

ABSTRACT

The growth of subscriber and network expansion on LTE-Advanced network in area Kotamadya Jakarta Timur which caused the detected PCI conflict of Collision and Confusion. Based on the measurement results there is a decrease in the value of KPI where RSRP averaged -102 dBm and RSRQ of -16.11 dB which shows the network condition is less than the maximum because it is below the threshold that should be over -100 dBm and -15 dB. Thus, it is necessary to optimize one of them in the planning side of the physical layer of LTE network, namely PCI (Physical Cell Identity) which is the configuration of cell identity used to regulate the neighboring system of each cell, thus reducing interference between cells.

The optimization sequence is based on the number of sites existing conditions that consider the coverage needs for the next 5 years. Where the scenario applied is re-allocation of PCI based on the distance of reuse that is 1 km, 2 km and 3 km according to the provisions of Huawei vendor to achieve the PCI numbering conditions are Collision Free and Confusion Free.

Based on the process and simulation result stated that optimization scenario for PCI allocation based on reuse distance can affect the quality of KPI where scenario of reuse distance of 3 km has fulfilled target KPI with percentage of RSRP value above -100 dBm equal to 85.61%, RSRQ above -15 dB equal to 88.24%, SINR above 10 dB equal to 83.297% and Throughput above 20 Mbps equal to 85.07%. When using 2 km distance of allocation which is standard provision of vendor to determine distance of allocation of PCI reuse based on 2x maximum coverage radius, percentage increase for RSRP equal to 77.57%, RSRQ 80.63%, SINR 61.16% and Throughput of 73.57% has not reached KPI target . In conclusion, that distance of reuse of 3x radius of maximum coverage is more suitable to be implemented in Area Kotamadya Jakarta Timur.

Keywords: *Physical Cell Identity, Collision Free, Confusion Free, Key Performance Indicator.*

