

Direct Digitalization and Frequency Translation using an Undersampling Scheme for Software-Defined-Radio based RFID UHF-Systems

Salvador Grey, Gerd von Bögel, Andreas Hennig, Frederic Meyer, Fraunhofer IMS, Duisburg, Germany

Abstract

This paper presents the advantages of the undersampling techniques in the digitalization of UHF signals. The applications of these techniques reduce the use of hardware and analog signal processing, thus reducing the size and complexity of the analog Front-End. The direct sampling of the UHF signal gives the possibilities for an earlier digital signal processing. A possible implementation of this technique is presented, simulated and verified using a Wavemaster Lecroy oscilloscope. This implementation is intended for Software Defined Radio applications in RFID-Systems.