

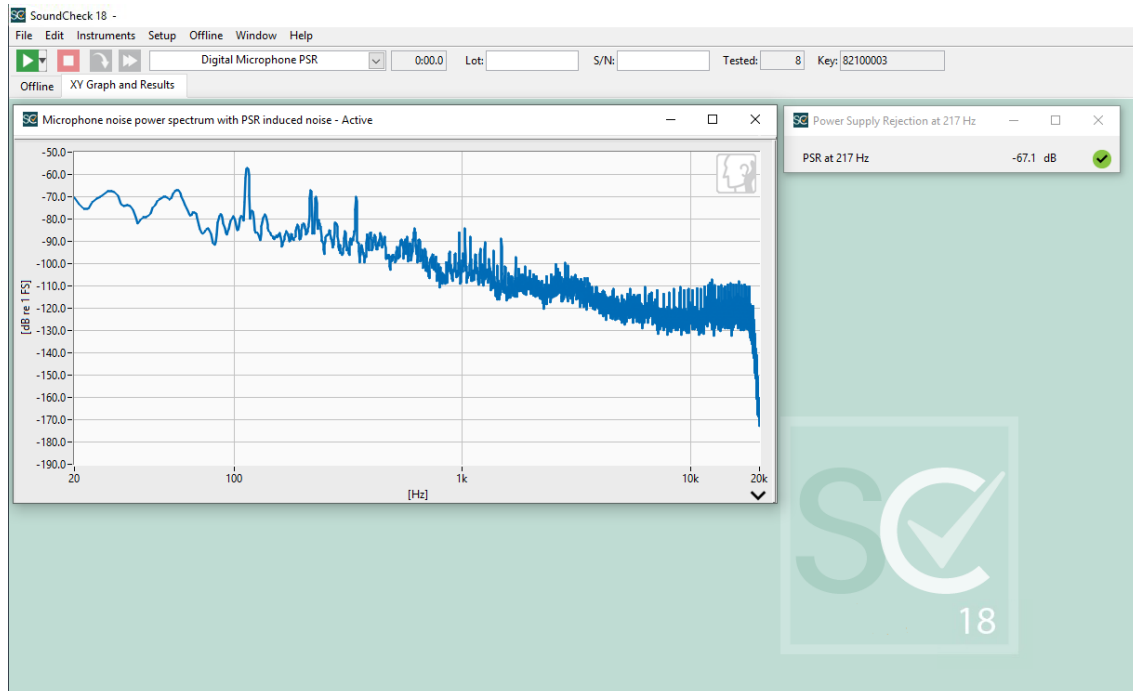
Digital Microphone PSR (Power Supply Rejection)

Introduction

This sequence demonstrates a method for measuring a digital MEMS microphone's power supply rejection performance (PSR). The PSR of a microphone reflects the ability of the device to reject or suppress external electrical interference. Such sources have historically been dominated by 50 and 60 Hz hum from electrical mains, but the 217 Hz GSM TDM pulse is now often of greater concern. This sequence measures PSR at 217 Hz but is easy to modify to test at any frequency.

The test is based on using a Portland Tool and Die DCC-1448 to provide a digital MEMS microphone with a DC supply with a calibrated AC signal, simulating electrical interference. SoundCheck then records the audio from the DUT, analyzes it with a spectrum analyzer and extracts the RMS energy at the specific frequency of the simulated electrical interference and returns the PSR value. The setting of frequency, waveform type and amplitude of the simulated electrical interference is controlled entirely from within SoundCheck.

The final display shows a graph of the spectrum of the device under test and the measured PSR value. A typical limit is applied to the PSR value and should be adapted to your DUT.



Final Display for Digital Microphone PSR Sequence

Hardware Requirements

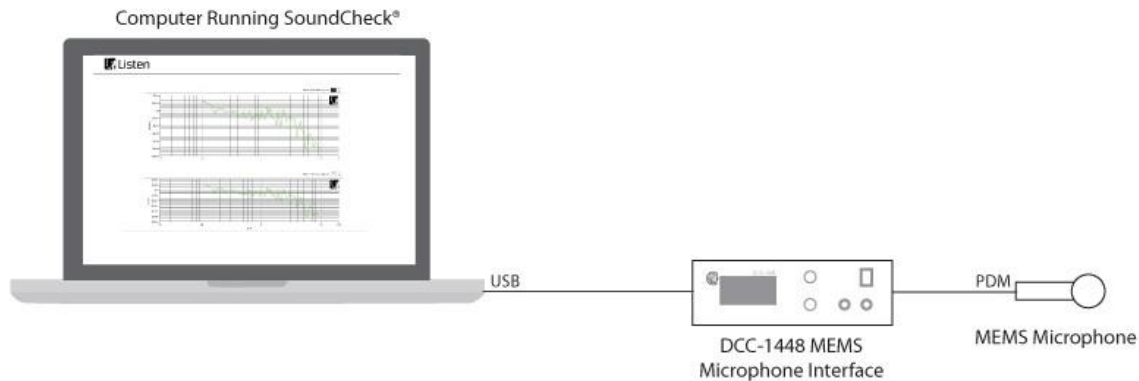
- Portland Tool & Die DCC-4149 (Listen p/n 2018) **note:** PQC-3048 cannot be used for this application

Hardware Setup & Calibration

1. Connect the MEMS microphone and digital MEMS interface per Digital Microphone Test Configuration Notes.
2. Make sure that you have run the Windows Setup.exe for your device, instructions can be found in the manual for the
3. This test is entirely electrical. You may need to mechanically mute the microphone if PSR performance is exceptionally low or ambient acoustical noise is very high.

You are ready to start the sequence.

System diagram



Sequence Logic

Type	Step Name	#	Out	In	
Cus	System	1			// Set DCC-1448 PSR generator to Sine
Cus	System	2			// Set DCC-1448 PSR generator frequency to 217 Hz
Cus	System	3			// Set DCC-1448 PSR generator level to 100 mVp
Cus	System	4			// Turn DCC-1448 PSR generator On
Acq	Record only	5		Digital In 1	
Cus	System	6			// Turn DCC-1448 PSR generator Off
Ana	Spectrum	7			
Pos	Power at one frequency	8			// Measure PSR signal at 217 Hz
Lim	Single Value - Upper Only	9			
Dis	XY Graph and Results	10			

