Experiment #3 – Function Generator

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I. Waveform Generator

A) Analysis & Synthesis

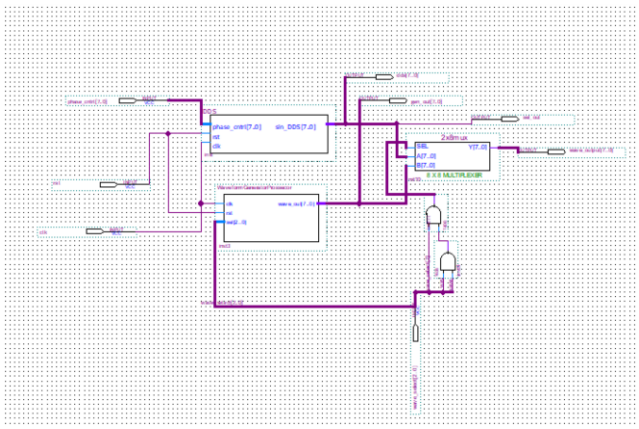

Fig. 1

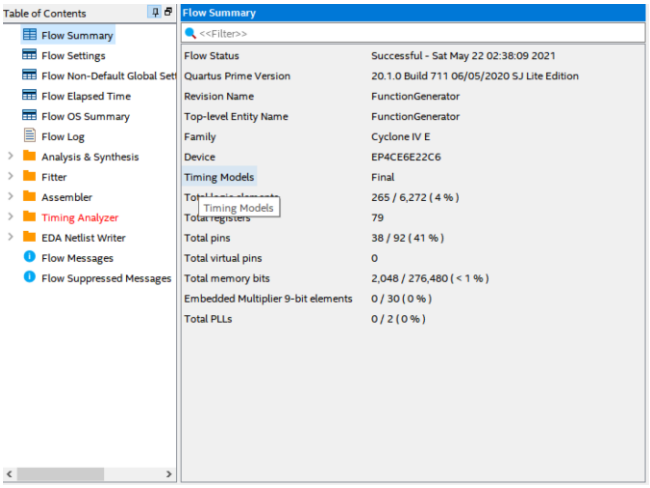

Fig. 2

B) Function Generator waveforms

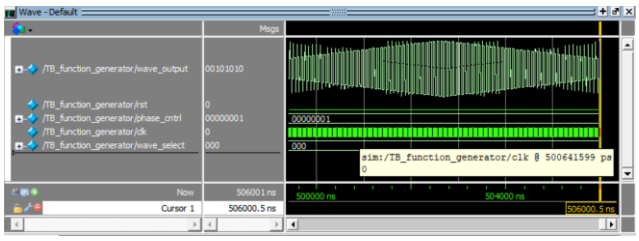

Fig. 3 Rhomboid waveform

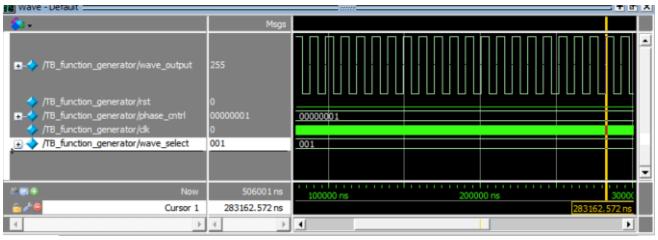

Fig. 4 Square waveform

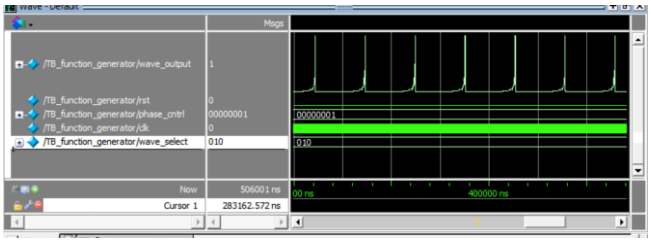

Fig. 5 Reciprocal waveform

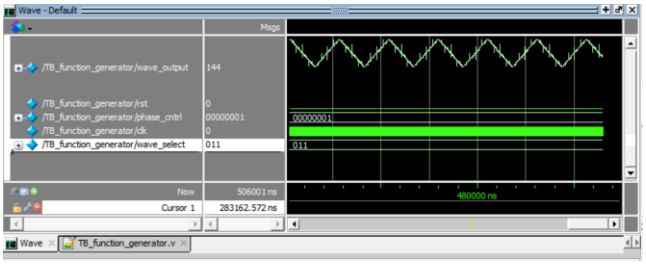

Fig. 6 Triangle waveform

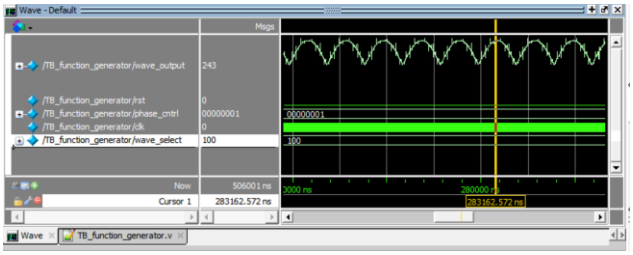

Fig. 7 Full-wave rectified

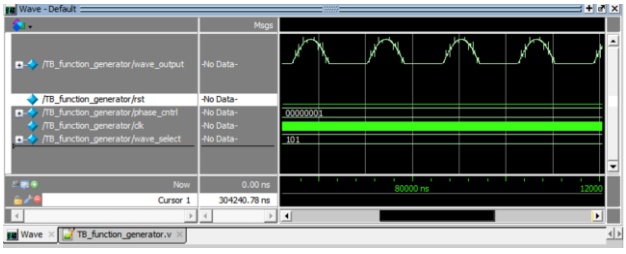

Fig. 8 Half-wave rectified

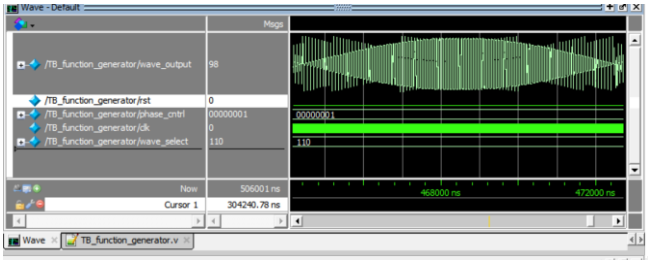

Fig. 9 Sinusidolly modulated square wave

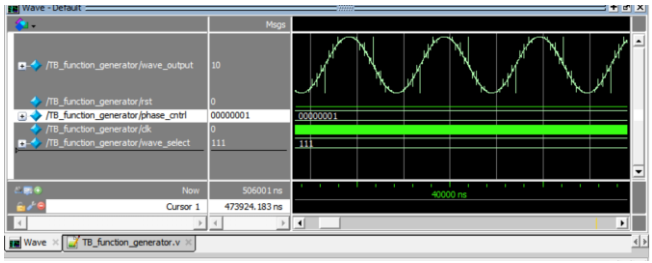

Fig. 10 DDS waveform

II. FREQUENCY SELECTOR

A) Different frequencies by clock divider

1. Parallel load is 1 and the desired Frequency is 382Hz and achieved frequency is 384Hz

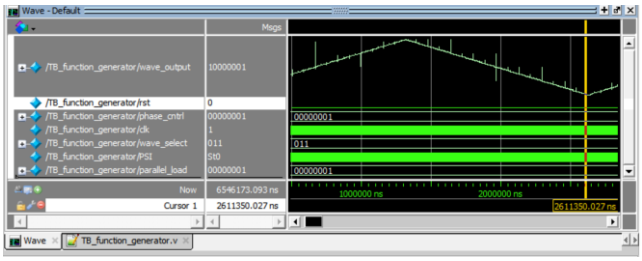

Fig. 11

2. Parallel load is 254 and the desired Frequency is 11kHz and achieved frequency is 12kHz

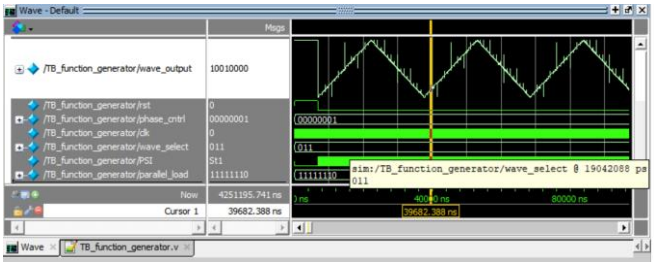

Fig. 12

3. Parallel load is 248 and the desired Frequency is 25kHz and achieved frequency is 32kHz

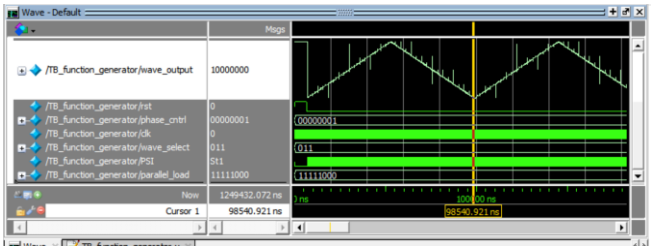

Fig. 13

B) Different frequencies by phase_cntrl

1. Phase_cntrl is 3 and the desired Frequency is 2306Hz and achieved frequency is 1500Hz

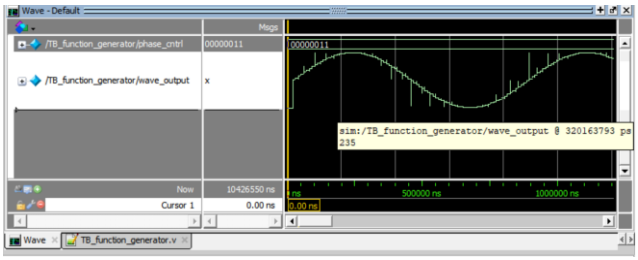

Fig. 14

2. Phase_cntrl is 7 and the desired Frequency is 5382Hz and achieved frequency is 3356Hz

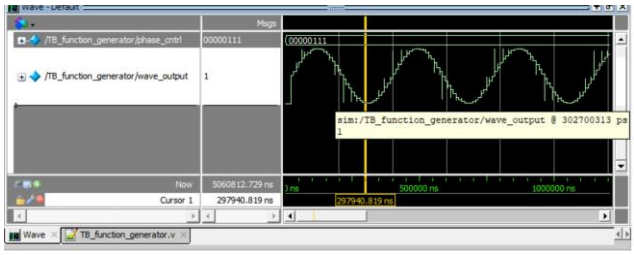

Fig. 15

3. Phase_cntrl is 15 and the desired Frequency is 11534Hz and achieved frequency is 6067Hz

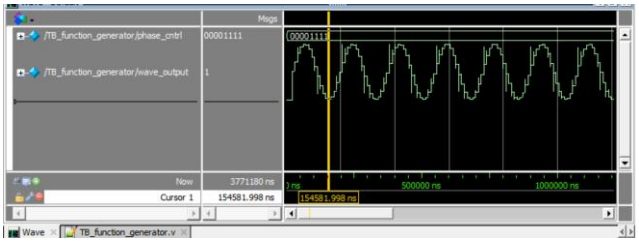

Fig. 16

III. AMPLITUDE SELECTOR

A) Whole design

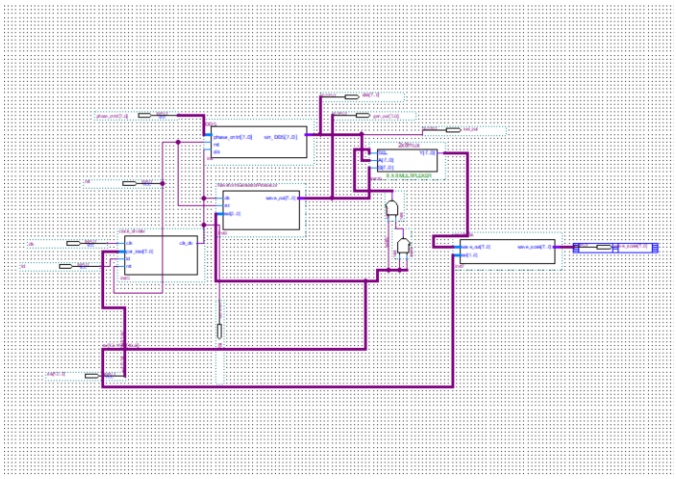

Fig. 17

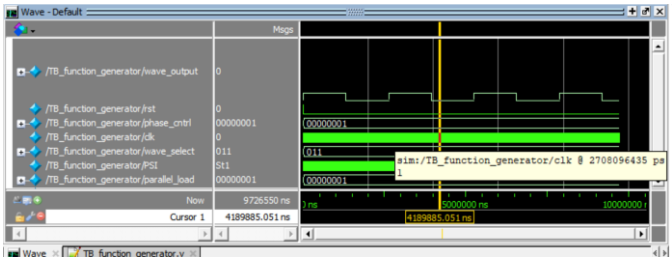

Fig. 21 Amplitude=8

B) Different Amplitude waveforms

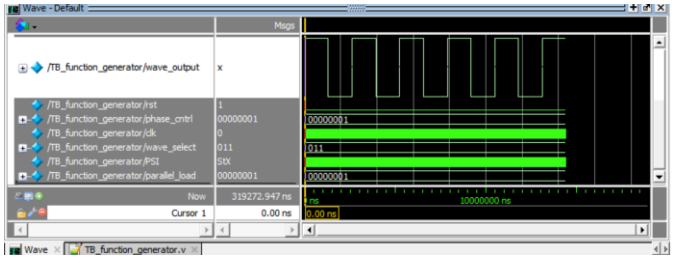

Fig. 18 Amplitude=1

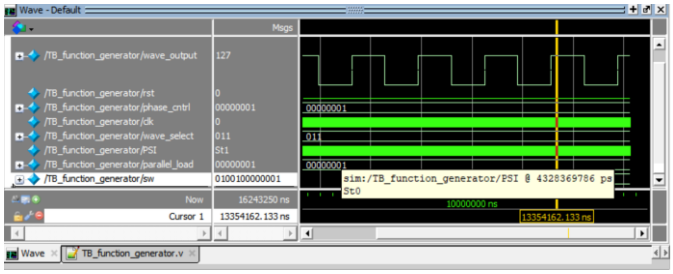

Fig. 19 Amplitude=2

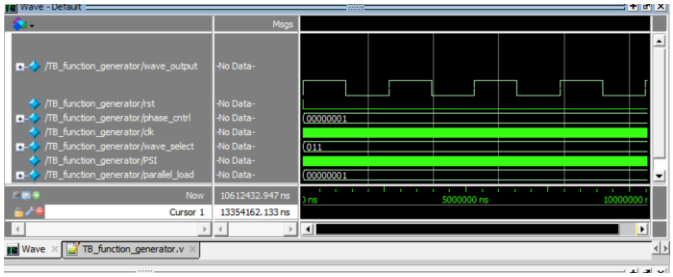

Fig. 20 Amplitude=4