Test Report No. 7191338137-MEC24/01-KDA
dated 17 Feb 2025

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SUBJECT:

Laboratory measurement of airborne sound insulation loss of double glazed partition system submitted by SAAS Solutions Pte Ltd on 13 Nov 2024.

TESTED FOR:

SAAS Solutions Pte Ltd
151 Chin Swee Road
#13-02 Manhattan House
Singapore 169876

Attn: Mr. Zack Chua

DATE OF TEST:

18 Nov 2024

DESCRIPTION OF SAMPLES:

One set of double glazed partition system with 10mm thick tempered glass + 60mm air gap + 12mm thick tempered glass was installed onto a filler wall of the sample carrier.

Brand Name	:	SAAS Solutions
Model	:	S-108 Double Glazed
Overall nominal size (include frame)	:	1200mm (width) x 2400mm (height) x 108mm (thick)
Material composition	:	a) 12mm thick tempered glass; b) 60mm air gap; c) 10mm thick tempered glass; b) Aluminium frame

The boundary perimeters and gaps of the entire double glazed partition system with tempered glass were filled up with sealant.

The technical drawings of the double glazed partition system with tempered glass were shown in Appendix.

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METHOD OF TEST:

The test was conducted in accordance with the following test standards.

a) ISO 10140 - 2 : 2021 “Laboratory measurement of sound insulation of building elements”
Part 2 : Measurement of airborne sound insulation.

b) ISO 717 - 1 : 2020 “Acoustics - Rating of sound insulation in buildings and of building elements”
Part 1 : Airborne sound insulation

Measured area of double glazed partition: 2.83m^2

Air temperature in both source room and receiving room: 24ºC

Relative air humidity in both source and receiving room: 66%

Receiving room volume: 159m^3

Source room volume: 131m^3

Location of the test: Acoustics Lab of TÜV SÜD PSB Pte Ltd

TEST EQUIPMENT:

The following instruments were used for the test:

1) A dual-channel real-time frequency analyser (B&K Type 2133)
2) One loudspeaker (JBL MPro MP415)
3) Two sets of ½” condenser microphone (B&K Type 4190)
4) Two sets of microphone preamplifer (B&K Type 2669)
5) A sound pressure level calibrator (Norsonic Type 1251)
6) A sound source amplifier (Crown model CE 1000)
7) Two sets of rotating microphone boom (B&K Type 3923)

TEST PROCEDURES:

1) Instrumentation was set up according to ISO 10140 - 2.

2) Measurement system was calibrated using a sound level calibrator.

3) Background noise level of both source and receiving room were measured.

4) One loudspeaker was placed at one corner in the source room.

5) Sound source system was switched on to generate “White” noise and maintained at constant level. The measured sound pressure level in the receiving room was ensured to be 15dB higher than the background noise level.

6) Recording time for both rotating microphone booms was set to 64s which equals to the time taken by the booms to complete two revolutions.

7) Sound pressure level in the source room and the receiving room were measured simultaneously and the measurement was repeated for another 2 more times.

8) Step 6 and 7 were then repeated after the loudspeaker was moved to another corner in the source room.

9) One loudspeaker was placed at one corner of the receiving room to generate the “Pink” noise for reverberation time measurement.

10) The average of 2 measurements of reverberation time in the receiving room was conducted and the measurement was repeated for another 1 more time.

11) Step 9 and 10 were then repeated after the loudspeaker was moved to another corner in the receiving room.

12) The mean values of 6 readings of sound pressure level difference and 4 readings of RT values were calculated.

13) Values of sound reduction index (R) were determined for each 1/3 octave frequency band from 100Hz to 5kHz based on the mean values of step 12.

14) Weighted sound reduction index ($\mathbf{R_w}$) and its adaptation terms ($\mathbf{C}$; $\mathbf{C_{tr}}$) according to ISO 717-1 was determined at 500Hz frequency of the shifted reference curve.

RESULTS:

Values of sound reduction index (R) of the tested double glazed partition system with tempered glass were tabulated in Table 1. Sound Insulation Rating is computed according to ISO 717-1.

Table 1 : Measured Sound Reduction Index, R, and values of the shifted reference curve for R_w = 45

1/3 Octave Band Frequency (Hz)	Sound Reduction Index, R (dBL)	Shifted Reference Curve R_w = 45	Deficiency
100	30.4	26	0.0
125	31.0	29	0.0
160	32.4	32	0.0
200	35.8	35	0.0
250	38.8	38	0.0
315	41.0	41	0.0
400	44.8	44	0.0
500	45.8	**45**	0.0
630	47.1	46	0.0
800	47.4	47	0.0
1000	41.7	48	6.3
1250	38.1	49	10.9
1600	44.0	49	5.0
2000	45.5	49	3.5
2500	47.6	49	1.4
3150	48.3	49	0.7
4000	53.3	49	0.0
5000	56.6	49	0.0
Total deficiency (100Hz – 3150Hz)			**27.8**

The values in Table 1 were plotted as shown in Figure 1.

Remark:

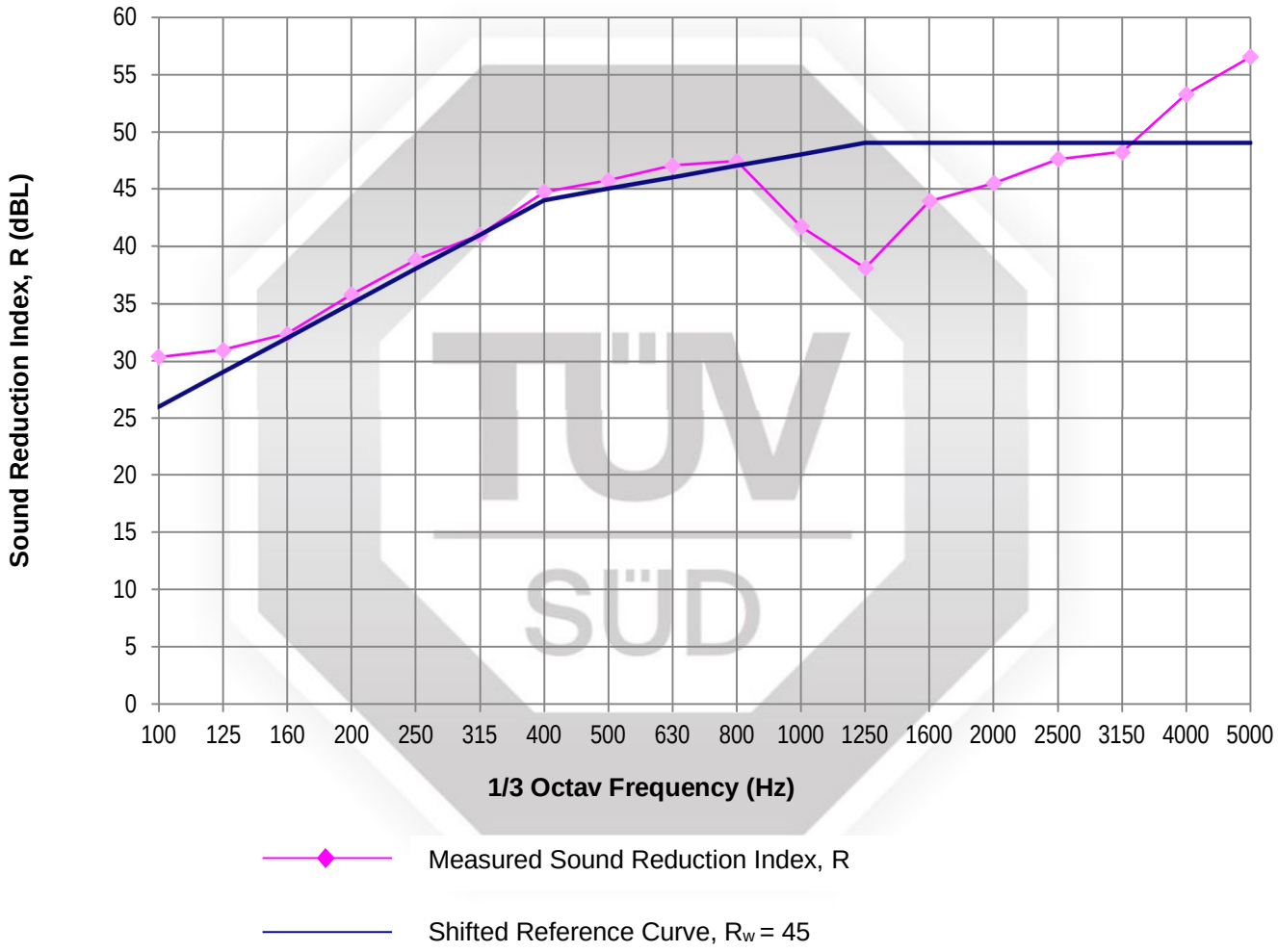
The tested “S-108 Double Glazed” partition system with 10mm thick tempered glass + 60mm air gap + 12mm thick tempered glass achieved a weighted sound reduction index, R_w (C; C_{tr}) = 45 (-2; -4).

Klenplir Drequito Antimano
Testing Officer

Francis Ee Min Kuen
Engineer
Acoustics
Real Estate & Infrastructure - Mechanical

RESULTS (cont'd):

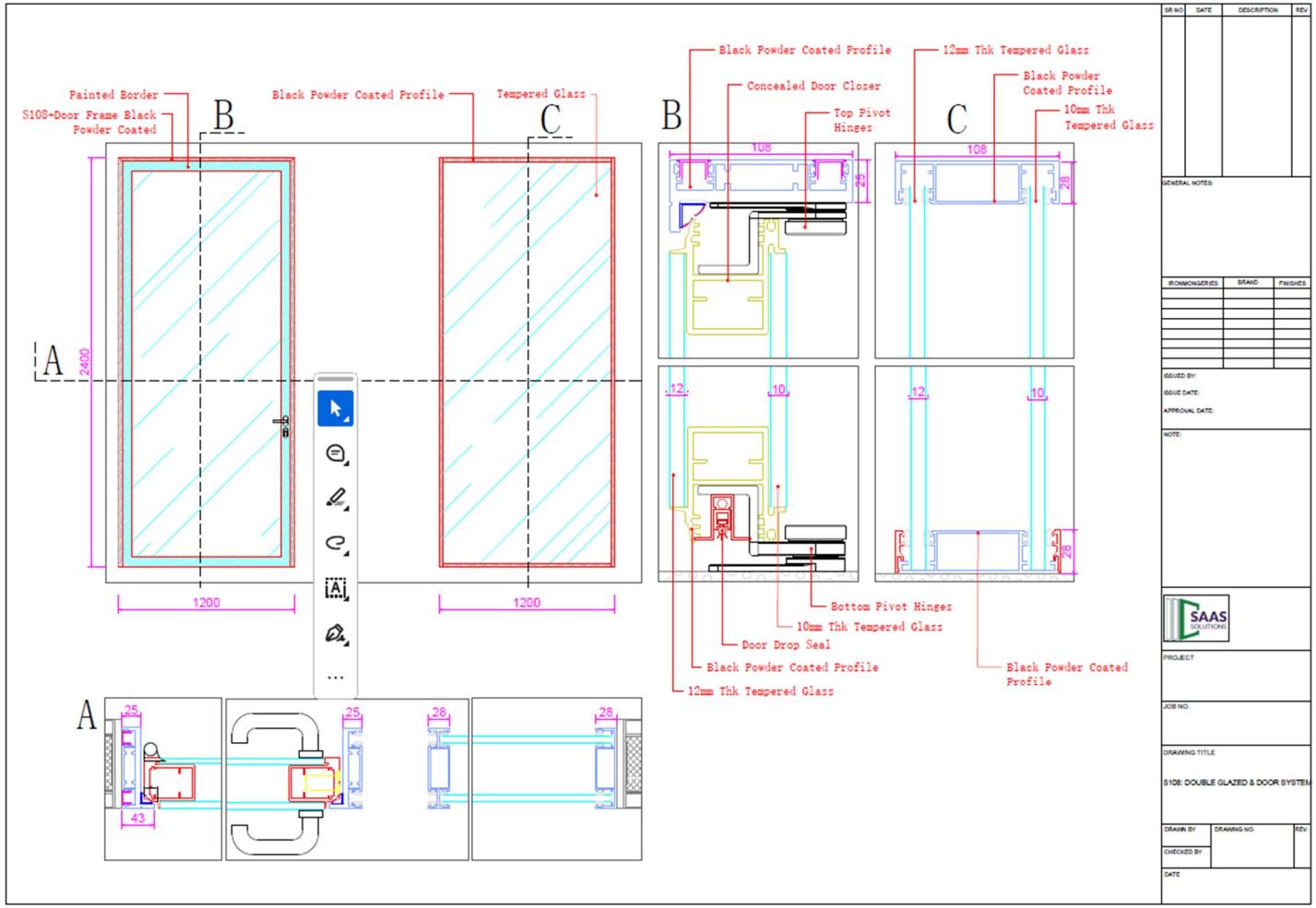
Figure 1: Sound Insulation Performance of "S-108 Double Glazed" Partition System with 10mm thick tempered glass + 60mm air gap + 12mm thick tempered glass (R_w 45)



RESULTS (cont'd):

Figure 2 : "S-108 Double Glazed" partition system with 10mm thick tempered glass + 60mm air gap + 12mm thick tempered glass facing the source room

Figure 3 : "S-108 Double Glazed" partition system with 10mm thick tempered glass + 60mm air gap + 12mm thick tempered glass facing the receiving room



Appendix : Technical drawing of "S-108 Double Glazed" partition partition system with 10mm thick tempered glass + 60mm air gap + 12mm thick tempered glass

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Effective 27 March 2024