




# Headphone Testing

## Any Headphone, Any Measurement

  
• Bluetooth

  
• Active Noise Cancellation (ANC)

  
• Earphone Response

- Earphones
- Headsets
- IEM
- Bone Conducting
- Earbuds
- ANC

 • Lightning, USB or Analog Connector

 • Headset Microphone

# Any Headphone, Any Measurement

SoundCheck offers simple, fast and accurate testing of any headphone – no matter what the form factor, functionality, connector or additional features. It measures a full range of driver parameters via traditional analog, Bluetooth, lightning or USB connections, as well as microphone performance, active noise cancellation and more.

## Measurements include:

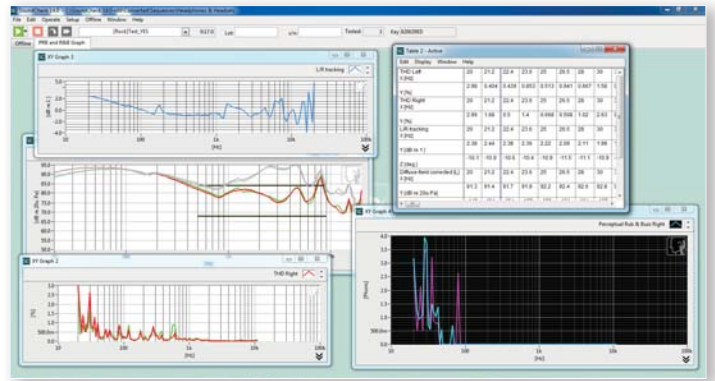
- Frequency response
- Phase
- Distortion
- Rub & Buzz
- Polarity
- Impedance
- Sensitivity
- Left/Right earphone tracking
- Maximum SPL to EN-50332
- Diffuse or Free-field corrected responses according to IEC 268-7 and IEC 581-10 or other target curves
- Active Noise Cancellation and passive attenuation



## The System

SoundCheck's modular combination of hardware and software is cost-effective, flexible and expandable.

At the heart of the system is the SoundCheck software. Powerful, fast and accurate, it measures every audio parameter from the R&D laboratory to the production line. Complete flexibility in stimulus choice enables any test signal (even



Headphone test result in SoundCheck showing frequency response, distortion and L/R tracking.

music) to be used. Virtual instruments offer the functionality of stand-alone hardware on your laptop. Advanced analysis and powerful post-processing options allow all types of analysis and mathematical operations - for example, placing the stimulus on the device and using triggered recording to test headphones with proprietary connectors (e.g. lightning connector), or the application of any target curve to a headphone response. Display options range from comprehensive Microsoft Word or Excel reports to simple pass/fail output or writing to a database.

Repeatable, automated tests are quickly and easily created, modified and saved using the simple point-and-click interface. Several fully-editable sample headphone sequences are provided, and more complex sequences are available for specific test standards such as IEC 60268-7 and EN-50332.

The software also controls the audio measurement hardware – an audio interface, a microphone (or HATS, coupler etc.), and appropriate power supplies and amplifiers.



## Listen's headphone test hardware includes:

### AudioConnect™

A compact audio interface with built in headphone amplifier and a power supply for up to 2 SCM™ microphones. This is a very cost-effective approach for basic headphone testing.



### AmpConnect™

Listen's all-in-one hardware interface includes an audio interface, headphone amplifier, power for up to 2 SCM or IEPE microphones (for use with couplers or IEPE-powered HATS) and an amplifier to power a speaker for ANC tests.



**SoundConnect 2™** A 2-channel microphone power supply (SCM, IEPE, 200V polarization) ideal for applications where polarization is required, or for switching between acoustic and impedance measurements with a 2 channel audio interface.



### BTC-4148 and BQC-4148 Bluetooth Interfaces

Designed for R&D and production respectively, these interface a Bluetooth headphone to SoundCheck, offering full control over all Bluetooth protocol settings and explicit control over the CODEC choice and transmitter power.



Also available for more complex test requirements: MEMS interfaces, amplifiers, speakers, current monitors, 3rd party hardware including Head and Torso Simulators (HATS), ear couplers, headphone test fixtures and more.

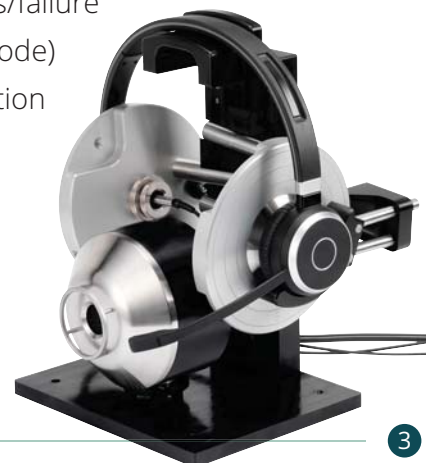
## R&D Headphone Testing

In the R&D lab, SoundCheck is used with a head and torso simulator to measure a complete set of loudspeaker parameters such as frequency response, distortion, maximum SPL and diffuse or free field corrected responses. Powerful test options, with a large selection of stimuli, analysis and post-processing options, enable just about any measurement and analysis. A range of interfaces permit Bluetooth testing, open loop testing and more. Pre-written test sequences facilitate out of the box testing to standards such as EN-50322, IEC 60268-7 and others.



## Production Line Headphone Testing

On the production line, SoundCheck is generally used with an ear coupler or custom test fixture to identify any drivers that are out of tolerance, or which contain manufacturing faults such as loose particles or Rub & Buzz. It can also be used for sorting and pairing drivers. It offers extremely fast testing, simple pass/failure (with optional failure mode) output, and full integration with footswitches, barcode readers and other production line automation.

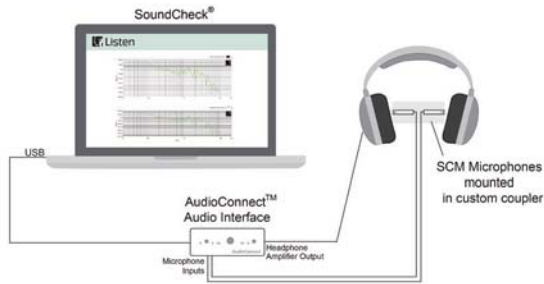




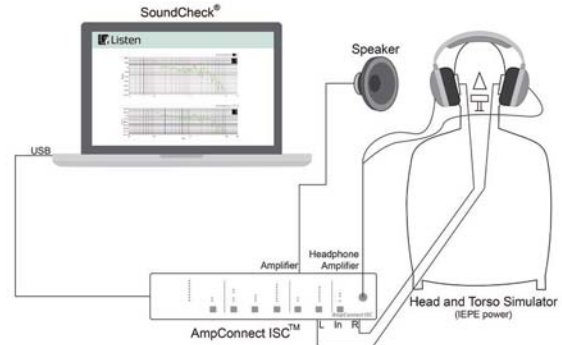
### TEST CONFIGURATIONS

There are many possible headphone test configurations. These are just a few options for testing different types of headphones.

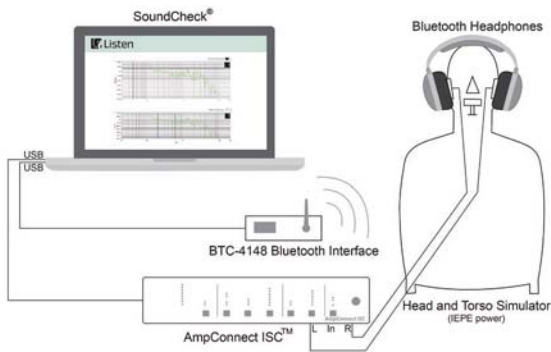
Typical low-cost production-line headphone test configuration



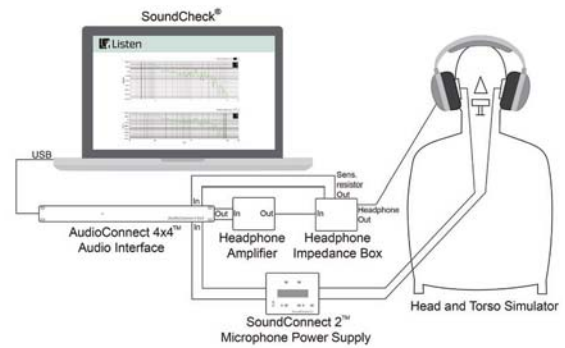
Complete R&D headphone test including active noise cancellation



Bluetooth headphone test configuration



Headphone measurement with impedance



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