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Subject: How did Kirk defeat Khan?

Posted by [Bill Fitzmaurice](#) on Mon, 24 May 2004 19:43:51 GMT

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Because Khan used battle tactics that relied on two dimensional thinking, as in Chess. Kirk, a master at 3 level chess (though no match for Spock) thought in 3 dimensions. Khan never saw that last Photon Torpedo coming. The same applies to horns. All of your diagrams are two-dimensional, which infers that your thought process behind them is also two dimensional. When you lose that second driver you halve the required space for the rear chamber, space that can be added either to your pathway for a lower Fc or to the mouth area for a higher SPL or both, or just subtracted from the box for net size savings. Don't sweat standing waves in basshorns; they don't exist where surface to surface dimensions are 1/4 wavelength or less. A quarter wavelength at 100 Hz is about 2.8 feet; you do the rest of the math. Also forget both reflectors and damping; both the Tuba 18 and Tuba 24 don't use either, with no degradation in performance. Standing waves for the most part only exist in the minds of advertising executives. The poster who noted that SPL was the same from an identical box with either one or two drivers was correct to a point. While wattage sensitivity remains the same, voltage sensitivity does go up by 3dB, as the halving of impedance doubles the wattage in for a given voltage. By the same token total output power is up 3dB, due to the doubling of PMax. However, what you don't get is the 6dB voltage sensitivity/power output gain that direct radiators achieve from doubling drivers. That because doubling cone area in a direct radiator achieves an efficiency gain of 3dB from the doubling of radiating area, but in a horn the radiating area is the horn mouth, and since doubling or quadrupling or googleplexing the number of drivers at the throat does not change the throat size the horn efficiency remains the same, only the input power capacity changes.

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