DUT Calculations

ECE 593 Final Project

Sender frequency = 80 MHz
Receiver frequency = 50 MHz
Write Idle Cycles = 0
Read Idle Cycles = 0
Write Burst size = 120

No idle cycles in reading or writing, thus, all the items in the burst will be written and read in consecutive clock cycles.

Time required to write one item: $\frac{1}{80\,MHz} = 12.5 \cdot 10^{-9} =$ **12.5ns**

Time required to write all the data in the burst = $120 \cdot 12.5ns =$ **1500ns**

Time required to read one data item: $\frac{1}{50\,MHz} = 20 \cdot 10^{-9} =$ **20ns**

→ Thus, every 20ns the receiver reads one data in the burst

→ In a period of 1500ns, 120 data items can be written

Number of data items that can be read in the time it takes to write all the data in the burst.

$= \left(\frac{1500ns}{20ns}\right) =$ **75**

Remaining number of bytes stored in the FIFO = $120 - 75 =$ **45**

Minimum FIFO depth = 45