Experiment #3-
Function Generator

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1- Waveform Generator

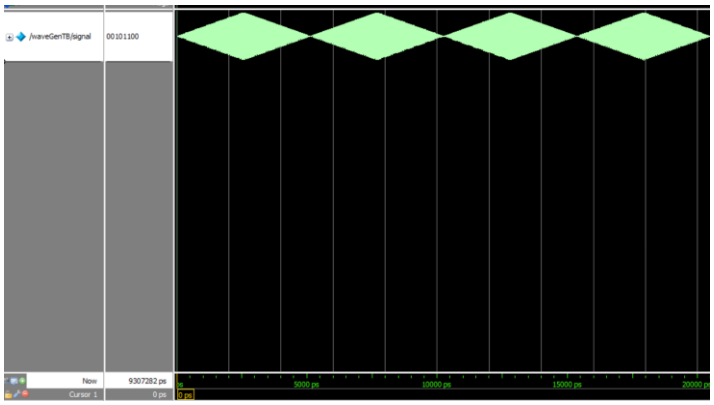

Fig1: Rhomboid

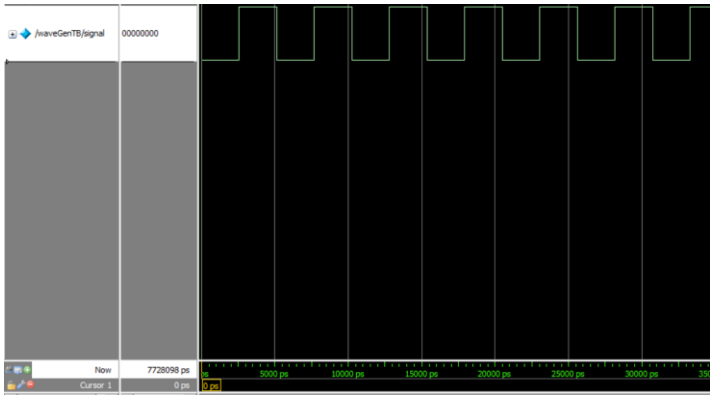

Fig 2: Square

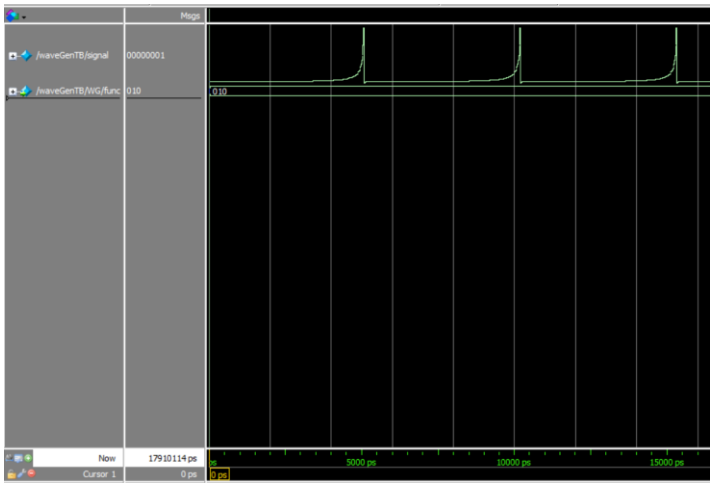

Fig4: Reciprocal

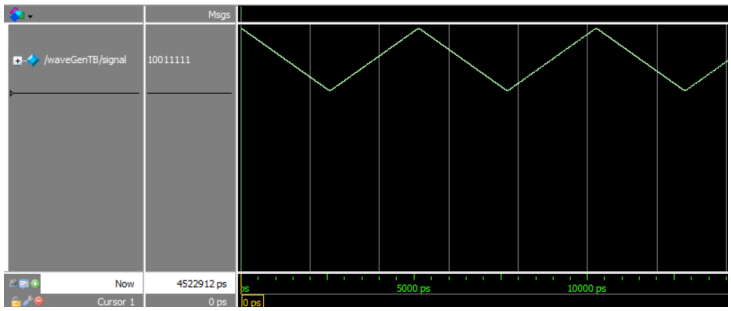

Fig 4: Triangle

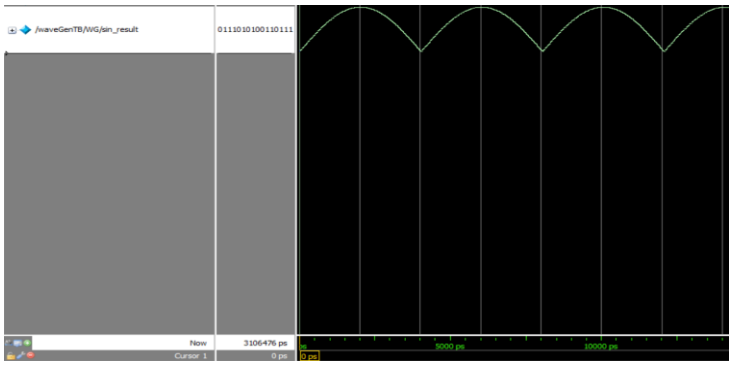

Fig 5: Full-wave rectified

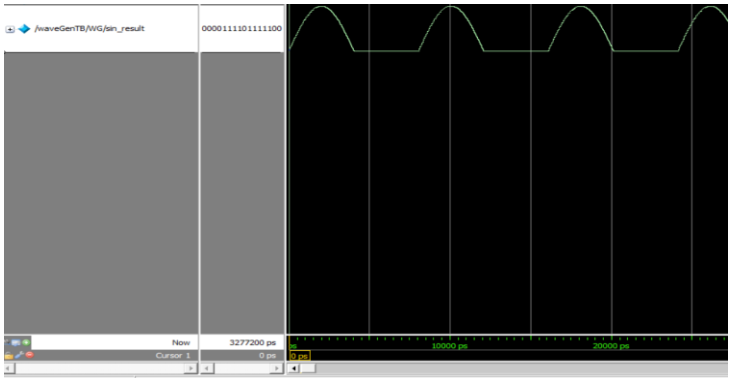

Fig 6: Half-wave rectified

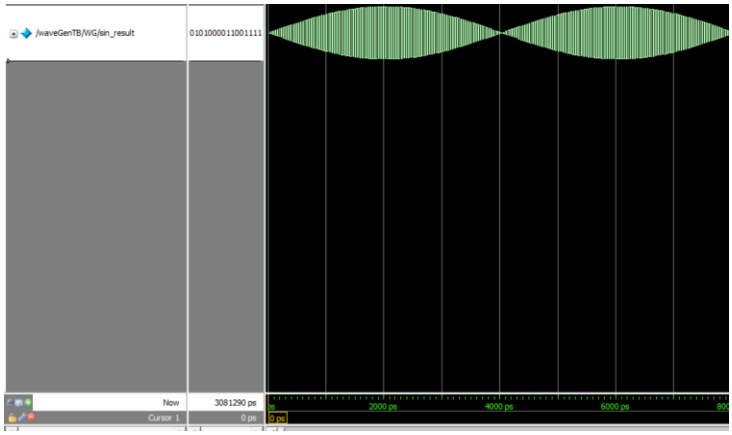

Fig 7: modulated square wave

2-

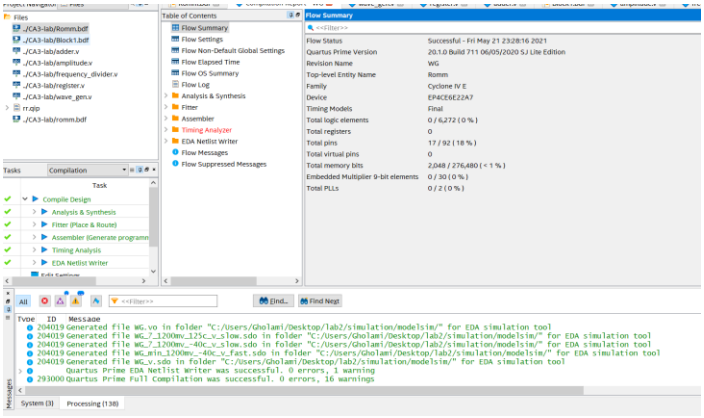

Fig 8: synthesis summary

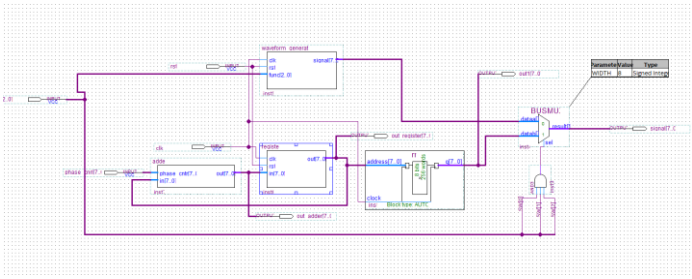

Fig 9: Quartus synthesis

2 Frequency Selector

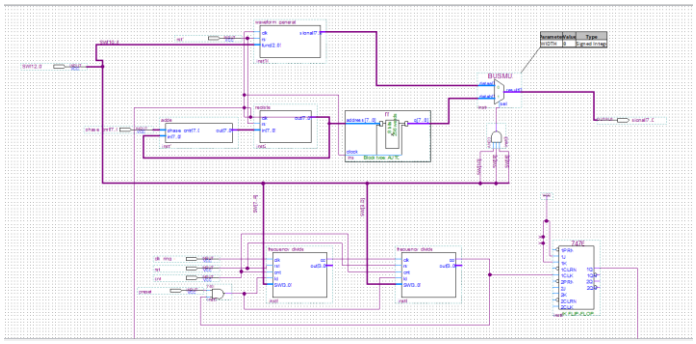

Fig10: clock divider with waveform generator design

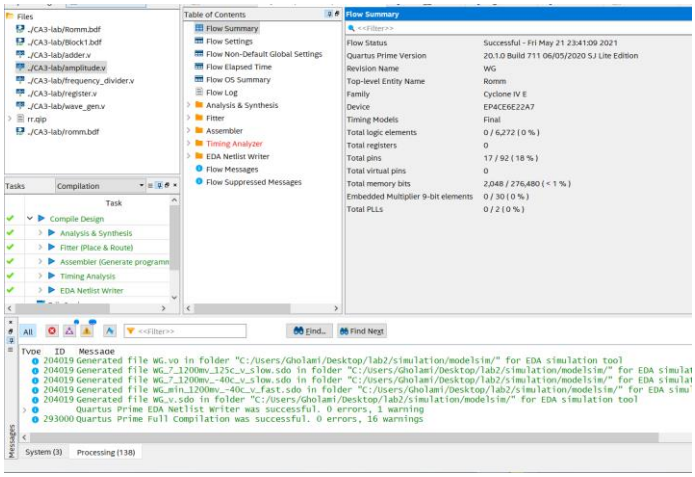

Fig11: Quartus synthesis

3-clock input is 500GHz and first parallel input is 127 and second one is 3 and expected frequencies are 66 THz and 142 THz respectively.

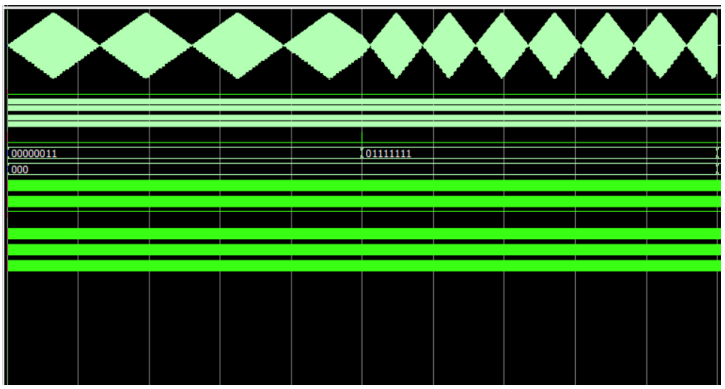

Fig12: Rhomboid

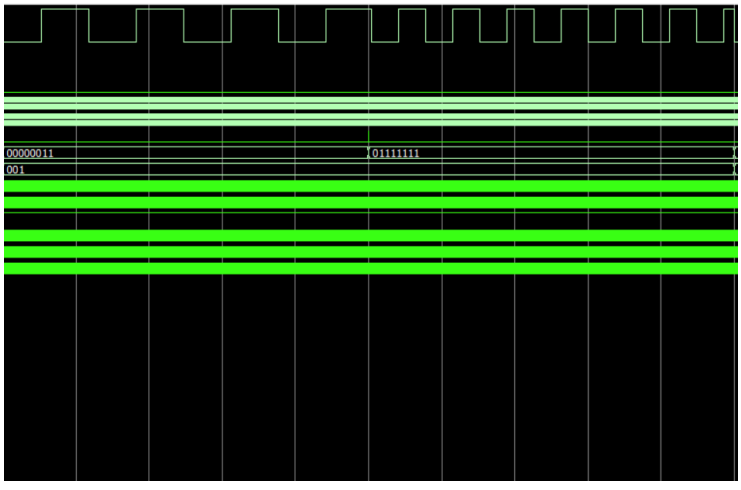

Fig13: Square

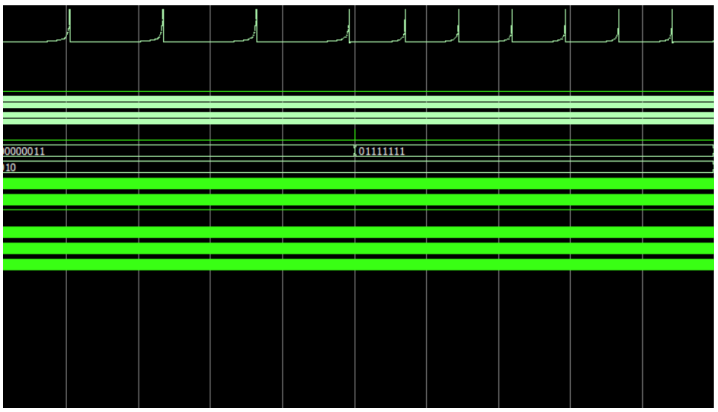

Fig14: Reciprocal

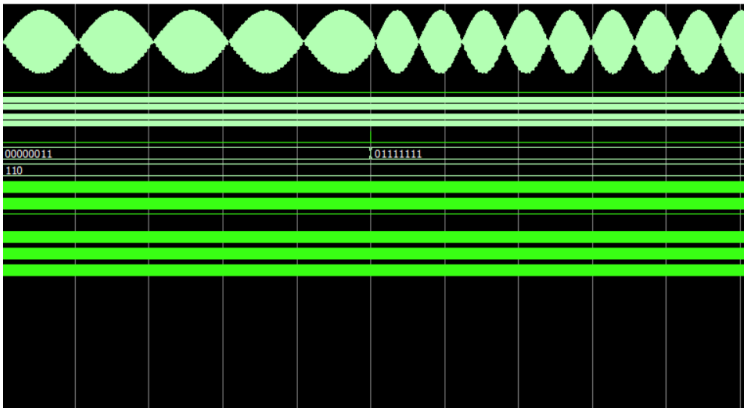

Fig18: modulated square wave

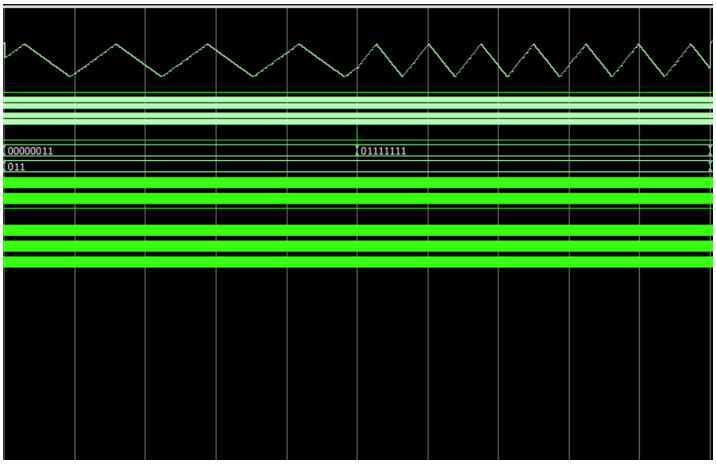

Fig15: Triangle

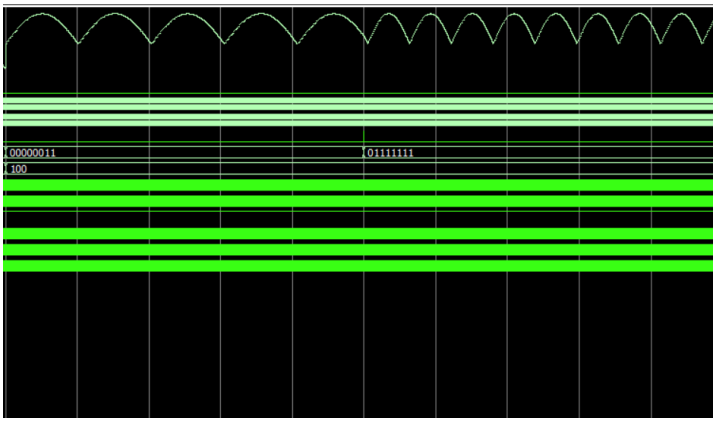

Fig16: Full-wave rectified

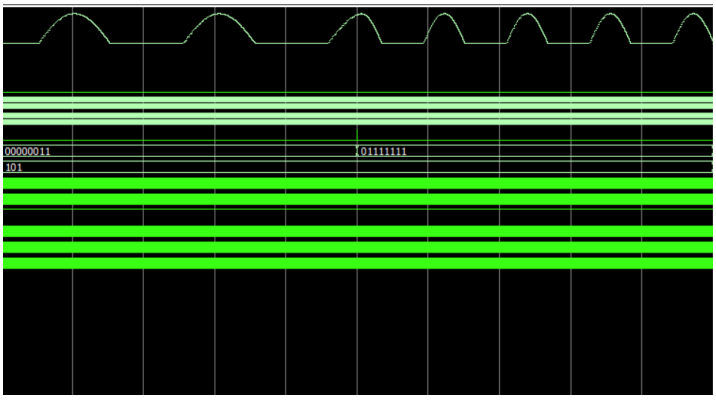

Fig17: Half-wave rectified

3 Amplitude Selector

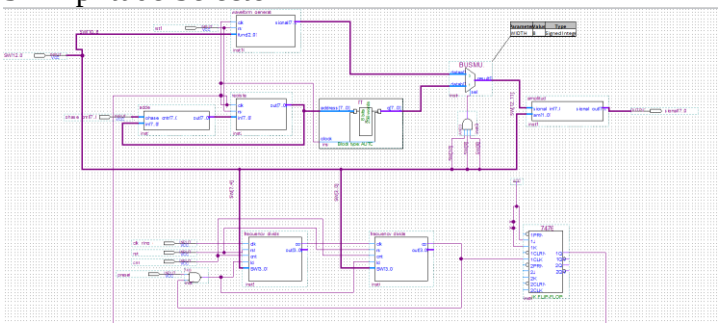

Fig19: top-level design

After simulate with amplitude:

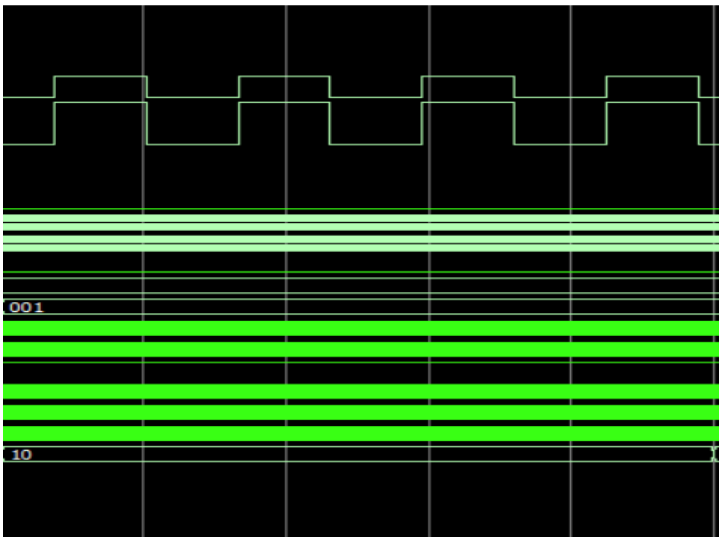

Fig20: Square with amplitude input 10 and 00

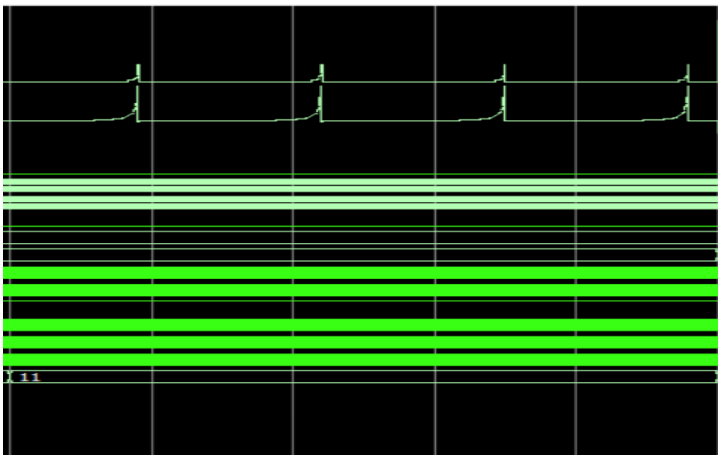

Fig21: Reciprocal with amplitude input 11 and 00

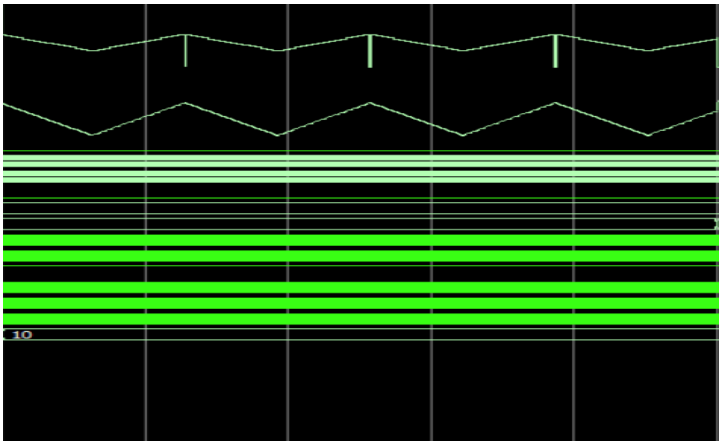

Fig22: Triangle with amplitude input 10 and 00

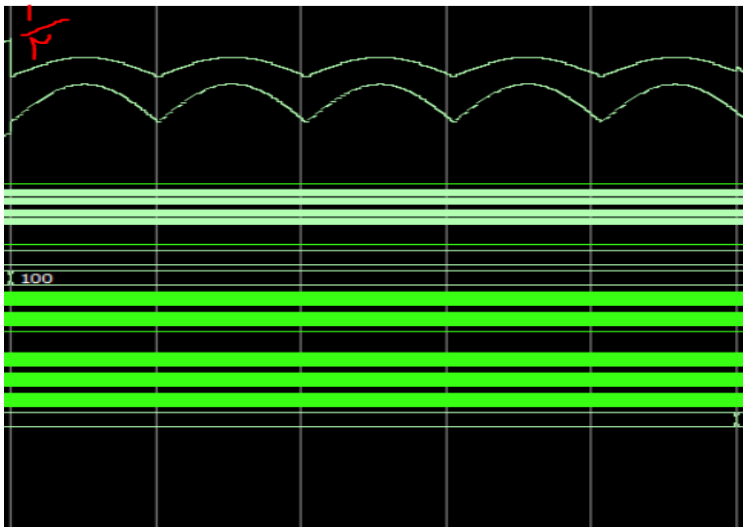

Fig23: Full-wave rectified with amplitude input 01 and 00

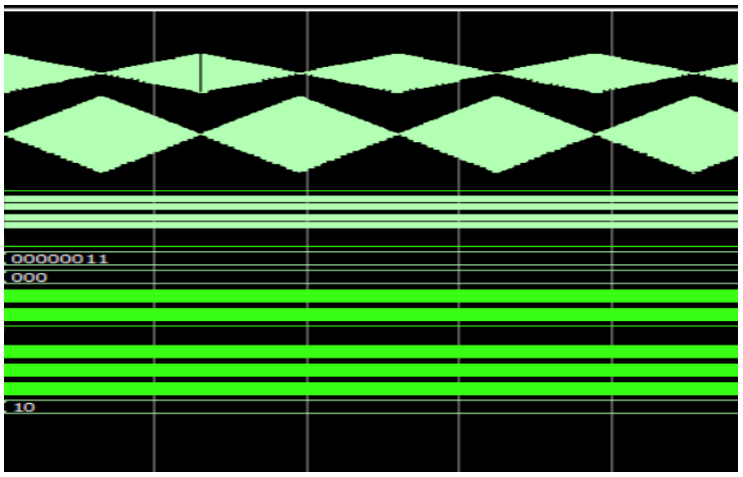

Fig24: Rhomboid with amplitude input 10 and 00

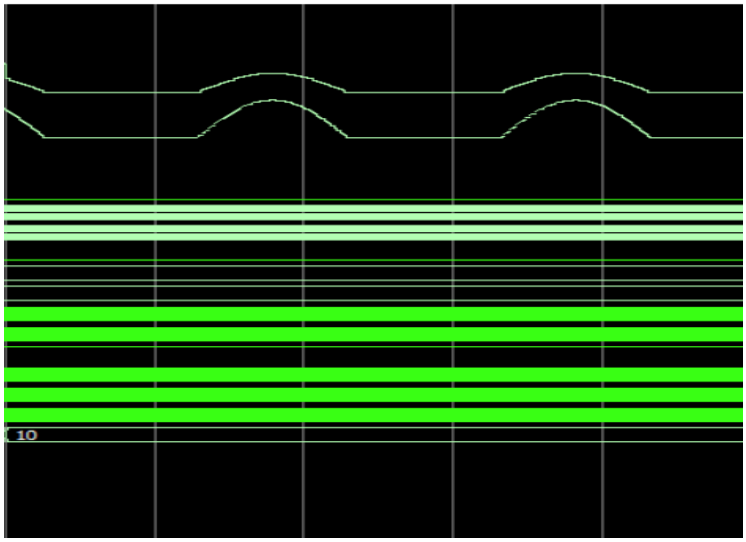

Fig25: Half-wave rectified with amplitude input 10 and 00

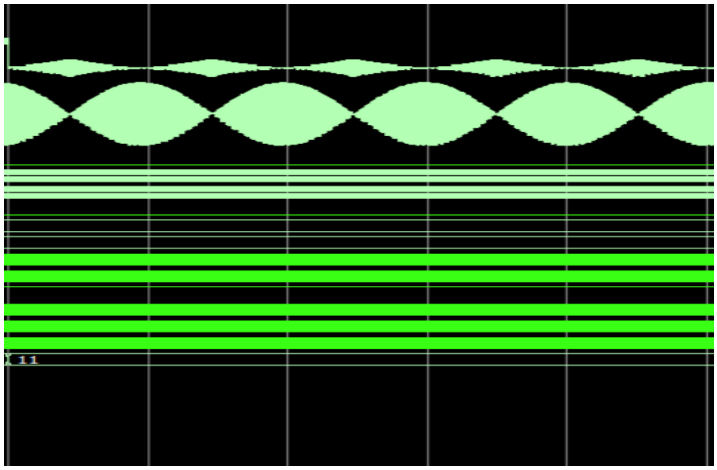

Fig26: Modulated square wave with amplitude input 11 and 00

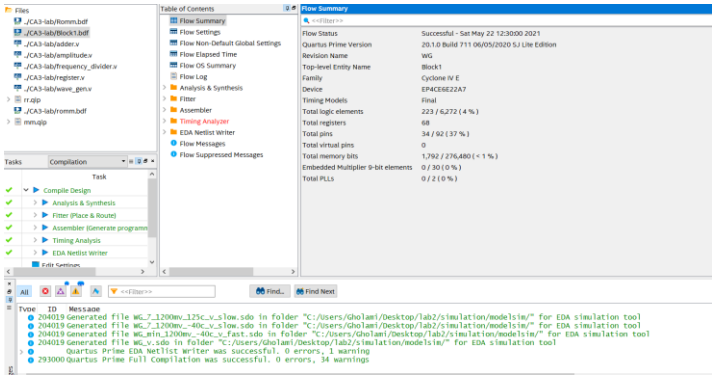

Fig27: synthesis summary.