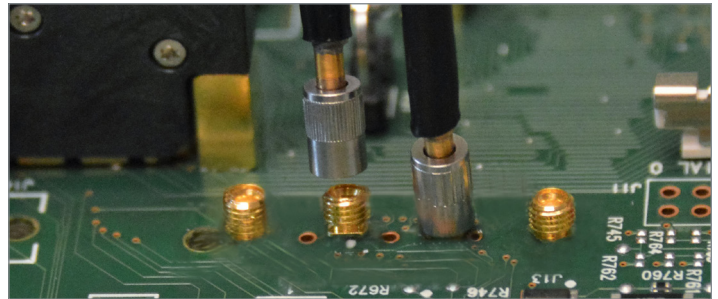


# SecureThread™



SecureThread SSMP (SMPM) Cable Assemblies



SecureThread WMP (SMPS)

## WHEN SIGNAL INTEGRITY AND DENSITY MATTERS

SecureThread™, Carlisle Interconnect Technologies' (CarlisleIT) high-performance interconnect system, uses a blind-mateable push-on interface with a threaded coupling nut that prevents the cable assembly from moving once the connection is made. Available as solderless direct-attach or solderable SSMP (SMPM)-type, SecureThread supports frequencies in the range of DC – 65 GHz with excellent signal integrity. The solderless system uses a compression mount-type connector on the cable side and a hollow plastic housing that is mounted on the standard SMA connector footprint on-board, using screws on the bottom side. The board-side connector can be moved on the PCB as long as the footprint is there.

The SSMP (SMPM)-based SecureThread Interconnect System consists of a coaxial cable assembly with a male SSMP (SMPM) connector and a threaded coupling nut, with a female SSMP (SMPM) board-mount connector on the board side that requires soldering. SecureThread cable assemblies are available as CoreHC™ to CoreHC-type; CoreHC to Precision Connector-type (1.85 mm, 2.4 mm, 2.92 mm, and 3.5 mm); Secure SSMP (SMPM) to Secure SSMP (SMPM); and Secure SSMP (SMPM) to Precision Connector-type configurations (1.85 mm, 2.4 mm, 2.92 mm, and 3.5 mm).

- » Easily and repeatedly configurable into applications, significantly reducing time and cost
- » Compatible with several of CarlisleIT's cables, including the AccuPhase®, IntegraPhase, Semi-Rigid, and Semi-Flexible cables
- » Phase matching up to 2 ps for cable pairs
- » Surface mount-type and field-replacement board-side connectors
- » Compression pin mount solderless secure CoreHC solution

## FEATURES & BENEFITS

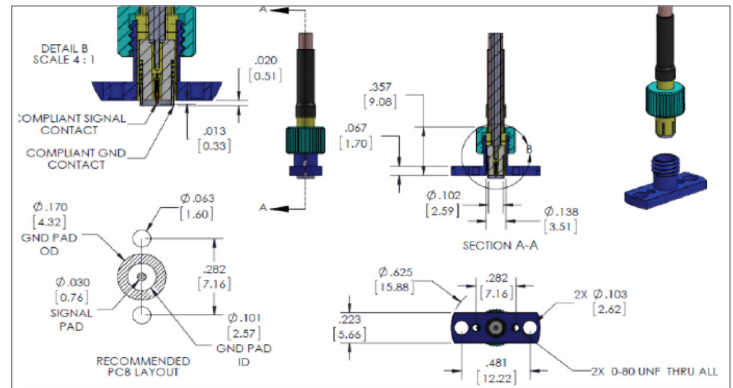
Feature	Benefit
Frequency range: DC to 65 GHz [SSMP (SMPM)]	Covers the frequency range requirements of current and future users at lower overall cost
Self-aligning blind mate	Enables quick and efficient connection in highly dense applications
Standard push-on interface with floating threaded coupling nut	No electrical length or phase variation under vibration, shock, or any other kind of movement; enables stable and reliable signals
Pre-tinned SMT (Surface Mount Technology)	Simplified mounting of board connectors provides fast and easy soldering and ensures performance, reducing cost and time to mount
500 mating/de-mating cycles	Robust design ensures high signal integrity in a long-life package
Quickly re-configurable	Low engagement/disengagement force makes it easy to push on/off to quickly re-configure the application, reducing time and cost
Supports a variety of coaxial cables	Design flexibility to select the cable assemblies with required loss profile
Tape-and-reel packing for SMT board-side connector	Suitable for automatic pick-and-place assembly process
Compression pin CoreHC solution option	One connector and cable assembly that supports DC - 65 GHz frequencies
Cable length options	Standard cable lengths in cm increments (custom cable lengths available upon request)
Solder-free option	Allows direct connection to PCB footprint with compression pin; no soldering required
Field-replaceable option	Can be moved, reconfigured, and replaced in the field with standard tools
CoreHC to precision connectors or SSMP (SMPM) to precision connectors interface	Simplified connection from device under test to test equipment

# SecureThread™ Specifications & Performance

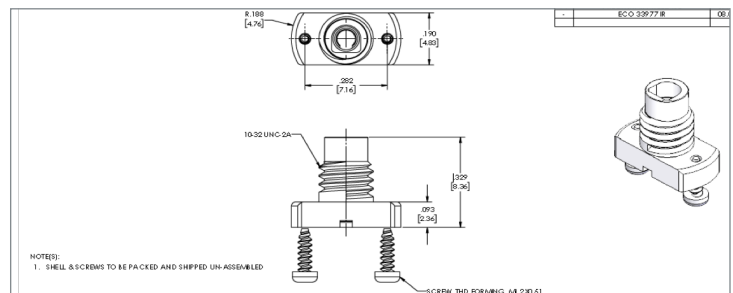
## TYPICAL SPECIFICATIONS

Parameter		Specification			
		SSMP (SMPM)		CoreHC™	
Impedance		50 Ω			
Frequency Range		DC to 50 GHz		DC to 65 GHz	
VSWR	Frequency Range	VSWR	Return Loss	VSWR	Return Loss
	DC - 26 GHz	1.11:1	<-26 dB	1.2:1	<-20 dB
	26 - 40 GHz	1.20:1	<-19 dB	1.25:1	<-20 dB
	40 - 50 GHz	1.25:1	<-17 dB	1.3:1	<-15 dB
50 - 65 GHz		1.4	<-15 dB	1.4:1	<-15 dB
Insertion Loss		0.10 x √F (GHz) dB		0.12 x √F (GHz) dB	
Working Voltage		335 VRMS max @ Sea Level			
DWV (Dielectric Withstand Voltage)		500 VRMS (min)			
Insulation Resistance		5,000 MΩ (min)			
RF High Pot		325 VRMS @ 5 MHz			
Force to Engage	Smooth Bore	0.5 lbs			
Force to Engage	Smooth Bore	0.5 lbs			
Corona Level		125 VRMS at 70,000 ft			
Crosstalk at PCB Transition		-50 dB to 30 GHz, -40 dB to 40 GHz			
RF Leakage		-90 dB		-65 dB	
Contact Durability		500 cycles			
Temperature Range		-55 °C to 165 °C			
Environmental	Meets MIL-STD-202 for corrosion, vibration, moisture resistance, thermal and mechanical shock				

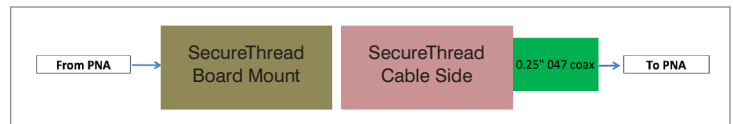
### Single-Channel CoreHC-Based Secure Interconnect Solution



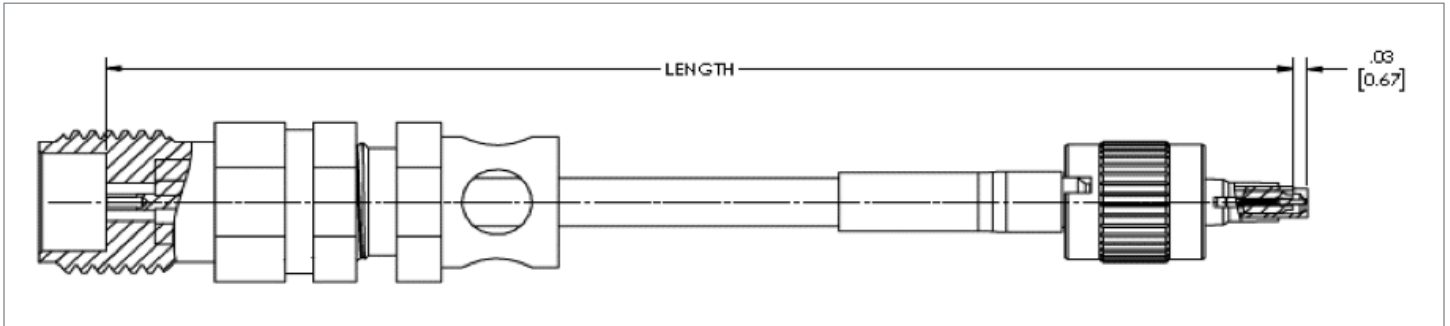
### CoreHC Field-Replaceable Board-Side Housing



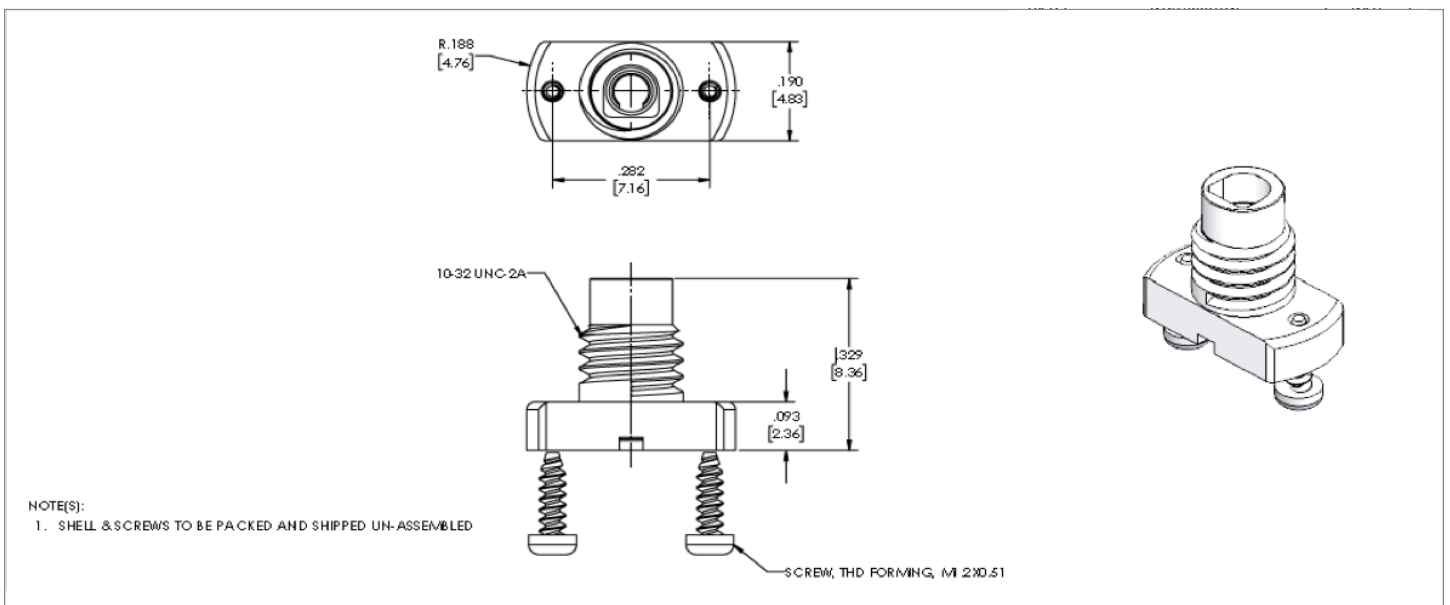
### Test Setup for Interconnect Performance



# SecureThread™ CoreHC™



Single-Channel CoreHC-Based Secure Interconnect Solution



CoreHC Field-Replaceable Board-Side Housing

# SecureThread™ CoreHC Part Numbers

Orderable part number nomenclature and part number examples for CoreHC-based SecureThread Solutions from CarlisleIT are as follows:

Cable Assembly

1V8H1492H X YY

**YY: Length in inches or (mm)**

06	6 (152)
12	12 (305)
18	18 (457)
24	24 (610)
30	30 (762)
36	36 (914)
42	42 (1067)
48	48 (1219)

**X: Phase Matching**

A	2 ps max
B	5 ps max
C	10 ps max

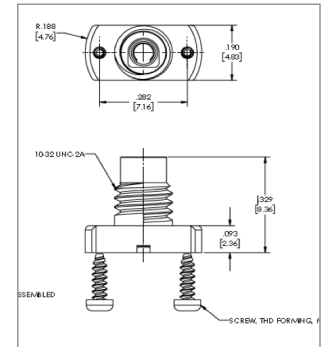
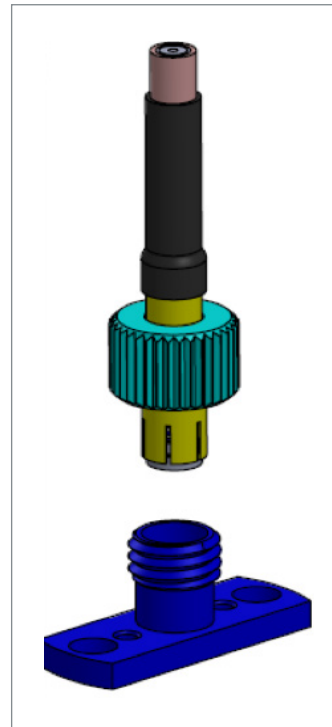
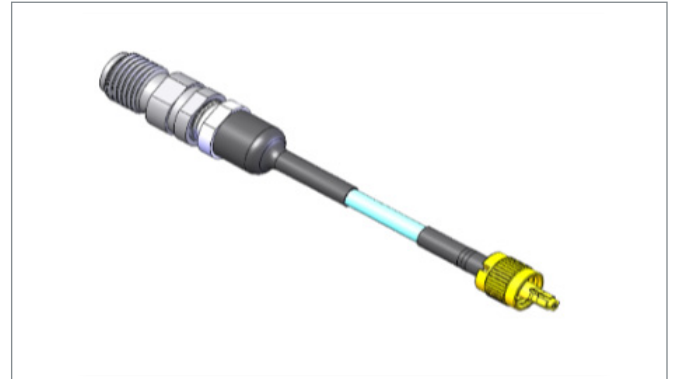
**For Example:**

1V8H1492HA12 is a 12", 2 ps phase-matched HC SecureThread to 1.85 m precision connector .079" coax cable assembly

1V8H1492HC36 is a 36", 10 ps phase-matched HC SecureThread to 1.85 m precision connector .079" coax cable assembly

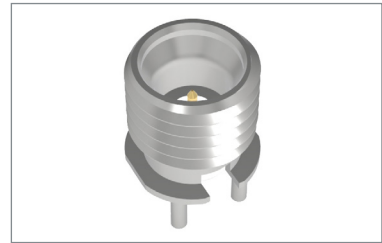
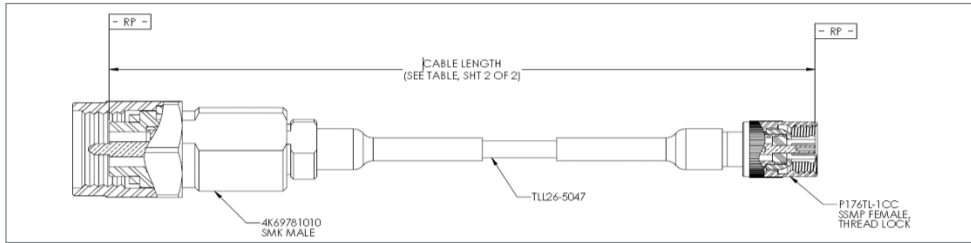
**Board-Side Connector:**

Part Number: 3H89980011



# SecureThread™ Board-Mount Solutions

Board-Mount SSMP (SMPM) SecureThread Solutions include a surface-mount board-side connector and a coaxial cable assembly. The threaded-lock female SSMP (SMPM) board-mount connector shown below (TM14-0084-00), which supports frequencies from of DC to 65 GHz, needs to be soldered onto the board using surface-mount technology. Therefore, in order to support automatic pick-and-place assembly, it is available in tape-and-reel packing with a maximum of 500 connectors per 13" diameter reel. A threaded-lock male SSMP (SMPM) to RF Precision Connector Coax Cable Assembly (1.85 mm, 2.92 mm, or 3.5mm) is needed to connect with TM14-0084-00, and is available as part of CarlisleIT's standard SecureThread offering.



**TAPE AND REEL DEFINITION**  
ITEMS 5 AND 6 NOT SHOWN FOR CLARITY  
NOTES 1 THRU 5 APPLY  
SCALE 4:1

REV.	DESCRIPTION	DATE	BY
001	INITIAL RELEASE	4/11/19	PV
01	REVISED STENCIL	4/23/2019	PV
02	REMOVED PRE-TIN	5/9/2019	PV

**PACKAGING NOTES:**  
 1. SOLDER CONNECTOR SUB-ASSEMBLY, REEL 1 AND 2.  
 2. CONNECTOR SUB-ASSEMBLY, REEL 3 SHALL BE PLACED UNDER CARRIER TAPE PER 13.  
 3. HOLE CENTER LOCATED ON THE CONNECTOR FORWARD TOWARD SPROCKET HOLES.  
 4. SOLDER CONNECTOR 3.5MM OR CARRIER TAPE USING COVER WIRE PER 14.  
 5. A MAXIMUM OF 100 CONNECTORS CAN BE PER REEL OR CARRIER TAPE ON EACH DIA. REEL PER 1 AND 4E.  
 6. ALL DIMENSIONS PER NOTES 1 THRU 5 TO BE HUNDREDS OF INCHES UNLESS OTHERWISE SPECIFIED.  
 7. REEL AND HOLE PER 1 AND 4E (EXCEPT DIMENSIONS ON DRAWING).  
 8. DIMENSIONS PER 13.  
 9. SEE PART 1 FOR PCB DEFINITION.  
 10. DIMENSIONS PER 13.  
 11. DIMENSIONS PER 13.  
 12. DIMENSIONS PER 13.  
 13. DIMENSIONS PER 13.  
 14. DIMENSIONS PER 13.

Threaded SSMP (SMPM) connector board-side footprint:

**CPW PCB LAYOUT**  
SCALE 20:1

**STRIPLINE PCB LAYOUT**  
SCALE 20:1

**PCB LAYER DEFINITION**

- LAYER 1: Cu, 1.35 mil [0.034mm]
- LAYER 2: DIELECTRIC, 8.0 mil [203mm]
- LAYER 3: Cu, .475 mil [0.017mm]
- LAYER 4: DIELECTRIC, 5.0 mil [127mm]
- LAYER 5: Cu, .475 mil [0.017mm]

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# SecureThread™ Board-Mount Solutions Part Numbers

Orderable part number nomenclature and part number examples for CoreHC-based SecureThread solutions from CarlisleIT are as follows:

Cable Assembly

1-**XX**S1-047-42**YY**

**1-XXS1-047-42YY**

02 = 2"	18 = 18"	34 = 34"
04 = 4"	20 = 20"	36 = 36"
06 = 6"	22 = 22"	38 = 38"
08 = 8"	24 = 24"	40 = 40"
10 = 10"	26 = 26"	42 = 42"
12 = 12"	28 = 28"	44 = 44"
14 = 14"	30 = 30"	46 = 46"
16 = 16"	32 = 32"	48 = 48"

**XX: Type of Precision Connector on Cable Side**

36	SMA male-type
K6	2.92 mm male-type
87	2.4 mm male-type
V6	1.85 mm male-type

**Board-Side Connector:**

TM14-0084-00  
Threaded SSMP (SMPM) female-type surface-mount board-side connector

**For Example:**

1-K6S1-047-4230 is a 30" long SecureThread Coax Cable Assembly with a threaded SSMP (SMPM) female connector on the board side and a 2.92 mm male-type precision connector on the cable side

1-V6S1-047-4244 is a 44" long SecureThread Coax Cable Assembly with a threaded SSMP (SMPM) female connector on the board side and a 1.85 mm male-type precision connector on the cable side

Part Number	Length	Max VSWR:1 @40 GHz (Gated)	Max Insertion Loss (dB) @40 GHz (Gated)
CABLE ASSEMBLY BUCKET PHANTOM			
1-K6S1-047-4200			
1-K6S1-047-4204	4"	1.50	1.44
1-K6S1-047-4206	6"	1.50	1.88
1-K6S1-047-4208	8"	1.50	2.31
1-K6S1-047-4210	10"	1.50	2.75
1-K6S1-047-4212	12"	1.50	3.19
1-K6S1-047-4214	14"	1.50	3.63
1-K6S1-047-4216	16"	1.50	4.07
1-K6S1-047-4218	18"	1.50	4.50
1-K6S1-047-4220	20"	1.50	4.94
1-K6S1-047-4222	22"	1.50	5.38
1-K6S1-047-4224	24"	1.50	5.82
1-K6S1-047-4226	26"	1.50	6.25
1-K6S1-047-4228	28"	1.50	6.69
1-K6S1-047-4230	30"	1.50	7.13
1-K6S1-047-4232	32"	1.50	7.57
1-K6S1-047-4234	34"	1.50	8.01
1-K6S1-047-4236	36"	1.50	8.44
1-K6S1-047-4238	38"	1.50	8.88
1-K6S1-047-4240	40"	1.50	9.32
1-K6S1-047-4242	42"	1.50	9.76
1-K6S1-047-4244	44"	1.50	10.20
1-K6S1-047-4246	46"	1.50	10.63
1-K6S1-047-4248	48"	1.50	11.07

# SecureThread™ Specifications & Performance

## PERFORMANCE

Low insertion loss and VSWR of CIT's SecureThread Interconnect Solutions indicate their high quality and performance. VSWR and insertion-loss performance of 12" of .079" coax cable assemblies with SSMP (SMPM) connectors across the frequency range of DC to 65 GHz is shown for reference in Figure 1. Low VSWR of <1.4 indicates a uniform impedance profile across the length of the cable assembly with minimal unwanted standing waves and reflections. Keeping the insertion loss less than -3 dB across the 65 GHz frequency spectrum ensures that the signal loss in the cable is very small. Similar performance is expected from the CoreHC SecureThread Interconnect system.

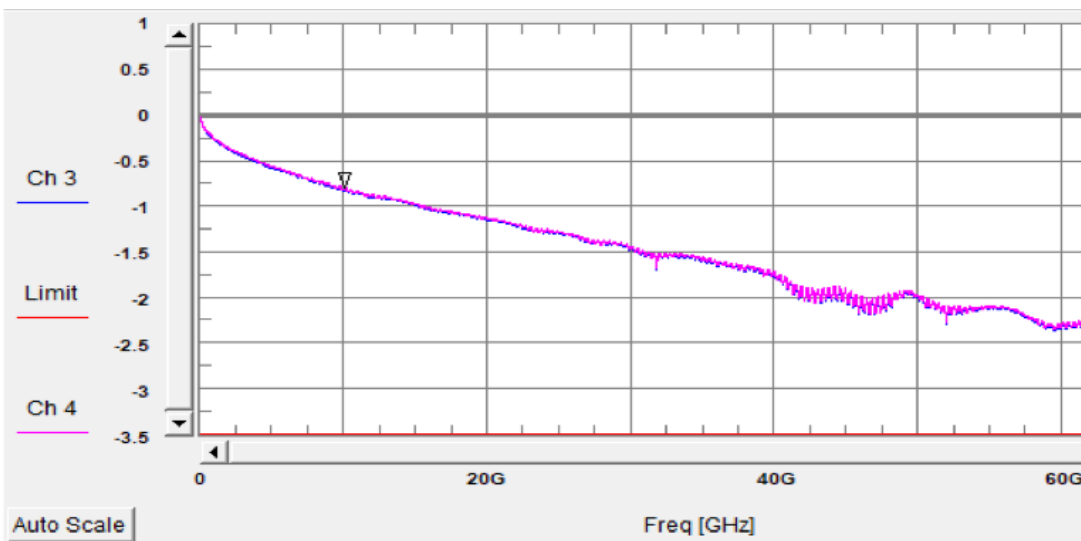


Fig 1. Insertion Loss of .079" SSMP (SMPM) SecureThread Interconnect Solution

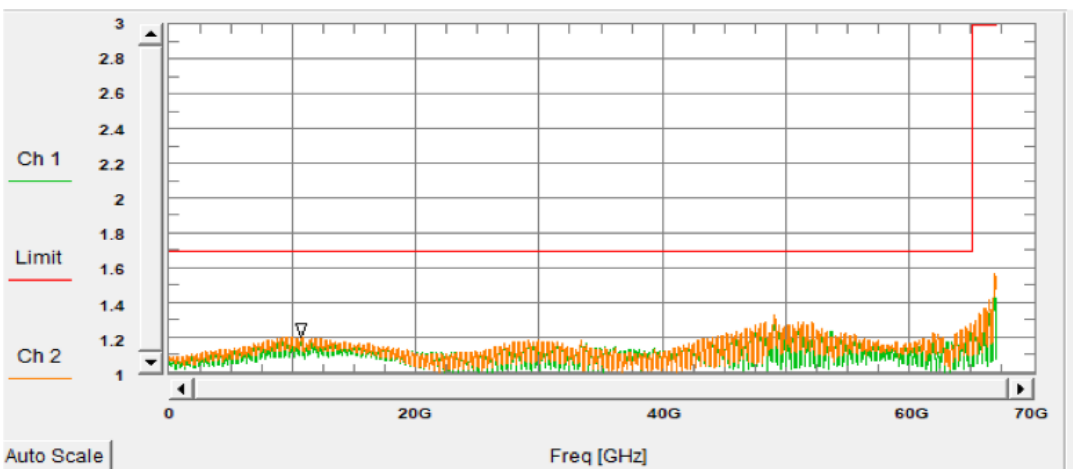


Fig 2. VSWR of .079" SSMP (SMPM) SecureThread Interconnect Solution

# Global Manufacturing. Local Support.

Wherever you are, so are we. With manufacturing centers around the globe, our highly qualified team of engineers is up to any challenge. Our extensive worldwide manufacturing capabilities, coupled with end-to-end local project management and engineering support, allow us to design, build, test, and certify your product in-house, saving you the time and hassle of managing multiple vendors.



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- » AS9100
- » ISO 9001
- » ISO 13485
- » ISO 14001
- » ITAR registration
- » MIL-SPEC/SAE
- » RoHS compliance

## Performance with Purpose



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