



Over 60 Years of Reliability



ABOUT VPC

VPC designs, manufactures, and markets interface connector products for the aerospace, automotive, commercial, defense, telecommunications, and medical industries. VPC is capable of designing and integrating printed circuit boards (PCBs) in our existing product line to further expand options for a when designing custom solutions.

VPC currently employs 21 engineers that innovate and design leading-edge products. VPC’s application engineers have experience designing a variety of wire product solutions, including complex cable assemblies to various end connectors and wired interface boxes.

TRAINING AND CERTIFICATION

VPC is committed to uncompromising quality, continuous improvement, and exceptional value. We are an ISO 9001:2015 certified business, reinforcing VPC’s dedication to operating a Quality Management System. VPC manufacturing and engineering personnel undergo in-house training programs, including blueprint reading, GD&T, crimping, assembly. etc.

VPC is an IPC member in good standing. All wiring assemblers are trained to comply with soldering and inspection per IPC J-STD-001. VPC complies with IPC/WHMA-A-620 with three certified IPC trainers in-house and all assemblers having IPC-620A application specialist certification. VPC is capable of producing to all IPC classes (Classes 1, 2 and 3) depending on the customer's requirements.



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WIRING CAPABILITIES

CABLE ASSEMBLIES

VPC's wire products team consists of experienced wire assemblers, capable of building and running preliminary tests of cable assemblies and wired interface boxes. VPC provides engineered, finished, and quality tested wire products for easier system configuration which promotes integration of your mass interconnect system with virtually any type of test and measurement instrumentation. From patchcords, cable assemblies, interconnect adapters, to wired enclosures, VPC can provide the wired solution for your needs.

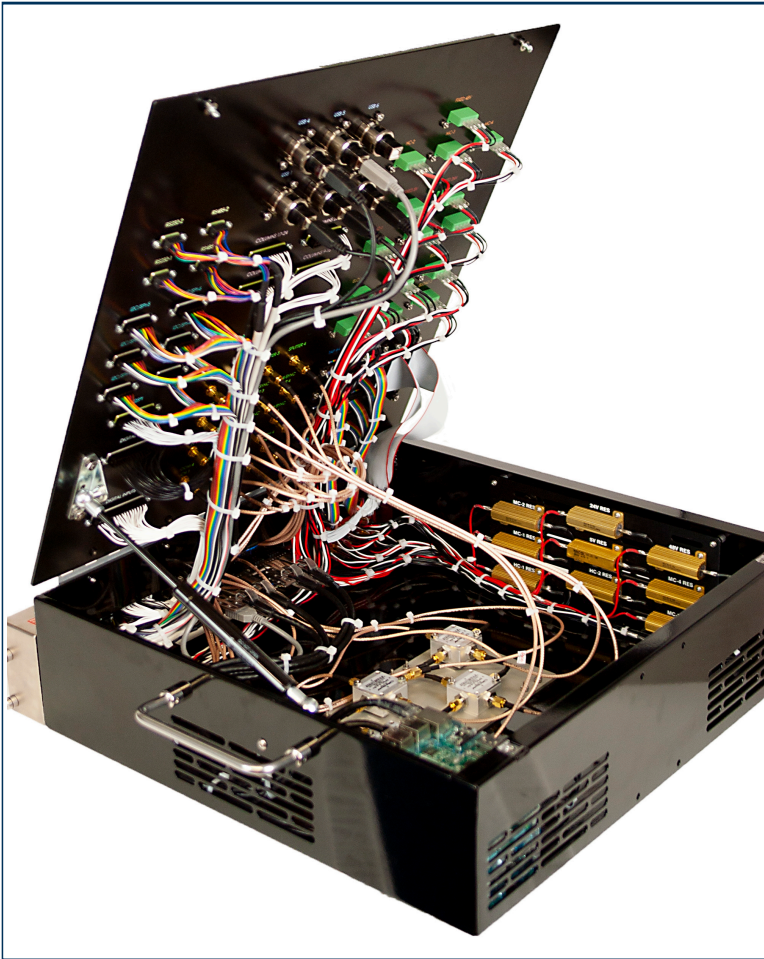


WIRED ITAs

VPC's in-house wiring team has the experience and know-how to build and assemble complete discrete-wired enclosures. VPC offers a variety of standard enclosures for discrete-wiring requirements. Standard enclosures are available for VPC ITAs ranging from low I/O ITAs, such as G2 and G6, to high I/O ITAs, such as the 9025 and 9050.

VPC also offers custom enclosure builds. Our in-house product design engineers and wiring team can design and build a custom enclosure specific to a system's wiring needs. VPC offers customization options such as cut-outs, screening and specialty hinges and covers.

G12 Custom ITA built for 5G testing application



G12x Custom ITAs



MANUFACTURING CAPABILITIES

VPC's success is due in part to its capability to execute manufacturing processes with technical precision and accuracy. Machining, assembly, and plating are all conducted in a single facility, which means faster turnaround times for the customer. VPC also sponsors an apprenticeship program for its manufacturing employees as part of its succession plan.

MACHINING CAPABILITIES

Each manufacturing employee is a state-certified machinist. Prior to receiving certification, each employee is required to complete an apprenticeship with 8,000 hours of on-the-job training (provided by VPC) and are required to take classes on safety, blueprint reading, metallurgy, computer-aided design (CAD), and CNC programming. Whether the machinist is beginning their career or has years of experience, VPC is committed to cross-training its employees and ensuring the same level of competence among all team members.

VPC standardizes on MAZAK and HAAS vertical and horizontal machining centers to CNC process steel and aluminum parts. Automated machining centers allow for better quality control, consistent parts, and faster turnaround times than competitors can offer.

VPC is also capable of producing prototypes, captive hardware, temporary stock, drive contacts, and tool and dies using Kondia Clausing mills, Harrison AA lathes, and Star CNC screw machines. These resources help to reduce the costs of limited runs by producing the necessary hardware in-house rather than purchasing limited quantities from a supplier.



MAZAK Horizontal Center Nexus 5000-II.



Star CNC Screw Machine.

PLATING PROCESS

The Plating Team is certified for knowledge and chemical access. Each Plating Team employee is trained in accordance to standards set by the National Association for Surface Finishing (NASF). Plating and finishing employees are provided the education and training necessary to become a Certified Electroplater-Finisher (CEF).

VPC uses a PLC-driven plating and surface finishing system using Technic, Inc electronics. The user-guided system allows the team to automate and batch control each plating and surfacing required by the customer. (For a list of finishing capabilities, please see the next page.)

By automating the process, VPC is able to provide consistently plated contacts and an overall higher quality product.

PLATING AUDITS

The Plating Team audits and controls for a number of tolerances including: thickness, hardness, pH, total material used and plating bath effectiveness.

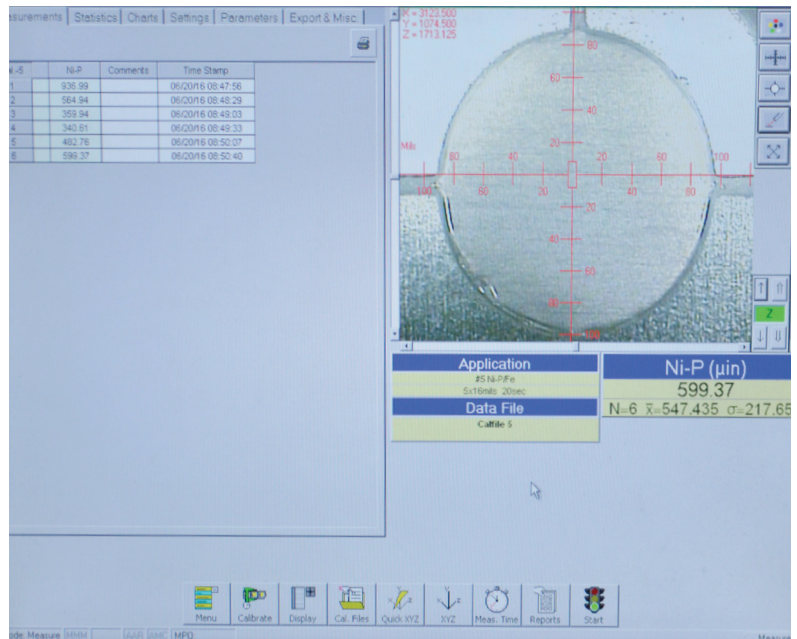
VPC standardizes on NexRay brand x-ray machines to measure and verify the total thickness of plating per contact up to 30 microns.

VPC is capable of measuring the total amount of gold (mm/L) used on a single contact. The plating team quantifies the gold used by removing the total gold from the pin and measuring it in a liquid medium.

The team is also responsible for measuring the effectiveness of a plating bath and conducts Hull cell tests to control plating characteristics for each unit being plated.



VPC's PLC-Driven Plating and Surface Finishing System.



NexRay Machine Measuring the Total Thickness of Nickel Plating on a Contact.

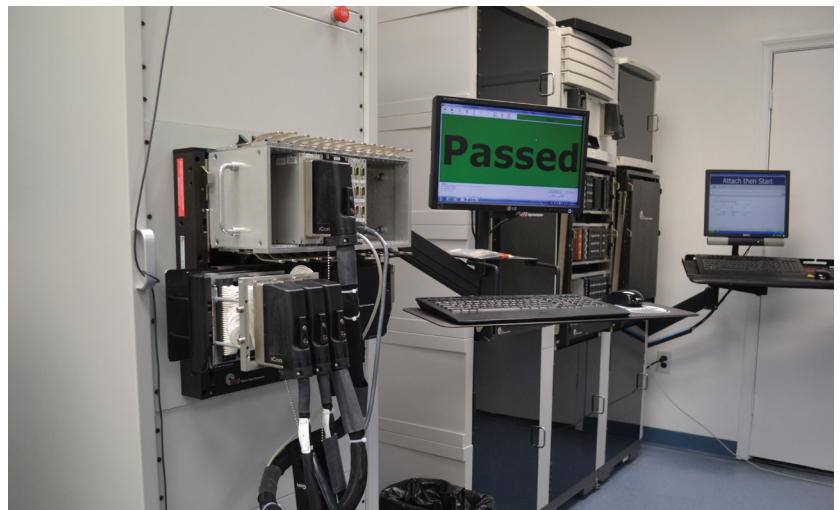
QA CAPABILITIES

CableTest Capabilities

VPC uses a CableTest ATE Multi-Point Tester (MPT) 1000T, a 5100 point hi-pot tester capable of testing for hi-pot, dielectric withstanding voltage, and continuity resistance measurements. CableTest uses the latest mass hi-pot testing technology to ensure the highest quality while increasing throughput and maintaining cost. It is controlled by CableTest's powerful Discovery software. It is fitted with a VPC 9050 interface to allow infinite fixtures and adapters in two tiers.



Internal cabling built by VPC's wiring team.



CableTest Performing a Pass/Fail Test.

From	E Contact	F AWG	G Wire/Patchcord P/N	H Color	I T/P #	J Connector	K PinA	To	
P1A-A1 C	610141101	RG316	7-361116000-088	TAN	-	P2A	A1	P2A-A1 C	6
P1A-A2 C	610141101	RG316	7-361116000-088	TAN	-	P2A	A2	P2A-A2 C	6
P1A-A3 C	610141101	RG316	7-361116000-088	TAN	-	P2A	A3	P2A-A3 C	6
P1A-A4 C	610141101	RG316	7-361116000-088	TAN	-	P2A	A4	P2A-A4 C	6
P1A-A5 C	610141101	RG316	7-361116000-088	TAN	-	P2A	A5	P2A-A5 C	6
P1A-A6 C	610141101	RG316	7-361116000-088	TAN	-	P2A	A6	P2A-A6 C	6
P1A-A7 C	610141101	RG316	7-361116000-088	TAN	-	P2A	A7	P2A-A7 C	6
P1A-A8 C	610141101	RG316	7-361116000-088	TAN	-	P2A	A8	P2A-A8 C	6
P1A-B1 C	610141101	RG316	7-361116000-088	TAN	-	P2A	B1	P2A-B1 C	6
P1A-B2 C	610141101	RG316	7-361116000-088	TAN	-	P2A	B2	P2A-B2 C	6
P1A-B3 C	610141101	RG316	7-361116000-088	TAN	-	P2A	B3	P2A-B3 C	6
P1A-B4 C	610141101	RG316	7-361116000-088	TAN	-	P2A	B4	P2A-B4 C	6
P1A-B5 C	610141101	RG316	7-361116000-088	TAN	-	P2A	B5	P2A-B5 C	6
P1A-B6 C	610141101	RG316	7-361116000-088	TAN	-	P2A	B6	P2A-B6 C	6
P1A-B7 C	610141101	RG316	7-361116000-088	TAN	-	P2A	B7	P2A-B7 C	6
P1A-B8 C	610141101	RG316	7-361116000-088	TAN	-	P2A	B8	P2A-B8 C	6
P1A-C1 C	610141101	RG316	7-361116000-088	TAN	-	P2A	C1	P2A-C1 C	6
P1A-C2 C	610141101	RG316	7-361116000-088	TAN	-	P2A	C2	P2A-C2 C	6

CableTest's Compare Test. Cable assemblies are connected to the CableTest to document all contacts and patchcords and will reject the cable assembly if it does not match the wire list.

VPC'S PRODUCT TEST STANDARDS AND SPECIFICATIONS FOR ELECTRICAL TESTING

- 364**
EIA-364-05
Contact Insertion, Release and Removal Force Test Procedure for Electrical Connectors
- EIA-364-06
Contact Resistance Test Procedure for Electrical Connectors
- EIA-364-09
Durability Test Procedure for Electrical Connectors & Contacts
- EIA-364-13
Mating & Unmating Forces Test Procedure for Electrical Connectors
- EIA-364-17
Temperature Life with or without Electrical Load Test Procedure for Electrical Connectors & Sockets
- EIA-364-20
Withstanding Voltage Test Procedure for Electrical Connectors, Sockets, & Coaxial Contacts
- EIA-364-21
Insulation Resistance Test Procedure for Electrical Connectors, Sockets, & Coaxial Contacts
- EIA-364-24
Maintenance Aging Test Procedure for Electrical Connectors
- EIA-364-27
Mechanical Shock Test Procedure for Electrical Connectors
- EIA-364-28
Vibration Test Procedure for Electrical Connectors and Sockets
- EIA-364-29
Contact Retention Test Procedure for Electrical Connectors
- EIA-364-70
Temperature Rise Versus Current Test Procedure for Electrical Connectors and Sockets
- EIA-364-102
Rise Time Degradation Test Procedure for Electrical Connectors, Sockets, Cable Assemblies or Interconnection Systems
- EIA-364-103
Propagation Delay Test Procedure for Electrical Connectors, Sockets, Cable Assemblies or Interconnection Systems
- EIA-364-107
Eye Pattern and Jitter Test Procedure for Electrical Connectors, Sockets, Cable Assemblies or Interconnection Systems
- EIA-364-108
Impedance, Reflection Coefficient, Return Loss, and VSWR Measured in the Time and Frequency Domain Test Procedure for Electrical Connectors, Cable Assemblies or Interconnection Systems
- 461**
Mil-Std-461
Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems & Equipment
- 1344**
Mil-Std-1344
Test Methods for Electrical Connectors
- Mil-Std-1344 Notice 1
Test Methods for Electrical Connectors
- Mil-Std-1344 Notice 2
Test Methods for Electrical Connectors
- Mil-Std-1344 Notice 3
Test Methods for Electrical Connectors
- Mil-Std-1344 Notice 4
Test Methods for Electrical Connectors
- Mil-Std-1344 Notice 5
Test Methods for Electrical Connectors
- IPC**
IPC-A-610
Acceptability of Electronic Assemblies

TEST REPORTS

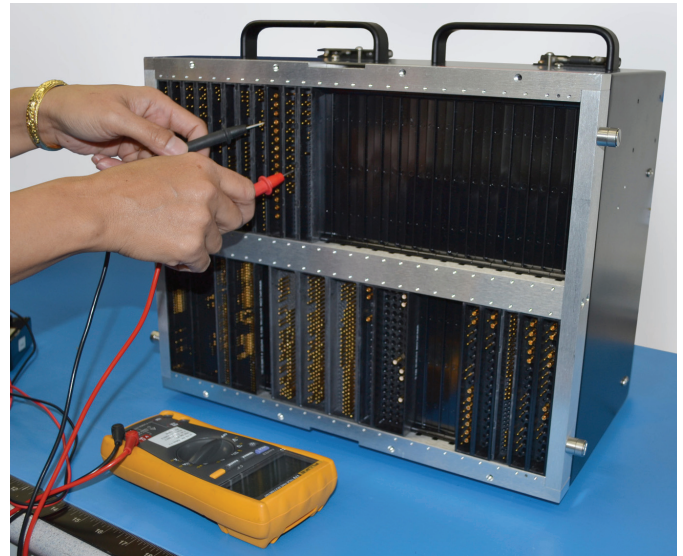
VPC's Quality Assurance (QA) Lab provides a test report for continuity, insulation, and high voltage with the completed product, when applicable. The QA Final Inspection Checklist for Wired ITAs and receivers provides final verification that the assembly was built and tested per VPC Quality standards. The routing inspection step requires visual and electrical inspection for all critical characteristics including, but not limited to: labels, dimensions, special notes and point-to-point continuity.

QA LAB

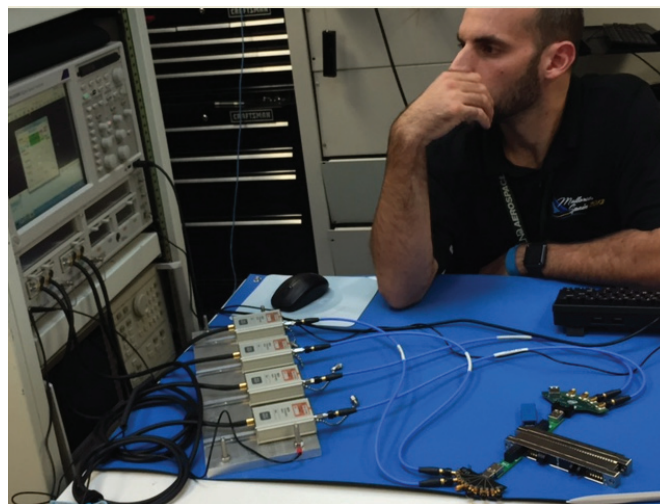
VPC's QA Lab conducts tests for point-to-point continuity, shorts, and insulation resistance.

The QA Lab's automated equipment includes CableTest and Cirris cable testers. VPC's network analyzer tests the electrical response of RF cables to a specified frequency range.

All cable assemblies are tested pass/fail. VPC's QA engineers are able to connect cable assemblies to the CableTest tester.



Point-to-Point Continuity Test by Hand.



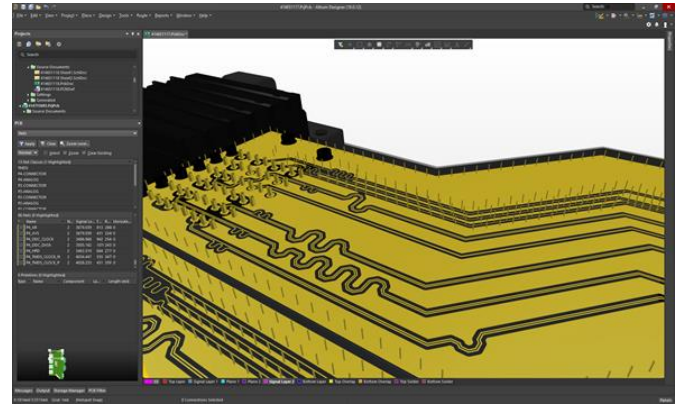
Network Analyzer Tests Electrical Response of RF Cables and Signal Integrity of High Speed Digital Signal.

PCB DESIGN CAPABILITIES

VPC has capability to design custom printed circuit boards (PCB) for VPC's existing product line and to further expand options for a customer's solution. VPC's PCB design engineers have the ability to route signals appropriately to ensure broadband transfer rates and to safeguard signal integrity. Employees are trained on the assembly, testing, packing, and shipping of PCBs to ensure receipt of a quality product upon delivery.

VPC PCB capabilities:

- Designing up to 40 layers on a single PCB
- Designing flex printed circuits
- Designing for high speed transfer speeds
- Performing signal integrity analysis
- Integrating new PCB designs into existing or custom Mass Interconnect product lines
- Shipping stocked PCB products in as little as two weeks



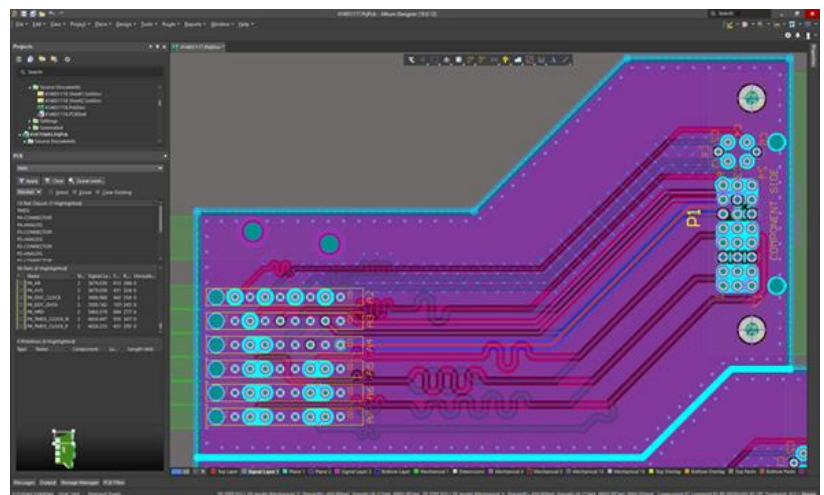
PCB Design Software

HIGH SPEED PCB DESIGN CAPABILITIES

VPC employs high speed PCB designers that engineer boards to offer the optimal trade-offs between low cost, industry standard PCB materials and processes, and high speed signal integrity performance.

Design is done around the following common signal integrity parameters:

- Insertion Loss
- Cross Talk
- Impedance matching
- Propagation delay and skew
- Return Loss
- Rise Time Degradation
- Signal Trace Design



ITA ENCLOSURES WITH PCB

VPC's highly reliable ITAs mount directly to an enclosure for housing your wiring and unit under test (UUT). This enclosure can be customized to fit your application dependent testing requirements. VPC offers custom cut-outs for accommodating secondary connectors and custom silk screening to guarantee quick and fail-safe identification of test lines. Hinged or removable covers can be added to any side of your enclosure to provide quick and easy access inside.

A popular ITA enclosure design includes PCBs routed to a standard industry connector. The standard industry connector can then be connected with a COTS cable, which is then plugged into the main switching PCB.

By going with COTS cables, VPC reduces the need for a technician to physically terminate the connectors, thereby eliminating any variance or potentially mis-wired runs.

VPC is able to build custom enclosures for board-to-board and board-to-wire designs to accommodate a variety of application needs.



Enclosure with Secondary Connectors and Silkscreen Labels



ITA Enclosure with Small PCB Wired to Another PCB



A 50 Module ITA Enclosure Slotted with PCBs

To learn more about VPC's capabilities and how their over 60 years of experience can take your test and measurement process to the next level, visit our website at vpc.com.