Audio Artistry
painting your world with sound
Your room is our canvas...

Vertical Sound-Field Simulations

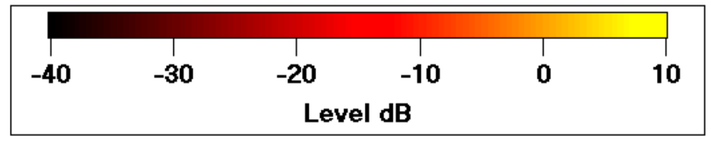
Compare: Point Source vs. Two-Way System vs. Straight-Line Array vs. CBT Curved-Line Array
In Free-Space and Over a Ground Plane

Notes (all speakers modeled as point sources):

1. **Point Source:** Located 1 m High.
2. **Two-Way System:** Tweeter located 1 m high, Woofer located 0.75 m high, 2nd-order Linkwitz-Riley crossover at 2 kHz.
3. **Straight-Line Array:** 5 ft tall, No shading (All speakers driven equally). Line array sitting on floor.
4. **CBT Curved-Line Array:** 5 ft tall, 36° Circular-arc ground-plane with full Legendre shading.

Color Scale:

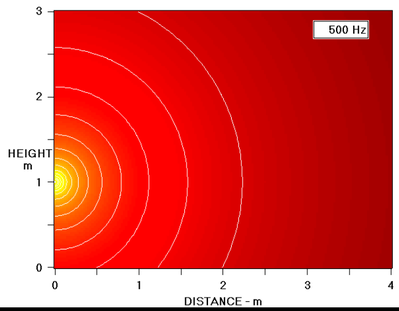
(Constant SPL contour lines every 3 dB)



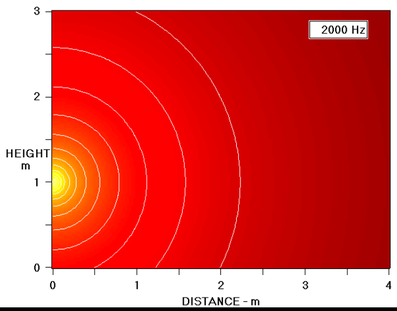
Point Source in Free Space:

Note that the pattern is independent of frequency!

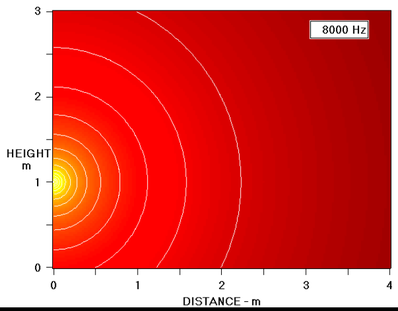
500 Hz



2 kHz



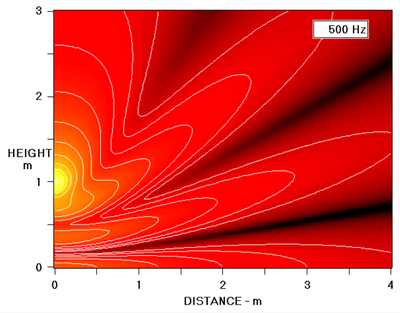
8 kHz



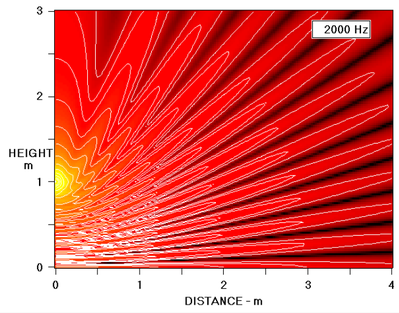
Point Source over a Ground Plane:

Note strong interference from floor that makes pattern highly frequency dependent!

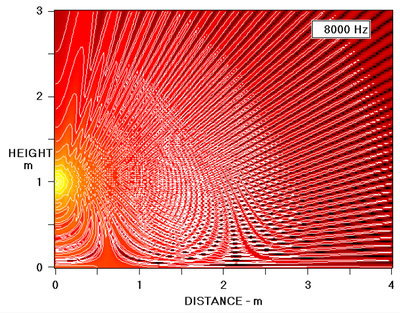
500 Hz



2 kHz



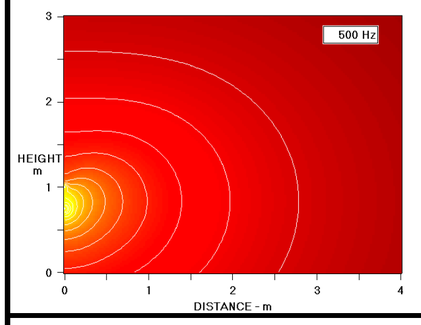
8 kHz



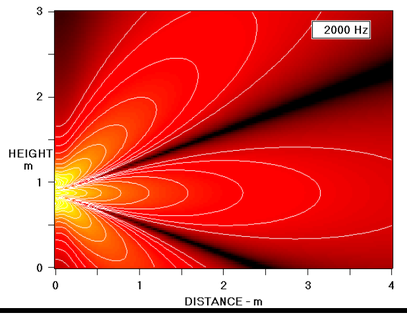
Two-Way System in Free Space:

Note that pattern is frequency dependent but fairly-well behaved.
Beam at 2 kHz crossover faces straight ahead (as designed).
Also note symmetrical up and down nulls at ±15° at 2 kHz.

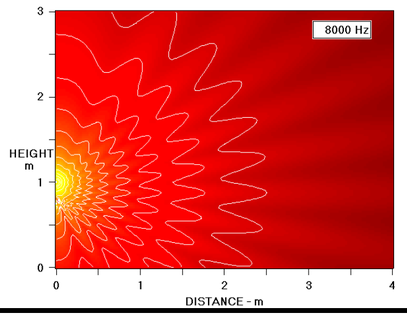
500 Hz



2 kHz



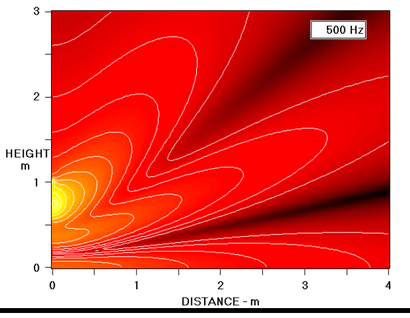
8 kHz



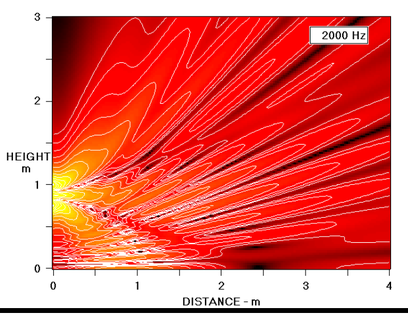
Two-Way System on a Ground Plane:

Note massive ground-plane interference, lobing, and pattern changes with frequency!

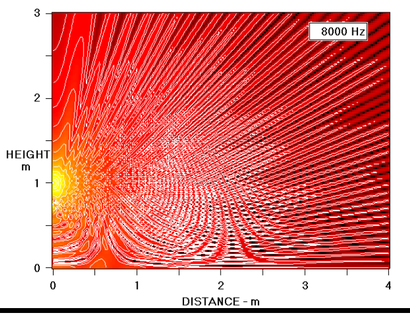
500 Hz



2 kHz



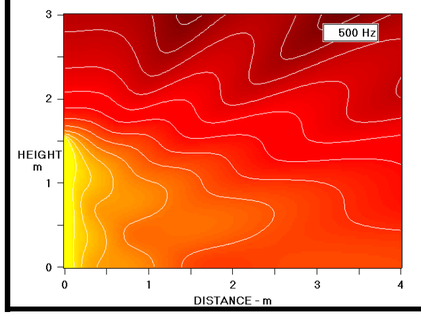
8 kHz



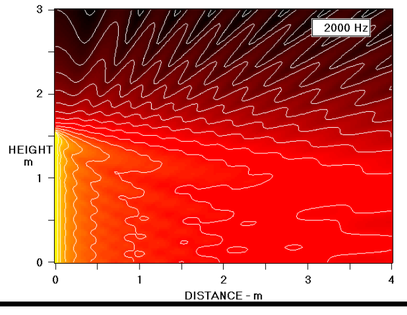
Straight-Line Array on Ground Plane:

Note that pattern changes and narrows considerably with frequency and dramatic near-field interference at points close to the array!

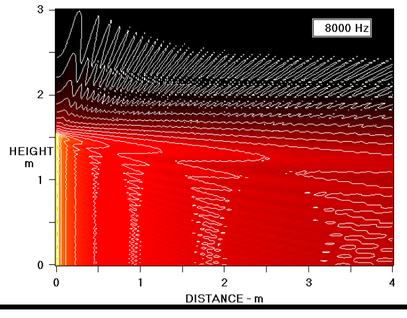
500 Hz



2 kHz



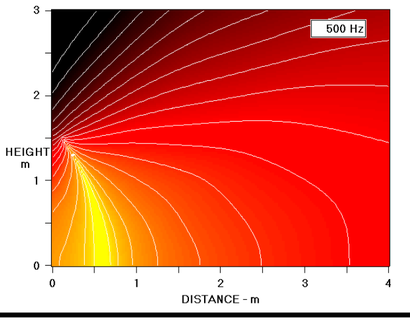
8 kHz



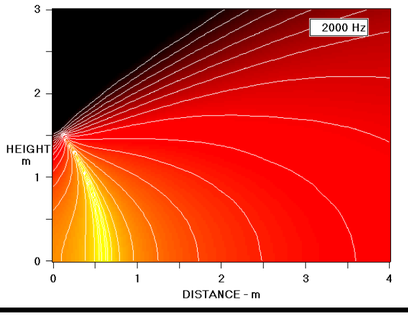
CBT Curved Line-Array on Ground Plane:

Note that pattern is essentially independent of frequency! Also note the complete absence of near-field interference at points close to the array!

500 Hz



2 kHz



8 kHz