



# PBT8812

8×112G Bit Error Ratio Tester

Version 1.3



Leader in optical communication and semiconductor high-end test instruments

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## Product Description

Semight Instruments PBT8812 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 all emerging 200/400/800GbE and CEI-112G standards by virtue of support for 4-level pulse amplitude modulation (PAM4) and non-return-to-zero (NRZ) signals, as well as up to 60GBaud symbol rate (equivalent to 120Gbit/s). 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. Moreover, 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) is equipped with built-in equalizer to ensure the signal integrity of the link. Moreover, the built-in fast locked clock recovery module ensures the stability of the link during the bit error test and the accuracy of the bit error test in the harsh and complex test environment.

## Key Features

- High performance 8 × 112Gbps bit error ratio tester, supporting up to 8 groups of service channels
  - Fast rising edge, low jitter;
- Support real pcs layer FEC analysis;
- Built-in RF switch to achieve host remote-switching trigger clock port;
- Each channel can be independently configured as NRZ or PAM4;
- Support symbol rate range: 24.33-60Gbaud;
- Support PRBS 7/9/11/13/15/16/23/31, PRBS7-31Q;
- Support rich test patterns, such as SSPRQ/JP03A/JP03B/LIN/square wave/CJT/user-defined patterns, etc;
- Support CTLE equalization on receiving end;
- 3-Tap and 7-Tap emphasis tuner with pre/main/post tap adjust.
- Support random/burst bit error injection and input/output polarity switching;
- Clock out supports frequency division (4-128 frequency division);
- Powerful and flexible database management function, giving assistance to research and development of in-depth analysis of data;
- The product can be flexibly programmed by calling external API (LabView, C #) through Ethernet port or USB control interface;
- Supported test patterns:
  - PRBS 7/9/11/13/15/16/23/31;
  - PRBS 7~31Q;
  - SSPRQ test patter;
  - Square Wave, JP03A, JP03B, CJT, LIN;
  - User-defined test pattern (64 bits length);



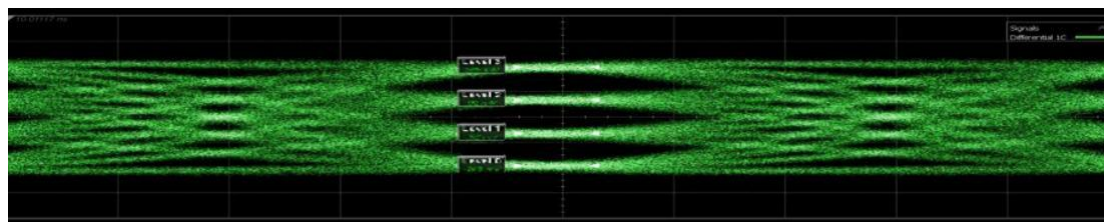
## Software function

Semight Instruments PBT8812 has very intuitive and simple interface GUI in which the system can be easily configured and all channel results can be displayed. It provides the built-in SNR indicator. The real FEC analyzer provides pcs layer framing generator and pre/post error statistic.

Ch/Symbol	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	5379648	211384	19998	2933	610	146	40	17	5	3	1	1	0	0	0



## Technical Specification



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

<b>Pattern Generator Indicators</b>	Output type	PAM4/NRZ
	Termination	Differential 100Ω, Single-ended 50Ω; AC-coupled
	Data patterns	PRBS 7/9/11/13/15/23/31, PRBS7~31Q
		SSPRQ, JP03A/03B, LIN, CJT, Square Wave
		User Defined Pattern (64bits length)
	Data symbol rate (GBaud) <sup>①</sup>	24.33/24.8832/25/25.78125/26.5625/27.89/27.95/28.05/28.125/28.2/28.9/30; 48.66/49.7664/51.5625/53.125/56/56.25/56.4/57.8/60;
	Frequency accuracy (Typ)	±50ppm
	Maximum output amplitude (differential) <sup>②</sup>	600mVpp
	Rise time (20%–80%) <sup>③</sup>	<10ps
	Fall time (20%–80%) <sup>③</sup>	<10ps
	Data output RMS jitter	<350fs
Connector	1.85mm female, 50Ω	

① Support more expansion rates in the future

② Net measured value of transmitting port

③ Measured with 56.Gb/s NRZ signal

<b>Trigger Output Indicators</b>	Output amplitude	>300mVp-p
	Output type	AC-coupled, Single-ended
	Frequency division ratio (settable)	4/8/16/32/128
	Connector	2.92mm female, 50Ω
	Trigger output	Support RF switch switching A/B, 4 groups of trigger switching for each
<b>Error Detector Indicators</b>	Input type	Differential PAM4 /NRZ
	Termination	AC-coupled
	Input impedance	100Ω
	Receiving amplitude (differential) <sup>①</sup>	100mVpp~600mVpp
	Receiving sensitivity (differential) <sup>②</sup>	100 mVpp
	Data patterns	PRBS 7/9/11/13/15/16/23/31, PRBS7~31Q;



	Data 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; 48.66/49.7664/51.5625/53.125/56/56.25/56.4/57.8/60
	SNR indicator	Support
	Clock mode	Built-in clock recovery
	Synchronization type	Auto Synchronization (level/phase)
	Connector	1.85mm female, 50Ω

①The measured value is the net input value of receiving end

②BER might reach to E-3 level or even LOS while input signal <100 mVpp;

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: 100-240VAC, 50/60Hz, 250W
	Warm-up time	10 minutes
	Dimensions (mm)	412*441*112(with foot pad/handle)
	Weight	Net weight 7.0kg

## Ordering Information

Product Model	Product Description
PBT8812	8×112G Bit Error Ratio Tester
Standard Accessories	Power cord, USB cable, Measurement Software and Drivers.
Options	
-RFSW	Built-in RF switch which allows host remote-switching trigger clock port
-FEC	Built-in integrated real FEC analyzer, providing graphical analysis interface and data management;
-EDR	Extendable Data Rate for more applications.



## Contact us

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## About Semight Instruments

Semight Instruments is a leading provider of global high-end test instrument and equipment. The company provides products and service to the development, fabrication and service of high-speed communication, optical chip and semiconductor testing fields. Semight's flagship testing instrument includes high-speed bit error ratio tester, network analyzer, broadband sampling oscilloscope, high-precision wavelength meter, optical spectrum analyzer, and digital Source Measure Unit. In addition, the company delivers optoelectronic hybrid ATE, laser chip burn-in system, laser chip tester, silicon photonics wafer tester, power chip tester, wafer level burn-in system, semiconductor parametric test system to domestic and international customers.

Semight Instruments adheres to the customer-centric, employee-based, innovation-driven, and subtle and broad corporate culture, and continues to provide customer trusted, cost-effective and high-performance products and service.

Visit [www.semight.com](http://www.semight.com) for more information.

\*Product specifications and descriptions in this article can be changed without notice