

<h1>Test Report</h1> <p>Issued by University of Salford (Acoustics Test Laboratory)</p> <p>Date of Issue: 8th August 2024</p> <p>Report Number: 06681/03 Rev.2</p>		
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<p>APPROVED SIGNATORIES</p> <p>Claire Lomax [x]      Andy Moorhouse [ ]      </p> <p>Gary Phillips [ ]      Danny McCaul [ ]</p>		
<p><b>acoustic test &amp; calibration laboratory</b></p> <p>The University of Salford, Salford, Greater Manchester, M5 4WT, UK</p> <p><a href="http://www.acoustics.salford.ac.uk">http://www.acoustics.salford.ac.uk</a></p> <p>t 0161 295 3030/0161 295 3319 f 0161 295 4456 e c.lomax1@salford.ac.uk</p>		

## Determination of airborne noise from an appliance

**Measurements described in this test report comply with:-**  
**BS EN ISO 3744:2010 ‘Acoustics. Determination of sound power levels and sound energy levels of noise sources using sound pressure. Engineering methods for an essentially free field over a reflecting plane’**

COMPANY NAME & ADDRESS:	Chauvet UK POD 1 EVO Park Nottingham NG16 6NT
FOR ATTENTION OF:	Ben Virgo
UNIT UNDER TEST:	Lighting unit, Storm 2 Profile
DATE OF TEST:	5 <sup>th</sup> March 2024
TEST ENGINEER:	Sean Furlong
MEASUREMENT PURPOSE:	To determine airborne noise by measurements to the above standards.

*Results relate only to samples tested. Items tested are the samples supplied by the manufacturer, who was responsible for selecting at random from a standard production run.*

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## 1.0 Description of Appliance Under Test

CATEGORY:	Lighting Unit
DESIGN CHARACTERISTICS:	Floor mounted
MANUFACTURER:	Chauvet
MODEL:	Storm 2 Profile
TEST REF NUMBERS:	06681/03_1 to 7
SERIAL NUMBER:	Not Stated
POWER:	Not Stated
POWER SOURCE:	UK Mains
SETTINGS: <i>*See Table 1.0 below for explanation of settings</i>	06681/03_1 “Ambient” 06681/03_2 “Max” 06681/03_3 “Eco” 06681/03_4 “Auto” 06681/03_5 “Full” 06681/03_6 “TV25” 06681/03_7 “TV35”

*\* Table 1.0 – Explanation of the “Settings” used to create the Test Configuration of the sample for each measurement.*

Explanation of Settings Used for Each Test	
Setting Name	Test Configuration
Ambient	Unit is in idle state, switched on and no output or movements
Max	Unit is using all mechanical options and the light output is on
Eco	All Effects Static, 100% Light output — ECO Fan mode
Auto	All Effects Static, 100% Light output — Auto Fan mode
Full	All Effects Static, 100% Light output — Full Fan mode
TV25	All Effects Static, 100% Light output — TV25 Fan mode
TV35	All Effects Static, 100% Light output — TV35 Fan mode

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## 2.0 Test Conditions

2.1 The following conditions were measured over duration of the test:-

	Measured Average Value
<b>TEST REF NUMBER:</b>	<b>06681/03_1 to 7</b>
<b>SERIAL NO. / SAMPLE REF.</b>	<b>Storm 2 Profile</b>
Atmospheric Pressure	100.600
Ambient Temperature	22.32
Ambient Relative Humidity	34.07

2.2 The test was carried out in the hemi-anechoic chamber at the University of Salford.

2.3 The unit under test was mounted directly on the floor, in the centre of the hemi-anechoic chamber.

2.4 Unit operation was controlled by the client from outside the chamber, after initial configuration directly at the unit. Measurements were taken immediately after each setting of the unit was set and confirmed by the client.

2.5 For measurement of the sound pressure level of the Reference Sound Source (RSS), the RSS was placed directly on the floor of the hemi-anechoic chamber at the same location as the unit under test as defined in BS EN ISO 3744: 2010.

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*Figure 1 – unit under test mounted in the hemi-anechoic chamber at the University of Salford.*

## 3 Acoustical Data

### 3.1 Measurement method

A direct measurement method was used as stated in BS EN ISO 3744: 2010.

### 3.2 Reference Sound Source

The Laboratory reference sound source (RSS) type B&K 4204, serial number 1460189 was used on mains supply.

### 3.3 Microphone Array

Ten laboratory free field, low noise microphones were used for the measurement, placed in fixed positions 1 to 10 on a hemispherical surface ( $d = 1.75$  m) with guidance from BS EN ISO 3744: 2010. The location of each measurement position is provided in Appendix 1 to this report.

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## 3.4 Measured sound pressure levels of the appliance

Each unit was run at the selected setting. Six measurements were made at each setting,

Mean sound pressure levels were measured over 30 seconds to give the measured sound pressure levels,  $L_{pi}$  at each measurement position in each third octave band. The sound power level was then calculated.

The background noise corrections  $K_1$ , environmental correction calculated from RSS levels  $K_2$ , measured sound pressure levels,  $L_{pi}$  at each measurement point, corrected sound pressure levels,  $L_{pf}$ , and the sound power level,  $L_w$  of the source in each third octave frequency band are given in Appendix 2 of this report. The measured time averaged sound pressure level of the RSS,  $L'_{P(RSS)}$ , at each microphone position is reported in Appendix 3 to this report.

## 3.5 Calculated sound power levels

The calculated A-Weighted sound power level,  $L_{WA}$  in dBA for each setting are given in table 3.1.

*Table 3.1 –A-weighted noise emissions for each setting, averaged over 30 seconds and over 10 microphone positions.*

Test Number	06681/3_1	06681/3_2	06681/3_3	06681/3_4	06681/3_5	06681/3_6	06681/3_7
Setting	Ambient	Max	Eco	Auto	Full	TV25	TV35
A-weighted sound power level, $L_{WA}$ in dBA	47.8	55.8	54.7	55.3	64.5	60.6	54.6

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## 3.6 Sound Pressure Level at 1 m from the source (not covered by BS EN 3744: 2010)

The A-weighted Sound Power Level can be used to calculate the A-weighted sound pressure level expected at different distances from the source in hemi-anechoic free field conditions\*.

The calculation of the sound pressure levels is based on the formulae in BS EN 3744: 2010 for a parallelepiped measurement surface (for a noise source measured, in this case, above a single reflective plane).

The calculations show that to estimate the average sound pressure level expected at a distance of 1 m from the surface of the unit, 13.4 dB should be subtracted from the sound power value. This would give A-weighted average sound pressure levels in table 3.2 for each unit setting at 1 m from the surface of the unit:-

Table 3.2 – Calculated A-weighted sound pressure level\* for each setting at 1 m from the unit surface

Test Number	06681/3_1	06681/3_2	06681/3_3	06681/3_4	06681/3_5	06681/3_6	06681/3_7
Setting	Ambient	Max	Eco	Auto	Full	TV25	TV35
A-weighted sound pressure level, $L_p$ in dBA	34.4	42.4	41.3	41.9	51.1	47.2	41.2

*\*This calculation represents an estimate of the levels that would be obtained in hemi-anechoic free field conditions and should not be assumed to be valid for any specific building environments where the characteristics of the room should be accounted for.*

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## Appendix 1 – Locations of measurement positions

### Defining measurement surface & Co-ordinates

Measurement distance, d

1.75 m

	x, mm	y, mm	z, mm
Microphone Position 1	280	-1680	385
Microphone Position 2	1365	-1050	350
Microphone Position 3	1365	962.5	542.5
Microphone Position 4	280	1575	717.5
Microphone Position 5	-1452.5	560	787.5
Microphone Position 6	-1452.5	-700	665
Microphone Position 7	-455	-1137.5	1242.5
Microphone Position 8	1295	-122.5	1172.5
Microphone Position 9	-455	875	1452.5
Microphone Position 10	175	-175	1732.5

Surface Area, m<sup>2</sup>

19.24 m<sup>2</sup>

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## Appendix 2 – Measurements and calculations according to BS EN ISO 3744

The following tables include measurement details that provide in each third octave band, for each of the seven settings:-

- measured  $L_{pi}$ , averaged over 30 s, at each measurement position
- background noise corrections  $K_1$
- environmental correction  $K_2$ , calculated from RSS levels
- corrected sound pressure levels,  $L_{pf}$
- the sound power level,  $L_w$  of the source
- the A-weighted sound power level,  $L_{wA}$  of the source

! The levels at these frequencies are affected by background level and therefore levels quoted represent an upper limit for the sound pressure levels of the noise source.



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MEASURED TIME AVERAGED SPL at 1 m, L'P - [06681/3_1 – Ambient Setting]											Mean L <sub>p</sub> over mic positions	ΔL <sub>p</sub> [dB]	BG corr. K <sub>1</sub> , [dB]	Env corr. K <sub>2</sub> , [dB]	L <sub>p</sub> [dB]	Sound Power, L <sub>w</sub> [dB]	A- weighting corrections [dB]	Sound Power, L <sub>wA</sub> [dB]
Frequency [Hz]	Mic 1 [dB]	Mic 2 [dB]	Mic 3 [dB]	Mic 4 [dB]	Mic 5 [dB]	Mic 6 [dB]	Mic 7 [dB]	Mic 8 [dB]	Mic 9 [dB]	Mic 10 [dB]								
100	19.1	18.2	14.9	14.9	16.3	16.2	12.7	15.5	11.4	11.9	15.8	3.0	1.30	-2.4	16.8	29.7	-19.1	10.6
125	19.0	15.4	16.8	20.0	11.1	13.9	17.4	11.3	14.8	8.7	16.1	9.3	0.55	1.2	14.4	27.2	-16.1	11.1
160	14.7	12.7	12.2	13.5	12.5	12.7	10.9	9.8	9.8	6.5	12.0	9.1	0.57	0.6	10.9	23.7	-13.4	10.3
200	16.9	18.2	16.9	14.7	17.6	17.3	13.0	15.1	11.6	8.1	15.8	20.1	0.00	1.3	14.4	27.3	-10.9	16.4
250	20.8	23.9	22.4	18.6	20.3	20.2	18.3	18.9	16.7	14.2	20.2	25.9	0.00	1.4	18.7	31.6	-8.6	23.0
315	21.4	24.4	22.2	19.6	21.9	22.1	17.8	19.8	15.4	16.4	20.9	28.7	0.00	-0.5	21.4	34.2	-6.6	27.6
400	18.3	17.9	17.6	16.5	14.9	16.2	12.5	12.0	12.3	13.5	15.8	24.0	0.00	0.6	15.1	28.0	-4.8	23.2
500	22.3	22.8	20.4	16.2	18.0	19.2	18.3	14.7	18.1	22.4	20.0	28.5	0.00	0.2	19.8	32.6	-3.2	29.4
630	23.8	25.4	20.9	21.4	20.2	23.7	24.8	23.8	22.1	27.2	23.8	32.9	0.00	-0.3	24.1	36.9	-1.9	35.0
800	24.1	25.3	21.8	22.5	22.5	21.7	22.1	26.9	23.5	22.6	23.6	32.5	0.00	-0.4	24.1	36.9	-0.8	36.1
1000	23.7	24.1	22.2	21.5	23.6	23.6	22.5	27.5	22.5	22.4	23.7	31.9	0.00	-0.9	24.6	37.5	0	37.5
1250	25.6	24.8	25.9	26.1	26.7	28.1	26.4	27.8	23.5	24.7	26.2	33.7	0.00	-0.7	26.9	39.7	0.6	40.3
1600	31.4	24.3	28.1	29.6	25.8	28.3	26.4	30.4	33.7	27.3	29.4	36.3	0.00	-0.2	29.6	42.5	1	43.5
2000	29.2	23.7	25.5	26.4	24.4	22.5	26.7	23.8	27.0	23.5	25.7	32.0	0.00	0.3	25.4	38.2	1.2	39.4
2500	21.0	18.9	18.8	18.8	16.9	16.7	19.6	19.9	19.8	17.8	19.0	24.5	0.00	-0.3	19.3	32.1	1.3	33.4
3150	16.0	17.7	17.7	17.2	14.9	14.3	16.5	15.5	16.7	16.6	16.4	21.3	0.00	0.1	16.3	29.2	1.2	30.4
4000	11.1	14.5	12.8	12.7	12.4	12.1	11.8	11.7	13.2	11.7	12.5	16.8	0.00	0.4	12.1	24.9	1	25.9
5000	9.3	8.7	10.8	9.0	8.6	8.9	9.1	8.1	10.0	6.9	9.1	13.0	0.22	-0.8	9.6	22.5	0.5	23.0
6300	8.3	8.7	8.0	7.8	5.4	7.4	6.1	6.7	6.9	4.6	7.2	11.3	0.33	-0.5	7.3	20.1	-0.1	20.0
8000	4.0	3.1	4.2	2.9	2.2	2.6	3.0	2.1	4.4	-0.1	3.0	6.8	1.03	-0.2	2.2	15.0	-1.1	13.9
10000	-0.2	0.3	1.8	0.5	0.5	0.5	-0.2	0.2	1.5	-1.8	0.4	3.2	1.30	0.1	-1.0	11.8	-2.5	9.3
A-WEIGHTED SOUND POWER LEVEL																		47.8

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MEASURED TIME AVERAGED SPL at 1 m, L'P - [06681/3_2 – Max Setting]											Mean L <sub>p</sub> over mic positions	$\Delta L_p$ [dB]	BG corr. K <sub>1</sub> , [dB]	Env corr. K <sub>2</sub> , [dB]	L <sub>p</sub> [dB]	Sound Power, L <sub>w</sub> [dB]	A- weighting corrections [dB]	Sound Power, L <sub>wA</sub> [dB]
Frequency [Hz]	Mic 1 [dB]	Mic 2 [dB]	Mic 3 [dB]	Mic 4 [dB]	Mic 5 [dB]	Mic 6 [dB]	Mic 7 [dB]	Mic 8 [dB]	Mic 9 [dB]	Mic 10 [dB]								
100	18.4	16.6	16.1	16.5	16.2	16.0	14.7	17.4	14.9	16.4	16.4	3.7	1.30	-2.4	17.5	30.3	-19.1	11.2
125	20.6	21.3	20.3	19.9	20.6	20.7	19.5	21.4	19.0	19.0	20.3	13.5	0.20	1.2	19.0	31.8	-16.1	15.7
160	21.3	20.3	20.0	19.8	21.3	21.4	18.0	19.4	17.3	18.5	19.9	17.0	0.00	0.6	19.4	32.2	-13.4	18.8
200	23.0	24.6	23.7	20.6	23.7	23.9	20.8	22.4	20.8	19.9	22.6	26.9	0.00	1.3	21.3	34.1	-10.9	23.2
250	25.2	27.5	26.0	22.7	24.0	24.2	23.6	23.3	23.0	23.6	24.6	30.3	0.00	1.4	23.1	36.0	-8.6	27.4
315	35.9	35.4	32.8	33.3	33.2	33.3	31.8	31.6	31.9	32.3	33.4	41.3	0.00	-0.5	33.9	46.7	-6.6	40.1
400	29.4	29.1	28.4	27.3	26.9	27.3	26.5	26.5	25.9	27.9	27.7	35.9	0.00	0.6	27.1	39.9	-4.8	35.1
500	31.5	30.9	28.0	25.3	24.7	25.8	27.8	26.4	27.7	30.6	28.5	37.0	0.00	0.2	28.3	41.1	-3.2	37.9
630	33.0	34.4	30.0	29.3	30.8	29.8	34.5	33.4	32.9	35.3	32.8	41.9	0.00	-0.3	33.1	45.9	-1.9	44.0
800	33.5	34.6	30.7	32.5	34.6	33.3	34.6	34.1	33.2	32.0	33.5	42.3	0.00	-0.4	33.9	46.8	-0.8	46.0
1000	32.1	32.9	32.6	34.7	35.5	35.1	34.0	34.0	32.6	32.7	33.8	41.9	0.00	-0.9	34.7	47.5	0	47.5
1250	34.2	32.4	34.6	36.6	35.9	36.4	33.7	34.3	33.3	33.5	34.7	42.2	0.00	-0.7	35.4	48.3	0.6	48.9
1600	36.6	35.1	34.9	34.9	35.6	35.2	35.8	35.5	35.5	36.0	35.5	42.5	0.00	-0.2	35.8	48.6	1	49.6
2000	33.5	31.8	32.0	31.4	31.4	31.4	32.2	32.4	31.6	29.8	31.8	38.1	0.00	0.3	31.5	44.3	1.2	45.5
2500	28.9	27.7	27.8	26.1	28.1	27.8	27.7	28.3	26.8	24.7	27.5	33.1	0.00	-0.3	27.9	40.7	1.3	42.0
3150	24.7	26.1	24.8	24.8	25.6	25.5	24.6	24.8	24.0	22.1	24.8	29.7	0.00	0.1	24.7	37.5	1.2	38.7
4000	21.1	24.5	23.4	22.2	23.5	23.6	22.6	22.5	22.2	19.7	22.7	27.0	0.00	0.4	22.3	35.1	1	36.1
5000	21.4	20.2	21.4	20.5	21.2	21.6	21.3	21.7	21.4	18.5	21.0	25.0	0.00	-0.8	21.8	34.6	0.5	35.1
6300	17.4	18.2	17.1	16.0	17.0	17.3	16.1	16.7	16.0	12.5	16.6	20.8	0.00	-0.5	17.1	29.9	-0.1	29.8
8000	13.8	13.8	12.5	11.8	13.2	13.9	12.4	12.9	13.2	7.7	12.8	16.5	0.00	-0.2	13.0	25.8	-1.1	24.7
10000	17.4	16.8	17.6	16.8	17.8	17.7	16.2	15.7	16.1	7.2	16.5	19.3	0.00	0.1	16.4	29.2	-2.5	26.7
A-WEIGHTED SOUND POWER LEVEL																		55.8

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MEASURED TIME AVERAGED SPL at 1 m, L'P - [06681/3_3 – Eco Setting]											Mean L <sub>p</sub> over mic positions	$\Delta L_p$ [dB]	BG corr. K <sub>1</sub> , [dB]	Env corr. K <sub>2</sub> , [dB]	L <sub>p</sub> [dB]	Sound Power, L <sub>w</sub> [dB]	A- weighting corrections [dB]	Sound Power, L <sub>wA</sub> [dB]
Frequency [Hz]	Mic 1 [dB]	Mic 2 [dB]	Mic 3 [dB]	Mic 4 [dB]	Mic 5 [dB]	Mic 6 [dB]	Mic 7 [dB]	Mic 8 [dB]	Mic 9 [dB]	Mic 10 [dB]								
100	20.1	18.0	16.8	18.2	16.2	16.7	15.3	17.0	14.7	16.1	17.2	4.4	1.30	-2.4	18.3	31.1	-19.1	12.0
125	21.1	20.3	18.9	20.6	17.9	18.4	19.5	18.6	17.7	14.9	19.1	12.3	0.27	1.2	17.7	30.5	-16.1	14.4
160	23.9	20.9	21.2	22.6	20.8	21.4	20.3	17.9	18.6	15.2	20.8	17.9	0.00	0.6	20.3	33.1	-13.4	19.7
200	25.0	24.5	24.3	23.5	23.3	24.4	21.8	21.0	20.1	16.1	23.0	27.3	0.00	1.3	21.7	34.5	-10.9	23.6
250	26.7	27.1	26.6	25.0	22.5	23.8	24.4	20.8	21.9	19.2	24.5	30.2	0.00	1.4	23.0	35.9	-8.6	27.3
315	34.7	36.2	33.7	32.3	35.0	34.6	28.8	32.6	29.3	30.0	33.4	41.2	0.00	-0.5	33.9	46.7	-6.6	40.1
400	28.6	28.7	27.9	27.0	26.6	27.2	22.5	23.0	21.8	23.7	26.4	34.6	0.00	0.6	25.7	38.6	-4.8	33.8
500	31.5	31.7	29.7	25.7	26.6	28.0	24.8	21.9	25.2	31.4	28.7	37.3	0.00	0.2	28.5	41.4	-3.2	38.2
630	34.5	34.6	30.4	29.7	24.9	28.4	32.4	31.5	32.5	36.8	32.6	41.7	0.00	-0.3	32.9	45.7	-1.9	43.8
800	34.0	35.2	29.7	28.8	27.7	26.6	30.1	36.8	31.7	31.7	32.4	41.3	0.00	-0.4	32.8	45.7	-0.8	44.9
1000	32.8	33.7	29.4	28.7	31.4	28.1	30.4	37.1	31.1	31.6	32.3	40.4	0.00	-0.9	33.2	46.0	0	46.0
1250	33.0	31.6	30.2	33.7	34.7	32.5	31.4	35.2	32.1	32.0	32.9	40.4	0.00	-0.7	33.6	46.4	0.6	47.0
1600	38.3	31.1	35.0	36.9	35.1	34.4	34.9	34.2	32.8	30.3	34.9	41.8	0.00	-0.2	35.1	48.0	1	49.0
2000	34.8	28.5	31.7	32.1	29.1	30.0	31.4	28.1	31.1	27.2	31.0	37.2	0.00	0.3	30.6	43.5	1.2	44.7
2500	29.4	26.3	27.8	26.8	22.9	24.8	27.6	25.1	24.9	20.9	26.2	31.7	0.00	-0.3	26.5	39.4	1.3	40.7
3150	24.8	25.0	23.1	25.2	22.7	22.6	23.0	21.4	23.3	19.0	23.3	28.2	0.00	0.1	23.2	36.1	1.2	37.3
4000	20.4	25.0	21.7	22.3	22.4	21.2	20.2	20.7	22.1	19.5	21.8	26.1	0.00	0.4	21.4	34.2	1	35.2
5000	18.6	15.7	19.6	18.3	15.1	17.5	18.2	16.4	19.0	13.7	17.6	21.5	0.00	-0.8	18.4	31.2	0.5	31.7
6300	17.2	15.5	14.8	16.6	12.6	15.6	14.5	12.1	14.2	10.3	14.8	18.9	0.00	-0.5	15.2	28.1	-0.1	28.0
8000	12.0	10.5	10.4	11.1	7.1	9.0	9.8	6.0	9.9	4.8	9.6	13.3	0.21	-0.2	9.5	22.4	-1.1	21.3
10000	6.4	4.2	6.2	7.1	4.4	5.6	5.0	2.8	5.6	1.4	5.2	7.9	0.77	0.1	4.3	17.1	-2.5	14.6
A-WEIGHTED SOUND POWER LEVEL																		54.7

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# Test Report

Issued by University of Salford (Acoustics Test Laboratory)

Date of Issue: 8th August 2024

Report Number: 06681/03 Rev.2

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MEASURED TIME AVERAGED SPL at 1 m, L'P - [06681/3_4 – Auto Setting]											Mean L <sub>p</sub> over mic positions	$\Delta L_p$ [dB]	BG corr. K <sub>1</sub> , [dB]	Env corr. K <sub>2</sub> , [dB]	L <sub>p</sub> [dB]	Sound Power, L <sub>w</sub> [dB]	A- weighting corrections [dB]	Sound Power, L <sub>wA</sub> [dB]
Frequency [Hz]	Mic 1 [dB]	Mic 2 [dB]	Mic 3 [dB]	Mic 4 [dB]	Mic 5 [dB]	Mic 6 [dB]	Mic 7 [dB]	Mic 8 [dB]	Mic 9 [dB]	Mic 10 [dB]								
100	21.3	17.8	16.5	19.2	17.2	17.1	16.4	17.4	15.2	16.8	17.8	5.1	1.30	-2.4	18.9	31.7	-19.1	12.6
125	25.8	21.3	23.1	26.7	19.4	20.9	24.2	18.0	21.8	15.0	22.8	16.0	0.00	1.2	21.6	34.5	-16.1	18.4
160	23.9	20.5	20.8	22.7	20.6	21.3	20.2	17.6	18.5	14.5	20.7	17.8	0.00	0.6	20.1	33.0	-13.4	19.6
200	25.0	24.2	24.1	23.1	22.9	24.1	21.2	20.4	19.6	15.0	22.7	27.0	0.00	1.3	21.3	34.2	-10.9	23.3
250	26.7	27.0	26.5	24.9	22.4	23.7	24.3	20.8	21.8	19.0	24.4	30.1	0.00	1.4	22.9	35.8	-8.6	27.2
315	34.6	36.2	33.8	32.3	35.0	34.6	29.0	32.6	29.3	30.1	33.4	41.2	0.00	-0.5	33.9	46.7	-6.6	40.1
400	28.5	28.7	28.0	27.0	26.6	27.2	22.5	23.1	22.0	23.7	26.4	34.6	0.00	0.6	25.7	38.6	-4.8	33.8
500	31.5	31.7	29.7	25.6	26.7	28.1	25.1	22.2	25.4	31.4	28.8	37.3	0.00	0.2	28.6	41.4	-3.2	38.2
630	34.4	34.8	30.5	30.1	26.2	29.6	32.9	32.0	32.5	36.9	32.9	42.0	0.00	-0.3	33.1	46.0	-1.9	44.1
800	34.1	35.3	29.9	29.5	28.8	27.6	30.4	36.9	31.9	31.9	32.6	41.5	0.00	-0.4	33.1	45.9	-0.8	45.1
1000	32.9	33.8	30.1	29.2	32.1	29.5	30.8	37.3	31.6	31.9	32.6	40.8	0.00	-0.9	33.5	46.4	0	46.4
1250	34.2	32.5	31.6	34.5	35.4	34.3	32.7	35.9	32.7	32.7	33.9	41.3	0.00	-0.7	34.6	47.4	0.6	48.0
1600	38.5	30.9	35.2	36.9	35.1	34.9	34.8	33.8	37.3	32.8	35.5	42.5	0.00	-0.2	35.7	48.6	1	49.6
2000	35.2	29.4	31.8	32.7	29.0	30.6	32.2	29.5	32.3	28.1	31.6	37.8	0.00	0.3	31.2	44.1	1.2	45.3
2500	30.1	27.0	28.2	27.3	23.9	25.3	28.2	26.6	26.3	22.7	27.0	32.5	0.00	-0.3	27.3	40.2	1.3	41.5
3150	25.3	25.7	24.6	25.7	23.5	23.2	23.7	22.5	24.4	21.3	24.2	29.1	0.00	0.1	24.1	36.9	1.2	38.1
4000	20.6	25.3	22.3	22.6	22.7	21.5	20.7	21.1	22.6	20.0	22.2	26.5	0.00	0.4	21.8	34.6	1	35.6
5000	19.1	16.4	20.0	18.6	15.9	17.9	18.6	16.9	19.4	14.3	18.0	22.0	0.00	-0.8	18.8	31.7	0.5	32.2
6300	17.4	16.4	15.5	16.8	13.2	16.0	14.9	13.3	14.8	11.2	15.3	19.5	0.00	-0.5	15.8	28.6	-0.1	28.5
8000	12.3	11.0	11.1	11.3	7.8	9.6	10.3	7.2	10.5	5.4	10.1	13.8	0.18	-0.2	10.1	23.0	-1.1	21.9
10000	6.7	5.1	7.0	7.3	4.7	5.9	5.3	3.7	5.9	1.5	5.6	8.3	0.69	0.1	4.8	17.6	-2.5	15.1
A-WEIGHTED SOUND POWER LEVEL																		55.3

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# Test Report

Issued by University of Salford (Acoustics Test Laboratory)

Date of Issue: 8th August 2024

Report Number: 06681/03 Rev.2

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MEASURED TIME AVERAGED SPL at 1 m, L'P - [06681/3_5 – Full Setting]											Mean L <sub>p</sub> over mic positions	$\Delta L_p$ [dB]	BG corr. K <sub>1</sub> , [dB]	Env corr. K <sub>2</sub> , [dB]	L <sub>p</sub> [dB]	Sound Power, L <sub>w</sub> [dB]	A- weighting corrections [dB]	Sound Power, L <sub>wA</sub> [dB]
Frequency [Hz]	Mic 1 [dB]	Mic 2 [dB]	Mic 3 [dB]	Mic 4 [dB]	Mic 5 [dB]	Mic 6 [dB]	Mic 7 [dB]	Mic 8 [dB]	Mic 9 [dB]	Mic 10 [dB]								
100	23.5	18.5	17.9	22.1	17.6	17.3	18.4	19.2	17.7	18.0	19.6	6.8	1.01	-2.4	20.9	33.8	-19.1	14.7
125	28.0	25.0	25.1	28.3	23.4	23.8	25.9	23.0	24.3	18.7	25.2	18.4	0.00	1.2	24.1	36.9	-16.1	20.8
160	29.3	26.0	26.4	28.1	26.3	27.2	25.6	23.5	23.7	20.0	26.3	23.3	0.00	0.6	25.7	38.5	-13.4	25.1
200	31.1	30.7	30.2	29.3	29.3	30.4	27.4	26.7	25.6	21.0	28.9	33.2	0.00	1.3	27.6	40.4	-10.9	29.5
250	33.8	34.8	32.9	31.5	29.7	30.4	31.1	28.2	28.3	24.9	31.4	37.1	0.00	1.4	29.9	42.8	-8.6	34.2
315	33.4	33.1	31.4	31.7	29.7	30.3	29.4	27.3	26.8	26.7	30.6	38.4	0.00	-0.5	31.1	43.9	-6.6	37.3
400	36.7	36.5	37.0	35.5	34.0	35.6	31.3	29.5	30.2	33.1	34.6	42.9	0.00	0.6	34.0	46.9	-4.8	42.1
500	46.3	47.8	47.4	43.1	45.5	46.1	39.9	41.2	39.3	43.0	44.9	53.4	0.00	0.2	44.7	57.5	-3.2	54.3
630	40.9	41.1	38.2	36.1	32.5	36.3	38.7	36.6	38.7	43.2	39.1	48.2	0.00	-0.3	39.4	52.2	-1.9	50.3
800	42.7	43.7	38.2	37.4	36.1	34.8	38.7	45.3	40.1	40.0	40.9	49.8	0.00	-0.4	41.4	54.2	-0.8	53.4
1000	44.7	45.0	40.6	39.3	42.2	38.2	41.3	46.8	41.9	42.8	43.0	51.2	0.00	-0.9	43.9	56.8	0	56.8
1250	42.9	41.4	39.9	43.4	44.2	42.3	40.9	44.1	41.7	41.7	42.4	49.9	0.00	-0.7	43.1	56.0	0.6	56.6
1600	44.3	39.0	41.0	46.7	44.3	44.1	44.0	40.3	45.0	40.2	43.5	50.5	0.00	-0.2	43.7	56.6	1	57.6
2000	44.7	37.9	42.1	41.7	38.0	40.6	41.6	38.6	42.1	37.9	41.1	47.3	0.00	0.3	40.7	53.6	1.2	54.8
2500	40.8	37.9	39.3	38.4	34.2	36.4	39.0	36.2	35.9	31.8	37.6	43.2	0.00	-0.3	38.0	50.8	1.3	52.1
3150	37.4	37.8	35.8	38.0	35.5	35.3	35.7	33.8	36.0	31.2	36.0	40.9	0.00	0.1	35.9	48.8	1.2	50.0
4000	34.6	38.8	35.6	36.1	36.1	35.2	34.1	34.4	35.8	33.0	35.6	39.9	0.00	0.4	35.2	48.1	1	49.1
5000	33.3	30.3	34.3	33.0	29.8	32.1	33.1	31.0	33.8	28.3	32.2	36.2	0.00	-0.8	33.0	45.9	0.5	46.4
6300	32.1	31.1	29.8	31.3	27.7	30.2	29.7	27.0	29.7	25.0	29.8	34.0	0.00	-0.5	30.3	43.1	-0.1	43.0
8000	29.4	27.2	26.8	27.9	23.5	25.9	26.4	22.3	26.5	20.9	26.3	30.0	0.00	-0.2	26.5	39.3	-1.1	38.2
10000	24.0	21.2	23.4	24.5	21.2	22.8	21.8	18.8	22.2	17.0	22.2	24.9	0.00	0.1	22.0	34.9	-2.5	32.4
A-WEIGHTED SOUND POWER LEVEL																		64.5

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# Test Report

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MEASURED TIME AVERAGED SPL at 1 m, L'P - [06681/3_6 – TV25 Setting]											Mean L <sub>p</sub> over mic positions	$\Delta L_p$ [dB]	BG corr. K <sub>1</sub> , [dB]	Env corr. K <sub>2</sub> , [dB]	L <sub>p</sub> [dB]	Sound Power, L <sub>w</sub> [dB]	A- weighting corrections [dB]	Sound Power, L <sub>wA</sub> [dB]
Frequency [Hz]	Mic 1 [dB]	Mic 2 [dB]	Mic 3 [dB]	Mic 4 [dB]	Mic 5 [dB]	Mic 6 [dB]	Mic 7 [dB]	Mic 8 [dB]	Mic 9 [dB]	Mic 10 [dB]								
100	21.0	16.9	16.2	19.4	16.7	17.5	15.8	17.0	15.0	14.4	17.4	4.7	1.30	-2.4	18.5	31.4	-19.1	12.3
125	23.6	21.5	21.0	23.5	19.9	20.6	21.5	20.1	20.2	15.0	21.2	14.4	0.16	1.2	19.9	32.7	-16.1	16.6
160	26.7	23.2	23.7	25.4	23.5	24.4	22.9	20.3	21.1	16.7	23.5	20.5	0.00	0.6	22.9	35.8	-13.4	22.4
200	28.3	27.6	27.5	26.6	26.4	27.6	24.5	23.7	22.8	17.8	26.1	30.3	0.00	1.3	24.7	37.6	-10.9	26.7
250	30.3	30.8	29.8	28.4	25.9	27.1	27.8	24.0	25.2	21.5	27.9	33.6	0.00	1.4	26.5	39.3	-8.6	30.7
315	31.9	32.0	31.1	30.4	30.1	30.4	27.6	27.8	25.8	26.1	29.8	37.7	0.00	-0.5	30.3	43.2	-6.6	36.6
400	38.8	40.7	41.0	37.6	39.0	39.8	33.1	34.9	31.7	34.3	38.1	46.3	0.00	0.6	37.5	50.3	-4.8	45.5
500	39.9	41.4	40.7	37.1	38.6	40.2	33.6	33.9	33.1	37.9	38.5	47.1	0.00	0.2	38.3	51.2	-3.2	48.0
630	37.6	37.8	34.7	32.6	28.6	32.4	35.3	33.2	35.3	39.8	35.7	44.8	0.00	-0.3	36.0	48.8	-1.9	46.9
800	40.9	41.8	36.1	35.5	34.2	32.4	36.0	43.3	37.8	38.1	38.9	47.8	0.00	-0.4	39.3	52.2	-0.8	51.4
1000	39.8	40.1	35.9	35.0	37.4	33.6	36.2	43.0	37.1	38.1	38.5	46.6	0.00	-0.9	39.4	52.2	0	52.2
1250	39.0	37.5	35.8	39.6	40.4	38.5	36.9	40.6	38.0	38.2	38.7	46.2	0.00	-0.7	39.4	52.3	0.6	52.9
1600	41.0	35.3	38.4	43.3	40.4	40.5	39.8	39.9	39.4	36.6	40.0	46.9	0.00	-0.2	40.2	53.0	1	54.0
2000	40.1	33.8	37.5	38.2	34.1	36.4	37.5	34.5	37.5	34.0	36.9	43.1	0.00	0.3	36.5	49.4	1.2	50.6
2500	36.4	33.5	34.9	34.1	29.8	32.0	34.6	31.9	31.5	27.3	33.3	38.8	0.00	-0.3	33.6	46.4	1.3	47.7
3150	32.6	33.1	31.0	33.2	30.8	30.5	30.9	29.1	31.2	26.4	31.2	36.1	0.00	0.1	31.1	44.0	1.2	45.2
4000	29.6	33.9	30.7	31.3	31.1	30.3	29.1	29.4	30.9	28.0	30.7	35.0	0.00	0.4	30.3	43.1	1	44.1
5000	27.9	25.0	28.9	27.7	24.5	26.8	27.7	25.6	28.4	22.9	26.9	30.9	0.00	-0.8	27.7	40.5	0.5	41.0
6300	26.5	25.5	24.3	26.0	22.2	24.7	24.2	21.6	24.1	19.5	24.3	28.4	0.00	-0.5	24.8	37.6	-0.1	37.5
8000	23.6	21.3	21.0	22.0	17.7	20.1	20.6	16.3	20.7	15.2	20.5	24.2	0.00	-0.2	20.7	33.5	-1.1	32.4
10000	17.9	15.4	17.3	18.5	15.1	16.8	15.7	12.8	16.2	11.1	16.1	18.9	0.00	0.1	16.0	28.9	-2.5	26.4
A-WEIGHTED SOUND POWER LEVEL																		60.6

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# Test Report

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MEASURED TIME AVERAGED SPL at 1 m, L'P - [06681/3_7 – TV35 Setting]											Mean L <sub>p</sub> over mic positions	$\Delta L_p$ [dB]	BG corr. K <sub>1</sub> , [dB]	Env corr. K <sub>2</sub> , [dB]	L <sub>p</sub> [dB]	Sound Power, L <sub>w</sub> [dB]	A- weighting corrections [dB]	Sound Power, L <sub>wA</sub> [dB]
Frequency [Hz]	Mic 1 [dB]	Mic 2 [dB]	Mic 3 [dB]	Mic 4 [dB]	Mic 5 [dB]	Mic 6 [dB]	Mic 7 [dB]	Mic 8 [dB]	Mic 9 [dB]	Mic 10 [dB]								
100	19.3	17.3	15.9	17.5	17.2	18.3	14.7	16.5	13.4	13.3	16.7	4.0	1.30	-2.4	17.8	30.6	-19.1	11.5
125	20.4	18.6	17.8	20.5	16.6	17.5	18.7	16.9	17.2	11.9	18.1	11.3	0.33	1.2	16.6	29.5	-16.1	13.4
160	23.6	20.1	20.6	22.3	20.3	21.0	19.8	17.1	18.1	13.9	20.4	17.4	0.00	0.6	19.8	32.6	-13.4	19.2
200	24.7	24.0	23.9	23.0	22.8	24.1	21.2	20.3	19.3	14.7	22.5	26.8	0.00	1.3	21.2	34.0	-10.9	23.1
250	26.6	26.9	26.4	24.8	22.2	23.6	24.2	20.4	21.6	18.5	24.3	30.0	0.00	1.4	22.8	35.7	-8.6	27.1
315	34.5	36.1	33.7	32.2	34.9	34.5	28.7	32.6	29.1	30.0	33.3	41.1	0.00	-0.5	33.8	46.6	-6.6	40.0
400	28.5	28.5	27.8	27.0	26.5	27.1	22.4	22.9	21.7	23.6	26.3	34.5	0.00	0.6	25.6	38.5	-4.8	33.7
500	31.5	31.7	29.7	25.7	26.5	28.0	24.8	21.7	25.1	31.4	28.7	37.2	0.00	0.2	28.5	41.3	-3.2	38.1
630	34.5	34.6	30.5	29.6	25.0	28.4	32.4	31.4	32.5	36.7	32.6	41.7	0.00	-0.3	32.9	45.7	-1.9	43.8
800	34.1	35.2	29.7	28.9	27.7	26.4	30.1	36.8	31.7	31.7	32.4	41.3	0.00	-0.4	32.9	45.7	-0.8	44.9
1000	32.9	33.7	29.5	29.0	31.5	28.2	30.5	37.2	31.2	31.6	32.3	40.5	0.00	-0.9	33.2	46.1	0	46.1
1250	33.1	31.7	30.5	33.6	34.8	32.7	31.6	35.1	32.1	32.1	33.0	40.5	0.00	-0.7	33.7	46.5	0.6	47.1
1600	35.7	29.4	33.3	37.4	34.8	34.4	34.3	33.9	33.7	30.9	34.3	41.2	0.00	-0.2	34.5	47.3	1	48.3
2000	34.5	28.9	31.6	32.7	28.7	29.9	31.4	28.4	31.4	28.1	31.0	37.3	0.00	0.3	30.7	43.5	1.2	44.7
2500	29.3	26.3	27.6	26.8	22.8	24.8	27.6	25.2	24.7	20.6	26.2	31.7	0.00	-0.3	26.5	39.3	1.3	40.6
3150	24.8	25.1	23.2	25.1	22.7	22.5	23.0	21.2	23.2	18.9	23.3	28.2	0.00	0.1	23.2	36.0	1.2	37.2
4000	20.9	25.1	21.9	22.6	22.4	21.3	20.4	20.8	22.4	19.6	22.0	26.3	0.00	0.4	21.6	34.4	1	35.4
5000	18.5	15.7	19.6	18.4	15.1	17.5	18.3	16.2	19.0	13.5	17.5	21.5	0.00	-0.8	18.3	31.2	0.5	31.7
6300	17.2	15.8	14.8	16.8	12.9	15.5	14.6	12.3	14.5	10.6	14.9	19.1	0.00	-0.5	15.4	28.2	-0.1	28.1
8000	13.1	11.1	11.0	11.5	7.5	10.4	11.4	6.3	11.3	6.1	10.5	14.2	0.17	-0.2	10.5	23.4	-1.1	22.3
10000	8.4	7.4	7.0	8.3	5.3	7.0	5.4	3.3	7.2	2.3	6.5	9.3	0.54	0.1	5.9	18.7	-2.5	16.2
A-WEIGHTED SOUND POWER LEVEL																		54.6

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# Test Report

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## Appendix 3 – Measured time averaged sound pressure level of RSS, $L'_{P(RSS)}$ at each microphone position

Frequency	Mic 1	Mic 2	Mic 3	Mic 4	Mic 5	Mic 6	Mic 7	Mic 8	Mic 9	Mic 10	Average $L'_{P(RSS)}$ over microphone positions	Calculated Sound Power of RSS
[Hz]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]
100	63.7	60.7	60.1	62.6	60.5	59.3	59.1	61.7	57.7	55.2	60.6	73.5
125	65.0	65.0	63.5	64.2	64.1	64.2	62.2	64.9	62.9	56.7	63.7	76.6
160	65.8	63.9	63.9	64.0	66.1	65.5	61.8	62.7	61.2	57.9	63.8	76.7
200	65.2	66.7	66.3	63.6	66.4	66.8	61.4	64.7	60.5	56.5	64.7	77.5
250	65.6	67.7	66.6	64.1	64.2	65.0	63.5	63.3	61.5	58.7	64.6	77.5
315	64.6	65.1	64.0	62.8	63.2	63.6	61.3	62.0	60.0	60.0	63.0	75.8
400	66.4	66.2	65.9	64.9	64.4	65.3	59.9	61.9	59.2	58.8	64.1	76.9
500	67.2	66.4	65.7	63.9	63.2	64.6	59.8	60.6	59.7	60.1	64.0	76.8
630	66.4	66.8	65.7	63.2	62.0	63.7	62.1	59.7	62.7	64.0	64.1	77.0
800	66.8	68.0	65.1	61.5	60.4	62.9	65.9	62.8	66.6	67.5	65.4	78.3
1000	67.0	68.5	64.1	60.0	60.9	60.1	68.8	67.1	68.3	65.1	66.1	78.9
1250	67.4	68.2	60.9	66.7	68.0	64.8	69.3	70.8	66.8	69.4	67.9	80.7
1600	63.6	64.6	65.1	71.0	71.2	69.9	67.2	67.9	69.5	68.5	68.5	81.4
2000	65.4	61.7	69.3	71.3	70.0	70.8	69.4	67.0	68.6	65.9	68.7	81.6
2500	66.7	62.8	69.0	66.5	65.3	67.6	65.9	67.9	65.1	62.7	66.4	79.2
3150	68.1	68.3	68.0	66.8	67.7	65.6	65.3	66.7	63.9	61.0	66.6	79.4
4000	66.6	69.7	65.5	68.0	67.5	67.4	65.6	66.3	64.3	61.1	66.7	79.5
5000	64.5	64.6	66.2	66.0	65.5	65.8	64.8	65.5	63.7	58.9	64.9	77.7
6300	66.2	65.0	65.3	64.7	64.2	64.8	61.7	63.6	61.6	57.5	64.0	76.8
8000	65.3	63.0	63.3	62.7	62.7	62.9	61.7	62.4	61.4	55.6	62.6	75.4
10000	61.9	61.0	62.3	61.6	61.2	61.6	59.4	61.0	59.7	54.2	60.8	73.6

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