

PBT8812/PBT4412/ PBT8812B

112Gbps/ch Bit Error Ratio Tester

Version 1.13





Product Description

Semight Instruments PBT8812/PBT4412/PBT8812B is a high-performance bit error ratio tester (BERT) applied to high-speed serial signal error rate test, which can be used for physical layer characterization and consistency test.

It covers 200/400/800GbE and CEI-112G standards by virtue of support for 4-level pulse amplitude modulation (PAM4) signals with up to 56 Gbaud symbol rate (112 Gbps), as well as non-return-to-zero (NRZ) signals. It provides strong performance and flexibility guarantee for pre-research, design and production test of high-speed serial circuit product based on its excellent signal quality (fast rise/fall time, low jitter), rich functions (supporting real FEC analysis), flexible feature options and ultra-high overall integration.

The programmable pattern generator (PPG) can provide 3-Tap/7-Tap pre-emphasis tuner to compensate the loss of the signal in the transmission process and improve the signal quality. The bit error detector (ED) can be easily switched between different preset equalizer modes to ensure the signal integrity of the link.

Key Features

- High performance 112 Gbps/Ch bit error ratio tester, supporting up to 8 (PBT8812/PBT8812B) or 4 (PBT4412) groups of service channels;
- Fast rising edge, low jitter;
- Support real pcs layer FEC analysis / FEC simulation analyzer;
- Built-in RF switch to achieve host remote-switching trigger clock port;
- Each channel can be independently configured as NRZ or PAM4;



- Support multiple ATE hosts remote-control while working via TCP/IP.
- Support symbol rate range: 24.33-57.8 Gbaud;
- Receiver signal quality monitor with histogram and SNR measurement.
- Simple 3-Tap emphasis tuner with pre/main/post tap adjust and 7-tap emphasis tuner for more detailed equalization;
- Support random/burst bit error injection and input/output polarity inverse;
- Clock out supports frequency division;
- Powerful and flexible log management, giving assistance to in-depth analysis of test data;
- Can be flexibly programmed by calling external API (LabVIEW, C #) through LAN / USB;
- Support rich test patterns:
 - PRBS 7/9/11/13/15/16/23/31;
 - PRBS 7~31Q;
 - SSPRQ test pattern;
 - Square Wave, JP03A, JP03B, LIN;
 - User-defined test pattern;

GUI Functions

The Ber Viewer provides very intuitive and rich features that can be easily configured and linked to test result panel with each lane.

BER statistics integrates SNR indicator and histogram for better signal analysis. BER/FEC real-time



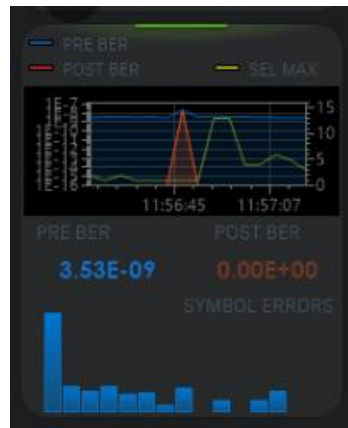
plots give assistance on capturing alarm events easily.

The real FEC analyzer provides PCS layer framing generator and gives user better evaluation on pre/post error symbols.

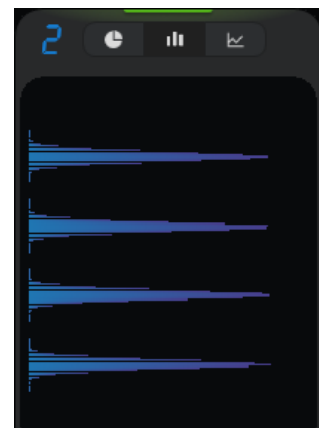
▷ PBT8812 only ※ PBT8812B only



* FEC Analysis Statistic

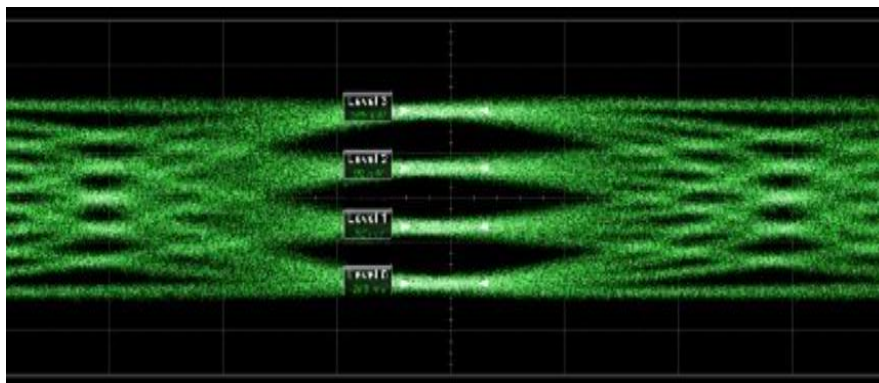


* FEC Analysis Plot



* Histogram ▷

Technical Specifications



*SSPRQ Pattern @ 53.125 Gbaud, differential eye diagram @ Keysight DCA 1092C

Default: PBT8812 ▷ PBT8812 only ※ PBT8812B only ▼ sFEC option only

Pattern Generator	Output type	PAM4/NRZ
	Termination	Differential; AC-coupled;
	Test Patterns	PRBS 7/9/11/13/15/16 [▷] /23/31;
		PRBS 7Q/9Q/11Q/13Q/15Q/16Q [▷] /23Q/31Q;
		SSPRQ, JP03A/JP03B [▷] , LIN [▷] , Square Wave [▷] ;
		User Defined Pattern (32bits* / 64bits [▷])
	Symbol rate (Gbaud)	24.33/24.8832/25/25.78125/26.5625/27.89/27.95/ 28.05/28.125/28.2/28.9/30 [▷] ; ①
	Frequency accuracy (Typical)	±50 ppm
	Maximum output amplitude (differential) ^②	650 mVp-p / 1000 mVp-p*
	Rise time (20%–80%) ^③	<10 ps
	Fall time (20%–80%) ^③	<10 ps
Data output RMS jitter	<350 fs	
Connector	1.85 mm female, 50 Ω	

① Optional.

② Net measured value at PG port.

③ Measured with 56.25Gbps NRZ signal.



Default; PBT8812 ▷ PBT8812 only ※ PBT8812B only ▼ sFEC option only

Trigger Output	Output amplitude	>300 mVp-p
	Output type	AC-coupled, Single-ended
	Frequency division ratio	4/8/16/32
	Connector	2.92 mm female, 50Ω
Error Detector	Input type	Differential PAM4/NRZ
	Termination	Differential; AC-coupled;
	Amplitude (differential) ^①	650 mVp-p ^{▷▼} / 1000 mVp-p [*]
	Sensitivity (differential) ^②	100 mVp-p ^{▷▼} / 300 mVp-p [*]
	Data patterns	PRBS 7/9/11/13/15/16 [▷] /23/31; PRBS 7Q/9Q/11Q/13Q/15Q/16Q [▷] /23Q/31Q;
	Symbol rate (Gbaud)	24.33/24.8832/25/25.78125/26.5625/27.89/27.95/ 28.05/28.125/28.2/28.9/30 ^{▷▼} ; ^③ 48.66/49.7664/51.5625/53.125/56/56.25/56.4/57.8;
	SNR indicator	Built-in
	Synchronization type	Auto Synchronization (level/phase)
	Connector	1.85 mm female, 50 Ω

① Net measured at Rx port.

② BER might reach to E-3 level or even LOS while input signal less than sensitivity threshold.

③ Optional.

General Indicators	Environment	Indoor
	Work	0°C~+55°C, 30%~80% Relative Humidity with no condensation
	Storage	-30°C~70°C, 10%~90%Relative Humidity with no condensation
	Altitude	Operation: 0m to 2000m, Storage: 0m to 4600m
	Power	LINE:100~240 VAC, 50/60 Hz, 50 W
	Warm-up time	10 minutes
	Dimensions	PBT8812: 412*441*112
	(unit: mm, with foot)	PBT8812B: 373*441*112



	pad/handle)	
	Net Weight	PBT8812: 6.5 kg
		PBT8812B: 7.8 kg

Ordering Information

Model	Description
PBT8812	8×112 Gbps Bit Error Ratio Tester
PBT4412	4 x112 Gbps Bit Error Ratio Tester
PBT8812B	8×112 Gbps Bit Error Ratio Tester
Accessories	Power cord, USB cable, Measurement Software and Drivers
Options	Description
-RFSW	Built-in RF switch which allows host remote-switching trigger clock port.
-EDR	Extendable Data Rate for more applications.
-FEC	Built-in real FEC analyzer, supports PCS layer traffic test; Providing graphical analysis interface and data management.
-sFEC (PBT8812B only)	Built-in FEC analyzer simulator, supports algorithm of FEC error correction & statistic towards receiving PRBS bit stream.
-TRIG (PBT8812B only)	Supports 4/8/16/32 div. monitor clock output.





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*This information is subject to change without notice.