

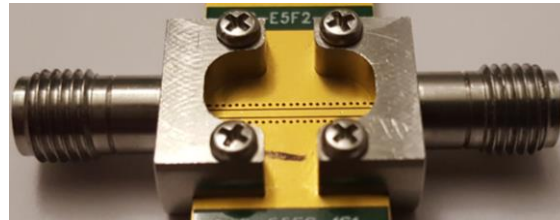
SIGNAL INTEGRITY REPORT

Test and Measurement Performance Report

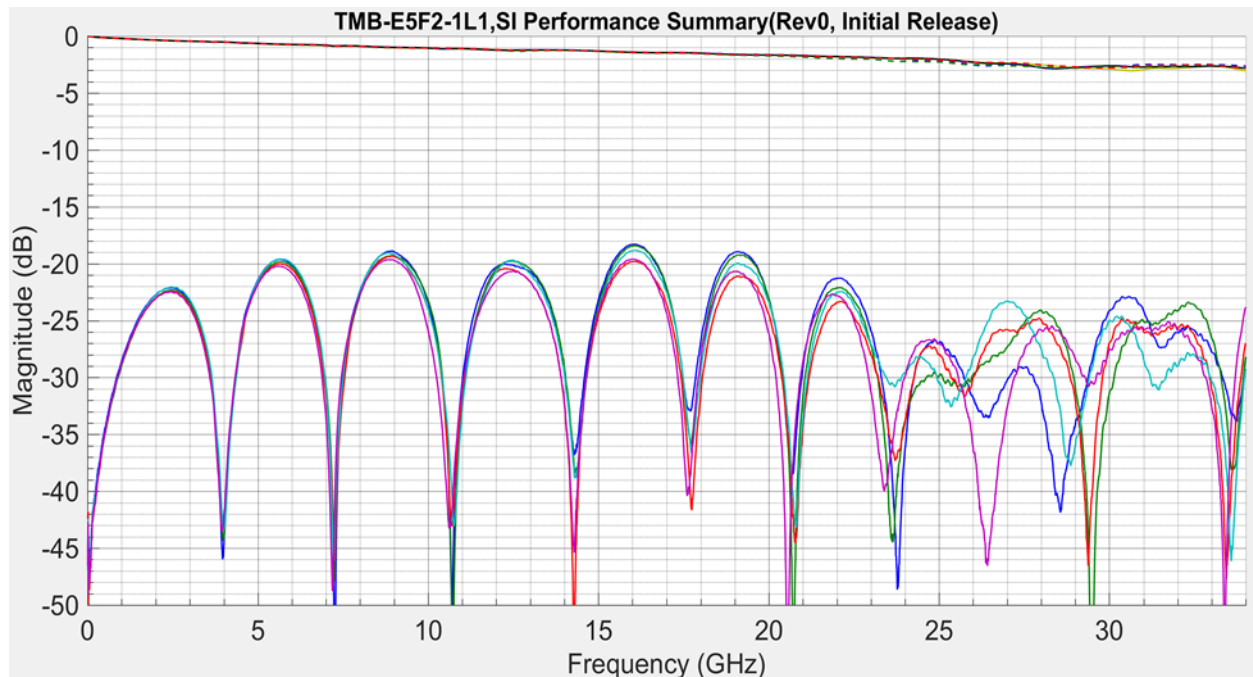
Part Number TMB-E5F2-1L1

(3.5mm Edge Launch 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: 04/13/2020	<u>TITLE:</u> 3.5mm Edge Launch, Solderless Precision Connector (TMB-E5F2-1L1) CARLISLE IT CONFIDENTIAL	<u>SHEET No.</u> 1 of 10
<u>DOCUMENT NUMBER:</u> RSI-TMB-E5F2-1L1_01	<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>			

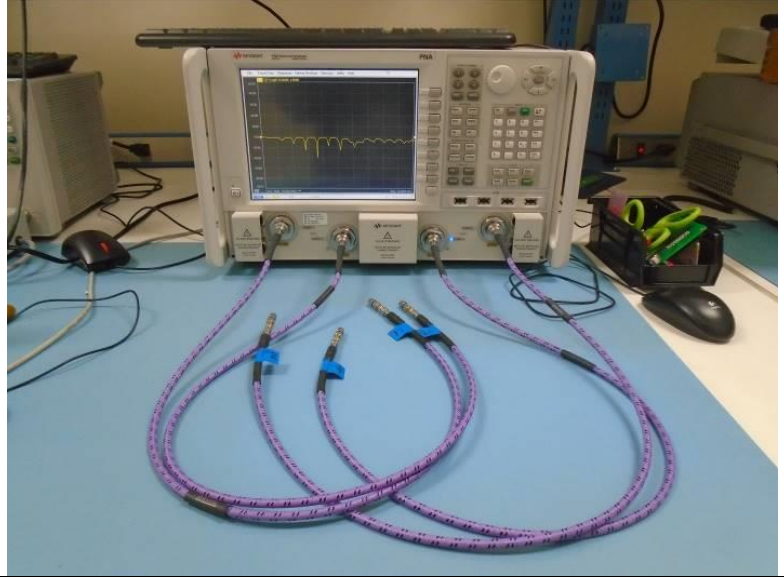
SIGNAL INTEGRITY REPORT

1.0 TEST SETUP AND DUT

Equipment, fixtures, and methods

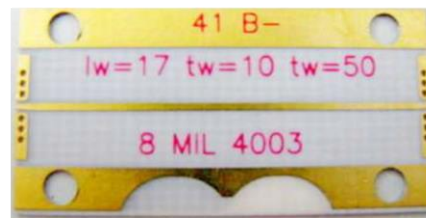
Test method: All data measured from test PCB shown below and a N5227A PNA Network Analyzer

- 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 edge launch precision connectors



Assembly Description

- T&M PN: TMB-E5F2-1L1
- Carlisle DUT PCB: Edge Launch Precision Connector Test Board (Rev A)
- Industry Leading Supplier Edge Launch PCB (B4003-8M-50)
- Port 1: 3.5mm edge mount
- Port 2: 3.5mm edge mount
-



Testing Samples:

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

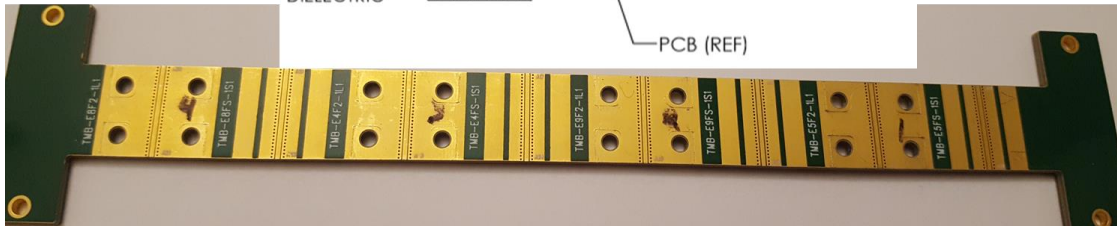
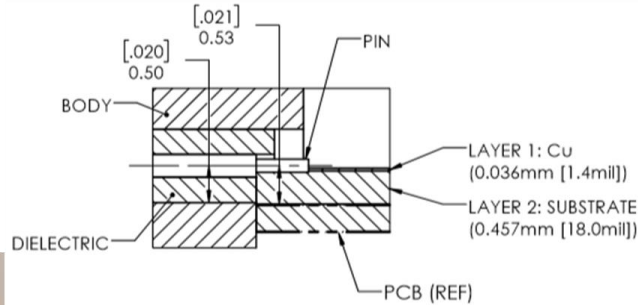
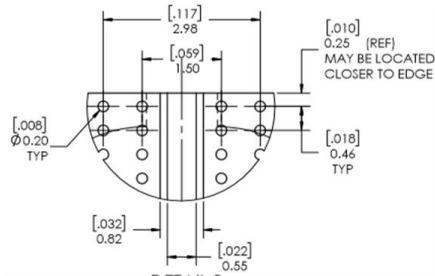
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DOCUMENT NUMBER: RSI-TMB-E5F2-1L1_01	SI ENGINEER: R.Stavoli	DESIGN ENGINEER P. Volkov	ENGINEERING MANAGER E.Soubh
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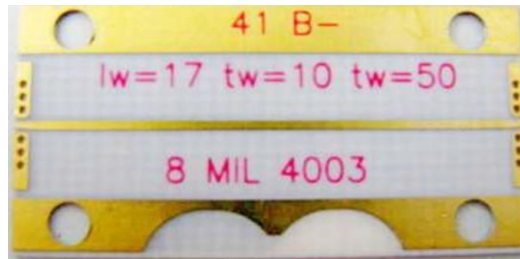
2.0 BOARD DETAILS & STACKUP

- Carlisle Edge Launch Precision Connector Test Board
 - Revision A, Coplanar Waveguide
 - Copper (traces, pads, ground) not all the way to the edge of the board
- Dielectric Material: Megtron6 (Dk.3.41, Df 0.004 @ 12Ghz)
 - Thickness: 0.457mm / 18 mil

Carlisle Interconnect Technologies				
Connector: Precision Edge Mount Connectors				
PCB Step File: EM_1.85mm_PrecisionConnectors_PCB_Megtron6_Rev_1_021220:				
Layer	Material	Thickness		Notes
		mm	mils	
1	Copper	0.03556	1.4	Signal Layer
2	Megtron 6	0.45144	17.7732283	
3	Copper	0.01778	0.7	Gnd Plane
4	Megtron 6	0.84396	33.2267717	Fill to Requirement
5	Copper	0.01778	0.7	Gnd Plane
6	Megtron 6	0.2032	8	
7	Copper	0.03556	1.4	Signal layer
TOTAL		1.60528	63.2	



- Industry Leading Supplier Edge Launch Test Board , B4003-8M-50
 - Microstrip
- Dielectric Material: Rodgers 4003 (Dk. 3.38, Df 0.0027 @ 10Ghz)
 - Thickness: 0.2032mm / 8 mil



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DOCUMENT NUMBER: RSI-TMB-E5F2-1L1_01	SI ENGINEER: R.Stavoli	DESIGN ENGINEER P. Volkov	ENGINEERING MANAGER E.Soubh
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SIGNAL INTEGRITY REPORT

3.0 MEASUREMENT SET-UP

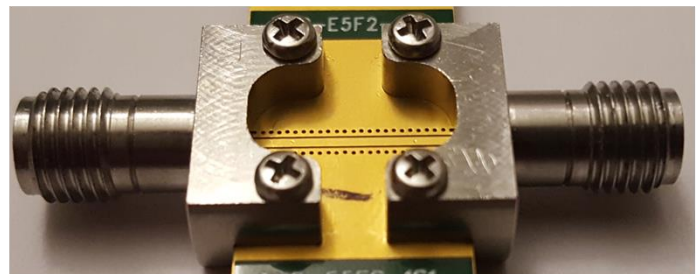
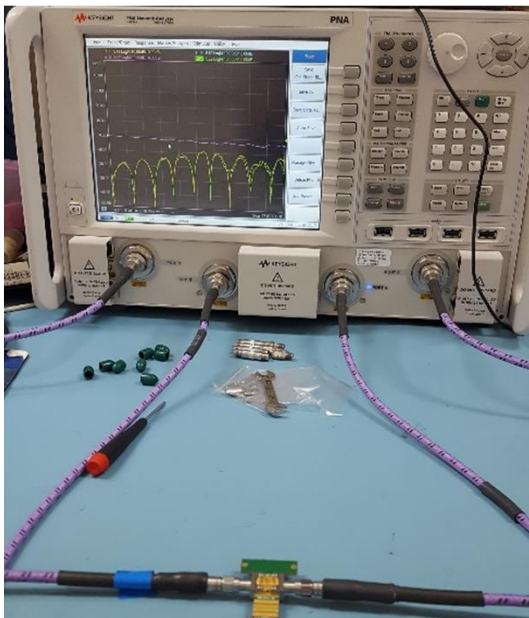
Port 1:

TMB-E5F2-1L1
3.5mm Edge Launch
Solderless Precision
Connector # 1 A

Edge Launch Test Board

Port 2:

TMB-E5F2-1L1
3.5mm Edge Launch
Solderless Precision
Connector # 1 B



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

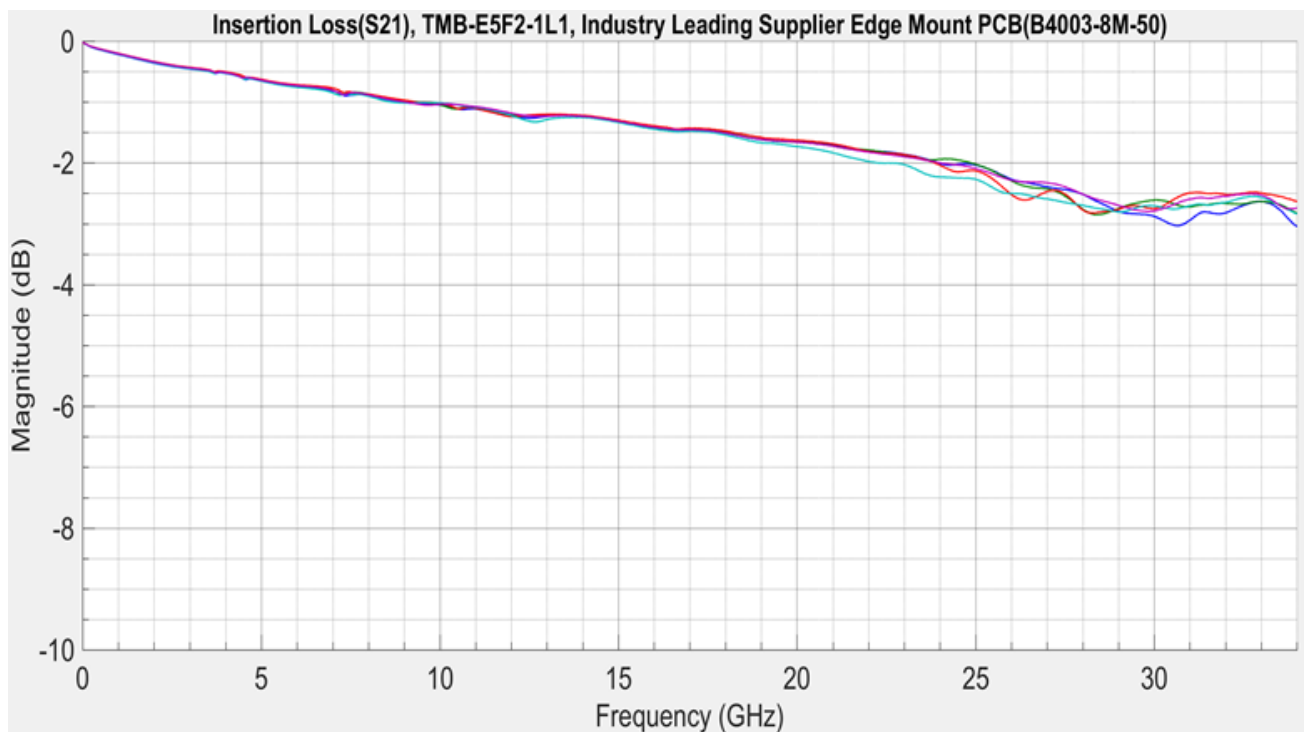
REVISION: 1	ECN INFORMATION: EC No: N/A DATE: 04/13/2020	TITLE: 3.5mm Edge Launch, Solderless Precision Connector (TMB-E5F2-1L1) CARLISLE IT CONFIDENTIAL	SHEET No. 4 of 10
DOCUMENT NUMBER: RSI-TMB-E5F2-1L1_01	SI ENGINEER: R.Stavoli	DESIGN ENGINEER P. Volkov	ENGINEERING MANAGER E.Soubh
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SIGNAL INTEGRITY REPORT

4.0 SIGNAL INTEGRITY RESULTS (INDUSTRY LEADING SUPPLIER PCB ,8MIL DIELECTRIC THICKNESS)



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

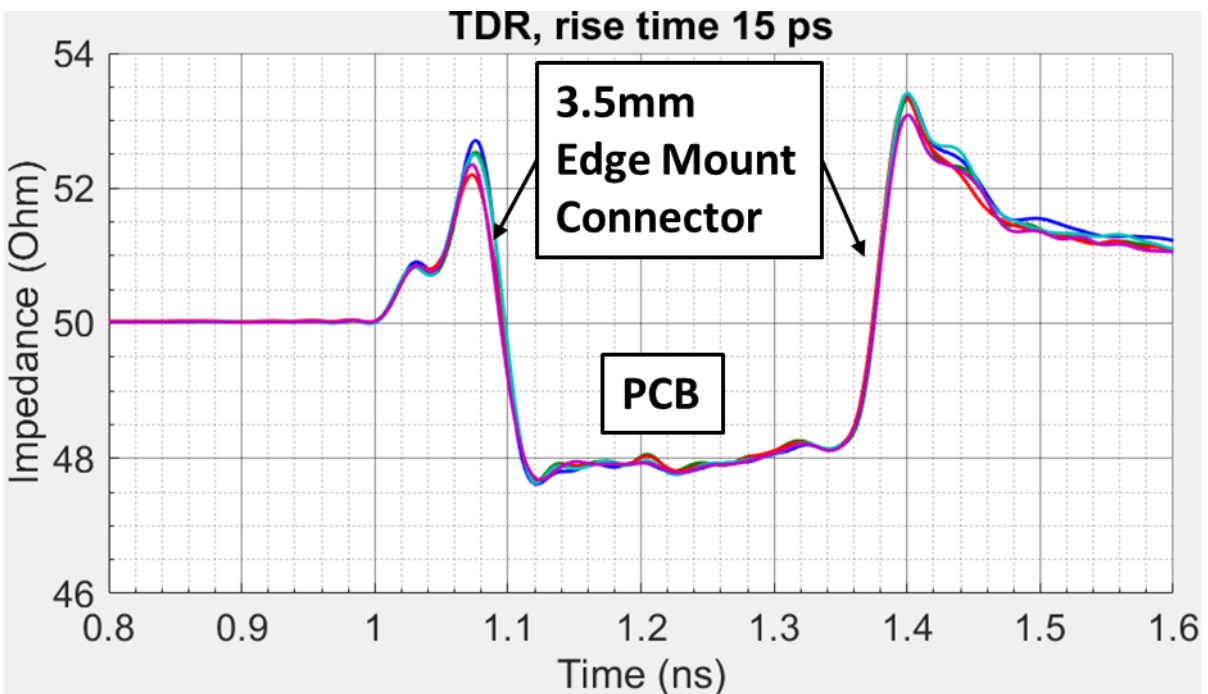
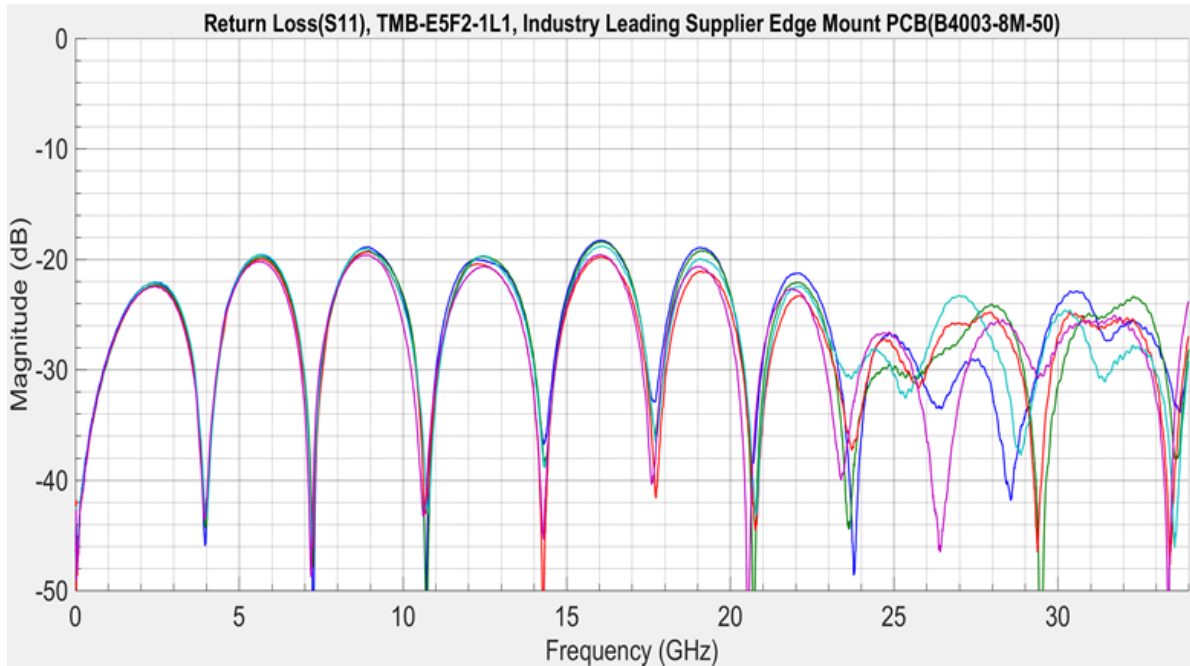


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REVISION: 1	ECN INFORMATION: EC No: N/A DATE: 04/13/2020	TITLE: 3.5mm Edge Launch, Solderless Precision Connector (TMB-E5F2-1L1) CARLISLE IT CONFIDENTIAL	SHEET No. 5 of 10
DOCUMENT NUMBER: RSI-TMB-E5F2-1L1_01	SI ENGINEER: R.Stavoli	DESIGN ENGINEER P. Volkov	ENGINEERING MANAGER E.Soubh
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SIGNAL INTEGRITY REPORT

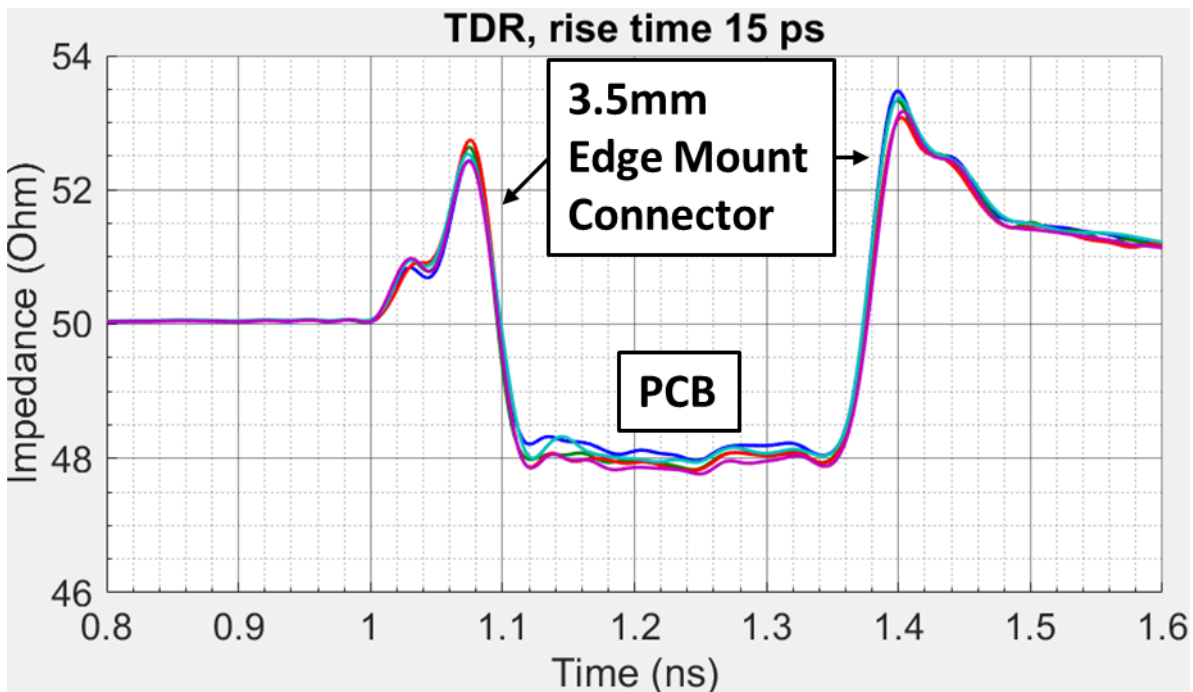
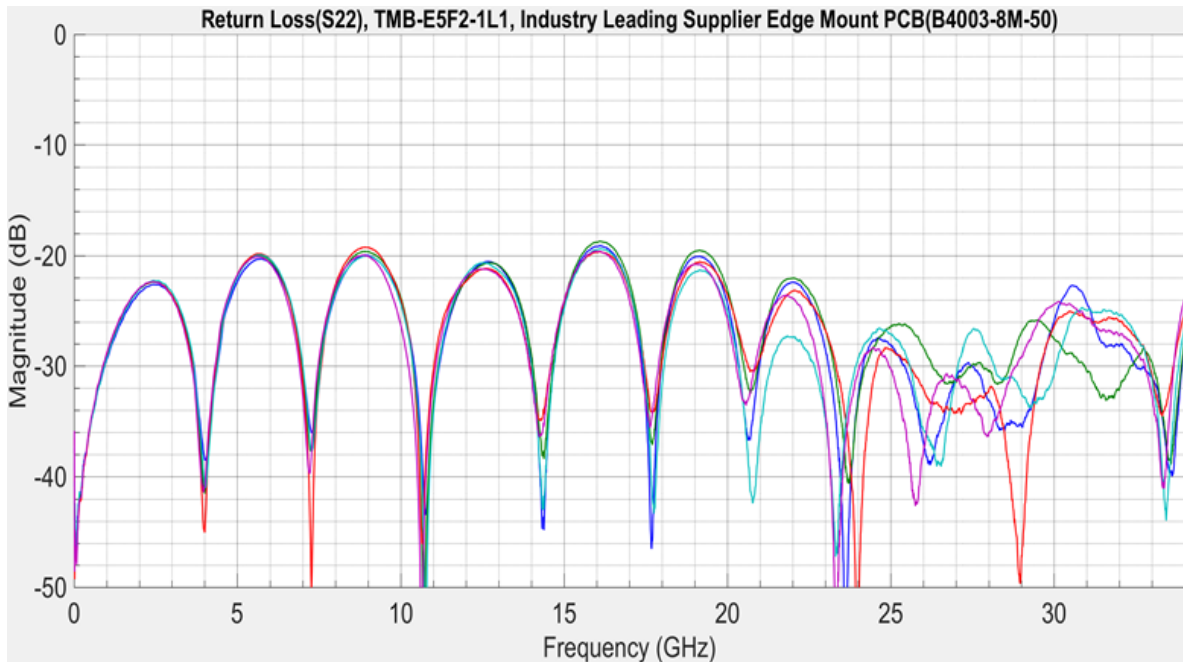
Return Loss (S11), 10 connectors measured, 5 measurements



REVISION: 1	ECN INFORMATION: EC No: N/A DATE: 04/13/2020	TITLE: 3.5mm Edge Launch, Solderless Precision Connector (TMB-E5F2-1L1) CARLISLE IT CONFIDENTIAL	SHEET No. 6 of 10
DOCUMENT NUMBER: RSI-TMB-E5F2-1L1_01		SI ENGINEER: R.Stavoli	DESIGN ENGINEER: P. Volkov
		ENGINEERING MANAGER: E.Soubh	
<small>TEMPLATE FILENAME: SPM(SIZE_A)(V.1).DOC</small>			

SIGNAL INTEGRITY REPORT

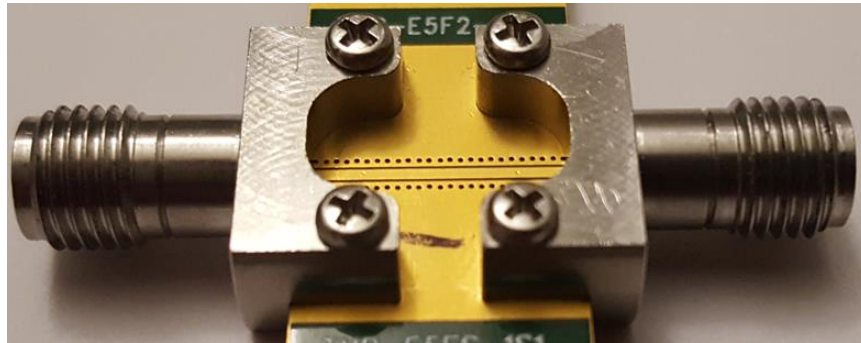
Return Loss (S22), 10 connectors measured, 5 measurements



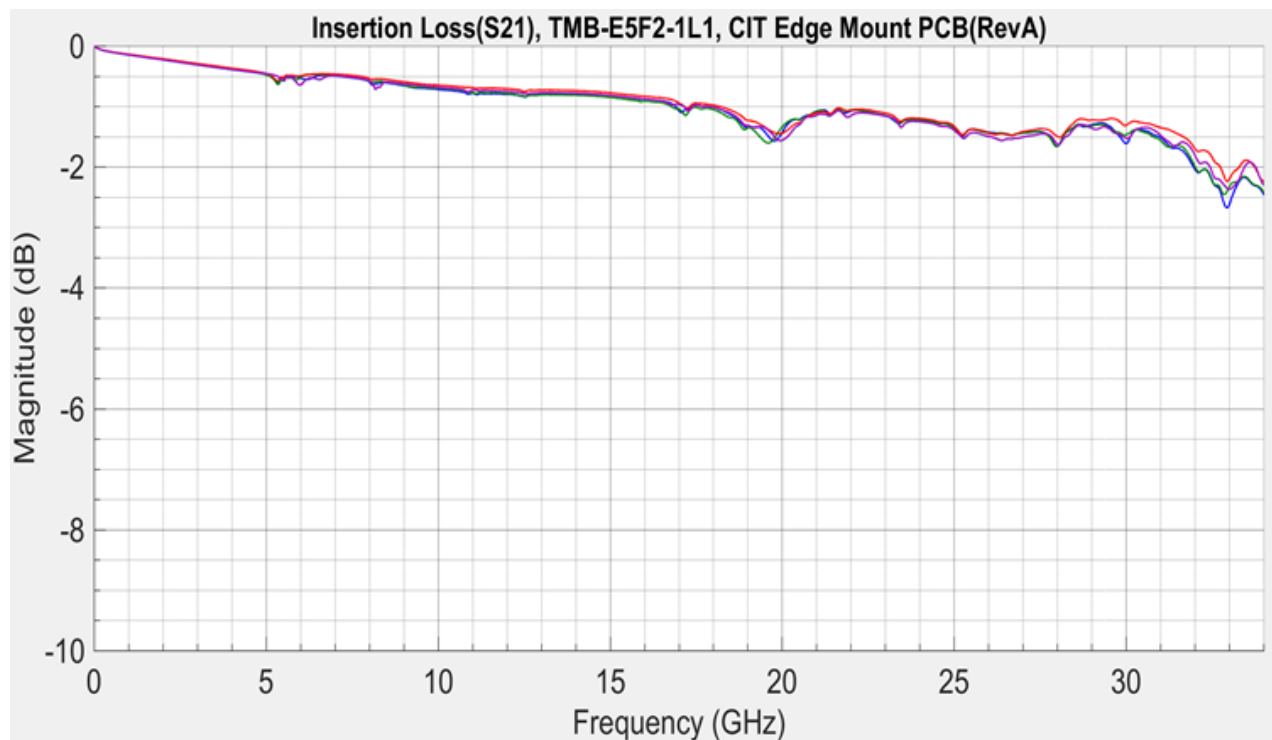
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DOCUMENT NUMBER: RSI-TMB-E5F2-1L1_01	SI ENGINEER: R.Stavoli	DESIGN ENGINEER P. Volkov	ENGINEERING MANAGER E.Soubh
<small>TEMPLATE FILENAME: SPM(SIZE_A)(V.1).DOC</small>			

SIGNAL INTEGRITY REPORT

5.0 SIGNAL INTEGRITY RESULTS (CIT PCB, 18MIL DIELECTRIC THICKNESS)



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

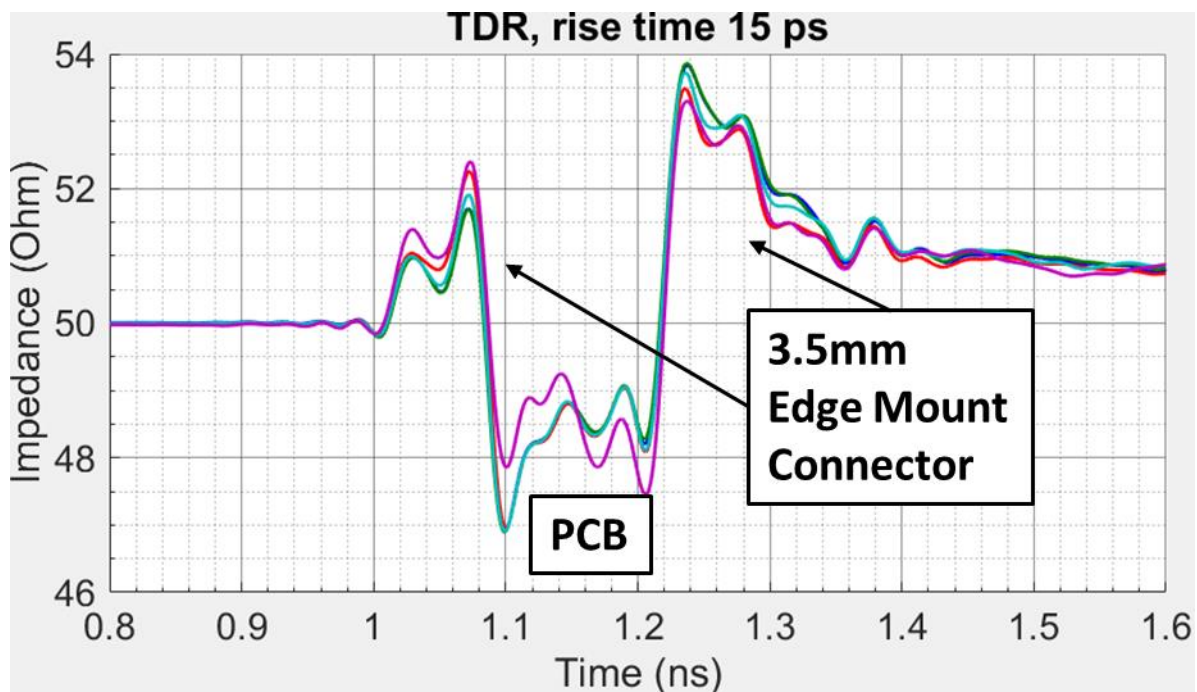
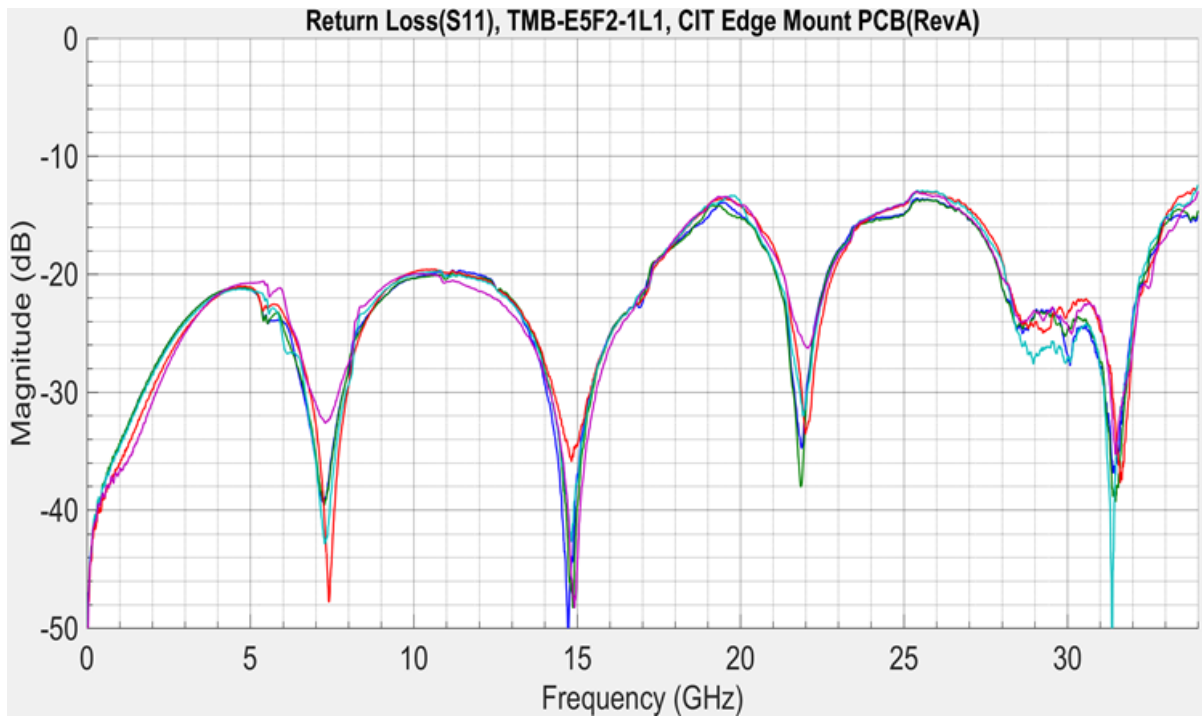


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TMB-E5F2-1L1_35_EMRevA0_18MilDk_Lo1_Conn3AB_P1SideB_P2SideA	4/10/2020 1:20 PM	S2P File	421 KB
TMB-E5F2-1L1_35_EMRevA0_18MilDk_Lo1_Conn4AB_P1SideB_P2SideA	4/10/2020 1:23 PM	S2P File	422 KB
TMB-E5F2-1L1_35_EMRevA0_18MilDk_Lo1_Conn5AB_P1SideB_P2SideA	4/13/2020 3:30 PM	S2P File	395 KB

REVISION: 1	ECN INFORMATION: EC No: N/A DATE: 04/13/2020	TITLE: 3.5mm Edge Launch, Solderless Precision Connector (TMB-E5F2-1L1) CARLISLE IT CONFIDENTIAL	SHEET No. 8 of 10
DOCUMENT NUMBER: RSI-TMB-E5F2-1L1_01	SI ENGINEER: R.Stavoli	DESIGN ENGINEER P. Volkov	ENGINEERING MANAGER E.Soubh
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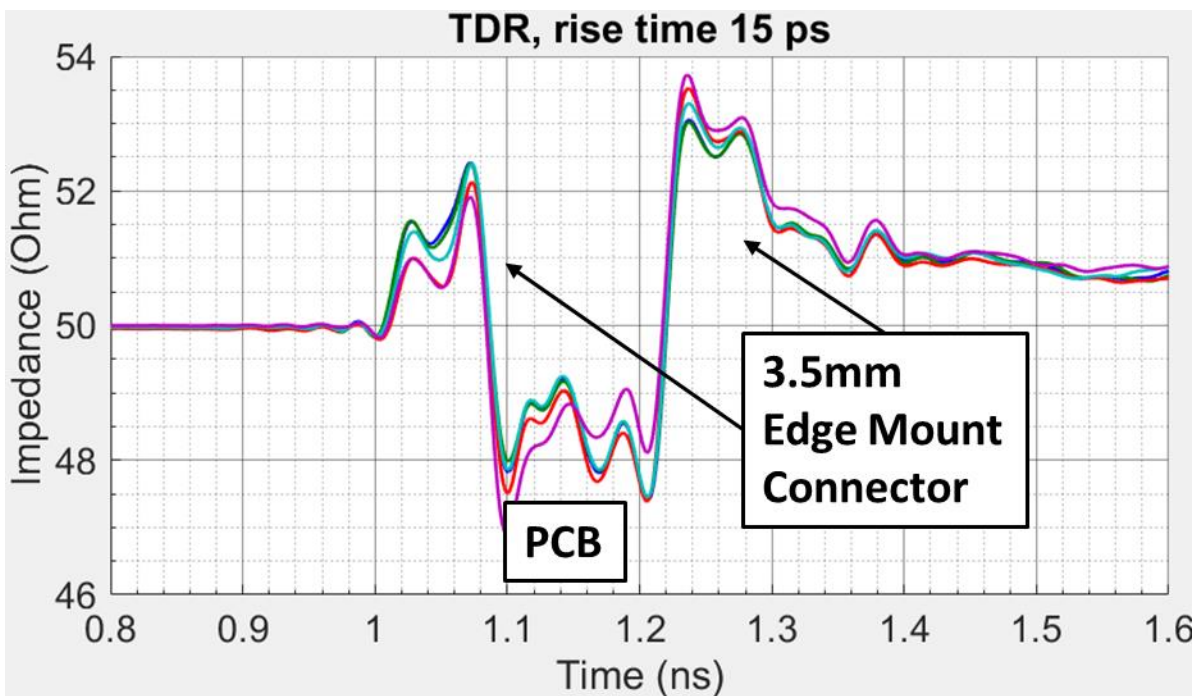
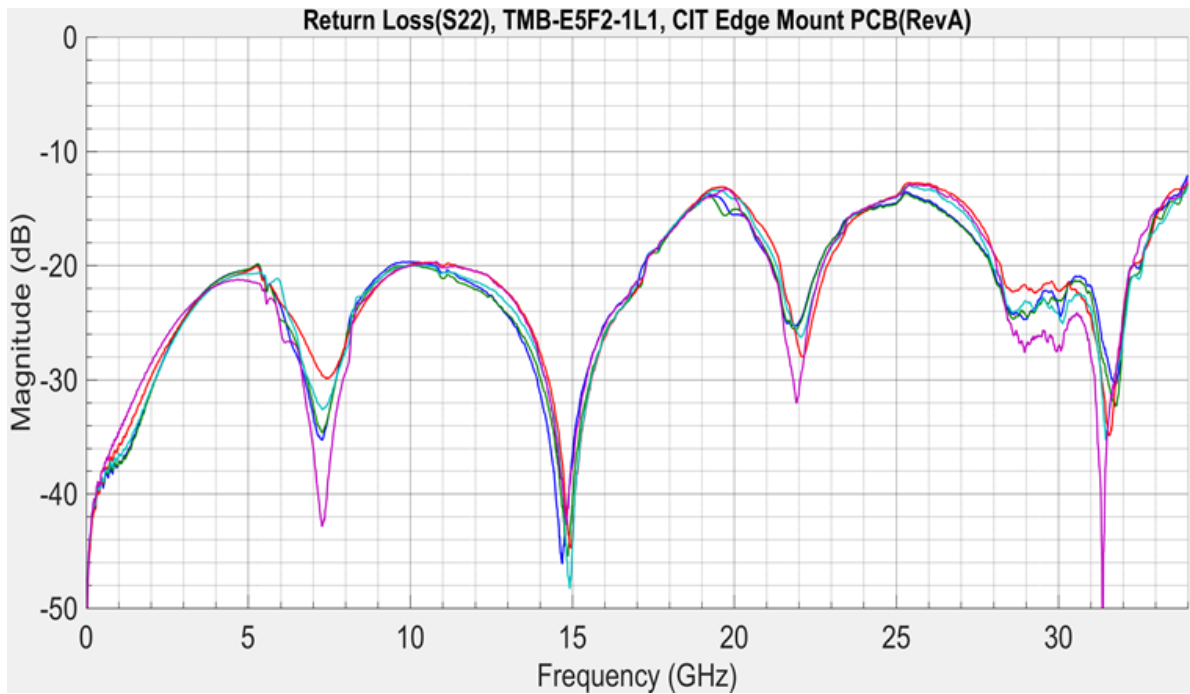
Return Loss (S11), 10 connectors measured, 5 measurements



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<u>DOCUMENT NUMBER:</u> RSI-TMB-E5F2-1L1_01	<u>SI ENGINEER:</u> R.Stavoli	<u>DESIGN ENGINEER</u> P. Volkov	<u>ENGINEERING MANAGER</u> E.Soubh
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SIGNAL INTEGRITY REPORT

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



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<u>DOCUMENT NUMBER:</u> RSI-TMB-E5F2-1L1_01	<u>SI ENGINEER:</u> R.Stavoli	<u>DESIGN ENGINEER</u> P. Volkov	<u>ENGINEERING MANAGER</u> E.Soubh