

MP1821A
50G/56Gbit/s MUX

MP1822A
50G/56Gbit/s DEMUX

MP1821A 50G/56Gbit/s MUX MP1822A 50G/56Gbit/s DEMUX

Product Introduction



Anritsu Corporation

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Introduction -Market Trend-

IEEE, ITU-T, and OIF are working to define issues and new standards for next-generation 40 Gbit/s and 100 Gbit/s networks. These new standards use WDM transmission equipment and phase-modulation technologies to curb symbol rate but further expansion of transmission capacity requires higher symbol rates.

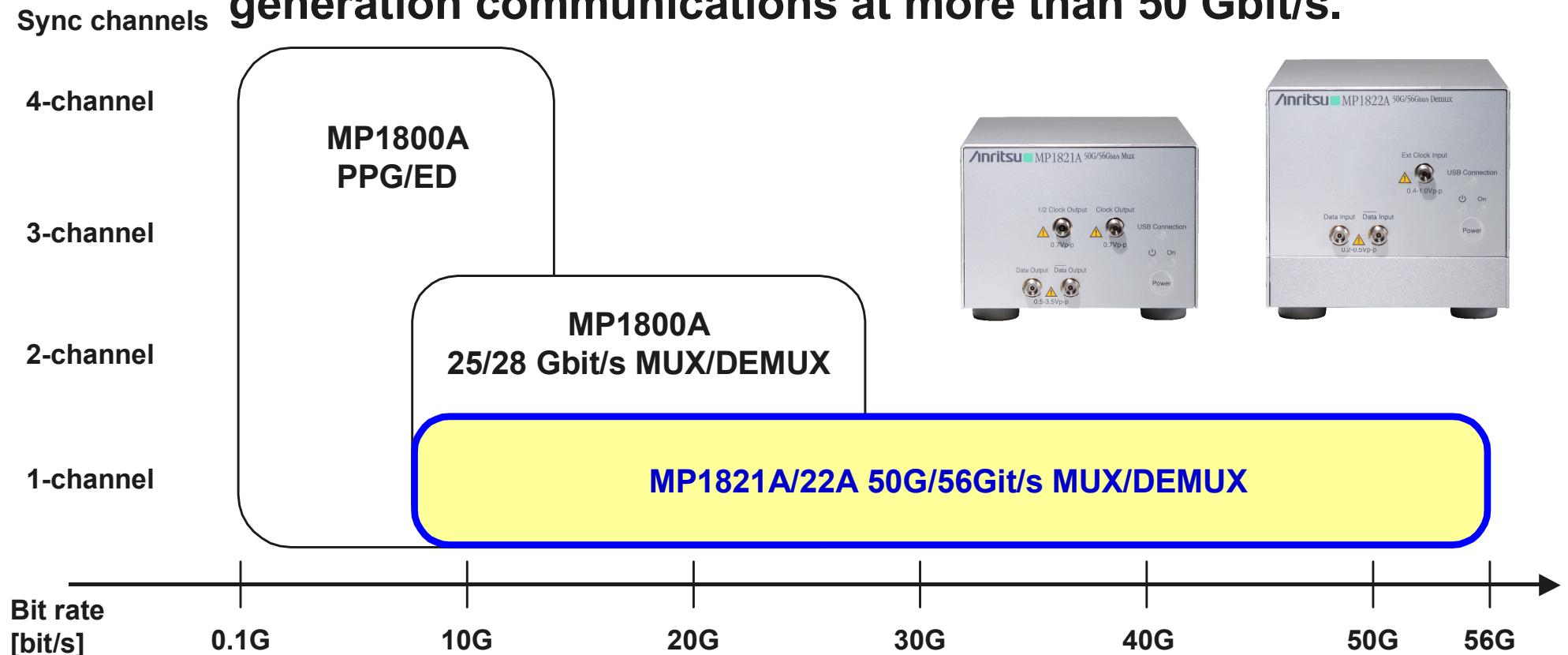
The MP1821A/22A supports operation frequencies up to 56 Gbit/s to meet these needs. Moreover, a full line of versatile functions and excellent performance for R&D into 40 Gbit/s fast next-generation devices, and ultra-fast 50Gbit/s optical modules, supports customers with the perfect solution for bringing new products to market as early as possible.



Key Features (1/7)

□ Wide 8 to 56 Gbit/s Operation Frequency Range (note)

- Anritsu provides the best measurement solutions for fundamental R&D in the 40 Gbit/s market and ultra-fast next-generation communications at more than 50 Gbit/s.

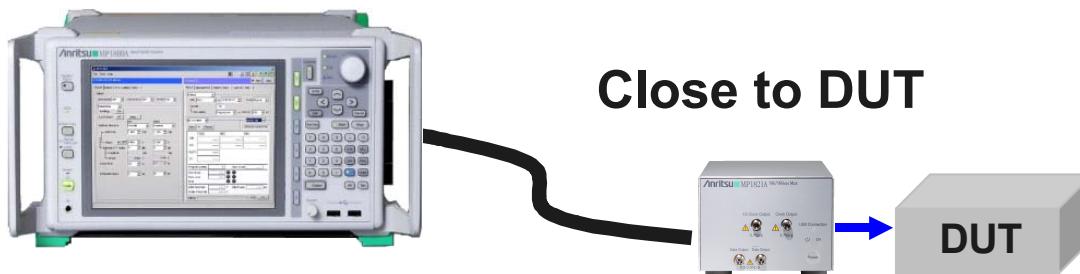


(Note): With MP1821A/22A-001

Key Features (2/7)

□ Compact Remote Head

- Shorter cables to the DUT minimize cable effects for assured high signal quality.



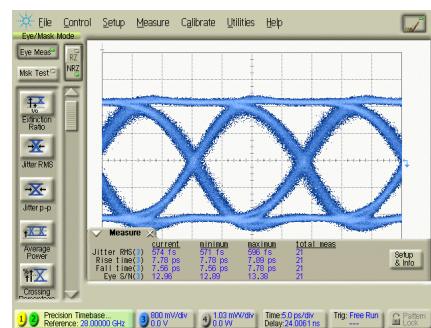
- The probe station supports direct evaluation of wafers. Troubleshooting at the early R&D phase cuts repeat work and time to product rollout.

Key Features (3/7)

□ Sophisticated Waveform (Note)

- High-speed Tr/Tf and low-jitter waveforms for evaluating electronic devices.
 - 8 ps (20% to 80%) high-speed Tr/Tf
 - 4 psp-p low-jitter waveform

- Direct driving of modulators without external amplifier supports high-quality measurement results.
 - Maximum 3.5Vp-p high amplitude waveform
 - 30% to 70% wide crosspoint adjustment function



56 Gbit/s, 3.5 Vp-p, PRBS31

(Note): With MP1821A-013

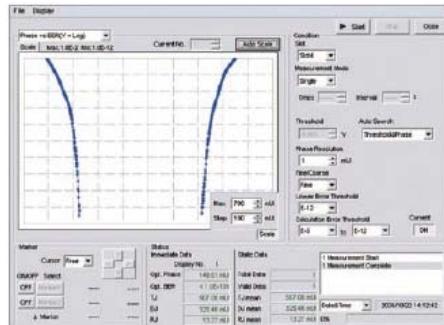
Key Features (4/7)

□ Easy Operation

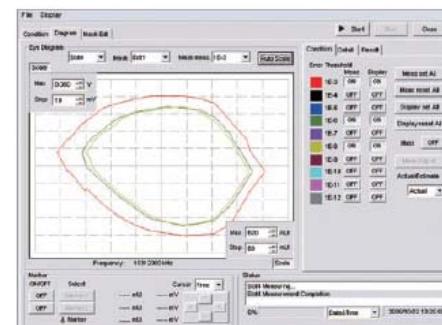
- Automatic phase shifting between PPG and MUX eliminates manual phase shifting and cuts set up time.

□ Automatic Measurement Function

- Eye Margin, Eye Diagram, Bathtub, Q, ISI Analysis and Capture functions are supported. A full range of versatile analysis functions help cut design verification times.



Bathtub
Measurements



Eye Margin
Measurements

Key Features (5/7)

□ Auto Search Function

- Automatic phase value and threshold value setting without complex adjustment.

□ Pre-Code/De-code Function (Note)

- 40G DPSK/ODB modulation signals are generated to evaluate optical modulators using the pre-code function. Moreover, the de-code function performs logic evaluation of pre-code blocks.

□ Flexible Expandability

- The MP1800A supports operating frequencies from 0.1 to 28 Gbit/s. Moreover, combination with the MP1821A/22A expands supported speeds to 56 Gbit/s and minimizes R&D investment for next-generation technologies.

(Note): With MX180000A-001/002

Key Features (6/7)

□ Function/Performance Comparison with Current MUX

Specification	MP1821A with option-001, 013	MP1803A with option-01
Operation Frequency	8 to 56 Gbit/s	25 to 43 Gbit/s
Data Interface	Differential Interface	Differential Interface
Number of Clock Outputs	2 (for DUT and DEMUX)	1
Output Amplitude	0.5 to 3.5 Vp-p	1.0 to 2.6 Vp-p
Offset	-2.0 to +3.3 Voh	-2.0 to +2.6 Voh
Crosspoint	30% to 70%	30% to 70%
Tr/Tf (20% ~ 80%)	8 ps typ.	9 ps typ.
Total Jitter	4 psp-p typ.	5 psp-p typ.
Output ON/OFF Function	Yes	No
PPG-MUX Manual Phase Calibration	Automatic Calibration	No
Interface	USB 1.1 or 2.0	Front Panel or GPIB
Software	MX180000A	-
Dimensions	100 (W) x 70 (H) x 140 (D) mm	213 (W) x 132.5 (H) x 364 (D) mm

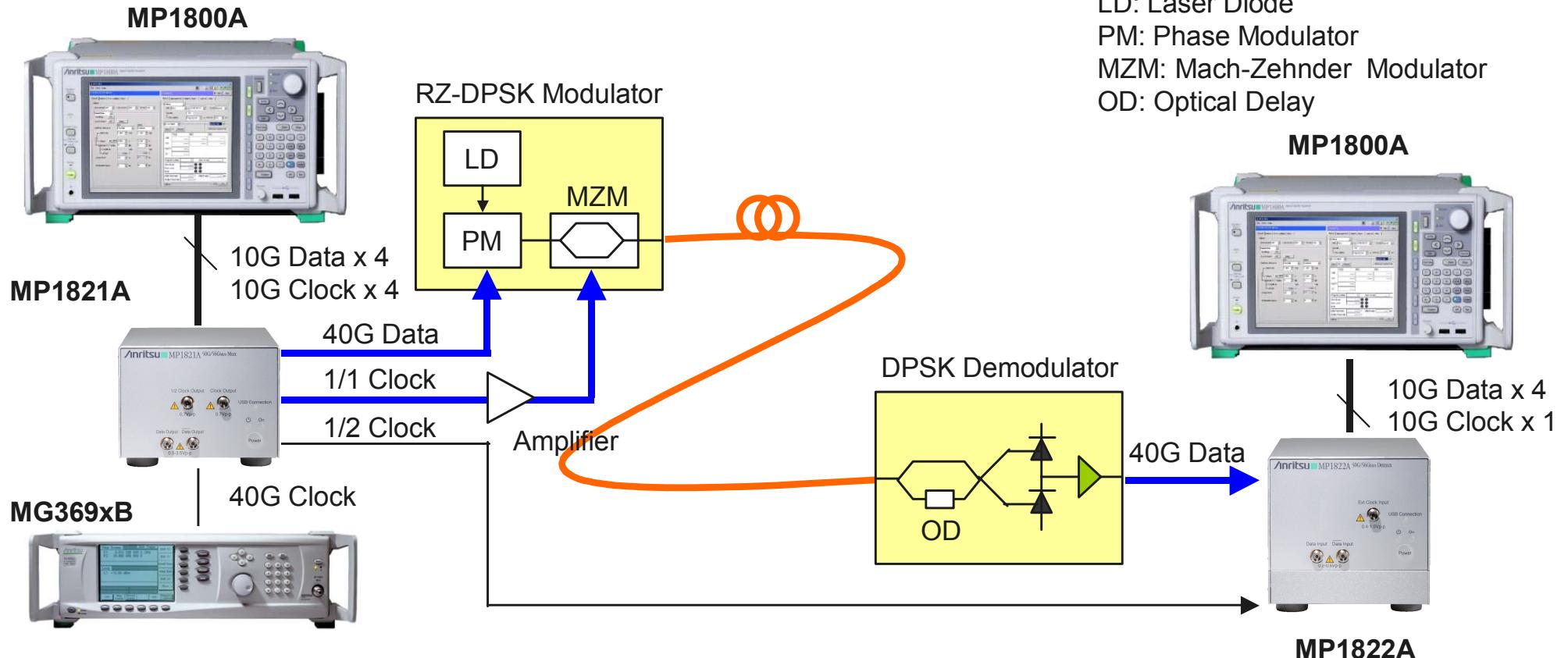
Key Features (7/7)

□ Function/Performance Comparison with Current MUX

Specification	MP1822A with Option-001, 030	MP1804A
Operation Frequency	8 to 56 Gbit/s	25 to 43 Gbit/s
Data Interface	Differential Interface	Single-ended
Input Amplitude	0.2 to 0.5 Vp-p	0.1 to 1.0 Vp-p
1/4 Clock Output	1	4
Auto Search	Yes	Yes *Requires separate software
Automatic Measurement	Yes *Eye Margin, Eye Diagram, Bathtub, Q, ISI Analysis, Capture functions	Yes *Requires separate software
Operation Interface	USB 2.0 or 1.1	Front Panel or GPIB
Operation Software	MX180000A	-
Dimensions	100 (W) x 90.9 (H) x 140 (D) mm	213 (W) x 132.5 (H) x 364 (D) mm

Applications (1/2)

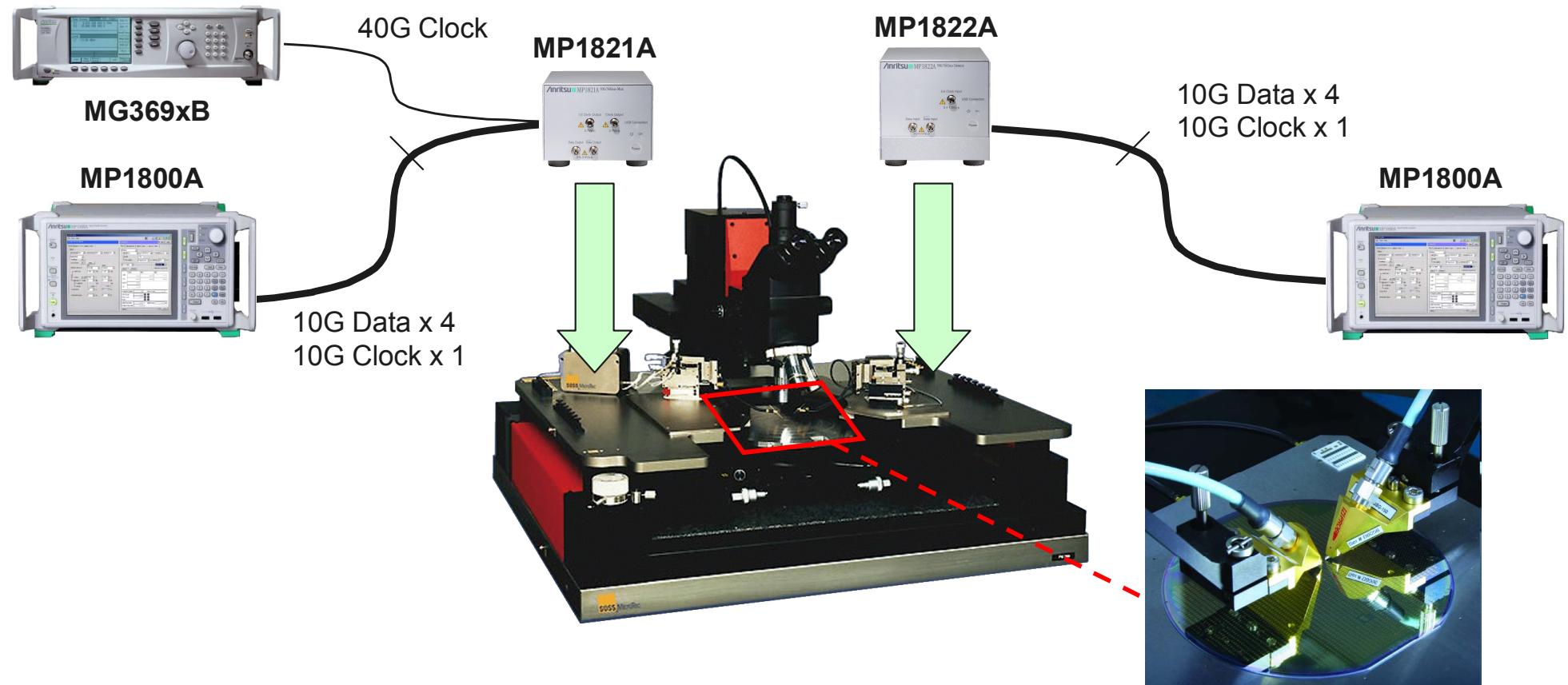
□ Ultra-fast Optical Transmission Evaluation



- Compact remote head with shorter cables to DUT keeps signal quality high.
- High-amplitude waveform supports direct driving of modulators, and crosspoint adjustment.
- Evaluation using 40G DPSK/ ODB modulation signals.

Applications (2/2)

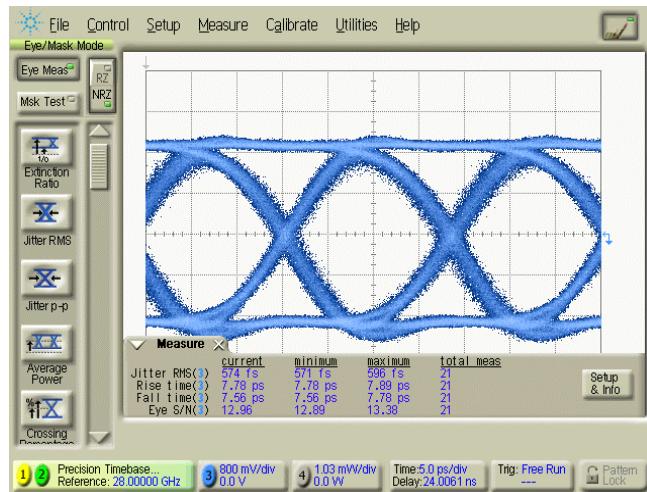
□ Ultra-fast Semiconductor Evaluation



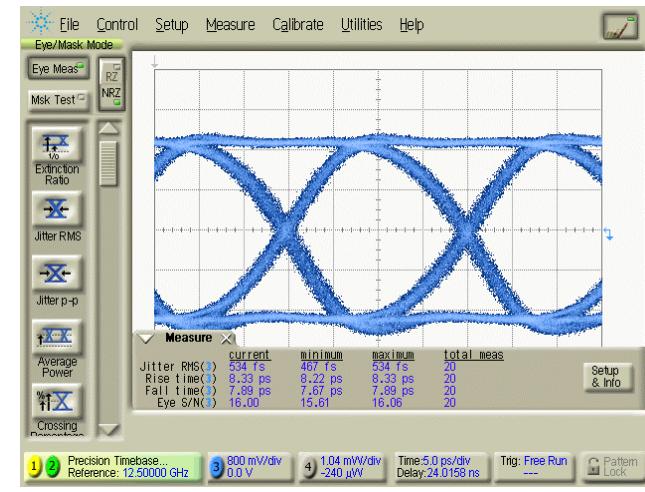
- Direct on-wafer device evaluation.
- High-speed Tr/Tf and low-jitter waveforms for electronic devices evaluation.
- Full line of versatile analysis functions, such as Bathtub.

Photo source of probe station: SUSS MicroTec

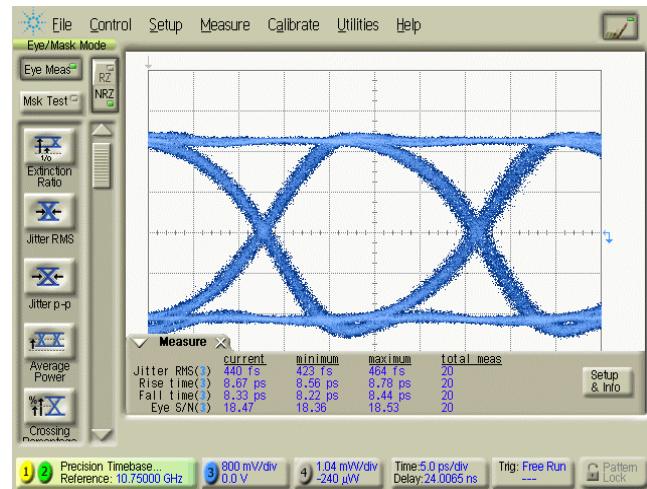
Typical Waveforms



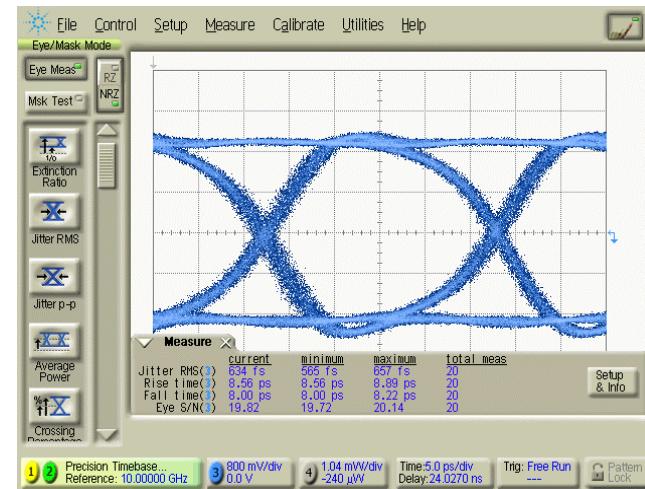
56 Gbit/s, 3.5 Vp-p, PRBS31



50 Gbit/s, 3.5 Vp-p, PRBS31



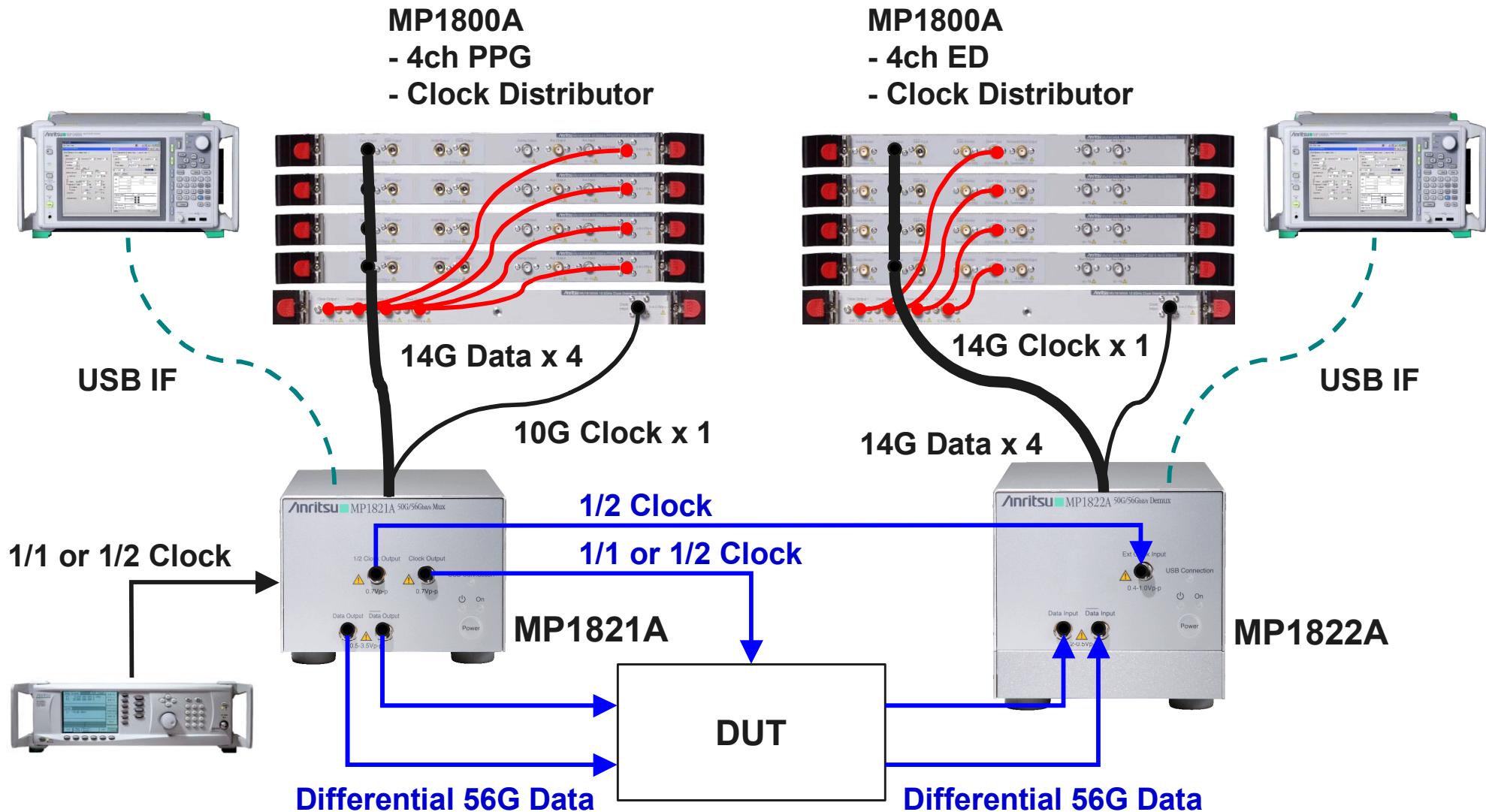
43 Gbit/s, 3.5 Vp-p, PRBS31



40 Gbit/s, 3.5 Vp-p, PRBS31

86100 DCA, 86116B 80G Electrical, 86107A Precision Timebase Reference

Connection Diagram



Ordering Information

□ MP1821A 50G/56Gbit/s MUX

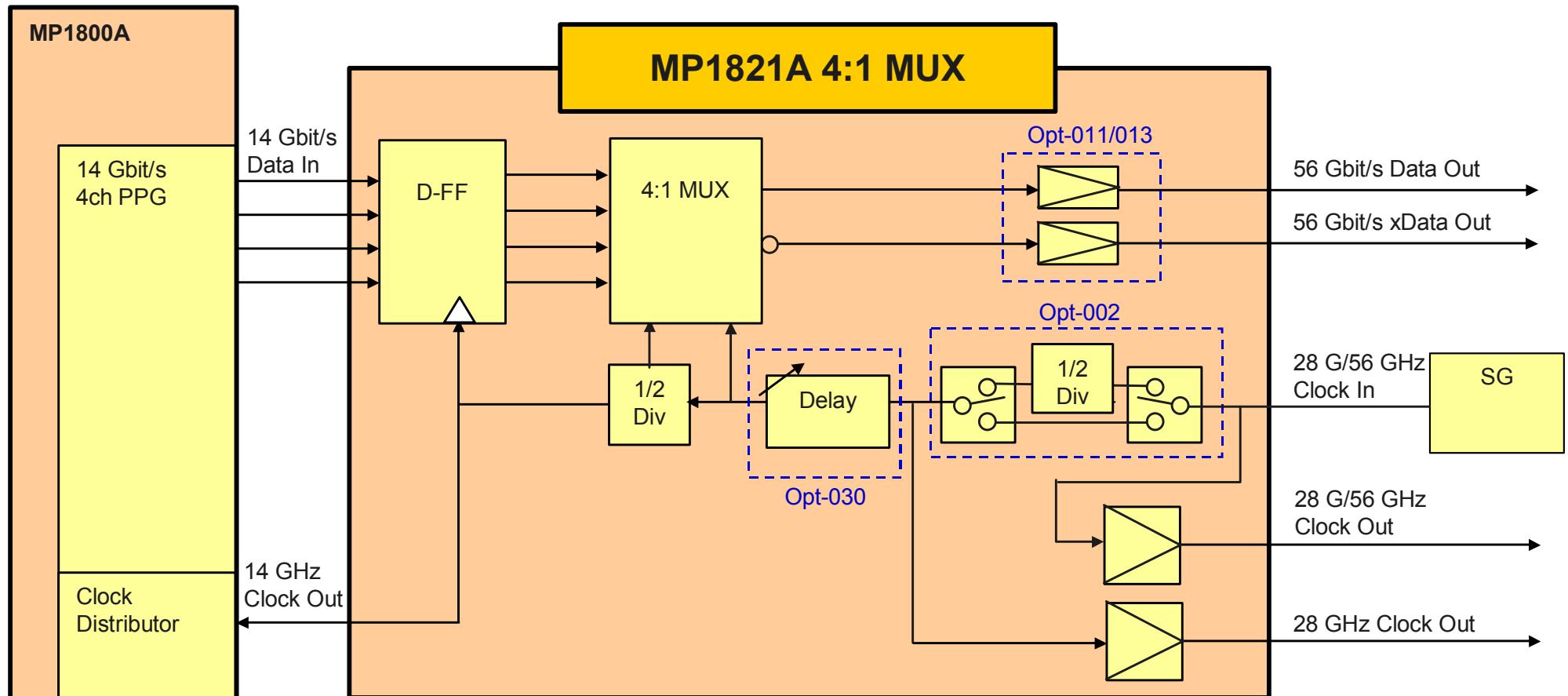
Model/Name	Explanation of Functions	Reference
MP1821A 50G/56Gbit/s MUX	Multiplexes four input signals into one (4:1) serial signal output at up to 50 Gbit/s. Provides 50 Gbit/s measurement solution in combination with MP1800A.	
MP1821A-001 56Gbit/s Extension	Expands operation frequency up to 56 Gbit/s.	
MP1821A-002 Clock Input Band Switch	Selects half-rate and full-rate clock frequencies. Half-rate input without options. Outputs same frequency as input clock from clock output port.	
MP1821A-010 Data Output (0.4 Vp-p fixed)	Amplitude fixed at 0.4 Vp-p. Lowest cost option.	Must select one of these
MP1821A-011 Variable Data Output (0.5 to 2.5 Vp-p)	Amplitude adjustment from 0.5 to 2.5 Vp-p as well as offset and crosspoint. Most versatile output option.	
MP1821A-013 Variable Data Output (0.5 to 3.5 Vp-p)	Amplitude adjustment from 0.5 to 3.5 Vp-p as well as offset and crosspoint. Highest amplitude waveform.	
MP1821A-030 Variable Data Delay	Shifts data vs clock phase.	

Ordering Information

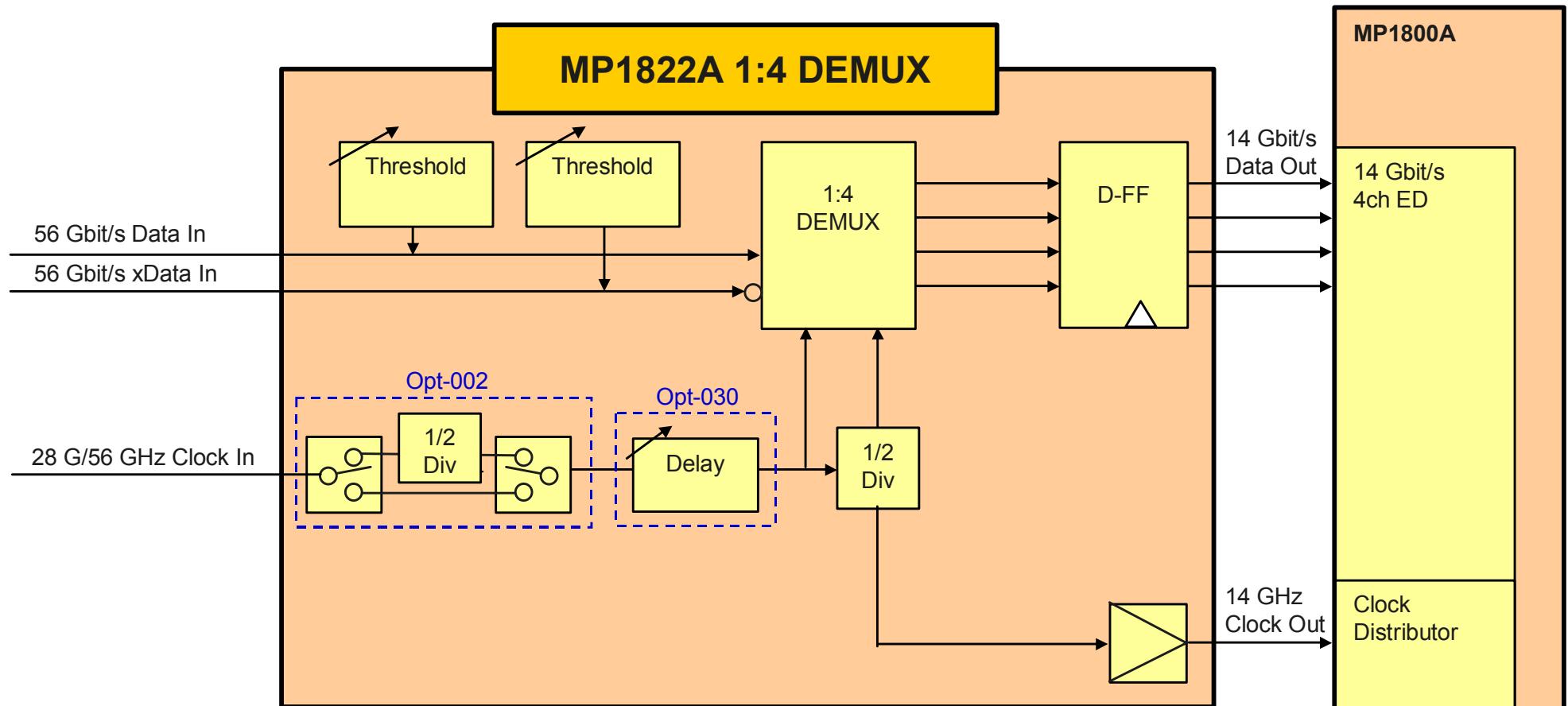
□ MP1822A 50G/56Gbit/s DEMUX

Model/Name	Explanation of Functions	Reference
MP1822A 50G/56Gbit/s DEMUX	Demultiplexes one input signal at up to 50 Gbit/s into four (1:4) serial signals. Provides 50 Gbit/s measurement solution in combination with MP1800A.	
MP1822A-001 56Gbit/s Extension	Expands operation frequency up to 56 Gbit/s.	
MP1822A-002 Clock Input Band Switch	Selects half-rate and full-rate clock frequencies. Half-rate input without options.	
MP1822A-030 Variable Clock Delay	Shifts clock vs data phase. Enables Auto Search and Automatic Measurement functions.	Required

MUX Block Diagram (1/2)



DEMUX Block Diagram (2/2)



Summary

□ Compact Remote Head

- Minimizes cable effects for assured high signal quality.

□ Sophisticated Waveform

- High-speed Tr/Tf: 8 ps (20% to 80%), Low jitter: 4 psp-p
- High Amplitude: 3.5 Vp-p, Crosspoint adjustment: 30 to 70%

□ Automatic Measurement Function

- Full line of versatile analysis functions, such as Bathtub

□ Flexible Expandability

- Combination with MP1800A supporting 0.1 to 28 Gbit/s expands measurement to 56 Gbit/s.

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