

RoomMatch® RM284520 and RM452820

asymmetrical array modules

Key Features



TECHNICAL DATA SHEET

- **All the benefits of the original 20 RoomMatch array module loudspeakers** - Concert-quality sound quality for live music and outstanding spoken-word clarity with industry-leading seat-to-seat consistency
- **22 different horizontally asymmetrical coverage patterns** - Improves sound quality by reducing side-wall reflections in many room shapes
- **Industry's only large-format asymmetrical waveguides** - Pattern control down to 800 Hz to improve vocal clarity and intelligibility
- **Asymmetrical patterns improve stereo soundstage effects** – Particularly when used in long, narrow rooms
- **Simplifies installation for many room shapes** - Provides consistent seat-to-seat coverage without the need to "yaw-in" array aiming

Product Overview

RoomMatch asymmetrical array modules add to existing RoomMatch full-range modules to provide 22 modules with horizontally asymmetrical coverage patterns. For many room shapes, asymmetrical coverage patterns improve sound quality by reducing side-wall reflections without the need to "yaw in" array aiming. Additionally, asymmetrical coverage patterns provide enhanced stereo soundstage when used in left/right pairs, or true left/center/right systems, for many venue shapes.

Technical Specifications

| Single Module Performance | | | | |
|---|--|------------|--------------------|------------|
| Frequency Response (+/-3 dB) ¹ | 60 Hz - 16 kHz | | | |
| Frequency Range (-10 dB) | 55 Hz - 16 kHz | | | |
| Recommended High-Pass Protection Filter | 50 Hz with minimum 24-dB / octave (4th order) slope | | | |
| Nominal Coverage Pattern (H x V) ² | 28°+45° x 20° or 45°+28° x 20° | | | |
| Recommended Crossover Frequency | 550 Hz (acoustic, active, external DSP) | | | |
| Long-Term Power Handling ³ | Low Frequency | | High Frequency | |
| | 500 W (2000 W peak) | | 150 W (600 W peak) | |
| Nominal Impedance | 4 Ω | | 8 Ω | |
| | LF No EQ | LF With EQ | HF No EQ | HF With EQ |
| Sensitivity (SPL / 1 W @ 1 m) | 94 dB | 93 dB | 109 dB | 104 dB |
| Maximum SPL @ 1 m ⁴ | 121 dB | 120 dB | 131 dB | 126 dB |
| Calculated Maximum SPL @ 1 m, peak | 127 dB | 126 dB | 137 dB | 132 dB |
| Transducers | | | | |
| Low Frequency | 2 x Bose LF10 high-excursion 10-inch woofers (3-inch voice coil) | | | |
| High Frequency | 6 x Bose® EMB2 extended-midrange compression driver (2-inch voice coil) | | | |
| Physical | | | | |
| Enclosure | Baltic birch plywood, engineered plastics and steel frame | | | |
| Finish | Two-part spray polyurethane coating on plywood, black | | | |
| Grille | 19-gauge (1.0 mm) perforated steel, powder-coated finish, black | | | |
| Environmental | Indoor use only | | | |
| Connectors | Two (2) parallel-wired Neutrik® Speakon NL4 connectors | | | |
| Suspension / Mounting | Integrated side-plate rigging hardware; optional array frame accessories | | | |
| Dimensions | 20.0" H x 39.1" W x 23.6" D (501 mm H x 993 mm W x 598 mm D) | | | |
| Net Weight | 123 lb (55.8 kg) | | | |
| Shipping Weight | 180 lbs (81.6 kg) - approximate with wood pallet | | | |
| Product Code | | | | |
| | RoomMatch® 284520 | | RoomMatch® 452820 | |
| Black | 626425-2760 | | 626425-7260 | |

Footnotes:

- ¹ Frequency response and range measured on-axis with passive crossover in an anechoic environment.
- ² Left-of-center angle + right-of-center horizontal angles (stage view) x vertical angles (stage pairs reverse horizontal angles).
- ³ Bose extended-lifecycle test using pink noise filtered to meet IEC268-5, 6-dB crest factor, 500-hour full-power duration.
- ⁴ Maximum SPL calculated from sensitivity and power handling specifications, exclusive of power compression.

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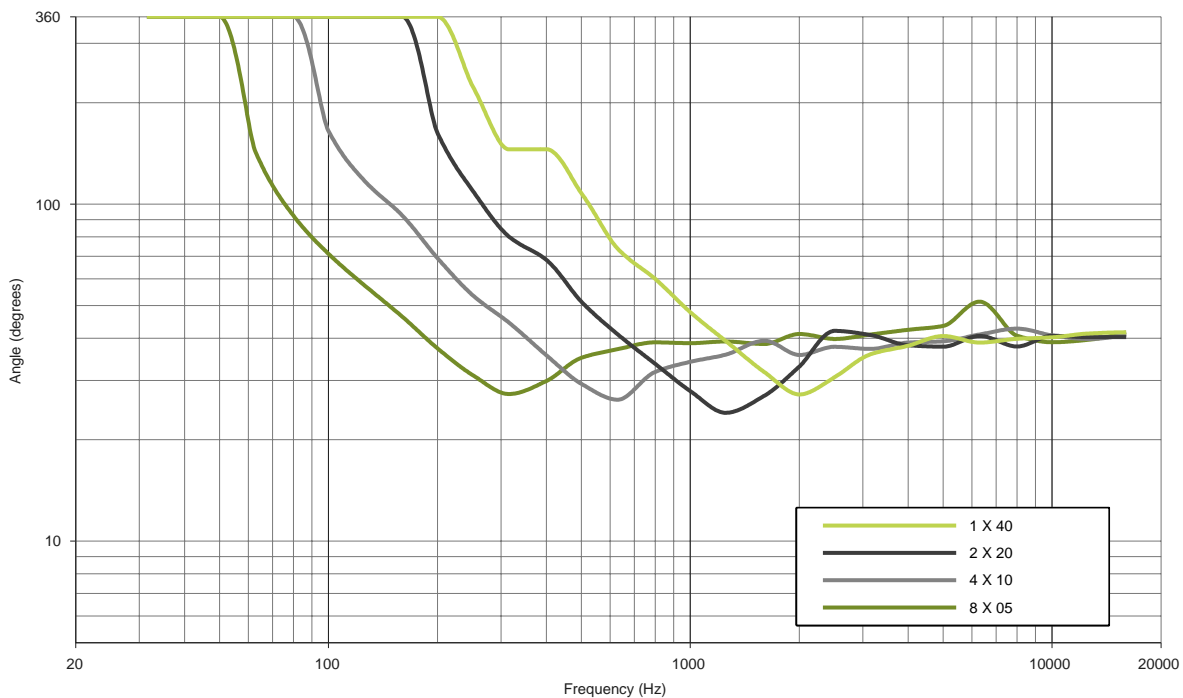
asymmetrical array modules



Multi-Module Performance, LF Section

| Array Configuration | | | | |
|--|------------|------------|------|------|
| Total Nominal Vertical Coverage Angle | 40° | 80° | 120° | 160° |
| Number of Modules in Array | 2 | 4 | 6 | 8 |
| Total Power Handling, Array LF Section | 1000 W | 2000 W | | |
| 50 Hz High-Pass | | | | |
| Array LF Sensitivity | 96 dB SPL | 98 dB SPL | | |
| Maximum Array SPL @ 1 m, continuous | 126 dB SPL | 131 dB SPL | | |
| Maximum Array SPL @ 1 m, peak | 132 dB SPL | 137 dB SPL | | |
| Maximum Array SPL @ 16 m | 102 dB SPL | 107 dB SPL | | |
| 80 Hz High-Pass | | | | |
| Array LF Sensitivity | 97 dB SPL | 99 dB SPL | | |
| Maximum Array SPL @ 1 m, continuous | 127 dB SPL | 132 dB SPL | | |
| Maximum Array SPL @ 1 m, peak | 133 dB SPL | 138 dB SPL | | |
| Maximum Array SPL @ 16 m | 103 dB SPL | 108 dB SPL | | |

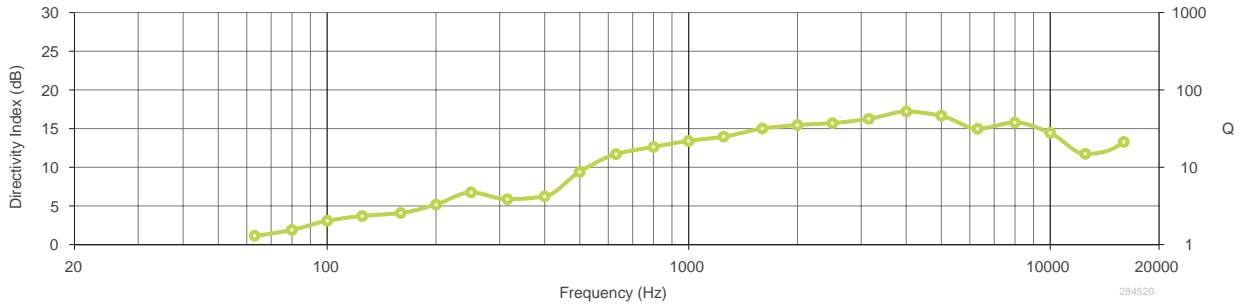
Multi-Module Vertical Beamwidth



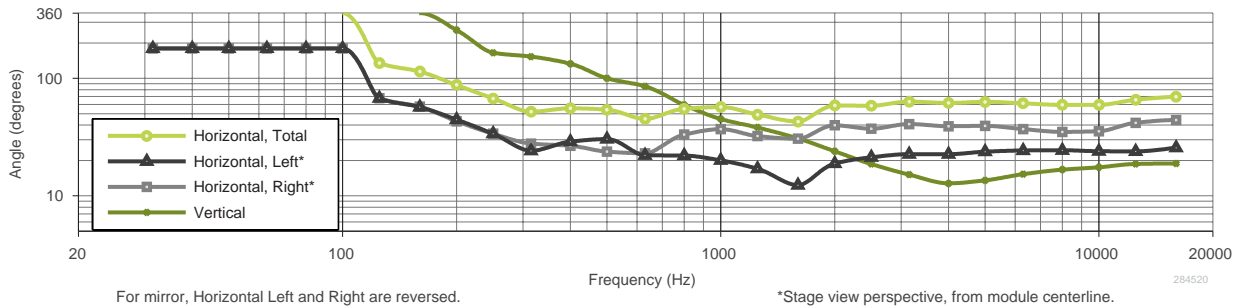
RoomMatch® RM284520 and RM452820 asymmetrical array modules



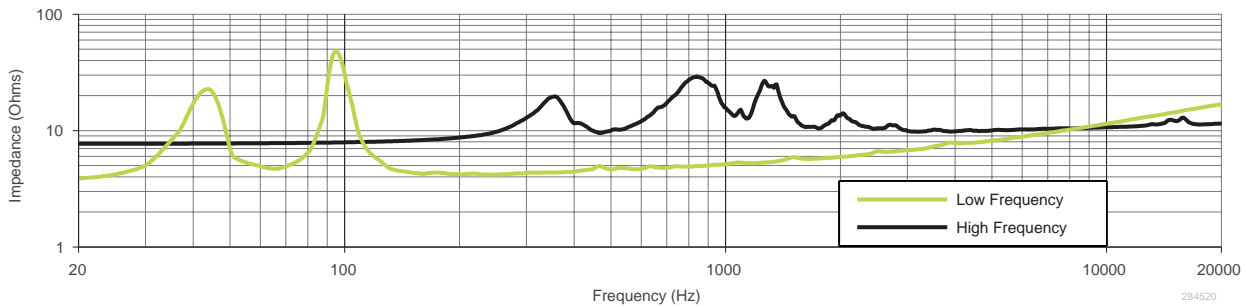
Directivity Index and Q



Beamwidth



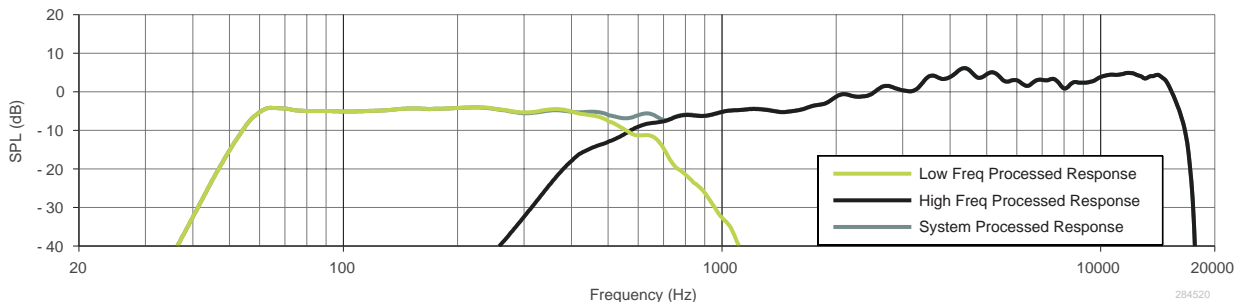
Impedance



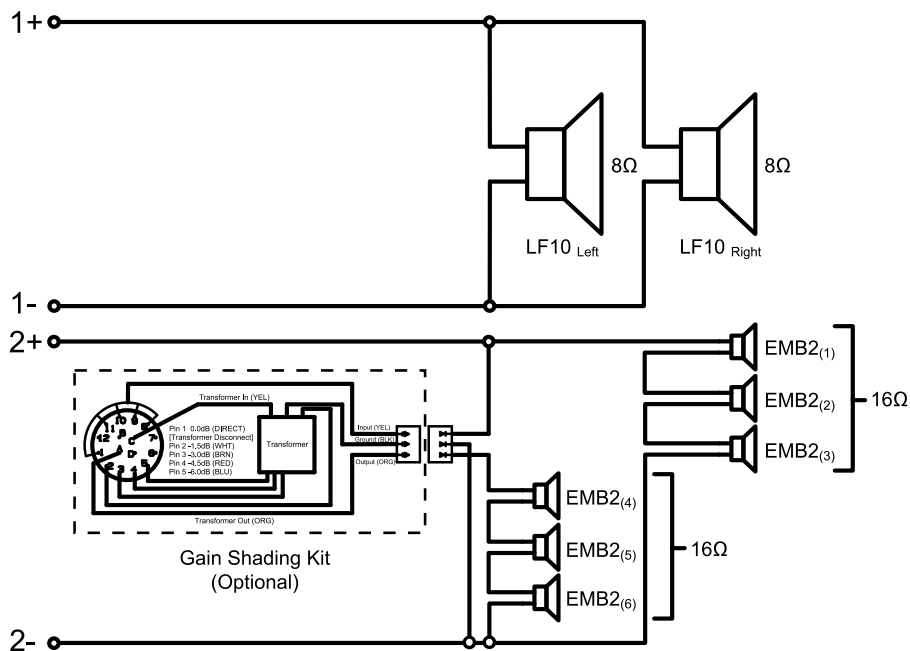
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On-Axis Response



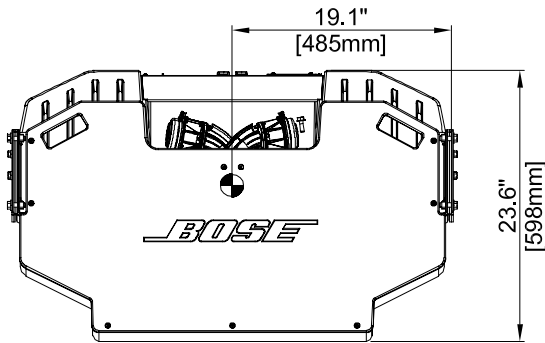
Wiring Diagram



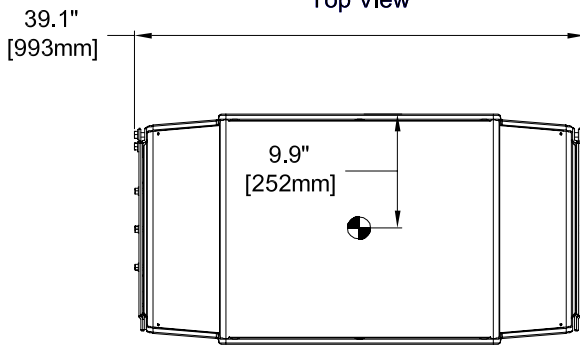
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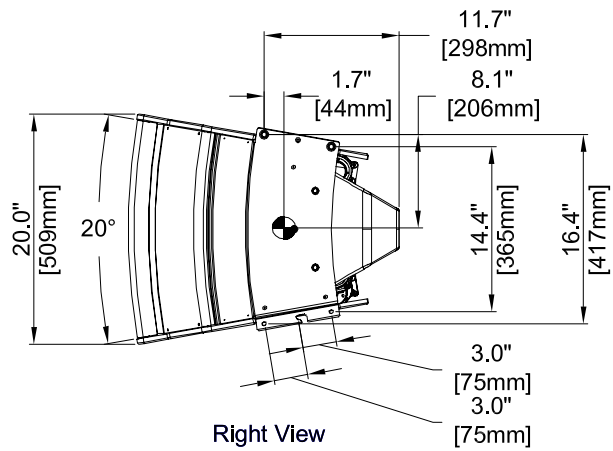
Mechanical Diagrams



Top View



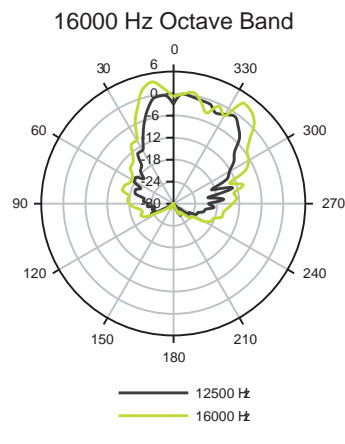
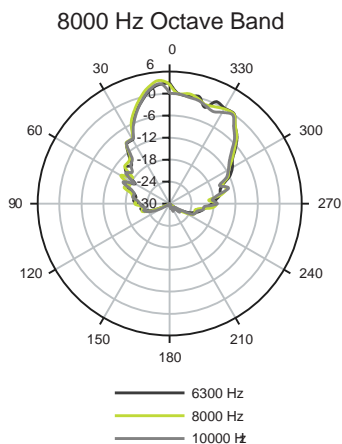
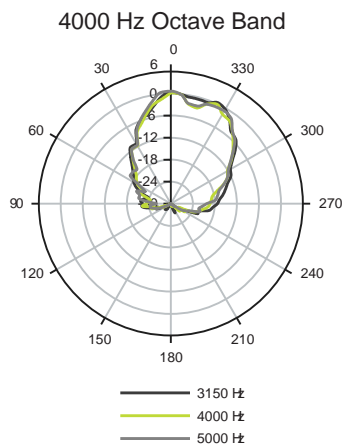
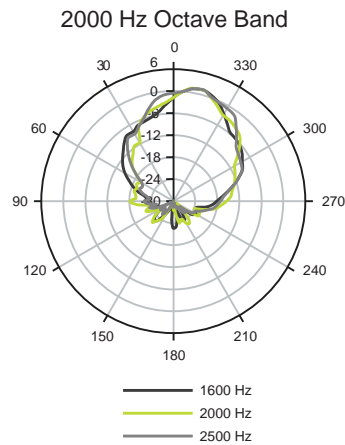
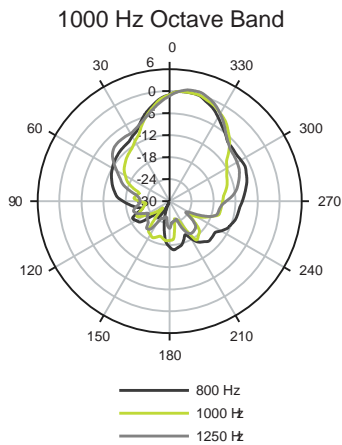
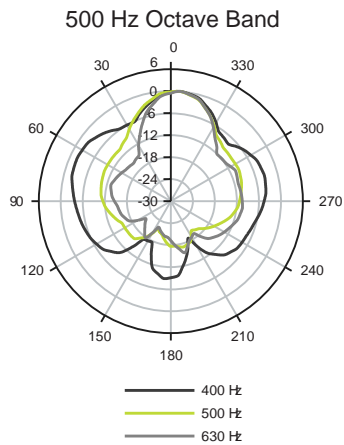
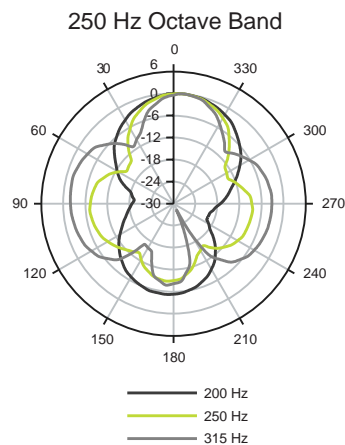
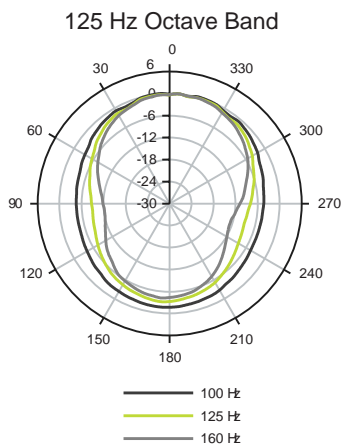
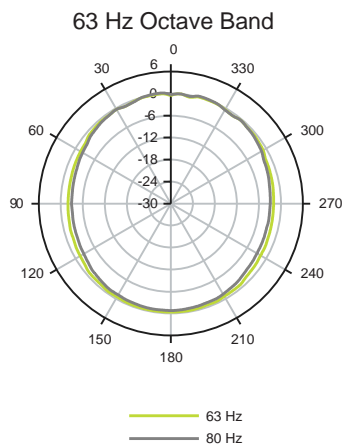
Front View



Right View

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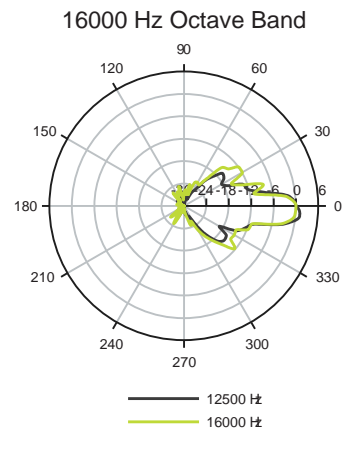
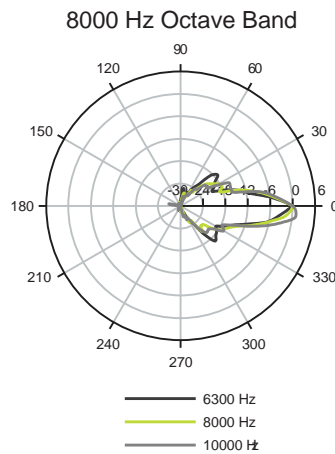
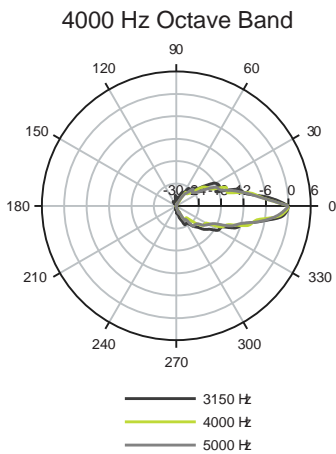
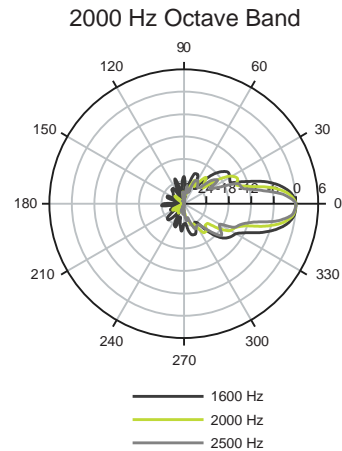
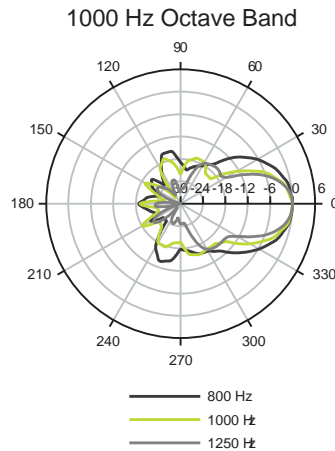
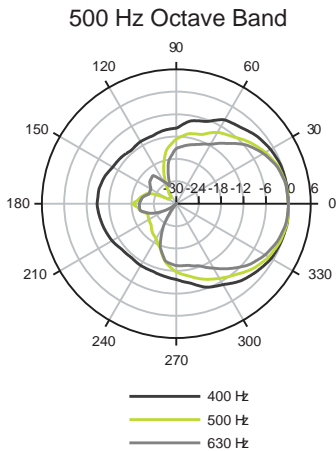
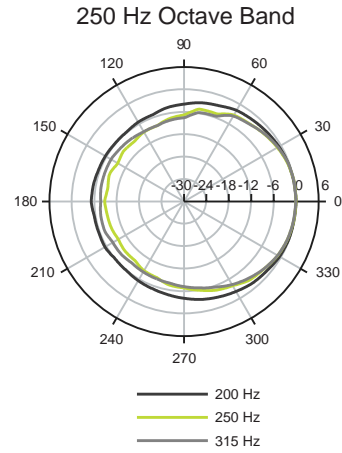
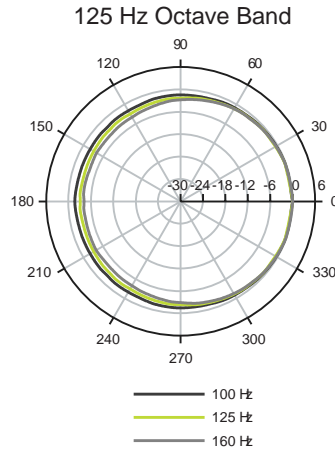
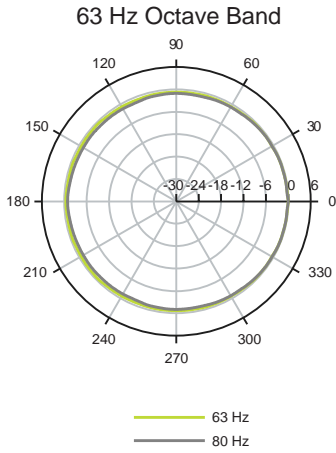
Horizontal Plots



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Vertical Plots



RoomMatch® RM284520 and RM452820

asymmetrical array modules Architects' and Engineers' Specifications

The 2-way, full-range array module loudspeaker shall contain six (6) 2-inch titanium-diaphragm compression drivers mounted to a continuous-arc diffraction-slot manifold. The manifold will provide acoustic summation that is free from significant peaks or dips in response, from 500 Hz to 16 kHz, and exit into a constant-directivity waveguide with effective pattern control to approximately 1 kHz. The low-frequency section shall contain two (2) 10-inch cone transducers with 3-inch voice coils, with each woofer contained in a separate vented enclosure. The array module will require external, active digital signal processing for transducer crossover and frequency response equalization.

The array module loudspeaker shall meet the following performance specifications: On-axis system frequency response shall be 60 Hz to 16 kHz (+/- 3 dB) with recommended crossover and active equalization. The low-frequency sensitivity shall be 93 dB SPL in free field with 1 W input, and be capable of producing peak output of 126 dB SPL on axis at 1 meter, with recommended equalization. The high-frequency sensitivity shall be 104 dB SPL in free field with 1 W input, and be capable of producing peak output of 132 dB SPL on axis at 1 meter, with recommended equalization. The low-frequency section shall have a long-term power handling rating of 500 W and a nominal input impedance of 4 ohms. The high-frequency section shall have a long-term power handling rating of 150 W and a nominal input impedance of 8 ohms. Power handling will be rated using IEC 268-5 pink noise, 6-dB crest factor, for 100 hours, with recommended EQ. The nominal coverage pattern shall be 28°+45° horizontal x 20° vertical or 45° +28° horizontal x 20° vertical as required.

The array module loudspeaker shall be constructed of 11-ply Baltic birch plywood, protected by a polyurethane coating, for top and bottom waveguide sections, engineered-plastic composites for the woofer enclosures, and steel spar beams connecting the integral side-plate steel rigging hardware. The rigging hardware shall support up to 8 similar array module loudspeakers with a 10:1 Safety Factor. The woofer and waveguide sections will be protected by separate 19-gauge (1.0 mm) perforated steel grilles with powder-coated finish. Input connectors shall be two (2) parallel-wired Neutrik® NL4 Speakon® connectors. The finish will be black (paintable).

Loudspeaker dimensions shall be 20.0 x 39.1 x 23.6 in (509 x 993 x 598 mm) and net weight shall be 123 lb. (55.8 kg).

The 2-way, full-range array module loudspeaker shall be the Bose® RoomMatch® RM284520 or RM452820 as required.



Additional Notes

- **Environment:** Measured at 10 m. Responses are time-windowed and processed to eliminate room effects, approximating an anechoic environment
- **Beamwidth:** 1/3 octave band smoothed beamwidth of single module measured at 10 m. Angle determined as -6dB point from the peak
- **On-Axis Response:** 1/10 octave band smoothed response with recommended active EQ
- **Horizontal/Vertical Plots:** 1/3 octave band smoothed polar responses with recommended active EQ applied to the module
- **Multi-Module Vertical Beamwidth:** 1/3 octave band smoothed beamwidth of an array simulated in the far field. Angle determined as -6dB point from the peak
- **Array LF Sensitivity:** On axis SPL of an array with 1 W input for the entire array LF section. Simulated using Modeler® software at 16 m and referenced to 1 m
- **Maximum Array SPL @ 1 m:** Maximum SPL calculated from sensitivity and power handling specifications, exclusive of power compression