

*** USER'S MANUAL ***

FCC ID : SBUBT25XR

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 UNDESIREED 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.

Bluetooth GPS Receiver

MODEL NO.:BT2.5SR, BT2.5MR

User's Manual



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Caution

Read before you start to use:

- 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.
- 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.
- Sometimes the speed-test alarm system may interfere with GPS signal. If it really do, please suspend it temporary.
- The receiver operating temperature is located between $-10^{\circ}\text{C}\sim 70^{\circ}\text{C}$. For safety and lifetime of Li-ion battery usage, do not place this device over two hours with overheated environment.

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 exists once you got it. Please tell our salesman if anything missing.

A. Basic package

1. Mini Solar Bluetooth GPS Receiver(BT2.5MR) x 1
2. High capacity rechargeable lithium-ion battery 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. Mobile charger x1
2. Travel charger x1

0.2 Connect to your PC/PDA

- A.** Push the power button for 2 seconds, power on the Bluetooth GPS receiver.
- B.** Put the Mini Solar Bluetooth GPS Receiver at proper place (open to sky) to receive the GPS signal.
- C.** Turn on the power of your PC/PDA.
- D.** Search for Blue tooth device by your Blue tooth manager on your PC/PDA. The GPS device required no passkey for connection. But some Blue tooth system is forced to enter passkey, please use [0000] in such case.
- E.** Connect to Mini Solar Bluetooth GPS Receiver and then make sure baud rate set at 9600 bps(standard) in your application program.

F. In firstly Use of this Mini Solar Bluetooth GPS Receiver, we strongly recommend you to bring Bluetooth GPS receiver **outdoor or open sky at least 15~20 minutes for sure 3D position fixed and almanac updated.**

1. Introduction

Mini Solar Bluetooth GPS Receiver is a total solution of GPS receiver. GPS antenna, Bluetooth transmit/receive system are included. It is designed on the most advantage MediaTek chip solution, got the full-function, and RoHS compliant, industry-level locating capacity and low prices.

You can use this Mini Solar Bluetooth GPS Receiver as vehicles navigator, security system, geographic measurement, investigations or agriculture purpose. Mini Solar Bluetooth GPS Receiver operation requirement is a proper power supply and the open sky-view. This Bluetooth GPS Receiver can communicate with other electronic devices by Bluetooth interface. Built-In Flash Memory can save satellite information and do almanac refresh periodically. This will shorten Time To First Fix (TTFF) effectively.

Patent protected Mini Solar Cell design can extend the device usage time up to 20 hrs. This is much longer than competitors'. Lithium-ion battery can be re-charged reasonably under nature or artificial sunlight no matter BT2.5MR receiver is turned on or off. Most of time, you are free of charger!

Mini Solar Bluetooth GPS Receiver is designed as a high position accuracy. It will update the satellite position every second. The Mini Solar Bluetooth GPS Receiver auto-locating feature is capable of automatically determining a navigation solution without intervention. However, acquisition performance could be interfered and do cold start if the receiver were initialized with occurrence of the following events:

- 1) First in use**
- 2) The GPS receiver is not in use for more than 3 months or transportation over distances further than 500 kilometers.**
- 3) Failure of the internal memory battery without system standby power.**
- 4) Change Li-ion battery**

2. Features and Functions

- 1), Total solution in power management.
- 2) Green solution in exactly wireless GPS receiver application
Always charge your lithium-ion battery under nature or artificial sunlight.
Spare your charger, Spare your space
- 3) Considerate LED/switch button design
easy look, easy touch !one-touch button design keep your hand free
- 4) Act as WARM/HOT start with high capacity battery
Back-up power circuit design will keep flash memory and RTC clocking always.
Shorten TTFF effectively.

5) Automatically almanac/ ephemeris update in flash memory

Programmable flash utility to do refresh on satellite orbit data information every 10 minutes.

6) Smart power management solution.

GPS Device will automatically shutdown in case of Bluetooth un-detected over default time.

7) Compatible with Bluetooth Serial Port Profile (SPP) completely.

8) Easy to combine with the vehicle, voyage navigation, vehicle management, AVL, personal navigation, tracking system and map applications.

3. Technical Specification

3.1. General

Core Module: Built-in high performance MediaTek chipset solution(MT3301+MT3179).

Satellite channel number: all-in-view 14 parallel satellites;

GPS frequency: 1575.42 MHz

Receiver: L1, C/A code.

Antenna type: Built in low noise patch antenna

External connector: MMCX (standard)

3.2. Acquisition Time

Refresh: 1 sec

Cold start: 37 sec (average, normally occurred in first use of GPS receiver life)

Warm start: 36 sec (average)

Hot start: 2 sec (average)

Position information update period: 5 Hz (average)

3.3. Precision/ Accuracy

Position accuracy: < 3m CEP (50%) without SA (horizontal)

Velocity: 0.05 m/sec, without SA

3.4. Dynamic condition

Altitude: 18,000m(32,900 feet) Max

Horizontal Velocity: 515 m/s Max

Acceleration: 4G(G for gravity unit)

3.5. Power management

A) Applied External Voltage: 5V DC +/- 5%(via charge cable)

B) Power system:

Main battery: Rechargeable Lithium-ion 3.7V battery, as main power.

Solar Panel: auxiliary power provider

3.6. Protocol &Interface

A) Output format

NMEA 0183 V3.01、ASCII (default : GGA、GSV、GSA、RMC、VTG)

Baud rate: 9600 bps(standard)

Data bit: 8

Parity: None

Stop bit: 1

B) NMEA code support:

GGA (1sec)

GSV (5sec)

GSA (1sec)

RMC (1sec)

VTG (1sec)

C) Compatible with Blue tooth devices with Serial Port Profile (SPP)

- Blue tooth version 1.1 compliant
- Blue tooth **Class 2** operation (up to 10 meter range)
- Frequency : 2.400 to 2.480 GHz
- Modulation: FHSS / GFSK
- RF channels: 79
- Input Sensitivity: -80dBm
- Output Level: 4dBm

3.7. Dimension/Environment Specification:

Dimension size: 52(W) × 82(L) × 21(H) mm

Weight: < 70g(battery excluded)

Operation temperature: -10°C to + 70°C

Storage temperature: -40°C to + 85°C

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

4. Start to Use

Step 1: Charge the battery in first use

Please fully-charge the battery with at least 4 hours before you use the GPS receiver firstly.

Bluetooth
indicator

Power
indicator

Charge plug



Connect charge cable to the power plug at the bottom and start charging

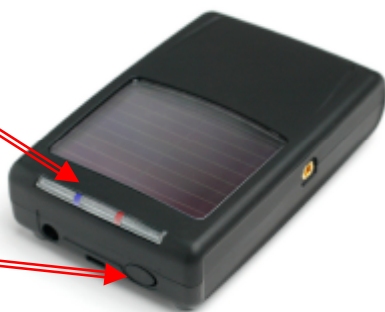
Power Indicator:

- (1) **Green** LED blinking
→ Power low/charging (see below detail described)
- (2) **Green** LED stop to blink & light up
→ Charge completed (LED will vanish when cable away)

Step 2: Power on, connect with Bluetooth

Bluetooth indicator

PowerON/OFF switch



Push the power switch 1~2 seconds to Power on

Bluetooth indicator:

- (1) Bluetooth host searching:
→ 3 pulses per second
- (2) Bluetooth host connected:
→ 1 pulse per second

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

Step 3: GPS function test

In firstly Use of this Receiver ,we strongly recommend to bring your Bluetooth GPS Receiver outdoor and open sky at least 15~20 minutes for almanac update.

GPS Acquisition &
Power indicator



Power on the 2.5MR Bluetooth GPS Receiver

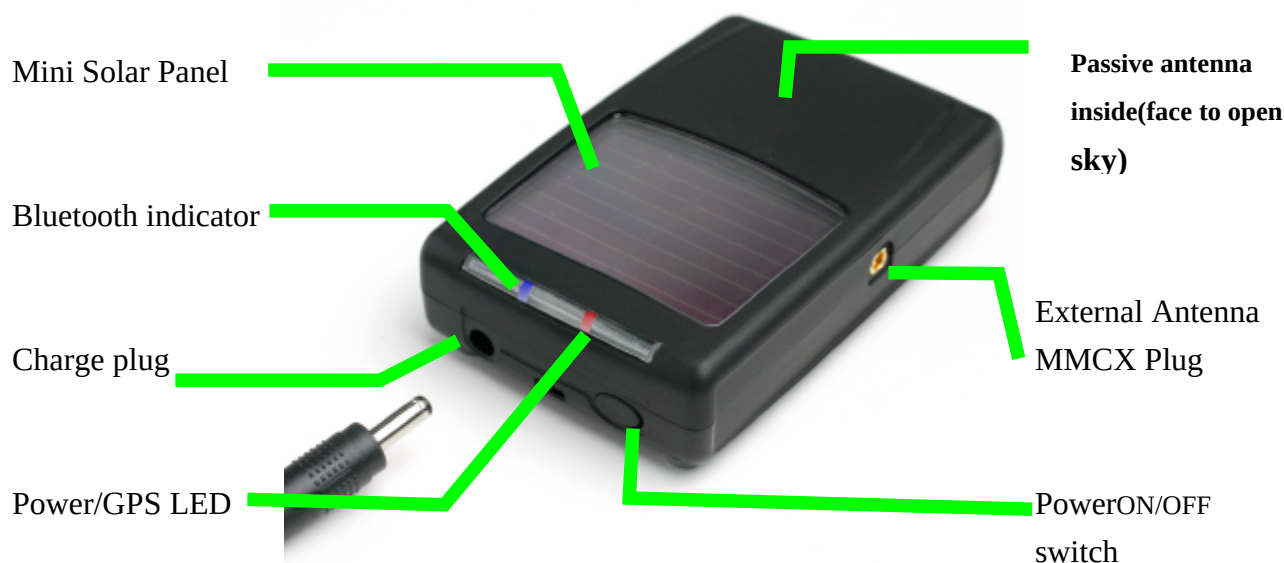
GPS Acquisition Fix Indicator

- (1) Red LED lights up continuously:
Inquiring
- (2) Red LED blinks (1 pulse/3 sec):
Position fixed

5. Software/Hardware Usage

5.1. Hardware description

1). Mini Solar Bluetooth GPS Receiver device function description is shown as below:



2). LED display description

Symbol	Color	Behavior	Description
Blue tooth Indicator	Blue	Blinking in 3 pulses/sec	Searching for Bluetooth host
		Blinking in 1 pulse/sec	Connected with host& communicating
Power/GPS Acquisition LED (Red/Green combined)	Green	Blinking with 3 sec interval	Battery low
	Green	Blinking with 2 sec interval	Charging
	Green	Light up	Charge completed (LED off when cable away)
	Red	Light up continuously	Positioning
	Red	Blink in 1pulse/ 3secs	Position fixed

3).Power ON/OFF :

Push power switch 1~2 seconds to switch on/off the power.