# N10/N20_EVB User Manual

**GPS Module Series**

**Version：** V1.1

**Date：** 2017-10-16

Shanghai Mobiletek Communication Ltd.

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# Version History

| Date | Version | Modify records | Author |
|---|---|---|---|
| 2016-09-11 | V1.0 | First release | Jason.liao |
| 2017-10-16 | V1.1 | Optimized layout format<br>Change company logo | Jason Liao |
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# Content

# 1. Overview

This document defines and specifies the usage of N10/N20 EVB. You can know how to use N10/N20 EVB and GPS demo tool from this document.

## 1.1 EVB Top View

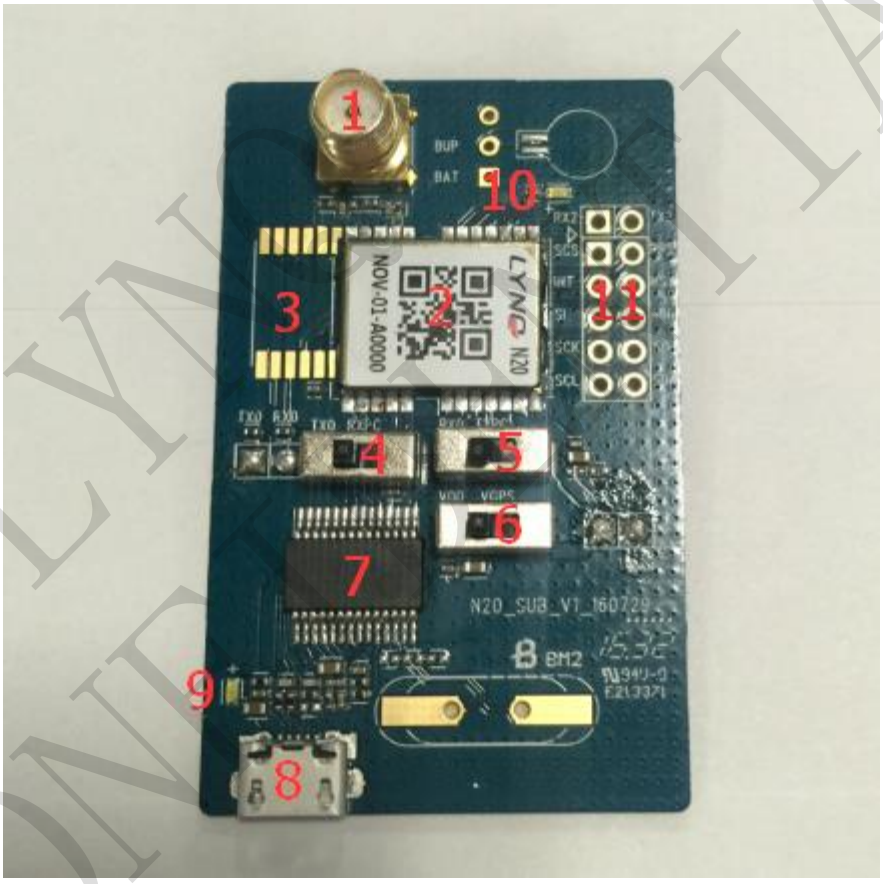



Figure 1-1 N10/N20 EVB Top View

1: Antenna Interface
2: N20 Module
3: N10 Module
4: TX Switch
5: RX Switch
6: Power Switch

7: USB to UART IC

8: 5pin Micro USB

9: USB Power Indication LED

10: PPS Indication LED

11: Test Points

## 1.2 EVB Accessories

Figure 1-2 EVB Accessories

1: USB Cable

2: GPS active antenna (3.3V)



# 2. Application

## 2.1 GPS Module


Figure 2-1 GPS Module

The EVB board can support two kinds of GPS Modules (N10 and N20) to test. Each GPS module has different match circuit position seen as the arrows.

## 2.2 Switch

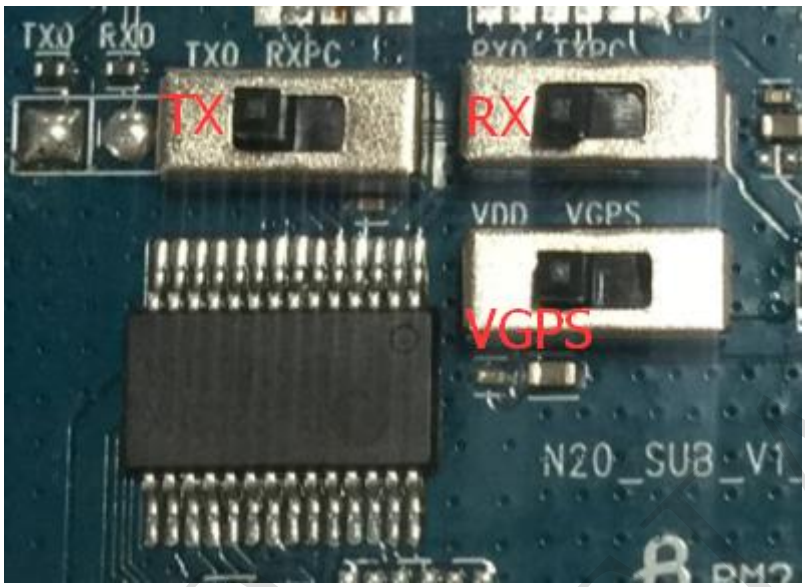



Figure 2-2 Switch

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

Both the active antenna and passive antenna can be selected for the external antenna. Please note the N10 and N20 have the different match circuits.

## 2.5 Status LEDs

The EVK board has two indication LEDs. One is USB power indication (9) 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

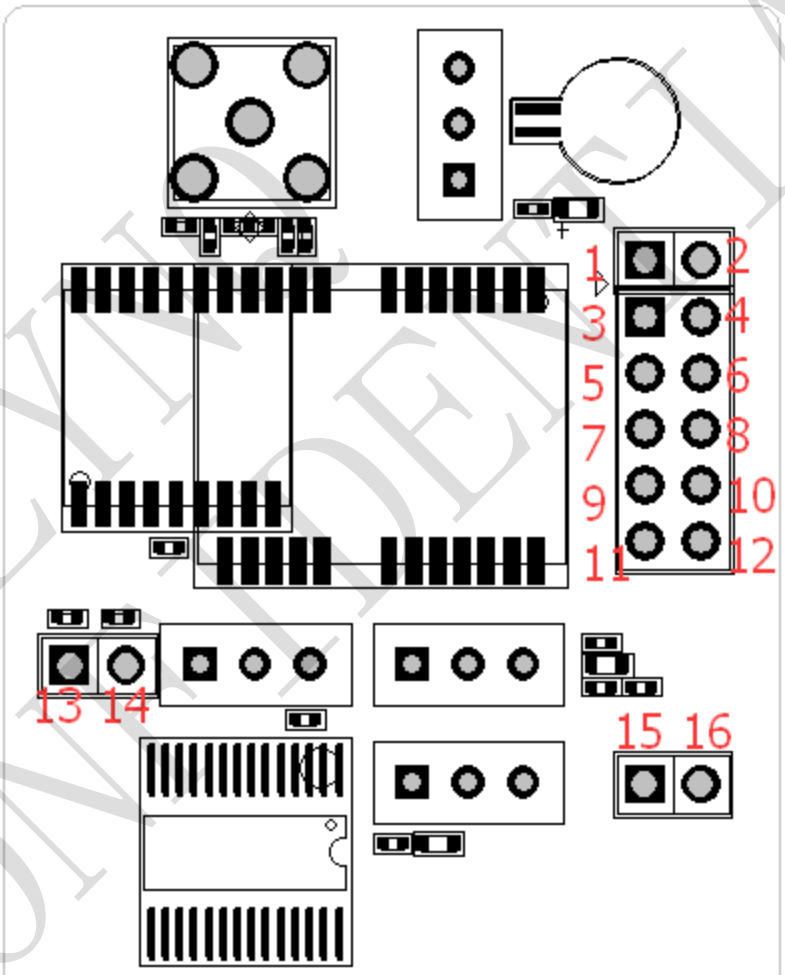



Figure 2-3 Test Point

Table 2-1: Pins of Test Point

| Pin | Pin Name | I/O | Description |
|---|---|---|---|
| 1 | RX2 | I | Receive data2 |
| 2 | TX2 | O | Transmit data2 |
| 3 | SCS | O | Select signal of SPI |
| 4 | PPS | O | 1 pulse per second |
| 5 | INT | I | Interrupt signal |
| 6 | RST | I | System reset |
| 7 | MOSI | I | Master output slave input of SPI |
| 8 | ANT_ON | O | External LNA control pin |
| 9 | SCK | O | Clock of SPI |
| 10 | MISO | O | Maser input slave output of SPI |
| 11 | SCL | O | Clock of IIC |
| 12 | SDA | O | Data of IIC |
| 13 | TX0 | I | Transmit data2 |
| 14 | RX0 | O | Receive data2 |
| 15 | VGPS | I | GPS Module Power Supply |
| 16 | GND | I | GND |



# 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.prolific.com.tw/US/ShowProduct.aspx?p_id=225&pcid=41

# 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:

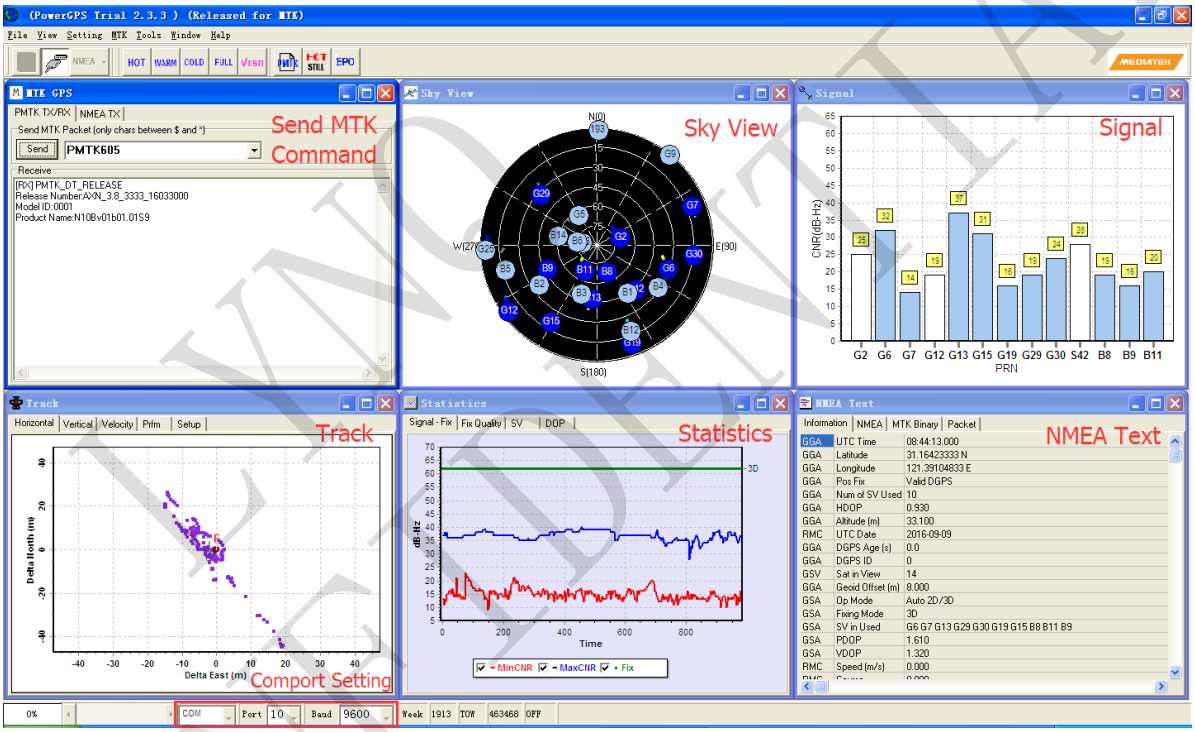
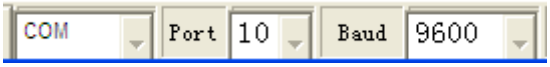


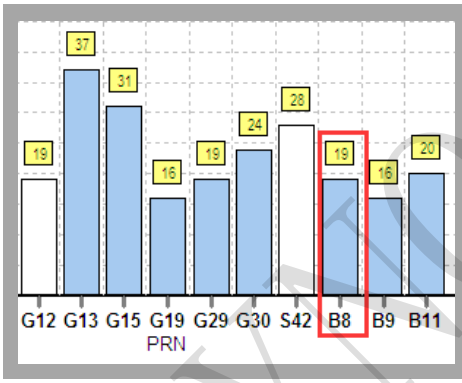
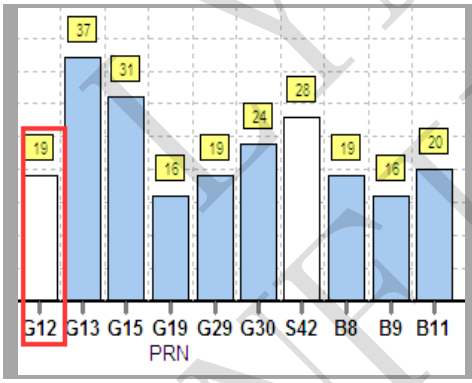
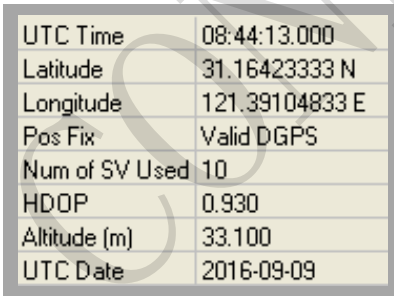
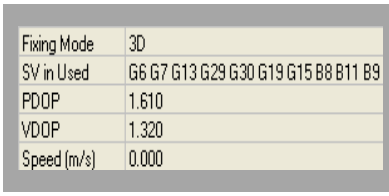

Figure 5-1 PowerGPS

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. |
|   | UTC time<br>Latitude degree<br>longitude degree<br>Positing fix<br>Using the number of satellites<br>Horizontal Dilution of Precision<br>Altitude based on WGS84 Datum<br>UTC date |
|   | Fix type: No-Fix, 3D or 2D SPS<br>Using satellite<br>Position Dilution of Precision<br>Vertical Dilution of Precision<br>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.

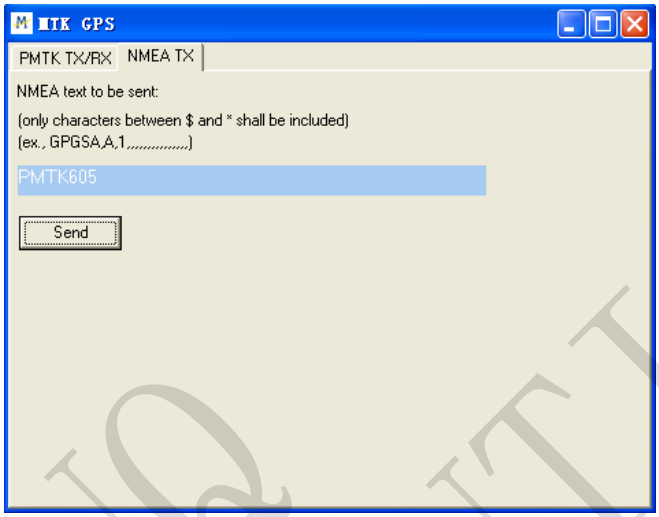



Figure 5-2 PMTK Command

## 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”.

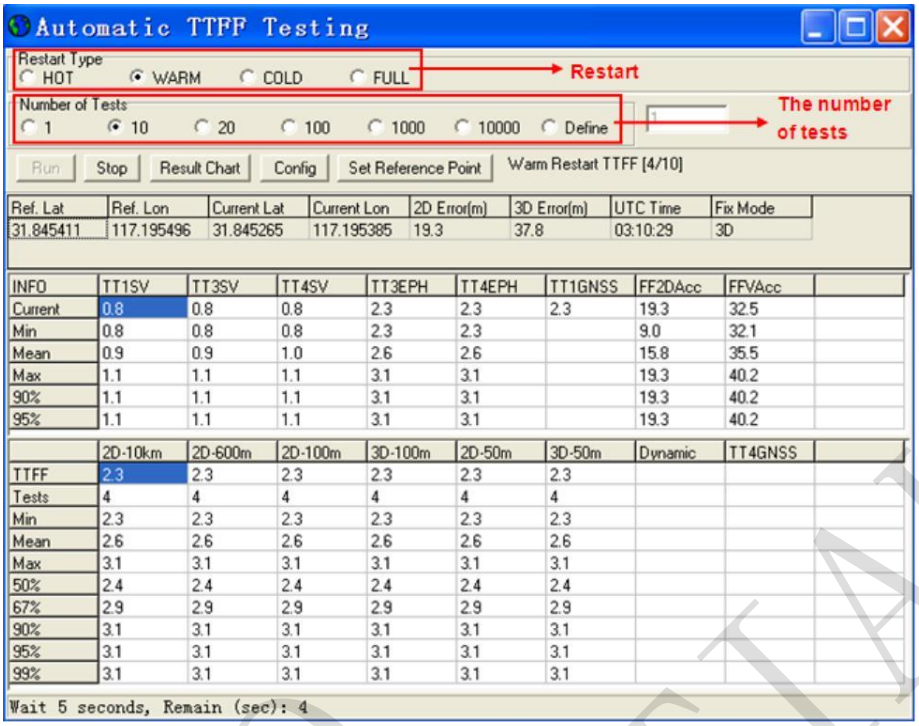



Figure 5-3 TTFF Test

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

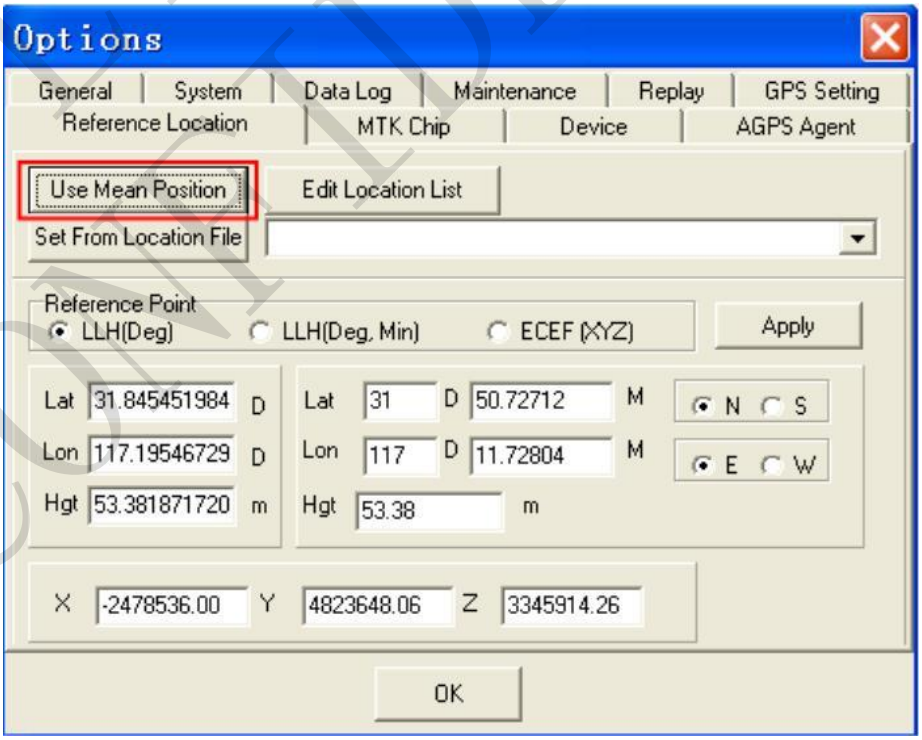


Figure 5-4 Static TTFF Testing Configuration Options

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

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

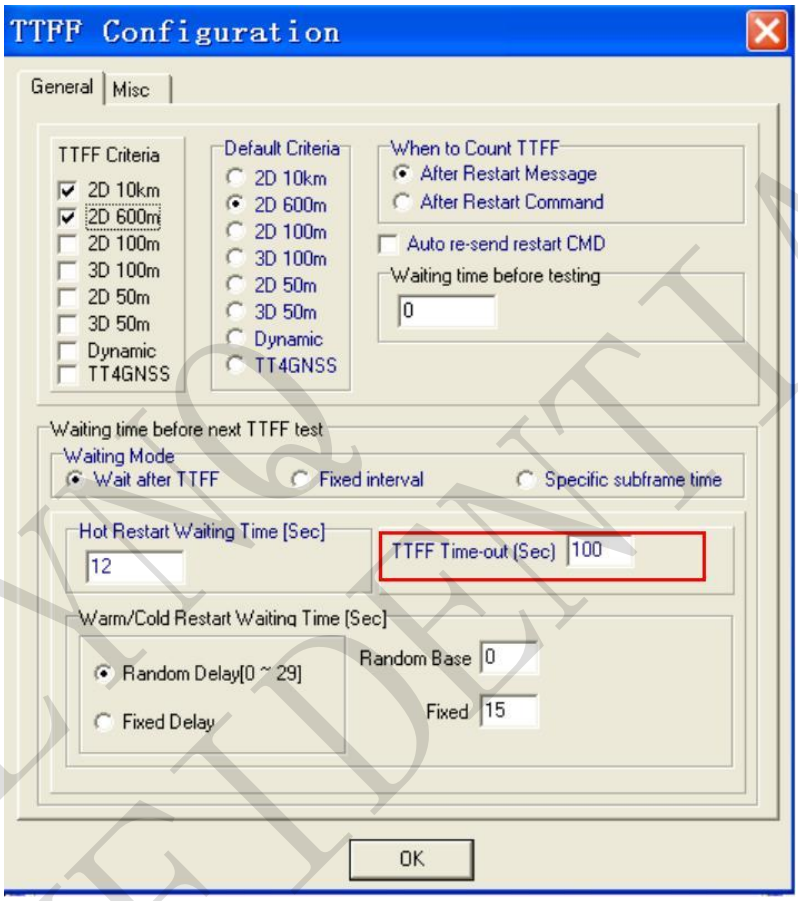



Figure 5-5 Static TTFF Testing Configuration

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.

