tb_cocotb.v

AUTHORS

JAY CONVERTINO

DATES

2025/06/24

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
frame_err,
input
wire
 [15:0]
s_axis_tdata,
input
wire
 [ 4:0]
s_axis_tuser,
input
wire
s_axis_tvalid,
output
wire
s_axis_tready,
output
wire
 [15:0]
m_axis_tdata,
output
wire
 [ 4:0]
m_axis_tuser,
output
wire
m_axis_tvalid,
input
wire
m_axis_tready,
output
wire
tx_activen,
output
wire
 [ 1:0]
tx_diff,
input
wire
 [ 1:0]
rx_diff
)
```

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 input wire	Clock for AXIS
arstn input wire	Negative reset for AXIS
parity_err output wire	Indicates error with parity check (active high)
frame_err output wire	Indicates the diff line went to no diff before data catpure finished.
s_axis_tdata input wire [15:0]	Input data for UART TX.
s_axis_tuser input wire [4:0]	Information about the AXIS data {S,D,TYY} (4:0) 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_activen - Active low indicates transmit is in progress. tx_diff - transmit for 1553 (output to RX) rx_diff - receive for 1553 (input from TX)

INSTANTIATED MODULES

dut

Device under test, axis_1553