Abstract

The research internship was accomplished at Optical Networks Division Development Group: Lambda Network system 6 (光ネットワーク事業) of NEC Corporation Co, Ltd. in Japan. The assigned project topic is the design and development of optical communication technology. A variety of technical topics were initially studied in order to understand basic principles of optical networks, including Digital Signal processing (DSP), Finite Impulse Response (FIR) filters, Large-Scale Integrated (LSI) Circuits, and Field-Programmable Gate Array (FPGA) Devices.

The main activity is to design a 3-tap FIR filter, which was particularly designed for the compensation of skew, gain and frequency errors. The simulation results show that the designed filter could reduce all errors and improve the signal quality.
Example of work: simulation of frequency compensation using Microsoft excels.