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CERTIFICATE OF PERFORMANCE

IMPACT NOISE TESTING (6 mm RIGID PLANK)

PROLINE FLOORS

DOCUMENT CONTROL	
Project Title	Certificate of Performance Impact Noise Testing (6 mm Rigid Plank) Proline Floors
Our Project Number	3303
Our File Reference	3303C20171103mfcProlinefloorsRigidPlank
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Prepared By	Michael Fan Chiang
Approved By	Nick Koikas 
Client	Proline Floors Attention: Brian Etteridge E-mail: Brian@prolinefloors.com.au

CERTIFICATE OF PERFORMANCE

IMPACT NOISE TESTING (6 mm Rigid Plank)

PROLINE FLOORS

CONTENTS

CERTIFICATE OF PERFORMANCE

IMPACT NOISE TESTING (6 mm Rigid Plank)

PROLINE FLOORS

1.0 CONSULTANT'S BRIEF

Koikas Acoustics was requested by Proline Floors to conduct impact noise tests on the 6 mm Rigid Plank in conjunction with eleven (11) different types of acoustic underlays. A total of thirteen (13) tests were conducted which included the base ceiling floor system and the plank.

The purpose of undertaking these impact noise tests was to quantify the acoustic performance of the 6 mm Rigid Plank flooring systems in conjunction with the sub base being concrete with suspending ceiling.

Test results were compared to the acoustics requirements of ***Part F5 of BCA (Building Codes of Australia)***, the standards prescribed by the ***Association of Australian Acoustical Consultants (AAAC)*** and City of Sydney Council's DCP 2012 requirements.

All measurements were carried out in accordance with the guidelines and procedures outlined in ***AS/NZS ISO 140.7:2006 "Field measurements of impact sound insulation of floors"*** with the rating determined in accordance with ***AS ISO 717.2-2004 "Rating of sound insulation in buildings and of building elements"***.

2.0 IMPACT NOISE COMPLIANCE TESTING

The impact noise tests were taken within residential flat units at Hurstville NSW.

2.1 PARTITION SYSTEM

Koikas Acoustics has been advised that the ceiling/floor system between the bedrooms of residential units is constructed with following building materials:

- 200 mm thick concrete slab;
- Approximately 80~100 mm deep suspended ceiling cavity, and
- 13 mm thick plasterboard ceiling.

Hereafter referred to as the "*existing ceiling/floor system*" (ECFS).

The Hebel wall system was used for common walls and as such, the junctions between the concrete slab and the walls is not of homogeneous slab/wall materials resulting in a partially impeded acoustic path.

The tests were conducted on the **6 mm Rigid Plank** with the following acoustic underlays over the ECFS:

- Test 00: 6 mm **Rigid Plank** with cushion back on all tests
- Test 01: 2 mm Blue Prolay
- Test 02: 3 mm A1 Rubber 720D
- Test 03: 10 mm A1 Rubber 850D
- Test 04: 3 mm Regupol 4515-S
- Test 05: 5 mm Regupol K225
- Test 06: 4/8 mm Regupol 6010 Note 1
- Test 07: 8/17 mm Regupol 6010 Note 1
- Test 08: 3 mm Uniroll RF700
- Test 09: 4 mm Uniroll RF700
- Test 10: 2 mm Damtec (650)
- Test 11: 3 mm Damtec (650)

Note 1. Including two layers of 18 mm ply-wood on top of the Regupol underlay as recommended by Regupol. The 6 mm Rigid Plank was laid above the ply-wood.

3.0 IMPACT NOISE CRITERION

3.1 BCA REQUIREMENT

In accordance with current BCA impact requirements, a floor in a Class 2 or 3 building must have an $D_{nTw}+C_{tr}$ (airborne) not less than 45 and an L_{nTw} (impact) not more than 62 if it separates-

(i) sole-occupancy units; or

(ii) a sole-occupancy unit from a plant room, lift shaft, stairway, public corridor, public lobby or the like, or parts of a different classification.

3.2 AAAC STAR RATING PERFORMANCE REQUIREMENTS

Reproduced from the AAAC Guideline for Apartment and Townhouse Acoustic Ratings, the following Table (Section C) describes the acoustic ratings with reference to the Star Rating System.

Table 1. Star Rating requirements for Inter-tenancy Activities – Published by the AAAC

INTER-TENANCY ACTIVITIES	2 Star	3 Star	4 Star	5 Star	6 Star
(a) Airborne sound insulation for walls and floors					
- Between separate tenancies $D_{nTw} + C_{tr} \geq$	35	40	45	50	55
- Between a lobby/corridor & bedroom $D_{nTw} + C_{tr} \geq$	30	40	40	45	50
- Between a lobby/corridor & living area $D_{nTw} + C_{tr} \geq$	25	40	40	40	45
(b) Corridor, foyer to living space via door(s) $D_{nTw} \geq$	20	25	30	35	40
(c) Impact isolation of floors					
- Between tenancies $L_{nTw} \leq$	65	55	50	45	40
- Between all other spaces & tenancies $L_{nTw} \leq$	65	55	50	45	40
(d) Impact isolation of walls					
- Between tenancies	No	Yes	Yes	Yes	Yes
- Between common areas & tenancies	No	No	No	Yes	Yes

3.3 CITY OF SYDNEY DCP 2012

Furthermore, the impact isolation requirement of the floor system stated in ***Part 10 of Section 4.2.3.11 Acoustic Privacy of City of Sydney DCP 2012*** is also considered.

(10) To limit the transmission of noise to and between dwellings, all floors are to have a weighted standardised impact sound level (L'nT,w) less than or equal to 55 where the floor separates a habitable room and another habitable room, bathroom, toilet, laundry, kitchen, plant room, stairway, public corridor, hallway and the like.

4.0 IMPACT NOISE TESTING

The testing of the ceiling/floor system with the 6 mm Rigid Plank in conjunction with 15 different types of acoustic underlays were conducted inside the unfurnished bedrooms from one residential unit (upper floor level) to another unit (lower floor level) directly below within a residential building in Hurstville NSW on Wednesday, 1st November 2017.

4.1 ASSESSMENT PROCEDURES

Spectrum sound level measurements of transmitted impact noise were recorded in 1/3 octave band centre frequencies between 50 and 10,000 Hertz.

A standardised BSWA Technology Co. Type TM002 S/N 440504 Tapping Machine was used to generate the sound field in the source rooms for the impact noise test. Impact noise measurements were carried out in accordance with the recommendations of ***AS/NZS ISO 140.7:2006 "Field measurements of impact sound insulation of floors"***. This document provides information on appropriate measurement equipment and the proper implementation of measurement practices so as to achieve reliable results of impact sound insulation between rooms in buildings.

For determining a single number quantity for impact sound insulation between rooms in buildings when measurements are conducted "in-situ", $L_{nT,w}$ (weighted standardised impact sound pressure level), the relevant standard is ***AS/NZS ISO 717.2-2004 "Impact sound insulation"***. The calculated $L_{nT,w}$ derived from applying the formulae in this standard allows for a comparison between these calculated levels and the nominated acceptable levels outlined in the *Verification Methods* of the ***Building Code of Australia (BCA)***.

4.2 AMBIENT BACKGROUND NOISE MEASUREMENT

A measure of the underlying ambient noise was taken in the receiving rooms to account for the perceived noise floor in the space. Inaccuracies in the measurements and calculations can occur in areas of high ambient noise however the location of the site and receiver rooms meant little ambient noise was evident in this case.

Ambient noise levels in each 1/3 octave frequency bands were measured to take into account the effect of ambient noise during the recording of the transmitted impact noise levels.

4.3 REVERBERATION TIME MEASUREMENTS

To determine the L_{nw} or $L_{nT,w}$ reverberation time measurements need to be performed in the receiving rooms. The reverberation time in the receiver room is calculated to 'standardise' the airborne/impact noise transmission measurements to reference reverberation time of 0.5 seconds as required by AS/NZS ISO 140.7:2006 Section 3.4, and AS ISO 140.4-2006 Section 3.4.

Reverberation time measurements were conducted using the balloon source method. This consisted of bursting a large balloon and measuring the decay of sound pressure level using a spectrum analyser. This transient response was analysed by the sound level meter and a measure of the reverberation time in 1/3 octave bands was used to calculate the standardised impact noise rating.

4.4 INSTRUMENTATION AND CALIBRATION

NTi XL2 Type Approved (TA) precision spectrum analyser S/N A2A-06312-E0 was used to measure the impact noise levels. The equipment used for taking noise level measurements is traceable to NATA certification. Field calibrations were taken before and after the measurements with a NATA calibrated field calibrator. No system drifts were observed.

5.0 MEASURED RESULTS

The results of the impact noise tests are summarised in Table 2 Below.

Table 2. Impact Noise Insulation Performance Summary for Ceiling/Floor System

System Tested	L'_{nTw}	Equivalent AAAC Star Rating	FIIC
Bare ECFS	66	2	39
Test 00: 6 mm Rigid Plank + ECFS	42	5	68
Test 01: 6 mm Rigid Plank + 2 mm Blue Prolay + ECFS	40	6	70
Test 02: 6 mm Rigid Plank + 3 mm A1 Rubber 720D + ECFS	43	5	68
Test 03: 6 mm Rigid Plank + 10 mm A1 Rubber 850D + ECFS	43	5	68
Test 04: 6 mm Rigid Plank + 3 mm Regupol 4515-S + ECFS	43	5	68
Test 05: 6 mm Rigid Plank + 5 mm Regupol K225 + ECFS	42	5	68
Test 06: 6 mm Rigid Plank + 8/4 mm Regupol 6010 Note 1 + ECFS	40	6	70
Test 07: 6 mm Rigid Plank + 17/8 mm Regupol 6010 Note 1 + ECFS	40	6	70
Test 08: 6 mm Rigid Plank + 3 mm Uniroll RF700 + ECFS	42	5	68
Test 09: 6 mm Rigid Plank + 4 mm Uniroll RF700 + ECFS	41	5	66
Test 10: 6 mm Rigid Plank + 2 mm Damtec (650) + ECFS	42	5	67
Test 11: 6 mm Rigid Plank + 3 mm Damtec (650) + ECFS	41	5	68

Note 1. Including two layers of 18 mm ply-wood on top of the Regupol underlay as recommended by Regupol. The 6 mm Rigid Plank was laid above the ply-wood.

Detail calculations of the partition system's impact noise insulation of the ceiling/floor systems are attached as **Appendix A**.

The following are also noted:

- All tests were undertaken with the existing ceiling/floor system (ECFS) consisting of 200 mm thick concrete sub-base with inclusion of approximately 80~100 mm suspended ceiling cavity and one layer of 13 mm thick plasterboard ceiling.

- All the ceiling/floor system tested have met both the BCA 2016 criterion ($L'_{nTw} \leq 62$) and City of Sydney DCP 2012 requirement ($L'_{nTw} \leq 55$) for impact noise insulation.

- The lower the rating number the better the acoustic performance for L_{nTw} ratings. It is anticipated that the $L'_{nTw} + 5 \approx L_{nTw}$.

- The relation between Field Impact Isolation Class (FIIC) and Impact Isolation Class (IIC) can be described by the formula FIIC + 5 ≈ IIC.

- The higher the AAAC Star Rating the better the impact insulation.
- The higher the IIC and FIIC the better the impact insulation.
- The information contained herein should not be reproduced except in full.
- The information provided in this report relates to acoustic matters only. Supplementary advice should be sought for other matters relating to flooring installation, construction, design, structural, fire-rating, water proofing, and the likes.
- Product installation details and methodologies must be sought from product supplier, installer or other experts.
- The acoustic ratings provided in this report are indicative and should be used for comparative purpose. Acoustic ratings will vary depending on the testing environment/conditions including, materials/structures of the existing ceiling/floor system and junction with walls, room volume, internal layout and workmanship. Even with the same testing environment, acoustic ratings can vary from room to room and buildings to building as no two buildings are identical.
- Floor covering must not make contact with any walls or joineries (kitchen benches, cupboards etc). During installation of any hard floor coverings, temporary spaces of 5~10mm should be used to isolate the floor covering from walls and/or joineries and the resulting gaps should be filled with a suitable mastic type sealant or off-cut of underlay or the equivalent where available. Acoustic ratings can be degraded if the above precautions are not implemented.

6.0 CONCLUSION

Koikas Acoustics was requested by Proline Floors to undertake impact noise tests of ceiling/floor system for the **6 mm Rigid Plank** in conjunction with fifteen (11) different types of acoustic underlay samples. The acoustic performances of various ceiling/floor configurations were calculated and compared against the acoustic requirements of the current BCA, AAAC Star Ratings and City of Sydney Council's DCP 2012 requirement.

The calculated acoustic rating of each tested flooring sample was summarised and presented in **Table 2** of this report. Detailed graphically presentation of the acoustic performance of each tested flooring sample is attached as **Appendix A**.

All the ceiling/floor systems tested with the **6 mm Rigid Plank** acoustic underlay (Test 01~15) achieved the impact insulation rating of L'_{nTw} 40~43 for the *existing ceiling floor system* and therefore at this site:

- meets the current BCA criterion ($L'_{nTw} \leq 62$),
- meets the City of Sydney Council's criterion ($L'_{nTw} \leq 55$) and
- meets the AAAC 5 Star Rating ($L_{nTw} \leq 45$) or 6 Star Rating ($L_{nTw} \leq 40$) for impact noise insulation.

The acoustic ratings provided in this report are indicative and for comparative purpose only. Acoustic ratings will vary depending on the testing environment/conditions including, materials/structures of the existing ceiling/floor system, room volume, internal layout and workmanship. Even with the same testing environment/conditions, acoustic ratings can vary from building to building.

It is recommended that testing be conducted prior to any full fit-out as the sub-base ceiling floor system and the wall junctions can impact upon the resultant flanking noise in the unit below. The above report should be reproduced in full including the attached Appendix.

Floor covering must not make contact with any walls or joineries (kitchen benches, cupboards etc). During installation of any hard floor coverings, temporary spaces of 5~10mm should be used to isolated the floor covering from walls and/or joineries and the resulting gaps should be filled with a suitable mastic type sealant or off-cut of underlay or the equivalent where available. Acoustic ratings could be degraded if the above precautions and treatments are not implemented.

APPENDIX A

APPENDIX A

APPENDIX A

FIELD MEASUREMENTS OF IMPACT SOUND INSULATION OF FLOORS (TEST 01)

KOIKAS ACOUSTICS PTY LTD

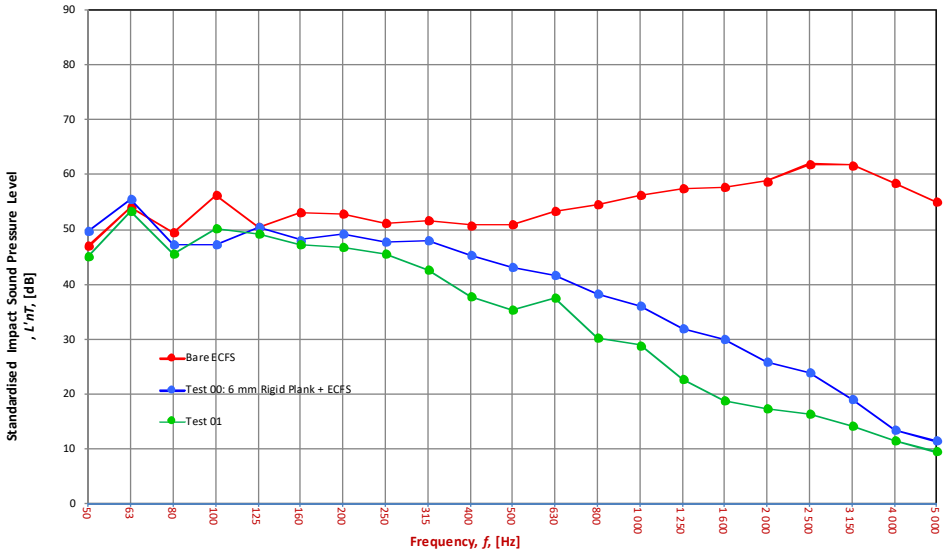
Date of Test :	Wednesday, 1 November 2017
Project No. :	3303 (Test 01)
Testing Company :	Koikas Acoustics
Checked by :	Nick Koikas
Place of Test:	Hurstville, NSW
Client	Proline Floors
Client Address	-

	Name	Thickness (mm)	Density (Sl)
Description	6 mm Rigid Plank	6	--
of	**2 mm Blue Prolay**	2	--
Floor	200 mm Concrete Slab	200	--
System	80~100 mm suspended ceiling + 13 plasterboard ceiling	80~100 + 13	--

Room Floor Dimensions	Width :	3.2	m
	Length :	3	m
	Area :	9.6	m^2
Sample Dimensions	Width :	1	m
	Length :	1	m
	Area :	1	m^2

	Location	Width	Length	Area	Height	Volume	Room Surfaces		
							Walls	Floor	Ceiling
Receiver Rm	Bedroom	3.2	3	9.6	2.7	25.92	Plasterboard	Concrete	Plasterboard

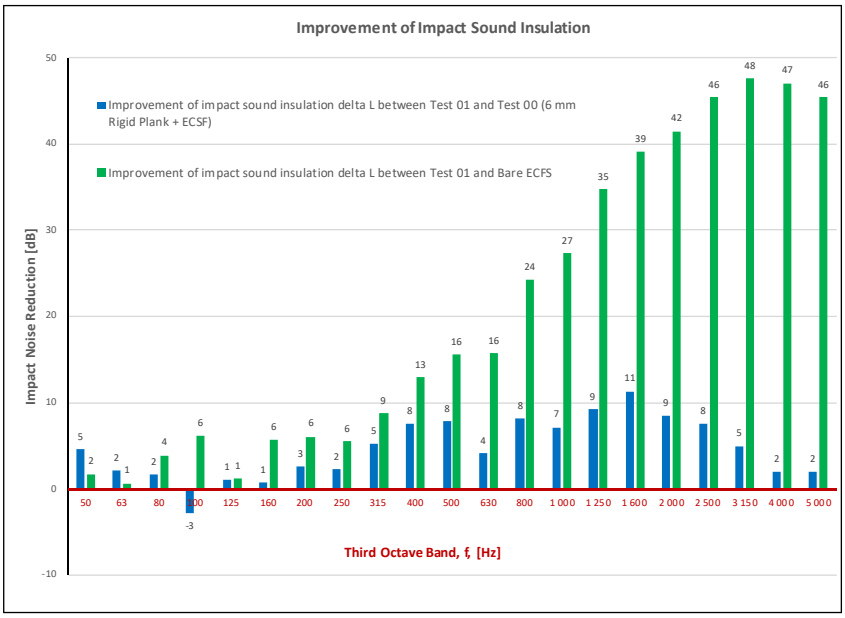
Frequency f Hz	L'nT (one-third octave) dB		
	Sub Base	Sub Base Floor	Sub Base Floor Underlay
50	46.9	49.7	45.1
63	54.0	55.4	53.3
80	49.4	47.2	45.5
100	56.3	47.2	50.1
125	50.4	50.3	49.2
160	53.0	48.1	47.3
200	52.8	49.2	46.6
250	51.1	47.8	45.5
315	51.5	47.9	42.7
400	50.8	45.2	37.7
500	50.9	43.2	35.3
630	53.3	41.7	37.4
800	54.4	38.3	30.1
1 000	56.2	36.0	28.8
1 250	57.4	31.9	22.5
1 600	57.8	30.0	18.6
2 000	58.8	25.8	17.2
2 500	61.9	23.9	16.4
3 150	61.7	19.1	14.0
4 000	58.5	13.3	11.3
5 000	54.9	11.4	9.4



Bare ECFS		
L'nT,w	66	AS ISO 717.2 - 2004
Ci	-13	AS ISO 717.2 - 2004
Ci(50-2500)	-13	AS ISO 717.2 - 2004
Ci(63-2000)	-14	AS ISO 717.2 - 2004
AAAC ★	2 Star	AAAC Guidleline
FIIC	39	ASTM E1007-14

Test 00: 6 mm Rigid Plank + ECFS		
L'nT,w	42	AS ISO 717.2 - 2004
Ci	0	AS ISO 717.2 - 2004
Ci(50-2500)	3	AS ISO 717.2 - 2004
Ci(63-2000)	3	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	68	ASTM E1007-14

Test 01		
L'nT,w	40	AS ISO 717.2 - 2004
Ci	0	AS ISO 717.2 - 2004
Ci(50-2500)	3	AS ISO 717.2 - 2004
Ci(63-2000)	3	AS ISO 717.2 - 2004
AAAC ★	6 Star	AAAC Guidleline
FIIC	70	ASTM E1007-14



Definitions of Noise Metrics

FIIC: Field Impact Insulation Class is a single-number rating of how well a floor system attenuates impact type sounds, such as footsteps. Calculated from third-octave band normalised impact sound pressure level data and referenced to 10 m^2 as described in ASTM E989. The higher the single-number rating, the better its impact insulation performance.

L'nT,w: The Weighted Standardised Impact Sound Pressure Level when measured in situ referenced to a reverberation time (RT60) of 0.5 seconds. Used by the AAAC to determine their respective Star Rating.

Ci: Spectrum adaption term is a low frequency correction factor. Typically for massive floors such as concrete, the values are about zero while for timber joist floors Ci is positive because of the low resonant frequencies. Considers frequency range between 100 -and 2500 Hz.

Ci(50-2500): Same as above, but for the frequency range 50 -2500 Hz.

Ci(125-2000): Same as above, but for the frequency range 125 -2000 Hz.

AAAC Star R.	2	3	4	5	6
L'nT,w	65	55	50	45	40
FIIC	45	55	60	65	70
Comments	Below BCA 62	Clearly Audible	Audible	Barely Inaudible	Normally Inaudible

FIELD MEASUREMENTS OF IMPACT SOUND INSULATION OF FLOORS (TEST 02)

KOIKAS ACOUSTICS PTY LTD

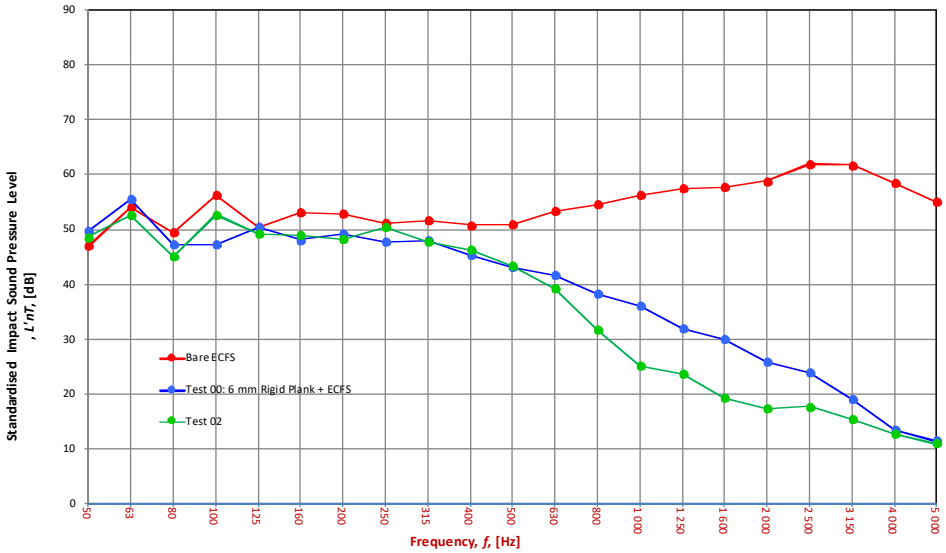
Date of Test :	Wednesday, 1 November 2017
Project No. :	3303 (Test 02)
Testing Company :	Koikas Acoustics
Checked by :	Nick Koikas
Place of Test:	Hurstville, NSW
Client	Proline Floors
Client Address	-

	Name	Thickness (mm)	Density (Sl)
Description	6 mm Rigid Plank	6	--
of	**3 mm A1 Rubber 720D**	3	--
Floor	200 mm Concrete Slab	200	--
System	80~100 mm suspended ceiling + 13 plasterboard ceiling	80~100 + 13	--

Room Floor Dimensions	Width :	3.2	m
	Length :	3	m
	Area :	9.6	m^2
Sample Dimensions	Width :	1	m
	Length :	1	m
	Area :	1	m^2

	Location	Width	Length	Area	Height	Volume	Room Surfaces		
							Walls	Floor	Ceiling
Receiver Rm	Bedroom	3.2	3	9.6	2.7	25.92	Plasterboard	Concrete	Plasterboard

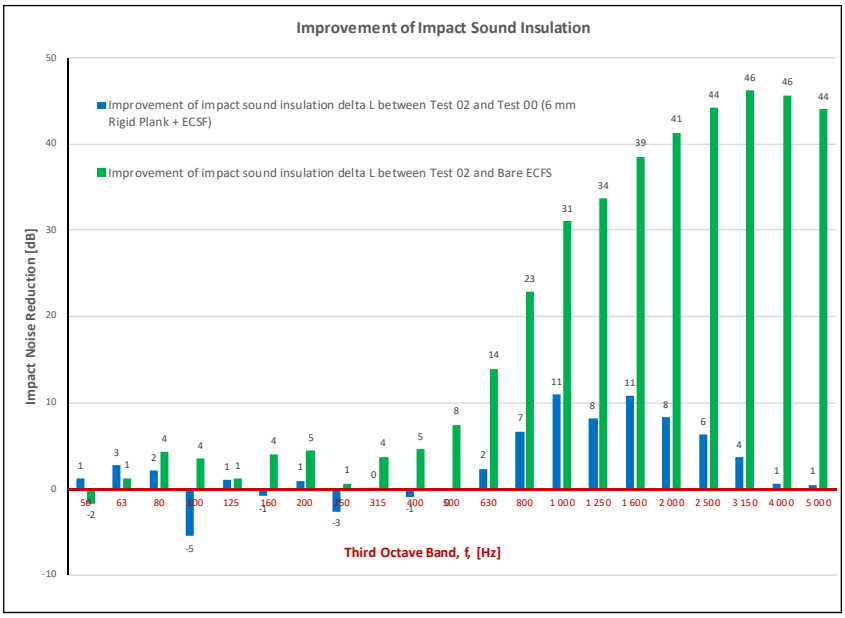
Frequency f Hz	L'nT (one-third octave) dB		
	Sub Base	Sub Base Floor	Sub Base Floor Underlay
50	46.9	49.7	48.5
63	54.0	55.4	52.7
80	49.4	47.2	45.1
100	56.3	47.2	52.7
125	50.4	50.3	49.2
160	53.0	48.1	48.9
200	52.8	49.2	48.2
250	51.1	47.8	50.4
315	51.5	47.9	47.7
400	50.8	45.2	46.1
500	50.9	43.2	43.4
630	53.3	41.7	39.3
800	54.4	38.3	31.5
1 000	56.2	36.0	25.0
1 250	57.4	31.9	23.6
1 600	57.8	30.0	19.2
2 000	58.8	25.8	17.4
2 500	61.9	23.9	17.6
3 150	61.7	19.1	15.4
4 000	58.5	13.3	12.7
5 000	54.9	11.4	10.8



Bare ECFS		
L'nT,w	66	AS ISO 717.2 - 2004
Ci	-13	AS ISO 717.2 - 2004
Ci(50-2500)	-13	AS ISO 717.2 - 2004
Ci(63-2000)	-14	AS ISO 717.2 - 2004
AAAC ★	2 Star	AAAC Guidleline
FIIC	39	ASTM E1007-14

Test 00: 6 mm Rigid Plank + ECFS		
L'nT,w	42	AS ISO 717.2 - 2004
Ci	0	AS ISO 717.2 - 2004
Ci(50-2500)	3	AS ISO 717.2 - 2004
Ci(63-2000)	3	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	68	ASTM E1007-14

Test 02		
L'nT,w	43	AS ISO 717.2 - 2004
Ci	0	AS ISO 717.2 - 2004
Ci(50-2500)	2	AS ISO 717.2 - 2004
Ci(63-2000)	1	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	68	ASTM E1007-14



Definitions of Noise Metrics

FIIC: Field Impact Insulation Class is a single-number rating of how well a floor system attenuates impact type sounds, such as footsteps. Calculated from third-octave band normalised impact sound pressure level data and referenced to 10 m^2 as described in ASTM E989. The higher the single-number rating, the better its impact insulation performance.

L'nT,w: The Weighted Standardised Impact Sound Pressure Level when measured in situ referenced to a reverberation time (RT60) of 0.5 seconds. Used by the AAAC to determine their respective Star Rating.

Ci: Spectrum adaption term is a low frequency correction factor. Typically for massive floors such as concrete, the values are about zero while for timber joist floors Ci is positive because of the low resonant frequencies. Considers frequency range between 100 -and 2500 Hz.

Ci(50-2500): Same as above, but for the frequency range 50 -2500 Hz.

Ci(125-2000): Same as above, but for the frequency range 125 -2000 Hz.

AAAC Star R.	2	3	4	5	6
L'nT,w	65	55	50	45	40
FIIC	45	55	60	65	70
Comments	Below BCA 62	Clearly Audible	Audible	Barely Inaudible	Normally Inaudible

FIELD MEASUREMENTS OF IMPACT SOUND INSULATION OF FLOORS (TEST 03)

KOIKAS ACOUSTICS PTY LTD

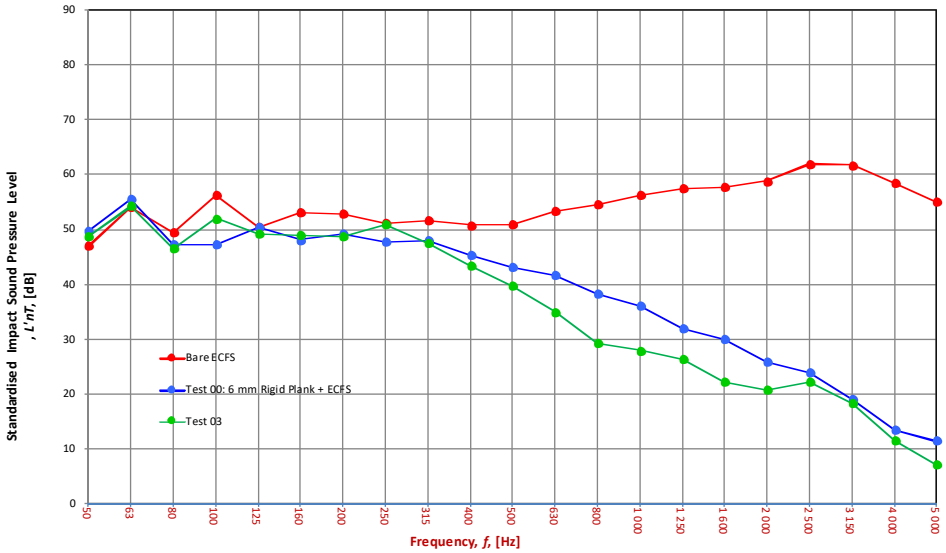
Date of Test :	Wednesday, 1 November 2017
Project No. :	3303 (Test 03)
Testing Company :	Koikas Acoustics
Checked by :	Nick Koikas
Place of Test:	Hurstville, NSW
Client	Proline Floors
Client Address	-

	Name	Thickness (mm)	Density (Sl)
Description	6 mm Rigid Plank	6	--
of	**10 mm A1 Rubber 850D**	10	--
Floor	200 mm Concrete Slab	200	--
System	80~100 mm suspended ceiling + 13 plasterboard ceiling	80~100 + 13	--

Room Floor Dimensions	Width :	3.2	m
	Length :	3	m
	Area :	9.6	m^2
Sample Dimensions	Width :	1	m
	Length :	1	m
	Area :	1	m^2

	Location	Width	Length	Area	Height	Volume	Room Surfaces		
							Walls	Floor	Ceiling
Receiver Rm	Bedroom	3.2	3	9.6	2.7	25.92	Plasterboard	Concrete	Plasterboard

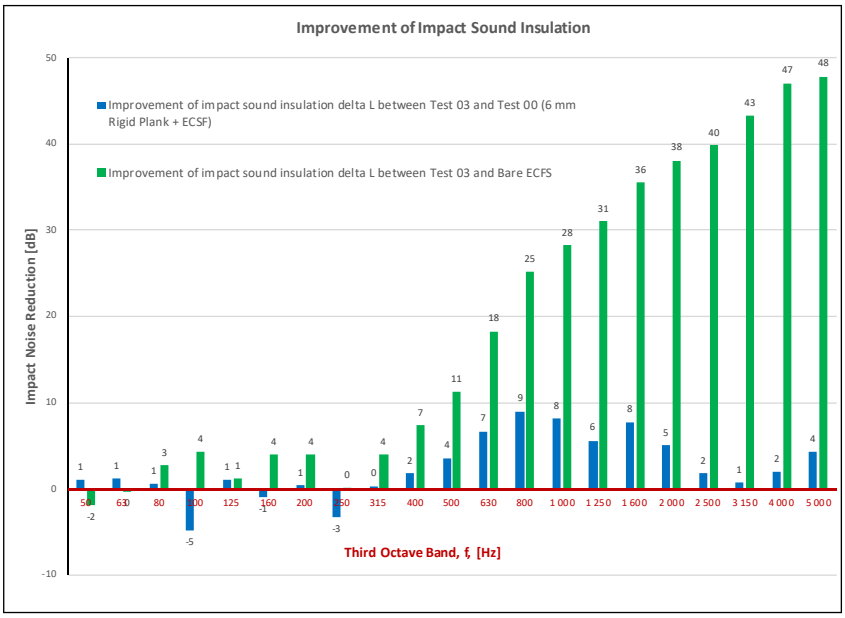
Frequency f Hz	L'nT (one-third octave) dB		
	Sub Base	Sub Base Floor	Sub Base Floor Underlay
50	46.9	49.7	48.7
63	54.0	55.4	54.2
80	49.4	47.2	46.6
100	56.3	47.2	52.0
125	50.4	50.3	49.2
160	53.0	48.1	49.0
200	52.8	49.2	48.7
250	51.1	47.8	51.0
315	51.5	47.9	47.5
400	50.8	45.2	43.3
500	50.9	43.2	39.6
630	53.3	41.7	34.9
800	54.4	38.3	29.2
1 000	56.2	36.0	27.9
1 250	57.4	31.9	26.2
1 600	57.8	30.0	22.2
2 000	58.8	25.8	20.6
2 500	61.9	23.9	22.0
3 150	61.7	19.1	18.3
4 000	58.5	13.3	11.3
5 000	54.9	11.4	7.0



Bare ECFS		
L'nT,w	66	AS ISO 717.2 - 2004
Ci	-13	AS ISO 717.2 - 2004
Ci(50-2500)	-13	AS ISO 717.2 - 2004
Ci(63-2000)	-14	AS ISO 717.2 - 2004
AAAC ★	2 Star	AAAC Guidleline
FIIC	39	ASTM E1007-14

Test 00: 6 mm Rigid Plank + ECFS		
L'nT,w	42	AS ISO 717.2 - 2004
Ci	0	AS ISO 717.2 - 2004
Ci(50-2500)	3	AS ISO 717.2 - 2004
Ci(63-2000)	3	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	68	ASTM E1007-14

Test 03		
L'nT,w	43	AS ISO 717.2 - 2004
Ci	0	AS ISO 717.2 - 2004
Ci(50-2500)	2	AS ISO 717.2 - 2004
Ci(63-2000)	2	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	68	ASTM E1007-14



Definitions of Noise Metrics

FIIC: Field Impact Insulation Class is a single-number rating of how well a floor system attenuates impact type sounds, such as footsteps. Calculated from third-octave band normalised impact sound pressure level data and referenced to 10 m^2 as described in ASTM E989. The higher the single-number rating, the better its impact insulation performance.

L'nT,w: The Weighted Standardised Impact Sound Pressure Level when measured in situ referenced to a reverberation time (RT60) of 0.5 seconds. Used by the AAAC to determine their respective Star Rating.

Ci: Spectrum adaption term is a low frequency correction factor. Typically for massive floors such as concrete, the values are about zero while for timber joist floors Ci is positive because of the low resonant frequencies. Considers frequency range between 100 -and 2500 Hz.

Ci(50-2500): Same as above, but for the frequency range 50 -2500 Hz.

Ci(125-2000): Same as above, but for the frequency range 125 -2000 Hz.

AAAC Star R.	2	3	4	5	6
L'nT,w	65	55	50	45	40
FIIC	45	55	60	65	70
Comments	Below BCA 62	Clearly Audible	Audible	Barely Inaudible	Normally Inaudible

FIELD MEASUREMENTS OF IMPACT SOUND INSULATION OF FLOORS (TEST 04)

KOIKAS ACOUSTICS PTY LTD

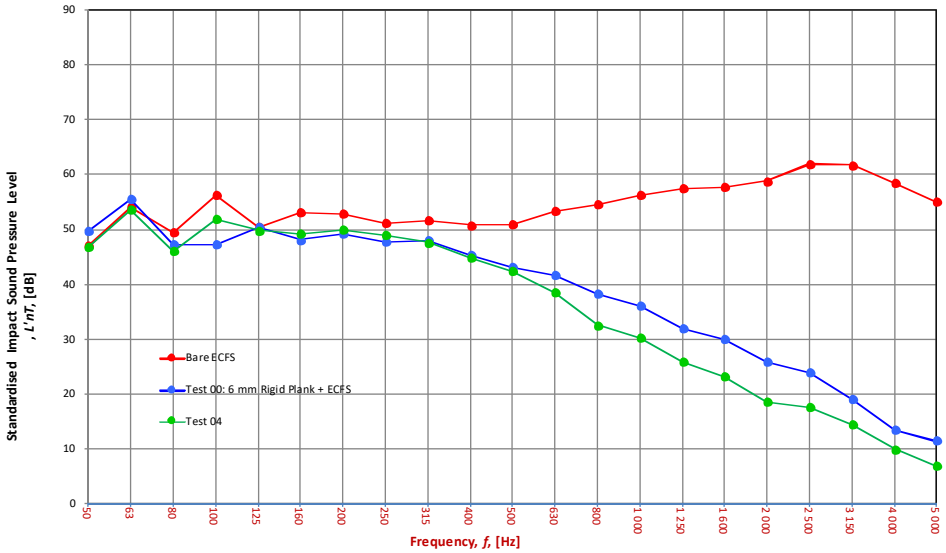
Date of Test :	Wednesday, 1 November 2017
Project No. :	3303 (Test 04)
Testing Company :	Koikas Acoustics
Checked by :	Nick Koikas
Place of Test:	Hurstville, NSW
Client	Proline Floors
Client Address	-

	Name	Thickness (mm)	Density (Sl)
Description	6 mm Rigid Plank	6	--
of	**3 mm Regupol 4515-S**	3	--
Floor	200 mm Concrete Slab	200	--
System	80~100 mm suspended ceiling + 13 plasterboard ceiling	80~100 + 13	--

Room Floor Dimensions	Width :	3.2	m
	Length :	3	m
	Area :	9.6	m^2
Sample Dimensions	Width :	1	m
	Length :	1	m
	Area :	1	m^2

	Location	Width	Length	Area	Height	Volume	Room Surfaces		
							Walls	Floor	Ceiling
Receiver Rm	Bedroom	3.2	3	9.6	2.7	25.92	Plasterboard	Concrete	Plasterboard

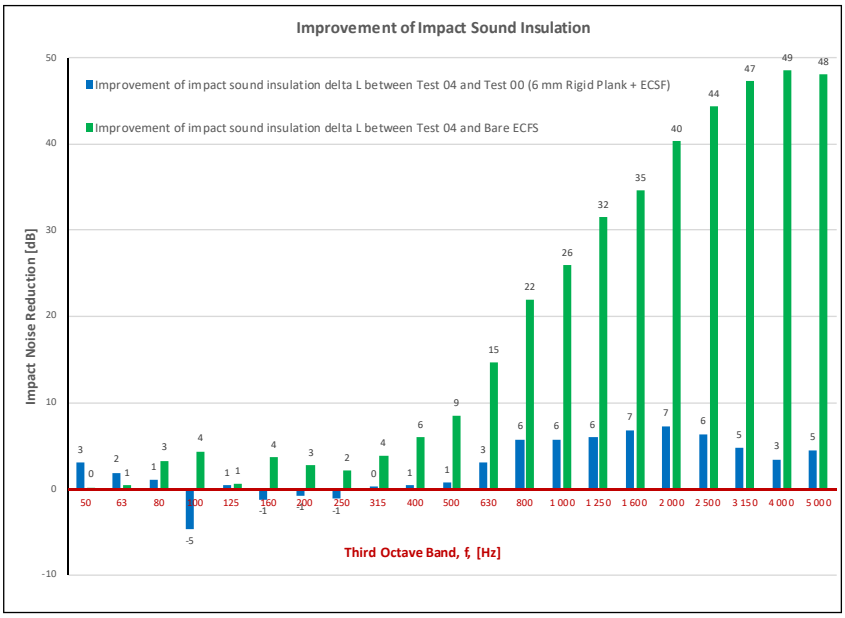
Frequency f Hz	L'nT (one-third octave) dB		
	Sub Base	Sub Base Floor	Sub Base Floor Underlay
50	46.9	49.7	46.6
63	54.0	55.4	53.5
80	49.4	47.2	46.1
100	56.3	47.2	51.9
125	50.4	50.3	49.8
160	53.0	48.1	49.3
200	52.8	49.2	49.9
250	51.1	47.8	48.9
315	51.5	47.9	47.6
400	50.8	45.2	44.7
500	50.9	43.2	42.4
630	53.3	41.7	38.6
800	54.4	38.3	32.5
1 000	56.2	36.0	30.2
1 250	57.4	31.9	25.8
1 600	57.8	30.0	23.2
2 000	58.8	25.8	18.4
2 500	61.9	23.9	17.5
3 150	61.7	19.1	14.3
4 000	58.5	13.3	9.8
5 000	54.9	11.4	6.8



Bare ECFS		
L'nT,w	66	AS ISO 717.2 - 2004
Ci	-13	AS ISO 717.2 - 2004
Ci(50-2500)	-13	AS ISO 717.2 - 2004
Ci(63-2000)	-14	AS ISO 717.2 - 2004
AAAC ★	2 Star	AAAC Guidleline
FIIC	39	ASTM E1007-14

Test 00: 6 mm Rigid Plank + ECFS		
L'nT,w	42	AS ISO 717.2 - 2004
Ci	0	AS ISO 717.2 - 2004
Ci(50-2500)	3	AS ISO 717.2 - 2004
Ci(63-2000)	3	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	68	ASTM E1007-14

Test 04		
L'nT,w	43	AS ISO 717.2 - 2004
Ci	0	AS ISO 717.2 - 2004
Ci(50-2500)	2	AS ISO 717.2 - 2004
Ci(63-2000)	1	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	68	ASTM E1007-14



Definitions of Noise Metrics

FIIC: Field Impact Insulation Class is a single-number rating of how well a floor system attenuates impact type sounds, such as footsteps. Calculated from third-octave band normalised impact sound pressure level data and referenced to 10 m^2 as described in ASTM E989. The higher the single-number rating, the better its impact insulation performance.

L'nT,w: The Weighted Standardised Impact Sound Pressure Level when measured in situ referenced to a reverberation time (RT60) of 0.5 seconds. Used by the AAAC to determine their respective Star Rating.

Ci: Spectrum adaption term is a low frequency correction factor. Typically for massive floors such as concrete, the values are about zero while for timber joist floors Ci is positive because of the low resonant frequencies. Considers frequency range between 100 -and 2500 Hz.

Ci(50-2500): Same as above, but for the frequency range 50 -2500 Hz.

Ci(125-2000): Same as above, but for the frequency range 125 -2000 Hz.

AAAC Star R.	2	3	4	5	6
L'nT,w	65	55	50	45	40
FIIC	45	55	60	65	70
Comments	Below BCA 62	Clearly Audible	Audible	Barely Inaudible	Normally Inaudible

FIELD MEASUREMENTS OF IMPACT SOUND INSULATION OF FLOORS (TEST 05)

KOIKAS ACOUSTICS PTY LTD

Date of Test :	Wednesday, 1 November 2017
Project No. :	3303 (Test 05)
Testing Company :	Koikas Acoustics
Checked by :	Nick Koikas
Place of Test:	Hurstville, NSW
Client	Proline Floors
Client Address	-

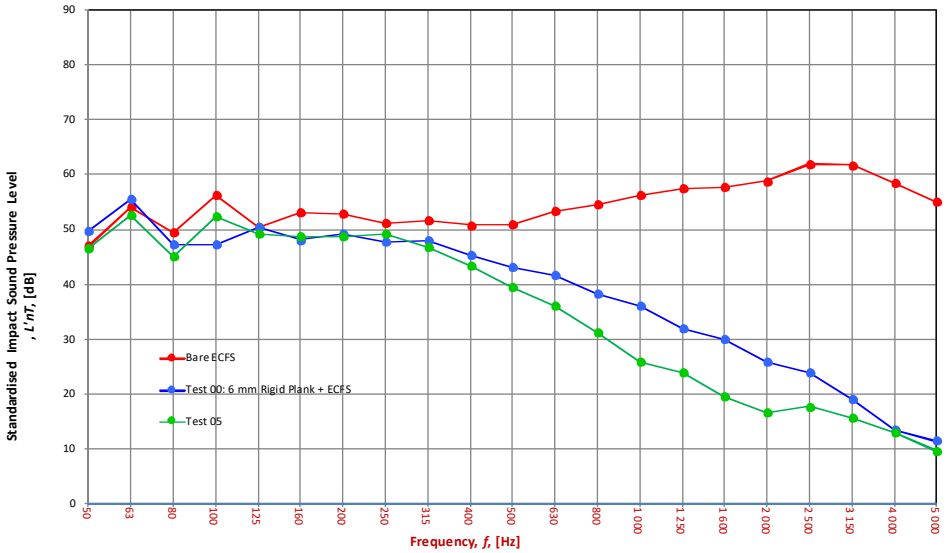
	Name	Thickness (mm)	Density (Sl)
Description	6 mm Rigid Plank	6	--
of	**5 mm Regupol K225**	5	--
Floor	200 mm Concrete Slab	200	--
System	80~100 mm suspended ceiling + 13 plasterboard ceiling	80~100 + 13	--

Room Floor Dimensions	Width :	3.2	m
	Length :	3	m
	Area :	9.6	m^2
Sample Dimensions	Width :	1	m
	Length :	1	m
	Area :	1	m^2

	Location	Width	Length	Area	Height	Volume
Receiver Rm	Bedroom	3.2	3	9.6	2.7	25.92

Room Surfaces		
Walls	Floor	Ceiling
Plasterboard	Concrete	Plasterboard

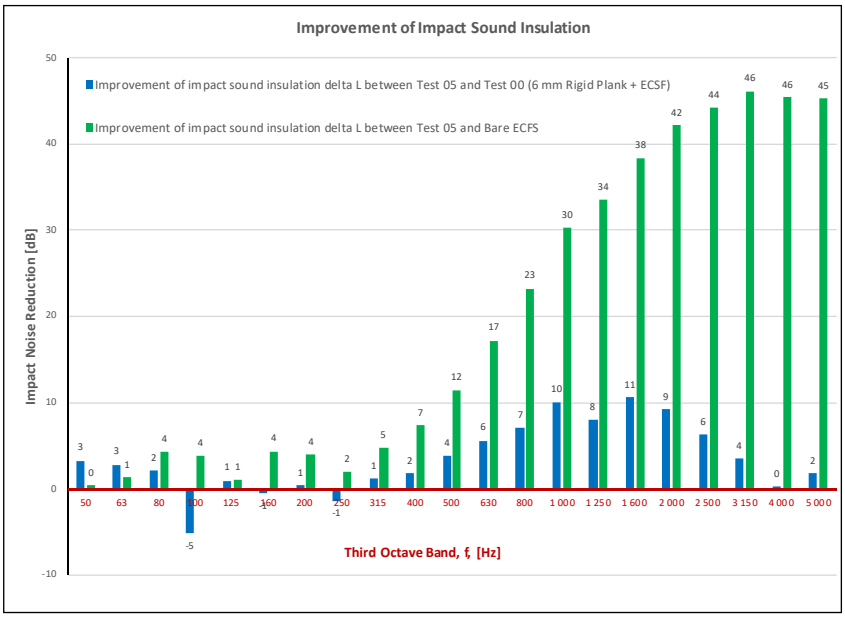
Frequency f Hz	L'nT (one-third octave) dB		
	Sub Base	Sub Base Floor	Sub Base Floor Underlay
50	46.9	49.7	46.4
63	54.0	55.4	52.6
80	49.4	47.2	45.1
100	56.3	47.2	52.4
125	50.4	50.3	49.3
160	53.0	48.1	48.6
200	52.8	49.2	48.7
250	51.1	47.8	49.1
315	51.5	47.9	46.7
400	50.8	45.2	43.3
500	50.9	43.2	39.4
630	53.3	41.7	36.0
800	54.4	38.3	31.1
1 000	56.2	36.0	25.9
1 250	57.4	31.9	23.8
1 600	57.8	30.0	19.3
2 000	58.8	25.8	16.5
2 500	61.9	23.9	17.6
3 150	61.7	19.1	15.5
4 000	58.5	13.3	13.0
5 000	54.9	11.4	9.6



Bare ECFS		
L'nT,w	66	AS ISO 717.2 - 2004
Ci	-13	AS ISO 717.2 - 2004
Ci(50-2500)	-13	AS ISO 717.2 - 2004
Ci(63-2000)	-14	AS ISO 717.2 - 2004
AAAC ★	2 Star	AAAC Guidleline
FIIC	39	ASTM E1007-14

Test 00: 6 mm Rigid Plank + ECFS		
L'nT,w	42	AS ISO 717.2 - 2004
Ci	0	AS ISO 717.2 - 2004
Ci(50-2500)	3	AS ISO 717.2 - 2004
Ci(63-2000)	3	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	68	ASTM E1007-14

Test 05		
L'nT,w	42	AS ISO 717.2 - 2004
Ci	1	AS ISO 717.2 - 2004
Ci(50-2500)	2	AS ISO 717.2 - 2004
Ci(63-2000)	2	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	68	ASTM E1007-14



Definitions of Noise Metrics

FIIC: Field Impact Insulation Class is a single-number rating of how well a floor system attenuates impact type sounds, such as footsteps. Calculated from third-octave band normalised impact sound pressure level data and referenced to 10 m^2 as described in ASTM E989. The higher the single-number rating, the better its impact insulation performance.

L'nT,w: The Weighted Standardised Impact Sound Pressure Level when measured in situ referenced to a reverberation time (RT60) of 0.5 seconds. Used by the AAAC to determine their respective Star Rating.

Ci: Spectrum adaption term is a low frequency correction factor. Typically for massive floors such as concrete, the values are about zero while for timber joist floors Ci is positive because of the low resonant frequencies. Considers frequency range between 100 -and 2500 Hz.

Ci(50-2500): Same as above, but for the frequency range 50 -2500 Hz.

Ci(125-2000): Same as above, but for the frequency range 125 -2000 Hz.

AAAC Star R.	2	3	4	5	6
L'nT,w	65	55	50	45	40
FIIC	45	55	60	65	70
Comments	Below BCA 62	Clearly Audible	Audible	Barely Inaudible	Normally Inaudible

FIELD MEASUREMENTS OF IMPACT SOUND INSULATION OF FLOORS (TEST 06)

KOIKAS ACOUSTICS PTY LTD

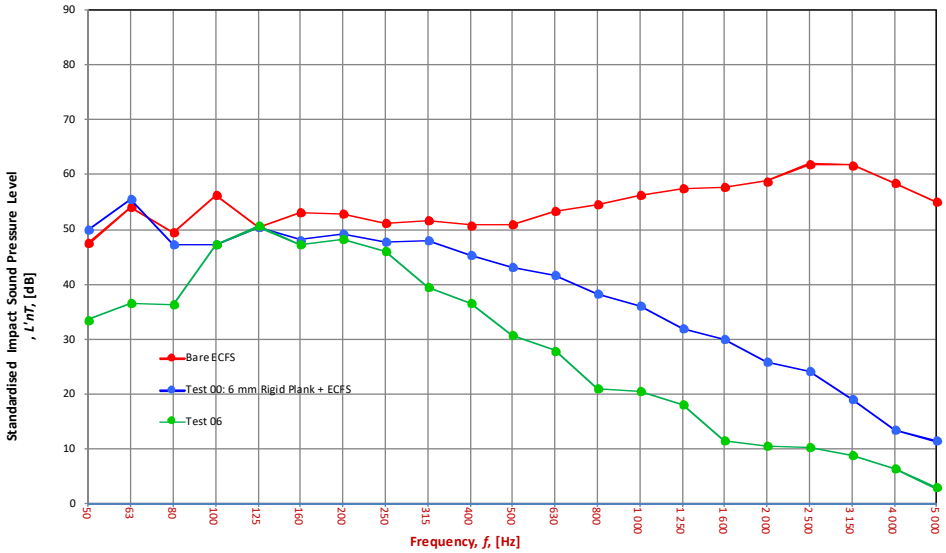
Date of Test :	Wednesday, 1 November 2017
Project No. :	3303 (Test 06)
Testing Company :	Koikas Acoustics
Checked by :	Nick Koikas
Place of Test:	Hurstville, NSW
Client	Proline Floors
Client Address	-

	Name	Thickness (mm)	Density (Sl)
Description of Floor System	6 mm Rigid Plank	6	--
	Regupol 6010 8/4 + 2 x 18 mm plywood	4~8 + 2x18	--
	200 mm Concrete Slab	200	--
	80~100 mm suspended ceiling + 13 plasterboard ceiling	80~100 + 13	--

Room Floor Dimensions	Width :	3.2	m
	Length :	3	m
	Area :	9.6	m^2
Sample Dimensions	Width :	1	m
	Length :	1	m
	Area :	1	m^2

	Location	Width	Length	Area	Height	Volume	Room Surfaces		
							Walls	Floor	Ceiling
Receiver Rm	Bedroom	3.2	3	9.6	2.7	25.92	Plasterboard	Concrete	Plasterboard

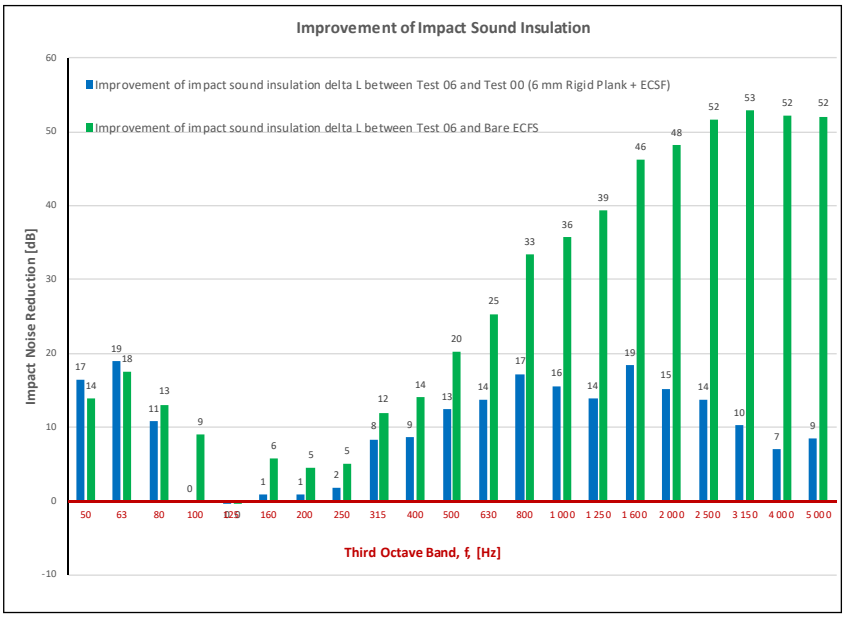
Frequency f Hz	L'nT (one-third octave) dB		
	Sub Base	Sub Base Floor	Sub Base Floor Underlay
50	47.3	50.0	33.5
63	54.1	55.5	36.5
80	49.4	47.2	36.3
100	56.3	47.2	47.2
125	50.4	50.3	50.6
160	53.0	48.1	47.2
200	52.8	49.2	48.2
250	51.1	47.8	46.0
315	51.5	47.9	39.4
400	50.8	45.2	36.6
500	50.9	43.2	30.7
630	53.3	41.7	27.9
800	54.4	38.3	21.0
1 000	56.2	36.0	20.4
1 250	57.4	31.9	18.0
1 600	57.8	30.0	11.5
2 000	58.8	25.9	10.6
2 500	61.9	24.0	10.2
3 150	61.7	19.1	8.8
4 000	58.5	13.3	6.2
5 000	54.9	11.4	2.8



Bare ECFS		
L'nT,w	66	AS ISO 717.2 - 2004
Ci	-13	AS ISO 717.2 - 2004
Ci(50-2500)	-13	AS ISO 717.2 - 2004
Ci(63-2000)	-14	AS ISO 717.2 - 2004
AAAC ★	2 Star	AAAC Guidleline
FIIC	39	ASTM E1007-14

Test 00: 6 mm Rigid Plank + ECFS		
L'nT,w	42	AS ISO 717.2 - 2004
Ci	0	AS ISO 717.2 - 2004
Ci(50-2500)	3	AS ISO 717.2 - 2004
Ci(63-2000)	3	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	68	ASTM E1007-14

Test 06		
L'nT,w	40	AS ISO 717.2 - 2004
Ci	0	AS ISO 717.2 - 2004
Ci(50-2500)	0	AS ISO 717.2 - 2004
Ci(63-2000)	0	AS ISO 717.2 - 2004
AAAC ★	6 Star	AAAC Guidleline
FIIC	70	ASTM E1007-14



Definitions of Noise Metrics

FIIC: Field Impact Insulation Class is a single-number rating of how well a floor system attenuates impact type sounds, such as footsteps. Calculated from third-octave band normalised impact sound pressure level data and referenced to 10 m^2 as described in ASTM E989. The higher the single-number rating, the better its impact insulation performance.

L'nT,w: The Weighted Standardised Impact Sound Pressure Level when measured in situ referenced to a reverberation time (RT60) of 0.5 seconds. Used by the AAAC to determine their respective Star Rating.

Ci: Spectrum adaption term is a low frequency correction factor. Typically for massive floors such as concrete, the values are about zero while for timber joist floors Ci is positive because of the low resonant frequencies. Considers frequency range between 100 -and 2500 Hz.

Ci(50-2500): Same as above, but for the frequency range 50 -2500 Hz.

Ci(125-2000): Same as above, but for the frequency range 125 -2000 Hz.

AAAC Star R.	2	3	4	5	6
L'nT,w	65	55	50	45	40
FIIC	45	55	60	65	70
Comments	Below BCA 62	Clearly Audible	Audible	Barely Inaudible	Normally Inaudible

FIELD MEASUREMENTS OF IMPACT SOUND INSULATION OF FLOORS (TEST 07)

KOIKAS ACOUSTICS PTY LTD

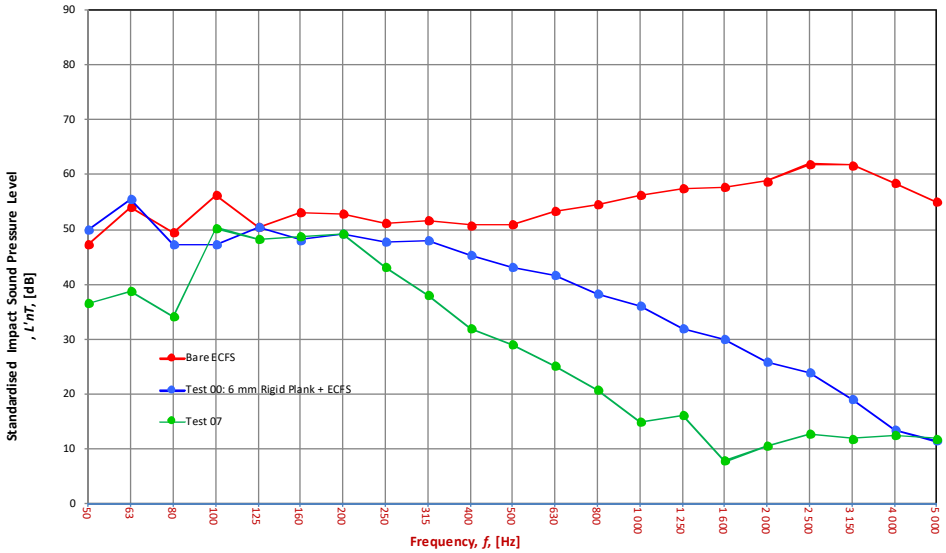
Date of Test :	Wednesday, 1 November 2017
Project No. :	3303 (Test 07)
Testing Company :	Koikas Acoustics
Checked by :	Nick Koikas
Place of Test:	Hurstville, NSW
Client	Proline Floors
Client Address	-

	Name	Thickness (mm)	Density (Sl)
Description of Floor System	6 mm Rigid Plank	6	--
	Regupol 6010 17/8 + 2 x 18 mm plywood	8~17 + 2x18	--
	200 mm Concrete Slab	200	--
	80~100 mm suspended ceiling + 13 plasterboard ceiling	80~100 + 13	--

Room Floor Dimensions	Width :	3.2	m
	Length :	3	m
	Area :	9.6	m^2
Sample Dimensions	Width :	1	m
	Length :	1	m
	Area :	1	m^2

	Location	Width	Length	Area	Height	Volume	Room Surfaces		
							Walls	Floor	Ceiling
Receiver Rm	Bedroom	3.2	3	9.6	2.7	25.92	Plasterboard	Concrete	Plasterboard

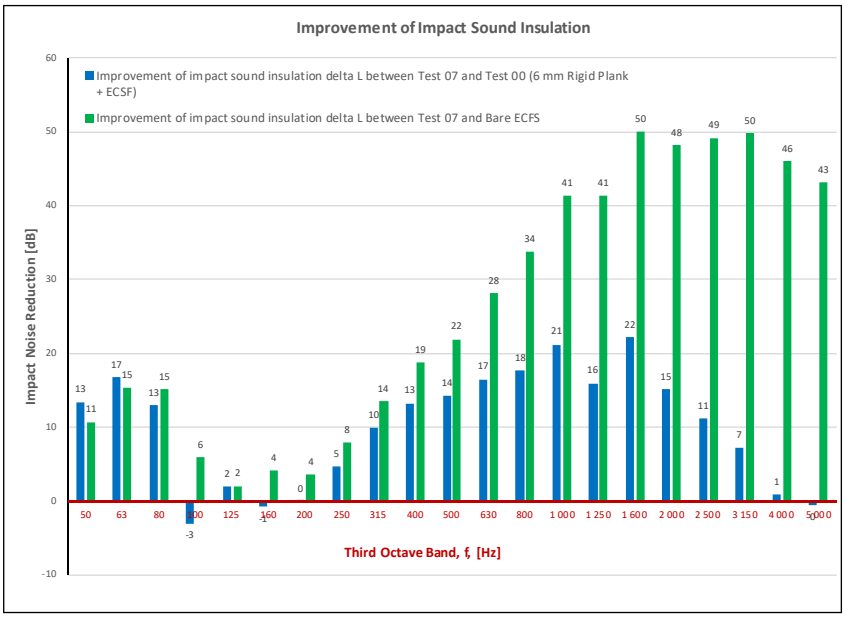
Frequency f Hz	L'nT (one-third octave) dB		
	Sub Base	Sub Base Floor	Sub Base Floor Underlay
50	47.2	49.9	36.5
63	54.1	55.5	38.7
80	49.4	47.2	34.2
100	56.3	47.2	50.3
125	50.4	50.3	48.3
160	53.0	48.1	48.8
200	52.8	49.2	49.1
250	51.1	47.8	43.0
315	51.5	47.9	37.9
400	50.8	45.2	31.9
500	50.9	43.2	28.9
630	53.3	41.7	25.1
800	54.4	38.3	20.6
1 000	56.2	36.0	14.8
1 250	57.4	32.0	15.9
1 600	57.8	30.0	7.7
2 000	58.8	25.8	10.6
2 500	61.9	23.9	12.7
3 150	61.7	19.1	11.8
4 000	58.5	13.3	12.3
5 000	54.9	11.4	11.8



Bare ECFS		
L'nT,w	66	AS ISO 717.2 - 2004
Ci	-13	AS ISO 717.2 - 2004
Ci(50-2500)	-13	AS ISO 717.2 - 2004
Ci(63-2000)	-14	AS ISO 717.2 - 2004
AAAC ★	2 Star	AAAC Guidleline
FIIC	39	ASTM E1007-14

Test 00: 6 mm Rigid Plank + ECFS		
L'nT,w	42	AS ISO 717.2 - 2004
Ci	0	AS ISO 717.2 - 2004
Ci(50-2500)	3	AS ISO 717.2 - 2004
Ci(63-2000)	3	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	68	ASTM E1007-14

Test 07		
L'nT,w	40	AS ISO 717.2 - 2004
Ci	1	AS ISO 717.2 - 2004
Ci(50-2500)	1	AS ISO 717.2 - 2004
Ci(63-2000)	1	AS ISO 717.2 - 2004
AAAC ★	6 Star	AAAC Guidleline
FIIC	70	ASTM E1007-14



Definitions of Noise Metrics

FIIC: Field Impact Insulation Class is a single-number rating of how well a floor system attenuates impact type sounds, such as footsteps. Calculated from third-octave band normalised impact sound pressure level data and referenced to 10 m^2 as described in ASTM E989. The higher the single-number rating, the better its impact insulation performance.

L'nT,w: The Weighted Standardised Impact Sound Pressure Level when measured in situ referenced to a reverberation time (RT60) of 0.5 seconds. Used by the AAAC to determine their respective Star Rating.

Ci: Spectrum adaption term is a low frequency correction factor. Typically for massive floors such as concrete, the values are about zero while for timber joist floors Ci is positive because of the low resonant frequencies. Considers frequency range between 100 -and 2500 Hz.

Ci(50-2500): Same as above, but for the frequency range 50 -2500 Hz.

Ci(125-2000): Same as above, but for the frequency range 125 -2000 Hz.

AAAC Star R.	2	3	4	5	6
L'nT,w	65	55	50	45	40
FIIC	45	55	60	65	70
Comments	Below BCA 62	Clearly Audible	Audible	Barely Inaudible	Normally Inaudible

FIELD MEASUREMENTS OF IMPACT SOUND INSULATION OF FLOORS (TEST 08)

KOIKAS ACOUSTICS PTY LTD

Date of Test :	Wednesday, 1 November 2017
Project No. :	3303 (Test 08)
Testing Company :	Koikas Acoustics
Checked by :	Nick Koikas
Place of Test:	Hurstville, NSW
Client	Proline Floors
Client Address	-

	Name	Thickness (mm)	Density (Sl)
Description	6 mm Rigid Plank	6	--
of	**3 mm Uniroll RFH600**	3	--
Floor	200 mm Concrete Slab	200	--
System	80~100 mm suspended ceiling + 13 plasterboard ceiling	80~100 + 13	--

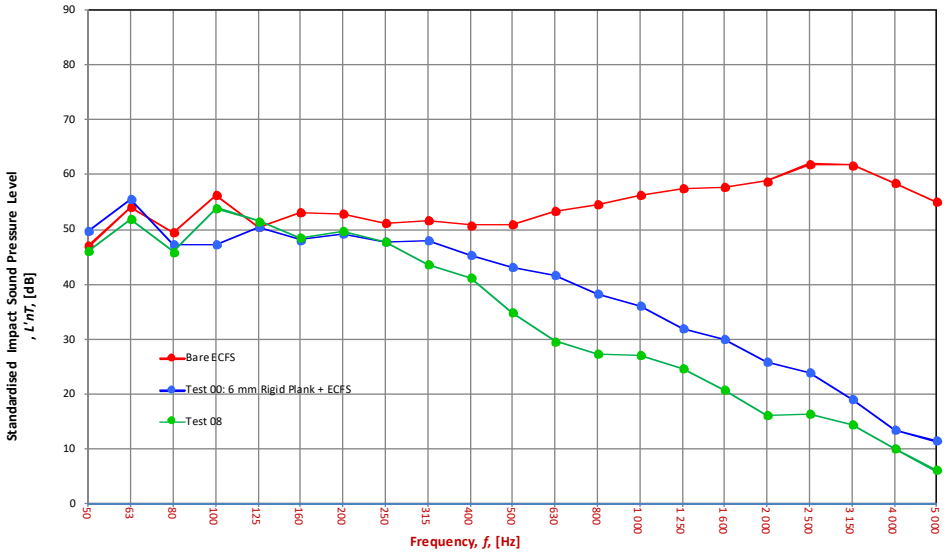
Room	Width :	3.2	m
Floor	Length :	3	m
Dimensions	Area :	9.6	m^2

Sample	Width :	1	m
Dimensions	Length :	1	m
	Area :	1	m^2

	Location	Width	Length	Area	Height	Volume
Receiver Rm	Bedroom	3.2	3	9.6	2.7	25.92

Room Surfaces		
Walls	Floor	Ceiling
Plasterboard	Concrete	Plasterboard

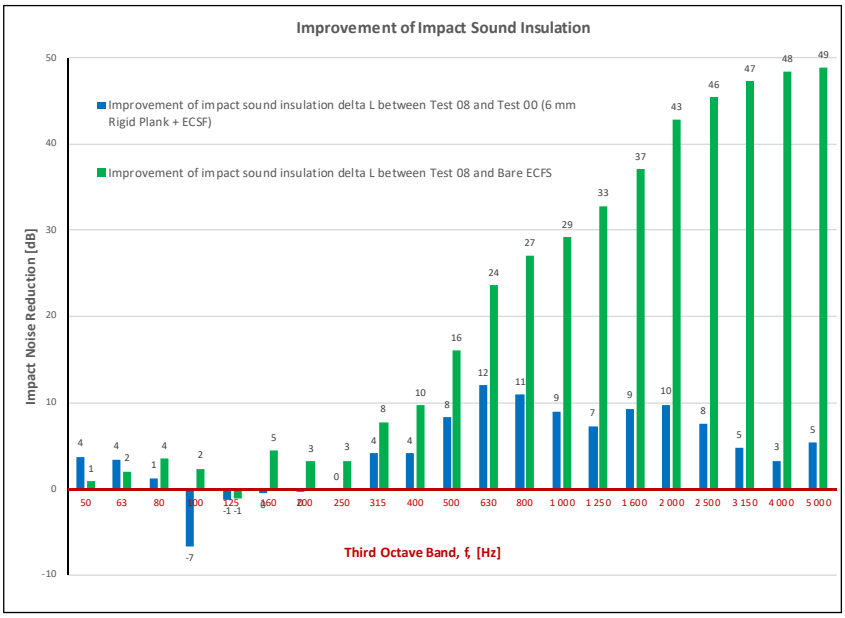
Frequency f Hz	L'nT (one-third octave) dB		
	Sub Base	Sub Base Floor	Sub Base Floor Underlay
50	46.9	49.7	45.9
63	54.0	55.4	51.9
80	49.4	47.2	45.9
100	56.3	47.2	53.9
125	50.4	50.3	51.5
160	53.0	48.1	48.5
200	52.8	49.2	49.5
250	51.1	47.8	47.8
315	51.5	47.9	43.7
400	50.8	45.2	41.0
500	50.9	43.2	34.8
630	53.3	41.7	29.6
800	54.4	38.3	27.3
1 000	56.2	36.0	27.0
1 250	57.4	31.9	24.5
1 600	57.8	30.0	20.6
2 000	58.8	25.8	15.9
2 500	61.9	23.9	16.4
3 150	61.7	19.1	14.3
4 000	58.5	13.3	10.0
5 000	54.9	11.4	6.0



Bare ECFS		
L'nT,w	66	AS ISO 717.2 - 2004
Ci	-13	AS ISO 717.2 - 2004
Ci(50-2500)	-13	AS ISO 717.2 - 2004
Ci(63-2000)	-14	AS ISO 717.2 - 2004
AAAC ★	2 Star	AAAC Guidleline
FIIC	39	ASTM E1007-14

Test 00: 6 mm Rigid Plank + ECFS		
L'nT,w	42	AS ISO 717.2 - 2004
Ci	0	AS ISO 717.2 - 2004
Ci(50-2500)	3	AS ISO 717.2 - 2004
Ci(63-2000)	3	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	68	ASTM E1007-14

Test 08		
L'nT,w	42	AS ISO 717.2 - 2004
Ci	1	AS ISO 717.2 - 2004
Ci(50-2500)	2	AS ISO 717.2 - 2004
Ci(63-2000)	2	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	66	ASTM E1007-14



Definitions of Noise Metrics

FIIC: Field Impact Insulation Class is a single-number rating of how well a floor system attenuates impact type sounds, such as footsteps. Calculated from third-octave band normalised impact sound pressure level data and referenced to 10 m^2 as described in ASTM E989. The higher the single-number rating, the better its impact insulation performance.

L'nT,w: The Weighted Standardised Impact Sound Pressure Level when measured in situ referenced to a reverberation time (RT60) of 0.5 seconds. Used by the AAAC to determine their respective Star Rating.

Ci: Spectrum adaption term is a low frequency correction factor. Typically for massive floors such as concrete, the values are about zero while for timber joist floors Ci is positive because of the low resonant frequencies. Considers frequency range between 100 -and 2500 Hz.

Ci(50-2500): Same as above, but for the frequency range 50 -2500 Hz.

Ci(125-2000): Same as above, but for the frequency range 125 -2000 Hz.

AAAC Star R.	2	3	4	5	6
L'nT,w	65	55	50	45	40
FIIC	45	55	60	65	70
Comments	Below BCA 62	Clearly Audible	Audible	Barely Inaudible	Normally Inaudible

FIELD MEASUREMENTS OF IMPACT SOUND INSULATION OF FLOORS (TEST 09)

KOIKAS ACOUSTICS PTY LTD

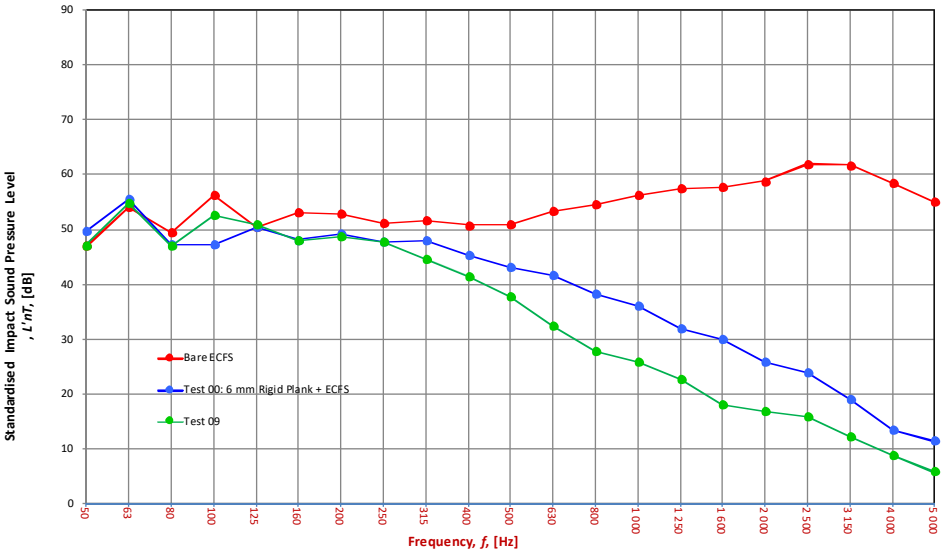
Date of Test :	Wednesday, 1 November 2017
Project No. :	3303 (Test 09)
Testing Company :	Koikas Acoustics
Checked by :	Nick Koikas
Place of Test:	Hurstville, NSW
Client	Proline Floors
Client Address	-

	Name	Thickness (mm)	Density (Sl)
Description	6 mm Rigid Plank	6	--
of	**3 mm Uniroll RF700**	3	--
Floor	200 mm Concrete Slab	200	--
System	80~100 mm suspended ceiling + 13 plasterboard ceiling	80~100 + 13	--

Room Floor Dimensions	Width :	3.2	m
	Length :	3	m
	Area :	9.6	m^2
Sample Dimensions	Width :	1	m
	Length :	1	m
	Area :	1	m^2

	Location	Width	Length	Area	Height	Volume	Room Surfaces		
							Walls	Floor	Ceiling
Receiver Rm	Bedroom	3.2	3	9.6	2.7	25.92	Plasterboard	Concrete	Plasterboard

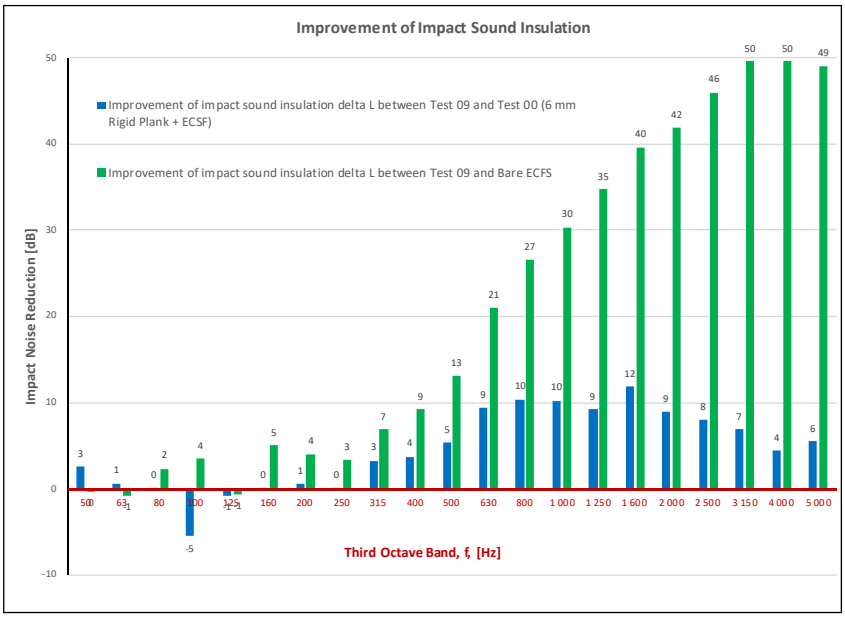
Frequency f Hz	L'nT (one-third octave) dB		
	Sub Base	Sub Base Floor	Sub Base Floor Underlay
50	46.9	49.7	47.1
63	54.0	55.4	54.7
80	49.4	47.2	47.0
100	56.3	47.2	52.7
125	50.4	50.3	51.0
160	53.0	48.1	47.9
200	52.8	49.2	48.6
250	51.1	47.8	47.7
315	51.5	47.9	44.6
400	50.8	45.2	41.4
500	50.9	43.2	37.7
630	53.3	41.7	32.3
800	54.4	38.3	27.8
1 000	56.2	36.0	25.8
1 250	57.4	31.9	22.5
1 600	57.8	30.0	18.1
2 000	58.8	25.8	16.8
2 500	61.9	23.9	15.9
3 150	61.7	19.1	12.1
4 000	58.5	13.3	8.8
5 000	54.9	11.4	5.8



Bare ECFS		
L'nT,w	66	AS ISO 717.2 - 2004
Ci	-13	AS ISO 717.2 - 2004
Ci(50-2500)	-13	AS ISO 717.2 - 2004
Ci(63-2000)	-14	AS ISO 717.2 - 2004
AAAC ★	2 Star	AAAC Guidleline
FIIC	39	ASTM E1007-14

Test 00: 6 mm Rigid Plank + ECFS		
L'nT,w	42	AS ISO 717.2 - 2004
Ci	0	AS ISO 717.2 - 2004
Ci(50-2500)	3	AS ISO 717.2 - 2004
Ci(63-2000)	3	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	68	ASTM E1007-14

Test 09		
L'nT,w	42	AS ISO 717.2 - 2004
Ci	0	AS ISO 717.2 - 2004
Ci(50-2500)	3	AS ISO 717.2 - 2004
Ci(63-2000)	3	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	68	ASTM E1007-14



Definitions of Noise Metrics

FIIC: Field Impact Insulation Class is a single-number rating of how well a floor system attenuates impact type sounds, such as footsteps. Calculated from third-octave band normalised impact sound pressure level data and referenced to 10 m^2 as described in ASTM E989. The higher the single-number rating, the better its impact insulation performance.

L'nT,w: The Weighted Standardised Impact Sound Pressure Level when measured in situ referenced to a reverberation time (RT60) of 0.5 seconds. Used by the AAAC to determine their respective Star Rating.

Ci: Spectrum adaption term is a low frequency correction factor. Typically for massive floors such as concrete, the values are about zero while for timber joist floors Ci is positive because of the low resonant frequencies. Considers frequency range between 100 -and 2500 Hz.

Ci(50-2500): Same as above, but for the frequency range 50 -2500 Hz.

Ci(125-2000): Same as above, but for the frequency range 125 -2000 Hz.

AAAC Star R.	2	3	4	5	6
L'nT,w	65	55	50	45	40
FIIC	45	55	60	65	70
Comments	Below BCA 62	Clearly Audible	Audible	Barely Inaudible	Normally Inaudible

FIELD MEASUREMENTS OF IMPACT SOUND INSULATION OF FLOORS (TEST 10)

KOIKAS ACOUSTICS PTY LTD

Date of Test :	Wednesday, 1 November 2017
Project No. :	3303 (Test 10)
Testing Company :	Koikas Acoustics
Checked by :	Nick Koikas
Place of Test:	Hurstville, NSW
Client	Proline Floors
Client Address	-

	Name	Thickness (mm)	Density (Sl)
Description	6 mm Rigid Plank	6	--
of	**4 mm Uniroll RF700**	4	--
Floor	200 mm Concrete Slab	200	--
System	80~100 mm suspended ceiling + 13 plasterboard ceiling	80~100 + 13	--

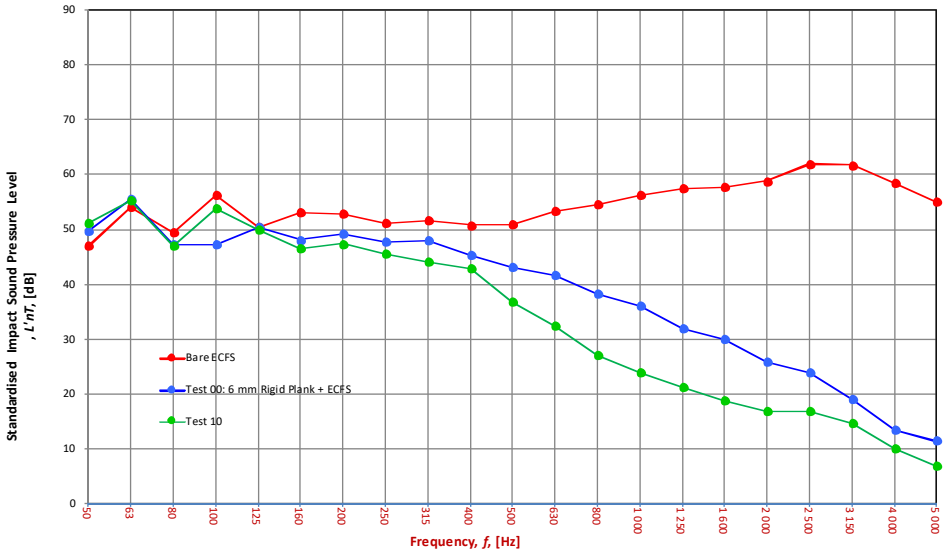
Room	Width :	3.2	m
Floor	Length :	3	m
Dimensions	Area :	9.6	m^2

Sample	Width :	1	m
Dimensions	Length :	1	m
	Area :	1	m^2

	Location	Width	Length	Area	Height	Volume
Receiver Rm	Bedroom	3.2	3	9.6	2.7	25.92

Room Surfaces		
Walls	Floor	Ceiling
Plasterboard	Concrete	Plasterboard

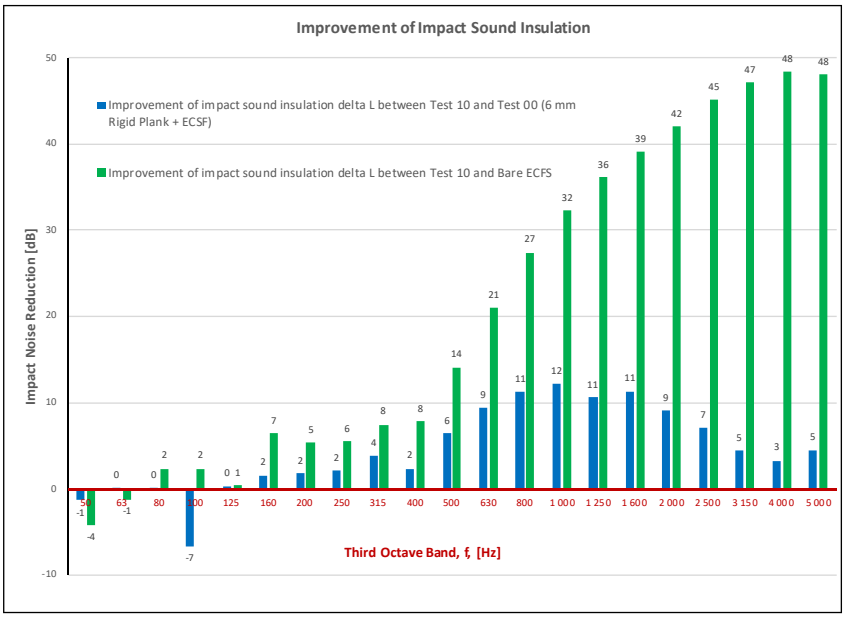
Frequency f Hz	L'nT (one-third octave) dB		
	Sub Base	Sub Base Floor	Sub Base Floor Underlay
50	46.9	49.7	51.0
63	54.0	55.4	55.2
80	49.4	47.2	47.0
100	56.3	47.2	53.9
125	50.4	50.3	49.9
160	53.0	48.1	46.5
200	52.8	49.2	47.3
250	51.1	47.8	45.6
315	51.5	47.9	44.0
400	50.8	45.2	42.8
500	50.9	43.2	36.7
630	53.3	41.7	32.3
800	54.4	38.3	26.9
1 000	56.2	36.0	23.8
1 250	57.4	31.9	21.1
1 600	57.8	30.0	18.6
2 000	58.8	25.8	16.7
2 500	61.9	23.9	16.8
3 150	61.7	19.1	14.5
4 000	58.5	13.3	10.0
5 000	54.9	11.4	6.8



Bare ECFS		
L'nT,w	66	AS ISO 717.2 - 2004
Ci	-13	AS ISO 717.2 - 2004
Ci(50-2500)	-13	AS ISO 717.2 - 2004
Ci(63-2000)	-14	AS ISO 717.2 - 2004
AAAC ★	2 Star	AAAC Guidleline
FIIC	39	ASTM E1007-14

Test 00: 6 mm Rigid Plank + ECFS		
L'nT,w	42	AS ISO 717.2 - 2004
Ci	0	AS ISO 717.2 - 2004
Ci(50-2500)	3	AS ISO 717.2 - 2004
Ci(63-2000)	3	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	68	ASTM E1007-14

Test 10		
L'nT,w	41	AS ISO 717.2 - 2004
Ci	1	AS ISO 717.2 - 2004
Ci(50-2500)	4	AS ISO 717.2 - 2004
Ci(63-2000)	4	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	66	ASTM E1007-14



Definitions of Noise Metrics

FIIC: Field Impact Insulation Class is a single-number rating of how well a floor system attenuates impact type sounds, such as footsteps. Calculated from third-octave band normalised impact sound pressure level data and referenced to 10 m^2 as described in ASTM E989. The higher the single-number rating, the better its impact insulation performance.

L'nT,w: The Weighted Standardised Impact Sound Pressure Level when measured in situ referenced to a reverberation time (RT60) of 0.5 seconds. Used by the AAAC to determine their respective Star Rating.

Ci: Spectrum adaption term is a low frequency correction factor. Typically for massive floors such as concrete, the values are about zero while for timber joist floors Ci is positive because of the low resonant frequencies. Considers frequency range between 100 -and 2500 Hz.

Ci(50-2500): Same as above, but for the frequency range 50 -2500 Hz.

Ci(125-2000): Same as above, but for the frequency range 125 -2000 Hz.

AAAC Star R.	2	3	4	5	6
L'nT,w	65	55	50	45	40
FIIC	45	55	60	65	70
Comments	Below BCA 62	Clearly Audible	Audible	Barely Inaudible	Normally Inaudible

FIELD MEASUREMENTS OF IMPACT SOUND INSULATION OF FLOORS (TEST 11)

KOIKAS ACOUSTICS PTY LTD

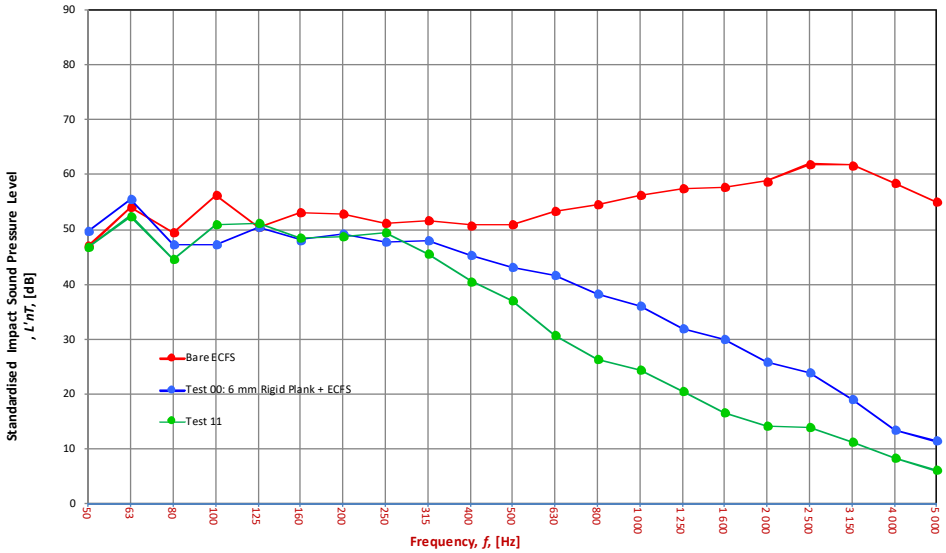
Date of Test :	Wednesday, 1 November 2017
Project No. :	3303 (Test 11)
Testing Company :	Koikas Acoustics
Checked by :	Nick Koikas
Place of Test:	Hurstville, NSW
Client	Proline Floors
Client Address	-

	Name	Thickness (mm)	Density (Sl)
Description	6 mm Rigid Plank	6	--
of	**4.5 mm Uniroll RFC650**	4.5	--
Floor	200 mm Concrete Slab	200	--
System	80~100 mm suspended ceiling + 13 plasterboard ceiling	80~100 + 13	--

Room Floor Dimensions	Width :	3.2	m
	Length :	3	m
	Area :	9.6	m^2
Sample Dimensions	Width :	1	m
	Length :	1	m
	Area :	1	m^2

	Location	Width	Length	Area	Height	Volume	Room Surfaces		
							Walls	Floor	Ceiling
Receiver Rm	Bedroom	3.2	3	9.6	2.7	25.92	Plasterboard	Concrete	Plasterboard

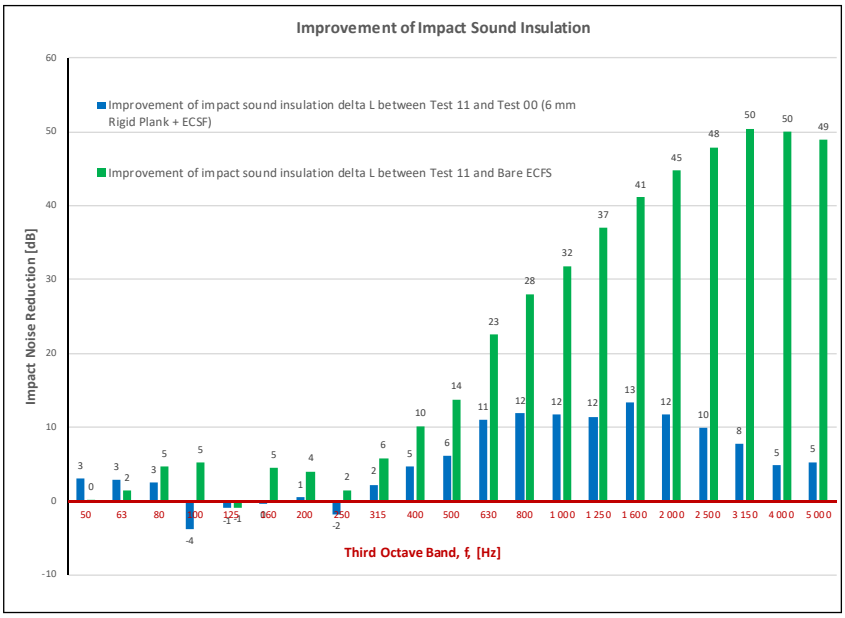
Frequency f Hz	L'nT (one-third octave) dB		
	Sub Base	Sub Base Floor	Sub Base Floor Underlay
50	46.9	49.7	46.6
63	54.0	55.4	52.5
80	49.4	47.2	44.6
100	56.3	47.2	51.0
125	50.4	50.3	51.2
160	53.0	48.1	48.4
200	52.8	49.2	48.6
250	51.1	47.8	49.5
315	51.5	47.9	45.6
400	50.8	45.2	40.5
500	50.9	43.2	37.0
630	53.3	41.7	30.6
800	54.4	38.3	26.3
1 000	56.2	36.0	24.3
1 250	57.4	31.9	20.3
1 600	57.8	30.0	16.6
2 000	58.8	25.8	14.0
2 500	61.9	23.9	13.9
3 150	61.7	19.1	11.2
4 000	58.5	13.3	8.3
5 000	54.9	11.4	6.0



Bare ECFS		
L'nT,w	66	AS ISO 717.2 - 2004
Ci	-13	AS ISO 717.2 - 2004
Ci(50-2500)	-13	AS ISO 717.2 - 2004
Ci(63-2000)	-14	AS ISO 717.2 - 2004
AAAC ★	2 Star	AAAC Guidleline
FIIC	39	ASTM E1007-14

Test 00: 6 mm Rigid Plank + ECFS		
L'nT,w	42	AS ISO 717.2 - 2004
Ci	0	AS ISO 717.2 - 2004
Ci(50-2500)	3	AS ISO 717.2 - 2004
Ci(63-2000)	3	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	68	ASTM E1007-14

Test 11		
L'nT,w	42	AS ISO 717.2 - 2004
Ci	0	AS ISO 717.2 - 2004
Ci(50-2500)	2	AS ISO 717.2 - 2004
Ci(63-2000)	2	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	69	ASTM E1007-14



Definitions of Noise Metrics

FIIC: Field Impact Insulation Class is a single-number rating of how well a floor system attenuates impact type sounds, such as footsteps. Calculated from third-octave band normalised impact sound pressure level data and referenced to 10 m^2 as described in ASTM E989. The higher the single-number rating, the better its impact insulation performance.

L'nT,w: The Weighted Standardised Impact Sound Pressure Level when measured in situ referenced to a reverberation time (RT60) of 0.5 seconds. Used by the AAAC to determine their respective Star Rating.

Ci: Spectrum adaption term is a low frequency correction factor. Typically for massive floors such as concrete, the values are about zero while for timber joist floors Ci is positive because of the low resonant frequencies. Considers frequency range between 100 -and 2500 Hz.

Ci(50-2500): Same as above, but for the frequency range 50 -2500 Hz.

Ci(125-2000): Same as above, but for the frequency range 125 -2000 Hz.

AAAC Star R.	2	3	4	5	6
L'nT,w	65	55	50	45	40
FIIC	45	55	60	65	70
Comments	Below BCA 62	Clearly Audible	Audible	Barely Inaudible	Normally Inaudible

FIELD MEASUREMENTS OF IMPACT SOUND INSULATION OF FLOORS (TEST 12)

KOIKAS ACOUSTICS PTY LTD

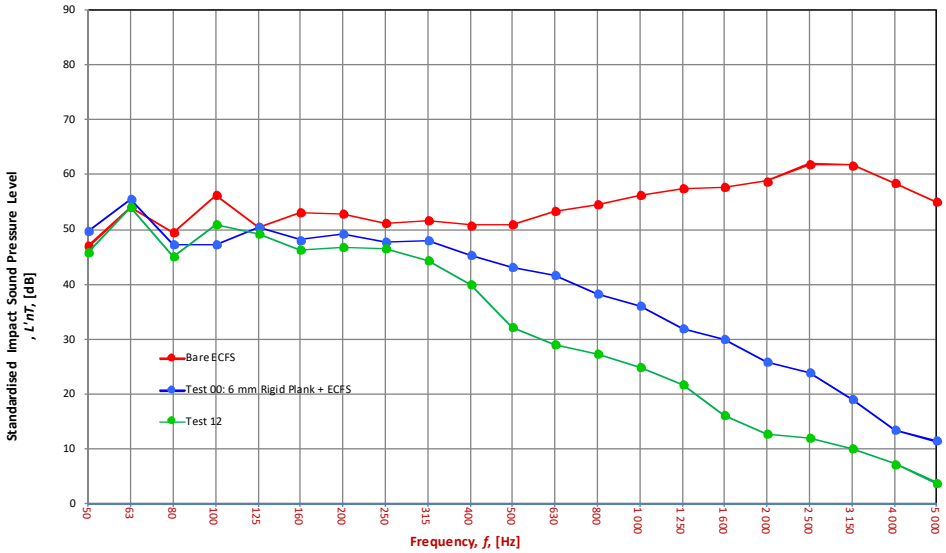
Date of Test :	Wednesday, 1 November 2017
Project No. :	3303 (Test 12)
Testing Company :	Koikas Acoustics
Checked by :	Nick Koikas
Place of Test:	Hurstville, NSW
Client	Proline Floors
Client Address	-

	Name	Thickness (mm)	Density (Sl)
Description	6 mm Rigid Plank	6	--
of	**5 mm Uniroll RF700**	5	--
Floor	200 mm Concrete Slab	200	--
System	80~100 mm suspended ceiling + 13 plasterboard ceiling	80~100 + 13	--

Room Floor Dimensions	Width :	3.2	m
	Length :	3	m
	Area :	9.6	m^2
Sample Dimensions	Width :	1	m
	Length :	1	m
	Area :	1	m^2

	Location	Width	Length	Area	Height	Volume	Room Surfaces		
							Walls	Floor	Ceiling
Receiver Rm	Bedroom	3.2	3	9.6	2.7	25.92	Plasterboard	Concrete	Plasterboard

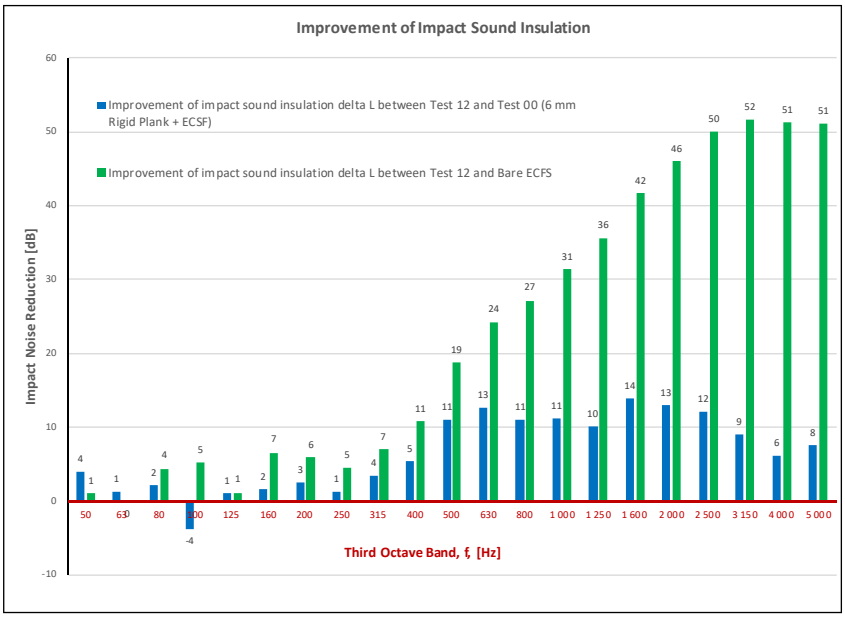
Frequency f Hz	L'nT (one-third octave) dB		
	Sub Base	Sub Base Floor	Sub Base Floor Underlay
50	46.9	49.7	45.7
63	54.0	55.4	54.1
80	49.4	47.2	45.0
100	56.3	47.2	51.0
125	50.4	50.3	49.2
160	53.0	48.1	46.4
200	52.8	49.2	46.7
250	51.1	47.8	46.5
315	51.5	47.9	44.4
400	50.8	45.2	39.8
500	50.9	43.2	32.1
630	53.3	41.7	28.9
800	54.4	38.3	27.2
1 000	56.2	36.0	24.8
1 250	57.4	31.9	21.7
1 600	57.8	30.0	16.1
2 000	58.8	25.8	12.7
2 500	61.9	23.9	11.9
3 150	61.7	19.1	10.0
4 000	58.5	13.3	7.2
5 000	54.9	11.4	3.8



Bare ECFS		
L'nT,w	66	AS ISO 717.2 - 2004
Ci	-13	AS ISO 717.2 - 2004
Ci(50-2500)	-13	AS ISO 717.2 - 2004
Ci(63-2000)	-14	AS ISO 717.2 - 2004
AAAC ★	2 Star	AAAC Guidleline
FIIC	39	ASTM E1007-14

Test 00: 6 mm Rigid Plank + ECFS		
L'nT,w	42	AS ISO 717.2 - 2004
Ci	0	AS ISO 717.2 - 2004
Ci(50-2500)	3	AS ISO 717.2 - 2004
Ci(63-2000)	3	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	68	ASTM E1007-14

Test 12		
L'nT,w	41	AS ISO 717.2 - 2004
Ci	0	AS ISO 717.2 - 2004
Ci(50-2500)	3	AS ISO 717.2 - 2004
Ci(63-2000)	2	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	69	ASTM E1007-14



Definitions of Noise Metrics

FIIC: Field Impact Insulation Class is a single-number rating of how well a floor system attenuates impact type sounds, such as footsteps. Calculated from third-octave band normalised impact sound pressure level data and referenced to 10 m^2 as described in ASTM E989. The higher the single-number rating, the better its impact insulation performance.

L'nT,w: The Weighted Standardised Impact Sound Pressure Level when measured in situ referenced to a reverberation time (RT60) of 0.5 seconds. Used by the AAAC to determine their respective Star Rating.

Ci: Spectrum adaption term is a low frequency correction factor. Typically for massive floors such as concrete, the values are about zero while for timber joist floors Ci is positive because of the low resonant frequencies. Considers frequency range between 100 -and 2500 Hz.

Ci(50-2500): Same as above, but for the frequency range 50 -2500 Hz.

Ci(125-2000): Same as above, but for the frequency range 125 -2000 Hz.

AAAC Star R.	2	3	4	5	6
L'nT,w	65	55	50	45	40
FIIC	45	55	60	65	70
Comments	Below BCA 62	Clearly Audible	Audible	Barely Inaudible	Normally Inaudible

FIELD MEASUREMENTS OF IMPACT SOUND INSULATION OF FLOORS (TEST 13)

KOIKAS ACOUSTICS PTY LTD

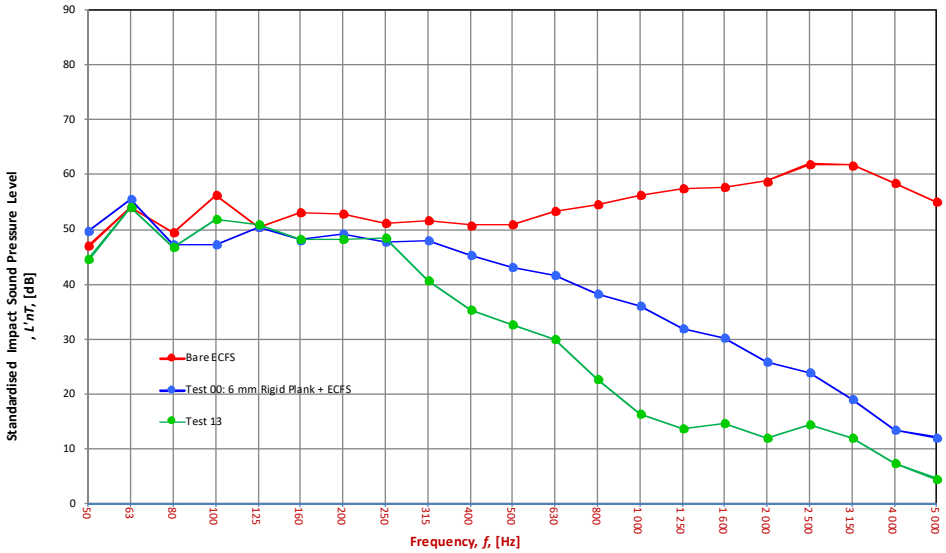
Date of Test :	Wednesday, 1 November 2017
Project No. :	3303 (Test 13)
Testing Company :	Koikas Acoustics
Checked by :	Nick Koikas
Place of Test:	Hurstville, NSW
Client	Proline Floors
Client Address	-

	Name	Thickness (mm)	Density (Sl)
Description	6 mm Rigid Plank	6	--
of	**10 mm Uniroll RF700**	10	--
Floor	200 mm Concrete Slab	200	--
System	80~100 mm suspended ceiling + 13 plasterboard ceiling	80~100 + 13	--

Room Floor Dimensions	Width :	3.2	m
	Length :	3	m
	Area :	9.6	m^2
Sample Dimensions	Width :	1	m
	Length :	1	m
	Area :	1	m^2

	Location	Width	Length	Area	Height	Volume	Room Surfaces		
							Walls	Floor	Ceiling
Receiver Rm	Bedroom	3.2	3	9.6	2.7	25.92	Plasterboard	Concrete	Plasterboard

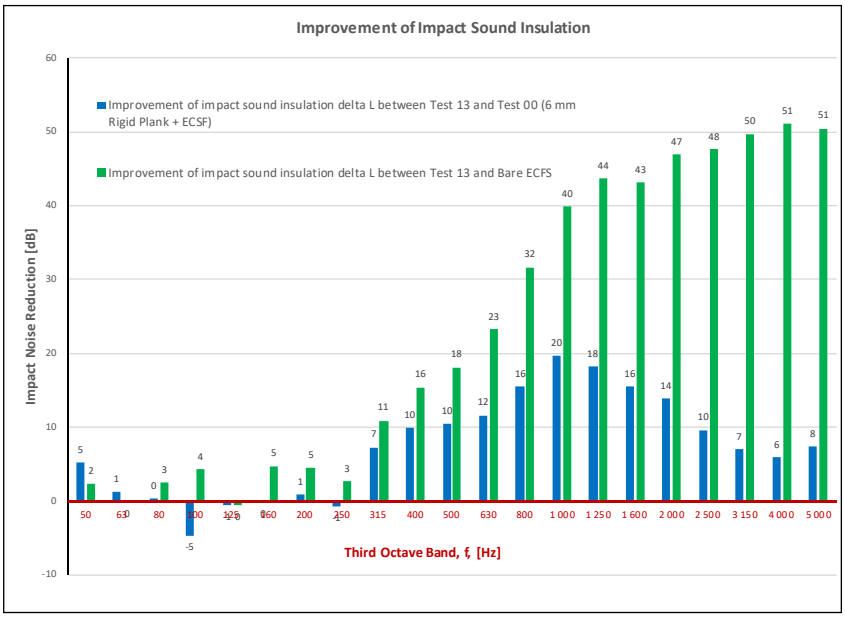
Frequency f Hz	L'nT (one-third octave) dB		
	Sub Base	Sub Base Floor	Sub Base Floor Underlay
50	46.9	49.7	44.5
63	54.0	55.4	54.1
80	49.4	47.2	46.8
100	56.3	47.2	51.9
125	50.4	50.3	50.8
160	53.0	48.1	48.2
200	52.8	49.2	48.2
250	51.1	47.8	48.4
315	51.5	47.9	40.5
400	50.8	45.2	35.3
500	50.9	43.2	32.7
630	53.3	41.7	30.0
800	54.4	38.3	22.7
1 000	56.2	36.0	16.3
1 250	57.4	31.9	13.6
1 600	57.8	30.2	14.6
2 000	58.8	25.8	11.8
2 500	61.9	23.9	14.2
3 150	61.7	19.1	11.9
4 000	58.5	13.3	7.3
5 000	54.9	11.9	4.4



Bare ECFS		
L'nT,w	66	AS ISO 717.2 - 2004
Ci	-13	AS ISO 717.2 - 2004
Ci(50-2500)	-13	AS ISO 717.2 - 2004
Ci(63-2000)	-14	AS ISO 717.2 - 2004
AAAC ★	2 Star	AAAC Guidleline
FIIC	39	ASTM E1007-14

Test 00: 6 mm Rigid Plank + ECFS		
L'nT,w	42	AS ISO 717.2 - 2004
Ci	0	AS ISO 717.2 - 2004
Ci(50-2500)	3	AS ISO 717.2 - 2004
Ci(63-2000)	3	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	68	ASTM E1007-14

Test 13		
L'nT,w	42	AS ISO 717.2 - 2004
Ci	0	AS ISO 717.2 - 2004
Ci(50-2500)	2	AS ISO 717.2 - 2004
Ci(63-2000)	2	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	68	ASTM E1007-14



Definitions of Noise Metrics

FIIC: Field Impact Insulation Class is a single-number rating of how well a floor system attenuates impact type sounds, such as footsteps. Calculated from third-octave band normalised impact sound pressure level data and referenced to 10 m^2 as described in ASTM E989. The higher the single-number rating, the better its impact insulation performance.

L'nT,w: The Weighted Standardised Impact Sound Pressure Level when measured in situ referenced to a reverberation time (RT60) of 0.5 seconds. Used by the AAAC to determine their respective Star Rating.

Ci: Spectrum adaption term is a low frequency correction factor. Typically for massive floors such as concrete, the values are about zero while for timber joist floors Ci is positive because of the low resonant frequencies. Considers frequency range between 100 -and 2500 Hz.

Ci(50-2500): Same as above, but for the frequency range 50 -2500 Hz.

Ci(125-2000): Same as above, but for the frequency range 125 -2000 Hz.

AAAC Star R.	2	3	4	5	6
L'nT,w	65	55	50	45	40
FIIC	45	55	60	65	70
Comments	Below BCA 62	Clearly Audible	Audible	Barely Inaudible	Normally Inaudible

FIELD MEASUREMENTS OF IMPACT SOUND INSULATION OF FLOORS (TEST 14)

KOIKAS ACOUSTICS PTY LTD

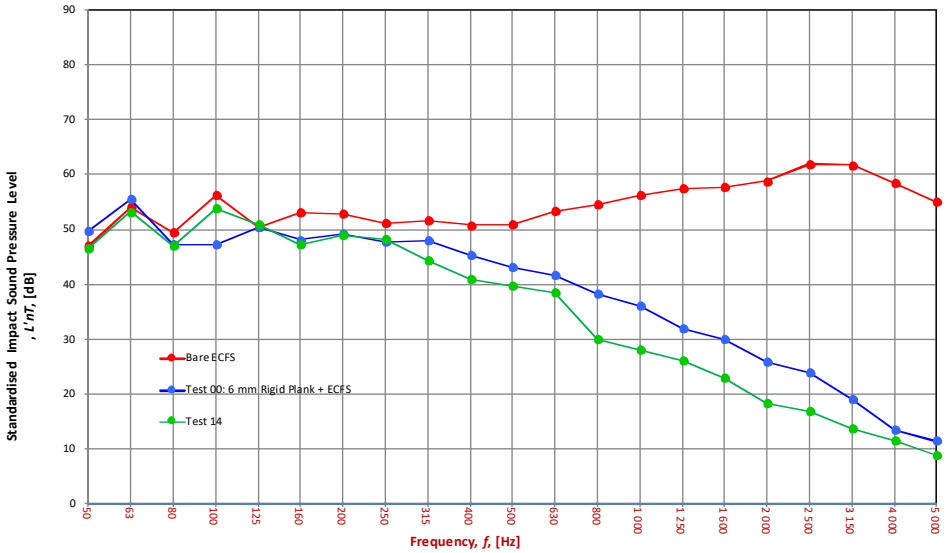
Date of Test :	Wednesday, 1 November 2017
Project No. :	3303 (Test 14)
Testing Company :	Koikas Acoustics
Checked by :	Nick Koikas
Place of Test:	Hurstville, NSW
Client	Proline Floors
Client Address	-

	Name	Thickness (mm)	Density (Sl)
Description	6 mm Rigid Plank	6	--
of	**2 mm Damtec**	2	--
Floor	200 mm Concrete Slab	200	--
System	80~100 mm suspended ceiling + 13 plasterboard ceiling	80~100 + 13	--

Room Floor Dimensions	Width :	3.2	m
	Length :	3	m
	Area :	9.6	m^2
Sample Dimensions	Width :	1	m
	Length :	1	m
	Area :	1	m^2

	Location	Width	Length	Area	Height	Volume	Room Surfaces		
							Walls	Floor	Ceiling
Receiver Rm	Bedroom	3.2	3	9.6	2.7	25.92	Plasterboard	Concrete	Plasterboard

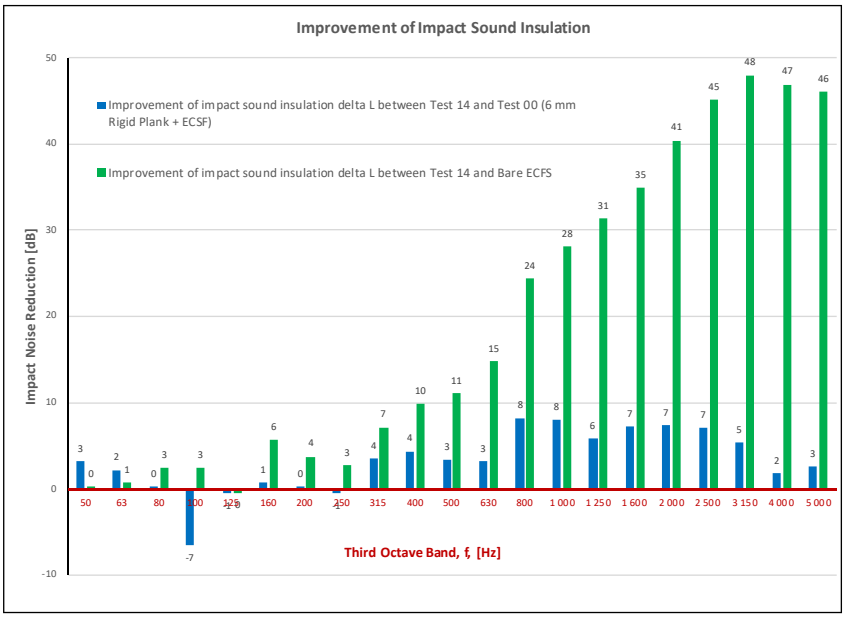
Frequency f Hz	L'nT (one-third octave) dB		
	Sub Base	Sub Base Floor	Sub Base Floor Underlay
50	46.9	49.7	46.5
63	54.0	55.4	53.2
80	49.4	47.2	46.9
100	56.3	47.2	53.8
125	50.4	50.3	50.8
160	53.0	48.1	47.3
200	52.8	49.2	48.9
250	51.1	47.8	48.3
315	51.5	47.9	44.3
400	50.8	45.2	40.8
500	50.9	43.2	39.8
630	53.3	41.7	38.5
800	54.4	38.3	30.0
1 000	56.2	36.0	28.0
1 250	57.4	31.9	26.0
1 600	57.8	30.0	22.8
2 000	58.8	25.8	18.3
2 500	61.9	23.9	16.8
3 150	61.7	19.1	13.7
4 000	58.5	13.3	11.5
5 000	54.9	11.4	8.8



Bare ECFS		
L'nT,w	66	AS ISO 717.2 - 2004
Ci	-13	AS ISO 717.2 - 2004
Ci(50-2500)	-13	AS ISO 717.2 - 2004
Ci(63-2000)	-14	AS ISO 717.2 - 2004
AAAC ★	2 Star	AAAC Guidleline
FIIC	39	ASTM E1007-14

Test 00: 6 mm Rigid Plank + ECFS		
L'nT,w	42	AS ISO 717.2 - 2004
Ci	0	AS ISO 717.2 - 2004
Ci(50-2500)	3	AS ISO 717.2 - 2004
Ci(63-2000)	3	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	68	ASTM E1007-14

Test 14		
L'nT,w	42	AS ISO 717.2 - 2004
Ci	1	AS ISO 717.2 - 2004
Ci(50-2500)	3	AS ISO 717.2 - 2004
Ci(63-2000)	2	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	67	ASTM E1007-14



Definitions of Noise Metrics

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Ci(50-2500): Same as above, but for the frequency range 50 -2500 Hz.

Ci(125-2000): Same as above, but for the frequency range 125 -2000 Hz.

AAAC Star R.	2	3	4	5	6
L'nT,w	65	55	50	45	40
FIIC	45	55	60	65	70
Comments	Below BCA 62	Clearly Audible	Audible	Barely Inaudible	Normally Inaudible

FIELD MEASUREMENTS OF IMPACT SOUND INSULATION OF FLOORS (TEST 15)

KOIKAS ACOUSTICS PTY LTD

Date of Test :	Wednesday, 1 November 2017
Project No. :	3303 (Test 15)
Testing Company :	Koikas Acoustics
Checked by :	Nick Koikas
Place of Test:	Hurstville, NSW
Client	Proline Floors
Client Address	-

	Name	Thickness (mm)	Density (Sl)
Description	6 mm Rigid Plank	6	--
of	**3 mm Damtec**	3	--
Floor	200 mm Concrete Slab	200	--
System	80~100 mm suspended ceiling + 13 plasterboard ceiling	80~100 + 13	--

Room Floor Dimensions	Width :	3.2	m
	Length :	3	m
	Area :	9.6	m^2
Sample Dimensions	Width :	1	m
	Length :	1	m
	Area :	1	m^2

	Location	Width	Length	Area	Height	Volume	Room Surfaces		
							Walls	Floor	Ceiling
Receiver Rm	Bedroom	3.2	3	9.6	2.7	25.92	Plasterboard	Concrete	Plasterboard

Frequency f Hz	L'nT (one-third octave) dB		
	Sub Base	Sub Base Floor	Sub Base Floor Underlay
50	46.9	49.7	47.4
63	54.0	55.4	53.3
80	49.4	47.2	46.1
100	56.3	47.2	52.1
125	50.4	50.3	49.9
160	53.0	48.1	46.7
200	52.8	49.2	47.1
250	51.1	47.8	48.5
315	51.5	47.9	44.3
400	50.8	45.2	41.0
500	50.9	43.2	40.2
630	53.3	41.7	35.7
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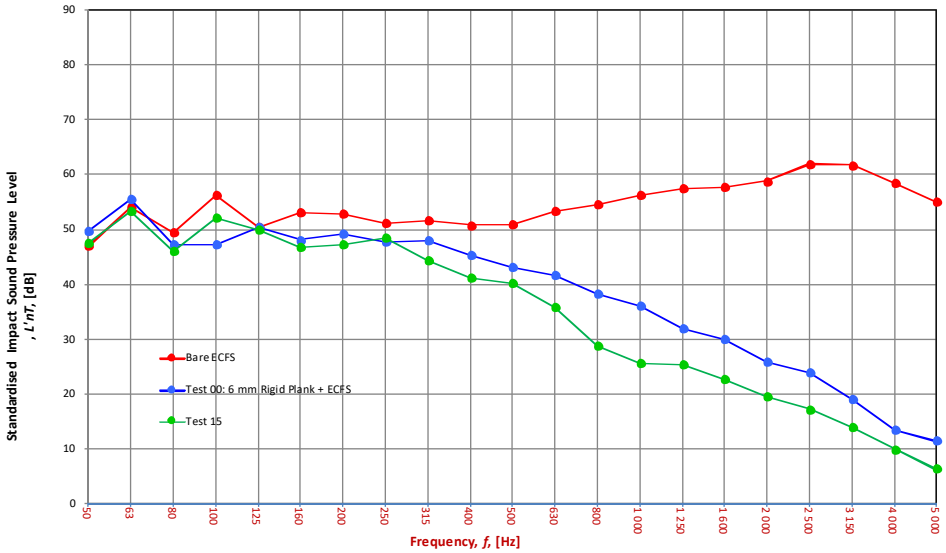
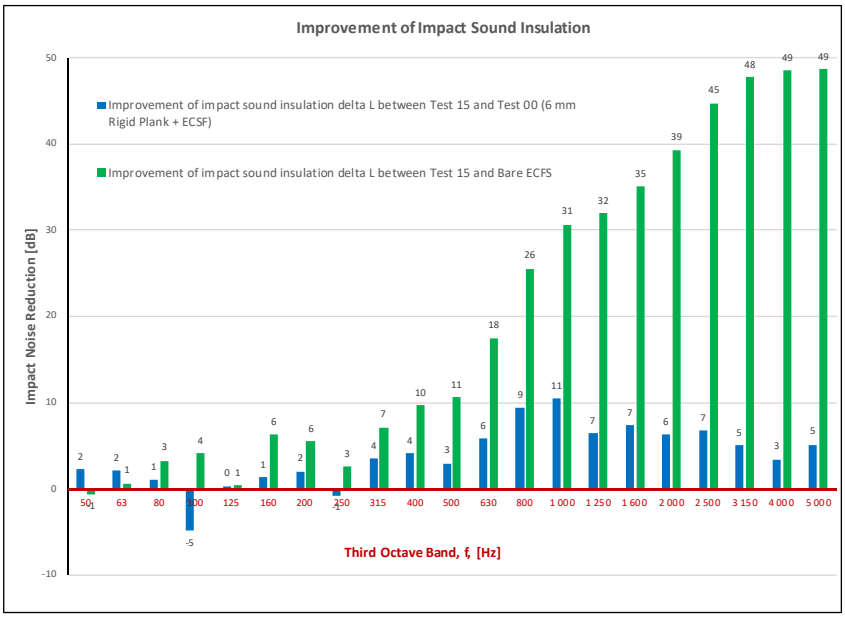
1 600	57.8	30.0	22.6
2 000	58.8	25.8	19.4
2 500	61.9	23.9	17.2
3 150	61.7	19.1	13.9
4 000	58.5	13.3	9.8
5 000	54.9	11.4	6.2



Bare ECFS		
L'nT,w	66	AS ISO 717.2 - 2004
Ci	-13	AS ISO 717.2 - 2004
Ci(50-2500)	-13	AS ISO 717.2 - 2004
Ci(63-2000)	-14	AS ISO 717.2 - 2004
AAAC ★	2 Star	AAAC Guidleline
FIIC	39	ASTM E1007-14

Test 00: 6 mm Rigid Plank + ECFS		
L'nT,w	42	AS ISO 717.2 - 2004
Ci	0	AS ISO 717.2 - 2004
Ci(50-2500)	3	AS ISO 717.2 - 2004
Ci(63-2000)	3	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	68	ASTM E1007-14

Test 15		
L'nT,w	41	AS ISO 717.2 - 2004
Ci	1	AS ISO 717.2 - 2004
Ci(50-2500)	3	AS ISO 717.2 - 2004
Ci(63-2000)	3	AS ISO 717.2 - 2004
AAAC ★	5 Star	AAAC Guidleline
FIIC	68	ASTM E1007-14



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AAAC Star R.	2	3	4	5	6
L'nT,w	65	55	50	45	40
FIIC	45	55	60	65	70
Comments	Below BCA 62	Clearly Audible	Audible	Barely Inaudible	Normally Inaudible