



Performance Test Certificate

Issued To

**STAR ASIA JSC.
LOT C3 PHUNG INDUSTRIAL PARK
DAN PHUNG DISTRICT
HANOI, VIETNAM**

Intertek has tested a representative sample of
Model SKD600 Star Asia Square Diffuser (Louver Face)

A Square Diffuser size 600 by 600 by 50 mm
was tested in accordance with the standards listed below and was found
to perform in a manner appropriate to the dictates of the standards.

STANDARDS

ASHRAE 70-2006 Standard "Method of Testing for Rating the Performance of Air Outlets and Inlets"

ADC1062: GRD-84 "Test Code for Grilles, Registers and Diffusers"

SCOPE OF TESTING

The square diffuser was tested for the following performance characteristics:
"Reference Intertek Report Number 104519155CRT-001c dated April 16, 2021".

- A) Sound Power Level ((NC)
- B) Air Volume versus Static Pressure
- C) Area Factor
- D) Throw Pattern

Date: April 23, 2021

James R. Kline
Intertek
Engineer / Quality Supervisor

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REPORT**3933 US ROUTE 11 CORTLAND, NEW YORK 13045**

Order No. 104519155

Date: April 16, 2021

REPORT NO. 104519155CRT-001c**STATIC PRESSURE, SOUND POWER LEVEL,
AREA FACTOR AND THROW TESTS ON A
MODEL SKD600 SQUARE DIFFUSER (LOUVER FACE)****RENDERED TO****STAR ASIA JSC.
LOT C3 PHUNG INDUSTRIAL PARK
DAN PHUNG DISTRICT
HANOI, VIETNAM****INTRODUCTION**

This report gives the results of tests conducted on a Square Diffuser (Louver Face). The test results include Static Pressure, Area Factor, Throw and Sound Power Level. The sample was selected and supplied by the client and was received at the laboratories on March 5, 2020. The sample appeared to be in new unused condition upon receipt.

AUTHORIZATION

Signed Intertek Quotation No. Qu-01121111-0

TEST METHOD

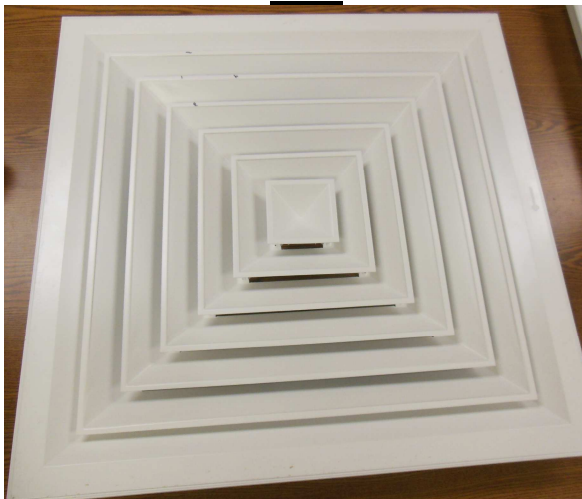
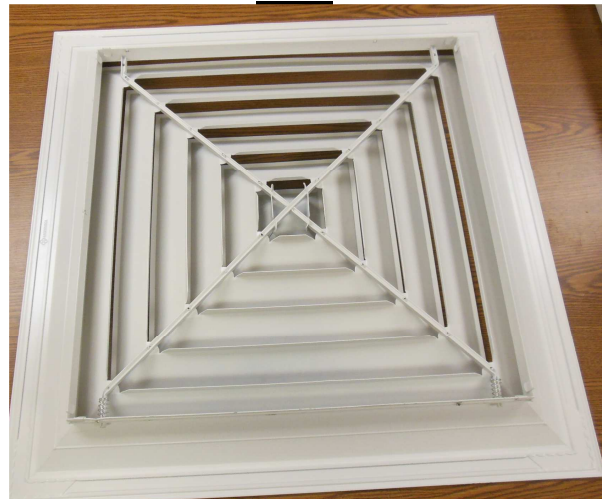
The diffuser was tested in accordance with the ASHRAE 70-2006 Standard "Method of Testing for Rating the Performance of Air Outlets and Inlets. Acoustical data was obtained employing a Bruel & Kjaer Pulse Digital Frequency Analyzer. The reference sound source used for this test was a calibrated Bruel & Kjaer Type 4204, which conforms to the above standard. The octave band sound power levels were plotted on graph of Noise Criteria Curves. These curves are reprinted with permission from the ASHRAE Handbook and Product Directory, 2017. The diffuser was installed in the facility and supplied with measured volumes of air. The static pressure was measured upstream of the sample. The testing was done with isothermal air.

EQUIPMENT

Equipment	Calibration Date	Due Date	S/N	Model	Asset
Microphone	11/3/2020	11/3/2021	-	4942	E450
Sound Analyzer	9/8/2020	9/8/2021	2706893	2270	A350
Reference Sound Source	10/12/2018	10/12/2021	2036621	4204	A230

DESCRIPTION OF TEST SPECIMEN**MODEL SKD600 SQUARE DIFFUSER (LOUVER FACE)**

The sample consisted of a Square Diffuser (Louver Face). The diffuser designed to provide airflow in all four directions. The 600 mm wide by 600 mm long by 50 mm deep sample was constructed from aluminum. The sample neck size was 450 mm by 450 mm. The testing was done using isothermal air.

PHOTOGRAPHS OF TEST SAMPLE**Face****Back**

RESULTS OF TESTS

Octave Band Center <u>Frequency Hertz</u>	MODEL SKD600 SQUARE DIFFUSER (LOUVER FACE)					
	<u>Discharge Sound Power Level dB re 10⁻¹² Watt</u>					
125	42.6	43.6	46.6	50.1	52.9	55.3
250	39.0	41.3	45.0	48.4	51.1	53.0
500	35.3	38.4	43.1	47.8	50.9	53.3
1000	27.9	31.7	37.3	42.6	46.0	48.8
2000	19.1*	23.3	30.6	37.4	41.6	44.9
4000	18.4*	18.8*	22.6	29.2	34.1	37.9
8000	22.1*	22.1*	23.5*	22.3*	23.1*	25.3*
Supply Air Volume, CFM	525	600	700	800	875	975
Inlet Static Pressure, in. H ₂ O	0.010	0.020	0.030	0.040	0.045	0.055
**Noise Criteria (NC)	19	22	28	33	36	39

* Sound Power Level data has reached ambient levels in the test room or is determined by instrument limitations. Actual levels are less than or equal to the levels indicated.

** Noise Criteria ratings were determined by subtracting a room absorption of 10dB from the Sound Power Level data.

AREA FACTOR A_k

FOR AIR OUTLETS

MODEL SKD600 SQUARE DIFFUSER (LOUVER FACE)

Throw Dir.: Horizontal					Neck Area (Sq. Ft.): 2.3						
Flow Meter: Nozzle Metering Station					Anemometer: Alnor Velometer Type 6000P						
					Serial Number: 6077AL		Date: April 7, 2021				
Run											
Number	Anemometer - (Vk, FPM)				Static	Q2 Flow	Neck	Neck	Total	Area Fact.	
	1	2	3	4	Average	"H2O	CFM	Velocity	V.P.	Pressure	Ak
#1	440	440	440	400	430	0.006	325	141.30	0.0012	0.007	0.756
#2	740	740	740	720	735	0.02	555	241.30	0.0035	0.023	0.755
#3	1150	1150	1150	1100	1137.5	0.045	850	369.57	0.0082	0.053	0.747
										Average:	0.753

MODEL SKD600 SQUARE DIFFUSER (LOUVER FACE)

Distance	Star Asia 4 Way Ceiling Diffuser									Air Volume				325 CFM
From	Inlet Static Pressure													
Ceiling	Distance From Diffuser (Ft)													
Inches	0'	2'	4'	6'	8'	10'	12'	14'	16'	18'	20'	22'	24'	
1"	192	148	100	77	59	52	36							
3"	76	150	112	90	65	51	36							
6"	27	107	94	80	55	46	32							
9"	21	63	83	71	40	38	24							
12"	19	31	63	56	34	35	17							
18"	13	19	23	25	19	20	9							
24"	13	18	17	15	18	8	12							

Distance	Star Asia 4 Way Ceiling Diffuser									Air Volume				555 CFM
From	Inlet Static Pressure													
Ceiling	Distance From Diffuser (Ft)													
Inches	0'	2'	4'	6'	8'	10'	12'	14'	16'	18'	20'	22'	24'	
1"	264	246	158	123	92	80	67	53	40					
3"	66	268	168	130	102	91	82	64	47					
6"	42	174	138	105	88	77	69	55	52					
9"	38	96	121	77	72	62	56	44	49					
12"	38	46	92	57	54	45	46	36	48					
18"	30	22	32	34	30	19	26	23	39					
24"	29	18	17	23	25	15	25	19	29					

Distance	Star Asia 4 Way Ceiling Diffuser									Air Volume				850 CFM
From	Inlet Static Pressure													
Ceiling	Distance From Diffuser (Ft)													
Inches	0'	2'	4'	6'	8'	10'	12'	14'	16'	18'	20'	22'	24'	
1"	375	380	255	197	163	129	113	89	64					
3"	117	434	300	225	196	145	137	102	74					
6"	70	273	224	176	152	118	115	81	71					
9"	63	169	170	129	118	94	91	72	65					
12"	55	81	113	94	93	75	70	64	54					
18"	43	43	43	41	49	35	46	44	39					
24"	44	45	38	30	38	34	38	43	34					

NOTE: All throw values are in feet per minute.
The testing was done with isothermal air.

CONCLUSION

The test method employed for this test has no pass-fail criteria; therefore, the evaluation of the test results is left to the discretion of the client.

Dates of Tests: April 8 - 12, 2021

Report Approved by:



Brian Cyr
Engineer
Acoustical Testing

Report Reviewed By:



James R. Kline
Engineer/Quality Supervisor
Acoustical Testing

Attachments: None