

# SIGNAL INTEGRITY REPORT

## Test and Measurement Performance Report

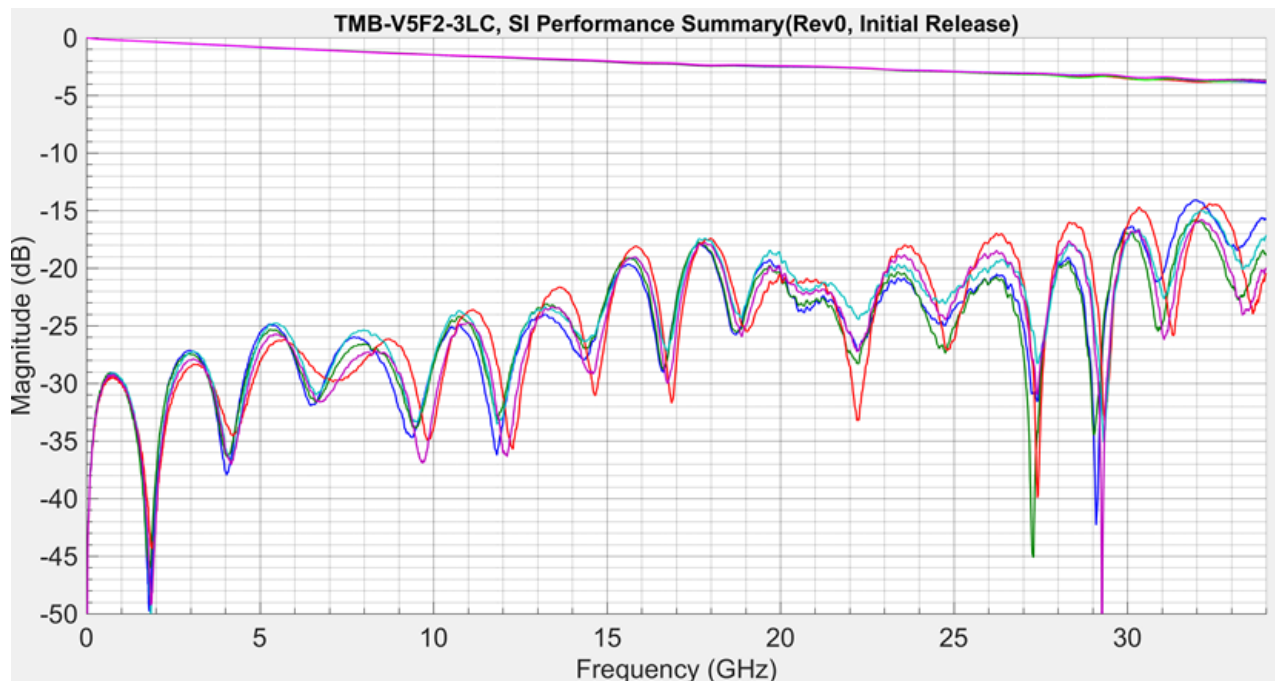
**Part Number** TMB-V5F2-3LC

(3.5 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.

<b>REVISION:</b>  <b>1</b>	<b>ECN INFORMATION:</b> EC No: <b>N/A</b> DATE: <b>04/21/2020</b>	<b>TITLE:</b> <b>3.5 mm Vertical Launch CPW Solderless Precision Connector (TMB-V5F2-3LC)</b>	<b>SHEET No.</b>  <b>1 of 8</b>
<b>DOCUMENT NUMBER:</b> <b>RSI-TMB_V5F2_3LC</b>		<b>SI ENGINEER:</b> <b>R.Stavoli</b>	<b>DESIGN ENGINEER:</b> <b>P. Volkov</b>
		<b>ENGINEERING MANAGER:</b> <b>E.Soubh</b>	
<small>TEMPLATE FILENAME: SPM(SIZE_A)(V.1).DOC</small>			

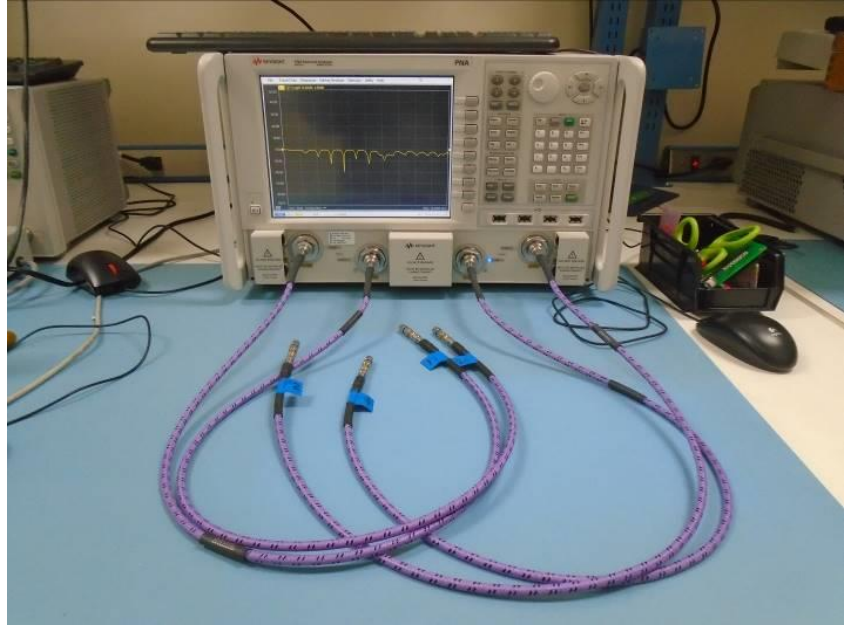
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## 1.0 TEST SETUP AND DUT

### Equipment, fixtures, and methods

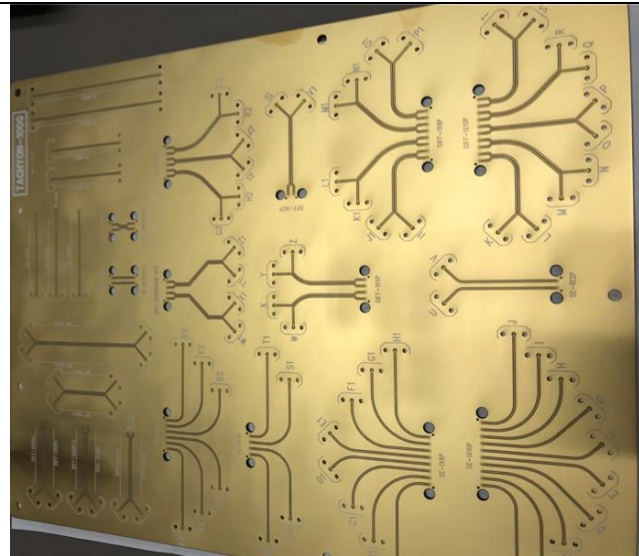
**Test method:** All data measured from test PCB shown below and a N5227A PNA Network Analyzer

- Calibration was performed up to the 2.92mm adapters using calibration kit: 8770F
- Data was swept from 10 MHz to 34GHz for 3400 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-V5F2-3LC
- Carlisle DUT PCB: Core HC 2.5mm CPW Test Board (Rev D0)
- **Measured on: 1x Cal Trace (SE-1xCal+)**
- **Port 1: 3.5mm vertical mount CPW**
- **Port 2: 3.5mm vertical mount CPW**



### Testing Samples:

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

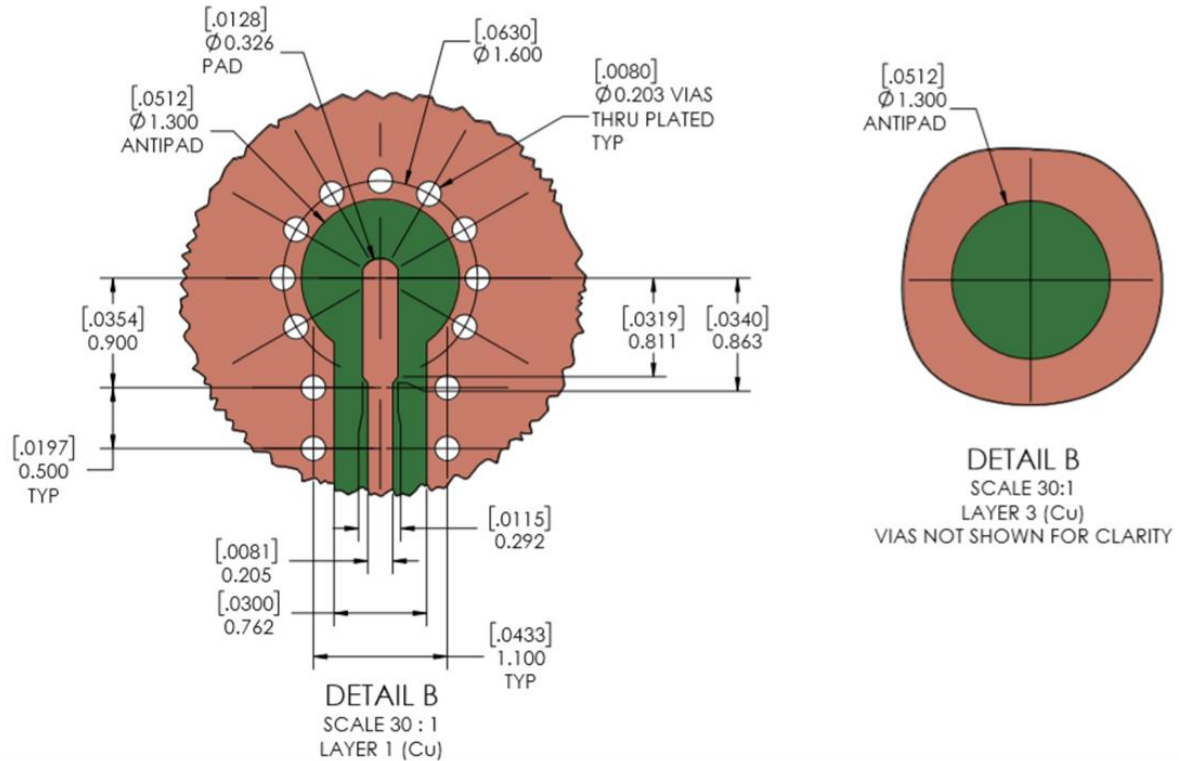
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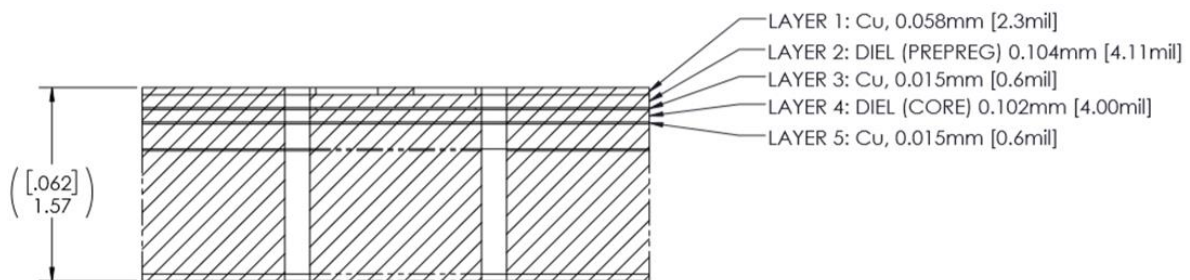
## 2.0 BOARD DETAILS & STACKUP

- 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-V5F2-3LC, Interconnect Footprint



### Core HC 2.5mm CPW Test Board Stackup (RevD0)



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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

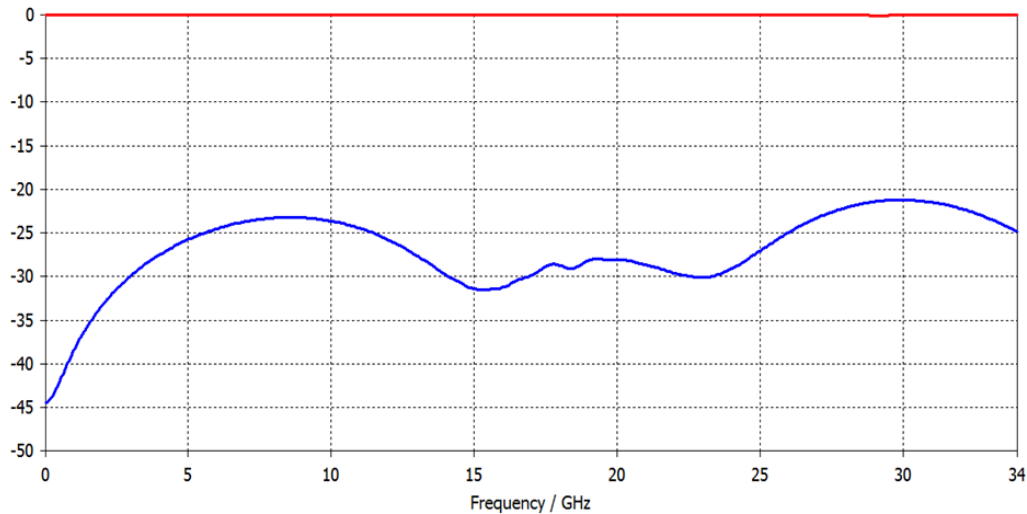
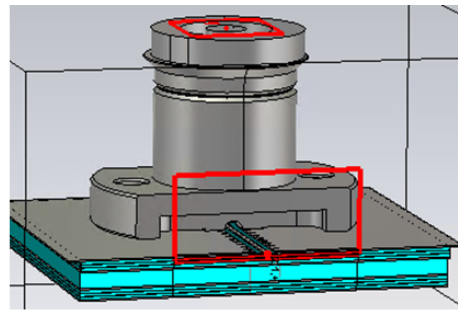
Apply an LPI solder mask to both sides of the board, the solder mask color is defined in the table.

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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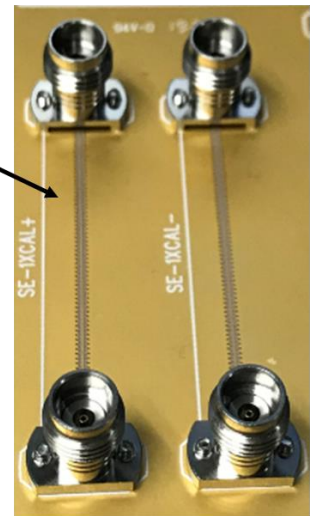
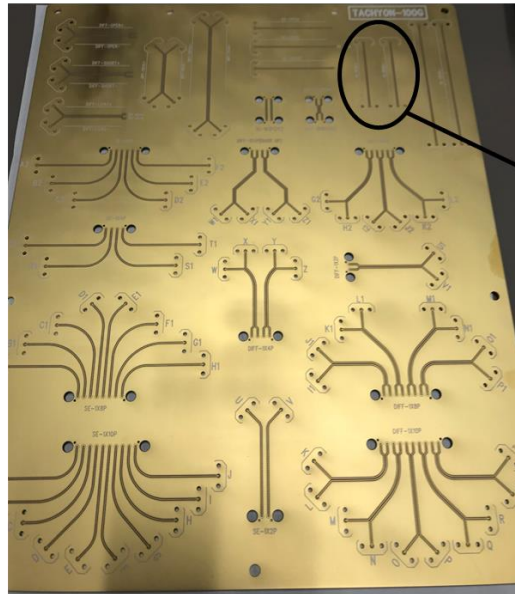
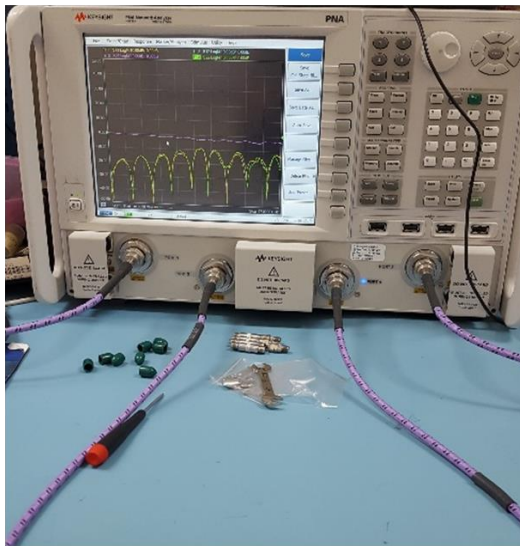
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## 3.0 MEASUREMENT SET-UP

**Port 1:**  
TMB-V5F2-3LC 3.5mm  
Vertical Launch CPW  
Solderless Precision  
Connector # 1 A

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

**Port 2:**  
TMB-V5F2-3LC 3.5mm  
Vertical Launch CPW  
Solderless Precision  
Connector # 1 B

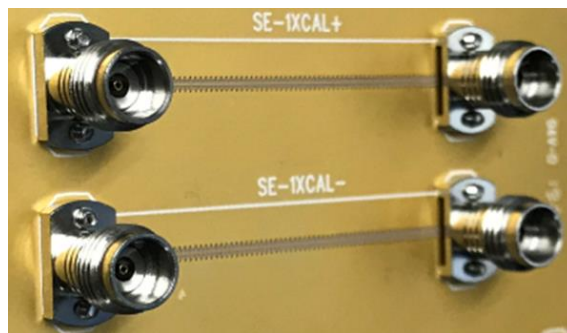


Measurements are not dembedded and include the two 3.5mm vertical launch CPW solderless precision connectors, and the PCB (transition, traces)

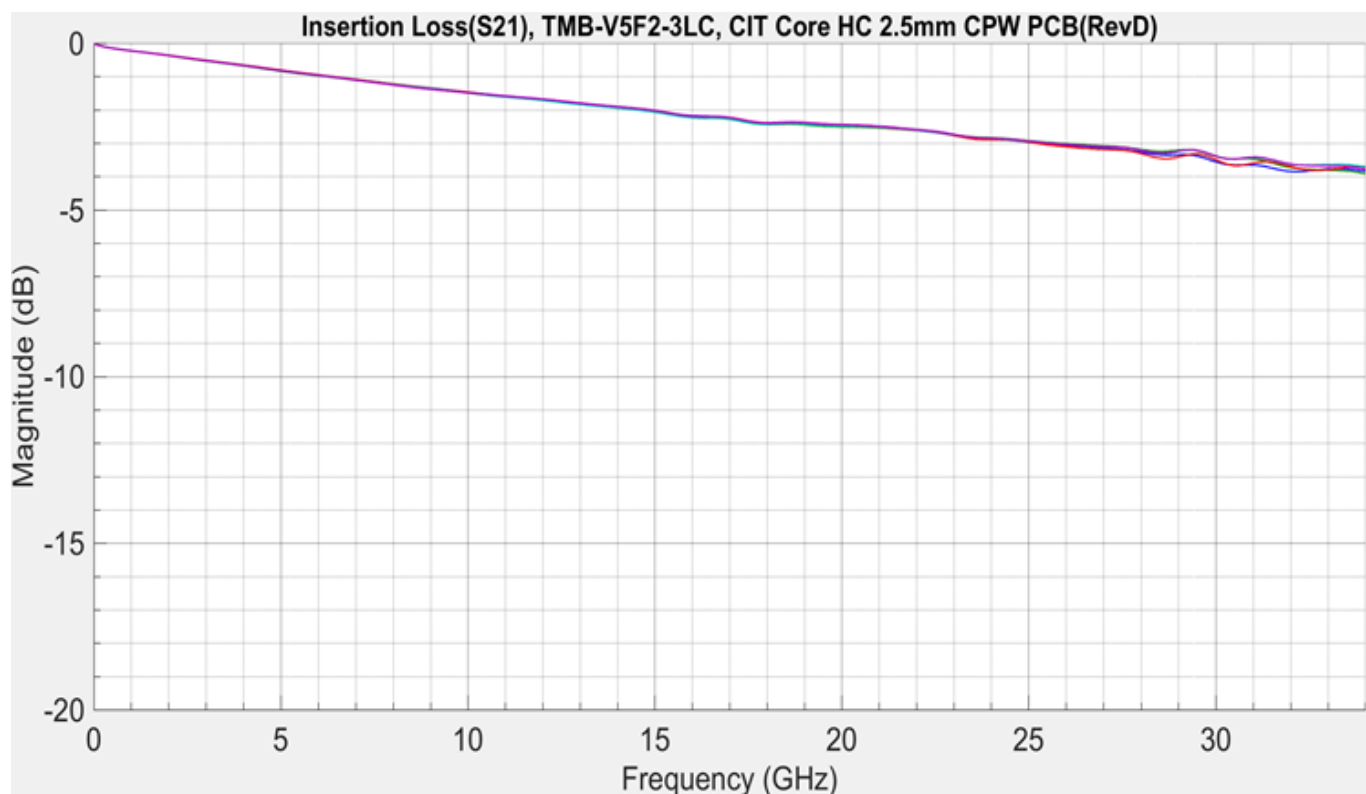
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## 4.0 SIGNAL INTEGRITY RESULTS (CIT: CORE HC 2.5MM CPW PCB, 1X CAL TRACE)



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

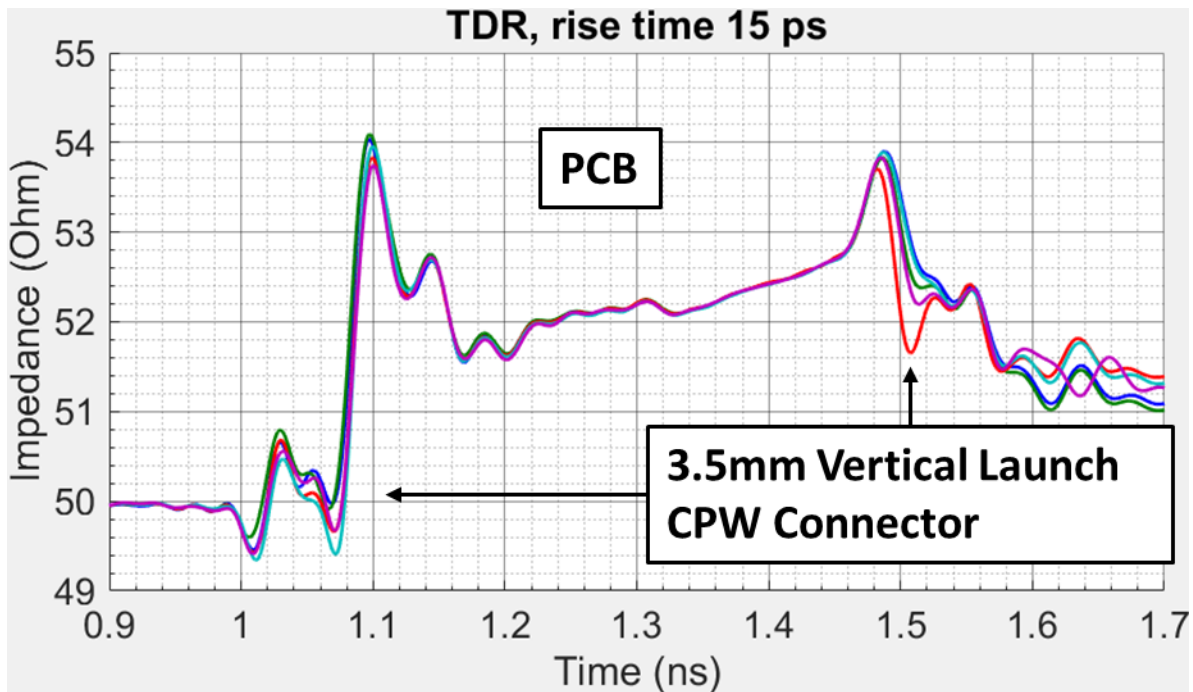
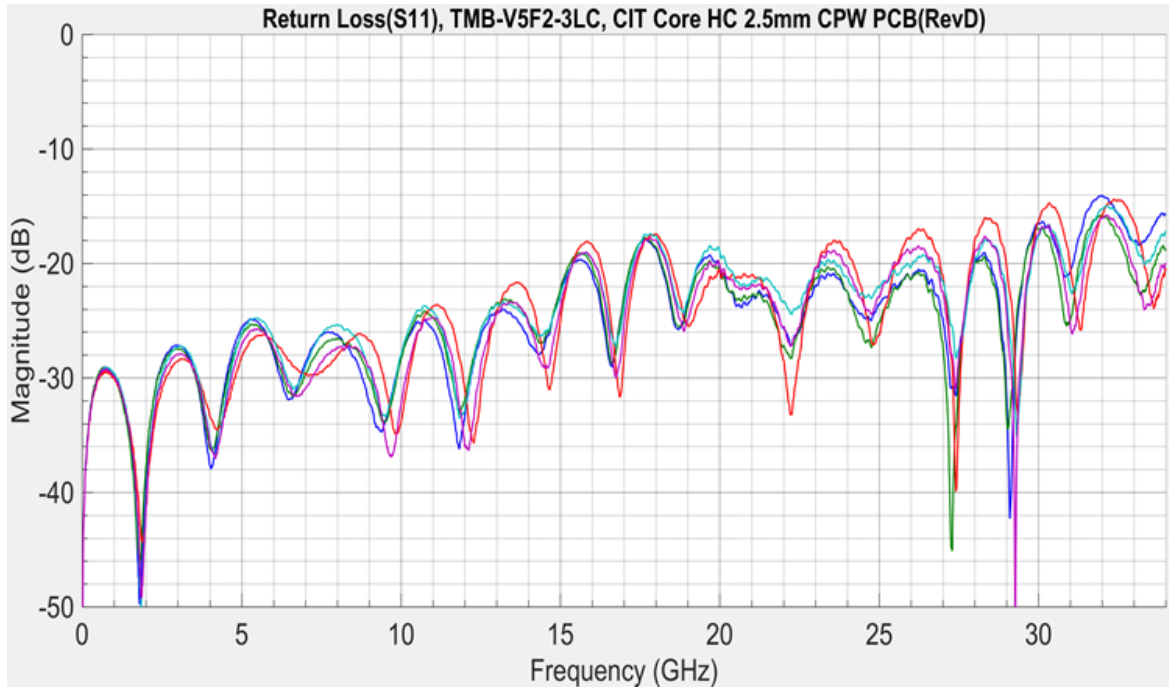


TMB-V5F2-3LC_35_CPW_1xCALPlus_HC2RevD0_P1C1A_P2C1B	3/25/2020 5:23 PM	S2P File	426 KB
TMB-V5F2-3LC_35_CPW_1xCALPlus_HC2RevD0_P1C2A_P2C2B	3/25/2020 5:26 PM	S2P File	426 KB
TMB-V5F2-3LC_35_CPW_1xCALPlus_HC2RevD0_P1C3A_P2C3B	3/25/2020 5:28 PM	S2P File	425 KB
TMB-V5F2-3LC_35_CPW_1xCALPlus_HC2RevD0_P1C4A_P2C4B	3/25/2020 5:30 PM	S2P File	426 KB
TMB-V5F2-3LC_35_CPW_1xCALPlus_HC2RevD0_P1C5A_P2C5B	3/25/2020 5:33 PM	S2P File	426 KB

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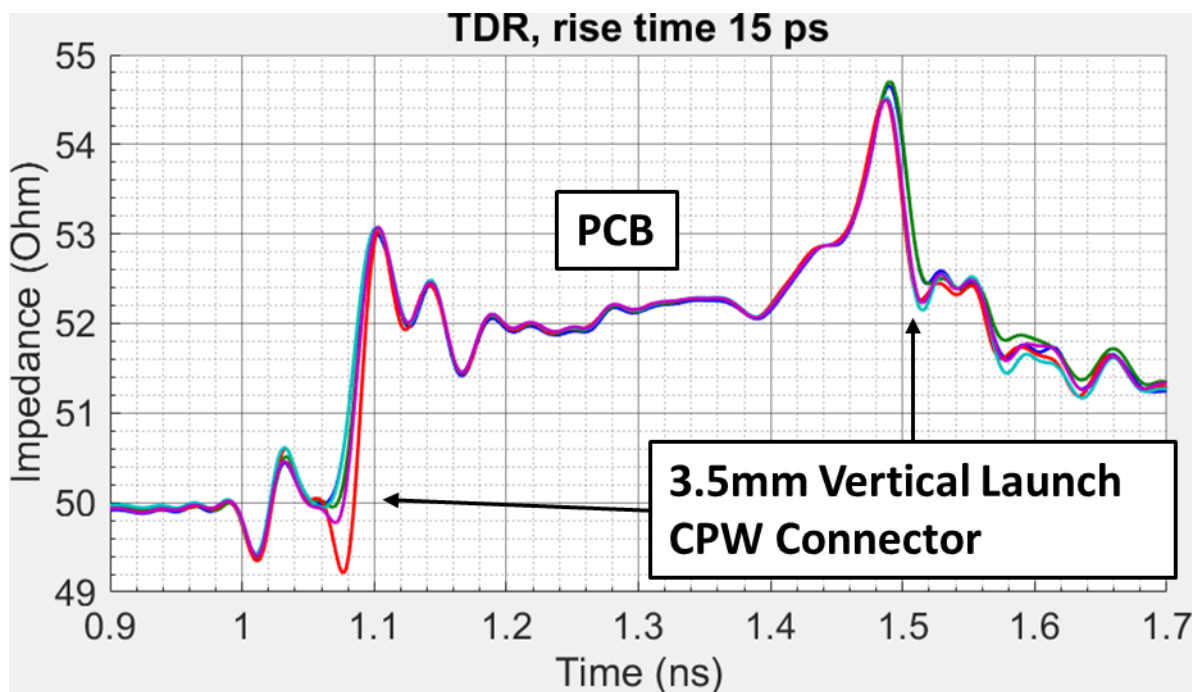
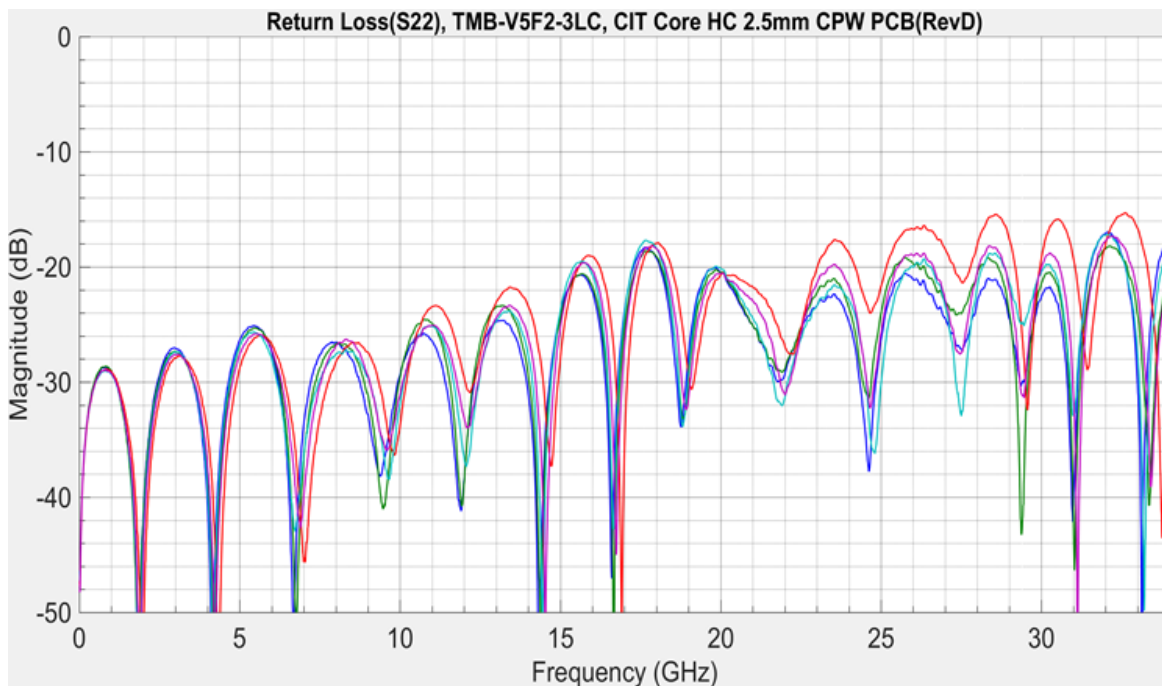
Return Loss (S11), 10 connectors measured, 5 measurements



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



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