

Station Automation --W3SZ

The screenshot displays a complex software interface for station automation, featuring several key components:

- Frequency Monitors:** Multiple windows showing frequency spectra and signal levels. One window is centered on 50.280.000 MHz, another on 144.140.000 MHz. A third window shows a spectrum around 144.060 MHz.
- Signal Processing:** A central window titled "N8SD USB TS-2000" displays various parameters like CW, PH, RTTY, PSK, and SSB, along with a "Call History UserText" field.
- Band Activity:** Two windows showing "Band Activity" for different frequency bands, with columns for UTC, dB, Freq, and Message.
- System Control:** A "WS3Z Multi-SDR Controller" window at the bottom left shows various control buttons and status indicators.
- Logging:** A "General Logging - OK (M3.03)" window in the bottom center displays a log of recent activity with columns for Date, Call, Freq, Mode, Snt, Rcv, Pfx, Name, and Comment.
- System Resources:** A "Task Manager" window at the bottom left shows system performance metrics like CPU usage (67%), Memory (4.81 GB), and Disk I/O.
- Other Windows:** Includes a "Radio Clock" showing 1:08:20 PM, a "Check Log/Master/Talent/Call History/Reverse Lookup" window, and a "Bands & Modes" window.

CAT Control (Rig Control)

“Computer Aided Transceiver”

- Modern radios have serial ports that allow control of transceiver frequency, mode, etc. by computer software
- Communications protocol used varies by manufacturer
 - You just select radio in logging program, it handles protocol
- The principle:
 - Changes in a parameter made in logging program change that parameter on radio
 - Changes in a parameter made on radio change that parameter in logging program

CAT Control (Rig Control)

- CAT Control when introduced had very limited instruction set, was unidirectional (commands sent from computer to radio but no feedback from radio to computer)
- CAT Control now quite sophisticated, bidirectional (Kenwood TS2000 has more than 100 CAT commands)
- Most SDRs will emulate CAT commands of another radio (often Kenwood TS-2000)
 - With SDR can use virtual serial ports for communications with radio (e.g. com0com)

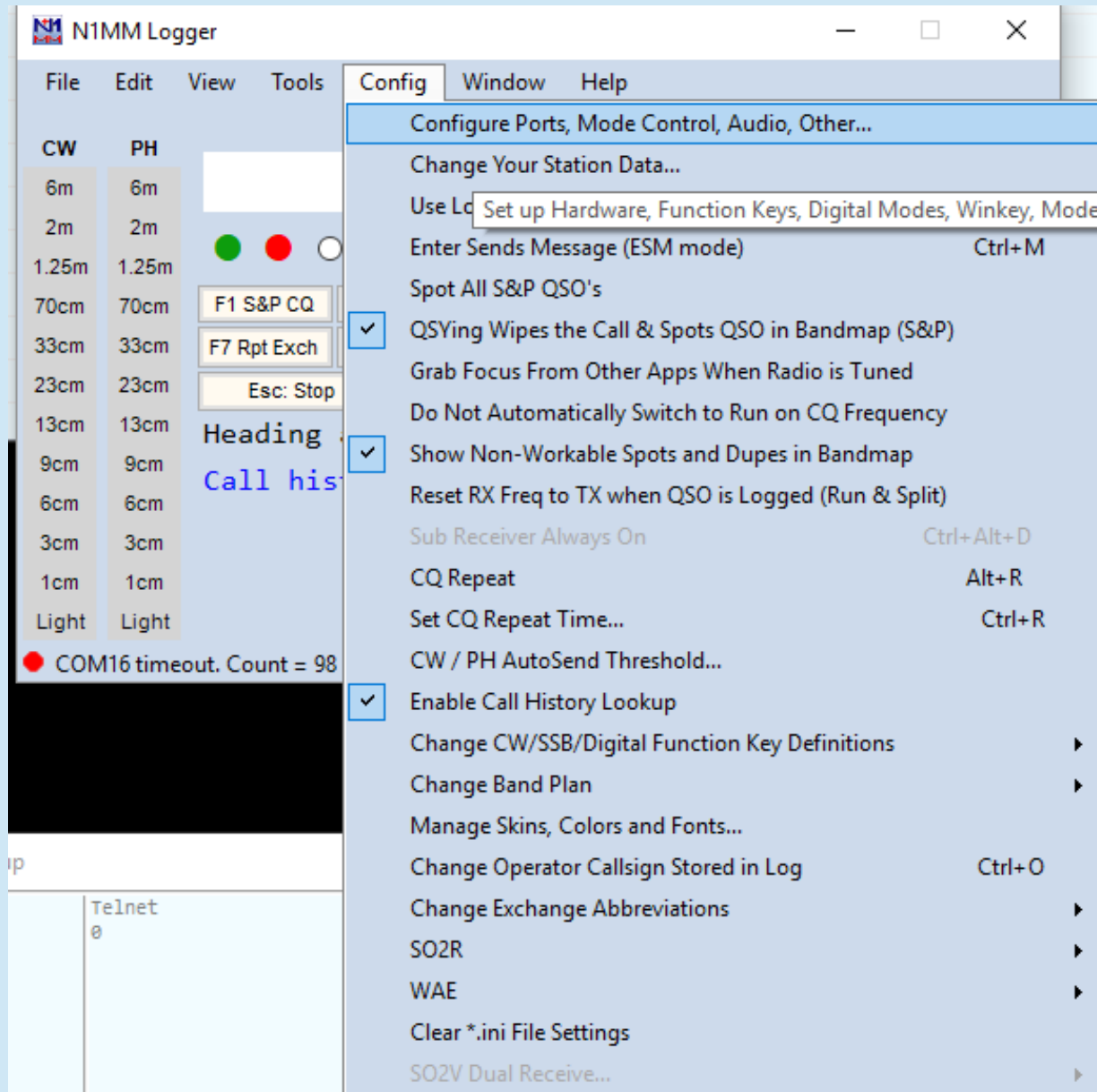
CAT Control (Rig Control)

- CAT Control is extremely important for contest operation because with CAT Control:
 - Logger and radio are always on same frequency and same band...No “Wrong Band” logging errors
 - Clicking on “Spots” from DX Cluster moves radio to spot frequency
 - Can QSY to any frequency just by typing it in logger entry window
 - PTT activated for logger’s voice keyer or CW keyer without need for operator intervention
 - Some radios (Elecraft, Flex) can bandswitch transverters using frequency information obtained via CAT control
- CAT Control essential for EME Doppler control

CAT Control (Rig Control)

- These VHF & Up contest logging programs have CAT control:
 - N1MM
 - WriteLog
 - Win-Test
- I use N1MM; I stopped using WriteLog about 10 years ago because I felt (and still feel) that N1MM was vastly superior
 - Thus comments to follow are focused on N1MM and CAT Control

N1MM CAT Control Setup



The screenshot shows the N1MM Logger application window. The 'Config' menu is open, and the first option, 'Configure Ports, Mode Control, Audio, Other...', is highlighted. A blue arrow points to this menu item from the right side of the image. The background shows the main interface with a bandplan table, a heading 'Call his', and a status bar indicating 'COM16 timeout. Count = 98'.

| CW | PH |
|-------|-------|
| 6m | 6m |
| 2m | 2m |
| 1.25m | 1.25m |
| 70cm | 70cm |
| 33cm | 33cm |
| 23cm | 23cm |
| 13cm | 13cm |
| 9cm | 9cm |
| 6cm | 6cm |
| 3cm | 3cm |
| 1cm | 1cm |
| Light | Light |

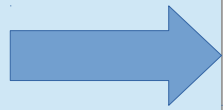
Heading
Call his

COM16 timeout. Count = 98

Telnet
0

- Configure Ports, Mode Control, Audio, Other...
- Change Your Station Data...
- Use Local Control (Set up Hardware, Function Keys, Digital Modes, Winkey, Mode Control)
- Enter Sends Message (ESM mode) Ctrl+M
- Spot All S&P QSO's
- QSYing Wipes the Call & Spots QSO in Bandmap (S&P)
- Grab Focus From Other Apps When Radio is Tuned
- Do Not Automatically Switch to Run on CQ Frequency
- Show Non-Workable Spots and Dupes in Bandmap
- Reset RX Freq to TX when QSO is Logged (Run & Split)
- Sub Receiver Always On Ctrl+Alt+D
- CQ Repeat Alt+R
- Set CQ Repeat Time... Ctrl+R
- CW / PH AutoSend Threshold...
- Enable Call History Lookup
- Change CW/SSB/Digital Function Key Definitions ▶
- Change Band Plan ▶
- Manage Skins, Colors and Fonts...
- Change Operator Callsign Stored in Log Ctrl+O
- Change Exchange Abbreviations ▶
- SO2R ▶
- WAE ▶
- Clear *.ini File Settings
- SO2V Dual Receive... ▶

N1MM CAT Control Setup



Configurer

Hardware Function Keys Digital Modes Other Winkey Mode Control Antennas Score Reporting Broadcast Data Audio

| Port | Radio | Digi | CW/Other | Details |
|-------|---------|--------------------------|-------------------------------------|---------|
| COM16 | TS-2000 | <input type="checkbox"/> | <input type="checkbox"/> | Set |
| COM18 | TS-2000 | <input type="checkbox"/> | <input type="checkbox"/> | Set |
| COM11 | None | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Set |
| COM35 | None | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Set |
| COM20 | None | <input type="checkbox"/> | <input type="checkbox"/> | Set |
| None | None | <input type="checkbox"/> | <input type="checkbox"/> | Set |
| None | None | <input type="checkbox"/> | <input type="checkbox"/> | Set |
| None | None | <input type="checkbox"/> | <input type="checkbox"/> | Set |
| LPT1 | | <input type="checkbox"/> | <input type="checkbox"/> | Set |
| LPT2 | | <input type="checkbox"/> | <input type="checkbox"/> | Set |
| LPT3 | | <input type="checkbox"/> | <input type="checkbox"/> | Set |

SO1V SO2V SO2R

9600,N,8,1,DTR=Always On,RTS=Always On,Tx=1

9600,N,8,1,DTR=Always On,RTS=Always On,Tx=2

DTR=Always On,RTS=Always Off,Tx=Both

DTR=PTT,RTS=Always Off,Tx=Both

OK Cancel Help

N1MM CAT Control Setup

Configurer

Hardware | Function Keys | Digital Modes | Other | Winkey | Mode Control | Antennas | Score Reporting | Broadcast Data | Audio

| Port | Radio | Digi | CW/Other | Details |
|-------|---------|--------------------------|-------------------------------------|---------|
| COM16 | TS-2000 | <input type="checkbox"/> | <input type="checkbox"/> | Set |
| COM18 | TS-2000 | <input type="checkbox"/> | <input type="checkbox"/> | Set |
| COM11 | None | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Set |
| COM35 | None | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Set |
| COM20 | None | <input type="checkbox"/> | <input type="checkbox"/> | Set |
| None | None | <input type="checkbox"/> | <input type="checkbox"/> | Set |
| None | None | <input type="checkbox"/> | <input type="checkbox"/> | Set |
| None | None | <input type="checkbox"/> | <input type="checkbox"/> | Set |
| LPT1 | | <input type="checkbox"/> | <input type="checkbox"/> | Set |
| LPT2 | | <input type="checkbox"/> | <input type="checkbox"/> | Set |
| LPT3 | | <input type="checkbox"/> | <input type="checkbox"/> | Set |

SO1V SO2V SO2R

9600,N,8,1,DTR=Always On,RTS=Always On,Tx=1
9600,N,8,1,DTR=Always On,RTS=Always On,Tx=2
DTR=Always On,
DTR=PTT,RTS=Al

Com16

Speed: 9600 Parity: N DataBits: 8 Stop Bits: 1

DTR (pin 4): Always On RTS (pin 7): Always On Radio Nr: 1

Enable Both Hardware & Software PTT
 PTT via Radio Command SSB Mode
 PTT via Radio Command CW Mode
 Allow ext interrupts PTT via Radio Command Digital Mode

FootSwitch (pin 6): None

Radio Polling Rate: Normal

Suggested TS-2000 Kenwood Settings:
38400, N, 8, 1, Handshake, Handshake

The radio can not be in Memory or Call mode.

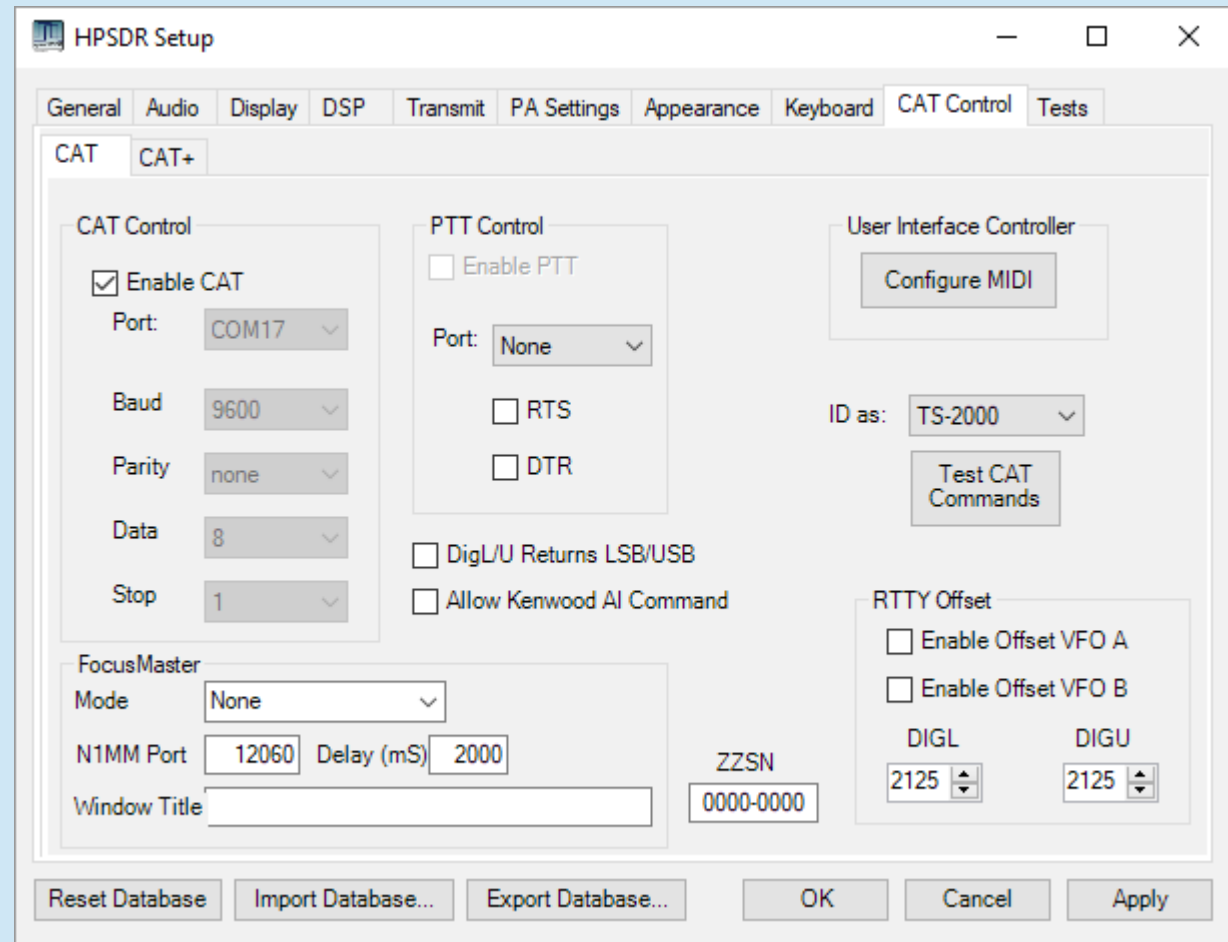
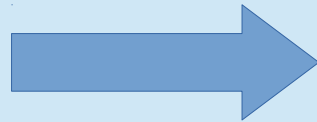
Help OK Cancel

OK Cancel Help

Light Light

PowerSDR CAT Control Setup

- Match baud rate, parity, data bits, stop bits to N1MM settings
- Set COM port number



HPSDR Setup

General Audio Display DSP Transmit PA Settings Appearance Keyboard CAT Control Tests

CAT CAT+

CAT Control

Enable CAT

Port: COM17

Baud: 9600

Parity: none

Data: 8

Stop: 1

PTT Control

Enable PTT

Port: None

RTS

DTR

DigL/U Returns LSB/USB

Allow Kenwood AI Command

User Interface Controller

Configure MIDI

ID as: TS-2000

Test CAT Commands

RTTY Offset

Enable Offset VFO A

Enable Offset VFO B

DIGL: 2125 DIGU: 2125

FocusMaster

Mode: None

N1MM Port: 12060 Delay (mS): 2000

Window Title: ZZSN: 0000-0000

Reset Database Import Database... Export Database... OK Cancel Apply

W3SZ SDR CAT Control Setup

- Match baud rate, parity, data bits, stop bits to N1MM settings
- **Set COM port numbers**

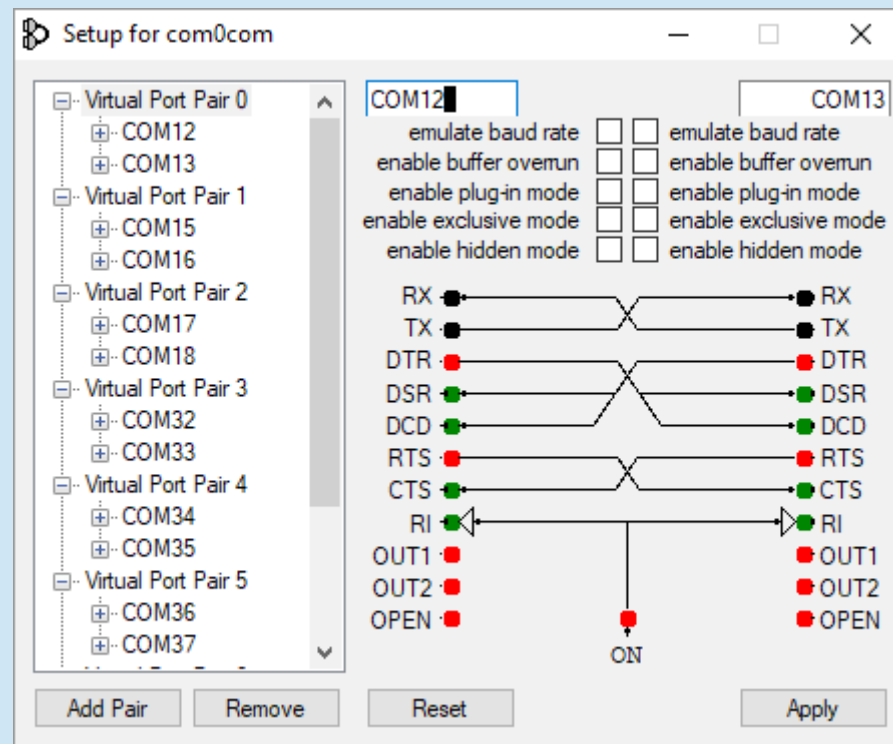
The screenshot shows the 'Setup' window for W3SZ SDR CAT Control. The 'Common Parameters' tab is active. The window is divided into two columns of settings. The left column lists bands and their corresponding Remote IP addresses and checkboxes. The right column lists COM ports for various CAT and PTT functions. Blue arrows point to the COM port dropdown menus.

| Band | Remote IP | Check | COM Port | |
|-----------------------|---------------|-------------------------------------|----------|----------------------------------|
| 50 MHz | 192.168.1.109 | <input checked="" type="checkbox"/> | 50 | Main N1MM CAT COM Port: COM15 |
| 144 MHz | 192.168.1.37 | <input checked="" type="checkbox"/> | 144 | Aux N1MM CAT COM Port: COM17 |
| 222 MHz | 192.168.1.113 | <input checked="" type="checkbox"/> | 222 | N1MM PTT COM Port: COM34 |
| 432 MHz | 192.168.1.149 | <input checked="" type="checkbox"/> | 432 | Main Digital CAT COM Port: COM32 |
| 903 MHz | 192.168.1.88 | <input checked="" type="checkbox"/> | 903 | Aux Digital CAT COM Port: COM38 |
| 1296 MHz | 192.168.1.108 | <input checked="" type="checkbox"/> | 1296 | Main Digital PTT COM Port: COM12 |
| GHz | 192.168.1.111 | <input checked="" type="checkbox"/> | GHz | Aux Digital PTT COM Port: COM40 |
| HF | 192.168.10.55 | <input type="checkbox"/> | HF | |
| CW Key Input COM Port | | | | COM4 |

SDR CAT Control – Virtual Serial Ports (com0com)

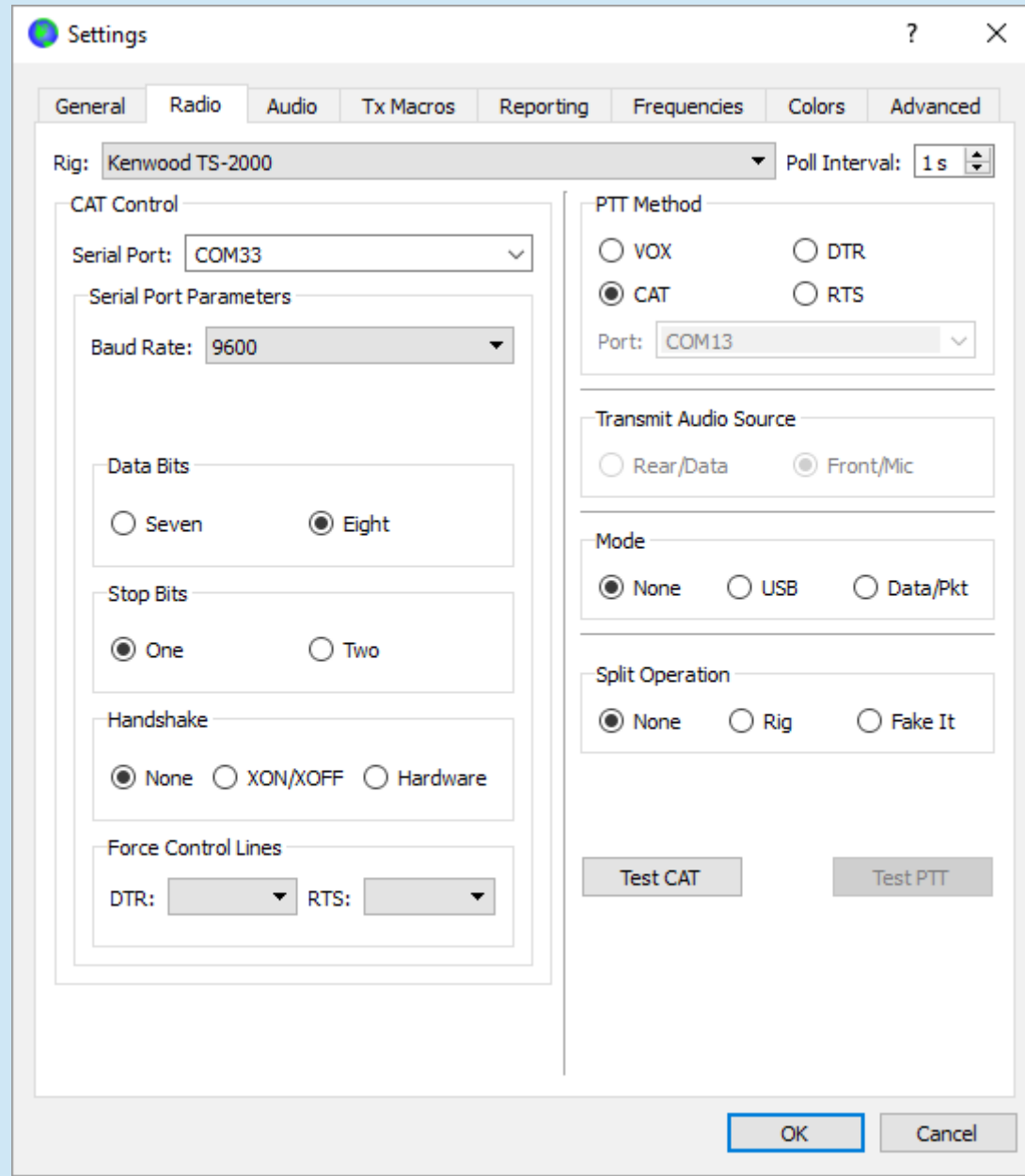
Virtual Serial Ports Travel in Pairs

- <http://com0com.sourceforge.net/>



CAT Control - WSJTX

- Can use for digital mode PTT
- Can use if frequency control by WSJTX is desired
- Requires separate COM port from the COM port shared by radio and N1MM, or use of COM port sharing



COM Port Sharing

- Allows radio CAT port to be used by more than one program:
 - e.g., both logging program (N1MM) and WSJTX

COM Port Sharing

- With com0com/hub4com, do this by creating a .bat file
- Run the bat file when starting PC
 - If radio is COM15, N1MM is COM16, WSJTX is COM33, and com0com virtual serial port pair is COM32<>COM33:
 - Bat file contains one command:

```
hub4com - -route=1,2:0 - -route=0:1,2 -baud=9600  
\\.\COM15 \\.\COM16 \\.\COM32
```



0



1



2

COM Port Sharing

- Other possible choices: LP-Bridge, VSPE, DDUTIL
 - I have used all of them and decided that com0com was best for me
 - Now, I use none of them because I just add serial ports as needed to my SDR software

SDR CAT Control – Virtual Serial Ports (com0com)

The image displays three overlapping windows from the SDR CAT Control software:

- Configurer Window:** Shows a table of virtual serial port configurations.

| Port | Radio | Digi | CW/Other | Details |
|-------|---------|--------------------------|-------------------------------------|---------|
| COM16 | TS-2000 | <input type="checkbox"/> | <input type="checkbox"/> | Set |
| COM18 | TS-2000 | <input type="checkbox"/> | <input type="checkbox"/> | Set |
| COM11 | None | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Set |
| COM35 | None | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Set |
| COM20 | None | <input type="checkbox"/> | <input type="checkbox"/> | Set |
| None | None | <input type="checkbox"/> | <input type="checkbox"/> | Set |
| None | None | <input type="checkbox"/> | <input type="checkbox"/> | Set |
| None | None | <input type="checkbox"/> | <input type="checkbox"/> | Set |
- Setup Window:** Shows CAT control parameters for various frequencies.

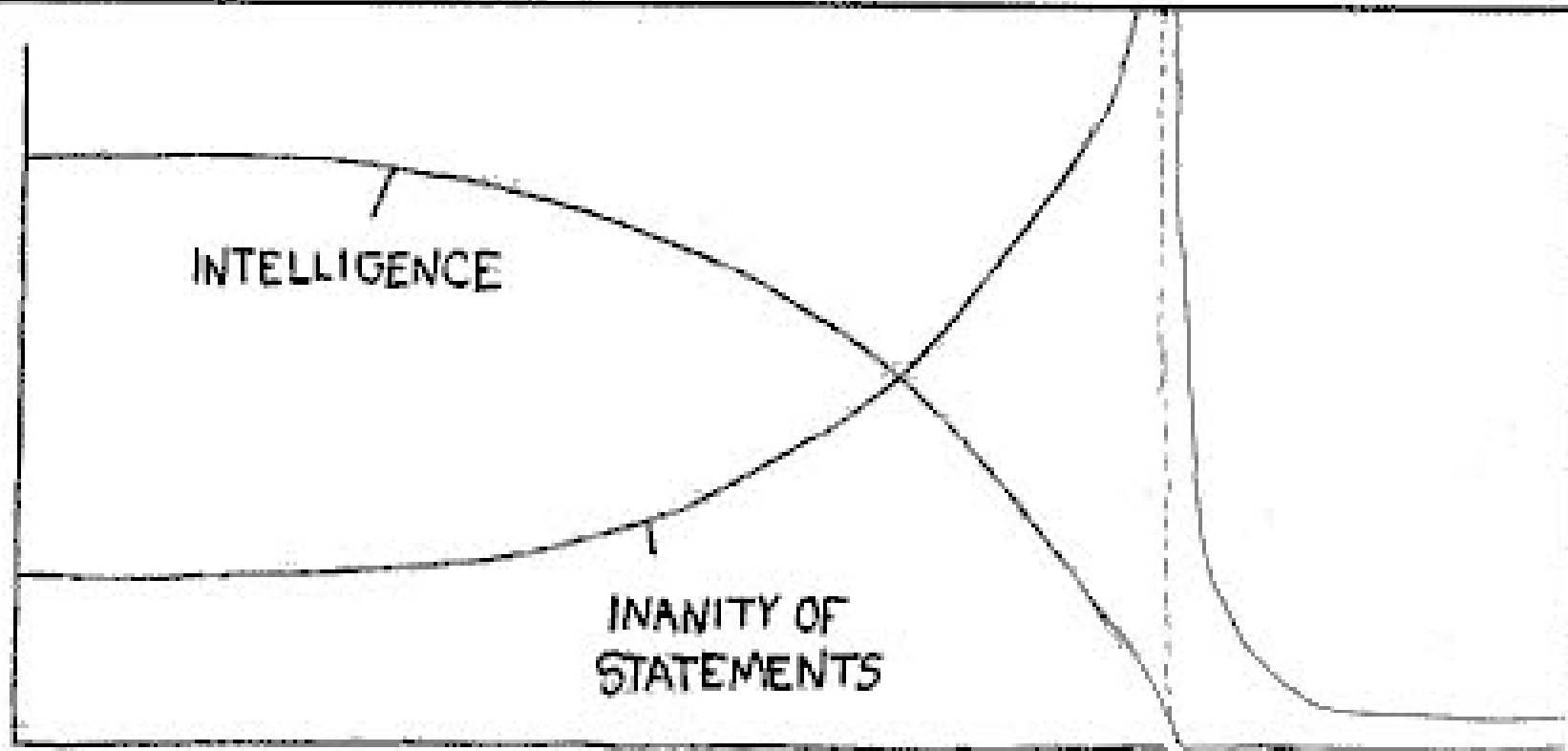
| Band | Remote IP | Remote IP | Main N1MM CAT COM Port |
|---------|---------------|-----------------------------------------|------------------------|
| 50 MHz | 192.168.1.109 | <input checked="" type="checkbox"/> 50 | COM15 |
| 144 MHz | 192.168.1.37 | <input checked="" type="checkbox"/> 144 | COM17 |
| 222 MHz | 192.168.1.113 | <input checked="" type="checkbox"/> 222 | COM34 |
| 432 MHz | 192.168.1.149 | <input checked="" type="checkbox"/> 432 | COM32 |
- Settings Window:** Shows detailed CAT control settings for a Kenwood TS-2000 rig.
 - Rig: Kenwood TS-2000
 - Serial Port: COM33
 - Baud Rate: 9600
 - Data Bits: Eight
 - Stop Bits: One
 - Handshake: None
 - Force Control Lines: DTR: [dropdown] RTS: [dropdown]
 - PTT Method: CAT
 - Port: COM13
 - Mode: None
 - Split Operation: None

Multiple Virtual COM Ports for One SDR

COM15-16 : Main Radio-N1MM
COM17-18: Aux Radio-N1MM

COM32-33: Main Radio-WSJT-X
COM38-39: Aux Radio-WSJT-X

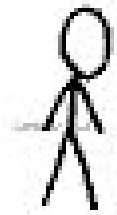
The screenshot displays a Windows 10 desktop environment with several software applications running. The primary focus is on N1MM and WSJT-X software, which are used for digital radio communication. The N1MM interface shows a waterfall display with a frequency range from 50.280000 to 50.360000 MHz. The WSJT-X interface shows a waterfall display with a frequency range from 144.140000 to 144.220000 MHz. Both interfaces include various controls for frequency, mode, and signal processing. A 'Radio Clock' window shows the time as 1:08:20 PM on 2017 Feb 24. A 'Task Manager' window is open, showing system performance metrics such as CPU usage (67%), memory usage (6.71 GB), and disk activity. A 'Resource Monitor' window is also visible, showing network activity for Ethernet adapters. The desktop background is a standard Windows 10 wallpaper with various icons for applications like Music, Photos, and File Explorer.



FAR

PROXIMITY TO CAT

NEAR



YOU'RE A KITTY!

