CONFIDENTIAL

TEST REPORT ON DETERMINATION OF AIRBORNE SOUND TRANSMISSION LOSS OF COMPOSITE STEEL PANEL OF 100 MM THICKNESS

ULR-TC508525050000202F
NVH/3100025271/2025-26/0202

6th August 2025

1.0 CUSTOMER NAME : ALFA ACOUSTICS
Plot No. 5, Swami Vivekanand Soc.,
Chinchwad, Pune- 411033
Maharashtra

2.0 TEST SAMPLE MANUFACTURER: Shree Venus Energy System Pvt Ltd
135, Burma Colony, Perungudi,
Kancheepuram – 600096
Tamil Nadu

3.0 LETTER REF. : E-mail dated 11th July 2025

4.0 TEST COMPONENT : Test sample details given by customer are as follows:

Composite Steel Panel consists Micro Perforated Aluminium sheet of 1 mm thick + Infill Material Honeycomb of 200 GSM and 50 mm thickness (21 mm Cell size) + Micro Perforated Aluminium sheet of 1 mm thick + Honeycomb of 200 GSM and 50 mm thickness (21 mm Cell size) + GI sheet of 1.2 mm thickness, total 185 kg/m^3 density and 100 mm thickness.

5.0 TEST REQUIREMENTS :

Measurement of sound transmission loss of above mentioned test sample as per ISO 10140-2 / ASTM E-90 and determination of sound transmission class (STC) as per ASTM E- 413 and weighted sound reduction index R_w (C; C_{tr}) with spectrum adaptation terms as per ISO 717-1.

6.0 TEST PROCEDURE :

The above mentioned test sample mounted between reverberation chambers and sealed all around at edges. The test sample area was 1.0 m x 1.0 m. The test was carried out as per ISO 10140-2 / ASTM E-90 in reverberation chamber. Please refer figure 1 for test set up and mounting of system. The airborne sound transmission loss test was carried out three times on same system in a reverberation chambers as per ISO 10140-2 / ASTM E-90 standard and average value is reported. These measurements were carried out at room temperature 25^{0}C ±1^{0}C and humidity 47% and barometric pressure 935 mbar.

7.0 DATE OF EVALUATION :

Test was carried out on above mentioned test sample on 5th August 2025 at NVH laboratory, ARAI-Pune.

An ISO 9001, ISO 14001, ISO 45001 and ISO/IEC 27001 Certified Organization

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ARAI Regional Centre South (ARAI-RCS), Chennai

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8.0 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	16-Jul-25	16-Jul-26
2	½" Random Incidence Microphone	378C20	PCB, USA	16-Jul-25	16-Jul-26
3	Power Amplifier	2716	Bruel & Kjaer, Denmark	Does not require separate calibration as it is driven by data acquisition system	
4	Omnidirectionnel sound source	Omni power 4296	Bruel & Kjaer, Denmark		
5	Reverberation Chambers	80 m^3 and 110 m^3	-	-	-

9.0 TEST RESULTS :

Table 1 and figure 1 shows the average values and plot for Composite Steel Panel consists Micro Perforated Aluminium sheet of 1 mm thick + Infill Material Honeycomb of 200 GSM and 50 mm thickness (21 mm Cell size) + Micro Perforated Aluminium sheet of 1 mm thick + Honeycomb of 200 GSM and 50 mm thickness (21 mm Cell size) + GI sheet of 1.2 mm thickness, total 185 kg/m^3 density and 100 mm thickness in the one-third octave frequency bands of 100 Hz to 5000 Hz, STC (sound transmission class), and R_w ($C_{100\text{-}5000}$; $Ctr_{100\text{-}5000}$) (weighted sound reduction index and spectrum adaptation terms).

10.0 CONCLUSIONS :

The sound transmission class (STC) is calculated as per ASTM E- 413 and weighted sound reduction index with spectrum adaptation terms R_w ($C_{100\text{-}5000}$; $Ctr_{100\text{-}5000}$) is calculated as per ISO 717-1 for Composite Steel Panel consists Micro Perforated Aluminium sheet of 1 mm thick + Infill Material Honeycomb of 200 GSM and 50 mm thickness (21 mm Cell size) + Micro Perforated Aluminium sheet of 1 mm thick + Honeycomb of 200 GSM and 50 mm thickness (21 mm Cell size) + GI sheet of 1.2 mm thickness, total 185 kg/m^3 density and 100 mm thickness	
Sound transmission class (STC)	36 dB
Weighted sound reduction index with spectrum adaptation terms R_w ($C_{100\text{-}5000}$;$C_{tr100\text{-}5000}$)	36 (-1; -6) dB

Tested and Report Prepared By:	Reviewed By:	Reviewed By:	Approved By:
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TC-5086

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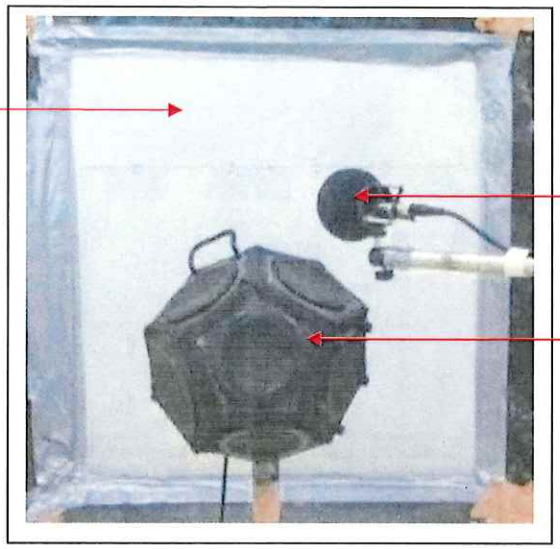

Figure 1: The test set up for mounting and testing of Composite steel panel of 100 mm thickness between two reverberation chambers

Table 1 and Figure 2: Values and plot for Sound Transmission Loss of Composite Steel Panel consists Micro Perforated Aluminium sheet of 1 mm thick + Infill Material Honeycomb of 200 GSM and 50 mm thickness (21 mm Cell size) + Micro Perforated Aluminium sheet of 1 mm thick + Honeycomb of 200 GSM and 50 mm thickness (21 mm Cell size) + GI sheet of 1.2 mm thickness, total 185 kg/m^3 density and 100 mm thickness tested at one third octave frequencies

One Third Octave Frequency, Hz	Sound Transmission Loss, dB	STDEV
100	20.8	0.9
125	19.2	1.0
160	19.5	0.6
200	20.6	0.8
250	22.2	0.6
315	26.1	0.8
400	29.6	0.4
500	33.0	0.6
630	36.7	0.5
800	39.6	0.1
1000	42.3	0.4
1250	44.8	0.4
1600	47.4	0.5
2000	51.1	0.5
2500	54.1	0.5
3150	52.1	0.4
4000	49.6	0.2
5000	51.8	0.3