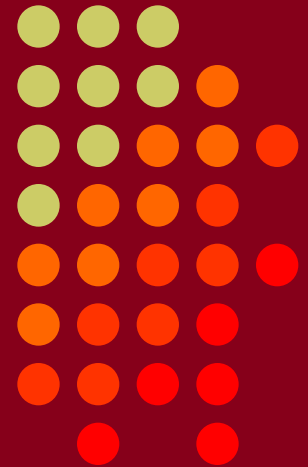


CTU 2017 Presents

Advanced Topics in RTTY Contesting

Ed Muns, W0YK



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Advanced RTTY Contesting



- 1st CTU session: *“RTTY Contesting, A to Z”*
- Radio Configuration
- Messages
- Keyboard Optimization
- Super Check Partial & Pre-Fill
- Callsign Stacking
- Multiple Decoders
- SO2V, SO2R-SOnR
- Logging Software
- Ergonomics

Receiver Configuration

AGC



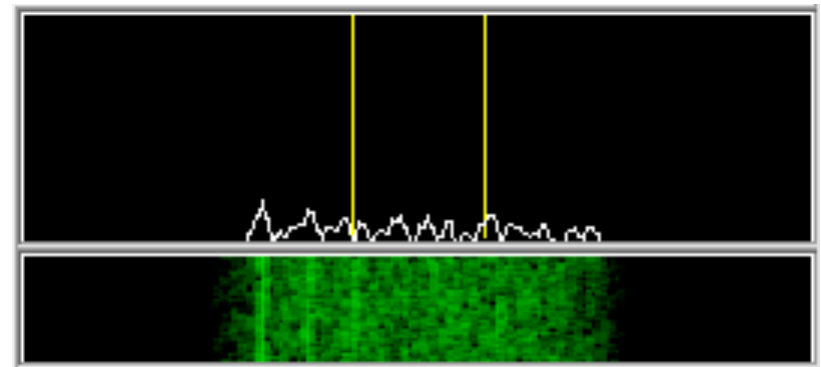
- Turn off AGC
 - or, at least minimize, e.g., AGC=Slow
 - AGC increases error rate in modern software decoders
- Use minimum discernible headphone volume
 - Ear protection from loud signals

Receiver Configuration

decoder level



- Decoder audio level
 - Band noise 5% of full-scale
 - Maximize dynamic range
- Note 500 Hz IF filtering

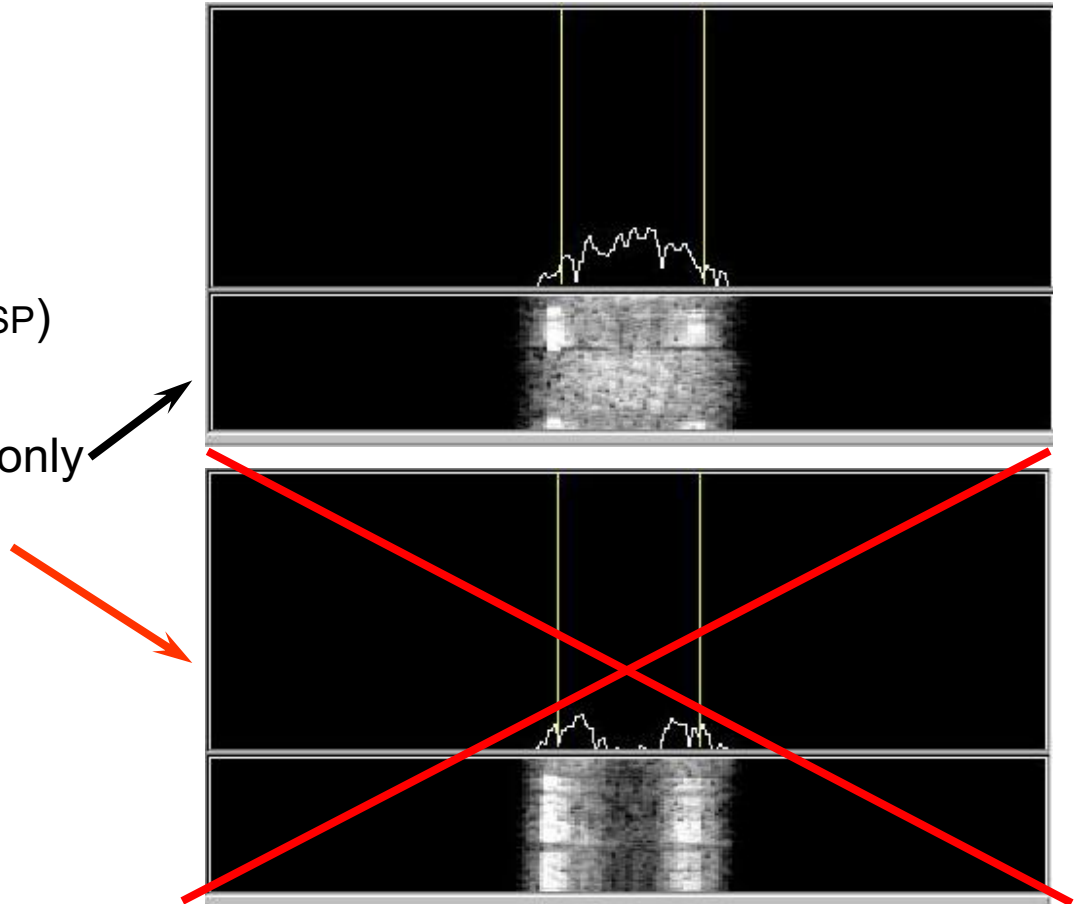


Receiver Configuration

narrow *IF* filtering



- PC Audio isolation
 - Transformer
 - Commercial interface
 - Some radios (K3)
- Narrow IF filters (Roofing & DSP)
 - 500 Hz - normal
 - 250 Hz - extreme QRM only
 - Tone filters – **don't use!**
 - Icom Twin Peak Filter
 - K3s Dual-Tone Filter
- Audio filtering
 - JPS NIR-10/12
 - Timewave DSP-599zx
 - Modern DSP rigs



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Radio Configuration

soundcard levels



- Adjust levels in Windows Volume Control
(or, in MMTTY *Options/Soundcard ...*)
 - Use isolation transformer, if needed
 - Mute other inputs and outputs
- RX audio goes to LINE IN (or, MIC w/pad)
 - *Options/Soundcard input level*
- TX AFSK audio (mic) comes from LINE OUT
 - *Options/Soundcard output level*
 - Turn off radio compression (speech proc.)
 - Avoid over-drive

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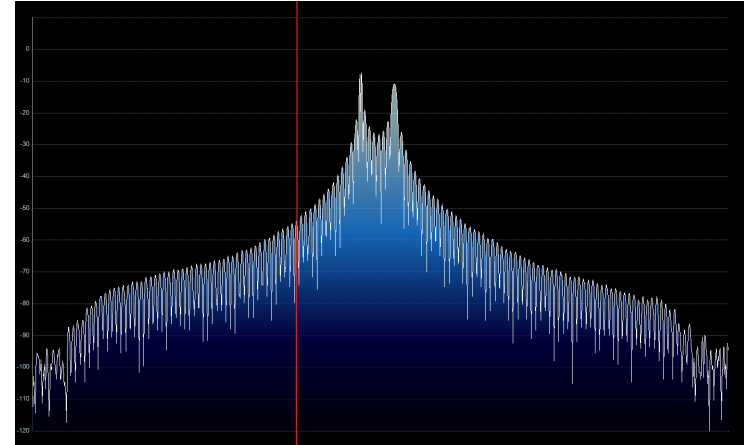
Transmitter Configuration

FSK bandwidth



Old K3 FSK bandwidth

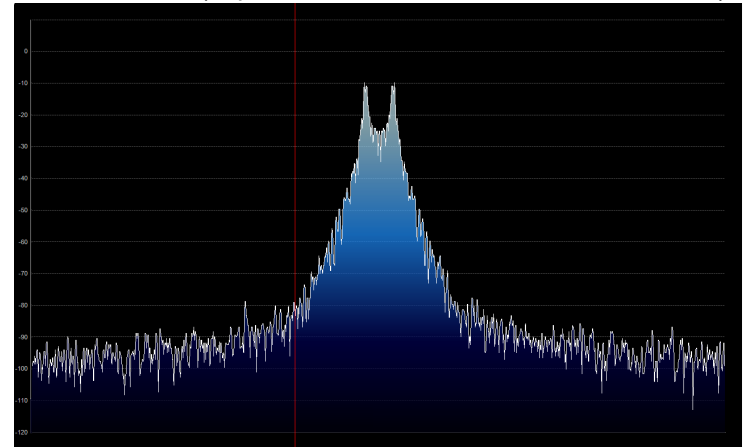
- No waveshaping
- < DSP281 firmware
- Typical of all radios
- 50 watts



Thanks K0SM (<http://www.frontiernet.net/~aflowers/k3beta/>)

New K3 FSK bandwidth

- Optimal DSP filter
- DSP281+ firmware, March 2013
- Lobby other mfrs



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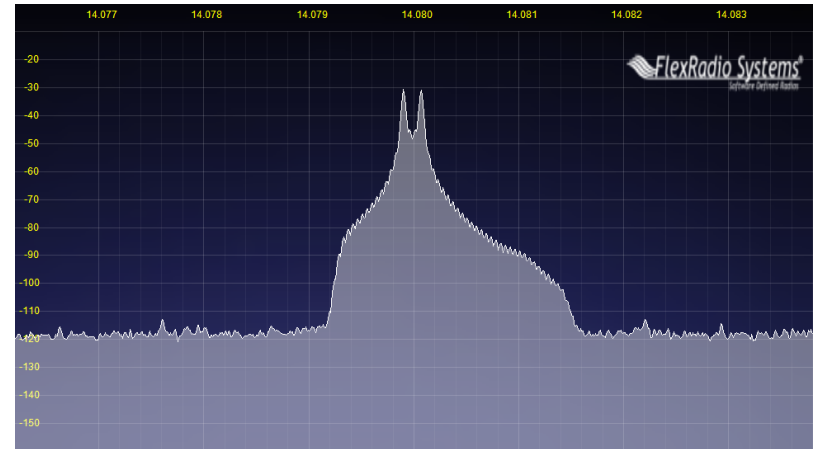
Transmitter Configuration

AFSK bandwidth



MMTTY - AFSK

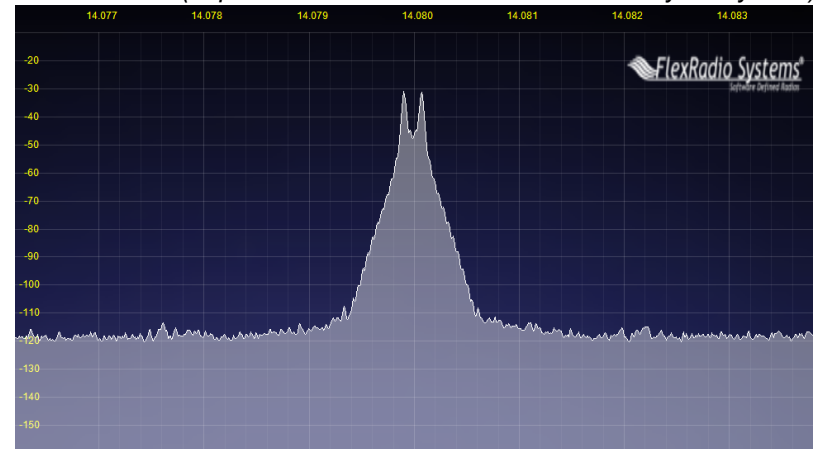
- No filtering
- K3 @ 1 mW



Thanks K0SM (<http://www.frontiernet.net/~aflowes/k3rtty/k3rtty.html>)

MMTTY - AFSK

- Default 48-tap TX BPF
- K3 @ 1 mW



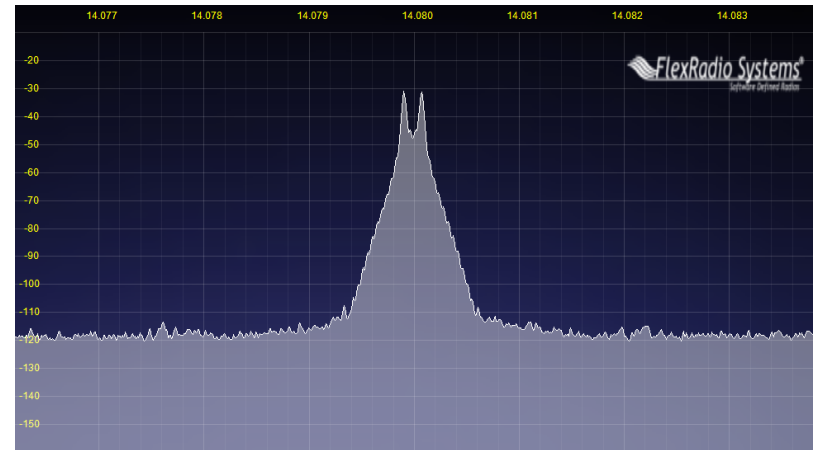
Transmitter Configuration

AFSK bandwidth



MMTTY - AFSK

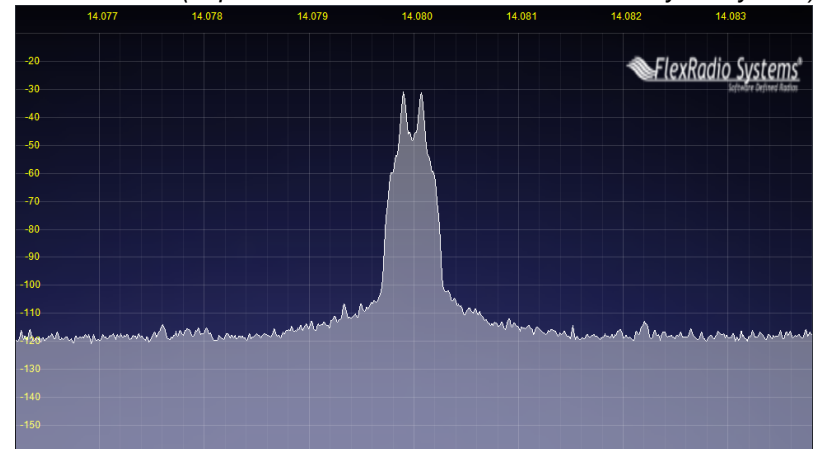
- Default 48-tap TX BPF
- K3 @ 1 mW



Thanks K0SM (<http://www.frontiernet.net/~aflowers/k3rtty/k3rtty.html>)

MMTTY - AFSK

- 512-tap TX BPF
- K3 @ 1 mW



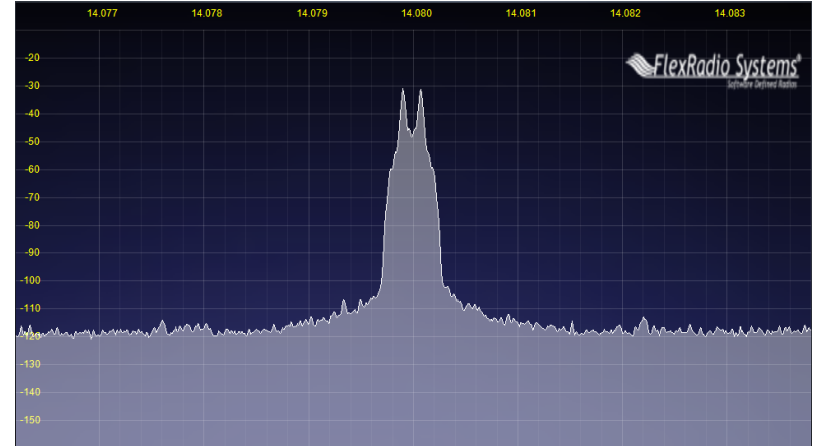
Transmitter Configuration

AFSK bandwidth



MMTTY - AFSK

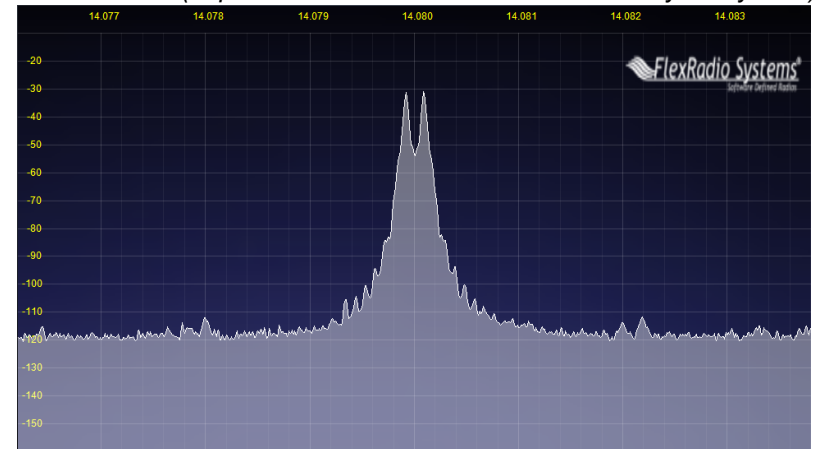
- 512-tap TX BPF
- K3 @ 1 mW



Thanks K0SM (<http://www.frontiernet.net/~aflowers/k3rtty/k3rtty.html>)

2Tone - AFSK

- Default “AM” setting
- K3 @ 1 mW



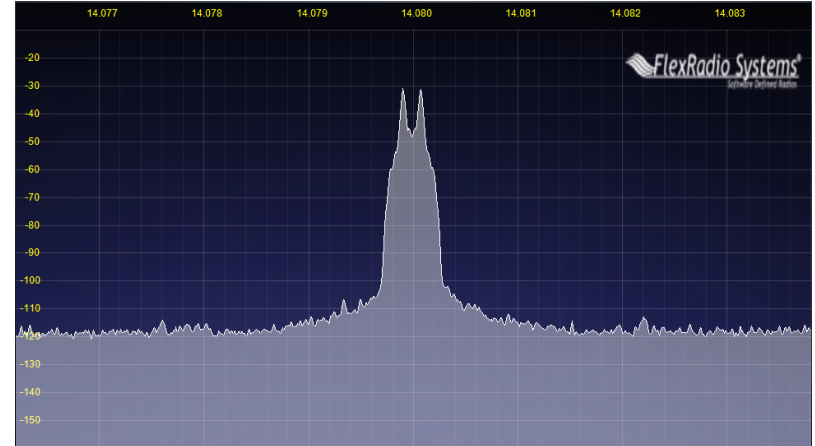
Transmitter Configuration

PA IMD impact on AFSK bandwidth



MMTTY - AFSK

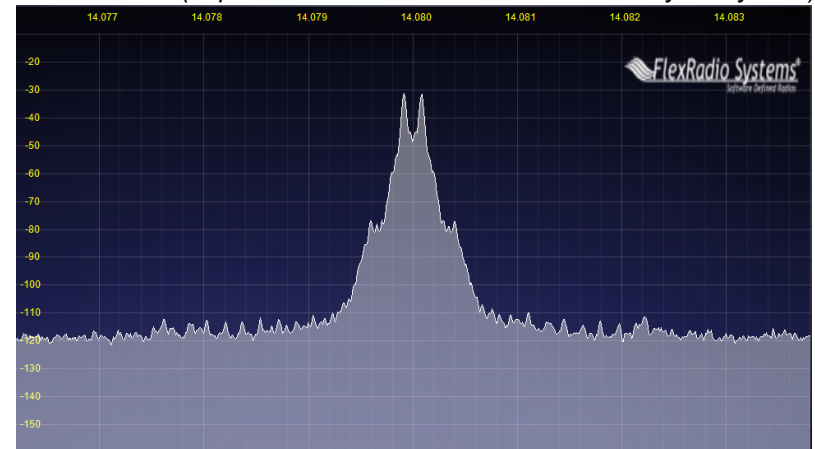
- 512-tap TX BPF
- K3 @ 1 mW



Thanks K0SM (<http://www.frontiernet.net/~aflowers/k3rtty/k3rtty.html>)

MMTTY - AFSK

- 512-tap TX BPF
- K3 @ 100 watts



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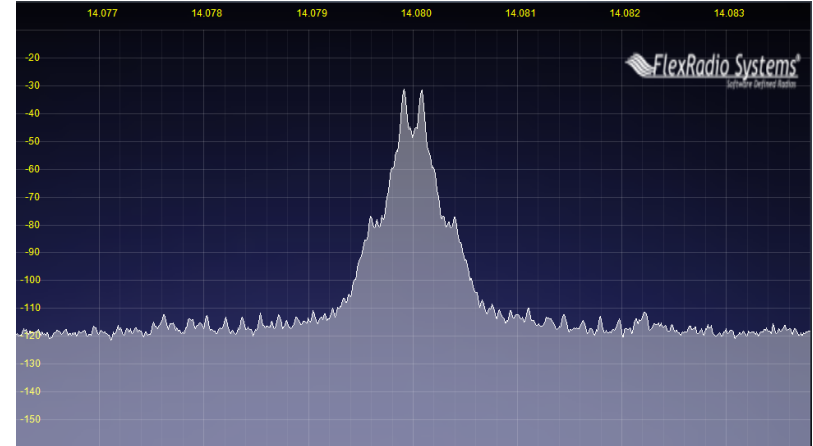
Transmitter Configuration

PA IMD impact on AFSK bandwidth



MMTTY - AFSK

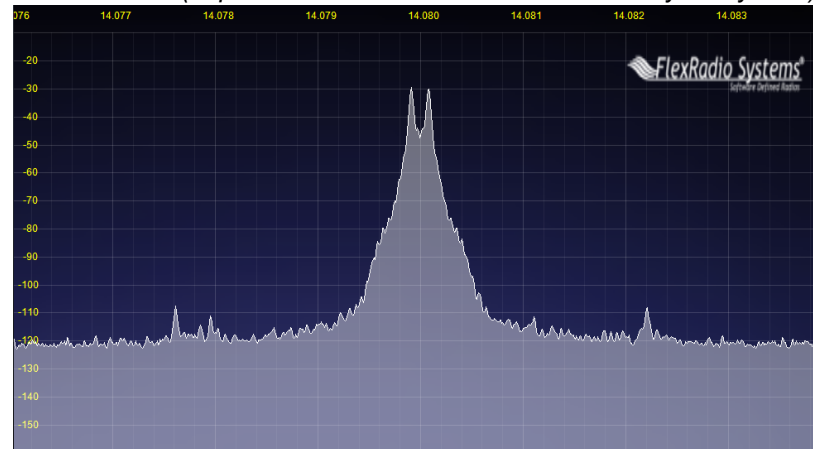
- 512-tap TX BPF
- K3 @ 100 watts



Thanks K0SM (<http://www.frontiernet.net/~aflowers/k3rtty/k3rtty.html>)

MMTTY - AFSK

- No MMTTY filter
- K3 AFSK filter
- K3 @ 100 watts



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Transmitter Configuration

FSK & AFSK bandwidth



FSK

- Use radio FSK filter
 - DSP TX filter (K3)
 - Crystal TX filter (K3)
 - Lobby other mfrs
- Otherwise, use AFSK
 - With TX filtering
 - Properly adjusted



AFSK

- Use radio AFSK filter
 - DSP TX filter (K3)
 - Crystal TX filter (K3)
 - Lobby other mfrs
- Use MODEM TX filter
 - MMTTY 512-tap
 - 2Tone default

Messages



- Short, as with CW/SSB
- No extraneous info
- 599 (not 5NN) once
- Serial number twice
- Space (not hyphen)
- Omit 'DE'
- RTTY chars (%R, %E)

www.rttycontesting.com/tutorials/messages

Slot	Call Sign	Mode
F2:	%RWPX P49X P49X CQ %E	Normal keys
F3:	DE P49X %E	Normal keys
F4:	P49X %E	Normal keys
F5:	%R%C 599 %N %N %E	Normal keys
F6:	%RTU P49X CQ %E	Normal keys
F7:	%RQRV %ZL.1 %E	Normal keys
F8:	%R%P1 TU NOW %C 599 %N %N %E	Normal keys
F9:	%RCALL? %E	Normal keys
F10:	%R?NR? %E	Normal keys
F16/F11:	%R%N %E	Normal keys

Slot	Call Sign	Mode
F2:	%RWPX P49X P49X P49X CQ %E	Shifted keys
F3:	UP 1 %E	Shifted keys
F4:	%B	Shifted keys
F5:	%R%C %E	Shifted keys
F6:	%RKB P49X CQ %E	Shifted keys
F7:	%RQRV %ZR.1 %E	Shifted keys
F8:	%R%P1 KB NOW %C 599 %N %N %E	Shifted keys
F9:	%RQRZ? %E	Shifted keys
F10:	%RAGN? %E	Shifted keys
F16/F11:	%RQSL LOTW OR W0YK %E	Shifted keys

Messages

optimize



- Modular
 - Chaining
- Group logically
- Supports a cadence

CW/RTTY/SSB Memory Setup

F2: %RWPK P49X P49X CQ %0%E

F3: DE P49X %E

F4: P49X %E

F5: %R%C 599 %N3 %N3 %E

F6: %R%C TU P49X CQ %0%E

F7: %RQRV %ZB.1 %E

F8: %R%P1 TU NOW %C 599 %N3 %N3 %E

F9: %RCALL? %E

F10: %R?NR? %E

F1&F11: %R%N3 %N3 %E

Browse...

OK

Cancel

Help

☒ Normal keys

☐ Shifted keys

☐ SSB

☐ Shifted SSB

CW/RTTY/SSB Memory Setup

F2: %RCQ WPK P49X P49X P49X CQ %0%E

F3: UP 1 %E

F4: %B

F5: %R%C %E

F6: %R%C KB P49X CQ %0%E

F7: %RQSL WOYK WOYK %E

F8: %R%P1 KB NOW %C 599 %N3 %N3 %E

F9: %RQRZ? %E

F10: %RAGN? %E

F1&F11: %RQTH? %E

Browse...

OK

Cancel

Help

☐ Normal keys

☒ Shifted keys

☐ SSB

☐ Shifted SSB

Messages

formatting



CR/LF Space Receive

CW/RTTY/SSB Memory Setup

F2:	%RNPX P49X P49X CQ %O%E	Browse...
F3:	DE P49X %E	OK
F4:	P49X %E	Cancel
F5:	%R%C 599 %N3 %N3 %E	Help
F6:	%R%C TU P49X CQ %O%E	<input checked="" type="radio"/> Normal keys
F7:	%RQRV %ZB.1 %E	<input type="radio"/> Shifted keys
F8:	%R&P1 TU NOW %C 599 %N3 %N3 %E	<input type="radio"/> SSB
F9:	%RCALL? %E	<input type="radio"/> Shifted SSB
F10:	%R?NR? %E	
F1&F11:	%R&N3 %N3 %E	

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Messages

efficiency



rarely used

RTTY practice

RIT clear

CW/RTTY/SSB Memory Setup

F2:	%RWPX P49X P49X CQ %O%E	Browse...
F3:	DE P49X %E	OK
F4:	P49X %E	Cancel
F5:	%R%C 599 %N3 %N3 %E	Help
F6:	%R%C TU P49X CQ %O%E	<input checked="" type="radio"/> Normal keys
F7:	%RQRV %ZB.1 %E	<input type="radio"/> Shifted keys
F8:	%R%P1 TU NOW %C 599 %N3 %N3 %E	<input type="radio"/> SSB
F9:	%RCALL? %E	<input type="radio"/> Shifted SSB
F10:	%R?NR? %E	
F1&F11:	%R%N3 %N3 %E	

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Messages

special



other radio freq.

Stacked Call Sign exchange

CW/RTTY/SSB Memory Setup

F2:	%RWPX P49X P49X CQ %O%E	Browse...
F3:	DE P49X %E	OK
F4:	P49X %E	Cancel
F5:	%R%C 599 %N3 %N3 %E	Help
F6:	%R%C TU P49X CQ %O%E	<input checked="" type="radio"/> Normal keys
F7:	%RQRV %ZB.1 %E	<input type="radio"/> Shifted keys
F8:	%R%P1 TU NOW %C 599 %N3 %N3 %E	<input type="radio"/> SSB
F9:	%RCALL? %E	<input type="radio"/> Shifted SSB
F10:	%R?NR? %E	
F1&F11:	%R%N3 %N3 %E	

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Messages

personal



QSL message

personal greeting

CW/RTTY/SSB Memory Setup

F2:	%RCQ WPX P49X P49X P49X CQ %O%E	Browse...
F3:	UP 1 %E	OK
F4:	%B	Cancel
F5:	%RAC %E	Help
F6:	%R%C (KB) P49X CQ %O%E	<input type="radio"/> Normal keys
F7:	%RQSL WOYK WOYK %E	<input checked="" type="radio"/> Shifted keys
F8:	%R&P1 (KB) NOW %C 599 %N3 %N3 %E	<input type="radio"/> SSB
F9:	%RQRZ? %E	<input type="radio"/> Shifted SSB
F10:	%RAGN? %E	
F1&F11:	%RQTH? %E	

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Messages

CQ WW RTTY



- WW W1UE W1UE CQ
- <his call> 599 05
(TU) 599 05
- TU W1UE CQ
- W1UE
- ZN
- AGN
- ?

Messages

CQ WPX RTTY



- WPX AK1W AK1W CQ
- <his call> 599 1867 1867
(TU) 599 1867 1867
- TU AK1W CQ
- AK1W
- NR
- AGN
- ?

Messages

NA RTTY Sprint



- NA N0NI N0NI CQ
- <his call> N0NI 154 154 TONI TONI IA IA
<his call> 154 154 TONI TONI IA IA N0NI
- TU

- N0NI
- NR
- NAME
- QTH
- AGN
- ?

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Messages: Space Delimiter

*UnShift On Space**

**UOS or USOS*



TX	RX	599 123 123	599 CA CA
UOS on	f599 f123 f123	f599 CA CA	
UOS on	f599 f123 f123	f599 CA CA	
UOS on	f599 f123 f123	f599 CA CA	
UOS off	f599 f123 f123	f599 :- :-	
UOS off	f599 123 123	f599 1CA CA	
UOS on	f599 QWE QWE	f599 1CA CA	
UOS off	f599 123 123	f599 1CA CA	
UOS off	f599 123 123	f599 1CA CA	

f: FIGS character

l: LTRS character

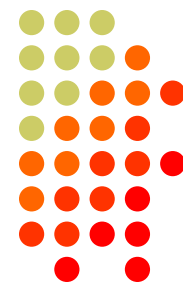
Garbled copy

- Protocol that provides some noise immunity for shift characters by:
 - forcing the Letters set after a received Space
 - sending a FIGS character after a Space when the next character is in the Figures set
- MMTTY:
 - RX UOS and TX UOS can be independently enabled or disabled

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Messages: Space Delimiter

UOS and a noise hit



	TX	RX	599 123 123	599 123 123	599 CA CA	599 CA CA	
<i>best case</i>	UOS on		f599 f123 f123	f599 f123 f123	f599 CA CA	f599 CA CA	<i>f: FIGS character</i>
	UOS on		xT00 f123 f123	f599 xQWE f123	xT00 CA CA	f599x:- CA	<i>l: LTRS character</i>
	UOS on		f599 f123 f123	f599 f123 f123	f599 CA CA	f599 CA CA	
	UOS off		xT00 f123 f123	f599 xQWE f123	xT00 CA CA	f599x:- :-	
<i>worst case</i>	UOS off		f599 123 123	f599 123 123	f599 lCA CA	f599 lCA CA	
	UOS on		xT00 QWE QWE	f599xQWE QWE	xT00 lCA CA	f599 x:- CA	
	UOS off		f599 123 123	f599 123 123	f599 lCA CA	f599 lCA CA	
	UOS off		xT00 QWE QWE	f599xQWE QWE	xT00 lCA CA	f599 x:- :-	

Garbled copy

Turning on UOS for both RX and TX is the best hedge:

- Most other stations will be that way
 - MMTTY default; 78% of survey respondents use MMTTY
- With only one noise hit, at least one of the important exchange elements is received properly

Messages: Hyphen Delimiter?



*UOS is defeated:
so all four cases
have identical
noise results*

TX	RX	599-123-123	599-123-123	599-CA-CA	599-CA-CA
UOS on		f599-123-123	f599-123-123	f599-1CAf-1CA	f599-1CAf-1CA
UOS on		xT00AQWEAQWE	f599x123-123	xT00A1CAf-1CA	f599-x:-f-1CA
UOS on		f599-123-123	f599-123-123	f599-1CAf-1CA	f599-1CAf-1CA
UOS off		xT00AQWEAQWE	f599x123-123	xT00A1CAf-1CA	f599-x:-f-1CA
UOS off		f599-123-123	f599-123-123	f599-1CAf-1CA	f599-1CAf-1CA
UOS on		xT00AQWEAQWE	f599x123-123	xT00A1CAf-1CA	f599-x:-f-1CA
UOS off		f599-123-123	f599-123-123	f599-1CAf-1CA	f599-1CAf-1CA
UOS off		xT00AQWEAQWE	f599x123-123	xT00A1CAf-1CA	f599-x:-f-1CA

f: FIGS character

l: LTRS character

Garbled copy

- Sending Hyphen instead Space “defeats” UOS and speeds up the message slightly by eliminating the FIGS character
 - However, if the first FIGS character is hit by noise, then the entire exchange is garbled
- Space with USO enabled is a slightly better hedge
 - Majority of stations use MMTTY with UOS enabled so at least one of the important exchange elements is received

Messages: “Double Shift”

LTRS/FIGS noise immunity



- MMTTY Double Shift may be enabled to send two LTRS or FIGS characters instead of one
- Eliminates single noise hits on LTRS and FIGS characters
- Moderate speed penalty for all transmissions

Probably not a good trade-off

Keyboard Optimization



- Accelerator keys
 - Insert: grab call sign & send exchange
 - +: log QSO & send TU/CQ message
- ESM (Enter Sends Message)
 - Enter sends CQ, exchange or TU/CQ message
- Key remapping
 - Most-used messages
 - Group around Enter key

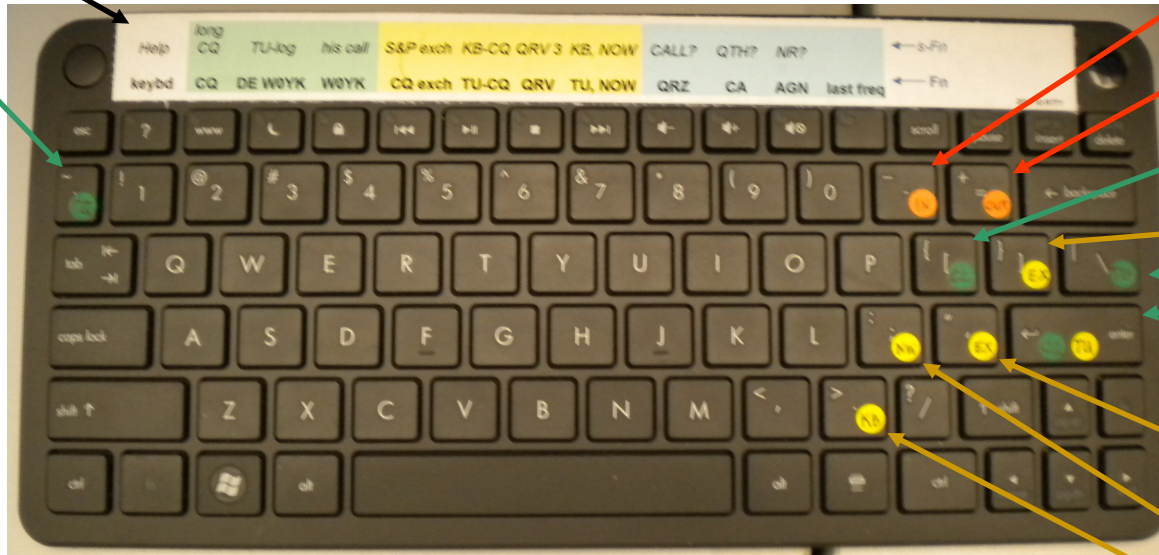
Keyboard Optimization

key re-mapping



FN key labels

long CQ



Push to Stack

Pop from Stack

mycall

S&P exch

alt TU/log

Stateful Enter

- CQ

- hiscall/exch

- TU/log

Insert ...

hiscall/exch

c1 TU NOW

his call

Full-size QWERTY keyboard; no number pad; integrated cursor keys

Super Check Partial



- SCP (Super Check Partial) enables computer to pick out call signs in receive window
 - Call signs
 - New mults and double mults
 - Dupes
- Use main SCP from CW/SSB/RTTY contests
 - RTTY SCP is a subset

XYZAB	AA5AU	XYZAB
XYZAB	9Y1VC	9N8TT
XYZAB	W5UKM	XYZAB

N1MM Logger

Super Check Partial

logger differences



XYZAB	AA5AU	XYZAB
XYZAB	9Y1VC	9N8TT
XYZAB	W5UKM	XYZAB

- Background option
- Custom colors

N1MM Logger

XYZAB	AA5AU	XYZAB
XYZAB	9Y1VC	9N8TT
XYZAB	W5UKM	XYZAB

WriteLog

XYZAB	AA5AU	XYZAB
XYZAB	9Y1VC	9N8TT
XYZAB	W5UKM	XYZAB

Win-Test

Pre-Fill

“Danger, Will Robinson!”



- Pre-fill is a **typing aid** using prior log data
- Each logger is unique:
 - N1MM: Call History Lookup File (text file)
 - User-created with Excel from prior logs
 - WriteLog: Pre-fill File (ADIF file)
 - User-created with text editor from prior ADIF logs
 - Win-Test: Database File
 - Provided for specific contests by the Win-Test team
- **Log what is communicated to you!**

Callsign Stacking

“Slow Down to Win”



- Sailboat racing analogy:
 - Pinwheel effect at mark-rounding
- Let pile-up continue 1-3 seconds after getting first call sign
 - Increase chance for another call sign or two
 - Increase chance for QSO-phase-skip
- Apply same tactic for tail-enders ... pause before sending TU/CQ message

The 4 Phases of a QSO



● Normal Run mode flow:

- 1. Enter or F1 (CQ)
 - repeat
 - AGN?
2. pile-up
3. Insert or ' (grab call sign, send exchange)
 - Send fill(s)
4. receive exchange
 - check pre-fill, click their exchange
 - AGN? or NR? or QTH? or NAME?
- 1. Enter or + (log contact, send TU/CQ)
 - optionally send F7 (QRV message)

● Normal S&P mode flow:

- 1. CQ
2. Enter or F4 (mycall)
 - repeat
3. receive exchange
 - check pre-fill, click their exchange
 - AGN? or NR? or QTH? or NAME?
4. Enter or F5 (send exchange)
 - send fill(s)
- 1. find next CQ

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Callsign Stacking

skip 2 phases



Normal

1. WPX P49X P49X CQ, or
TU P49X CQ
2. K3LR K3LR K5ZD K5ZD
3. K3LR 599 2419 2419
4. TU 599 842 842

Shortened

1. (skip CQ)
2. (skip pile-up)
3. K3LR TU NW
K5ZD 599 2420 2420
4. TU 599 1134 1134

Callsign Stacking

tail-ender



Normal

1. WPX P49X P49X CQ, or
TU P49X CQ
2. K3LR K3LR
3. K3LR 599 2419 2419
K5ZD
4. TU 599 842 842

Shortened

1. (skip CQ)
2. (skip pile-up)
3. K3LR TU NW
K5ZD 599 2420 2420
4. TU 599 1134 1134

Callsign Stacking



- Efficiently work:
 - multiple callers in a pile-up, and
 - tail-enders to a completing QSO
- Calls **pushed** onto the stack as they arrive
- Message parameter **pops** call off of the stack into the Entry window
- Eliminates 2 of 4 QSO phases, which doubles rate

Multiple Decoders

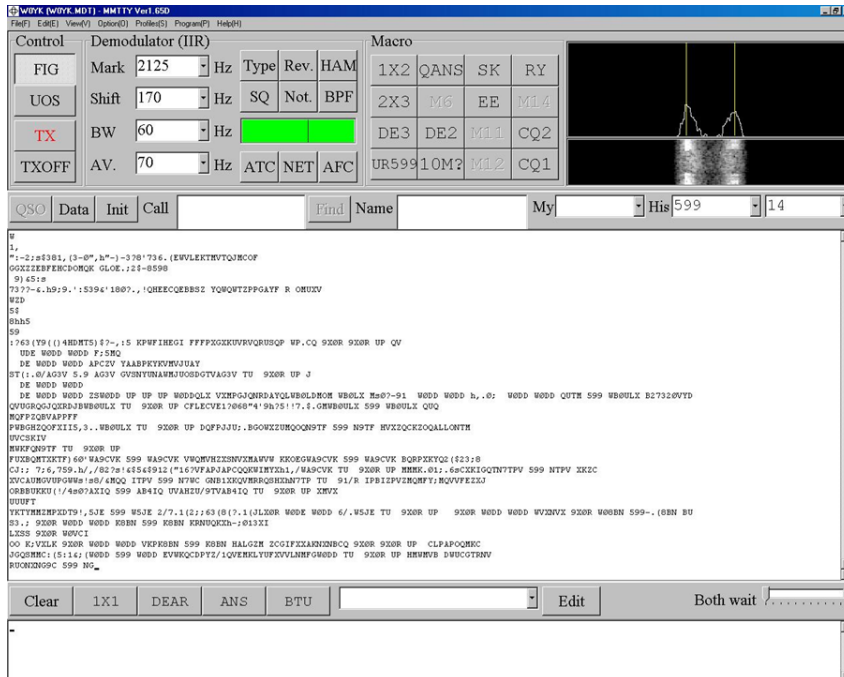
choice of Tones



- Low tones are less fatiguing
- Low/High tones can be mixed to put two audio streams in one ear:
 - SO2R plus SO2V per radio
 - SOnR

Multiple Decoders

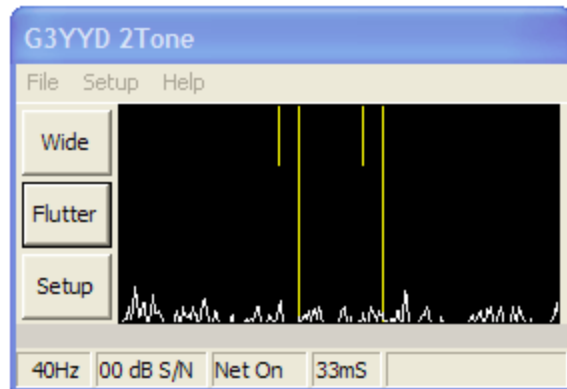
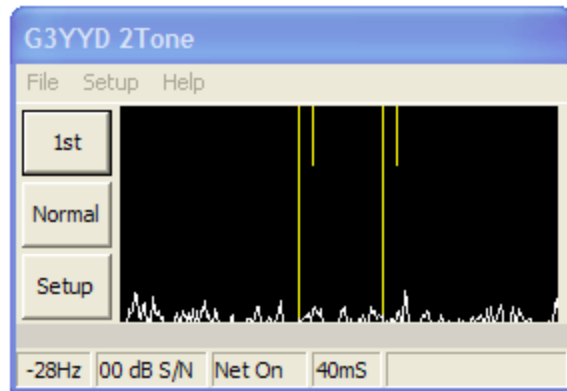
MMTTY



- Dominant SC MODEM
- Standalone, or ...
- Contest loggers:
 - N1MM Logger+
 - WriteLog
 - Win-Test
- Introduced June 2000
- Mako Mori, JE3HHT

Multiple Decoders

2Tone



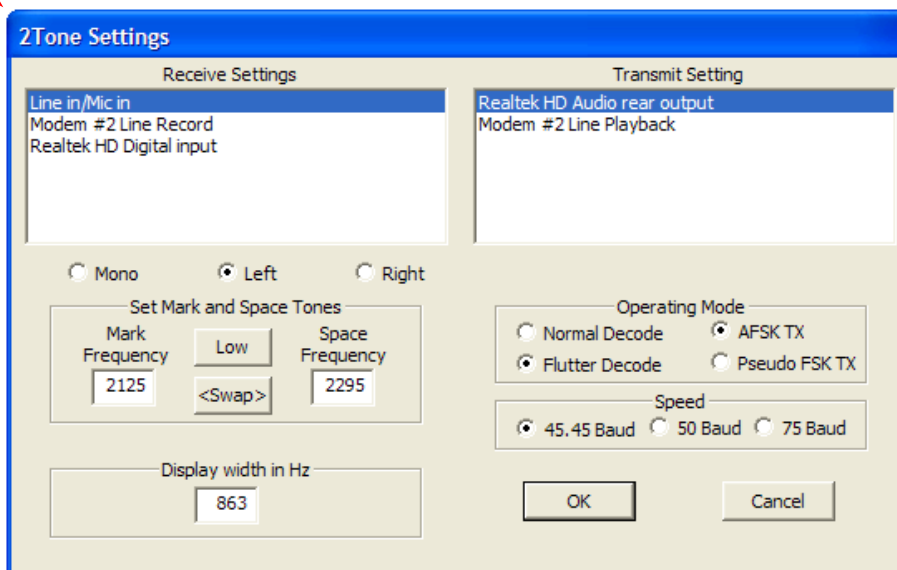
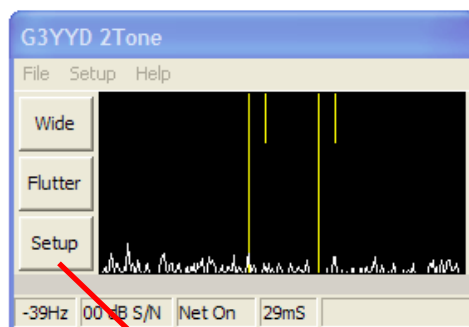
- Outperforms MMTTY ?
- Uses less CPU cycles
- Contest loggers:
 - N1MM Logger+
 - WriteLog
 - Win-Test
- Introduced late 2012
- David Wicks, G3YYD

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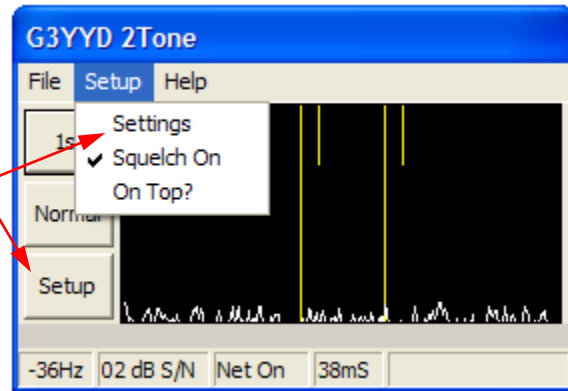
RTTY Decoders

2Tone

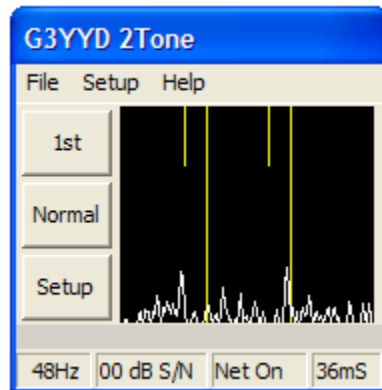


RTTY Decoders

2Tone



- Setup vs. Settings



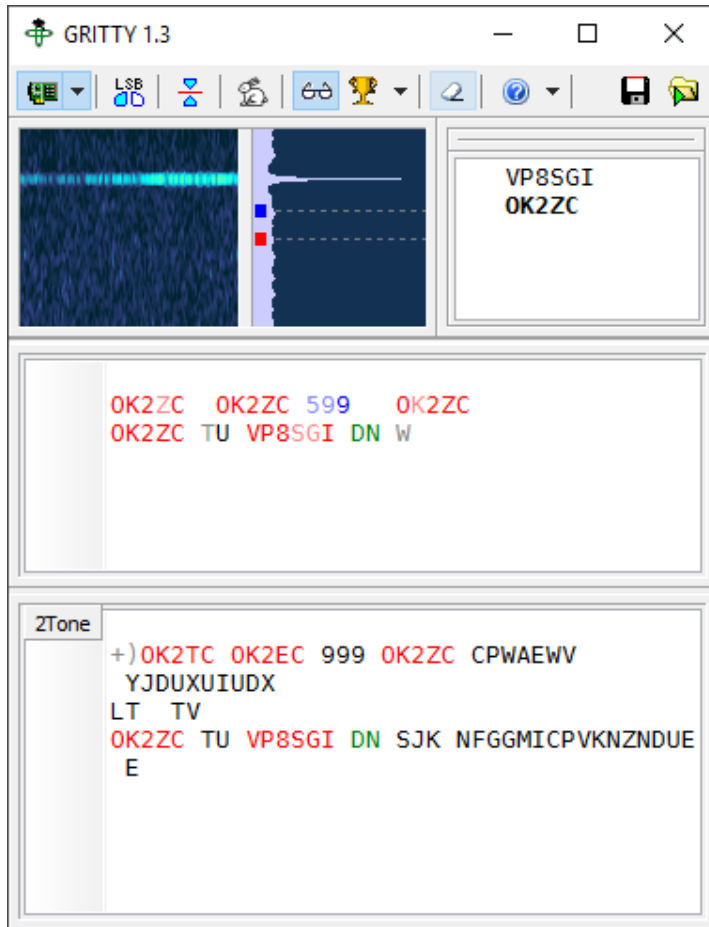
- Window-width adjust

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Multiple Decoders

GRITTY



- Best accuracy ?
- Bayesian statistics
- Standalone, or ...
- Contest loggers:
 - N1MM Logger+ only
- Introduced late 2015
- Alex Shovkoplyas, VE3NEA

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Multiple Decoders

hardware MODEM

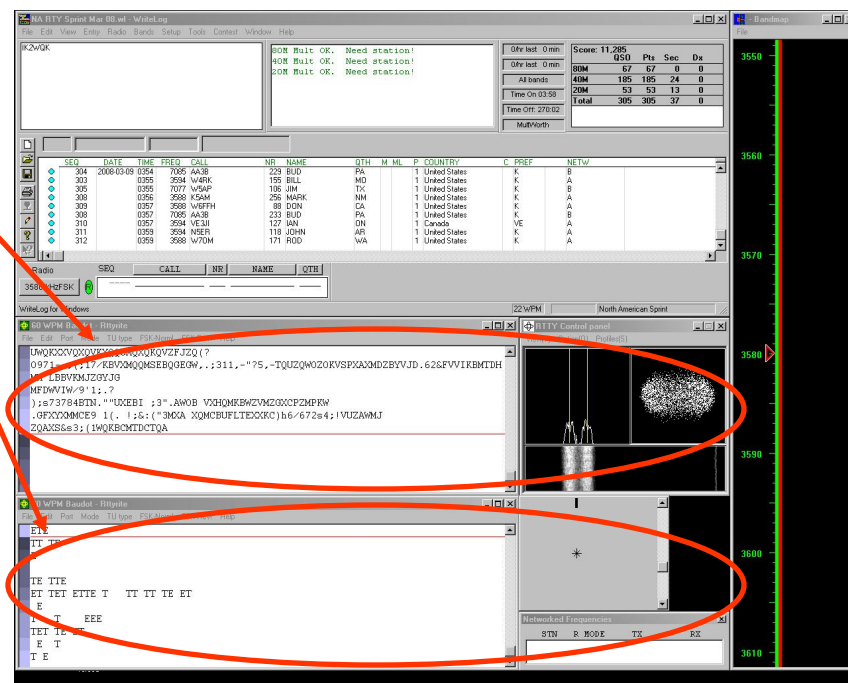


Multiple Decoders

MMTTY & DXP38 - WriteLog



- Parallel decoding
 - Software, e.g., MMTTY
 - Hardware, e.g., DXP38
- Diverse conditions
 - Flutter
 - Multi-path
 - QRM, QRN
 - Weak signals
 - Off-frequency stations



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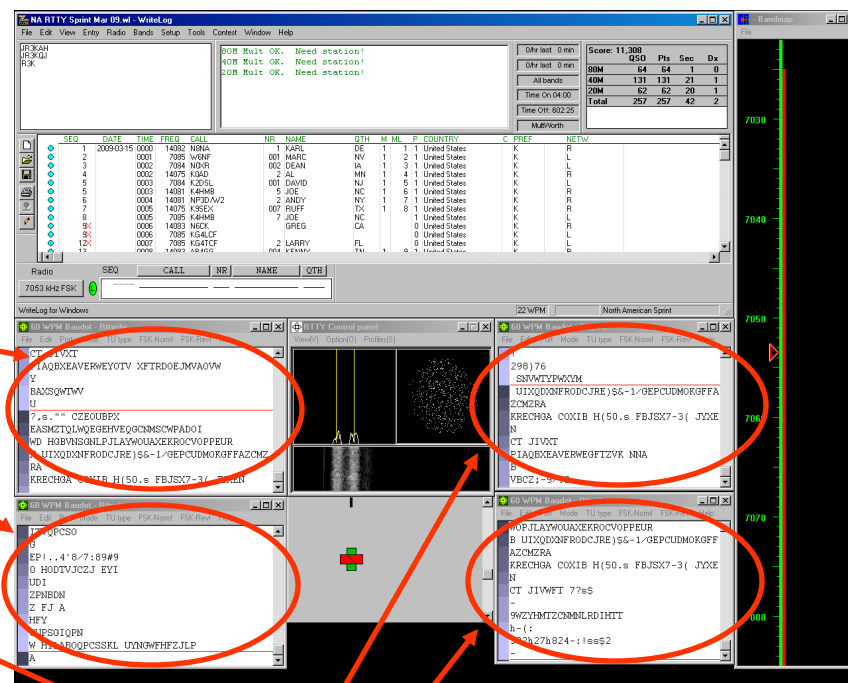
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Multiple RTTY Decoders

multiple MMTTY profile windows



- Parallel decoding
 - same audio stream
 - switching takes too long
- Multiple profile windows
 - Standard
 - Fluttered signals
 - Fluttered signals (FIR)
 - Multi-path
 - hyper sensitive
 - EU1SA
 - AA6YQ-FIR-512
 - weak signals in QRN

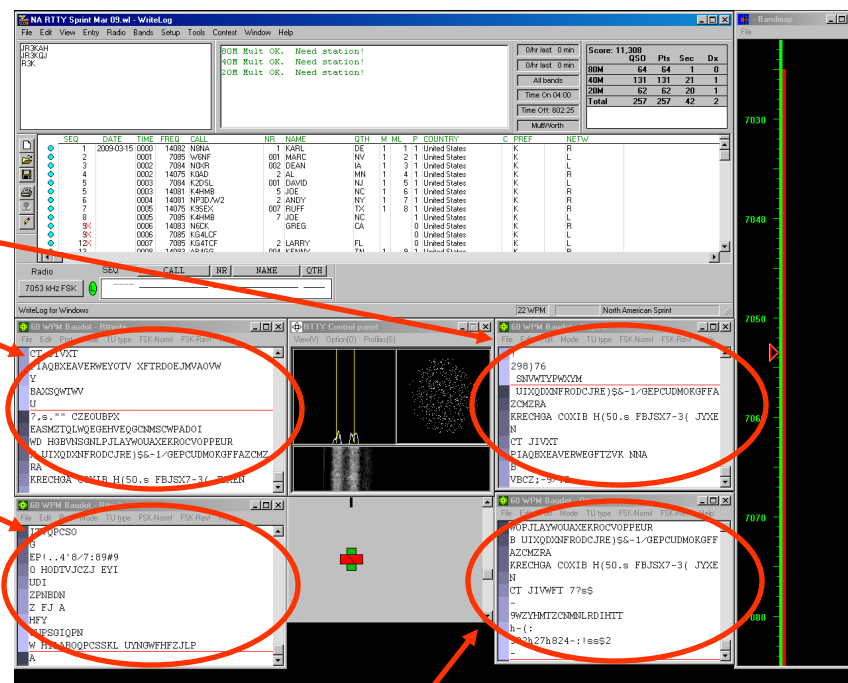


Multiple Decoders

two IF bandwidths



- Narrow IF filtering (main RX)
 - Hardware modem, i.e. DXP38
 - MMTTY profiles
 - Standard
 - Fluttered signals
 - Fluttered signals (FIR)
 - Multi-path
 - hyper sensitive
 - EU1SA
- Wide IF filtering (sub RX)
 - MMTTY profiles
 - AA6YQ-FIR-512
 - Dual Peak Filter
 - "Matched filter"



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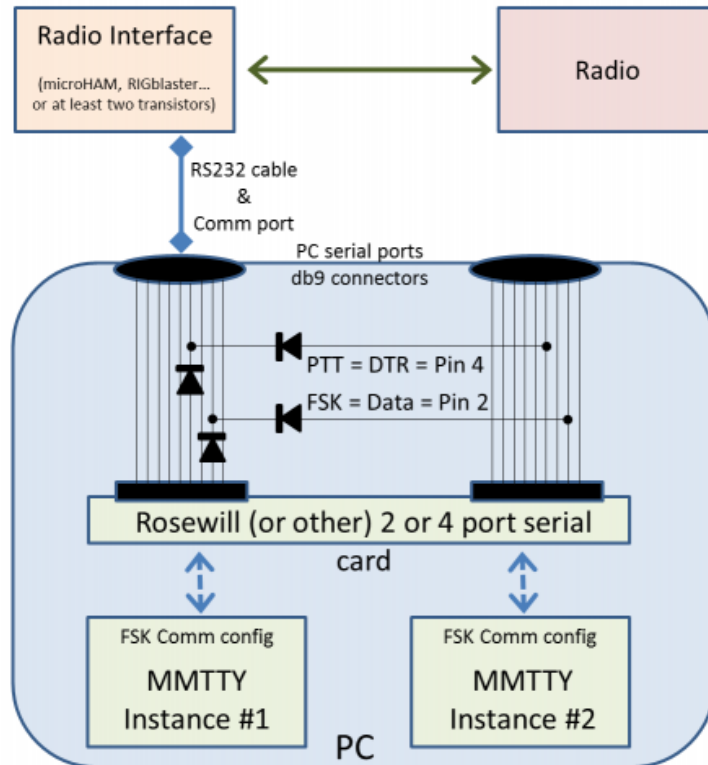
SO2V



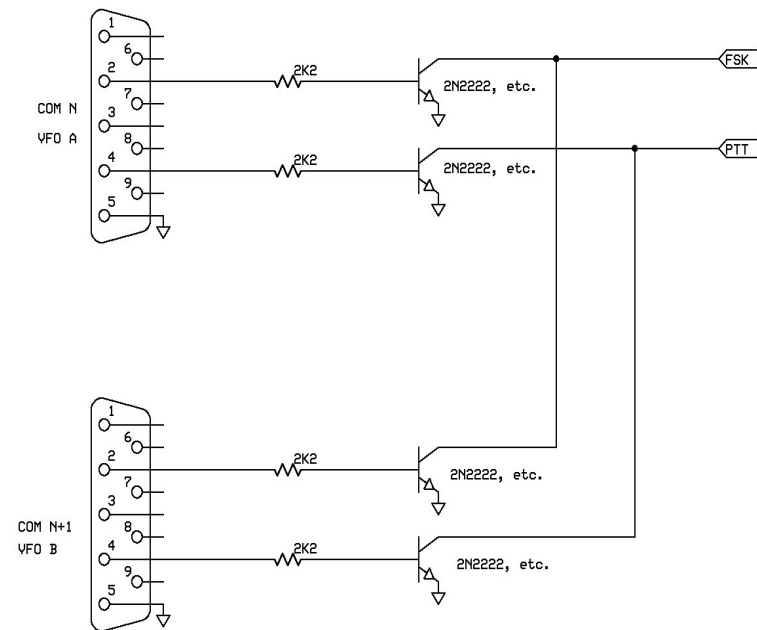
1. If Assisted and running on VFO-A, then
 - A<>B
 - Click spot, tune, ID station, work station
 - A<>B, resume running
2. Or, set up decoder windows on VFO-A and VFO-B
 - Radio must have two true receivers
 - Monitor both frequencies simultaneously with right/left channels of sound card
 - Left-click call from 2nd RTTY window into VFO-B Entry Window
 - Two ways to transmit on VFO-B:
 - I. A<>B, work the mult, A<>B
 - II. SPLIT, work the mult, SPLIT, resume running
 - Requires “wire-OR’d” FSK or AFSK and two transmit RTTY windows
 - K3/WriteLog invokes SPLIT when call is right-clicked

SO2V

Wire-OR FSK/PTT



Serial Signals (K8UT)

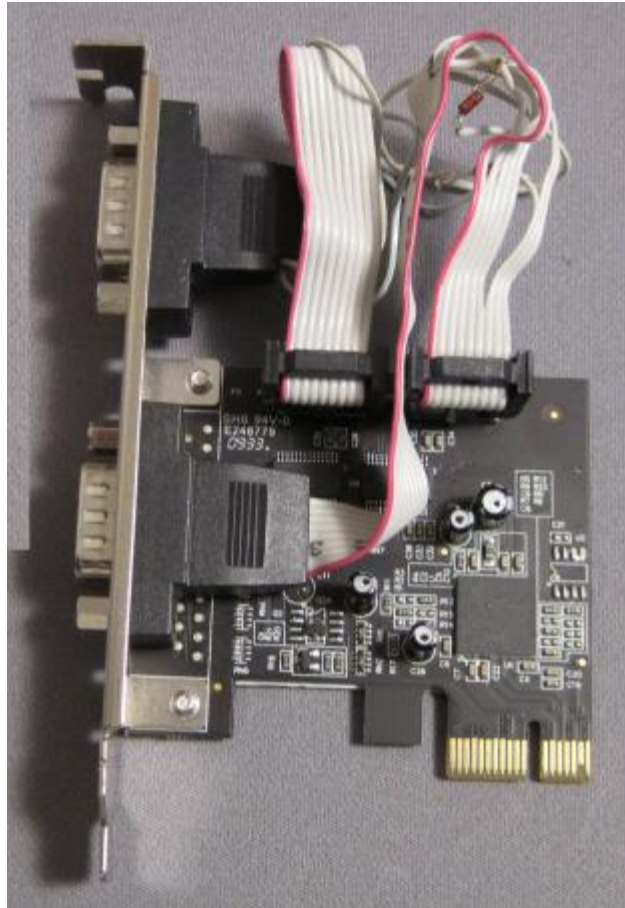


FSK/PTT Signals (W0YK)

SO2V



Wire-OR FSK/PTT



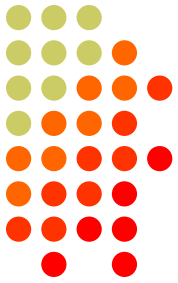
Serial Signals (K8UT)



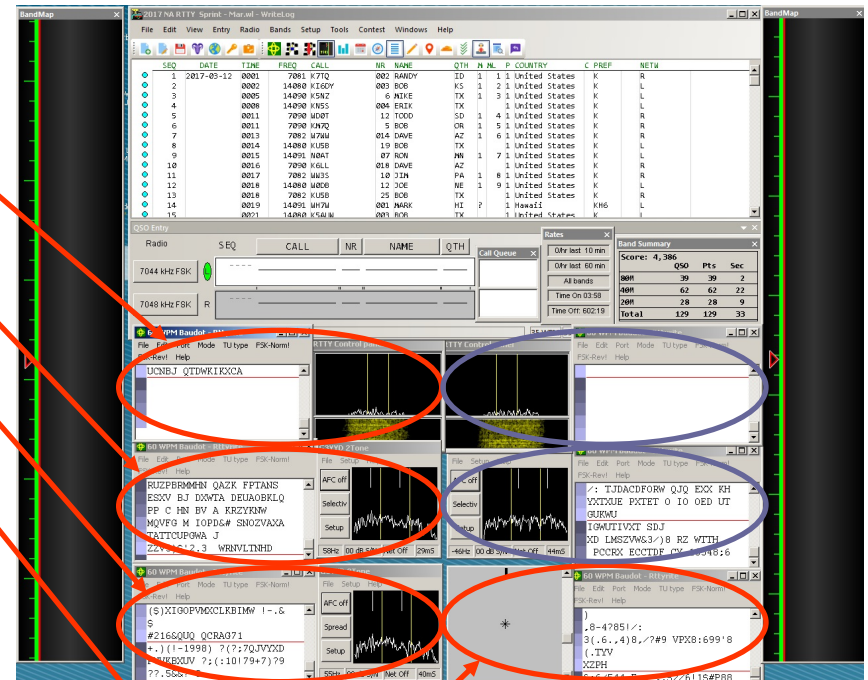
FSK/PTT Signals (W0YK)

Multiple Decoders

SO2V



- VFO-A (main RX)
 - MMTTY Standard profile
 - 2Tone Flat profile
 - 2Tone Selective profile
 - DXP38
- VFO-B (sub RX)
 - MMTTY Standard profile
 - 2Tone Flat profile



SO2R



- Eliminates SO1R RTTY boredom
- Think beyond run and S&P:
 - Dueling CQs; run on two bands simultaneously
 - S&P on two bands simultaneously, esp. w/Packet
 - SO2V on one or both radios (SO4V!)
- Two networked computers:
 - Eliminates PC focus swapping
 - RTTY doesn't require much typing
 - Mini-keyboards ideal for RTTY
 - 2 x SO2V=SO4V for picking up mults on both run bands
 - Easily extendible to SO4R

No time to watch TV or read spy novels!

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SO2R

M2 configuration

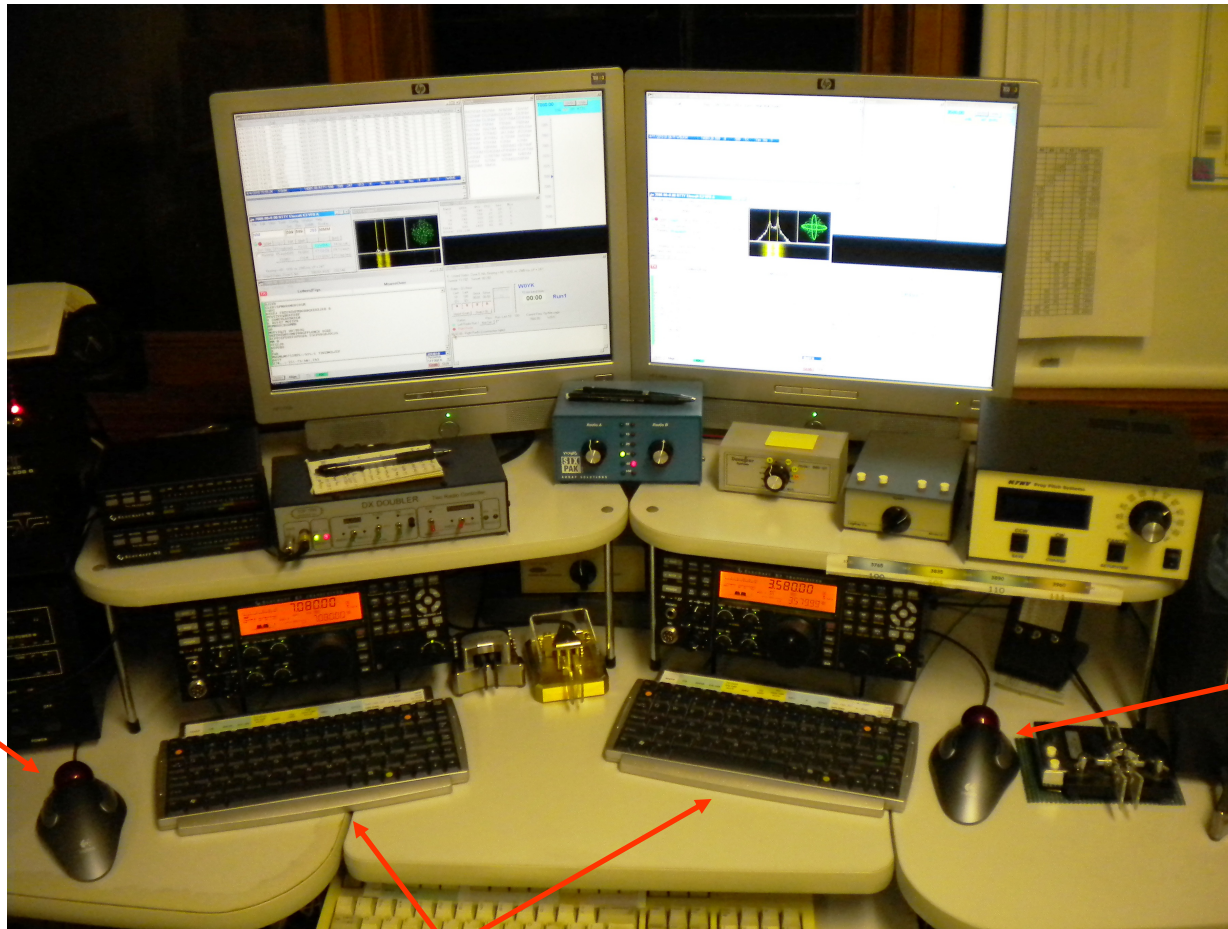


Left-hand
Trackball

Right-hand
Trackball

Right-sized
Keyboards

52/86



SO2R in the NA Sprint



- Set VFOs at least 10 kHz apart on both radios
- Find a clear spot on one radio and CQ while you tune the other radio for a station to work
- If you don't find a station to work quickly (within a minute), find a clear frequency and duel CQ
- After a QSO swap VFOs on that radio, search for up to a minute, then resume dueling CQ
- Don't waste time trying to work the "couplet" ... CQing is OK in Sprint!



- Simplify antenna/filter band-decoding:
 - Dedicate a band/antenna to the 3rd (or 4th) radio
- Networked PC/radio simplifies configuration
- RTTY (vs. CW or SSB) easier for operator
 - PC decodes for operator
 - Low tones & high tones allows two radios per ear
 - Classic audio headphone mixer provides radio 1, radio 2 or both

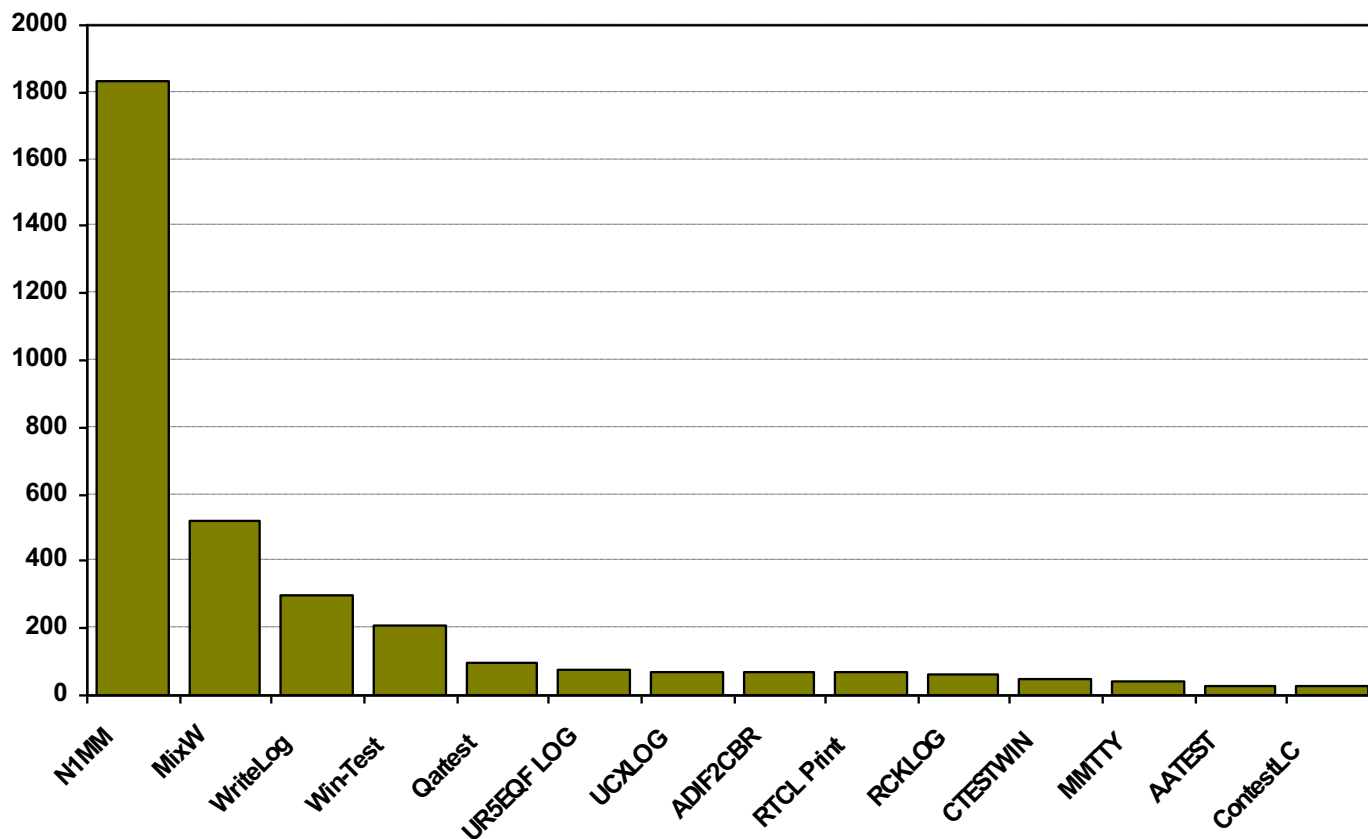
Multi-Multi configuration



dedicated
to 10 meters

Logging Software

2012 CQ WPX RTTY



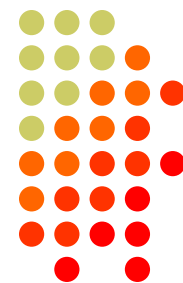
Logging Software

The Big Three



- WriteLog (1994)
 - created for RTTY (CW & SSB came later)
 - www.rttycontesting.com/tutorials
- N1MM Logger+ (2000; free)
 - dedicated RTTY software designer
 - www.rttycontesting.com/tutorials
- Win-Test (2003)
 - RTTY is low priority.

Logging Software



	WriteLog	N1MM	Win-Test
MMTTY	😊	😊	😊
2Tone	😊	😊	😊
other decoders	😊	😊	none
Call sign acquisition	😊	😊	😊
Contests supported	😊	😊	fewer
Advanced RTTY	😊	😊	none

- *All three are entirely adequate for basic RTTY contesting*
- *Use the logger you are already familiar with for CW & SSB*

Logging Software

N1MM Logger, WriteLog, Win-Test



- 13 features compared
 - Simplifying assumption: features equally weighted
 - Rated 0 to 5
- All three score '5' on:
 - MMTTY integration
 - Stateful Enter key (ESM: Enter Sends Message)
 - Accelerator keys
 - QRV message parameter
- Another 9 advanced RTTY features distinguish these loggers

Logging Software

MMTTY integration



- Install free MMTTY software
- Logger integrates MMTTY
 - WriteLog requires additional MMTTY plug-in SW
- All three loggers
- Integrated excellent encoder/decoder

Logging Software

stateful Enter key



- Stateful **Enter** key (ESM=Enter Sends Message)
 - Cursor in call sign field:
 1. Sends CQ if Call Sign Window empty, else
 2. Sends call sign & exchange
 - Cursor in exchange field:
 3. Sends TU/CQ
- N1MM Logger highlights active key(s)
- All three loggers
- Efficient keyboarding

Logging Software

accelerator keys



- **Insert** grabs call sign & sends exchange
 - **+** logs QSO & sends TU/CQ
-
- All three loggers
 - Saves keystrokes

Logging Software

automatic QRV



- *QRV 28079.3*
- Message parameter for other radio's VFO
- All three loggers
- Efficient QSY, mult move or “self-spotting”

RTTY Contest Loggers

relative ratings



WL	N1	WT
5	5	5
5	4	0
4	5	0
0	5	3
5	5	0
5	3	3
5	4	5
5	5	3
5	4	4
39	40	23

Logger

- RTTY window readability
- Multiple decoders
 - MMTTY, 2Tone, GRITTY
- ESM mouse ctrl & Sprint mode
- SO2V
- M2 SO2R configuration
- Re-mapped keys
- Call sign stacking
- AFSK/FSK flexibility

Overall

Logging Software

RTTY Window Readability

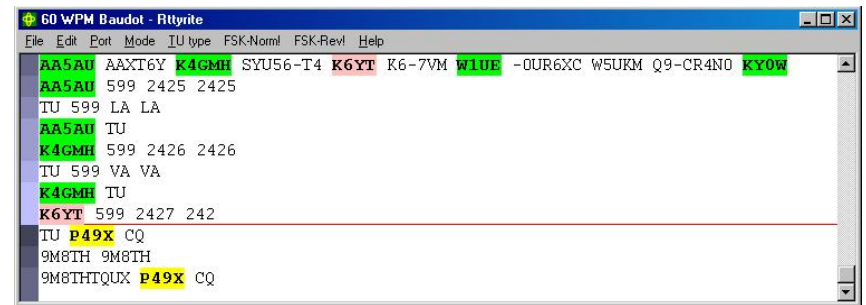


N1MM Logger



Colored text is difficult to read, especially the dark blue (unworked call) which has negligible contrast to black text or black background. The dark blue cannot be changed by the user. **HOWEVER ...**

WriteLog



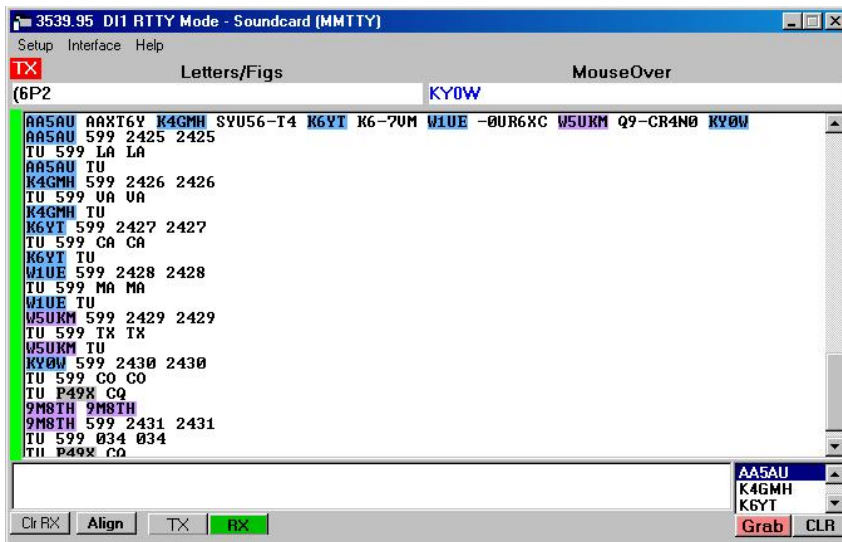
Colored highlighting has outstanding readability. The text all remains black for maximum contrast and the highlighting does not detract. Rather the large highlight area around the text make it extremely easy to zero in on the call sign of interest, especially when quickly moving one's eyes between multiple windows.

Logging Software

RTTY Window Readability



N1MM Logger

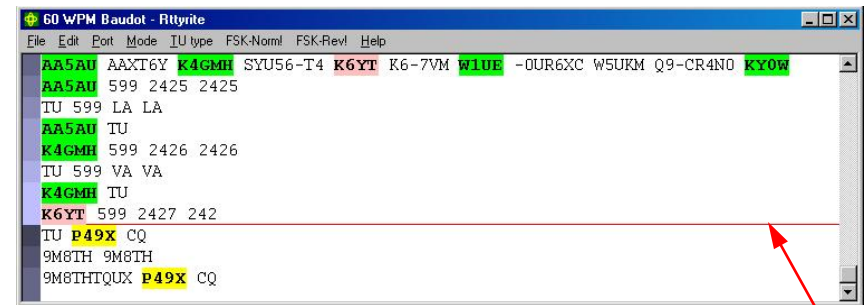


Colored text is difficult to read, especially the dark blue (unworked call) which has negligible contrast to black text or black background. The dark blue cannot be changed by the user. **HOWEVER, there is now an option for highlighting like WriteLog and WinTest.**

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WriteLog



Colored highlighting has outstanding readability. The text all remains black for maximum contrast and the highlighting does not detract. Rather the large highlight area around the text make it extremely easy to zero in on the call sign of interest, especially when quickly moving one's eyes between multiple windows.

WriteLog is unique in having a NON-SCROLLING RTTY window, so you don't have to chase text up the screen!

Logging Software

multiple decoders



- N1MM Logger limited to 4 total, but has best DXP38 & GRITTY support
- WriteLog has 10 additional decoders per rcvr and the most hardware MODEMs
- Win-Test only supports one instance of MMTTY or 2Tone
- WriteLog & N1MM Logger only
- Multiple parallel decoders for marginal copy

Logging Software

ESM mouse control



- Left-click enters call sign or exchange
 - Right-click (ESM) sends exchange or TU/CQ
 - QSOs can be worked entirely with mouse action, except for the rare instance where a call or exchange must be typed in
 - Particularly suited to unique non-prefillable exchanges such as serial numbers
-
- N1MM Logger only
 - Eliminates keyboard for efficiency

SO2V



- Basic capability with two VFOs
- Advanced capability with two receivers
 - Requires second receiver in radio
 - Independent RTTY window for second receiver
 - radio/logger SPLIT mode
- N1MM Logger & WriteLog
- Interleave S&P QSOs on Run band

SO2R

M2 configuration



- PC & UI per radio; networked
 - Single signal interlock
 - Extendible to SOnR
-
- Only WriteLog
 - Another user preference alternative; SOnR

Logging Software

key re-mapping



- Soft re-definition of keyboard keys
 - Examples:
 - Insert → ‘
 - = → PopCallFromStack
 - WriteLog provides a rich built-in function set for key shortcuts
-
- WriteLog & Win-Test remap keys and functions
 - N1MM Logger uses HotKeys
 - Relocates keys for efficiency

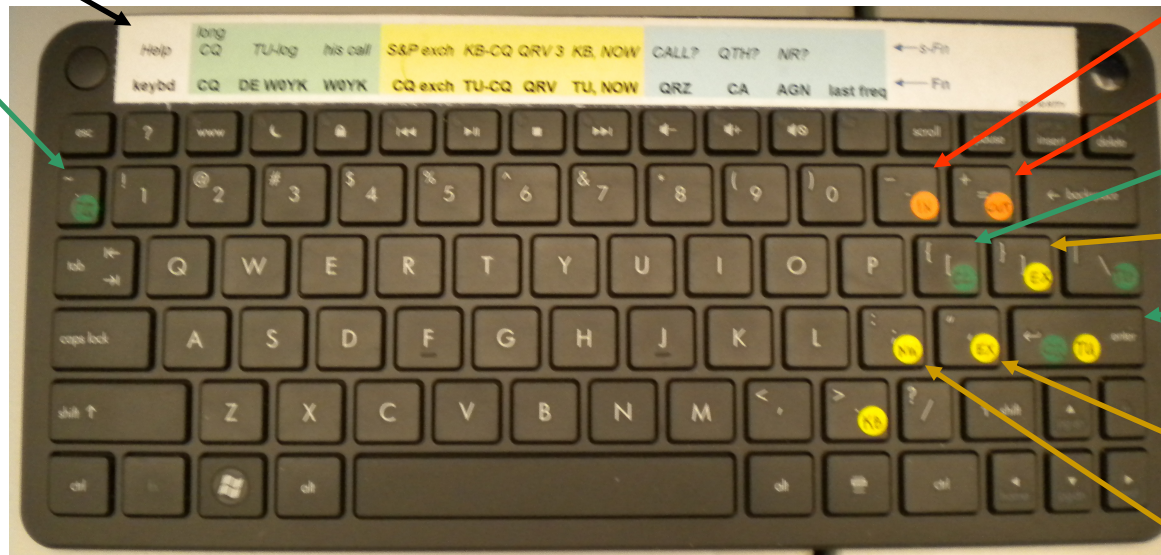
Logging Software

re-mapped keys



Fn key labels

long CQ



Push to Stack

Pop from Stack

mycall

Sprint S&P exch

Stateful Enter

- CQ
- his call/exch
- TU/log

Insert ...
his call/exch

c1 TU NOW

Full-size QWERTY keyboard; no number pad; integrated cursor keys

Logging Software

callsign stacking



- N1MM Logger can automatically fill stack
 - WriteLog has convenient stack management
 - Win-Test script can use partner stack
-
- All three loggers
 - Doubles rate by skipping CQ & pile-up

Logging Software

callsign stacking



- **N1MM Logger** automatically pushes calls into the Grab window.
 - It can also explicitly push calls onto the Call Stack (like WriteLog and Win-Test)
 - There is a rich list of stack functions and ESM integration
- **WriteLog** explicitly right-clicks calls onto the call stack
- **Win-Test** requires a LUA script to push calls onto the Partner Stack

Automatic vs. explicit pushing is personal pref.

Logger Software

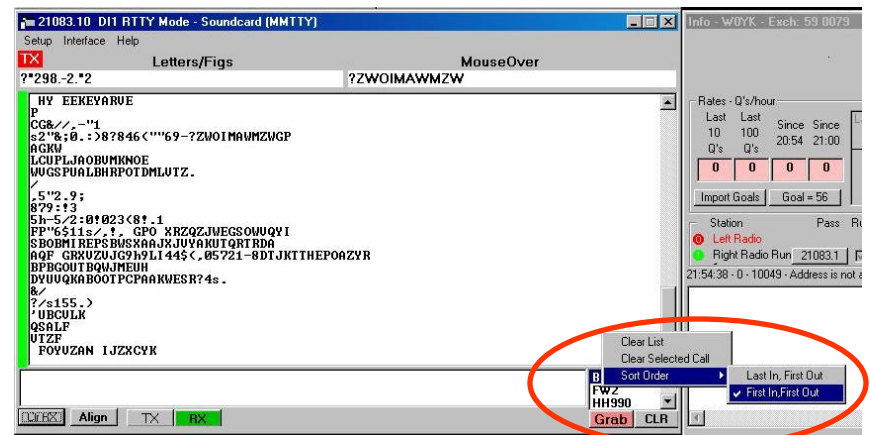
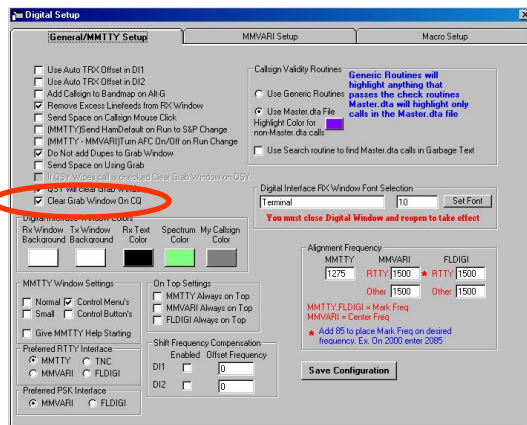
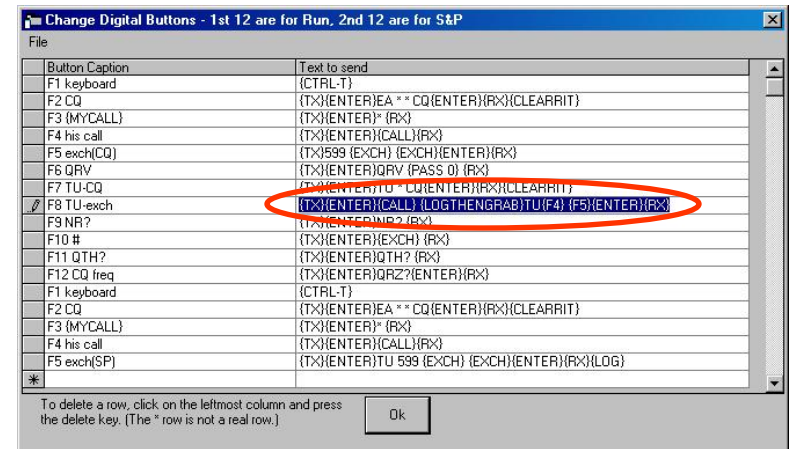
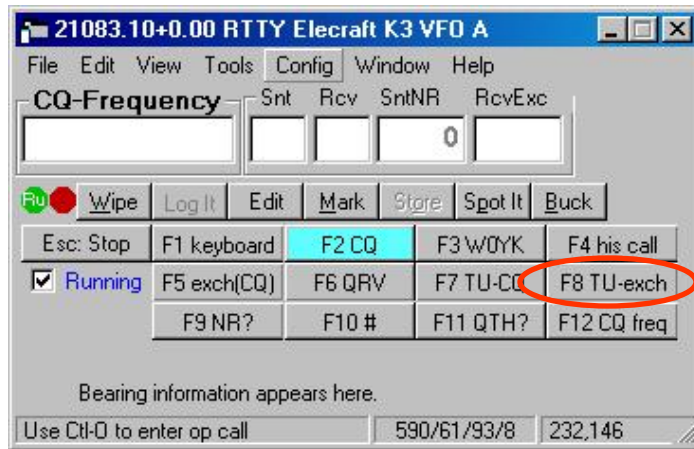
callsign stacking: N1MM Logger



- Setup:
 - Create a F8 message (macro):
 - {TX} ! {LOGTHENGRAB}TU NOW {F4}{F5}{RX}
 - ! or F4: his call; F5: CQ-exchange ... your choice of Fn
 - Configure the Grab window:
 - Choose “Clear Grab window with CQ” (on DI tab of Configuration window)
 - Choose “First In, First Out” (right-click Grab window)
- Operate:
 - Each highlighted call in DI window automatically goes into Grab window
 - Send this macro in place of TU/CQ macro when you want to work the next call in stack
 - Sending the CQ message clears the Grab window
 - Delete calls from stack by right-clicking and choosing “Delete”

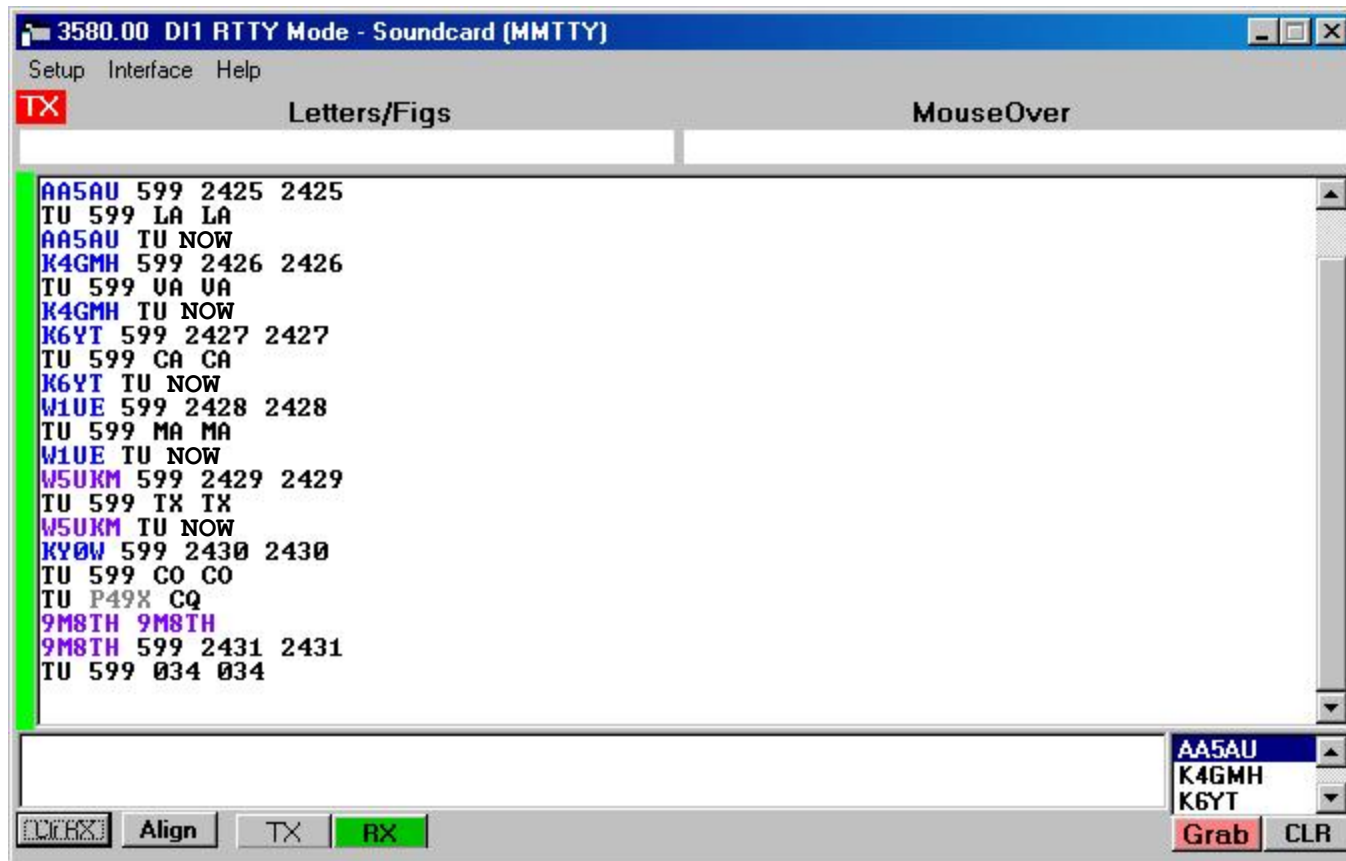
Logging Software

callsign stacking: N1MM Logger - 2



Logging Software

callsign stacking: N1MM Logger - 3



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Logger Software

callsign stacking: N1MM Logger - 4



Alternatively, the Call Stack may be used:

- **Setup:**

- Create a F8 message (macro):
 - {TX} ! {LOGTHENPOP}TU NOW {F4}{F5}{RX}
 - ! or F4: his call; F5: CQ-exchange ... your choice of Fn

- **Operate:**

- Alt-click a callsign to push it onto the Call Stack
- Send this macro in place of TU/CQ macro when you want to work the next call in stack
- Sending the CQ message clears the Call Stack
- Delete calls from the Call Stack by right-clicking and choosing “Delete”

Logging Software

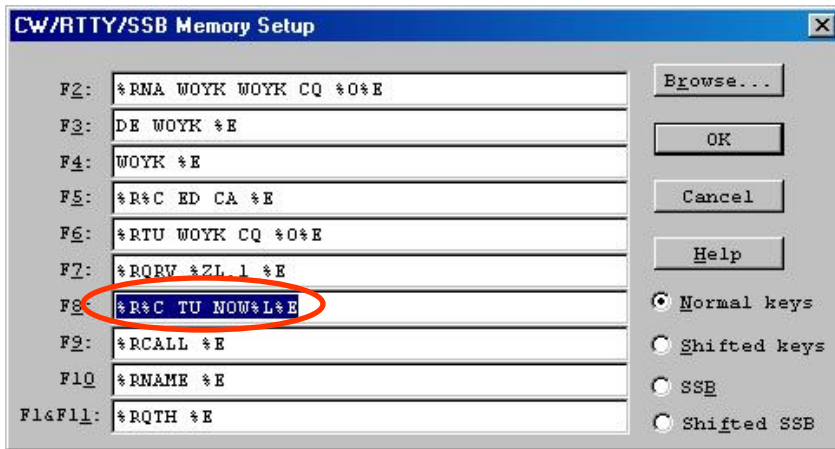
callsign stacking: WriteLog



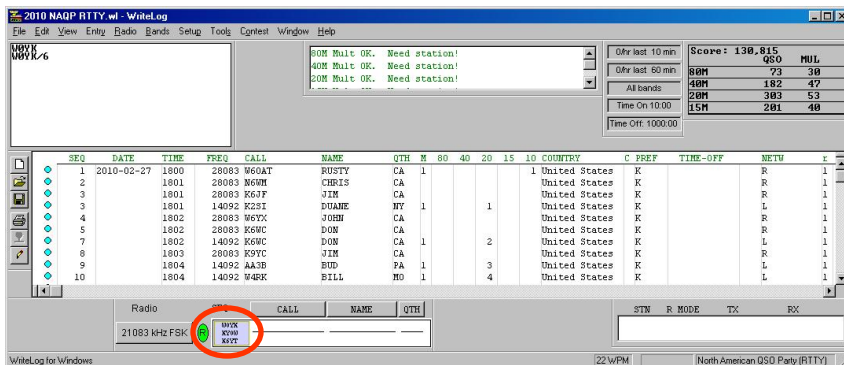
- Setup:
 - Configure right-click for Push-only in writelog.ini:
 - [RttyContextMenuEntries]
 - 1=PUSHCALL
 - Define Push and Pop keys, using the Keyboard Shortcuts feature:
 - Push Call on the Graves (~) key
 - Pop Call on the Equals (=) key
 - Create <TU NOW msg>
 - %R%C TU NOW%L
- Operate:
 - Push calls onto stack
 - configure right-click for single menu item
 - right-click call in Rttyrite window
 - At the end of the current QSO, press <TU NOW msg> followed by the Insert key or Enter key (the normal CQ-exchange msg)
 - Press TU/CQ msg (rather than + or Enter) when you don't want to pop the stack for your next contact
 - Pop/Push to rotate the desired call into Entry window without losing others (replace Push with Alt-W to delete a call, or do another Pop)

Logging Software

callsign stacking: WriteLog - 2



- Create Fn macro
 - %R%C TU NOW%L%E



- Push calls onto stack
 - Right-click call in Rttyrite window

Logging Software

callsign stacking: WriteLog - 3

A screenshot of the WriteLog software interface. The window title is "60 WPM Baudot - Rttwrite". The menu bar includes "File", "Edit", "Port", "Mode", "IU type", "FSK-Norm!", "FSK-Rev!", and "Help". The log text is as follows:
AA5AU AA5T6Y K4GMH SYU56-T4 K6YT K6-7VM W1UE -OUR6XC W5UKM Q9-CR4N0 KYOW
AA5AU 599 2425 2425
TU 599 LA LA
AA5AU TU NOW
K4GMH 599 2426 2426
TU 599 VA VA
K4GMH TU NOW
K6YT 599 2427 242
TU P49X CQ
9M8TH 9M8TH
9M8THTQUX P49X CQ
The callsigns and numbers are color-coded: AA5AU is green, K4GMH is green, K6YT is pink, W1UE is green, KYOW is green, P49X is yellow, and 9M8TH is blue.

Logging Software

AFSK & FSK flexibility



- WriteLog has built-in AFSK & FSK
- N1MM relies on MODEM for AFSK or FSK

- WriteLog
- Independence from MODEM for transmit

RTTY Contest Loggers

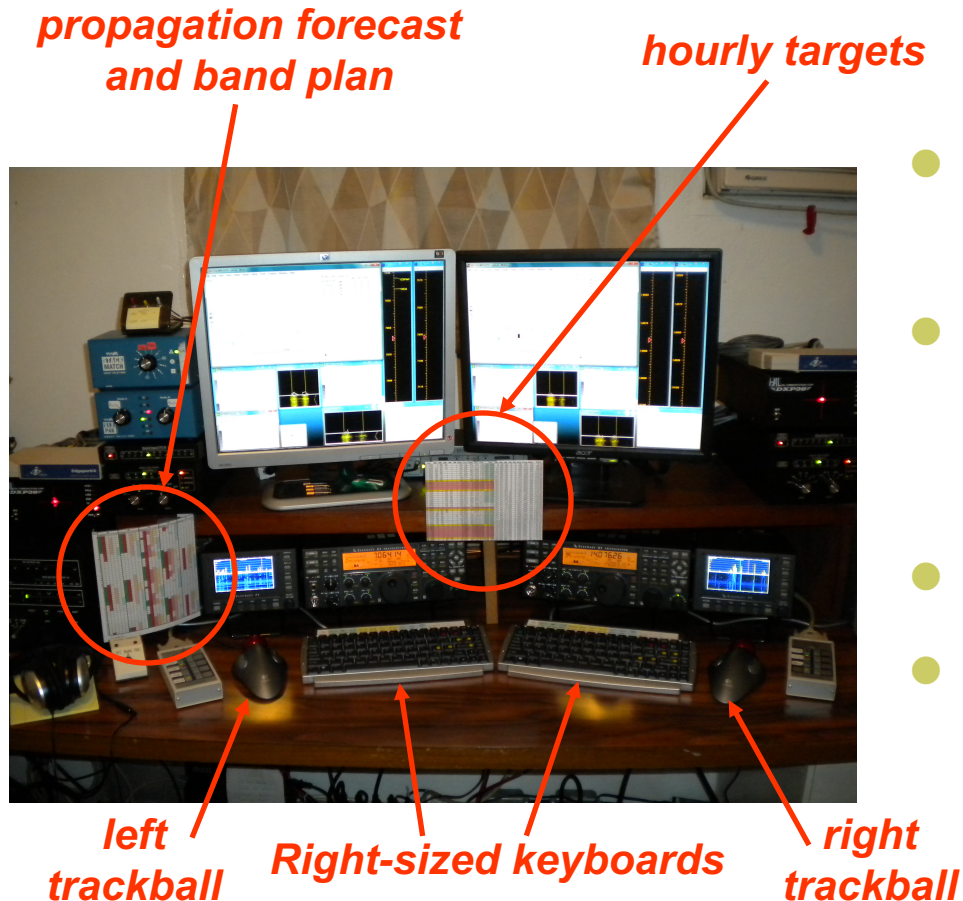
relative ratings



WL	N1	WT	Logger
5	5	5	● RTTY window readability
5	4	0	● Multiple decoders
4	5	0	● MMTTY, 2Tone, GRITTY
0	5	3	● ESM mouse ctrl & Sprint mode
5	5	0	● SO2V
5	3	3	● M2 SO2R configuration
5	4	5	● Re-mapped keys
5	5	3	● Call sign stacking
5	4	4	● AFSK/FSK flexibility
39	40	23	Overall

Ergonomics

user interface



- Comfortable heights, reaches, layout
- Right-sized keyboard
 - Fn keys template
 - Label re-mapped keys
- Right & left trackballs
- Bose QC2 phones
 - Minimal volume
 - Stereo

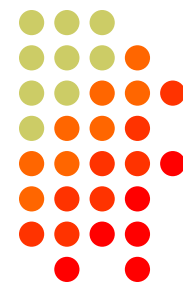
Ergonomics

keyboard or mouse?



- Keyboard – minimal typing in RTTY
 - Either:
 - F1, Insert and + ... or,
 - Enter, Insert and Enter (ESM – Enter Sends Message)
 - Plus Fn keys or re-mapped Fn keys
 - Mouse click received exchange, if not pre-filled
- Mouse/trackball
 - 100% (N1MM Logger)
 - 80% (WriteLog and Win-Test)

Resources



- www.rttycontesting.com
 - Tutorials and resources (beginner to expert)
 - WriteLog, N1MM Logger+ and MMTTY
- rtty@contesting.com
 - Email reflector
 - RTTY contester networking
 - Q&A
- Software web sites
 - mmhamsoft.amateur-radio.ca/ (MMTTY)
 - n1mm.hamdocs.com/tiki-index.php (N1MM Logger+)
 - www.writelog.com (WriteLog)
 - www.wintest.com (Win-Test)
- Software Reflectors
 - mmtty@yahoogroups.com (MMTTY)
 - N1MMLoggerplus@yahoogroups.com (N1MM Logger+)
 - N1MMLogger-Digital@yahoogroups.com (N1MM Logger+ RTTY & PSK)
 - writelog@contesting.com (WriteLog)
 - support@win-test.com (Win-Test)

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