



TEST REPORT 2423601-OYC

Date 29 JUL 2024

Singapore Test Lab Pte Ltd, 10B Enterprise Road, Singapore 629828, Tel: +65 6353 6393, Fax: +65 6353 6395

SUBJECT:

Sound measurement test of uPVC and hubless pipe submitted by Liang Chew Hardware Pte Ltd.

TESTED FOR:

Liang Chew Hardware Pte Ltd
 133 Kitchener Road
 Singapore 208517
 Attn: QC Department

SAMPLE RECEIVED DATE:

02 Jul 2024

TEST DATE:

05 Jul 2024

METHOD OF TEST:

Adopting ISO 3744:2010 Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Engineering methods for an essentially free field over a reflecting plane.

As requested by client, the tests are to be carried as follow:

1. A close-coupled water closet was installed with the corresponding down pipes simulating a toilet on the upper floor.
2. The sound generated by flushing the water closet on the upper floor through the down pipes was measured in the lower floor at a fixed measurement radius.
3. All sound measurement was carried out using A Weighting. See appendix as supplied by the client.

Sample reference	Measurement radius	Test set-up
uPVC pipe	0.15m At 1.5 m below the ceiling	See photo 1 and 2
Hubless pipe coating thickness 120µm		
Hubless pipe coating thickness 240µm		
Hubless pipe coating thickness 120µm (with rockwool insulation)		

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DESCRIPTION OF SAMPLE:

One lot of “Norika” brand uPVC and hubless pipe and fitting were received for testing. The descriptions are as follows:

Sample size (DN)	Descriptions	Remarks
100	uPVC pipe (SS213)	See photo 1 and 2
100	Hubless pipe coating thickness 120µm	
100	Hubless pipe coating thickness 240µm	
100	Hubless pipe coating thickness 120µm (with rockwool insulation)	

TEST RESULTS:

Table 1 – Noise measurements on uPVC pipe

Test	Results			
	Test 1	Test 2	Test 3	Average
Background noise level dB(A)	29.5			
Noise level dB(A)	71.5	73.7	72.1	72.4

Table 2 – Noise measurements on hubless pipe (120µm coating thickness)

Test	Results			
	Test 1	Test 2	Test 3	Average
Background noise level dB(A)	29.5			
Noise level dB(A)	63.3	63.4	63.0	63.2

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TEST RESULTS:

Table 3 – Noise measurements on hubless pipe (240µm coating thickness)

Test	Results			
	Test 1	Test 2	Test 3	Average
Background noise level dB(A)	29.5			
Noise level dB(A)	61.8	62.2	62.0	62.0

Table 4 – Noise measurements on hubless pipe (120µm coating thickness with rockwool insulation)

Test	Results			
	Test 1	Test 2	Test 3	Average
Background noise level dB(A)	29.5			
Noise level dB(A)	60.1	60.4	60.4	60.3


 Ong Yeo Chuan
 Testing Officer


 Chua Peck Cheong
 Senior Manager

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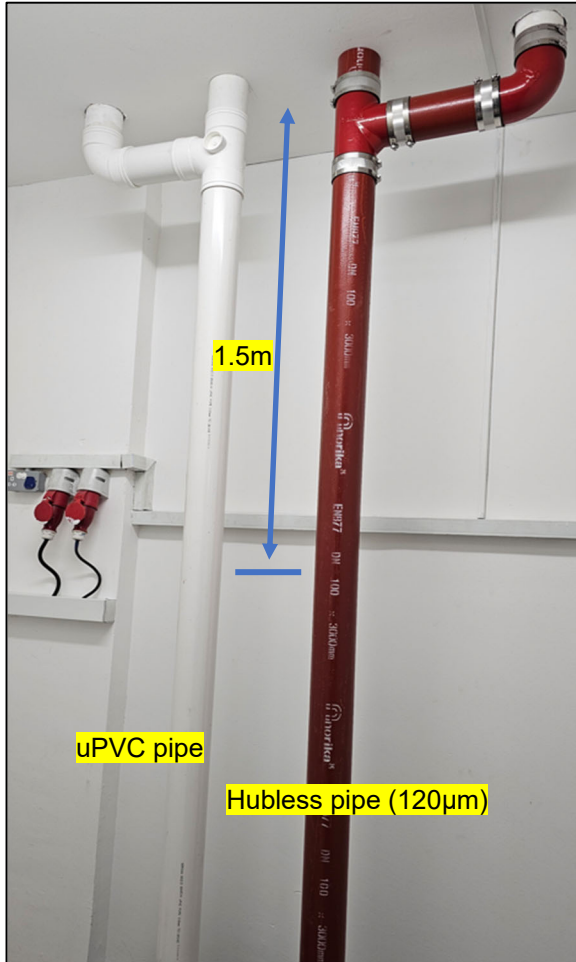


Photo 1 - Typical test set-up

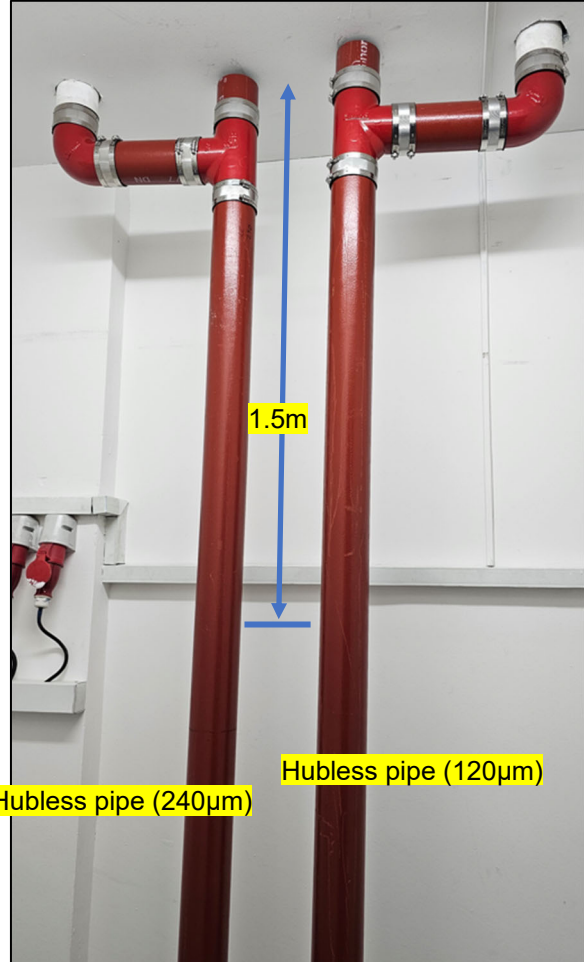


Photo 2 - Typical test set-up

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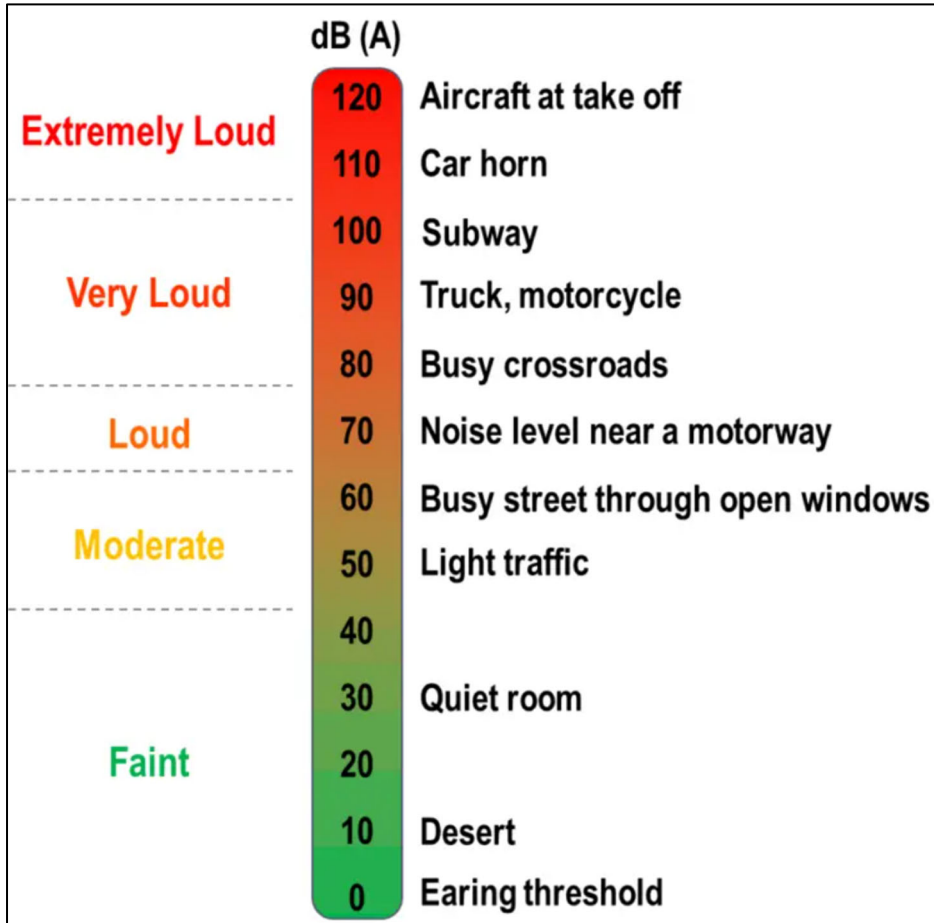


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APPENDIX:



Appendix as supplied by the client

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