# BA-1600

## 1.6T BIT ANALYZER

■ World-class series of 1.6T electrical BER testers, with 4- and 8-channel PAM4 coding options for ultimate flexibility.

## 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 BER testing for validating compliance and performance in next-gen 1.6T designs

Flexible, cost-effective: choose 8-channel unit for transceiver testing, or 4-channel unit for high-speed component testing

User-friendly GUI streamlines workflows, and reduces learning curves

PAM4 support for validating high-speed signaling performance

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

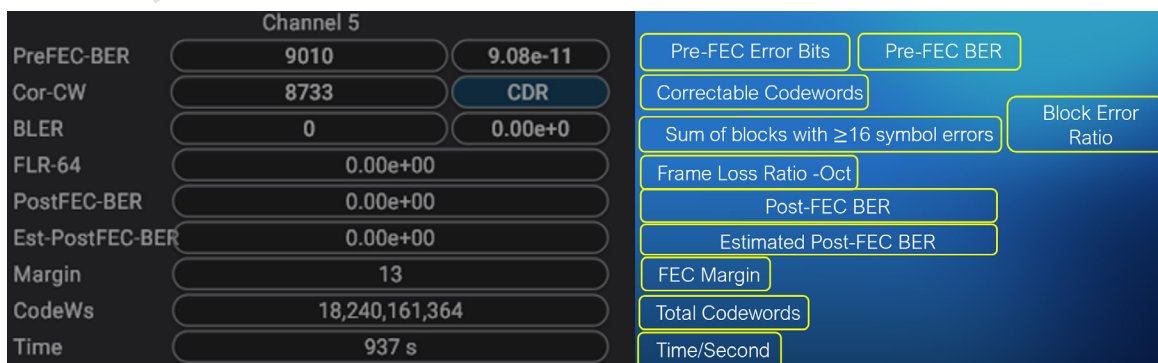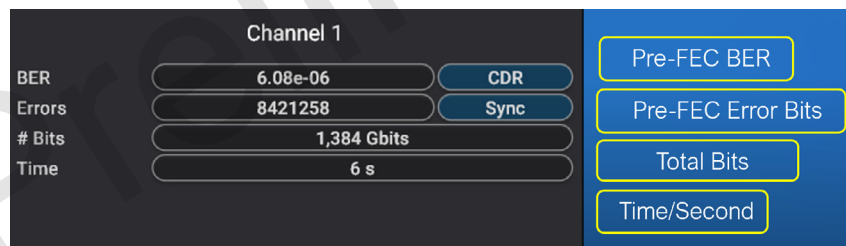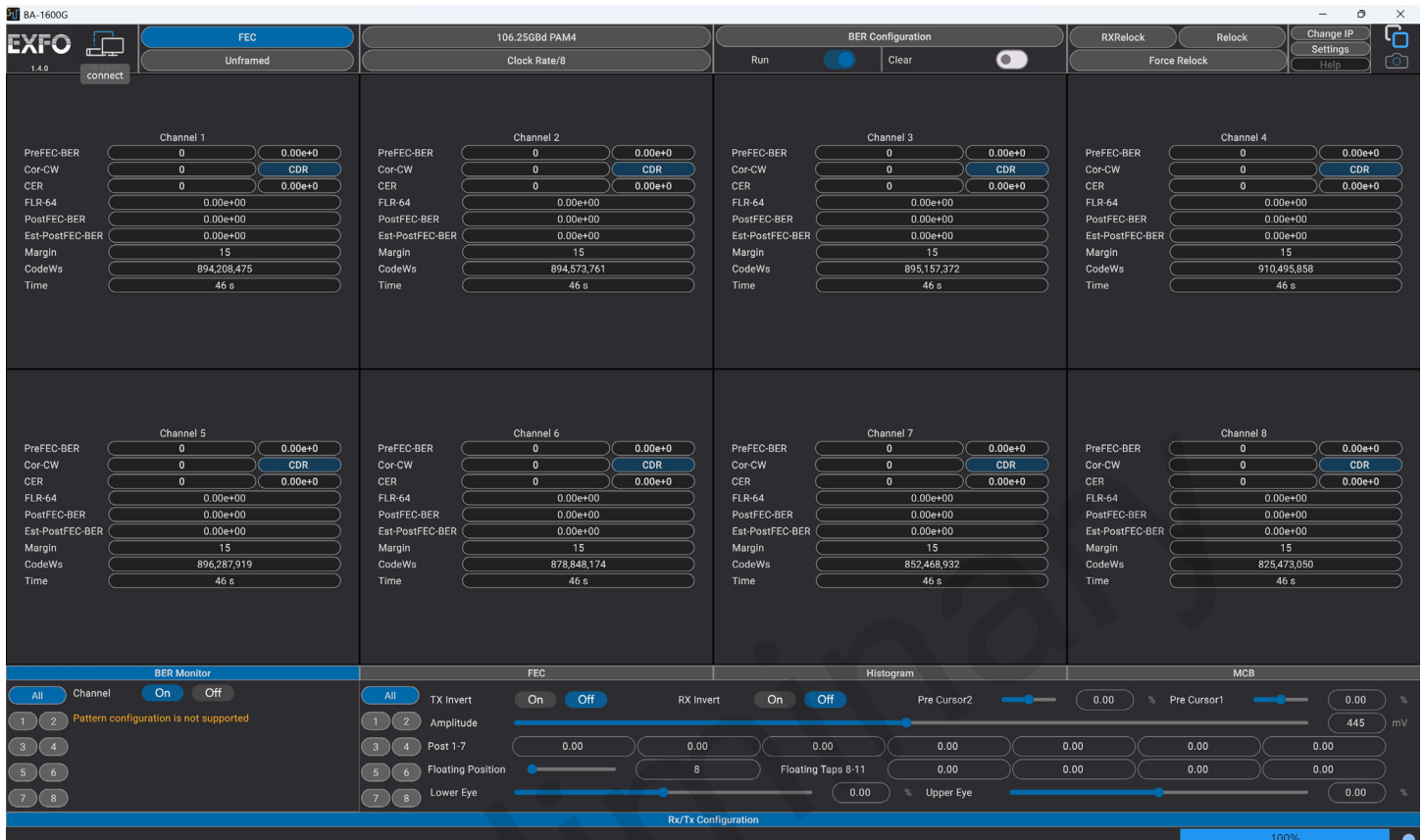Powerful equalizer and channel simulator: powerful equalizer includes CTLE

I²C register read/write access enables the direct control and monitoring of device parameters for fast, low-level diagnostics and efficient debugging
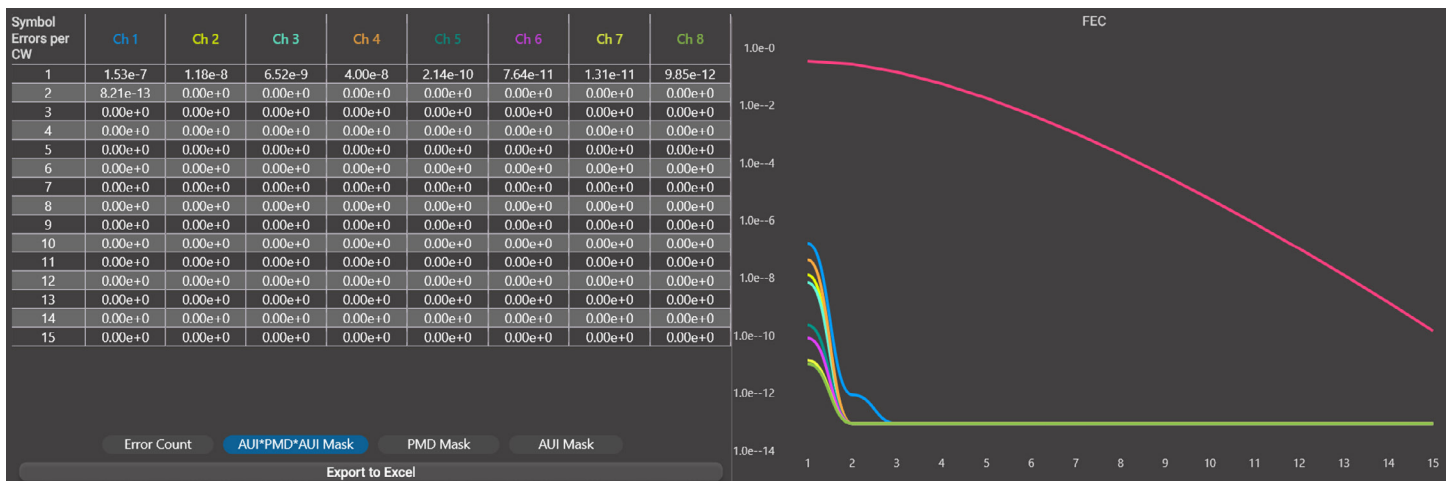
"Save-and-load" functionality for all applicable parameters reduces valuable time and ensures test consistency

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

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## POWERFUL AND SIMPLIFIED USER INTERFACE

The BA-1600 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 1

| | | |
|---|---|---|
| BER | 6.08e-06 | CDR |
| Errors | 8421258 | Sync |
| # Bits | 1,384 Gbits | |
| Time | 6 s | |

Pre-FEC BER
Pre-FEC Error Bits
Total Bits
Time/Second



Channel 5

| | | |
|---|---|---|
| PreFEC-BER | 9010 | 9.08e-11 |
| Cor-CW | 8733 | CDR |
| BLER | 0 | 0.00e+0 |
| FLR-64 | 0.00e+00 | |
| PostFEC-BER | 0.00e+00 | |
| Est-PostFEC-BER | 0.00e+00 | |
| Margin | 13 | |
| CodeWs | 18,240,161,364 | |
| Time | 937 s | |

Pre-FEC Error Bits
Pre-FEC BER
Correctable Codewords
Sum of blocks with ≥16 symbol errors
Block Error Ratio
Frame Loss Ratio -Oct
Post-FEC BER
Estimated Post-FEC BER
FEC Margin
Total Codewords
Time/Second

*FEC channel distribution and BLER mask testing*



*MCB control*



*Reference clock*

# WITH PAM4 CODING, A SIMPLE BER TEST IS NOT ENOUGH



*FEC symbol error margin*



*FEC symbol error distribution plot*



*Channel histogram*



*14-tap mode*

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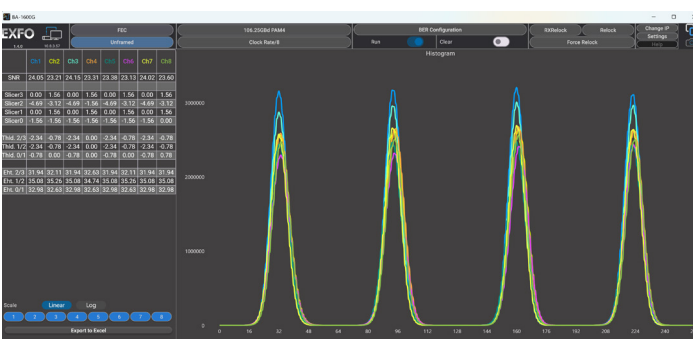
# DESIGNED FOR HIGH-SPEED AND MULTISERVICE

1. Display 4.5 inch
2. MCB support bracket mount (optional)
3. Air inlet
4. Power button
5. Foot rest
6. RF user connectors (SMPX)
7. Ground jack
8. MCB interface connector
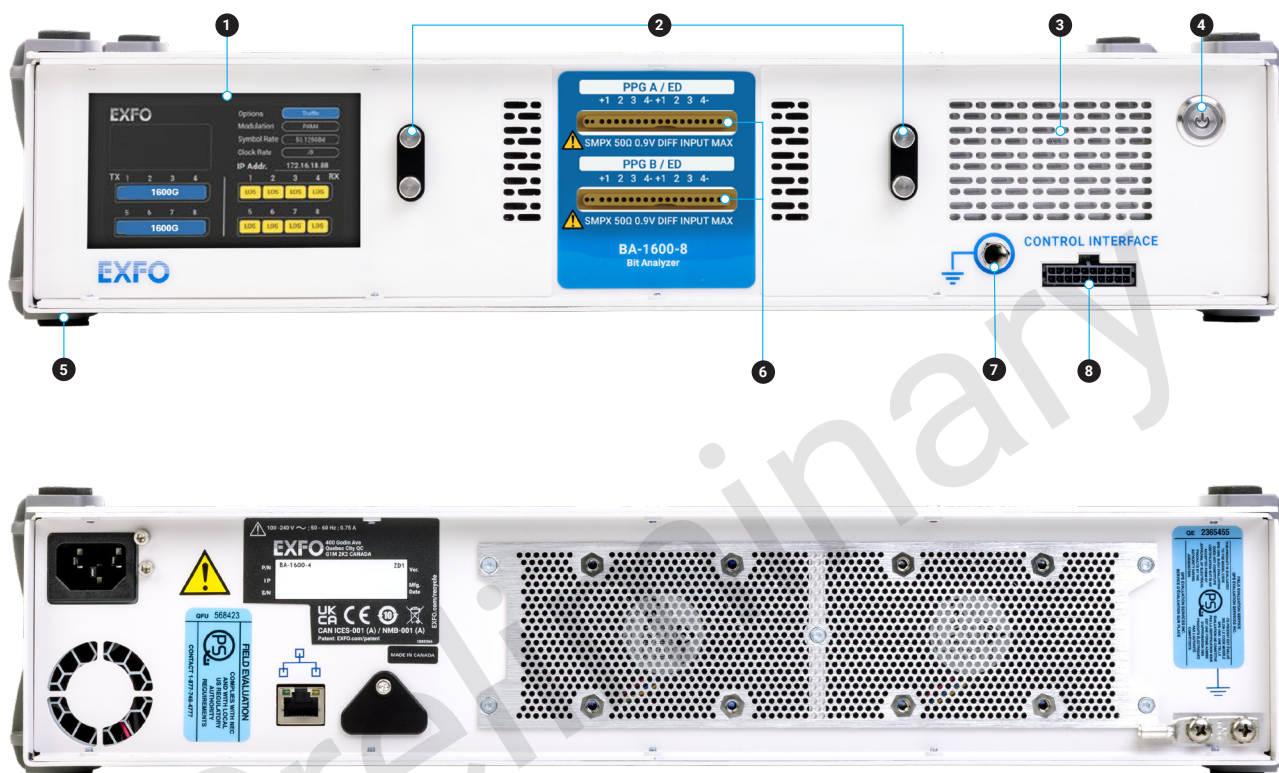
## SPECIFICATIONS

| SPECIFICATIONS | |
|---|---|
| Number of channels | 8 or 4 |
| Data rate per lane (GBd) | 106.25, 53.125 and 26.5625 GBd/lane |
| Data rate adjustment (ppm) | ±250 |
| PAM4 coding | Gray code |
| Pattern supported by PPG and ED | PPG: 7Q/9Q/10Q/11Q/13Q/15Q/20Q/23Q/31Q/49Q/58Q/USER/SSPRQ<br>ED: 7Q/9Q/10Q/11Q/13Q/15Q/20Q/23Q/31Q/49Q/58Q |
| TX maximum amplitude (mV$_{ppd}$) | 900 |
| Receive input (mV$_{ppd}$) | 600-1200 |
| Jitter RMS (UI) | 0.023 |
| Sensitivity (mV$_{ppd}$) [g] | 300 |
| ED damage level (mV$_{ppd}$) | 1300 |
| ED maximum level (mV$_{ppd}$) | 1200 |
| TX multi tap pre-emphasis support | 10 fix taps + 4 floating taps |
| RX equalization | Adaptable 16 taps FFE |
| Connector type | One 1×16 SMPX for BA-1600-4, and two 1×16 SMPX for the BA-1600-8 from Rosenberger |
| TX adjustable differential amplitude | Yes |

| GENERAL SPECIFICATIONS | | |
|---|---|---|
| Size (H × W × D) | | 115 mm × 465 mm × 300 mm (4.5 in × 18.3 in × 11.8 in) |
| Weight | | ≤ 10 kg (22 lb) |
| Temperature | Operating<br>Storage | 5 °C to 40 °C (41 °F to 104 °F)<br>−20 °C to 70 °C (−4 °F to 158 °F) |
| Relative humidity | | 20% to 80% |
| Power | | 100 Vac to 240 Vac (47 Hz to 63 Hz)<br>60 W typical / 80 W max. |

| MODULE COMPLIANCE BOARD (MCB) | |
|---|---|
| Part number | EXFO- Wilder WMCB-OSFP-1.6T MCB SMPX-to-SMPX |
| Interface | OSFP1600 support |
| Direct SMPX connection | BA-1600-8 and BA-1600-4 |
| Power class | Class 4 and higher pluggable with cooling system |
| CMIS | CMIS control and I2C read/write |

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| 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 |



*GP-3275*

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