



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 SLD A2S Star Asia Square Slot Lineal Diffuser

A Two Slot Lineal Diffuser size 1200 by 120 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 slot lineal diffuser was tested for the following performance characteristics:
"Reference Intertek Report Number 104519155CRT-001d 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-001d**STATIC PRESSURE, SOUND POWER LEVEL,
AREA FACTOR AND THROW TESTS ON A
MODEL SLD A2S SLOT LINEAL DIFFUSER****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 Sloe Lineal Diffuser. 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

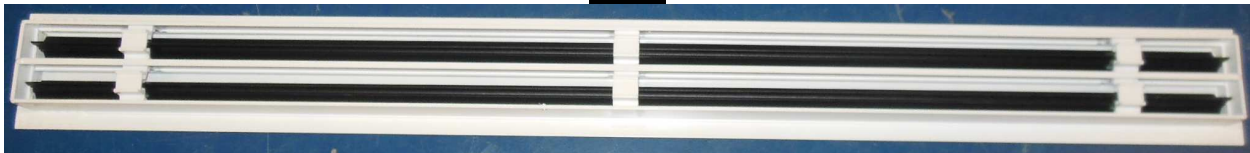
The diffuser was tested in accordance with the ASHRAE 70-2006 Standard "Method of Testing for Rating the Performance of Air Outlets and Inlets. Acoustical data was obtained employing a Bruel & Kjaer Pulse Digital Frequency Analyzer. The reference sound source used for this test was a calibrated Bruel & 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 SLD A2S SLOT LINEAL DIFFUSER**

The sample consisted of a Slot Lineal Diffuser. The two slot diffuser was 1200 mm by 120 mm and was equipped with adjustable deflector blades which were set to provide horizontal airflow back in the direction of the supply air. The neck of the sample was 1140 mm by 80 mm. The sample was constructed from aluminum. The sample was installed in a sheet metal plenum with one inch thick insulation and an 8 inch diameter inlet centered on one long side. The testing was done using isothermal air.

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

RESULTS OF TESTS

| Octave Band Center Frequency Hertz | MODEL SLD A2S SLOT LINEAL DIFFUSER | | | | | |
|---|--|-------|-------|-------|-------|------|
| | <u>Discharge Sound Power Level dB re 10⁻¹² Watt</u> | | | | | |
| 125 | 39.7* | 42.1 | 45.0 | 48.1 | 52.4 | 55.8 |
| 250 | 36.8* | 41.5 | 45.4 | 49.4 | 55.1 | 59.6 |
| 500 | 28.0 | 32.5 | 37.2 | 41.7 | 49.3 | 55.3 |
| 1000 | 24.6* | 25.5* | 30.6 | 36.5 | 45.1 | 51.6 |
| 2000 | 18.4* | 17.7* | 22.7 | 31.1 | 42.1 | 49.8 |
| 4000 | 18.3* | 17.7* | 18.3* | 23.5 | 37.2 | 46.5 |
| 8000 | 22.2* | 22.2* | 22.2* | 22.2* | 24.4* | 34.1 |
| Supply Air Volume, CFM | 125 | 150 | 175 | 200 | 250 | 300 |
| Inlet Static Pressure, in. H ₂ O | 0.05 | 0.07 | 0.10 | 0.13 | 0.24 | .038 |
| **Noise Criteria (NC) | <15 | 18 | 23 | 28 | 34 | 41 |

* 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 SLD A2S SLOT LINEAL DIFFUSER

| | | | | | | | | | | | | |
|-------------------------------------|------------------------|----------|----------|----------|--|-------------|------------|----------|---------------------|------------|-------|--|
| Throw Dir.: Horizontal | | | | | Neck Area (Sq. Ft.): 0.34 | | | | | | | |
| Flow Meter: Nozzle Metering Station | | | | | Anemometer: Alnor Velometer Type 6000P | | | | | | | |
| | | | | | Serial Number: 6077AL | | | | Date: April 9, 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 | 580 | 580 | 600 | 580 | 585 | 0.02 | 75 | 220.59 | 0.0029 | 0.023 | 0.128 | |
| #2 | 960 | 970 | 970 | 980 | 970 | 0.05 | 120 | 352.94 | 0.0075 | 0.057 | 0.124 | |
| #3 | 1750 | 1750 | 1800 | 1800 | 1775 | 0.2 | 240 | 705.88 | 0.0298 | 0.230 | 0.135 | |
| | | | | | | | | | | Average: | 0.129 | |

MODEL SLD A2S SLOT LINEAL DIFFUSER

| Distance | Star Asia 2 Slot Lineal Diffuser | | | | | | | | | | Air Volume | | 75 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" | 50 | 206 | 123 | 105 | 93 | 78 | 59 | 56 | 51 | 36 | | | |
| 3" | 30 | 189 | 145 | 102 | 96 | 86 | 72 | 66 | 55 | 47 | | | |
| 6" | 33 | 83 | 128 | 77 | 83 | 79 | 71 | 62 | 52 | 48 | | | |
| 9" | 42 | 27 | 88 | 62 | 74 | 71 | 63 | 54 | 48 | 45 | | | |
| 12" | 34 | 18 | 53 | 50 | 71 | 67 | 57 | 52 | 46 | 40 | | | |
| 18" | 18 | 13 | 19 | 27 | 50 | 52 | 44 | 43 | 37 | 25 | | | |
| 24" | 18 | 13 | 14 | 14 | 42 | 41 | 42 | 37 | 40 | 18 | | | |

| Distance | Star Asia 2 Slot Lineal Diffuser | | | | | | | | | | Air Volume | | 120 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" | 68 | 321 | 218 | 169 | 135 | 100 | 87 | 76 | 76 | 71 | 65 | 55 | 46 |
| 3" | 48 | 336 | 246 | 186 | 155 | 114 | 105 | 90 | 87 | 85 | 75 | 69 | 52 |
| 6" | 53 | 173 | 188 | 167 | 132 | 111 | 100 | 93 | 81 | 83 | 77 | 69 | 51 |
| 9" | 99 | 66 | 172 | 164 | 120 | 105 | 90 | 91 | 71 | 76 | 71 | 66 | 45 |
| 12" | 109 | 30 | 117 | 133 | 106 | 90 | 78 | 83 | 59 | 68 | 65 | 63 | 45 |
| 18" | 88 | 18 | 31 | 63 | 48 | 66 | 45 | 52 | 45 | 45 | 42 | 46 | 38 |
| 24" | 62 | 18 | 13 | 21 | 29 | 45 | 32 | 33 | 36 | 35 | 35 | 29 | 34 |

| Distance | Star Asia 2 Slot Lineal Diffuser | | | | | | | | | | Air Volume | | 240 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" | 136 | 439 | 391 | 312 | 276 | 232 | 181 | 169 | 154 | 134 | 111 | 90 | 78 |
| 3" | 114 | 361 | 389 | 353 | 324 | 279 | 219 | 192 | 176 | 151 | 140 | 112 | 96 |
| 6" | 196 | 160 | 266 | 285 | 259 | 230 | 201 | 170 | 161 | 144 | 135 | 111 | 97 |
| 9" | 268 | 83 | 262 | 299 | 252 | 214 | 193 | 162 | 145 | 152 | 127 | 110 | 98 |
| 12" | 230 | 50 | 186 | 258 | 223 | 198 | 175 | 142 | 131 | 141 | 119 | 107 | 94 |
| 18" | 151 | 38 | 51 | 102 | 136 | 138 | 119 | 106 | 85 | 114 | 80 | 70 | 73 |
| 24" | 104 | 38 | 20 | 45 | 72 | 85 | 94 | 74 | 65 | 98 | 63 | 57 | 66 |

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