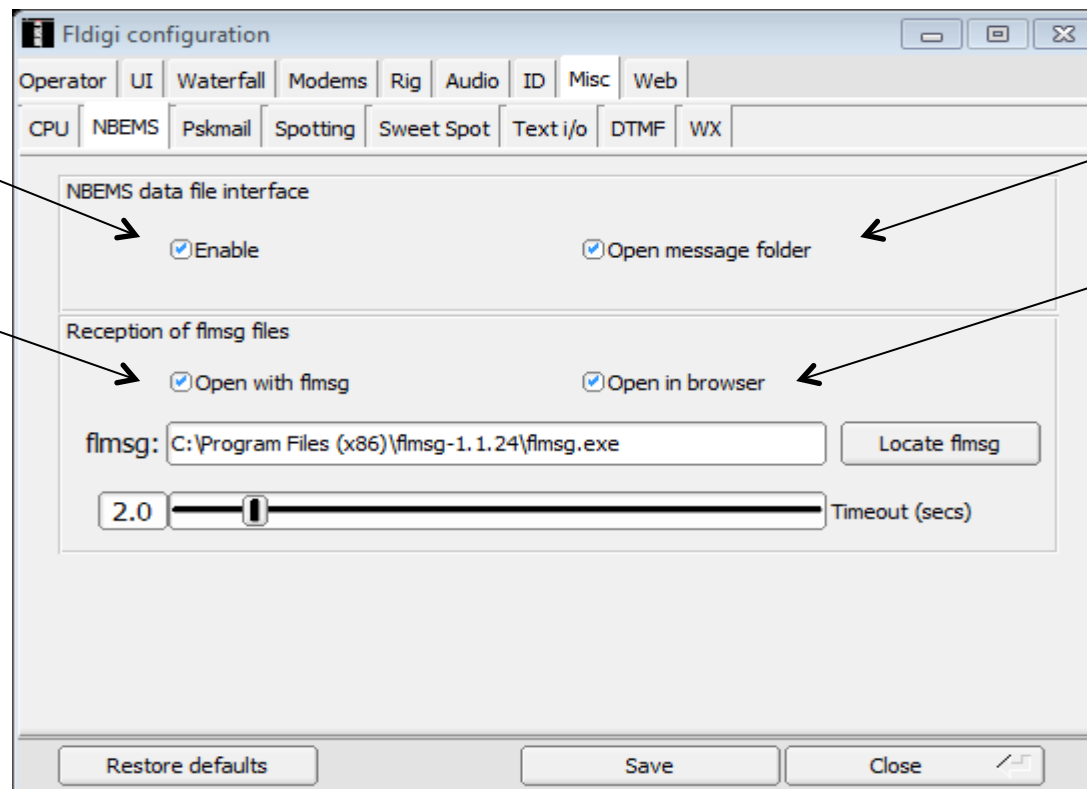
Your CW ID at end of your TX



Configure fldigi to extract data

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- ❑ Set the Fldigi configuration setting and Wrapped data will be automatically extracted!



Set up Message to Automatically Unwrapped

Fmsg setup for System 7

C:\Program Files (x86)\fmsg-1.1.xx
\fmsg.exe

C:\

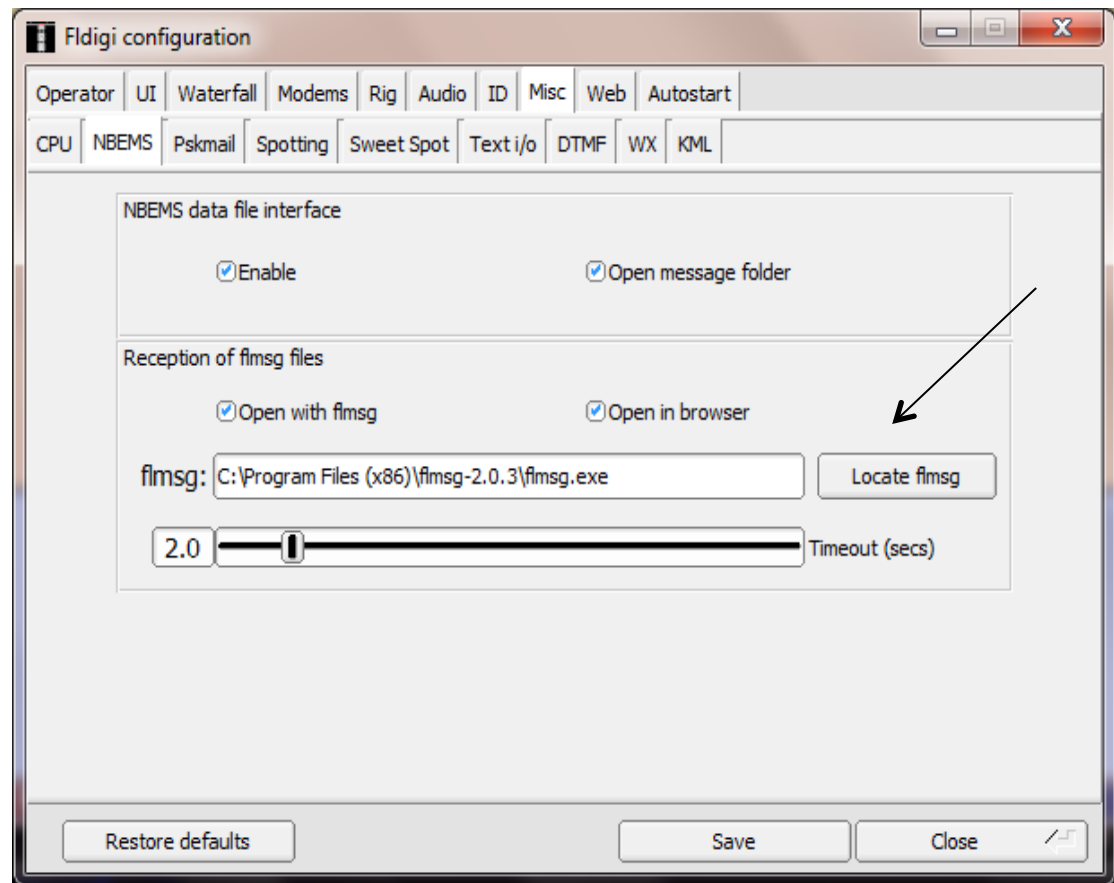
Program files(x86)\
fmsg-1.1.xx\
fmsg.exe

Fmsg setup for Vista

C:\Program Files\fmsg-1.1.xx
\fmsg.exe

C:\

Program files\
fmsg-1.1.xx\
fmsg



NBEMS= Open message Folder

The screenshot shows the FLMSG 1.1.31 application window. The title bar reads "FLMSG: 1.1.31". The menu bar includes "File", "Form", "Template", "Config", "AutoSend", and "Help". The main area displays a message form for "JCS-213 report" with the file path "file: KH6DQ_2.213". The "Originator" tab is selected, showing fields for "To" (KH6DQ), "Fm" (NH7UA), "Sub" (Test_130709), "Pos" (NCS), and "Time" (2010W). The "Message:" field contains the text: "Hi Jack, Thanks for doing NCS job. Look forward to regular digital statewide nets with analysis of mode performance." The "Sig." field is "Norm Cohler" and the "Pos." is "EC, S.Kohala". The bottom status bar shows "Comp" (base64), "MT63-1KS", and "444 bytes / 44 secs".

FLMSG: 1.1.31

File Form Template Config AutoSend Help

JCS-213 report file: KH6DQ_2.213

Originator Responder

To KH6DQ Pos. NCS

Fm NH7UA Pos. Net Member

Sub. Test_130709

Date 2013-07-09 Time 2010W

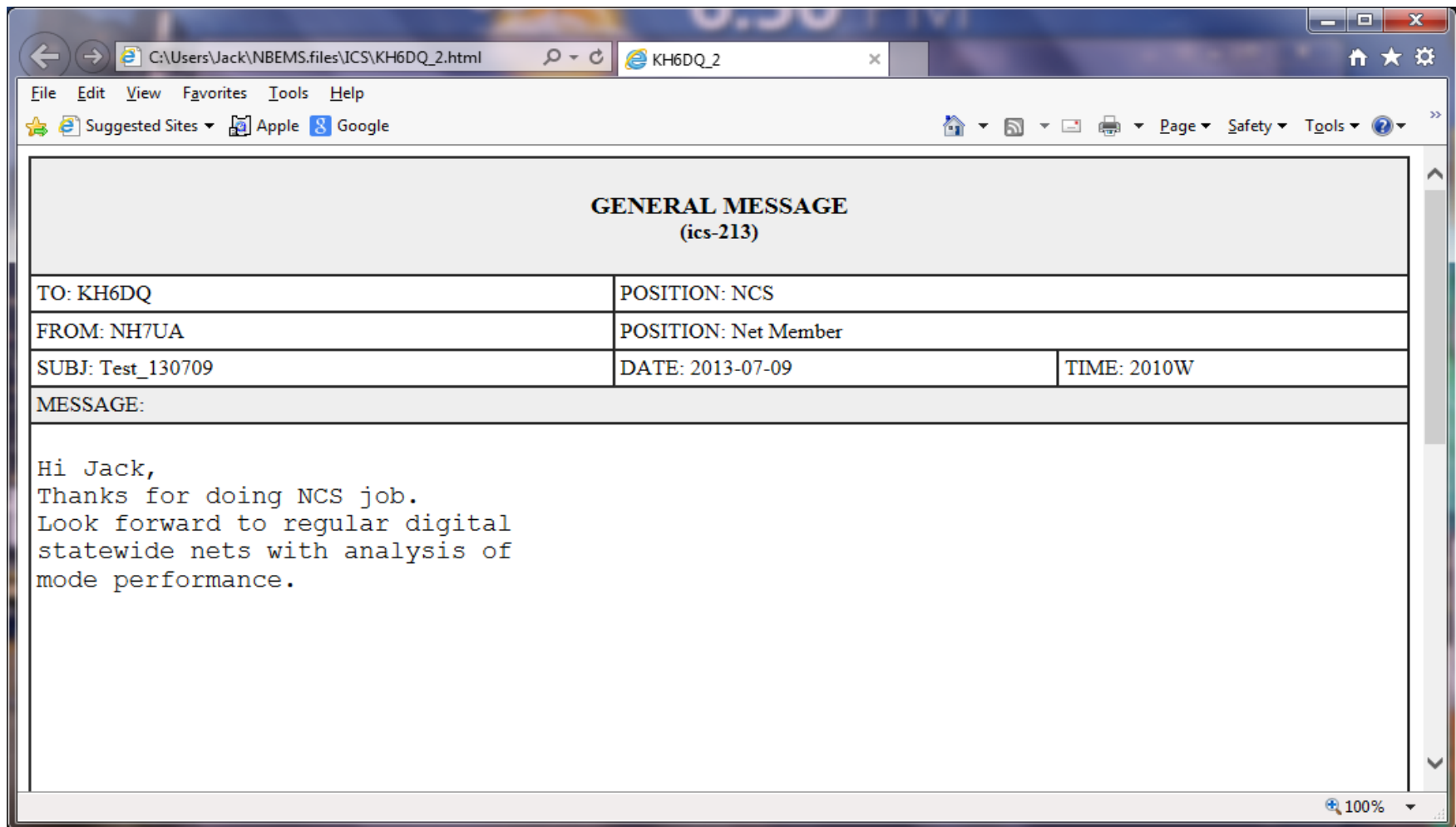
Message:

Hi Jack,
Thanks for doing NCS job.
Look forward to regular digital
statewide nets with analysis of
mode performance.

Sig. Norm Cohler Pos. EC, S.Kohala

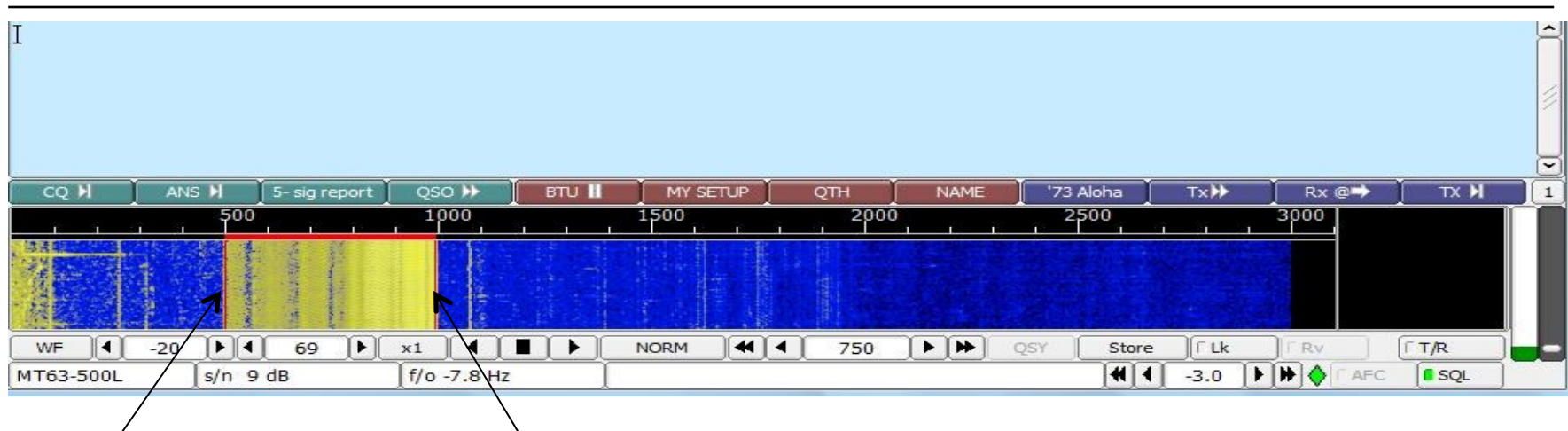
☐ Comp base64 MT63-1KS * 444 bytes / 44 secs

Reception = Open in browser



MT63-500-L Waterfall

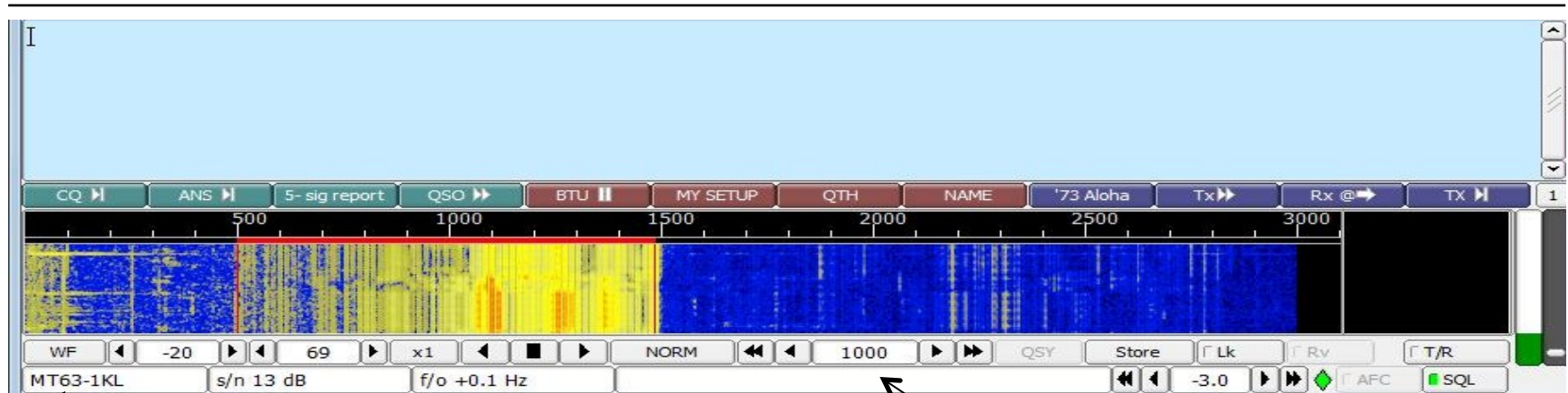
Jack Tsujimura KH6DQ Aug. 2012



- ❑ Signal width is 500 Hz
- ❑ Offset frequency is usually fixed at 750 Hz
- ❑ Fixed low frequency eliminates tuning errors

MT63-1000-L Waterfall

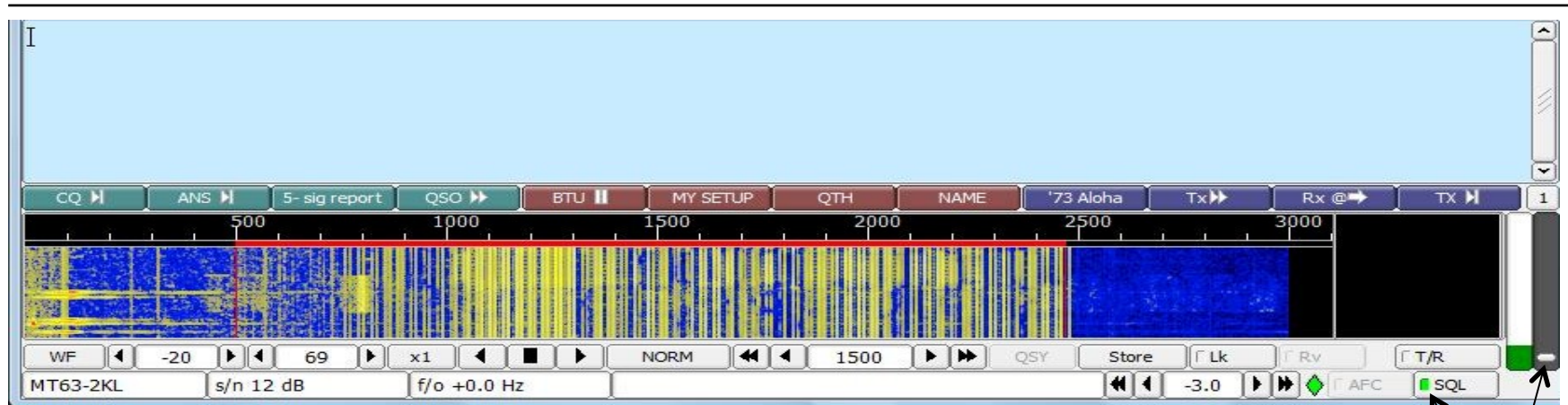
Jack Tsujimura KH6DQ Aug. 2012



- ❑ Signal width is 1000 Hz
- ❑ Offset frequency is usually fixed at 1000 Hz
- ❑ Fixed low frequency eliminates tuning errors

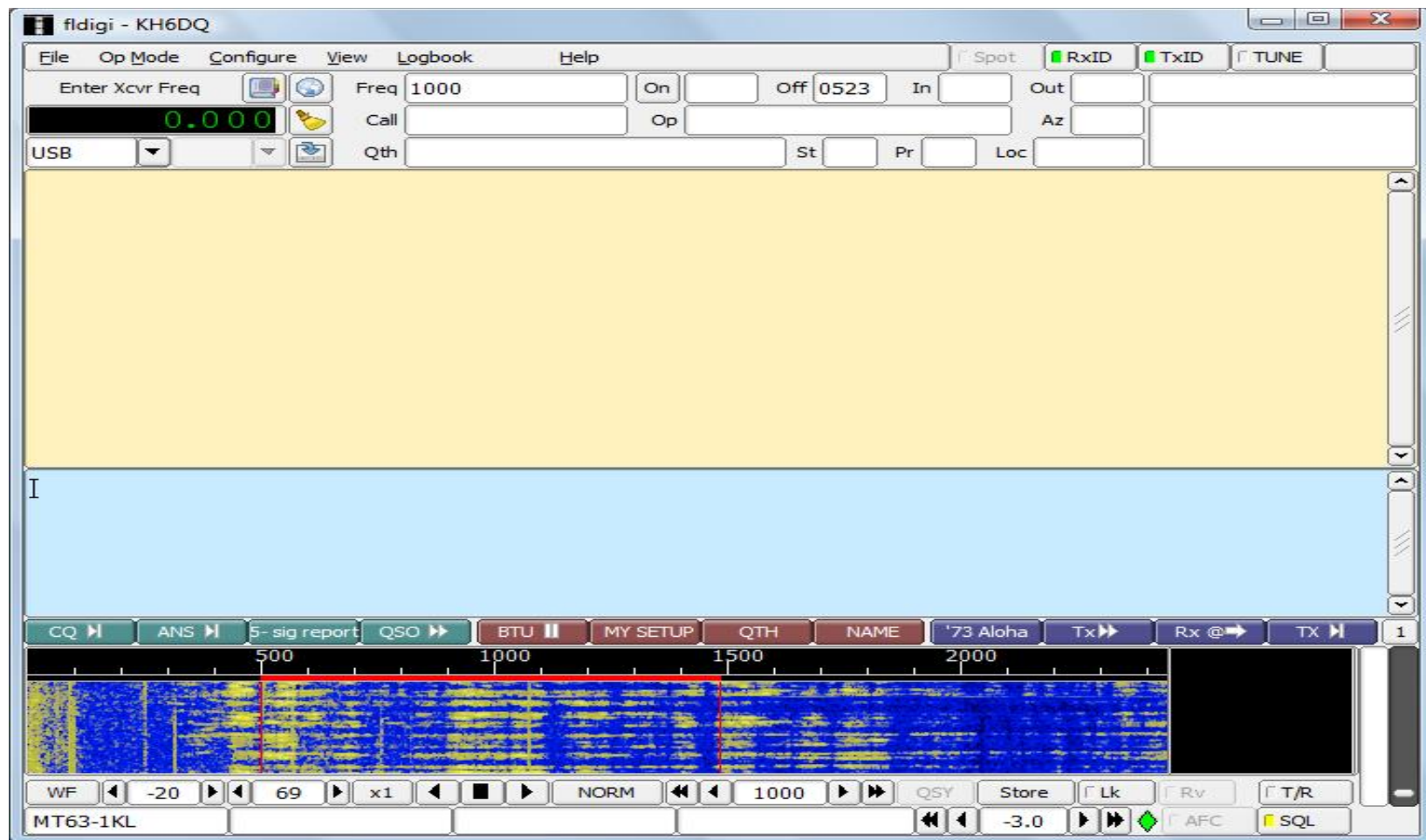
MT63-2000-L Waterfall

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- ❑ Signal width is 2000 Hz
- ❑ Offset frequency is usually fixed at 1500 Hz
- ❑ Fixed low frequency eliminates tuning errors
- ❑ Sounds like a giant buzzsaw 🗣️

Fldigi-/RxID/TxID/Macros



NBEMS **STOP** Next Flmsg



"Now, if you can find the power switch, flip it on."

FLMSG ver. 1.1.3X

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The screenshot shows the FLMSG 1.1.24 application window. The title bar reads "FLMSG: 1.1.24". The menu bar includes "File", "Form", "Template", "Config", "AutoSend", and "Help". The main area is titled "ICS-213 report" with a file name "file: new.213". Below this are two tabs: "Originator" (selected) and "Responder". The form contains several input fields: "To", "Pos.", "Fm", "Pos.", "Sub.", "Date", "Time", "Sig.", and "Pos.". A large text area for the message is in the center. At the bottom, there is a checkbox for "Comp", a dropdown menu set to "base64", and another dropdown menu set to "MT63-1K". An arrow points to the "MT63-1K" dropdown menu.

FLMSG: 1.1.24

File Form Template Config AutoSend Help

ICS-213 report file: new.213

Originator Responder

To Pos.

Fm Pos.

Sub.

Message: Date Time

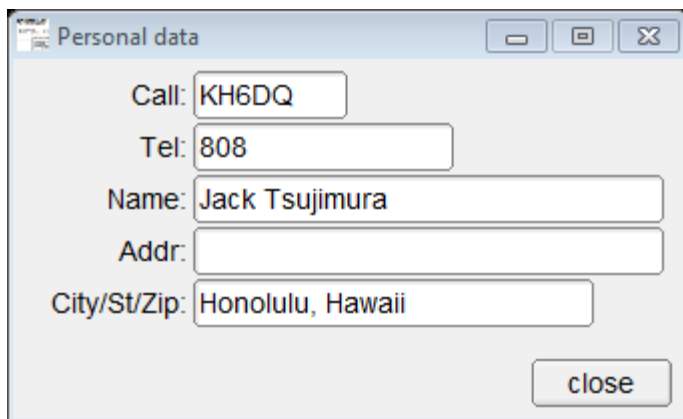
Sig. Pos.

☐ Comp base64 MT63-1K

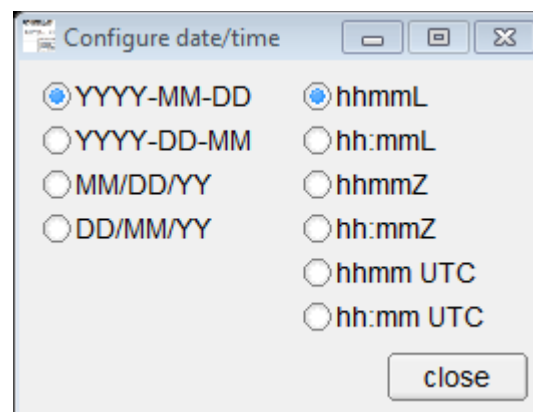
Flmsg – configuration

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- ❑ Click on Config menu.
- ❑ Enter your preferences and info.



A screenshot of a Windows-style dialog box titled "Personal data". It contains five text input fields: "Call:" with "KH6DQ", "Tel:" with "808", "Name:" with "Jack Tsujimura", "Addr:" (empty), and "City/St/Zip:" with "Honolulu, Hawaii". A "close" button is at the bottom right.



A screenshot of a Windows-style dialog box titled "Configure date/time". It contains two columns of radio button options. The left column has: ☒ YYYY-MM-DD, ☐ YYYY-DD-MM, ☐ MM/DD/YY, and ☐ DD/MM/YY. The right column has: ☒ hhmmL, ☐ hh:mmL, ☐ hhmmZ, ☐ hh:mmZ, ☐ hhmm UTC, and ☐ hh:mm UTC. A "close" button is at the bottom right.



Flmsg – send forms

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- ❑ Flmsg used to send formatted messages:
- ❑ ICS forms like ICS-203, 205, 206, 213, 214, 216, 309
- ❑ Weather Report like Hurricane, Severe Wx, Storm report
- ❑ ARRL Radiograms
- ❑ Blank text
- ❑ Automates use of Flwrap.
- ❑ Starts transmission automatically.
- ❑ Eases importing and checksum verification of incoming message



Data verification with Flwrap

Jack Tsujimura KH6DQ Aug. 2012

- ❑ Flwrap allows you to be 100% sure your message was received accurately.
- ❑ Checksum is inserted into a file.
- ❑ 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

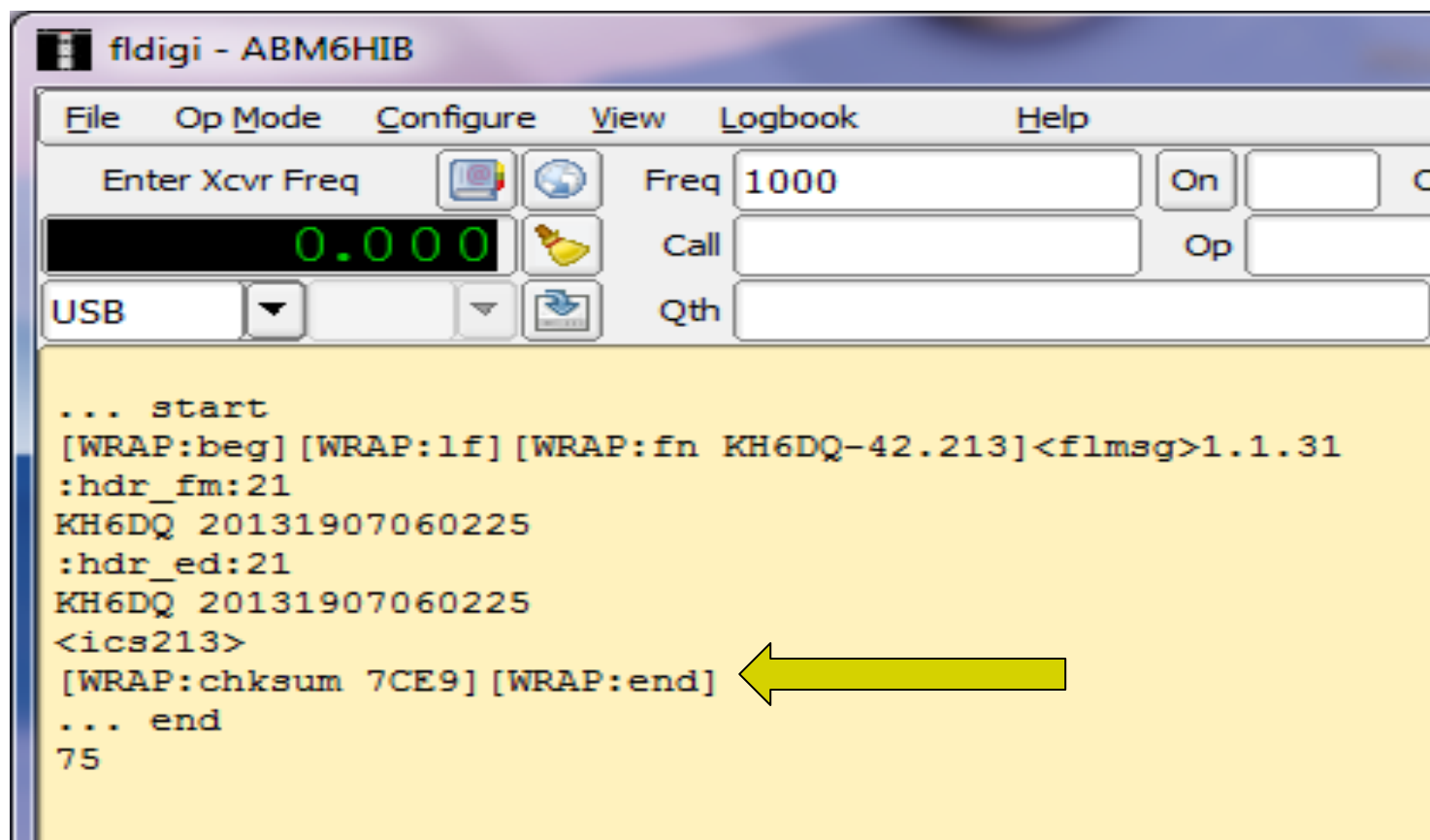
Flwrap – example

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- ❑ This is an example of a “wrapped” file:
- ❑ **[WRAP:beg]**[WRAP:crLf][WRAP:fn
example.txt]This is an example of a wrapped file.
- ❑ Here's what happens when we wrap something.
[WRAP:chksum 7CE9]**[WRAP:end]**
- ❑ Note the WRAP beg and end delimiters
- ❑ Also note the checksum, it's **7CE9**.
- ❑ Easy to import wrapped file...just drag into Fldigi
transmit window.

Flmsg – Autosend

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Flmsg setup HELP on THUMB Drive

- ❑ Check on your information from the thumb drive.
- ❑ HealthComm FSR (2 type)
- ❑ How to Send Spreadsheet CSV file
- ❑ Flmsg setup HELP
- ❑ For MAC users that is HELP
- ❑ Powerpoint for NBEMS



Next steps

Jack Tsujimura KH6DQ Aug. 2012

- ❑ Our strength is the ability to turn amateur activities into powerful emcomm tools.
- ❑ If you're ready for your daily hamming, you're more prepared for emergency than you think.
- ❑ Be active, and on the month HealthComm net you're needed, you'll feel right at home with fldigi program.
- ❑ **PRACTICE, PRACTICE, AND PRACTICE**



NBEMS Nets

- **HealthComm Digital net- after the main net**
- <http://groups.yahoo.com/group/NBMS-HI>

Monthly VHF/UHF Fldigi Net initialing using digital mode MT-63 on the 4th Thursday of every month at 8:00 p.m. to 9:00 p.m.

The following repeaters will be linked via Allstar:

- 147.020 pl 103.5
- 147.040 pl 103.5
- 147.060 pl 103.5
- 444.350 pl 103.5
- 444.325 pl 103.5
- 146.760
- 146.980 pl 88.5



Thanks!

- Narrow Band Emergency Yahoo group