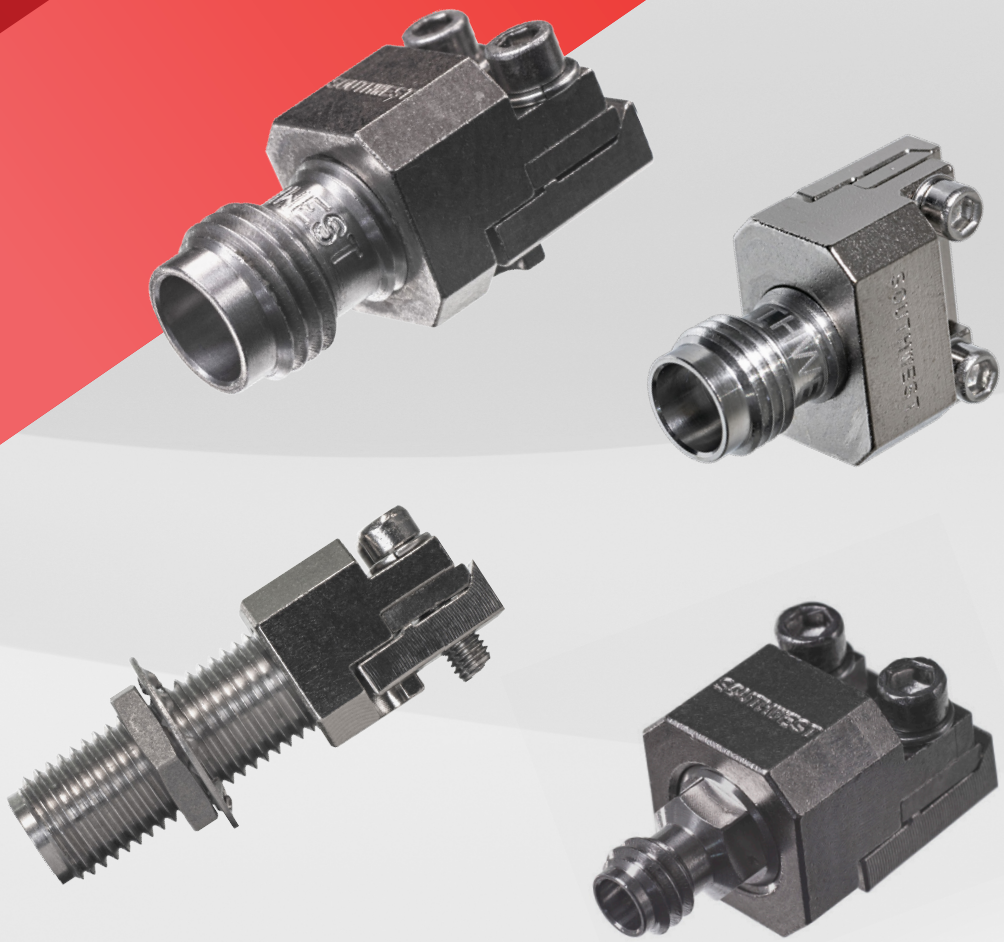
THE PERFORMANCE LEADER IN

# MICROWAVE CONNECTORS

2022 - 2023



## End Launch Connectors

### DC to 110 GHz

- Low VSWR
- Low Insertion Loss
- Low RF Leakage
- High Temperature
- Rugged & Durable
- Excellent Repeatability

SOUTHWEST MICROWAVE

## INTRODUCTION

Southwest Microwave is the original innovator of the solderless, clamp-on end launch connector concept, producing the widest range of options available today. These connectors, available in multiple configurations, have been leading the microwave and digital industries for 20 years and are designed to provide the lowest VSWR, mode-free wide responses up to 110 GHz for single and multilayer microstrip or grounded coplanar printed circuit boards.

These end launch connectors feature a unique two-piece bottom clamp to accommodate any board thickness up to 300 mils for effective grounding between the connector and the circuit board. The connector pin is designed with an interference fit to the circuit board trace eliminating the need for soldering. Combining the bottom clamp with the solderless pin offers ease of removal and reusability.

Newer models include thread-ins for enhanced robustness and narrow block, reducing footprint by 30% for applications where space and weight are limited.

## FEATURES

- Available in SMA (27 GHz), 2.92 mm (K) (40 GHz), 2.40 mm (50 GHz), 1.85 mm (V) (67 GHz) and 1.0 mm (W) (110 GHz)
- Male and female options along with narrow body and bulkhead feed-through
- Multiple launch configurations for best match to circuit layout
- Unique clamping mechanism accommodates board thicknesses up to .300” (7.62 mm)
- Three transition sizes allow for the best match to a wide variety of microwave substrates
- Soldering launch pin to signal trace is optional
- Robust, reusable and repairable
- Optional space qualification

**Design and Test Assistance:**

Standalone connector samples available or can be attached to Southwest Microwave’s test boards

3D models for mechanical layouts

Printed circuit board connector launch designs and connector part number recommendations for stack-ups

Connector Encrypted HFSS models (version 18.0 or newer) for EM simulations

## SPECIFICATIONS

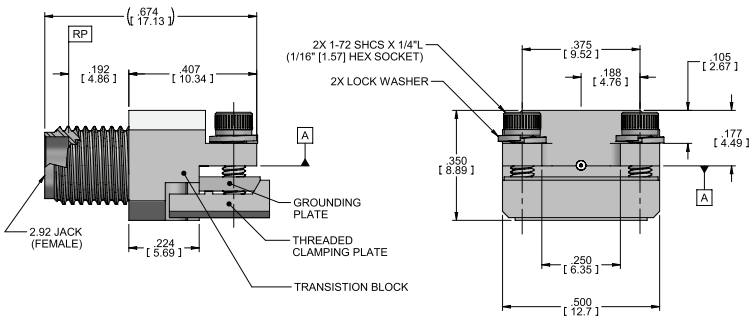
| MATERIALS | |
|---|---|
| **RF Connector Materials** | |
| Connector Housing | Passivated CRES Alloy |
| Contact | Gold Plated BeCu |
| Contact Capture Bead | SMA, 1.0 mm – Ultem 1000<br>2.92 mm, 2.40 mm – Ultem 1000 & Kel-F<br>1.85 mm – Ultem 1000 & PTFE |
| Dielectric | SMA only - PTFE |
| Connector Fasteners | #0-80 SHCS |
| **Transition Block Materials** | |
| Block & Clamping Plates | Ni Plated Brass Alloy |
| Pin | Gold Plated BeCu |
| Dielectric | PTFE |
| PCB Fasteners | #1-72 SHCS |

| Mechanical | |
|---|---|
| RF Connector Durability | 500 minimum |
| PCB Mating Cycles | 100 |
| Board Thicknesses | .005” (.127 mm) to .300” (7.62 mm) |

| Electrical | |
|---|---|
| Frequency | DC to 110 GHz |
| Impedance | 50 Ohms |
| Low Insertion Loss | |
| Low VSWR | |

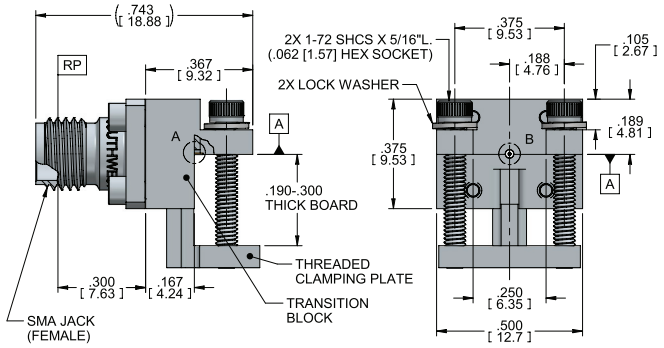
| **Environmental** | |
|---|---|
| Temperature | SMA -65 to +165 °C<br>2.92 mm and 2.40 mm -55 to +135 °C<br>1.85 mm and 1.0 mm -55 to +165 °C |

**xxxx-xA-12**
**Standard Block, Thread-In**
Up to .065 Board Thickness



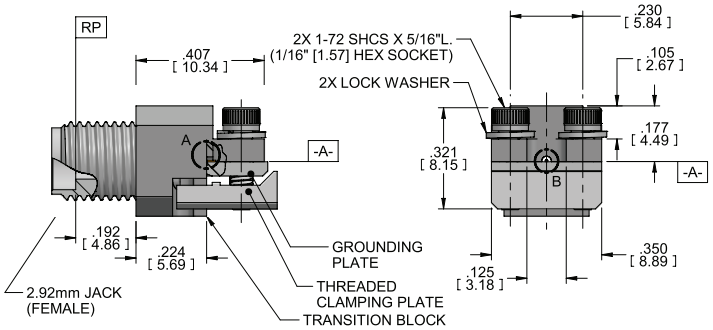

**xxxx-xA-7**
**Standard Block**
.090 to .210 Thick Board

**xxxx-xA-8**
**Standard Block**
.190 to .300 Thick Board



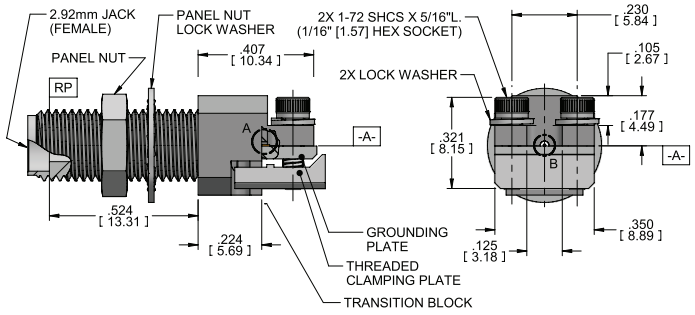

**xxxx-xA-9**
**Narrow Block, Thread-In**
Up to .065 Board Thickness

**xxxx-xA-14**
**Narrow Block, Thread-In**
.040 to .110 Thick Board




**xxxx-xA-11**
**Extended Length**
Up to .065 Board Thickness

**xxxx-xA-13**
**Narrow Block, Extended Length**
.040 to .110 Thick Board



## SuperSMA (27 GHz)

| Launch Pin Diameter | Dielectric Diameter | PCB Thickness | Standard Block .500", Thread-In (For standard block -6 models, please contact us) | | PCB Thickness | Standard Block .500" | | PCB Thickness | Narrow Block .350" | |
|---|---|---|---|---|---|---|---|---|---|---|
| Dim A | Dim C | Inches | Female | Male | Inches | Female | Male | Inches | Female | Male |
| .010 | .0635 | up to .100 | 292-04A-12<br>292-04Z-6<br>(non-magnetic) | 293-01A-12 | .090 to .210<br>.190 to .300 | 292-04A-7<br>292-04A-8 | 293-01A-7<br>293-01A-8 | up to .065<br>.040 to .110 | 292-04A-9<br>292-04A-14 | 293-01A-9<br>293-01A-14 |
| .007 | .039 | up to .100 | 292-06A-12 | 293-03A-12 | .090 to .210<br>.190 to .300 | 292-06A-7<br>292-06A-8 | 293-03A-7<br>293-03A-8 | up to .065<br>.040 to .110 | 292-06A-9<br>292-06A-14 | 293-03A-9<br>293-03A-14 |
| .005 | .029 | up to .100 | 292-07A-12 | 293-04A-12 | .090 to .210<br>.190 to .300 | 292-07A-7<br>292-07A-8 | 293-04A-7<br>293-04A-8 | up to .065<br>.040 to .110 | 292-07A-9<br>292-07A-14 | 293-04A-9<br>293-04A-14 |

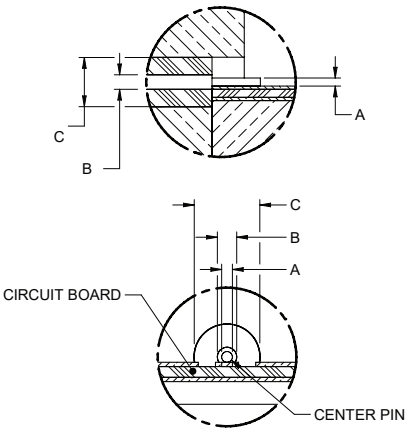
## 2.92mm (40 GHz)

| Launch Pin Diameter | Dielectric Diameter | PCB Thickness | Standard Block .500", Thread-In (For standard block -6 models, please contact us) | | PCB Thickness | Standard Block .500" | | PCB Thickness | Standard Block .500", Thread-In, Extended Length | |
|---|---|---|---|---|---|---|---|---|---|---|
| Dim A | Dim C | Inches | Female | Male | Inches | Female | Male | Inches | Female | Male |
| .010 | .0635 | up to .100 | 1092-03A-12 | 1093-01A-12 | .090 to .210<br>.190 to .300 | 1092-03A-7<br>1092-03A-8 | 1093-01A-7<br>1093-01A-8 | up to .065 | Contact Us | Contact Us |
| .007 | .039 | up to .100 | 1092-04A-12 | 1093-03A-12 | .090 to .210<br>.190 to .300 | 1092-04A-7<br>1092-04A-8 | 1093-03A-7<br>1093-03A-8 | up to .065 | Contact Us | Contact Us |
| .005 | .029 | up to .100 | 1092-01A-12 | 1093-04A-12 | .090 to .210<br>.190 to .300 | 1092-01A-7<br>1092-01A-8 | 1093-04A-7<br>1093-04A-8 | up to .065 | 1092-01A-15 | Contact Us |

## 2.92mm (40 GHz) Cont'd

| Launch Pin Diameter | Dielectric Diameter | PCB Thickness | Narrow Block .350" | | PCB Thickness | Narrow Block .350", Extended Length | |
|---|---|---|---|---|---|---|---|
| Dim A | Dim C | Inches | Female | Male | Inches | Female | Male |
| .010 | .0635 | up to .065<br>.040 to .110 | 1092-03A-9<br>1092-03A-14 | 1093-01A-9<br>1093-01A-14 | up to .065<br>.040 to .110 | Contact Us | Contact Us |
| .007 | .039 | up to .065<br>.040 to .110 | 1092-04A-9<br>1092-04A-14 | 1093-03A-9<br>1093-03A-14 | up to .065<br>.040 to .110 | Contact Us | Contact Us |
| .005 | .029 | up to .065<br>.040 to .110 | 1092-01A-9<br>1092-01A-14 | 1093-04A-9<br>1093-04A-14 | up to .065<br>.040 to .110 | 1092-01A-11<br>1092-01A-13 | Contact Us |

**DIMENSIONS A, B, C**



## 2.40mm (50 GHz)

| Launch Pin Diameter | Dielectric Diameter | PCB Thickness | Standard Block .500", Thread-In (For standard block -6 models, please contact us) | | PCB Thickness | Standard Block .500" | | PCB Thickness | Narrow Block .350", Thread-In | |
|---|---|---|---|---|---|---|---|---|---|---|
| Dim A | Dim C | Inches | Female | Male | Inches | Female | Male | Inches | Female | Male |
| .010 | .0635 | up to .100 | 1492-02A-12 | 1493-01A-12 | .090 to .210<br>.190 to .300 | 1492-02A-7<br>1492-02A-8 | 1493-01A-7<br>1493-01A-8 | up to .065<br>.040 to .110 | 1492-02A-9<br>1492-02A-14 | 1493-02A-9<br>1493-02A-14 |
| .007 | .039 | up to .100 | 1492-03A-12 | 1493-03A-12 | .090 to .210<br>.190 to .300 | 1492-03A-7<br>1492-03A-8 | 1493-03A-7<br>1493-03A-8 | up to .065<br>.040 to .110 | 1492-03A-9<br>1492-03A-14 | 1493-03A-9<br>1493-03A-14 |
| .005 | .029 | up to .100 | 1492-04A-12<br>*1492-04Z-5<br>(non-magnetic) | 1493-04A-12 | .090 to .210<br>.190 to .300 | 1492-04A-7<br>1492-04A-8 | 1493-04A-7<br>1432-04A-8 | up to .065<br>.040 to .110 | 1492-04A-9<br>1492-04A-14 | 1493-04A-9<br>1492-04A-14 |

**1492-04Z-5 is a non-standard end launch using a 4-hole flange connector and a high-profile standard block.*

## 1.85mm (67 GHz)

| Launch Pin Diameter | Dielectric Diameter | PCB Thickness | Standard Block .500", Thread-In (For standard block -6 models, please contact us) | | PCB Thickness | Standard Block .500" | | PCB Thickness | Narrow Block .350", Thread-In | |
|---|---|---|---|---|---|---|---|---|---|---|
| Dim A | Dim C | Inches | Female | Male | Inches | Female | Male | Inches | Female | Male |
| .007 | .039 | up to .100 | 1892-03A-12 | 1893-03A-12 | .090 to .210<br>.190 to .300 | 1892-03A-7<br>1892-03A-8 | 1893-03A-7<br>1893-03A-8 | up to .065<br>.040 to .110 | 1892-03A-9<br>1892-03A-14 | 1893-03A-9<br>1893-03A-14 |
| .005 | .029 | up to .100 | 1892-04A-12 | 1893-04A-12 | .090 to .210<br>.190 to .300 | 1892-04A-7<br>1892-04A-8 | 1893-04A-7<br>1893-04A-8 | up to .065<br>.040 to .110 | 1892-04A-9<br>1892-04A-14 | 1893-04A-9<br>1893-04A-14 |

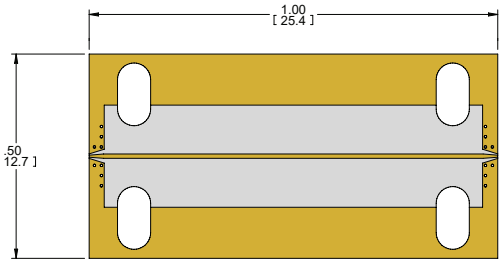
## 1.0mm (110 GHz)

| Launch Pin Diameter | Dielectric Diameter | PCB Thickness | Standard Block .500", Thread-In (For standard block -6 models, please contact us) | | PCB Thickness | Standard Block .500" | | PCB Thickness | Narrow Block .350", Thread-In | |
|---|---|---|---|---|---|---|---|---|---|---|
| Dim A | Dim C | Inches | Female | Male | Inches | Female | Male | Inches | Female | Male |
| .005 | .029 | up to .100 | 2492-04A-12 | 2493-04A-12 | .090 to .210<br>.190 to .300 | 2492-04A-7<br>2492-04A-8 | 2493-04A-7<br>2493-04A-8 | up to .065<br>.040 to .110 | 2492-04A-9<br>2492-04A-14 | 2493-04A-9 |

## End Launch Test Boards

| Board Type | 27 GHz (p/n) | 40 GHz (p/n) | 50 GHz (p/n) | 67 GHz (p/n) | 110 GHz (p/n) |
|---|---|---|---|---|---|
| .005" RO3003 Microstrip | | | | | B3003-5M-110 |
| .008" RO4003 Microstrip | B4003-8M-27 | B4003-8M-40 | B4003-8M-50 | B4003-8M-67 | |
| .008" RO4003 GCPW | B4003-8C-27 | B4003-8C-40 | B4003-8C-50 | B4003-8C-67 | |
| .030" RO4350 GCPW | B4350-30C-27 | B4350-30C-40 | B4350-30C-50 | | |
| .005" EZ-IO-F Microstrip | | | | | BEZOF-SM-110 |

***Note: All test boards are one inch long and are suitable for either the standard or narrow body connector.***




## Installation

Step 1: Mount End Launch Assembly on board in desired position.

Step 2: Make sure launch pin is centered on trace.

Step 3: Insure launch adapter is tight against edge of board.

Step 4: Tighten 1-72 mounting screws until secured.

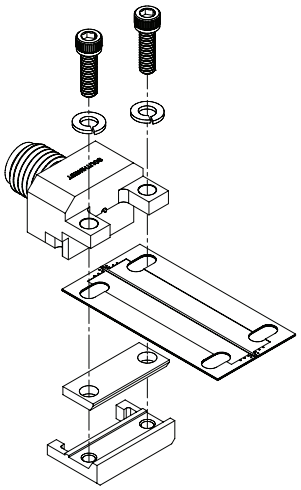
*(Note: The amount of torque is board material dependent, but should not exceed more than 2 lb. inch.)*

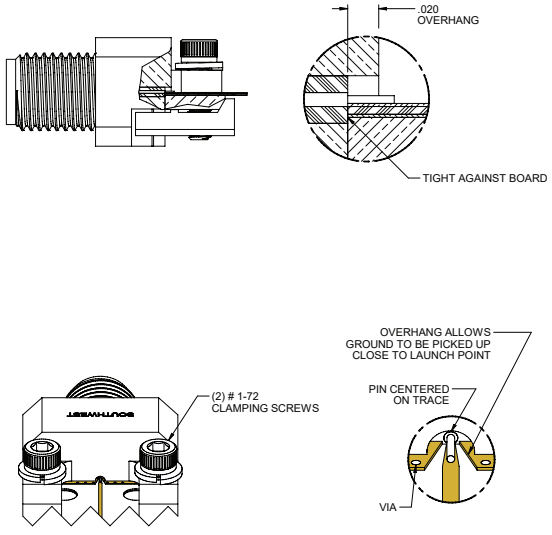
The following steps are optional:

Step 5: Solder launch pin to trace. *(Note: Be sure solder flows entire length of launch pin/trace contact area.)*

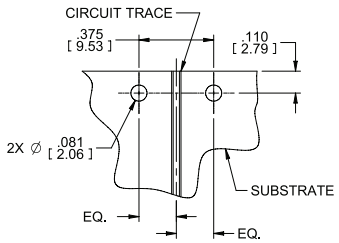
Step 6: Remove any excess solder *(Note: Excess solder will affect performance.)*

Step 7: Clean any flux or other residue from around solder joint.

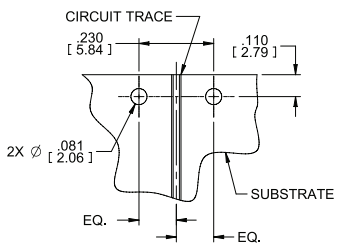




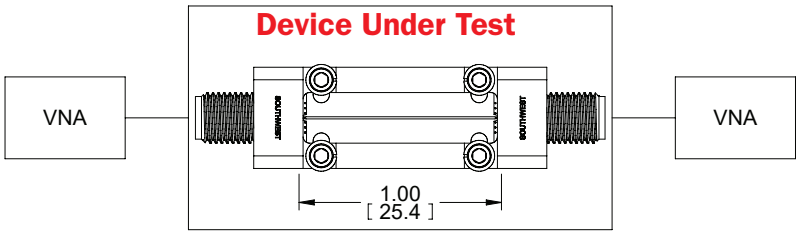

### .500 Transition Block PCB Footprint



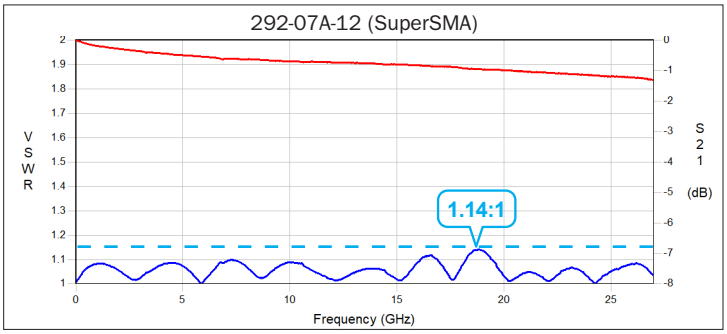

### .350 Transition Block PCB Footprint

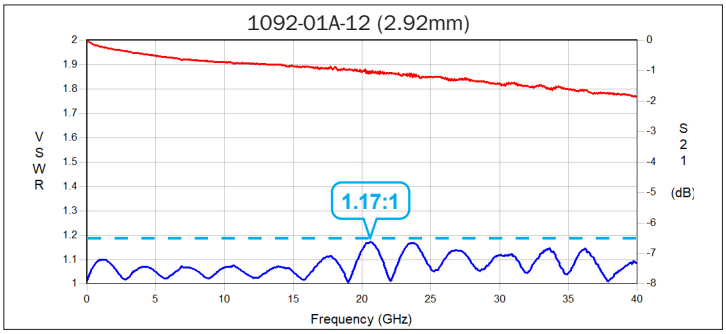


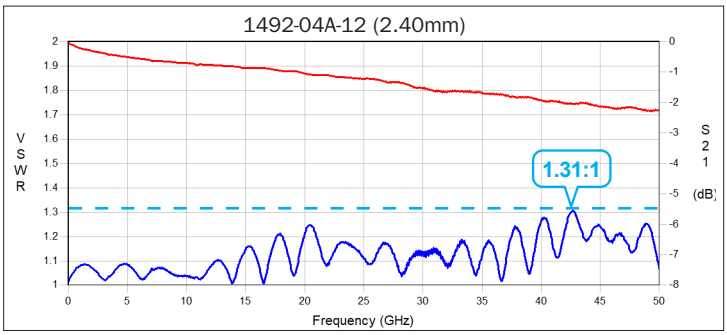
## TYPICAL TEST DATA

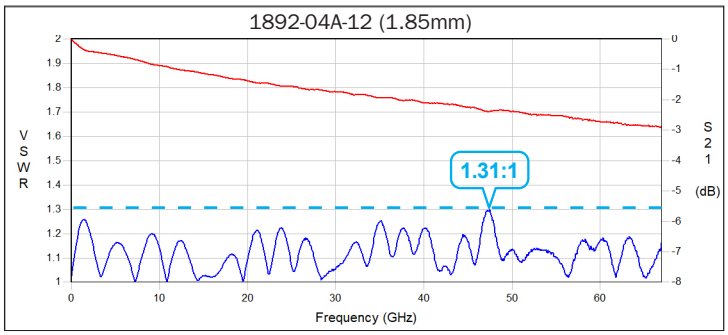


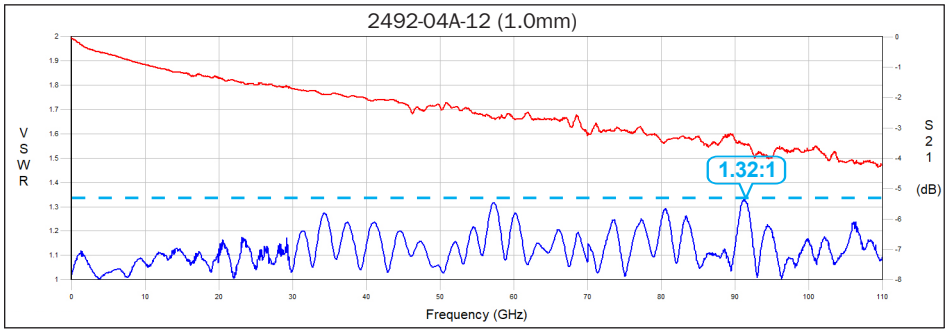

**Typical test data shown below represent two End Launch Connectors mounted on 1-inch long test board as shown in the set-up above.**

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