APPLICATION NOTE

HIGH PERFORMANCE 12'' 2 WAY LOUDSPEAKER SYSTEM

KEY FEATURES

- An effective, high performance and easy to build two way loudspeaker system for high performance in a very compact and portable enclosure.
- An “already optimized” passive crossover network greatly simplifies the system setup.

12W750

General Specifications

Nominal Diameter	300 mm (12 in)
Rated Impedance	8 Ohm
AES Power	600 W
Program Power	1200 W
Peak Power	2500 W
Sensitivity	97 dB
Frequency Range	50 ÷ 4600 Hz
Power Compression @-10dB	0,9 dB
Power Compression @-3dB	2,8 dB
Power Compression @Full Power	3,8 dB
Max Recomm. Frequency	1800 Hz
Recomm. Enclosure Volume	40 ÷ 90 lt. (1,41 ÷ 3,18 cuft)
Minimum Impedance	6,4 Ohm at 25°C
Max Peak To Peak Excursion	38 mm (1,50 in)
Voice Coil Diameter	75 mm (3 in)
Voice Coil Winding Material	aluminum
Suspension	Triple Roll, Polycotton
Cone	Curvilinear, water repellent high damping pulp

Thiele Small Parameters

Fs	49 Hz
Re	5,2 Ohm
Sd	0,0531 sq.mt. (82,31 sq.in.)
Qms	7,00
Qes	0,30
Qts	0,28
Vas	73 lt. (2,58 cuft)
Mms	57 gr. (0,13 lb)
BL	18 Tm
Linear Mathematical Xmax	± 8 mm (± 0,31 in)
Le (1kHz)	0,95 mH
Ref. Efficiency 1W@1m (half space)	96,6 dB

HD1050

General Specifications

Throat Diameter	25,4 mm (1 in)
Rated Impedance	8 Ohm
DC Resistance	5,3 Ohm
Minimum Impedance	7 Ohm at 4000Hz
AES Power	50 W above 1,6 kHz
Program Power	100 W above 1,6 kHz
Sensitivity	107 dB
Frequency Range	1600Hz ÷ 20kHz
Recomm. Xover Frequency	1400Hz (12dB/oct slope)
Diaphragm Material	Titanium - PEN
Voice Coil Diameter	44,4 mm (1 3/4 in)
Voice Coil Winding Material	Edge-wound aluminum
Magnet Material	Ferrite
Flux Density	1,6 T
BL Factor	7,4 N/A
Polarity	Positive voltage on + terminal gives positive pressure in the throat

XT1086

General Specifications

Throat Diameter	25,4 mm (1 in)
Horizontal Coverage -6db	80°(1 - -8) average range(1,6kHz - 12,5kHz) (1 in)
Vertical Coverage -6db	60° (18 - -7) average range(1,6kHz - 12,5kHz)
Directivity Index	10 dB (1.3 - -0,4) average range (1.6kHz - 12.5kHz)
Usable Frequency Range	Above 800 Hz
Recomm. Xover Frequency	1200 Hz or more
Sensitivity	110 dB
Frequency Range	1200 Hz - 20kHz
Material	Die-cast aluminum

KEY FEATURES

> The enclosure should be made out of Baltic birch plywood (15mm thick);

> The vents can be made with standard PVC plumbing pipe connection with internal diameter of 74mm;

> M5 T-Nuts in conjunction with M5x35mm Bolts is recommended;

> Handling, rigging and connectors are user's choice;

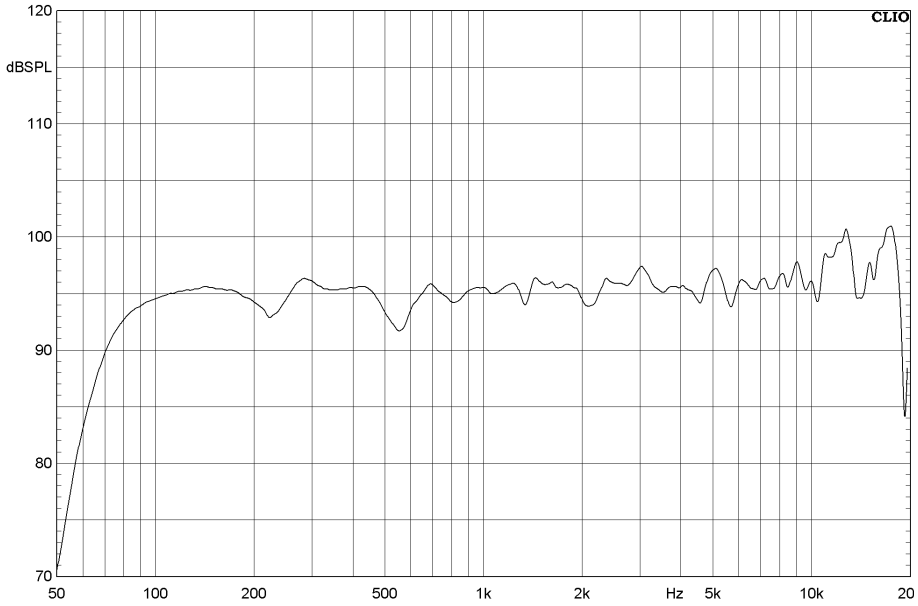
> It's recommended to well damping the cabinet as show in the example;

> An high density dampening material, such as Dacron or other synthetic fibers, is required for best acoustic performance

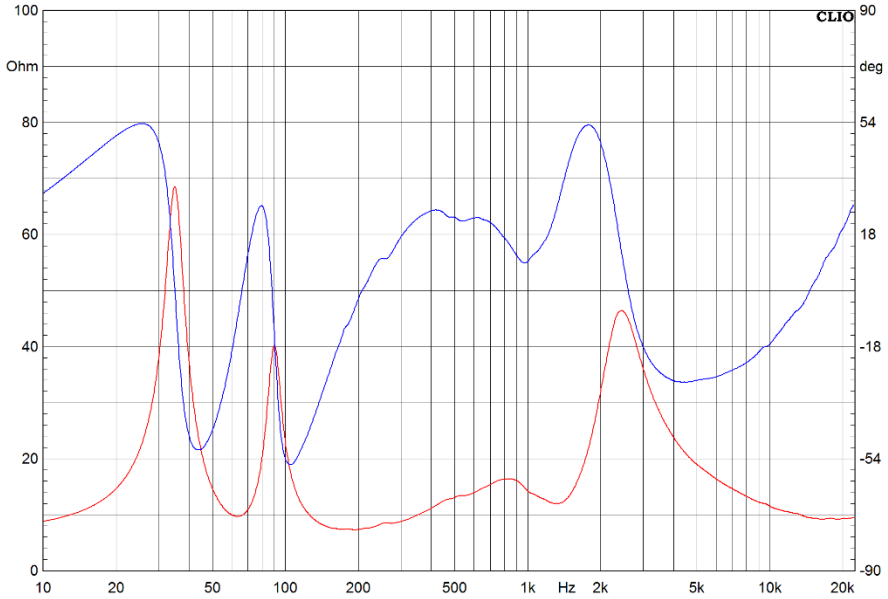
INTERNAL VIEW

DAMPING DISPOSITION

MEASUREMENTS: 12W750 + HD1050 ON XT1086



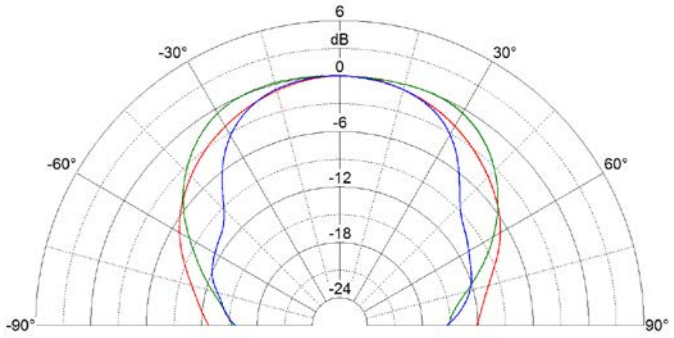
MAGNITUDE RESPONSE



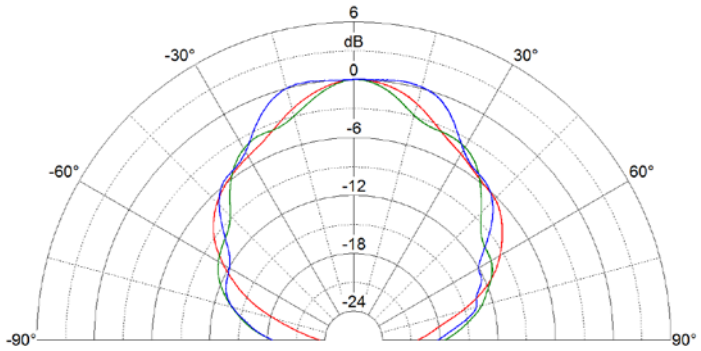
PHASE RESPONSE
IMPEDANCE

HORIZONTAL POLAR RESPONSE

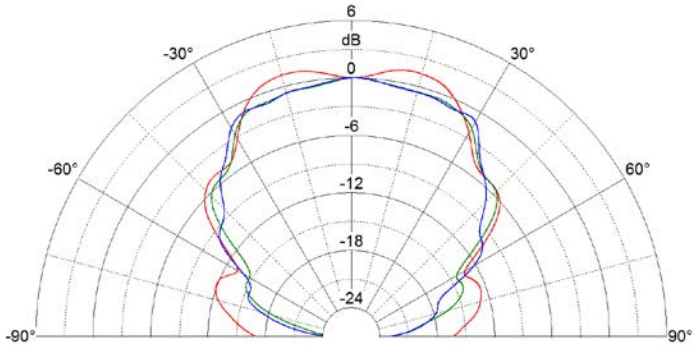
1250Hz
1600Hz
2000Hz



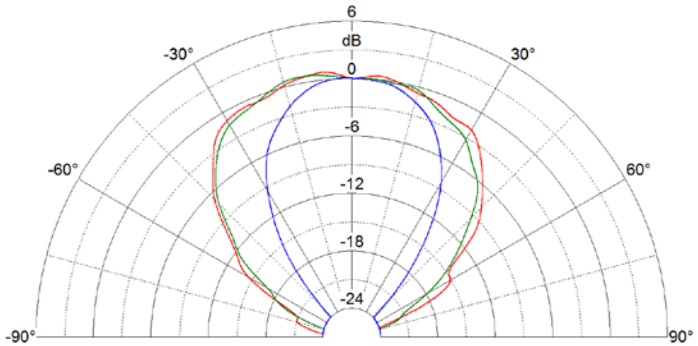
2500Hz
3150Hz
4000Hz



5000Hz
6300Hz
8000Hz

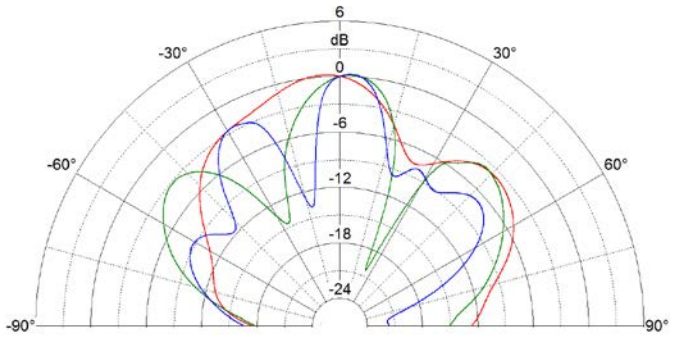


10000Hz
12500Hz
16000Hz

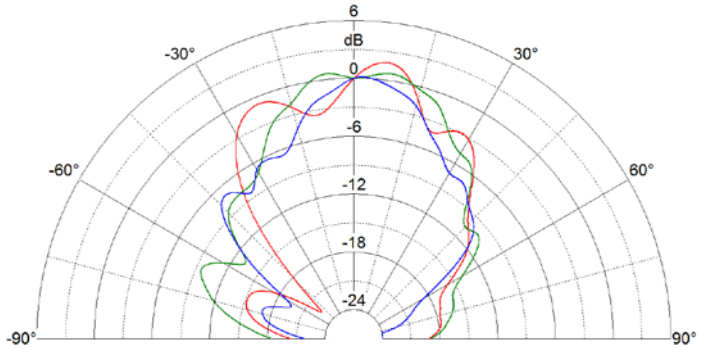


VERTICAL POLAR RESPONSE

1250Hz
1600Hz
2000Hz



2500Hz
3150Hz
4000Hz



5000Hz
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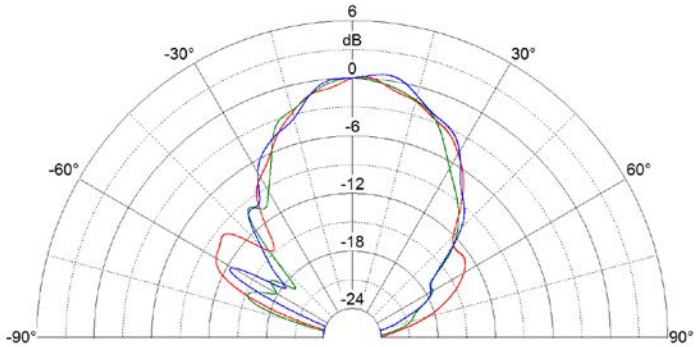
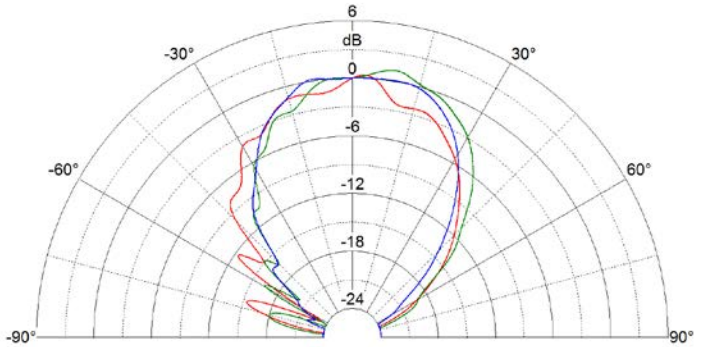
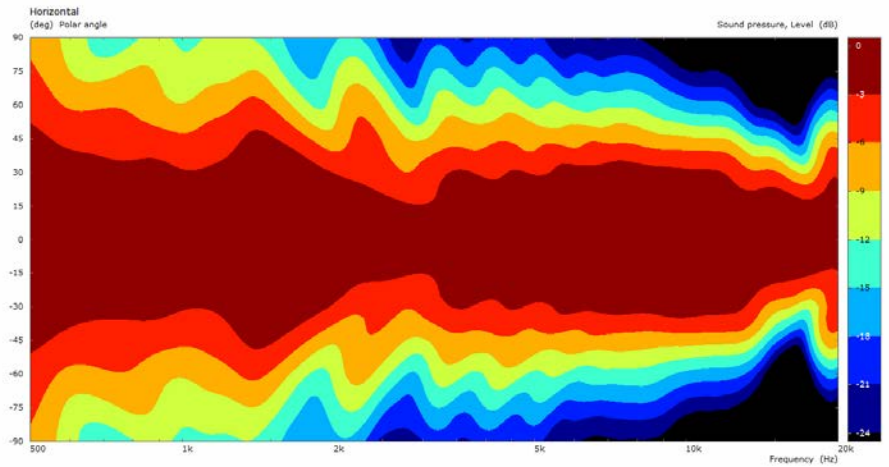
8000Hz



10000Hz
12500Hz
16000Hz

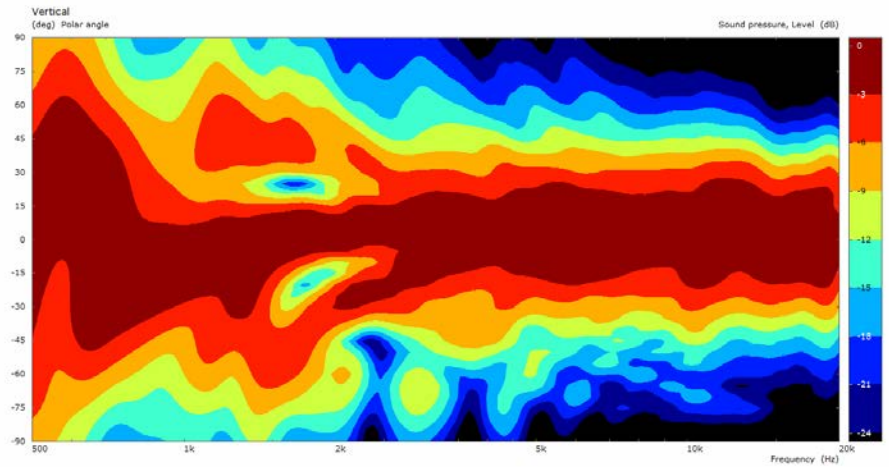


POLAR MAPS



HORIZONTAL POLAR MAP

Normalized to 0 deg Axis – 1/3 Smoothing

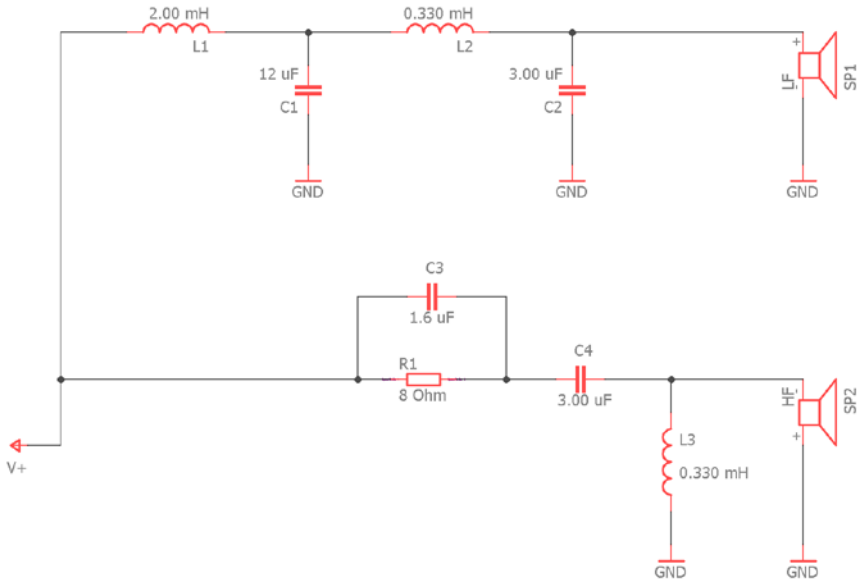


VERTICAL POLAR MAP

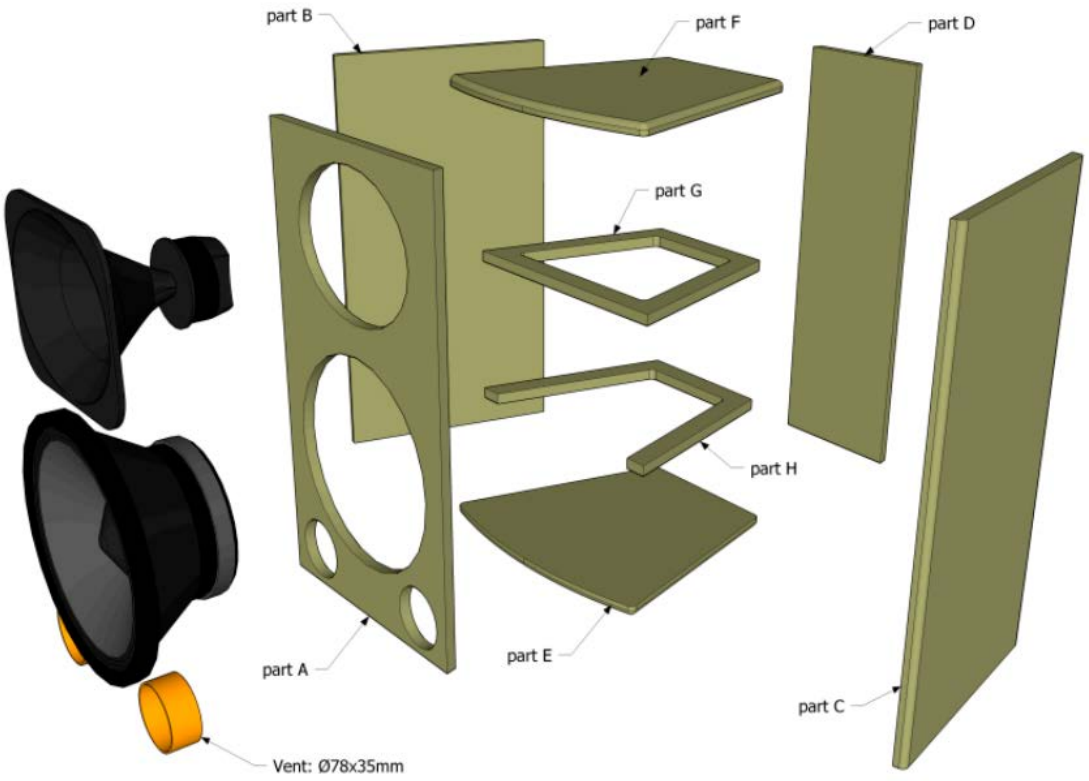
Normalized to 0 deg Axis – 1/3 Smoothing

CROSSOVER SCHEMATICS

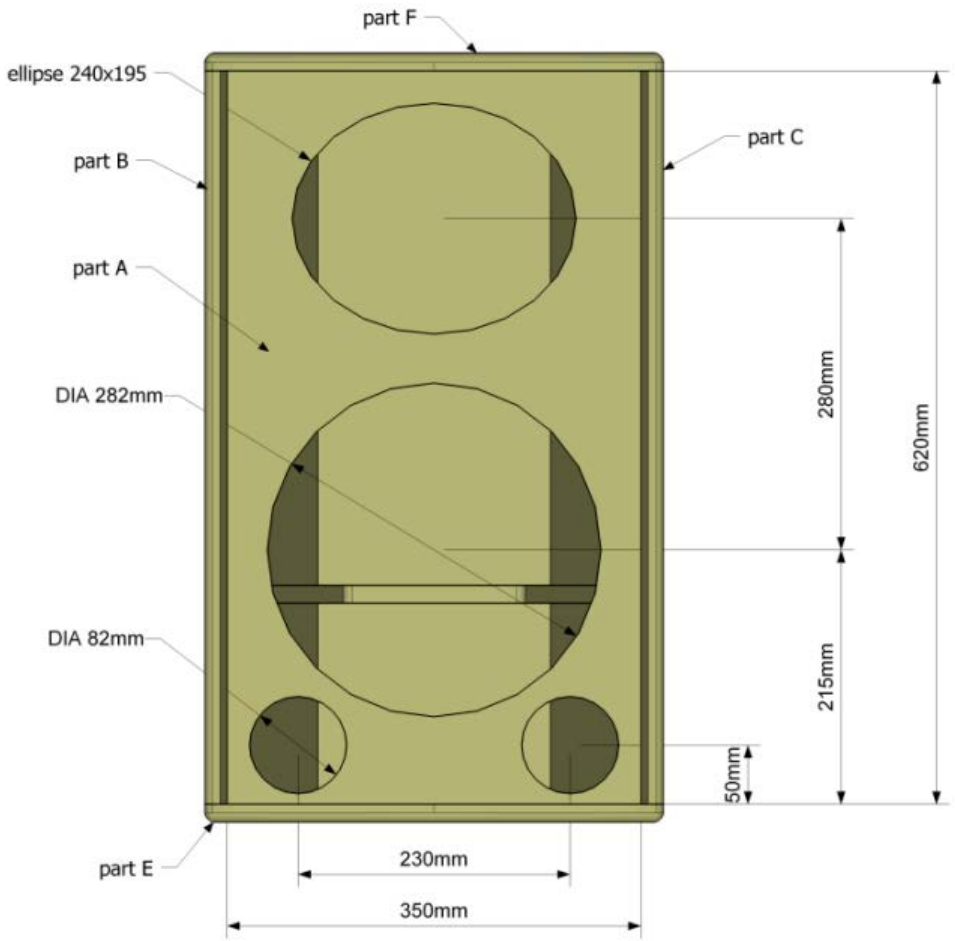
TYPE	VALUE	NOTE
L1 – Inductor	2.0 mH	
C1 – Capacitor	12 uF	5% - >250V
L2 – Inductor	0.33 mH	
C2 – Capacitor	3.0 uF	5% - >250V
C3 – Capacitor	1.6 uF	5% - >250V
R1 – Resistor	8 Ohm	20W
C4 – Capacitor	3.00 uF	5% - 250V
L3 – Inductor	0.33 mH	



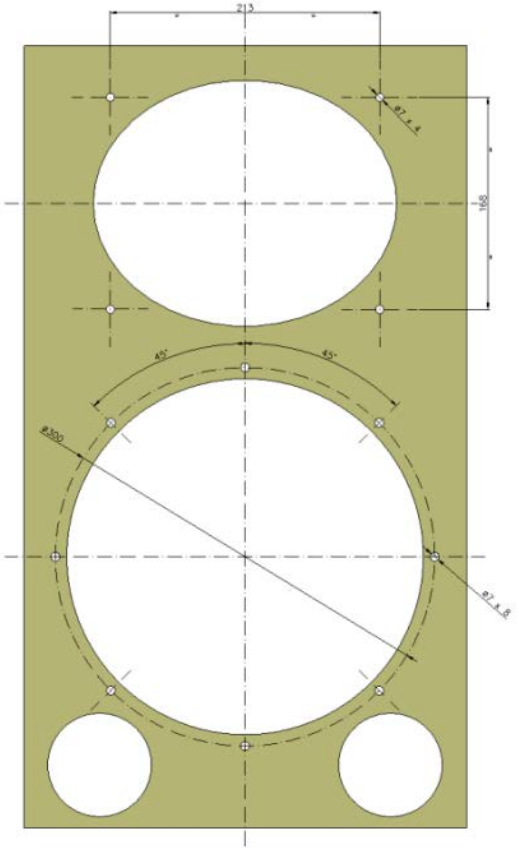
EXPLODED VIEW



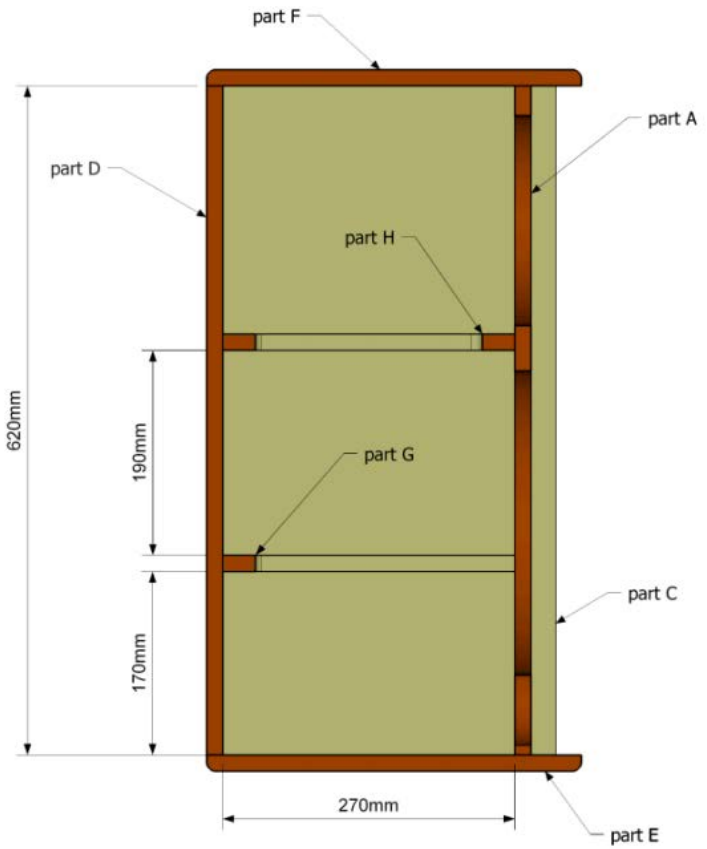
FRONT VIEW



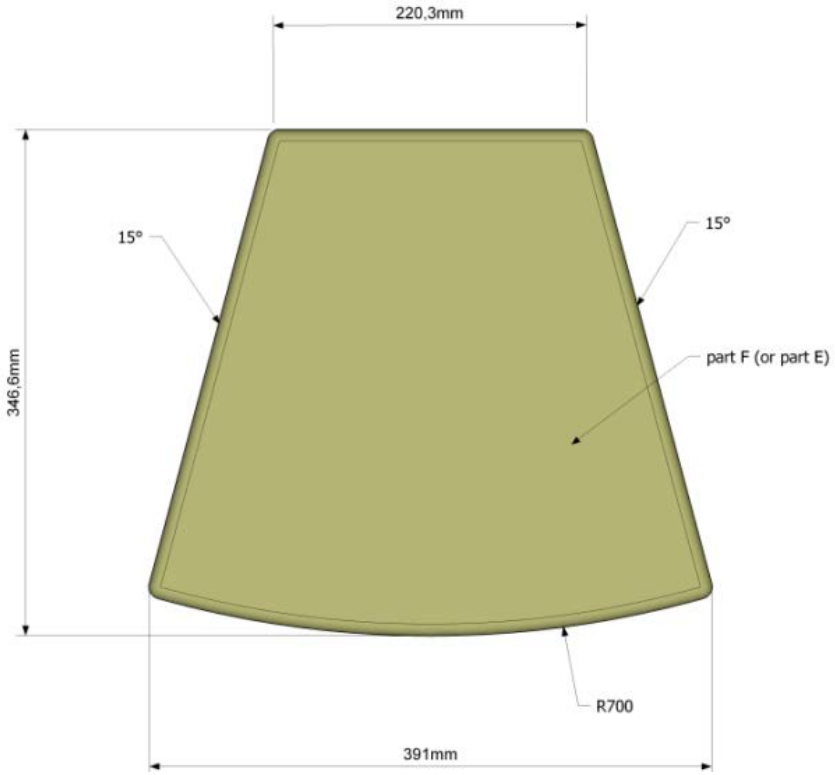
DETAILS: FRONT PANEL



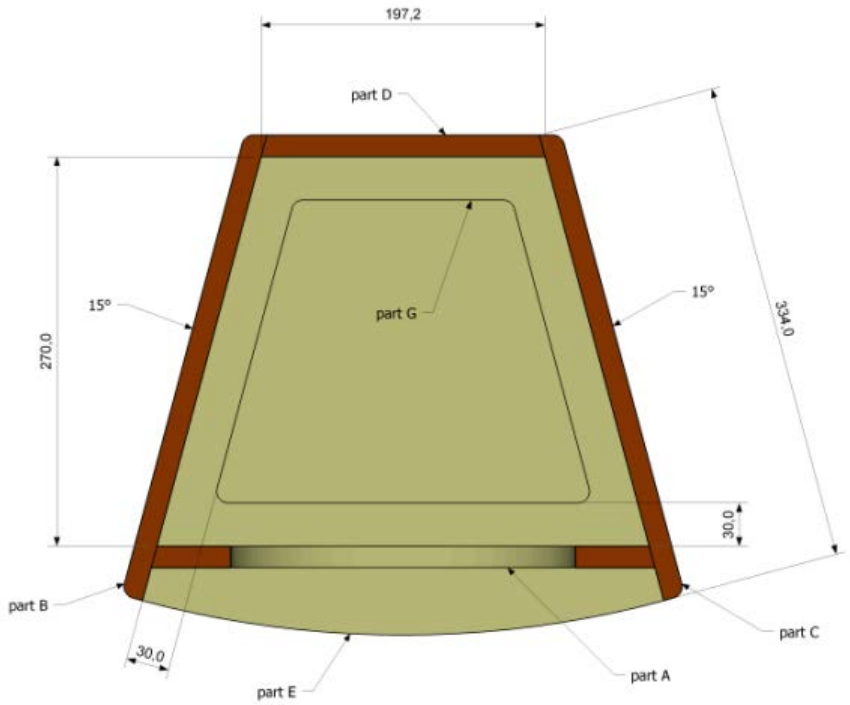
SIDE VIEW



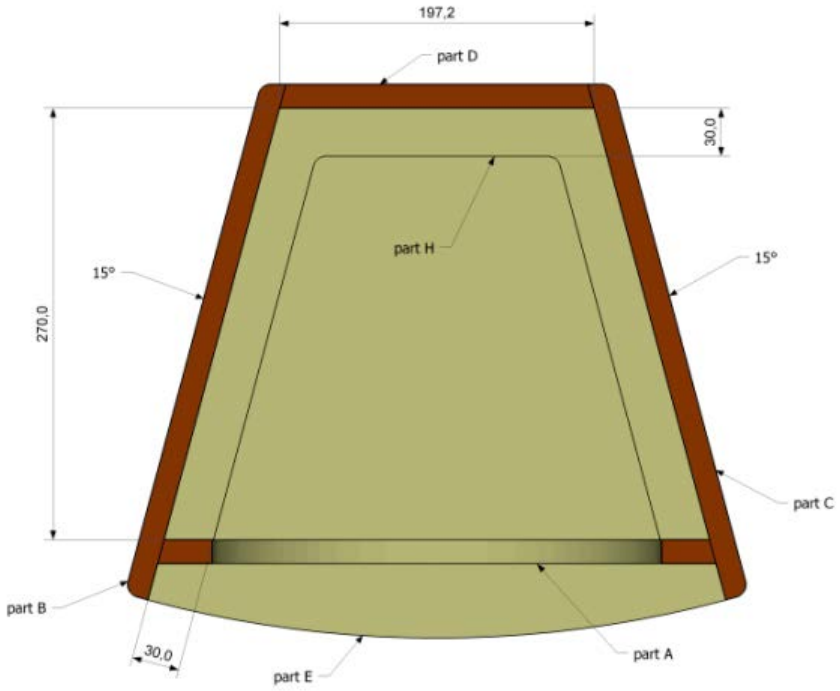
TOP VIEW



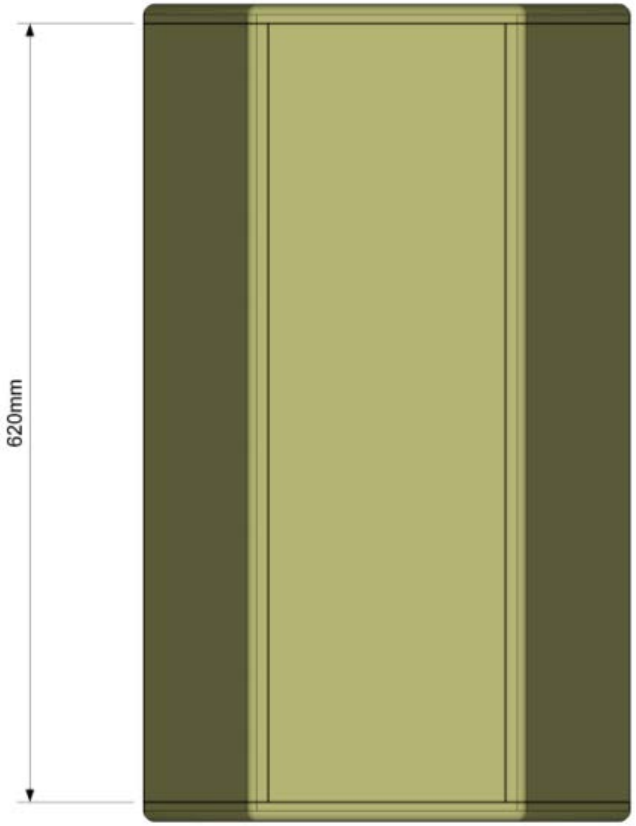
TOP SECTION: HORN HEIGHT



TOP SECTION: WOOFER HEIGHT



BACK VIEW



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