

The On-The-Fly Scanning Data Acquisition System Used on TPS 23A Endstation at Taiwan Photon Source

Chien-Yu Lee*, Gung-Chian Yin, Bo-Yi Chen, Huang-Yeh Chen, Bi-Hsuan Lin, Shao-Chin Tseng, Shi-Hung Chang, Xiao-Yun Li, and Mau-Tsu Tang

National Synchrotron Radiation Research Center, Taiwan

**lee.cy@nsrrc.org.tw*

The on-the-fly scanning system is an innovative project since 2014, developed for control TPS 23A endstation at Taiwan photon source (TPS). The fully integrated, easy for user control and self-developed software(SW) control script language makes this system clear and easy for user operation.

Hardware(HW) of this system is composed of the high speed FPGA with embedded processor to process the input and output data which includes the 4 channels digital to analog converter(DAC), 4 channels analog to digital converter(ADC), Gigabit Ethernet , X-ray fluorescence (XRF) detector and Interferometer control interfaces. Multiple sensors output data are packed into an Ethernet packet then sent back to PC for analysis.

Self-defined and development machine control script language which are composed of less than 20 useful commands are used for control TPS 23A endstation. Quick and easy view image software, which makes the experiment rapid and accurate, as shown in the following figures.

This whole system is almost done and well prepares to welcome the incoming of future user.



System control software used on TPS 23A: (a) Client control software. (b) Server control software. (c) TPS 23A endstation. (d) Image process software.