Sending ICS Forms
Using MT63 Soundcard Mode

Faster than Voice and Error Free

AH6EZ/W7
Dick Illman

MT63 Mode

- Used by many EOC organizations

  - Proven communications method

- Forward Error Correction

  - (better than voice and handwriting)

- Faster than voice/transcription – about 200 wpm

- fldigi is integrated with flmsg

  - Send ICS form content only, auto fills in received form

- Can send many other forms such as ARRL

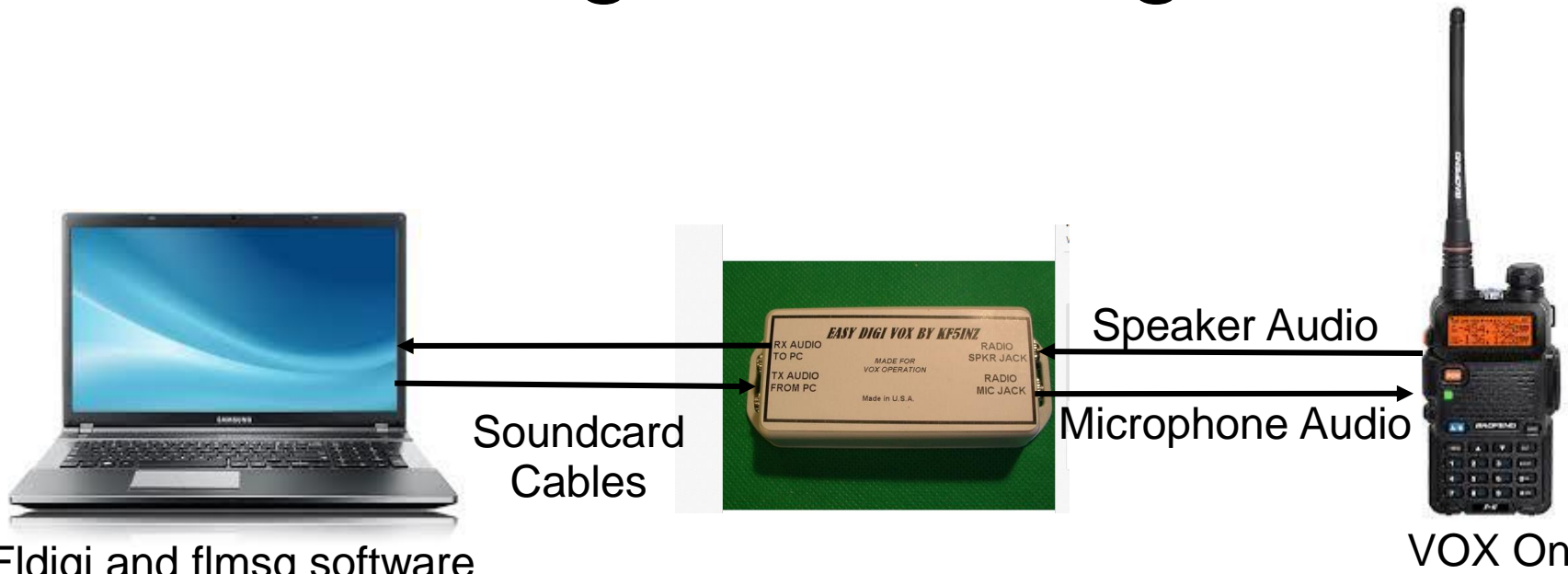- Tolerant of path errors and level setting

MT63 modes

- Three Speeds (3 bandwidths)
    - 2000 HZ (500 HZ TO 2500 HZ) - THRUPUT 200 WPM
    - 1000 HZ (500 HZ TO 1500 HZ) - THRUPUT 100 WPM
    - 500 HZ (500 HZ TO 1000 HZ) - THRUPUT 50 WPM
- Three Interleaves (amount of forward error correction)
    - LONG INTERLEAVE
    - SHORT INTERLEAVE
    - VERY SHORT INTERLEAVE
- Recommended default 2000 Long, good VHF conditions

MT63 technical details

- Orthogonal Frequency Division Multiplexed (OFDM) mode

- 64 parallel carriers spaced at 1/64th of bandwidth (31.25Hz MT63-2000)

- tones are differential BPSK modulated

- highly redundant Forward Error Correction system

- tones have synchronous symbols, and are raised cosine modulated.

- mode requires a very linear transmitter

- Over-driving leads to excessive bandwidth and poorer reception.

- mode very tolerant of tuning, most software will handle 100Hz mistuning
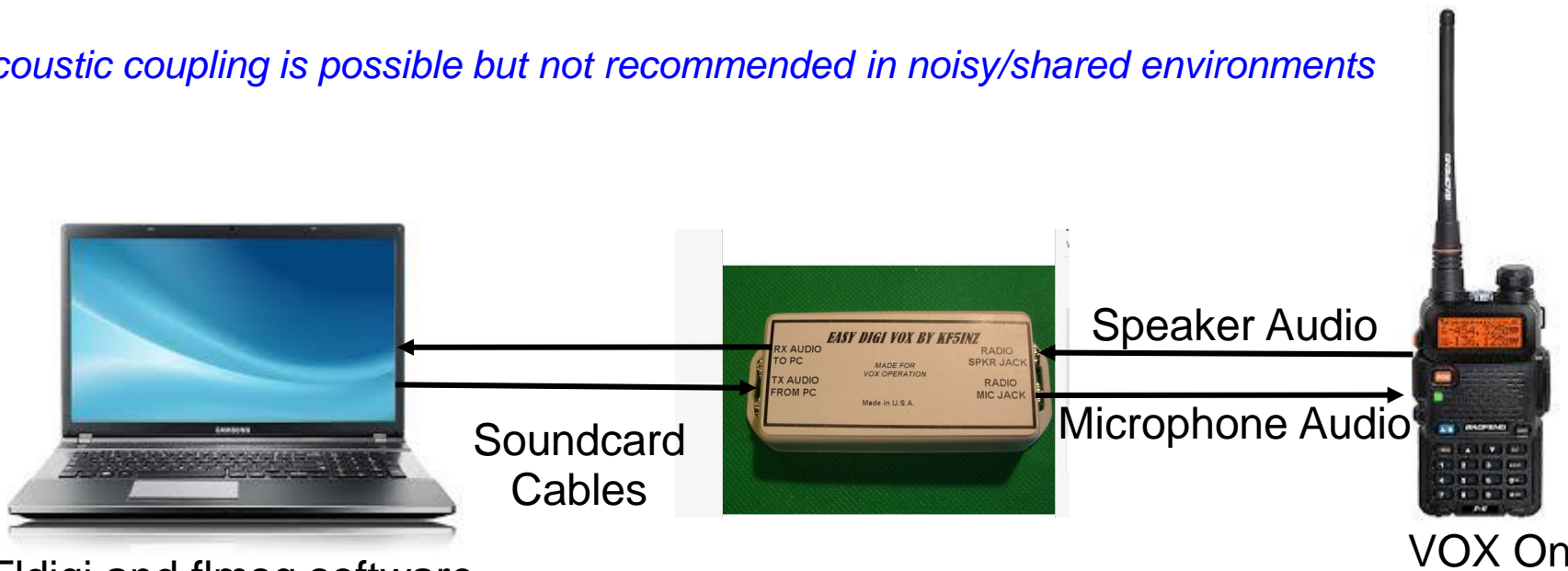
- designed by Pawel SP9VRC.

Baofeng to Baofeng Setup

Fldigi and flmsg software
Windows, OSX, or Linux

Soundcard Cables

Speaker Audio

Microphone Audio

VOX On

Acoustic coupling is possible but not recommended in noisy/shared environments

2m or 70cm Simplex or Repeater

Fldigi and flmsg software
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Soundcard Cables

Speaker Audio

Microphone Audio

VOX On

Baofeng UV-5R $37 kit using VOX

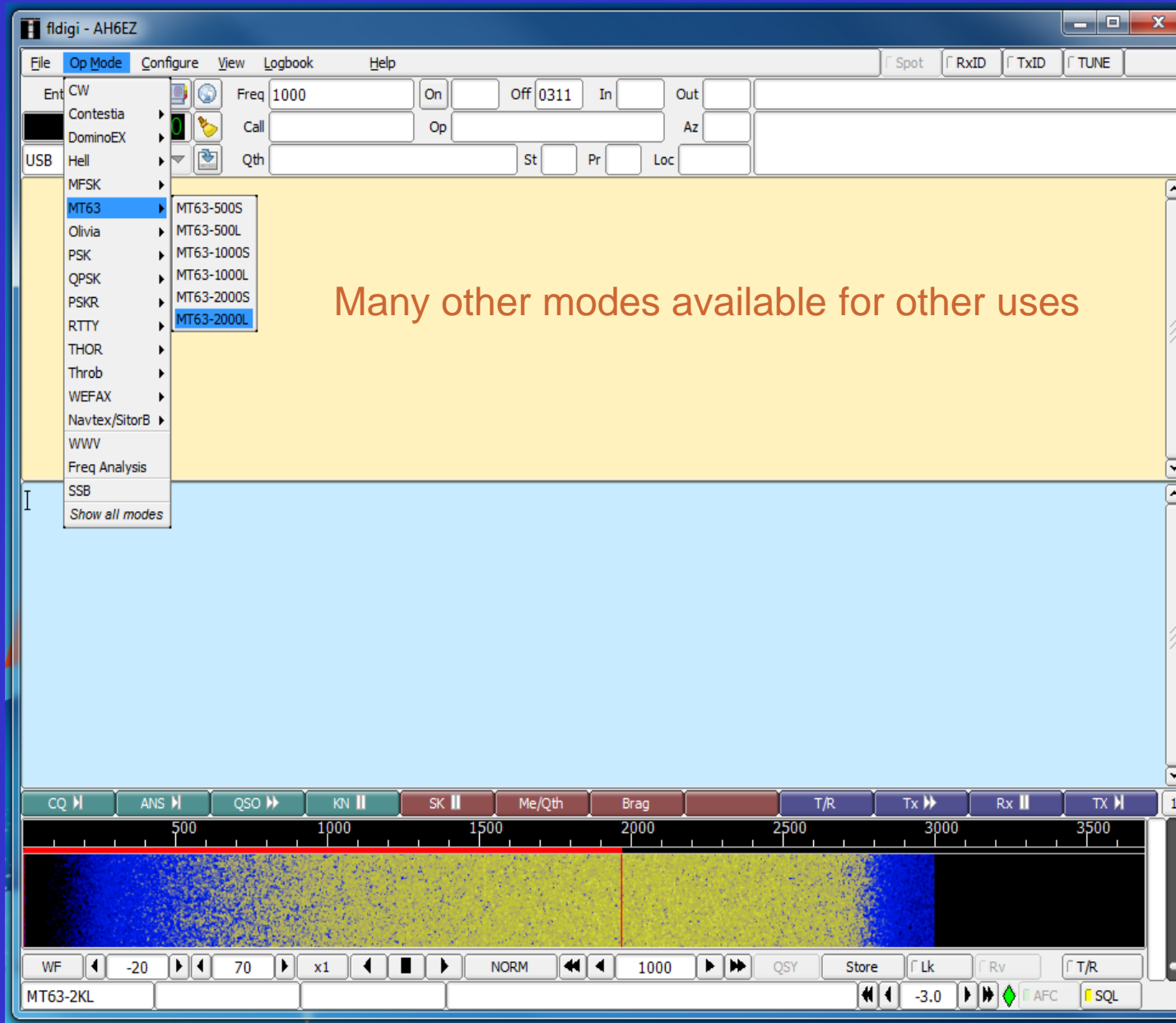Includes ALL cables and enclosure
Available on eBay

KF5INZ $10 Interface Kit with PTT

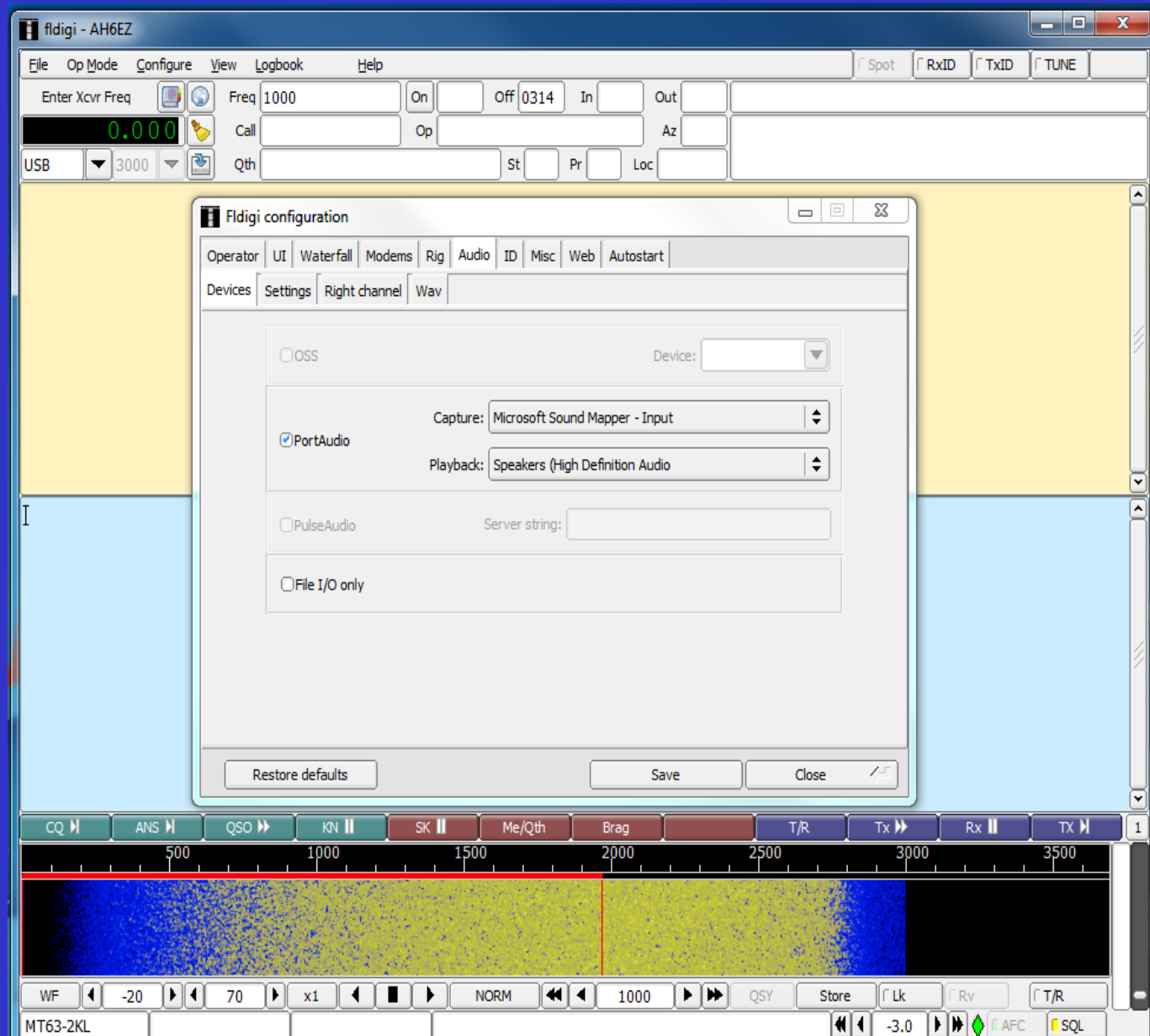Useful for using with radios without VOX

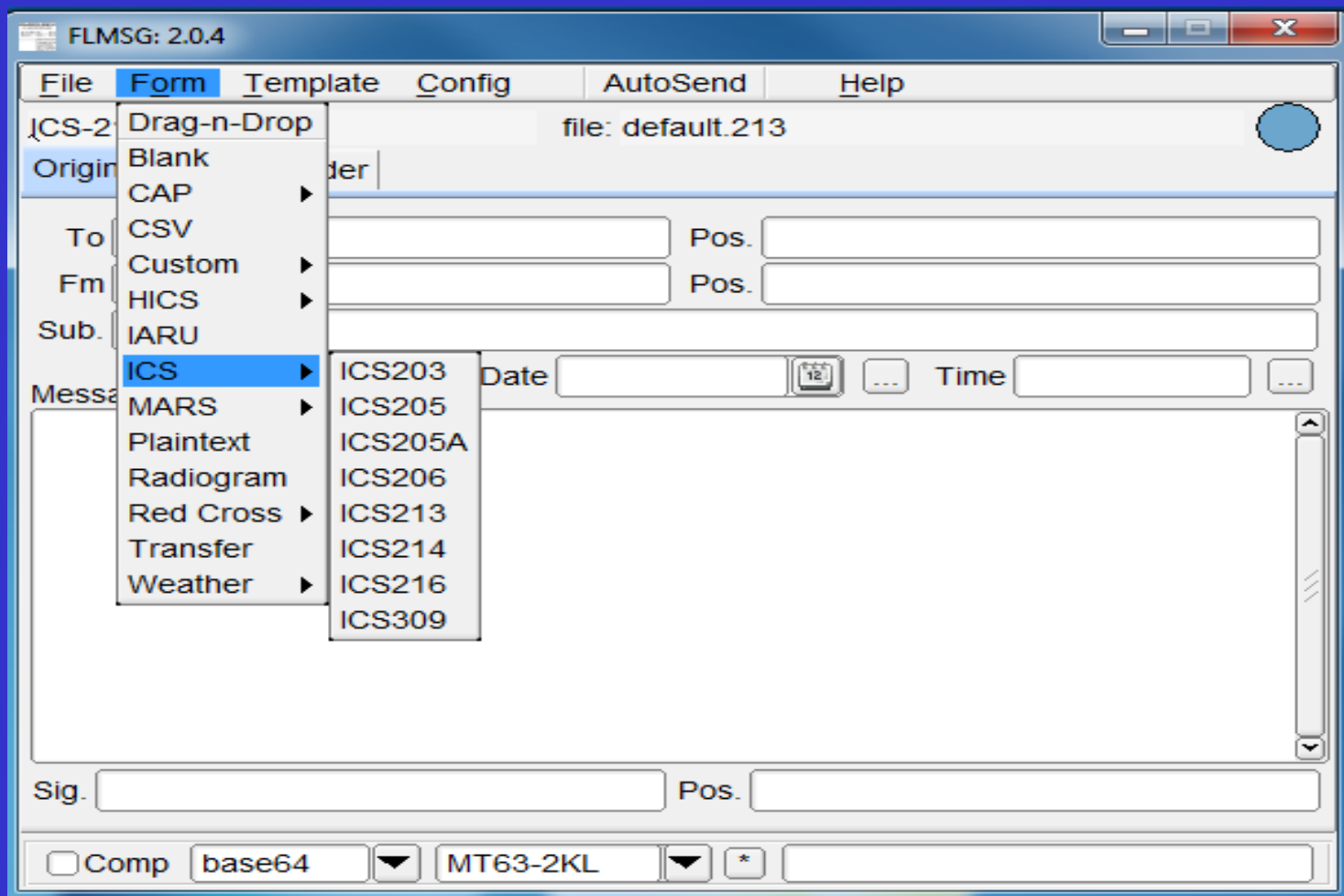# fldigi user interface
Select MT63 2000 Long mode
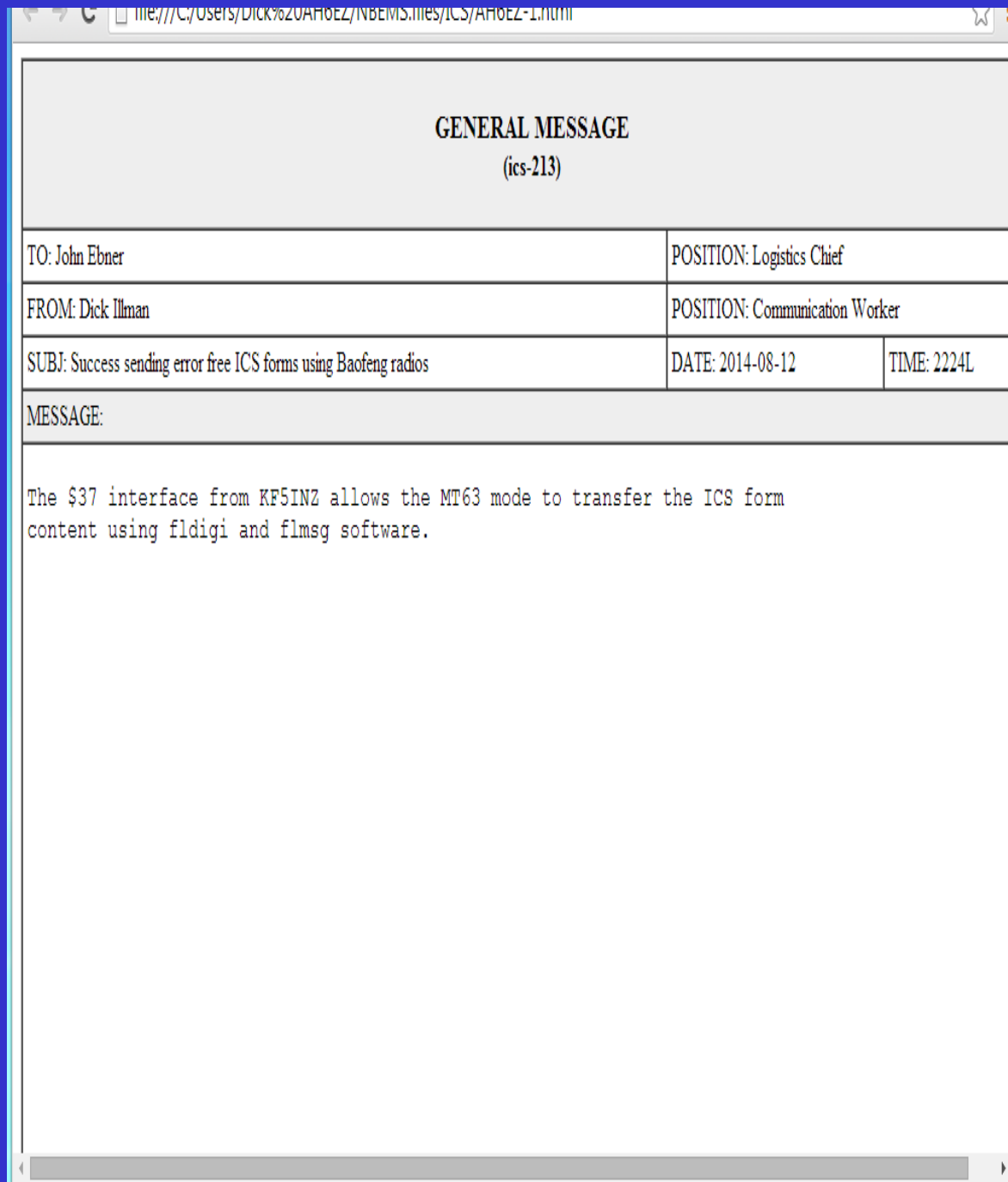
fldigi user interface
Select Soundcard Input and Output

flmsg addon software to fldigi
ICS message entry

View, print, save ICS forms

file:///C:/Users/Dick%20AH6EZ/NBEMS.files/ICS/AH6EZ-1.html

GENERAL MESSAGE
(ics-213)

TO: John Ebner	POSITION: Logistics Chief
FROM: Dick Illman	POSITION: Communication Worker
SUBJ: Success sending error free ICS forms using Baofeng radios	DATE: 2014-08-12 TIME: 2224L

MESSAGE:

The $37 interface from KF5INZ allows the MT63 mode to transfer the ICS form content using fldigi and flmsg software.

flmsg addon software to fldigi
ARRL radiogram message entry

Drag and drop
Message file
To fill in form

Select mode to show message time

Where to download the free software
www.w1hkj.com

	Linux Binary	Windows Setup	OS X dmg	Puppy Pet (1)	Source	Help	Release Info
fldigi / flarq:	fldigi-3.21.83.bin	fldigi-3.21.83 setup	fldigi-3.21.83 i386 dmg	fldigi-3.21	fldigi-3.21.83	fldigi-Help	Maint'
			fldigi-3.21.83 ppc dmg	flarq-4.3		flarq-Help	
	README	Setup.exe SHA256 checksums		How-To-Install			
		required for all fl___ applications on Puppy OS =>		pet libs		fldigi-Help PDF	
RigCat Xmls	xml archives						
flamp:	flamp-2.1.02.bin	flamp-2.1.02 setup	flamp-2.1.02 i386 dmg	flamp	flamp-2.1.02	flamp-Help(html)	
			flamp-2.1.02 ppc dmg			flamp-Help - PDF	
						flamp-protocol PDF	
flwrap:	flwrap-1.3.4.bin	flwrap-1.3.4 setup	flwrap-1.3.4 i386 dmg	flwrap	flwrap-1.3.4	flwrap-Help	Maint'
			flwrap-1.3.4_ppc dmg			flwrap Help PDF	
flmsg:	flmsg-2.0.4.bin	flmsg-2.0.4 setup	flmsg-2.0.4 i386 dmg	flmsg	flmsg-2.0.4	flmsg-Help	Maint'
			flmsg-2.0.4 ppc dmg			flmsg-Help-PDF	
flwkey:	flwkey-1.1.6.bin	flwkey-1.1.6 setup	flwkey-1.1.6 i386 dmg	flwkey	flwkey-1.1.6	flwkey-Help	Maint'
			flwkey-1.1.6 ppc dmg			flwkey Help PDF	
flrig:	flrig-1.3.16.bin	flrig-1.3.16 setup	flrig-1.3.16 i386 dmg	flrig	flrig-1.3.16	flrig-help	Maint'
			flrig-1.3.16 ppc dmg			flrig Help PDF	
fllog:	fllog-1.1.8.bin	fllog-1.1.8 setup	fllog-1.1.8 i386 dmg	fllog	fllog-1.1.8	fllog-help	Maint'
			fllog-1.1.8_ppc dmg			fllog Help PDF	
flnet	flnet-7.2.1 bin	flnet-7.2.1 setup	flnet-7.2.1 i386 dmg		flnet-7.2.1	flnet help	
			flnet-7.2.1 ppc dmg			flnet Help PDF	
kcat	kcat-1.2.1 bin	kcat-1.2.1 setup	kcat 1.2.1 i386 dmg		kcat-1.2.1	kcat help	
			kcat 1.2.1 ppc dmg			kcat help PDF	
kcts	kcts 1.0.0 bin	kcts-1.0.0 setup	kcts-1.0.0 i386 dmg		kcts-1.0.0	kcts help	
			kcts-1.0.0 ppc dmg				

Operational Best Practices

- Best using simplex without CTCSS encode

- Optimum deviation 3 KHz for no clipping

  - VOX can be problematic, may need PTT interface

- Repeaters tricky

  - May have DTMF muting (MT63 carriers fake it out)

  - Strong MT63 can overcome CTCSS decoder

- Be mindful of radio or repeater Time Out Timers

- Develop meaningful file name structure

- Messages can be forwarded to/from HF if needed

- Many different radio/interface/computer setups possible

Additional Links

- Basic fldigi and flmsg setup - 4.75 minutes https://www.youtube.com/watch?v=SWZ2vKWSilE

- here is a link sending receiving an ICS213 form with MT63 audio - 2 minutes

- https://www.youtube.com/watch?v=4J-e7u4wxmc

- Here is one about flmsg ARRL message gram entry. - 6 minutes

- https://www.youtube.com/watch?v=6KBtanh4COc