Design & Verification Engineering Capability

Embedded ODM Production
Engineering Functions

Research & Design Engineering

- Electrical Engineering
- Mechanical Design
- PCB Layout
- Power Engineering
- Thermal Design
- High Speed IO Testing
- Signal Integrity Design
- EMC/EMI Testing
- Low Speed Bus Testing
- Power Integrity Design
- Product Safety
- Design Quality Assurance
**ODM Working Process**

1. **Know Why**
2. **Hardware Design**
3. **SI/PI/Thermal Simulation**
4. **Hardware/HS/LS Validation**
5. **Design Quality Assurance**
6. **Manufacture**

**Creativity and Flexibility**

- Reduce the risk of design failure
- Electrical Design Verification Report
- System Reliability Verification Report
- Reliable Product Manufacturing
Project Development Process

P0 phase
Proposal

P5 phase
Pilot-run

P1 phase
High Level Design

P2 phase
Detailed Design

P3 phase
Design Verification

P4 phase
Design Maturity

C0

C1

C2

C3

C4

C5

Project Kickoff

Production Release

Fab Release

ES Release

QS Release
## Design and Test Review

<table>
<thead>
<tr>
<th>P1 phase</th>
<th>P2 phase</th>
<th>P3 phase</th>
<th>P4 phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Level Design</td>
<td>Detailed Design</td>
<td>Design Verification</td>
<td>Design Maturity</td>
</tr>
<tr>
<td>▪ Placement</td>
<td>▪ Schematic</td>
<td>▪ EVT report</td>
<td>▪ DVT report</td>
</tr>
<tr>
<td>▪ Thermal simulation</td>
<td>▪ Layout</td>
<td>▪ Signal integrity</td>
<td>▪ Compatibility</td>
</tr>
<tr>
<td>▪ Mechanical</td>
<td>▪ Design rule</td>
<td>▪ Functional</td>
<td>▪ Reliability</td>
</tr>
<tr>
<td>▪ Design rule</td>
<td>▪ CPLD Spec</td>
<td>▪ Performance</td>
<td>▪ Serviceability</td>
</tr>
<tr>
<td>▪ BOM cost</td>
<td>▪ EVT plan</td>
<td>▪ Design margin</td>
<td>▪ Certification</td>
</tr>
<tr>
<td>▪ DFM/Assembly</td>
<td>▪ DVT plan</td>
<td></td>
<td>▪ Pilot-Run</td>
</tr>
<tr>
<td>▪ DFT(Test)</td>
<td>▪ DFMEA (Design Failure Mode and Effects Analysis)</td>
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Project Management

Product Data

- Part BOM
- ECR
- ECO
- Project
- Doc.
- Drawing

Agile PLM

Emerging Product Lifecycle Management (PLM) Platforms

- Agile Product Development & Collaboration
- Agile Product Portfolio Management
- Agile Project & Cost Management
- Agile Product Collaboration
- Agile PLM Platform

NEXCOM

Enterprise Product Record
Thermal Simulation - FloTHERM
Background:
- The longest trace length from IOM to HDD-BP#2 is 27.56 inches (estimation value).

Topology:

Action: Channel Loss Simulation and eye opening
1. Channel loss can meet PMC SAS channel requirement and have good margin
   PMC Ch loss Spec. : < 33dB @ 6GHz
2. Eye opening better than PMC requirement and have good margin.
   (PMC Sierra expander IBIS AMI v2.7 simulation)
Verification Process

EVT
- Build Quality Check
- Test-to-Specification
- Signal Quality Fine Tune
- Performance Benchmark
- Design Margin Test

DVT
- System Elements Assembly
- Temperature Profile
- Power Consumption
- Guard Band Test
- Package Test
- Environmental Test
- Long Term Reliability Test

PVT
- Functionality Test
- Compatibility Test
- Performance Test
- Stability Test
- Usability Test
- Compliance Test
Engineering Validation Test Equipment

**DSA-X 92804A 28GHz 80GSa/s**
Application:
1. SFP+
2. 40G QSFP
3. HDMI
4. SAS
5. PCIE

**DSA-X 91604A 16GHz 40GSa/s**
Application:
1. PCIE
2. SATA
3. Displayport
4. USB3.0
5. CLOCK
6. 10M/100M/1G/10G/NBase-T
7. IEEE Return Loss

**EXA N9010A (10Hz - 7GHz)**
Application:
1. 10GBASE-T Power Spectral Density
2. 10GBASE-T Power Level

**Keysight PNA N5224B**
Application:
1. S-parameter extraction
2. Insertion Loss Test
3. Return Loss Test
4. Impedance Test

**DSOX3024T 200MHz 5GSa/s**
Application:
1. Power Supply Control Loop Response Measurement
2. Bode Plot, Gain Margin and Phase Margin

**ENA E5061B (100KHz – 1.5GHz)**
Application:
1. RJ45 MDI Return Loss test
Engineering Validation Test Equipment

**DPO77002SX 70GHz 200GS/s 125M/Ch(RL)**

- **Application:**
  1. PCIE Gen6/5/4/3
  2. IEEE 800GbE
  3. IEEE 400GbE
  4. IEEE 200GbE
  5. IEEE 100GbE
  6. USB4/3.2/3.1/3.0
  7. SATA7/22
  8. DP1.4/1.2

**DPO73304SX 33GHz 200GS/s**

- **Application:**
  1. PCIE Gen6/5/4/3
  2. IEEE 400GbE
  3. IEEE 200GbE
  4. IEEE 100GbE
  5. USB4/3.2/3.1/3.0
  6. SATA7/22
  7. DP1.4/1.2
  8. HDMI2.0/1.4

**Tektronix MSO71604C**

- **Application:**
  1. PCIE
  2. SATA
  3. USB3.1
  4. USB2.0
  5. CLOCK
  6. 10M/100M/1G Base-T
  7. MIPI D-PHY

**DSA8300 Sampling scope**

- **Application:**
  1. TDR 50GHz BW
  2. 100G/40G/10GbE
  3. SerDes
  4. ICONN S-param
  5. Impedance Test

**DR 28G BW 80E10**

**MSO64 4Ghz 25GS/s**

- **Application:**
  1. Ethernet Base-T
  2. USB2.0
  3. Low speed signals
  4. Power ac noise
  5. IEEE Return Loss
IXIA XGS12
NOVUS10/5/2.5/1/100M16DP
NOVUS-R100GE8Q28+
NOVUS 25GE FAN-OUT-UPG
Multis QSFP+40GE QSFP28 , FAN-OUT 10GE 32SFP+ , L2-3 support

Application:
1. RFC2544/2889 for
   100G/40G/25G/10G/5G/2.5G/1G

AresONE-400GE QSFP-DD High-Performance
4-Port Test System

Application:
1. RFC2544/2889 for
   400G/200G/100G/50GbE
IXIA Novus ONE PLUS
IXIA Novus ONE PLUS Fixed Chasssis, 4-port, SFP+/10GBASE-T Dual PHY 10GE/5GE/2.5GE/1GE/100M

Application:
1. TSN conformance and interoperability tests.
   10G/5G/2.5G/1G/100M
Engineering Validation Test Equipment

**R&S®ESPI Test Receiver**
Application:
1. Radiation Emission

**R&S FSL Spectrum Analyzer**
9 kHz to 3 GHz
Application:
1. Signal/EMI Analyzer

**IMU3000/CDN-UTP8 ED3**
Application:
1. Surge
2. EFT

**ESS-2002EX**
Application:
1. ESD simulator
Engineering Validation Test Equipment

**Shock-100**
Application:
1. Shock test

**VS-600VH-51/VS-1000VH-51**
Application:
1. Vibration test

**MHK-408NK/LK/LB/AK**
Application:
1. Temperature & Humidity Test Chamber

**VS-1018**
Application:
1. Drop test
Certification lab (NEXCOM In-House)

EMI Chamber
Certification lab (NEXCOM In-House)

ESD Lab

Surge/EFT Lab
Certification lab (NEXCOM In-House)

Vibration Machine

Shock Machine
Thank You