ANSI/CEA 2010-B 2014 Subwoofer Maximum SPL - Peak

Introduction

This sequence measures the maximum peak SPL of a subwoofer according to ANSI/CEA 12010-B 2014 as described in Section 7 of the standard document. It is recommended that the user obtain a copy of this standard to familiarize themselves with all its requirements as they are extensive. A copy of the standard can be purchased here.

Section 7 of the standard calls for 1/3 octave band limited tone bursts to be presented to the subwoofer at ISO 1/3 octave frequencies across a 3 octave range from 20 Hz to 160 Hz. The tone bursts used in this sequence are provided in WAV file format. At each frequency, the stimulus level is increased until the harmonic (and non-harmonic) distortion and noise (HD+N) exceeds the specified levels.

At each frequency, the stimulus level is increased in +3 dB increments until the HD+N threshold is exceeded. The level is then decreased by 3 dB and the test continues with level increments of +1 dB until the HD+N threshold is again exceeded. The peak SPL of the fundamental at the last passing test level is then recorded and the sequence continues to the next frequency.

The peak SPL values are weighted according to the power spectrum defined in the standard and the Average Weighted SPL is calculated by averaging the weighted values from 40 Hz to 80 Hz. A series of calculations are then applied to the test data to produce the final Broadband Peak SPL value.

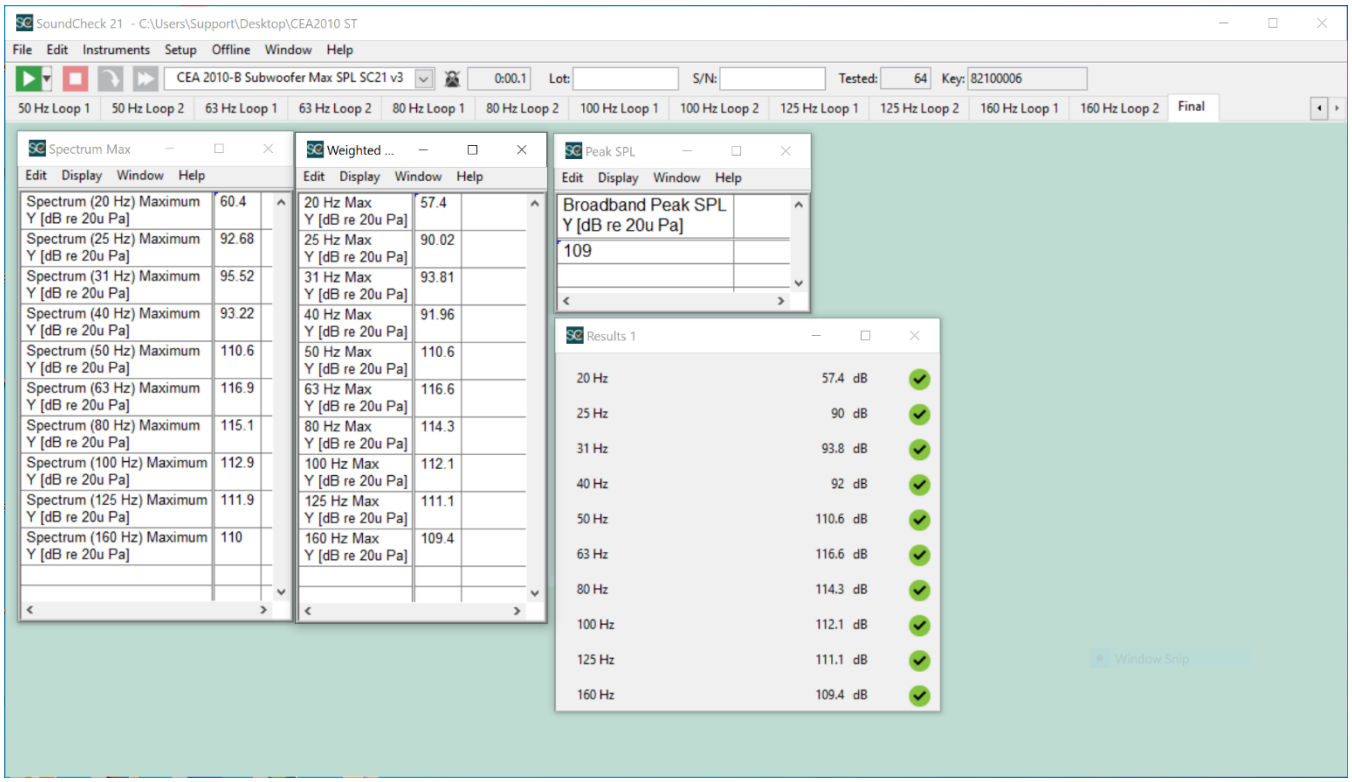


Figure 1 - Final display results - ANSI/CEA 2010-B 2014 B Subwoofer Maximum SPL - Peak

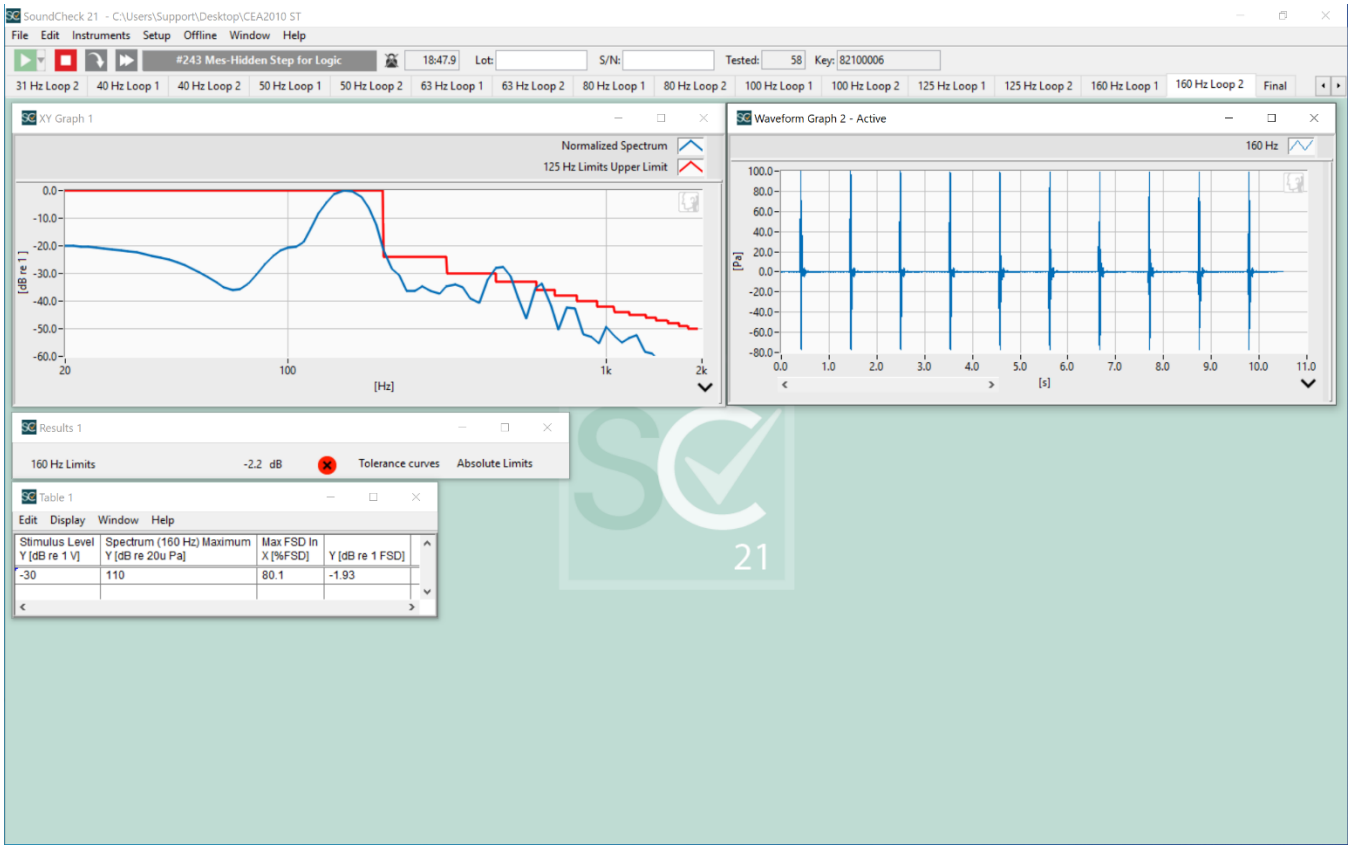


Figure 2 – Final display results for the 125 Hz test

Software Requirements

- SoundCheck Plus Version 21 or later Part # 1102
- Equation Editor post-processing module Part # 2012

Hardware Requirements

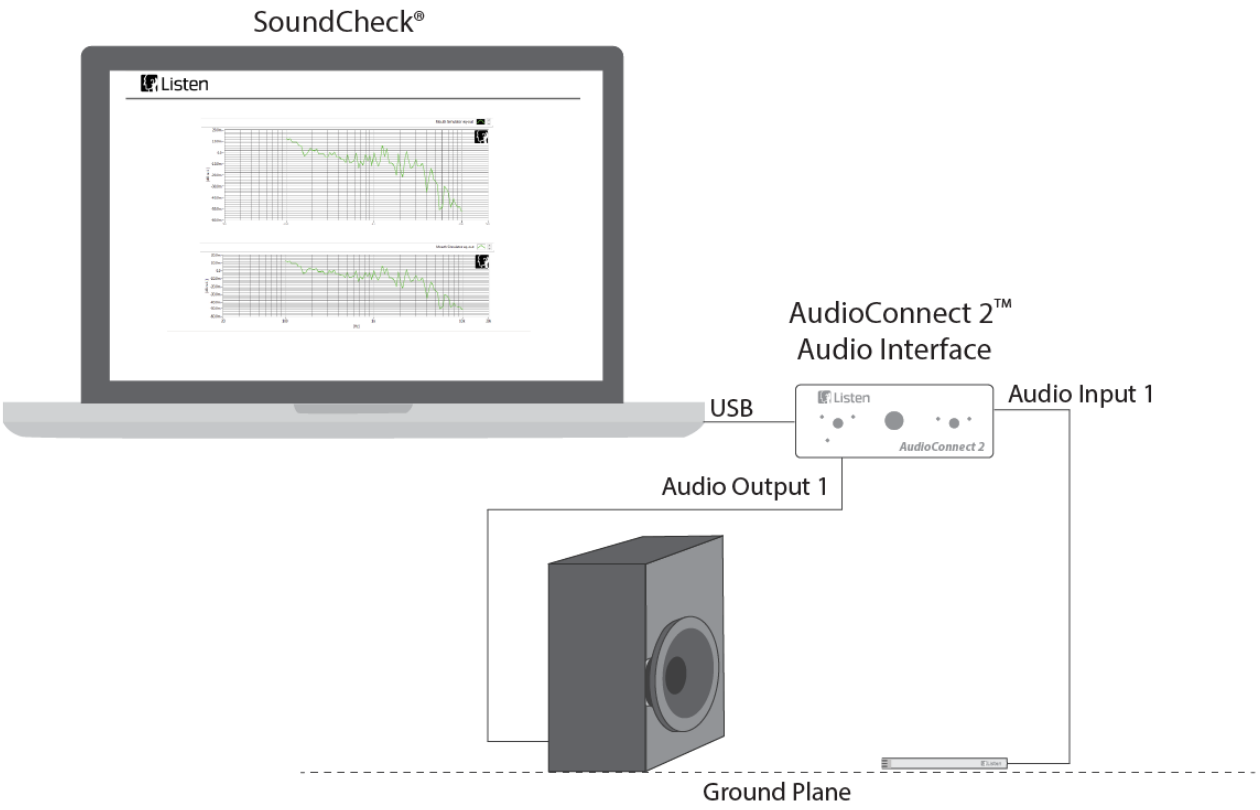
- Audio Interface - Listen AudioConnect 2 or similar Part # 4047
- Measurement Microphone – Listen SCM or similar Part # 4002

Hardware Setup & Calibration

1. Connect output 1 of your audio interface to the input of the subwoofer.
2. Connect the microphone to input 1 of your audio interface.
3. Place the microphone 1 meter from the subwoofer in a ground plane configuration, as per the standard.
4. Calibrate the microphone as instructed in the SoundCheck manual.
5. Adjust the subwoofer gain to maximum, as per the standard.

You are ready to start the sequence.

System Diagram



Further sequence development

Ways in which you could modify or further develop the sequence include:

- Autosave steps can be added in between measurements within the sequence, or at the end of the sequence.
- If Listen hardware that supports Gain Auto Ranging is being used (AudioConnect 2, AmpConnect ISC, AmpConnect 621, SoundConnect 2, Auto Range can be enabled in the acquisition steps.