



Impact Sound Insulation Test

Oak Tree Retirement Village, Pelican Waters

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Document Control

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Disclaimer

This report was compiled in accordance with the policies and procedures found within Live It Acoustics Quality Management System (QMS) which is based on Australian and New Zealand Standard AS/NZS ISO 9001-2016 Quality management systems.

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1 Introduction

Live It Acoustics were engaged by GT Tiling Pty Ltd to conduct field impact sound insulation testing at Oak Tree Retirement Village, located at 1 Boat Shed Way, Pelican Waters QLD 4551. This test investigates the transmission of structure-borne noise generated by impact through floors separating sole-occupancy units.

The Building Code of Australia (BCA) specifies verification methods to determine if the level of sound transmission through a floor system is compliant. The verification method used within this assessment is FV5.1. Under this method, the BCA require that floors separating sole-occupancy units provide a field tested isolation rating of $L'nT,w \leq 62$ dB when determined under AS ISO 717.2. $L'nT,w$ is a weighted standardised impact sound pressure level, whereby a lower value indicates better isolation performance provided by the floor under investigation.

To perform the above-mentioned verification method, the testing procedure involves the use of a tapping machine placed on a test specimen, typically comprising of samples of flooring within a source room. The tapping machine uses hammers to strike the floor within the source room, producing noise within the receiving room. The level of noise transmission received is measured with a sound level meter. Using the field measurements collected, the single figure $L'nT,w$ rating for the test specimen is then calculated in accordance with AS ISO 717.2.

1.1 Test Specimens

Three (3) test specimens were installed in the source room, which was the proposed main bedroom in Unit 206. Their descriptions are presented below in Table 1.

Table 1. Partition description

Test No.	Partition description (in order of layer)
1	600x300x10mm porcelain tile -> 4.5mm Regupol 4515 matting -> 200mm concrete slab -> 350mm ceiling void -> 13mm plasterboard ceiling lining
2	600x300x10mm porcelain tile -> 4mm Acoustibond adhesive -> 200mm concrete slab -> 350mm ceiling void -> 13mm plasterboard ceiling lining
3	200mm concrete slab -> 350mm ceiling void -> 13mm plasterboard ceiling lining

The receiving room was located in the main bedroom of Unit 104. The unit was fully furnished, with finishes including:

- Godfrey Hirst Bayside Twist carpet
- Two (2) side tables;
- Queen bed; and
- 6.5mm Hush Lam sliding glass door (full perimeter acoustically rated seals).

All windows and doors in the receiving room were closed during testing.

2 Methodology

Testing was conducted in accordance with ISO 16283.2:2015 and AS 2460:2002 (R2016). It should be noted that the 'low frequency procedure' was not used within these tests.

The L'nT,w rating was calculated in accordance with AS ISO 717.2:2013.

Each floor product sample was tapped in four (4) positions, where measurements were taken in the receiving room over a period of 30-seconds per source position.

Background noise measurements were conducted after each set of intrusive measurements.

Room reverberation measurements were conducted in the receiving room, utilising the Rion NL-52's RT function at ten (10) locations within the room. Pink noise was generated through PA speakers to excite the room.

The sound level meter was calibrated with a sound pressure level of 94dB at 1kHz before and after the tests. Calibration drift was found to be within ± 0.5 dB and is therefore acceptable.

Instrumentation utilised in conducting the tests are presented below in Table 2.

Table 2. Instrumentation

Description	Serial #	Manufacturer	Model	Calibration Date
Sound Level Meter	01254317	Rion	NL-52	10/06/2020
Calibrator	1.284874	Lutron	SC-942	13/07/2020
Tapping Machine	AC.14039	Sources Line	EM50	n/a
Speakers	n/a	dB Technologies	Opera 10	n/a



Figure 1. Source room & test 1 floor sample



Figure 2. Source room & test 2 floor sample



Figure 3. Source room & test 3 floor (bare concrete slab)

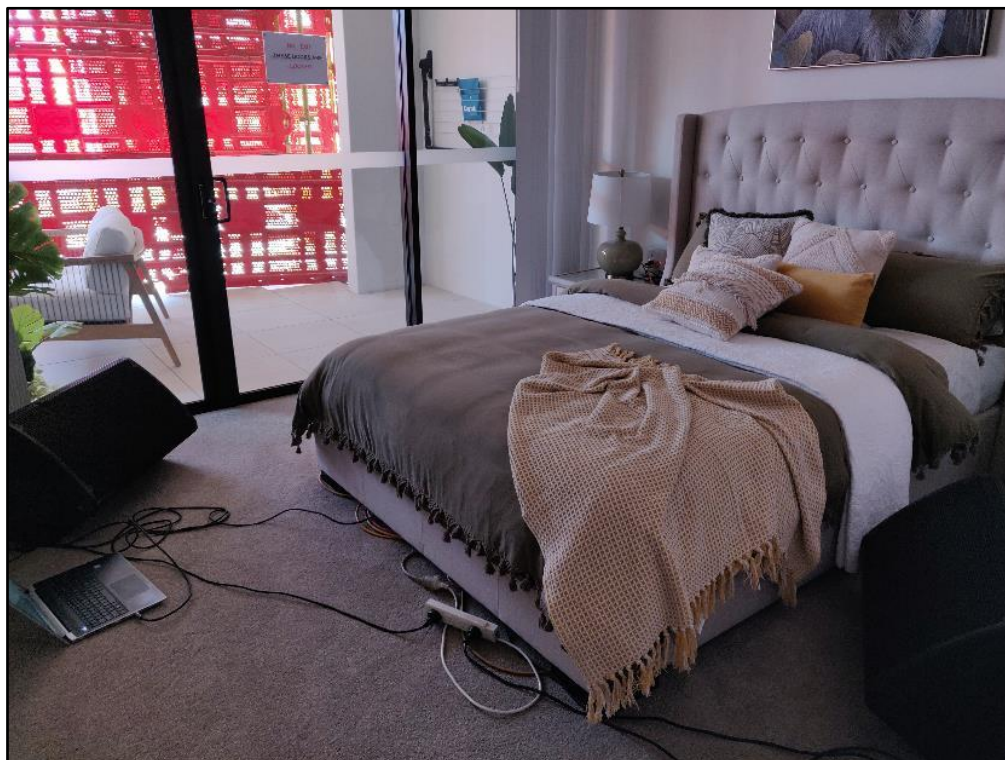


Figure 4. Receiving room & noise survey instrumentation

3 Results

Table 3 below presents the results of the field impact sound insulation tests. Detailed test certificates for each flooring sample are also provided in Appendix A – Test Certificates.

Table 3. Summary of test results

Test No.	Test flooring sample	L'nT,w	C _i
1	600x300x10mm porcelain tile -> 4.5mm Regupol 4515 matting -> 200mm concrete slab -> 350mm ceiling void -> 13mm plasterboard ceiling lining	63 dB	-9
2	600x300x10mm porcelain tile -> 4mm Acoustibond adhesive -> 200mm concrete slab -> 350mm ceiling void -> 13mm plasterboard ceiling lining	62 dB	-10
3	200mm concrete slab -> 350mm ceiling void -> 13mm plasterboard ceiling lining	68 dB	-14

4 Conclusion

The Acoustibond flooring sample was the only finish which achieved a L'nT,w rating of ≤ 62 dB and therefore complies with the BCA criteria.

Should you require further information, please do not hesitate to contact Live It Acoustics.

Report complied by

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Appendix A – Test Certificates

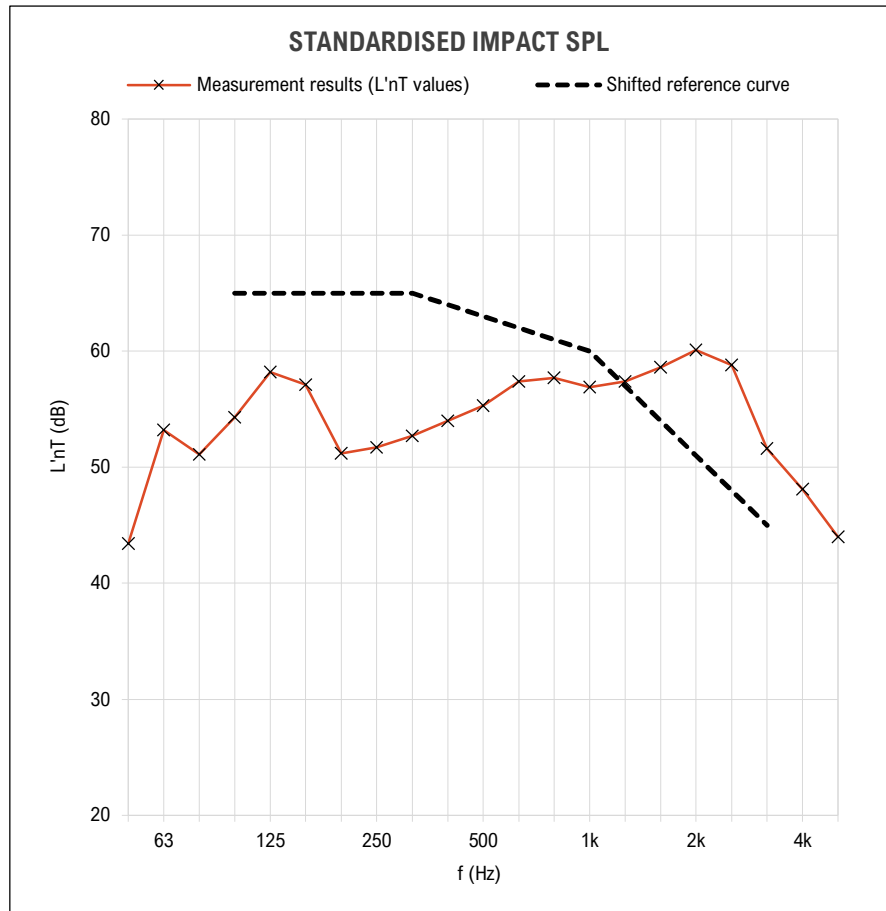
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FIELD IMPACT SOUND INSULATION TEST CERTIFICATE 1



FIELD IMPACT SOUND INSULATION - TEST CERTIFICATE	DESCRIPTION OF FLOOR AND SPECIMEN
Project: #1224 Oak Tree Retirement	Floor/Partition Construction: 600x300x10mm porcelain tile -> 4.5mm Regupol 4515 matting -> 200mm concrete slab -> 350mm ceiling void -> 13mm plasterboard ceiling lining
Source Space/Room: Unit 206	
Receiving Space/Room: Unit 104	Receiving room finish: 150mm Ritek wall construction (concrete core with fibre cement finish) with 92 & 64mm internal steel studs (plasterboard finish). 6.5mm Hush Lam sliding doors (Rw32) with full perimeter acoustically rated seals. Bedroom is fully furnished with queen bed and carpeted with Godfrey Hirst Bayside Twist.
Client: GT Tiling Pty Ltd	
Test Performed By: Lachlan Gleeson, Jessica Appel	Receiving room volume (m³): 35.6
Measurement Date: 28 August 2020	No. of Source Positions: 4 Sweeps
Measurement Parameter: Leq	No. of Microphone Positions: Manual Sweep
Tapping Machine: Sources Line EM50 / SN: 01254317	No. of RT measurements: 10
Sound Level Meter: Rion NL-52 / SN: 01254317	

Frequency f Hz	L'nT (1/3 octave) dB
50	<= 43.4
63	53.2
80	51.1
100	54.3
125	58.2
160	57.1
200	51.2
250	51.7
315	52.7
400	54.0
500	55.3
630	57.4
800	57.7
1000	56.9
1250	57.4
1600	58.6
2000	60.1
2500	58.8
3150	51.6
4000	48.1
5000	44.0



L'nT,w (CI) = 63 (-9) dB

Rating according to ISO 717-2:2013

Evaluation based on field measurement results obtained by an engineering method

Tests conducted in accordance with ISO 16283-2:2015 and AS 2460:2002 (R2016)

No background noise influence on L'nT,w

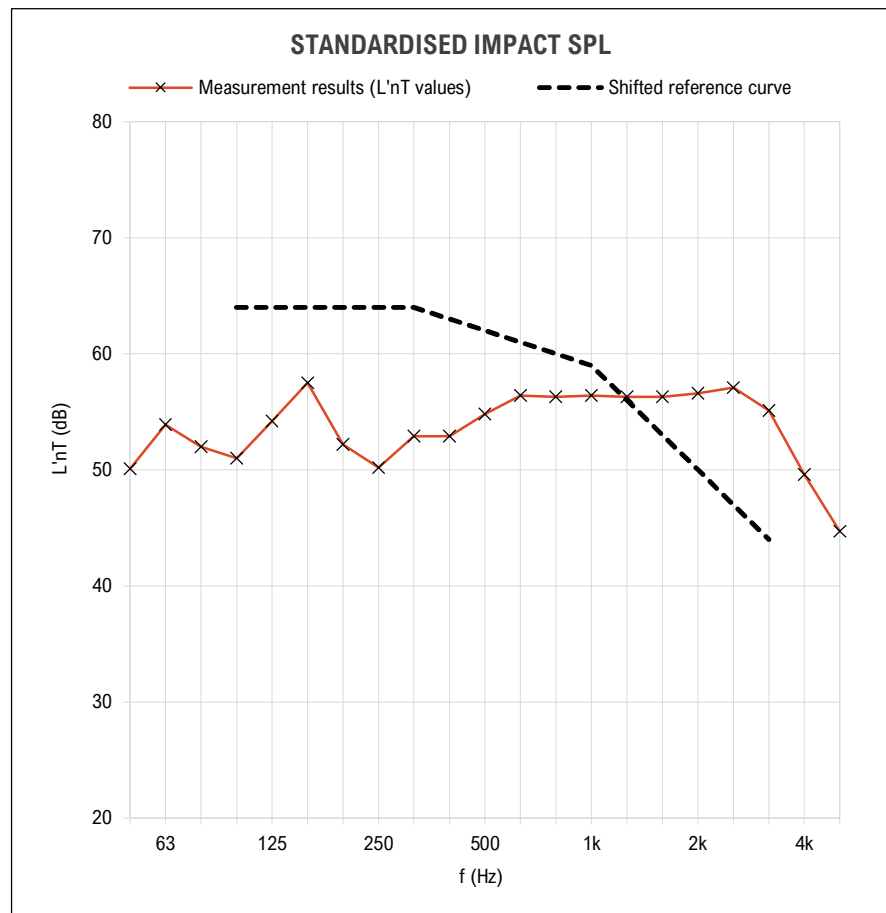
No background noise influence on CI

FIELD IMPACT SOUND INSULATION TEST CERTIFICATE 2



FIELD IMPACT SOUND INSULATION - TEST CERTIFICATE	DESCRIPTION OF FLOOR AND SPECIMEN
Project: #1224 Oak Tree Retirement	Floor/Partition Construction: 600x300x10mm porcelain tile -> 4mm Acoustibond adhesive -> 200mm concrete slab -> 350mm ceiling void -> 13mm plasterboard ceiling lining
Source Space/Room: Unit 206	
Receiving Space/Room: Unit 104	Receiving room finish: 150mm Ritek wall construction (concrete core with fibre cement finish) with 92 & 64mm internal steel studs (plasterboard finish). 6.5mm Hush Lam sliding doors (Rw32) with full perimeter acoustically rated seals. Bedroom is fully furnished with queen bed and carpeted with Godfrey Hirst Bayside Twist.
Client: GT Tiling Pty Ltd	
Test Performed By: Lachlan Gleeson, Jessica Appel	Receiving room volume (m³): 35.6
Measurement Date: 28 August 2020	No. of Source Positions: 4 Sweeps
Measurement Parameter: Leq	No. of Microphone Positions: Manual Sweep
Tapping Machine: Sources Line EM50 / SN: 01254317	No. of RT measurements: 10
Sound Level Meter: Rion NL-52 / SN: 01254317	

Frequency f Hz	L'nT (1/3 octave) dB
50	50.1
63	53.9
80	52.0
100	51.0
125	54.2
160	57.5
200	52.2
250	50.2
315	52.9
400	52.9
500	54.8
630	56.4
800	56.3
1000	56.4
1250	56.3
1600	56.3
2000	56.6
2500	57.1
3150	55.1
4000	49.6
5000	44.7



L'nT,w (CI) = 62 (-10) dB

Rating according to ISO 717-2:2013

Evaluation based on field measurement results obtained by an engineering method

Tests conducted in accordance with ISO 16283-2:2015 and AS 2460:2002 (R2016)

No background noise influence on L'nT,w

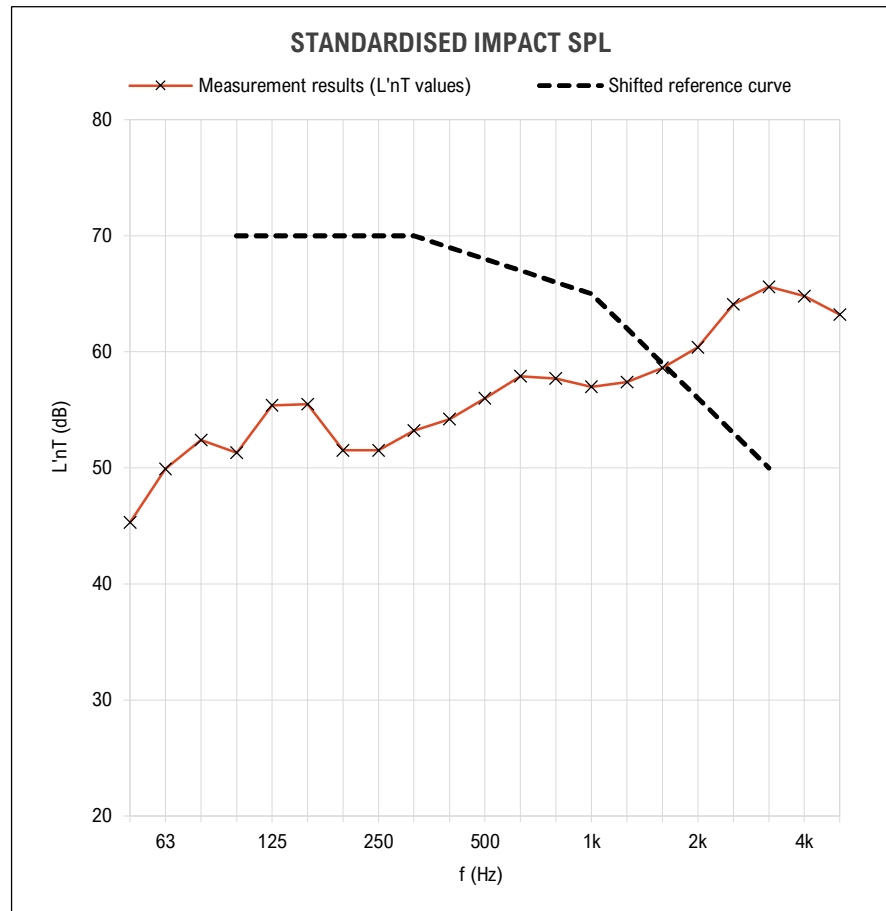
No background noise influence on CI

FIELD IMPACT SOUND INSULATION TEST CERTIFICATE 3



FIELD IMPACT SOUND INSULATION - TEST CERTIFICATE	DESCRIPTION OF FLOOR AND SPECIMEN
Project: #1224 Oak Tree Retirement	Floor/Partition Construction: 200mm concrete slab -> 350mm ceiling void -> 13mm plasterboard ceiling lining
Source Space/Room: Unit 206	
Receiving Space/Room: Unit 104	
Client: GT Tiling Pty Ltd	Receiving room finish: 150mm Ritek wall construction (concrete core with fibre cement finish) with 92 & 64mm internal steel studs (plasterboard finish). 6.5mm Hush Lam sliding doors (Rw32) with full perimeter acoustically rated seals. Bedroom is fully furnished with queen bed and carpeted with Godfrey Hirst Bayside Twist.
Test Performed By: Lachlan Gleeson, Jessica Appel	
Measurement Date: 28 August 2020	Receiving room volume (m³): 35.6
Measurement Parameter: Leg	No. of Source Positions: 4 Sweeps
Tapping Machine: Sources Line EM50 / SN: 01254317	No. of Microphone Positions: Manual Sweep
Sound Level Meter: Rion NL-52 / SN: 01254317	No. of RT measurements: 10

Frequency f Hz	L'nT (1/3 octave) dB
50	<= 45.3
63	<= 49.9
80	52.4
100	51.3
125	55.4
160	55.5
200	51.5
250	51.5
315	53.2
400	54.2
500	56.0
630	57.9
800	57.7
1000	57.0
1250	57.4
1600	58.6
2000	60.4
2500	64.1
3150	65.6
4000	64.8
5000	63.2



L'nT,w (CI) = 68 (-14) dB

Rating according to ISO 717-2:2013

Evaluation based on field measurement results obtained by an engineering method

Tests conducted in accordance with ISO 16283-2:2015 and AS 2460:2002 (R2016)

No background noise influence on L'nT,w

No background noise influence on CI