FRG Omniffusor™

The First Fiberglass Reinforced Gypsum Two Dimensional Molded QRD® From The Acoustical Industry's Leading Innovator

Diffusive ceilings and walls are one of the most effective ways to simultaneously control room reflections and provide a natural ambiance. Since ceiling systems and wall applications often cover appreciable surface areas, a cost-effective 2D diffusor is required. To meet these needs and life safety fire codes, RPG® developed the first non-combustible Fiber Reinforced Gypsum (FRG) modular 2D diffusor that tegularly mounts in a standard T-bar system. The FRG Omniffusor™ uniformly scatters sound arriving from any direction into many directions, providing ideal distribution and coverage. It's unique shape also adds the visual interest of a bas relief sculpture.

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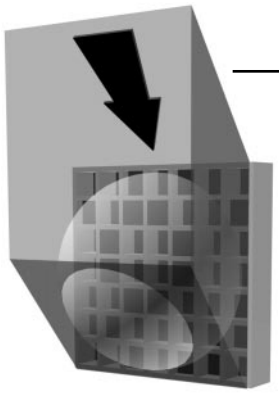
Problem and Solution

Problem

To provide 2D diffusion for large surface areas and meet life safety fire codes, a molded modular diffusor that mounts in conventional T-bar systems is needed.

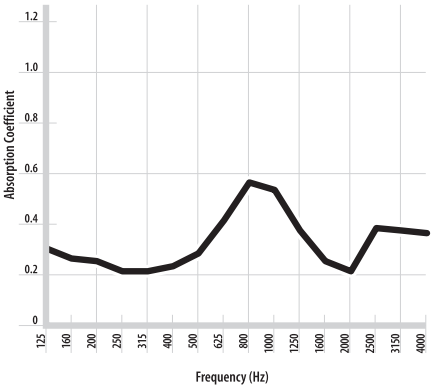
Solution

The FRG Omniffusor™ is the first cost-effective, non-combustible, molded Fiber Reinforced Gypsum 2D QRD®. It offers twice the reflection attenuation of the 1D QRD® because it scatters sound uniformly into a hemisphere. The FRG Omniffusor® provides uniform, omnidirectional, broad bandwidth diffusion in an attractive ceiling or wall design element.



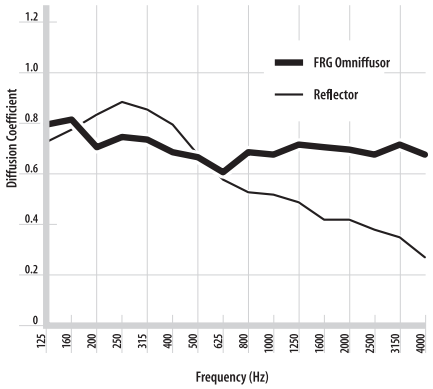
Sound strikes a two dimensional diffusing surface and is uniformly scattered into a hemisphere.

Performance Specifications



Absorption

While the primary function of the FRG Omniffusor™ is to provide broad bandwidth diffusion, it also offers a modest and beneficial amount of absorption across the frequency spectrum with a small emphasis at about 800Hz.

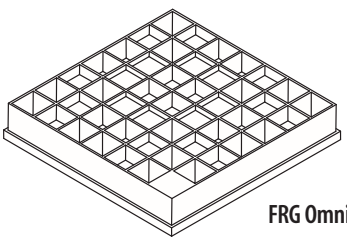


Diffusion

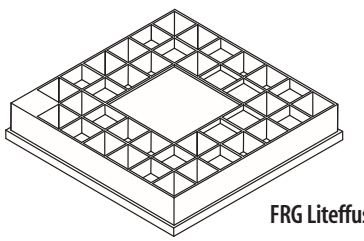
The FRG Omniffusor™ offers significant diffusion compared to a flat reflector panel above the diffraction limit of 565 Hz, which is determined by the dimensions of the panel. Above this frequency, the graph indicates how the reference reflector becomes more and more specular as the frequency increases, whereas the FRG Omniffusor™ provides a constant diffusivity.

Installation

When suspended in a 15/16" T-bar grid, the FRG Omniffusor™ and FRG Liteffusor™ protrude 3-1/4" into the room. Wall mounting the FRG Omniffusor™ requires custom wooden stiles and rails with a 1/8" dado to capture the perimeter flange.



FRG Omniffusor™



FRG Liteffusor™

FEATURES

- *2D QRD® reflection phase grating*
- *Uniform hemispherical scattering for all angles of incidence*
- *Simultaneously offers diffusion and moderate mid band absorption*
- *2D QRD® provides twice the diffusive specular attenuation of a 1D QRD®*
- *Non-combustable FRG*
- *Cost effective molded FRG panel*
- *Available in modular 2' x 2' panels*
- *Liteffusor™ can incorporate down lighting*

BENEFITS

- *The 2D QRD® provides phase variation in two orthogonal directions for uniform omnidirectional scattering*
- *Hemispherical scattering is ideal for ceiling applications because the incident sound is uniformly distributed throughout the room from a planar ceiling surface*
- *The omnidirectional diffusive attenuation, coupled with moderate mid band absorption, provides ideal reflection control without deadening the space*
- *2D diffusive attenuation provides effective diffusive control of strong specular reflections*
- *FRG is non-combustible and can be used in any space to meet life safety fire codes*
- *Low cost allows designers to cover large surface areas for optimum performance*
- *Modular 2' x 2' panels can be wall mounted or suspended in a 15/16" T-bar ceiling grid*
- *The central flat area (9-3/8" x 9-3/8") of the Lightffusor™ allows designers to incorporate down lighting, sprinklers, projector supports, and other design elements*

APPLICATIONS

Mastering studios, Performing arts facilities, Post production studios, Broadcast studios, Worship spaces, Recording studios, Listening rooms, Home theaters, Conference rooms

SPECIFICATIONS

- *Size: 23-5/8" (L) x 23-5/8" (W) x 4" (D)*
- *Tegular Dimensions: 23" (L) x 23" (W) x 3-1/4" (D)*
- *Lightffusor™ central flat area: 9-3/8" x 9-3/8"*
- *Standard finish: painted white*
- *Custom finishes available*
- *Weight: 18lbs.*

FRG Omniffusor™

Standard Unit Construction

Fiberglass reinforced gypsum
Painted white
2' height x 2' width nominal (1' 11-5/8" x 1' 11-5/8") x 4-1/4" deep
Tegular Dimensions (1' 11" x 1' 11") x 3'-1/4" deep

Product Options*, **

Finish Selection
White
Custom

Option Sheet

Note:

All dimensions are allowed a tolerance of ± 1/16" due to material shrinkage and variations.

** Most options merit an increase or, in some cases, a decrease in pricing compared to the standard unit.*

*** Due to material availability, RPG® reserves the right to change options at any time. Therefore, any special options—whether listed or not—must be confirmed prior to submittal of P.O. and acceptance verified by RPG® Diffusor Systems, Inc.*

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FRG Omniffusor™

Fiberglass Reinforced Gypsum Two Dimensional Diffusor

CSI Specifications

A The Fiberglass Reinforced Gypsum Two Dimensional Diffusor shall be the model Omniffusor™ FRG as manufactured by RPG® Diffusor Systems, Inc., Upper Marlboro, MD 20774. Tel: 301-249-0044, Fax: 301-249-3912.

B The The Fiberglass Reinforced Gypsum Two Dimensional Diffusor shall be fabricated from fiberglass reinforced gypsum.

C The Fiberglass Reinforced Gypsum Two Dimensional Diffusor shall work on the two dimensional reflection phase grating principle, using an array of square wells of equal widths separated by thin dividers. The depths of the wells shall be based on the phase-shifted prime 7 quadratic residue number theory sequence.

D The Fiberglass Reinforced Gypsum Two Dimensional Diffusor shall all be installed in the same orientation to preserve the two dimensional symmetry of the surface.

E Absorption Coefficients and Noise Reduction Coefficient for the product shall be measured by an independent, accredited NVLAP facility according to the test methods as defined by ASTM C 423 and ASTM E 795. Random incidence Absorption Coefficients for the product in an E-400 mounting shall be as follows:

125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	NRC
0.30	0.21	0.28	0.53	0.21	0.36	0.30

F Diffusion Coefficients for the product shall be measured in accordance with the recommendations of the Audio Engineering Society Working Group SC-04-02 boundary measurement technique. The directional diffusion coefficient is given by the standard deviation of the 1/3-octave polar response, for a given angle of incidence, and normalized by the response of a flat panel of similar size. The average incidence diffusion coefficients determined at 5° intervals between ± 85° are listed below at octave-band centers. The mean and standard deviation (SD) of the 1/3-octave-band coefficients are also tabulated.

125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	Mean	SD
0.79	0.74	0.66	0.67	0.69	0.67	0.70	0.05

G Flame Spread and Smoke Developed shall be tested by an independent, accredited NVLAP facility according to the test methods as defined by ASTM E 84 and NFPA 255. The Fiberglass Reinforced Gypsum Two Dimensional Diffusor shall have a composite Flame Spread Rating of less than 25 and a Smoke Development of less than 450.

H The Fiberglass Reinforced Gypsum Two Dimensional Diffusor shall be supplied in a flat white painted finish (or specify other color).

I The overall dimensions shall be 23-5/8"(H) x 23-5/8"(W) x 4-1/4"(D) and weigh no more than 22 pounds.

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FRG Omniffusor™

Standard Unit Construction

Fiberglass reinforced gypsum
Painted white
2' height x 2' width nominal (1' 11-5/8" x 1' 11-5/8") x 4-1/4" deep
Tegular Dimensions (1' 11" x 1' 11") x 3'-1/4" deep
Center Dimensions (9-1/2" x 9-1/2") x 5/8" deep

Product Options*, **

Finish Selection
White
Custom

Liteffusor™ Option Sheet

Note:

All dimensions are allowed a tolerance of ± 1/16" due to material shrinkage and variations.

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FRG Omniffusor™

Fiberglass Reinforced Gypsum Two Dimensional Diffusor

Liteffusor™ CSI Specifications

A The Fiberglass Reinforced Gypsum Two Dimensional Diffusor shall be the model FRG Liteffusor™ as manufactured by RPG® Diffusor Systems, Inc., Upper Marlboro, MD 20774. Tel: 301-249-0044, Fax: 301-249-3912.

B The The Fiberglass Reinforced Gypsum Two Dimensional Diffusor shall be fabricated from fiberglass reinforced gypsum.

C The Fiberglass Reinforced Gypsum Two Dimensional Diffusor shall work on the two dimensional reflection phase grating principle, using an array of square wells of equal widths separated by thin dividers. This unit shall have a 9-1/2" x 9-1/2" flat surface located in the center for mounting objects. This center has a depth of 5/8". The depths of the remaining wells shall be based on the phase-shifted prime 7 quadratic residue number theory sequence.

D The Fiberglass Reinforced Gypsum Two Dimensional Diffusor shall all be installed in the same orientation to preserve the two dimensional symmetry of the surface.

E Absorption Coefficients and Noise Reduction Coefficient for the product shall be measured by an independent, accredited NVLAP facility according to the test methods as defined by ASTM C 423 and ASTM E 795. Random incidence Absorption Coefficients for the product in an E-400 mounting shall be as follows:

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H The Fiberglass Reinforced Gypsum Two Dimensional Diffusor shall be supplied in a flat white painted finish (or specify other color).

I The overall dimensions shall be 23-5/8"(H) x 23-5/8"(W) x 4-1/4"(D) and weigh no more than 22 pounds.

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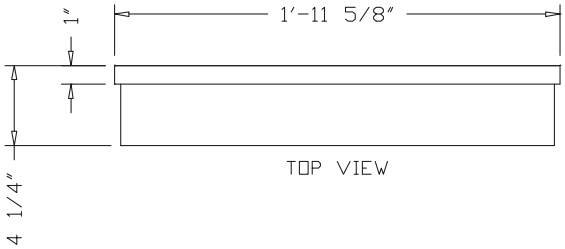
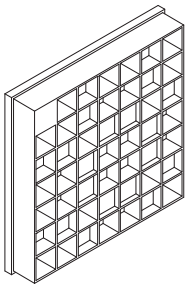
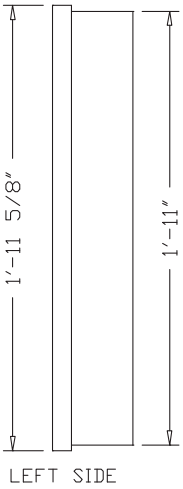
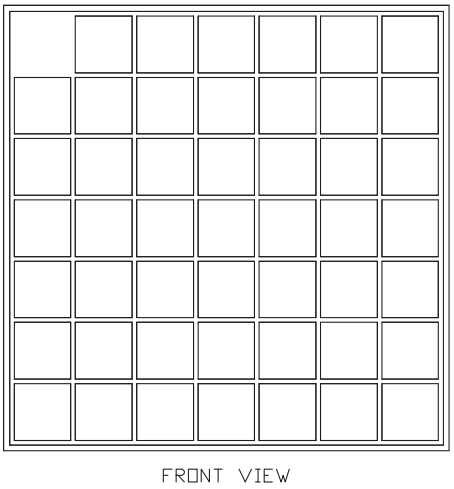
FRG Omniffusor™



2' x 2' Cutsheet







Project:

Specifier:

Drawing Number:

Date:

Tolerance: ± 1/16"

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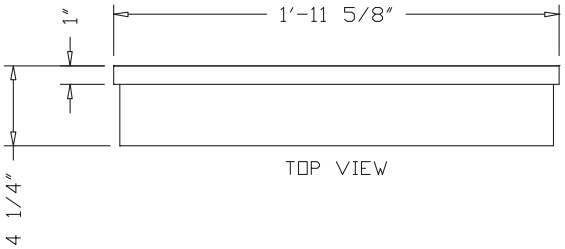
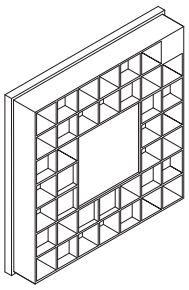
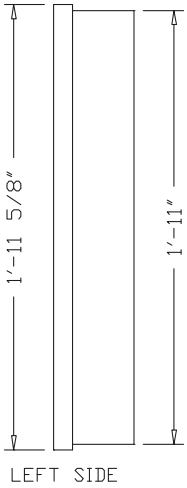
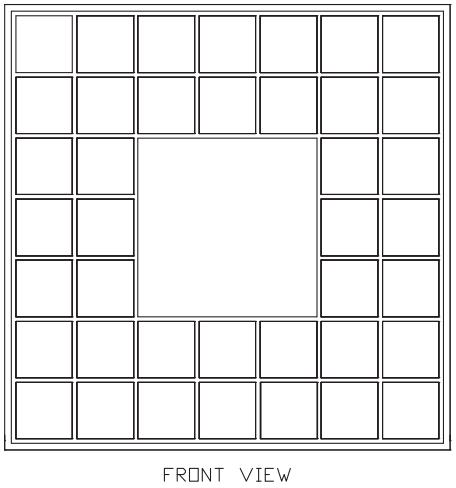


Liteffusor™ 2' x 2' Cutsheet







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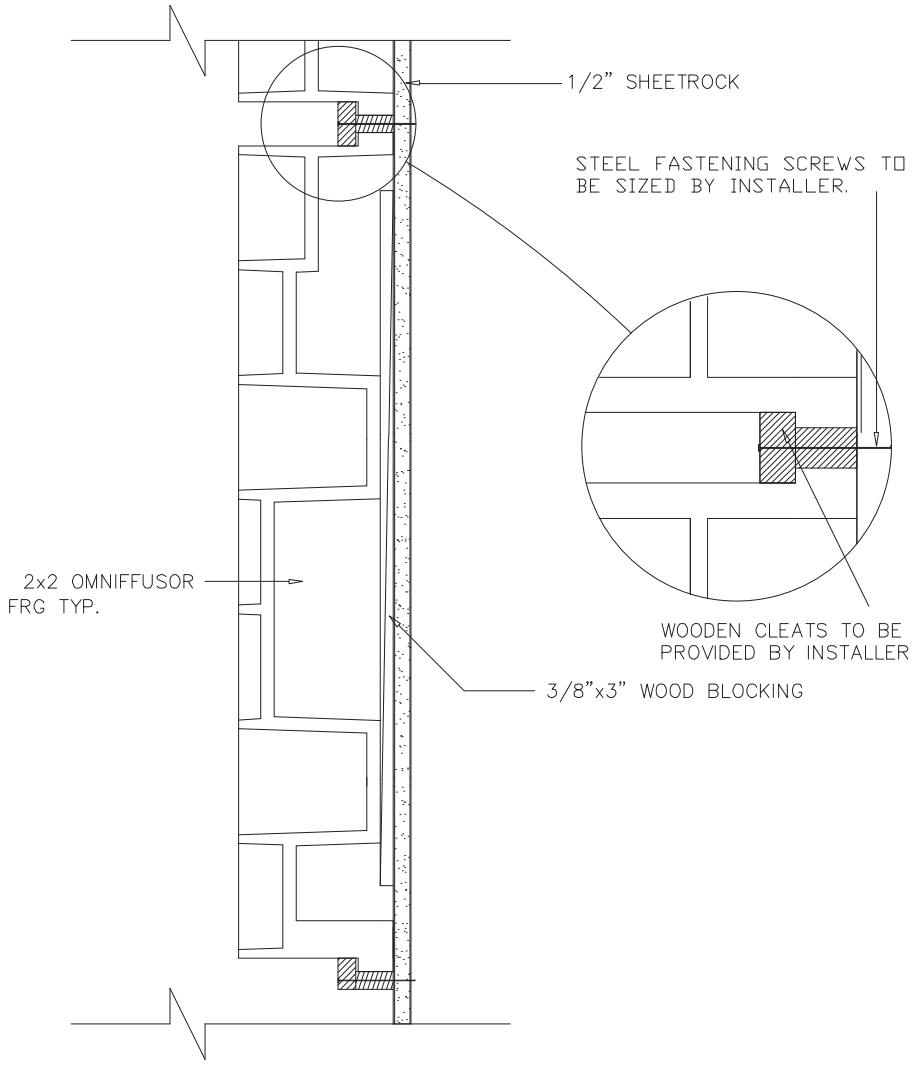
Wall Mount



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Drawing Number:

Date:

All dimensions should be field verified prior to installation.

0 ¼' ½' 1'

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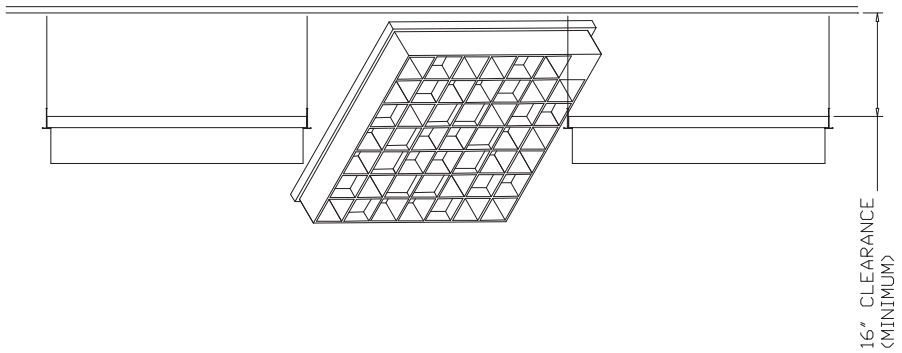
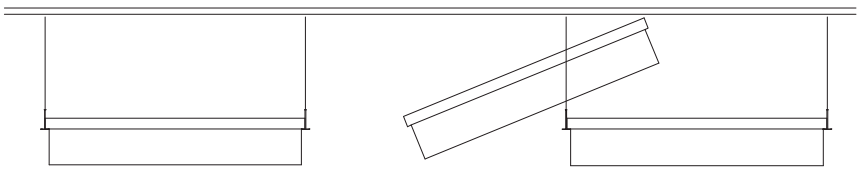
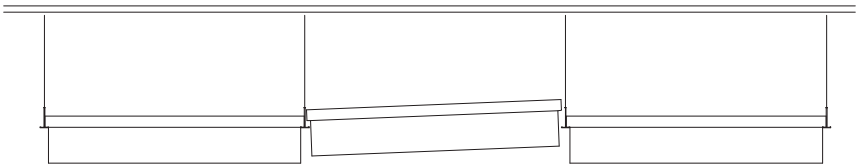
FRG Omniffusor™







T-Bar Tilt and Drop

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Drawing Number:

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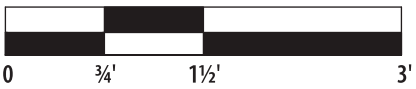

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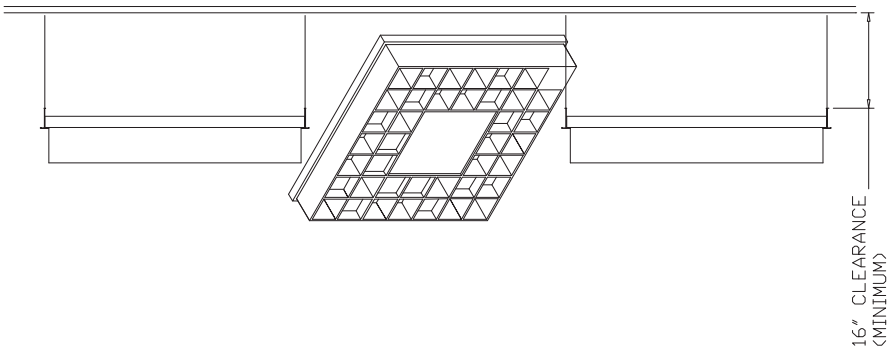
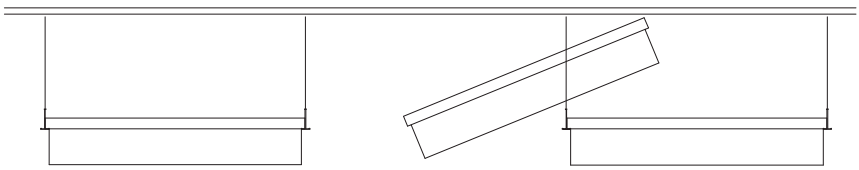
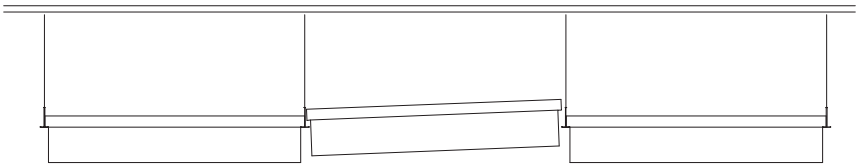
FRG Omniffusor™







Liteffusor™ T-Bar Tilt and Drop

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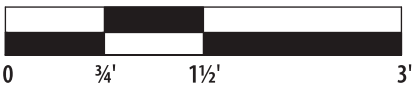

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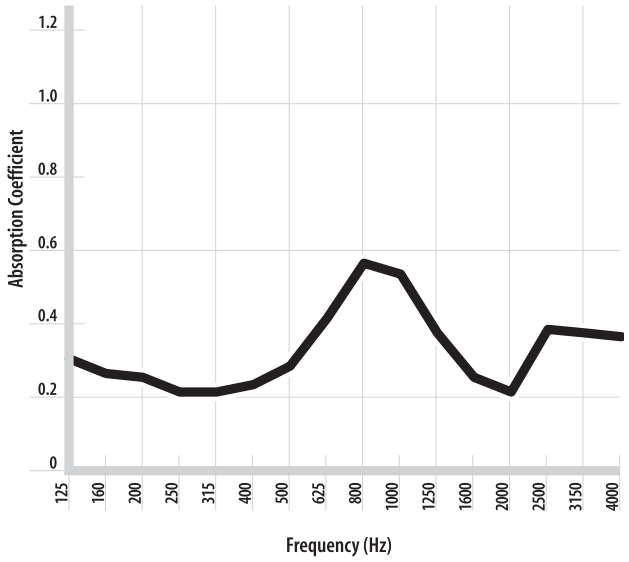
FRG Omniffusor™

Absorption Coefficients



Hz	Absorption Coefficient
125	0.30
160	0.26
200	0.25
250	0.21
315	0.21
400	0.23
500	0.28
630	0.41
800	0.56
1000	0.53
1250	0.37
1600	0.25
2000	0.21
2500	0.38
3150	0.37
4000	0.36

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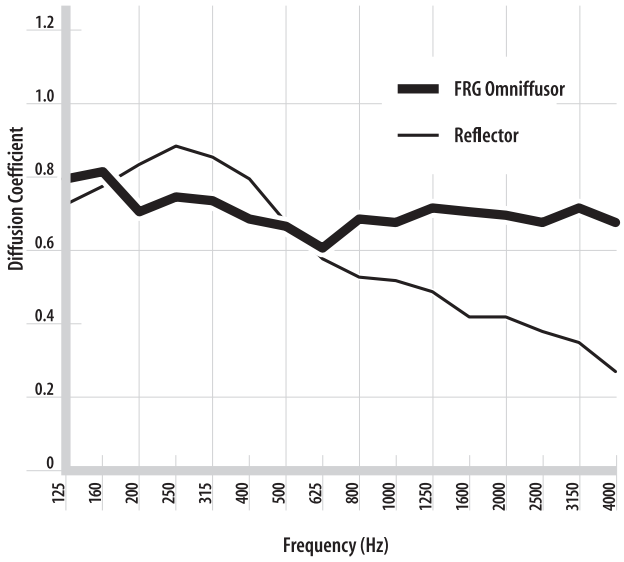
FRG Omniffusor™

Diffusion Coefficients



Hz	FRG Omniffusor™	Reflector
125	0.79	0.72
160	0.81	0.77
200	0.70	0.83
250	0.74	0.88
315	0.73	0.85
400	0.68	0.79
500	0.66	0.67
630	0.60	0.57
800	0.68	0.52
1000	0.67	0.51
1250	0.71	0.48
1600	0.70	0.41
2000	0.69	0.41
2500	0.67	0.37
3150	0.71	0.34
4000	0.67	0.26

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