Subject: Measure impedance
Posted by Wayne Parham on Fri, 16 Aug 2002 21:34:35 GMT
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To find the box frequency, you measure impedance much the same way you find a woofer's free air resonance. But when the woofer motor is introduced to the (Helmholtz resonator) speaker cabinet, it now forms a system that has two resonant peaks, separated by a drop in impedance. So the box resonant frequency must be determined indirectly, by looking at the twin peaks and the dip between them in the impedance chart.The lower-frequency peak is described as fl and the upper-frequency peak is called fh. The Helmholtz frequency, or box resonance is called fb, free air resonance of the woofer is fs and fo is the frequency of resonance of the woofer mounted in the box, were there no port present. The formulas that describe these relationships are:flfh = fsfbfl2 + fh2 = fo2 + fb2Therefore,fb = (fl2 + fh2 - fo2)0.5fb = flfh / fsBasically, if you know fl, fh and either fs or fo, you can determine fb. And exact impedance values aren't required, only the frequencies fl, fh and either fs or fo