

ABSTRACT

The characteristics of wireless channels are very important in evaluating the performance of 5G mobile systems. Therefore it is important to do channel modeling for 5G mobile communication technology. The 5G channel modeling includes the Tapped Delay Line (TDL) and Cluster Delay Line (CDL) models. The TDL channel model is related to micro fading while the CDL channel model is a model that deals with a combination of macro fading and micro fading and multipath effects.

This final project discusses the performance of the 5G system using TDL and CDL channel modeling simulated on the MATLAB software. The 5G communication system uses Channel Coding Polar Codes, 16QAM modulation, multicarrier modulation (OFDM) and the addition of Cyclyc Prefix (CP) to prevent or minimize intersymbol interference (ISI).

The results of BER and FER performance on the 5G communication system block using Polar Codes are better than without using channel coding (uncoded). the greater the value of E_b / N_0 , the better the performance of TDL and CDL channels based on BER and FER parameters. The best channel performance is obtained on TDL channel models using Polar Codes with BER & FER=0 on $E_b / N_0 \geq 25$ dB while CDL channel models Polar Codes BER & FER=0 on $E_b / N_0 \geq 30$ dB

Keywords: Tapped Delay Line (TDL), Cluster Delay Line (CDL), BER versus E_b / N_0 , micro fading and macro fading.