

ABSTRACT

Wireless communication is used in many sectors to support the need of communication, the example of wireless communication is applied in mission critical network. Mission critical network is a network that could operate for the need of daily communication, beside that mission critical network has ability to operate in unusual time as in natural disaster, the reason is because of mission critical is designed with resilience. Wireless communication system that used in mission critical are *Terrestrial Trunked Radio (TETRA)* and *Long Term Evolution (LTE)*. TETRA system supports voice service while LTE supports voice and data services. Co-existence between LTE and TETRA in same frequency band is one of the optimization quality for mission critical network.

For this final project analysis interference in co-existence between LTE and TETRA in frequency 800 MHz. LTE used frequency 814-849 MHz for uplink and 859-894 MHz for downlink and TETRA used frequency 806-824 MHz for uplink and 851-869 MHz for downlink. There are four scenarios using extended-hata model propagation in urban area. There are several parameters that reviewed, desired Received Signal Strength (dRSS), interfering Received Signal Strength (iRSS), Carrier to Interference ratio (C/I) and probability of interference.

In all scenarios occur Co-Channel Interference (CCI) between LTE and TETRA in frequency 800 MHz so the performance not optimal. The performance increased when add guard band variation. The variation that applied are 0,5 MHz, 0,75 MHz, 1 MHz. Based on the result of the simulations that have been done, proposed the used of guard band variation for elevate the performance.

Keywords : C/I, Interference, LTE, mission critical, probability of interference, TETRA.