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Global IoT Company Overcomes Complex Manufacturing Challenges

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When a fast-growing IoT company backed by a leading silicon provider approached INDIC Electronics, they were looking for more than a manufacturing partner. Their previous supplier struggled with precision and scalability, and they needed someone who could not only produce high-quality modules but also help solve the practical challenges that come with scaling advanced designs.

From the start, engagement involved highly complex assemblies: fine-pitch components down to 01005 size, dense BGA layouts, and shielded packages. These requirements introduced several technical hurdles, particularly around solder paste printing, component placement, and post-assembly depaneling.

What follows is how our team worked through each of these complex manufacturing challenges, step by step to help the IoT Company.

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IoT Complex Manufacturing Challenge 1:

Solder Paste Printing on Fine-Pitch, High-Density Boards

During assembly, we noticed component shifts and frame distortion. If left unresolved, these could have led to major yield losses and performance variability.

Solution:

- Optimized placement strategies within the pick-and-place programming, tuned package by package.
- Used special nozzles and added support bars to stabilize frames during placement.
- Adjusted jig tolerances to eliminate tilt.

By carefully balancing the mechanical setup with placement logic, we stabilized the process and ensured accurate placement - critical for RF-grade modules, especially for an Internet of Things (IoT) manufacturing project.

IoT Complex Manufacturing Challenge 2:

Component Placement Anomalies

During assembly, we noticed component shifts and frame distortion. If left unresolved, these could have led to major yield losses and performance variability.

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IoT Complex Manufacturing Challenge 3:

Depaneling-Induced Defects

In post-assembly depaneling, we observed burrs, deep cuts, and shield scratches. These were mainly due to fixture play and uneven router depths.

Solution:

- Ran trials with router bits of varying diameters (0.8 mm, 1.5 mm, 1.6 mm).
- Designed new JIGs with tighter tolerances and cushioning to absorb vibration.
- Introduced fixture support tape to minimize movement during routing.

- Selected router bits based on module versions (1.5 mm for V3, 1.6 mm forV3.3).

These mechanical improvements significantly reduced cosmetic and structural damage, while protecting the overall integrity of the module.

Beyond Problem-Solving: Scaling With Confidence

For us, this project was not just about fixing issues one by one. It was about creating a scalable process that the customer could rely on as they expanded production. With the right combination of engineering trials, process refinements, and hands-on problem solving, INDIC demonstrated that we can manage highly challenging assemblies and deliver the mat scale.

Our capability now extends across:

- Fine-pitch SMT (01005, 0.3 mm pitch)
- High-density RF/BGA layouts
- Mechanically sensitive assemblies requiring custom fixtures.

Why This Matters For a Global IoT Company Who Has Complex Manufacturing Challenges

The real value here wasn't only in solving immediate issues. It was in building a foundation for the customer to move confidently from prototyping into volume manufacturing. The partnership showed that with the right engineering support and process rigor, even highly complex designs can be industrialized at scale.

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If you're facing design or manufacturing challenges that seem like roadblocks, our team at INDIC is ready to help you move forward. Please contact us to begin the discussion about your project.

Learn more about how Indic can help your company overcome complex manufacturing challenges:

PCB placement analysis, product engineering, Design For Manufacturing (DFM), PCB assembly