LWA: THE BESTUSEOFUNLICENSEDBAND

Rojeena Bajracharya, Rakesh Shrestha and Sung Won Kim

Yeungnam University, South Korea

Abstract

Exponential increase in wireless data demands and limited nature of licensed spectrum for cellular network has motivated the consideration of integrated LTE-Wi-Fi systems. The first efforts of integration by 3GPP was License Assisted Access(LAA), which simply extends LTE carrier aggregation feature used in licensed bands to unlicensed bands to assist LTE data transmission with new 5 GHz LTE-enabled device and small cells for unlicensed band use. In other hand, LTE-WLAN aggregation (LWA), capable of leveraging legacy devices and base stations, emerged as an alternative of LAA. LWA design primarily follows LTE Dual Connectivity architecture (defined in 3GPP Release 12), which allows a UE to connect to multiple base stations simultaneously, with WLAN used instead of LTE Secondary eNB i.e. it allow LWA to split single bearer at sub-bearer granularity while accounting for channel conditions. With this competency, for a user LWA offers seamless usage of both LTE and Wi-Fi networks and significantly improved performance whereas, for a cellular operator, LWA simplifies Wi-Fi deployment, improves system utilization and reduces network operation and management costs. Hence, this paper compare LWA and LTE-U/LAA technology in terms of performance gain and demonstrate that LWA outperforms LTE-U/ LAA in utilization of unlicensed channel. Additionally, we also provides the current advances in LWA (such as enhanced LWA) highlighting research opportunities and deployment challenges.

Keywords –

Coexistence, LTE, LAA, LWA.

Corresponding Author –

Sung Won Kim