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## GNSS-SDR: An Open Source Software-Defined GNSS Receiver

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**ABSTRACT** - This paper presents a new platform for the experimentation with GNSS signals. It includes a set of commercial of-the-shelf hardware and an open source software, constituting a state-of-the-art platform for research and development of next-generation GNSS receivers. The core of the platform is GNSS-SDR, an open source software-defined GNSS receiver which has been extended to support multi-band and multi-system operations. As a relevant case of use to validate the research facility, we present a triple band GNSS-SDR customization capable of receiving four GNSS signals in real-time: GPS L1 C/A, GPS L2CM and Galileo E5a. In addition, we provided detailed descriptions of the receiver architecture, identifying the synchronization challenges of the multi-system satellite channels and providing practical and reproducible solutions. The source code developed to produce this paper has been released under the General Public License, and it is freely available on the Internet.

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