Low-power and high-speed CORDIC-based split-radix FFT processor for OFDM systems

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Abstract

This paper presents a CORDIC (Coordinate Rotation Digital Computer)-based split-radix fast
Fourier transform (FFT) core for OFDM systems, for example, Ultra Wide Band (UWB),
Asymmetric Digital Subscriber Line (ADSL), Digital Audio Broadcasting (DAB), Digital Video
Broadcasting - Terrestrial (DVB-T), Very High Bitrate DSL (VHDSL), and Worldwide Interoperability
for Microwave Access (WiMAX). The high-speed 128/256/512/1024/2048/4096/8192-point FFT processor has been implemented by 0.18 μm (1p6m) at 1.8 V, in which all
the control signals are generated internally. This programmable FFT processor outperforms
the conventional ones in terms of both power consumption and core area.

Keyword：FFT, CORDIC, split-radix, OFDM systems