

Automotive Max SPL Sequence

Introduction

The purpose of this sequence is to measure the Max Sound Pressure Level (SPL) of a car infotainment system in the vehicle's interior

The sequence uses a 6 microphone array mounted at either the driver or passenger locations. A 30 second pink noise stimulus having an RMS level of -12 dBFS is played through the infotainment system and captured by SoundCheck's Multi-channel Real Time Analyzer (RTA). The Multi-channel RTA produces 6 RTA curves which are then power averaged to produce a Max SPL Spectrum. The spectrum is then power summed to produce a single value for Max SPL.

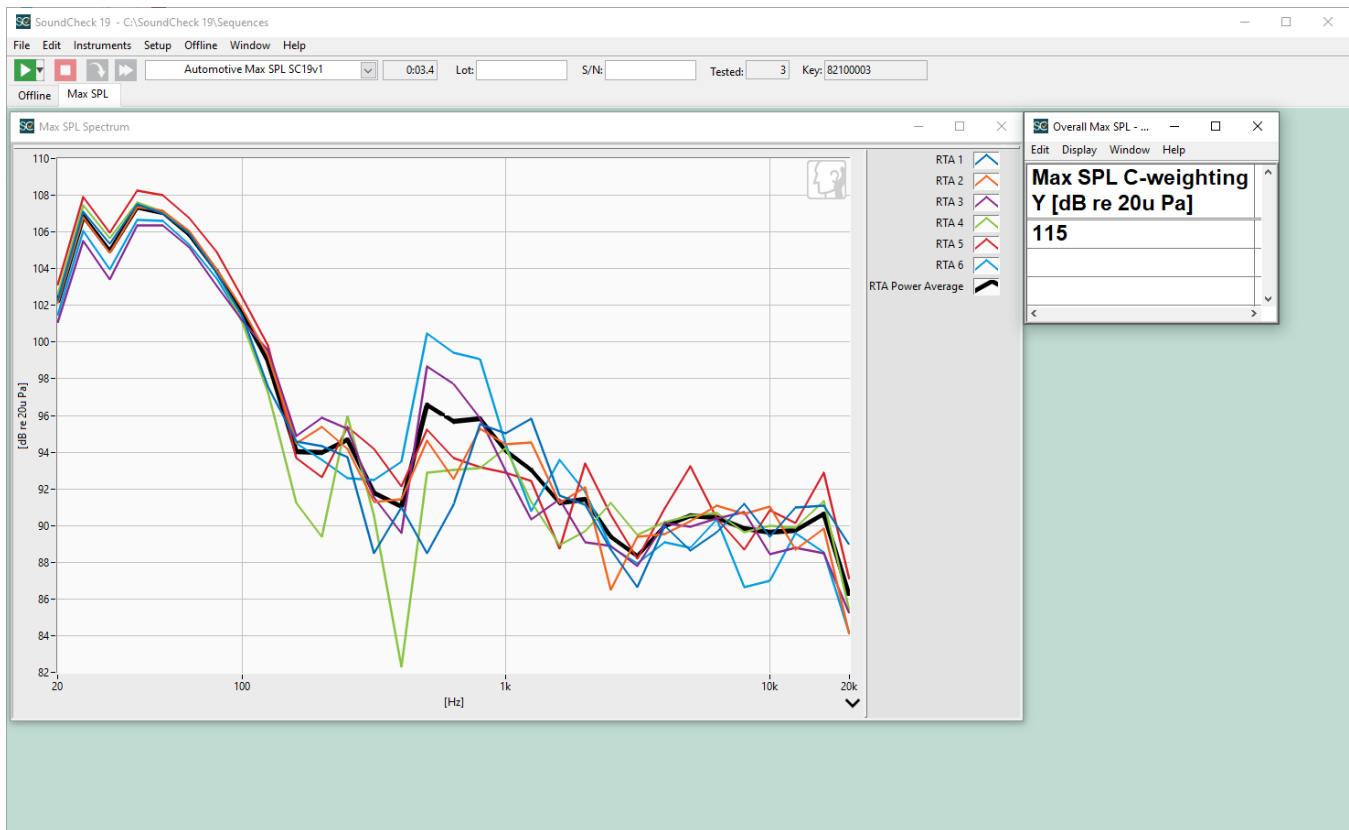


Figure 1 - Final Display for the *Automotive Max SPL* sequence



Hardware Requirements

Audio Interface – Listen AmpConnect 621 or similar hardware setup with a minimum of 6 inputs (p/n 4046)

Microphones (6) – Listen SCM-4 or similar (p/n 4012)

Software Requirements

- SoundCheck version 19 or later with the following minimum configuration requirements:
 - SoundCheck Plus package (p/n 1102)
 - RTA Module (p/n 2005)
 - 8 channel acquisition module (p/n 2024)

Hardware Setup & Calibration

1. Connect the hardware as shown in the system diagram below
2. Calibrate each microphone as described in the SoundCheck user manual
3. Place the microphones in the array holder and mount the array in the desired location

Infotainment System Setup

1. Load the WAV file onto the infotainment system using a memory stick or other storage medium
2. Set the system tone controls/EQ to the factory default “flat” settings
3. Set any front/rear, left/right balance controls to the center
4. Set the playback level to maximum

Notes on Software Setup

Auto Hardware is required to be disabled in Calibration. Signal Path gain values should then be entered manually in Calibration and these values will automatically be applied to the RTA Signal Path gains.

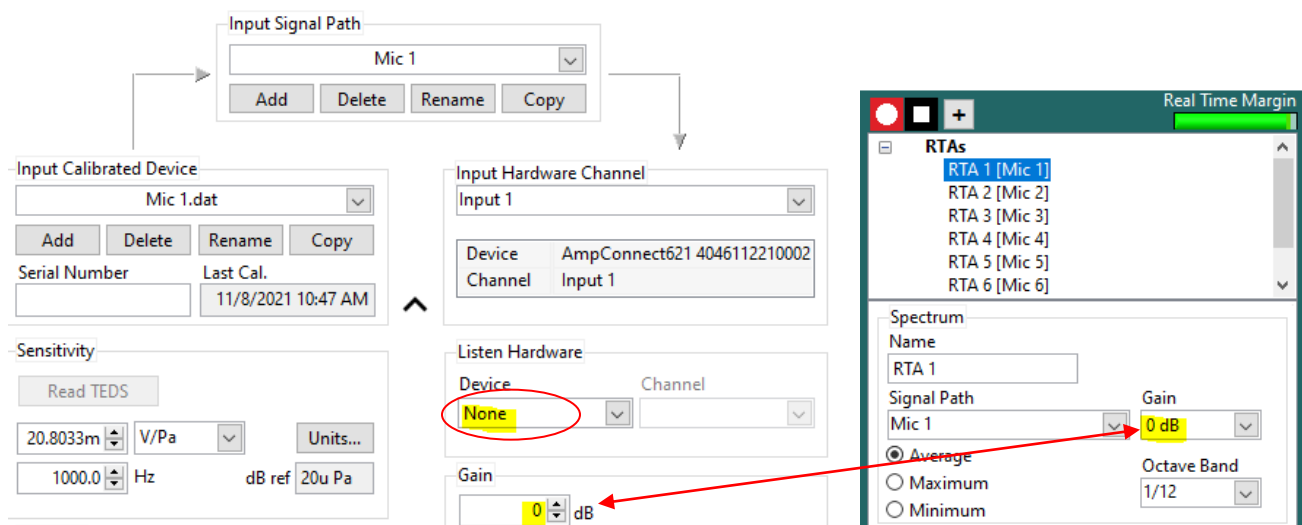


Figure 2 – Gain and Auto Hardware settings for Calibration and RTA



System diagram

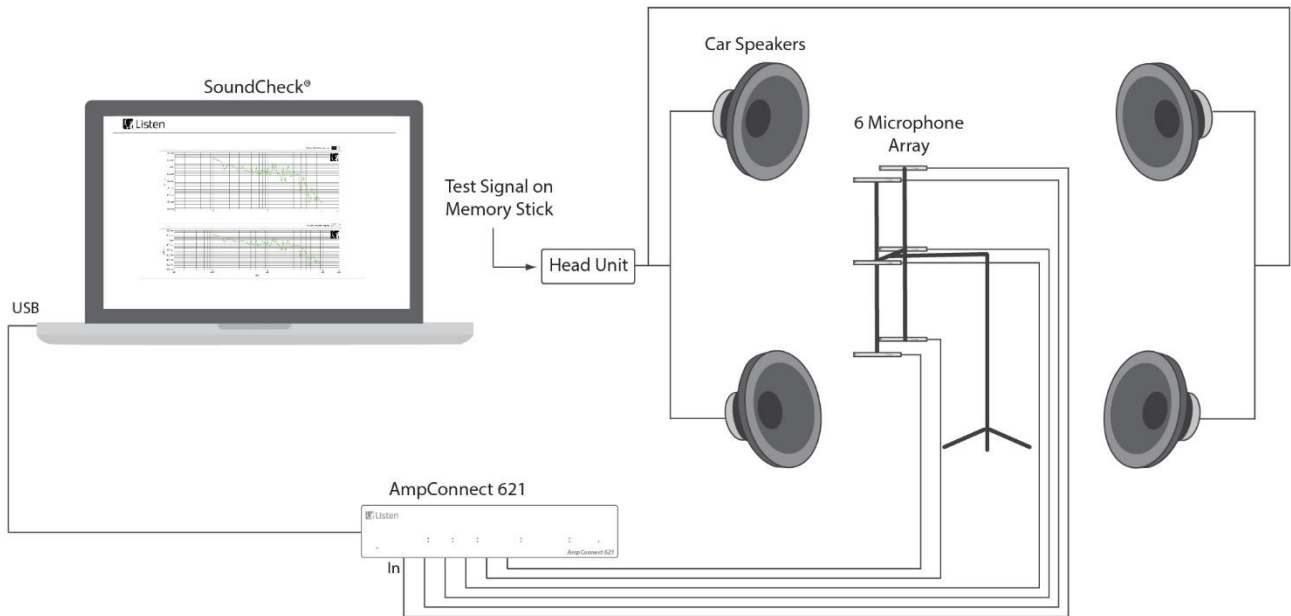


Figure 3 – Hardware Setup Diagram

Sequence Logic

Type	Step Name	#	Out	In
Rec	Recall curves	1		// Recalls C-weighting curve
Mes	Operator Dialog	2		// Prompt to recall data or run the sequence
Rec	Recall curves	3		// Recalls example RTA data
Mes	Operator Message	4		
Acq	Virtual Instruments	5	Mic 1 Mic 1 Mic 2 Mic 3 Mic 4 Mic 5 Mic 6	
Pos	Curve Multiplication	6		// Applies C-weighting to the Max SPL Spectrum
Pos	Power sum	7		// Power Sums the C-weighted Max SPL Spectrum
Dis	Max SPL	8		

Further sequence development

This sequence has been designed for simplicity and to be accessible to most SoundCheck users. Ways in which you could modify or further develop the sequence include:

- Add an autosave step to save sequence data in your desired format
- Add Pass/Fail limits to the final curves and/or values