

## ABSTRACT

Long Term Evolution (LTE) is known as broadband technology with bandwidth varying from 1.4 to 20 MHz which uses different modulation techniques at different distances. However, the availability of frequency allocations for LTE is now exhausted. Now, The opportunity of frequency allocation for LTE emerges along with the government plan to change analog television (478-806 MHz) with 8 MHz bandwidth into digital television because digital television needs less bandwidth than analog television.

In this final project, the analysis is about the availability of LTE frequency allocation especially at 700 MHz frequency band. The analysis consists of the calculation of the digital television capacity, coverage and capacity of LTE. The verification for several scenarios which is done in order to analyze the best refarming in LTE FDD and LTE TDD implementation in Indonesia.

Refarming recommendation for digital television in Indonesia is divided into 6 channel groups where each of groups consists of 4 channels starting from channel 22 UHF (478 MHz) to channel 45 (670 MHz). Channel 46, 47, and 48 (670-694 MHz ) can be used as backup channels or guard band. In the refarming of LTE TDD, 20 MHz bandwidth (3<sup>th</sup> scenario) achieves the maximum radius. In refarming of LTE FDD, 15 MHz bandwidth refarming (2<sup>nd</sup> scenario) achieves the maximum radius. LTE FDD (2x20MHz) implementation saves up to 66.67% of number of LTE TDD (20 MHz) eNodeB for implementation in 500 km<sup>2</sup> area and 100 Mbps OBQ traffic .

Key words : LTE frequency, refarming of 700 MHz band frequency, coverage, capacity