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HL967x Series Wilkinson Power Dividers (to 67 GHz)

Features and Technical Specifications[1] (HL9677 shown)

PRODUCT SUMMARY

The HL967x series are 2-way Wilkinson power dividers that provide outstanding amplitude and in-phase power division or combining from 1 GHz to beyond 67 GHz.

This product is designed using concatenated quarter-wavelength transformers resulting in low loss outputs that are ideally attenuated to 3 dB, when all ports are impedance-matched to 50 Ohms.

The advantage of a Wilkinson power divider is the high isolation between the output ports that is extremely advantageous in power combining applications.

Applications include test and measurement, high-speed data communications, and power combining.

DEPLOYMENT NOTES

The Wilkinson can also be used to combine two equal phase signals.

MODELS & OPTIONS

The following models are available:

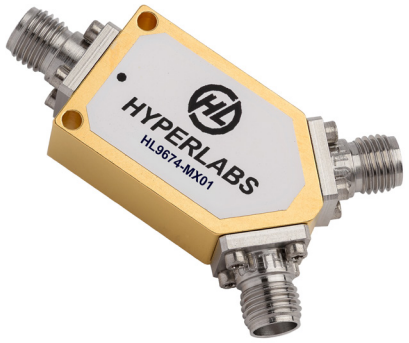
- ***HL9674***, 40 GHz
- ***HL9675***, 50 GHz
- ***HL9677***, 67 GHz

The following connector options are available:

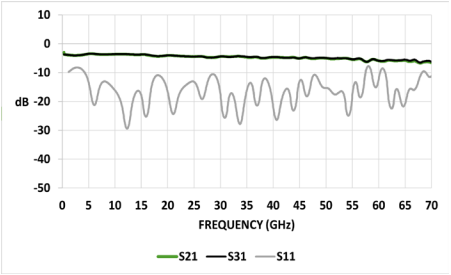
- ***-JJJ,*** 3 x jack (standard)
- ***-JPP***, jack/plug/plug
- ***-PJJ***, plug/jack/jack
- ***-PPP***, 3 x plug

Bandwidth (-3 dB)	1 to 67 GHz
Insertion Loss (AC)	4 dB
Nominal Phase Shift	0°
Amplitude Match	± 0.1 dB See *Fig. 6*
Phase Match	± 1°, f ≤ 50 GHz ± 2°, f > 50 GHz *See Fig. 5*
Return Loss	> 20 dB, f ≤ 35 GHz, output ports > 15 dB, f > 35 GHz, output ports > 10 dB, f ≤ 67 GHz, common port *See Fig. 3*
Isolation	15 dB *See Fig. 2*
Rise Time	5 ps
Insertion (Group) Delay	260 ps, all ports See *Fig. 4*
Max Input Power	+30 dBm
Impedance	50 Ω
Connectors	1.85 mm, 3 x jack/female
Dimensions (L x W x H)	1.81" x 1.17" x 0.40" 46.0 x 29.7 x 10.16 mm *See Fig. 6*
Temperature Limits	-40° to +70° C, operating
RoHS Compliant	Yes, assembled with lead-free solder
REACH Compliant	Yes
Warranty	1 year, see website

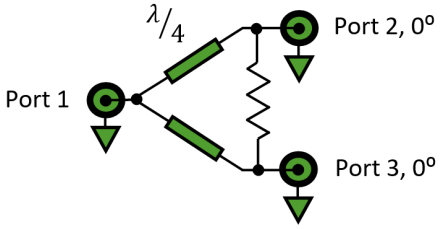
NOTE 1 - Unless otherwise noted, the specifications in this table are typical for Model Number HL9677 using the standard connector configuration (-JJJ; 3 x jack). Full specifications for this and related models are available on page 2 of this datasheet.



HL9674, other models similar



Typical HL9677 Insertion and Return Loss



HL967x Schematic and Port Assignments

HL967x Full Specifications

Parameter	HL9674	HL9675	HL9677	Comments
Upper Frequency Limit	40 GHz	50 GHz	67 GHz	
Lower Frequency Limit	1 GHz			
Insertion Loss (AC) *See Fig. 1*	4 dB			Typical, nominal
Nominal Phase Shift	0°			
Return Loss *See Fig. 3*	> 20 dB, f ≤ 35 GHz > 15 dB, f > 35 GHz			Typical, output ports
Return Loss *See Fig. 3*	> 10 dB, f ≤ 67 GHz			Typical, common port
Amplitude Match *See Fig. 6*	± 0.1 dB			Typical, between output ports
Isolation *See Fig. 2*	15 dB			Typical
Phase Match *See Fig. 5*	± 1°	± 1°	± 1°, f ≤ 50 GHz ± 2°, f > 50 GHz	Typical, between output ports
Rise Time	8.75 ps	7 ps	5.2 ps	Typical
Insertion (Group) Delay *See Fig. 4*	260 ps			Typical, all ports
Max Input Power	+30 dBm			
Impedance	50 Ω			All ports
Connectors	2.92 mm, 3 x jack/female	2.4 mm, 3 x jack/female	1.85 mm, 3 x jack/female	Plug/male connectors available
Dimensions (L x W x H)	1.81” x 1.17” x 0.40 46.0 x 29.7 “x 10.16 mm			Will vary slightly based on connectors
Weight	18 g (0.63 oz.)			
Operating Temperature	-40° to +70° C			Case temperature
RoHS Compliant	Yes, assembled with lead-free solder			
REACH Compliant	Yes			
Warranty	1 year, repair or replacement; see website for details			

Note: All specifications are based on test results using the standard connector configuration (3 x jack). Specifications may vary slightly for other configurations.

HL9677 Plot Diagrams

Figures 1-6 show the typical S-parameter characteristics of an HL9677. Other models show similar performance within their respective specified bandwidths.

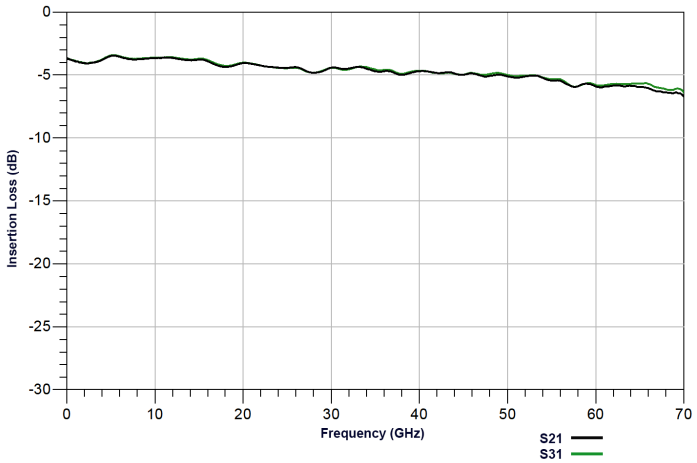


Figure 1: HL9677 Insertion Loss

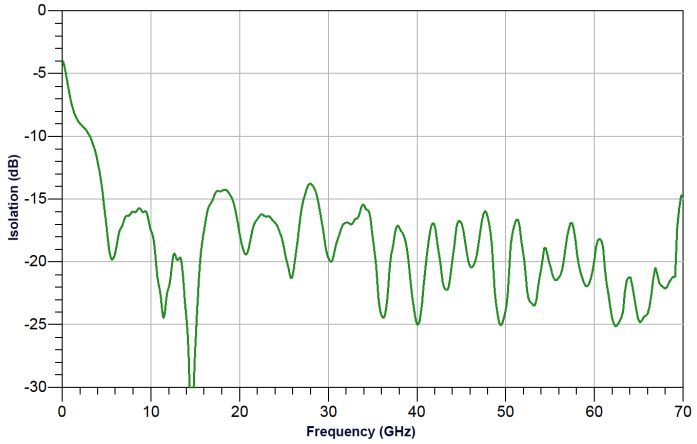


Figure 2: HL9677 Isolation

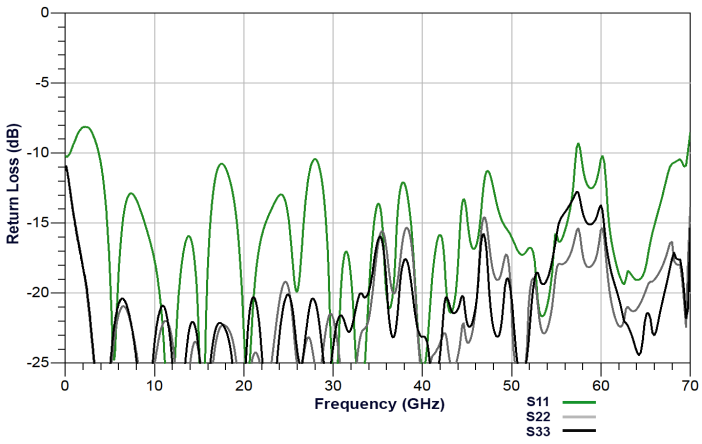


Figure 3: HL9677 Return Loss

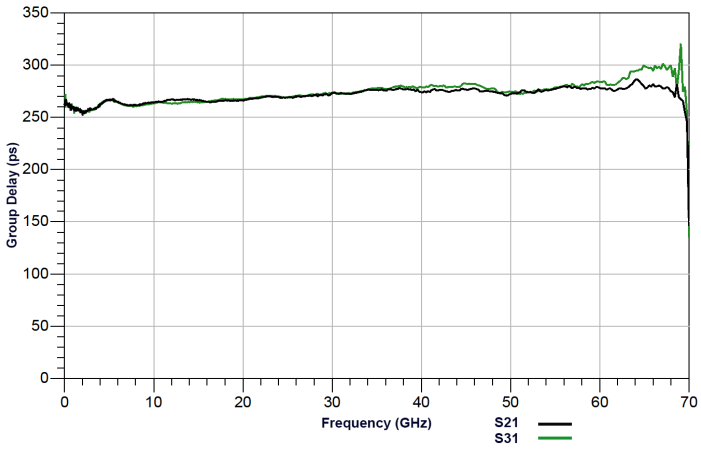


Figure 4: HL9677 Group Delay

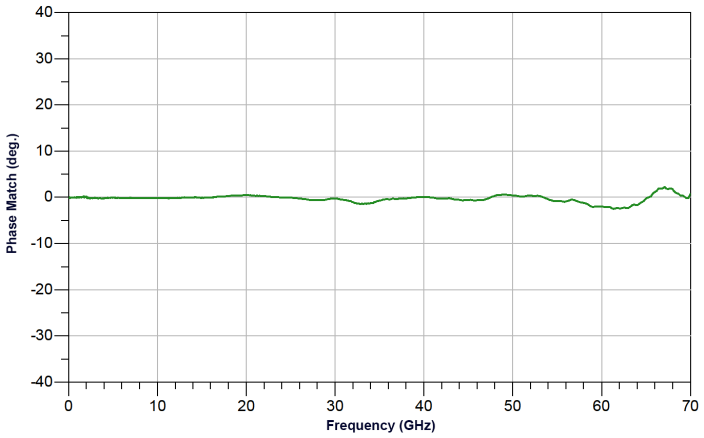


Figure 5: HL9677 Phase Match

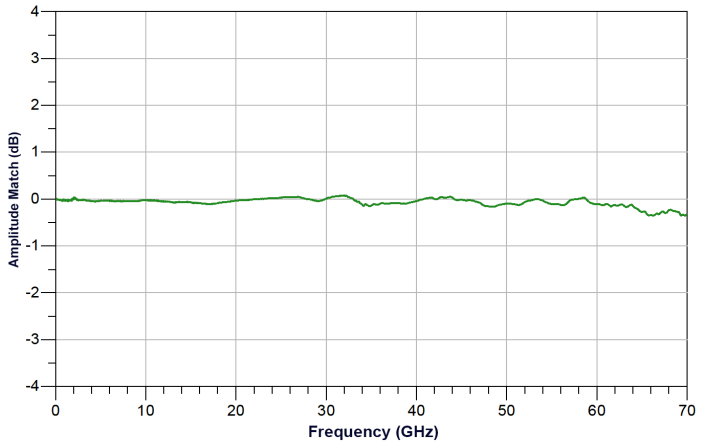


Figure 6: HL9677 Amplitude Match

HL967x Dimensional Drawing

Figure 7 shows a mechanical drawing of an HL9677. Unless otherwise noted, all units are shown in inches. Other models vary in length and width based on connectors.

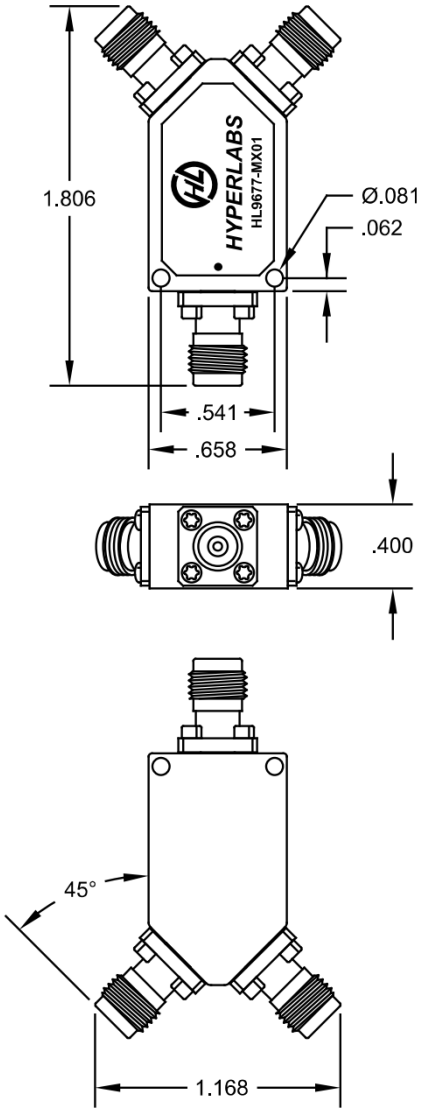


Figure 7: HL9677 Mechanical Drawing