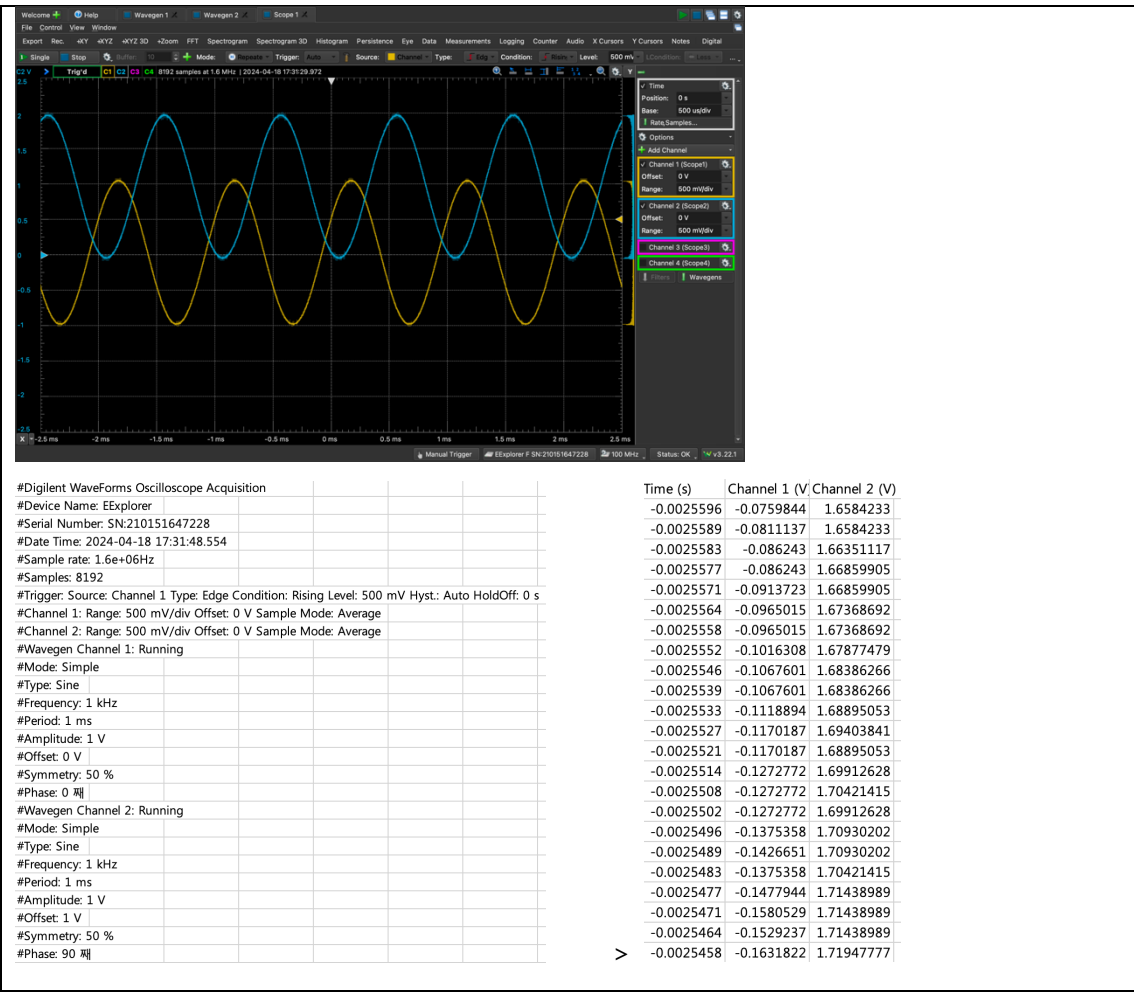


Lab07: 함수 발생기 및 오실로스코프

학번: 22200034

이름: 곽도현

1. Lab07\_02.csv파일을 excel에서 plot 하여 capture 후 아래에 첨부하고, 정현파 신호 조건을 이용하여 AWG1과 AWG2 두 신호에 대해  $V_{A1}$ ,  $f_1$ ,  $\Phi_1$ ,  $V_{offset1}$ ,  $V_{A2}$ ,  $f_2$ ,  $\Phi_2$ ,  $V_{offset2}$ 를 구하시오 (1점)



AWG1:  $v_1(t) = V_{A1} \cdot \sin(2\pi f_1 \cdot t + \phi_1) + V_{offset1}$

$V_{A1}$ : 1V

$f_1$ : 1kHz

$\Phi_1$ : 0°

$V_{offset1}$ : 0V

AWG2:  $v_2(t) = V_{A2} \cdot \sin(2\pi f_2 \cdot t + \phi_2) + V_{offset2}$

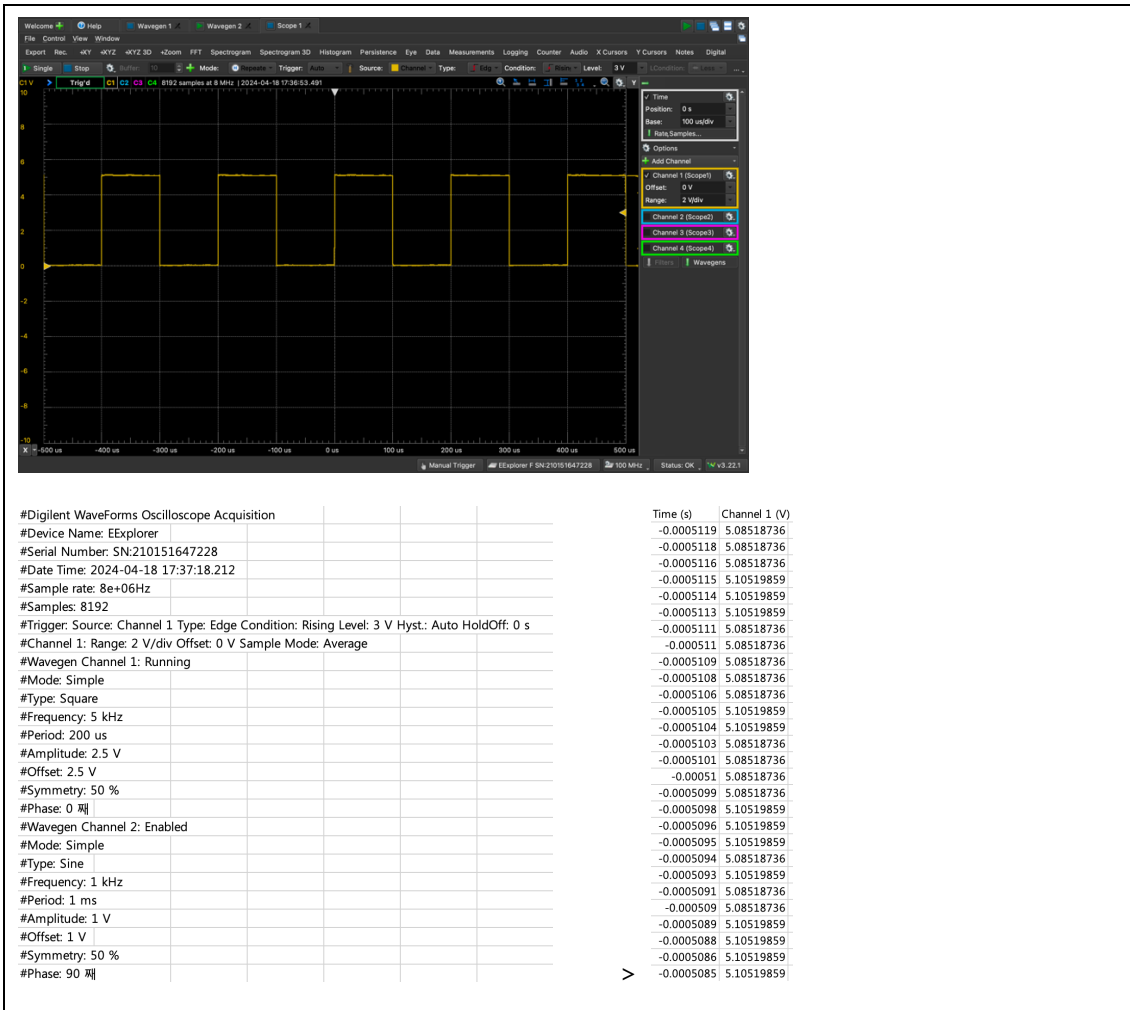
$V_{A2}$ : 1V

$f_2$ : 1kHz

$\Phi_2$ :  $90^\circ$  ( $2/\pi$ )

Voffset<sub>2</sub>: 1V

2. Lab07\_03.csv파일을 excel에서 plot 하여 capture 후 아래에 첨부하고, DC전압 (Tim average value)과 주기, duty cycle을 각각 구하시오 (1점)

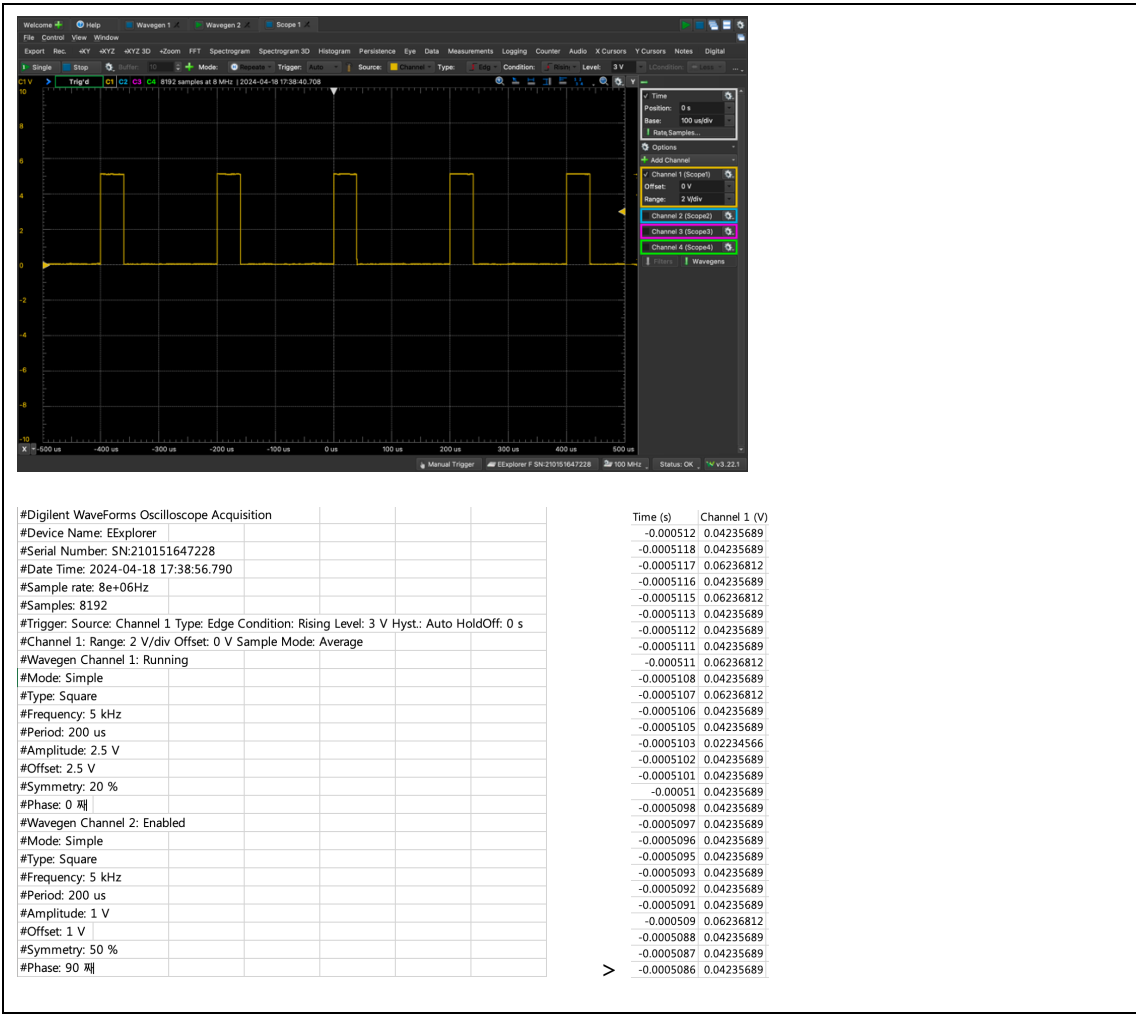


신호의 DC전압(V): 2.5V

신호의 주기(s): 0.2ms

Duty cycle (%): 50%

3. Lab07\_04.csv파일을 excel에서 plot 하여 capture 후 아래에 첨부하고, DC전압 (Tim average value)과 주기, duty cycle을 각각 구하시오 (1점)

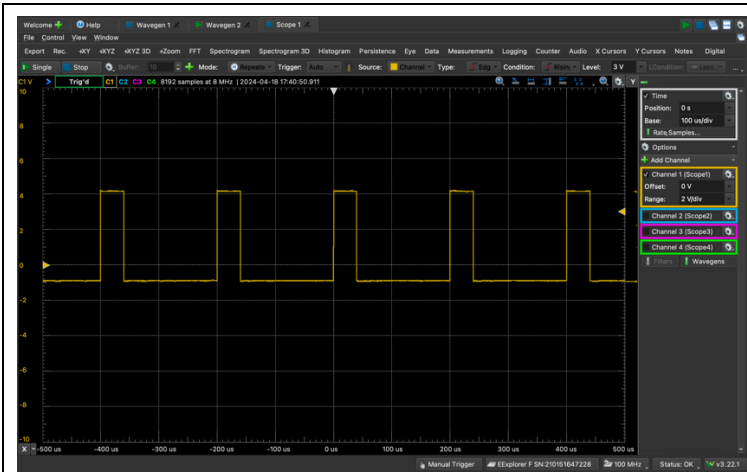


신호의 DC전압(V): 1V

신호의 주기(s): 0.2ms

Duty cycle (%): 20%

4. Lab07\_05.csv파일을 excel에서 plot 하여 capture 후 아래에 첨부하고, AC-coupling의 의미를 설명하시오 (Lab07\_04.csv에서 알아낸 DC전압을 이용하여 설명하시오) (1점)



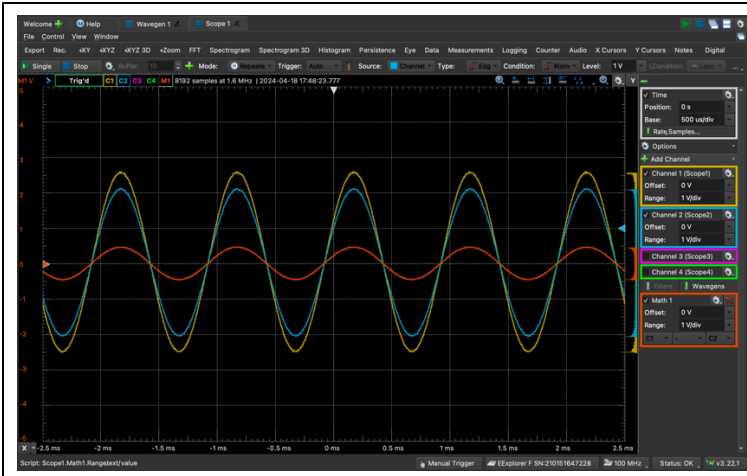
#Diligent WaveForms Oscilloscope Acquisition

#Device Name: EExplorer  
#Serial Number: SN:210151647228  
#Date Time: 2024-04-18 17:41:18.550  
#Sample rate: 8e+06Hz  
#Samples: 8192  
#Trigger: Source: Channel 1 Type: Edge Condition: Rising Level: 3 V Hyst: Auto HoldOff: 0 s  
#Channel 1: Range: 2 V/div Offset: 0 V Sample Mode: Average  
#Wavegen Channel 1: Running  
#Mode: Simple  
#Type: Square  
#Frequency: 5 kHz  
#Period: 200 us  
#Amplitude: 2.5 V  
#Offset: 2.5 V  
#Symmetry: 20 %  
#Phase: 0 페  
#Wavegen Channel 2: Enabled  
#Mode: Simple  
#Type: Square  
#Frequency: 5 kHz  
#Period: 200 us  
#Amplitude: 1 V  
#Offset: 1 V  
#Symmetry: 50 %  
#Phase: 90 페

Time (s) Channel 1 (V)

-0.0005119 -0.9381935  
-0.0005118 -0.9181822  
-0.0005117 -0.9381935  
-0.0005116 -0.9181822  
-0.0005114 -0.9181822  
-0.0005113 -0.898171  
-0.0005112 -0.9181822  
-0.0005111 -0.9181822  
-0.0005109 -0.9181822  
-0.0005108 -0.9381935  
-0.0005107 -0.9181822  
-0.0005106 -0.9181822  
-0.0005104 -0.9181822  
-0.0005103 -0.898171  
-0.0005102 -0.9181822  
-0.0005101 -0.9181822  
-0.0005099 -0.9181822  
-0.0005098 -0.9181822  
-0.0005097 -0.9181822  
-0.0005096 -0.898171  
-0.0005094 -0.898171  
-0.0005093 -0.9181822  
-0.0005092 -0.9181822  
-0.0005091 -0.9181822  
-0.0005089 -0.9181822  
-0.0005088 -0.9181822  
-0.0005087 -0.898171  
> -0.0005086 -0.9181822

5. Lab07\_06.csv파일을 excel에서 plot 하여 capture 후 아래에 첨부하시오 (1점)



|   |  |  |  |  |            |               |               |            |
|---|--|--|--|--|------------|---------------|---------------|------------|
| #Digilent WaveForms Oscilloscope Acquisition  |  |  |  |  | Time (s)   | Channel 1 (V) | Channel 2 (V) | Math 1 (V) |
| #Device Name: EExplorer   |  |  |  |  | -0.0025596 | -0.2378012    | -0.1855199    | -0.0522813 |
| #Serial Number: SN:210151647228   |  |  |  |  | -0.0025589 | -0.2378012    | -0.1972208    | -0.0405804 |
| #Date Time: 2024-04-18 17:48:33.951   |  |  |  |  | -0.0025583 | -0.2482419    | -0.2089217    | -0.0393202 |
| #Sample rate: 1.6e+06Hz   |  |  |  |  | -0.0025577 | -0.2691233    | -0.2206225    | -0.0485007 |
| #Samples: 8192  |  |  |  |  | -0.0025571 | -0.2691233    | -0.2206225    | -0.0485007 |
| #Trigger: Source: Channel 2 Type: Edge Condition: Rising Level: 1 V Hyst: Auto HoldOff: 0 s |  |  |  |  | -0.0025564 | -0.279564     | -0.2323234    | -0.0472406 |
| #Channel 1: Range: 1 V/div Offset: 0 V Sample Mode: Average                                 |  |  |  |  | -0.0025558 | -0.3004453    | -0.2440243    | -0.0564211 |
| #Channel 2: Range: 1 V/div Offset: 0 V Sample Mode: Average                                 |  |  |  |  | -0.0025552 | -0.3004453    | -0.2440243    | -0.0564211 |
| #Math 1: Function: C1 - C2  |  |  |  |  | -0.0025546 | -0.310886     | -0.2440243    | -0.0668617 |
| #Wavegen Channel 1: Running   |  |  |  |  | -0.0025539 | -0.3213267    | -0.2557251    | -0.0656016 |
| #Mode: Simple   |  |  |  |  | -0.0025533 | -0.3317674    | -0.267426     | -0.0643414 |
| #Type: Sine   |  |  |  |  | -0.0025527 | -0.342208     | -0.267426     | -0.074782  |
| #Frequency: 1 kHz   |  |  |  |  | -0.0025521 | -0.3526487    | -0.2908277    | -0.061821  |
| #Period: 1 ms   |  |  |  |  | -0.0025514 | -0.3630894    | -0.2908277    | -0.0722617 |
| #Amplitude: 2.5 V   |  |  |  |  | -0.0025508 | -0.3630894    | -0.3025286    | -0.0605608 |
| #Offset: 0 V  |  |  |  |  | -0.0025502 | -0.3839708    | -0.3142295    | -0.0697413 |
| #Symmetry: 50 %   |  |  |  |  | -0.0025496 | -0.3839708    | -0.3142295    | -0.0697413 |
| #Phase: 0 °   |  |  |  |  | -0.0025489 | -0.3944115    | -0.3142295    | -0.080182  |
|   |  |  |  |  | -0.0025483 | -0.4048521    | -0.3376312    | -0.0672209 |
|   |  |  |  |  | -0.0025477 | -0.4152928    | -0.3376312    | -0.0776616 |
|   |  |  |  |  | -0.0025471 | -0.4257335    | -0.3493321    | -0.0764014 |
|   |  |  |  |  | -0.0025464 | -0.4466149    | -0.3610329    | -0.0855819 |
|   |  |  |  |  | -0.0025458 | -0.4466149    | -0.3610329    | -0.0855819 |
|   |  |  |  |  | -0.0025452 | -0.4570555    | -0.3727338    | -0.0843217 |