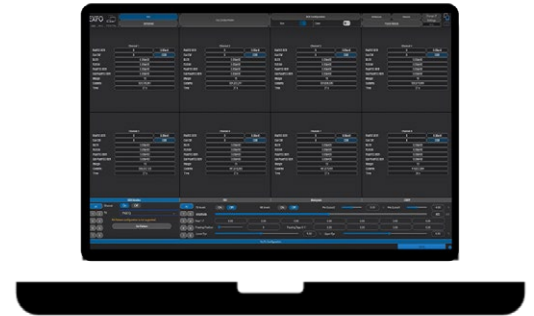


BA-1602 Series

1.6T BIT ANALYZER

- World-class, high-performance electrical BER tester for 1.6T design validation, including thermal testing.



KEY FEATURES

Full lifecycle validation for 1.6T, 800G and 400G across lab, fab and live environments

Superior hardware design: native electrical interface, excellent signal quality, clean eye diagram and low error floor

High-performance signal integrity and bit error rate (BER) testing for validating compliance and performance in next-gen 1.6T designs

Two valuable configurations on single RF SMPX connector supporting 8 channels at 212.5G and a dual RF SMPX supporting 16 channels at 212.5G

User-friendly GUI streamlines workflows, and reduces learning curves

FEC generation and analysis testing to ensure data integrity over ultra-fast connections

Real-time FEC analysis: testing of pre/post FEC BER, symbol error distribution and FEC margin

BLER: block error ratio statistics and an efficient FLR estimation mechanism, addressing the time constraints of ultra-low BER measurements

High-level equalization capabilities of challenged interconnects (LPO)

Single- and dual-port RF configuration allowing validation of more than one transceivers including thermal testing

I2C and I3C register read/write access enables the direct control and monitoring of device parameters for fast, low-level diagnostics and efficient debugging

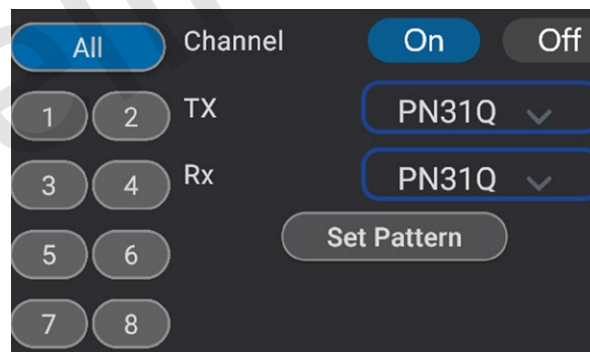
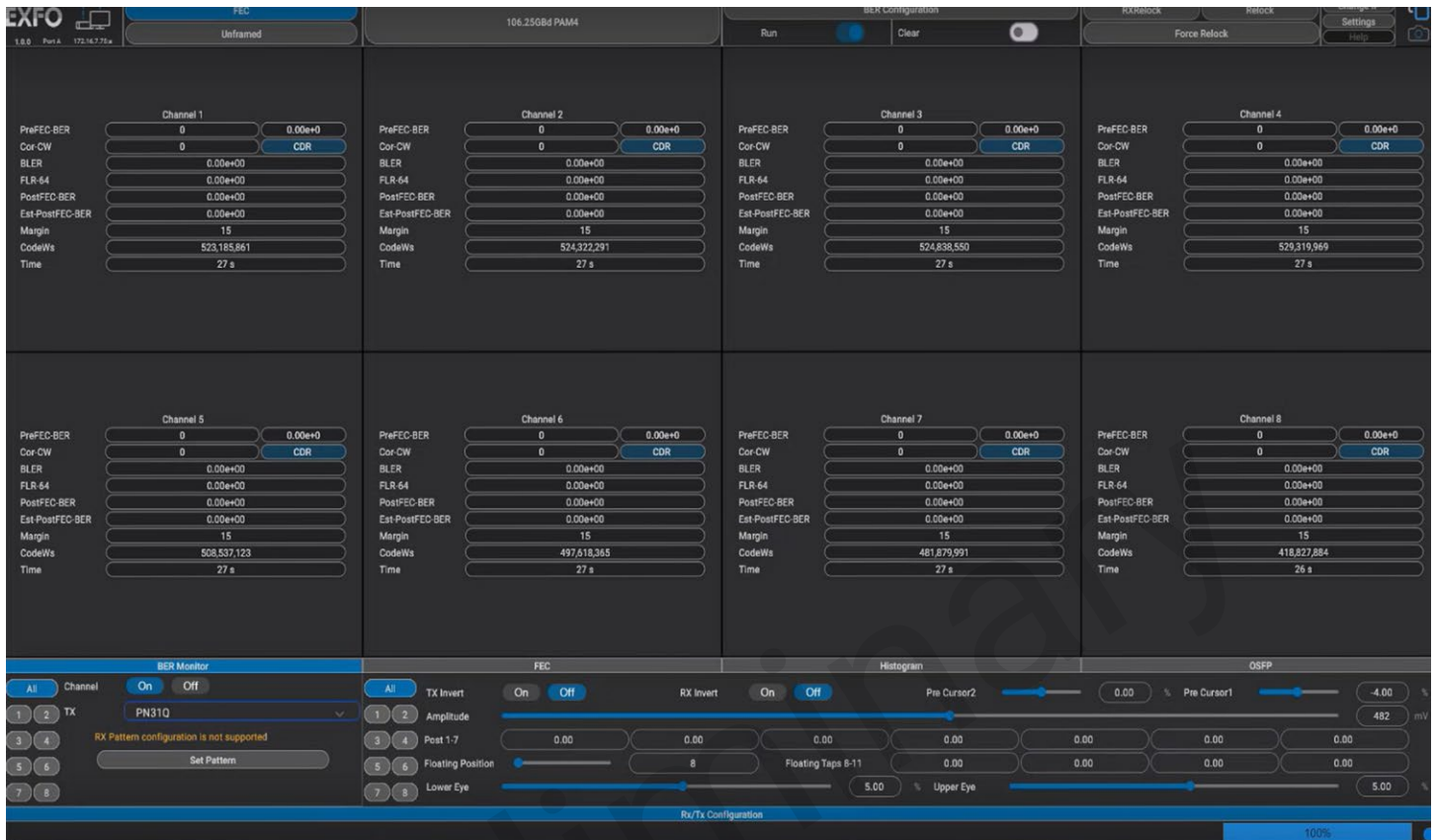
Save-and-load functionality for all applicable parameters reduces valuable time and ensures test consistency

Automation simplifies complex test configurations and speeds up validation using a complete API suite

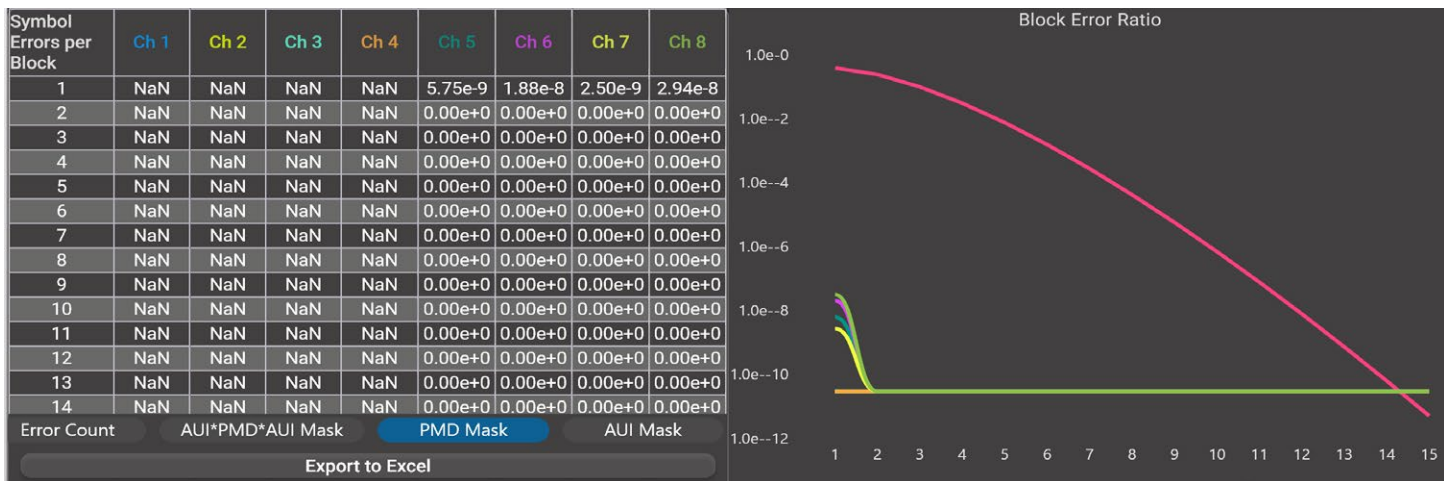
Auto-negotiation and APSU support for cable and transceiver validation

POWERFUL AND SIMPLIFIED USER INTERFACE

The BA-1602 graphical user interface (GUI) provides simplified and real-time test results per channel. It requires an external Windows-based PC with Ethernet capability to run the GUI and API.



Channel number	Channel 1		
Number of total pre-FEC error bits	PreFEC-BER	540008	4.85e-7
Correctable codeword count	Cor-CW	423812	CDR
Block error ratio	BLER	0	
Frame loss ratio (64-octet frame only)	FLR-64	0.00e+00	
Post-FEC bit error rate	PostFEC-BER	0.00e+00	
Estimated Post-FEC BER	Est-PostFEC-BER	1.72e-39	
FEC margin	Margin	12	
Number of total tested codewords	CodeWs	204,753,700	
Test time	Time	10 s	



FEC channel distribution and BLER mask testing

Board Type: ☒ OSFP ☐ QSFPDD

Power Supply: V

HW Signals: ☒ LPWn ☐ RSTn ☐ PRSn ☐ Int ☐ High(3.3v) ☐ Low(ground)

I2C register: Address Value ☐ R ☒ W

MCB control

Clock Ratio: ☒ Rate/2 ☐ Rate/4 ☐ Rate/8 ☐ Rate/16 ☐ Rate/32

Enable output Clock: ☒ Enable ☐ Disable

Channel 1: ☒ Channel 2: ☐ Channel 3: ☐ Channel 4: ☐ Channel 5: ☐ Channel 6: ☐ Channel 7: ☐ Channel 8: ☐

Cancel Apply

Reference clock

WITH PAM4 CODING, A SIMPLE BER TEST IS NOT ENOUGH

Channel 1

Pre-FEC-BER:

Cor-CW:

CER:

FLR-64:

Est-CER:

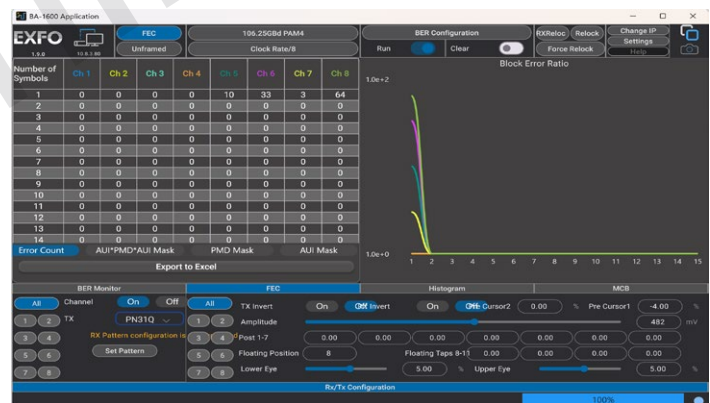
Est-FLR:

Margin:

CodeWs:

Time:

FEC symbol error margin



FEC symbol error distribution plot



Channel histogram

BER Monitor: ☒ On ☐ Off

TX Invert: ☒ On ☐ Off

Amplitude:

Post 1-7:

Floating Position:

Lower Eye:

Upper Eye:

14-tap mode

THE RIGHT MODEL FOR YOUR APPLICATION

EXFO's **BA-1602-8** and **BA-1602-16** help teams solve the core challenges of 1.6T validation by combining high-speed performance, deeper error visibility, and repeatable workflows from R&D through manufacturing. The chart below shows which model is best suited to each application.

SUGGESTED SOLUTIONS		
	BA-1602-8	BA-1602-16
Transceiver vendor	●	●
Cable vendor	○	●
Component vendor	●	○
Research and development (lab use)	●	●
Production use	○	●

DESIGNED FOR HIGH-SPEED AND MULTISERVICE

- 1

Power button
- 2

MCB interface connector
- 3

High-speed RF connectors (SMPX)
- 4

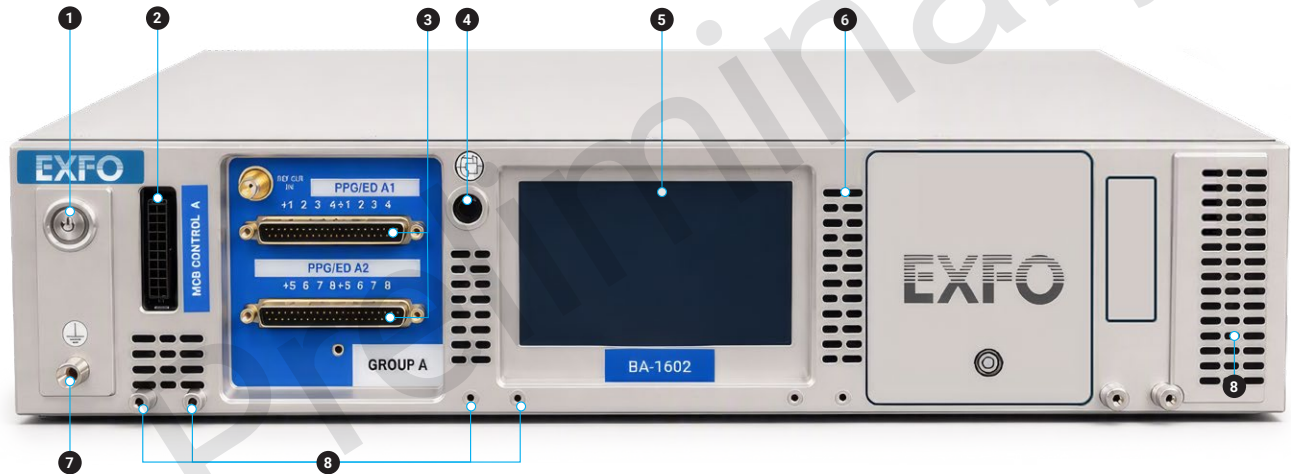
Screen switch button
- 5

Display 4.5 inch
- 6

Air inlet
- 7

Grounding jack
- 8

MCB support bracket mount (optional)



SPECIFICATIONS

BA-1602 SERIES		
	BA-1602-8	BA-1602-16
Channels	8	16
Connectors	2 of RF SMPX 1×16 connectors	4 of RF SMPX 1×16 connectors
Modulation	PAM4 and NRZ	
Coding	Gray code and Linear code Precode	
Symbol rate per lane (GBd)	106.25, 53.125 and 26.5625 (PAM4) 25.78125 (NRZ)	
Symbol rate adjustment (ppm)	±250	
PPG amplitude (mV _{ppd})	1000 (max)	
TX pre-emphasis taps	6 fixed (3 pre-cursors, 1 main cursor, 2 post-cursors)	
Pattern support	PPG: PRBS 7Q/9Q/10Q/11Q/13Q/15Q/20Q/23Q/31Q/49Q/58Q/SSPRQ/Clock wave ED: PRBS 7Q/9Q/10Q/11Q/13Q/20Q/23Q/31Q/49Q/58Q ^a	
Jitter RMS (mUI)	≤ 23	
ED receiving range (mV _{ppd})	1000 (max)	
GUI	Standard	
API (automation)	Standard	
Unframed mode	Standard: 26.5625 GBd Option: 53.125 GBd, 106.25 GBd	
FEC mode	Option	
Clock connector type	SMA	
Clock IN frequencies (MHz)	10, 25, 156.25	
Clock IN voltage (mV _{pp})	400 to 2800	
Temperature (operation)	0 °C to 40 °C (32 °F to 104 °F)	
Temperature (storage)	-40 °C to 70 °C (-40 °F to 158 °F)	
Relative humidity	≤ 95% non-condensing	
Vibration	< 1.5 g from 10 Hz to 500 Hz (on three main axes)	
Power	90 Vac to 264 Vac (47 Hz to 63 Hz) 60 W typical / 90 W max	
Size (H x W x D)	103 mm x 465 mm x 335 mm (4 1/8 in x 18 1/4 in x 13 1/4 in)	
Weight	≤ 10 kg (22 lb)	

MODULE COMPLIANCE BOARD (MCB)

Part number	EXFO- Wilder WMCB-OSFP-1.6T MCB SMPX-to-SMPX
Interface	OSFP1600 support
Direct SMPX connection	BA-1602-8 and BA-1602-16
Power class	Class 4 and higher pluggable with cooling system
CMIS	CMIS control and I2C read/write

a. Only 13Q, 20Q, 23Q, 31Q, 49Q, 58Q patterns are supported in RX at 106.25 GBd.



ACCESSORIES

GP-3273	RF loopback cable SMPX to SMPX 1×16 (qty: 1)
GP-3274	RF fanout cable SMPX 1×16 to V 1.85 mm male (length = 15 cm) (qty: 1)
GP-3275	RF fanout cable SMPX 1×16 to V 1.85 mm male (length = 30 cm) (qty: 1)
GP-3276	BA-1600 MCB cable assembly (this is the low-speed CMIS control cable) (qty: 1)
GP-3277	19" relay rack mounting bracket + screws/HW



Preliminary

EXFO headquarters T +1 418 683-0211 Toll-free +1 800 663-3936 (USA and Canada)

EXFO serves over 2000 customers in more than 100 countries. To find your local office contact details, please go to www.EXFO.com/contact.

For the most recent patent marking information, please visit www.EXFO.com/patent. EXFO is certified ISO 9001 and attests to the quality of these products. EXFO has made every effort to ensure that the information contained in this specification sheet is accurate. However, we accept no responsibility for any errors or omissions, and we reserve the right to modify design, characteristics and products at any time without obligation. Units of measurement in this document conform to SI standards and practices. In addition, all of EXFO's manufactured products are compliant with the European Union's WEEE directive. For more information, please visit www.EXFO.com/recycle. **Contact EXFO for prices and availability or to obtain the phone number of your local EXFO distributor.**

For the most recent version of this spec sheet, please go to www.EXFO.com/specs.

In case of discrepancy, the web version takes precedence over any printed literature.