

Shri Ramdeobaba College of Engineering and Management, Nagpur-13.
Department of Electronics Engineering
Analog and Digital Communication Engineering Lab [ENP357]
Even Semester – 2023-24

Lab 07

SNR

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Batch / Roll No.	A1/12
Semester/Section:	6 th /A
Date of Performance:	5/04/2024
Date of Submission:	17/04/2024
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Lab-07

Aim: Computation of S/N and noise figure for the given noise model.

✓ **Apparatus used : Function generator, CRO**

✓ **Observations**

Observations

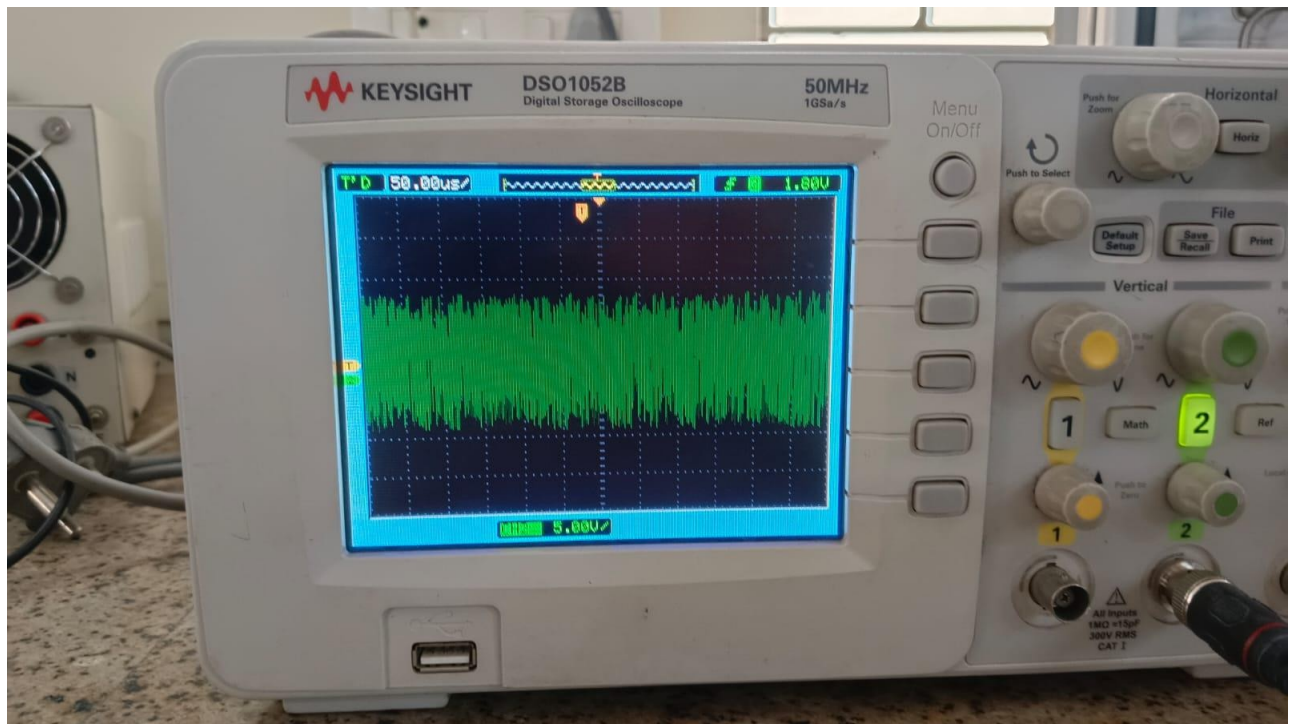
1. Observed Waveforms of different Noise patterns

2. Measurement for signal to noise ratio

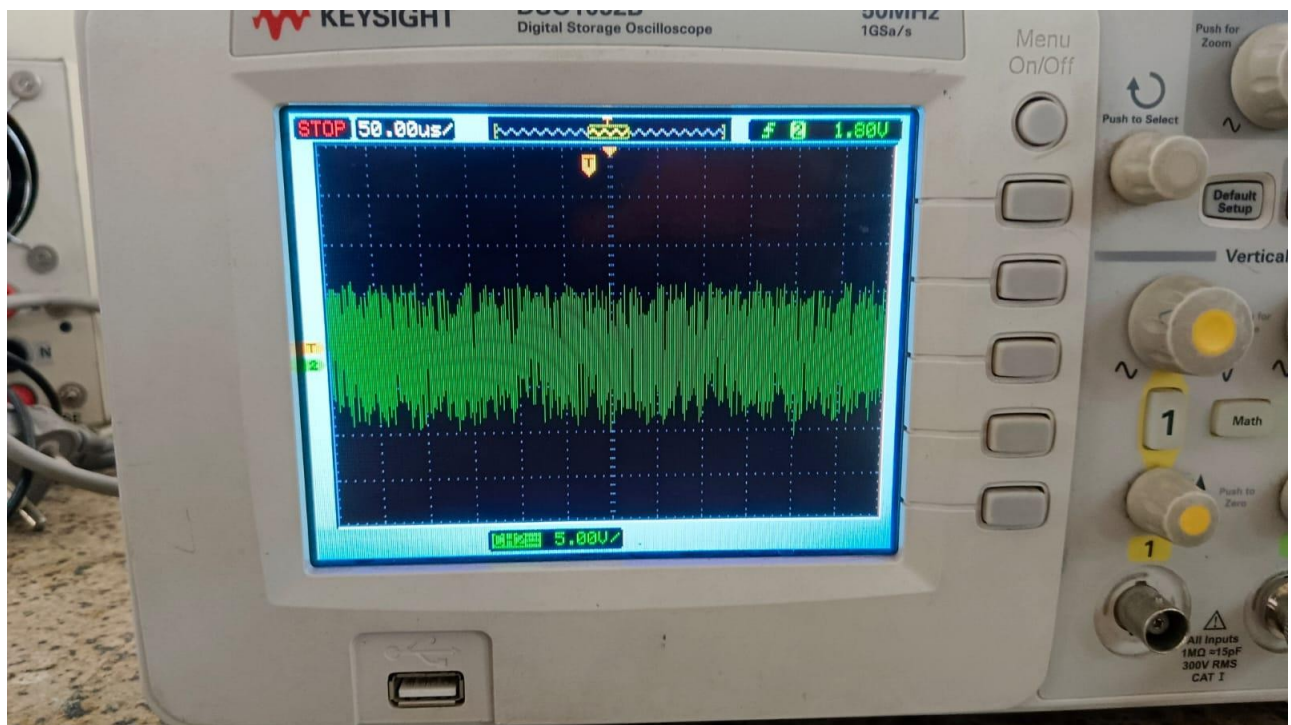
I/P Signal Type/ Freq. /amplitude x(t)	Type of noise	Noise Amplitude n (t) $V_{rms} = V_{max}/1.414$	Output in (dB) SNR $= 20 \log_{10} (\text{Signal RMS value}) / (\text{Noise RMS value})$
Random Data/1.2KH z/3Volts	White Noise	0 Volts(Vpp)	SNR = 5.46
Random Data/1.2KH z/3Volts	White Noise	1 Volts(Vpp)	SNR = 14.06
Random Data/1.2KH z/3Volts	White Noise	2.2 Volts(Vpp)	SNR = 9.26

3. Observed Waveforms of output signal y(t)

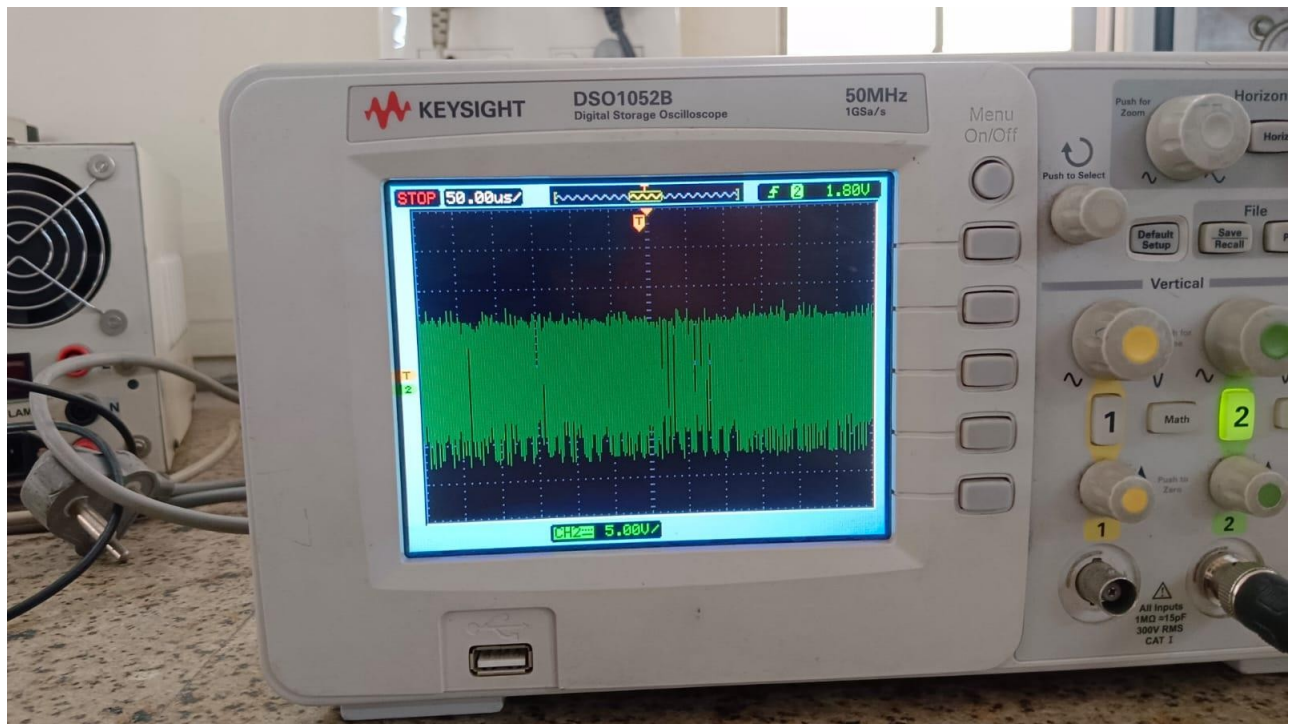
White noise



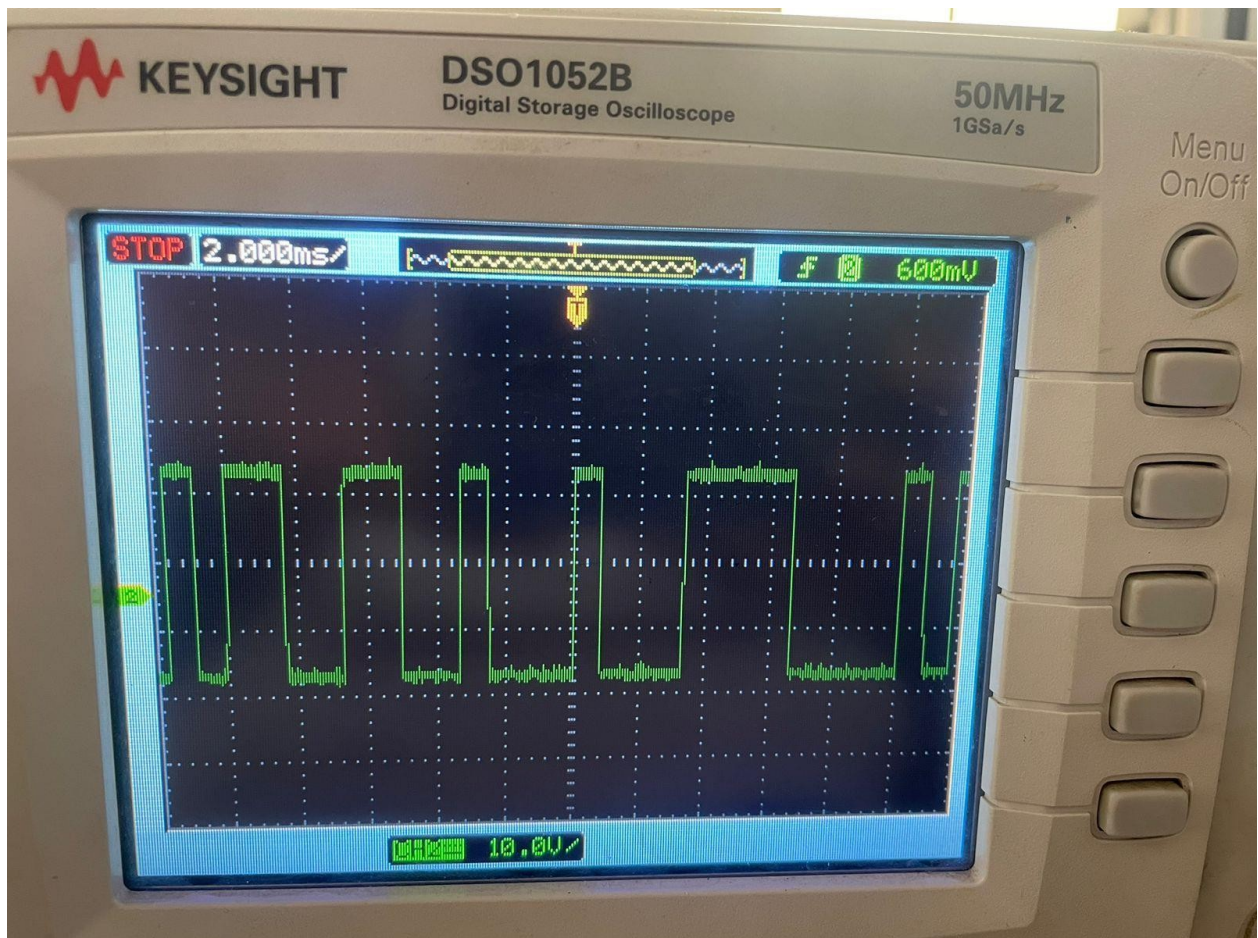
Additive white noise



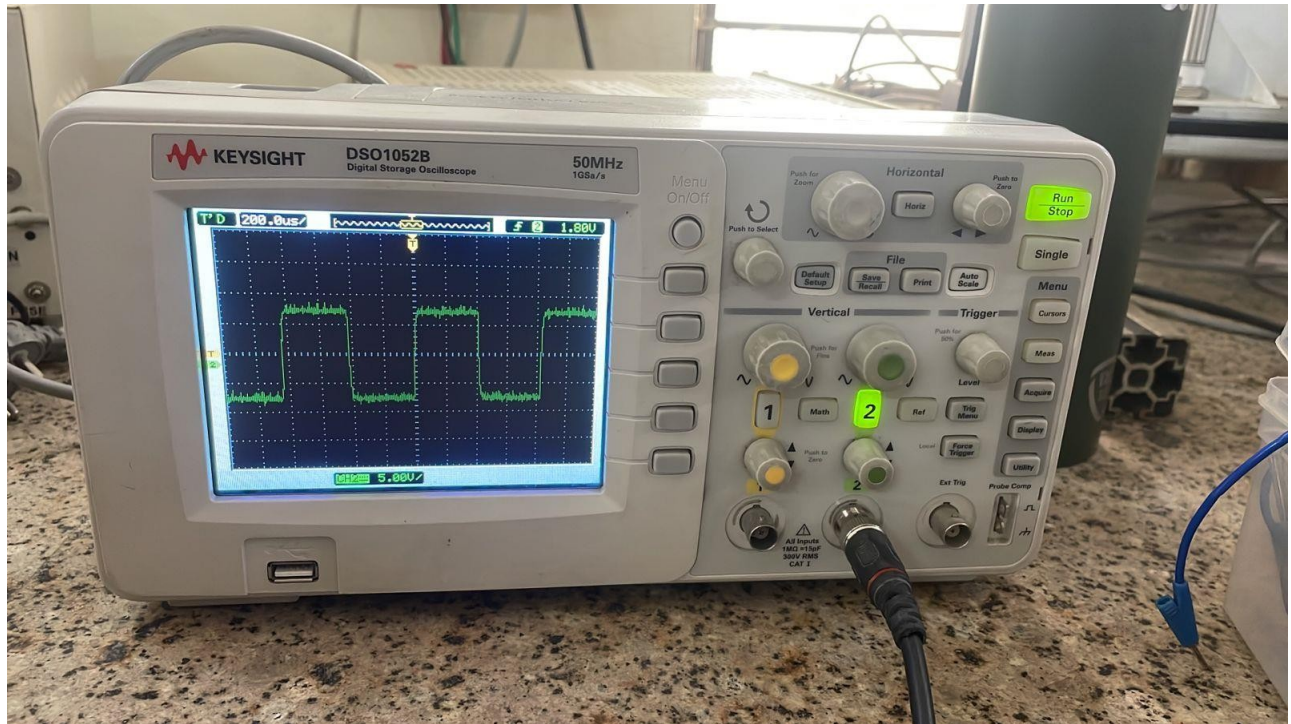
Periodic random noise



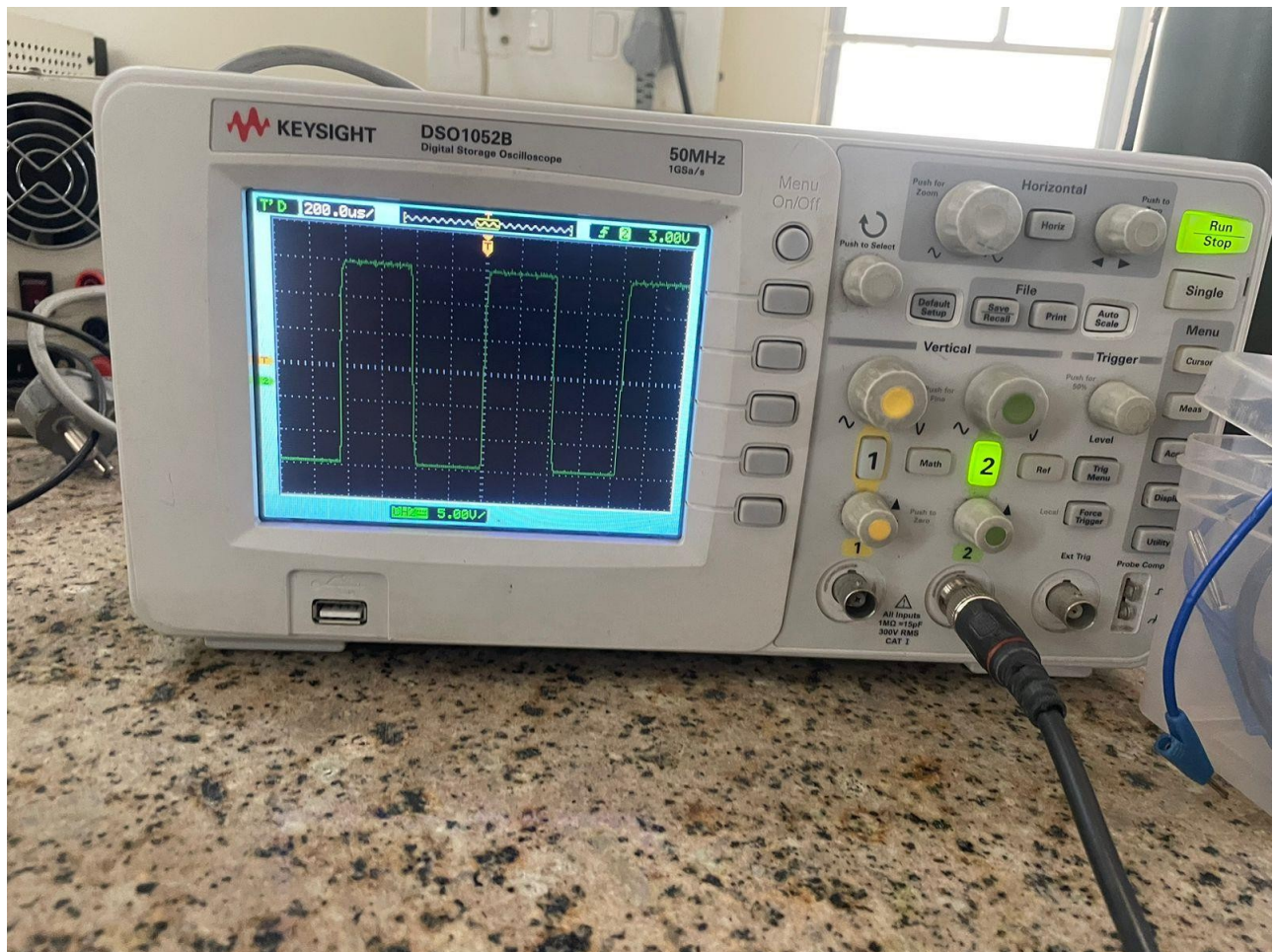
signal noise



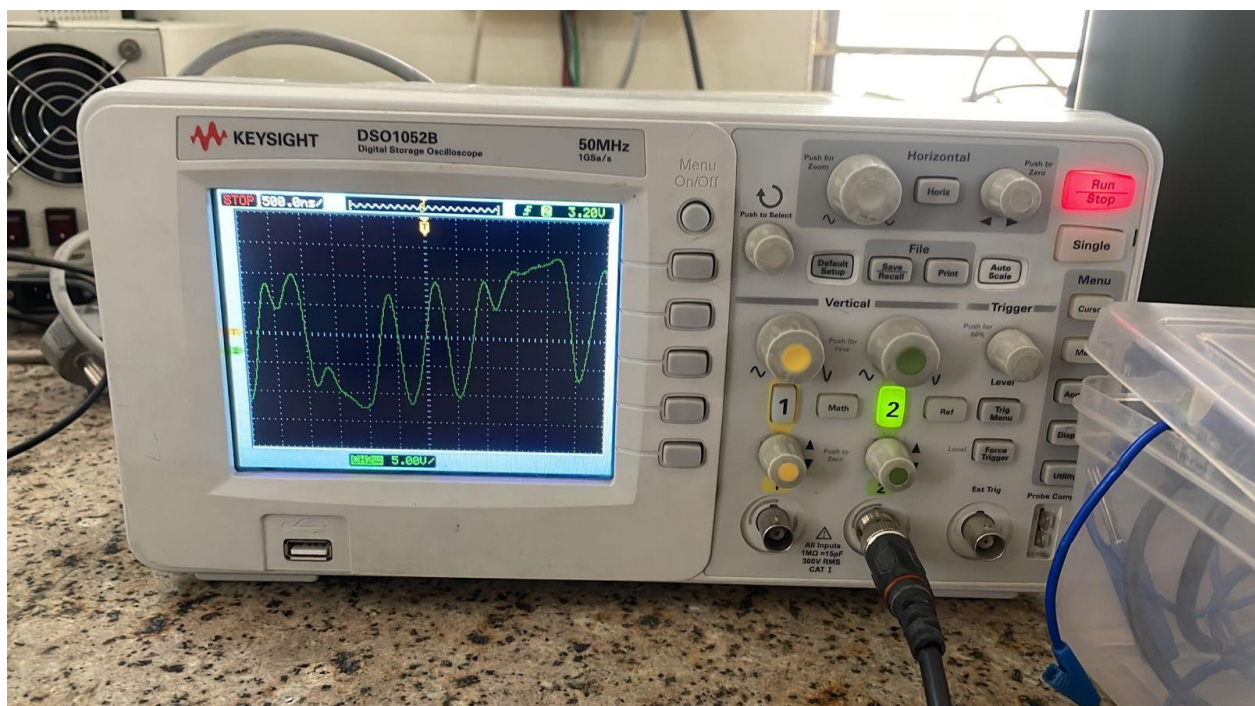
5V



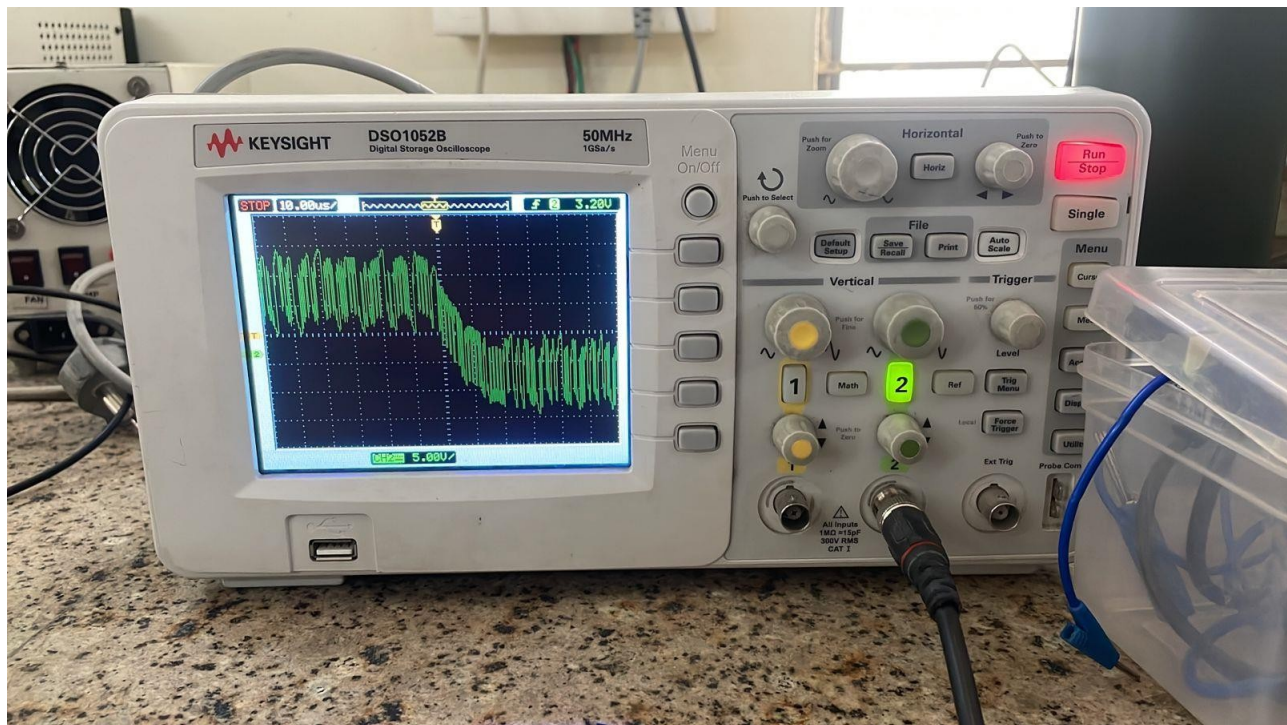
Square wave sample



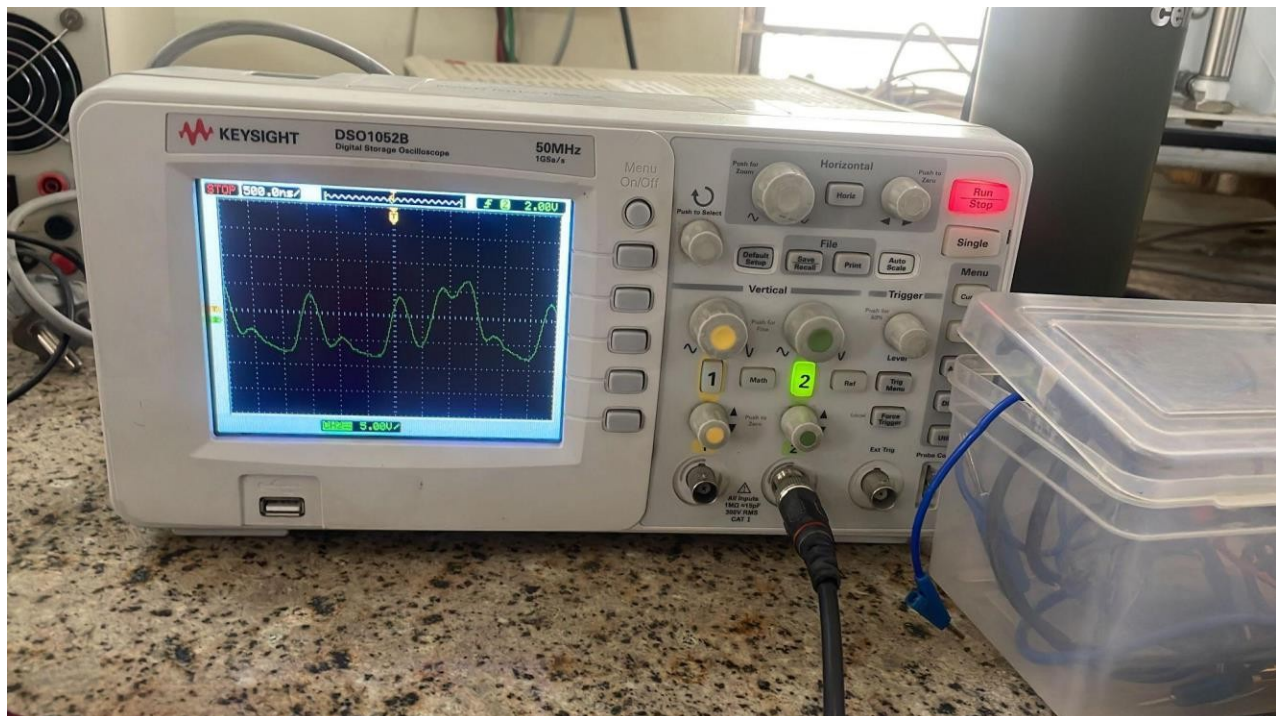
White noise



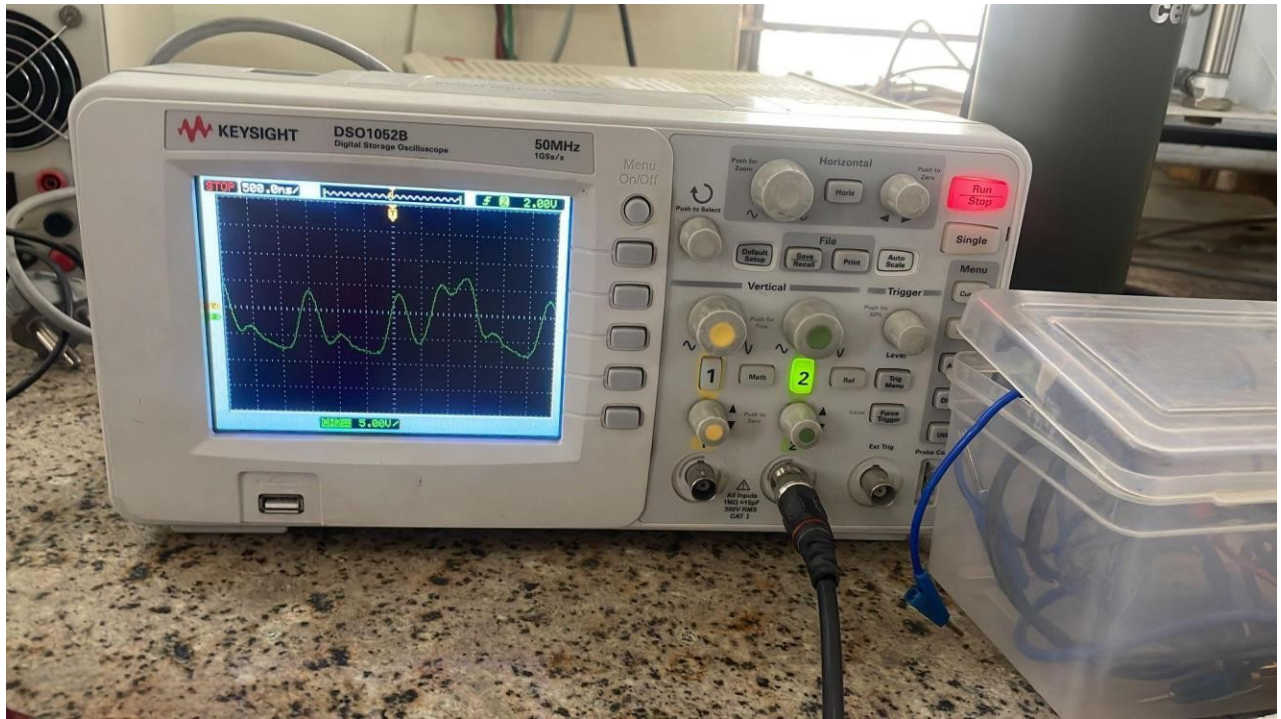
Addition



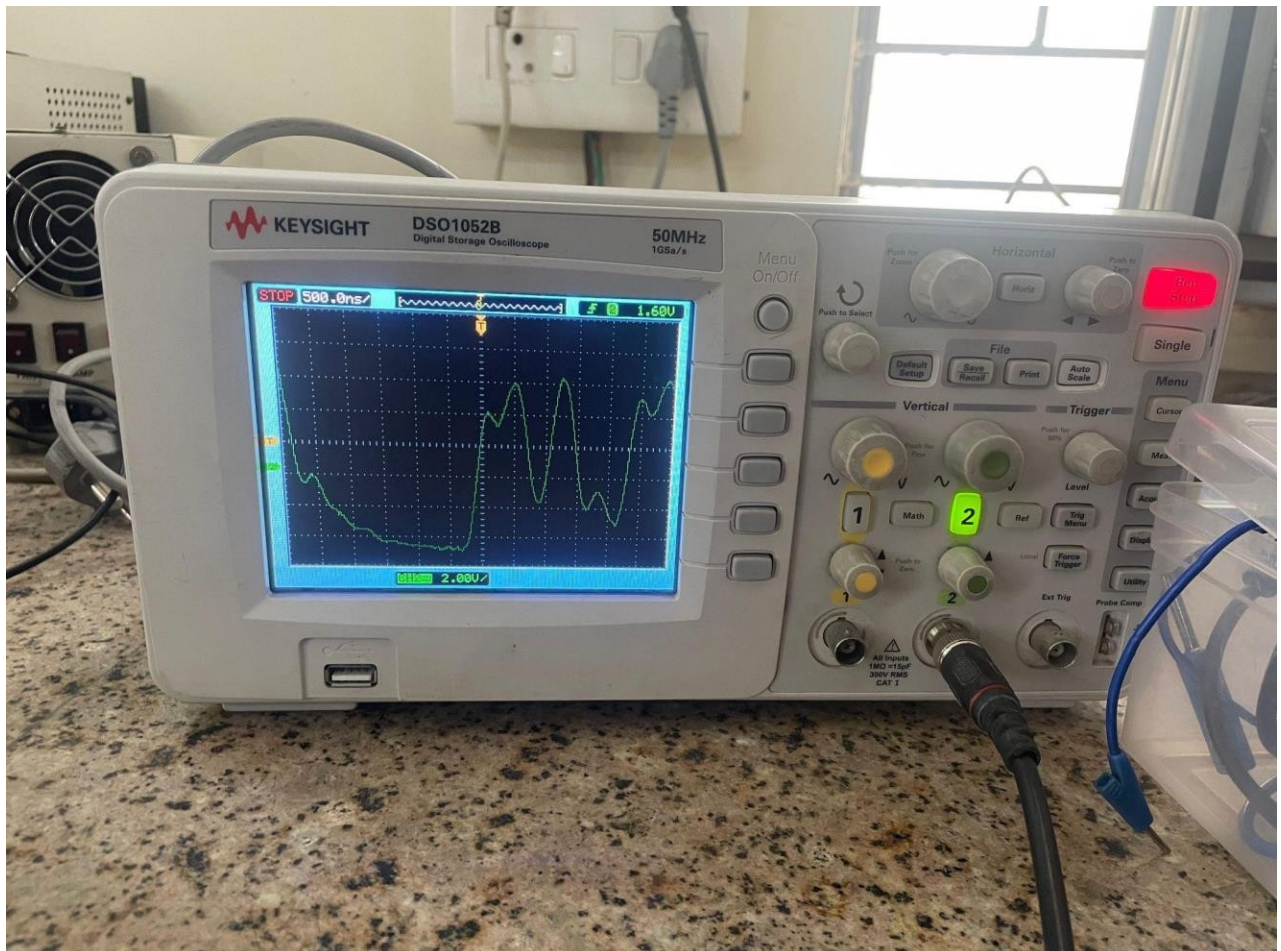
2 volt



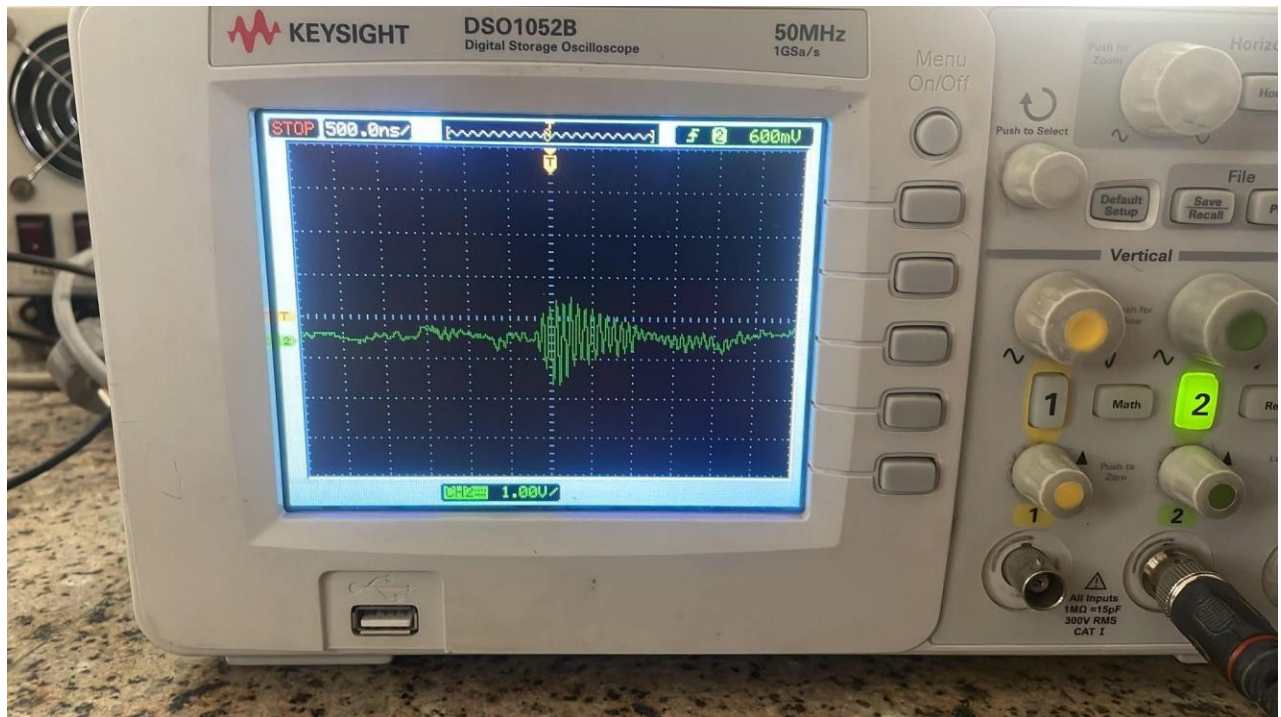
Signal + Noise



1.04



Noise



Calculations:

① Sample $\rightarrow 3V$ RMS = 2.12
Noise $\rightarrow 2V$ RMS = 1.414

$$SNR = 3.54$$

② Noise $\rightarrow 1.6$ RMS = 1.13
SNR $\rightarrow 5.46$

③ Noise $\rightarrow 0.6$ RMS = 0.42
SNR $\rightarrow 14.06$

④ Noise $\rightarrow 1.04$ RMS = 0.73
SNR $\rightarrow 9.26$

Conclusion:

We Use these metrics to optimize system design for better signal quality and sensitivity in practical applications.

Note: Save your lab report file as shown in the following example:

Batch_A1/B1/C1_Roll No-Lab-No

Eg. Batch-C1-21_Lab-04

Once you have done all the corrections submit your lab report in soft copy to your course instructor.