

25G Burst Mode Bit Error Ratio Tester

rBT2250 [Datasheet](#) **V2.1**

25G Burst Mode Bit Error Ratio Tester, Professional simulation PON module system testing instrument.

Applied to burst mode bit error testing of 10G/25G PON modules



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1 Product Description

Semight rBT2250 is a new type of burst bit error tester specifically designed for testing optical line terminals (OLTs) in next-generation 25G/50G passive optical network (PON) applications. It is used to evaluate the performance of 10G and 25G 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.

rBT2250 provides two 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.

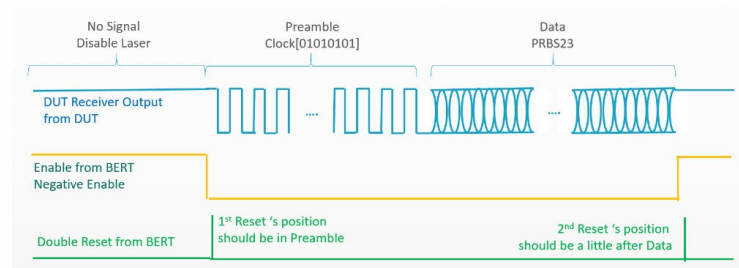
2 Key Features and Advantages

Flexible application

- Support range for burst rate: 9.953/10.3125/12.441/24.883/25.78125Gbps;
- Support burst and continuous mode data signal output and error bits testing;
- 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: optional 1 channel with NRZ up to 25Gbps, or 2 channels with NRZ/PAM4 up to 50Gbps;

Control signal matching

- Provide 2 synchronous ONU laser enable control signals: LVTTTL 3.3V, configurable enable level;
- Provide 2 synchronous reset control signals: LVTTTL 3.3V, configurable level, adjustable reset position and width;



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 either Lan or 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 \pm 10%
	Pattern	PRBS7, 15, 23, 31, SSPR, Custom Defined Pattern and CID
	Burst signal rate (Gbps) [1]	9.953/10.3125/12.4416/24.8832/25.78125
	Frequency accuracy	± 50 ppm (typical)
	Output amplitude (differential)	100-600mVpp (typical) [2]
	Rise time [3] (20–80%)	<20ps (typical)
	Fall time [3] (20–80%)	<20ps (typical)
	Random Jitter [4]	<1ps (typical)
	Laser enable (TXEN)	LVTTL 3.3V
	Reset signal	LVTTL 3.3V, Adjustable voltage level, trigger position, and width

Type	Item	Description
	Connector	2.92mm female, 50 Ω
Trigger and Clock Specification	Clock Output Amplitude	>250 mVp-p
	Output Type	AC Coupled, Single-end
	Div Ratio (Adjustable)	4/8/16

[1] 1.25G and 2.5G speeds are not yet compatible.

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

[3] Measured with 24.8832 Gbps NRZ signal.

[4] Tested with/after Jitter separation.

RX specification

Type	Item	Description
Error Detector Specification	Input	Differential NRZ
	Terminal	AC Coupled
	Input Impedance	100 Ω \pm 10%
	Input Range (Differential) [1]	100 ~ 800mVp-p (typical)
	RSSI (Differential) [1]	100mVp-p (typical)
	Pattern	PRBS7, 15, 23, 31, CID
	Symbol Rate (Gbaud) [2]	9.953/10.3125/12.4416/24.8832/25.78125
	Clock Mode	Built-in Clock Recovery
	Connector	2.92mm female, 50 Ω

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

[2] 1.25G and 2.5G speeds are not yet compatible.

Environment Specification

Item	Description
Environment	Indoor
Operating	Temperature: 0°C to +55°C, Humidity: 30% to 80% @non-condensing
Storage	Temperature: -30°C to 60°C, 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 $\pm 3^{\circ}\text{C}$
Dimensions (mm)	395 \pm 0.5*440 \pm 0.8*112 \pm 0.3 (with foot pad/handle)
Weight	Net weight: 8.2kg ^[1]

[1] Dimensions and weight may vary depending on the configuration of different options.

4 Ordering Information

Option Type	Option ID	Remarks
Burst Options (Choose one)	B21	2x25Gbps Burst PPG + 1x25Gbps Burst ED
	B22	2x25Gbps Burst PPG + 2x25Gbps Burst ED
Continuous Options (Choose one)	CN25	25Gb/s NRZ Continuous Channel
	CN50	2 x 50Gb/s NRZ Continuous Channel
	CM50	2 x 50Gb/s NRZ & PAM4 Continuous Channel
Service (Choose one)	R3C	Extended warranty and service plan - 36 months
	R5C	Extended warranty and service plan - 60 months

Option Guide

Option Name	PN	Option Description
Standard	rBT2250-B21-CN25	Support double burst or single burst with one channel , with both upstream and downstream data rate of 25Gbps
Enhanced	rBT2250-B22-CN25	Support double burst or single burst with two channel , with both upstream and downstream data rate of 25Gbps;
Fully equipped I	rBT2250-B22-CN50	Support double burst or single burst with two channel , Upstream 25Gbps , downstream 50Gbps (NRZ);
Fully equipped II	rBT2250-B22-CM50	Support double burst or single burst with two channel , Upstream 25Gbps , downstream 50Gbps (NRZ & PAM4);

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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