

Agilent N4973A PRBS Generator 22 Gb/s

Data Sheet



Features

- High performance PRBS generator
- 11 to 22 Gb/s data rates
- PRBS7, PRBS15, PRBS31 patterns
- 1000 mV differential output
- External clock input
- Ultra-low jitter
- Pattern trigger output
- Small size (8" x 10" x 2.5")

Description

The Agilent Technologies N4973A PRBS generator 22 Gb/s is an 11 to 22 Gb/s PRBS generator. This product has been designed to provide an excellent quality "EYE" made possible through comprehensive integration of the key building blocks into monolithic integrated circuits founded on SiGe technology. The performance of the 11 to 22 Gb/s PRBS source is world class with the typical EYE having 500 fs rms jitter, 500 mV of output swing and 8 ps rise time. All of this comes in a small package which allows you to put your source directly at your device under test regardless of your lab bench environment.

Application

The N4973A PRBS generator 22 Gb/s source is designed to be used as the source for testing high speed communications components, such as those used in fiber channel applications. The 11 to 22 Gb/s PRBS source is a perfect companion to a digital communication analyzer in a stimulus response measurement for 11 to 22 Gb/s components. Other applications include backplane signal integrity testing, and cable testing.



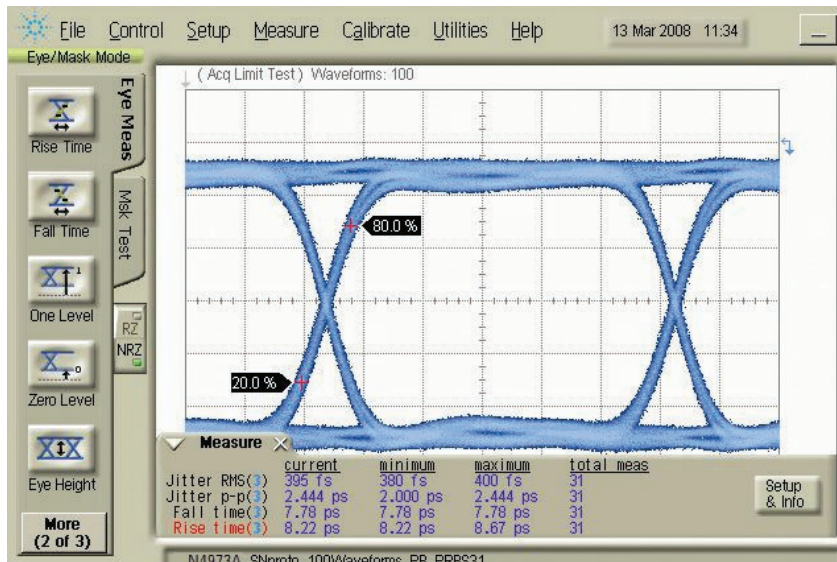


Figure 1. 17 Gb/s

N4973A PRBS Generator Specifications

Data output	Data rate	11 to 22 Gb/s ¹
	PRBS patterns	$2^7-1 : 1 + X^4 + X^7$ $2^{15}-1 : 1 + X^{14} + X^{15}$ $2^{31}-1 : 1 + X^{28} + X^{31}$
	Output amplitude (single-ended)	> 500 mV p-p typical
	Output level	high: 0 V nominal low: -500 mV nominal
	Jitter	510 fs rms typical
	Rise/fall time (20% to 80%)	8 ps typical
	Data crossover	55% typical
	Data phase adjust range	30 ps nominal
	External interface	Differential. DC coupled, 50 Ω nominal, 1.85 mm female connectors. Note: outputs are CML and must be externally DC terminated with 50 Ω to GND
Clock input	External clock input range	11 to 22 GHz
	External clock input power required	+10 to +16 dBm
	External interface	Single-ended. AC coupled, 50 Ω nominal, 2.92 mm female connector
Clock trigger output	Clock trigger (CLK/1) output power	Nominally -16 dB less than Clock Input power
	External interface	Single-ended. AC coupled, 50 Ω nominal, 2.92 mm female connector. Terminate if not used.
Pattern trigger output ²	Pulse width	$64 * (1/(2 * \text{Bit_rate}))$ e.g. at 20 Gb/s pulse width = 1.6 ns
	Repetition period	$64 * (1/(2 * \text{Bit_rate})) * \text{Pattern_length}$ e.g. at 20 Gb/s, $2^{31}-1$ pattern, period = 3.4 s
	Output amplitude	200 mV p-p typical
	External interface	Single-ended. DC coupled, 50 Ω nominal, SMA female connector

1. The N4973A requires an external clock signal.

2. Pattern trigger specified at ≤ 20 Gb/s only. Remove termination from CLK/1 output when using the Pattern Trigger.

General and Mechanical Parameters

Operating temperature	+10 to +40 °C
Storage temperature	−40 to +70 °C
Power requirements	42 W External AC Adaptor (included) • 100 to 240 V AC, 47 to 63 Hz
Physical dimensions (W x H x D)	203 mm (8 in) x 63.5 mm (2.5 in) x 254 mm (10 in)

Regulatory Standards

EMC

- CISPR Pub 11 Group 1, class A
- AS/NZS CISPR 11
- ICES/NMB-001

This ISM device complies with Canadian ICES-001.

Cet appareil ISM est conforme à la norme NMB-001 du Canada.

Ordering Information

N4973A PRBS generator 17 Gb/s



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