

# Report on GNSS Training

Course ID: T151-40

**Team No: 08**

Team Members:

Tek Bahadur Kshetri

Saurav KC

Arjun Rajlawat

Nyamdagva Ayush

# Training held at GIC/AIT, Thailand

6 – 10 JAN 2020

## Table of Contents

### Table of Contents

1.	Team 08	4
1.1.	Executive Summary	4
1.2.	Team Members	5
1.3.	Introduction	6
1.4.	Summary	6
1.5.	Recommendations	9

## 1. TEAM 08

### 1.1. EXECUTIVE SUMMARY

In this GNSS training session, we learn about the lots of new techniques about Global Navigation Satellite System (GNSS). Now we can collect the data from field using different receivers like, M8T, F9P, septrio etc. We can collect the data using u-center/u-blocks (softwares) or RTKDroid (mobile application). We can now apply different positioning methods, like Single Point Positioning (SPP), Real Time Kinematic (RTK), Post Processing Kinematic (PPK) and DGPS.

## 1.2. TEAM MEMBERS

<b>Name</b>	<b>Email ID</b>
Tek Bahadur Kshetri	<a href="mailto:iamtekson@gmail.com">iamtekson@gmail.com</a>
Saurav KC	<a href="mailto:st120967@ait.asia">st120967@ait.asia</a>
Arjun Rajlawat	<a href="mailto:noozrajlawat@gmail.com">noozrajlawat@gmail.com</a>
Nyamdagva Ayush	<a href="mailto:nyamdagva.a@gmail.com">nyamdagva.a@gmail.com</a>

### 1.3. INTRODUCTION

Global Navigation Satellite System (GNSS) receivers, using the GPS, GLONASS, Galileo or BeiDou system, are used in many applications. The first systems were developed in the 20th century, mainly to help military personnel find their way, but location awareness soon found many civilian applications.

The main objective of our study is to compare two low cost and high cost receiver and calculate the accuracy on different methods like SPP, DGPS and PPK.

### 1.4. SUMMARY

#### Zero Baseline Data

In this setup, the single antenna is connected to the two different receiver. One is high cost receiver and one is low cost receiver. And these receiver will used for the base and rover in different cases to find out the actual position of the point. Low cost receivers can be used when required conditions are met along with the good quality antenna.

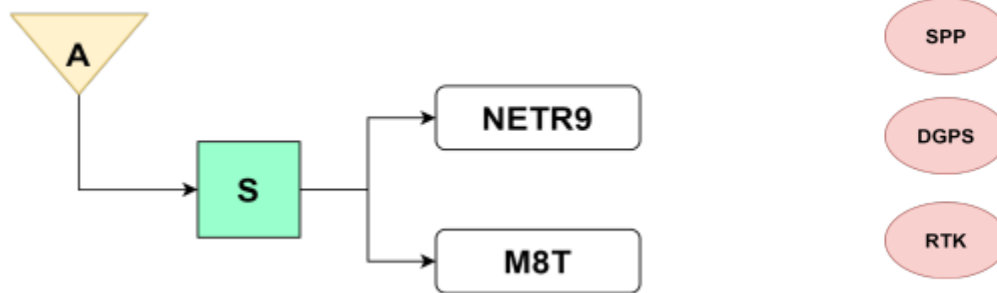


Fig 1: Zero baseline receiver setup

fig 2: Data processing

Single  
Point  
Positioning  
(SPP)  
method

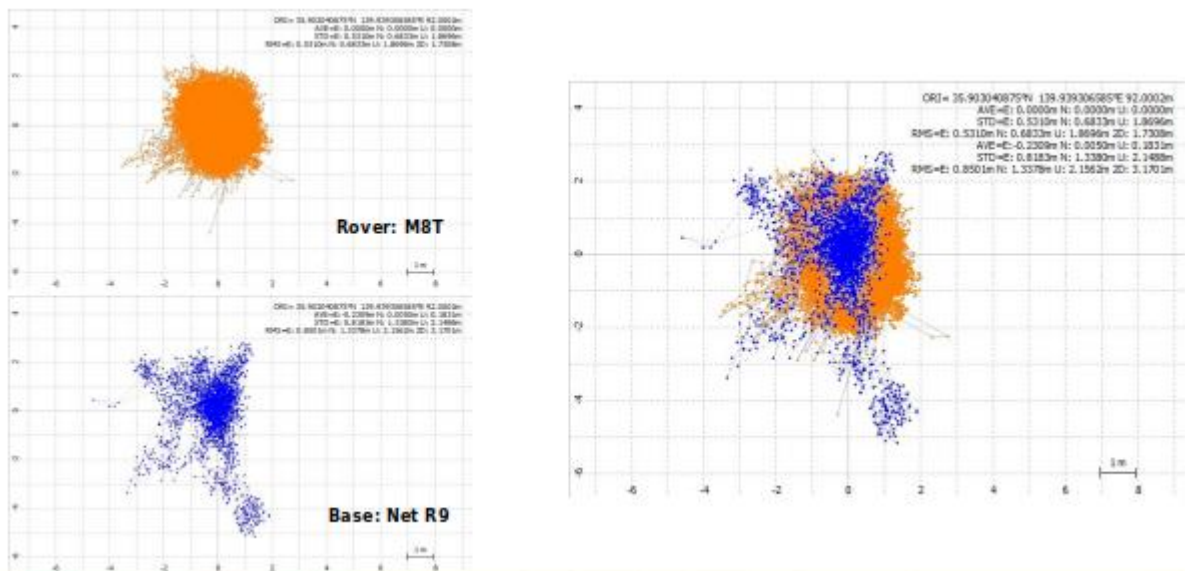


fig 3: SPP using two different receiver

DGPS method

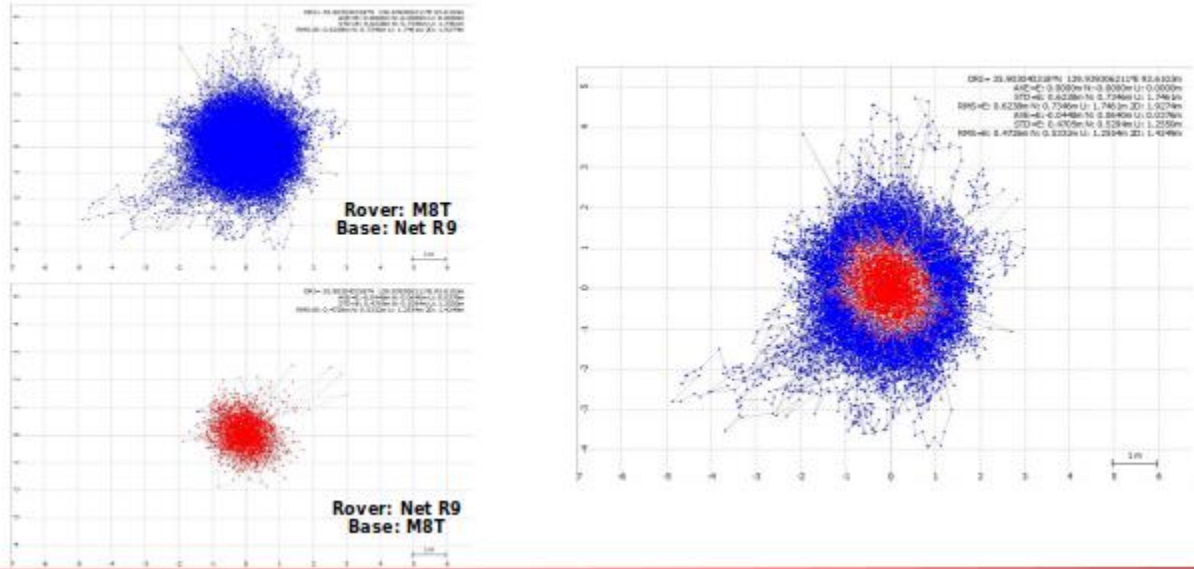


fig 4: DGPS method

### RTK method

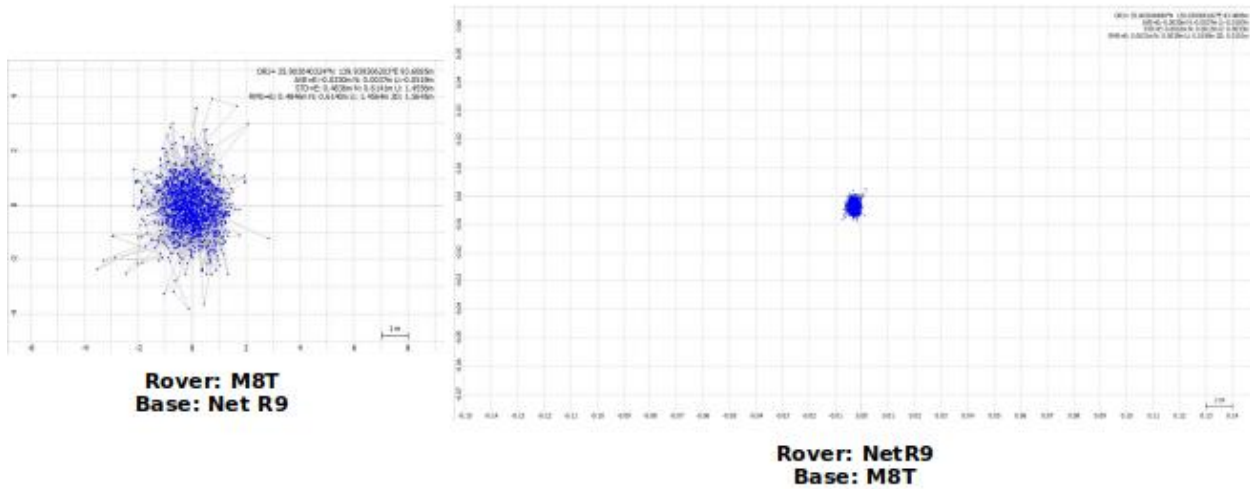


Fig 5: RTK Method

### Linear Error Analysis

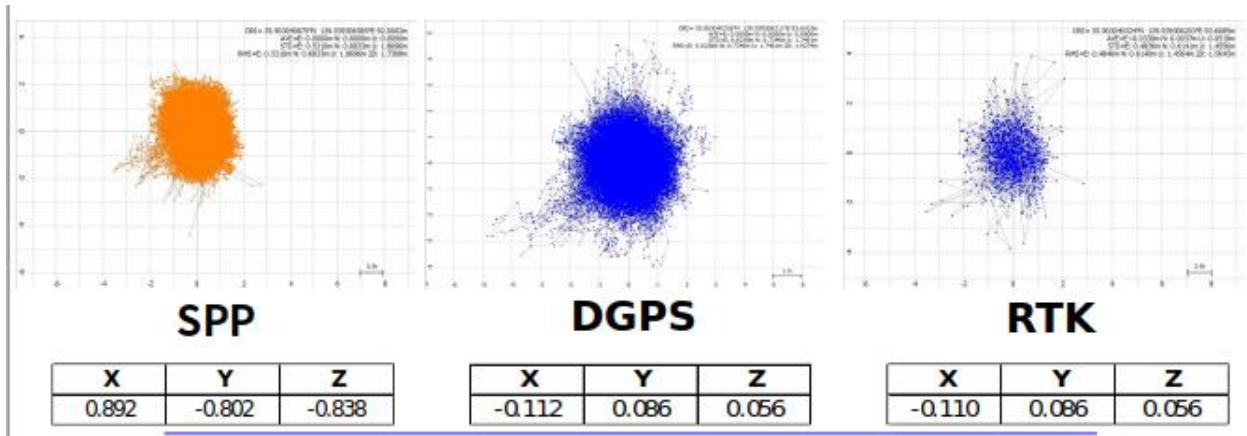


fig 6: linear error analysis

From above result, we conclude that the RTK method is high accurate method then SPP and DGPS.

### 1.5. RECOMMENDATIONS

Following are the recommendations:

1. The RTK method is the precise one, so for the high accuracy upto millimeter, we can use RTK.
2. The accuracy is directly proportional to the time of receiving data. So for high accuracy, we should receive data for more time.
3. During different data augmentation especially RTK, the internet connections should be stable.