
T H E
M O D E M
D O C T O R

Shareware Version 1.0
Hank Volpe (c) 1989
108 Broadmoor Dr
Tonawanda NY 14150

Section 1. Introduction -

The Modem Doctor is a professional diagnostic tool designed to work with IBM-PC's and compatibles. There are two versions of the Modem Doctor, the Shareware Version and the Registered Version.

The Registered Version of the Modem Doctor contains complete diagnostics for 8250 and compatible UARTS, RS-232 data lines, and Carrier tests. Some of the many diagnostic features of the Registered Version are ;

- ** Support for COM 1 through COM 4
- ** Baud Rates from 300 to 19200 bps
- ** Support for Courier HST/Dual Standard/V.32 Modems [+]
- ** Auto log-in of COMM Ports to DOS for use by other programs
- ** Manual log-in of COMM ports for Non-Standard Hardware
- ** On-screen Display of all 8250 and Compatible UART registers
- ** On-screen Display of Modem S-Registers
- ** Full Diagnostic tests of UART and RS-232 Channels including;
 - ALL UART REGISTERS
 - ALL RS-232 Handshaking Signals
 - 8259 Interrupt Controller Mask Registers
 - Digital Loopback UART Tests
 - Analog Loopback Data Tests
- ** Full Diagnostic Checks of "AT" Instruction Set Modems
 - Carrier Tests on both Originate and Answer Frequencies
 - Carrier Test interface for "Dumb" Modems or Data Channels
 - Modem Microprocessor Command Channel Diagnostics
 - Support for High Speed Modems
- ** Interactive Mode with 4K Communications Buffer for;
 - TTY mode Interactive Communications over Serial Port or Modem while on-line
 - Custom Designed Tests...Help Menu Included
 - On-Line "Hot-key" Viewing of 8250 UART Registers

The Shareware Version of the Modem Doctor is designed for people who would like to try a piece of software before buying it. This "Look-see" version has some limits over the Registered Version, however it does provide the following full-functioned Diagnostics;

- ** Support for COM 1 and COM 2
- ** Baud Rates from 300 to 2400 bps
- ** Auto log-in of COMM Ports 1 and 2
- ** On-screen Display of all 8250 and Compatible UART registers
- ** On-screen Display of Modem S-Registers
- ** Diagnostic tests of UART and RS-232 Channels including;
 - ALL UART REGISTERS
 - ALL RS-232 Handshaking Signals
 - 8259 Interrupt Controller Mask Registers

- ** Full Diagnostic Checks of "AT" Instruction Set Modems
 - Carrier Tests on both Originate and Answer Frequencies
 - Carrier Test interface for "Dumb" Modems or Data Channels
 - Modem Microprocessor Command Channel Diagnostics

- ** Interactive Mode with 4K Communications Buffer for;
 - TTY mode Interactive Communications over Serial Port or Modem while on-line
 - Custom Designed Tests...Help Menu Included
 - On-Line "Hot-key" Viewing of 8250 UART Registers

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The Modem Doctor is distributed on as "As-is" basis, with no warranties for usefulness or suitability expressed or implied. Users of the Shareware version are granted a limited license to use this program. It is expected that if you use it for more than 30 days, that you will register the Modem Doctor.

Registration adds many powerful features that make the Modem Doctor an excellent RS-232/UART/Modem Diagnostic Tool. Comparable programs cost well over \$100, while the Modem Doctor Registration Fee is just \$19.95 for a single copy. Group Discount prices for software distributors and Businesses are available.

For Single-user registration, send a check or Money order for \$19.95 to

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You will receive the latest version of the Modem Doctor, plus several other useful Modem Utilities. Registered Users also are entitled for updates to newer versions (when available) for a small fee to cover shipping and handling.

Section 2. Starting MDR

The Modem Doctor has been designed to work with PC-Type Serial Ports and "AT" Instruction Set (so called Hayes Compatible[++]) Modems. The Modem Doctor requires at least 1 Serial Port to Operate.

MDR is written to run under MS or PC DOS 2.2 or higher, requires a MDA or CGA adaptor and at least 80K of program memory. When MDR is started, it will use the last mode that the display adaptor was in (unless it was in EGA or VGA mode or a graphics mode). MDA and CGA are the two execution modes regardless of what kind of adaptor is in use.

Code has been included to work with hardware-incompatible display adaptors as long as they are at least IBM-PC Bios compatible. This is operator selectable at runtime.

To start MDR, type MDR from the dos prompt. If you wish to use the Bios compatible mode instead of direct display writes, start the program using the Bios switch ; MDR /B

Section 3. First Time Setup

MDR checks to see what hardware is available and reports its results to you. Displayed on the bottom line is the serial number unique to each copy (Registered Version..Shareware Version says "Shareware"). Press any key to continue.

```
[ Ports ]
Use COMM 1
```

Next, you are instructed to pick from a list of valid comm ports. The only ports that are listed are valid ports that MDR found when it first started. The Registered Version allows you to add ports that are not "standard" ports, (check the section on Login). Use the arrow keys to find your selection, and then press return to select.

```
[ Baud ]
 300 BPS
1200 BPS
2400 BPS
4800 BPS * Registered Version Only
9600 BPS * Registered Version Only
19200 BPS * Registered Version Only
```

A window now opens showing you valid comm port speeds. Select a speed from this menu. Please note, don't select a speed faster than your modem can handle. The reason for faster speeds is so communication links can also be tested. Use the arrow keys and press return to make your selection.

```
[ Select an Option ]=====
Test Modem / Port 1 to 300 BPS
Test the UART Hardware Only
Dont set up modem, return to Menu
```

At this point you are in the options menu. If you select Test Modem, a series of commands and tests will be performed to make sure the modem is on line and running. If you select Test UART Hardware, only the 8250 UART will be tested. The modem will not be setup. This selection is useful only if you wish to test an RS-232 line or a "dumb" modem. Selection 3 aborts to the main menu

A. Test Modem/ UART

Preliminary Diagnostic Checks of Hardware

Testing Modem Microprocessor

Modem Microprocessor Command Bus Active
Modem reports a 9600 bps Modem installed
Modem Microprocessor Accepts Setup Commands

Modem Microprocessor ON-LINE

Modem - UART Status appears correct
Press any key to continue

Above is displayed then normal test results with a modem. First step tests the UART to Modem hardware. If any connection errors are discovered, they are reported to the screen. Next the modem command bus is tested and if its compatible, the modem ID information is queried from the Modem Processor. Finally, the modem is setup for diagnostics. Note: These setup strings do not overwrite any non-volatile storage. If all is ok, all the UART registers and the First 16 Modem S registers are displayed. This display is not shown the next time you log in a comm port unless you press the space bar

If the modem does not respond to certain parts of the tests, error messages are reported.

Testing Modem Microprocessor

Modem Microprocessor Command Mode Not Detected
Software Reset Initiated

This message is displayed if the modem did not respond the first time for a query to its status. This could happen for any number of reasons, including that the modem was still on-line and not in the command mode. A soft-reset is performed, which essentially tries to wake the processor up.

No Response...resetting Modem Microprocessor ...attempt #1
No Response...resetting Modem Microprocessor ...attempt #2
No Response...resetting Modem Microprocessor ...attempt #3

After 3 soft-resets, the Modem Doctor assumes that the modem is jammed and needs a hardware reset. A hardware reset is the program equivalent of turning the modem on and off again. This is the only way to reset some internal modems that get "jammed" when the computer is first turned on. Clearing a "jam" usually takes no more than 2 attempts.

Trying a Hardware reset of the Modem Microprocessor

The Hardware reset is performed, and again the modem microprocessor is strobed for its status.

Software Reset Initiated

After a hardware reset, a soft reset is performed again, attempting to wake the processor up. If this fails, the following message is displayed;

Modem Microprocessor Did Not Accept Setup Commands
Trying a Hardware reset of the Modem Microprocessor

After one more attempt at waking the modem up, the Modem Doctor assumes that the modem is not compatible and based on the status given it by the UART, it will report if the device is off or not connected.

WARNING...This unit does not have a Compatible Modem attached

WARNING...The Modem Device appears to be off or not connected

The registers are now displayed for diagnostic tests, and a conclusion based on the status of the registers is displayed. There are many reasons why the modem/UART could fail. See the error code section for details.

If the UART is fine, but the modem is not compatible, the program will tell you that the UART hardware tests ok and display this in a window to the right of the register display.

B. UART Tests

The UART test is performed every time either the Modem or the UART test is selected. Essentially, the UART test programs all of the registers of the UART and looks to see that the correct values have been placed in them. After that, it looks to see that an RS-232 loop is active. If not, it displays an error message saying that the loop is either disconnected or a register in the UART is defective.

Each register is checked for proper values...if anyone of them fail, a window will open and display a possible cause for the problem.

Preliminary Diagnostic Checks of Hardware

----- Testing UART Hardware Only -----

Modem - UART Status appears correct

The first time through these tests, the registers will display for diagnostics. Unlike the modem tests, only the UART registers are displayed.

C. Return to main menu

Selecting this returns you to the main menu, this allows you to change an entry made in error without having to wait for the diagnostic checks to fail.

In any event, after any of these tests have been run, you will then enter the Modem Doctor's Main Menu.

Section 4. The Main Menu

----- The Modem Doctor -----

Log-in	Regs	Carrier	Loopback	Manual	Setup	End Program
--------	------	---------	----------	--------	-------	-------------

All of the above selections are toggled using the arrow keys and selected using the return key. Pressing the down arrow displays a brief message about what each function does.

Log-in COMM Ports

The ROM-BIOS only looks for COMM ports 1 and 2. Use this section to manually log-in a COMM port that cannot be detected by DOS. Entries are also good after you quit
(NOTE..This feature in Registered Version Only!)

UART Register Diagnostics

This test section can be used to check the contents of an 8250 UART and the 8259 Interrupt Controller mask register. White = Active, Gray = Not Active

Carrier Mode Tests

This tests runs a Smartmodem in an test of the Carrier Originate and Answer frequencies. A Smartmodem or a modem with Manual Carrier selection is required

Loopback/ UART Tests

This test is designed to check out a RS-232 COMM port for proper operation. No Modem is required for this test however this test is not for an Internal Modem, although it can be run as a test of the command channel.

(NOTE..This feature in Registered Version Only!)

Manual Interactive Tests

This test is designed to check out the command channels and user interface to a Smartmodem. You can also use it with an RS-232 loop or to send your own commands.

Setup Diagnostics

Use this test section to return to the setup mode to change a Port assignment or a Baud Rate to a new value. Only Logged-in Comm ports can be accessed.

Exit Program

Quit the program, all vectors and interrupt tables are restored.

4.1 Login In Comm ports

(NOTE..This feature in Registered Version Only!)

When you select this menu, you are offered these choices

```
[  Comm Port Login  ]-----  
  Let me Auto Detect COMM Ports  
  You Manually Enter COMM Ports  
  Return To Main Menu
```

Option 1 repeats what the Modem Doctor does when you first begin to run the program.

Option 2 allows you to enter a "non" standard Port address and assign one of the two Interrupt lines to use with the UART.

Option 3 returns to the main menu.

Port addresses for PC's are standardized in order for Communication programs to properly work. The industry standards are

COMM 1	3F8	COMM 2	2F8	COMM 3	3E8	COMM 4	2E8
	IRQ4		IRQ3		IRQ4		IRQ3

The Port addresses for Serial Ports is held in a reserved area of PC Memory. The "base port" of each of these UARTS is saved in a distinct area. When you first start the Modem Doctor, the program checks these locations to see if there are any Comm ports already logged in by Dos.

If not, a search is conducted for the PC's default Comm 1 and Comm 2 port values and these are logged in. Next, a search is performed for the other industry standard comm ports. Some PC's already log these in, however IBM-PC's and those that mimic exactly their ROM-BIOS routines do not log in a COMM 3 or a COMM 4. The Modem doctor will, and as a side benefit, these stay logged in until the next warm or cold boot is performed on your computer. Why would dos not log in a port? Well, some multi-tasking programs overwrite this area to prevent "swapping" of communication programs and it is possible that they might not be properly restored on exit.

Option 2 is the only real option available. Please use it with caution. The only real need for this option is for logging in a COMM port that does not use any of the listed industry standards as its base port address.

Consult your Serial Port or Modem's user manual to make sure you enter the exact Port address and select the correct Interrupt line to use with it. Otherwise the Modem Doctor will not recognize or be able to test any device hooked to this port.

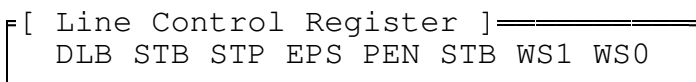
Protection is included in this routine to keep someone from accidentally entering a port that is used by the system board, display adaptors, or fixed disk adaptor. Entering any of these values, or an error, will result in the display;

"WARNING...RESERVED PORT...RETRY ENTRY"

After running Option 1 or 2 , you must tell the Modem Doctor which COMM port you wish to use so that testing can begin

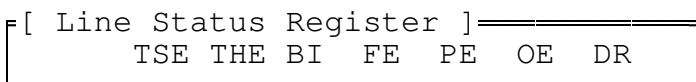
4.2 Regs

The register display section can be an invaluable diagnostic tool. What this does is "poll" all of the status registers of the UART, and the Interrupt Controller to tell you exactly what is going on. When you use the setup mode, the Modem Doctor checks all of these registers for correct information. If something wrong is discovered, a warning is displayed on the screen telling you what the Modem Doctor believes is wrong. Many different error conditions are checked, see the error code section for a listing. Each register contains a Mnemonic for each one of the data bits. Bits that are a logic low (= 0) are displayed in low intensity, those that are a logic high (= 1) are displayed in high intensity. On a color monitor, this is easy to see. On a Mono Monitor, make sure you have the brightness and contrast controls properly adjusted to see the difference between the two status conditions.



This register controls many of the setup characteristics of your UART and how it behaves to your PC. This register is responsible for setting baud rate, setting break code transmission, parity, and the length of the serial stream word. When you enter the setup mode,

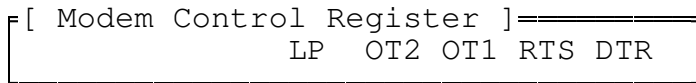
DLB	Divisor Latch	Used to access the baud rate registers Should be 0 for the Modem Doctor
STB	Set Break	If High, the modem transmits a break signal, should be 0 normally.
STP	Stick Parity	Should be 0 normally
EPS	Even Parity select	High = Even Parity..should be 0 normally
PEN	Parity Enable	Enable Parity checks, should be 0 normally
STB	Stop Bits	Number of stop Bits, should be 0 normally to Indicate 1 stop bit character only.
WS1	Word Length Select 1	These two bits are used to determine the Serial data word length. Both should be High normally to indicate a length of 8 bits.
WS0	Word Length Select 0	



The line status register reports error conditions that might have occurred between the PC and the UART.

TSE	TX Shift Register Empty	A High indicates that all characters sent to the UART were transmitted. Should be High Normally.
THE	TX Holding Register Empty	A High indicates that the UART can now accept a new character from the PC. Should be High Normally.
BI	Break Interrupt	A High indicates that a break signal was received. Should be Low Normally
FE	Framing Error	A High indicates that a serial data train did not have a proper stop bit. Should be Low Normally.
PE	Parity Error	A High indicates that the received serial data's parity did not match what the UART was programmed to receive. This should be Low Normally.
OE	Overrun Error	A High indicates that a character in the receive buffer was not read by the PC in time, and another character overwrote and destroyed it. Should be Low Normally.

DR Data Ready A High indicates that a character has been received and is ready to be read by the PC from the Receiver Buffer. Should be Low normally for these test, but can vary while data is coming in from the Modem.



The Modem Control register handles all of the interfacing between the UART and the modem. Only 5 signals are needed to handle this

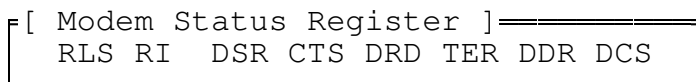
LP LOOP A High indicates that the Loopback digital diagnostic has been activated. This feature only works with 8250 UARTS or those that are 100% Compatible. This is used in the Digital Loopback test.

OT2 OUT 2 A High enables the UART to generate interrupts. A Low disables interrupts This should always be high for testing purposes.

OT1 OUT 1 On 100% compatible modems, a High on this pin will perform a Hardware reset of the modem. Normally this is a Low.

RTS Request to Send A Handshaking signal that is used by some modems to enable data transfer between the Modem and the UART. Should be High for testing purposes.

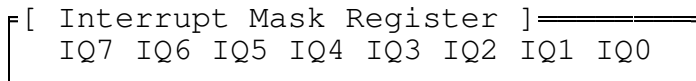
DTR Data Terminal Ready A Handshaking signal that is used by some modems to enable data transfer between the Modem and the UART. Should be High for testing purposes.



The Modem Status Register returns the status of the control signals sent by the modem to the UART.

RLS	Received Line Detect	A High indicates that a carrier has been received by the modem. When the Analog tests are run, this should be High. If it is not, it is still possible that the Modem is ok, however the cable from the Modem to the UART (for externals only) might not have a complete circuit due to faulty wiring of the RS-232 cable. This signal is very important for some communications programs to operate properly.
RI	Ring Indicator	A High indicates that the modem detected a Ringing signal on the phone line.
DSR	Data Set Ready	This is part of the DTR/DSR Handshaking pair that is used by some modems to control the flow of data. Should normally be a High.
CTS	Clear to Send	This is part of the RTS/CTS Handshaking pair that is used by some modems to control the flow of data. Should normally be a High.
DRD	Delta Received Line Signal Detect	A High indicates that the Received Line Signal has changed state. Some Communications programs use this also as an indication that a Carrier was detected by the modem.
TER	Trailing Edge Indicator	A High indicates that the Ring Indicator changed state. Some Communications programs use this as an indication that the phone as Rung.
DDR	Delta Data Set Ready	Indicates that the DSR signal has changed state.
DCS	Delta Clear to Send	Indicates that the CTS signal has changed state.

ERI Enable Receive Data A High causes the UART to generate an
Ready Interrupt interrupt whenever Data is ready to
 be read by the CPU. The DR line of the
 Line Status register going to a high
 condition generates this condition. This
 signal should be High for testing
 purposes, since it is the only interrupt
 needed by the Modem Doctor.



The Interrupt Mask Register is contained on the 8259 Priority Interrupt Controller on your Computer's Motherboard. Each one of these Hardware Interrupts corresponds to an external device.

IQ7 Printer Interrupt
IQ6 Floppy Disk Interrupt
IQ5 Hard Drive interrupt
IQ4 COM1 Interrupt (also COM3)
IQ3 COM2 Interrupt (also COM4)
IQ2 reserved by IBM (Gateway to second 8259 on AT's)
IQ1 Keyboard Interrupt
IQ0 Timer Interrupt

Under Normal Conditions, IQ0, IQ1 and IQ6 should be lit, along with IQ4 if testing COM1 (or COM3) or IQ3 if testing COM2 (or COM4). In addition, other lines could be lit depending on your computer. The only line the Modem Doctor looks for is the IQ4 or IQ3 lines (depending on which Serial Port you are testing).

4.3 Carrier Tests

The Carrier tests are designed to test your modem under actual use conditions (minus a telephone line). There are two versions of this test, one of which is automatically selected by the Modem Doctor depending on the hardware it detects.

Smart Modem Test - If you selected the Test Modem/UART option from the setup menu and a Modem with a compatible Microprocessor was detected, the Modem Doctor will test the Originate and Answer frequencies of your modem automatically. Before running this test, make sure you have disconnected the modem from the telephone line, because the modem will go off-hook and sometimes the dial-tone will interfere with testing.

You will be prompted to enter a "Loop Count". If you select a count of 1, you will be able to hear the connecting tones on your speaker. If you select a count greater than 1, then the speaker is turned off.

After you make your selection, two windows will open on your screen. One contains data that is being sent to the modem, the other Data that has been received by the modem. All of the characters from Binary 0 to Binary 255 are transmitted. Some of these will look strange because they are characters of the Extended Character set. The Modem Doctor

takes a great deal of care in preserving the normal condition of your modem before testing, and sends all the character strings necessary to test without disturbing any non-volatile memory settings. If you have an external modem, you will see the data being sent and acknowledged before testing begins. If you have an internal, please be patient while it sets up.

UART or Dumb Modem - This test works the same as the Smart Modem tests with two main exceptions. First, Your modem must be able to generate a carrier on its own on the answer and originate frequencies. Most external "dumb" modems have front panel switches for this function. Most are marked as AL (for Analog Loopback). If your modem can generate this, answer yes and follow the prompts on the screen. All testing is performed as above, except you setup the modem instead of the Modem Doctor.

Errors - If A RLS (Received Line Detect) signal is not received before testing begins, this indicates that either A Carrier is not being generated (or properly received in self test) by the modem, or an RS-232 Cable to an external modem is improperly wired. Although RS-232 loops will work fine without an RLS signal being wired, there is no way for the modem Doctor to detect on a Dumb Modem if a carrier was generated. On a Smart Modem, the Modem Doctor alternately looks for the word "CONNECT" to be sent from the modem if there is no RLS signal available. If you wish your all of your communications programs to work properly, you should get a cable with this signal wired.

If an Error is detected during the Analog test, the error Counter is incremented. There are two error counters; One is used for the Originate Mode, and the other for the Answer Mode. If you receive an error, it could be due to a problem with a UART or a Modem at a certain Baud Rate. Try testing at other Baud rates to determine if the errors repeat. Also Errors could occur on only the Originate or only the Answer frequency. This is more prevalent at higher baud rates. Finally, make sure that the modem was disconnected from the Phone line before testing. The Dial-tone interferes with some modems. Finally, there could be a problem with a cable or interrupts not properly being generated or properly handled by the CPU. Run the Digital/Loopback tests and if the problem repeats, you might have a bad UART or motherboard problem.

4.4 Loopback Tests

(NOTE..This feature in Registered Version Only!)

The Loopback tests were designed for two purposes. First, to test an RS-232 loop including cables that are properly terminated with a loopback plug, and second, to run a digital loopback test on 8250 and 100% Compatible UARTS.

Selecting Loopback and pressing return fetches this menu

```
[ Loopback Tests ]
Analog Loopback using a PLUG
Digital Loopback 8250 UARTS
Loopback Plug Technical Data
Return To Main Menu
```


Analog Loopback tests require that you attach a Loopback plug either to the back of the Comm port connector on your computer, or at the end of a RS-232 Cable. This test is designed for external Modems, however you could run this on an internal modem as a test of the command channel's ability to receive characters. Caution should be used on internal modems, for some will fail this test. If this happens, don't be concerned. However this test should NEVER fail with a Loopback Plug.

Digital Loopback tests require that you have an 8250 or 100% compatible UART in your system. These UART's have built-in diagnostics. If this test does not run, it means that you do not have a compatible UART installed. You should never pick up a character error using this test. If you do, you have a bad UART or CPU Motherboard Problem.

Both Tests open up windows (like the Analog test) and send and receive characters to the UART.

If you wish to know how to build a loopback plug, select the Loopback Plug technical data section.

4.5 Manual

As well written as the Modem Doctor is, there exists the possibility that a Modem or a system might not be compatible with the diagnostics. The Manual section allows you to send your own string commands to the Modem, read back data, and in fact you could use this as a Mini-communications program.

If you select this mode, a window opens with the banner Interactive Mode. At the Bottom are listed the "Hot-Keys" you can use;

ALT-C Clears the screen. This only clears the window of data, and leaves all your prompts.

ALT-R This displays the UART registers...handy for real-time troubleshooting of RS-232 loops.

ALT-H Help..this displays the basic AT Command set instructions that you could use to control your modem. Note that this is only a basic set. Some modems have many extensions to this, so for advanced work, consult your owners manual.

ALT-X Exits the interactive mode and returns to the main menu.

4.5 Setup Mode

This section was covered above. Use this to change the serial port under test, the baud rate, and the type of test to be run.

4.6 Exit Program

This is the only way to exit the Modem Doctor. This is necessary because the interrupt tables and controllers of your PC must be returned to their original state in order to avoid problems after you use the Modem Doctor. Pressing Control-C or Control-Break during the Modem doctor will cause one of two things to happen. First, it will freeze the program deliberately (locking it up) forcing you to

warmboot your computer. Second, if it is at all possible to exit without damage, a window will open telling you that you can control-break abort if you wish..answer yes or no.

5.0 Error Messages and their Meanings

The Modem Doctor, if presented with an error, will make a diagnosis of the problem. In most cases, this should be enough for you to figure out what is wrong and go on from there to correct it.

5.1 Log In errors

ALL Available COMM ports are in use...Press to Return

-COM1 through COM4 are logged in and no new ports can be added

COMx Not Found

-A COMM port (x) was not located at the port address specified.

This is normal during auto-selection, but not if a manual selection was entered. If a manually entered address did not work, check your Modem owners manual to make sure you entered it correctly.

WARNING...RESERVED PORT...RETRY ENTRY

- You entered a port address that is assigned to a critical Motherboard or CPU address port. Your entry was an error..check your modem owners manual to get the right port.

5.2 Carrier Errors

WARNING...CARRIER FAILURE...Status Registers Displayed above

followed by;

RLS (Received Line Signal Detect indicates that a carrier has not been received by the UART Check modem or connector wiring

This indicates that a "dumb" modem did not signal the UART that it has received a carrier (or is generating one).

Modem not responding to the Analog originate test

or;

Modem not responding to the Analog Answer test

A Smart Modem did not go into the self test mode. The Modem Doctor looks for the word "CONNECT" to be returned by the modem. A possible reason for a perfectly working modem to generate this is if the wrong baud rate was selected for testing. Smart Modems return identifications that can be read by the Modem Doctor. If you suspect you selected the incorrect baud rate, go to setup and select 300 baud and try again. If it doesn't work this time, you might have a problem with your modem generating a self test.

Modem Analog Test passed without any errors in Originate and Answer Modes

- Normal results of the testing.

"You had a total of x Originate Errors and x Answer Errors
- An error was detected on character transmission by the Modem Doctor. Use the window display to isolate the error if you wish, or run the test again, making sure that the phone line is disconnected.

5.3 Loopback Errors

UART not responding using Analog Loopback Plug mode

- No characters were received over the RS-232 Loop. Make sure you are using a proper RS-232 cable and a proper Loopback plug

No Loopback Plug or General Failure of the Hardware

- None of the handshaking signals (RTS/CTS DTR/DSR) were detected (or generated) by the UART. Either you have a bad cable, a bad loopback plug or a faulty UART.

Analog Loopback Test passed without any errors

- Normal result of test

You had a total of x Errors

- At least one error was detected...this is the normal result if a UART does not respond to any test.

UART not responding to the Digital Loopback test

- No characters were looped internally through the 8250 UART. Suspect a non-compatible UART or a failure of the 8250 UART.

UART Registers did not set for Loop back test

- The UART Modem Control Registers did not program properly. This should indicate a hardware failure of the UART under all circumstances (including use with a non-compatible UART).

UART Digital Test passed without any errors

- Normal result of test

5.4 Setup Errors

Modem Microprocessor Did Not Accept Setup Commands

- Commands were sent to setup the modem for testing, the Modem did not acknowledge. Suspect a non-compatible modem or a possible hardware failure.

Modem Status Register readings show that there is no status coming back from the modem to the UART. If this is an external modem, check" that the cable is plugged in.

- The only condition that the UART will not have any status is if an External Modem is off, not connected, or the UART has a serious hardware problem.

Line Control register readings show that the word length selected is incorrect. WS1 and WS0 should both be on indicating that 8 bit words are to be used. The UART is defective or communications to the UART are suspect.

Line Status Readings Show

show that the Tx Holding Register THE or the Tx Shift Register TSE is not resetting properly. UART is suspect or connections to the UART from the computer.

Modem Control register readings show that either DTR,RTS or OT2 signals are not set properly. DTR and RTS are essential for communications. OT2 is essential for interrupts. UART is suspect or connections to the UART from the computer

Interrupt ID register readings show that an interrupt is pending when none should be. UART is suspect or connections to the UART from the computer.

Interrupt Enable register readings show that ERI Enable Receiver ints is not set properly. UART is suspect or connections to the UART from the computer.

8259 Interrupt Controller has not responded to setting the IRQ4 line. This problem is on the system board of your computer. Run your computer diagnostics program to locate the error

8259 Interrupt Controller has not responded to setting the IRQ3 line. This problem is on the system board of your computer. Run your computer diagnostics program to locate the error

I cant find a COMM Port

- If Dos does not Log in Comm 1 or Comm 2 and if no port is Auto-Detected, then the Modem Doctor Aborts for there is no reason to run the program.

WARNING...This COMM PORT is MODEM STATUS REGISTER IS DEFECTIVE

- The Modem status register is one of the registers tested during auto-login detection. If it doesn't respond properly, the UART is probably defective and this message is displayed.

Section 6. Registration Information

The Modem Doctor is copyrighted by Hank Volpe. The Shareware Version of this program may be distributed on Bulletin Board Systems or in Public Domain Libraries as long as a Fee is not charged for its duplication or acquisition. The Modem Doctor is distributed on as "As-is" basis, with no warranties for usefulness or suitability expressed or implied. Users of the Shareware version are granted a limited license to use this program. It is expected that if you use it for more than 30 days, that you will register the Modem Doctor.

Registration adds many powerful features that make the Modem Doctor an excellent RS-232/UART/Modem Diagnostic Tool. Comparable programs cost well over \$100, while the Modem Doctor Registration Fee is just \$19.95 for a single copy. Group Discount prices for software distributors and Businesses are available.

For Single-user registration, send a check or Money order for \$19.95 to

Hank Volpe
108 Broadmoor Drive
Tonawanda NY 14150

You will receive the latest version of the Modem Doctor, plus several other useful Modem Utilities. Registered Users also are entitled for updates to newer versions (when available) for a small fee to cover shipping and handling.

Notes -

[+] Copywrited by US Robotics INC
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