

Voltage Regulator Tests

SpectraPLUS general settings

Processing Settings

Frequency Range and Resolution

Sampling Rate (Hz): 96000

Decimation Ratio: 1

FFT size (samples): 32768

Spectral Line Resolution: 2.930 Hz

Frequency Limit: 48000.000 Hz

Apply low pass filter when decimating

Smoothing Window

Hanning

FFT Overlap
(Post Processing Mode only)

Percentage: 50

Time Resolution: 341.33 (msecs)

Input Signal Overload

Enable Overload Detection Exclude Overloaded Data From Processor

Sampling Format

8 bit Mono (left)
 16 bit Stereo
 24 bit

Dual Channel Options (Stereo only)

Independent Scaling and Calibration

Left channel only

Cross Channel Delay

Delay Channel: Right Left

Delay time (msec): 0.000

Averaging Settings

Mode: Sound Level Meter

Type: Exponential

Speed/Blocks: Off

Peak Hold

Ok
Cancel
Defaults
Help

Scaling Control

Amplitude Axis

Linear Logarithmic

Frequency Axis

Narrowband: Linear Logarithmic

Octave: 1/1 1/3 1/6 1/12 1/24 1/48 1/96 1/24

Power Spectral Density (normalize)

Enable PSD Units/sqrt(Hz) Units²/Hz

Standard Frequency Weighting

Flat (none) A B C

Microphone Compensation

Enable Compensation

Select... Left:

Select... Right:

Ok
Cancel
Defaults
Help

Noise measurements settings

- o Leave the regulator unloaded.
- o Connect a **60dB Low Noise Amplifier** to the regulator output.
- o Set the displayed top plot amplitude to '0 dB' and the average to 'slow'.
- o Start the analysis, when the plot is stable press 'peak hold'.

PSRR measurements settings

- o *Select $R_{load} = 100\ \text{ohm}$ and PSRR / Line Rejection Test Mode.*
- o Connect Reg IN e Reg OUT binding posts with a short wire.
- o Measure the voltage between Reg IN and GND, rotate the Reg Vin Potentiometer full clockwise, then adjust the external power supply (DC IN) until it equal the supposed V_{in} to the Regulator Under Test, for example 12V.
- o Using '1 kHz tone', adjust the generator level to minimize THD (-15dB FS in my setup).

Generator Output Level

Output Level

Level (Left): -15.000

Level (Right): 0.000

Units: dB Full Scale

The Full Scale output level of my sound card is:

I don't know

Level (Volts RMS) 2.000

Pick from list: DAL CardD - Jumper Setting 1 (+4dB)

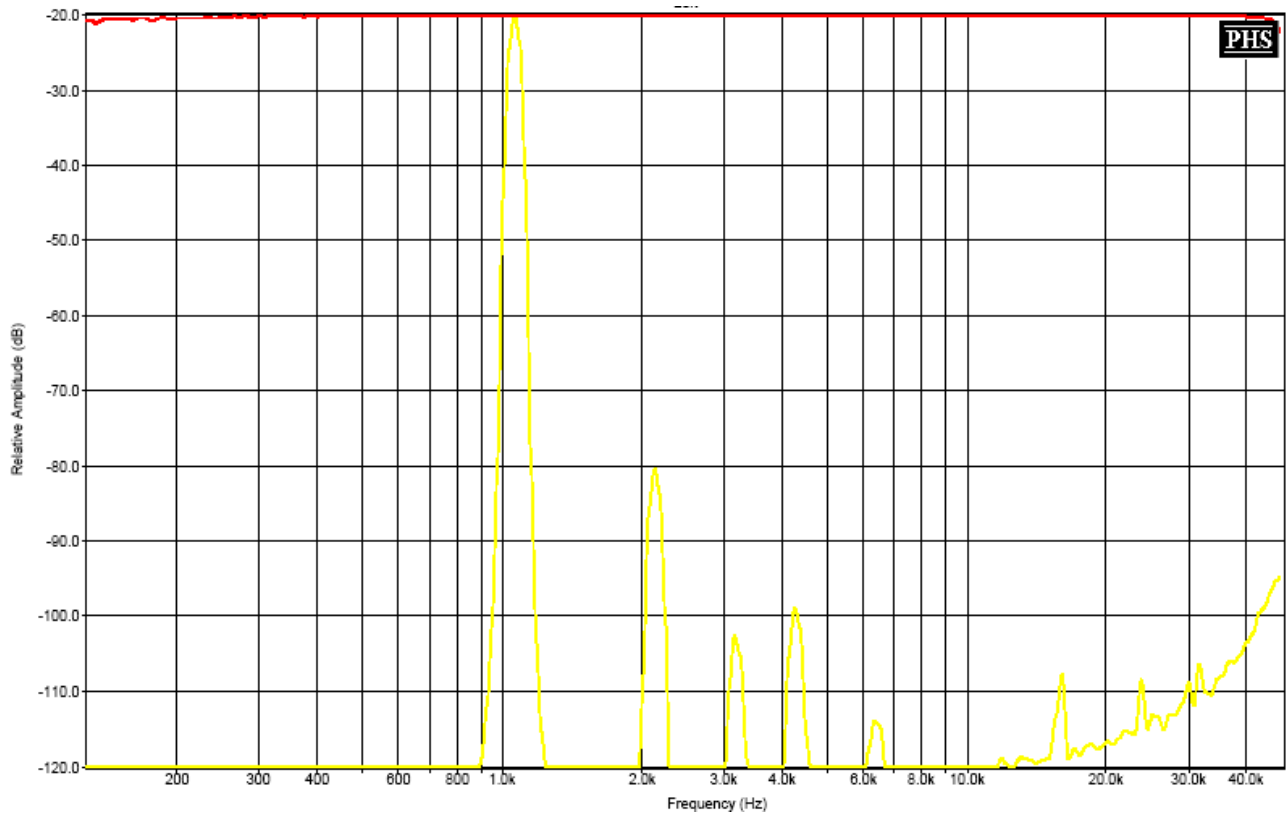
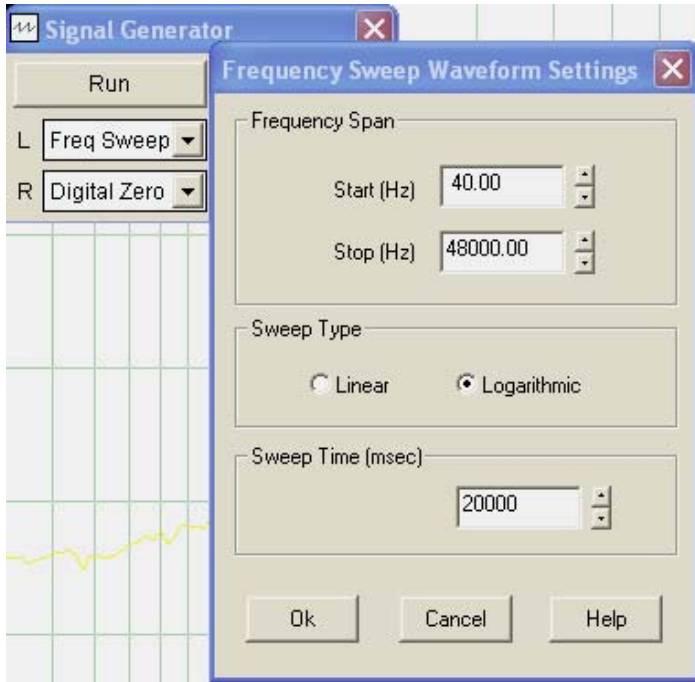
Notes:

For most sound cards, the full scale output level is dependent upon the sound card current volume setting in the mixer utility.

Click on the Help button below for more details.

Ok Cancel Help

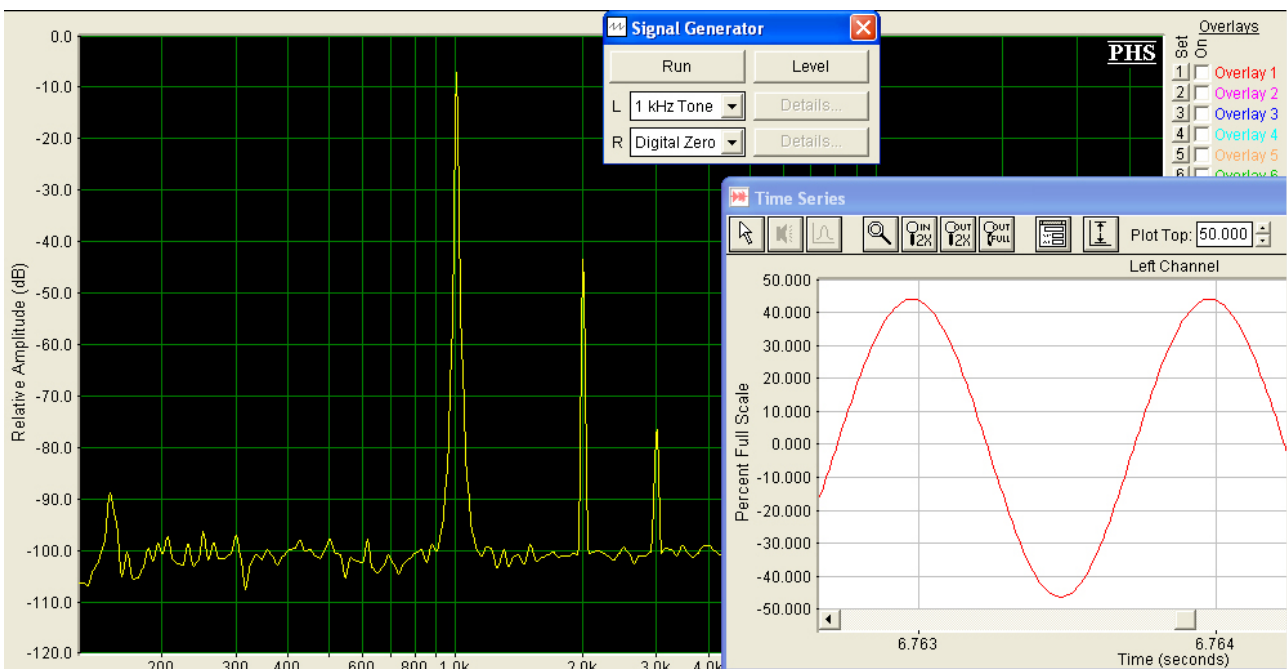
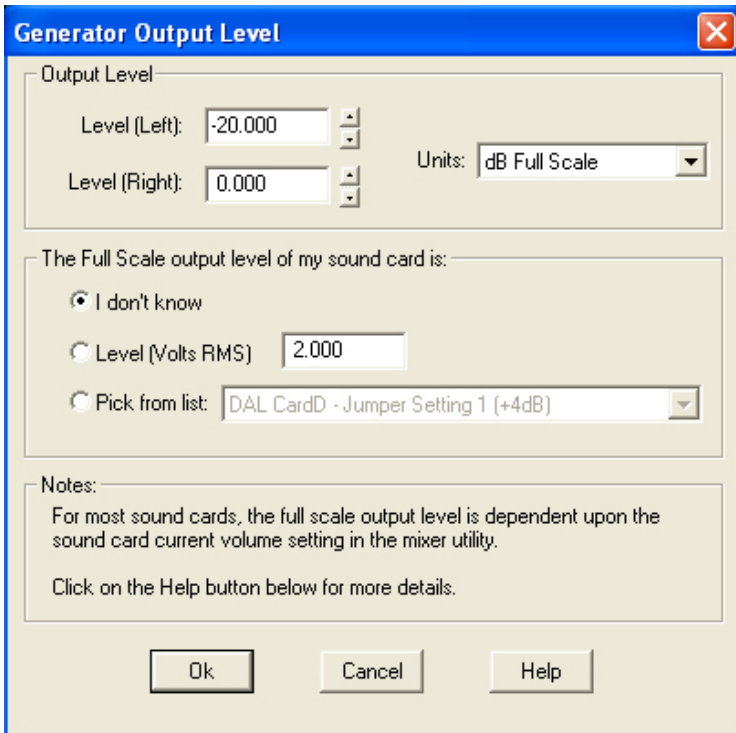
- o Set and run the 'freq. sweep', press 'peak hold' to plot a reference line. Fine adjust the generator level to overlap a displayed grill line (-20dB in my setup).



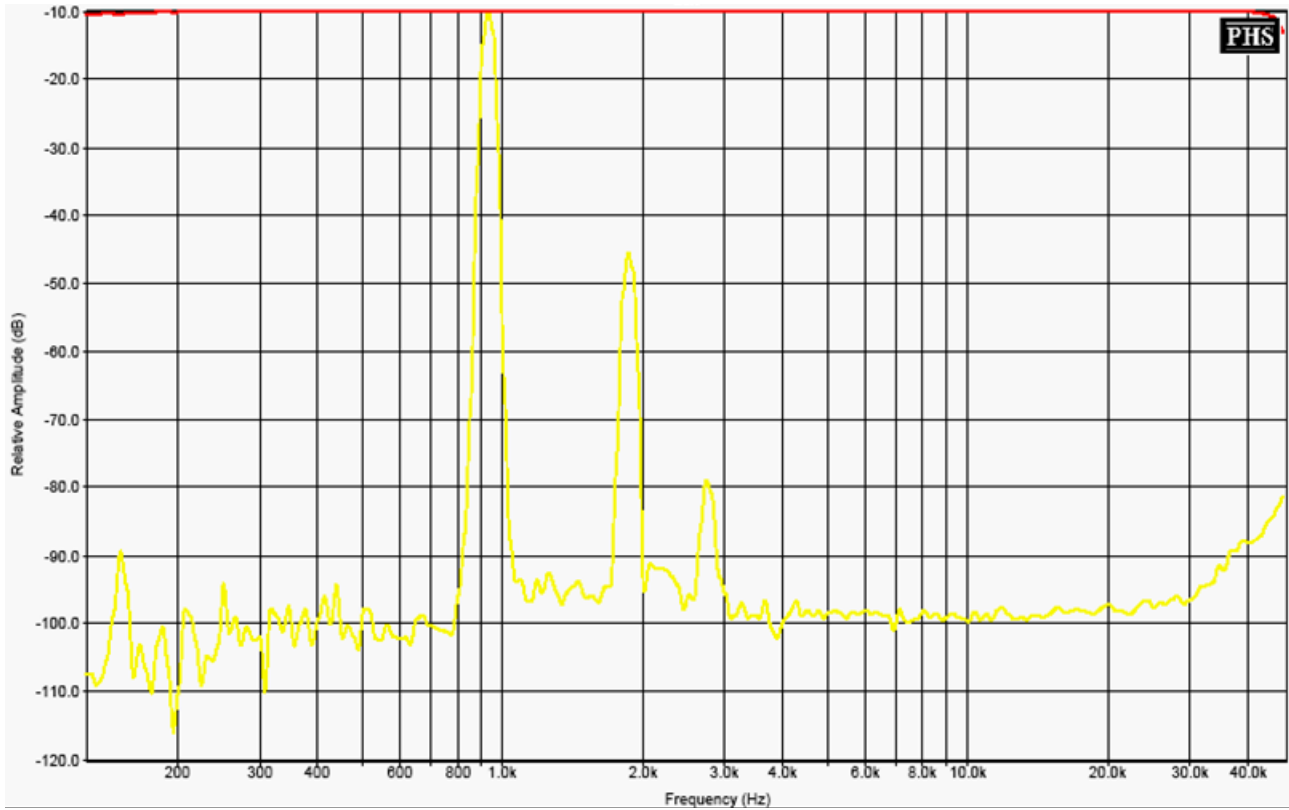
- o The red line is now the 0dB reference, set the displayed top plot amplitude equal to the overlapped grill line (or normalize if your analyzer has this option). All following plots will be relative to the reference line amplitude, subtract the reference line amplitude from the amplitude read on Y axis.

Load Regulation measurements settings

- o Select Rload = 100 ohm and Zout / Load Transient Test Mode.
- o Connect Reg IN e Reg OUT binding posts with 1 ohm resistor.
- o Connect Measure Output to a **40dB Low Noise Amplifier**.
- o Measure the voltage between Reg IN and GND, rotate the Reg Vin Potentiometer full clockwise, then adjust the external power supply (DC IN) until it equal the desired Vout from the Regulator Under Test, for example 5V.
- o Using 1 kHz tone and both the frequency domain and time domain plots, adjust the generator level and the DC current (via the Reg Iout potentiometer) to minimize THD (-20dB FS in my setup).



- o Run the freq. sweep to plot a reference line and adjust the generator level to overlap a displayed grill line (-10dB in my setup).



- o The red line is now the 1 ohm reference, set the displayed top plot amplitude equal to the overlapped grill line (or normalize if your analyzer has this option). All following plots refer to 1 ohm line.
- o When calculating output impedance, add 10 dB to the amplitude read on Y axis.
- o Measure the voltage between Reg IN and GND, rotate the Reg Vin Potentiometer full clockwise, then adjust the external power supply (DC IN) until it equal the supposed Vin to the Regulator Under Test, for example 12V.