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Economic Modelling and Implementation of Test Signal Generator for Characterization of Continuous Time Sigma-Delta Analog-to-Digital Converter

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Abstract—Now there is a tremendous growth in the specific applications positively related to wireless communications, which posses the specific requirement for mixed-signal integrated circuits. When these independent circuits are used in the unique design of ADC and DAC practical applications, the considerable complexity of the testing increases. BIST is a precisely conventional technique which typically reduces this considerable complexity and prevents functional dependence on high-cost test equipment ATE. Moreover, in Built-In-self-Test (BIST), the output response analyzer (ORA) is the most significant component of architecture of continuous time (CT) sigma-delta analog-to-digital converter (ADC). There are numerous techniques of ORA used for accurate determining the design parameters like integral non-linearity (INL), differential non-linearity (DNL), signal-to-noise ratio (SNR). In this paper, the prime focus is primarily on the modern CORDIC technique which is used as ORA. For the modelling and accurate simulation of this technique Matlab simulink and CADENCE VIRTUOSO EDA tool environment software are properly implemented. A Coordinate Rotation Digital Computer (CORDIC) reduces the design complexity of the independent circuit. The design of ADC can be improved tremendously by typically using BIST. This paper focuses on the system level modelling of test stimuli generator (TSG) and its simulation for accurate characterization of high-resolution sigma-delta ADC. The successful implementation is carefully tested on Matlab simulink tool environment. The auto-testing external test equipment is required to test the integrated structures. TSG is implemented and it helps in extracting of statics and transmission parameters required for characterization of CT sigma-delta ADC.

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1. INTRODUCTION

The COordinate Rotating DIgital Computer (CORDIC) algorithm is typically organized in computerized PC (CORDIC) calculation, which is carried out to show the vector revolution in the numerous advanced signal adequately preparing digital signal applications in an outstanding number juggling manner. However, the vast number of considerable emphases is a notorious weakness of this complex calculation for its speed exhibit.

Numerous scientists propose plans to reduce the quantity of considerable emphasis. Moreover, in carefully executing the current CORDIC calculation, the vector is generally extended with purpose of additional scaling capacities that are required to achieve the standardized yield. In this manner, it can diminish the aggregate number of considerable emphases essentially keeping in mind the end goal of enhanced speed execution [1].

2. RELATED WORKS

To accurately predict rotation guidelines, classic CORDIC repetition is typically required for less than 1/3 of initial rotational states. The remaining running directions can be counted in parallel and the same

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

ADDITIONAL INFORMATION

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