

ABSTRACT

The Telkom University Area is a region with massive data traffic level, because it is a center for student activities, shopping areas, and housing. To satisfy the high speed communications needs, The Fourth Telecommunication Generation Long Term Evolution (4G LTE) is one of the best solution. However, several areas in the Telkom University are experiencing problems of 4G LTE networks performance in terms of bad coverage and pilot pollution.

This thesis conducts 4G LTE networks optimizations using physical tuning scenarios, including setting of antenna azimuth and tilt of antenna for Telkom University Area. Optimization is performed by reviewing the Referenced Signal Received Power (RSRP), Signal to Interference and Noise Ratio (SINR), and Mean Throughput. These parameters are evaluated from the results of the drive test using TEMS 14.0.2. The drive test's results are used as a reference to determine the optimization step using the Atoll 3.3.

The results show that the performance of existing networks in the Telkom University Region has increased after the optimization. The mean throughput increased from 8.4 Mbps to 16.6 Mbps with a target of throughput being 12 Mbps. The parameter of the distribution of SINR above the Key Performance Indicator (KPI) threshold, which is 5 dB, increases from 56 % to 93.5 %. The distribution of RSRP parameter is categorized in good condition if the value above -100 dBm reaches 80.9 %. In addition, the condition of the pilot pollution in the Telkom University area has increased in terms of SINR to 23-27 dB. The results indicate that the parameters used in this thesis have met the KPI target. It means that the scenarios taken to overcome the problem of bad coverage and pilot pollution in Telkom University Area have been successfully solved.

Keywords: 4G LTE, Bad Coverage, Drive Test, RSRP, SINR, Throughput , Physical Tuning