



On the field evaluation of the Galileo High Accuracy Service (HAS) E6-B signal

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The European Commission, through the Commercial Service (CS) implementing act (European Commission, 2018), established that the Galileo High Accuracy Service will allow achieving decimeter accuracies on a freely basis. The service will be based on the broadcasting of Precise Point Positioning (PPP) corrections through the E6-B data components of the E6 signal while the E6-C pilot will be encrypted and exploited for the Commercial Authentication Service (CAS).

Therefore, it will be possible to achieve high accuracy without the need of nearby reference stations, as required by Real Time Kinematic (RTK) techniques or commercial correction providers, typically required for exploiting PPP techniques. It is expected that the service will benefit many emerging applications, including autonomous driving, drones, agriculture, just to mention some.

The Galileo group of the Joint Research center is performing an extensive test campaign to assess the performance of the Galileo E6-B signals under different scenarios which could represent the typical scenarios of potential HAS users. They include open-sky, rural, sub-urban and urban environments. The tests are conducted by exploiting E6 capable antennas and receivers of different grade. In this way it is possible to analyse how the use of lower grade equipment impacts on the Galileo E6-B performance.

The assessment is performed by evaluating the Galileo E6-B signal quality, tracking and demodulation performance. Currently, the Galileo E6 signal is transmitting a known dummy message which allows estimating the bit and page error rate under different conditions. Indeed, the Galileo E6-B signal is characterized by a very high bit rate (around 500 bps) and therefore it is of interest to assess the signal demodulation performance under challenging scenarios, for instance characterized by strong multipath or when lower grade antennas are used.

References

- [1] European Commission. (2018). COMMISSION IMPLEMENTING DECISION (EU) 2018/321 of 2 March 2018 amending Implementing Decision (EU) 2017/224 (CS Implementing Act). Official Journal of the European Union.