ABSTRACT

A wideband frequency synthesizer for built-in self testing of analog integrated circuits

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The cost to test chips has risen tremendously. Additionally, the process for testing all functionalities of both analog and digital part is far from simple. One attractive option is moving some or all of the testing functions onto the chip itself leading to the use of built-in self-tests (BISTs). The frequency generator or frequency synthesizer is a key element of the BIST. It generates the clock frequencies needed for testing. A wide-band frequency synthesizer is designed in the project. The architecture of a PLL is analyzed as well as the modifications carried out. The modified structure has three blocks: basic PLL based frequency synthesizer, frequency down-converter, and output selector. Each of these blocks is analyzed and designed. This frequency synthesizer system overcomes challenges faced by the traditional PLL based frequency synthesizer.