# tb_cocotb.v

## AUTHORS

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## DATES

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## INFORMATION

### Brief

Test bench wrapper for cocotb

### License MIT



### tb_cocotb

```
module tb_cocotb #(
parameter
CLOCK_SPEED
  =
2000000,
parameter
RX_BAUD_DELAY
  =
0,
parameter
TX_BAUD_DELAY
  =
0
) ( input wire aclk, input wire arstn, output wire parity_err, output wire f
```

### Parameters

| | |
|---|---|
| **CLOCK_SPEED** parameter | This is the aclk frequency in Hz |
| **RX_BAUD_DELAY** parameter | Delay in rx baud enable. This will delay when we sample a bit (default is midpoint when rx delay is 0). |
| **TX_BAUD_DELAY** parameter | Delay in tx baud enable. This will delay the time the bit output starts. |

### Ports

| | |
|---|---|
| **aclk** | Clock for AXIS |
| **arstn** | Negative reset for AXIS |
| **parity_err** | Indicates error with parity check (active high) |
| **frame_err** | Indicates the diff line went to no diff before data catpure finished. |
| **s_axis_tdata** | Input data for UART TX. |
| **s_axis_tuser** | Information about the AXIS data {S,D,TYY} (4:0)<br>Bits explained below: |

```
- S   = SYNC ONLY (4)
      - 1 = Send only a sync pulse specified by TYY
      - 0 = Send normal sync + data.
- D   = DELAY ENABLED (3)
      - 1 = Make sure there is a delay of 4us
      - 0 = Send out immediatly
- TYY = TYPE OF DATA  (2:0)
      - 000 = NA
      - 001 = REG (NOT IMPLIMENTED)
      - 010 = DATA
      - 100 = CMD/STATUS
```

s_axis_tvalid - When set active high the input data is valid s_axis_tready - When active high the device is ready for input data. m_axis_tdata - Output data from UART RX m_axis_tuser - Information about the AXIS data {S,D,TYY} (4:0)

Bits explained below:

```
- S   = SYNC ONLY (4)
      - 1 = Only received a sync pulse specified by TYY
      - 0 = Normal sync + data received.
- D   = DELAY BEFORE DATA (3)
      - 1 = Delay of 4us or more before data
      - 0 = No delay between data
- TYY = TYPE OF DATA      (2:0)
      - 000 NA
      - 001 REG (NOT IMPLIMENTED)
      - 010 DATA
      - 100 CMD/STATUS
```

m_axis_tvalid - When active high the output data is valid m_axis_tready - When set active high the output device is ready for data. tx_active - Active high indicates transmit is in progress. tx_diff - transmit for 1553 (output to RX) rx_diff - receive for 1553 (input from TX)

## INSTANTIATED MODULES

### dut

```
 axis_1553 #(
                                                                                .
 CLOCK_SPEED(CLOCK_SPEED),
                                                                                .
 RX_BAUD_DELAY(RX_BAUD_DELAY),
                                                                                .
 TX_BAUD_DELAY(TX_BAUD_DELAY)
) dut ( .aclk(aclk), .arstn(arstn), .parity_err(parity_err), .frame_err(fram
```

Device under test, axis_1553