Subject: Re: Energy along frequency spectrum
Posted by Wayne Parham on Fri, 28 May 2004 14:35:25 GMT
View Forum Message <> Reply to Message

This isn't exactly on topic, but it's related.I define the midrange band as 100Hz to 500Hz, whereas I think many consider it to start much higher, like 500Hz. Not that this is right or wrong, it's just a definition, a label used to communicate an idea. But I consider a driver used above 500Hz or 1000Hz to be a tweeter more than a midrange.Middle C is 260Hz. To me, that's squarely centered in the midrange. One octave below (130Hz) is the start of midrange, where it transitions to midbass and bass. 60Hz to 130Hz is midbass, and 60Hz down is bass. Below 20Hz is infrasonic, certainly felt but not heard.One octave above middle C (520Hz) marks the start of the overtone region. Sopranoes hit notes an octave higher and more, so the overtone region and the fundamental vocal range overlap between 500Hz and 1500Hz. The overtone range for voice overlaps with the overtone range for many instruments too, so a definition of this region is fuzzy because overtones vary so much in content and distribution. But I tend to mentally think of a artificial boundary, an end of the overtone region of about 5kHz.That leaves the last two octaves, the treble region 5kHz to 10kHz and the top octave above 10kHz. This is where cymbals, chimes and brushes live. It's the splash and the air and where the leading edge of transients are represented. Above 20kHz is the ultrasonic range. It can be shown that humans cannot identify sounds much above 20kHz, but there is some debate as the whether or not energy above 20kHz can be sensed in some way, perhaps by artifacts caused by interaction with audible frequency components.Seems like Elliot estimated that 1/2 power is generally required below Middle C or so, and 1/2 above. That puts half the power in the midrange, midbass and bass and the other half in the upper midrange, overtone and treble range. It also means that half power is used in the first third of the audible range. You can break the range into three decades, marked by 10x frequency divisions each, for a total of 1000-fold frequency range. The first 10x range carries half power, and the next 100x range carries the other half.