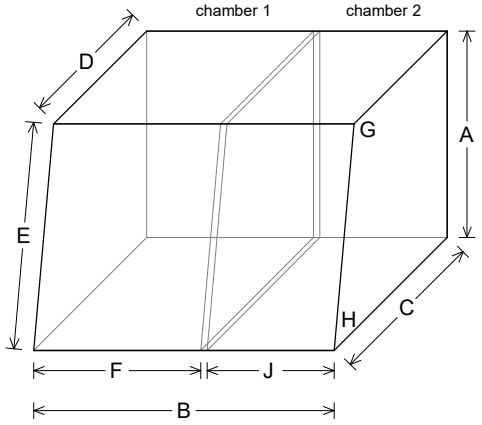
Custom Single-Tuned Bandpass Box Design

By Lenovo, na

Box Properties

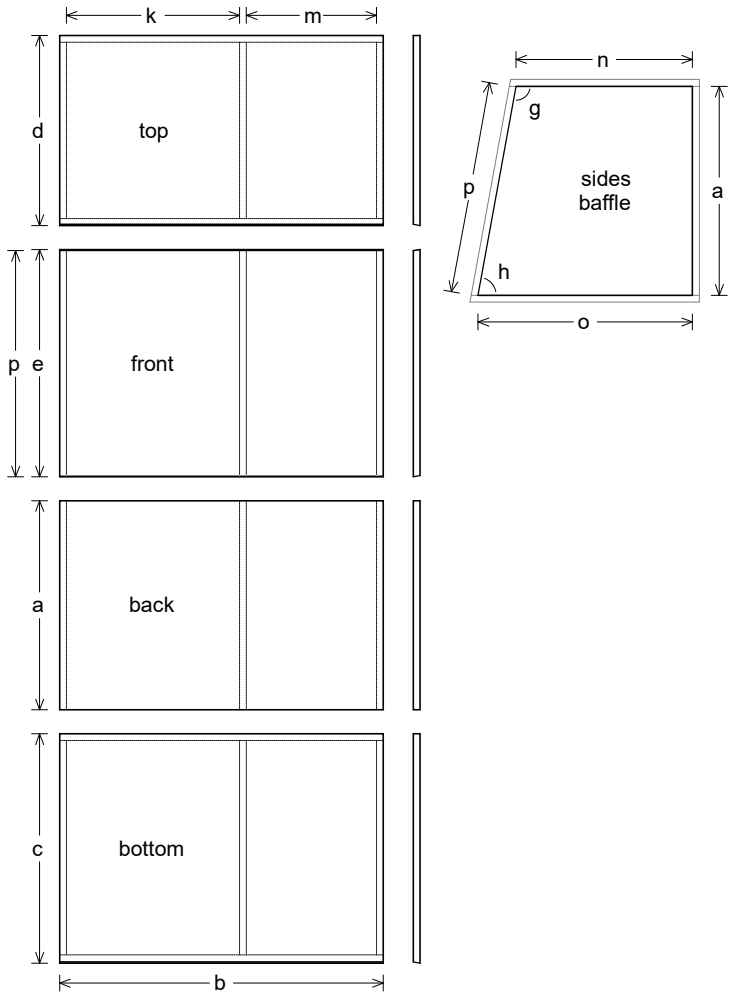
--Description--
Name:
Type: Bandpass Single-Tuned Box
Shape: Prism, Bandpass with two chambers
--Box Parameters--
Chamber 1 - lower-frequency
Vb = 1.498 cu.ft
V(total) = 1.669 cu.ft
Fb = 41.33 Hz
F3 = 20.86 Hz
Fill = none
Chamber 2 - upper-frequency
Vb = 1.303 cu.ft
V(total) = 1.256 cu.ft
Fb = 48 Hz
F3 = 60.18 Hz
Fill = none
--Vents--
No. of Vents = 1
Vent shape = round
Vent ends = no flush
Dv = 6 in
Lv = 22.43 in

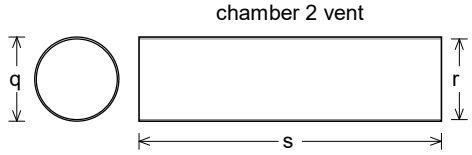


--External Dimensions--
A = 16.5 in
B = 24 in
C = 17 in
D = 14 in
E = 16.77 in
--Internal Dimensions--
A = 15.5 in
C = 15.9 in
D = 13.08 in
E = 15.75 in
F = 12.84 in
J = 9.659 in
--Wall Thickness--
Outer Sides = 0.5 in
Inner Baffle = 0.5 in
--Angles--
G = 100.3°
H = 79.7°

Driver Properties

--Description--
Name: SPG-555 2 ohm
Type: Standard one-way driver
Company: Boston Acoustics
--Configuration--
No. of Drivers = 1
--Mechanical Parameters--
Fs = 29.68 Hz
Qms = 11.7
Vas = 1.568 cu.ft
Cms = 0.0175 in/lb
Mms = 286.2 g
Rms = 10.11 lb/s
Xmax = 22 mm
Xmech = 1.929 in
P-Dia = 10.51 in
Sd = 86.03 sq.in
P-Vd = 0.0435 cu.ft
--Electrical Parameters--
Qes = 0.666
Re = 1.68 ohms
Z = 3 ohms
BL = 2.603 lb/A
--Electromech. Parameters--
Qts = 0.63
no = 0.168 %
1-W SPL = 84.2 dB
2.83-V SPL = 91.18 dB





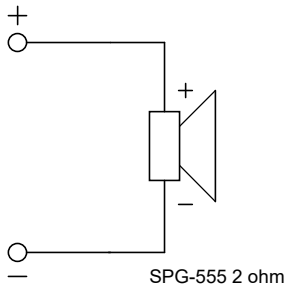
Box Parts

Box Shape: Bandpass Prism
1 Top: height (d) = 14.09 in
width (b) = 24, thickness = 0.5 in
cut angle (front edge only) = 10.3°
1 Front: total height (e) = 15.85 in
exposed surface height (p) = 15.75 in
width (b) = 24, thickness = 0.5 in
cut angles = ± 10.3°
1 Back: height (a) = 15.5 in
width (b) = 24, thickness = 0.5 in
1 Bottom: height (c) = 17 in
width (b) = 24, thickness = 0.5 in
cut angle (front edge only) = 10.3°
2 Sides: top depth (n) = 13.08 in
height (a) = 15.5 in
bottom depth (o) = 15.9 in
front length (p) = 15.75 in
thickness = 0.5 in
top corner angle (g) = 100.3°
bottom corner angle (h) = 79.7°
1 Baffle: top depth (n) = 13.08 in
height (a) = 15.5 in
bottom depth (o) = 15.9 in
front length (p) = 15.75 in
thickness = 0.5 in
top corner angle (g) = 100.3°
bottom corner angle (h) = 79.7°
Location: k = 12.84, m = 9.659 in

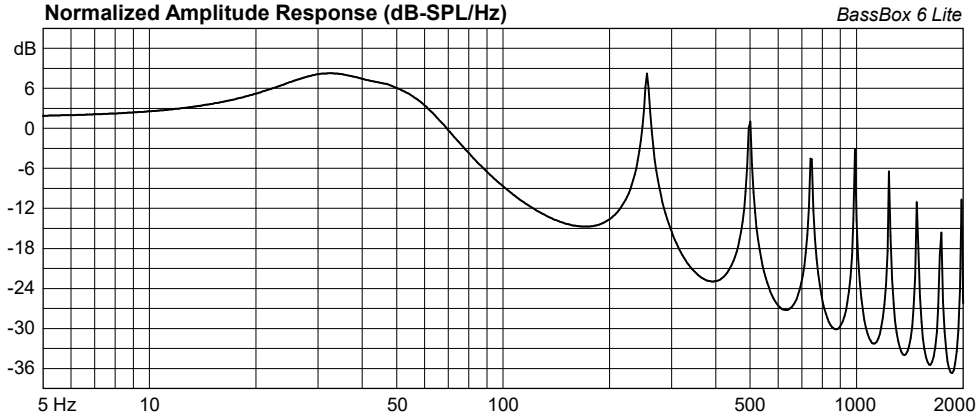
--Vent Parts--
1 Duct: (chamber 2)
outside diameter (q) = 6.25 in
inside diameter (r) = 6 in
length (s) = 22.43 in

--Driver Mounting--
Mounting: Flush
Aim: Driver faces chamber 2

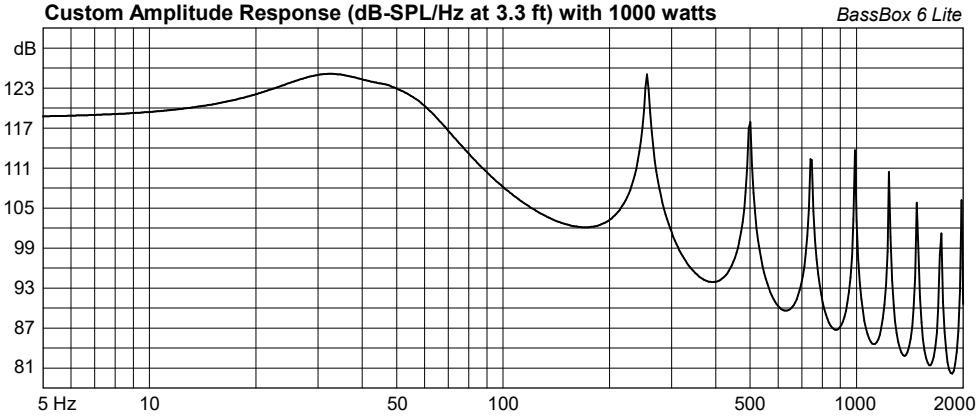
Wiring Diagram



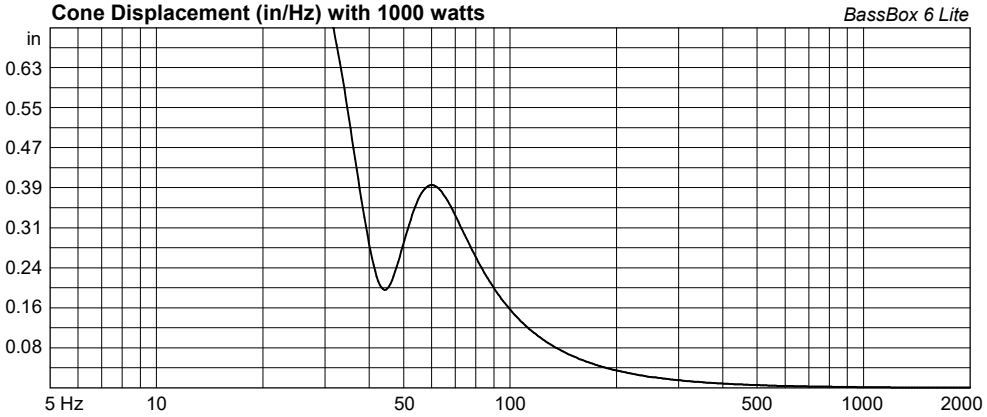
Normalized Amplitude Response (dB-SPL/Hz) *BassBox 6 Lite*



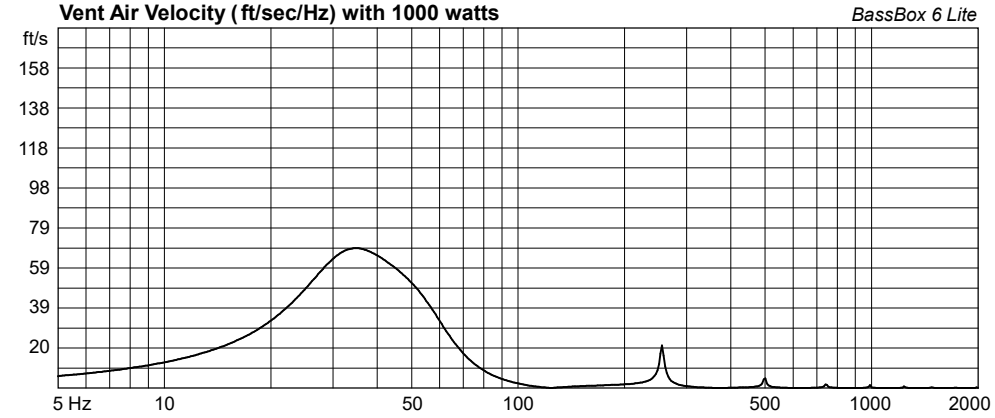
Custom Amplitude Response (dB-SPL/Hz at 3.3 ft) with 1000 watts *BassBox 6 Lite*



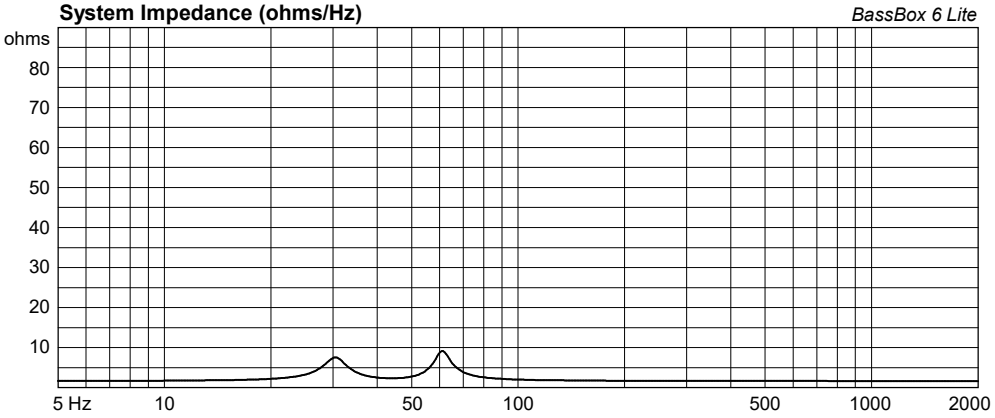
Cone Displacement (in/Hz) with 1000 watts *BassBox 6 Lite*



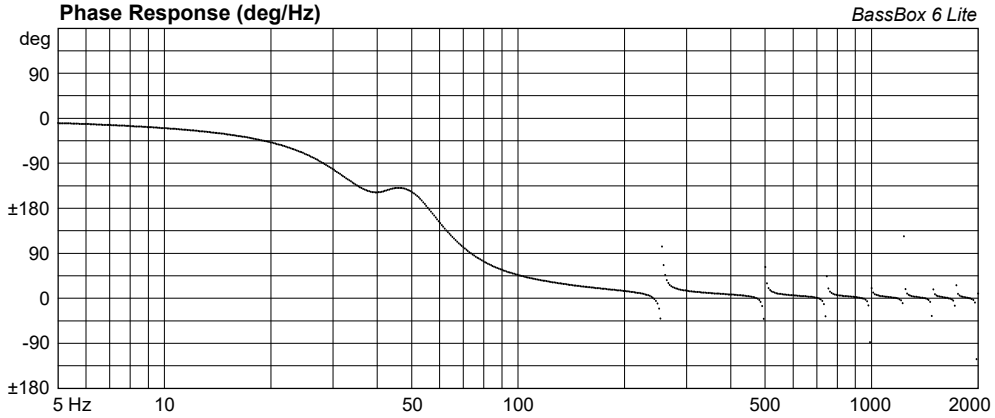
Vent Air Velocity (ft/sec/Hz) with 1000 watts *BassBox 6 Lite*

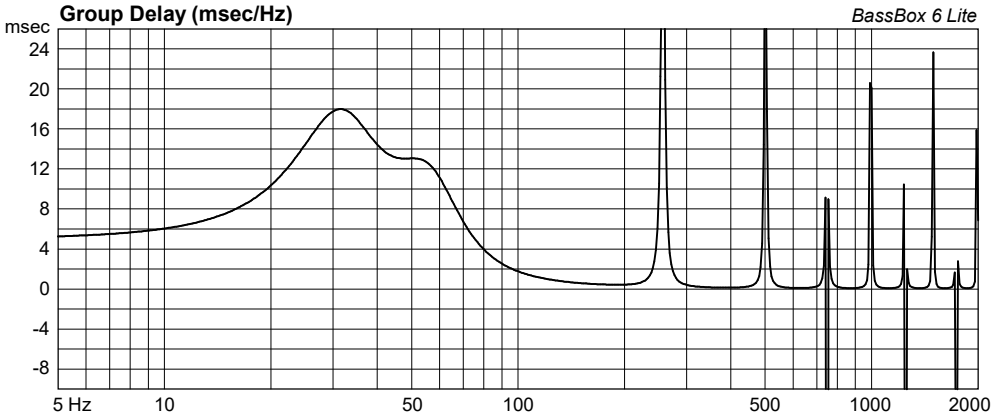


System Impedance (ohms/Hz) *BassBox 6 Lite*



Phase Response (deg/Hz) *BassBox 6 Lite*




Group Delay (msec/Hz)
BassBox 6 Lite
msec
24
20
16
12
8
4
0
-4
-8
5 Hz
10
50
100
500
1000
2000