

ABSTRACT

As part of the development of the 5th generation (5G) New Radio (NR) against it is "IMT for 2020 and beyond." 3GPP has announced its first specification for 5G NR which is a significant achievement in the global mobile industry to initiate full-scale development. The first specifications released by 3GPP are NSA 5G (non-standalone) for use-case eMBB (Enhanced Mobile Broadband) and URLLC (Ultra Reliable Low Latency Communication) which in the implementation of 5G NR will be based on FR-1 and FR-2 for supports a wide range of use-cases.

OFDM is by far the most suitable signal form for 5G NR because of its resistance to dispersion time and makes it easy for both time and frequency domain to be exploited when determining structures for different channels and signals. 5G NR is designed to support implementation at wide frequency coverage ranging from sub – 6Ghz (FR – 1) to mmWave (FR – 2). Therefore, one important aspect of OFDM is the selection of numerology. Specifically to determine the subcarrier spacing and length of and length of the cyclic prefix.

Simulation results of 5G NR performance at this frequency gained that 4 numerology is the best numerology to be implemented at 5G NR with an average 0.473 ms latency, 1052.26 Mbps throughput and 0.0003% packet loss. Meanwhile the worst numerology is numerology 0 with average-latency 3.07 ms, Hroughput 127.36 Mbps and 0.0003% packet loss.

Key Word: 5G NR, NSA, Numerologi, OFDM, NS 3