

# **iTestMic User Guide**



**STUDIO SIX DIGITAL LLC**

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# Quick Start

iTestMic is a professional-grade test & measurement microphone for iPhone® 4, iPod touch® 4, and iPad®. It connects to the attached iOS device using a digital audio link for the lowest noise and highest quality audio.

## ***Hardware Requirements***

iTestMic is designed to work with iPod touch® 4, iPhone® 4, or iPad® running OS 3.0 or later.

## ***App Compatibility***

iTestMic is compatible with AudioTools (which requires iOS 4 or later), and many other iOS Apps which record or process audio. While we have tested iTestMic with many Apps and found that it works with many (including Apple's GarageBand), we do not guarantee compatibility with all Apple or 3rd party Apps. In particular, the phone App on iPhone does not use dock connector audio, and will not work with iTestMic.

Once iTestMic is plugged in, it will be active and available to iOS as an audio source. There are no controls or setup required.

## ***Installation***

To install iTestMic, plug it into the dock connector of any compatible iOS device. Hold the plug parallel to the connector, since plugging in at an angle may cause the device to not recognize iTestMic. Make sure that you hear both latches click so that you know you have a firm connection. Some third-party plastic outer cases have smaller openings for dock connector cables, so make sure that the case does not interfere with the iTestMic connector, and that the connector is making solid contact with the dock connector.

Note that it takes approximately 3 seconds for iTestMic to be recognized by your iOS device. So, if you plug iTestMic in while AudioTools is running, wait for the confirmation box to appear before trying to use it.

## ***App Installation***

If you do not have the AudioTools App installed, when you connect iTestMic to your device a prompt may appear, and you may be asked if you want to install AudioTools. This behavior is normal and is a feature of iOS.

## ***Calibration***

You can use iTestMic right out of the box, since it automatically transmits its calibration values to the AudioTools app. This gives you an instantly usable acoustic analysis tool. To recalibrate, or check calibration, see the section on Calibration, below.

## ***Dock connector cable***

The dock connector cable is used to attach iTestMic to your device. Connect it only to an iPhone 4, iPod touch 4, or iPad. The cable should be connected to the device before starting AudioTools. Never use any dock-extender cable, as these are not approved for usage.

# AudioTools App

iTestMic is designed to work with the Studio Six Digital App “AudioTools”, which is available for download on the App Store. When used with AudioTools, all of the features of iTestMic, such as multiple gain ranges and output configuration, are available. When used with any other App, iTestMic operates in the configuration specified on the Settings->Configuration Settings screen of AudioTools.

This manual will not cover the AudioTools App in detail, but it will discuss some of the ways in which AudioTools interacts with iTestMic.

## ***Acoustic Analysis and SPL Functions***

These functions use the input source selected and gain range settings on the Settings menu, Microphone Setup module. The currently active input source is always shown on the screen. You may see labels like “iTestMic Mic Low Range” or “iTestMic Line Mid Range”.

### ***SPL Meter***

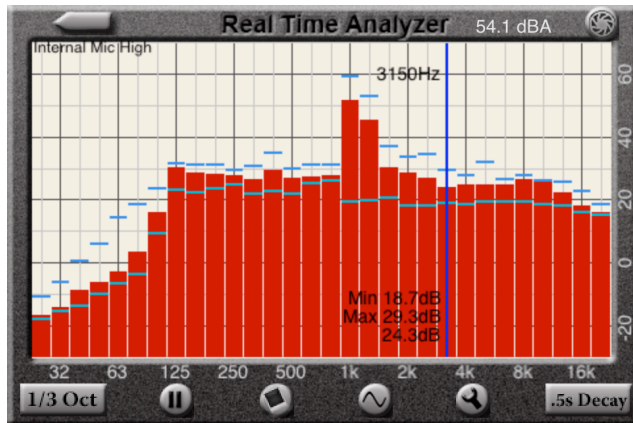


SPL Meter gives you a way to accurately measure Sound Pressure Levels with iTestMic.

SPL Meter uses ANSI / ISO Type 1 filters for A and C weighting, as well Type exponential decay characteristics. Needle dynamics are carefully matched to real analog meter ballistics.

Range may be set from 40 dB to 140 dB to measure sound levels over a wide range.

## RTA



Use the Real Time Analyzer to display levels for each frequency band.

You can view the display in octave or 1/3 octave mode, display a cursor to readout actual levels, and see max and min values.

Graphs may be saved and recalled, or exported for reports or further analysis.

# Calibration

iTestMic is factory-calibrated a 94.0 dB at 1kHz, +/- 0.1 dB. The high and low range trim values are stored in the mic in non-volatile memory, so that when iTestMic is plugged into AudioTools, the calibration factors are read by the app, giving you a ready-to-use calibrated system. You don't have to do anything to store these values, they are read every time that AudioTools detects iTestMic.

iTestMic will typically hold its calibration, but if exposed to extremes of heat, cold, or humidity, the microphone calibration may change. At any time, you can check the calibration using an SPL calibrator, and if necessary adjust the trim values and store them back into iTestMic. These instructions are below.

## ***Microphone Calibration with a Calibrator***

Before beginning calibration, connect iTestMic to your iOS device.

Now start the AudioTools App and go to the Settings menu, Microphone Setup function. The Input Sources screen appears.

Select the first calibration option, by tapping the blue disclosure triangle for the first entry on the top of the screen.

Note: AudioTools uses the AES standard for dBFS, which is that for a sine wave just reaching clipping, the reading will be 0.00. A square would by this formula show +3.00 dBFS.

Select Low Range.

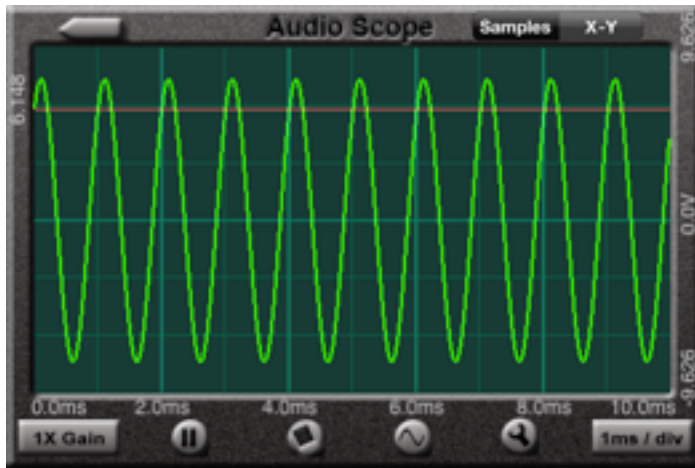
Now enter the calibrator output setting (typically 94) in the dB field by tapping on the field, clearing the value in the field, and entering your calibrator's fixed value. Tap Done. The trim value will be set automatically by this process, so do not alter it.

Select High Range, and repeat the calibration process. Now, you should be able to switch back and forth between Low and High range, and the dB value should stay the same.

When you have completed setting the calibration Trim values, tap the button "Store Calibration in iTestMic". Accept the confirmation screen. Now the new calibration is stored in the microphone, and will be available to any iOS device that is running AudioTools.

After setting the ranges, it's a good idea to double check your headroom using Audio Scope. To do this, exit this screen, and go to the Line Input menu, Audio Scope screen. Go to settings (tap the wrench icon), and select Line Input Mode Mono, Input Source Mic. Now go back to the scope screen and check that the sine wave is not clipped. It should look something like this picture:





## Microphone Calibration by Matching

If you do not have access to a microphone calibrator, but you do have access to a calibrated SPL meter, you can do basic calibration by matching iTestMic to the SPL meter. Since iTestMic comes calibrated from the factory, we do not normally recommend doing this procedure.

To do this, follow the instructions above, with these changes:

- \* Use an acoustic noise source such as pink noise, or white noise. White noise will have less low frequency, and may be a better choice, since it is best to calibrate with mid-band energy. Do not use a sine wave signal, because you may get cancellation or reinforcement effects that can throw off the readings.
- \* Use C Weighting, if possible, with the calibrated meter.
- \* Enter the value read from the calibrated SPL meter into the dB field in AudioTools.

# Specifications

All specifications are subject to change.

## ***Microphone***

28 dBA - 120 dBA

Frequency Response 20Hz - 20kHz, +/- 3.0 dB

1/2" Nominal diameter, fits standard calibrators

Consumes less than 50ma in use

Omnidirectional

## Support

See our website for the most up-to-date information about our products.

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