

**CONFIDENTIAL**

**TEST REPORT ON MEASUREMENT OF  
RANDOM INCIDENCE SOUND ABSORPTION COEFFICIENT OF  
ULTRA TRAP 80Hz BASS TRAP**

**NVH/3100008821/2020-21/1505**

**28<sup>th</sup> January 2021**

- 1.0 CUSTOMER NAME** : A R Acoustics Limited Liability Partnership  
Fifth Floor, 504, Jupiter Gaurav Galaxy Phase 2,  
Near Nityanand Nagar, Mira Road East,  
Thane - 401107, Maharashtra
- 2.0 LETTER REF.** : E-mail dated 22<sup>nd</sup> December 2020
- 3.0 TEST COMPONENT DETAILS** : Test sample details given by customer are as follows,
- 3.1 Sample Name : Ultra Trap 80 Hz Bass Trap
- 3.2 Sample Configuration : Please refer annexure 1
- 3.3 Size of one panel : 1200 mm (L) X 600mm (W) X 212 mm (H)  
Total 8 panels used for mounting
- 3.4 Area of test sample : 2.4 m x 2.4 m
- 3.5 Type of mounting : Type A mounting

**4.0 TEST REQUIREMENTS** :

Measurement of random incidence sound absorption coefficient on above mentioned test sample as per ASTM C-423 / ISO 354 in reverberation chamber.

**5.0 TEST PROCEDURE** :

- 5.1 The random incidence sound absorption coefficient measurement was carried out on above mentioned test sample as per ASTM C-423 / ISO 354.
- 5.2 Please refer figure 1 for test set up and Annexure 1 for test component details.
- 5.3 Reverberation chamber is excited with random noise in the range from 100 Hz to 5000 Hz.
- 5.4 Reverberation time RT<sub>60</sub> were measured with and without test sample in reverberation chamber at one third octave frequency band.
- 5.5 The measurement was carried out at temperature 25<sup>o</sup>C ±1<sup>o</sup>C and humidity 50%.

**6.0 DATE OF EVALUATION** :

The random incidence sound absorption coefficient measurement was carried out on above mentioned test sample on 27<sup>th</sup> January 2021.

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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	05-Aug-20	05-Aug-21
2	½" Random Incidence Microphone	378B20	PCB, USA	05-Aug-20	05-Aug-21
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 Chambers	80 m <sup>3</sup> and 110 m <sup>3</sup>	-	-	-

**8.0 TEST RESULTS :**

Table 1 and figure 2 shows the values and plot for random incidence sound absorption coefficient of Ultra Trap 80 Hz Bass Trap of 212 mm thickness in the frequency range of 100 Hz to 5000 Hz.

**9.0 CONCLUSIONS :**

- 9.1 The Noise Reduction Coefficient (NRC) is given by the average value of sound absorption coefficient at 250 Hz, 500 Hz, 1000 Hz and 2000 Hz is calculated as per ASTM C-423.
- 9.2 Sound Absorption Average (SAA) is given by the average value of sound absorption coefficient from 200 Hz to 2500 Hz and it is calculated as per ASTM C-423.
- 9.3 The weighted sound absorption coefficient ( $\alpha_w$ ) and sound absorption class are calculated as per ISO 11654 are given below.

<b>Ultra Trap 80 Hz Bass Trap of 212 mm thickness</b>	
Noise Reduction Coefficient (NRC)	0.75
Sound Absorption Average (SAA)	0.76
Weighted sound absorption coefficient $\alpha_w$	0.80
Sound Absorption Class	Class B

**Report Prepared By:**

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**P. P. Kamble  
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**Reviewed By:**

*M. P. Joshi*

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

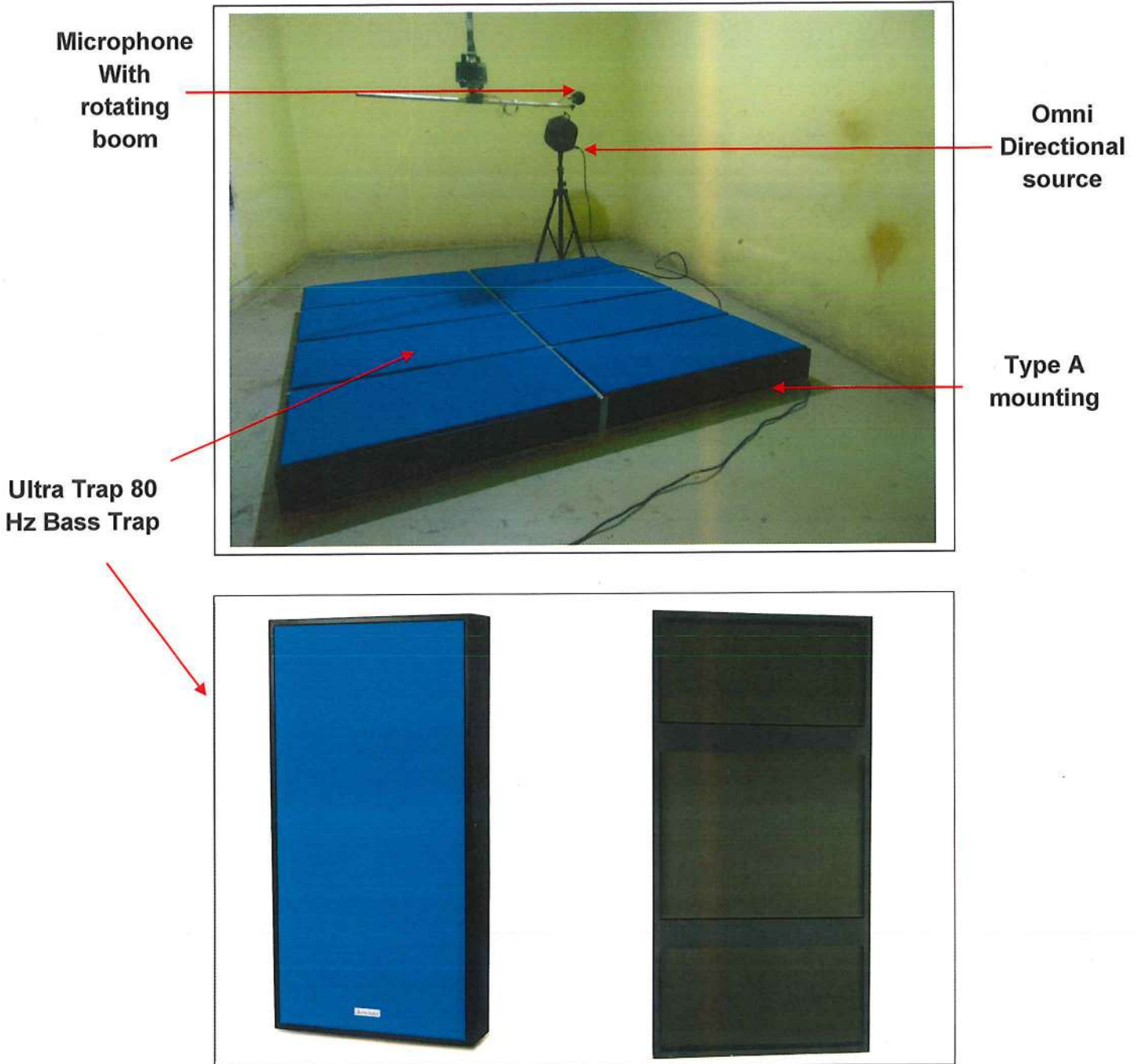
**Approved By:**

*S. K. Jain*

**S. K. Jain  
General Manager**

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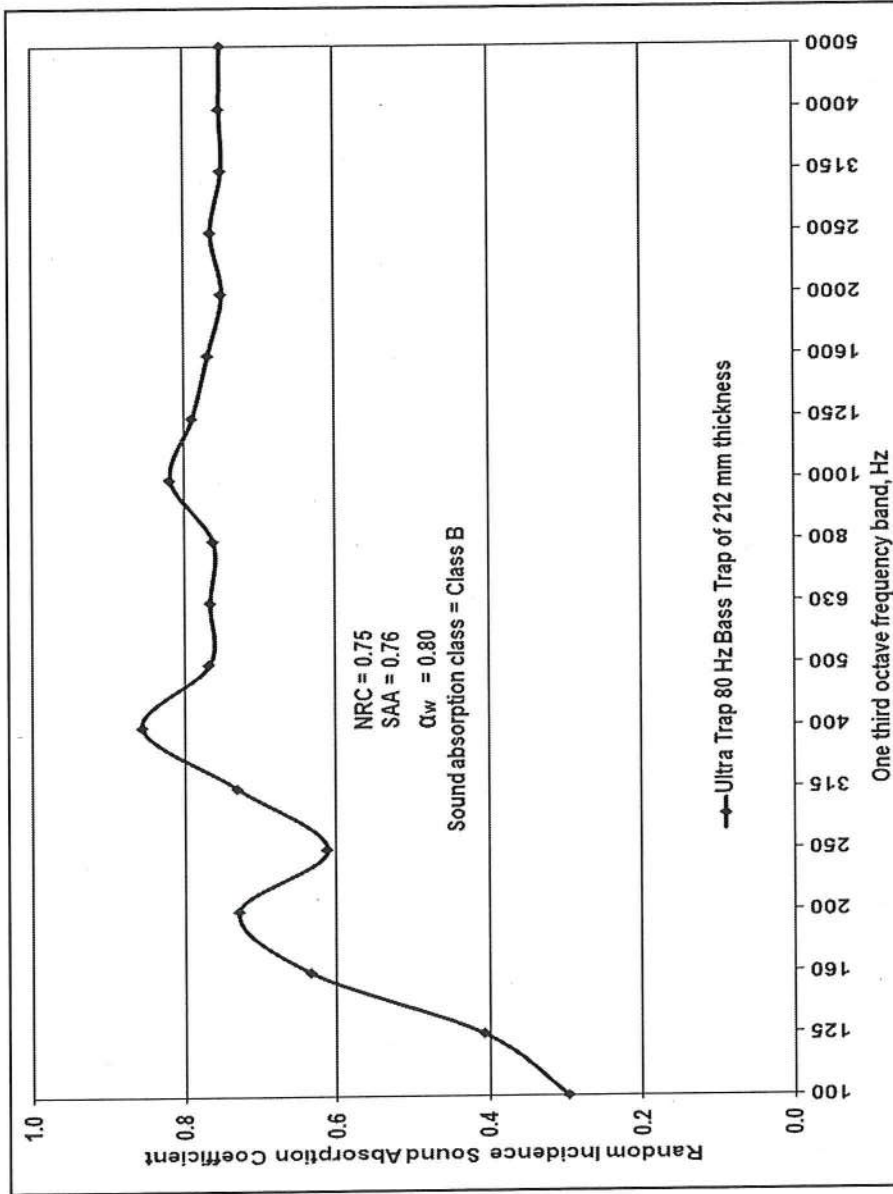




**Figure 1: Test set up for mounting and testing of Ultra Trap 80 Hz Bass Trap with Type A mounting in reverberation chamber**

Table 1 and Figure 2: Values and plot for random incidence sound absorption coefficient of Ultra Trap 80 Hz Bass Trap of 212 mm thickness at one third octave frequencies

One third octave frequency, Hz	Random Incidence Sound Absorption Coefficient	Standard Deviation
100	0.30	0.01
125	0.41	0.01
160	0.63	0.01
200	0.73	0.02
250	0.61	0.02
315	0.73	0.01
400	0.86	0.02
500	0.77	0.02
630	0.77	0.02
800	0.76	0.02
1000	0.82	0.02
1250	0.79	0.01
1600	0.77	0.02
2000	0.75	0.01
2500	0.76	0.01
3150	0.75	0.02
4000	0.75	0.02
5000	0.75	0.01



**Annexure 1**

