

Data Quality and Outdoor Positioning Accuracy of Recent Smartphones with Dual Frequency GNSS Receivers

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SUMMARY

We report on experimental settings and measurement results for in situ outdoor positioning by using two recent Android driven smartphones with in-device dual frequency L1/L5-band GNSS receivers. The experiments were performed in Central Europe near TU Wien, Vienna, Austria. Different raw data logging Apps were tested. Measurements were carried out in different scenarios in open sky and obstructed environments in static, stop-and-go, and kinematic mode. In general, data quality was poor, and especially L5-band signals are scarcely received in our experiments. In some cases, carrier phase data are completely missing. Therefore, as for the devices under test, both real-time positioning and post-processing the data for achieving higher positioning accuracy are very limited. This causes that the solution falls back very often to code SPP (Single Point Positioning) instead of carrier PPP (Precise Point Positioning) in single mode. In differential mode, no RTK carrier and baseline solutions can then be processed. The comparison of the usage of different raw data loggers showed that these Apps behave quite unstable. Thus, they have a significant impact on the signals logged and their quality.

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