

# VITA 67.3

## NANO RF & SMPM CONNECTORS

### RF COAXIAL INTERCONNECT SYSTEM VPX COMPATIBLE




VITA 67.3 Nano and SMPM assemblies are a part of VPX systems and is the **latest spec revision that allows for more customization** with RF connectors.

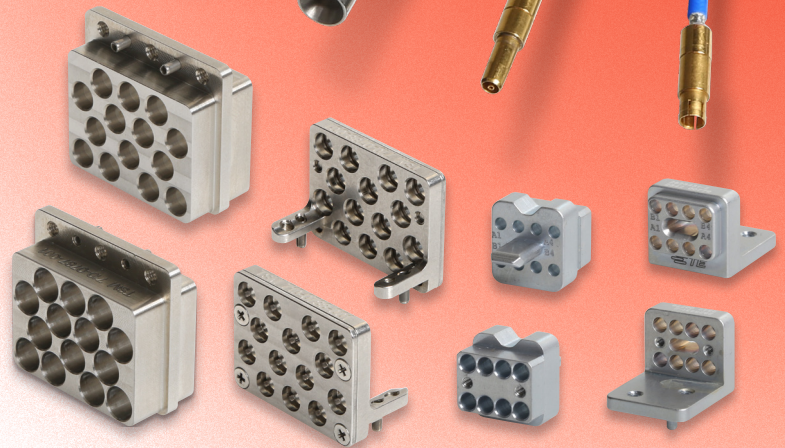
The embedded computing architecture allows for fixed plug-in module contacts mating to a spring loaded backplane. The VITA standard ensures **interoperability across all vendors** with **high electrical performance** to 40 GHz and above.

The Teledyne Storm Microwave advantage comes through with our StormFlex® cable. The combination of these RF contacts and StormFlex cable creates a **robust assembly that is flexible, durable, and reliable.**

Teledyne Storm Microwave assemblies undergo **rigorous testing to adhere to the harsh environments** that these VITA components must endure. Our attention to detail is evident in all our products and is evident in our growing family of VITA products.

**Contact us to learn more about how we can support your embedded system design.**

 Cables made and assembled in the U.S.



#### FEATURES

- ~ Various positions ranging from 4 and higher
- ~ Mother card and daughter card versions
- ~ Standard MIL-STD-348 SMPM interface
- ~ Works beyond the VITA 67 minimum operation frequency of 26.5 GHz
- ~ Utilizes Storm Flex® 086, 047 and 034 cable

#### BENEFITS

- ~ Layout flexibility
- ~ Works with standard VPX parts
- ~ Saves time by enabling quick connect/disconnect
- ~ Adapters used to reduce radial misalignment
- ~ Broader use across multiple applications
- ~ Offers the flexibility needed to handle high density configurations
- ~ Withstands multiple flexures immediately behind the connectors without breaking or degrading
- ~ High compression resistance



High value microwave and electronic interconnect solutions.

[www.teledynestorm.com](http://www.teledynestorm.com)

## CONNECTOR PROPERTIES

### SPECIFICATIONS

Operating Frequency	DC to 40 GHz* (performance based on connector selection)
VSWR (max)	1.45:1 DC to 40 GHz* (performance based on connector selection)
Insertion Loss	See calculator on Storm website (TYP. 12" Storm Flex® 086 max IL: 2.13 dB)
Dielectric Withstanding Voltage	325 Vrms (min) tested per MIL-STD-202, Method 301
Mating Characteristics	Force to engage and disengage: 3.5 lbs (typical) Spring force at full deflection: 4.25 lbs (typical)
Insulation Resistance	5000 Mohms (min) tested per MIL-STD-202, Method 302, Condition B
Corrosion	Tested per MIL-STD-202, Method 101
Durability	More than 500 mate/demate cycles
Contact Resistance – Initial (milliohms, max)	Center contact 6.0 and outer contact 5.0, tested per MIL-PRF-39012, para. 4.6.13
Vibration	Tested per MIL-STD-202, Method 214, Test Condition I, Curve D
Shock	Sawtooth pulse of 100 g 6ms per Mil-STD-202, Method 213, Condition I
Thermal Shock	Tested per MIL-STD-202, Method 107, Test Condition A
Moisture Resistance – Humidity	1,000 megohms within 5 minutes after removal from humidity, tested per MIL-STD-202, Method 106
Power Handling	RF power CW average: 20 dBm min. from 30 MHz to 27 GHz and 30 dBm min. from 3 MHz to 30 MHz
Channel to Channel Isolation	>100 dB 3–26.5 GHz >120 dB 30 MHz–3 GHz >140 dB 3–30 MHz
Intermateability	Connector blocks and SMPM contacts may be used between manufacturers.

\* The VITA specification lists electrical requirements through 26.5 GHz. In practice, cables will operate above this frequency.

### CONFIGURATION

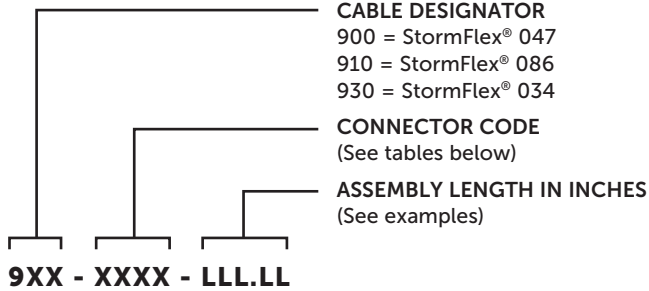
Direct Attach Connector Block	Various positions ranging from 4 up to 20
Connector Block	Available in 4, 8, 10, 14 & 20 Positions
Cable Type	StormFlex® 086, 047 & 034 available
Connectors	Connectors vary, see ordering information for options

### MATERIALS

CONNECTOR BLOCKS	
SMPM / Nano RF Blocks	<b>OPTION 1:</b> Aluminum 6061-T6 with chemical conversion coat <b>OPTION 2:</b> Corrosion resistant steel with passivation
Direct Attach Block	Mounting & connector block: Aluminum 6061-T651 or -T6 with chemical conversion coat Screw & pins: 18-8 stainless steel with passivation
SMPM CONNECTORS	
Body and Contact	Beryllium copper with gold plate over nickel plate
Locking Ring	Beryllium copper with nickel plate
Insulator	Teflon
Spring	Corrosion resistant steel with passivation

# ORDERING INFORMATION

## PART NUMBER DESIGNATION



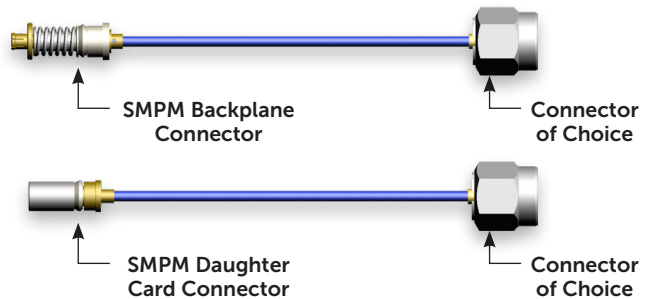
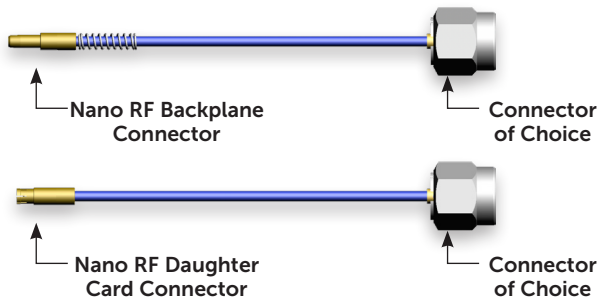
## EXAMPLES:

**900-3776-012** = VITA 67.3 assembly with Storm Flex 047 cable, Nano Pin to SMK SP connectors (assembly operates up to 40 GHz), **12 inches**

**910-0475-007.5** = VITA 67.3 assembly with Storm Flex 086 cable, SMPM Backplane to SMA SJ connectors (assembly operates up to 18 GHz), **7.5 inches**

## CONNECTOR CODES

SP	Straight Plug
SJ	Straight Jack
RAJ	Right-Angle Jack



## CONNECTOR CODES

### STORMFLEX® 034

	40 GHz		50 GHz
	SMK SP	2.4mm	SMPM SJ
<b>Nano Pin</b>	0576	0672	7284
<b>Nano Socket</b>	0573	0673	7384

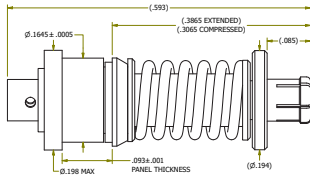
### STORMFLEX® 047

	50 GHz	40 GHz		26.5 GHz		18 GHz		
	2.4mm SP	GPPO SJ	SMK SP	SMA SP	SSMA SP	GPO RAJ	GPO SJ	SMA SP
<b>Nano Pin</b>	4076	2376	3776	0376	3076	0776	2176	0276
<b>Nano Socket</b>	4077	2377	3777	0377	3077	0777	2177	0277
<b>SMPM Backplane</b>	4075	2375	3775	0375	3075	0775	2175	0275
<b>SMPM Plug-in</b>	4074	2374	3774	0374	3074	0774	2174	0274

### STORMFLEX® 086

	50 GHz	40 GHz		26.5 GHz		18 GHz			4 GHz		
	2.4mm SP	GPPO SJ	2.92mm SP	SMA SP	SSMA SP	GPO RAJ	GPPO SJ	SMA SP	SMA SJ	SMP SJ	BNC SP
<b>Nano Pin</b>	4076	2376	3776	0376	3076	0776	2176	0276	0476	1676	4276
<b>SMPM Backplane</b>	4075	2375	3775	0375	3075	0775	2175	0275	0475	1675	4275
<b>SMPM Plug-in</b>	4074	2374	3774	0374	3074	0774	2174	0274	0474	1674	4274

# TECHNICAL DRAWINGS



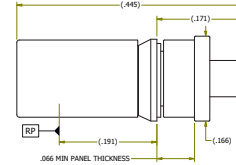
## SMPM BACKPLANE CONNECTOR

MADE WITH StormFlex® 047

050-4069-001

MADE WITH StormFlex® 086

050-4070-001



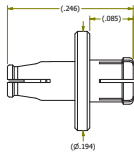
## SMPM DAUGHTER CARD CONNECTOR

MADE WITH StormFlex® 047

050-4064-001

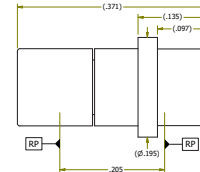
MADE WITH StormFlex® 086

050-4065-001



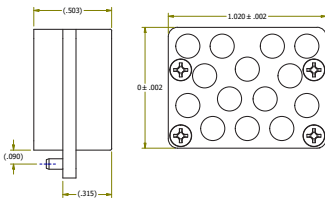
## SMPM CONNECTOR ADAPTER

750-0074-001



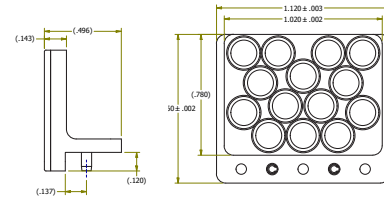
## SMPM BACKPLANE ADAPTER

750-0075-001



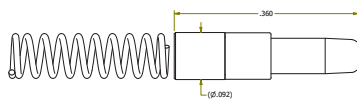
## SMPM BACKPLANE

710-0787-001



## SMPM DAUGHTER CARD

710-0788-001



## NANO RF BACKPLANE CONNECTOR

MADE WITH StormFlex® 034

050-3917-001

MADE WITH StormFlex® 047

050-3880-001

MADE WITH StormFlex® 086

050-3886-001



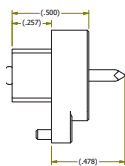
## NANO RF DAUGHTER CARD CONNECTOR

MADE WITH StormFlex® 034

050-3918-001

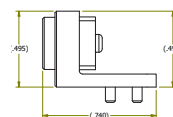
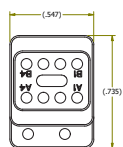
MADE WITH StormFlex® 047

050-3881-001



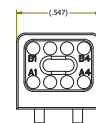
## NANO RF BACKPLANE ASSEMBLY

050-3931-001



## NANO RF DAUGHTER CARD ASSEMBLY

050-3932-001

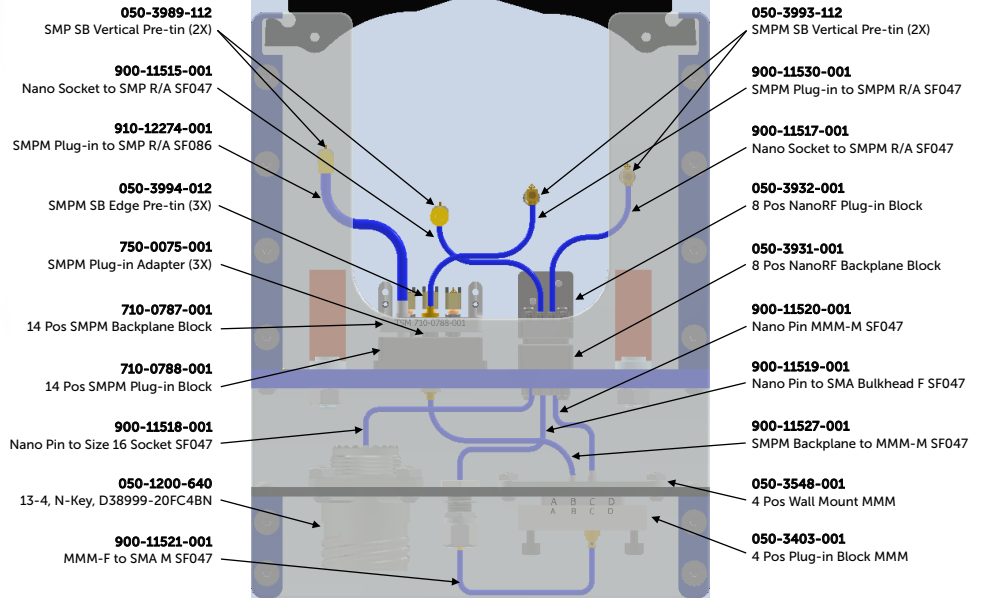


Pair with connector blocks on next page for complete assembly.

## SAMPLE KIT & PART NUMBER REFERENCE



### VITA 67.3 Sample Kit Part Number Reference



## TOOLS NEEDED



**CABLE INSERTION TOOL**

P/N: 520-3679



**SMPM BACKPLANE  
REMOVAL PLUNGER**

P/N: 520-3538-001



**SMPM BACKPLANE ADAPTER  
INSERTION/REMOVAL TOOL**

P/N: 520-3782-001



**SMPM DAUGHTER CARD  
REMOVAL PLUNGER**

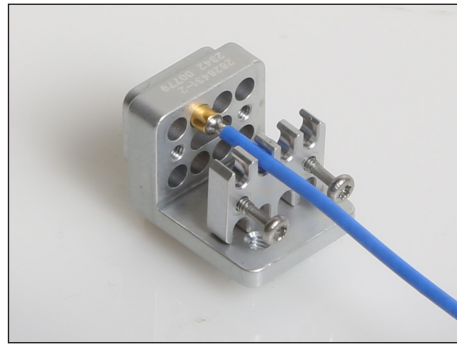
P/N: 520-3781-001

# NANO RF BACKPLANE ASSEMBLY INSTRUCTIONS

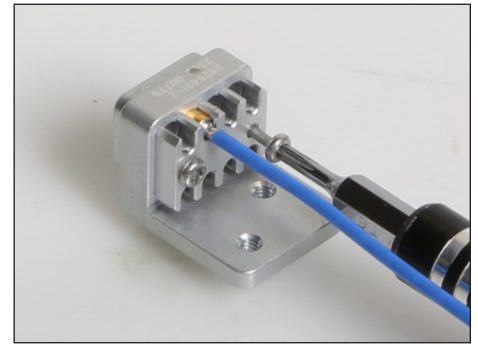
## INSTALLATION



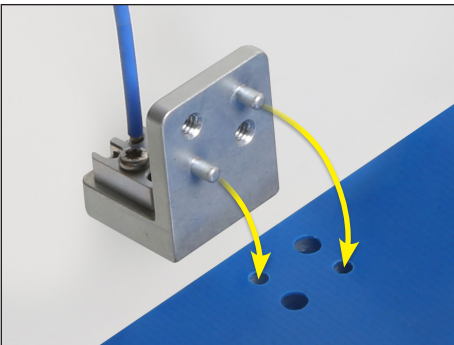
Pre-thread cable retention bracket with two retention screws.



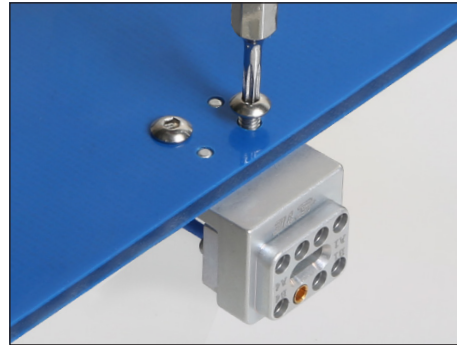
Place cable(s) into backplane face in desired position and carefully seat cable retention bracket, ensuring it is properly aligned to the back of connectors before pushing fully forward.



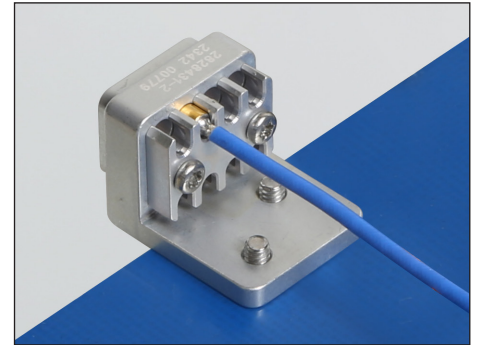
Tighten cable bracket screws.



Seat completed backplane assembly while holding bracket down and line up two retention pegs to PC board.

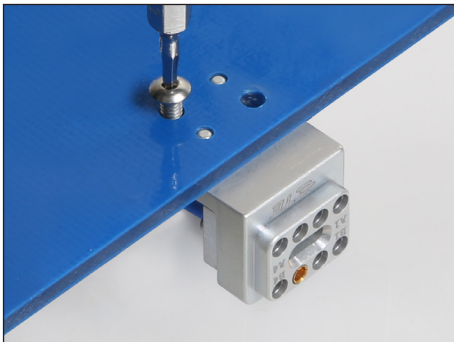


From back face of PC board, securely mount backplane assembly bracket with 2 screws.

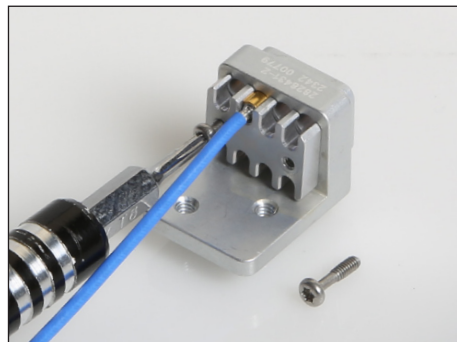


Finished backplane assembly flush-mounted to the PC board.

## REMOVAL



From back face of PC board, loosen and remove 2 retention screws from backplane assembly bracket.



Once backplane assembly is freed from PC board, loosen and remove cable bracket screws while holding onto bracket and cabling..



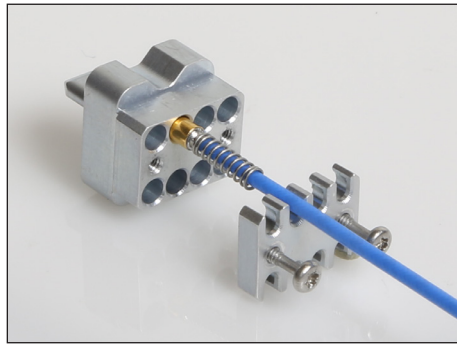
Remove cables and bracket.

# NANO RF DAUGHTER CARD ASSEMBLY INSTRUCTIONS

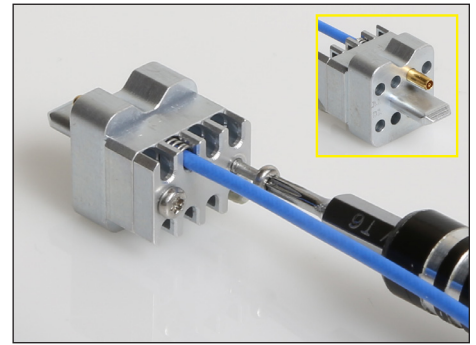
## INSTALLATION



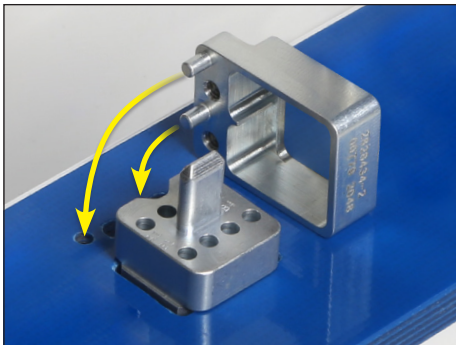
Pre-thread cable retention bracket with two retention screws.



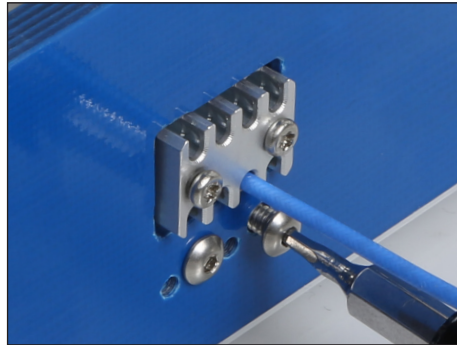
Place cable(s) into daughter card face in desired position and pre-run cable retention bracket, ensuring it is properly aligned to the back of the connector spring before pushing fully forward.



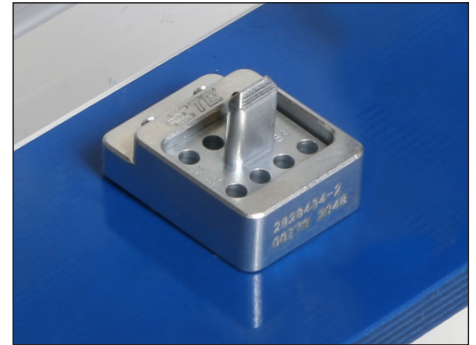
Tighten cable retention bracket screws and verify connector(s) is seated properly on other side of daughter card.



Align cabling through PC board opening and seat completed daughter card assembly, noting alignment notch is on the side of the arrows. Position assembly bracket and insert alignment pegs as shown.



From back face of PC board, securely mount daughter card assembly bracket with 2 screws.

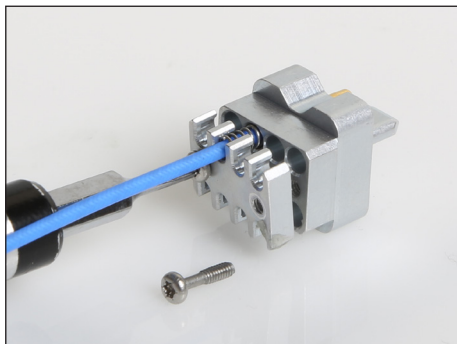


Finished daughter card assembly flush-mounted to the PC board.

## REMOVAL



From back face of PC board, loosen and remove 2 retention screws from daughter card assembly bracket.



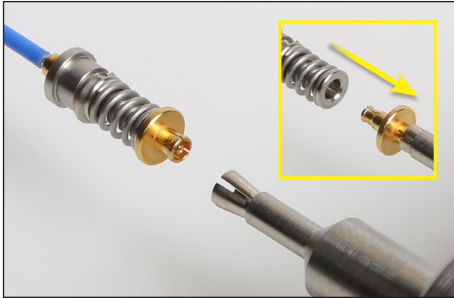
Once daughter card assembly is freed from PC board, slide assembly retention bracket back, loosen and remove cable retention bracket screws.



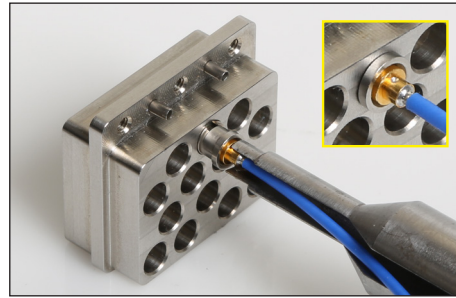
Slide out cabling from daughter card once cable retention bracket is fully removed.

# SMMP BACKPLANE ASSEMBLY INSTRUCTIONS

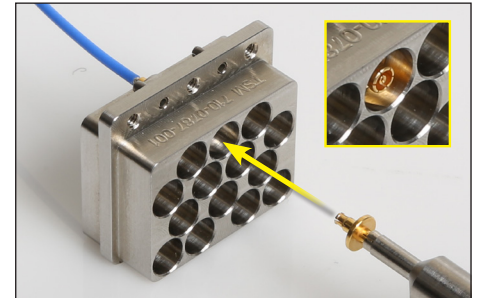
## INSTALLATION



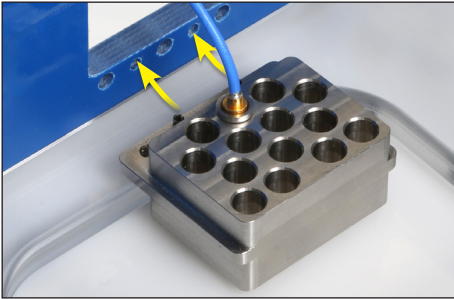
Use adapter tool to remove backplane contact adapter(s) from male connector ends(s). Once removed, place adapter(s) to side for use in upcoming assembly steps.



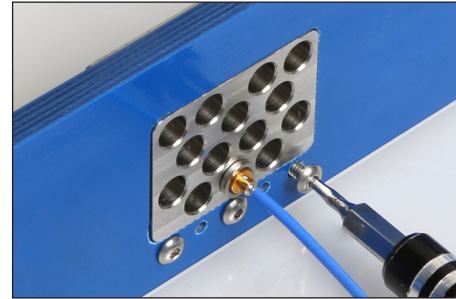
Align cable assembly(s) to desired ports on back side of backplane. You may orient the clip opening to insert first to avoid any potential twisting, it will snap into place when inserted correctly.



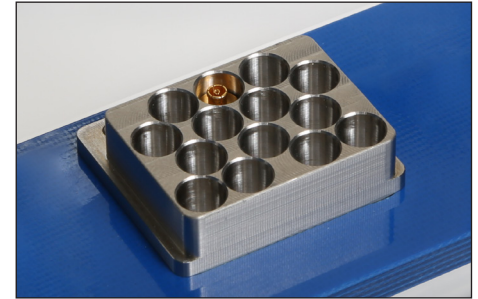
From the mating side of the backplane, re-insert the adapter into desired port and re-connect male connector with adapter tool. A snapping sensation will confirm you have properly seated the adapter.



Line up two retention pegs and seat completed backplane assembly to PC board.

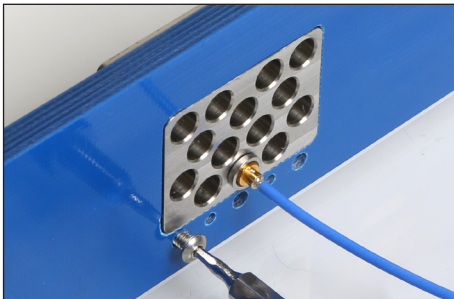


Securely mount backplane assembly to PC board from back side with 3 retention screws.

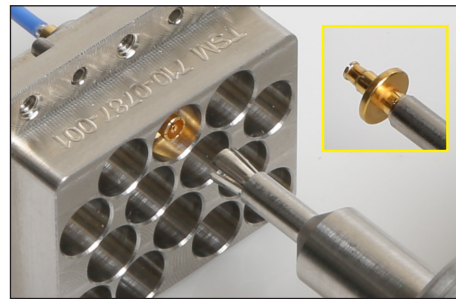


Finished backplane assembly flush-mounted to the PC board.

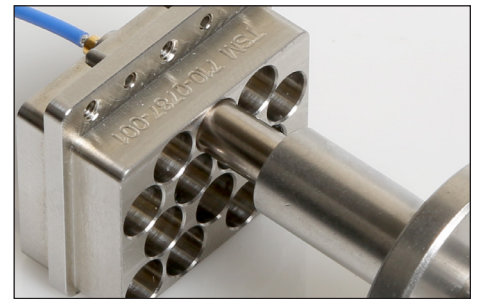
## REMOVAL



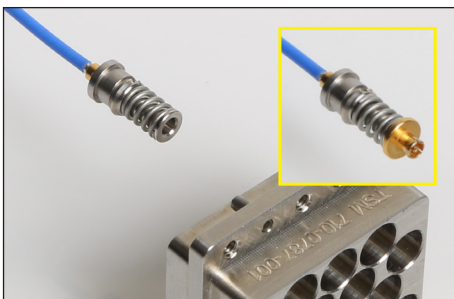
From back face of PC board, loosen and remove 3 retention screws from backplane assembly.



Once backplane assembly is freed from PC board, use adapter tool to pull adapter(s) from ports on backplane face.



Insert removal tool in desired port until it is resting against the connector, you may hear a small click sound. While firmly pushing the tool flange forward, engage the plunger to remove the cable from the backplane.

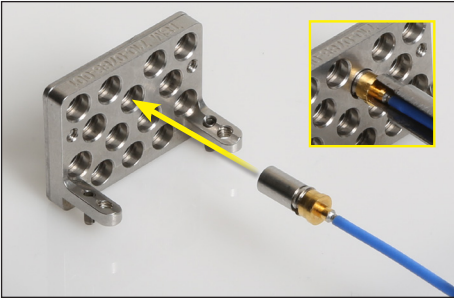


Once cable assembly(s) have been released from backplane, be sure to re-connect cable adapter(s) to male connectors for re-use.

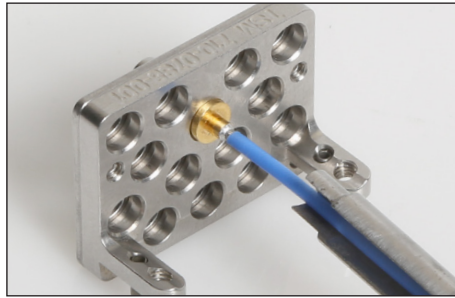


# SMMP DAUGHTER CARD ASSEMBLY INSTRUCTIONS

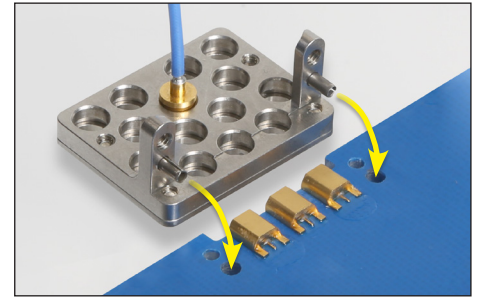
## INSTALLATION



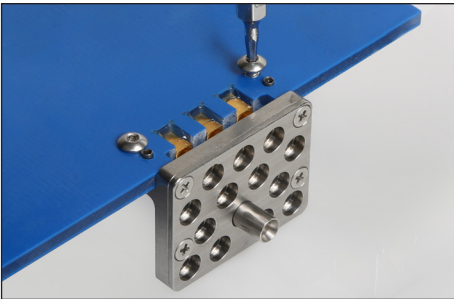
On the back side, line up and place female cable assembly(s) into desired port(s) on daughter card and press-mount using cable insertion tool.



A snapping sensation will confirm you have properly seated the connector into the daughter card.



Align retention pegs of fully completed daughter card assembly to PC board.

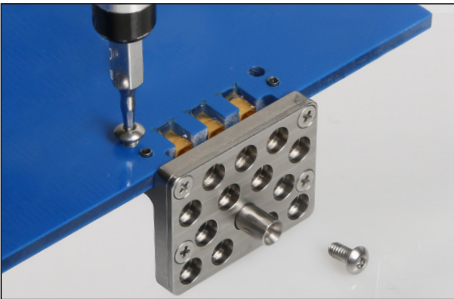


Firmly grip the completed assembly retention pegs to PC board while installing with 2 retention screws.

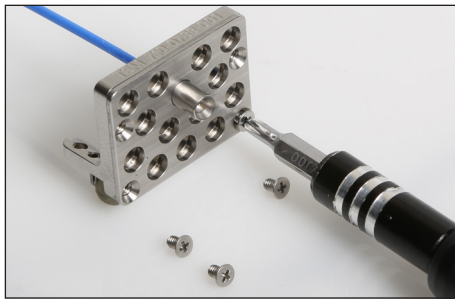


Finished daughter card assembly flush-mounted to the PC board.

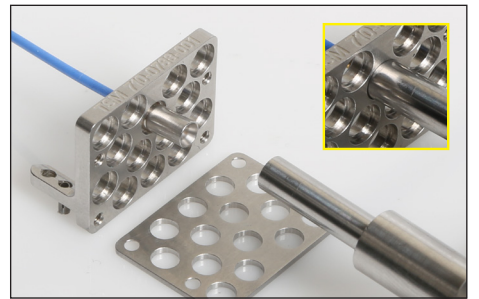
## REMOVAL



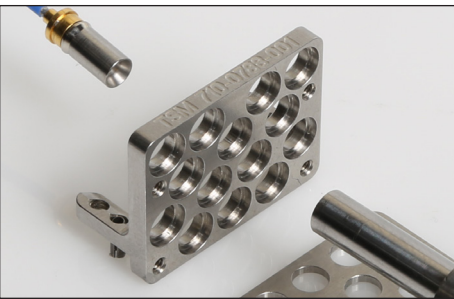
From back face of PC board, loosen and remove 2 retention screws to release daughter card assembly.



Once daughter card assembly is freed from PC board, remove all 4 screws on the front plate.



Use removal tool in desired port until it is resting against the connector clip, you may hear a small click sound. While firmly pushing the tool flange forward, engage the plunger to remove the cable from the daughter card



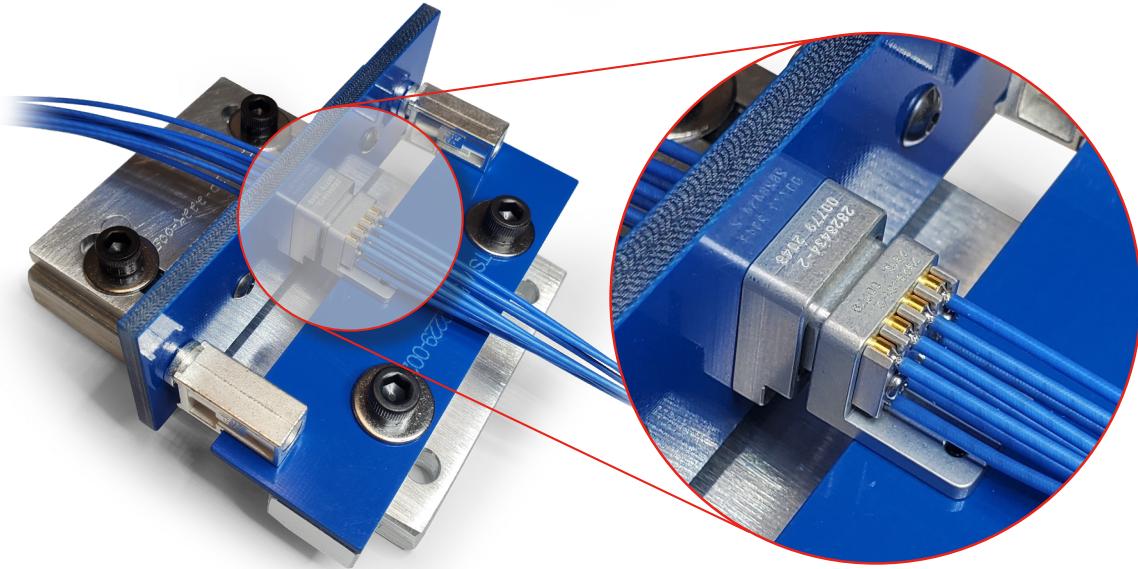
The cable assembly will pop out of the daughter card, be careful to limit the cable assembly from moving in an unexpected direction

# VITA 67.3

## NANO RF & SMPM CONNECTORS

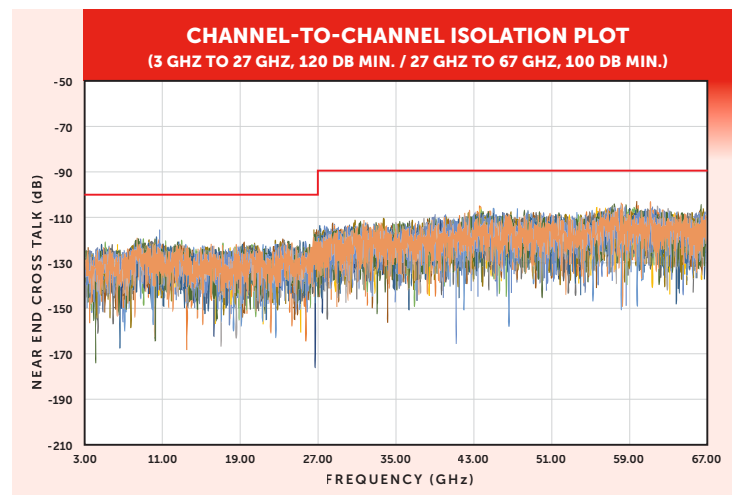
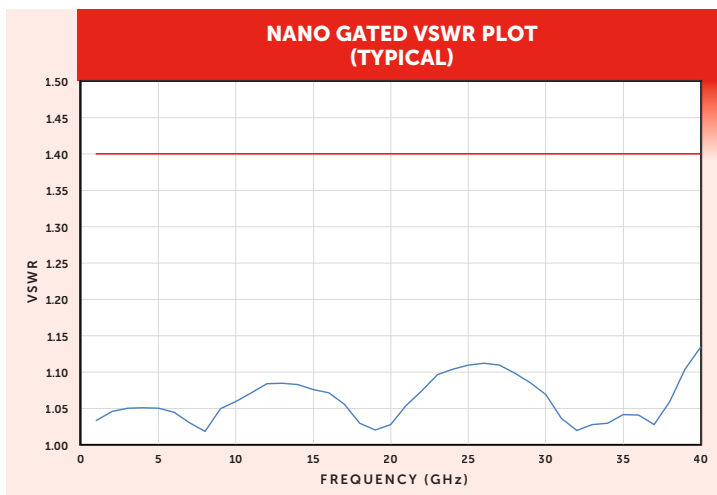
## RF COAXIAL INTERCONNECT SYSTEM VPX COMPATIBLE

VITA assemblies must pass rigorous testing to ensure robustness in harsh environments. Teledyne Storm Microwave has created test fixtures to simulate the mating conditions for electrical and mechanical environmental testing. These tests include a variety of supplier parts to confirm that all parts of NanoRF and SMPM are intermateable with industry equivalent parts. Our diligence in evaluation applies to every part we make.



The mated fixture above shows NanoRF 8 port modules used in environmental testing.

### PERFORMANCE & TEST DATA



AS9100/ISO 9001 REGISTERED

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Toll Free 888.347.8676

PR1-0058 Rev A