

32 Gbaud PAM4 BER Test Solution

32 Gbaud PAM4 Decoder with CTLE G0376A

Signal Quality Analyzer MP1800A

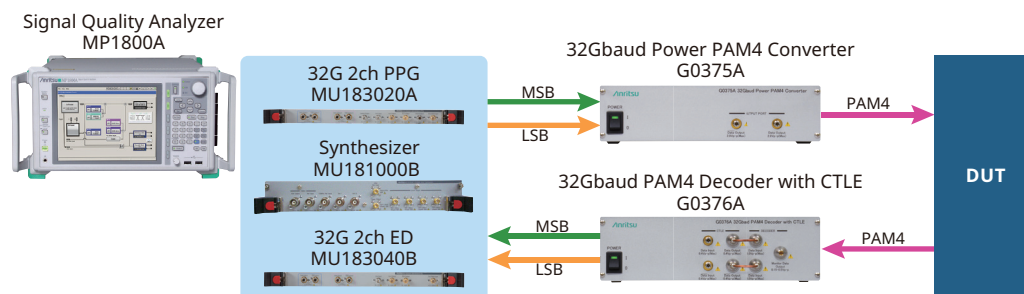
To increase the communications speed between network devices, next-generation Ethernet standards such as 400 GbE are adopting the PAM4 (Pulse Amplitude Modulation) technology, which increases transmission rates without increasing the symbol rate. Unlike the previous NRZ method using two signal levels, PAM4 supports multiple transitions between four signal levels as well as increased dependency; frequency-dependent loss has a complex impact on degraded Eye opening in both the voltage and phase directions. In addition, since the size of the three Eye openings of a PAM4 signal specified by 100 GbE is smaller than for NRZ signals, etc., obtaining higher input sensitivity by using an equalizer function to correct the degraded Eye openings requires accurate BER measurements at transceiver design.

Combining Anritsu's Signal Quality Analyzer MP1800A series with the high-input sensitivity and PAM4 Decode functions of the high-expandability 32 Gbaud PAM4 Decoder with CTLE G0376A supports separate MSB and LSB measurements as well as real-time total BER measurements for efficient verification tests of 400 GbE optical transceivers and devices.

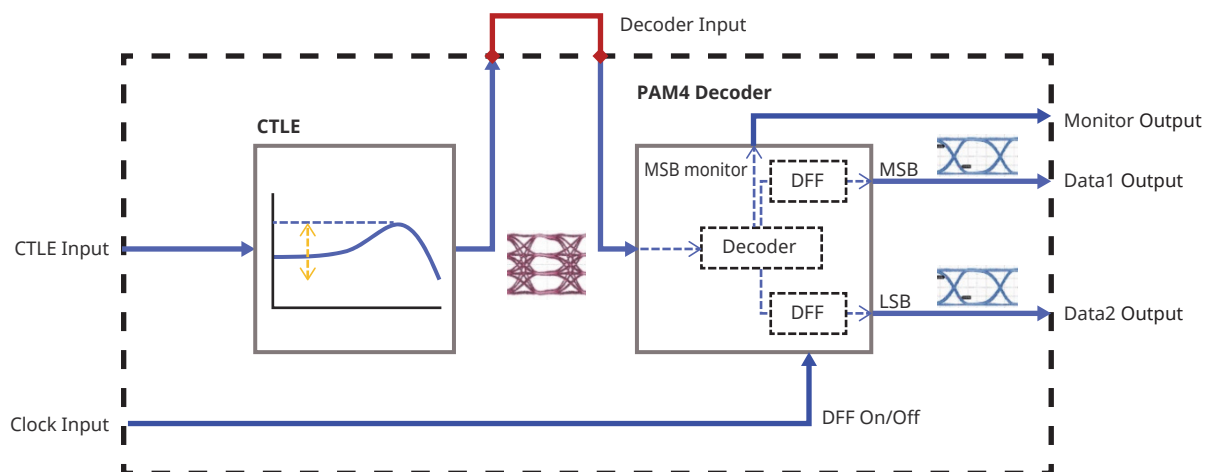
[Target Applications] 200 GbE/400 GbE, CEI-56G, High-Speed Interconnects

Features

- Baud rate: 10 to 32.1 Gbaud
- High input sensitivity: 40 mV typ. (per Eye, single-end, G0376A Data input)
- BER measurement after PAM4 Eye opening adjustment by adjusting CTLE gain from -12 to 0 dB
- Real-time PAM4 BER measurement using PAM4 Decoder + 2ch Error Detector
- CDR function (with MU183040B-022)
- Compact structure using remote head for getting near DUT (USB remote control between G0376A and MP1800A)



Block Diagram



Typical Specifications

| Item | Specification | Remarks |
|---------------------------|---|-------------------------------------|
| Number of Data inputs | 5 (CTLE Input(diff.), Decoder Input(diff.), Clock Input) | |
| Number of Data outputs | 5 (CTLE Output(diff.), Decoder Data Output1, 2, Monitor Output) | |
| PAM4 Decoder Baud-rate | 10 to 32.1 Gbaud (DFF On) 10 to 28 Gbaud (DFF Off) | |
| Input Amplitude | 0.4 V (CTLE input, max.) 0.5 V (Decoder input, max.) 0.3 V to 1.0 V (Clock input) | |
| Decoder Input Sensitivity | 40 mV (Typ.) | Eye Height, Single-end |
| Decoder Output Amplitude | 0.3 Vp-p (Typ.) | |
| Internal DFF | Selectable On/Off | Uses external clock for DFF On mode |
| CTLE gain | -12 to 0 dB, adjustable | |
| CTLE peak Frequency | 14 GHz | |
| In/Out Connector | K (female) | |

Ordering Information

| Model/Code | Name | Options | Qty |
|------------|-----------------------------------|--------------------|-----|
| G0376A | 32 Gbaud PAM4 Decoder with CTLE | — | 1 |
| G0375A | 32 Gbaud Power PAM4 Converter | — | 1 |
| MP1800A | Signal Quality Analyzer | 002, 007, 015, 032 | 1 |
| MU181000B | 12.5 GHz 4 port Synthesizer | — | 1 |
| MU183020A | 28G/32G bit/s PPG | 022, 031 | 1 |
| MU183040B | 28G/32G bit/s High Sensitivity ED | 020, 022 | 1 |

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