

Eminence Subwoofer Project

Lee Batchelor
97 Jocelyn Street
Port Hope ON, Canada
L1A 2G6
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Home (905) 885-4134
acre@cogeco.ca
thetechnicalwriter.ca



Introduction

A subwoofer is needed for extending the low frequency range of two Bose™ Compact speakers ($F_3=65$ Hz). Unfortunately, the Bose™ corporation does not offer a suitable subwoofer for this system, so a subwoofer is constructed using Eminence components. The primary purpose of the subwoofer is for stereo musical instrument reproduction.

Driver

Initially, the Eminence Beta 12A driver is selected, but after performing design simulations using the *WinISD* box design program, it is evident that one of the 15 inch low frequency drivers is better suited. Weight is a consideration, so the final choice is the Eminence Kappalite 3015LF, neodymium driver.

Enclosure

A rectangular cube design is used with the following features.

Feature	Details
Enclosure dimensions (Internal)	Width = 16.50 inches Height = 25.75 inches Depth = 19.25 inches
Volume	4.7 ft ³
Tuning frequency	40 Hz
Ports	2 circular (McBride APT110), 4.38 inch diameter, 7.55 inch long
Materials	¾ inch Baltic birch plywood, all joints glued and screwed
Drivers	1
Internal bracing	One vertical along back panel (offset from center), one front to back, one side to side.
Handles	Two
Final weight	47 pounds

Amplification

The system is driven with the two following ART™ components:

- CX311 active crossover
 - 30 Hz high pass filter (turned on)
 - Frequency range = 50 Hz to 250 Hz. Upper frequency is set to 100 Hz for home theatre and 120 Hz for live keyboard production.
- SD2 power amplifier
 - 560 watts RMS bridged. Perhaps a little light for this subwoofer, however, considering where the subwoofer is used, the SD2 is adequate.

Conclusion

The Eminence Kappalite 3015LF driver is a most capable and under-rated driver. When placed in a properly designed enclosure and driven with quality components, the user can expect superior performance at affordable prices. In my opinion, the Eminence corporation under-promises and over-delivers.

A very special thanks to Mr. Jerry McNutt from the Eminence Corporation for his patience and exceptionally professional guidance throughout this project.

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