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Evaluating the Impact of OFDM Parameters on the Operation of the LTE System in Different Conditions

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Abstract: *These days we find an enormous growth in wireless communication technologies. The use of OFDM in wireless systems has created a way to provide high data rates, less intercarrier interference(ICI), and less intersymbol interference(ISI). OFDM has become the core of most 4G communication systems, a Long Term Evolution (LTE) system. OFDM system divides the available signal spectrum into smaller bandwidths and transmits them to the receiver without interference with each other by inserting the cyclic prefix in between the signals. LTE uses OFDM for downlink, SC-FDMA for uplink and MIMO for enhanced throughput. The OFDM uses inverse fast fourier transform(IFFT) and fast fourier transform(FFT) for conversion of data. The system performance is measured by correlating the signal to noise ratio to bit error rate. The system performance is evaluated to study the effect of various LTE design parameters by simulating in MATLAB*

Keywords: Orthogonal Frequency Division Multiplexing (OFDM); Inverse Fast Fourier Transform (IFFT); Fast Fourier Transform (FFT); Cyclic Prefix (CP); Bit Error Rate (BER); Signal to Noise Ratio (SNR).

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