# PANARAY® LT 9702® Series III
## Mid/High-Frequency Loudspeaker

PROFESSIONAL SYSTEMS DIVISION

## Product Overview

The Bose® Panaray® LT 9702®-III loudspeaker is a mid/high-frequency device designed for shorter throw distances. The LT 9702-III loudspeaker offers a 92˚ horizontal by 61˚ vertical dispersion pattern which is the broadest beamwidth of all the LT loudspeakers.

When arrayed correctly, LT 9702-III loudspeakers behave sonically as a large single source of sound energy. This coherent wavefront provides full fidelity and even coverage at critical mid and high frequencies throughout the coverage area of the array.

## Product Information

Each Panaray LT 9702-III loudspeaker uses two V2 mid-frequency drivers combined with a 1.4" compression driver mounted on a 90˚H x 70˚V constant directivity waveguide.

The LT 9702-III loudspeaker can be operated in a passive or bi-amplified mode.

In passive mode, the internal passive crossover network is utilized and a single amplified signal is connected to the loudspeaker.

In bi-amplified mode, the mid-frequency and high-frequency drivers are accessed through separate pins on the Neutrik NL4 connectors.

The 10-ply, marine-grade Baltic birch enclosure has sixteen hang points, four each on the top, bottom and sides. Each hang point will accept SAE $^{3}/_{8}$ - 16 rigging hardware.


## Key Features

- Pattern control of 92˚H x 61˚V
- Designed for indoor and many outdoor applications*
- Coherent wavefront performance at critical mid and high frequencies
- Proprietary V2 mid-frequency engine with integrated heat sink provides smooth mid-band frequency response and high driver reliability
- 10-ply, marine-grade Baltic birch enclosure
- 16 stainless steel hang points
- Contoured, powder coated stainless steel grille
- Selectable passive and bi-amp modes
- Designed for shorter throw distances
- Optional rigging accessories available from ATM Fly-Ware®

## Applications

The LT 9702-III loudspeaker is ideal for shorter throw applications and as down-fill tier in larger clusters for:

- Stadiums
- Arenas
- Houses of worship
- Auditoriums
- Performing arts facilities
- Outdoor* event facilities

* LT loudspeakers can be installed outdoors under cover.

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## Detailed Product Specifications – Acoustic

| | Passive | Bi-amplified | |
|---|---|---|---|
| | | Mid | High |
| Power Handling[1] | 140W | 140W | 75W |
| Impedance | 8Ω | 8Ω | 8Ω |
| Sensitivity[2] (at 1W @ 1m) | 104 dB-SPL | 105 dB-SPL | 104 dB-SPL |
| Maximum SPL[3] (pink noise @ 1m @ rated power) | 126 dB-SPL<br>132 dB-SPL (Peak) | 127 dB-SPL<br>133 dB-SPL (Peak) | 123 dB-SPL<br>129 dB-SPL (Peak) |
| Recommended Crossover | Internal Crossover @ 1.6 kHz | **Mid Frequency**<br>HPF: 160 Hz, Butterworth, 4th order<br>LPF: 1600 Hz, Butterworth, 4th order | |
| | | **High Frequency**<br>HPF: 1600 Hz, Butterworth, 4th order<br>LPF: 20 kHz, Butterworth, 4th order | |
| Frequency Range[4] (± 3 dB) | 180 Hz - 16 kHz | | |
| Beamwidth (-6 dB point, average 800 Hz - 5 kHz) | Horizontal: 92°, Vertical: 61° | | |

## Additional Product Information

The Panaray® LT 9702®-III loudspeaker requires equalization through the use of Bose® active equalization or by using 4-6 bands of parametric equalization along with a high-pass filter and a low-pass filter. Equalization is required for both passive and bi-amplified configurations.

Active equalization for the LT 9702-III loudspeaker can be provided by using the Panaray LT 9702-III EQ card or the Panaray system digital controller with presets for each Panaray speaker and combination of speakers. A parametric equalizer can replicate the active equalization curve below along with a high-pass filter and low-pass filter as shown.

Recommended controller:

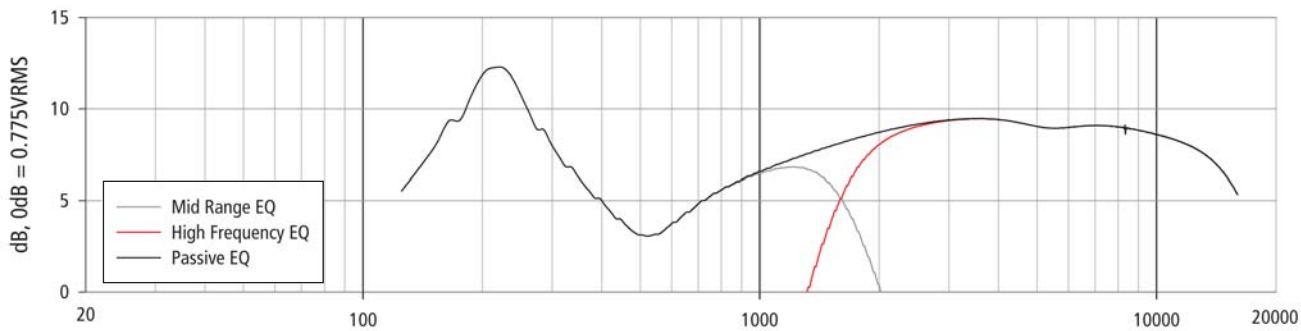
The Panaray system digital controller has a universal power supply for worldwide use. Variants of the product refer to the AC cord included with the product. There are five variations.

| | |
|---|---|
| Australia: | PC 028024 |
| Europe: | PC 028022 |
| North America: | PC 028021 |
| Japan: | PC 028025 |
| United Kingdom: | PC 028023 |

Available EQ Cards:

| | |
|---|---|
| Panaray LT 9702-II/III active equalization card | PC 017929 |
| LT mid-frequency EQ card | PC 018485 |

## Active Equalization Curves



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## Mid/High-Frequency Loudspeaker

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**Driver complement:**
Mid-frequency: Two V2 drivers per cabinet.
High-frequency: One 1.4" compression driver per cabinet.

**Construction features:**
10-ply, marine-grade Baltic birch enclosure with 16 stainless steel hang points and a powder coated stainless steel grille.

**Hang points:**
Sixteen steel hang points – four top, four bottom, and four on each side – allow for easy rigging. The hang points are SAE $^{3}/_{8}$ - 16 thread, with at least 18 usable threads.

**Rigging:**
Panaray® LT 9702®-III loudspeakers can be used with the ATM Fly-Ware® AFGS system. For more information contact ATM Fly-Ware at www.ATMflyware.com

**Dimensions:**
14.4"D x 22.5"W x 34.6"H
(368 mm x 572 mm x 879 mm)

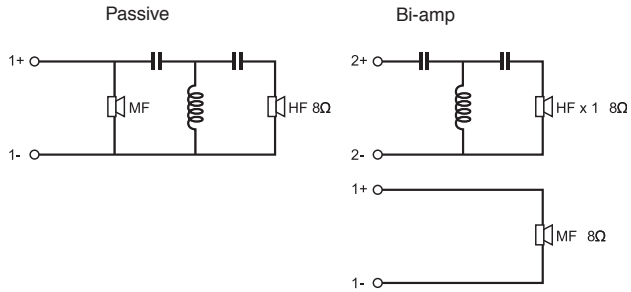
**Weight:**
96 lb (43 kg)

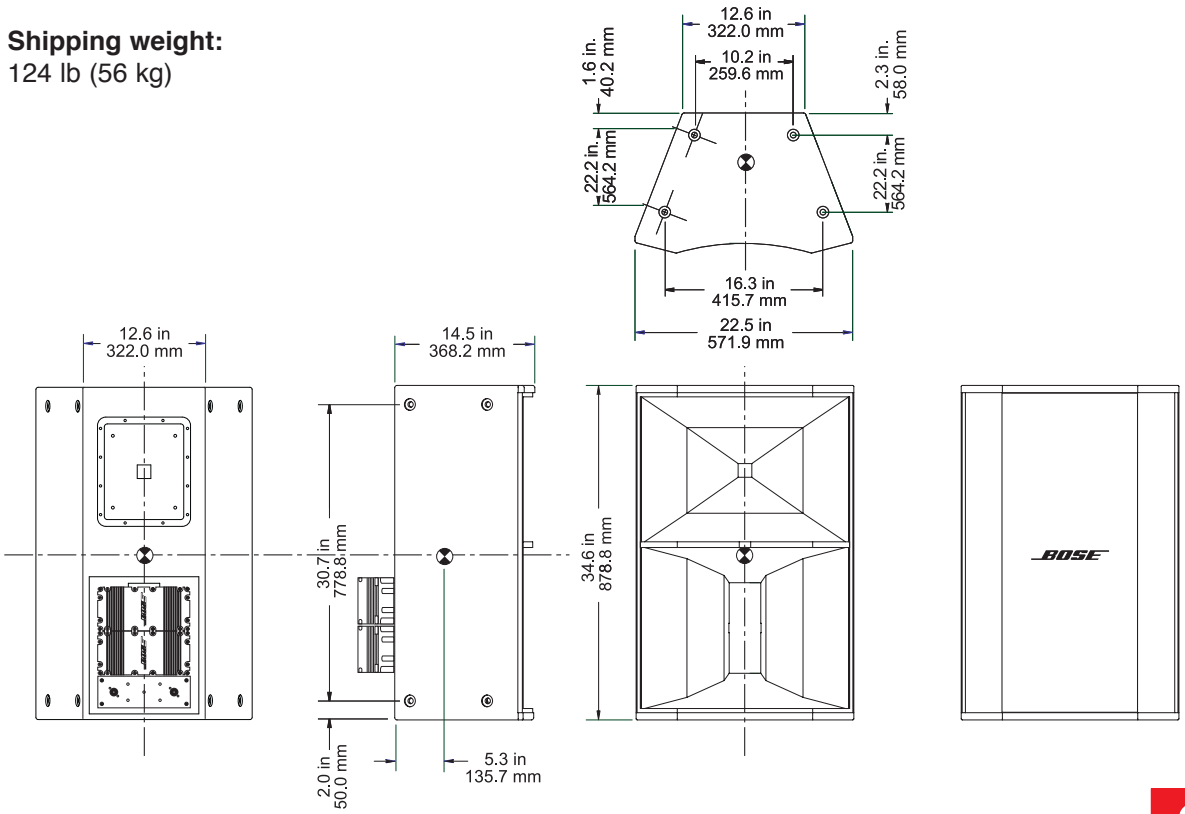
**Shipping weight:**
124 lb (56 kg)

**Finish:**
Each loudspeaker is manufactured with a textured black polyurethane finish and contoured, powder coated stainless steel grille. Both cabinet and grille can be painted to match the surroundings. Panaray LT 9702-III loudspeakers are available in Black.

**Connectors:**
Two Neutrik NL4 connectors wired in parallel with internal jumper for configuring passive and bi-amp modes.

**NL4 Wiring Diagram:**



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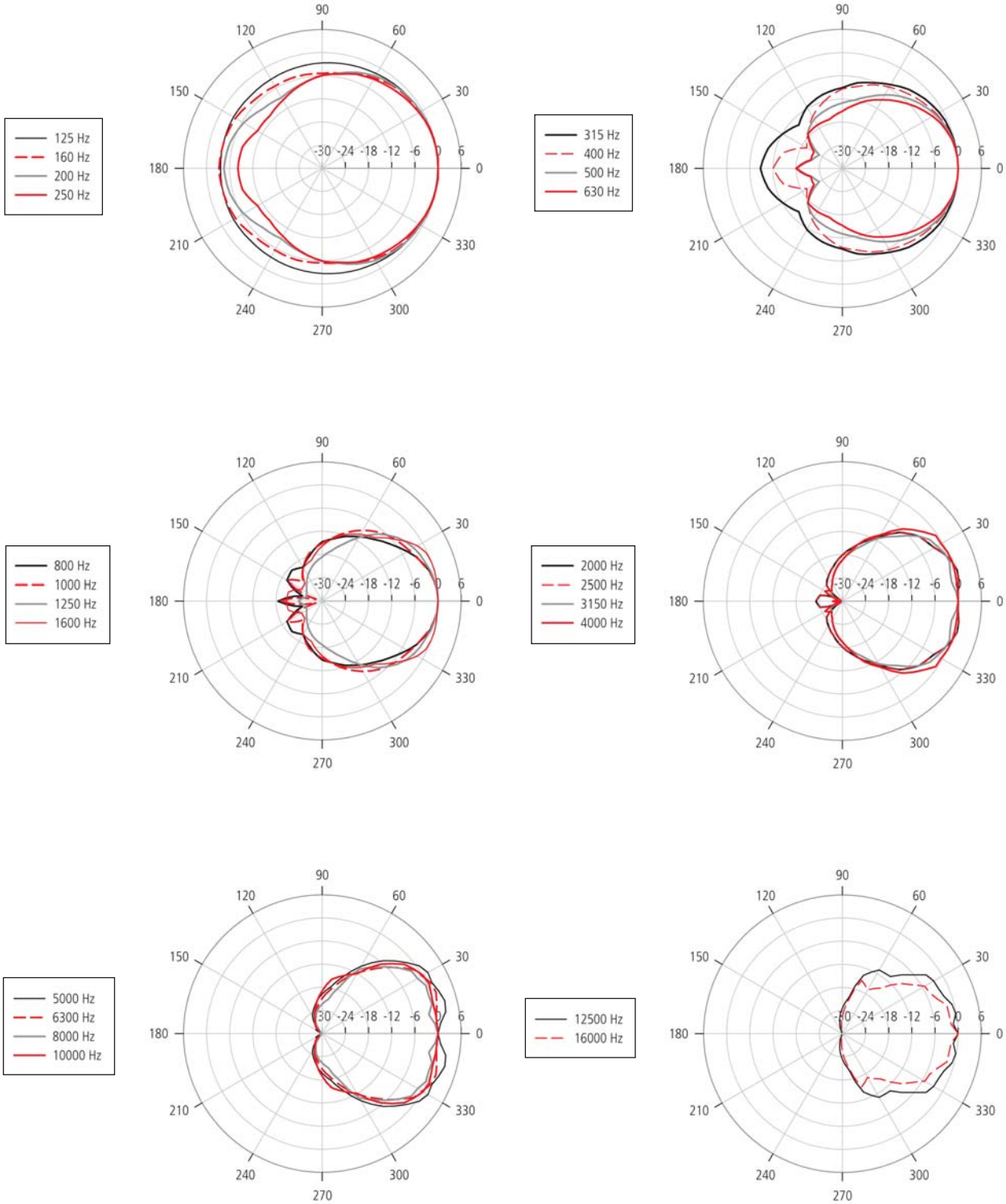
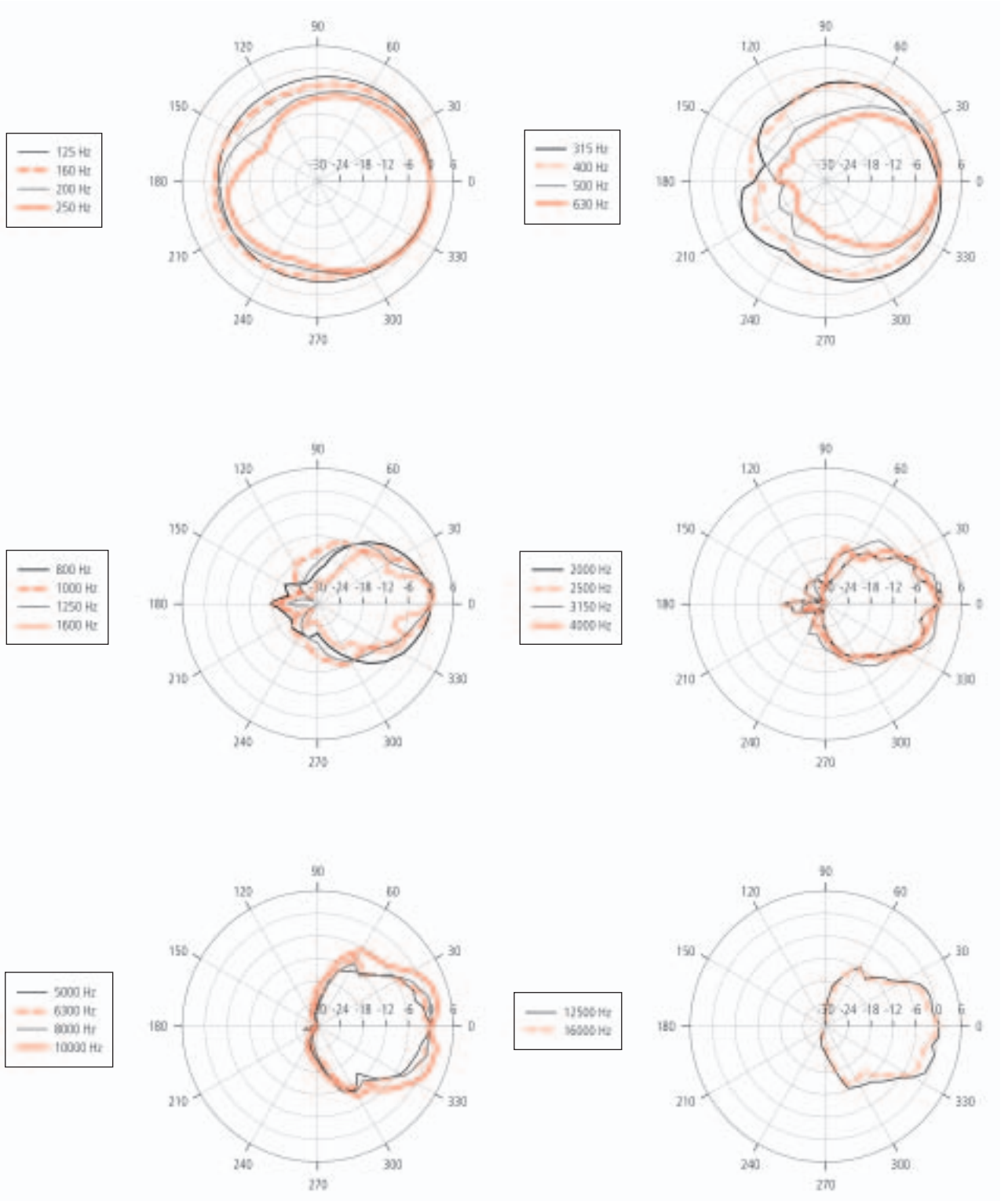
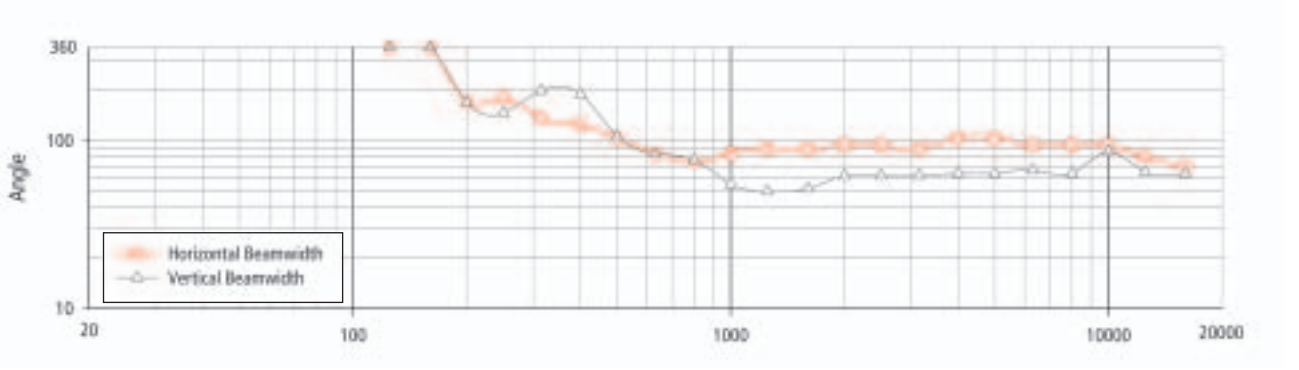
## Polar Plots ⅓ Octave Horizontal



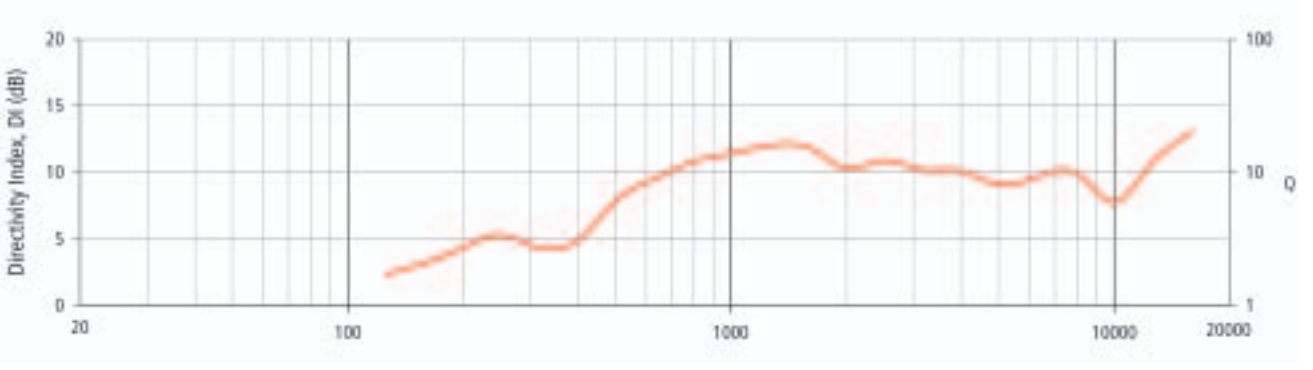
## Polar Plots ⅓ Octave Vertical



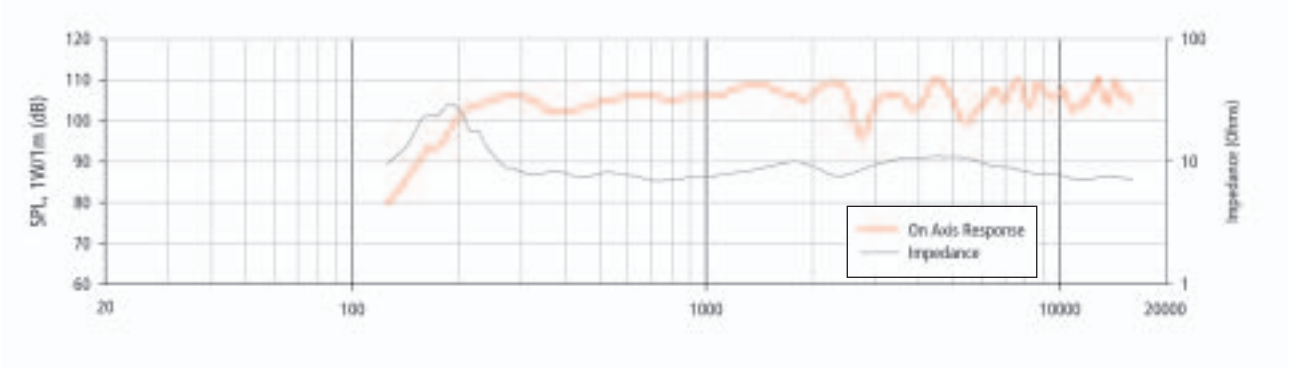
## Beamwidth




## Directivity Index and Q




## On-Axis Response – Impedance vs. Frequency



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## Engineers' and Architects' Specifications

The mid/high-frequency device shall be a multiple driver system as follows: The transducer complement shall consist of two mid-range drivers and one high-power compression driver mounted vertically, such that directional characteristics provide a smooth response.

The array enclosure shall be composed of 10-ply, marine-grade Baltic birch enclosure with 16 stainless steel hang points and a paintable contoured stainless steel grill, with outer dimensions of 14.4"D x 22.5"W x 34.6"H (368 mm x 572 mm x 879 mm); its weight shall be 96 lb (43 kg).

Nominal horizontal beamwidth shall be 92 degrees and nominal vertical beamwidth shall be 61 degrees (-6 dB point, 800 Hz – 5 kHz).

The loudspeaker shall comply with ANSI/EIA 636 for electrical and mechanical safety and with EU EMC directive 89/336/EEC.

All versions of this product shall bear the CE mark, unless restricted to the North American or Japanese markets.

The loudspeaker shall be the Bose® Panaray® LT 9702®-III loudspeaker.

## Technical Literature

PANARAY LT Reference Guide
PANARAY LT Array Guide
Designing PANARAY LT Systems
PANARAY LT Sample Clusters

Available at pro.bose.com

## Safety and Regulatory Compliance

The LT 9702-III loudspeaker complies with ANSI/EIA-636 *Recommended Loudspeaker Safety Practices* and with EU EMC Directives 89/336/EEC for CE marking.

## Safety Features

EIA-636: *Recommended Loudspeaker Safety Practices*

This document is a set of guidelines related to the safe design and testing of loudspeakers and their components set by the Electronics Industry Association. Although one cannot list a product to the standard, Bose has performed the tests outlined for the LT 9702 product, and it complies with the standard as set forth in EIA-636.

## Warranty

The Bose Panaray LT 9702-III mid/high-frequency loudspeaker is covered by a 5-year transferable limited warranty.

## Replacement Parts

| | |
|---|---|
| LT 9702-III grille (includes screws) | PN 276846 |
| Replacement screws for grille | PN 276847 |
| Replacement logo | PN 276848 |
| Input panel with crossover board | PN 276854 |
| Compression driver | PN 276860 |
| Diaphragm for compression driver | PN 276861 |
| Compression driver plate with screws | PN 276849 |
| V2 assembly with drivers | PN 276850 |

All replacement parts are available at authorized Bose Service Centers.

## How our loudspeakers are measured

### 1. Power Handling

Full-bandwidth pink noise, meeting the IEC Standard #268-5, is applied to the loudspeaker and amplified to a level at the loudspeaker terminals corresponding to the power handling of the loudspeaker. The loudspeaker must show no visible damage or measurable loss of performance after 100 hours of continuous testing.

### 2. Sensitivity

Full-bandwidth pink noise is applied to the loudspeaker with its active equalization curve and amplified to a level at the loudspeaker terminals corresponding to 1 watt as referenced to the nominal impedance. The average sound pressure level (dB-SPL) is measured at 1 meter from the speaker in an anechoic environment.

### 3. Maximum SPL

Full-bandwidth pink noise is applied to the loudspeaker with its active equalization curve and amplified to a level at the loudspeaker terminals corresponding to the long-term rated power handling of the speaker. The average sound pressure level (dB-SPL) is measured at 1 meter from the speaker in an anechoic environment.

### 4. Frequency Range

Sine waves are injected into the loudspeaker and the level is adjusted to 1W, as referenced to the nominal impedance, and the level measured at 1m. Resulting graph is smoothed by 0.05 octave-band.



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