

2019 IEEE 28th International Symposium on Industrial Electronics (ISIE), Vancouver, BC, Canada, 12-14 June 2019

Technology Coexistence in LPWANs-A Comparative Analysis for Spectrum Optimization

Abu-Mahfouz, Adnan MI
Council for Scientific and Industrial Research
Pretoria, 0001, South Africa
Email: AAbuMahfouz@csir.co.za

Abstract

Low-Power Wide-Area Networks (LPWANs) are designed to overcome range and scalability problems encountered by traditional cellular networks and short-range communication technologies. This has brought a revolution to wireless communications in an unprecedented manner. Internet of things (IoT) on the other hand allows the connectivity of these networks to take place. The most suitable technology for many IoT applications is the LPWAN due to some characteristics peculiar to this technology like low power, long battery life, wide coverage and low deployment and operational costs. Many of LPWAN technologies are found in the unlicensed spectrum with a lot of different technologies deployed at close range, congestion and interference are bound to occur. Hence, the spectrum needs to be optimized for efficiency, reliability and better quality of service. This paper reviews different optimization techniques in an environment of technology coexistence, the merits and demerits of the different techniques and its application to LPWANs. The paper also highlights the recommendations and future directions for spectrum optimization in LPWANs.