Optimized EDA Conversion for Advanced Videoscope Systems

Scope: Electronic Design Automation Conversion

Application: Manufacturing Industries

The Advanced Videoscope Systems PCB Board is a state-of-the-art solution tailored for precision inspection and quality control within manufacturing industries. Featuring high-resolution video capture and real-time processing, this board is designed to deliver exceptional performance and reliability in demanding industrial environments. With a focus on durability and advanced signal integrity, it provides robust and accurate analysis, making it a crucial component for ensuring product quality and operational efficiency in modern manufacturing processes.

Challenges –EDA Conversion

We were tasked with converting their PCB files from **Allegro PCB to Altium Designer** to fulfill their requirements effectively.

Challenges:

- Achieve 99.99% Physical Accuracy
- Achieve 100% Electrical Match
- Manage Length Matching Groups
- Accurate Footprint Libraries
- Netlist Synchronization
- Layer Mapping and Configuration (14 layer PCB)
- Design Rule Translation
- Handling Custom Components
- Manual Intervention in EDA Conversion
- Signal Routing Integrity

EDA Conversion - SoW

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Pre-Conversion process

Import Files into Altium Designer

Verify Physical Layout

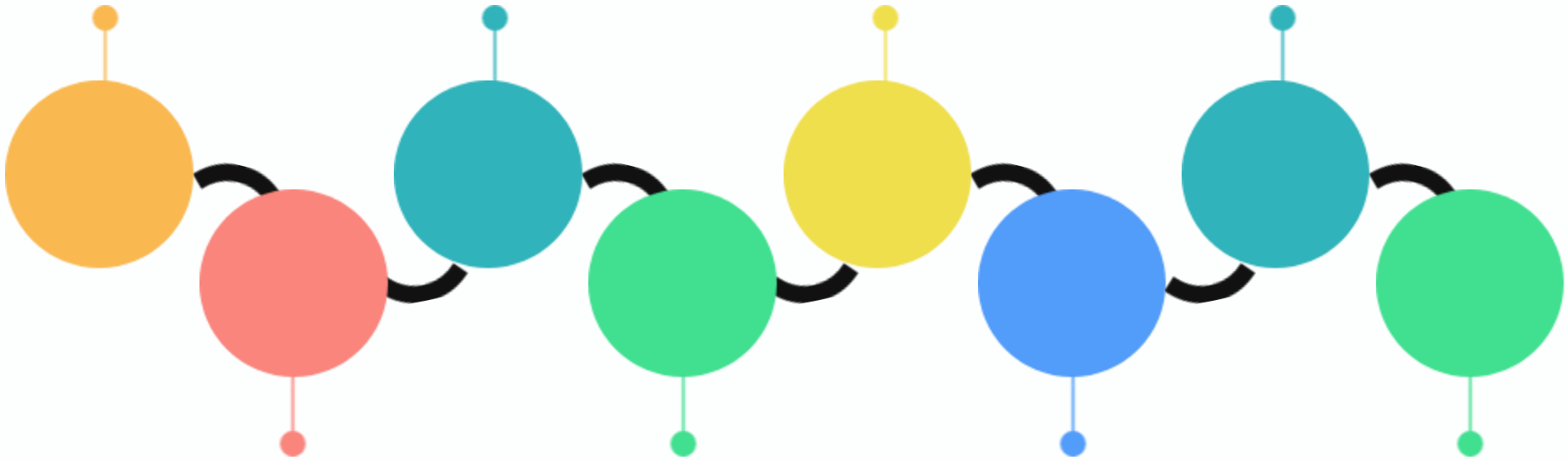
Ensure Electrical Accuracy

Update Footprints and Libraries

Review Design Rules

Netlist Verification

Finalize and Document



Pre-Conversion Process

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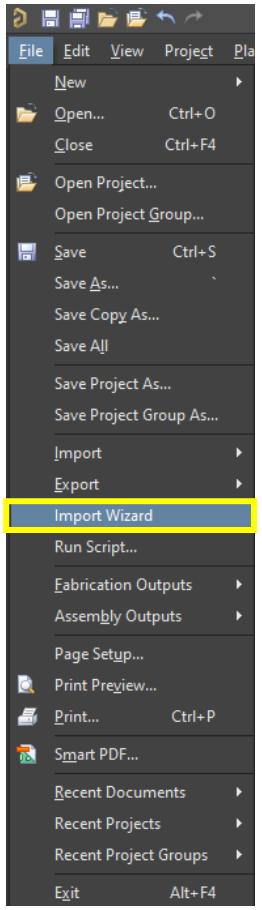
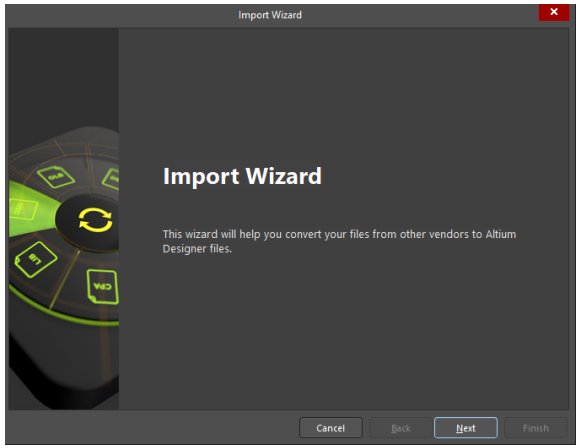
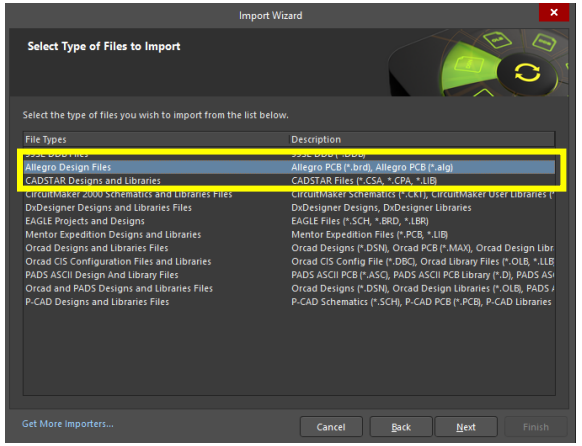
- **Pre conversion verification:**
  - We ensured that the schematic and PCB files are in the correct formats for conversion to Altium Designer.
    - Schematics - ORCAD files to Altium files
    - PCB – Allegro PCB to Altium PCB
- **Import Files into Altium Designer :**
  - Used Altium's import wizard to load the exported files.
  - After importing, reviewed the data to ensure that all components, traces, and design elements are accurately represented and make any necessary adjustments to fit Altium's environment.

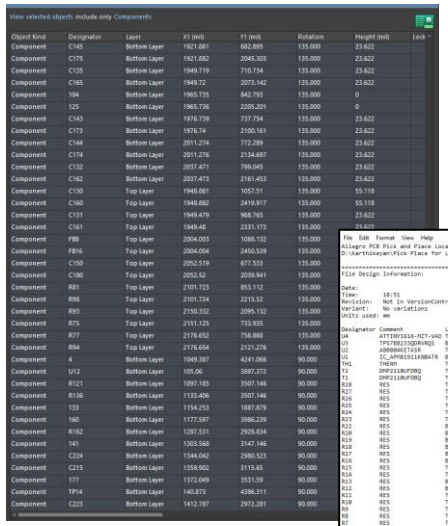






Verify Physical Layout

- Checked that the physical layout in Altium Designer matches the original design from Allegro.
- This includes verifying the accuracy of layer mapping and confirming that all components are placed correctly according to the original design specifications.



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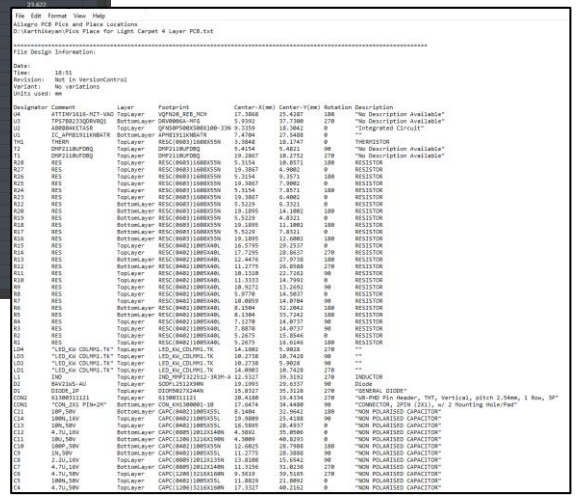
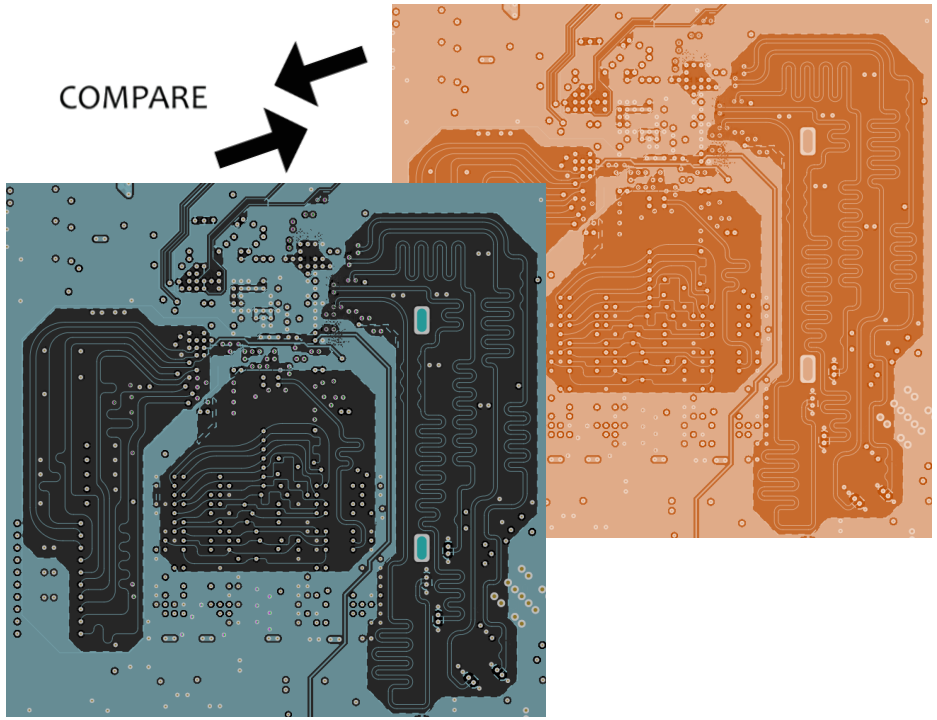


Altium PCB Details

Allegro PCB Details

COMPARE



Components location's Verification

Highspeed Signals routing Verification

Ensure Electrical Accuracy

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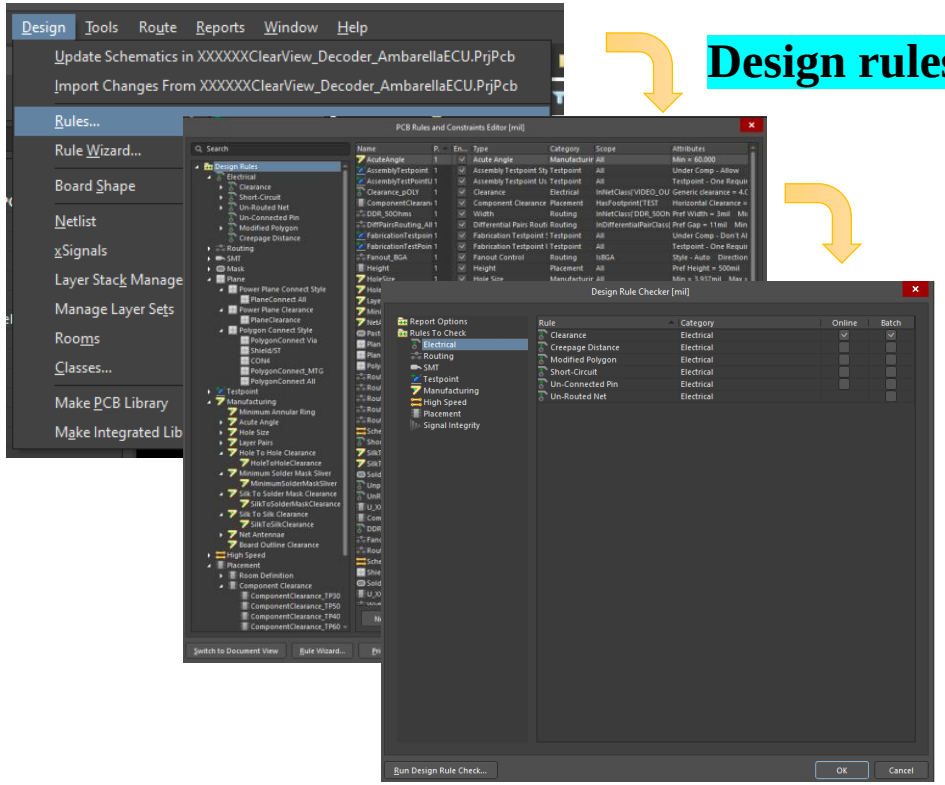
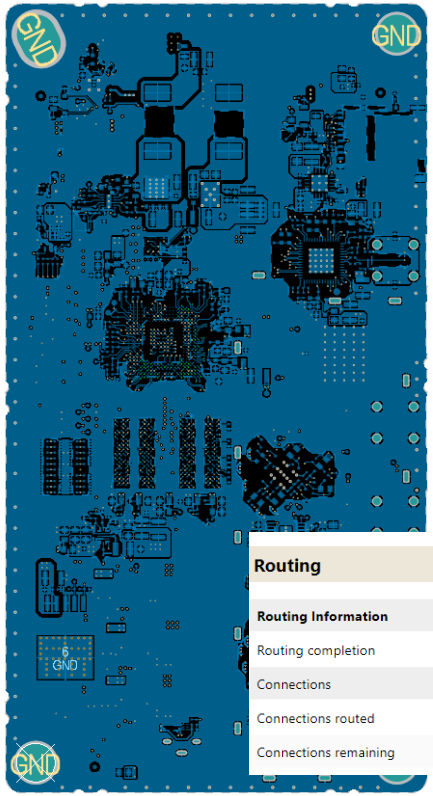
- Electrical connectivity and signal integrity are maintained by synchronizing the netlists from Allegro with those in Altium Designer.
- Validated that high-speed signals and critical electrical connections are correctly represented to avoid performance issues.



Design rules Defining



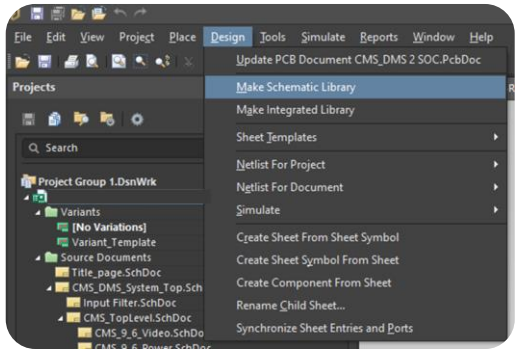
Signals routing Verification

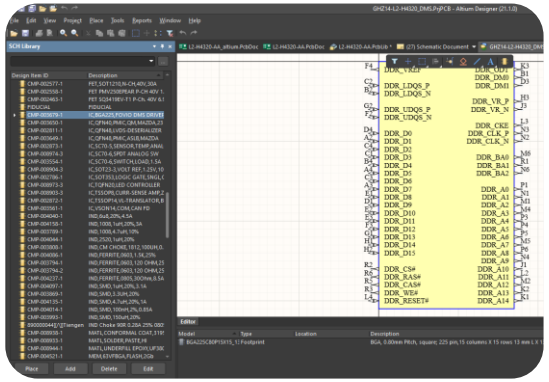
Routing	
Routing Information	
Routing completion	100.00%
Connections	2056
Connections routed	2056
Connections remaining	0

Update Footprints and Libraries

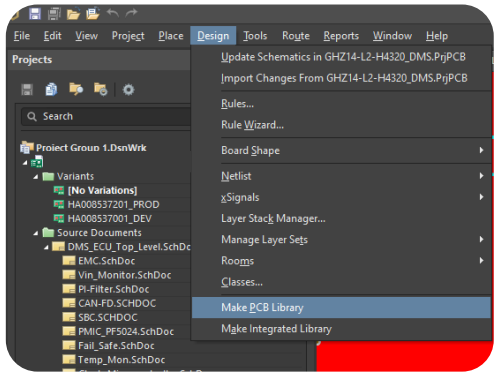
- Updated and verified component footprints to match the original design, including precise pad shapes and round corners
- Imported and recreated all custom components and libraries used in the Allegro design to ensure they were accurately represented in Altium Designer.

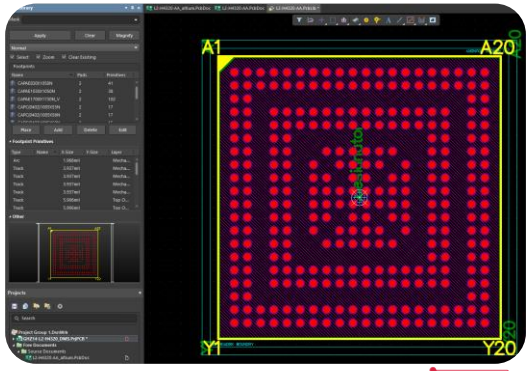
Schematic Library





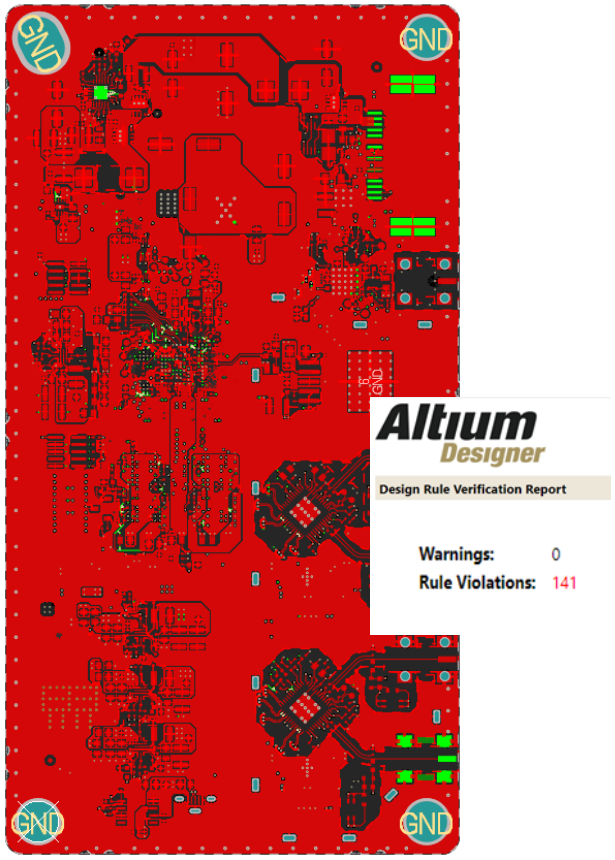
PCB Library





Review Design Rules

- Reconfigured the design rules and constraints from Allegro to fit the Altium Designer environment.
- Performed a comprehensive Design Rule Check (DRC) to identify and resolve any issues that may arise from the conversion, ensuring the design adheres to all necessary rules and constraints



Altium Designer

Design Rule Verification Report

Warnings: 0

Rule Violations: 141

Altium Designer

Design Rule Verification Report

Warnings: 0

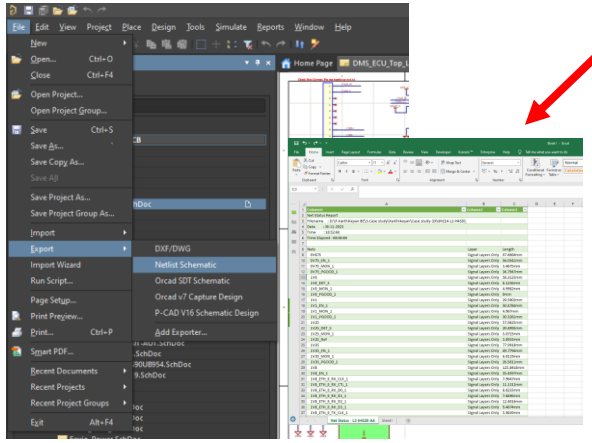
Rule Violations: 0

- Both Electrical (Cu Layers) and Non electrical layers (Overlay, Assembly, etc.) are also verified and cleaned up.

Netlist Verification

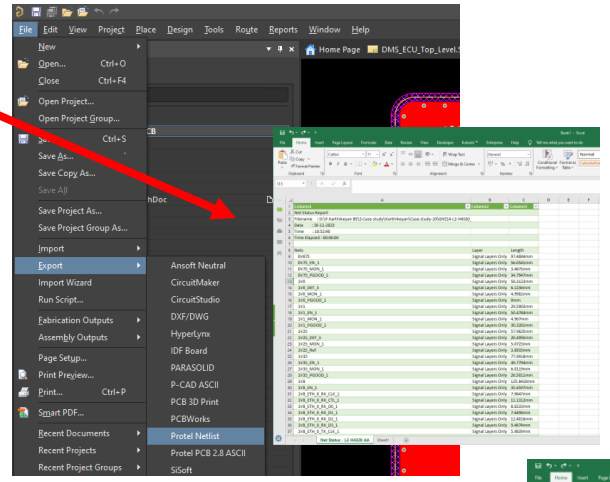
- Generated a netlist in Altium Designer and then proceed to compare it with the netlist provided by the client.

Schematic Netlist



Altium PCB Netlist

PCB Netlist



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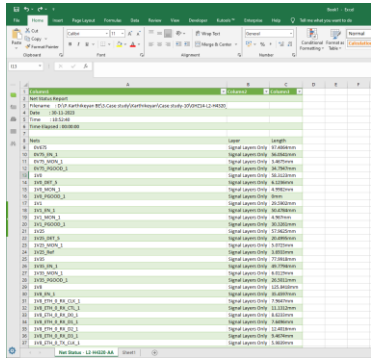

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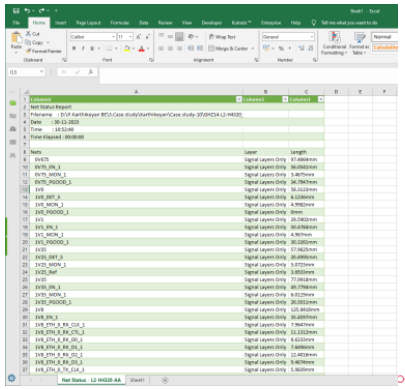
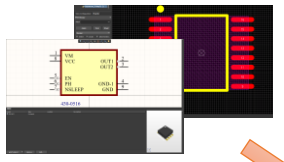


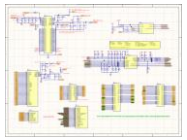
Allegro PCB Netlist

Finalize and Document

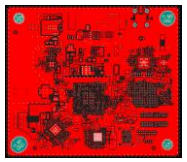
- Updated documentation for the PCB design, including schematics, layout files, and design notes, has been generated.
- Final design files are saved and backed up properly to provide a complete record of the converted design.



Library Files



Schematics



PCB layout files

Final Review

Results-In Altium Designer

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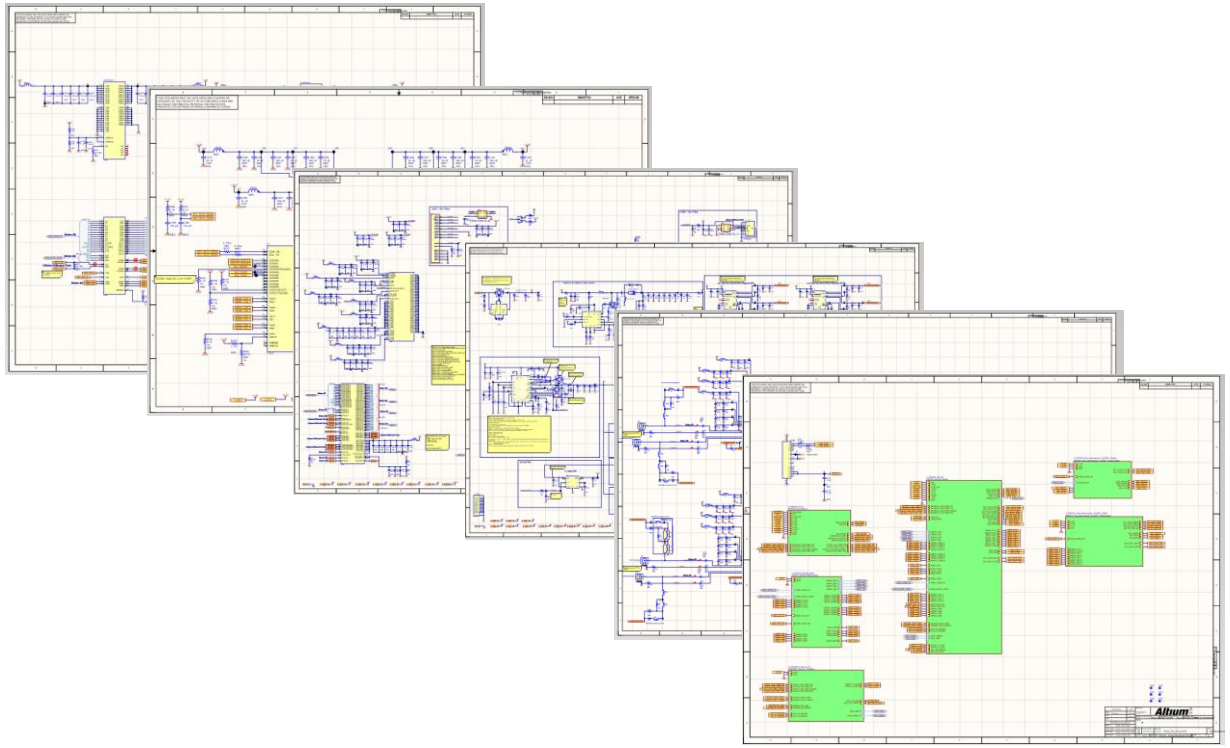
Schematics



PCB Layout

"EDA conversion from Allegro PCB to Altium Designer resulted in 100% electrical accuracy and 99.99% physical precision."

GigHz
A Global Engineering partner

An ISO-27001 ISMS Certified Company

Client Testimonial

Presented below is a testimonial from a satisfied client, providing compelling evidence of the effectiveness of our EDA conversion services,

"Working with GigHz was a game-changer for us. Their expert conversion of our PCB design files from Allegro to Altium Designer was marked by remarkable efficiency, precision, and dedication. They met our deadlines and provided cost-effective solutions that fit perfectly within our expectation. The quality of their work, characterized by exceptional attention to detail and flawless execution, exceeded all our expectations. GigHz exemplifies an ideal blend of time efficiency, cost-effectiveness, and unparalleled quality, making them an invaluable partner in navigating the complexities of electronic design and PCB development."

Conclusion

We demonstrated our dedication to excellence and technical expertise by delivering EDA conversion results that perfectly matched the client's requirements.

Our collaboration merges deep technical knowledge with personalized service, showcasing our proficiency and attention to client needs.

We provide high-quality EDA conversion PCB layouts that reduce costs while highlighting our capability and dependability in achieving outstanding results.

Emphasizing quality and strict adherence to timelines is central to our approach, ensuring consistent and exceptional performance.