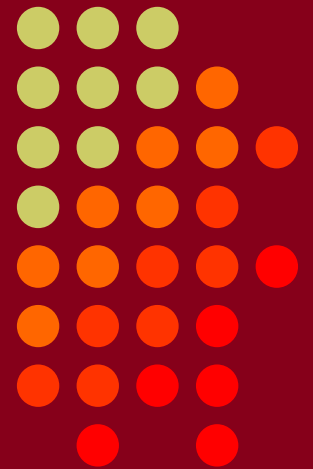# CTU 2013 Presents

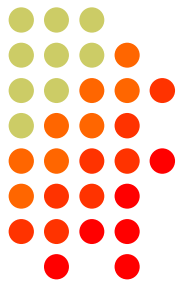## Setting Up for RTTY Contesting—
Basic to Advanced

Ed Muns, W0YK

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The Cynics Say …

- "The RTTY decoder/encoder does everything."

  however, this attribute …

  - frees the operator to improve other skills

  - enables more contest participants

  - provides mode diversity for contest junkies

- "RTTY is a pain to set up and get working."
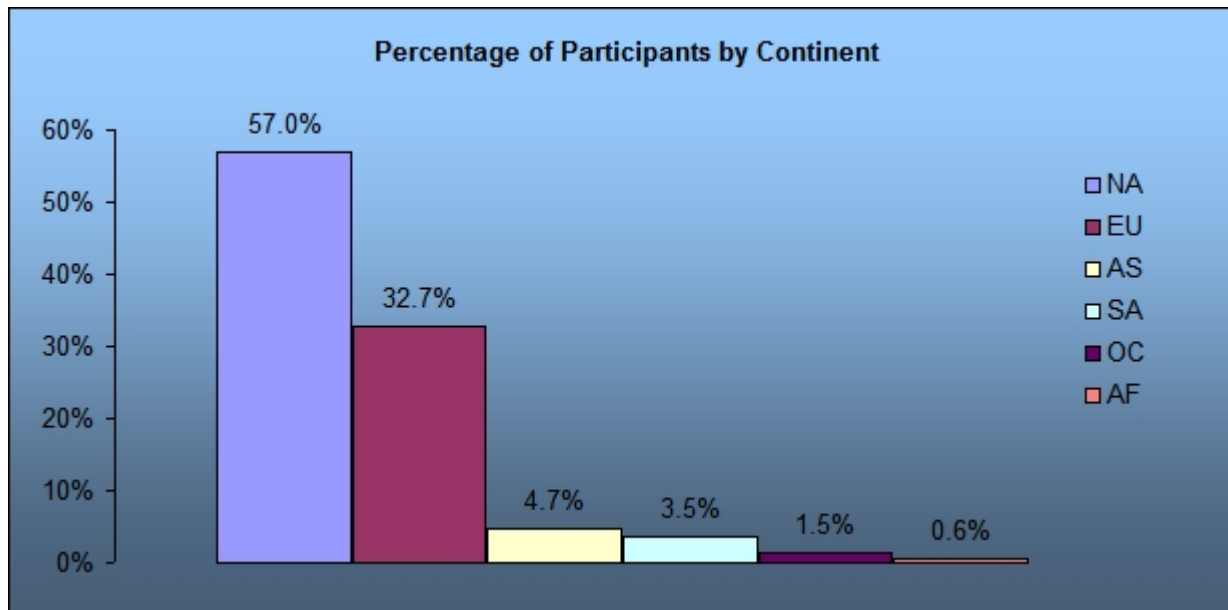
  … stay tuned, it's really not that difficult!

RTTY Contesting Setup

- What is RTTY?

- How do I set it up?

- Radios

- Loggers: N1MM, WriteLog, Win-Test

- Part 2: "Operating a RTTY Contest"

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RTTY Contesters

2010 survey

Percentage of Participants by Continent

- NA: 57.0%
- EU: 32.7%
- AS: 4.7%
- SA: 3.5%
- OC: 1.5%
- AF: 0.6%

- 825 participants; 13 questions
- conducted in February 2010
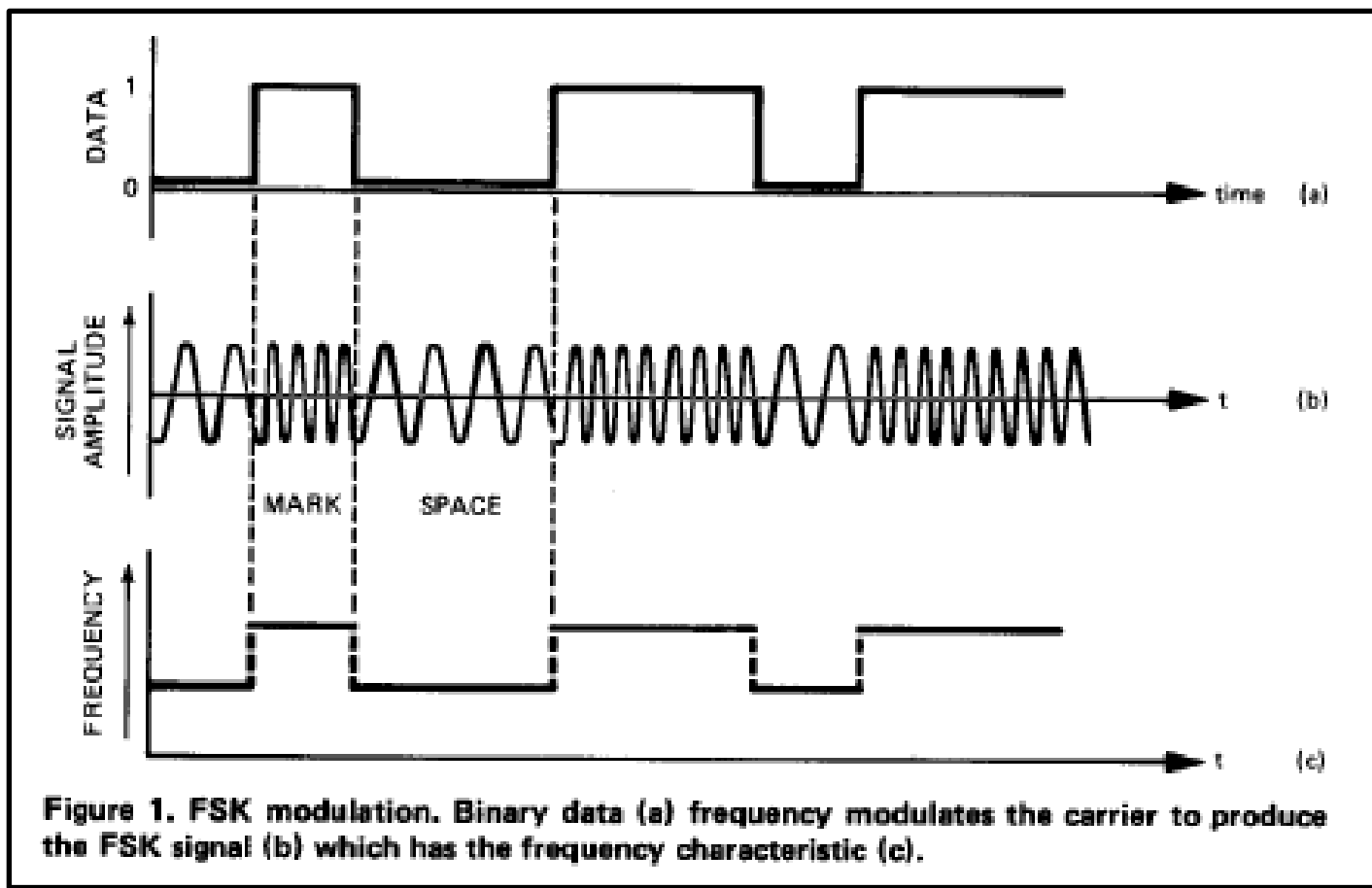
What is RTTY?

compared to CW

CW

- *One* RF carrier

- Local audio *pitch*

- On *or* off
  - key up is data 0
  - key down is data 1

- *Morse* code
  - typically 25-40 wpm

RTTY

- *Two* RF carriers 170 Hz apart *(Space & Mark; Shift)*

- Local audio *tones*

- One on *and* other off
  - Space is data 0
  - Mark is data 1

- *Baudot* code
  - constant 60 wpm *(or 45.45 Baud)*
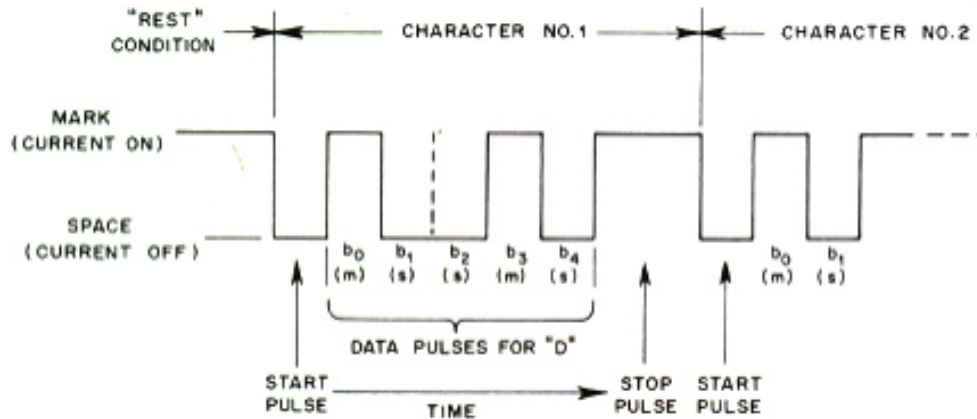
What is RTTY?

Space & Mark

Figure 1. FSK modulation. Binary data (a) frequency modulates the carrier to produce the FSK signal (b) which has the frequency characteristic (c).

What is RTTY?

45.45 Baud = 60 WPM

- Asynchronous character stream
  - 1 bit Start pulse (Space)
  - 5 bits of data (character code)
  - 1, 1.5 or 2 bits Stop pulse (Mark)

What is RTTY?

code history

- Baudot code (1870)
  - Manual bit entry
  - 5-bit ITA1 code
  - Two 32-bit character sets
    - letters
    - figures
- Murray code (1901)
  - Teletype character entry
  - Western Union variation
- **5-bit ITA2 code (1930)**
  - **USTTY variation**
- ASCII (1967)
  - 7-bit ITA5 code

Code	Control Characters	
11111	LTRS	
11011	FIGS	
00000	Null	
00100	Space	
01000	LF	
00010	CR	

	Letters	Figures	
		ITA2	USTTY
00011	A	-	
11001	B	?	
01110	C	:	
01001	D	ENQ	$
00001	E	3	
01101	F		!
11010	G		&
10100	H		#
00110	I	8	
01011	J	BELL	'
01111	K	(	
10010	L	)	
11100	M	.	
01100	N	,	
11000	O	9	
10110	P	0	
10111	Q	1	
01010	R	4	
00101	S	'	BELL
10000	T	5	
00111	U	7	
11110	V	;	
10011	W	2	
11101	X	/	
10101	Y	6	
10001	Z	"	

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What is RTTY?

Figures Shift

- The *LTRS* and *FIGS* characters do not print
  - The code for the characters "Q" and "1" is the same; which one prints depends on if you are in Letters or Figures set
  - Note that the *LTRS*, *FIGS* and *space* characters appear in both sets

- Example: "***KI7GUO DE K4GMH***" gets sent as:
  - *LTRS* **K I** *FIGS* **7** *LTRS* **G U O** *Space* **D E** *Space* **K** *FIGS* **4** *LTRS* **G M H**

- Why do we care to understand this?
  - If a burst of static garbles the *LTRS* or *FIGS* character, then what prints after that is from the wrong set until the next *LTRS* or *FIGS* character appears

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What is RTTY?

UnShift on Space

- UnShift On Space (USOS or UOS)
  - Increases noise immunity for alpha text
  - Space character forces a shift to the Letters set
- Contest exchanges are alpha and numeric
  - Should UOS be on or off?
  - Should Space or Hyphen delimit exchange elements?
    - 599 JOHN NY   or   599-JOHN-NY
- *Recommendation:*
  - *Turn on both RX & TX UOS and use Space delimiters*
 - *Explained in "Operating an RTTY Contest"*

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What is RTTY?

audio tones

- Space and Mark audio tones
  - Default: 2295 and 2125 Hz
  - Less fatiguing: 1085 and 915 Hz
- Analogous to CW pitch
  - Operator choice
  - Each operator can use different tone pairs
  - Transmission is always two carriers 170Hz apart
- Must be same in radio and decoder/encoder

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AFSK vs. FSK

2010 survey

Do you use AFSK or FSK RTTY transmission?
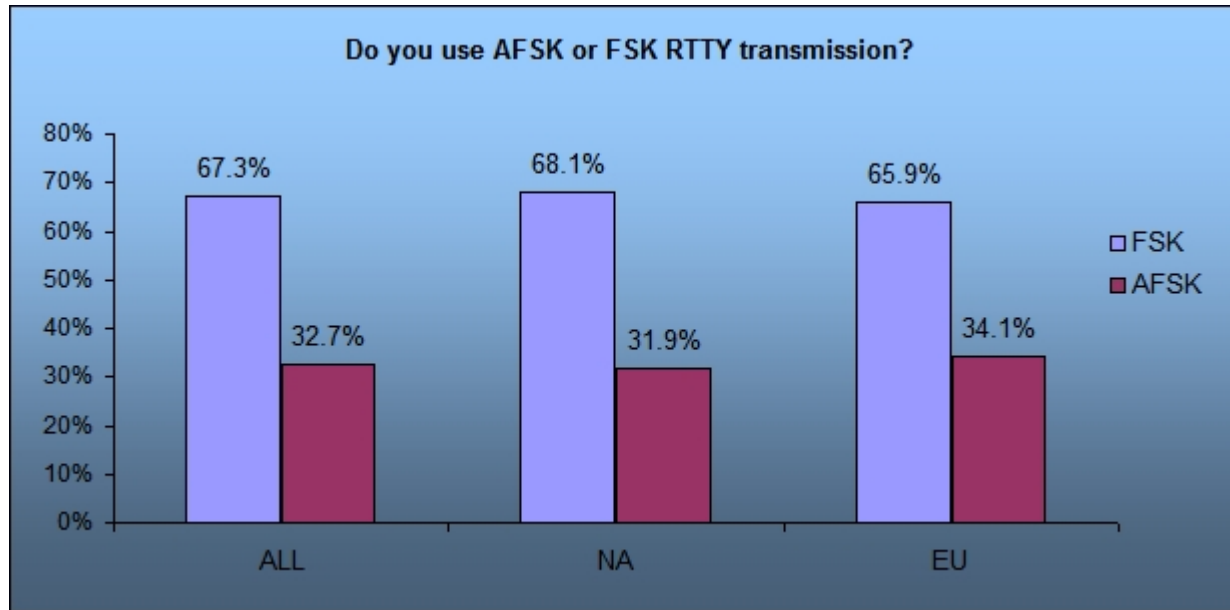
- AFSK has been overtaken by FSK
  since it first appeared in radios, circa 1990

What is RTTY?

AFSK vs. FSK

Two methods of transmission:

- AFSK (Audio Frequency Shift Keying)
  - keyed audio tones into SSB transmitter via:
    - Mic input, or
    - Auxiliary audio input. e.g., Line In
- FSK (Frequency Shift Keying)
  - keys the transmitter just like CW

Note: Receiving is the same in either case.

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What is RTTY?

- RTTY RF is independent of local audio tones and whether LSB or USB is used:
  - The higher RF frequency is the Mark *(14090.000 kHz)*
  - The lower RF frequency is the Space *(14089.830 kHz)*
  - The difference between the two is the shift *(170 Hz)*

- FSK displays Mark *(14090.000 kHz)*

- AFSK displays suppressed carrier which varies with local audio tones and sideband used!
  - For Mark tone of 2125 Hz (Space tone of 2295 Hz):
    - LSB *(14092.125 kHz)*
    - USB – Mark & Space tones reversed *(14087.005 kHz)*

What is RTTY?

AFSK vs. FSK

AFSK	FSK
Indirect *(tones → Mic input)*	Direct *(like CW keying)*
Any SSB radio *(esp. legacy)*	"Modern" radios
SSB (wide) filtering	RTTY (narrow) filtering
Dial = sup. car. frequency	Dial = Mark frequency
VOX	PTT
Audio cable *(same as PSK31)*	COM FSK keying cable
Must use high tones	Can use low tones
NET (automatic TX tone control)	*No audio level adjust*
Less bandwidth (sometimes)	*No disabling speech proc.*
	No erroneous sound keying
Easier hook-up; NET	*Less pitfalls*

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What is RTTY?

summary

- Uses 5-bit Baudot … er … USTTY code with two sets of 32 characters: Letters and Figures
- Space & Mark frequencies separated by 170 Hz "Shift"
- Local Space & Mark tones analogous to pitch in CW
- Constant 45.45 Baud (60 wpm) asynchronous character stream with 5 data bits and 2-3 sync bits
- Figures Shift & Letters Shift
  - optional UnShift-On-Space (UOS)
- AFSK vs. FSK transmission (receiving is the same)
  - Radio dial frequency differences
  - 100% duty cycle!

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How Do I Set it Up?

overview

- ***Acquire*** hardware and/or software to convert between the RTTY signal and text:
    - RTTY *receive* decoder
    - RTTY *transmit* encoder
- ***Configure*** decoder/encoder
- ***Integrate*** decoder/encoder with logger

The rest of the station setup is the same as for CW and SSB

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How Do I Set it Up?
RTTY decoder/encoder

- RTTY *receive* decoder converts printed characters from the two RTTY frequencies
  - CW and SSB receive audio is converted to typed characters by our ears/brain/hands

    (CW decoders are also available, similar to RTTY decoders, but seldom used)

- RTTY *transmit* encoder converts typed characters (or messages) into the two RTTY frequencies
  - Transmitted CW is converted from text by our brain/hand with the aid of a key and/or keyer
  - Transmitted SSB is converted from text by our brain/mouth via a microphone

    (CW software keyers and SSB DVKs are also used, similar to RTTY encoders)

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How Do I Set it Up?
decoder/encoder terminology

- The RTTY *transmit encoder* and *receive decoder* is sometimes referred to as a MODEM or a TNC:
  - MODEM = MOdulator DEModulator
  - TNC = Terminal Node Controller
- MODEMs can be:
  - a hardware box, or
  - a software application driving a PC soundcard

How Do I Set It Up?
hardware *MODEM*

AFSK

Radio
RX   TX

audio out   audio input

Line In   Line Out

MODEM

Computer
Term. Em. or Graphic UI

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How Do I Set It Up?
hardware *MODEM*

AFSK

Radio

RX   TX

audio out   **audio input**

Line In   **Line Out**

MODEM

Computer

Term. Em. or Graphic UI

FSK

Radio

RX   TX

audio out   **FSK input**

Line In   **FSK output**

MODEM

Computer

Term. Em. or Graphic UI

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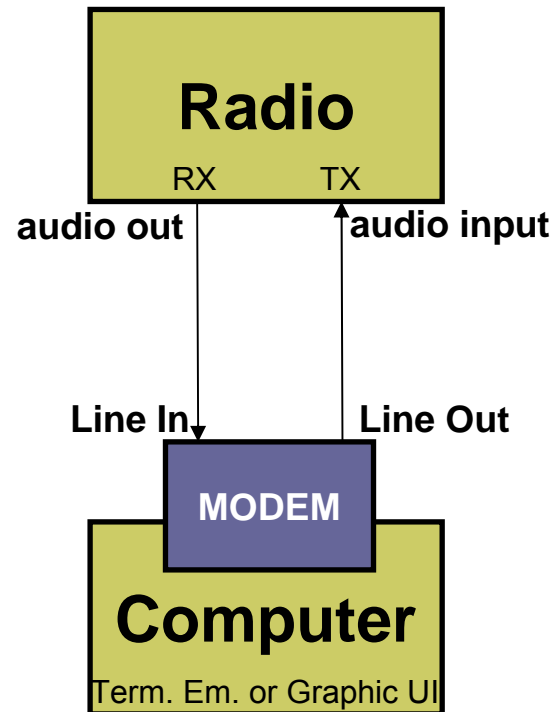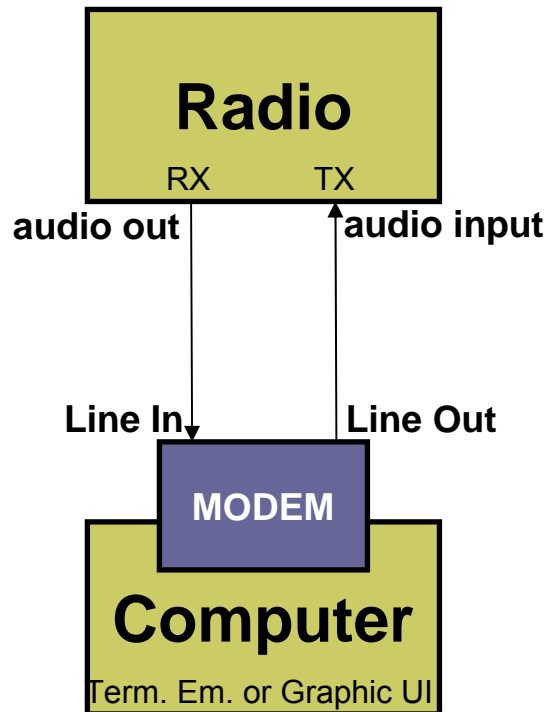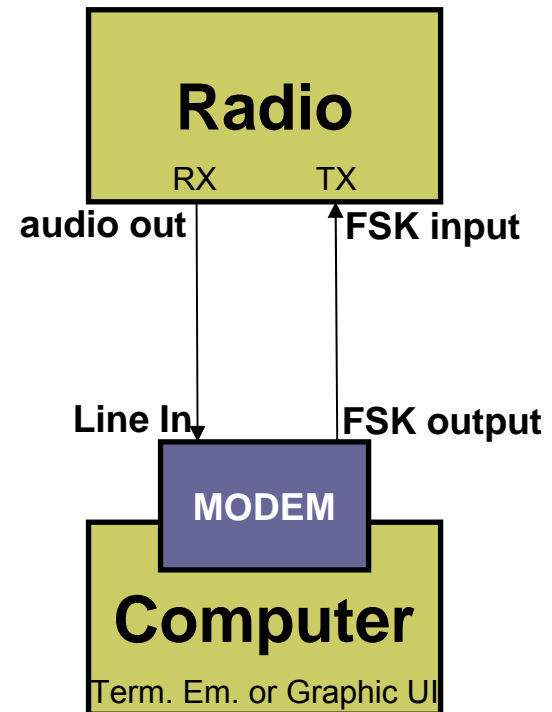
How Do I Set It Up?

hardware *MODEM*

How Do I Set It Up?
software application & *soundcard*

AFSK

Radio

RX   TX

audio out   **audio input**

Line In   **Line Out**

Soundcard

Computer

RTTY decoder/encoder

FSK

Radio

RX   TX

audio out   **PTT**   **FSK input**

FSK & PTT keying cable

Line In

Soundcard   **Serial port**

Computer

RTTY decoder/encoder

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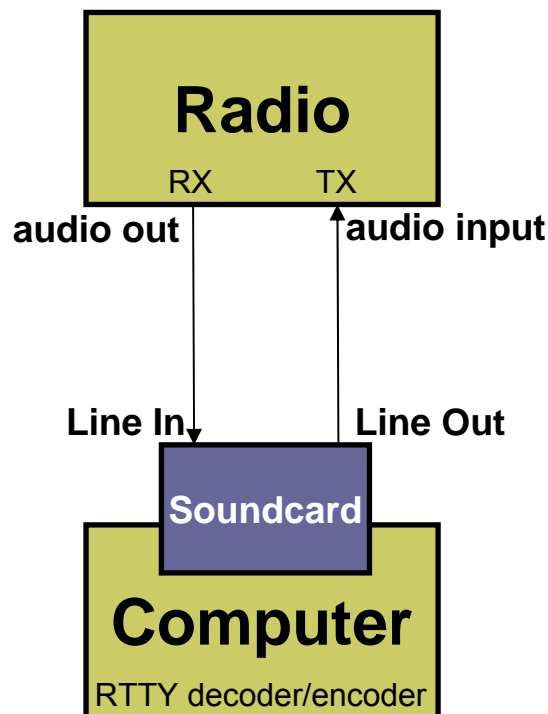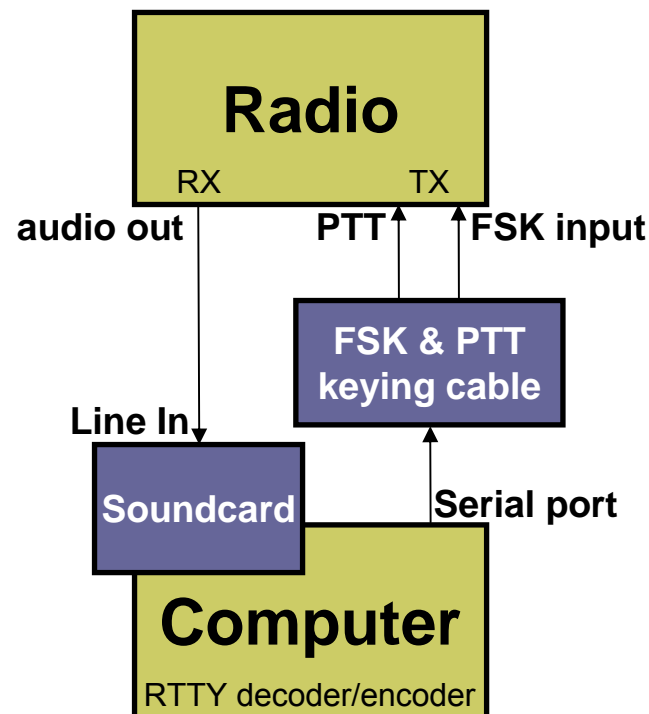
How Do I Set It Up?
ground loops

- Eliminate ground loops between radio and PC

- Otherwise insert 1:1 audio isolation transformer on:
  - RX output
  - TX Mic input *(AFSK only)*

- Alternatives:
  - Bourns LM-NP-1001-B1L transformer → homebrew cable
  - Ground loop isolators
  - W2IHY iBox
  - Commercial RTTY interfaces
  - K3 (uses Bourns LM-NP-1001-B1L on LINE IN & OUT)

How Do I Set It Up?
homebrew audio isolation

RECEIVE AUDIO

Bourns LM-NP-1001-B1L
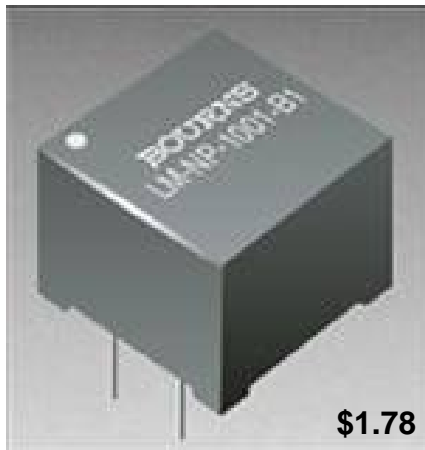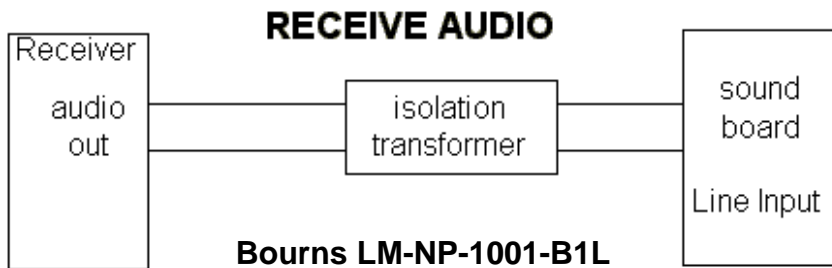
$1.78

-90 dBc 3rd order IMD

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How Do I Set It Up?

ground loop isolators

Radio Shack $19.49   or   eBay $6.99
-64 dBc 3rd order IMD

eBay $3.35

eBay $5.50

eBay $7.45

How Do I Set It Up?
W2IHY iBox audio isolation

$60

How Do I Set It Up?
commercial interface audio isolation

Rascal

How Do I Set It Up?
radio audio isolation

K3 audio isolation   **IN – LINE – OUT**

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How Do I Set It Up?

radio IF filtering

- PC Audio isolation
  - Transformer
  - Commercial interface
  - Some radios (K3)
- Narrow IF filters (Roofing & DSP)
  - 400 Hz - normal
  - 250-300 Hz - strong QRM
  - Tone filters??
    - Icom Twin Peak Filter
    - K3 Dual-Tone Filter
- Audio filtering
  - JPS NIR-10/12
  - Timewave DSP-599zx
  - Modern DSP rigs
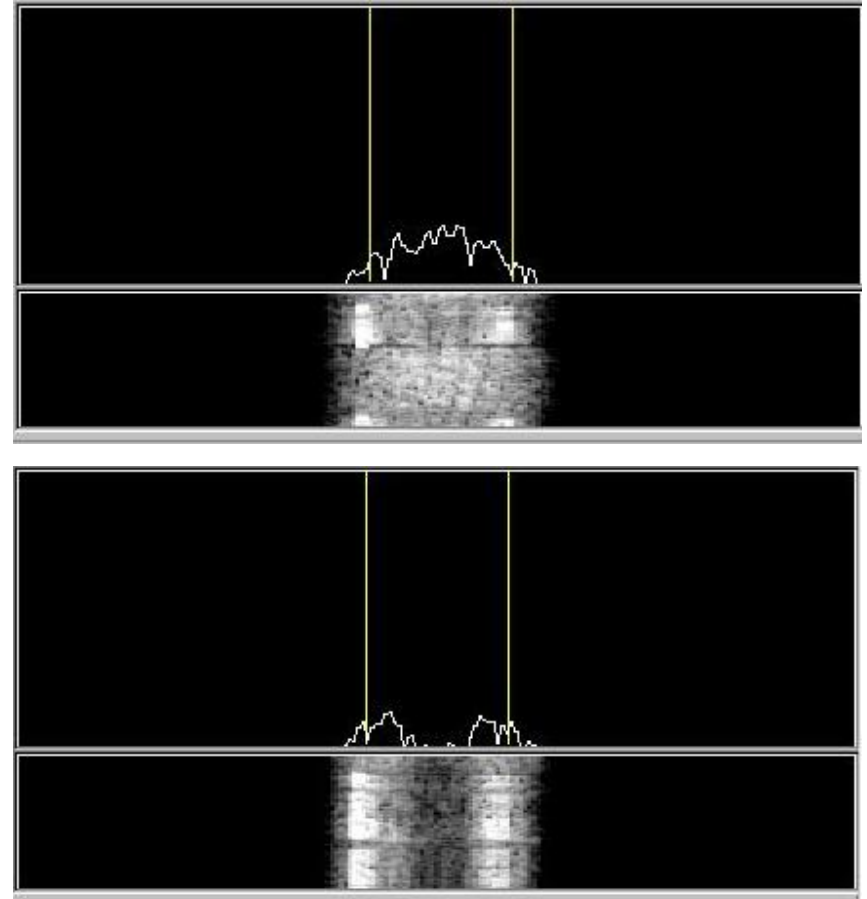
How Do I Set It Up

AF filtering

- PC Audio isolation
  - Transformer
  - Commercial interface
  - Some radios (K3)
- Narrow IF filters (Roofing & DSP)
  - 400 Hz - normal
  - 250-300 Hz - strong QRM
  - Tone filters??
    - Icom Twin Peak Filter
    - K3 Dual-Tone Filter
- Audio filtering
  - JPS NIR-10/12
  - Timewave DSP-599zx
  - Modern DSP rigs

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How Do I Set It Up?
soundcard levels

- Adjust levels in Windows Volume Control
  (or, in MMTTY Options/Soundcard …)
  - Use isolation transformer
  - Avoid over-drive
  - 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.)

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How Do I Set It Up?

PTT vs. VOX

- AFSK uses VOX (or PTT); FSK uses PTT
- PTT by:
  - Computer control via Serial COM port
  - Footswitch *(not recommended)*
- FSK to use semi-break-in in the future?

How Do I Set It Up?
homebrew *FSK & PTT keying cable*

FSK: TXD (3)   FSK input ⎱ on radio
PTT: RTS (7)   PTT input ⎰

1k ohm   NPN General Purpose

(DB9 pin #)   Gnd (5)
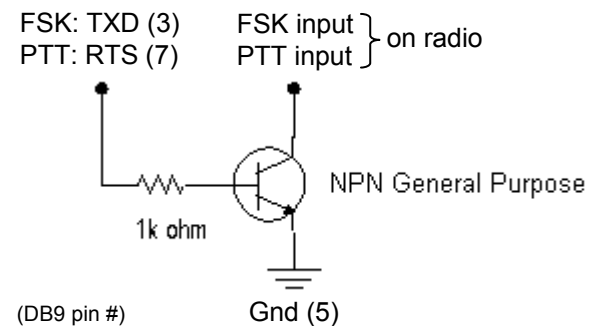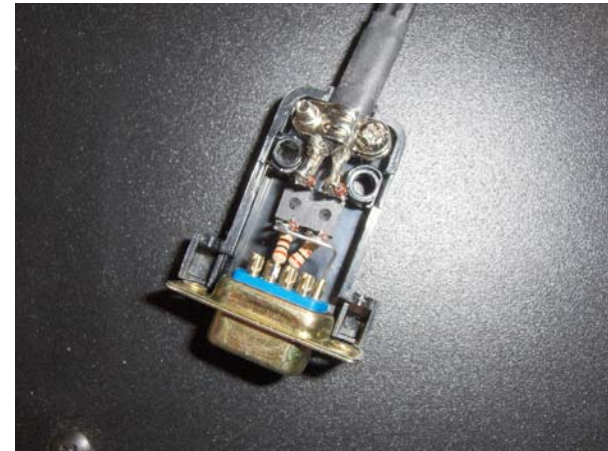
How Do I Set It Up?
W3YY *FSK & PTT keying cable*
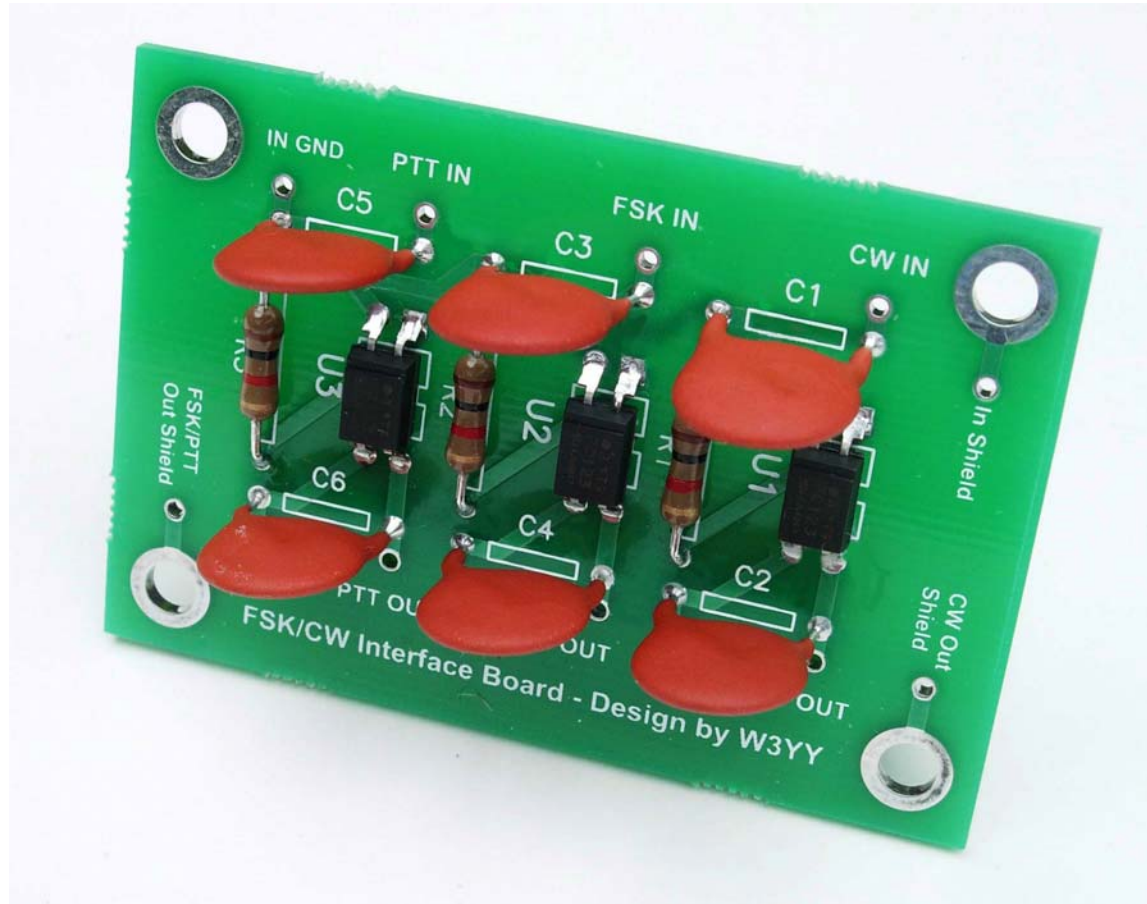
How Do I Set It Up?

commercial interfaces

RASCAL

How Do I Set It Up?
commercial interfaces

Vendor	Model	Price	PC In'fc	PTT	Soundcard	Level ctrl	FSK	CW	WinKey	Voice	Radio in'fc
generic (with K3)	(2) 3.5mm M-M audio cables	$ 10	-			√					
Buxcomm	Rascal-IIB or -IIIA	$ 69	-								
Buxcomm	Rascal GLX	$ 79	Serial	√							
Tigertronics	SL-1+	$ 80	-	auto							
Tigertronics	USB	$ 110	USB	auto	√	√					
MFJ	1273B	$ 60	Serial	√							
MFJ	1275	$ 110	Serial	√							
MFJ	1279	$ 140	Serial	√	√						
Mountain Radio	RIGblaster Nomic	$ 60	Serial/USB	√							
Mountain Radio	RIGblaster Plug & Play	$ 120	USB	√				√			some
Mountain Radio	RIGblaster Plus II	$ 160	USB	√			√ or CW	√ or FSK			some
Mountain Radio	RIGblaster Advantage	$ 200	USB	√	√	√	√ or CW	√ or FSK			√
Mountain Radio	RIGblaster Pro	$ 300	Serial/USB	√			√	√			√
Navigator	Navigator	$ 417	USB	√	√	√	√	√	√		√

See May-June 2012 NCJ, "RTTY Contesting" column

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How Do I Set It Up?
RigExpert Interfaces

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How Do I Set It Up?
microHAM interfaces

One Radio

SO2R

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Vendor	Model	Price	PC In'fc	PTT	Soundcard	Level ctrl	FSK	CW	WinKey	Voice	Radio in'fc	SO2R
RigExpert	Tiny	$120	USB	√	√			√		√	√	
RigExpert	Standard	$265	USB	√	√	√	√	√	√	√	√	
RigExpert	TI-5	$365	USB	√	√	√	√	√	√	√	√	
microHAM	USB Interface II	$179	USB	√				√			√	
microHAM	USB Interface III	$225	USB	√	√	√					√	
microHAM	Digi KEYER II	$369	USB	√	√		√	√			√	
microHAM	microKEYER II	$479	USB	√	√	√	√	√	√	√	√	
microHAM	micro2R	$369	USB	√		√	√	√	√	√	√	√
microHAM	MK2R	$899	USB	√		√	√	√	√	√	√	√
microHAM	MK2R+	$999	USB	√	√	√	√	√	√	√	√	√

See May-June 2012 NCJ, "RTTY Contesting" column

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How Do I Set It Up?
summary - receive

1. Use appropriate receiver IF and AF filtering.

2. Receiver Audio Out (via isolation) to …

    - MODEM Audio In:
        - Set level so band noise is just above threshold

                OR

    - MMTTY via Soundcard Line In (or Mic In with pad):
        - Enable soundcard Line In (or Mic) input, disable/mute other inputs
        - Increase level so band noise is just above threshold

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How Do I Set It Up?
summary - AFSK

1. Turn off speech processor in radio; enable VOX
2. Connect radio's Line In (Mic In with pad) via isolation to:
   - MODEM Audio Out
     - Set radio Mic level to just reach peak power output

     OR

   - Soundcard Line Out
     - Enable soundcard WAV output, disable/mute other outputs
     - Increase WAV level and/or radio Mic level to just reach peak power output

How Do I Set It Up?
summary - FSK

1. Connect the radio FSK and PTT inputs to:
   - the MODEM FSK and PTT outputs and connect the MODEM Serial port to the PC

     OR, if MMTTY

   - the RTTY interface FSK and PTT outputs and connect the interface Serial or USB port to the PC

2. If no PC Serial port, then use a USB-Serial adapter.
   - Beware that some won't key FSK properly. Edgeport USB-Serial adapters are known good.

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Decoders

What do you use as your main RTTY decoder?
(All Participants)

- Sound card with MMTTY — 74.9%
- Sound card other than MMTTY — 12.2%
- Other External Decoder — 6.4%
- PK-232 — 2.3%
- DXP-38 — 1.2%
- HAL other than DXP-38 — 1.2%
- KAM — 1.1%
- SCS PTC-II — 0.7%
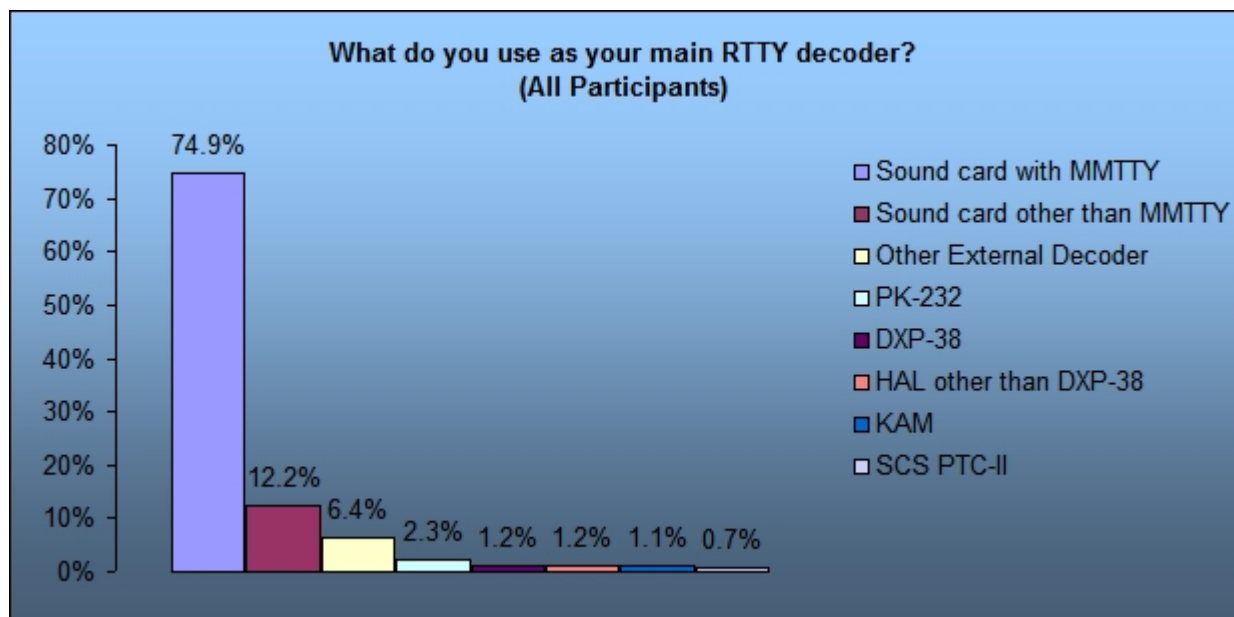
- 87% use soundcard decoding/encoding
- 86% of soundcard users run MMTTY
- 2Tone introduced late 2012

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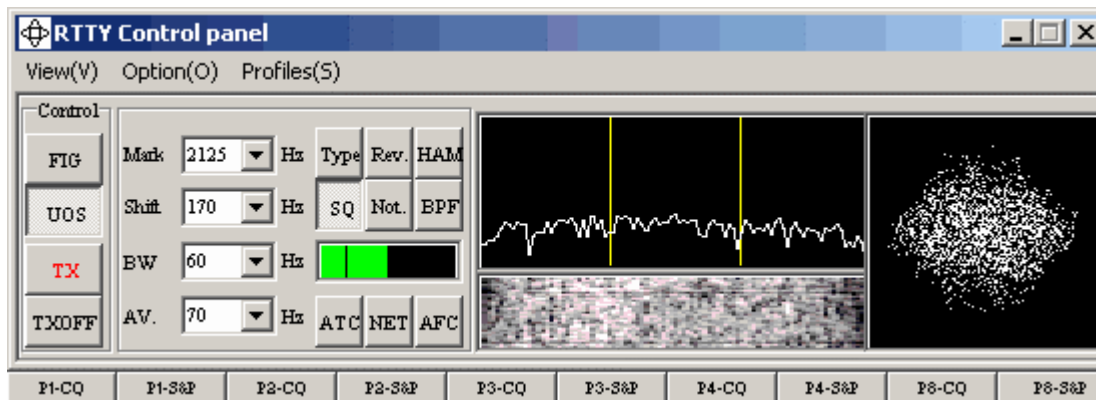
Decoders

MMTTY

- Dominant soundcard MODEM in use today
- Exceeds performance of most other MODEMs
- Freeware since introduction in 2000
- Mako, JE3HHT

Decoders

2Tone

-28Hz | 00 dB S/N | Net On | 40mS

40Hz | 00 dB S/N | Net On | 33mS
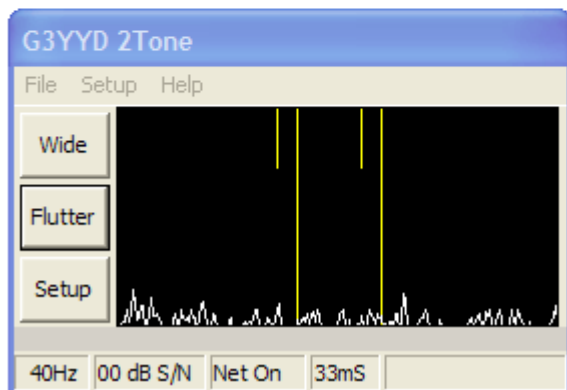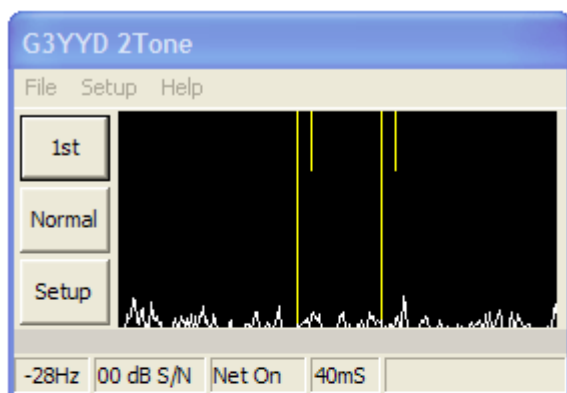
- Outperforms MMTTY
- Uses less CPU cycles
- AFSK only
- Pseudo FSK
- Contest loggers:
  - N1MM Logger
  - WriteLog
- Introduced late 2012
- David Wicks, G3YYD

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Decoders

Logger Support

Feature	MMTTY		2Tone	
	AFSK	FSK	AFSK	FSK
WriteLog	😊	😊	😐	😊
N1MM Logger	😊	😊	😊	☹
Win-Test	😊	😊	☹	☹

😐 NET on

☹ not available

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Decoders

Logger Support

Feature	MMTTY		2Tone	
	AFSK	FSK	AFSK	FSK
WriteLog	🙂	🙂	😐	🙂
N1MM Logger	🙂	🙂	🙂	☹️
Win-Test	🙂	🙂	☹️	☹️

🙂 The "Sweet Spots"

How Do I Set It Up?

MMTTY standalone

How Do I Set It Up?
MMTTY Option menu

Soundcard levels

MMTTY setup

How Do I Set It Up?
MMTTY Option/Setup/Demodulator

Set tones

How Do I Set It Up?
MMTTY Option/Setup/TX

TX UOS on

Select LTR

512 Tap
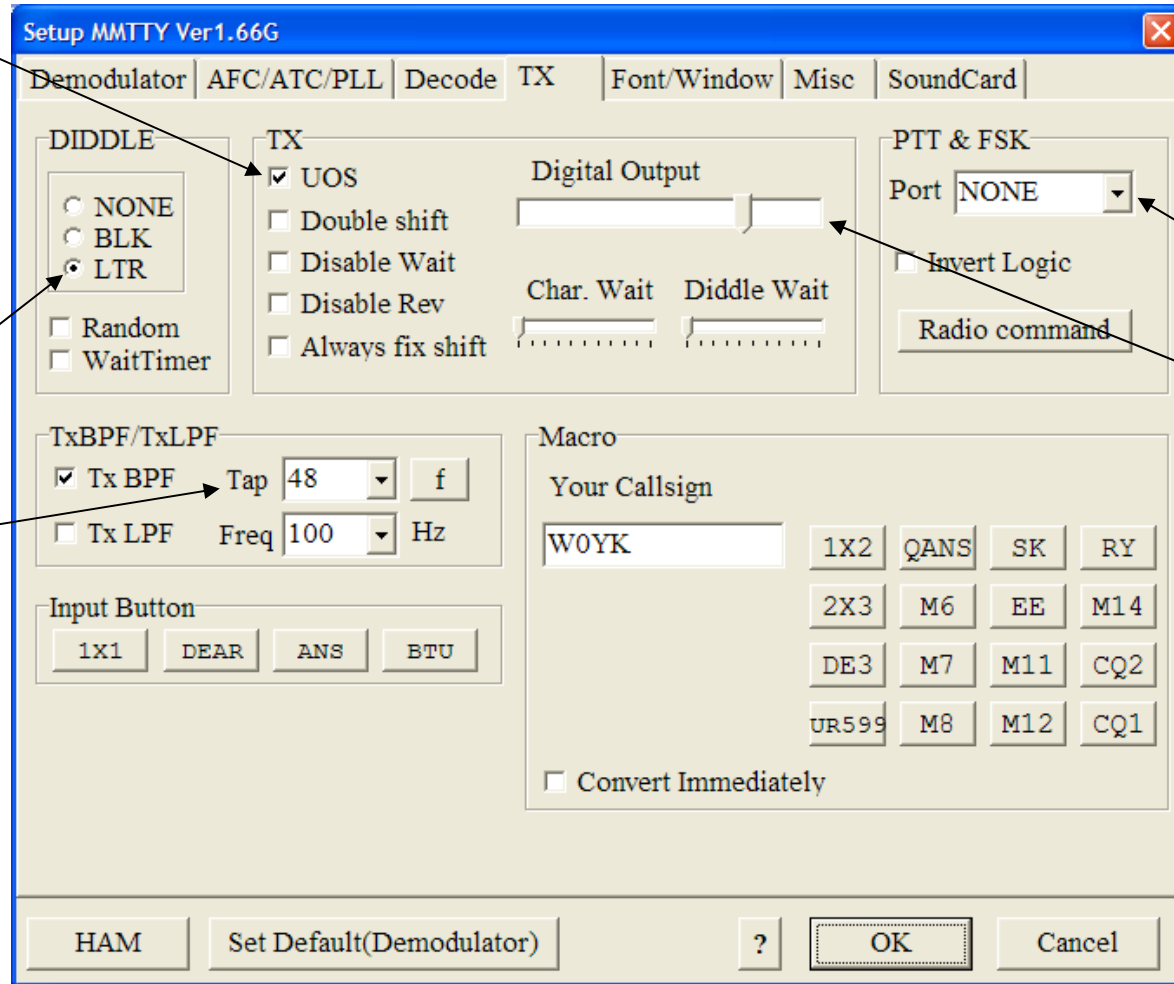
FSK/PTT port

Soundcard
Line Out level

Setup MMTTY Ver1.66G

Demodulator | AFC/ATC/PLL | Decode | TX | Font/Window | Misc | SoundCard

DIDDLE
- ○ NONE
- ○ BLK
- ● LTR
- ☐ Random
- ☐ WaitTimer

TX
- ☑ UOS
- ☐ Double shift
- ☐ Disable Wait
- ☐ Disable Rev
- ☐ Always fix shift

Digital Output

Char. Wait   Diddle Wait

PTT & FSK
Port [NONE ▼]
☐ Invert Logic
Radio command

TxBPF/TxLPF
- ☑ Tx BPF   Tap [48 ▼] [f]
- ☐ Tx LPF   Freq [100 ▼] Hz

Input Button
[1X1] [DEAR] [ANS] [BTU]

Macro
Your Callsign
[W0YK]

[1X2] [QANS] [SK] [RY]
[2X3] [M6] [EE] [M14]
[DE3] [M7] [M11] [CQ2]
[UR599] [M8] [M12] [CQ1]

☐ Convert Immediately

[HAM] [Set Default(Demodulator)]   [?] [OK] [Cancel]

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How Do I Set It Up?
MMTTY Option/Setup/Misc

Setup MMTTY Ver1.66G

Demodulator | AFC/ATC/PLL | Decode | TX | Font/Window | Misc | SoundCard

Sound Card

FIFO
RX [12] TX [4]

Priority
- Normal
- Higher
- Highest
- Critical

Soundcard →

Device Identifiers
RX [0]
TX [0]

Source
- Mono
- Left
- Right

Clock
[11025] Hz [Adj]
[0.00] Hz
Tx offset

☐ Save window location

Sound loopback
- OFF
- Int.
- Ext.(SAT)

Tx Port
- Sound ← AFSK
- Sound + COM-TxD (FSK)
- COM-TxD(FSK) ← FSK

System Font
Window [Times New Roman] [Set] [0]
Fixed pitch [Courier New] [Set] [0]
[Japanese] [English]

[HAM] [Set Default(Demodulator)] [?] [OK] [Cancel]

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How Do I Set It Up?
MMTTY Option/Setup/SoundCard
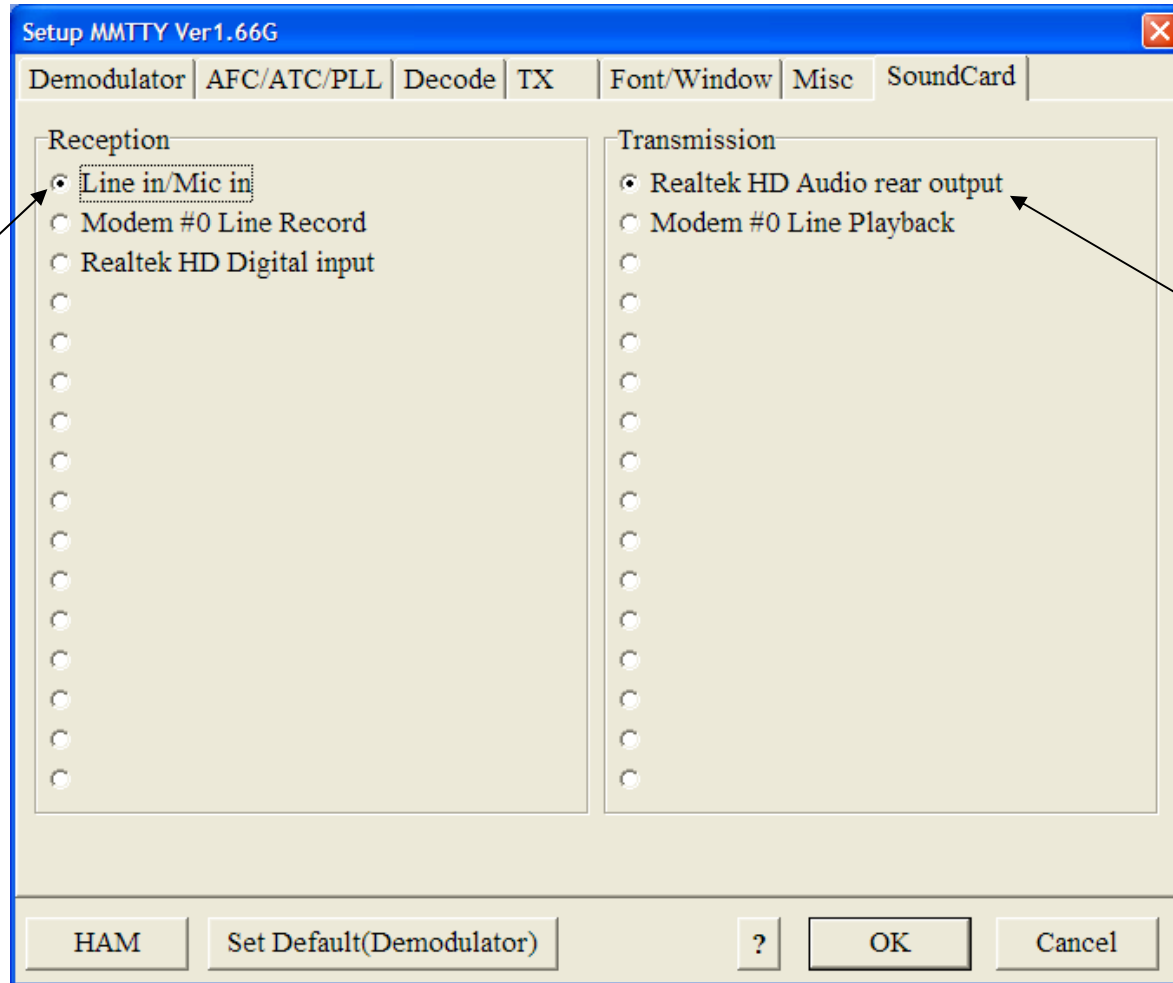
Select receive Soundcard

Select transmit Soundcard (AFSK only)

How Do I Set It Up?
MMTTY userpara.ini

- *userpara.ini* file (in MMTTY program directory) stores parameter defaults
- There is a section for each profile, e.g.,
  - [Define0]
  - Name=Standard RTTY
- In each section (profile) make sure:
  - NET and AFC are off [NET=0, AFC=0]
  - UOS and TXUOS are on [UOS=1, TXUOS=1]
  - Other parameters are set so that they do not have to be changed every time you load MMTTY or that profile

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How Do I Set It Up?
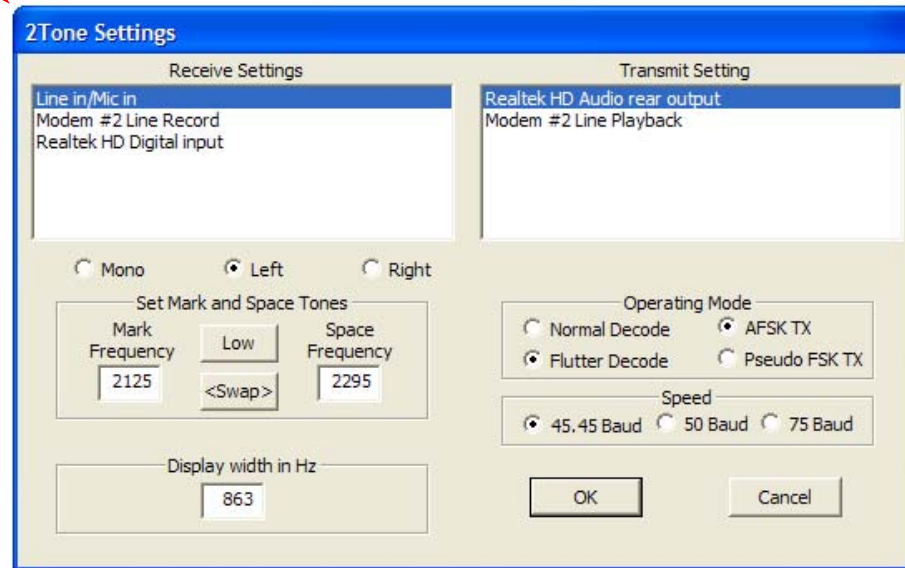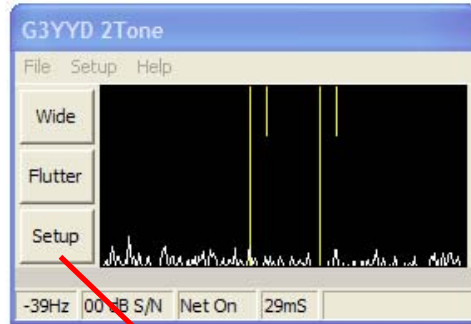
2Tone

How Do I Set It Up?

2Tone

same
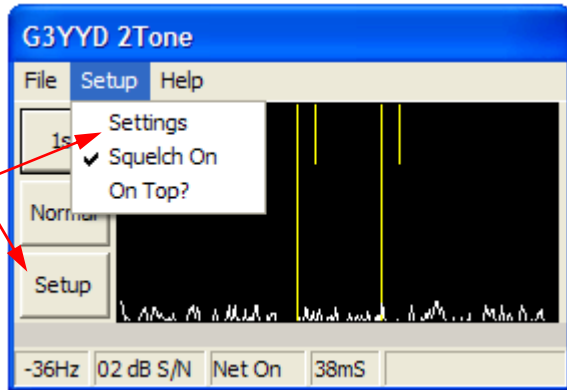
- Setup vs. Settings
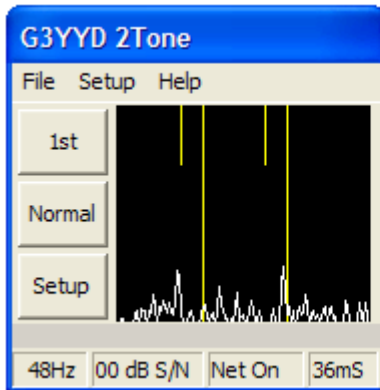
- Window-width adjust

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RTTY Radios

2010 survey

What radio or radios do you use for RTTY contesting?
(All Participants)

Other Radios — 30.8%
Yaesu FT-1000D/MP/MK5 — 17.1%
Icom IC-756/PRO/PRO II or IC-746PRO — 11.5%
Icom IC-756 PRO III — 9.2%
Elecraft K3 — 8.0%
Kenwood TS-850/950 — 6.8%
Yaesu FT-2000/2000D/9000/9000D — 6.1%
Kenwood TS-870/TS-2000 — 5.8%
Icom IC-7600/7700/7800 — 4.7%
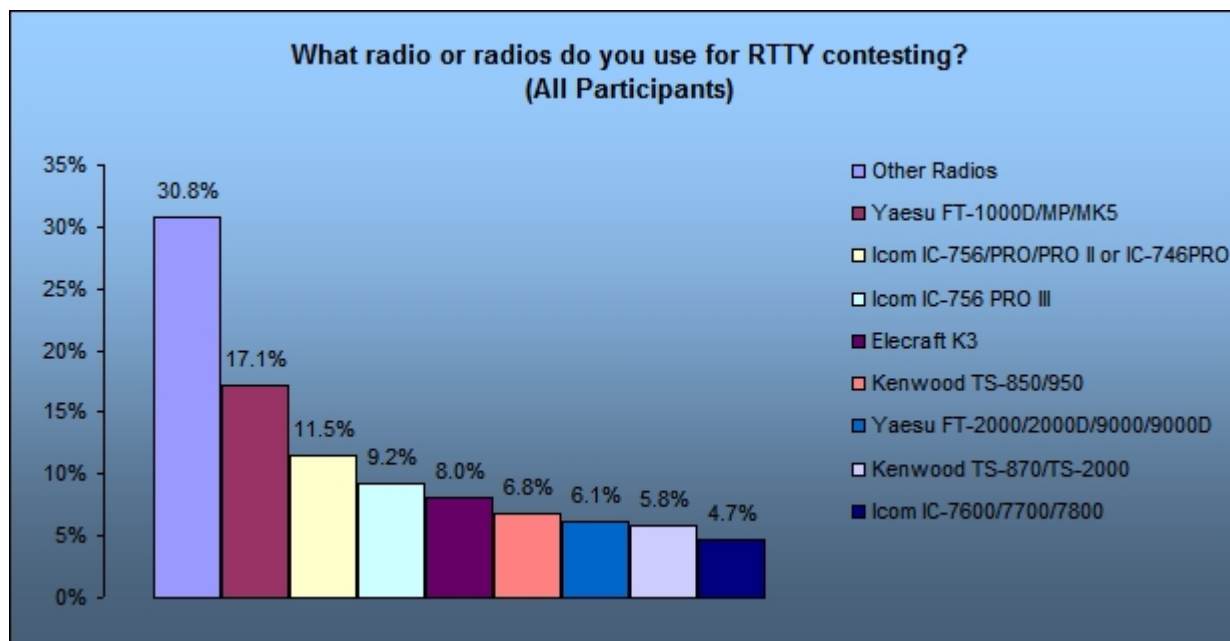
- Icom 756Pro series most popular
- Elecraft K3 growing rapidly

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RTTY Radios

MMTTY - AFSK

- No TX filter
- K3 @ 1 mW

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

MMTTY - AFSK

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

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RTTY Radios

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

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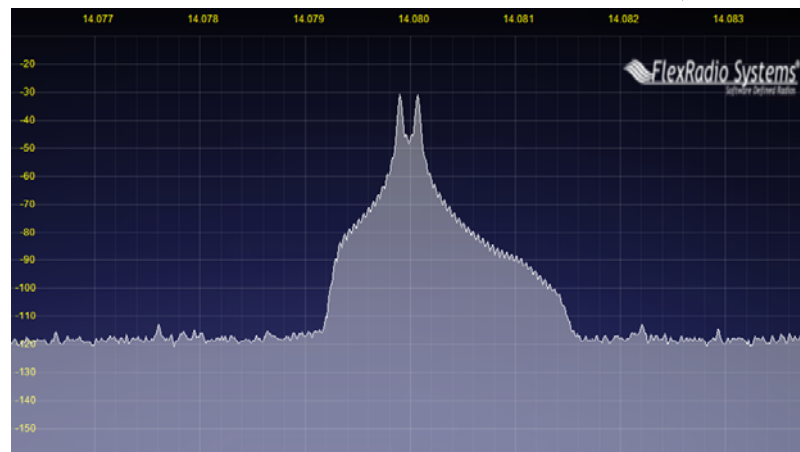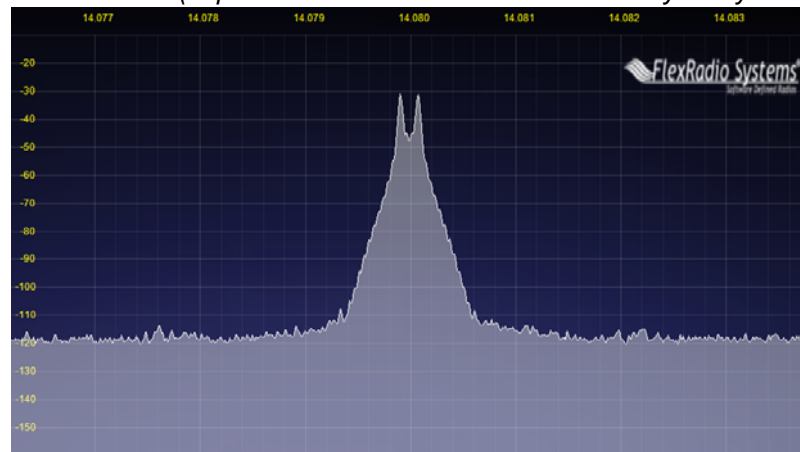
RTTY Radios

AFSK bandwidth

MMTTY - AFSK

- 512-tap TX BPF
- K3 @ 1 mW

Thanks K0SM (http://www.frontiernet.net/~aflowers/k3rtty/k3rtty.html)
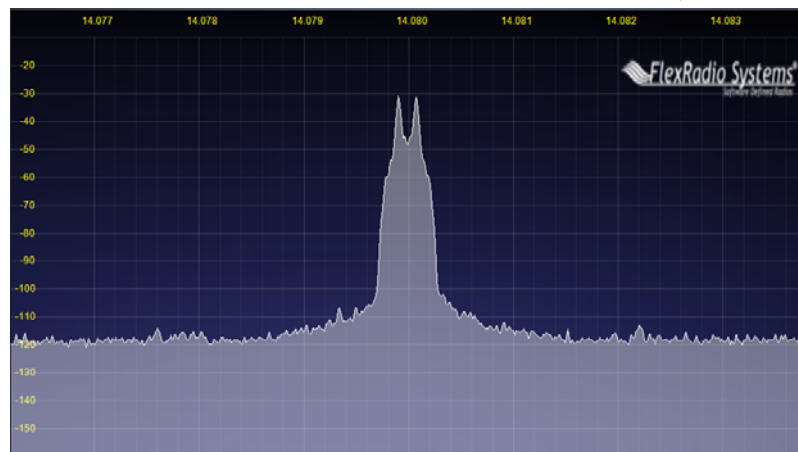
2Tone - AFSK

- Default "AM" setting
- K3 @ 1 mW
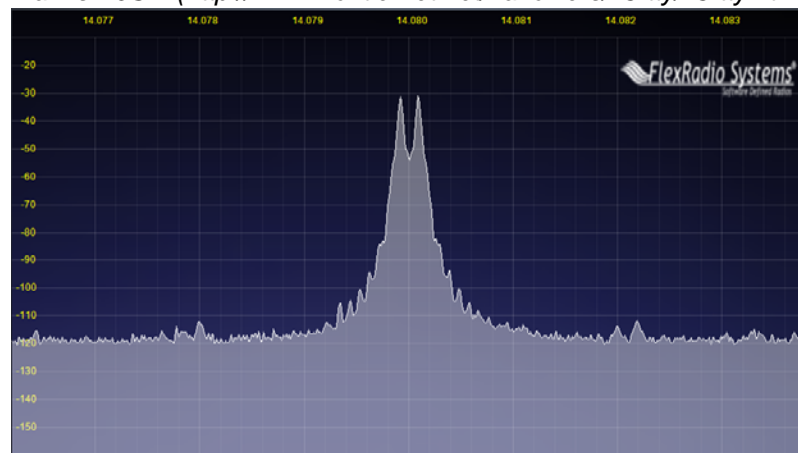
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RTTY Radios
PA IMD impact on AFSK bandwidth

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

ICOM
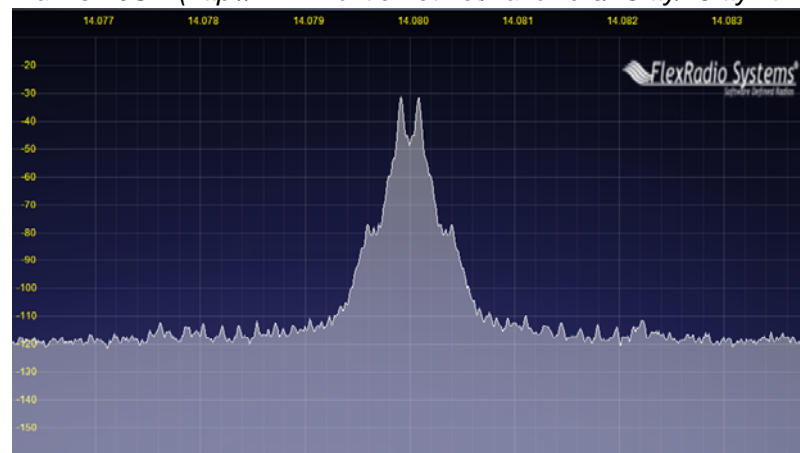
RTTY Radios
PA IMD impact on AFSK bandwidth

MMTTY - AFSK

- No MMTTY filter

- K3 @ 100 watts
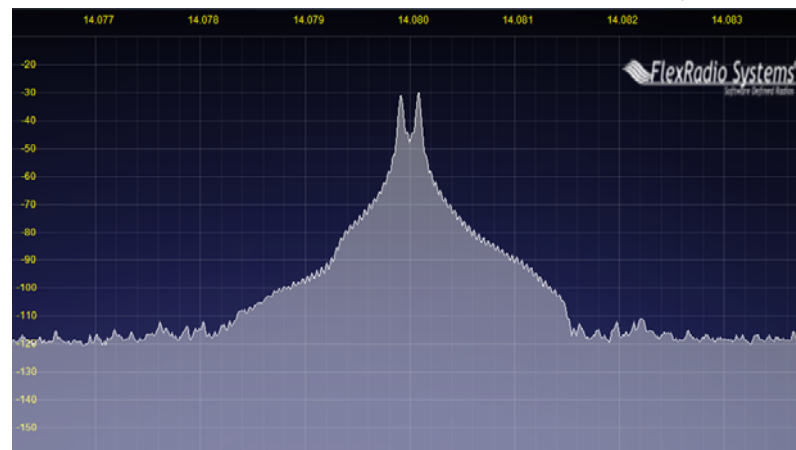
Thanks K0SM (http://www.frontiernet.net/~aflowers/k3rtty/k3rtty.html)
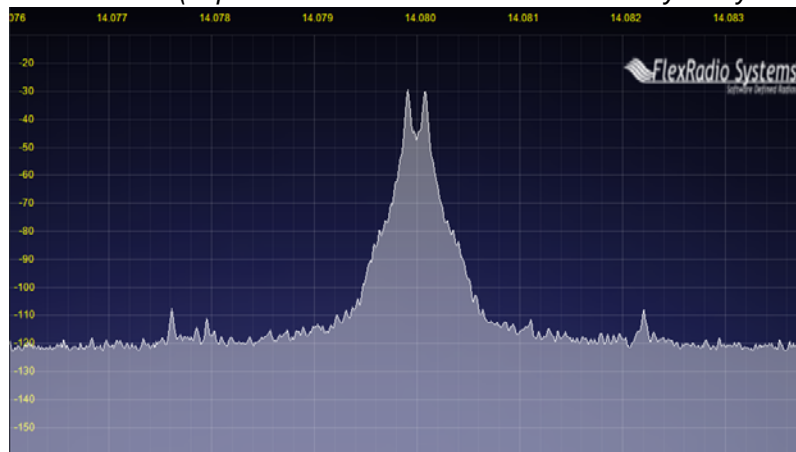
MMTTY - AFSK

- No MMTTY filter

- K3 AFSK filter

- K3 @ 100 watts

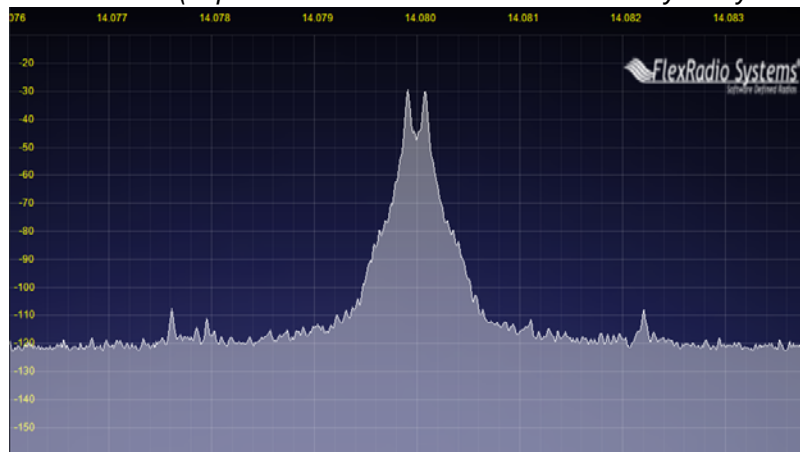# RTTY Radios
PA IMD impact on AFSK bandwidth

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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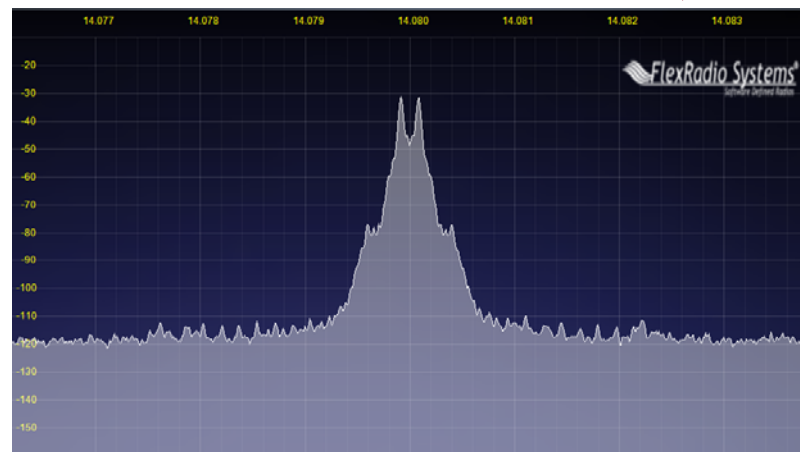
RTTY Radios
PA IMD impact on RTTY bandwidth
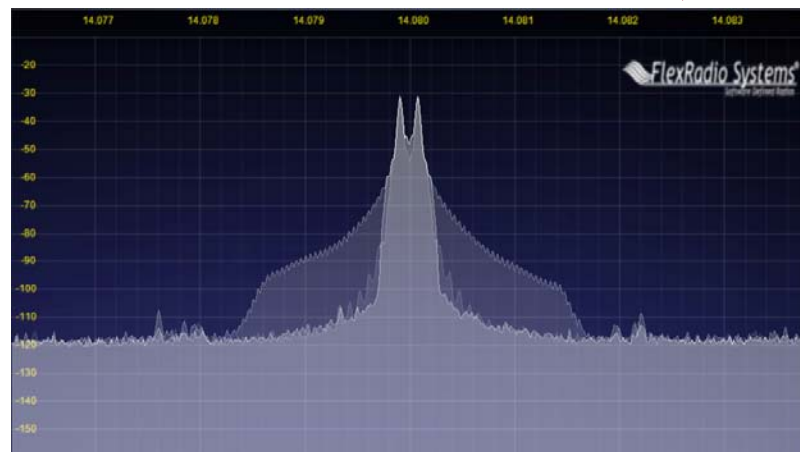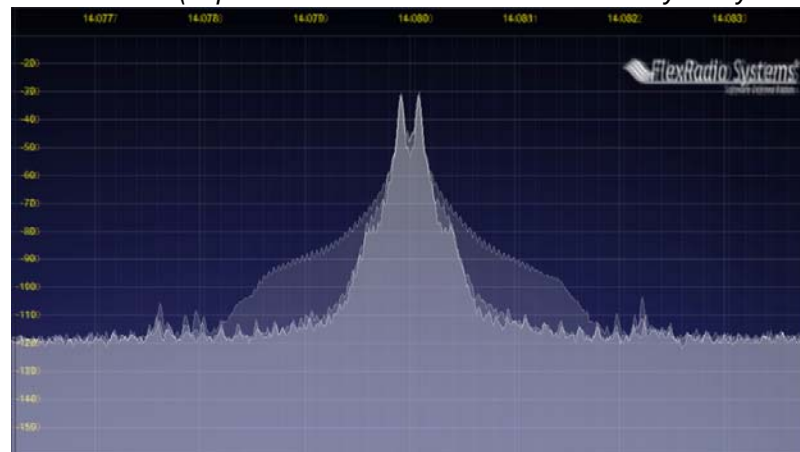
FSK/MMTTY/2Tone

- FSK unfiltered

- MMTTY 512-tap BPF

- 2Tone "AM" setting

- K3 @ 1 mW

FSK/MMTTY/2Tone

- Same encoders

- K3 @ 100 watts

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

Thanks W7AY for composite graphics
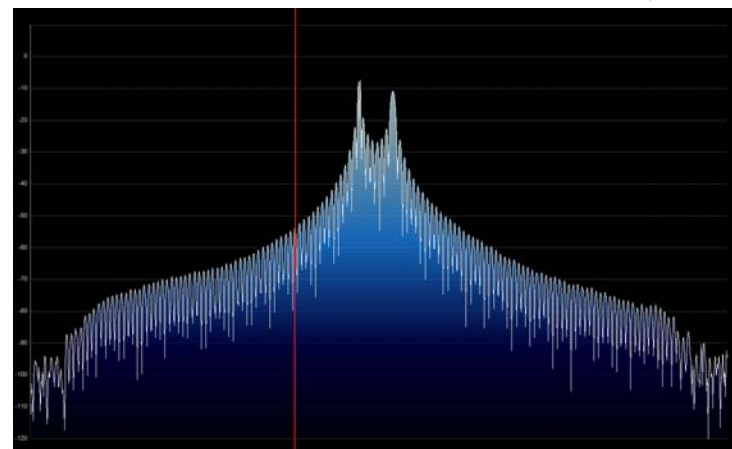
RTTY Radios

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
- Lobby other mfrs to add a FSK filter!

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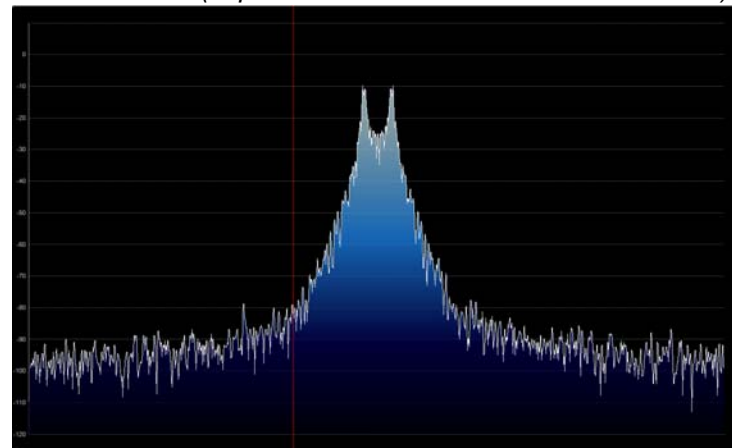
RTTY Radios
FSK & AFSK bandwidth

AFSK

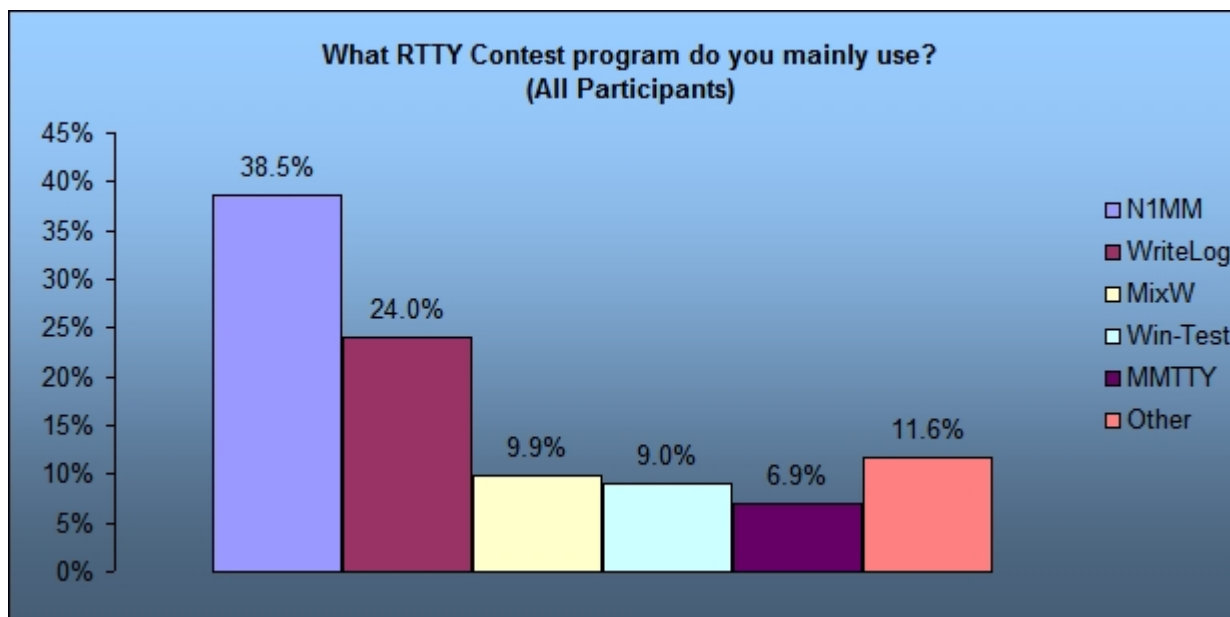- Use radio AFSK filter
  - DSP TX filter (K3)
  - Crystal TX filter (K3)
  - Lobby other mfrs
- Use MODEM TX filter
  - 2Tone default
  - MMTTY 512-tap

FSK

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

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RTTY Contest Loggers
2010 survey

What RTTY Contest program do you mainly use?
(All Participants)

- N1MM — 38.5%
- WriteLog — 24.0%
- MixW — 9.9%
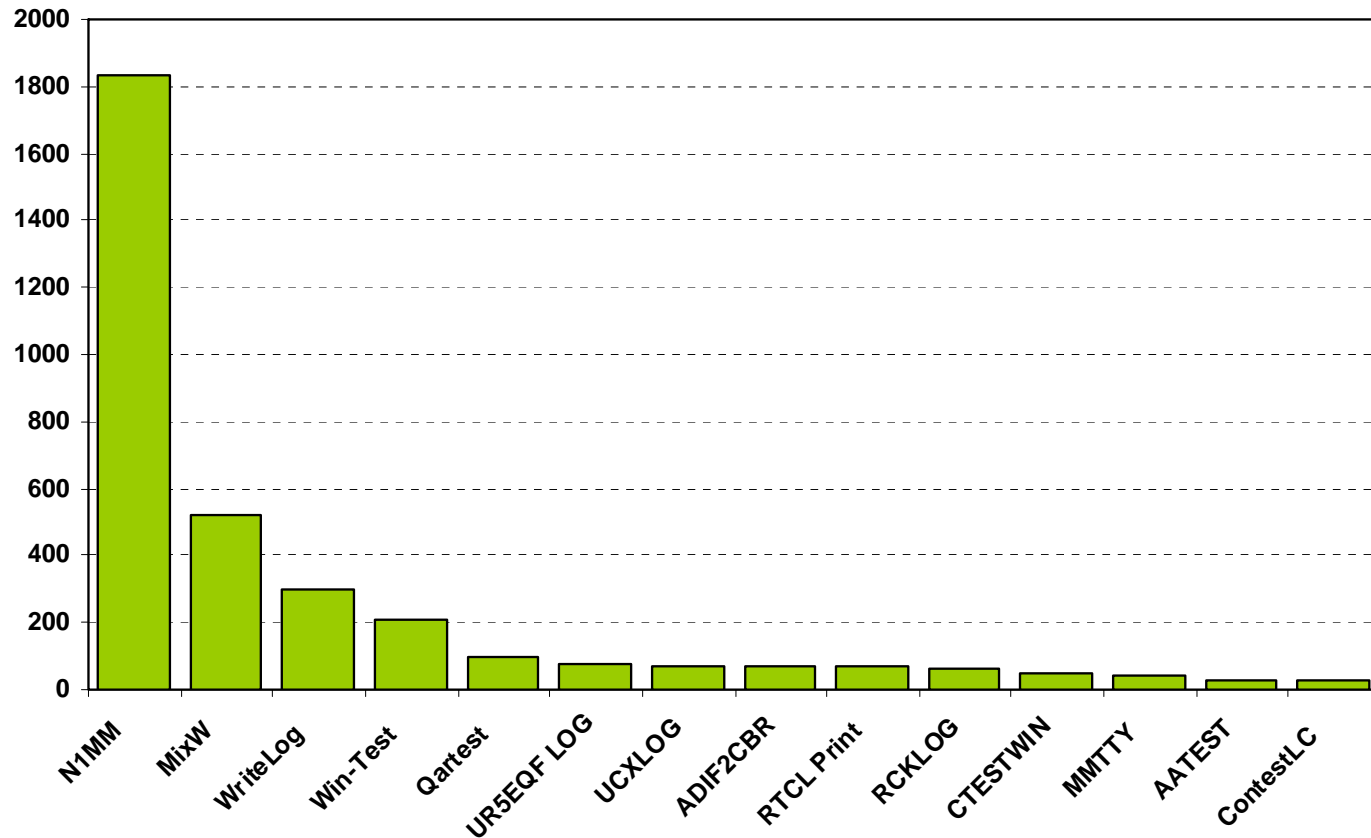- Win-Test — 9.0%
- MMTTY — 6.9%
- Other — 11.6%

- MixW ahead of Win-Test
- MMTTY used stand-alone

2012 CQ WPX RTTY
3550 submitted logs

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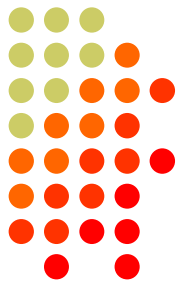
RTTY Contest Loggers

- WriteLog *(1994)*
  - created for RTTY *(CW & SSB came later)*
  - *www.rttycontesting.com* web site
- N1MM Logger *(2000; dedicated RTTY software designer)*
  - Free
- Win-Test *(2003; RTTY is low priority)*

All three integrate MMTTY and have similar functionality for basic RTTY contesting.
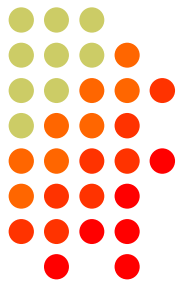
RTTY Contest Loggers

	WriteLog	N1MM	Win-Test
MMTTY	☻	☻	☻
2Tone	☻	☻	-
other decoders	☻	some	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*

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RTTY Contest Loggers
relative ratings

- 13 features compared
  - Rated 0 to 5
  - Simplifying assumption: features equally weighted
- 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

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RTTY Contest Loggers
relative ratings

WL	N1	WT	Logger
5	3	4	• RTTY window readability
5	4	0	• Multiple decoders
5	4	0	• multiple MMTTY or 2Tone
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	3	5	• AFSK/FSK flexibility
40	**36**	**23**	***Overall***

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A Blizzard of Details!

this is fun??

Start Simple, Then Enhance

- MMTTY *(free)*
    - get RX working *(std audio cable from radio to PC)*
    - get TX working; use either:
        - AFSK *(2nd std audio cable from radio to PC)*
        - FSK *(keying cable or commercial interface)*
- Integrate MMTTY or 2Tone with logging software
- Enhance later
    - Audio isolation *(highly recommended)*
    - Commercial interface
   - Advanced setup: SO2V, SO2R, multiple decoders, ...

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Resources

- www.rttycontesting.com
  - Tutorials and resources (beginner to expert)
  - WriteLog/MMTTY/2Tone (N1MM Logger coming)
- 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)
  - N1MMLogger@yahoogroups.com (N1MM Logger general)
  - N1MMLogger-Digital@yahoogroups.com (N1MM Logger RTTY & PSK)
  - writelog@contesting.com (WriteLog)
  - support@win-test.com (Win-Test)

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Operating a RTTY Contest
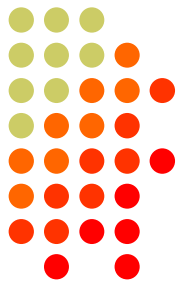
- RTTY considerations
- Optimize message buffers
  - UnShift On Space (UOS or USOS)
  - Space vs. Hyphen
- Accelerator keys; Stateful Enter key (ESM); key re-mapping
- Super Check Partial & Pre-Fill
- "Slow down to win" (call sign stacking)
- Multiple decoders
- SO2V, SO2R-SOnR
- Logging Software: WriteLog vs. N1MM Logger vs. Win-Test
- Ergonomics

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