Instalaciones III

UNCUYO
UNIVERSIDAD
NACIONAL DE CUYO

“Sistemas de Sonido”

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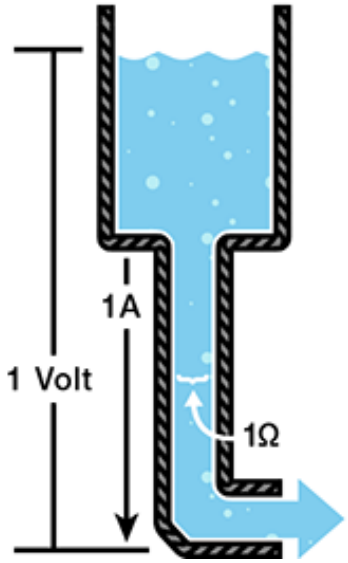
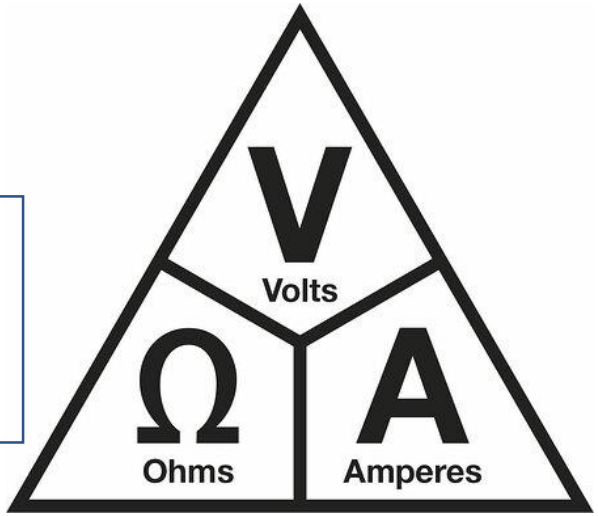
Ley de Ohm

$$Caudal\ de\ Agua = \frac{Altura\ del\ Agua}{Rugosidad\ de\ la\ Tuberia}$$

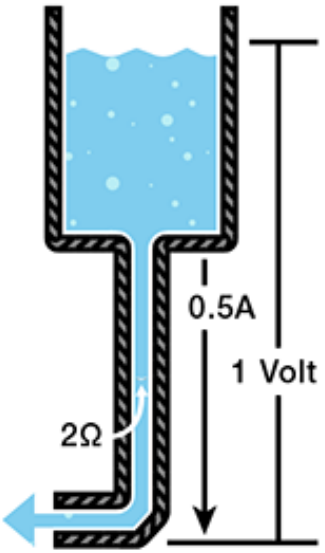
$$Corriente = \frac{Diferencia\ de\ Tensión}{Resistencia}$$



$$V = I.R$$



$$R = \frac{V}{I}$$



Ley de Ohm

$$V = I.R$$

$$I = \frac{V}{R}$$

$$R = \frac{V}{I}$$

$$P = I.V$$

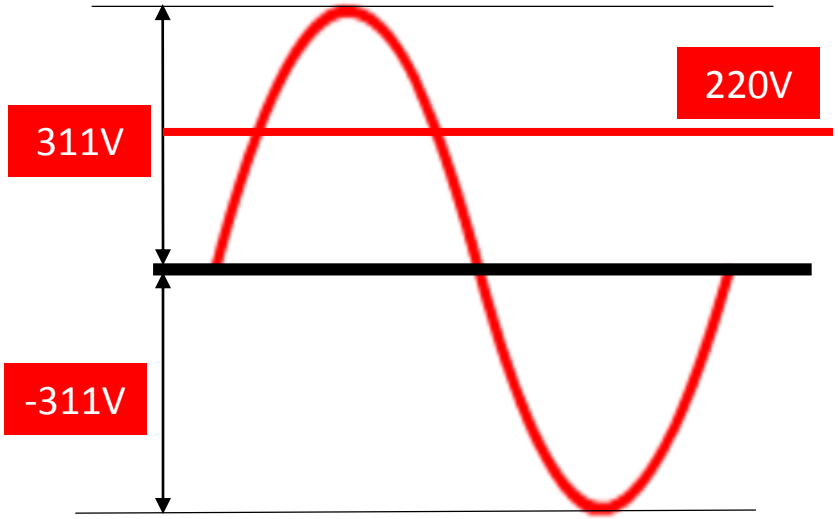
$$P = \frac{V^2}{R}$$

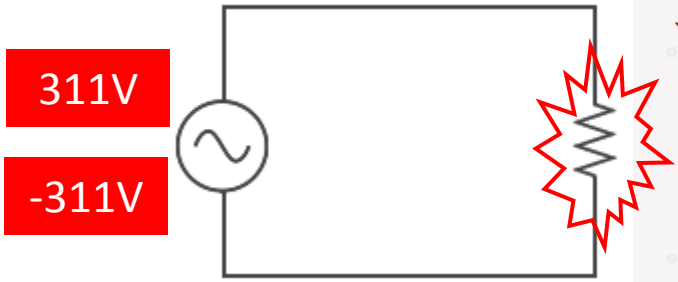
$$P = I^2.R$$

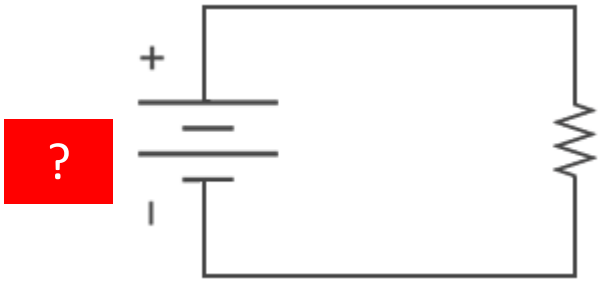
Tensión Alterna o Diferencia de potencial alterno

¿Qué son los 220v entonces?

Tensión R.M.S o "Tensión Eficaz"





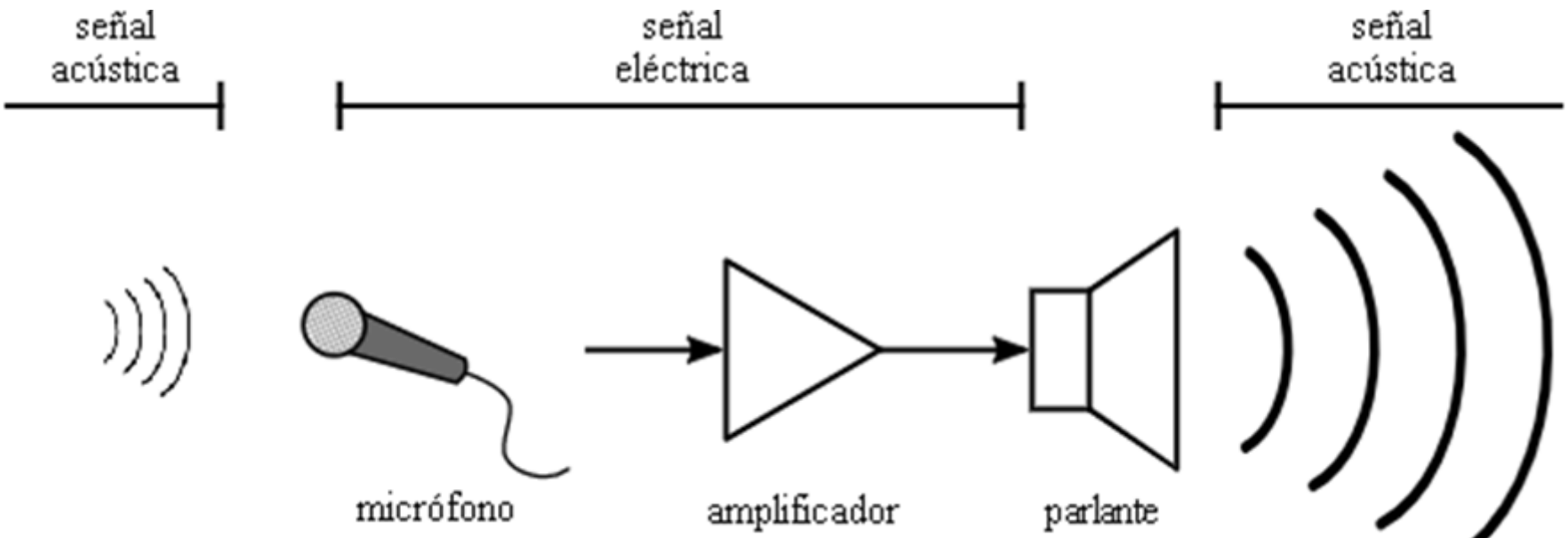


$$V_{equivalente} = \frac{V_{pico}}{\sqrt{2}} = V_{RMS}$$

R.M.S = *Root Mean Square*

$$\frac{V_{pico}}{\sqrt{2}} = \frac{311V}{\sqrt{2}} = \boxed{220V}$$

Cadena Electroacústica

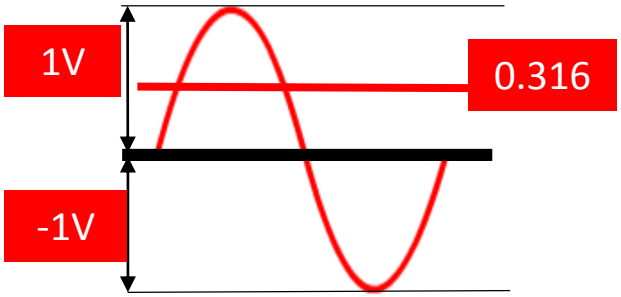


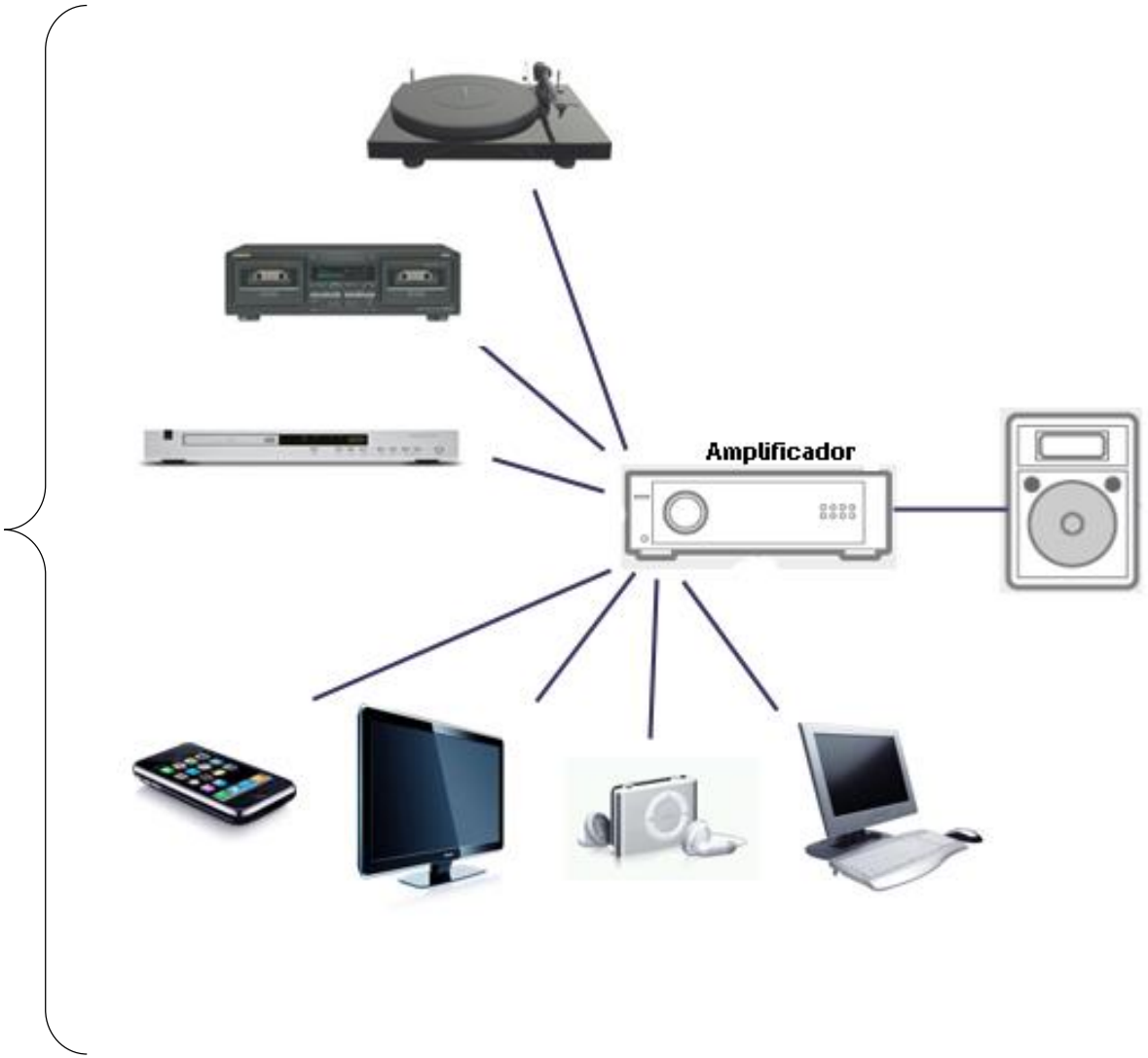
Cadena Electroacústica

Señales de Entrada

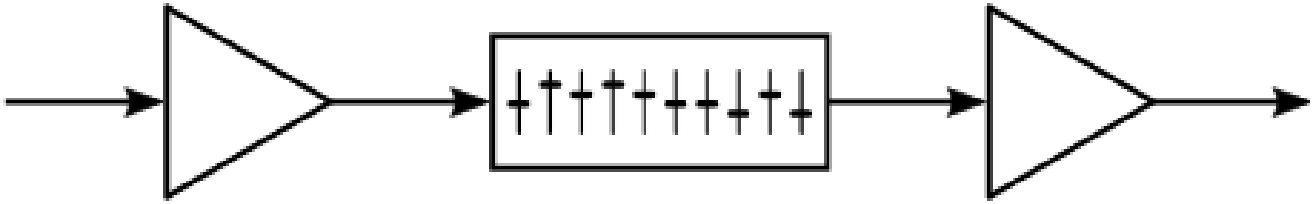
Señales sonoras muy pequeñas

$$V_{RMS} = 0.316\, V_{RMS}$$

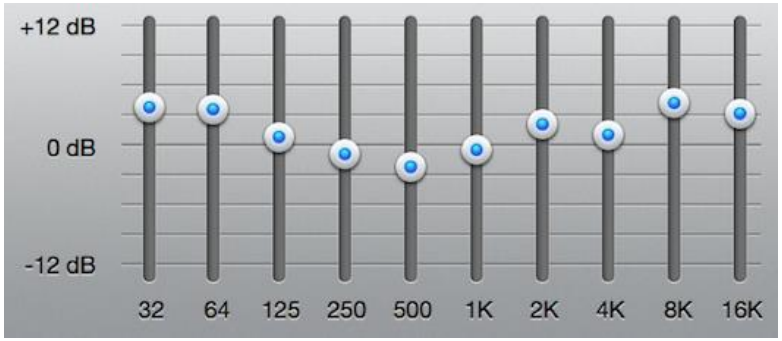


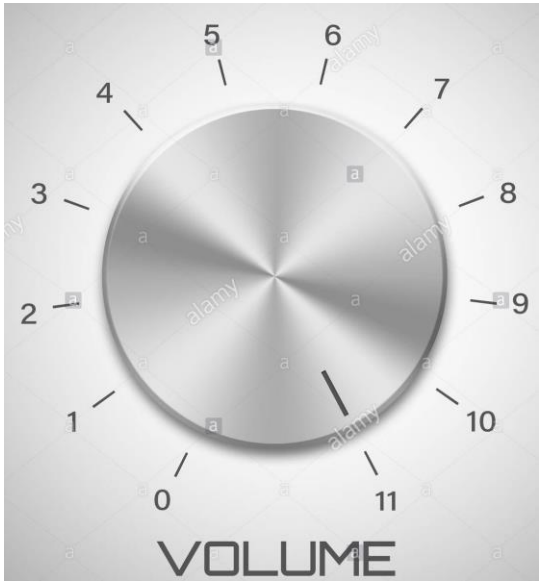


Amplificador de potencia

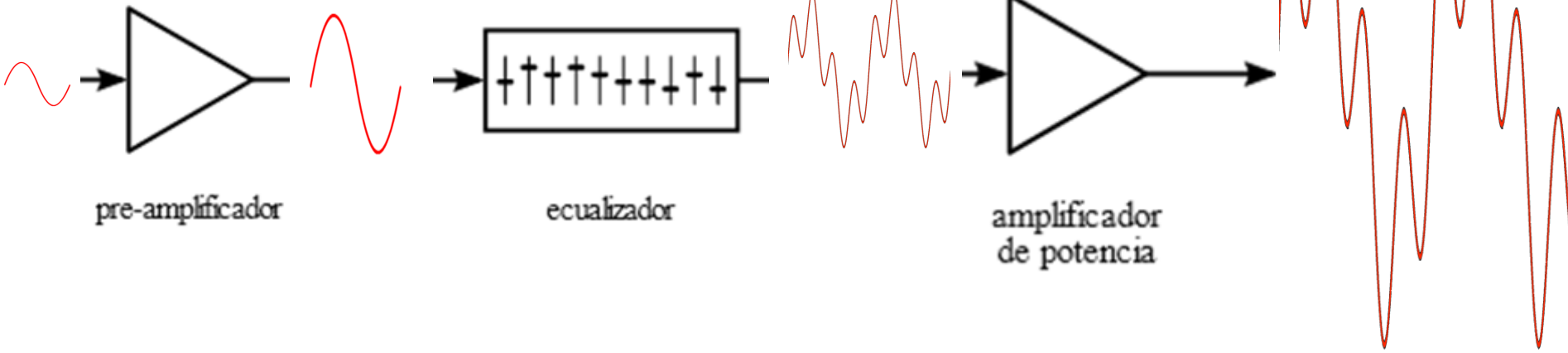


pre-amplificador ecualizador amplificador de potencia





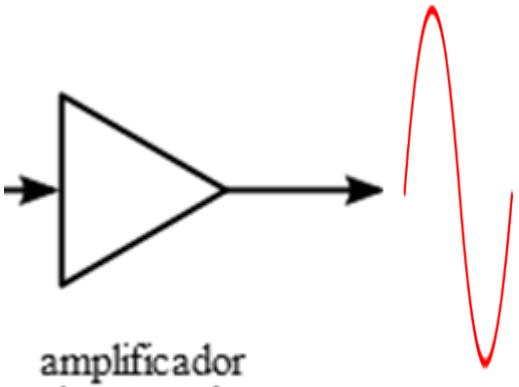
Repaso de lo visto hasta ahora



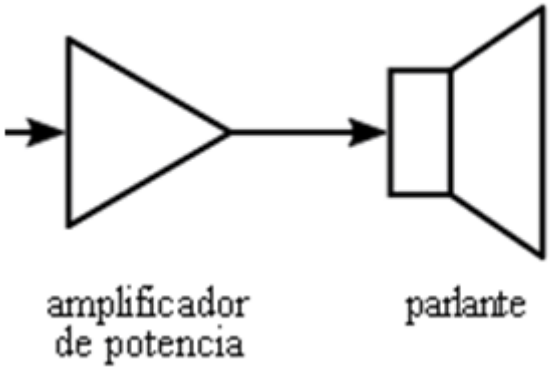
$0.316\ V_{RMS}$ $0.353\ V_{RMS}$ $20\ V_{RMS}$

Potencia de un Amplificador

Resistencia



$20\ V_{RMS}$

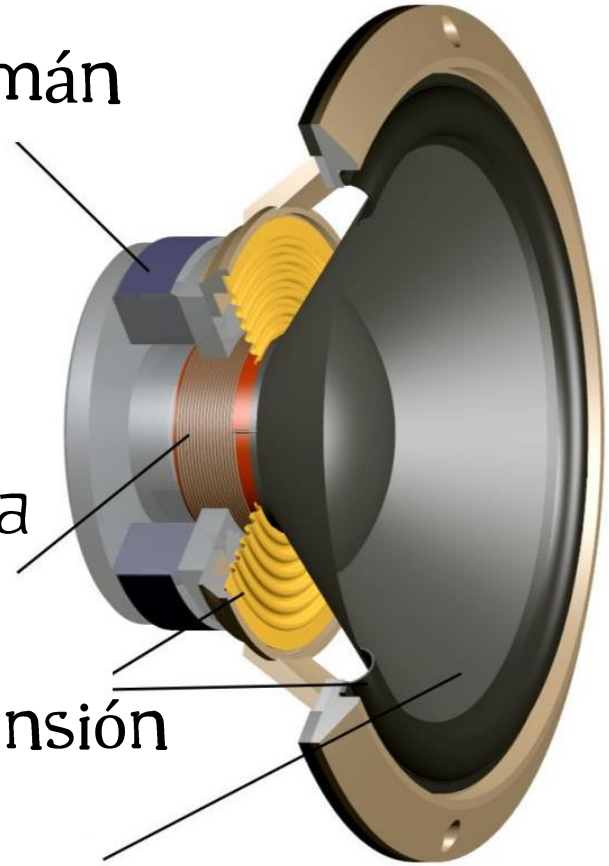


$$Potencia = \frac{(V_{RMS})^2}{R}\ [W]$$

V_{RMS} → $\boxed{W_{RMS}}$

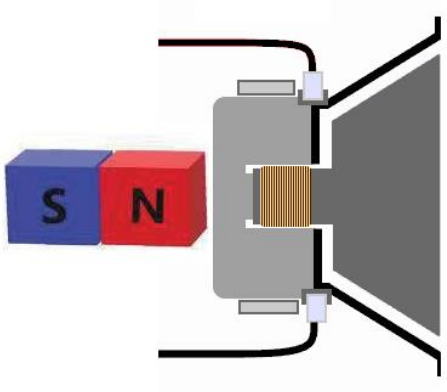
Parlantes

Imán

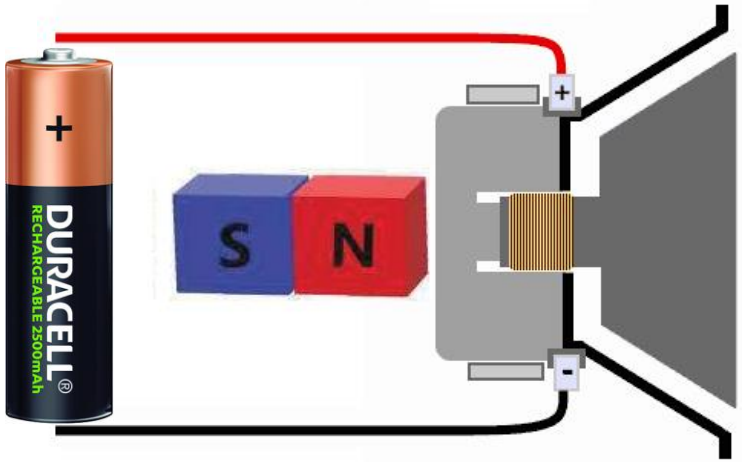


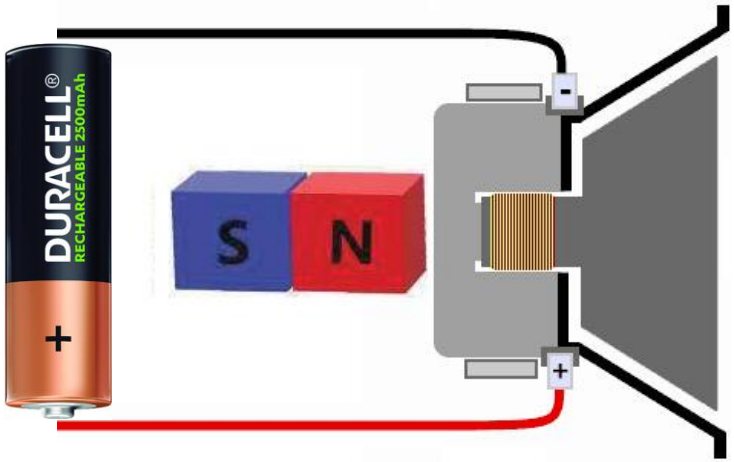
Bobina

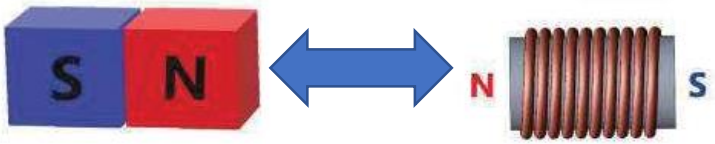
Funcionamiento

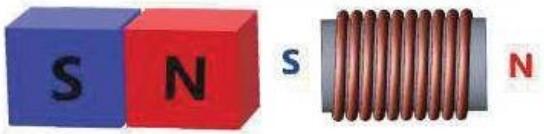


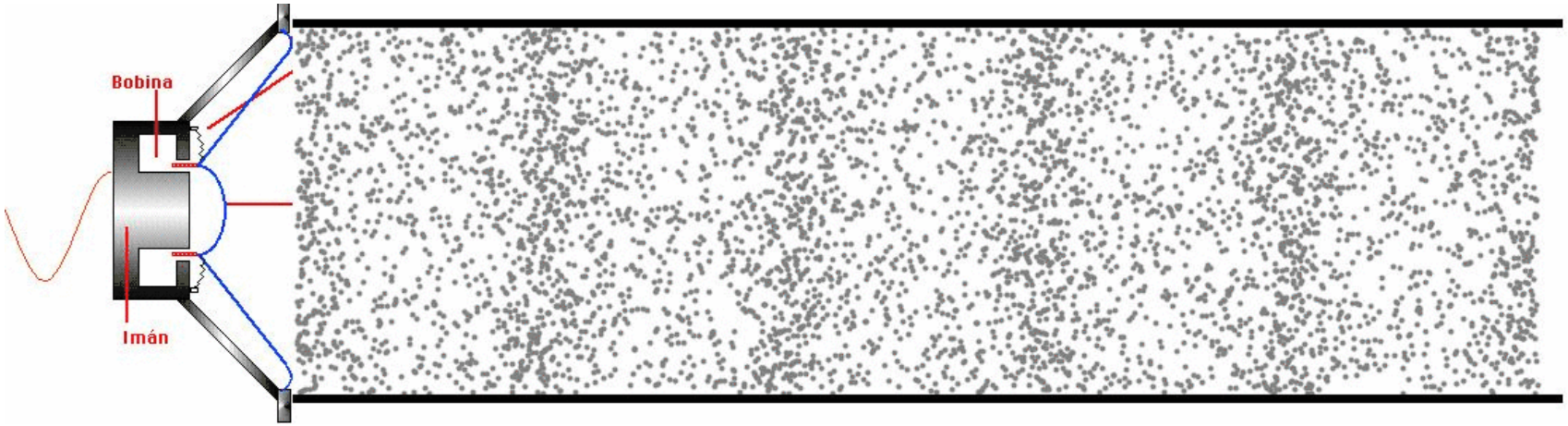
Sin Señal

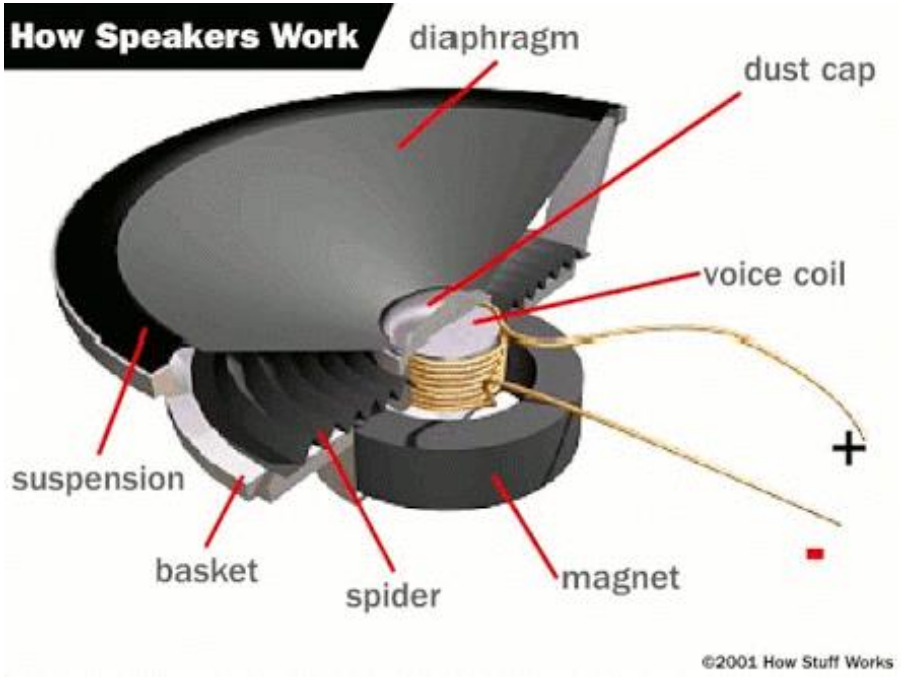


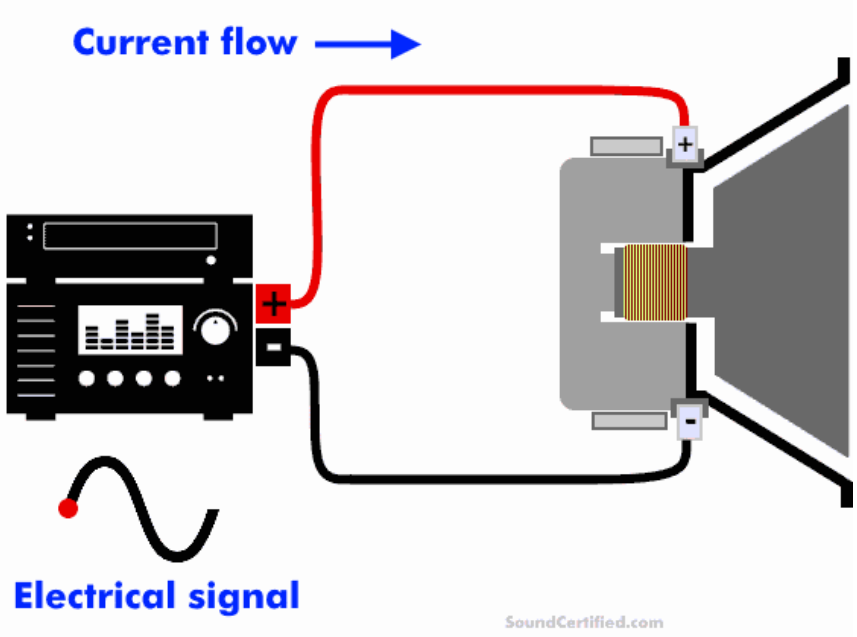







Bobina
Imán


How Speakers Work
diaphragm
dust cap
voice coil
suspension
basket
spider
magnet
+
-
©2001 How Stuff Works


Current flow
+
-
+
-
Electrical signal
SoundCertified.com

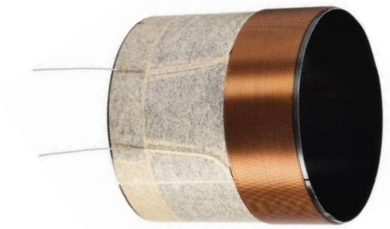
Características

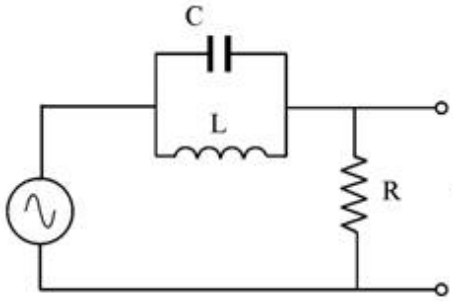
Impedancia "Z"

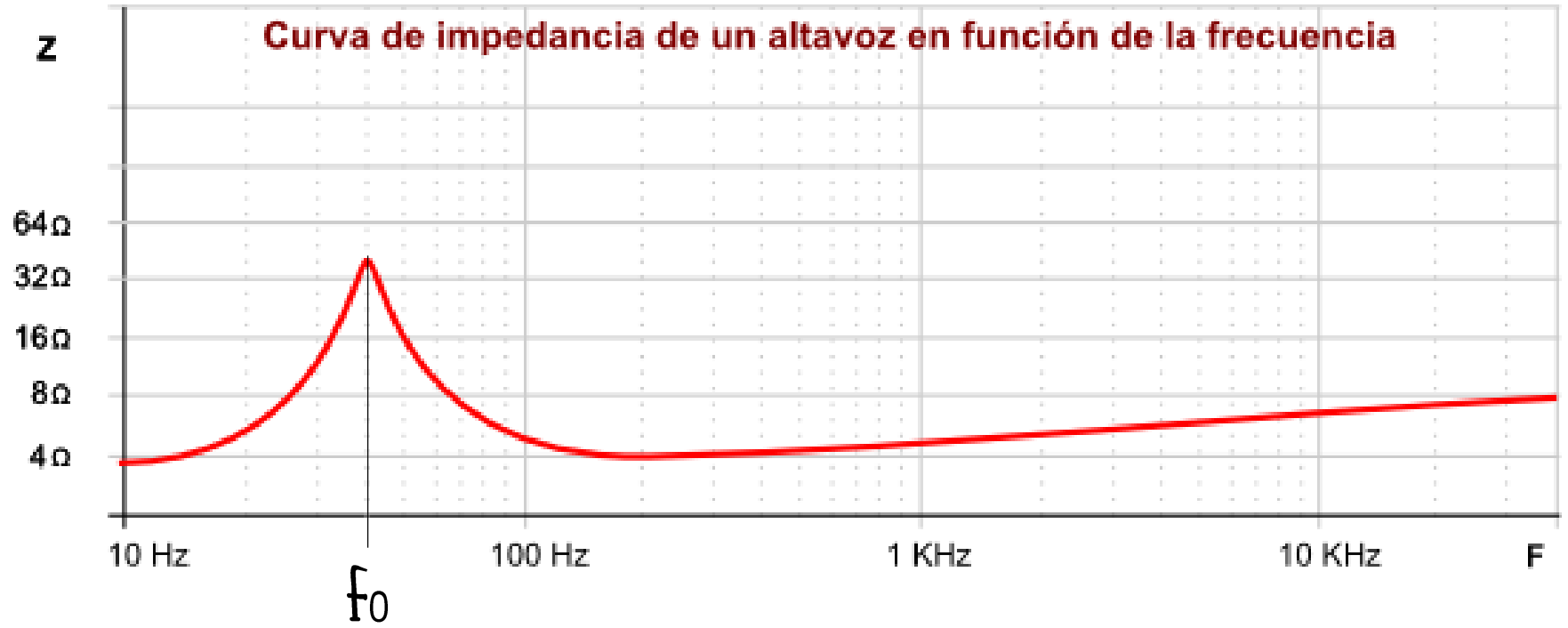
- 4 Ohm
- 8 Ohm
- 16 Ohm

$$Z = R + X$$

Resistencia + Reactancia







Potencia y Sensibilidad

Watts RMS es la potencia ELÉCTRICA que SOPORTA un parlante antes de quemarse

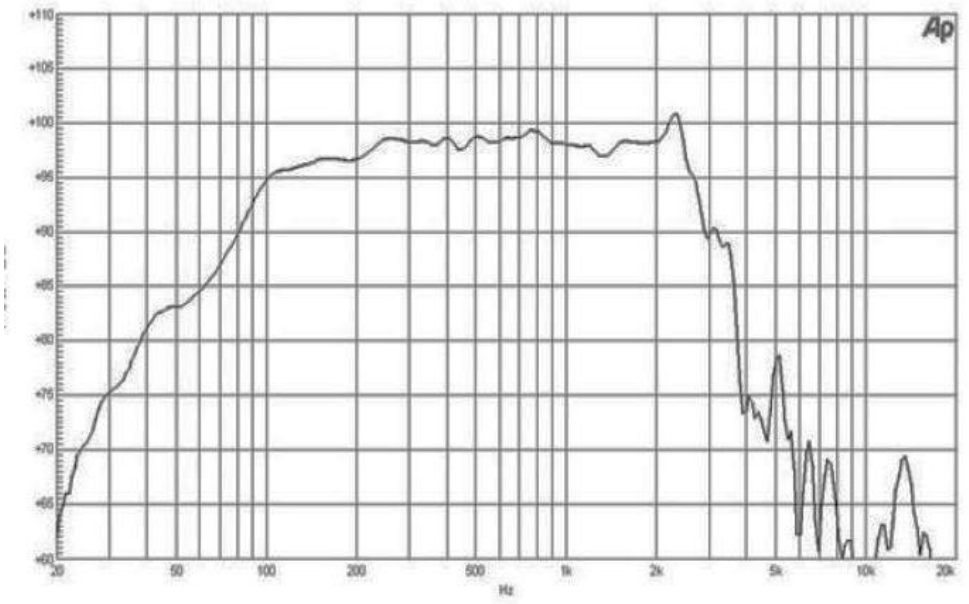
Sensibilidad

Capacidad de un parlante de transformar
POTENCIA ELECTRICA
en
INTENSIDAD SONORA

$$\frac{dB\ con\ 1W_{rms}\ a\ 1metro}{}$$

Respuesta en Frecuencia

B&C 15HPL76w

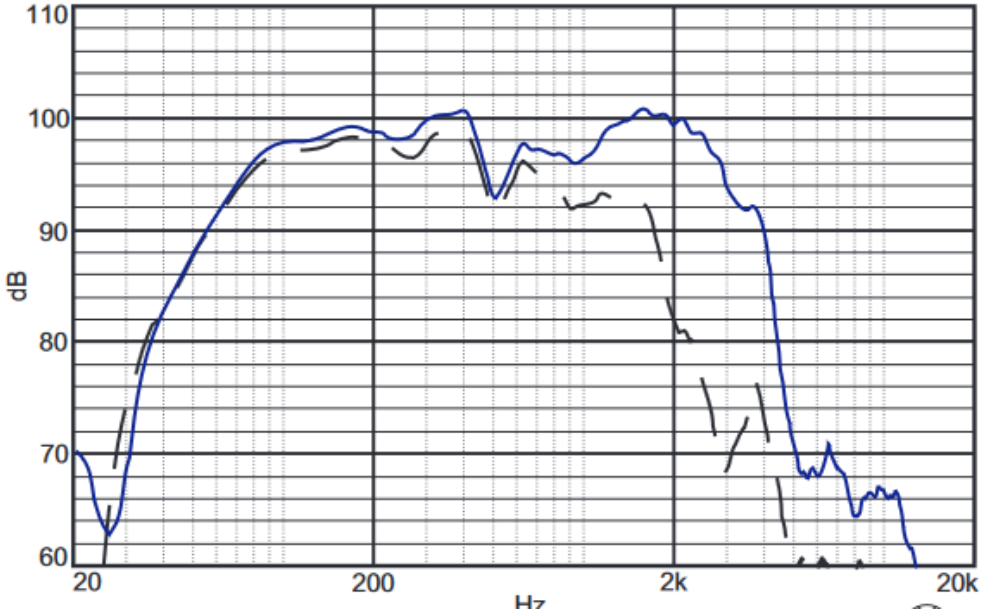


4 Ohm

350W

99dB

Selenium 15PW6



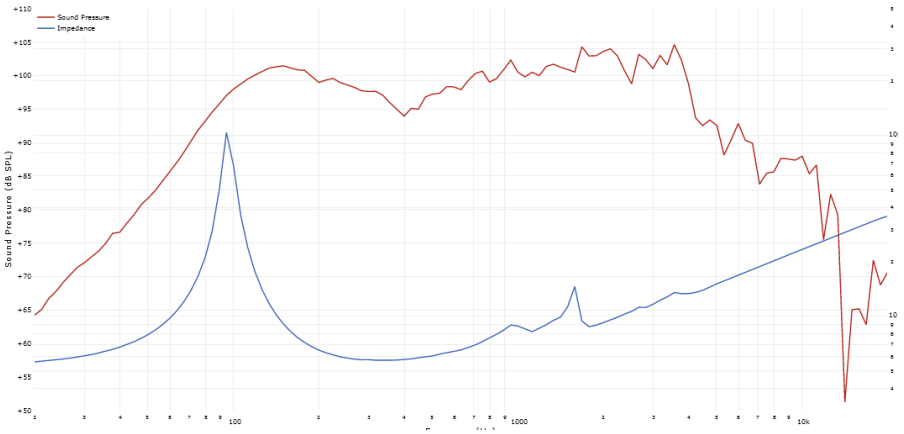
8 Ohm

400W

97dB

Respuesta en Frecuencia

Jensen 12-70

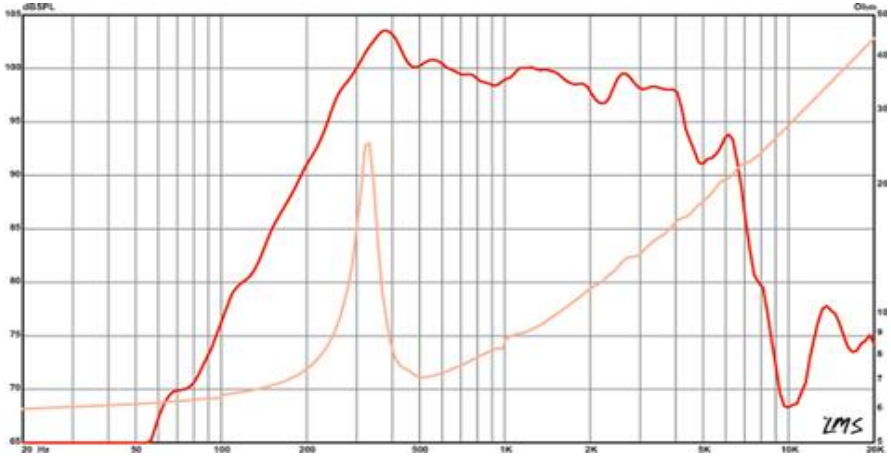


8 Ohm

70W

97dB

Eminence Beta 10 CBMRA



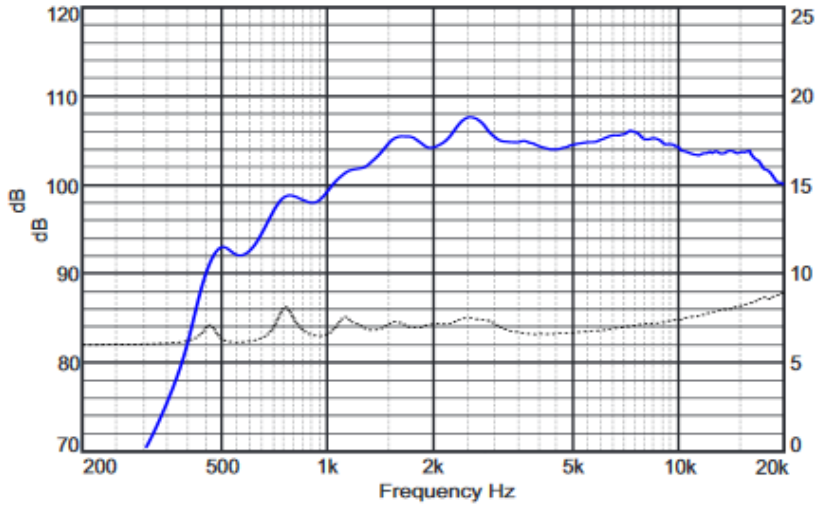
8 Ohm

200W

99.6dB

Respuesta en Frecuencia

JBL D202TI

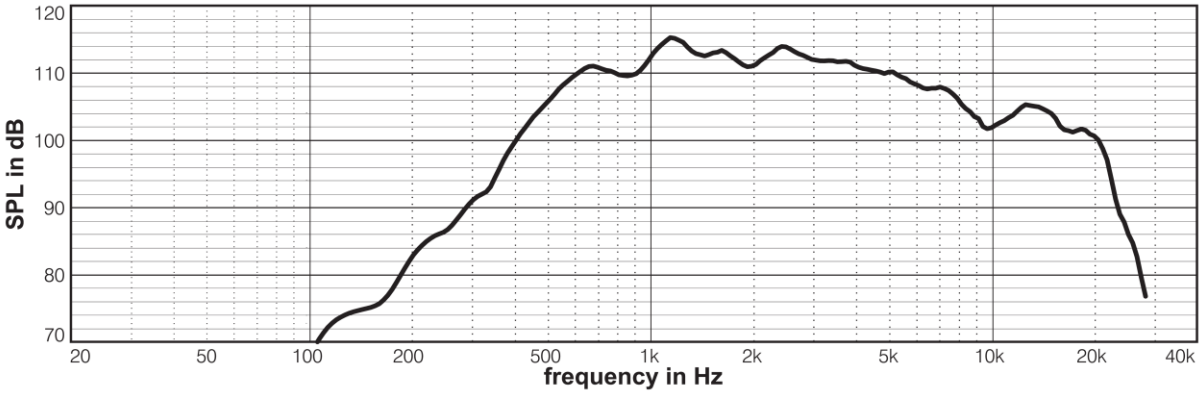


8 Ohm

60W

106dB

D.A.S K-8



16 Ohm

125W

110dB

¿Cuánto sonará un parlante?

8 Ohm, 400W y 97dB

$400\ W_{RMS}$

$1W \rightarrow 97dB \quad L_{[SPL]} = 10\log\frac{400W}{1W} = 26dB$

Máximo Volumen $\rightarrow 97dB + 26dB = \boxed{123dB}$

8 Ohm, 200W y 99.6dB

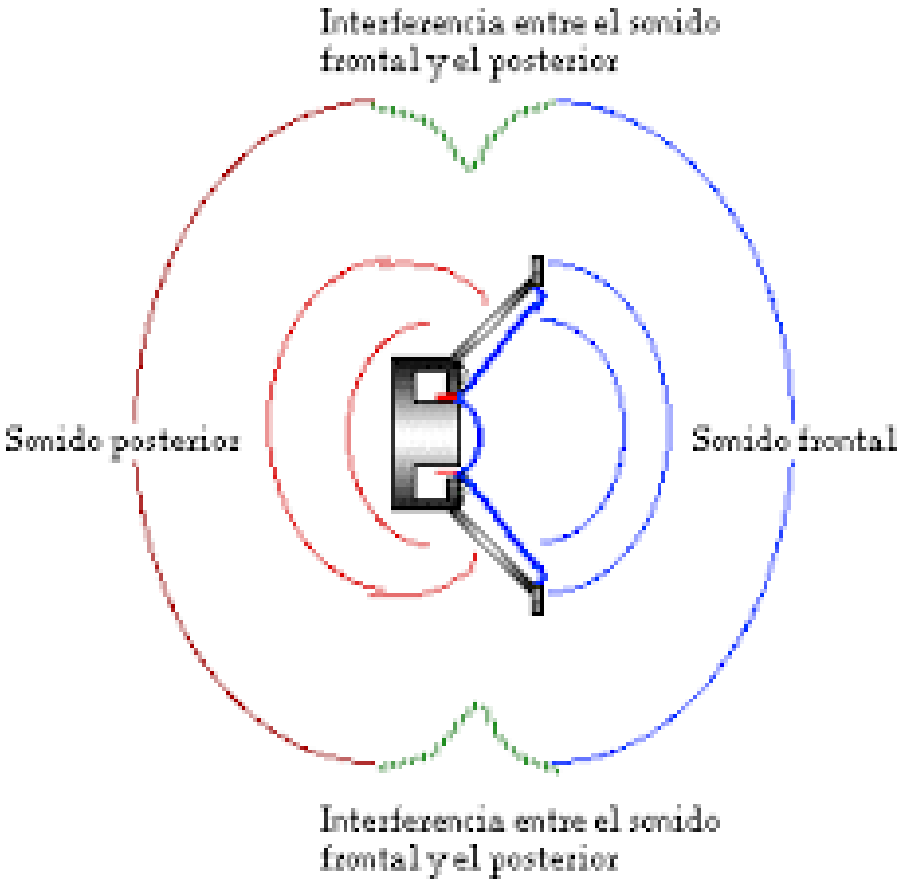
$400\ W_{RMS}$

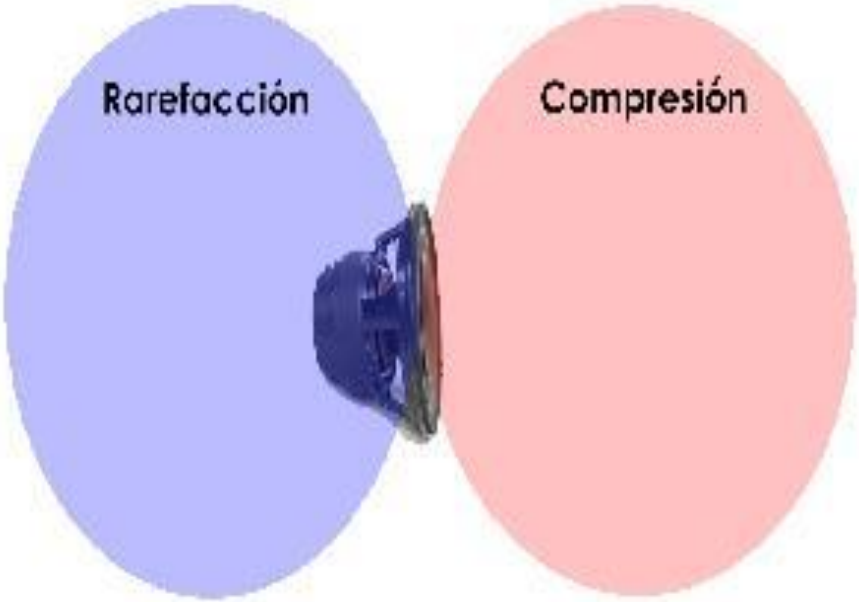
$1W \rightarrow 99.6dB \quad L_{[SPL]} = 10\log\frac{200W}{1W} = 23dB$

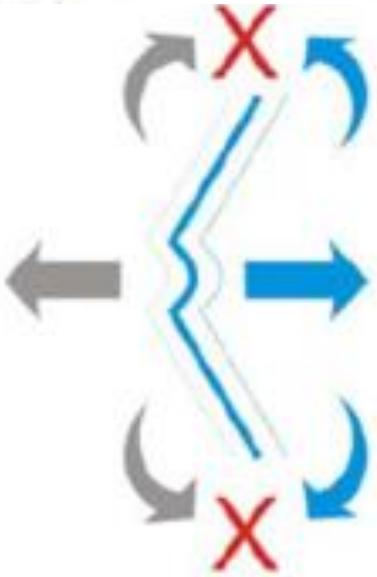
Máximo Volumen $\rightarrow 99.6dB + 23dB = \boxed{122{,}6dB}$

Gabinete Acústico o "Bafle"

Cortocircuito Acústico

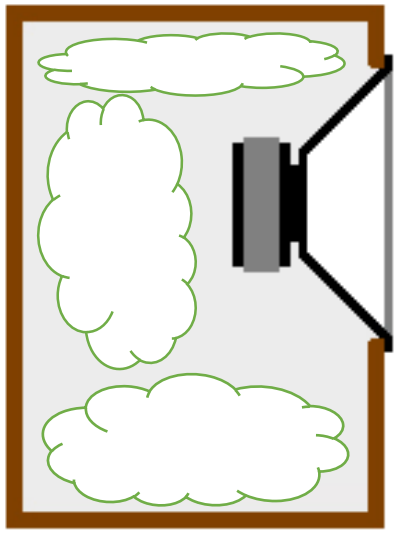


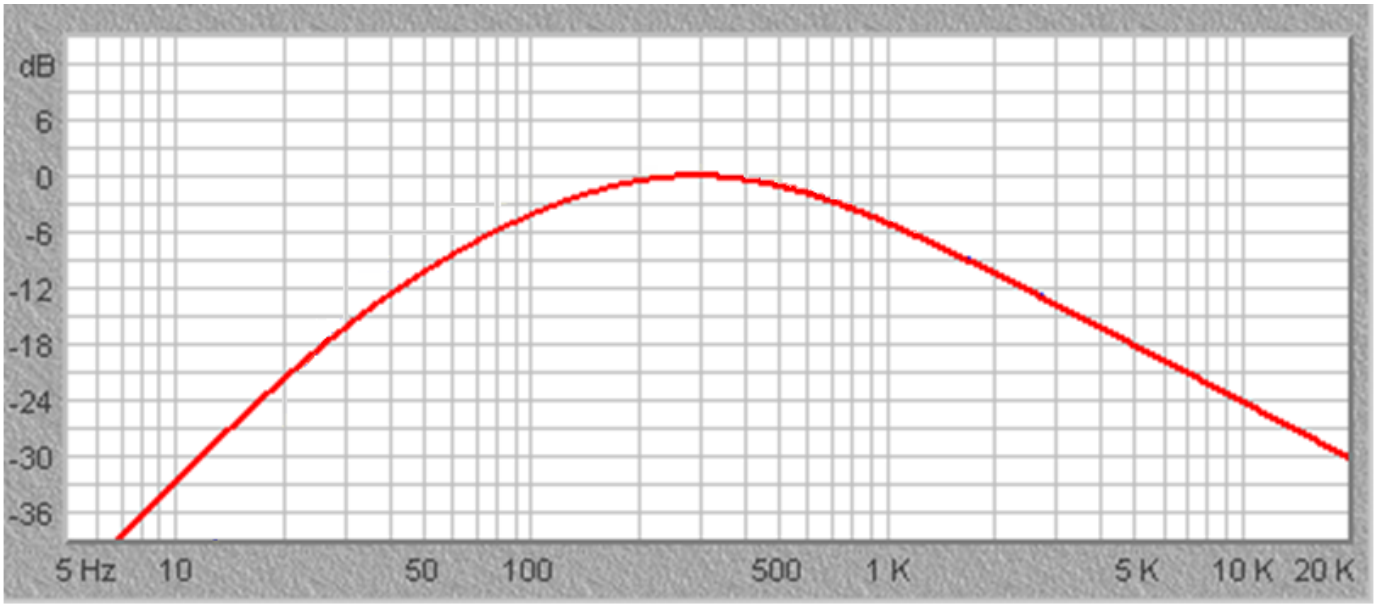




Anulación de bajas frecuencias

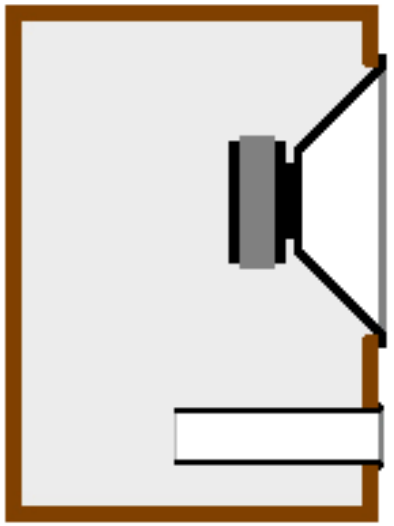
Gabinete Acústico Cerrado o "Bafle infinito"

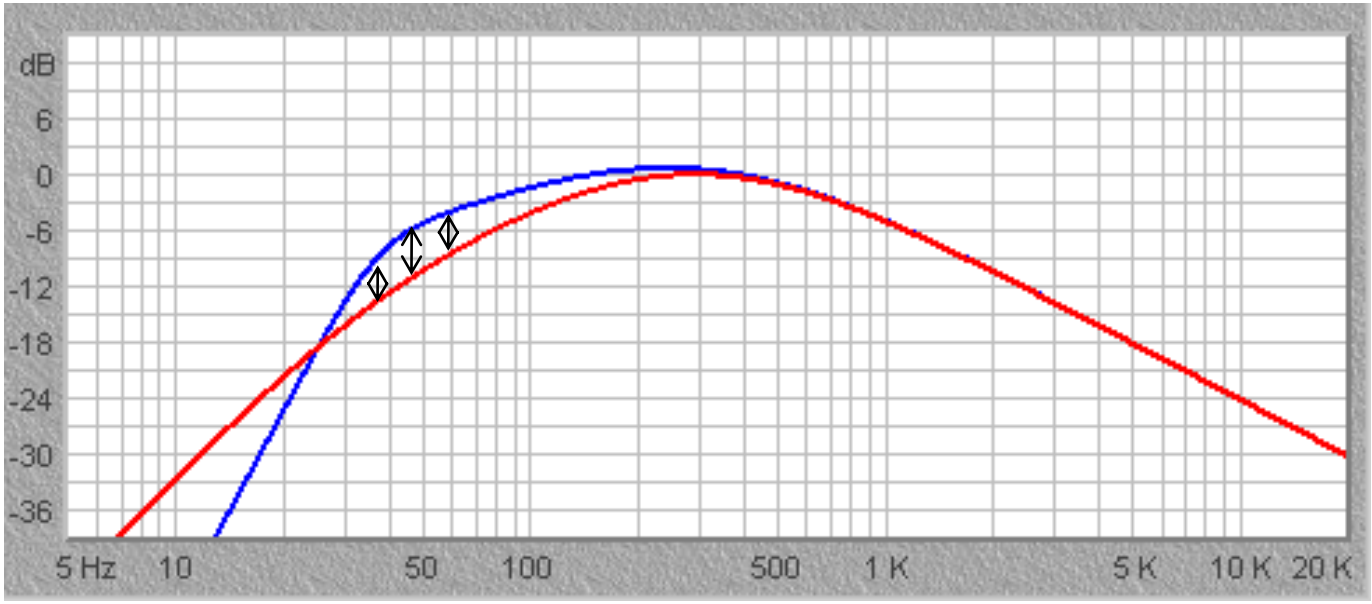




- Caja hermética
- Rellena o no con material absorbente
- Parlantes con suspensión muy blanda

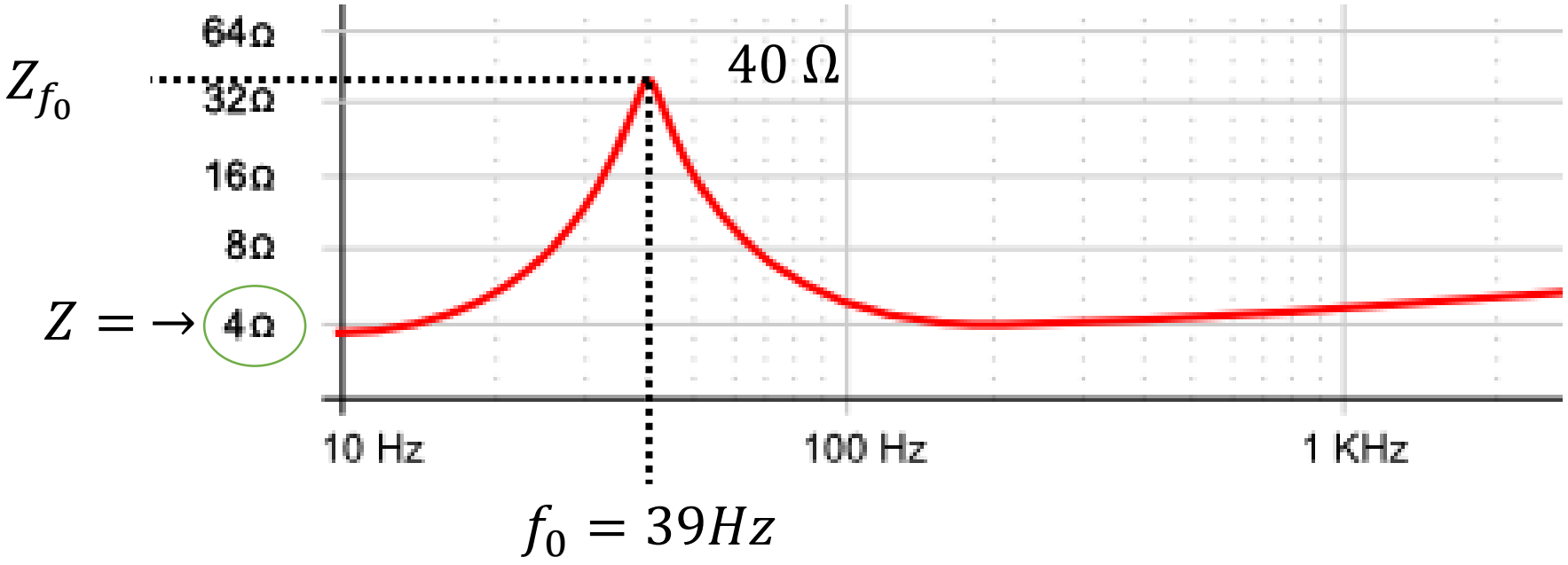
Gabinete Acústico ventilado o "Bass Reflex"





- Ganancia de 6db en bajas frecuencias
- Sin material absorbente
- Mejora el Rendimiento del parlante

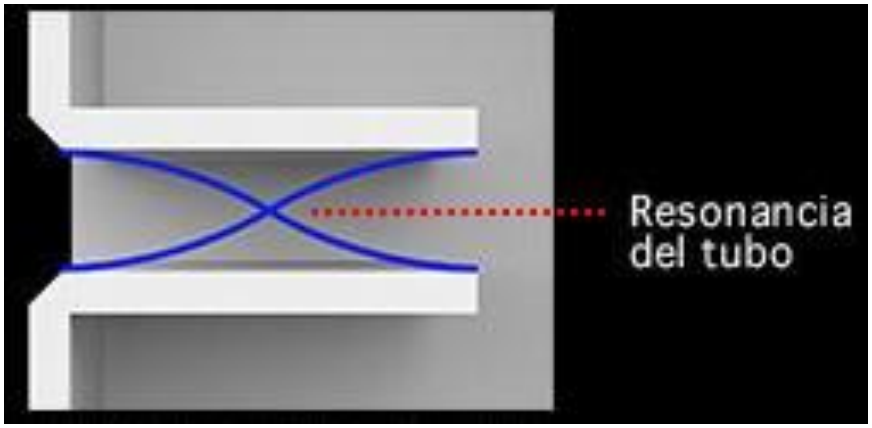
¿Cómo funciona un Gabinete Bass Réflex?

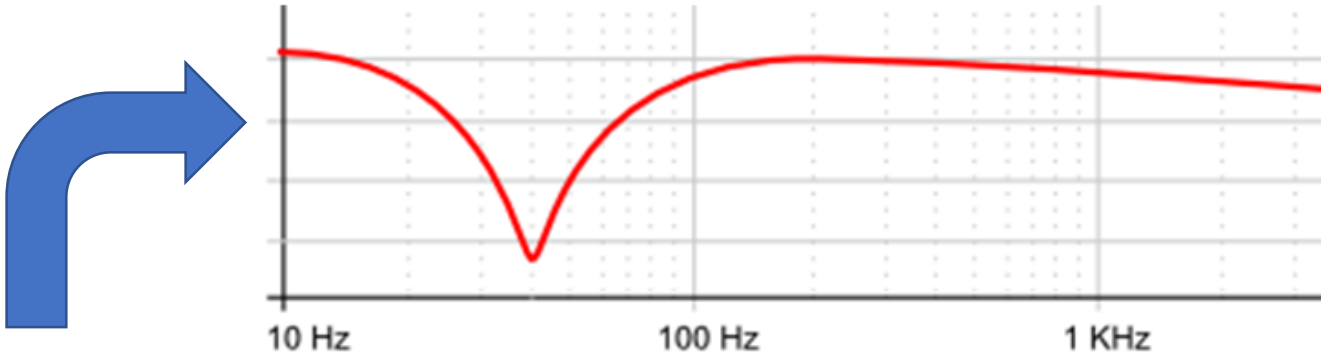


$$P = \frac{(V_{RMS})^2}{40\ \Omega} = W_{RMS}$$

En f_0 el parlante recibirá 10 veces menos potencia del amplificador

Tubos de Sintonía



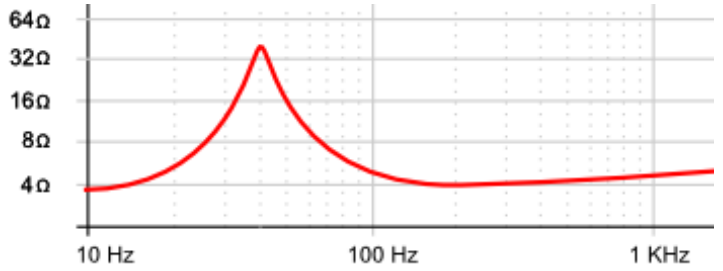


Sintonizamos el gabinete para que resuene a la misma frecuencia que el parlante

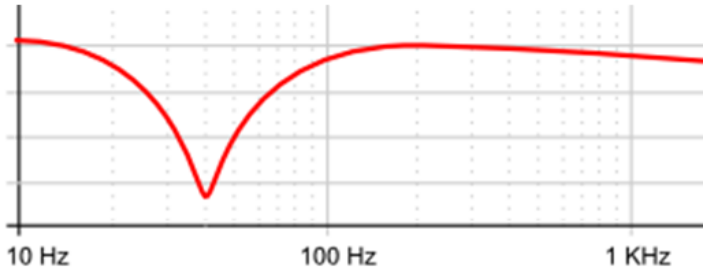
BAFLE

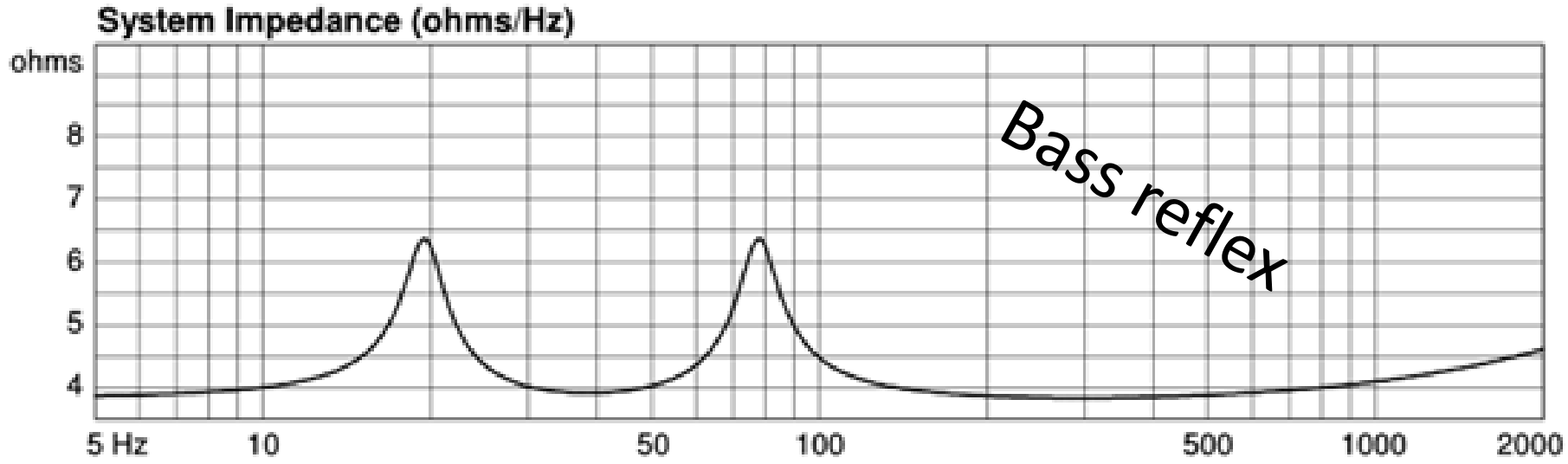
Parlante dentro de Gabinete Sintonizado

Impedancia del parlante



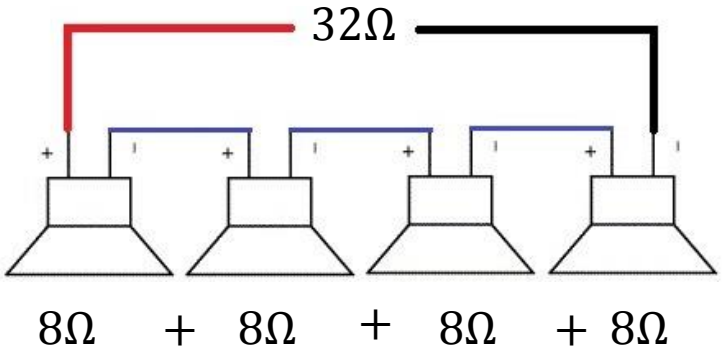
Impedancia del gabinete





Interconexión de Parlantes

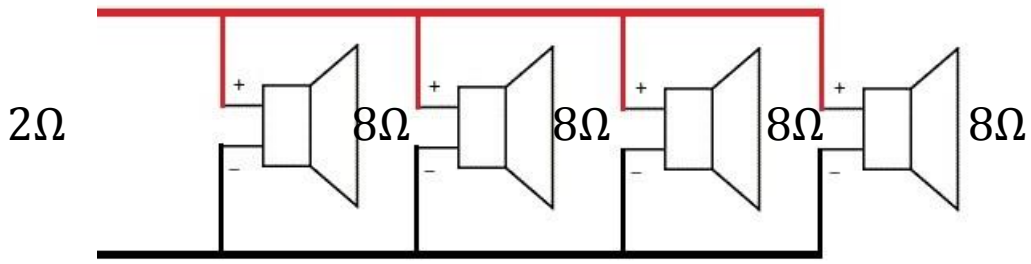
Conexión Serie



$$Z = Z1 + Z2 + Z3 + Z4$$

$$Z = 8 + 8 + 8 + 8 = 32$$

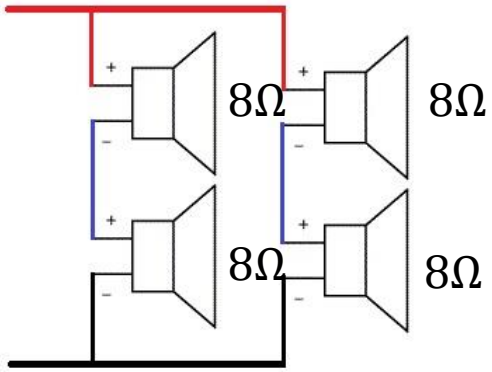
Conexión Paralelo



$$Z = \frac{1}{\frac{1}{Z1} + \frac{1}{Z2} + \frac{1}{Z3} + \frac{1}{Z4}}$$

$$Z = \frac{1}{\frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8}} = 2$$

Conexión Mixta

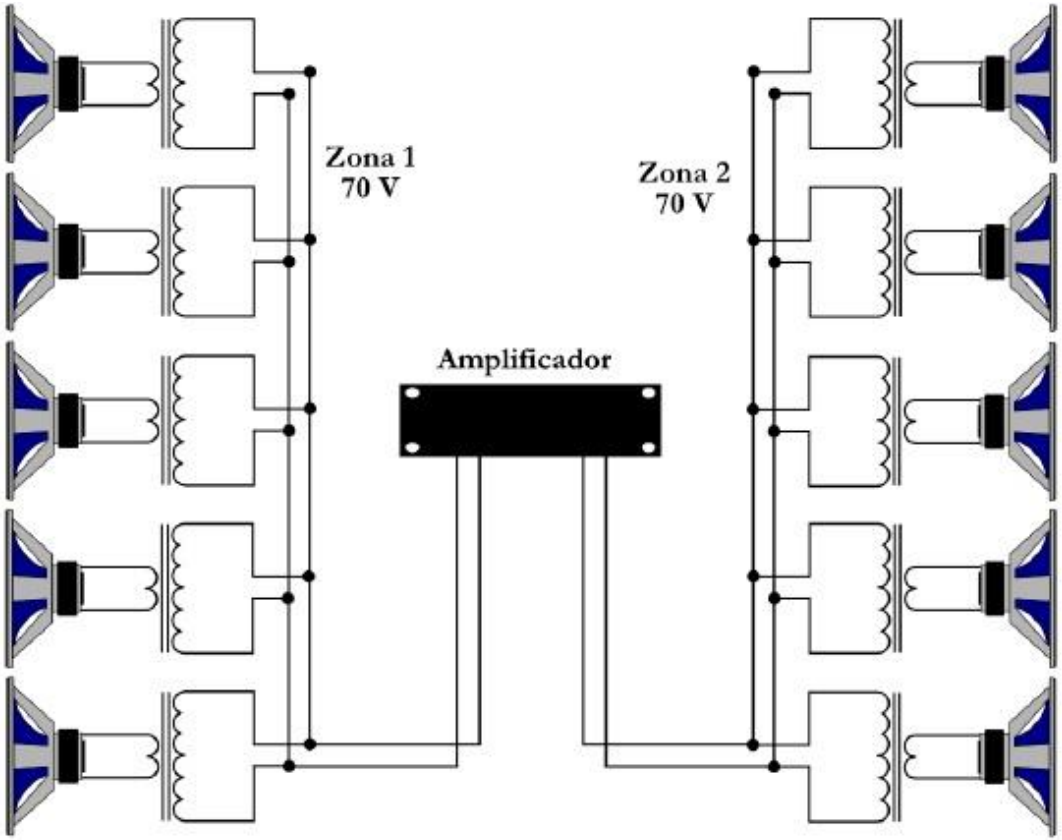


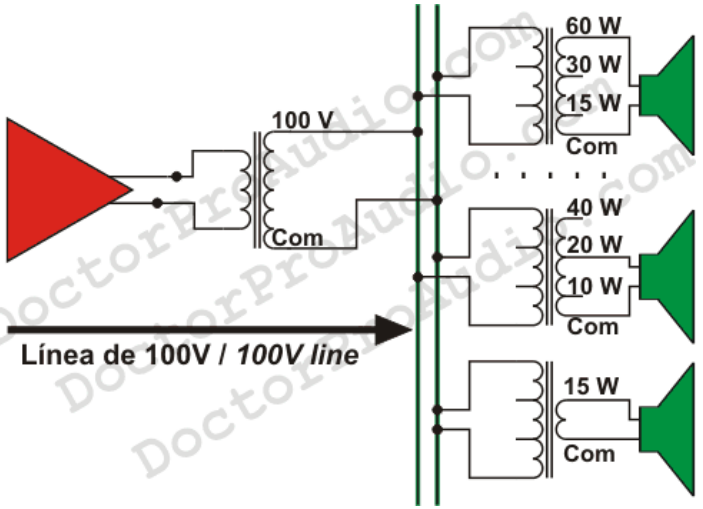
$$Z_{serie} = 8 + 8 = 16$$

$$Z = 8$$

$$Z_{paralelo} = \frac{1}{\frac{1}{16} + \frac{1}{16}} = 8$$

Conexión de parlantes con transformador





Parlantes para diseño arquitectónico

Parlantes para embutir en techos

Modelo abierto

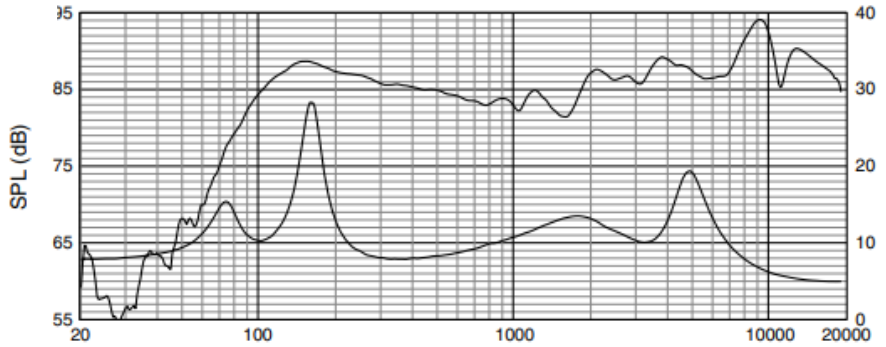
Parlantes para embutir en techos

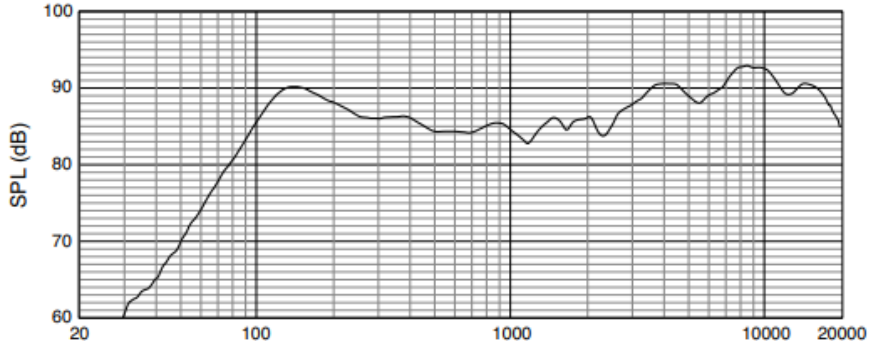
Bass-Reflex

JBL PROFESSIONAL by HARMAN

Control Series

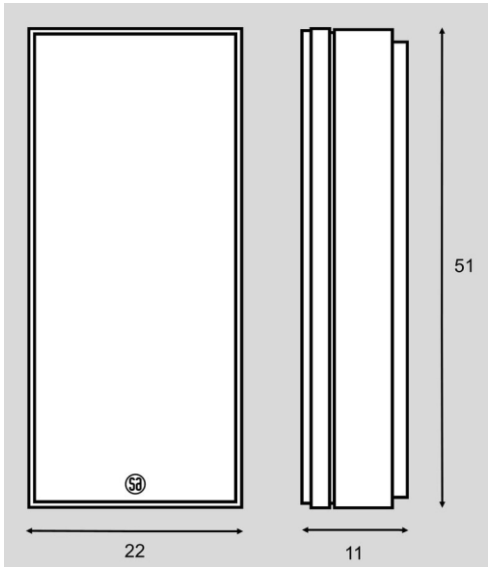
8 ohm
30 watts RMS
87dB





Parlantes para muros

Con gabinete cerrado



SA Saxo16

SIN DATOS

Parlantes para embutir en muros

Modelo abierto

In-Wall Series

SIN DATOS

SONOS

Parlantes para embutir en muros

Gabinete cerrado Bass Reflex

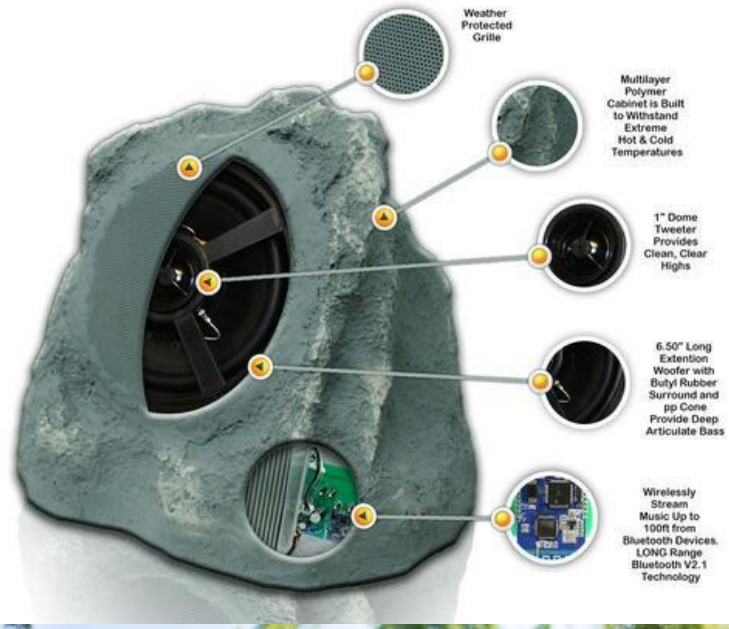
SONANCE

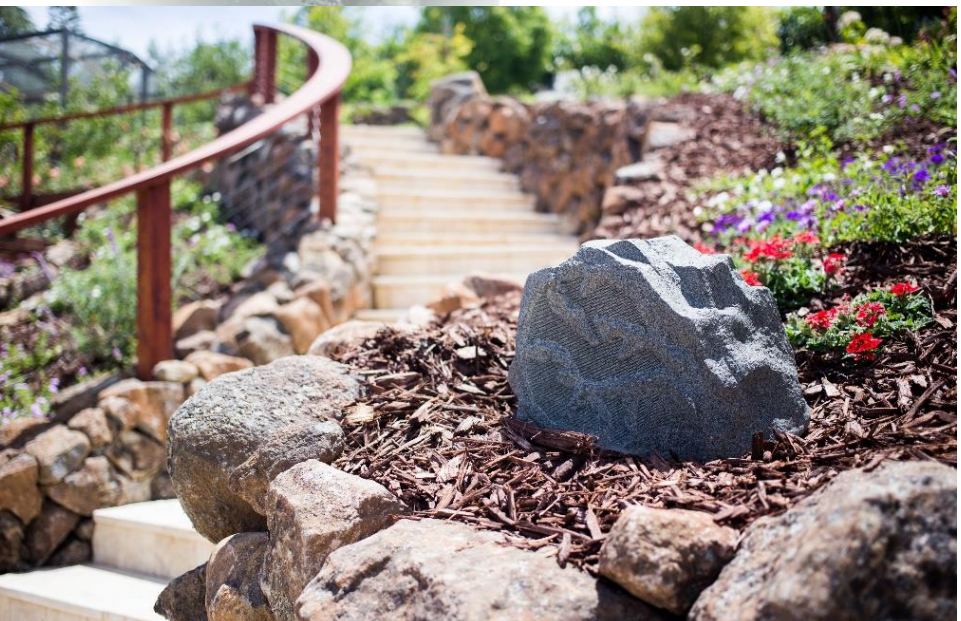
Invisible Series

5 ohm
100 watts RMS
90dB

Parlantes para exteriores "clásicos"

Parlantes para exteriores "modernos"





Parlantes para exteriores "modernos"

BLINDADOS