

## TEST REPORT

for

**Radial Engineering**  
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Port Coquitlan, BC V3C 5M5  
Jay Porter / 604-942-1001

### Sound Attenuation of Suspended Ceiling Test ASTM E 1414 / E1414 M-11 / E413-10

On

### Ceiling Panels: ThunderTile™ Ceiling Panels

Report Number: NGC 6015012

Assignment Number: G-1158

Test Date: 03/16/2015

Report Approval Date: 04/17/2015

Submitted by:   
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Reviewed by:   
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Director

The results reported above apply to specific samples submitted for measurement. No responsibility is assumed for performance of any other specimen. The laboratory's accreditation or any of its test reports in no way constitute or imply product certification, approval, or endorsement by NVLAP or any agent of the U.S. Government. This report may not be reproduced except in full, without written approval of the laboratory.

**Revision Summary:**

Date	SUMMARY
Approval Date: 04/17/2015	Original issue date: 04/17/2015 Original NGCTS report: NGC 6015012

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Test Method: This test method conforms explicitly with the American Society for Testing and Materials Standard Test Method for Airborne Sound Attenuation between Rooms Sharing a Common Ceiling Plenum - Designation: E 1414 / E1414 M-11 / E413-10.

Specimen Description: Designated by client: ThunderTile™ Ceiling Panels  
610 mm x 1219.2 mm x 25.4 mm (2 ft. x 4 ft. x 1 in.)

Grid System Description: Suspended ceiling system consisting of 2 ft. by 4 ft. nominal, reveal panels. The T-grid system was a Chicago Metallic ceiling grid system (Runner HDG Base-211-01H part number; Cross Tees-10.01.229.001H part number).

The specimen was sealed with caulk between the grid face and the top of the dividing partition. The metal grid system was installed continuous at the dividing partition.

Ceiling panels were observed to consist of:

Panels are: Reveal Edge, T-bar

Face Finish: Fiberglass Tissue Micro-Mesh sealed with white paint

Panel Core: High Density Glass wool

Back Finish: 1/2 inch gypsum board with foil

All weights and dimensions are averaged:

Measured Panel Thickness: 25.91 mm (1.02 in.)

Measured Panel Weight: 10.94 kg/m<sup>2</sup> (2.24PSF)

Unit Size: 603.25 mm x 1212.85 mm (23-3/4 in. x 47-3/4 in.)

Ceiling Test Area: 15.6 sq. meters.

Laboratory end walls farthest from common partition fitted with 5/8 in. gypsum board panels as per Section 8.1 of ASTM E 1414.

Suspension System Type: CE.

Data Normalization: The 'direct method' of measuring the receiving room absorption was used.

Preconditioning: Minimum 24 hours at 70°F, 55% R.H.

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

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**Sound Attenuation by Suspended Ceiling**

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Spec. Area [m<sup>2</sup>]: 12

**Source room**

Volume [m<sup>3</sup>]: 41.26

Rm Temp [°C]: 21

Humidity [%]: 53

**Receiving room**

Volume [m<sup>3</sup>]: 41.26

Rm Temp [°C]: 17

Humidity [%]: 68

**Ceiling Attenuation Class CAC [dB] = 46**

Sum of Unfavorable Deviations [dB]: 26

Maximum Unfavorable Deviation [dB]: 6 at 6 Hz

Frequency	D <sub>n,c</sub>	L1	L2	d	Corr.	u.Dev.	ΔD <sub>n,c</sub>
[Hz]	[dB]	[dB]	[dB]	[dB/s]	[dB]	[dB]	
100	26	104.7	82.5	45.5	3.8	-	0.762
125	31	102.1	74.0	53.6	2.9	-	0.632
160	37	96.3	62.0	48.8	2.8	-	0.648
200	42	100.3	62.2	43.2	3.9	-	0.374
250	39	100.3	65.0	46.5	3.7	4	0.200
315	38	98.4	63.5	46.9	3.1	5	0.173
400	40	97.4	59.7	44.8	2.3	4	0.200
500	42	99.0	59.0	47.2	2.0	6	0.141
630	41	97.1	56.3	46.9	0.1	3	0.173
800	45	95.7	50.0	45.8	-0.7	-	0.100
1000	50	96.9	46.7	46.9	-0.2	-	0.100
1250	52	94.5	42.5	47.6	0.0	-	0.100
1600	52	92.3	39.7	50.8	-0.7	-	0.100
2000	51	92.1	40.9	53.6	-0.1	-	0.100
2500	50	92.8	42.5	57.1	-0.3	4	0.100
3150	46	91.4	45.2	60.0	-0.2	5	0.100
4000	45	91.8	46.7	64.5	0.0	-	-.-
5000	49	89.7	41.2	71.4	0.6	-	0.100

D<sub>n,c</sub> = Normalized Ceiling Attenuation, dB  
 L1 = Source Room Level, dB  
 L2 = Receiving Room Level, dB  
 d = Decay Rate, dB/second  
 Δ D<sub>n,c</sub> = Uncertainty for 95% Confidence Level

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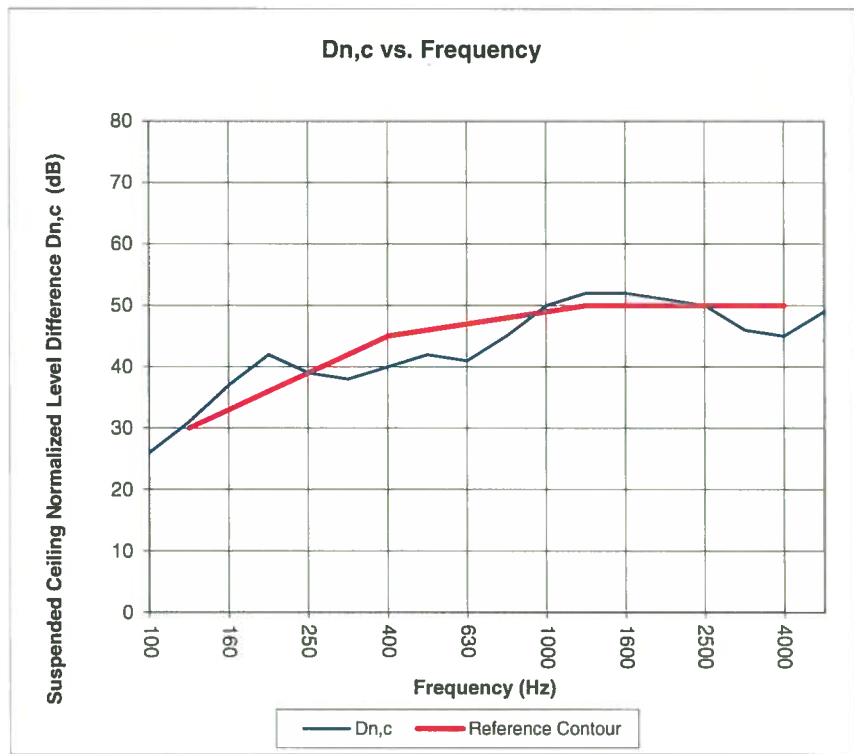
**Sound Attenuation by Suspended Ceiling**

Test: ASTM E 1414 / ASTM E 1414-M11 / ASTM E 413 -10

Test Report: NGC6015012  
 Test Date: 3/16/2015  
 Specimen Size [m<sup>2</sup>]: 12

**Ceiling Attenuation Class CAC [dB] = 46 dB**

Frequency [Hz]	D <sub>n,c</sub> [dB]	ΔD <sub>n,c</sub>
100	26	0.762
125	31	0.632
160	37	0.648
200	42	0.374
250	39	0.200
315	38	0.173
400	40	0.200
500	42	0.141
630	41	0.173
800	45	0.100
1000	50	0.100
1250	52	0.100
1600	52	0.100
2000	51	0.100
2500	50	0.100
3150	46	0.100
4000	45	-
5000	49	0.100



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

D<sub>n,c</sub> = Normalized Ceiling Attenuation, dB  
 Δ D<sub>n,c</sub> = Uncertainty for 95% Confidence Level

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