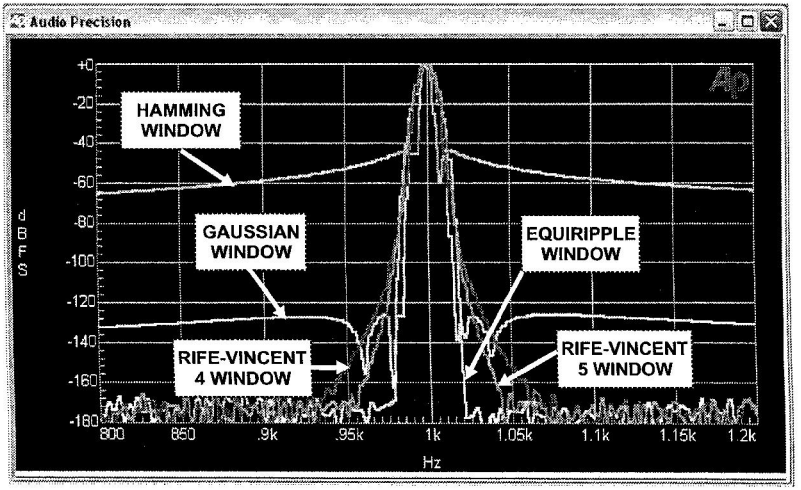

Figure 215. FFT Window Functions: Hamming, Gaussian, Rife-Vincent 4 and 5. Equiripple shown for comparison.

Hann Window

The Hann window is a raised cosine window that provides good selectivity near the top of the main lobe (about –6 dB at one bin away from center and about –30 dB at two bins away), with no side lobes. Its skirts more than 3 bins off center are not as steep as the Blackman-Harris window. The Hann window causes approximately –1.5 dB maximum amplitude error due to window attenuation, if the signal is at the extreme edge of the bin.

Blackman-Harris Window

The Blackman-Harris window is a 4-term minimum side lobe window. When compared to the Hann window, it is not quite as selective across the central several bins (about –3 dB in the adjacent bins and about –14 dB at two bins off), but has steeper skirts beyond that point. The Blackman-Harris window has side lobes below –92 dB (response fall-off is not monotonic). It has a reasonably flat top with a maximum amplitude error of about –0.8 dB if the signal is at the extreme edge of the bin.

Flat-Top Window

The Flat-Top window is designed for the greatest amplitude measurement accuracy. It provides a maximum amplitude error due to window attenuation of less than –0.02 dB. However, its selectivity is poorer than the other windows. The Flat-Top window is the appropriate window for accurate amplitude measurements (such as when measuring individual harmonics) except when signals are so closely spaced that its selectivity becomes a problem.