

Agilent Technologies 81490A Reference Transmitter

Technical Specifications



81490 Reference Transmitter

Agilent's 81490A Reference Transmitter is designed to offer excellent eye quality as a reference for testing 10 GbE-L and 10 Gb-E according to IEEE 802.3ae and according to 10 GFC Fibre Channel specifications. The module is fully integrated into the industry standard LMS 816xB platform.

Offering both 1310 and 1550 nm in one module gives the fastest reconfiguration between these two transmission bands without reconnecting.

The integration in the LMS mainframe offers an integration of the reference transmitter into the 4917A stressed eye software package. Of course a separate usage of the transmitter is also supported with SCPI language.

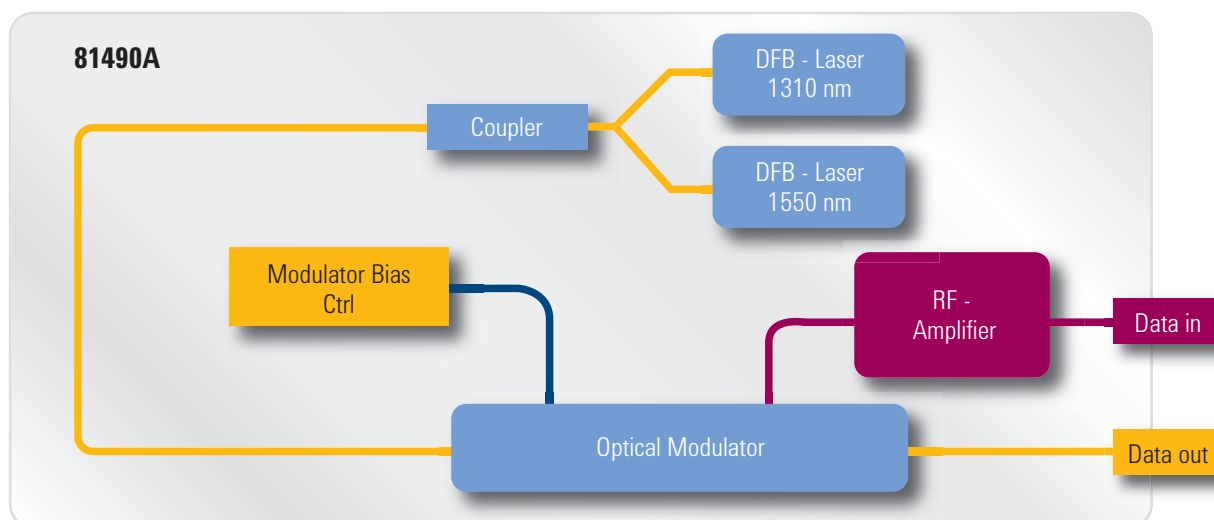
The separation of the signal source and the modulator is the only way to offer a zero-chirp modulation. This is essential for a clean and repeatable eye diagram when modulating with an appropriate clean external source to fulfill the requirements of the IEEE standard. Another advantage of this design compared to directly modulated transmitters is the wide extinction ratio range that can only be achieved with this design.

Benefits

- **Repeatable and reproducible measurements permit lower production test margins and improved specifications of the characterized devices.**
- **Reliable measurements ensure comparability of the test results.**
- **Support for full compliance to IEEE 802.3 stressed eye test in combination with the N4917A Optical Receiver Stress Test solution.**
- **Wide extinction range offers highest test range coverage to ensure best quality of the tested devices under all target operating conditions.**
- **Rapid test reconfiguration with dual-wavelength to switch between 1310 nm and 1550 nm by remote control or manually without exchanging a module.**
- **Scalability with integration into industry-standard Agilent LMS platform extends your optical workbench capabilities.**

Applications

- Reference transmitter for stressed eye compliance test according to IEEE 802.3.
- Creation of arbitrary optical modulation signals in combination with waveform generators.
- General transmission system test with special pulse patterns in combination with a pattern generator.



Specifications

Data input (RF in)

Operational data rate	622 Mb/s to 12.5 Gb/s
Input voltage range for $\lambda_1 = 1310$ nm $\lambda_2 = 1550$ nm	up to $0.9 V_{pp}$ (typical) up to $1.1 V_{pp}$ (typical)
Maximum input voltage	$< 2 V_{pp}$ from -2V to +2V
Input impedance (nominal)	50 Ω

Data output (optical out)

Fiber type	Standard single-mode 9 / 125 μm
Laser type	CW DFB laser with built in isolator
Optical wavelength	λ_1 : (1310 ± 10) nm λ_2 : (1550 ± 10) nm
Average optical output power ^{[1][2]}	> 5 dBm
Attenuation range (nominal)	6 dB
Electro-optical modulation bandwidth ^[3]	10 MHz to 33 GHz (typical)
Electrical-optical conversion ratio ^[2]	> 5 mW/V
Relative intensity noise (RIN) ^[4]	< -136 dB / Hz
Maximum extinction ratio (ER) ^[5]	> 10 dB (dependent on input voltage amplitude)
Vertical eye closure penalty ^[6]	< 0.5 dB (typical)
Rise and fall time (20 % to 80 %) ^[4]	< 25 ps 17 ps (typical)
Jitter (peak-peak) ^[7]	< 18 ps < 12 ps (typical)

[1] After TX_Recal operation

[2] At attenuation 0 dB

[3] -6dB decrease relative to maximum response

[4] For 0.6 V_{pp} to 0.85 V_{pp} data at 1310 nm; for 0.6 V_{pp} to 1.0 V_{pp} data at 1550 nm

[5] At data rates 10.3125 Gb/s, 10.51875 Gb/s; for whole operational data range typical; temperature change $< \pm 1$ K and operation point adjusted to 50 % eye crossing

[6] At 1% center region

[7] Jitter of input signal < 10 ps

General specifications

Optical connector interface

Agilent universal Adapter
SMF 28, straight ferrule

RF connector interface

2.4mm female

Module size (H x W x D)

75 mm x 64 mm x 335 mm (2.8" x 2.6" x 13.2")

Module weight

1.0 kg (2.2 lbs)

Warmup time

60 min

Operating temperature

+5° C to +40° C

Storage Temperature

- 40° C to +70° C

Humidity

5 % to 95 % relative humidity, non-condensing

816xA/B Firmware revision

5.01 and higher

Recommended recalibration period

2 years

Ordering Information

81490A Reference Transmitter

-135 1310 & 1550 nm

Cal and Warranty

R 1280

Return-to-Agilent
warranty and service plan

R-51B-001-3A

3 month Return-to-Agilent
warranty extended to 3 years

R-50C-011-3

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For more information on Agilent Technologies' products, applications or services, please contact your local Agilent office.

Phone or Fax

United States:

(tel) 800 829 4444
(fax) 800 829 4433

Canada:

(tel) 877 894 4414
(fax) 800 746 4866

China:

(tel) 800 810 0189
(fax) 800 820 2816

Europe:

(tel) 31 20 547 2111

Japan:

(tel) (81) 426 56 7832
(fax) (81) 426 56 7840

Korea:

(tel) (080) 769 0800
(fax) (080)769 0900

Latin America:

(tel) (305) 269 7500

Taiwan:

(tel) 0800 047 866
(fax) 0800 286 331

Other Asia Pacific Countries:

(tel) (65) 6375 8100
(fax) (65) 6755 0042

Email: tm_ap@agilent.com

Contacts revised: 05/05/05

The complete list is available at:

www.agilent.com/find/contactus

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