



Microphone Testing

System Overview

SoundCheck™ is an easily configurable, Windows-based system for efficient and comprehensive testing of microphones.

Applications include:

- High-speed Production Testing
- Incoming Inspection
- Research and Development
- Capsules
- Systems
- Test in an ordinary room without an anechoic chamber

SoundCheck uses a variety of readily available hardware and software including anechoic test boxes, measurement microphones, and databases to measure and report all parameters related to microphone test and measurement. SoundCheck's measurement results can satisfy in-house performance standards as well as AES and other standards. In addition, SoundCheck can control external devices, such as turntables, using RS-232, USB, or IEEE interfaces.

Production Testing

SoundCheck is fast for production line measurements, performing comprehensive tests in a matter of seconds. Test sequences can be pre-programmed for simple pass/fail analysis or detailed results that can be exported to other programs such as Excel for additional processing. SoundCheck can be easily integrated into existing test programs that use ActiveX controls or National Instruments LabVIEW®. One-button operation, barcode control and assignable security levels give you total control over your production testing.

R&D Applications

SoundCheck also offers unrivalled flexibility for R&D applications - with SoundCheck, you are no longer constrained by the limitations of proprietary hardware-based systems for testing microphones and capsules. SoundCheck is easily configurable, making it perfect for a laboratory environment where a large number of different tests need to be carried out. Tests can be selected from a standard library and customized test sequences can be programmed and modified via a simple point-and-click programming interface. Any WAV file can be used as the input stimuli, including sine, noise



and real speech. One-button calibration, a large number of measured data points and advanced mathematical algorithms ensure unparalleled accuracy for measurements in both the time and the frequency domain.

Features and Benefits

One-button Calibration

The entire measurement chain, including reference microphone, audio amplifiers, and sound source, is easily calibrated by simply clicking on one button in SoundCheck. An external acoustic calibrator is used to calibrate the reference microphone, which

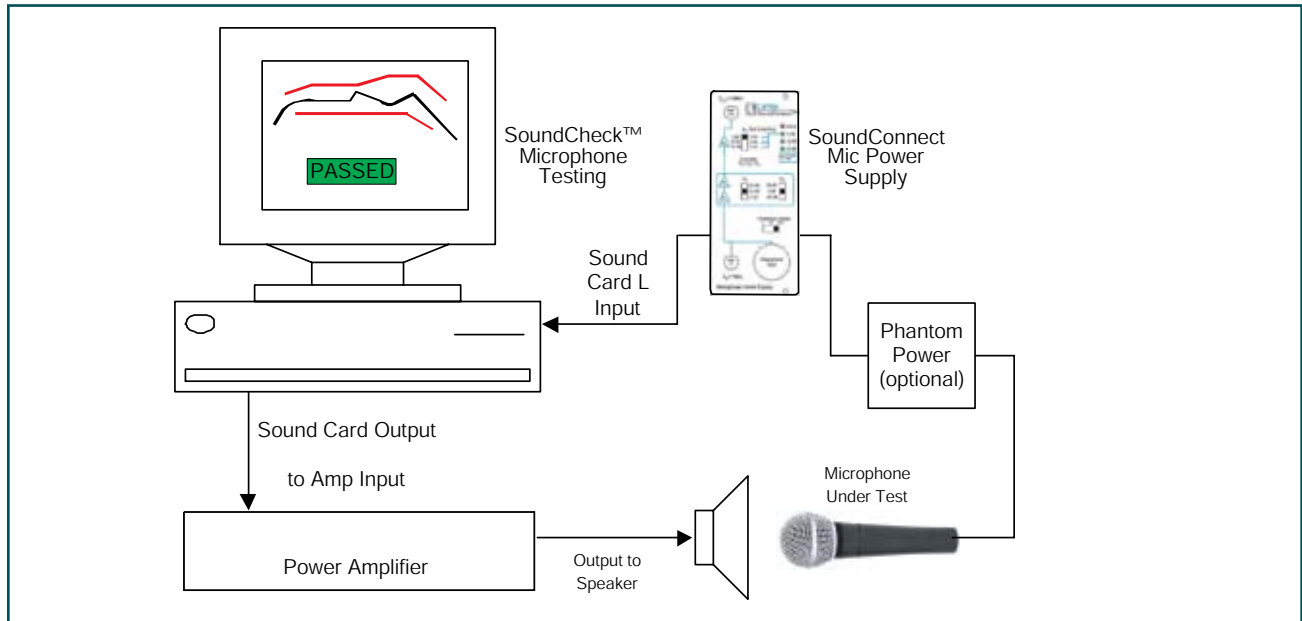
Industry Standard Tests

- Frequency response
- Phase
- Distortion
- Simulated free-field response
- Directional characteristics
- Impulse response
- Self-noise and signal-to-noise
- Max SPL
- Polar plots



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Typical System Configuration



A typical microphone test system consists of the SoundCheck Basic System that includes stepped-sine sweep (Stweep™) excitation, frequency/phase response, and a calibrated high-end sound card. Optional SoundWare modules include the Real Time Analyzer and polar plotting. Turnkey systems including computer, reference microphones, test chambers, and audio amplifiers are also available.

then can be used to calibrate the sound source. The magnitude and phase of the source is equalized for a flat response. The position of the test microphone, relative to the sound source, can be measured acoustically thereby enabling easy alignment to the reference position.

Application-specific Modules

SoundCheck application-specific modules enable you to create functionality specific to your measurement needs and budget. Modules include the Signal Generator, Voltmeter, Oscilloscope, Spectrum (FFT), and Real Time Analyzer. For real-time "hands-on" investigation of microphones, the Signal Generator can play a sine wave, a noise signal or any Windows WAV file at a calibrated output level. The response of the microphone can then be analyzed in the time and frequency domain using the Oscilloscope, FFT or Real Time Analyzer.

Simulated Free-Field Response

Free-field amplitude, phase, and impulse response of any test microphone can be measured using the substitution method.

Directional Characteristics

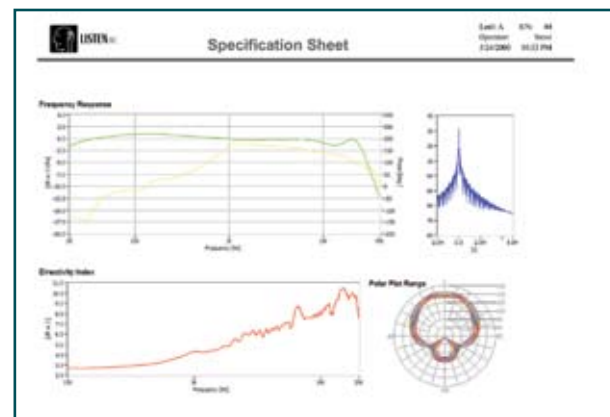
You can measure the directional characteristics at any angle manually or automatically using a turntable such as the B&K 9640 IEEE controlled turntable system. Off-axis responses at any number of selected frequencies or over a range of frequencies can be displayed on a polar plot.

Distortion

Measure the distortion of a microphone using an intermodulation distortion technique using two separate sound sources. One source is used to produce a fixed tone and the other is used to produce a sine sweep. In this way, the harmonic distortion of the sources is excluded from the measurement. Only the selected intermodulation components from the microphone are measured.

Limits

Limits can easily be created from a measured response by offsetting the curve in frequency, amplitude, or time.



Microphone Specification Sheet

