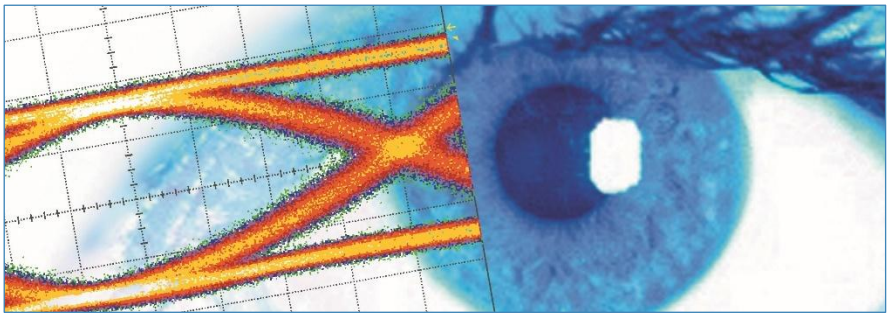


Data Sheet
SHF PSP110 A

110 GHz Power Splitter

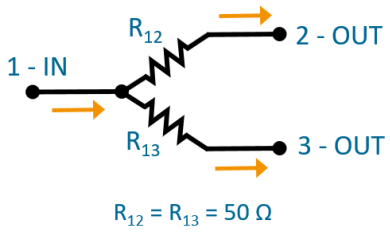
Description

The SHF PSP110 A is a compact, high-performance, resistive power splitter with a bandwidth exceeding 110 GHz.

Fully customizable 1.0 mm connector configurations as well as between series (1.0 mm ↔ 1.85 mm) configurations are available to meet individual requirements of the customer and to avoid additional adapters in the setup.

Dedicated mounting holes on the back side allow secure installation on a mounting plate for stable system integration.

The PSP110 A is a unidirectional device and is not intended to be used for signal combining. The designated input port is Port 1, with Ports 2 and 3 being the outputs.



Circuit schematic of the PSP110 A.

Applications

- Gain and compression measurements
- Signal rationing and leveling

Features

- Small and lightweight
- Flat insertion loss, low reflection
- Optimized effective output match for leveling-loop applications or rationing systems
- Excellent phase and amplitude balance at output ports for minimal measurement uncertainty

Configurations

- WFWFWF
- Other configurations on request

Product Code Example

- SHF PSP110 A | WFWFWF

Brand: SHF
Type: 110 GHz Power-Splitter
Revision: A
Connector Configuration:
Port 3 - 1.0 mm female
Port 2 - 1.0 mm female
Port 1 - 1.0 mm female

Specifications[1]

Absolute Maximum Ratings

Parameter	Unit	Symbol	Min	Typ	Max	Conditions
Power handling	W	$P_{in,\ max}$			0.5	

Mechanical Characteristics

Parameter	Unit	Symbol	Min	Typ	Max	Conditions
Operating temperature	°C	T_{case}	10		50	
Connectors						1.0 mm
Dimensions	mm				42.2 30.1 9	Width Length Height
Weight	g			15		

[1] These specifications are valid for the WFWFWF configuration.

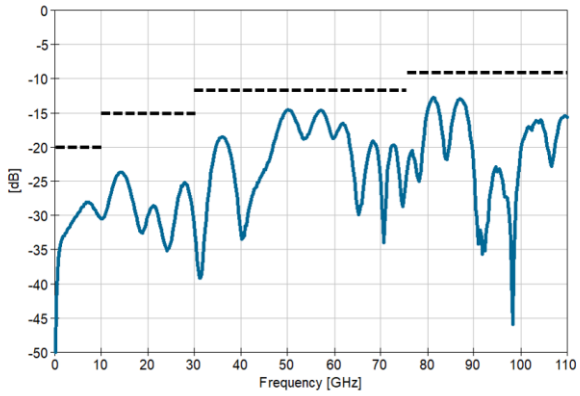
Electrical Characteristics (At 35°C case temperature, unless otherwise specified)

Parameter	Unit	Symbol	Min	Typ	Max	Conditions
Maximum Operating Frequency	GHz	f_{max}	110			
Minimum Operating Frequency		f_{min}			DC	
Input Impedance	Ω			50		
Insertion Loss	dB	IL			7 7.5 8 8.5 9	f < 10 GHz 10 GHz < f < 30 GHz 30 GHz < f < 55 GHz 55 GHz < f < 75 GHz 75 GHz < f < 110 GHz
Input Return Loss (Port 1)	dB	RL	20 15 12 9			f < 10 GHz 10 GHz < f < 30 GHz 30 GHz < f < 75 GHz 75 GHz < f < 110 GHz
Effective Output Match[2] (Ports 2 and 3)	dB	Γ_g	15 12 10 7 5			f < 10 GHz 10 GHz < f < 30 GHz 30 GHz < f < 55 GHz 55 GHz < f < 75 GHz 80 GHz < f < 110 GHz
Amplitude Balance[3]	dB				±0.5 ±0.75 ±1.2	f < 30 GHz 30 GHz < f < 75 GHz 80 GHz < f < 110 GHz
Phase Balance[4]	deg				±5 ±10 ±15	f < 30 GHz 30 GHz < f < 75 GHz 80 GHz < f < 110 GHz

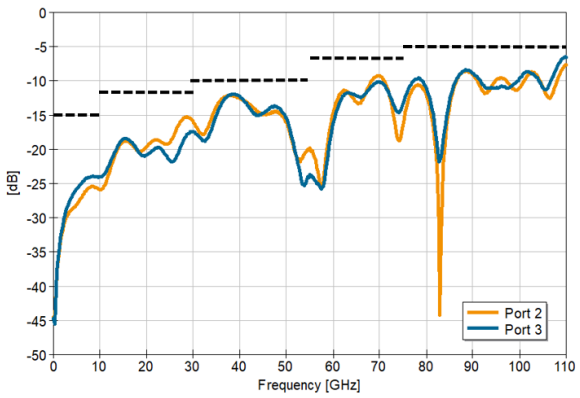
[2] The "effective output match", also called "equivalent source match" or "equivalent output reflection coefficient", is defined as $\Gamma_{g,2} = S_{22} - S_{21} * S_{32} / S_{31}$ and $\Gamma_{g,3} = S_{33} - S_{31} * S_{23} / S_{21}$ for port 2 and 3, respectively.
[3] The amplitude balance between the output ports is defined as the amplitude difference in dB of the output signals at port 2 and 3. It is calculated as: $|S_{31}|_{dB} - |S_{21}|_{dB}$.
[4] The phase balance between the output ports is defined as the phase difference in degrees of the output signals at port 2 and 3. It is calculated as: $\varphi_{31} - \varphi_{21}$, where φ_{31} and φ_{21} indicate the unwrapped phase of S_{31} and S_{21}, respectively.

Typical S-Parameters and Balance Properties[5]

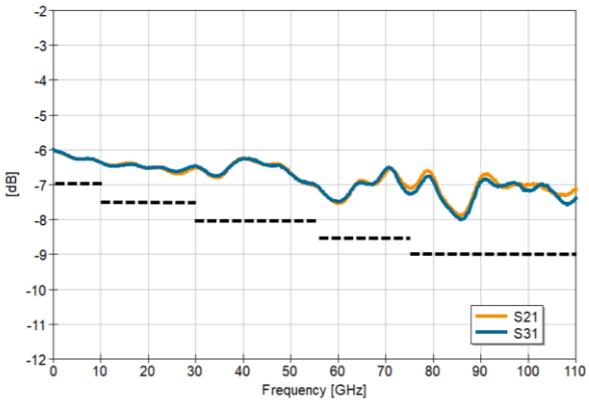
S11



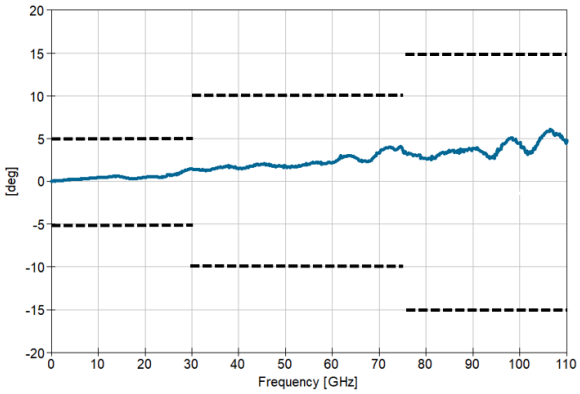
Effective Output Match



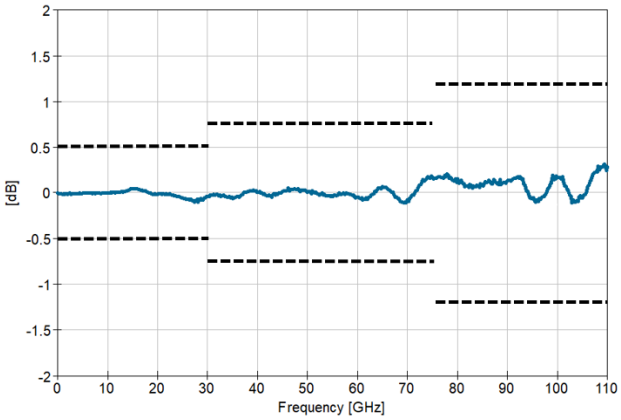
S21, S31



Phase Balance



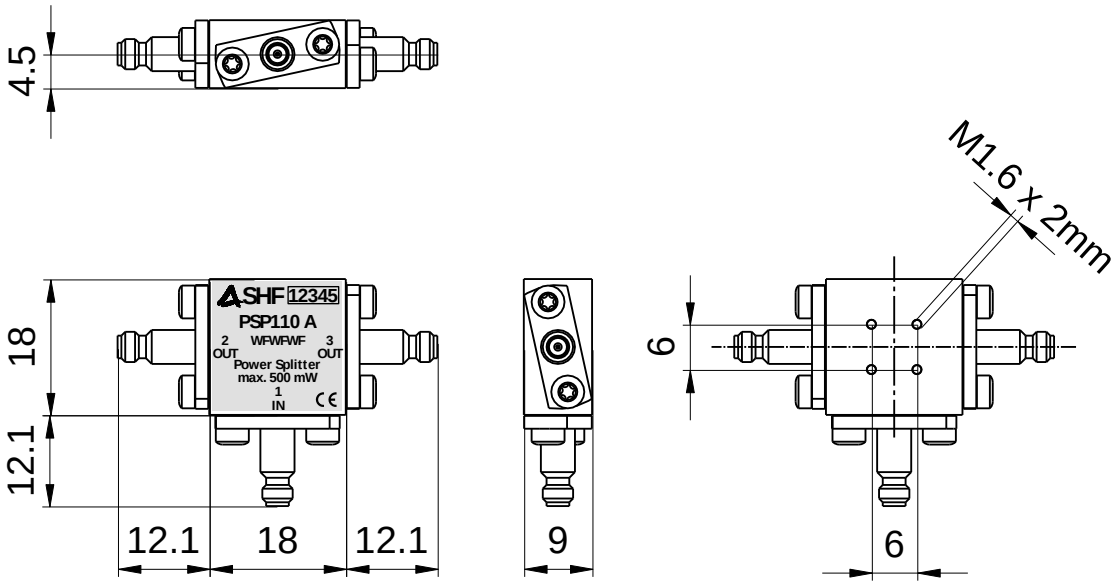
Amplitude Balance



- **Solid lines = Measurements**
- **Black dashed lines = Specifications**

[5] These typical plots are valid for the WFWFWF configuration.

Mechanical Drawing



All dimensions in mm

SHF Communication Technologies AG

Wilhelm-von-Siemens-Str. 23 D | 12277 Berlin | Germany

+49 30 772 051 0

sales@shf-communication.com

www.shf-communication.com