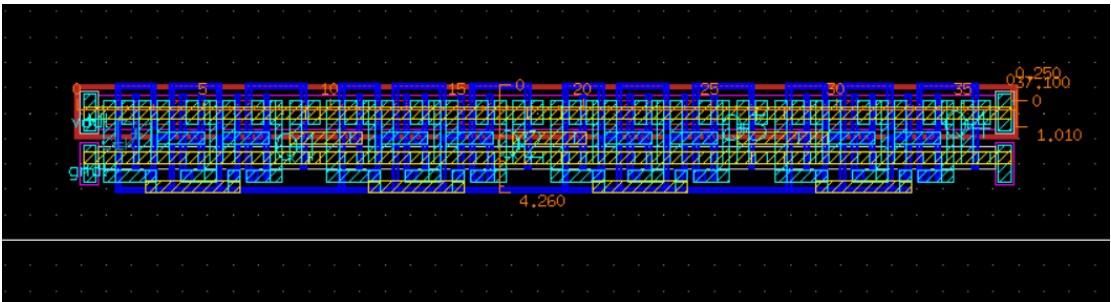
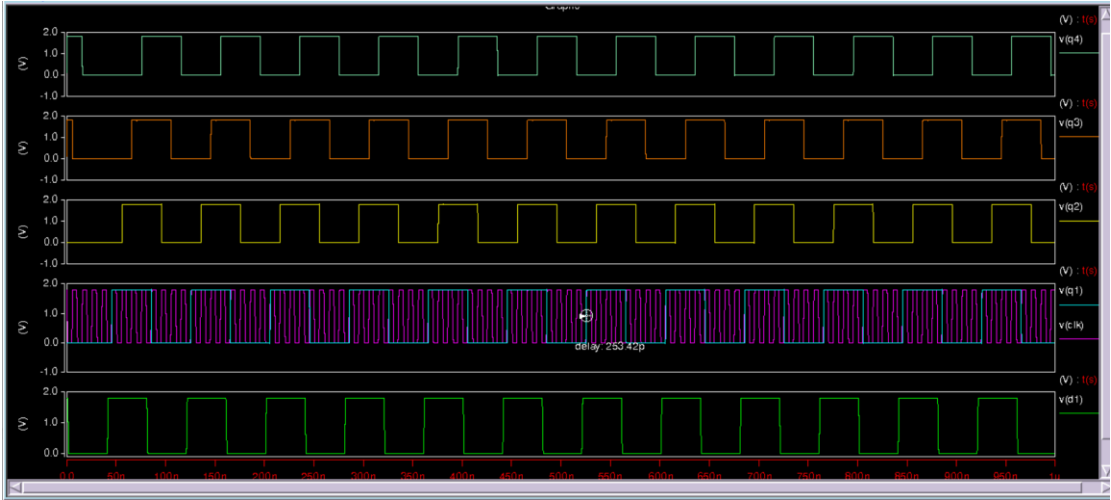


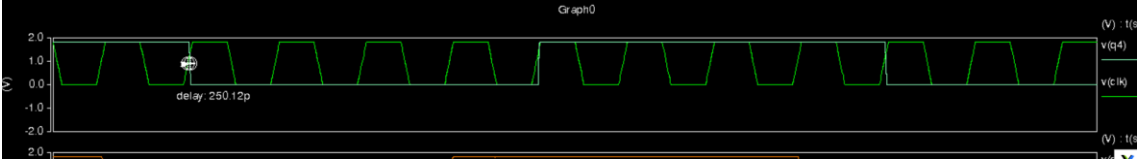
1.shift register(4.26*37.1=158.046)



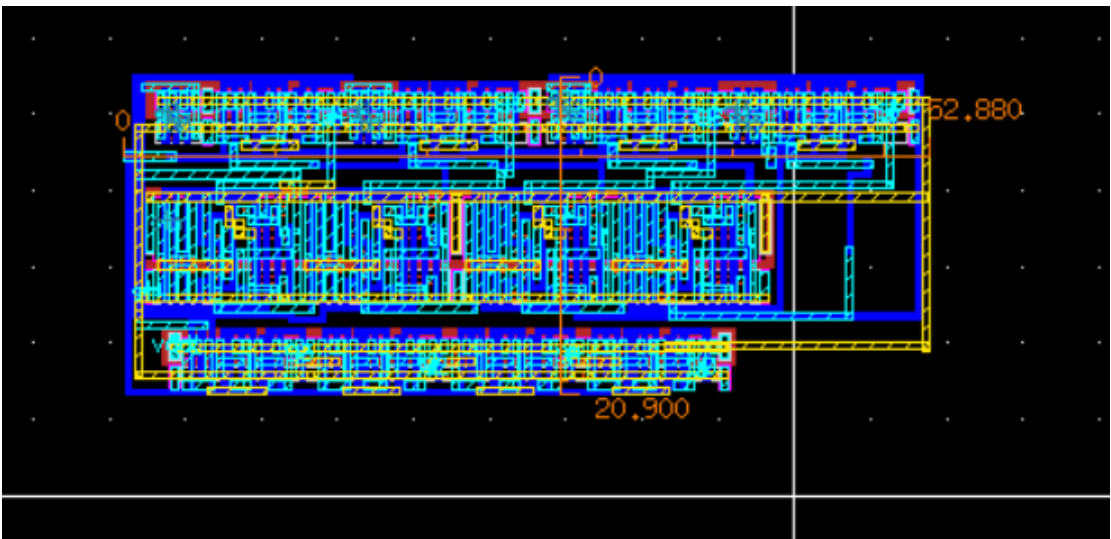
wavefrom



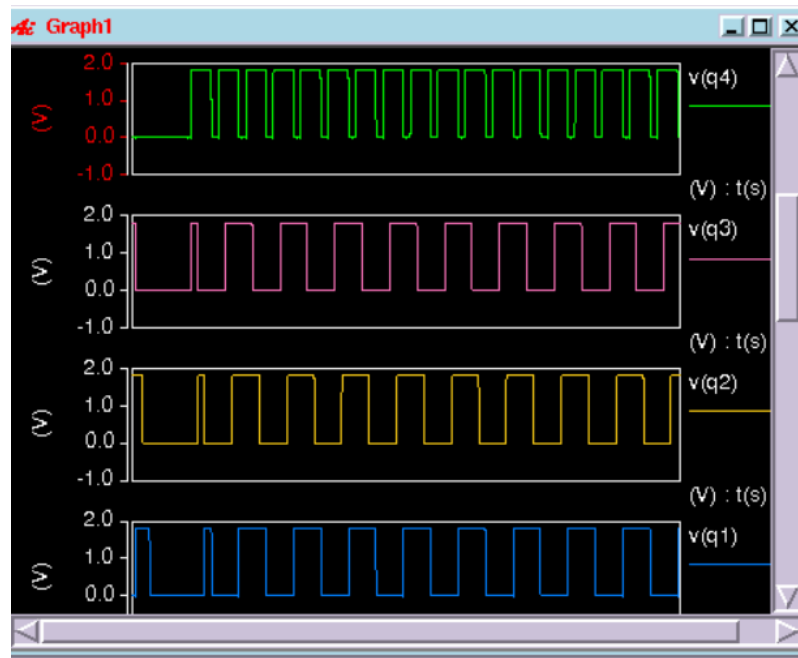
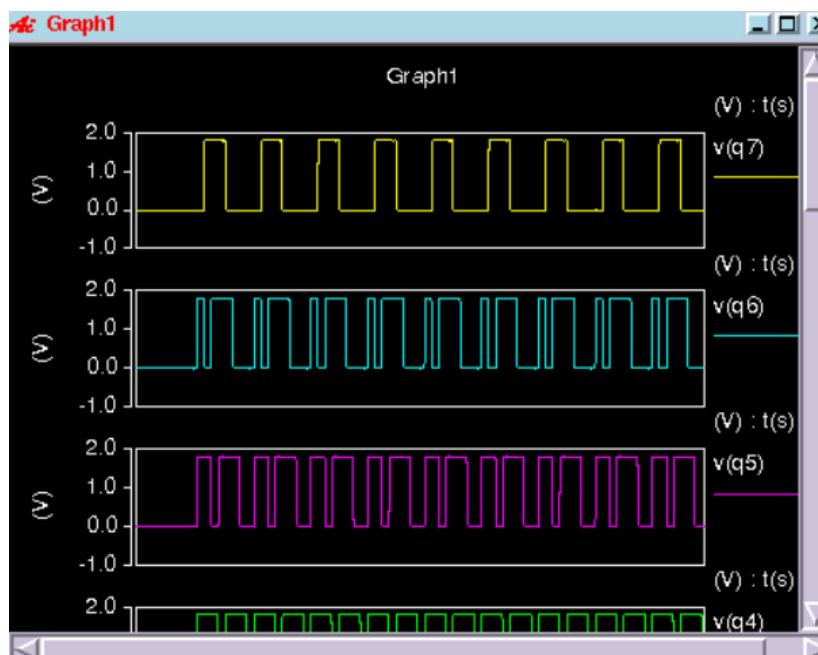
Delay:250.12p

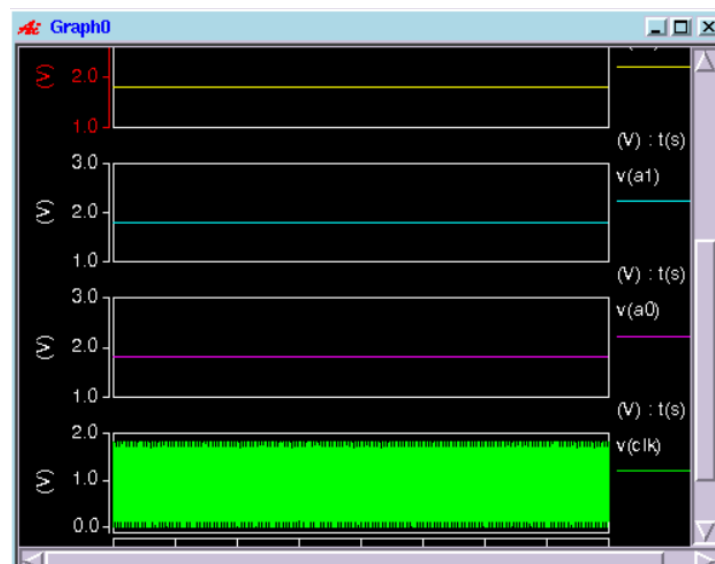
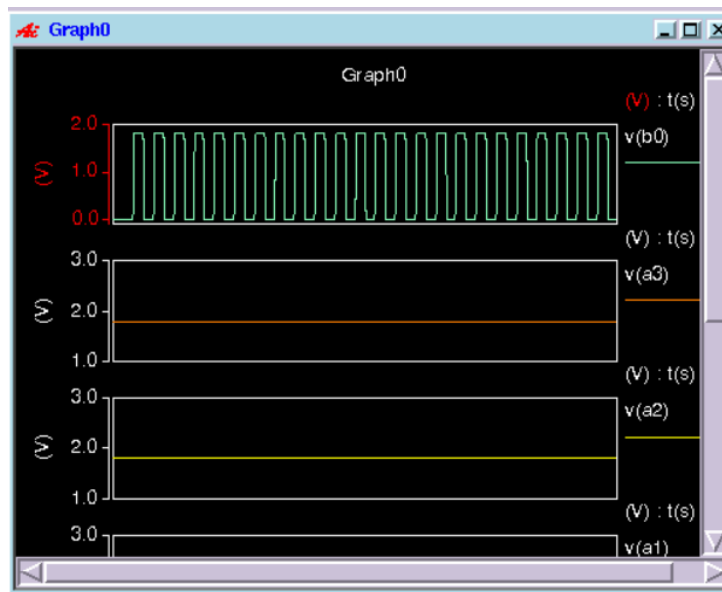


2.Shift-register based multiplier(52.88*20.90=1105.192)

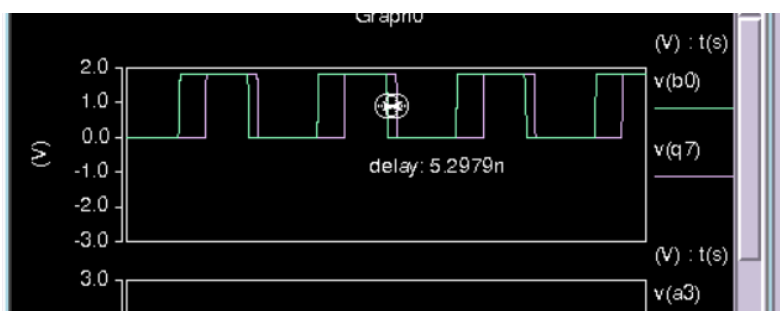


Wavefrom:

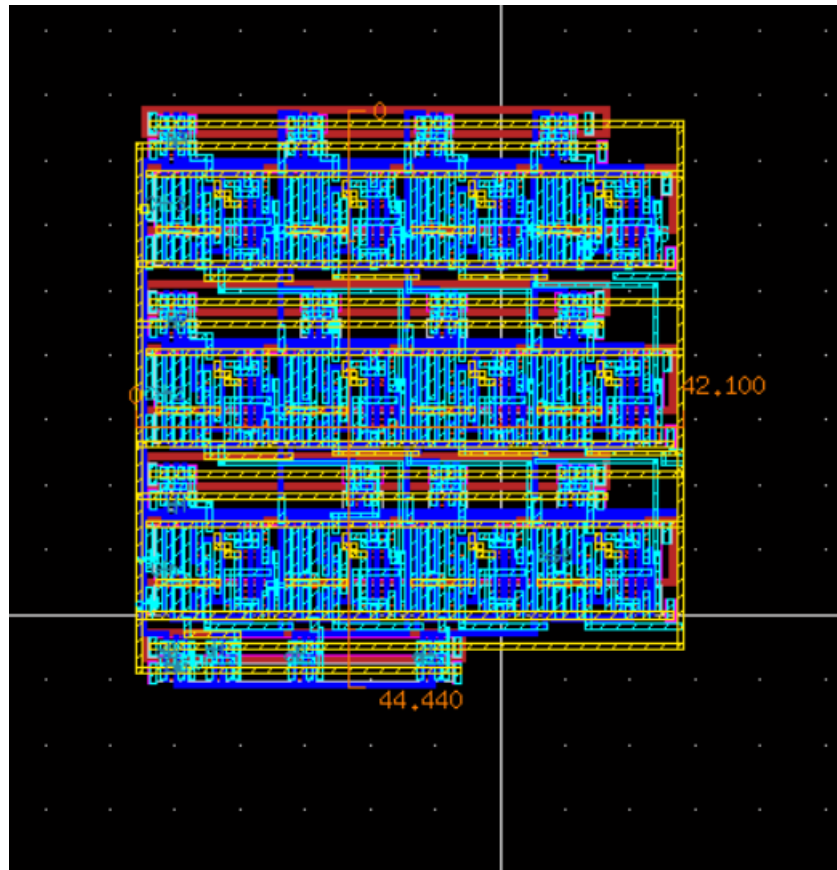




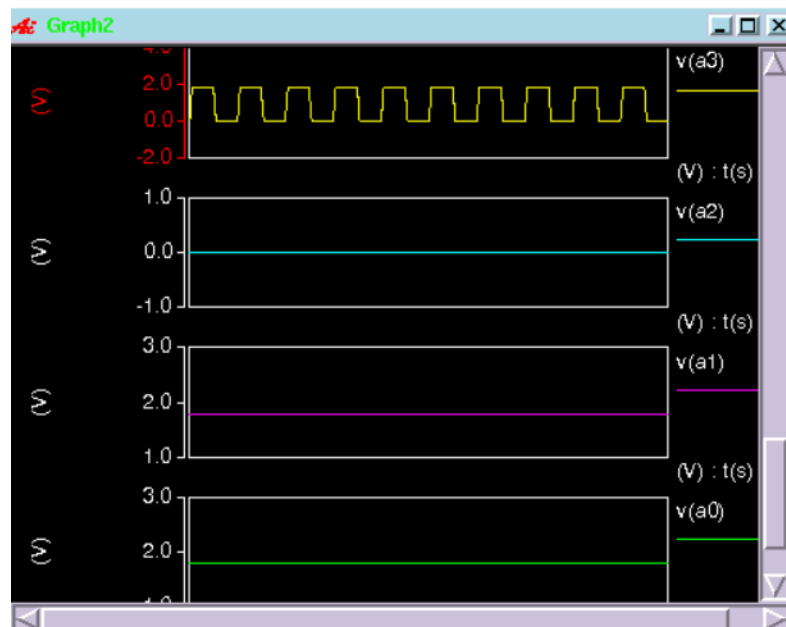
Delay:5.2979n

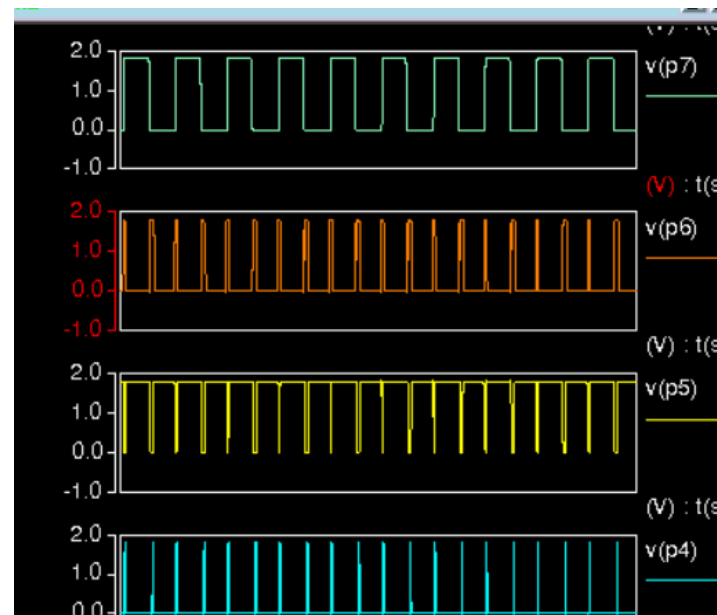
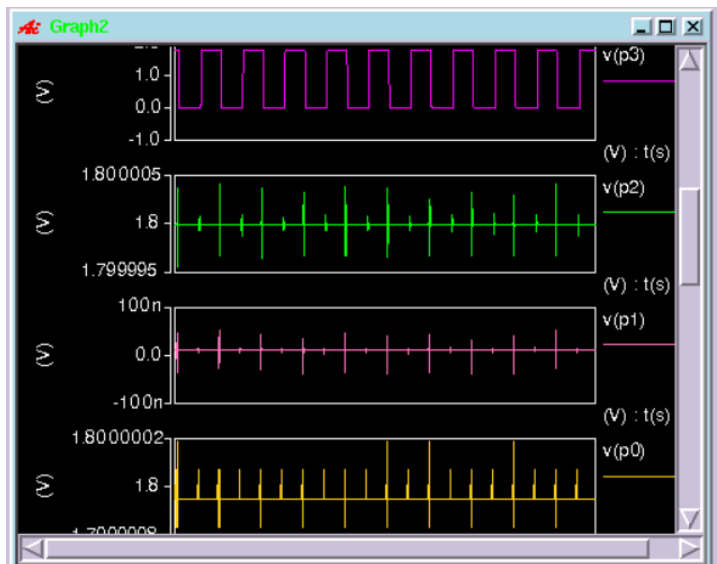
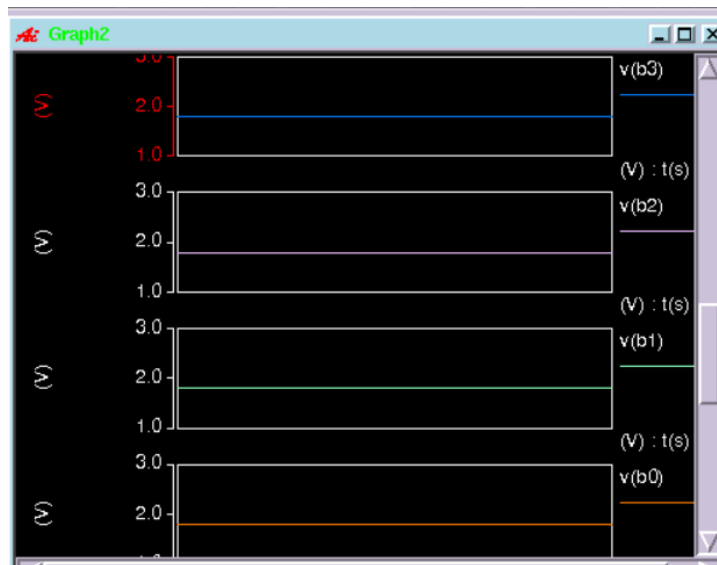


3.Array-structure-multiplier(42.1*44.44=1870.924)

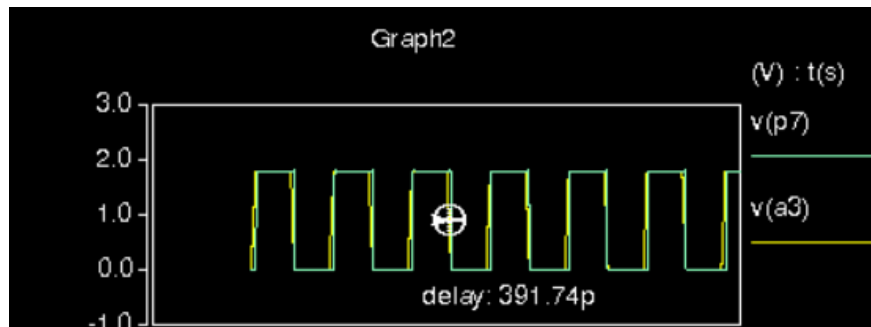


Waveform:

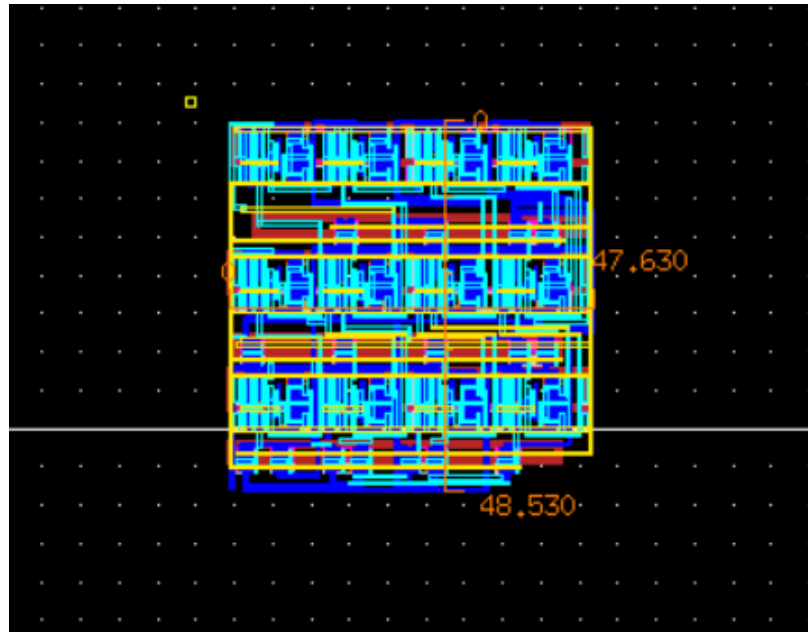




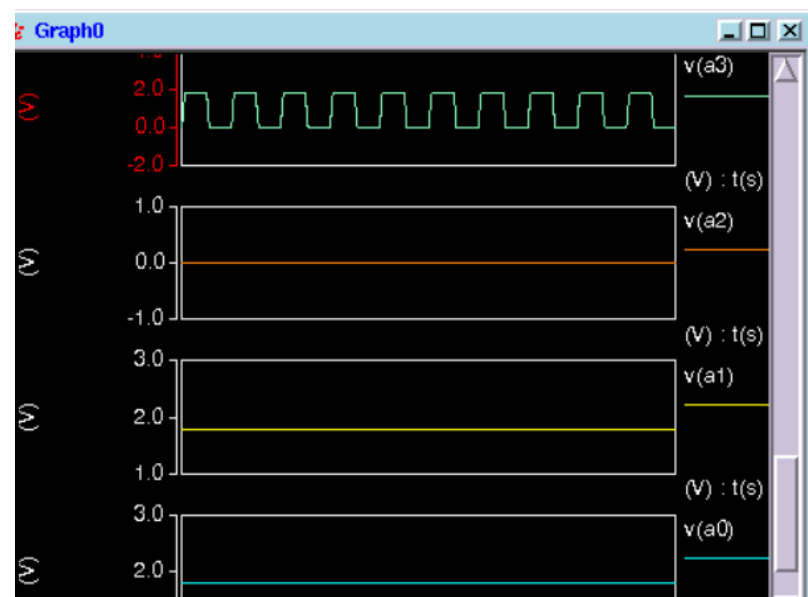
Delay:391.74p

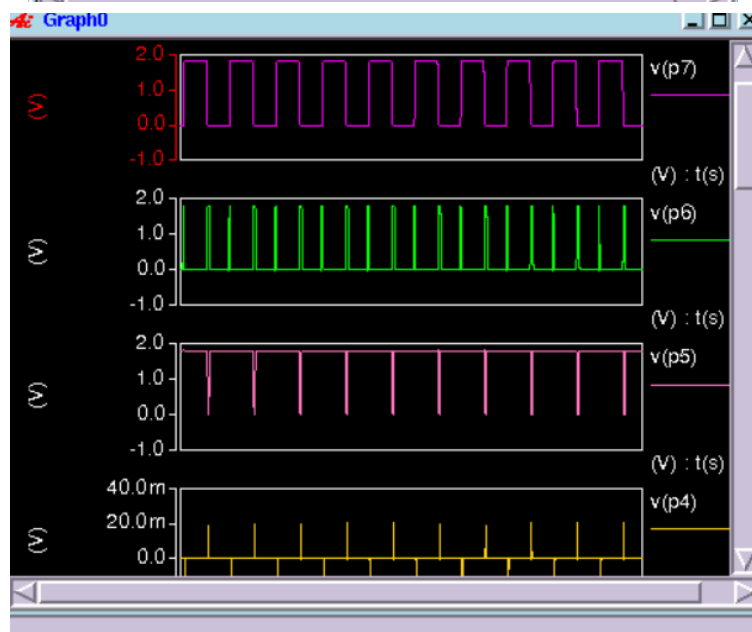
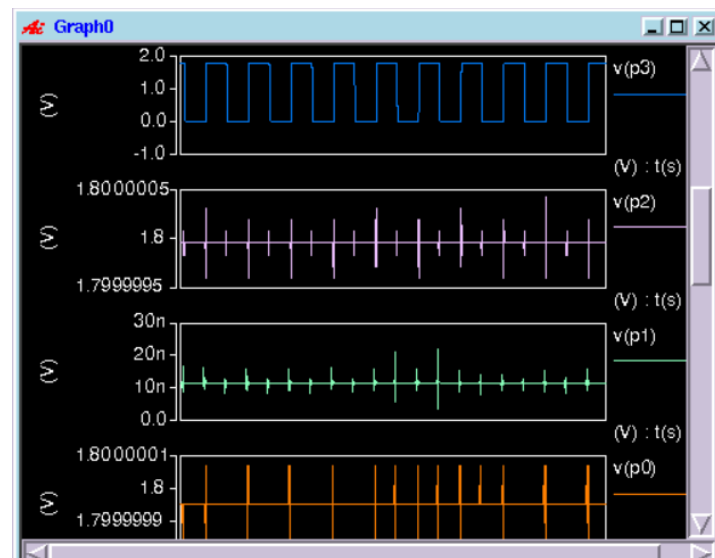
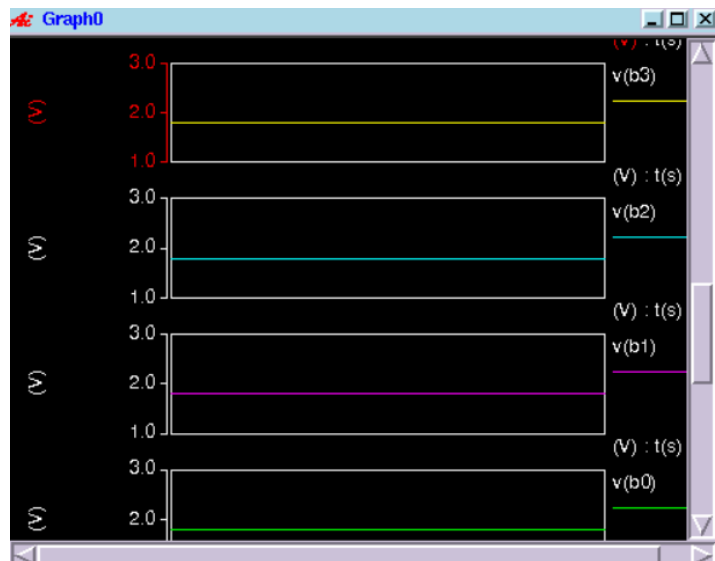


4. Wallace tree multiplier(47.63*48.53=2311.4839)

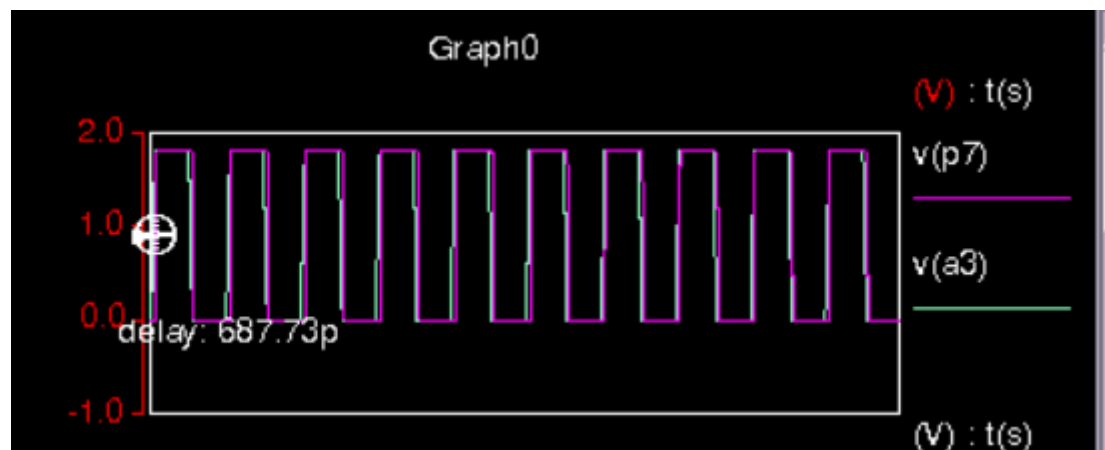


Wavefrom:





Delay:687.73p



5.Question: Compare three types of multiplier you designed, show their advantages and disadvantages.

比較我設計的三種乘法器，我的 area 為：Wallace tree multiplier > Array structure multiplier > Shift register based multiplier，delay time 為: Shift register based multiplier > Wallace tree multiplier > Array structure multiplier，Shift register based multiplier 雖然 area 最小但 delay time 最長，我會偏好使用 Array structure multiplier 因為綜合 area 以及 delay time，這個設計是三者裡面 performance 最好的。