**Agenda for Demo - Cooperative Design Lab**

**Project**:

USB RX/TX and AHB-lite Slave

**Team 31**:

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**USB RX:**

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| **Number of Test Case** | **Module tested** | **Feature tested** | **Test name** | **Criteria Num.** | **Description of test inputs** | **Description of expected outputs** |
| 1 | USB RX | RX Control Unit State Machine (FSM) | DUT Power-on-reset | 1 | Assert reset signal to ensure device asserts appropriate signals when DUT is reset | The RX must be in idle state |
| 2 | USB RX | DATA | Checks if error signal is asserted if invalid payload size is received | 3 | Invalid packet with the payload size more than 64 bytes | The device moves into an error state and the data buffer is flushed to eliminate invalid data |
| 3 | USB RX | NRZI Decoder | Checks correct functionality of decoder | 3 | Use the TX encoder to stream a random sequence of bits to check decoder | NRZI decoder correctly reproduces the encoder signal with no timing hazards |
| 4 | USB RX | PID | Verify receipt of ACK/NAK | 3 | A sequence of valid USB packets with ACK and NAK | The USB RX indicates that the packet was received correctly |
| 5 | USB RX | PID | Verify correct functionality for IN/OUT | 3 | A sequence of valid USB input packets with IN/OUT token IDs | Each of these packets causes USB to indicate packet was received correctly |
| 6 | USB RX | PID | Ensure functionality DATA0/DATA1 with small payload | 1, 3 | A sequence of valid USB packets with small sized payloads | For each of the DATA0 and DATA1 packets, the USB RX indicates correct receipt |
| 6 | USB RX | PID | Ensure functionality for DATA0/DATA1 with half of the maximum payload | 1, 3 | Send a sequence of valid USB packets with half of the maximum payload size | For each of the DATA0 and DATA1 packets, the USB RX indicates correct receipt |
| 6 | USB RX | PID | Ensure functionality for DATA0/ DATA1 case with maximum payload | 1, 3 | A sequence of valid USB packets with maximum payload size | For each of the DATA0 and DATA1 packets, the USB RX indicates correct receipt |
| 7 | USB RX | SYNC | Incorrect SYNC byte | 3 | Send incorrect SYNC byte followed by a valid EOP | RX should assert RX Error with transfer active high until correct EOP received |
| 8 | USB RX | PID | Verify functionality for an invalid and incorrect PID | 3 | Send two packets, one with an incorrect PID and the other with an invalid PID | RX should assert an RX Error and RX Transfer Active is asserted until the end of packet is received |
| 9 | USB RX | EOP Detector | Verify that incorrect detection of EOP asserts error | 3 | A sequence of packets with premature EOP detection during the SYN, PID, DATA receiving stage | RX must assert error moving the device to EIDLE state until the next clock edge |