Subject: Re: Horn mouth vs. front baffle or "speaker cone"
Posted by Wayne Parham on Tue, 04 Sep 2018 01:04:26 GMT
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Here's a post that contains a video that shows measurement of vertical nulls:
Crossover optimization for DI-matched two-way speakersThe thread above shows my design

Click in the link that says "Vertical Nulls" about halfway through the first post. It will show you a video of a measurement where I move the microphone above and below the speaker, through the forward lobe above to the upper null an below to the lower null. This shows you exactly what I'm talking about. I design the speaker to place these nulls outside the radiation pattern.

The measurement in the video described above shows result of interference between two sound sources, the woofer and the tweeter. The forward lobe is clean: Summing is constructive +/-20° above and below the speaker.

Something similar happens with reflections and room modes. The sound reflected from the nearest boundaries causes self-interference notches that look a lot like those vertical nulls. Arrays mitigate this, and that's what flanking subs are for: They mitigate nulls from nearest boundaries in the 80-120Hz range, which are very common. Similarly, room modes cause peaks and dips from resonances in the room. Multisubs help in the 20-80Hz range because they are a form of an array that are very effective at smoothing low-frequency room modes.