

Report on GNSS Training

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Team No: 12

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Table of Contents

Table of Contents

1. Introduction	3
1.1. Team Members.....	3
2. Workflow.....	3
2.1. U-Center Program.....	3
2.2. Field Data Collection	4
2.3. Data Processing and Result.....	5
2.3.1 Single Point Position (SPP).....	5
2.3.2 Kinematic	6
3. Executive Summary	Error! Bookmark not defined.
4. Conclusion and Recommendation	7

- Record Data and Eject after Finishing data collection
- Conversion Data from ubx to rinex with RTKCONV
- Data processing with RTKLIB program

2.2 FIELD DATA COLLECTION

2.2.1 TYPE OF RECEIVER

U-Blox M8T uses single frequency while F9P uses Dual frequency



M8T Receiver

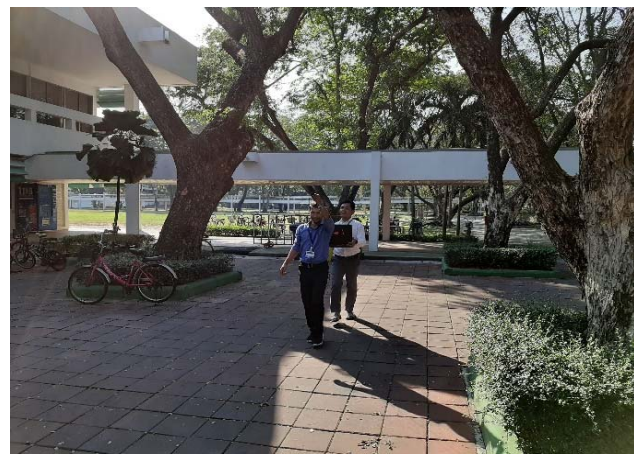


F9P Receiver

Data collection with Static and Dynamic by using M8T



Static data collection



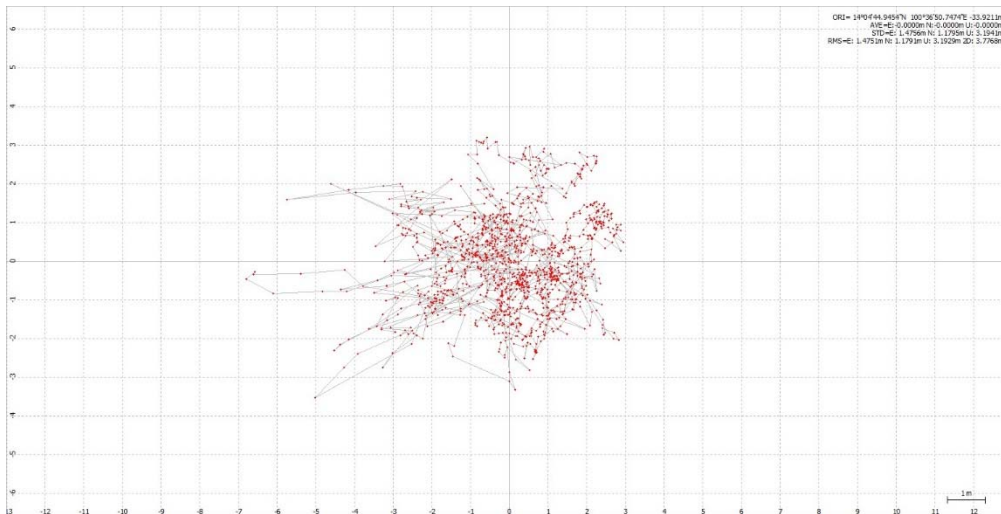
Dynamic Data Collection

2.3 DATA PROCESSING AND RESULT

RTKLIB was used to process the data using different methods like SPP, DGPS and Kinematic.

2.3.1 SINGLE POINT POSITION (SPP)

- M8T result

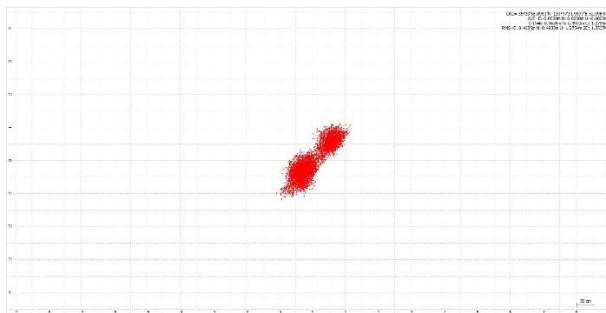


Q=5:1359 (100%)

As a result, we cannot get good precision and accuracy, because M8T was processed in single position system. But it would be better with other methods as RTK.

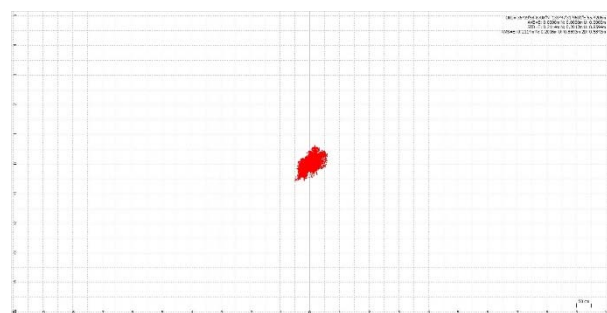
We used static observation data from M8T, F9P and R9T receiver and make the comparison as below

- M8P and F9P results and comparison



Q=5:5094 (100%)

data of M8P processing



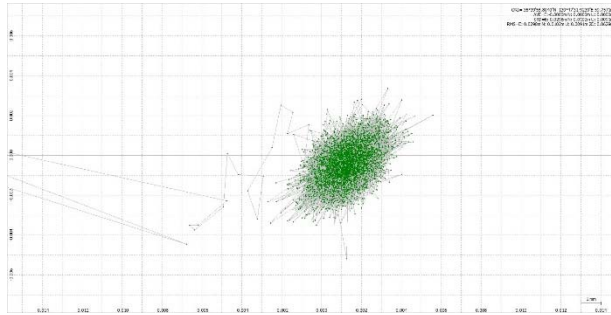
Q=5:4960 (100%)

data of F9P processing

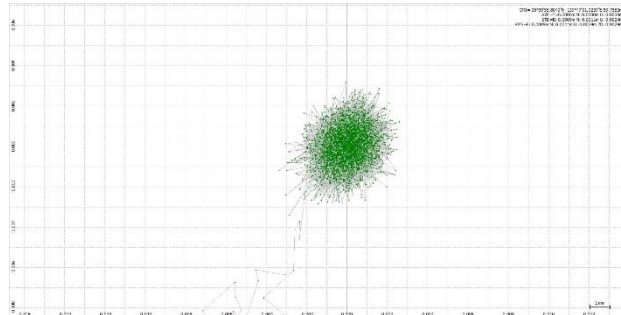
As the result of Single Point Position, F9P data is better than M8P with precision, as M8P has a single frequency while F9P has Dual frequency.

2.3.2 KINEMATIC

- M8P and F9P results and comparison

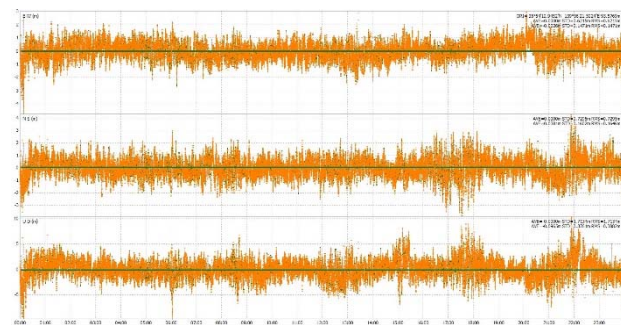


data of M8P processing

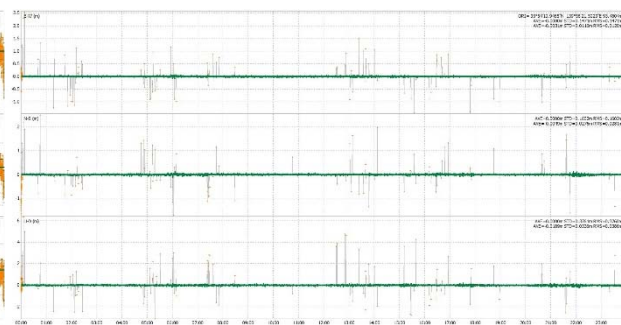


data of F9P processing

As a result from kinematic(RTK) F9P and M8P are more accurate compared to SPP cause it has the reference station to remove the errors. However, F9P is better than M8P both precision and accuracy. M8T and NetR9 results and comparison



Processed with Instantaneous method



Process with Continuous

As a result from kinematic M8T and NetR9, In the picture above NetR9 is better than M8T. NetR9 is a high-cost receiver. but it depends on the processing options in RTKLIB like elevation mask , Integer ambiguity res, satellites systems option like we should include or exclude, to get more accuracy.



Result data of F9P processing with GLONASS

Result data of F9P processing without GLONASS

As a result from kinematic of dynamic data processing , we could get the better result without GLONASS satellite systems.

3. EXECUTIVE SUMMARY

Global Navigation Satellites Systems (GNSS) are the completely standard of all satellites systems including GPS, GLONASS, GALILEO, BEIDOU, QZSS, NAVIC and some other system type as SBAS (which provide by WAAS USA, MSAS Japan, EGNOS Europe, GAGAN India, SDCM Russia etc..). From those constellation satellites, connected to the our GNSS receivers, must provide carrier signal, PRN code, and Navigation message for the connection. It can provide centimeter level accuracy with both low-cost receiver and high-cost receiver. Low-cost receiver M8T, F9P were used to collect the data during field survey. Information Data from satellites was processing with different method SPP, DGPS, kinematic. We got almost the same result of data information from both low-cost and high cost receiver. The data processed from RTKLIB program must try different type of options selection in order to get high quality.

4. CONCLUSION AND RECOMMENDATION

- Both low-cost and high cost receivers are not far deferent from processing data , but it depends on options and methods selected in RTKLIB program. So we should try deferent one.
- We tested only for short distance, so we should test it for wide range area and long distance