

Performance Data

ADN2525

DESCRIPTION

This document provides performance data on the ADN2525 10.7 G active back-termination laser diode driver operating with the NEC NX8341UJ differential 10 G DFB laser.

The ADN2525 laser diode driver is designed for direct modulation of packaged laser diodes that have a differential resistance ranging from 5 Ω to 50 Ω . The active back-termination technique provides excellent matching with the output transmission lines while reducing the power dissipation in the output stage. The small package provides the optimum solution for compact modules where laser diodes are packaged in low pin count optical subassemblies. Please refer to the [ADN2525](#) data sheet for more information.

The NEC NX8341UJ is a 25 Ω differential LC-TOSA for Ethernet applications. It is edge mounted on an ADN2525 optical demo board. This board is available for purchase in limited quantities from ADI. Contact ADI sales for pricing and availability of the evaluation boards; contact NEC Compound Semiconductor Devices for information regarding the laser TOSA.

Data includes filtered and unfiltered eye diagrams, optical eye margin, and power consumption at SONET and Ethernet data rates for temperatures of -5°C , $+25^{\circ}\text{C}$, and $+85^{\circ}\text{C}$.

Table 1. Demo Board Selection

Model	Description
EVAL-ADN2525-O-NEC	ADN2525 10 G optical evaluation board with NEC NX8341UJ differential LC TOSA
EVAL-ADN2525-O	ADN2525 10 G optical evaluation board without TOSA

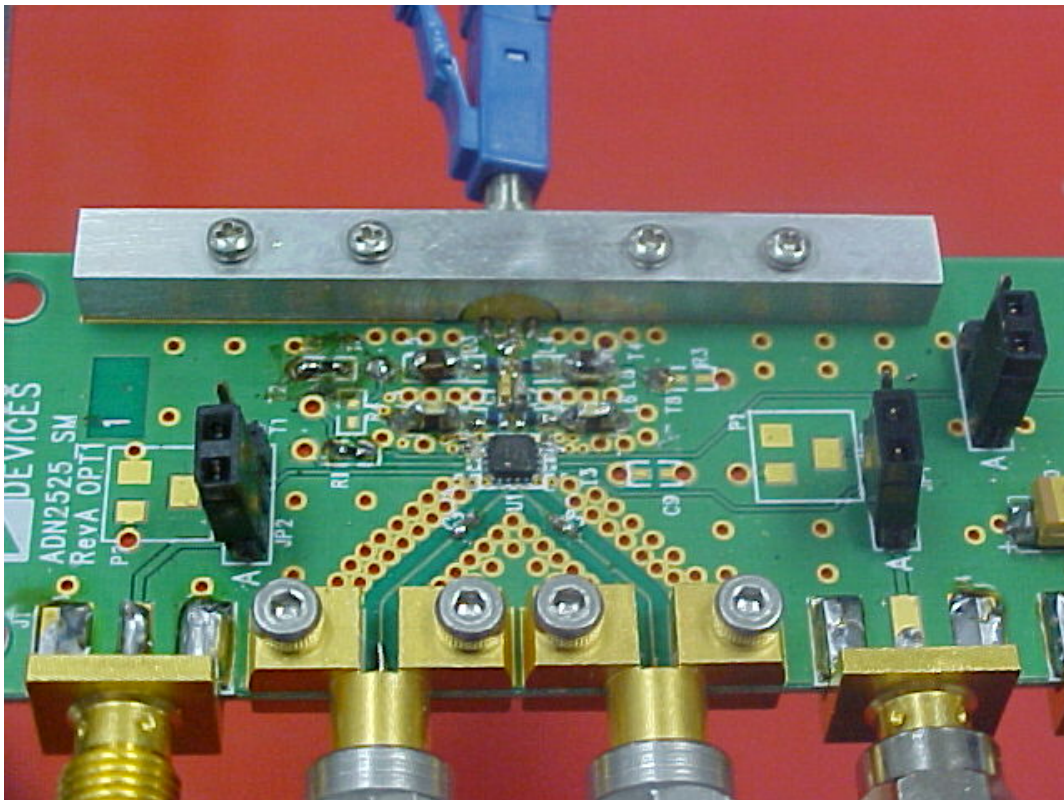


Figure 1. Board Used to Evaluate the NEC TOSA with the ADN2525

Rev. 0

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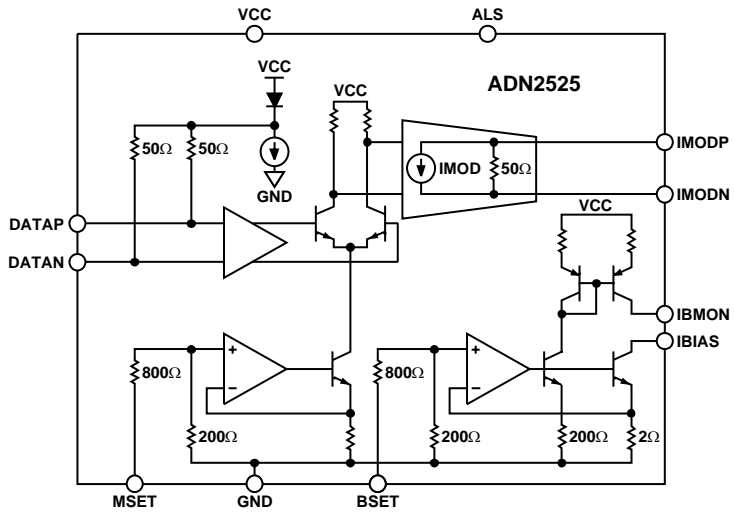


Figure 2. Functional Block Diagram of the ADN2525

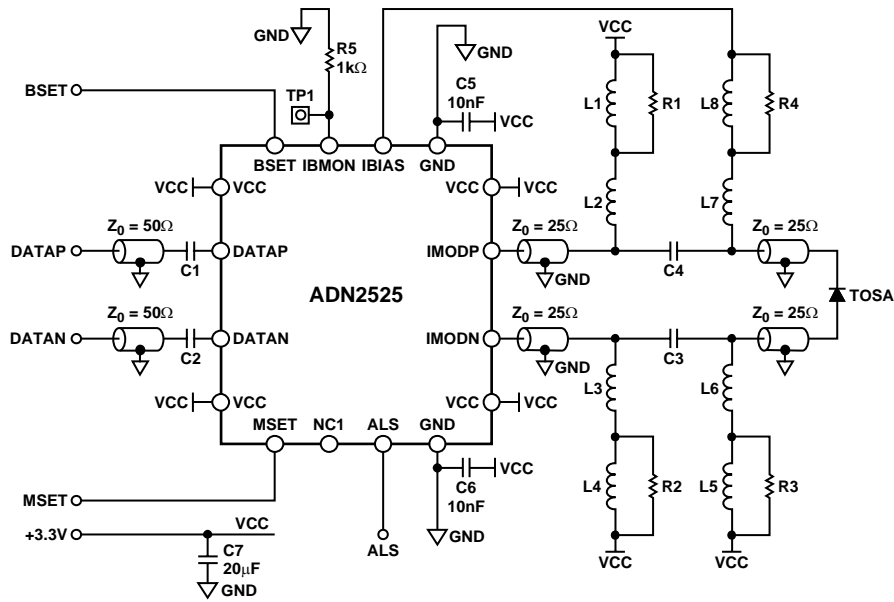


Figure 3. Typical ADN2525 Application Circuit

10 Gb ETHERNET, PAV = -2 dBm, ER = 5 dB

V_{CC} = 3.3 V

Total transmitter power dissipation is 653.4 mW

Bit rate 10.3125 Gbps

PRBS = 2³¹ - 1

25°C

41% mask margin

Total I_{CC} = 198 mA

Mod = 27.14 mA

Bias = 30 mA

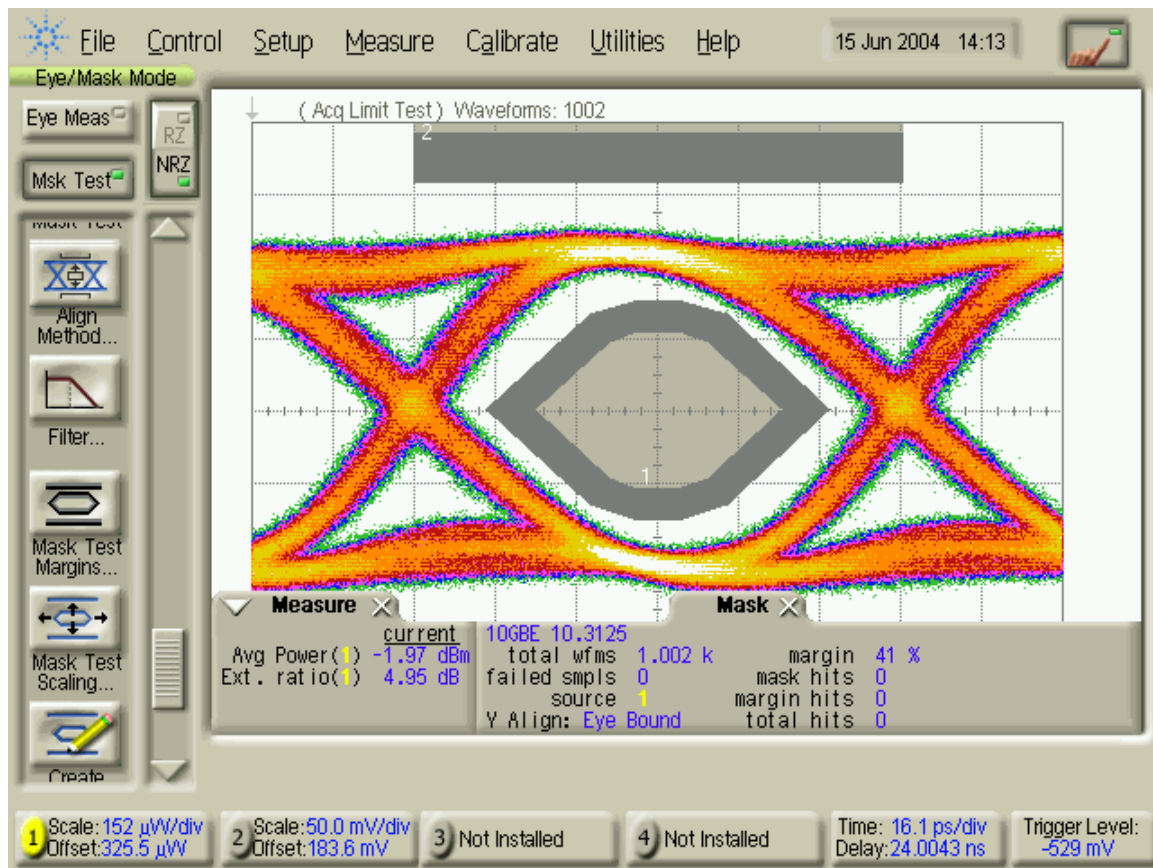


Figure 4. 41% Mask Margin (25°C)

10 Gb ETHERNET, PAV = -2 dBm, ER = 5 dB $V_{CC} = 3.3\text{ V}$

Total transmitter power dissipation is 653.4 mW

Bit rate 10.3125 Gbps

PRBS = $2^{31} - 1$

25°C

Unfiltered eye

Total $I_{CC} = 198\text{ mA}$

Mod = 27.14 mA

Bias = 30 mA

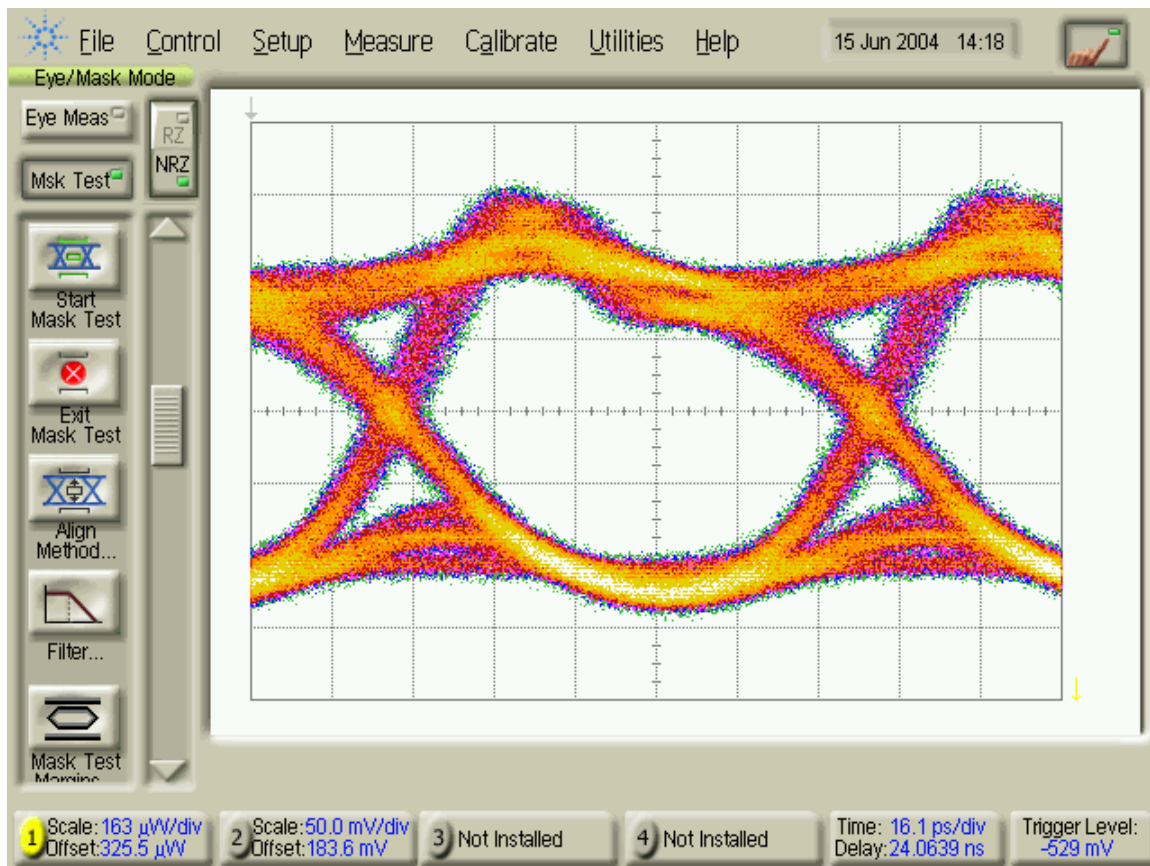


Figure 5. Unfiltered Eye (25°C)

10 Gb ETHERNET, PAV = -2 dBm, ER = 5 dB

V_{CC} = 3.3 V

Total transmitter power dissipation is 772.2 mW

Bit rate 10.3125 Gbps

PRBS = 2³¹ - 1

85°C

42% mask margin

Total I_{CC} = 234 mA

Mod = 38.64 mA

Bias = 55 mA

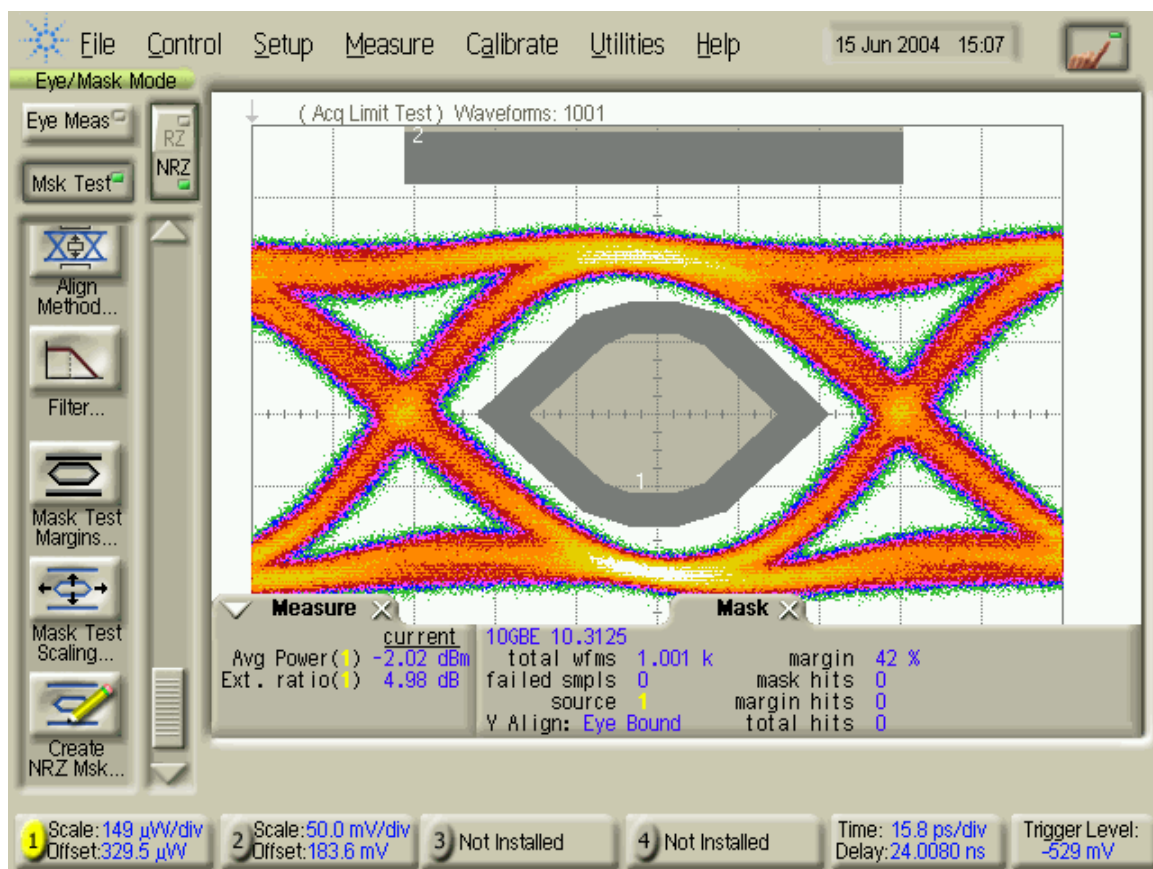


Figure 6. 42% Mask Margin (85°C)

10 Gb ETHERNET, PAV = -2 dBm, ER = 5 dB $V_{CC} = 3.3\text{ V}$

Total transmitter power dissipation is 772.2 mW

Bit rate 10.3125 Gbps

PRBS = $2^{31} - 1$

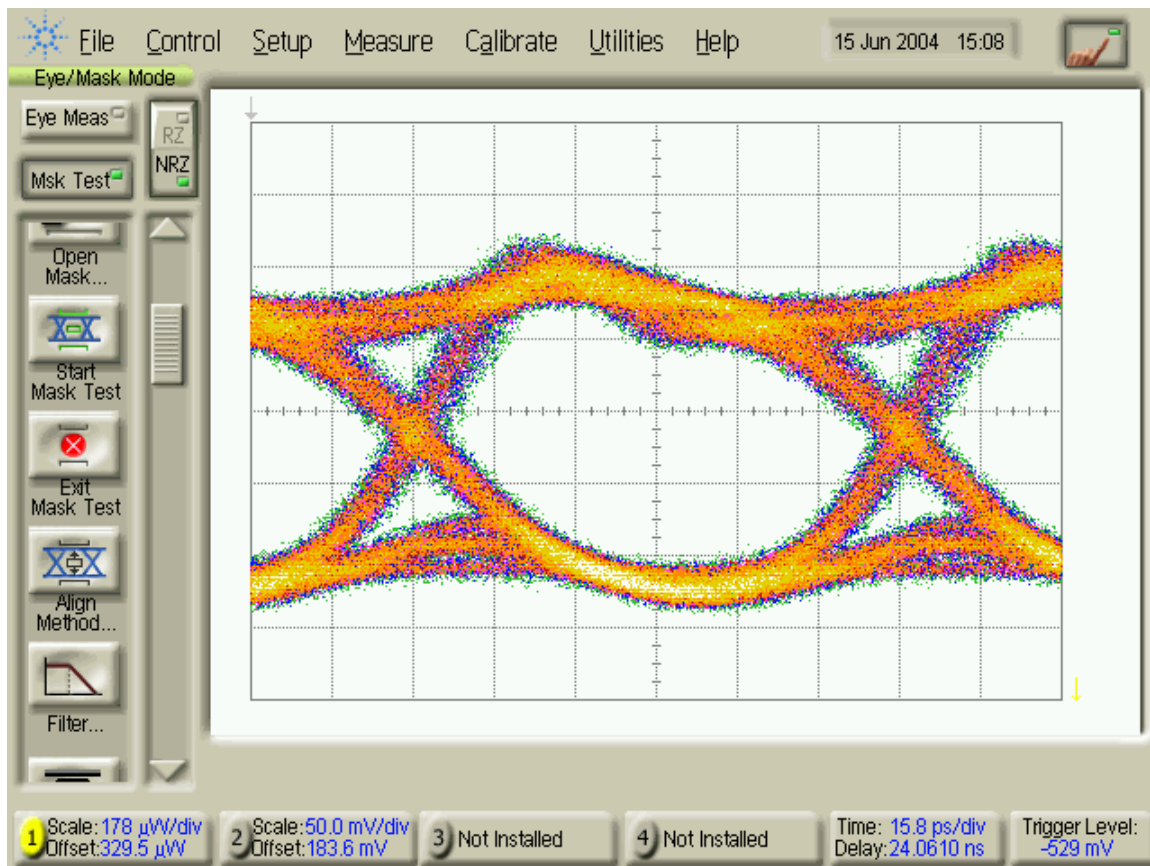
85°C

Unfiltered eye

Total $I_{CC} = 234\text{ mA}$

Mod = 38.64 mA

Bias = 55 mA



10 Gb ETHERNET, PAV = -2 dBm, ER = 5 dB

V_{CC} = 3.3 V

Total transmitter power dissipation is 650.1 mW

Bit rate 10.3125 Gbps

PRBS = 2³¹ - 1

-5°C

40% mask margin

Total I_{CC} = 197 mA

Mod = 28.175 mA

Bias = 29 mA

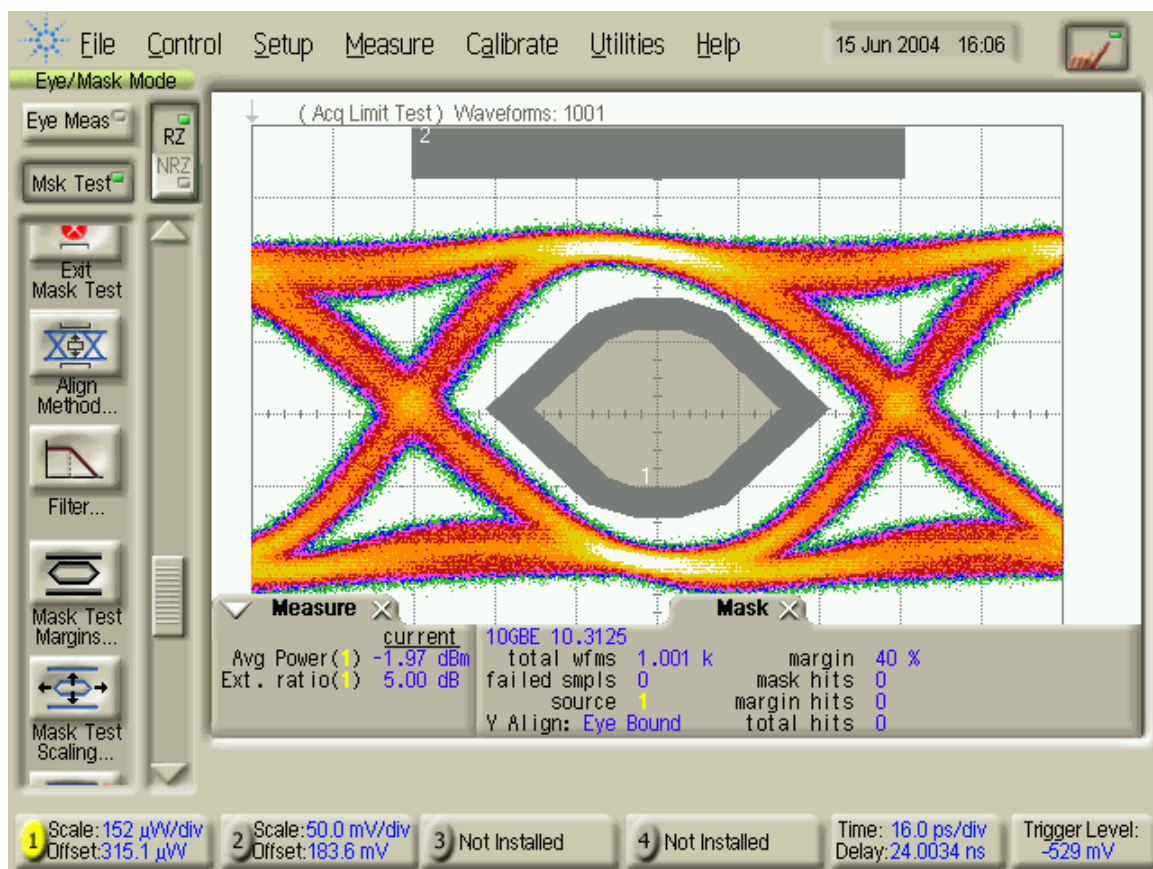


Figure 8. 40% Mask Margin (-5°C)

10 Gb ETHERNET, PAV = -2 dBm, ER = 5 dB $V_{CC} = 3.3\text{ V}$

Total transmitter power dissipation is 650.1 mW

Bit rate 10.3125 Gbps

PRBS = $2^{31} - 1$

-5°C

Unfiltered eye

Total $I_{CC} = 197\text{ mA}$

Mod = 28.175 mA

Bias = 29 mA

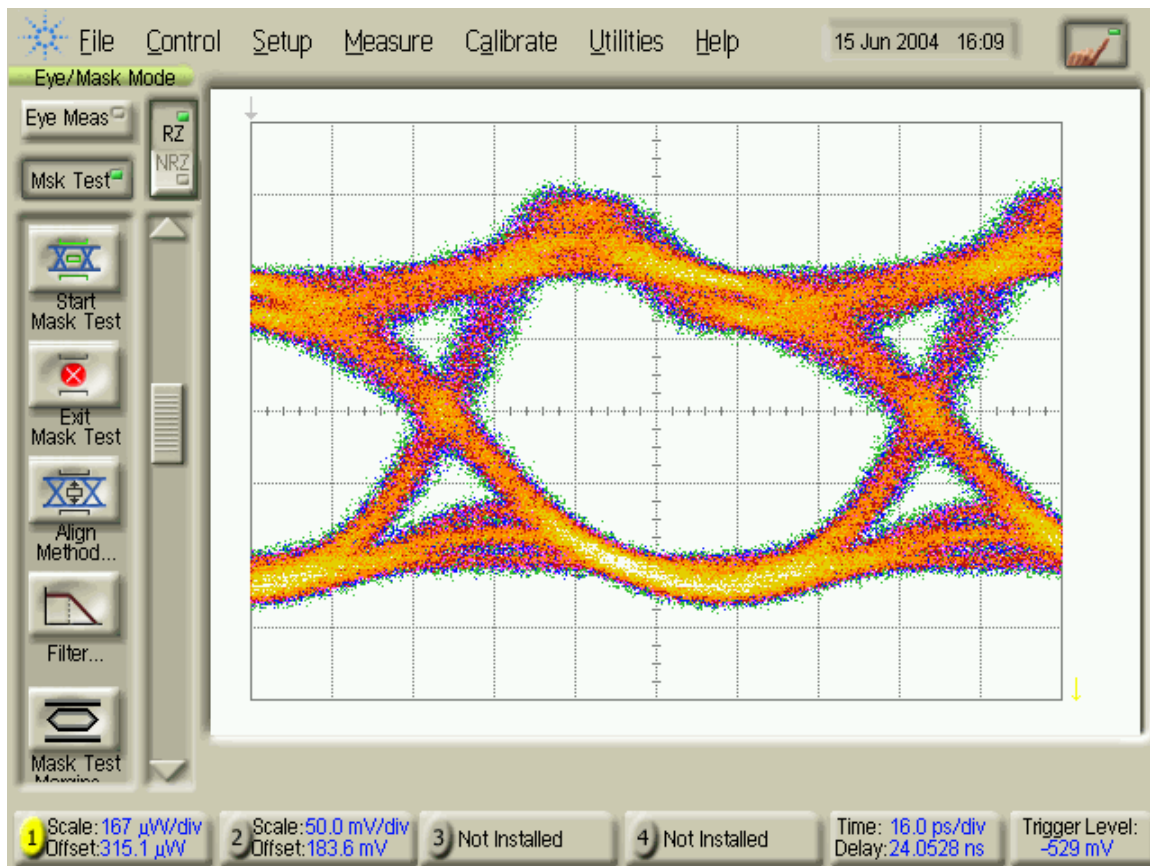


Figure 9. Unfiltered Eye (-5°C)

FOR REFERENCE: SONET OC192, PAV = -2 dBm, ER = 7 dB

V_{CC} = 3.3 V

Total transmitter power dissipation is 673.2 mW

Bit rate 9.95 Gbps

PRBS = 2³¹ - 1

25°C

17% mask margin

Total I_{CC} = 204 mA

Mod = 36.11 mA

Bias = 30 mA

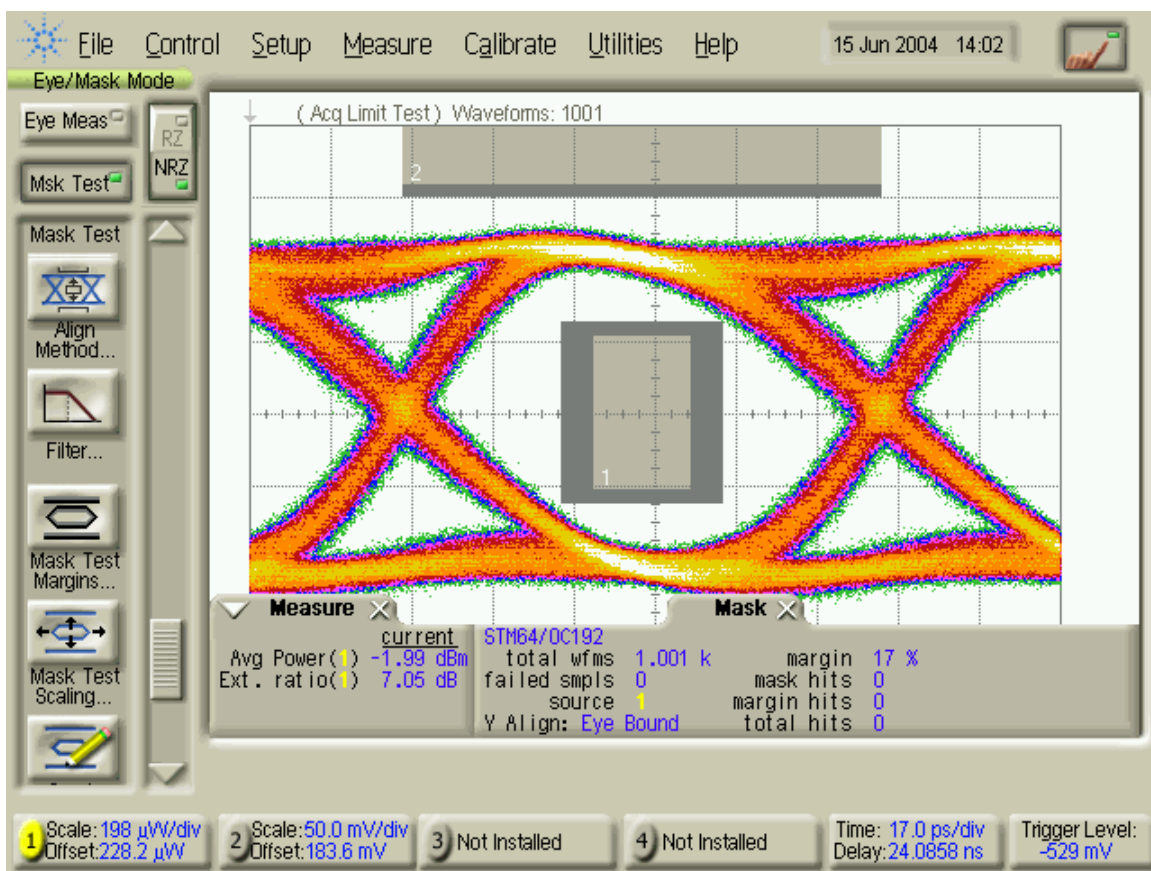


Figure 10. 17% Mask Margin (25°C)

FOR REFERENCE: SONET OC192, PAV = -2 dBm, ER = 7 dB $V_{CC} = 3.3\text{ V}$

Total transmitter power dissipation is 673.2 mW

Bit rate 9.95 Gbps

PRBS = $2^{31} - 1$

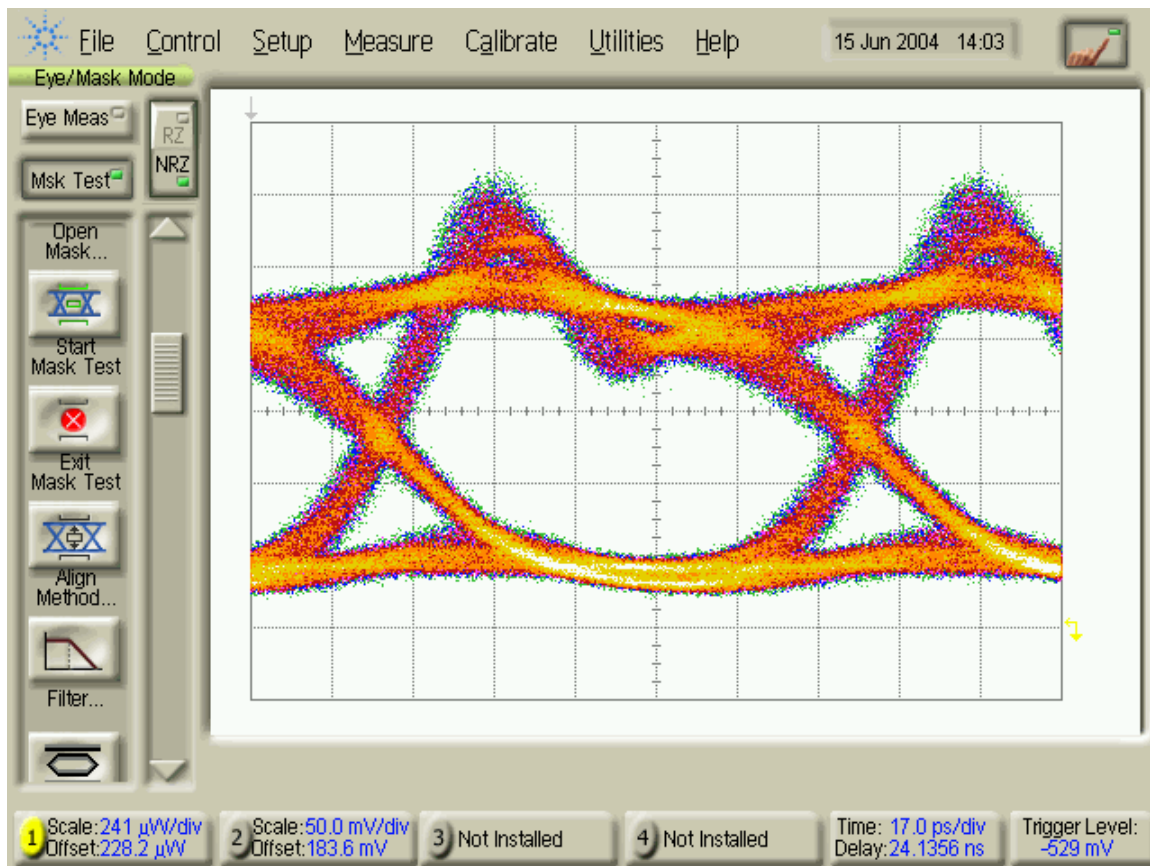
25°C

Unfiltered eye

Total $I_{CC} = 204\text{ mA}$

Mod = 36.11 mA

Bias = 30 mA



FOR REFERENCE: SONET OC192, PAV = -2 dBm, ER = 7 dB

V_{CC} = 3.3 V

Total transmitter power dissipation is 795.3 mW

Bit rate 9.95 Gbps

PRBS = 2³¹ - 1

85°C

18% mask margin

Total I_{CC} = 241 mA

Mod = 50.715 mA

Bias = 54 mA

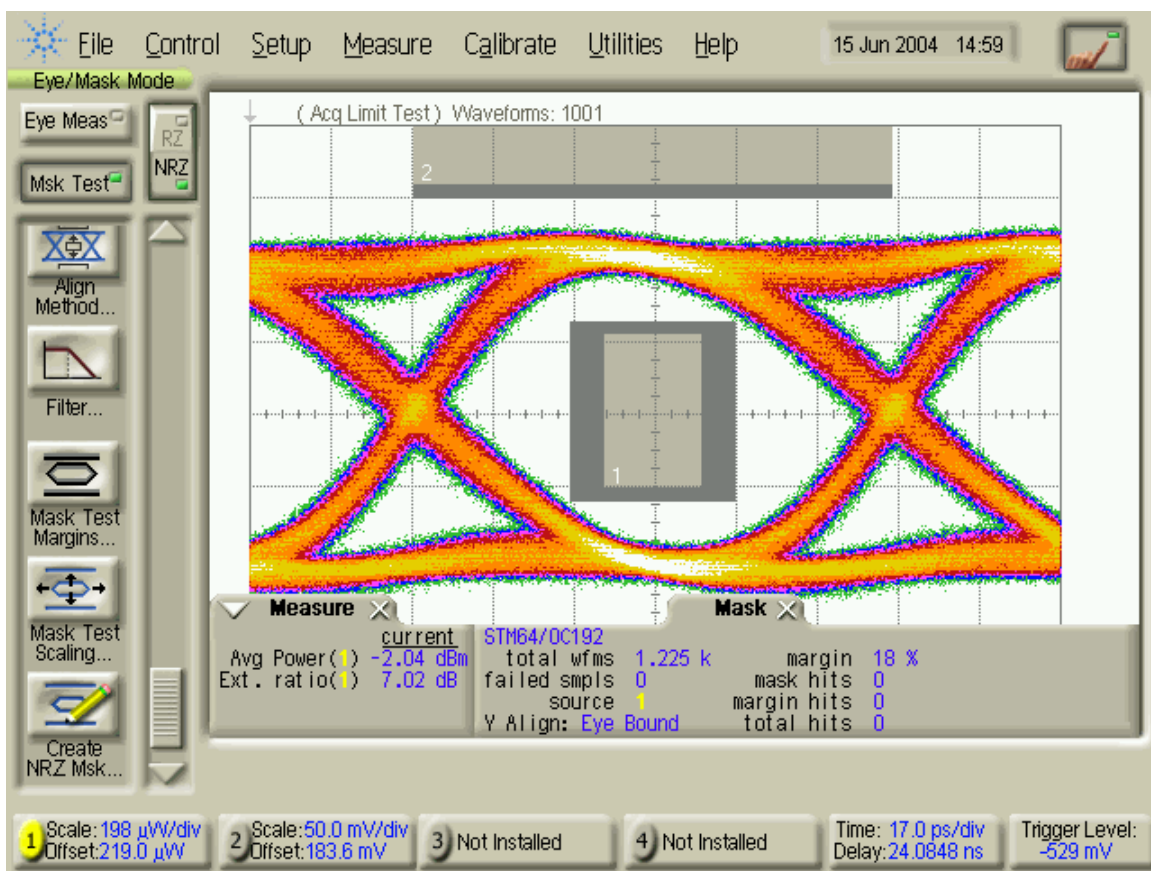


Figure 12. 18% Mask Margin (85°C)

FOR REFERENCE: SOMET OC192, PAV = -2 dBm, ER = 7 dB $V_{CC} = 3.3\text{ V}$

Total transmitter power dissipation is 795.3 mW

Bit rate 9.95 Gbps

PRBS = $2^{31} - 1$

85°C

Unfiltered eye

Total $I_{CC} = 241\text{ mA}$

Mod = 50.715 mA

Bias = 54 mA

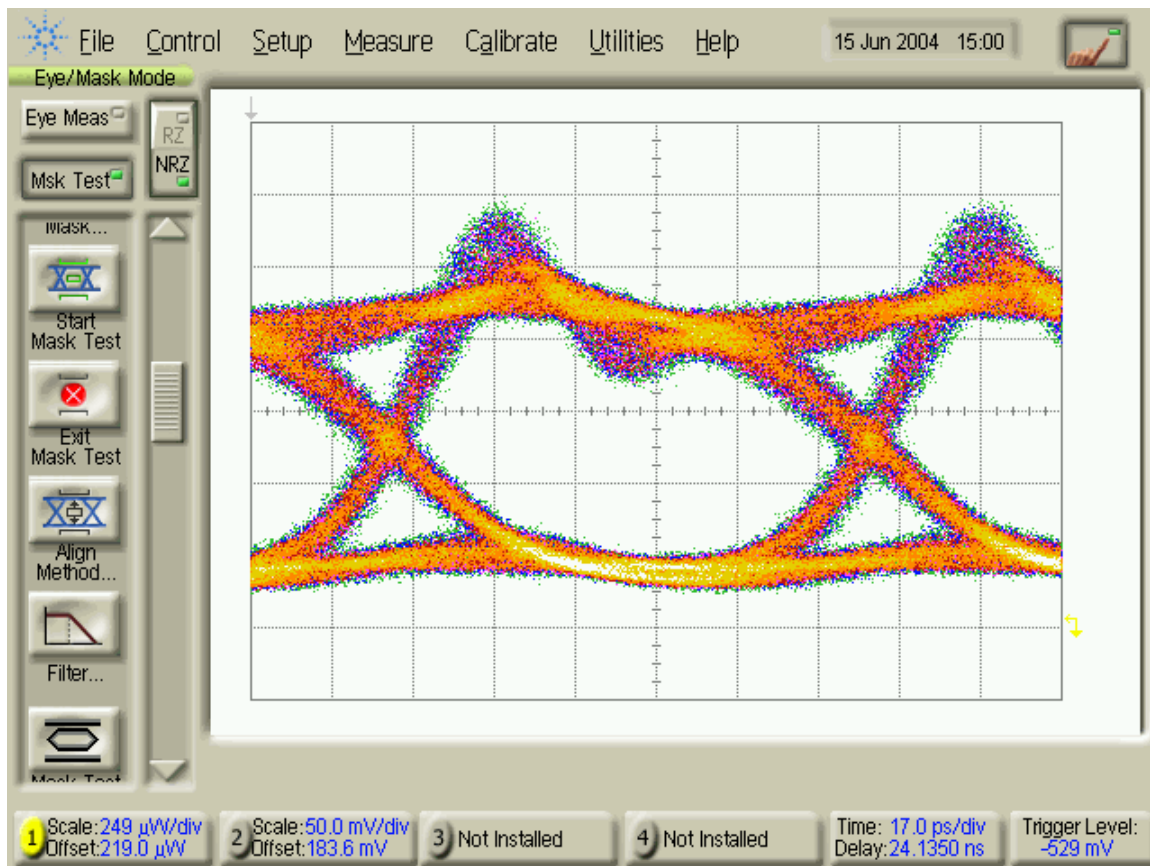


Figure 13. Unfiltered Eye (85°C)

FOR REFERENCE: SONET OC192, PAV = -2 dBm, ER = 7 dB

V_{CC} = 3.3 V

Total transmitter power dissipation is 669.9 mW

Bit rate 9.95 Gbps

PRBS = 2³¹ - 1

-5°C

17% mask margin

Total I_{CC} = 203 mA

Mod = 37.145 mA

Bias = 29 mA

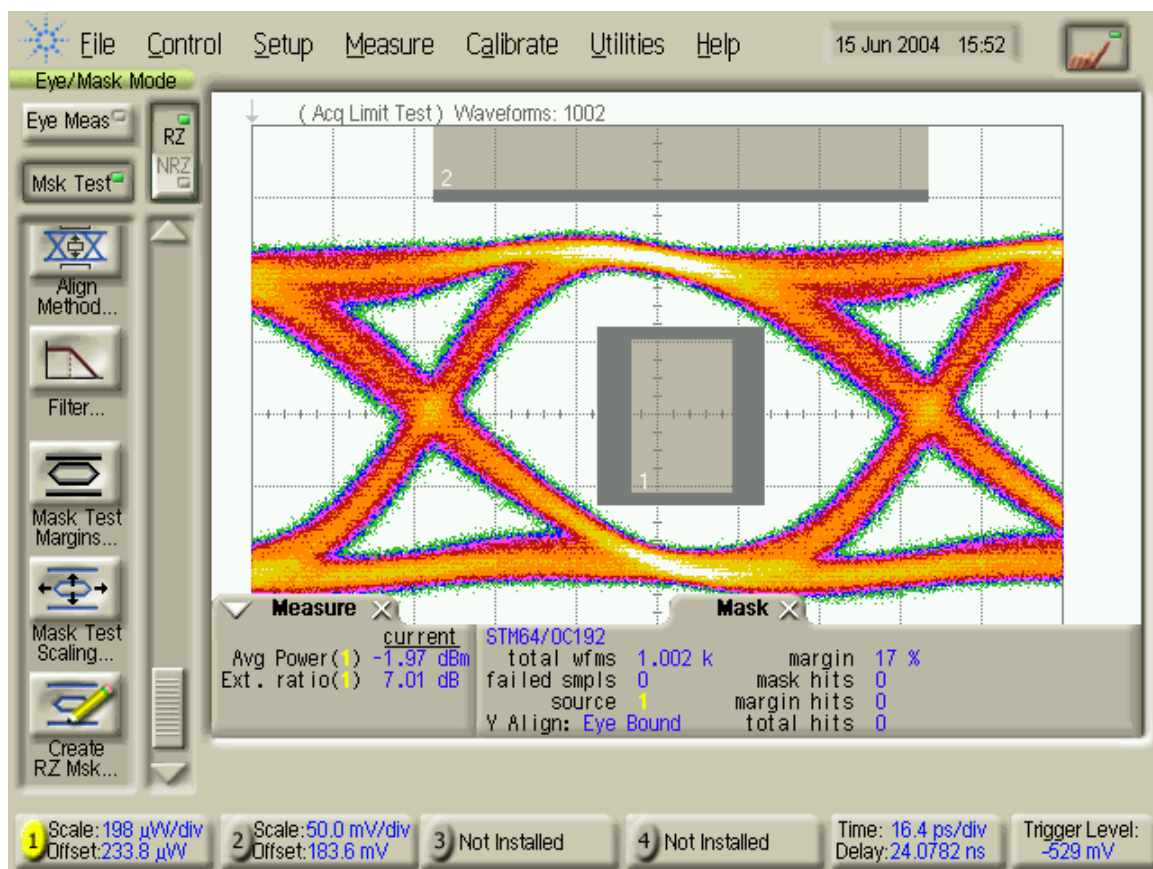


Figure 14. 17% Mask Margin (-5°C)

FOR REFERENCE: SOMET OC192, PAV = -2 dBm, ER = 7 dB $V_{CC} = 3.3\text{ V}$

Total transmitter power dissipation is 669.9 mW

Bit rate 9.95 Gbps

PRBS = $2^{31} - 1$

-5°C

Unfiltered eye

Total $I_{CC} = 203\text{ mA}$

Mod = 37.145 mA

Bias = 29 mA

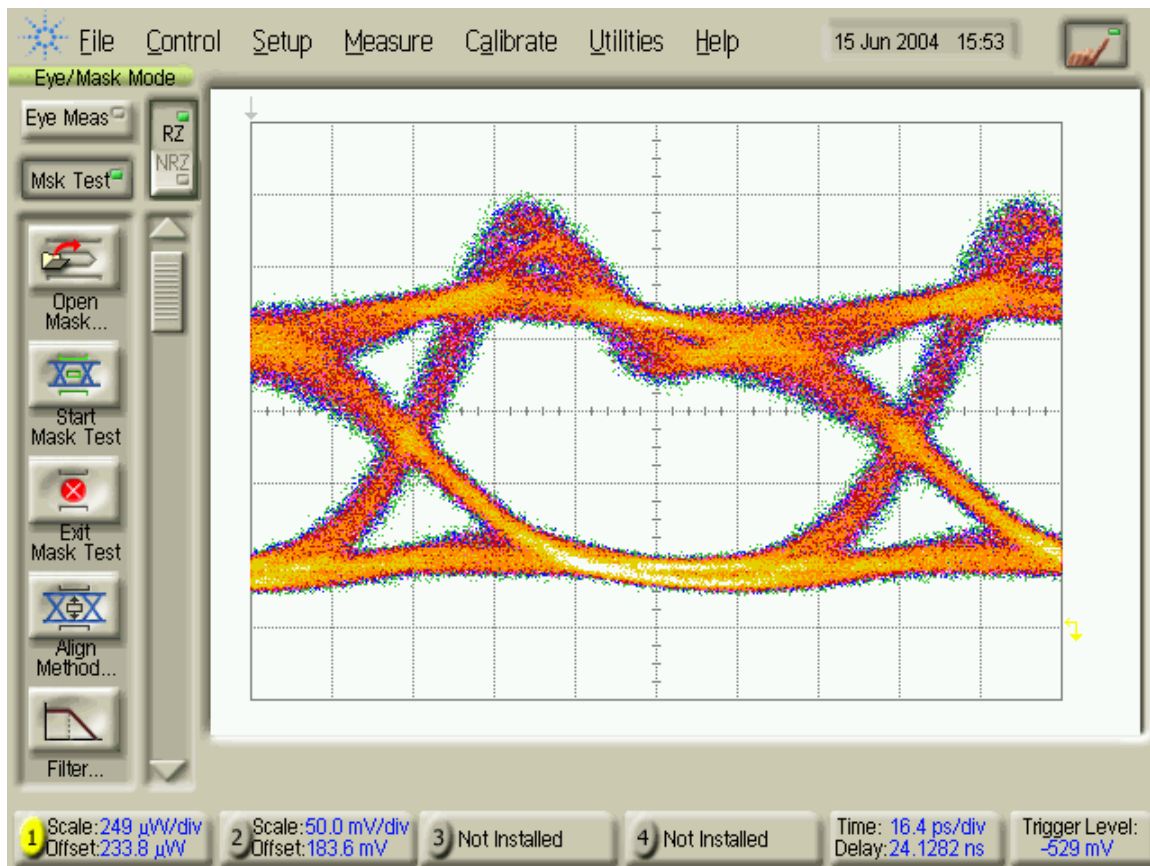


Figure 15. Unfiltered Eye (-5°C)