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IMPACT NOISE INSULATION
FIELD TEST REPORT

Reference Number:	TG428-01F03 (rev 1) Floor Impact U13E LD over U12E LD.docx		
Date of Test:	17th October 2013		
Address of Test Premises:	Unit 13E/2 Distillery Drive, Pyrmont		
Form of Construction:	Floor finish in U13E Living/Dining/Kitchen: 14mm Engineered hardwood Iron Bark floating floorboards on 10mm Vibramat acoustic underlay (provided by Acoustic Supplies Pty Ltd) over 200mm concrete slab. Ceiling finish in U12E Living/Dining/Kitchen: Living/dining ceiling consists of 13mm standard plasterboard suspended approx. 100mm from slab soffit using standard hangers with no acoustic insulation. Kitchen ceiling and bulkhead consists of 13mm standard plasterboard suspended approx. 400mm from slab soffit using resilient mounts and acoustic insulation in the ceiling cavity.		
Source Room:	Apartment No: Unit 13E, Level 13	Occupancy Type:	Living/Dining/Kitchen
Receiver Room:	Apartment No: Unit 12E, Level 12	Occupancy Type:	Living/Dining/Kitchen
Measured Field Impact Isolation Class	FIIC	60	
Sydney City Council's Central Sydney DCP 1996	FIIC	No less than 55	
Complies with Sydney City Council's Central Sydney DCP 1996		**Yes**	
Measured Weighted Standardised Impact Sound Pressure Level and Spectrum Adaptation Term	$L'_{nT,w}$ (C_I)	43 (1)	
Measured Weighted Standardised Impact Sound Pressure Level plus Spectrum Adaptation Term	$L'_{nT,w} + C_I$	44	
Impact Sound Insulation Requirement of Current Building Code of Australia	$L'_{nT,w} + C_I$	No more than 62	
Comply with BCA Impact Sound Insulation Requirement		**Yes**	

Measurements conducted in accordance with Australian/New Zealand Standard AS/NZS ISO 140.7:2006 "Acoustics – Measurement of sound insulation in buildings and of building elements – Part 7: Field measurements of impact sound insulation of floors (ISO 104-7:1998, MOD)" and Australian Standard AS ISO 717.2-2004: "Acoustics – Rating of sound insulation in buildings and of building elements – Part 2: Impact sound insulation". Measurements and procedures documented in this report have been carried out in accordance with the Renzo Tonin & Associates Quality Assurance System. This quality system is based on Australian/New Zealand Standard AS/NZS ISO 9001:2000.

Graduate Engineer	Checked By
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FIELD TEST REPORT - IMPACT INSULATION CLASS and IMPACT SOUND PRESSURE LEVEL

File:	TG428-01S01 (REV 0) IIC CALCULATIONS.XLSM	
Receiver Room: Apt 12E - Living/Dining/Kitchen Area		
Volume	116.78	m^3
Surface Area	190.96	m^2
Test Area	45.07	m^2
Humidity	-	%
Temperature	-	^0C

Test Date:	17/10/13
Test Eng:	DV
Chk Eng:	TW
No. tapper posn:	5
Tapper Location:	ASTM / IS0 140-7:1998
Test Location:	Apt 13E - Living/Dining/Kitchen Area
Revision:	FIIC Ver 23

Measurements & calculations done in accordance with	ISO 140-7 1998, ISO 717-2 1996
Where no conflict, compliance also with	ASTM E492-90, ASTM E989-89, ASTM E1007-97

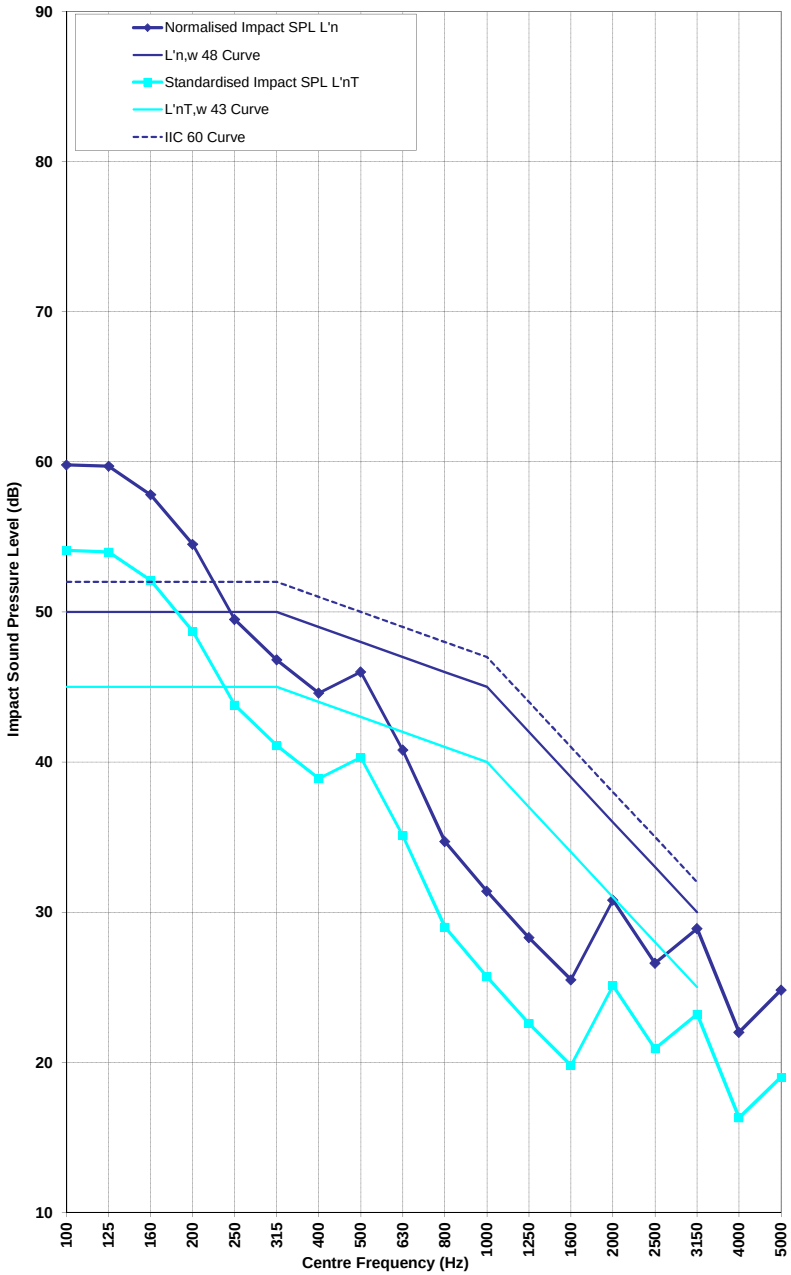
Normalised Impact Insulation Class IIC	**60**
Weighted Normalised Impact Sound Pressure Level L'n,w (C_I)	**48 (2)**
Weighted Standardised Impact Sound Pressure Level L'nT,w (C_I)	**43 (1)**
Ball Drop Lav max	**-**

Specimen description

Floor in apartment 13E (source) Living/Dining/Kitchen area: 14mm engineered hardwood Iron Bark floating boards on 10mm Vibramat acoustic underlay (provided by Acoustic Supplies Pty Ltd) over 200mm concrete slab.

Ceiling in apartment 12E (reciever) Living/Dining/Kitchen area: 13mm standard plasterboard suspended by standard hangers with 100mm cavity and no acoustic insulation in Living/Dining area. 13mm standard plasterboard suspended by resilient mounts with 400mm cavity and acoustic insulation in Kitchen/Bulkhead area.

Centre Frequency (Hz)	Test Specimen	Normalised Impact SPL L'n	IIC 60 Curve	Deficiencies	L'n,w 48 Curve	Deficiencies	Standardised Impact SPL L'nT	L'nT,w 43 Curve	Deficiencies	95% uncertainty Limit for Ln, ΔLn (ASTM E492)	Criterion	Exceed
100	53.2	59.8	52	8	50	9.8	54.1	45	9.1	3.3	3	0.3
125	54.3	59.7	52	8	50	9.7	54.0	45	9.0	3.1	3	0.1
160	53.0	57.8	52	6	50	7.8	52.1	45	7.1	3.0	3	0.0
200	49.6	54.5	52	3	50	4.5	48.7	45	3.7	3.2	3	0.2
250	44.9	49.5	52		50		43.8	45		2.2	3	
315	42.6	46.8	52		50		41.1	45		3.5	3	0.5
400	40.3	44.6	51		49		38.9	44		4.1	3	1.1
500	41.9	46.0	50		48		40.3	43		5.5	2.5	3.0
630	36.7	40.8	49		47		35.1	42		5.4	2.5	2.9
800	30.1	34.7	48		46		29.0	41		3.4	2.5	0.9
1000	27.1	31.4	47		45		25.7	40		2.7	2.5	0.2
1250	24.0	28.3	44		42		22.6	37		2.1	2.5	
1600	20.9	25.5	41		39		19.8	34		1.9	2.5	
2000	26.4	30.8	38		36		25.1	31		3.9	2.5	1.4
2500	21.7	26.6	35		33		20.9	28		3.7	2.5	1.2
3150	24.0	28.9	32		30		23.2	25		4.5	2.5	2.0
4000	17.4	22.0					16.3			3.6		
5000	19.9	24.8					19.0			4.2		
			Total	25	Total	31.8		Total	28.9			
			IIC	**60**	**L'n,w**	**48**		**L'nT,w**	**43**			
					C_I =	**2**		**C_I =**	**1**			



APPENDIX A - TEST METHODOLOGY

A1 Introduction

This report provides results of impact isolation tests conducted in accordance with the following Australian/New Zealand and International:

- Australian/New Zealand Standard AS/NZS ISO 140.7:2006 "Acoustics – Measurement of sound insulation in buildings and of building elements – Part 7: Field measurements of impact sound insulation of floors (ISO 140-7:1998, MOD)";
- Australian Standard AS ISO 717.2-2004 "Acoustics – Rating of sound insulation in buildings and of building elements – Part 2: Impact sound insulation";
- Australian Standard AS ISO 354-2006 "Acoustics – Measurement of sound absorption in a reverberation room";
- ASTM E1007-04 "Standard Test Method for Field Measurement of Tapping Machine Impact Sound Transmission Through Floor-Ceiling Assemblies and Associated Support Structures"; and
- ASTM E989-89 "Standard Classification for Determination of Impact Insulation Class (IIC)".

A1 Test Procedure

Tests were conducted according to the following procedure:

1. A tapping machine was placed in four different positions distributed on the floor in accordance with ASTM Standards indicated above.
2. While this tapping machine was operating, noise levels were recorded in four positions in the receiving room for each of the four tapping machine positions using a Bruel & Kjaer Type 2260 Investigator Sound Level Meter. The measured noise level was filtered simultaneously in all one-third octave frequency bands in real time. These values were recorded and subsequently statistically analysed to determine the average sound pressure levels for each room and to indicate the precision of the measurements.
3. The reverberation time of the receiving room was measured in accordance with AS ISO 354-2006.

A2 Instrumentation and Analysis

The sound level meter has been calibrated to Australian Standards by a certified NATA laboratory. Further to this, a calibration was conducted prior to and subsequent to the measurements using a Bruel & Kjaer Type 4231 Acoustic Calibrator. The sound level meter conforms to a Type 1 instrument as defined in AS 1259-1990 "Acoustic – Sound level meters".

The impact isolation of the specimen was then calculated using the following relationship:

$$L'_{nT} = L_i - \log\frac{T}{T_0}$$

Where:

L_i = the average sound pressure level in the receiving room, decibels

T = the reverberation time in the receiving room (sec)

T_0 = the reference reverberation time, for dwellings, T_0 =0.5s

The Weighted Standardised Impact Sound Pressure Level $L'_{nT,w}$ and the adaptation term C_I were determined in accordance with AS ISO 717.2. The Impact Insulation Class (IIC) was determined in accordance with ASTM E989-89.

Both the Weighted Standardised Impact Sound Pressure Level and the IIC are reported.

A3 Precision

Estimates of precision are outlined on Section A1 of this report.

A2 Test Specimen

The photograph below shows floor covering tested in-situ.