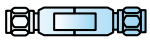
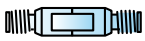
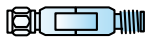
Typical Configuration



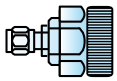
11900A
11901A
11904A
83059A
1250-1159
1250-1748
85058-60007



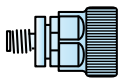
11900B
11901B
11904B
83059B
1250-1158
1250-1749
85058-60008



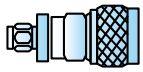
11900C
11901C
11901D
11904C
11904D
83059C
1250-1462
85058-60009



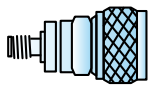
11533A
1250-1746



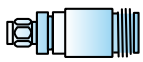
11534A
1250-1747



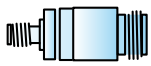
11903A
1250-1636
1250-1743



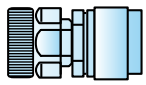
11903D
1250-1250
1250-1744



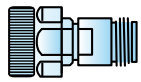
11903C
1250-1562
1250-1750



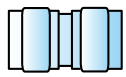
11903B
1250-1745
1250-1772



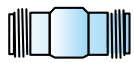
11525A



11524A

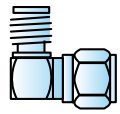


1250-0778
1250-1475
1250-1528

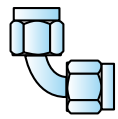


1250-0777
1250-1472
1250-1529

11852B
11852B Option 004
1250-0597

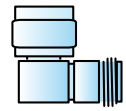


1250-1249

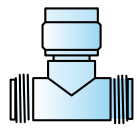


1250-1397

1250-1698



1250-0176



1250-0559

1250-0846

3

1.0 mm Adapters

- Increased measurement versatility
- Ease-of-use for on-wafer and coaxial measurements

Increased measurement versatility

For microwave and RF engineers making coaxial measurements at 50, 67 or 110 GHz, the Agilent 11920/1/2 Series 1.0 mm adapters provide an easy way of measuring coaxial devices at high frequencies. The Agilent 11920 A/B/C 1.0 mm to 1.0 mm are designed for the measurement of components with 50 Ω 1.0 mm connectors. The Agilent 11921 A/B/C/D, 1.0 mm to 1.85 mm, and the Agilent 11922 A/B/C/D, 1.0 mm to 2.4 mm, are intended to be used as general purpose adapters that are versatile and interchangeable. These adapters increase the capability needed to use test systems, such as the Agilent N5250A.

Ease-of-use for on-wafer and coaxial measurements

Each connector has an air dielectric interface and a center conductor that is supported by a low-loss plastic bead. Available with male and female connectors, these Agilent 1.0 mm adapters provide ease-of-use for microwave engineers who need to connect their test systems. The Agilent 1.0 mm adapters allow engineers to make fewer connections directly to their test port while maintaining the accuracy of their test system.

1.0 mm Connector Launch

Flexible microcircuit packaging

The Agilent 11923A 1.0 mm female connector launch threads into a package or fixture housing to transition a microwave circuit from microstrip to coaxial connector. The 11923A connector launch is intended for use with the N5250A and other test systems up to 110 GHz. The 11923A 1.0 mm female connector has an air dielectric interface and center conductor that is supported by a low-loss plastic bead on one end and a glass-to-metal seal interface on the other end. This interface consists of a 0.162 mm diameter pin that extends inside the package or fixture for connection onto a microwave circuit.

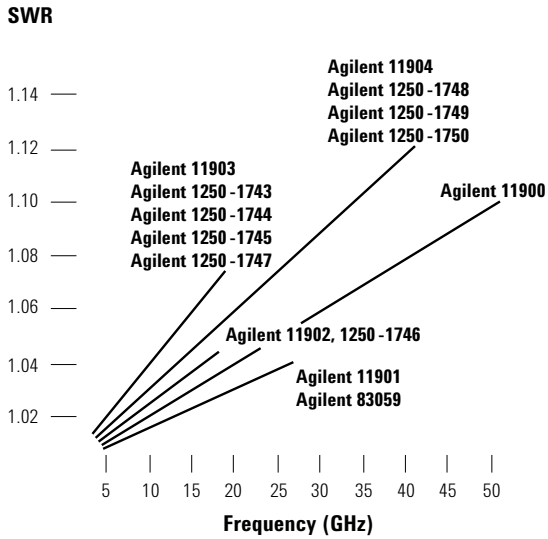
The 11923A is pre-assembled and supplied with a machining detail for mounting the launch and assembly instructions. The user is responsible for making the connection onto the circuit card, machining the package, and installing the connector. If a quasi-hermetic seal is desired, epoxy may be applied to threads of the launch prior to installation. The procedure describing the necessary dimensions for the package and installation is provided with the launch assembly.

Metrology Grade Adapters [1]

Model	Type [2]	Frequency range	Return loss	Repeatability [3] (min)	Overall length (nom) mm (in)	Ref. plane to ref. plane length (nom) mm (in)	Diameter (nom) mm (in)
11900A	2.4 mm (m), 2.4 mm (m)	DC to 50 GHz	> 26 dB	44 dB	16.2 (0.64)	12.4 (0.49)	9 (0.35)
11900B	2.4 mm (f), 2.4 mm (f)	DC to 50 GHz	> 26 dB	44 dB	18.5 (0.73)	12.4 (0.49)	8 (0.31)
11900C	2.4 mm (m), 2.4 mm (f)	DC to 50 GHz	> 26 dB	44 dB	17.4 (0.69)	12.4 (0.49)	9 (0.35)
11901A	2.4 mm (m), 3.5 mm (m)	DC to 26.5 GHz	> 26 dB	54 dB	20.9 (0.82)	16.1 (0.63)	9 (0.35)
11901B	2.4 mm (f), 3.5 mm (f)	DC to 26.5 GHz	> 32 dB	54 dB	21.1 (0.83)	16.1 (0.63)	8 (0.31)
11901C	2.4 mm (m), 3.5 mm (f)	DC to 26.5 GHz	> 32 dB	54 dB	20.2 (0.80)	16.1 (0.63)	9 (0.35)
11901D	2.4 mm (f), 3.5 mm (m)	DC to 26.5 GHz	> 32 dB	54 dB	21.8 (0.86)	16.1 (0.63)	9 (0.35)
11903A	2.4 mm (m), Type-N (m)	DC to 18 GHz	> 28 dB	48 dB	49.1 (1.93)	46.1 (1.82)	22 (0.86)
11903B	2.4 mm (f), Type-N (f)	DC to 18 GHz	> 28 dB	48 dB	58.3 (2.30)	46.1 (1.82)	15.7 (0.62)
11903C	2.4 mm (m), Type-N (f)	DC to 18 GHz	> 28 dB	48 dB	57.4 (2.26)	46.1 (1.82)	15.7 (0.62)
11903D	2.4 mm (f), Type-N (m)	DC to 18 GHz	> 28 dB	48 dB	50.0 (1.97)	46.1 (1.82)	22 (0.86)
11904A	2.4 mm (m), 2.92 mm (m) [4]	DC to 40 GHz	> 24 dB	40 dB	16.4 (0.64)	11.3 (0.45)	9 (0.35)
11904B	2.4 mm (f), 2.92 mm (f)	DC to 40 GHz	> 24 dB	40 dB	16.3 (0.64)	11.3 (0.45)	8 (0.31)
11904C	2.4 mm (m), 2.92 mm (f)	DC to 40 GHz	> 24 dB	40 dB	13.3 (0.52)	11.3 (0.45)	9 (0.35)
11904D	2.4 mm (f), 2.92 mm (m)	DC to 40 GHz	> 24 dB	40 dB	17.0 (0.67)	11.3 (0.45)	9 (0.35)
11904S	2.4 mm to 2.92 mm matched set						

[1] Agilent 1190x adapters are phase matched within each family
[2] *f* = jack, m = plug
[3] Repeatability = –20 Log | Δr | , where | Δr | = | r m1 – r m2 |
[4] 2.92 mm is compatible with 3.5 mm

Typical Precision Adapter Performance



Slotless Connectors

Precision slotless sockets (female connectors) were developed by Agilent to provide the most accurate traceable calibration possible. Connectors that use precision slotless sockets are metrology grade connectors. The outside diameter of the socket does not change when mated with pins of varying diameters, within the tolerance requirements of a metrology grade connector.

Conventional slotted sockets are flared by the inserted pin. Because physical dimensions determine connector impedance, electrical characteristics of the connector pair are dependent upon the mechanical dimensions of the pin. While connectors are used in pairs, their pin and socket halves are always specified separately as part of a standard, instrument, or device under test. Because the slotted socket's outer diameter changes with different pin diameters, it is very difficult to make precision measurements with the conventional slotted socket connector. The measurement of the device is a function of its connector.

Slotless sockets are used in the following calibration kits:

85052B standard mechanical calibration kit
85052C precision mechanical calibration kit
85052D economy mechanical calibration kit
85054B standard mechanical calibration kit
85054D economy mechanical calibration kit
85056A standard mechanical calibration kit
85056D economy mechanical calibration kit

Metrology/instrument Grade Adapter Selection Guide

Connector type	1.0 mm	1.85 mm	2.4 mm	2.92 mm	3.5 mm	7 mm	Type-N (50 Ω)	Type-N (75 Ω)
1.0 mm	11920A/B/C	11921E/F/G/H	11922A/B/C/D					
1.85 mm		85058-60007 85058-60008 85058-60009						
2.4 mm			11900A/B/C	11904A/B/C/D 11904S	11901A/B/C/D 1250-2277	11902A/B	11903A/B/C/D	
3.5 mm					83059A/B/C 1250-1748 1250-1749	1250-1746 1250-1747	1250-1743 1250-1744 1250-1745 1250-1750	
Type N (50 Ω)								11852B 11852B Option 004