*** USER'S MANUAL ***

FCC ID : SBUFGPXBT01

The Federal Communication Commission Statement

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 instruction, may cause harmful interference to radio communication. 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 of 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.**

Use only shielded cables to connect I/O devices to this equipment. You are cautioned that change or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERECE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

1. This device may not cause harmful interference and
2. This device must accept any interference received, including interference that may cause undesired operation.

Contents

Caution

Read before you start to use:

Ø Global position system(GPS) is obtained by American Ministry of National Defense, and they got the full responsibility about the preciseness and the maintenance. Any changes may cause the capacity and preciseness of GPS differed.

Ø Consider your safety of driving, we are strongly recommend you not to use this device while you are driving vehicles.

Ø If you use this device inside of buildings, tunnels, or any huge objects beside you, the GPS signals might be cut-off or disturbed. Please do not consider that the receiver is malfunction.

Ø Sometimes the speed-test alarm system may interfere with GPS signal. If it really do, please suspend it temporary.

Ø The receiver is made by high-technology electronic components. Please do not make it exposure in sunshine for a long time.

0、Quick Start

0.1 Inside the Package

Thank you for purchasing our GPS product, and wish you have the best experience in using. Please open the package, and check if everything in the list exist once you got it. Please tell our salesman if anything missing.

A. Basic package

1. FGPXBT01 Bluetooth GPS receiver x 1
2. High capacity rechargeable lithium-ion battery (1000mAh) x 1
3. Manual/software CD-Rom x 1

B. Optional package

In order to support various computers and handheld devices, you may need some accessories inside the package also:

1. Travel charger (110V plug type) x 1
2. Mobil charger (12V plug type) x 1

0.2 Connect to your PC/PDA

A. Turn on the power of FGPXBT01.

B. Put the FGPXBT01 at proper place (open to sky) to receive the GPS signal.

C. Turn on the power of your PC/PDA.

D. Search for Bluetooth device by your Bluetooth manager on your PC/PDA. The GPS device required no passkey for connection. But some Bluetooth system is forced to enter passkey, please use [0000] in such case.

E. Connect to FGPXBT01 and it can send you the GPS message immediately.

Caution: If you are first time to use Bluetooth devices, please read the whole operation manual carefully. Any mis-operation may cause your system not working properly.

1. Introduction

FGPXBT01 Bluetooth GPS receiver(FGPXBT01 bellow), is a total solution of GPS receiver. High capacity rechargeable lithium-ion battery inside, GPS antenna, Bluetooth transmit/receive system are included. It is designed base on the most advantage GPS kernel(FirstGPS^{TM}), got the full-function, industry-level locating capacity and low prices.

You can use FGPXBT01 as vehicles navigator, security system, geographic measurement, investigations or agriculture purpose. FGPXBT01 operation requirement is a proper power supply and the open sky-view. FGPXBT01 can communicate with other electronic devices by Bluetooth interface. The build-in lithium-ion rechargeable battery may keep the satellites information, such as the signal status, last position, date and time.

FGPXBT01 is designed as a low power consumption device, and track 8 satellites at the same time. It will update the satellite position every second. Special power saving circuit design extends the working time of all system. The FGPXBT01 utilizes initial data such as last stored position, data and time as well as satellite orbital data to achieve maximum acquisition performance. If significant inaccuracy exists in the initial data, or if the orbital data is obsolete, it may take a long time to achieve a navigation solution. The FGPXBT01 Auto-locate feature is capable of automatically determining a navigation solution without intervention from the host system. However, acquisition performance can be improved if the host system initialized the FGPXBT01 following the occurrence of one or more of the following events:

1) The GPS receiver is not in use for more than 3 months or transportation over distances further than 500 kilometers.

2) Failure of the internal memory battery without system standby power.

2. Features and Functions

FGPXBT01 provide a full set of GPS function, and you can use it more flexible, or connect with other systems.

1. FGPXBT01 is designed base on the most advance GPS receiver module (FirstGPS^{TM}), build-in high performance ARM CPU may let users to design various applications and store in the flash ROM, is your most economic solution.

2. Extermly high-speed position fix and power saving design, also with high sensitive antenna, track 8 satellites at the same time.

3. Support RTCM (Radio Technical Commission for Maritime Services) real-time deviation correction capacity, can provide the precision smaller then 1 meter.

4. Full compatible with the Bluetooth SPP (Serial Port Profile) specification.

5.Ultra low power usage. The build-in rechargeable lithium-ion battery (1000mAh) can

provide the power to receive GPS signal without any external power supply. Charge with 4 hours can keep the device working over 20 hours.

6.Smart power management solution. Device will automatically shutdown after the Bluetooth interface having been disconnected over 1 hour.

7.Small size design can connect with any handheld devices easily, suitable for vehicle-security requirement.

8.Use reliable and long life flash memory to store program. Update program is possible by external input.

9.Flexible designs make it easy to combine with vehicle, voyage navigation, vehicle management, AVL, personal navigation, tracking system and map applications.

10.Build-in rechargeable lithium-ion battery can save the satellite position and RTC information, speed up the fix-time at the next time.

11.Support NMEA0183 version 3.01 data format output.

12.Use LED to indicate the GPS status. While the LED lights up, means the power is on and start to inquire position information. While the LED starts to blink, means the position is fixed. No extra device is required to check the current status.

3. Technical Specification

3.1. General

Core Module: FirstGPS^{TM}

Satellite channel number: Receive and track 8 satellites at the same time.

GPS frequency: 1575.42 MHz

Codec: L1, C/A code.

3.2. Inquire Time(Average)

Refresh: 1 sec

Code start: 120 secs

Warm start: 42 secs

Hot start: 10 secs

Update position information period: 1 sec

3.3. Precision

A) None-DGPS

Position accuracy: <5m(50% CEP) or <7m(95% CEP)
Speed: 0.05m/sec, typical
Time: 1 sec(satellite time)

B) DGPS (Difference GPS)

Location accuracy: <1m

Speed: 0.05m/sec, typical

3.4. Measurement range

Altitude: 16,000m(60,000 feet)

Velocity: 515m/sec(1,000knod)

Acceleration: 4G(G for gravity unit)

Jerk: 20m/sec^2

3.5. Power supply

External voltage: 5V DC +/- 5%

Battery:

Main battery: Rechargeable Lithium-ion 3.7V battery (1000mAh), as the working power.

Backup battery: Rechargeable Lithium-ion battery 3V, for RTC and store the GPS information.

Working current: 33mA(Typical)

Working time: Charged with 4 hours, more then 20 hours of working time.

Smart power management: Device will automatically shutdown after the Bluetooth interface having been disconnected over 1 hour. This avoid power waste unexpectedly.

3.6. Output format and hardware interface

Output format:

I. NMEA 0183 V3.01, ASCII output(GPGGA，GPGLL，GPGSV，GPGSA，GPRMC，GPVTG，GPZDA)

Baud rate: 9600 bps

Data bit: 8

Parity: None

Stop bit: 1

II. NMEA code support:

GPGGA(1/sec)
GPGLL(1/sec)
GPGSV(1/sec)
GPGSA(1/sec)
GPRMC(1/sec)
GPVTG(1/sec)
GPZDA(1/sec)

III. Coordinate system: WGS84

IX. Input/Output interface: Full compatible with Bluetooth Serial Port Profile(SPP). Minimal connection distance is 10 meters (blocks free).

3.7. Diameter/Weight/Operation environment:

Outbound size: 81 × 44 × 20 mm

Weight: < 65gm(batteries exclude)

Operation temperature: -10°C to + 60°C

Storage temperature: -20°C to + 85°C

Operation humidity: 5%R.H. to 95%R.H. no compressed

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3.8. Miscellanea:

   Bluetooth transmit frequency: 2.4~2.48GHz

   Bluetooth input signal sensitivity: -80dbm

   Minimal GPS signal sensitivity: -175dBW

   GPS antenna type: Internal passive antenna

   LED display: Build-in 3-LED display to show the Bluetooth, battery and GPS status.

4. Start to Use

Step 1: Charge the battery

Please fully-charge the battery with at least 4 hours before you use the GPS receiver firstly. There are 3 ways to charge: purchase the plug type charger. Second, use standard NOKIA^{TM}(*) cell phone charger, third, use the NOKIA^{TM} 6015 cell phone desk stands to charge the battery pack inside.

Power indicator

Power plug

Connect the power cord to the power plug at the bottom and start charging

Power indicator: Green LED blinking

Power low

Power indicator: Green LED lights

Charging

Step 2: Power on, connect with Bluetooth

Power switch

Bluetooth indicator
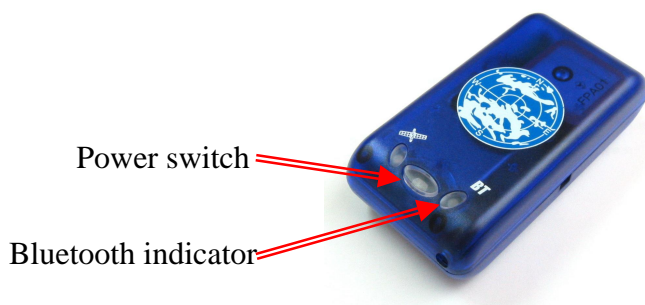
Push the power switch about 1 sec to turn on FGPXBT01

Searching Bluetooth device: the Bluetooth indicator blinks (3 times/sec)

Bluetooth connected: Bluetooth indicator blinks (1 time/3 secs)

Note: Some PDA needs to restart the Bluetooth function if you need to re-connect.

Step 3: GPS function test

Bring your FGPXBT01 to outdoor or any coverless above helps the sensitivity of GPS signal receiving.

GPS indicator

Power switch
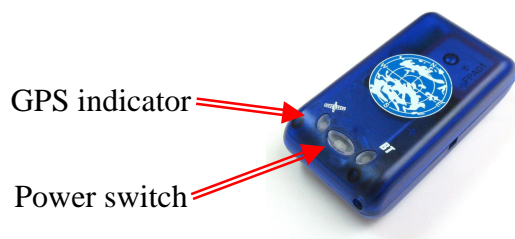
Power on the FGPXBT01

Red LED lights up continuously: Inquiring

Red LED blinks (1 time/3 secs): Position fixed

*: NOKIA^{TM} is the trademark of Nokia Co.

5. Software/Hardware Usage

5.1. Hardware description

1). FGPXBT01 device function description is shown as below:

2). LED display description

Symbol	Color	Behavior	Description
BT Bluetooth	Blue	Blink in 3 times/sec	Searching for Bluetooth host
		Blink in 1 time/3 secs	Connecting
		Blink in 1 time/sec	Connected & communicating
Working status (Red/Green combined)	Green	Blinking	Battery low
	Green	Light up	Over 14 hours working power
	Green	Blink 3 time	Power on/off
	Red	Light up	Position inquiring
	Red	Blink in 1 time/3 secs	Position fixed

3).Power switch：

Push 1~2 secs while power off: Power on

Push 1~2 secs while power on: Power off

5.2. Configuration of connect with PC

Here is a sample to show you how to connect FGPXBT01 with your PC, install software and basic function test.

1) First, select a PC with Bluetooth interface. Or you can purchase Bluetooth adapter for your PC. Please contact with your PC's salesroom about this.

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2) Check your Bluetooth manager if there is any configuration of Bluetooth Serial Port Profile like this:
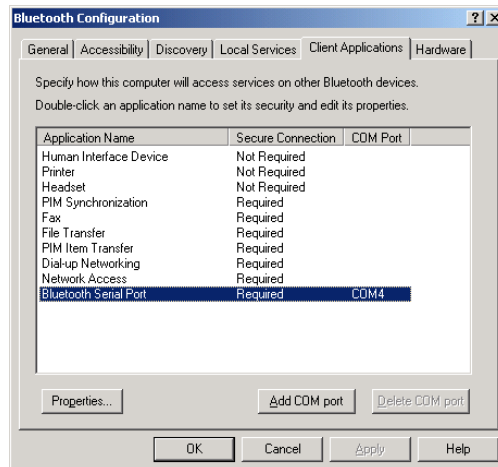
Note: this sample is for your reference only. The screen may various between different models of Bluetooth manager software.

3) If not found, please create a Bluetooth serial port your self. The configuration should be like this:

Name it as you wish

Please uncheck the secure connection
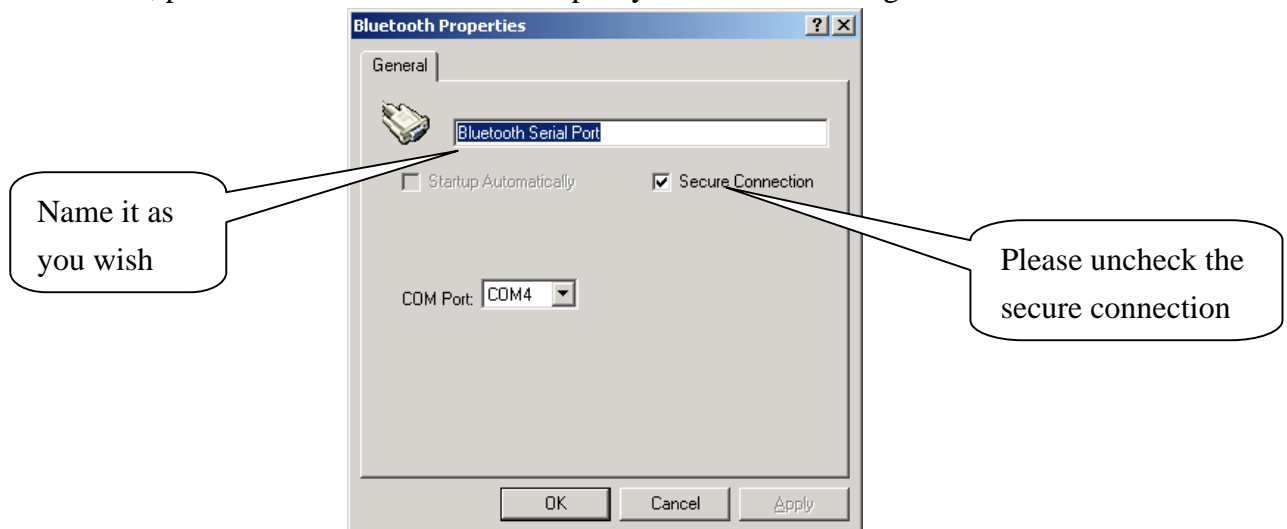
4) If there is already one, please check the content. Some Bluetooth device will enable the secure connection. Please refer to the configuration above to uncheck it.

5) Power on your FGPXBT01. If the battery is ready, you should see 2 LED light up: the blue LED blink 3 times/sec means Bluetooth is start up and wait for connection. Another static red LED shows the GPS module is started and is inquiring position information.

6) Open your Bluetooth places; you should see nothing while using firstly.
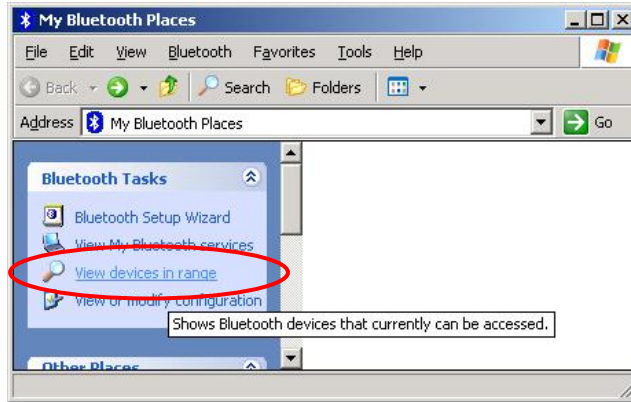
7) Click the [View devices in range] and you should find a [Bluetooth GPS] show as below:
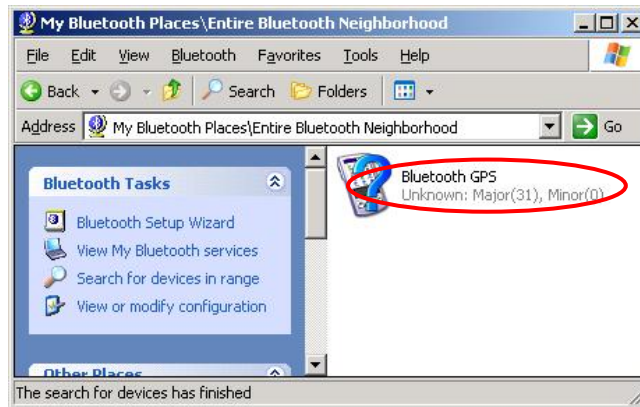
8) Right click on the icon, select the [Discover Available Services]:
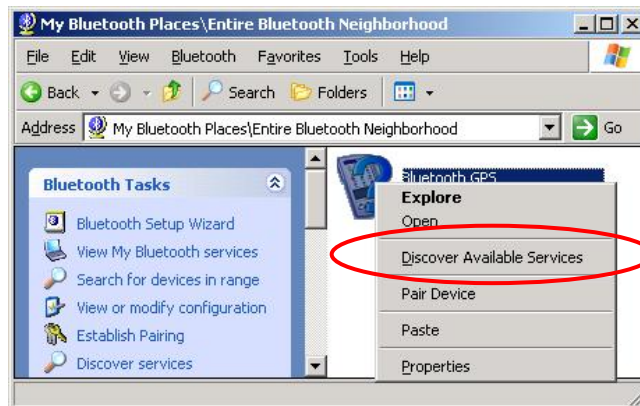
9) You should find the service SPP slave, right click and select [Connect to Bluetooth Serial Port]:
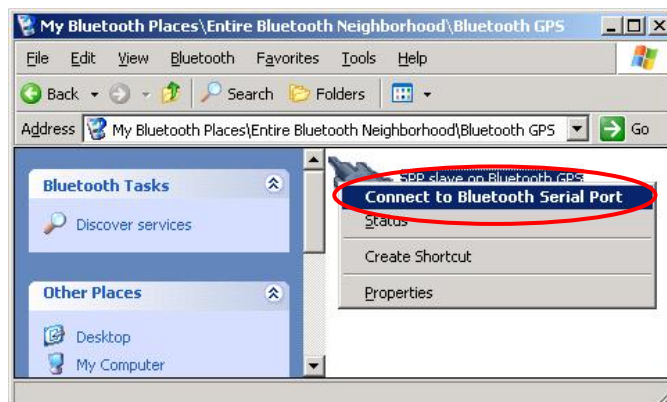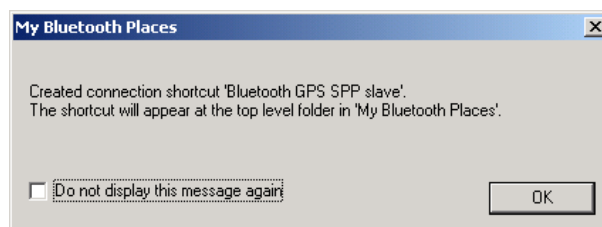
10) The follow message will show:
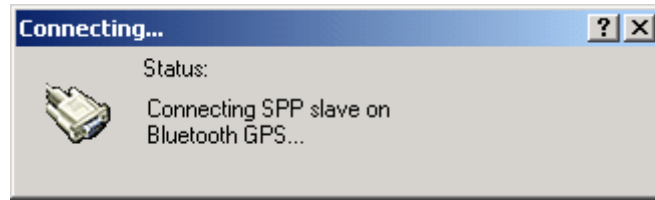
11) And the connection successful message:
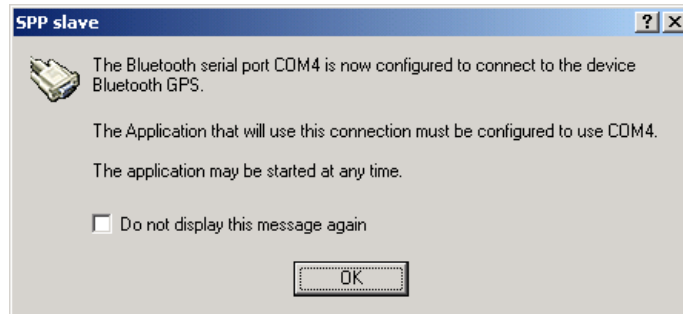
12) Back to the Bluetooth service view, you should see the icon changed to [Connected]:
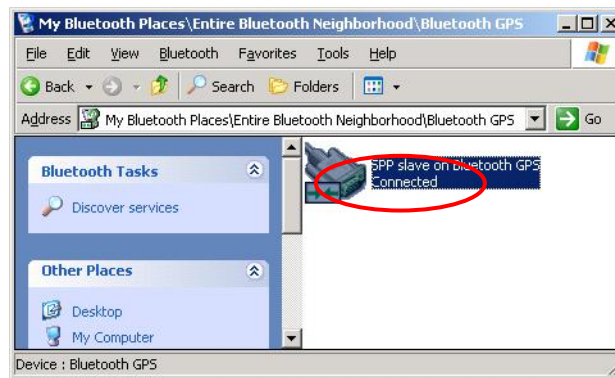
13) If you wish to use the connection more easily next time, you can create a shortcut for this:
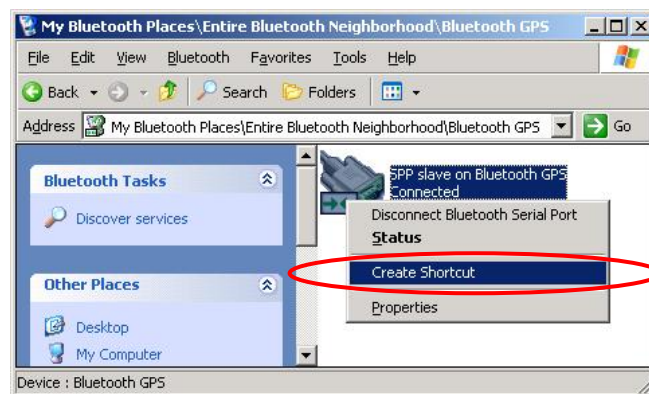
14) You will see the shortcut you just created:

5.3. Configuration of connect with PDA

Following will show how to configure the Bluetooth connection on IPAQ 2210 Chinese version, and install the GPS Viewer software. It may be different between other PDA models.

1) Power on your PDA as the Bluetooth host.

2) Power on the FGPXBT01. If the battery level is full, you should see 2 LEDs indication: the blue for Bluetooth blinks 3 times/sec. It means the FGPXBT01 Bluetooth module is activated and waiting for connection. The red LED for GPS, means the GPS module is activated and is inquiring GPS signal.

Red LED————

————Blue LED blinks 3 times/sec

3) See the IPAQ 2210 screen, click Bluetooth mark at bottom, and [Bluetooth Manager] as below:

-11-
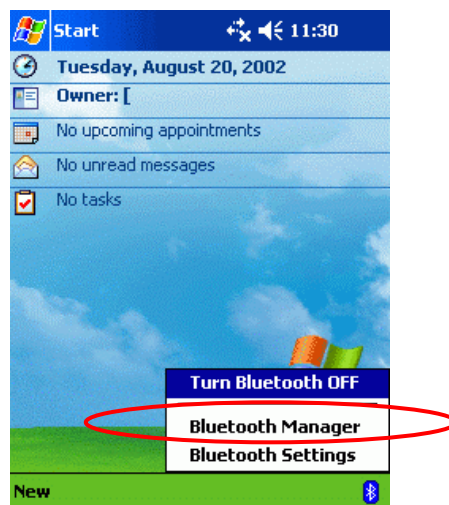
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4) If this is your first time to use Bluetooth GPS, click the Bluetooth mark at the bottom as below:


5) Then the Bluetooth connection wizard show up, select [Explore a Bluetooth device] and click [Next]. In the next page, click the box to search Bluetooth devices. Your PDA will find the Bluetooth GPS and show it in the window. Click the icon to search for service.
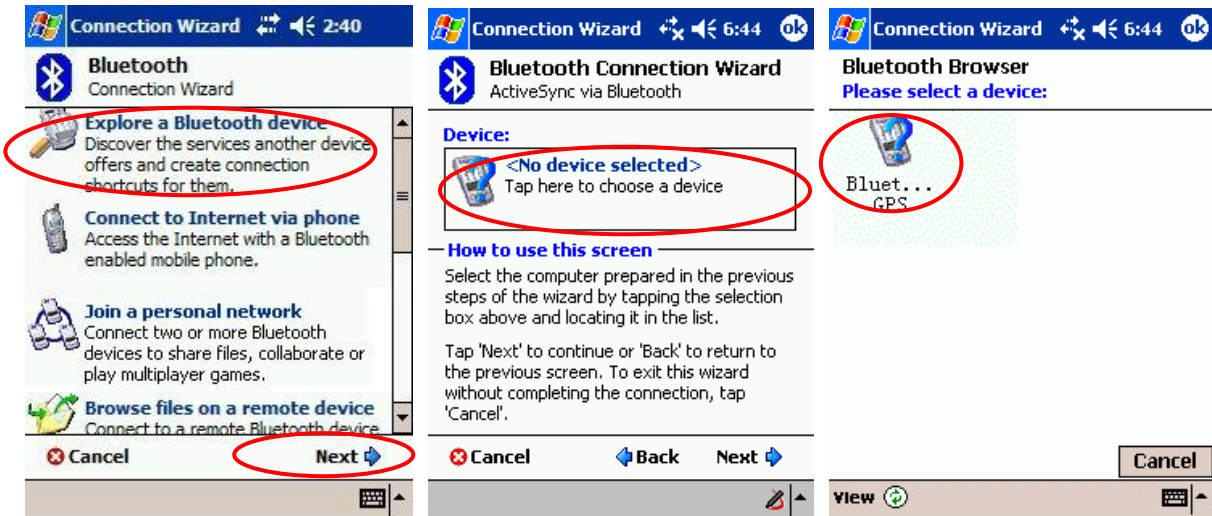
6) Back to the [Explore a Bluetooth device] as below. Click [Next] to list service on Bluetooth GPS. [SPP slave] should appear in the service list box, click it and click [Next] to finish shortcut creation. Don't forget to uncheck the secure connection box.
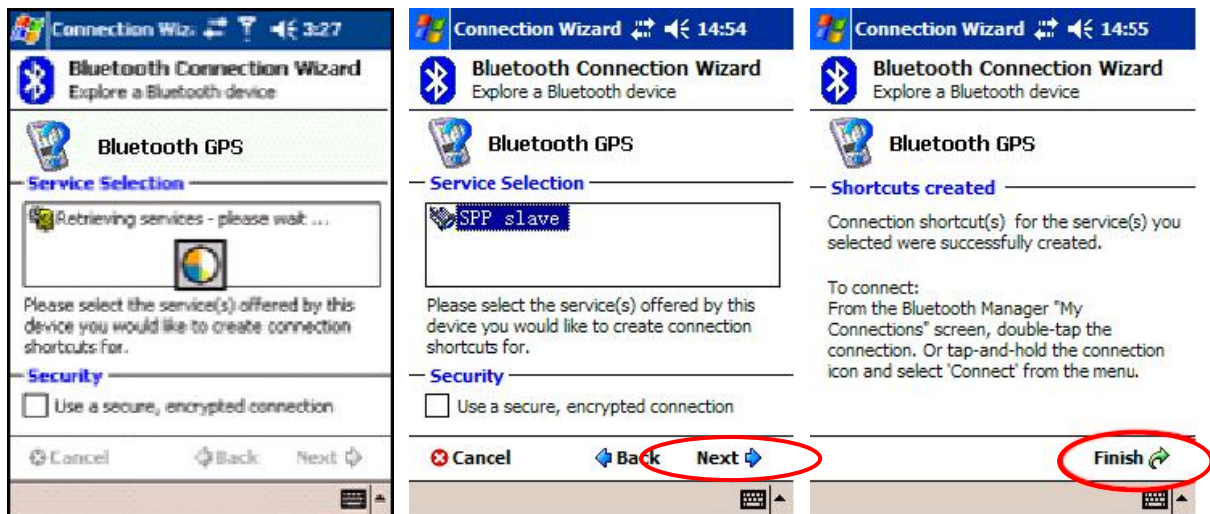
7) Back to the main screen of [Bluetooth manager] as below. Please double-click the icon to connect FGPXBT01. If connection successful, a green arrow will show as below at right.
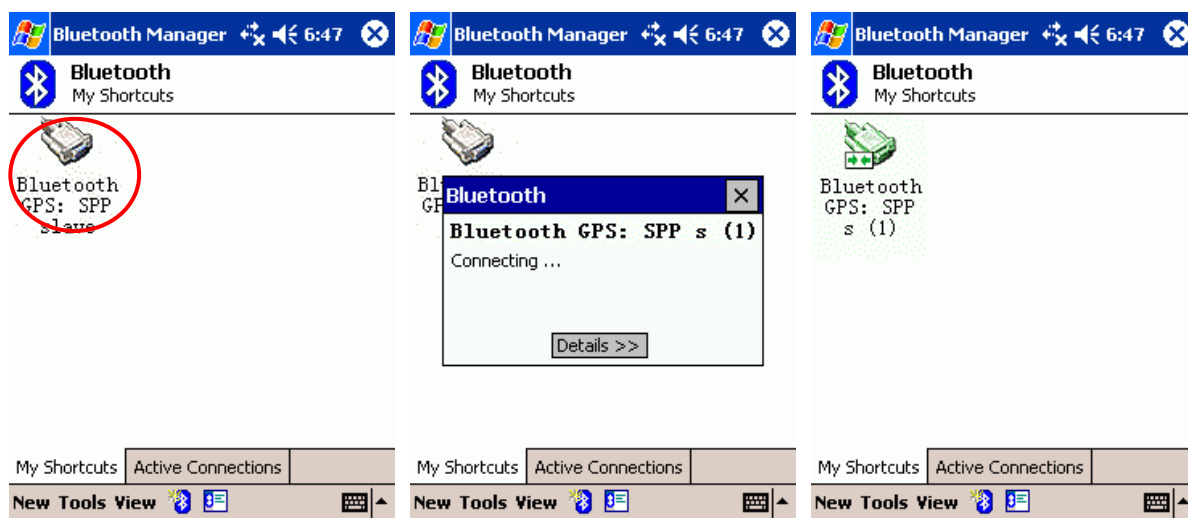
8) You may start to use any map/navigation software and use the GPS function now. Or you can use the GPS Viewer software bounded in our CD-Rom to verify the function of FGPXBT01 as you wish.

5.4. GpsViewer Software Install/Usage Guide

After the Bluetooth connected, you may use FGPXBT01 in any software support GPS function. We have provided you the software: GPS Viewer, for you to test the basic function of GPS. You may use it to verify if your GPS device works. Attention! GPSViewer for PDA supports only Microsoft Pocket PC 2002 or fully compatible operation systems. Please do not use it on any non-compatible system like Palm or SONY CLIE, etc

1) Please make sure your PDA is connected properly with your PC using Microsoft ActiveSync. If you have not install ActiveSync yet, you can install the copy from the bounded CD-Rom, version 3.7.1. Please connect your PDA with your PC by the cable/cradle for your PDA, it should be found in your PDA accessory pack.
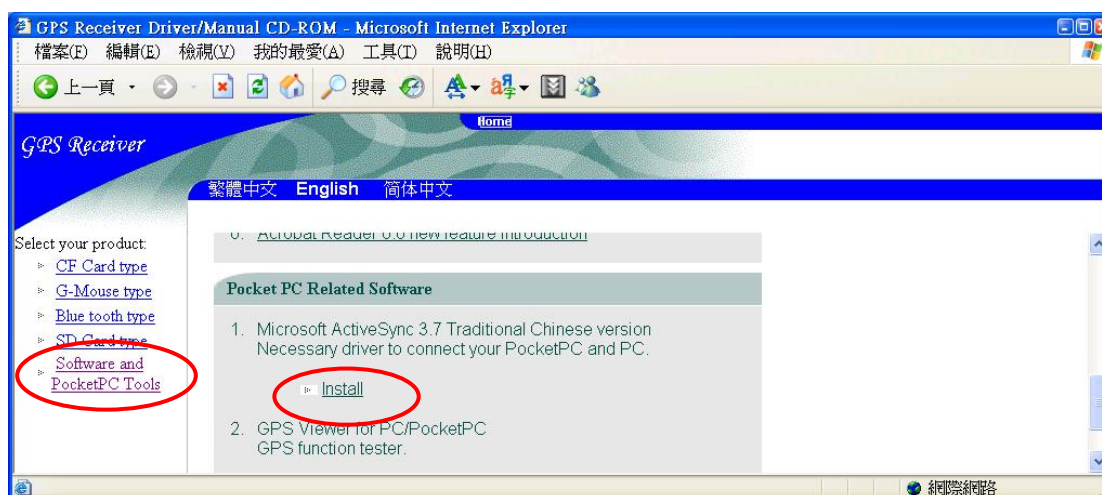
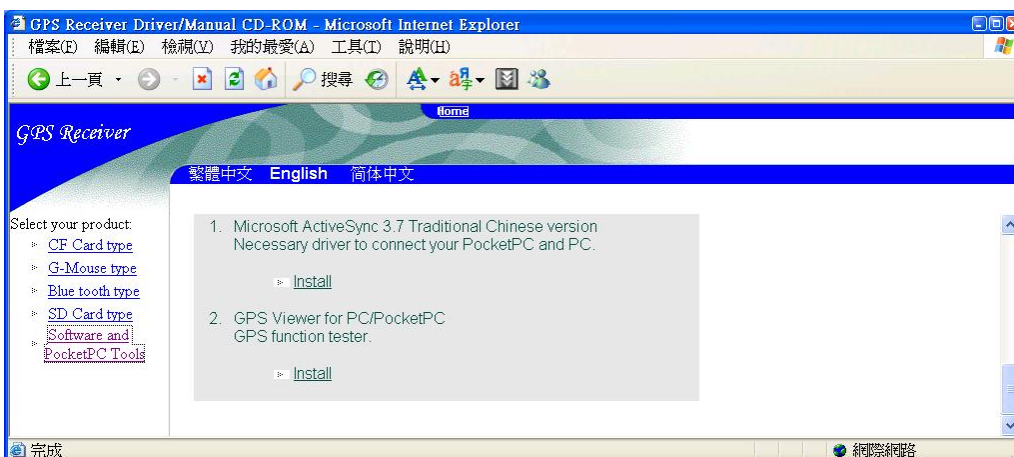Bluetooth GPS Receiver User Manual

2) Insert the CD-Rom into your CD drive. If your auto-run function works, you will see the welcome screen as below:
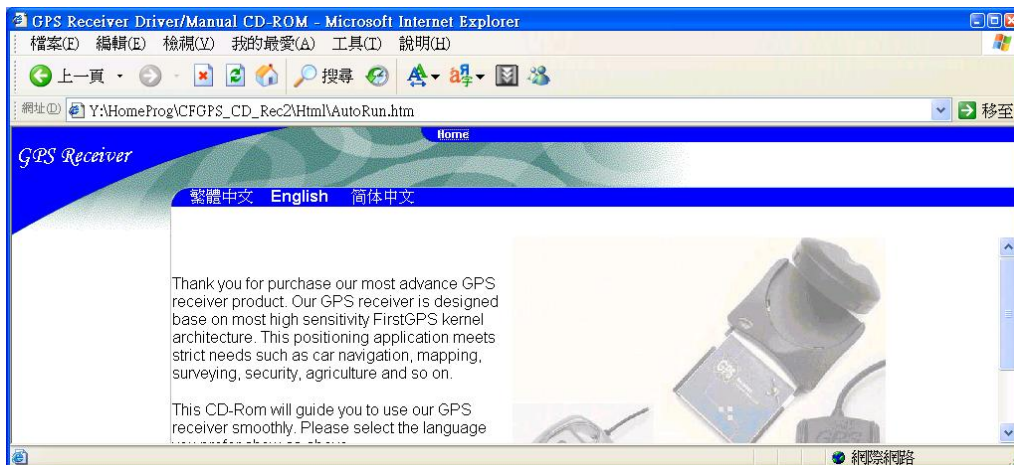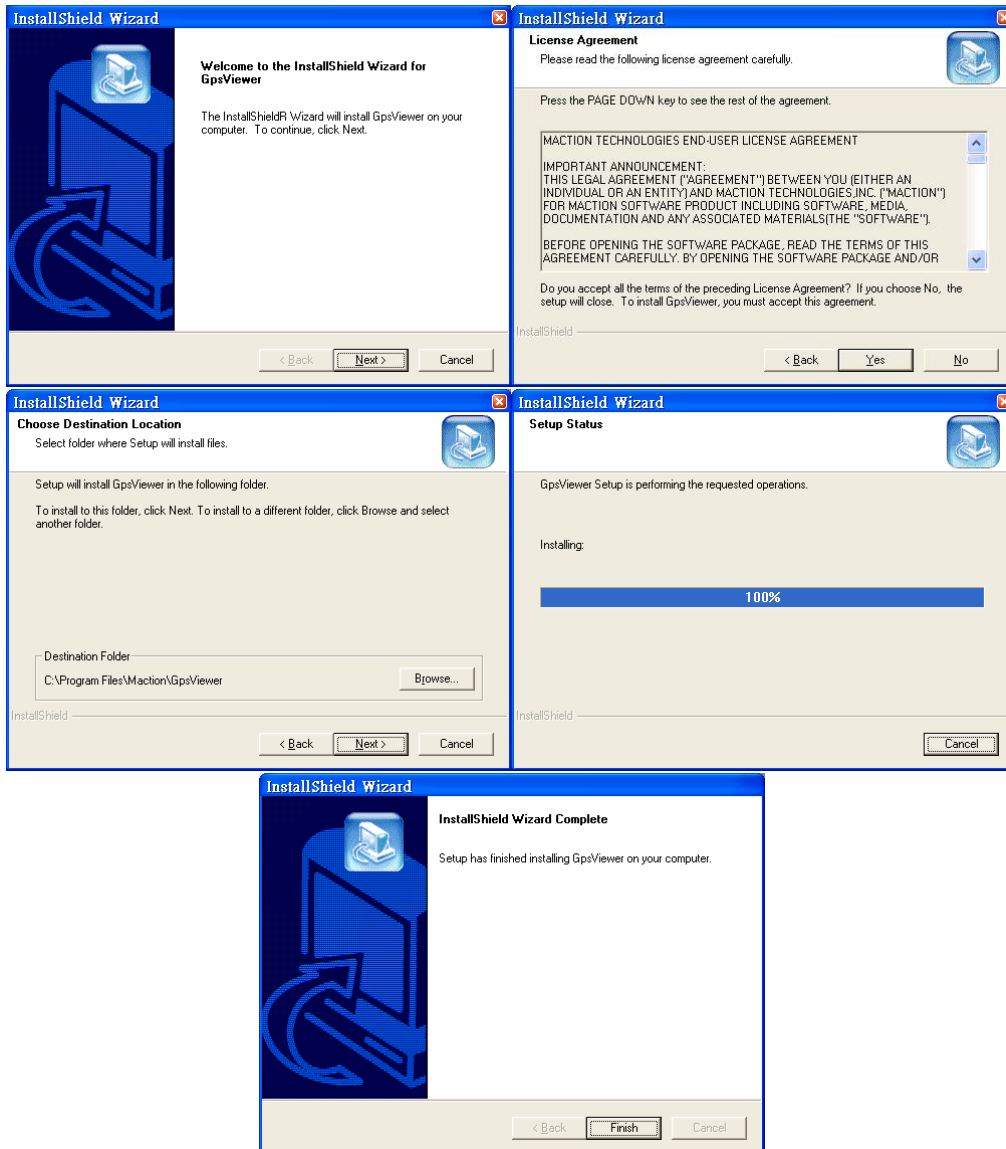

3) Select the language you preferred. We choose the "English" here:

4) Click the [Useful tools and PocketPC utility] at the left:

5) Click the [Install] at the right screen. The setup screen will show up. Please follow the screen guide to install step by step:

6) If your PDA is connected correctly, the installer will call Microsoft active synchronize and install it. You can install them right now. The install procedure is complete.
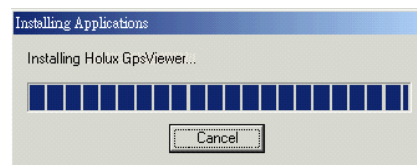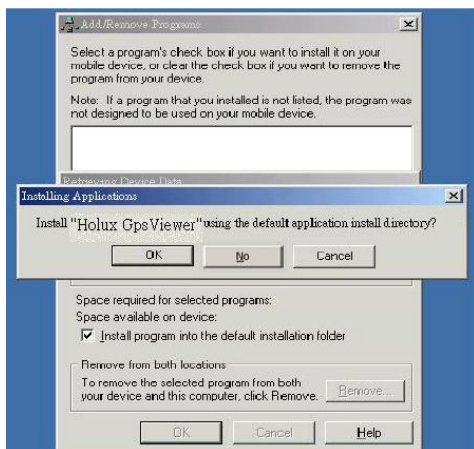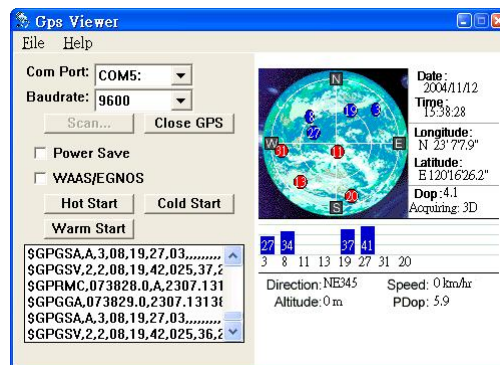
7) The installer will create an icon on your desktop. Please double-click it to start program:

8) GPS Viewer main screen will shows up, please select the proper COM port ID and baud rate, and click [Open GPS] to begin the test. The COM port id is COM5 in our PC; please select the corresponding ID base on your Bluetooth manager. Please select 9600 as your baud rate as below:
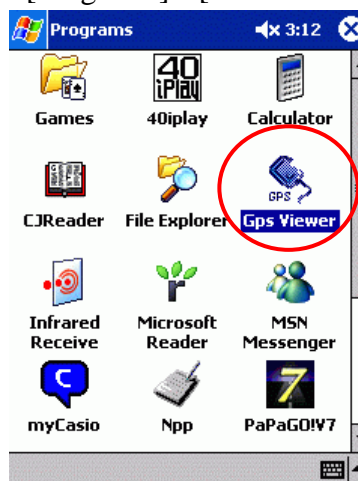

9) If you just cannot determine the COM port ID for your Bluetooth GPS, you may click [Scan…] to scan it automatically:
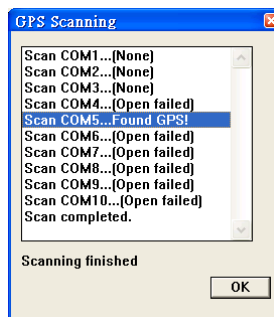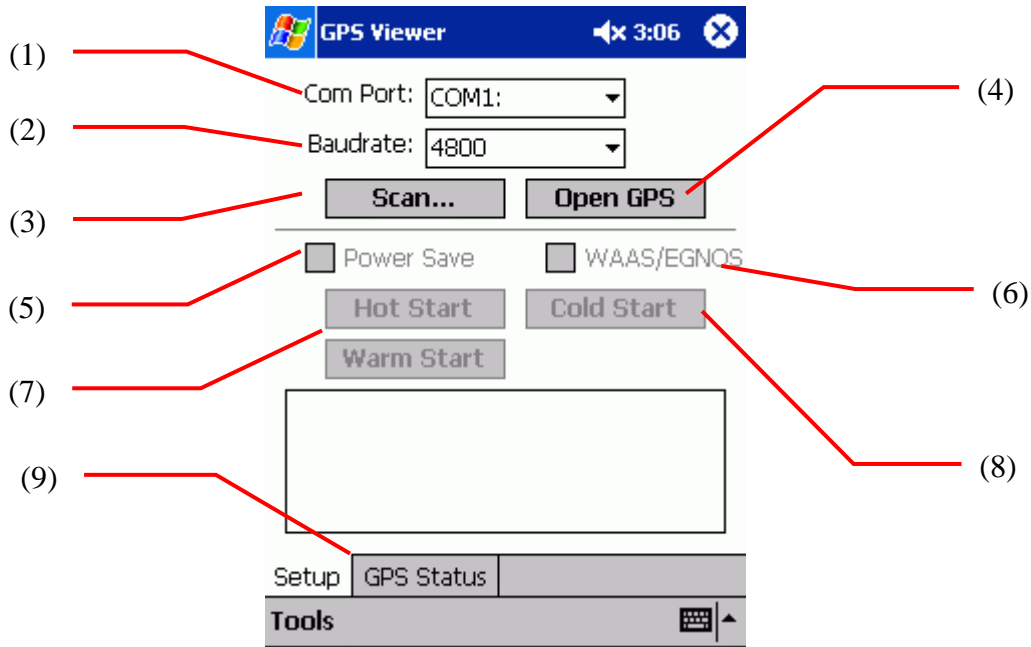

Attention! The following steps show the usage of GPSViewer for PDA. Please follow the operations on your PDA.

10) See your PDA and click [Start]->[Programs]->[GPSViewer] as below:

11) Here is the main screen of GPSViewer, and the basic function description as below:

(1) Com Port: COM port ID to connect with GPS device.

(2) Baud rate: COM port data transfer rate.

(3) Scan: Search the COM port ID automatically.

(4) Open GPS: Connect to GPS receiver.

(5) Power Save: The GPS receiver working in an extremely low power cost, extra power saving mode is not necessary.

(6) WAAS/EGNOS: Enable the synchronous GPS satellite receiving function (Support only the area with synchronous satellites, not available in Asia currently)

(7) Hot Start/Warm start: Hot start, warm start (For test only)

(8) Cold start: Clean the date/time and previous satellites information in GPS flash ROM. It will force GPS receiver to re-calculate satellites information. It is necessary if the GPS receiver didn't get satellites information over 60 days, or re-locate over 500 km.

(9) GPS Status: Show the satellites map and data flow from the GPS receiver.

12) Select **9600** as the baud rate, click [Scan] to auto-detect where the GPS receiver is mapped to your PDA. For example, most IPAQ 2210 will set COM 8 as its Bluetooth SPP slave COM port ID. After the COM port found, you can click [Open GPS] to start test. As blow:
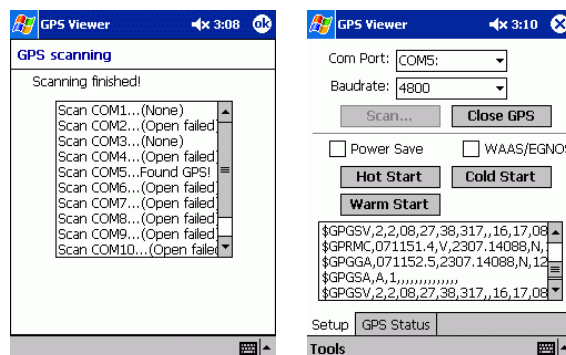
13) Click [GPS Status] to see the satellite view. If the GPS receiver can acquire position successful, the position fix result will show as below:
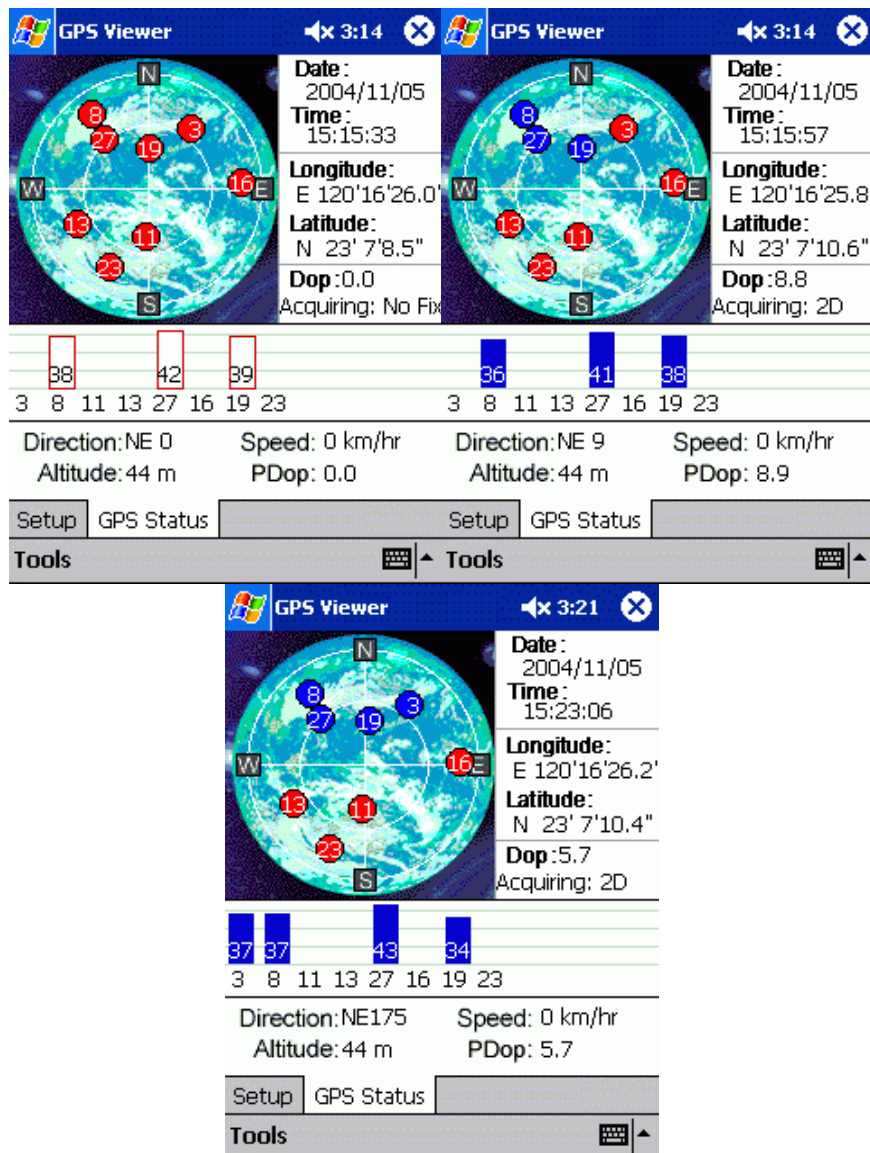
6. Warranty

The Bluetooth GPS receiver is warranty for free from defect in material and function for 1 year from the date of purchase. Any failure of this product within the period under normal conditions will be replaced at no charge to the customers.

This warranty does not cover failures due to abuse, misuse, accident, or unauthorized alteration or repairs, inappropriate disassemble.

Ø   Since the FGPXBT01 got high performance rechargeable lithium-ion battery, we are strongly recommend you not to place it under the sunshine for a long time.

Ø   If the build-in battery needs to replace, you can purchase NOKIA^{TM}(*) 6015/6016/6019 or compatible batteries for substitute, or contact us for high-capacity lithium-ion rechargeable batteries. Attention! The warranty will become invalid if any mis-operation found.

(*)NOKIA^{TM} is the trademark of NOKIA Company.

# 7. Trouble Shooting

7.1 Problem of Configuration

| Error	Cause	Trouble shooting
Can not find the GPS device through Bluetooth interface	Install not correct or battery low	Check if FGPXBT01 is installed properly, and confirm the battery level is suitable (green LED blinks or none LED)
Unable the connect through Bluetooth	Configuration incorrect	Please refer section 5.2 to re-install. Or refer to your PDA's user manual for configuration.
Fail to open COM Port	Bluetooth manager is not configured properly, or the COM port is adopted by another software.	Please check your Bluetooth manager settings, close the software may use COM ports and try again. Or check if there is any password protection.
No NMEA code (GPS data flow)	Some PC/PDA will enter the power saving mode if you stop input for a few minutes. Bluetooth interface will be reset in such case.	Disable the power saving mode, try to connect GPS receiver again.

7.2 Problem of GPS Signal

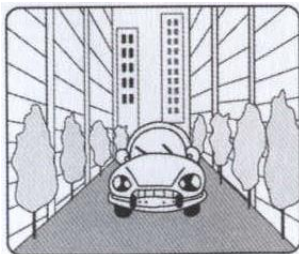It is possible unable to receive GPS signal or signal low in these places:
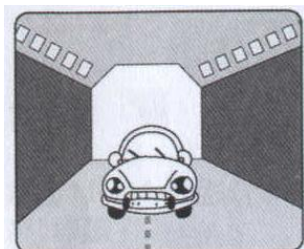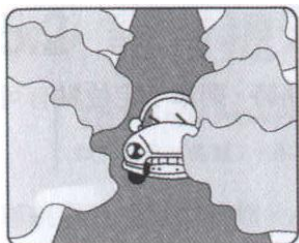

Ø Inside the tunnel, GPS signal is blocked.
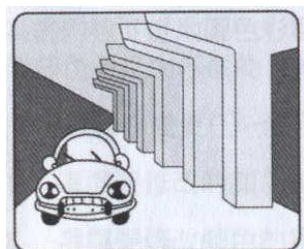
Ø Covers above, GPS signal is blocked.
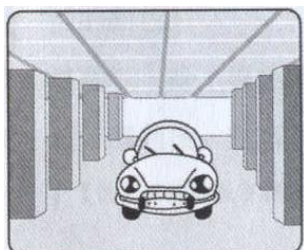
Ø Inside buildings, GPS signal is blocked.

Ø   Beside some buildings, GPS signal is disturbed.

Ø   Inside forests, or too many covers, GPS signal is disturbed.

n   If you use G-Mouse inside the car, some sun-control film will makes the GPS signal low or lost.

n   GPS satellite is owned by America military, sometimes they will tune-down the accuracy by some reason. In such cases, the GPS position may not fixed exactly.
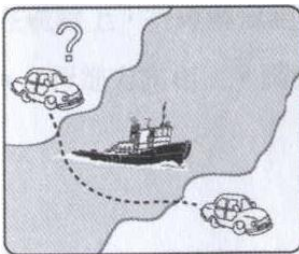
7.3 Problem of Position Fix Error

The position fix problem below does not mean the G-Mouse GPS receiver's malfunction:
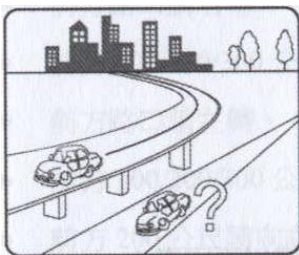
Ø   You are driving on the freeway, but the GPS navigation software shows you are on the road beside. Or the opposite situation.
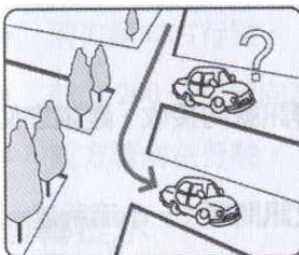
Ø   You are driving on a grid like lane, it is possible to show your car on an incorrect lane, if these 2 lane very near.

Ø   If you translate the GPS receiver inside somewhere with no satellite signal, the GPS position may stay at the position before.

7.4 Problem of Position Fix Fail

If you found [Not Fix] after you start up the map software, please consider about following:

- n   Please wait longer. Inquire position from satellites may cost several minutes depends on your GPS signal quality.
- n   Please make sure that you put the G-Mouse GPS receiver at a proper place. Some sun-control film for car may cutoff the satellite signal. You may replace it and try again.

Please make sure that you are not inside of somewhere the GPS signal shaded. Please reference the chapter [Satellite Signal Problem] about this.

8. Order Information

(1) Part No: FGPXBT01
(2) Color of shell available
     BK: Black shell (None transparent)
     BL: Blue shell (transparent)