Multilevel Linear Fm Pulse Compression Radar Signals Simulator

International Journal of Computer Applications

Foundation of Computer Science (FCS), NY, USA

Volume 178

Number 5

Year of Publication: 2017

Authors:

Mahmod A. Al-Zubaidy, Samaa K. Al-Saffar

10.5120/ijca2017915819

Abstract

The radar signals simulators became an essential requirement for the development and the evaluation of the performance of the radar systems. Many types of the radar signals simulators were implemented using different techniques. Some of them use digital electronics boards and digital electronics cards as help access to real-world signals and instrumentation for test different types of radar systems, but these types of simulators did not has the ability to generate the radar signals in the intermediate frequency (IF) stage. In this paper, the radar signals simulator in video stage and (IF) stage using PC, arbitrary waveform generator card (DA4300) and National Instruments Digital Electronic Field programmable Gate Array (NI-FPGA) board was proposed. In addition of the hardware requirements, LabVIEW program was used with the FPGA board to generate some of the radar signals such as the synchronization signal (SYNC), Antenna Location signals (ACP1, ACP2 (Angle Clock pulse) and NP (North Pulse)), and others,
while Microsoft Visual C++ software was used with the (DA4300) card to generate a transmitted signal, target signal, and other signals in (IF) and video stages. The proposed simulator system has the ability to generate the signals for different types of radars; one of these types is the pulse compression radar. The generation of linear FM pulse compression radar signals is compared with the MATLAB Simulink results for this type of radar.

References

3. US Navy, Aviation Electricity And Electronics, Navedtra 14339.
6. Christian Wolff, Text is available under the GNU Free Documentation License, and the Creative Commons Attribution Share Alike 3.0 Unported license.

Index Terms

Computer Science                Signal Processing

Keywords

Linear FM Pulse Compression Radar, MATLAB Simulink, Radar Signal Simulator, FPGA, DA4300 Card, Pulse Compression Filter & LABVIEW.