



Azymuth Acoustics UK

Professional Acoustic Services

Acoustic Testing Report

Ref: Z43470

67 Old Market Street
Blackley

On behalf of

CEJ Homes Ltd

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1.0 Introduction

Azymuth Acoustics UK (henceforth Azymuth) were appointed by CEJ Homes Ltd in March 2022 to undertake acoustic testing on a new build development site located on 67 Old Market Street, Blackley. The site consists of 18no. new build apartments.

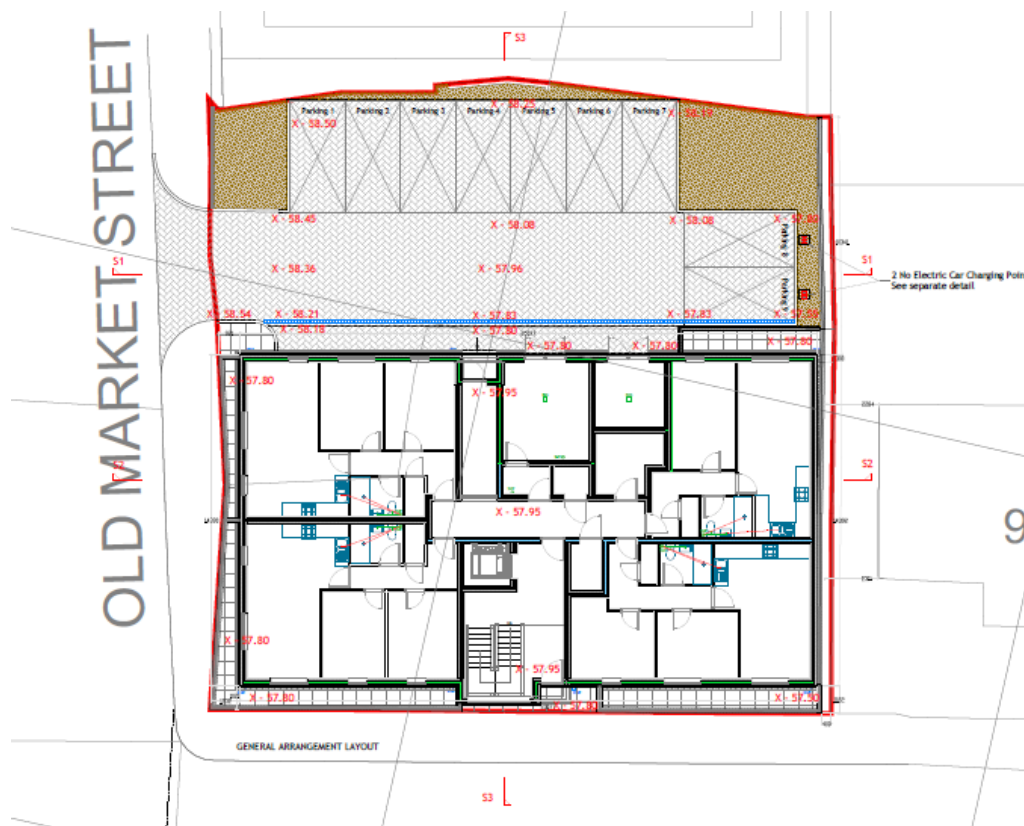


Figure 1 –Site plan, Old Market Street

Testing has been instructed in order to assist with the discharge of a planning condition in relation to internal noise levels. The planning application refers to a noise impact assessment that was carried out on site by another acoustic consultancy (Hydrock Consultants Limited) in July 2022. The purpose of the testing is to confirm that the mitigation advice issued in this assessment is accurate and that the internal noise levels are of an acceptable level.

1.1 Measurement Procedure

The instrumentation used for the acoustic testing consisted of 2no. Svantek 971 type 1 precision sound level meters. The equipment was calibrated before and after measurements. The sound level meters measured A-weighted (fast response) noise levels as well as octave bands noise levels for all measurement record.

Measurements were taken ~1m from the Bedroom and Living Room windows in Plot F03. The instrumentation measured the internal noise levels to be experienced by the plot over a continuous time period that included both day/night-time and also rush-hour.

Measurements were undertaken over a continuous period between 15:30hrs on Friday 21st June and 08:15hrs on Monday 24th June 2024.

Full results of the noise levels recorded during the course of the survey are included in Appendix B of this report.

2.0 Assessment Criteria

In order to assess the extent of any measures required in order to comply with suitable conditions relating to potential noise sources, AAUK has reviewed various guidance documents and standards, these include:

- British Standard 8233:2014
- World Health Organisation Guidelines on Community Noise
- Manchester City Council Planning Application No: 126507/FO/2020 (Condition 21)

2.1 British Standard 8233: 2014

BS 8233 provides a code of practice for the sound insulation of a variety of building types affected by general environmental noise. It provides recommendations for control of noise in and around buildings and suggests appropriate internal ambient noise level criteria / limits for a variety of different situations including residential properties.

The following table summarises the noise limits suggested by BS 8233 applying to residential properties:

Activity	Room	Good Design Range $L_{Aeq, T}$ dB	
		07:00-23:00hrs	23:00-07:00hrs
Resting	Living Room	35	-
Dining	Dining Room / Area	40	-
Sleeping (daytime resting)	Bedroom (at night)	35	30

Table 1 – Noise Limits for Residential Properties Suggested in BS 8233

2.2 World Health Organisation Environmental Noise Guidelines (ENG) 2018

The main purpose of the 2018 WHO guidelines is to provide recommendations for protecting human health from exposure to environmental noise originating from the following sources: transportation (road traffic, railway and aircraft), wind turbines and leisure activities.

The guidelines set out to define recommended exposure levels for environmental noise in order to protect population health. Exposure limits are average levels defined over a period of one year, measured outdoors in free field at the most exposed façade. It should be noted that the document does not provide guideline limit values for multiple noise sources in combination.

The 2018 guidelines supersede the Community Noise Guidelines from 1999. Nevertheless, the document recommends that all CNG indoor guideline values and any values not covered by the current guidelines should remain valid. As such, the following guidance would remain appropriate:

For protection against sleep disturbance inside dwellings, night-time noise levels should not exceed 30dB L_{Aeq} for continuous noise and 45dB L_{Amax} for typical single sound events (which are exceeded 15 times or more per night – see ProPG Appendix A.12 for more details).

To protect the majority of people from being seriously annoyed during the daytime, the outdoor sound level from steady, continuous noise (interpreted as noise from all sources combined) should not exceed 55dB L_{Aeq} on balconies, terraces and in outdoor living areas.



It should be noted that exposure levels defined in ENG and CNG are for guidance purposes as relates potential adverse health impacts and should not be interpreted as absolute limits or regulations.

2.3 Manchester City Council Planning Application No: 126507/FO/2020 (Condition 21)

The following planning condition has been issued by the council in relation to internal noise within the development:

'Before above ground development commences, a scheme for acoustically insulating the residential accommodation against noise from Old Market Street and neighbouring public house shall be submitted to and approved in writing by the City Council as Local Planning Authority. The approved noise insulation scheme shall be completed before any residential units are occupied.'

Upon completion of the development and prior to first occupation of the apartments hereby approved, a verification report shall be submitted to and approved in writing by the City Council as Local Planning Authority in order to validate the works undertaken conform to the recommendations and requirements contained within the report. The report should contain details of post completion testing to confirm that the internal noise criteria has been met. Any instances of non-conformity with the recommendations contained within the report shall be detailed, along with any measures required to ensure compliance with the internal noise criteria.

Reason – To safeguard the amenities of existing future occupiers of nearby residential accommodation, pursuant to saved policy DC26 of the Unitary Development Plan for the City of Manchester and policies SP1, H1 and DM1 of the core strategy'

2.3.1 Hydrock Noise Impact Assessment Recommendations

The initial planning stage Noise Impact Assessment (NIA) was undertaken by Hydrock Consultants Limited.

A summary of the noise measurements undertaken by Hydrock is shown below:

Table 1: Average Measured Noise Levels

Monitoring Location	Date	Average Noise Level - $L_{Aeq,T}$, dB	
		Daytime 0700 - 2300	Night-time 2300 - 0700
ML1	Thursday 30th June 2022	65	59
	Friday 1st July 2022	67	62
	Saturday 2nd July 2022	65	59
	Sunday 3rd July 2022	65	59
ML2	Thursday 30th June 2022	54	49
	Friday 1st July 2022	56	50
	Saturday 2nd July 2022	54	49
	Sunday 3rd July 2022	54	48

Figure 2 – Summary of $L_{Aeq,T}$ noise measurement data as measured by Hydrock

Table 2: Summary of Maximum Night-time Levels

Monitoring Location	Date	Maximum Noise Level - L_{Amax} , r, dB
		Night-time 2300 - 0700
ML1	Thursday 30th June 2022	75
	Friday 1st July 2022	77
	Saturday 2nd July 2022	74
	Sunday 3rd July 2022	74
ML2	Thursday 30th June 2022	65
	Friday 1st July 2022	65
	Saturday 2nd July 2022	64
	Sunday 3rd July 2022	64

Figure 3 – Summary of night-time L_{Amax} noise measurement data as measured by Hydrock



Figure 4 – Hydrock noise measurement positions

Table 6: Minimum Sound Reduction Performance

Site Area	Preliminary minimum sound reduction performance (dB)		Example configuration
	Glazing ($R_w + C_{tr}$)	Ventilator ($D_{n,e,w} + C_{tr}$)	
Glazing Spec 1	35	38	10mm / 16mm / 6.4mm enhanced thermal double glazing; and - Acoustic trickle ventilator
Glazing Spec 2	27	35	6/16/6 standard thermal double glazing; and - Acoustic trickle ventilator

Figure 5 – Hydrock mitigation recommendations

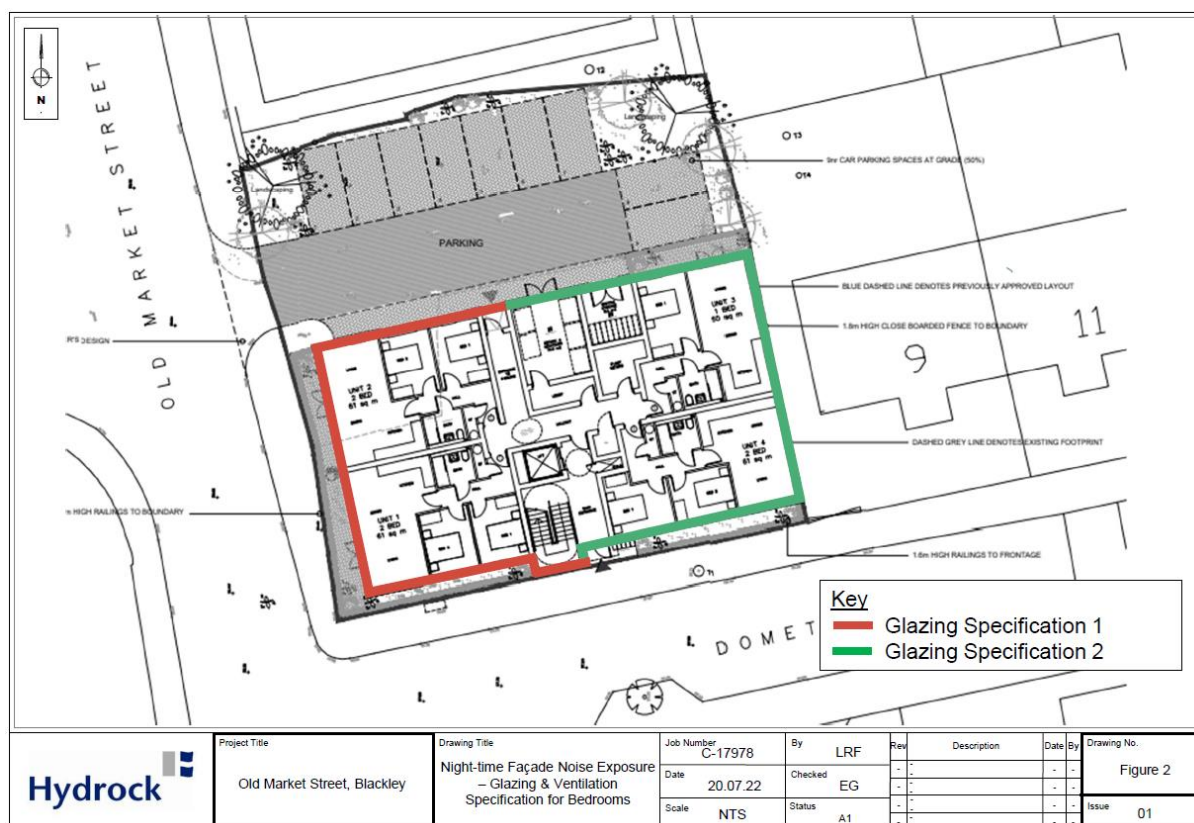


Figure 6 – Hydrock mitigation specifications

3.0 Assessment of Results

3.1 Plot F03: Living Room

The following table summarises the noise measurement data for the Living Room of Plot F03 over the measurement period.

Location	Period	L _{Amax}	L _{Aeq}	L _{A10}	L _{A50}	L _{A90}
Plot F03: Living Room	Day	47.1	32.3	28.9	24.5	21.3
Plot F03: Living Room	Night	38.7	24.5	23.7	20.3	18.3

Table 2 – Summary of daytime and night-time noise levels Plot F03 Living Room

3.2 Plot F03: Bedroom

The following table summarises the noise measurement data for the Bedroom of Plot F03 over the measurement period.

Location	Period	L _{Amax}	L _{Aeq}	L _{A10}	L _{A50}	L _{A90}
Plot F03: Bedroom	Day	47.9	31.5	30.5	25.9	22.2
Plot F03: Bedroom	Night	39.6	24.1	24.8	20.3	17.5

Table 3 – Summary of daytime and night-time noise levels Plot F03 Bedroom

- 15th highest night-time L_{Amax} value = 44.9dB inside Bedroom of Plot F03.

A graph of the noise measurement data is included in Appendix C of this report.

4.0 Summary

Azymuth were appointed by CEJ Homes Ltd to undertake acoustic testing at a new build development site located on 67 Old Market Street, Blackley.

A Noise Impact Assessment (NIA) of the site was completed by Hydrock in July 2022 providing recommendations relating to mitigation required for the site.

A planning condition was issued by Manchester City Council, this condition stated that a verification report would have to be completed in order to validate that the relevant internal noise level targets had been met:

The internal noise level targets are as follows:

- Bedrooms (night-time - 23.00 - 07.00) 30dB L_{Aeq} (individual noise events shall not exceed 45dB $L_{Amax,F}$ by more than 15 times)
- Living Rooms (daytime - 07.00 - 23.00) 35dB L_{Aeq}

Condition 21

Plot No.	Room	Target	Result	Compliance
F03	Living Room	<35dB $L_{Aeq,16hr}$	32.3dB $L_{Aeq,16hr}$	Compliant
	Bedroom	<30dB $L_{Aeq,8hr}$ 15 th highest $L_{Amax} \leq 45dB$	24.1dB $L_{Aeq,8hr}$ 44.9dB L_{Amax}	Compliant

Table 6 – Summary of noise levels

Appendix A – Glossary of Acoustic Terms

Decibel (dB)

This is the unit used to measure sound. The human ear has an approximately logarithmic response to acoustic pressure over a very large dynamic range (typically 20 micro Pascal to 100 Pascal).

dB (A)

This is a measure of the overall noise level of sound across the audible spectrum with a frequency weighting (i.e. A-weighting) to compensate for the sensitivity of the human ear to sound of different frequencies. The A-weighting curve is implemented in sound level meters using an electronic filter that approximately corresponds to the frequency response of the ear.

Octave Band Noise Level

The human ear is sensitive to sound over a range of frequencies between approximately 20Hz to 20kHz. The ear is also generally more sensitive to medium and high frequencies than to low frequencies. In order to define the frequency content of a noise, the spectrum can be divided into frequency bands. The most commonly used frequency bands are octave bands, in which the mid-frequency of each band is twice that of the band below it.

L_{Aeq}

This is the equivalent steady sound level in dB(A) containing the same acoustic energy as the actual fluctuating sound level over a given time period.

Reverberation Time (RT or sometimes T_{30} or T_{60})

This is the time taken for the reverberant sound energy in an enclosure to decay one millionth of its equilibrium value, i.e. by 60dB, after the source has been switched off. The reverberation time is frequency dependent and it is customary to measure its value in octave or one-third octave bands. Reverberation occurs when sound waves are repeatedly reflected from each surface of the room.

Sound Reduction Index (SRI)

Difference measured between the amount of energy flowing towards the wall in the source room and the total amount of energy entering the receiving room (usual range 100 - 3150Hz for one third octave band values). The SRI varies with frequency and is measured in a laboratory in either octave or one-third octave bands.

$SRI = L_1 - L_2 + 10 \log (S/A)$, where:

L_1 = Noise level in the source room

L_2 = Noise levels in the receiving room

S = Surface area of test specimen

A = Equivalent acoustic absorption area in the receiving room

Weighted Sound Reduction Index (R_w)

This is a weighted single figure descriptor of the sound insulation performance of a partition measured under laboratory conditions. The procedure used to quantify the R_w is to compare the sound reduction index (SRI) in each of the one-third octave bands from 100Hz to 3150Hz against a set of standard reference curves.



Appendix B – Noise Survey Data

Start	Plot	Date	L _{Amax}	L _{Aeq}	L _{A10}	L _{A50}	L _{A90}
Plot F03 Living Room							
15:45:00	F03	21/06/2024	64.3	34.9	31.7	25.5	22.6
16:15:00	F03	21/06/2024	72.2	40.1	31.2	24.7	21.7
16:45:00	F03	21/06/2024	42.8	24.8	26.9	23.5	20.8
17:15:00	F03	21/06/2024	53.7	31.4	28.4	24	21.1
17:45:00	F03	21/06/2024	54.4	33.1	28	23.6	20.8
18:15:00	F03	21/06/2024	55	27.4	27.9	23.9	21.4
18:45:00	F03	21/06/2024	54.7	35.3	34.4	24.5	21
19:15:00	F03	21/06/2024	44.7	24.7	26.9	22.9	20.1
19:45:00	F03	21/06/2024	44.4	24.9	27.2	22.9	19.7
20:15:00	F03	21/06/2024	40.2	24.6	27.3	23	19.9
20:45:00	F03	21/06/2024	39.8	26.6	29	25.8	22.1
21:15:00	F03	21/06/2024	47.5	28	30.2	26.7	23.4
21:45:00	F03	21/06/2024	37.7	26.4	28.7	25.5	22.8
22:15:00	F03	21/06/2024	42.9	28.4	30.7	27.2	23.7
22:45:00	F03	21/06/2024	42.5	27.1	29.4	25.9	22.4
23:15:00	F03	21/06/2024	37	27.2	30	25.9	22.4
23:45:00	F03	21/06/2024	34.9	24.6	27.7	23.4	18.5
00:15:00	F03	22/06/2024	38.7	31.7	33.2	31.8	28.1
00:45:00	F03	22/06/2024	37.4	30.4	32.1	31.1	17.7
01:15:00	F03	22/06/2024	38.7	20.6	22.3	17.7	16.4
01:45:00	F03	22/06/2024	45.6	20.8	22.1	17.7	16.5
02:15:00	F03	22/06/2024	33	19.1	20.9	17.2	16.3
02:45:00	F03	22/06/2024	52	22.4	20.6	17.1	16.3
03:15:00	F03	22/06/2024	33.9	19.5	20.9	18.5	17.1
03:45:00	F03	22/06/2024	35.5	20.1	21.7	18.7	17.1
04:15:00	F03	22/06/2024	45.6	20.7	21.5	17.7	16.5
04:45:00	F03	22/06/2024	37.9	19.4	20.7	17.4	16.3
05:15:00	F03	22/06/2024	37.1	19.2	20.3	17.1	16.3
05:45:00	F03	22/06/2024	38.5	19.7	21.3	17.1	16.2
06:15:00	F03	22/06/2024	38.5	20.5	22.3	17.8	16.5
06:45:00	F03	22/06/2024	36.9	21.1	23.2	18.7	17.3
07:15:00	F03	22/06/2024	48.7	23.9	26.7	20.3	17.8
07:45:00	F03	22/06/2024	37.3	23.7	27.2	21	17.9
08:15:00	F03	22/06/2024	42.5	23.7	26.8	21.2	18
08:45:00	F03	22/06/2024	43	23.2	26.3	20.7	17.7
09:15:00	F03	22/06/2024	42.4	23.8	26.6	21.3	18
09:45:00	F03	22/06/2024	38.7	23.4	26.4	21.7	18.6
10:15:00	F03	22/06/2024	48	24.7	26.8	22.2	19.2
10:45:00	F03	22/06/2024	52.3	30.2	27.9	22.8	19.9
11:15:00	F03	22/06/2024	53.5	30.1	27.2	22.3	19.6
11:45:00	F03	22/06/2024	42.3	24.5	27.1	23	20
12:15:00	F03	22/06/2024	38	24.9	27.1	23.9	21.7
12:45:00	F03	22/06/2024	46.5	27.1	27.8	23.8	21.3
13:15:00	F03	22/06/2024	44.8	25.1	27.4	23.7	20.6
13:45:00	F03	22/06/2024	42.5	33.2	34.2	32.9	31.8



Start	Plot	Date	L _{Amax}	L _{Aeq}	L _{A10}	L _{A50}	L _{A90}
14:15:00	F03	22/06/2024	53.5	36.1	38.1	35.1	32.8
14:45:00	F03	22/06/2024	55.2	38.7	41.1	37.8	33.9
15:15:00	F03	22/06/2024	47.6	37.1	40.4	35.5	31.1
15:45:00	F03	22/06/2024	53	37.5	40	36	32.3
16:15:00	F03	22/06/2024	46.3	34.9	38	33.9	25.6
16:45:00	F03	22/06/2024	48	37.7	40.4	36.6	32.7
17:15:00	F03	22/06/2024	52.4	37.3	40	36	32.3
17:45:00	F03	22/06/2024	51.5	35	37.5	33.8	29.5
18:15:00	F03	22/06/2024	54.4	34.4	37.2	33.1	24.4
18:45:00	F03	22/06/2024	53.5	30.1	29	24.6	21.3
19:15:00	F03	22/06/2024	43.1	24.9	27.4	23.3	20.3
19:45:00	F03	22/06/2024	43.4	25.1	27.4	22.9	19.8
20:15:00	F03	22/06/2024	58.8	32.4	28.2	23.1	19.9
20:45:00	F03	22/06/2024	42.8	24.2	27	22.3	19
21:15:00	F03	22/06/2024	40.7	23.6	26.3	21.9	18.3
21:45:00	F03	22/06/2024	45.4	23.6	26	21.2	18.3
22:15:00	F03	22/06/2024	57	29.5	26.8	21.2	18.6
22:45:00	F03	22/06/2024	42.6	23.5	25.7	22	19.7
23:15:00	F03	22/06/2024	35.6	22.9	25.3	21.2	19.5
23:45:00	F03	22/06/2024	38.3	23.2	25.8	21.2	19.6
00:15:00	F03	23/06/2024	42	22.7	24.7	21	19.6
00:45:00	F03	23/06/2024	43.3	23.2	25.3	20.6	18.2
01:15:00	F03	23/06/2024	36.3	21	23.2	19.1	17.5
01:45:00	F03	23/06/2024	34.2	20.9	22.6	19.6	17.9
02:15:00	F03	23/06/2024	33.5	22.1	23.3	21.3	19.9
02:45:00	F03	23/06/2024	39.9	30.2	32.8	31.1	20.2
03:15:00	F03	23/06/2024	37	31.7	32.5	31.6	30.9
03:45:00	F03	23/06/2024	34.2	20.9	21.2	17.9	16.7
04:15:00	F03	23/06/2024	33.7	19.4	21.5	17.9	16.6
04:45:00	F03	23/06/2024	34.5	19.4	21.6	17.5	16.4
05:15:00	F03	23/06/2024	31.6	19.2	21.1	17.5	16.5
05:45:00	F03	23/06/2024	34.4	19.4	21.2	17.4	16.4
06:15:00	F03	23/06/2024	38	19.6	21.7	17.4	16.3
06:45:00	F03	23/06/2024	55.6	24.1	23.2	17.9	16.5
07:15:00	F03	23/06/2024	42.6	22.3	25	19.1	16.9
07:45:00	F03	23/06/2024	43.8	23.2	26.1	20.3	17.5
08:15:00	F03	23/06/2024	35.1	22.4	25.5	20	17.6
08:45:00	F03	23/06/2024	44.1	22.4	24.9	19.8	17.5
09:15:00	F03	23/06/2024	41.5	22	24.6	19.7	17.5
09:45:00	F03	23/06/2024	50.2	23.6	25.9	21.3	18.5
10:15:00	F03	23/06/2024	37.2	23.2	25.5	21.6	19.8
10:45:00	F03	23/06/2024	43.8	23.8	26.5	21.8	19.3
11:15:00	F03	23/06/2024	62.1	30.2	26.2	21.6	18.9
11:45:00	F03	23/06/2024	53.4	24.1	25.7	21.6	18.9
12:15:00	F03	23/06/2024	42.6	23.8	26.2	21.8	19
12:45:00	F03	23/06/2024	42.1	23.7	26.1	22.2	19.6
13:15:00	F03	23/06/2024	47.5	25.5	27	22.4	19.5
13:45:00	F03	23/06/2024	41.6	24.6	26.9	23.1	20.8
14:15:00	F03	23/06/2024	37.2	25	27.3	23.8	21.7



Start	Plot	Date	L _{Amax}	L _{Aeq}	L _{A10}	L _{A50}	L _{A90}
14:45:00	F03	23/06/2024	44.2	25.4	27.5	23.7	21.1
15:15:00	F03	23/06/2024	40.1	24.2	26.6	22.9	20.4
15:45:00	F03	23/06/2024	49.6	26.4	28.3	23	20.5
16:15:00	F03	23/06/2024	46.5	33.3	34.1	33	32.1
16:45:00	F03	23/06/2024	49.8	31.8	34.1	31.9	22
17:15:00	F03	23/06/2024	50.3	27.2	27.4	23	20.1
17:45:00	F03	23/06/2024	62.1	35.1	28.7	23.9	20.5
18:15:00	F03	23/06/2024	37.1	24.7	27.3	23.1	19.9
18:45:00	F03	23/06/2024	57	29.2	28.1	23.3	19.9
19:15:00	F03	23/06/2024	42.3	24.8	27.1	23.1	20
19:45:00	F03	23/06/2024	41.8	25.4	28	23.9	20.6
20:15:00	F03	23/06/2024	55.6	27.2	27.1	23	19.4
20:45:00	F03	23/06/2024	42	24.4	27	22.6	19.4
21:15:00	F03	23/06/2024	41.4	23.4	25.9	21.5	18.9
21:45:00	F03	23/06/2024	36.9	22.7	25.4	21.2	18.4
22:15:00	F03	23/06/2024	38.4	21.9	24.6	19.9	17.9
22:45:00	F03	23/06/2024	36.4	22	24.6	20.2	18
23:15:00	F03	23/06/2024	55.8	24.2	23.3	18.7	17.3
23:45:00	F03	23/06/2024	37.7	20.8	22.8	18.4	17.1
00:15:00	F03	24/06/2024	54.2	22.9	22.2	18.3	17.1
00:45:00	F03	24/06/2024	50.2	20.6	21	17.8	16.9
01:15:00	F03	24/06/2024	33.1	19.8	21.2	18.2	17.4
01:45:00	F03	24/06/2024	35.1	19.3	20.8	17.8	16.8
02:15:00	F03	24/06/2024	33	19.1	20.7	17.2	16.4
02:45:00	F03	24/06/2024	38.9	18.1	18.7	17.1	16.3
03:15:00	F03	24/06/2024	30.9	17.8	18.7	16.9	16.3
03:45:00	F03	24/06/2024	32.5	18	19.5	17	16.2
04:15:00	F03	24/06/2024	32.2	19.4	21.4	17.8	16.7
04:45:00	F03	24/06/2024	33.7	20	21.2	17.5	16.5
05:15:00	F03	24/06/2024	53.2	31.9	32.6	31.7	30.8
05:45:00	F03	24/06/2024	36.8	30	32.4	31.2	20.9
06:15:00	F03	24/06/2024	37.7	23.8	26.2	21.6	20.2
06:45:00	F03	24/06/2024	39.9	23.5	26.2	21.4	19
07:15:00	F03	24/06/2024	50.2	25.2	27.8	22.9	19.9
07:45:00	F03	24/06/2024	80.8	46.4	29	24.4	20.8
08:15:00	F03	24/06/2024	52.3	28.8	28.8	23.8	21.1
Plot F03 Bedroom							
15:45:00	F03	21/06/2024	52.9	29.5	30.4	25.5	22.5
16:15:00	F03	21/06/2024	61.3	32.3	30.6	25.7	22.3
16:45:00	F03	21/06/2024	41.7	26.1	28.5	24.7	21.4
17:15:00	F03	21/06/2024	54.6	31.3	30.1	25.4	21.5
17:45:00	F03	21/06/2024	52.8	31.8	29.6	24.8	21
18:15:00	F03	21/06/2024	55.1	28.6	29.2	25	21.7
18:45:00	F03	21/06/2024	50.3	33.3	34.7	25.7	21.3
19:15:00	F03	21/06/2024	45.5	26.2	28.6	24.3	20.7
19:45:00	F03	21/06/2024	45.5	26.5	28.8	24.2	20.2
20:15:00	F03	21/06/2024	40.3	26	28.9	24.4	20.2
20:45:00	F03	21/06/2024	39.9	27.9	30.5	27	22.9



Start	Plot	Date	L _{Amax}	L _{Aeq}	L _{A10}	L _{A50}	L _{A90}
21:15:00	F03	21/06/2024	49.4	28.8	31	27.4	23.9
21:45:00	F03	21/06/2024	39.2	27.5	29.8	26.5	23.5
22:15:00	F03	21/06/2024	45	29.3	31.8	28	24.3
22:45:00	F03	21/06/2024	43.5	28.3	30.8	26.7	22.2
23:15:00	F03	21/06/2024	40.4	28.5	31.4	27.2	23.3
23:45:00	F03	21/06/2024	36.6	25.9	29.2	24.6	18.6
00:15:00	F03	22/06/2024	39.3	28.9	30.6	28.6	26.2
00:45:00	F03	22/06/2024	38.5	27.7	29.6	27.9	17.8
01:15:00	F03	22/06/2024	40.6	21.7	23.9	17.3	14.5
01:45:00	F03	22/06/2024	48.2	21.9	23.7	17.3	14.7
02:15:00	F03	22/06/2024	35.4	19.7	22.3	16.2	14.3
02:45:00	F03	22/06/2024	54.7	24.5	21.9	15.8	14.1
03:15:00	F03	22/06/2024	35.6	20.6	22.7	19.2	16.1
03:45:00	F03	22/06/2024	36.8	20.9	22.8	19.1	16.7
04:15:00	F03	22/06/2024	48	21.7	22	16.8	14.5
04:45:00	F03	22/06/2024	39.5	19.9	21.9	16.5	14.4
05:15:00	F03	22/06/2024	38.8	19.8	21.4	16.2	14.6
05:45:00	F03	22/06/2024	38.9	20.4	22.8	15.9	14.1
06:15:00	F03	22/06/2024	40	21.9	24.6	17.6	14.9
06:45:00	F03	22/06/2024	36	22.7	25.5	19.8	16.6
07:15:00	F03	22/06/2024	52.8	25.9	28.7	21.8	18.2
07:45:00	F03	22/06/2024	42.8	25.6	29.3	22.5	17.9
08:15:00	F03	22/06/2024	44	25.4	28.8	22.5	17.7
08:45:00	F03	22/06/2024	40.4	24.9	28.3	22.1	17.4
09:15:00	F03	22/06/2024	43.8	25.6	28.8	23.2	18.9
09:45:00	F03	22/06/2024	39.7	25.4	28.4	23.5	19.9
10:15:00	F03	22/06/2024	46.4	26.4	29	24.6	21.1
10:45:00	F03	22/06/2024	53.2	29.5	30	24.9	21.5
11:15:00	F03	22/06/2024	50.4	29.2	29.3	24.5	21.3
11:45:00	F03	22/06/2024	45.9	26.2	28.9	24.7	20.9
12:15:00	F03	22/06/2024	46	25.7	28.4	24.2	20.7
12:45:00	F03	22/06/2024	43.1	26.6	28.9	24.4	20.6
13:15:00	F03	22/06/2024	48.1	26.6	29.2	25.2	21
13:45:00	F03	22/06/2024	44.9	31.6	32.9	31.1	29.6
14:15:00	F03	22/06/2024	56.3	36.6	38.6	35.3	32.8
14:45:00	F03	22/06/2024	56.8	40.1	42.5	39.3	35.6
15:15:00	F03	22/06/2024	50.9	38.8	42.2	37.1	33
15:45:00	F03	22/06/2024	55.3	39.2	41.6	37.9	34.4
16:15:00	F03	22/06/2024	47.3	36.6	39.8	35.5	27.9
16:45:00	F03	22/06/2024	51	39.4	41.9	38.4	34.7
17:15:00	F03	22/06/2024	53.6	38.8	41.3	37.8	34.2
17:45:00	F03	22/06/2024	51.9	36.5	38.9	35.5	31.3
18:15:00	F03	22/06/2024	58.4	36.4	39.1	35.2	27.6
18:45:00	F03	22/06/2024	58.1	33.3	31.6	27.6	25
19:15:00	F03	22/06/2024	47.5	27.2	29.6	25.8	22.2
19:45:00	F03	22/06/2024	42.6	26.5	29.3	24.4	20.6
20:15:00	F03	22/06/2024	56.7	32.2	30.5	25.7	22.1
20:45:00	F03	22/06/2024	42.8	26.6	29.3	24.9	21.4
21:15:00	F03	22/06/2024	42.1	26.1	28.8	24.8	20.8



Start	Plot	Date	L _{Amax}	L _{Aeq}	L _{A10}	L _{A50}	L _{A90}
21:45:00	F03	22/06/2024	48.7	25.4	28	22.9	19.2
22:15:00	F03	22/06/2024	60	32	29	23.1	18.7
22:45:00	F03	22/06/2024	42.3	24.6	27.4	22.5	19.3
23:15:00	F03	22/06/2024	36.5	24.1	27.2	22	19.1
23:45:00	F03	22/06/2024	40.5	24.5	27.8	21.9	19.1
00:15:00	F03	23/06/2024	42.2	23.5	26.4	20.9	18.1
00:45:00	F03	23/06/2024	45.1	25.3	27.5	23.1	18.2
01:15:00	F03	23/06/2024	38	25	26.9	24.1	21.1
01:45:00	F03	23/06/2024	36.9	24.2	26.1	23.8	18.3
02:15:00	F03	23/06/2024	34.7	24.8	25.9	24.1	23.1
02:45:00	F03	23/06/2024	44.5	28.4	30.5	28.6	23.5
03:15:00	F03	23/06/2024	38.1	29.6	30.7	29.4	28.2
03:45:00	F03	23/06/2024	33.6	23.7	25	22.7	21.2
04:15:00	F03	23/06/2024	35.1	22.6	24.5	21.7	17.9
04:45:00	F03	23/06/2024	36.4	20.4	22.7	17.9	16.3
05:15:00	F03	23/06/2024	32.9	19.8	21.8	17.8	16.3
05:45:00	F03	23/06/2024	36	20.1	22.1	17.5	16.1
06:15:00	F03	23/06/2024	37.3	20.6	23.1	17.7	16.1
06:45:00	F03	23/06/2024	57	25.6	24.6	18.5	16.3
07:15:00	F03	23/06/2024	45.4	24.1	27	21.2	17.4
07:45:00	F03	23/06/2024	46	25.4	28.4	22.5	19.5
08:15:00	F03	23/06/2024	37.7	24.8	28	22.5	20
08:45:00	F03	23/06/2024	44.4	24.1	27.1	21.4	18
09:15:00	F03	23/06/2024	41.4	24.3	27.1	22.4	18.5
09:45:00	F03	23/06/2024	42.8	25.7	28.2	24.3	20.9
10:15:00	F03	23/06/2024	44.2	24.1	27.1	21.7	18.4
10:45:00	F03	23/06/2024	41.7	24.4	27.7	22.3	18
11:15:00	F03	23/06/2024	66.5	34.1	28.4	24	20.1
11:45:00	F03	23/06/2024	47.1	24.9	27.4	23	19.5
12:15:00	F03	23/06/2024	46.2	25.2	27.9	23.4	19
12:45:00	F03	23/06/2024	43.1	26	28.3	24.9	22.4
13:15:00	F03	23/06/2024	49.7	26.5	28.4	23.4	19
13:45:00	F03	23/06/2024	40.8	25.5	28.2	23.7	19.9
14:15:00	F03	23/06/2024	40.6	25.7	28.5	24.2	20.6
14:45:00	F03	23/06/2024	48	27	29.3	24.8	21.1
15:15:00	F03	23/06/2024	40.5	25.4	28.3	24	20.4
15:45:00	F03	23/06/2024	50.2	27.3	28.7	24.1	20.7
16:15:00	F03	23/06/2024	46.8	30.7	31.9	30	28.5
16:45:00	F03	23/06/2024	53.5	30.4	31.6	29.3	25.1
17:15:00	F03	23/06/2024	47.7	28.5	30	26.4	24.1
17:45:00	F03	23/06/2024	63.5	36.5	30.7	26	22.5
18:15:00	F03	23/06/2024	40.8	26.3	29.2	24.7	21
18:45:00	F03	23/06/2024	57.5	31.3	30.3	25.3	21.6
19:15:00	F03	23/06/2024	42.9	27	29.5	25.3	22.1
19:45:00	F03	23/06/2024	44.2	27.6	30.1	26.2	23
20:15:00	F03	23/06/2024	56.4	29.3	29.4	25.4	22
20:45:00	F03	23/06/2024	43.6	26.7	29.3	24.9	21.5
21:15:00	F03	23/06/2024	46	25.3	28	23.1	19.8
21:45:00	F03	23/06/2024	38.9	24.4	27.5	22.8	19



Start	Plot	Date	L _{Amax}	L _{Aeq}	L _{A10}	L _{A50}	L _{A90}
22:15:00	F03	23/06/2024	36	23.5	26.6	21.1	18.1
22:45:00	F03	23/06/2024	38.6	23.6	26.8	21.4	18.1
23:15:00	F03	23/06/2024	50.1	23.8	25.5	19.5	17
23:45:00	F03	23/06/2024	38.1	21.5	24.6	18	14.4
00:15:00	F03	24/06/2024	44.9	21.2	23.9	17.5	14.4
00:45:00	F03	24/06/2024	45.7	20.3	22.2	16.2	14
01:15:00	F03	24/06/2024	34.8	20.1	22.5	17.2	15.3
01:45:00	F03	24/06/2024	34	19.4	22	16.6	14.6
02:15:00	F03	24/06/2024	37.8	19.4	22	15.5	13.7
02:45:00	F03	24/06/2024	39.9	18.1	19.5	16.2	14
03:15:00	F03	24/06/2024	32.2	18.1	19.5	16.5	15.3
03:45:00	F03	24/06/2024	33.9	18.7	20.6	17.5	15.7
04:15:00	F03	24/06/2024	33.9	20.4	22.5	18.6	17.1
04:45:00	F03	24/06/2024	36.2	20.6	22.6	18.4	17.1
05:15:00	F03	24/06/2024	40.8	29	29.9	28.7	27.5
05:45:00	F03	24/06/2024	38.7	27.9	30	28.3	20.1
06:15:00	F03	24/06/2024	45.8	24.9	28	21.5	18.9
06:45:00	F03	24/06/2024	40.9	24.7	28	21.8	17.7
07:15:00	F03	24/06/2024	50.1	27	29.9	24.5	20.2
07:45:00	F03	24/06/2024	69.2	36.9	31.3	26.5	22.2
08:15:00	F03	24/06/2024	55.1	30.5	30.6	25.5	22

Table B1 – Fully tabulated internal noise measurement results for 67 Old Market Street, Plot F03



Appendix C – Graphed Results

Plot F03 Living Room (21-06-24/24-06-24)

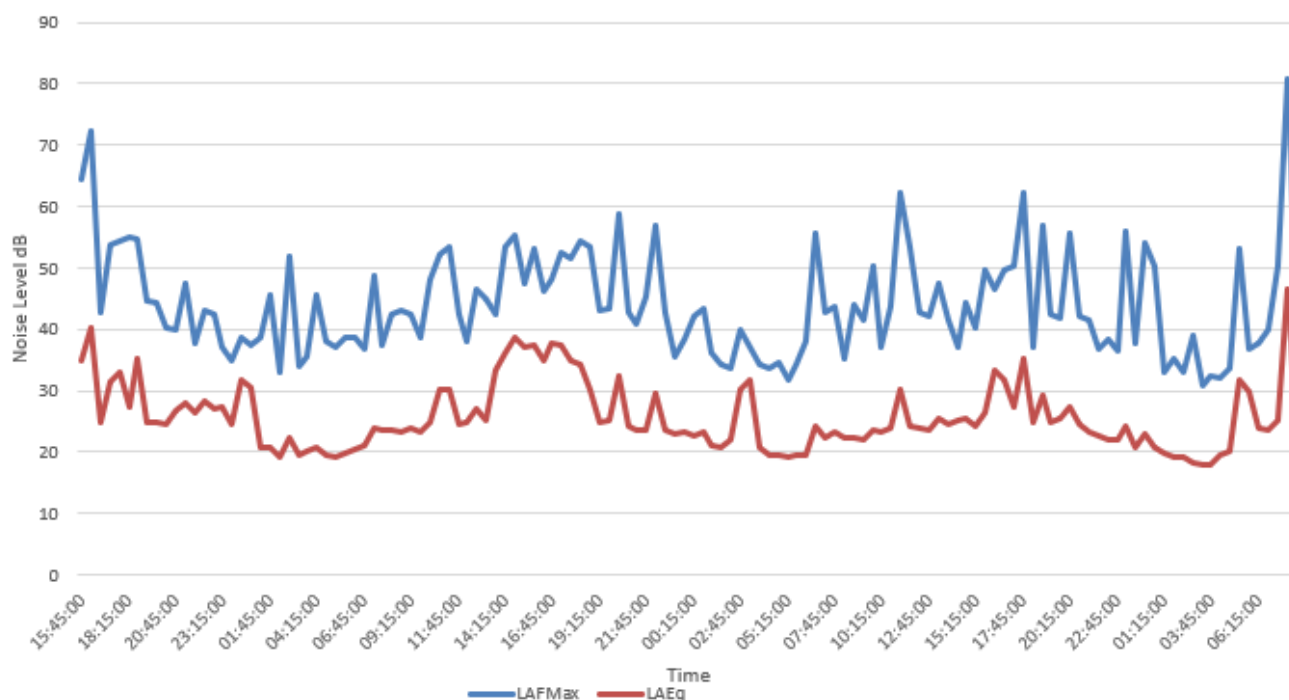


Figure C1 – F03 Living Room graphed measurement data

Plot F03 Bedroom (21-06-24/24-06-24)

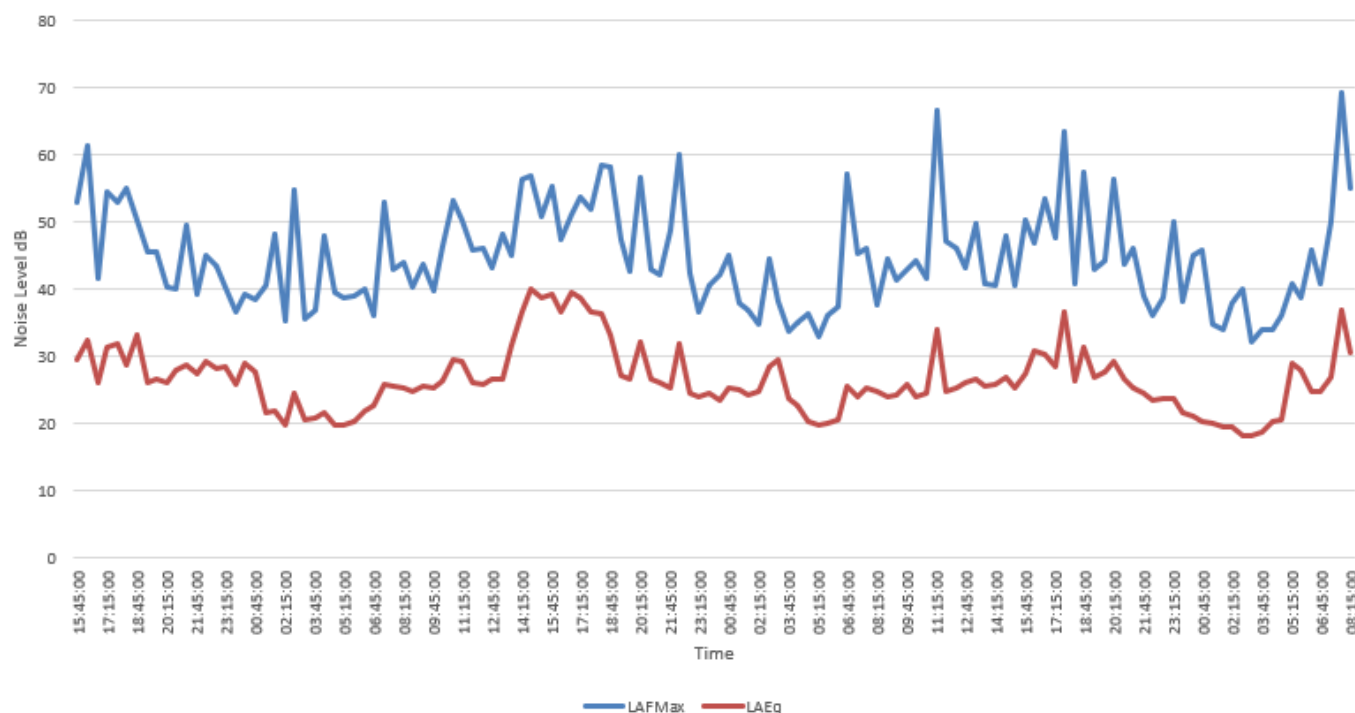


Figure C2 – F03 Bedroom graphed measurement data