



RF Characterization Report

185-J-P-EP-ST-CMM-X

Test Date: 29 DEC 2020



Description **50 Ohm 1.85 mm Jack, Vertical Compression Mount Microstrip**

Series: 1.85 mm

Description: 50 Ohm 1.85 mm Jack, Vertical Compression Mount Microstrip

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Test Setup Information

Scope:

Provide standing wave ratio, return loss and insertion loss performance parameters for 1.85 mm vertical compression mount connector.

Instrument Setup & Test Accessories:

Network Analyzer	Keysight PNA N5227B
Averaging Factor	1
Smoothing	Off
IF Bandwidth	1 KHz
Sweep Start	10 MHz
Sweep End	67 GHz
Points	6700
Test Cables	Gore 0F0CACB036.0-LF (DC to 67 GHz)

Calibration Type:

A Keysight mechanical calibration is performed using the Keysight 85058B Standard Mechanical Calibration kit.

Calibration Kit	Keysight 85058E Standard Mechanical Calibration Kit
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Adapter Use:

Test Board PCB-RFCMM-110841-SIG-0 was used for the measurements of 185-J-P-EP-ST-CMM-X. The traces effects were removed from the measurement using the Fixture Removal method.

Test System Description

The test fixture is composed of a six-layer Isola material with 50 Ω signal trace and varying launch designs to reflect performance on different routing layers. Optimization of the RF launch was performed using full wave simulation tools to minimize reflections. These launch designs were implemented on PCB-RFCMM-110841-SIG-0. 67 GHz Calibration standards specific to the PCB used for 185-J-P-EP-ST-CMM-X measurements.

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PCB-RFCMM-110082-SIG-0 Test Fixtures

Shown below is a photograph of the test board.



PCB-RFCMM-110082-SIG-0 PCB Layout

Artwork of the PCB design is shown below.



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185-J-P-EP-ST-CMM-X Test Definition

Part Number	End 1
185-J-P-EP-ST-CMM-X	1.85 mm

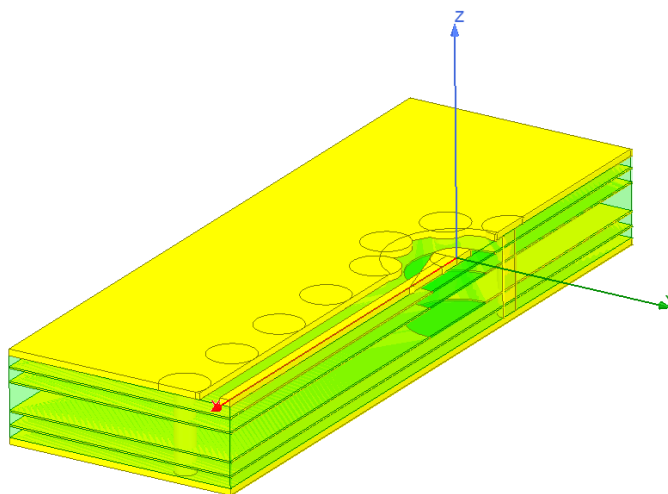
Connector Under Test:



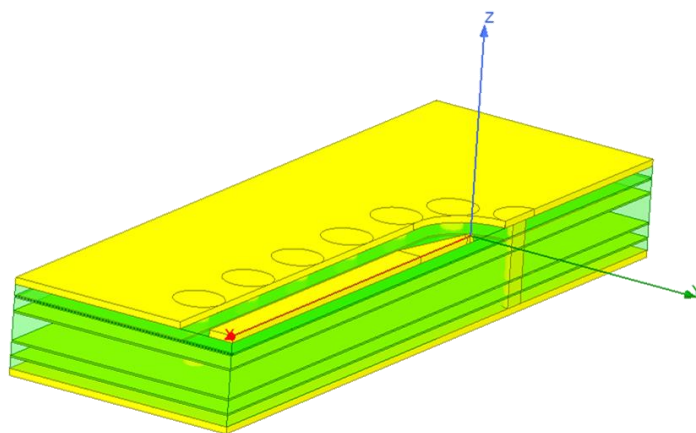
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Two launch approaches were compared on this test board. The first uses a circular landing pad on L1, providing a large footprint for the connector pin, but requiring anti-pads underneath. The CPW trace escapes from the connector using L2 as a ground reference. The second approach uses a taper to narrow the CPW trace to a point under the connector. This, along with using L3 as a reference, avoids the use of anti-pads under the part, which can allow energy to escape into inner board layers underneath the CPW trace. For more information about these launches, see the Final Inch Report for this product.



Compensated Pad Standard Approach



Tapered Trace Advanced Application

Series: 1.85 mm

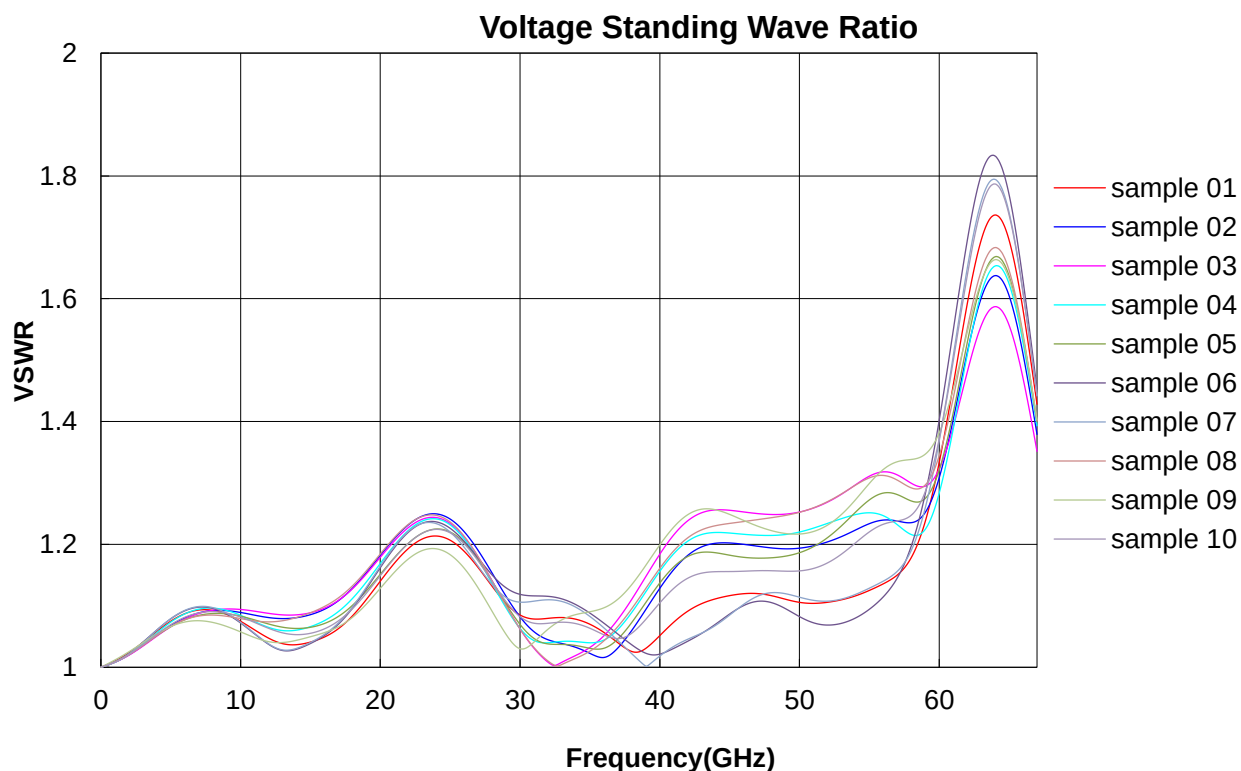
Description: 50 Ohm 1.85 mm Jack, Vertical Compression Mount Microstrip

Results:185-J-P-EP-ST-CMM-X (Compensated Pad Standard Application)

The post processed results include the 185-J-P-EP-ST-CMM-X connector, launch, and ~100 mils of PCB trace to minimize the effects of the test setup.

Description: 50 Ohm 1.85 mm Vertical Compression Mount			
Sample	VSWR(max)	RL(max)	IL(min)
sample01	1.74@64.03GHz	-11.40@64.03GHz	-1.67@64.57GHz
sample02	1.64@64.06GHz	-12.33@64.06GHz	-1.65@64.57GHz
sample03	1.59@64.06GHz	-12.88@64.06GHz	-1.64@64.55GHz
sample04	1.65@64.10GHz	-12.17@64.10GHz	-1.65@64.55GHz
sample05	1.67@64.08GHz	-12.02@64.08GHz	-1.66@64.55GHz
sample06	1.83@63.85GHz	-10.63@63.85GHz	-1.70@64.15GHz
sample07	1.79@63.91GHz	-10.92@63.91GHz	-1.68@64.54GHz
sample08	1.68@64.04GHz	-11.88@64.04GHz	-1.65@64.55GHz
sample09	1.66@64.06GHz	-12.07@64.06GHz	-1.65@64.57GHz
Sample10	1.79@63.95GHz	-10.98@63.95GHz	-1.69@64.57GHz

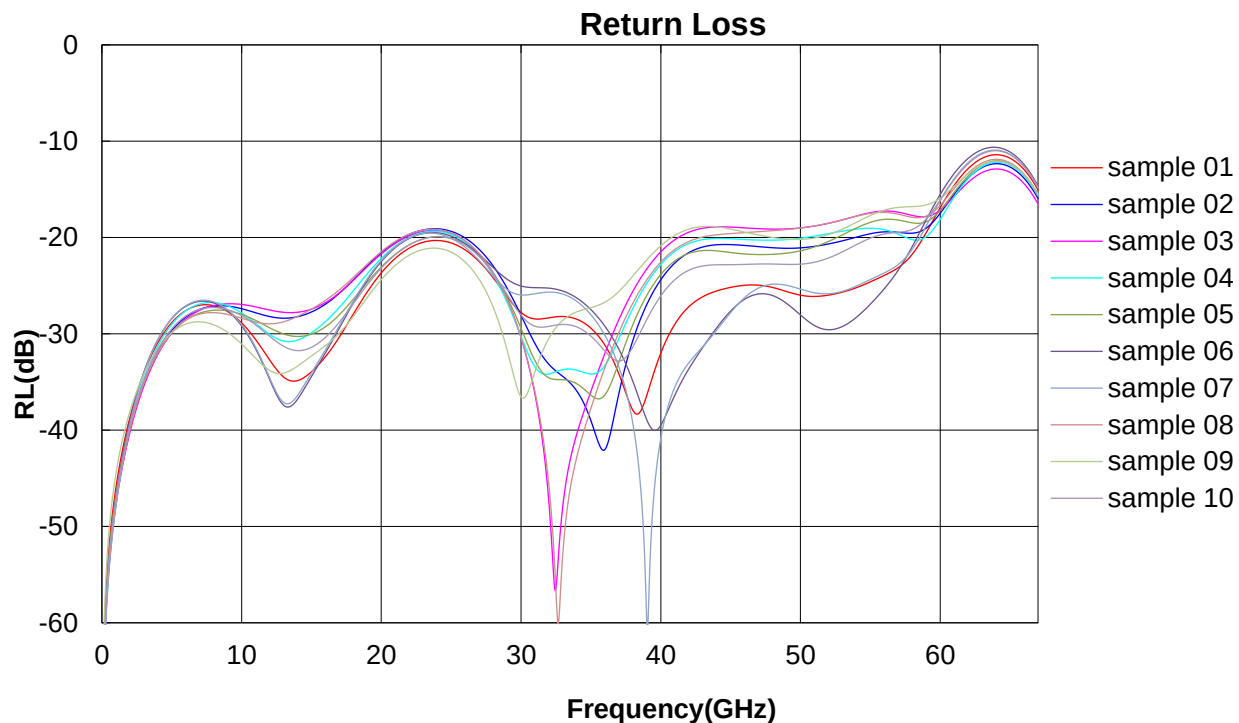
VSWR



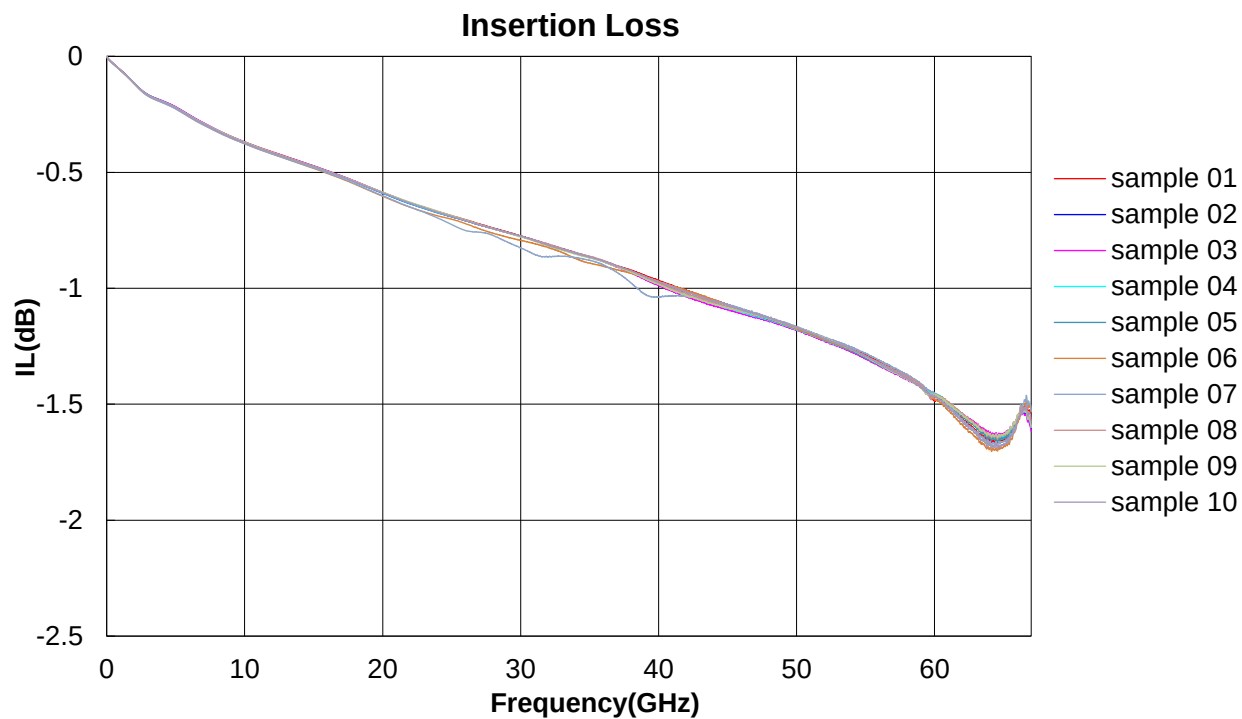
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Return Loss



Insertion Loss



Series: 1.85 mm

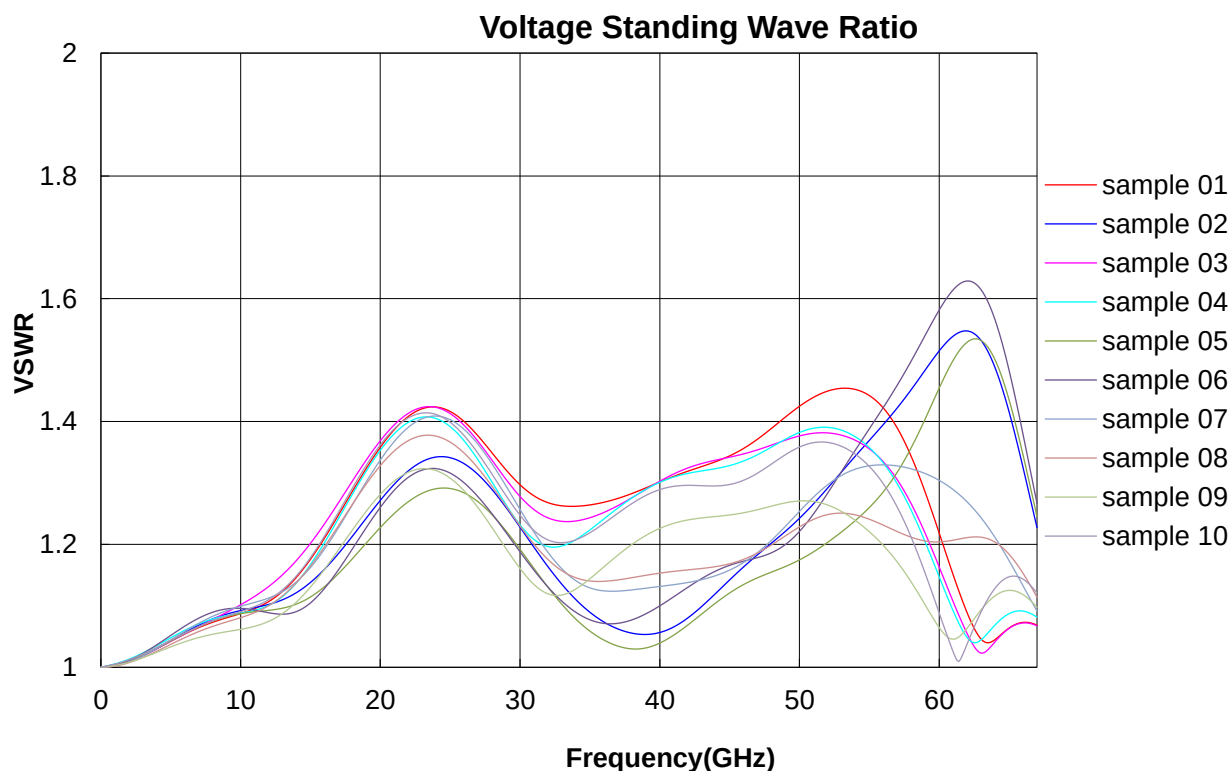
Description: 50 Ohm 1.85 mm Jack, Vertical Compression Mount Microstrip

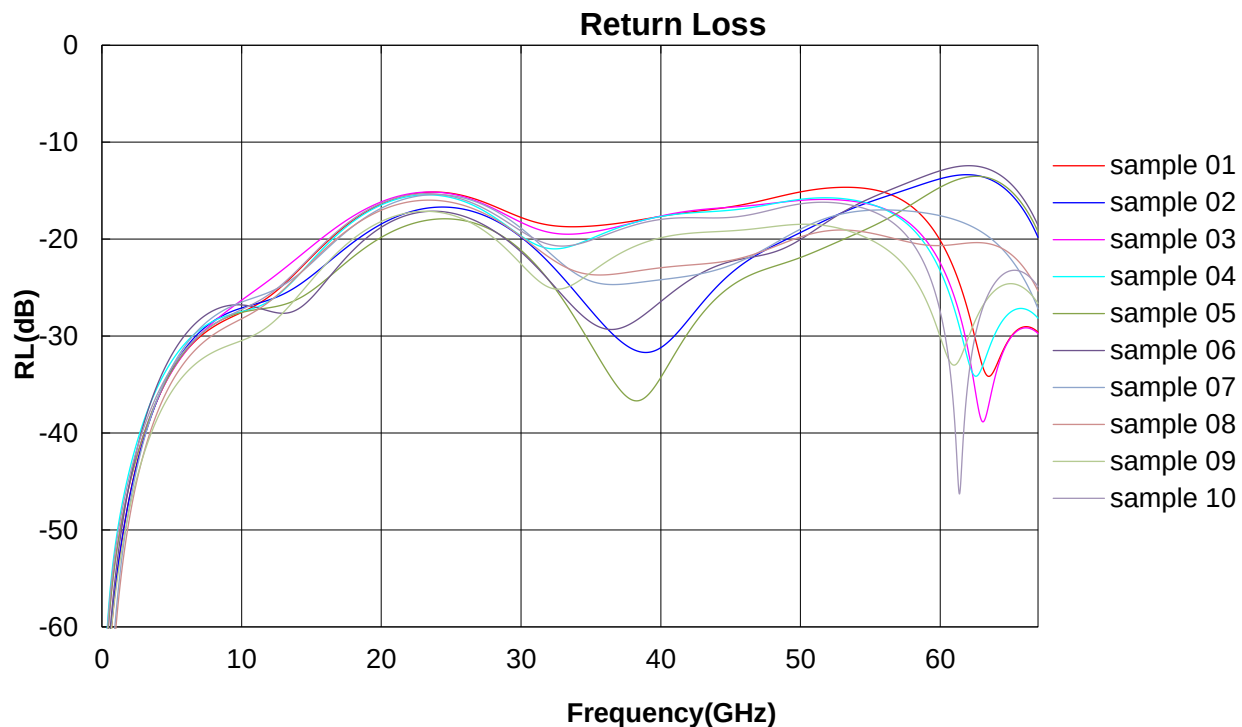
Results:185-J-P-EP-ST-CMM-X (Tapered Trace Advanced Application)

The post processed results include the 185-J-P-EP-ST-CMM-X connector, launch, and ~100 mils of PCB trace to minimize the effects of the test setup.

Description: 50 Ohm 1.85 mm Vertical Compression Mount			
Sample	VSWR(max)	RL(max)	IL(min)
sample01	1.45@53.24GHz	-14.65@53.24GHz	-1.13@66.13GHz
sample02	1.55@61.90GHz	-13.35@61.90GHz	-1.19@64.02GHz
sample03	1.42@23.50GHz	-15.14@23.50GHz	-1.14@66.32GHz
sample04	1.41@23.29GHz	-15.43@23.29GHz	-1.15@66.09GHz
sample05	1.53@62.59GHz	-13.52@62.59GHz	-1.22@63.93GHz
sample06	1.63@62.06GHz	-12.42@62.06GHz	-1.25@63.97GHz
sample07	1.41@23.92GHz	-15.40@23.92GHz	-1.19@66.09GHz
sample08	1.38@23.40GHz	-15.98@23.40GHz	-1.18@66.09GHz
sample09	1.32@23.15GHz	-17.13@23.15GHz	-1.17@66.12GHz
Sample10	1.41@23.27GHz	-15.31@23.27GHz	-1.18@66.08GHz

VSWR



Series: 1.85 mm**Description:** 50 Ohm 1.85 mm Jack, Vertical Compression Mount MicrostripReturn LossInsertion Loss