

## ABSTRACT

In the development of communication technology are already familiar with the development of 4G technology or what we might call the LTE (Long Term Evolution). A phenomenon that occurs at this time, when the *user* moves it in the process of data transmission will be interrupted due to the Doppler effect or frequency displacement caused by one of the sender or the receiver moved. It causes fluctuations in signal power at the receiver as we know by Small Scale *Fading*.

In this study is analyzed and simulated the movement of the *user* on the service when accessing the LTE video call service. When the simulation will be calculated the parameters that influence the movement of the *user* at a particular rate, such as Doppler frequency, Signal to Noise Ratio comparison by Frame Error Rate and *Throughput*, and the value of Time Coherence affecting the classification of small scale *fading*. In addition, the is analyzed also limit the maximum movement distance from *user* to BTS by Walfisch-Ikegami propagation model, so it will obtain the maximum movement of the *user* based on the limit value of RSL which already determined. Then of all parameters will be determined the most influence on the speed of the *user*.

From the observation, at a minimum speed of 5 km/h was obtained 9.722 Hz Doppler frequency, the maximum fluctuation of -17 dB and 5 times the amount of fluctuation. At a maximum speed of 250 km/h was obtained Doppler frequency value of 486.11 Hz, the maximum fluctuation of -39 dB and  $\pm 180$  times the amount of fluctuation. The higher the speed of the *user*, the higher and more fluctuations in the signal quality will be worse. For the calculation of the optimum distance to the *user* moving a distance of 500 m *up to* 8 km, obtained by RSL's largest -114.45 dBm and smallest -68.69 dBm. For optimum distance with a limit of -110 dBm RSL obtained optimum distance as far as 6.1 km. FER for the calculation results obtained very high yields. To avoid dropcall needed SNR of 10 dB for the entire speed and the value FER who obtained no less than  $10^{-2}$ . As well as for *throughput*, maximum value obtained 100.8 Mbps, the maximum reduction in *throughput* occurs at a speed of 250 k /h with a 0 dB SNR obtained *throughput* of 61.5 Mbps. After calculating all of parameters can be analyzed the Frame Error Rate (FER) is a most influential parameter at the effect of impairment of the AWGN and the moving *user*.

**Keyword :** LTE, *Small Scale Fading*, *Doppler Effect*, FER, *Throughput*, *Time Coherence*.