Crest Factor Reduction Techniques for 4G/5G Waveforms

Lab Based Project

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Project Report From:

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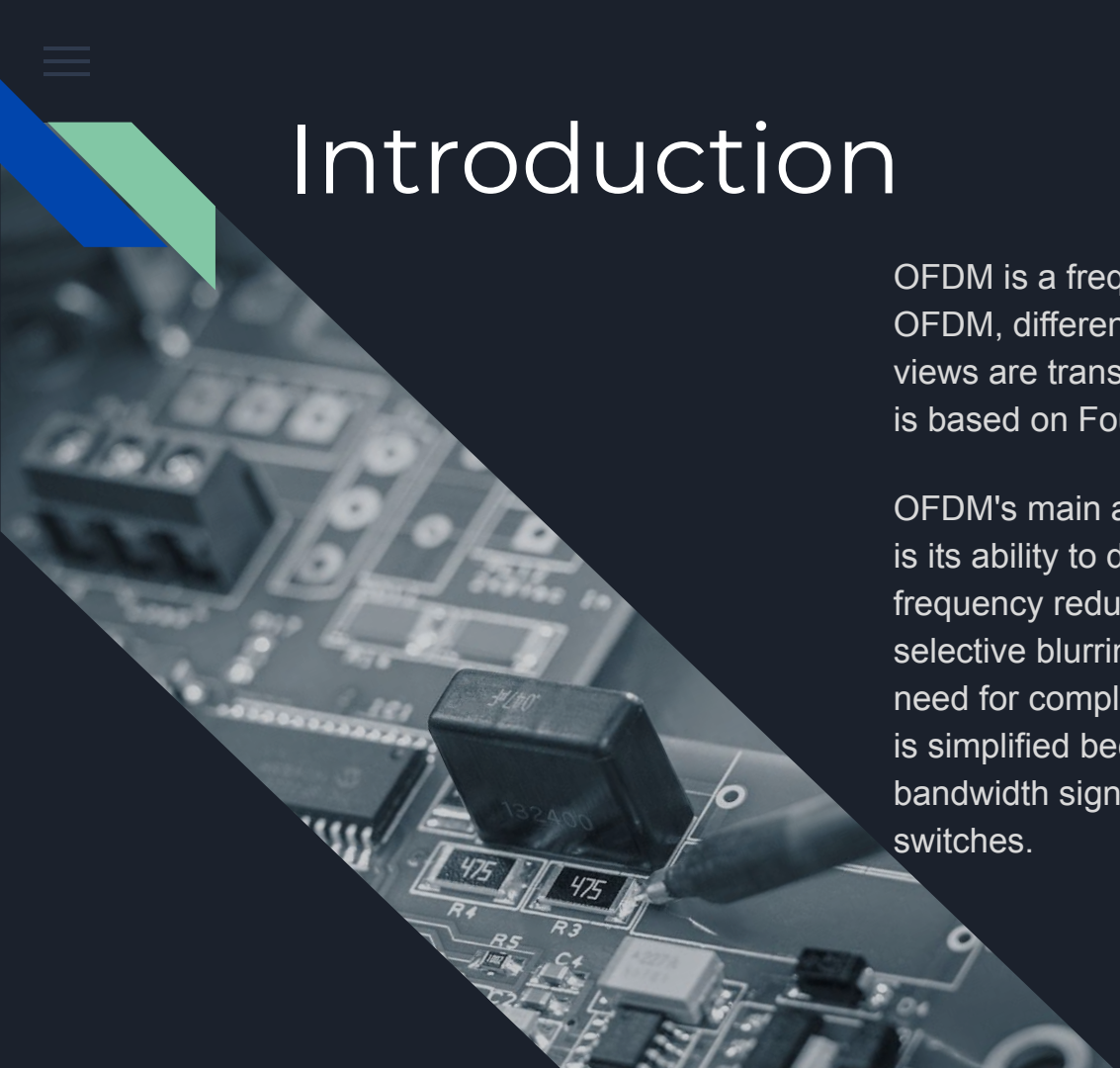
Introduction

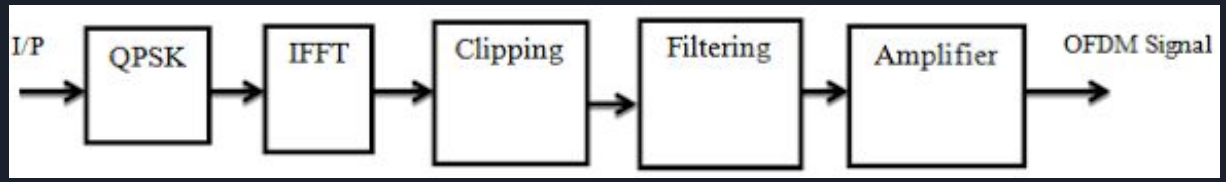


OFDM is a frequency-division multiplexing (FDM) program.In OFDM, different closely related orthogonal signals with distinct views are transmitted to treat the data uniformly. Price reduction is based on Fourier transform algorithms.

OFDM's main advantage over single network company systems is its ability to deal with critical channel conditions (e.g., high frequency reduction in long copper wire, low bandwidth and selective blurring due to the number of channels) without the need for complex measurements. filters. Channel measurement is simplified because OFDM may be considered to use less bandwidth signals that are slightly switched than single-band switches.

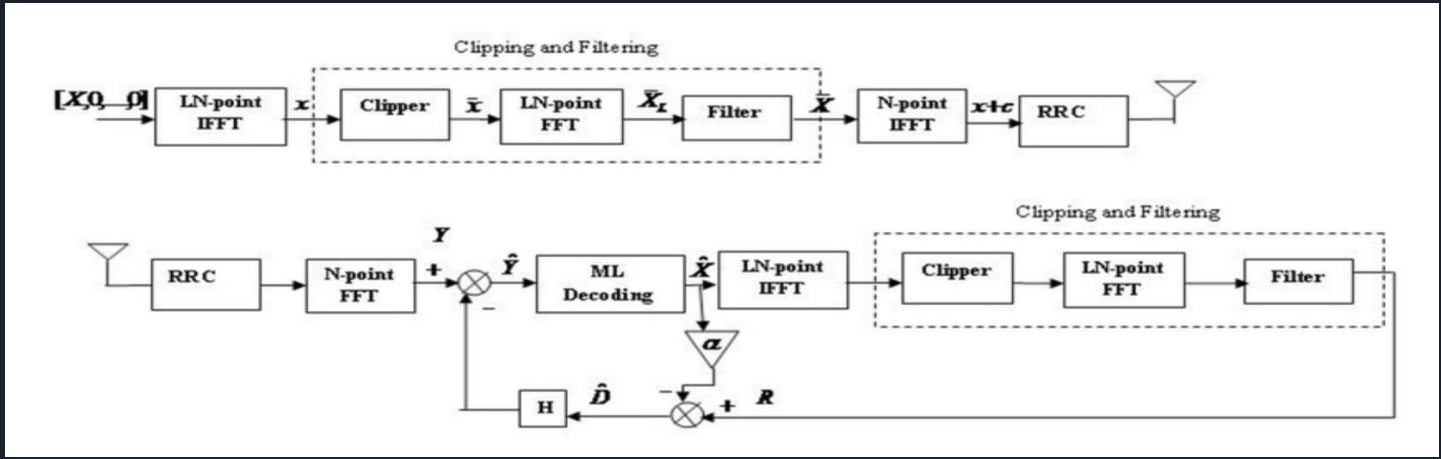
Different Methods used for PAPR

Clipping and filtering can be used to effectively reduce the peak-to-average power ratio (PAPR) of orthogonal frequency division multiplexing (OFDM) signals at the cost of introducing distortion.



Comparison on Reduction Techniques

Clipping is a non-linear process that limits the amplitude of the signal when it exceeds a certain predefined threshold. The ultimate performance of clipping and filtering techniques, has not been investigated. Both are interpreted as a procedure of adding an extra signal to the original signal. Based on this, the ultimate performance problem of clipping and filtering techniques can be formulated as a convex optimization problem, by solving which we obtain the ultimate performance of clipping and filtering techniques. Subsequently, using this ultimate performance we evaluated the performance of several famous clipping and filtering techniques and provide the simulation results.



Simulation Work

Done PAPR Reduction Technique to saw the effects of high power amplifier and the channel noise on the OFDM signal and then introduces clipping as a PAPR reduction method to reduce the HPA effect.

I am attaching my .m file with zip file submission for the Mid-Term Evaluation for my LBP Work.

Conclusion

If the signal is passed through an HPA without reducing its PAPR, a large amount of non-linear distortion and spectral fading would degrade the system performance or force the power amplifier to work at lower efficiency.

It is observed that the reduction in PAPR of input signal after clipping enables the operation of HPA at increased power efficiency of around 30%.

Thank You