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TEST REPORT

for

Hubei Xiangyuan New Material Technology Inc.
Economic Development Zone
Hanchuan, Hubei 431600
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Impact Sound Transmission Test

ASTM E 492 – 09 / ASTM E 989 – 06

On

6 Inch Concrete Slab Floor – Ceiling Assembly
With a Suspended Single Layer of 5/8 Inch Type X Wallboard Ceiling
And 3-1/2 Inches of Fiberglass Insulation
Overlaid with 12 mm Laminate Flooring and IXPE Underlayment

Report Number: NGC 7017121

Assignment Number: G-1410

Test Date: 05/16/2017

Report Approval Date: 05/23/2017

Submitted by: _____
Anthony J. Rivers
Test Technician

Reviewed by: _____
Robert J. Menchetti
Director

Revision Summary:

Date	SUMMARY
Approval Date: 05/23/2017	Original issue date: 05/23/2017 Original NGCTS report #: NGC 7017121

Report Number: NGC 7017121

Test Method: This test method is in accordance with American Society for Testing and Materials Standard Test Method for Laboratory Measurement of Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine - Designation: E 492-09/ E 989-06.

The uncertainty limits of each tapping machine location met the precision requirements of section A1.4 of ASTM E 492-09.

Specimen Description: 6 inch concrete slab floor-ceiling assembly, with a single layer of 5/8 inch Type X wallboard Ceiling and 3-1/2 inches of fiberglass insulation, overlaid with according to client, 12 mm Laminate Flooring, over IXPE underlayment.

The test specimen was a floor-ceiling assembly and was observed to consist of the following:
All weights and dimension are averaged:

- 1 layer of, according to the client, 12 mm Laminate Flooring. The flooring was floating on the IXPE underlayment. Plank dimensions: 196.9 mm x 1212.9 mm (7-3/4 in. x 47-3/4 in.). Measured thickness: 12.19 mm (0.48 in.). Measured weight: 11.34 kg/m^2 (2.32 PSF)

- 1 layer of, according to the client, IXPE underlayment. The underlayment was floating on the concrete slab. Measured thickness: 1.93 mm (0.076 in.). Measured weight: 0.098 kg/m^2 (0.02 PSF)

- 152.4 mm (6 in.) thick reinforced concrete slab, weighing: 366.2 kg/m^2 (75.0 PSF)

- 1 layer of, 88.9 mm (3.5 in.) unfaced fiberglass batt insulation which was laid over the suspended grid system parallel to the main tees. Sample weight: 0.78 kg/m^2 (0.16 PSF)

- Gypsum wallboard ceiling grid suspension system. System is comprised of main tees and cross tees. The main tees were placed 1219.2 mm (48 in.) o.c. and the cross tees were placed 609.6 mm (24 in.) o.c.16 gauge galvanized tie wire was used to attach the main tees to concrete anchors, located 1219.2 mm (48 in.) o.c. along the longitudinal axis, suspending the grid 304.8 mm (12 in.) below the concrete slab.

- 1 layer of, 15.9 mm (5/8 in.) Type X gypsum wallboard. The wallboard was attached parallel to the suspended grid suspension system mains, using 28.6 mm (1-1/8 in.) Type S drywall screws spaced 304.8 mm (12 in.) o.c. The wallboard joints were taped. Suspended gypsum wallboard grid ceiling weighed: 11.23 kg/m^2 (2.30 PSF).

The overall weight of the test assembly is: 389.58 kg/m^2 (79.80 PSF)

The perimeter of the test frame was sealed with a rubber gasket and a sand filled trough.

The test frame was structurally isolated from the receiving room.

Specimen size: 3657.6 mm x 4876.8 mm (12 ft. x 16 ft.)

Conditioning: Concrete slab cured for a minimum of 28 days.

Test Results: The results of the tests are given on pages 4 and 5 of the report.

Normalized impact sound pressure level

Test: ASTM E 492 - 09 / ASTM E 989 - 06

Test Report: NGC7017121 Date: 5/16/2017
Specimen Size [m²]: 17.8

Source room
Rm Temp [°C]: 20
Humidity [%]: 52

Receiving room
Volume [m³]: 124
Rm Temp [°C]: 22
Humidity [%]: 56

Impact Insulation Class IIC [dB]: 69
Sum of Unfavorable Deviations [dB]: 28
Max. Unfavorable Deviation [dB]: 8 at 125 Hz

Frequency [Hz]	L_n [dB]	L2 [dB]	d [dB/s]	Corr. [dB]	u.Dev. [dB]	ΔL_n
80	52	51.4	31.87	0.6		0.97
100	49	49.5	26.73	-0.5	6	2.54
125	51	52.7	20.25	-1.7	8	0.77
160	49	51.7	16.32	-2.7	6	0.82
200	49	52.3	15.02	-3.3	6	0.70
250	44	48.8	14.07	-4.8	1	0.58
315	44	47.5	14.73	-3.5	1	0.56
400	42	44.8	15.61	-2.8		0.49
500	40	42.9	16.49	-2.9		0.41
630	38	40.3	17.00	-2.3		0.27
800	29	32.3	17.52	-3.3		0.31
1000	24	28.4	16.91	-4.4		0.49
1250	20	24.3	17.86	-4.3		0.77
1600	18	21.6	19.31	-3.6		0.97
2000	15	18.3	22.82	-3.3		0.66
2500	14	17.3	24.94	-3.3		0.48
3150	10	12.8	26.09	-2.8		0.36
4000	9	10.9	29.19	-1.9		0.27
5000	8	9.9	33.64	-1.9		0.22

L_n = Normalized Sound Pressure Level, dB
L2 = Receiving Room Level, dB
d = Decay Rate, dB/second
ΔL_n = Uncertainty for 95% Confidence Level

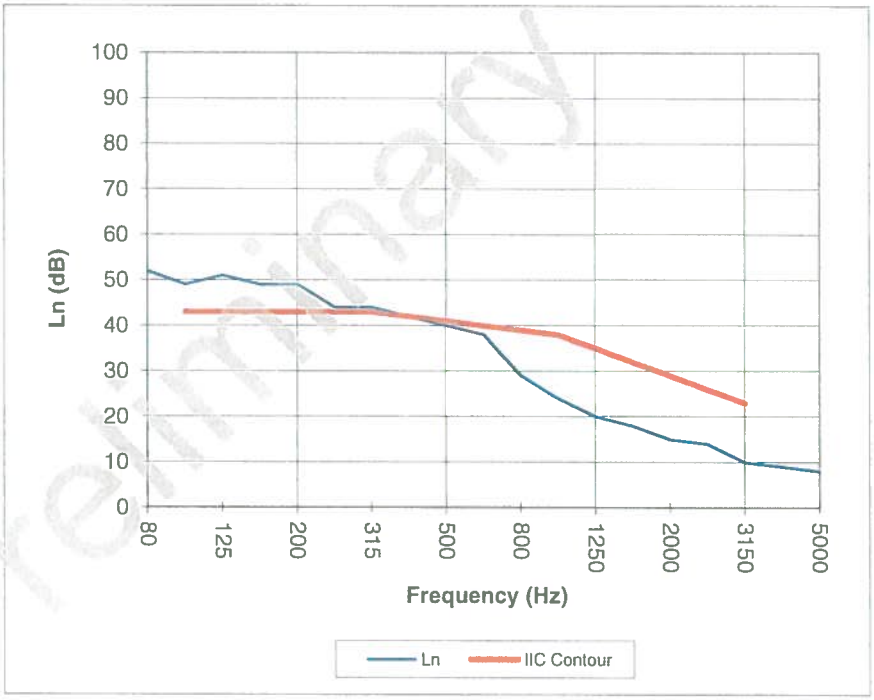
Normalized impact sound pressure level

Test: ASTM E 492 - 09 / ASTM E 989 - 06

Test Report: NGC7017121
Test Date: 5/16/2017
Specimen Size [m²]: 17.8

Impact Insulation Class IIC [dB]: 69

Frequency [Hz]	L_n [dB]	
80	52	
100	49	
125	51	
160	49	
200	49	
250	44	
315	44	
400	42	
500	40	
630	38	
800	29	
1000	24	
1250	20	*
1600	18	*
2000	15	*
2500	14	*
3150	10	*
4000	9	*
5000	8	*



* Due to high insulating value of specimen, background levels limit results at these frequencies.

L_n = Normalized Sound Pressure Level, dB