

## ACOUSTICAL FIELD TEST REPORT

Rendered to:

**KNIGHT INDUSTRIES, LLC**

**PROJECT: Lake Park Estates  
Richardson, TX**

<b>ATI Data File No.</b>	<b>Test Area</b>	<b>Description</b>	<b>Results</b>
70722.01A	1	1 <sup>st</sup> Floor: Wall partition between condominium 2009 bedroom and condominium 2007 living room	ASTC: 69
70722.01B	2	2 <sup>nd</sup> Floor: Wall partition between condominium 2009 bedroom and condominium 2007 bedroom	ASTC: 65

Reference should be made to ATI Report No. 70722.01-113-10 for complete test specimen description. The complete test results are listed in Appendix B.

## ACOUSTICAL PERFORMANCE TEST REPORT

Rendered to:

KNIGHT INDUSTRIES, LLC  
One Northfield Plaza  
Suite 400  
Northfield, Illinois 60093

Report No: 70722.01-113-10  
Revision 1: 03/07/07  
Test Date: 02/22/07  
Report Date: 02/27/07  
Expiration Date: 02/22/11

**Project Identification:** Lake Park Estates  
Richardson, TX

**Test Area 1:** 1<sup>st</sup> Floor: Wall partition between condominium 2009 bedroom and  
condominium 2007 living room

**Test Area 2:** 2<sup>nd</sup> Floor: Wall partition between condominium 2009 bedroom and  
condominium 2007 bedroom

**Project Summary:** Architectural Testing, Inc. (ATI) was contracted by Knight Industries, LLC to conduct field sound transmission loss tests at the project listed above. A summary of the results is listed in the Test Results section and the complete test data is included as Appendix B of this report.

**Test Methods:** The acoustical tests were conducted in accordance with the following:

ASTM E 336-05, *Standard Test Method for Measurement of Airborne Sound Insulation in Building.*

ASTM E 413-04, *Classification for Rating Sound Insulation.*

ASTM E 2235-04<sup>e1</sup>, *Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods.*

**Test Equipment:** The equipment used to conduct these tests meets the requirements of Sections 7 and 8 of ASTM E 336. The microphones were calibrated before and after testing at each site. The test equipment is listed in Appendix A.

### **Test Procedure:**

The sound transmission loss tests were performed in accordance with ASTM E 336. For the first floor rooms, six source and six receiving room microphone positions were used, with no position closer than 40 inches to any room surface or extended surface. For the second floor bedrooms, four source and four receiving room microphone positions were used. Temperature and relative humidity conditions were measured and are recorded on the data sheets included in Appendix B.

**Sample Description:**

**Test Area 1:** 1<sup>st</sup> Floor: Wall partition between condominium 2009 bedroom and condominium 2007 Living Room

**Wall Assembly Description\*:** (Layer 1 faces condominium 2007, receiving room)

Layer	Description
1	5/8" gypsum board
2	Sound Stop <sup>®</sup>
3	3-5/8" wood stud with 3-1/2" Rocwool insulation between studs
4	5/8" gypsum board
5	1" air space
6	5/8" gypsum board
7	3-5/8" wood stud with 3-1/2" Rocwool insulation between studs
8	Sound Stop <sup>®</sup>
9	5/8" gypsum board

\* - Stated by client / manufacturer

Condominium 2007 Living Room (Receive room):

Room Description	
Room Dimensions	4.1 m by 7 m (13.4 ft by 23 ft)
Room Volume	87.4 m <sup>3</sup> (3086 ft <sup>3</sup> )
Specimen Area	12.4 m <sup>2</sup> (133.7 ft <sup>2</sup> )
Ceiling Type	Textured gypsum board
Ceiling Finish	Paint
Floor Material	Unfinished concrete
Wall Type / Finish	Gypsum board, textured and painted

Condominium 2009 bedroom (Source room):

Room Description	
Room Dimensions	4.1 m by 3.5 m (6.6 ft by 9.8 ft)
Room Volume	43.1m <sup>3</sup> (1522.4 ft <sup>3</sup> )
Specimen Area	12.4 m <sup>2</sup> (133.7 ft <sup>2</sup> )
Ceiling Type	Gypsum over wood framing
Ceiling Finish	Paint
Floor Material	Unfinished concrete
Wall Type / Finish	Painted gypsum board

**Sample Description:** (continued)

**Test Area 2:** 2<sup>nd</sup> Floor: Separating wall between condominium 2009 bedroom to condominium 2007 bedroom

**Wall Assembly Description\*:** (Layer 1 faces condominium 2007, receiving room)

Layer	Description
1	5/8" gypsum board
2	Sound Stop <sup>®</sup>
3	3-5/8" wood stud with 3-1/2" Rocwool insulation between studs
4	5/8" gypsum board
5	1" air space
6	5/8" gypsum board
7	3-5/8" wood stud with 3-1/2" Rocwool insulation between studs
8	Sound Stop <sup>®</sup>
9	5/8" gypsum board

\* - Stated by client / manufacturer

Condominium 2007 bedroom (Receive room):

Room Description	
Room Dimensions	4.5 m by 3.5 m (14.8 ft by 11.4 ft)
Room Volume	43 m <sup>3</sup> (1519 ft <sup>3</sup> )
Specimen Area	11.1 m <sup>2</sup> (119.9 ft <sup>2</sup> )
Ceiling Type	Gypsum over wood framing
Ceiling Finish	Paint
Floor Material	3/4" OSB subfloor
Wall Type / Finish	Painted gypsum board

Condominium 2009 bedroom (Source room):

Room Description:	
Room Dimensions	3.6 m by 3.2 m (11.7 ft by 10.4 ft)
Room Volume	31 m <sup>3</sup> (1107 ft <sup>3</sup> )
Specimen Area	11.1 m <sup>2</sup> (119.9 ft <sup>2</sup> )
Ceiling Type	Gypsum over wood framing
Ceiling Finish	Paint
Floor Material	3/4" OSB subfloor
Wall Type / Finish	Painted gypsum board

**Comments:** Outside all test areas, there was a water fountain and waterfall. All windows were closed and locked prior to the start of testing. The sliding glass doors would not close and lock properly. They were closed as much as possible and sealed with tape. However, the water fountain and waterfall noise could easily be heard in the test areas and significantly affected the background and sound pressure level measurements. They were both turned off prior to the start of testing.

There were no seals installed in the front and garage doors of the condominiums. After the water fountain and waterfall were turned off, traffic noise could be heard from the door perimeters. Seals were installed on both door perimeters prior to the start of testing.

Digital photographs are located in Appendix C.

**Test Results:** The table listed below contains a summary of the field sound transmission loss tests conducted at Lake Park Estates. The complete test data is included in Appendix B of this test report.

<b>ATI Data File No.</b>	<b>Test Area</b>	<b>Description</b>	<b>Results</b>
70722.01A	1	1 <sup>st</sup> Floor: Wall partition between condominium 2009 bedroom and condominium 2007 living room	ASTC: 69
70722.01B	2	2 <sup>nd</sup> Floor: Wall partition between condominium 2009 bedroom and condominium 2007 bedroom	ASTC: 65

## Conclusions:

The ASTM E 336 test method is a guide for determining the Apparent Sound Transmission Loss (ATL) and Apparent Sound Transmission Class (ASTC) of building facades or facade elements. Flanking transmission or unusual field conditions could render the determination of ATL difficult or meaningless. There were several factors that affected the transmission loss measurements made at the Lake Park Estates.

Several factors that could have affected the measurements in some of the spaces tested are listed below:

- The absorption of the receiving room in test area 1 could not be accurately determined because it was open to other parts of the condominium. This situation causes the measured absorption to be higher than what it would be for the receiving room alone. The ATL is the source room sound pressure level minus the receiving room sound pressure level plus 10 times the logarithm of the test specimen area, minus 10 times the logarithm of the absorption. Therefore, the higher the absorption, the lower the measured transmission loss.
- The receiving room absorption in test area 1 exceeded the sound absorption limit specified in ASTM E 336.
- The volume of the receiving room in test area 2 was less than the 1400 ft<sup>3</sup> recommended by ASTM E 336.
- All of the specimens were measured without a flanking screen. The ATL may be referred to as the lower limit of the true field transmission loss of the specimen. The ATL values were used to calculate the ASTC rating of the wall.

**Witnesses:** The following representatives witnessed all or part of the testing.

The following representatives witnessed all or part of the testing on 02/22/07:

Todd Kister	Architectural Testing, Inc.
Jim Sturdevant	Architectural Testing, Inc.
Walt Smith	Knight Industries, LLC
Pete Lindsay	Knight Industries, LLC

Detailed drawings, data sheets, a copy of this report, or other pertinent project documentation will be retained by Architectural Testing, Inc. for a period of four years from the original test date. At the end of this retention period, such materials shall be discarded without notice and the service life of this report will expire. Results obtained are tested values and were secured by using the designated test methods. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen(s) tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC:

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James F. Sturdevant  
Lab Technician

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Todd D. Kister  
Laboratory Supervisor - Acoustical Testing

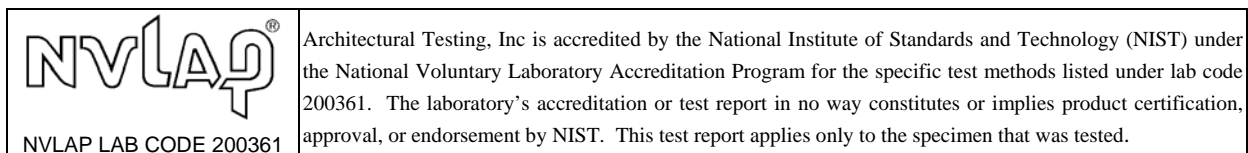
JFS:cre

Attachments (pages):      This report is complete only when all attachments listed are included.

Appendix A: Equipment description (1)

Appendix B: Complete test results (2)

Appendix C: Photographs (1)



### Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	02/27/07	N/A	Original Report Issue
1	03/07/07	Page 2 & 3	Changed batt fiberglass to Rocwool

**Appendix A**

**Instrumentation:**

<b>Instrument</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Description</b>	<b>Serial Number</b>
Analyzer	Norsonic	NOR-121	Two channel real-time analyzer with 1/3 octave band filtering	C002893
Receive Room Microphone	ACO Pacific	7047	1/2", random incidence microphone	Y002183
Receive Room Preamp	ACO Pacific	4012	1/2" preamplifier	Y002808
Microphone Calibrator	Norsonic	CAL 1251	calibrator	C002921
Noise Source	Norsonic	NOR-121	"Pink" weighted, random noise generated by the NOR 121 Analyzer	C002893
Loudspeaker	Yamaha	MS 400	Amplified loudspeaker	MS 400
Temperature/humidity indicator	Davis	6150C	Weather station	6150C

**Appendix B**  
**Complete Test Results**

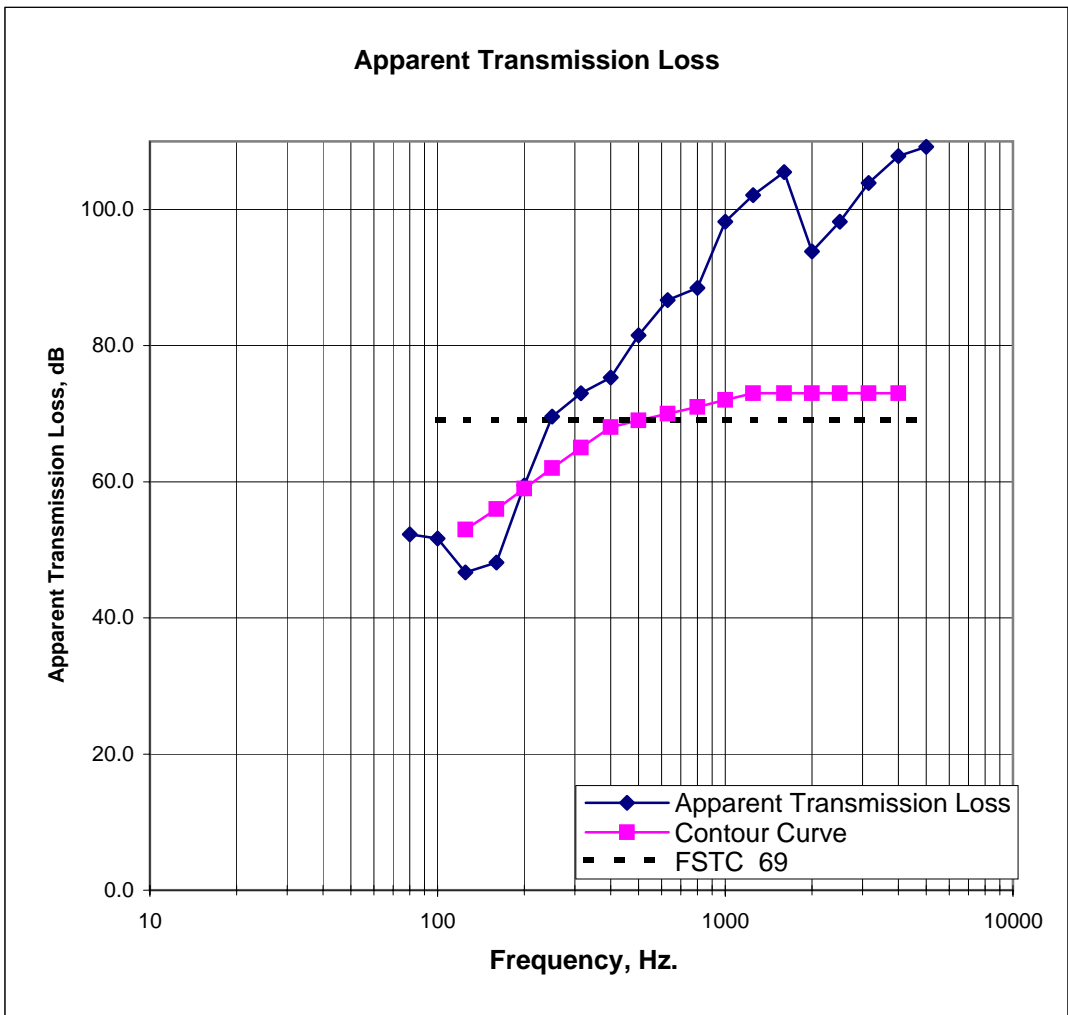
**ASTM E336 Apparent Sound Transmission Class**


ATI Report No. 70722.01A-113-10  
 Test Date: 2/23/07  
 Customer: Knight Industries  
 Project: 1250 Jonssen Blvd., Richardson, TX  
 Test Area: Parting Wall  
 Specimen Type: Bedroom to Living Room, 1st Floor  
 Sample Area: 133.7 Square feet  
 Receive Room Volume: 3087 Cubic feet  
 Source Room Volume: 1473 Cubic feet  
 Technician: TDK/JS



Freq. (Hz)	Apparent Transmission Loss (dB)
80	52
100	52
125	47
160	48
200	59
250	70
315	73
400	75
500	82
630	87
800	88
1000	98
1250	102
1600	106
2000	94
2500	98
3150	104
4000	108
5000	109

ASTC Rating = 69



 NVLAP Nvlap Lab Code 200361	Accredited by the National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program for the specific test methods under lab code 200361. The laboratory's accreditation or test report in no way constitutes or implies product certification, approval, or endorsement by NIST. This test report applies only to the specimen that was tested.
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**ASTM E336 Apparent Sound Transmission Class**

ATI Report No. 70722.01B-113-10

Test Date: 2/23/07

Customer: Knight Industries

Project: 1250 Jonssen Blvd., Richardson, TX

Test Area: Parting Wall

Specimen Type: Bedroom to Bedroom, 2nd Floor

Sample Area: 119.9 Square feet

Receive Room Volume: 1476 Cubic feet

Source Room Volume: 1109 Cubic feet

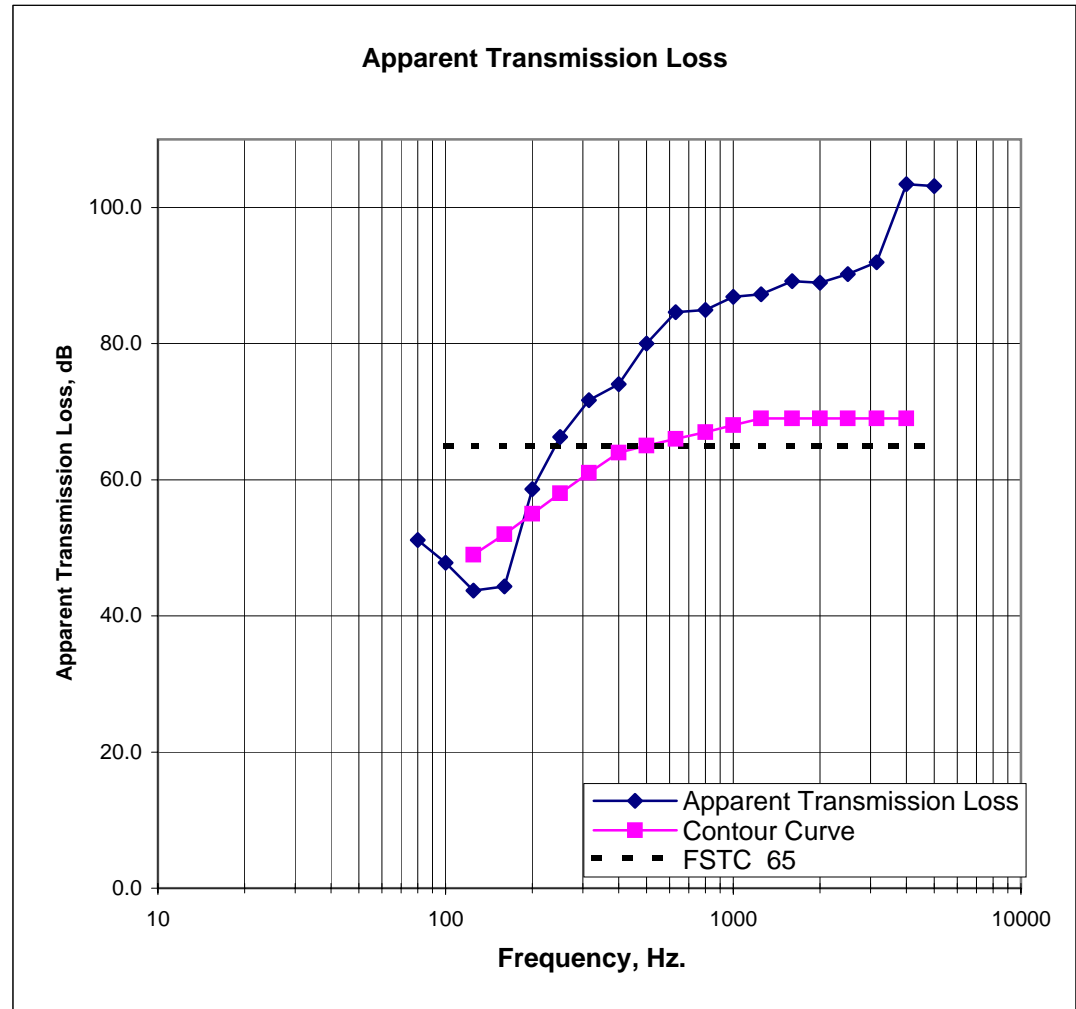
Technician: TDK/JS




Architectural Testing

Freq. (Hz)	Apparent Transmission Loss (dB)
80	51
100	48
125	44
160	44
200	59
250	66
315	72
400	74
500	80
630	85
800	85
1000	87
1250	87
1600	89
2000	89
2500	90
3150	92
4000	103
5000	103

ASTC Rating = 65



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**Appendix C**

**Photographs**



**Wall Partition in Condominium 2007 Living Room**



**Wall Partition in Condominium 2009 Bedroom, Second Floor**