AL ARABIA INDUSTRIES LLC

TEST REPORT

SCOPE OF WORK

This report gives the results of tests conducted on an AR-1SFB-50.
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: February 19, 2026

The sample appeared to be in new unused condition upon receipt.

MODEL NUMBER

AR-1SFB-50 FLOW BAR DIFFUSER

PROJECT NUMBER

G106483741

REPORT NUMBER

106483741CRT-002

ISSUE DATE

March 23, 2026

REVISED DATE

None

TEST DATE

March 18, 2026

DOCUMENT CONTROL NUMBER

DIFF.PKT.2022

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REPORT NUMBER
106483741CRT-002

ISSUE DATE
March 23, 2026

MODEL NUMBER(s)
AR-1SFB-50 FLOW BAR DIFFUSER

REPORT RENDERED TO:
AL ARABIA INDUSTRIES LLC
ICAD3 MUSSAFFAH
ABU DHABI - UAE.

AUTHORIZATION

The testing performed was authorized by signed quote number SWA.

TEST STANDARDS

ASHRAE 70-2023 Standard “Method of Testing for Rating the Performance of Air Outlets and Inlets”.

In Charge of Testing:	Reviewer:
Gerald Gray Associate Engineer Acoustical Testing	Brian Cyr Engineer Acoustical Testing

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SAMPLE INFORMATION

REPORT NO. 106483741CRT-002
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ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Received
1	CRT2602191421-002	AR-1SFB-50	FLOW BAR DIFFUSER	February 19, 2026

DESCRIPTION OF TEST SPECIMEN

The sample consisted of a model AR-1SFB-50 FLOW BAR DIFFUSER. The sample measured 39.25 x 2 inches at the face. The sample measured 39.25 x 4 inches at the inlet.

SAMPLE PHOTOS

TEST METHODS

The sample was tested in accordance with the ASHRAE 70-2023 Standard “Method of Testing 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 sample 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.

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EQUIPMENT LIST

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#	Equipment	Model No	Control No.	Last Cal	Cal Due
2	Pulse Analyzer	3110	E553	5/5/2025	5/5/2026
3	Microphone/Pre - DF	4942	E550	5/5/2025	5/5/2026
4	Reference Sound Source	4204	A230	11/20/2024	11/20/2027
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

Temperature:

Dry Bulb 70.3 °F

Wet Bulb 52.8 °F

Barometric Pressure: 28.78 inHg

ASHRAE 70 - 2023 Edition

AREA FACTOR A_k - FOR AIR OUTLETS

Free Area, ft^2: 0.55

Neck Area, ft^2: 1.09

Face Area, ft^2: 0.55

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RESULTS OF TESTS

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SOUND POWER LEVEL

1/3 Octave Band Center Frequency Hertz	**FLOW BAR DIFFUSER AR-1SFB-50 Sound Power Level dB re 10-12 Watt**					
125	43.7	48.3	51.2	55.7	57.7	61.7
250	40.5*	44.3	47.5	51.6	54.0	58.3
500	32.6*	34.0	37.7	41.8	44.1	48.0
1000	30.7*	29.4	33.5	37.9	40.6	44.9
2000	23.3*	23.3*	25.3	31.4	34.1	39.4
4000	23.1*	23.3*	24*	25.2*	27.4	33.8
8000	27.1*	27.1*	27.1*	27.2*	27.6*	28.7*
Supply Air Volume, CFM	300	350	400	450	500	575
Inlet Static Pressure, in. H2O	0.05	0.06	0.08	0.11	0.13	0.16
**Noise Criteria (NC)	16	22	26	30	33	38

* 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.

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RESULTS OF TESTS
THROW

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Maximum Horizontal Inlet Static Pressure 0.01 " H2O Air Volume 140 CFM

Distance From Ceiling	Distance From Diffuser (Ft)										
	0'	.5'	1'	1.5'	2'	2.5'	3'	3.5'	4'	4.5'	5'
24"	153	70	44	42	--	--	--	--	--	--	--
30"	123	96	38	33	--	--	--	--	--	--	--
36"	69	93	41	23	--	--	--	--	--	--	--
42"	47	70	39	28	--	--	--	--	--	--	--
48"	37	53	43	29	--	--	--	--	--	--	--
54"	36	46	47	28	--	--	--	--	--	--	--
60"	34	36	51	26	--	--	--	--	--	--	--

Maximum Horizontal Inlet Static Pressure 0.02 " H2O Air Volume 205 CFM

Distance From Ceiling	Distance From Diffuser (Ft)										
	0'	.5'	1'	1.5'	2'	2.5'	3'	3.5'	4'	4.5'	5'
24"	192	71	32	66	20	23	--	--	--	--	--
30"	132	97	41	57	32	23	--	--	--	--	--
36"	82	123	54	49	42	26	--	--	--	--	--
42"	61	131	79	51	45	31	--	--	--	--	--
48"	52	121	92	68	45	35	--	--	--	--	--
54"	53	100	103	81	47	38	--	--	--	--	--
60"	52	93	103	89	57	46	--	--	--	--	--

Maximum Horizontal Inlet Static Pressure 0.04 " H2O Air Volume 270 CFM

Distance From Ceiling	Distance From Diffuser (Ft)										
	0'	.5'	1'	1.5'	2'	2.5'	3'	3.5'	4'	4.5'	5'
24"	271	129	62	44	51	40	42	--	--	--	--
30"	236	176	48	43	51	57	49	--	--	--	--
36"	156	180	66	47	51	69	55	--	--	--	--
42"	122	165	93	73	56	64	50	--	--	--	--
48"	109	148	120	97	83	52	46	--	--	--	--
54"	101	130	128	112	85	60	45	--	--	--	--
60"	96	119	131	125	99	62	51	--	--	--	--

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