

# waveform

Logic design project

Fpga simple calculator simulation

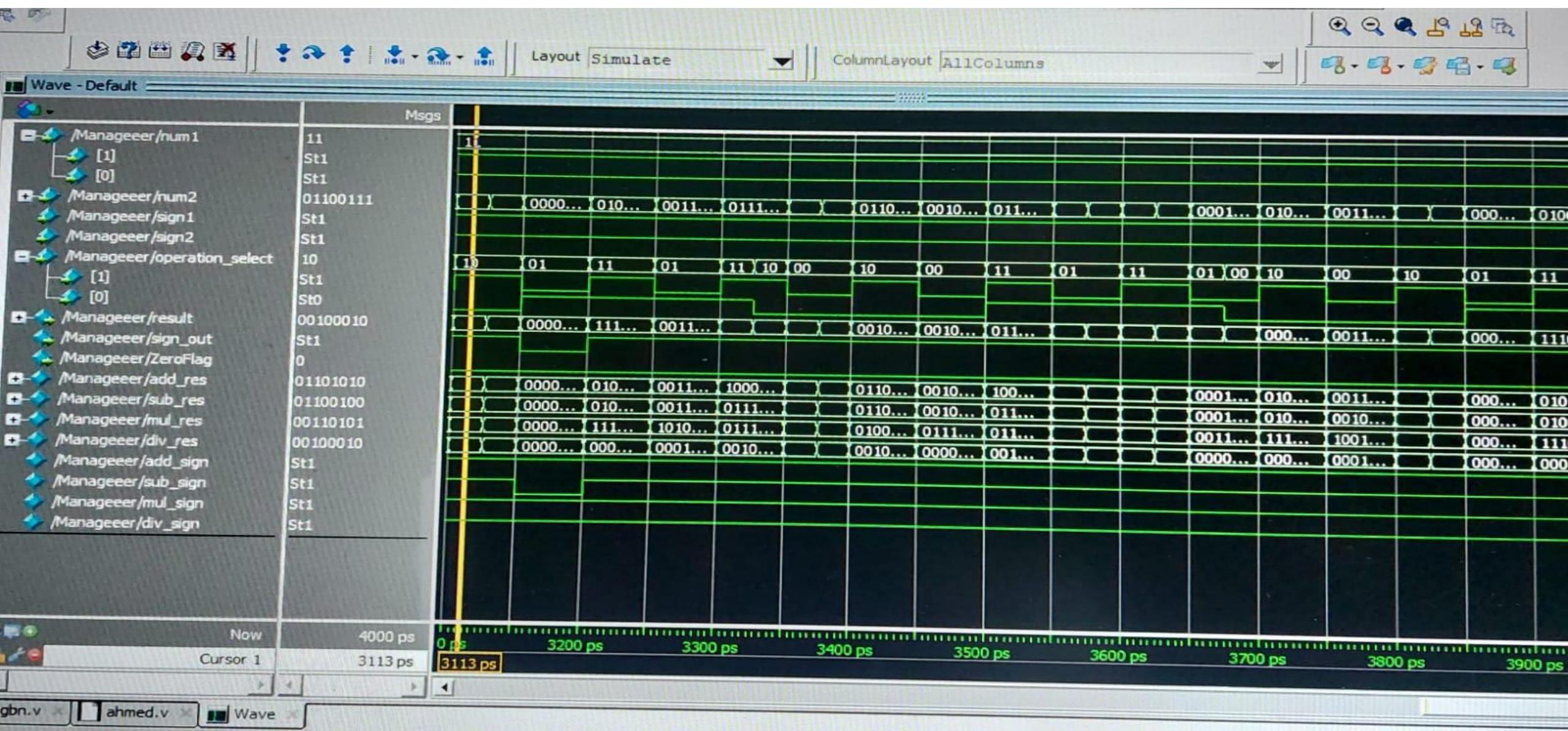
The simulation and waveform will have numerous number of cases that may be performed.

So this simulation will cover only sum cases randomly selected to test the functionality of the code and how simulation works.

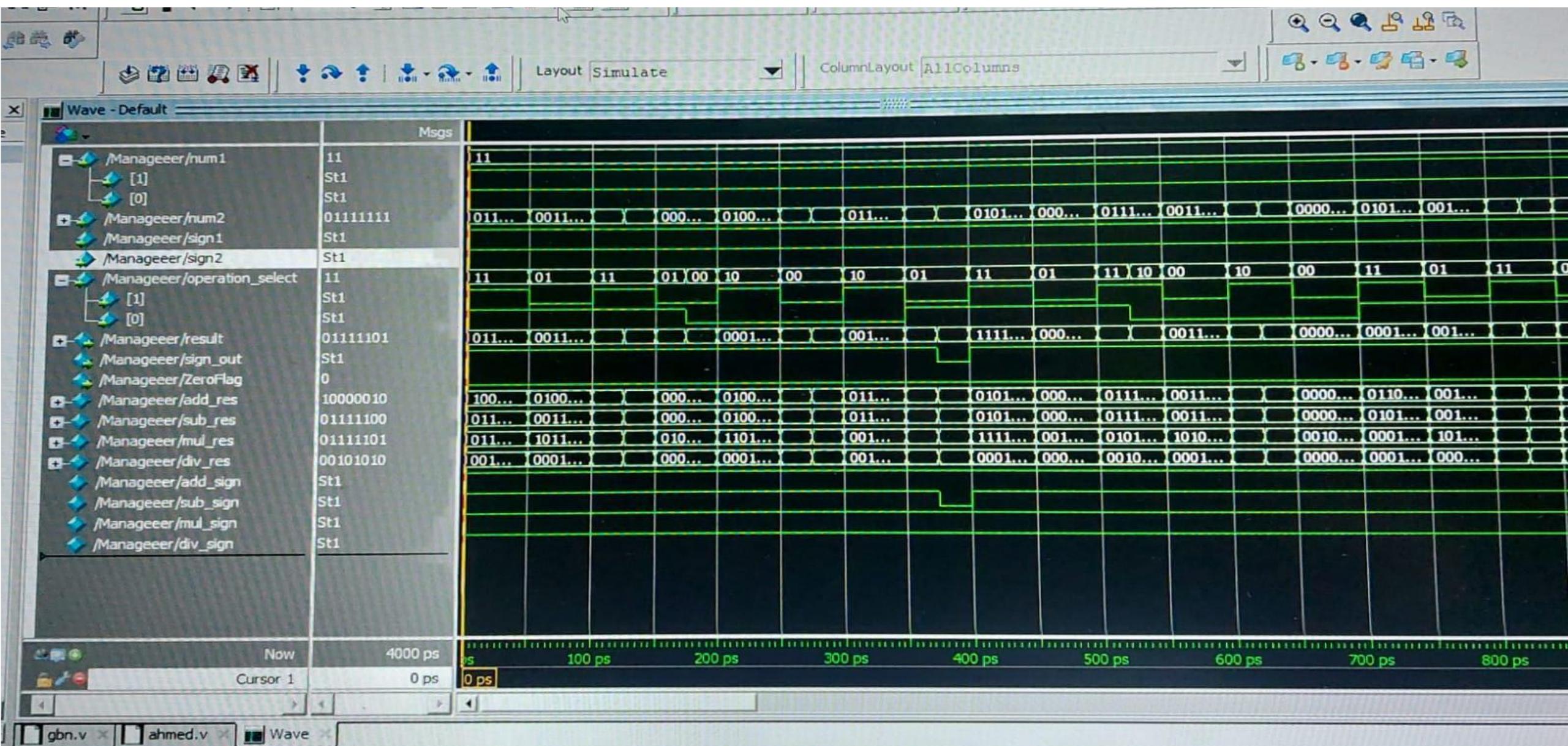
We will divide the cases into four cases ,each case will have four operations which means that we will have 16 case.

\*Any other cases can be done manually on FPGA.

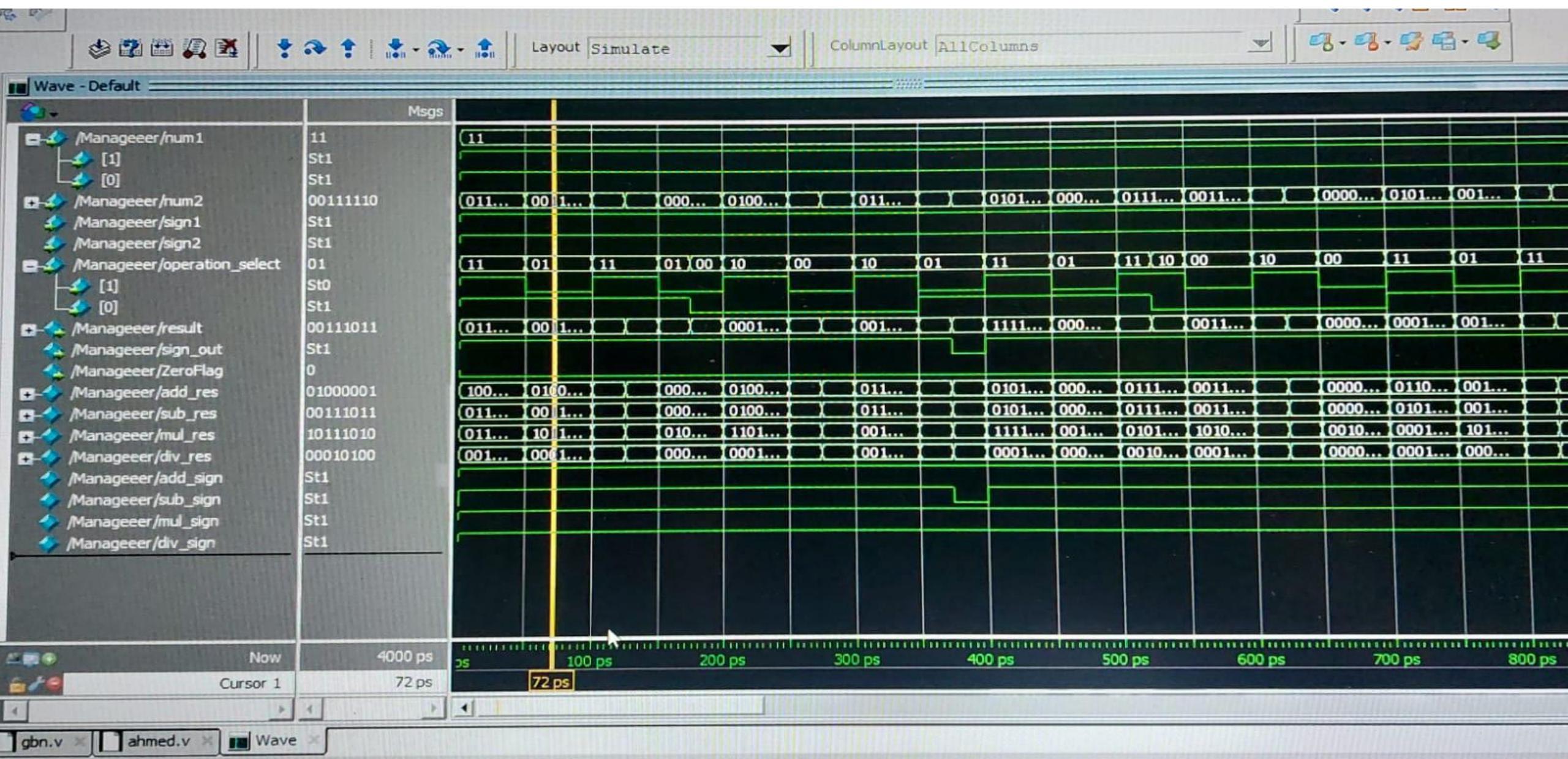
Case 1:operation with input 3  
case 1.1:divide 8bit-input by 3



Case 1:operation with input 3  
case 1.2:multiply 8bit-input by 3

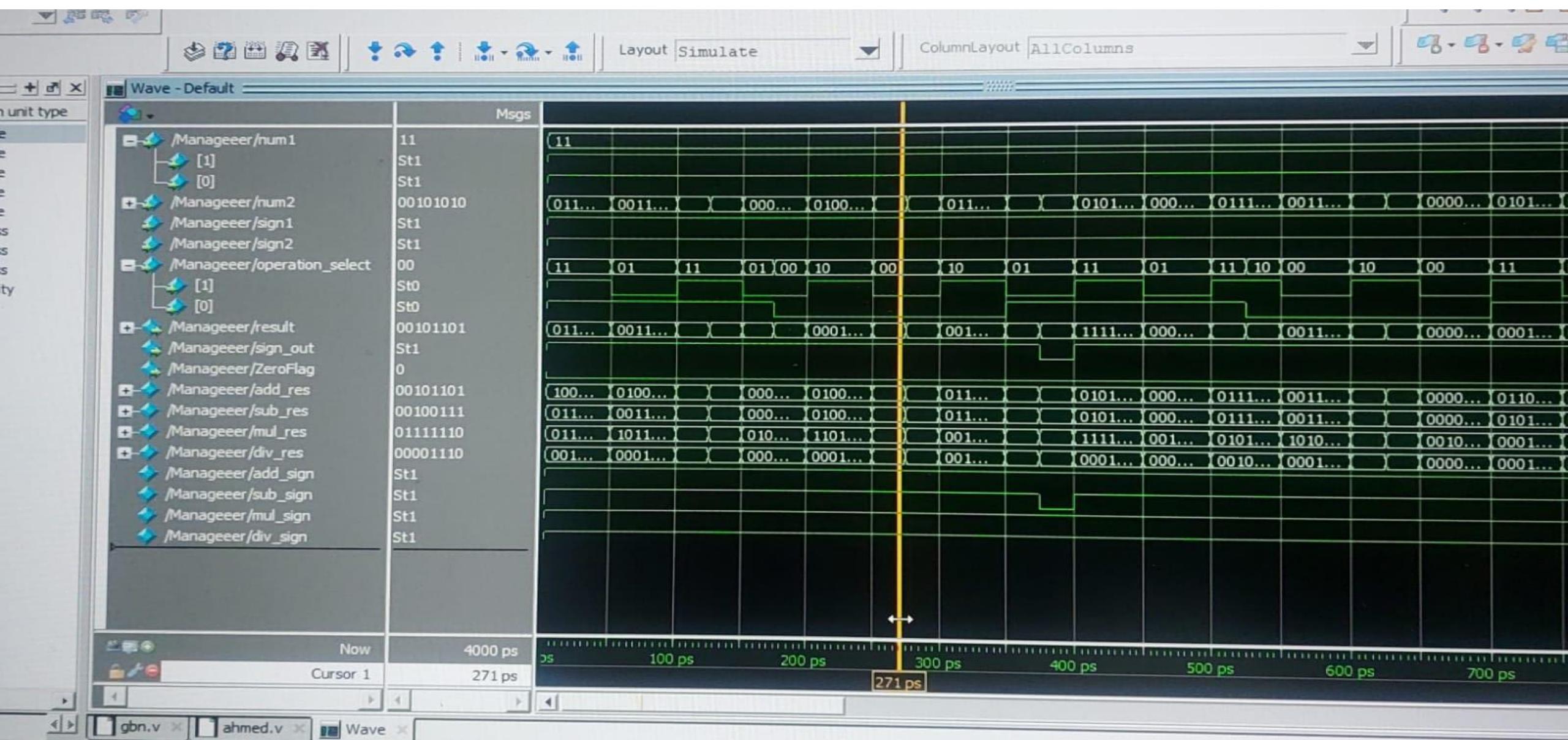


Case 1:operation with input 3  
case 1.3:subtract 8bit-input by 3



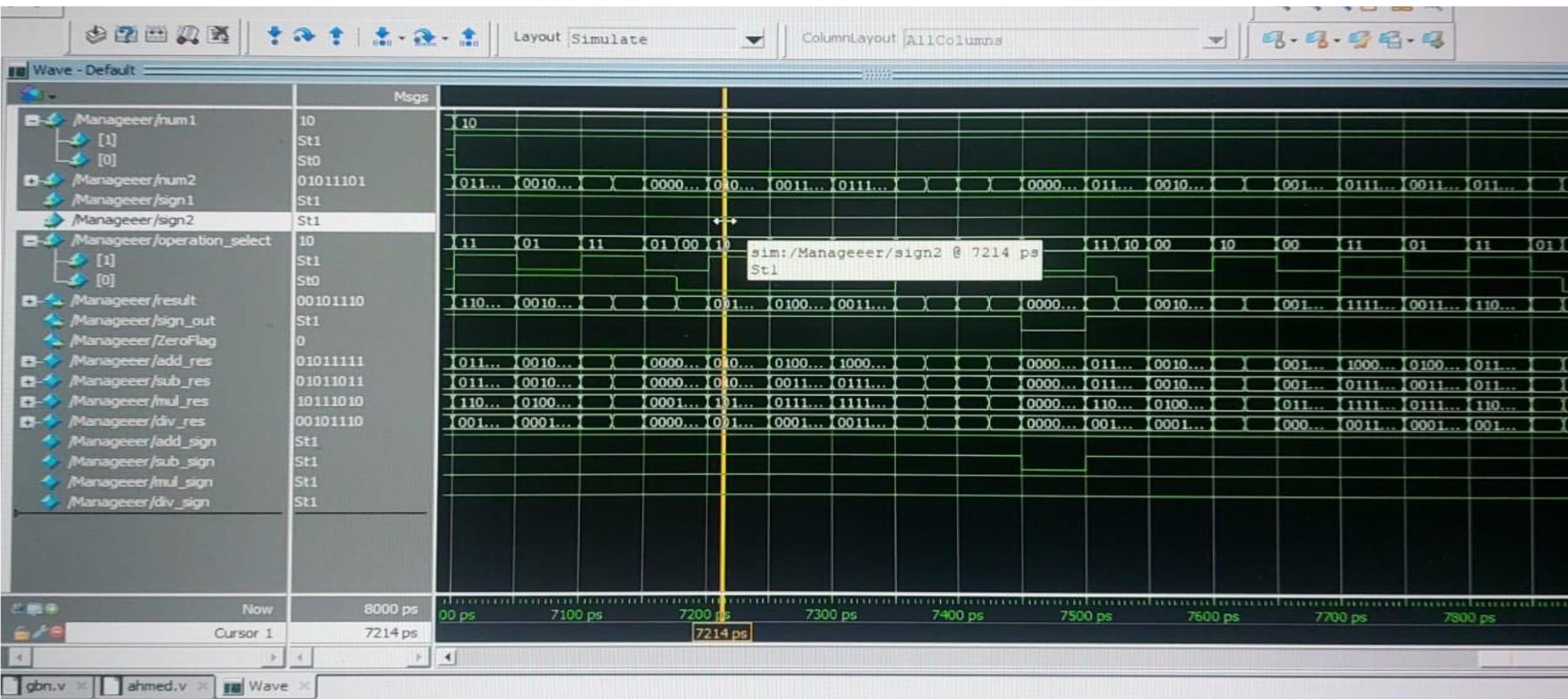
Case 1:operation with input 3

case 1.4:add 8bit-input by 3



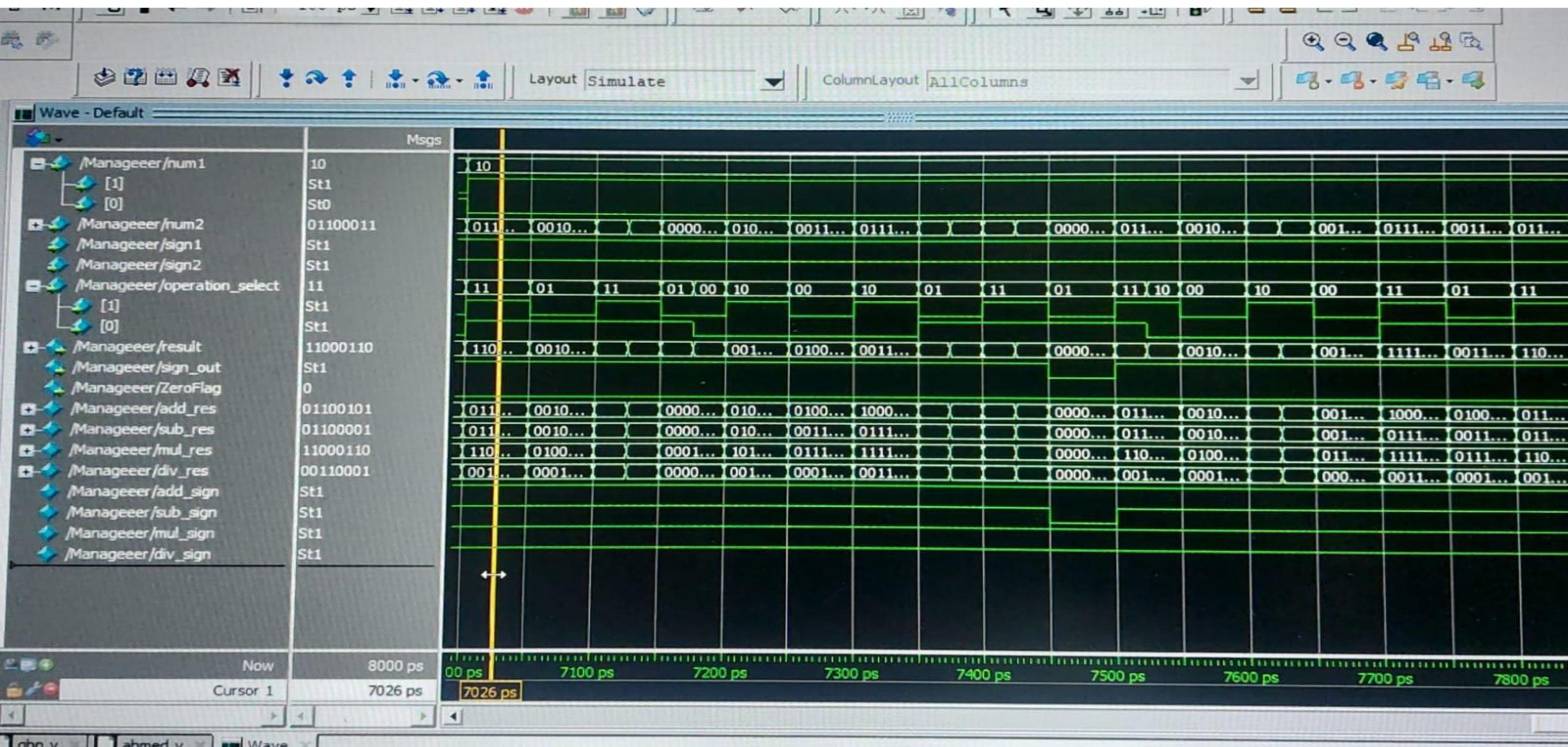
# Case 2:operation with input 2

## case 2.1:divide 8bit-input by 2

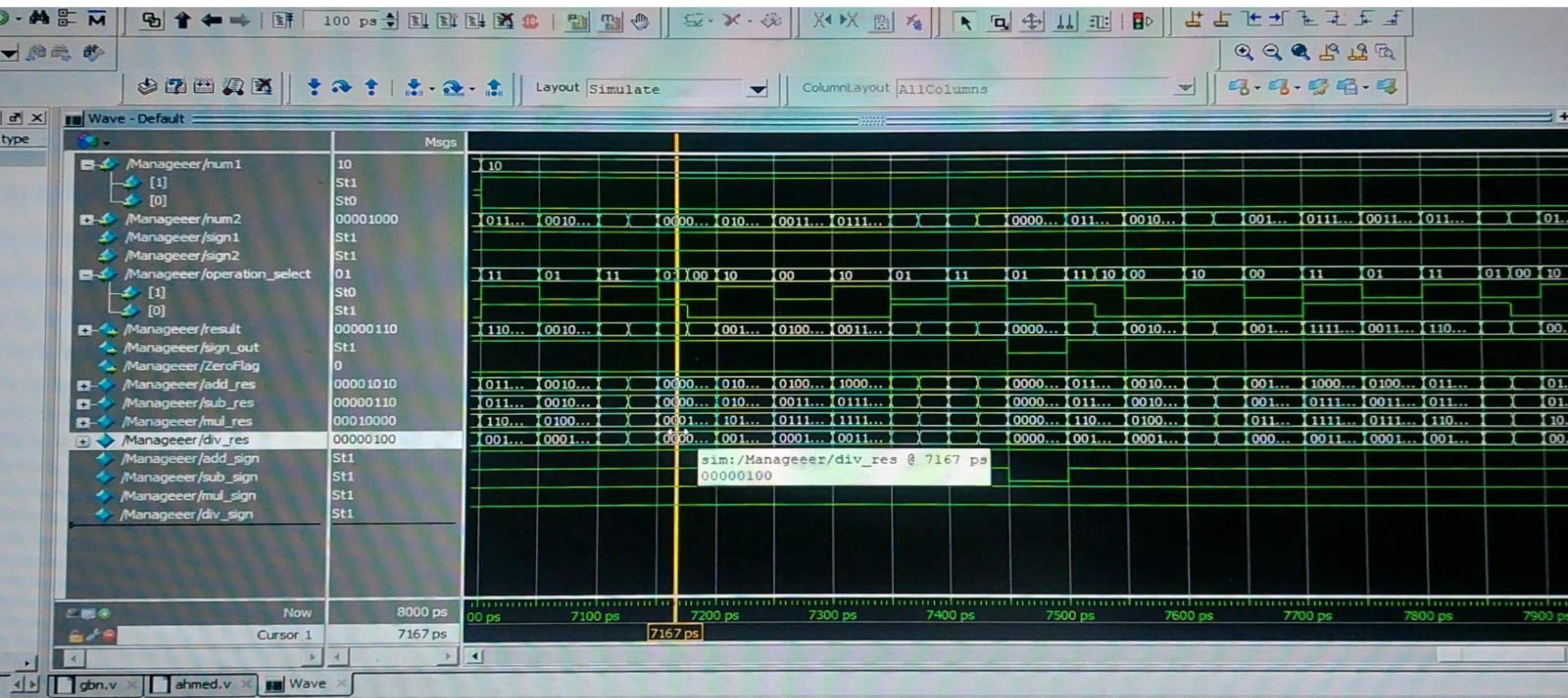


## Case 2:operation with input 2

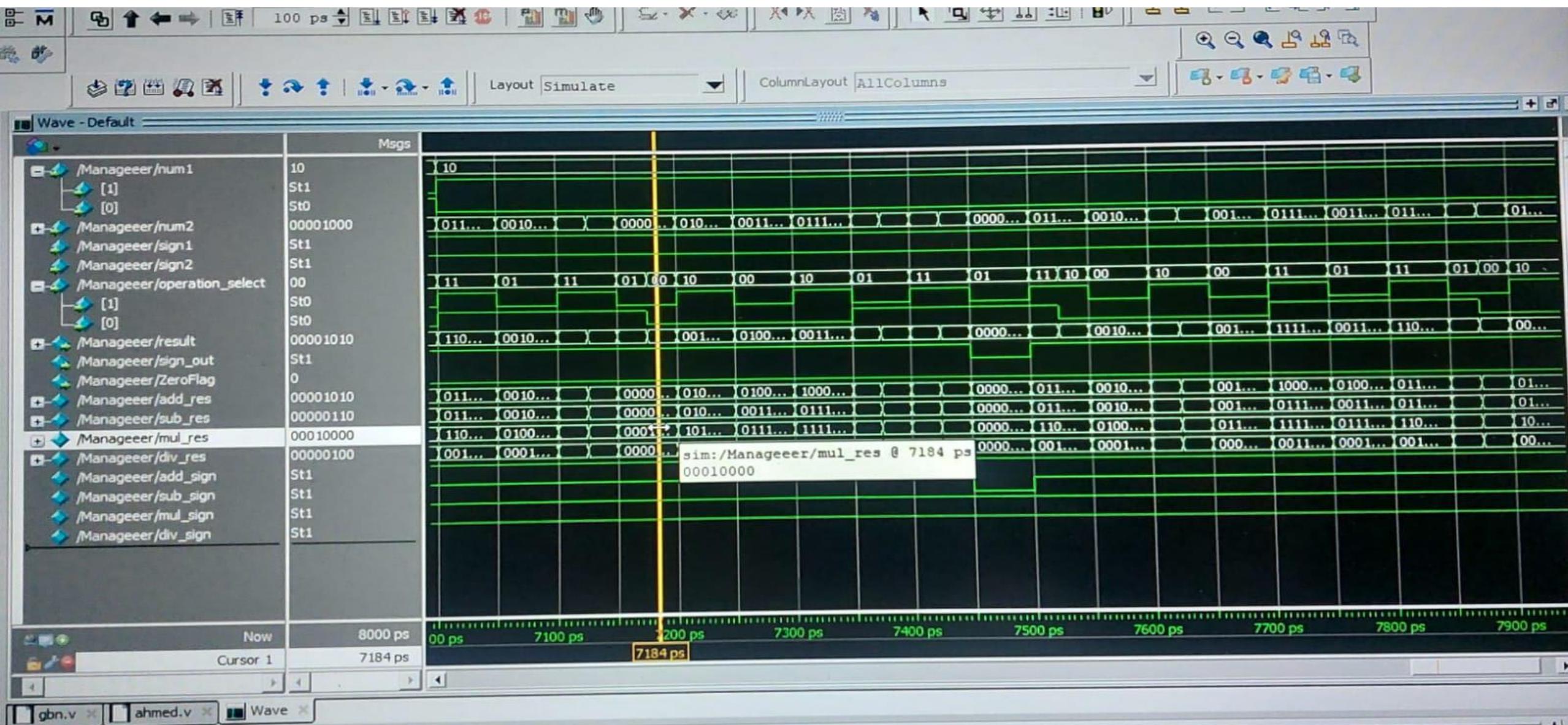
### case 2.2:multiply 8bit-input by 2



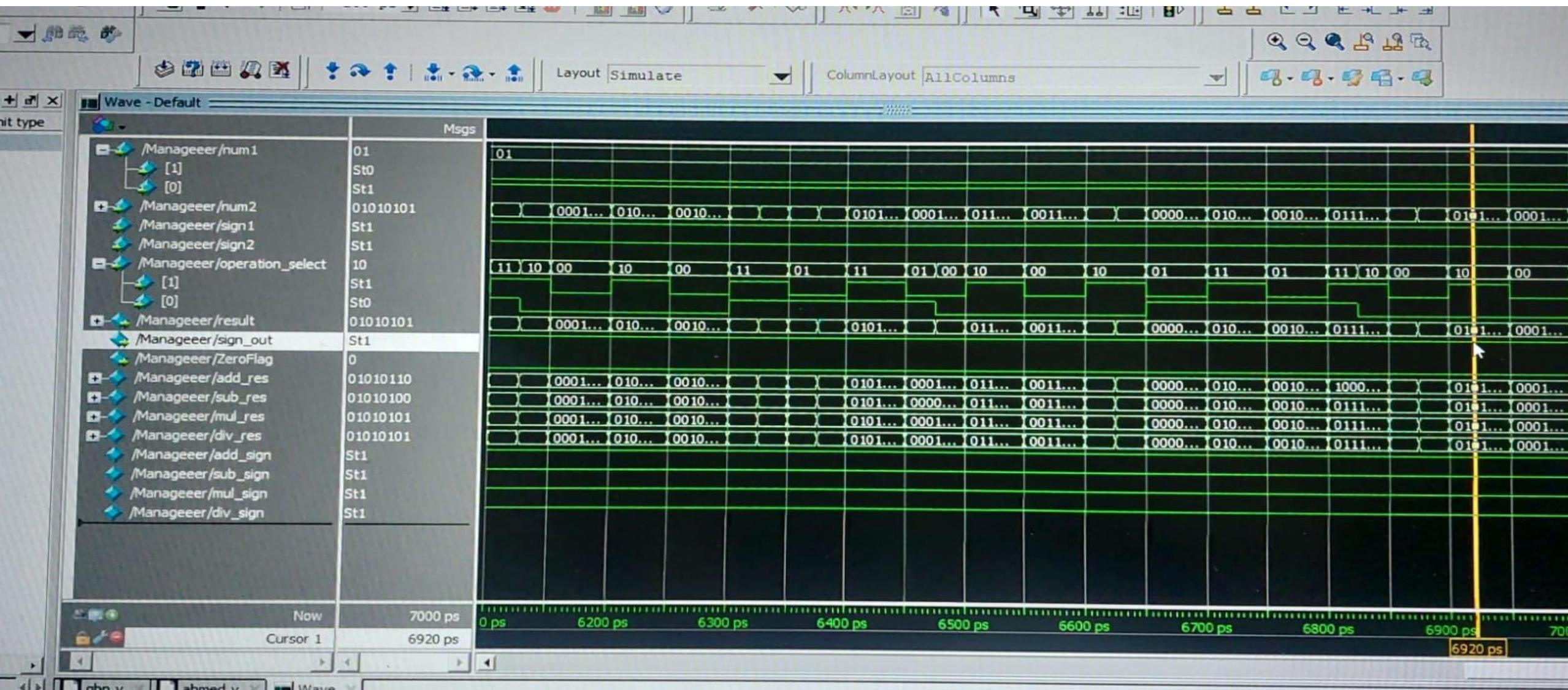
Case 2:operation with input 2  
case 2.3:subtract 8bit-input by 2



Case 2:operation with input 2  
case 2.4:add 8bit-input by 2

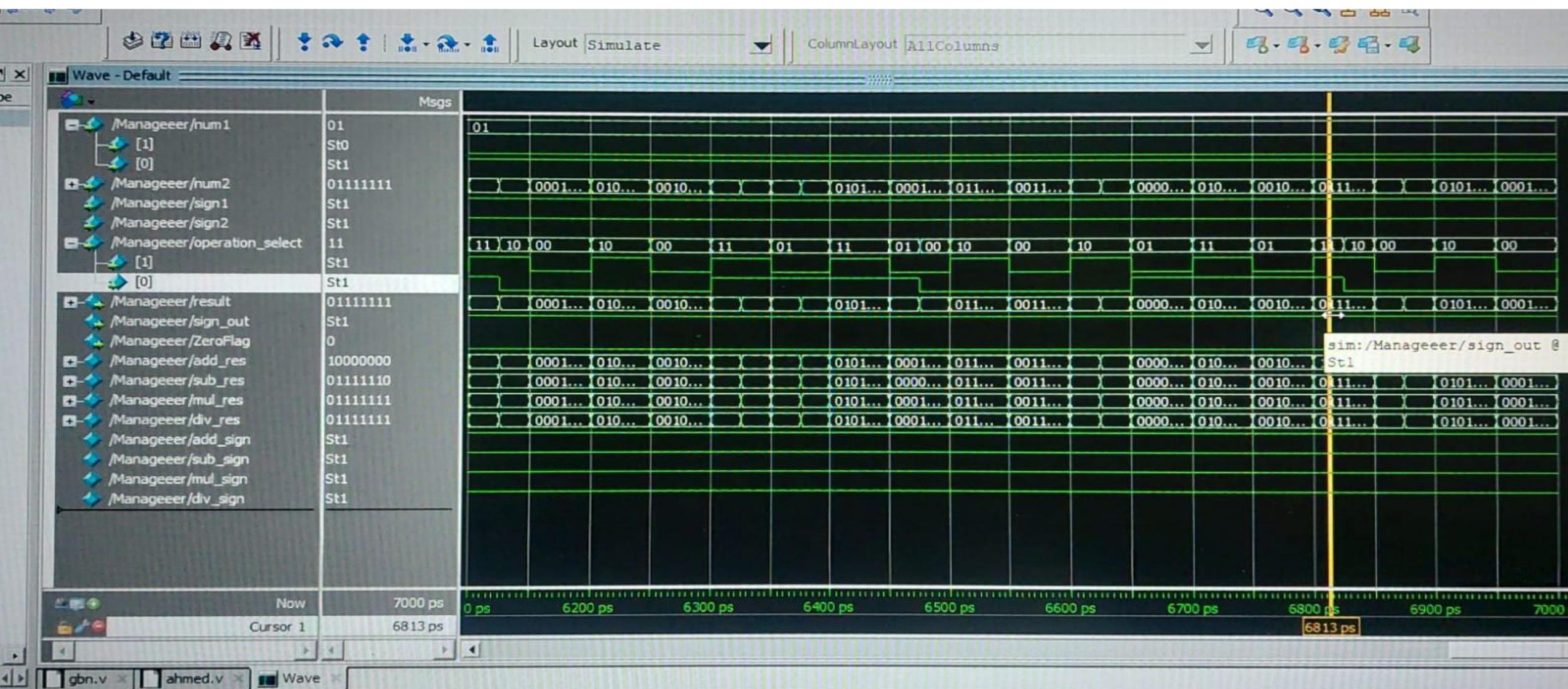


Case 3:operation with input 1  
case 3.1:divide 8bit-input by 1

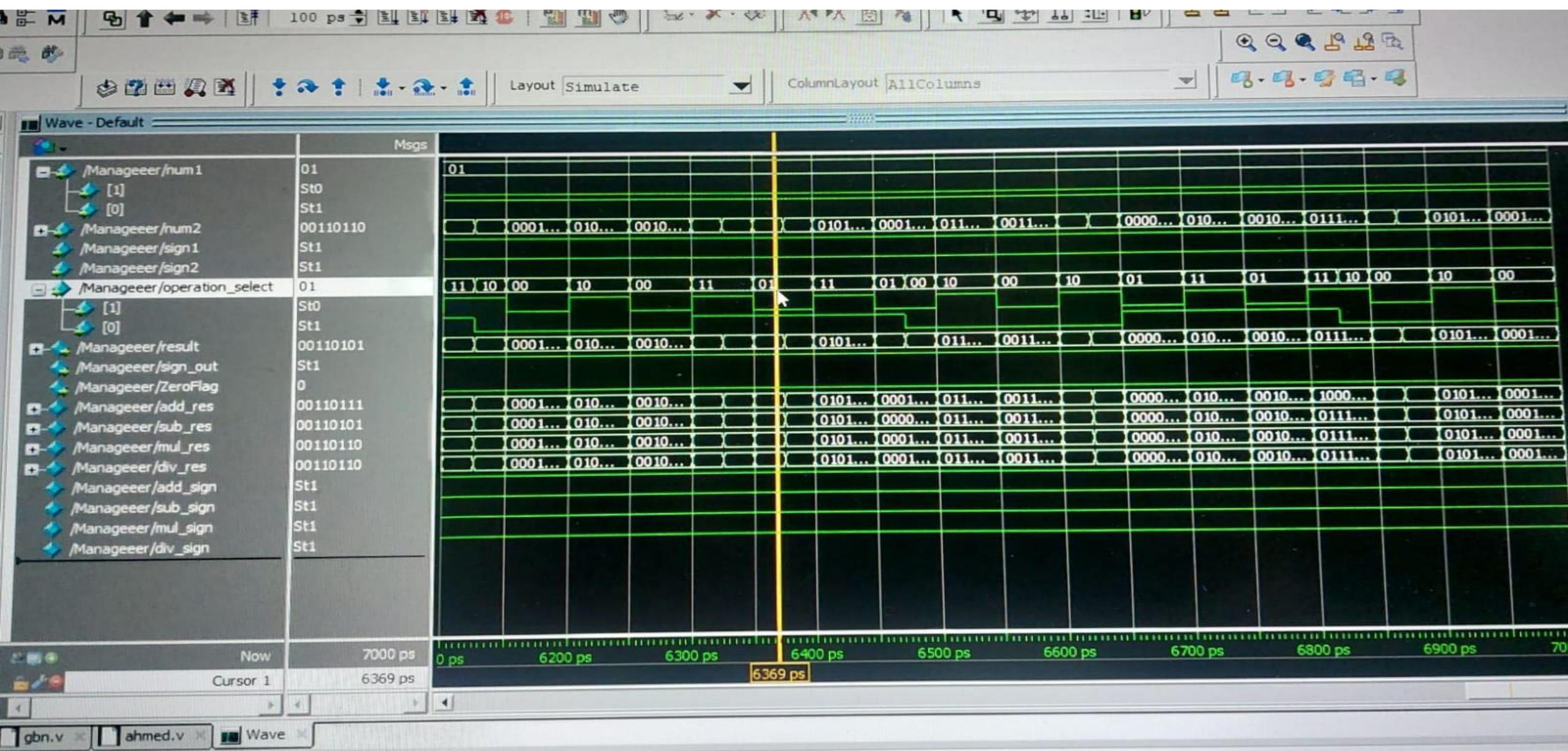


# Case 3:operation with input 1

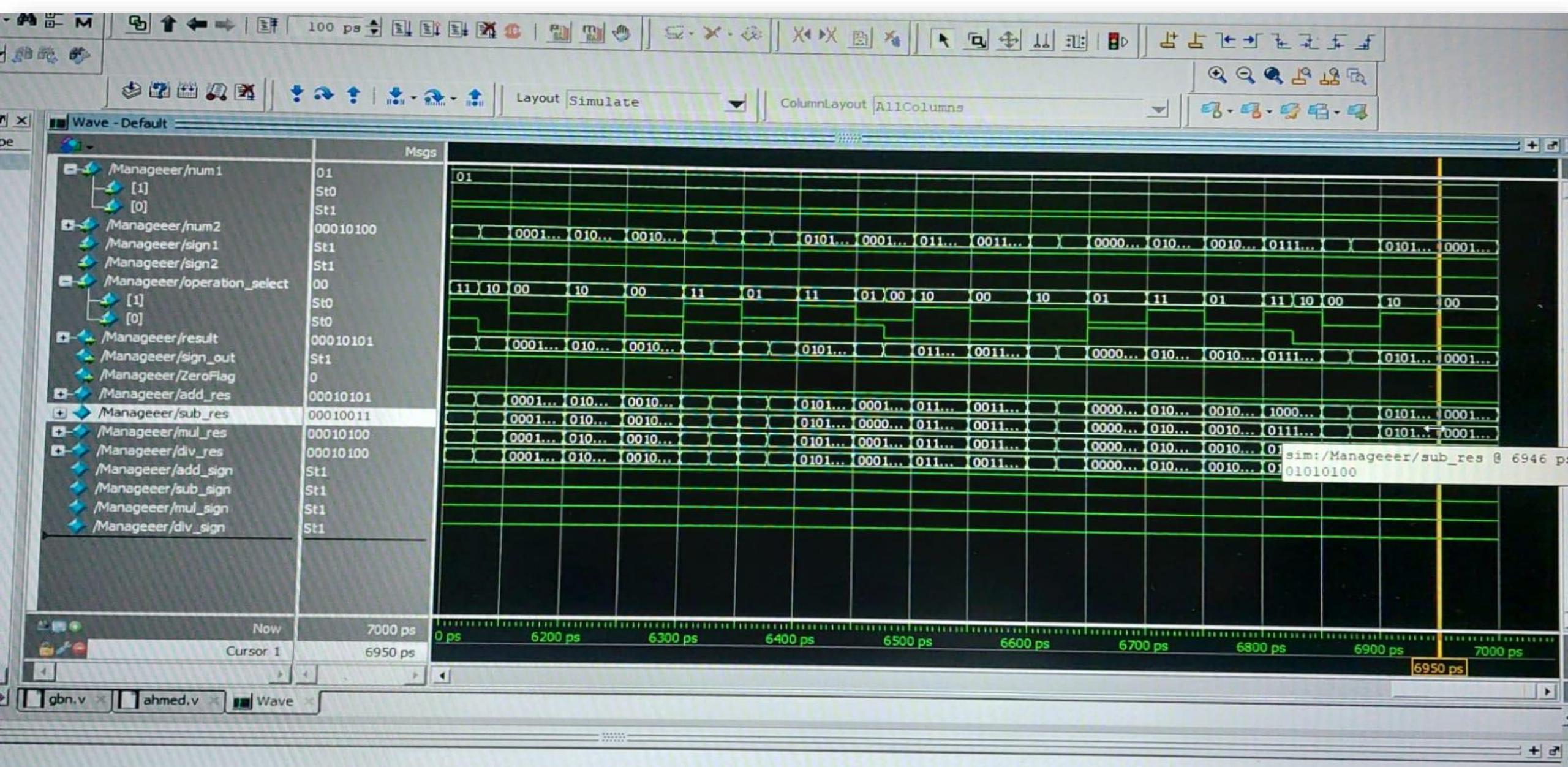
## case 3.2:multiply 8bit-input by 1



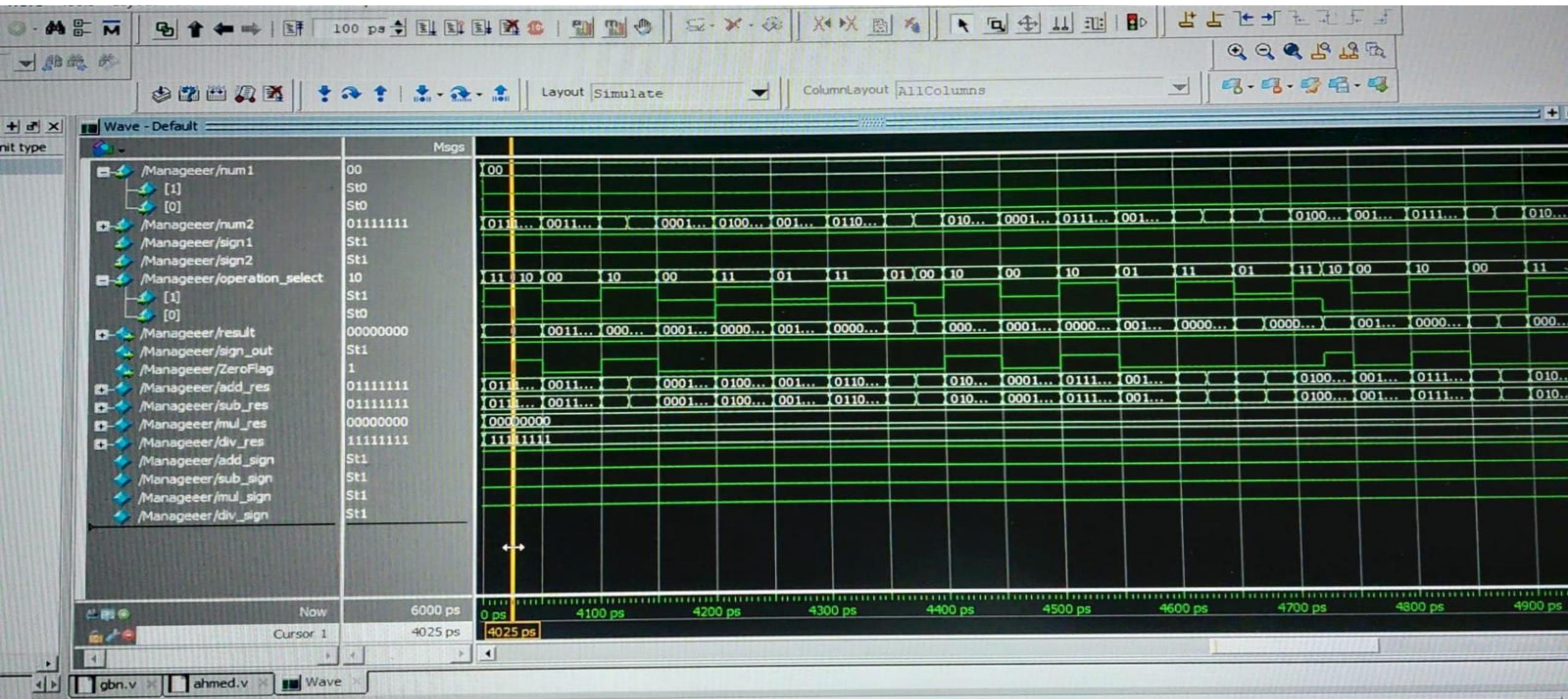
Case 3:operation with input 1  
case 3.3:subtract 8bit-input by 1



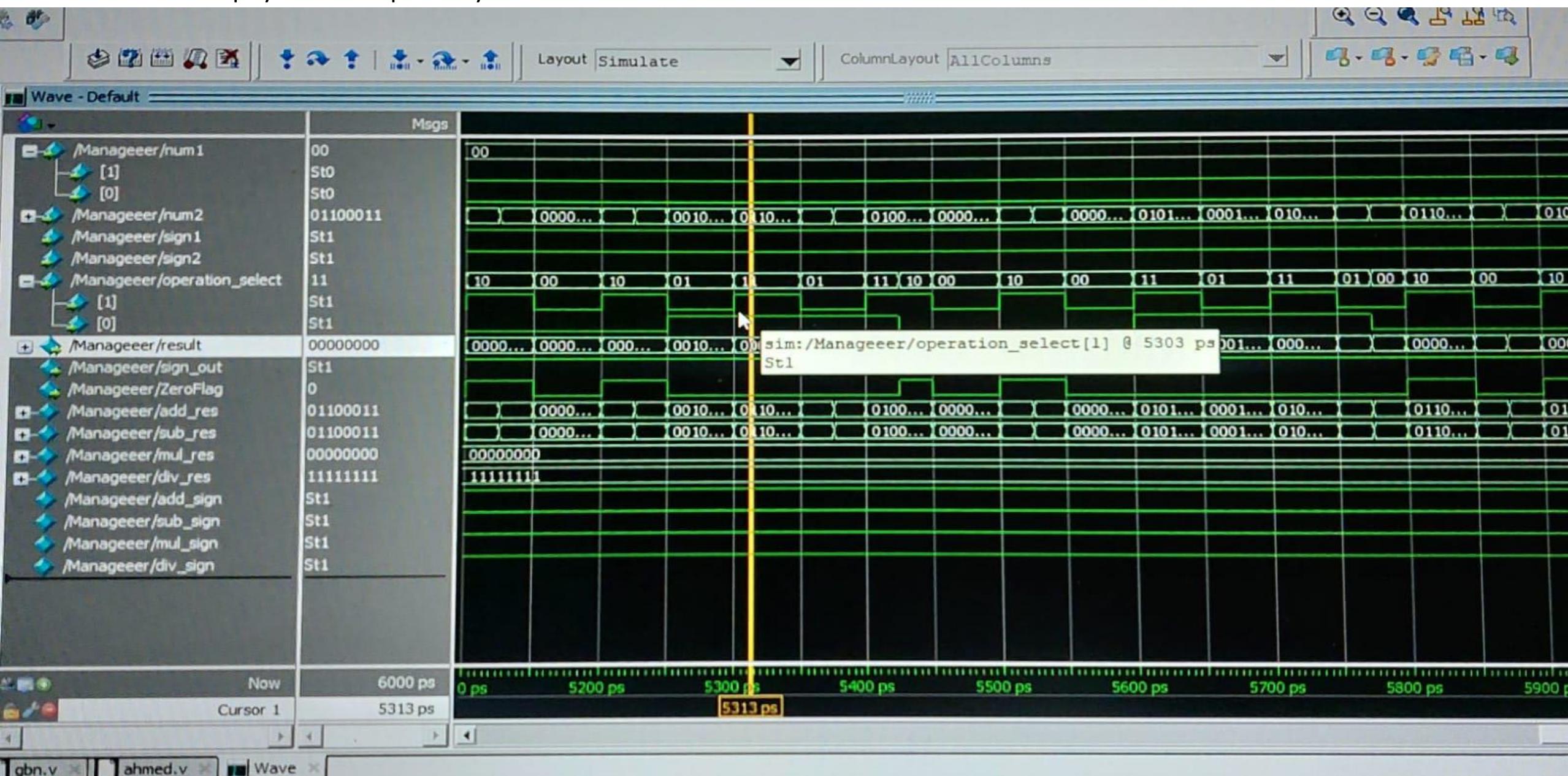
Case 3:operation with input 1  
case 3.4:subtract 8bit-input by



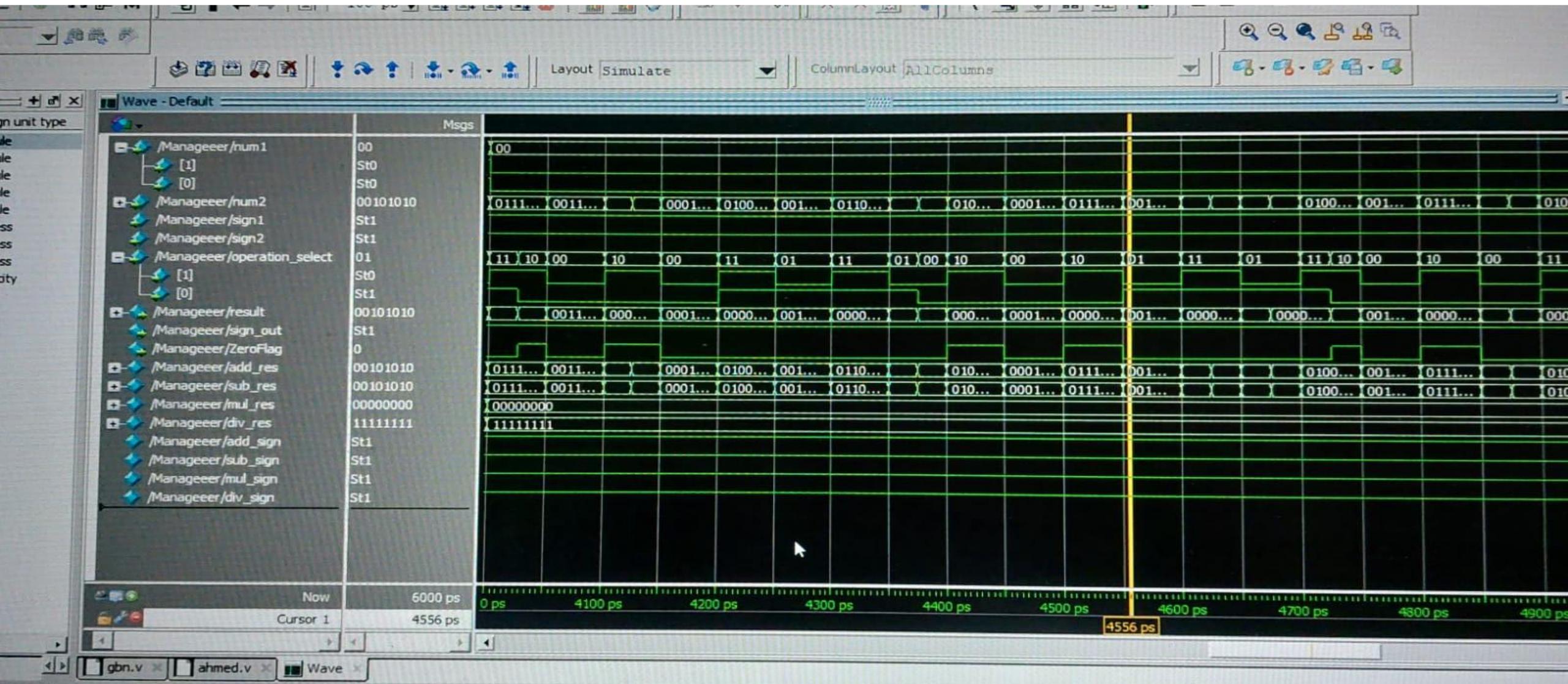
Case 4:operation with input 0  
case 4.1:divide 8bit-input by 0



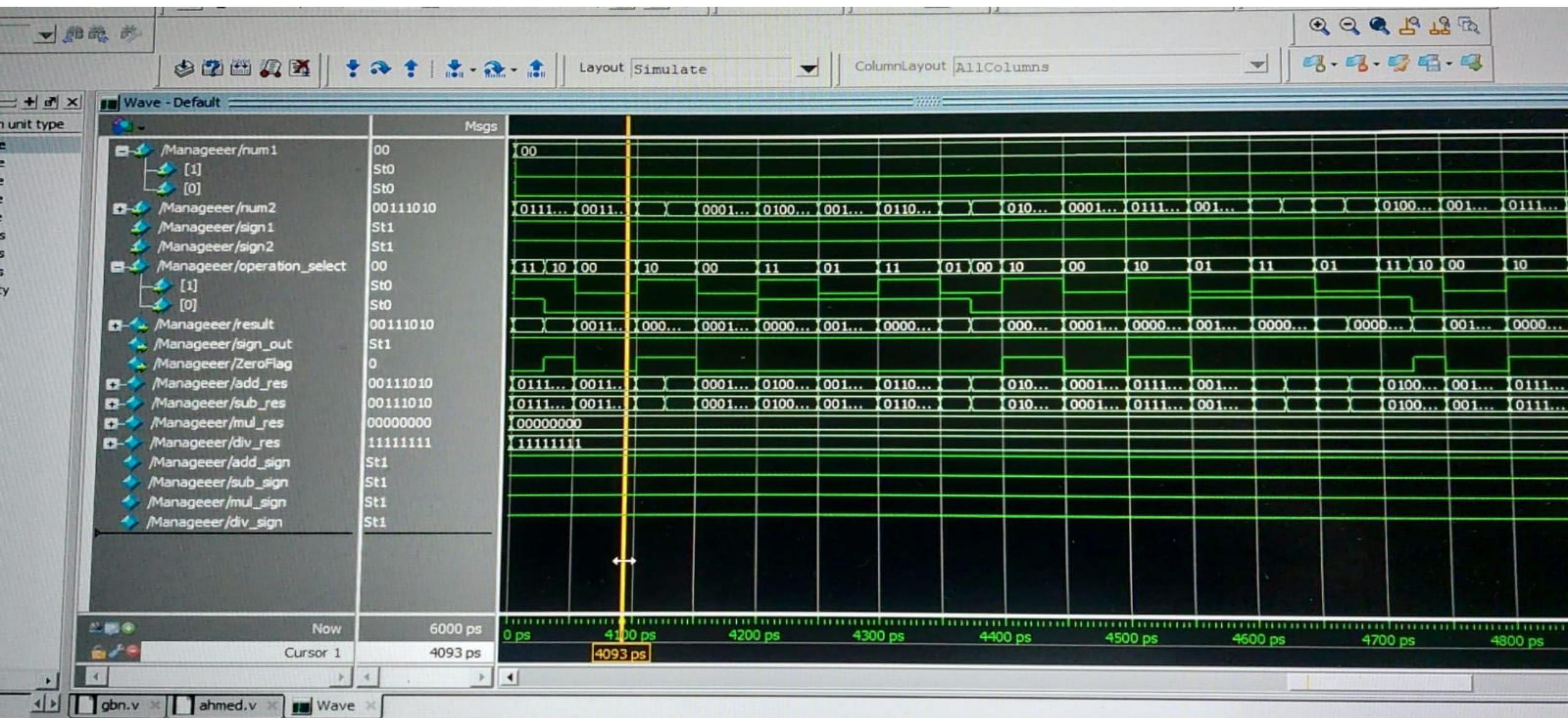
Case 4:operation with input 0  
case 4.2:multiply 8bit-input by 0



Case 4:operation with input 0  
case 4.3:subtract 8bit-input by 0

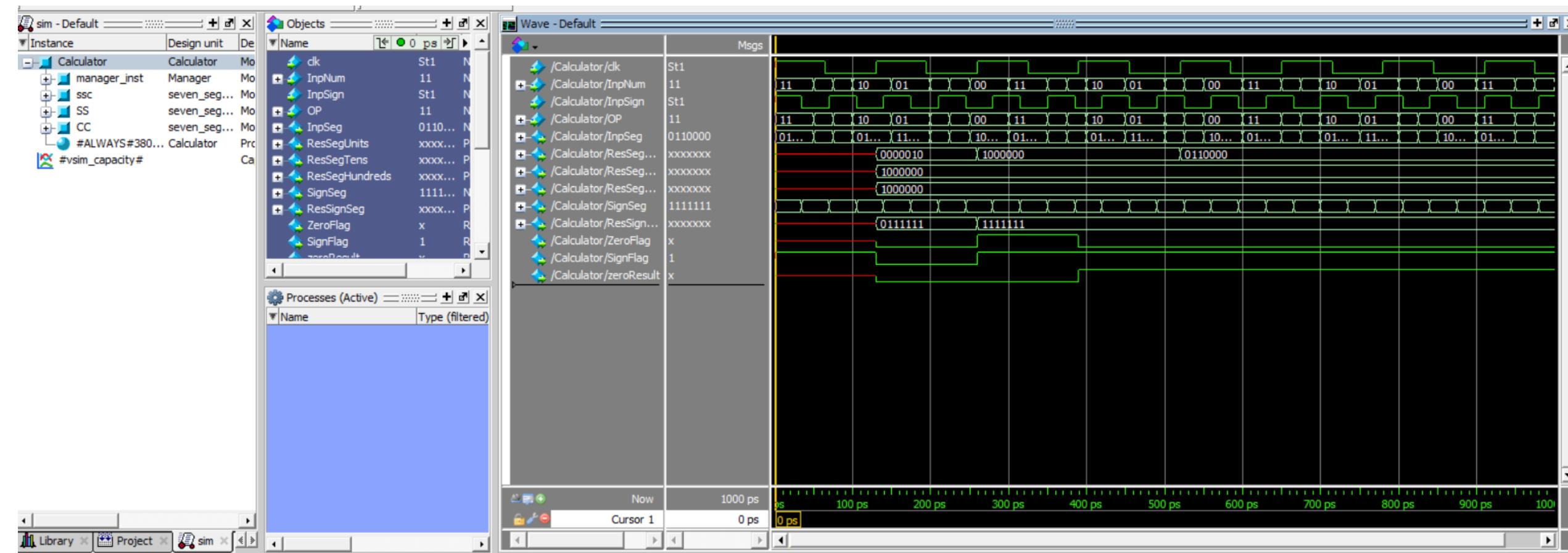


Case 4:operation with input 0  
case 4.4:add 8bit-input by 0



More examples from the top level module:

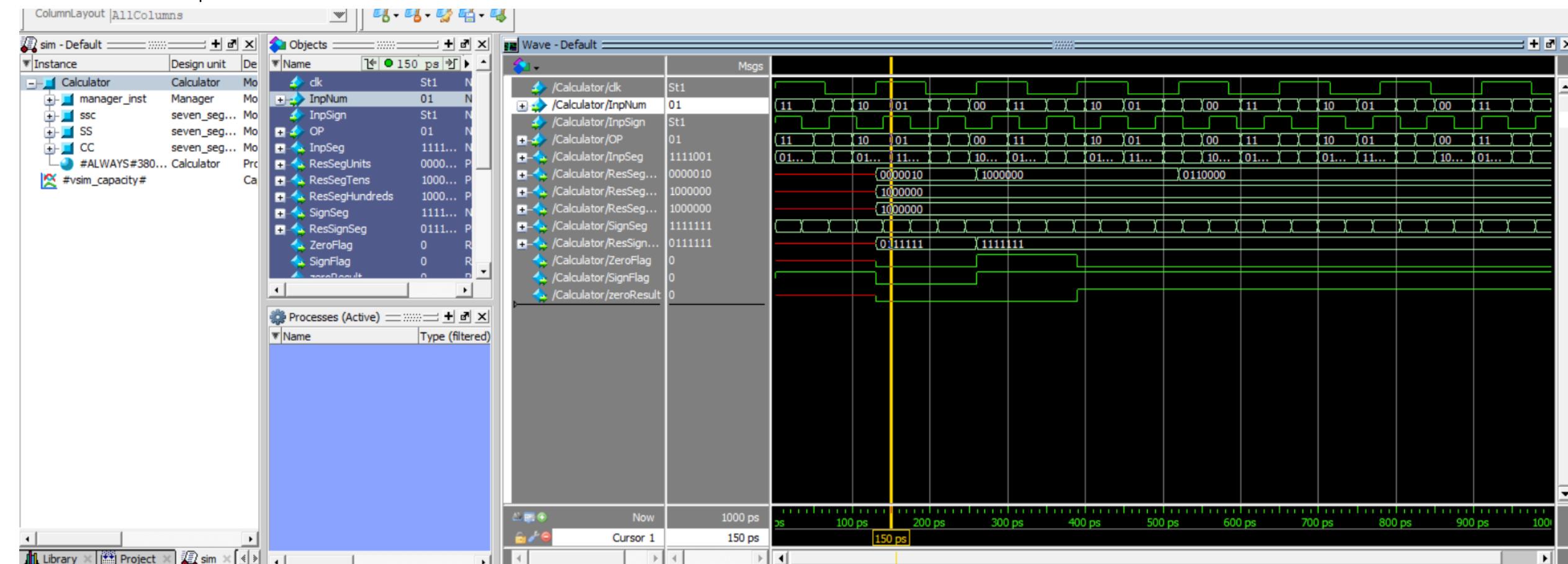
First Clock Inputs: + 3 \*



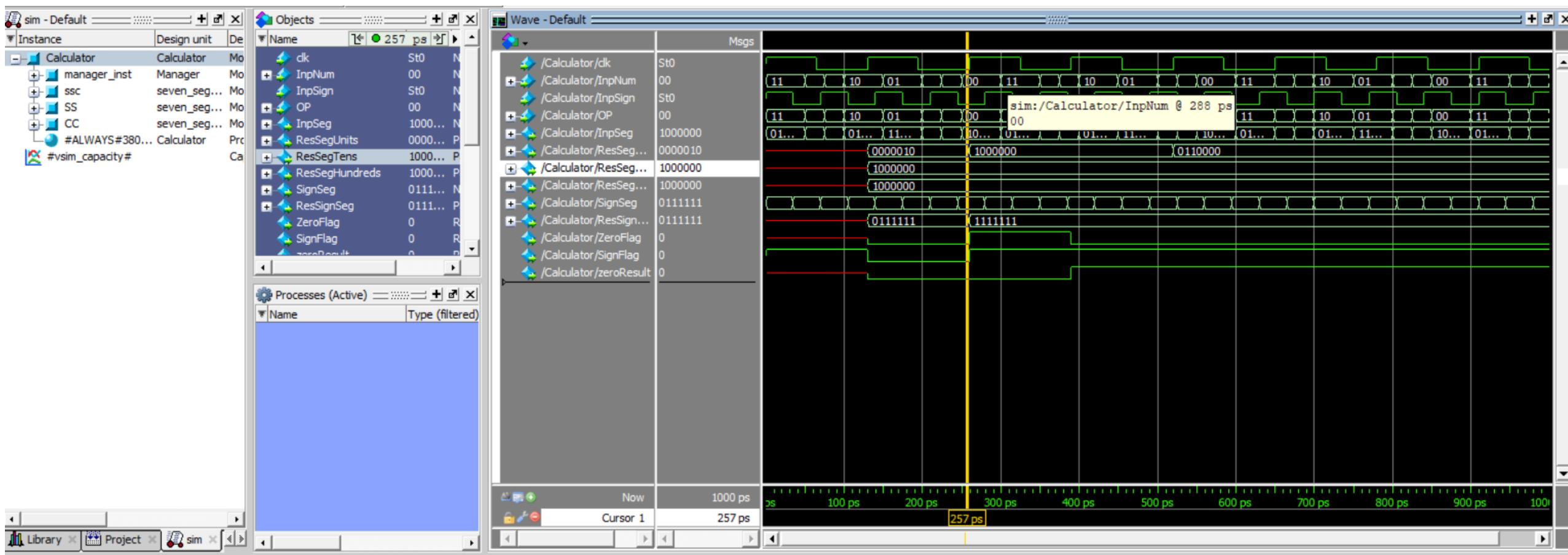
More examples from the top level module:

Second Clock Inputs: - 2 /

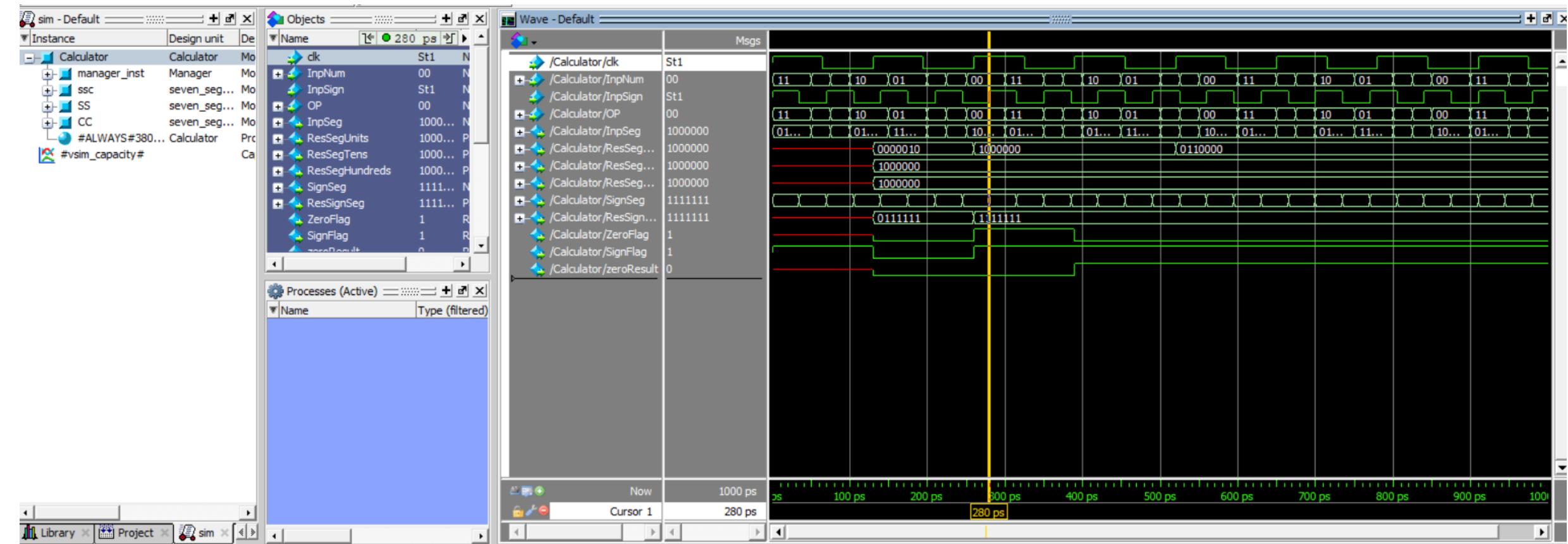
Second Clock Output =  $3 \times -2 = -6$



More examples from the top level module:  
inputs of third clock : 0 +



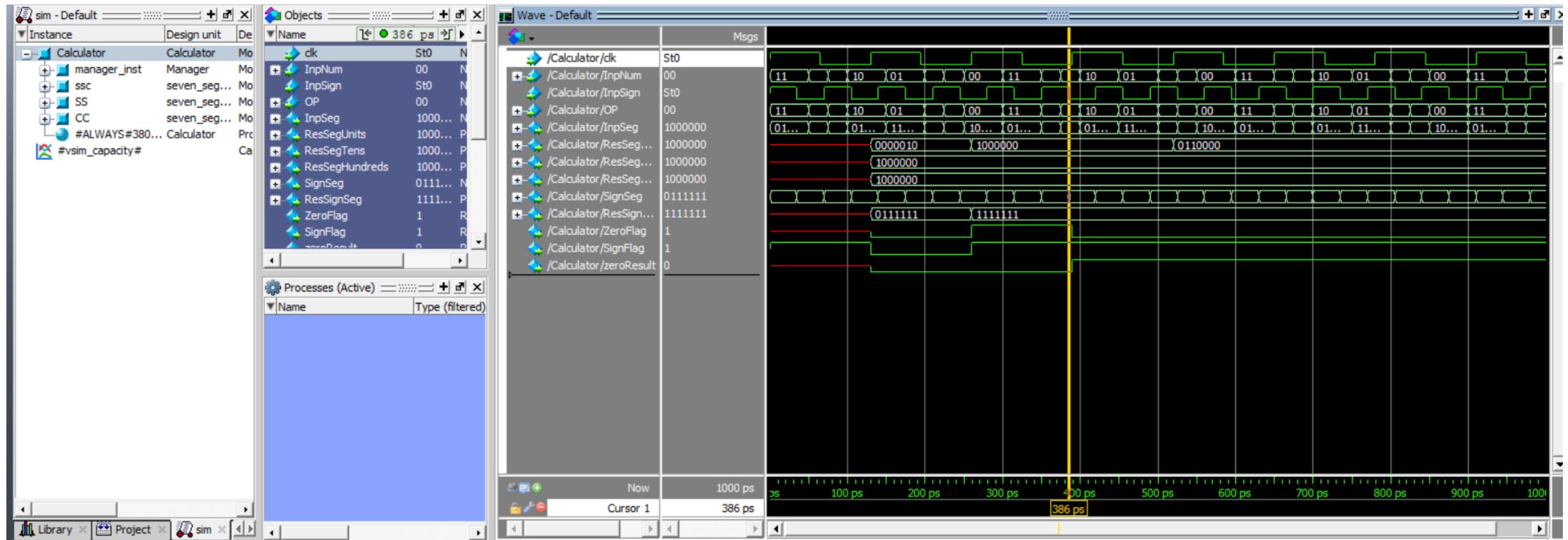
More examples from the top level module:  
output of Third clock : -6/0= 000000 ZeroFlag Is 1



More examples from the top level module:

output of past clock : -6/0= 00000 ZeroFlag is 1

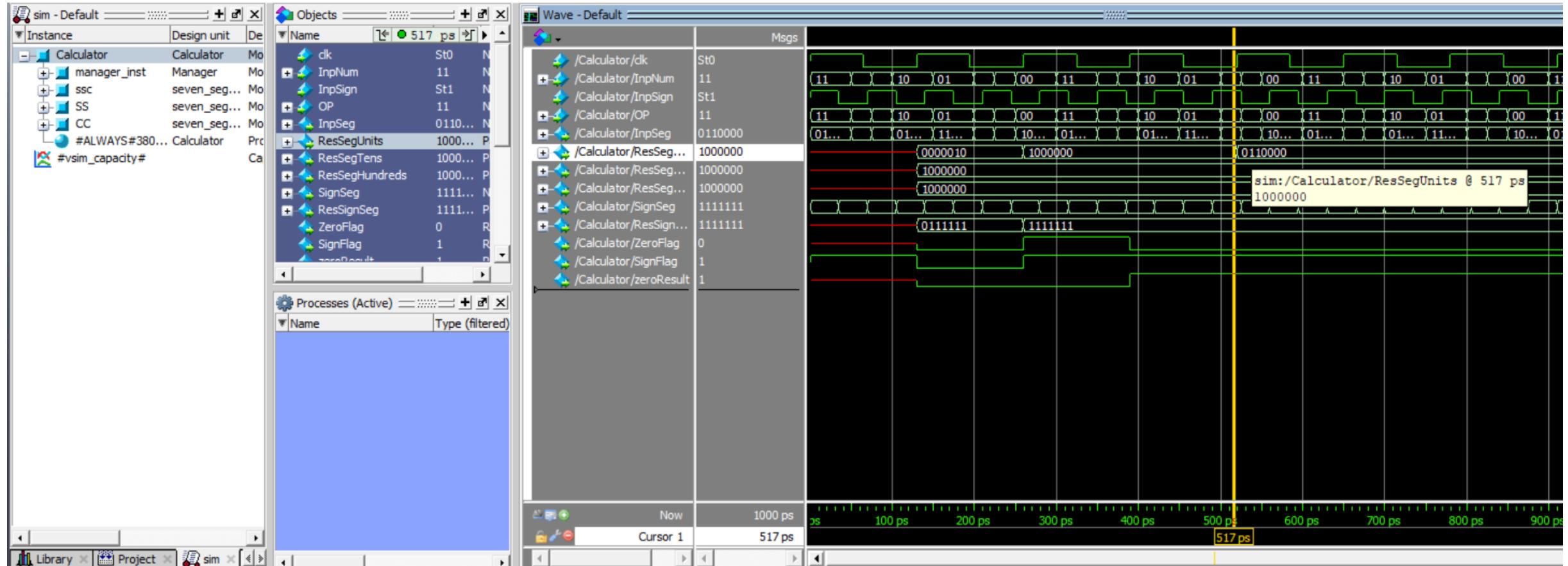
Fourth Clock Inputs: - 0 +



More examples from the top level module:

output of past clock : 0+0= 0

Second Clock Inputs: +3 \*



More examples from the top level module:  
output of Last clock :  $0+3=3$

