RexburgHams.org/Training

Rigby Region Training

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# Digital Communication

# Digital Communication

- Email, files, keyboard-to-keyboard (chat)
- Others?

- It's digital if the information is exchanged as individual characters encoded as digital bits.

# Digital Communication

- A = 01000001 (ASCII)
- A = di – dah (CW)

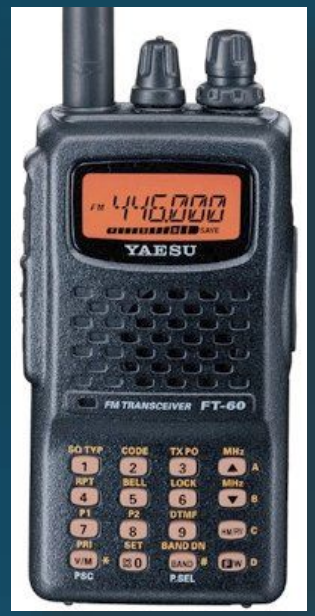
# Emergency Communication Benefits

- Long lists of information
- Complex vocabulary
- Formal traffic

- Faster than voice communication

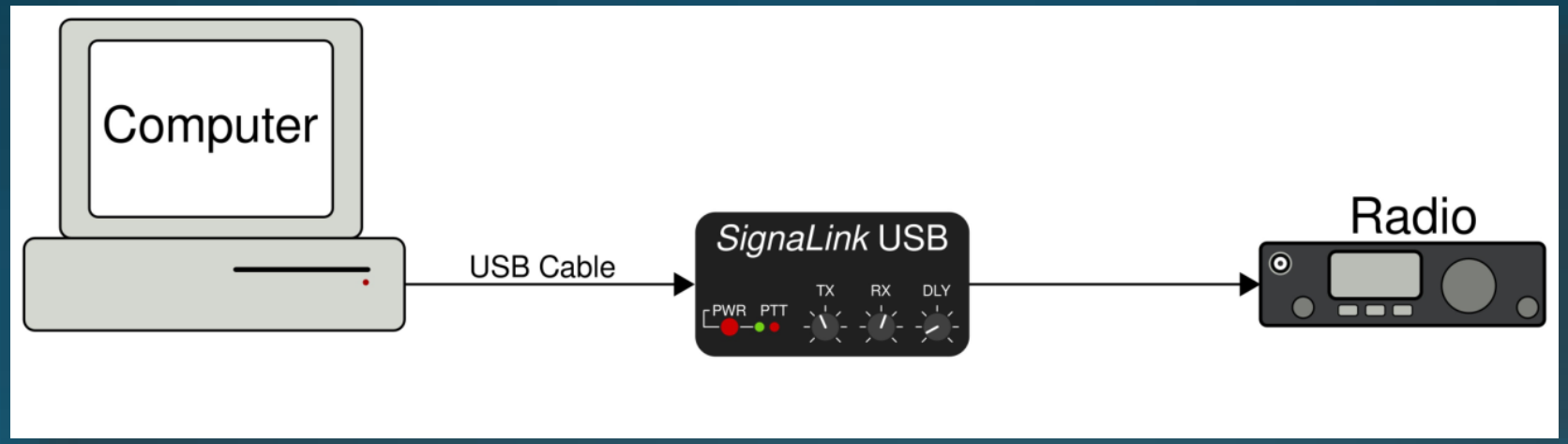
# Equipment - Minimum

- Radio (Even a HT)
- Computer
- Microphone
- Speaker



# Equipment – Full Station

- Multimode Radio
- Computer
- SignaLink (~$105)
- Interface Cable

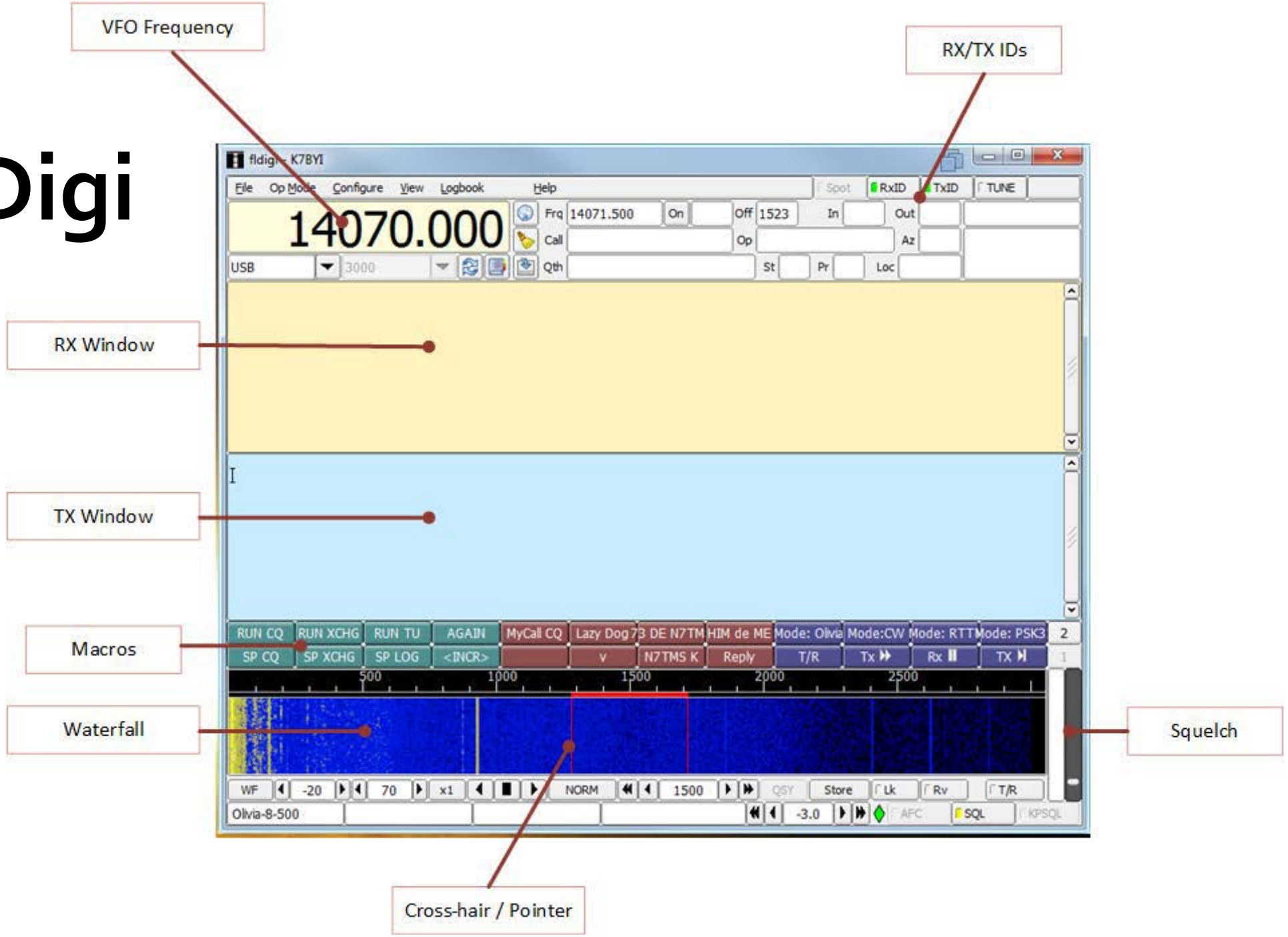


# Software

- FLDigi: http://sourceforge.net/projects/fldigi/files/fldigi/
- FSQCall: http://www.qsl.net/zl1bpu/MFSK/FSQweb.htm (NW8L/KA4CDN FSQCall V0.24.6, US Edition)
- JT65-HF: http://sourceforge.net/projects/jt65hfhb9hqxedi/?source=directory
- RMS Express: http://www.winlink.org/RMSExpress (rms_express_install_1-3-7-0.zip link at bottom of page)

- (Other software Ham Radio Deluxe, MultiPSK, MixW)

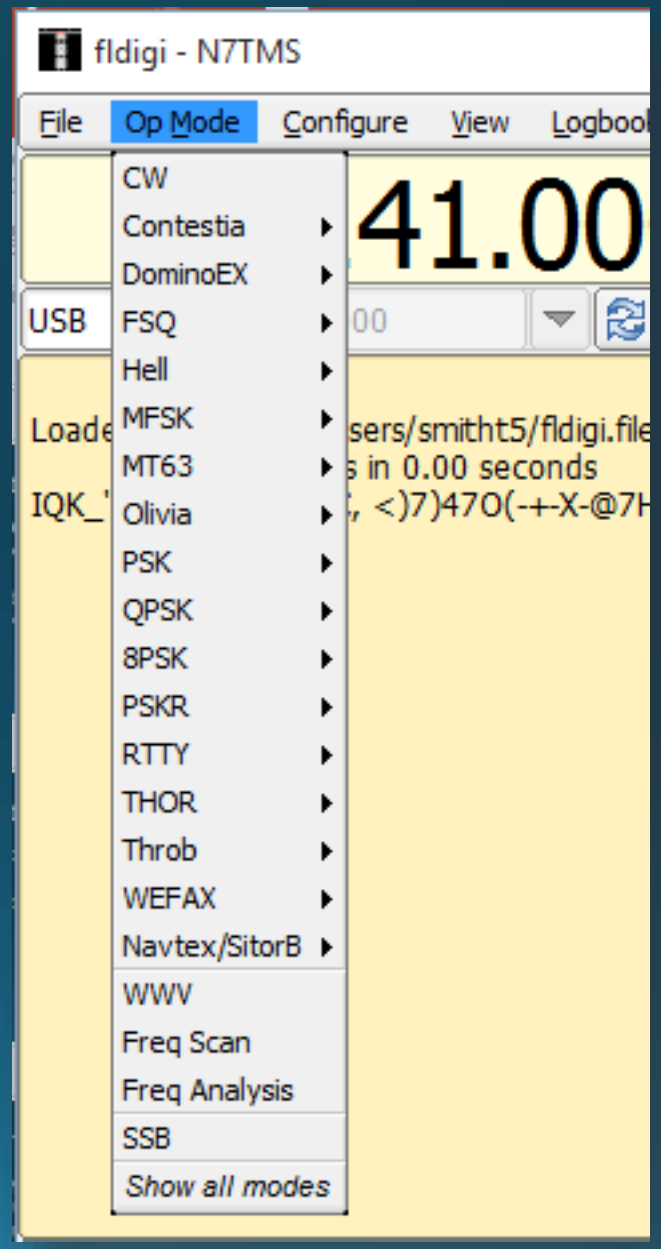
# FLDigi


VFO Frequency
RX/TX IDs
RX Window
TX Window
Macros
Waterfall
Squelch
Cross-hair / Pointer
fldigi - K7BYI
File
Op Mode
Configure
View
Logbook
Help
Spot
RxID
TxID
TUNE
14070.000
Frq
14071.500
On
Off
1523
In
Out
Call
Op
Az
USB
3000
Qth
St
Pr
Loc
RUN CQ
RUN XCHG
RUN TU
AGAIN
MyCall CQ
Lazy Dog 73 DE N7TM
HIM de ME
Mode: Olivia
Mode:CW
Mode: RTTY
Mode: PSK3
SP CQ
SP XCHG
SP LOG
<INCR>
v
N7TMS K
Reply
T/R
Tx
Rx
TX
500
1000
1500
2000
2500
WF
-20
70
x1
NORM
1500
QSY
Store
Lk
Rv
T/R
Olivia-8-500
-3.0
AFC
SQL
KPSQL

# Popular Modes

- RTTY
- PSK31
- Olivia
- PACTOR

- JT65
- FSQ



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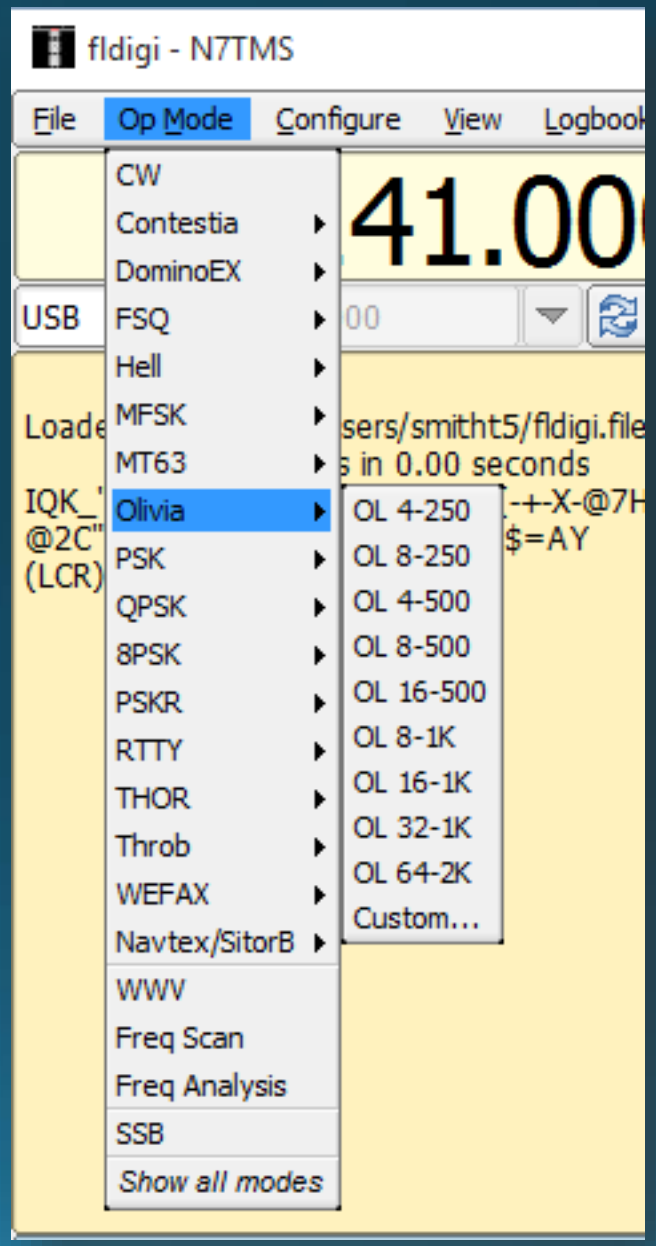
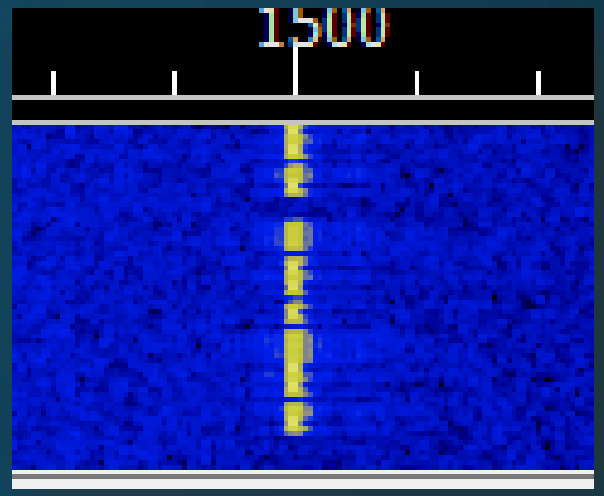


# CW – Morse Code

- "Carrier Wave"
- Single frequency turned on & off



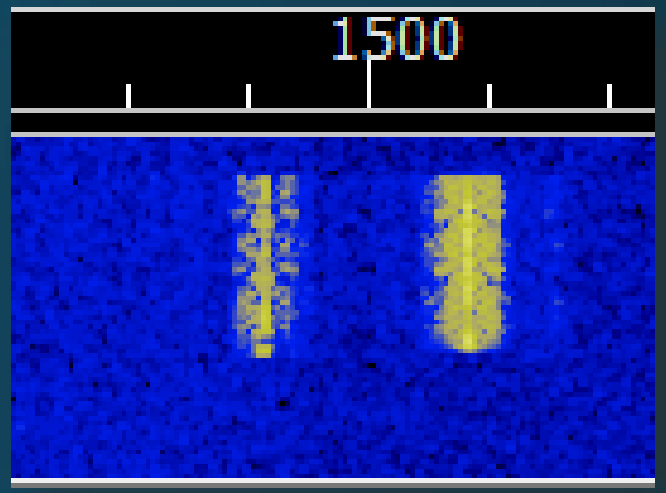

CW (10 WPM)

- http://lcwo.net
- http://aa9pw.com/morsecode
- MorseRunner
- RufzXP

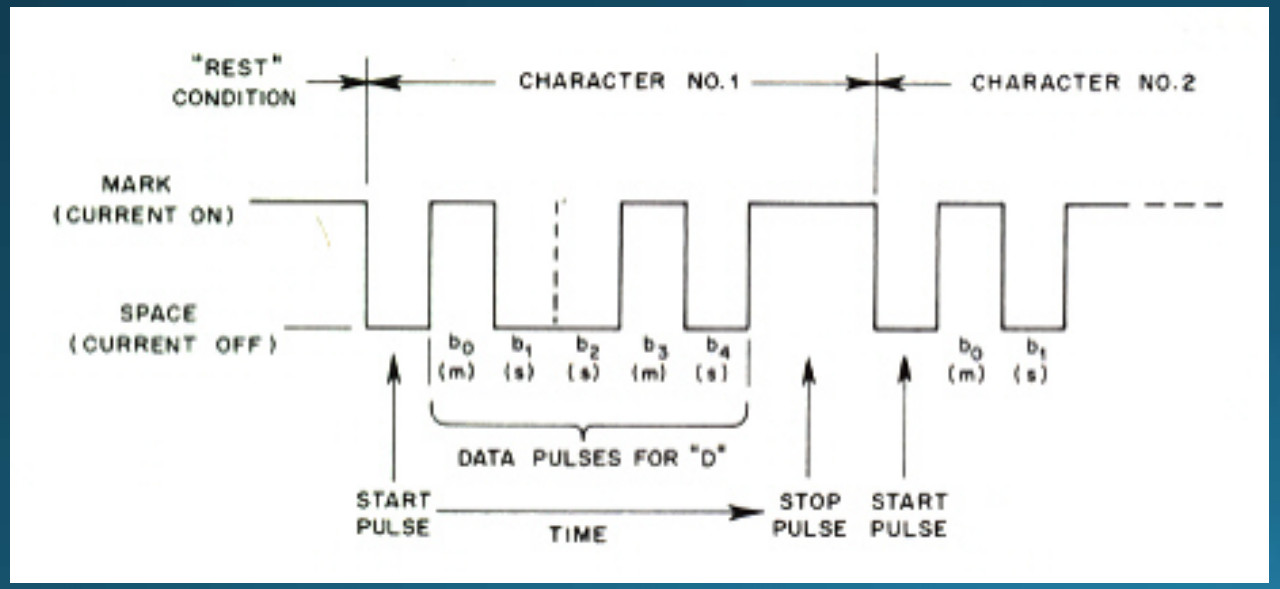
Where: x.000 – x.050 MHz
Bandwidth: < 100 Hz

# RTTY

- Each character encoded in 5 bits
- 5 bits = 2^5 = 32 characters



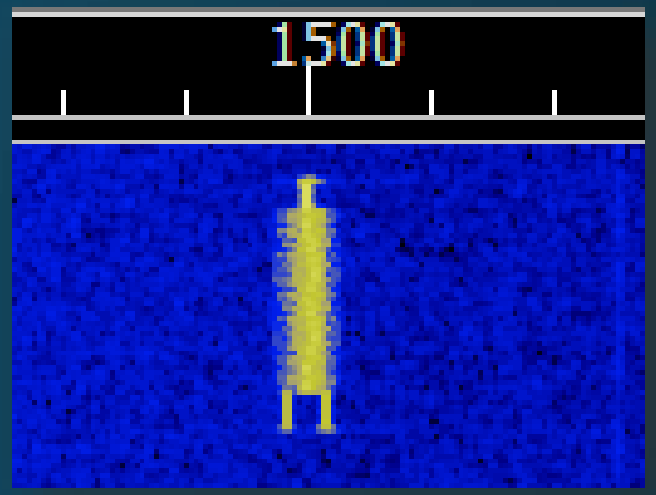

RTTY-45



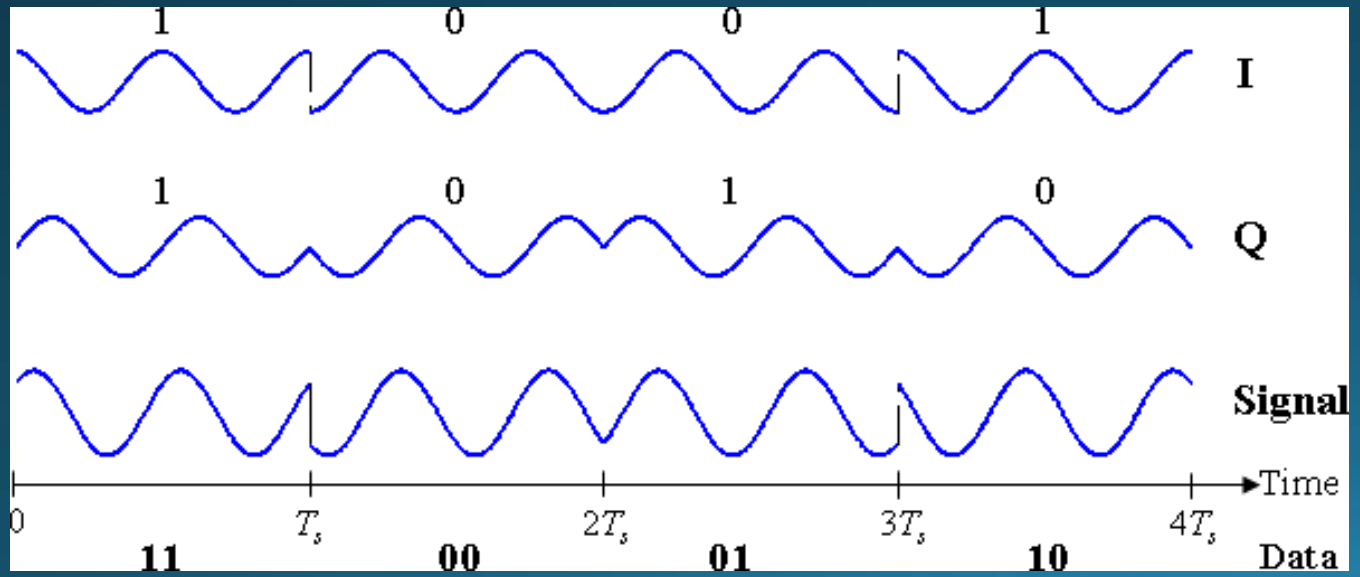

Where: x.075 MHz
Bandwidth: ~200 Hz

# PSK31

- Phase Shift Keying
- "31" is the symbol rate, 31.25 baud
- Variable length character code – varicode



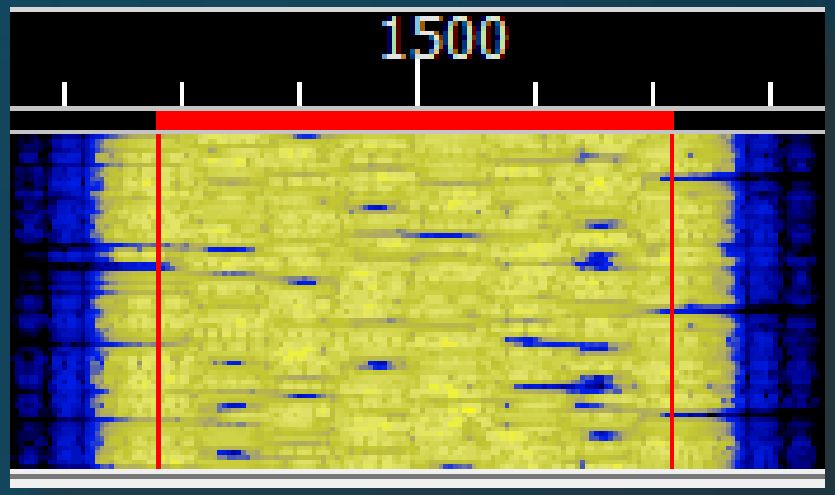

PSK31




Where: x.070 MHz
Bandwidth = ~50 Hz

# Olivia

- Designed for "difficult" HF ConDX
- ~40 different formats
  - Combos of bandwidth & tones



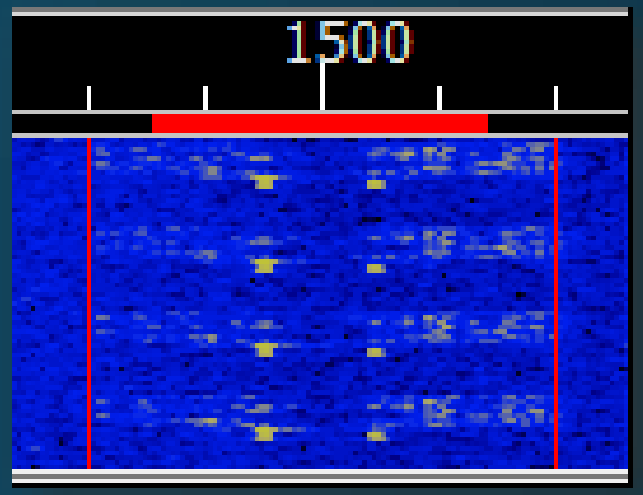

Olivia (8-500)

- ERC HF Digital net begins in this mode

Where: x.070 MHz
Bandwidth = "depends"

# PACTOR

- Packet Teletype Over Radio
- Speed negotiation based on ConDX
- 2 meter packet
- Winlink & RMS Express

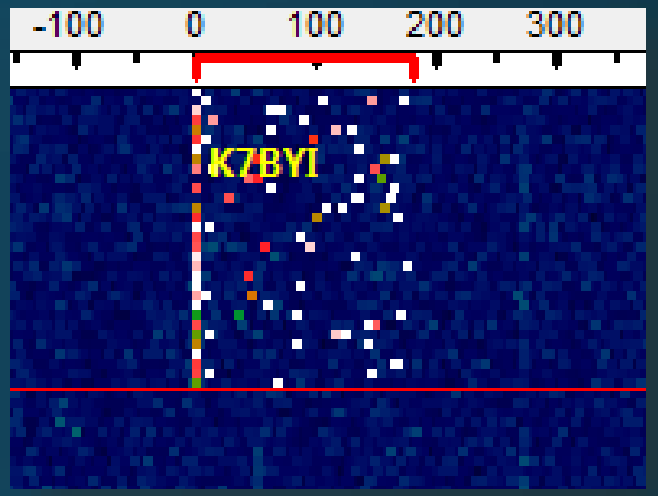



Packet (Winlink)

Where: “Data”
Bandwidth = ~350 Hz

# JT65

- Excels at getting an extremely weak signal through atmospheric noise and ionospheric distortion
- Transmissions are time-synced

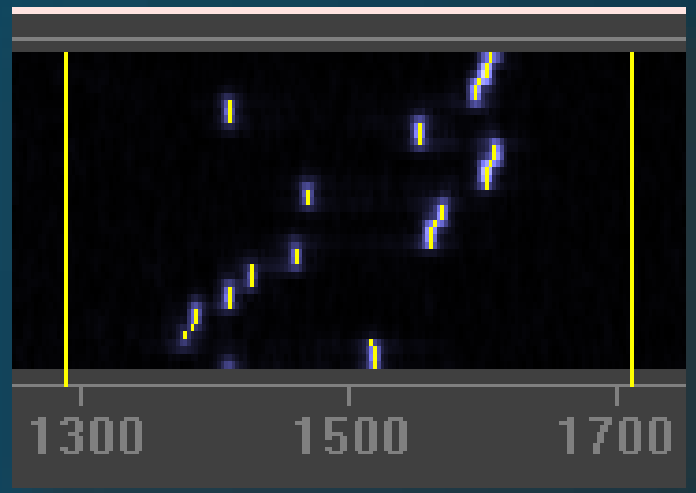



JT65

Where: x.076 MHz
Bandwidth = ~350 Hz

# FSQ

- Fast & Simple QSO
- Automatic ID
- Chat
- File Transfer
- Remote/Unattended Operation




FSQ (6 baud)

Where: 3.594 MHz
7.104 MHz
10.144 MHz
14.104 MHz
Bandwidth: 300 Hz

# Demonstration