



Faculty of Engineering & Technology Electrical & Computer Engineering  
Department

Communications Lab - ENEE4103

Pre-Lab #6

Experiment NO. 6: Pulse Amplitude Modulation (Sampling)

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Section: 4

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prelab 6		Exp 6 PAM			Grade	out of
1	5 block diagrams	pulse train	ok	3	3	
		Natural sampling	ok			
		Flat top smpling	ok			
		Demodulation fo Nat and Flat	ok			
	graphs/results	pulse train	pulse train (t and f)		1	1.5
			s(t) (t and f)		1.5	2
		s(t) for f1 (t and f)				
		s(t) for f2 (t and f)				
		s(t) for %D1 (t and f)				
		s(t) for %D2 (t and f)				
		Natural sampling	pulse train (t and f)		1	1.5
			s(t) (t and f)			
			s(t) for f1 (t and f)			
			s(t) for f2 (t and f)			
			s(t) for %D1 (t and f)			
		Flat top smpling	s(t) for %D2 (t and f)		1	1.5
		Demodulation	normal m and m' (t and f)		1	1
			flat top m and m' (t and f)			
		Aliasing	Natural s(t) (t and f)		1	1
	flat top s(t) (t and f)					
m and m' (t and f)						
				8.5	10	

## **Table of contents**

1.	Part 1: Time and Frequency Characteristics of the pulse train.....	4
2.	Part 2: Characteristics of Pulse Amplitude Modulation (PAM).....	6
3.	Part 3: Characteristics of Pulse Amplitude Demodulation.....	9
4.	Part 4: Aliasing in the Time and the Frequency Domains:.....	10
5.	Part 4: PAM Time Multiplex:.....	13

## Table of Figures

Figure 1: Block digram .....	4
Figure 2: The Output of Dutey Cycle 50% and frequecy 500 .....	4
Figure 3:The Running Output in frequency.....	5
Figure 7: The Running Output with DC=50% .....	7
Figure 8: The Running Output.....	8
Figure 9: The Block Diagram .....	9
Figure 10: Circuit Output in time domain.....	9
Figure 11: The running output in frequency domain .....	10
Figure 12: The running output .....	<b>Error! Bookmark not defined.</b>
Figure 15: The running output .....	<b>Error! Bookmark not defined.</b>
Figure 16: Block Diagram Connection .....	10
Figure 17: The running output .....	11
Figure 18: The running output .....	11
Figure 19: The running output .....	12
Figure 20: The running output .....	15
Figure 21: The running output demodulator .....	15
Figure 22: Block Diagram Connection .....	16
Figure 23: The running output .....	17
Figure 24: Block Diagram Connection .....	17
Figure 25: The Setting .....	18
Figure 26: The Output in Frequency Domain.....	18

## 1. Part 1: Time and Frequency Characteristics of the pulse train

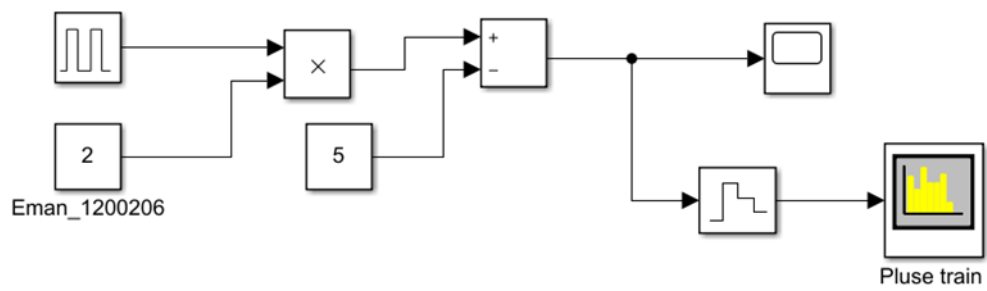


Figure 1: Block digram

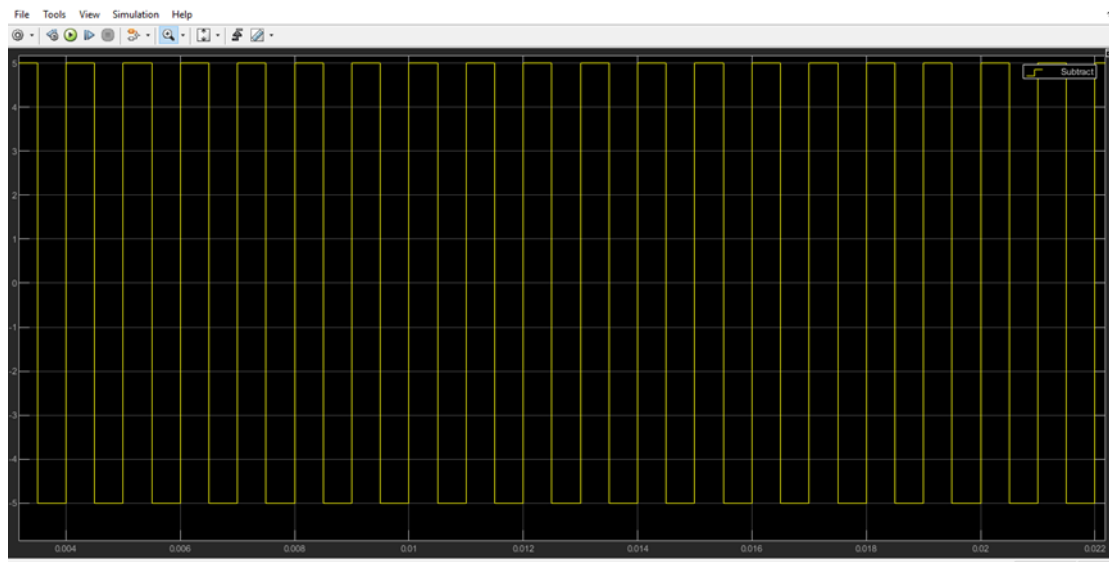
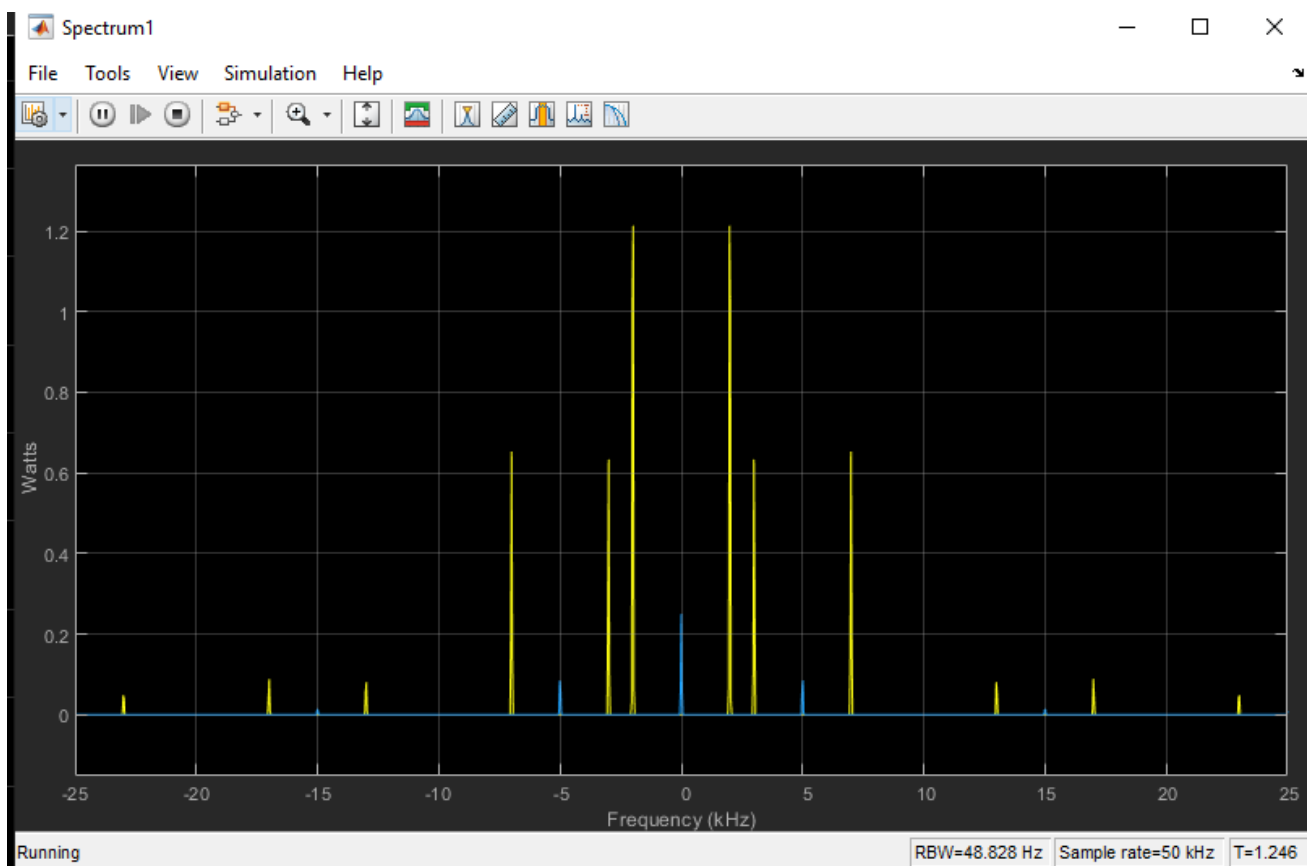


Figure 2: The Output of Dutey Cycle 50% and frequecy 500



**Figure 3: The Running Output in frequency**

change duty cycle?

## 2. Part 2: Characteristics of Pulse Amplitude Modulation (PAM)

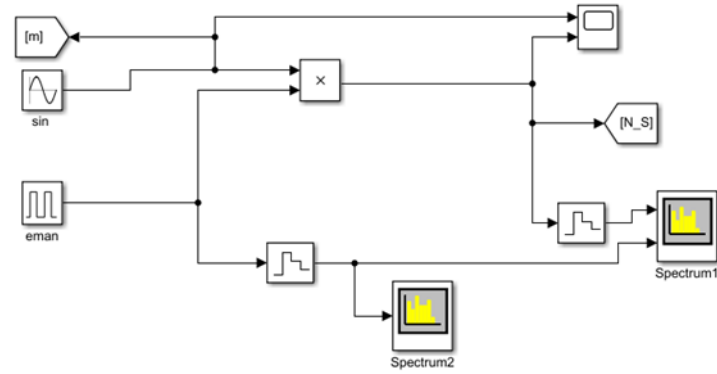


Figure 4 :Block Digram

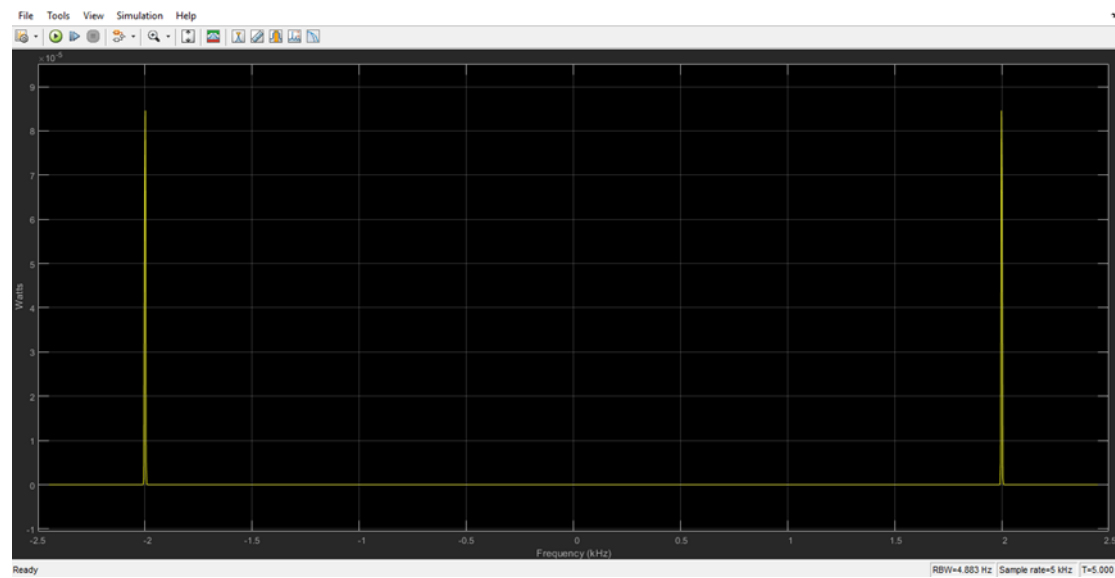
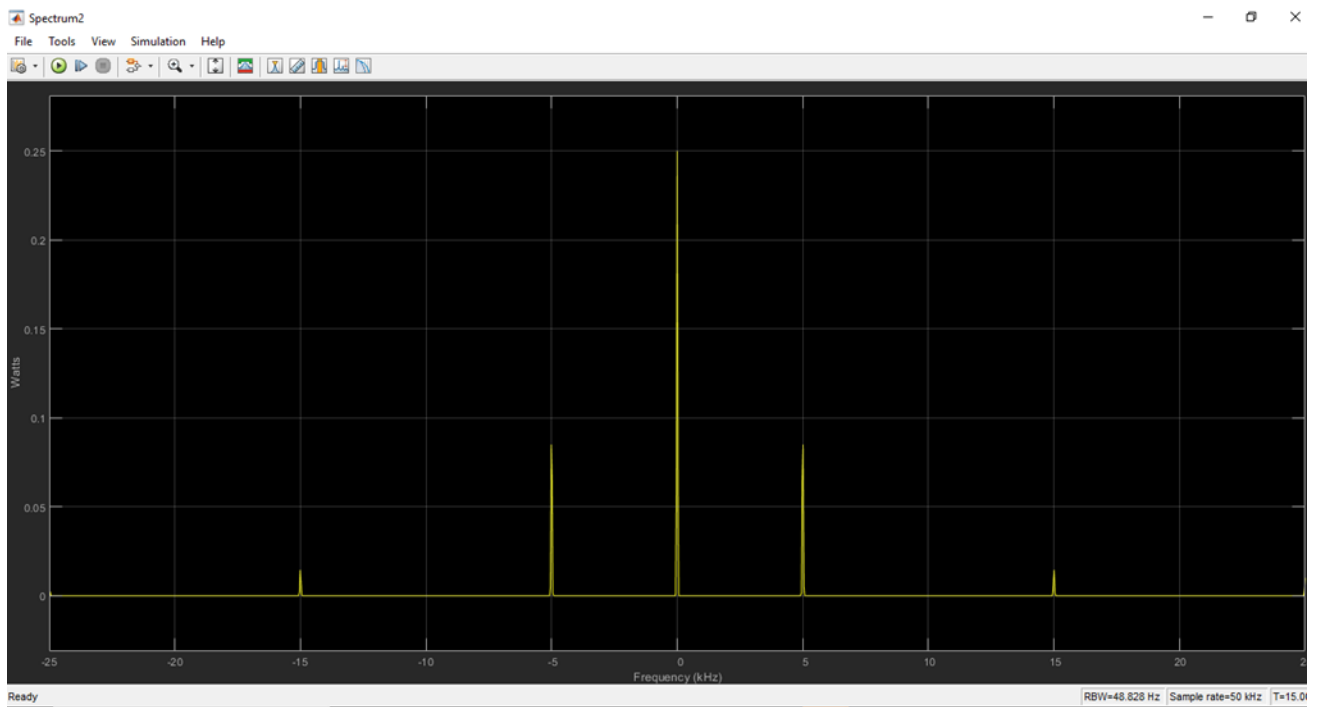
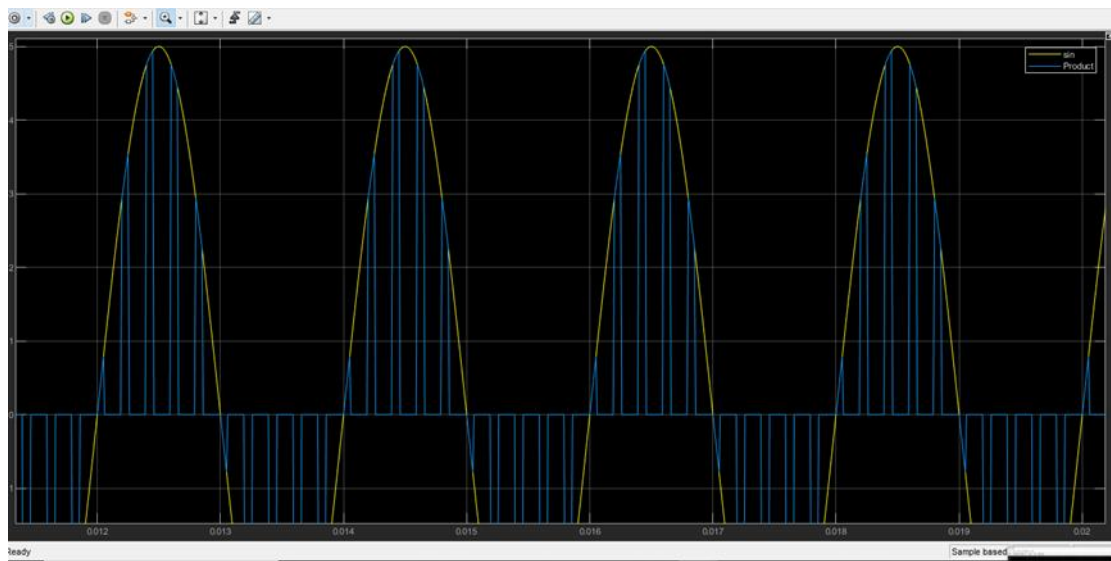


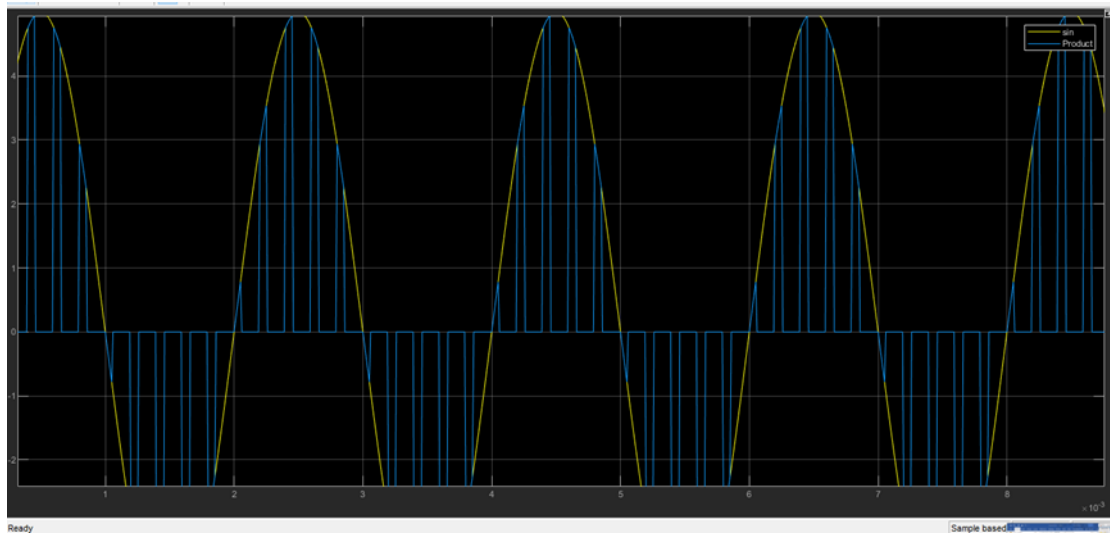
Figure 5:The Connected Circuit output



**Figure 6: The Running Output**



**Figure 4: The Running Output with DC=50%**



**Figure 5: The Running Output**

change duty cycle and frequency?



### 3. Part 3: Characteristics of Pulse Amplitude Demodulation

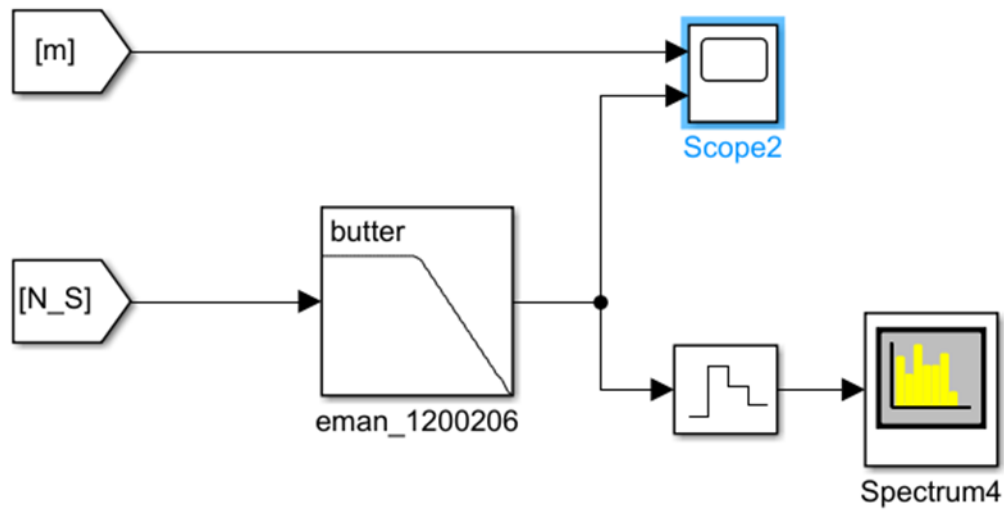


Figure 6: The Block Diagram

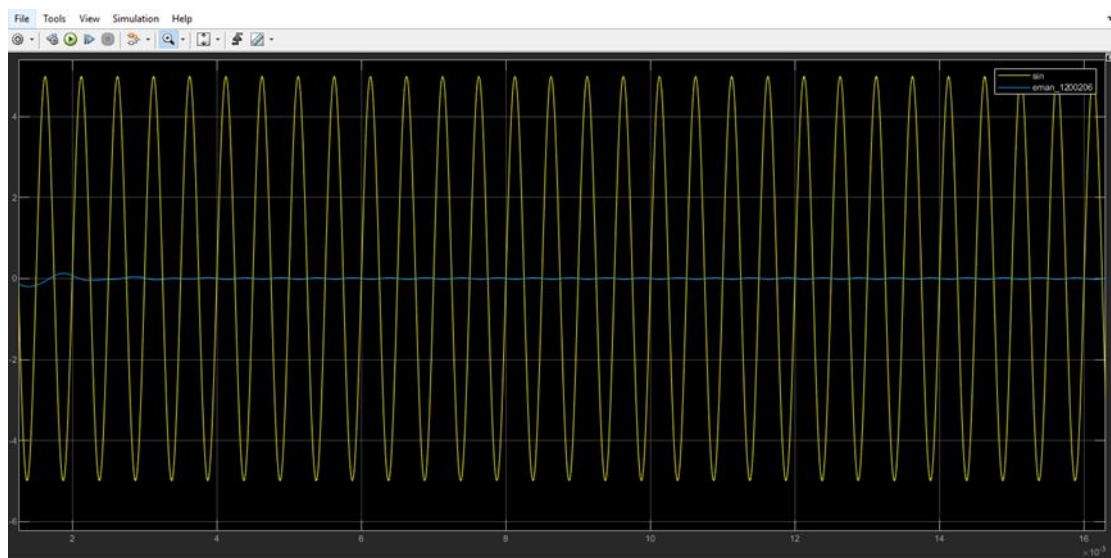


Figure 7: Circuit Output in time domain

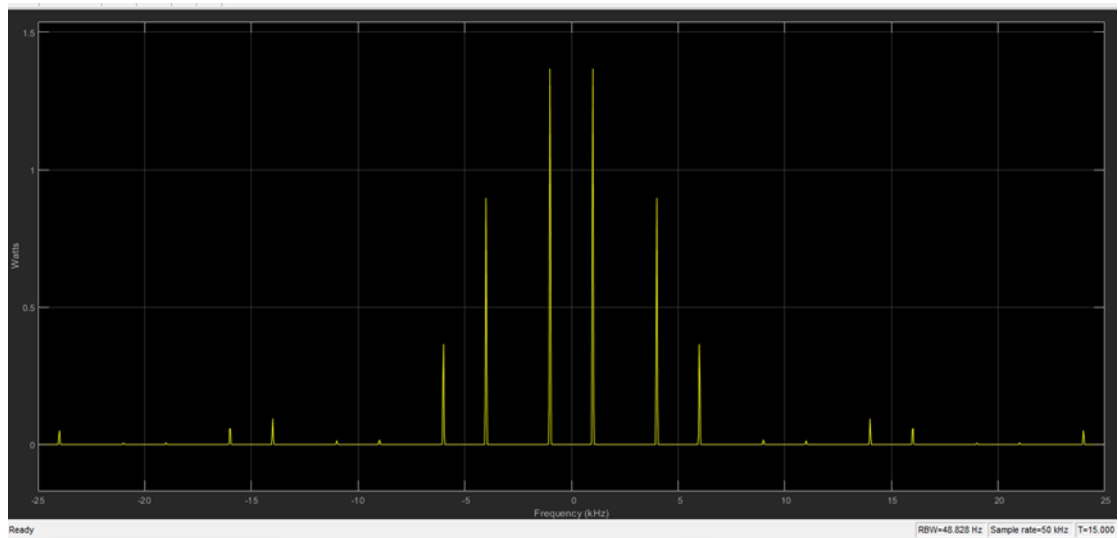


Figure 8: The running output in frequency domain

#### 4. Part 4: Aliasing in the Time and the Frequency Domains:

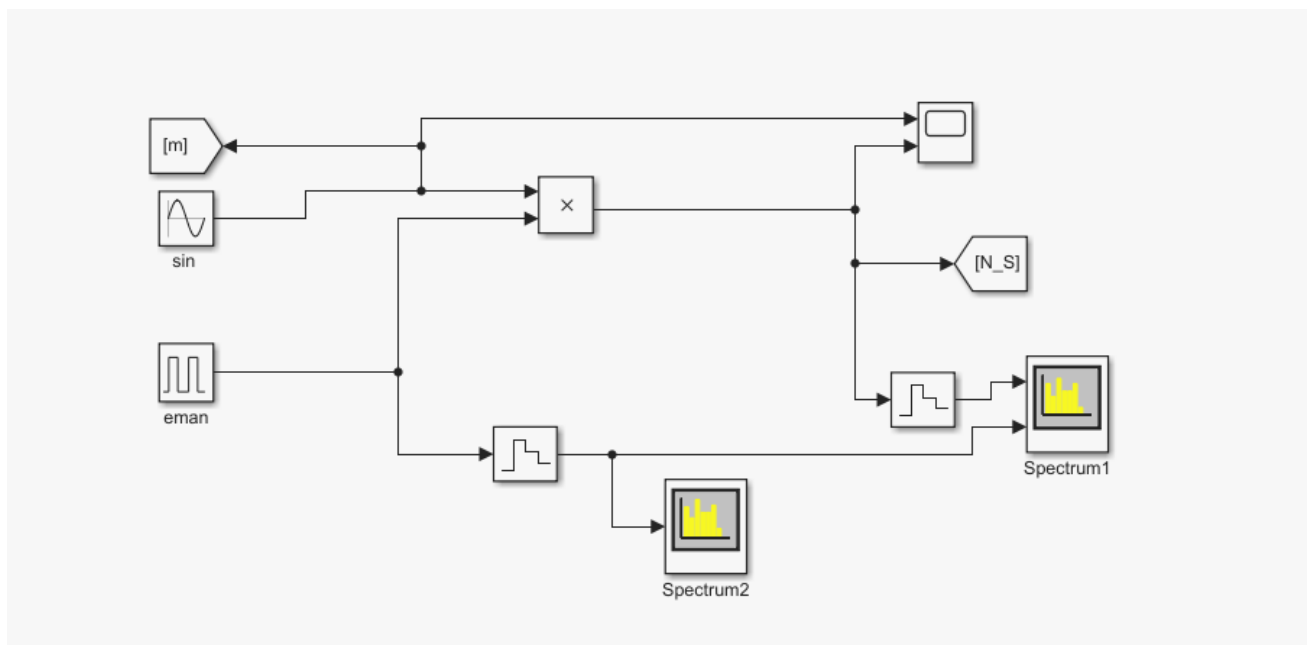
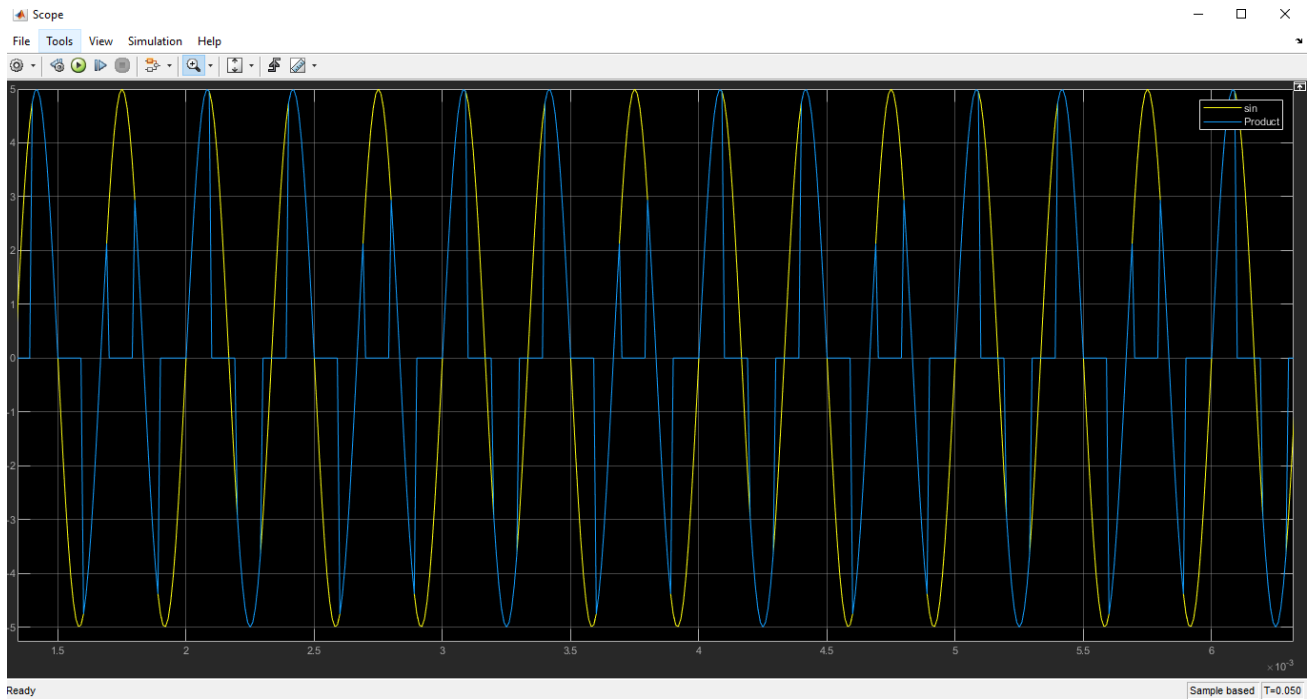
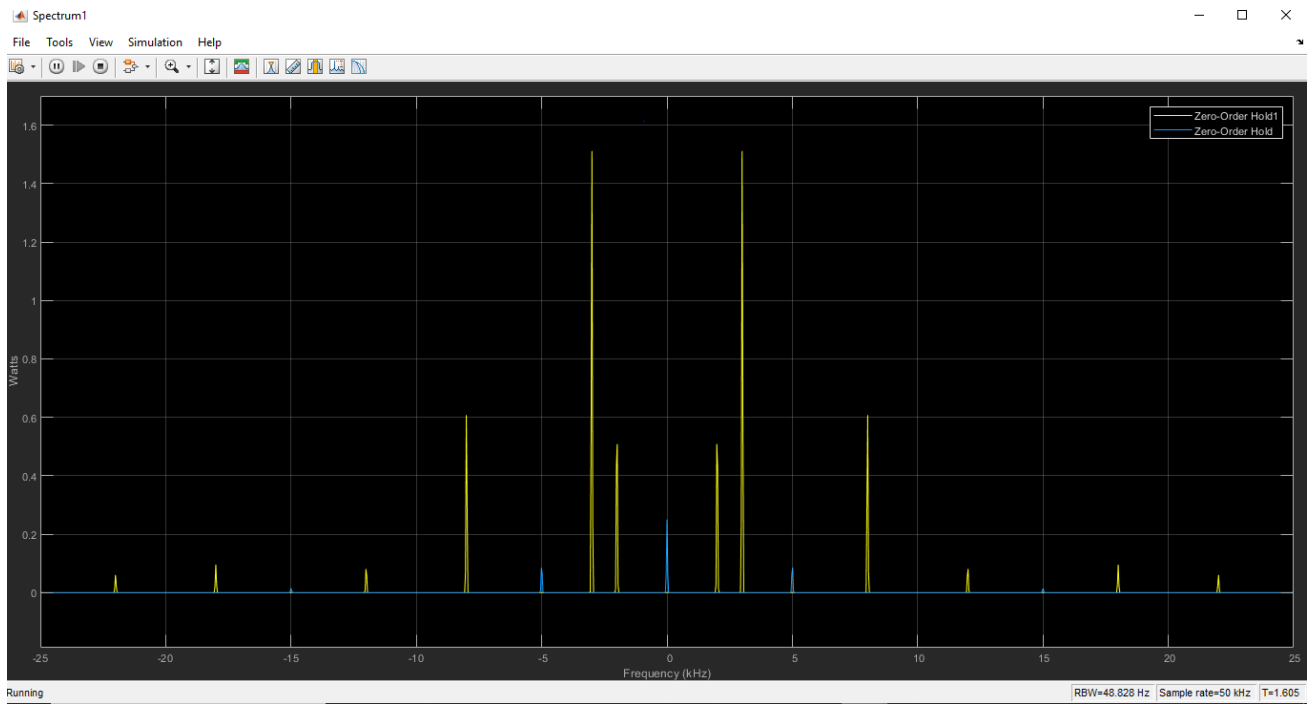


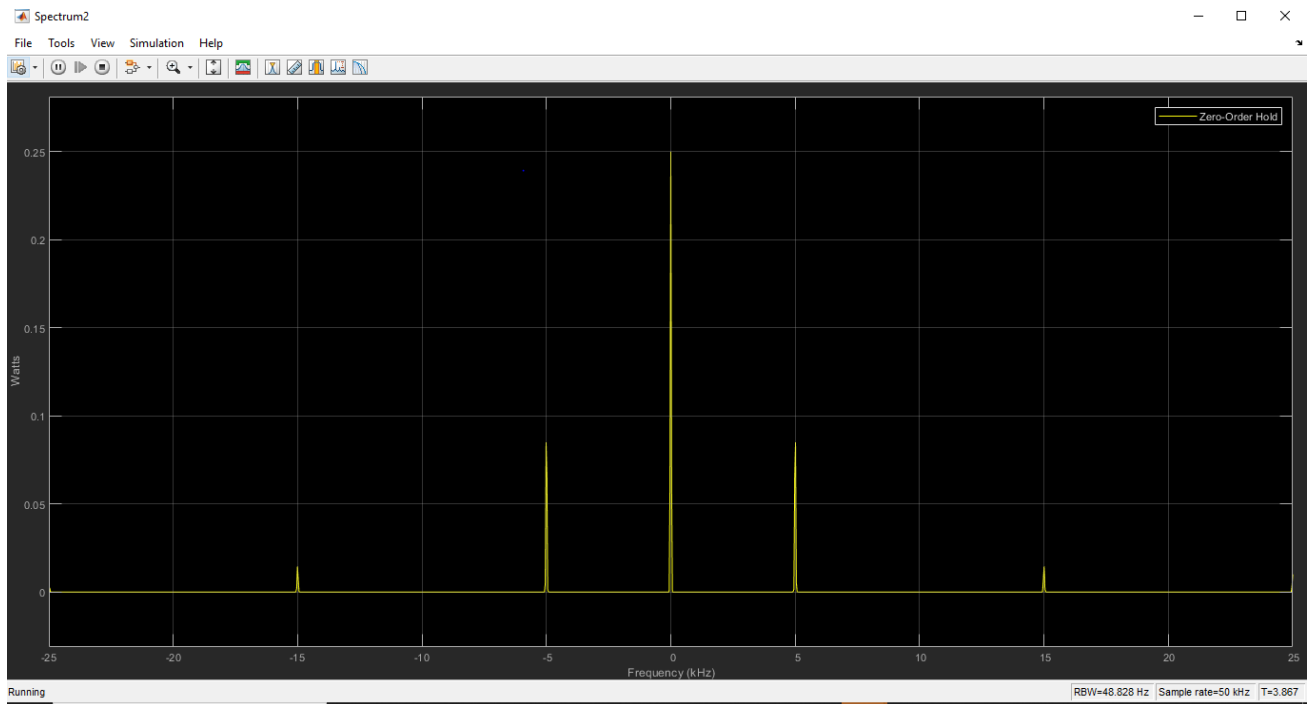
Figure 96: Block Digram Connection



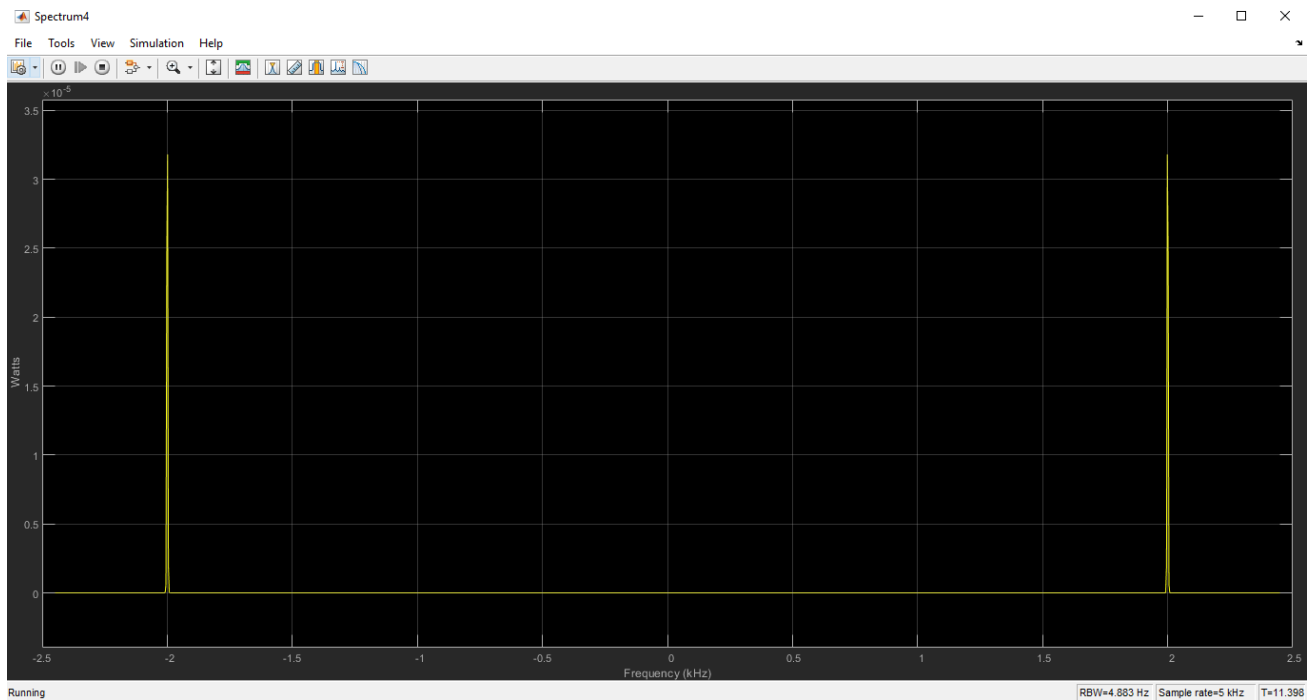
**Figure 107: The running output**



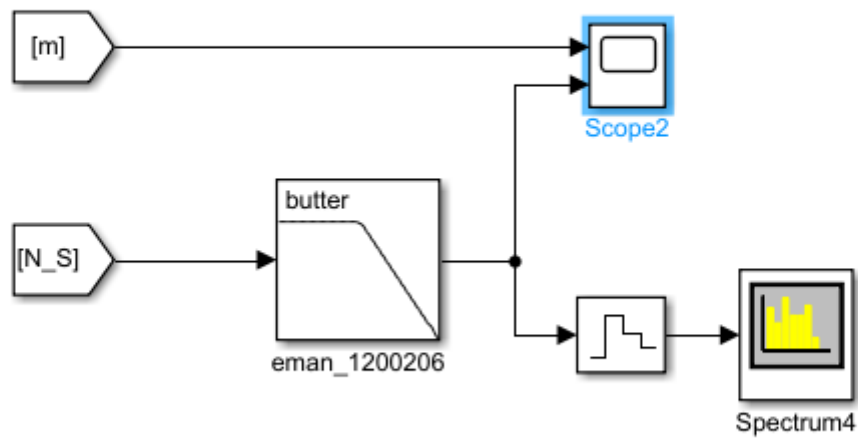
**Figure 118: The running output**



**Figure 19: The running output**

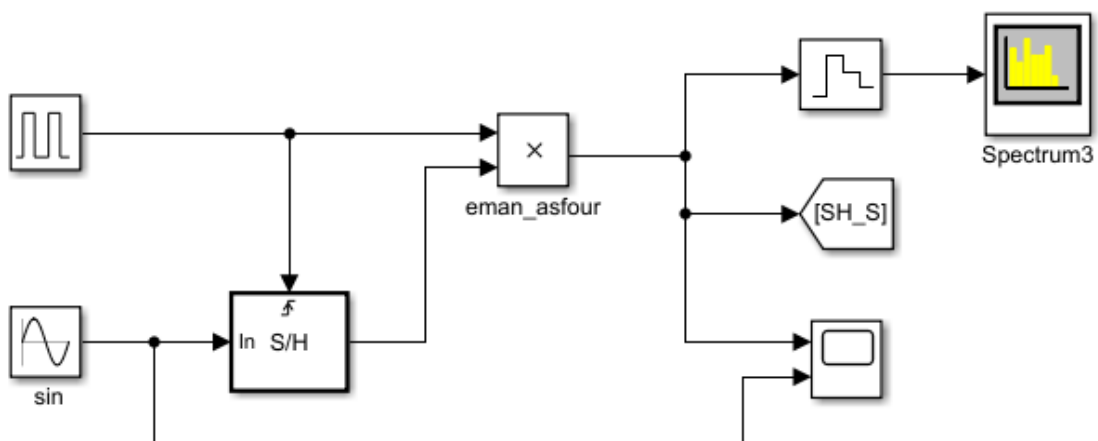


**Figure 20: The running output demodulated**

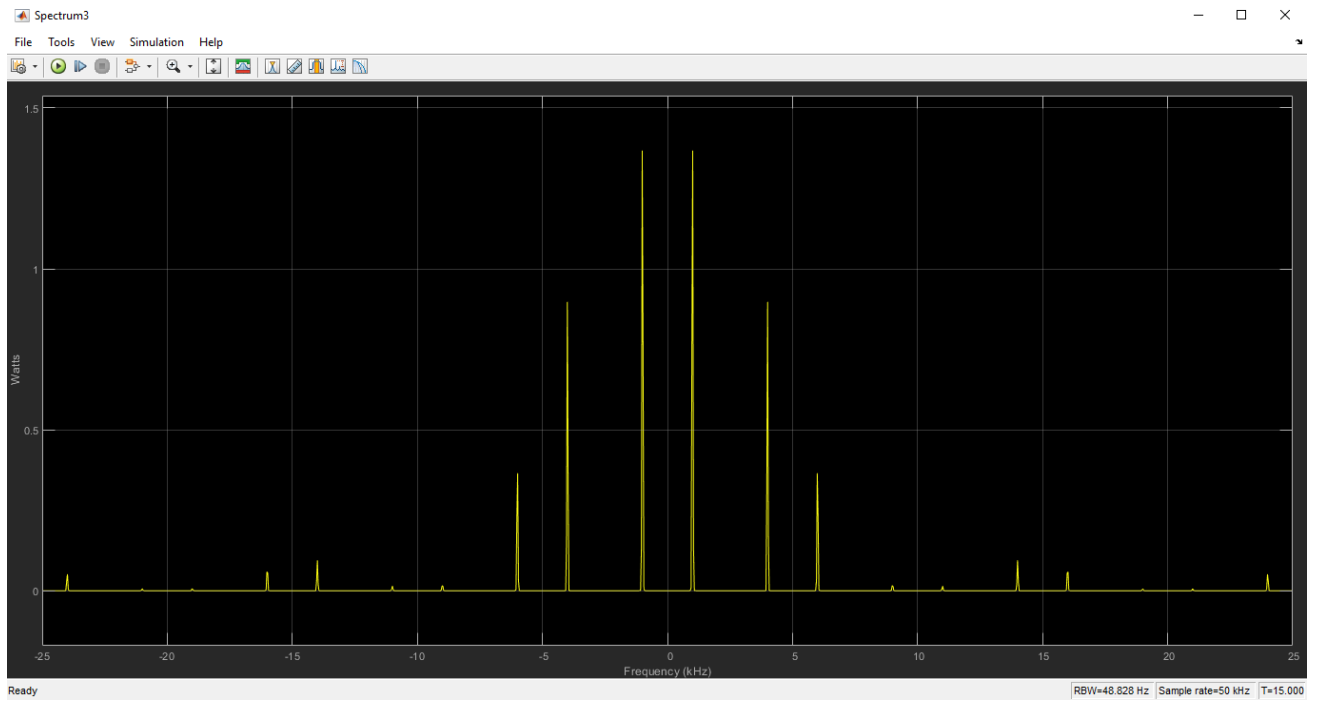


**Figure 21: The running output demodulator**

## 5. Part 5: PAM Time Multiplex:



**Figure 22: Block Diagram Connection**



**Figure 23: The running output**

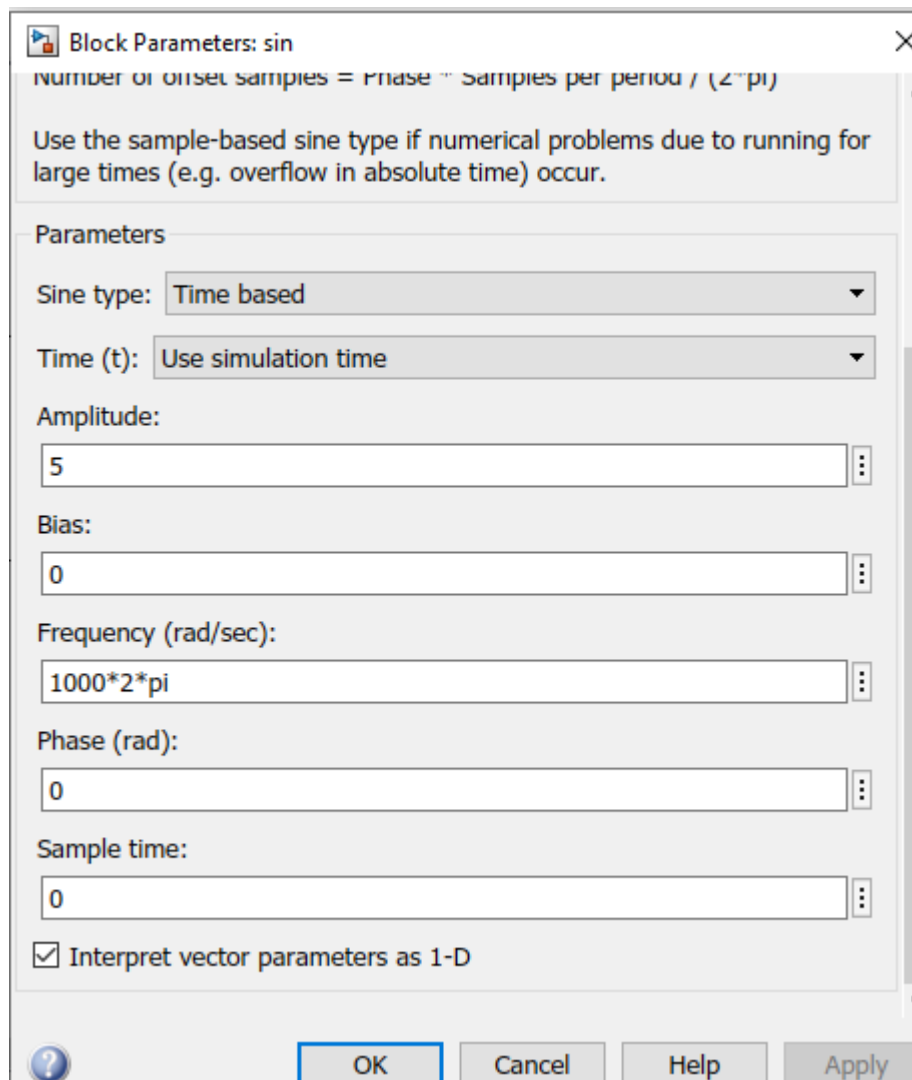
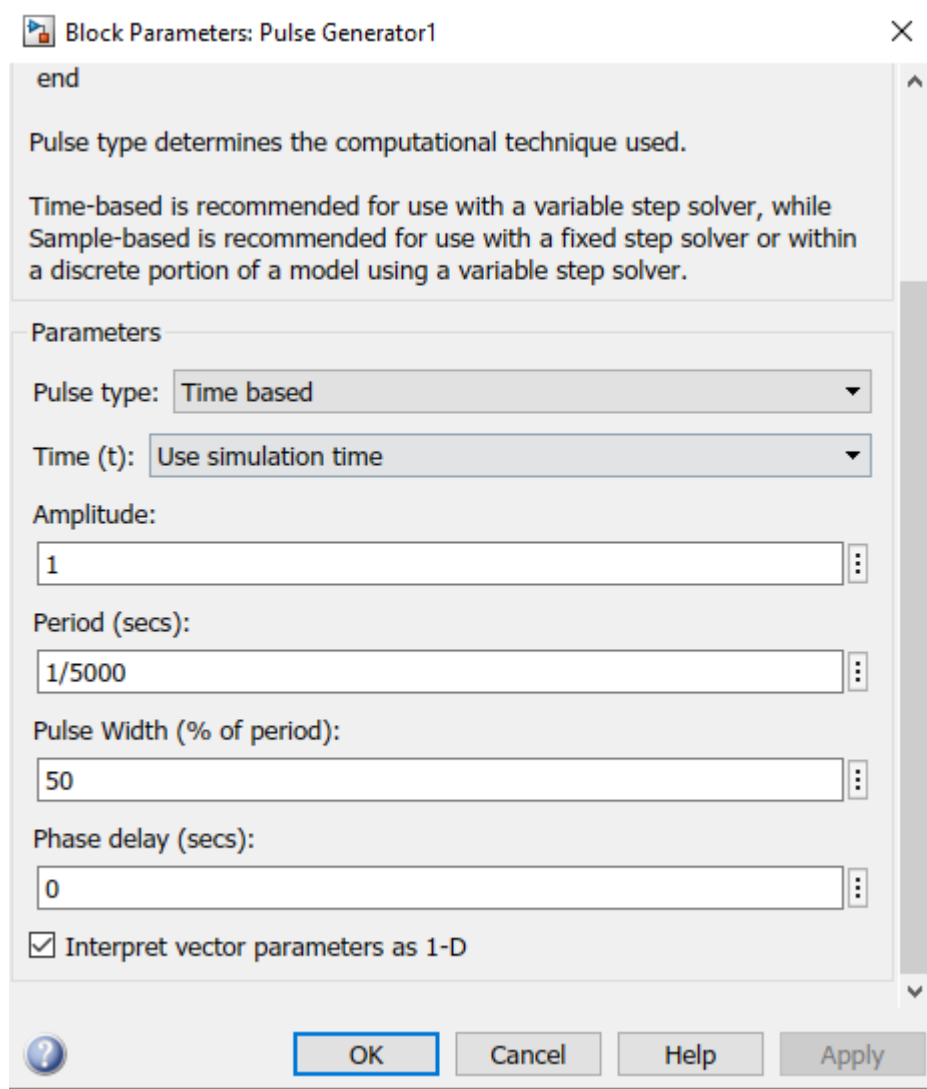
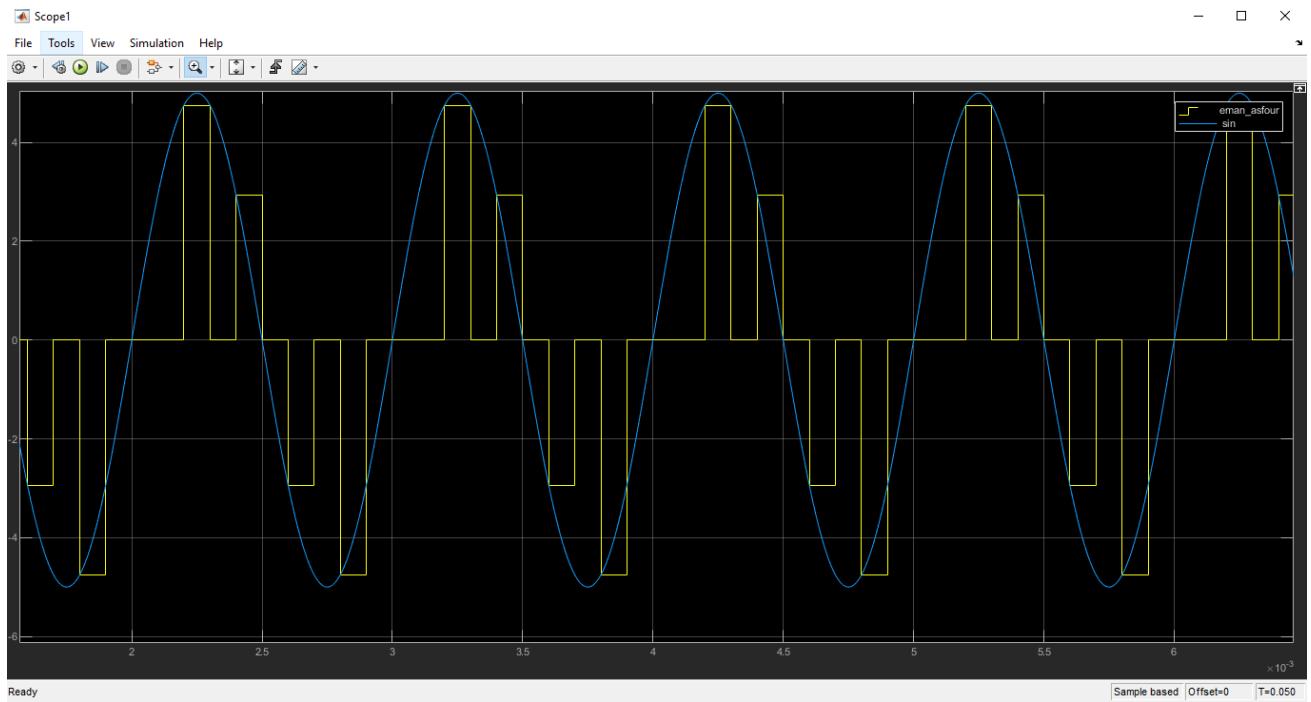


Figure 24: The Setting



**Figure 25: The Setting**





**Figure 26: The Output in Frequency domain**

change f and duty cycle