

CONFIDENTIAL

**TEST REPORT ON DETERMINATION OF  
RANDOM INCIDENCE SOUND ABSORPTION OF ECHO PUNCH ACOUSTIC DIVIDER**

ULR-TC508522050000150F  
NVH/3100013318/2022-23/0150

15<sup>th</sup> June 2022

- 1.0 CUSTOMER NAME** : Senses Akustik Private Limited  
Plot No. 102, New GIDC, Gundlav,  
Valsad- 396 035, Gujarat
- 2.0 LETTER REF.** : E-mail dated 10<sup>th</sup> MAY 2022
- 3.0 TEST COMPONENT DETAILS** : Test sample details given by customer is as follows:
- 3.1 Product Name : Echo Punch Acoustic Divider  
3.2 Acoustic material specification : Consist of Felt & Polyester foam  
3.3 Dimension : 1210 mm x 410 mm size, 25 mm thickness  
3.4 Density : 126 kg/m<sup>3</sup>  
3.5 Samples used for testing : 8 samples used for testing

- 4.0 TEST REQUIREMENTS** :
- Measurement of equivalent sound absorption and per sample equivalent sound absorption on above mentioned test sample as per ASTM C-423 / ISO 354 in reverberation chamber.

- 5.0 TEST PROCEDURE** :
- Equivalent sound absorption and per sample equivalent sound absorption was computed by hanging 6 nos. of above mentioned test sample at a height of 1 m from ceiling as per ASTM C-423 / ISO 354 in reverberation chamber. Please refer figure 1 for test set up and test component details. Total three sets of measurement were taken and average value is reported. The measurement was carried out at temperature 25<sup>0</sup>C ±1<sup>0</sup>C, humidity 57% and barometric pressure 938 mbar.

- 6.0 DATE OF EVALUATION** :
- The Random incidence sound absorption measurement was carried out on above mentioned test sample on 10<sup>th</sup> June 2022.

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**7.0 INSTRUMENTATION :**

Sr. No	Instrument Name	Type / Model No	Make	Calibrated on	Calibration due on
1	Multi-channel Data Acquisition System	3560 D	Bruel & Kjaer, Denmark	03-Aug-21	03-Aug-22
2	½" Random Incidence Microphone	378B20	PCB, USA	03-Aug-21	03-Aug-22
3	Power Amplifier	2716	Bruel & Kjaer, Denmark	Does not require separate calibration as it is driven by data acquisition system	
4	Omni directionnel Sound source	Omni power 4296	Bruel & Kjaer, Denmark		
5	Reverberation room	80 m <sup>3</sup> and 110 m <sup>3</sup>	-	-	-

**8.0 TEST RESULTS :**

8.1 Table 1 and figure 2 show the values and plot for Equivalent Sound Absorption Area in Sabine m<sup>2</sup> of Echo Punch Acoustic Divider consist of Felt & Polyester foam of measured 1210 mm x 410 mm size, 25 mm thickness, 126 kg/m<sup>3</sup> density and 8 samples tested in hanging condition in the frequency range of 100 Hz to 5000 Hz

8.2 Table 2 and figure 3 show the values and plot for Per Sample Equivalent Sound Absorption Area in Sabine m<sup>2</sup> of Echo Punch Acoustic Divider consist of Felt & Polyester foam of measured 1210 mm x 410 mm size, 25 mm thickness, 126 kg/m<sup>3</sup> density and 8 samples tested in hanging condition in the frequency range of 100 Hz to 5000 Hz.

**9.0 CONCLUSIONS :**

Average value of per sample sound absorption of Echo Punch Acoustic Divider sample calculated in the frequency range 100 Hz to 5000 Hz.

<b>Echo Punch Acoustic Divider consist of Felt &amp; Polyester foam of measured 1210 mm x 410 mm size, 25 mm thickness, 126 kg/m<sup>3</sup> density</b>	
Average value of per sample sound absorption of Echo Punch Acoustic Divider, Sabine's m <sup>2</sup>	0.38

**Tested and Report Prepared By:**



**P. P. Kamble**  
Engineer

**Reviewed By:**



**M. P. Joshi**  
Dy. General Manager

**Reviewed By:**



**S. K. Jain**  
General Manager

**Approved By:**



**Dr. N. H. Walke**  
Deputy Director

This test report pertains only to the samples actually tested at ARAI in the presented condition. The issuing of this test report does not indicate any measure of approval, certification, supervision, control of quality surveillance by ARAI of any product. No extract, abridgement or abstraction from this test report be published or used to advertise the product without the written consent of the Director, ARAI, who reserves the absolute right to agree or reject all or any of the details of any items of publicity for which consent may be sought.



**Sachin Kumar Jain**  
Digitally signed by Sachin Kumar Jain  
Date: 2022.07.07 18:20:15 +05'30'

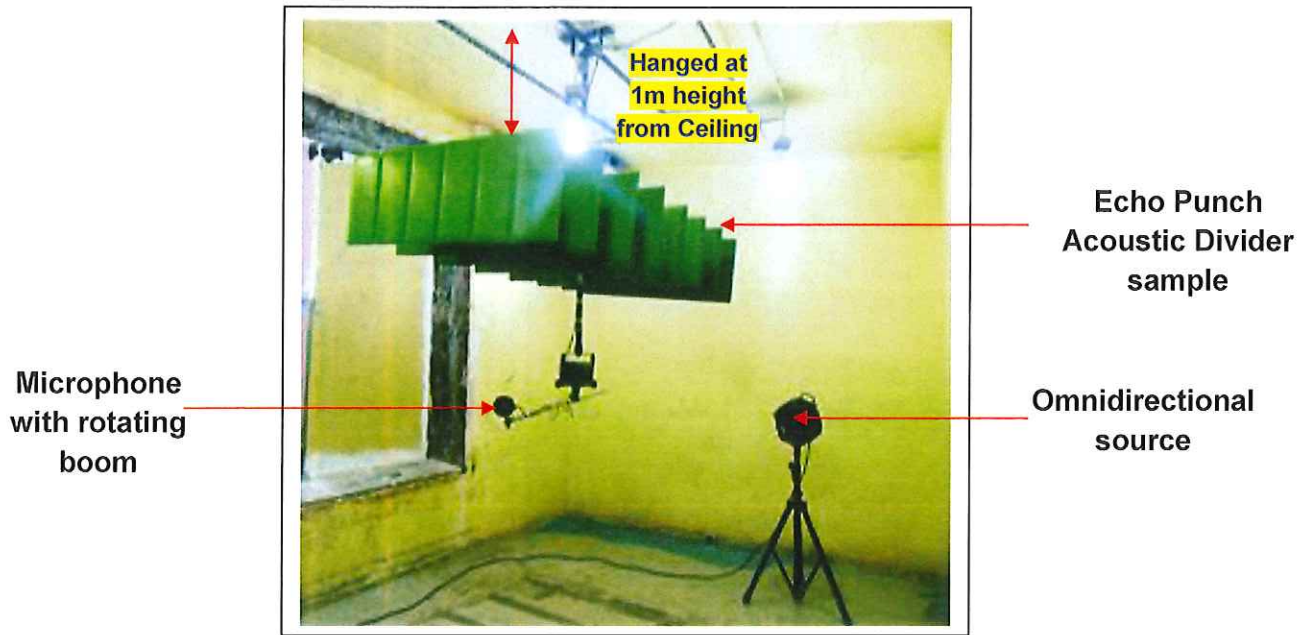


Figure 1: Test set up for mounting and testing of Echo Punch Acoustic Divider sample in reverberation chamber

Table 1 and Figure 2: Values and Plot for Equivalent Sound Absorption Area in Sabine m<sup>2</sup> of Echo Punch Acoustic Divider consist of Felt & Polyester foam of measured 1210 mm x 410 mm size, 25 mm thickness, 126 kg/m<sup>3</sup> density and 8 samples tested in hanging condition at one third octave frequencies

One third octave frequency, Hz	Equivalent Sound Absorption Area, Sabine m <sup>2</sup>	Standard Deviation
100	0.53	0.00
125	0.70	0.03
160	1.10	0.01
200	0.84	0.03
250	1.18	0.14
315	1.68	0.14
400	1.99	0.16
500	2.33	0.14
630	2.70	0.09
800	3.21	0.05
1000	3.85	0.17
1250	4.33	0.01
1600	4.75	0.04
2000	5.04	0.04
2500	5.11	0.05
3150	5.20	0.08
4000	5.22	0.08
5000	5.30	0.04

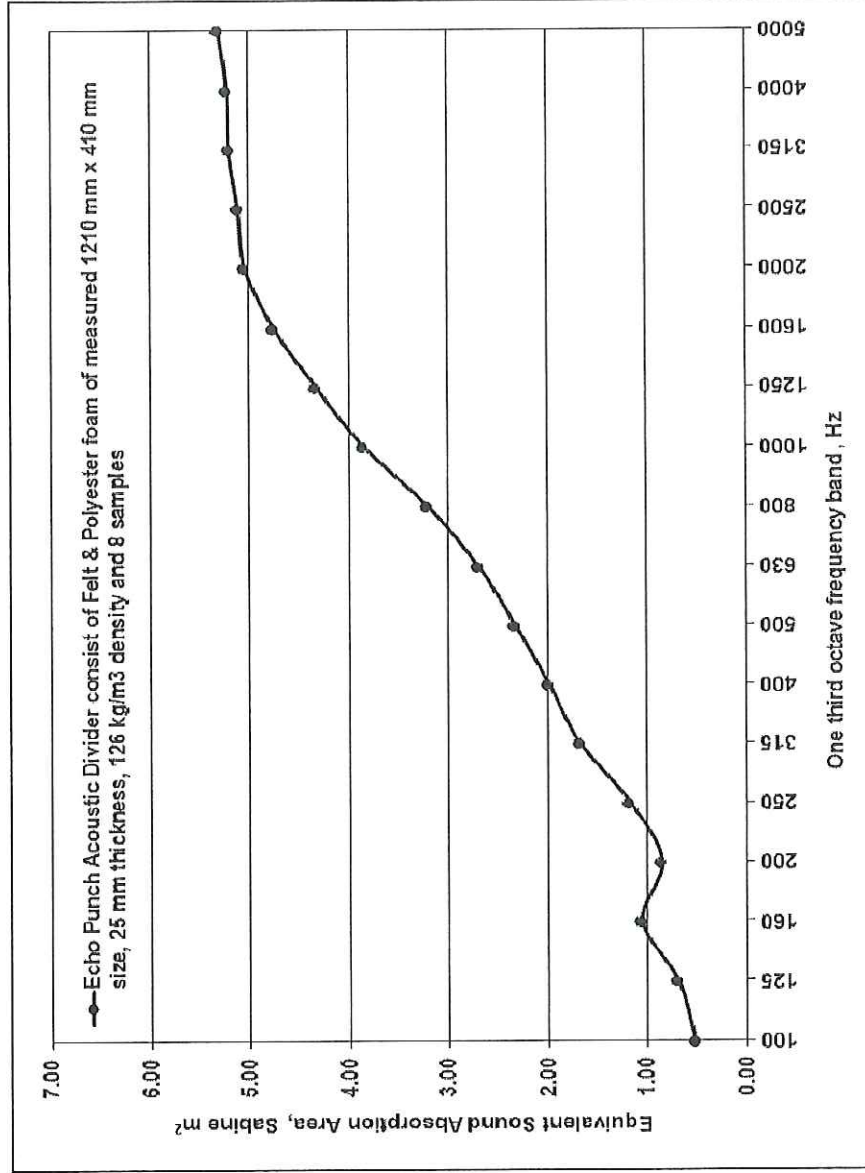
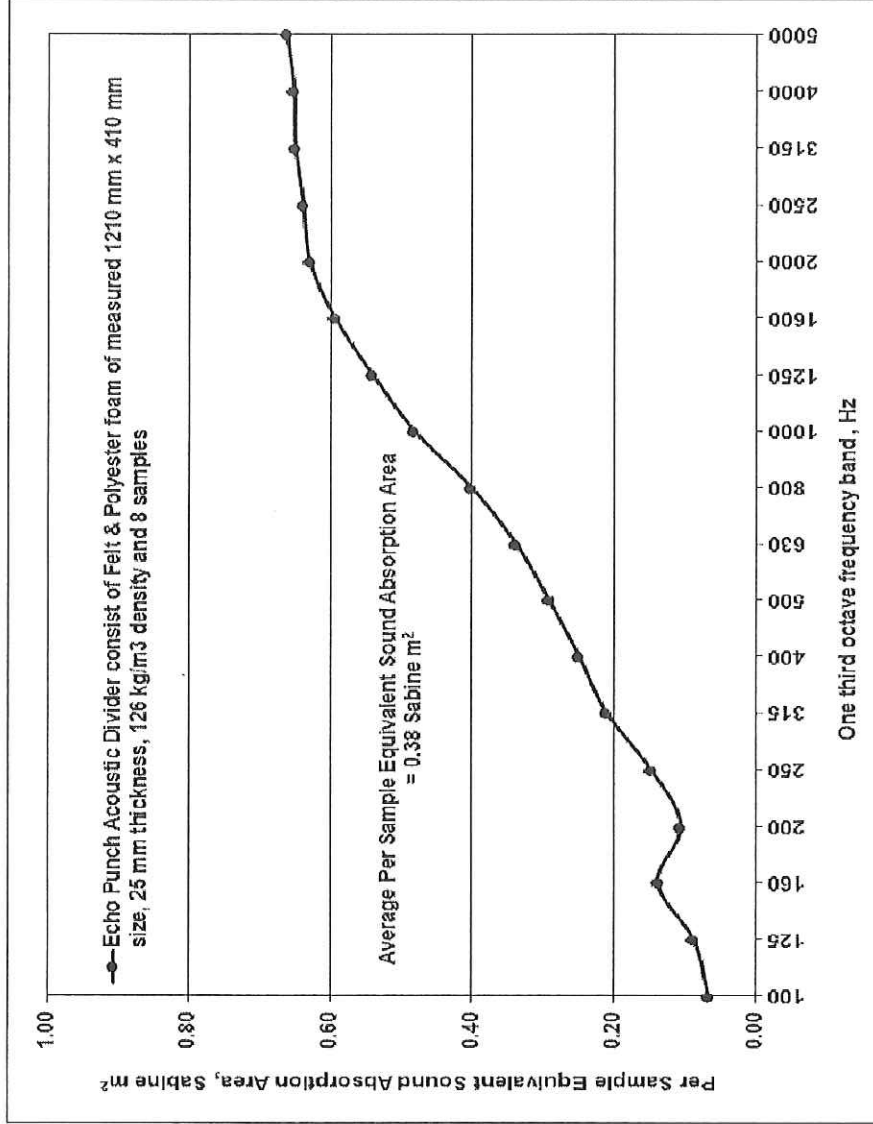


Table 2 and Figure 3: Values and Plot for Per Sample Equivalent Sound Absorption Area in Sabine m<sup>2</sup> of Echo Punch Acoustic Divider consist of Felt & Polyester foam of measured 1210 mm x 410 mm size, 25 mm thickness, 126 kg/m<sup>3</sup> density and 8 samples at one third octave frequencies

One third octave frequency, Hz	Per Sample Equivalent Sound Absorption Area, Sabine m <sup>2</sup>	Standard Deviation
100	0.07	0.00
125	0.09	0.00
160	0.14	0.00
200	0.10	0.00
250	0.15	0.02
315	0.21	0.02
400	0.25	0.02
500	0.29	0.02
630	0.34	0.01
800	0.40	0.01
1000	0.48	0.02
1250	0.54	0.00
1600	0.59	0.00
2000	0.63	0.01
2500	0.64	0.01
3150	0.65	0.01
4000	0.65	0.01
5000	0.66	0.00



**Table 6 and Figure 6: Values and plot for random incidence sound absorption coefficient of Echo Punch Acoustic Divider consist of Felt & Polyester foam of measured 1210 mm x 410 mm size, 25 mm thickness, 126 kg/m<sup>3</sup> density and 8 samples tested in hanging condition at one third octave frequencies**

One Third Octave Frequency, Hz	Random incidence sound absorption coefficient (-)
100	0.13
125	0.18
160	0.28
200	0.21
250	0.30
315	0.43
400	0.51
500	0.59
630	0.69
800	0.82
1000	0.98
1250	1.10
1600	1.21
2000	1.28
2500	1.30
3150	1.32
4000	1.33
5000	1.35

