Narrow-Band Emergency Message System (EBEMS) - MT-63 Operating Instructions

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Narrow Band Emergency Messaging Software (NBEMS) is a system that allows amateur radio operators to send and receive data using almost any computer (Windows, Mac, and Linux) and any analog radio without requiring a dedicated digital infrastructure like packet, D-Star, etc. NBEMS works on VHF/UHF FM and on HF. NBEMS software was developed by Dave Freese - W1HKJ, Stelios Bounanos - M0GLD, Leigh Klotz - WA5ZNU, Stephane Fillod - F8CFE, John Douyere - VK2ETA, Joe Veldhuis - N8FQ, Chris Sylvain - KB3CS, and Gary Robinson - WB8ROL. The three most common modes used are:

MT-63 2000L (long interleave) Digital Mode VHF/UHF FM

MT-63 1000L (long interleave) Digital Mode VHF/UHF FM

MT-63 1000L (long interleave) Mode HF USB

Installation

Download FLDIGI and FLMGS from http://www.w1hkj.com/download.html for Windows, Linux, or MAC.

1. If using a Sound Card Interface, hook up all cables and test the microphone on FM.

2. Connect the RS232 connection from the rig to the computer.

3. Install Fldigi and Flmsg software.

4. Open Fldigi.

5. Click on Configure / Operator and enter your personal information or as much as you want to. Save.

6. Run Sound Card Calibration (CheckSR.exe) and write down the PPM values. Skip this step if using a mac.

6a. Sound Card Calibration

1. Download and save CheckSR.exe. It provides the capability of analyzing your sound card offsets and gives you the corrections in parts per million (ppm): http://www.pa-sitrep.com/checksr/CheckSR.exe

2. Open FLDIGI, go to configure, sound card, audio devices tab and make sure you have the sound card you use for your interface properly selected from the capture and playback drop down choices.

3. Under the audio settings tab, you should see a sample rate drop down box for capture and playback. Under each drop down box, select the sample rate that has (native) listed after it and write down this figure. Click save config, then click save. Close FLDIGI.

4. Open CheckSR. From the drop down boxes for sound card settings, Input and Output, choose the sound card you are using. Next, select the sample rate from the drop down box in CheckSR for the sample rate that FLDIGI showed as "Native" then click start.

5. Let the application run for about 5 minutes. You will notice that the numbers will progressively stabilize. After about 5 minutes, click stop then write down the resulting figures on input and output for the measurements in Hz and PPM. Keep this record.

6. Open FLDIGI, go to configure, defaults, sound card and click on the audio settings tab. Enter the PPM figures for RX ppm (CheckSR ppm Input figure) and TX ppm (CheckSR ppm Output figure). If you had a figure that resulted in a minus from CheckSR, enter the PPM setting with the minus symbol followed directly by the figure with no space. Then click save config, then close.

Some sound card softwares have a programmable filter on the mic/line input that can characterize the digital signal as noise, and squash it after 2 seconds. Turned off this filter.

7. Click on Configure / Audio / Devices and select the sound card input and output fields and enter the PPM values from the Sound Card Calibration. Enter the PPM figures for RX ppm (CheckSR ppm Input figure) and TX ppm (CheckSR ppm Output figure). If you had a figure that resulted in a minus from CheckSR, enter the PPM setting with the minus symbol followed directly by the figure with no space. Save.

8. Click on Rig / Rig / Hardware PTT and set up Rig Control. The simplest rig control is to control the push to talk. Set this type of control on the first configuration tab for rig control. Select this operation by checking the "Use serial port PTT". Select the serial port from the list (fldigi will have searched for available ports) or go to Start / Control Panel / System / Hardware / Device Manager / Ports (Com and LPT) to find the com port used. Then specify whether the h/w uses RTS or DTR and whether a + or - voltage is required to toggle PTT on. Then, press the Initialize button. Set the rig to a frequency that is not used during testing. Save.

9. Click Configure /Misc / NBEMS, check: enable, open message folder, open with FLMSG, open in browser, and press FLMSG button and select the executable file. Save.

10. Click Configure / Modems / MT-63 tab, check: 8 bit extended character (UTF-8) and Long Receive Integration. Save.

11. Open FLMSG

12. Configure, Date and time. Select the format you want to use. Save.

13. Configure, Personal Data. This should already be in the program. If not, enter it. Save.

14. Configure Files Formatting. Check open folder when exporting, Callsign, Data-time, and Serial #. Save.

15. From the Form menu, select Radiogram.

16. On the bottom of the window, select Base 64 and MT63-2L from the drop down lists.

Operation

A hard wired sound card interface can be used. Alternately placing the computer's microphone near the radio's speaker to receive and holding the radio's microphone next to the computer speaker while pressing the microphone's PTT switch and pressing PTT on the computer to transmit.

Below are some basic instructions. More advanced instructions can be obtained by watching the instructional videos.

1. Open FLDIGI.

2. Under, Op Mode, select the operating mode MT63-2000L or MT63-1000L (PSK can also be used for other applications)

3. Adjust your sound card master audio volume and sound recording volume to about 75%. You can change this later if necessary according to signal reports from others.

4. In the frequency display, click on the last digit and set it to zero. Then, press enter. Enter the frequency on the keyboard. Then, press enter or Select a frequency from the drop down box located after the words "Enter Xcvr Freq."

5. If a sound card interface is not used, place the computer's microphone near the radio's speaker.

6. Open the Squelch button on the bottom right corner of the screen (no color seen in box).

7. Turn the rig squelch off.

8. Set the volume of the radio or the computer sound card microphone input level until the black diamond, on the bottom part of the FLDIGI window, changes color to green. If the diamond turns red, the level is too high. Adjust it again on an incoming signal. If the rear data jack is used for audio, adjust only the computer sound card microphone input level because the radio volume control will not have any effect.

9. When there is a solid line in the waterfall, point the cursor to it and click so that a message can be received.

10. Click on the AFC button to track drifting signals.

11a. TO SEND A TEST TONE

    1. Set the signal markers to be centered on the waterfall at 1,500 Hz.

    2. Press the TUNE button (a 1,000 Hz. tone will be transmitted.

    3. Press it again after 15 seconds to release it.

11b. TO SEND A FORMATED MESSAGE:

    1. Open FLMSG

    2. Select the message format you want to use, such as Radiogram or ICS-213.

    3. Enter the appropriate information into the message, including Base 64 and MT63-2KL at the bottom of the window.

    4a. If a sound card interface is not used, place the radio's microphone near the computer's speaker. Press the PTT switch on the microphone, then click "Auto Send."

    4b. If a sound card interface is used, Press the PTT switch on the microphone, then click "Auto Send."

    4c. If a sound card interface and rig control is used, click "Auto Send."

11c. TO SEND AN UNFORMATED MESSAGE:

    1a. If a sound card interface is not used, place the radio's microphone near the computer's speaker. Press the PTT switch on the microphone, then click on the CQ button (green button) or the TTX. To transmit a message that has been typed in, press the PTT switch on the microphone, then click on the TTX button.

    1b. If a sound card interface is used, click on the CQ button (green button) or the TTX. To transmit a message that has been typed in, click on the TTX button.

1c. If a sound card interface and rig control is used, click on the CQ button (green button) or the TTX button.

FLDI User Manual: http://www.w1hkj.com/FldigiHelp-3.22/operating_page.html

Macros

1 .Open Flidigi

2. On the right, above the waterfall, next to the blue blank button is a #1. Left click this number until it changes to "3" or "4", whichever bank you want to use.

3. On the left side, there is a green blank macro button, right click a button and the macro editor will pop up.

4. Copy the line from below. Paste this line into "macro text" box.
DE <MYCALL> ALL STATIONS THIS IS A MESSAGE FROM, Northport, New York [MT63-2KL 1500Hz] DE <MYCALL> K <RX>

5. Enter a button name below into the "macro button label" box (such as TX-30s)

6. Click Apply and Close

7. Choose File, Macros, Save, and Save.

Test it the first time by left clicking it without a radio connected.

Instructional Videos

http://www.youtube.com/watch?v=-1wZ7uIA-Qs

http://www.youtube.com/watch?v=SWZ2vKWSilE&list=PLBF8CFBA57CC6C2CC

http://www.youtube.com/watch?v=psP489NOkg0

http://www.youtube.com/watch?v=9Pw9XWnwukc

http://www.nyc-arecs.org/narrow.html