

**Test Report No. 719120065-MEC20-EMK**  
dated 19 Aug 2020



PSB Singapore

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**SUBJECT:**

Laboratory measurement on noise reduction of single phone booth submitted by Integrated Venture Pte Ltd on 17 Aug 2020.

**TESTED FOR:**

Foshan Shunde Huaquan Furniture Co., Ltd  
No 1, Xijun Road, Chongkou Industrial Zone,  
Longjiang Town, Shunde, Foshan,  
Guangdong,  
China

Attn: Mr. Deng Ke Quan

**DATE OF TEST:**

18 Aug 2020

**DESCRIPTION OF SAMPLES:**

The following single phone booth was installed in the reverberation room.

Brand	:	Dian Tang
Model	:	B0128A
Product	:	Single phone booth
External Dimension	:	1103mm (width) x 1103mm (depth) x 2200mm (height)
Material Composition	:	0.8mm to 2mm thick cold rolled sheet and hollow section; 1.2mm to 4mm thick aluminium 6063 T5; 9mm thick, 205kg/m <sup>3</sup> acoustic material polyester fibre board; 12mm to 15mm thick plywood; 1.0mm to 1.2mm thick polyester fabric; 5mm thick ethylene-vinyl acetate sheet; double glazed glass panel with 5mm thick tempered glass.

The technical drawing of the single phone booth submitted by the company was shown in Appendix.



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**TUV®**

**METHOD OF TEST:**

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

- a) ASTM E596-96 (Reapproved 2016) "Standard test method for Laboratory Measurement of Noise Reduction of Sound-Isolating Enclosures"
- b) ASTM E413 - 16 "Classification for Rating Sound Insulation"

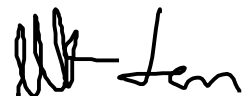
**TEST EQUIPMENT:**

The following instruments were used for the test.

- 1) LAN-XI Data Acquisition Unit (B & K Type 3160-A-042) with Pulse Labshop (v.16)
- 2) 1 units of 4-channel sound & vibration analyser (SVAN 958).
- 3) One units of loudspeaker (JBL MPro MP415)
- 4) 5 sets of ½" diffused microphone (B & K Type 4943) and pre-amplifier (B & K Type 2669)
- 5) A sound pressure level calibrator (Norsonic Type 1251)
- 6) A sound source amplifier (Crown model CE 1000)

**TEST PROCEDURES:**

- 1) The phone booth and test equipment were set up inside a reverberation room as shown in Figure 2.
- 2) Measurement system was calibrated.
- 3) The fan and light inside the phone booth remained "OPERATION" throughout the testing.
- 4) Sound pressure level inside the phone booth was measured at 4 different microphone locations.
- 5) Sound pressure level outside the phone booth was measured at 8 different microphone locations.
- 6) A loudspeaker was placed at 2 separate different locations outside the phone booth to generate noise source for the measurement.
- 7) Noise reduction (NR) values was determined for each 1/3 octave frequency band from 100Hz to 5kHz based on the mean values of 2 different loudspeaker positions.
- 8) Noise Isolation Class (NIC) was determined at 500Hz frequency of the shifted reference curve according to ASTM E413.



**TEST RESULTS:**

The test results were tabulated in the following tables.

- a) Table 1 shows the background noise level inside the operating phone booth.
- b) Table 2 shows the noise reduction level (NR) of the operating phone booth.
- c) Table 3 shows the measured noise reduction, NR and values of the shifted reference curve of the operating phone booth.

**Table 1 : Background Noise Level inside phone booth**

1/3 Octave Frequency (Hz)	Background Noise Level inside phone booth (dBL)	
	1/3 Octave Band	1/1 Octave Band
100	36.3	31.8
125	34.5	
160	28.6	
200	27.9	26.7
250	29.1	
315	24.5	
400	28.5	18.7
500	20.3	
630	15.2	
800	11.7	9.4
1000	9.2	
1250	8.1	
1600	7.5	8.0
2000	7.8	
2500	8.7	
3150	8.9	9.8
4000	9.8	
5000	10.8	
Overall Linear	40.2	

**Remark:**

The background noise was measured with the operating fan and light.



**RESULTS: (cont'd)**

**Table 2 : Noise Reduction Level of phone booth**

1/3 Octave Frequency (Hz)	Noise level (dBL)		Noise Reduction Level, NR (dBL)
	Outside Phone Booth	Inside Phone Booth	
100	79.4	75.0	4.5
125	83.3	65.5	17.7
160	84.3	66.6	17.7
200	83.6	67.3	16.3
250	83.2	67.2	16.0
315	82.0	60.4	21.6
400	79.8	61.4	18.4
500	82.8	60.1	22.7
630	85.9	61.9	24.0
800	81.5	57.0	24.5
1000	85.2	53.1	32.1
1250	81.4	48.1	33.3
1600	81.9	49.5	32.4
2000	84.7	52.3	32.3
2500	83.3	49.0	34.2
3150	84.7	46.7	38.0
4000	83.2	44.0	39.3
5000	81.4	41.5	39.9
Overall Linear (dBL)	95.7	77.5	18.2



**RESULTS: (cont'd)**

**Table 3 : Measured Noise Reduction, NR and values of the shifted reference curve for NIC = 27**

1/3 Octave Band Frequency (Hz)	Measured Noise Reduction, NR, (dB)	Shifted Reference Curve NIC = 27 dB	Deficiency
100	4.5	8	3.5
125	17.7	11	0.0
160	17.7	14	0.0
200	16.3	17	0.7
250	16.0	20	4.0
315	21.6	23	1.4
400	18.4	26	7.6
<b>500</b>	<b>22.7</b>	<b>27</b>	<b>4.3</b>
630	24.0	28	4.0
800	24.5	29	4.5
1000	32.1	30	0.0
1250	33.3	31	0.0
1600	32.4	31	0.0
2000	32.3	31	0.0
2500	34.2	31	0.0
3150	38.0	31	0.0
4000	39.3	31	0.0
5000	39.9	31	0.0
<b>Total deficiency (125Hz – 4000Hz)</b>			<b>26</b>

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

**Remarks:**

The tested "Dian Tang / B0128A" single phone booth achieved

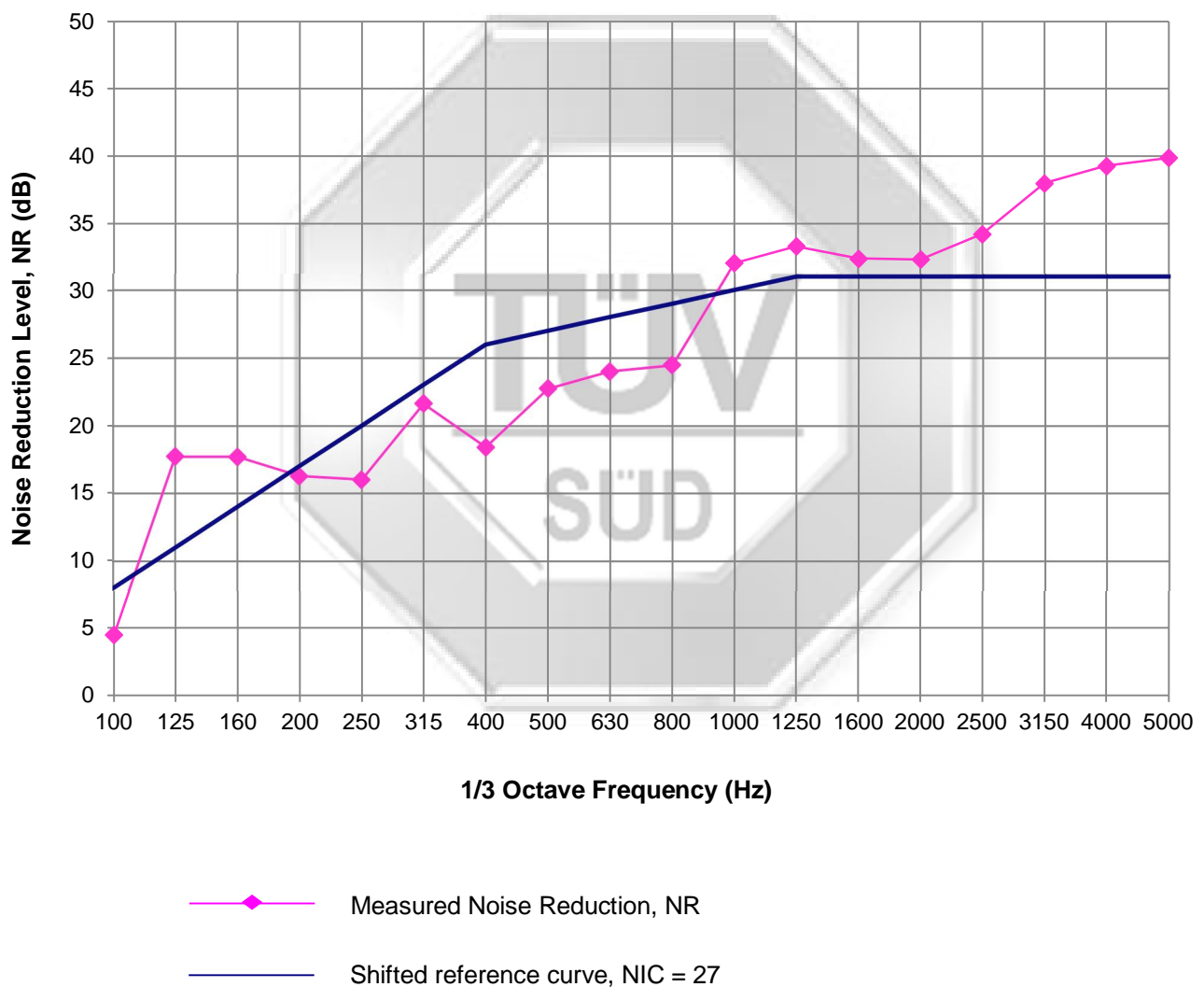
- a) Noise Reduction, NR = 18.2dB
- b) Noise Isolation class, NIC = 27

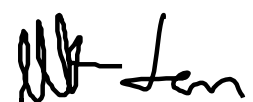
  
Francis Ee Min Kuen  
Testing Officer

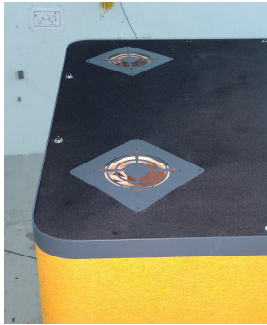
  
Lem Chee Meng  
Product Manager  
Acoustics  
Real Estate & Infrastructure - Mechanical

**RESULTS: (cont'd)**

**Figure 1 : Noise isolation performance of “Dian Tang / B0128A” single phone booth  
(NIC 27)**



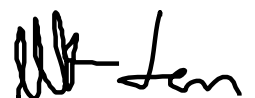




Ventilation remained  
"OPEN" during test



Figure 2 : Test setup of phone booth inside the reverberation room

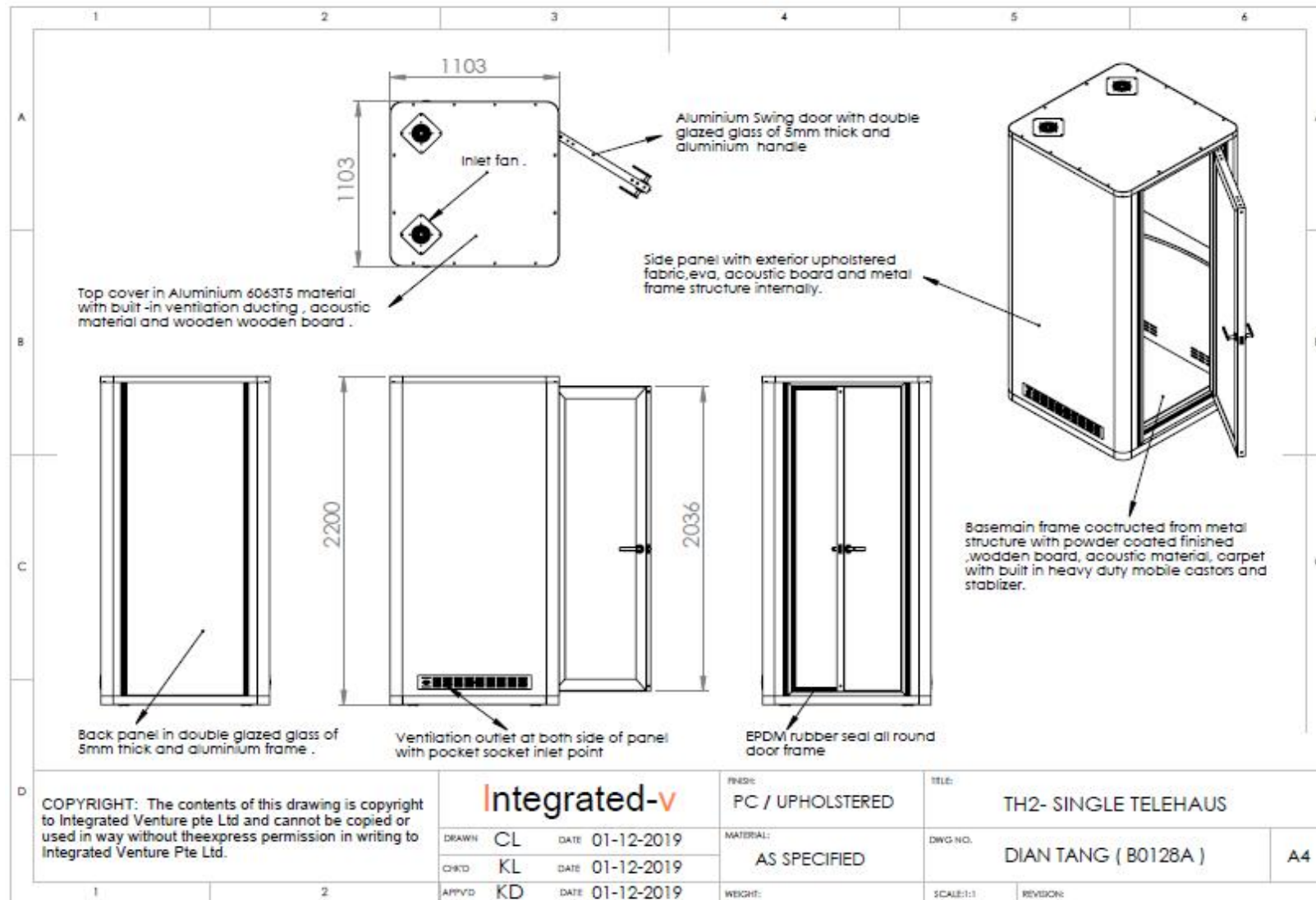




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**Appendix : Isometric view of phone booth**



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July 2011

