Abstract

Digital up converters are used at the transmitter side to up convert the baseband signal to intermediate frequency signal. Digital down converters are used at receiver side to down convert intermediate frequency signal to baseband signal. DUC and DDU modules are designed using System generator Xilinx block set and generated verilog code for the same. This paper deals with the implementation of high performance digital up converter and digital down converter for software defined radio application. Simulation is performed using Isim and synthesis is carried out using Xilinx ISE 13. 2. Design has implemented on vertex-4 FPGA board. The power consumed in this design is 52. 6mWatts and the maximum operating frequency is up to 336. 1MHz and total time taken for output is 2. 93ns.
Implementation of High performance DUC and DDC for Software Defined Radio Applications

References

- The Theory of Digital Down Conversion, HUNT ENGINEERING, Chestnut Court, Burton Row, Brent Knoll, Somerset, TA9 4BP, UK.

Index Terms

Computer Science Signals And System

Keywords

DUC - Digital Up Converter DDC - Digital Down Converter DDS - Direct Digital synthesizer CIC – Cascade Integrator Comb
FIR – Finite Impulse response
ADC – Analog to Digital converter

DAC – Digital to Analog Converter

HF – High Frequency

IF – Intermediate Frequency

FPGA – Field Programmable Gate Array.