

# TEST REPORT



Your Ref:

Date: 28 Apr 2006

Our Ref: 54S062383/B/EMK

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## **SUBJECT:**

Laboratory measurement of airborne sound transmission loss of solid wood glass door system submitted by Sermat Co., Ltd on 14 Apr 2006.

## **TESTED FOR:**

Sermat Co., Ltd  
5/5-6 Soi Sailom  
Phaholyothin Road  
Bangkok 10400

Attn: Mr Apirat Wisetwongsa

## **DATE OF TEST:**

21 Apr 2006

## **DESCRIPTION OF SAMPLE:**

A solid wood glass door system, STC 35 was installed onto the sample carrier by Sermat Co., Ltd.

The dimensions of the test sample including its frame was 840mm (width) x 2760mm (height) x 200mm (thick). The weight of the glass door system was 163.4kg.

The solid wood glass door system consists of a 6mm thick clear glass, 27mm thick air-gap and 6mm thick clear glass.

The technical specification of the window system layout was shown in Appendix 1.



LA-2001-0212-A  
LA-2001-0213-F  
LA-2001-0214-E  
LA-2001-0215-B  
LA-2001-0216-G  
LA-2001-0217-G

The results reported herein have been performed in accordance with the laboratory's terms of accreditation under the Singapore Accreditation Council - Singapore Laboratory Accreditation Scheme

**METHOD OF TEST:**

The test was conducted in accordance with ASTM E90 - 97 "Standard test method for laboratory measurement of airborne sound transmission loss of building partitions and elements"

Area of opening: 2.24m<sup>2</sup>

Air temperature in both source room and receiving room : 25°C

Relative air humidity in both source room and receiving room : 65%

Source room volume: 73m<sup>3</sup>

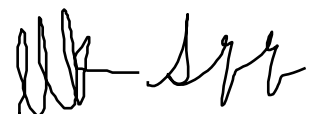
Receiving room volume: 84m<sup>3</sup>

Location of the test: Acoustics Lab of PSB Corporation Pte Ltd

**TEST EQUIPMENT:**

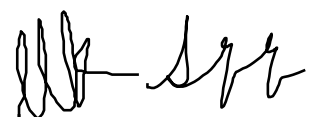
The following instruments were used for the test.

- 1) A dual-channel real-time frequency analyser (B&K Type 2133)
- 2) An Omni-loudspeaker (B&K Type 4296)
- 3) Two sets of ½" condenser microphones (B&K Type 4190)
- 4) Two sets of microphone preamplifiers (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 booms (B&K Type 3923)



**TEST PROCEDURES:**

- 1) Instrumentation was set up according to ASTM E90.
- 2) Measurement system was calibrated using a sound level calibrator Norsonic Type 1251.
- 3) Background noise level for both source room and receiving room were measured.
- 4) Sound source system was switched on and maintained at constant level. The sound pressure level in the receiving room was ensured to be 15dB higher than the background noise level.
- 5) Recording time for both rotating microphone booms was set to 64s which equals to the time taken by the booms to complete two revolutions.
- 6) Sound pressure level difference between the source room and the receiving room was measured with a dual – channel acoustic analyser (B&K 2133), and the measurement was repeated 3 times.
- 7) Step 6 was repeated after the loudspeaker was moved to new position.
- 8) Reverberation time (RT) of the receiving room was measured from two different loudspeaker positions. Each loudspeaker position was measured 2 times.
- 9) The mean values of the six readings for sound pressure level difference and four readings for RT values were calculated.
- 10) Values of sound transmission loss were determined for each 1/3 octave frequency band from 100Hz to 5kHz based on the mean values of step 9.
- 11) Sound transmission class was determined at the frequency of 500Hz of the shifted reference curve according to ASTM E 413.



**RESULTS:**

Values of sound transmission loss (TL) of the sample tested were tabulated in Table 1. Sound insulation rating was computed according to ASTM E413 - 87 (Reapproved 1999) "Classification for rating sound insulation".

**Table 1 : Measured values of TL and values of the shifted reference curve for STC = 35**

One-third Octave Band Frequency (Hz)	TL (dB)	STC = 35 (dB)	Deficiency
100	22	16	0
125	22	19	0
160	22	22	0
200	29	25	0
250	33	28	0
315	35	31	0
400	35	34	0
500	37	35	0
630	36	36	0
800	36	37	1
1000	35	38	3
1250	34	39	5
1600	33	39	6
2000	34	39	5
2500	34	39	5
3150	34	39	5
4000	37	39	2
5000	38	39	1
Total deficiency (125Hz – 4000Hz) :			30

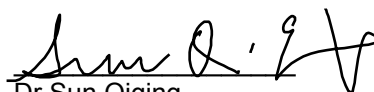
The values in Table 1 were plotted as shown in Figure 1.

**Remark:**

The tested sample has a sound transmission class, STC = 35



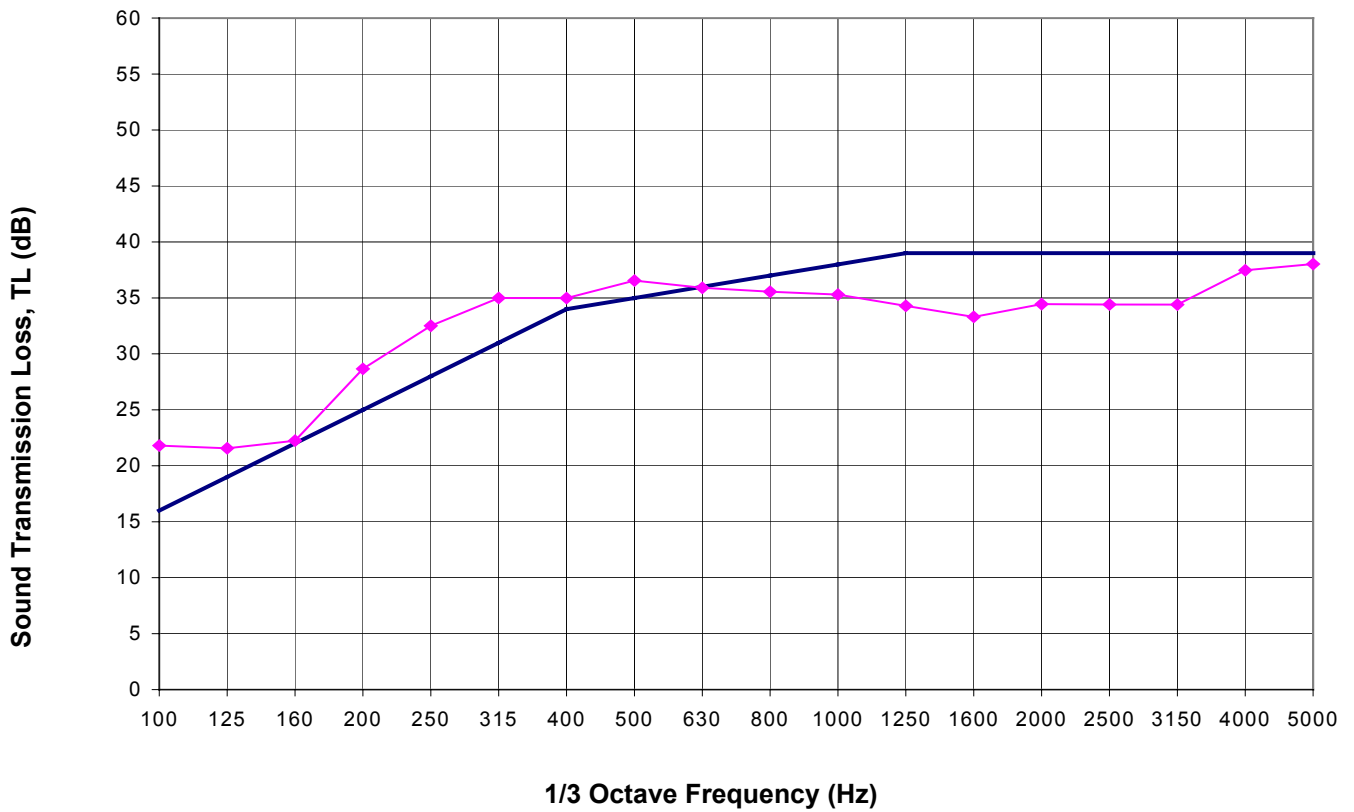
Ee Min Kuen  
Testing Officer



Dr Sun Qiqing  
Assistant Vice President  
Acoustic & Vibration/Packaging  
Testing Group

**RESULTS: (cont'd)**

**Figure 1 : Sound insulation performance of solid wood glass door system, STC 35**

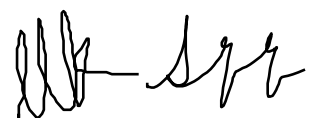


◆ Measured sound transmission loss, TL  
— Shifted curve, STC = 35

**RESULTS: (cont'd)**



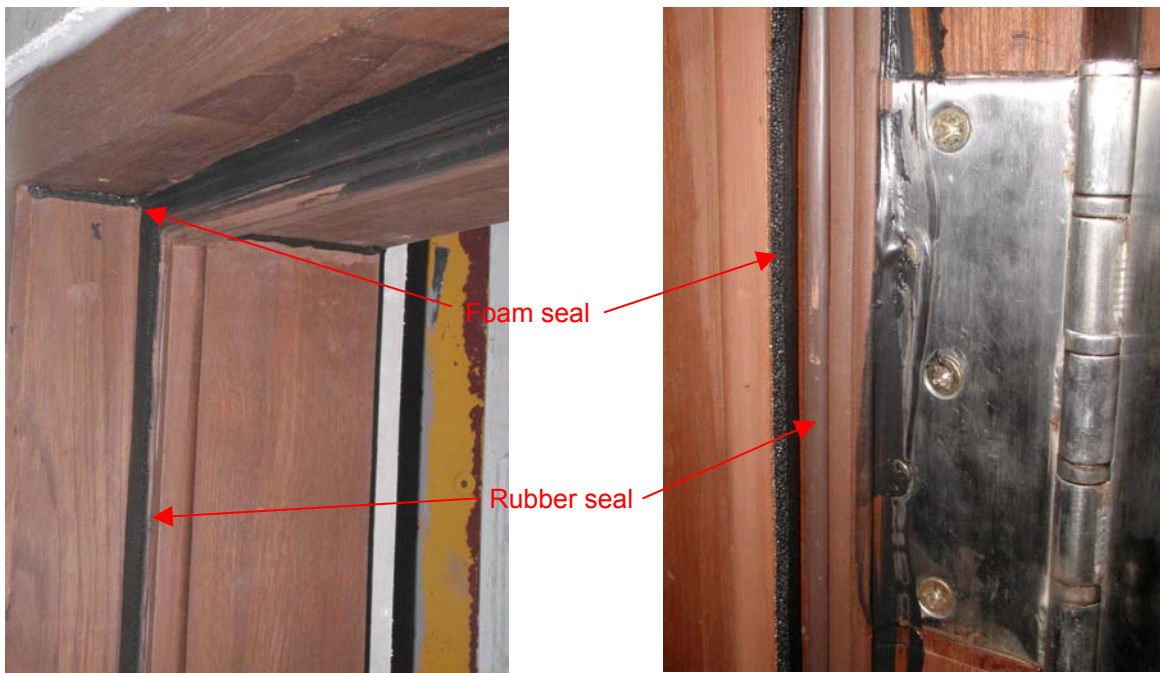
**Figure 2 : Test set up of sample in the reverberation room**



**RESULTS: (cont'd)**

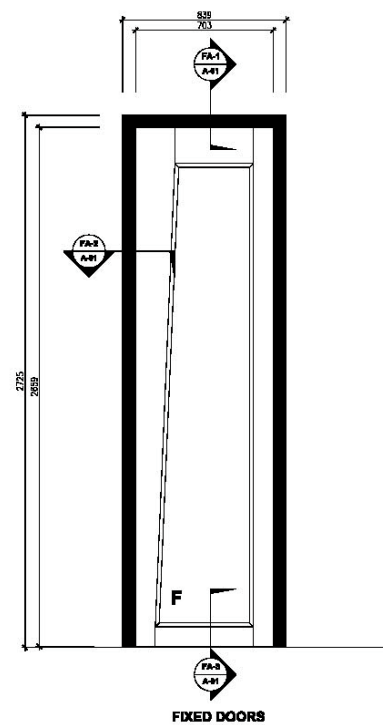
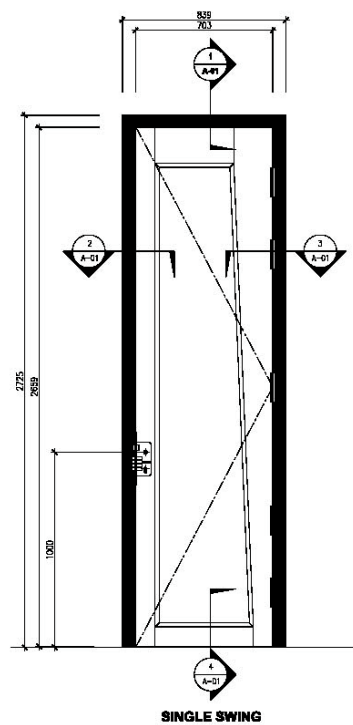


**Figure 3 : The location of drop-seal of the acoustic door**



**Figure 4 : Location of the seals on the acoustic door frame**

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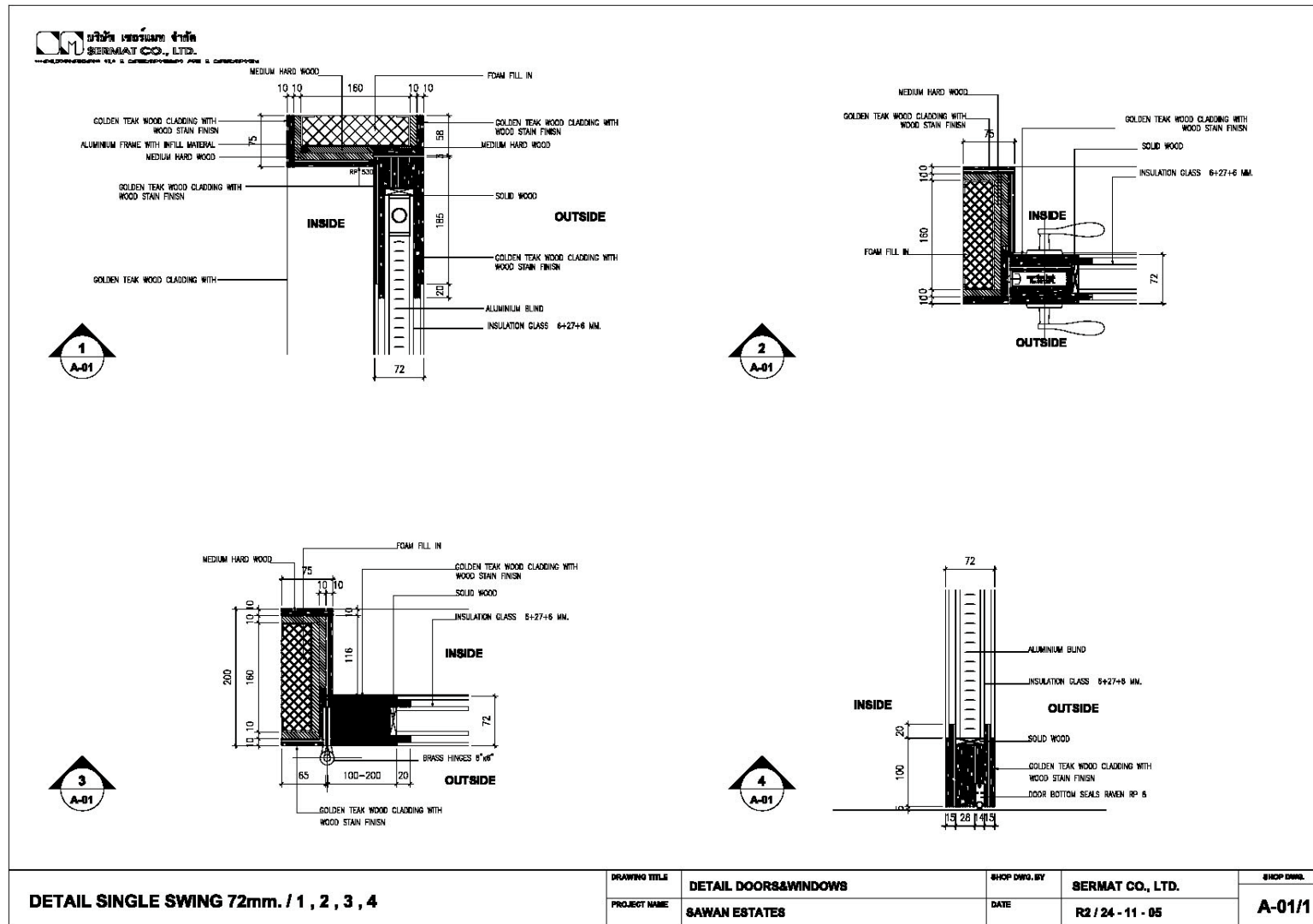


**SINGLE SWING / FIXED DOORS**

DRAWING TITLE	SINGLE SWING / FIXED DOORS	SHOP DWG. BY	SERMAT CO., LTD.	SHOP DWG.
PROJECT NAME	SAWAN ESTATES	DATE	10/03/2006	A-001

Appendix 1a : Technical Drawing





DETAIL SINGLE SWING 72mm. / 1, 2, 3, 4

DRAWING TITLE	DETAIL DOORS&WINDOWS	#SHOP DWG. BY	SERMAT CO., LTD.	#SHOP DWG.
PROJECT NAME	SAWAN ESTATES	DATE	R2 / 24 - 11 - 05	A-01/1

Appendix 1b : Technical Drawing

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May 2005