Development of the Electronic Circuit in High Frequency SLR Based on FPGA

Chong CHEN, Cunbo FAN, Zhenwei LI, You ZHAO
Abstract

• Increase of the laser firing frequency will significantly improve the performance of Satellite Laser Ranging (SLR) system. To meet the requirement of high frequency SLR, an implementation of control circuit in single FPGA chip was designed and developed. SOPC (System On Programmable Chip) system was proposed to solve these problems. To realize the system, a control circuit custom component was designed and simulated. Then, the component was integrated into a SOPC system. Cooperated with software, the circuit has the ability to control the SLR system running at high frequency. Finally, the system was simulated in the Quartus software and NIOS IDE provided by Altera and implemented in an Altera EP1S10 development kit.
Hardware block diagram
Initialization

Read ephemeris

Transmit Complete?

Y

Read Currant Second

Start Pulse?

N

Read The Pulse Time

Calculate The RG

Send the RG time to custom component

Figure 2 Software in embed system