datasheet

TA-880H

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. A further requirement is 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-880H** is a trapezoidal mid-high enclosure designed for ground stacked touring and fixed installation applications, matched to the complementary **TA-880L** low frequency enclosure. 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 drivers loaded by a high frequency Polyhorn™ device. The HF driver combines highly innovative patented (and patent applied for) design features to ensure exceptional high frequency performance and long term reliability. High-mid frequencies from 450Hz to 5kHz are handled by a custom designed 10" 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.

The entire mid-high section is symmetrically shaped and consequently can be removed from the cabinet and rotated through 90°. This allows the enclosure to be used horizontally while maintaining a 25°h x 15°v dispersion pattern, or alternatively achieving a tighter array angle of 15° when using the boxes vertically in a long throw application.

A key feature of the Polyhorn™ designs is the very sharp cut-off at the edges of the coverage

FEATURES

- Ultra low distortion
- Very high output
- Trapezoidal enclosure
- Seamless arrayability
- Removable rigging system

APPLICATIONS

- Stadia and arenas
- Ground stacked touring
- Regional concert touring
- Theatre and Corporate
- Dance clubs

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pattern, which all but eliminates the comb filtering effects commonly experienced between adjacent sources when arraying conventional horn designs. This makes it possible to acheive seamless arrayability in a very intuitive and predictable fashion.

All drive units employ high stability, radial neodymium magnet structures in order to provide very high motor strength—and hence fast transient response—as well as exceptional thermal performance. This also results in a useful reduction in weight which aids transportation and handling.

The TA-880H cabinet is constructed from 15mm (5/8”) birch plywood and is trapezoidally shaped with side angles optimised at 12.5° to ensure that adjacent boxes are currently positioned relative to each other with the optimumhorizontal array angle. A recessed panel on the rear panel carrying two linked Speakon NL8MP’s is further set in to ensure that the cable connectors do not protrude beyond the rear of the box profile where space is limited. A kelping strap attachment point and M10 rigging point are provided on a further recessed panel on the rear, situated just below the centre of gravity, for adjusting the vertical angle.

The cabinet is equipped with four recessed handles—two on each side—placed to enable an easy two-man lift, and a removable wheel board clips on to the front of the cabinet for transportation.

The TA-880H is highly recommended for installing in venues such as theatres, concert halls and entertainment venues. The cost-effective flying system consists of removable steel swords which pass through slots in the top and bottom of the cabinet.

KEY FEATURES

• Controlled dispersion pattern of 25° x 15° generates highly focused coverage pattern in both horizontal and vertical planes with exceptional projection capabilities

• HF transducer and 10” high-mid driver employ a high stability, high temperature radial neodymium magnet structure which offers much higher efficiency, as well as reduced weight

• Patented HF Polyhorn™ designs generates equal level across a uniformly curved wavefront identical to the array profile

• Directivity over 1kHz exhibits very sharp cut-off at the edges of the pattern, 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 section employs rear-facing drivers with loading functions. Magnet cover / heatsink assemblies act as phase plugs as well as providing additional cooling

• Revolutionary composite cone materials are used in all cone transducers, giving high strength to weight ratio

• Flying system consists of removable swords which enable quick and simple rigging for permanent installations

KEY SYSTEM BENEFITS

• Minimal destructive interference between adjacent enclosures, effectively giving seamless arrayability in both horizontal and vertical planes. All audience seats get essentially the same frequency response

• 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 combined with high efficiency means that peak sound pressure levels of up to 146dB are easily achievable from one cabinet

• Greatly improved thermal performance from neodymium magnet structures reduces power compression to negligible levels and delivers more amplifier power into acoustic watts

• Ability to tailor the PA coverage according to extremely varied venue requirements; can achieve optimum coverage even in irregularly shaped rooms

trapezoidal mid-high enclosure TA-880H

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TA-880H

ASPECT SERIES ENGINEERING INFORMATION

DIMENSIONS (HxWxD)	1025mm x 477mm x 463mm (40.3” x 18.8" x 18.3")
NET WEIGHT	55kg (121 lbs)
COMPONENTS	2 x custom 10” (254mm) LMF drivers, 1 x custom 10” (254mm) HMF driver on a midrange Polyhorn™, 2 x custom HF drivers on a high frequency Polyhorn™
FREQUENCY RESPONSE[1]	95Hz - 20kHz ±4dB
DISPERSION[2]	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] (1W@IM)	LMF: 108dB; HMF: 114dB; HF: 114dB
MAXIMUM SPL	140dB continuous[4], 146dB peak[5]
CROSSOVER BANDS	LMF: 111Hz–435Hz, HMF: 435Hz–4kHz, HF: 5kHz–20kHz
NOMINAL IMPEDANCE	LMF: 8 ohms HMF: 16 ohms HF: 12 ohms
CONSTRUCTION	15mm (5/8”) birch plywood throughout; rebated, screwed and glued. Finished in black semi-matt textured paint (optional TurboBlue™). Four recessed carrying handles
GRILLE	Cloth/expanded metal
CONNECTORS	2 x Neutrik Speakon NL8 wired: pin1+: LMF positive; pin1-: LMF negative; pin 2+: HMF positive, pin 2-: HMF negative, pin 3+: HF positive, pin 3- HF negative, pin 4+ and pin 4- n/c
OPTIONS	Wheel dolly

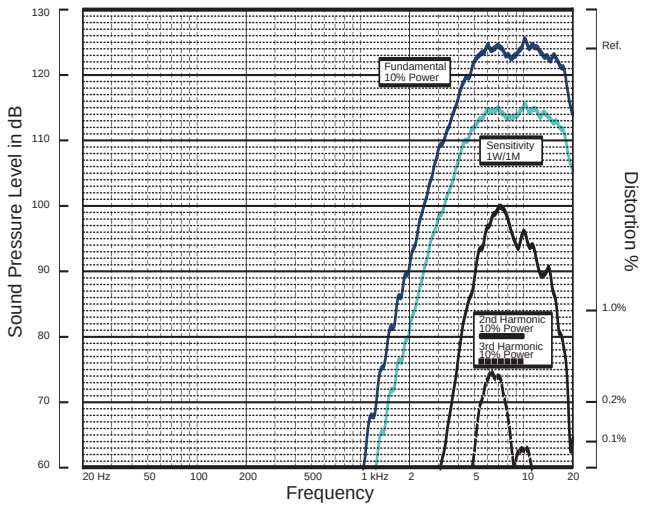
SPARES AND ACCESSORIES

MG-880	Replacement cloth/expanded metal grille
LS-1022	10” (254mm) LMF loudspeaker
RC-1022	Recone kit for LS-1022
LS-1021	10” (254mm) HMF loudspeaker
RC-1021	Recone kit for LS-1021
CD-112	HF compression driver
RD-112	Replacement diaphragm for CD-112
W-3	Heavy duty wheel

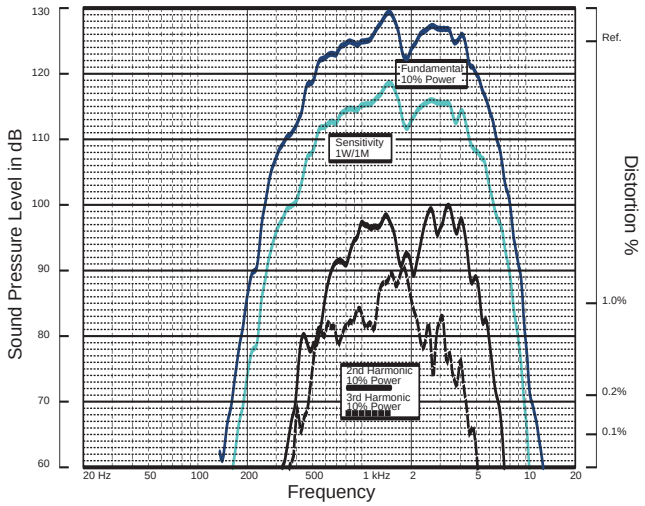
Notes

[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.

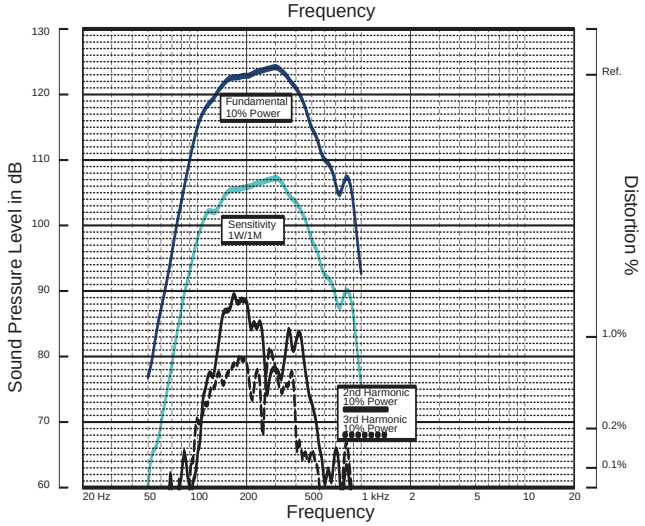
HIGH FREQUENCY RESPONSE



HIGH-MID FREQUENCY RESPONSE



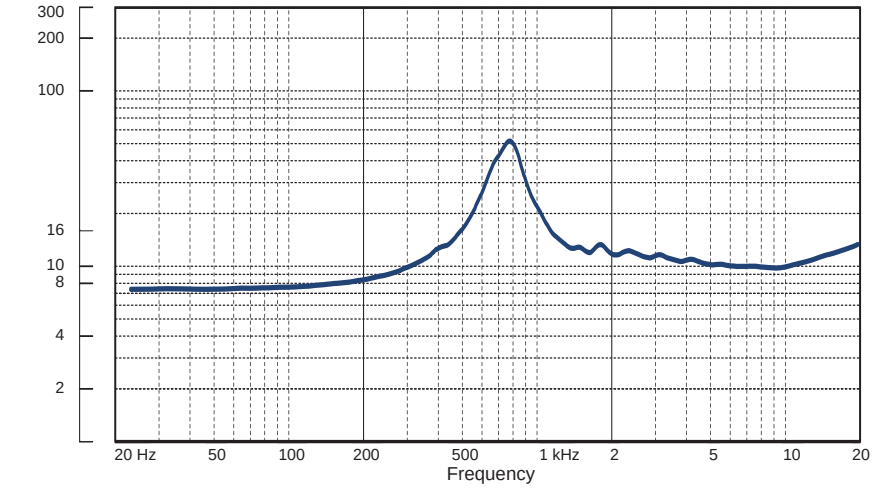
LOW-MID FREQUENCY RESPONSE



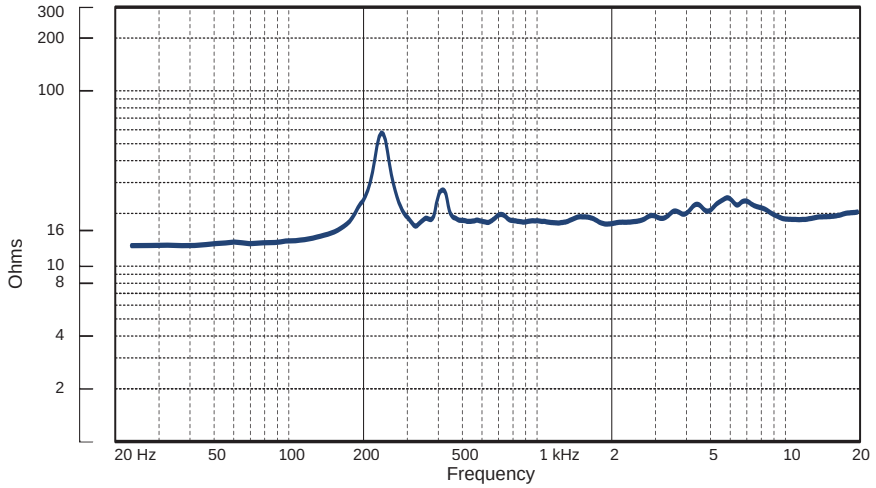
NOTES ON MEASUREMENT CONDITIONS

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.

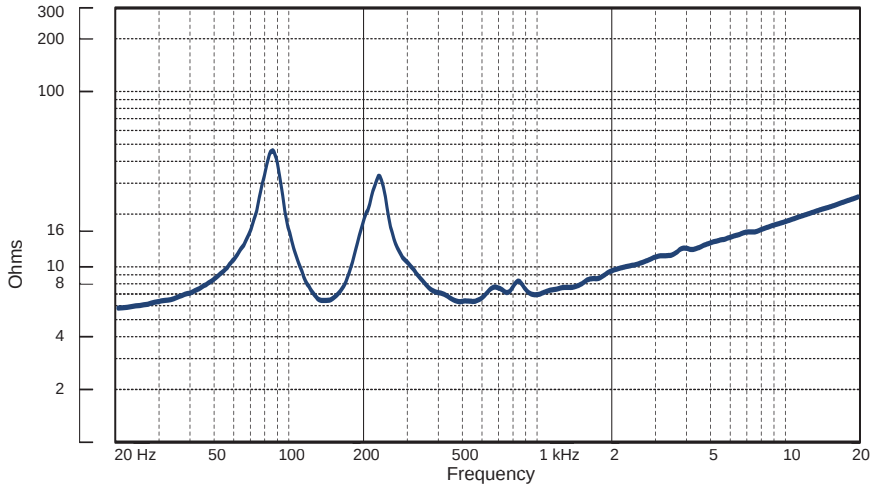
HIGH FREQUENCY IMPEDANCE



HIGH MID IMPEDANCE



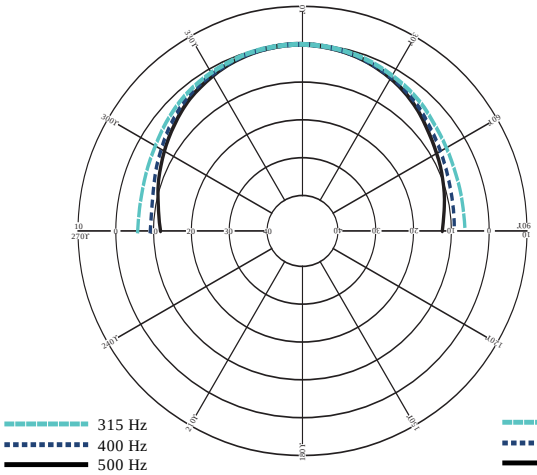
LOW MID IMPEDANCE

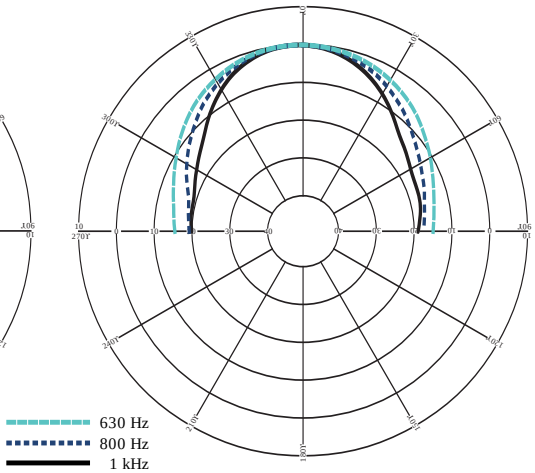


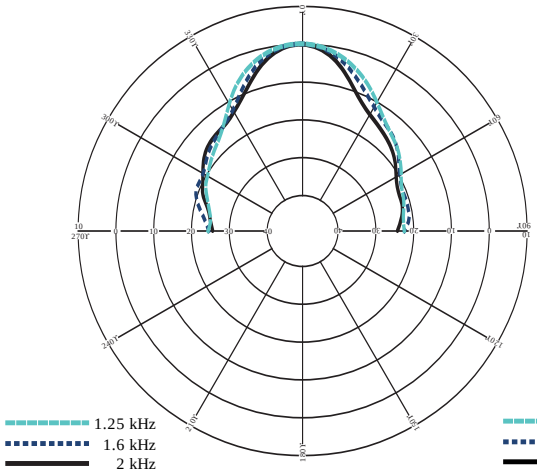
NOTES ON MEASUREMENT CONDITIONS

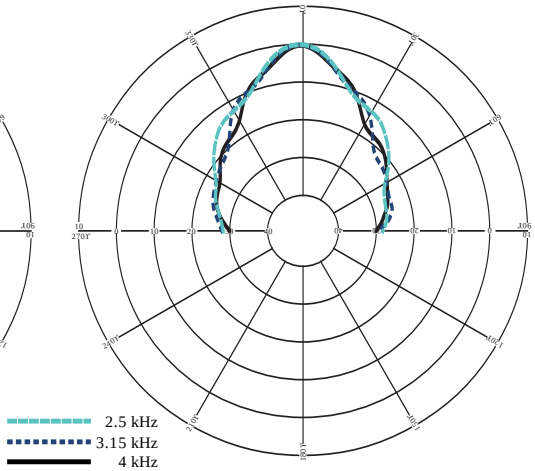
Impedance A common method, constant current circuit was use to measure the impedance. **Frequency Response** The frequency response shown was obtained by feeding a swept sine wave through the system in a half-space environment. The position of the microphone was vertically on-axis, horizontally in-line 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.

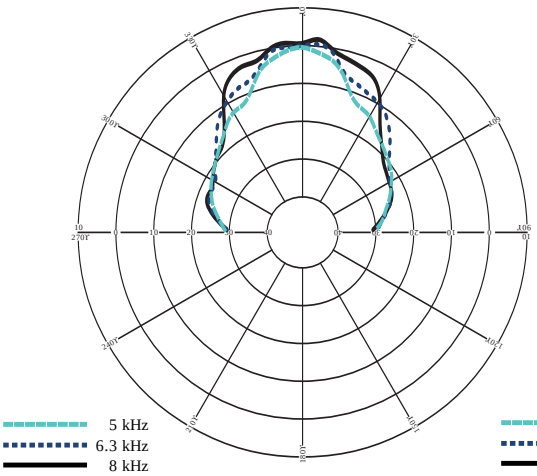
HORIZONTAL THIRD OCTAVE POLARS

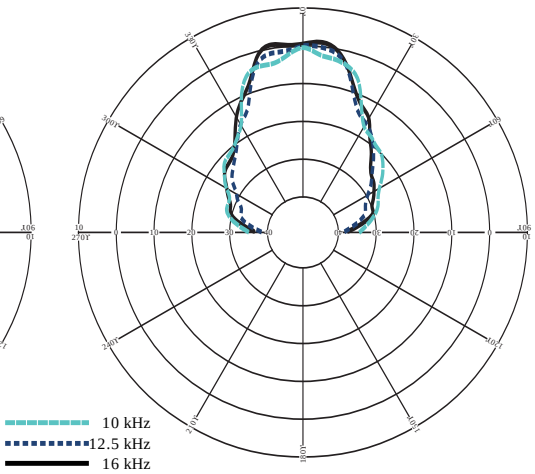




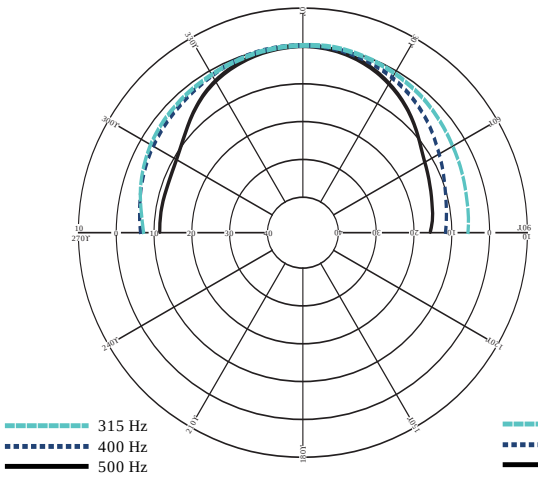


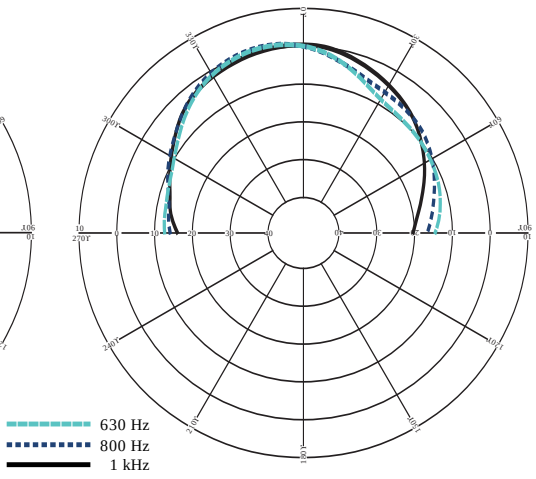


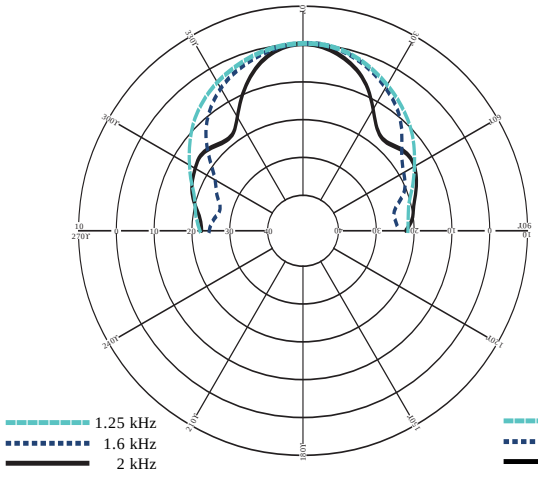


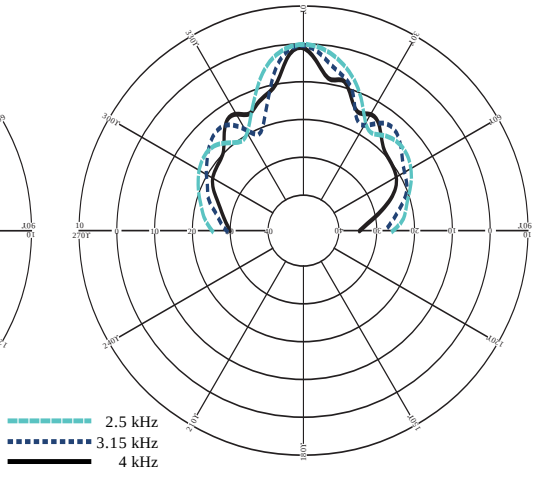


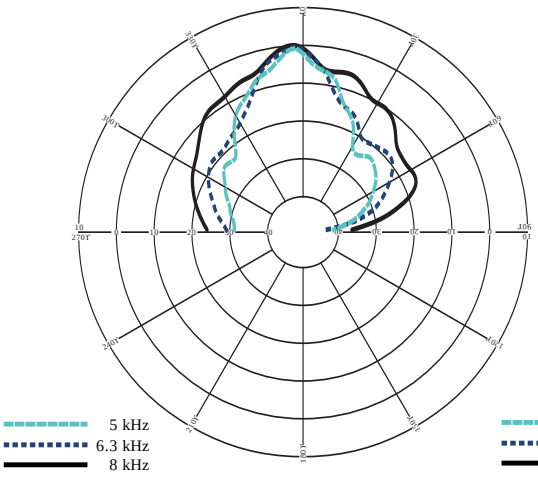
VERTICAL THIRD OCTAVE POLARS

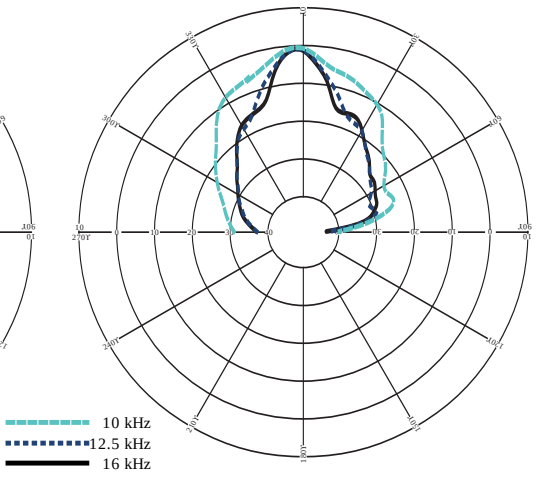












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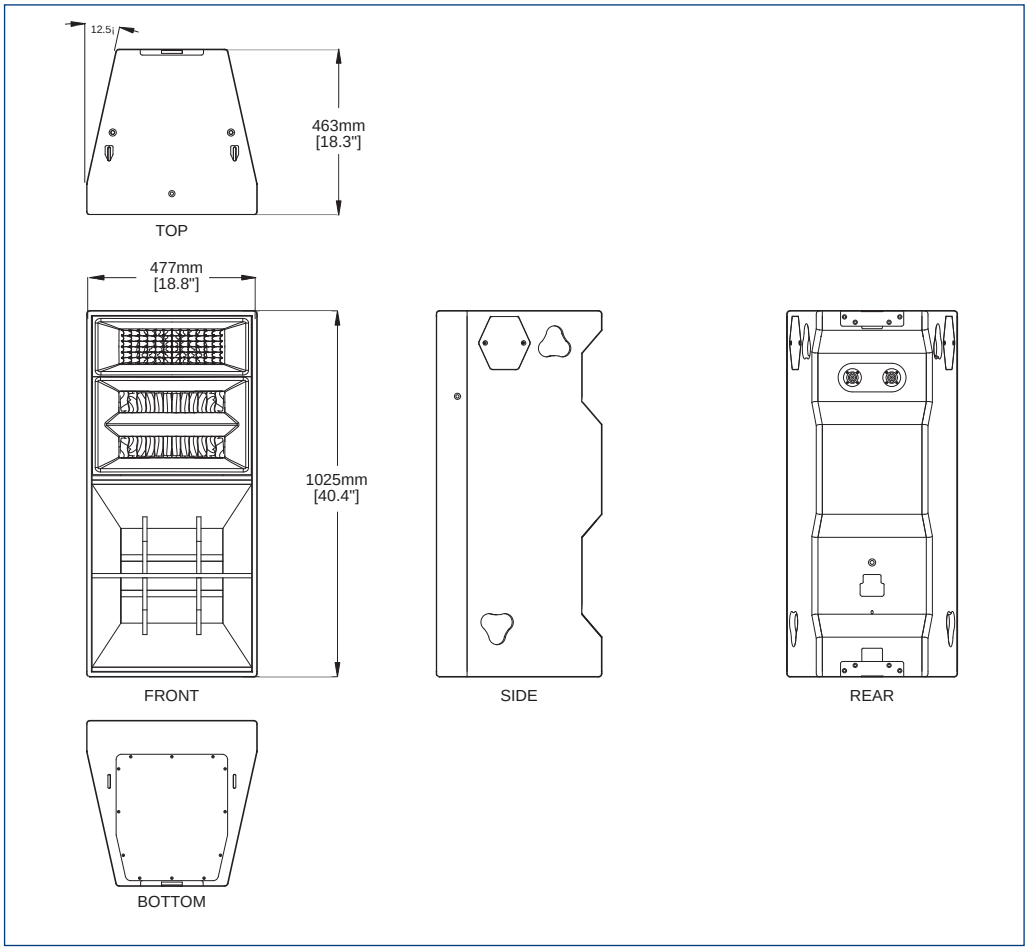
TA-880H

ASPECT SERIES ENGINEERING INFORMATION

ARCHITECTURAL & ENGINEER'S SPECIFICATIONS

The loudspeaker system shall be of the trapezoidal tri-amped type comprising: two high frequency drivers loaded with patented PolyHorn™, one 10" (254mm) high-mid frequency driver loaded with a patented PolyHorn™, and two 10" (254mm) low-mid frequency drivers loaded with TurboBass™ devices. Performance specifications of a typical production unit shall meet or exceed the following:- Frequency response, measured with a swept sine wave input shall be flat within ±4dB from 95Hz to 20kHz. Dispersion shall average 25°H x 15°V. Nominal impedance shall be LMF: 8 ohms, HMF: 16 ohms, HF: 12 ohms. Power handling 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: 108dB, HMF: 114dB, HF: 114dB. Maximum SPL (peak), measured with music program shall be 146dB. The loudspeaker system shall be the Turbosound Aspect TA-880H. No other system shall be acceptable unless the above combined performance specifications are equalled or exceeded. Flying and installation hardware shall be available comprising a range of load-certified components.

DIMENSIONS



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