



**SHEN MILSOM WILKE**  
INTEGRATED COMMUNICATIONS TECHNOLOGY  
AND ACOUSTIC CONSULTING

2 North Riverside Plaza, Suite 1460  
Chicago, IL 60606  
Tel: 312-559-4585 Fax: 312-559-5393  
[www.smwinc.com](http://www.smwinc.com)  
SM&W Project # 9120

## **Seyfarth Shaw 131 S. Dearborn**

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Chicago, IL

### **Skyfold**

Vertically Folding Electric Partition Testing.

Prepared for:

Mr. Steve Miller

Skyfold & Autolift Wall System

325 Lee Ave., Baie d'Urfe (Montreal)

Quebec, Canada H9X 3S3

August 10, 2006

This report summarizes the results of the sound transmission test performed on the Skyfold partition at the offices of Seyfarth Shaw on the 24<sup>th</sup> floor at 131 South Dearborn in Chicago, IL on August 1, 2006.

### **Conformance to Standard**

The test was done in accordance with ASTM E 336-97 Standard Test Method for Measurement of Airborne Sound Insulation in Buildings.

### **Test Environment**

A sound transmission test was performed on the Skyfold operable partition separating rooms 24-09 Seyfarth and 24-10 Shaw on the 24th floor of the building.

The source room used for the test was room 24-09 Seyfarth. With the Skyfold partition in place, the source room was approximately 56 ft. long x 35 ft. wide x 10 ft. high. The space was carpeted, with tables and chairs present in the room. There was also a raised floor system with a double layer gyp. board septum within the floor plenum below the Skyfold partition. The ceiling consisted of a suspended acoustic tile ceiling with a gyp. board soffit near the Skyfold wall and at the room perimeter. The southern wall was full height glass windows. The north and east walls had fabric wrapped panels.

The receiver room was room 24-10 Shaw. With the Skyfold partition in place, the source room was approximately 56 ft. long x 35 ft. wide x 10 ft. high. The space was carpeted, with tables and chairs present in the room. There was also a raised floor system with a double layer gyp. board septum within the floor plenum below the Skyfold partition. The ceiling consisted of a suspended acoustic tile ceiling with a gyp. board soffit near the Skyfold wall and at the room perimeter. The southern wall was full height glass windows. The southern wall was full height glass windows. The north and west walls had fabric wrapped panels.

### **Test Specimen**

The specimen tested was the Skyfold partition separating rooms 24-09 Seyfarth and 24-10 Shaw. The partition is electronically operated, and lowered in place before the test. The partition was in the down position upon arrival. The Skyfold partition tested measured 29 ft. wide by 9 ft.-10 ¼ in. high. The partition consists of individual panels on either side of a structural skeleton, which yields an overall depth of approximately 11-3/4 in. for each. The individual panels are 2 ft.-3 7/16 in. high and 9 ft.-7 in. wide (total 4 x 3 panels = 12 total panels, on each side of the partition). There is a 2 ft.- 3 ¾ in. high gypsum board bulkhead between the underside of the structure and the Skyfold partition, which contains a 1 ft. 2 ¼ in. deep pocket that houses the partition once it is raised.

The test specimen was constructed with a galvanized steel face sheet, honeycomb core, galvanized steel backer sheet and 1 ½ in. of semi-rigid acoustical insulation. The

specimen weighs approximately 7.1 lbs/sq. ft.. There are acoustic seals at the floor and seals that engage the sidewalls. The test specimen rested on carpet when in place.

### **Test Procedure**

The sound source used was a Peavey Minx 110 amplifier/loudspeaker. Pink noise was generated from an apple G4 Power book and CD with the equalization flat and no additional gain added, as the source signal. During testing, the loudspeaker was centrally located 15ft. off and facing away from the partition, allowing for a uniform sound level distribution across the partition. A Bruel & Kjaer 2260 Type 1 Sound Level Meter was used for the source and receiver sound pressure level measurements. The meter was calibrated with a Bruel & Kjaer 4231 Calibrator that emits a 1000 Hz tone at 94 dB. A manual sweeping method was used to measure the source room sound level (L1), receive room sound level (L2) and background sound pressure levels. In each case, the meter was positioned 3 m (10 ft.) from the wall, and swept by walking back and forth forming an S-pattern at about a 3.5 ft. height from the floor. The duration of the measurements was 120 seconds for all tests.

### **Test Results**

The NR (Noise Reduction) values were computed in third-octave bands from 125 Hz to 4000 Hz. These values allowed us to calculate the NIC (Noise Insulation Class) value of NIC 43 for the partition separating rooms 24-09 Seyfarth and 24-10 Shaw. The complete NR values, as well as the NIC graph for the test are appended.

Corrections were made utilizing ASTM 336-97 section 10.5 Background Noise. Each measurement where the background level was between 5 and 10 dB below the combined level of background and signal, the adjusted value was calculated as follows:

$$L_s = 10 \log (10^{L_{sb}/10} - 10^{L_b/10})$$

Where:

$L_b$  = background noise level in each band, dB.

$L_{sb}$  = combined level of signal and background, dB.

$L_s$  = adjusted signal level, dB.

When the signal level could not be adjusted so that the background level was at least 5 dB below the combined level, a subtraction of 2 dB from the combined level was used as the adjusted signal level. The measurements provide an estimate of the lower limit of noise reduction (ASTM 336-97).

Noted sound flanking paths were found due to some residual leakage at the exterior column enclosure as well as the baseboard reveal at either end of the partition. The baseboard partially prohibited the end seals from creating a totally positive seal.

## Summary

The tests revealed that the Skyfold partition on the 24th floor separating rooms 24-09 Seyfarth and 24-10 Shaw achieved a minimum field rating of NIC 43. This result is favorable for an electrical operable partition of this size.

Sincerely,

SHEN MILSOM & WILKE, INC.



Eric R. Brooks  
Associate Consultant  
Acoustics/ AV  
Shen Milsom & Wilke, Inc.  
2 North Riverside Plaza  
Suite 1460  
Chicago, IL 60606

cc Erik Ryerson, SM&W  
Don Davis, Modernfold Doors of Chicago

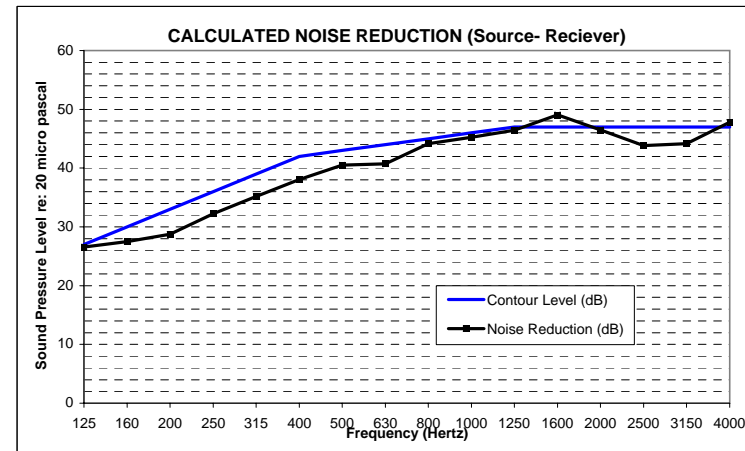
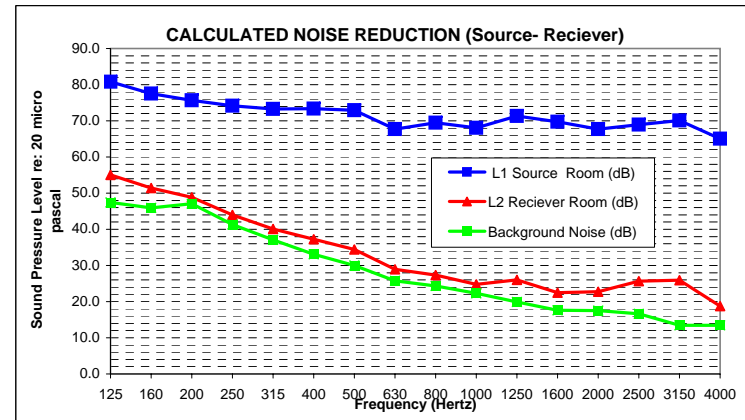
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 Job Number 9120  
 Measurement Date 7/27/2006  
 Source Room 24-09 Seyfarth  
 Reciever Room 24-10 Shaw

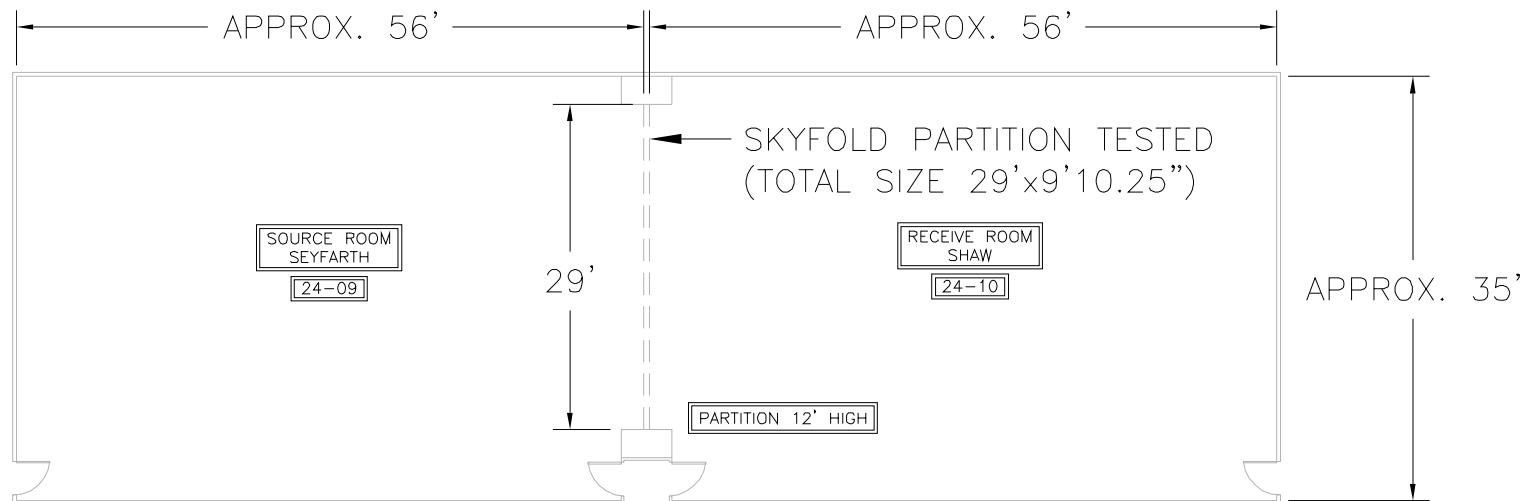
**NIC TEST  
 SKYFOLD PARTITION  
 24th FLOOR**



Octave Band	L1 Source Room (dB)	L2 Reciever Room (dB)	Background Noise (dB)	Corrected L2 (dB)	NR (dB)
125	80.8	55.0	47.5	54.2	27
160	77.5	51.4	45.9	50.0	28
200	75.6	48.9	47.0	46.9	29
250	74.2	44.0	41.3	42.0	32
315	73.3	40.1	37.0	38.1	35
400	73.3	37.3	33.1	35.3	38
500	72.9	34.4	30.0	32.4	41
630	67.7	28.9	25.8	26.9	41
800	69.5	27.3	24.3	25.3	44
1000	68.0	24.8	22.3	22.8	45
1250	71.3	26.0	20.0	24.8	46
1600	69.8	22.4	17.6	20.7	49
2000	67.7	22.8	17.6	21.2	46
2500	68.9	25.7	16.6	25.1	44
3150	70.1	25.9	13.5	25.9	44
4000	65.1	18.8	13.5	17.3	48

Total Deviation  Deviation < 32  
 Deviation Per Octave  1= non compliance  
 0=compliance  
**NIC RATING**





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 Chicago, IL 60606  
 T. 312-559-4585  
 F. 312-559-5393  
 www.smwinc.com

Revision	Date	Description

Project Name: SKYFOLD PARTITION TESTING SEYFARTH SHAW CHICAGO, IL

Title: TEST ROOM CONFIGURATION

SCALE: NTS

DATE: 08/01/06	JOB No: 9120	DRAWN BY: PPD	SHEET No: SK-1
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