南京邮电大学
Nanjing University of Posts and Telecommunications

物理实验教学中心

Physics Experiment Center

Website: https://sourceforge.net/projects/phy-njupt/files/2017Spring/

Oscilloscope

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NJUPT

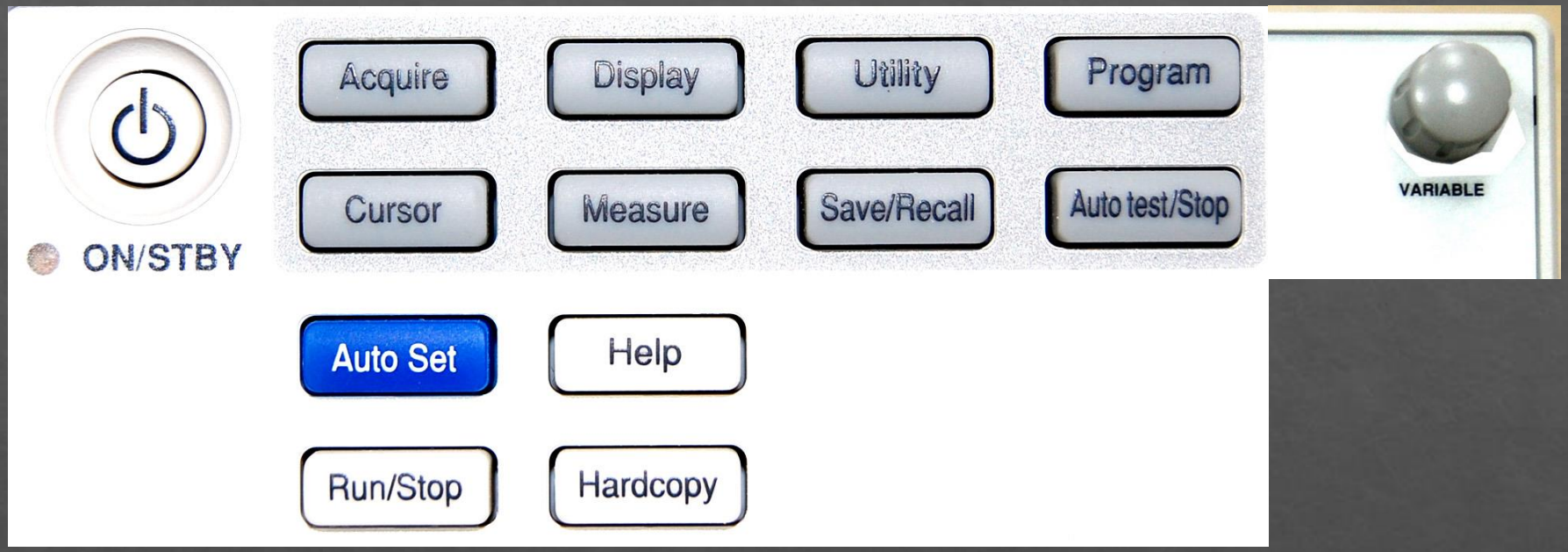
Experimental Goals

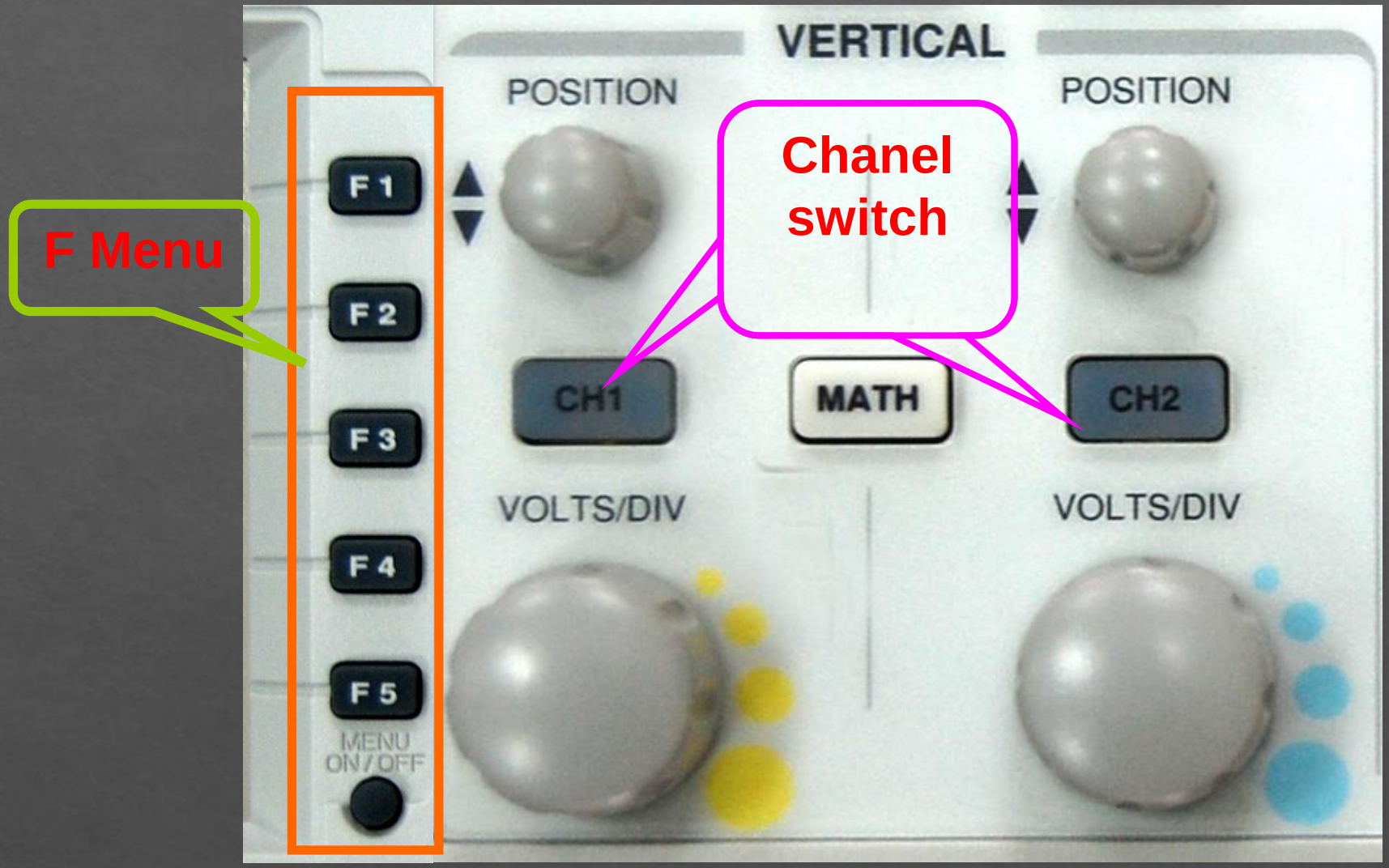
1. Adjustment and use of oscilloscope.

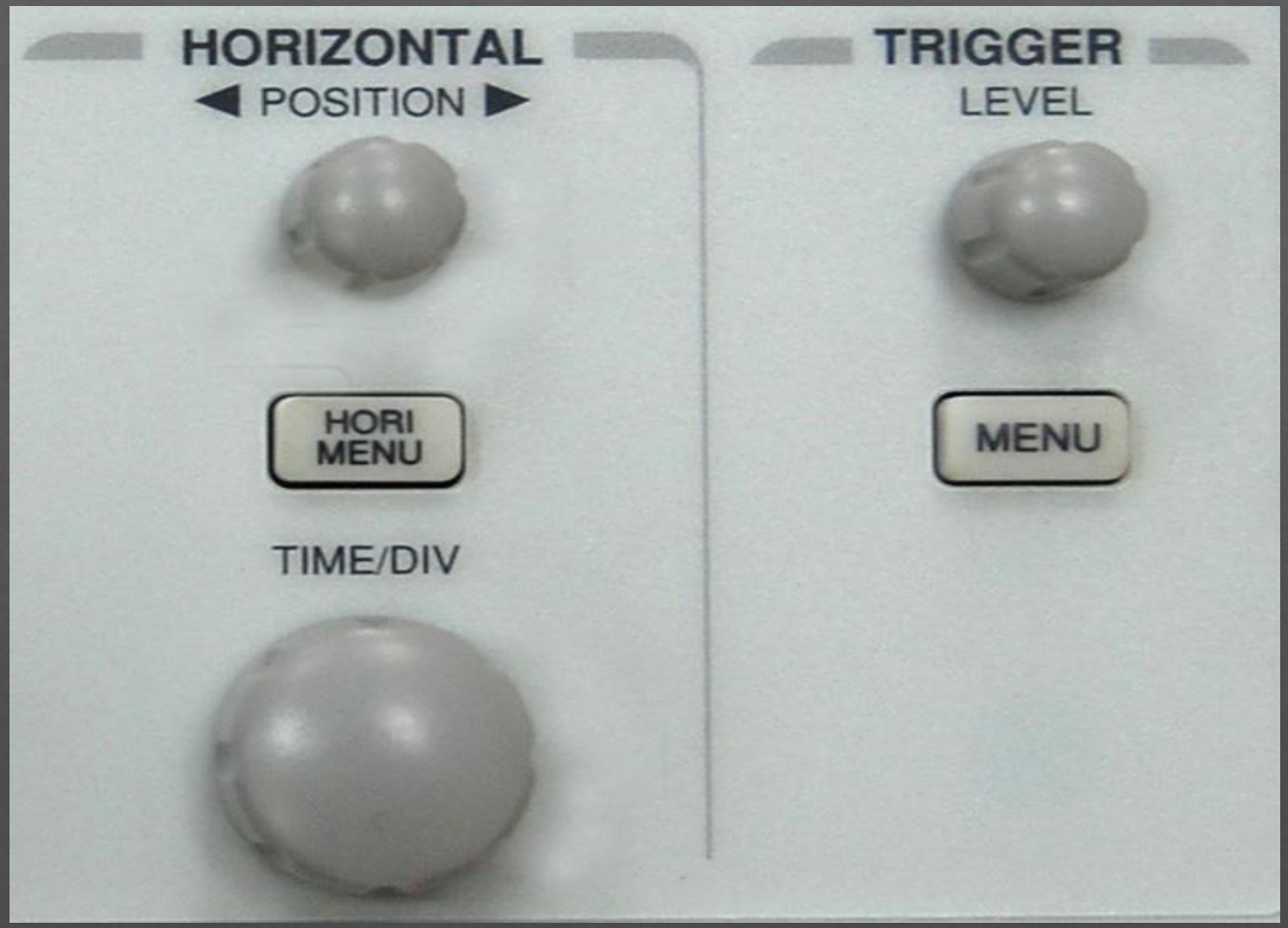
2. Learn to use oscilloscope to observe voltage waveform.

3. Observation of Lissajous figures.

GDS-2062 Oscilloscope


ON/STBY
Acquire
Display
Utility
Program
Cursor
Measure
Save/Recall
Auto test/Stop
Auto Set
Help
Run/Stop
Hardcopy
VARIABLE


F Menu
Chanel switch
VERTICAL
POSITION
POSITION
F1
F2
F3
F4
F5
CH1
MATH
CH2
VOLTS/DIV
VOLTS/DIV
MENU
ON / OFF


HORIZONTAL
◀ POSITION ▶
HORI
MENU
TIME/DIV
TRIGGER
LEVEL
MENU

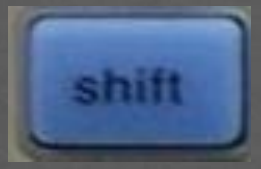
F05A Signal generator

Frequency

Amplitude

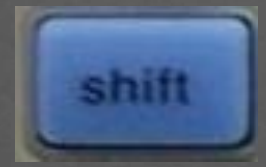
kHz Hz

Reset：



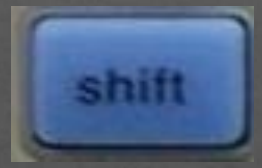
+8

Chanel A：



+

Chanel B：



+

Contents and Steps:

1. Settings of Signal generator:

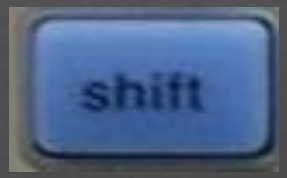
(1) Set the frequency : 

+ value + unit

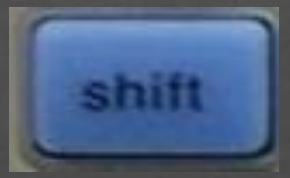
(2) Set the voltage: 

+ value + unit

(3) Set the phase difference between channel A & B :



+ 

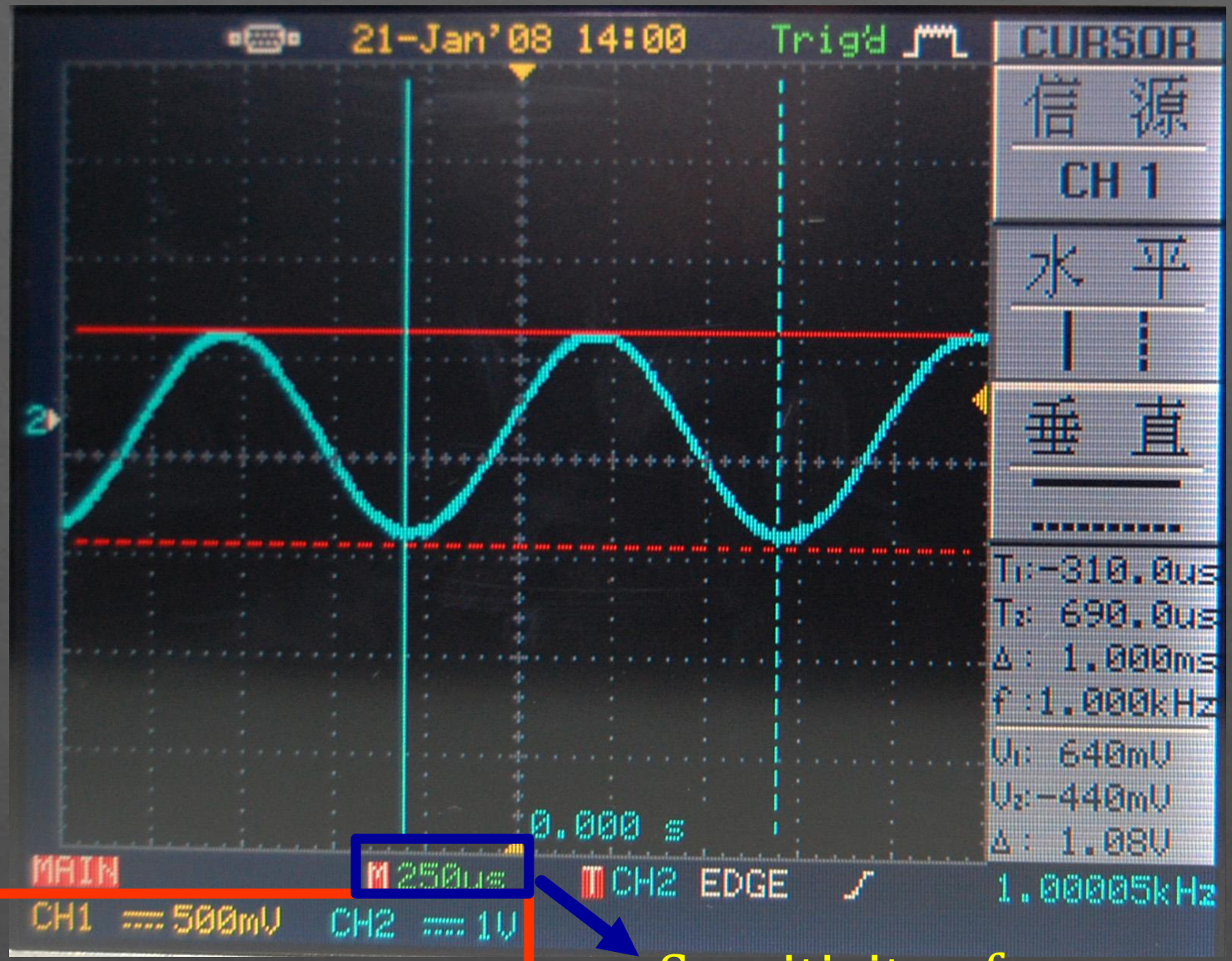
value + 

2. Observe voltage waveform on Oscilloscope

(1)Power on;

(2) Open the channels (corresponding lights on), press 

or adjust the VOLTS/DIV &TIME/DIV buttons, observe the voltage waveform.


21-Jan'08 14:00
Trig'd
CURSOR
信 源
CH 1
水 平
垂 直
T1:-310.0us
T2: 690.0us
Δ: 1.000ms
f :1.000kHz
V1: 640mV
V2:-440mV
Δ: 1.08V
0.000 s
MAIN
M 250us
CH2 EDGE
1.00005kHz
CH1 500mV
CH2 1V
Sensitivity of Y axis (voltage)
Sensitivity of x axis (time)

3. Lissajous figures

(1) Turn on two channels;

(2) 

+ F5 On oscilloscope

Switch to channel B: 

+ 

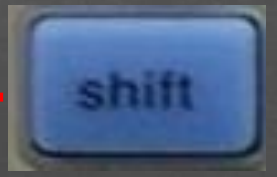
Switch to channel A: 

+ 

On signal generator

Phase differences:

On signal generator

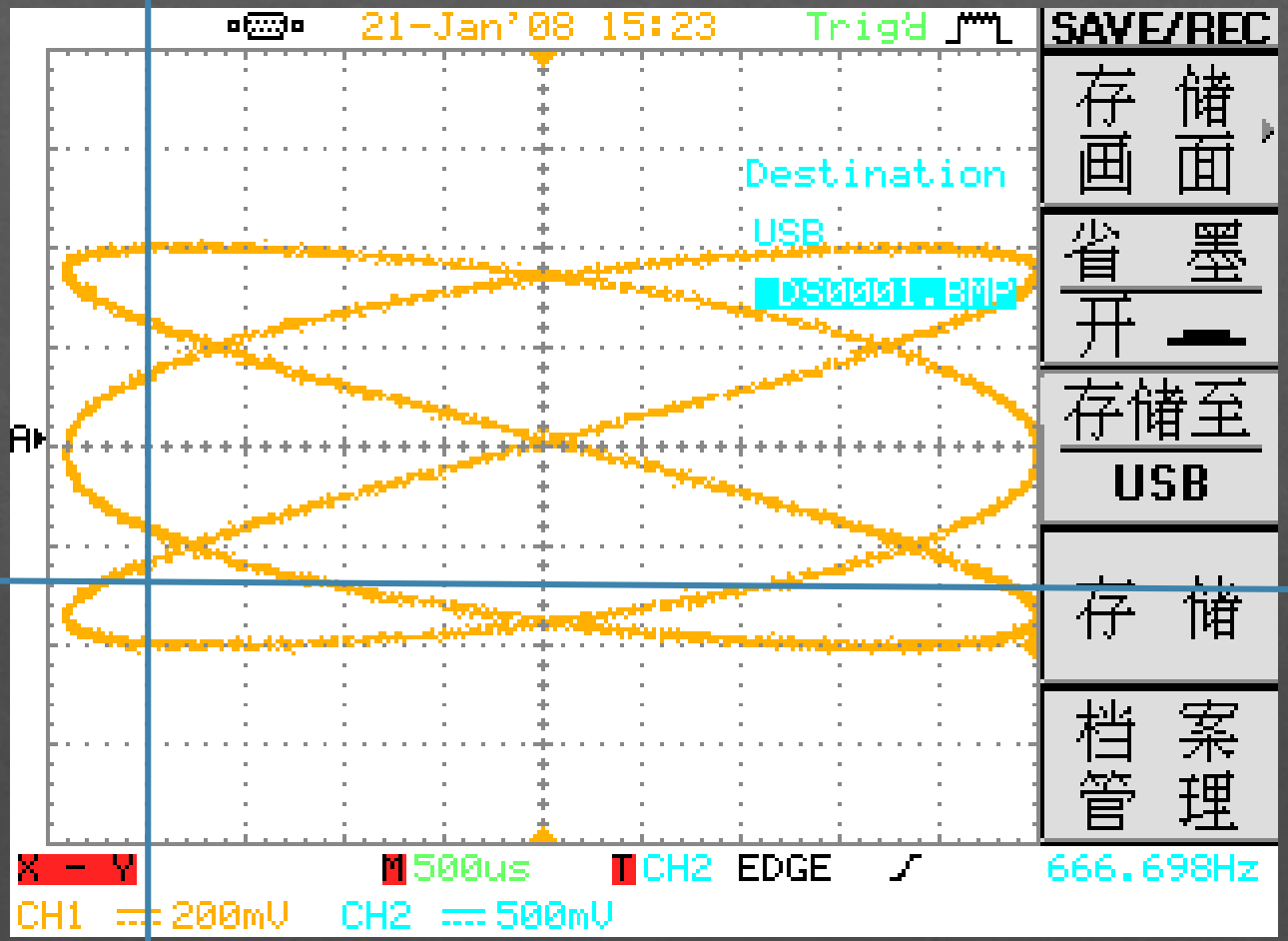
value 

Lissajous figures

Ny=6;

Nx:Ny=2:3;

Fx:Fy=Ny:Nx=3:2



Nx=4;

TABLEs

$$U_p=\frac{1}{2}U_{p-p}=\sqrt{2}U$$

1. The voltage of sinusoidal signals

NO.	Voltage (V)	Sensitivity of Y axis (V)	D_y	U_{p-p}(v)	U_p(v)	U (v)
1	2.5					
2	3.0					
3	4.5					
4	5.0					

2. The period of sinusoidal signals

NO.	f（H_Z）	Sensitivity of X axis (ms)	D_x	T (ms)
1	400			
2	2000			
3	8000			
4	15000			

3. Lissajous figures

f_x= 3 kHz, f_y=6 kHz

Phase diff.	0º	90º	180º	270º	360º
Lissajous figures					

END