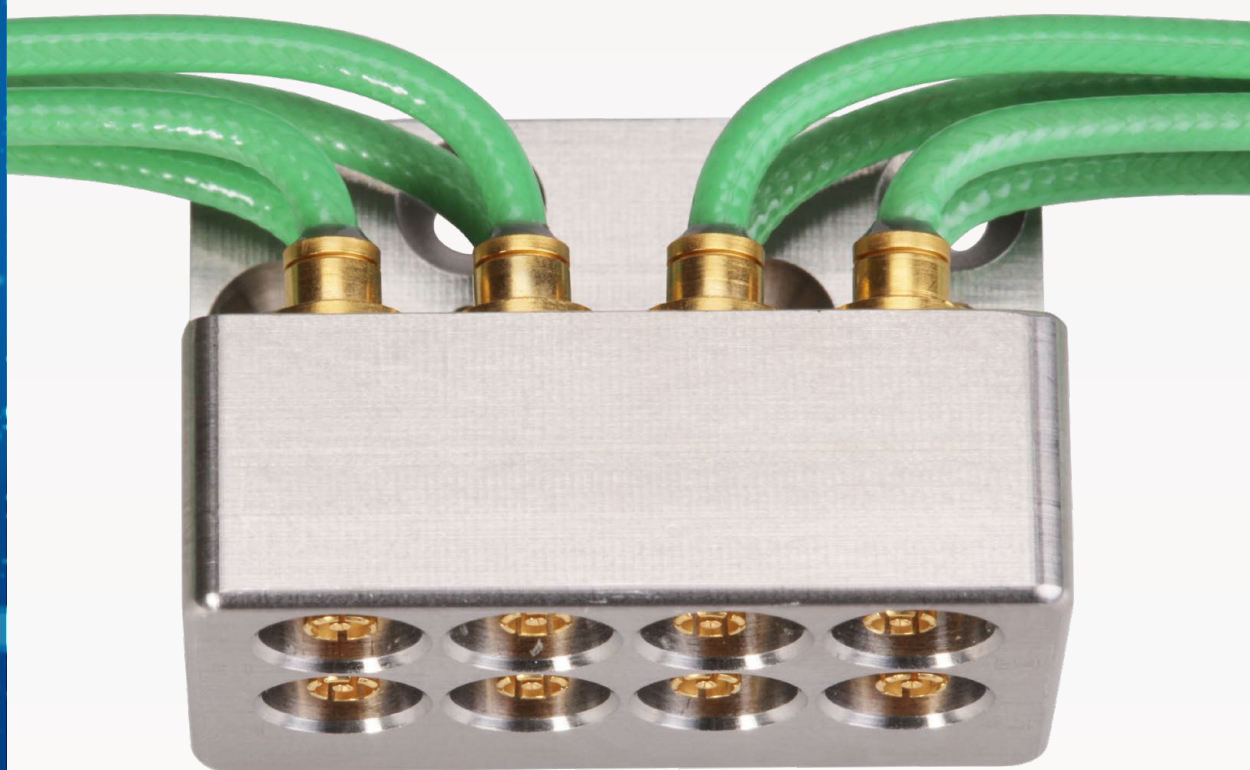


Product snapshot

# OpenVPX™ compliant solutions

Edition 2025



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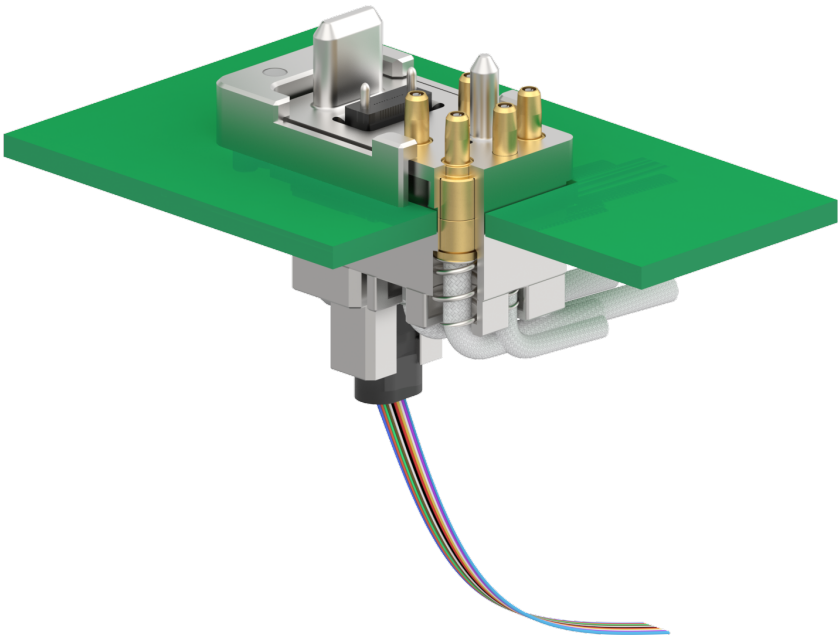
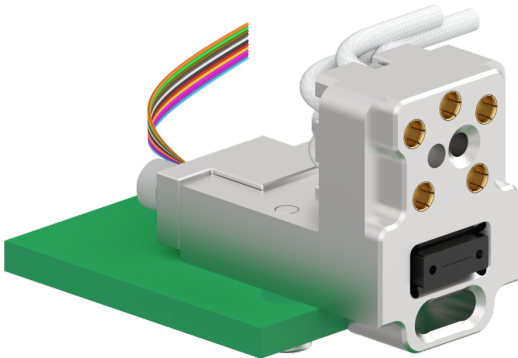
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# Portfolio Overview



## What is OpenVPX™?

The OpenVPX suite of standards identifies a common framework for the design of firmware, software, and hardware for next-generation military embedded systems. OpenVPX is one of many open-source design standards that have been established through collaboration among government, industry, and academia across the Aerospace & Defense (A&D) industry. The purpose of these open-source architecture consortia is to identify, standardize, and proactively maintain a suite of technologies that enable seamless interoperability and significantly improved time-to-market for system-level prototyping, fleet-wide technology upgrades, mission reconfiguration, and MRO activities by empowering multiple sourcing initiatives and improving platform lifecycle management and useful life. At the hardware connectivity level, OpenVPX identifies standard design options for power and data (analog and digital) architecture for embedded systems from PCB to chassis.

Platform commonality and interoperability will boost the effectiveness of next generation A&D systems by ensuring continuous mission readiness. HUBER+SUHNER is a proud member of The Open Group's SOSA Consortium and VITA Standards Organization, and has supported the global Aerospace and Defense industry with high performance and high reliability connectivity solutions for over half a century. We firmly believe that standardization and innovation can coexist, providing system engineers with tradeoff-free connectivity solutions that enable true size, weight, and power (SWaP) optimization for next-generation mission capabilities.

## Features and Benefits

- Complete end-to-end OpenVPX-compliant RF and Fiber Optic connectivity supporting SMPM, SMPS, and NanoRF interfaces delivered as drop-in assemblies from a single source
- The largest portfolio of cable and connector options for PCB and chassis connectivity ensures application-tailored interconnect solutions
- HUBER+SUHNER's proprietary solderless MINIBEND® RF cable termination technology enables the industry's lowest profile 90° bends immediately behind the connector junction and eliminates failure-prone solder joints from the cable assembly, saving valuable space while improving reliability and eliminating installation-related failures
- Lowest loss .047- and .086-size cable options available on the market
- All assemblies manufactured in accordance with IPC/WHMA-A-620 Class 3
- Dedicated express production line provides made-to-order assemblies in as little as 4 weeks



# Technology Spotlight:

## The MINIBEND® family of solderless cable assemblies

Over the last 30 years, HUBER+SUHNER has revolutionized solderless connector termination technology in flexible cable assembly applications. This capability is the foundation behind our MINIBEND® portfolio, the industry's lowest profile flexible coaxial cable assemblies. Designed as a drop-in replacement for traditional semi-rigid coaxial connections (such as .047, .086, and .141), these assemblies deliver superior reliability and ease of installation as an off-the-shelf MIL-PRF-39012 qualified solution.

MINIBEND cable assemblies are highly engineered to provide a tradeoff-free alternative to conventional flexible and pre-formed semi-rigid assemblies:

- **Shield braid** – The cable options supporting the MINIBEND family of products are designed with a stainless steel shield braid to replicate the tensile strength of solder joints without the need for strain relief.
- **Connector design** – MINIBEND connectors are designed with a high-reliability clamped cable junction, which allows the RF cable to be bent immediately behind the rear of the connector body. This feature enables the industry's tightest 90° routing, enabling extreme density which is only otherwise achievable with expensive and fragile pre-formed semi-rigid assemblies.
- **Epoxy system** – HUBER+SUHNER's proprietary epoxy system ruggedizes the clamped shield braid termination, increasing the tensile strength of the cable junction by 70%. This system also provides enough torsional robustness to permit multiple 90° rotations about the center line axis, which is not possible with a soldered connector junction and is one of the leading causes of soldered flexible cable failures during installation.

HUBER+SUHNER's portfolio of OpenVPX-compliant connectivity solutions is designed around the following MINIBEND cable types (for performance details, see Cable Offerings on page 9):

- **MINIBEND L** – Low loss .086-size cable option, compatible with SMPM options
- **MICROBEND** – Standard .047-size cable option with industry-leading 0.060 in. (1.5mm) bend radius
- **MICROBEND L** – Low loss .047-size cable option
- **NANO BEND** – Standard .047-size cable option designed for .047 NanoRF contacts

Additionally featured as a cable option from the HUBER+SUHNER catalog for OpenVPX connectivity:

- **MULTIFLEX\_53-02** – best combination of bend radius and loss performance available at .047 cable size

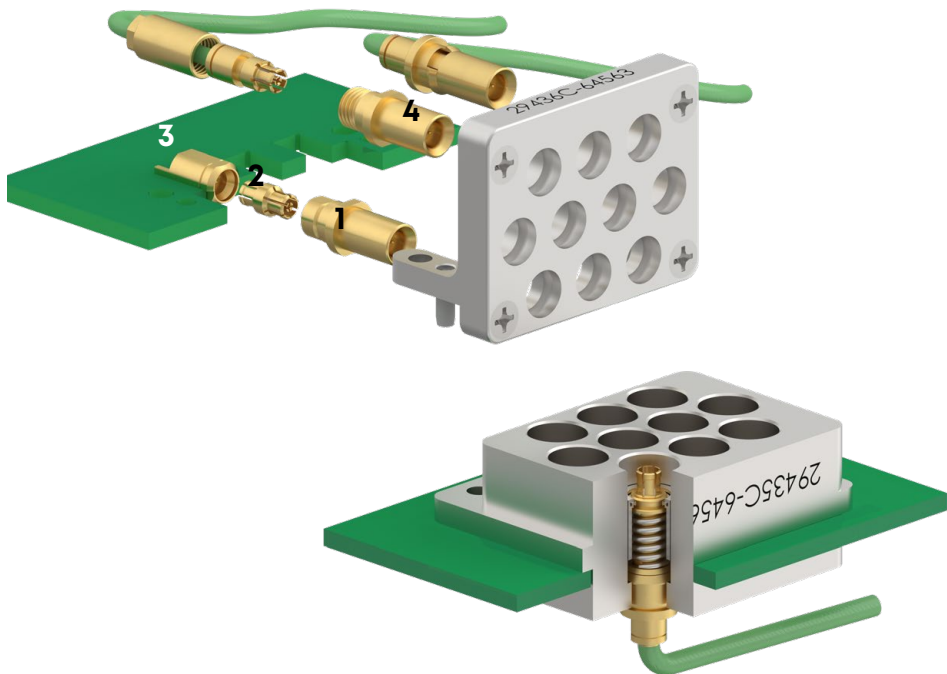
For additional information on the MINIBEND portfolio, please visit our website: **MINIBEND**



MINIBEND assembly (left) shown bent 90° at minimum bend radius alongside a competitor flexible cable assembly

# Product Offerings

## VITA 67.3 – SMPM



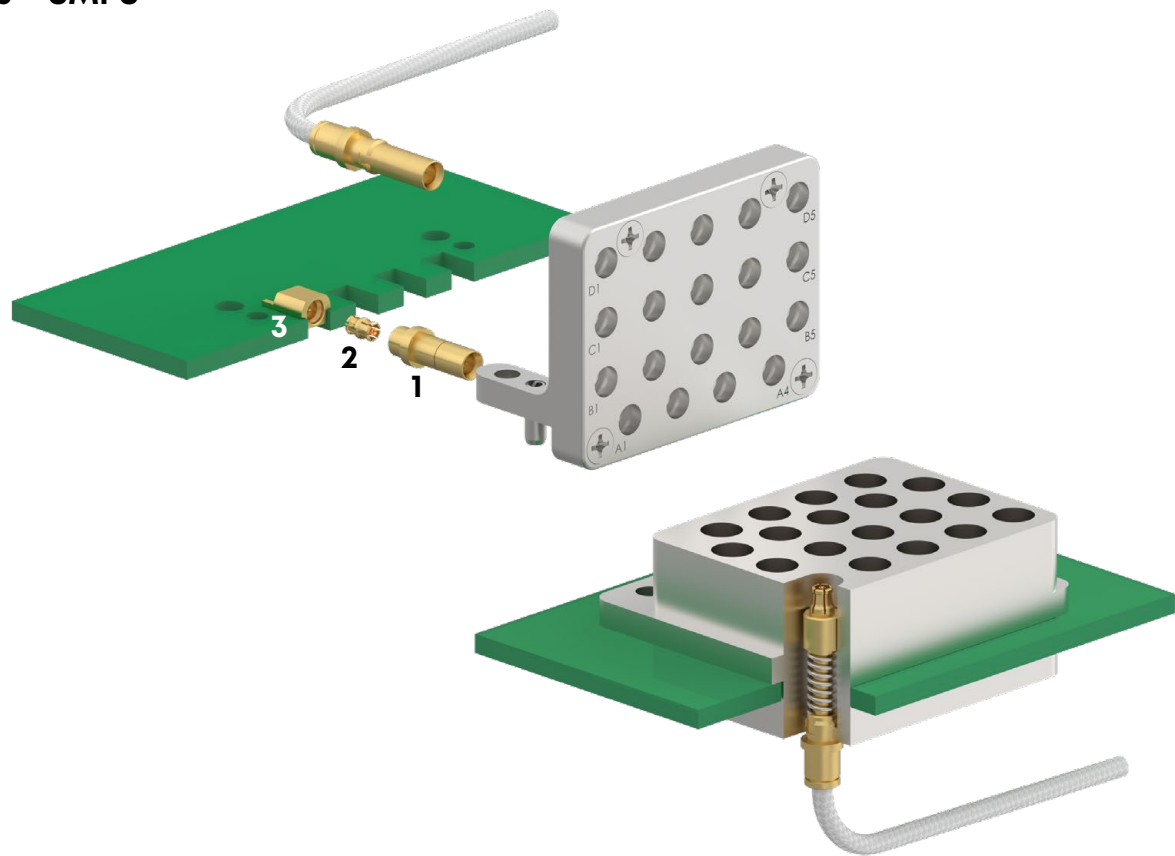
| VITA 65 Reference | Module Description       | Module P/N      | SMPM Contact Series <sup>1</sup> | SOSA Aligned |
|-------------------|--------------------------|-----------------|----------------------------------|--------------|
| 6.4.5.6.3         | 10-pos SMPM Backplane    | 29435C-64563_AI | 29981SV2CR3                      | Legacy       |
|                   | 10-pos SMPM Plug-In Card | 29436C-64563_AI | 29972SVCR3                       | Legacy       |
| 6.4.5.6.4         | 14-pos SMPM Backplane    | 29435C-64564_AI | 29981SV2CR3                      | x            |
|                   | 14-pos SMPM Plug-In Card | 29436C-64564_AI | 29972SVCR3                       | x            |

<sup>1</sup> Reference the Cable Connector Compatibility Matrix on page 9 for available cable types

| Part Description                           | Part Number     | Reference |
|--------------------------------------------|-----------------|-----------|
| VITA 67.3 SMPM Male to SMPM Male Adaptor   | 29989-972P-972P | 1         |
| SMPM Female-to-Female Bullet (.210")       | 29981-A2F11     | 2         |
| SMPM Male Edge Launch PCB Connector        | 29972CB1-4-004  | 3         |
| VITA 67.3 SMPM Male to SMPM-T Male Adaptor | 29989-972P-976P | 4         |



VITA 67.3 – SMPS

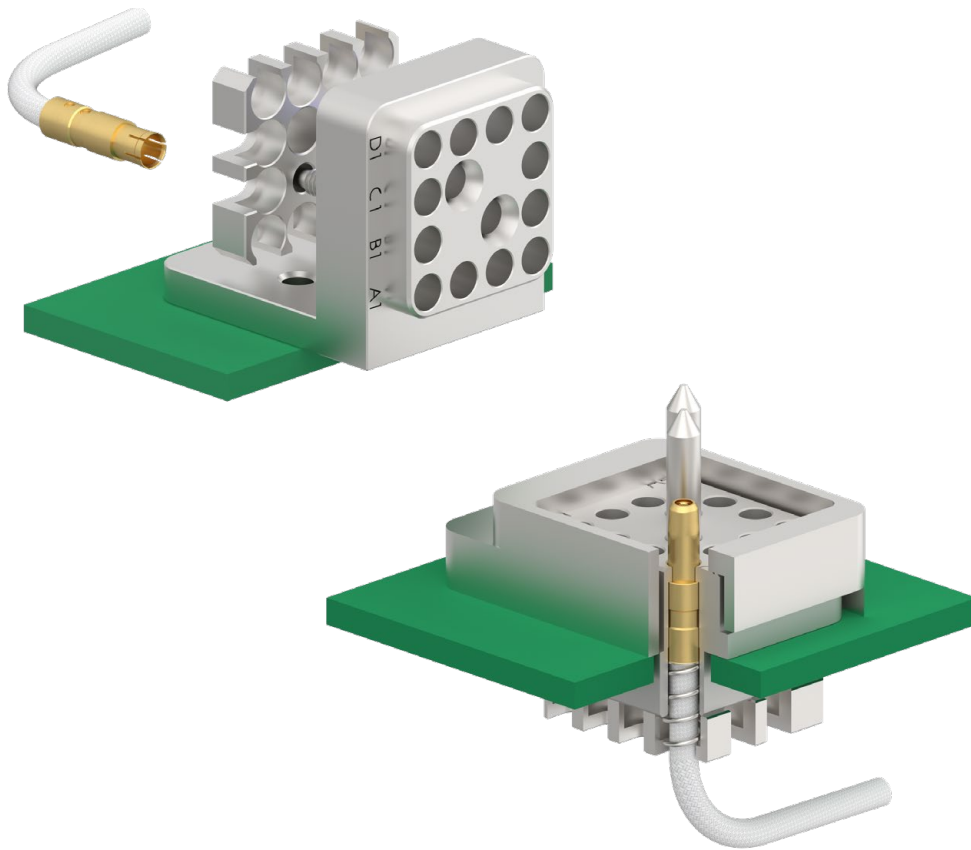


| VITA 65 Reference | Module Description       | Module P/N      | SMPS Contact Series <sup>1</sup> | SOSA Aligned |
|-------------------|--------------------------|-----------------|----------------------------------|--------------|
| 6.4.5.6.7         | 19-pos SMPS Backplane    | 29435C-64567_AI | 29171SVCR3                       | x            |
|                   | 19-pos SMPS Plug-In Card | Coming Soon     |                                  | x            |

<sup>1</sup>Reference the Cable Connector Compatibility Matrix on page 9 for available cable types

| Part Description                         | Part Number | Reference |
|------------------------------------------|-------------|-----------|
| VITA 67.3 SMPS Male to SMPM Male Adaptor | Coming Soon | 1         |
| SMPS Female-to-Female Bullet (.098")     | Coming Soon | 2         |
| SMPS Male Edge Launch PCB Connector      | Coming Soon | 3         |

## VITA 67.3 – NanoRF



| VITA 65 Reference | Module Description                   | Module P/N      | NanoRF Contact Series <sup>2</sup> | MT Assembly <sup>1</sup> | SOSA Aligned |
|-------------------|--------------------------------------|-----------------|------------------------------------|--------------------------|--------------|
| 6.4.5.7.2         | 9-pos NanoRF Backplane               | 29446P-64572_AI | 29447P(2)                          |                          | x            |
|                   | 9-pos NanoRF Plug-In Card            | 29446J-64572_AI | 29447J(2)                          |                          | x            |
| 6.4.5.7.3         | 5-pos NanoRF, 1-pos MT Backplane     | 29446P-64573_AI | 29447P(2)                          | Contact H+S              | x            |
|                   | 5-pos NanoRF, 1-pos MT Plug-In Card  | 29446J-64573_AI | 29447J(2)                          | Contact H+S              | x            |
| 6.4.5.7.4         | 10-pos NanoRF, 1-pos MT Backplane    | 29446P-64574_AI | 29447P(2)                          | Contact H+S              | x            |
|                   | 10-pos NanoRF, 1-pos MT Plug-In Card | 29446J-64574_AI | 29447J(2)                          | Contact H+S              | x            |
| N/A               | 12-pos NanoRF Backplane              | 29446P-12_AI    | 29447P(2)                          |                          |              |
|                   | 12-pos NanoRF Plug-In Card           | 29446J-12_AI    | 29447J(2)                          |                          |              |
| N/A               | 18-pos NanoRF Backplane              | 29446P-18_AI    | 29447P(2)                          |                          |              |
|                   | 18-pos NanoRF Plug-In Card           | 29446J-18_AI    | 29447J(2)                          |                          |              |

<sup>1</sup> HUBER+SUHNER can support MT ferrules on single mode and multimode fiber types, contact H+S for full product availability

<sup>2</sup> The final digit '2' is required for NANOBEND assemblies only. Reference the Cable Connector Compatibility Matrix on page 9 for available cable types

MIL-DTL-38999 Series III / IV Contacts

| Contact Size <sup>1</sup> | Coax Interface | Pin         | Socket      | SOSA Aligned |
|---------------------------|----------------|-------------|-------------|--------------|
| 8                         | BMA            | 14_BMA-50   | 24_BMA-N50  |              |
|                           |                |             | 29482C8R    |              |
| 8                         | BMB            | Coming Soon | Coming Soon | x            |
| 12                        | SMPM           | 29981M12    | 29972AS12   | x            |
| 16                        | SMPS           | 29171M16CR  | 29174M16CR  |              |

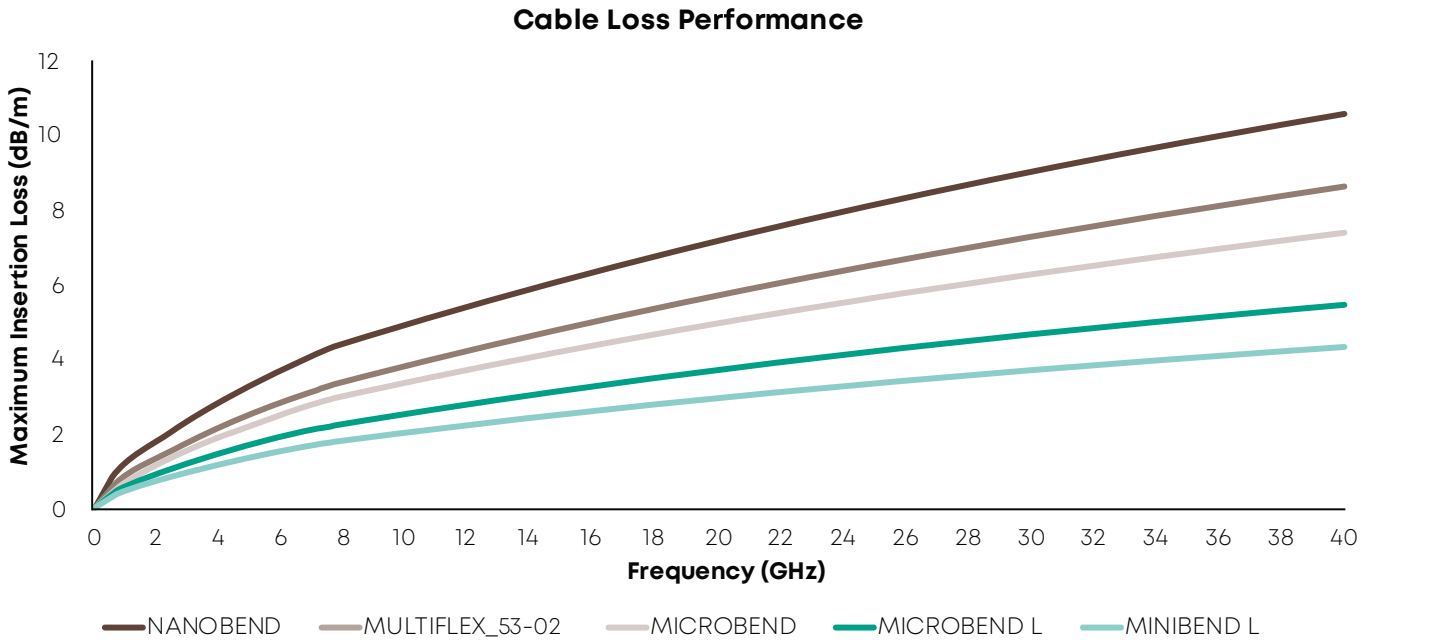
<sup>1</sup> Reference the Cable Connector Compatibility Matrix on page 9 for available cable types



Cable Offerings

| Cable Type <sup>1</sup> | Outer Diam.<br>in. (mm) | Bend Radius<br>in. (mm) | Nominal Insertion Loss dB/ft (dB/m) |             |             |             |
|-------------------------|-------------------------|-------------------------|-------------------------------------|-------------|-------------|-------------|
|                         |                         |                         | 2 GHz                               | 6 GHz       | 18 GHz      | 40 GHz      |
| NANOBEND                | 0.06 (1.62)             | 0.20 (5.1)              | 0.64 (2.11)                         | 1.13 (3.71) | 2.01 (6.58) | 3.07 (10.7) |
| MULTIFLEX_53-02         | 0.07 (1.74)             | 0.06 (1.5)              | 0.50 (1.60)                         | 0.88 (2.90) | 1.60 (5.20) | 2.50 (8.20) |
| MICROBEND               | 0.08 (1.96)             | 0.06 (1.5)              | 0.45 (1.47)                         | 0.79 (2.60) | 1.42 (4.66) | 2.20 (7.22) |
| MICROBEND L             | 0.08 (1.96)             | 0.20 (5.1)              | 0.35 (1.12)                         | 0.60 (1.96) | 1.05 (3.44) | 1.59 (5.21) |
| MINIBEND L              | 0.10 (2.49)             | 0.20 (5.1)              | 0.27 (0.88)                         | 0.47 (1.53) | 0.82 (2.70) | 1.25 (4.10) |

<sup>1</sup> For further details of the cable types listed above, please consult the associated HUBER+SUHNER datasheet.





# Cable Connector Compatibility Matrix

| Interface | Type                  | Part No.    | MIL Ref.*   | NANO BEND | MF53-02 | MICRO BEND | MICRO BEND L | MINI BEND L |
|-----------|-----------------------|-------------|-------------|-----------|---------|------------|--------------|-------------|
| SMP       | Female                | 29573CR     |             | x         |         | x          | x            | x           |
|           | Female                | 29573       |             |           | x       |            |              |             |
|           | Female Right Angle    | 29578       |             |           |         | x          |              | x           |
| SMPM      | VITA 67.3 PIC         | 29972SVCR3  |             | x         |         | x          |              | x           |
|           | VITA 67.3 BP          | 29981SV2CR3 |             | x         | x       | x          | x            | x           |
|           | VITA 67.1/67.2 PIC    | 29981SV     |             |           | x       |            |              |             |
|           |                       | 29981SVCR   |             | x         |         | x          |              |             |
|           | Female (4-Finger)     | 29971CR     |             |           | x       | x          |              |             |
|           | Female (6-Finger)     | 29981CR     |             | x         |         | x          |              | x           |
|           | Female (6-Finger)     | 29981       |             |           | x       |            |              |             |
|           | Female Right Angle    | 29973       |             | x         | x       | x          | x            |             |
|           | D38999 Pin Size 12    | 29981M12    | M39029/58   | x         |         | x          |              | x           |
|           | D38999 Socket         | 29972AS12   | M39029/56   | x         |         |            | x            | x           |
| SMPM-T    | Female                | 29971TCR    |             |           |         | x          | x            | x           |
| SMPS      | VITA 67.3 PIC         |             | Coming Soon |           |         |            |              |             |
|           | VITA 67.3 BP          | 29171SVCR3  |             | x         |         | x          | x            |             |
|           | D38999 Pin Size 16    | 29171M16CR  | M39029/58   | x         |         |            |              |             |
|           | D38999 Socket Size 16 | 29174M16CR  | M39029/56   | x         |         |            |              |             |
| NanoRF    | VITA 67.3 BP (.047)   | 29447P      |             |           | x       |            |              |             |
|           | VITA 67.3 BP (.047)   | 29447P2     |             | x         |         |            |              |             |
|           | VITA 67.3 BP (.086)   | 29447P      |             |           |         |            | x            |             |
|           | VITA 67.3 PIC         | 29447J      |             |           | x       |            |              |             |
|           | VITA 67.3 PIC         | 29447J2     |             | x         |         |            |              |             |
| SMP3      | Female                | 29171CR     |             | x         |         |            |              |             |
| SMP3-T    | Female                | 21SMP3T     |             | x         |         |            |              |             |
| BMA       | D38999 Socket Size 8  | 29482C8R    | M39029/60   |           |         |            |              | x           |
| SMA       | Male                  | 29094CR     |             | x         |         | x          | x            | x           |
|           |                       | 11SMA       |             |           | x       |            |              |             |
|           | Female                | 29092CR     |             | x         |         | x          |              | x           |
|           |                       | 21SMA       |             |           | x       |            |              |             |
| SK        | Male                  | 29094KCR    |             | x         |         | x          | x            | x           |
|           |                       | 11SK        |             |           | x       |            |              |             |
|           | Female                | 29092KCR    |             | x         |         | x          |              | x           |
|           |                       | 21SK        |             |           | x       |            |              |             |

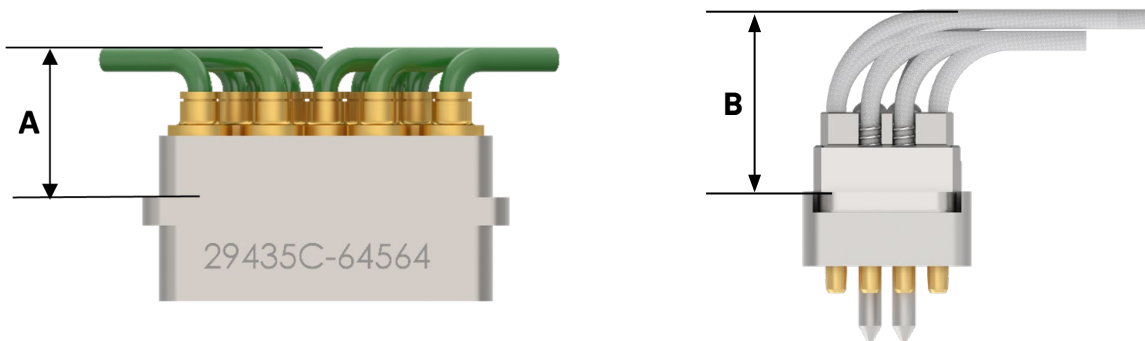
A wide variety of additional "Connector B" options are available for OpenVPX-compliant interconnects. Additional cable types may be available for a specific connector configuration, please contact your local HUBER+SUHNER representative for additional options.

\*MIL references applicable to contact geometry compliance only

# Backplane Minimum Assembly Clearance

| Module                     | Cable           | Clearance Dimension<br>in. (mm) | Reference |
|----------------------------|-----------------|---------------------------------|-----------|
| VITA 67.3 SMPM Backplane   | MINIBEND L      | 0.764 (19.4)                    | A         |
|                            | MICROBEND L     | 0.674 (17.1)                    | A         |
|                            | NANOBEND        | 0.594 (15.1)                    | A         |
|                            | MICROBEND       | 0.455 (11.6)                    | A         |
|                            | MULTIFLEX_53-02 | 0.595 (15.1)                    | A         |
| VITA 67.3 SMPS Backplane   | MICROBEND       | 0.497 (12.6)                    | A         |
|                            | MICROBEND L     | 0.611 (15.5)                    | A         |
|                            | NANOBEND        | 0.597 (15.2)                    | A         |
| VITA 67.3 NanoRF Backplane | MICROBEND L     | 0.534 (13.6)                    | B         |
|                            | MULTIFLEX_53-02 | 0.550 (14.0)                    | B         |
|                            | NANOBEND        | 0.518 (13.2)                    | B         |

Dimensions are referenced from mounting surface of PCB to the top of the 90° cable bend at minimum bend radius. Please contact your local HUBER+SUHNER representative for detailed design support resources.



## Assembly Part Number Builder

|              |   |                    |   |                    |   |               |             |
|--------------|---|--------------------|---|--------------------|---|---------------|-------------|
| <b>Cable</b> | - | <b>Connector A</b> | - | <b>Connector B</b> | - | <b>Length</b> | <b>Unit</b> |
|--------------|---|--------------------|---|--------------------|---|---------------|-------------|

**32061SE** = NANOBEND  
**MF5302** = MULTIFLEX\_53-02  
**32041E** = MICROBEND  
**32085E** = MICROBEND L  
**32081E** = MINIBEND  
**32024E** = MINIBEND L

See Cable Connector Compatibility Matrix on page 9, **Part Number** column<sup>1</sup>

No Unit = Inches (default)  
**MM** = Millimeters  
**M** = Meters

### Example

|                     |                               |
|---------------------|-------------------------------|
| <b>Cable:</b>       | MICROBEND L                   |
| <b>Connector A:</b> | SMPM VITA 67.3 Backplane      |
| <b>Connector B:</b> | SMP Female                    |
| <b>Length:</b>      | 12                            |
| <b>Unit:</b>        | Inches                        |
| <b>Result:</b>      | 32085E-29981SV2CR3-29573CR-12 |

<sup>1</sup> If there is a connector you are looking for that is not in the matrix, please reach out as this option may be available.

Contact HUBER+SUHNER for full part number and ordering information.

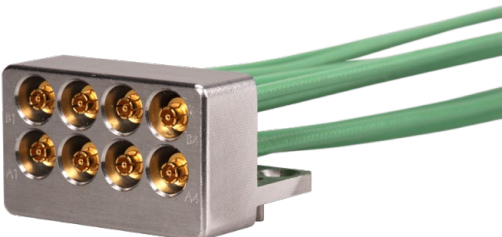
Assemblies from the VITA 67.3 portfolio are manufactured in accordance with IPC/WHMA-A-620 Class 3 by default.

Assemblies requiring special customizations such as phase or length matching can be accommodated.

# Additional Products – VITA 67.1 and 67.2



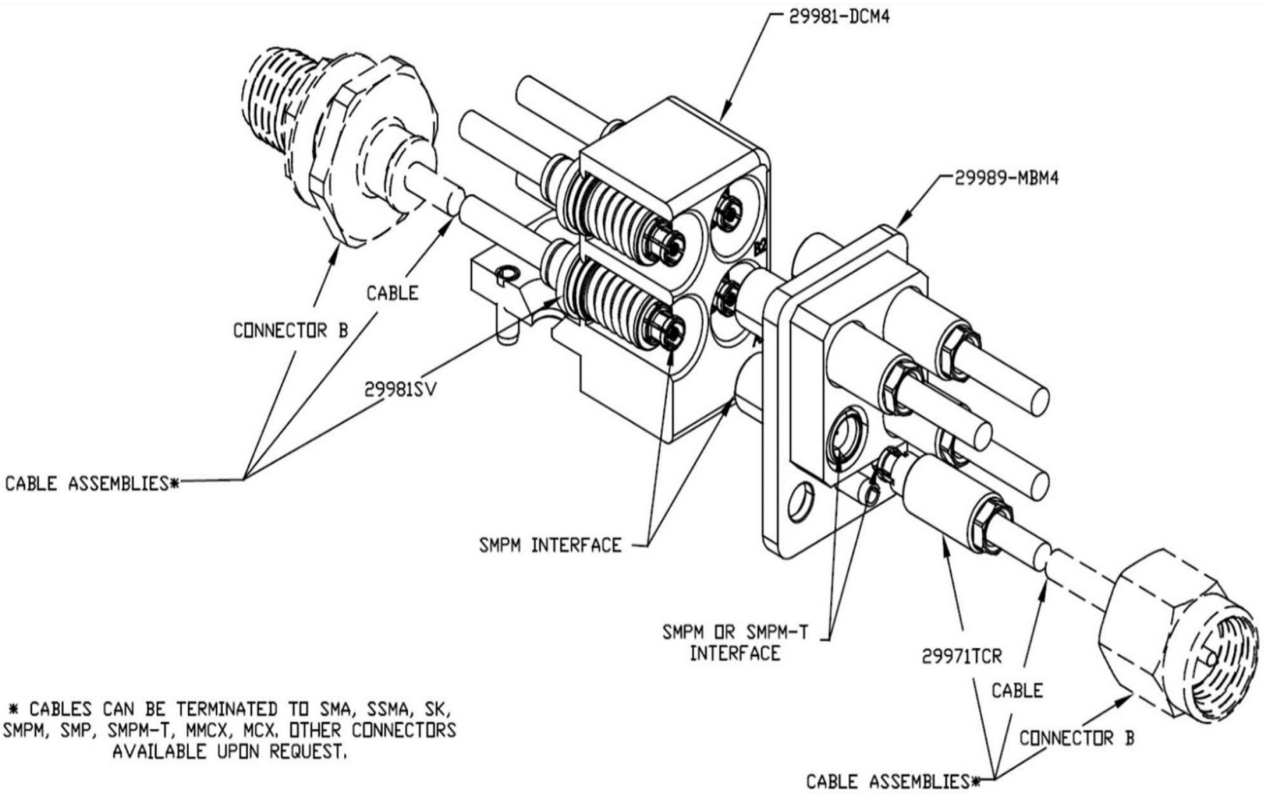
VITA 67.1



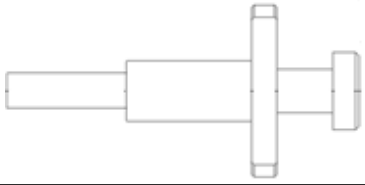
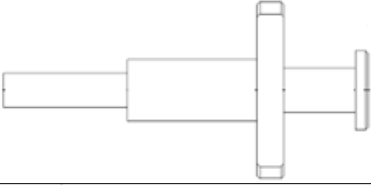
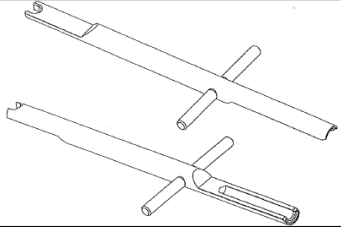
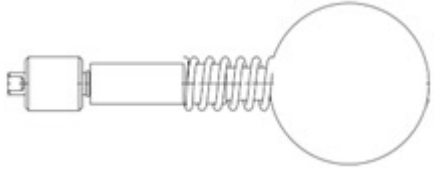
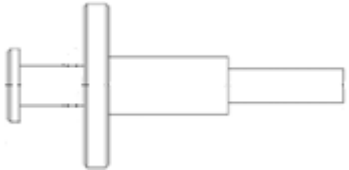
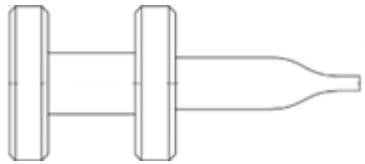
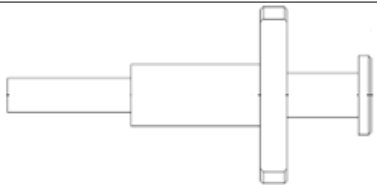
VITA 67.2

| VITA 67 Reference | Module Description             | Module P/N    | SMPM Connector Series <sup>1</sup> |
|-------------------|--------------------------------|---------------|------------------------------------|
| 67.1              | 4-pos SMPM Plug-In Card        | 29981-DCM4    | 29981SV<br>29981SVCR               |
|                   | 4-pos SMPM to SMPM Backplane   | 29989B-MBM4   | 29971CR                            |
|                   | 4-pos SMPM to SMPM-T Backplane | 29989-MBM4    | 29971TCR                           |
|                   |                                | 29989-MBM4-86 |                                    |
| 67.2              | 8-pos SMPM Plug-In Card        | 29981-DCM8    | 29981SV<br>29981SVCR               |
|                   | 8-pos SMPM to SMPM Backplane   | 29989B-MBM8   | 29971CR                            |
|                   | 8-pos SMPM to SMPM-T Backplane | 29989-MBM8    | 29971TCR                           |
|                   |                                | 29989-MBM8-86 |                                    |

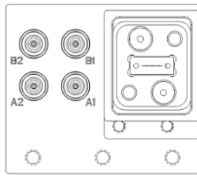
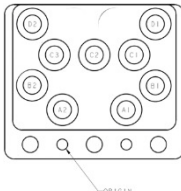
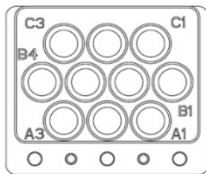
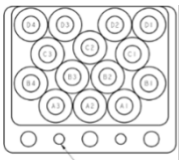
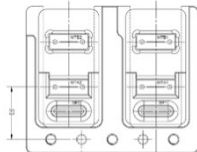
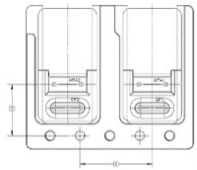
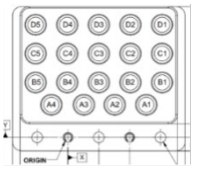
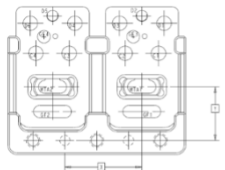
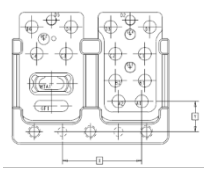
<sup>1</sup> Reference the Cable Connector Compatibility Matrix for available cable types  
Reference DOC-0000889067 for detailed information on VITA 67.1 and 67.2 products and accessories

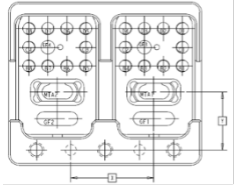
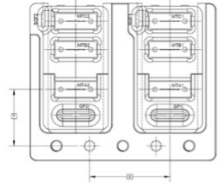
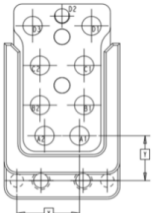
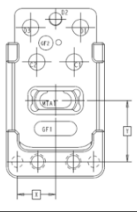
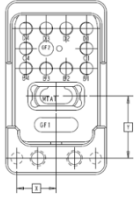
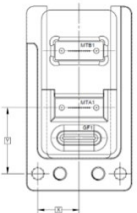
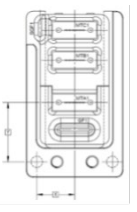


# VITA Tools

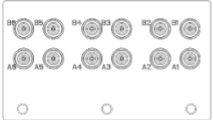
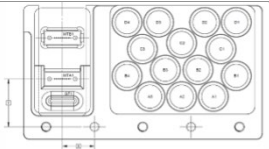
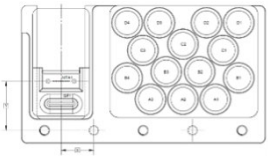
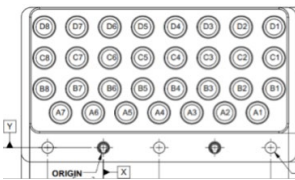
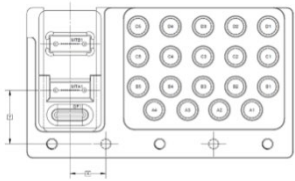
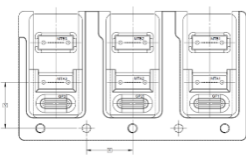
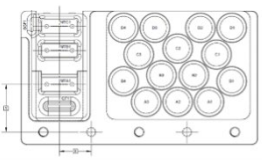
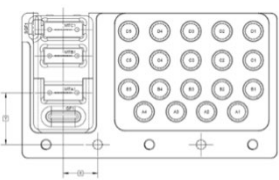
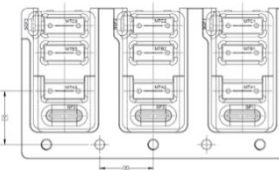
| Description                                            | Part Number  | Reference Image                                                                       |
|--------------------------------------------------------|--------------|---------------------------------------------------------------------------------------|
| <b>SMPM</b>                                            |              |                                                                                       |
| SMPM Female VITA 67.3<br>Contact Removal Tool          | AT-2377-DCM3 |    |
| SMPM Male VITA 67.3<br>Contact Removal Tool            | AT-2377-DCM7 |    |
| SMPM VITA 67.1/2/3<br>Insertion tool                   | AT-2377-DCM2 |    |
| SMPM Female VITA 67.3<br>Installation/Removal Tool     | AT-2377-DCM8 |   |
| SMPM Female VITA 67.1/2<br>Removal Tool                | AT-2377-DCM1 |  |
| <b>SMPS</b>                                            |              |                                                                                       |
| SMPS Female VITA 67.3<br>Bullet Insertion/Removal Tool | AT-2377-DCM5 |  |
| SMPS VITA 67.3<br>Contact Removal Tool                 | AT-2377-DCM4 |  |

# REFERENCE – VITA 65.1 Connector Modules

| Reference                                                                   | Number of MTs | Number of Coax Contacts | Coax Interface     | Arrangement                                                                          | SOSA Aligned |
|-----------------------------------------------------------------------------|---------------|-------------------------|--------------------|--------------------------------------------------------------------------------------|--------------|
| <b>6.4.5.6 Connector Modules with Aperture Pattern H (67.3C Footprints)</b> |               |                         |                    |                                                                                      |              |
| 6.4.5.6.1                                                                   | 1             | 4                       | SMPM               |    | Legacy       |
| 6.4.5.6.2                                                                   |               | 9                       | SMPM               |    | Legacy       |
| 6.4.5.6.3                                                                   |               | 10                      | SMPM               |    | Legacy       |
| 6.4.5.6.4                                                                   |               | 14                      | SMPM               |   | X            |
| 6.4.5.6.5                                                                   | 4             |                         |                    |  |              |
| 6.4.5.6.6                                                                   | 2             |                         |                    |  |              |
| 6.4.5.6.7                                                                   |               | 19                      | SMPS               |  | X            |
| 6.4.5.6.8                                                                   | 2             | 10                      | 50 $\Omega$ NanoRF |  | X            |
| 6.4.5.6.9                                                                   | 1             | 14                      | 50 $\Omega$ NanoRF |  | X            |

| Reference                                                                       | Number of MTs | Number of Coax Contacts | Coax Interface     | Arrangement                                                                          | SOSA Aligned |
|---------------------------------------------------------------------------------|---------------|-------------------------|--------------------|--------------------------------------------------------------------------------------|--------------|
| 6.4.5.6.10                                                                      | 2             | 20                      | 50 $\Omega$ NanoRF |    | X            |
| 6.4.5.6.11                                                                      | 6             |                         |                    |    | X            |
| <b>6.4.5.7 Connector Modules with Aperture Pattern J (VITA 67.3D Footprint)</b> |               |                         |                    |                                                                                      |              |
| 6.4.5.7.1                                                                       | 1             |                         |                    |    | X            |
| 6.4.5.7.2                                                                       |               | 9                       | 50 $\Omega$ NanoRF |   | X            |
| 6.4.5.7.3                                                                       | 1             | 5                       | 50 $\Omega$ NanoRF |  | X            |
| 6.4.5.7.4                                                                       | 1             | 10                      | 50 $\Omega$ NanoRF |  | X            |
| 6.4.5.7.5                                                                       | 2             |                         |                    |  |              |
| 6.4.5.7.6                                                                       | 3             |                         |                    |  | X            |



| Reference                                                                       | Number of MTs | Number of Coax Contacts | Coax Interface | Arrangement                                                                          | SOSA Aligned |
|---------------------------------------------------------------------------------|---------------|-------------------------|----------------|--------------------------------------------------------------------------------------|--------------|
| <b>6.4.5.8 Connector Modules with Aperture Pattern K (VITA 67.3E Footprint)</b> |               |                         |                |                                                                                      |              |
| 6.4.5.8.1                                                                       |               | 12                      | SMPPM          |   |              |
| 6.4.5.8.2                                                                       | 2             | 14                      | SMPPM          |    |              |
| 6.4.5.8.3                                                                       | 1             | 14                      | SMPPM          |    |              |
| 6.4.5.8.4                                                                       |               | 31                      | SMPS           |    |              |
| 6.4.5.8.5                                                                       | 2             | 19                      | SMPS           |   |              |
| 6.4.5.8.6                                                                       | 6             |                         |                |  |              |
| 6.4.5.8.7                                                                       | 3             | 14                      | SMPPM          |  |              |
| 6.4.5.8.8                                                                       | 3             | 19                      | SMPS           |  |              |
| 6.4.5.8.9                                                                       | 9             |                         |                |  |              |

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