tb_coctb.v

AUTHORS

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DATES

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INFORMATION

Brief

Test bench wrapper for cocotb

License MIT

tb_cocotb

```verilog
module tb_cocotb #(
parameter
CLOCK_SPEED
  =
20000000,
parameter
SAMPLE_RATE
  =
2000000,
parameter
BIT_SLICE_OFFSET
  =
0,
parameter
```

```
   INVERT_DATA
    =
   0,
   parameter
   SAMPLE_SELECT
    =
   0
) ( input aclk, input arstn, output [15:0] m_axis_tdata, output m_axis_tval:
```

This core is a MIL-STD-1553 to AXI streaming decoder. It uses the postive edge of a clock to sample data. This restricts the core to 2 Mhz and above for a sample clock.

Parameters

CLOCK_SPEED
parameter

This is the aclk frequency in Hz, must be 2 MHz or above.

SAMPLE_RATE
parameter

2 MHz or above rate that is an even divisor of CLOCK_SPEED

BIT_SLICE_OFFSET
parameter

Changes the bit that is selected for data reduction.

INVERT_DATA
parameter

Will invert all decoded data.

SAMPLE_SELECT
parameter

Changes the bit that is sampled for data capture.

Ports

aclk   Clock for all logic

arstn   Negative reset

m_axis_tdata   Output data for 1553 decoder.

m_axis_tvalid   When active high the output data is valid.

m_axis_tuser   Information about the AXIS data {TYY,NA,D,I,P}

                      Bits explained below:

```
- TYY = TYPE OF DATA
      - 000 NA
      - 001 REG (NOT IMPLIMENTED)
      - 010 DATA
      - 100 CMD/STATUS
- NA  = RESERVED FOR FUTURE USE.
- D   = DELAY BEFORE DATA
      - 1 = Delay of 4us or more before data
      - 0 = No delay between data
- I   = INVERT
      - 1 = Inverted data
      - 0 = Normal data
- P   = PARITY
      - 1 = GOOD
      - 0 = BAD
```

m_axis_tready   When active high the destination device is ready for data.

diff   Output data in TTL differential format.

INSTANTIATED MODULES

dut

```
axis_1553_decoder #(
                                                                   .
CLOCK_SPEED(CLOCK_SPEED),
                                                                   .
SAMPLE_RATE(SAMPLE_RATE),
                                                                   .
BIT_SLICE_OFFSET(BIT_SLICE_OFFSET),
                                                                   .
INVERT_DATA(INVERT_DATA),
                                                                   .
SAMPLE_SELECT(SAMPLE_SELECT)
) dut ( .aclk(aclk), .arstn(arstn), .m_axis_tdata(m_axis_tdata), .m_axis_tva
```

Device under test, axis_1553_decoder