

32Gbit/s All-in-One Multi-Channel BERT

MU183020A/MU183021A, MU183040A/MU183041A
28/32G Multi-Channel PPG and ED Modules

The growing demands of cloud computing and high-resolution video streaming are driving increases in server and storage transmission speed. The transmission capacity of core networks is increasing rapidly to support these demands.

The MP1800A SQA is a modular BERT with built-in Pulse Pattern Generator (PPG), supporting output of high-quality, high-amplitude signals; Error Detector (ED) with high input sensitivity supporting signal analysis, such as Bathtub Jitter and EYE diagram measurements; and Jitter Modulation Source for generating various jitters, including SJ/RJ/BUJ/SSC and supporting jitter tolerance tests.

Installing the 28/32G Multi-Channel PPG and ED modules supports high-speed interconnect up to 32Gbit/s, BER measurements required for device R&D, and simultaneous multi-channel crosstalk tests, as well as more precise and complete signal-integrity analyses.

■ Features

- ✓ Wideband 2.4 to 32.1Gbit/s
- ✓ 1/2/4ch Selection
- ✓ Simultaneous multi-channel pattern generation and BER analysis
- ✓ Crosstalk testing with individual variable data skew per channel
- ✓ High-input-sensitivity ED
- ✓ High-speed auto measurement (TJ/DJ/RJ/Bathtub Jitter, Eye Diagram)
- ✓ 32.1Gbit/s Jitter Tolerance testing (with MU181500B, generates RJ/SJ/BUJ/SSC)
- ✓ 4-tap Emphasis Signal Generator up to 28.1 Gbit/s (with MP1825B)

■ Applications

- ✓ CEI-25G, CEI-28G-VSR
- ✓ 32G Fibre Channel
- ✓ Infiniband EDR (26G)
- ✓ 100 GbE (25 Gx4), OTU4 (28 Gx4)
- ✓ 32G DP-QPSK for Long Haul
- ✓ CFP/CFP2, QSFP Module
- ✓ Optical Interconnect
- ✓ High-Speed Backplanes

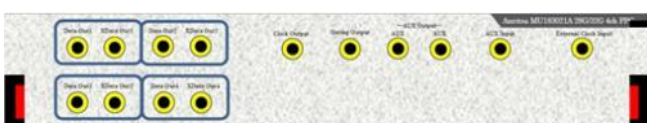
MP1800A Signal Quality Analyzer



28/32G Pulse Pattern Generator



MU183020A (1ch or 2ch)

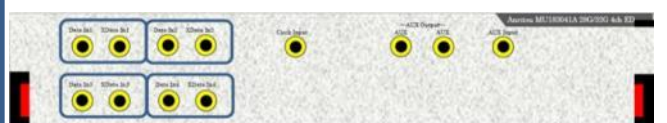


MU183021A (4ch)

28/32G Error Detector



MU183040A (1ch or 2ch)



MU183041A (4ch)

MU183020/21A, MU183040/41A does not work together with MU181020A/B and MU181040A/B. Please contact Anritsu for more detailed information and limitations. The specifications and contents of this document may be changed without prior notice.

■ Typical Specifications

PPG	Specification
Operating Bit Rate	2.4 to 28.1 Gbit/s, 2.4 to 32.1 Gbit/s (Opt-001)
Data Output	Differential, 1/2/4ch (depends on model and option), K-connector, 50ohm
Amplitude	500 mV to 2.0 Vp-p / 2 mV Step (Opt-012, 022), 500 mV to 3.5 Vp-p / 2 mV Step (Opt-013, 023)
Offset	-2.0 to +3.3 Voh / 1mV step (Opt-012, 022, 013, 023)
Cross Point Adjust	20% to 80%(at amp: 1 to 3.5 Vpp), 30% to 70%(at amp: 0.5 to 0.998Vpp) / 0.1% Step @ 28 or 32Gbit/s
Data Delay Range	-1000 m to +1000 mUI / 2mUI step (Opt-030)
Tr/Tf	12ps (Typical, 20-80%, 28.1Gbit/s, 32.1Gbit/s, Amplitude 3.5Vp-p)
Jitter	8psp-p (Typical, measured with Sampling Scope which has <200fsrms intrinsic jitter)
Clock Output	Single-ended, 1ch, K-connector, 50ohm
Frequency	Full-rate (2.4G to 32.1GHz) or Half-rate (1.2GHz to 16.05GHz) operation
Amplitude	0.3 Vp-p min., 1.0 Vp-p max.
Ext Clock Input	Single-ended, 1ch, SMA-connector, 50ohm
Frequency	1.2GHz to 16.05GHz
Amplitude	0.3 to 1.0Vp-p (-6.5 to +4.0dBm)
Aux Input	SMA-connector, 50ohm, Error Injection, Burst Enable
Aux Output	SMA-connector, 50ohm Divided Output, Pattern Sync. Output, Burst Out2
Pattern Generation	
PRBS	2 ⁿ -1 (n = 7, 9, 10, 11, 15, 20, 23, 31)
Programmable	2 to 268,435,456 bits/step 1 bit
Multi-CH operation	Channel Synchronization, Combination

ED	Specification
Operating Bit Rate	2.4 to 28.1 Gbit/s, 2.4 to 32.1 Gbit/s (Opt-001)
Data Input	Differential, 1/2/4ch (depends on model and option), K-connector, 50ohm
Input Amplitude	0.25 to 2.0 Vp-p, Sensitivity 50 mVp-p typ.
External Clock Input	Single-ended, 1ch, SMA-connector, 50ohm
Frequency	Half-rate operation (1.2GHz to 16.05GHz)
Amplitude	0.3 to 1.0Vp-p (-6.5 to +4.0dBm)
Clock Delay Range	-1000 m to +1000 mUI / 2 m UI step
Pattern Detection	
PRBS	2 ⁿ -1 (n = 7, 9, 10, 11, 15, 20, 23, 31)
Programmable	2 to 268,435,456 bits/step 1 bit
Aux Output	SMA-connector, 50ohm, Divided Output, Pattern Sync. Output
Analysis Functions	Auto Search, Bathtub Jitter, EYE Diagram, EYE Margin, Auto Adjust

■ Typical Configuration

Model Number	Model Name	28G 1ch High speed device	28G 2ch + Jitter Interconnect	28G 4ch + Jitter CFP2/CFP4	32G 4ch DP-QPSK
MP1800A	Signal Quality Analyzer	✓	✓	✓ (x2)	✓
MP1800A-014	2-slot for PPG and/or ED	✓	✓	✓ (x2)	✓
MP1800A-032	32G PPG/ED Support	✓	✓	✓ (x2)	✓
MU181000A	12.5 GHz Synthesizer	✓	✓	✓	✓
MU181000A-001	Jitter Modulation		✓	✓	
MU181500B	Jitter Modulation Source		✓	✓	
MU183020A	28G/32G PPG	✓	✓		
MU183020A-001	32G Extension				
MU183020A-012	2.0 V Data Out				
MU183020A-013	3.5 V Data Out	✓			
MU183020A-030	1ch Data Delay				
MU183020A-022	2ch 2.0 V Data out		✓		
MU183020A-023	2ch 3.5 V Data out				
MU183020A-031	2ch Data Delay		✓		
MU183021A	28G/32G x 4ch PPG			✓	✓
MU183021A-001	32G Extension				✓
MU183021A-012	4ch 2.0 V Data Out			✓	
MU183021A-013	4ch 3.5 V Data Out				✓
MU183021A-030	4ch Data Delay			✓	✓
MU183040A	28G/32G ED	✓	✓		
MU183040A-001	32G Extension				
MU183040A-010	1ch ED	✓			
MU183040A-020	2ch ED		✓		
MU183041A	28G/32G x 4ch ED			✓	
MU183041A-001	32G Extension				