SHF Communication Technologies AG

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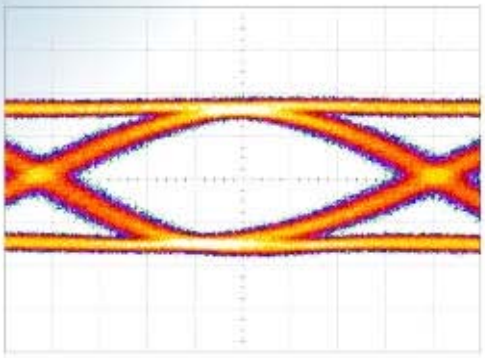


Datasheet

SHF 11120 A

40/43 Gbps Clock Recovery Module

Description

The SHF 11120 A is a clock recovery module which extracts a clock signal at a frequency half of the incoming bit rate from an electrical NRZ or RZ data signal at a nominal bit rate of about 40 Gbps or about 43 Gbps. The module is a compact solution which offers superb performance while including easy to use features.

There are two separate VCOs included in the module, which allow operation in a standard mode at 39.81 Gbps or in an FEC mode to cover FEC bit rates of 42.65 Gbps or 43.01 Gbps, respectively. Two reference frequencies are included as standard.

Features

supports multiple data rates (standard bit rate mode at OC-768, non-FEC rates at 39.81 Gbps and FEC bit rate mode at OC-768 FEC rates around 43 Gbps)
clock output frequency at half of the input data bit rate
a reference signal at input bit rate divided by 64 is required
NRZ and RZ input data format applicable
only a 50 mV single ended input signal is required
excellent tolerance against input signal jitter
increases capability of the SHF 47100 A O/E Receiver by adding clock recovery
9V adaptor included as standard for power supply

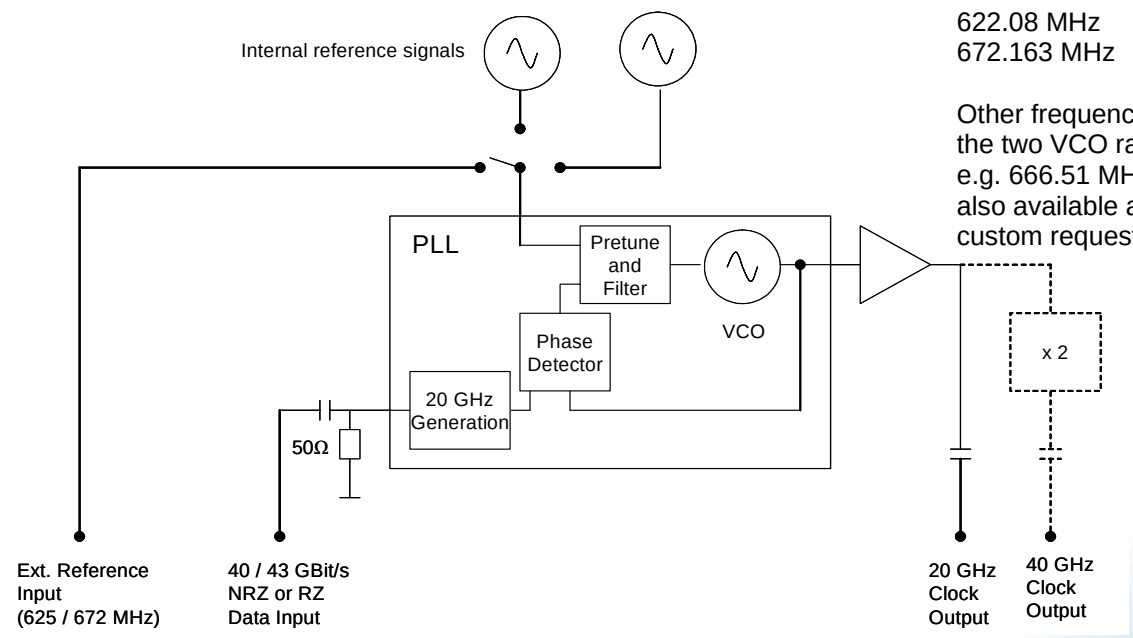
Applications

R&D for optical communication systems at bit rates around 40 and 43 Gbps
characterization of high speed optical components
bit error rate testing
optical component and fiber loop testing
optical transmitter testing

Options

C40: full rate clock output can be provided

Block Diagram



Frequencies available as standard:

622.08 MHz
672.163 MHz

Other frequencies within the two VCO ranges, e.g. 666.51 MHz, are also available as a custom request.

Specifications

Parameter	Unit	Min.	Typ.	Max.	Conditions
40/43 Gbps Data Input					
Connector Type/Coupling					ruggedized V-male connector, AC-coupled
Operating bit rate VCO1 VCO2	Gbps	 39.5 42.5		 40.1 43.1	 standard mode FEC mode
Input Return Loss	dB	10 5			<20 GHz <40 GHz
Input Voltage	mV	50		1000	
625/672 MHz Reference Clock Input					
Connector Type/Coupling					ruggedized K-male connector, AC-coupled
Input Frequency	MHz	617 664		627 674	standard mode FEC mode
Input Return Loss	dB	10			
Input Voltage	mV	200		800	
20/21.5 GHz Clock Output					
Connector Type/Coupling					ruggedized K-male connector, AC-coupled
Output Frequency	GHz	19.75 21.25		20.05 21.55	standard mode FEC mode
Output Return Loss	dB		10		<30 GHz
Output Voltage	mVpp		1200		half bit rate 600mV with option C40
RMS-Jitter	fs		500		
40/43 GHz Clock Output (Optional)					
Connector Type/Coupling					ruggedized V-male connector, AC-coupled
Output Frequency	GHz	39.5 42.5		40.1 43.1	standard mode FEC mode
Output Return Loss	dB		10		
Output Voltage	mVpp		600		full bit rate
RMS-Jitter	fs		500		
General					
Dimensions	mm				120x220x40
Power supply	V	9		12	
Supply current	A		1.0 1.2		standard with option C40
Power consumption	W		8		
Operating temperature	C	0		40	
Storage temperature	C	-20		85	

All parameters measured at 25°C

Output Waveform

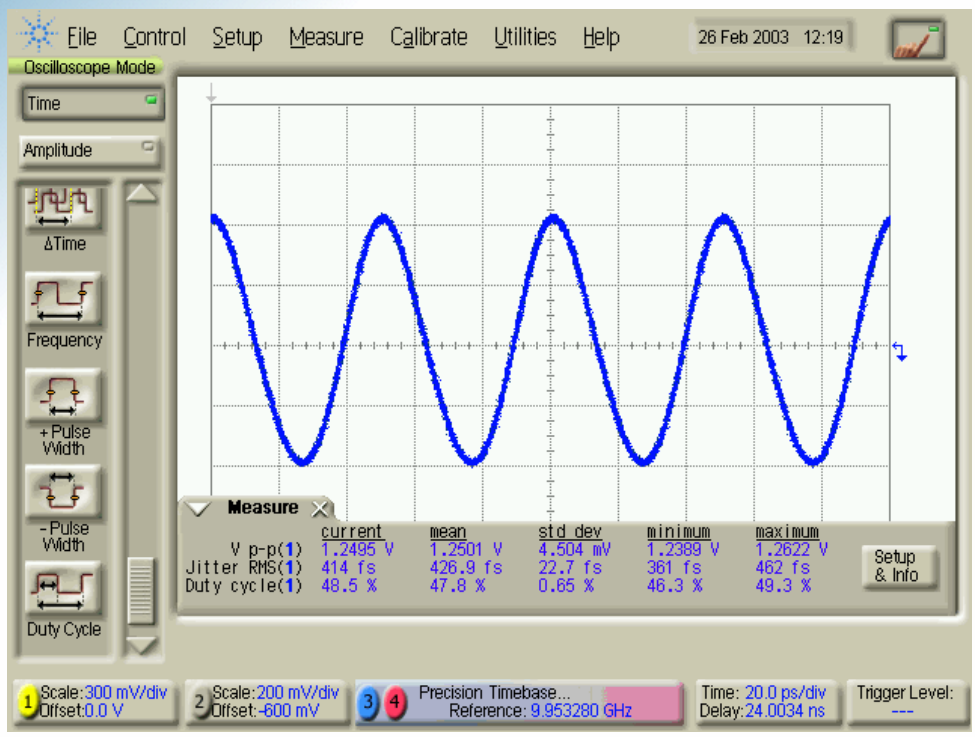
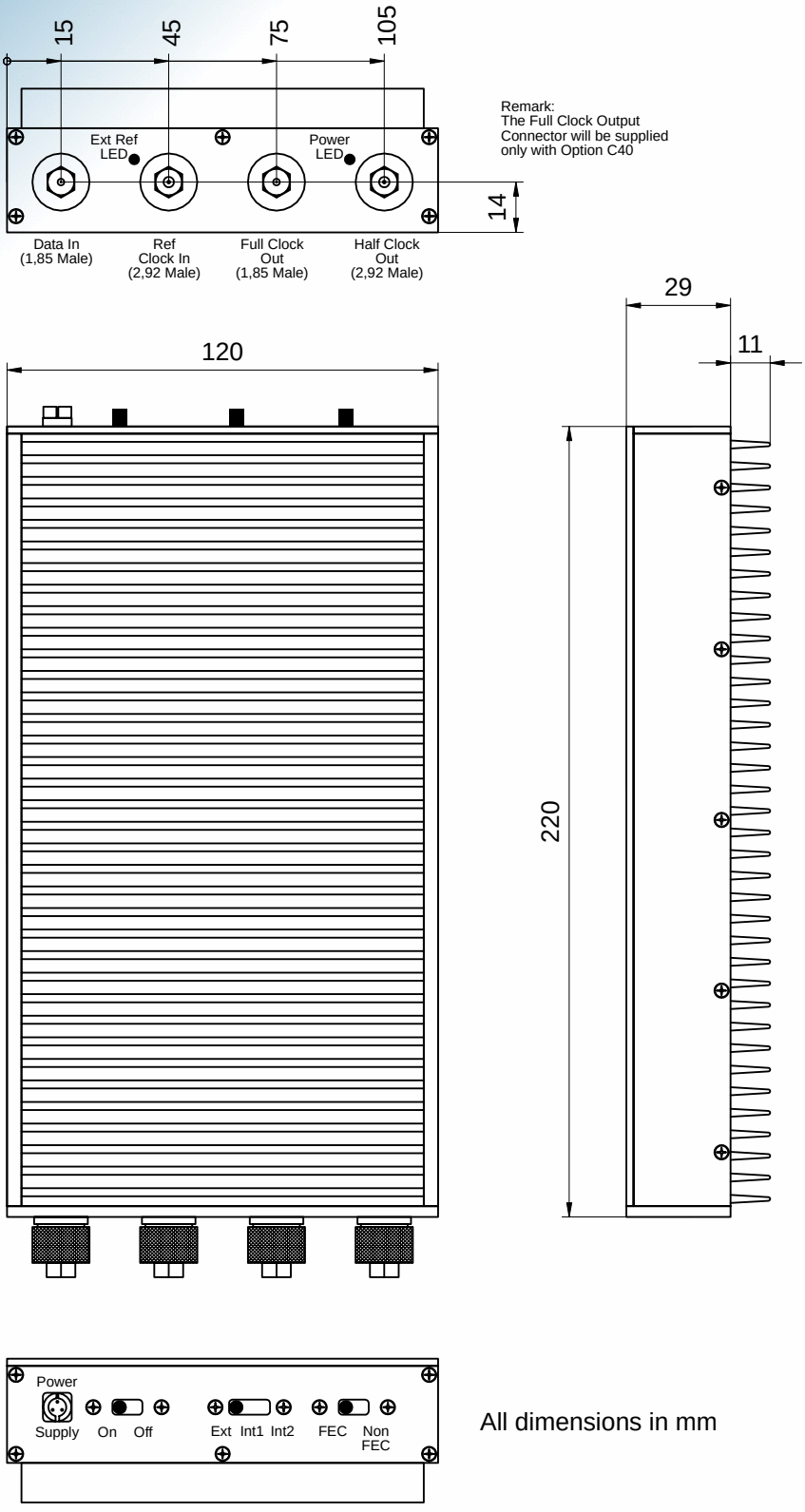


Fig. 2: 19.9 GHz recovered clock signal

The measurement was performed using an Agilent DCA 86100 B / 70 GHz sampling head Agilent 86118 A / precision time base module Agilent 86107 A / 50 cm Suhner Sucoflex 102 EA / 10 dB V-attenuator.

Module Outline



All dimensions in mm

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the bandwidth company