Leadtek®
We Make Dreams a Reality

LEADTEK Wireless GPS Receiver
User's Manual

GPS 9537

Leadtek®
We Make Dreams a Reality

Version 1.2

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1. Introduction
1.1. Overview

The Leadtek 9537 Wireless GPS receiver is a Global Position System Receiver with Bluetooth wireless technology. This wireless GPS receiver allows you to receive GPS data on mobile handheld wirelessly. By sending GPS position data over Bluetooth, you can position the receiver for the best possible reception all without wires. The advent of wireless GPS receiver will become the next level of GPS receivers.

The Leadtek Wireless GPS receiver integrates Bluetooth module into GPS device. It shows the high performance, low power consumption, easily portable, rechargeable & removable battery function and wireless data transmission. If you have a Pocket PC or other portable devices enabled with Bluetooth function, for example iPAQ 3870/3970 and SONY Ericsson T68 mobile phone, you can take advantage of your device's Bluetooth capability to wirelessly add GPS positioning technology. When you choose suitable navigation software, you can apply to personal, vehicle tracking, and marine navigation.

If you use this wireless GPS receiver, you will ignore the messy cords and antenna and add the portability of your Pocket PC. In addition, This wireless GPS receiver can change the exhausted battery to full battery like battery of mobile phone.

1.2. Main Features

◆ 12 Channels "All-In-View" Tracking
◆ Position accuracy of 10 meters 2D RMS
◆ Cold/Warm/Hot Start Time: 45/38/8 Seconds
◆ Reacquisition Time: 0.1 seconds
◆ RF connector for external GPS antenna
◆ Support Standard NMEA-0183
◆ Support Trickle Power mode Power Saving
◆ Compatible with Bluetooth devices with Serial Port Profile (SPP)
◆ Superior Sensitivity for Urban Canyon and Foliage Environment
◆ Small, sleek, and lightweight design easily fits in your hand
◆ Two LEDs indicating Bluetooth and GPS activity.
◆ Lithium-ion battery lasting full working day typical use
◆ On/off push button
◆ Dimension: 1.77" x 3.27" x 0.71" (45mm x 83mm x 18mm)

2. Technical Specifications
2.1. Electrical Characteristics
2.1.1 General

Chipset	Sirf Star IIe/LP
Frequency	L1, 1575.42 MHz

C/A code	1.023 MHz chip rate
Channels	12 channel all-in-view tracking
Antenna Type	Built-in Ceramic patch antenna (External antenna optional)

2.1.2 Accuracy

Position	10 meters, 2D RMS
Velocity	0.1 meters/second
Time	1 microsecond synchronized to GPS time

2.1.3 Datum

| Default | WGS-84 |

2.1.4 Acquisition Rate (Open sky, stationary requirement)

Reacquisition	0.1 sec., average
Snap start	2 sec., average
Hot start	8 sec., average
Warm start	38 sec., average
Cold start	45 sec., average

2.1.5 Dynamic Conditions

Altitude	18,000 meters (60,000 feet) max.
Velocity	515 meters/second (1000 knots) max.
Acceleration	4g, max.
Jerk	20 meters/second^3, max.

2.1.6 Power

Operational Power	3.3VDC±10% (from internal Lithium-Ion battery pack)
Input Power	5VDC±10%
Battery Source	Rechargeable and removable 900mAh Lithium-Ion battery with 5V DC input charging circuit.
Battery Charging	Full charge 3 hours
Backup Power	3.3V (internal on board rechargeable backup battery)
Operational Current	The device is enabled by Lithium-Ion battery only.

	GPS position(patch)		GPS not position(patch)	
	BT connect	BT not connect	BT connect	BT not connect

Current consumption	Continuous mode 95~105 mA	Trickle-power mode 15--^{5sec} -->65mA 65--^{1sec}-->15mA	98~108mA	65~75mA
Remark	1. **Battery is not charging state.** 2. The current consumption of active antenna is 21mA			

Typical Operation	Typical use 6- 8 hours	
	GPS and Bluetooth fully active 4.5 - 6 hours	

2.1.7 Main Interface

Connection:	Communication via Bluetooth Serial Port Profile(SPP)
Protocol messages	NMEA-0183 Version 2.20 output protocol
	Default output format: GGA(1sec), GSA(5sec), GSV(5sec), RMC(1sec),VTG(1sec)

2.2. Environmental Characteristics

Humidity range	5% to 95% No condensing
Operating temperature range	-20°C to +60°C (-4°F to 140°F)
Battery discharge	-20°C to +60°C (-4°F to 140°F)
Battery charge	0°C to +40°C (32°F to 104°F)
Short period storage temperature (< 1 month)	-20°C to +50°C (-4°F to 112°F)
Long time storage temperature(>1 month)	-20°C to +35°C (-4°F to 95°F)

2.3. Physical Characteristics

Length	3.27" (83 mm)
Width	1.77" (45mm)
Height	0.71" (18 mm)
Weight	1.82 oz / 52g (without chargeable battery)
	2.73 oz / 78g (with chargeable battery)
Antenna connector	MC plug -Note: The internal antenna will be disables when an external antenna is connected.
Power connector	2.1*5.5*9.5 (The connector look the same as the DC jack of iPAQ 36/38 series PDA.)

2.4. Accessories

Mains Adapter	Mains Adapter for charging. Supports 110V-220V. Multiple

AC plugs provided for US, UK and Europe.

2.5. Regulatory Standards

Operational	BQB
Safety	CE
Electrical	FCC Class B, ICES-003 Class B, E-Mark

3. Applications

Leadtek GPS 9537 Bluetooth GPS receiver is a high performance, low power consumption product. The product applications are as follow.

◆ Vehicle Tracking & Location-based Services

◆ Personal/Portable Navigation

◆ Car Navigation

◆ Marine Navigation

4. Operation
4.1. Hardware Description

DC Power Jack

The Bluetooth GPS has two LED light which each has two colors. One is GPS & Charge status LED, that is named LED 2, and the other is Bluetooth & low power status LED, that is named LED 1. The status table of LED shows as follows:

<State Table of LED>

LED1

BT & Low Power LED	Description	
LED1 Color and Action	Bluetooth Active	Low Power
Blue Flash 🔵	Yes	No
Purple–Red Flash 🟣	Yes	Yes

LED2

GPS & Charge LED	Description	
LED2 Color and Action	Battery Charged	Position Fixed
Dark ⚫	No	No
Green Flash 🟢	No	Yes
Orange 🔴	Yes	No
Orange-Red Flash 🟠	Yes	Yes

<Note1>When the Bluetooth is active and LED 1 lights, it shows Bluetooth RF function. As long as the Bluetooth RF is transmitting the LED light will flash. When Bluetooth doesn't connect the other Bluetooth device, the LED 1 will be flash periodically. Therefore, it means that it broadcasts message to connect the other device with Bluetooth function. If it connects the other Bluetooth device and transmits data, LED 1 will flash very quickly and look like bright.

<Note 2>When the battery is charging, LED 1 will show purple-red color and flash. The reason that Bluetooth is working cause LED 1 purple-red color. If the GPS receiver go to the end of charge, LED 1 will show blue color and flash.

4.2. Turn on/off

Turn on	To turn on the receiver, press the power button on the topside briefly (0.5 seconds). The left LED(LED 2) indicator will flash briefly. The right LED (LED 1) indicator will start flashing.
Turn off	To turn off the receiver, press the power button on the topside for 3 seconds. The LED indicator will flash briefly before switching off the receiver.

4.3. Charging

Low Power	The right LED(LED 1) indicator will turn RED (normally BLUE) when battery power becomes low. Connect the receiver to a powers source to continue operation and to recharge the battery.
Charging	The left LED(LED 2) indicator will turn RED (or ORANGE) when the battery is being charged. When fully charged, the RED indicator will switch off.

4.4. Bluetooth Communication

Waiting to connect	The right LED(LED 1) indicator will flash if there is no communication between the receiver and another device.
Connected	The right LED(LED 1) indicator will turn to continuous lighting when the receiver is connected through the wireless link with another device.

4.5. GPS

Navigating	The left LED(LED 2) will flash GREEN (or ORANGE when charging) if the receiver is able to determine the current position.

4.6. PIN CODE

The **PIN** code means Personal Identification Number for Bluetooth device and it is also called as **Pass Key**. The Bluetooth GPS receiver has the default PIN Code, and is "**0000**". Generally speaking, there are two steps in Bluetooth connecting. One is pairing process, the other is link process. If you need PIN code to pairing and connect, you can use the default pin code, "**0000**" to connect Bluetooth device. Our GPS receiver belongs to non-safety connecting, you can use in general application to finish connecting.

5. What do you get in the box?

- ◆ The Leadtek BT GPS receiver
- ◆ A power supply
- ◆ Three adapters for the power supply
- ◆ A power supply of CLA(**cigarette lighter adapter**)

6. Notices

6.1. Global Positioning System

The Global Positioning System (GPS) is operated and maintained by the Government of the United States of America who are responsible for the availability and the accuracy of the system. Changes in the operation, availability and accuracy may affect the operation of your GPS receiver.

6.2. Aircraft and Hospitals

Use of devices with an antenna is prohibited on most aircraft and in many hospitals. The TomTom Wireless GPS receiver is a receiving and transmitting device with two antenna's and should not be used in these environments.

6.3. Heat Reflective Shields

Modern vehicles may have a heat reflective shield in the windshield, preventing proper GPS signal reception if the receiver is placed under the windshield. To get proper reception:

(a) Use an external antenna, or

(b) Place the receiver in a different position, or

(c) Attach the cradle to the windshield behind the rearview mirror, where many vehicles have an opening in the heat reflective shield, indicated by a black outline.

6.4. Important

The information in this document is subject to change without notice. No liability shall be assumed for technical or editorial errors or omissions contained herein; nor for incidental or consequential damages resulting from the performance or use of this material. This document contains information protected by copyright.

6.5 Battery

This product uses a Lithium-Ion battery. Please charge fully before first use. Operation in low (below 0°C/32°F) or high (over 40°C/110°F) temperatures will affect power supply efficiency and the ability to charge the battery. All Lithium-Ion batteries will experience power supply efficiency deterioration over time even if not used and have a limited life expectancy. Permanently powering the battery will reduce life expectancy. Do not use your product in a humid, wet and/or corrosive environment. Do not put, store or leave your product in or near a heat source or in a high temperature location and do not expose it to temperature over 60°C(140°F). Failure to follow these guidelines may cause the Lithium-Ion battery to become hot, explode or ignite and cause injury and/or damage. **THE LITHIUM-ION BATTERY CONTAINED IN THE PRODUCT MUST BE RECYCLED OR DISPOSED OF PROPERLY. USE ONLY WITH SUPPLIED CHARGER(s) AND SUPPLIED AC ADAPTOR FOR BATTERY CHARGING.**

6.6 FCC

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

--Reorient or relocate the receiving antenna.

--Increase the separation between the equipment and receiver.

--Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

--Consult the dealer or an experienced radio/TV technician for help.

CAUTION

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

FCC RF Radiation Exposure Statement

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Appendix A Software Install

iPAQ Bluetooth Setup with Pocket PC software

<Note 1> These steps apply to the PDA with Bluetooth function, for example iPAQ 3870 or 3970 PDA

<Note2> The operation system of iPAQ Pocket PC is Chinese Window CE version and shows as follow. The English version should be similar with Chinese.
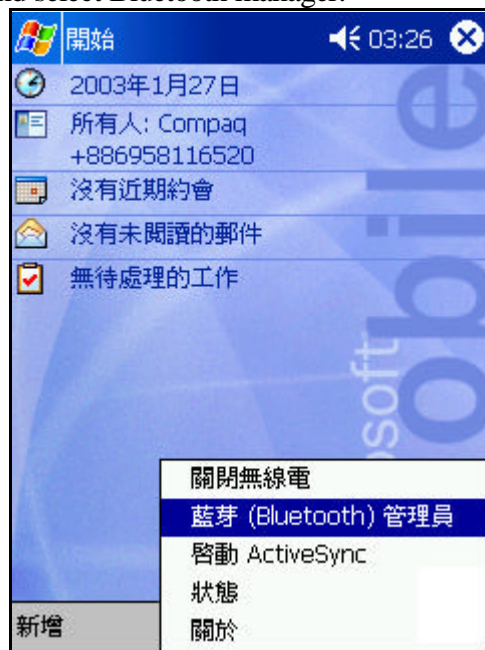
<Illustration> Bluetooth GPS receiver and iPAQ h3970 device

Bluetooth RF Data Transmission

To configure the virtual serial port which the application software use with.

<1> On the client, make sure the Bluetooth device is available.

<2> Click the Bluetooth RF icon and select Bluetooth manager.

<3> Click tool and select setup the device.

<4> Select the serial port panel and you can see the output serial port which should be used by application for specified Bluetooth device.

To establish a Bluetooth serial port connection:

Connections are initiated from the client:

<1> Click search to find available device.
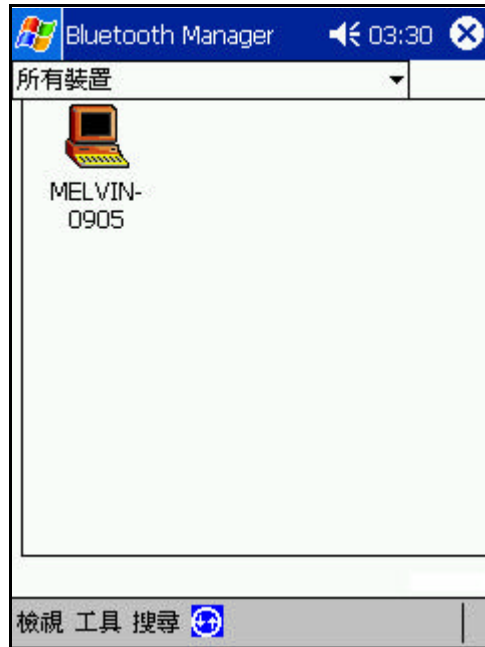
<2> Select the device which you want to establish connection to and then click save button. Another window will popup and you can choose at least one place to save the selected device. After that, click OK.

<3> Click the device you want to establish connection to. The device information will show and at the same time iPAQ Bluetooth will search for available service in the selected device for a short time. After that, if there is

any service found you can click action and select connect to the found service.

Appendix B Installing WinFast Navigator for Pocket PC

Note :

Microsoft ActiveSync has to be installed on your computer when you install WinFast Navigator. The application interface is shown in the figure to the right.
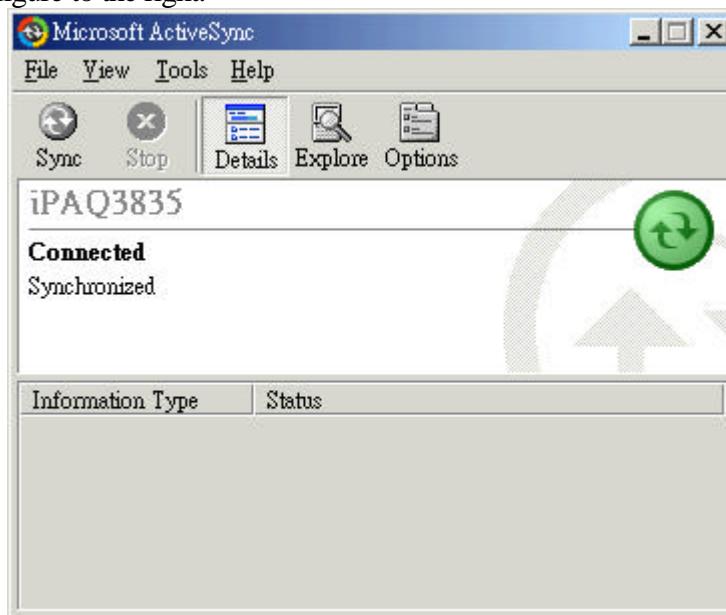
Step 1.

Insert the software CD in your CD-ROM drive. The setup screen appears as shown in the figure to the right. If the setup screen does not appear automatically, run install.exe on the CD. Click WinFast Navigator CE to

- initialize the installation.

Step 2.

The Add/Remove Programs dialog box appears. An information box on top of it tells you the application is Retrieving application data from the mobile device.
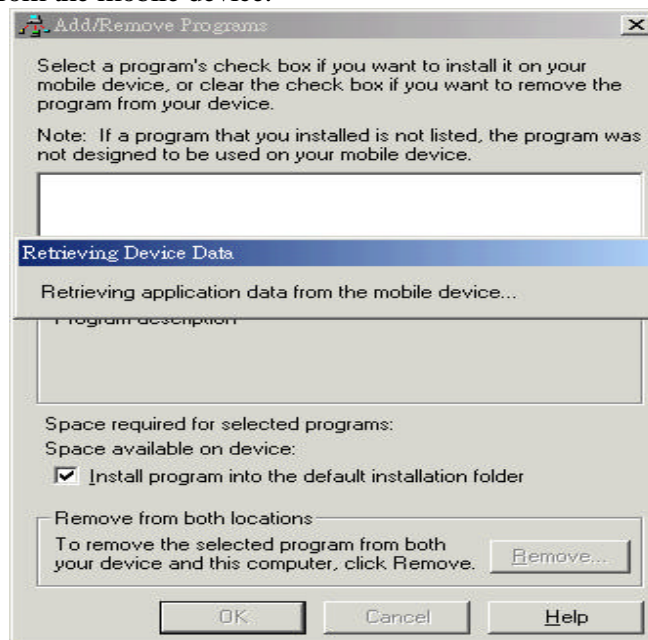
Step 3.

The application will next determine the destination location. A dialog box appears asking if you want to install the application at the default location, which is Main Memory on your PDA/pocket PC. Click Yes to install WinFast Navigator at that location. Click No to change the location using the next dialog box (see the second figure) which contains a selection box with 2 destination options: Main Memory and iPAQ File Store. Select

one as desired and then click OK.
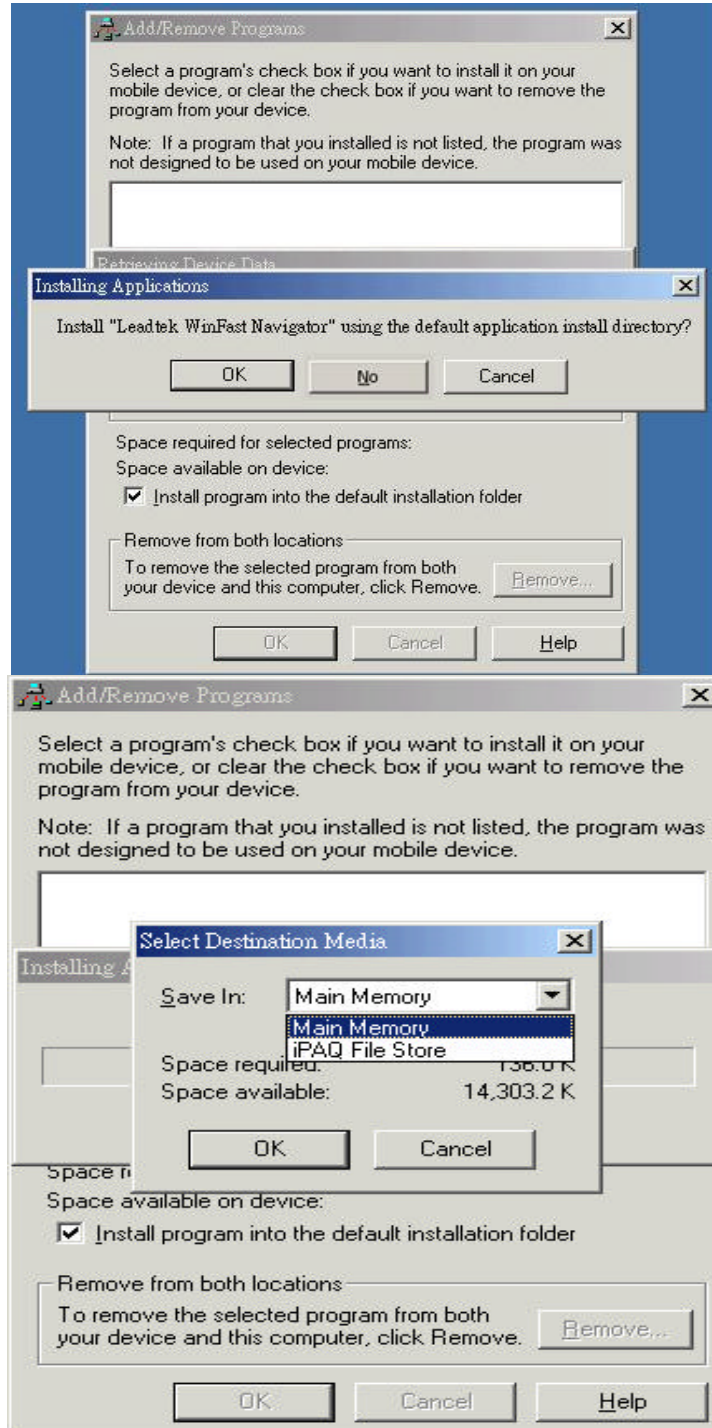
Step 4.

A dialog box appears showing the progress of installation.
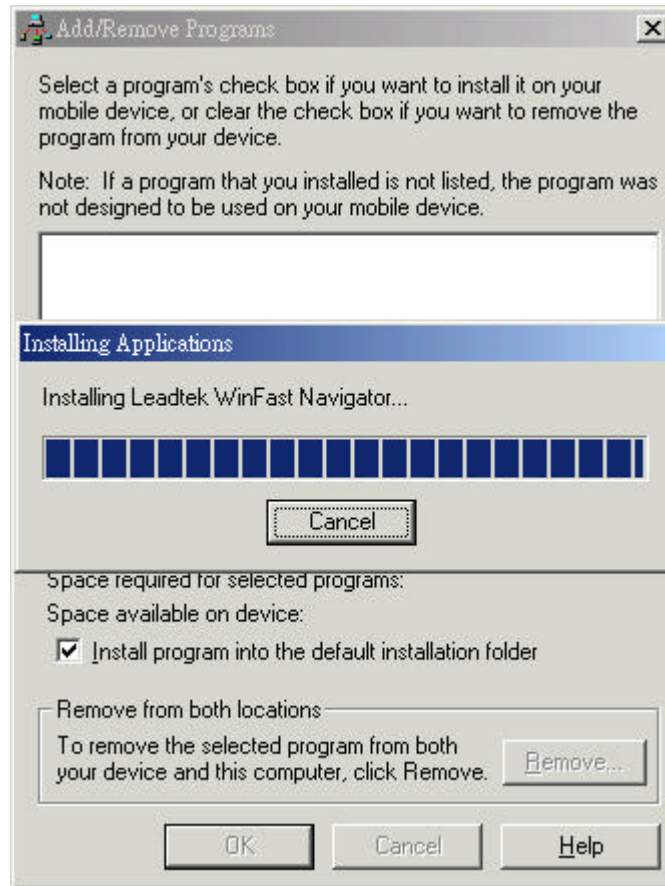
Step 5.

When the installation is completed, a dialog box tells you to check your mobile device screen to see if additional steps are necessary to complete this installation. Click OK.
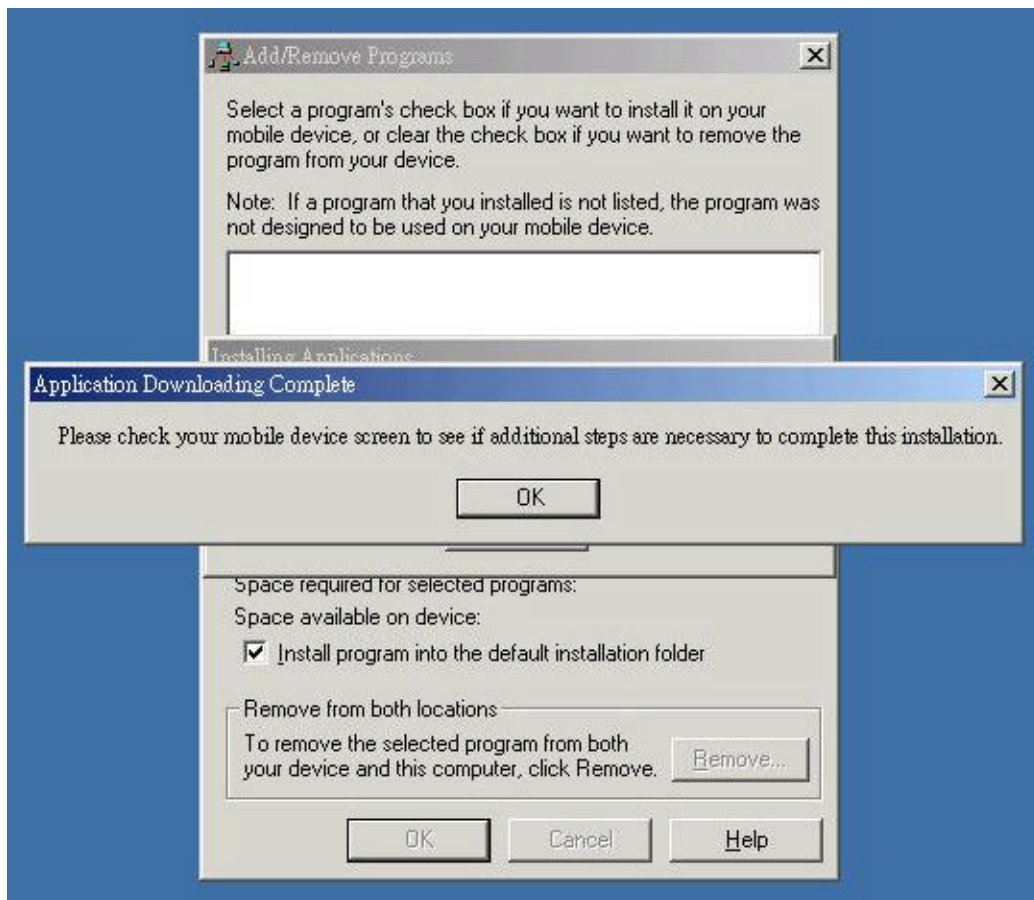
Appendix C Test Reference for Only

PC Bluetooth Setup with Widcomm BTW

<Note>This software does belong to copyright reserved of Widcomm company

and you have to get the authorized software to use it. The follow method is only for reference.

The Bluetooth Serial Port service allows two Bluetooth devices to establish a wireless connection through virtual communications ports and then use that connection as if it were a hardwired serial cable between the devices.

To establish a Bluetooth serial port connection:

Connections are initiated from the client:

<1> On the client, in the Folders pane of My Bluetooth Places, select Entire Bluetooth Neighborhood.
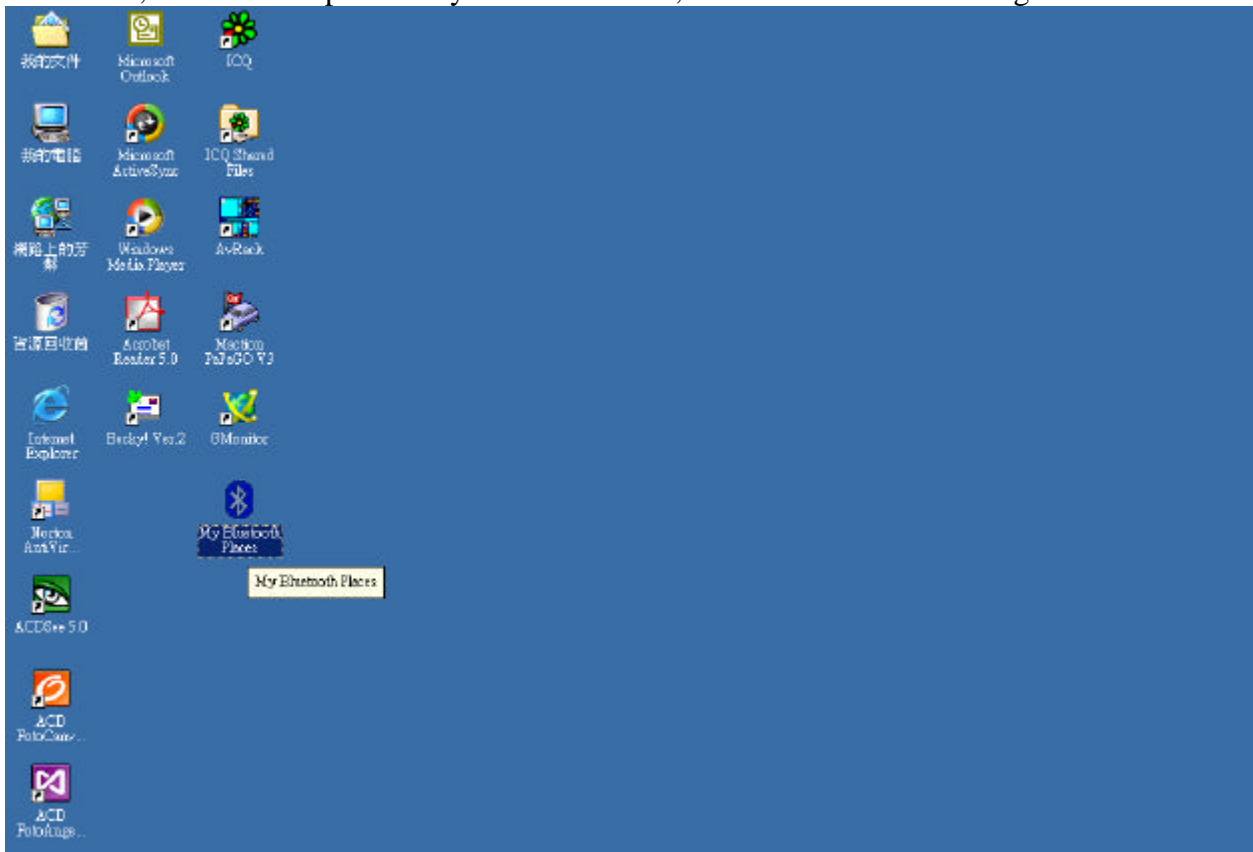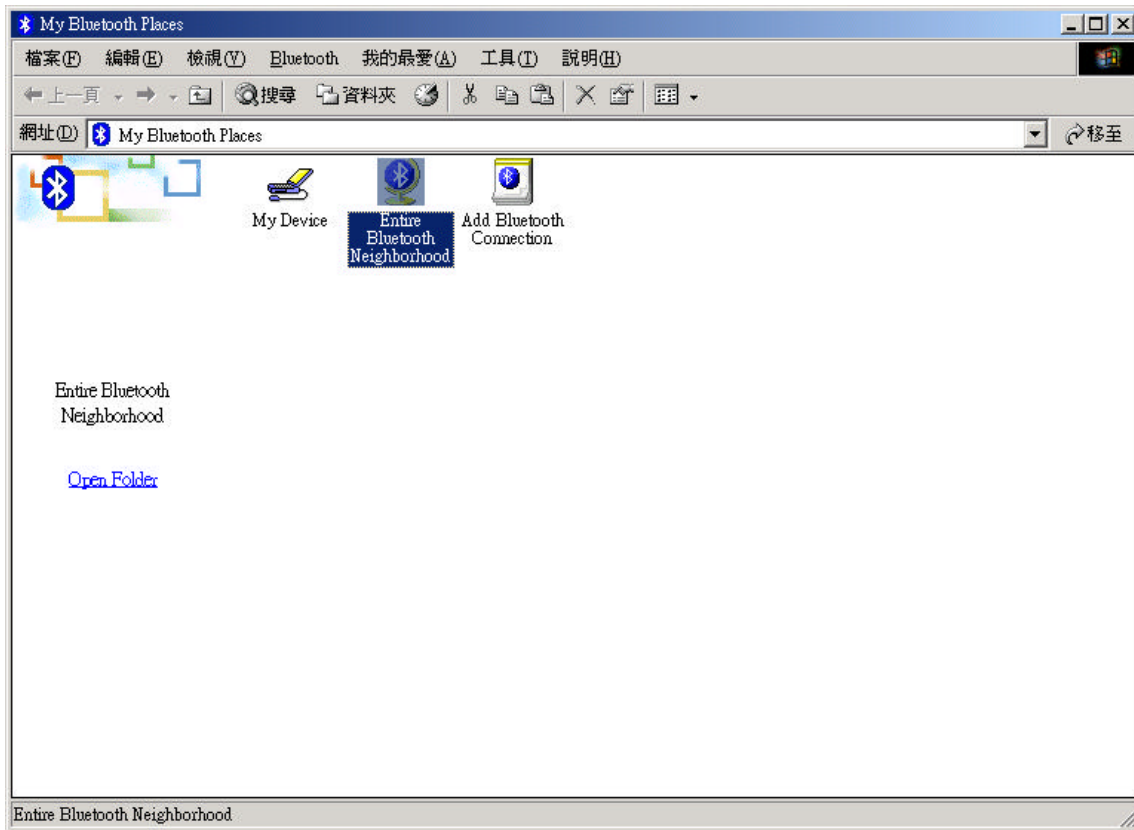
<2> In the right pane of Entire Bluetooth Neighborhood, right-click anywhere except on a device name and select Refresh from the pop-up menu.
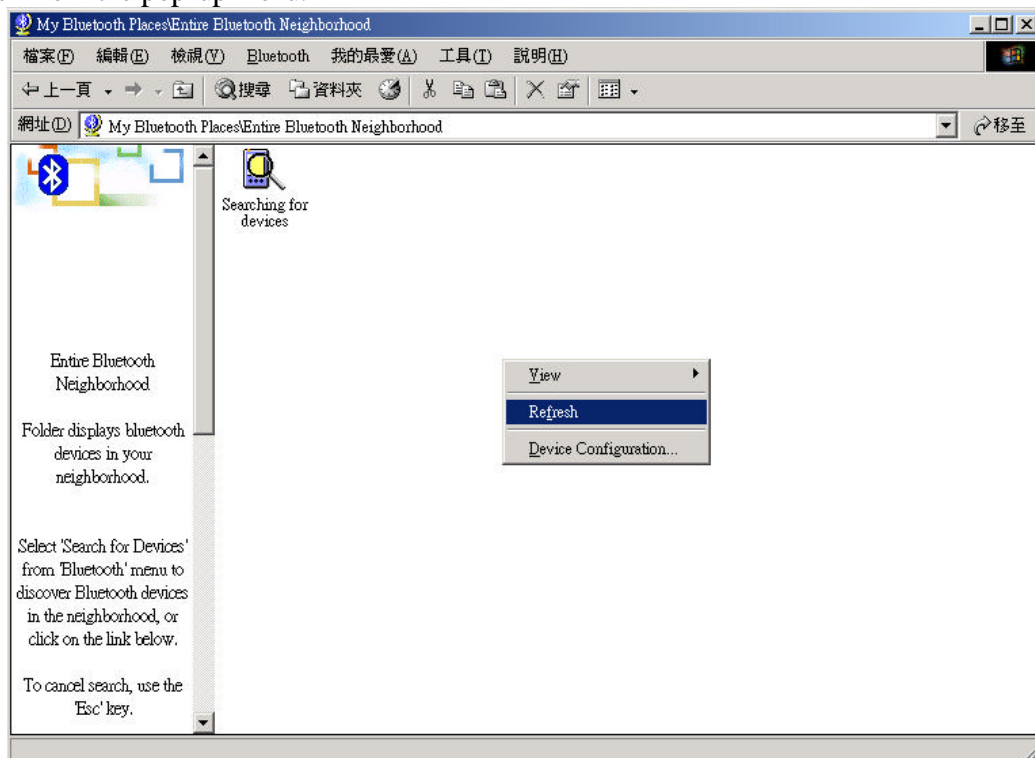
<3> In the Folders pane of My Bluetooth Places, right-click the server you want to establish a connection with and select Discover Available Services from the popup menu to update the available services list. The available services will be displayed in the right pane of My Bluetooth Places.
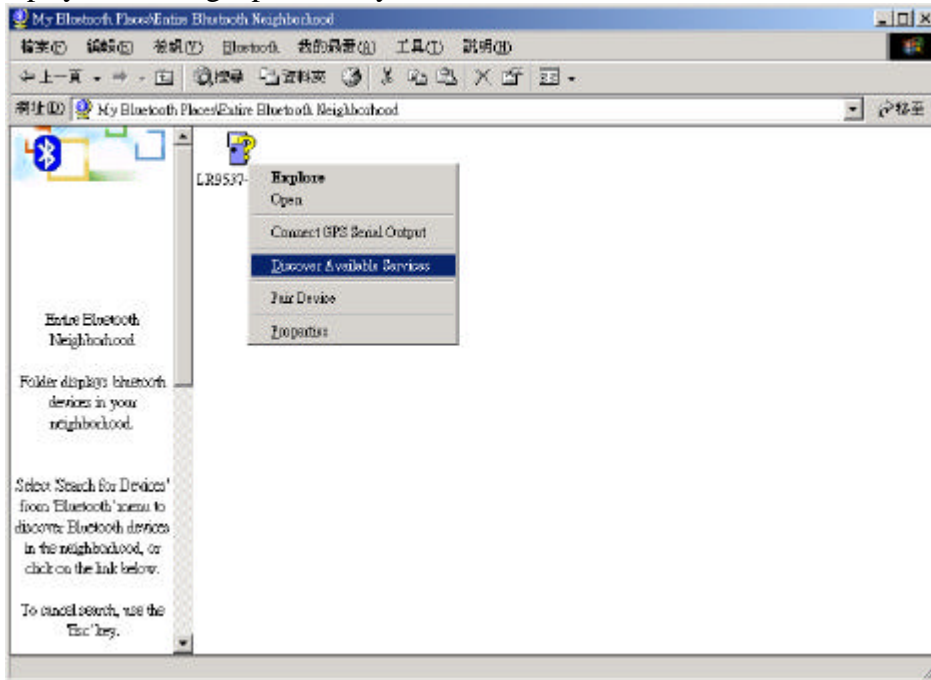
<4> In the right pane of My Bluetooth Places, double-click Bluetooth Serial Port. A dialog box appears that contains the communications port number assigned to this connection by the client. **The application that will use this connection must be configured to send data to this port.**
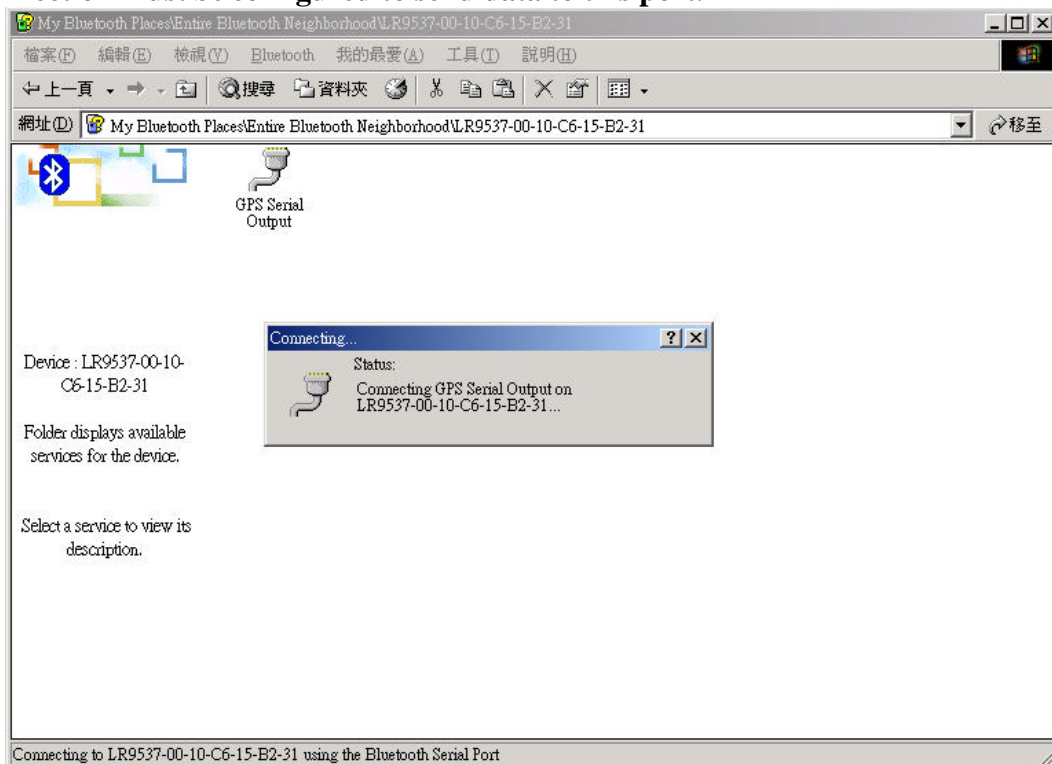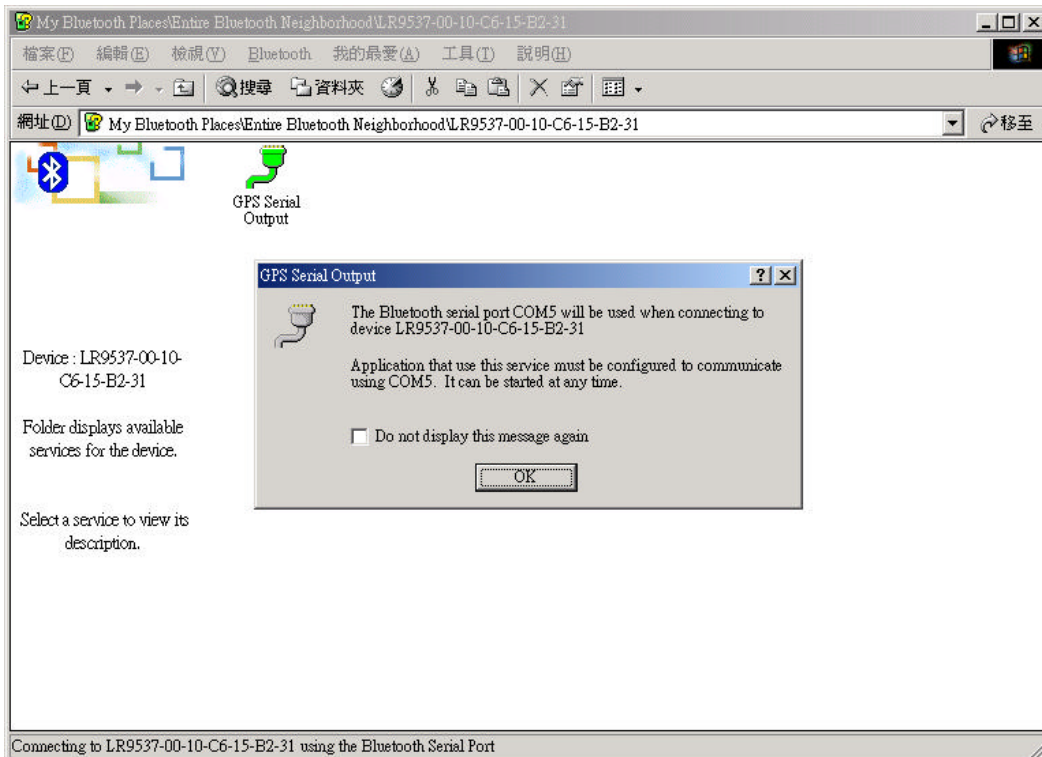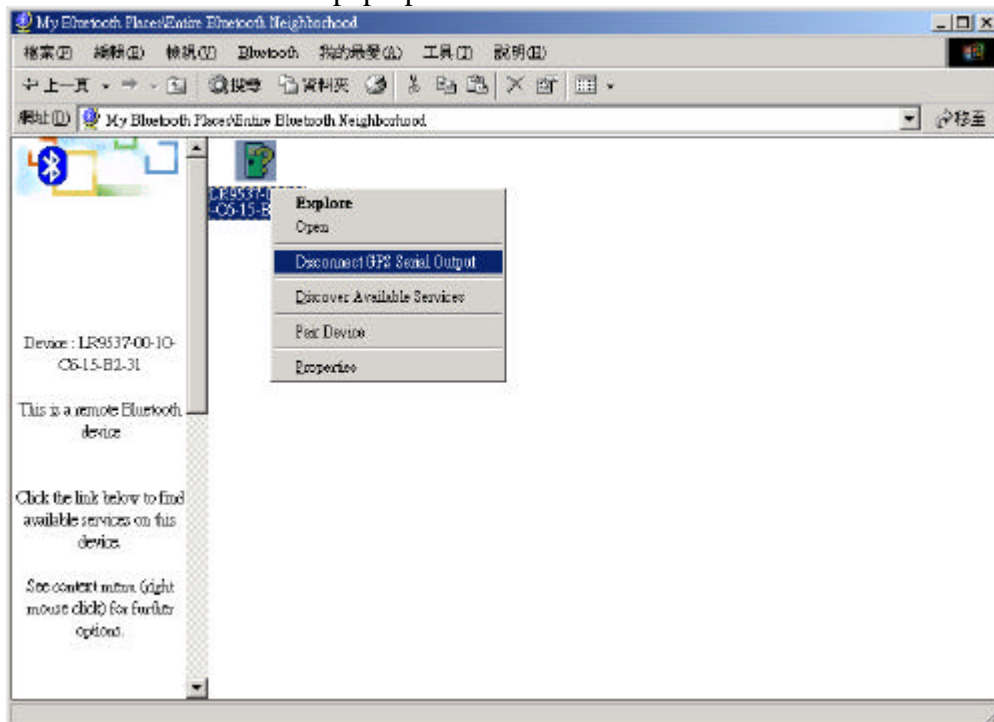
To close a Bluetooth serial port connection

Connections are normally closed from the client:

- On the client, in the Folders pane of My Bluetooth Places, select (highlight) the device that is providing the Bluetooth Serial Port service.
- In the right pane of My Bluetooth Places, right-click Bluetooth Serial Port and then select Disconnect Bluetooth Serial Port from the pop-up menu.