



Hughes Manufacturing Services

HUGHES
An EchoStar Company

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Hughes has been a technology manufacturer for over 30 years. In that time, we have produced over 10 million devices and thousands of rack mount systems for our own use and for customers, such as Eutelsat OneWeb, Intelsat, and General Atomics. Thanks to our high production volume and long-standing vendor relationships, our manufacturing team can buy primary materials and components from a variety of high-quality suppliers at very competitive prices.

With our new, state-of-the-art facility in Germantown, Maryland, we are expanding our outsourced expertise to select customers, extending the benefits of our secure facility, onshore equipment, skilled staff, and proven production capabilities to US government agencies and their suppliers.

Outsourcing gives you the advantage of focused, experienced providers and the increased flexibility to help you remain competitive and meet your mission objectives. Onshore outsourced manufacturing offers an excellent option for government agencies and businesses looking to improve security, increase quality, and maintain flexibility.



With Hughes as your outsourcing manufacturer, you can enjoy access to advanced technology and expertise. For example, high-mix, low-volume manufacturing is a specialty at Hughes, providing our customers with a range of benefits. This type of process allows for efficient production with minimal waste and the ability to modify processes based on your dynamic needs. This method typically requires less inventory and shorter lead times, reducing costs. Our team has the experience and expertise to ensure that our customers get the highest quality products delivered on time and at a competitive price. We take pride in providing this service as it allows us to remain agile, flexible, and responsive in meeting customer's demands. Plus, with build-to-order manufacturing, we can ensure that products meet our customers' expectations quickly and accurately.

We provide the following services in our ITAR/CUI-compliant, ISO-9001 certified manufacturing facilities:

- Device assemblies
- Rack configurations
- PCB assembly
- Fully automated testing capability

CAPABILITIES

Fabrication

The Hughes manufacturing facility has the tools to perform milling and stamping to create parts from scratch—including custom parts. Our onsite team has experience in design and can provide feedback on the most efficient and effective ways to accomplish your product. Our 3D printing capabilities reduce the time required to develop prototypes and proof of concept design examples.

PCB Assembly

With multiple assembly lines, the Hughes manufacturing facility can perform pick-and-place assemblies in large or small quantities, placing passive components (e.g., resistors, inductors, and capacitors) and active parts (e.g., diodes, transistors, and integrated circuits). Plus, we can place ball grid arrays (BGA) or chip carriers in support of integrated circuits.

Final Assembly

The Hughes team can handle final assembly projects thanks to our experience with box-level assembly, which consists of combining existing boards and components to produce finished goods (e.g. terminals and media players). We also have experience with rack-level assemblies that include hardware positioning, wiring, and software installation. All final assembly projects are shipment-ready.

Final Test

In addition to experienced quality control personnel in all areas of the Hughes manufacturing line, the facility also has full test harness ability for board level, box level, and full rack level assemblies. Test procedures can be manual, automated, or a combination, as needed, to ensure your product performs as intended.



FABRICATION

Features include:

- CAD: for custom design work
- CAM: tool pathing software
- Mechanical stress simulations
- 5-axis simultaneous machining center
- 3-axis machining center
- CNC laser cutting (3kW fiber laser)
- CO₂ laser cutting (small, nonmetal parts)
- 3D printing
- Bending
- Secondary processing/assembly
- Touch probe CMM
- Romer arm, portable CMM, with laser scanning
- 3D scanner/CMM



AUTOMATED FLUID DISPENSING

Automated fluid dispensing systems from PVA are capable of dispensing one or two-component adhesives, sealants, and gaskets, as well as cure-in-place (CIP) and form-in-place (FIP) gaskets

Commonly used applications include:

- EMI shielding for electronics
- Environmental sealing for Ingress Protection (IP) from water, dust, and debris
- Sealing for adhesive bonds in assembly
- High-volume curing ovens with operating temperatures between 100–450 °F for thermal cure materials



COMPLEX PWB ASSEMBLY

Features include:

- From single-side to 36-layer PCB
- Size range of up to 20" x 28"
- Component count of up to 12,000 parts per board
- Components on both sides of PCB
- Smallest component size placement capability is 01005
- BGA pitch of 0.35 mm with consistent placement accuracy
- High-speed laser etch of 2D barcodes for traceability
- SPEA machine for high-speed automated testing



DEVICE ASSEMBLY

Automated assembly lines:

- High-speed robotic assembly lines feature integrated intelligent functionality, including vision and force capabilities

Collaborative robots:

- Efficient robotic solutions include advanced safety features for device builds

Palletization:

- Mobile stretch wrap machine used for flexible and efficient floor space utilization

Semi-automated assemblies:

- Assembly lines equipped with torque and angle-controlled screwdrivers ensure precision fastening, enabling flexible assembly of complex chassis
- ASG X-PAQ and Kolver electric fastening systems are utilized



CUSTOM RACK SOLUTIONS

Capabilities include:

- Capacity of five racks per day
- Flow-line process for efficiency and cost
- Rack prep, including kit audit, elevation, and ID labels
- Equipment staging, including chassis and server assembly installation
- Cabling, including flag labels, lacing bar, and cable routing
- Testing and configuration
- Secured, packed, and ready to ship



AUTOMATED TESTING

The automated testing process ensures superior connectivity and functionality at both the board level and for final products, using state-of-the-art custom software and specialized test equipment. We are able to custom design for any product variety.

Precision calibration and verification:

- Custom-designed test software accurately calibrates and verifies product functionalities, guaranteeing that each unit operates flawlessly

Complete testing coverage

- Every product undergoes board-level, functional, and final testing—ensuring all critical components meet quality standards

Product audit testing for real-world assurance

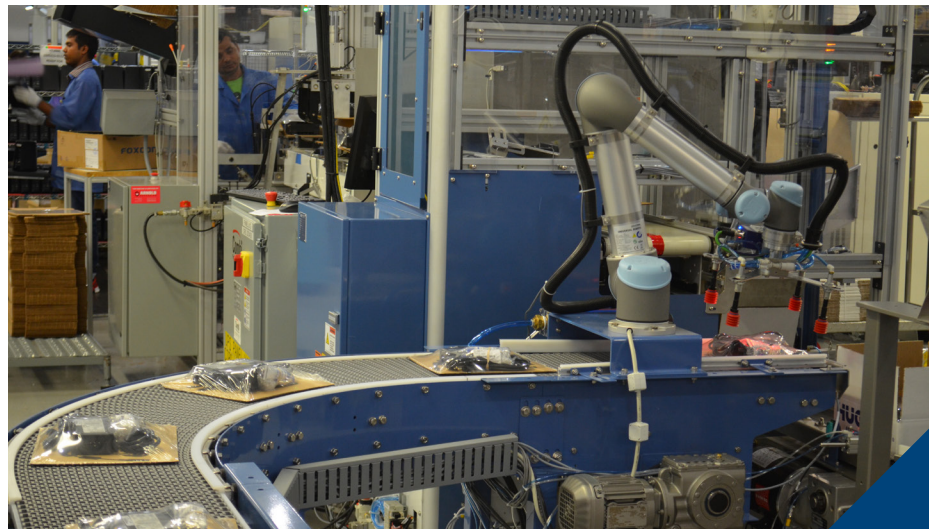
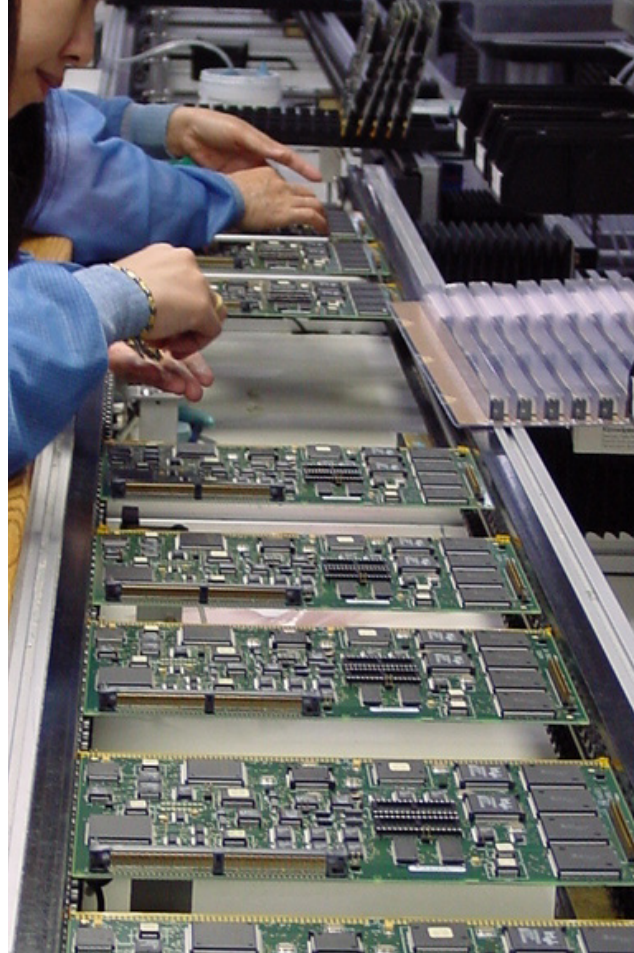
- Product audit tests are designed to mimic real-world conditions. By running Over-The-Air (OTA) tests, we assess core connectivity and overall product quality to ensure that customers have a flawless experience.

Expert Wi-Fi testing and configuration

- The process covers firmware updates, configuring Wi-Fi modules with default SSID, MAC addresses, and serial numbers
- Provides extensive RF testing for various Wi-Fi antennas, ensuring optimal signal strength and reliability for end users



Eutelsat OneWeb utilized the Hughes manufacturing facility to build 10,000 terminals and assemble dozens of gateway racks for shipments to remote locations around the world.



BENEFITS

Cost Savings

Our experienced manufacturing teams can significantly reduce costs for your business. In addition to over 30 years of component purchasing experience, we can provide design and process improvement assistance. Our production teams meet with your team to discuss the design and suggest alternatives to components and assemblies, increasing reliability and improving production timing.

Quality Assurance

By using our US-based manufacturing services, you will have easier access to our plant, providing greater visibility and review of the production process. You can track progress throughout the production cycle and have access to review onsite machinery and personnel. This access increases accountability and efficiency in quality control measures, while reducing defects and issues with completed products.

Flexibility

With the Hughes onshore manufacturing facility, you can easily visit the plant, meet with our team, and adapt to changing requirements. This gives you increased flexibility to quickly adapt to changing customer demands and expectations without adding significant time or cost. This level of agility is essential when new technology or components are needed.

Security and Protections

The Hughes onshore manufacturing facility utilizes physical and data protection protocols throughout our facility. These protocols protect intellectual property, patented information, and proprietary agency data, as well as provide for the safety of workers. US regulations offer better protection for all personnel involved in production, ensuring everyone can work safely and receive fair wages and benefits. Our employees are US citizens, as well as work-authorized residents, reducing risks of labor violations and exploitation—an issue common in offshore production. Because we are located within the United States, US law will provide protections for Intellectual Property and other proprietary data.

Peace of Mind

As a result of our decades of experience, we were able to continue manufacturing during recent supply chain issues that caused others to halt production. Our service provides the peace of mind that your products will be built with high-quality materials and that plans are in place to manage potential disruptions. Our manufacturing services also offer flexibility in production scale, meaning businesses can easily adjust to changing demand without compromising quality. Ultimately, by choosing a reliable, secure, onshore partner like Hughes, you can rest assured that you are getting the highest quality product while protecting your data and intellectual property.



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HUGHES MANUFACTURING SERVICES

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