

SIGNAL INTEGRITY REPORT

Test and Measurement Performance Report

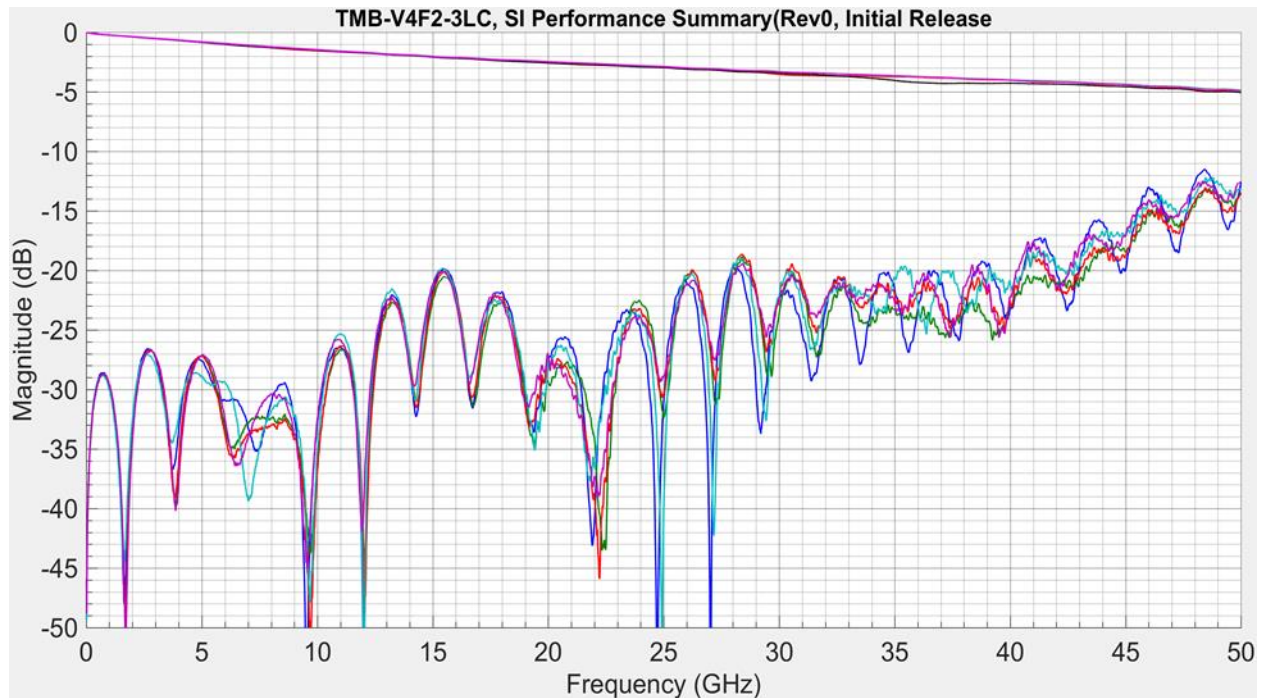
Part Number TMB-V4F2-3LC

(2.4 mm Vertical Launch CPW Solderless Precision Connector)

Distribution: *Internal & External Use*



SI Performance Summary (Attenuation & Reflections, Single-Ended)



* 10 connectors are shown, measured in pairs. (5 measurements) For further details regarding testing setup, configurations please see the rest of the report.

<u>REVISION:</u> 1	<u>ECN INFORMATION:</u> EC No: N/A DATE: 04/21/2020	<u>TITLE:</u> 2.4 mm Vertical Launch CPW Solderless Precision Connector (TMB-V4F2-3LC)	<u>SHEET No.</u> 1 of 8
<u>DOCUMENT NUMBER:</u> RSI-TMB_V4F2_3LC		<u>SI ENGINEER:</u> R.Stavoli	<u>DESIGN ENGINEER:</u> P. Volkov
		<u>ENGINEERING MANAGER:</u> E.Soubh	
<small>TEMPLATE FILENAME: SPM(SIZE_A)(V.1).DOC</small>			

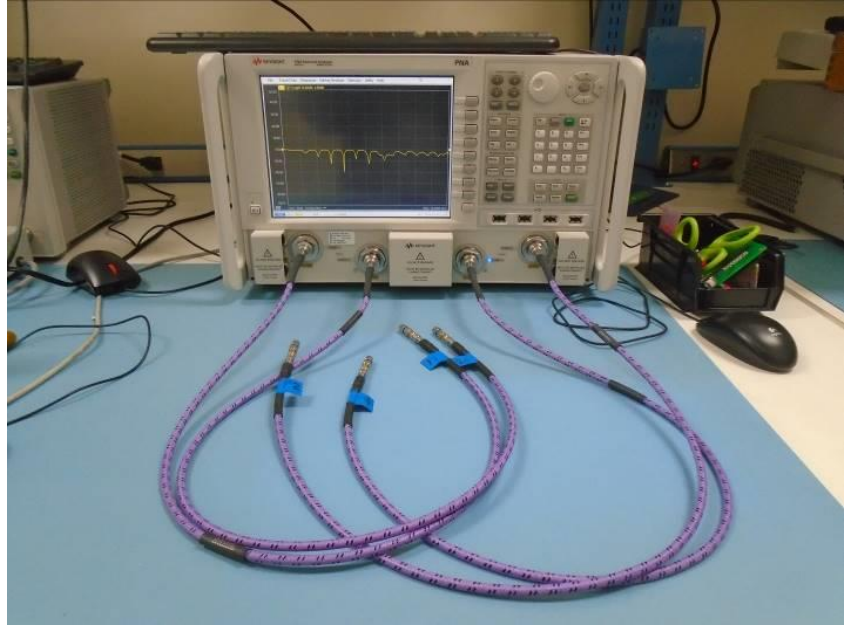
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1.0 TEST SETUP AND DUT

Equipment, fixtures, and methods

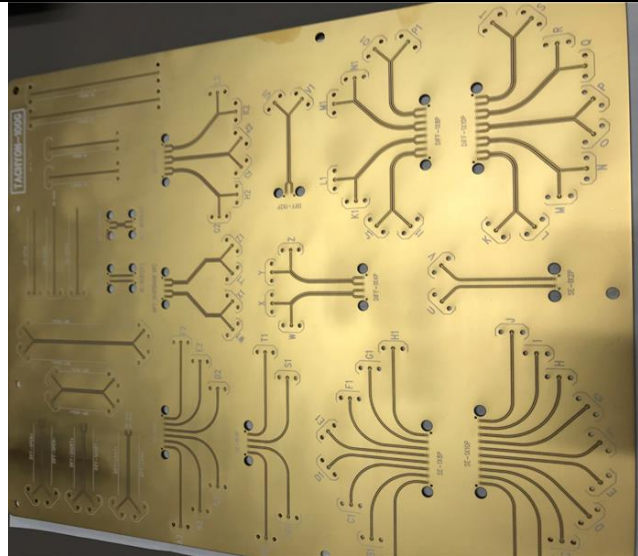
Test method: All data measured from test PCB shown below and a N5227A PNA Network Analyzer

- Calibration was performed up to the 2.4mm adapters using calibration kit: 85056B
- Data was swept from 10 MHz to 50GHz for 5000 points
- Data averaging was turned off.
- Data is not dembedded and includes the board trace/transition and two RF vertical launch CPW precision connectors



Assembly Description

- T&M PN: TMB-V4F2-3LC
- Carlisle DUT PCB: Core HC 2.5mm CPW Test Board (Rev D0)
- **Measured on: 1x Cal Trace (SE-1xCal+)**
- **Port 1: 2.4mm vertical mount CPW**
- **Port 2: 2.4mm vertical mount CPW**



Testing Samples:

- 10 Samples
- 5 Channels
- 5 THRU Measurements (5 Channels = 10 samples) -> **-Single-Ended**

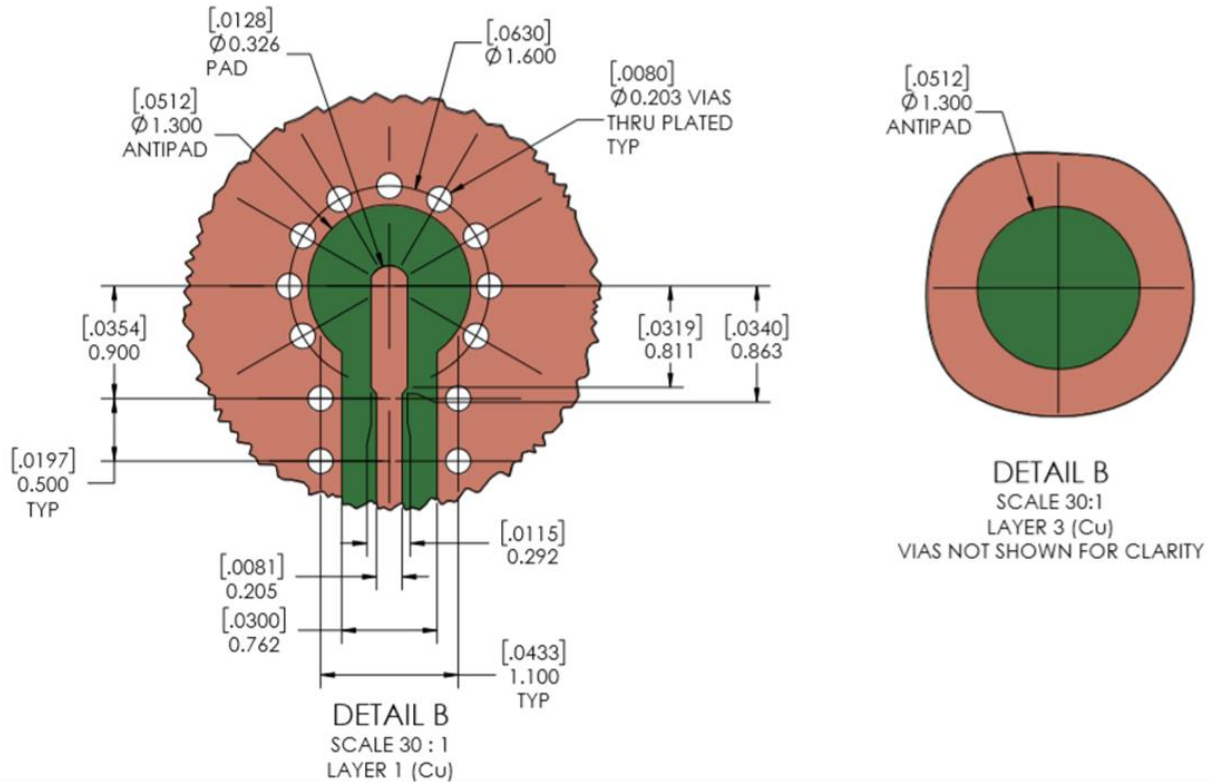
REVISION: 1	ECN INFORMATION: EC No: N/A DATE: 04/21/2020	TITLE: 2.4 mm Vertical Launch CPW Solderless Precision Connector (TMB-V4F2-3LC)	SHEET No. 2 of 8
DOCUMENT NUMBER: RSI-TMB_V4F2_3LC		SI ENGINEER: R.Stavoli	DESIGN ENGINEER: P. Volkov
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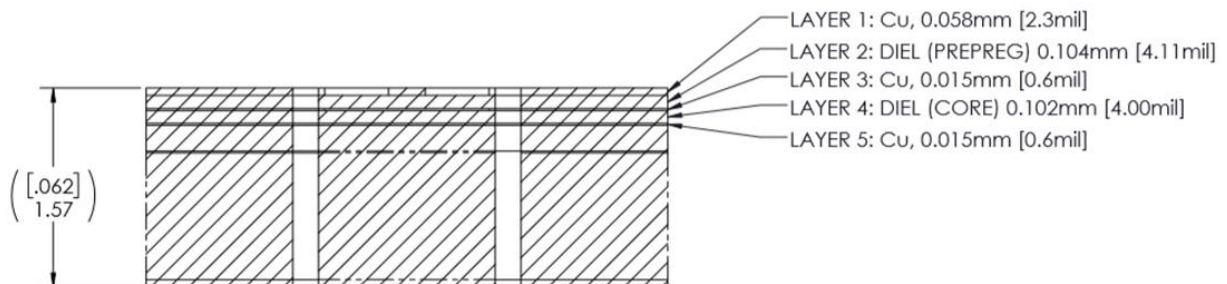
2.0 BOARD DETAILS & STACKUP

- Carlisle Core HC 2.5mm CPW Test Board
 - Revision D, Coplanar Waveguide
 - **Interconnects placed on 1x Cal Traces**
- Dielectric Material: Tachyon 100G (Dk.2.97, Df 0.0014 @ 20 Ghz)
 - Thickness: 0.104mm / 4.11 mil

TMB-V4F2-3LC, Interconnect Footprint



Core HC 2.5mm CPW Test Board Stackup (RevD0)



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DOCUMENT NUMBER: RSI-TMB_V4F2_3LC	SI ENGINEER: R.Stavoli	DESIGN ENGINEER P. Volkov	ENGINEERING MANAGER E.Soubh
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C) PCB FINISH

1. Surface Protective Plating

- a. All exposed copper on the outer layers shall be plated with a protective surface finish.
- b. All exposed pads, edge fingers and plated through holes shall be ENIG with thickness listed in Table 2.

Table 2: Protective Plating Thickness

Nickel		Immersion Gold	
µm (microinch)		µm (microinch)	
Min.	Max.	Min.	Max.
2.5 (100)	13(512)	0.051 (2)	0.2032 (8)

2. Solder Mask

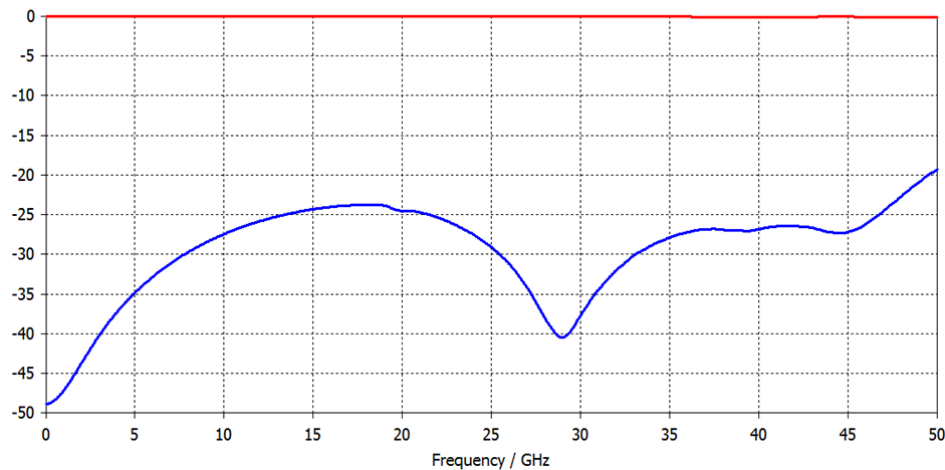
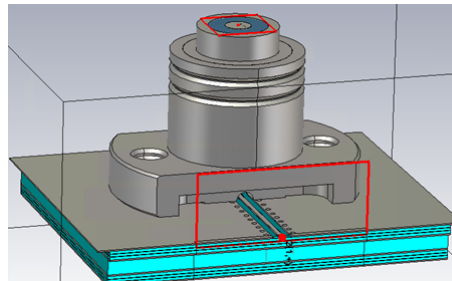
Apply an LPI solder mask to both sides of the board, the solder mask color is defined in the table.

PCB PN	Soldermask color
NA	Green

3. Silkscreen

Silkscreen shall be permanent, non-conductive ink. There shall be no silkscreen on any solderable component pad.
Color: White

Simulated Data
1 connector to PCB



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DOCUMENT NUMBER: RSI-TMB_V4F2_3LC	SI ENGINEER: R.Stavoli	DESIGN ENGINEER P. Volkov	ENGINEERING MANAGER E.Soubh
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3.0 MEASUREMENT SET-UP

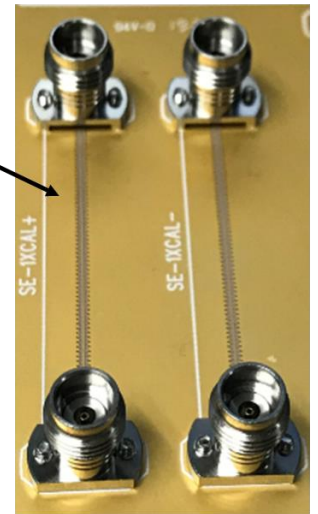
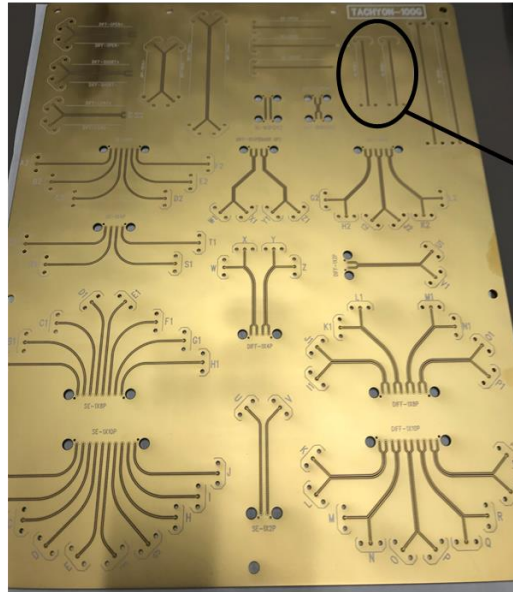
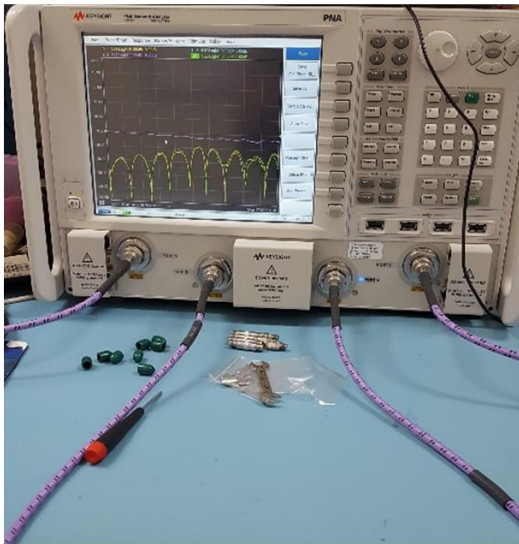
Port 1:

TMB-V4F2-3LC 2.4mm
Vertical Launch CPW
Solderless Precision
Connector # 1 A

1x Cal Trace (SE-1XCal+)
Core HC 2.5mm CPW
Test Board (RevD0)

Port 2:

TMB-V4F2-3LC 2.4mm
Vertical Launch CPW
Solderless Precision
Connector # 1 B

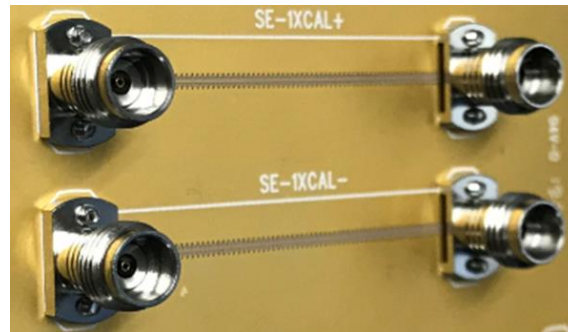


Measurements are not dembedded and include the two 2.4mm vertical launch CPW solderless precision connectors, and the PCB (transition, traces)

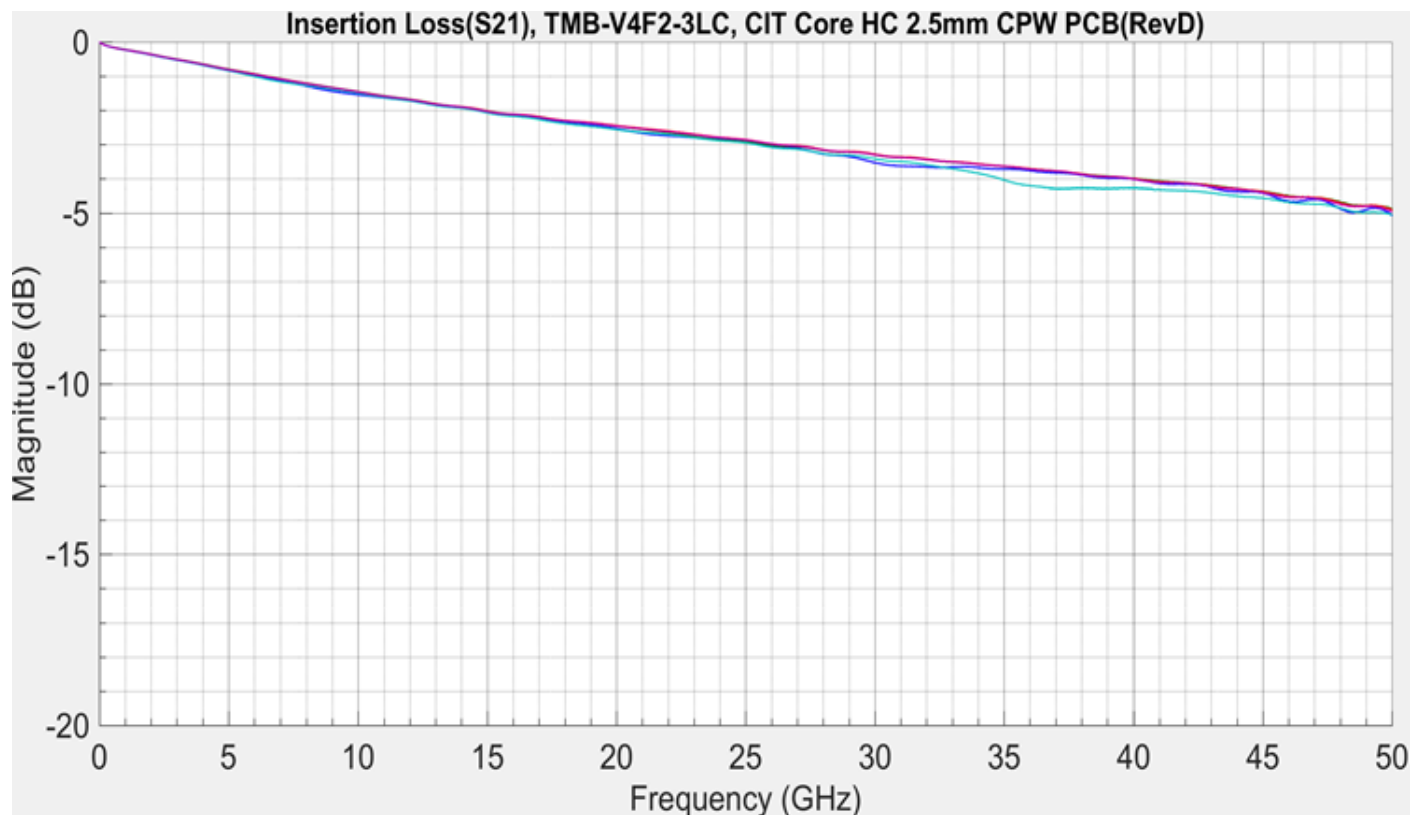
REVISION: 1	ECN INFORMATION: EC No: N/A DATE: 04/21/2020	TITLE: 2.4 mm Vertical Launch CPW Solderless Precision Connector (TMB-V4F2-3LC)	SHEET No. 5 of 8
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4.0 SIGNAL INTEGRITY RESULTS (CIT: CORE HC 2.5MM CPW PCB, 1X CAL TRACE)



Insertion Loss (S21), 10 connectors measured, 5 measurements

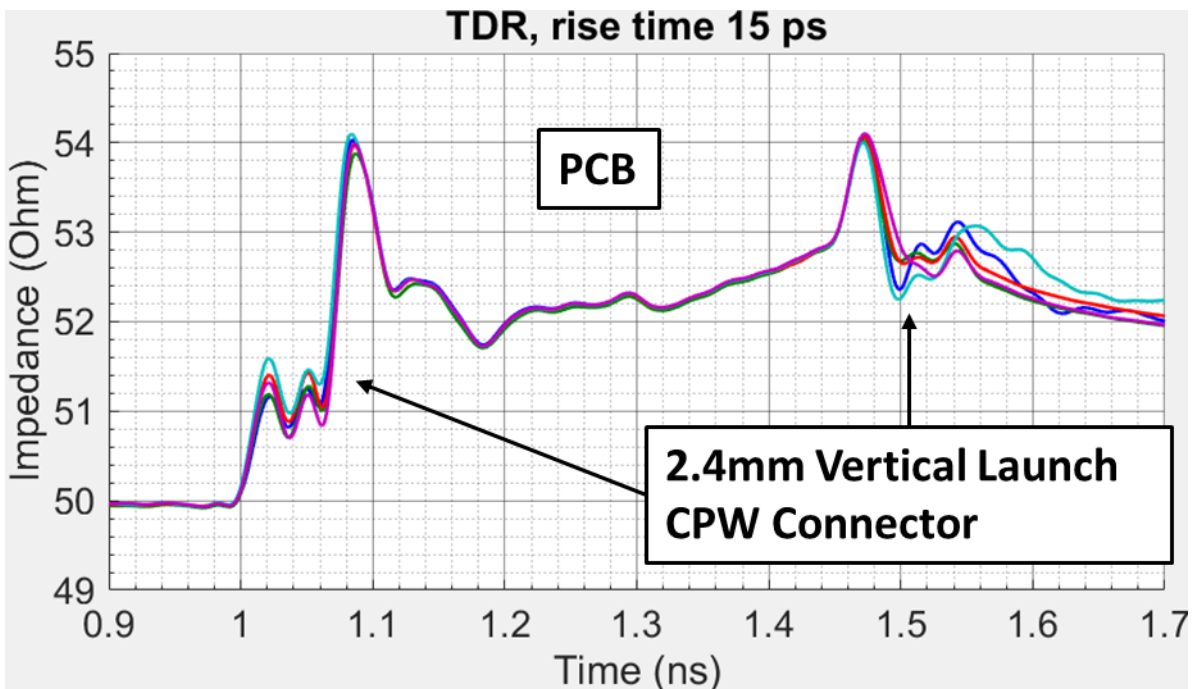
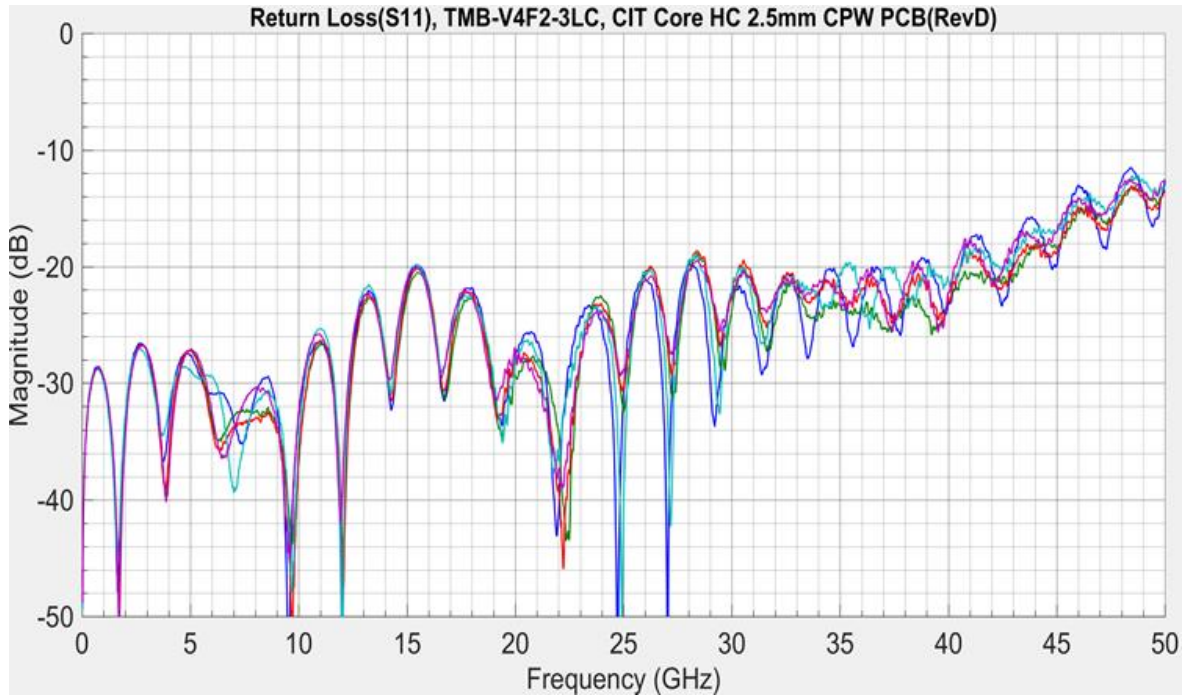


TMB-V4F2-3LC_24_CPW_1xCALplus_HC2RevD0_P1C1A_P2C1B	3/25/2020 3:08 PM	S2P File	529 KB
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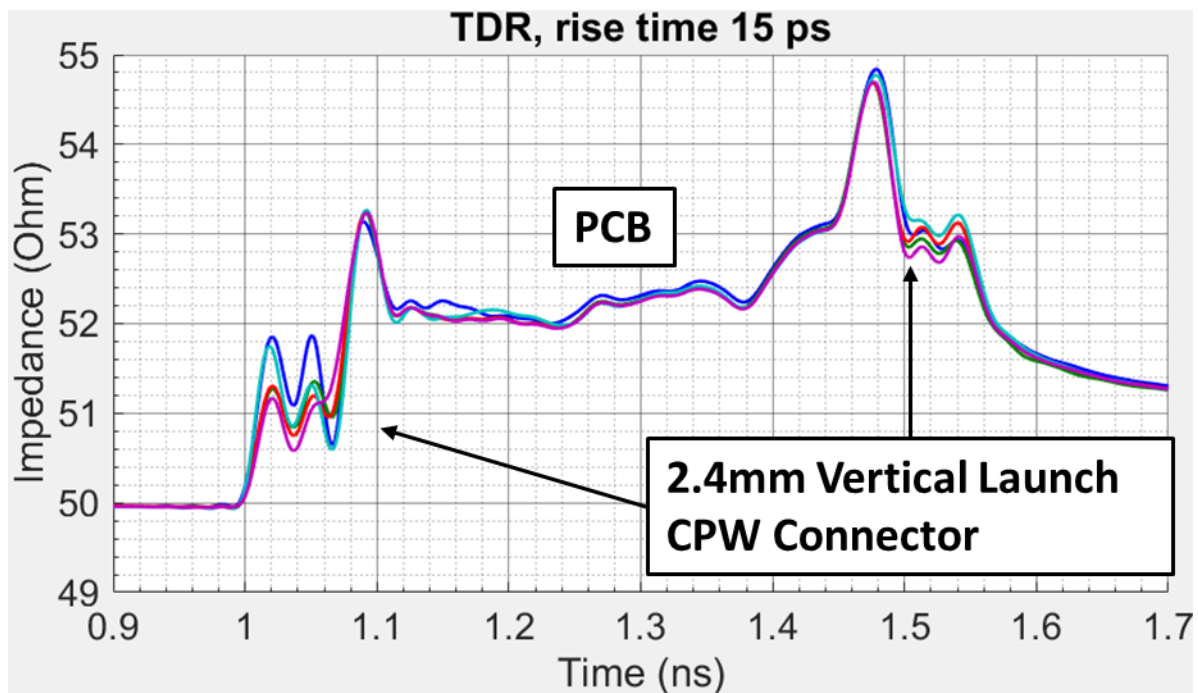
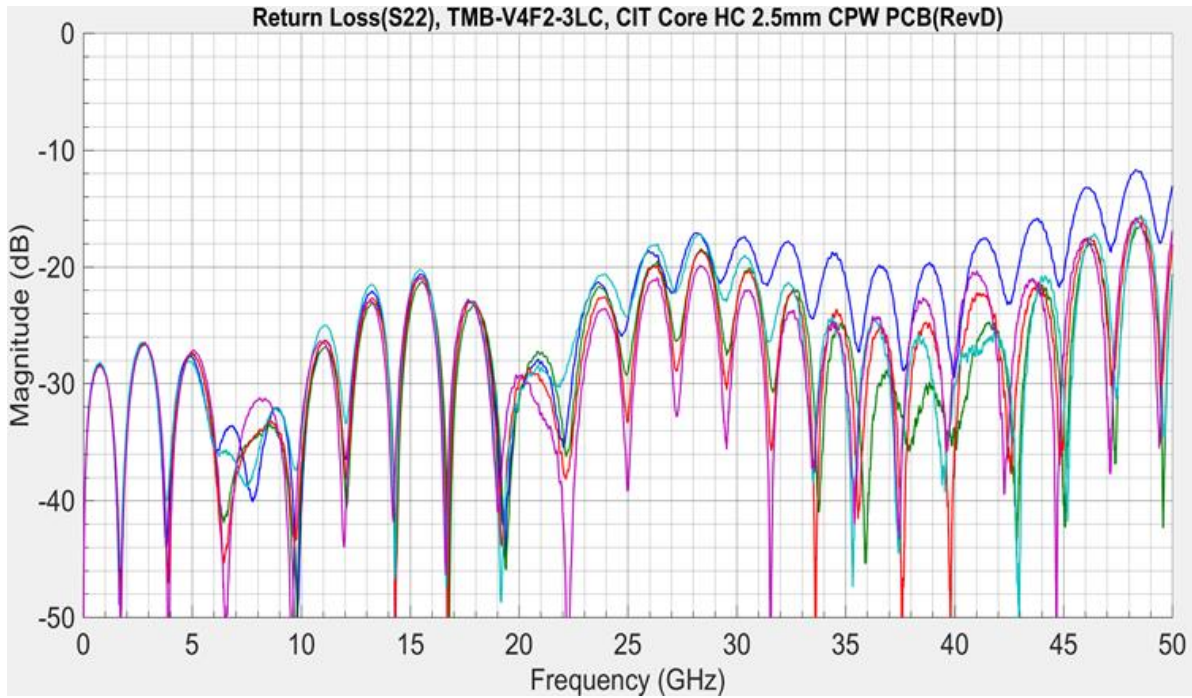
Return Loss (S11), 10 connectors measured, 5 measurements



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Return Loss (S22), 10 connectors measured, 5 measurements



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