

## **ABSTRACT**

*The application of 5G technology in Indonesia is growing by using the 3.5 GHz frequency. Different environmental conditions in Indonesia can affect 5G performance. High frequency usage factors as well as different environmental conditions can cause data loss during communication. The performance of the system can be evaluated by the frame error rate (FER), every bit the error in frame can be calculated. This study analyzes repetition codes using the Statistical Spatial Channel Model (SSCM) system with a frequency of 3.5 GHz and a bandwidth of 100 MHz. This research uses quadrature phase shift keying (QPSK) modulation cyclic orthogonal (CP-OFDM) prefix frequency with . division multiplexing user, after the modification gets the results of 8 paths modification. This study will analyze the performance of the frame error rate (FER) with channel coding repetition codes and FER with system CP-OFDM (Uncoded). The result is FER repetition codes are better than uncoded for SSCM channel. This is because the use of SNR in repetition codes is lower when compared to uncoded. On average, the performance of FER repetition codes which requires a signal to noise ratio (SNR) of 24.35 dB and the performance of uncoded requires an SNR of 36.34 dB. The results showed that the addition of channel coding repetition codes on the SSCM channel at a frequency of 3.5 GHz was able to reduce errors compared to uncoded.*

**Keywords:** *5G, Repetition Codes, Kanal SSCM, Power Delay Profile, FER*