datasheet

TA-890H

ASPECT SERIES ENGINEERING INFORMATION

The Aspect series is a range of high performance modular loudspeaker enclosures designed for use across a wide spectrum of sound reinforcement activities, easily scaleable to specific acoustical and venue requirements ranging from large scale indoor or outdoor concerts to corporate events, theatre shows and nightclub applications.

The aim of any sound reinforcement system is to distribute sound evenly, with consistent frequency response and in a predictable way, across all seats of an auditorium or listening area. An optimum method of attaining this goal is through the correct application of point source arrays to create a segment of a spherical wavefront. Not only does this approach provide an exceptionally well defined and coherent acoustic source, but it also allows for considerable flexibility when assembling arrays in both horizontal and vertical dimensions.

In practice, the dispersion characteristics of a typical sound system are less than ideal because of the tendency for conventional high frequency exponential horns to 'beam' with increasing frequency. When arraying such horns, interference between adjacent sources is inevitable due to the variable curvature of the wavefront caused by the horn's geometry, and this results in undesirable comb filtering effects.

Turbosound engineers, through intensive research and the subsequent implementation of innovative and patented Polyhorn™ designs, have identified and overcome these deficiencies and implemented solutions in the Turbosound Aspect series. Fundamental to the Polyhorn™ designs—and applied in both high-mid and high frequency bands—is the principle of dividing an exponential horn flare into a multiplicity of tapered waveguides. Doing so ensures that all path lengths from the diaphragm surface to horn mouth are identical, and consequently guarantees uniformity of phase of the wavefront at the horn mouth. The Polyhorn™ design effectively locates the acoustic centre well behind the motor system, forming a virtual point source whose radius coincides with the array curvature without requiring an excessively deep enclosure.

The **TA-890H** is a portable mid-high enclosure designed for flown and ground stacked touring applications. It houses high frequency, high-mid frequency and low-mid frequency elements arranged in a vertical orientation, and covering the frequency range from 100Hz to 20kHz.

The top section of the enclosure is dedicated to handling the high frequency band above 5kHz, being reproduced by two custom-designed HF drivers loaded by a high frequency Polyhorn™ device. The HF driver combines highly innovative patented design features to ensure exceptional high frequency performance and long term reliability. High-mid frequencies from 450Hz to 5kHz are handled by a proprietary 10" HMF drive unit on a further Polyhorn™ device optimised for high-mid frequencies. Two 10" low-mid frequency drivers loaded with TurboMid™ devices cover the remaining frequency range from 450Hz down to 100Hz.

A key feature of the Polyhorn™ designs is the very sharp cut-off at the edges of the coverage pattern, which all but eliminates the comb filtering effects commonly experienced between adjacent sources when arraying conventional horn designs. This makes it possible to achieve seamless arrayability in a very intuitive and predictable fashion.

Significant improvements in the individual drivers' power handling, and a subsequent reduction in power compression, have also been achieved through the use of high stability, high temperature neodymium magnet

FEATURES

- Total system optimisation
- Very high SPL
- Arrayable enclosure
- Integral flyware
- Rotatable mid-high section
- Optimised truck pack
- Very compact enclosures
- Seamless arrayability

APPLICATIONS

- Stadia and arenas
- Touring and festivals
- Regional concert touring
- Theatre and Corporate
- Dance clubs

Turbosound®

structures. These provide very high motor strength—and hence fast transient response—as well as exceptional thermal performance. This means that more of the available amplifier power is converted into acoustic energy and less power is wasted as heat. A useful reduction in net weight is also achieved which aids in moving and handling.

The TA-890H is a fully equipped modular touring cabinet with integral flying systems for both horizontal and vertical configurations. The mid-high section is square and symmetrical, and it can be removed and rotated through 90° to allow boxes to be flown in either orientation while maintaining the required coverage pattern. This means that only one type of mid-high enclosure is needed form part of a large rental inventory flexible enough to meet widely varying venue requirements.

The cabinet dimensions have been carefully chosen to allow the boxes to be optimally truck packed in the most common US and European vehicles without wasted space. As well as providing individual wheel dollies with each enclosure, it is also possible to pre-stack up to four cabinets on an optional dolly for easy loading in to venues equipped with ramps.

The TA-890H is fitted with two completely independent flying systems. The 'A' (or horizontal box) flying system consists of integral flygear, rebated into the cabinet surfaces, which mate with the cabinets above and below and provide a choice of four optimised vertical inter-cabinet angles. These angles are set incrementally by an interlocking mechanism which provides visual indication of the chosen angle, even from a distance. The 'B' (or vertical box) flying system allows the cabinets to be flown with a vertical orientation and consists of integral steelwork again offering a choice of inter-cabinet angles. Both 'A' and 'B' flying systems are fitted to TA-890H mid-high and TA-890L low frequency boxes as standard, enabling both mid-high and bass cabinets to be flown and integrated together in a cluster.

The cabinet is also fitted with interlocking corner mouldings. These aid in aligning boxes when they are ground stacked or loaded on a 4-up wheel dolly. A Speakon NL8MP is fitted to the rear access door, as well as a break-out cable fitted with a NL8FC for connection to additional mid-high cabinets.

KEY FEATURES

• Tight dispersion pattern of 25°h x 15°v generates highly focused coverage pattern with exceptional projection
• Patented Polyhorns™ generates equal level across a uniformly curved wavefront identical to the array profile
• Proprietary HF and HMF transducers employ high stability, high temperature radial neodymium magnet structures which offers much higher efficiency, as well as reduced weight
• Directivity over 1kHz exhibits very sharp cut-off at the pattern edges, dramatically reducing out-of-band signal
• Unique 10" high-mid frequency driver is fabricated from a single-piece spun aluminium bowl, serving as a high strength frame, heatsink, rear compression chamber and high pass filter
• Low-mid enclosure employs rear-facing drivers with combined heatsink/phase plug assemblies
• Revolutionary composite cone materials are used in all cone transducers
• Mid-high cabinet construction based on pre-bent 15mm plywood, greatly increasing cabinet strength.
• Flying hardware is integral to the box and can be quickly removed for safety testing; allows cabinets to be safely and securely ground stacked
• Cabinet dimensions are optimised for both US and European vehicle truck pack arrangements

KEY SYSTEM BENEFITS

• Minimised destructive interference between adjacent enclosures, effectively giving seamless arrayability in both horizontal and vertical planes
• Intuitive 'point and shoot' characteristics make it very easy to adapt flown or ground stacked clusters to widely variable venue and audience requirements
• Very high power capability and proved driver efficiency means that maximum sound pressure levels of up to 146dB (peak) are easily achievable from one cabinet
• Greatly improved thermal performance reduces power compression to negligible levels
• Smaller and uniformly sized enclosures simplifies handling, transportation and flying
• Flexible cabinet orientation allows array optimisation and makes the best use of venue sightlines

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TA-890H

ASPECT SERIES ENGINEERING INFORMATION

DIMENSIONS (HxWxD)	795mm x 477mm x 574mm (31.3" x 18.8" x 22.6")
NET WEIGHT	76kg (167lbs)
COMPONENTS	2 x 10" (254mm) LMF drivers, 1 x 10" (254mm) HMF driver on a midrange Polyhorn™ 2 x HF drivers on a high frequency Polyhorn™
FREQUENCY RESPONSE[1]	95Hz - 20kHz ±4dB
DISPERSION	25°H x 15°V
POWER HANDLING	LMF: 500 watts r.m.s., 1000 watts program HMF: 200 watts r.m.s., 400 watts program HF: 100 watts r.m.s., 200 watts program
SENSITIVITY[3]	LMF: 107dB; HMF: 114dB; HF: 111dB
MAXIMUM SPL	140dB continuous[4], 146dB peak[5]
CROSSOVER BANDS	LMF: 101Hz–405Hz, HMF: 405Hz–4kHz, HF: 5k99Hz–20kHz
NOMINAL IMPEDANCE	LMF: 8 ohms; HMF: 16 ohms; HF: 12 ohms
CONSTRUCTION	15mm (5/8") beech plywood throughout; rebated, screwed and glued. Finished in black semi-matt textured paint. Four recessed carrying handles
GRILLE	Cloth/expanded metal
CONNECTORS	2 x Neutrik Speakon NL8 wired: pin1+: linked internally; pin1-: linked internally; pin 2+: LMF positive; pin 2-: LMF negative; pin3+: HMF positive; pin 3-: HMF negative; pin4+: HF positive; pin 4-: HF negative
OPTIONS	Wheel dolly for four cabinets

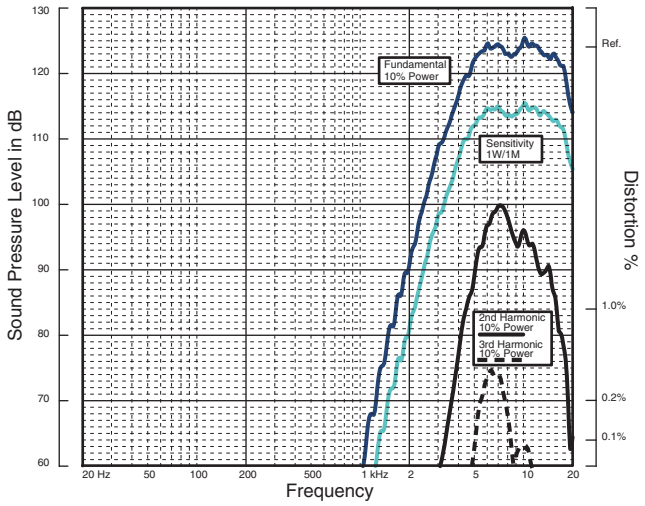
SPARES AND ACCESSORIES

MG-890	Replacement cloth/expanded metal grille
LS-1022	10" (254mm) LMF loudspeaker
RC-1022	Recone kit for LS-1022
RC-1021	Recone kit for LS-1021
LS-1021	10" (254mm) HMF loudspeaker
CD-112	25mm HF driver
RD-112	Replacement diaphragm for CD-112

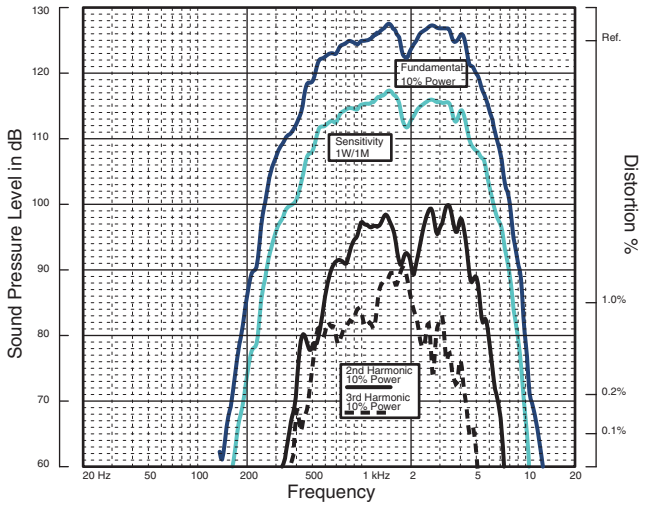
Notes

[1]Measured on axis
[2]Average over stated bandwidth
[3]Average over stated bandwidth
[4]Unweighted diode-clipped pink noise. Measured in a half space environment.
[5]Verified by subjective listening tests of familiar program material, before the onset of perceived signal degradation.

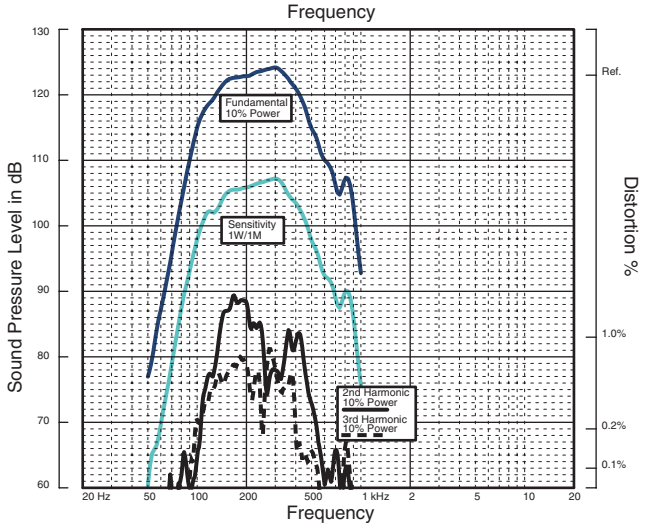
HIGH FREQUENCY RESPONSE



HIGH-MID FREQUENCY RESPONSE



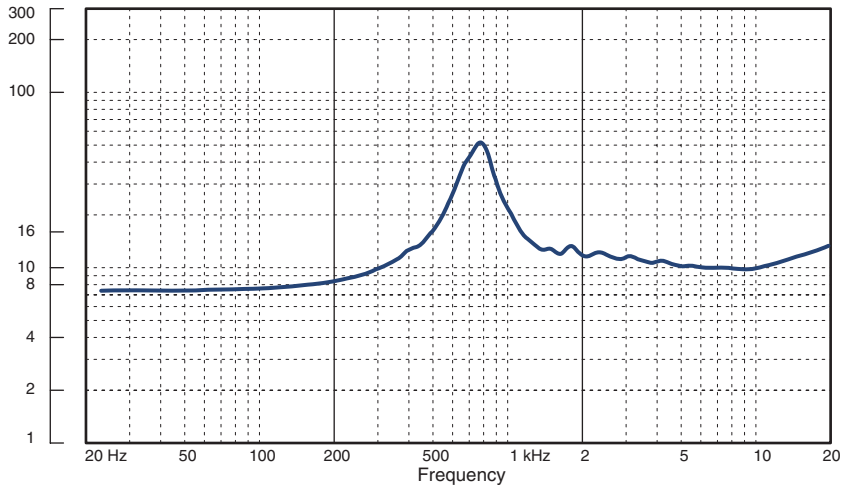
LOW-MID FREQUENCY RESPONSE



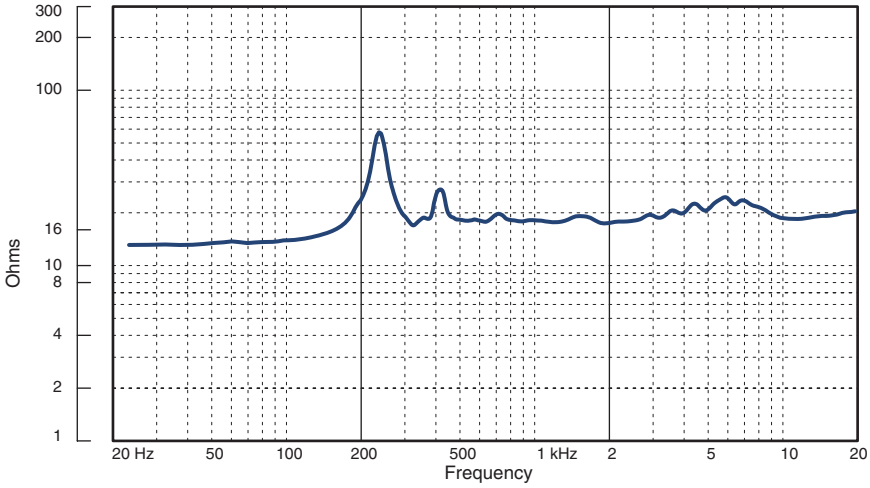
NOTES ON MEASUREMENT CONDITIONS

Impedance A constant current circuit was used to measure the impedance. **Frequency response** The frequency response shown was obtained by feeding a swept sine wave through the system in a half space environment. The position of the microphone was vertically on-axis at a distance of 2 metres, then scaled to represent 1 metre. **2nd & 3rd Harmonic Distortion** Distortion measurements were obtained using an Audio Precision harmonic distortion analysis system and comply with AES recommendations for enclosure measurement (AES paper ANSI S4-26-1984). **Data Conversion** All graphs were digitally generated using the APEX custom software system, designed to translate data derived from Audio Precision 'System One' test equipment into AutoCAD™. This program enables graphical information to be plotted to a high degree of accuracy.

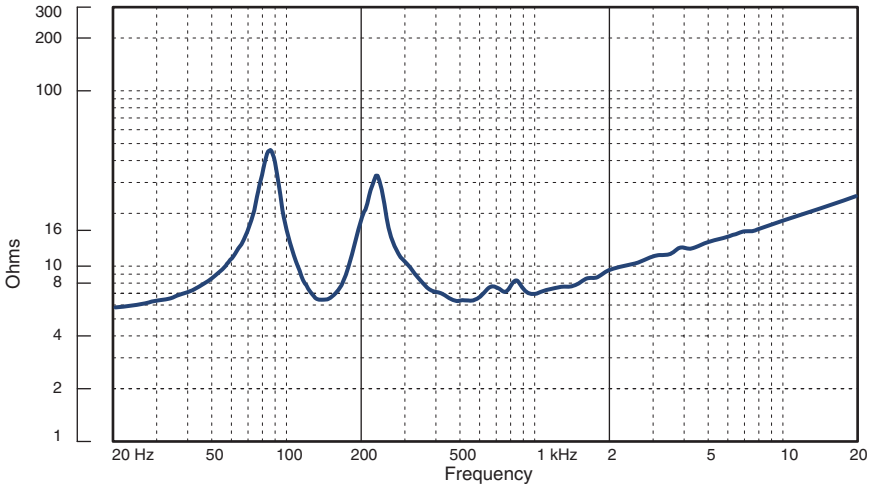
HIGH FREQUENCY IMPEDANCE



HIGH-MID IMPEDANCE



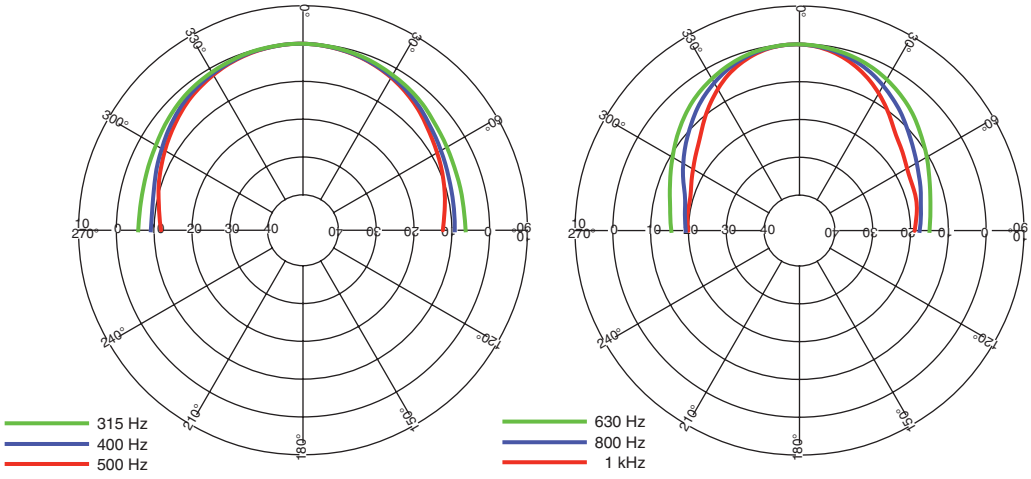
LOW-MID IMPEDANCE

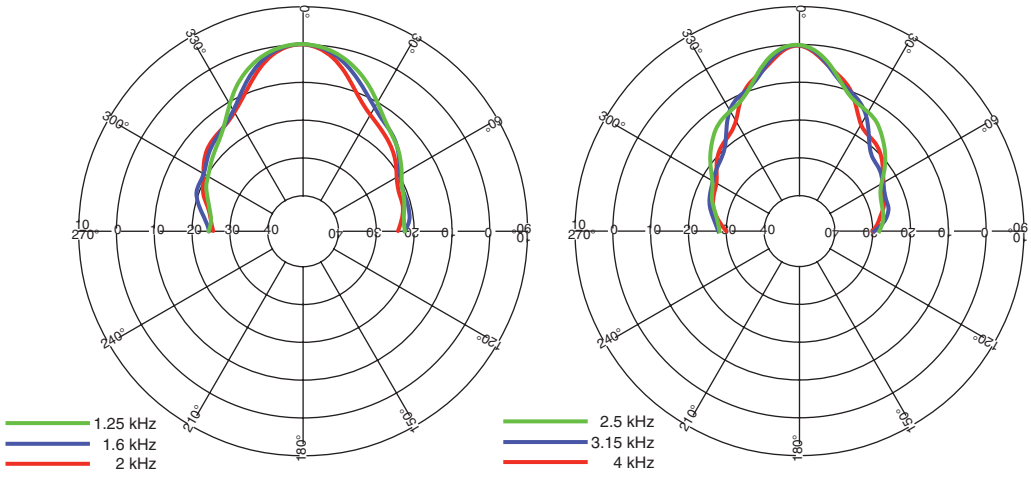


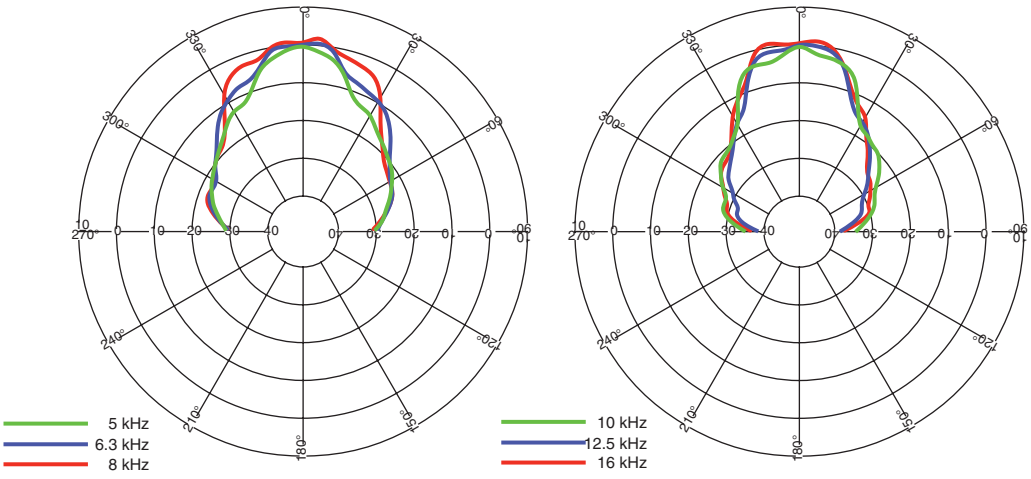
NOTES ON MEASUREMENT CONDITIONS

Impedance A common method, constant current circuit was use to measure the impedance. **Frequency Response** The frequency response shown was obtained by feeding a swept sine wave through the system in a half-space environment. The position of the microphone was vertically on-axis, horizontally in-line with the MF/HF section at a distance of 3 metres, then scaled to represent 1 metre. **2nd & 3rd Harmonic Distortion** Distortion measurements were obtained using an Audio Precision harmonic distortion analysis system and comply with AES recommendations for enclosure measurement (AES Paper reference: ANSI S4-26-1984). **Data Conversion** All graphs were digitally generated using the APEX custom software system, designed to translate data derived from Brüel & Kjæl and Audio Precision "System One" test equipment into AutoCAD™. This program enables graphical information to be plotted to an accuracy of more than four decimal places.

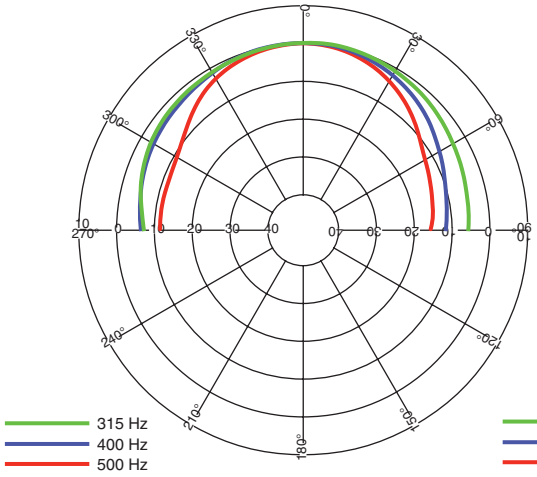
HORIZONTAL THIRD OCTAVE POLARS

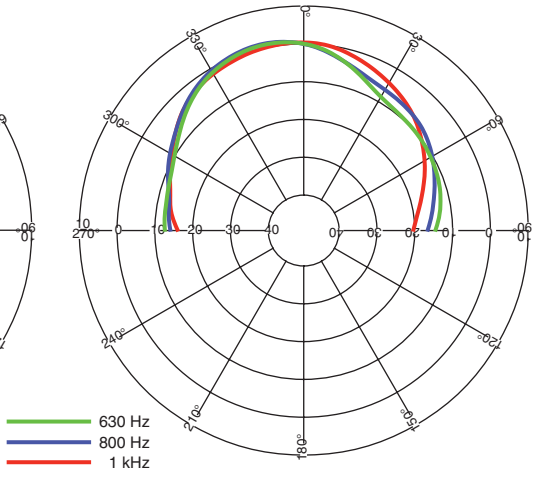


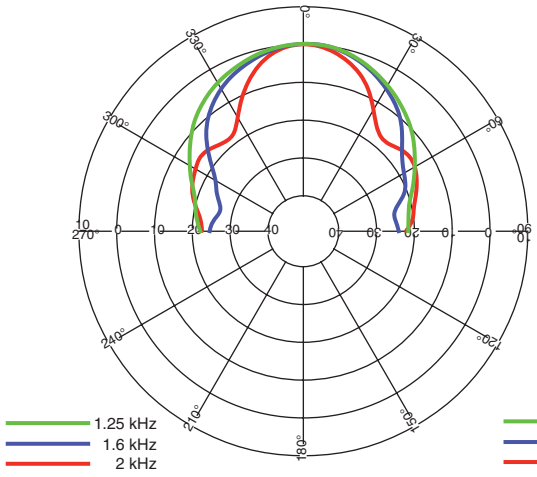


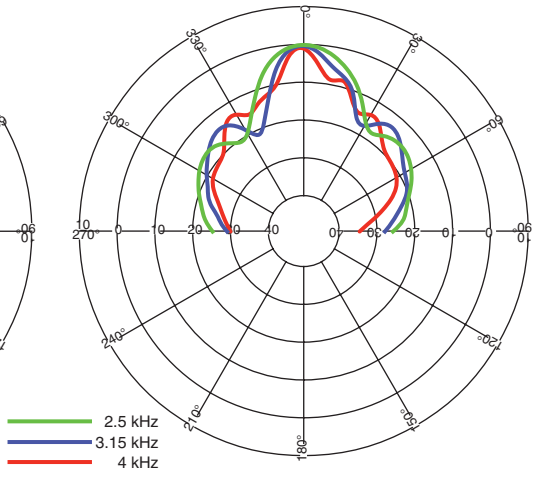


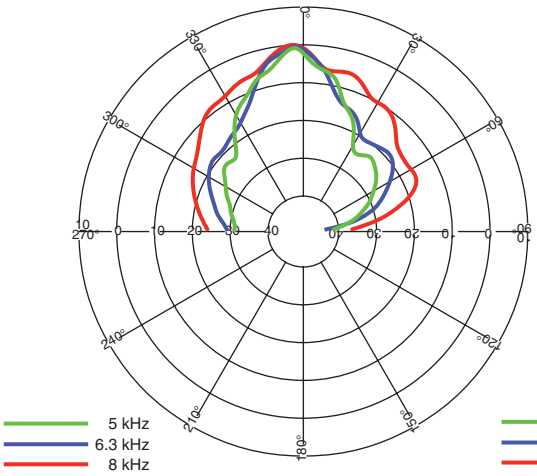
VERTICAL THIRD OCTAVE POLARS

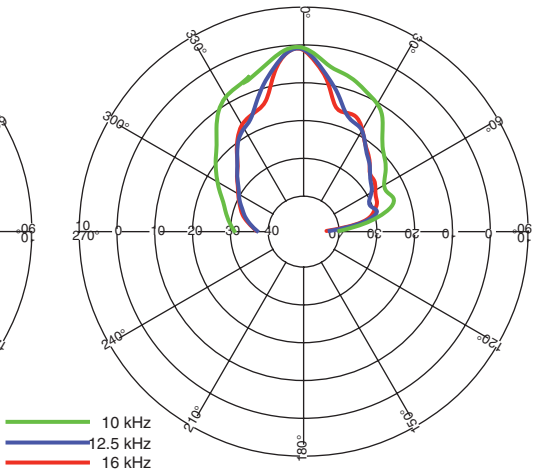












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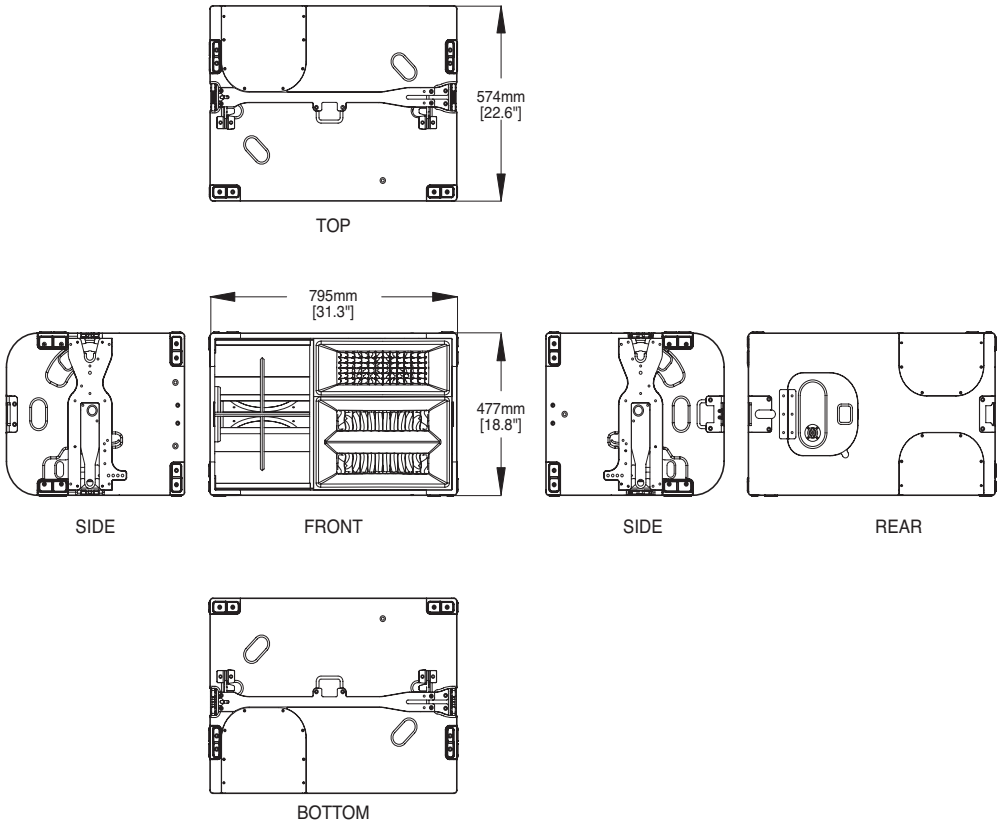
ASPECT SERIES ENGINEERING INFORMATION

ARCHITECTURAL & ENGINEER'S SPECIFICATIONS

The loudspeaker system shall be of the tri-amped, three way active type, consisting of two 10" low-mid frequency drivers loaded with TurboMid™ devices, one 10" high-mid driver on an HMF Polyhorn™, and two HF drivers on an HF Polyhorn™. Performance specifications of a typical production unit shall meet or exceed the following: Frequency response, measured with swept sine wave input, shall be flat within ±4dB from 95Hz - 20kHz. Nominal impedance shall be: LMF: 8 ohms, HMF: 16 ohms, HF: 12 ohms. Power handing shall be LMF: 500 watts r.m.s., 1000 watts program; HMF: 200 watts r.m.s., 400 watts program; HF: 100 watts r.m.s., 200 watts program. Sensitivity, measured with 1 watt input at 1 metre distance on axis, mean averaged over stated bandwidth, shall be LMF: 107dB, HMF: 114dB, HF: 111dB. Maximum SPL (peak), measured with music program input at stated amplifier power shall be 146dB. Dimensions: 795mmH x 477mmW x 574D (31.3" x 18.8" x 22.6"). Weight: 76 kg (167 lbs). The loudspeaker system shall be the Turbosound TA-890H. No other loudspeaker system shall be acceptable unless submitted data from an independent test laboratory verify that the above combined performance/size specifications are equalled or exceeded.

DIMENSIONS



TURBOSOUND Ltd Star Road Partridge Green West Sussex RH13 8RY England
tel: +44 (0) 1403 711447 fax: +44 (0) 1403 710155 • www.turbosound.com