

Waveform Analysis

Overview :

Waveform analysis software aims to analyze waveform data and playback the record data of control software. It can check the waveform exported from the device terminal and control software and analyze parameter measurement, filtering and FFT. It can also convert inner waveform document to CSV document in order to support the third software like MATLAB\EXCEL.

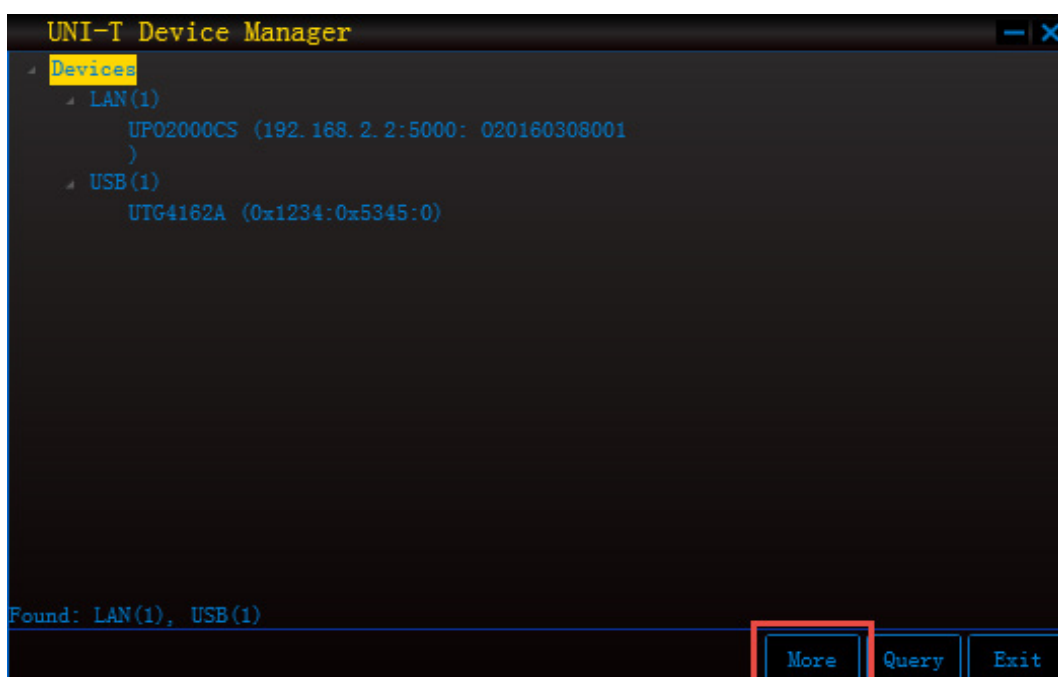
Only one can be selected between waveform analysis and waveform record playback, that is, they are mutually exclusive.

Start :

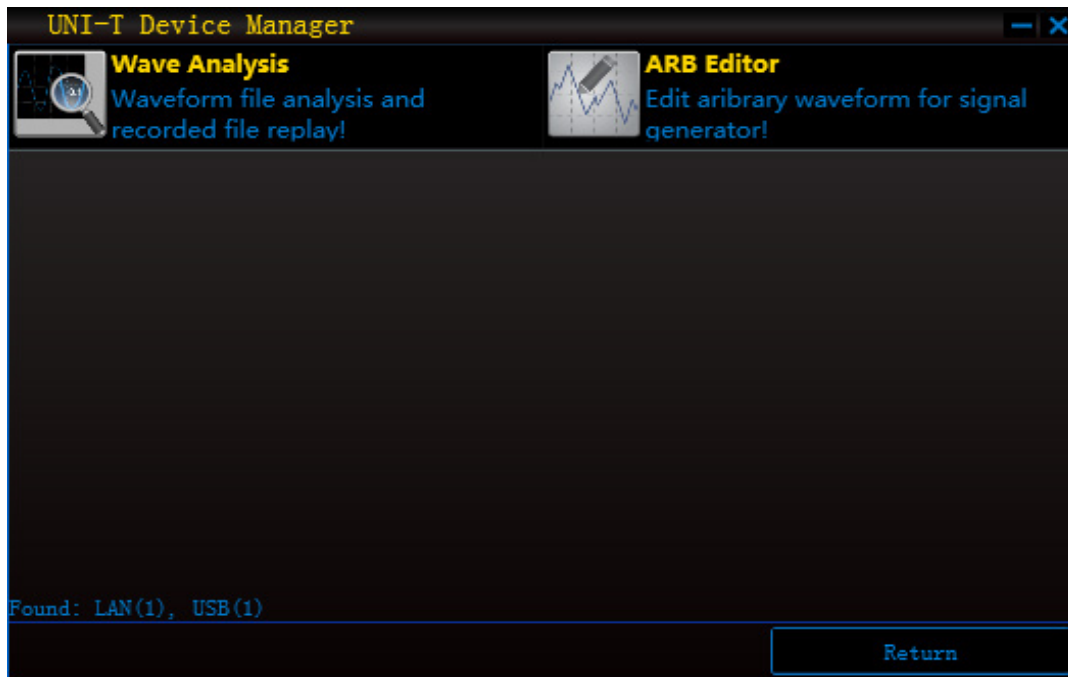
- 1、 Start Devices Manager



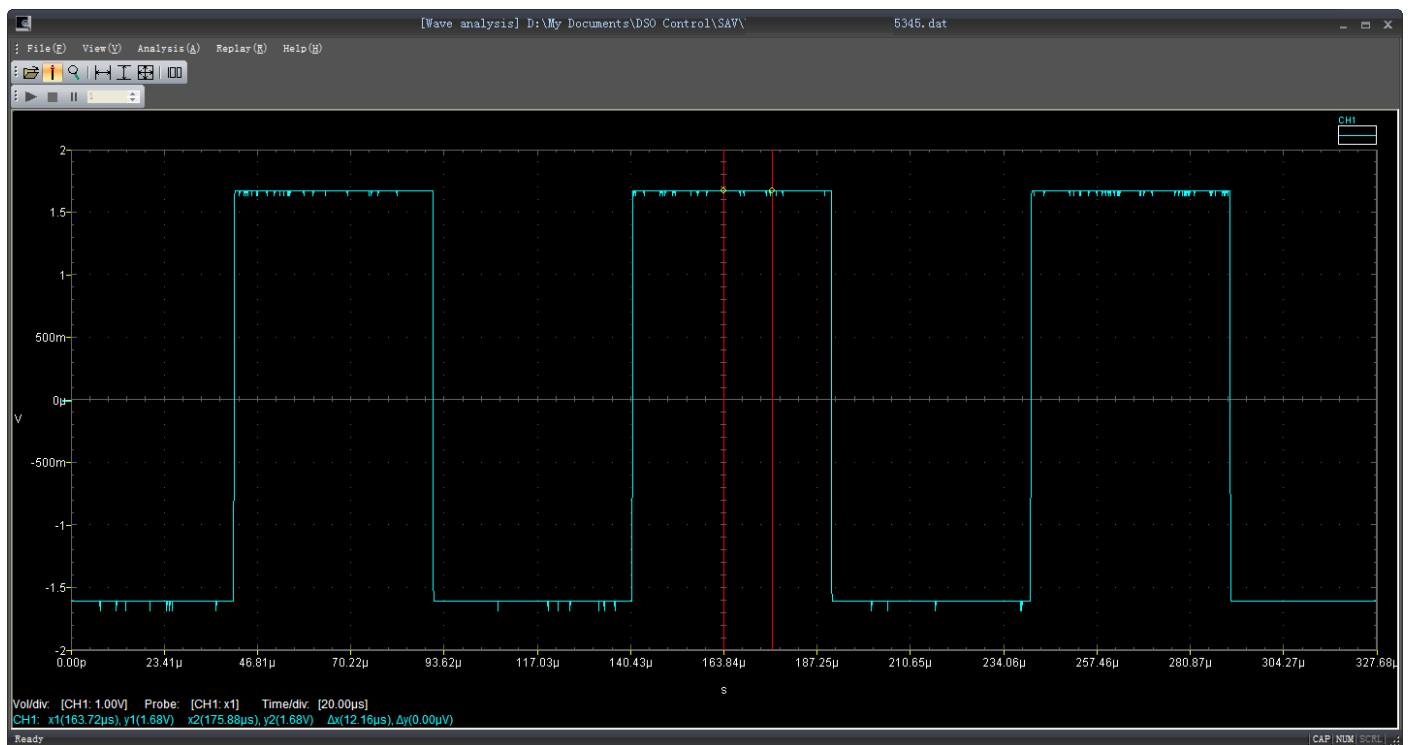
- 2、 Press "More"



3、Select "Wave Analysis"



Preview:



Waveform Analysis Software Menu Instruction

As the above picture shows, there are five menus at the top left of screen: document, view, analysis, playback and help. The followings are the five menus instructions.

Document

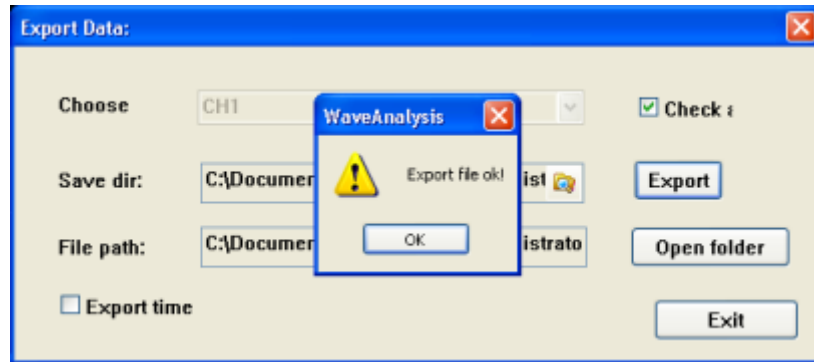
Open : Read waveform in the document of computer hard disk or other storage medium to digital storage oscilloscope analysis software. Select "document" → "open", and load supported format documents to the waveform analysis software.

Document Information : Waveform status can be seen clearly in the document information column when it is saved. Waveform during being saved can be played again easily as the following picture shows:

[illegible]

Picture W-3

Export Data : Export the current data of waveform analysis software to the computer hard disk or other storage medium by *.CSV format.



Exit: Exit waveform analysis software.

View

As to the imported *.rec document type data, only toolbar and status bar are usable under view menu.

Original : Display the most original *.sav document type data that oscilloscope records.

Filtering (Comparison/Single) : Only when the imported waveform is filtered under the “analysis” menu after importing data, can be used this function. The filtered waveform can be individually display or contrastively display.

FFT : Only when the imported waveform is FFT under the “analysis” menu, can be used this function and displayed the waveform through FFT.

Scaling Mode : Enlarge the waveform of virtual screen at different axis directions. For example, enlarge X. Press the left mouse button and hold on in the waveform area. Then drag mouse crosswise to select the area. Finally release the mouse left button to enlarge the selected area at X direction

Measurement Mode : The cursor can measure time difference (Δt) and amplitude difference (ΔV) between two cursors. Move the mouse to the cursor, and then press the mouse left button to drag the cursor. Read the difference value among

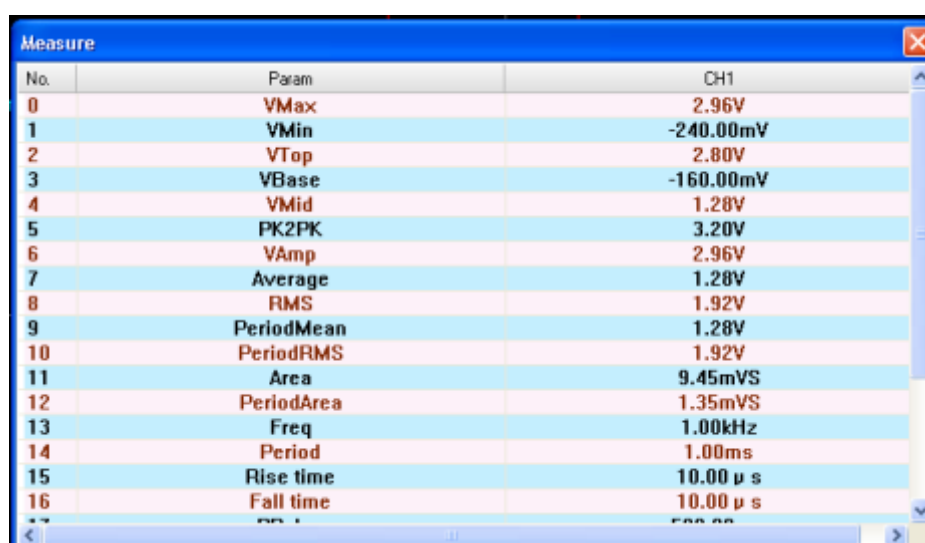
coordinate axis, and time difference ($\Delta t = |x_1 - x_2|$) and amplitude difference ($\Delta V = |y_1 - y_2|$) can be calculated.

Toolbar : Select the items "standard" and "playback", and display shortcut toolbar under menu bar.

Status bar : Move the mouse to the relative shortcut button icons or menus. The status bar at the left corner of virtual screen will display the relevant information the mouse indicates currently. The display can be closed here.

Analysis (It is effective for *.SAV type data)

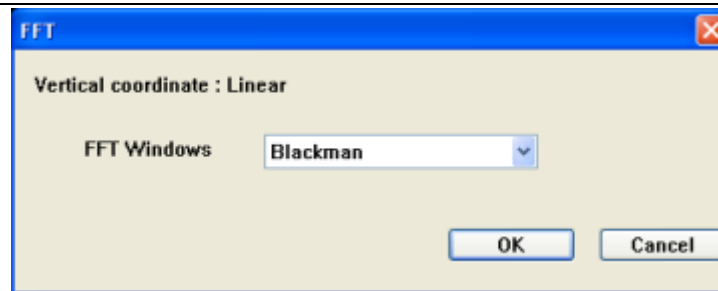
Measurement : Measure amplitude, frequency, pulse width and duty ratio of the imported waveform as the following picture shows:



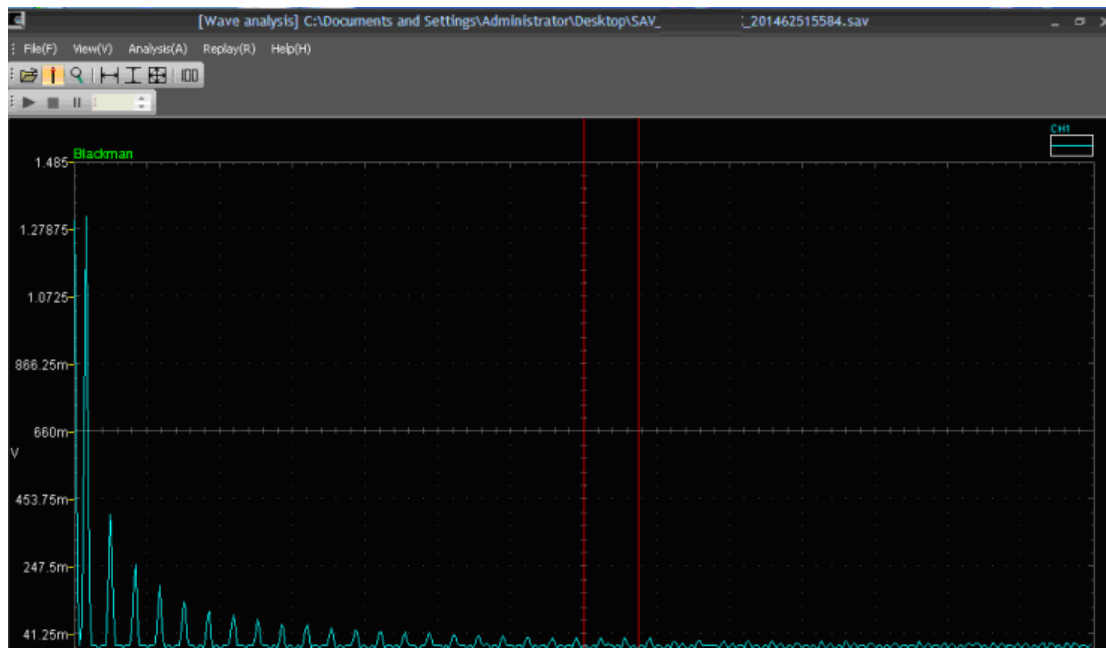
No.	Param	CH1
0	VMax	2.96V
1	VMin	-240.00mV
2	VTop	2.80V
3	VBase	-160.00mV
4	VMid	1.28V
5	PK2PK	3.20V
6	Vamp	2.96V
7	Average	1.28V
8	RMS	1.92V
9	PeriodMean	1.28V
10	PeriodRMS	1.92V
11	Area	9.45mVS
12	PeriodArea	1.35mVS
13	Freq	1.00kHz
14	Period	1.00ms
15	Rise time	10.00 μs
16	Fall time	10.00 μs

FFT: Fourier transforms the imported waveform. The selectable window functions are:

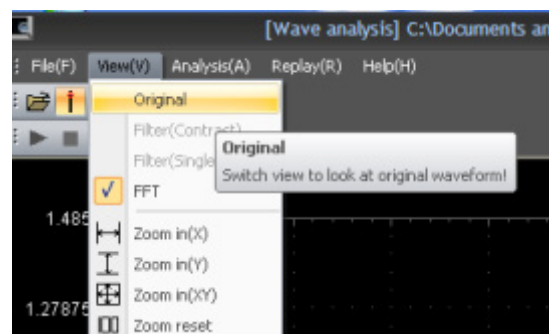
Blackman, Hamming, Hanning, and Rectangle as the following picture shows.



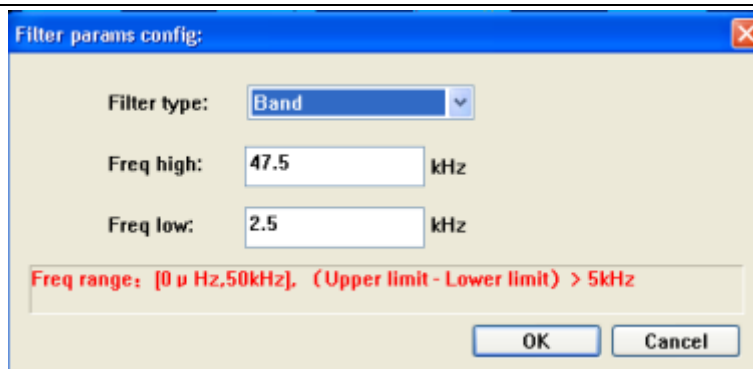
Select suitable window function and click "Confirm" . Original waveform data is converted to FFT waveform data as the following picture shows.



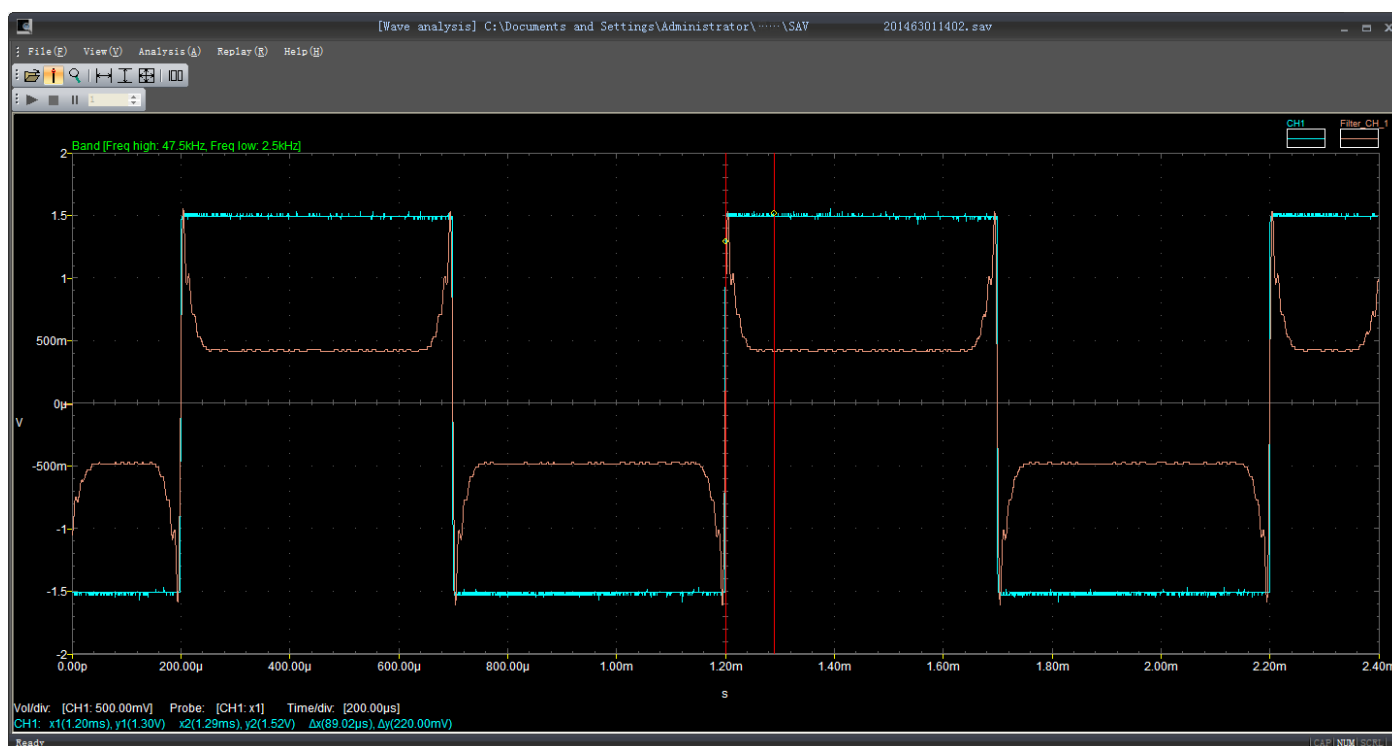
If the original waveform data need to be restored, click the "original" of view menu as the following picture shows:



Filtering : Filter the imported waveform. Filter signals except frequency band. There are three filtering types to select: band-pass, high pass and low pass as the following picture shows:



Set the filtering type, upper and lower limit of frequency, and then click OK. The filtered waveform data is displayed in the waveform analysis software as the following picture shows:



Playback (It is effective for *.REC type data)

Play/Pause/Stop : The imported waveform type data (*.REC) document is played, stopped or paused.

Single Frame Play: Click the counting up button or counting down button as the following picture shows to realize single frame play waveform data.



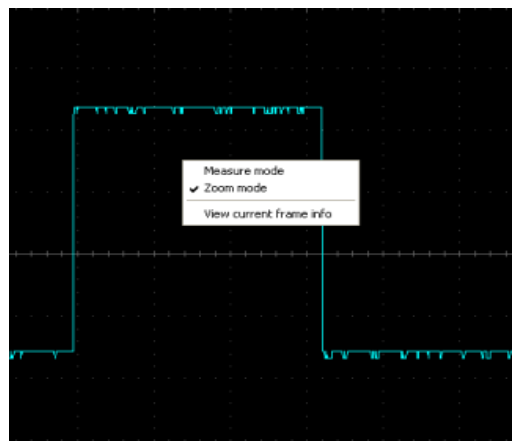
Help

About: Display relevant version information of the current software.

Check the Current Frame Property

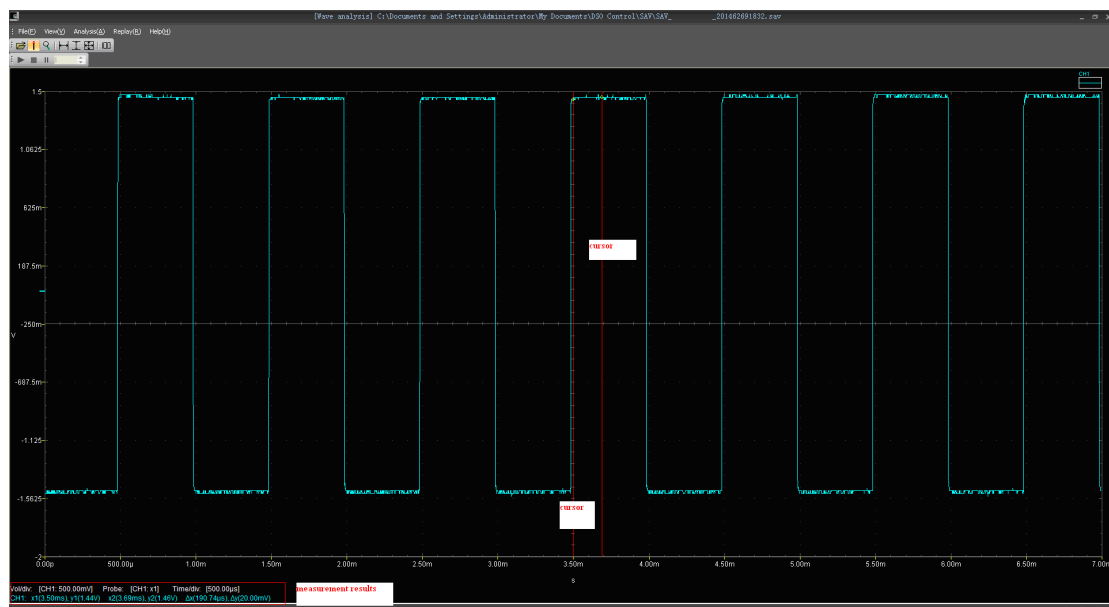
Measurement Mode

Open SAV waveform data. Right click mouse in the tool bar  and in the waveform display area to enter measurement mode as the following shows:



Picture 4-14

Under measurement mode, use cursor line to realize measuring and analyzing SAV wave form data as the following shows:



Two vertical red cursor lines can be dragged by mouse. With the cursor being dragged, the voltage and relevant time parameter value will be displayed real time at the left bottom corner.

Scaling Mode

There are totally three modes: X,Y and XY as the following picture shows:

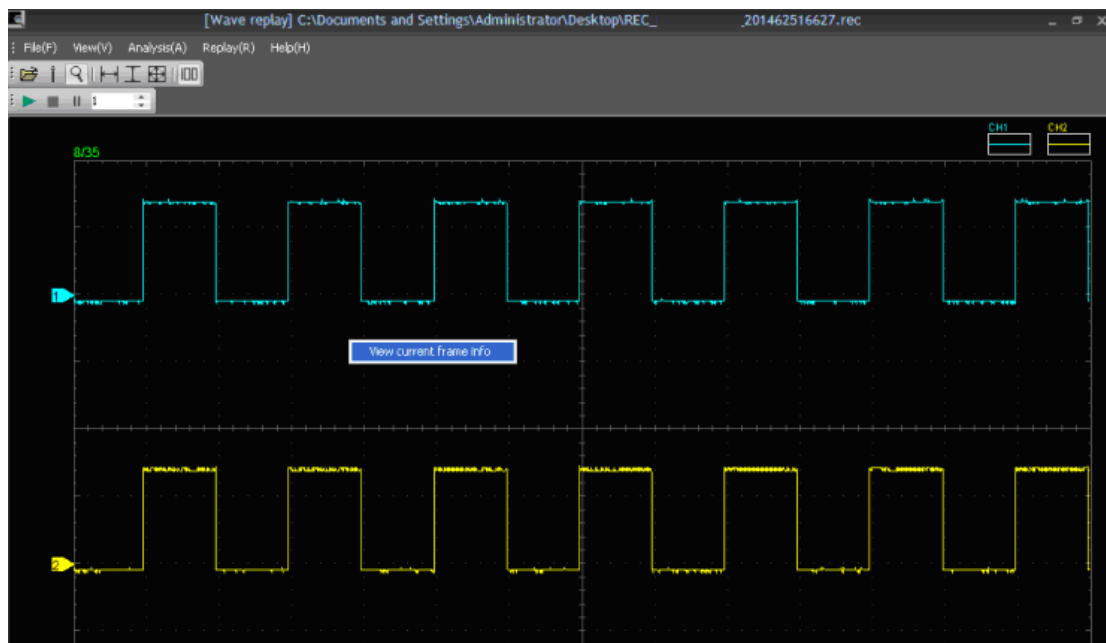


Reset to 100% view :



Check the Current Frame Property

Open *.SAV or *.REC document, and then right click mouse in the waveform display area. The “check the current frame property” option pops up as the following picture shows. Take *.REC document for an example.



Click “check the current frame property” and the frame information window pops up. The window displays the waveform parameter information of current frame as the following picture shows.

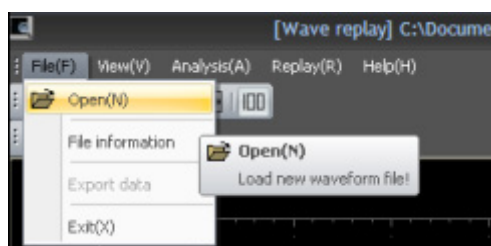
Cur frame info(1/35)		
No.	Param	Value
1	Acquire type	Normal
2	Trigger type	Edge
3	Trigger mode	AUTO
4	Trigger coupling	DC
5	Trigger source	CH1
6	Edge Polar	Rise
7	Trigger voltage	1.36V
8	CH count	2
9	CH1_CH coupling	DC
10	CH1_Probe polar	Normal
11	CH1_Band limit	Full
12	CH1_Probe	1X
13	CH1_Vol/div	2V
14	CH1_Time/div	500 μ s
15	CH1_Data count	700
16	CH2_CH coupling	DC
17	CH2_Probe polar	Normal

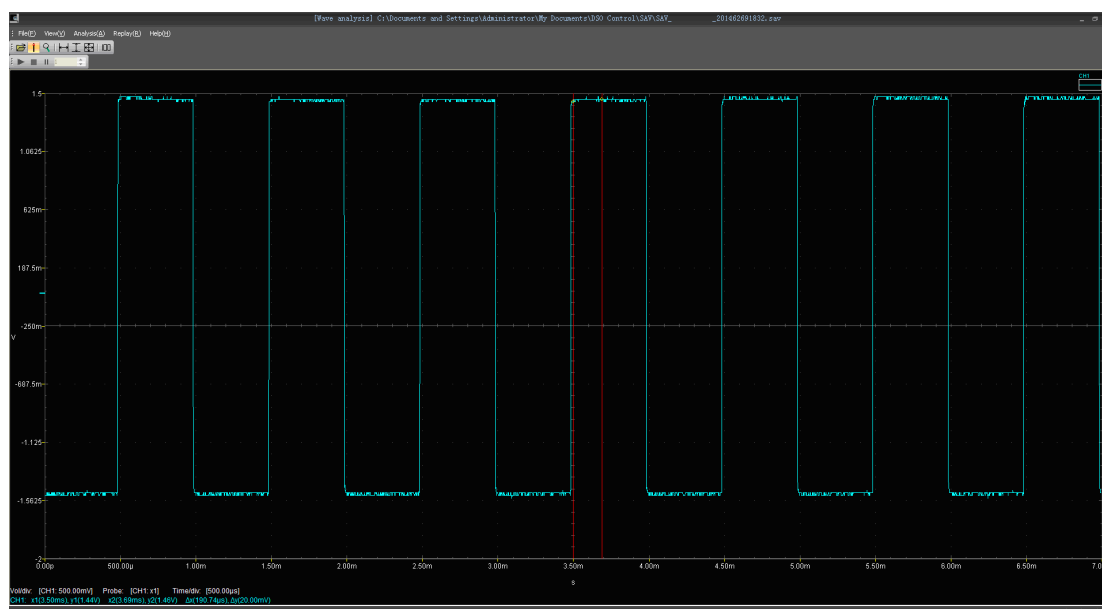
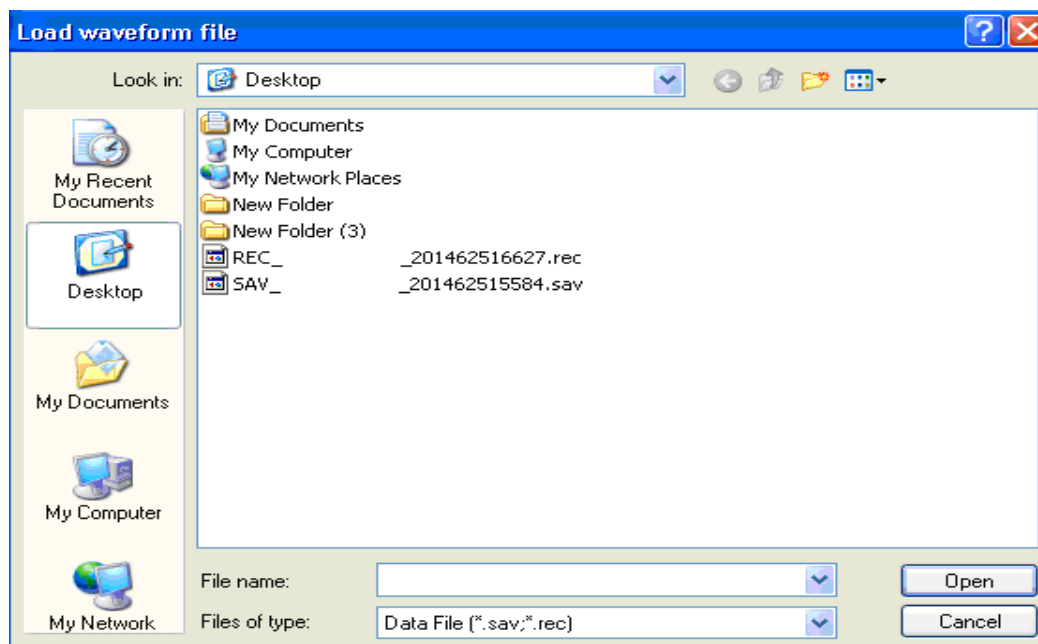
Application Example

Load 1 KHz/3Vpp square wave signal data (*.SAV) to the waveform analysis software.

Use band-pass filter with 100Hz upper limit and 10Hz lower limit to filter. "Virtual screen" only can display filtering wave.

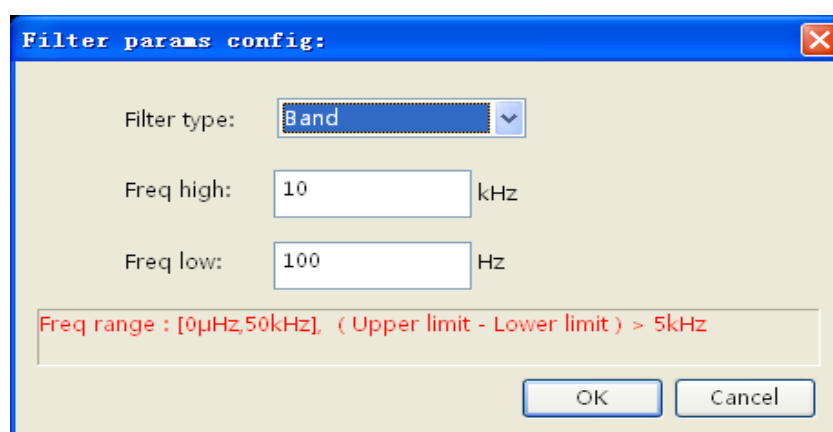
- Start waveform analysis software according to methods of Chapter 1
- Select "document - >open" in the menu, and then select waveform document according to the correct path as the following picture shows

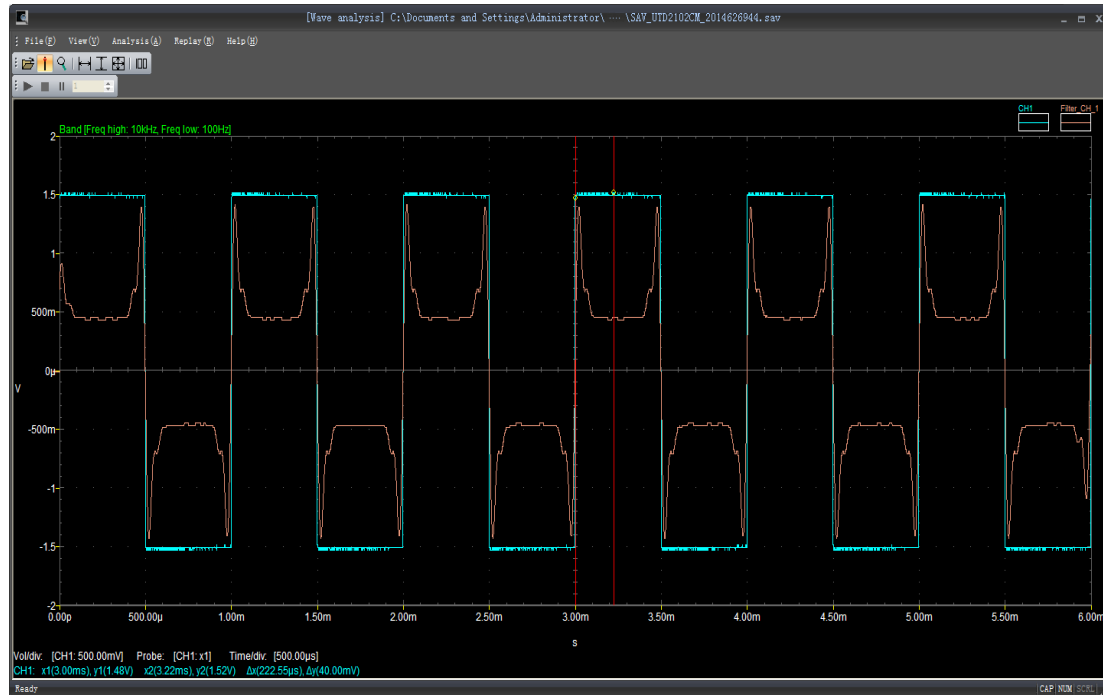




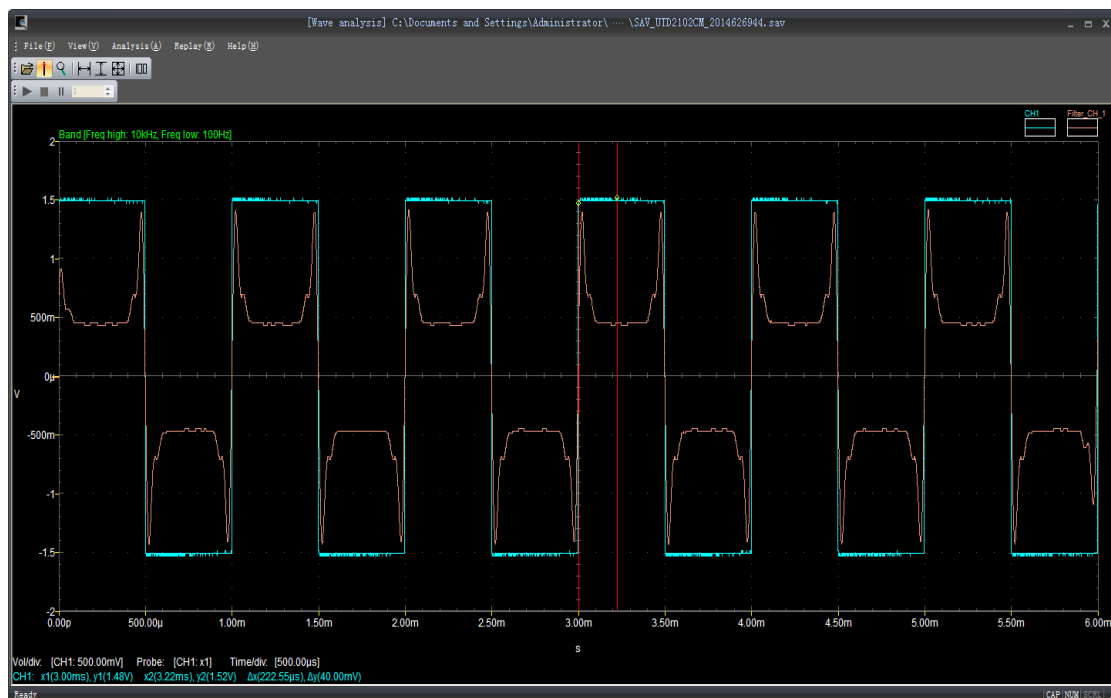
3. Select "analysis—>filtering" in the menu and filter parameter setup dialog box pops up.

Select "Band" among the filtering type. Set upper limit to 10KHz and lower limit to 100Hz. Click "OK" as the following picture shows:





4. Select “view -> filtering(single)” in the menu, and check “virtual screen “of waveform analysis software as the following picture:



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Thank You!