10G Burst Mode
Bit Error Ratio Tester
rBT1250   Datasheet V2.8

10G Burst Mode Bit Error Ratio Tester，Professional simulation PON module system testing instrument.

Supports 1.25G EPON, GPON, 2.5G XGPON, Combo PON, 10G EPON and 10G XGSPON burst bit error testing and analysis.

Content

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1 Product Description

Semight rBT1250 is a burst bit error tester specifically designed for testing optical line terminals (OLTs) in next-generation 1.25G/2.5G/10G passive optical network (PON) applications. It is used to evaluate the performance of 1.25G、2.5G and 10G ONU and OLT in burst mode. The overall design of the product can greatly simplify the testing setup and system configuration, and significantly reduce the cost.

rBT1250 provides three independent burst pattern generators and error bits detector channels. Supports continuous or burst mode error bits analysis, with the ability to generate and analyze two burst time-division code sequences. The code pattern timing is flexible and adjustable. And in response to device testing requirements, provide synchronous laser enable, reset signals, and other low-speed control channels for the corresponding testing channels. The product has a built-in clock recovery, which can automatically measure distance and easily handle long fiber testing.
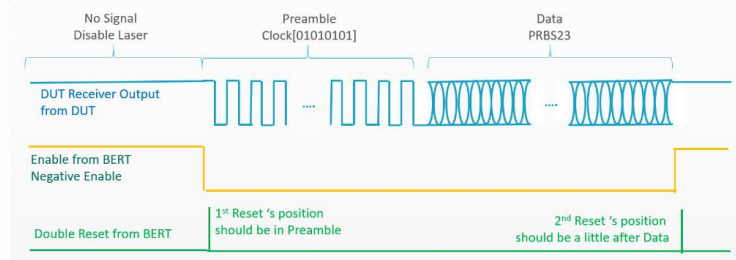
2 Key Features and Advantages

Flexible application

➢ Support range for burst rate: 1.25/2.5/9.953/10.3125 Gbps;

➢ Support burst and continuous mode data signal output and error bits testing;

➢ Support Combo-PON: the first burst bit error ratio tester supporting CPON in the industry;

➢ The burst sequence (period, preamble, payload, guard time) can be flexibly configured;

➢ Excellent Signal Quality: Rapid rise and fall time, low intrinsic jitter;

➢ Provide downlink continuous error bits testing channel:1 channel wit 10Gbps;

Control signal matching

➢ Provide 3 synchronous ONU laser enable control signals: LVTTL 3.3V, configurable enable level;

➢ Provide 3 synchronous reset control signals: LVTTL 3.3V, configurable level, adjustable reset position and width;

No Signal Disable Laser	Preamble Clock[01010101]	Data PRBS23

DUT Receiver Output from DUT

Enable from BERT Negative Enable

Double Reset from BERT — 1st Reset 's position should be in Preamble — 2nd Reset 's position should be a little after Data

Diverse auxiliary testing functions

➢ Support 1 RSSI Trigger signal: trigger mode, adjustable cycle, position, and pulse width；

➢ Supports 1 Trigger signal: position adjustable, used to assist in monitoring the length of sudden data；

➢ Support LOS/SD signal measurement: Each burst channel has the function of detecting LOS/SD signals separately, which can detect the edge position and level of LOS/SD signals;

High efficiency, convenient application, one-stop solution

➢ Quick configuration download and fast hardware response speed；

➢ Built in CDR: Each burst of data received will undergo clock recovery for ease of mass production testing; Can conduct real long fiber optic testing and support reset signal automatic positioning function；

Fully Match ATE Application Scenarios

➤ With powerful and flexible database management capabilities, it aids in the in-depth analysis of data for research and development purposes.

➤ Can be remotely controlled via USB port by invoking external APIs (LabVIEW, C#).

3 Technical Specification

TX specification

Type	Item	Description
Pattern Generator Specification	Output	Differential/Single End NRZ
	Terminal	AC Coupling
	output Impedance	100 Ω ± 10%
	Pattern	PRBS7, 23, 31, Custom Defined Pattern and CID
	Burst signal rate (Gbps) [1]	1.25/2.5/9.953/10.3125
	Pre-emphasis	3-taps
	Output amplitude (differential)	*100-600mVpp (typical)* [2]
	Rise time [3] (20–80%)	*<40ps (typical)*

Type	Item	Description
	Fall time [3] (20–80%)	<40ps (typical)
	Peak to peak Jitter [4]	<12ps (typical)
	Laser enable (TXEN)	LVTTL 3.3V
	Reset signal	LVTTL 3.3V，Adjustable voltage level, trigger position, and width
	Connector	SMA
Trigger and Clock Specification	Clock Output Amplitude	>250 mVp-p
	Output Type	AC Coupled，Single-end
	Div Ratio (Adjustable)	64

[1]   Compliant with EPON and GPON speeds

[2]   Net measurement value at the transmitter's end, default pre-emphasis/de-emphasis parameters.

[3]   Measured with10.3125 Gbps NRZ signal.

[4]   Tested with/after Jitter separation.

RX specification

Type	Item	Description
	Input	Differential NRZ
	Terminal	AC Coupled
Error Detector Specification	Input Impedance	100 Ω ±10%
	Input Range (Differential) [1]	100 ~ 800mVp-p (typical)
	RSSI (Differential) [1]	100mVp-p (typical)

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Type	Item	Description
	Pattern	PRBS7, 23, 31, CID
	Symbol Rate (Gbaud) [2]	1.25/2.5/9.953/10.3125
	Clock Mode	Built-in Clock Recovery
	Connector	SMA

[1]   Take care of output amplitude from DUT as the high voltage signal may damage the receiver.

[2]   Compliant with EPON and GPON speeds

Environment Specification

Item	Description
Environment	Indoor
Operating	Temperature：0℃ to +55℃，Humidity：30% to 80% @non-condensing
Storage	Temperature：-30℃ to 60℃，Humidity：10% to 90%@non-condensing
Power Supply	Voltage Range：100-240 VAC，Frequency Range：50/60 Hz, Maximum Power：800W
Warm-up	30-minutes of warm-up and automatic calibration, with the ambient temperature variation remaining within ±3℃
Dimensions (mm)	415*265*105 (with foot pad/handle)
Weight	Net Weight 5.3 kg

4 Ordering Information

Option Type	Option ID	Remarks
Burst Options (Choose one)	rBT1250-200	Support double burst or single burst Test, Upstream 1.25/2.5Gbps , downstream 10Gbps, Support CPON Test.
	rBT1250-300	Support double burst or single burst Test, Upstream 1.25/2.5/10Gbps , downstream 10Gbps, Support GPON,EPON,CPON,10G GPON,10G EPON Test.
Service (Choose one)	R3C	Extended warranty and service plan - 36 months.
	R5C	Extended warranty and service plan - 60 months.

5 Warranty Terms

Number	Item	Description	Period
1	Mainframe Warranty Period	Free of Charge during the warranty period (excluding static electricity or human dSamage)	12 months
2	Calibration Period	Return to the factory for calibration or bring the calibration system for on-site calibration	24 months

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