Voltage Regulator Tests

SpectraPLUS general settings

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 Rload = 100 ohm* and <u>PSRR / Line Rejection Test Mode.</u>

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 Vin 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).

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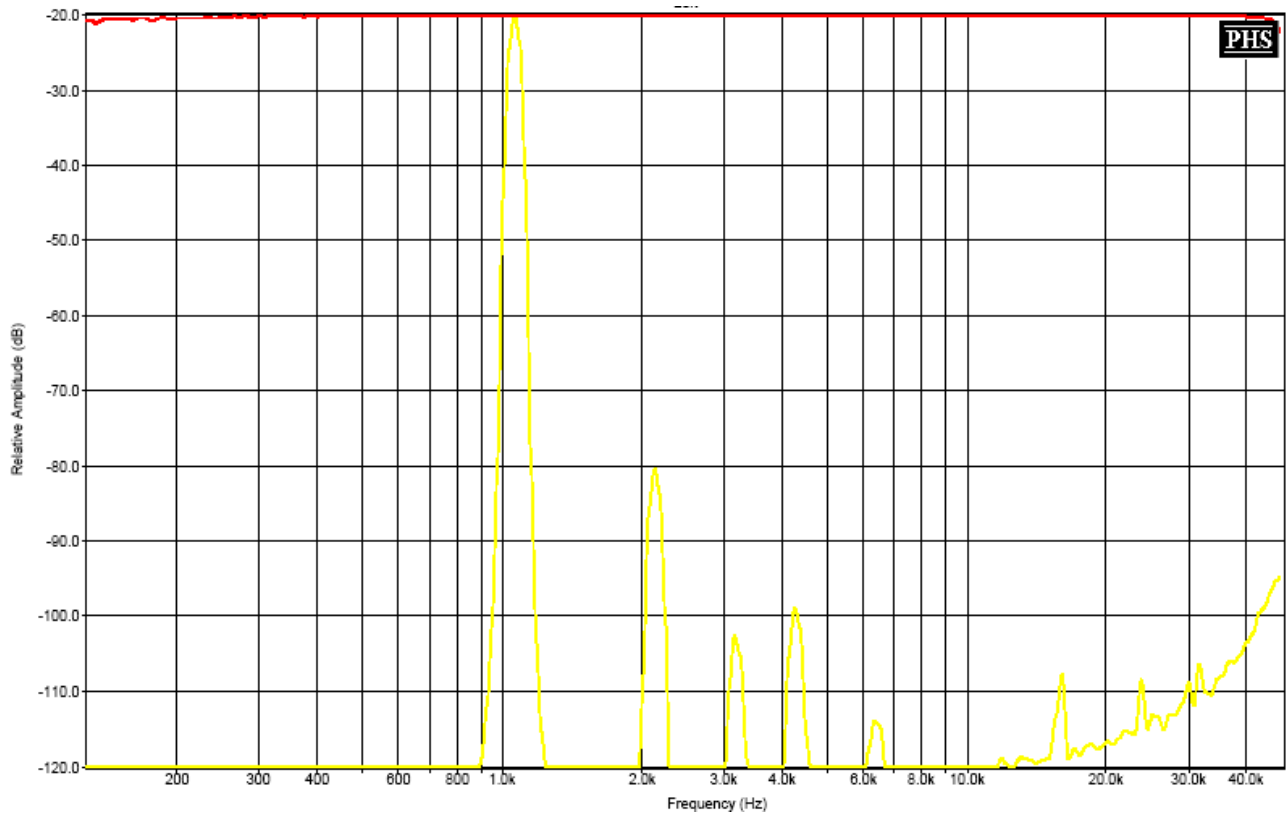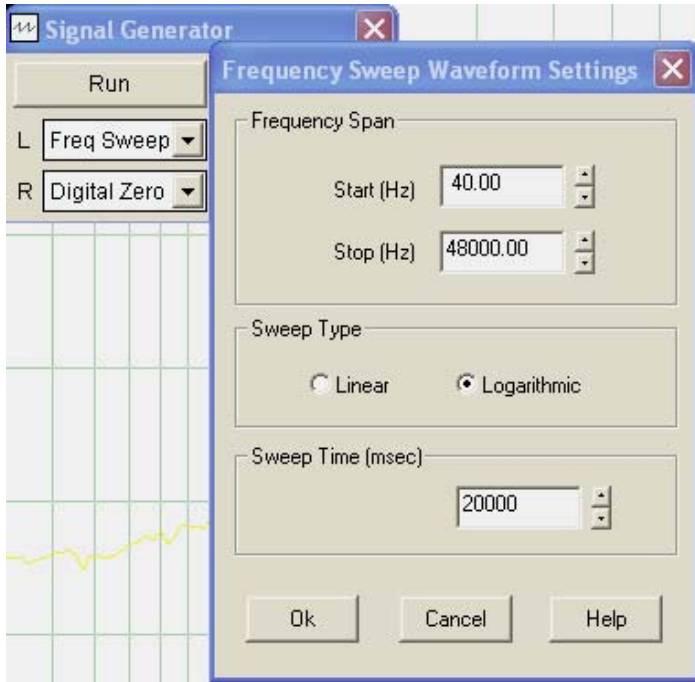
o   The red line is now the 0dB reference, set the displayed top plot amplitude equal to the overlapped grill line (or normalize if your analyzer has this option). All following plots will be relative to the reference line amplitude, subtract the reference line amplitude from the amplitude read on Y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

Load Regulation measurements settings

o Select Rload = 100 ohm and <u>Zout / Load Transient Test Mode.</u>

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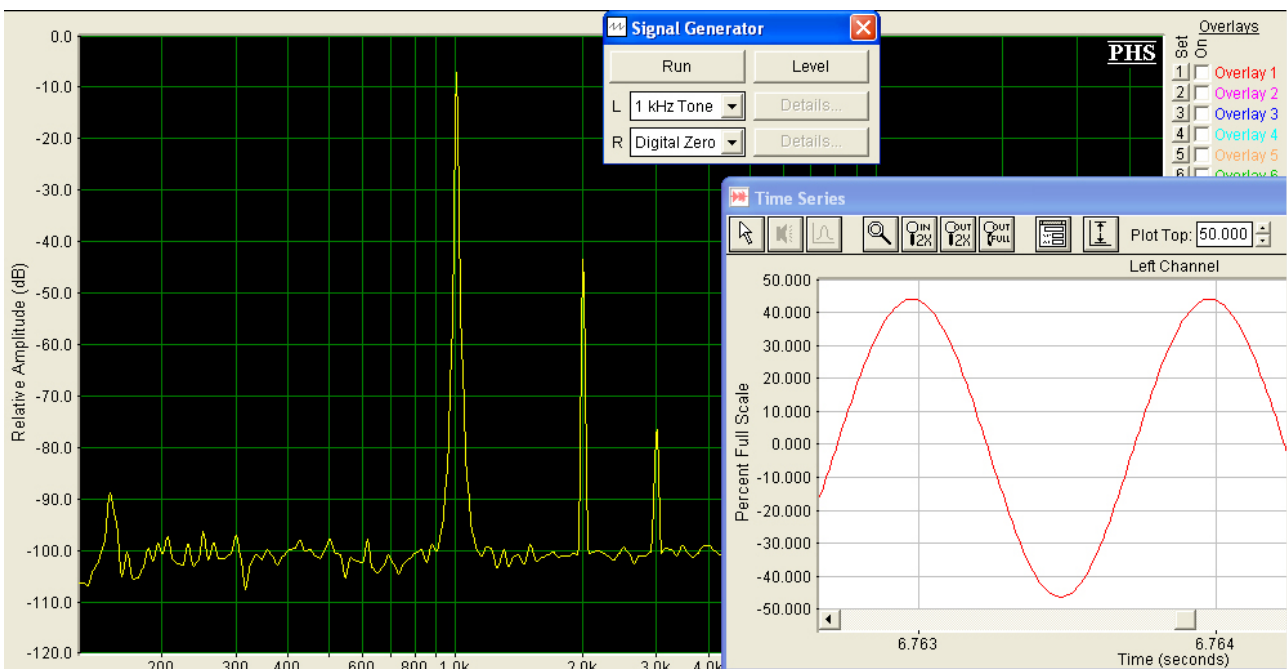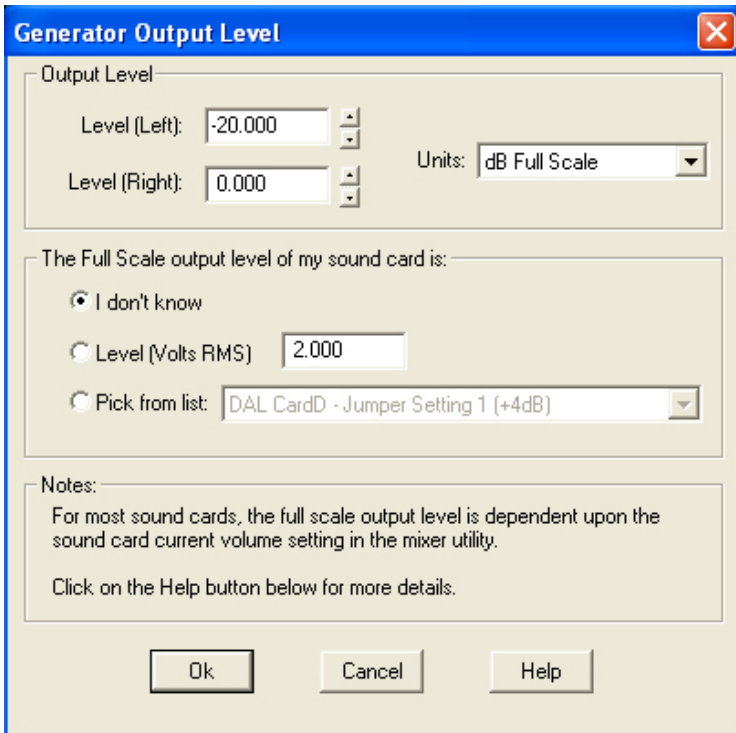
- Run the freq. sweep to plot a reference line and adjust the generator level to overlap a displayed grill line (-10dB in my setup).
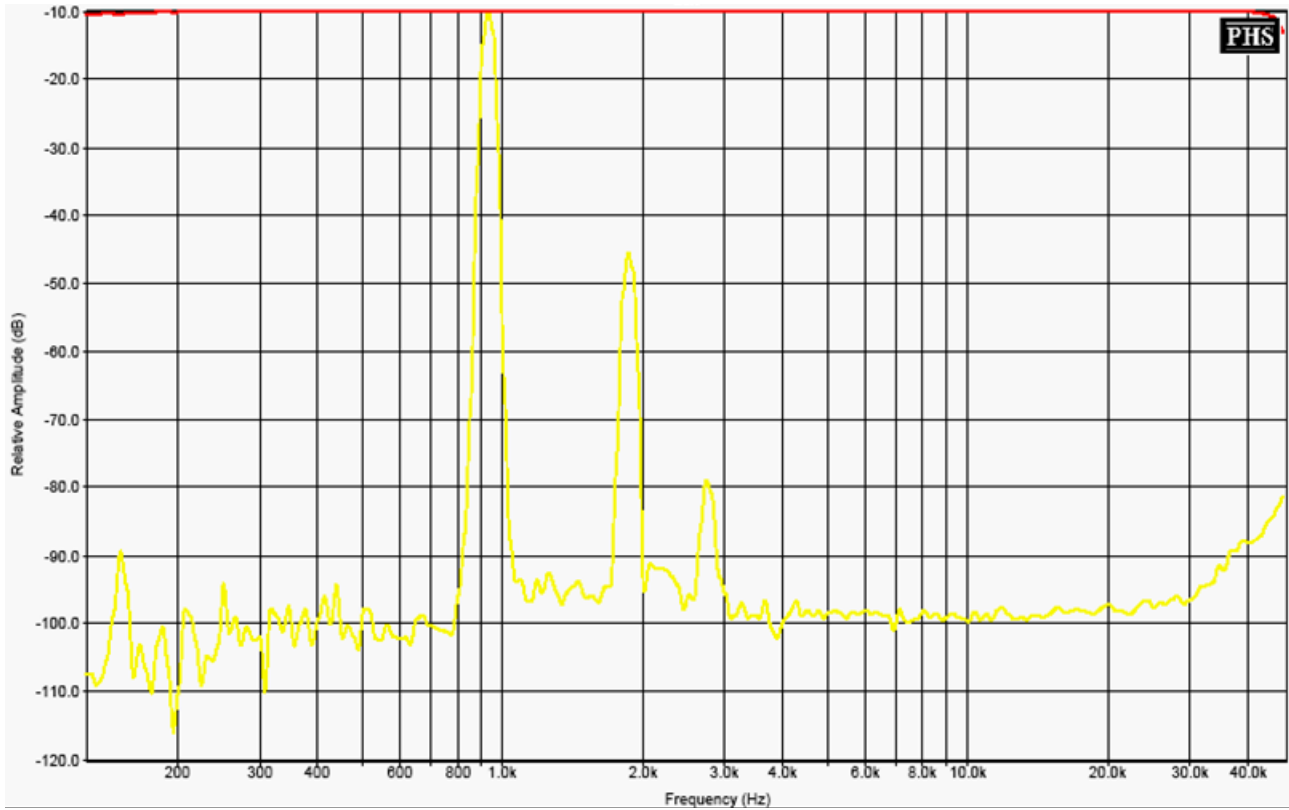

- The red line is now the 1 ohm reference, set the displayed top plot amplitude equal to the overlapped grill line (or normalize if your analyzer has this option). All following plots refer to 1 ohm line.
- When calculating output impedance, add 10 dB to the amplitude read on Y axis.
- Measure the voltage 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.