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ACOUSTICS PLUS

Proposed Residential Development

Alliance House, 29-30 High Holborn, London, WC1V 6AZ.

Noise Impact Assessment

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Noise Impact Assessment Proposed Mixed Use Development	
Project Address:	Alliance House, 29-30 High Holborn London WC1V 6AZ
Project Reference:	103918

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Reviewer:		**Phil Huffer**	**Principal Consultant**	**01/11/2019**

1. INTRODUCTION

1.1 Acoustics Plus Ltd (APL) is an independent firm of multi-disciplinary acoustic engineers. APL is engaged by both private and public sector clients. APL is a registered member of The Association of Noise Consultants (ANC) and the author is a corporate member of The Institute of Acoustics (IOA).

1.2 APL has been instructed by, Westcombe Homes, to consider and advise upon the noise implications of the proposed redevelopment of the site. The development proposals will comprise the erection of a 4 storey rear extension at 2nd, 3rd, 4th and 5th floor levels to create 4 no. self-contained flats (1 no. 2-bed and 3 no. studios).

1.3 It is understood that the Local Planning Authority (LPA) will require more information, specifically in regard of noise. It is further understood that the noise matters are in connection with the proposed new buildings proximity to nearby highways and existing commercial premises.

1.4 The object of this report is to determine environmental noise levels at the site in accordance with Government planning policy guidance and Camden Council. Outline comments regarding any noise control measures will also be provided to demonstrate that the ingress of noise may be properly controlled.

1.5 The report will give due regard to the following documents:

(a) *National Planning Policy Framework February 2019 – Ministry of Housing Communities & Local Government;*

(b) *Noise Policy Statement for England (NPSE) March 2010 – Department for Environment, Food and Rural Affairs;*

(c) *ProPG: Planning and Noise May 2017 Professional Practice Guidance on Planning and Noise;*

(d) *BS8233:2014 "Sound insulation and noise reduction for buildings – Code of Practice";*

(e) *Planning condition No.3 of Decision notice 2015/6112?P*

2. BASELINE SITUATION

2.1 The Application Site (the "site") is located at Alliance House, 29-30 High Holborn, London, WC1V 6AZ. The site (highlighted in red) is shown in Diagram 1.

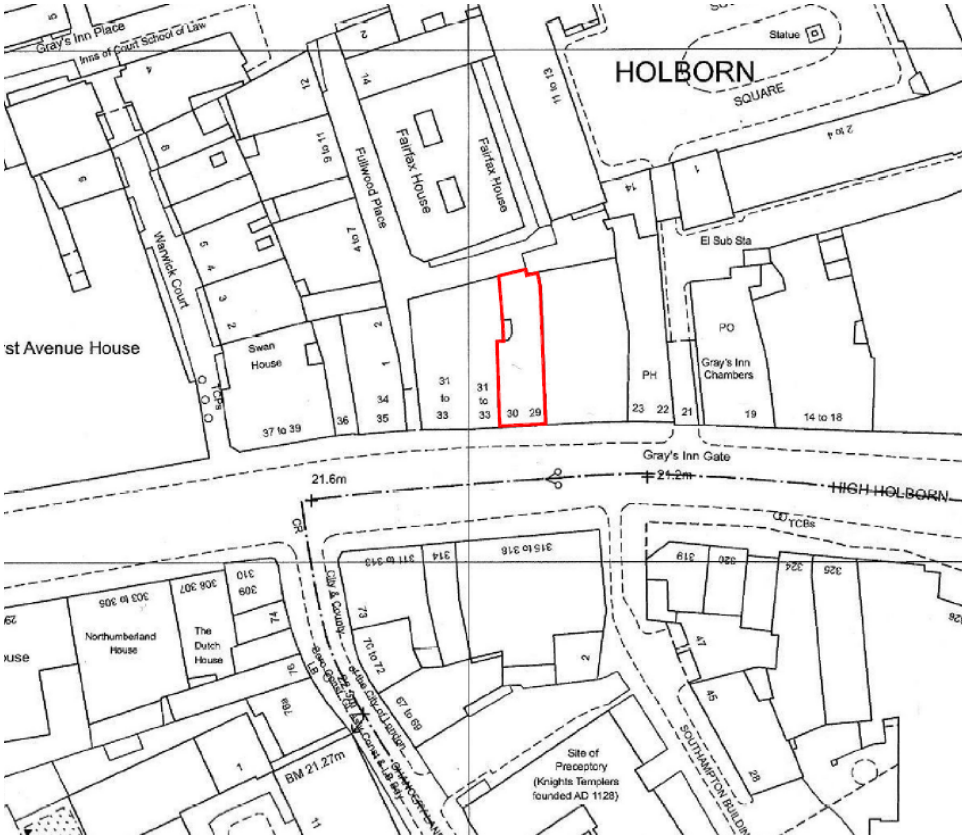

Diagram 1

2.2 The development proposals will comprise the erection of a 4 storey rear extension at 2nd, 3rd, 4th and 5th floor levels to create 4 no. self-contained flats (1 no. 2-bed and 3 no. studios).

2.3 The proposal would result in the creation of dwellings surrounded by largely commercial and office use.

3. NOISE CRITERIA

New residential accommodation

3.1 Camden Council have conditioned the application and Condition No.3 is reproduced below:

> *"The noise level in rooms at the development hereby approved shall meet the 'Good' noise standard specified in BS8233:1999 for internal rooms and external amenity areas".*
>
> *Reason: To ensure that the amenity of occupiers of the development site is not adversely affected by noise in accordance with policy CS5 of the London Borough of Camden Local Development Framework Core Strategy and policy DP28 of the London Borough of Camden Local Development Framework Development Policies*.

3.2 It is noted that BS8233:1999 is superseded by BS8233:2014 and that for the purposes of this report the newer standard guidelines will be adopted.

3.3 The new National Planning Policy Framework (NPPF) released in February 2019 has replaced planning policy guidance which previously covered planning and pollution control and new development in England. The purpose of the planning system is to contribute to the achievement of sustainable development. There are three dimensions to sustainable development: economic, social and environmental. The environmental role is to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

3.4 One of the core planning principles is to contribute to conserving and enhancing the natural environment and reducing pollution. Planning policies and decisions should contribute to and enhance the natural and local environment by:

(a) *protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);*

(b) *recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the*

economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;

(c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate;

(d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;

(e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and

(f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

3.5 Paragraph 180 of the NPPF states Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

(a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life (see Explanatory Note to the Noise Policy Statement for England (Department for Environment, Food & Rural Affairs, 2010);
(b) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life (see Explanatory Note to the Noise Policy Statement for England (Department for Environment, Food & Rural Affairs, 2010);
(c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.

3.6 The Noise Policy Statement for England (NPSE) was developed by DEFRA and published in March 2010. The vision of the NPSE is to 'Promote good health and good quality of life through the effective management of noise within the context of Government policy on sustainable development.

3.7 The NPSE aims to 'Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

(a) avoid significant adverse impacts on health and quality of life;
(b) mitigate and minimise adverse impacts on health and quality of life; and
(c) where possible, contribute to the improvement of health and quality of life'.

3.8 The Professional Practice Guidance on Planning and Noise (ProPG) has been produced to provide practitioners with guidance on a recommended approach to the management of noise within the planning system in England. The recommended ProPG internal noise level guidelines are described in Table 1. These guidelines reflect and extend current practice contained in BS8233:2014 (Sound Insulation and Noise Reduction for Buildings – Code of Practice). For clarity, blue italic font is used to highlight additions to the guidance contained in Table 4 of BS8233:2014. The dB values provided in the table for different activities are target levels. The table plus supporting notes are referred to as ProPG internal noise level guidelines.

Activity	Location	07:00-23:00hrs	23:00-07:00hrs
Resting	Living room	35dB $L_{Aeq,16hr}$	-
Dining	Dining room/area	40dB $L_{Aeq,16hr}$	-
Sleeping (daytime resting)	Bedroom	35dB $L_{Aeq,16hr}$	30dB $L_{Aeq,8hr}$ 45dB $L_{Amax,F}$

Table 1

NOTE 1 The Table provides recommended internal L_{Aeq} target levels for overall noise in the design of a building. These are the sum total of structure-borne and airborne noise sources. Ground-borne noise is assessed separately and is not included as part of these targets, as human response to ground-borne noise varies with many factors such as level, character, timing, occupant expectation and sensitivity.

NOTE 2 The internal L_{Aeq} target levels shown in the Table are based on the existing guidelines issued by the WHO and assume normal diurnal fluctuations in external noise. In cases where local conditions do not follow a typical diurnal pattern, for example on a road serving a port with high levels of traffic at certain times of the night, an appropriate alternative period, e.g. 1 hour, may be used, but the level should be selected to ensure consistency with the internal L_{Aeq} target levels recommended in the Table.

NOTE 3 These internal L_{Aeq} target levels are based on annual average data and do not have to be achieved in all circumstances. For example, it is normal to exclude occasional events, such as fireworks night or New Year's Eve.

NOTE 4 Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$, depending on the character and number of events per night. Sporadic noise events could require separate values. In most circumstances in noise sensitive rooms at night (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45dB $L_{Amax,F}$ more than 10 times a night. However, where it is not reasonably practicable to achieve this guideline then the judgement of acceptability will depend not only on the maximum noise levels but also on factors such as the source, number, distribution, predictability and regularity of noise events (see Appendix A).

NOTE 5 Designing the site layout and the dwellings so that the internal target levels can be achieved with open windows in as many properties as possible demonstrates good acoustic design. Where it is not possible to meet internal target levels with windows open, internal noise levels can be assessed with windows closed, however any façade openings used to provide whole dwelling ventilation (e.g. trickle ventilators) should be assessed in the "open" position and, in this scenario, the internal L_{Aeq} target levels should not normally be exceeded, subject to the further advice in Note 7.

NOTE 6 Attention is drawn to the requirements of the Building Regulations.

NOTE 7 Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal L_{Aeq} target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved. The more often internal L_{Aeq} levels start to exceed the internal L_{Aeq} target levels by more than 5 dB, the more that most people are likely to regard them as "unreasonable". Where such exceedances are predicted, applicants should be required to show how the relevant number of rooms affected has been kept to a minimum. Once internal L_{Aeq} levels exceed the target levels by more than 10 dB, they are highly likely to be regarded as "unacceptable" by most people, particularly if such levels occur more than occasionally. Every effort should be made to avoid relevant rooms experiencing "unacceptable" noise levels at all and where such levels are likely to occur frequently, the development should be prevented in its proposed form (see Section 3.D).

4. NOISE OUTLINE

4.1 In order to determine the environmental noise level, consideration must be given to the noise levels on the site from the presence of urban traffic movements and nearby commercial activities.

4.2 Given the proposed site, measurements were obtained at second floor level at a location indicative of the proposed second floor residential accommodation that will be closest to the dominant noise source affecting the site (existing installation of mechanical plant).

4.3 This measurement location was chosen to represent worst case noise levels that would be experienced at the façades of the residential accommodation.

4.4 The particulars of the measurement exercise are recorded below:

Date:	25-28 October 2019
Start Time:	12:05 hrs
Location:	Second floor level overlooking southern side of site.

4.5 The measurements carried out during the exercise are recorded below.

$L_{Aeq, 5mins}$ (dB re 20μPa) - average equivalent sound pressure level
$L_{Amax, 5mins}$ (dB re 20μPa) - maximum sound pressure level

4.6 The measurements obtained during the exercise are presented in Appendix A.

5. EQUIPMENT

All measurements were obtained using the following equipment:

- *Svantek Svan971 Class 1 Serial No. 51704*
- *Rion Calibrator Type NC-74 Class 1 Serial No. 00410215*

5.1 The relevant equipment carries full and current traceable calibration. The equipment, where necessary, was calibrated prior to and after the measurements were carried out.

6. NOISE OUTLINE

New residential accommodation

6.1 Given the monitoring positions and the measurements obtained, it is possible to calculate the $L_{Aeq,\ T}$ values experienced during the day and night-time periods.

6.2 When determining an internal noise level, BS8233 specifies a design range in terms of $L_{Aeq,\ T}$. With regard to T, BS8233 states *"The time period should be appropriate for the activity involved (e.g. 23:00-07:00 for bedrooms)".*

6.3 For the purposes of this report and in line with the recommendations of the supplementary planning document and BS8233, the following time periods are considered.

(a) 07:00 hrs to 23:00 hrs for living, dining rooms & studios (day)
(b) 23:00 hrs to 07:00 hrs for bedrooms (night)

6.4 In accordance with these time periods, the appropriate average $L_{Aeq,T}$ level during the relevant period has been considered. This has been calculated based on the $L_{Aeq,5min}$ measurements obtained during the assessment.

Location	L_{Aeq}	L_{Amax}
07:00 – 23:00	58	-
23:00 – 07:00	57	71

Table 2

6.5 BS8233 refers to maximum levels that are "not normally exceeded". From the data collected, typical maximum levels were calculated in the spirit of BS8233 and in line with the recommendations of ProPG, the 10th highest $L_{Amax,F}$ level was chosen. ProPG states as follows:

- *"In noise-sensitive rooms at night (e.g. bedrooms) individual noise events (from all sources) should not normally exceed 45dB $L_{Amax,F}$ more than 10 times a night as this represents a threshold below which the effects of individual noise events on sleep can be regarded as negligible."*

Outside amenity spaces

6.6 When considering external noise levels and the noise levels experienced within the proposed amenity areas, BS8233:2014 "Guidance on sound insulation and noise reduction for buildings" states:

"For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB LAeq,T, with an upper guideline value of 55 dB LAeq,T which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited."

6.7 Further, World Health Organisation (WHO) "Guidelines on Community Noise" suggests a maximum external noise level of 55 dB(A) L_{Aeq} between 7am and 11pm.

6.8 Onsite noise measurements show that the first floor façade facing onto the existing installation of mechanical plant located at ground and lower ground floor levels experience average noise levels of 58dB L_{Aeq} during the daytime period, given that the proposed amenity areas are to be located at sixth floor level and set back from the building boundary and so at a greater distance away from commercial activities / plant noise and will be further afforded screening by the building envelope, this would reduce the noise level to below the upper guideline value of 55dB $L_{Aeq,T}$. for these external amenity spaces.

7. GLAZING RECOMMENDATIONS

7.1 With regard to site noise levels, the average daytime and night time noise levels recorded are detailed within Table 2, the full measurement results are presented in Appendix A.

7.2 It is recommended that in order to meet the LPA requirements, acoustic fenestration measures be considered in order to protect the daytime and night time amenity of future occupiers, it is understood that mechanical ventilation is to be provided to the residential units and so passive / trickle ventilation elements will not need to be considered within the calculation exercises.

7.3 To reduce daytime and night time noise exposure in the proposed dwellings, attention should be given to the sound insulation of the façade of the building. The windows will normally be the weakest part of any façade.

7.4 Based on outline information supplied, it is anticipated the proposed external wall constructions will have an insulation value of around R_w74dB for the wall system. The proposed roof construction will have an insulation value of around R_w58dB these performance values were obtained from proprietary prediction software 'Insul' produced by Marshall Day, a copy of the prediction outputs is contained within Appendix B of this report. The predicted outputs obtained from Insul have been corrected to account for laboratory predictions and their likely performance when installed onsite, a nominal -7-9dB correction has been assumed for the different constructions. Given the external noise levels it is recommended that the glazing performances be considered. These will provide the necessary sound insulation values to reduce the internal noise levels to an acceptable level.

7.5 From the calculated levels it is possible to predict the internal noise levels within habitable rooms. In order to undertake this, consideration has been given to the following formula:

$$SPL_{in} = SPL_{out} + 10Log_{10}\left(\frac{A_0}{S}10^{\frac{-D_{n,e}}{10}} + \frac{S_{wi}}{S}10^{\frac{-R_{wi}}{10}} + \frac{S_{ew}}{S}10^{\frac{-R_{ew}}{10}} + \frac{S}{A}\right) + 3$$

where:

SPL_{in} =	sound pressure level inside the room
SPL_{out} =	highest sound pressure level outside the room
A_0 =	reference absorption area of $10m^2$
S_{wi} =	area in m^2 of the windows of the room
S_{ew} =	area in m^2 of the external wall of the room
R_{wi} =	weighted sound reduction index of window (R_w+C_{tr})
R_{ew} =	weighted sound reduction index of external wall
S =	area through which sound is transmitted (m^2)
A =	amount of acoustic absorption in room (m^2)
K =	a numerical factor associated with sound incidence

Equation 1

7.6 Room dimensions and the size of windows have been extracted from scaled drawings. For the purposes of the calculation exercises, a typical example of a room type at various levels has been considered.

7.7 Due to the varying methods of quantifying the sound insulation performance of building elements, the following parameters are described:

- *R_w Weighted Sound Reduction Index: Single figure sound insulation value derived from the measured sound reduction index R.*
- *C_{tr} Spectrum adaptation term: The correction to a sound insulation quantity (such as $D_{nT,w}$) to take account of a specific sound spectra. See BS EN ISO 717 – 1: 1997 – Noise spectrum No. 2 - noise from traffic, aircraft, factories, railways and disco's*

7.8 To meet the criteria, Equation 1 was rearranged in terms of R_w (the sound reduction index of the window). The window specification required in order to achieve the internal noise levels as set out in BS8233 are as shown in Table 3, the rooms chosen are typical of worst case scenarios of rooms with the largest areas of glazing combined with the smallest volumes at various floor levels of the building. Details of the elements considered within the calculation exercises are contained within Appendix C of this report.

Location	Room use	Sound Reduction Index Glazing (R_w)
First floor	Master bedroom	34
First floor	Bedroom2	34
Second floor	Kitchen diner	32
Third floor	Studio	33
Fifth floor	Studio	34

Table 3

7.9 Suggested window specifications are detailed in Appendix D. These windows have published R_w performances. The published performance figures for these windows were obtained from laboratory measurements of the glass only. The best workmanship practices and installation guidelines should be followed to ensure that the stated performances can be obtained once installed.

7.10 Alternatively, it is highly recommended that the glazing is over specified to allow a 5dB workmanship tolerance (hence requirement = R_w + 5dB workmanship correction, required especially at 125Hz and 250Hz frequencies) or a tested glazing system (glass and frame) with the required octave band performance levels is chosen.

7.11 To achieve the values of sound reduction required by the glazing, the following configurations could be utilised, these products (taken from Guardian Glass), are available on the market and would meet the performance criteria, other manufacturers are available. Details of the systems are contained within Appendix D.

Glazing configuration examples:

Guardian Glass 6mm float glass /10mm void/ 4mm float glass R_w 34dB

Guardian Glass 6mm float glass /10mm void/ 3mm float glass R_w 33dB

Guardian Glass 5mm float glass /10mm void/ 3mm float glass R_w 32dB

Purge Ventilation

7.12 Ventilation requirements for dwellings (and other buildings) are covered under the Building Regulations 'Approved Document F – Means of Ventilation, 2010 Edition1 (ADF). Unfortunately, ADF contains very little information on the potential interactions between ventilation and the acoustic design of dwellings.

7.13 ADF requires that:

- *"There shall be adequate means of ventilation provided for people in the building"*
- *"Ventilation is simply the removal of 'stale' indoor air from a building and its replacement with 'fresh' outside air"*.

7.14 Ventilation is required for one or more of the following purposes:

a) *Provision of outside air for breathing;*

b) *Dilution and removal of airborne pollutants, including odours;*

c) *Control of excess humidity (arising from water vapour in the indoor air);*

d) *Provision of air for fuel-burning appliances (which is covered under Part J of the Building Regulations).*

7.15 Ventilation may also provide a means to control thermal comfort but this is not controlled under the Building Regulations. Part L addresses minimising energy use due to the effects of solar gain in summer.'

7.16 ADF describes three types of ventilation provision and associated ventilation rates. The types of ventilation are summarised below:

Type of ventilation	Location / Reason for ventilation	When is this required
Whole Dwelling Ventilation	To provide fresh air to the building and to dilute and disperse residual water vapour not dealt with by extract ventilation as well as removing water vapour and other pollutants which are released throughout the building	Continuously
Extract Ventilation	From rooms where most water vapour and/or pollutants are released, e.g. due to activities such as cooking, bathing or photocopying. This is to minimise their spread to the rest of the building.	Continuous or Intermittent
Purge Ventilation	Throughout the building to aid removal of high concentrations of pollutants and water vapour released from occasional activities such as painting and decorating or accidental releases such as smoke from burnt food or spillage of water.	Occasionally

Table 4

7.17 It is proposed to install 'whole dwelling ventilation' to each residential unit.

7.18 In addition to the above ADF also states:

- *"Purge ventilation provisions may also be used to improve thermal comfort, although this is not controlled under the Building Regulations*.".

7.19 With reference to the provision of purge ventilation within habitable rooms, the approved document provides the following note. 'There may be practical difficulties in achieving this (e.g. if unable to open a window due to excessive noise from outside).' However, no objective guidance is provided in the Approved Document as to what constitutes "excessive noise" or how to resolve the practical difficulties.

7.20 Given the measured noise levels at the site and during occasions when purge ventilation is required with the windows open it should be noted that the acoustic performance of the building envelope will be reduced, typically reducing the insulation to no more than 10 to 15 dB(A). Most residents value the ability to open windows at will, for a variety of reasons but the internal target noise levels can only be practically achieved with windows closed. This is the case as this site is in an urban area adjacent to transportation noise sources.

7.21 It should also be noted that the internal noise level guidelines are generally not applicable under "purge ventilation" conditions as defined by Building Regulations Approved Document F, as this should only occur occasionally (e.g. to remove odour from painting and decorating or from burnt food).

8. CONCLUSION

8.1 Based on the foregoing, it can be concluded that:

(a) The average and maximum noise levels measured at the proposed development during the day and night time periods are detailed in Table 2;

(b) It has been demonstrated that the internal noise level requirements of Camden Council can be met;

(c) The minimum required glazing performances are detailed in Table 3;

(d) The required level of sound insulation needed to achieve this internal level is based on the considered building envelope make up and measured external noise levels with the windows closed.

8.2 The noise level within the proposed sixth floor roof level amenity area will be below the upper guideline value of 55dB $L_{Aeq, T.}$

Figures

Alliance House, 29-30 High Holborn, WC1V 6AZ and surrounding area

Site boundary

Figure 1

Figure 2

view south

Figure 3

measurement location

Figure 3

Figure 4

Figure 5

Figure 6

view north

Figure 7

Figure 8

view from
rear of site

Figure 9

Appendix A

Background noise measurementrs at Alliance House, 29-30 High Holborn, London, WC1V 6AZ.

No.	Date & time	LAFmax	LAeq	Leq 125 Hz	Leq 250 Hz	Leq 500 Hz	Leq 1000 Hz	Leq 2000 Hz	Leq 4000 Hz	LZmax125 Hz	LZmax250 Hz	LZmax500 Hz	LZmax1000 Hz	Lzmax 2000 Hz	Lzmax 4000 Hz
1	25/10/2019 12:05:00	67	61	63	62	59	56	51	46	68	65	62	65	63	59
2	25/10/2019 12:10:00	62	60	63	61	57	54	51	47	67	65	61	56	56	53
3	25/10/2019 12:15:00	66	59	63	61	57	54	50	46	68	64	62	59	64	56
4	25/10/2019 12:20:00	64	59	62	60	56	53	51	47	68	67	63	62	60	55
5	25/10/2019 12:25:00	63	59	63	61	58	54	49	43	68	67	62	58	59	54
6	25/10/2019 12:30:00	64	59	64	60	57	54	49	43	69	63	62	59	61	54
7	25/10/2019 12:35:00	63	59	64	60	57	54	50	45	68	65	61	58	60	55
8	25/10/2019 12:40:00	64	59	64	60	57	54	50	43	68	64	60	59	61	55
9	25/10/2019 12:45:00	66	59	64	60	57	54	51	46	68	64	64	59	65	58
10	25/10/2019 12:50:00	68	59	64	60	57	54	50	45	68	64	64	66	63	59
11	25/10/2019 12:55:00	68	59	64	60	57	54	51	46	69	64	65	64	65	64
12	25/10/2019 13:00:00	64	59	64	60	57	53	50	43	69	63	60	57	63	55
13	25/10/2019 13:05:00	65	59	64	60	57	53	50	43	69	69	63	62	63	56
14	25/10/2019 13:10:00	63	59	64	60	57	53	50	43	68	63	60	59	60	55
15	25/10/2019 13:15:00	65	59	64	60	57	54	50	43	68	65	61	59	64	55
16	25/10/2019 13:20:00	64	59	64	60	57	54	50	44	69	64	65	58	56	55
17	25/10/2019 13:25:00	70	61	64	61	58	56	51	47	68	65	71	65	64	60
18	25/10/2019 13:30:00	72	61	65	61	58	56	50	47	71	64	64	62	59	67
19	25/10/2019 13:35:00	65	58	62	59	56	52	48	45	66	62	61	60	64	59
20	25/10/2019 13:40:00	66	59	63	59	56	53	50	52	67	63	61	60	63	63
21	25/10/2019 13:45:00	62	57	62	59	56	52	46	40	67	63	59	56	57	55
22	25/10/2019 13:50:00	64	58	62	59	56	52	49	46	66	62	61	61	57	53
23	25/10/2019 13:55:00	63	58	62	59	56	52	48	44	66	62	61	61	57	59
24	25/10/2019 14:00:00	69	58	62	59	56	53	50	46	67	63	68	67	63	57
25	25/10/2019 14:05:00	71	59	62	59	56	53	51	46	68	65	67	69	70	62
26	25/10/2019 14:10:00	73	59	63	59	56	53	52	48	67	65	66	66	70	69
27	25/10/2019 14:15:00	62	57	62	59	56	52	46	40	66	62	60	56	56	55
28	25/10/2019 14:20:00	66	58	63	59	56	52	49	46	74	69	63	63	60	55
29	25/10/2019 14:25:00	62	57	63	58	56	52	48	44	71	64	60	58	55	53
30	25/10/2019 14:30:00	62	58	63	59	56	52	49	45	73	63	59	58	57	55
31	25/10/2019 14:35:00	69	57	62	59	56	52	47	42	66	62	68	64	65	63
32	25/10/2019 14:40:00	62	57	63	59	56	52	46	40	67	63	59	57	56	55
33	25/10/2019 14:45:00	76	66	63	60	57	59	59	58	66	65	63	74	71	69
34	25/10/2019 14:50:00	73	60	63	60	56	53	53	50	66	67	68	68	70	66
35	25/10/2019 14:55:00	72	58	62	59	56	53	50	46	66	63	64	70	70	68
36	25/10/2019 15:00:00	63	56	59	57	54	50	48	45	64	61	59	58	59	56
37	25/10/2019 15:05:00	62	56	62	58	55	51	45	39	66	64	58	55	59	55
38	25/10/2019 15:10:00	62	57	60	58	55	51	48	44	66	62	60	55	60	57
39	25/10/2019 15:15:00	63	56	60	57	54	50	45	39	67	63	63	57	58	56
40	25/10/2019 15:20:00	70	57	62	59	56	52	46	40	72	73	69	67	63	58
41	25/10/2019 15:25:00	71	58	62	59	56	53	48	41	78	74	69	68	62	54
42	25/10/2019 15:30:00	70	58	62	60	56	53	48	42	68	67	68	70	63	58
43	25/10/2019 15:35:00	75	61	62	60	56	53	54	53	65	66	62	67	70	69
44	25/10/2019 15:40:00	69	58	62	60	56	53	49	43	73	70	67	67	63	59
45	25/10/2019 15:45:00	64	57	62	59	56	52	47	41	71	67	63	62	60	58
46	25/10/2019 15:50:00	69	58	63	60	56	52	48	41	70	74	65	60	67	56
47	25/10/2019 15:55:00	63	57	62	59	56	52	46	40	66	62	61	59	56	53
48	25/10/2019 16:00:00	64	57	62	59	55	51	46	40	65	66	62	60	61	56
49	25/10/2019 16:05:00	72	60	63	62	59	55	49	40	77	78	73	69	62	50
50	25/10/2019 16:10:00	60	56	59	59	54	50	45	38	63	63	60	57	53	49
51	25/10/2019 16:15:00	76	61	64	63	60	54	49	40	77	80	76	69	64	53
52	25/10/2019 16:20:00	61	57	62	59	55	51	45	38	68	64	59	56	56	50
53	25/10/2019 16:25:00	58	57	62	59	55	51	45	38	65	62	59	53	50	43
54	25/10/2019 16:30:00	63	57	62	59	55	51	46	39	65	62	64	60	60	55
55	25/10/2019 16:35:00	61	56	61	59	55	51	46	39	66	62	59	56	56	56
56	25/10/2019 16:40:00	61	56	60	59	54	50	45	38	65	63	61	56	54	49
57	25/10/2019 16:45:00	64	57	61	60	56	52	46	40	67	63	61	59	59	57
58	25/10/2019 16:50:00	60	56	59	58	54	50	45	38	64	63	59	56	52	44
59	25/10/2019 16:55:00	60	57	61	59	55	51	46	39	66	62	59	56	54	53
60	25/10/2019 17:00:00	65	57	61	59	55	52	47	40	70	68	64	64	61	54
61	25/10/2019 17:05:00	59	55	59	59	54	50	45	38	66	64	58	53	53	50
62	25/10/2019 17:10:00	66	57	61	59	55	51	46	40	66	63	64	60	60	58
63	25/10/2019 17:15:00	62	56	60	58	55	51	46	40	65	62	61	57	59	55
64	25/10/2019 17:20:00	59	55	58	58	54	50	45	38	63	61	58	53	55	53
65	25/10/2019 17:25:00	63	57	61	59	56	51	46	39	67	64	61	58	60	57
66	25/10/2019 17:30:00	60	57	61	59	55	52	46	39	66	63	59	58	55	51
67	25/10/2019 17:35:00	61	58	63	60	57	53	47	40	70	64	60	59	53	49
68	25/10/2019 17:40:00	62	58	64	60	57	53	47	41	70	65	62	57	53	51
69	25/10/2019 17:45:00	64	59	64	60	57	54	48	41	70	65	64	60	55	51
70	25/10/2019 17:50:00	73	59	63	59	57	55	48	41	66	69	73	72	64	56
71	25/10/2019 17:55:00	66	58	64	60	57	53	48	41	69	67	65	61	58	53
72	25/10/2019 18:00:00	63	59	64	60	57	54	48	42	71	63	63	60	55	53
73	25/10/2019 18:05:00	63	59	64	60	57	54	48	42	68	63	62	60	56	47
74	25/10/2019 18:10:00	63	58	64	60	57	53	48	42	68	63	62	60	56	51
75	25/10/2019 18:15:00	62	58	64	60	57	53	47	42	69	63	63	60	57	48
76	25/10/2019 18:20:00	63	58	63	60	57	53	47	42	67	65	62	60	57	48
77	25/10/2019 18:25:00	63	59	64	59	57	54	48	42	69	63	63	60	56	51
78	25/10/2019 18:30:00	66	58	63	59	57	53	47	41	70	70	65	61	56	50
79	25/10/2019 18:35:00	63	57	61	58	56	51	46	38	65	62	62	60	56	48
80	25/10/2019 18:40:00	62	56	60	58	55	51	46	40	65	66	60	60	59	53
81	25/10/2019 18:45:00	63	56	59	57	54	50	45	38	67	65	61	60	56	48
82	25/10/2019 18:50:00	61	57	61	58	56	52	46	39	65	62	60	58	55	49
83	25/10/2019 18:55:00	61	57	61	58	55	51	46	39	67	64	62	58	56	47
84	25/10/2019 19:00:00	64	57	61	58	56	52	46	38	68	65	64	61	55	46
85	25/10/2019 19:05:00	64	56	61	57	55	51	45	38	71	65	66	62	56	48
86	25/10/2019 19:10:00	60	56	61	58	55	51	46	39	67	63	59	59	52	46
87	25/10/2019 19:15:00	63	56	61	57	55	51	45	39	65	62	61	60	57	48
88	25/10/2019 19:20:00	62	55	59	56	54	50	45	38	65	61	61	59	54	47
89	25/10/2019 19:25:00	63	56	61	57	55	52	46	39	65	62	61	60	57	47
90	25/10/2019 19:30:00	71	57	61	60	55	52	46	39	77	76	70	66	59	47
91	25/10/2019 19:35:00	66	57	62	59	55	52	46	39	65	66	67	65	60	52
92	25/10/2019 19:40:00	68	57	62	59	56	52	46	40	66	65	71	67	59	49
93	25/10/2019 19:45:00	74	57	62	59	56	53	46	40	67	67	68	75	63	64
94	25/10/2019 19:50:00	68	56	58	60	54	50	44	38	75	64	59	57	60	61
95	25/10/2019 19:55:00	62	57	61	60	55	51	46	38	65	63	59	60	58	45
96	25/10/2019 20:00:00	60	57	62	59	55	51	46	38	65	62	58	58	55	51
97	25/10/2019 20:05:00	61	57	61	59	55	51	46	39	66	62	59	59	54	51
98	25/10/2019 20:10:00	68	57	61	59	55	51	46	39	65	66	63	67	60	56
99	25/10/2019 20:15:00	70	57	62	59	55	53	47	39	65	63	60	71	62	48
100	25/10/2019 20:20:00	65	57	62	59	56	52	46	40	66	67	67	60	55	50
101	25/10/2019 20:25:00	63	57	61	59	56	52	46	39	66	64	61	61	56	48
102	25/10/2019 20:30:00	61	56	58	59	54	50	45	38	64	63	59	59	55	46
103	25/10/2019 20:35:00	65	56	58	58	54	50	46	38	62	61	58	65	51	43
104	25/10/2019 20:40:00	62	56	58	58	54	50	46	38	62	61	59	62	59	45
105	25/10/2019 20:45:00	64	55	57	58	54	50	45	38	62	61	65	63	55	50
106	25/10/2019 20:50:00	62	55	57	58	53	50	45	39	62	61	61	60	54	50
107	25/10/2019 20:55:00	61	55	57	57	53	50	45	38	62	61	58	60	52	45
108	25/10/2019 21:00:00	59	55	57	57	53	49	44	37	62	61	61	56	50	44
109	25/10/2019 21:05:00	58	55	57	58	53	49	44	37	62	61	58	56	52	48
110	25/10/2019 21:10:00	63	55	57	57	53	49	44	37	72	68	63	60	54	48
111	25/10/2019 21:15:00	58	55	57	57	53	49	44	38	64	61	58	56	53	44
112	25/10/2019 21:20:00	57	55	59	58	53	50	45	38	72	61	57	54	53	44
113	25/10/2019 21:25:00	57	55	57	57	53	49	44	37	62	61	57	52	50	47
114	25/10/2019 21:30:00	64	55	57	57	53	49	44	38	63	64	64	61	58	45
115	25/10/2019 21:35:00	62	55	58	57	53	49	43	37	67	64	63	62	55	52
116	25/10/2019 21:40:00	61	55	58	57	53	49	44	37	63	61	60	59	54	45
117	25/10/2019 21:45:00	62	55	58	57	53	49	44	37	66	62	57	56	57	56
118	25/10/2019 21:50:00	62	55	58	57	53	50	44	37	62	61	60	60	55	47
119	25/10/2019 21:55:00	61	55	57	57	53	49	44	37	66	61	58	61	54	47
120	25/10/2019 22:00:00	58	55	58	57	53	50	44	36	69	61	59	55	50	40
121	25/10/2019 22:05:00	58	55	58	57	53	50	44	36	66	62	59	54	49	43
122	25/10/2019 22:10:00	79	56	58	57	54	51	47	43	72	77	77	78	74	71
123	25/10/2019 22:15:00	62	54	57	56	53	49	43	37	63	61	57	58	58	47

Background noise measurementrs at Alliance House, 29-30 High Holborn, London, WC1V 6AZ.

No.	Date & time	LAFmax	LAeq	Leq 125 Hz	Leq 250 Hz	Leq 500 Hz	Leq 1000 Hz	Leq 2000 Hz	Leq 4000 Hz	LZmax125 Hz	LZmax250 Hz	LZmax500 Hz	LZmax1000 Hz	Lzmax 2000 Hz	Lzmax 4000 Hz
124	25/10/2019 22:20:00	56	54	57	56	53	49	43	36	62	61	57	51	45	41
125	25/10/2019 22:25:00	68	54	58	57	53	49	44	37	62	62	66	64	66	56
126	25/10/2019 22:30:00	61	54	57	57	53	49	43	36	61	60	60	58	54	46
127	25/10/2019 22:35:00	56	54	57	56	53	49	44	37	62	60	57	53	49	43
128	25/10/2019 22:40:00	60	54	57	56	53	49	43	37	63	60	57	56	57	53
129	25/10/2019 22:45:00	62	54	58	57	53	49	43	36	65	62	63	55	48	40
130	25/10/2019 22:50:00	61	56	64	58	54	50	45	38	75	65	61	62	53	46
131	25/10/2019 22:55:00	63	56	63	58	54	50	44	38	71	67	62	63	51	44
132	25/10/2019 23:00:00	63	55	64	57	53	49	43	37	75	67	67	62	52	43
133	25/10/2019 23:05:00	58	55	65	58	53	49	43	36	73	63	57	57	49	41
134	25/10/2019 23:10:00	74	55	62	56	53	51	43	41	80	65	62	76	58	65
135	25/10/2019 23:15:00	58	54	60	57	53	49	43	37	71	64	58	57	48	42
136	25/10/2019 23:20:00	62	55	62	57	53	49	43	37	69	63	57	62	50	44
137	25/10/2019 23:25:00	69	55	61	57	54	51	45	37	69	68	63	68	62	53
138	25/10/2019 23:30:00	64	56	60	60	54	51	44	38	70	66	61	65	52	44
139	25/10/2019 23:35:00	61	56	62	59	54	50	44	37	73	67	64	61	51	51
140	25/10/2019 23:40:00	67	56	60	59	54	50	44	37	70	66	63	68	50	42
141	25/10/2019 23:45:00	63	56	64	59	54	51	44	38	74	67	65	63	56	44
142	25/10/2019 23:50:00	67	56	64	59	54	50	43	37	75	71	63	67	56	49
143	25/10/2019 23:55:00	67	58	64	60	56	54	47	41	72	69	66	65	59	53
144	26/10/2019 00:00:00	66	57	63	59	55	53	46	41	75	68	66	66	55	52
145	26/10/2019 00:05:00	68	58	63	60	57	54	46	38	73	71	70	68	59	49
146	26/10/2019 00:10:00	65	57	63	59	55	51	46	39	73	65	64	65	58	50
147	26/10/2019 00:15:00	66	57	65	59	55	53	46	40	78	67	68	66	58	49
148	26/10/2019 00:20:00	64	57	65	58	55	53	45	39	77	67	65	65	56	49
149	26/10/2019 00:25:00	62	56	63	58	53	50	44	37	75	65	63	61	53	47
150	26/10/2019 00:30:00	61	55	63	57	53	50	44	38	71	64	63	57	51	45
151	26/10/2019 00:35:00	61	55	60	58	53	49	44	38	79	68	62	55	48	43
152	26/10/2019 00:40:00	63	56	63	59	55	50	45	38	75	70	65	59	54	46
153	26/10/2019 00:45:00	63	56	65	59	54	51	44	37	76	66	65	60	52	45
154	26/10/2019 00:50:00	66	56	61	58	55	51	45	38	73	68	68	63	57	58
155	26/10/2019 00:55:00	64	57	63	60	55	52	44	37	75	68	65	64	56	45
156	26/10/2019 01:00:00	68	60	70	63	57	54	48	42	81	73	72	70	60	56
157	26/10/2019 01:05:00	65	60	70	61	58	54	48	41	80	69	68	65	60	53
158	26/10/2019 01:10:00	65	60	70	61	58	54	48	42	79	69	68	65	58	56
159	26/10/2019 01:15:00	70	59	68	61	58	54	47	40	81	70	67	71	57	50
160	26/10/2019 01:20:00	65	59	69	60	57	55	48	42	81	69	67	66	60	52
161	26/10/2019 01:25:00	66	58	65	59	57	54	47	41	77	69	67	67	56	51
162	26/10/2019 01:30:00	68	58	62	59	56	54	47	40	72	71	69	68	58	53
163	26/10/2019 01:35:00	66	58	65	60	56	52	45	39	74	70	71	63	54	49
164	26/10/2019 01:40:00	67	57	66	59	56	52	45	39	76	70	71	66	53	46
165	26/10/2019 01:45:00	64	56	66	58	54	50	44	38	80	65	62	59	50	46
166	26/10/2019 01:50:00	64	57	64	60	55	52	45	39	78	70	68	65	52	47
167	26/10/2019 01:55:00	64	56	65	58	53	50	45	39	77	66	61	59	52	48
168	26/10/2019 02:00:00	62	57	65	58	54	52	45	39	78	65	64	64	54	46
169	26/10/2019 02:05:00	62	57	65	60	54	52	46	39	75	71	63	62	54	49
170	26/10/2019 02:10:00	64	56	67	59	54	50	44	38	80	64	62	64	57	45
171	26/10/2019 02:15:00	61	55	63	57	53	50	44	38	72	63	58	61	52	46
172	26/10/2019 02:20:00	59	56	64	58	54	50	44	37	74	65	61	59	55	43
173	26/10/2019 02:25:00	64	56	64	59	54	50	44	38	73	66	61	60	62	54
174	26/10/2019 02:30:00	64	54	60	57	53	49	43	37	77	63	61	58	61	54
175	26/10/2019 02:35:00	63	54	58	57	53	49	43	36	65	64	62	63	54	46
176	26/10/2019 02:40:00	58	54	57	56	52	48	42	35	62	60	56	53	56	48
177	26/10/2019 02:45:00	58	53	57	56	52	48	42	35	62	63	59	54	50	43
178	26/10/2019 02:50:00	57	53	57	56	52	48	42	36	61	60	56	55	49	45
179	26/10/2019 02:55:00	57	53	57	56	52	48	42	35	62	60	57	53	44	37
180	26/10/2019 03:00:00	59	54	57	58	52	48	42	35	67	65	61	53	49	45
181	26/10/2019 03:05:00	57	55	58	59	53	48	43	36	63	63	55	51	50	38
182	26/10/2019 03:10:00	57	54	58	57	53	48	43	36	62	62	57	58	49	40
183	26/10/2019 03:15:00	55	53	57	56	52	48	42	36	62	61	54	50	45	40
184	26/10/2019 03:20:00	55	53	57	56	52	48	42	36	62	60	56	50	46	43
185	26/10/2019 03:25:00	61	54	57	56	52	48	42	36	70	65	61	58	52	46
186	26/10/2019 03:30:00	56	54	57	57	53	48	43	36	62	61	56	51	48	43
187	26/10/2019 03:35:00	55	54	57	57	52	48	43	36	62	61	55	50	46	41
188	26/10/2019 03:40:00	55	53	57	56	52	48	42	36	62	61	56	51	46	42
189	26/10/2019 03:45:00	55	53	57	56	52	48	42	36	62	60	55	50	44	40
190	26/10/2019 03:50:00	55	53	57	56	52	48	42	36	62	60	56	51	47	43
191	26/10/2019 03:55:00	55	53	57	56	52	48	42	35	62	60	55	50	48	40
192	26/10/2019 04:00:00	56	54	57	57	52	48	42	35	61	61	56	52	47	44
193	26/10/2019 04:05:00	75	55	57	57	53	50	44	36	62	61	68	78	63	55
194	26/10/2019 04:10:00	60	54	57	56	53	48	42	36	62	61	62	61	49	41
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197	26/10/2019 04:25:00	54	53	57	56	52	48	42	35	62	60	55	50	44	38
198	26/10/2019 04:30:00	57	54	57	56	52	48	42	36	61	62	56	52	53	50
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202	26/10/2019 04:50:00	55	53	57	56	52	48	42	35	62	60	56	50	45	39
203	26/10/2019 04:55:00	55	53	57	56	52	48	42	35	61	60	55	50	46	47
204	26/10/2019 05:00:00	55	53	57	56	52	48	42	35	62	60	56	50	47	44
205	26/10/2019 05:05:00	55	54	57	57	52	48	42	35	61	60	55	51	45	39
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211	26/10/2019 05:35:00	56	54	57	57	52	48	42	36	61	61	56	51	47	46
212	26/10/2019 05:40:00	56	54	57	57	53	48	43	36	62	61	55	50	45	40
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214	26/10/2019 05:50:00	55	53	57	56	52	48	42	35	62	59	56	50	44	38
215	26/10/2019 05:55:00	56	53	57	56	52	48	42	36	61	61	56	50	48	43
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222	26/10/2019 06:30:00	58	53	57	56	52	48	42	35	65	63	58	51	44	37
223	26/10/2019 06:35:00	55	53	57	56	52	48	42	35	61	60	56	51	48	39
224	26/10/2019 06:40:00	56	54	57	57	52	48	43	36	62	61	56	51	46	43
225	26/10/2019 06:45:00	57	54	57	57	53	48	44	36	65	61	56	53	52	39
226	26/10/2019 06:50:00	57	53	57	56	52	48	43	35	61	60	56	53	53	41
227	26/10/2019 06:55:00	55	53	56	55	52	48	42	36	61	59	57	51	44	40
228	26/10/2019 07:00:00	60	54	57	58	52	48	42	35	63	65	57	58	53	46
229	26/10/2019 07:05:00	57	55	57	58	53	48	43	36	62	62	58	51	46	43
230	26/10/2019 07:10:00	56	53	57	56	52	48	42	36	61	60	56	50	46	40
231	26/10/2019 07:15:00	57	53	57	56	52	48	42	35	61	62	56	50	45	40
232	26/10/2019 07:20:00	57	53	57	56	52	48	42	35	61	60	57	53	50	49
233	26/10/2019 07:25:00	56	53	57	56	52	48	42	36	62	60	56	51	49	48
234	26/10/2019 07:30:00	74	57	59	59	56	51	45	37	75	79	77	68	62	54
235	26/10/2019 07:35:00	68	54	57	57	53	49	44	37	62	61	56	67	63	51
236	26/10/2019 07:40:00	56	54	57	57	53	48	43	36	62	60	57	50	47	40
237	26/10/2019 07:45:00	56	53	57	56	52	48	42	36	61	60	56	51	46	43
238	26/10/2019 07:50:00	72	54	57	56	53	49	44	37	61	69	73	73	65	54
239	26/10/2019 07:55:00	73	54	57	56	52	49	46	41	61	61	63	68	71	68
240	26/10/2019 08:00:00	61	54	57	56	52	48	43	38	62	60	58	57	56	56
241	26/10/2019 08:05:00	57	53	57	56	52	48	42	36	61	61	58	56	50	48
242	26/10/2019 08:10:00	65	55	58	57	54	50	45	38	67	71	64	63	60	56
243	26/10/2019 08:15:00	62	54	57	56	53	48	44	39	61	62	57	56	58	56
244	26/10/2019 08:20:00	58	53	57	55	52	48	43	35	64	61	58	55	49	42
245	26/10/2019 08:25:00	55	53	57	56	52	48	42	35	63	60	56	50	48	38
246	26/10/2019 08:30:00	57	53	57	56	52	48	42	35	61	60	57	52	46	50

No.	Date & time	LAFmax	LAeq	Leq 125 Hz	Leq 250 Hz	Leq 500 Hz	Leq 1000 Hz	Leq 2000 Hz	Leq 4000 Hz	LZmax125 Hz	LZmax250 Hz	LZmax500 Hz	LZmax1000 Hz	Lzmax 2000 Hz	Lzmax 4000 Hz
247	26/10/2019 08:35:00	58	53	57	56	52	48	42	36	67	60	56	54	55	52
248	26/10/2019 08:40:00	64	54	57	56	53	48	43	36	63	61	58	56	62	58
249	26/10/2019 08:45:00	68	54	57	57	53	49	44	38	63	61	66	62	62	60
250	26/10/2019 08:50:00	66	54	57	56	53	49	43	37	66	62	64	64	62	57
251	26/10/2019 08:55:00	66	54	57	56	52	48	43	37	62	60	60	63	63	54
252	26/10/2019 09:00:00	57	54	57	56	52	48	43	37	61	60	57	52	53	50
253	26/10/2019 09:05:00	58	53	57	56	52	48	42	36	61	60	57	56	52	47
254	26/10/2019 09:10:00	62	54	57	56	52	48	43	36	61	62	57	53	60	54
255	26/10/2019 09:15:00	62	54	57	57	52	48	43	37	62	62	57	61	54	48
256	26/10/2019 09:20:00	60	54	57	56	53	48	43	37	61	61	58	58	53	48
257	26/10/2019 09:25:00	58	54	57	56	52	48	43	37	61	60	57	54	51	48
258	26/10/2019 09:30:00	56	53	57	56	52	48	42	36	62	60	56	52	47	45
259	26/10/2019 09:35:00	56	53	57	56	52	48	42	36	62	62	58	51	48	44
260	26/10/2019 09:40:00	59	54	57	57	53	48	43	37	62	62	57	54	54	53
261	26/10/2019 09:45:00	59	55	57	58	53	49	44	37	63	61	58	57	53	50
262	26/10/2019 09:50:00	73	59	58	60	54	51	49	52	64	66	68	66	67	69
263	26/10/2019 09:55:00	76	66	58	61	59	60	56	61	69	71	72	76	70	70
264	26/10/2019 10:00:00	71	56	57	58	54	50	45	39	62	65	73	70	64	60
265	26/10/2019 10:05:00	65	59	57	59	56	53	51	46	62	64	63	62	62	58
266	26/10/2019 10:10:00	68	58	58	58	54	50	49	46	62	64	61	59	63	63
267	26/10/2019 10:15:00	58	55	57	58	53	48	44	37	63	63	58	55	52	49
268	26/10/2019 10:20:00	58	55	57	58	53	48	44	37	64	61	58	54	50	46
269	26/10/2019 10:25:00	58	55	57	58	53	48	43	36	64	63	57	53	47	44
270	26/10/2019 10:30:00	60	55	57	60	54	49	43	36	64	63	59	57	53	43
271	26/10/2019 10:35:00	59	56	57	61	53	49	43	36	62	64	59	55	51	45
272	26/10/2019 10:40:00	58	56	57	61	54	49	43	37	62	63	59	53	49	47
273	26/10/2019 10:45:00	57	55	57	59	54	48	43	37	62	62	58	54	48	42
274	26/10/2019 10:50:00	74	55	57	58	54	49	44	37	63	67	73	74	70	63
275	26/10/2019 10:55:00	57	54	57	56	53	48	43	36	61	62	59	55	49	45
276	26/10/2019 11:00:00	56	54	57	56	52	48	43	36	62	61	57	53	48	42
277	26/10/2019 11:05:00	63	54	57	58	53	48	43	36	63	66	62	55	55	46
278	26/10/2019 11:10:00	57	56	57	60	54	49	43	36	62	63	57	51	45	39
279	26/10/2019 11:15:00	63	56	57	59	55	49	43	37	62	63	59	55	56	58
280	26/10/2019 11:20:00	62	56	57	59	55	49	44	37	62	62	58	60	56	50
281	26/10/2019 11:25:00	64	56	58	59	54	49	44	38	66	62	64	60	58	51
282	26/10/2019 11:30:00	74	55	58	59	54	50	44	37	65	66	71	75	67	57
283	26/10/2019 11:35:00	63	55	57	59	53	49	44	37	62	63	62	63	55	48
284	26/10/2019 11:40:00	67	55	58	58	54	49	44	37	63	62	67	65	50	46
285	26/10/2019 11:45:00	65	55	58	58	54	49	44	38	70	68	64	63	56	51
286	26/10/2019 11:50:00	59	55	57	58	53	49	44	37	62	61	58	57	51	46
287	26/10/2019 11:55:00	57	55	57	58	53	48	44	37	62	61	58	57	49	44
288	26/10/2019 12:00:00	61	55	58	58	54	49	44	37	65	65	59	61	49	44
289	26/10/2019 12:05:00	56	55	58	58	53	48	43	36	62	61	56	51	48	41
290	26/10/2019 12:10:00	56	55	57	58	53	48	43	37	62	61	58	51	47	48
291	26/10/2019 12:15:00	58	55	57	58	53	49	44	37	62	61	57	54	49	46
292	26/10/2019 12:20:00	58	55	57	58	54	48	43	36	62	63	58	54	51	44
293	26/10/2019 12:25:00	57	55	58	58	53	48	44	36	64	63	58	51	46	40
294	26/10/2019 12:30:00	57	55	57	57	53	49	44	36	63	62	57	52	50	43
295	26/10/2019 12:35:00	57	55	58	57	53	49	44	37	67	62	57	51	48	42
296	26/10/2019 12:40:00	56	54	57	57	53	49	43	36	64	61	57	53	47	41
297	26/10/2019 12:45:00	61	54	57	57	53	49	44	36	62	63	57	57	56	51
298	26/10/2019 12:50:00	56	55	57	57	53	49	44	37	62	61	58	52	48	43
299	26/10/2019 12:55:00	57	55	57	57	53	49	44	38	61	61	57	52	48	53
300	26/10/2019 13:00:00	56	55	57	59	53	49	43	36	62	62	57	51	45	40
301	26/10/2019 13:05:00	59	56	58	60	54	49	43	37	66	66	60	52	47	43
302	26/10/2019 13:10:00	57	56	58	61	54	49	44	37	63	63	58	53	49	44
303	26/10/2019 13:15:00	59	56	58	61	54	49	43	36	65	64	58	53	50	39
304	26/10/2019 13:20:00	63	55	57	59	54	49	44	40	63	64	58	57	59	61
305	26/10/2019 13:25:00	58	55	57	59	54	49	44	37	63	62	58	55	52	42
306	26/10/2019 13:30:00	57	55	57	58	53	49	43	37	61	61	57	55	52	48
307	26/10/2019 13:35:00	57	55	57	59	53	48	43	37	62	63	57	51	47	41
308	26/10/2019 13:40:00	56	54	57	58	53	48	43	36	62	61	57	50	45	42
309	26/10/2019 13:45:00	57	54	57	58	53	48	43	36	62	62	57	54	47	38
310	26/10/2019 13:50:00	56	54	57	58	53	48	43	36	63	61	58	50	47	40
311	26/10/2019 13:55:00	56	55	57	58	53	48	44	37	63	61	57	51	51	40
312	26/10/2019 14:00:00	57	55	57	58	53	48	44	37	71	61	58	51	47	46
313	26/10/2019 14:05:00	56	55	57	58	53	49	44	36	62	61	58	51	48	41
314	26/10/2019 14:10:00	61	55	57	58	53	49	44	36	63	64	59	59	56	54
315	26/10/2019 14:15:00	67	55	57	58	53	48	43	41	61	61	57	51	53	65
316	26/10/2019 14:20:00	69	55	57	58	53	50	46	38	62	63	58	65	66	51
317	26/10/2019 14:25:00	57	55	57	58	53	49	44	37	62	61	57	52	49	45
318	26/10/2019 14:30:00	59	55	57	58	53	49	44	37	64	61	56	57	52	50
319	26/10/2019 14:35:00	58	55	57	58	53	49	44	37	62	61	57	52	54	47
320	26/10/2019 14:40:00	57	55	57	58	53	49	44	37	63	63	57	51	51	44
321	26/10/2019 14:45:00	56	55	57	58	53	49	44	38	62	61	57	51	49	51
322	26/10/2019 14:50:00	58	55	57	58	52	49	45	37	61	61	56	58	53	44
323	26/10/2019 14:55:00	55	54	57	56	52	48	43	37	62	60	56	51	46	46
324	26/10/2019 15:00:00	55	53	57	56	52	48	42	37	61	60	56	50	46	47
325	26/10/2019 15:05:00	55	54	57	55	52	48	43	37	61	60	57	51	45	43
326	26/10/2019 15:10:00	56	54	57	56	52	48	43	37	62	60	57	52	49	45
327	26/10/2019 15:15:00	60	54	57	56	52	49	43	38	64	60	58	56	56	50
328	26/10/2019 15:20:00	57	54	57	56	53	48	43	37	65	63	58	53	48	46
329	26/10/2019 15:25:00	57	55	57	59	53	49	43	38	62	63	58	52	51	44
330	26/10/2019 15:30:00	57	55	58	58	54	49	44	39	62	62	58	53	48	45
331	26/10/2019 15:35:00	57	55	57	57	53	49	44	37	61	62	58	51	53	47
332	26/10/2019 15:40:00	56	54	57	57	53	49	43	37	61	60	57	53	47	48
333	26/10/2019 15:45:00	58	54	57	57	53	48	43	37	62	61	59	56	50	44
334	26/10/2019 15:50:00	57	54	57	57	53	48	43	36	62	61	57	53	51	45
335	26/10/2019 15:55:00	58	54	57	57	53	49	43	36	65	63	59	53	47	42
336	26/10/2019 16:00:00	56	54	57	56	53	48	42	36	61	60	57	52	46	43
337	26/10/2019 16:05:00	62	54	57	56	53	48	43	36	68	66	66	53	48	44
338	26/10/2019 16:10:00	57	54	57	56	53	48	42	36	62	61	58	51	47	43
339	26/10/2019 16:15:00	56	54	57	57	53	48	43	36	62	61	57	52	47	43
340	26/10/2019 16:20:00	56	54	57	57	53	48	44	37	63	61	57	51	48	45
341	26/10/2019 16:25:00	57	55	57	58	53	49	43	37	63	63	57	52	49	46
342	26/10/2019 16:30:00	57	54	57	56	53	48	43	37	64	62	57	52	48	45
343	26/10/2019 16:35:00	62	54	57	57	53	49	43	37	65	62	60	61	56	52
344	26/10/2019 16:40:00	61	55	57	60	53	49	43	37	63	67	61	56	48	44
345	26/10/2019 16:45:00	59	56	57	61	53	49	43	37	62	64	59	54	47	44
346	26/10/2019 16:50:00	69	56	57	60	53	49	47	38	62	63	56	62	67	56
347	26/10/2019 16:55:00	58	55	57	60	54	49	44	37	61	66	57	52	51	44
348	26/10/2019 17:00:00	64	56	57	59	54	50	45	37	61	62	57	59	61	46
349	26/10/2019 17:05:00	57	55	57	59	54	49	43	37	62	62	58	52	47	49
350	26/10/2019 17:10:00	57	55	57	58	54	49	44	36	62	61	57	52	48	44
351	26/10/2019 17:15:00	56	55	57	58	53	49	44	36	62	62	57	53	48	43
352	26/10/2019 17:20:00	59	54	57	57	53	49	44	37	64	65	58	52	49	51
353	26/10/2019 17:25:00	65	55	57	58	53	49	45	38	62	61	57	64	62	51
354	26/10/2019 17:30:00	59	54	57	57	53	49	43	37	62	60	59	54	54	54
355	26/10/2019 17:35:00	57	54	57	58	53	48	43	36	62	63	57	51	48	46
356	26/10/2019 17:40:00	59	56	57	58	54	50	47	42	62	64	61	53	52	53
357	26/10/2019 17:45:00	59	56	57	58	53	50	46	42	62	62	58	53	52	56
358	26/10/2019 17:50:00	62	55	57	58	53	50	45	38	61	62	58	53	49	54
359	26/10/2019 17:55:00	61	55	57	58	53	50	44	38	62	65	61	55	50	46
360	26/10/2019 18:00:00	58	55	57	57	53	49	45	38	61	62	58	53	52	47
361	26/10/2019 18:05:00	57	55	58	57	53	49	44	37	62	61	59	52	49	44
362	26/10/2019 18:10:00	64	54	57	56	53	49	44	37	67	62	57	61	60	43
363	26/10/2019 18:15:00	60	54	57	56	53	49	42	35	63	61	58	58	46	41
364	26/10/2019 18:20:00	58	54	57	56	52	49	42	35	62	60	57	54	55	44
365	26/10/2019 18:25:00	59	54	57	56	52	48	43	35	62	61	58	57	53	42
366	26/10/2019 18:30:00	56	54	57	56	52	48	42	35	62	60	56	53	46	42
367	26/10/2019 18:35:00	57	55	58	58	53	49	43	36	62	62	57	52	49	44
368	26/10/2019 18:40:00	59	55	59	59	53	49	43	36	66	64	60	55	52	46
369	26/10/2019 18:45:00	56	55	58	59	53	49	43	36	63	62	56	51	46	45

No.	Date & time	LAFmax	LAeq	Leq 125 Hz	Leq 250 Hz	Leq 500 Hz	Leq 1000 Hz	Leq 2000 Hz	Leq 4000 Hz	LZmax125 Hz	LZmax250 Hz	LZmax500 Hz	LZmax1000 Hz	Lzmax 2000 Hz	Lzmax 4000 Hz
370	26/10/2019 18:50:00	57	54	58	58	53	48	43	36	63	62	56	54	48	42
371	26/10/2019 18:55:00	56	53	57	56	52	48	42	35	62	60	57	50	47	43
372	26/10/2019 19:00:00	56	54	57	56	53	48	42	35	62	61	57	51	48	43
373	26/10/2019 19:05:00	57	55	57	60	53	49	43	36	62	64	58	51	46	45
374	26/10/2019 19:10:00	57	55	57	58	54	49	43	37	61	61	59	54	50	44
375	26/10/2019 19:15:00	62	55	57	57	53	49	44	36	65	61	61	60	55	43
376	26/10/2019 19:20:00	63	55	58	58	54	49	44	36	68	65	63	59	51	44
377	26/10/2019 19:25:00	56	54	57	57	53	48	43	36	61	60	58	51	48	45
378	26/10/2019 19:30:00	56	54	57	56	52	48	42	35	61	60	57	52	49	45
379	26/10/2019 19:35:00	56	53	57	56	52	48	42	35	62	60	57	52	50	45
380	26/10/2019 19:40:00	56	53	57	56	52	48	42	35	62	60	58	50	48	45
381	26/10/2019 19:45:00	56	54	57	58	53	49	43	36	62	61	58	51	46	45
382	26/10/2019 19:50:00	56	54	57	57	53	49	43	36	62	61	58	51	46	45
383	26/10/2019 19:55:00	56	53	57	56	52	48	42	35	62	61	57	51	46	47
384	26/10/2019 20:00:00	56	54	57	56	53	48	42	35	61	60	57	51	44	41
385	26/10/2019 20:05:00	58	53	57	56	52	48	42	35	63	61	57	56	51	43
386	26/10/2019 20:10:00	56	54	57	56	52	48	42	35	62	60	56	52	47	45
387	26/10/2019 20:15:00	58	54	58	58	53	48	42	35	64	65	57	51	46	42
388	26/10/2019 20:20:00	56	54	58	57	53	49	43	35	61	61	57	52	46	40
389	26/10/2019 20:25:00	57	54	57	56	52	48	42	40	62	60	56	50	48	52
390	26/10/2019 20:30:00	56	53	57	56	52	48	42	35	62	61	57	51	47	41
391	26/10/2019 20:35:00	56	53	57	56	52	48	42	35	63	60	56	51	45	43
392	26/10/2019 20:40:00	55	53	57	56	52	48	42	35	62	60	55	51	47	45
393	26/10/2019 20:45:00	56	54	57	57	53	48	43	36	62	61	58	51	46	42
394	26/10/2019 20:50:00	57	54	57	57	53	49	43	35	63	62	57	55	46	38
395	26/10/2019 20:55:00	62	54	57	56	53	49	43	35	63	62	63	59	51	43
396	26/10/2019 21:00:00	59	54	58	56	52	48	42	35	67	65	58	51	43	46
397	26/10/2019 21:05:00	57	54	57	56	53	48	42	35	62	62	57	51	44	40
398	26/10/2019 21:10:00	58	53	57	56	52	48	42	35	63	66	55	51	47	47
399	26/10/2019 21:15:00	56	54	57	57	53	49	42	35	64	63	58	51	44	42
400	26/10/2019 21:20:00	57	54	58	57	52	49	43	35	62	62	57	51	45	40
401	26/10/2019 21:25:00	56	53	57	56	52	48	42	35	62	62	58	52	47	40
402	26/10/2019 21:30:00	56	53	57	56	52	48	42	35	62	60	57	50	44	40
403	26/10/2019 21:35:00	55	53	57	56	52	48	42	35	62	61	57	51	43	44
404	26/10/2019 21:40:00	56	54	57	56	53	48	42	35	68	62	57	53	46	44
405	26/10/2019 21:45:00	56	54	58	57	53	48	42	35	63	62	57	53	45	43
406	26/10/2019 21:50:00	56	54	57	57	53	49	43	35	62	63	56	51	45	37
407	26/10/2019 21:55:00	56	54	57	56	52	48	42	35	62	61	57	51	46	40
408	26/10/2019 22:00:00	56	53	57	56	52	48	42	35	62	61	58	51	43	42
409	26/10/2019 22:05:00	56	53	57	56	52	48	42	35	61	60	58	50	44	39
410	26/10/2019 22:10:00	56	53	57	56	52	48	42	35	63	61	58	50	43	36
411	26/10/2019 22:15:00	56	54	58	57	52	48	42	35	61	62	57	51	48	45
412	26/10/2019 22:20:00	56	54	58	57	53	48	43	36	63	61	58	51	46	38
413	26/10/2019 22:25:00	56	54	57	56	53	48	43	35	62	60	57	51	47	38
414	26/10/2019 22:30:00	55	53	57	56	52	48	42	35	62	60	55	51	44	38
415	26/10/2019 22:35:00	56	53	57	56	52	48	42	34	63	61	58	51	43	36
416	26/10/2019 22:40:00	57	53	57	56	52	48	42	35	62	60	57	51	43	36
417	26/10/2019 22:45:00	57	53	57	56	52	48	42	35	61	60	56	54	48	40
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439	27/10/2019 00:35:00	57	53	57	56	52	48	42	35	62	60	54	55	51	37
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457	27/10/2019 02:05:00	56	53	57	56	52	48	42	34	62	61	55	51	44	37
458	27/10/2019 02:10:00	70	57	59	57	55	53	47	36	69	68	69	69	63	50
459	27/10/2019 02:15:00	55	53	57	56	52	48	42	35	61	60	56	51	48	39
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466	27/10/2019 02:50:00	55	53	57	56	52	48	42	34	61	60	56	50	43	39
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480	27/10/2019 04:00:00	56	53	57	56	52	48	42	34	62	62	57	50	43	37
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487	27/10/2019 04:35:00	55	53	57	56	52	48	41	34	62	60	55	50	43	36
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489	27/10/2019 04:45:00	55	54	58	57	53	48	43	36	62	61	56	50	45	40
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491	27/10/2019 04:55:00	56	53	57	56	52	48	42	34	62	60	55	55	50	36
492	27/10/2019 05:00:00	55	53	57	56	52	48	42	34	62	60	57	50	43	37

No.	Date & time	LAFmax	LAeq	Leq 125 Hz	Leq 250 Hz	Leq 500 Hz	Leq 1000 Hz	Leq 2000 Hz	Leq 4000 Hz	LZmax125 Hz	LZmax250 Hz	LZmax500 Hz	LZmax1000 Hz	Lzmax 2000 Hz	Lzmax 4000 Hz
493	27/10/2019 05:05:00	55	53	57	56	52	48	42	34	62	60	55	50	44	39
494	27/10/2019 05:10:00	56	53	57	56	52	48	42	34	61	61	58	50	43	39
495	27/10/2019 05:15:00	54	53	57	56	52	48	42	34	61	60	55	50	43	37
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499	27/10/2019 05:35:00	55	53	57	56	52	48	41	34	61	61	55	50	43	36
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508	27/10/2019 06:20:00	56	53	57	56	52	48	42	35	61	60	57	50	52	47
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510	27/10/2019 06:30:00	56	54	57	56	52	48	42	35	62	61	56	53	48	44
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516	27/10/2019 07:00:00	56	54	58	57	53	48	43	35	62	61	57	51	46	37
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541	27/10/2019 09:05:00	68	55	58	57	53	50	44	35	65	68	67	66	59	42
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548	27/10/2019 09:40:00	56	53	57	56	52	48	42	35	62	60	57	50	51	50
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552	27/10/2019 10:00:00	56	53	57	56	52	48	42	35	62	60	57	53	47	46
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584	27/10/2019 12:40:00	70	56	60	60	54	49	42	35	75	77	70	61	45	37
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606	27/10/2019 14:30:00	62	55	58	58	53	51	43	36	63	61	63	59	48	41
607	27/10/2019 14:35:00	65	57	60	60	56	52	45	36	67	68	67	60	54	39
608	27/10/2019 14:40:00	61	55	58	58	53	51	43	36	63	64	60	58	50	38
609	27/10/2019 14:45:00	57	54	58	57	53	50	43	35	65	63	58	53	45	39
610	27/10/2019 14:50:00	59	54	59	57	53	48	42	35	68	66	60	52	54	43
611	27/10/2019 14:55:00	63	54	57	56	52	48	43	36	64	61	57	56	60	54
612	27/10/2019 15:00:00	55	53	57	56	52	48	42	35	62	61	57	50	45	37
613	27/10/2019 15:05:00	56	53	57	56	52	48	42	35	62	60	57	50	43	37
614	27/10/2019 15:10:00	62	54	58	57	53	48	42	35	66	65	64	57	46	36
615	27/10/2019 15:15:00	57	54	58	58	52	48	42	35	63	64	57	51	45	41

No.	Date & time	LAFmax	LAeq	Leq 125 Hz	Leq 250 Hz	Leq 500 Hz	Leq 1000 Hz	Leq 2000 Hz	Leq 4000 Hz	LZmax125 Hz	LZmax250 Hz	LZmax500 Hz	LZmax1000 Hz	Lzmax 2000 Hz	Lzmax 4000 Hz
616	27/10/2019 15:20:00	58	56	57	61	53	49	43	36	62	64	58	52	46	38
617	27/10/2019 15:25:00	57	55	58	59	53	49	44	36	64	63	57	51	45	37
618	27/10/2019 15:30:00	57	54	58	58	53	48	43	35	63	62	58	52	50	39
619	27/10/2019 15:35:00	57	55	58	60	53	49	43	36	63	62	58	52	46	37
620	27/10/2019 15:40:00	58	55	57	59	53	49	43	36	62	62	59	53	45	40
621	27/10/2019 15:45:00	57	55	58	58	53	49	43	36	62	61	58	51	45	37
622	27/10/2019 15:50:00	60	54	58	57	53	49	42	35	64	63	60	57	50	43
623	27/10/2019 15:55:00	58	54	57	56	52	48	43	35	62	61	57	52	57	41
624	27/10/2019 16:00:00	59	55	58	58	53	49	47	37	62	62	56	52	57	47
625	27/10/2019 16:05:00	61	55	58	58	53	50	47	37	63	64	58	58	57	48
626	27/10/2019 16:10:00	61	54	57	57	53	49	42	35	62	62	61	58	51	47
627	27/10/2019 16:15:00	57	55	58	58	53	49	43	35	62	62	58	52	45	37
628	27/10/2019 16:20:00	59	54	58	56	53	49	42	35	63	62	60	53	47	37
629	27/10/2019 16:25:00	61	53	57	56	52	48	42	35	62	60	57	56	60	48
630	27/10/2019 16:30:00	55	53	57	56	52	48	42	35	63	61	56	50	44	36
631	27/10/2019 16:35:00	56	54	57	56	53	48	42	35	64	61	57	50	43	36
632	27/10/2019 16:40:00	70	59	60	60	58	55	47	35	72	72	71	68	62	46
633	27/10/2019 16:45:00	57	55	58	58	53	49	43	35	63	62	58	54	48	41
634	27/10/2019 16:50:00	57	55	58	58	53	49	43	35	65	62	57	51	47	37
635	27/10/2019 16:55:00	56	54	58	58	53	49	43	35	62	61	57	51	47	41
636	27/10/2019 17:00:00	58	54	58	56	53	48	42	35	69	61	58	54	53	38
637	27/10/2019 17:05:00	59	54	57	56	52	48	42	35	66	62	58	55	47	47
638	27/10/2019 17:10:00	59	54	58	58	53	49	43	36	64	61	56	53	55	45
639	27/10/2019 17:15:00	70	57	58	59	56	52	45	36	68	69	70	66	59	44
640	27/10/2019 17:20:00	55	53	57	56	52	48	41	34	62	60	56	51	43	43
641	27/10/2019 17:25:00	57	54	58	58	53	48	42	35	62	61	57	53	50	45
642	27/10/2019 17:30:00	58	54	57	57	52	48	42	35	62	61	57	55	49	45
643	27/10/2019 17:35:00	60	57	61	60	56	52	45	39	65	63	59	56	50	47
644	27/10/2019 17:40:00	62	58	62	59	56	53	46	40	65	64	59	56	57	56
645	27/10/2019 17:45:00	62	57	62	59	55	52	45	39	69	68	60	54	49	40
646	27/10/2019 17:50:00	62	57	62	58	55	52	45	39	65	62	59	55	56	60
647	27/10/2019 17:55:00	59	57	62	59	56	52	45	38	67	64	58	55	48	42
648	27/10/2019 18:00:00	59	57	61	59	55	52	45	38	64	62	58	55	51	52
649	27/10/2019 18:05:00	60	56	61	59	55	51	44	38	68	63	58	56	49	44
650	27/10/2019 18:10:00	61	58	62	59	56	54	47	41	65	63	60	57	53	49
651	27/10/2019 18:15:00	68	56	61	58	55	52	46	40	65	63	61	65	65	58
652	27/10/2019 18:20:00	60	57	61	59	56	53	46	40	66	63	60	56	51	46
653	27/10/2019 18:25:00	58	56	61	58	55	52	44	38	65	62	59	54	49	49
654	27/10/2019 18:30:00	58	57	62	59	55	52	45	39	65	63	58	54	47	41
655	27/10/2019 18:35:00	61	57	62	59	55	52	45	39	65	62	59	58	51	43
656	27/10/2019 18:40:00	58	56	61	58	55	51	44	37	65	62	59	54	45	40
657	27/10/2019 18:45:00	62	57	61	59	56	53	46	40	66	63	60	59	57	48
658	27/10/2019 18:50:00	62	57	61	59	55	52	45	39	69	64	60	60	52	50
659	27/10/2019 18:55:00	59	57	61	61	55	52	44	38	65	64	59	55	49	41
660	27/10/2019 19:00:00	58	56	60	58	55	51	44	37	64	62	60	54	46	40
661	27/10/2019 19:05:00	58	56	61	58	55	51	44	37	67	62	58	53	45	39
662	27/10/2019 19:10:00	57	56	61	58	55	51	44	37	64	62	58	53	48	41
663	27/10/2019 19:15:00	57	56	60	58	55	51	44	37	64	62	58	53	45	39
664	27/10/2019 19:20:00	59	56	60	58	55	51	44	37	65	61	59	54	45	39
665	27/10/2019 19:25:00	58	56	61	58	55	51	44	37	64	62	58	55	49	45
666	27/10/2019 19:30:00	58	56	61	59	55	51	44	38	65	62	58	53	46	39
667	27/10/2019 19:35:00	58	56	60	58	55	51	44	37	65	62	59	53	45	39
668	27/10/2019 19:40:00	60	56	61	58	55	51	44	38	68	67	60	55	53	53
669	27/10/2019 19:45:00	61	58	66	60	56	53	47	41	69	64	60	57	50	46
670	27/10/2019 19:50:00	75	59	63	60	57	54	47	45	67	66	66	61	60	71
671	27/10/2019 19:55:00	74	57	60	58	55	52	45	44	66	65	66	63	61	71
672	27/10/2019 20:00:00	61	58	62	60	56	54	47	41	66	64	60	58	55	50
673	27/10/2019 20:05:00	60	58	62	59	56	53	46	40	65	64	59	57	50	44
674	27/10/2019 20:10:00	60	57	62	58	55	52	45	38	66	65	59	55	46	40
675	27/10/2019 20:15:00	62	57	62	58	55	52	44	38	65	63	64	55	46	40
676	27/10/2019 20:20:00	58	57	62	58	55	52	45	38	65	62	58	55	46	40
677	27/10/2019 20:25:00	62	57	62	58	55	53	46	39	66	62	60	60	54	40
678	27/10/2019 20:30:00	66	56	61	59	55	51	44	37	65	69	69	58	50	50
679	27/10/2019 20:35:00	68	57	61	59	55	52	45	38	65	70	71	57	47	40
680	27/10/2019 20:40:00	57	56	60	58	55	51	44	38	65	62	57	54	46	39
681	27/10/2019 20:45:00	58	56	60	58	55	51	44	37	66	63	59	54	46	39
682	27/10/2019 20:50:00	59	56	61	58	55	51	44	37	64	62	60	54	47	39
683	27/10/2019 20:55:00	63	56	60	58	55	51	44	37	69	69	64	58	49	39
684	27/10/2019 21:00:00	59	56	60	58	55	51	44	38	65	64	59	53	49	51
685	27/10/2019 21:05:00	64	57	61	59	55	51	44	38	65	64	62	62	55	47
686	27/10/2019 21:10:00	60	57	62	59	55	52	45	38	66	64	60	54	47	40
687	27/10/2019 21:15:00	60	57	62	59	56	52	44	38	66	66	60	56	46	39
688	27/10/2019 21:20:00	58	57	62	58	55	52	44	38	65	62	59	55	46	39
689	27/10/2019 21:25:00	62	57	62	58	55	52	44	38	67	67	63	56	46	39
690	27/10/2019 21:30:00	58	57	62	58	55	52	44	38	65	62	60	54	49	50
691	27/10/2019 21:35:00	64	57	62	59	56	52	45	38	65	64	66	61	55	50
692	27/10/2019 21:40:00	62	58	62	59	56	53	45	39	67	66	63	58	47	40
693	27/10/2019 21:45:00	58	57	62	58	55	52	45	38	65	62	58	55	47	39
694	27/10/2019 21:50:00	59	57	62	58	55	52	44	38	65	63	60	55	47	39
695	27/10/2019 21:55:00	59	57	62	58	55	52	44	38	66	63	60	56	48	40
696	27/10/2019 22:00:00	61	57	62	58	55	52	44	38	67	62	60	54	54	55
697	27/10/2019 22:05:00	65	59	66	60	57	54	47	41	70	67	67	59	51	46
698	27/10/2019 22:10:00	75	59	63	60	57	54	48	47	67	64	62	61	63	71
699	27/10/2019 22:15:00	74	57	60	58	55	52	45	44	65	64	61	62	60	71
700	27/10/2019 22:20:00	62	58	62	60	56	53	46	41	75	67	61	59	51	51
701	27/10/2019 22:25:00	61	58	62	60	56	53	46	41	67	64	63	56	49	44
702	27/10/2019 22:30:00	58	56	60	58	55	51	44	37	64	64	59	53	51	49
703	27/10/2019 22:35:00	58	56	60	58	55	51	44	37	64	62	59	54	45	39
704	27/10/2019 22:40:00	58	57	62	58	55	52	44	38	65	63	60	55	48	44
705	27/10/2019 22:45:00	63	57	62	59	55	52	45	38	65	64	65	61	51	40
706	27/10/2019 22:50:00	58	57	62	58	55	52	45	38	65	62	59	55	47	41
707	27/10/2019 22:55:00	59	57	62	60	56	52	45	39	66	64	59	54	47	40
708	27/10/2019 23:00:00	59	57	62	59	55	52	45	38	65	62	60	54	47	40
709	27/10/2019 23:05:00	58	57	62	58	55	52	45	38	65	62	59	55	46	40
710	27/10/2019 23:10:00	58	57	62	58	55	52	45	39	65	62	59	54	47	40
711	27/10/2019 23:15:00	64	56	60	58	55	51	44	37	66	71	65	58	54	50
712	27/10/2019 23:20:00	57	56	60	58	54	51	44	37	64	62	57	53	46	39
713	27/10/2019 23:25:00	68	57	61	59	55	52	45	38	72	75	68	63	56	47
714	27/10/2019 23:30:00	72	58	62	59	56	53	47	40	69	69	69	73	64	58
715	27/10/2019 23:35:00	62	57	62	58	55	52	46	39	65	63	61	61	59	50
716	27/10/2019 23:40:00	63	57	62	58	55	52	45	39	66	62	61	61	57	46
717	27/10/2019 23:45:00	58	56	60	58	54	51	44	37	66	64	58	53	45	39
718	27/10/2019 23:50:00	58	56	60	58	55	51	44	37	65	62	58	53	46	39
719	27/10/2019 23:55:00	58	56	60	58	55	51	44	37	64	62	58	53	45	38
720	28/10/2019 00:00:00	63	56	60	59	55	51	44	38	65	69	65	59	50	46
721	28/10/2019 00:05:00	71	56	60	59	55	51	44	38	71	73	75	67	53	39
722	28/10/2019 00:10:00	57	56	60	58	54	51	44	37	64	62	58	53	45	39
723	28/10/2019 00:15:00	57	56	60	58	55	51	44	37	64	62	58	53	46	39
724	28/10/2019 00:20:00	57	56	60	58	54	51	44	37	64	62	57	53	45	39
725	28/10/2019 00:25:00	58	56	60	58	55	51	44	37	64	64	59	53	47	40
726	28/10/2019 00:30:00	61	56	60	58	55	51	44	38	65	63	62	59	56	51
727	28/10/2019 00:35:00	67	57	60	59	55	52	45	38	64	63	64	65	58	48
728	28/10/2019 00:40:00	77	60	62	60	57	55	50	48	66	68	67	72	68	70
729	28/10/2019 00:45:00	62	60	63	61	58	56	51	46	66	63	61	58	54	51
730	28/10/2019 00:50:00	74	59	64	60	56	54	48	44	69	64	64	63	61	70
731	28/10/2019 00:55:00	59	56	61	59	55	51	44	38	64	62	57	53	48	51
732	28/10/2019 01:00:00	57	56	61	59	55	51	44	37	64	62	57	54	45	39
733	28/10/2019 01:05:00	58	57	61	59	55	51	44	38	65	64	57	54	46	40
734	28/10/2019 01:10:00	58	56	60	59	55	51	44	37	64	62	57	53	46	40
735	28/10/2019 01:15:00	62	56	60	58	55	51	44	38	64	62	58	56	58	50
736	28/10/2019 01:20:00	69	57	61	59	55	51	44	42	65	63	57	55	54	65
737	28/10/2019 01:25:00	60	58	66	60	56	53	47	41	69	64	59	56	50	46
738	28/10/2019 01:30:00	76	59	63	60	56	54	48	47	68	63	61	61	64	72

No.	Date & time	LAFmax	LAeq	Leq 125 Hz	Leq 250 Hz	Leq 500 Hz	Leq 1000 Hz	Leq 2000 Hz	Leq 4000 Hz	LZmax125 Hz	LZmax250 Hz	LZmax500 Hz	LZmax1000 Hz	Lzmax 2000 Hz	Lzmax 4000 Hz
739	28/10/2019 01:35:00	74	57	60	58	55	52	45	44	64	63	60	61	61	72
740	28/10/2019 01:40:00	60	58	61	60	56	53	46	40	65	63	60	57	51	50
741	28/10/2019 01:45:00	60	58	62	60	56	54	47	41	66	63	59	57	49	45
742	28/10/2019 01:50:00	58	56	60	58	55	51	44	38	64	62	57	53	47	47
743	28/10/2019 01:55:00	57	56	60	58	55	51	44	38	64	62	57	54	48	40
744	28/10/2019 02:00:00	58	57	62	58	55	52	45	38	65	62	58	54	46	40
745	28/10/2019 02:05:00	58	57	62	58	55	52	45	38	65	62	58	54	46	40
746	28/10/2019 02:10:00	58	57	62	59	55	52	45	39	65	62	58	55	49	46
747	28/10/2019 02:15:00	58	57	62	58	55	52	45	38	65	62	58	54	47	40
748	28/10/2019 02:20:00	58	57	62	59	55	52	45	38	65	62	58	56	48	46
749	28/10/2019 02:25:00	58	57	61	60	55	52	45	38	65	63	57	54	50	48
750	28/10/2019 02:30:00	58	57	61	59	55	52	45	38	66	62	58	54	47	40
751	28/10/2019 02:35:00	60	57	62	59	55	52	45	38	66	62	59	57	51	44
752	28/10/2019 02:40:00	58	57	62	59	55	52	45	38	66	63	58	54	48	42
753	28/10/2019 02:45:00	58	57	62	58	55	52	44	38	65	62	58	54	46	40
754	28/10/2019 02:50:00	58	57	62	58	55	52	45	38	65	61	57	54	46	39
755	28/10/2019 02:55:00	58	57	62	59	55	52	45	39	65	63	58	54	47	42
756	28/10/2019 03:00:00	58	57	62	59	55	52	45	39	65	63	58	54	47	40
757	28/10/2019 03:05:00	58	57	62	58	55	52	45	38	65	62	58	54	49	39
758	28/10/2019 03:10:00	58	57	62	58	55	52	45	38	65	61	58	54	47	42
759	28/10/2019 03:15:00	58	57	62	58	55	52	44	38	64	61	57	54	46	43
760	28/10/2019 03:20:00	58	57	62	58	55	52	45	38	65	61	57	54	46	42
761	28/10/2019 03:25:00	60	57	62	58	55	52	45	38	65	61	59	55	51	42
762	28/10/2019 03:30:00	58	57	62	58	55	52	45	38	65	62	58	54	48	45
763	28/10/2019 03:35:00	58	57	62	59	56	52	45	39	65	62	58	55	47	40
764	28/10/2019 03:40:00	58	57	62	58	55	52	45	38	66	62	57	54	46	40
765	28/10/2019 03:45:00	58	57	62	58	55	52	45	38	65	61	58	54	46	40
766	28/10/2019 03:50:00	58	57	62	58	55	52	44	38	65	62	58	54	46	39
767	28/10/2019 03:55:00	70	57	62	58	55	52	45	43	65	62	58	54	55	66
768	28/10/2019 04:00:00	60	58	66	60	56	54	47	41	70	64	59	56	49	46
769	28/10/2019 04:05:00	74	59	63	60	56	54	48	46	67	64	60	60	61	71
770	28/10/2019 04:10:00	73	57	60	59	55	52	45	43	65	63	60	60	60	70
771	28/10/2019 04:15:00	60	58	61	59	56	53	46	41	66	63	59	56	50	50
772	28/10/2019 04:20:00	60	58	62	60	56	54	47	41	66	63	59	56	49	44
773	28/10/2019 04:25:00	58	57	62	58	55	52	44	38	65	62	57	54	46	39
774	28/10/2019 04:30:00	58	57	62	58	55	52	45	38	65	62	57	54	46	39
775	28/10/2019 04:35:00	58	57	62	58	55	52	44	38	65	61	58	54	46	40
776	28/10/2019 04:40:00	58	57	62	58	55	52	45	38	65	61	57	54	48	44
777	28/10/2019 04:45:00	58	57	62	59	55	52	45	39	65	62	58	54	47	45
778	28/10/2019 04:50:00	58	57	62	58	55	52	45	38	65	62	57	54	46	40
779	28/10/2019 04:55:00	58	57	62	58	55	52	45	38	65	62	58	54	46	40
780	28/10/2019 05:00:00	59	57	62	58	55	52	45	38	65	61	57	54	50	47
781	28/10/2019 05:05:00	60	57	62	59	55	52	45	39	65	63	59	56	49	45
782	28/10/2019 05:10:00	60	59	63	61	57	55	48	43	66	63	59	57	50	45
783	28/10/2019 05:15:00	60	59	63	61	57	55	48	43	66	64	60	57	50	48
784	28/10/2019 05:20:00	60	59	63	61	57	55	48	43	66	65	60	56	50	45
785	28/10/2019 05:25:00	62	59	62	61	57	55	48	44	65	64	59	57	56	52
786	28/10/2019 05:30:00	60	59	63	61	57	55	48	43	66	63	59	57	49	45
787	28/10/2019 05:35:00	60	59	63	61	57	55	48	43	65	63	60	57	49	45
788	28/10/2019 05:40:00	60	59	63	61	57	55	48	43	66	63	60	57	49	45
789	28/10/2019 05:45:00	60	59	63	61	57	55	48	43	66	64	59	57	49	44
790	28/10/2019 05:50:00	60	59	63	61	57	55	48	43	66	64	60	57	51	46
791	28/10/2019 05:55:00	60	59	63	61	57	55	48	43	66	64	60	57	49	44
792	28/10/2019 06:00:00	60	59	63	61	57	55	47	42	66	64	60	56	49	44
793	28/10/2019 06:05:00	60	59	63	61	57	55	47	42	66	64	59	57	49	44
794	28/10/2019 06:10:00	60	59	63	61	57	55	48	43	66	63	60	56	49	44
795	28/10/2019 06:15:00	60	59	63	60	57	54	47	42	66	64	60	56	49	46
796	28/10/2019 06:20:00	62	59	66	61	56	54	47	41	69	64	59	56	53	57
797	28/10/2019 06:25:00	75	59	63	60	56	54	47	46	67	64	59	59	63	71
798	28/10/2019 06:30:00	73	57	61	59	55	52	45	44	65	63	61	61	60	70
799	28/10/2019 06:35:00	60	58	61	59	56	53	46	40	66	63	60	57	49	50
800	28/10/2019 06:40:00	60	59	63	60	57	54	47	42	66	64	59	57	50	45
801	28/10/2019 06:45:00	59	57	62	58	55	52	45	38	65	61	58	56	52	50
802	28/10/2019 06:50:00	59	58	62	60	56	53	45	39	66	64	59	54	47	42
803	28/10/2019 06:55:00	59	57	62	59	55	52	45	38	65	62	58	54	46	41
804	28/10/2019 07:00:00	61	57	62	59	55	52	44	38	67	66	61	55	49	40
805	28/10/2019 07:05:00	59	57	62	59	55	52	45	38	66	62	58	55	48	41
806	28/10/2019 07:10:00	61	57	62	58	55	52	45	39	65	62	58	58	56	57
807	28/10/2019 07:15:00	59	57	62	59	56	52	45	39	66	63	59	55	51	47
808	28/10/2019 07:20:00	59	58	62	59	57	52	45	39	66	63	60	55	51	50
809	28/10/2019 07:25:00	59	58	62	59	56	52	45	39	66	63	59	55	51	45
810	28/10/2019 07:30:00	59	58	62	60	56	52	45	39	66	63	60	54	49	40
811	28/10/2019 07:35:00	67	58	62	60	56	52	46	39	68	64	58	58	65	52
812	28/10/2019 07:40:00	59	57	62	59	56	52	45	39	66	63	59	54	47	43
813	28/10/2019 07:45:00	59	57	62	59	56	52	45	38	66	63	59	55	50	41
814	28/10/2019 07:50:00	59	57	62	60	56	52	45	38	66	62	59	55	50	47
815	28/10/2019 07:55:00	64	58	62	60	56	52	45	39	67	65	63	61	54	46
816	28/10/2019 08:00:00	71	58	63	60	56	53	47	39	67	64	59	64	70	59
817	28/10/2019 08:05:00	59	58	62	60	56	52	45	39	66	63	59	54	52	41
818	28/10/2019 08:10:00	58	58	63	60	56	52	45	39	66	63	58	54	47	41
819	28/10/2019 08:15:00	60	58	63	60	56	52	45	39	67	63	59	56	50	42
820	28/10/2019 08:20:00	69	58	63	60	56	53	46	39	76	71	68	65	59	51
821	28/10/2019 08:25:00	61	58	63	60	57	53	46	40	68	64	61	57	49	45
822	28/10/2019 08:30:00	61	58	63	60	56	53	46	40	68	69	59	55	48	44
823	28/10/2019 08:35:00	63	58	64	60	57	53	46	40	68	64	65	61	53	46
824	28/10/2019 08:40:00	71	59	66	61	57	54	48	45	71	65	62	58	56	66
825	28/10/2019 08:45:00	73	59	66	62	57	54	48	45	71	65	60	60	62	69
826	28/10/2019 08:50:00	62	59	63	61	57	54	48	43	67	65	60	58	56	51
827	28/10/2019 08:55:00	74	58	63	60	56	53	47	44	71	68	64	61	60	71
828	28/10/2019 09:00:00	66	60	65	62	58	55	49	44	68	67	65	63	59	54
829	28/10/2019 09:05:00	76	59	64	60	57	55	51	45	69	72	73	73	71	66
830	28/10/2019 09:10:00	65	58	64	60	56	53	48	42	67	64	62	64	63	57
831	28/10/2019 09:15:00	77	61	65	62	58	56	51	49	75	70	64	65	67	69
832	28/10/2019 09:20:00	70	61	65	62	58	56	51	47	80	73	71	66	65	56
833	28/10/2019 09:25:00	66	59	63	60	57	54	49	45	69	65	63	62	62	55
834	28/10/2019 09:30:00	69	57	63	59	56	52	47	41	67	63	68	66	63	60
835	28/10/2019 09:35:00	65	59	64	61	57	54	48	43	68	66	62	62	58	55
836	28/10/2019 09:40:00	64	60	64	61	58	55	50	47	68	65	62	60	59	55
837	28/10/2019 09:45:00	68	60	65	62	58	55	50	45	69	66	62	65	65	60
838	28/10/2019 09:50:00	63	59	64	61	58	55	48	42	72	65	63	58	54	50
839	28/10/2019 09:55:00	74	60	67	62	58	54	48	41	84	82	75	67	63	59
840	28/10/2019 10:00:00	68	59	64	60	57	54	48	42	69	64	62	65	62	55
841	28/10/2019 10:05:00	66	61	65	62	58	56	52	48	70	67	63	62	60	58
842	28/10/2019 10:10:00	68	60	65	61	58	55	49	44	69	66	65	64	64	58
843	28/10/2019 10:15:00	65	60	65	61	58	55	49	44	68	65	62	61	60	57
844	28/10/2019 10:20:00	63	60	64	61	58	55	49	44	68	64	61	58	56	53
845	28/10/2019 10:25:00	70	60	64	61	58	56	50	44	68	65	73	68	65	57
846	28/10/2019 10:30:00	66	61	65	62	59	56	50	44	69	66	65	61	62	57
847	28/10/2019 10:35:00	65	61	65	62	59	56	49	44	69	65	63	59	61	54
848	28/10/2019 10:40:00	77	63	68	65	62	58	51	44	82	80	77	71	65	54
849	28/10/2019 10:45:00	65	61	65	62	59	56	49	44	69	65	63	62	60	56
850	28/10/2019 10:50:00	66	60	65	62	58	56	49	43	68	65	62	63	61	54
851	28/10/2019 10:55:00	63	59	65	61	57	54	48	42	69	64	60	58	58	55
852	28/10/2019 11:00:00	63	59	65	60	57	54	47	41	69	65	60	62	59	56
853	28/10/2019 11:05:00	65	59	65	60	57	54	48	42	69	67	65	61	58	54
854	28/10/2019 11:10:00	68	59	64	61	57	54	47	41	70	67	70	63	62	57
855	28/10/2019 11:15:00	67	58	63	62	56	53	47	43	67	66	60	57	65	57
856	28/10/2019 11:20:00	74	61	64	62	59	56	50	48	75	75	74	71	65	64
857	28/10/2019 11:25:00	64	57	61	60	56	52	46	40	66	65	60	57	62	57
858	28/10/2019 11:30:00	65	58	62	60	56	52	46	41	67	67	63	58	63	55
859	28/10/2019 11:35:00	65	58	64	60	56	52	46	41	68	64	66	62	58	57
860	28/10/2019 11:40:00	74	60	63	61	59	55	49	42	73	72	75	70	64	53
861	28/10/2019 11:45:00	75	65	64	61	60	60	56	59	71	68	67	73	65	68

Background noise measurementrs at Alliance House, 29-30 High Holborn, London, WC1V 6AZ.

No.	Date & time	LAFmax	LAeq	Leq 125 Hz	Leq 250 Hz	Leq 500 Hz	Leq 1000 Hz	Leq 2000 Hz	Leq 4000 Hz	LZmax125 Hz	LZmax250 Hz	LZmax500 Hz	LZmax1000 Hz	Lzmax 2000 Hz	Lzmax 4000 Hz
862	28/10/2019 11:50:00	66	58	64	60	56	52	47	42	70	67	65	65	64	56
863	28/10/2019 11:55:00	74	63	64	62	58	58	53	56	73	70	67	73	63	68
864	28/10/2019 12:00:00	69	60	64	65	57	53	47	41	69	68	66	58	69	61
865	28/10/2019 12:05:00	63	60	64	65	57	53	47	40	68	67	62	59	52	53
866	28/10/2019 12:10:00	74	63	64	61	59	58	53	54	71	68	69	73	64	65
867	28/10/2019 12:15:00	65	57	63	60	56	52	46	40	69	64	60	57	64	57
868	28/10/2019 12:20:00	64	58	63	60	56	52	46	40	68	63	62	57	59	58

	LAeq	Leq 125 Hz	Leq 250 Hz	Leq 500 Hz	Leq 1000 Hz	Leq 2000 Hz	Leq 4000 Hz
25th Oct day	58	62	59	56	52	48	43
25th Oct night	55	62	58	54	50	44	37
26th Oct day	55	57	57	53	49	44	41
26th Oct night	54	57	56	52	48	42	35
27th Oct day	55	59	58	54	50	44	37
27th Oct night	57	62	59	56	53	46	41
28th Oct day	59	64	61	57	54	48	46
25th and 28th day combined	58	63	60	56	53	48	44

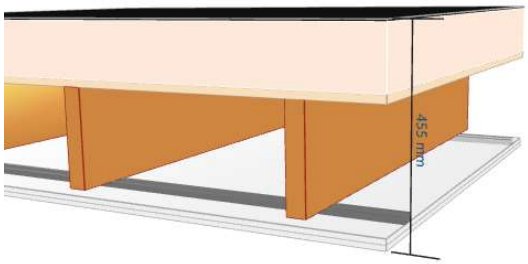
LAFmax	LZmax125 Hz	LZmax250 Hz	LZmax500 Hz	LZmax1000 Hz	Lzmax 2000 Hz	Lzmax 4000 Hz
71	71	73	75	67	53	39

Appendix B

Sound Insulation Prediction (v9.0.8)

margin of error is generally within Rw +/- 3 dB
- Key No. 2501
Job Name:
Job No.: Initials:AD
Date.:18/10/2019
File Name:Insu'

Notes:Roof construction



Rw	58 dB
C	-1 dB
Ctr	-6 dB

Mass-air-mass resonant frequency = =32 Hz
Panel Size = 2.7 m x 4.0 m
Partition surface mass = 50.6 kg/m²

System description

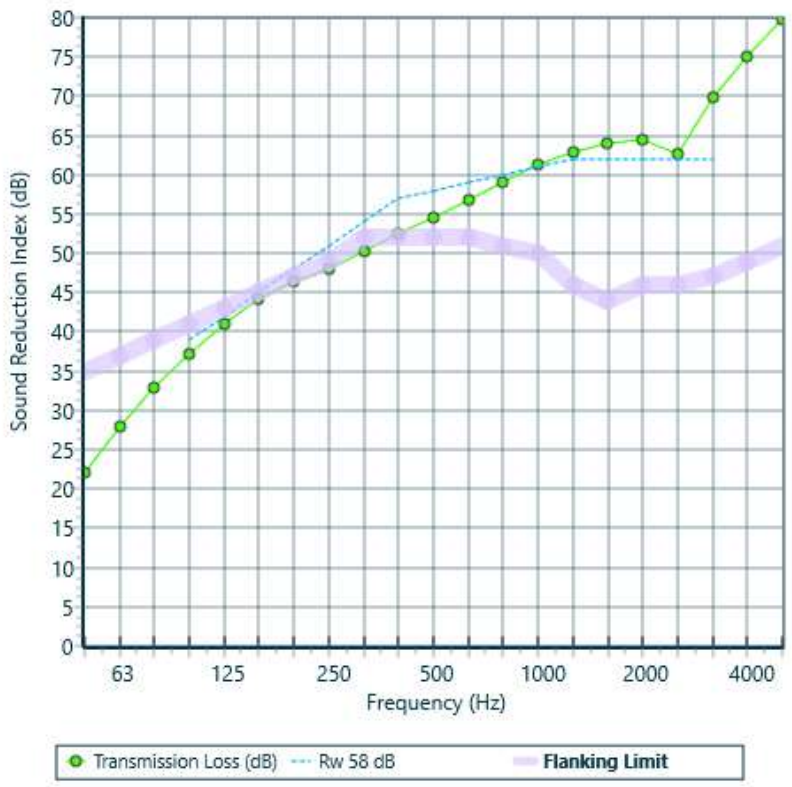
Panel 1 : 1 x 4 mm Nuraply waterproof membrane
+ 1 x 18 mm Plywood

Frame: Solid Joist with resilient rail; Cavity Width 268 mm
Panel 2 + 2 x 12.5 mm Gyproc SoundBloc 12.5mm

+ 1 x 139.9 mm Kingspan KS 1000AWP 120/140mm

Floor Cover: Thickness 0.02 mm

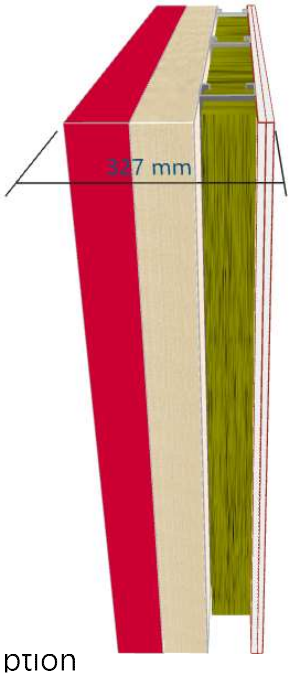
freq.(Hz)	TL(dB)	TL(dB)
50	22	
63	28	26
80	33	
100	37	
125	41	40
160	44	
200	46	
250	48	48
315	50	
400	52	
500	55	54
630	57	
800	59	
1000	61	61
1250	63	
1600	64	
2000	64	64
2500	63	
3150	70	
4000	75	73
5000	80	



Sound Insulation Prediction (v9.0.8)

margin of error is generally within Rw +/- 3 dB
- Key No. 2501
Job Name:
Job No.: Initials:AD
Date.:18/10/2019
File Name:Insu'

Notes:Wall construction



Rw	74 dB
C	-3 dB
Ctr	-9 dB

Mass-air-mass resonant frequency = =43 Hz
Panel Size = 2.7 m x 4.0 m
Partition surface mass = 193 kg/m²

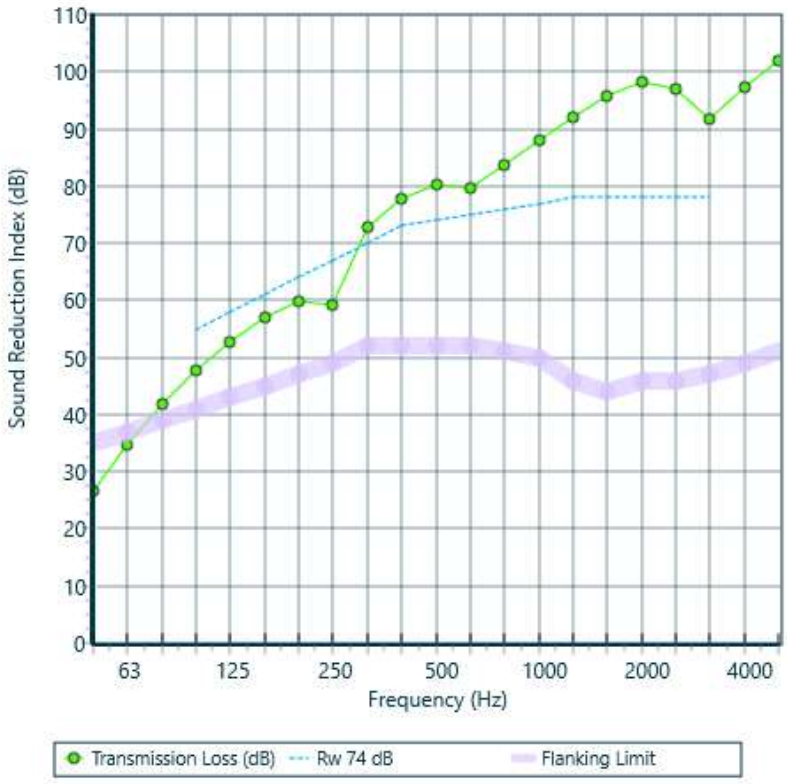
System description

Panel 1 : 1 x 102.5 mm Brick + 1 x 99.9 mm Kingspan KS 1000LS 100/140mm

Frame: Right steel stud + air gap; Cavity Width 100 mm ,Stud spacing 600 mm , 1 x Fibreglass (10kg/m3) Thickness 100 mm
Panel 2 + 2 x 12.5 mm Gyproc Wallboard 12.5mm

Floor Cover: Thickness 0.02 mm

freq.(Hz)	TL(dB)	TL(dB)
50	27	
63	35	31
80	42	
100	48	
125	53	51
160	57	
200	60	
250	59	61
315	73	
400	78	
500	80	79
630	79	
800	84	
1000	88	87
1250	92	
1600	96	
2000	98	97
2500	97	
3150	92	
4000	97	95
5000	102	



Appendix C

1st Floor Master day

ACOUSTICS PLUS

Description	Term	Weighted rating	Octave Band Centre Frequency (Hz)					
			125	250	500	1000	2000	4000
Freefield External Noise Level	$L_{eq,ff}$	58dBA	63	60	56	53	48	44
Mechanical ventilation	$D_{ne,w}$	Dne,w N/A	100	100	100	100	100	100
Glazing 6mm float / 10mm / 4mm float	R_w	Rw 34dB	27	26	28	37	36	36
External Wall	R_{ew}	R_w 74dB	44	54	72	80	90	88
Roof Construction	R_{rr}	R_w N/A dB	100	100	100	100	100	100
Total room absorption (based on RT)	RT_{60}	0.5	7	9	11	11	10	10

Derivation	Term	Value
Façade area (including window)	S_f	14
Window area	S_{wi}	4.6
$S_f - S_{wi}$	S_{ew}	9
Area of ceiling	S_{rr}	14
$S_f + S_{rr}$	S	28
Reference absorption area	A_0	10
Room volume	V	35

Description	Term from Equation	Reference letter	Octave Band Centre Frequency (Hz)					
			125	250	500	1000	2000	4000
Freefield External Noise Level	$L_{eq,ff}$	A	63	60	56	53	48	44
Mechanical ventilation	$D_{n,e}$		100	100	100	100	100	100
	$(A_0/S)*10^{(-D_{ne,w}/10)}$	B	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Double Glazed Windows	R_{wi}		27	26	28	37	36	36
	$(S_{wi}/S)*10^{(-R_{wi}/10)}$	C	0.00033	0.00042	0.00026	0.00003	0.00004	0.00004
External Wall Construction	R_{ew}		44	54	72	80	90	88
	$(S_{ew}/S)*10^{(-R_{ew}/10)}$	D	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
Roof Construction	R_{rr}		100	100	100	100	100	100
	$(S_{rr}/S)*10^{(-R_{rr}/10)}$	E	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Total Sound Insulation Performance	10Log(B+C+D+E)	F	-35	-34	-36	-45	-44	-44
Total Absorption Area of Receiver Room	A (furnished)		7	9	11	11	10	10
	10Log(S/A)	G	5.7	4.7	3.9	3.9	4.3	4.3
Total Internal Sound Pressure Level, Leq	Leq,2	A+F+G+3	36.7	33.6	27.3	15.0	11.6	7.9

RESULTANT INTERNAL NOISE LEVEL	**28.7**

1st Floor Master night

ACOUSTICS PLUS

Description	Term	Weighted rating	Octave Band Centre Frequency (Hz)					
			125	250	500	1000	2000	4000
Freefield External Noise Level	$L_{eq,ff}$	58dBA	62	59	56	53	46	41
Mechanical ventilation	$D_{ne,w}$	Dne,w N/A	100	100	100	100	100	100
Glazing 6mm float / 10mm / 4mm float	R_w	Rw 34dB	27	26	28	37	36	36
External Wall	R_{ew}	R_w 74dB	44	54	72	80	90	88
Roof Construction	R_{rr}	R_w N/A dB	100	100	100	100	100	100
Total room absorption (based on RT)	RT_{60}	0.5	7	9	11	11	10	10

Derivation	Term	Value
Façade area (including window)	S_f	14
Window area	S_{wi}	4.6
$S_f - S_{wi}$	S_{ew}	9
Area of ceiling	S_{rr}	14
$S_f + S_{rr}$	S	28
Reference absorption area	A_0	10
Room volume	V	35

Description	Term from Equation	Reference letter	Octave Band Centre Frequency (Hz)					
			125	250	500	1000	2000	4000
Freefield External Noise Level	$L_{eq,ff}$	A	62	59	56	53	46	41
Mechanical ventilation	$D_{n,e}$		100	100	100	100	100	100
	$(A_0/S)*10^{(-D_{ne,w}/10)}$	B	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Double Glazed Windows	R_{wi}		27	26	28	37	36	36
	$(S_{wi}/S)*10^{(-R_{wi}/10)}$	C	0.00033	0.00042	0.00026	0.00003	0.00004	0.00004
External Wall Construction	R_{ew}		44	54	72	80	90	88
	$(S_{ew}/S)*10^{(-R_{ew}/10)}$	D	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
Roof Construction	R_{rr}		100	100	100	100	100	100
	$(S_{rr}/S)*10^{(-R_{rr}/10)}$	E	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Total Sound Insulation Performance	10Log(B+C+D+E)	F	-35	-34	-36	-45	-44	-44
Total Absorption Area of Receiver Room	A (furnished)		7	9	11	11	10	10
	10Log(S/A)	G	5.7	4.7	3.9	3.9	4.3	4.3
Total Internal Sound Pressure Level, Leq	Leq,2	A+F+G+3	36.1	33.1	26.7	14.8	9.2	4.3

RESULTANT INTERNAL NOISE LEVEL	**28.1**

1st Floor Master Lamax

ACOUSTICS PLUS

Description	Term	Weighted rating	Octave Band Centre Frequency (Hz)					
			125	250	500	1000	2000	4000
Freefield External Noise Level	$Lmax_{,ff}$	74dBA	71	73	75	67	53	39
Mechanical ventilation	$D_{ne,w}$	Dne,w N/A	100	100	100	100	100	100
Glazing 6mm float / 10mm / 4mm float	R_w	Rw 34dB	27	26	28	37	36	36
External Wall	R_{ew}	R_w 74dB	44	54	72	80	90	88
Roof Construction	R_{rr}	R_w N/A dB	100	100	100	100	100	100
Total room absorption (based on RT)	RT_{60}	0.5	7	9	11	11	10	10

Derivation	Term	Value
Façade area (including window)	S_f	14
Window area	S_{wi}	4.6
$S_f - S_{wi}$	S_{ew}	9
Area of ceiling	S_{rr}	14
$S_f + S_{rr}$	S	28
Reference absorption area	A_0	10
Room volume	V	35

Description	Term from Equation	Reference letter	Octave Band Centre Frequency (Hz)					
			125	250	500	1000	2000	4000
Freefield External Noise Level	$L_{eq,ff}$	A	71	73	75	67	53	39
Mechanical ventilation	$D_{n,e}$		100	100	100	100	100	100
	$(A_0/S)*10^{(-D_{ne,w}/10)}$	B	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Double Glazed Windows	R_{wi}		27	26	28	37	36	36
	$(S_{wi}/S)*10^{(-R_{wi}/10)}$	C	0.00033	0.00042	0.00026	0.00003	0.00004	0.00004
External Wall Construction	R_{ew}		44	54	72	80	90	88
	$(S_{ew}/S)*10^{(-R_{ew}/10)}$	D	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
Roof Construction	R_{rr}		100	100	100	100	100	100
	$(S_{rr}/S)*10^{(-R_{rr}/10)}$	E	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Total Sound Insulation Performance	10Log(B+C+D+E)	F	-35	-34	-36	-45	-44	-44
Total Absorption Area of Receiver Room	A (furnished)		7	9	11	11	10	10
	10Log(S/A)	G	5.7	4.7	3.9	3.9	4.3	4.3
Total Internal Sound Pressure Level, Leq	Leq,2	A+F+G+3	45.5	47.2	46.0	29.3	16.2	2.9

RESULTANT INTERNAL NOISE LEVEL	**44.5**

1st Floor bedroom2 day

ACOUSTICS PLUS

Description	Term	Weighted rating	Octave Band Centre Frequency (Hz)					
			125	250	500	1000	2000	4000
Freefield External Noise Level	$L_{eq,ff}$	58dBA	63	60	56	53	48	44
Mechanical ventilation	$D_{ne,w}$	Dne,w N/A	100	100	100	100	100	100
Glazing 6mm float / 10mm / 4mm float	R_w	Rw 34dB	27	26	28	37	36	36
External Wall	R_{ew}	R_w 74dB	44	54	72	80	90	88
Roof Construction	R_{rr}	R_w N/A dB	100	100	100	100	100	100
Total room absorption (based on RT)	RT_{60}	0.5	3	5	7	7	6	6

Derivation	Term	Value
Façade area (including window)	S_f	7
Window area	S_{wi}	1.9
$S_f - S_{wi}$	S_{ew}	5
Area of ceiling	S_{rr}	8
$S_f + S_{rr}$	S	15
Reference absorption area	A_0	10
Room volume	V	20

Description	Term from Equation	Reference letter	Octave Band Centre Frequency (Hz)					
			125	250	500	1000	2000	4000
Freefield External Noise Level	$L_{eq,ff}$	A	63	60	56	53	48	44
Mechanical ventilation	$D_{n,e}$		100	100	100	100	100	100
	$(A_0/S)*10^{(-D_{ne,w}/10)}$	B	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Double Glazed Windows	R_{wi}		27	26	28	37	36	36
	$(S_{wi}/S)*10^{(-R_{wi}/10)}$	C	0.00025	0.00032	0.00020	0.00003	0.00003	0.00003
External Wall Construction	R_{ew}		44	54	72	80	90	88
	$(S_{ew}/S)*10^{(-R_{ew}/10)}$	D	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
Roof Construction	R_{rr}		100	100	100	100	100	100
	$(S_{rr}/S)*10^{(-R_{rr}/10)}$	E	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Total Sound Insulation Performance	10Log(B+C+D+E)	F	-36	-35	-37	-46	-45	-45
Total Absorption Area of Receiver Room	A (furnished)		3	5	7	7	6	6
	10Log(S/A)	G	7.7	5.1	3.5	3.5	4.3	4.3
Total Internal Sound Pressure Level, Leq	Leq,2	A+F+G+3	37.5	32.9	25.8	13.5	10.4	6.7

RESULTANT INTERNAL NOISE LEVEL	**28.0**

1st Floor bedroom2 night

ACOUSTICS PLUS

Description	Term	Weighted rating	Octave Band Centre Frequency (Hz)					
			125	250	500	1000	2000	4000
Freefield External Noise Level	$L_{eq,ff}$	58dBA	62	59	56	53	46	41
Mechanical ventilation	$D_{ne,w}$	Dne,w N/A	100	100	100	100	100	100
Glazing 6mm float / 10mm / 4mm float	R_w	Rw 34dB	27	26	28	37	36	36
External Wall	R_{ew}	R_w 74dB	44	54	72	80	90	88
Roof Construction	R_{rr}	R_w N/A dB	100	100	100	100	100	100
Total room absorption (based on RT)	RT_{60}	0.5	3	5	7	7	6	6

Derivation	Term	Value
Façade area (including window)	S_f	7
Window area	S_{wi}	1.9
$S_f - S_{wi}$	S_{ew}	5
Area of ceiling	S_{rr}	8
$S_f + S_{rr}$	S	15
Reference absorption area	A_0	10
Room volume	V	20

Description	Term from Equation	Reference letter	Octave Band Centre Frequency (Hz)					
			125	250	500	1000	2000	4000
Freefield External Noise Level	$L_{eq,ff}$	A	62	59	56	53	46	41
Mechanical ventilation	$D_{n,e}$		100	100	100	100	100	100
	$(A_0/S)*10^{(-D_{ne,w}/10)}$	B	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Double Glazed Windows	R_{wi}		27	26	28	37	36	36
	$(S_{wi}/S)*10^{(-R_{wi}/10)}$	C	0.00025	0.00032	0.00020	0.00003	0.00003	0.00003
External Wall Construction	R_{ew}		44	54	72	80	90	88
	$(S_{ew}/S)*10^{(-R_{ew}/10)}$	D	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
Roof Construction	R_{rr}		100	100	100	100	100	100
	$(S_{rr}/S)*10^{(-R_{rr}/10)}$	E	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Total Sound Insulation Performance	10Log(B+C+D+E)	F	-36	-35	-37	-46	-45	-45
Total Absorption Area of Receiver Room	A (furnished)		3	5	7	7	6	6
	10Log(S/A)	G	7.7	5.1	3.5	3.5	4.3	4.3
Total Internal Sound Pressure Level, Leq	Leq,2	A+F+G+3	36.9	32.3	25.2	13.3	8.1	3.2

RESULTANT INTERNAL NOISE LEVEL	**27.4**

1st Floor bedroom2 Lamax

ACOUSTICS PLUS

Description	Term	Weighted rating	Octave Band Centre Frequency (Hz)					
			125	250	500	1000	2000	4000
Freefield External Noise Level	$Lmax_{,ff}$	74dBA	71	73	75	67	53	39
Mechanical ventilation	$D_{ne,w}$	Dne,w N/A	100	100	100	100	100	100
Glazing 6mm float / 10mm / 4mm float	R_w	Rw 34dB	27	26	28	37	36	36
External Wall	R_{ew}	R_w 74dB	44	54	72	80	90	88
Roof Construction	R_{rr}	R_w N/A dB	100	100	100	100	100	100
Total room absorption (based on RT)	RT_{60}	0.5	3	5	7	7	6	6

Derivation	Term	Value
Façade area (including window)	S_f	7
Window area	S_{wi}	1.9
$S_f - S_{wi}$	S_{ew}	5
Area of ceiling	S_{rr}	8
$S_f + S_{rr}$	S	15
Reference absorption area	A_0	10
Room volume	V	20

Description	Term from Equation	Reference letter	Octave Band Centre Frequency (Hz)					
			125	250	500	1000	2000	4000
Freefield External Noise Level	$L_{eq,ff}$	A	71	73	75	67	53	39
Mechanical ventilation	$D_{n,e}$		100	100	100	100	100	100
	$(A_0/S)*10^{(-D_{ne,w}/10)}$	B	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Double Glazed Windows	R_{wi}		27	26	28	37	36	36
	$(S_{wi}/S)*10^{(-R_{wi}/10)}$	C	0.00025	0.00032	0.00020	0.00003	0.00003	0.00003
External Wall Construction	R_{ew}		44	54	72	80	90	88
	$(S_{ew}/S)*10^{(-R_{ew}/10)}$	D	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
Roof Construction	R_{rr}		100	100	100	100	100	100
	$(S_{rr}/S)*10^{(-R_{rr}/10)}$	E	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Total Sound Insulation Performance	10Log(B+C+D+E)	F	-36	-35	-37	-46	-45	-45
Total Absorption Area of Receiver Room	A (furnished)		3	5	7	7	6	6
	10Log(S/A)	G	7.7	5.1	3.5	3.5	4.3	4.3
Total Internal Sound Pressure Level, Leq	Leq,2	A+F+G+3	46.3	46.5	44.5	27.8	15.0	1.8

RESULTANT INTERNAL NOISE LEVEL	**43.3**

2nd Floor kitchen diner

ACOUSTICS PLUS

Description	Term	Weighted rating	Octave Band Centre Frequency (Hz)					
			125	250	500	1000	2000	4000
Freefield External Noise Level	$L_{eq,ff}$	58dBA	63	60	56	53	48	44
Mechanical ventilation	$D_{ne,w}$	Dne,w N/A	100	100	100	100	100	100
Glazing 5mm float / 10mm / 3mm float	R_w	Rw 32dB	21	25	27	34	39	25
External Wall	R_{ew}	R_w 74dB	44	54	72	80	90	88
Roof Construction	R_{rr}	R_w N/A dB	100	100	100	100	100	100
Total room absorption (based on RT)	RT_{60}	0.75	18	20	22	22	21	21

Derivation	Term	Value
Façade area (including window)	S_f	39
Window area	S_{wi}	8.0
$S_f - S_{wi}$	S_{ew}	31
Area of ceiling	S_{rr}	40
$S_f + S_{rr}$	S	79
Reference absorption area	A_0	10
Room volume	V	99

Description	Term from Equation	Reference letter	Octave Band Centre Frequency (Hz)					
			125	250	500	1000	2000	4000
Freefield External Noise Level	$L_{eq,ff}$	A	63	60	56	53	48	44
Mechanical ventilation	$D_{n,e}$		100	100	100	100	100	100
	$(A_0/S)*10^{(-D_{ne,w}/10)}$	B	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Double Glazed Windows	R_{wi}		21	25	27	34	39	25
	$(S_{wi}/S)*10^{(-R_{wi}/10)}$	C	0.00081	0.00032	0.00020	0.00004	0.00001	0.00032
External Wall Construction	R_{ew}		44	54	72	80	90	88
	$(S_{ew}/S)*10^{(-R_{ew}/10)}$	D	0.00002	0.00000	0.00000	0.00000	0.00000	0.00000
Roof Construction	R_{rr}		100	100	100	100	100	100
	$(S_{rr}/S)*10^{(-R_{rr}/10)}$	E	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Total Sound Insulation Performance	10Log(B+C+D+E)	F	-31	-35	-37	-44	-49	-35
Total Absorption Area of Receiver Room	A (furnished)		18	20	22	22	21	21
	10Log(S/A)	G	6.5	6.1	5.6	5.6	5.8	5.8
Total Internal Sound Pressure Level, Leq	Leq,2	A+F+G+3	41.2	33.8	27.9	17.7	8.0	18.3

RESULTANT INTERNAL NOISE LEVEL	**30.4**

3rd Floor studio day

ACOUSTICS PLUS

Description	Term	Weighted rating	Octave Band Centre Frequency (Hz)					
			125	250	500	1000	2000	4000
Freefield External Noise Level	$L_{eq,ff}$	58dBA	63	60	56	53	48	44
Mechanical ventilation	$D_{ne,w}$	Dne,w N/A	100	100	100	100	100	100
Glazing 6mm float / 10mm / 3mm float	R_w	Rw 33dB	22	25	28	35	36	27
External Wall	R_{ew}	R_w 74dB	44	54	72	80	90	88
Roof Construction	R_{rr}	R_w N/A dB	100	100	100	100	100	100
Total room absorption (based on RT)	RT_{60}	0.75	12	14	16	16	15	15

Derivation	Term	Value
Façade area (including window)	S_f	34
Window area	S_{wi}	6.3
S_f -S_{wi}	S_{ew}	27
Area of ceiling	S_{rr}	30
S_f +S_{rr}	S	64
Reference absorption area	A_0	10
Room volume	V	75

Description	Term from Equation	Reference letter	Octave Band Centre Frequency (Hz)					
			125	250	500	1000	2000	4000
Freefield External Noise Level	$L_{eq,ff}$	A	63	60	56	53	48	44
Mechanical ventilation	$D_{n,e}$		100	100	100	100	100	100
	$(A_0/S)*10^{(-D_{ne,w}/10)}$	B	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Double Glazed Windows	R_{wi}		22	25	28	35	36	27
	$(S_{wi}/S)*10^{(-R_{wi}/10)}$	C	0.00063	0.00031	0.00016	0.00003	0.00003	0.00020
External Wall Construction	R_{ew}		44	54	72	80	90	88
	$(S_{ew}/S)*10^{(-R_{ew}/10)}$	D	0.00002	0.00000	0.00000	0.00000	0.00000	0.00000
Roof Construction	R_{rr}		100	100	100	100	100	100
	$(S_{rr}/S)*10^{(-R_{rr}/10)}$	E	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Total Sound Insulation Performance	10Log(B+C+D+E)	F	-32	-35	-38	-45	-46	-37
Total Absorption Area of Receiver Room	A (furnished)		12	14	16	16	15	15
	10Log(S/A)	G	7.1	6.5	5.9	5.9	6.2	6.2
Total Internal Sound Pressure Level, Leq	Leq,2	A+F+G+3	40.8	34.2	27.1	16.8	11.3	16.5

RESULTANT INTERNAL NOISE LEVEL	**30.0**

3rd Floor studio night

ACOUSTICS PLUS

Description	Term	Weighted rating	Octave Band Centre Frequency (Hz)					
			125	250	500	1000	2000	4000
Freefield External Noise Level	$L_{eq,ff}$	58dBA	62	59	56	53	46	41
Mechanical ventilation	$D_{ne,w}$	Dne,w N/A	100	100	100	100	100	100
Glazing 6mm float / 10mm / 3mm float	R_w	Rw 33dB	22	25	28	35	36	27
External Wall	R_{ew}	R_w 74dB	44	54	72	80	90	88
Roof Construction	R_{rr}	R_w N/A dB	100	100	100	100	100	100
Total room absorption (based on RT)	RT_{60}	0.75	12	14	16	16	15	15

Derivation	Term	Value
Façade area (including window)	S_f	34
Window area	S_{wi}	6.3
S_f -S_{wi}	S_{ew}	27
Area of ceiling	S_{rr}	30
S_f +S_{rr}	S	64
Reference absorption area	A_0	10
Room volume	V	75

Description	Term from Equation	Reference letter	Octave Band Centre Frequency (Hz)					
			125	250	500	1000	2000	4000
Freefield External Noise Level	$L_{eq,ff}$	A	62	59	56	53	46	41
Mechanical ventilation	$D_{n,e}$		100	100	100	100	100	100
	$(A_0/S)*10^{(-D_{ne,w}/10)}$	B	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Double Glazed Windows	R_{wi}		22	25	28	35	36	27
	$(S_{wi}/S)*10^{(-R_{wi}/10)}$	C	0.00063	0.00031	0.00016	0.00003	0.00003	0.00020
External Wall Construction	R_{ew}		44	54	72	80	90	88
	$(S_{ew}/S)*10^{(-R_{ew}/10)}$	D	0.00002	0.00000	0.00000	0.00000	0.00000	0.00000
Roof Construction	R_{rr}		100	100	100	100	100	100
	$(S_{rr}/S)*10^{(-R_{rr}/10)}$	E	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Total Sound Insulation Performance	10Log(B+C+D+E)	F	-32	-35	-38	-45	-46	-37
Total Absorption Area of Receiver Room	A (furnished)		12	14	16	16	15	15
	10Log(S/A)	G	7.1	6.5	5.9	5.9	6.2	6.2
Total Internal Sound Pressure Level, Leq	Leq,2	A+F+G+3	40.2	33.6	26.5	16.6	8.9	13.0

RESULTANT INTERNAL NOISE LEVEL	**29.4**

3rd Floor studio Lamax

ACOUSTICS PLUS

Description	Term	Weighted rating	Octave Band Centre Frequency (Hz)					
			125	250	500	1000	2000	4000
Freefield External Noise Level	$Lmax_{,ff}$	74dBA	71	73	75	67	53	39
Mechanical ventilation	$D_{ne,w}$	Dne,w N/A	100	100	100	100	100	100
Glazing 6mm float / 10mm / 3mm float	R_w	Rw 33dB	22	25	28	35	36	27
External Wall	R_{ew}	R_w 74dB	44	54	72	80	90	88
Roof Construction	R_{rr}	R_w N/A dB	100	100	100	100	100	100
Total room absorption (based on RT)	RT_{60}	0.75	12	14	16	16	15	15

Derivation	Term	Value
Façade area (including window)	S_f	34
Window area	S_{wi}	6.3
$S_f - S_{wi}$	S_{ew}	27
Area of ceiling	S_{rr}	30
$S_f + S_{rr}$	S	64
Reference absorption area	A_0	10
Room volume	V	75

Description	Term from Equation	Reference letter	Octave Band Centre Frequency (Hz)					
			125	250	500	1000	2000	4000
Freefield External Noise Level	$L_{eq,ff}$	A	71	73	75	67	53	39
Mechanical ventilation	$D_{n,e}$		100	100	100	100	100	100
	$(A_0/S)*10^{(-D_{ne,w}/10)}$	B	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Double Glazed Windows	R_{wi}		22	25	28	35	36	27
	$(S_{wi}/S)*10^{(-R_{wi}/10)}$	C	0.00063	0.00031	0.00016	0.00003	0.00003	0.00020
External Wall Construction	R_{ew}		44	54	72	80	90	88
	$(S_{ew}/S)*10^{(-R_{ew}/10)}$	D	0.00002	0.00000	0.00000	0.00000	0.00000	0.00000
Roof Construction	R_{rr}		100	100	100	100	100	100
	$(S_{rr}/S)*10^{(-R_{rr}/10)}$	E	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Total Sound Insulation Performance	10Log(B+C+D+E)	F	-32	-35	-38	-45	-46	-37
Total Absorption Area of Receiver Room	A (furnished)		12	14	16	16	15	15
	10Log(S/A)	G	7.1	6.5	5.9	5.9	6.2	6.2
Total Internal Sound Pressure Level, Leq	Leq,2	A+F+G+3	49.6	47.7	45.8	31.1	15.9	11.6

RESULTANT INTERNAL NOISE LEVEL	**44.8**

5th Floor studio day

ACOUSTICS PLUS

Description	Term	Weighted rating	Octave Band Centre Frequency (Hz)					
			125	250	500	1000	2000	4000
Freefield External Noise Level	$L_{eq,ff}$	58dBA	63	60	56	53	48	44
Mechanical ventilation	$D_{ne,w}$	Dne,w N/A	100	100	100	100	100	100
Glazing 6mm float / 10mm / 4mm float	R_w	Rw 34dB	27	26	28	37	36	36
External Wall	R_{ew}	R_w 74dB	44	54	72	80	90	88
Roof Construction	R_{rr}	R_w 58 dB	31	39	45	52	55	64
Total room absorption (based on RT)	RT_{60}	0.75	12	14	16	16	15	15

Derivation	Term	Value
Façade area (including window)	S_f	34
Window area	S_{wi}	6.3
$S_f - S_{wi}$	S_{ew}	27
Area of ceiling	S_{rr}	30
$S_f + S_{rr}$	S	64
Reference absorption area	A_0	10
Room volume	V	75

Description	Term from Equation	Reference letter	Octave Band Centre Frequency (Hz)					
			125	250	500	1000	2000	4000
Freefield External Noise Level	$L_{eq,ff}$	A	63	60	56	53	48	44
Mechanical ventilation	$D_{n,e}$		100	100	100	100	100	100
	$(A_0/S)*10^{(-D_{ne,w}/10)}$	B	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Double Glazed Windows	R_{wi}		27	26	28	37	36	36
	$(S_{wi}/S)*10^{(-R_{wi}/10)}$	C	0.00020	0.00025	0.00016	0.00002	0.00003	0.00003
External Wall Construction	R_{ew}		44	54	72	80	90	88
	$(S_{ew}/S)*10^{(-R_{ew}/10)}$	D	0.00002	0.00000	0.00000	0.00000	0.00000	0.00000
Roof Construction	R_{rr}		31	39	45	52	55	64
	$(S_{rr}/S)*10^{(-R_{rr}/10)}$	E	0.00038	0.00006	0.00001	0.00000	0.00000	0.00000
Total Sound Insulation Performance	10Log(B+C+D+E)	F	-32	-35	-38	-46	-46	-46
Total Absorption Area of Receiver Room	A (furnished)		12	14	16	16	15	15
	10Log(S/A)	G	7.1	6.5	5.9	5.9	6.2	6.2
Total Internal Sound Pressure Level, Leq	Leq,2	A+F+G+3	40.4	34.1	27.5	15.4	11.5	7.6

RESULTANT INTERNAL NOISE LEVEL	**29.8**

5th Floor studio night

ACOUSTICS PLUS

Description	Term	Weighted rating	Octave Band Centre Frequency (Hz)					
			125	250	500	1000	2000	4000
Freefield External Noise Level	$L_{eq,ff}$	58dBA	62	59	56	53	46	41
Mechanical ventilation	$D_{ne,w}$	Dne,w N/A	100	100	100	100	100	100
Glazing 6mm float / 10mm / 4mm float	R_w	Rw 34dB	27	26	28	37	36	36
External Wall	R_{ew}	R_w 74dB	44	54	72	80	90	88
Roof Construction	R_{rr}	R_w 58 dB	31	39	45	52	55	64
Total room absorption (based on RT)	RT_{60}	0.75	12	14	16	16	15	15

Derivation	Term	Value
Façade area (including window)	S_f	34
Window area	S_{wi}	6.3
S_f -S_{wi}	S_{ew}	27
Area of ceiling	S_{rr}	30
S_f +S_{rr}	S	64
Reference absorption area	A_0	10
Room volume	V	75

Description	Term from Equation	Reference letter	Octave Band Centre Frequency (Hz)					
			125	250	500	1000	2000	4000
Freefield External Noise Level	$L_{eq,ff}$	A	62	59	56	53	46	41
Mechanical ventilation	$D_{n,e}$		100	100	100	100	100	100
	$(A_0/S)*10^{(-D_{ne,w}/10)}$	B	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Double Glazed Windows	R_{wi}		27	26	28	37	36	36
	$(S_{wi}/S)*10^{(-R_{wi}/10)}$	C	0.00020	0.00025	0.00016	0.00002	0.00003	0.00003
External Wall Construction	R_{ew}		44	54	72	80	90	88
	$(S_{ew}/S)*10^{(-R_{ew}/10)}$	D	0.00002	0.00000	0.00000	0.00000	0.00000	0.00000
Roof Construction	R_{rr}		31	39	45	52	55	64
	$(S_{rr}/S)*10^{(-R_{rr}/10)}$	E	0.00038	0.00006	0.00001	0.00000	0.00000	0.00000
Total Sound Insulation Performance	10Log(B+C+D+E)	F	-32	-35	-38	-46	-46	-46
Total Absorption Area of Receiver Room	A (furnished)		12	14	16	16	15	15
	10Log(S/A)	G	7.1	6.5	5.9	5.9	6.2	6.2
Total Internal Sound Pressure Level, Leq	Leq,2	A+F+G+3	39.8	33.6	26.9	15.2	9.2	4.1

RESULTANT INTERNAL NOISE LEVEL	**29.2**

ACOUSTICS PLUS

Description	Term	Weighted rating	Octave Band Centre Frequency (Hz)					
			125	250	500	1000	2000	4000
Freefield External Noise Level	$Lmax_{,ff}$	74dBA	71	73	75	67	53	39
Mechanical ventilation	$D_{ne,w}$	Dne,w N/A	100	100	100	100	100	100
Glazing 6mm float / 10mm / 4mm float	R_w	Rw 34dB	27	26	28	37	36	36
External Wall	R_{ew}	R_w 74dB	44	54	72	80	90	88
Roof Construction	R_{rr}	R_w 58 dB	31	39	45	52	55	64
Total room absorption (based on RT)	RT_{60}	0.75	12	14	16	16	15	15

Derivation	Term	Value
Façade area (including window)	S_f	34
Window area	S_{wi}	6.3
$S_f - S_{wi}$	S_{ew}	27
Area of ceiling	S_{rr}	30
$S_f + S_{rr}$	S	64
Reference absorption area	A_0	10
Room volume	V	75

Description	Term from Equation	Reference letter	Octave Band Centre Frequency (Hz)					
			125	250	500	1000	2000	4000
Freefield External Noise Level	$L_{eq,ff}$	A	71	73	75	67	53	39
Mechanical ventilation	$D_{n,e}$		100	100	100	100	100	100
	$(A_0/S)*10^{(-D_{ne,w}/10)}$	B	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Double Glazed Windows	R_{wi}		27	26	28	37	36	36
	$(S_{wi}/S)*10^{(-R_{wi}/10)}$	C	0.00020	0.00025	0.00016	0.00002	0.00003	0.00003
External Wall Construction	R_{ew}		44	54	72	80	90	88
	$(S_{ew}/S)*10^{(-R_{ew}/10)}$	D	0.00002	0.00000	0.00000	0.00000	0.00000	0.00000
Roof Construction	R_{rr}		31	39	45	52	55	64
	$(S_{rr}/S)*10^{(-R_{rr}/10)}$	E	0.00038	0.00006	0.00001	0.00000	0.00000	0.00000
Total Sound Insulation Performance	10Log(B+C+D+E)	F	-32	-35	-38	-46	-46	-46
Total Absorption Area of Receiver Room	A (furnished)		12	14	16	16	15	15
	10Log(S/A)	G	7.1	6.5	5.9	5.9	6.2	6.2
Total Internal Sound Pressure Level, Leq	Leq,2	A+F+G+3	49.2	47.7	46.2	29.8	16.2	2.7

RESULTANT INTERNAL NOISE LEVEL	**44.9**

Appendix D

Acoustic Performance

Glazing Configuration

6mm Float Glass

10mm Cavity

4mm Float Glass

.

Sound Reduction Indices

Frequency, Hz / dB						Rw	C	Ctr	OITC	STC
125	250	500	1000	2000	4000	34	-1	-3	29	34
27	26	28	37	36	29					

01 November 2019 | Acoustic database 20190508

Acoustic Performance

Glazing Configuration

6mm Float Glass

10mm Cavity

3mm Float Glass

.

Sound Reduction Indices

Frequency, Hz / dB						Rw	C	Ctr	OITC	STC
125	250	500	1000	2000	4000	33	-1	-4	28	32
22	25	28	35	36	27					

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Acoustic Performance

Glazing Configuration

5mm Float Glass

10mm Cavity

3mm Float Glass

.

Sound Reduction Indices

Frequency, Hz / dB						Rw	C	Ctr	OITC	STC
125	250	500	1000	2000	4000	32	0	-3	27	32
21	25	27	34	39	25					

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