

Under test filtered-OFDM and UFMC 5G waveform using cellular network

In this study, filtered orthogonal frequency division multiplexing (F-OFDM) and universal filtered multicarrier (UFMC) were proposed for complexity reduction in the 5G waveform. Cyclic prefix orthogonal frequency division multiplexing (CP_OFDM) is well suited for 4G; however, the major problem of the 4G modulation methods is their susceptibility to high peak to average power ratio (PAPR). Another problem of OFDM is the issue of sideband leakage. The existing 4G systems mainly depend on the CP_OFDM waveform, which cannot support the host of applications provided by the 5G platform. 5G-generated traffic is likely to exhibit different features and requirements compared to the existing wireless technology. Consequently, investigations have been devoted to other multiple access schemes. The existing limitations of OFDM can be mitigated by using the UFMC technique. To ensure that the demands and requirements of the upcoming 5G cellular networks are satisfied, this study presents an enabler called filtered-OFDM (f-OFDM) for flexible waveform configurations. Contrarily, the assigned bandwidth in the f-OFDM is split into various sub-bands to accommodate different services in each sub-band using the most suited waveform, thereby enhancing the spectrum utilization using a different filter. Additionally, the advantages of F-OFDM and UFMC were portrayed via a wide comparison with the current 5G waveforms.