Light Weight Vibrometer
Seismic Ground Vibration & Sound Analyzer
Blast Induced Ground Vibration & Sound Analyzer
EVS(Environmental Vibration & Sound) Measurement

User Manual

Third Edition (Ver. 3.2)

SVIB Software Technologies Pvt. Ltd

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[Does & Don'ts]

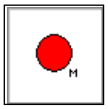
Does	Don'ts
Device Should be charge before taking the measurements	Do not start the device without SD Card
check for the SD Card in device slot	don't use sharp object to touch the screen
Make sure to have memory in SD card to save result files	If device shows empty screen. Please email to info@svibtech.net
Connect the Ground Sensor & Micro Phone to the device before taking the measurements	Don't run 2 different versions of PC software at same time
Device should be switch off while removing & inserting the SD Card	
Uninstall the old PC software before installing the new versions of PC Software	
Please install crystal report Which is given along with the package	

[ICON of the EVS]

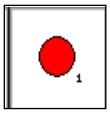
: EVS(Environmental vibration and sound) measurement mode selection

: Transducer option

: Trigger option

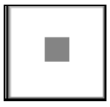


: (M) Manual recording mode -> Manual start-stop recording without trigger option



: (S) Single recording mode -> Auto single recording with trigger option

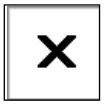
: (C) Continuous recording mode -> Auto continuous recording with trigger option



: Manual Stop

: Open the saved result

: Print the saved results



: Exit from program

[Procedure of the EVS]

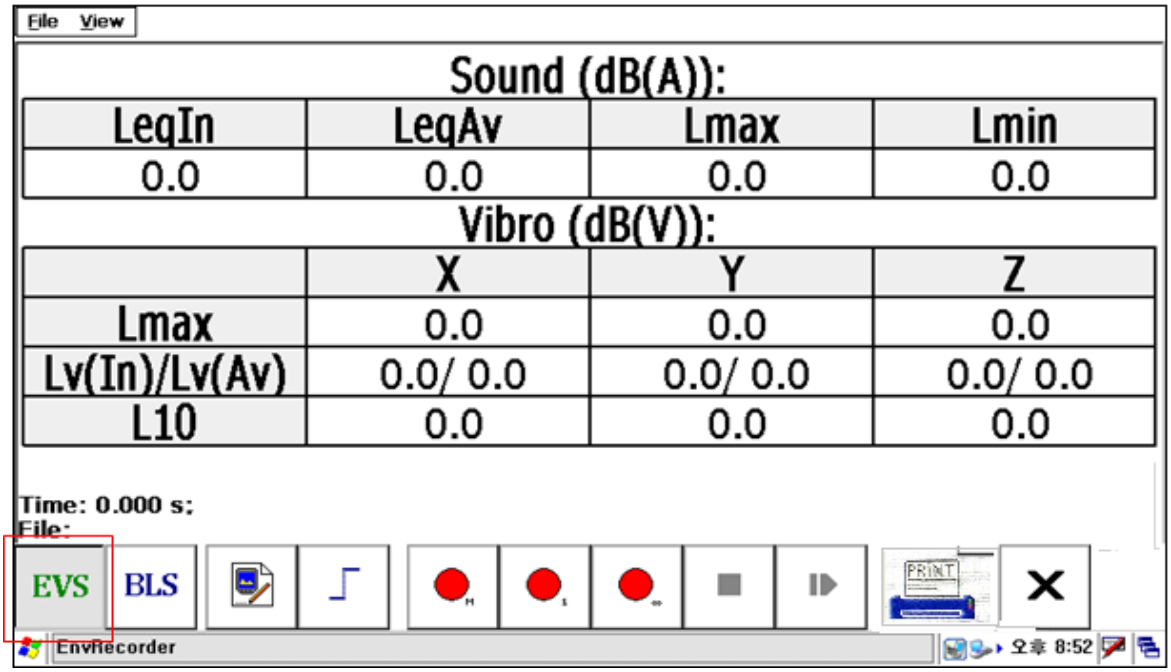
1. Device Software Launching:

You can see the window if you turn on.

Please Double click "EnvRecorder" Icon.

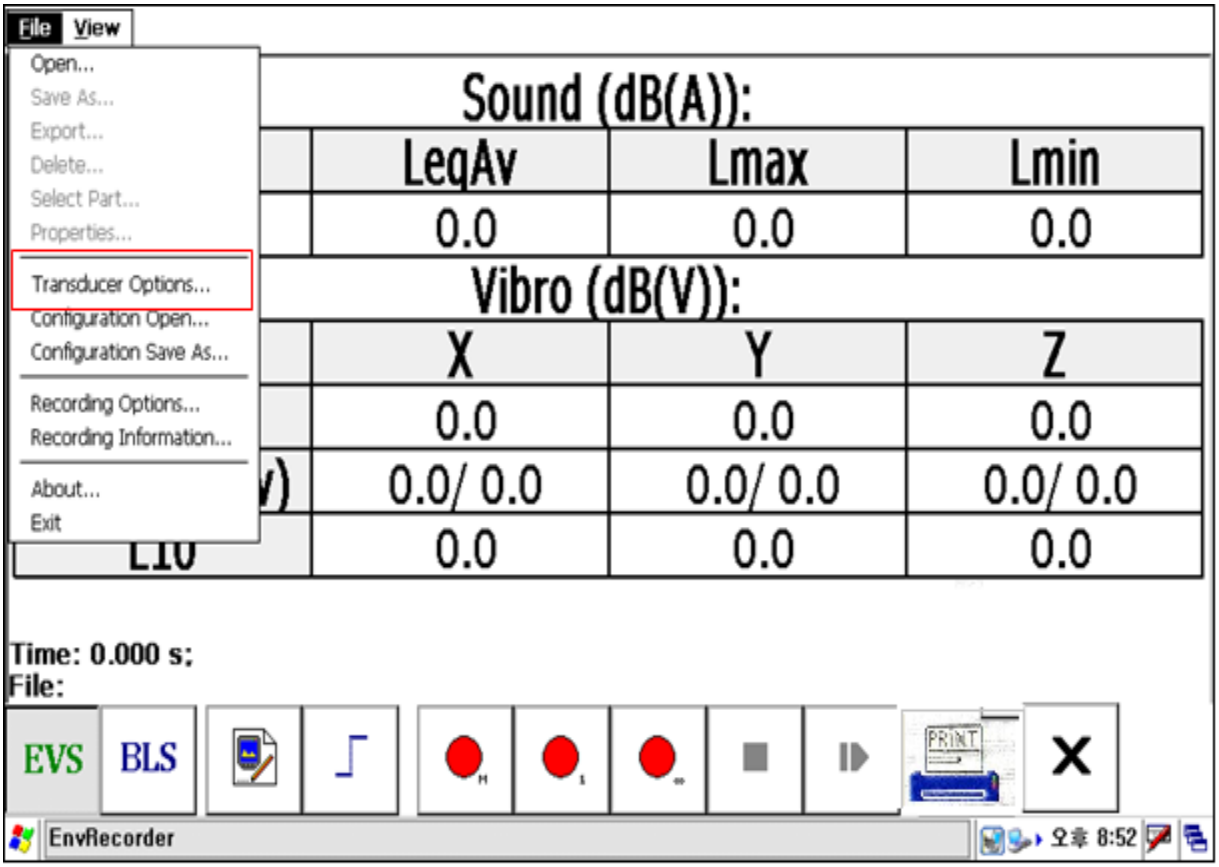
2. EVS Settings:

Please click "EVS" and then "File" if it display as bellow window.



3. Transducer Options:

To set up Sensor, Please do "Transducer Options" in the file.



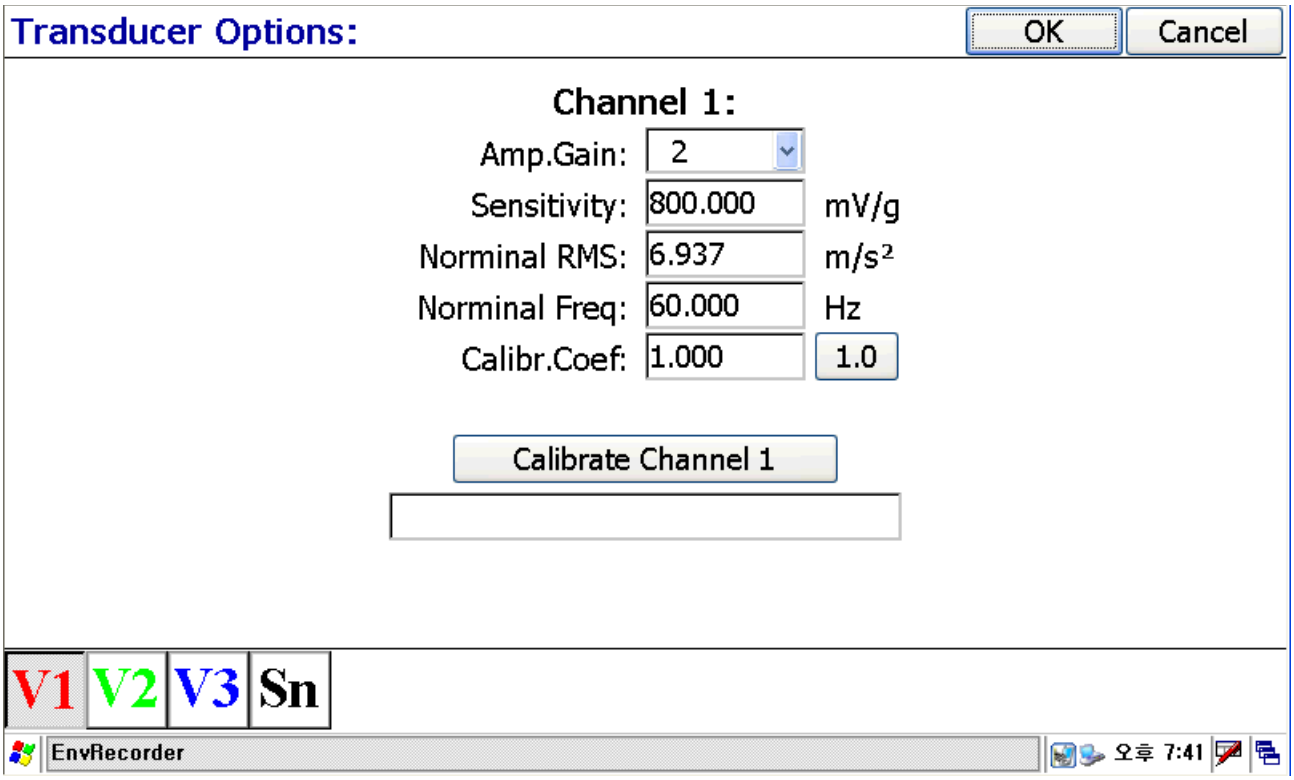
3.1 Transducer Options Settings:

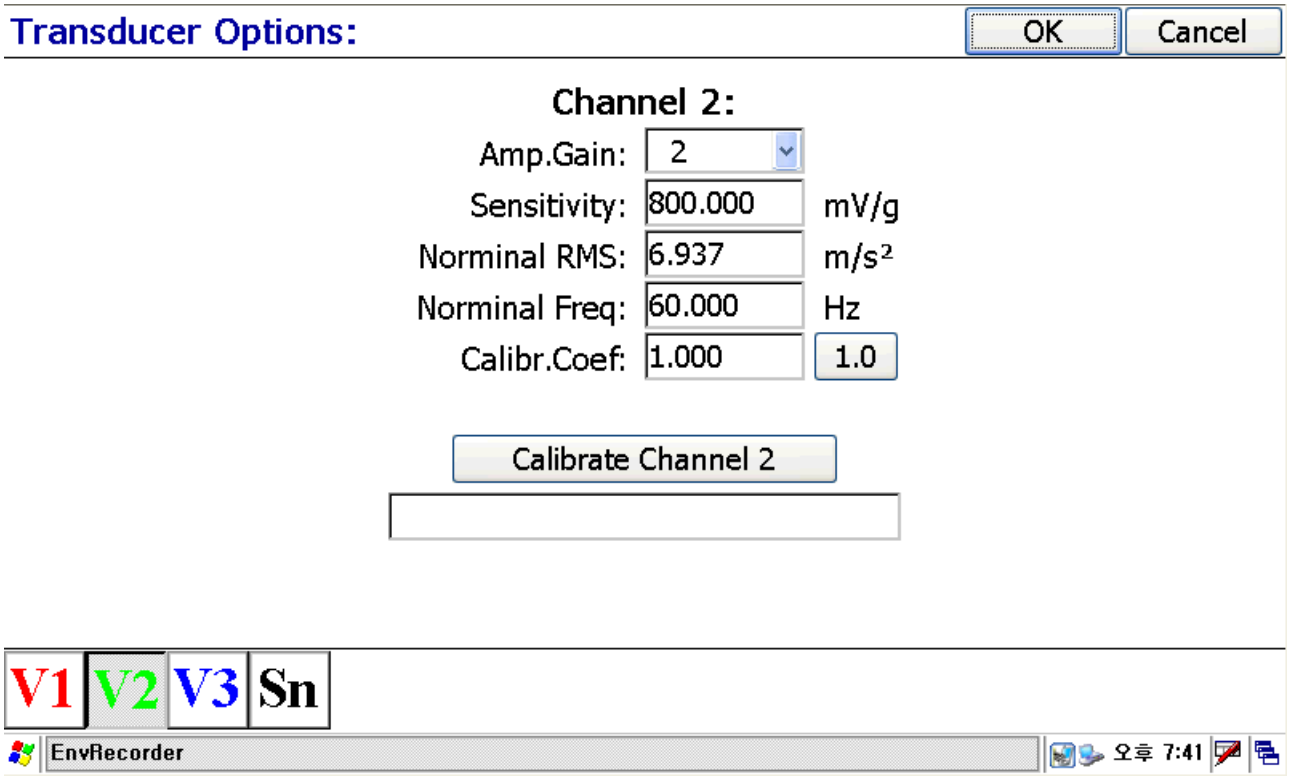
3.1.1. Transducer Options For V1:

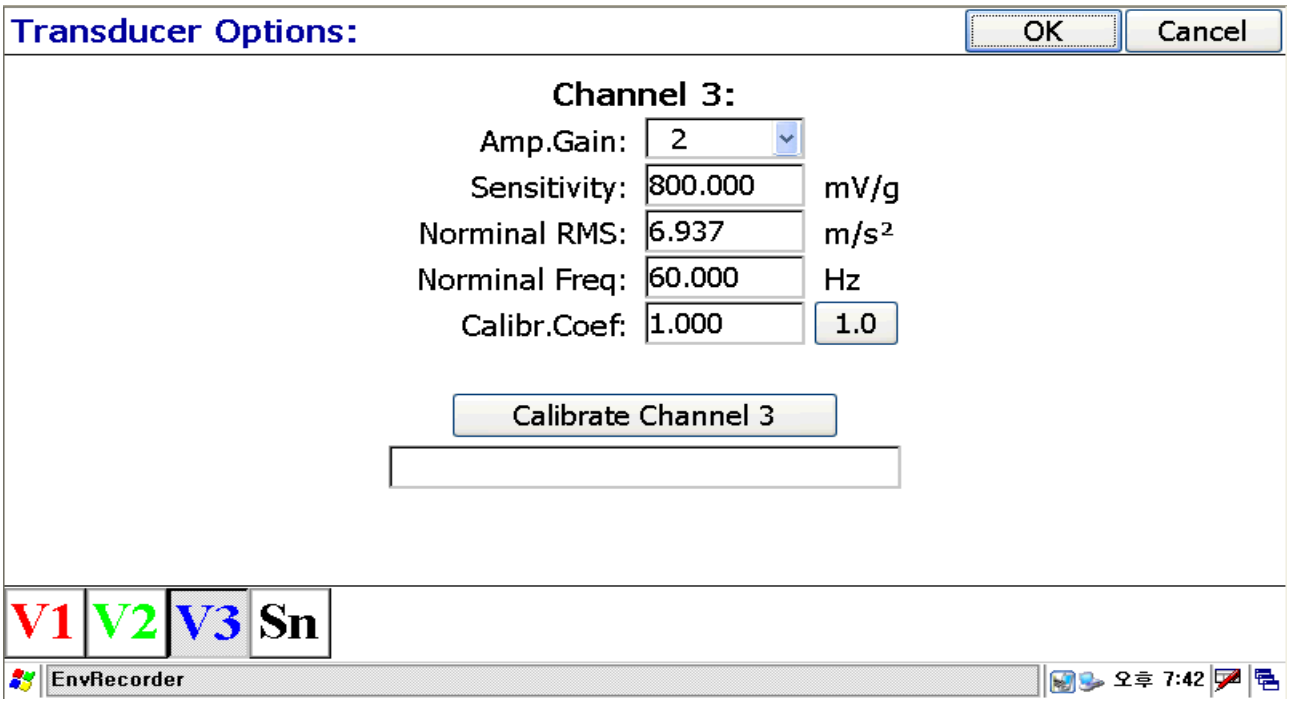
Please select "V1" at the bottom to set up "Channel 1". Put the Sensitivity of sensor, with the calibrator, please put the "Norminal RMS" value and "Nominal Frequency" that the output of vibration calibrator was from, Please fix the vibration sensor with "X" direction, and then give the calibration signal, do the "Claibration channel 1" at the bottom, the channel 1 will automatically calibrate with the "Calibr. Coef" value. You can manually do the calibration if you meet an error. Manually to do the calibration, please put the sensitivity of the sensor and give the calibration signal, and then click "OK", and move the "Measurement window" to check the measuring value and put the "Calibra. Coef." value to be corresponded with the calibration signal value.

3.1.2. Transducer Options For V2,V3:

for the "V2"(Channle 2), "V3"(Channel 3), Please put the sensivity of vibration sensor's "Y' and "Z" axis, and put the "Calibr. Coef." Value as "X" axis.

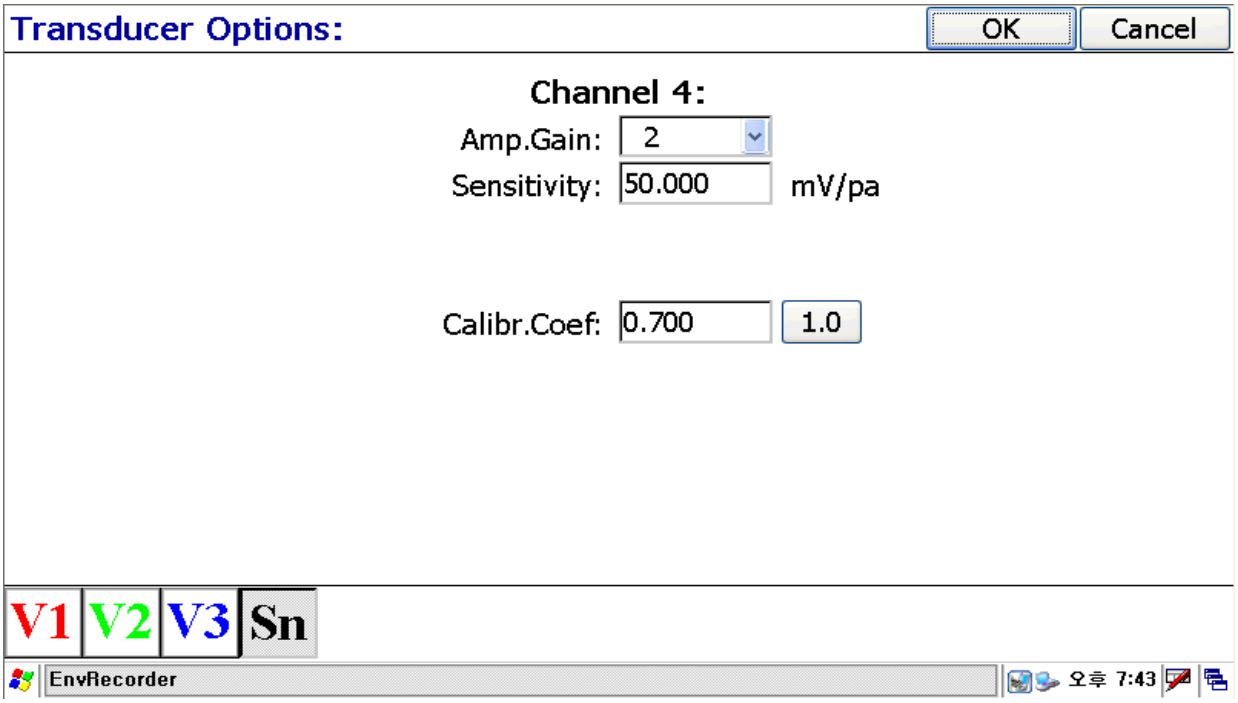

Transducer Options:
OK
Cancel
Channel 1:
Amp.Gain:
2
Sensitivity:
800.000
mV/g
Norminal RMS:
6.937
m/s²
Norminal Freq:
60.000
Hz
Calibr.Coef:
1.000
1.0
Calibrate Channel 1
V1
V2
V3
Sn
EnvRecorder
오후 7:41


Transducer Options:
OK
Cancel
Channel 2:
Amp.Gain:
2
Sensitivity:
800.000
mV/g
Norminal RMS:
6.937
m/s²
Norminal Freq:
60.000
Hz
Calibr.Coef:
1.000
1.0
Calibrate Channel 2
V1
V2
V3
Sn
EnvRecorder
오후 7:41



3.1.3. Transducer Options for V4:

"Please put the sensitivity of the microphone for the Sn"(Channel 4), and connect the sound calibrator with 94dB output at 1kHz to the microphone, and generate standard signal, and click "OK"to move measurement window, and check the measuring value, please put "Calibra. Coef" value to becorresponded with that Leq value is 94dBw. If you finished all channels, please click "OK" to exit.

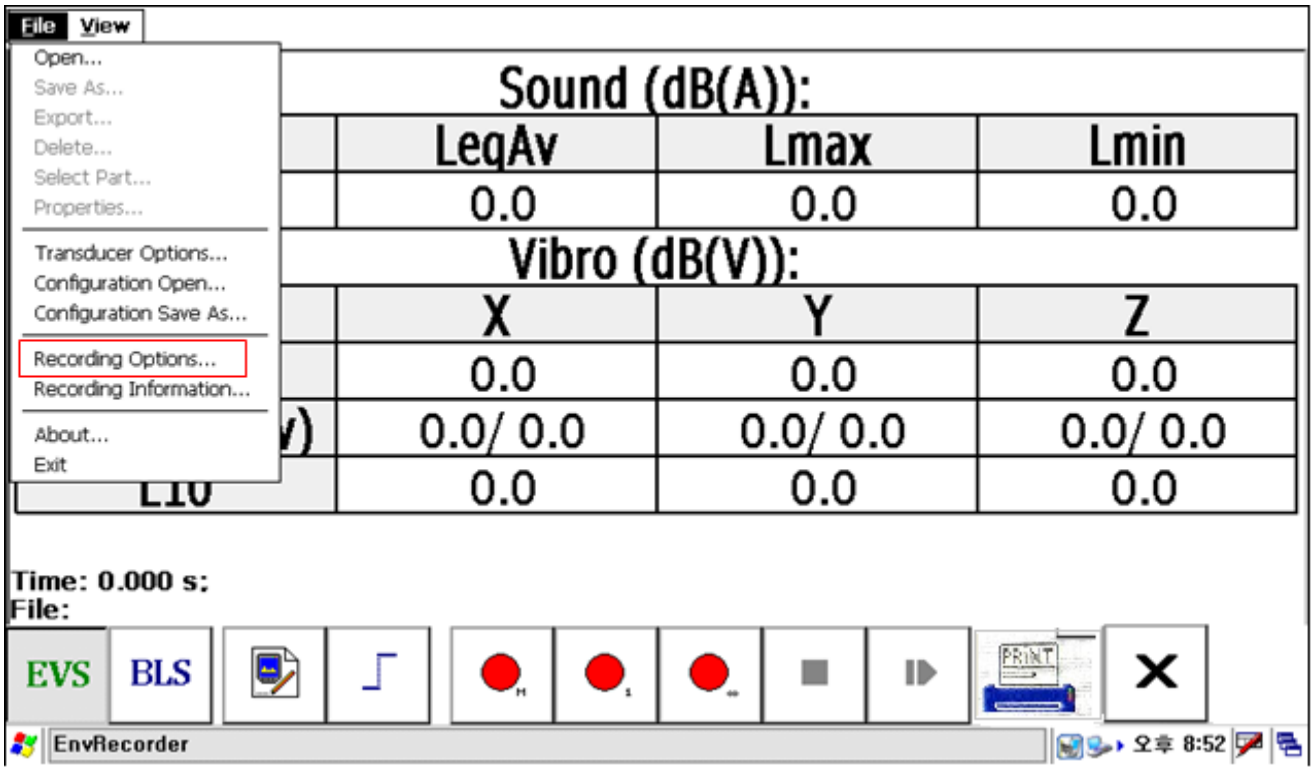


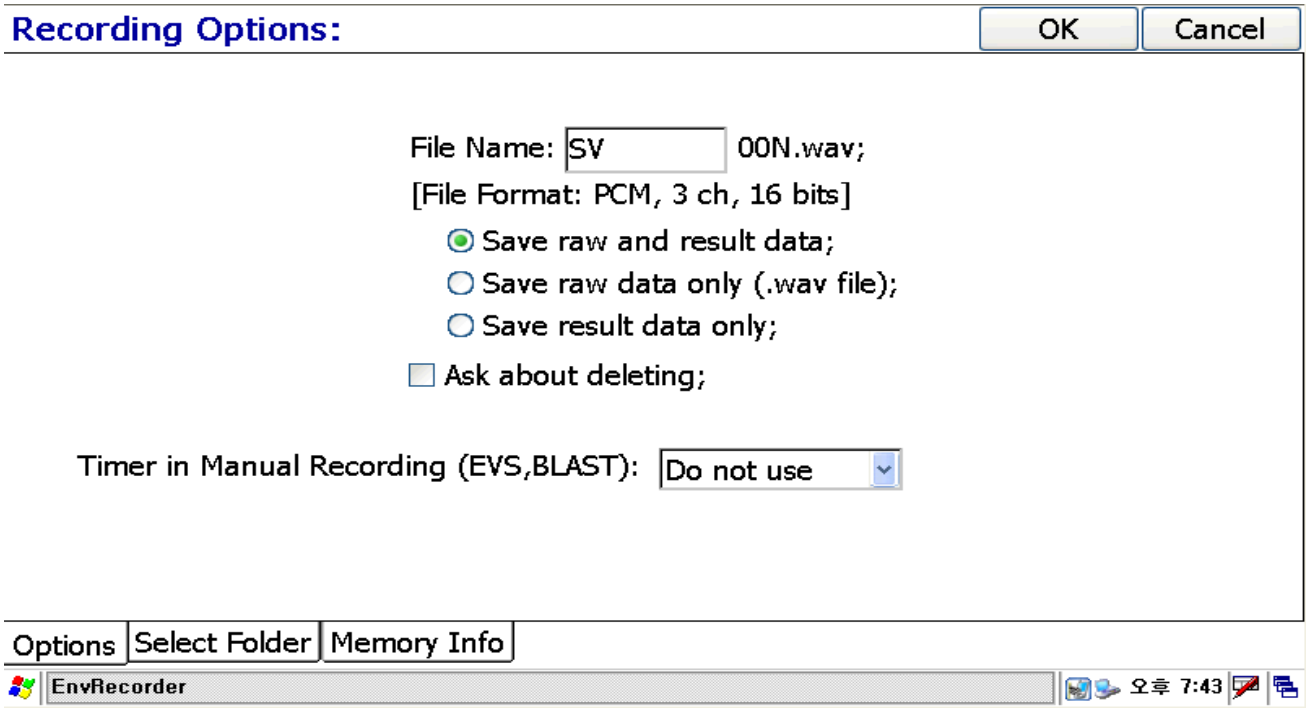
4. Recording Options:

Please move "File" menu again to do "Recording Option".

a. File Name : write the file name to be stored

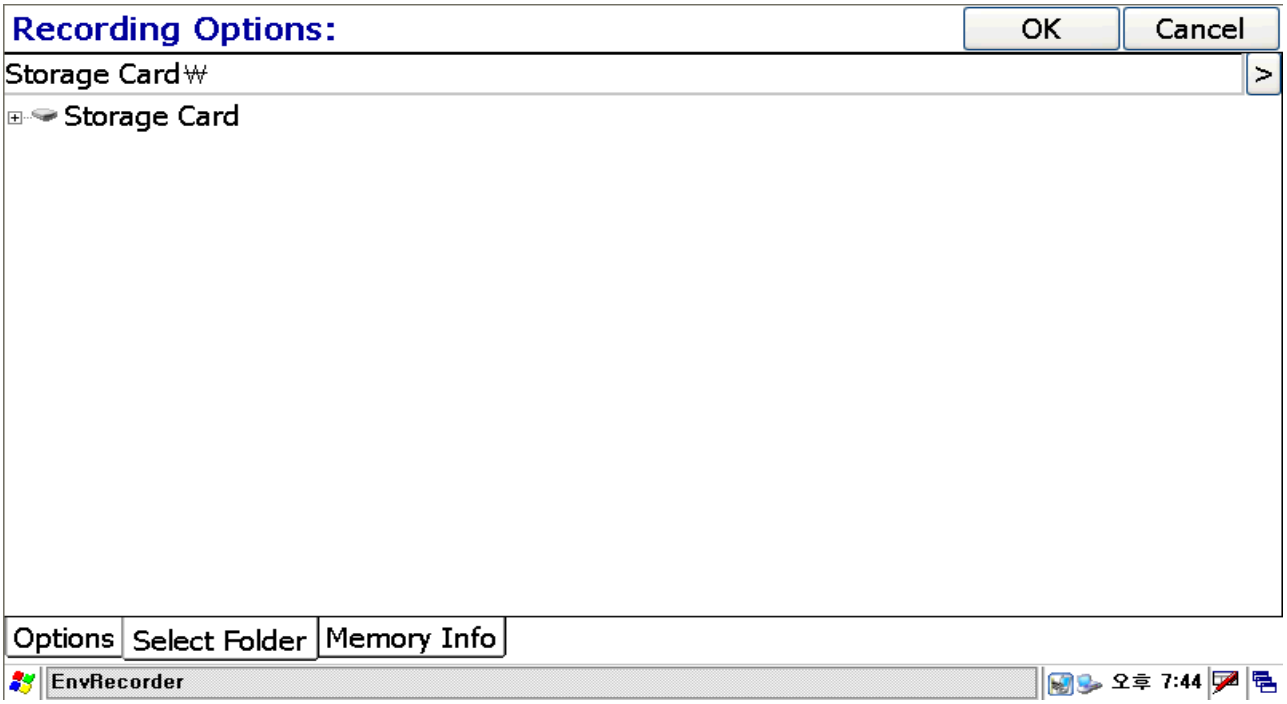
b. File Format, PCM : select the file format to be stored.





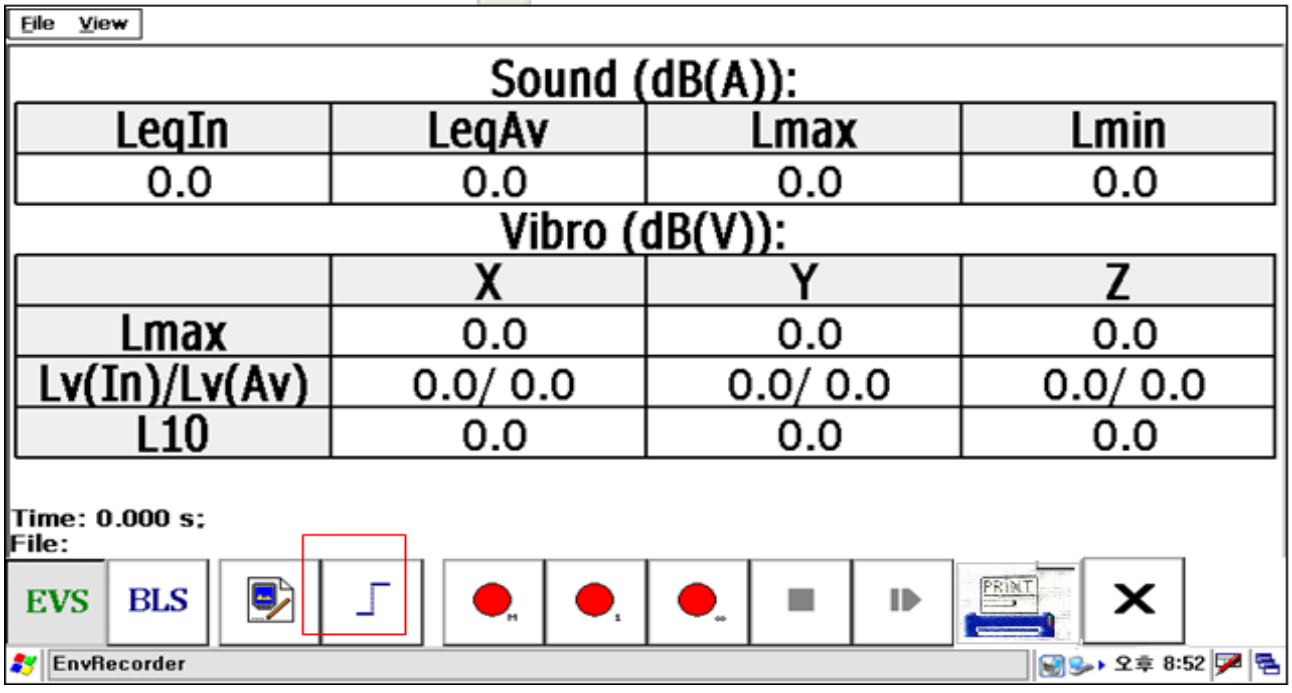
4.1. Folder selection:

Select "Folder" at the bottom in the "Recording Options", and select the position to save the File.The data has to be saved in the SD Memory by our program.



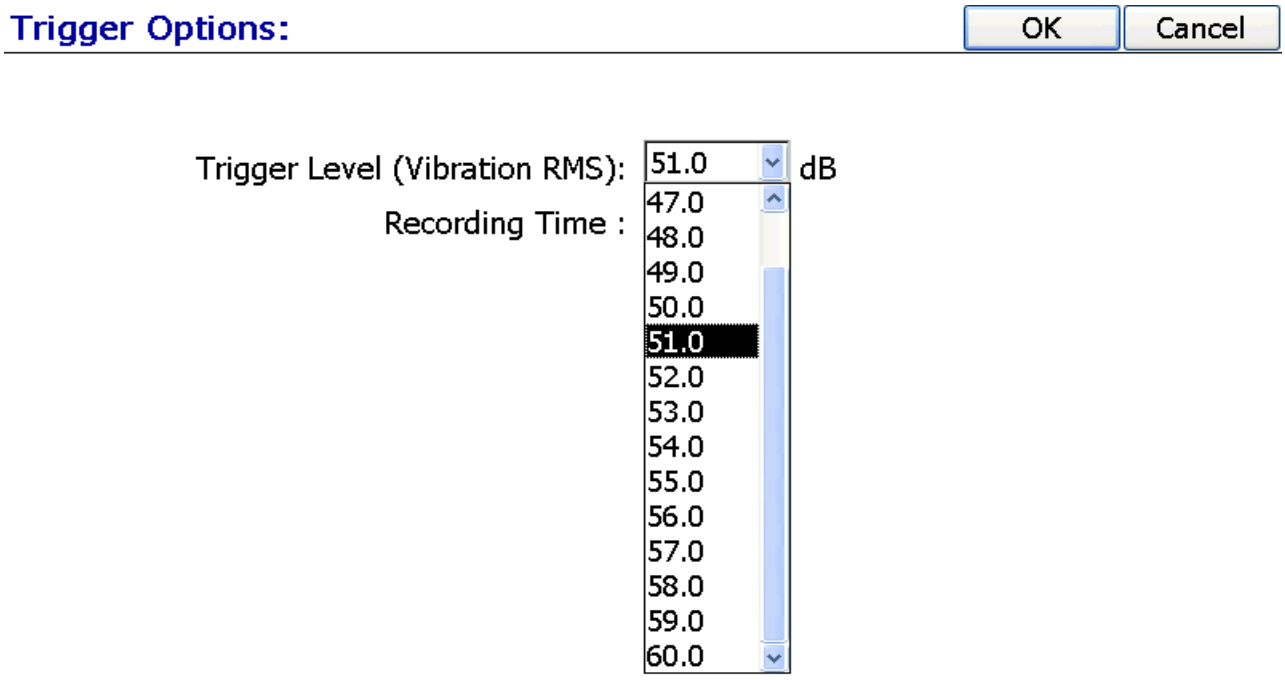
5. Trigger Options Display:

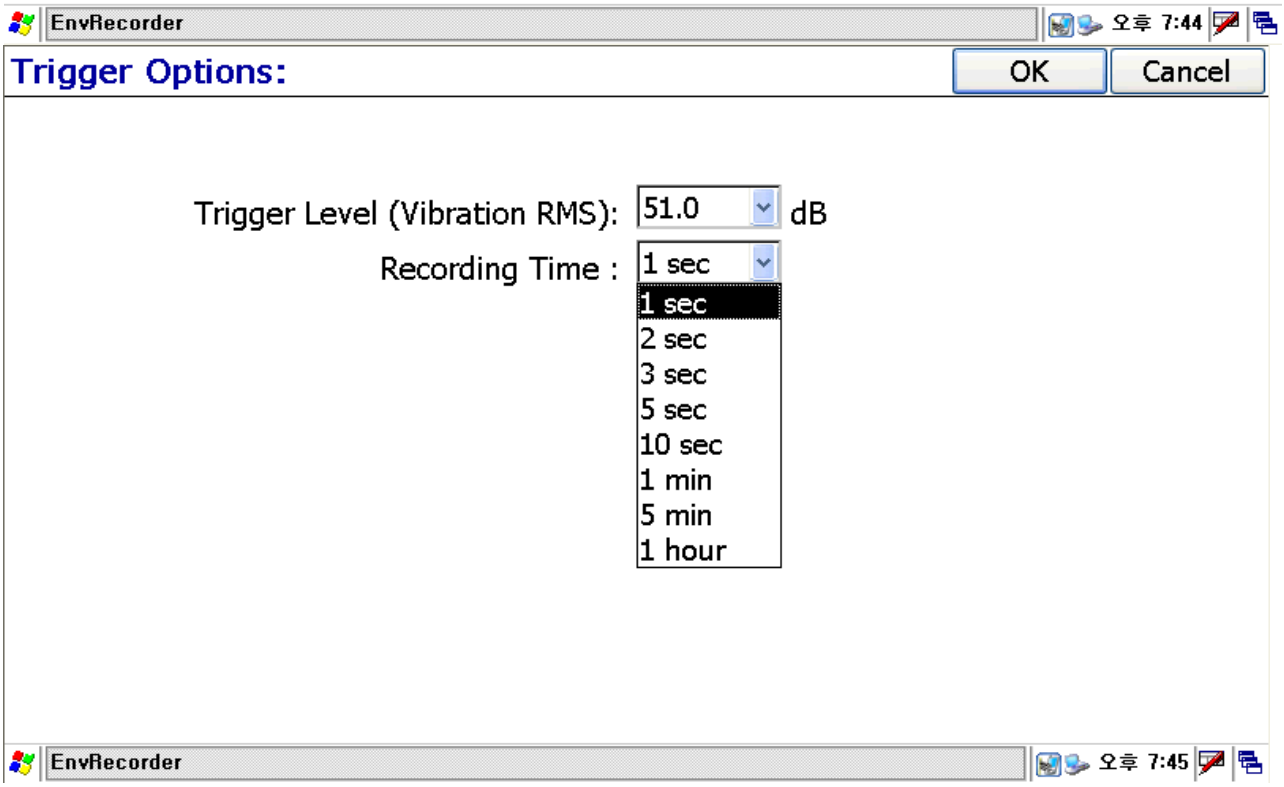
If display measurement window, click icon at the bottom.



5.1. Trigger Options Settings:

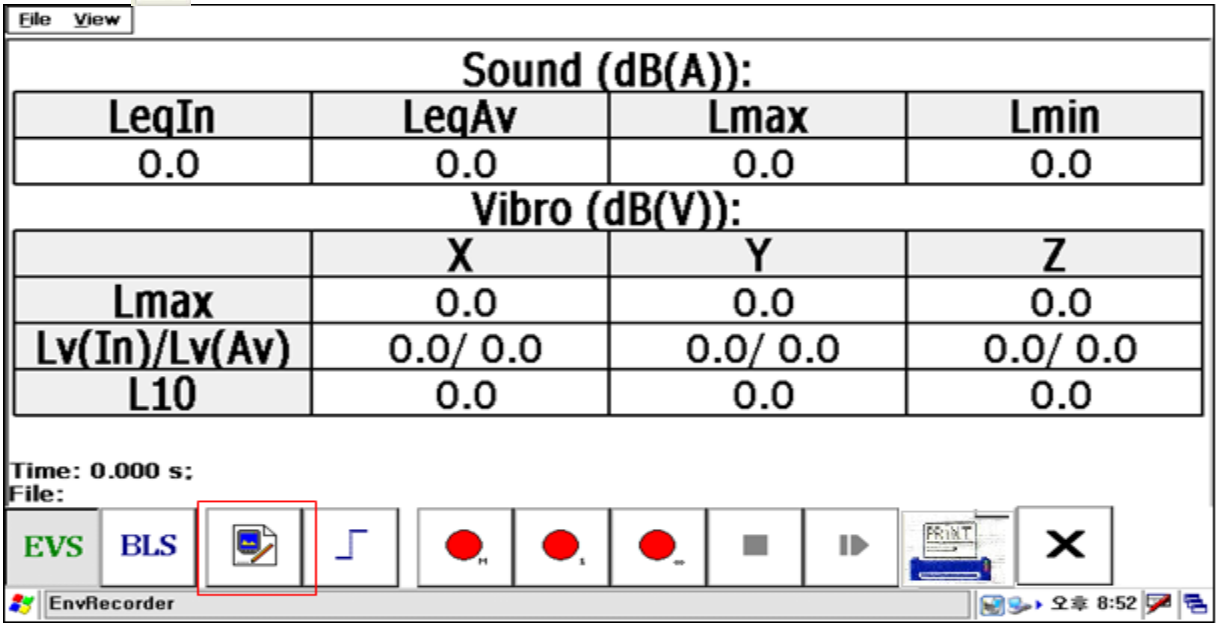
Move "Trigger Options" window, and set up "trigger level" with dB by "Vibration RMS", and select "Recording Time". You can select "Trigger Level" by 1 dB step from 45dB to 60dB, Recording Time can be selected among 1s, 2s, 3s, 5s, 10s, 1min, 5min, 1hour. Please click "OK".





6. Analyzing Options:

Click  the Icon at the bottom in the measurement window again.

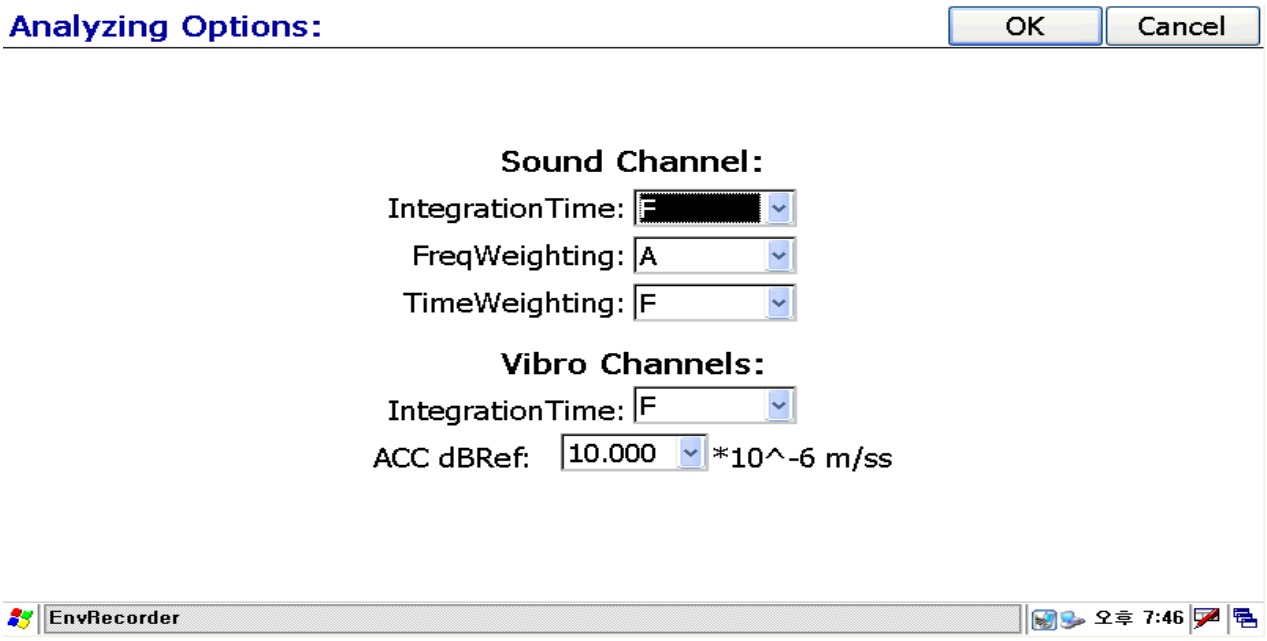


6.1. Analyzing Options Settings:

Move to "Analyzing Options" window, and set up the options of Sound channel and Vibration channels.

6.1.1. Sound Channel:

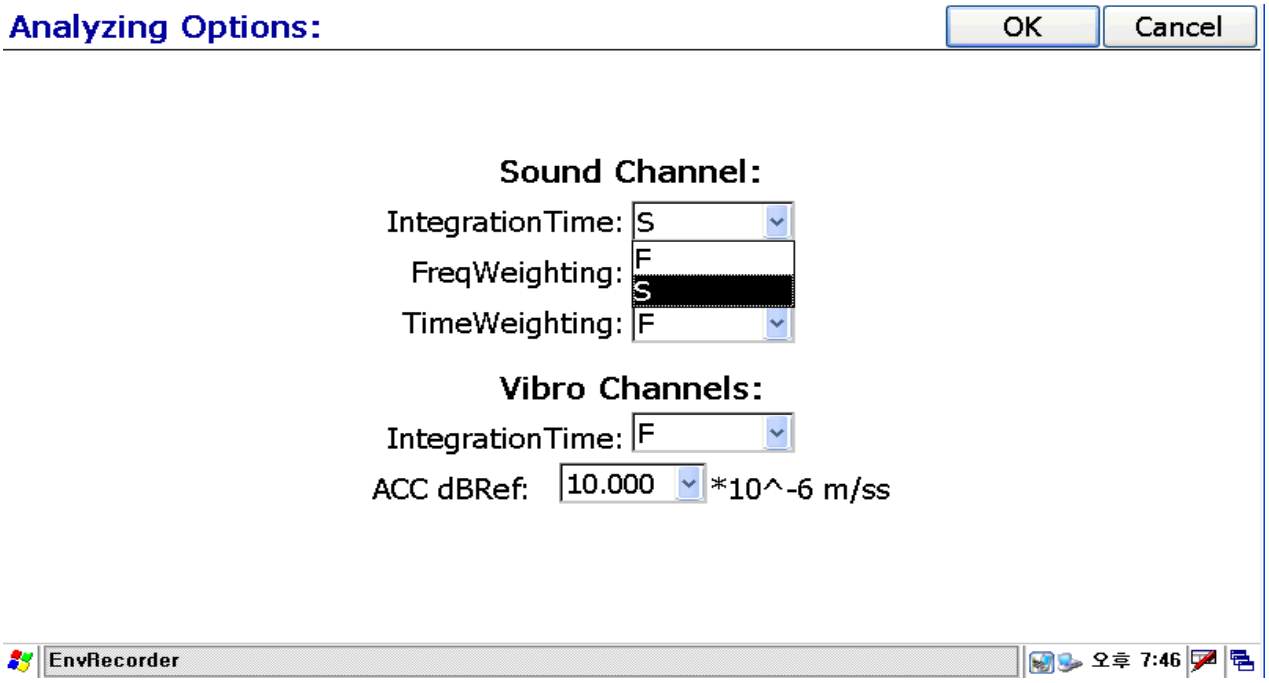
Select "Integration time (F, S)", "Frequency Weighting (Z, A, B)", "Time Weighting(S, F, I, U)". Usually, please select "Fast" for the "Integration time" and select "A" for the"Frequency Weighting", and select "Fast" for the "Time Weighting".

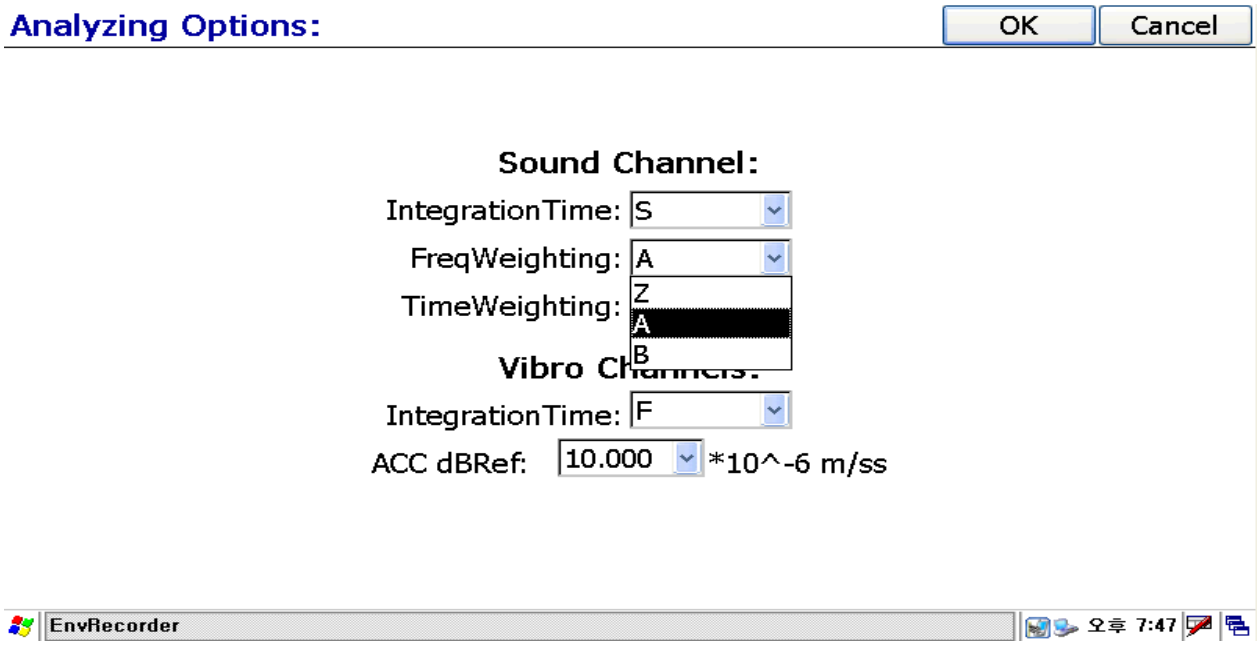


6.1.2. Vibration Channel:

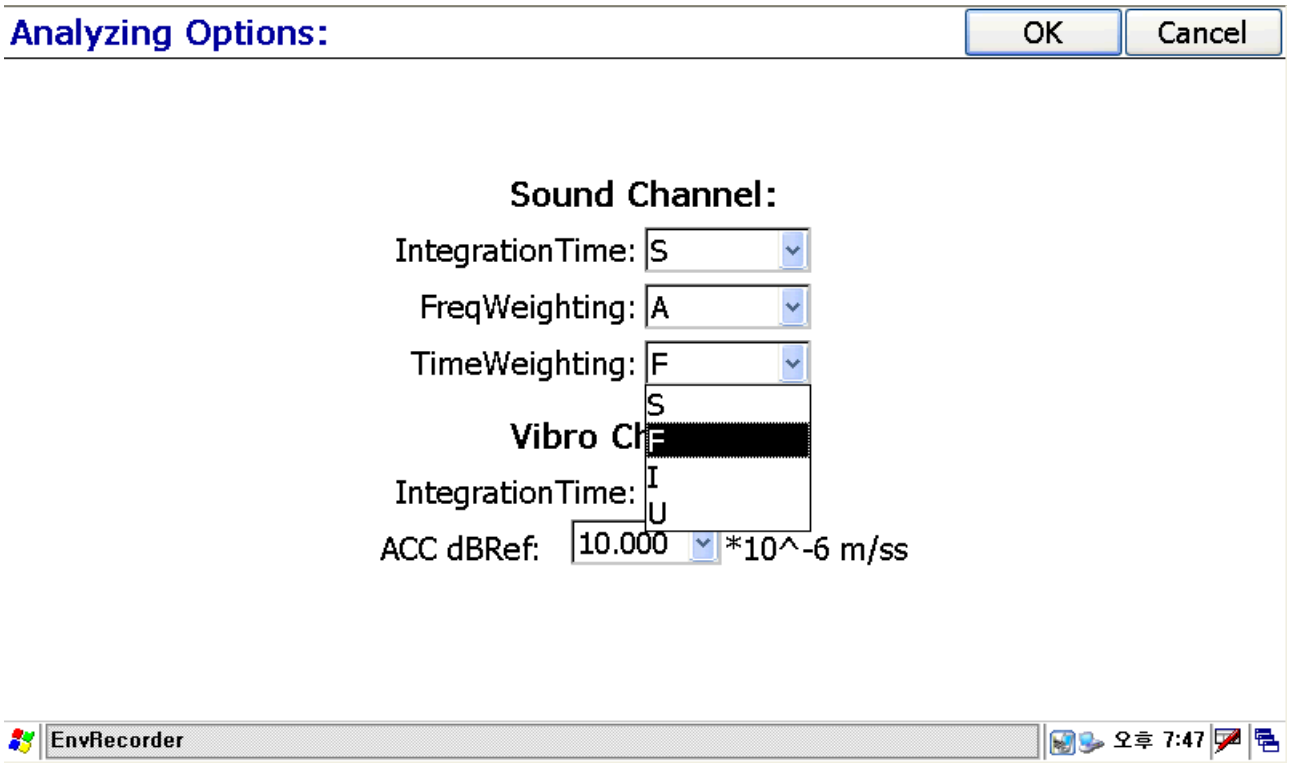
Set up "Integration Time(F, S)" and "dBref" value of vibration. Generally,select "Slow", and put 10 * 10^-6 m/ss for ACC dBref value. And click "OK".

[참조] Sound Channel-Integration Time : S(Slow) integrate every 1 second, F(Fast) integrate every 125ms, and calculate Euivalent Sound Level(Leq).

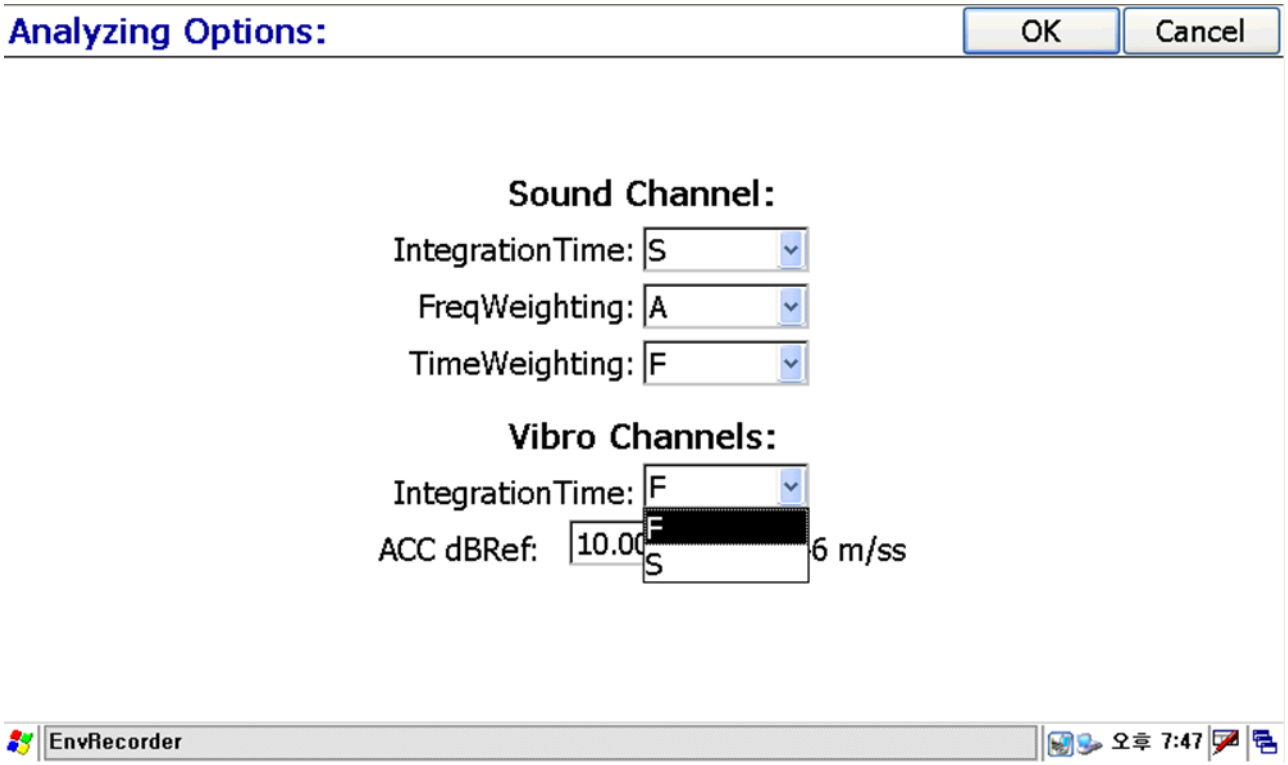




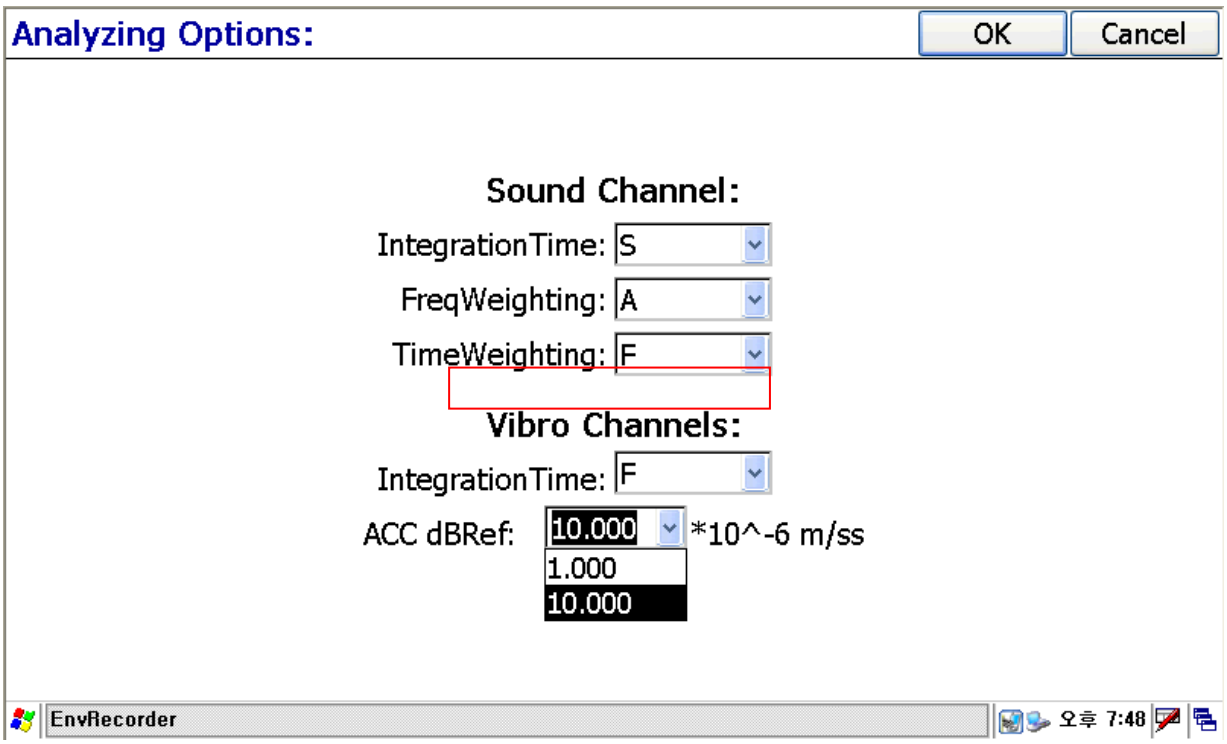
[Example] Sound Channel-FreqWeighting : Select the frequency weighting among Z, A, B. A frequency weighting is designed to meet with human ear.



[Example] Sound Channel-TimeWeighting : Time weighting is weighted by time F(Fast) is sampled every 125ms, S(Slow) is sampled every 1 sec, I(Impulse)is sampled every 35ms.



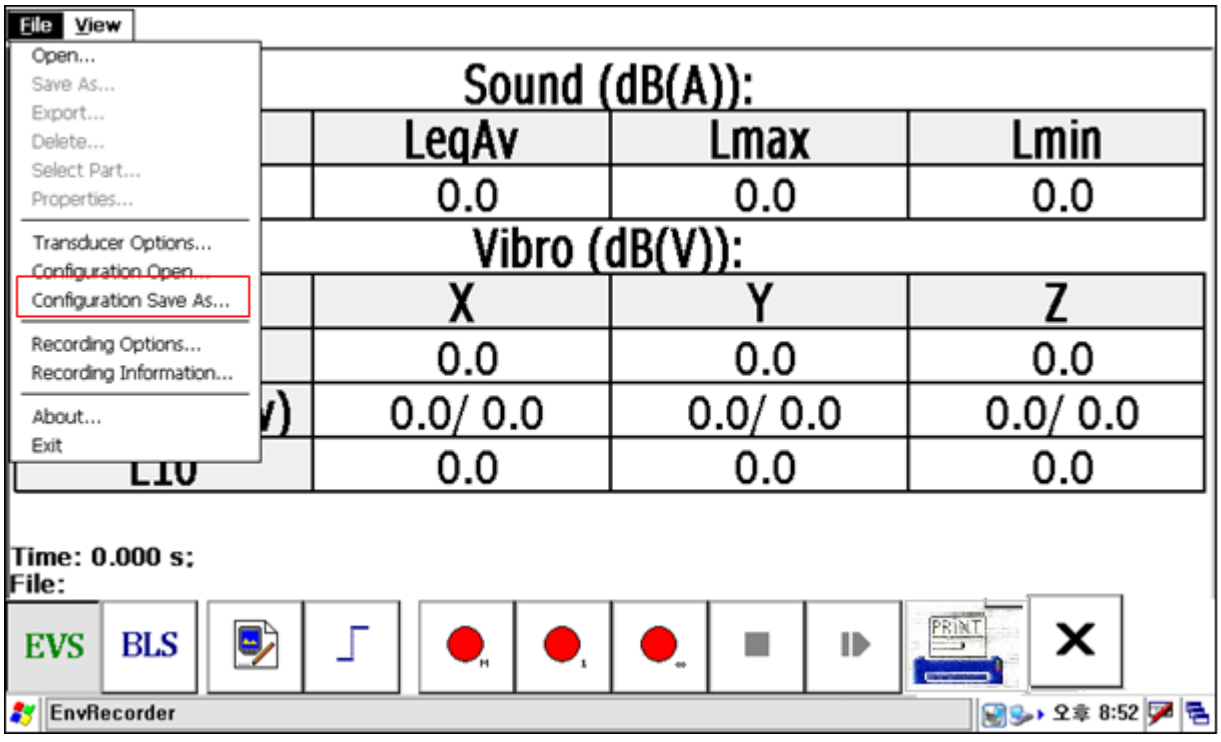
[Example] Vibro Channels-IntegrationTime : Set up Integration time for the vibration channels. F(Fast) has 100ms of integration time, S(Slow) has 1 sec of Integration time.

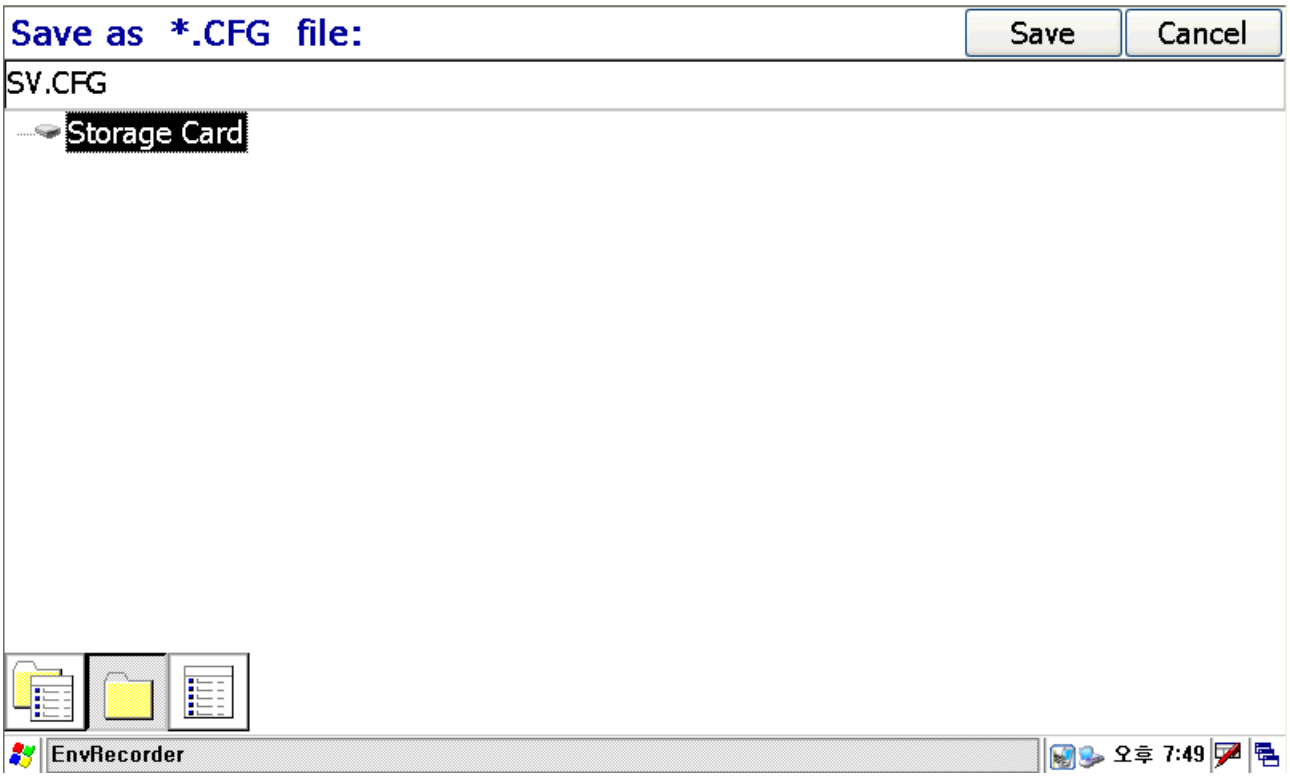


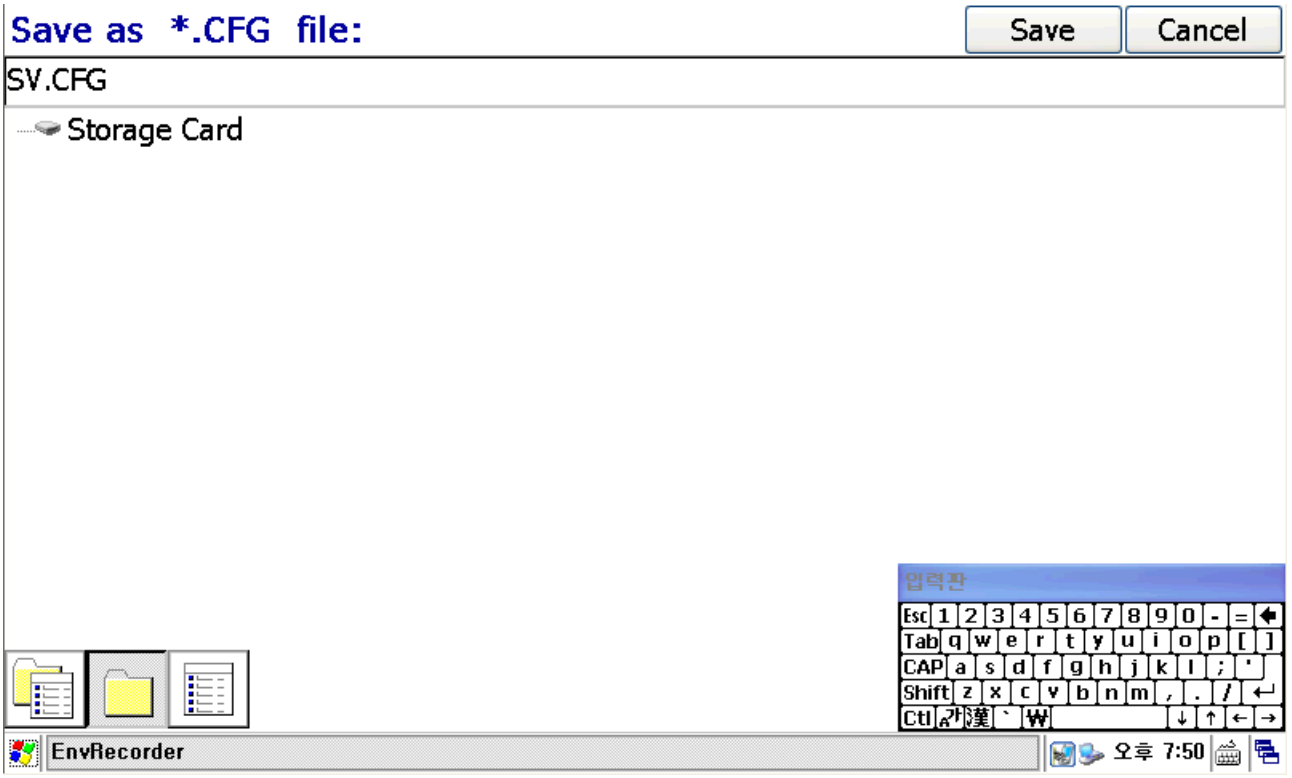
[Example] Vibro Channels : Please select between 1 and 10, Usually 1 is used in Europe as a vibration reference value, Korea and Japan are used 10.

7. Configuration Save As:

After set up all, do "Configuration Save As" at the file menu. Select the position to be saved the "Configuration file", and write file name using the touch key board at the bottom, and click "Save". Tocall the saved configuration file, do and call "File-Configuration Open".

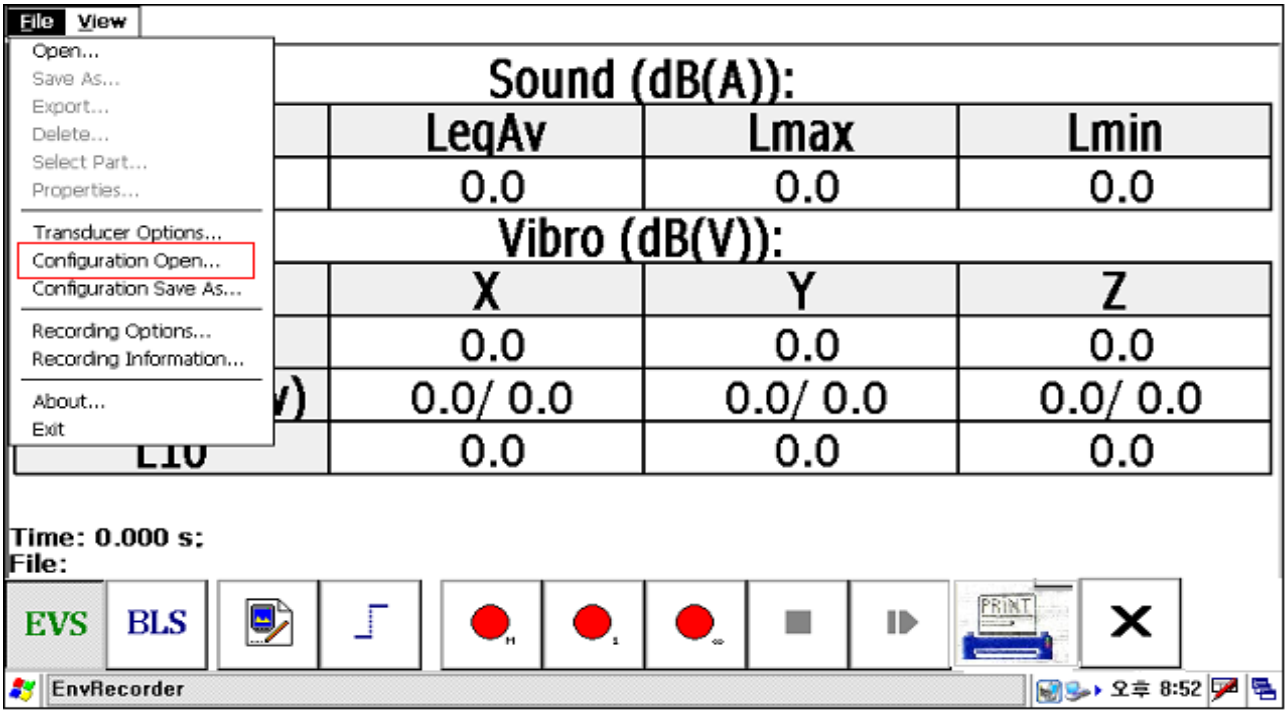


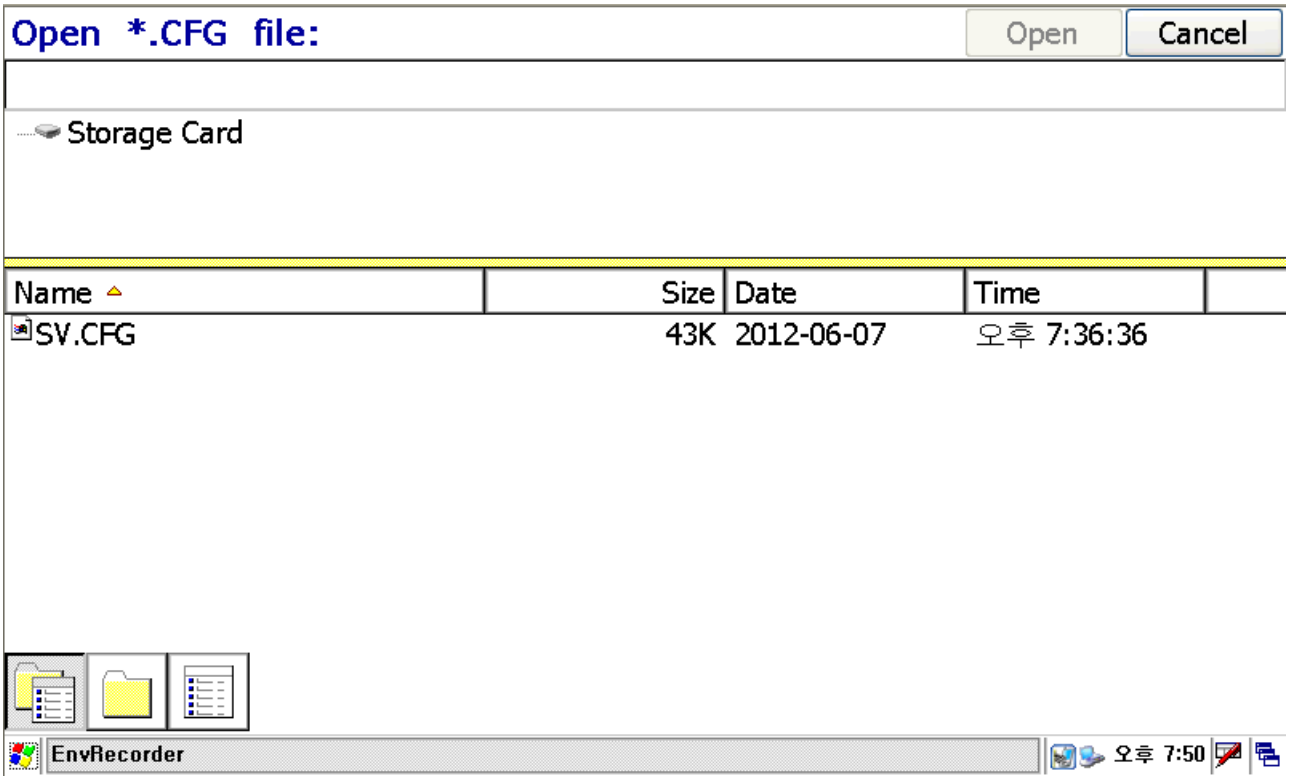




[Example] Click Key board Icon at the right side of bottom, to remove the key board icon from the display, select the key board disappear by pressing the key board icon.

8. Configuration Open:





9. Taking Measurements:

To do measurement and saving the measured data, use "Red recording" Icon.

9.1. Recording M:

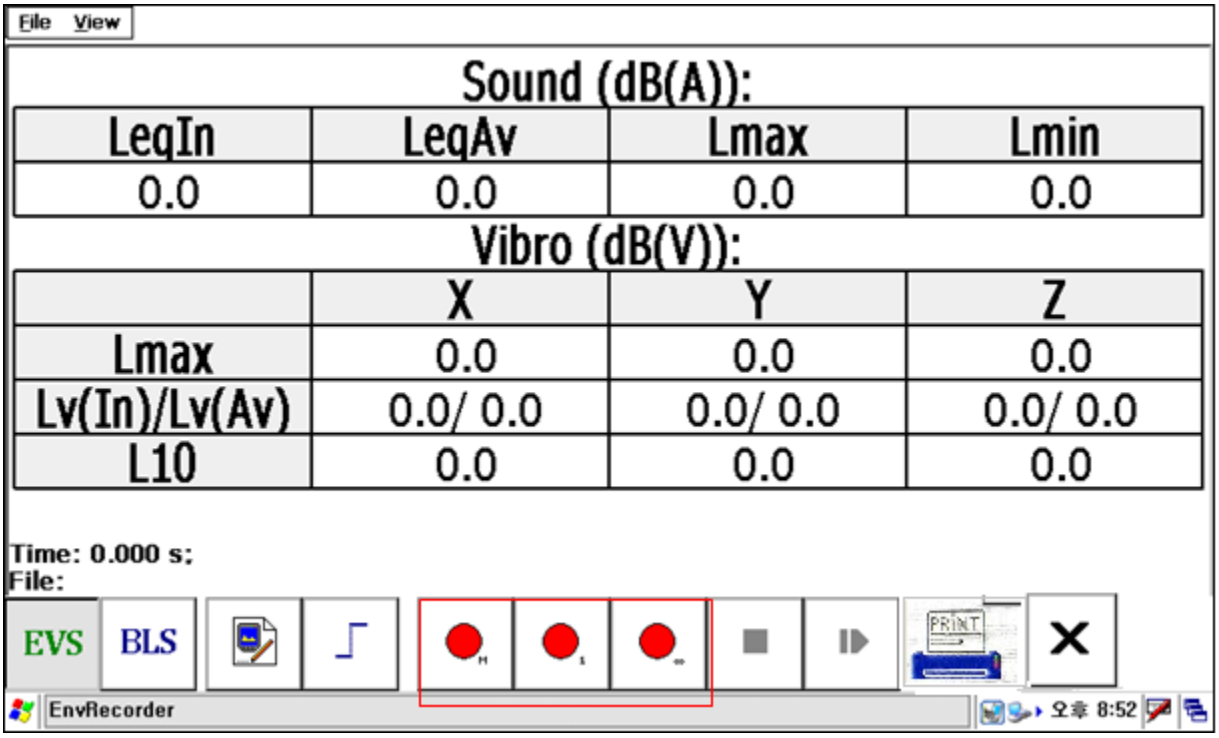
Click "Manual". Then you can measure and save till click "Stop"

9.2. Recording S (1 Recording):

With "Single-shot recording option", it will be measured and saved by the recording time defined at Position 5.1.

9.3. Recording C (Continuous Recording):

If click "recording" Icon, It will start the data acquisition by the trigger level, andstop the data acquisition by defined time, and wait the next Trigger Level. If meet "Trigger Level" signal, it will measure and save the data till you click "Stop", continuously it will be doing the measurement and save the data repeatedly.



10. Data saving to SD Card:

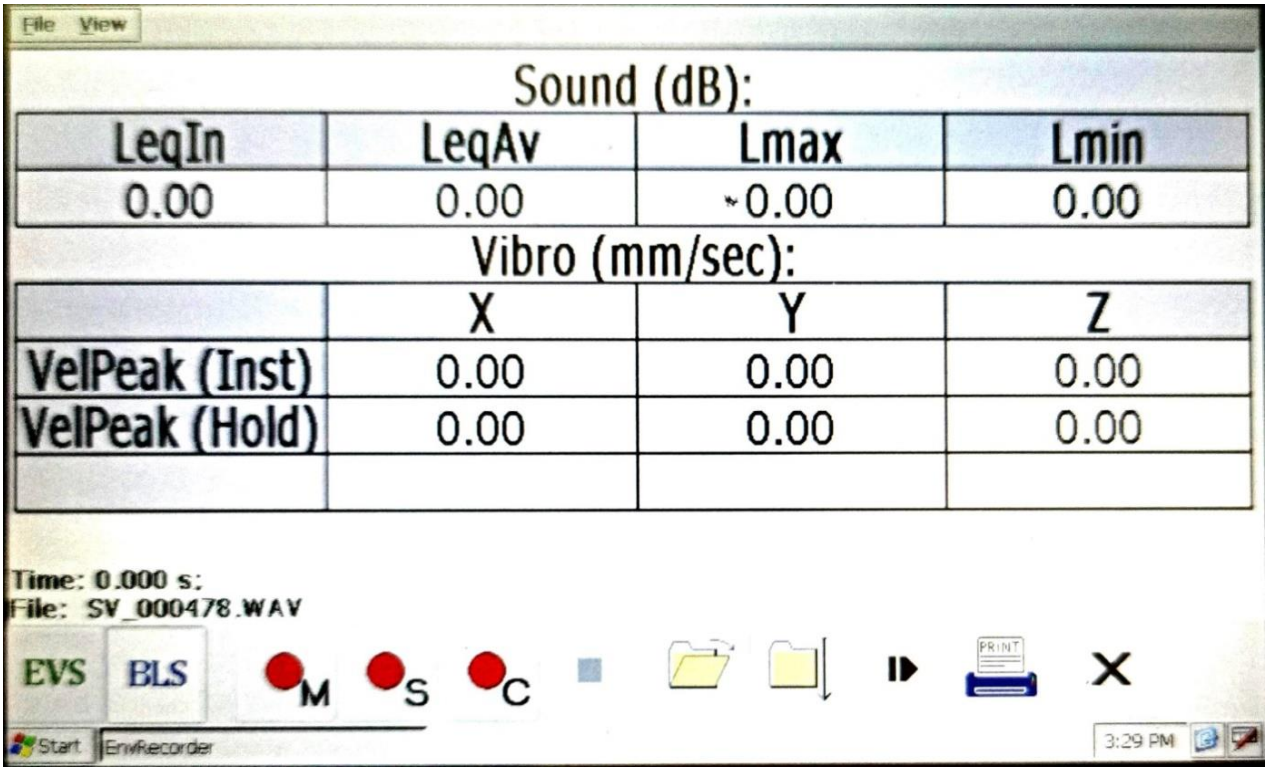
The saved data will be stored in the SD memory card, you can move the saved data of the SD memory card to your PC, and you can analyze the data with the PC EVS analysis software.

11. Summary Printout:

User can print only saved result file.

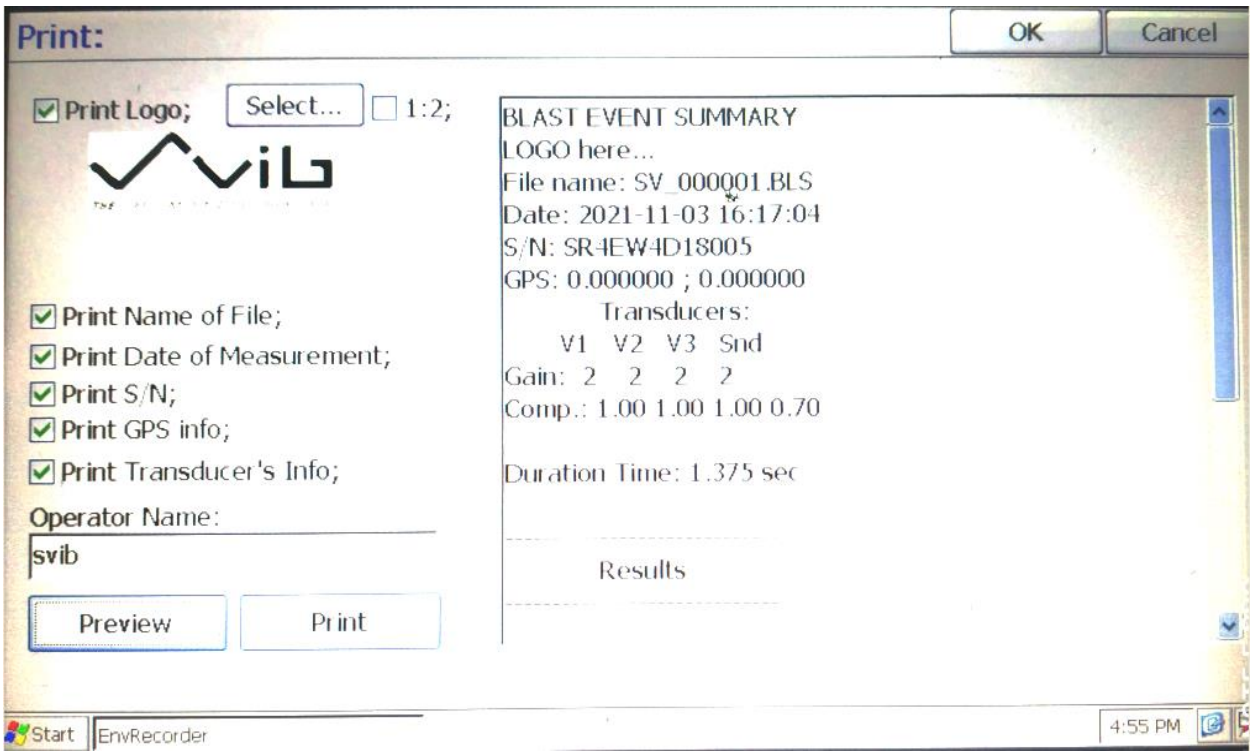
11.1. Steps to take Summary printout of saved result file.

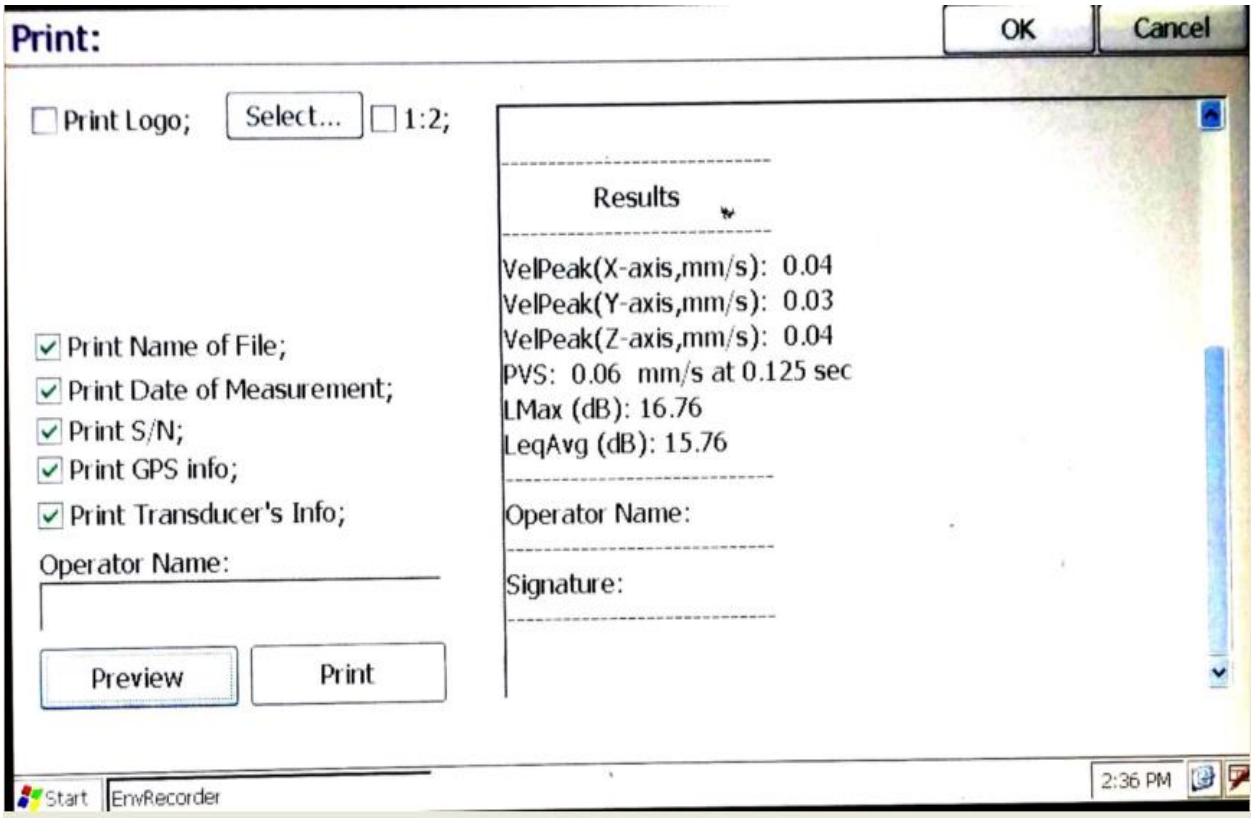
- Feed the paper into the printer
- Connect the printer cable between device & Printer.
- Power on the printer.
- Select result file (menu File/Open... or toolbar or just saved file).
- Press [Print] button.



11.2. Print Preview of summary Printout:

- Before printing the summary printout user can check file content with [Preview] function. Logo picture is not available in preview, just string "Logo here...".
- User can check all other check boxes (Print Name of File, Print Date of Measurement, Print S/N, Print GPS info, Print Transducer's info) as per user requirement.
- So the Print Preview of summary Printout will show the selected checkbox data & the result with Peak velocity of X, Y, Z, PVS, LMax, LeqAvg & operator name & Signature as shown below.
- To set logo in the summary printout user need to select the image from the device & that image should follow the rules as discussed in 11.3.


Print:
OK
Cancel
Print Logo;
Select...
1:2;
Print Name of File;
Print Date of Measurement;
Print S/N;
Print GPS info;
Print Transducer's Info;
Operator Name:
svib
Preview
Print
BLAST EVENT SUMMARY
LOGO here...
File name: SV_000001.BLS
Date: 2021-11-03 16:17:04
S/N: SR4EW4D18005
GPS: 0.000000 ; 0.000000
Transducers:
V1 V2 V3 Snd
Gain: 2 2 2 2
Comp.: 1.00 1.00 1.00 0.70
Duration Time: 1.375 sec
Results
Start
EnvRecorder
4:55 PM


Print:
OK
Cancel
Print Logo;
Select...
1:2;
Print Name of File;
Print Date of Measurement;
Print S/N;
Print GPS info;
Print Transducer's Info;
Operator Name:
Preview
Print
Results
VelPeak(X-axis,mm/s): 0.04
VelPeak(Y-axis,mm/s): 0.03
VelPeak(Z-axis,mm/s): 0.04
PVS: 0.06 mm/s at 0.125 sec
LMax (dB): 16.76
LeqAvg (dB): 15.76
Operator Name:
Signature:
Start
EnvRecorder
2:36 PM

11.3. Logo picture requirement:

- Image should be Monochrome type;
- Image Width is not more 240px,
- Image Height is not more 100px;
- Width should be a multiple of 8 (preferably);

EVS app displays the selected logo-picture in its real size. But printer stretches its height into 2 times. So the selected logo image will show 2 times stretchable than the original image.
There are two ways to fix it:

11.3.1. Editing Logo image:

1. User should edit logo-image before selecting the logo image in the device by himself (compress the Logo image height in ~2 times in a picture editor, for ex. Paint)
2. Select the Checkbox "Print Logo" in Preview Window.
3. select the edited image in Preview Window.

11.3.2. select the check box option <1:2>:

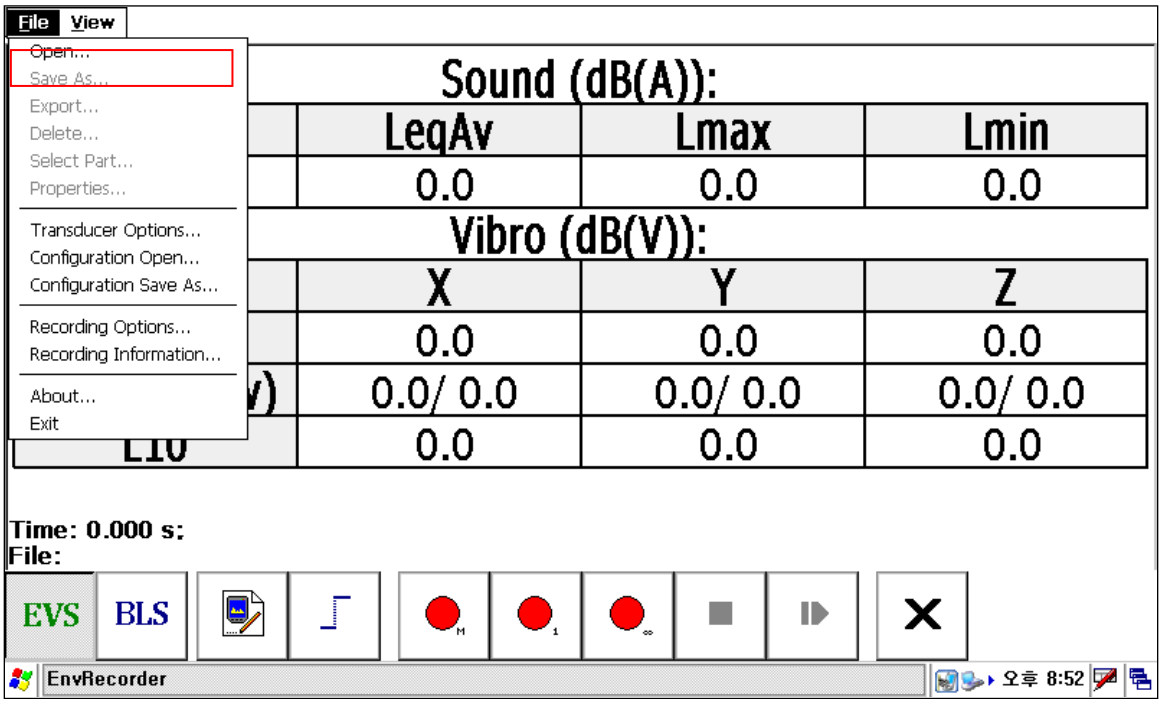
1. User should select the check box option <1:2> in the preview window
2. But its Quality may be worse as compared to 11.3.1.

Note:
If printer is not connected but user press [Print] button in <Print> dialog then the app sends data to printer device anyway. User should wait of process ending (it's not possible to interrupt it). Print function takes about 10-15 sec for a file.

[Appendix]

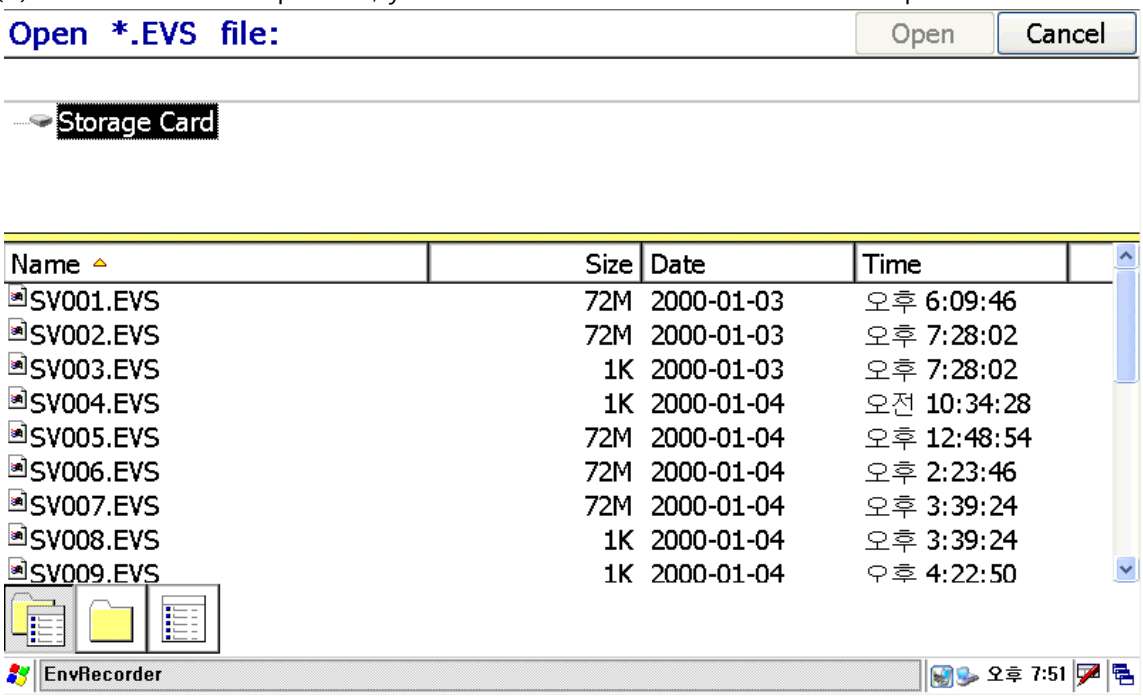
1. To open the saved data and to display the file information

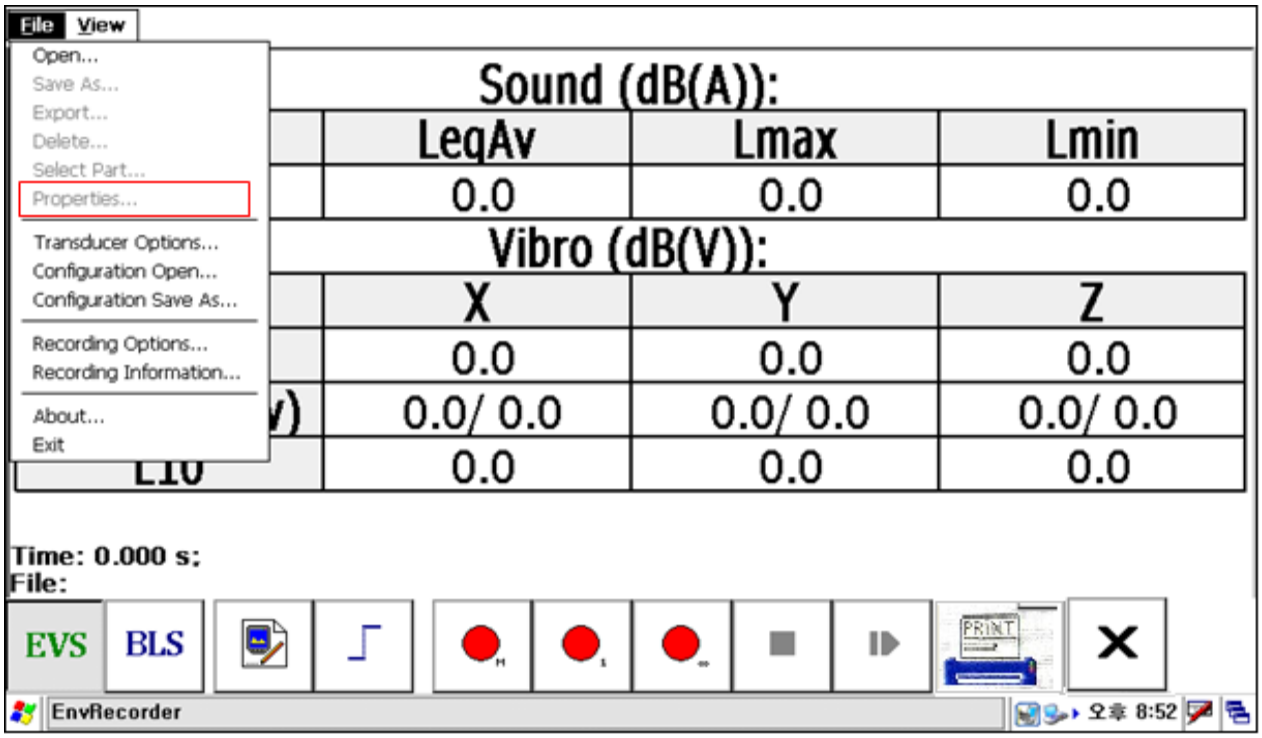
(1) Please do "File-Open".

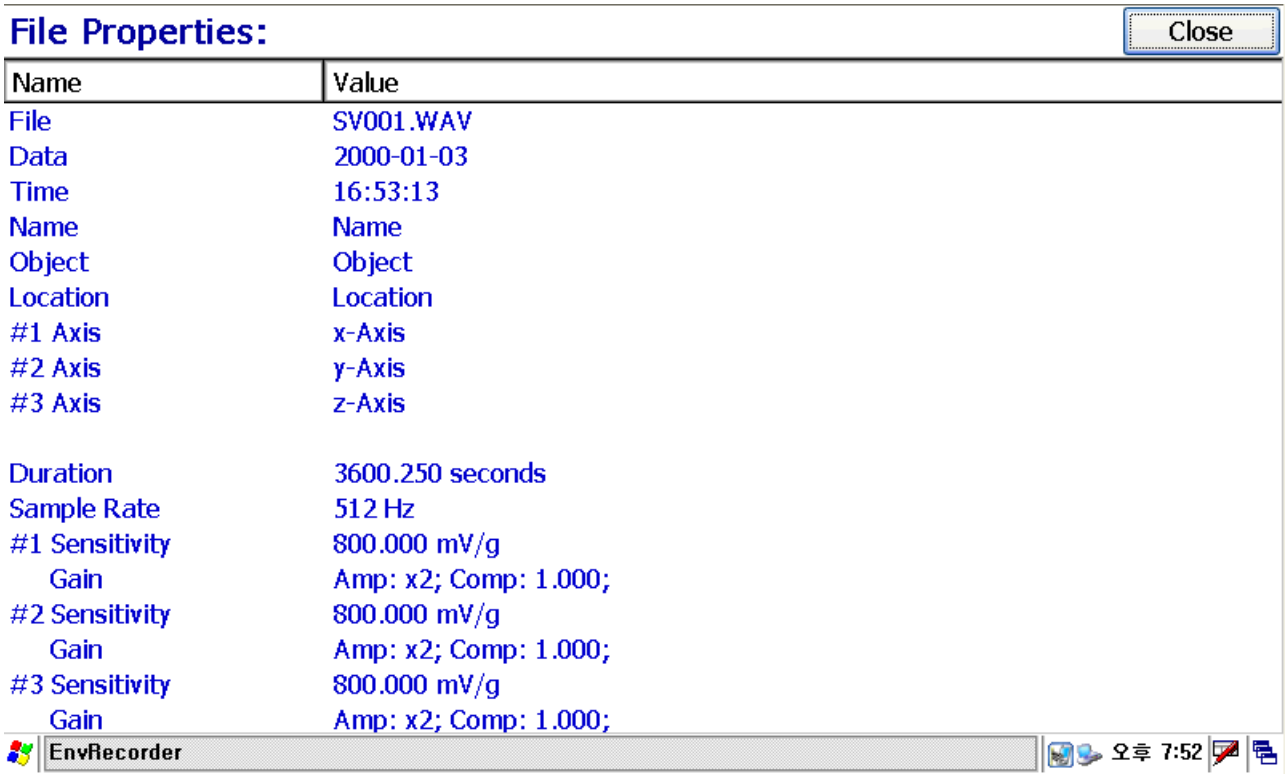


(2) Select the data to be opening, click "Open".

(3) Please do "File-Properties", you can see the saved file information Open.

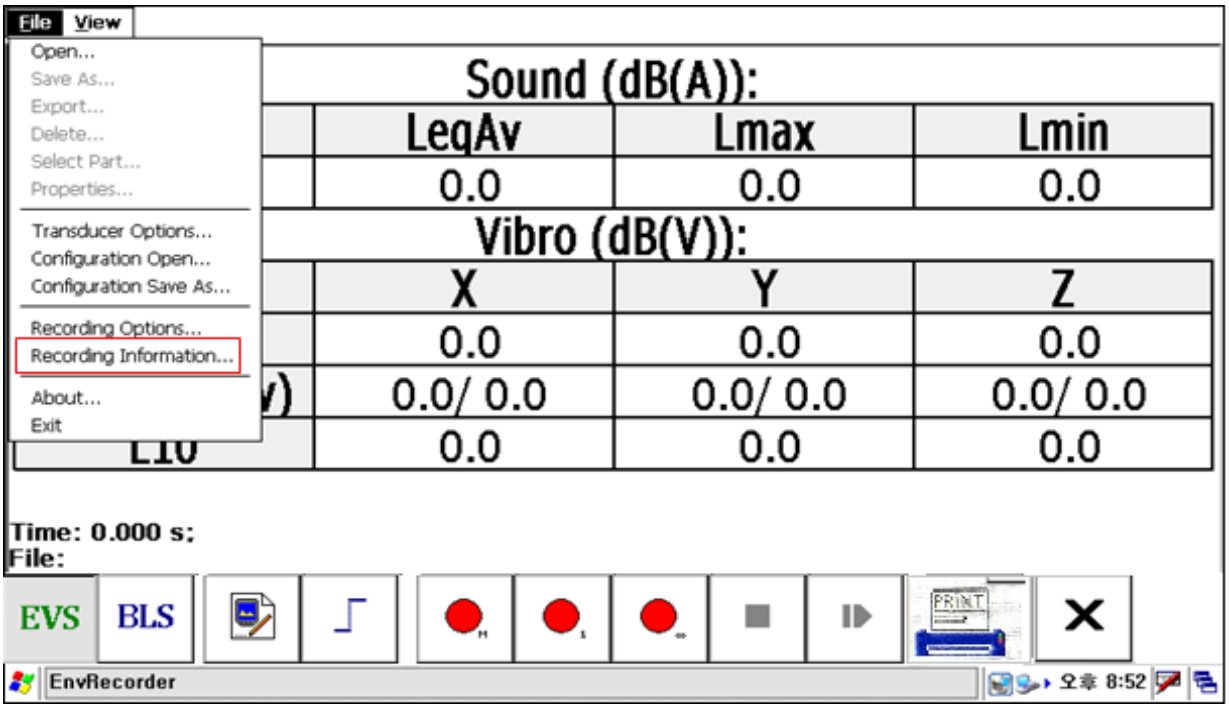



File
View
Open...
Save As...
Export...
Delete...
Select Part...
Properties...
Transducer Options...
Configuration Open...
Configuration Save As...
Recording Options...
Recording Information...
About...
Exit
Sound (dB(A)):
LeqAv
Lmax
Lmin
0.0
0.0
0.0
Vibro (dB(V)):
X
Y
Z
0.0
0.0
0.0
0.0/ 0.0
0.0/ 0.0
0.0/ 0.0
L10
0.0
0.0
0.0
Time: 0.000 s;
File:
EVS
BLS
PRINT
EnvRecorder
오후 8:52


File Properties:
Close
Name
Value
File
SV001.WAV
Data
2000-01-03
Time
16:53:13
Name
Name
Object
Object
Location
Location
#1 Axis
x-Axis
#2 Axis
y-Axis
#3 Axis
z-Axis
Duration
3600.250 seconds
Sample Rate
512 Hz
#1 Sensitivity
800.000 mV/g
Gain
Amp: x2; Comp: 1.000;
#2 Sensitivity
800.000 mV/g
Gain
Amp: x2; Comp: 1.000;
#3 Sensitivity
800.000 mV/g
Gain
Amp: x2; Comp: 1.000;
EnvRecorder
오후 7:52

2. Set up "Recording Information" for the data to be saving

(1) Please do "File-Recording Information".

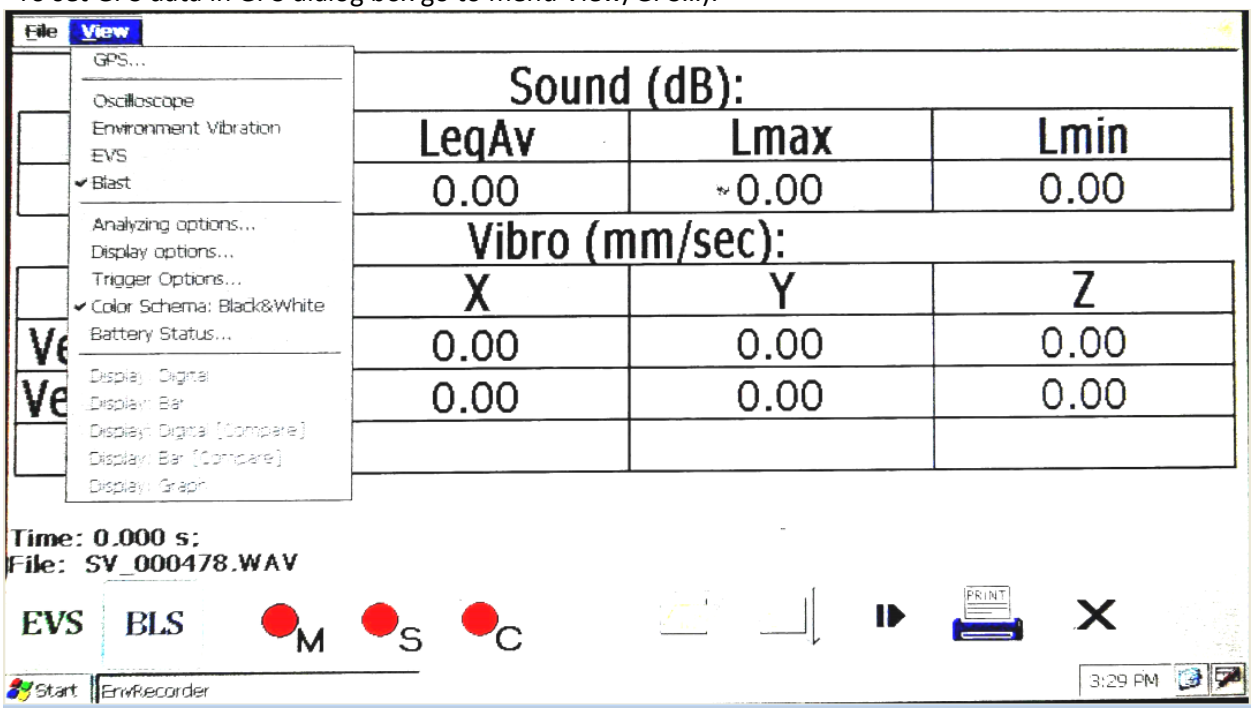


(2) Put the saving information for the data. Name of person, Object of measurement, measuring position, Axis direction information of 1,2,3 channels for vibration name.

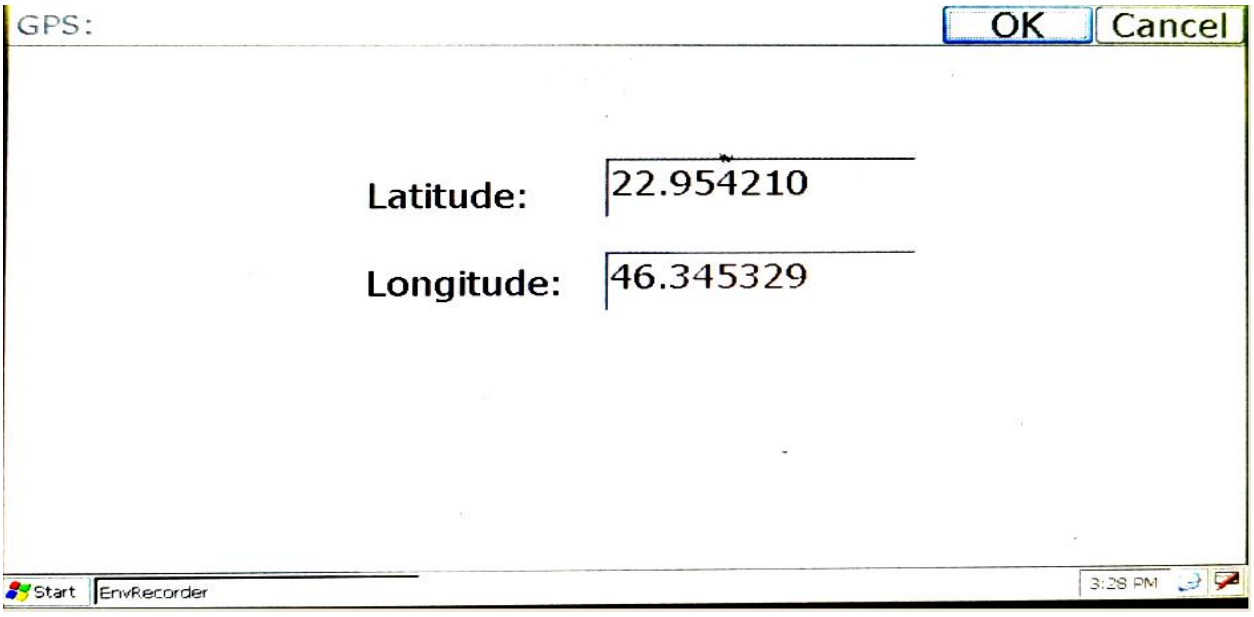
3. To Set GPS Coordinates

(1) GPS data are related to the place where measurement is done, but not to a place where file is printing. So GPS data should be saved to the result file before the measurement starts and are printed with result data. If user doesn't set the GPS data before the measurement starts it will take the previous values.

To set GPS data in GPS dialog box go to menu View/GPS…):

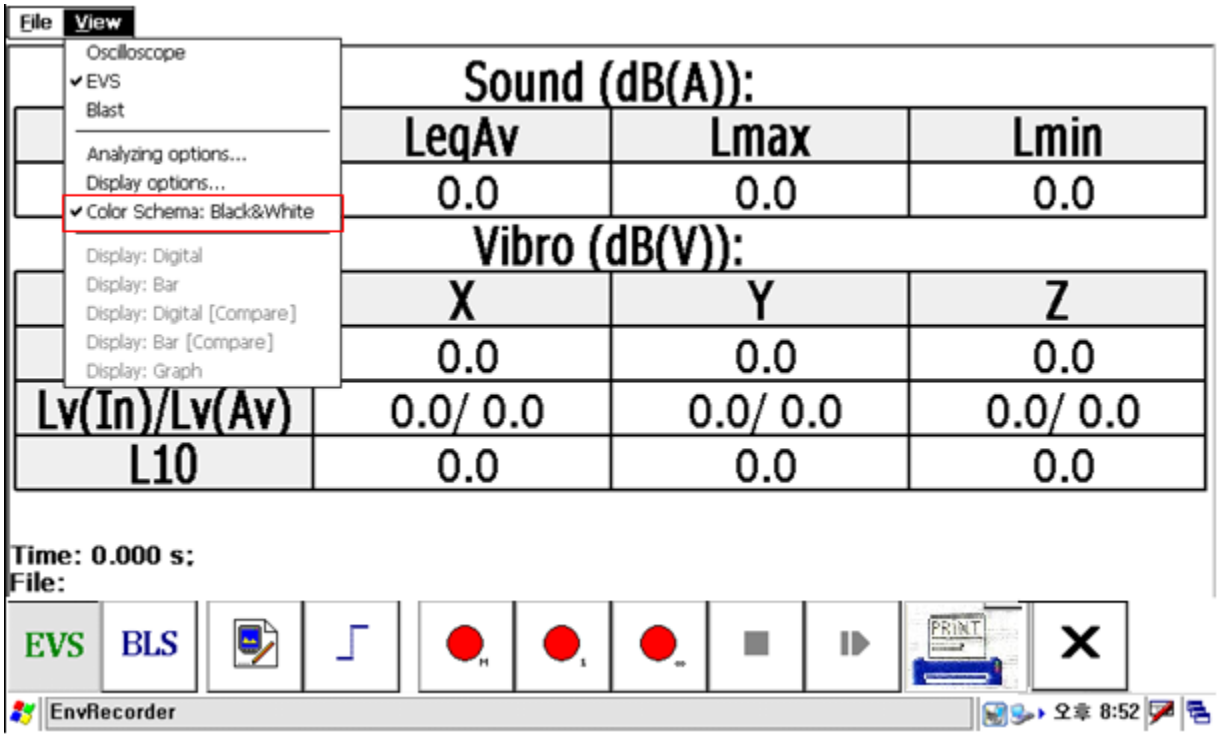


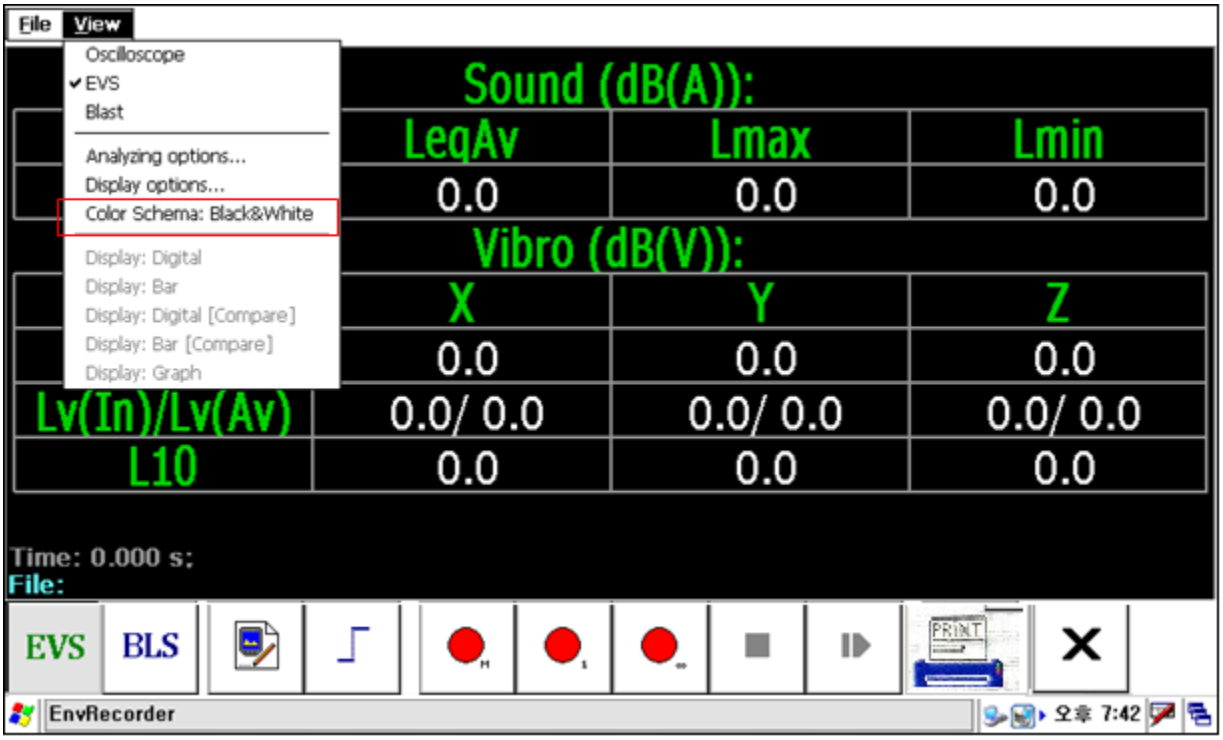
Below screen will appear. User can set GPS data in the blocks for each file



4. To change the background color of the display

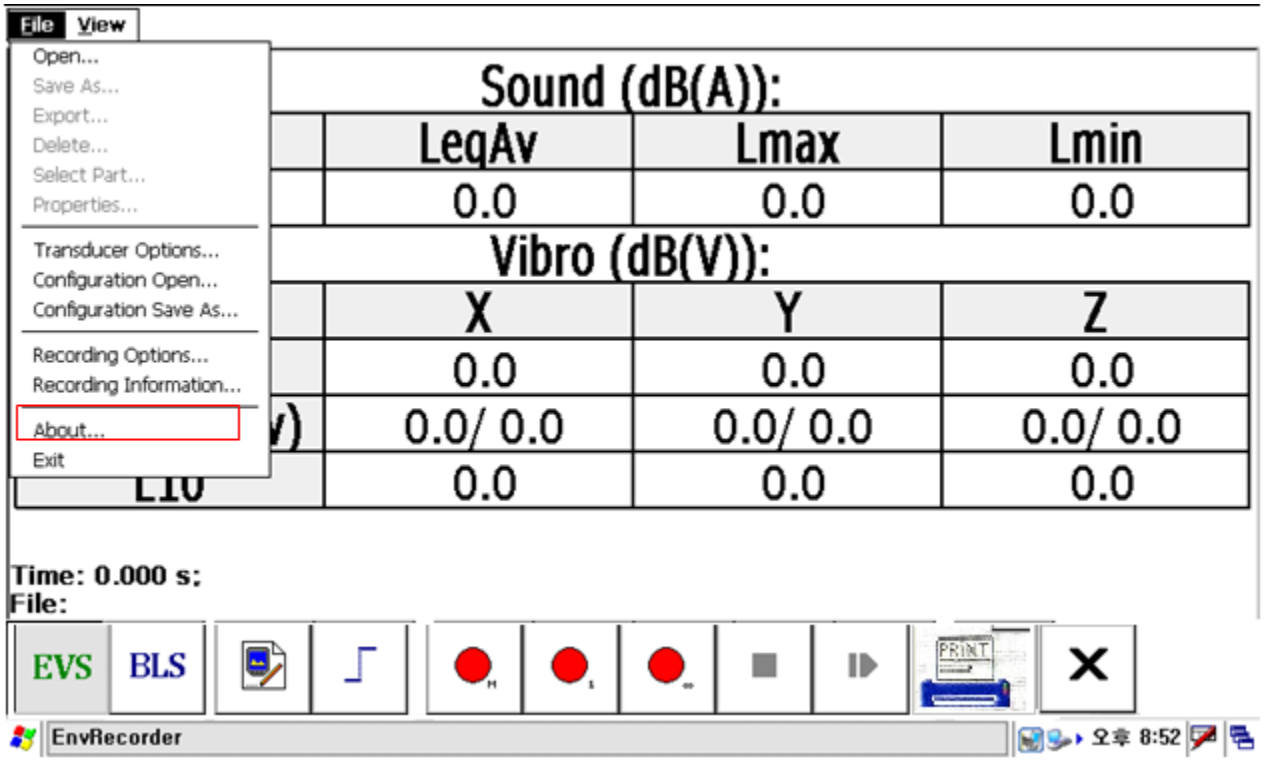
(1) View-Color Schema: If select "Black&White" Background color will be white and letter will be black,if not select it, background will be black and letter will be green. Under shine, it will illegible, So please check the "Black&White".

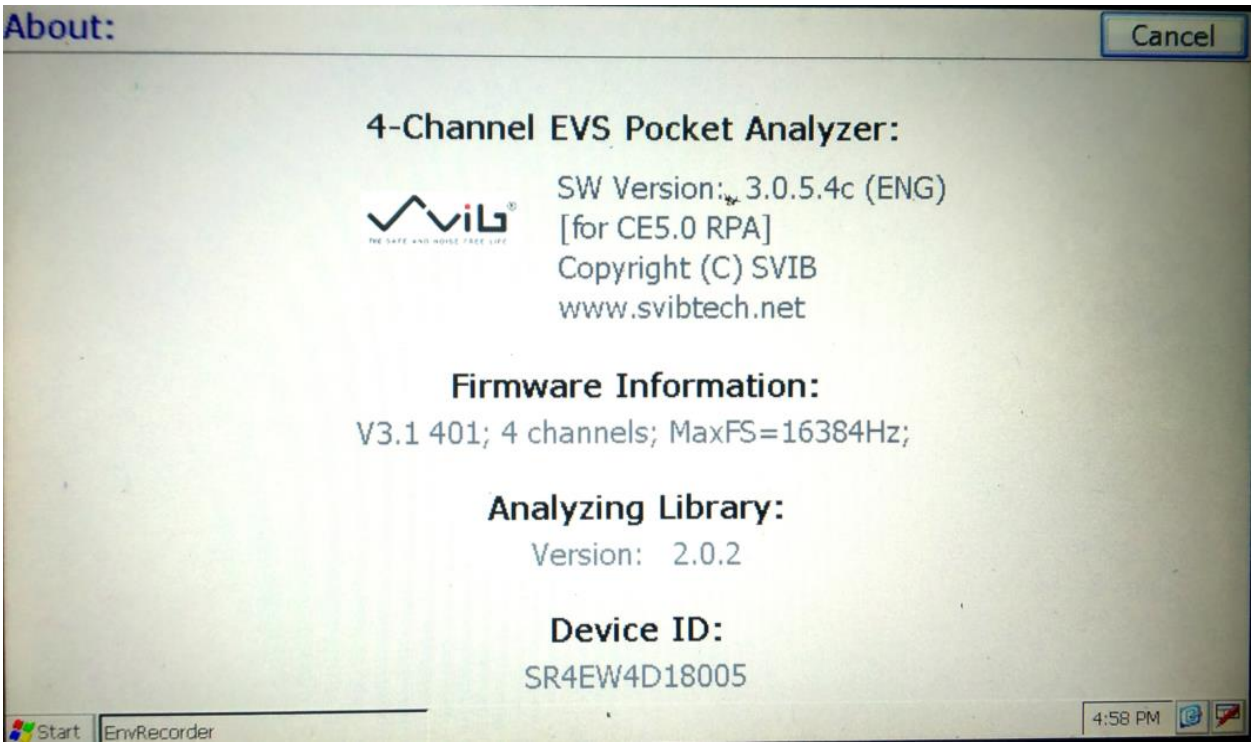




5. Display the information of the measuring system

c. If do "File-About", you can find the software version and hardware firmware version of themeasuring system.





Seismic Ground Vibration & Sound Analyzer
Blast Induced Ground Vibration & Sound Analyzer
EVS(Environmental Vibration & Sound) Measurement

PC Software User Manual

Third Edition (Ver. 3.0.0.d)

SVIB Software Technologies Pvt. Ltd

[BLS PC Software]

1. Copying Files to system & Installation Steps:

Before installing the BLS Package user need to copy the result files in to the system in a particular folder.

1.1. System Requirement:

Operating System: Windows

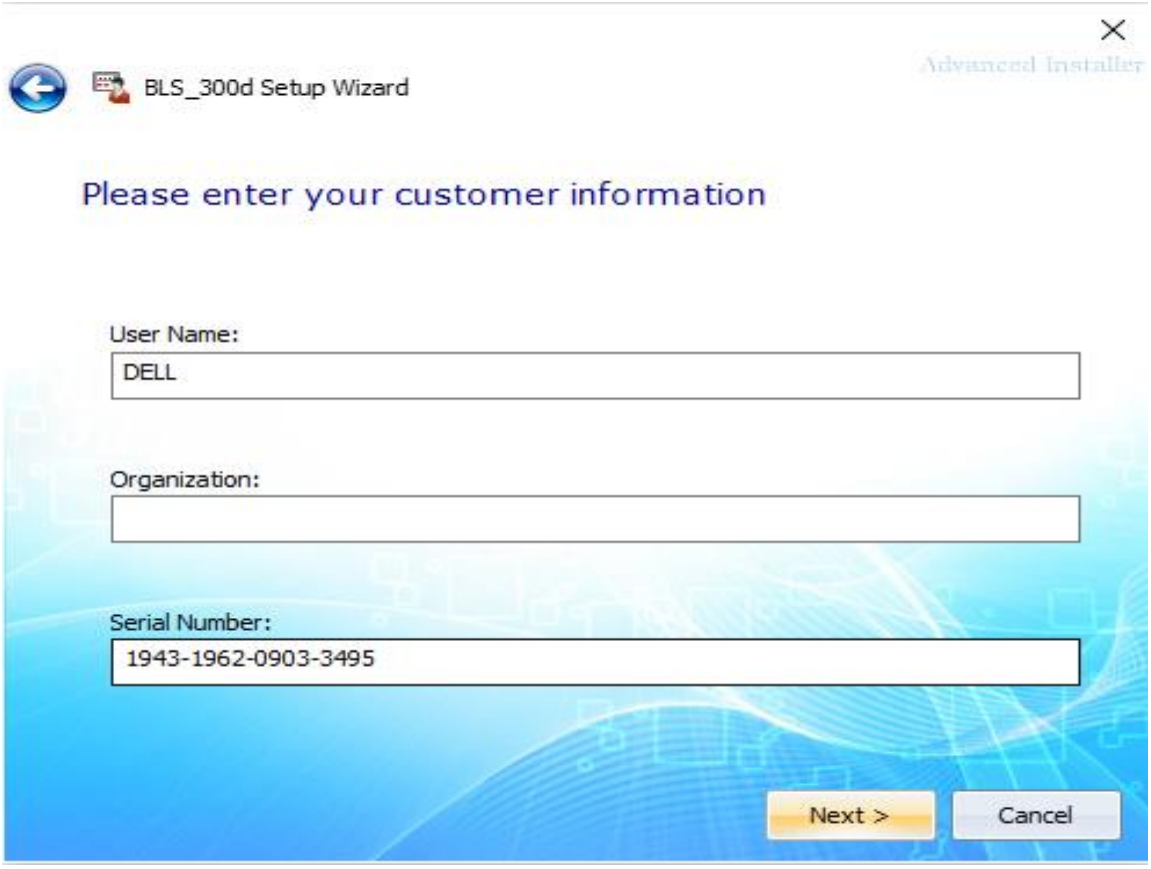
RAM : 8GB

System Type : 64Bit

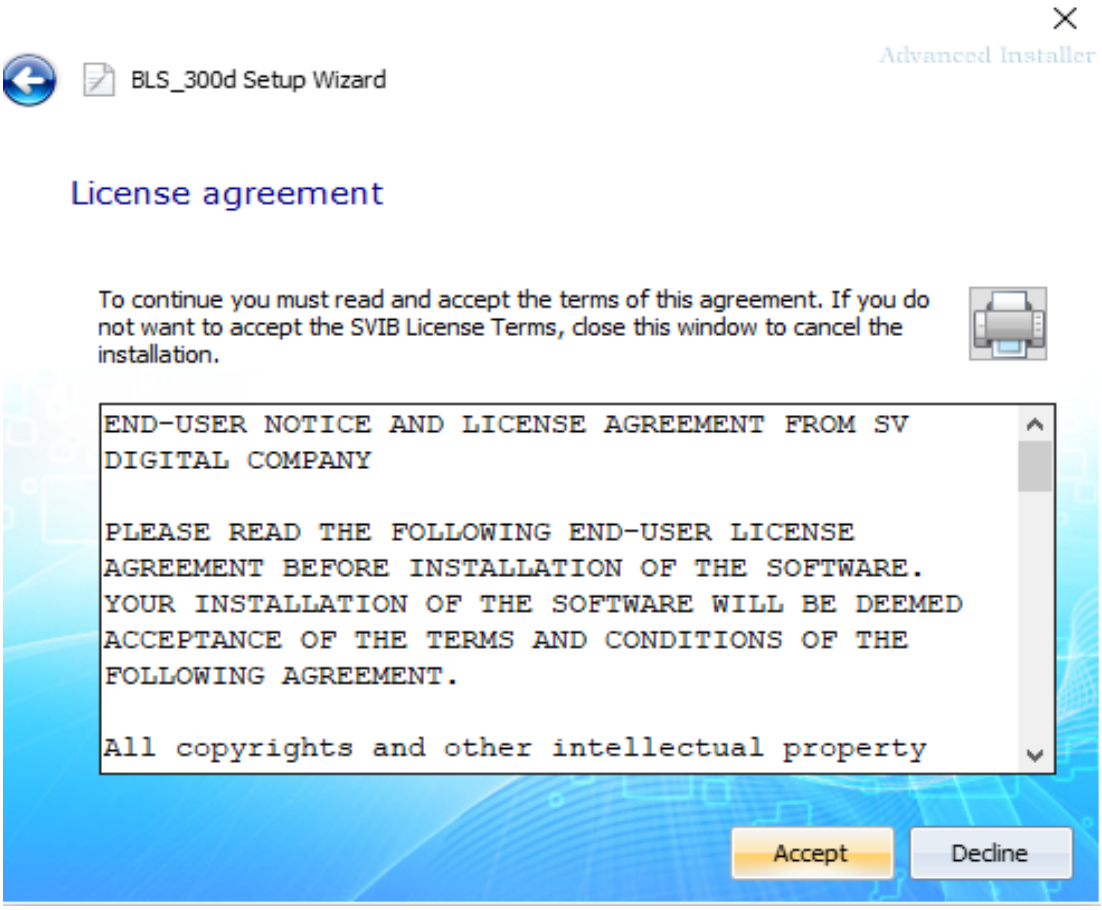
(For 32 bit different version of PC Software is need to install)

1.2: Steps for installation of BLS300 PC Software:

- Double click on .exe file click Next.
- Paste the serial key (which is given in a text file along with the .exe package) & click Next.
- For First Time installation of BLS Package it will ask for the crystal report installation
- User need to install the crystal report along with the main installation of BLS
- After installation of crystal report continue with the main installation of BLS PC Software.



- Then click on Accept button to accept the terms & Conditions



- Select Typical & click Next
- Then click on Install& then Finish.

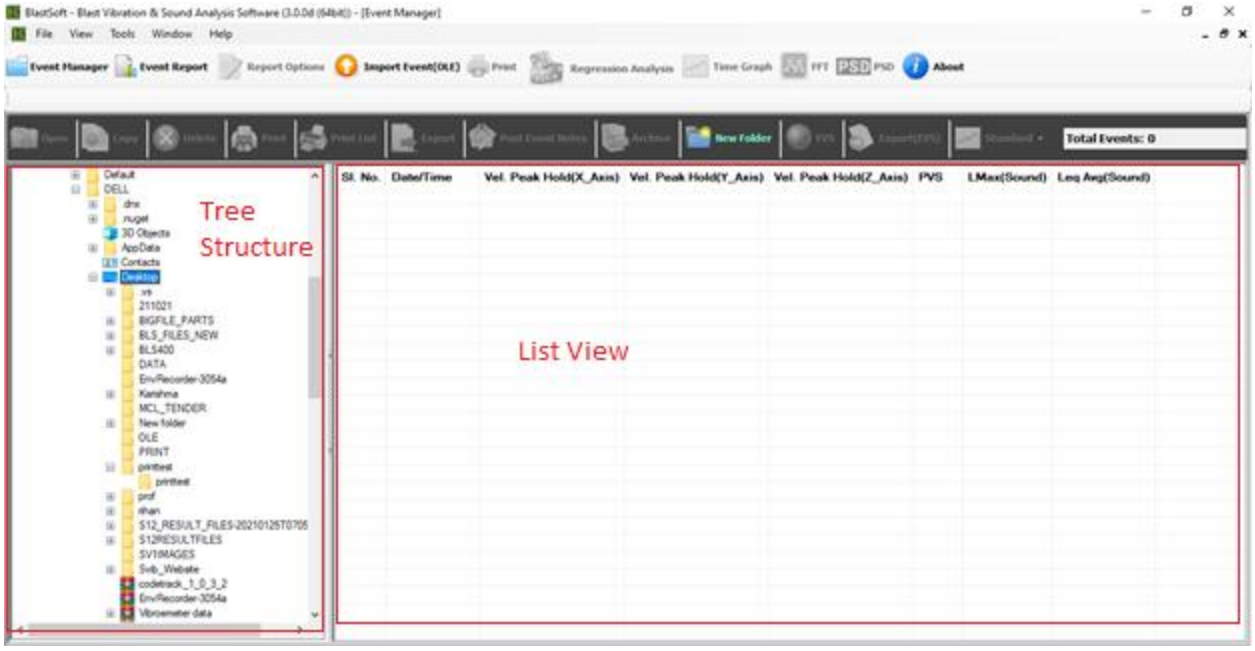
2. Application Launching:

Install the BLS Package as discussed in 1.2 and Click on icon  on Desktop to launch the application

Event Manager Window will appear .Left hand side one tree structure & right hand side list view

2.1. Tree structure

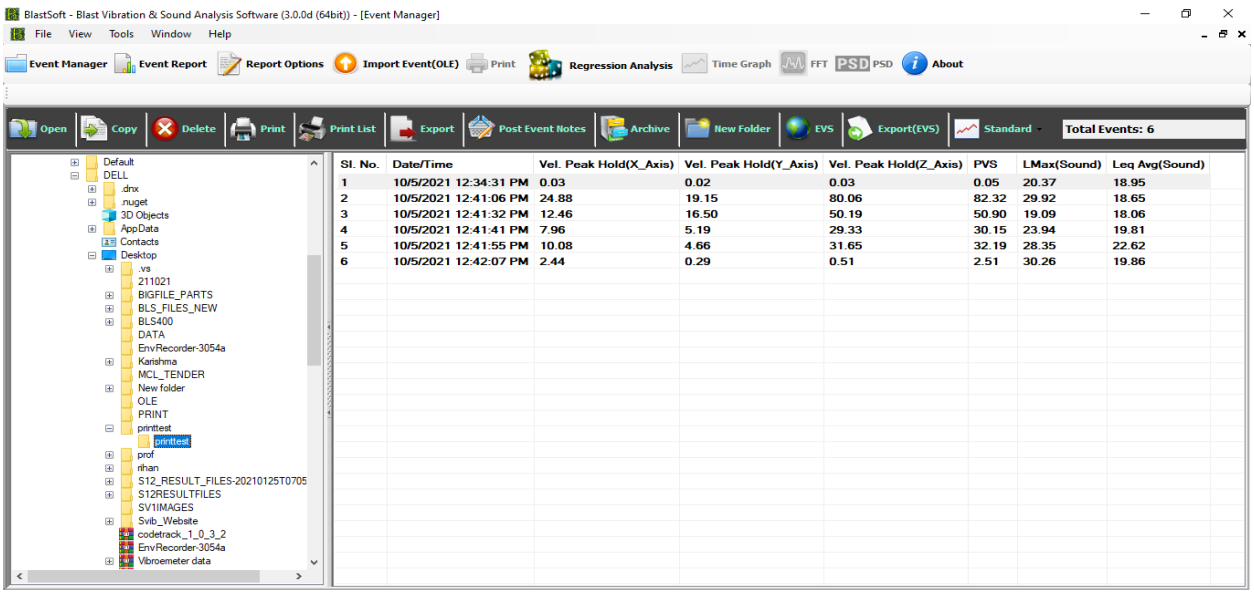
Tree structure is used to select the folder from where Blast files are stored as explain in 1.



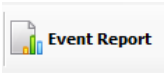
2.2. List View:

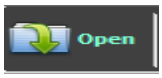
List View is used to show Velocity peak hold of x, y, z, PVS , LMax(Sound) & Leq Avg(Sound)

When user select the folder where Blast files are stored, list view shows its values in right side.

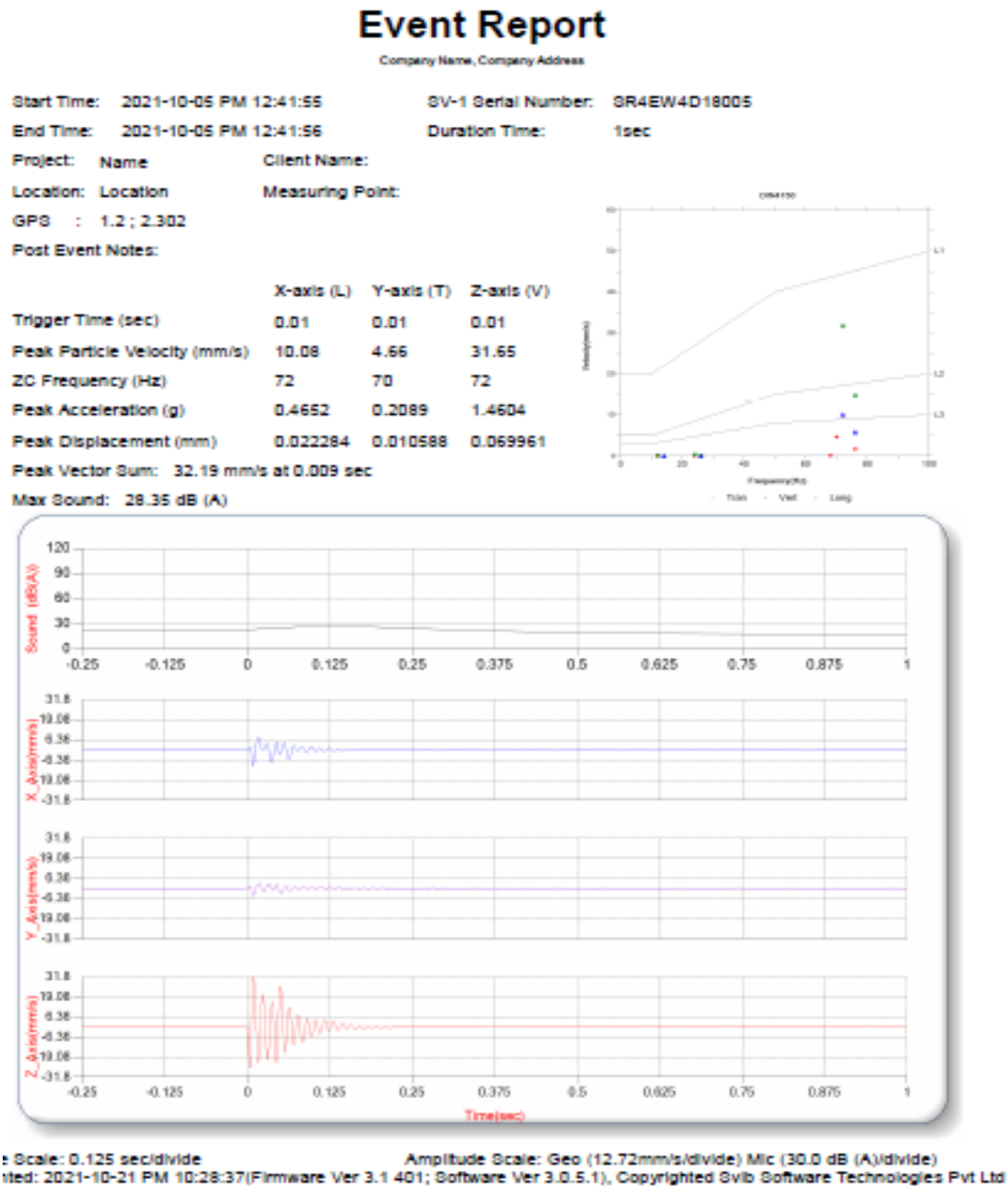


3. Event Report:

When user double click of list view file or click on 

or click on 

event report window will open which shows Event Report details of X, Y, Z axis values & charts showing the sound and vibration analysis of the selected



Event Report

Company Name, Company Address

Start Time: 2021-10-05 PM 12:41:55 SV-1 Serial Number: SR4EW4D18005

End Time: 2021-10-05 PM 12:41:56 Duration Time: 1sec

Project: Name Client Name:

Location: Location Measuring Point:

GPS : 1.2 ; 2.302

Post Event Notes:

	X-axis (L)	Y-axis (T)	Z-axis (V)
Trigger Time (sec)	0.01	0.01	0.01
Peak Particle Velocity (mm/s)	10.08	4.66	31.65
ZC Frequency (Hz)	72	70	72
Peak Acceleration (g)	0.4652	0.2089	1.4604
Peak Displacement (mm)	0.022284	0.010588	0.069961

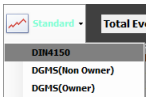
Peak Vector Sum: 32.19 mm/s at 0.009 sec

Max Sound: 28.35 dB (A)

Scale: 0.125 sec/divide Amplitude Scale: Geo (12.72mm/s/divide) Mic (30.0 dB (A)/divide)

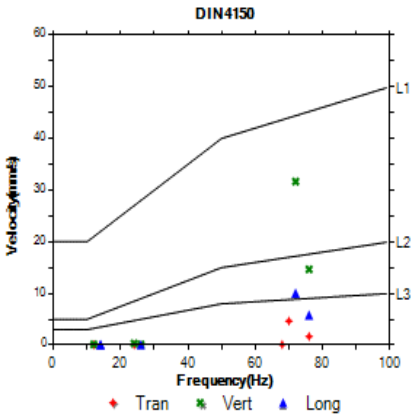
ted: 2021-10-21 PM 10:28:37(Firmware Ver 3.1 401; Software Ver 3.0.5.1), Copyrighted Svib Software Technologies Pvt Ltd

4. Standards:

When user click on 

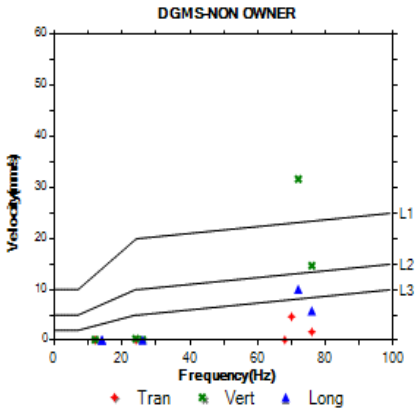
button, on the right side of event report as shown in 10 Freq-vel graph plot is shown with the corresponding standards .In dropdown 3 standards (DIN4150, DGMS-Non Owner, and DGMS-Owner)

4.1. DIN-4150:



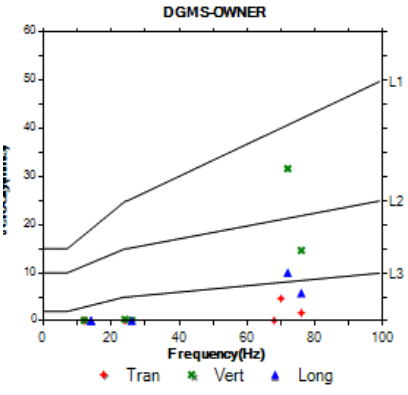
Permissible PPV(mm/s) as per DIN				
Type of structure		Dominant excitation Freq(Hz)		
		<10Hz	10-45Hz	>45Hz
L1	Industrial buildings	20	40	50
L2	Domestic houses/Structure	5	15	20
L3	objects of historical importance & Sensitive structures	3	8	10

4.2. DGMS-NON Owner:



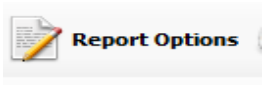
Permissible PPV(mm/s) as per DGMS-Non Owner				
Type of structure		Dominant excitation Freq(Hz)		
		<8Hz	8-25Hz	>25Hz
L1	Industrial buildings	10	20	25
L2	Domestic houses/Structure	5	10	15
L3	objects of historical importance & Sensitive structures	2	5	10

4.3. DGMS-Owner:

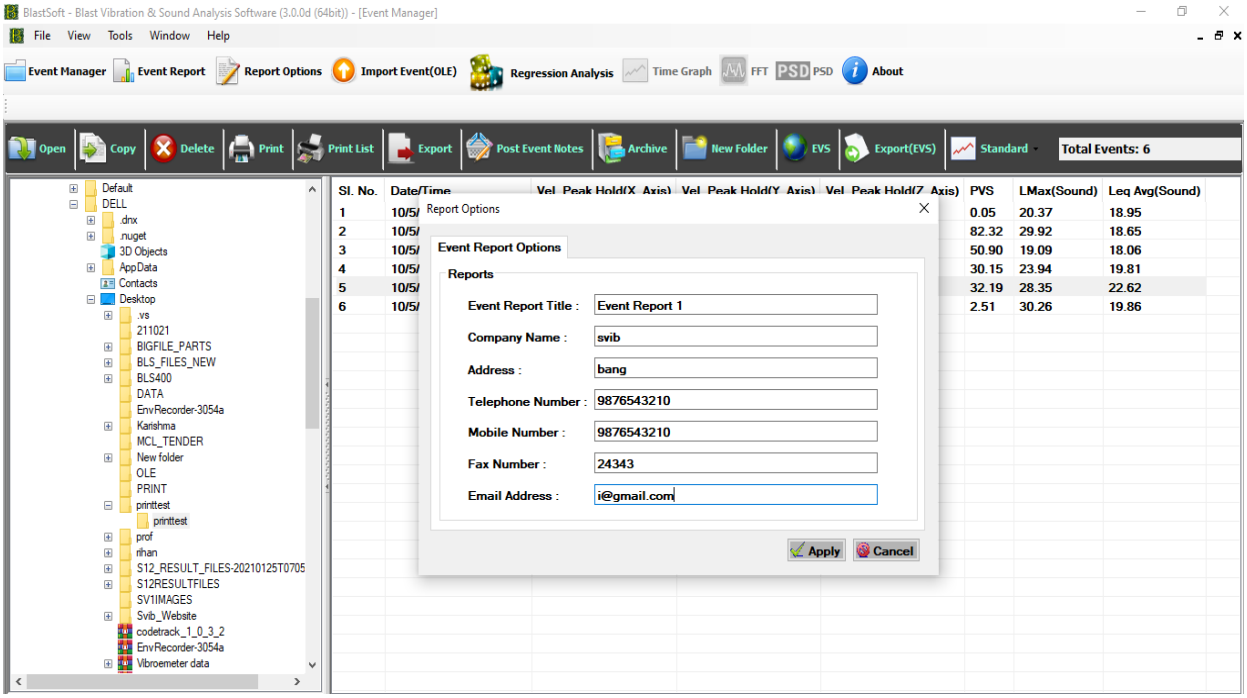


Permissible PPV(mm/s) as per DGMS-Owner				
Type of structure		Dominant excitation Freq(Hz)		
		<8Hz	8-25Hz	>25Hz
L2	Domestic houses	10	15	25
L1	Industrial buildings	15	25	50
L3	objects of historical importance & Sensitive structures	2	5	10

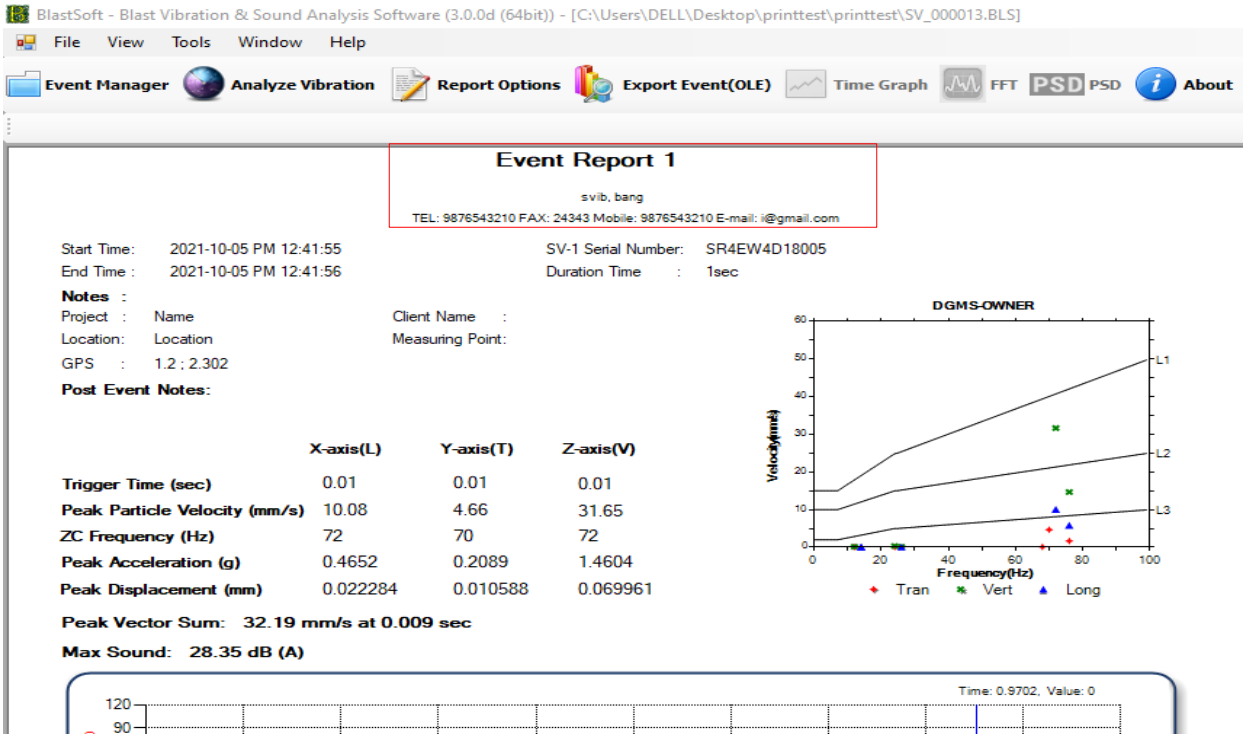
5. Report Options:

When user selects a file from list View & clicks on 

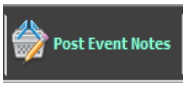
button following window will appear.



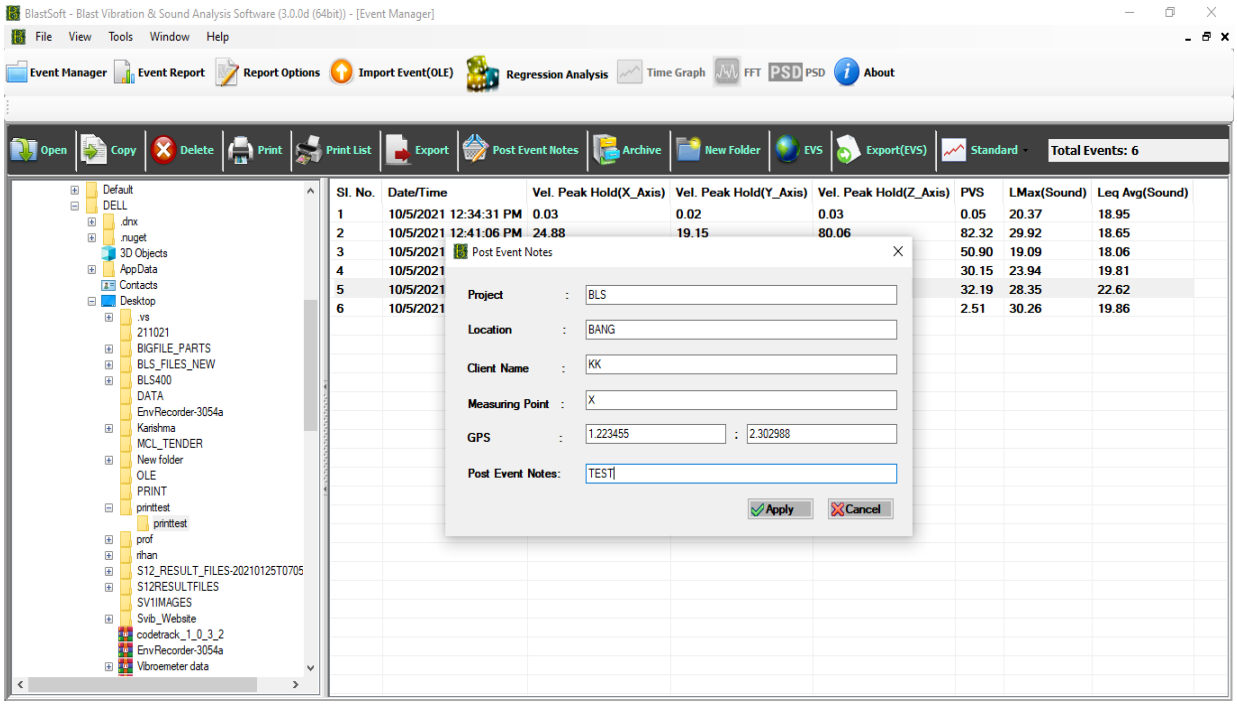
User need to enter all the fields. Then click on Apply button. That user options will get reflected into event report.



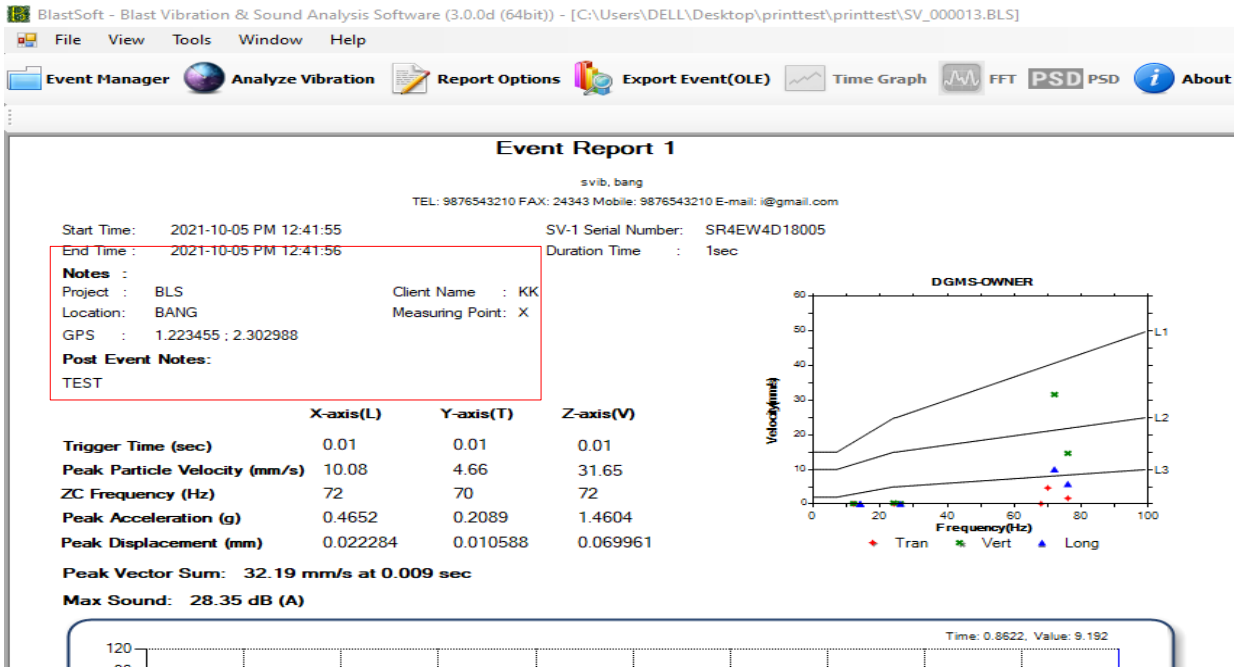
6. Post Event Notes:

When user selects a file from event list & clicks on 

button following window will appear.



User need to enter all the fields. Then click on Apply button. That user options will get reflected into event report

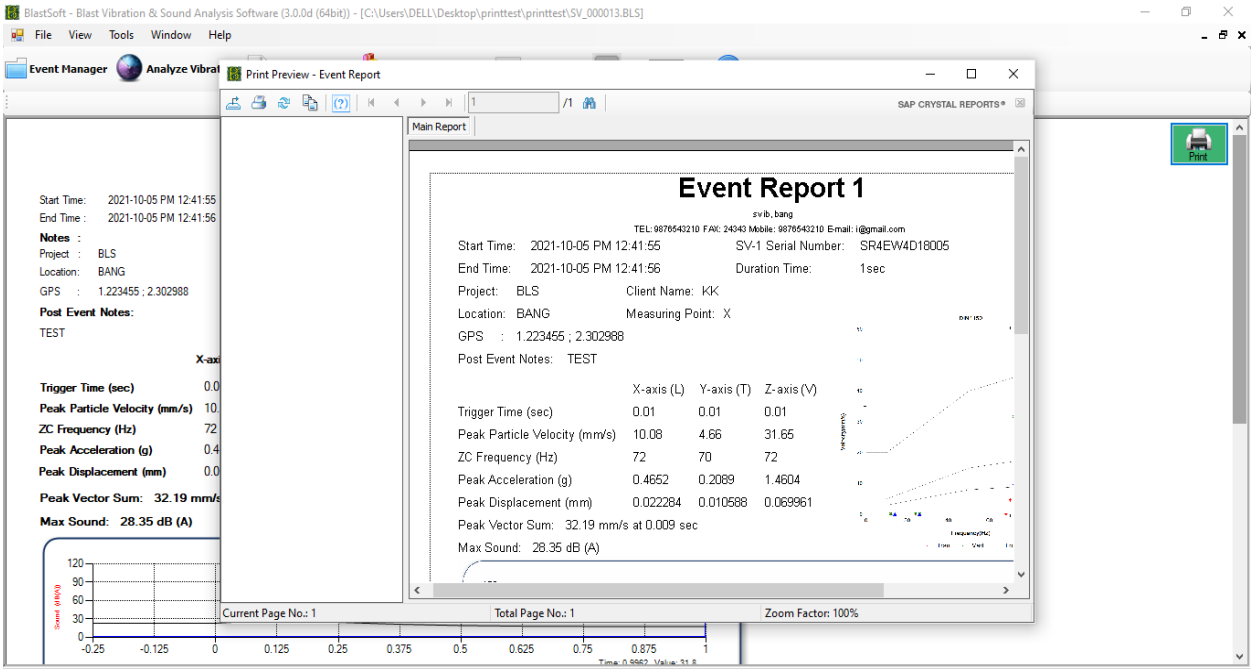


7. Print:

When user clicks on 

or 

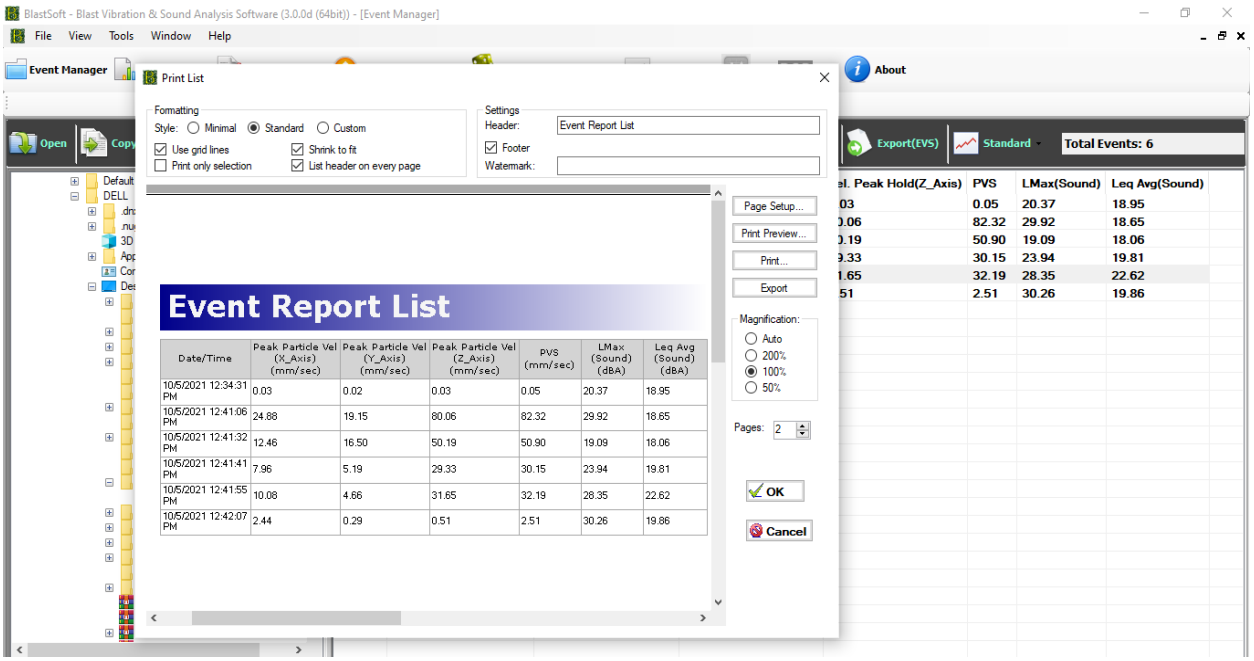
(Inside the event report form) following window will appear. User can take print of the event report or it can save as pdf file also.



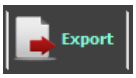
8. Print List:

When user clicks on 

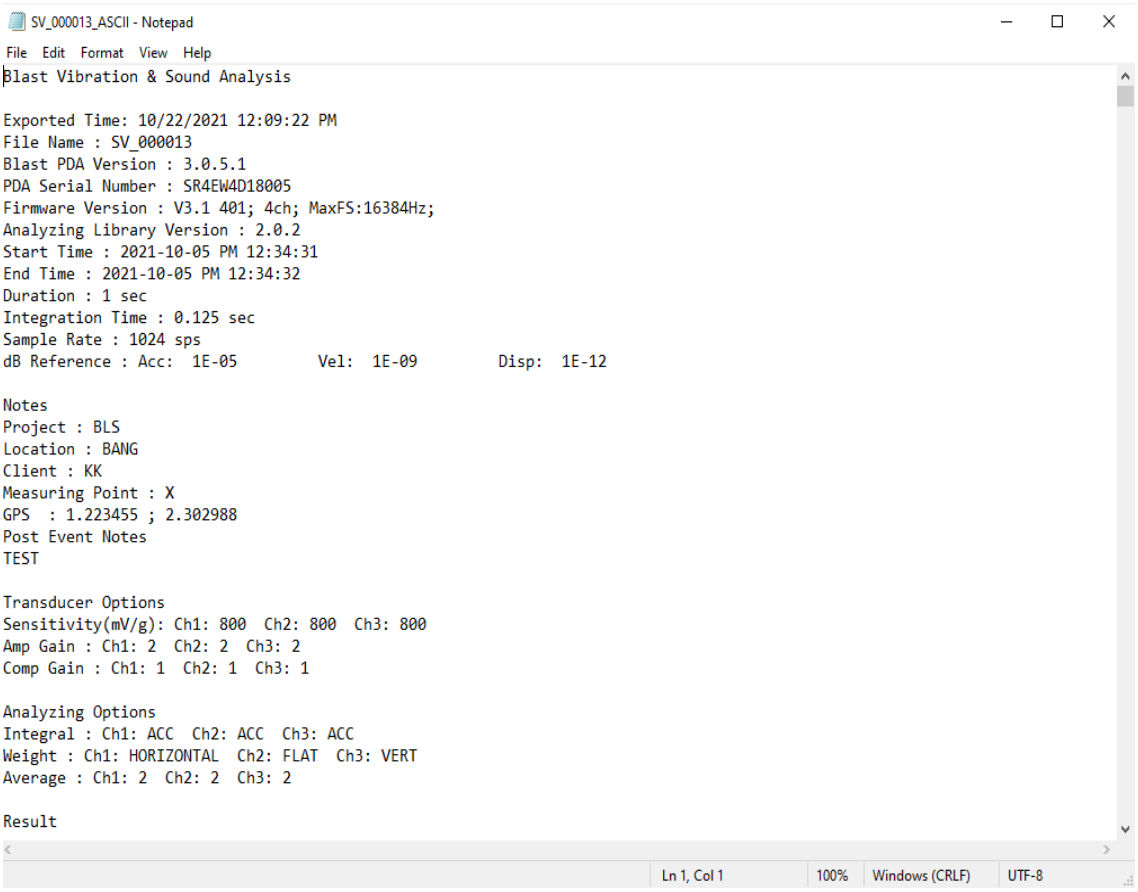
button following window will appear. There user can take print of the list view or it can export to .csv file.



9. Export:

When user clicks on 

browser window will appear. User need to browse the location where that exported file need to save & click on OK. That file data will save to text file as below.



10. EVS:

When user click on EVS button 

by selecting one file from list view, EVS Window will appear. User can take its print also.

Event Report 1

svlb, bang

TEL: 9876543210 FAX: 24343 Mobile: 9876543210 E-mail: i@gmail.com

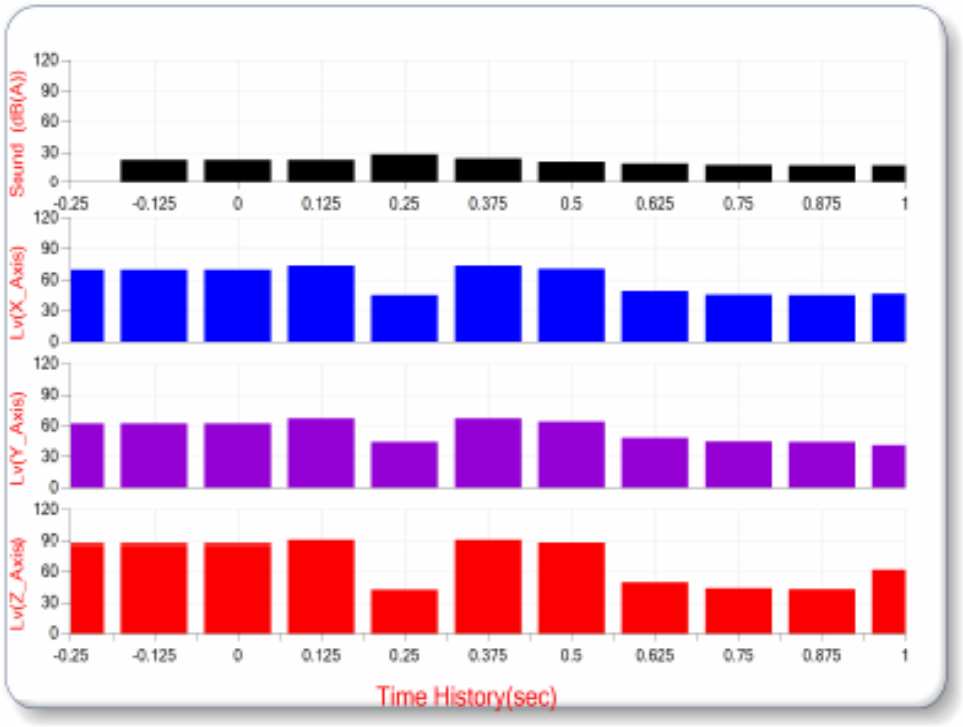
Start Time:	2021-10-05 PM 12:41:55	SV-1 Serial Number:	SR4EW4D18005
End Time:	2021-10-05 PM 12:41:56	Duration Time:	1sec
Project:	BLS	Client Name:	KK
Location:	BANG	Measuring Point:	X
GPS :	1.223455 ; 2.302968		

Post Event Notes:

	Leq	LMax	LMin	L1	L5	L10	L50	L90	L95	L99
Sound (dB(A))	22.62	28.35	17.78	28.35	28.35	28.35	19.03	17.78	17.78	17.78

	Leq	LMax	LMin	L5	L10	L50	L90	L95	L99
Vibration Vert Axis (dB)	80.48	90.91	42.50	90.25	87.27	51.42	43.67	42.71	42.50

Time History:

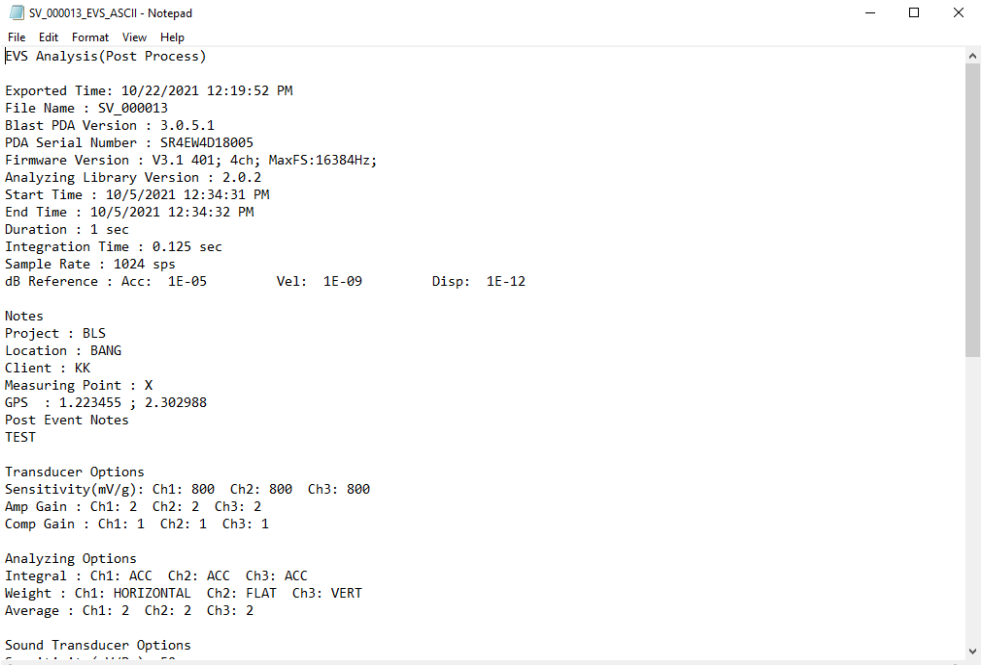


Printed: 2021-10-22 PM 12:13:32(Firmware Ver 3.1 401; Software Ver 3.0.5.1), Copyrighted Svlb Software Technologies Pvt Ltd

11. Export EVS:

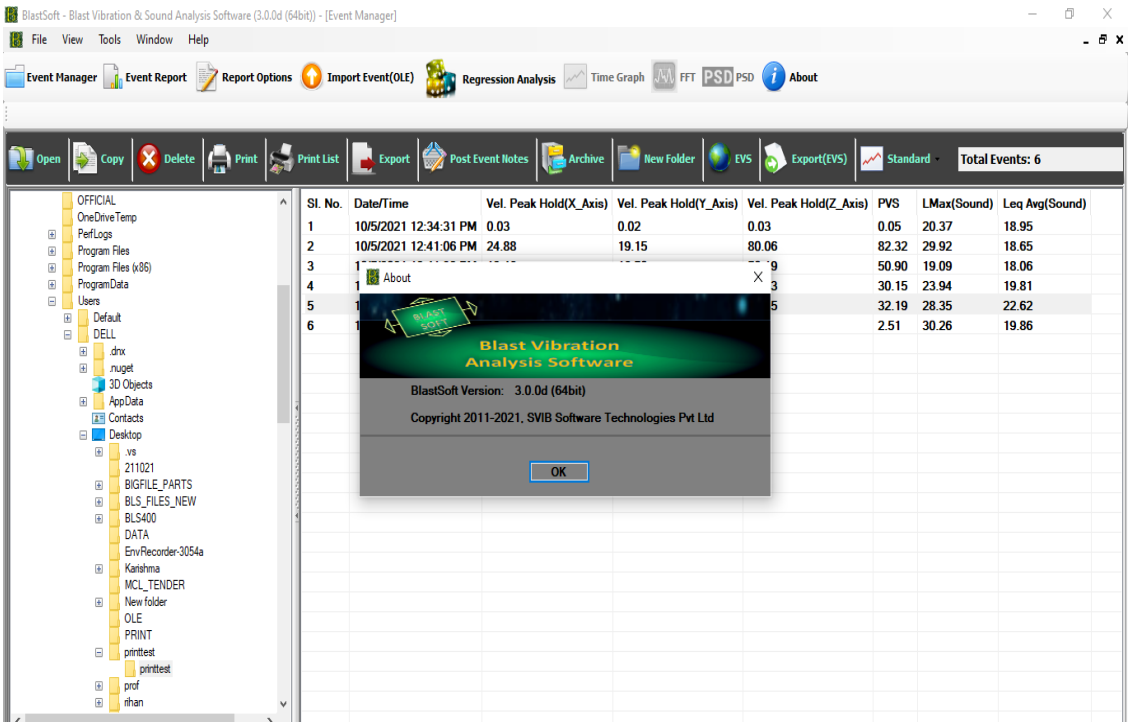
Click on 

icon to export the EVS to text file of the selectedfile.



12. About:

Click on About Icon to view the version of project.



*****END*****