

## ABSTRACT

Selection of appropriate spectrum frequency for 4G technology will have significant effect and benefits to the development of national infrastructure. Frequency spectrum is a finite resource, so it requires a certain methodology to calculate the estimation of spectrum frequency needs in the future.

ITU Recommendation no. M.1768 has introduced a new methodology for calculating the frequency spectrum requirement for 4G (IMT-Advanced), the estimation taken into account based on market study, switching parameters, and the radio parameters for the various Service Categories (SC), Service Environment (SE), and Radio Environment (RE) by 2020.

The results of the methodology, reported in the ITU-R M.2078, which estimates the total spectrum demand in 2020 equal to 1280 MHz (low density), 1720 MHz (high density). Low density scenario appropriate for developing countries such as Indonesia.

These estimates show that there is a need of sufficient frequency spectrum in 2020, for that, the frequency of existing and candidate frequency will be used in meeting those needs. Thus, the application of multi-operator canalization with bandwidth per operator between 5.10 and 20 MHz and the spectral efficiency 8bit/Hz, it will achieved maximum throughput according to the characteristics of 4G technology.

Keyword: *4G Frequency, IMT Advanced, Spectrum Frequency*