

ABSTRACT

LTE roll out in Indonesia is mostly done with frequency 1800 MHz which is band frequency with Frequency Division Duplexing (FDD) mode. Refarming 2300 MHz frequency allow operators to roll out new LTE frequency in Time Division Duplexing (TDD) mode. With a new Carrier Aggregation (CA) configuration in LTE Release 12, it is possible to aggregate FDD and TDD frequency band. So that, the use of separate frequency band that operator have can be more optimal if the existing bandwidth from separate frequency is aggregate.

In this research, the design of LTE-Advanced Release 12 uses new configuration CA which is FDD-TDD CA technique on band 3 frequency 1800 MHz and band 40 frequency 2300 MHz with bandwidth of each band is 10 MHz. The performance of FDD-TDD CA is compared to FDD-FDD CA technique on band 3 and band 1 with the same 10 MHz bandwidth. The design of LTE-A is done by two method which are planning by coverage and planning by capacity.

Parameters that is analyzed include RSRP, SINR, user throughput, and user connected as well as analysis the effect of scenario based on the type of service. Both scenarios require the same number of sites for the Central Jakarta area that is 109 site. From the simulation result, it is obtained the average value of RSRP - 87,58 dBm, SINR 33,8 dB, user throughput 1561 Kbps, and user connected 99,7% from the first scenario. As for the second scenario, the average value of RSRP - 87,79 dBm, SINR 33,74 dB, user throughput 1275 Kbps, and user connected 99,6%. Based on the data, the first scenario has better performance than the second scenario for overall parameter. However, when viewed for the service type, the first scenario has better performance on real time services while the second scenario on non real time service.

Keywords: LTE-A, Carrier Aggregation, FDD-TDD CA, band frequency, LTE planning