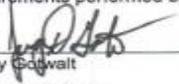


# Measure the Noise with NoiseLab APP

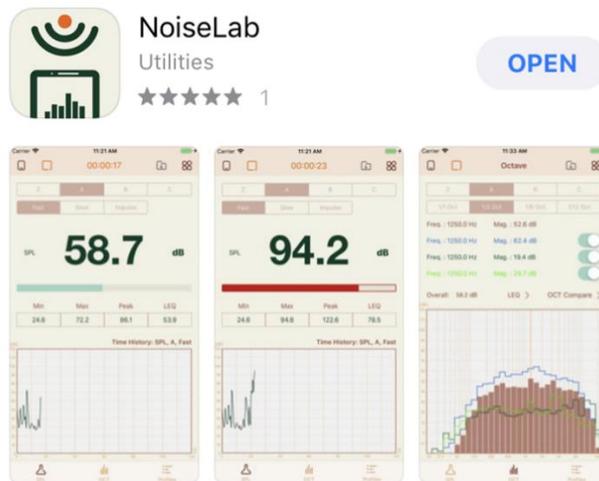
## Introduction

With MicW i437L microphone, the NoiseLAB is the world first APP to comply with IEC61672-3 Class 2 Sound Level Meter standard. The iPhone-based sound level meter has passed the tests in the USA. The summary of report is shown as follows:

Summary of Test Report No.:43187				
<b>BSWA Type: iPhone NoiseLab Serial no: 570001</b>				
<b>Customer:</b>	<b>BSWA</b>			
<b>Department:</b>	<b>Research</b>			
<b>Contact Person:</b>	<b>Dr. Wu</b>			
<b>Microphone:</b>	<b>BSWA</b>	<b>Type: i437L</b>	<b>Serial no: 550117</b>	<b>Sens:dB</b>
<b>Measurement Results:</b>				
Indication at the calibration check frequency - IEC61672-3 Ed.2 Clause 10				Passed
Acoustical test of a frequency weighting - IEC 61672-3 Ed.2.0 Clause 12				Passed
Frequency weightings: A Network - IEC 61672-3 Ed.2.0 Clause 13				Passed
Frequency weightings: C Network - IEC 61672-3 Ed.2.0 Clause 13				Passed
Frequency weightings: Z Network - IEC 61672-3 Ed.2.0 Clause 13				Passed
Frequency and time weightings at 1 kHz IEC 61672-3 Ed.2.0 Clause 14				Passed
Level linearity on the reference level range - IEC 61672-3 Ed.2 Clause 16				Passed
Toneburst response - IEC 61672-3 Ed.2.0 Clause 18				Passed
Peak C sound level - IEC 61672-3 Ed.2.0 Clause 19				Passed
Overload indication - IEC 61672-3 Ed.2.0 Clause 20				Passed
High level stability test - IEC 61672-3 Ed.2.0 Clause 21				Passed
Long term stability test - IEC 61672-3 Ed.2.0 Clause 15				Passed
<b>Environmental conditions:</b>				
<b>Pressure:</b>	<b>Temperature:</b>	<b>Relative humidity:</b>		
100.22	22.8	52.0		
Date of calibration: 7/31/2019				
Date of issue: 7/31/2019				
Supervisor: Steven E. Marshall				
Measurements performed by:				
				
Jeremy Badwalt				
Software version: 8.1 T				
<b>Scantek, Inc.</b> 6430 Dobbin Rd., Suite C, Columbia, MD 21045 Ph: 410-290-7726 eMail: callab@scantekinc.com				

## Get the APP

1. Access the Apple Store in iOS devices, the app is not available for Android yet.
2. Search for: NoiseLab. There will be two version of the app, NoiseLab-Lite is good for daily measure and the NoiseLab has some extra feature design for noise analysis. Click on “GET” to download either of them base on your needs.



After installing, a new icon will appear on the home screen of your device.

3. Using external microphone.

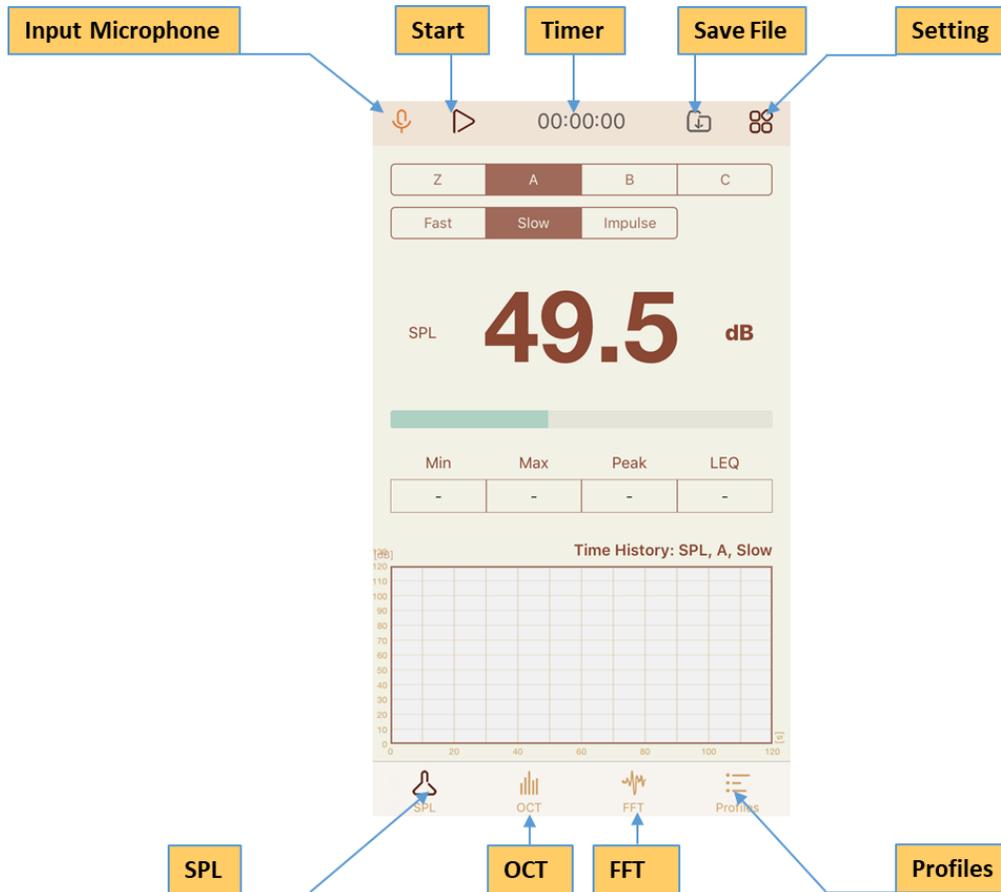
It is essential to use MicW i437L external microphone to obtain the accurate noise measurements. The features of i437L are

- 1) Certified in USA as Class 2 sound level meter with NoiseLab
- 2) Calibration with a normal sound level calibrator
- 3) Flat frequency responses
- 4) Omnidirectional responses to sound field



# How to take measure

## 1. Basic Control



**Input Microphone:** Current working microphone, the icon will change from  →  when external microphone is plugged in. (Upgrade to MicW i437L high precision microphone for more accurate measurement.)

**Start:** Start the measurement

**Timer:** Indicate the time lapses of the measurement

**Save File:** Save your measurement for data review or post-process

**Setting:** Enter the setting menu

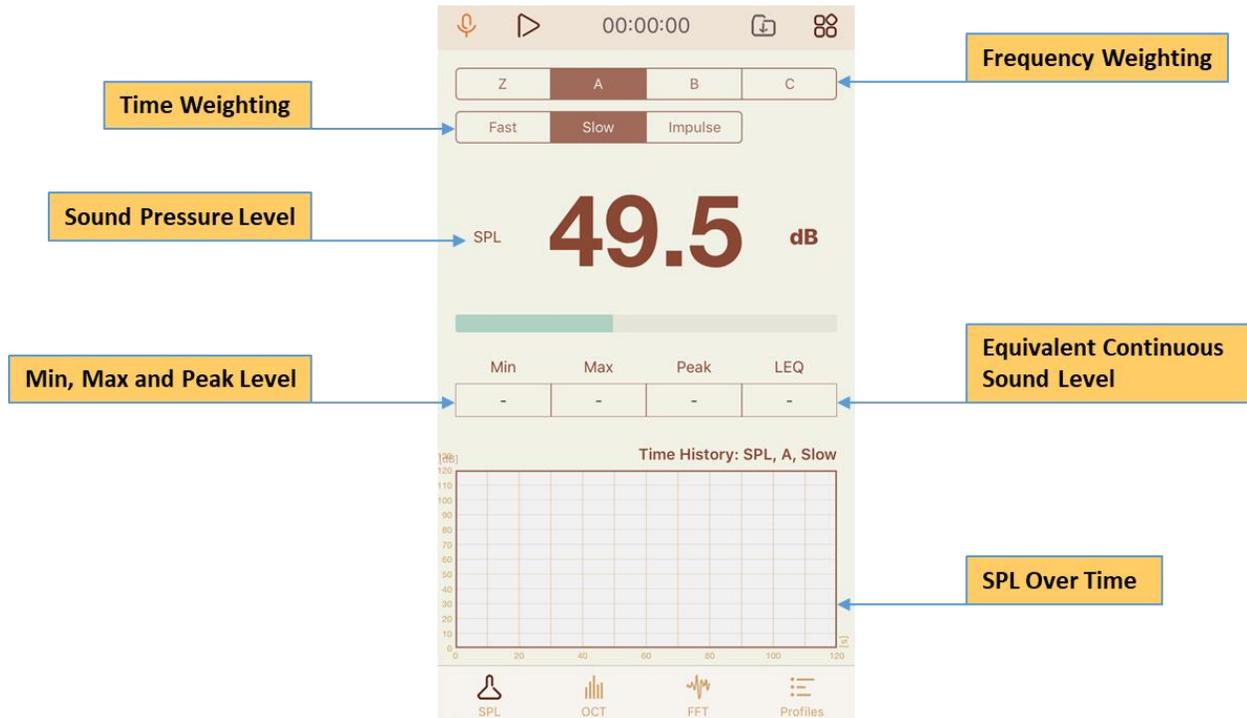
**SPL:** Enter the Sound Level Meter module

**OCT:** Enter the Octave Band Measurement module

**FFT:** Enter the FFT Measurement module

**Profiles:** Review the result in 3 different sets of configuration

## 2. Sound Level Meter



**Frequency Weighting:** Select Z, A, B or C weighting for your measurement

**Time Weighting:** Select Fast, Slow or Impulse time weighting for your measurement

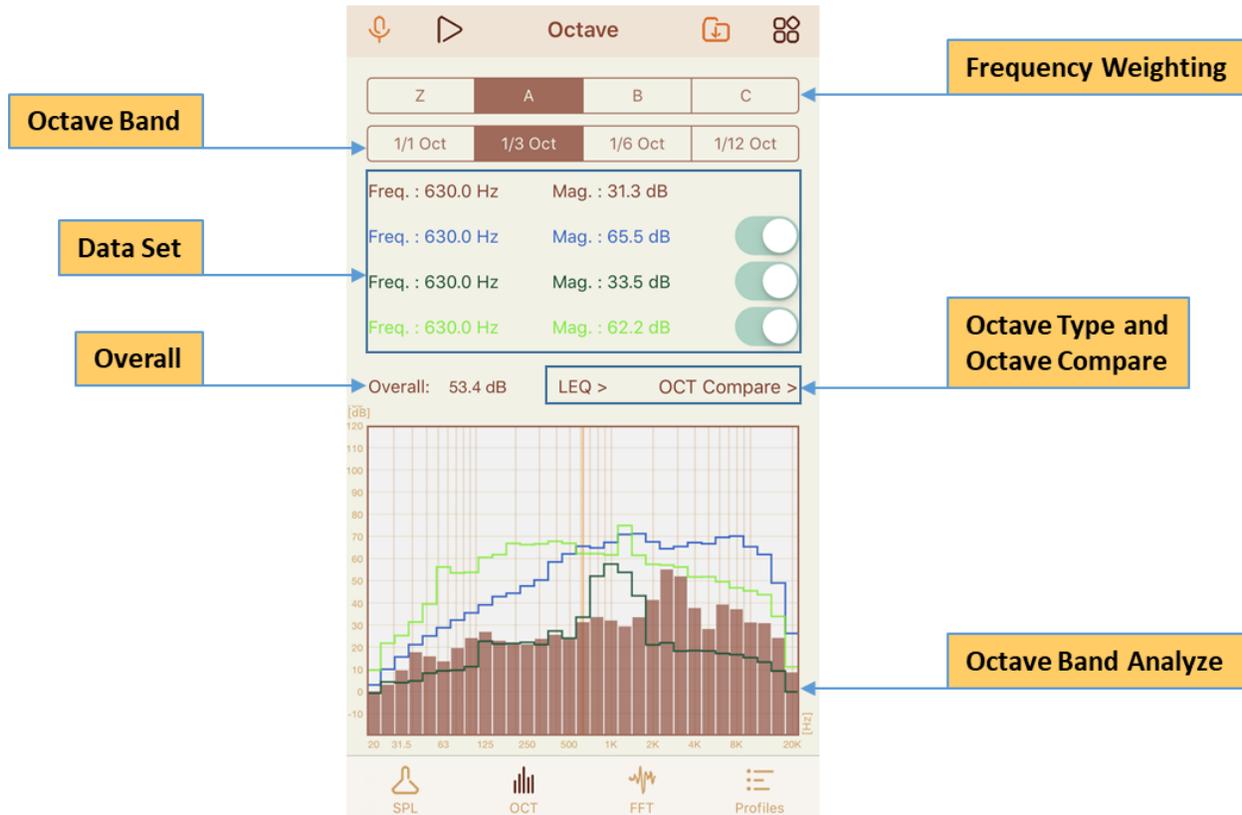
**Sound Pressure Level:** Indicate the current sound pressure Level

**Min, Max and Peak Level:** The maximum and minimum are the highest and lowest sound levels measured, the peak is the peak of the sound pressure wave with no time weighting.

**Equivalent Continuous Sound Level:** The average of sound level

**SPL Over Time:** Graph shows the sound pressure level over time history

### 3. Octave Band Measurement



**Frequency Weighting:** Select Z, A, B or C weighting for your measurement

**Octave Band:** Select 1/1, 1/3, 1/6 or 1/12 octave band for your measurement

**Data Set:** Activate the data set for comparison

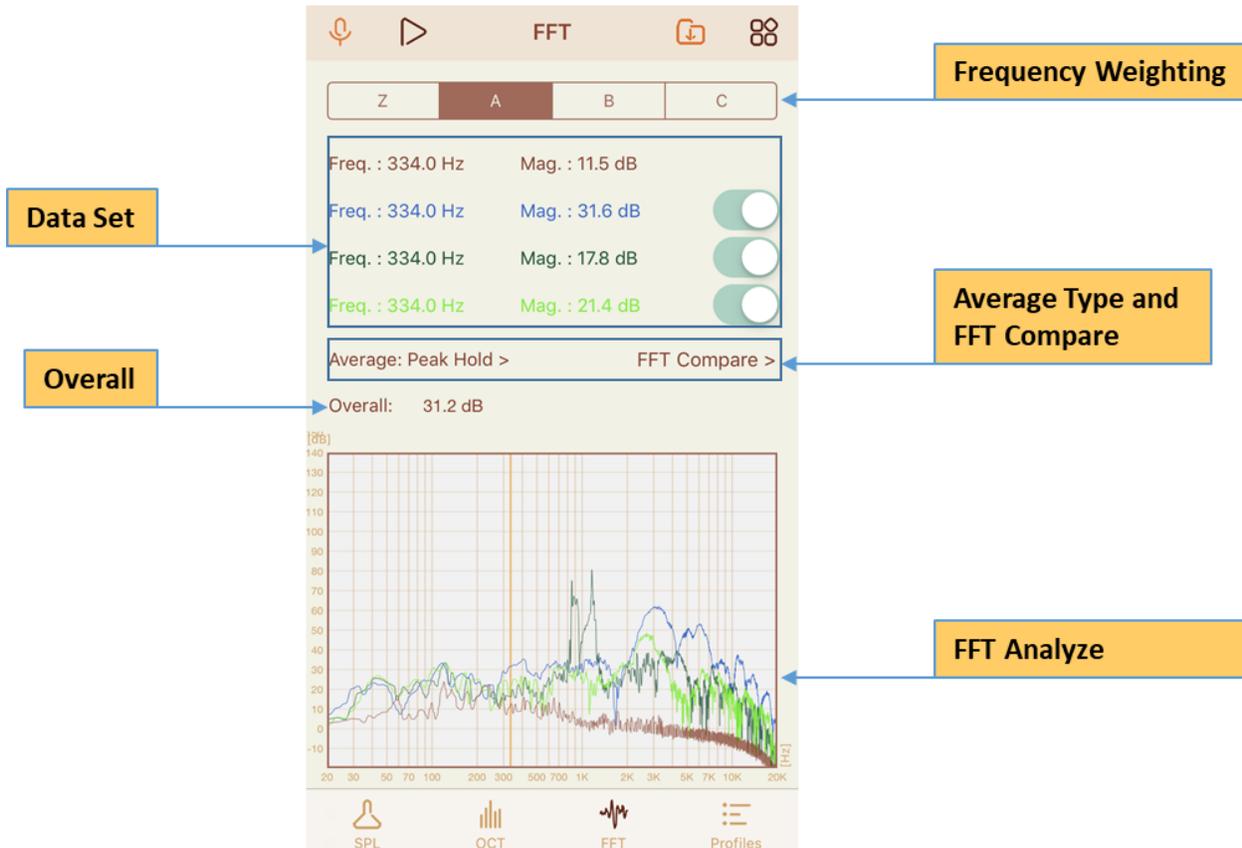
**Overall:** Sound pressure level of current measurement

**Octave Type:** Select the octave band measurement type (LEQ, RMS or PEAK)

**OCT Compare:** Select the measurement data or saved measurement data for comparison

**Octave Band Analyze:** Move the cursor on the graph to get the SPL at certain frequency

## 4. FFT



**Frequency Weighting:** Select Z, A, B or C weighting for your measurement

**Data Set:** Activate the data set for comparison

**Overall:** Sound pressure level of current measurement

**Average Type:** Select the average type (No Averaging, Peak Hold, RMS Ave: Lin, RMS Ave: Exp)

**FFT Compare:** Select the measurement data or saved measurement data for comparison

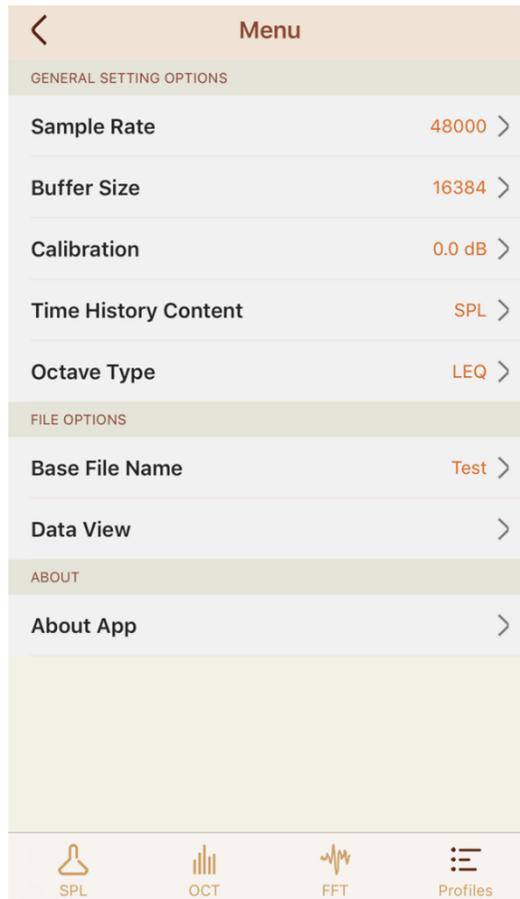
**FFT Analyze:** Move the cursor on the graph to get the SPL at certain frequency

## 5. Profiles

Unit (dB)	1	2	3
Filter	Z	A	C
Detector	Fast	Slow	Impulse
SPL	66.4	66.4	83.2
RMS	63.8	35.0	53.6
MAX	86.4	78.7	91.4
MIN	53.6	31.6	43.4
PEAK	113.3	114.1	112.7
LEQ	70.0	70.6	69.0

**Data Configuration:** Click on each box to select the frequency weighting and time weighting for the current measurement

## 6. Setting Menu



**Sample Rate:** The number of samples of measurement carried per second

**Buffer Size:** The amount of data allotted for each processing

**Calibration:** Calibrate the measurement microphone

**Time History Content:** Select the target level that shows in the SPL over time graph

**Base File Name:** Customize the measurement file name

**Data View:** Review and export the measurement data

The image shows two screenshots of a mobile application interface. The left screenshot, titled "Saved Datas", displays a list of saved measurements. The right screenshot, titled "Saved Data", shows the detailed view of a selected measurement, including an "Export" button in the top right corner.

**Saved Datas (Left Screenshot):**

Test ID	Measurement Type	Duration
Test_20190710_115528	SPL, A, Slow	00:00:08.1
Test_20190709_145659	SPL, A, Slow	00:00:21.5
Test_20190620_182643	SPL, A, Slow	00:00:08.8
Test_20190620_182605	SPL, A, Slow	00:00:12.2
Test_20190609_190017	SPL, A, Fast	00:00:12.2
Test_20190609_185823	SPL, A, Fast	00:00:08.5

**Saved Data (Right Screenshot):**

Test Date	Overload		
07/10/2019	NO		
Start	Duration	Sample	BufferSize
11:55:28	00:00:08.1	48000	16384
Filter	Detector	SPL	RMS
A	Slow	67.0	31.4
MAX	MIN	PEAK	LEQ
80.0	35.0	92.4	74.3
Filter	Detector	SPL	RMS
Z	Fast	55.6	53.9
MAX	MIN	PEAK	LEQ
83.5	53.2	91.1	74.2
Filter	Detector	SPL	RMS
A	Slow	67.0	31.4
MAX	MIN	PEAK	LEQ
80.0	35.0	92.4	74.3
Filter	Detector	SPL	RMS
C	Impulse	74.6	48.6
MAX	MIN	PEAK	LEQ
84.8	43.7	90.8	74.1

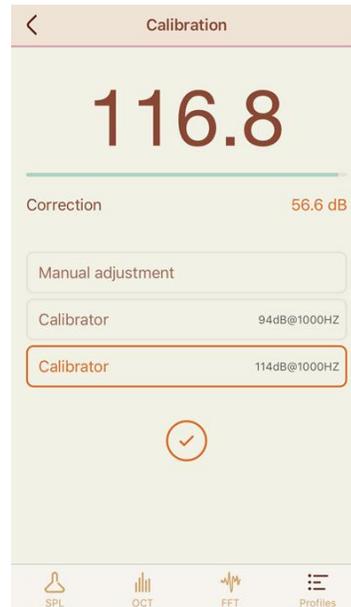
**Additional Data (Right Screenshot):**

- Time History Data: SPL, A, Slow
- Octave Data: 1/3, LEQ
- FFT Data: Peak Hold

**About App:** Introduction and contact information of this App

## 7. Calibration

In order to take a scientific measurement with microphone, its precise sensitivity must be known. NoiseLab provides a simple approach for user to calibrate their external microphone with standard calibrator.



**Manual Adjustment:** Manually set the Sound Pressure Level according to the calibrator

**Calibrator ( 94dB@1000HZ):** When calibrating the microphone with a 94dB@1000Hz calibrator. First, plugin your external microphone to your device, then plug the microphone into the running calibrator, next click on the Calibrator (94dB@1000HZ) button and the App will automatically calibrate the microphone. Last, click on the “check mark” and you will be all set!

**Calibrator (114dB@1000HZ):** The procedure is same as above, except using a 114 dB@1000Hz calibrator.

