

GuideTech

GTB1684 - High Performance 14.5 Gbps Bit Error Ratio Testing System



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The new BERT Concept

- High Quality 4 channel BERT system
- 14.5 Gb/s with excellent signal fidelity
- Error detector with CDR and an equalizer
- Very Clean and stable time base
- Light weight and Compact
- User friendly GUI

The **GTB1684** is a light weight, high quality 14.5Gbps, 4-Channel BERT system. It is the ideal choice for high speed serial bus testing.

Accurate testing at today's high speed serial links requires the test tool to generate very clean signals with the lowest jitter possible. The **GTB1684's** fast rise time, low noise and low jitter are evident in the high fidelity output eye on all four channels.

On the detector side the **GTB1684** is equipped with flexible and independent receivers on each channel, each with its own high quality equalizer and CDR

Traditional BERT systems are hard to operate; the **GTB1684's** GUI was designed specifically to simplify the test setup and to quickly get results. It takes a few seconds from power-up to the point when the user sees test results.

The **GTB1684** offers fully differential I/Os, adjusted amplitude levels, and independent PRBS patterns on all output channels. On the input side it offers auto-lock CDR and programmable equalizer.

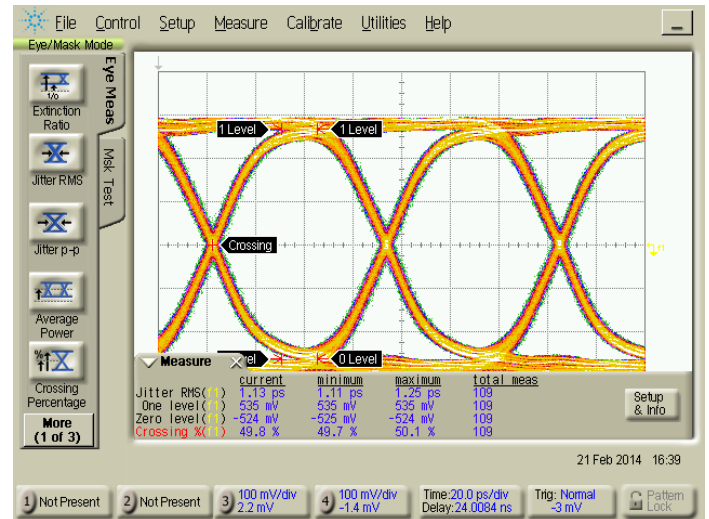


Figure 1. Impressive output signal quality at 14.5Gbps

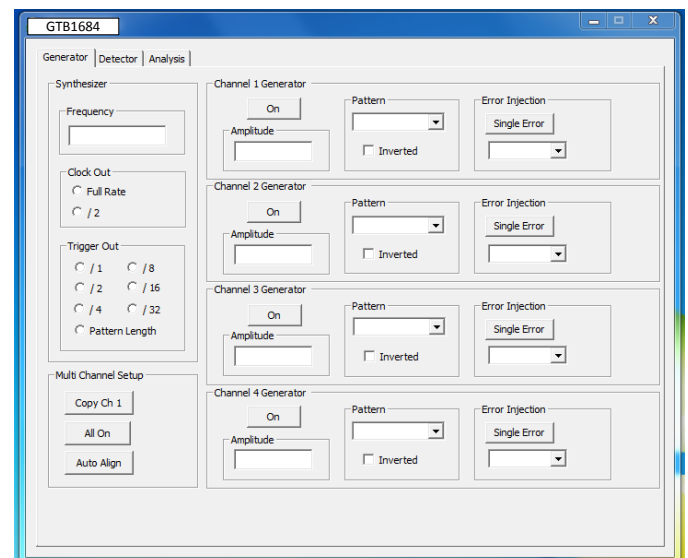


Figure 2. **GTB1684** user friendly and intuitive GUI

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Applications

The **GTB1684** is an ideal and affordable choice for R&D labs, optical transceiver production line, and silicon testing among many other applications.

The affordability of the **GTB1684** makes sense in the R&D environment, as most times standard tools are too pricey and there's no real need for each and every corner-case control.

The multiple channel configurations allow the user to test backplanes, ICs, and electrical & optical transceivers on multiple channels, test for crosstalk and other sensitivities which related to multi-channel design.

The **GTB1684's** clean and stable clock source allows for easy characterization of maximum data rates up to 14.5 Gbps. The many divide ratios on the clock's circuit output allows for easy external triggering of sampling scopes.

The following serial-buss are supported:

- PCI Express Gen 3 up to 8Gbps
- Fibre Channel up to 14.025Gbps
- SATA 3 up to 6Gbps
- SAS 3 up to 12Gbps
- USB 3.1 up to 10Gbps
- DisplayPort
- MIPI M-PHY
- SD UHS-II
- Thunderbolt
- QPI
- Infiniband
- Telecom
- 10 GbE/ XAUI
- XFP/XFI, SFP+
- 100 GbE (10x 10G or 4x 25G)

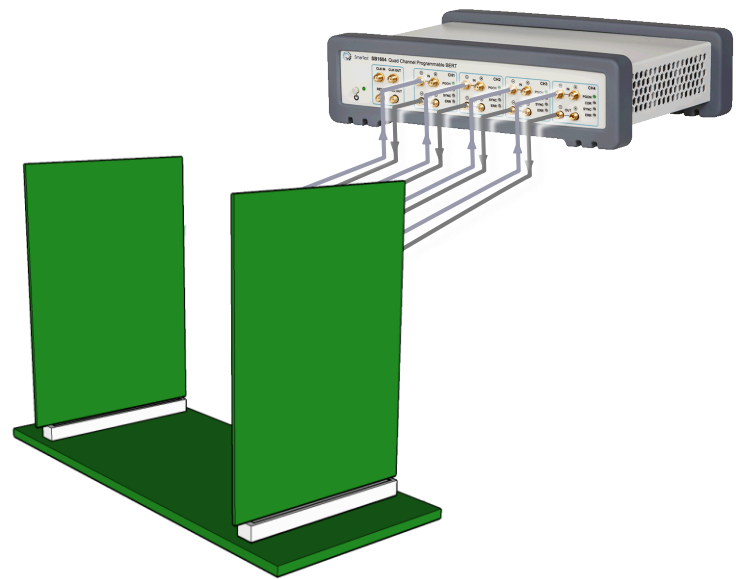


Figure 3. Backplane testing

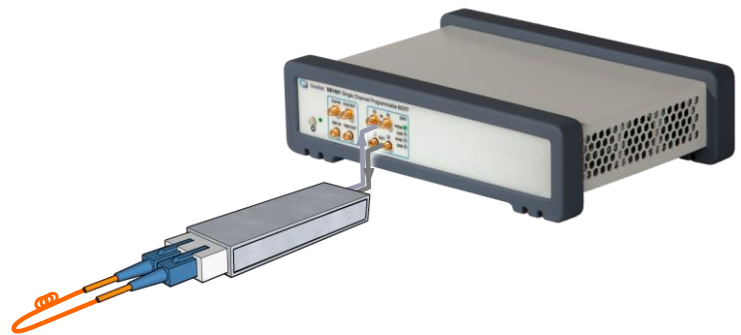


Figure 3. Transceiver testing

Pattern Generator Specifications

Number of Channels	4 differential pairs
Connector type	2.92mm, 40GHz, Front Panel
Output Type	Differential or two single ended, AC coupled, 50 Ω SE
Range Of Operation	1.25Gbps to 14.5Gbps
Patterns	PRBS7, PRBS9, PRBS11, PRBS15, PRBS23, PRBS31
Pattern Invert	Yes
Format	NRZ
Transition Times (20% to 80%)	<20ps
Output Amplitude	400mV to 1V Differential
Total Jitter	< 1ps RMS
Error Injection	Yes

Frequency Synthesizer and Clock Specifications

Frequency Range	125MHz to 16GHz
Stability	1 PPM
Total Jitter	< 500fs RMS

External Clock Out	CLK OUT
Clock Rate	8GHz to 16GHz
Amplitude	400mV Typical
Interface	Single Ended, AC coupled, 50 Ω
Connector Type	SMA, 26GHz, Front Panel

External Clock In	CLK IN
Clock Rate	1GHz to 16GHz
Connector Type	SMA, 26GHz, Front Panel

Trigger Out	TRIG OUT
Clock Rate	Divide by 1, 2, 4, 8, 16, 32 and 64
Amplitude	400mV Typical
Interface	Single Ended, AC coupled, 50 Ω
Connector Type	SMA, 26GHz, Front Panel

Reference Clock In	REF IN
Frequency	10MHz
Connector Type	SMA, 26GHz, Front Panel

Internal CDR (Clock Data Recovery) Specifications

Input Data Rate Range	9.95Gbps to 11.3Gbps and 14.025Gbps
Rate Detection	Automatic
Reference input	Either Internal frequency synthesizer or external through CLK IN
Loop Bandwidth	Typical 8 MHz
Lock Time	10us
LED Indicators	Front Panel, ON = CDR Lock

Error Detector Specifications

Number of Channels	4 differential pairs
Connector type	SMA, 26GHz, Front Panel
Input Type	Differential or two single ended, AC coupled, 50 Ω SE
Range Of Operation	1.25Gbps to 14.5Gbps
Patterns	PRBS7, PRBS9, PRBS11, PRBS15, PRBS23, PRBS31
Pattern Invert	Yes
Format	NRZ
Input Sensitivity	Minimum 25mV
Amplitude Range	100mV to 1V Differential
LED Indicators	Front Panel, ON = CDR Lock

General Specifications

Control Interface	USB 2.0
Operating System	Microsoft Windows XP, Vista and Windows7
Operating Temperature	5 ^o C to 40 ^o C
Storage Temperature	-40 ^o C to 70 ^o C
Operating humidity	95% relative humidity,
Storage humidity	50% relative humidity
Power Supply	100V to 240V AC, 50Hz to 60Hz
Operating Altitude	
Power Consumption	60VA maximum
Dimensions	
Weight (net)	
Weight (shipping)	

Calibration

Annual Calibration is Recommended