

**Agilent 11636C
DC to 50 GHz Power
Divider**

**Operating and Service
Manual**



Agilent Technologies

Notices

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This chapter provides an overview and general specifications of Agilent 11636C power divider.



Product Overview

The Agilent 11636C Power Divider, operating from DC to 50 GHz, provides excellent output power symmetry between the two output ports. Its design features excellent amplitude and phase tracking to ensure excellent source match for fault location applications using network analyzers and also precise power division.

Any port may be used as an input, as the Agilent 11636C provides a symmetrical 6 dB power division. The 11636C can also be used as a power combiner. When signals are input at two output ports, the sum of the two appears at the input port. However, this is not recommended for ratio or source leveling applications.



Figure 1 Agilent 11636C Power Divider

Features

- Broadband coverage from DC to 50 GHz
- Excellent amplitude (0.3 dB from DC to 50 GHz) and phase tracking ($\pm 2^\circ$) minimizes amplitude and phase difference between the two outputs to ensure an accurate power division.
- Low SWR of 1.67 at 50 GHz minimizes your measurement uncertainty

Specifications

Specifications describe the product's warranted performance which the power dividers are tested.

Supplemental and typical characteristics are intended to provide typical and additional information only but non-warranted performance parameters. These are denoted as “typical”, “nominal” and “approximate”.

Table 1 Agilent 11636C Power Divider Specifications

Parameter	Specifications
Frequency Range	DC – 50 GHz
Max Input Power	0.5 W
Max Phase Tracking	$\pm 2^\circ$
Amplitude Tracking	0.3 dB, DC – 50 GHz
Insertion Loss	6.5 dB, DC – 18 GHz 7.0 dB, 18 GHz – 26.5 GHz 8.0 dB, 26.5 GHz – 40 GHz 8.5 dB, 40 GHz – 50 GHz
Return Loss (SWR)	20 dB (1.22), DC – 18 GHz 16 dB (1.38), 18 GHz – 26.5 GHz 14 dB (1.50), 26.5 GHz – 40 GHz 12 dB (1.67), 40 GHz – 50 GHz
Connectors	2.4 mm (f) on all ports

1 Introduction



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This chapter basically discusses how 11636C power divider undergoes the environmental test to fully comply with Agilent Technologies' product operating environment specifications. It also includes the mechanical dimensions in the later section.



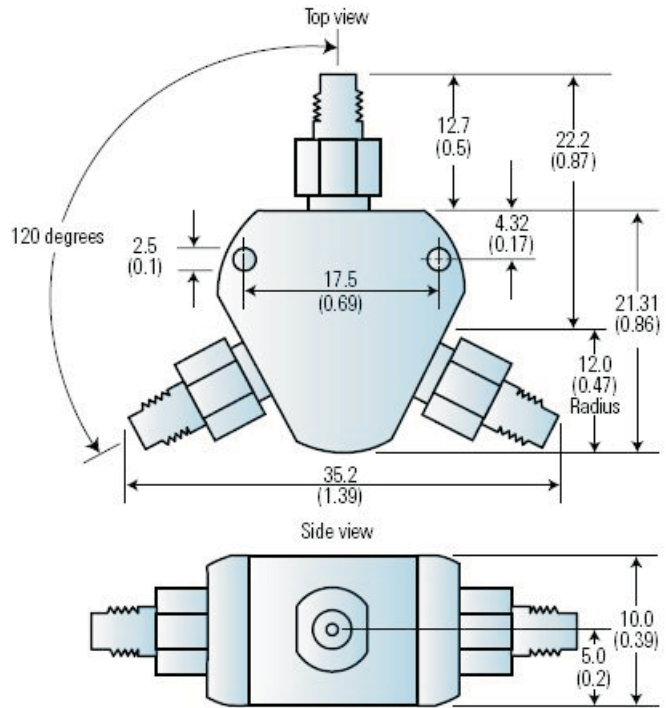
Environmental Specifications

The 11636C is designed to fully comply with Agilent Technologies' product operating environmental specifications. Below is the list down summary of environmental specifications.

Table 2 11636C Power Divider Environmental Specifications

Temperature:	
• Operating	-45° C to +70° C
• Non-operating	-65° C to +85° C
• Cycling	-65° C to +150° C, 10 cycles @ 20° C per minute ramp rate, 20 minutes dwell time per MIL-STD-883F, Method 1010.8, Condition C (modified)
Humidity:	
• Non-operating	90% RH @ 65° C, 24 hours
• Operating	50% to 95% RH @ 40° C, 24 hours cycling, 5 times
Shock:	
• Half sine, smoothed	1000 G @ 0.5 ms, 3 shock pulses per orientation, 18 total per MIL-STD-883F, Method 2002.4, Condition B (modified)
Vibration:	
• Broadband random	2.41 G rms, 10 min/axis
Altitude:	
• Storage	≤ 4600 meters (15,000 feet)
ESD immunity:	
• Direct discharge	4 kV (to center conductor) 15 kV (to outer conductor)

Physical Dimensions



Dimensions are in mm (inches) nominal, unless otherwise specified.

Figure 2 11636C Power Divider Physical Dimensions

2 Environmental Specifications & Physical Dimensions



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This chapter mainly discuss on the installation of power divider and operating instruction which walk-through quick-check procedure to assure power divider is working before implement in the system. There are also the performance tests and service instructions available later in this chapter.



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 instrument has been checked both mechanically and electrically.
 - Check for mechanical damage such as scratches or dents.
 - Procedures for checking electrical performance are given under “Operator’s Check” or “ Performance Tests”.
- 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 divider prior to use or if a failure is suspected.

CAUTION

ESD exceeding the level specified in Table 1 may cause permanent damage to the device.

Description

The power divider 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 divider to be verified. The s-parameter measurement is the best way to determine if the switch is working properly.

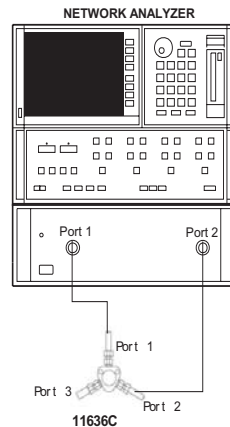


Figure 3 Quick-Check Configuration

Quick-Check Procedure

- 1 Connect Port 1 of power divider to Port 1 of the network analyzer and Port 2 of the power divider to Port 2 of network analyzer as illustrated in Figure 3.
- 2 Then terminate Port 3 of power divider with 50 ohm load.
- 3 Perform s-parameters measurement and verify against specifications in [Table 1](#).
- 4 Repeat the above steps. Connect Port 3 of power divider to Port 1 of the network analyzer and Port 1 of the power divider to Port 2 of the network analyzer. Next, terminate Port 2 of power divider with 50 ohm load. Now, the quick-check procedure already complete and performance are measured and verified.

Performance Tests

The power divider can be tested to the accuracy of the specifications with a network analyzer or equivalent equipment of suitable accuracy. If a network analyzer is available, test instrument using the procedure in the analyzer's operating manual.

Service Instructions

Adjustment

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

Repair

The 11636C power divider is not recommended for repair as most components are not easily removed.

Maintenance

The connectors, particularly the connector faces, must be kept clean.

For instruction on connecting and care of your connectors, refer to Microwave Connector Care Quick Reference Card (08510-90360).

3 Operating Guides