![AEROCOMM logo]

Developer Kit User's Manual

Version 3.3

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If, after inspection, AeroComm determines that there is a defect, AeroComm will repair or replace the OEM transceiver at their discretion. If the product is replaced, it may be a new or refurbished product.

TABLE OF CONTENTS

Figures

Tables

1. Overview

This document contains information about the hardware included as part of an Aerocomm OEM transceiver System Developer Kit (SDK).

The SDK is designed to allow flexibility at the hardware interface level so that the SDK can be interfaced to the OEM product, to a PC for performance testing, or to any other device that will support +5/3.3V TTL, RS232, RS485 or USB interface signals.

The SDK is a complete, integrated package that contains all the hardware, software and documentation needed to integrate an OEM transceiver quickly and painlessly.

The SDK includes:

1. (2) Transceivers

2. (2) SDK interface boards

3. (2) AC Power Adapters

4. (2) DB9 to DB9 cables

5. (2) USB cables

6. (2) omni-directional dipole antennas with a 5" pigtail and MMCX connector – Other antennas are available for testing

7. User's Manual outlining the hardware and software interface specification

8. Software Utilities and Literature CD

9. Technical support

2. Hardware

2.1 SDK BOARD

The SDK board is provided so the developer can use a standard PC interface to operate the transceivers and to aid in system integration. As shown in Figure 2 below, there are many features that enhance the functionality and usability of this board. It uses +5V TTL, RS232, RS485 and USB data formats for interfacing with the transceiver. The configuration and operation of the SDK Board is continuously shown by the LEDs located on the edge of the board. See **Table 1 – Status LEDs** and **Table 3 – Switch and Jumper Settings** for definitions of the LEDs and switches.

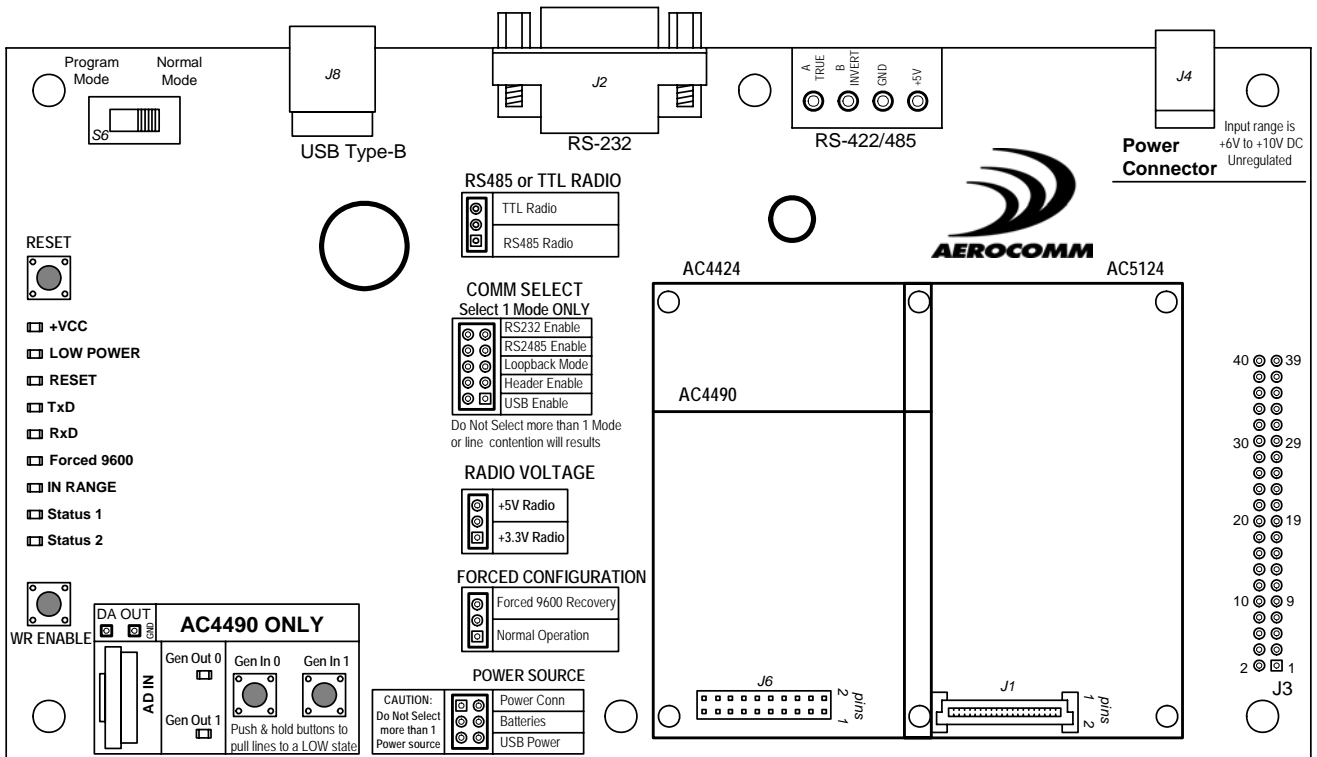## Figure 1 - SDK Board Assembly Drawing

Table 1 - Status LEDs

+VCC	Will light when power is applied to the Serial Adapter Board.
LOW POWER	Monitors the 5V supply and lights when the supply dips below 4.8V.
RESET	Will light when the **Reset** line to the processor is *High*, resetting the transceiver.
TxD	Will light when the **TXD** line is *Low*, will flash rapidly when data is transmitted from the transceiver to the host.
RxD	Will light when the **RXD** line is *Low*, will flash rapidly when data sent by the host is received by the transceiver.
Forced 9600 Recovery	Will light when the 9600 Baud line is *Low*; shows that the **FORCED CONFIGURATION** jumper is set to force the transceiver to 9600 Baud. The transceiver must be reset before it will be forced to 9600.
IN RANGE	If used with a Client transceiver, will light if the Client transceiver is in range of a Server transceiver with the same System ID and Channel Number. If used with a Server transceiver, will always light when the Server is powered in normal mode and is ready to accept data.
Status 1	Reflects the state of the Command/Data pin (AC4490, AC4486, AC4424, AC4790, AC4868), the TE pin (AC3124, AC1524) and the Pktmode pin (AC5124). This is controlled by the PC RTS pin when the **Program Mode/Normal Mode** switch is set to **Program Mode**. Lights when this pin goes *Low*.
Status 2	Will light when the Write Enable pin (AC4424, AC5124, AC3124, AC1524) or the GI1 pin (AC4490, AC4486, AC4790, AC4868) goes *Low*. Controlled by the **WR ENABLE** and **Gen IN 1** push buttons.

Table 2 – AC4490 Only Section (AC4486, AC4790 and AC4868 Included)

Potentiometer/ AD In	This varies the voltage (0 – 3.3V) presented to the **AD In** pin (pin 18).
Gen Out 0 LED	Will light when the **GO0** pin (pin 1) is *Low*.
Gen Out 1 LED	Will light when the **GO1** pin (pin 9) is *Low*.
Gen In 0 Pushbutton	When depressed, will force the **GI0** pin (pin 4) *Low*.
Gen In 1 Pushbutton	When depressed, will force the **GI1** pin (pin 14) *Low*.

DA_Out	This probe point provides a location for measuring the DA_Out pin (pin 19).
GND	This probe point provides a GND reference location.

Table 3 - Switch and Jumper Settings

Program Mode/Normal Mode (S6)	When this Switch is moved to the **Program Mode** position, the RTS pin from the DB9/USB connector is connected to the **Command/Data** pin (AC4490, AC4486, AC4424, AC4790, AC4868), the **TE** pin (AC3124, AC1524) and the **Pktmode** pin (AC5124) of the transceiver. **RTS** of the transceiver is also connected to GND. This allows the SDK software to control these pins with **RTS** always enabled. When the Switch is moved to the **Normal** position, RTS at the DB9/USB connector is connected to **RTS** pin of the transceiver and Command/Data is left disconnected. The AC4424, AC4490, AC4790, AC4486 and AC4868 families all support AT Commands for making changes to the EEPROM settings. If the "Read/Write with AT Commands" checkbox is enabled on the PC Settings page of the configuration software, then the Program/Normal switch can always be set to Normal. The AC5124 family also supports AT Commands when that function is enabled in the transceiver EEPROM.
RESET (S1)	When this pushbutton is pressed, the transceiver hardware performs a soft reset.
WR ENABLE (S2)	When this pushbutton is pressed, it will take the Write Enable pin (AC4424, AC5124, AC3124, AC1524) or GI1 pin (AC4490, AC4486, AC4790, AC4868) Low. ***This button must be pressed and held during the write process for AC5124, AC3124, AC1524, and AC4424 product families.***
RS485 or TTL Radio	If using a transceiver module fitted with a RS-485 interface chip, ***RS485 Radio*** should be selected. This converts the transceiver's RS-485 interface to serial, which is then converted to the interface selected by the COMM SELECT jumper. If not using a transceiver module fitted with a RS-485 interface chip, ***TTL Radio*** should be selected.
COMM SELECT (J12)	When this jumper is moved to the ***RS232 Enable*** position, RS-232 communication is enabled through the DB9 connector (J2). When this jumper is moved to the ***RS485 Enable*** position, RS-485 communication is enabled through the RS-485 header pins. When this jumper is moved to the ***Loopback Mode*** position, the transceiver TxD pin is tied to the transceiver RxD pin. This is only valid for AC5124, AC4424 and AC4486, AC4490, AC4790, AC4868 products. RTS mode must be disabled on the transceiver when Loopback Mode is enabled. This mode is not compatible with RS485 Radio selection.

	When this jumper is moved to the **40 Pin Header** position, serial communication is enabled through the 40 pin header (J3). Depending on the transceiver used, signal levels will need to be either 3.3V or 5V.
	When this jumper is moved to the **USB Enable** position, USB communication is enabled through the USB Type B connector (J8).
RADIO VOLTAGE (J9)	When this jumper is moved to the **+5V Radio** position, the transceiver is powered with 5V. When this jumper is moved to the **+3.3V Radio** position, the transceiver is powered with 3.3V. The AC4x90-1000, AC4868 and AC4x90-1x1 must have this jumper set to 3.3V. **Special care should be taken when setting this jumper. An improper setting can cause catastrophic damage to the transceiver.**
FORCED CONFIGURATION (J11)	When this jumper is moved to the **Normal Operation** position, the transceiver will communicate at the Baud Rate configured in the EEPROM. When the jumper is moved to the **Forced 9600 Recovery** position, the transceiver interface baud rate is forced to 9600 Baud upon reset. **This is for EEPROM recovery only and should not be used in normal operation.**
POWER SOURCE (J7)	When this jumper is moved to the **Power Conn** position, power is supplied to the SDK board through the power connector (J4). When this jumper is moved to the **Batteries** position, power is supplied to the SDK board through the two AA battery sockets on the bottom of the SDK board. Special care should be taken when selecting batteries to power the SDK. High quality Alkaline batteries should be used. Do not mix battery types or batteries that have been used unequally as performance could suffer. Four Alkaline batteries will produce a voltage of 6V. A minimum of 5.5V is required to power the SDK board. Power should be constantly monitored when using battery power. If **USB Power** is selected, the transceiver and development board will receive power from the USB port. **USB power should only be used for AC4486, AC4490, AC4790 and AC4868 product families. Most USB ports can only supply 500mA of power max therefore it is recommended that USB power only be used with transceivers that draw less than 300mA peak. Though PCs should have over-current protection for their USB ports, drawing too much current through the USB port has the potential to cause damage to the PC and should be avoided.**

Table 4 - DB9 (J2) Signal Definitions

J2 Pin#	J1 Pin#	Signal Name	Description	Direction
1	36	DCD	Data Carrier Detect	I
2	14	RXD	Receive Data	I
3	16	TXD	Transmit Data	O
4	34	DTR	Data Terminal Ready	O
5	1,20,21,40	GND	Ground	
6	32	DSR	Data Set Ready	I
7	27	RTS	Request To Send	O
8	23	CTS	Clear To Send	I
9	19	RI	Ring Indicator	I

Note: I/O direction is relative to the PC

Table 5 – SDK Board to Transceiver Pin Definitions

J1 Pin Number	Type	AC5124 Pin Number	AC5124 Signal Name	AC1524 / AC3124 / AC4424 / AC4490 / AC4486 / AC4868 Pin Number	AC1524 / AC3124 Signal Name	AC4424 Signal Name	AC4490 / AC4486 Signal Name	AC4790 Signal Name	AC4868 Signal Name
1	GND	1	GND	5	GND	GND	GND	GND	GND
2	I	2	PKTMODE	17	TE	Command/Data	Command/Data	Command/Data	Command/Data
3	VCC	3	VCC	10	VCC	VCC	VCC	VCC	VCC
4	NC	4	NC		NC	NC	NC	NC	NC
5	VCC	5	VCC		NC	NC	NC	NC	NC
6	NC	6	NC		NC	NC	NC	NC	NC
7	NC	7	NC		NC	NC	NC	NC	NC
8	NC	8	NC	19	NC	NC	DA Out	NC	DA Out
9	NC	9	NC		NC	NC	NC	NC	NC
10	NC	10	NC		NC	NC	NC	NC	NC
11	O	11	RSSI	13	RSSI	RSSI	RSSI	RSSI	NC
12	NC	12	NC		NC	NC	NC	NC	NC
13	NC	13	NC		NC	NC	NC	NC	NC
14	O	14	TXD	2	TXD	TXD	TXD	TXD	TXD
15	O	15	In Range	20	In Range	In Range	In Range	Session Status	In Range
16	I	16	RXD	3	RXD	RXD	RXD	RXD	RXD
17	I	17	RI_In		NC	NC	NC	NC	NC
18	NC	18	NC		NC	NC	NC	NC	NC
19	O	19	RI_Out	9	NC	NC	GO1	GO1	GO1
20	GND	20	GND	18	RE	NC	AD In	AD In	AD In
21	GND	21	GND		NC	NC	NC	NC	NC
22	I	22	DCD_In		NC	NC	NC	NC	NC
23	O	23	CTS	7	CTS	CTS	CTS	CTS	CTS
24	NC	24	NC		NC	NC	NC	NC	NC
25	NC	25	NC		NC	NC	NC	NC	NC
26	I	26	BDSEL	12	Test Mode/Packet Frame	9600 Baud/Packet Frame	9600 Baud	9600 Baud	9600 Baud
27	I	27	RTS	8	NC	RTS	RTS	RTS	RTS
28	NC	28	NC		NC	NC	NC	NC	NC
29	NC	29	NC		NC	NC	NC	NC	NC
30	NC	30	NC		NC	NC	NC	NC	NC
31	NC	31	NC		NC	NC	NC	NC	NC
32	O	32	DSR	6	Hop Frame	Hop Frame	Hop Frame	NC	Hop Frame
33	NC	33	NC		NC	NC	NC	NC	NC
34	I	34	DTR	4	NC	NC	GI0	GI0	GI0
35	NC	35	NC		NC	NC	NC	NC	NC
36	O	36	DCD_Out	1	NC	NC	GO0	GO0	GO0
37	I	37	Write Enable	14	Write Enable	Write Enable	GI1	GI1	GI1
38	I	38	µP _Reset	15	µP Reset	µP Reset	µP Reset	µP Reset	µP Reset
39	VCC	39	VCC	11	VCC	VCC	VCC	VCC	VCC
40	GND	40	GND	16	GND	GND	GND	GND	GND

I = Input to the transceiver
O = Output from the transceiver
NC = No Connection (though there is an internal connection in some instances, therefore, this pin should be left disconnected)
Note: The 40 pin header (J1) on the SDK board maps directly (pin-for-pin) to the 40 pin connector (J3).

2.2 INTERFACING THE SDK BOARD TO OTHER RS-232 HARDWARE

The development kit serial board is defined as a DCE (Data Communications Equipment). DCE is wired to interface directly with DTE (Data Terminal Equipment). Typically, DTE is defined as a PC and DCE is defined as a peripheral. To interface DCE to other DCE, or DTE to other DTE, a null modem is required. The null modem simply swaps pins to convert a DCE to a DTE and vice-versa. Normally, a null modem consists of a female and a male DB9 connector. A typical null modem configuration is shown below.

Table 6 – DTE, DCE and Null Modem Signal Definitions

DCE Pin Number	DCE Signal Name	DCE Direction	DTE Pin Number	DTE Signal Name	DTE Direction	Null Modem Female DB9	Null Modem Male DB9
1	DCD	O	1	DCD	I	1	4 or NC
2	TXD	O	2	RXD	I	2	3
3	RXD	I	3	TXD	O	3	2
4	DTR	I	4	DTR	O	4	6 and 1 or NC
5	GND		5	GND		5	5
6	DSR	O	6	DSR	I	6	4 or NC
7	RTS	I	7	RTS	O	7	8
8	CTS	O	8	CTS	I	8	7
9	RI	O	9	RI	I	9	NC

2.3 INTERFACING THE SDK BOARD TO RS-485 EQUIPMENT

The SDK serial board has been designed to interface to RS-485 equipment. If such operation is desired, the **COMM Select** jumper should be set to *RS485 Enable*. The RS-485 circuitry used by the SDK board has been specially designed to negate the requirement for a DE/RE signal. Thus, the receiver is always enabled unless the transceiver has something to send to the OEM Host. The OEM must ensure that the OEM Host does not send data at the same time as the transceiver; otherwise a RS-485 contention will occur because the RS-485 hardware is half duplex.

Table 7 – RS-485 Header Pins

RS-485 Pin Name	Description
A TRUE	The non-inverted form of the serial data. This pin is at rest **High**.
B INVERT	The inverted form of the serial data (an exact inversion of A TRUE). This pin is at rest **Low**.
GND	GND
+5V	This is regulated 5V output from the serial board for general purpose use. A maximum of 100mA should be drawn through this node.

2.4 POWER REQUIREMENTS

The serial board employs a National LM2940 linear regulator to regulate the incoming voltage to 5VDC. Due to heat dissipation limitations and current requirements, a maximum of 10VDC should be present at connector J4. A minimum of 5.5V should also be present at the connector.
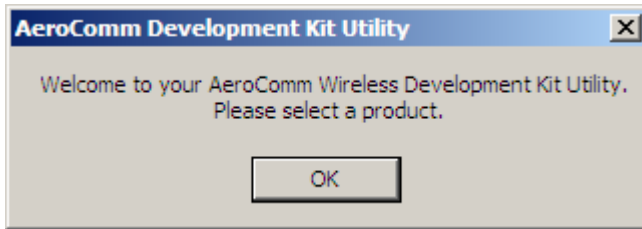
3. Software

3.1 USB SOFTWARE INSTALLATION

Disconnect the SDK hardware from the USB port of the PC (if it is currently connected) and close any open USB driver installation menus. Locate the software download section of the SDK CD and install the USB drivers.

3.2 SDK SOFTWARE INSTALLATION

Locate the software download section on the SDK CD and install the development kit software. The first time the software is run, the following message will be displayed:

Click "OK." The software will attempt to open COM1 of the PC. If there is a conflict or the port does not exist, the software will show the port as unavailable. This has occurred for one of the following reasons:

1) There is other software running that has control over the COM1 port. Locate this software and shut it down while running "Aerocomm OEM.exe" software.

2) The PC either does not have a COM1 port or the port has been disabled.

3.3 SETTINGS PAGE

The **Settings** Page is shown below, as it will appear the first time the program is run.
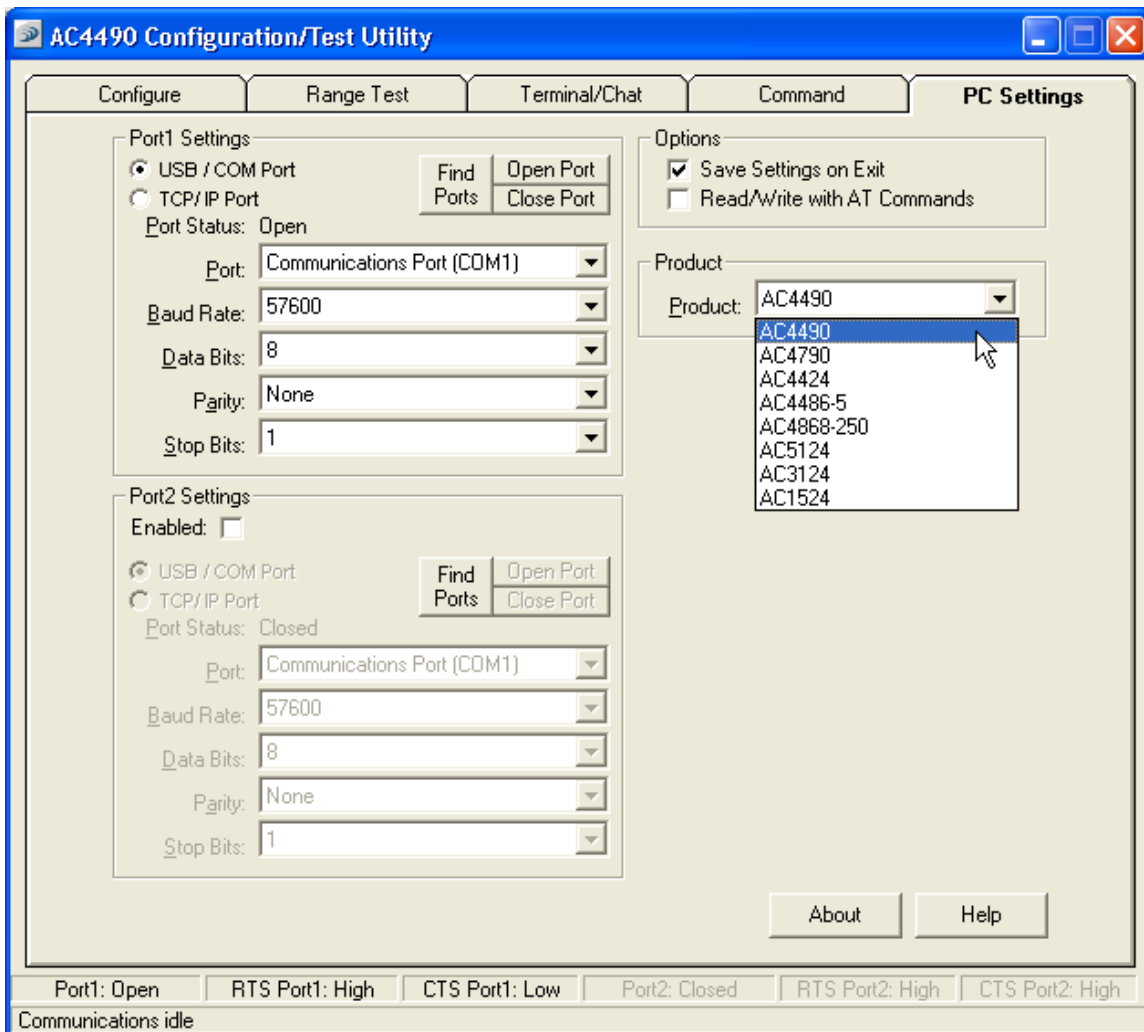
Select the appropriate product in the **Product** pull-down menu. Doing this will automatically select the default baud rate for that product family. If the COM port is listed as unavailable, a different COM port can be selected in the **Port** pull-down menu. The software can use two serial ports if the **Enabled:** box is checked.

3.3.1 Port1/Port2 Options

The software can control up to (2) COM ports including virtual COM ports, which physically map to USB or Ethernet ports. The Port pull-down menu allows selection of COM1 through COM16. An error message will be displayed if a port is selected that is either nonexistent or already occupied by another software program. When a port selection is made, the software will attempt to open the port and list its status as; Unavailable, Open or Closed. Although menus are shown for Data Bits, Parity and Stop Bits, only the Parity menu selection can be changed.

3.3.2 Other Options

These are additional options.

3.3.2.1   Save Settings on Exit

When enabled, all changes made to the **Settings** page will be automatically loaded the next time the software is run. Otherwise, the changes will be discarded.

3.3.2.2 Read/Write with AT Commands

When enabled, the software will use AT Commands for its read/write EEPROM functions instead of the standard configuration commands. This is only available for the AC5124 (when enabled in EEPROM), AC4424, AC4486, AC4490, AC4790, and AC4868 and is ignored for all other product modes.

3.3.3 Status Bar

Located at the bottom of the software, the status bar gives the state of Port 1, RTS Port 1, CTS Port 1, Port 2, RTS Port 2, and CTS Port 2 lines. When the text appears black, the current state will be shown. When the text appears gray, the current state will not be shown. The text shown in the bottom status bar gives a simplified status of the current, pending software process. The software has no pending process when "Communications Idle" is shown.

3.3.4 About Button

The **About** button can be pressed to determine the revision number of the software and the contact information for Aerocomm.

3.3.5 Help Button

When the **Help** button is pressed, the Help file will be shown.
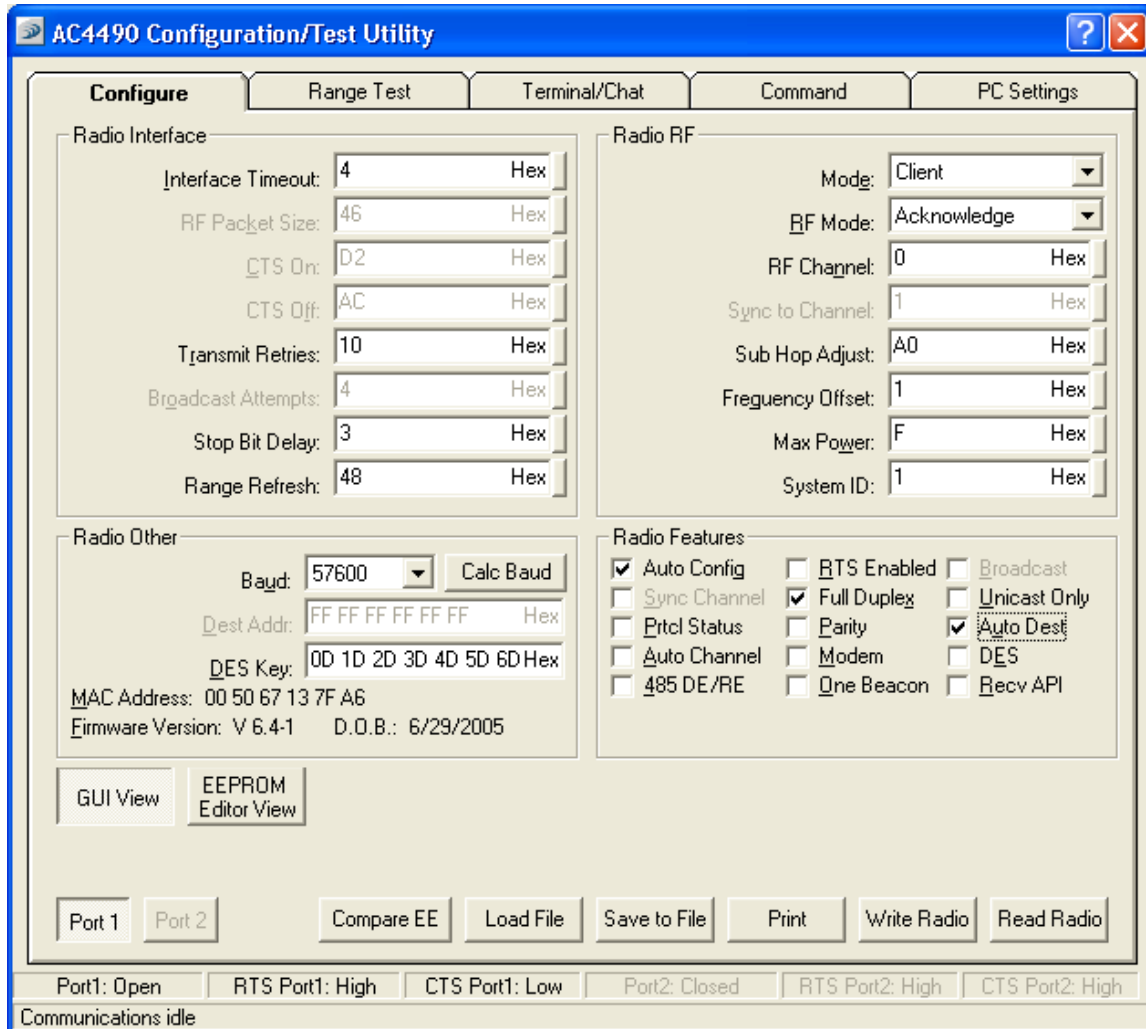
3.4 CONFIGURE PAGE

The **Configure** page is a GUI representation of the 256 byte EEPROM contents within the radio. The same data is shown in a full hexadecimal dump of the EEPROM in the **EEPROM Editor View**. The **Configure** page (for AC4490) is shown below, as it will appear until a radio is successfully read:
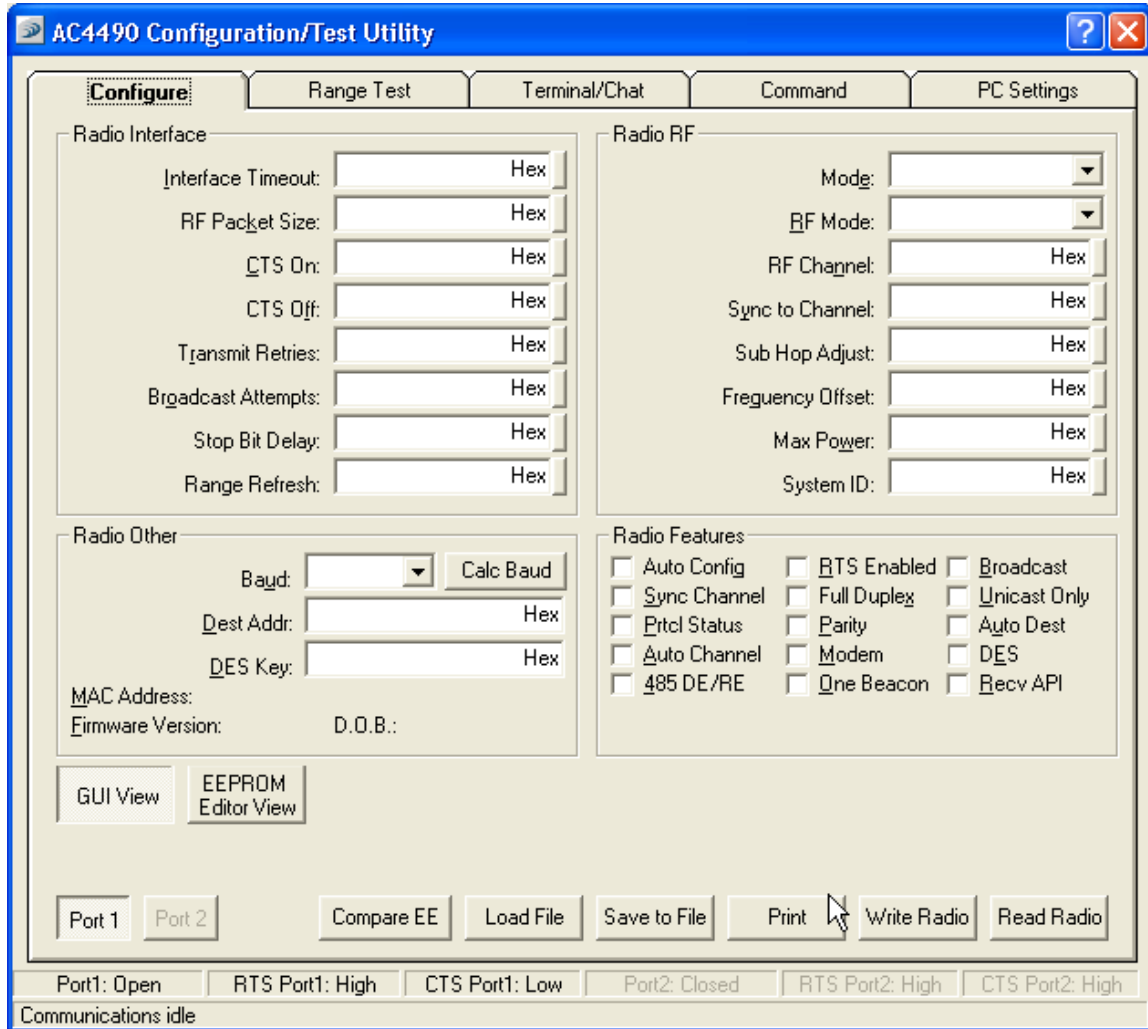
3.4.1 Read Radio Button

To update the **Configure** and **EEPROM Editor View** pages with the EEPROM contents of a radio currently connected to the proper port on the PC, click the **Read Radio** button. An example of the Configure page after a transceiver has successfully been read is shown below:

3.4.2 Write Radio Button

After making changes to the controls on the **Configure** page, the **Write Radio** button can be pressed to save those changes to the radio EEPROM.

3.4.3 Port 1/Port 2 Buttons

When Port 1 is depressed, the **Write Radio** and **Read Radio** buttons communicate through Port 1.
When Port 2 is depressed, the **Write Radio** and **Read Radio** buttons communicate through Port 2.

3.4.4 Calc Baud Button

The **Baud** pull-down menu includes all standard PC baud rates. To select a non-standard baud rate, the **Calc Baud** button can be pressed. This will bring up the following window:
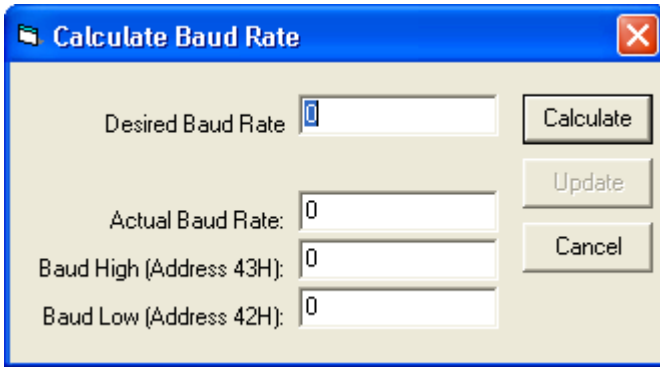
To calculate the settings for a particular baud rate, type that baud rate into the **Desired Baud Rate** window and click the **Calculate** button. If the baud rate is not supported by the radio, an error message will be displayed. Otherwise, the information will be filled in and the **Update** button will be enabled. An example is shown below:
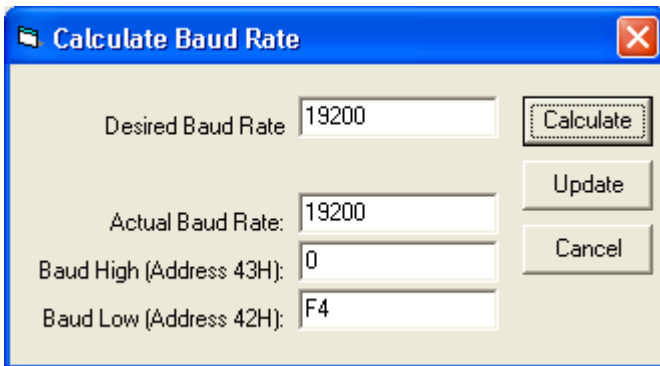
Clicking the **Update** button will cause the baud rate shown in the **Actual Baud Rate** window to be displayed in the **Baud** window on the **Configure** page of the software. Clicking **Cancel** will ignore these changes. The Actual Baud Rate will not always match the Desired Baud Rate. However, the program verifies that the Desired Baud Rate is within 3% of the Actual Baud Rate (as required by the radio).

3.4.5 Hex/Decimal Button

All of the text entry type boxes found on the **Configure** page have a button located to the right of the box. When pressed a menu will be shown which allows the selection of either Hexadecimal or Decimal numbering format for that particular text box. When the program is restarted, all text boxes will revert back to Hexadecimal.

3.4.6 GUI View Button

The GUI View Button enables a GUI representation of the 256 byte EEPROM contents of the radio.

3.4.7 EEPROM Editor View Button

The **EEPROM Editor View** is a hexadecimal dump of the full 256 byte EEPROM resident on the radio. The same data is shown on the **Configure** page in a GUI format. The **EEPROM Editor View** (for AC4490) is shown below, as it will appear after a radio has been successfully read:
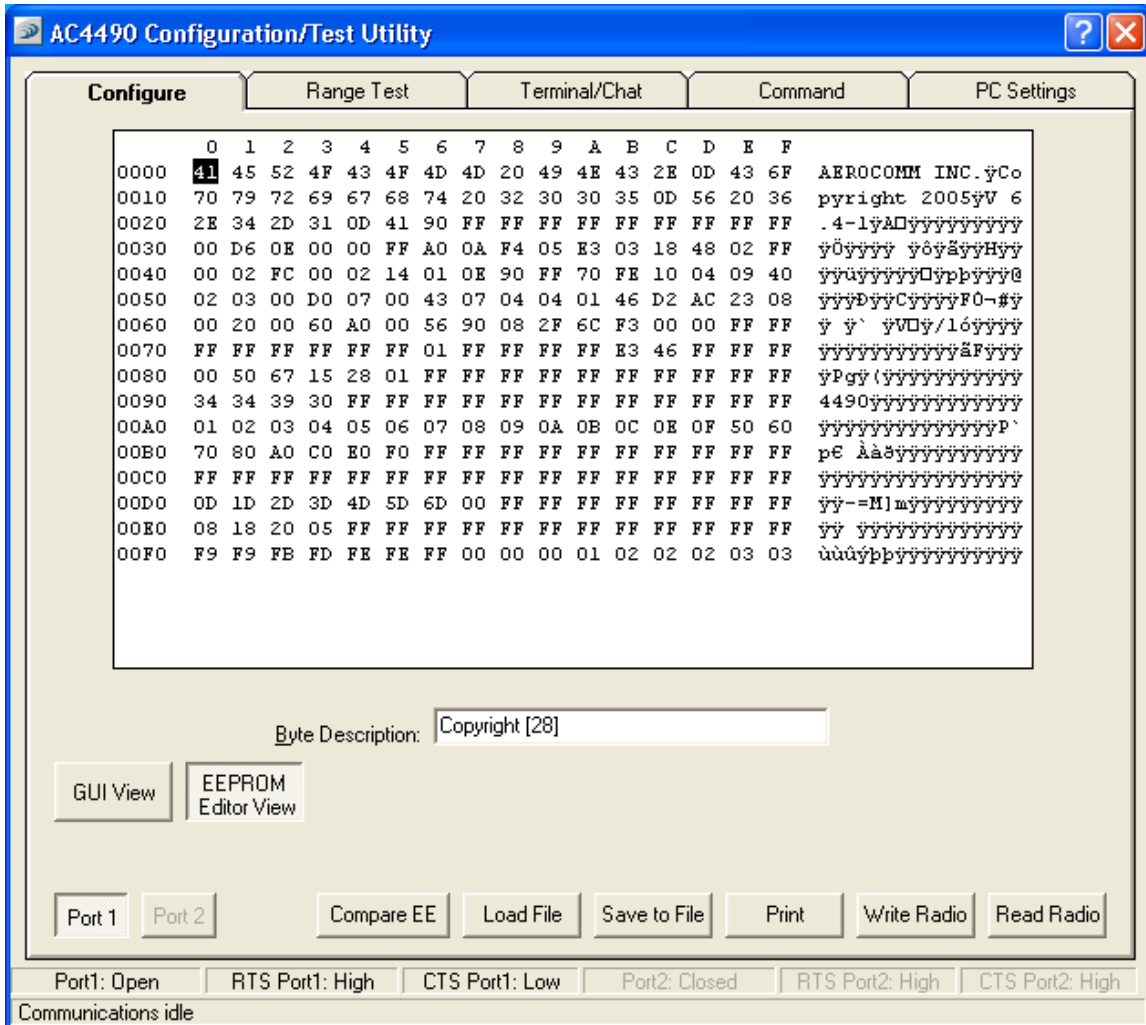
3.4.7.1 Compare EE Button

The **Compare EE** button allows you to compare two or more saved EEPROM files. This can be a very useful tool when analyzing performance of two or more transceivers. An example is shown below:
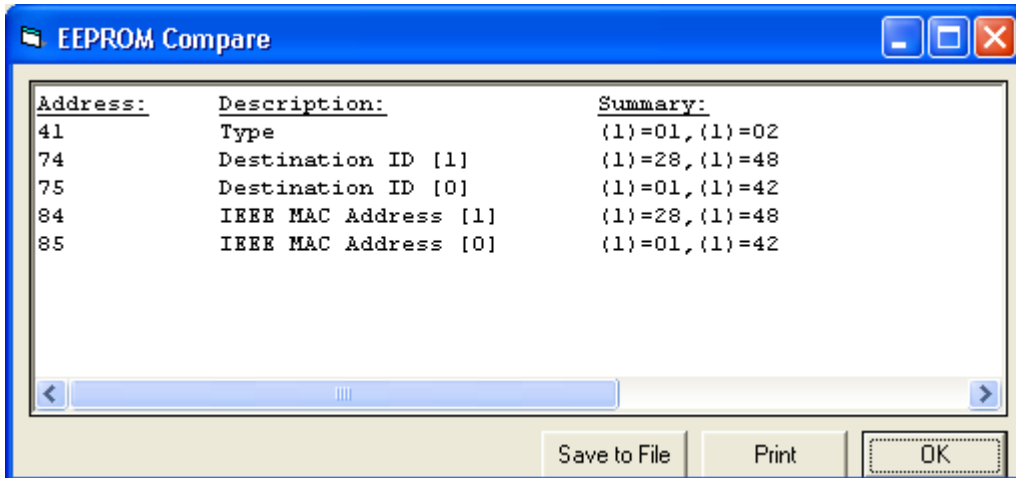
3.4.7.2 Load File Button

A file previously created by this software can be loaded to restore an EEPROM to a former state.

3.4.7.3 Save to File Button

An EEPROM can be saved to a file using this button. This allows for the current state of the EEPROM to be restored at a later time.

3.4.7.4 Print Button

This button sends the entire EEPROM dump window or GUI View to a selected printer.

3.4.7.5 Write Radio Button

After making changes to the **EEPROM Editor** window, the **Write Radio** button can be pressed to save those changes to the radio EEPROM.

3.4.7.6 Read Radio Button

Clicking the **Read Radio** button will cause the contents of the entire 256 byte EEPROM to be displayed in the EEPROM Editor View window.

3.4.7.7 Port 1/Port 2 Buttons

When Port 1 is depressed, the **Write Radio** and **Read Radio** buttons communicate through Port 1. When Port 2 is depressed, the **Write Radio** and **Read Radio** buttons communicate through Port 2.

3.5 TERMINAL/CHAT PAGE

The **Terminal/Chat** page is used to send small data packets between two Com ports. As data is received it is appended to the appropriate Port window. An example of the **Terminal/Chat** page is shown below.
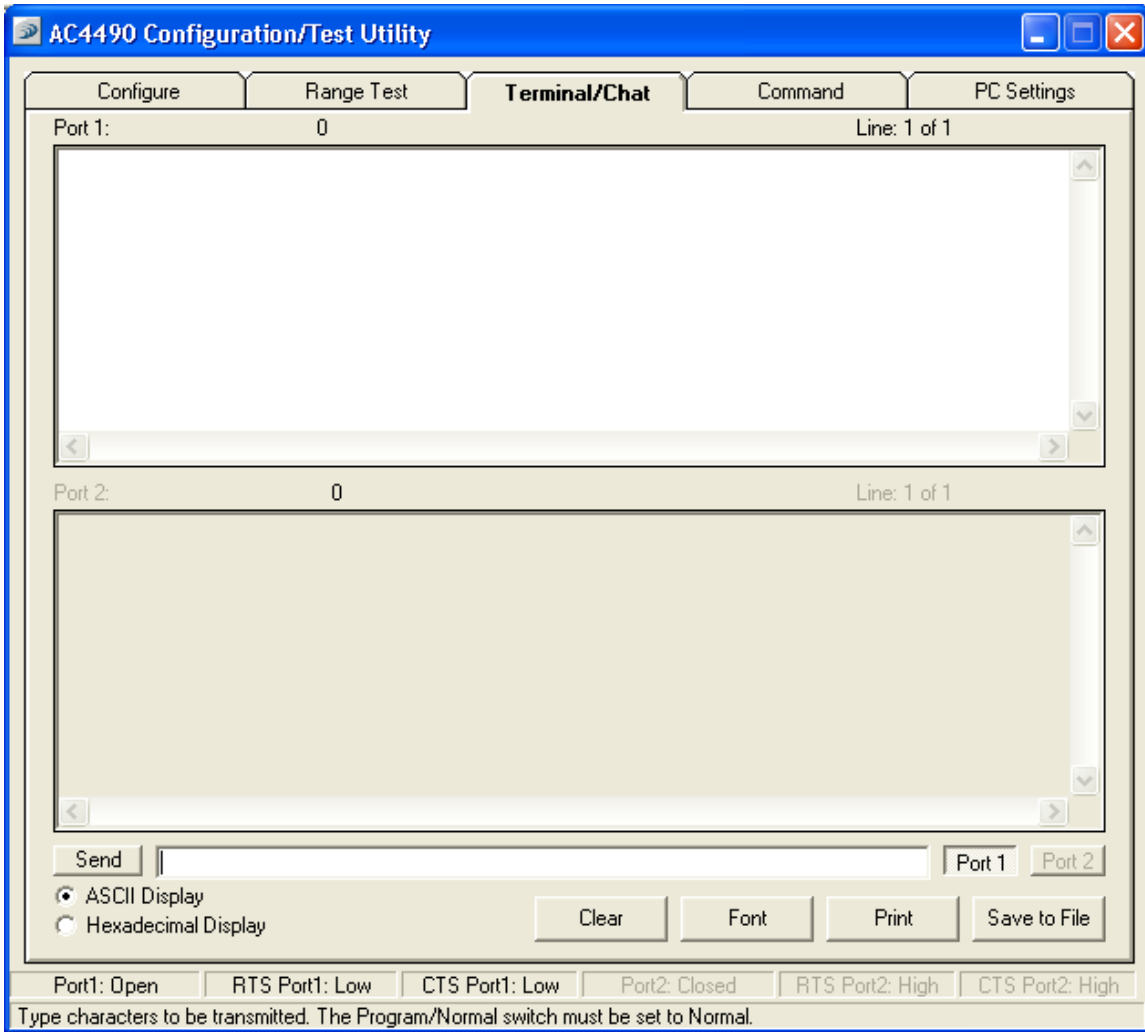
3.5.1 Send Button

This button sends the data in the textbox out the selected port(s). The current user's Windows username is also sent with the data.

3.5.2 ASCII Display

When selected, new received data will be displayed in ASCII format.

3.5.3 Hexadecimal Display

When selected, new received data will be displayed in Hexadecimal format.

3.5.4 Clear Button

Pressing the **Clear** Button will erase all of the text that has been displayed in both text windows.

3.5.5 Font Button

Pressing the **Font** button will bring up a font selection window allowing the font used in both terminals text boxes to be changed. Both terminals will use the same font.

3.5.6 Print Button

Pressing the **Print** Button will allow the user to selectively send the text in either of the two windows to a printer.

3.5.7 Save to File Button

Pressing the **Save to File** button will allow the user to selectively save the text in either of the two windows to a file.

3.6 RANGE TEST PAGE

The **Range Test** page allows packets of data to be sent between two radios and reports the numbers of successes and errors. An example is shown below:
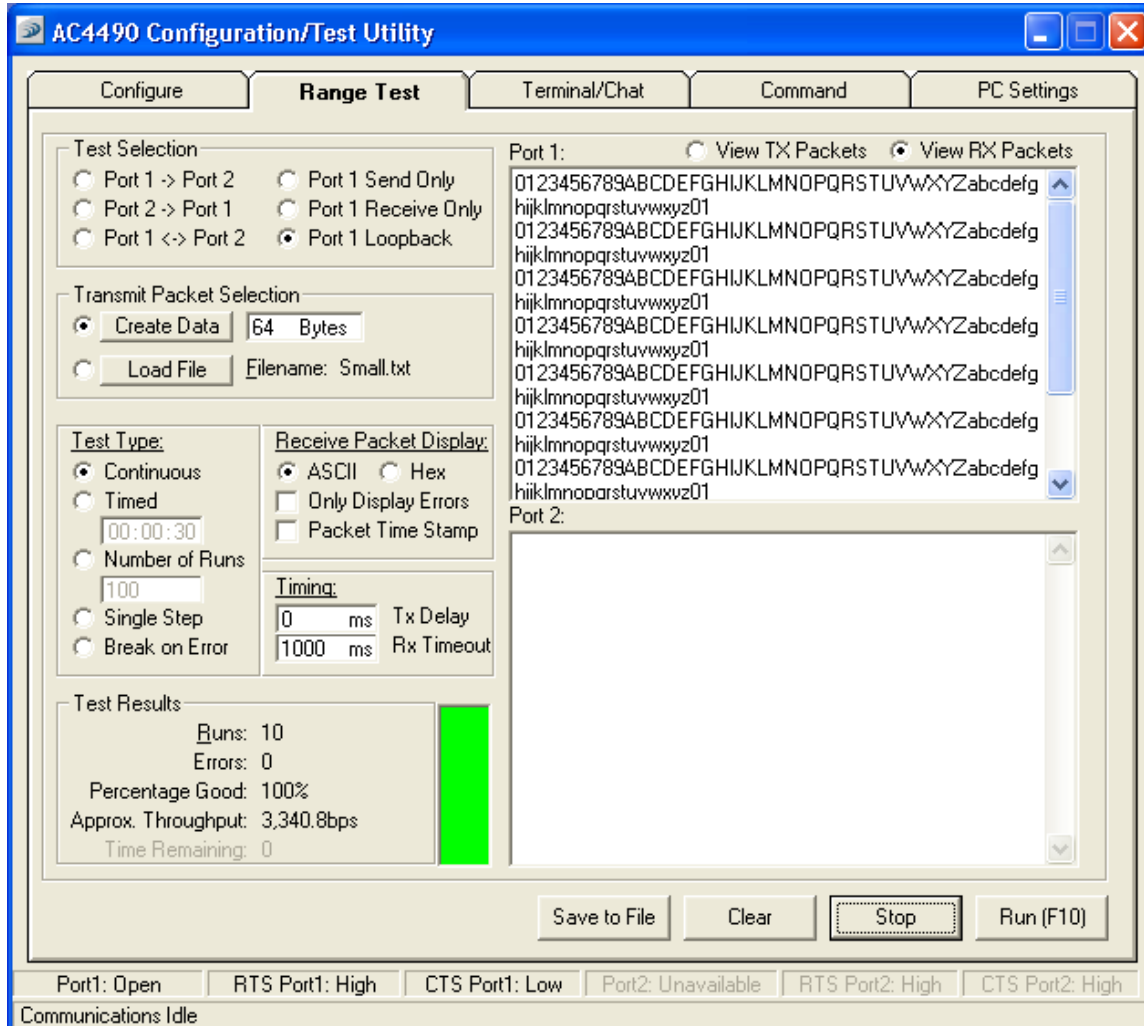
3.6.1 Test Selection

There are six test options that can be selected. There are three typical hardware setups.

1. One radio is plugged into a serial or USB port on a PC. The second radio is plugged into a separate power supply and has the **Comm Select** jumper set to **Loopback**.

2. One radio is plugged into a serial or USB port on a PC. The other radio is plugged into a different serial or USB port on the same computer.

3. One radio is plugged into a serial or USB port on a PC. The other radio is connected to a serial or USB port on another PC.

If using two PCs for the test, the software run on both sides should have the second COM port disabled on the **Settings** page.

Test Selection	Port 1 Action	Port 2 Action	Hardware Setup
Port 1 -> Port 2	Tx	Rx	2
Port 2 -> Port 1	Rx	Tx	2
Port 1 <-> Port 2	Tx/Rx	Tx/Rx	2
Port 1 Send Only	Tx	Not Applicable	3
Port 1 Receive Only	Rx	Not Applicable	3
Port 1 Loopback	Tx/Rx	Not Applicable	1

3.6.2 Transmit Packet Selection

This section allows you to select the data packet used to perform the Range Test. You may either create data of a specified byte length or load your own text or configuration file.

3.6.3 Test Type

The test type allows you to select how long the test will be performed.

Test Type	Description
Continuous	Test will run until stopped.
Timed	Test will run for specified time period
Number of Runs	Test will run for specified number of runs
Single Step	Test will run for a single step
Break on Error	Test will run until an error occurs

3.6.4 Receive Packet Display

This section allows you to select how the received packets will be displayed. Received packets can either be displayed in ASCII or Hexadecimal format, marked with a time stamp, and show only when an error has occurred.

3.6.5 Timing

This section allows you to modify the Tx and Rx timing of the test.

3.6.5.1 Tx Delay

The delay between transmissions can be modified (in ms) using Tx Delay.

3.6.5.2 Rx Timeout

Specifies the total amount of time to allow for a packet to be displayed.

3.6.6 Test Results

Displays the results of the test.

3.6.6.1 Runs

The run number is incremented every time a test is completed, whether errors occurred or not.

3.6.6.2 Errors

Displays the number of errors that occur while the test is being performed.

3.6.6.3 Percentage Good

Displays the percentage of test results that were successful.

$$\frac{\text{Runs-Errors}}{\text{Runs}} * 100 = \text{Percentage Good}$$

3.6.6.4 Approx. Throughput

Uses a rough calculation to display the amount of data transferred in bits per second (bps).

3.6.6.5 Time Remaining

Shows as runs remaining during Number of Runs test.

3.6.7 Port 1/Port 2

Displays the Tx or Rx activity for Port 1 and Port 2.

3.6.8 View Tx Packets/View Rx Packets

Allows you to switch between Tx or Rx packets in the Port 1/Port 2 display.

3.6.9 Save to File Button

Saves the contents of the Received Data window to a file.

3.6.10 Clear Button

This button sets all of the statistics and errors back to zero. This can be used while a test is running.

3.6.11 Stop Button

This halts the current test in progress. It does not clear the statistics or errors.

3.6.12 Run (F10) Button

Pressing either the **Run Button** or the **F10** key will begin the test.

3.7 COMMAND PAGE

The **Command** page is used to send configuration, "CC" (product family dependent) and AT commands (product family dependent) to the radio on the selected port. Below is an example of the **Command** page for the AC4490 product family:
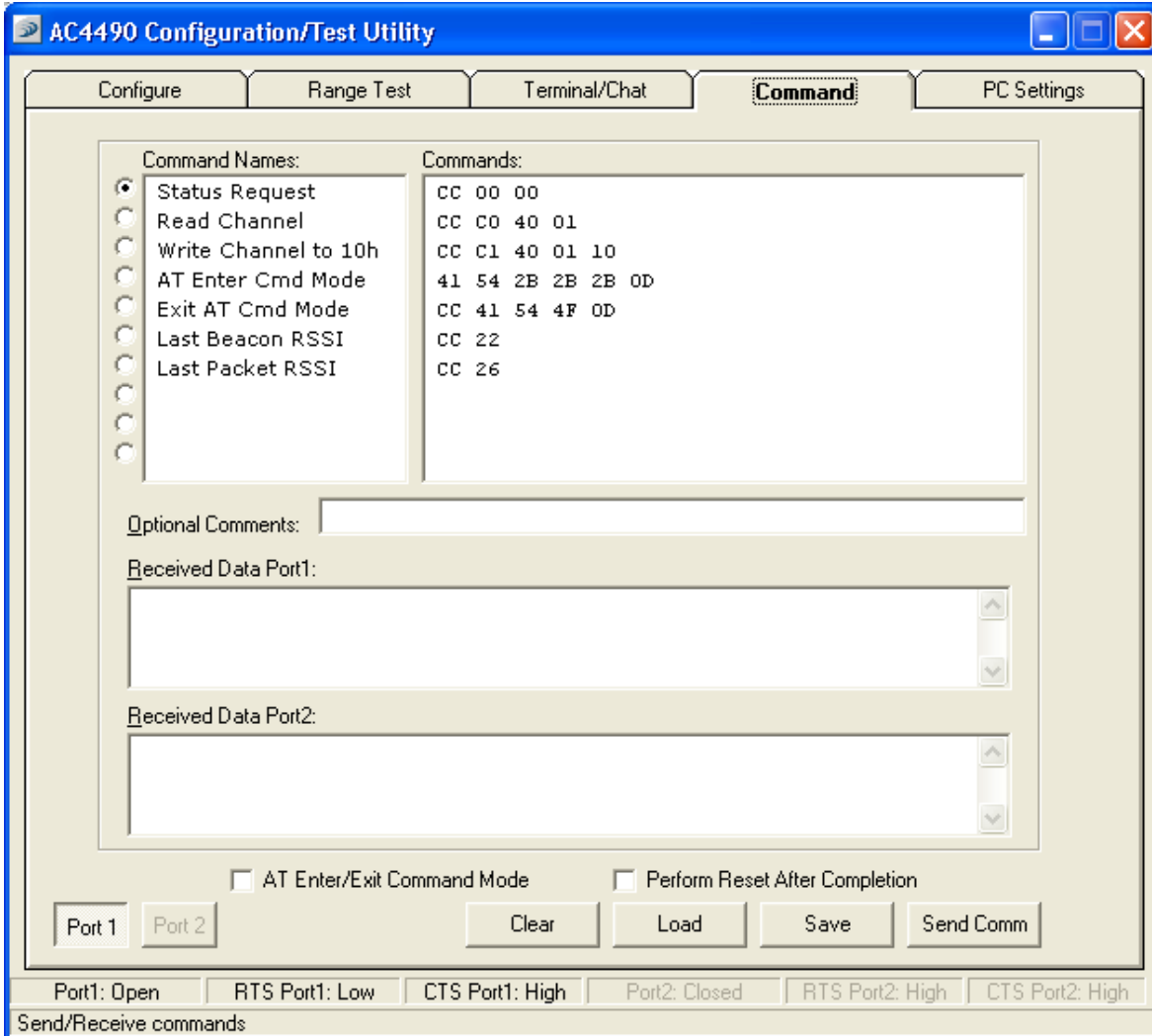
3.7.1 Radio Buttons

The software sends one command at a time. The command can be selected by clicking the radio button next to that command.

3.7.2 Command Name Box

The length of the **Command Name** is not restricted and is not required by the software.


3.7.3 Command Box

The **Command Box** consists of the command that will be sent to the radio.

3.7.4 Optional Comments Box

The **Optional Comments Box** is not restricted in length and is not required by the software. The description for a particular command will be displayed when that commands radio button is selected.

3.7.5 Received Data Port 1/Port 2Window

Data received over the serial port while on the **Command** page (whether in response to a command or not) will be displayed in the **Received Data** window in hexadecimal format. Below is an example of an AC4490 command response:
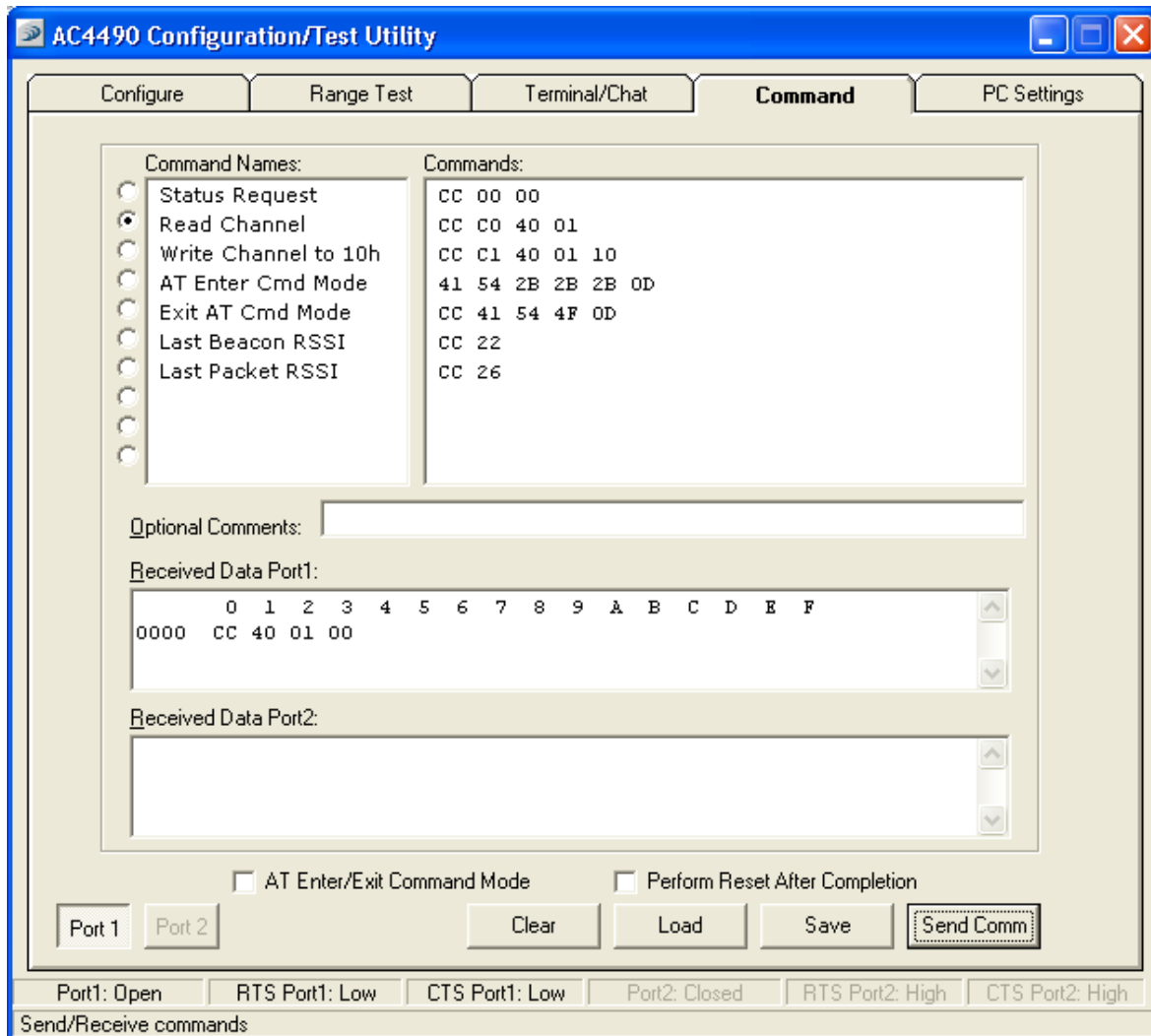
3.7.6 AT Enter/Exit Command Mode

When selected, the radio will enter/exit AT Command mode as required to complete the selected command by creating a virtual version of the Command/Data Line. The Enter AT Command mode asserts this virtual line Low (to enter Command Mode) and the Exit AT Command Mode asserts this virtual line High (to enter Data Mode).

3.7.7 Perform Reset After Completion

When enabled, the radio will be reset after the selected command has completed. **This feature is supported by all but the AC1524 and AC3124 product families.**

3.7.8 Port 1/Port 2 Buttons

When Port 1 is depressed, received data will be shown for Port 1. When Port 2 is depressed, received data will be shown for Port 2.

3.7.9 Clear Button

This button clears the Received Data Port 1 and Port 2 screens.

3.7.10 Load Button

This is used to load a different command file onto the **Command** page.

3.7.11 Save Button

This is used to save the changes to the current **Command** page file.

3.7.12 Send Comm

This button sends the selected command out the selected serial port.

4. Troubleshooting

Problem	Solution
No lights on SDK Board.	1. Check the power connection. The VCC LED should be lit when power is applied to the serial board. 2. Make sure there is nothing shorting VCC to GND and that the radio is seated into it's interconnect board properly. 3. Make sure that all jumpers are installed correctly.
Radio EEPROM cannot be read by **Aerocomm OEM.exe**.	1. Verify that power is applied and that the serial/USB cable is connected to the serial board and the PC. Try resetting the radio with the **Reset** push-button. 2. Verify that the correct serial/USB port is selected in the software (Port 1 or Port 2). 3. Verify baud rate and port address on the **PC Settings** page. 4. Make sure the **Program Mode/Normal Mode** switch is set to Normal Mode and Read/Write with AT Commands is selected on the PC Settings Page. 5. Check to make sure the **FORCED CONFIGURATION** jumper is in the correct position. 6. Verify the **COMM SELECT** jumper setting.
Writing to the EEPROM fails.	1. Make sure to press and hold the write enable button before writing to the EEPROM if using the AC1524, AC3124, AC4424 and AC5124 product families. Reset the radio before trying again using the **Reset** push-button.
EEPROM can be read/viewed with the OEM software, but data cannot be sent between the two transceivers using **Aerocomm OEM.exe**.	1. Make sure the Status 1 LED is not turned on. If so, find out what is driving RTS *Low* (thus, turning on the Status 1 LED) and either slide the **Program Mode/Normal Mode** switch to Normal, or cause RTS to go *High*. 2. If the Status 1 LED is not lit, reset both radios. 3. Make sure both transceivers have the same Channel Number and System ID (if applicable). 4. Check all cables and connections.

	5. Make sure one radio is a Server and one is a Client (excluding AC4790).
	6. Check radio addressing.
	7. Make sure that radios are separated by at least ten feet.
	8. Make sure the In Range LED is lit on both transceivers.
Packets can be sent between both radios using **Aerocomm OEM.exe** but cannot be sent from software or hardware not supplied by Aerocomm.	1. Use the Hardware section of this manual to determine if a null-modem adapter is required for interfacing to the hardware.
	2. Make sure the baud rate of the radios matches that of the OEM Host hardware.
	3. Make sure the Status 1 LED is not turned on. If so, find out what is driving RTS *Low* (thus, turning on the Status 1 LED) and either slide the **Program Mode/Normal Mode** switch to Normal, or cause RTS to go *High*.
A **Framing** or **Data Timeout** error occurs while running a Range Test.	1. Verify that the baud rate on the PC Settings page matches that of the radio's EEPROM.
	2. Verify that both radios are powered on and that the Port settings are correct.
	3. Verify that the In Range LED is lit on both radios.

If these troubleshooting tips do not resolve the problem, please contact the support engineer referenced on the cover sheet in the SDK binder. Please use our toll free support number at (800) 492-2320. Technical support hours are Monday through Friday, 8:00 AM to 5:00 PM Central Standard Time.