

Sound Card Function Generator

Requirements: A PC with Windows 95 or higher, stereo sound card.

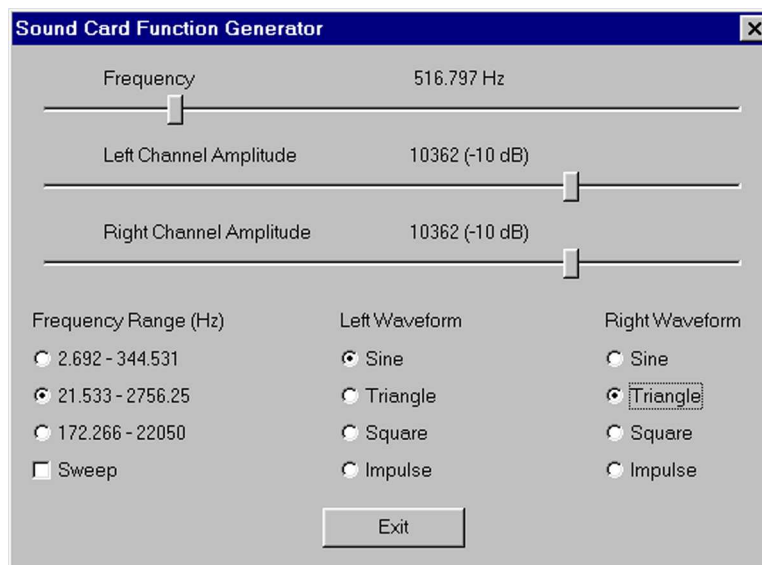
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This program is offered “as is” without warranty of any kind.

Installation: Sound Card Function Generator does not need to be installed. Just put **FuncGen.exe** in any folder you choose and create a shortcut on the desktop.

CAUTION: Some amplifiers and loudspeakers are not designed for use with continuous tones such as generated by this program. Keep the volume low to avoid overheating and burnout of your audio components. Volume can be adjusted with the volume control program in your computer.

CAUTION: Tones such as generated by this program can damage your hearing at high volume. Keep the volume low to avoid hearing loss. Volume can be adjusted with the volume control program in your computer.

Screen shot:



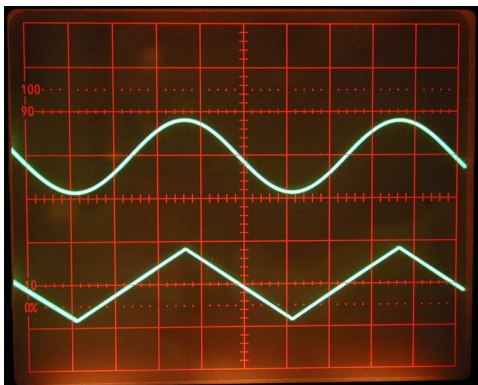
Controls:

- **Frequency** slider: Selects the frequency of the signals in conjunction with the **Frequency Range (Hz)** buttons.
- **Left Channel Amplitude** slider: Adjusts the peak level sent to the sound card's digital-to-analog converter (DAC). The maximum is ± 32767 . Center position is off. Left of center inverts the signal. 21 steps from 0 to -20 dB. You can still use the computer's volume control program to independently adjust the output level.
- **Right Channel Amplitude** slider: Same for right channel

- **Frequency Range (Hz) buttons:** Select one of three ranges of frequencies. The **Frequency** slider sets the exact frequency within this range.
- **Sweep** check box: When this box is checked, the output signal is swept over the frequency range selected. The waveform is sinusoidal. The **Waveform** buttons and **Frequency** slider are disabled. Frequency varies exponentially with time and the sweep repeats every 5.994 seconds.
- **Left waveform** buttons: Selects waveform of left channel signal: sine wave, square wave, triangle wave or impulse.
- **Right waveform** buttons: Same for right channel.
- **Exit** button: Closes the program.

Distortion: PC sound cards are designed for speech and music, not for generating test signals. Therefore, the waveforms they generate will not be as nice looking as a real function generator. The square waves and impulses, in particular, are likely to look quite distorted, depending on the make and model of sound card in the computer. Square waves and impulses cannot be generated accurately above about 500 Hz because the sound card cannot reproduce the high frequency signal components they contain.

The oscillographs below show the four waveforms at 516.797 Hz, as reproduced by one typical sound card.



Technical data:

- The discrete frequencies (Hz) that can be generated are:
 - Low range: $n \times 44100 / 16384$, $1 \leq n \leq 128$.
 - Medium range: $n \times 44100 / 2048$, $1 \leq n \leq 128$.
 - High range: $n \times 44100 / 256$, $1 \leq n \leq 128$.
- The square wave is generated as a sinusoidal wave clipped at .015625 of peak amplitude.
- The impulse is generated as a half cycle sine pulse with a duty cycle of .041666 of the period.
- Sampling rate is 44100/sec (audio CD rate) for all signals.
- The most recently generated waveform is saved in file **FuncGenPCMdata.wav** in the current folder. This file can be read, analyzed or played by other multimedia programs, if desired.