Subject: Re: A horn loaded bass 2 way for me?
Posted by Wayne Parham on Thu, 15 Jan 2004 06:44:17 GMT
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Hi Charlie!There are a few ways around the problem of upper frequency rolloff, and they all take advantage of properties that increase high frequency energy or concentrate high frequency directivity. Examples include electrical or acoustic EQ from collapsing directivity, rising power response or equalization networks.I don't know that I've ever seen a horn with peak-efficiency bandwidth greater than 3 octaves, but I've seen plenty of horns that worked pretty well over greater range. Some would probably say that the horn isn't acting as a horn over part of the bandwidth, and that may be true. But the point is that I think you can expect pleasant behaviour from a cone-driven horn up to and beyond 1500Hz, when designed for that purpose.A cone driver's beamwidth will actually become more narrow than the horn's flare at some point, which increases DI. Until voice coil inductance makes a final rolloff pole, the reactive properties of the motor/diaphragm system may cause it to have rising response. Breakup modes also increase upper frequency output - Smoothly controlled breakup modes have been purpose-designed in full range and extended range drivers for decades. So the total effect of all these forces can generate on-axis response that is flat well above mass-rolloff.Essentially, the driver of a horn becomes the most significant part of the equation at high frequencies. At these very high frequencies, the system behaves differently than it does in the horn's peak-efficiency band. But it is an option to consider. I've built many large horns with drivers having rising response, and the horn almost acts like a response modifier, bringing up the bottom end to match the top.I've found this approach to open up several interesting possibilities, and lots of very pleasant loudspeakers were built as a result.Wayne