

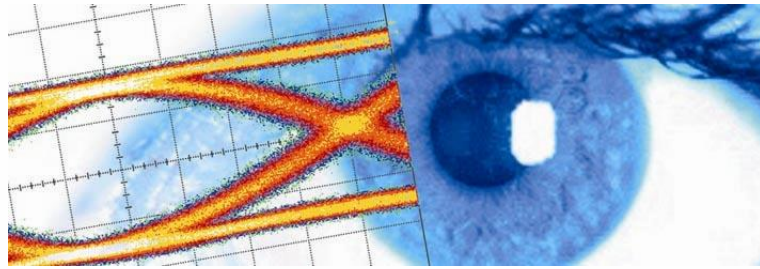


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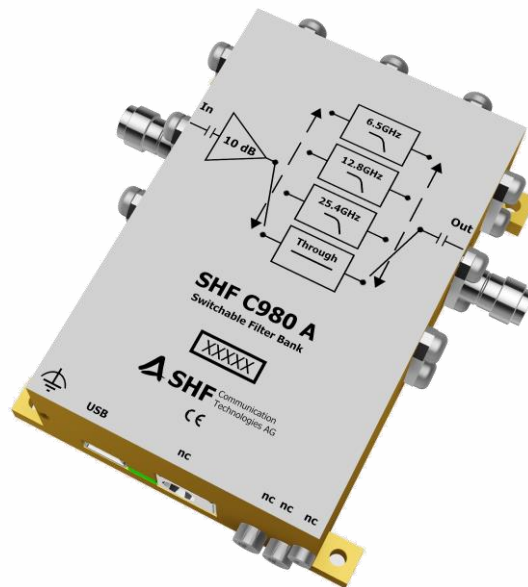
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Datasheet SHF C980 A

Switchable Filter Bank





Description

The SHF C980 A is a switchable broadband RF filter bank, operating up to 60 GHz for clock signals. It offers high quality output signals together with a compact size and ease of operation.

This selectable filter array module consists of three low pass Bessel filter paths and one through signal path. It can be used for various applications e.g. a trigger input of a Tektronix® Digital Serial Analyzer DSA8300 or Keysight® Digital Communication Analyzer DCA 86100.

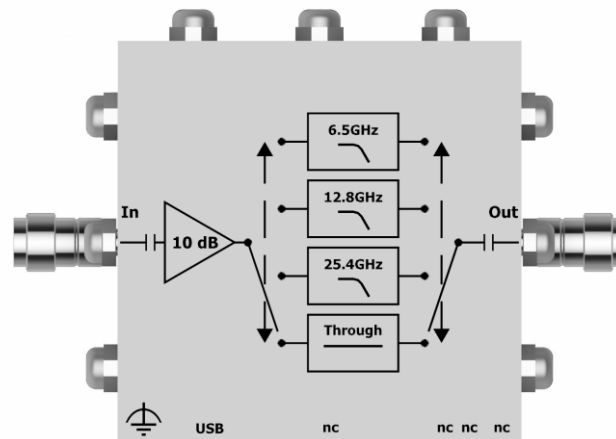
Features

- Broadband operation up to 60 GHz for clock signals
- Low power consumption
- Single-ended operation
- Mini-USB interface only
- Simple, easy to use graphical user interface
- Automated measurements by using different software environments easily possible¹

Applications

- Broadband test and measurement equipment
- Trigger for a digital sampling oscilloscope

Block Diagram



Accessories

- Functional earth cable
- Mini-USB cable

[®] Tektronix is a registered trademark of Tektronix Inc., Keysight is a registered trademark of Keysight Technologies Inc.

¹ To operate the module, intuitive and well documented plain text commands are sent and received via USB. Thus the device can be operated either by the complementary software or automated by any programming language which can communicate with USB devices.



Absolute Maximum Ratings

Parameter	Unit	Symbol	Min.	Typ.	Max.	Comment
Input Parameters						
Input Power	dBm	P_{in}			0	
External DC Voltage on RF Ports	V	V_{DCext}	-6		+6	AC coupled ports

Specifications – SHF C980 A

Parameter	Unit	Symbol	Min.	Typ.	Max.	Comment
Performance						
Lower Cutoff Frequency ²	GHz	$f_{L\ 3dB}$			0.1 1 1 0.1	LPF-6.5 LPF-12.8 LPF-25.4 Through
Upper Cutoff Frequency ²	GHz	$f_{U\ 3dB}$	6.5 13.5 25.4 30			LPF-6.5 LPF-12.8 LPF-25.4 Through
Gain	dB	S_{21}	+7 +7 +6 +5 -6		+10 +10 +10 +11 +5	0.1 - 6.5 GHz (LPF-6.5) 1 - 12.8 GHz (LPF-12.8) 1 - 25.4 GHz (LPF-25.4) 0.1 - 40 GHz (Through) 40 - 60 GHz (Through)
Isolation	dB	S_{12}	30	40		All
Input Reflection	dB	S_{11}		-10 -8 -6	-8 -6 -3	< 35 GHz 35 - 50 GHz > 50 GHz
Output Reflection	dB	S_{22}				See RF Performance
Settling Time	ms			1		
Switching Transient Overshoot ³	mV				+600	Output port

² The Lower and Upper Cutoff Frequencies refer to 3dB point of each path

³ Switching Transient Overshoot refers to a voltage overshoot measured on the module's ports while toggling the switch



Parameter	Unit	Symbol	Min.	Typ.	Max.	Comment
Output Parameters						
Jitter RMS	fs	J _{RMS}				See note ⁴
Duty Cycle	%	DC				See note ⁴
Power Requirement						
Supply Voltage	V	V _{cc}	+4.40	+5.00	+5.25	Mini-USB
Supply Current	mA	I _{cc}		250	300	
Power Dissipation	W	P _d		1.25	1.575	
Mechanical Characteristics						
Input	Ω			50		1.85 mm (V) female
Output	Ω			50		1.85 mm (V) female
Dimensions	mm					See Outline Drawing
Weight	g			190		
Conditions						
Operating Temperature	°C	T _{ambient}	15		35	

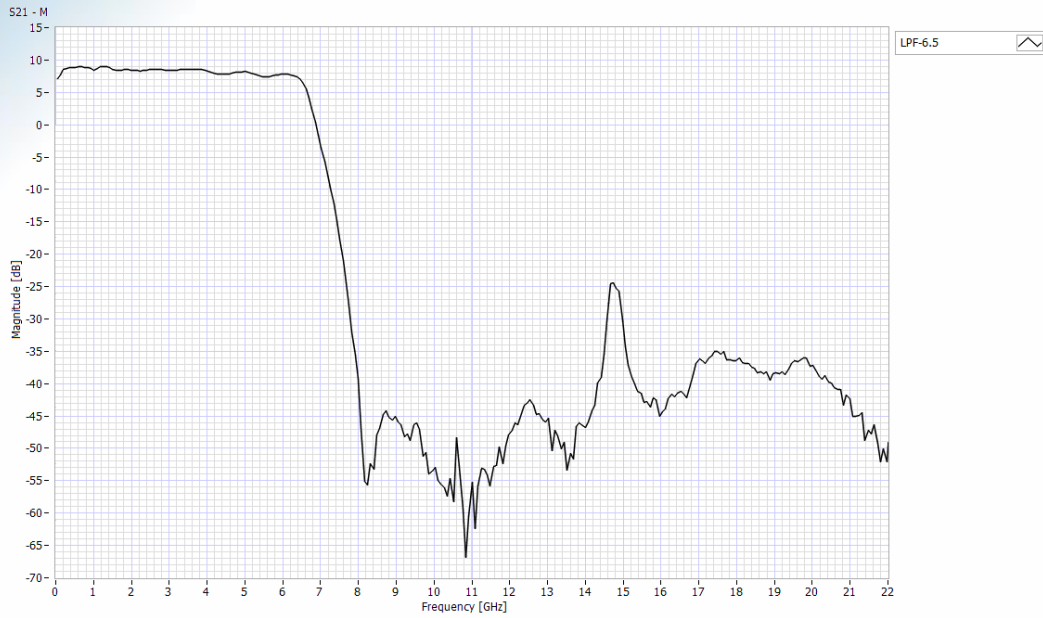
⁴ No degradation in jitter or duty cycle performance were observed for sine or square wave signals



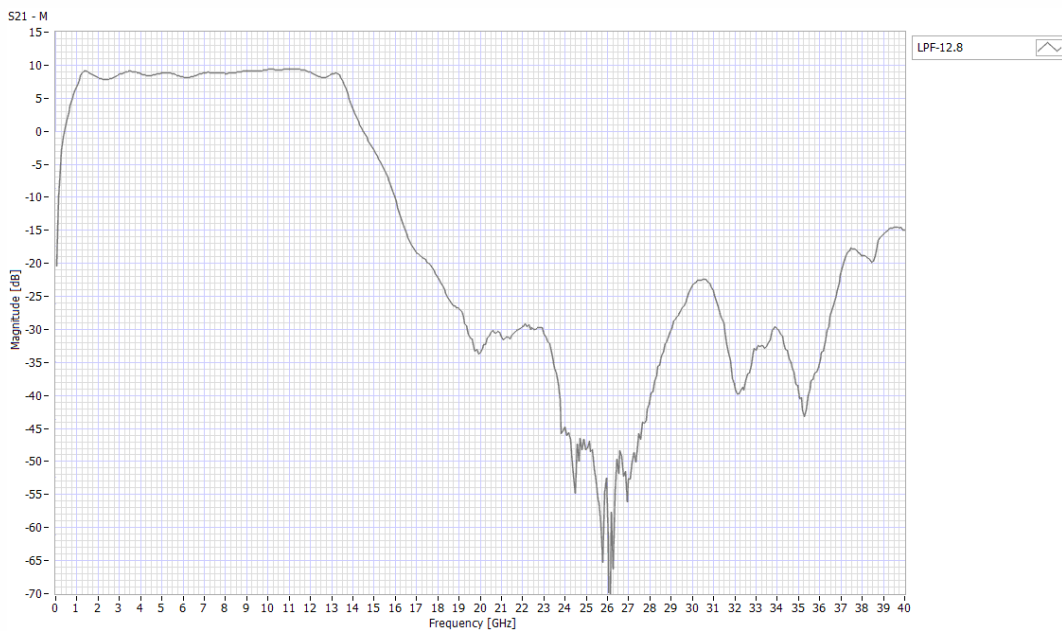
Typical RF Performance @ +25°C

C980 A

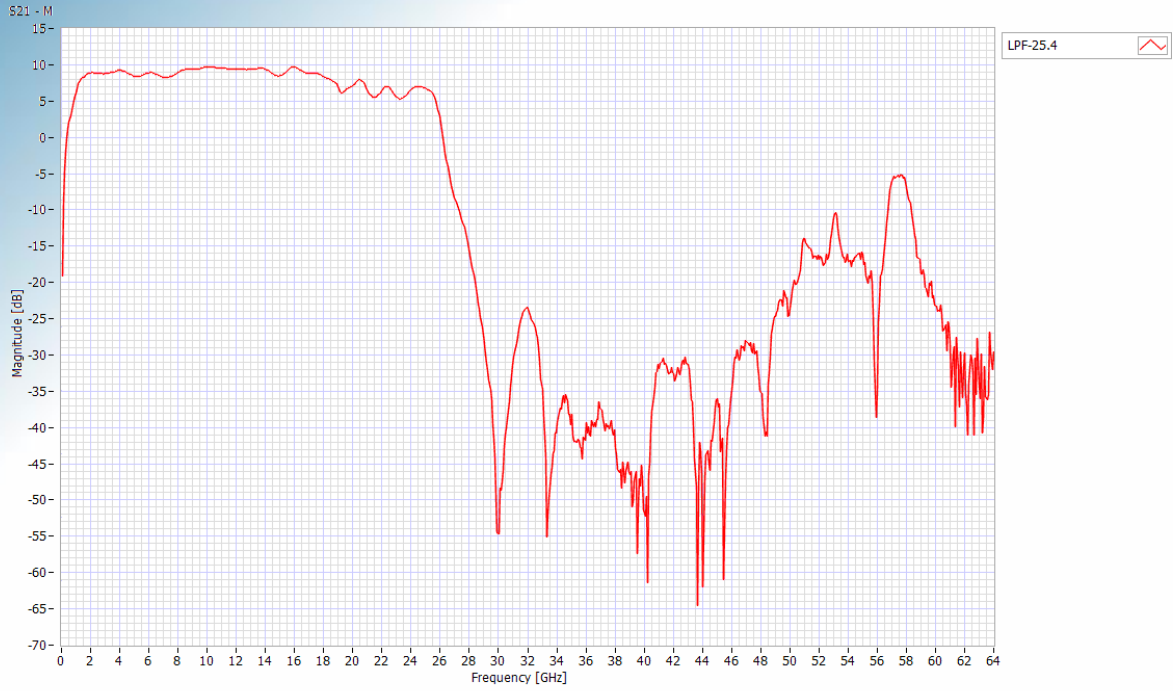
The measurements below had been performed using a VNA.



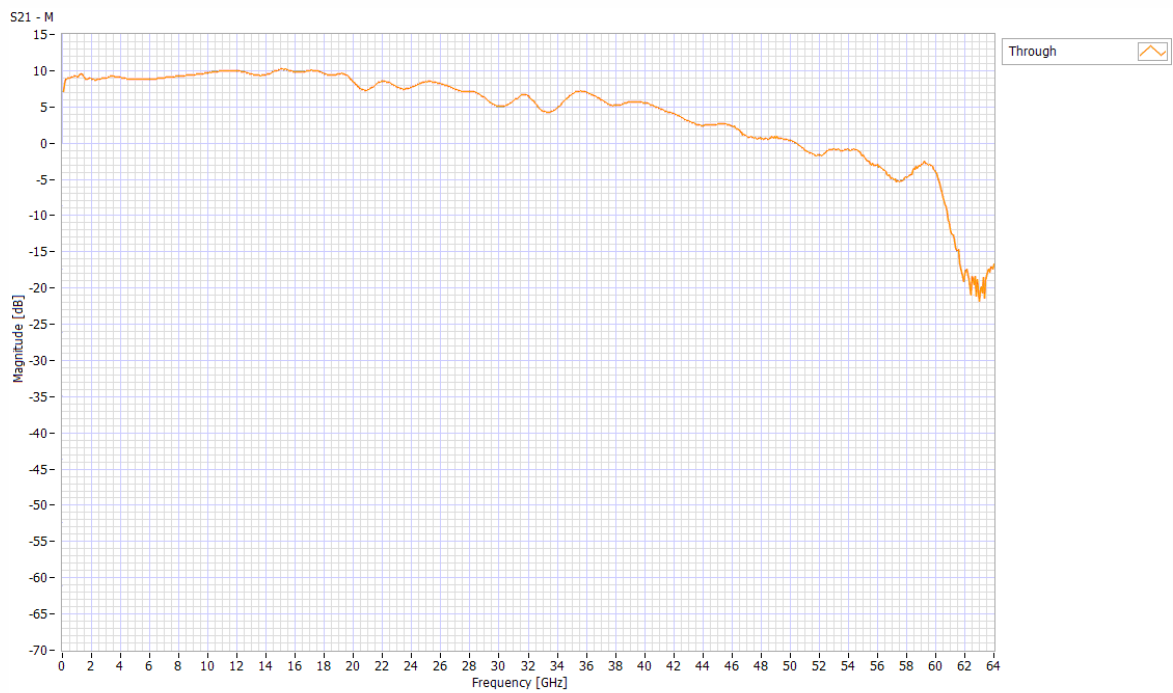
Gain LPF-6.5



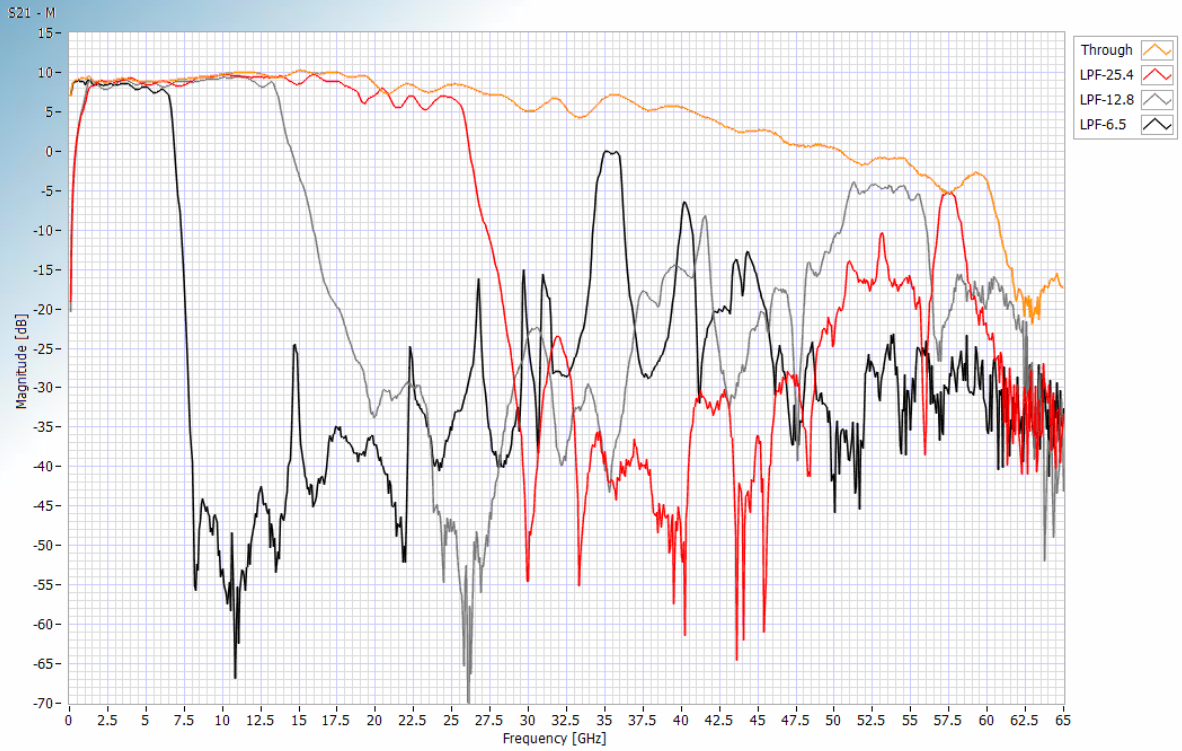
Gain LPF-12.8



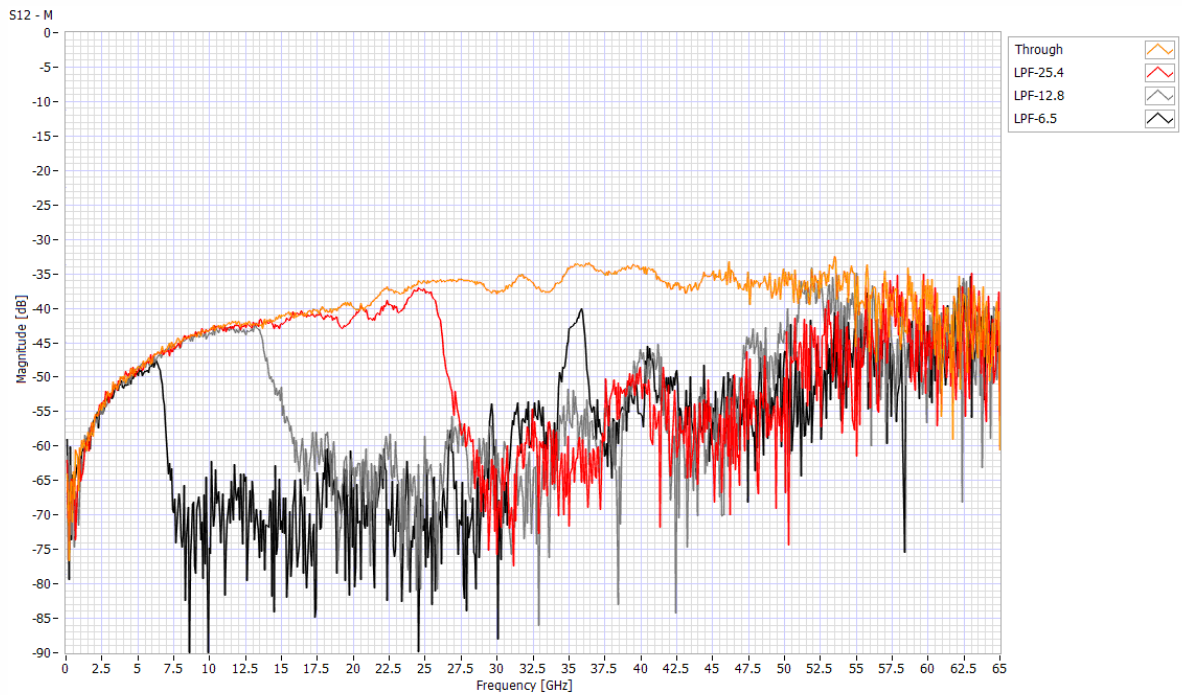
Gain LPF-25.4



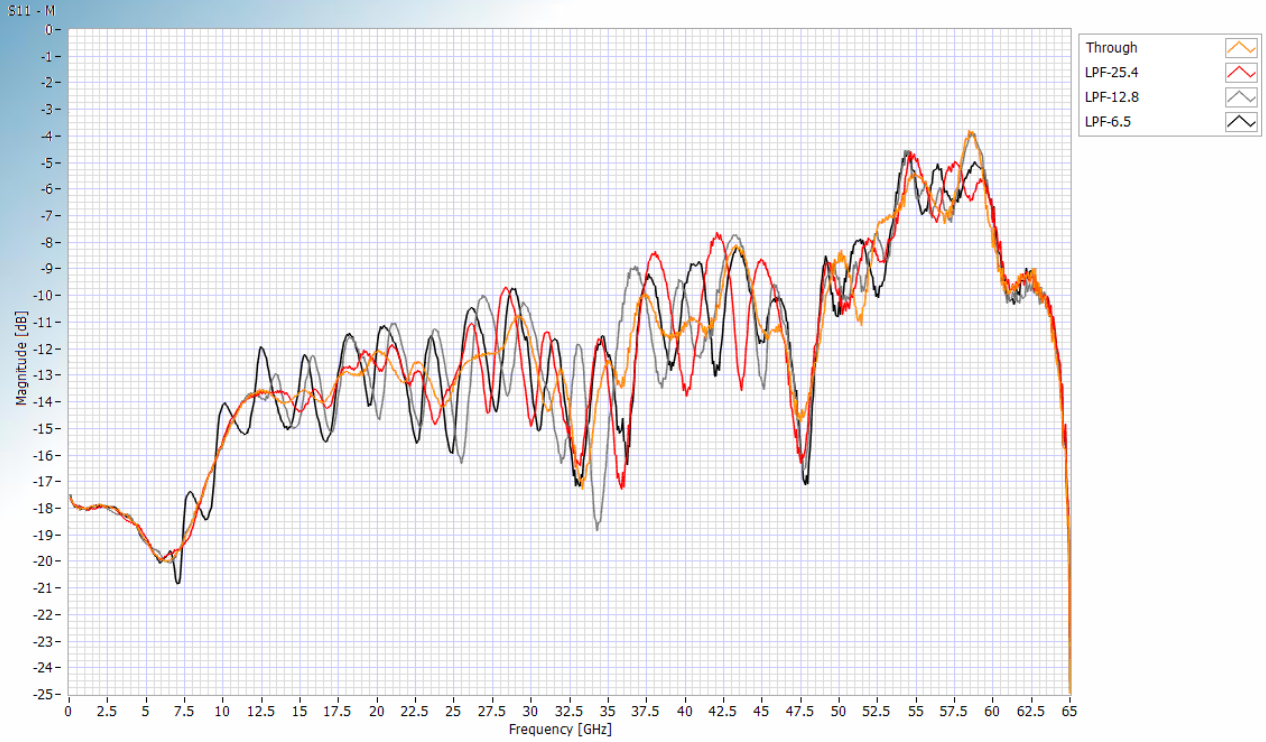
Gain Through



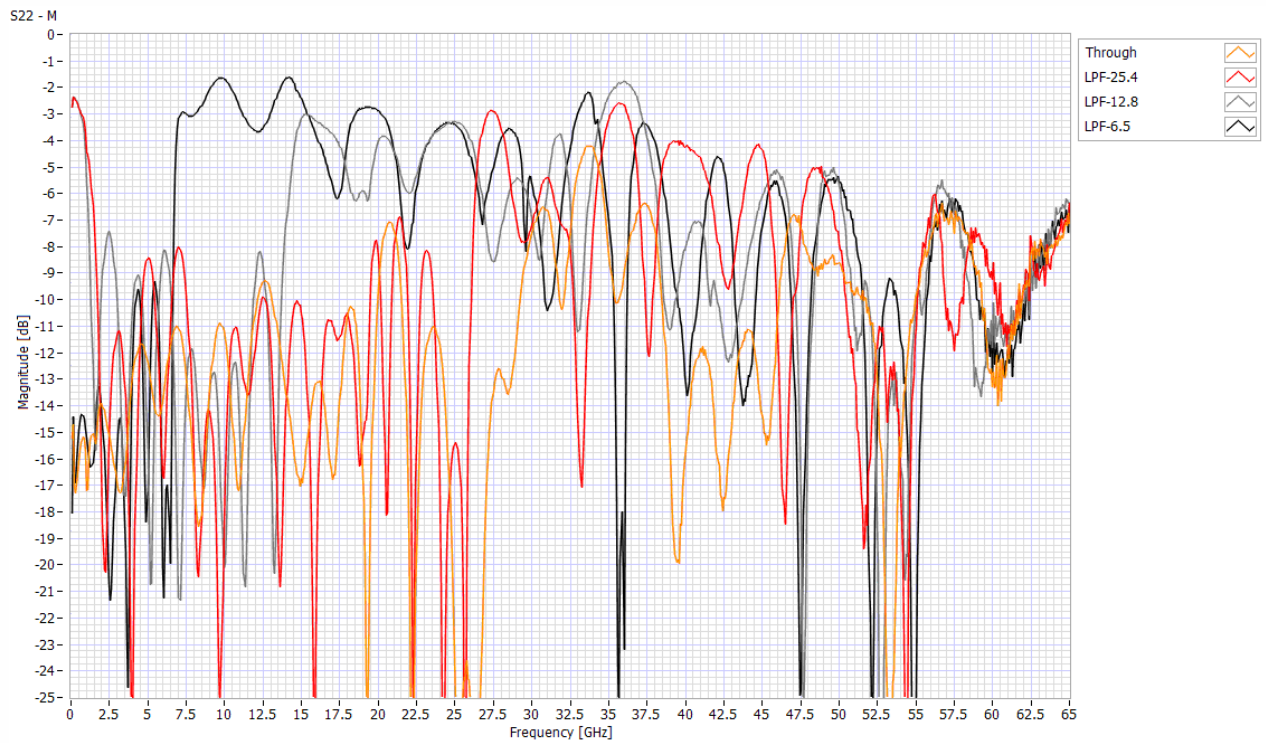
Response



Isolation



Input Reflection



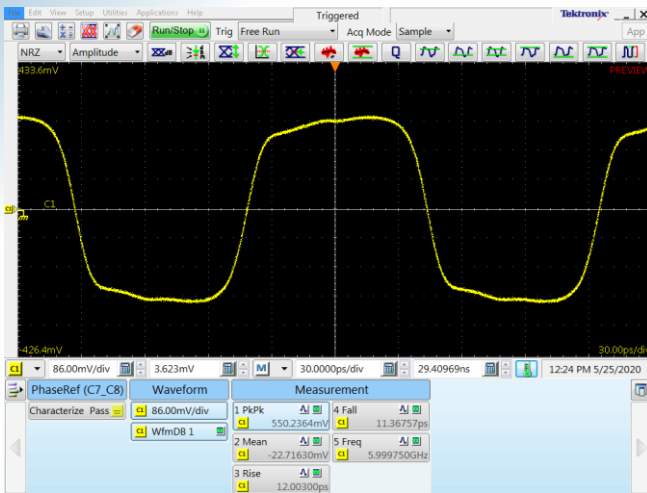
Output Reflection



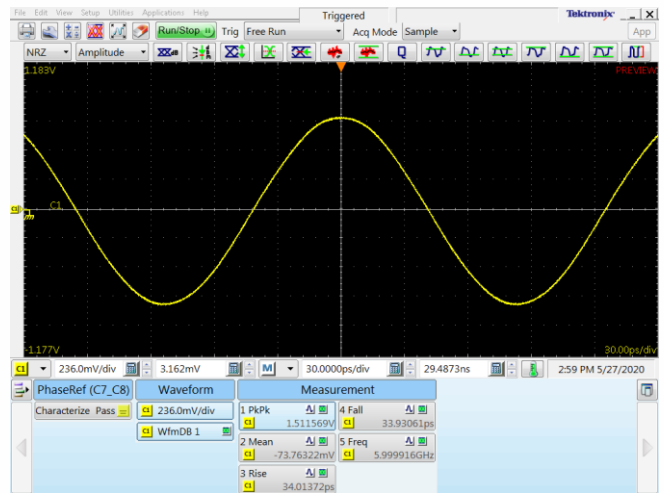
Typical Output Waveforms

Clock Output Signals

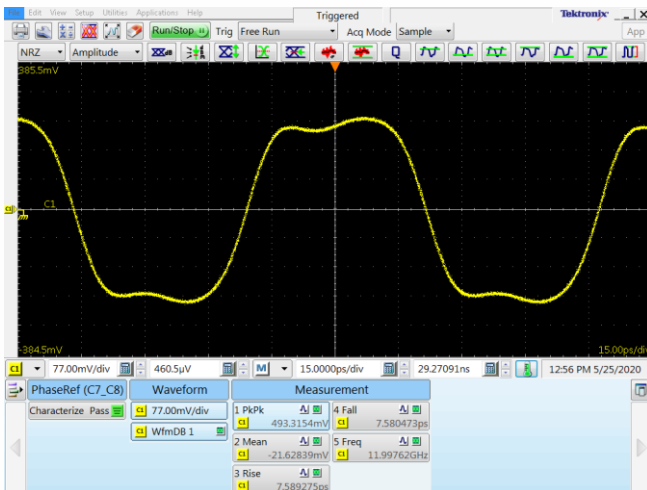
The measurements below had been performed using a signal generator (MG3697C), SHF78123 A (clock distribution) and a Digital Serial Analyzer (DSA8300) with a Phase Reference Module (82A04B-60G) and a Sampling Module (80X02). The output of the module had been connected directly to the DSA input.



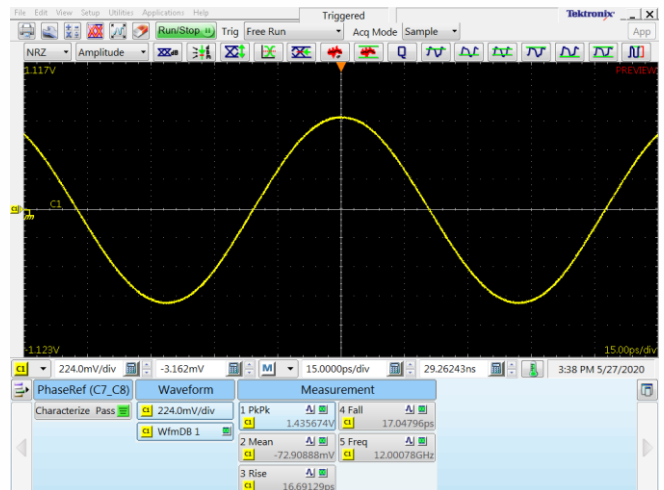
6 GHz input signal



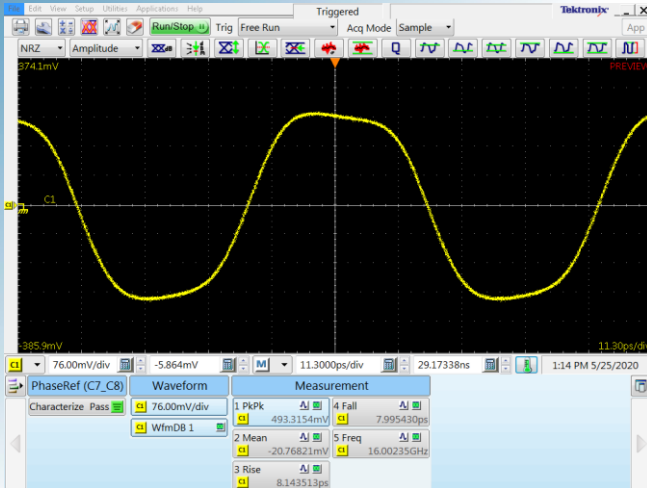
6 GHz output signal (LPF-6.5)



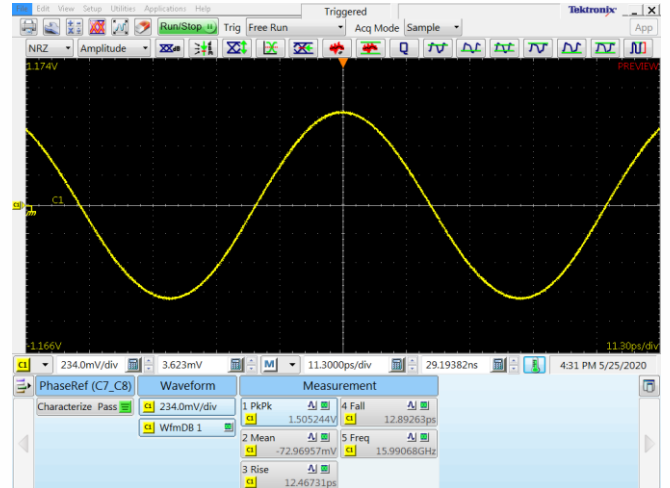
12 GHz input signal



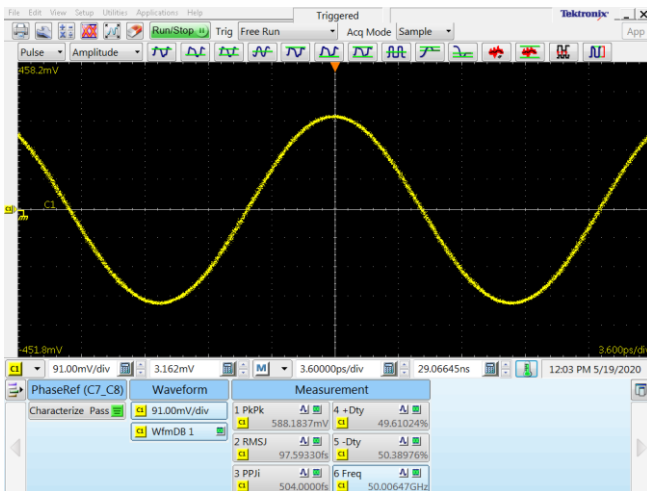
12 GHz output signal (LPF-12.8)



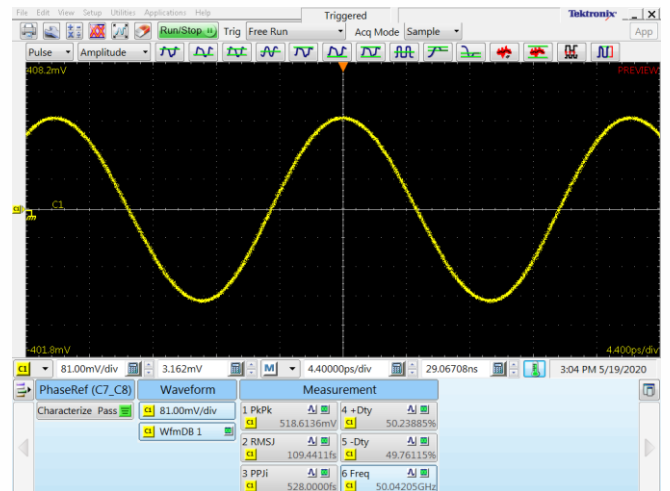
16 GHz input signal



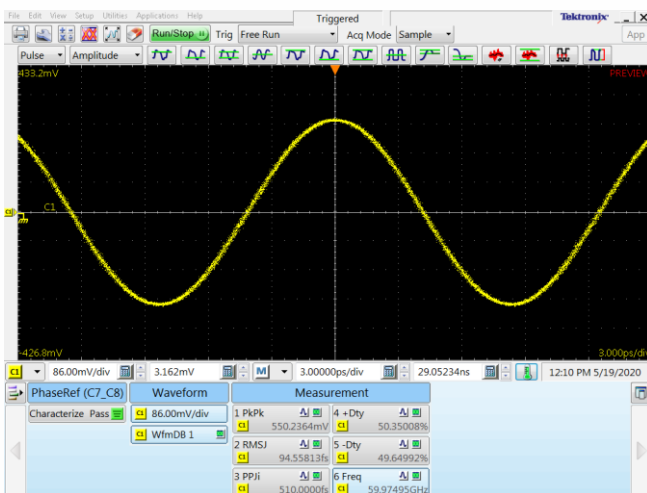
16 GHz output signal (LPF-25.4)



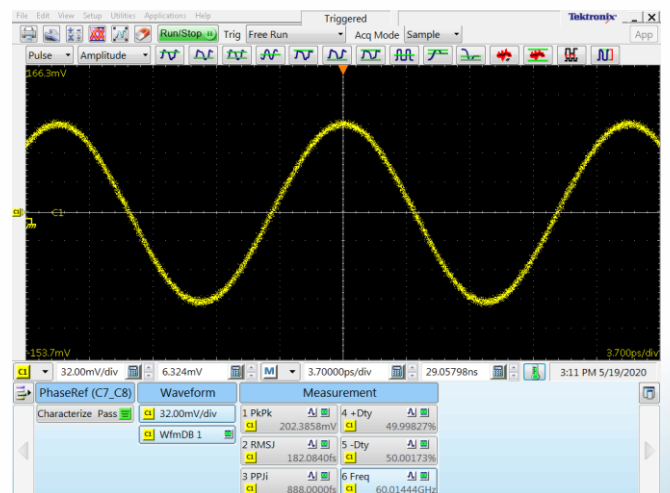
50 GHz input signal



50 GHz output signal (through)



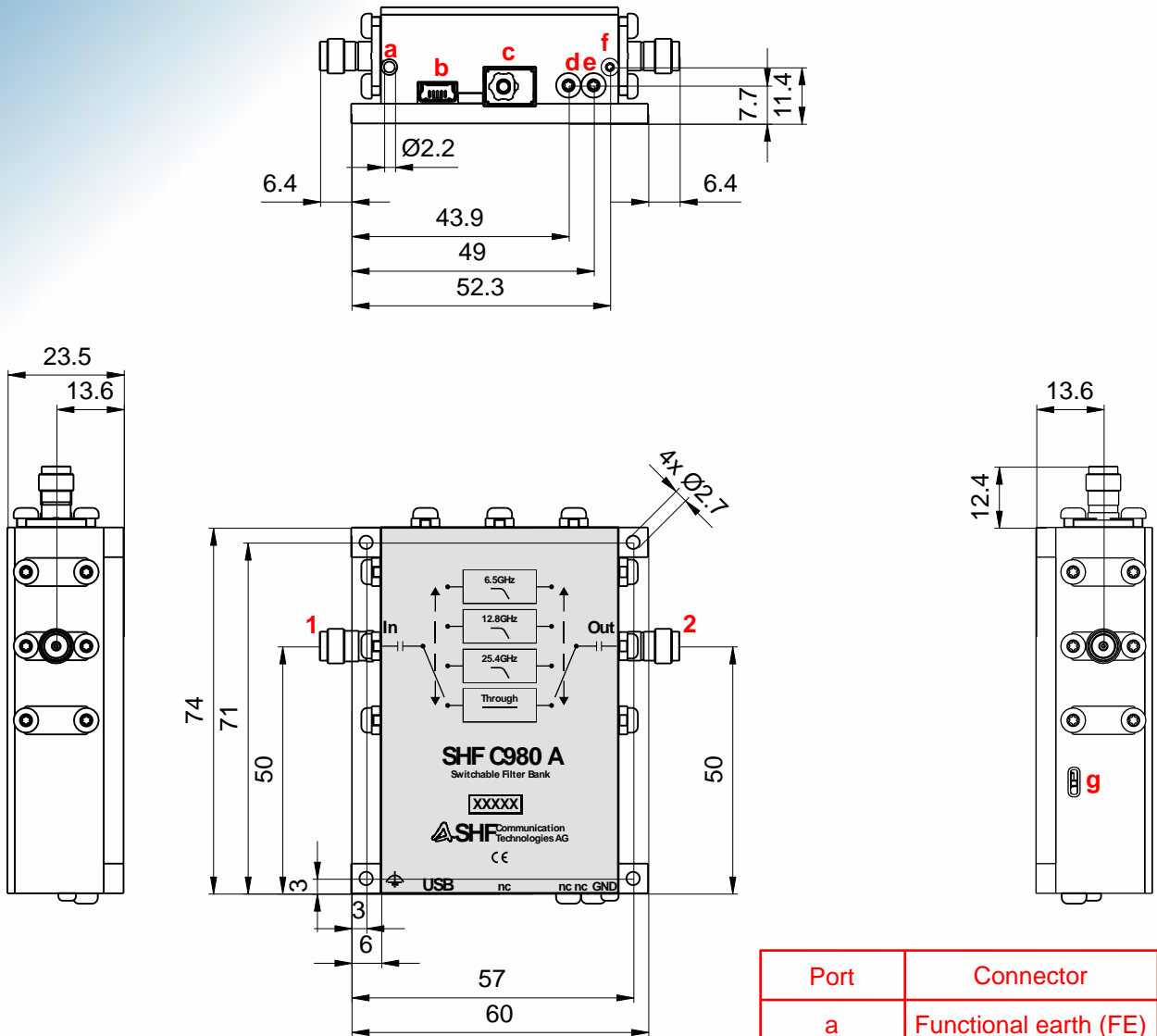
60GHz input signal



60 GHz output signal (through)



Outline Drawing – Module



Pos	Port	Connector
1	In	1.85mm (V) female
2	Out	1.85mm (V) female

all dimensions in mm

Port	Connector
a	Functional earth (FE)
b	Mini-USB
c	nc
d	nc
e	nc
f	nc
g	xx