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# NOISE AND VIBRATION ASSESSMENT

# YUGO DEPOT POINT, 15 – 27 BRITANNIA STREET, LONDON

REPORT REFERENCE NO. J005090-8039-ECE-01

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# **Document Control Sheet**

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This report has been prepared based upon a scope of works and associated resources agreed between the client and Philip Dunbavin Acoustics Ltd (PDA). This report has been prepared with all reasonable skill, care and diligence and has been based upon the interpretation of data collected. This has been accepted in good faith as being accurate and valid at the time of the collection. This report has been based solely on the specific design assumptions and criteria stated herein.



# CONTENTS

1.0	SUMMARY	.4
2.0	SITE DESCRIPTION	5
3.0 3.1 3.2 3.3 3.4 3.5	NOISE ASSESSMENT CRITERIA National Planning Policy Framework (NPPF) WHO Guidelines for Community Noise BS8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings BS6472-1:2008 Camden Local Plan – Policy A4	.8 .9 .9 .9 .9
4.0 4.1 4.2 4.3 4.4	NOISE SURVEY DETAILS Survey Periods Equipment Measurement Location Measurements Procedure	11 11 11 12 12
5.0 5.1 5.2 5.3 5.4	ASSESSMENT OF MEASURED NOISE LEVELS Noise Sources Weather Conditions Measured Results Initial Assessment of Impact	12 12 12 13 13
6.0 6.1 6.1.1 6.1.2 6.2 6.3 6.4	NOISE MITIGATION MEASURES. Glazing and Ventilation Attenuation Requirements. Glazing Specification Ventilation Requirements External Façade Specification Roof Construction Design Assumptions	13 13 14 14 15 15
7.0	ASSESSMENT OF MEASURED VIBRATION LEVELS	15
8.0	CONCLUSION	16

APPENDIX A – DEFINITION OF ACOUSTIC TERMS

APPENDIX B – MEASURED RESULTS



# 1.0 SUMMARY

PDA Ltd have been commissioned by GSA Club GBP Unit Trust to carry out an ambient noise and building envelope assessment for the proposed development at Yugo Depot Point, 15-27 Britannia Street, London.

It is proposed to reconfigure internal rooms within the existing student residence at Britannia Street to add additional ensuite and studio spaces.

A noise level survey was undertaken at the location of the proposed new student accommodation spaces to determine the existing noise climate.

The results of the survey were used to evaluate the sound insulation of the building envelope and to assess compliance Camden Local Plan Policy A4 and the guidance contained within WHO Guidelines for Community Noise and BS8233: 2014. These assessments have demonstrated that utilising the window and ventilation specifications recommended within this report the internal ambient noise levels comply with the design criteria.

In addition a vibration survey has been undertaken at the site of the proposed development. The results have been compared with the criteria contained within Camden Local Plan Policy A4. The results of this assessment have indicated that vibration levels are below the criteria for adverse comment and comply with the design criteria.



# 2.0 SITE DESCRIPTION

Depot Point is located within the London Borough of Camden, adjacent to both Britannia Street to the north and Wicklow Street to the south. To the east, it is bounded by a London Underground line. The existing building is a 5 storey student residence with an internal courtyard.

It is understood that additional studio and ensuite bed spaces will be created within the existing building footprint in a number of different ways as follows: splitting large studios; forming studio in existing store; utilising redundant space in overly large cluster kitchens.

The proposed room schedules is highlighted as follows:

Figure 1. Proposed Ground Floor Plan





# Figure 2. Proposed First Floor Plan



Figure 3. Proposed Second Floor Plan



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# Figure 4. Proposed Third Floor Plan



# Figure 5. Proposed Fourth Floor Plan





# 3.0 NOISE ASSESSMENT CRITERIA

#### 3.1 National Planning Policy Framework (NPPF)

National Planning Policy is guided by the National Planning Policy Framework (NPPF) updated in December 2023. With regard to Noise the Framework states the following;

Planning policies and decisions should contribute to and enhance the natural and local environment by:

 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.

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:

- mitigate and reduce to a minimum potential adverse impact resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;
- identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

The terms '*significant adverse impact*' and '*adverse impact*' are defined in the explanatory notes of the 'Noise Policy Statement for England (NPSE) which states;

There are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation. They are:

#### NOEL – No Observed Effect Level

This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

#### LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effects on health and quality of life can be detected.

Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.

#### SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur.

The notes also offer an explanation of the term 'other adverse impacts' as follows;

... refers to the situation where the impact lies somewhere between LOAEL and SOAEL. It requires that all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development (paragraph 1.8). This does not mean that such adverse effects cannot occur.

It should be noted that no specific noise limits for LOAEL and SOAEL have been specifically defined; however guidance from other acoustic standards may be employed to determine suitable levels within the overall principal of the National Planning Policy Framework.



# 3.2 WHO Guidelines for Community Noise

In 1999, the WHO (World Health Organisation) published Guidelines for Community Noise, stating the following noise levels are applicable to residential dwellings.

#### Table 1. WHO Guidelines for Community Noise Criteria

Specific Environment	Critical Health Effect(s)	L <sub>Aeq</sub> dB	Time Base (hours) *	L <sub>AFmax</sub> dB
Dwelling, indoors	Speech intelligibility & moderate annoyance, daytime & evening	35	16	-
Inside bedrooms	Sleep disturbance, night-time	30	8	45

\* Typically taken to be daytime/evening - 07:00 – 23:00 hours and night time 23:00 – 07:00 hours.

The WHO guidelines state that, *"it is recommended that*  $L_{Aeq,T}$  *be used to evaluate more-or-less continuous environmental noises. Where the noise is principally composed of a small number of discrete events, the additional use of*  $L_{Amax}$  *or SEL is recommended.*" The guidelines recommend that for a good sleep, the indoor sound pressure levels should not exceed approximately 45dB LAmax more than 10 – 15 times.

#### 3.3 BS8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings

British Standard 8233:2014, Guidance on Sound Insulation and noise reduction for buildings, gives guidance on internal noise levels within dwellings, flats and rooms in residential use when unoccupied. The following criteria are for Living and Dining Rooms for daytime use and Bedrooms for night time.

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 LAeq,16hour	_
Dining	Dining room/area	40 LAeq,16hour	_
Sleeping (daytime resting)	Bedrooms	35 L <sub>Aeq,16hour</sub>	30 L <sub>Aeq,8hour</sub>

 Table 2. BS8233 Recommended Indoor Ambient Noise Levels

It should however be stressed that the above criterion relates to steady noise, in this case from road traffic etc., excluding unusual noise events departing from the typical noise character of the area.

In addition, BS 8233 suggests, '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<sub>Amax,F</sub>, depending on the character and number of events per night. Sporadic noise events could require separate values'.

BS8233:2014 stated that the Building Regulations' supporting documents on ventilation recommend that habitable rooms in dwellings have background ventilation. Where openable windows cannot be relied upon for this ventilation, trickle ventilators can be used. However, it is advised that windows may remain openable for rapid or purge ventilation, or at the occupant's choice.

#### 3.4 BS6472-1:2008

BS 6472:2008 defines guideline limiting vibration criteria for residential use and other premises. BS 6472 uses the Vibration Dose Value (VDV) parameter to assess the probability of adverse comments when human subjects are exposed to vibration from typical environmental sources of vibration (e.g. rail traffic). BS 6472 gives the following envelope limiting values to describe varying degrees of perception:



# Table 3. VDV Guideline Values

VDV Period	VDV ms <sup>-1.75</sup>				
	Low Probability of	Adverse Comment	Adverse Comment		
	Adverse Comment	Possible	Probable		
Residential Buildings 16hr day 07:00 – 23:00	0.2 – 0.4	0.4 – 0.8	0.8 – 1.6		
Residential Buildings 8hr night 23:00 – 07:00	0.1 – 0.2	0.2 – 0.4	0.4 – 0.8		

# 3.5 Camden Local Plan – Policy A4

The Camden Local Plan sets out the Council's planning policies and cover the period from 2016 – 2031. Within the Local Plan Policy A4 covers the requirements for Noise and Vibration and states the following:

## "Policy A4 Noise and vibration

The Council will seek to ensure that noise and vibration is controlled and managed.

Development should have regard to Camden's Noise and Vibration Thresholds (Appendix 3). We will not grant planning permission for:

a. development likely to generate unacceptable noise and vibration impacts; or

b. development sensitive to noise in locations which experience high levels of noise, unless appropriate attenuation measures can be provided and will not harm the continued operation of existing uses.

We will only grant permission for noise generating development, including any plant and machinery, if it can be operated without causing harm to amenity. We will also seek to minimise the impact on local amenity from deliveries and from the demolition and construction phases of development."

In addition the above Appendix 3 of the Camden Local Plan provides noise and vibration threshold levels and states the following:

"The significance of noise impact varies dependent on the different noise

sources, receptors and times of operation presented for consideration within a planning application. Therefore, Camden's thresholds for noise and vibration evaluate noise impact in terms of various 'effect levels' described in the National Planning Policy Framework and Planning Practice Guidance:

- NOEL No Observed Effect Level
- LOAEL Lowest Observed Adverse Effect Level
- SOAEL Significant Observed Adverse Effect Level

Three basic design criteria have been set for proposed developments, these being aimed at guiding applicants as to the degree of detailed consideration needed to be given to noise in any planning application. The design criteria outlined below are defined in the corresponding noise tables. The values will vary depending on the context, type of noise and sensitivity of the receptor:

• Green – where noise is considered to be at an acceptable level.



• Amber – where noise is observed to have an adverse effect level, but which may be considered acceptable when assessed in the context of other merits of the development.

• Red – where noise is observed to have a significant adverse effect."

Table A within the Appendix 3 indicates the vibration threshold levels and indicates the following:

**Table 4.** Appendix of the Camden Local Plan Vibration Threshold Levels

Vibration description and location of measurement	Period	Time	Vibration Levels (Vibration Dose Values) m/s <sup>1.75</sup>
Vibration inside dwellings	Day and evening	07:00 - 23:00	0.2 - 0.4
Vibration inside dwellings	Night	23:00 - 07:00	0.13

Table B within the Appendix 3 indicates the noise threshold levels and indicates the following:

 Table 5. Appendix of the Camden Local Plan Noise Threshold Levels

Dominant Noise	Assessment	Design	LOAEL (Green)	LOAEL to SOAEL	SOAEL (Red)
Source	Location	Period		(Amber)	
Anonymous noise	Noise at 1 metre	Day	<50dB L <sub>Aeq,16hr*</sub>	50dB to 72dB	>72dB L <sub>Aeq,16hr*</sub>
such as general	from noise			LAeq,16hr*	
environmental	sensitive facade	Night	<45dB L <sub>Aeq,8hr*</sub>	45dB to 62dB	>62dB L <sub>Aeq,8hr*</sub>
noise, road traffic			<40dB Lnight**	L <sub>Aeq,8hr*</sub>	
and rail traffic ~				>40dB L <sub>night**</sub>	
	Inside a	Day	<35dB L <sub>Aeq,16hr</sub>	35dB to 45dB	>45dB L <sub>Aeq,16hr</sub>
	bedroom			L <sub>Aeq,16hr</sub>	
		Night	<30dB L <sub>Aeq,8hr</sub>	30dB to 40dB	>40dB L <sub>Aeq,16hr</sub>
			42dB L <sub>Amax,fast</sub>	L <sub>Aeq,16hr</sub>	>73dB L <sub>Amax,fast</sub>
				40dB to 73dB	
				L <sub>Amax,fast</sub>	
	Outdoor living	Day	<50dB L <sub>Aeq,16hr</sub>	50dB to 55dB	>55dB L <sub>Aeq,16hr</sub>
	space			L <sub>Aeq,16hr</sub>	

Notes:

\* - L<sub>Aeq,T</sub> values specified for outside a bedroom window are façade levels

\*\* Lnight values specified for outside a bedroom window are free field levels

Please note that the Table B within the Appendix A of Camden's Local Plan include a number of typographical errors. These have been corrected within Table 5 above.

It is also noted that the Table also indicates that it should not be used for non anonymous noise sources. However, please note that the Proposed Development is only exposed to general environmental noise and does not include industrial, commercial or entertainment noise sources.

# 4.0 NOISE SURVEY DETAILS

#### 4.1 Survey Periods

Noise measurements were undertaken from 15:00 on the 22<sup>nd</sup> August 2024 until 13:00 on the 23<sup>rd</sup> August 2024. Measurements were setup and partially attended by Mr. Joe Meadows BSc (Hons) of PDA Ltd.

## 4.2 Equipment



All noise monitoring equipment are precision grade Class 1 accuracy as per IEC 61672-1. The meters were set to measure broadband 'A' weighted sound pressure levels and linear octave bands. The time weighting was set to fast response. The microphones are of the 'free field' type.

The meters were field calibrated before and after the survey during which time no significant calibration drift was observed.

#### 4.3 Measurement Location

Noise Measurements were undertaken at two locations on the site. Measurement Position 1 (MP1) was located within the courtyard of the proposed development on the First Floor. A second measurement position (MP2) was located on the eastern elevation the site on the fourth floor. Measurements were undertaken to correspond to the proposed new bedrooms associated with the Proposed Development. Note that all measurements were undertaken at 1m from the façade of the existing building.

The Measurement Location is as detailed within the following figure:

# Figure 6. Noise Measurement Locations



#### 4.4 Measurements Procedure

Noise monitoring equipment was set to monitor L<sub>Amax</sub>, L<sub>Aeq</sub> and L<sub>A90</sub> noise levels over contiguous 5minute measurement periods with measurements running continuously.

# 5.0 ASSESSMENT OF MEASURED NOISE LEVELS

# 5.1 Noise Sources

The dominant noise sources consisted of road traffic on surrounding road network with additional contributions from the underground train line that runs to the east of the site.

# 5.2 Weather Conditions



The weather conditions during the survey were summarised as follows:

Wind Speed: Wind Direction:	1 – 6 m/s SW
Temperature:	13 - 18ºC
Rain:	Some precipitation between 06:00 - 08:00 on the 23rd August 2024

#### 5.3 Measured Results

The noise measurements from the survey conducted by PDA are summarised in the table below. It is noted that the measurement at MP2 stopped recording at 03:10. Therefore the results have been assessed as follows: As a worst case estimate  $L_{Aeq}$  levels during the day have been based upon logarithmic average of the measurements during rush hour periods 17:00 - 18:00 and 08:00 - 10:00; The  $L_{Aeq}$  levels at MP1 during the night are the logarithmic average of all the measured levels between 23:00 - 07:00. The  $L_{Aeq}$  levels at MP2 during the night has been based upon the difference between the day and night observed within MP1 and applied to the daytime measurements of MP2;  $L_{AFmax}$  noise data is the representative maximum event noise that occurred at each position and are based upon the 10<sup>th</sup> loudest night time measurement at MP2.

Full data are collated within the tables at the rear of the report.

#### **Table 6.** Summary of Measurements

Measurement Position	Daytime Noise Level L <sub>Aeq,</sub>	Night-time Noise level L <sub>Aeq,</sub>	Night-time L <sub>Amax(Fast)</sub>
1	53	46	66
2	61	55	71

#### 5.4 Initial Assessment of Impact

If comparison is made with Camden's Local Plan Policy A4 it would indicate that the proposed scheme will fall within the Amber category and therefore would lie between the LOAEL and SOAEL.

Policy A4 suggests that within the amber category that "where noise is observed to have an adverse effect level, but which may be considered acceptable when assessed in the context of other merits of the development."

In addition it is noted that the NPSE indicates that where the impact lies somewhere between LOAEL and SOAEL all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life.

It would therefore be our recommendation to review the noise ingress into the proposed habitable rooms to ensure that the internal noise level criteria can be achieved.

# 6.0 NOISE MITIGATION MEASURES

Based upon the measured and predicted noise levels in Section 5, calculations have been undertaken to determine internal noise levels for the proposed student accommodation bedrooms and studios. The proposed Site and Internal GA Arrangement Plans are as per the received Hadfield Cawkwell Davidson Design & Access Statement.

## 6.1 Glazing and Ventilation Attenuation Requirements

The dominant paths for noise transfer to the interior of buildings are generally the glazing and ventilation elements of the façade constructions. Based on this premise, to achieve the required internal noise



levels within Appendix 3 of the Camden's Local Plan the following glazing and ventilation specification will be required:

#### Table 7. Sound insulation requirements

Plots Room	Minimum Glazing Requirement R <sub>w</sub> dB	Minimum ventilator rating D <sub>n,e,w</sub>	Internal Noise Target Level dB (Day L <sub>Aeq</sub> /Night L <sub>Aeq</sub> /Night L <sub>Amax</sub> )	Calculated Internal Noise Level dB (Day L <sub>Aeq</sub> /Night L <sub>Aeq</sub> / Night L <sub>Amax</sub> )		
New habitable rooms facing Courtyard	31	31	35 / 30 / 45	29 / 23 / 45		
New Habitable rooms facing east elevation	35	33	35 / 30 / 45	32 / 25 / 43		

## 6.1.1 Glazing Specification

It must be ensured that the acoustic performance of the window frames matches the performance of the glazing that is fitted within them. Glazing framing systems must be fully sealed with any small gaps (<10mm nominal) around perimeter to be stuffed with dense mineral wool to full frame depth and sealed both sides with acoustic non-setting mastic. No gaps should be left unsealed, and in no instance should lightweight foams be used as a sealant behind weathering protection without additional acoustically suitable sealant.

Minimum performance requirements for the combination of glazing and framing recommended in the above tables are as follows:

#### Table 8. Window Acoustic Properties

Octave Band (Hz) Sound Insulation, R (dB)								Typical Construction		
63	125	250	500	1000	2000	4000	Rw	Typical construction		
23	23	21	33	40	37	48	35	8mm glass, 12mm space, 6mm glass		
16	22	19	25	36	42	36	31	4mm glass, 12mm space, 4mm glass		

#### 6.1.2 Ventilation Requirements

The ventilator requirements described in Table 7 above are predicted to have adequate sound insulation to maintain the required internal noise level. It will need to be ensured that the trickle vents selected achieve following minimum sound insulation requirements:

#### Table 9. Ventilator Acoustic Properties

Octave	Band (H	lz) Soun	d Insula	dB	Exemple Vent						
63	125	250	500	1000	2000	4000	D <sub>n,e,w</sub>				
36	40	36	35	31	32	37	33	Simon Acoustic Framevent			
32	36	33	33	31	29	31	31	Simon Framevent			

It is noted that our assessment has assumed that there will be one of each trickle vent within each habitable room. Should additional vents be required, the performance of each individual vent will need to be increased accordingly. Please contact PDA for advice in this instance. The ventilation requirements for compliance with Building Regulations will need to be checked by others.

In addition, please note that in accordance with the guidance contained within BS8233:2014 "Guidance on sound insulation and noise reduction for buildings", windows may remain openable for rapid or purge ventilation, or at the occupant's choice.

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# 6.2 External Façade Specification

It is understood that the scheme will utilise the existing masonry external wall façade. It is assumed that this will either be solid masonry or a cavity masonry and as such the acoustic performance will be high in comparison with the other elements such as the gazing and vents.

#### 6.3 Roof Construction

It should be noted that as the dominant noise are low level sources such as road traffic and the underground line the noise level incident on the roof will be mostly shielded. We would consider that it is unlikely that noise ingress via the roof construction would have any impact on the internal noise level ingress.

#### 6.4 **Design Assumptions**

Assessment and specification of the acoustic performance of the building envelope, has been undertaken based on achieving the LOAEL internal ambient acoustic conditions, highlighted in Table 5.

Information on the sound insulation properties for specific element details has either been sourced from manufacturer's literature or from Insul® Sound insulation prediction software.

In accordance with the reverberation time standardisation detailed within ISO 140-4 the reverberation time within residential habitable rooms have been assumed as 0.5 seconds. Please note that this is a conservative assessment as measurements within furnished and occupied rooms are typically lower than this reverberant level.

# 7.0 ASSESSMENT OF MEASURED VIBRATION LEVELS

Noise measurements were undertaken from 17:00 on the 22<sup>nd</sup> August 2024 until 00:45 on the 23<sup>rd</sup> August 2024.

The vibration measurements were undertaken utilising a Svan 958 noise and vibration analyser. The Svan 958 conforms to ISO8041, ISO2631 and ISO5349. A high sensitivity tri-axial accelerometer Svan SV207A was utilised to measure incident vibration levels.

Measurements were undertaken at the following location. Please note that measurements were undertaken on the First Floor within an existing vacant bedroom.



# Figure 7. Vibration Measurement Location



The vibration measurements are summarised within the table below. Vibration levels have been assessed by determining the dose throughout the 16-hour daytime period and 8-hour night-time period. As a worst case assessment this has been based upon the assumption that the vibration levels between 17:00 - 18:00 are continuous throughout the day and vibration levels between 23:00 - 00:00 are continuous throughout the night.

In addition, the results presented here is the axis that measured the highest value.

Table 10. Summary of Vibration Measurements

Daytime Vibration Level	Night-time Vibration level
0.015	0.011

It is noted that the measured vibration levels are low and would correspond to the low probability of adverse comment range defined within BS6472:2008. In addition the levels are below the threshold levels described within Camden's Local Plan Appendix 3.

# 8.0 CONCLUSION

PDA Ltd have been commissioned by GSA Club GBP Unit Trust to carry out an ambient noise and building envelope assessment for the proposed development at Yugo Depot Point, 15-27 Britannia Street, London.

It is proposed to reconfigure internal rooms within the existing student residence at Britannia Street to add additional ensuite and studio spaces.

A noise level survey was undertaken at the location of the proposed new student accommodation spaces to determine the existing noise climate.

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The results of the survey were used to evaluate the sound insulation of the building envelope and to assess compliance Camden Local Plan Policy A4 and the guidance contained within WHO Guidelines for Community Noise and BS8233: 2014. These assessments have demonstrated that utilising the window and ventilation specifications recommended within this report the internal ambient noise levels comply with the design criteria.

In addition a vibration survey has been undertaken at the site of the proposed development. The results have been compared with the criteria contained within Camden Local Plan Policy A4. The results of this assessment have indicated that vibration levels are below the criteria for adverse comment and comply with the design criteria.



# **APPENDIX A – DEFINITION OF ACOUSTIC TERMS**

# The decibel

This is the basic unit of noise, denoted dB.

# A Weighting

This is a weighting process which simulates the human ear's different sensitivity at different frequencies. A weighting can be shown two typical ways, 50 dB(A)  $L_{eq}$  or 50 dB  $L_{Aeq}$ . Both mean the same thing. (See below for a definition of  $L_{eq}$ ). The dB(A) level can be regarded as the overall level perceived by human beings.

## Leq and Leq(s)

This is the equivalent continuous noise level which contains the same acoustic energy as the actual timevarying sound. In other words it is a kind of average noise level. It is denoted dB  $L_{eq}$  or, for A-weighted figures dB(A)  $L_{eq}$  or dB  $L_{Aeq}$ . It can also be expressed in terms of frequency analysis (see later).  $L_{eq(s)}$  is the sample  $L_{eq}$ level.

# Ln

This is the level exceeded for n% of the time. It is denoted dB  $L_n$  or, for A-weighted figures dB(A)  $L_n$  or dB  $L_{An}$ . It can be expressed in terms of frequency analysis (see later).  $L_{90}$  is the level exceeded for 90% of the time and is a measure of the lowest level typically reached.  $L_{10}$  is the level exceeded for 10% of the time and is the highest level typically reached.  $L_{50}$  is the level exceeded for 50% of the time and, mathematically, it is the median.

## $L_{\text{max}}$

This is the maximum level reached during a measurement period. The "time constant", or the ability of the equipment to respond to impulses is usually expressed along with it, e.g. "Fast", "Slow", etc. It is denoted dB  $L_{max}$  or, for A-weighted figures dB(A)  $L_{max}$ , dB  $L_{Amax}$ , etc. It can also be expressed in terms of frequency analysis.

## Frequency Analysis

Whereas dB(A) gives a very useful overall figure, it has its limitations in that it cannot be used to model or predict the effect of noise control and mitigation as this nearly always has radically different performance at different frequencies.

Frequency analysis expresses an overall noise level at each frequency or band of frequencies in the audible range. Octave band analysis divides the audible range into 10 bands from 31.5 Hz to 16 kHz and the noise level in each band can be expressed in any form e.g.  $L_{eq}$ ,  $L_{90}$ ,  $L_{max}$  etc. One third octave band analysis uses 30 bands.

Narrow band analysis takes the process to resolutions of less than 1 Hz. This is useful for identifying the existence of tones (whines, hums, etc.) and in pin-pointing the sources.



# APPENDIX B – MEASURED RESULTS

#### Measurement Position 1

				LZeq	LZeq	LZeq	LZeq	LZeq	LZeq	LZeq	LZeq
Time	LAeq	LAFmax	LAF90.0%	63	125	250	500	1000	2000	4000	8000
[hh:mm:s	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]
17:00:00	51	72	46	59	53	52	48	47	41	36	29
17:05:00	53	68	47	59	52	54	50	49	43	34	27
17:10:00	51	63	47	58	55	54	49	46	40	32	25
17:15:00	53	68	46	57	55	54	50	48	43	39	36
17:20:00	54	78	48	58	53	52	50	49	47	46	40
17:25:00	56	73	47	58	53	53	51	53	48	42	37
17:30:00	51	66	46	57	53	53	49	47	41	35	28
17:35:00	52	65	46	59	54	54	50	48	41	34	26
17:40:00	52	64	47	59	54	54	50	47	42	37	37
17:45:00	50	69	45	57	51	51	48	45	40	35	28
17:50:00	51	63	45	55	51	52	49	48	40	32	24
17:55:00	53	78	45	56	50	51	49	48	44	44	39
18:00:00	50	69	45	55	50	51	48	47	40	33	25
18:05:00	50	67	45	55	51	51	48	47	40	33	26
18:10:00	52	73	45	55	51	52	48	49	41	36	28
18:15:00	49	61	45	55	50	50	46	45	38	30	22
18:20:00	52	68	45	56	52	52	49	48	42	34	27
18:25:00	50	66	45	55	50	51	48	47	41	33	28
18:30:00	51	69	46	56	51	51	48	48	42	35	27
18:35:00	52	76	45	54	50	51	48	48	43	44	38
18:40:00	50	67	45	54	50	51	48	46	40	32	26
18:45:00	50	65	45	55	49	51	47	47	41	35	29
18:50:00	53	77	40	55	50	51	49	51	44	34	28
18:55:00	51	67	45	57	50	50	48	48	41	32	25
19:00:00	50	64	40	54	51	51	48	46	38	30	23
19:05:00	50	64	44	55	50	50	48	47	40	31	23
19:10:00	50	66	44	54	49	50	47	46	39	29	26
19:15:00	52	70	44	55	51	52	49	48	42	33	28
19:20:00	48	64	44	54	49	48	46	45	39	30	25
19:25:00	50	71	44	54	49	49	40	46	41	36	29
19:30:00	49	66	44	56	50	50	48	45	30	32	25
19:35:00	50	63	44	55	50	50	48	40	40	31	20
19:40:00	52	75	44	56	50	51	48	47	40	43	36
19:45:00	51	61	48	57	52	54	49	45	40	31	24
19.50.00	50	65	40	56	50	50	47	40	41	33	26
19:55:00	49	63	44	54	49	50	47	45	40	33	25
20.00.00	51	67	44	56	50	52	49	40	41	33	25
20:05:00	50	66	44	55	50	50	48	46	40	31	23
20.10.00	48	59	44	55	49	49	47	43	37	28	21
20:10:00	-0	79	44	54		-53		-0	43	35	21
20.20.00	50	70	44	55	49	49	47	47	40	34	26
20:25:00	48	61	44	55	40	40	47	43	37	30	20
20.20.00	40	66	44	55	40	40	47	40	40	33	20
20:35:00	45 /18	59	43	53	40 /0	40 /0	47	45	-40	30	20
20.00.00	40 50		-+5	54	49 50	49 50	40	40	/1	25	20
20.40.00	50	72	 ΛΛ	55	50	51	47 /Q	40 /Q	41	35	20
20.40.00	52	71	/5	50	50	10	40 /Q	40	42	/0	20
20.30.00	53	71	45	55	50	-49 50	49 /Q	49	47	2/	
20.00.00	51	71	40	54	/0	10	40	47	41	34 26	20
21.00.00	50	70	44	54	49	40	4/	40	42	21	29
21.00.00	50	00	44	54	49	49	40	40	40	31	22



				LZeq	LZeq	LZeq	LZeq	LZeq	LZeq	LZeq	LZeq
Time	LAeq	LAFmax	LAF90.0%	63	125	250	500	1000	2000	4000	8000
[hh:mm:s	:[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]
21:10:00	48	63	44	53	48	49	46	44	38	28	19
21:15:00	49	63	44	55	49	49	47	45	40	31	22
21:20:00	52	68	44	58	52	51	49	48	42	32	23
21:25:00	51	64	45	57	52	53	49	46	41	34	29
21:30:00	51	68	44	55	51	51	49	48	41	32	25
21:35:00	51	68	44	53	49	50	48	47	41	34	27
21:40:00	50	69	44	54	49	49	47	47	40	32	25
21:45:00	51	70	44	54	50	50	49	47	42	36	29
21:50:00	48	62	44	54	49	49	47	44	38	29	24
21:55:00	52	68	44	54	49	49	49	49	43	35	27
22:00:00	49	67	44	53	50	49	47	45	40	35	28
22:05:00	51	71	44	53	48	50	47	47	42	35	28
22:10:00	50	69	44	54	50	50	48	47	41	35	29
22:15:00	48	62	44	54	49	49	46	43	37	30	24
22.20.00	51	72	44	53	49	49	47	46	44	41	.34
22:25:00	49	65	44	54	48	49	47	46	40	33	28
22:20:00	40	64	44	54	40	-0	47	45	39	31	20
22:35:00		66	44	54	40	48	46	45	39	31	24
22:00:00	-0	72	44	54	40	40	40	40	41	37	30
22:40:00		72	44	53	40	40	47	46	40	30	23
22:40.00		80	44	60		-0	50		40	42	20
22:55:00	50	66	43	54	49	50	48	47	40	33	26
22:00:00	50	67	40	55	51	51	40	47	30	3/	20
23:05:00	51	68	42	56	51	52	47	40	41	34	20
23.10.00	46	62	40	53	49	47	40	43	37	29	20
23.12.00	48	64	41	53	48	48	46	44	36	27	19
23.20.00	46	60	41	52	40	40	40	42	35	27	19
23.25.00	40	68	40	53	47	47	45	46	38	28	20
23:30:00	49	69	40	52	47	46	46	40	38	28	19
23:35:00	40	66	40	58	51	40	46	45	39	31	25
23:40:00	40	65	41	54	47	48	46	40	39	29	20
23:45:00	46	63	41	54	48	46	40	47	34	25	18
23.20.00	40	68	41	56	40	45	44	46	37	20	18
23:55:00	48	69	40	55	47	46	45	46	37	28	20
00.00.00	40	67	41	58	48	40	46	46	39	20	20
00:05:00	40	62	41	53	40	46	45	43	38	31	25
00.10.00	48	69	40	52	47	46	44	45	37	27	19
00.10.00	40	64	40	52	46	45	44	43	38	31	26
00.10.00	47	73	41	61		40	45	46	40	34	20
00.20.00	50	63	42	58	52	-0	40	40	20	21	2/
00.20.00	47	73	30	55	16	32	40	44	38	32	24
00.30.00	4/	, , , , , , , , , , , , , , , , , , ,	40	55	40	44	40	40	35	02 07	10
00.33.00	44	65	40	52	47	44	42	40	40	2/	21
00.40.00	4/	60	41	52	47	40	43	44 /1	240	20	10
00.40.00	40 15	60	41 20	52	40	40	44	41	34 25	20	10
00.50.00	45	50	39	51	40	40	42	42	30	20	10
00.00.00	44	50	40	53	40	40	42	40	33	24	20
01.00.00	44	60	40	54	40	44	41	40	30	2/	20
01.05.00	45	64	39	53	40	45	41	42	30	27	20
01.10.00	45	04	40	00	45	44	42	42	30	28	10
01:12:00	44	62	40	54	45	44	41	41	35	25	18



				LZeq	LZeq	LZeq	LZeq	LZeq	LZeq	LZeq	LZeq
Time	LAeq	LAFmax	LAF90.0%	63	125	250	500	1000	2000	4000	8000
[hh:mm:s	:[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]
01:20:00	48	72	41	53	48	48	43	43	42	38	31
01:25:00	46	64	41	55	47	46	44	41	37	31	21
01:30:00	45	63	40	51	47	46	42	41	34	24	18
01:35:00	42	55	39	51	46	44	41	37	32	24	18
01:40:00	45	65	39	53	46	45	42	41	35	26	18
01:45:00	43	63	38	50	45	44	39	40	35	27	17
01:50:00	44	61	39	52	46	45	41	40	34	26	19
01:55:00	47	66	38	52	44	46	44	45	37	26	18
02:00:00	44	60	38	50	44	43	41	40	34	26	20
02:05:00	47	64	38	50	43	44	44	44	38	31	22
02:10:00	42	58	39	52	44	43	39	37	32	24	18
02:15:00	44	64	39	51	44	45	41	41	34	25	18
02:20:00	43	64	38	49	42	42	40	40	33	24	18
02:25:00	42	60	38	49	43	42	38	39	32	23	17
02:30:00	46	67	39	50	44	43	43	41	39	34	24
02:35:00	45	65	40	50	43	44	43	41	35	24	19
02:40:00	43	50	41	49	43	42	39	39	34	24	20
02:45:00	46	62	41	50	46	45	42	43	36	27	21
02:50:00	46	72	41	51	43	42	40	43	38	31	25
02:55:00	44	64	40	49	43	43	40	42	36	26	20
02.00.00	/13	57	30	40	40	40	20	42	3/	20	19
03.05.00	/1	/18	39	-0	/1	42	38	37	33	20	19
03.00.00	41	0 <del>+</del> 66	30	50	41	42	14	40	34	22	10
03.10.00	43	63	30	51	47	40	44	40	33	24	10
03.10.00	40	46	30	50	44	43	40	40	30	24	10
03.20.00	40	40	30	51	42	41	12	/1	33	25	10
03.20.00	44	50	40	54	40	-40	42	41	36	20	22
03.30.00	4/	62	20	10	43	16	40	40	30	23	10
03.33.00	44	57	20	43	4J 52	40	20	20	32	24	10
03.40.00	43	57	41	51	32	40	30	39	33	24	19
03.45.00	44	50 50	41	51	43	43	40	41	30	24	19
03.50.00	44	58	40	51	44	43	40	41	30	20	20
03.55.00	40	70	40	50	44	43	41	42	30	28	23
04.00.00	40	12	39	51	43	43	41	44	37	31	23
04.05.00	45	00	38	51	44	44	41	42	30	25	19
04:10:00	41	60	38	49	43	42	38	38	31	23	18
04.15.00	42	50	38	51	43	43	39	38	32	23	18
04:20:00	50	/2	39	52	46	48	4/	45	44	40	32
04:25:00	43	60	39	51	44	43	39	38	35	28	20
04:30:00	42	60	39	52	44	43	39	38	34	26	19
04:35:00	43	53	38	50	46	46	42	38	32	25	18
04:40:00	45	64	38	51	44	45	42	42	36	26	19
04:45:00	41	49	39	50	43	42	39	37	32	26	19
04:50:00	45	67	40	51	44	44	42	42	36	29	20
04:55:00	46	66	40	53	49	49	45	42	34	27	20
05:00:00	41	54	39	50	44	42	38	36	32	26	21
05:05:00	43	52	40	50	44	43	40	39	34	28	21
05:10:00	46	63	41	52	46	46	43	43	36	29	22
05:15:00	44	55	41	52	45	43	41	39	35	29	21
05:20:00	43	55	40	51	45	43	40	39	34	28	21
05:25:00	43	54	40	52	45	43	40	39	34	28	20



				LZeq							
Time	LAeq	LAFmax	LAF90.0%	63	125	250	500	1000	2000	4000	8000
[hh:mm:s	:[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]
05:30:00	45	65	40	52	45	45	42	41	35	26	19
05:35:00	45	61	39	54	46	45	41	41	36	28	19
05:40:00	44	52	40	51	47	47	42	38	33	26	18
05:45:00	46	65	40	52	47	49	43	42	36	32	20
05:50:00	43	54	40	52	47	44	40	38	34	29	23
05:55:00	50	63	46	54	50	48	46	46	43	37	31
06:00:00	48	61	44	53	47	48	45	44	39	35	31
06:05:00	48	57	45	53	47	46	44	44	40	36	32
06:10:00	47	56	44	54	48	49	44	42	37	32	28
06:15:00	47	60	43	55	49	49	44	42	36	31	26
06:20:00	51	64	43	57	53	53	48	46	41	34	26
06:25:00	46	62	42	56	49	47	43	42	38	31	23
06:30:00	47	67	41	55	51	48	44	43	37	28	20
06:35:00	49	66	41	56	51	50	47	44	39	32	25
06:40:00	47	61	43	56	50	49	45	43	37	30	24
06:45:00	50	69	43	56	52	51	47	45	42	36	28
06:50:00	49	67	42	56	51	50	46	44	40	33	27
06:55:00	51	72	46	57	53	52	48	46	43	37	30
07:00:00	50	65	47	57	52	51	48	45	38	31	25
07:05:00	48	60	45	55	51	49	46	43	37	31	23
07:10:00	49	65	45	55	50	50	47	45	39	33	27
07:15:00	50	66	46	56	51	51	48	46	41	34	28
07:20:00	50	66	45	57	51	52	48	46	41	36	33
07:25:00	50	70	46	56	51	50	48	46	41	35	28
07:30:00	53	76	46	56	51	50	48	48	45	44	39
07:35:00	51	70	47	56	51	50	48	47	42	38	34
07:40:00	49	61	46	56	51	50	47	45	39	33	28
07:45:00	53	70	46	57	53	52	51	48	43	37	32
07:50:00	49	63	46	57	52	51	47	44	39	33	31
07:55:00	49	60	47	57	52	51	47	44	41	35	30
08:00:00	50	67	47	57	53	51	48	45	42	35	28
08:05:00	50	64	46	57	52	52	48	45	40	32	26
08:10:00	50	69	46	57	51	51	48	46	41	35	26
08:15:00	52	69	46	57	52	52	49	47	44	37	28
08:20:00	54	75	50	59	54	55	52	49	45	41	33
08:25:00	52	71	47	57	52	52	50	48	44	36	28
08:30:00	55	77	48	59	54	54	51	51	48	45	39
08:35:00	55	77	50	62	57	55	51	49	47	44	38
08:40:00	58	72	48	62	55	55	56	55	49	42	36
08:45:00	52	71	48	59	54	53	50	48	43	37	29
08:50:00	52	65	48	60	53	53	49	47	42	35	25
08:55:00	51	68	47	58	53	52	49	46	43	37	26
09:00:00	52	69	48	59	54	53	49	47	43	35	25
09:05:00	53	70	48	59	56	54	50	48	43	36	30
09:10:00	53	72	47	58	55	53	50	48	45	39	34
09:15:00	50	63	47	58	54	52	48	44	39	31	25
09:20:00	52	66	48	59	53	53	50	48	43	36	28
09:25:00	51	65	47	58	52	51	48	47	42	35	29
09:30:00	51	66	47	58	53	53	49	47	41	34	24



				I	Zeq	LZeq						
Time	LAeq	LAFmax	LAF90.0%		63	125	250	500	1000	2000	4000	8000
[hh:mm:s	[dB]	[dB]	[dB]	[	[dB]							
09:35:00	53	63	48		60	56	55	50	48	43	37	28
09:40:00	52	69	50		58	52	52	49	47	44	43	35
09:45:00	53	66	49		57	52	51	49	48	44	42	35
09:50:00	52	69	46		57	53	53	50	48	41	33	23
09:55:00	50	59	49		58	53	54	49	45	40	33	24
10:00:00	50	69	46		57	52	52	48	45	40	37	29
10:05:00	56	71	47		64	57	56	53	52	47	40	29
10:10:00	52	66	47		58	56	54	50	47	43	36	28
10:15:00	54	70	47		59	57	55	51	49	45	37	28
10:20:00	68	94	47		61	62	72	67	61	53	42	31
10:25:00	52	70	47		59	55	53	49	47	43	37	28
10:30:00	58	78	49		59	58	57	55	55	50	43	33
10:35:00	50	62	47		57	53	52	48	45	40	33	26
10:40:00	50	68	47		58	53	52	48	46	41	34	27
10:45:00	51	68	47		57	54	53	49	46	41	34	29
10:50:00	51	66	48		58	53	53	49	47	41	34	30
10:55:00	52	73	48		59	52	52	48	48	42	36	27
11:00:00	53	68	47		59	53	53	49	49	46	35	28
11:05:00	50	66	47		58	52	52	48	45	42	36	33
11:10:00	55	72	48		58	53	53	51	49	48	48	34
11:15:00	53	76	48		59	53	54	50	48	45	44	36
11:20:00	52	68	47		58	53	53	50	48	41	34	26
11:25:00	50	63	46		56	51	51	48	47	40	32	26
11:30:00	51	68	47		57	52	53	49	47	41	34	26
11:35:00	50	64	46		56	51	51	48	47	41	35	27
11:40:00	49	63	46		56	50	51	48	45	40	33	25
11:45:00	58	77	46		62	61	57	57	55	46	35	26
11:50:00	53	65	48		60	56	56	51	49	43	35	28
11:55:00	58	75	46		59	56	58	58	53	48	43	37
12:00:00	52	72	46		58	57	53	49	47	41	35	25
12:05:00	56	66	51		58	59	57	54	51	46	39	36
12:10:00	52	65	46		58	53	52	49	48	43	34	32
12:15:00	52	72	45		57	51	51	49	48	43	42	33
12:20:00	51	68	45		57	50	51	48	47	42	37	35
12:25:00	52	78	45		56	50	48	47	46	44	45	38
12:30:00	52	72	46		58	55	54	50	48	41	35	26
12:35:00	51	72	45		57	52	51	48	47	42	38	32
12:40:00	51	71	45		57	51	50	48	47	41	34	26
12:45:00	51	68	46		57	51	51	48	47	42	35	26
12:50:00	50	69	46		56	51	50	48	47	41	35	26
12:55:00	52	69	46		58	52	51	49	49	45	34	25
13:00:00	49	61	45		55	51	50	48	45	38	30	25
13:05:00	50	63	45		56	50	51	48	47	40	33	31
13:10:00	50	63	45		57	51	51	48	46	39	32	27
13:15:00	47	63	45		54	50	49	46	42	36	28	23



#### Measurement Position 2

				LZeq							
Time	LAeq	LAFmax	LAF90.0%	63	125	250	500	1000	2000	4000	8000
[hh:mm:s	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]
17:25:00	62	80	51	61	61	61	58	59	55	47	34
17:30:00	61	74	49	60	63	62	59	56	52	46	38
17:35:00	60	72	49	62	63	63	58	55	51	45	34
17:40:00	61	74	48	59	61	62	59	57	50	44	35
17:45:00	61	75	48	59	61	62	59	57	50	43	32
17:50:00	61	73	49	60	62	63	59	57	51	45	33
17:55:00	60	71	49	60	60	61	57	56	49	43	32
18:00:00	63	77	49	59	61	62	60	60	52	46	36
18:05:00	62	76	49	59	60	61	60	59	51	45	34
18:10:00	62	76	51	59	61	64	60	58	51	45	34
18:15:00	59	74	48	58	59	60	57	56	49	42	31
18:20:00	61	74	47	64	64	62	58	56	50	43	32
18:25:00	60	72	49	60	60	61	58	57	51	45	33
18:30:00	60	70	48	61	61	61	57	56	51	44	33
18:35:00	59	71	48	58	60	61	58	55	49	43	32
18:40:00	59	73	49	58	61	61	57	55	49	42	31
18:45:00	60	72	49	59	60	61	57	56	49	44	33
18:50:00	62	77	49	59	60	61	59	60	52	45	33
18:55:00	61	76	48	60	60	61	58	57	50	44	40
19:00:00	61	75	48	59	61	61	59	58	50	44	37
19:05:00	60	70	47	59	60	61	58	56	50	44	36
19:10:00	59	73	48	59	60	61	57	56	49	43	38
19:15:00	61	74	48	59	62	63	59	56	49	42	31
19:20:00	61	76	47	58	59	58	58	58	49	42	32
19:25:00	61	76	46	58	59	60	59	58	48	41	36
19:30:00	60	71	48	60	61	62	59	55	49	42	32
19:35:00	60	74	48	59	60	61	58	57	50	44	34
19:40:00	59	69	47	60	61	61	57	55	50	44	36
19:45:00	60	71	48	58	60	63	58	56	49	44	32
19:50:00	59	70	52	59	58	59	57	55	51	45	37
19:55:00	60	70	49	59	60	61	58	55	50	45	36
20:00:00	61	74	48	60	61	63	59	55	50	43	35
20:05:00	60	72	47	59	61	62	58	55	50	43	35
20:10:00	58	72	48	58	59	60	56	54	49	43	38
20:15:00	65	87	47	61	63	64	64	61	56	47	41
20:20:00	57	71	47	57	57	56	54	53	48	43	34
20:25:00	58	70	46	59	59	60	56	54	48	42	31
20:30:00	59	71	48	58	60	60	57	54	48	43	38
20:35:00	58	72	47	58	59	60	56	54	48	42	31
20:40:00	59	73	46	58	60	60	56	54	50	43	34
20:45:00	61	75	47	60	60	63	58	55	51	44	32
20:50:00	58	70	48	58	59	57	55	53	50	44	38
20:55:00	59	73	47	58	60	62	58	54	49	43	32
21:00:00	57	72	46	58	58	57	54	53	48	42	34
21:05:00	58	70	45	57	59	59	56	53	48	42	35
21:10:00	58	70	47	57	59	60	56	54	48	Δ1	30
21:15:00	56	68	47	58	58	59	55	51	47	42	33
21:20:00	60	72	48	59	60	61	58	55	50	44	37
21:25:00	59	72	48	59	60	61	57	54	49	43	34
21:30:00	59	73	47	58	60	60	56	54	50	43	32



Intern     Iden					LZeq	LZeq	LZeq	LZeq	LZeq	LZeq	LZeq	LZeq
intramerside(ref)<	Time	LAeq	LAFmax	LAF90.0%	63	125	250	500	1000	2000	4000	8000
21.35:00         59         72         47         58         60         61         57         64         50         44         33           21.40:00         58         72         46         61         61         60         56         53         448         43         33           21.45:00         59         70         46         58         59         60         57         55         53         348         42         33           21.50:00         59         71         47         59         61         61         57         55         49         443         33           22.10:00         59         71         47         59         60         61         57         55         49         443         33           22.10:00         59         71         47         58         60         60         57         55         49         444         33           22.20:00         58         71         46         58         59         61         57         54         49         44         33           22.35:00         57         71         47         57         60         61         <	[hh:mm:s	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]
2140:00       58       76       46       61       61       60       56       53       48       42       35         214500       99       70       46       57       58       61       56       49       43       32         215500       57       72       47       59       61       65       53       53       48       44       33         220500       60       71       47       59       60       61       57       55       49       43       33         221500       60       71       47       59       60       61       57       54       49       43       33         222500       58       67       47       57       61       60       57       54       49       44       36         223000       59       71       46       58       59       61       57       54       49       44       33         224000       56       70       46       58       59       51       55       53       49       44       33         224500       56       70       46       56       57       56	21:35:00	59	72	47	58	60	61	57	54	50	44	39
2145:00     58     72     46     57     58     61     56     53     48     42     33       215:00     57     77     47     57     57     55     53     53     48     42     30       220:00     59     71     47     59     56     161     57     55     49     43     32       22:00:00     59     71     47     58     59     62     58     55     49     43     33       22:10:00     58     69     47     58     60     60     57     53     48     44     33       22:20:00     58     71     46     58     58     57     54     49     44     33       22:30:00     59     71     46     58     58     57     54     49     44     33       22:30:00     59     71     47     57     58     57     54     53     49     44     33       22:40:00     57     72     47     57     60     61     57     54     54     49     43     33       22:50:00     58     73     44     57     58     53     54 <t< td=""><td>21:40:00</td><td>58</td><td>76</td><td>46</td><td>61</td><td>61</td><td>60</td><td>56</td><td>53</td><td>48</td><td>43</td><td>35</td></t<>	21:40:00	58	76	46	61	61	60	56	53	48	43	35
21:50:00       59       70       46       58       59       60       57       55       49       43       32         21:55:00       59       71       47       59       61       61       57       55       49       44       32         22:05:00       60       71       47       59       60       61       57       55       49       443       33         22:15:00       58       67       47       59       60       61       57       55       49       443       33         22:25:00       58       71       46       58       58       55       55       49       44       33         22:25:00       59       71       47       57       58       57       54       49       44       33         22:45:00       57       74       46       58       59       61       57       54       49       44       33         22:45:00       57       74       75       58       57       54       53       49       42       33         22:45:00       57       74       47       57       60       61       57	21:45:00	58	72	46	57	58	61	56	53	48	42	35
2155:00       57       72       47       57       55       53       53       48       42       30         220:000       59       71       47       59       61       61       57       55       49       43       33         22:05:00       58       69       47       58       60       61       57       53       48       43       33         22:10:00       59       67       47       57       61       60       57       54       49       43       33         22:20:00       58       71       46       58       57       55       55       49       44       33         22:30:00       57       71       47       57       58       57       54       54       49       43       33         22:30:00       57       71       47       57       58       57       54       54       49       43       33         22:45:00       56       70       46       58       57       54       54       49       43       33         32:00:00       59       70       47       57       56       53       48	21:50:00	59	70	46	58	59	60	57	55	49	43	32
2200:00       59       71       47       59       61       61       57       55       49       44       32         221:00:0       59       71       47       59       60       61       57       55       49       43       33         221:00:0       58       69       47       58       60       60       57       53       48       43       38         22:25:00       58       71       46       58       55       55       54       49       44       36         22:25:00       57       74       46       58       55       52       53       449       43       33         22:40:00       57       72       47       57       58       57       54       49       44       33         22:40:00       56       70       46       56       55       52       53       48       42       33         22:50:00       58       73       46       56       56       55       52       53       48       42       33         23:00:00       59       70       47       57       56       55       55       53	21:55:00	57	72	47	57	57	55	53	53	48	42	30
22:05:00       60       74       47       58       59       62       58       55       49       43       33         22:11:00       59       67       47       59       60       61       57       53       44       43       33         22:20:00       59       67       47       57       61       60       57       53       44       43       33         22:20:00       59       67       47       57       61       60       57       54       49       44       36         22:30:00       57       71       47       57       58       57       54       53       49       44       36         22:40:00       57       72       47       57       58       57       54       53       49       43       33         22:45:00       56       70       46       58       58       57       54       53       49       43       33         22:50:00       51       74       47       75       60       61       57       55       49       43       33         23:00:00       59       70       47       57	22:00:00	59	71	47	59	61	61	57	55	49	44	32
22:10:00       59       71       47       59       60       61       57       55       49       43       34         22:10:00       58       69       47       58       60       60       57       53       48       43       33         22:20:00       58       71       46       58       58       57       55       55       49       44       36         22:30:00       57       71       47       57       58       57       54       49       44       38         22:30:00       57       72       47       57       58       57       54       53       49       44       38         22:40:00       57       72       47       57       58       57       54       53       49       42       33         22:50:00       58       73       46       58       58       60       56       53       49       43       33         23:0:00       59       70       44       57       60       61       57       54       54       44       23       33         23:0:00       56       73       46       56	22:05:00	60	74	47	58	59	62	58	55	49	43	33
22:15:00       58       69       47       58       60       60       57       53       48       43       35         22:20:00       59       67       47       57       61       60       57       53       49       43       39         22:20:00       59       74       46       58       59       61       57       54       49       44       36         22:30:00       57       71       47       57       58       57       54       53       49       44       36         22:40:00       56       70       46       66       55       52       53       48       42       30         22:45:00       58       73       46       58       58       60       56       52       43       33         32:00:00       59       70       44       57       56       53       54       42       33         32:00:00       59       70       44       57       56       53       51       47       41       35         23:00:00       59       72       44       57       60       61       58       56       48	22:10:00	59	71	47	59	60	61	57	55	49	43	34
22:20:00       59       67       47       57       61       60       57       54       49       43       39         22:20:00       58       71       46       58       56       57       55       49       44       36         22:30:00       57       71       47       57       58       57       54       54       49       43       33         22:45:00       56       70       46       56       55       57       54       53       49       44       36         22:45:00       56       70       46       58       58       60       56       52       53       48       42       33         22:50:00       51       74       47       57       60       61       57       55       53       48       42       33         32:00:00       59       70       44       57       60       61       57       55       53       48       42       31         23:00:00       59       71       46       57       60       62       58       53       48       41       31         23:20:00       59       75	22:15:00	58	69	47	58	60	60	57	53	48	43	35
22.25:00 $58$ $71$ $46$ $58$ $58$ $57$ $55$ $55$ $49$ $44$ $36$ $22.35:00$ $57$ $71$ $47$ $57$ $58$ $57$ $54$ $49$ $44$ $33$ $22.40:00$ $57$ $72$ $47$ $57$ $58$ $57$ $54$ $53$ $49$ $44$ $33$ $22.40:00$ $56$ $70$ $46$ $56$ $56$ $55$ $52$ $53$ $48$ $42$ $30$ $22.50:00$ $61$ $74$ $47$ $57$ $60$ $63$ $56$ $52$ $45$ $31$ $22.50:00$ $58$ $73$ $46$ $58$ $58$ $60$ $56$ $53$ $49$ $42$ $33$ $23.00:00$ $59$ $70$ $47$ $57$ $60$ $61$ $57$ $55$ $49$ $43$ $333$ $23.00:00$ $56$ $70$ $48$ $57$ $56$ $53$ $51$ $47$ $41$ $37$ $23.10:00$ $59$ $71$ $46$ $57$ $60$ $62$ $58$ $53$ $47$ $41$ $37$ $23.20:00$ $56$ $72$ $44$ $57$ $60$ $61$ $58$ $56$ $43$ $42$ $31$ $23.20:00$ $56$ $72$ $44$ $57$ $65$ $53$ $53$ $44$ $42$ $31$ $23.20:00$ $56$ $76$ $45$ $56$ $58$ $56$ $53$ $53$ $47$ $41$ $33$ $22.25:00$ $56$	22:20:00	59	67	47	57	61	60	57	54	49	43	39
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	22:25:00	58	71	46	58	58	57	55	55	49	44	36
22:35:00       57       71       47       57       58       57       54       54       49       43       33         22:40:00       57       72       47       57       58       57       54       53       49       44       35         22:45:00       56       70       46       56       56       55       52       53       48       42       30         22:50:00       58       73       46       58       58       60       56       53       49       42       35         23:00:00       59       70       47       57       60       61       57       55       53       48       42       33         23:00:00       56       73       46       56       57       56       53       51       47       41       35         23:10:00       56       72       44       57       60       61       58       56       48       42       31         23:20:00       56       72       44       55       55       53       53       48       41       29         23:26:00       57       75       45       56	22:30:00	59	74	46	58	59	61	57	54	49	44	36
22:40:00       57       72       47       57       58       57       54       53       49       44       35         22:40:00       56       70       46       56       56       52       53       48       42       30         22:50:00       61       74       47       57       60       63       59       56       52       45       31         22:50:00       58       73       46       58       58       56       53       49       42       33         23:00:00       59       70       47       57       60       61       57       55       53       48       42       31         23:10:00       56       73       46       56       57       56       53       51       47       41       37         23:20:00       59       72       44       57       60       61       58       56       53       53       48       42       31         23:30:00       57       75       47       61       57       55       54       54       54       54       54       54       54       54       33       47 <t< td=""><td>22:35:00</td><td>57</td><td>71</td><td>47</td><td>57</td><td>58</td><td>57</td><td>54</td><td>54</td><td>49</td><td>43</td><td>33</td></t<>	22:35:00	57	71	47	57	58	57	54	54	49	43	33
22:45:00567046565655525348423022:50:00617447576063595652453122:50:00587346585860665349423323:00:00597047576061575549433323:00:00597048575857555348423123:10:00567346565756535147413523:20:00597146576061585348423123:20:0056724457606158535348412923:20:005672455555535348412923:30:00567645565856535344423123:40:00587246585955545449423123:40:005674455656535247413323:40:005674455656535248402700:00:005571445556535248402300:0	22:40:00	57	72	47	57	58	57	54	53	49	44	35
22:50:00       61       74       47       57       60       63       59       56       52       45       31         22:55:00       58       73       46       58       58       60       66       53       49       42       33         23:00:00       59       70       47       57       60       61       57       55       53       48       42       33         23:00:00       59       70       46       56       57       56       53       51       47       41       35         23:10:00       59       71       46       57       60       61       58       53       48       42       31         23:20:00       59       72       44       57       60       61       58       53       53       48       42       31         23:20:00       56       76       45       56       58       56       53       53       48       44       42         23:30:00       57       75       47       61       57       55       54       54       50       44       32         23:46:00       57       69	22:45:00	56	70	46	56	56	55	52	53	48	42	30
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23:00:00597047576061575544433323:05:00577048575857555348423123:15:00597146565756535147413523:15:00597244576061585648423123:20:00567245555555535348412923:20:00567245565658535344413123:30:00567645565856535344423123:30:00577547615755545449423123:40:0057769465859565247413323:50:00567045595856535247413323:50:00567445565653535247413323:50:00567445565655535348412900:00:00577744575759555248402700:05:0055714456565553535348<	22:55:00	58	73	46	58	58	60	56	53	49	42	35
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23:20:00507244576061585648423123:20:00567245555555535348412923:30:00567645565856535344413123:35:00577547615755545449423123:35:00577547615755545449423123:45:00576946585959565247413123:50:00567045595856535247413123:50:00567445565655535248402700:00:00577744575759555248402700:00:00557144555654525147413200:10:00567445565655535348413200:10:00557445565655535348413200:30:00517143575049484743382600:30:0055734456555451514740	23:15:00	59	71	46	57	60	62	58	53	47	41	37
23:25:00 $56$ $72$ $45$ $55$ $55$ $55$ $55$ $53$ $53$ $48$ $41$ $29$ $23:30:00$ $56$ $76$ $45$ $56$ $58$ $56$ $53$ $53$ $44$ $44$ $31$ $23:35:00$ $57$ $75$ $47$ $61$ $57$ $55$ $54$ $54$ $49$ $42$ $31$ $23:40:00$ $58$ $72$ $46$ $58$ $57$ $57$ $54$ $54$ $49$ $42$ $31$ $23:45:00$ $57$ $69$ $46$ $58$ $59$ $59$ $56$ $52$ $47$ $41$ $33$ $23:55:00$ $56$ $70$ $45$ $56$ $56$ $53$ $52$ $47$ $41$ $33$ $23:55:00$ $56$ $74$ $45$ $56$ $56$ $55$ $53$ $52$ $47$ $41$ $33$ $23:55:00$ $56$ $74$ $45$ $56$ $56$ $55$ $53$ $52$ $48$ $027$ $00:00:00$ $57$ $77$ $44$ $57$ $57$ $59$ $55$ $52$ $48$ $41$ $32$ $00:10:00$ $56$ $74$ $45$ $56$ $56$ $53$ $53$ $53$ $48$ $41$ $32$ $00:10:00$ $53$ $74$ $45$ $56$ $56$ $55$ $52$ $51$ $47$ $41$ $32$ $00:30:00$ $51$ $71$ $43$ $57$ $50$ $49$ $48$ $47$ $43$ $38$ $26$ </td <td>23.20.00</td> <td>59</td> <td>72</td> <td>40</td> <td>57</td> <td>60</td> <td>61</td> <td>58</td> <td>56</td> <td>48</td> <td>42</td> <td>31</td>	23.20.00	59	72	40	57	60	61	58	56	48	42	31
23:30:00 $56$ $76$ $45$ $56$ $58$ $56$ $53$ $53$ $47$ $41$ $31$ $23:35:00$ $57$ $75$ $47$ $61$ $57$ $55$ $54$ $54$ $49$ $42$ $31$ $23:45:00$ $57$ $69$ $46$ $58$ $57$ $57$ $54$ $54$ $50$ $44$ $32$ $23:45:00$ $57$ $69$ $46$ $58$ $59$ $58$ $56$ $52$ $47$ $41$ $33$ $23:55:00$ $56$ $70$ $445$ $56$ $56$ $55$ $53$ $52$ $47$ $40$ $29$ $00:00:00$ $57$ $77$ $44$ $57$ $57$ $59$ $55$ $52$ $48$ $40$ $27$ $00:5:00$ $55$ $71$ $44$ $57$ $57$ $59$ $55$ $52$ $48$ $40$ $27$ $00:00:00$ $55$ $71$ $44$ $56$ $56$ $55$ $53$ $53$ $48$ $41$ $32$ $00:10:00$ $56$ $74$ $45$ $56$ $56$ $55$ $53$ $53$ $48$ $41$ $32$ $00:15:00$ $53$ $70$ $43$ $54$ $54$ $53$ $50$ $49$ $44$ $37$ $31$ $00:25:00$ $58$ $74$ $45$ $56$ $55$ $52$ $51$ $47$ $41$ $29$ $00:30:00$ $51$ $71$ $43$ $57$ $50$ $49$ $48$ $47$ $43$ $38$ $26$ <td>23:25:00</td> <td>56</td> <td>72</td> <td>45</td> <td>55</td> <td>55</td> <td>55</td> <td>53</td> <td>53</td> <td>48</td> <td>41</td> <td>29</td>	23:25:00	56	72	45	55	55	55	53	53	48	41	29
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01.10.00 40 72 40 30 47 47 40 42 30 25 01.20.00 50 67 44 53 51 51 45 45 40 25 22	01.10.00	49 50	72	43	50	4/ 51	4/ 51	40	40	42	30 25	23
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01.00 47 07 40 32 22 01.40.00 50 60 43 52 40 40 40 42 47 40 26 20	01.35.00	47 E0	60	40	52	30	48	44	43	40	32	22



				LZeq							
Time	LAeq	LAFmax	LAF90.0%	63	125	250	500	1000	2000	4000	8000
[hh:mm:s	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]
01:45:00	49	73	42	50	48	48	44	45	43	36	23
01:50:00	50	70	42	54	51	51	45	46	43	36	24
01:55:00	54	77	43	53	47	50	48	51	47	41	28
02:00:00	47	68	41	49	45	45	42	43	40	33	22
02:05:00	50	73	41	51	46	47	44	46	44	37	25
02:10:00	47	65	42	51	46	45	42	44	40	32	21
02:15:00	49	70	43	54	48	48	44	45	42	35	22
02:20:00	50	73	41	49	45	47	44	47	43	36	24
02:25:00	48	71	41	50	45	45	42	45	42	36	23
02:30:00	50	66	41	52	48	47	46	44	44	38	27
02:35:00	45	64	41	48	44	44	42	41	37	28	18
02:40:00	47	60	41	49	50	49	44	41	37	35	26
02:45:00	50	71	43	50	47	48	45	47	44	37	25
02:50:00	44	57	41	48	44	43	40	41	36	29	20
02:55:00	45	64	41	47	44	44	41	42	38	31	20
03:00:00	50	73	41	48	44	45	44	46	43	37	25
03:05:00	44	53	41	50	44	43	41	40	35	27	18



# Measurement Position 3

Date & time	Elapsed ti	Ch1(VLM)	Ch2 (VLM)	Ch3 (VLM)
	[hh:mm:s	P1 (Wd, Lin)	P1 (Wd, Lin)	P1 (Wb, Lin)
		VDV [m/s^1.75]	VDV [m/s^1.75]	VDV [m/s^1.75]
22/08/2024 16:56	00:10:00	0.057	0.186	0.254
22/08/2024 17:06	00:10:00	0.001	0.001	0.004
22/08/2024 17:16	00:10:00	0.001	0.001	0.005
22/08/2024 17:26	00:10:00	0.001	0.001	0.004
22/08/2024 17:36	00:10:00	0.002	0.001	0.005
22/08/2024 17:46	00:10:00	0.002	0.002	0.005
22/08/2024 17:59	00:10:00	0.001	0.001	0.005
22/08/2024 18:09	00:10:00	0.001	0.001	0.005
22/08/2024 18:19	00:10:00	0.001	0.001	0.004
22/08/2024 18:29	00:10:00	0.001	0.001	0.008
22/08/2024 18:39	00:10:00	0.001	0.001	0.005
22/08/2024 18:49	00:10:00	0.001	0.001	0.004
22/08/2024 18:59	00:10:00	0.001	0.001	0.005
22/08/2024 19:09	00:10:00	0.001	0.001	0.005
22/08/2024 19:19	00:10:00	0.001	0.001	0.005
22/08/2024 19:29	00:10:00	0.001	0.001	0.004
22/08/2024 19:39	00:10:00	0.001	0.001	0.005
22/08/2024 19:49	00:10:00	0.001	0.001	0.004
22/08/2024 19:59	00:10:00	0.001	0.001	0.005
22/08/2024 20:09	00:10:00	0.001	0.001	0.005
22/08/2024 20:19	00:10:00	0.001	0.001	0.004
22/08/2024 20:29	00:10:00	0.001	0.001	0.004
22/08/2024 20:39	00:10:00	0.001	0.001	0.004
22/08/2024 20:49	00:10:00	0.001	0.001	0.004
22/08/2024 20:59	00:10:00	0.001	0.001	0.004
22/08/2024 21:09	00:10:00	0.001	0.001	0.004
22/08/2024 21:19	00:10:00	0.001	0.001	0.004
22/08/2024 21:29	00:10:00	0.001	0.001	0.004
22/08/2024 21:39	00:10:00	0.001	0.001	0.005
22/08/2024 21:49	00:10:00	0.001	0.001	0.004
22/08/2024 21:59	00:10:00	0.001	0.001	0.005
22/08/2024 22:09	00:10:00	0.001	0.001	0.004
22/08/2024 22:19	00:10:00	0.001	0.001	0.004
22/08/2024 22:29	00:10:00	0.001	0.001	0.005
22/08/2024 22:39	00:10:00	0.001	0.001	0.004
22/08/2024 22:49	00:10:00	0.001	0.001	0.004
22/08/2024 22:59	00:10:00	0.001	0.001	0.004
22/08/2024 23:09	00:10:00	0.001	0.001	0.004
22/08/2024 23:19	00:10:00	0.001	0.001	0.004
22/08/2024 23:29	00:10:00	0.001	0.001	0.004
22/08/2024 23:39	00:10:00	0.001	0.001	0.004
22/08/2024 23:49	00:10:00	0.001	0.001	0.004
22/08/2024 23:59	00:10:00	0.001	0.001	0.004
23/08/2024 00:09	00:10:00	0.001	0.001	0.004
23/08/2024 00:19	00:10:00	0.001	0.001	0.004
23/08/2024 00:29	00:10:00	0.001	0.001	0.004
23/08/2024 00:39	00:10:00	0.001	0.001	0.003