Subject: A Study of Effeciency
Posted by RBP on Mon, 26 Mar 2001 16:41:24 GMT
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Over the last 25 years, I have studied a factor that is not getting the attention it deserves. I have written several papers on this. Call it Linear effeciency.Take two designs, Low eff. and High eff. Even though "High eff. is still considerably less than even 10%, these results will prove why higher effeciency Loudspeakers are closer to the truth than Low effeciency in terms of dynamics. High effeciency has it's price. Usually more deviation in the frequency response curve, and large size, plus higher low frequency cutoff per cu ft.Here is a reprint of one of over 200 effeciency test I have performed over the years. Note that doubling the power does not necessary mean a rise in 3dB!Next can of worms...Dissapation.Here goes:From the Archives:86dB speaker. DCM Time Window.1W.... 85.7 (2.4dB)2W.... 88.1 (2.3dB)4W.... 90.4 (2.2dB)8W.... 92.6 (2.2dB)16W... 94.8 (2.2dB)32W... 97.0 (2.1dB)64W... 99.1 (1.8dB) Severe compression here.128W..100.9 (1.3dB)256W..102.2 512W..Voice coil failure.OK?104dB Speaker...Klipschorns.1W.....103.2dB (3.4dB)2W.....106.7dB (3.4dB)4W.....110.1dB (3.4dB)8w.....113.4dB (3.3dB)16w....116.7dB (3.5dB)!32w....120.2dB (3.4dB)64w....123.6dB (3.0dB)128W...126.6dB (2.4dB) Compression begins....256W...129.0dB No need to go further risk speaker damage.White noise burst for 500mS (1/2 second)Clearly the difference between 1 and 128 watts on the Klipsch is 20dB.The low effeciency speaker ..only 15.2dBEach speaker has "it's curve" on linear effeciency. Dissapation was done at 1 meter with B&K 3259 microphones with 500 mS of White noise.Next time, a study in Linear dissapation VS effeciency and room coeffecients.Warning, this one get's deep!Hope this helps.