RoomMatch® RM12040
array module loudspeaker

TECHNICAL DATA SHEET

Key Features

- **Concert-quality sound –** New Bose® patented technologies combine to provide audio quality equaling that of the best concert-sound systems, in a fixed-installation format
- **RoomMatch® waveguide technology –** 5 vertical and 4 horizontal coverage pattern choices allow arrays to direct sound precisely to desired listening areas, improving audio quality by reducing unwanted acoustic reflections
- **Progressive directivity arrays –** A new class of curvilinear array in which the coverage and directivity index of each module is selected to optimize room coverage and system efficiency
- **Continuous-arc diffraction-slot (CADS) manifold –** Proprietary Bose design provides interference-free acoustic summation of 6 compression drivers and acoustically equal spacing of diffraction slots across multiple modules
- **Bose EMB2 and LF10 drivers –** Patented new Bose transducers combine to deliver the vocal clarity of 3-way systems with the improved polar response typical of 2-way systems

Product Overview

RoomMatch® RM12040 array module delivers superb audio quality for fixed-installations in almost any room size, shape, acoustic requirement or budget. Overcoming the acoustic limitations of both line array and point-source conventional designs, RoomMatch® modules form a new class of curvilinear array that allows seamless audio quality, with consistent front-to-back and side-to-side tonal balance.

Technical Specifications

System Performance				
Frequency Response (+/-3 dB)[1]	60 Hz - 16 kHz			
Frequency Range (-10 dB)[1]	55 Hz - 16 kHz			
Recommended High-Pass Filter	50 Hz with minimum 24 dB / octave (4th order) slope			
Nominal Coverage Pattern (H x V)	120° H x 40° V			
Recommended Crossover Frequency	550 Hz (acoustic, active, external DSP)			
	Low Frequency		**High Frequency**	
Long-Term Power Handling[2]	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)[3]	94 dB SPL	93 dB SPL	106 dB SPL	99 dB SPL
Maximum SPL @ 1 m[4]	121 dB SPL (127 dB SPL peak)	120 dB SPL (126 dB SPL peak)	128 dB SPL (134 dB SPL peak)	121 dB SPL (127 dB SPL peak)
Transducers				
Driver Compliment	HF: 6 x Bose EMB2 extended mid-band high frequency compression drivers (2-inch voice coil) LF: 2 x Bose LF10 ultra-linear 10-inch woofers (3-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 NL4 Neutrik® Speakon® connectors			
Suspension / Mounting	Integrated side-plate rigging hardware; optional array frame accessories			
Dimensions	24.0" H x 39.1" W x 23.6" D (610 mm x 993 mm x 598 mm)			
Net Weight	124 lb (56.2 kg)			
Shipping Weight	180 lb (81.6 kg) - approximate with pallet			
Product Code				
Black	626425-9980			

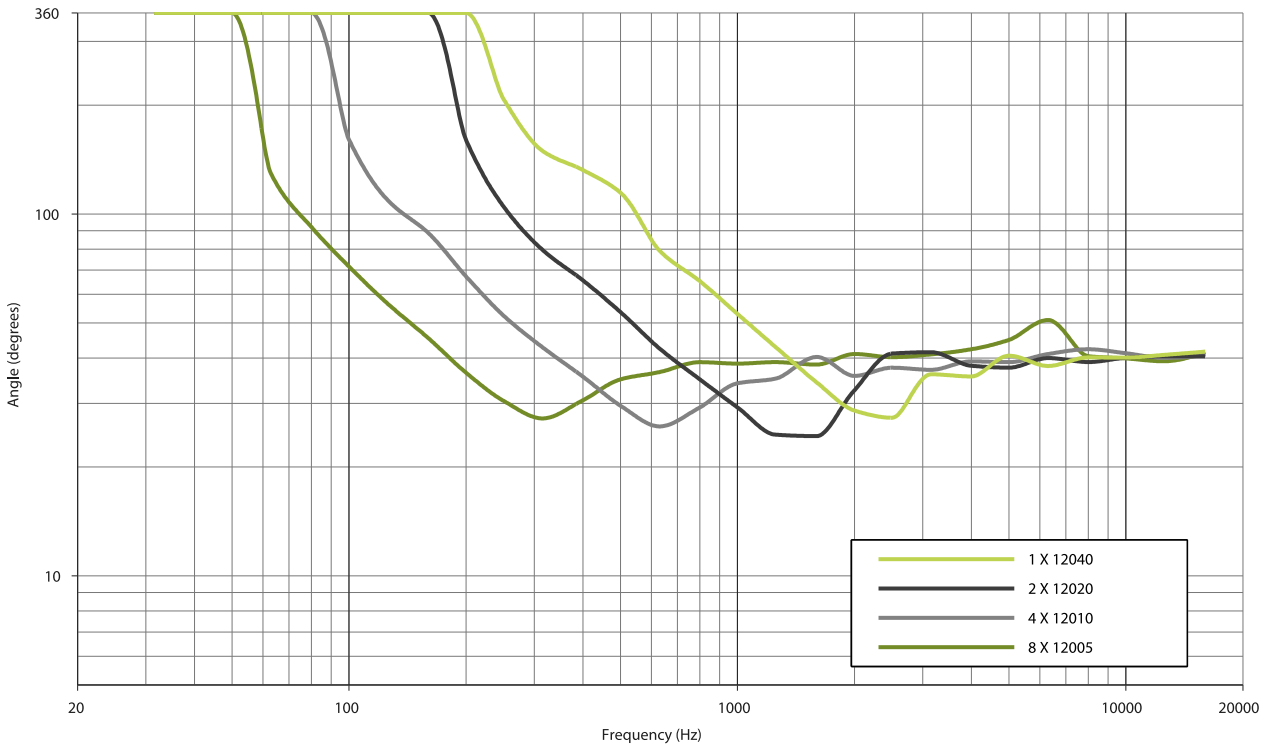
Footnotes:

1 Frequency response and range measured on-axis with recommended active EQ in an anechoic environment.
2 Power handling tested using pink noise filtered to meet IEC 268-5, 6 dB crest factor, 100 hours, with recommended EQ.
3 Sensitivity measured in free field (no boundary-loading gain) with recommended active EQ, referenced to 1W/1m.
4 Maximum SPL calculated from sensitivity and power handling specifications, exclusive of power compression.

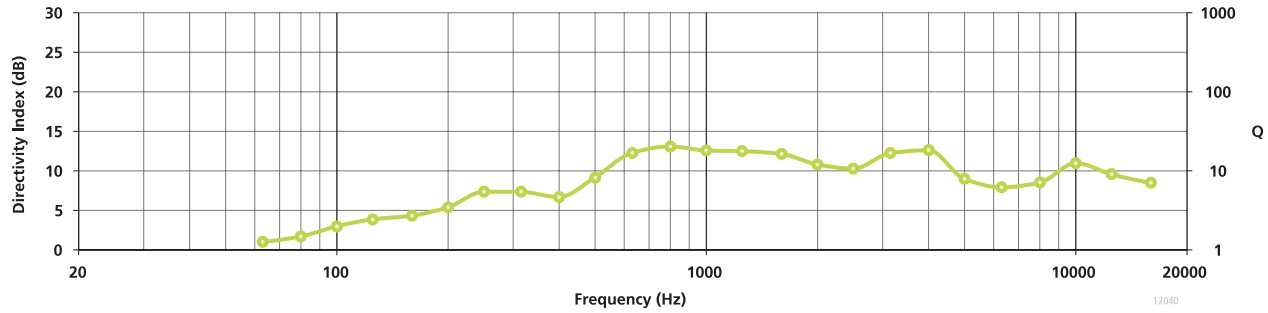
Multi-Module Performance, LF Section

Array Configuration				
Total Nominal Vertical Coverage Angle	80°	160°	240°	320°
Number of Modules in Array	2	4	6	8
Total Power Handling, Array LF Section	1000 W			
50 Hz High-Pass				
Array LF Sensitivity	96 dB SPL			
Maximum Array SPL @ 1 m, continuous	126 dB SPL			
Maximum Array SPL @ 1 m, peak	132 dB SPL			
Maximum Array SPL @ 16 m	102 dB SPL			
80 Hz High-Pass				
Array LF Sensitivity	97 dB SPL			
Maximum Array SPL @ 1 m, continuous	127 dB SPL			
Maximum Array SPL @ 1 m, peak	133 dB SPL			
Maximum Array SPL @ 16 m	103 dB SPL			

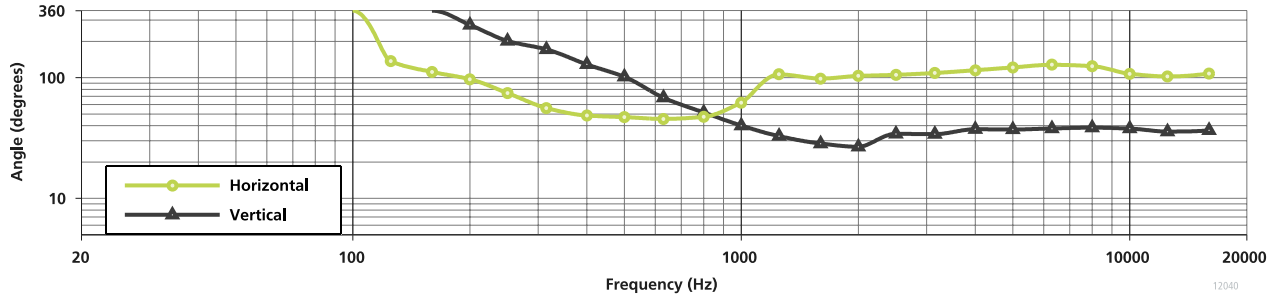
Multi-Module Vertical Beamwidth



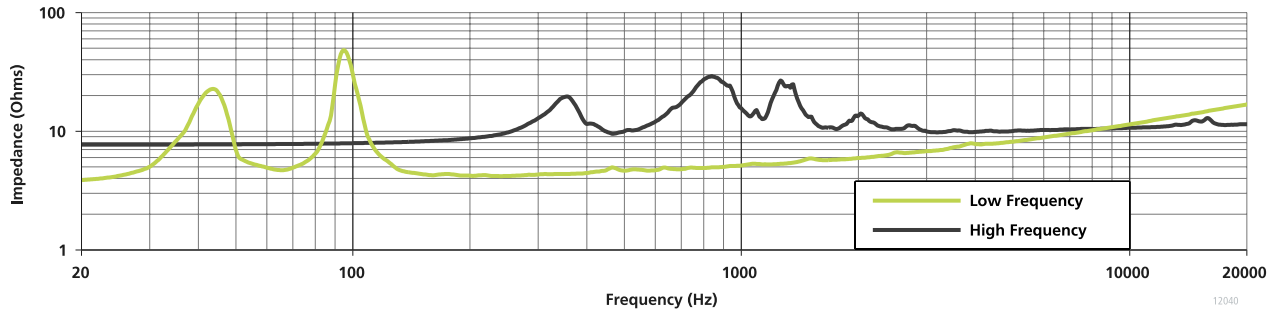
Directivity Index and Q



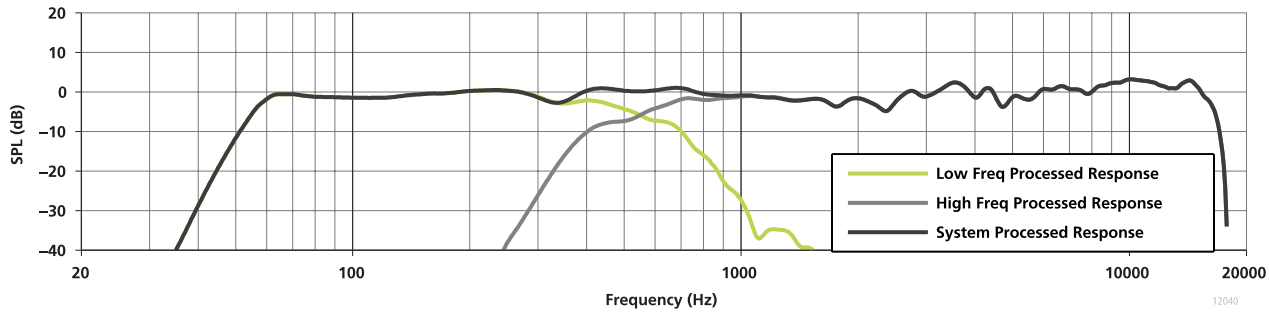
Beamwidth



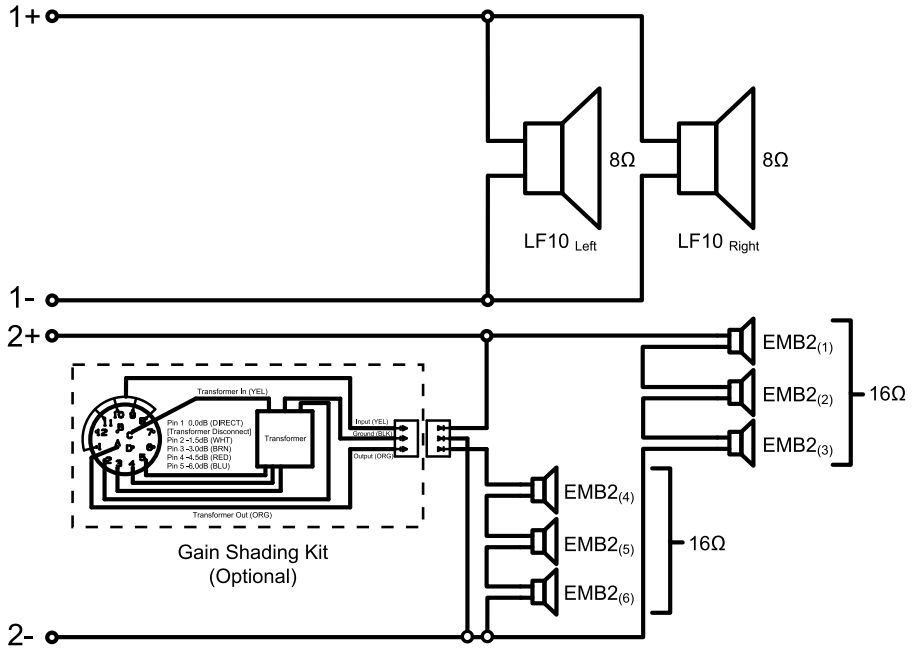
Impedance



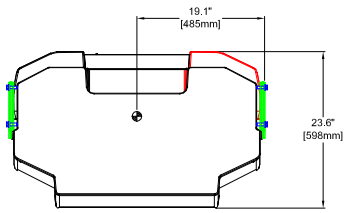
On-Axis Response



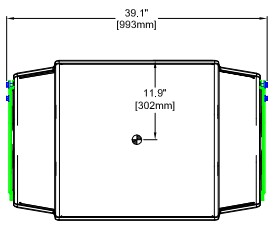
Wiring Diagram



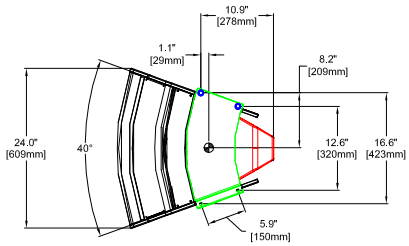
Mechanical Diagrams



Top View



Front View

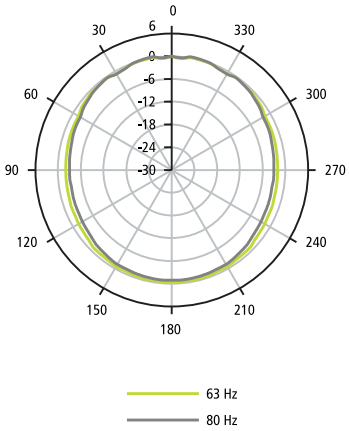


Right View

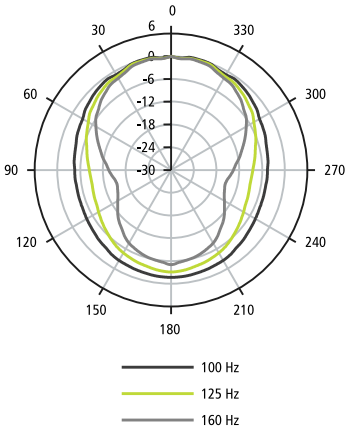
TECHNICAL DATA SHEET

Horizontal Plots

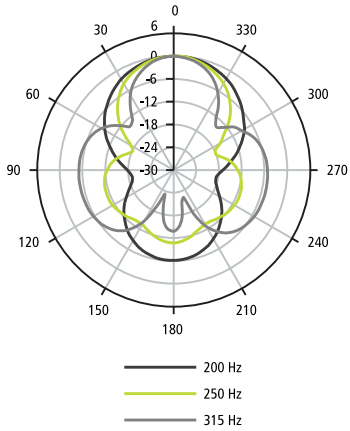
63 Hz Octave Band



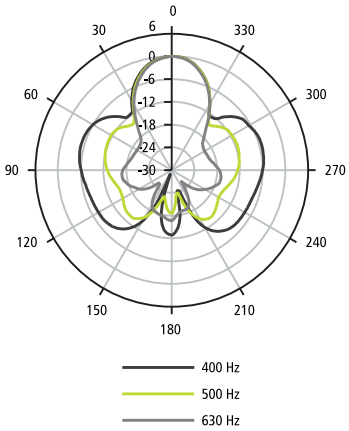
125 Hz Octave Band



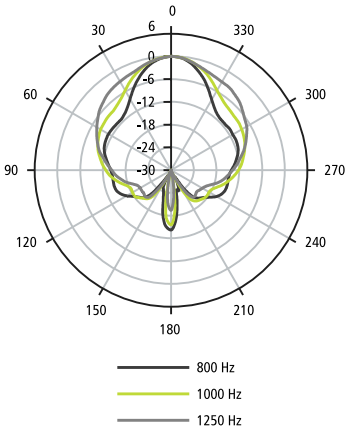
250 Hz Octave Band



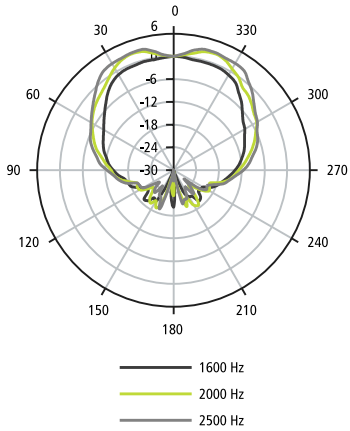
500 Hz Octave Band



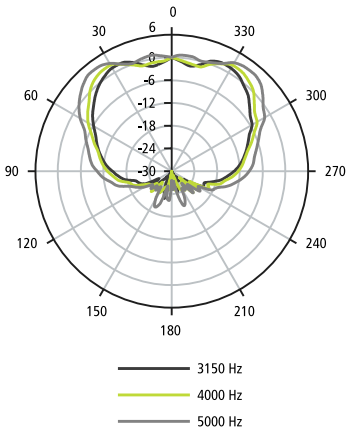
1000 Hz Octave Band



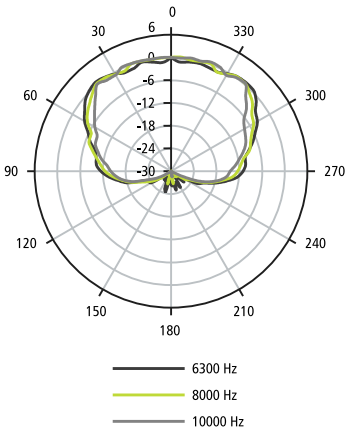
2000 Hz Octave Band



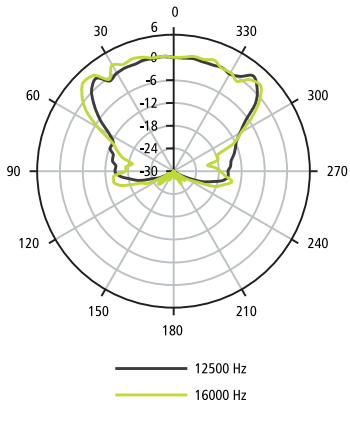
4000 Hz Octave Band



8000 Hz Octave Band



16000 Hz Octave Band



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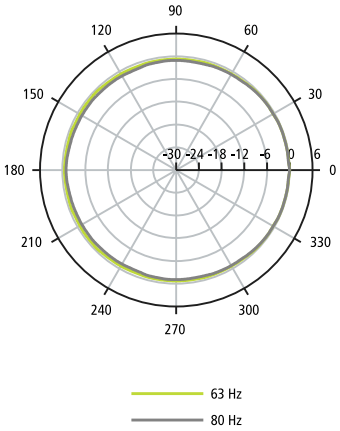
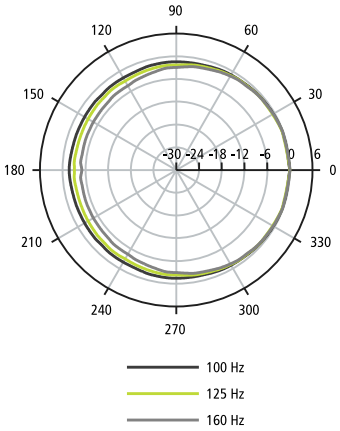
Vertical Plots

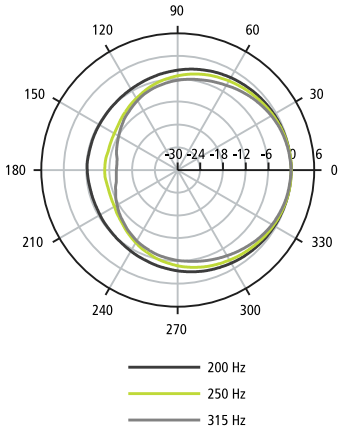
63 Hz Octave Band



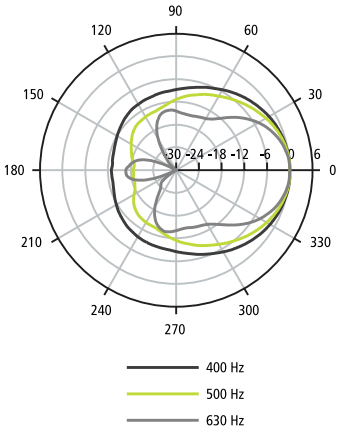
125 Hz Octave Band



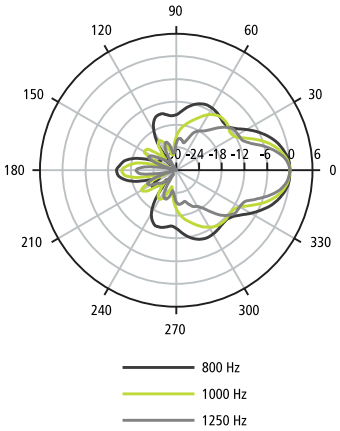
250 Hz Octave Band



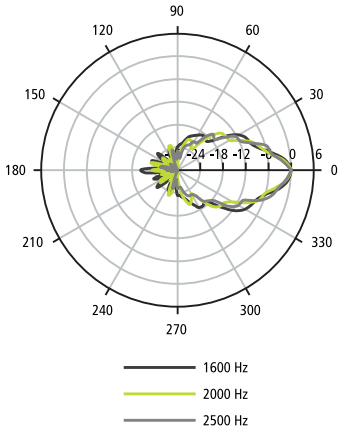
500 Hz Octave Band



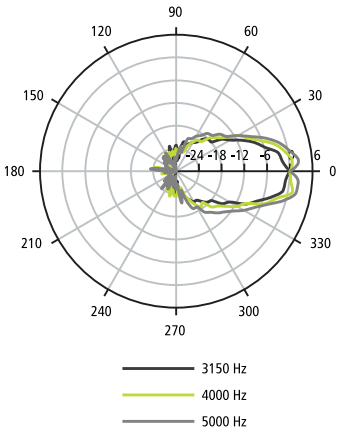
1000 Hz Octave Band



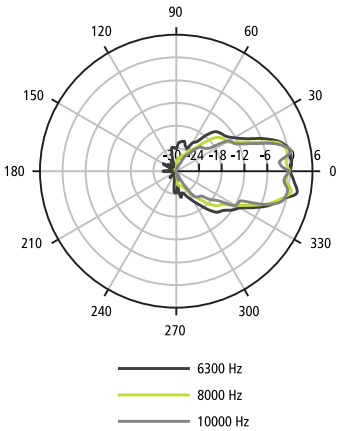
2000 Hz Octave Band



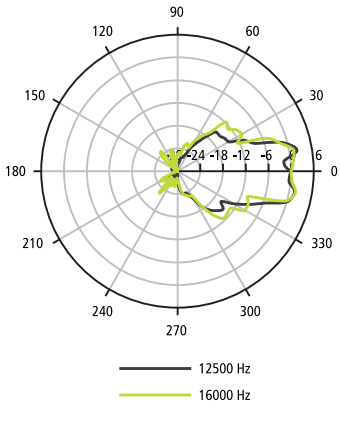
4000 Hz Octave Band



8000 Hz Octave Band



16000 Hz Octave Band



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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 99 dB SPL in free field with 1 W input and be capable of producing peak output of 127 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 120° horizontal and 40° vertical.

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 24.0 x 39.1 x 23.6 in (610 x 993 x 598 mm) and net weight shall be 124 lb (56.2 kg).

The 2-way, full-range array module loudspeaker shall be the Bose® RoomMatch® RM12040.

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