



Getting Started Guide

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1 Getting Started

KC Wirefree Serial Adapters are delivered complete with everything the user needs to operate Bluetooth devices. The Serial Cable replacement application embeds a complete upper layer stack, lower layer stack, and Bluetooth profiles.

Because of this high-level of integration, developers can easily use basic serial communication programs to develop host applications/products that interface through a UART port.

2 Serial Hardware Types

KC Wirefree Serial Adapters come with two different serial connector types.

2.1 DTE Serial Connector

Adapters that are configured as DTE devices are equipped with 9 pin male gender connectors. In order to connect this type of adapter to a PC, a Null Modem or "twisted" female to female cable is necessary.

2.2 DCE Serial Connector

Adapters that are configured as DCE devices are equipped with 9 pin female gender connectors. This type of adapter is ready to plug into and communicate directly with a PC without additional cables.

3 Launch HyperTerminal

Once the hardware has been setup, the communication program is used to communicate between the two Bluetooth devices. This section describes the launching and configuration of this communication program.

Windows-based computers come with a program called HyperTerminal. Launch and setup this program by following these steps:

- Go to **Start**,
- Select **Programs**,
- Select Accessories,
- Select Communications (Or HyperTerminal in some systems),
- Select Hyper Terminal.

A HyperTerminal window appears (see Figure 1) with a dialogue box. Enter a name (e.g., **test**) and click on **OK**.

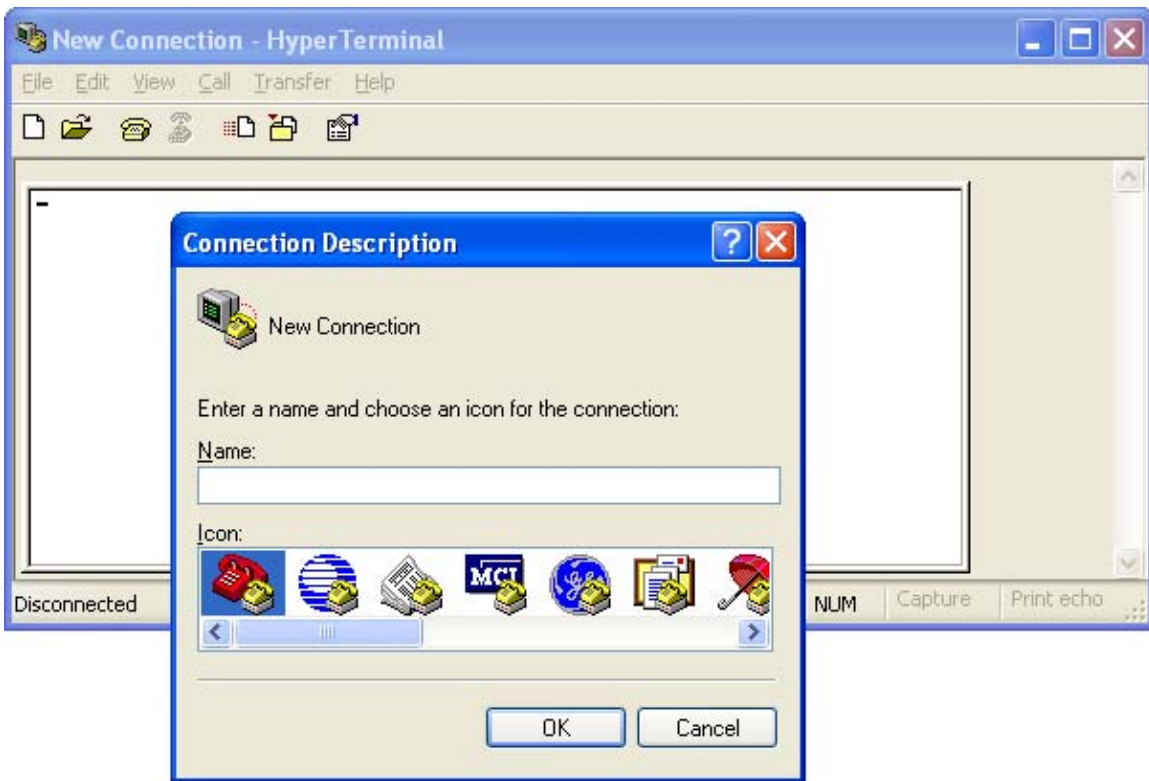


Figure 1. First HyperTerminal Window and Dialogue Box

3.1 Choose Communication Port(s)

The Connect To dialogue box (see Figure 2) appears. Choose the appropriate communication port for each computer and click on **OK**. The “appropriate communication port” is the port to which the serial cable is connected.

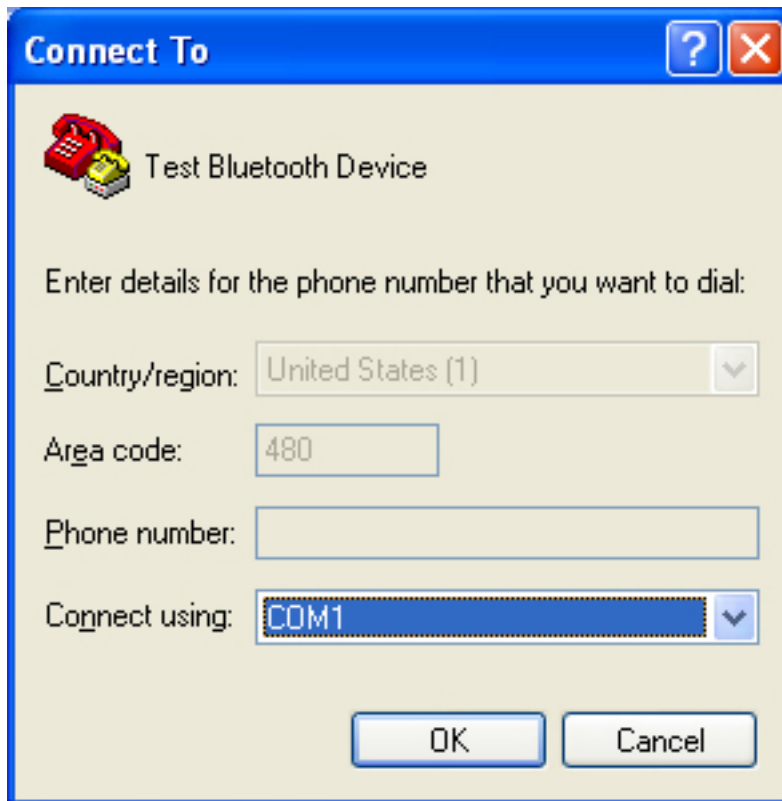


Figure 2. Choose Appropriate Com Port

3.2 Set Communication Properties

The Com Port dialogue box (see Figure 3) appears. Choose the appropriate settings for each computer and click on **OK**.

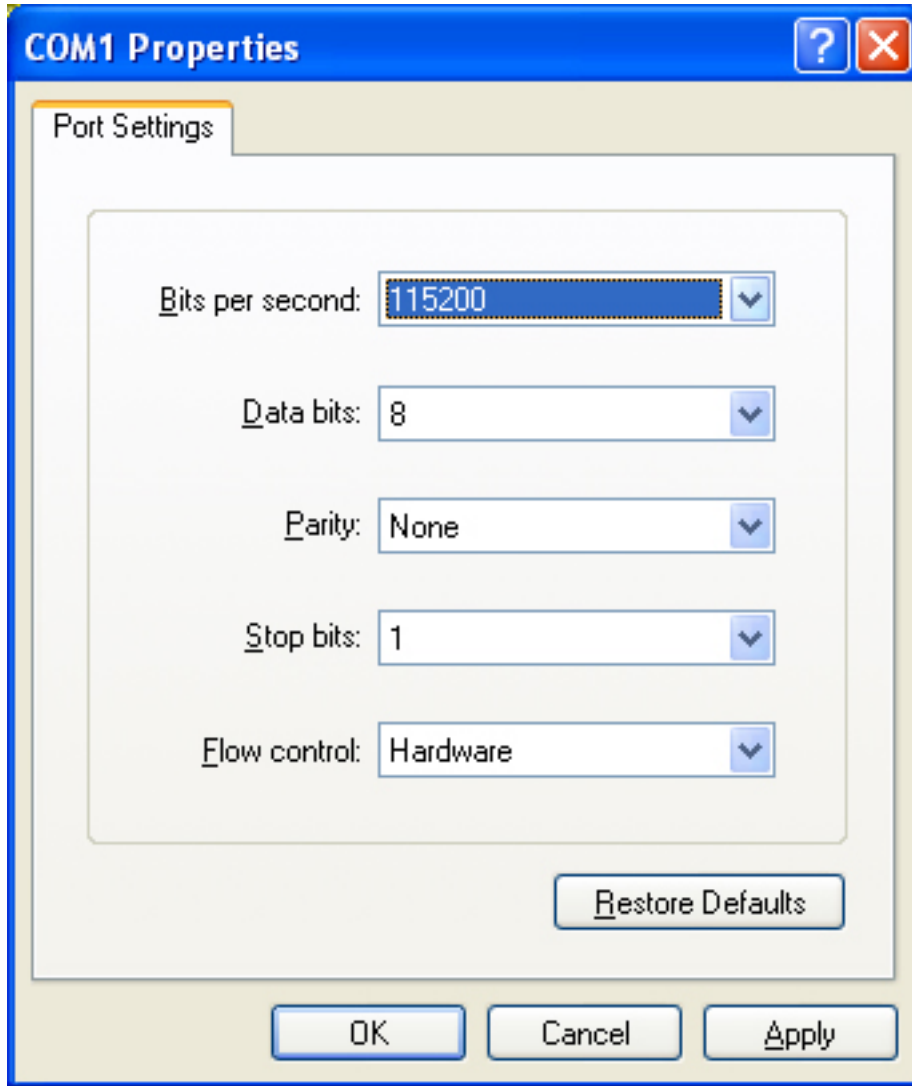


Figure 3. Set Communication Port Settings

The default serial port setup for KC Wirefree adapters is 115K bps, 1 stop bit, no party, 8 data bits, and HW flow control enabled.

4 Establish a Serial Connection

After launching HyperTerminal, a window representing your connection appears. Click on the connect icon to establish a connection from the computer's communication port to the evaluation/development board.

After a connection is established from the computer's communication port to the evaluation/development board, you will see the responses, "AT-ZV -CommandMode-", followed by "AT-ZV BDAAddress [bd address of local device]" appear in the text body of the window. Also, on the bottom status bar of the window, the updated status is displayed. See Figure 4.

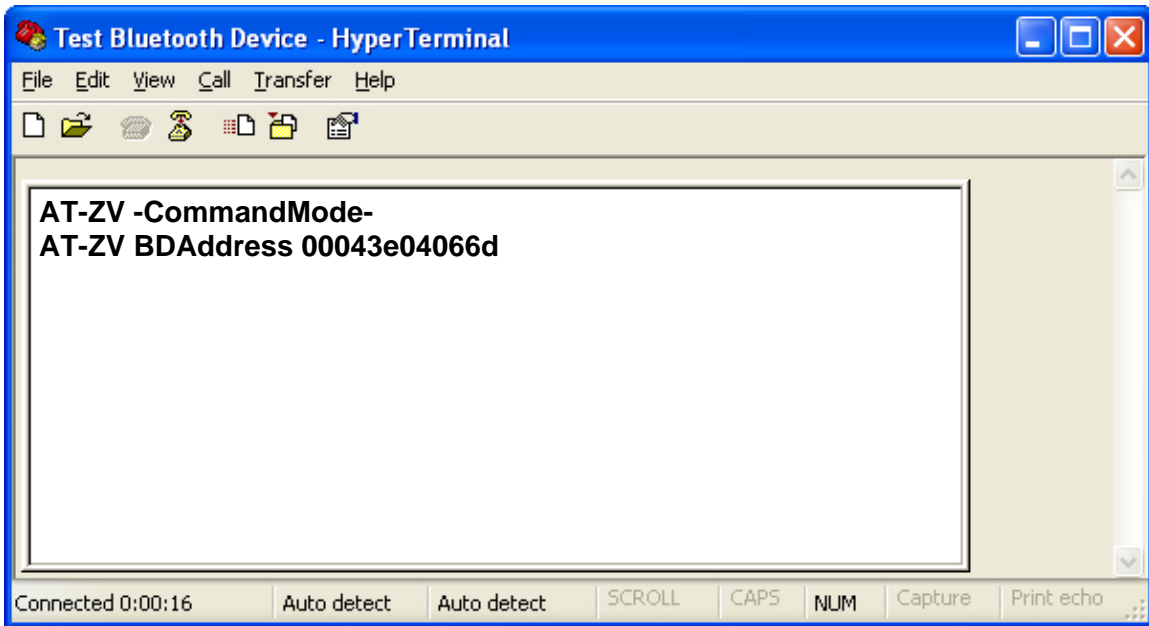


Figure 4. Updated Status Depicts Connection to Evaluation/Development Boards

5 Write Scripts for HyperTerminal

In order to facilitate using HyperTerminal with KC Bluetooth adaptors, the use of pre-written test scripts is recommended. Since the firmware is not able to accept typed command corrections, any errors will require the command to be completely re-entered. To solve this inconvenience, follow the procedure detailed in this section to create HyperTerminal text scripts for AT type commands:

- Right click on the **Desktop**. A drop down menu box appears.
- Select **New** then select **Text Document**.
- Name the document "Connect_Command.txt" or choose an acceptable name.
- Open the document by double clicking on it. Type the following command with the desired remote BD address in place of

[BD_Addr]:

```
AT+ZV SPPConnect [BD_Addr]
```

- Press **Return/Enter** at the end of the above text. If you forget to include the Return/Enter, the script will not work.

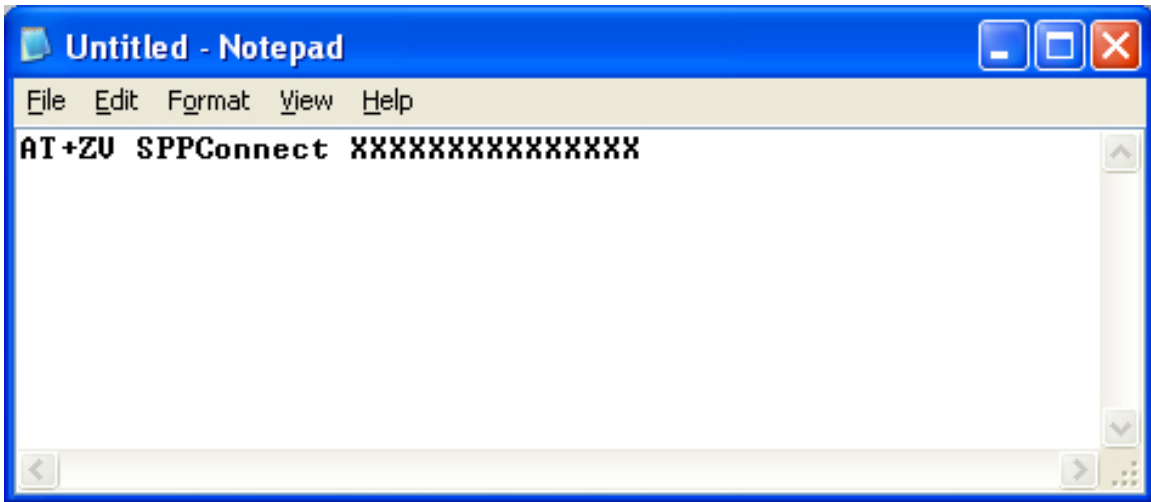


Figure 5. SPP Connect Command with Return Character

- Save the script onto the PC. It will probably be used often.
- Creating scripts for the Change Baud Rate commands is also recommended:

```
AT+ZV ChangeBaud 115200
```

```
AT+ZV ChangeBaud 230400
```

```
AT+ZV ChangeBaud 460800
```

```
AT+ZV ChangeBaud 921600
```

6 Invoke the Connect Command

This section describes how to use the SPP Connect command and demonstrates a file transfer over a Bluetooth link.

Follow the steps below to invoke a command and perform a file transfer:

- On the sending computer's HyperTerminal main menu, click on **Transfer** and then select **Send Text File**. See Figure 6.
- After the browse window appears, locate the previously saved Connect Command script you wish to use. Figure 9.
- Click on **Open**. A connection, via Bluetooth link, will be established to the receiving terminal. See Figure 9.
- On the transmitting terminal, select the **Transfer** menu and then select **Send File**. A Send File window appears. See Figure 8.
- Click on **Browse** to select a file to send or enter the path name of the file to send.
- Choose **Zmodem** from the list of protocols. Click on **Send**. See Figure 8.

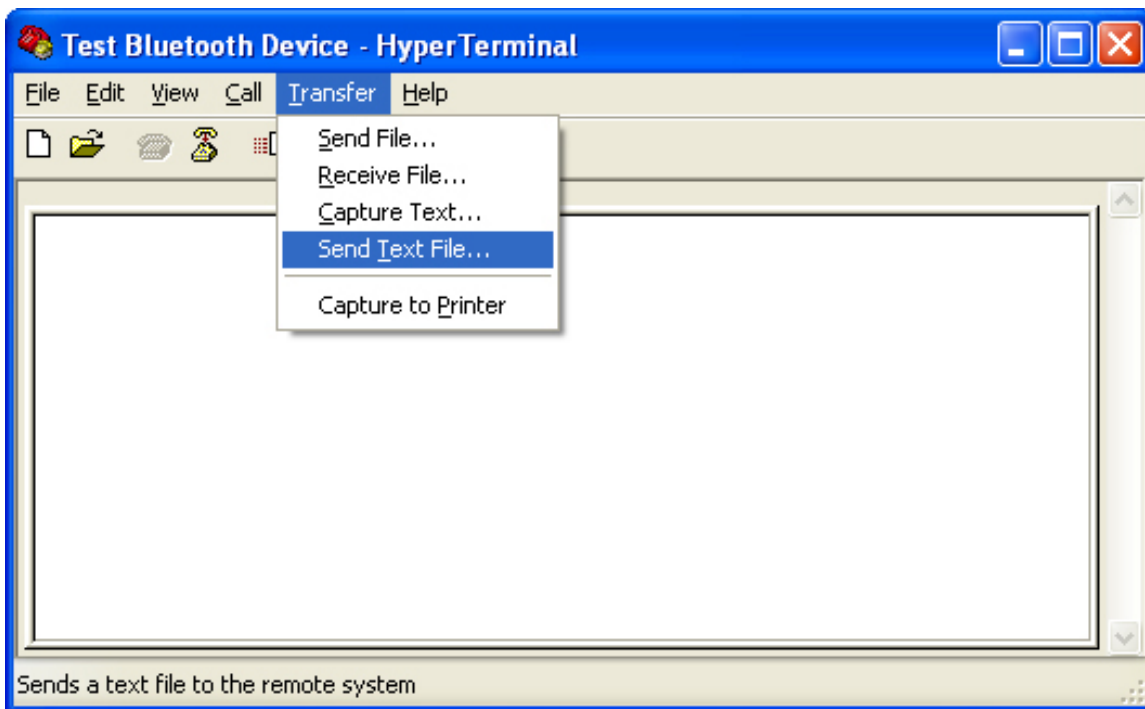


Figure 6. Transfer > Send Text File

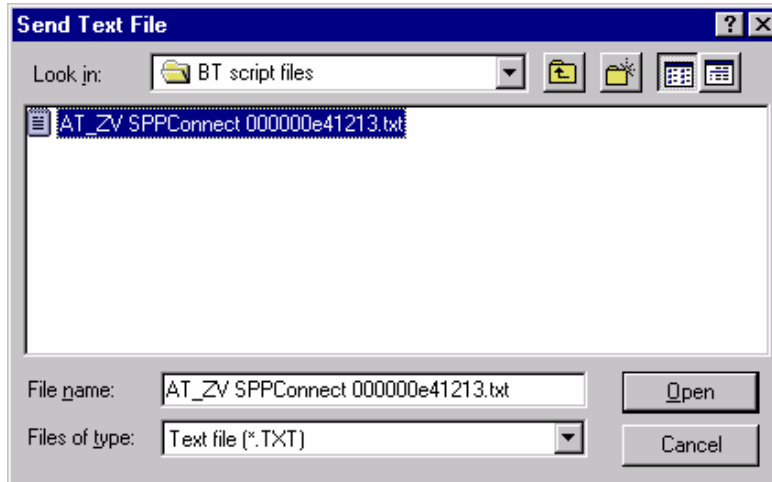


Figure 7. Example of a Script

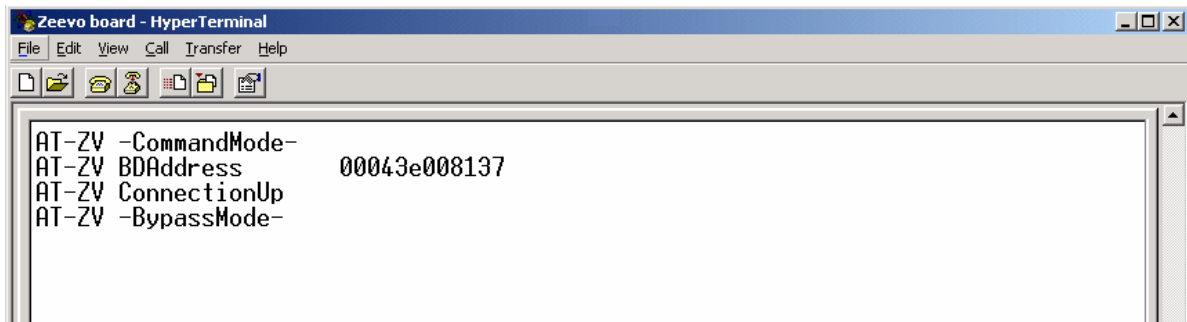


Figure 8. The Connect Event Appears

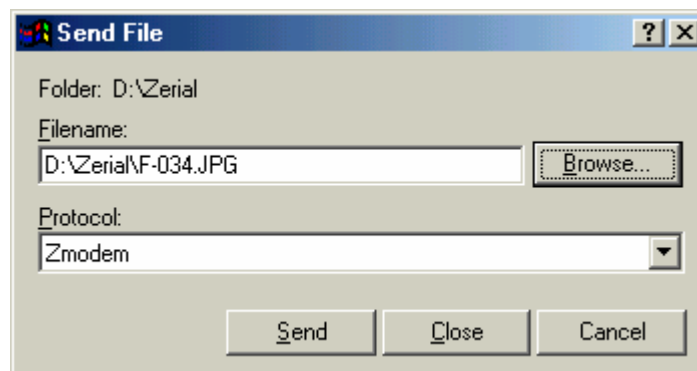


Figure 9. Send File Window

- On the receiving terminal, select the **Transfer** menu, and then select **Receive File**. A dialogue window appears.
- Click on the **Browse** button and choose the directory location of the file transfer.
- Choose **Zmodem** from the list of protocols. Click on **Receive**. See the figure below.

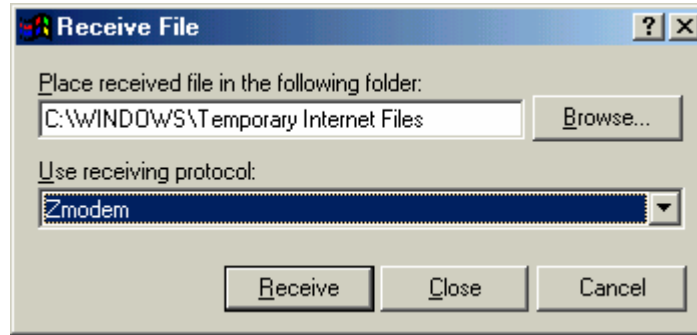


Figure 10. Receive File Dialogue Window

A status window will appear on each terminal. See the two figures below.

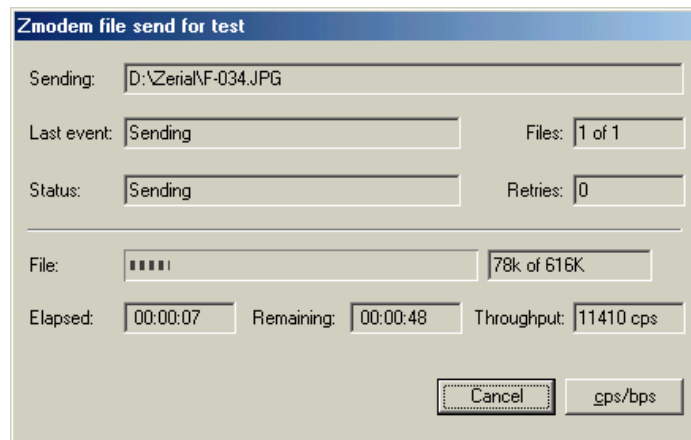


Figure 11. Dialogue Window on Sending Computer

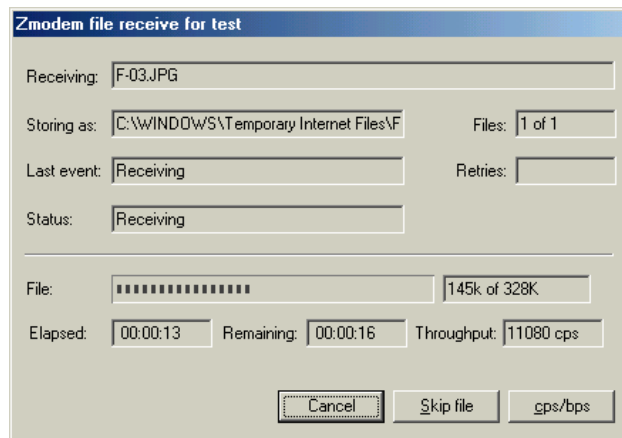


Figure 12. Dialogue Window on Receiving Computer

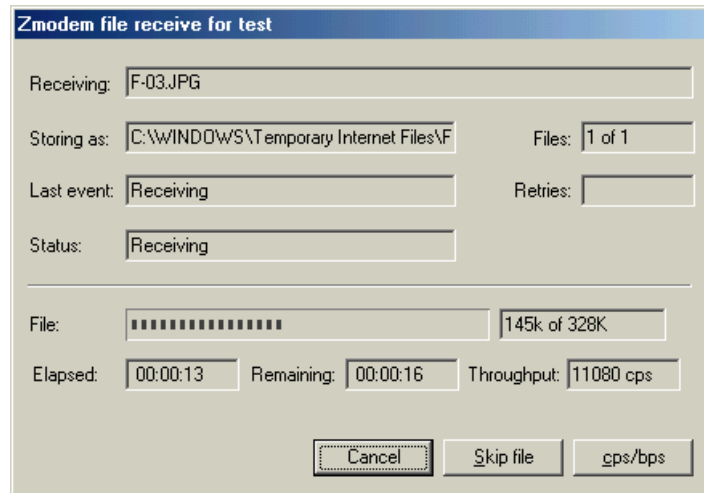


Figure 13. Dialogue Window on Receiving Computer

7 Changing the Baud Rate

Although the adaptors initially have a default baud rate of 115200 bps, multiple baud rates are supported. To change the baud rate for the current session, use the following command:

```
AT+ZV ChangeBaud [new baud rate]
```



Figure 14. Enter the Connect Command

Hit **Return/Enter**.

It is not necessary to reset. If the adaptor is reset, the baud rate and other session configurations will be reset to default.

To permanently change the default baud rate, use the following command:

```
AT+ZV ChangeDefaultBaud [new baud rate]
```

In this case, the new default baud rate will be applied after every reset, but not for the current session.

After the baud rate has been changed, the terminal's baud rate must also be changed to match.

- On HyperTerminal's main menu, select **File** and then select **New Connection**.
- A HyperTerminal window appears with a dialogue box. Enter a name (e.g., **test**) and click on **OK**.
- The Connect To dialogue box appears. Choose the appropriate communication port and click on **OK**.
- The Com Port dialogue box appears. Choose the new baud rate for each terminal and click on **OK**.

7.1 High Speed Serial Cards

In order to increase the UART speed of the PC to values above 115K bps, it is often necessary to use a third-party high speed serial card.

A company called Axxon has a 2-port adapter called the "Soft I/O" Axxon's contact information is <http://www.softio.com/>.

8 Streaming Serial Mode

The default UART setting for hardware flow control, CTS/RTS, is enabled. If this setting is not desired, a feature called streaming serial mode may be enable using the Dip Switch block on the back of the KC serial adaptor.

Streaming serial mode activates the following changes:

- The CTS/RTS flow control lines are ignored by the UART
- Data may be discarded when the Bluetooth link is unable to transmit due to poor RF conditions such as out of range.
- The maximum baud rate is limited to 115K bps.

To Enable Streaming Serial mode: place dip switch 1 in the ON position and reset the power to the device.

To Disable Streaming Serial mode: place dip switch 1 in the OFF position and reset the power to the device.

Note: Switches 2 to 4 in the dip switch block are not used.

9 Antenna Performance

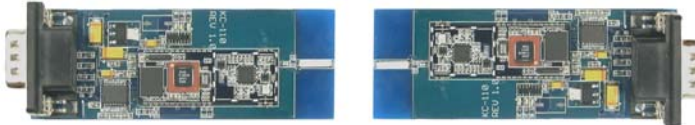
The KC Serial Adapters include a 2.4 GHz chip antenna. This antenna is a high-performance device and must be aligned properly for best performance. See the below diagrams for proper usage:

9.1 Best Range - Correct



Antennas aligned in parallel or vertically (XZ axis)

9.2 Poor Range - Wrong



Antennas “pointing” at each other