

DESIGN AND ANALYSIS OF FFT ARCHITECTURES USING VLSI

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Abstract

The demand of the growing number of customers and data rate have push the future mobile communication frequency band into parts of the millimeter wave band, especially 60GHz band which is the unlicensed band. The Orthogonal Frequency Division Multiplexing (OFDM) modulation has particular interest in future mobile communication. This is because of its high bandwidth efficiency as the use of orthogonal waveforms with overlapping spectra. The complexity of an OFDM system is highly depends upon the computation of Fast Fourier Transform (FFT) algorithm. In this paper we provide a comprehensive comparison of several contemporary FFT algorithms on state-of-the-art processors. Various FFT size has been tested to choose the best FFT size in OFDM communication system. The modified Mixed Radix 4-2 Butterfly FFT derived by index decomposition technique is our suggested VLSI system architecture to design the prototype FFT/IFFT processor for OFDM systems.

Keywords: VLSI, OFDM, FFT/IFFT, Mixed Radix.