

## ABSTRACT

LTE is a development of the previous technology are UMTS (3G) and HSPA (3.5G) while LTE referred to as the 4th generation (4G) are given on a project of the Third Generation Partnership Project (3GPP) to improve third generation mobile phone standard. Because equalization technological advances in many areas including Surabaya and Madura, it require an application of LTE technology in the region, especially Suramadu Bridge. These applications will not run without good planning on an LTE network to cover the entire area of the longest bridge. So that the implementation can be optimized LTE it is necessary to design the coverage area of LTE, the link budget and the number of eNode B required.

In this study, will be planned LTE network in the 1800 MHz frequency along the Suramadu bridge. Planning will be done using conventional methods, namely in terms of coverage and capacity in the radio access side. Then do the planning in accordance with the neighbour relations and Physical Cell Identity (PCI).

The parameters in this final project done according to the standard Huawei telecom vendor. PCI allocation should be made in LTE to identify a cell. Simulations use planning and optimization Atoll software from Forsk. Comparing before and after the allocation of PCI, it can reduce the interference level indicated increased probability of an area with a small BLER value is 9,002km<sup>2</sup> km to 9.123 km<sup>2</sup> increased by 0.85%, then because of interference which reduced the average value of  $C / (I + N)$  becoming 11.23 dB and before PCI 11.24 dB, so the average user throughput increased from 38093.06 kbps becoming 38067.28 kbps.

Keyword : Long Term Evolution (LTE), link budget, coverage, capacity, free collision, free confusion dan PCI.