ABSTRACT

LTE-Advanced is a 4th generation mobile network technology that is developed to meet user demand in terms of increasingly high datarate, due to the use of internet access that has become a trend in people's lives. Terms datarate offered by LTE-A in the direction of downlink reach up to 1 Gbps and uplink direction can reach up to 500 Mbps. In order to achieve optimal capabilities in the LTE-A network needs to be done more detailed and meticulous network dimensioning with not only attention to the side of coverage and capacity, but also channel dimensioning is applied ie the composition of each physical channel allocated into the resource block.

The physical channel of LTE-A has two main roles, namely as control channel and traffic channel. The composition of traffic channels and control channels within the resource block is differentiated by CFI (Control Format Indicator) used. To obtain optimal result, the comparison of channel dimensioning using CFI 1 (scenario 1), CFI 2 (scenario 2) and CFI 3 (scenario 3) is used. CFI indicates to the UE (User Equipment) about the number of OFDM symbols used to carry the control channel during transmission. CFI 1 indicates that only 1 symbol on each subframe is used to carry the control channel, and so is the case for CFI 2 and CFI 3.

Based on the simulation results from 3 different CFI scenarios, the best results of the final analysis were obtained in scenario 1 with an average RSRP value of -78.9 dBm, average SINR of 11.06 dB, CQI average of 9, 36, application throughput per user 46,742 Mbps and connection success rate percentage 99,6%. In scenario 2 the average RSRP value was -78.23 dBm, average SINR of 8.66 dB, CQI average of 8.13, application throughput per user 44.016 Mbps and the connection success rate percentage of 99.5 %. In scenario 3 the average RSRP value was -78.23 dBm, average SINR of 8.43 dB, average CQI was 8.01, application throughput per user 39,937 Mbps and the connection success rate percentage was 99.4 %.

Keywords: LTE-Advanced, Physical Channel, Resource Element, Control Format Indicator