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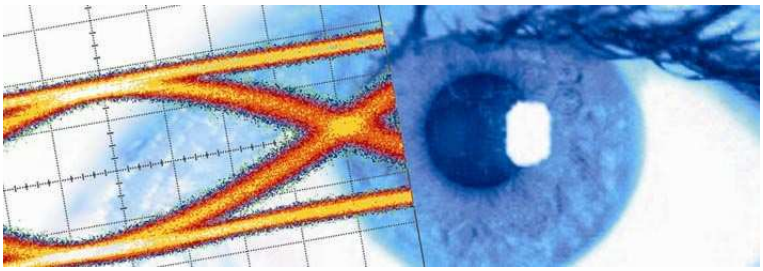


Datasheet

SHF 12102 A

28 Gbps Bit Pattern Generator

Description

The SHF 12102 A is a bit pattern generator plug-in which generates two differential data streams from 3 Gbps up to 28 Gbps.

The operating bit rate is determined by the clock frequency (clock frequency equivalent to the nominal data rate). The two channels can be programmed individually and allow the production of PRBS signals with pattern lengths of 2^7-1, 2^9-1, 2^{11}-1, 2^{15}-1, 2^{20}-1, 2^{23}-1 and 2^{31}-1. User-programmed patterns can also be loaded into the instrument.

The instrument is ready for a later upgrade to include an additional differential output to deliver 56 Gbps signals.

The SHF 12102 A is a plug-in which needs to be installed in a SHF 10000 Series mainframe.

Features

- Broadband operation from 3 to 28 Gbps
- Operation by intuitive software interface
- High quality output signals
- Seven built-in PRBS patterns: 2^7-1, 2^9-1, 2^{11}-1, 2^{15}-1, 2^{20}-1, 2^{23}-1, 2^{31}-1
- Pattern coding and decoding of DQPSK transmission experiments
- Real-Time Hardware DQPSK precoding up to 2^{31}-1
- Up to 128 MBit user pattern
- Two independent, programmable frame trigger outputs
- Sub-rate clock outputs

Specifications – SHF 12102 B

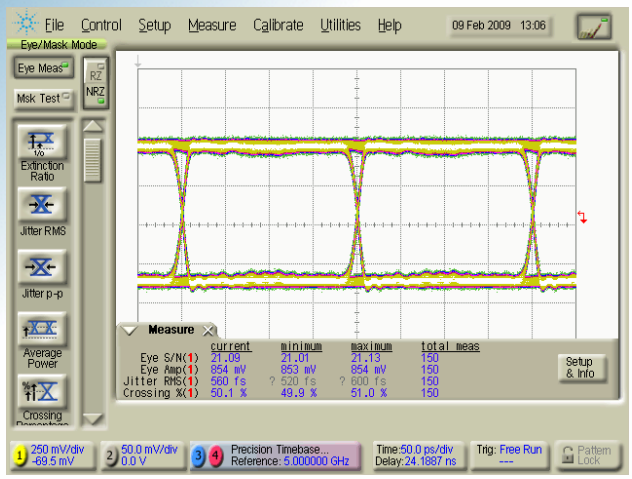
Parameter	Unit	Min.	Typ.	Max.	Comment
Data Outputs					
Connector Type			50 Ω		2.92mm female
Bit rate	Gbps	3		28	
Output level	mV	600	800	1000[1]	AC coupled fixed value
Jitter (RMS)	fs			1000	on scope display, measured at 28 Gbps with Agilent 86100A with 70 GHz sampling head and precision time base
Rise/fall time	ps			12	20%...80%
Clock					
Connector type Clock input Clock output Clock/2, Sel. Clock Output			50 Ω		 ruggedized 1.85 mm male connector ruggedized 1.85 mm male connector ruggedized 2.92 mm male connector
Clock input frequency	GHz	3		28	
Input level	V	0.6		1	
Output level	mV	300 300	600 450		clock clock/2
S_{11}	dB			-10	
Output frequency	GHz GHz GHz	3 3[2] 3[2]		28 14	clock clock/2 sel. Clock sel: can be switched between bitrate/N (N=16,32,64,128,256, 512)
Frame Trigger Outputs					
Connector Type			50 Ω		SMA female
Output level Frame 1	mV		800		AC coupled
Output level Frame 2	mV		3300		LVTTL-Level

[1] For PRBS pattern only
[2] Clock/2 and selectable clock output signals between f_{in} = 3….6 GHz are enabled with an input signal slew rate = ~10V / ns

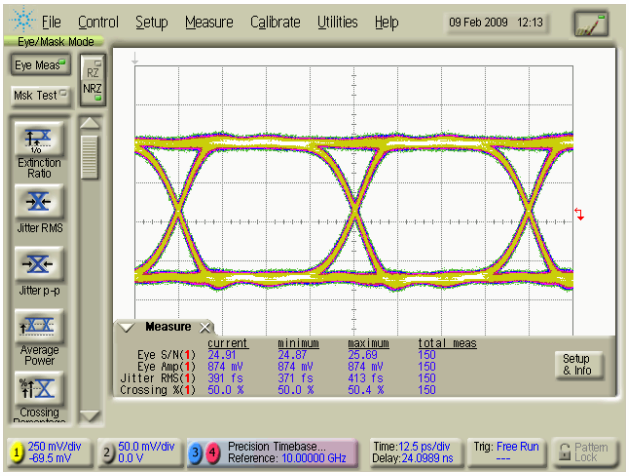
Patterns					
Data patterns			2^7-1 2^9-1 2^{11}-1 2^{15}-1 2^{20}-1 2^{23}-1 2^{31}-1		
User-programmable pattern	Mbit			128	64 Mbit per channel

Typical output waveforms

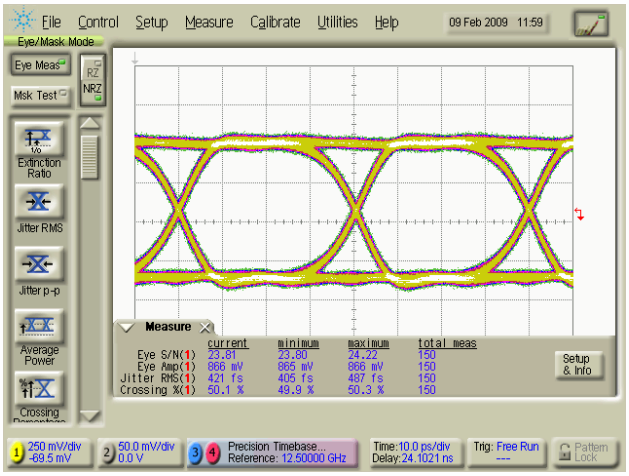
Measurements performed using Agilent 86100B Oscilloscope with 70 GHz sampling heads (Agilent 86118A) and precision time base (Agilent 86107A) at the end of a 0.5m microwave cable assembly and a 10dB attenuator.



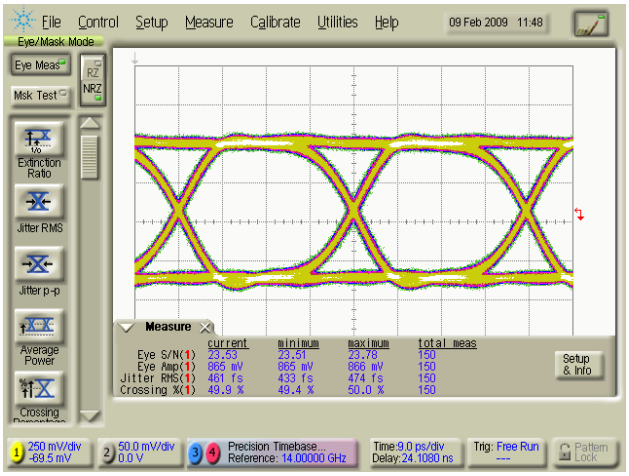
Data @ 5Gbps



Data @ 20Gbps



Data @ 25Gbps



Data @ 28Gbps