Student Name: Yolanda Chen Date: 09/22/2021
Lab partner(s): Praneel Jasinghe Lab No./Title: 4
Section # (GTA): 003 Yi Xie

Instructions:

- ***Submission must contain only original, individual, and current work.***
- ***After completion, save as PDF before submitting.***

Task 4.6.1

Objective

For this task, we are to change the triggering settings and see what difference it makes.

Results/Calculations

Step 2

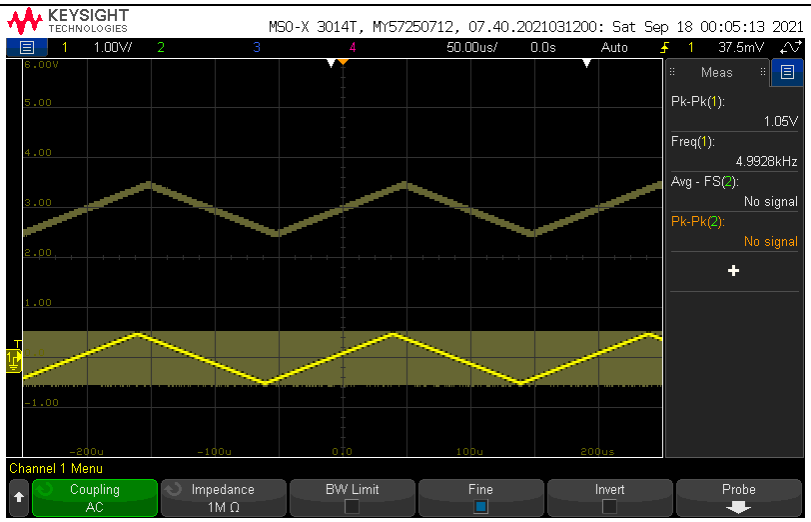

Figure 1: waveform captured using th persistence feature .

Step 4

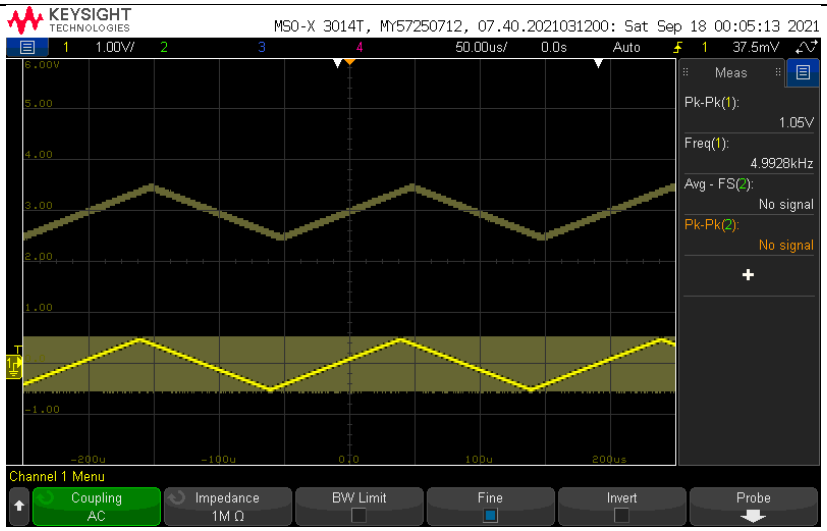

Figure 2: waveform showing both AC and DC coupled signals .

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Step 4

When we set the offset to 3, the wave is steady and has a clear line. When we turn it to negative 3, the wave is unstable and messy.

Step 5

The oscilloscope is able to maintain constant triggering when the triggering offset is changing because the triggering level is steady and therefore it can continue trigger the wave signals.

Conclusion

We got triangle waves and the persistence feature worked so we successfully captured the AC and DC coupled signal on one screen.

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Task 4.6.2

Objective

For this task, we are to download the code provided by the instructor, then capture the waves generated by the code.

Results/Calculations

Step 2

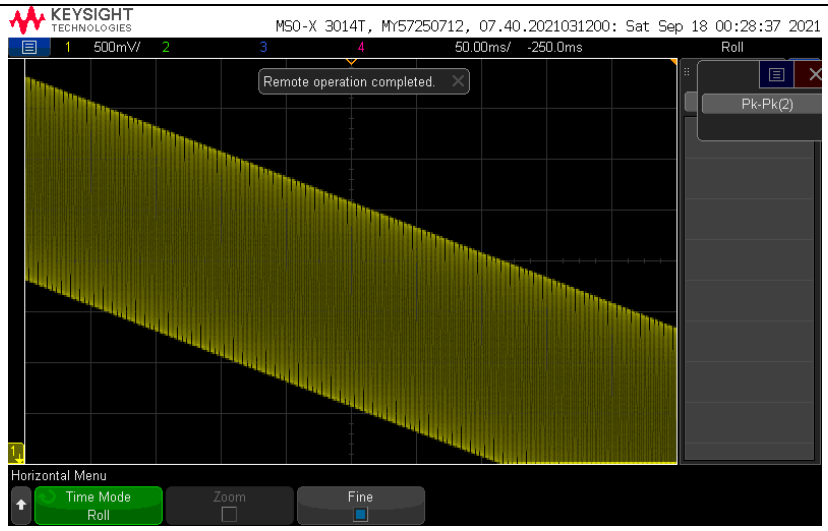

Figure 3: the slower part of the waveform .

Step 3

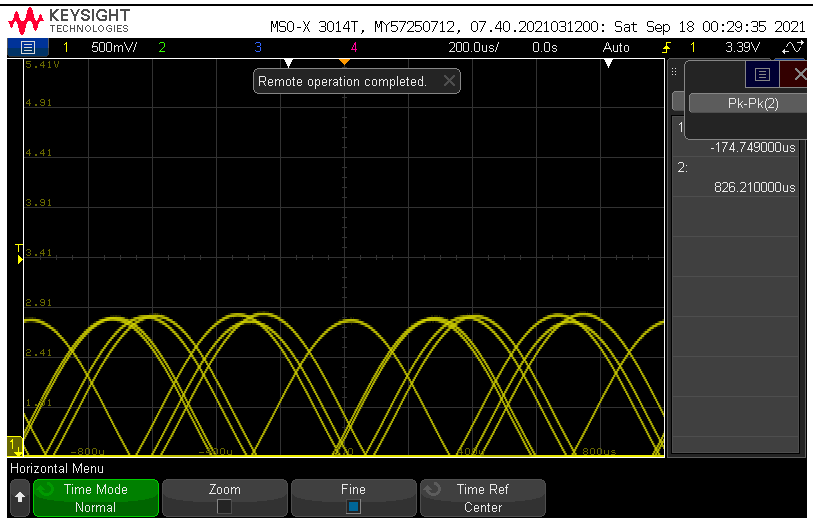

Figure 4: the faster part of the waveform .

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Step 4

Table I: trigger coupling mode, trigger level and hold off for slower and faster signal

	Trigger coupling mode	**Trigger level (V)**	**Hold-off (ns)**
Slower signal	DC	3.3	40
Faster signal	DC	3.3	40

Conclusion

We used Dc trigger coupling mode for the slower and faster signal part. We successfully generated a wave that consists of slower and faster parts so I think we did it correctly.

Task 4.6.3

Objective

For this task, we can change the trigger level, mode to generate different kinds of waveforms.

Results/Calculations

Step 3

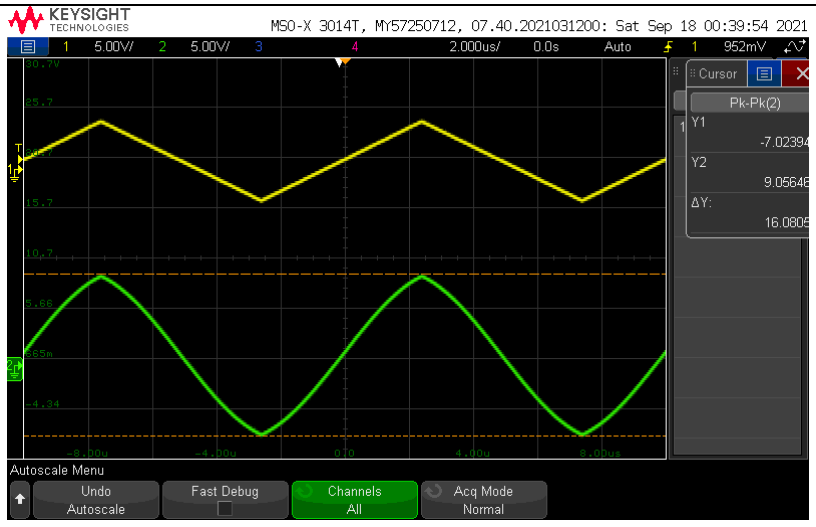

Figure 5: Waveforms for input1 and input 2 .

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Step 4

The display for the sine wave starts to oscillate slowly.

Step 5

The triangle wave starts moving as well.

Step 6

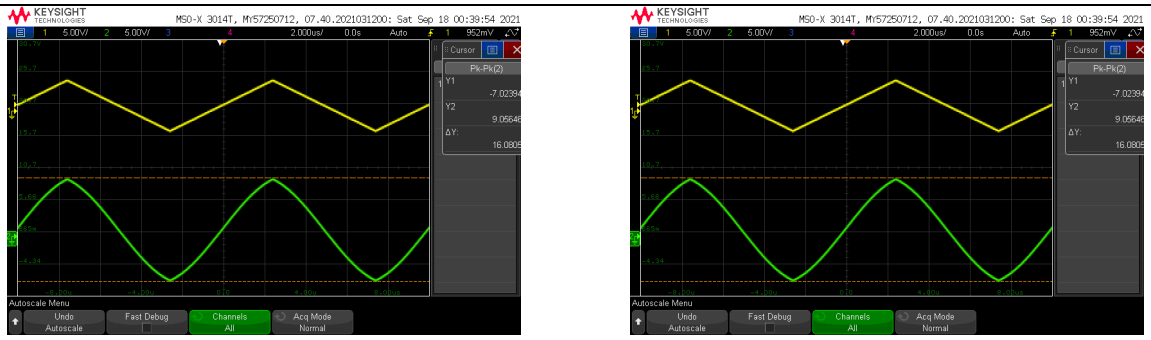

Figure 6: display for both waveforms .

For this task, we successfully generate the sine and triangle wave then matched them. When we make adjustments like changing the frequency or triggering level, the waveforms move as expected so I would say we did it correctly.

Task 4.6.4

Objective

This task we are to use a different wave in the function generator and then see its changes when we adjust the parameters.

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Results/Calculations

Step 2

No, the wave is almost a flat line. It's a messy flat line.

Step 3

We can now view the signal because now the triggering level less than the period.

Step 4

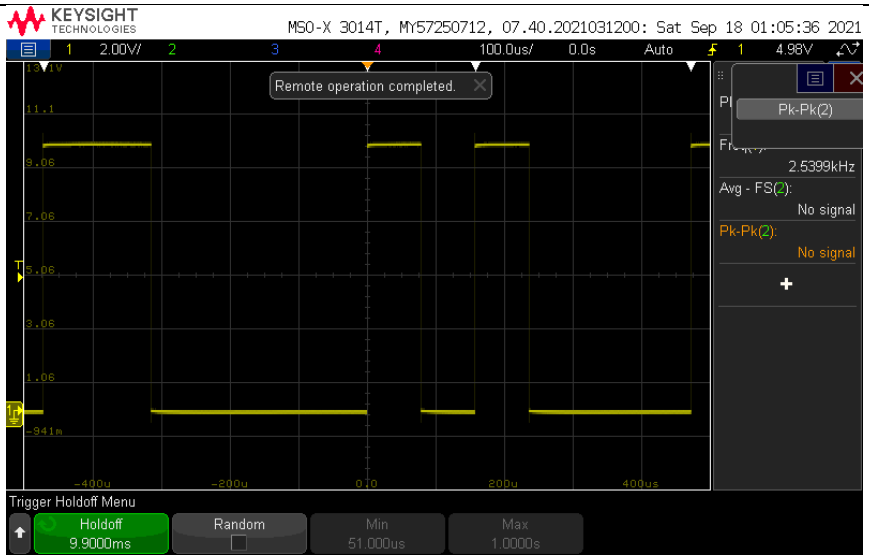

Figure 7: the first 10 pulses of the pseudorandom bit sequence. .

For this task, we got to see a different type of waveform and what it does. The concept is the same with sine and triangle waves though.

Conclusion

For this task, we got to see a different type of waveform and what it does. The concept is the same with sine and triangle waves though.

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Task 4.6.5

Objective

For this task, we are to generate very fast signals.

Results/Conclusions

Step 3-4

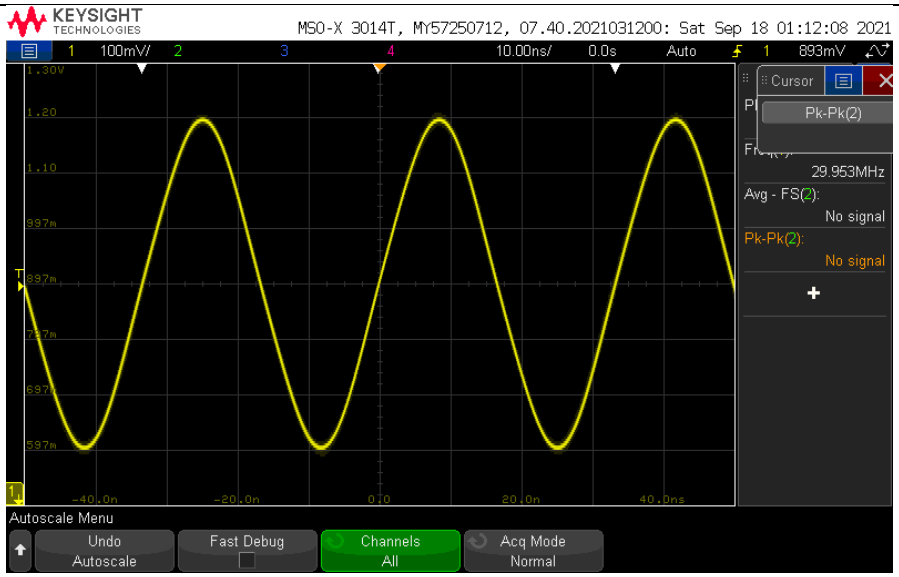

Figure 8: waveform for task 5 .

Table II : parameters for waveform

MEASUREMENT	
FREQUENCY	594.97MHz
AMPLITUDE	29.977mV
AVERAGE	898.04mV

Conclusion

For this task, even though we set the waveform to square wave, , the generated wave form is like a sine wave. I think it's because the signals are so fast that the signals slowly merges to form one smooth line instead of lines with distinct corners.