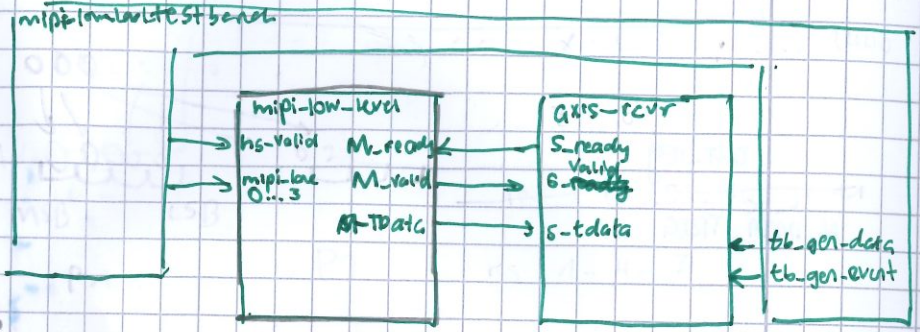
# MIPI

→ 12 Bit Raw-Data aka pixel data

→ one line contains 1920 * 12 Bits

→ Since Streaming Axi aligns packet to 16 bits, Then are 12 Bits raw data from 1.st packet and 4 bits from 2nd packet

→ No of streaming packets to be transferred 1440




Pseudo

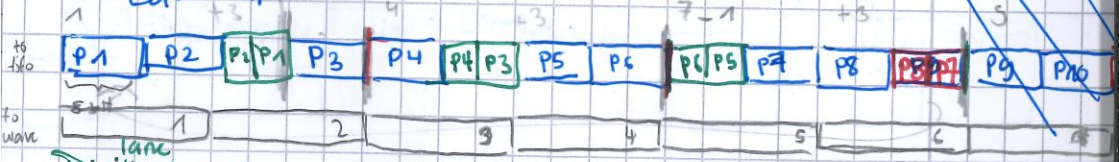
tb_gen_data <= pixel_idx (1...1920) when m_axis_clk = '0' & aclk'event

tb_gen_event <= '1' when m_axis_tvalid else '0'

Note: one pixel (12 bit) is transmitted over two separate packets

## mipi RAW12 packet

case mipi = 0 mipi = 1 mipi = 2 mipi = 3




Mipi cnt = 4

packet cnt = 3

line cnt = 1440

Accessing mipi lane (1 mipi), {0, 1, 2}

" ~~packet~~ (pkt) {1, 4, 7, 9, 12, 15, 17 ...}

byte idx

m-lane_0 =>
m_lane_1
m-lane_2
m-lane_3

RAW12 Transmission

1 → For each 32·3 bits sent, 8 pixels are transmitted over AXIS
·96

2 → For analysis waveform should display a series of numbers, in which its validity is easily discernable by one glance, for eg an increasing amount of numbers from 1 to x (chosen)
no : $R \in \{1, \ldots x\}$ where $x = 200$

3 → Thus, each packet of 16 bit displays one element of no

4 → The sum number of byte in a 16 bit word of no from 1 to 200
= 400

5 → No of bits if element 1 to 200 each has 16 bits
= 200*16
= 3200

mipi_tb

1.1 According to (2), one 16-bit packet should display a number from 1 to 1440, which is the number of streaming packets to be transmitted when 1920 image width is in a line

1.2 Since RAW12 takes 3 mipi_packet (8 bits) to transmit 2 counts of information all of the elements of 12 bits is only transmitted after (1440*12)/16 = 1080 streaming packet

1.3 The byte count in (1.2) case is
((1440*12)/16)*2 = 2160