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1 Introduction

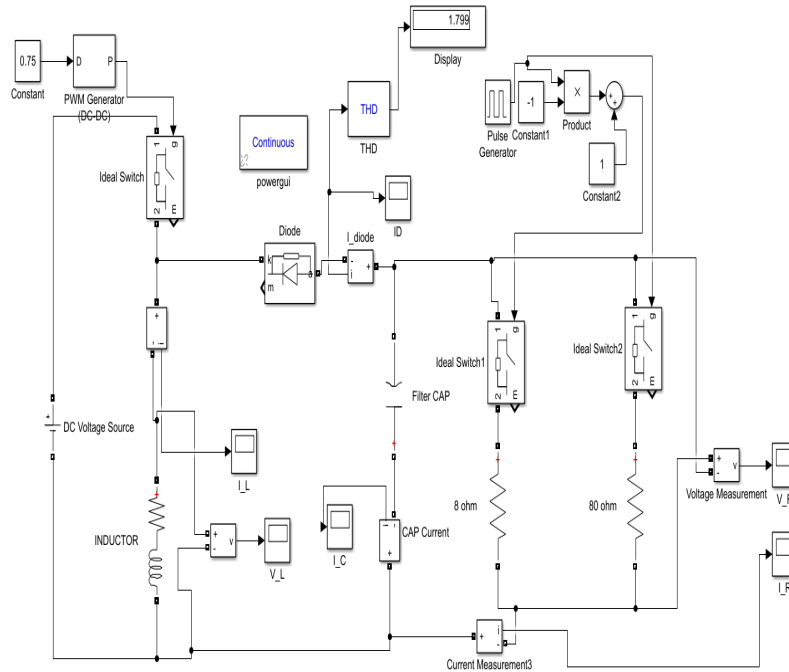


Figure 1: Buck Boost Simulink Model

2 Question 1

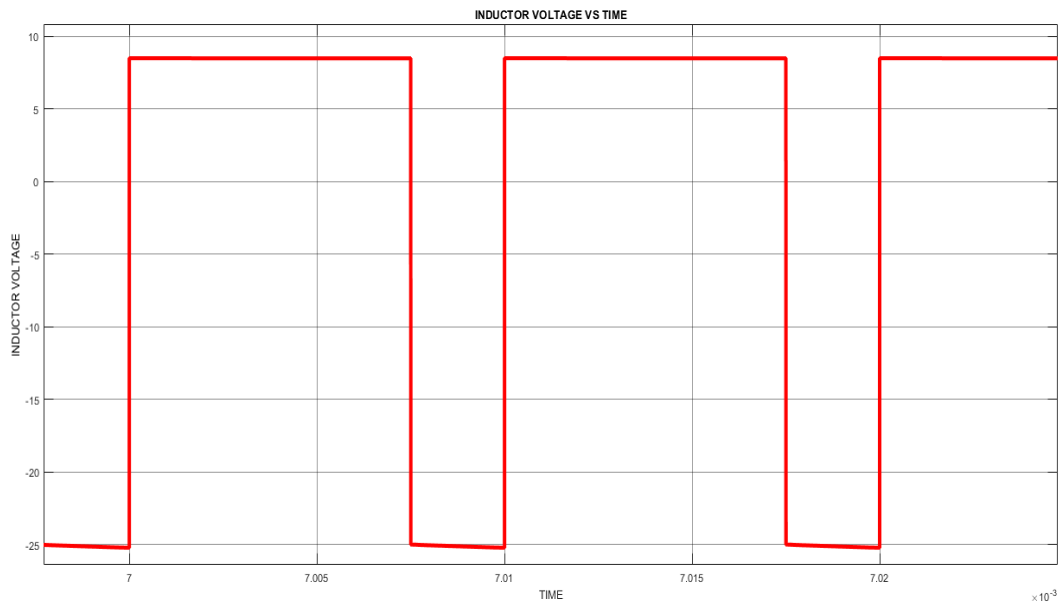


Figure 2: Inductor Voltage

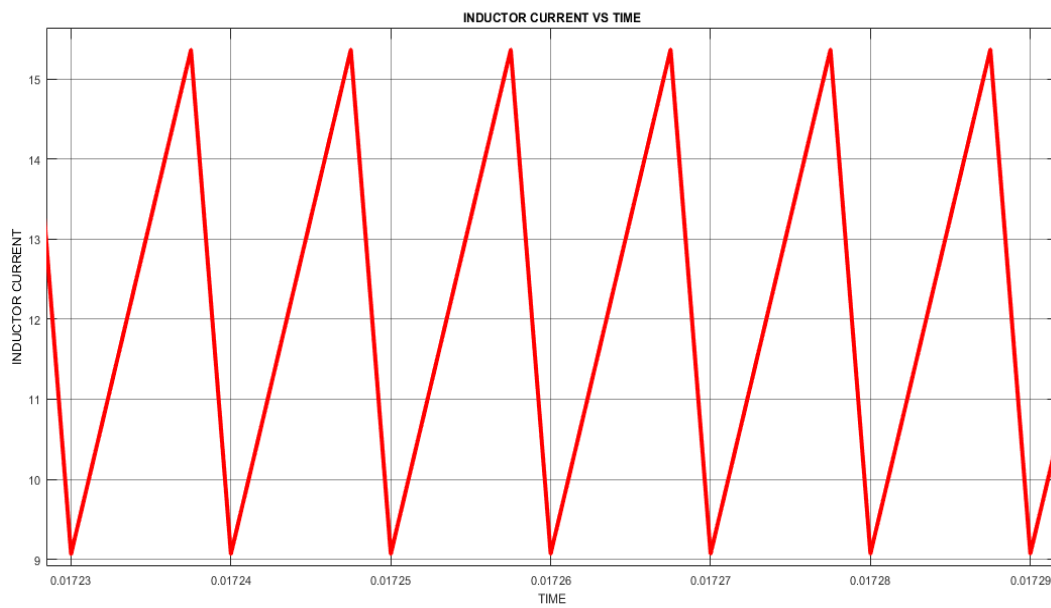


Figure 3: Inductor Current

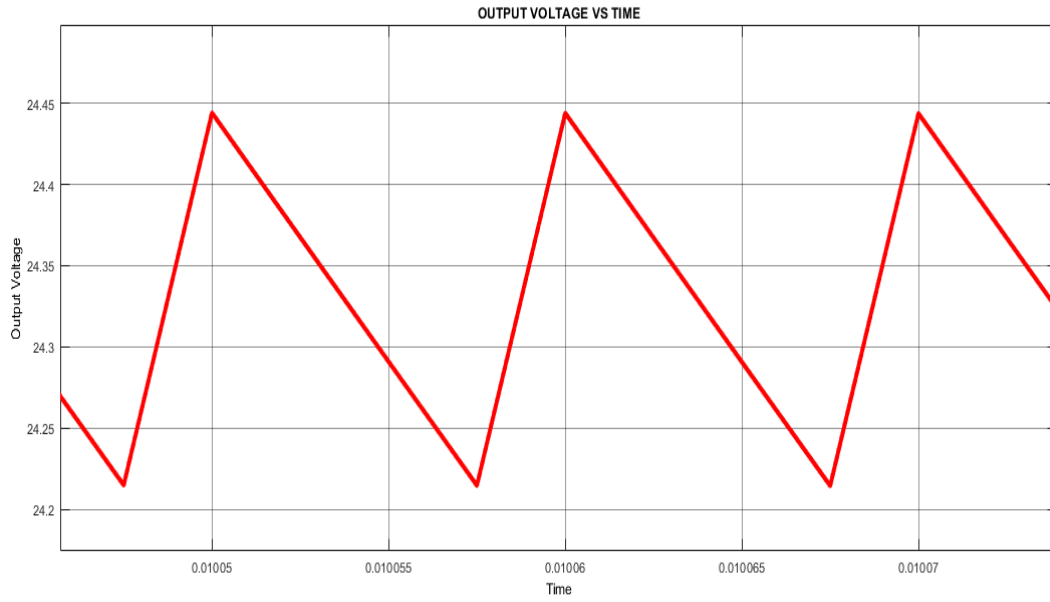


Figure 4: Output Voltage

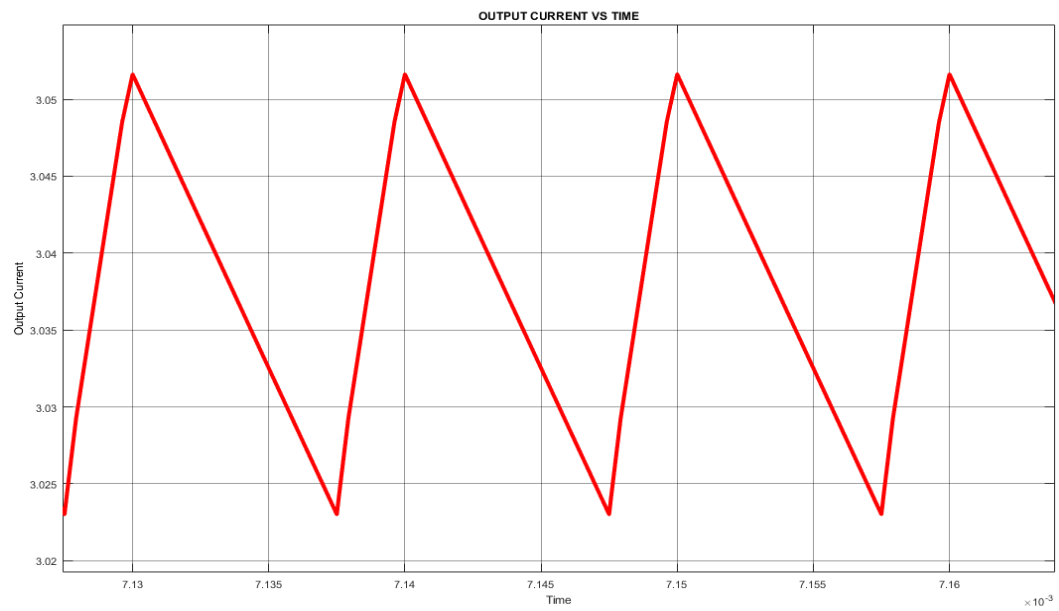


Figure 5: Output Current

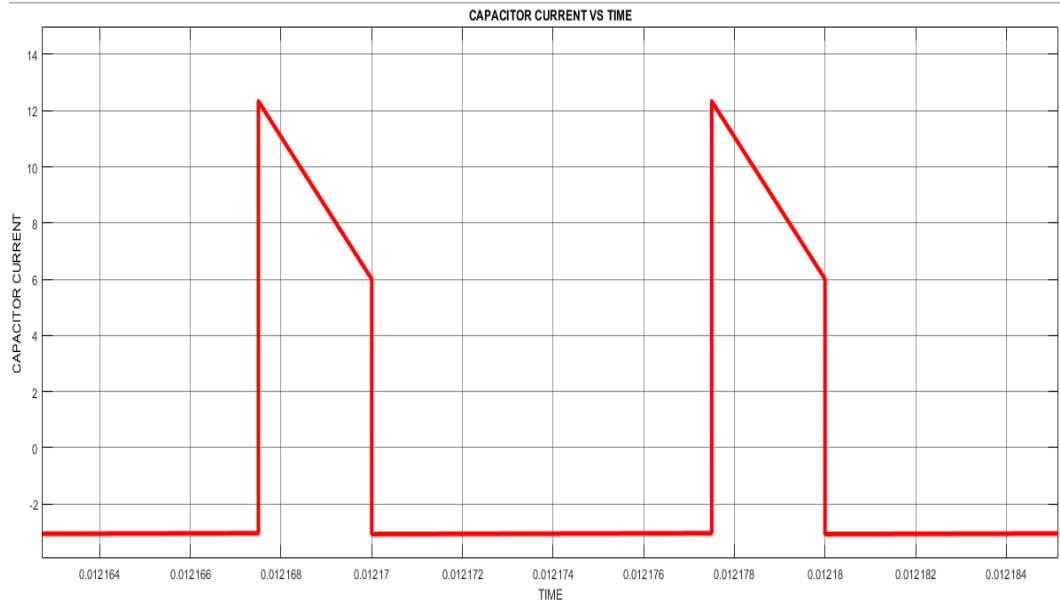


Figure 6: Capacitor Current

3 Question 2

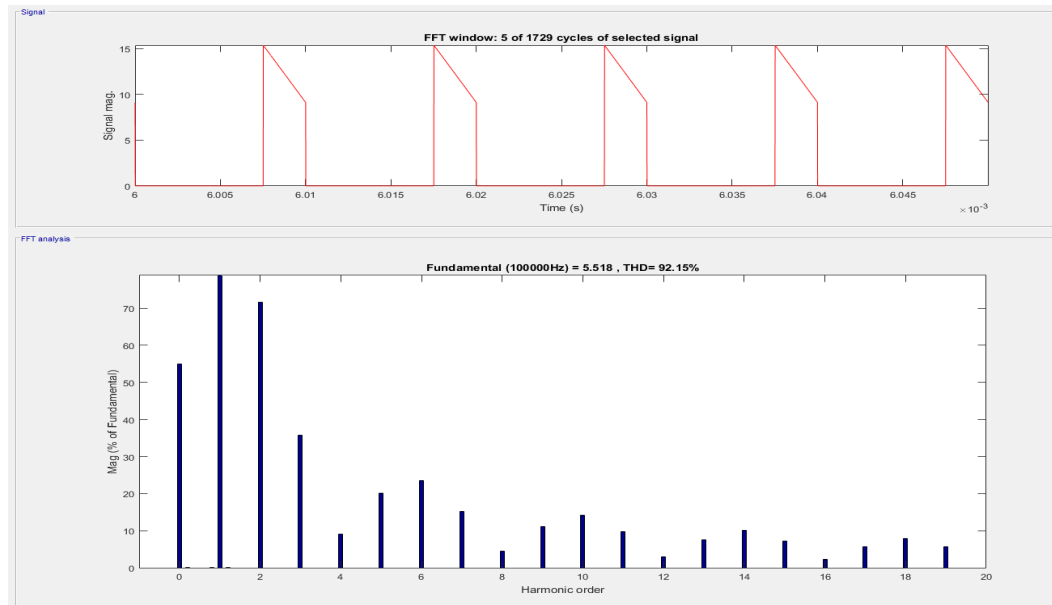


Figure 7: Diode Currents FFT Analysis

THD is found to be %94.

4 Question 3

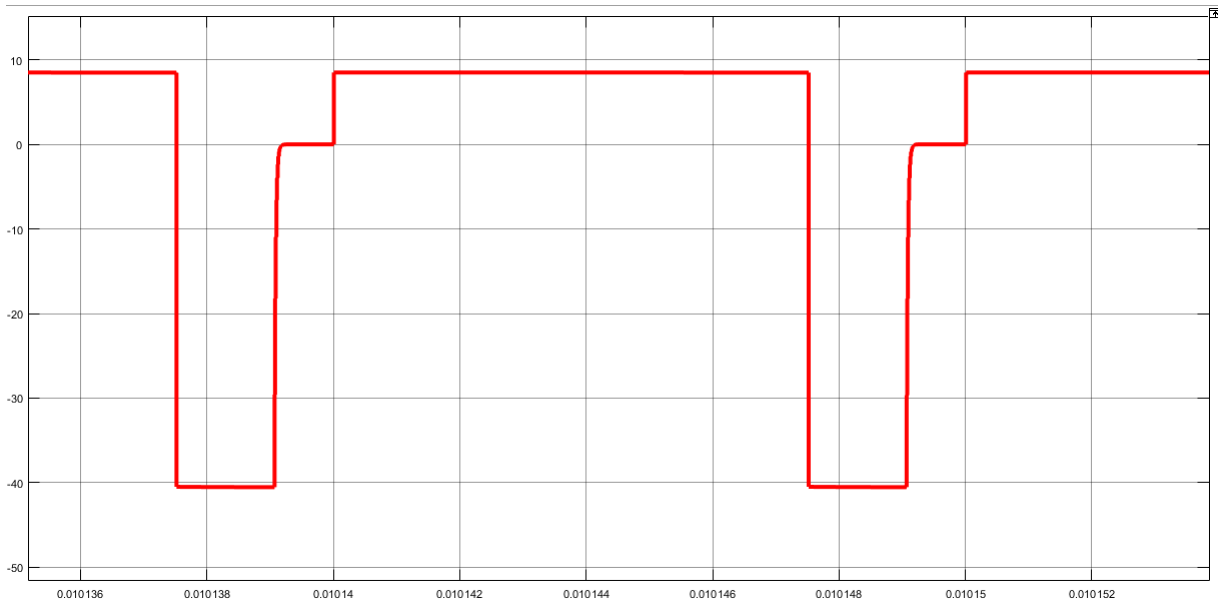


Figure 8: DCM Inductor Voltage Waveform

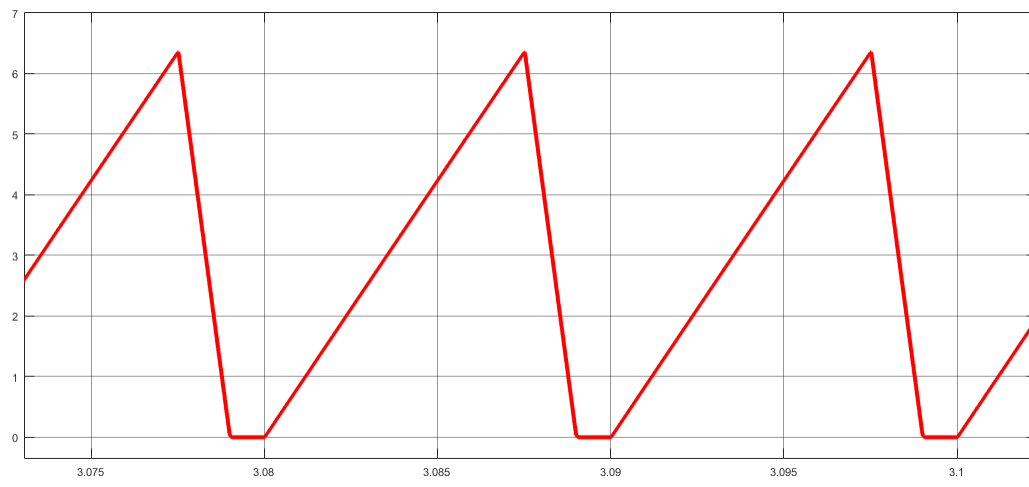


Figure 9: DCM Inductor Current Waveform

5 Question 4

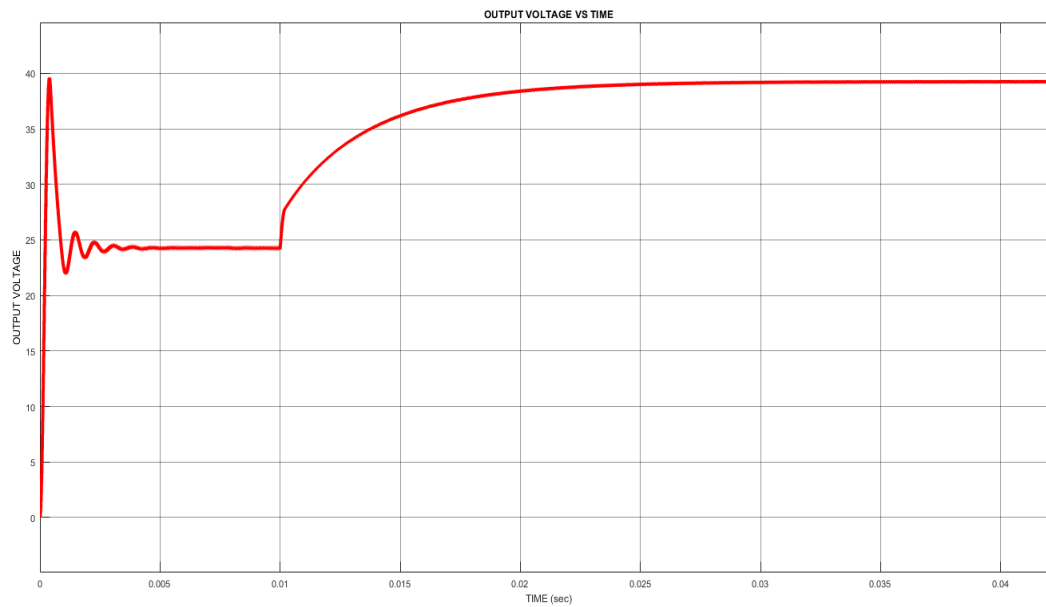


Figure 10: CCM to DCM Output Voltage (Open Loop Operation)

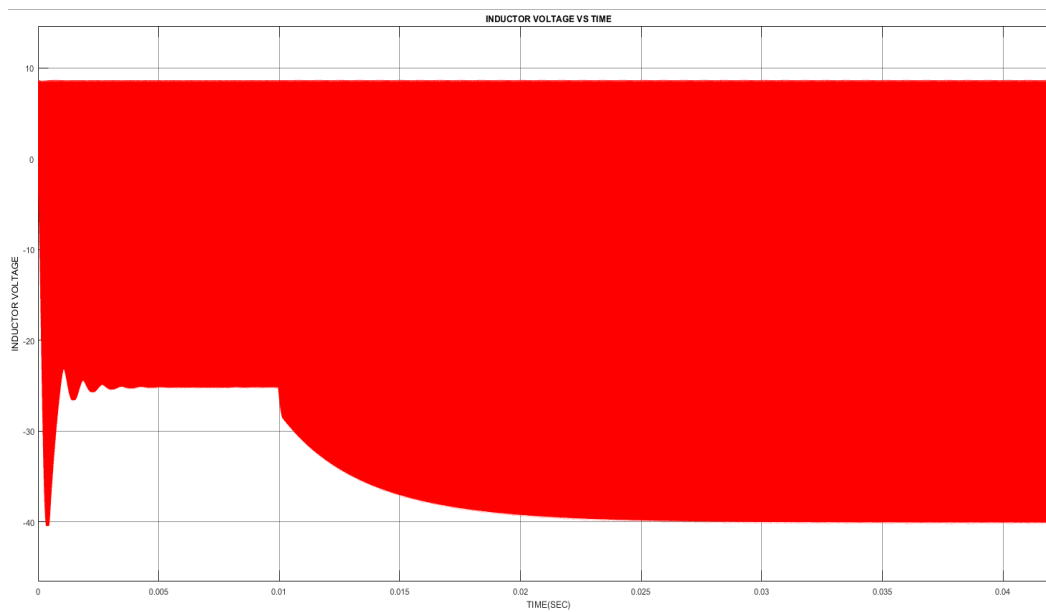


Figure 11: CCM to DCM Inductor Voltage (Open Loop Operation)

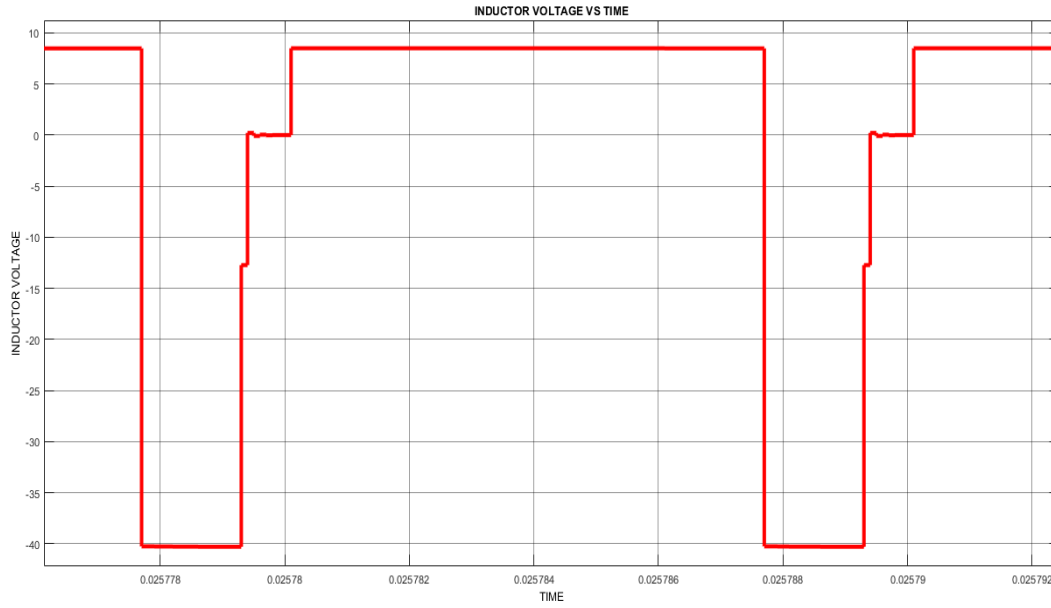


Figure 12: CCM to DCM Inductor Voltage Zoomed (Open Loop Operation)

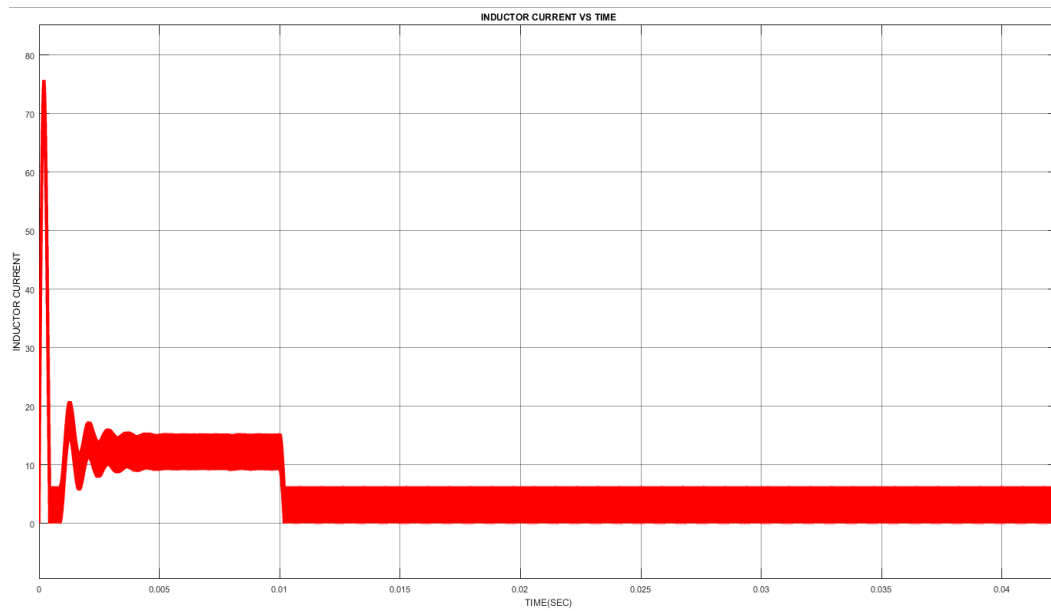


Figure 13: CCM to DCM Inductor Current (Open Loop Operation)

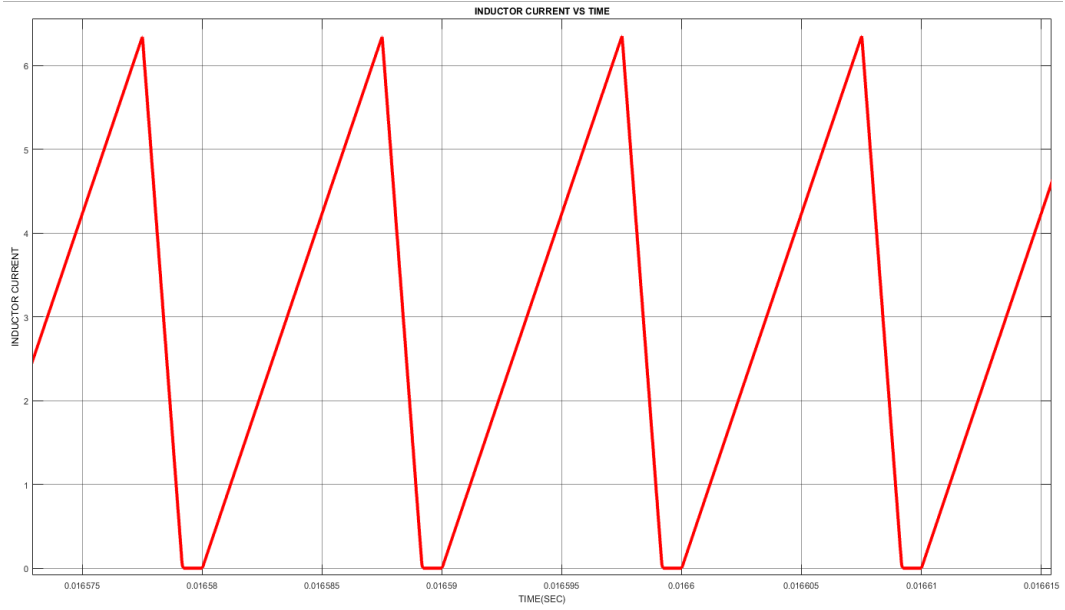


Figure 14: CCM to DCM Inductor Current Zoomed(Open Loop Operation)

6 Question 5

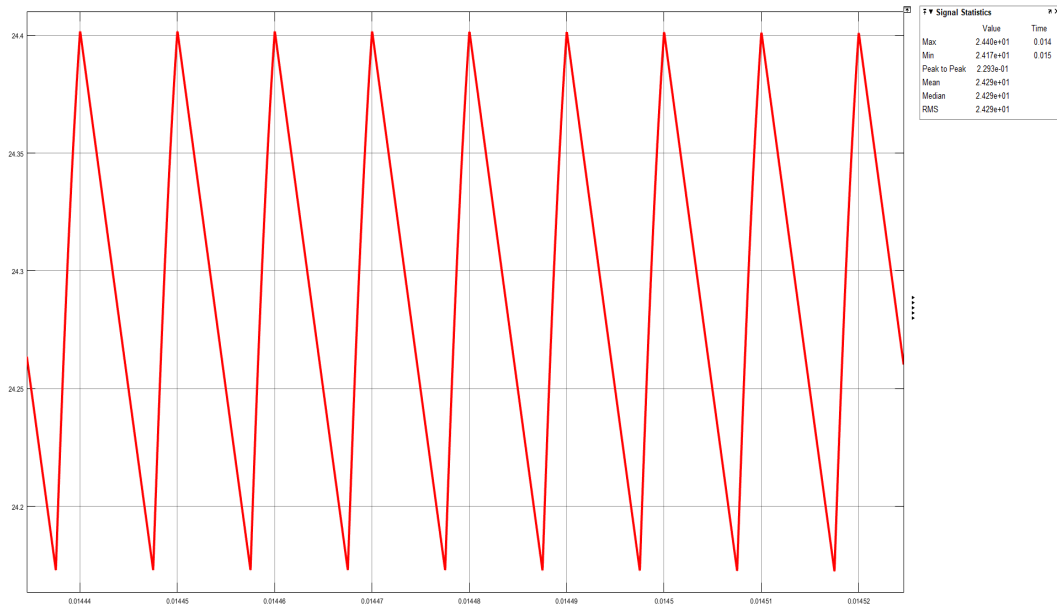


Figure 15: Output Voltage in Steady State

Signal Statistics		
	Value	Time
Max	2.440e+01	0.014
Min	2.417e+01	0.015
Peak to Peak	2.293e-01	
Mean	2.429e+01	
Median	2.429e+01	
RMS	2.429e+01	

Figure 16: Waveform information of Output Voltage in Steady State

7 Question 6

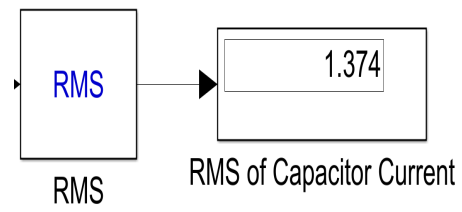


Figure 17: RMS calculation of Capacitor Current in CCM