Agilent 11667L DC to 2GHz Power Splitter

Operating and Service Manual

Agilent Technologies

Notices

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Certification

Agilent Technologies certified that this product met its published specifications at the time of shipment from the factory. Agilent Technologies further certifies that its calibration measurements are traceable to the United States National Institute of Standards and Technology (NIST, formerly NBS), to the extent allowed by the Institute's calibration facility, and to the calibration facilities of other International Standards Organization members.

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CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

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A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

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This product complies with the WEEE Directive (2002/96/EC) marking requirements. The affixed label indicates that you must not discard this electrical/electronic product in domestic household waste.

Product Category: With reference to the equipment types in the WEEE Directive Annex I, this product is classed as a "Monitoring and Control Instrumentation" product.

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For more information, please contact your nearest Agilent office.

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China	800 810 0189
Hong Kong	800 938 693
India	1 800 112 929
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Korea	080 769 0800
Malaysia	1 800 888 848
Singapore	1 800 375 8100
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Denmark	45 70 13 15 15
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Italy	39 02 92 60 8484
Netherlands	31 (0) 20 547 2111
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Sweden	0200-88 22 55
Switzerland (French)	41 (21) 8113811 (Opt 2)
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Or, go to www.agilent.com/find/assist for more information.

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1 Introduction

This chapter provides you the overview of Agilent 11667L Power Splitter.

Product Overview

The Agilent 11667L Power Splitter is a two- resistor type power splitter operating from DC to 2GHz. The 11667L power splitter provides excellent amplitude and phase tracking for highly accurate power splitting, also offering excellent output power symmetry between the two output ports. This power splitter is recommended for applications that require external source leveling or for ratio measurements. The power splitters are not recommended for power dividing and combining applications.

Figure 1-1 Agilent 11667L Power Splitter

Key Features of Agilent 11667L Power Splitter

- Excellent amplitude (0.2dB) and phase tracking (+/- 3°) ensures highly accurate power splitting
- Low SWR minimizes measurement uncertainty

2 Specification

This chapter provides an overview specifications of Agilent 11667L Power Splitter

Product Specifications

Specification

Specifications refer to the performance standards or limits against which the power splitter is tested.

Typical characteristics are included for additional information only and they are not specifications. These are denoted as "typical", "nominal" or "approximate".

Table 2-1 11667L Specifications

Specifications	**11667L**
Frequency Range	DC to 2GHz
Connector	BNC (Female)
Insertion Loss (above 6dB)	DC to 100MHz: 0.2 dB (Max) 100MHz to 2GHz: 0.6 dB (Max)
Isolation	DC to 2GHz: 11 dB (Min)
Return Loss (SWR)	Input: 18dB (1.30) (typical) Output: 11dB (1.78) (typical)
Amplitude Tracking	DC to 100MHz: 0.1 dB (Max) 100MHz to 2GHz: 0.2 dB (Max)
Phase Tracking	DC to 100MHz: 1 deg (Max) 100MHz to 2GHz: 3 deg (Max)
Maximum Input Power	500mW

Typical Performance

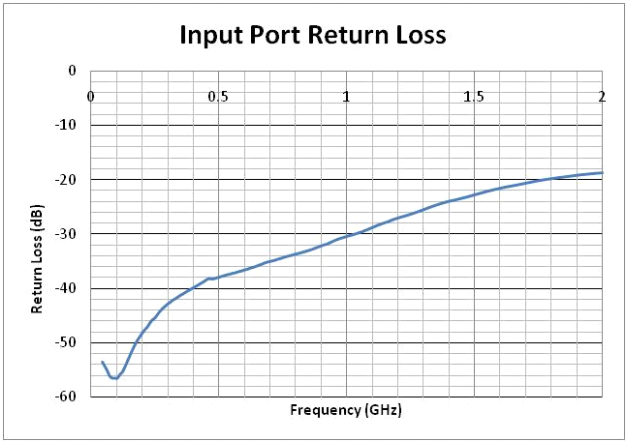

Figure 2-1 Input Port Return Loss

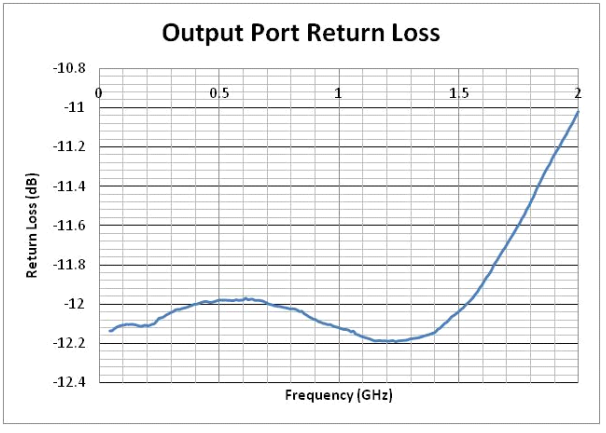

Figure 2-2 Output Port Return Loss

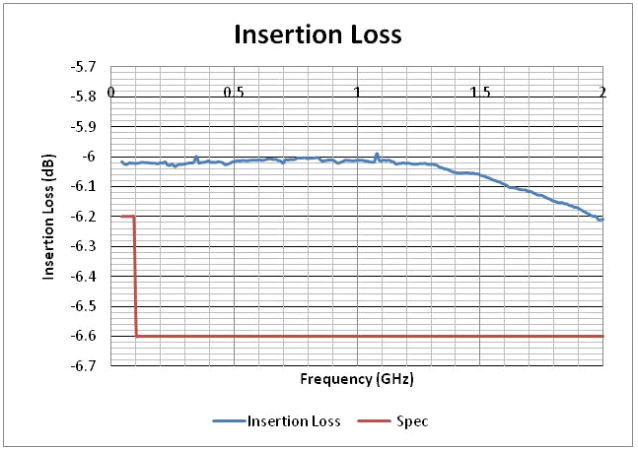

Figure 2-3 Insertion Loss

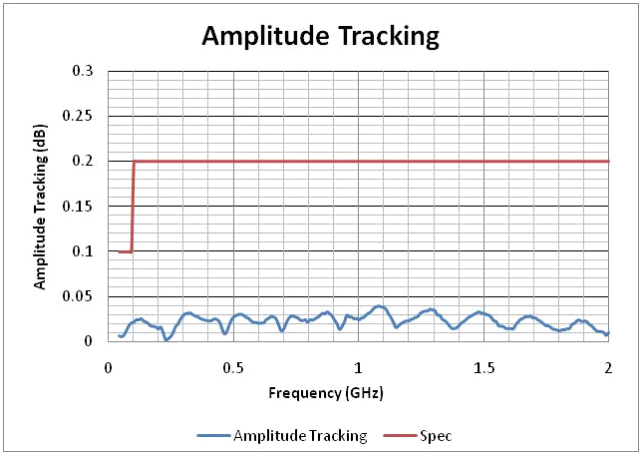

Figure 2- 4 Amplitude Tracking

Physical Specifications

	11667L
Mechanical Dimensions	Figure 2-5
Net Weight	0.045kg (0.0992lb)
Shipping Weight	0.33kg (0.7275lb)
Output Connector	BNC (Female)

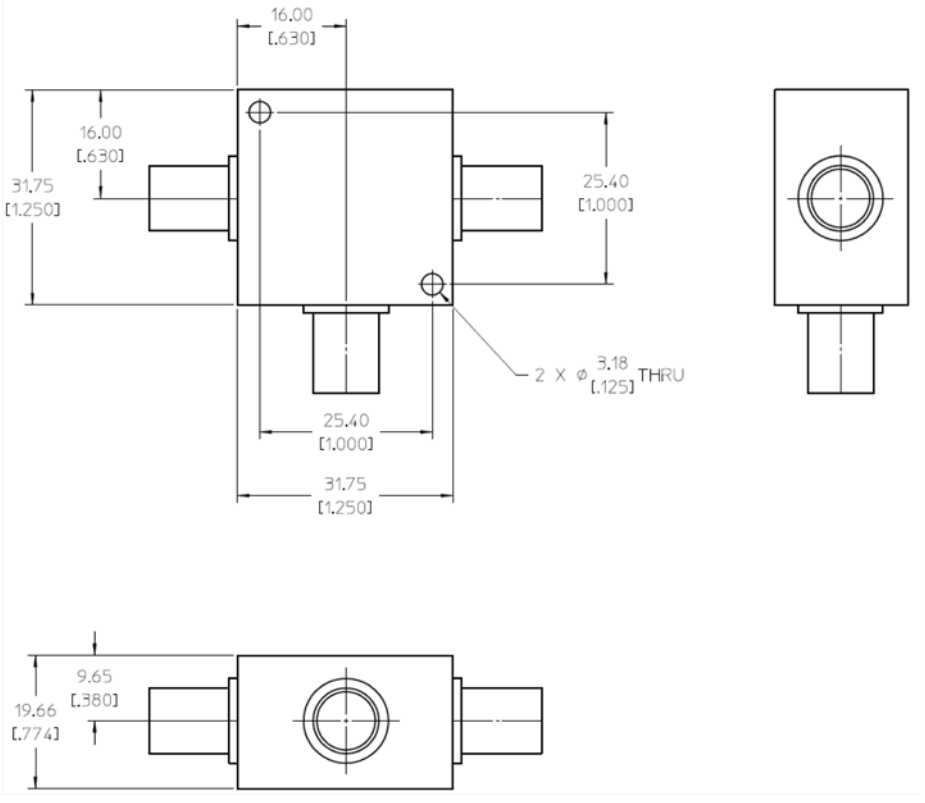

Figure 2-5 Mechanical Dimension of 11667L

Environmental Specifications

Agilent 11667L is designed to fully comply with Agilent Technologies's product operating environment specifications. The following are the summarized environmental specifications for these product.

Table 2- 2 11667L Environmental Specifications

Temperature	
• Operating	0°C to +55°C
• Non-operating	-40°C to +70°C
Relative Humidity	
• Operation	95% RH at 40°C, 5 days cycle
• Non-operating	50% RH at -10°C to 25°C
Functional Shock	Half-sine wave form, 30g, 11ms duration
Vibration	
• Operating random vibration	5-500Hz, 0.21g RMS
Altitude	
• Operating/ storage	≤ 4600 meters (15,000 feet)
ESD immunity:	
• Air discharge	15kV
• Direct discharge	6kV

CAUTION This device is sensitive to electrostatic discharge. It is recommended that these power splitters, like other electronic components be installed and operated at a static-free workstation or in an environment where precautions againts ESD have been implemented.

3
Operating and Service

This chapter describes the installation of the 11667L. The operating instruction, quick- check procedure is included for verification prior to usage.

Installation

Initial Inspection

1. Inspect the shipping container for damage. If the shipping container or cushioning material is damaged, it should be kept until the contents of the shipment have been checked for completeness and the instruments has been checked both mechanically and electrically.
2. If the contents are incomplete, if there is mechanical damage or defect, or if the instrument does not pass the electrical performance test, contact the nearest Agilent Technologies Sales and Service office. Refer to the Service and Support information in the front matter of this manual. Agilent Technologies will arrange for repair or replacement of the damaged or defective equipment. Keep the shipping materials for the carrier's inspection.
3. If you are returning the instrument under warranty or for service, repackaging the instrument requires original shipping containers and materials or their equivalents. Agilent Technologies can provide packaging materials identical to the original materials. Refer to Service and Support information in the front matter of this manual for the Agilent Technologies nearest to you. Attach a tag indicating the type of service required, return address, model number and serial number. Mark the container ***FRAGILE*** to insure careful handling. In any correspondence, refer to the instrument by model number and serial number.

Operating Instruction

Operator's Check

The operator's check is supplied to allow the operator to make quick check of the power splitter prior to use or if a failure is suspected.

CAUTION ESD exceeding the level specified in **Table 2- 2** on page 14 or RF power applied is greater that the maximum specified as in **Table 2-1** on page 10 may cause permanent damage to the device.

Description

The power splitter is connected to a network analyzer configured for the S- parameter measurement. The network analyzer may be set to sweep over the whole or selected frequency range of the power splitter to be verified.

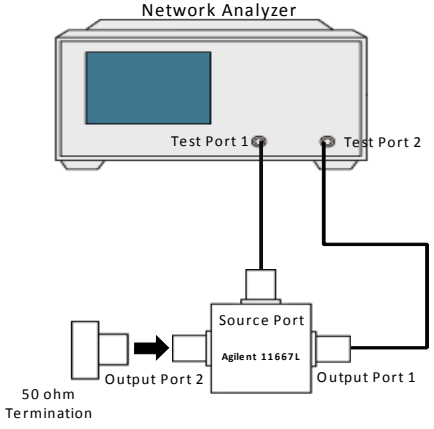

Figure 3 - 1 Quick check configuration for 11667L

Quick-Check Procedure

1. Calibrate the network analyzer with full 2- port cal.
2. Connect the Source Port of power splitter to Test Port 1 of the network analyzer and Output Port 1 of the power splitter to Test Port 2 of the network analyzer as illustrated in **Figure 3 - 1.**
3. Terminate Output Port 2 of power splitter with 50ohm load.
4. Perform Source Port Return Loss measurement (S11) and Insertion Loss measurement between Source Port and Output Port 1 (S21) and verify Input Return Loss and Insertion Loss measurement results with specification in **Table 2- 1** on page 10**.**
5. Connect Output Port 2 of power splitter to Test Port 2 of the network analyzer and Source Port of the power splitter to Test Port 1 of the network analyzer.
6. Terminate Output Port 1 of power splitter with 50ohm load.
7. Perform Insertion Loss measurement between Source Port and Output Port 2 (S21) and verify measurement result with specification in **Table 2- 1** on page 10**.**
8. Calculate the ratio of Insertion Loss of Source Port and Output Port 1 and Insertion Loss of Source Port and Output Port 2. Verify with specification in **Table 2- 1** on page 10**.**
9. Now, the quick- check procedure already complete and performance are measured and verified.

Service Instructions

Adjustment

The power splitter do not have internal adjustments and should not be opened.

Repair

The power splitter are not recommended for repair. If service or repair is required, contact your nearest Agilent Technologies Service Center. Refer to “Contacting Agilent” on page 4.

Maintenance

The connectors, particularly the connector faces, must be kept clean. Agilent recommends that the connectors be periodically inspected and cleaned if necessary. For instruction on connecting and care of your connectors, refer to Microwave Connector Care Quick Reference Card (08510- 90360).