Santos

Wilga Park Power Station
Compliance noise monitoring (February 2021)

March 2021

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Appendices

1. Introduction

1.1 Purpose of report

Santos NSW (Eastern) Limited (Santos) is the operator of the Wilga Park Power Station (WPPS) which was approved in 2008.

The Department of Planning, Industry and Environment (the Department) Minister's condition of approval (Project Approval) places standards on the proponent with regards to noise monitoring once the WPPS is operating above 12 MW capacity. Santos also agreed to subsequent monitoring during the following winter period. On 22 December 2018, the WPPS operated above 12 MW, and a subsequent monitoring program was undertaken in January 2019. Following this, the power station operated above 16 MW on 13 July 2020 and monitoring was undertaken on 15 to 17 September 2020 within 90 days, to satisfy Project Approval Condition 3.5. Subsequent noise monitoring in summer has been undertaken between 8 to 10 February 2021 as agreed between DPIE and Santos.

GHD Pty Ltd (GHD) was commissioned by Santos to undertake this noise monitoring program and this report provides details and results. The GHD assessment of the monitoring results concluded on 5 March 2021. On this basis, the due date for this report's submission is 2 April 2021 as per Condition 3.5.

2. Requirements

The Planning Approval requirements are provided in the following sections.

2.1 Condition 3.5

Condition 3.5: *Within 90 days of the commencement of operation of the power station at a capacity of more than 12 megawatts and at every stage that new generation capacity is added to the power station or as otherwise agreed by the Secretary, and during a period in which the power station is operating under normal operating conditions (considering all operational generators at the time), the Proponent shall undertake a program to confirm the noise emission performance of the project. The program shall include, but not necessarily be limited to:*

a) noise monitoring, consistent with the guidelines provided in the New South Wales Industrial Noise Policy (EPA, 2000), to assess compliance with the maximum allowable noise contributions specified in Table 2 of condition 2.8 of this approval in relation to the locations specified in condition 2.8; and

b) details of any entries in the Complaints Register (condition 5.3 of this approval) relating to noise impacts.

A report providing the results of the program shall be submitted to the Secretary and the EPA within 28 days of completion of the assessment required under condition 3.5.

2.2 Condition 2.8 and 2.9

Condition 2.8: *The Proponent shall implement all reasonable and feasible at-source noise control measures at the Wilga Park power station to ensure that the noise contributions from the operation of the power station does not exceed the maximum allowable noise contributions specified in Table 2, at the following locations:*

a) all existing sensitive receivers identified in Attachment A;

b) any residential dwelling within the land area shown in Attachment A for which an approval has been obtained under the Environmental Planning and Assessment Act 1979 at the date of this project approval; and

c) over 25% or more of a vacant allotment within the land area shown in Attachment A in existence at the date of this project approval and for which a dwelling is permissible under the Environmental Planning and Assessment Act 1979 at the date of this project approval.

The maximum allowable noise contributions apply under wind speeds up to 3 ms-1 (measured at 10 metres above ground level), or under temperature inversion conditions of up to 3 ºC/ 100 metres and wind speeds of up to 2m/s at 10 metres above the ground.

Table 2 - Maximum Allowable Noise Contribution

7:00am to 6:00pm Mondays to Saturdays *8:00am to 6:00pm Sundays and public holidays*	*Evening* *6:00pm to 10:00pm on any day*	*Night* *10:00pm to 7:00am Mondays to Saturdays* *10:00pm to 8:00am Sundays and public holidays*	
35 LAeq(15 minute)	*35 LAeq(15 minute)*	*35 LAeq(15 minute)*	*45 LA1 (1 minute)*

Condition 2.9: *For the purpose of assessment of noise contributions specified under condition 2.8 of this approval, noise from the project shall be:*

a) measured at the most affected point within the residential boundary or at the most affected point within 30 metres of the dwelling where the dwelling is more than 30 metres from the boundary to determine compliance with the $L_{Aeq(15\ minute)}$ noise limits;

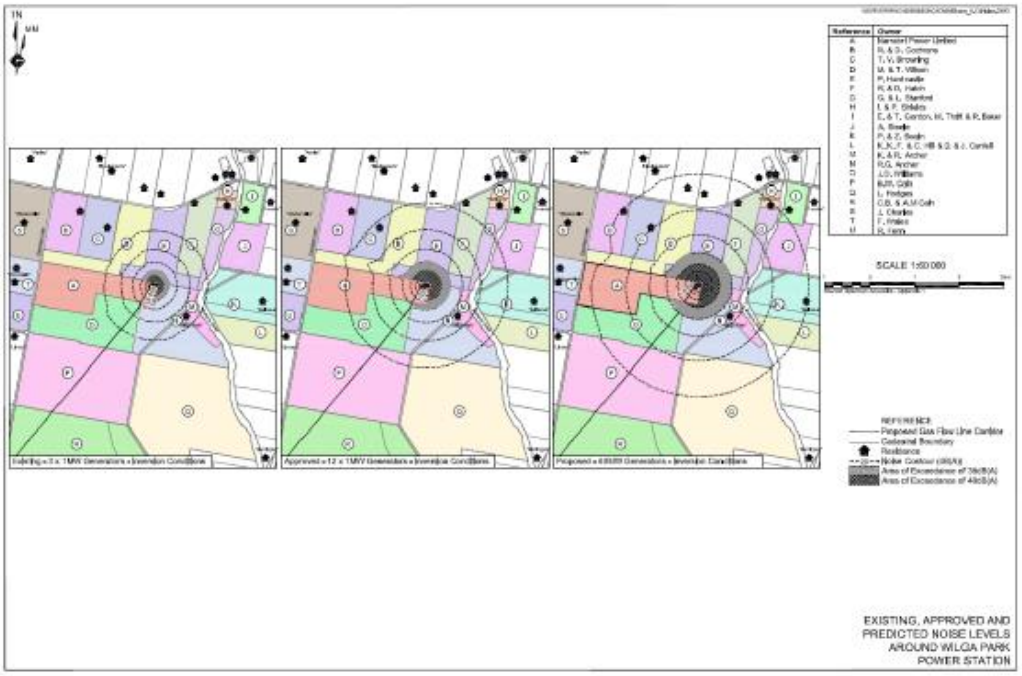
b) measured at 1 metre from the dwelling façade to determine compliance with the $L_{A1\ (1\ minute)}$ noise limits; and

c) subject to the modification factors provided in Section 4 of the New South Wales Industrial Noise Policy (EPA, 2000), where applicable.

Notwithstanding the above, should direct measurement of noise from the project be impractical, the Proponent may employ an alternative noise assessment method deemed acceptable by the EPA (refer to Section 11 of the New South Wales Industrial Noise Policy (EPA, 2000)). Details of such an alternative noise assessment method accepted by the EPA shall be submitted to the Secretary prior to the implementation of the assessment method.

***Condition 2.16:** Should the monitoring required under condition 3.5 indicate that the operational noise contributions of the Wilga Park Power Station, following the implementation of all reasonable and feasible at-source mitigation measures in accordance with condition 2.8, exceed the maximum allowable noise contributions specified in Table 2 at the location identified in condition 2.8c) by more than 5 dB(A), then the Proponent shall, upon receiving a written request for acquisition from the landowner within two years of the date of that landowner being notified of his/her acquisition rights, acquire the land in accordance with the procedures in conditions 2.17 to 2.21 of this approval.*

Attachment A: Noise Receivers



3. Assessment

3.1 Assessment methodology

A noise monitoring program was undertaken from 8 to 10 February 2021 at the WPPS to confirm compliance with Condition 2.8 and 2.9 of the Planning Approval. The WPPS was operating at its full available output.

The following Type 1 Sound Level Meter's (SLMs) were used for the monitoring program:

- Svantek SV977 serial number 36873 within NATA calibration.
- Svantek SV977 serial number 45744 within NATA calibration.

The $L_{Aeq(15min)}$ measurements were set to linear averaging and the L_{Amax} and $L_{A90(15min)}$ measurements were set to Fast time-response. Field calibration checks were performed at the start and end of the measurement sessions.

Temperatures at 10 m and 60 m elevation were obtained from Whitehaven Coal's weather station which is located 27 km to the south east of the WPPS. This data was used to determine the presence of noise enhancing meteorological conditions including the temperature lapse rate. Wind speed measurements were also undertaken simultaneously with the noise measurements at the WPPS site at ground level (1.5 m) using a weather station, to confirm the influence of wind over the microphone did not affect the noise measurements. At ground level, during all measurements, the wind speed was less than 3 m/s.

Direct noise measurements were undertaken at all the locations identified in Condition 2.8 of the Planning Approval where practical, or conservatively on the intervening site boundary. Access was not provided for the resident at location F and the nearest location in the direction of the WPPS has been used to represent location F. Location P was used to represent location R which is closer to the WPPS. Where the receiver was a vacant allotment the measurement was either taken on the lot boundary nearest the WPPS or at a location within the allotment set back so that it is representative of 25% of the vacant land area (estimated based on spherical spreading).

The ambient noise environment has an influence on the measured WPPS noise levels. The WPPS was observed to be a steady state noise source, whereas attended observations noted that the ambient environment contained contributions from dogs, insects, distant vehicles and other wildlife. The total measured noise level (L_{Aeq}) in Table 2 includes all extraneous contribution and would be a conservative estimate of noise levels from the WPPS. The L_{A90} noise level provides a better representation of a steady-state noise source where there are contributions from extraneous noise. Using the L_{A90} noise level to estimate noise levels from the WPPS is consistent with EPA guidance (Noise Policy for Industry (EPA, 2017) Section 7.1.1 and Industrial Noise Policy (EPA, 2000) Section 2.3) for steady state noise sources. A review of the 1/3 octave band data at the location with the highest contribution (Receiver E) as shown in Appendix A) indicates that WPPS dominant noise source is between 40 Hz and 63 Hz frequency bands. The L_{Aeq} summation of these bands was reviewed as an alternative estimate to determine the contribution from the WPPS, however based on previous experience at the site the L_{A90} method provides a more reliable estimate for all locations as it excludes extraneous noise.

The SLM was paused during some extraneous events where possible. Note it was not possible to pause the SLM for the majority of extraneous events.

It is understood that these methods are considered acceptable from the EPA as they are based on latest EPA guidance and were provided to EPA for comment (GHD Letter to EPA dated 11 May 2018).

3.2 Noise level contribution from WPPS

The total measured ambient noise level and the noise level contribution from the WPPS is provided in Table 2. The WPPS noise level contribution has been determined based on the direct operator attended measurements and the L_{A90} assessment methodology and the frequency analysis assessment method described in Section 3.1. It is noted that the noise level contribution may still contain influence from ambient noise, particularly for receivers where the WPPS was only just audible.

During all operator attended measurements, when the WPPS was audible, no impulsive noise characteristics or maximum noise events were attributed to the WPPS. In addition to this a review of source measurements on site at the WPPS shows that the difference between the L_{Aeq} noise level and the L_{A1} noise level was less than 1 dBA. As such the received $L_{A1(1minute)}$ noise level should not exceed the WPPS contribution shown in Table 2 by more than 1 dBA. As such the WPPS is assessed to be compliant with the 45 dBA $L_{A1\ (1\ minute)}$ maximum allowable noise contribution.

Condition 2.9 requires the adoption of the modification factors provided in Section 4 of the New South Wales Industrial Noise Policy (EPA, 2000). Note that under the *Implementation and transitional arrangements for the Noise Policy for Industry (2017) (EPA 2017P0293; October 2017),* where conditions reference the New South Wales Industrial Noise Policy (EPA, 2000) the modification factors these are to be transitioned to the *Noise Policy for Industry (2017)* Fact Sheet C through the practice notes issued on the EPA website. The potential for low frequency noise impacts were assessed using the difference between the modelled C- and A-weighted noise levels. At most locations a difference of 15 dB was measured. Therefore, there is the potential for low frequency noise if the threshold levels are exceeded. The measured one-third octave noise levels were reviewed and assessed against the *Noise Policy for Industry (2017)* one-third octave noise threshold levels provided in Table 1. The measured noise levels are below the noise threshold levels in all one-third octave bands at all locations, with the exception of Receivers B and E. In accordance with the *Noise Policy for Industry (2017)* Fact Sheet C, a low frequency noise modification factor is applied to the measured noise levels at these locations prior to assessment against the maximum allowable noise contribution in Condition 2.8. Receiver B exceeds the noise threshold levels by 3 dB in the 40 Hz band and a 2 dB correction is applied. Receiver E exceeds the noise threshold levels by 2 dB, 4 dB and 1 dB in the 40 Hz, 50 Hz and 63 Hz bands respectively and a 2 dB correction is applied.

Table 1 One-third octave low-frequency noise threshold level

Frequency	10	12.5	16	20	25	31.5	40	50	63	80	100	125	160
dBZ criteria	**92**	**89**	**86**	**77**	**69**	**61**	**54**	**50**	**50**	**48**	**48**	**46**	**44**

Based on the direct attended noise measurements and the assessment methodology in Section 3.1, all receivers comply with the criteria (with the inclusion of the low frequency noise modification factor) when considering negotiated agreements.

3.3 Complaints register

Santos has advised that no complaints have been received since the power station began generating above 12MW and subsequently 16 MW. Note for future noise assessment reports for each stage of increase in power generation, this will be the point of reference for complaints.

Table 2 WPPS noise contribution, $L_{Aeq(15minute)}$

Receiver	Criteria	Total noise level	WPPS Contribution (dBA) L_{A90} Method	Date (Start time)	Wind speed (Direction)	Temperature Lapse rate	Observations
B	40 (vacant lot)	35	33 (35)[2]	9/02/2021 3:32 am	0.2 m/s (163°)	-0.2 °C/100m	WPPS audible Insects
C	35	34	27	10/02/2021 5:41 am	0.7 m/s (147°)	0.6 °C/100m	WPPS audible Insects Distant road traffic noise
D (Boundary)	35	28	23	10/02/2021 5:43 am	0.7 m/s (147°)	0.6 °C/100m	WPPS just audible Distant road traffic noise
E	40 (vacant lot)	36	35 (37)[2]	9/02/2021 4:12 am	0.3 m/s (230°)	-0.2 °C/100m	WPPS audible
G / H (F[1])	35	38	28	9/02/2021 6:45 am	0.2 m/s (245°)	-0.2 °C/100m	Insects and birds Distant road traffic noise WPPS inaudible
I	35	26	24	10/02/2021 5:09 am	0.6 m/s (151°)	0.2 °C/100m	Insects WPPS inaudible
J	35	29	21	10/02/2021 5:08 am	0.6 m/s (151°)	0.2 °C/100m	Insects Frogs WPPS inaudible

Receiver	Criteria	Total noise level	WPPS Contribution (dBA) $L_{A90\ Method}$	Date (Start time)	Wind speed (Direction)	Temperature Lapse rate	Observations
K	35	38	29	10/02/2021 3:30 am	0.7 m/s (148°)	2.0 °C/100m	Insects WPPS inaudible
L	40 (vacant lot)	39	22	10/02/2021 4:13 am	0.5 m/s (149°)	1.2 °C/100m	Insects WPPS inaudible
M	Negotiated agreement in place	42	29	9/02/2021 5:43 am	0.5 m/s (152°)	-0.8 °C/100m	Insects Kookaburras Distant road traffic noise Dogs barking Irrigation equipment WPPS inaudible
N	Negotiated agreement in place (vacant lot)	42	32	9/02/2021 5:45 am	0.5 m/s (152 °)	-0.8 °C/100m	WPPS just audible Distant road traffic noise Insects
O	40 (vacant lot)	30	28	9/02/2021 4:53 am	0.3 m/s (253°)	-0.4 °C/100m	WPPS inaudible
P, R (Boundary)	40 (vacant lot)	35	30	9/02/2021 6:14 am	0.3 m/s (200°)	-0.2 °C/100m	WPPS inaudible Distant road traffic noise Insects and birds

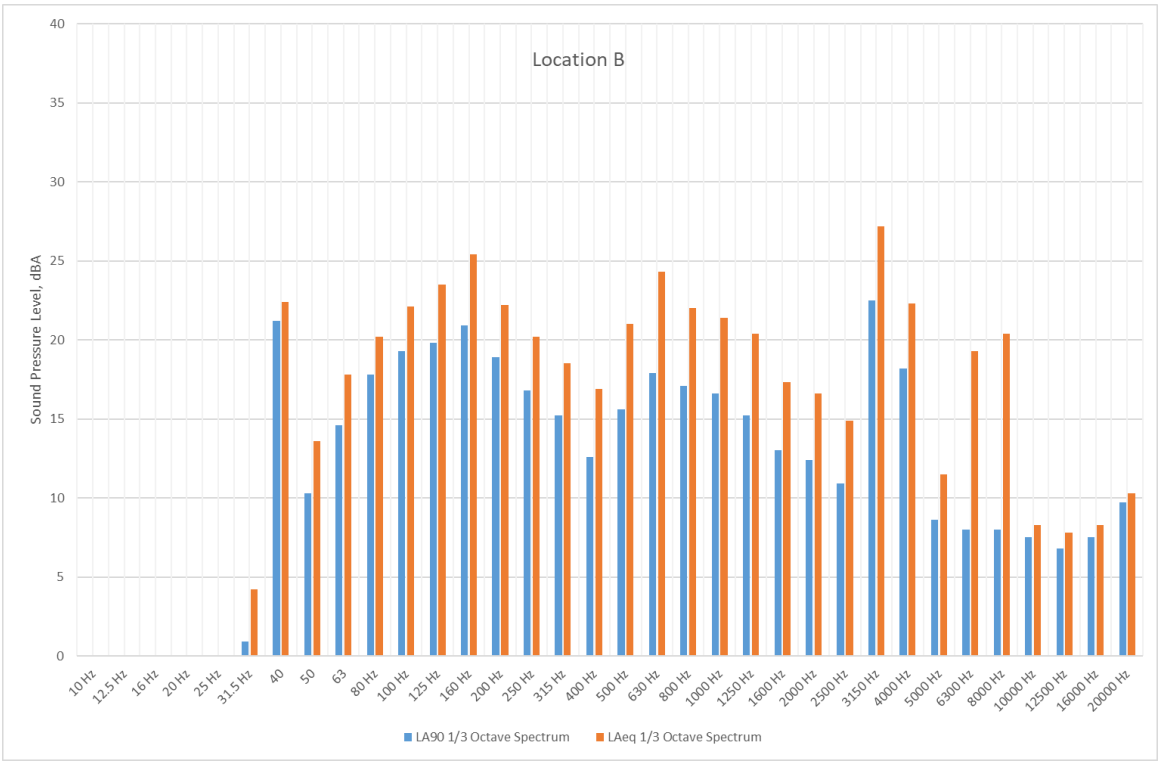
Receiver	Criteria	Total noise level	WPPS Contribution (dBA) $L_{A90\ Method}$	Date (Start time)	Wind speed (Direction)	Temperature Lapse rate	Observations
Q	40 (vacant lot)	35	30	9/02/2021 6:14 am	0.3 m/s (200°)	-0.2 °C/100m	WPPS inaudible Distant road traffic noise Insects and birds
S, T, U (Boundary)	35	38	33	9/02/2021 3:00 am	0.8 m/s (147°)	0 °C/100m	WPPS inaudible Insects Livestock

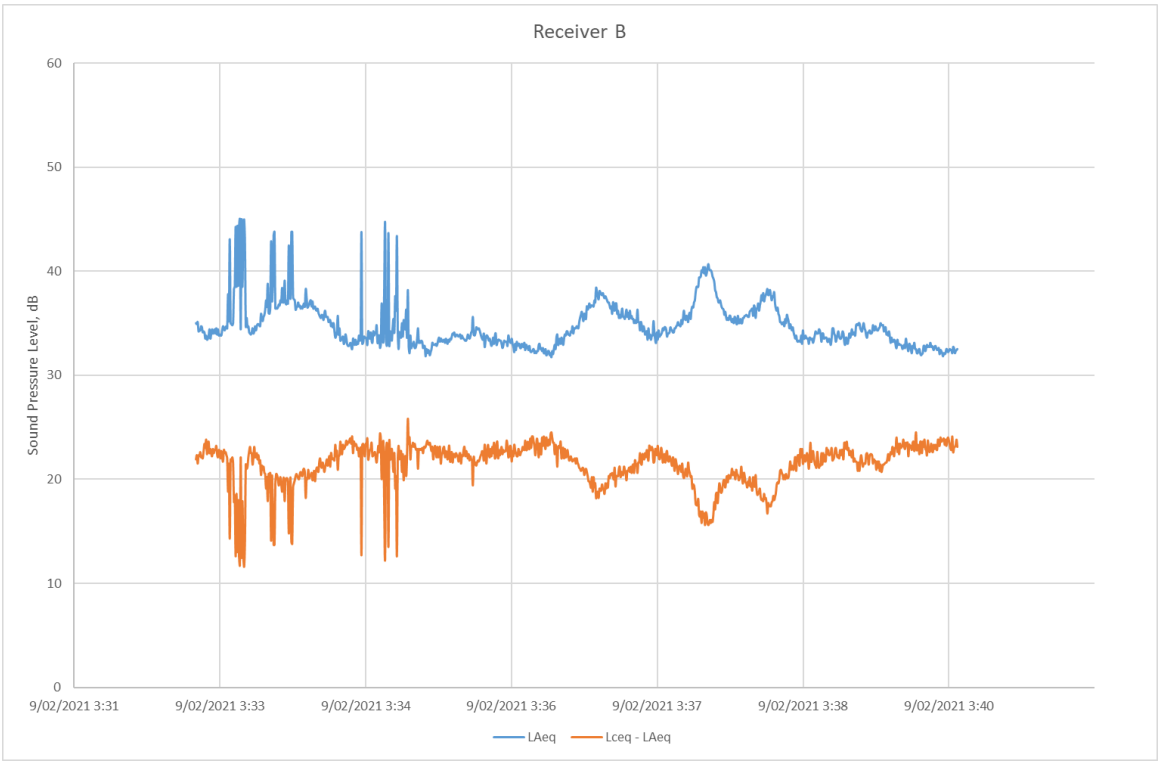
Note 1: Access to F not available. Site G was considered representative of this location as it is a similar distance and direction to the WPPS.

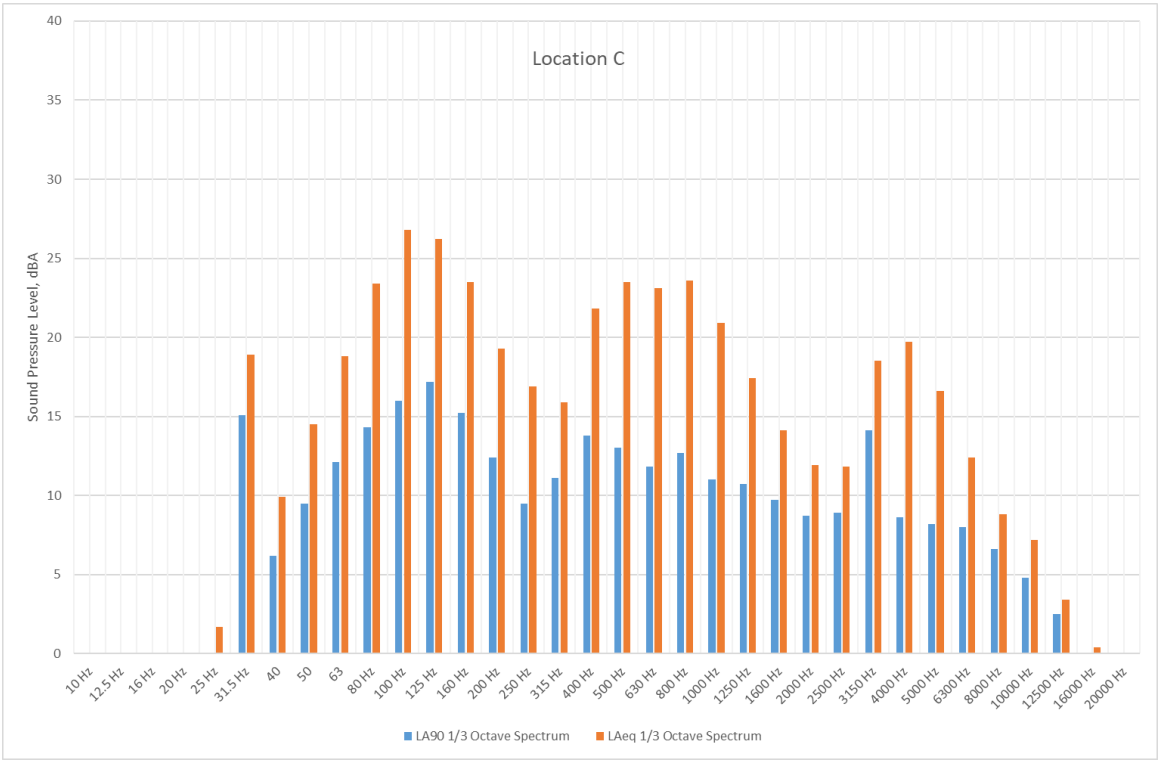
Note 2: Results in brackets indicate the noise levels contribution from the WPPS with the inclusion of the low frequency modification factor

Appendices

Appendix A – Measured noise level charts and frequency spectrums



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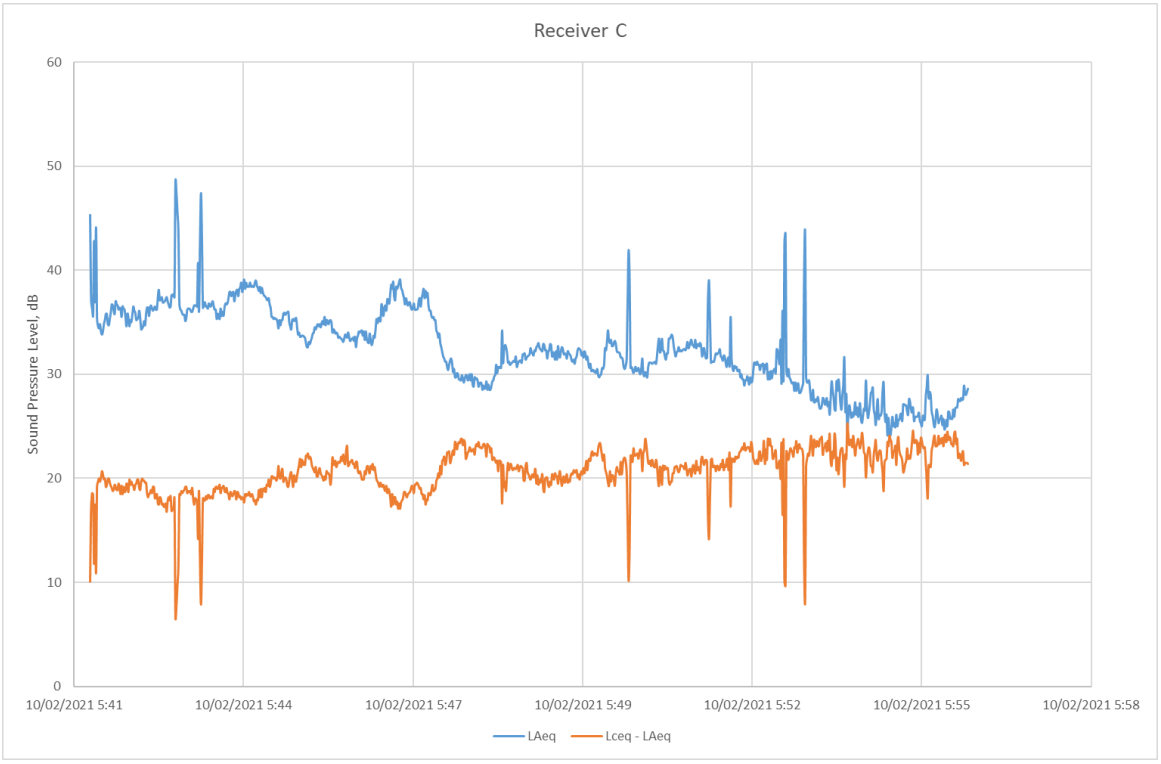
35
30
25
20
15
10
5
0
10 Hz
12.5 Hz
16 Hz
20 Hz
25 Hz
31.5 Hz
40
50
63
80 Hz
100 Hz
125 Hz
160 Hz
200 Hz
250 Hz
315 Hz
400 Hz
500 Hz
630 Hz
800 Hz
1000 Hz
1250 Hz
1600 Hz
2000 Hz
2500 Hz
3150 Hz
4000 Hz
5000 Hz
6300 Hz
8000 Hz
10000 Hz
12500 Hz
16000 Hz
20000 Hz
LA90 1/3 Octave Spectrum
LAeq 1/3 Octave Spectrum


Receiver C
Sound Pressure Level, dB
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50
40
30
20
10
0
10/02/2021 5:41
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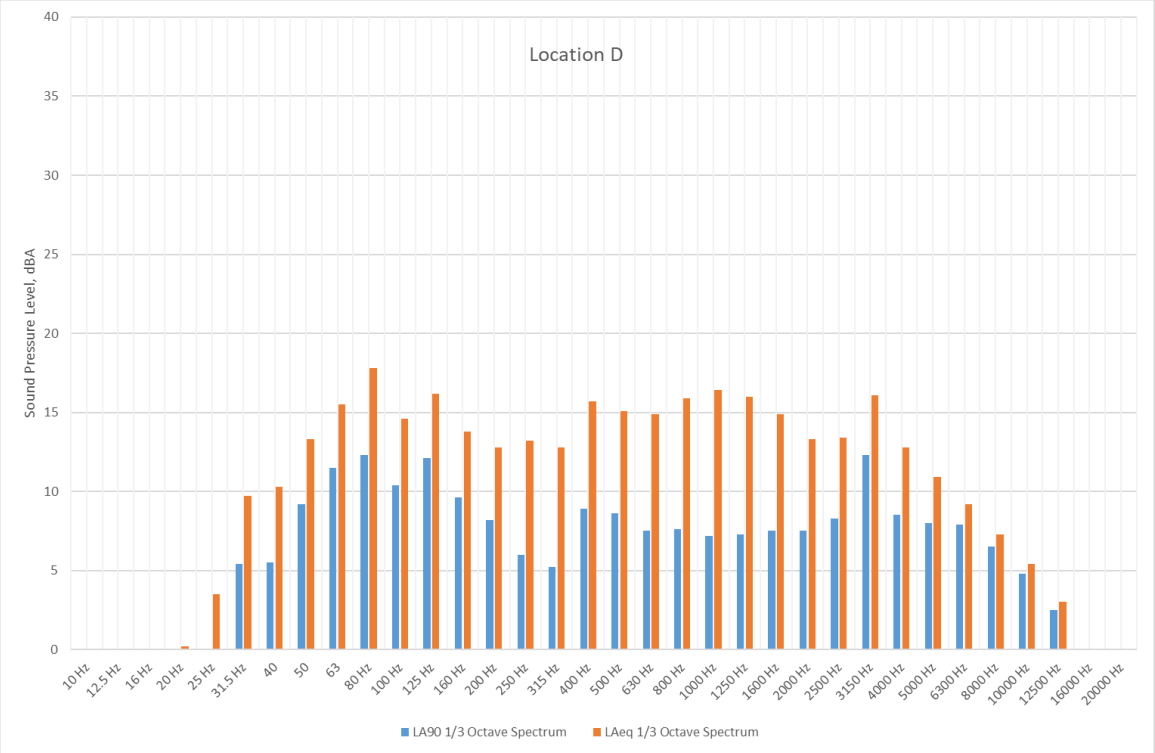
10/02/2021 5:58
LAeq
Lceq - LAeq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35
30
25
20
15
10
5
0
10 Hz
12.5 Hz
16 Hz
20 Hz
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31.5 Hz
40
50
63
80 Hz
100 Hz
125 Hz
160 Hz
200 Hz
250 Hz
315 Hz
400 Hz
500 Hz
630 Hz
800 Hz
1000 Hz
1250 Hz
1600 Hz
2000 Hz
2500 Hz
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10000 Hz
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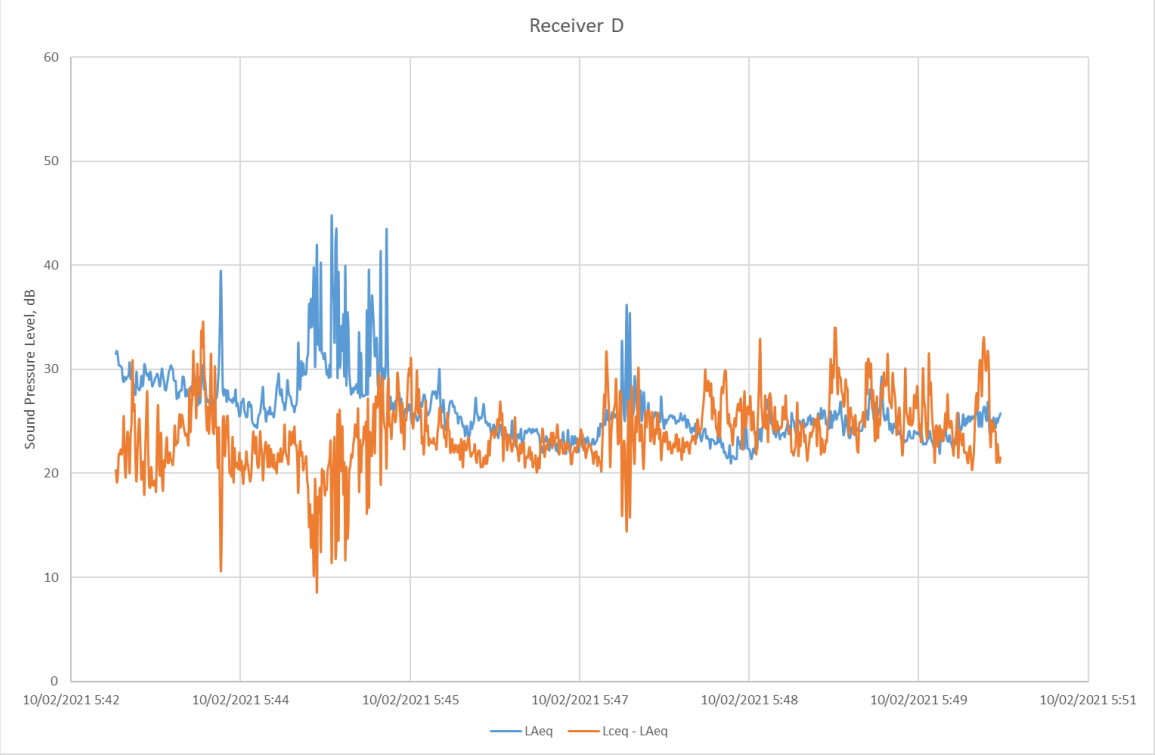
20000 Hz
LA90 1/3 Octave Spectrum
LAeq 1/3 Octave Spectrum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0
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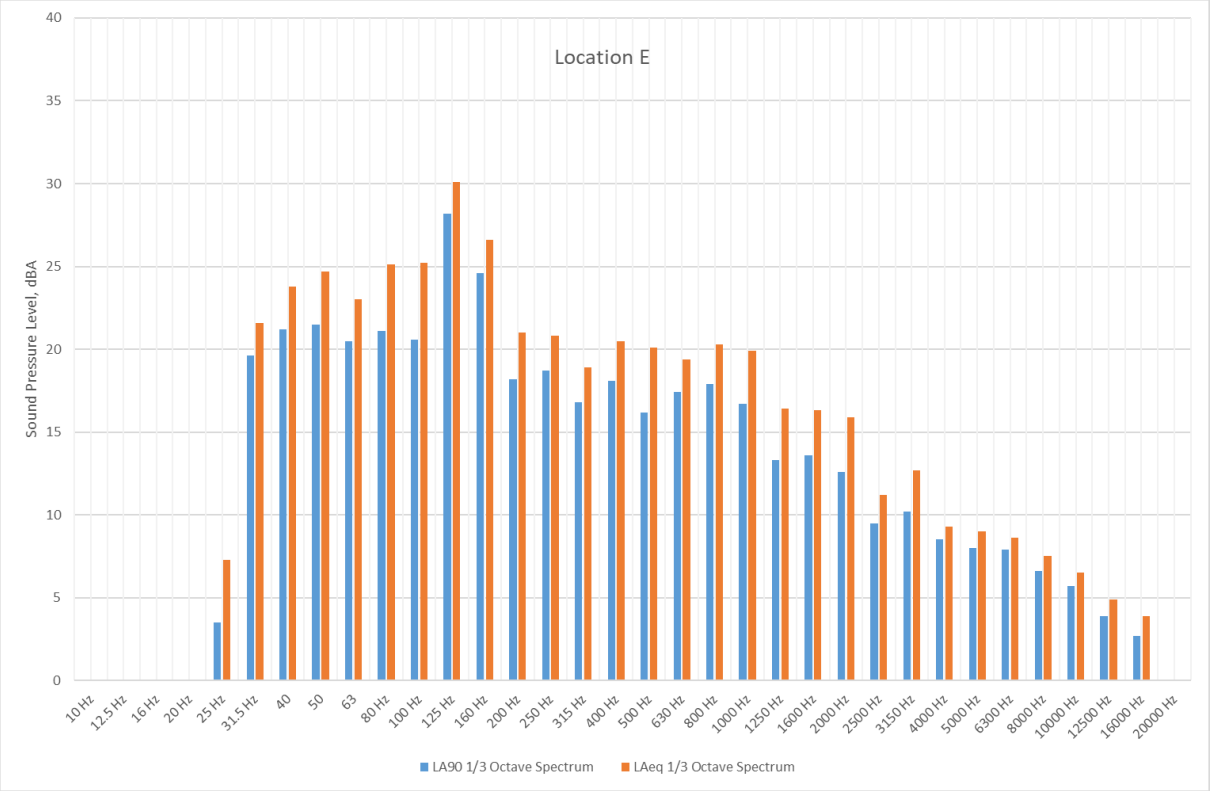
LAeq
Lceq - LAeq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15
10
5
0
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16 Hz
20 Hz
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31.5 Hz
40
50
63
80 Hz
100 Hz
125 Hz
160 Hz
200 Hz
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400 Hz
500 Hz
630 Hz
800 Hz
1000 Hz
1250 Hz
1600 Hz
2000 Hz
2500 Hz
3150 Hz
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8000 Hz
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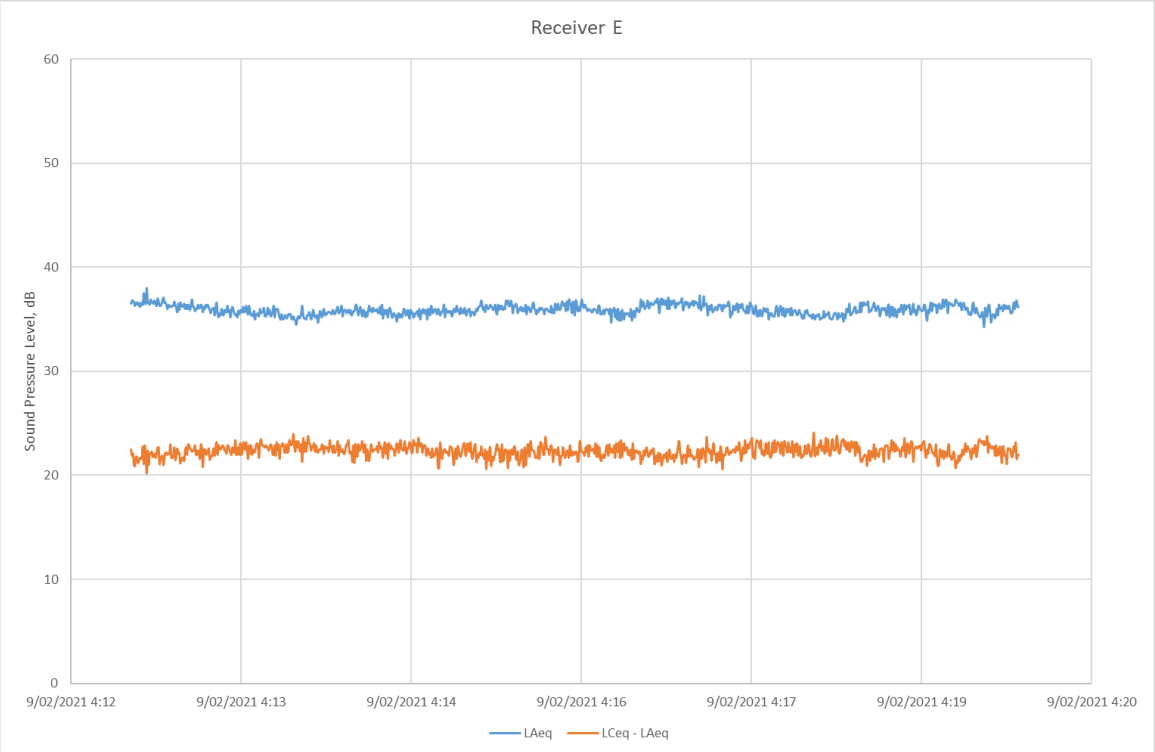
20000 Hz
LA90 1/3 Octave Spectrum
LAeq 1/3 Octave Spectrum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Sound Pressure Level, dB
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50
40
30
20
10
0
9/02/2021 4:12
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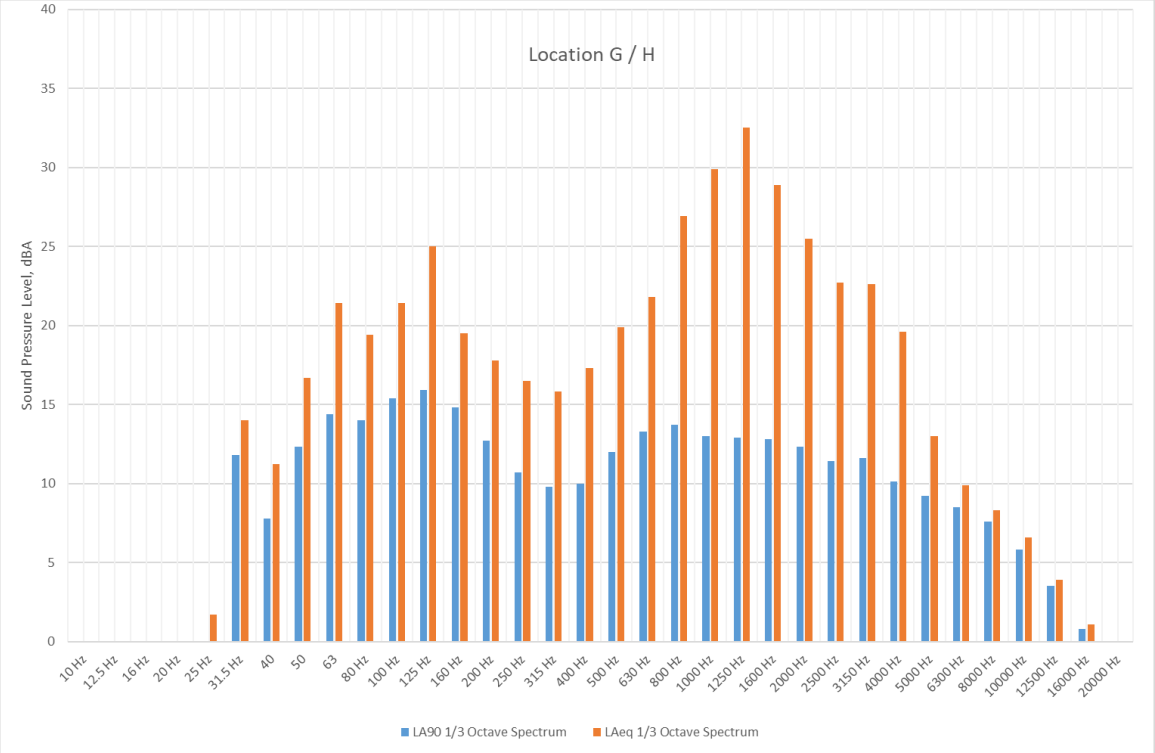
9/02/2021 4:16
9/02/2021 4:17
9/02/2021 4:19
9/02/2021 4:20
LAeq
LCeq - LAeq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31.5 Hz
40
50
63
80 Hz
100 Hz
125 Hz
160 Hz
200 Hz
250 Hz
315 Hz
400 Hz
500 Hz
630 Hz
800 Hz
1000 Hz
1250 Hz
1600 Hz
2000 Hz
2500 Hz
3150 Hz
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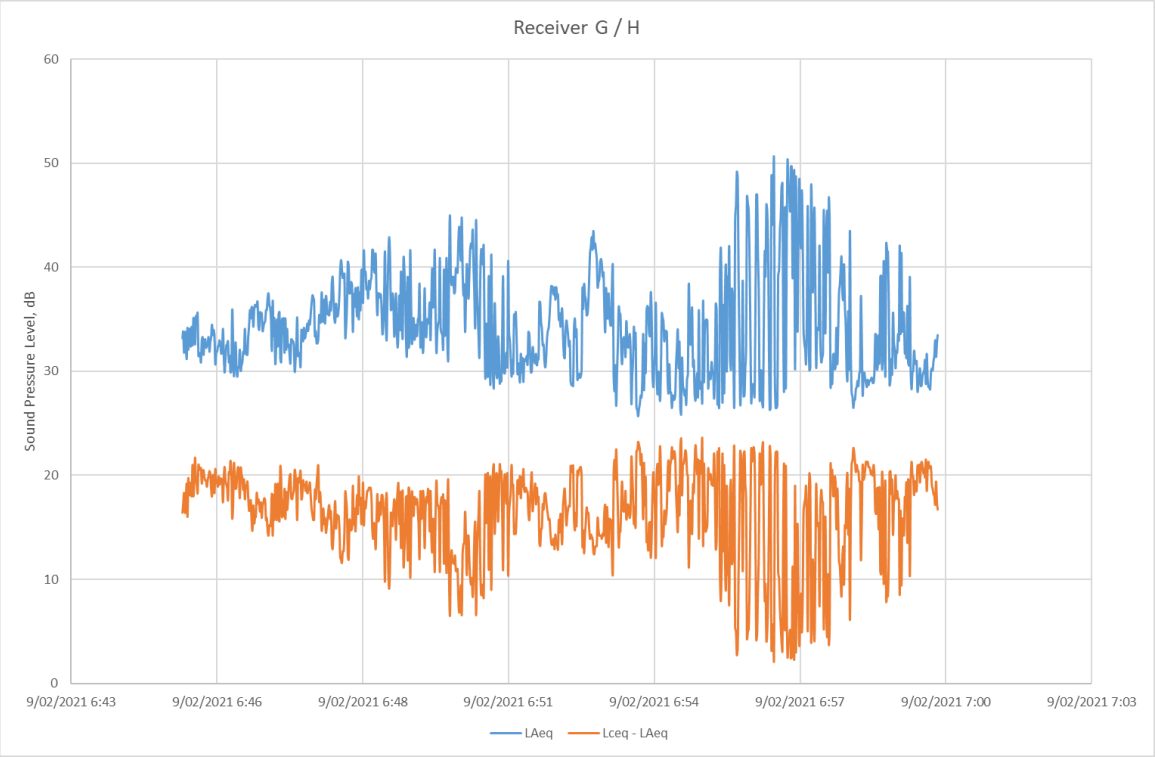
20000 Hz
LA90 1/3 Octave Spectrum
LAeq 1/3 Octave Spectrum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Sound Pressure Level, dB
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40
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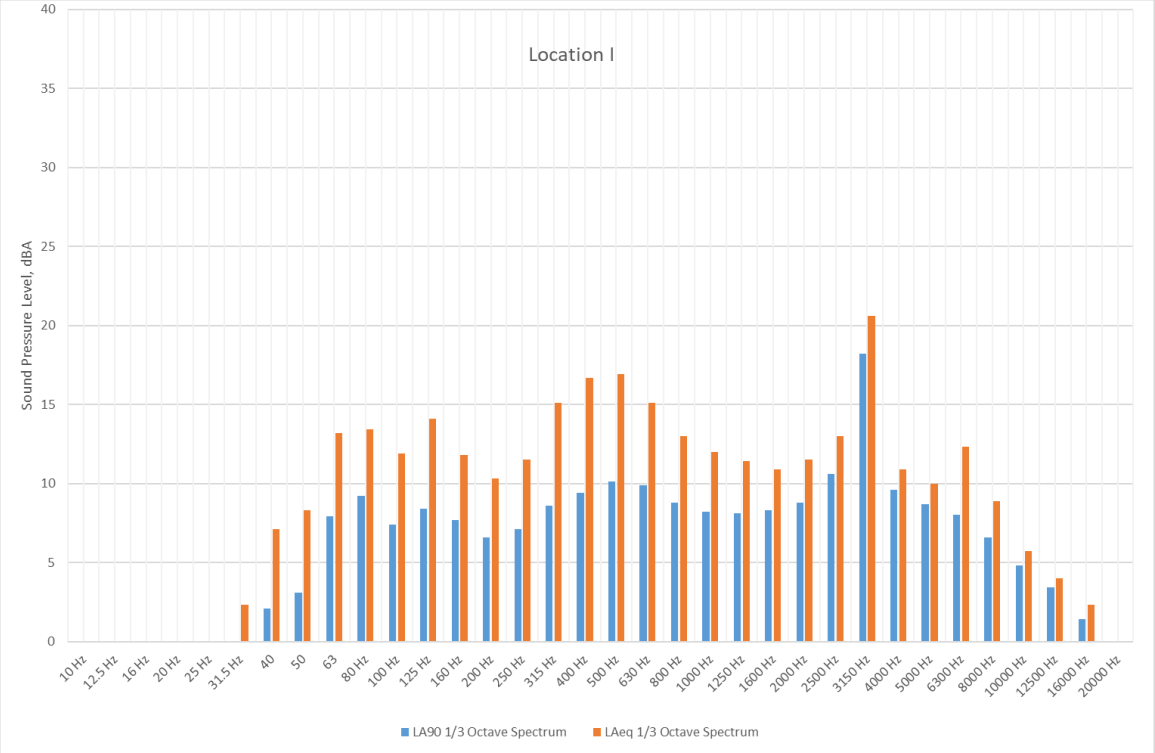
LAeq
Lceq - LAeq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16 Hz
20 Hz
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63
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1600 Hz
2000 Hz
2500 Hz
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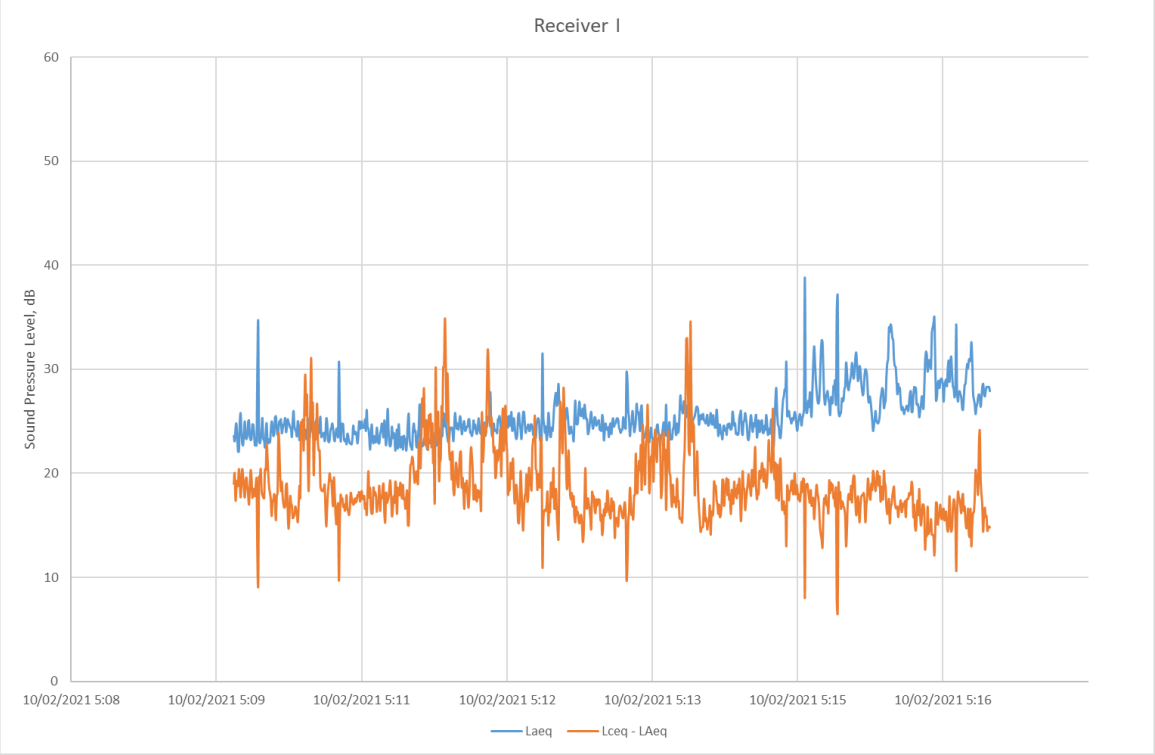
LA90 1/3 Octave Spectrum
LAeq 1/3 Octave Spectrum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10/02/2021 5:16
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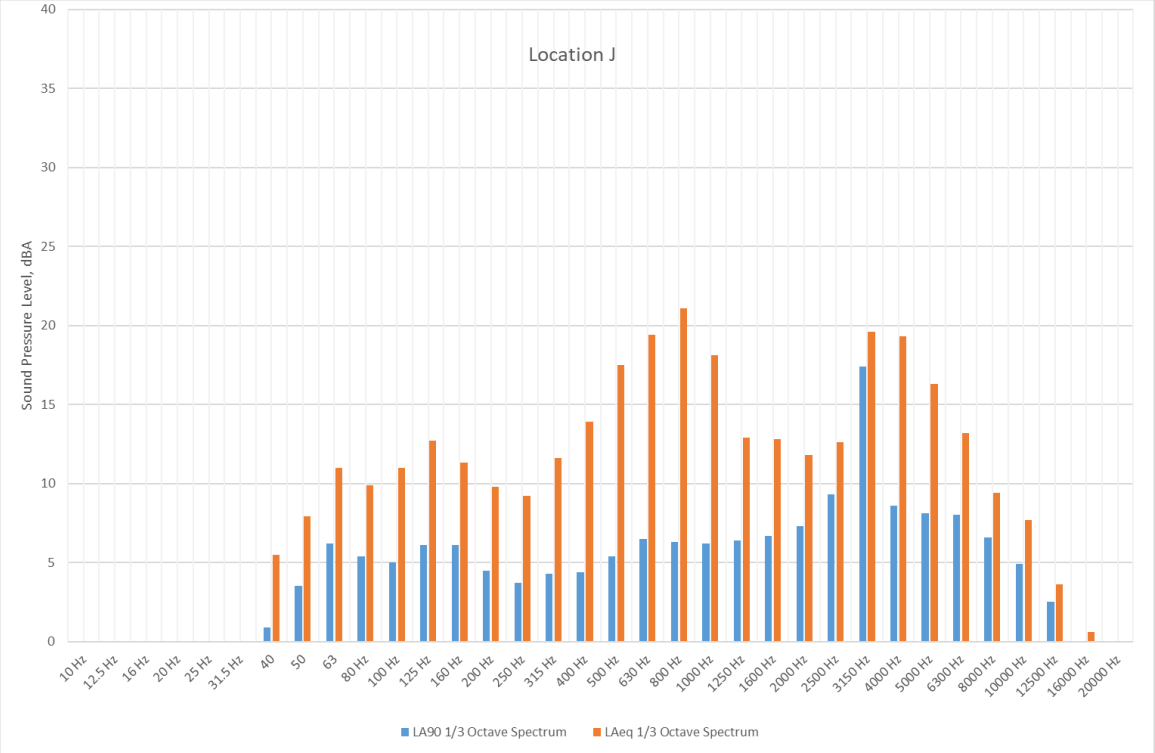
Lceq - LAeq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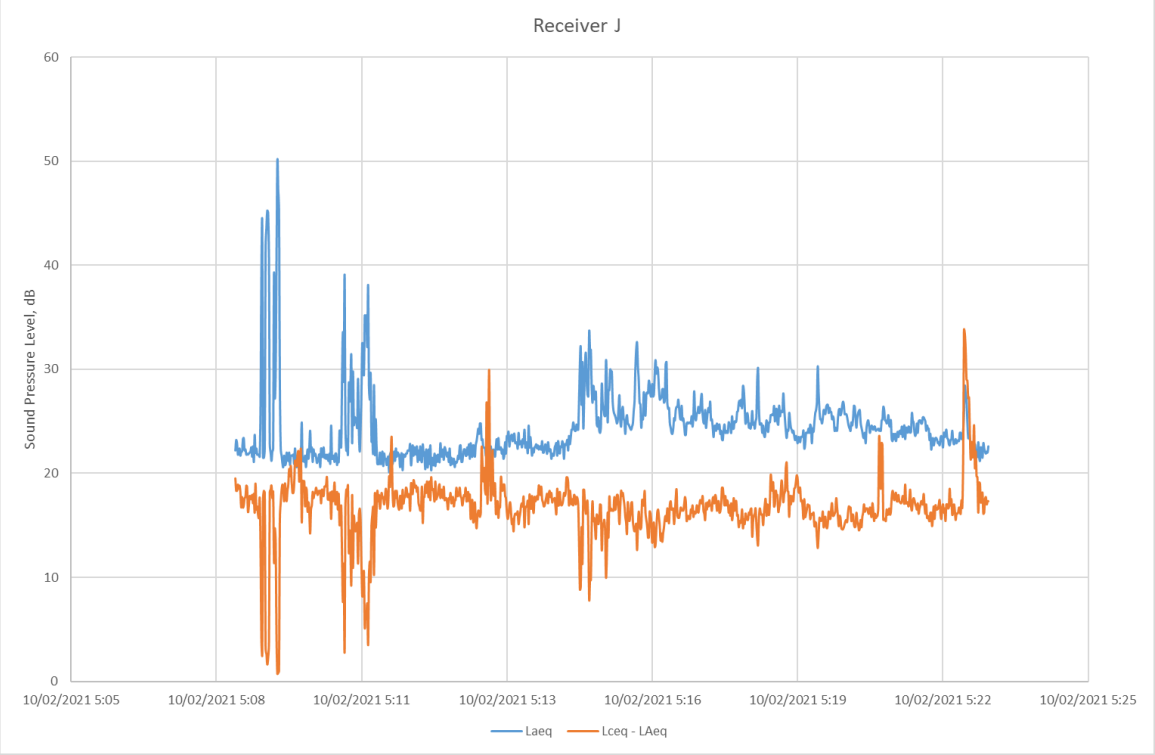
LA90 1/3 Octave Spectrum
LAeq 1/3 Octave Spectrum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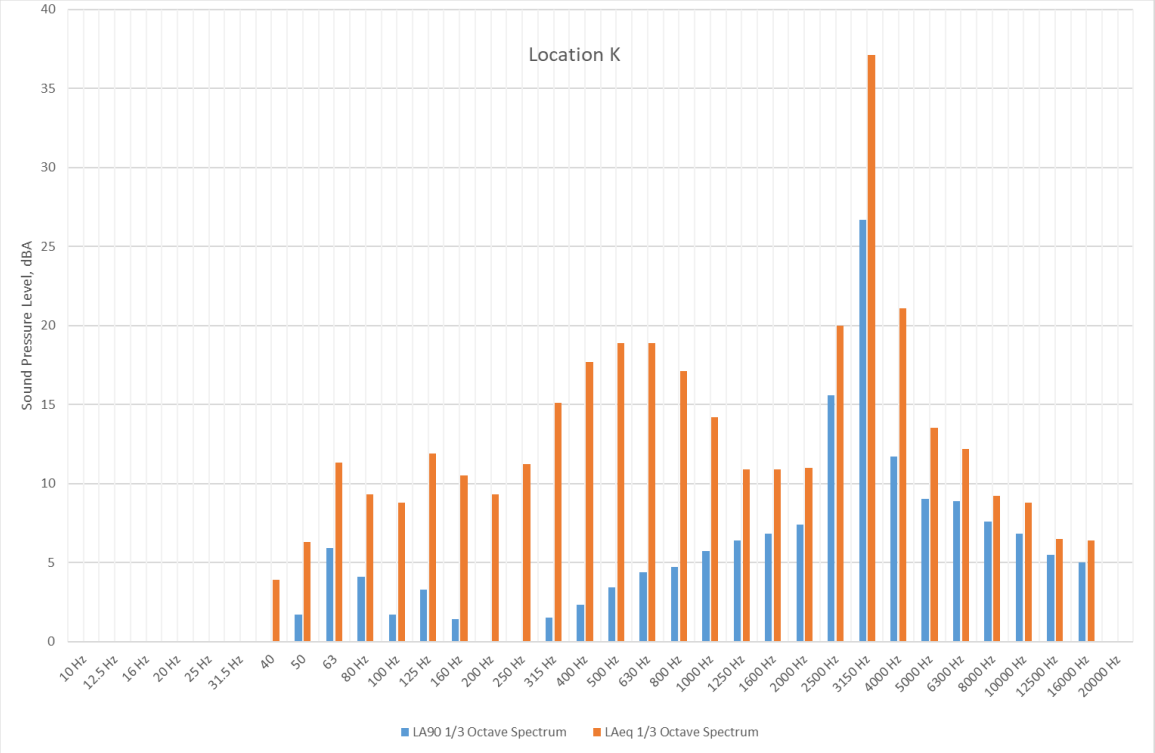
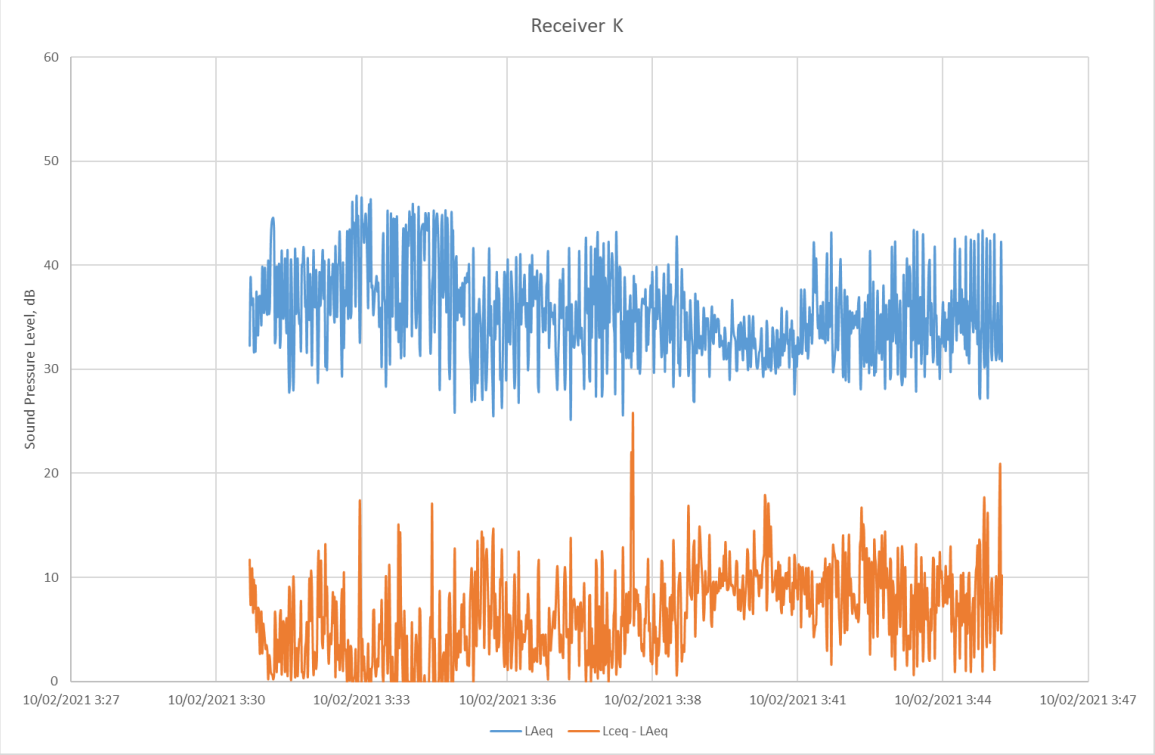
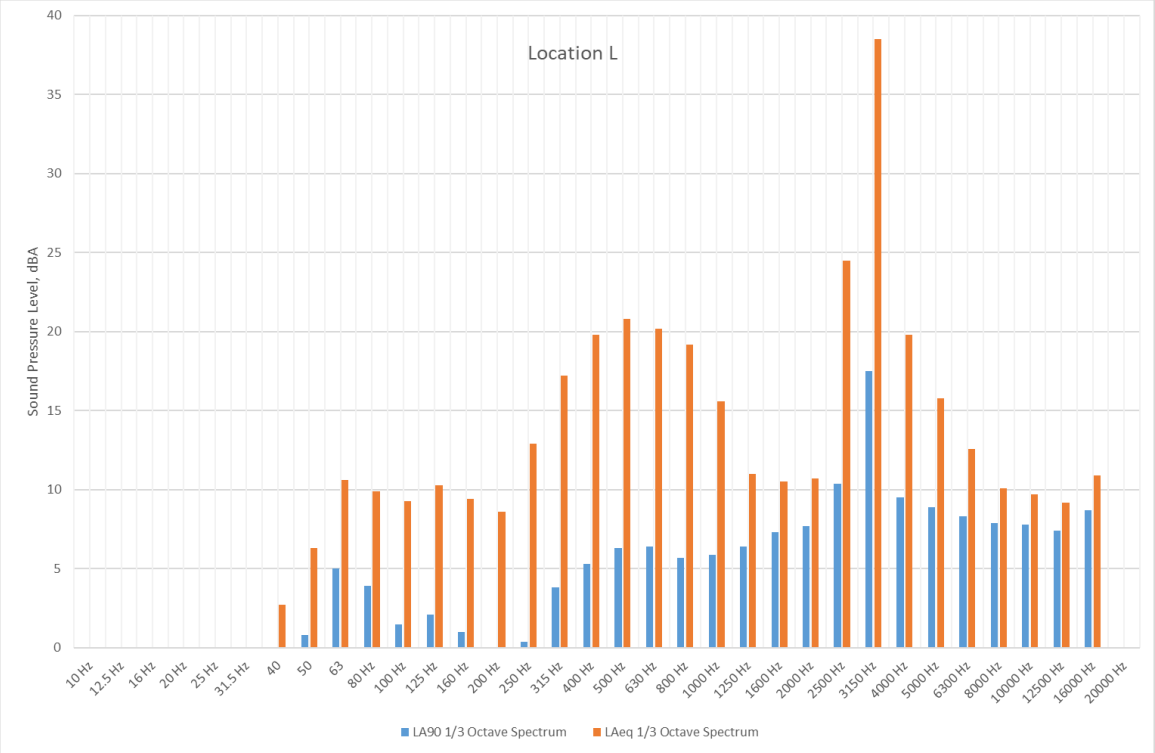
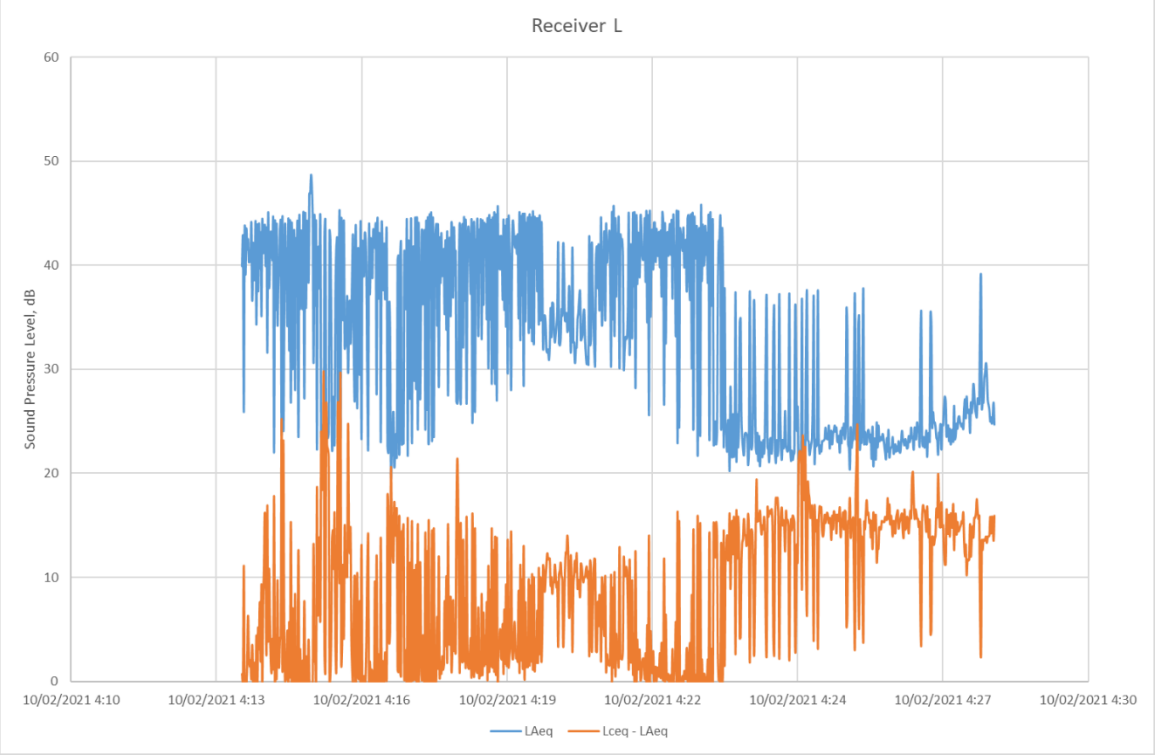
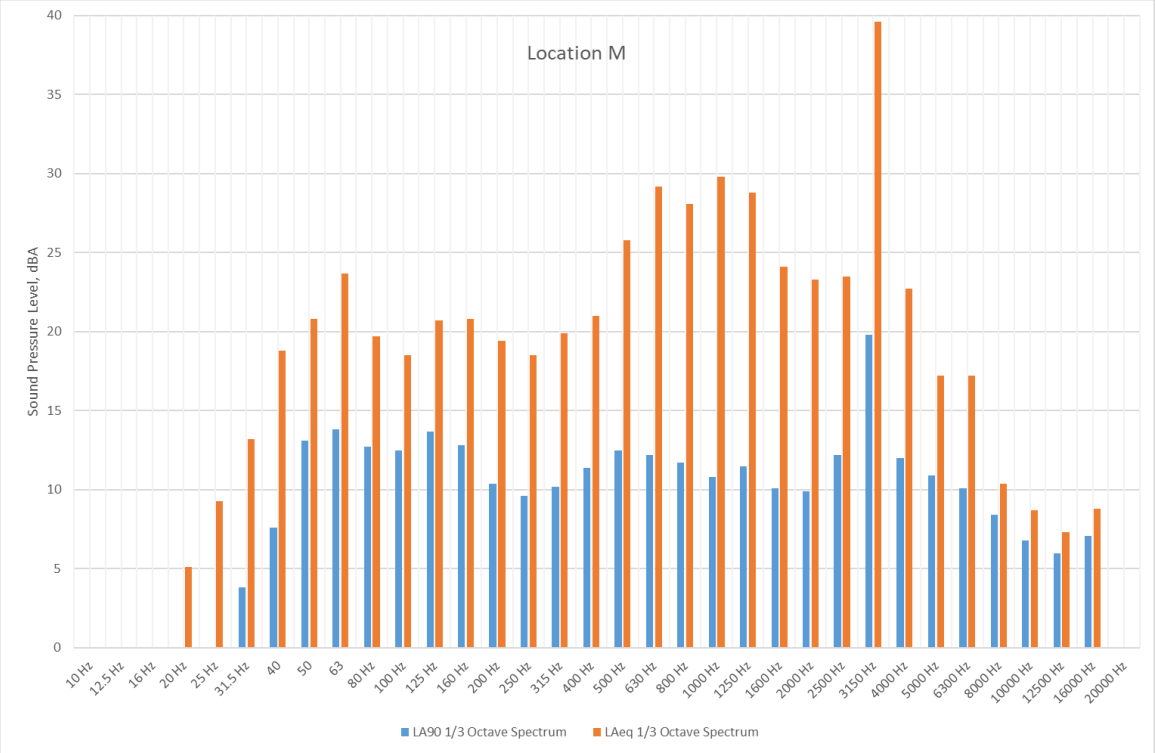
Laeq
Lceq - LAeq

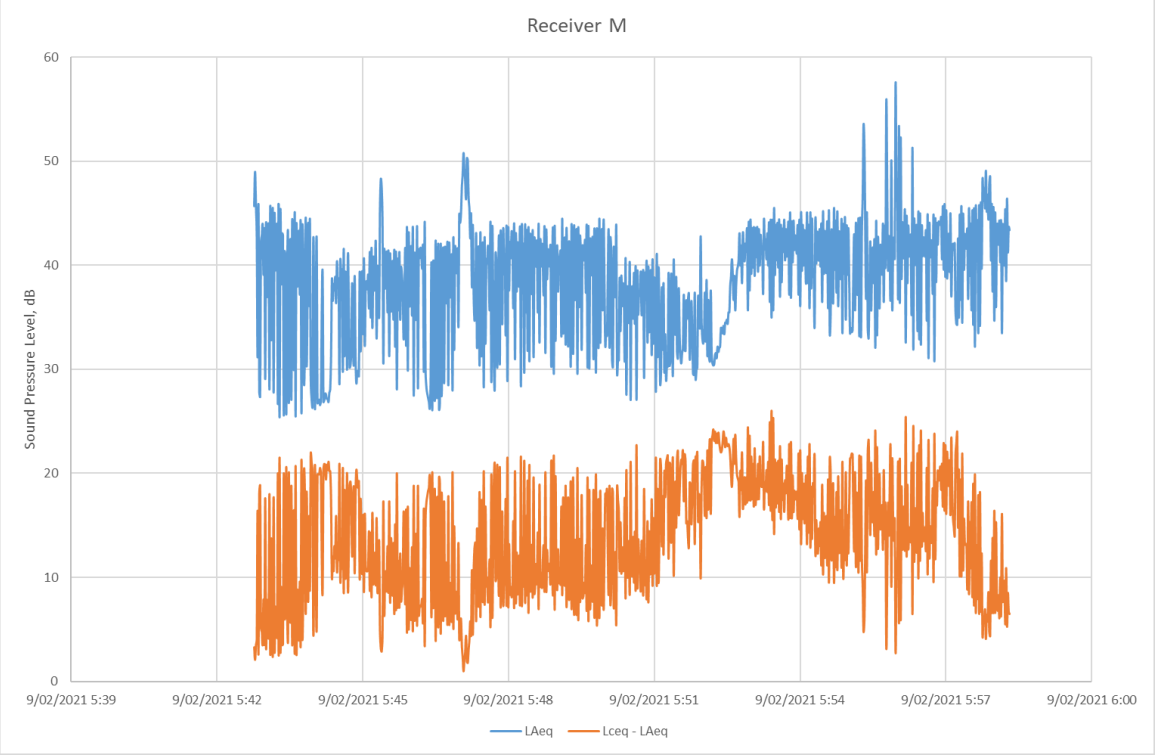

Location K
Sound Pressure Level, dBA
40
35
30
25
20
15
10
5
0
10 Hz
12.5 Hz
16 Hz
20 Hz
25 Hz
31.5 Hz
40
50
63
80 Hz
100 Hz
125 Hz
160 Hz
200 Hz
250 Hz
315 Hz
400 Hz
500 Hz
630 Hz
800 Hz
1000 Hz
1250 Hz
1600 Hz
2000 Hz
2500 Hz
3150 Hz
4000 Hz
5000 Hz
6300 Hz
8000 Hz
10000 Hz
12500 Hz
16000 Hz
20000 Hz
LA90 1/3 Octave Spectrum
LAeq 1/3 Octave Spectrum

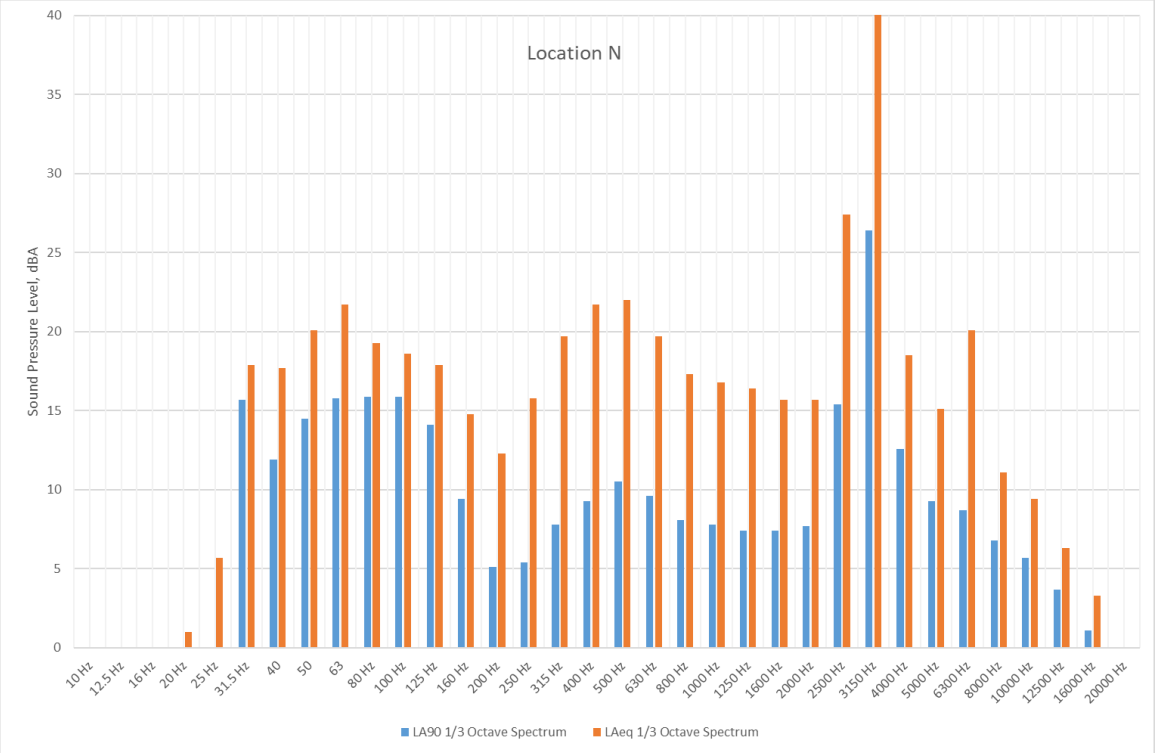

Receiver K
Sound Pressure Level, dB
60
50
40
30
20
10
0
10/02/2021 3:27
10/02/2021 3:30
10/02/2021 3:33
10/02/2021 3:36
10/02/2021 3:38
10/02/2021 3:41
10/02/2021 3:44
10/02/2021 3:47
LAeq
Lceq - LAeq

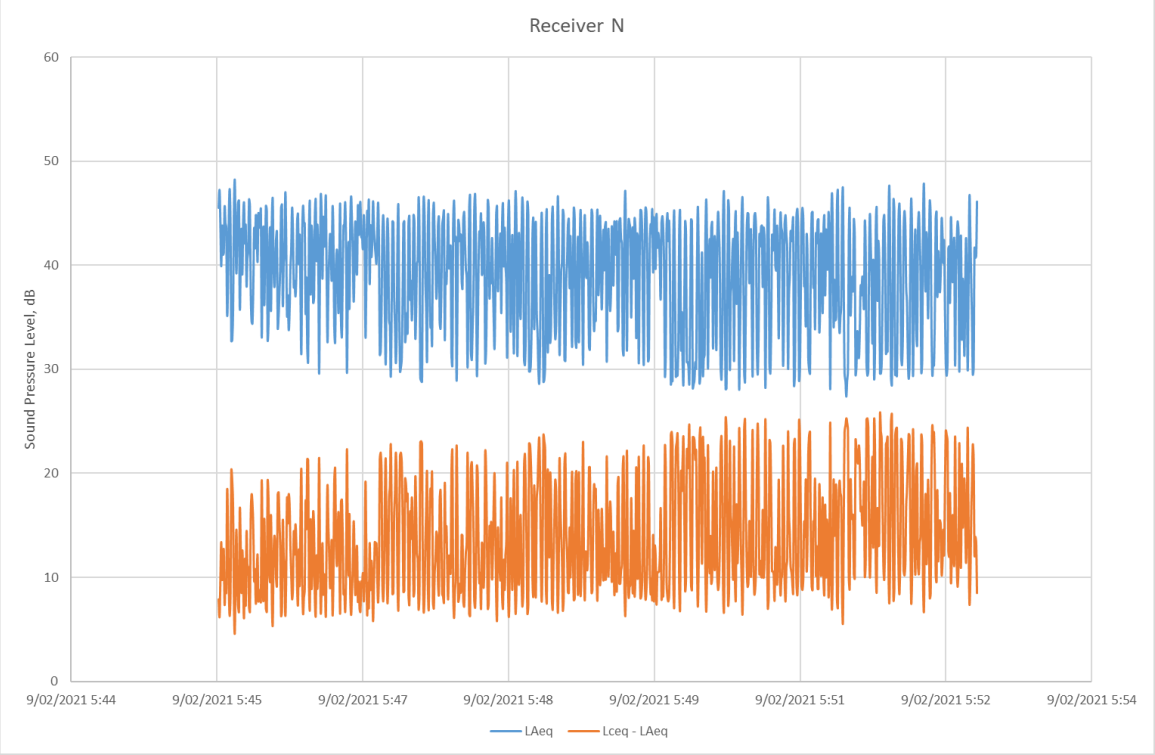

Location L
Sound Pressure Level, dBA
40
35
30
25
20
15
10
5
0
10 Hz
12.5 Hz
16 Hz
20 Hz
25 Hz
31.5 Hz
40
50
63
80 Hz
100 Hz
125 Hz
160 Hz
200 Hz
250 Hz
315 Hz
400 Hz
500 Hz
630 Hz
800 Hz
1000 Hz
1250 Hz
1600 Hz
2000 Hz
2500 Hz
3150 Hz
4000 Hz
5000 Hz
6300 Hz
8000 Hz
10000 Hz
12500 Hz
16000 Hz
20000 Hz
LA90 1/3 Octave Spectrum
LAeq 1/3 Octave Spectrum

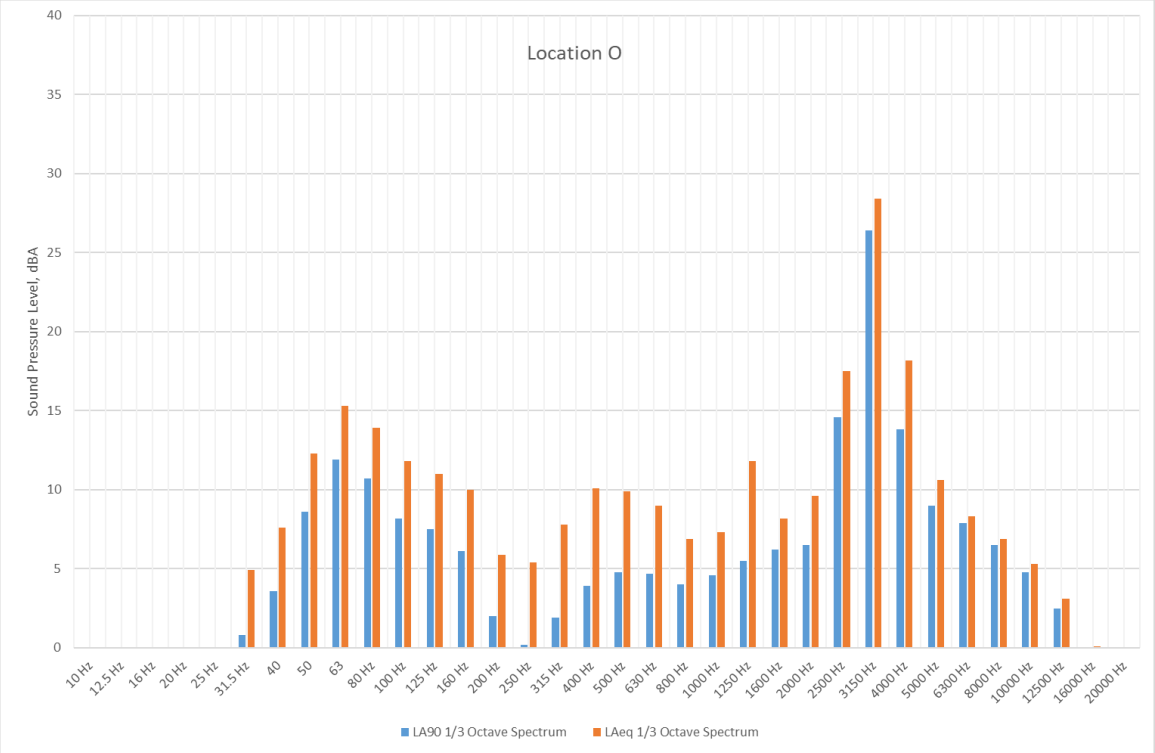

Receiver L
Sound Pressure Level, dB
60
50
40
30
20
10
0
10/02/2021 4:10
10/02/2021 4:13
10/02/2021 4:16
10/02/2021 4:19
10/02/2021 4:22
10/02/2021 4:24
10/02/2021 4:27
10/02/2021 4:30
LAeq
Lceq - LAeq

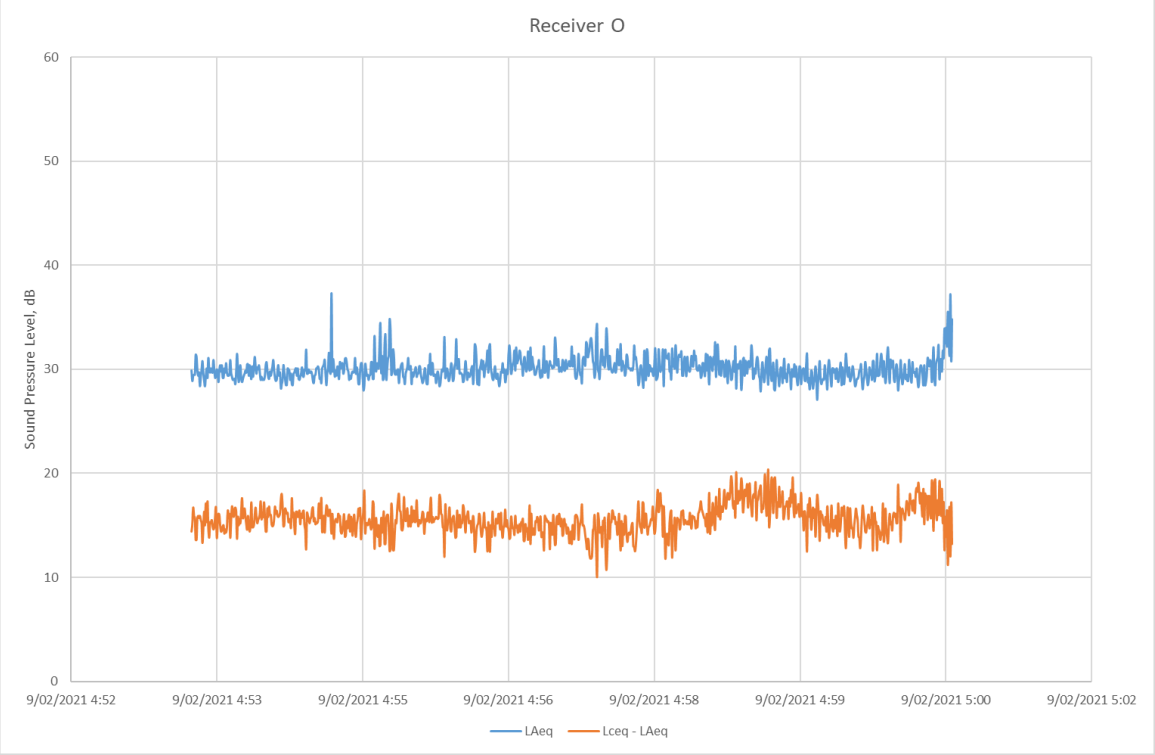

Location M
Sound Pressure Level, dBA
40
35
30
25
20
15
10
5
0
10 Hz
12.5 Hz
16 Hz
20 Hz
25 Hz
31.5 Hz
40
50
63
80 Hz
100 Hz
125 Hz
160 Hz
200 Hz
250 Hz
315 Hz
400 Hz
500 Hz
630 Hz
800 Hz
1000 Hz
1250 Hz
1600 Hz
2000 Hz
2500 Hz
3150 Hz
4000 Hz
5000 Hz
6300 Hz
8000 Hz
10000 Hz
12500 Hz
16000 Hz
20000 Hz
LA90 1/3 Octave Spectrum
LAeq 1/3 Octave Spectrum

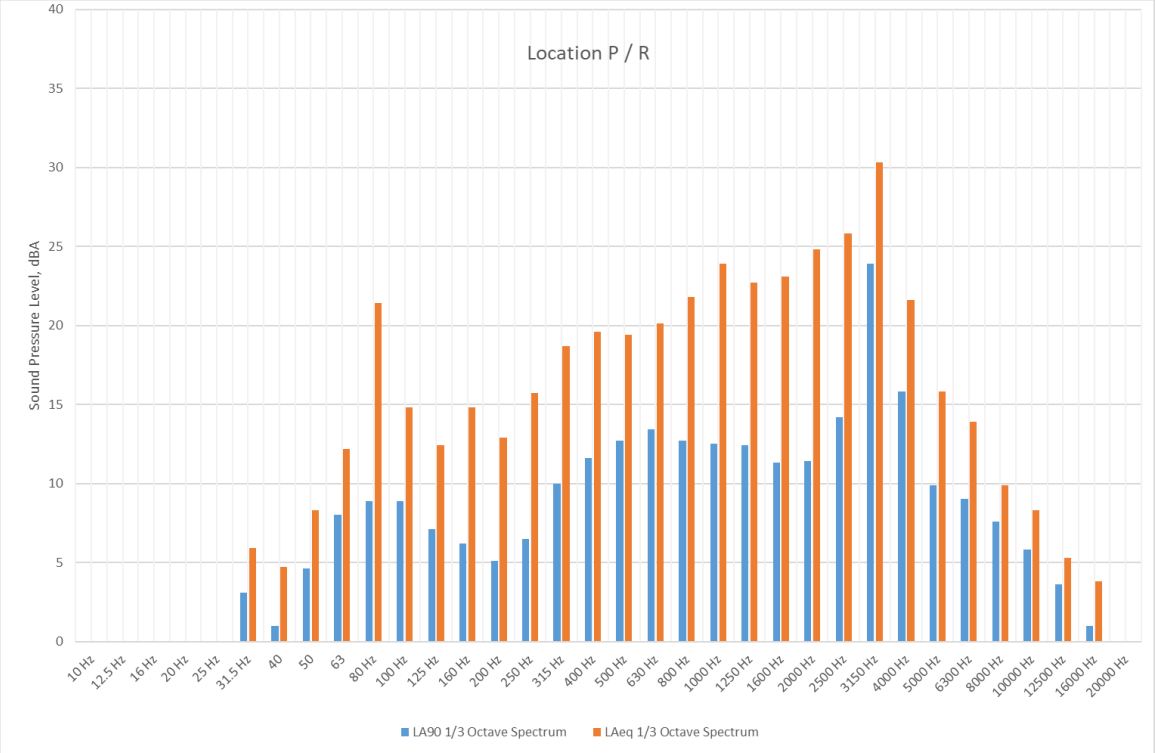

Receiver M
Sound Pressure Level, dB
60
50
40
30
20
10
0
9/02/2021 5:39
9/02/2021 5:42
9/02/2021 5:45
9/02/2021 5:48
9/02/2021 5:51
9/02/2021 5:54
9/02/2021 5:57
9/02/2021 6:00
LAeq
Lceq - LAeq

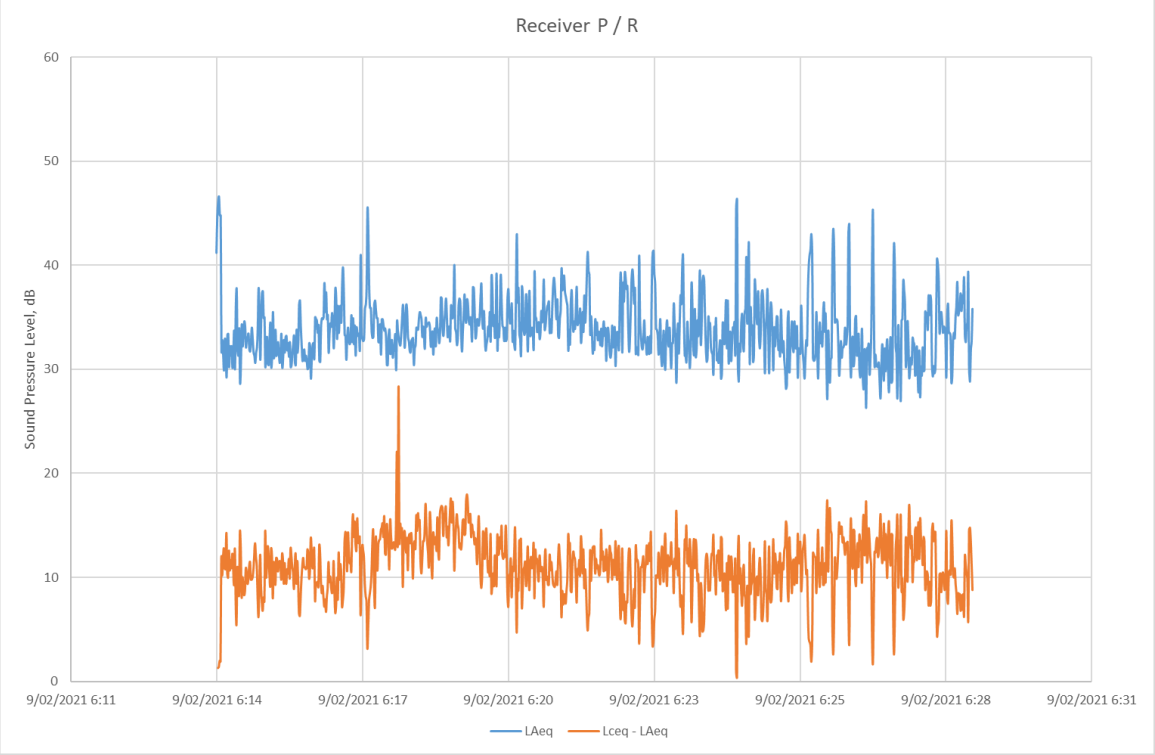

Location N
Sound Pressure Level, dBA
40
35
30
25
20
15
10
5
0
10 Hz
12.5 Hz
16 Hz
20 Hz
25 Hz
31.5 Hz
40
50
63
80 Hz
100 Hz
125 Hz
160 Hz
200 Hz
250 Hz
315 Hz
400 Hz
500 Hz
630 Hz
800 Hz
1000 Hz
1250 Hz
1600 Hz
2000 Hz
2500 Hz
3150 Hz
4000 Hz
5000 Hz
6300 Hz
8000 Hz
10000 Hz
12500 Hz
16000 Hz
20000 Hz
LA90 1/3 Octave Spectrum
LAeq 1/3 Octave Spectrum

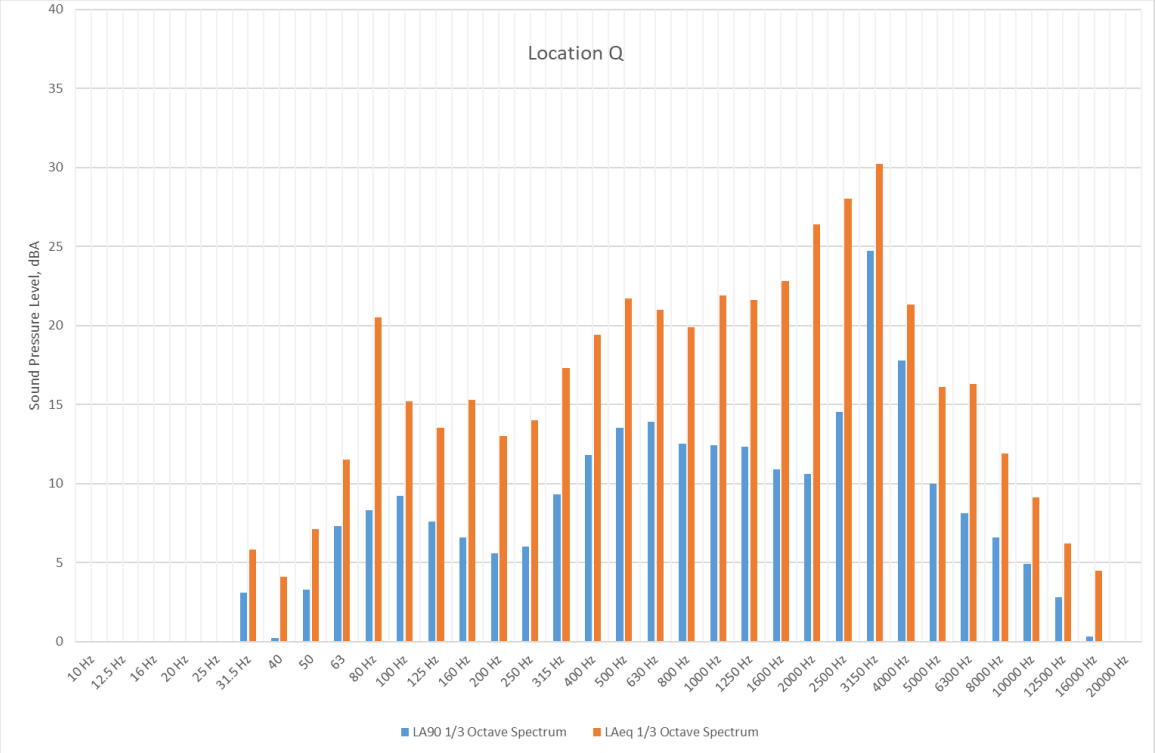

Receiver N
Sound Pressure Level, dB
60
50
40
30
20
10
0
9/02/2021 5:44
9/02/2021 5:45
9/02/2021 5:47
9/02/2021 5:48
9/02/2021 5:49
9/02/2021 5:51
9/02/2021 5:52
9/02/2021 5:54
LAeq
Lceq - LAeq

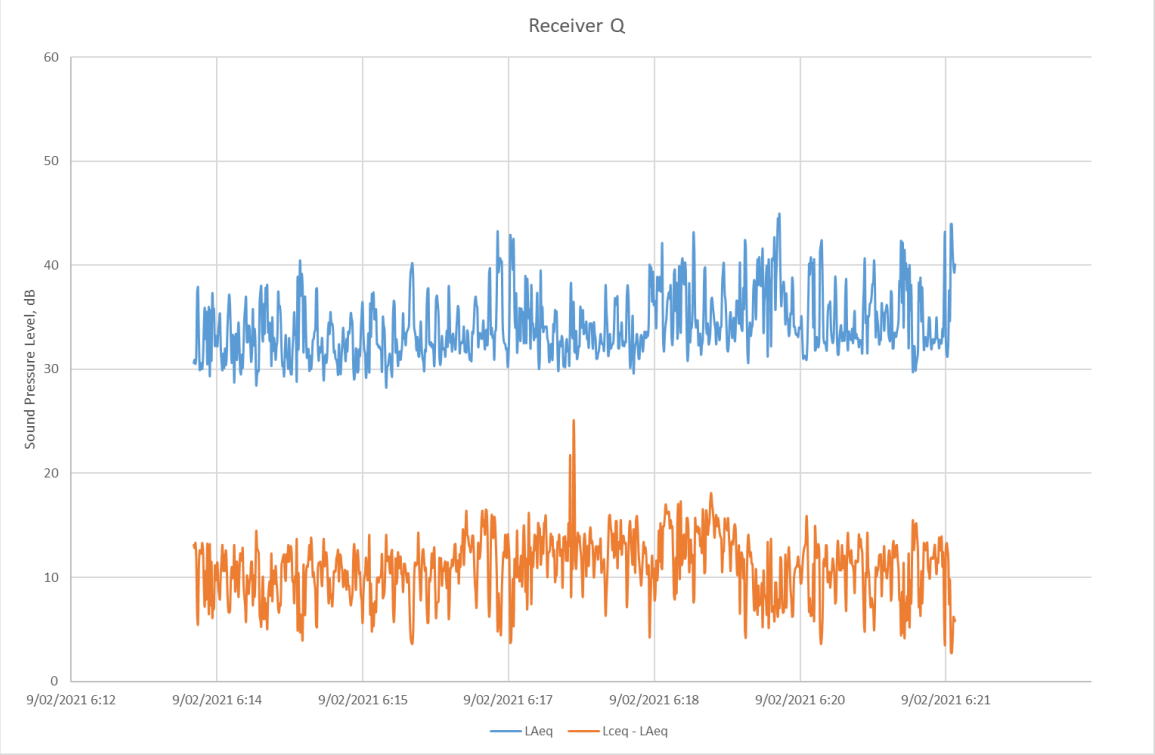

Location O
Sound Pressure Level, dBA
40
35
30
25
20
15
10
5
0
10 Hz
12.5 Hz
16 Hz
20 Hz
25 Hz
31.5 Hz
40
50
63
80 Hz
100 Hz
125 Hz
160 Hz
200 Hz
250 Hz
315 Hz
400 Hz
500 Hz
630 Hz
800 Hz
1000 Hz
1250 Hz
1600 Hz
2000 Hz
2500 Hz
3150 Hz
4000 Hz
5000 Hz
6300 Hz
8000 Hz
10000 Hz
12500 Hz
16000 Hz
20000 Hz
LA90 1/3 Octave Spectrum
LAeq 1/3 Octave Spectrum

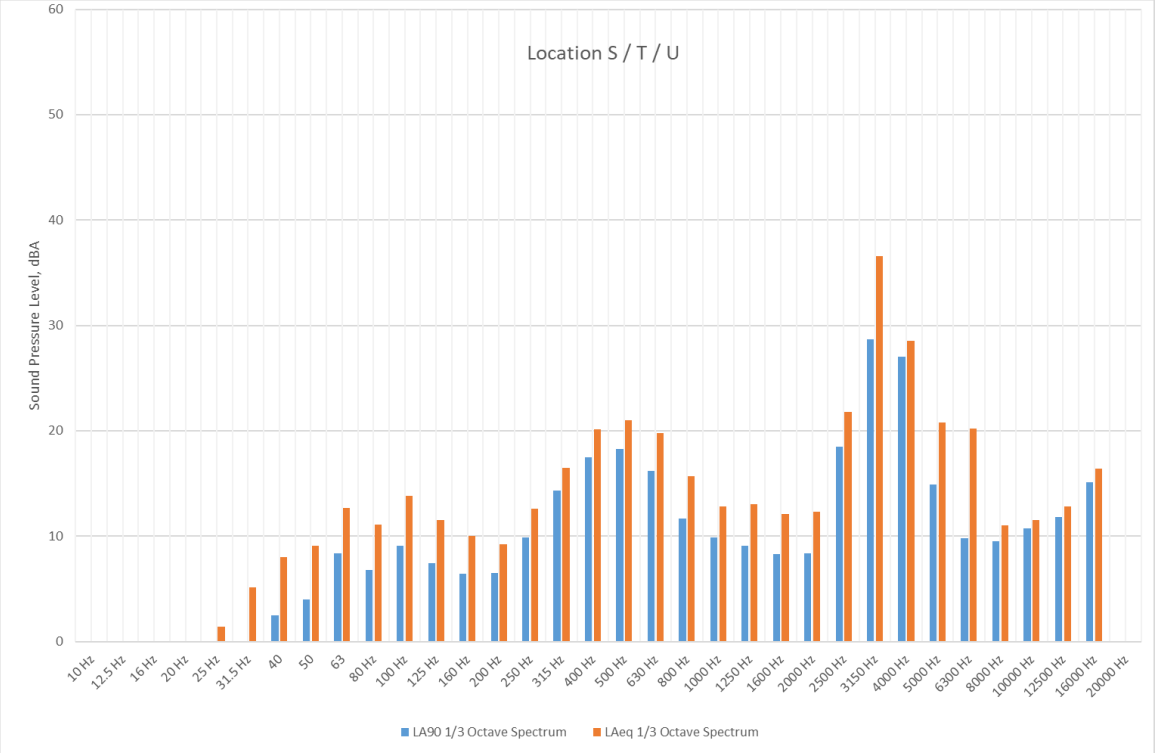

Receiver O
Sound Pressure Level, dB
60
50
40
30
20
10
0
9/02/2021 4:52
9/02/2021 4:53
9/02/2021 4:55
9/02/2021 4:56
9/02/2021 4:58
9/02/2021 4:59
9/02/2021 5:00
9/02/2021 5:02
LAeq
Lceq - LAeq

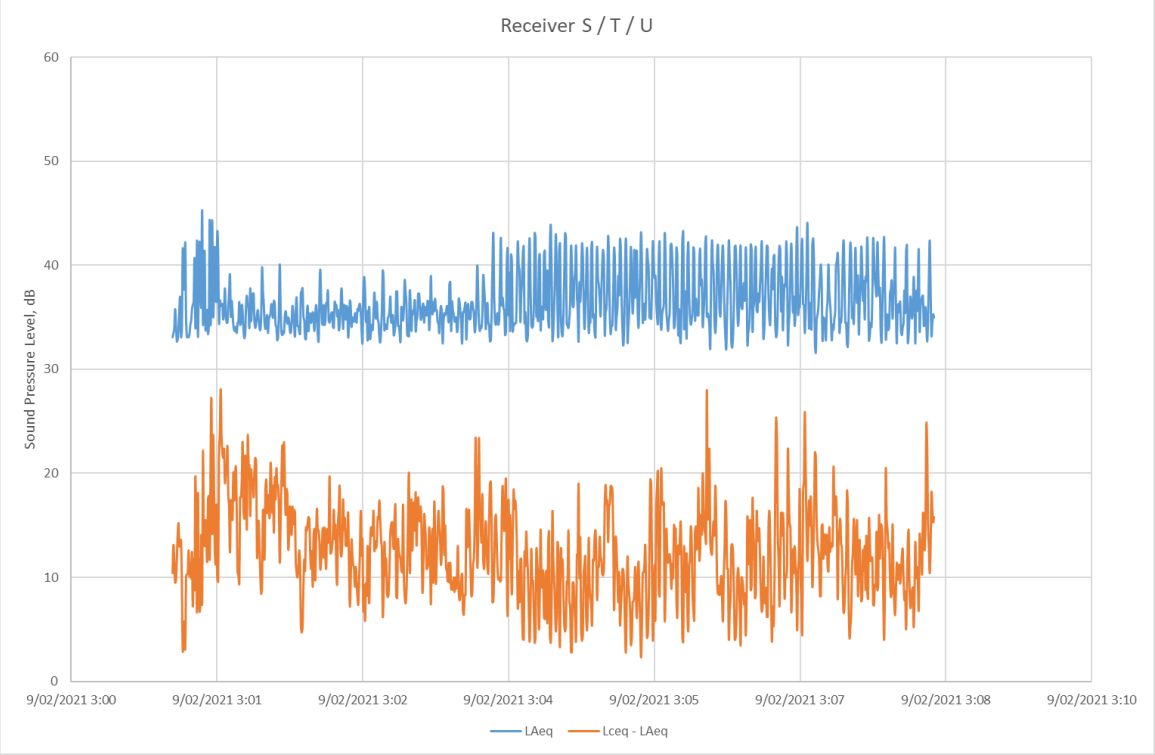

Location P / R
Sound Pressure Level, dBA
40
35
30
25
20
15
10
5
0
10 Hz
12.5 Hz
16 Hz
20 Hz
25 Hz
31.5 Hz
40
50
63
80 Hz
100 Hz
125 Hz
160 Hz
200 Hz
250 Hz
315 Hz
400 Hz
500 Hz
630 Hz
800 Hz
1000 Hz
1250 Hz
1600 Hz
2000 Hz
2500 Hz
3150 Hz
4000 Hz
5000 Hz
6300 Hz
8000 Hz
10000 Hz
12500 Hz
16000 Hz
20000 Hz
LA90 1/3 Octave Spectrum
LAeq 1/3 Octave Spectrum


Receiver P / R
Sound Pressure Level, dB
60
50
40
30
20
10
0
9/02/2021 6:11
9/02/2021 6:14
9/02/2021 6:17
9/02/2021 6:20
9/02/2021 6:23
9/02/2021 6:25
9/02/2021 6:28
9/02/2021 6:31
LAeq
Lceq - LAeq


Location Q
Sound Pressure Level, dBA
40
35
30
25
20
15
10
5
0
10 Hz
12.5 Hz
16 Hz
20 Hz
25 Hz
31.5 Hz
40
50
63
80 Hz
100 Hz
125 Hz
160 Hz
200 Hz
250 Hz
315 Hz
400 Hz
500 Hz
630 Hz
800 Hz
1000 Hz
1250 Hz
1600 Hz
2000 Hz
2500 Hz
3150 Hz
4000 Hz
5000 Hz
6300 Hz
8000 Hz
10000 Hz
12500 Hz
16000 Hz
20000 Hz
LA90 1/3 Octave Spectrum
LAeq 1/3 Octave Spectrum


Receiver Q
Sound Pressure Level, dB
60
50
40
30
20
10
0
9/02/2021 6:12
9/02/2021 6:14
9/02/2021 6:15
9/02/2021 6:17
9/02/2021 6:18
9/02/2021 6:20
9/02/2021 6:21
LAeq
Lceq - LAeq


Location S / T / U
Sound Pressure Level, dBA
60
50
40
30
20
10
0
10 Hz
12.5 Hz
16 Hz
20 Hz
25 Hz
31.5 Hz
40
50
63
80 Hz
100 Hz
125 Hz
160 Hz
200 Hz
250 Hz
315 Hz
400 Hz
500 Hz
630 Hz
800 Hz
1000 Hz
1250 Hz
1600 Hz
2000 Hz
2500 Hz
3150 Hz
4000 Hz
5000 Hz
6300 Hz
8000 Hz
10000 Hz
12500 Hz
16000 Hz
20000 Hz
LA90 1/3 Octave Spectrum
LAeq 1/3 Octave Spectrum


Receiver S / T / U
Sound Pressure Level, dB
60
50
40
30
20
10
0
9/02/2021 3:00
9/02/2021 3:01
9/02/2021 3:02
9/02/2021 3:04
9/02/2021 3:05
9/02/2021 3:07
9/02/2021 3:08
9/02/2021 3:10
LAeq
Lceq - LAeq

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Document Status

Revision	Author	Reviewer		Approved for Issue Under delegation from Stuart Winchester		
		Name	Signature	Name	Signature	Date
0	E Milton	A Bagby		E Milton		19/03/21

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