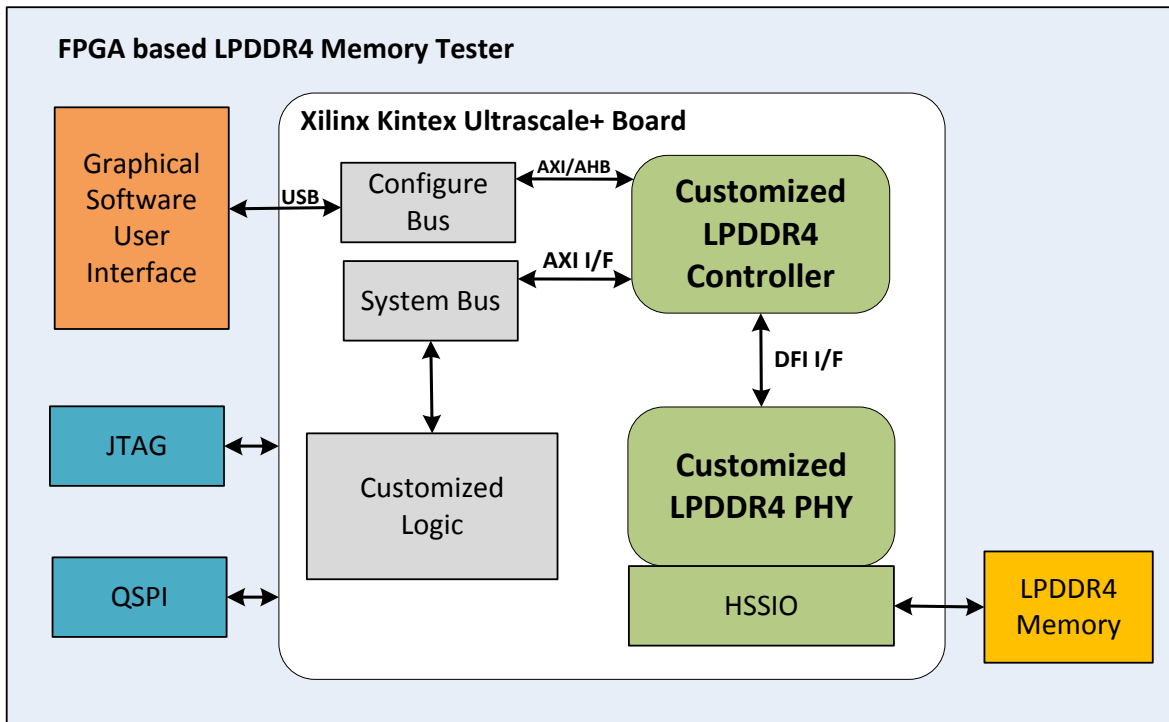


Why Memory Module Tester for LPDDR4?

Memory goes through various processes from die level of wafer to packaged die to Module preparation, wherein it is susceptible to **damage from external environmental factors**, such as, humidity, hot/cold temperatures, dust particles, etc. DRAM modules in Industries undergoes rigorous computing performed at a very large scale. Any impact in business operations may lead to huge loss financially and resource wise. Many LPDDR4 applications in Automotive industry (ADAS, In-Car Infotainment) require **reliable LPDDR4 memories, robust connectivity** and **expects performance in extreme temperatures**. Memory Module Testers are imperative to prevent catastrophic events such as System Failure or to avoid delay in Business operations.

Block Diagram:



Feature Highlights:

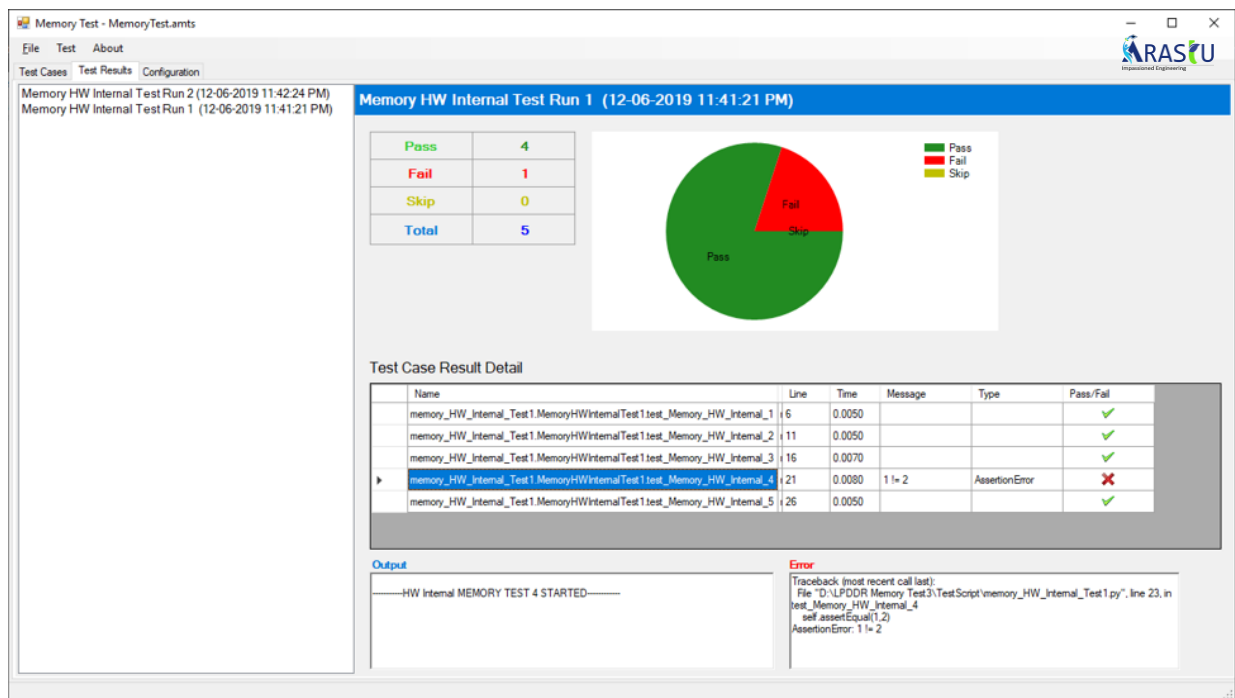
- Integrated **LPDDR4 Controller** and **PHY**, specifically designed to work for LPDDR4 memories
- Developed using **Xilinx Kintex Ultrascale+ FPGA**
- **Software Graphical User interface** as well automate testing using Python script
- Flexibility to **generate multiple Scenarios** based on the nature of the test
- **Testing Accuracy and Speed of testing**
- Analytical data for **Intelligent Failure Management**
- Flexible User Interface to manage **Software Controllability**
- Yield improvement techniques such as **PPR (Post Package Repair)**
- Dynamic Frequency Change
- **High speed software connectivity** to run Analytics to know the status and react on Pass/Fail results
- Flexibility to choose different size, bandwidth, datawidth, etc.
- Controller can manage (Auto or Manual) Refresh, Power Down state, Memory Timing configuration for **Robust Memory Testing**
- Control Mask address/data request and data bus inversion
- Fast Read-Modify-Write operation
- High performance with Low cost
- Designed using a flexible new approach
- Rigorously **tested and validated** using Xilinx FPGA for speeds up to **LPDDR2400**



Snapshot of Memory Tester Hardware Board

Hardware Feature Highlights

- Xilinx Kintex Ultrascale+ based board
- **LPDDR4 memory On-Board**
- Optimized routing to run memory for single channel of LPDDR4
- Scalable architecture for board design to run two LPDDR4 and two channels each at high speeds
- On-board Power Supply
- 12VDC Input
- Small Form factored board



Snapshot of Memory Tester's Graphical User

GUI Feature Highlights:

- **USB3.0** Interface to Tester Hardware (FTDI)
- GUI to control Register for **Memory Under Test**
- Python Script Interface to automate Testing,
 - Select DUT Configuration
 - Select Type of tests to run
 - Collect Result/Status
- Select Hardware configured At-Speed Tests
- Choose and select Software configured Tests for Specific **User defined scenarios**

- Provision to Collect Various Testing Data Points for **Data Analytics**

Deliverables:

- LPDDR4 Controller & LPDDR4 Digital PHY for Xilinx FPGA
- Synthesize Constraint File
- Software Graphical User Interface
- **Hardware Board**, if required (Optional)
- User Manual and other related technical documentation