

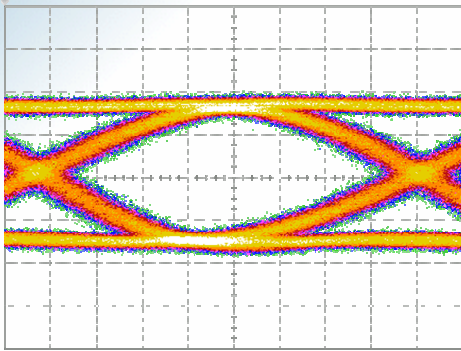


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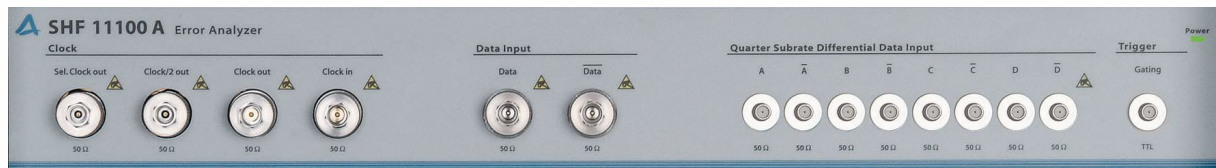
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# Datasheet

## SHF 11100 A

### Error Analyzer





## Description

The SHF 11100 A is an error analyzer plug-in which can be fitted into any the SHF 10000 Series mainframes.

It has broadband operation from 1.5 to 56Gbps<sup>1</sup> and features high sensitivity and a wide clock phase margin. It allows the analysis 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 patterns can also be analyzed.

In a back-to-back configuration with the SHF 12100 B, the system Q-factor is an impressive 25 (28dB), measured using a  $2^{31}-1$  PRBS pattern.

## Features

- Broadband operation up to 56 Gbps<sup>1</sup>
- Operation by intuitive software interface
- Q-factor determination
- Jitter analysis
- Auto search of optimum sampling point
- 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
- Up to 128 MBit user pattern
- Sub-rate clock outputs

## Options

010 – Four 12.5 Gbps sub-rate inputs

56 – Guaranteed operation up to 56 Gbps

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<sup>1</sup> Depending on the configuration of the particular system



# Specifications – SHF 11100 A

Parameter	Unit	Min.	Typ.	Max.	Comment
<b>Data input</b>					
Bit rate With Option 56	Gbps	6		50 56	input AC coupled; DC coupled on request (ground referenced CML, 0...-500mV)
S <sub>11</sub>	dB			-10	
Sensitivity <sup>1</sup>	mV		25	50	standard, up to 50 Gbps value corresponds to the measured eye heights on an Agilent 86100 A
Clock phase margin <sup>2</sup>	°	200			
Threshold adjustment	mV	-300		300	0.5mV steps
Subrate data inputs (optional)	Gbps	1.5		12.5	sensitivity: 100mV
<b>Clock input</b>					
Frequency With option 56	GHz	3 6		25 50 28 56	half clock full clock half clock full clock
Input level	dBm	0		4	
Phase adjustment	ps	0		160	0.1ps resolution
<b>Trigger (gating)</b>					LV TTL
<b>Clock outputs</b>					
Frequency	GHz GHz MHz	3 3 11.7		50 25 3125	clock clock/2 sel. clock sel: can be switched between bitrate/N (N=16,32,64,128,256,512)
Output level	mV	300	600		
S <sub>11</sub>	dB			-10	



System					
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	25	30		measured with SHF 12100 A @ 40 Gbps, $2^{31}-1$ , 400 mV amplitude
	dB	28	30		

## Absolute maximum ratings

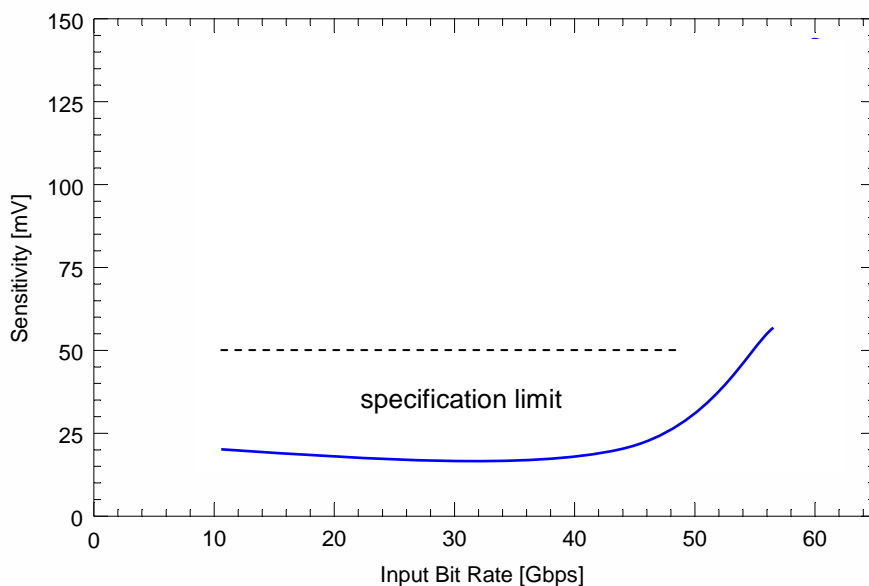
Parameter	Unit	Min.	Typ.	Max.	Comment
Data input	V <sub>pp</sub>			1	
Clock input	V <sub>pp</sub>			1	
Subrate input	V <sub>pp</sub>			1	

Note 1: Value corresponds to the measured eye height on an Agilent 86100 B with 70 GHz sampling heads using  $2^{31}-1$  PRBS at a BER limit of  $10^{-9}$

Note 2: BER limit  $10^{-9}$ , PRBS  $2^{31}-1$ , Eye Height 100 mV<sub>pp</sub>, Peak-to-Peak-Source-Jitter as displayed on an Agilent 86100 B with 70 GHz sampling heads and precision timebase, calculated using the formula:

$$\text{Clock Phase Margin [ps]} = 360 \cdot \frac{\text{Measured Clock Margin [ps]} - (\text{Peak-to-Peak-Source-Jitter [ps]})}{\text{Eye Length [ps]}}$$

## Typical Sensitivity and Phase Margin





### Sensitivity measurement

