

Magic Sinewave Harmonic Spectra

Don Lancaster
Senior Product Development Engineer
Synergetics, Box 809, Thatcher, AZ 85552
<http://www.tinaja.com>
don@tinaja.com
(928) 428-4073

The plot below shows a portion of the **UNFILTERED** spectrum of a typical magic sinewave. This example is for an 0.53 amplitude Delta Friendly **MS28NDX Magic Sinewave**. It takes the results of the JavaScript calculator and then plots the harmonic amplitudes on a linear scale.

The fundamental is shown normalized to 1.0. All even harmonics are zero. A chosen number of low harmonics are forced to zero. In this case, the first twenty two harmonics are zeroed out. The first two uncontrolled harmonics will have significant amplitude before filtering. These range from an **unfiltered** one quarter amplitude near maximum output up to unity amplitude or very slightly above at minimum output.

Significant but progressively diminishing harmonics are also found at multiples of the first two uncontrolled harmonics. For a Delta Friendly magic sinewave, all triad harmonics are also zero.

A conventional square wave harmonic spectrum is shown in red. The magic sinewave technique can be clearly seen to force all harmonic energy much higher in frequency where it can easily be dealt with by filtering, inertia, or other means.

Sourcecode is available as **SPEC28ND.PSL**. Additional assistance is **available here**.

