EXALOS

EXALOS Swept Source OCT Engine | EOE

Applications

- Optical Coherence Tomography (OCT)
- Bio-medical Imaging
- Industrial Metrology
- Optical Sensing

Product Features

- Fast OCT signal processing based on real-time k-space remapping at 40-100 kHz A-scan rate
- Integrated compact OEM swept source
- Workstation computer midi-tower
- 2-channel DAQ card (500 MS/s, 12-bit)
- On-board high-speed FPGA
- 2D scanner drive signals
- Display engine at >25 fps for A-scans
- Display engine at >25 fps for B-scans
- Selectable OCT data storage
- Real-time spectral windowing
- Real-time dispersion compensation
- Application programming interface
- Compact turn-key system

Description

The EXALOS swept-source OCT engine (EOE) is an integral system containing a swept source module, an FPGA-based data acquisition card in a commercial PC, and proprietary software that enables real-time OCT signal acquisition, processing, and k-space remapping at an A-scan rate as high as 100 kHz.

Specifically, the OCT engine integrates an OEM swept source (in 3.5" HDD format), and a two-channel high-speed (500 MS/s, 12-bit) DAQ card with an on-board field programmable gate array (FPGA) for real-time acquisition and processing of the OCT fringe signal and the k-clock reference signal. Spectral windowing, dispersion compensation, and background subtraction are performed in real-time independently for forward and reverse sweeps. The display engine performs video-rate (>25 fps) displaying of A-scans (2,048 points per array) and B-scans (1024 A-scans per B-scan).

The system also offers the option to integrate a low-speed (900 kS/s, 16-bit) DAQ card for generating two independent drive signals for controlling an external 2D scanner to perform cross-sectional B-scans and volumetric C-scans.
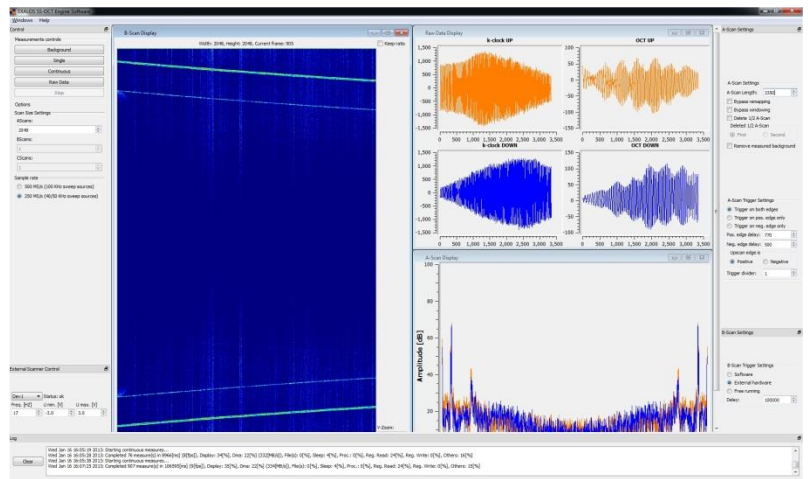
OCT Engine Software User Interface

EOE SS-OCT Engine Hardware Features

Swept source[1]: internal OEM[2] module or external instrument model[3]

Complete OCT set, midi-tower PC (Personal Computer with Windows 7 Pro)

Deterministic processing in FPGA (Field Programmable Gate Array)

Low-noise ADC (Analog-to-Digital Converter; Dual channel 500MHz, 12-bit)

A-scan and B-scan trigger output for synchronizing to probe scanner

EOE SS-OCT Engine Software Features

Application programming interface (API) to configure and control the data acquisition, data transfer, OCT signal processing, and display

Dynamic k-space remapping

Video-rate A-scan display at >25 fps (length: 2048 points per array)

Video-rate B-scan display at >25 fps (1024 A-scans per B-scan)

Selectable color or grayscale table for B-scan imaging

Adjustable brightness and saturation of B-scan imaging

Selectable storing of raw or processed A-scan data on hard disk

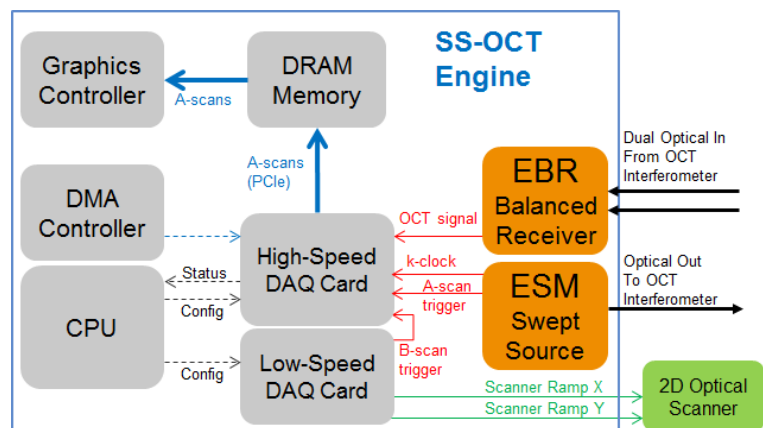B-scan data storage (in PNG format)

SS-OCT Engine Model: EOE380001-01

250 MSPS engine for A-scan rates of 40-50 kHz

SS-OCT Engine Model: EOE380002-01

500 MSPS engine for A-scan rates of 100 kHz

Options

Low-speed (900 kS/s, 16-bit) DAQ card for generating 2D external scanner driver

Notes:
1 Swept source needs to be ordered as a separate item, and it can be either an OEM module installed inside the OCT Engine or an instrument model. The swept source and the OCT Engine will be tested together as an integral system.
2 For OEM module, please refer to EXALOS Swept Source Module **ESM** product leaflets.
3 For instrument model, please refer to EXALOS Swept Source **ESS** product leaflets.

Ordering Information

Part Number: **EOE380001-01**: 250 MSPS engine for A-scan rates of 40-50 kHz
Part Number: **EOE380002-01**: 500 MSPS engine for A-scan rates of 100 kHz