# ABSTRACT

Moda Raya Terpadu Jakarta (MRT) is a public transportation that started operating on April 1, 2019. There are two lines for the MRT, which are: Lebak Bulus-Bundaran Hotel Indonesia (Bundaran HI) and Bundaran HI-Kota. Some tracks of Lebak Bulus- Bundaran HI line are located underground, started from Bundaran HI Station until halfway to Association of Southeast Asian Nations (ASEAN) Station. Drive test result shows that the value of Reference Signal Received Power (RSRP) is -96,29 dBm which belongs to the 'Poor' category in Key Performance Indicator (KPI). In addition, there were radio failures at several points such as Handover Fail, Connection Drop, and Connection Setup Fail which caused difficulties in accessing Long Term Evolution services.

The research method used in this thesis provides suggestions for improvements of signal quality in the form of possibility upgrade vertical which is changing degrees of antenna tilts both vertically and horizontally, and also split sectorize which is adding an antenna sector. Improvements are done using Radiowave Propagation Simulator, an application thath can do simulations to predict radio coverage.

The purpose of this thesis is to make an analysis of improvement suggestions in the area coverage when passengers are on the subway line and provide suggestions to improve LTE network services on the MRT. Parameters used on this research are RSRP, Signal to Noise Ratio (SINR), and throughput. After the simulation, the RSRP value can reach up to -76.72 dBm which is included in the 'Good' category in the KPI. In addition, the value of SINR has increased from the drive test results 15.15 dB to 18.19 dB at some points which is included in the 'Good' category. Other than that, the calculation is also done so the throughput which only amounted to 66.86 kilo bit per second (kbps) on the drive test increased to 2.07 Megabit per second (Mbps) and reached KPI target.

**Keywords**: LTE, MRT, underground, possibility upgrade vertical, split sectorize