Application Note
Demonstrating the Serial Port Profile (SPP) Between BlueConnect and BTW

2002/5/29

1   Introduction

As a technology leader in the wireless networking market, WIDCOMM's vision is to enable consumers to easily, conveniently and securely access information and services from their Bluetooth devices anytime and anywhere – from homes, offices and public places.

- BTW™ is a set of software drivers and utilities that seamlessly integrate Bluetooth technology into your desktop or laptop computer.
- BlueConnect™ is a Bluetooth Springboard™-compatible radio module for the Handspring™ Visor™.

This document describes the procedure for demonstrating the use of the Serial Port Profile (SPP) to chat between a BlueConnect module on a Handspring Visor and a Bluetooth-enabled USB dongle on a Microsoft Windows laptop or desktop computer.   This document was tested using the following configuration:

- A desktop or laptop computer with an available USB interface and running the Microsoft Windows 2000 operating system.
- BTW version 1.2.1.14 or later.
- A Psion USB dongle running firmware version 114.
- A standard version of the Handspring Visor (running Palm OS 3.1) with a BlueConnect card running the WIDCOMM version 3.0 software.   The procedure is slightly different under the Palm OS version 3.5.
- A terminal emulator under Windows 2000.   Hyperterminal will work although it is not recommended.   This example utilizes an enhanced version of Hyperterminal which is available for download from the Web.

NOTE: The procedure on a computer running other versions of the Microsoft Windows operating system may be slightly different.

2   A Quick Overview of the Procedure

The basic procedure for running this demonstration is not complicated.   On the Visor side, WidChat acts like a simple terminal emulator that connects to another computer through a Serial Port Profile (SPP) connection.   Instead of a physical serial cable connecting the two computers, a Bluetooth wireless link is used to simulate a serial connection.   On the BTW/Windows side, you can use any terminal emulator which runs under Windows and supports the Windows Virtual COMM (VCOMM) port standard.   Here is a quick overview of the process:

1)   Install BTW 1.2 and a Psion dongle on your Windows Computer (98SE, 2000, Me, or XP version)
2)   Install Hyperterminal Private Edition or some other compatible terminal emulator on your BTW system
3)   Insert the BlueConnect 3.0 card into your Visor
4)   Use the Visor to inquire for the BTW device
5)   Use the Visor to discover the "Bluetooth Serial Port" service on the BTW system
6)   Use the Visor to establish a connection to the "Bluetooth Serial Port" service on the BTW system.   You do this by starting WidChat on the Visor and using it to initiate a connection.
7)   Using the BTW dialogs, determine what Virtual COMM (VCOMM) port has been assigned to the BTW side of the SPP link

8) Configure your Windows terminal emulator to use the VCOMM port that you uncovered in step 7.   Configure the terminal emulator to echo local input to the screen (Local Echo ON).

9) Start the terminal emulator on the BTW system.

10) At this point you may chat freely back and forth.

11) When you are finished, terminate the applications (WidChat and your Windows terminal emulator).

12) Terminate the SPP link by shutting down your BlueConnect card on the Visor.

3   The Differences between the Old and New WidChat

WidChat has changed somewhat between the BlueConnect 2.2G and 3.0 releases.   Under 2.2G, you would simply discover the SPP service on a remote server and run WidChat in order to establish a connection.   WidChat would automatically attempt to connect to the SPP service on the remote device.   It was limited to only using a service which advertised itself as a legacy serial port profile.   Since WidChat had no user options whatsoever, there was no possibility   of confusion.

Since then, WidChat has been enhanced.   The new WidChat will allow you to connect to a custom RFCOMM service that was created specifically to support the WidChat application. This allows WidChat to communicate with another WidChat that is running on a different Visor.   To support the new functionality, there are now various menu options on WidChat. Some of these options can be confusing to people who are used to the old version of WidChat. For best results, we recommend that you exactly follow the instructions outlined in this document.

4   Setup

4.1   BTW SETUP

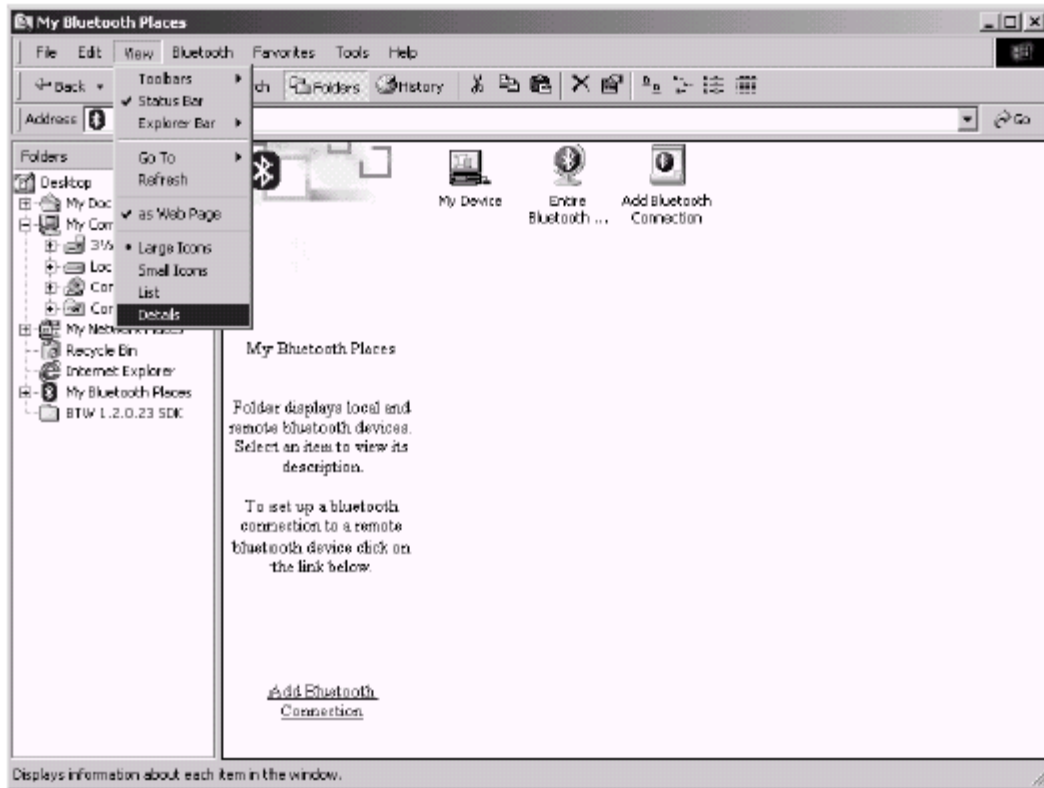### 4.1.1   Connecting the USB Dongle to your Desktop or Laptop Computer

Installing the USB Bluetooth Adapter is quick and painless. Connect the USB cable to the matching USB connector on your PC, laptop computer, or USB hub.

4.1.2   Installing the BTW Software

The BTW software is installed from a CDROM using an InstallShield executable.   For detailed instruction on how to install the software, see the   *BTW Installation and Uninstallation Instructions*.   This document will be supplied with your BTW CD and has the file name *readme.pdf*.

4.1.3   Set Explorer to View Details

On your Windows PC, start the Windows Explorer and click on the *My Bluetooth Places* entry in the folder view.   For additional status information, use the *View   Details* option as shown below.

My Bluetooth Places

File   Edit   View   Bluetooth   Favorites   Tools   Help

Back   Toolbars   ►   ch   Folders   History   ✂ 🗐 📋 ✕ 🗗 📇 📑 📰
            ✔ Status Bar
Address 🔵   Explorer Bar   ►   ▼ 𝒫Go

            Go To   ►
Folders   Refresh
Desktop   🔵   🖥   🜨   🔵
My Doc   ✔ as Web Page   My Device   Entire   Add Bluetooth
My Com   Bluetooth ... Connection
  3½   • Large Icons
  Loc   Small Icons
  Cor   List
  Cor   Details
My Net
Recycle Bin   My Bluetooth Places
Internet Explorer
My Bluetooth Places   Folder displays local and
BTW 1.2.0.23 SDK   remote bluetooth devices.
                              Select an item to view its
                                    description.

                               To set up a bluetooth
                              connection to a remote
                              bluetooth device click on
                                   the link below.

                                  Add Bluetooth
                                   Connection

Displays information about each item in the window.

NOTE: **It is important later in the process to use the *View***
** *Details* option.   This setting will**
allow you to view the details of your SPP connection in the *My Device* display.

4.1.4   Configuring BTW to Act as an SPP Server

No action is necessary on your part.   A service entitled "Bluetooth Serial Port" will be automatically started on your Windows desktop or laptop computer.   This service will handle all incoming requests which attempt to utilize the Serial Port Profile.

4.2   BLUECONNECT SETUP

4.2.1   Power Considerations and Battery Drain

Whenever the Bluetooth Stack is running, the BlueConnect card remains fully powered up and operational.   Even when the Handspring Visor auto-off timer expires and the screen blanks, power is still applied to the BlueConnect card.   If the screen blank button is pushed, power is still applied to the BlueConnect card.   This can cause the battery to drain at a high rate.   For this

reason, you should always power down the card when the Bluetooth features are no longer being used.   This can be done by using the "Bluetooth" pull-down selector and choosing "Disabled" at the main Bluetooth preferences screen.

Screen Blanking and Backlight Control
NOTE: Referred to as the "power button" in some Handspring documentation
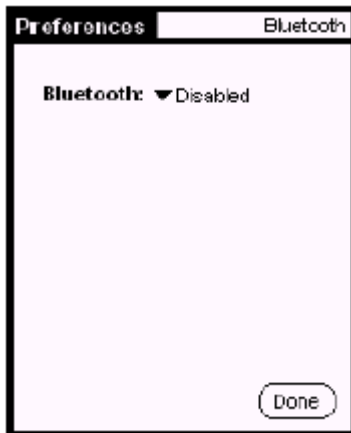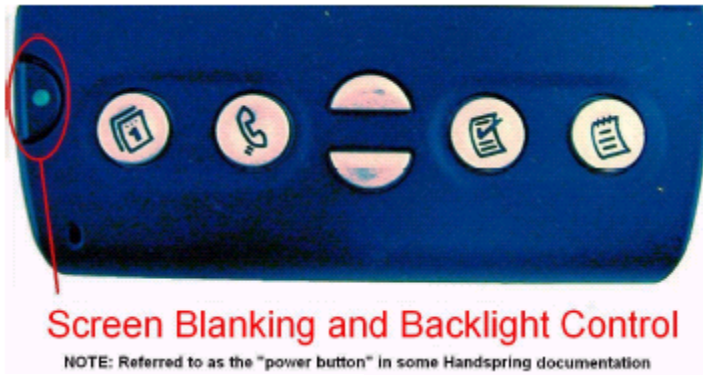
The module is now disabled (powered down)

### 4.2.2 Configuring BlueConnect as an SPP Client

SPP connectivity requires a remote device with a SPP server running the Bluetooth Serial Port Profile.   The name of the SPP service running under BTW 1.2   is "Bluetooth Serial Port".

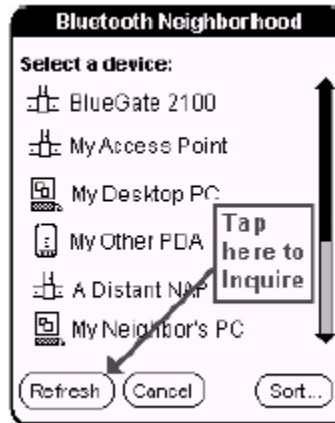1.   Insert the BlueConnect module into your Visor.   You should see the BlueConnect 3.0 welcome
screen:

2.   Tap the   icon.

3.   Tap the   icon.   Make sure that Bluetooth is enabled.
4.   The devices displayed are drawn from the discovery database and may not be up-to-date.

Follow the procedure shown below to do a fresh device inquiry.
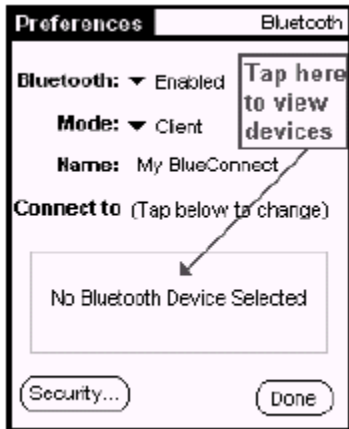
Step 1: Tap in Device Selection Area   Step 2: Perform a Device Inquiry

5.   Once device inquiry has completed, verify that the SPP server shows up in the device list, then
tap on the device icon in order to perform a service discovery.   Tap the *Bluetooth Serial Port*
service in order to select it.
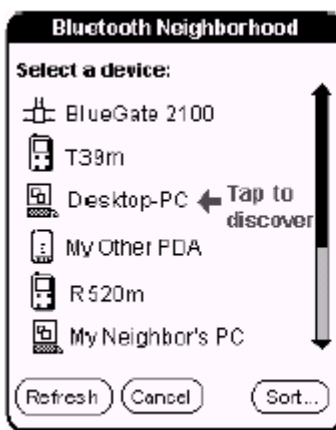
Tap to Discover Services   Tap to Select Service   Confirm Service Selection

NOTE: The SPP service name is configurable and may vary from device to device.
6.   Tap on "Done" to confirm your selection.

7.   Return to the application launch screen by tapping the "Home" silkscreen icon:

5   Run WidChat on the Visor/BlueConnect
WidChat is a sample chat application that was designed to demonstrate the ability of two
BlueConnect devices to communicate.   This application is permanently burned into the ROM of
your BlueConnect card.   In order to run the WidChat side of this example, you will need the
following:
• A Handspring Visor
• A BlueConnect 3.0 card

5.1   LAUNCH WIDCHAT

Tap •WidChat   to launch the WidChat application on the client Visor.

Tap the button.   This should activate a menu bar across the top of your Visor screen. Tap on "Connection" followed by "Join Session."


WidChat will respond by confirming the device that you wish to connect to.   Tap on *Connect*. There will be a delay of a few seconds while the unit attempts to connect with the service that is running on your BTW system.   A tone will sound to announce that the connection has been established.

NOTE: This screen and the accompanying Bluetooth connection will never time out.   It will

persist for as long as it takes to bring up a matching terminal emulator on your Windows system.

6   Install and Run HyperTerminal Private Edition

6.1   DISCOVERING THE VCOMM PORT

On the desktop or laptop computer that you are using as a Bluetooth server, click on the *Local Devices* icon in *My Bluetooth Places*.   You will see the following display if you have no active Bluetooth connections:
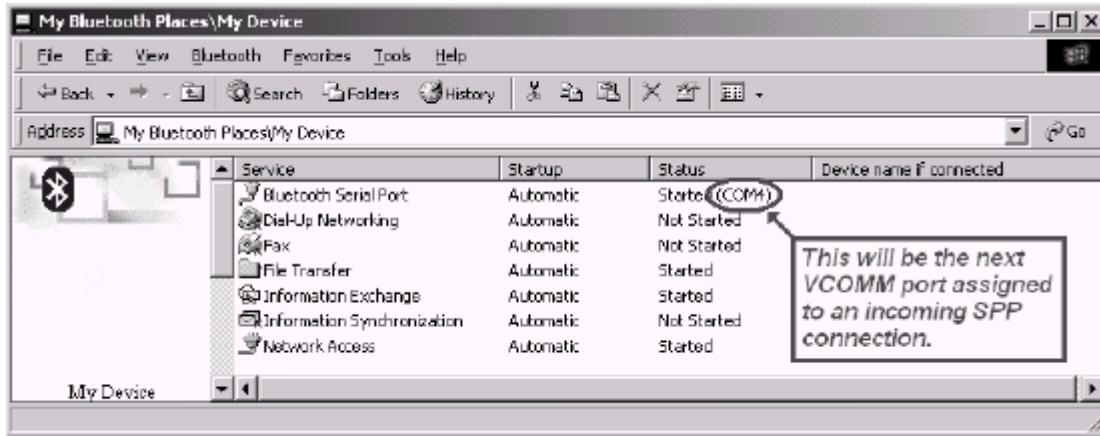
The local services with no connection active.

Examine the *Status* column under the *Bluetooth Serial Port* service.   Notice that the service is started and that COM4 will be the VCOMM port that will be assigned to an incoming SPP connection.

Once you have connected to the *Bluetooth Serial Port* service using BlueConnect, this display will change to the following:
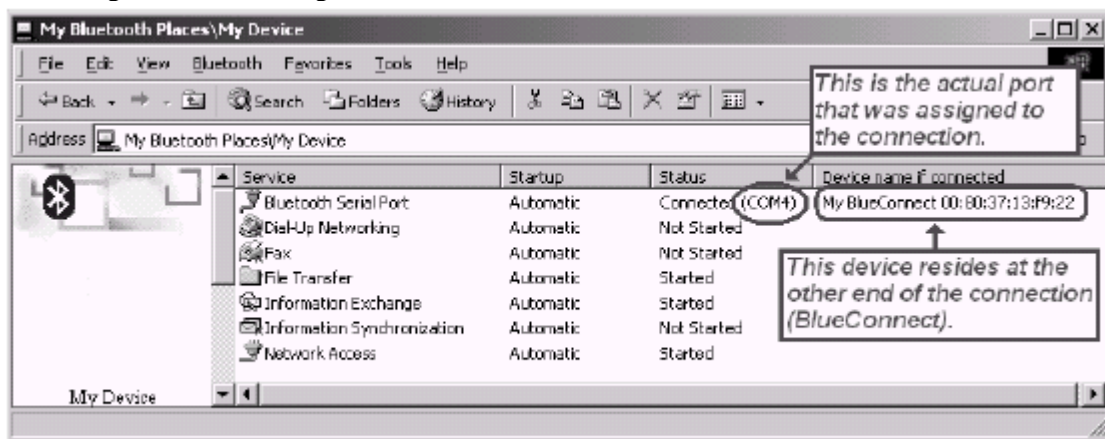

The local services when a *Bluetooth Serial Port* connection is in place

Once again, examine the *Status* column under the *Bluetooth Serial Port* service.   Notice that the service is started and the COM4 is assigned to the Bluetooth connection.   Also notice that the friendly name and Bluetooth Device Address of the BTW unit is displayed for this connection. From the above example, you can see that COM4 is the appropriate port to use on the BTW side of the connection.   You must set your terminal emulator to this com port in order to communicate with WidChat on your BlueConnect.

6.2   OBTAINING AND INSTALLING HYPERTERMINAL PRIVATE EDITION

Although you can use the Hyperterminal application that is supplied along with your Windows operating system to perform this demonstration, it is not recommended.   Hyperterminal does not support a local echo mode.   Text that you type in at the Hyperterminal screen will show up on BlueConnect/Widchat, but will not echo on the Hyperterminal display.

You can obtain a free upgrade of Hyperterminal that will support local echo.   It can be obtained at: http://www.zdnet.com/downloads/stories/info/0,,16536,.html
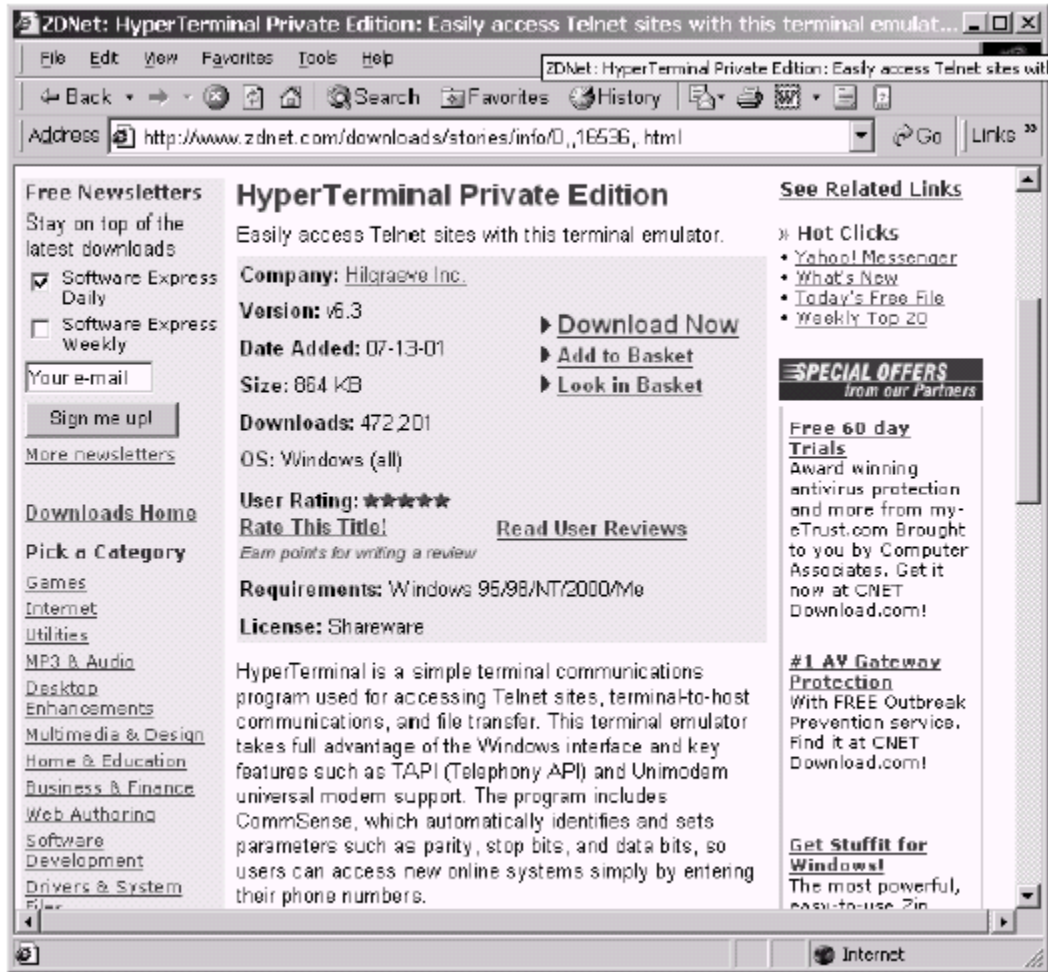
Once you reach this page, download the file called *htpe63.zip*.   Inside the zip file, double-click on *htpe6.exe* in order to install the software.   To run the new version of Hyperterminal, use the following sequence:
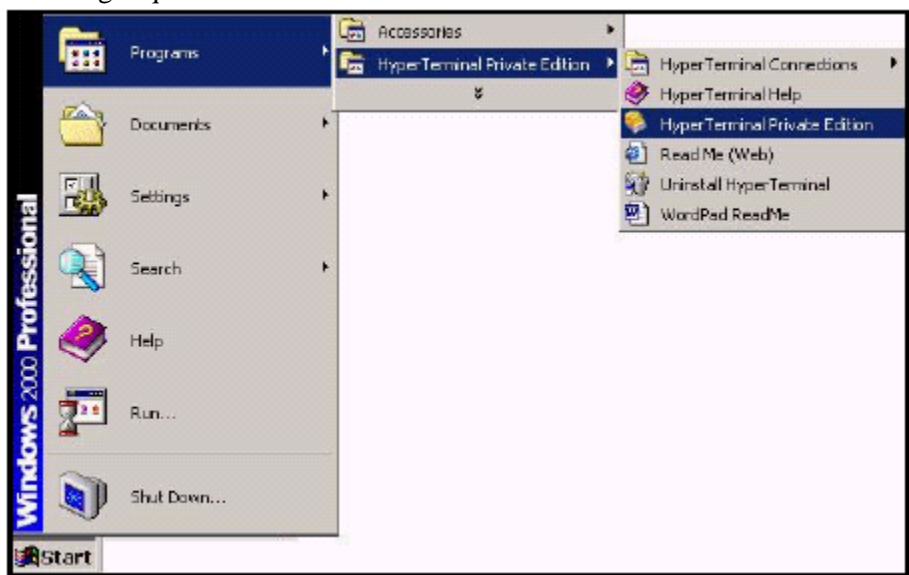
6.3 HYPERTERMINAL SETTINGS

The first time that you run Hyperterminal, you will be prompted to create a new connection. In the following example, we will create a connection called *BlueConnect*. Enter the name and click on *OK* to continue.
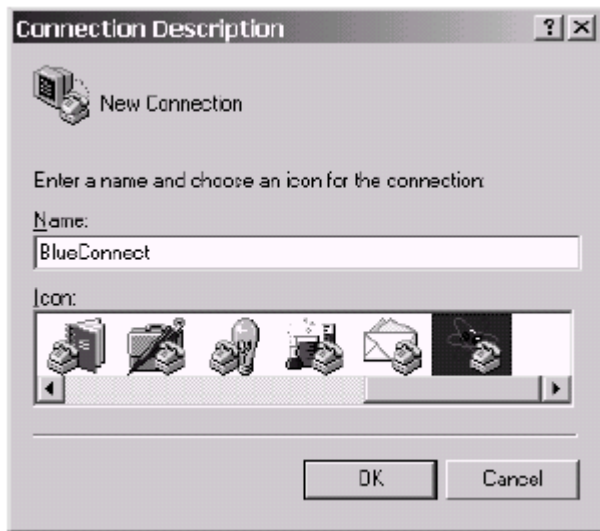
The next dialog will have a header entitled *Connect To*. Set the *Connect using* setting to use the COM port that you discovered in *Section 6.1: 6.1Discovering the VCOMM Port.* Click on *OK* to continue.


The next dialog will have a header entitled "COM[X] Properties". You can set the "Bits per second" to any value. A baud rate of 38400 will work quite well. Set "Flow Control" to *None*. Then click on *OK* to immediately connect to the specified COM port.
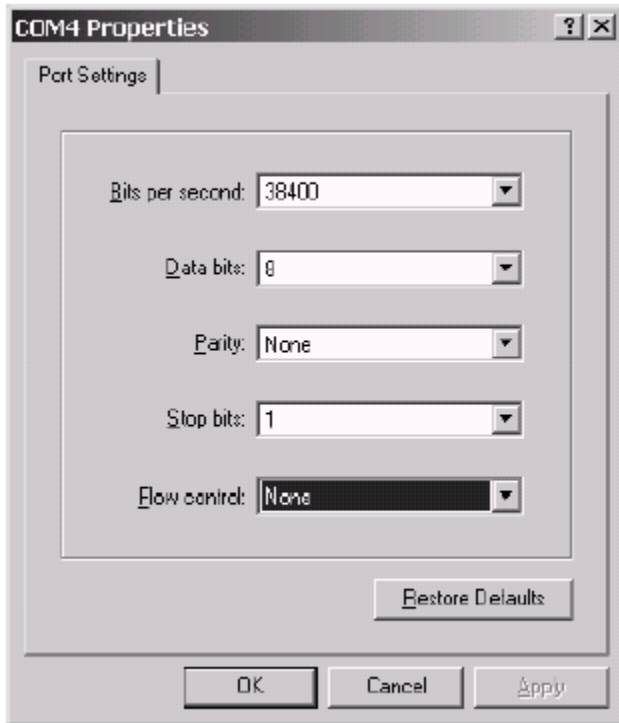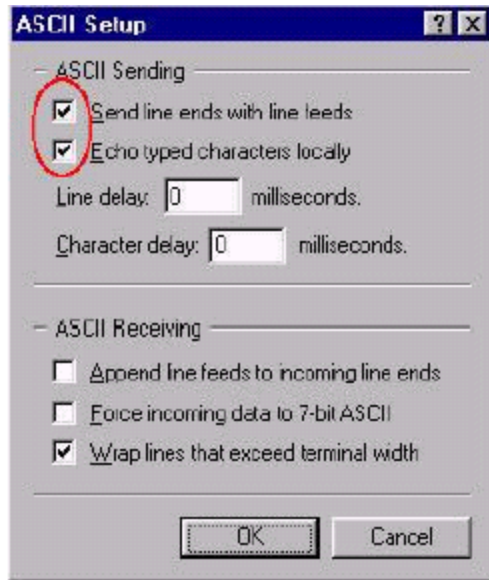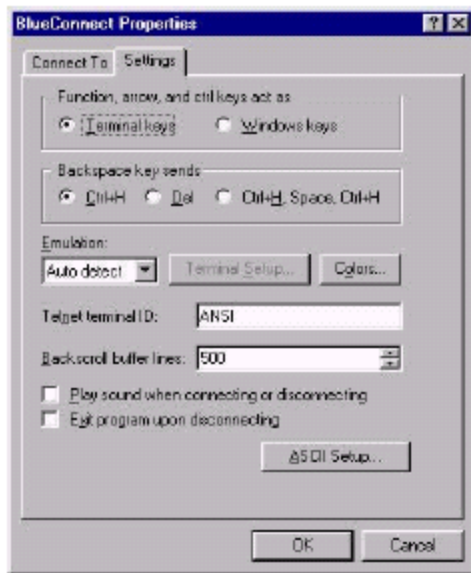
NOTE: The connection is still not properly set up at this point. Continue to finish the configuration.

Use the *File* menu to set the properties of the current session using the method shown below:
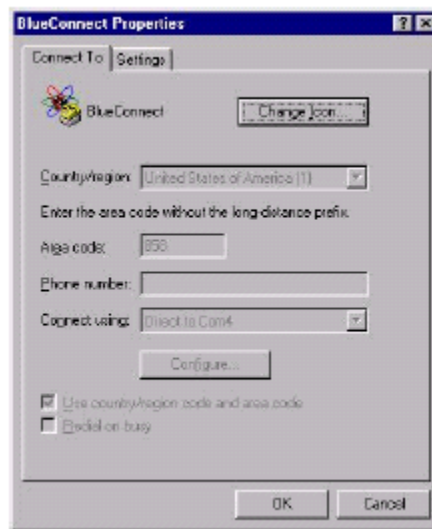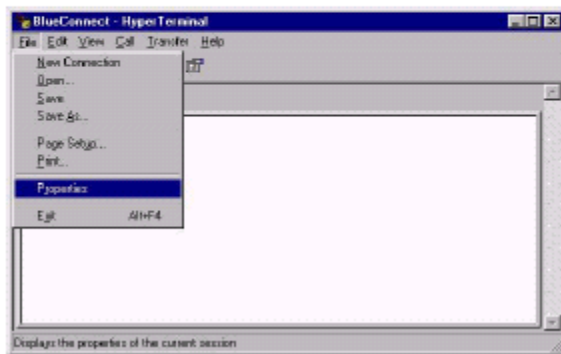
Click on the *Settings* tab followed by the *ASCII Setup...* button. Checkmark the *Send line ends with line feeds* and *Echo types characters locally* boxes as shown below.

Then click on *OK* to register your choices and continue. This concludes the setup of the Hyperterminal session. You can now save this session for later use.

7   Chatting
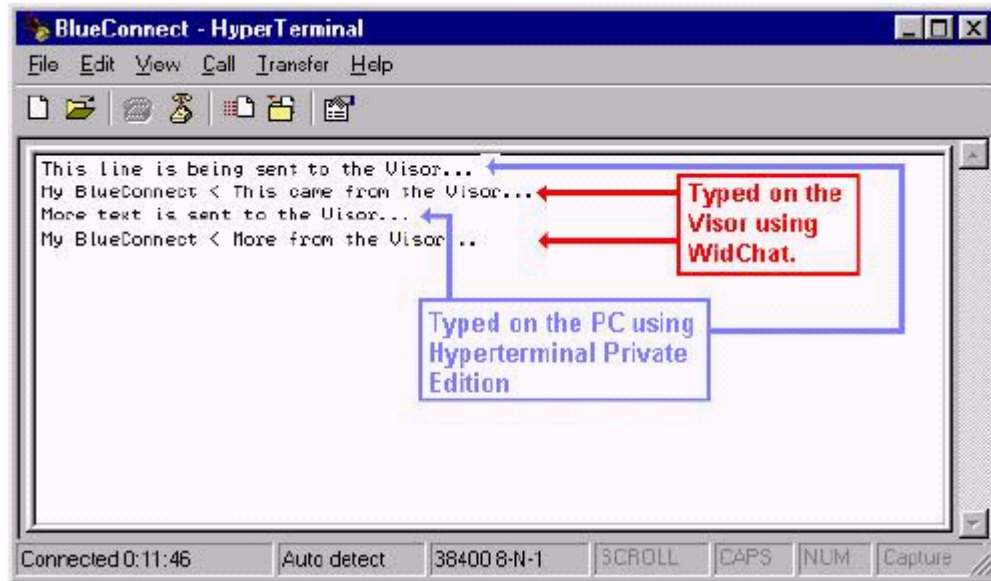
7.1   WIDCHAT TO HYPERTERMINAL

On the Visor, set your WidChat screen name by tapping in the *Screen Name* field and using the Palm OS text entry feature. Tap in the *Chat* field to set the text that you want to send to HyperTerminal. Tap the *Send* key to send your text to the opposing unit.
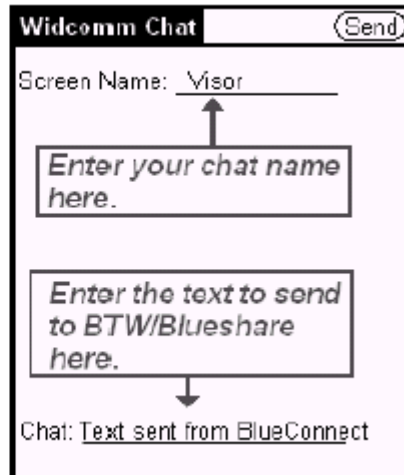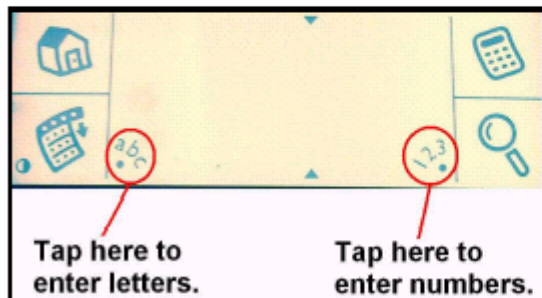
WidChat may be terminated at any time by tapping the icon. The *Bluetooth* connection will persist after the application has ended and must be shut down by tapping the Discover icon and then tapping the *Shutdown* button. If you do not shut down the connection, the BlueConnect card will remain powered up – this may result in excessive drain on the batteries in your Visor.

7.2   HYPERTERMINAL TO WIDCHAT

You are now ready to begin chatting. To send text from HyperTerminal to WidChat, just type it in at the HyperTerminal window. Text that you enter onto the HyperTerminal screen will echo on the WidChat and vice versa.

BlueConnect - HyperTerminal

File Edit View Call Transfer Help

```
This line is being sent to the Visor...
My BlueConnect < This came from the Visor...        Typed on the
More text is sent to the Visor...                    Visor using
My BlueConnect < More from the Visor ..              WidChat.
```

Typed on the PC using
Hyperterminal Private
Edition

Connected 0:11:46   Auto detect   38400 8-N-1   SCROLL   CAPS   NUM   Capture

8   Disconnect the Applications

When you are finished chatting, disconnect both applications as shown below.

8.1   EXIT WIDCHAT

You might think that the best way to terminate your Bluetooth connection is to return to the

application launch screen by tapping the [icon] button.   This is not true.   The SPP connection between the two devices will still be active (although there are no applications on either side to make use of it).   Your BTW system will still be prevented from servicing other connections (since the current version is point-to-point) and your BlueConnect card will remain powered up and will drain your Visor batteries at an accelerated rate.

When you are finished using WidChat, the best way to   terminate the connection is by tapping

the [icon] button and choosing *Disconnect* from the pull-down menu.   You can then return to

the application launch screen by tapping the [icon] button.

8.2   EXIT HYPERTERMINAL

At this point the connection should already be terminated.   Exit HyperTerminal as you would any other Windows application.

8.3   SHUT DOWN THE BLUECONNECT CARD

Your Bluetooth card will still be powered up at this point.   See Section 4.2.1: *Power Considerations and Battery Drain* for information on how to shut down the card and prevent battery drain.

9   For Troubleshooting or Further Information

For additional technical information or troubleshooting advice, see the following WIDCOMM documents:

- *BlueConnect Version 3.0 Release Notes*, WIDCOMM doc # BTP-PROJ-UM-011005-1230.
- *BlueConnect User's Guide*, WIDCOMM doc # BTP-PROJ-UM-010627-1723.
- *BlueConnect Development Kit Quick Start Guide*, WIDCOMM doc # BTP-PROJ-UM-

010725-0623.

- *BTW Installation and Uninstallation Instructions.* These are supplied with your BTW CD as *readme.doc* or *readme.pdf*.
- *BTW Windows 2000 Release Notes*.
- *BTW Configuration and User's Guide*.

If you still cannot succeed using the steps outlined in the document, contact WIDCOMM technical support. The preferred method of doing this is to use the on-line forms for either BTW or BlueConnect. In order to access these forms, you will need the user name and password that was supplied along with your WIDCOMM product. You can access these forms from http://www.widcomm.com/Support/index.asp or send an email to support@widcomm.com

10   A Freeware Alternative to WidChat

A freeware terminal emulator called *Pilot Term* can be used in place of WidChat and is just as effective at demonstrating the SPP profile. You can obtain it at:
http://www.handango.com/PlatformProductDetail.jsp?siteId=1&homePath=HANDANGO&platformId=1&productType=2&productId=549&sectionId=122&catalog=1