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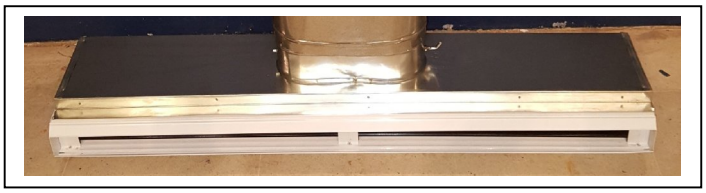
ASLI Mechanical Sdn Bhd

Airflow and Acoustic Research and Development Study of one (1) Diffuser

Face Size: 1200mm x 1-slot x 50mm



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1.0 INTRODUCTION

This report presents the results of airflow and acoustic tests carried out on one (1) Diffuser, supplied by "ASLI Mechanical Sdn Bhd", as described below.

2.0 TEST SPECIMEN

The unit under test is detailed in Table 1 below.

Table 1: Units Under Test

#	Product Name	Slot Length (mm)	Slot Width (mm)
1	**One (1) Slot Jet Ceiling Diffuser** Model: SJS-A	1200	50

Photographs of the Test Unit are shown in Figure 1 below.

1b) Diffuser Back View

1a) Diffuser with plenum

1d) Diffuser Front View

Figure 1: One (1) Slot Jet Ceiling Diffuser (Model: SJS-A)

3.0 TEST CONDITIONS AND APPLICABLE STANDARDS

3.1 TEST CONDITIONS

The unit under (acoustic) tests was supplied with ambient temperature air at the following conditions:

Air Temperature	17 ºC	± 3 ºC
Barometric Pressure	101 kPa	± 2 kPa
Relative Humidity	55	± 10 %

3.2 APPLICABLE STANDARDS

The unit was tested at a range of flow conditions, as shown on the Test Certificate.

The test set up was in general accordance with ANSI/ASHRAE 70-2006 Standard. Measurements were taken in general accordance with the following standards:

ACOUSTICS

AS 1217.2-1985 Acoustics – Determination of sound power levels of noise sources Part 2: Precision methods for broad-band sources in reverberation rooms.

ISO 3741-1999 Acoustics – Determination of sound power levels of noise sources using sound pressure. Precision methods for reverberation rooms.

AIRFLOW

ANSI/ASHRAE 70-2006 – Method of Testing the performance of Air Outlets and Air Inlets

THROW & STATIC PRESSURE DROP

ANSI/ASHRAE 70-2006 – Method of Testing the performance of Air Outlets and Air Inlets

4.0 TEST SET UP AND SPECIFICATION

Vipac's Reverberation Test Room has a volume of 170m^3 has been qualified in accordance with the procedures in AS 1217.2-1985 (ISO 3741–1999) for determination of sound power in octave bands with Centre Frequencies from 125 Hz to 8000 Hz.

The unit under test was set up in the Air Distribution (Reverberation) Test Chamber and connected to a quiet air supply.

Following calibration checks, sound pressure levels were measured and converted to sound power levels using the comparison method of AS 1217.2 - 1985 (ie. using a reference sound source of known Sound Power to determine room correction).

Airflow rates were measured using ∅150 mm orifice plate. Static pressure drop was recorded using a (Static Pressure) probe and a digital manometer. Throw was measured using a hotwire type anemometer. Figure 2 shows diffuser slot position for horizontal throw measurements. Figure 3 shows the test setup.

Figure 2: Horizontal Throw Setup

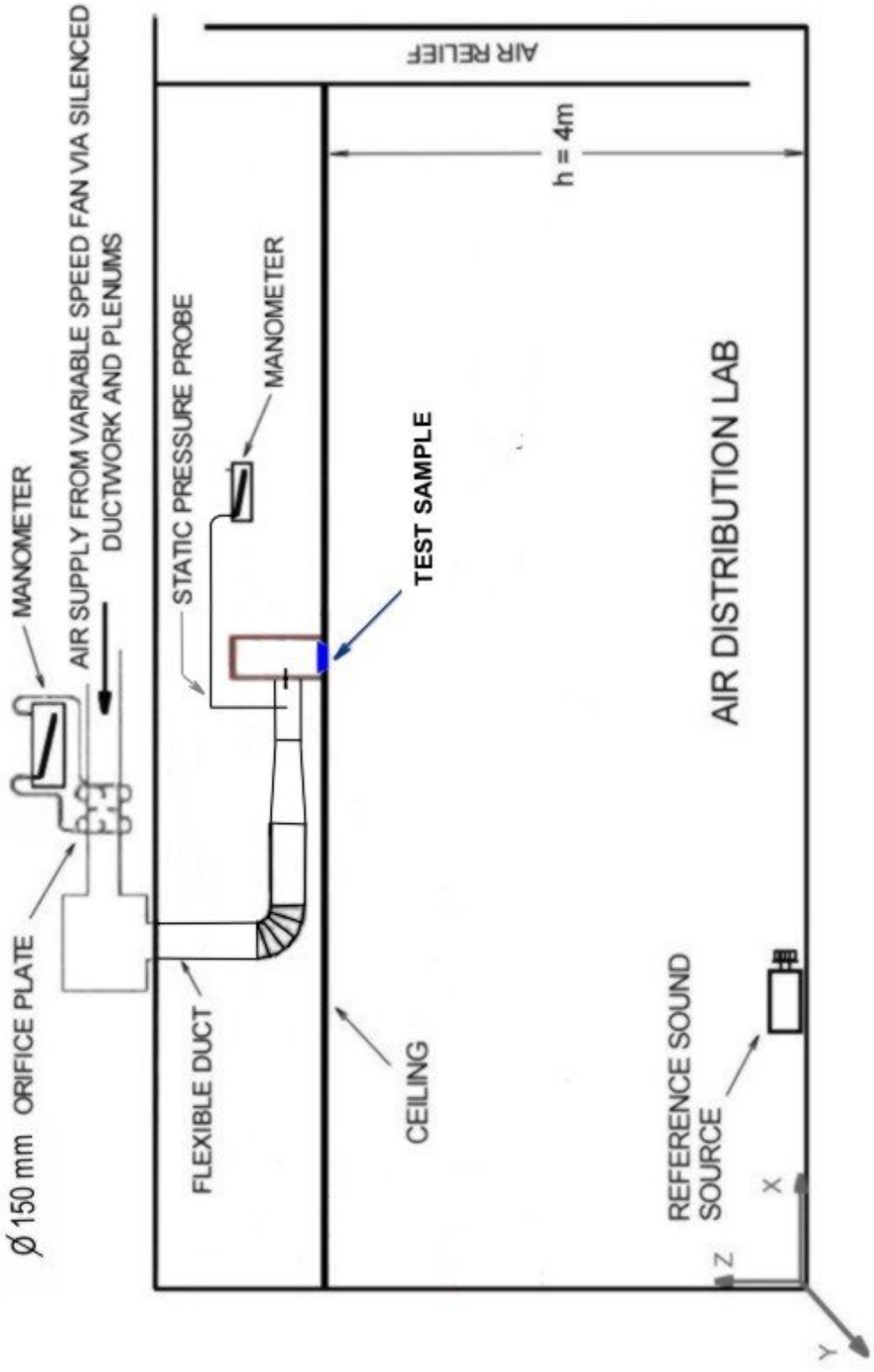

Figure 3: Test Set-up (Air Distribution Laboratory)

5.0 INSTRUMENTATION

INSTRUMENT	MAKE & MODEL	CALIBRATION		SERIAL NO.
		BY	DATE	
Sound Level Meter	ONO SOKKI LA-5570	Vipac	March 2015	64401234
Acoustic Calibrator	B&K 4230	Vipac	March 2015	860700
Manometers	EMA 200	GTS	July 2015	B/C: 000013792
	PVM 610	GTS	July 2015	PVM610718009
Orifice Plates	∅ 150	Vipac	May 2013	-
Airflow Anemometer	TSI 9545	UKAS	July 2015	9545A0813010

6.0 ORDERS OF ACCURACY

Sound Pressure Level:	Octave Band Centre Frequency (Hz)	Standard Deviation (1) (dB)
	125	± 3.0
	250	± 2.0
	500 to 4000	± 1.5
	8000	± 3.0

Pressure Drop: ± 5% or 1 Pa whichever is greater

Airflow: ± 5% or 10 L/s whichever is greater

7.0 RESULTS

The results obtained are shown in the attached Test Certificate.

Report Prepared by:
VIPAC ENGINEERS AND SCIENTISTS LTD.

.....
GREG KING
OPERATION MANAGER

.....
ZARKO DRINIC
AUTHORISED SIGNATORY

TEST CERTIFICATE (J/N: 30S-15-0077)

ACOUSTIC AND AIRFLOW PERFORMANCE TESTS

SUPPLIED BY: ASLI MECHANICAL SDN BHD
TESTED BY: VIPAC ENGINEERS & SCIENTISTS LTD
TEST DATE: November 2015
EXPIRY DATE: November 2018
CLIENT: ASLI MECHANICAL SDN BHD
UNIT: One (1) Slot Jot Ceiling Diffuser (Model: SJS-A)

SIZE: 1200 mm x 1-slot x 50mm (Diffuser Face)
308mm x 129mm (Plenum Neck)

HORIZONTAL THROW

TEST CONDITIONS				SOUND POWER LEVEL, dB re 1E-12 W OCTAVE BAND CENTRE FREQUENCY (Hz)						
Qs (L/s)	Ps (Pa)	T (m)	NC	125	250	500	1000	2000	4000	8000
128	27	2	22	43.0	44.5	37.6	32.4	25.5	<18.4	<17.0
152	39	3	27	47.4	48.4	41.7	36.8	30.5	24.6	<18.4
184	56	4	33	52.1	53.3	47.0	42.5	37.4	32.2	24.1
218	77	6	38	57.1	57.9	51.9	47.4	42.8	38.3	30.8
248	100	>7	43	60.0	61.8	55.5	51.0	47.1	43.0	36.3

LEGEND
Qs - Primary Air Flow Rate (L/s)
Ps - Supply Static Pressure (Pa)
T - Horizontal Throw in meters to a terminal velocity of 0.25 m/s (m)
< - Insufficient margin above background noise to allow accurate determination
> - Length of throw greater than that able to be measured
NC - Noise Criterion based upon room absorption of 10 dB

GREG KING
OPERATION MANAGER

ZARKO DRINIC
AUTHORISED SIGNATORY

Appendix A

Drawing supplied by “ASLI Mechanical Sdn Bhd”