

# **N30/N39\_EVB User Manual**

**GPS Module Series**

**Version:** V1.1

**Date:** 2017-10-16



## Notice

Some features of the product and its accessories described herein rely on the software installed, capacities and settings of local network, and therefore may not be activated or may be limited by local network operators or network service providers.

Thus, the descriptions herein may not exactly match the product or its accessories which you purchase. Shanghai Mobiletek Communication Ltd reserves the right to change or modify any information or specifications contained in this manual without prior notice and without any liability.

## Copyright

This document contains proprietary technical information which is the property of Shanghai Mobiletek Communication Ltd. copying of this document and giving it to others and the using or communication of the contents thereof, are forbidden without express authority. Offenders are liable to the payment of damages. All rights reserved in the event of grant of patent or the registration of a utility model or design. All specification supplied herein are subject to change without notice at any time.

## DISCLAIMER

ALL CONTENTS OF THIS MANUAL ARE PROVIDED "AS IS". EXCEPT AS REQUIRED BY APPLICABLE LAWS, NO WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE MADE IN RELATION TO THE ACCURACY, RELIABILITY OR CONTENTS OF THIS MANUAL.

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT SHALL SHANGHAI MOBILETEK COMMUNICATION LTD BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, OR LOSS OF PROFITS, BUSINESS, REVENUE, DATA, GOODWILL SAVINGS OR ANTICIPATED SAVINGS REGARDLESS OF WHETHER SUCH LOSSES ARE FORSEEABLE OR NOT.

# Version History

Date	Version	Modify records	Author
2017-05-16	V1.0	First release	Jason.liao
2017-10-16	V1.1	Update company logo	Jason.liao

## Content

1. Overview .....	3
1.1 EVB Top View .....	3
1.2 EVB Accessories .....	4
2. Application .....	5
2.1 GPS Module .....	5
2.2 Switch .....	5
2.3 USB Interface .....	6
2.4 Antenna Interface .....	6
2.5 Status LEDs.....	6
2.6 Test Points .....	7
3. EVB and Accessories .....	9
4. USB Driver .....	10
5. PowerGPS.....	11
5.1 PowerGPS panel .....	11
5.2 PMTK Command .....	13
5.3 Automatic TTFF Testing.....	13

# 1. Overview

This document defines and specifies the usage of N30/N39 EVB. You can know how to use N30/N39 EVB and GPS demo tool from this document.

## 1.1 EVB Top View



Figure 1-1 N30/N39 EVB Top View

- 1: N30 Antenna
- 2: N39 Antenna
- 3: Power Switch
- 4: TX Switch
- 5: RX Switch
- 6: USB to UART IC
- 7: 5pin Micro USB
- 8: USB Power Indication LED
- 9: Test Points
- 10: PPS Indication LED

## 1.2 EVB Accessories



Figure 1-2 EVB Accessories

- 1: USB Cable

## 2. Application

### 2.1 GPS Module

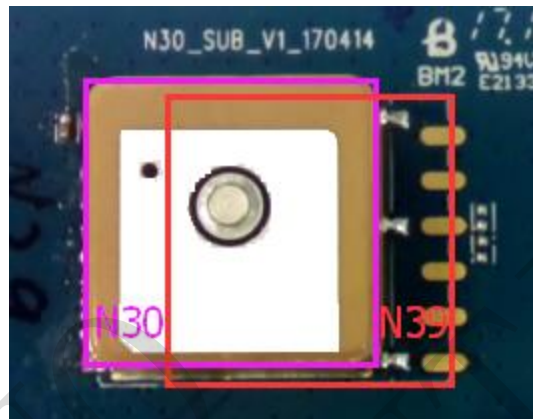


Figure 2-1 GPS Module

The EVB board can support two kinds of GPS Modules (N30 and N39) to test. Each GPS module has different match circuit position seen as the arrows.

### 2.2 Switch

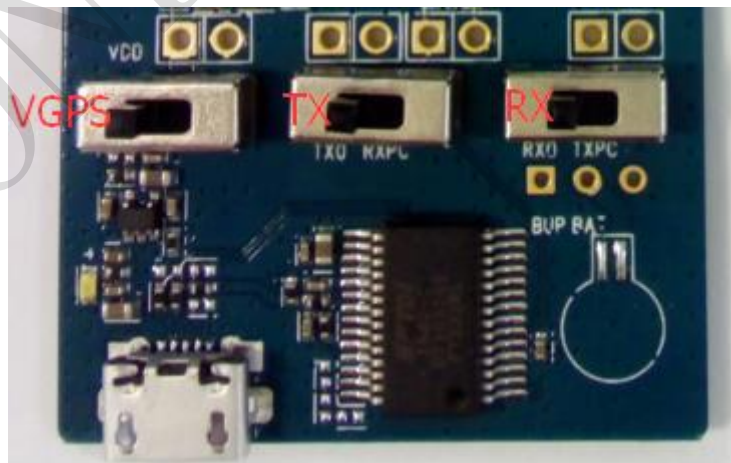


Figure 2-2 Switch

The EVB board has three switches for the UART and Power of GPS module. All these three switches should turn left when connect the module to the computer through the Micro-USB, like getting the NEMA data or downloading the software.

## 2.3 USB Interface

The EVB board only provides one way for data communication. Micro-USB interface can also supply the main power for the EVB, not need another power. You can cut the UART communication via the switch (4, 5) and the power supply of GPS module via the switch (6).

## 2.4 Antenna Interface

Please note the N30 and N39 have the different Module and match Antenna.

## 2.5 Status LEDs

The EVK board has two indication LEDs. One is USB power indication (8) and another is PPS indication (10). USB power indication led will light on when USB cable plugging. PPS indication led will on when the GPS module outputs the PPS signal.



## 2.6 Test Points

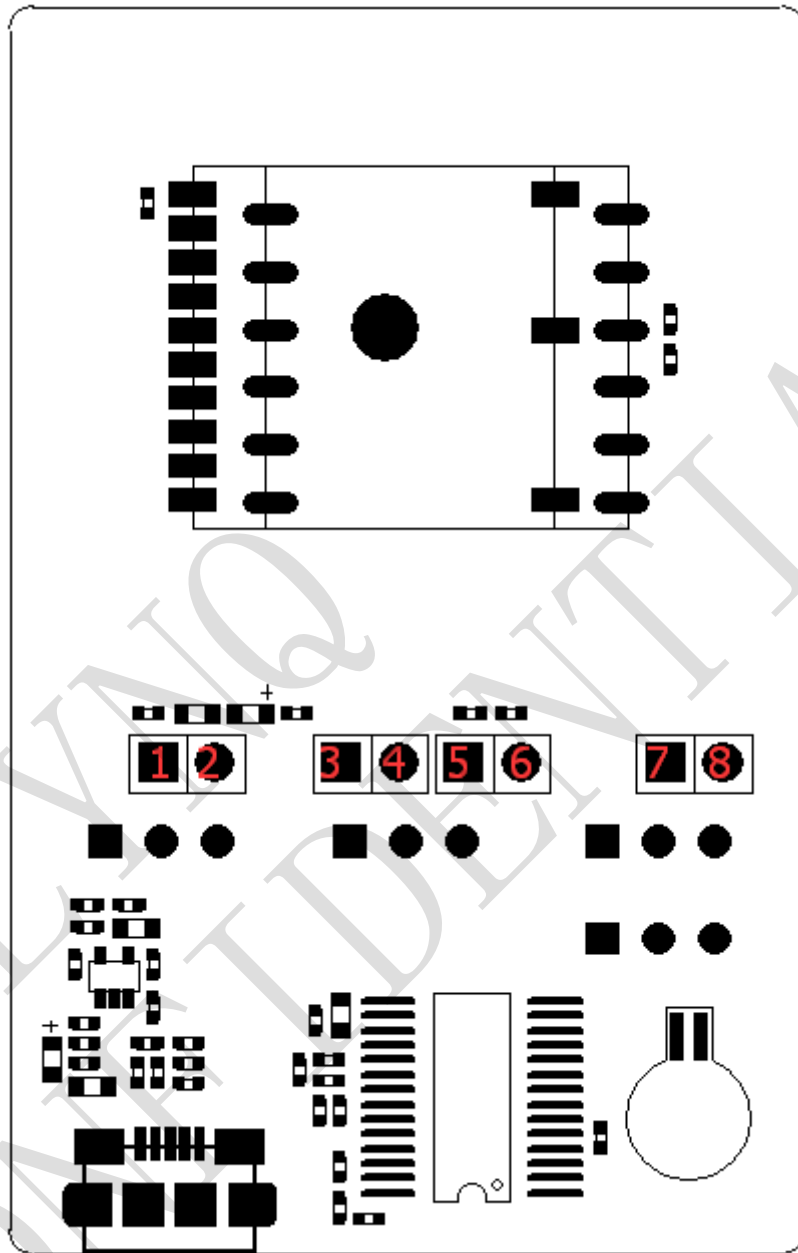


Figure 2-3 Test Point

Table 2-1: Pins of Test Point

Pin	Pin Name	I/O	Description
-----	----------	-----	-------------

1	VGPS	I	GPS Module Power Supply
2	GND	I	GND
3	PPS	O	1 pulse per second
4	3D_FIX	O	Indicator of successful navigation
5	TX0	I	Transmit data2
6	RX0	O	Receive data2
7	RST	I	System reset
8	FORCE_ON	I	Wakeup module

LYNQ  
CONFIDENTIAL

### 3. EVB and Accessories

The EVB and its accessories are showed as follow figure which tell user how to connect them.

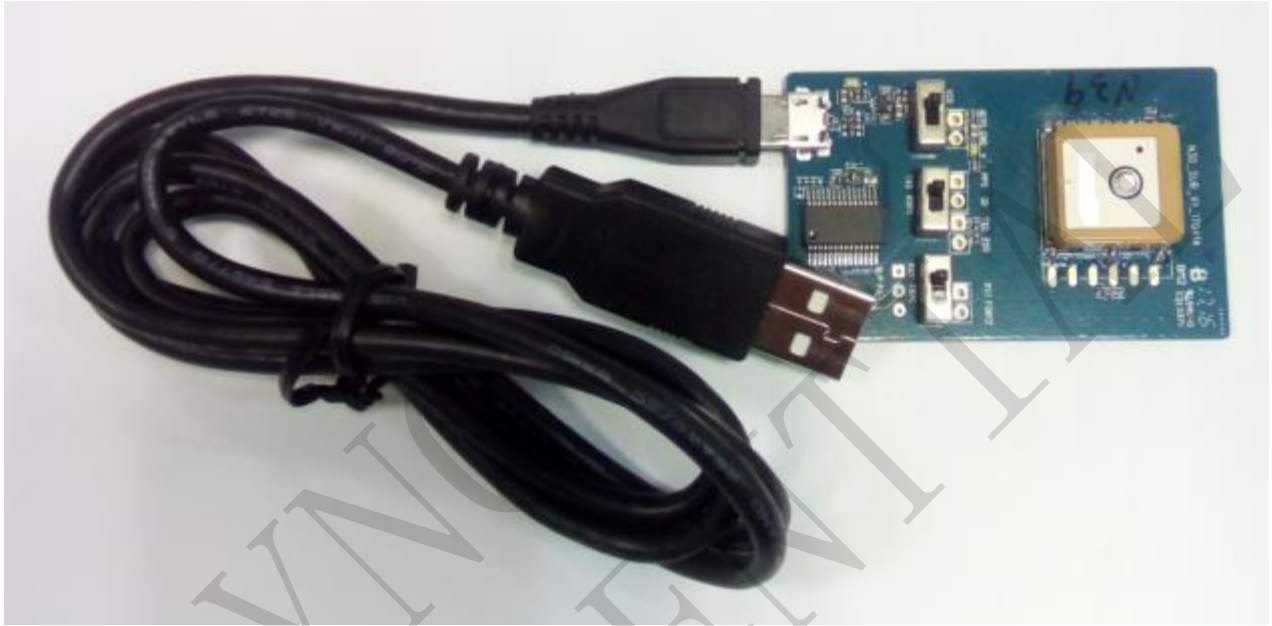


Figure 3-1 EVB and Accessory Equipments

## 4. USB Driver

You need to install the driver of Micro-USB, when use Micro-USB for data communication. Please get the driver from our FAE of Mediatek Company or download them from internet.

We have two different driver ICs for the Micro-USB. These download paths are as below:

[http://www.ftdichip.com/Drivers/CDM/CDM21218\\_Setup.zip](http://www.ftdichip.com/Drivers/CDM/CDM21218_Setup.zip)

[http://www.prolific.com.tw/US/ShowProduct.aspx?p\\_id=225&pcid=41](http://www.prolific.com.tw/US/ShowProduct.aspx?p_id=225&pcid=41)

LYNQ  
CONFIDENTIAL

# 5. PowerGPS

## 5.1 PowerGPS panel

The PowerGPS version is V2.3.3. The PowerGPS tool can help customer to view the status of GPS&GLONASS&BDS receiver. When the tool is opened, the following window will be displayed:

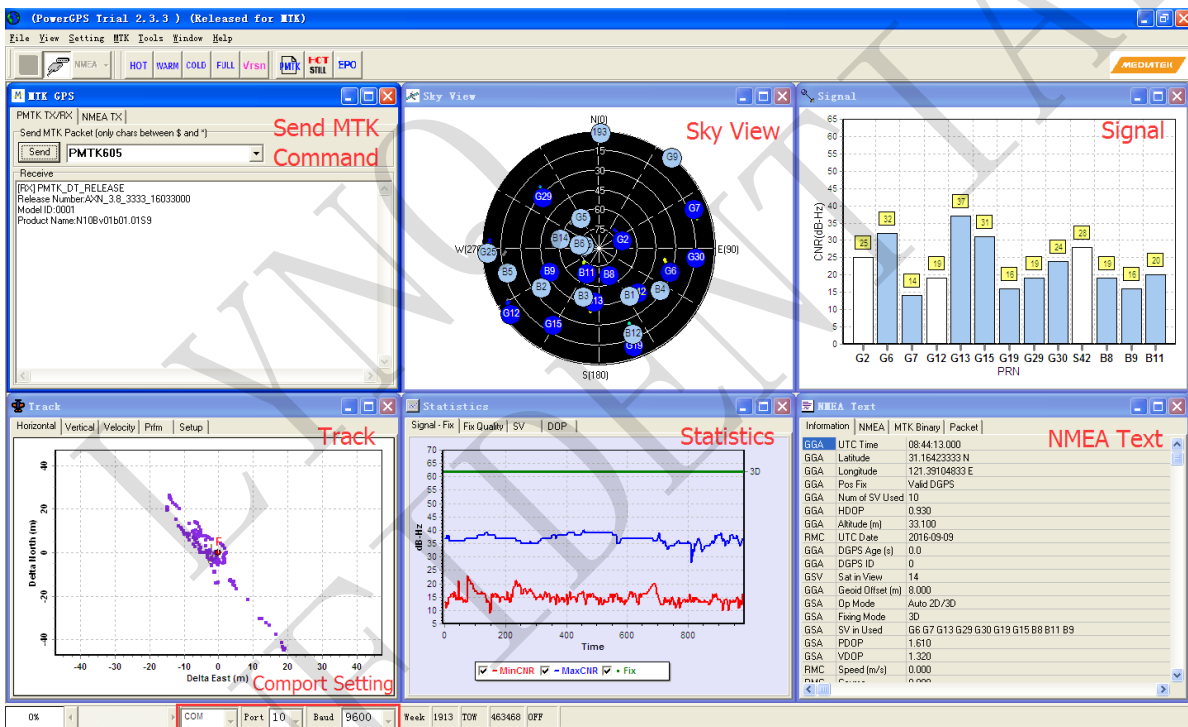
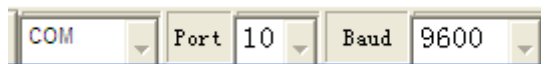



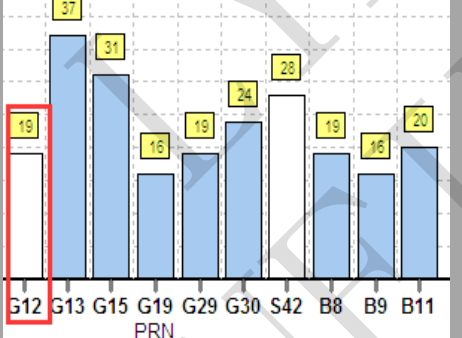
Figure 5-1 PowerGPS

Assemble the EVB accessories, supply power to the module, start up the PowerGPS, select a correct COM port and baud rate (N10 module supports 9600bps by default), then click the button “Create Connection”



From the window, customer can find CNR message, time, position, speed, precision and so on. More detail information are listed in Table 5.

Table 5 Explanations of PowerGPS Window

Icon	Explanation																																
	SV with PRN G19. If the position of SV is near to the centre of the Sky View, the elevation angle of SV is close to 90°. Dark blue means this satellite is in tracking.																																
	Light blue means this satellite is not in tracking.																																
	The CNR of PRN B8 is 41dB/Hz. Light blue column means the navigation data of this satellite is in use.																																
	The CNR of PRN G12 is 27dB/Hz. White column means the navigation data of this satellite is not in use.																																
<table border="1" data-bbox="204 1552 579 1809"> <tr><td>UTC Time</td><td>08:44:13.000</td></tr> <tr><td>Latitude</td><td>31.16423333 N</td></tr> <tr><td>Longitude</td><td>121.39104833 E</td></tr> <tr><td>Pos Fix</td><td>Valid DGPS</td></tr> <tr><td>Num of SV Used</td><td>10</td></tr> <tr><td>HDOP</td><td>0.930</td></tr> <tr><td>Altitude (m)</td><td>33.100</td></tr> <tr><td>UTC Date</td><td>2016-09-09</td></tr> </table>	UTC Time	08:44:13.000	Latitude	31.16423333 N	Longitude	121.39104833 E	Pos Fix	Valid DGPS	Num of SV Used	10	HDOP	0.930	Altitude (m)	33.100	UTC Date	2016-09-09	<table border="1" data-bbox="699 1552 1121 1809"> <tr><td>UTC time</td><td>UTC time</td></tr> <tr><td>Latitude degree</td><td>Latitude degree</td></tr> <tr><td>longitude degree</td><td>longitude degree</td></tr> <tr><td>Positing fix</td><td>Positing fix</td></tr> <tr><td>Using the number of satellites</td><td>Using the number of satellites</td></tr> <tr><td>Horizontal Dilution of Precision</td><td>Horizontal Dilution of Precision</td></tr> <tr><td>Altitude based on WGS84 Datum</td><td>Altitude based on WGS84 Datum</td></tr> <tr><td>UTC date</td><td>UTC date</td></tr> </table>	UTC time	UTC time	Latitude degree	Latitude degree	longitude degree	longitude degree	Positing fix	Positing fix	Using the number of satellites	Using the number of satellites	Horizontal Dilution of Precision	Horizontal Dilution of Precision	Altitude based on WGS84 Datum	Altitude based on WGS84 Datum	UTC date	UTC date
UTC Time	08:44:13.000																																
Latitude	31.16423333 N																																
Longitude	121.39104833 E																																
Pos Fix	Valid DGPS																																
Num of SV Used	10																																
HDOP	0.930																																
Altitude (m)	33.100																																
UTC Date	2016-09-09																																
UTC time	UTC time																																
Latitude degree	Latitude degree																																
longitude degree	longitude degree																																
Positing fix	Positing fix																																
Using the number of satellites	Using the number of satellites																																
Horizontal Dilution of Precision	Horizontal Dilution of Precision																																
Altitude based on WGS84 Datum	Altitude based on WGS84 Datum																																
UTC date	UTC date																																
<table border="1" data-bbox="204 1843 579 1995"> <tr><td>Fixing Mode</td><td>3D</td></tr> <tr><td>SV in Used</td><td>G6 G7 G13 G29 G30 G19 G15 B8 B11 B9</td></tr> <tr><td>PDOP</td><td>1.610</td></tr> <tr><td>VDOP</td><td>1.320</td></tr> <tr><td>Speed (m/s)</td><td>0.000</td></tr> </table>	Fixing Mode	3D	SV in Used	G6 G7 G13 G29 G30 G19 G15 B8 B11 B9	PDOP	1.610	VDOP	1.320	Speed (m/s)	0.000	<table border="1" data-bbox="699 1843 1090 1995"> <tr><td>Fix type: No-Fix, 3D or 2D SPS</td><td>Fix type: No-Fix, 3D or 2D SPS</td></tr> <tr><td>Using satellite</td><td>Using satellite</td></tr> <tr><td>Position Dilution of Precision</td><td>Position Dilution of Precision</td></tr> <tr><td>Vertical Dilution of Precision</td><td>Vertical Dilution of Precision</td></tr> <tr><td>Speed of receiver</td><td>Speed of receiver</td></tr> </table>	Fix type: No-Fix, 3D or 2D SPS	Fix type: No-Fix, 3D or 2D SPS	Using satellite	Using satellite	Position Dilution of Precision	Position Dilution of Precision	Vertical Dilution of Precision	Vertical Dilution of Precision	Speed of receiver	Speed of receiver												
Fixing Mode	3D																																
SV in Used	G6 G7 G13 G29 G30 G19 G15 B8 B11 B9																																
PDOP	1.610																																
VDOP	1.320																																
Speed (m/s)	0.000																																
Fix type: No-Fix, 3D or 2D SPS	Fix type: No-Fix, 3D or 2D SPS																																
Using satellite	Using satellite																																
Position Dilution of Precision	Position Dilution of Precision																																
Vertical Dilution of Precision	Vertical Dilution of Precision																																
Speed of receiver	Speed of receiver																																

## 5.2 PMTK Command

You can send PMTK command by PowerGPS, for example PMTK605. For more PMTK command, Please refer to the related documents.

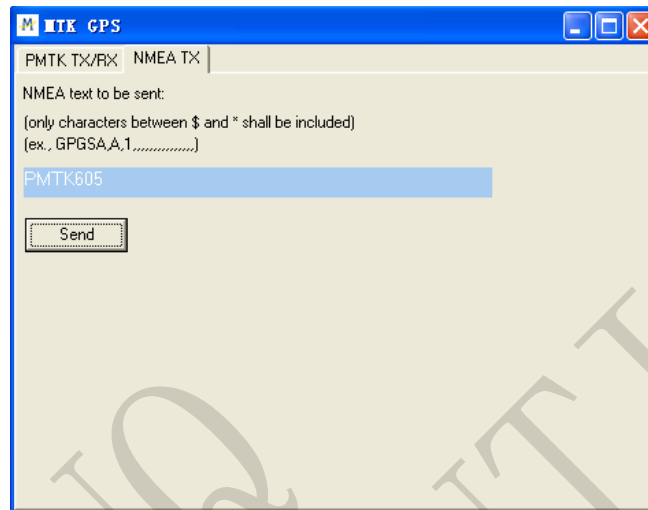


Figure 5-2 PMTK Command

## 5.3 Automatic TTFF Testing

This tool can measure the TTFF (Time to First Fix) under different testing conditions, like full start, cold start, warm start and hot start. And the number of tests can be chosen from 1, 10, 20, 100, 1000 and 10000. Click the Run button to start the test and click the Stop button to stop. The configuration is as below. Start "MTK" menu, and click "Static TTFF Testing", then "Static TTFF Testing".

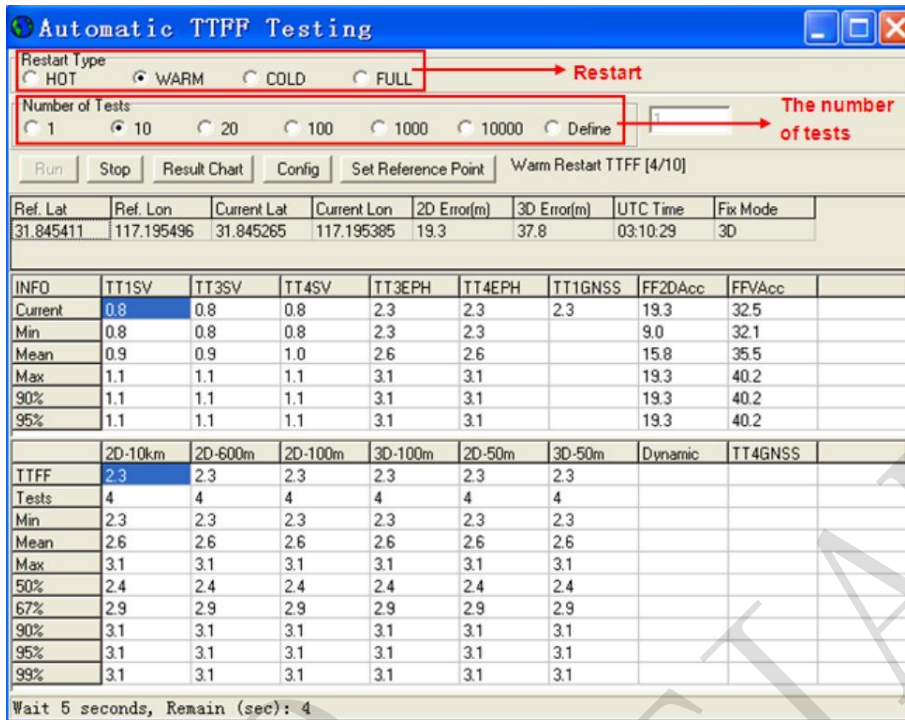


Figure 5-3 TTPF Test

Click “Set reference point”, and “Reference location”. After start positioning, click “Use Mean Position” and “OK”.

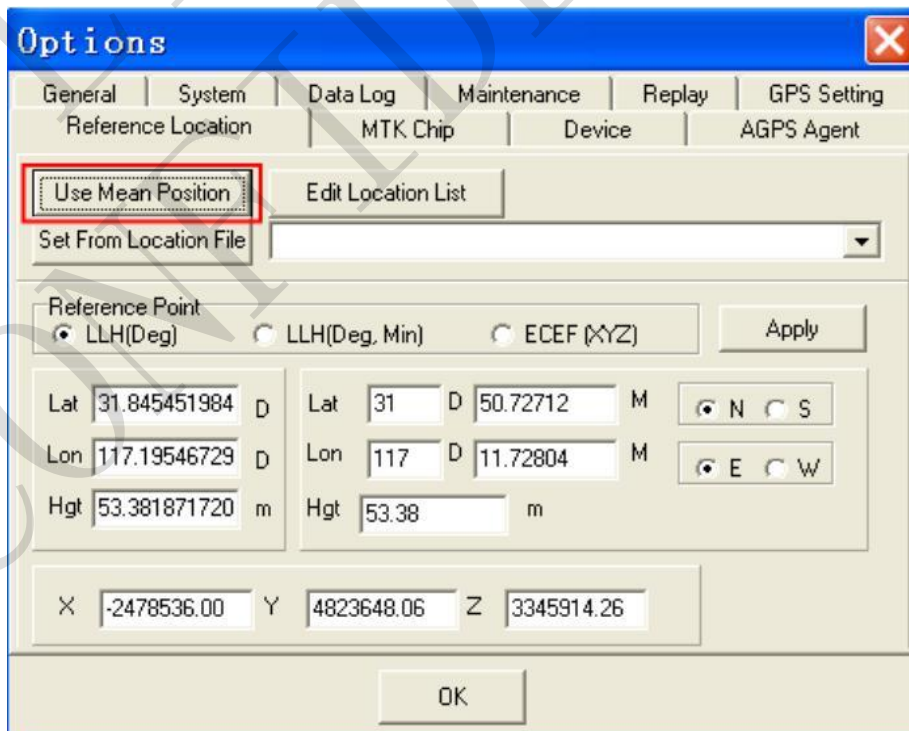




Figure 5-4 Static TTFB Testing Configuration Options

Click “Config”, set “TTFB Time-out (sec)”, then click “OK”:

Generally, if you want to choose hot start, warm start or cold start, “TTFB Time-out (sec)” sets 10s, 50s or 100s. “TTFB Time-out (sec)” can help you judge TTFB and save time.

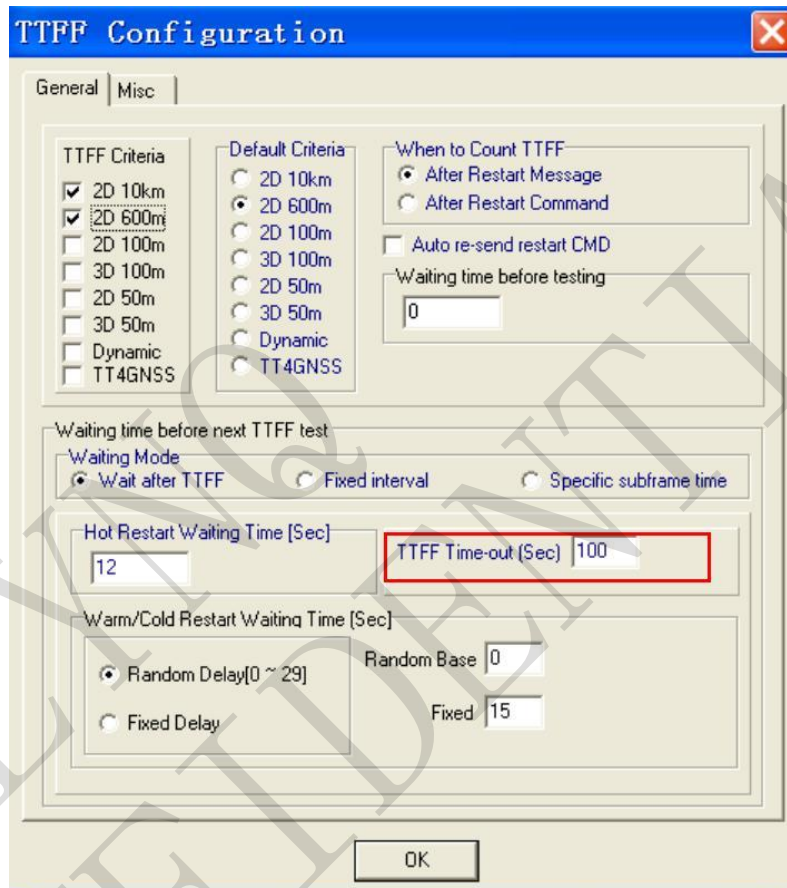


Figure 5-5 Static TTFB Testing Configuration

After completed, click on the Run button to start the test and click on the Stop button to stop. After finishing the testing, you can see the testing result charts. The result will be stored in the tool installation path, and you can view the corresponding log.