

## ABSTRACT

*Sukajadi District is the fourth most populous city in the city of Bandung with a recorded population of 100.668 people, the dense population causes the quality of the 4G LTE network to be not optimal. Telkomsel as one of the operators of 4G LTE network service providers continues to monitor the quality of the network in each region in order to continue to meet operator KPI standards, especially Sukajadi District which is an urban area where the population is active in accessing the internet using the 4G LTE network, the results of the drive test data show the percentage of RSRP 90.73%  $\geq$  -100 dBm, SINR 76.46%  $\geq$  0 dB, and Throughput 85.31%  $\geq$  3 Mbps these values do not meet operator standards, namely 95% RSRP, 85% SINR, and 90% Throughput. Based on the results of the analysis, there are 2 bad spot areas in the area so that the ACP method will be optimized.*

*In this final project, optimization of the 4G LTE network using the ACP method is carried out by comparing the simulation results of existing sites with acp simulations at a frequency of 1800 MHz to see the improvement of 4G LTE network quality before and after optimization. Calculation method optimization is also carried out as a comparison of the ACP optimization method used to see which optimization method is better. The parameters compared are the Key Performance Indicator (KPI) parameters, namely RSRP, SINR, and Throughput.*

*Based on comparison of the optimization results of Calculation and ACP simulations, it was found that calculation optimization increase only in RSRP and Throughput UL, while ACP increased in all parameters, namely RSRP, SINR, Throughput UL, and Throughput DL. Therefore, it can be concluded that the ACP method is better used in optimization because after optimization with the ACP method, all bad spot areas have increased network quality based on RSRP, SINR, and Throughput parameters. The percentage increase after optimization shows that in the simulation results, ACP area 1 parameter RSRP is 13% greater than Site Existing, SINR is 55% greater than Site Existing, UL Throughput is 6% greater than Site Existing, and DL Throughput is 61% more greater than Site Existing. Percentage improvement for area 2 ACP simulation results on RSRP parameters 1% greater than Site Existing, SINR 13% greater than Site Existing, UL Throughput 3% greater than Site Existing, and Throughput DL 11% greater than Site Existing. The simulation results in both areas have met the operator's KPI standard, and based on the problem of bad spots in the Sukajadi District of Bandung, the Automatic Cell Planning method can be used as a solution to this problem.*

**Keywords:** *LTE, Automatic Cell Planning, Optimization, Physical Tuning, Atoll, CoVmo, RSRP, SINR, Throughput.*