Fabbian

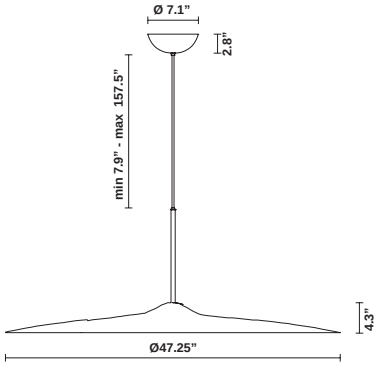
# Acustica F58

**F58A32A43**

*Gio Minelli & Marco Fossati*

Fixture type

Project name




## Dimensions

## Material

Recycled PET, PMMA, Aluminum

## Color

Lawn Green

## Other colors available

Check online www.fabbian.us

## Included accessories

LED, Driver

## Weight Lamp

13.3lbs (6Kg)

## Options

4000K by request 47 custom color choices (minimum quantities apply) View color choices here: https://bit.ly/fabbian-custom-colors

## Notes

See the following pages for the acoustic report

## Features

Flicker-Free3 McAdam Step binning

## Description

Pendant light with a large and thin lampshade designed to absorb surrounding sounds and create a high level of acoustic comfort while providing direct ambient illumination. Recycled PET shade, black anodized aluminum structure and PMMA diffuser. Shade adjusts from level to inclined positions for dynamic and creative arrangements around its fixed central light source.

| Voltage | Dimmable |
|---|---|
| 120-277V (UNV) | 0-10V |

## Specs

DRY IP40

## Light source and Technical

**Lamp type**: LED
**Wattage**: 18W
**Color temperature**: 2700K
**CRI**: 90
**Lumens**: 1604

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ISTITUTO GIORDANO
BEYOND CERTIFICATION

ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO

LAB N° 0021 L

# TEST REPORT No. 381795

Customer

**FABBIAN S.r.l.**

**Via Santa Brigida, 50 - Località Castelminio - 31023 RESANA (TV) - Italy**

Item*

**lamp named "F58 Acustica Ø1200 mm"**

Activity

**measurement in reverberation room of the sound absorption "$A_{obj}$" of objects in accordance with standard ASTM C423 - 17**

(*) according to that stated by the customer.

Bellaria-Igea Marina - Italy, 12 April 2021

Chief Executive Officer
(Dott. Arch. Sara Lorenza Giordano)

Firmato digitalmente da SARA LORENZA GIORDANO

**Order:**
87550

**Item origin:**
sampled and supplied by the customer

**Identification of item received:**
2021/0852/B dated 15 March 2021

**Activity date:**
25 March 2021

**Activity site:**
Istituto Giordano S.p.A. - Strada Erbosa Uno, 78 - 47043 Gatteo (FC) - Italy

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**Chief Test Technician:**
Dott. Andrea Muccioli
**Head of Acoustics and Vibrations Laboratory::**
Dott. Andrea Cucchi

**Compiler:** Agostino Vasini
**Reviewer:** Dott. Andrea Muccioli

**Description of item***

The item under examination consists of circular lamps, having the dimensional characteristics stated in the following table.

| | |
|---|---|
| **Diameter of the single element "d"** | 1200 mm |
| **Measured thickness of the single object "T"** | 60 mm |
| **Number of single objects "n"** | 4 |
| **Effective acoustic surface** | 9,04 m² |
| **Measured mass per unit area of the item** | 3,5 kg/m² |

The item, in particular, consists of a lampshade in thermoformed material, consisting of a thermoplastic texture based on modified copolyester and additive with nominal density of 50 g/m² containing polyester fiber.
The item is manufactured by the customer and it was placed in the reverberation room by Istituto Giordano staff.

**Photograph of the item**

(*) according to that stated by the customer, apart from characteristics specifically stated to be measurements; Istituto Giordano declines all responsibility for the information and data provided by the customer that may influence the results.

## Normative references

| Standard | Title |
|---|---|
| ASTM C423 - 17 | Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method |

## Apparatus

| Description |
|---|
| Behringer "EPX2000" 2000 W power amplifier |
| Behringer "DEQ2496" digital ⅓-octave equaliser |
| No. 2 omnidirectional speakers |
| Sinus "Soundbook" real-time analyser |
| Larson Davis "CAL200" acoustic calibrator for microphone calibration |
| No. 2 G.R.A.S. Sound & Vibration type "40AR" ½" microphones |
| No. 2 G.R.A.S. Sound & Vibration type "26AK" microphone preamplifiers |
| Kern "VB 150 K 50LM" electronic platform scale |
| Sola "Tri-Matic 5m/19mm" metric tape measure |
| Bosch "DLE 50 Professional" laser rangefinder |
| Delta Ohm "HD206-2" and "HD206S1" thermo-hygrometer |
| Brüel & Kjær "UZ001" barometer |

## Method

The test was carried out using detailed internal procedure PP016 in its current revision at date of testing.
The test environment consists of a parallelepiped-shaped reverberation room with a rectangular base and the following size specifications:

| | |
|---|---|
| **Plan-view dimensions** | 8,091 m × 6,782 m |
| **Height "H"** | 3,994 m |
| **Base surface area "$S_b$"** | 54,87 m² |
| **Total surface area "$S_t$"** | 228,55 m² |
| **Volume of the room** | 219,2 m³ |
| **Net volume of room "V"** | 218,8 m³ |

All surfaces of the test room were treated in such a way as to produce maximum sound reverberation; in addition, 14 slightly-curved diffusing elements having an overall surface area, including both faces, of approx. 40 m² were arranged and oriented randomly.
No. 4 objects were positioned in different positions of the reverberation room at different heights from the floor.
The test involves measuring decay rate the empty reverberation room "$d_1$" and with the item under examination "$d_2$" in order to determine the said object's sound absorption "$A_{obj}$"; measurements were taken in one-third-octave bands within the range 100 Hz to 5000 Hz using the interrupted noise method.

The test utilised a pink-noise generator, power amplifier and two dodecahedral omnidirectional speakers, operating alternatively for each one of the six microphone positions, such as to measure twelve decays in sound pressure level for each frequency band.

The sound absorption of the object "$A_{obj}$" was calculated using the following equations:

$$A_{obj} = \frac{A}{n}$$

$$A = A_2 - A_1 = 0{,}9210 \cdot \frac{V_2 (d_2 - d_{2,air})}{c_2} - 0{,}9210 \cdot \frac{V_1 (d_1 - d_{1,air})}{c_1}$$

$$c_2 = 20{,}047\sqrt{271{,}15 + t_2} \quad c_1 = 20{,}047\sqrt{271{,}15 + t_1}$$

where: $A_{obj}$ = sound absorption of the object, in m²;
- $S$ = surface of test item, in m²;
- $n$ = number of objects;
- $A$ = equivalent sound absorption area of the item under examination, in m²;
- $A_2$ = equivalent sound absorption area, in m², of the reverberation room with test item;
- $A_1$ = equivalent sound absorption area, in m², of the empty reverberation room;
- $V_2$ = effective volume, in m³, of the reverberation room with test item;
- $V_1$ = effective volume, in m³, of the empty reverberation room;
- $d_2$ = decay rate, in dB/s, of the reverberation room with test item;
- $d_1$ = decay rate, in dB/s, of the empty reverberation room;
- $d_{2,air}$ = decay rate, in dB/s, of the reverberation room with test item due to sound absorption of air and calculated in accordance with annex B of ANSI S1.26;
- $d_{1,air}$ = decay rate, in dB/s, of the empty reverberation room due to sound absorption of air and calculated in accordance with annex B of ANSI S1.26;
- $c_2$ = speed of sound in air, in m/s, of the reverberation room with test item;
- $c_1$ = speed of sound in air, in m/s, of the empty reverberation room;
- $t_2$ = air temperature, in °C, in the reverberation room with test item;
- $t_1$ = air temperature, in °C, in the empty reverberation room.

The test was carried immediately after the item under examination completion.

**Uncertainty of measurement**

Uncertainty of measurement was determined in accordance with guide JGCM 100:2008 dated September 2008 "Evaluation of measurement data - Guide to the expression of uncertainty in measurement", by calculating for each frequency the number of effective degrees of freedom "$v_{eff}$" and expanded uncertainty "U" of the sound absorption of object "$A_{obj}$", using a coverage factor "k" representing a confidence level of 95 %.

## Environmental conditions

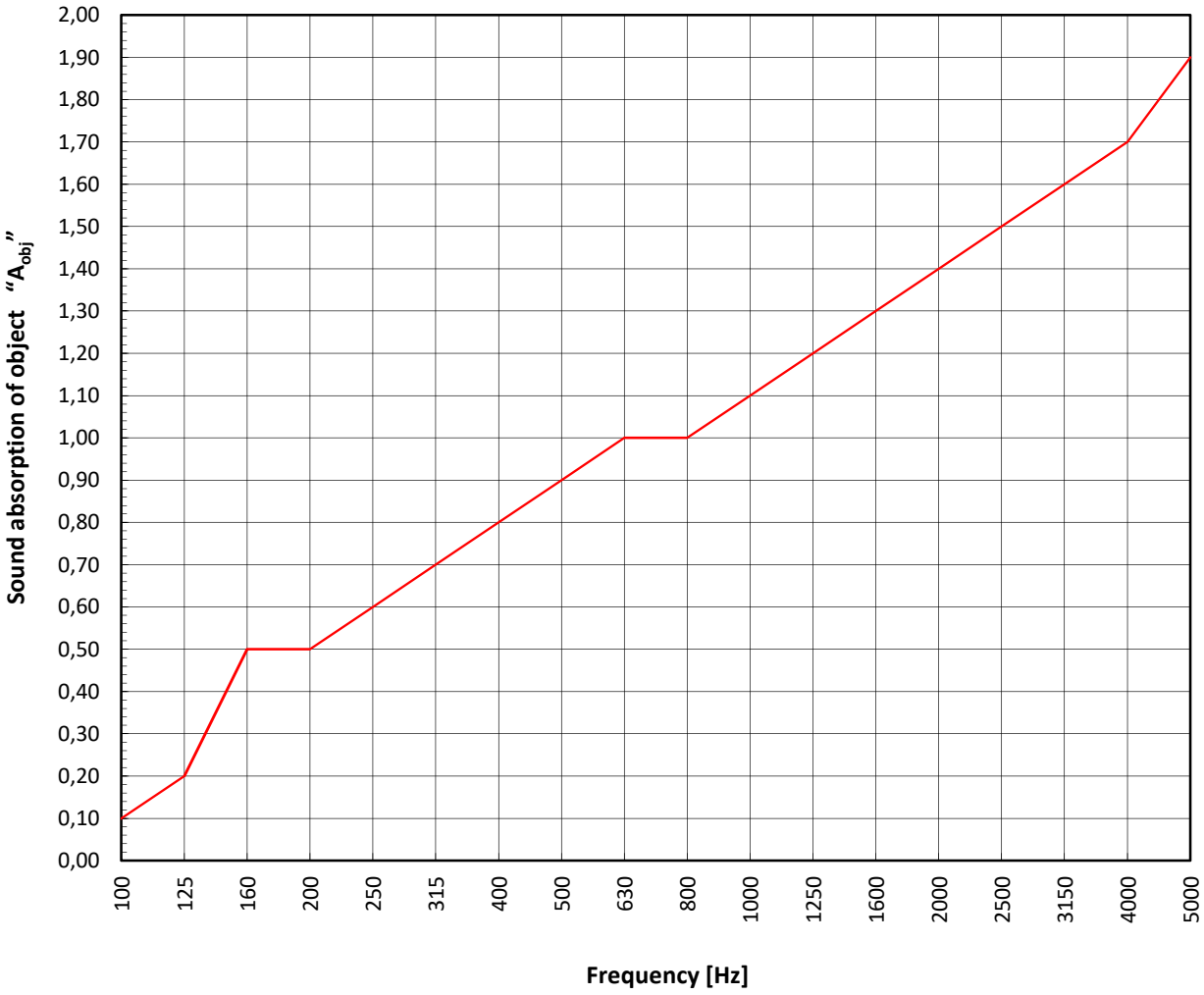
| | Test without item | Test with item |
|---|---|---|
| **Atmospheric pressure** | 101900 Pa | 101900 Pa |
| **Air temperature "t"** | 15,1 °C | 15,1 °C |
| **Relative humidity** | 43,3 % | 42,6 % |

## Results

| | |
|---|---|
| **Volume of reverberation room without item "$V_1$"** | 218,8 $m^3$ |
| **Volume of reverberation room with item "$V_2$"** | 218,8 $m^3$ |
| **Number of objects "n"** | 4 |

| **Frequency** [Hz] | **$d_1$** [dB/s] | **$d_2$** [dB/s] | **$A_{obj}$** [$m^2$] | **$v_{eff}$** | **k** | **U** |
|---|---|---|---|---|---|---|
| 100 | 8,19 | 8,93 | **0,10** | 15 | 2,00 | 0,07 |
| 125 | 7,87 | 9,33 | **0,20** | 22 | 2,00 | 0,05 |
| 160 | 7,51 | 10,57 | **0,50** | 22 | 2,00 | 0,09 |
| 200 | 7,41 | 10,57 | **0,50** | 17 | 2,00 | 0,07 |
| 250 | 7,80 | 11,83 | **0,60** | 22 | 2,00 | 0,07 |
| 315 | 7,79 | 12,71 | **0,70** | 14 | 2,00 | 0,07 |
| 400 | 7,98 | 13,37 | **0,80** | 15 | 2,00 | 0,05 |
| 500 | 8,41 | 14,56 | **0,90** | 14 | 2,00 | 0,06 |
| 630 | 10,14 | 16,78 | **1,00** | 18 | 2,00 | 0,05 |
| 800 | 11,30 | 18,35 | **1,00** | 13 | 2,00 | 0,07 |
| 1000 | 11,62 | 19,10 | **1,10** | 18 | 2,00 | 0,05 |
| 1250 | 13,14 | 21,39 | **1,20** | 19 | 2,00 | 0,08 |
| 1600 | 14,34 | 22,95 | **1,30** | 17 | 2,00 | 0,08 |
| 2000 | 16,12 | 25,84 | **1,40** | 22 | 2,00 | 0,05 |
| 2500 | 18,18 | 28,63 | **1,50** | 15 | 2,00 | 0,07 |
| 3150 | 22,08 | 33,19 | **1,60** | 21 | 2,00 | 0,07 |
| 4000 | 26,00 | 37,84 | **1,70** | 21 | 2,00 | 0,06 |
| 5000 | 33,57 | 46,77 | **1,90** | 23 | 2,00 | 0,11 |

**ONE-THIRD-OCTAVE BAND**
**SOUND ABSORPTION OF OBJECT "$A_{obj}$"**

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