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# FPGA board based cost-effective, robust and flexible online waveform monitors development, test and implementation at KEK Accelerator Test Facility

*Thursday 5 June 2025 15:30 (2 hours)*

KEK ATF is the Accelerator Test Facility devoted to develop an advanced beam instrumentation technologies for ILC (International Linear Collider) project. There are seven main subsystems at the facility: RF-Gun laser, Linac, Beam Transport (BT), Damping Ring (DR), Extraction Line (EXT), Final Focus (FF) and Interaction Point Beam Size Monitor (IP BSM). In order to monitor laser pulse output power, bunch charge transmission between accelerator sections and background at Final Focus, the online waveform monitors based on the RedPitaya STEMlab 125-14 and SIGNALlab 250-12 FPGA boards were programmed, tested implemented at KEK ATF. This study demonstrates results of the bunch charge transmission, laser pulse output power and background level monitoring using the FPGA board based waveform digitizers. Also, the FPGA boards System-on-Chip programming and control software implementation details, as well as a pulse shaping technique, will be explained in this report.

## Footnotes

## Paper preparation format

LaTeX

## Region represented

Asia

## Funding Agency

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