Electronic Technician - Electronics Manufacturing & Testing

PCB Assembly | Component-Level Repair | Product Testing | Programming | Production Support

Focus	Environment	Approach
Electronics manufacturing, troubleshooting, testing & production support	Small-team electronics manufacturing	Assemble - Program - Test - Diagnose - Repair - Verify

Role Overview

I worked in a small electronics manufacturing environment supporting multiple stages of product production, from PCB assembly and wire preparation through programming, testing, troubleshooting, repair, and final production support.

The position initially centered on hands-on production responsibilities including soldering electronic components, wire and harness work, potting, parts support, and preparation of products for shipment. As I gained experience with the company's products and manufacturing processes, my responsibilities expanded into component-level troubleshooting and repair, product programming and configuration, functional testing, technical documentation, and development of practical production and test solutions.

Working closely with the company's electrical engineer provided experience interpreting electrical schematics, PCB documentation, bills of materials, and component datasheets while using multimeters, bench power supplies, oscilloscopes, function generators, and other electronic test equipment to investigate product behavior and verify proper operation.

Electronics Manufacturing & Assembly

A significant portion of my work involved hands-on production of electronic assemblies. This included placing and soldering components onto printed circuit boards, performing rework when necessary, preparing wiring and electrical connections, and supporting assemblies through later stages of production.

PCB work required attention to component orientation, placement, solder quality, polarity, and overall workmanship. Depending on the product and production requirements, assemblies involved manual component installation and automated manufacturing processes, followed by inspection and additional assembly work.

My responsibilities also included preparing materials for manufacturing, working from bills of materials and product documentation, assisting with parts management, and supporting products as they progressed from components and bare PCBs into completed electronic assemblies.

Wire & Harness Fabrication

Wire and harness fabrication was another part of my electronics manufacturing work. I was specifically tasked with developing stronger capability in wire-related production to help support the company's harness work.

Responsibilities included preparing and assembling wiring used within electronic products and supporting integration of those connections with PCBs, connectors, and other components. The work required attention to routing, termination, connection integrity, and workmanship as part of producing reliable electronic assemblies.

Product Programming & Configuration

In addition to hardware assembly, I programmed and configured electronic products as part of the production process. This included flashing firmware, assigning serial numbers, communicating with devices through serial interfaces, and executing commands using terminal software such as TeraTerm.

Programming was followed by functional verification to confirm that the device communicated correctly and operated as expected. When a product failed to program or respond properly, troubleshooting could require distinguishing between the programming interface, electrical connections, PCB assembly, configuration, and the product itself.

Testing & Functional Verification

Functional testing was used to verify that completed electronic assemblies operated as intended. I performed defined product tests using multimeters, bench power supplies, oscilloscopes, function generators, and other electronic test equipment.

Testing included taking electrical measurements, applying or observing signals, collecting signal-response data, and comparing product behavior with expected operating conditions. After programming, repair, or corrective work, I performed functional verification to confirm proper operation before the product returned to production flow.

Component-Level Troubleshooting & Repair

When electronic assemblies failed testing or did not operate as expected, I diagnosed problems at the component and circuit-board level rather than treating the entire assembly as a failed unit.

Troubleshooting involved electrical schematics, PCB documentation, bills of materials, component datasheets, and test equipment to understand the circuit and isolate the source of a failure. Depending on the problem, measurements were used to narrow the fault to a component, connection, or area of the circuit.

Once the problem was identified, I performed the necessary PCB rework or component replacement and retested the assembly to verify that the repair corrected the original failure. The process followed a systematic sequence: understand expected operation, gather measurements, isolate the fault, make the repair, and verify proper operation.

Process Improvement & Production Support

Beyond assembly, testing, and repair, I supported improvements to the processes and tools used to manufacture electronic products. Working in a small production environment made repetitive or inefficient processes visible and created opportunities for practical improvements.

I worked with the electrical engineer to develop and improve production resources including test procedures, custom test cables, programming interfaces, and other tools used to support assembly and verification. I also assisted with bills of materials, parts organization, production documentation, and related manufacturing support.

One example was a reusable PCB programming fixture developed to replace a dedicated six-pin programming connector that had previously been soldered onto each production PCB solely for programming. The spring-contact fixture transferred that temporary interface into a reusable production tool, eliminating the dedicated connector and its associated repetitive soldering operation from each board.

Skills Demonstrated

Electronics Manufacturing	PCB Assembly | Component Soldering | PCB Rework | Wire & Harness Fabrication | Potting | Electronic Assembly | Production Support
Testing & Troubleshooting	Component-Level Troubleshooting | Electrical Schematics | Multimeter Testing | Bench Power Supplies | Oscilloscope Testing | Function Generator Testing | Functional Verification
Programming & Configuration	Firmware Programming | Serial Communication | TeraTerm | Product Configuration | Serial Number Assignment | Post-Programming Testing
Technical Problem Solving	Fault Isolation | Component Replacement | Datasheet Interpretation | PCB Documentation | Bills of Materials | Repair Verification | Systematic Troubleshooting
Process Improvement & Documentation	Test Procedures | Programming Fixtures | Custom Test Cables | Process Development | Technical Documentation | Parts & Production Support | Continuous Improvement

Project Summary

This brief documents hands-on experience across electronics manufacturing, assembly, programming, testing, troubleshooting, repair, and production support. Responsibilities progressed from production-focused work into component-level diagnostics, product configuration, functional testing, technical documentation, and practical process improvement.

The work provided broad exposure to the electronics production cycle - from assembling hardware through programming, troubleshooting, repair, and final functional verification - while reinforcing a disciplined approach to technical problem solving and manufacturing support.

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