Listen

**Transforming Sound into Knowledge**

Sequence Note

# Test sequences for measuring headphones with SoundCheck ONE and AudioConnect™

## Introduction

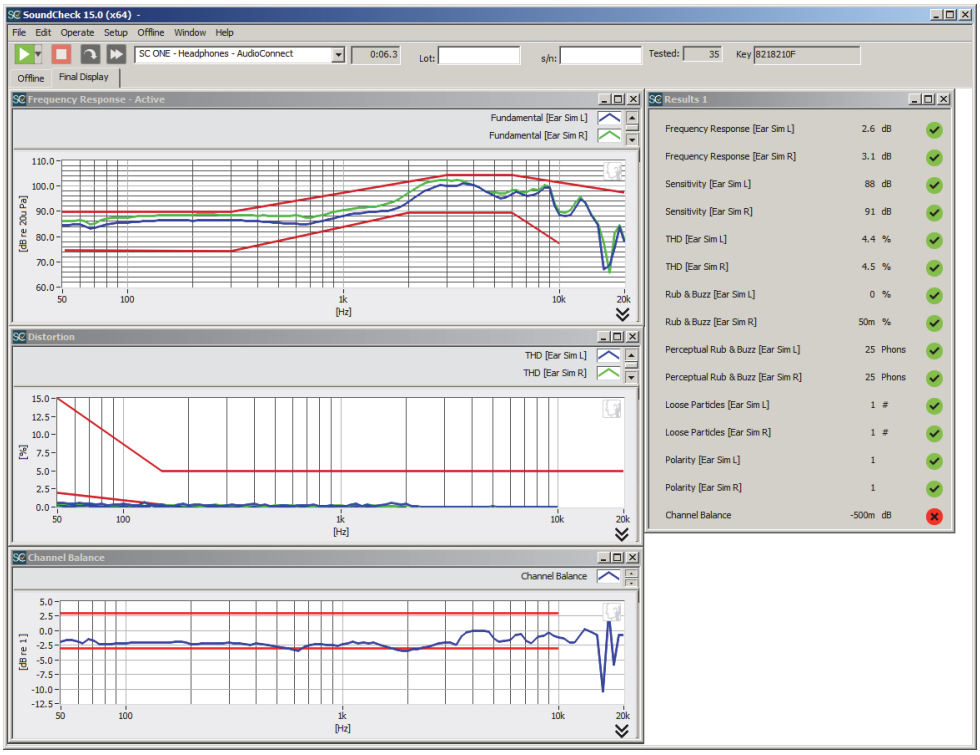
This SoundCheck ONE template sequence contains all the essential steps for basic headphone measurements using SoundCheck ONE and AudioConnect™. The sequence can be easily customized and saved for specific products by turning individual measurements on and off, and by adjusting settings within each sequence step such as stimulus range and level, tolerance limits, graphical displays, and data saving.

Please note that sequences in SoundCheck ONE cannot have steps added/removed or the layout modified – the full version of SoundCheck is required for this capability.

**The basic process for creating a SoundCheck ONE sequence is as follows:**

1. Choose the appropriate template for the application
2. Modify any necessary settings in the sequence steps
3. Save the template as a new sequence

There is no limit as to how many custom sequences can be created using the templates.




**Final Display for SC ONE Headphone sequence**

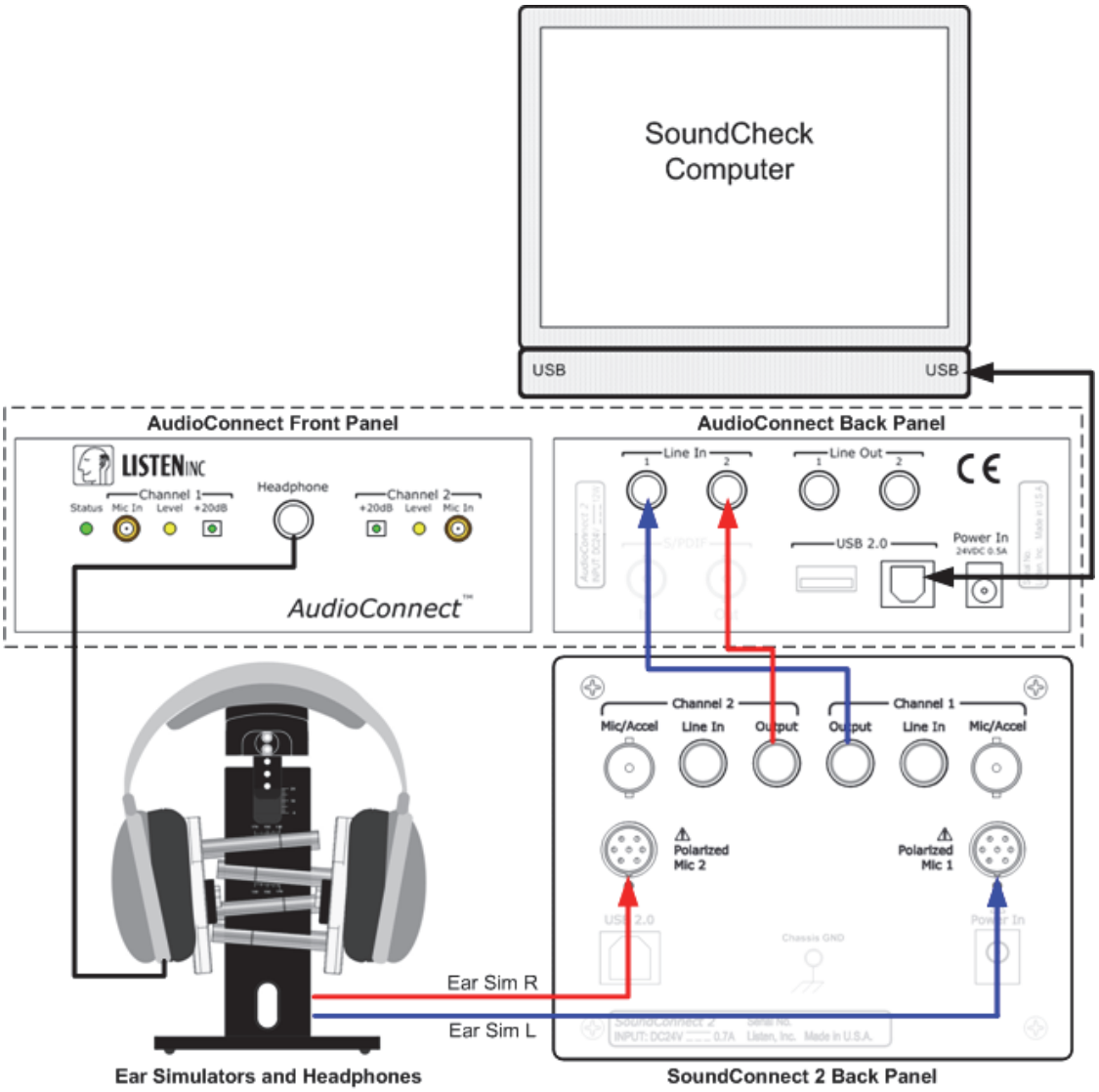
## Software Requirements

- p/n: 2029 – SoundCheck ONE

## Hardware Requirements

- Listen AudioConnect , Part# 4050
- Ear Simulators (for headphone testing)
- B&K 4231 (or equivalent) calibrator
- SoundConnect 2 Microphone Power Supply, Part# 4025/4026 (or equivalent 2 channel supply)
- Power Amplifier or Headphone Amplifier (optional)

## System Diagram




**Headphone Test Wiring Diagram**

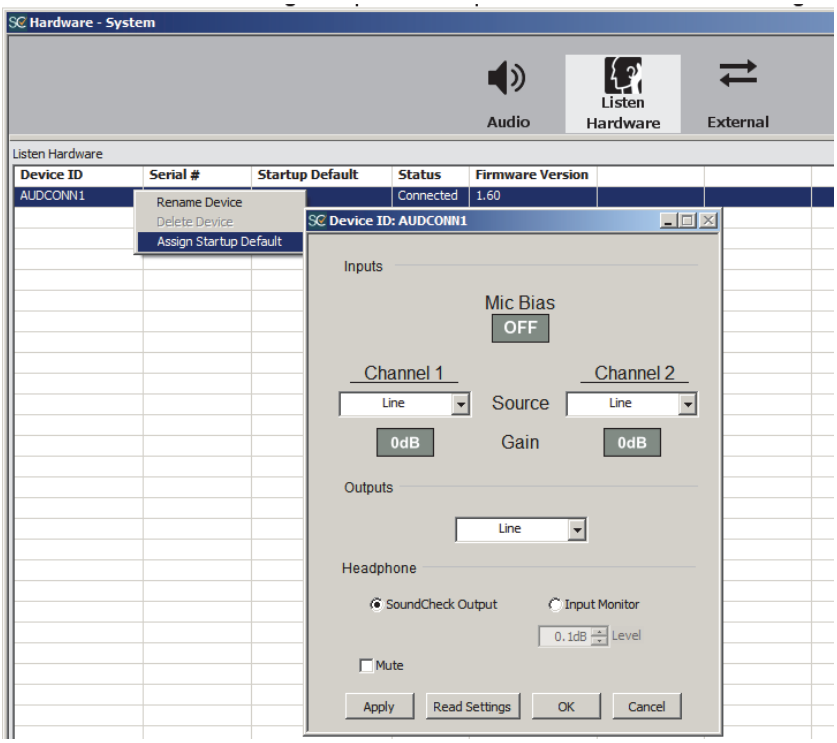
## SoundCheck Hardware Setup For Headphone Sequence

Before the first run of the sequence, open the Hardware Editor and select the Listen Hardware Tab. (This requires that the user has signed in with Engineer or Technician Access Level.)

Set the **Startup Default** for AudioConnect as shown below.

- The AudioConnect Inputs are set to **Line In**. This is assuming that you will be using an external microphone power supply for the ear simulators.
- Click Apply to send the settings to AudioConnect.
- Click OK and save the changes to the Hardware Editor.

The AudioConnect Message Step in the Sequence Template shows the settings required for use with the sequence.




**SoundCheck - Hardware Editor - Startup Default**

## Sequence Setup & Calibration

Calibration should be performed according to the instructions in the SoundCheck Manual.
Sequences should be closed before calibrating.
Additional instructions are included below.

**Ear Simulators:**

- The ear simulators or couplers should be calibrated according to the instructions in the SoundCheck manual on microphone calibration. You will need to calibrate the signal paths: Ear Sim L and Ear Sim R.

**Headphone Amplifier:**

- **AudioConnect Headphone Amp Signal Paths -** When using the AudioConnect Headphone Amp, open the SoundCheck Calibration Editor, click **Table View** and change the Calibrated Device for the Headphone Amp Output Paths to use the AudioConnect Headphone Amp L or R dat files. This shows the nominal values for the AudioConnect Headphone Amp.

Output Paths

| Signal Path | HW Channel | Calibrated Device | Sens | Sens Unit | Sens (dB) |
|---|---|---|---|---|---|
| Direct Out 1 | Output 1 | unity cal (Read only)-out.dat | 1 | V/V | 0.0 |
| Direct Out 2 | Output 2 | unity cal (Read only)-out.dat | 1 | V/V | 0.0 |
| Amp ch 1 | Output 1 | AmpConnect.dat | 20.893 | V/V | 26.4 |
| Amp ch 2 | Output 2 | AmpConnect.dat | 20.893 | V/V | 26.4 |
| Headphone Amp L | Output 1 | AudioConnect Headphone Amp L.dat | 503m | V/V | -6.0 |
| Headphone Amp R | Output 2 | AudioConnect Headphone Amp R.dat | 503m | V/V | -6.0 |
| BT Headset | Output 1 | Unity Digital Out.dat | 1 | FS/V | 0.0 |
| Mouth Sim | Output 1 | Mouth Simulator.dat | 48.8905 | Pa/V | 33.8 |
| Source Speaker | Output 1 | B&K4232 Anechoic Test Box-Out.dat | 18.2095 | Pa/V | 25.2 |

**SoundCheck - Calibration Editor Table**

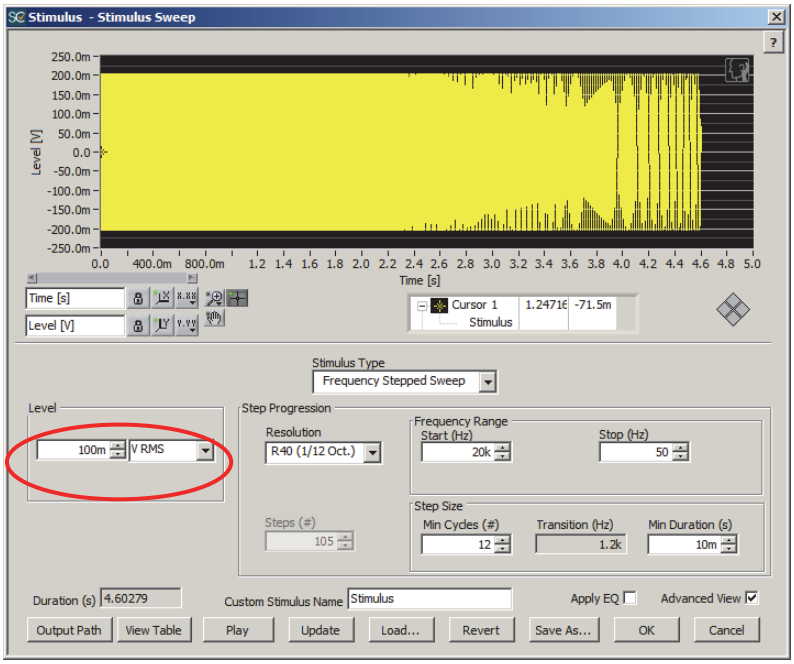
- The power amplifier/headphone amp must be calibrated to account for gain and frequency response. In this case, the two channels should be calibrated independently for more accurate results.
- Use the **Headphone Amplifier Calibration** sequence and follow the instructions for Headphone Amplifier Calibration in the AudioConnect Manual.

## Generating SoundCheck ONE Sequences

1. Open the template sequence for Headphones which will serve as the starting point. Note that all sequences must be generated from this template. Sequences cannot be created from scratch.
2. Use **File** – **Save As** to store a copy of the sequence with a new name. The new sequence file can be stored anywhere on the system. It does not need to be stored in the same folder as the template.
***The templates are Read-only files and may not be overwritten.***
3. To modify sequence parameters click Setup then choose the step category that you would like to modify (See the examples below).
4. Click the green start button on the toolbar to run the sequence and see the result.
5. When finished making changes save the sequence (**File** – **Save**) to store your changes to disk.

Sequence Editing Examples:

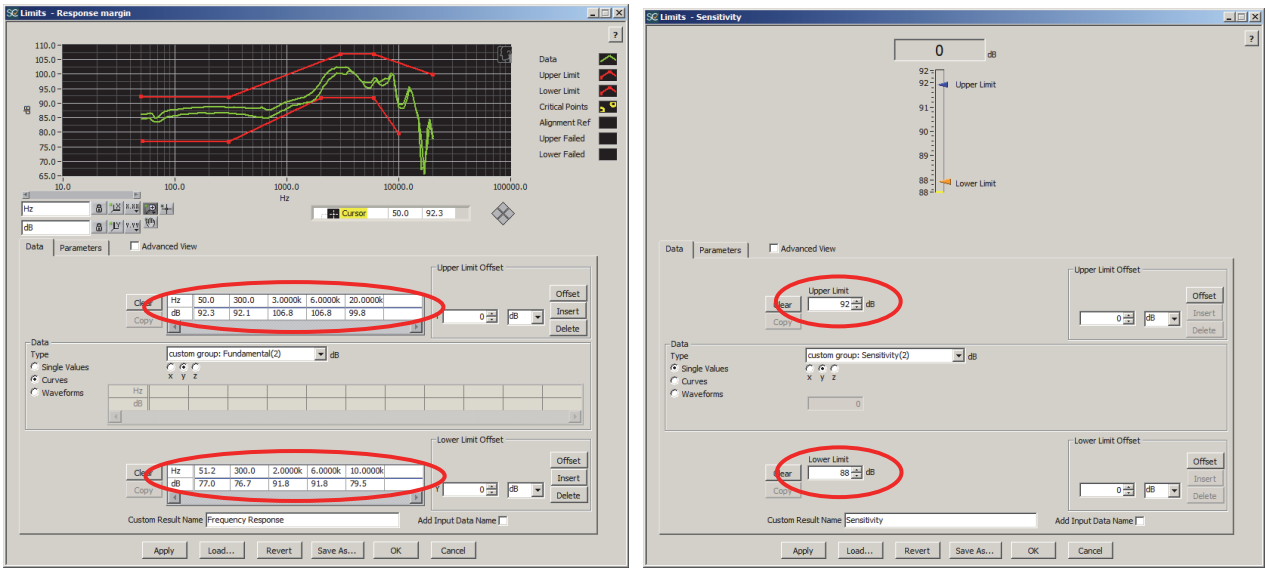
Stimulus –
To edit the stimulus level and frequency range in a SoundCheck ONE sequence click **Setup** – **Stimulus**. This will open the stimulus editor. Make the desired changes then click 'OK'. The changes will be saved to disk when the sequence is saved.




**Edit Stimulus Parameters**

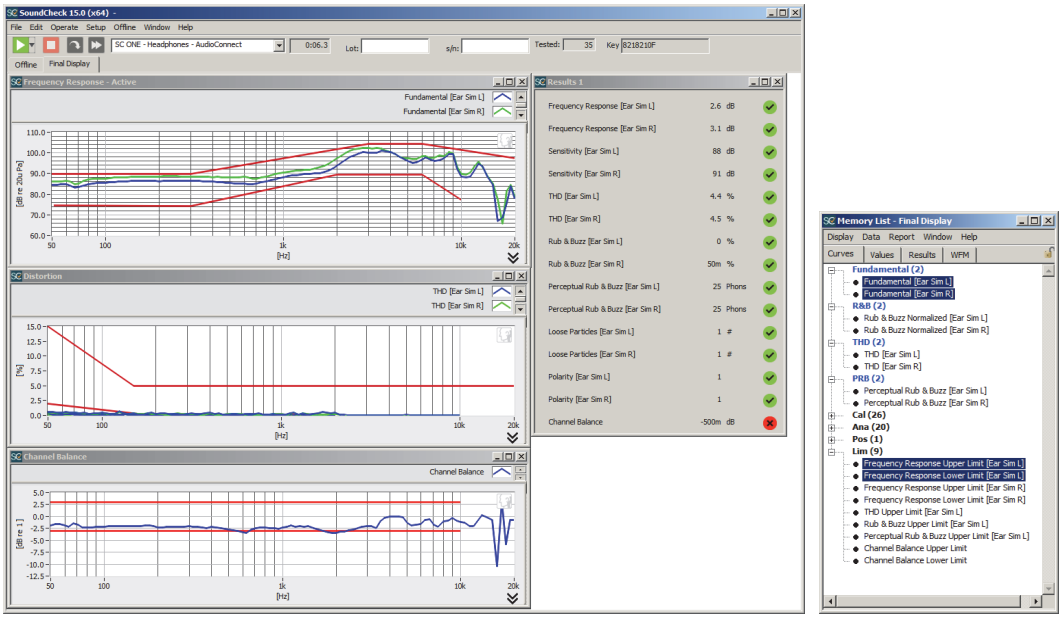
**Example:** Set the stimulus level according to the requirements for the specific Device Under Test.

Limits –
To edit the limits in a SoundCheck ONE sequence click **Setup** – **Limits**. You will see a list of all the different limit steps in the sequence. Choose the one you would like to edit, and click 'OK'. The editor will open where you can make any desired changes then click 'OK'. The changes will be saved to disk when the sequence is saved.




**Edit Limits Parameters**

Display –
To edit the display in a SoundCheck ONE sequence, first click the tab for '**Final Display**'. The windows for the sequence display will then open.




**Display and Memory List**

Add or remove windows, modify what data is shown in a window via the **Memory List**, and change the display preferences of the individual windows. The entire display is configurable. Once all necessary changes have been made click **File - Save** to save the sequence.
For more detailed information on using any of these step editors see the SoundCheck manual.

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