SHF Communication Technologies AG

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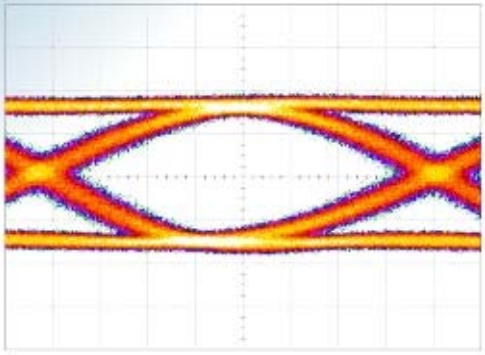


Datasheet

SHF 12100 A

50 Gbps Bit Pattern Generator

Description

The SHF 12100 A is a bit pattern generator plug-in which can be fitted into the SHF 10000 A mainframe.

Operation is from 6Gbps up to 50Gbps. It allows 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 operating bit rate is determined by the clock frequency – the instrument can operate at both full clock and half clock, so either a 25 GHz or a 50 GHz signal is required for 50 Gbps operation. Sub rate outputs can be optionally fitted to provide four channels with data rates from 1.5…12.5Gbps.

Features

Broadband operation up to 50 Gbps
Operation by intuitive software interface
High quality adjustable output signals
Available PRBS pattern lengths: 2^7-1, 2^9-1, 2^{11}-1, 2^{15}-1, 2^{20}-1, 2^{23}-1, 2^{31}-1
Up to 128 MBit user pattern
Two independent, programmable frame trigger outputs
Sub rate clock outputs

Options

010 – Four differential 1.5 to 12.5 Gbps sub-rate outputs

020 – Two differential 3 to 25 Gbps sub-rate outputs

DFF – D-type retiming flip-flop on output

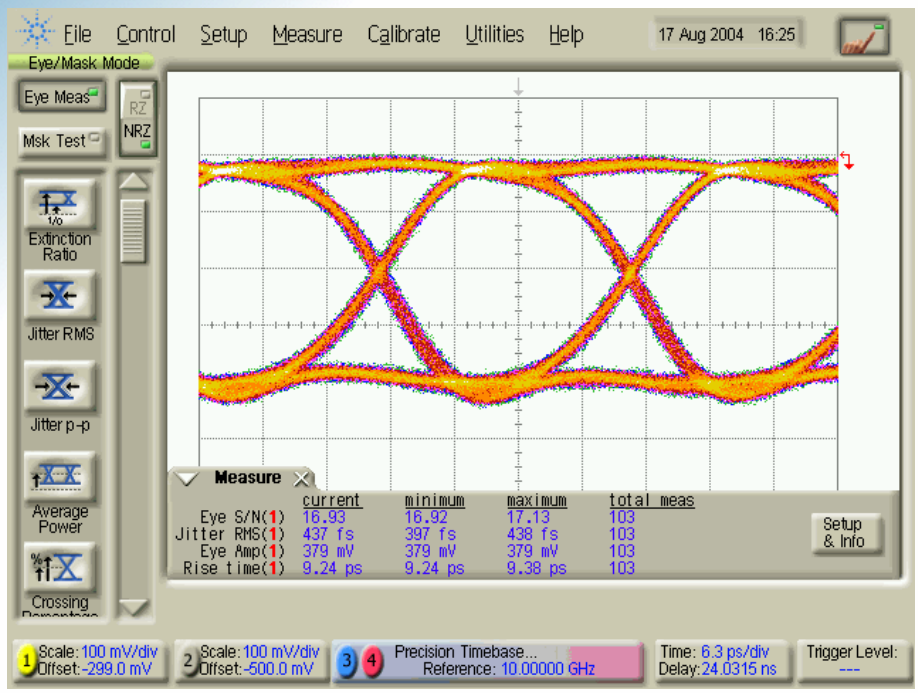
Note:
Option 010 and 020 cannot be supplied at the same time
With option DFF the output amplitude is fixed and the instrument works only in full clock mode

Specifications – SHF 12100 A

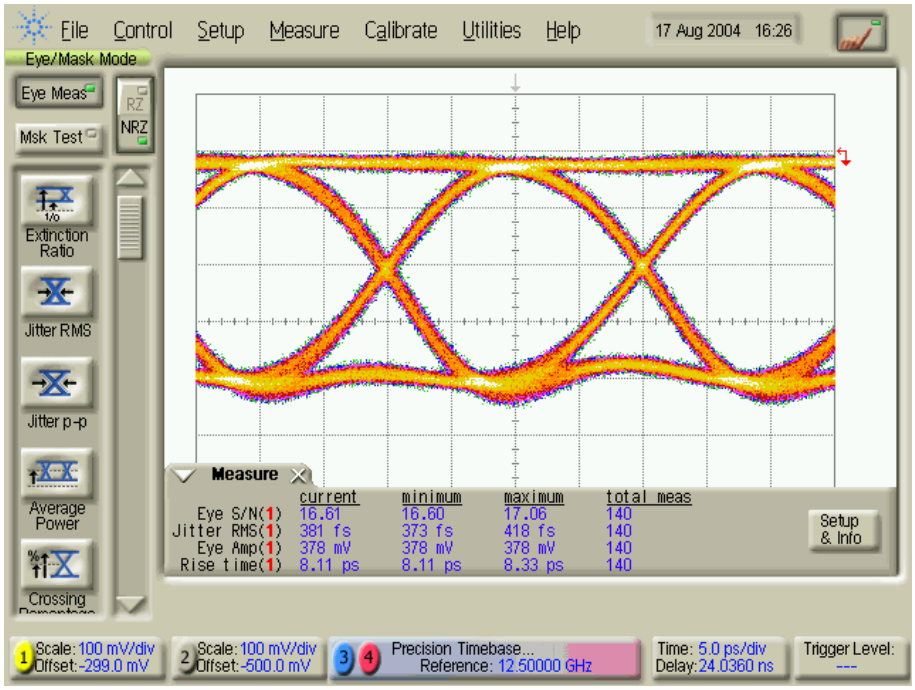
Parameter	Unit	Min.	Typ.	Max.	Comment
Data Outputs					
Connector Type			50 Ω		ruggedized 1.85 mm male connector
Bit rate	Gbps	6		50	
Output level	mV	350	400 500		adjustable by up to -3dB, not adjustable with DFF
Output level with DFF (optional)	mV		500		fixed
Jitter (rms)	fs		500	550	on scope display, measured at 50Gbps with Agilent 86100A with 70GHz sampling head and precision timebase
Rise/fall time	ps			10	20%...80%
12.5 Gbps sub rate data outputs (optional)	Gbps	1.5		12.5	$250mV_{pp}$…$1V_{pp}$ adjustable output level
Connector Type			50 Ω		SMA female
25 Gbps sub rate data outputs (optional)	Gbps	3		25	$350mV_{pp}$ fixed output level
Connector Type			50 Ω		SMA female
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 2.9 mm male connector
Clock input frequency	GHz	3 6		25 50	half clock mode full clock mode
Input level	V	0.6		1	
Output level	mV	500	600		
S_{11}	dB			-10	
Output frequency			clock clock/2 sel		sel: can be switched between bitrate/N (N=16,32,64,128,256, 512)

Parameter	Unit	Min.	Typ.	Max.	Comment
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
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	
Back to back Q factor	linear dB	25 28	30 30		measured with SHF 11100 A @ 40 Gbps, 2^{31}-1, 400 mV amplitude

Typical output waveforms



40 Gbps output eye at maximum output level



50 Gbps output eye at maximum output level