Subject: Ultra-high frequencies - unimportant?
Posted by laoye on Fri, 15 Feb 2002 20:09:18 GMT
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Wayne-First, let me thank you for your generousity. It's been a great education for me to comb through these archives.I am interested in your pro-series PI speakers for an "ultimate" home system some day. I notice that HF response is rated through 16khz. Is response beyond 18khz unimportant?On my current system, which uses a 2405 for UHF through 22khz, I find that I like to use a supertweeter to "open up" the sound. The supertweeter is set to cross over at 24khz at 18db/oct and is set 4db down vs. the 2405. (Other possible settings of the supertweeter, such as a lower crossover or higher contribution vs. the 2405 make the system unnatural to my ears.) I mention all this because it demonstrates to me that the UHF response is important. Have you or others supplemented the main speakers with UHF drivers, and if so, what solutions have you found appropriate?Thanks!- Ken

Subject: Re: Ultra-high frequencies - unimportant?
Posted by Wayne Parham on Fri, 15 Feb 2002 21:26:41 GMT
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I find that output up to 16kHz gives plenty of sparkle. Cymbols and chimes sound right, and it doesn't sound muffled, like there is a lack of treble. But I won't kid you. You can hear a little extra "air" in that region between 16kHz and 20kHz from a tweeter that goes up that high. You can tell the difference between a ribbon or dome tweeter with response up beyond 20kHz and a compression horn that goes only up to 16kHz. It's subtle, and you don't miss much. The compression horn gives you all the sparkle and doesn't sound like it's missing anything but a whisper of "hiss" or "air".There are a few compression horn tweeters with beryllium diaphragms that can reach 20kHz. That's an excellent way to get that last few kilohertz of audible sound. But they're expensive. Another option is to add a super-tweeter, but I'm not as thrilled with this approach. The problem is there's no way to get a super-tweeter close enough to be within 1/4 wavelength at this high frequency, so summing is a problem. Super-tweeters crossed over above

uniformity of response throughout the listening room. When a super-tweeter is added, this is lost. That's the reason I use a compresson horn tweeter as the highest frequency device.Here's the thing that makes compression horn tweeters so good. Let's say you're playing some music with the low passages around 95dB/M or 100dB/M. That's not terribly loud, particularly if you're sitting five or ten feet back and the low passages are the average level. Lots of music is this way, particularly classical and some rock, like art rock. When the music rises to a crescendo, or hits a loud peak, it's at least 15dB to 20dB louder. That's not uncommon, just a 15dB to 20dB dynamic range, not unexpected. What you have here though is a 120dB peak, and that's something the dome or ribbon just won't do. You'll send the dome flying out into the room at that level. But the compression horn tweeter has no problem with sound at those levels. It's designed for

that.Compression horns do a few things very well, better than any other kind of tweeter. They're designed to reach 120dB/M and more. They don't need a lot of power to reach these levels either, they're just cruising and distortion is very low. Another thing is their controlled directivity. Horns put the sound where you want it, and they can be used to uniformly cover the listening area. A good horn tweeter will put the splash of the cymbols throughout the room, not just striaght out on-axis. Their controlled directivity, low-distortion and wide dynamic range are the strengths of compression horn tweeters, and that's why I tend to prefer them over other tweeters.