



# Tracking NMEA protocol and Accuracy check using Google Earth

## 1. Displaying NMEA protocol log as a track in Google Earth

1. Save a NMEA .txt log file using SiRFLive / other software.  
The log **must** contain **only** the standard NMEA messages.
2. Go to the following visualizer web site -

[http://www.gpsvisualizer.com/map\\_input?form=googleearth](http://www.gpsvisualizer.com/map_input?form=googleearth)

3. On the right side – click on the “choose file” button.
4. Choose the log file and click “Create KML file”.

KML is a protocol supported by Google Earth.

KMZ is a compressed protocol also supported by Google Earth.

5. This visualizer will create a kml / kmz file and you will get the following screen:

\*\* If you don't have GoogleEarth installed on your PC –  
Download and install Google Earth.

6. Click in the kmz file link. Your browser will download the kmz file. Click on this downloaded file, and it will be opened in GoogleEarth.


**GPS Visualizer**

MAKE A MAP  
- Google Maps  
- Google Earth  
- JPC/PNG/SVG


MAKE A PROFILE  
CONVERT A FILE  
Draw on a map  
Calculators


Geocode addresses  
Look up elevations  
Atlas: Share a map  
GPSBabel

**Google Earth output**  
Your GPS data has been processed. Here's your KML or KMZ file:

 [20151219230400-95069-map.kmz](#)

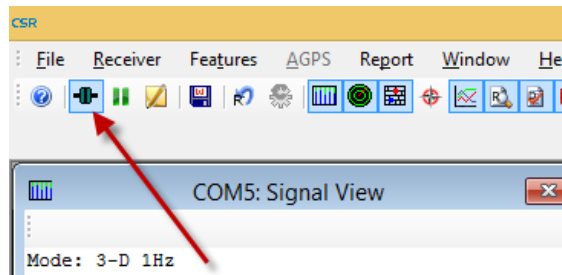
If you've already installed [Google Earth](#), clicking the above link should open the application. If something does

 [Create a "DEMIS physical map" overlay](#) to accompany your KML file (or [explore more overlay options](#))

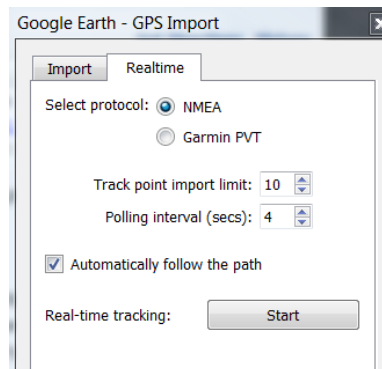
 [SAVE THIS TRIP, add photos, & share with others @ EveryTrail.com](#)

## 2. Real Time Tracking

1. Open SiRFLive software and establish a connection in NMEA protocol.
2. Click on the “Disconnect” button in the top bar of SiRFLive software, but don’t physically disconnect the USB cable from the PC.



3. Open Google Earth software utility
4. From the menu select Tools -> GPS. A menu window will appear.
5. In the “select protocol” section – select NMEA.
6. Check the “Automatically follow the path” checkbox.
7. Click on Start.



8. You will see the path in Google Earth.

### 3. Scattering / Deviation Check

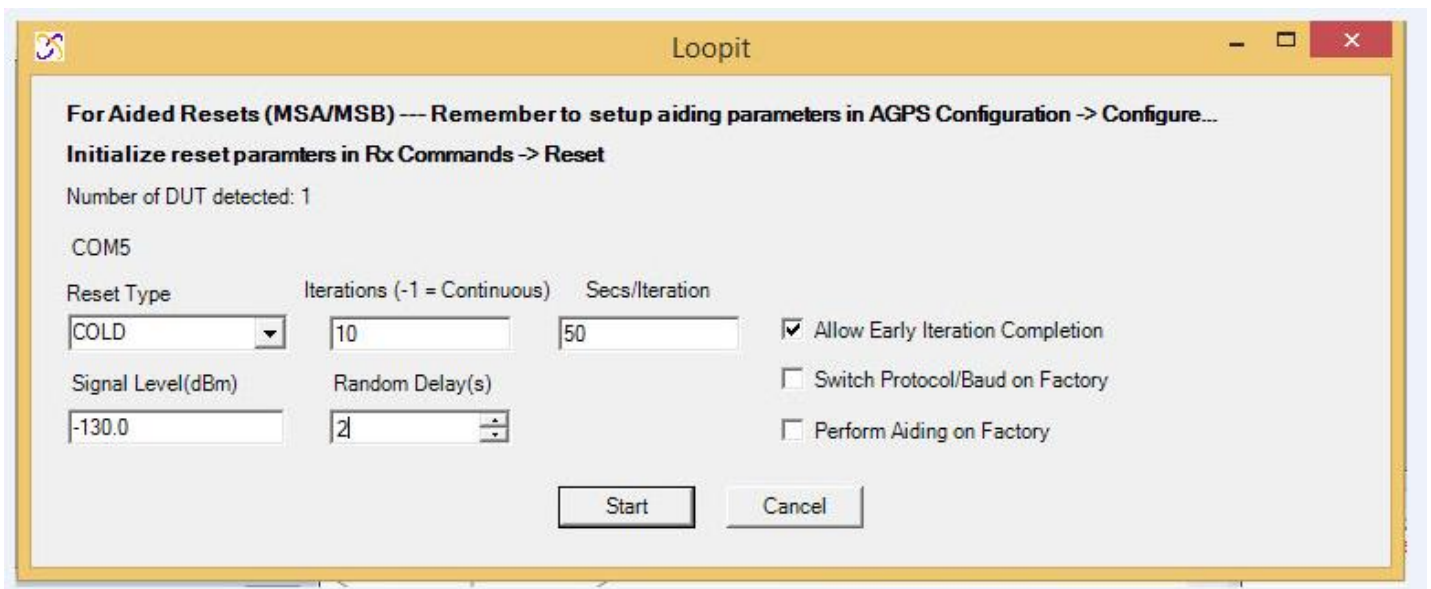
This test should be done in one of the following conditions:

a. Receiver is static at a fixed point, up to 1 cm, in open sky conditions.

Or

b. With a GPS simulator with a known point.

1. In SiRfLive software, after you establish the connection in NMEA protocol, go on the top menu to Receiver -> Automation Test -> loopit.
2. A window may pop with a title "Information", "\*\*\* For position accuracy..." – if you have this window just click YES.
3. You will have a "Loopit" window opened. Please fill the fields as follows:



4. After the loopit test is finished, the log of the loopit test will be automatically saved in the folder of SiRFLive folder, usually it is in C:\CSR\SiRFLive\Log\12202015 (current day's date).
5. Inside this folder you will have a NMEA txt log file, whose name starts with the time of the test, for instance

153619\_COM5\_SiRF\_.....

Please note – you will have 2 txt files for every test – for example:

142512\_COM5\_SiRF\_EVK\_COLD\_-130.0.txt

142512\_COM5\_SiRF\_EVK\_COLD\_-130.0\_error.txt

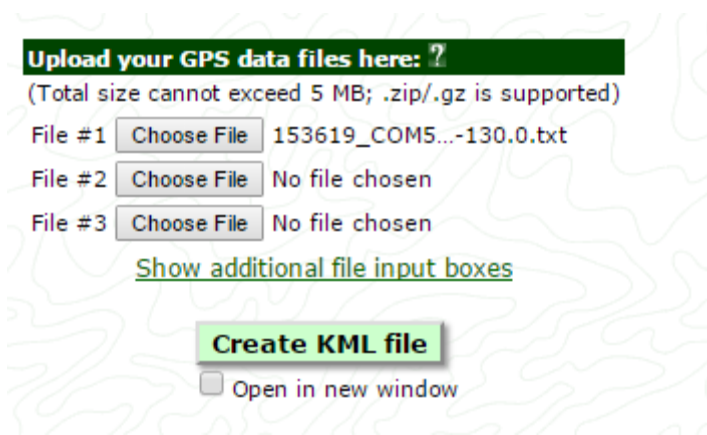
You should choose the regular file, not the “error” file.

6. Open the following Visualizer:

[http://www.gpsvisualizer.com/map\\_input?form=googleearth](http://www.gpsvisualizer.com/map_input?form=googleearth)

7. On the right side – click on the “choose file” button.

8. Choose the log file from the folder described in section 5, and click “Create KML file”.



9. The visualizer will create a kmz file and you will get the following screen:



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10. Click in the kmz file link. Your browser will download the kmz file.  
Click on this downloaded file, and it will be opened in  
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11. You will see several red dots. The dots should be as close as possible to each other. The dots' scattering indicates GPS deviation – as close the dots are to each other – the better the scattering is.

## 4. Calculating GPS latitude/longitude from NMEA strings

GPS module reports coordinates in WGS84 Datum (latitude longitude)-degrees, minutes format (ddmm.mmmm) , while Google Earth supports 2 types of coordinate systems:

- a. Decimal degrees.
- b. Degrees, minutes, seconds.

Therefore you cannot take coordinates from the module's NMEA messages and copy them directly to Google Earth.

For example, suppose that the NMEA string values for a position are as follows:

3218.0489, N, 6447.5086, W

The NMEA strings are decimal-decimal values. In order to turn them into decimal degree values, you have to do some math:

$$32\ 18.0489\ N = 32\ \text{degrees} + 18.0489 / 60 = 32.300815\ N$$

$$64\ 47.5086\ W = 64\ \text{degrees} + 47.5086 / 60 = 64.79181\ W$$

Now these coordinated may be entered to Google Earth and give the correct location.

Another type of input to Google Earth is using degrees/minutes/seconds. The math to do that is fairly simple:

$$32.300815 = 32\ \text{degrees}$$

$$.300815 * 60 = 18.0489 = 18\ \text{minutes}$$

$$.0489 * 60 = 2.934\ \text{seconds}$$

Which can be written as: 32° 18' 2.9"

This coordinate may also be entered to Google Earth.