



## Technical Memorandum

**To:** EPC Environmental, Inc. Ernest Perea

**From:** Kevin P. Carr, MS., KPC EHS Consultants

**Date:** September 6, 2023

**Re:** 8<sup>th</sup> Street West, Lancaster Industrial Development Project – Noise Impact Technical Memorandum

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### 1.0 Purpose

The purpose of this memorandum is to document the impacts of construction, mobile, and operational noise and vibration as it relates to the potential environmental impacts associated with the construction and operation of the proposed warehouse project on 4.33 acres.

### 2.0 Project Location & Description

**2.1 Project Location:** The proposed project site is located in the City of Lancaster, Los Angeles County, California on the south side of Rancho Road, on 8<sup>th</sup> Street West, south of West Avenue L.

**2.2 Description:** The Applicant is proposing to develop a 92,932 square foot (SF) industrial building project consisting of 8,000 SF of office area and 84,932 SF warehouse area, 16 loading docks and 55 parking spaces with 13 being parking for EV/Clean air vehicles on an approximately 4.33-acre vacant parcel.

### 3.0 Regulatory Setting

#### Lancaster General Plan 2030

The City of Lancaster's General Plan (GP) Objective 4.3 identifies noise standards for compatible land use relationships in Table 3-1 Noise Compatible Land Use Objectives. The maximum exterior Community Noise Equivalent Level (CNEL) for Commercial and Industrial land use areas is 70 dBA CNEL.

#### Lancaster Municipal Code

The City of Lancaster has set restrictions to control noise impacts from construction activities. Section 8.24.040 of the Lancaster Municipal Code restricts construction activities between the hours of 8:00 p.m. and 7:00 a.m. on weekdays and Saturdays, and construction will not be performed on Sundays.

### 4.0 Noise Impacts

**4.1 Determination of Significance:** The criteria used to determine the significance related to potential Project related noise impacts is based on the California Environmental Quality Act (CEQA) Environmental Checklist, Appendix G Thresholds.

*Would the Project:*

- a) Result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project more than standards established in the local general plan or noise ordinance, or applicable standards of other agencies?
- b) Generate excessive ground borne vibration or groundborne noise levels?
- c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

**4.2 Ambient Noise:** The primary sources for existing ambient noise in the Project area is from traffic, commercial and industrial uses, the Palmdale Regional Airport, and external loudspeaker from the Lancaster DMV Office. Traffic generated noise is from 8<sup>th</sup> Street West, 10<sup>th</sup> Street West, and Highway 14 which is approximately 0.44 miles to the west. The Palmdale Regional Airport is located approximately 2.4 miles southeast. Industrial and commercial uses surrounding the Project area are listed in Table 4-1 below with approximate distance(s) to the site.

**Table 4-1 Occupied Structures/Receptors**

<b>Business</b>	<b>Location</b>	<b>Distance</b>
Desert Star Limousines	North adjacent to project site.	Occupied structure approximately 10 feet from north boundary.
Lancaster DMV	South adjacent to project site.	Occupied structure approximately 50 feet from south boundary.
Commercial use (Pacific Retina Specialist and Westdent Dental Laboratories)	West across 8 <sup>th</sup> Street West.	Occupied structures approximately 130 feet from west boundary.
Precision Welding	East from property on Enterprise Parkway.	Occupied structure approximately 3,000 feet from east boundary.

**4.2.1 Existing Ambient Noise Level Measurements:** To assess the existing noise level environment short-term noise measurements were obtained from four locations in the Project study area. Exhibit 4-A Noise Monitoring Map, provides the locations of the noise level measurements. Table 4-2 Ambient Noise Level Measurements provides the noise measurements.

#### Exhibit 4-A Noise Monitoring Map

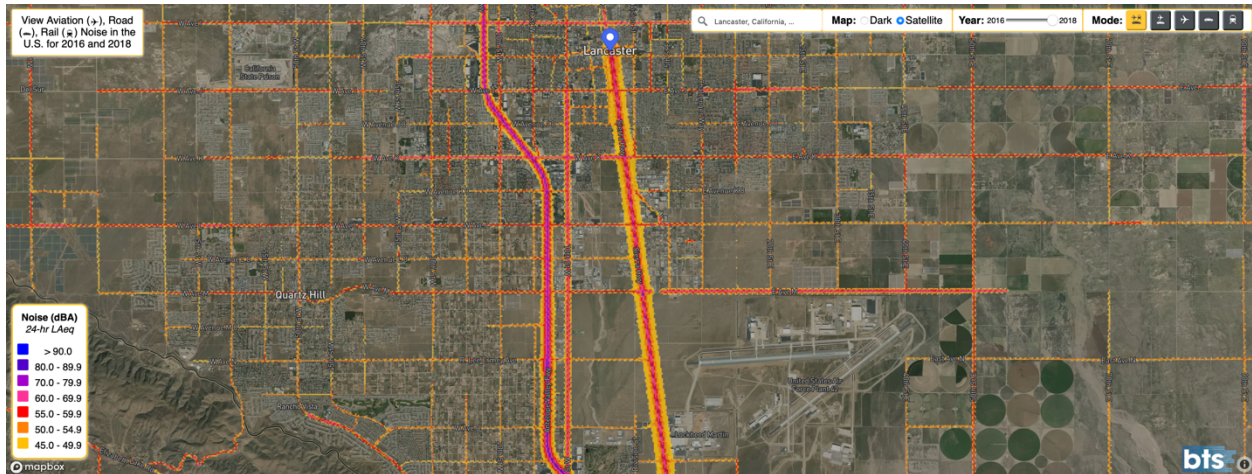


The Bureau of Transportation Statistics provides the National Transportation Noise Map as a basis for understanding what-if scenarios and helping policy makers and planners to prioritize noise-related transportation investments.<sup>1</sup> The data on the noise map allows for viewing the potential exposure to aviation, highway, and rail noise. The current data for the Lancaster Area is from the 2016 – 2018 noise map and is presented in Exhibit 4-B. The Noise Map contours are representative of the measured ambient noise measurements as presented in Table 4-2.

<sup>1</sup> Bureau of Transportation Statistics, National Transportation Noise Map: <https://www.bts.gov/geospatial/national-transportation-noise-map> accessed February 11, 2023.



## Exhibit 4-B National Transportation Noise Map: Lancaster Area



**Table 4-2 Ambient Noise Level Measurements**

Location	Distance to Project Boundary (feet)	Description	Average Noise Level dBA (Leq)
#1	0	Northwest corner of Project Site	47.8
#2	0	Southwest corner of Project Site	57.0
#3	525	Shekinah Worship Center	58.2
#4	1,420	Montecito Apartments (W Ave L)	63.4

**4.2.2 Sensitive Receptors (Noise Sensitive Land Uses):** Noise-sensitive land uses are locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Residences, schools, hospitals, guest lodging, libraries, churches, nursing homes, auditoriums, concert halls, amphitheaters, playgrounds, and parks are considered noise sensitive. The nearest sensitive receptor to the Project site is the Shekinah Worship Center located at 42640 10<sup>th</sup> Street West, located approximately 525 feet northwest of the property northwestern boundary.

**4.3 Construction Noise:** Construction activities that would create noise include: site preparation, grading, building construction, paving, and architectural coating. Noise levels associated with the construction will vary with the different types of construction equipment, the duration of the activity, and distance from the source. Construction noise will have a temporary or periodic increase in the ambient noise level above the existing levels within the Project vicinity. The nearest sensitive receptor to the Project site is the Shekinah Worship Center located at 42640 10<sup>th</sup> Street West, located approximately 525 feet northwest of the property northwestern boundary. The closest commercial structure to the project site is Desert Star Limousines to the north approximately 10 feet from the north boundary. To estimate the potential impact of construction noise at the nearest sensitive receptor, Shekinah Worship Center, as well as nearby commercial and industrial land uses (current and future), equipment that is expected to be used during construction was input into the Federal Highway Administration Roadway Construction Noise Model (RCNM) to generate anticipated noise levels. The RCNM generates the maximum noise levels (Lmax) and the equivalent continuous sound

level (Leq). The Leq is a calculation of the anticipated steady sound pressure level which, over a given time period (day, evening, night), has the same total energy as the actual fluctuating noise. The RCNM also uses an acoustical use factor in the noise calculations. The acoustical use factor is the percentage of time each piece of construction equipment is assumed to be operating at the full power level and is used to estimate the Leq values from the Lmax values. For example, typical operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Noise levels will be loudest during the site preparation and grading phases. Table 4-3 identifies the construction equipment noise levels at the nearest sensitive receptor (Shekinah Worship Center).

**Table 4-3 Construction Equipment Noise Levels at the Nearest Sensitive Receptor  
(Shekinah Worship Center)**

Source	Approximate Distance to Nearest Receptor <sup>1</sup> (Property Line to Construction Site) (feet)	Sound Level at Nearest Receptor		
		Lmax	Acoustical Use Factor (%)	Leq
Backhoe	525	57.1	40	53.2
Concrete Mixer Truck	525	58.4	40	54.4
Compressor (air)	525	57.2	40	53.3
Concrete Pump Truck	525	61.0	20	54.0
Crane	525	60.1	16	52.2
Dozer	525	61.2	40	57.2
Dump Truck	525	56.0	40	52.0
Excavator	525	60.3	40	56.3
Flat Bed Truck	525	53.8	40	49.8
Front End Loader	525	58.7	40	54.7
Generator	525	60.2	50	57.2
Grader	525	64.6	40	60.6
Man Lift	525	54.3	20	47.3
Paver	525	56.8	50	53.8
Pickup Truck	525	54.6	40	50.6
Pneumatic Tools	525	64.8	50	61.7
Roller	525	59.6	20	52.6
Scraper	525	63.2	40	59.2
Tractor	525	63.6	40	59.6
Welder / Torch	525	53.6	40	49.6

Source: FHWA – RCNM Version 1.1

The properties immediately adjacent and surrounding the Project site are industrial uses or vacant undeveloped parcels (zoned Industrial), additionally, the nearest sensitive receptors are located at the Shekinah Worship Center (525 feet to the west) and the Montecito Apartments (1,420 feet to the north) and the Project would be compatible with surrounding land uses and would not adversely impact sensitive receptors.

The City of Lancaster through the Municipal Code (MC) Title 8 – Health and Safety - Section 8.24.040 – Loud, unnecessary, and unusual noises prohibited – Construction and Building, has set restrictions for construction activities that will limit the impacts of construction noise on nearby receptors. MC 8.24.040 states:

*Except as otherwise provided in this chapter, a person at any time on Sunday or any day between the hours of eight p.m. and seven a.m. shall not perform any construction or repair work of any kind upon any building or structure or perform any earth excavating, filling, or moving where any of the foregoing entails the use of any air compressor, jack hammer, power-driven drill, riveting machine, excavator, diesel-powered truck, tractor or other earth-moving equipment, hard hammers on steel or iron or any other machine tool, device or equipment which makes loud noises within five hundred (500) feet of an occupied dwelling, apartment, hotel, mobile home, or other place of residence.*

With implementation of the above standard condition of approval, construction noise impacts would be less than significant.

While the City establishes limits to the hours during which construction activity may take place, it does not identify specific noise level limits for construction noise levels. Therefore, to evaluate whether the Project will generate a substantial increase in the short-term noise levels at the offsite sensitive receptors (worship center and residences), the construction-related noise level threshold is based on the National Institute for Occupational Safety and Health (NIOSH) recommended exposure limit (REL) for occupation noise exposure at 85 dBA, as an 8-hour time-weighted average (85 dBA – 8-hr TWA). Using the equipment from the Air Quality GHG Technical Memorandum CalEEMod data for the Site Preparation and Grading Phases, each piece of equipment operating at the same time in the same location for a full 8-hour period was calculated with results provided in Table 4-4, Worse Case Construction Noise Levels (Site Preparation & Grading).

**Table 4-4 Worse Case Construction Noise Levels at Sensitive Receptor  
(Site Preparation & Grading)**

Phase	Equipment Type	Number of Units	Leq dBA/unit	Leq dBA Total
Site Preparation	Tractor/Loader/Backhoe	4	59.6	
Site Preparation	Rubber Tired Dozer	3	57.2	
<b>Site Preparation</b>	<b>Total Noise Level</b>			<b>67.2</b>
Grading	Grader	1	60.6	
Grading	Tractor/Loader/Backhoe	3	59.6	
Grading	Rubber Tired Dozer	1	57.2	
Grading	Excavator	1	56.3	
<b>Grading</b>	<b>Total Noise Level</b>			<b>66.8</b>

The highest equipment noise level at the nearest sensitive receptor (Shekinah Worship Center) located 525 -feet away from the Project site will be at 64.8 dBA (Lmax) and 61.7 dBA (LEQ). If multiple pieces of construction equipment were to operate simultaneously and next to each other the combined noise levels at the nearest sensitive receiver would be 67.2 dBA Leq for site preparation and 66.8 dBA Leq during grading operations. During the construction phase the noise levels will be the highest as heavy equipment pass along the Project site boundaries. During the site preparation and grading phases, which produce the highest noise levels, equipment will not be stationary, rather equipment will be moving throughout the site at varying speeds and power levels and as a result not operating at the maximum noise level for the entire workday.

The levels of noise at the nearest sensitive receptor as indicated in Table 4-3 and 4.4 are all below the NIOSH REL of 85 dBA 8-hour TWA and would be less than significant. Construction noise is of short-term duration and will not present any long-term impacts on the project site or the surrounding area.

#### **4.4 Operational Noise:**

##### **4.4.1 Offsite Traffic Noise Impacts**

Vehicle noise is a combination of the noises produced by the engine, exhaust, and tires. The primary source of noise generated by the Project will be from the vehicle traffic generated by the vehicle ingress and egress to the Project site. Under existing conditions, the site does not generate any traffic noise that impacts the surrounding area.

According to the Federal Highway Administration, *Highway Traffic Noise Analysis and Abatement Policy and Guidance*, the level of roadway traffic noise depends on three things: (1) the volume of the traffic, (2) the speed of the traffic, and (3) the number of trucks in the flow of the traffic. Generally, the loudness of traffic noise is increased by heavier traffic volumes, higher speeds, and greater numbers of trucks. These factors are discussed below.

- *The Volume of the Traffic*

As there are currently no known tenants of the future development the number of truck trips for the Project was calculated using the South Coast AQMDs Warehouse Truck Trip Study with

an overall trip rate of 1.78 per 1,000 SF and a truck trip rate of 0.53 per 1,000 SF. The average daily trips total is estimated to be 165 trips per day with 49 truck trips per day.

The current average daily vehicle trips (ADT) along 8<sup>th</sup> Street south of W Avenue L is 2,207 ADT, and along W Avenue L between Sierra Highway and Aerospace Highway is 34,303 ADT<sup>2</sup>.

According to Caltrans, the human ear is able to begin to detect sound level increases of 3 decibels (dB) in typical noisy environments.<sup>3</sup> A doubling of sound energy (e.g., doubling the volume of traffic on a highway) that would result in a 3-dBA increase in sound, would generally be barely detectable. Implementation of the Project will increase traffic volumes in the area occurring along 8<sup>th</sup> Street and W Avenue L but not to the extent that traffic volumes will be doubled creating a +3dBA noise increase or result in a perceivable noise increase. Therefore, operational noise impacts would be less than significant.

- *The Speed of Traffic*

8<sup>th</sup> Street is a 2-lane road and has no posted speed limit therefore it would be subject to the prima facie speed limit of 25 mph. W Avenue L is a divided 6-lane road and has a posted speed limit of 55 mph. The low level of speed along 8<sup>th</sup> Street does not result in vehicles generating high levels of noise, additionally, as indicated in volume of traffic above, the anticipated increase in noise levels would be less than 3 dBA and less than significant on both 8<sup>th</sup> Street and W Avenue L.

- *The Number of Trucks in the Flow of the Traffic*

The Project is a warehouse development in an industrial area and although it will generate noise from large trucks, the site is located in an industrial area with similar truck and traffic uses. The total number of daily trips from both passenger cars and trucks is calculated to be 165 ADT, of which 49 (30 %) will be from trucks. The morning and afternoon peak hour truck traffic is calculated to be 4 ADT and total peak hour traffic to be 13 ADT.

Truck traffic will also be required to use any State or City designated truck routes. The use of the truck routes will also decrease the impacts on sensitive receptors such as residential uses.

#### **4.4.2 Facility Operations (Stationary Noise)**

At the time this noise analysis was prepared, the future tenants of the proposed Project are unknown. The on-site Project-related noise sources are expected to include roof-top heating ventilation and air conditioning units (HVAC), refrigeration units, idling trucks, truck activities, backup alarms, as well as loading and unloading of dry goods, and parking lot vehicle movements. This noise analysis is intended to describe noise level impacts associated with the expected typical operational (stationary source) activities at the Project site.

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<sup>2</sup> City of Lancaster 2019 Average Daily Traffic Map.

<https://www.cityoflanasterca.org/home/showpublisheddocument/41344/637141754835800000> Accessed August 30, 2023

<sup>3</sup> Caltrans, Traffic Noise Analysis Protocol, April 2020, p.7-1.



**Table 4-5 Reference Noise Level Measurements**

Noise Source	Reference Distance (feet)	Reference Noise Level (dBA)	Distance to Receptor (feet)	Noise Level (dBA)
Rooftop HVAC <sup>1</sup>	1 ‘	88	525	54.4
Truck Loading Dock Activity <sup>2</sup>	50 ‘	63.6	525	43.2
Truck Backup Alarm <sup>2</sup>	50 ‘	75.0	525	54.6
Parking Lot Activity <sup>2</sup>	25 ‘	54.4	525	28.0

<sup>1</sup> Reference Level Lennox 10-ton air handler unit (AHU) manufacturer specifications.

<sup>2</sup> Reference Level collected at Amazon Fulfillment Center ONT-6 (24208 San Michele Rd., Moreno Valley)

The proposed warehouse structure would include dock doors for truck loading and unloading. To determine the noise level impacts of the Project short-term reference noise level measurements were collected at the Amazon Fulfillment Center located at 24208 San Michele Road in the City of Moreno Valley. The noise measurements represent a typical weekday warehouse loading/unloading operation on a large single building distribution center, approximately 1.2 million square feet with 200 trailer parking spaces and 90 docks. Operations during the noise measurements included multiple trucks being loaded/unloaded, forklift, and truck/trailer movement.

The loading/unloading operations noise measurements were taken over a 15 – minute period taken from an area approximately at the center of the docking stations at 50’ feet from the building. The reference noise measurement obtained was 63.6 dBA  $L_{eq}$  and calculated attenuation for 525- foot distance at 43.2 dBA  $L_{eq}$ . The 525-foot distance is the closest distance from the property to the closest sensitive receptor. No attenuation for shielding from buildings or walls was calculated as no detailed information on boundary walls/fencing.

Trucks at the Project site would utilize backup alarms during the loading/unloading activities, which according to ECCO, the first manufacturer of backup alarms, depending on the model, typically produce a noise level of 87 to 112 dBA at 1 foot<sup>4</sup> and at 525 feet with no sound barriers (walls or buildings) the noise level would be between 32.6 to 57.6 dBA. Reference noise level measurements taken at 50 feet during truck movement and backup alarm operation were measured at 75 dBA max which would result in a 54.6 dBA noise level at 525 feet with no perimeter walls or buildings as shielding.

Parking lot areas for passenger vehicles and trailer parking were estimated to be located on the west and east sides of the proposed structure. Traffic associated with parking lots is typically not at a sufficient level to exceed the community noise standards. The total parking spaces estimated for the Project is approximately 55 stalls, the reference noise levels were taken at a parking lot that can accommodate approximately 1,000 stalls. The Project’s parking lots are substantially smaller and no significant noise impacts offsite from the parking lot use would be anticipated.

<sup>4</sup> ECCO Backup alarm manufacturer resources:

<https://www.eccoesg.com/us/en/SearchResults?searchText=backup+alarm+noise+levels> accessed August 30, 2023.

The USEPA identifies noise levels affecting health and welfare as exposure levels over 70 dBA over a 24-hour period. Noise levels for various levels are identified according to the use of the area. Levels of 45 dBA are associated with indoor residential areas, hospitals, and schools, whereas 55 dBA is identified for outdoor areas where typical residential human activity takes place. According to the USEPA levels of 55 dBA outdoors and 45 dBA indoors are identified as levels of noise considered to permit spoken conversation and other activities such as sleeping, working, and recreation, which are part of the daily human condition.<sup>5</sup> Levels exceeding 55 dBA in a residential setting are normally short in duration and not significant in affecting health and welfare of residents. As the Project site is located in an industrialized and commercial area that is zoned and planned for future industrial and commercial development, the nearest exiting sensitive receptor is over 525 feet away to the west and no significant noise impacts are expected at that distance.

#### 4.5 Vibration

During construction the operation and movement of heavy equipment create seismic waves that radiate along the ground-surface in all directions. These waves are felt as ground vibrations. Vibrations from construction can result in effects ranging from annoyance to people to structure damage. Vibration levels are impacted by geology, distance, and frequencies. According to the Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018<sup>6</sup>, while ground vibrations from construction activities do not often reach the levels that can damage structures, construction vibration may result in building damage or prolonged annoyance from activities such as blasting, piledriving, vibratory compaction, demolition, and drilling or excavation near sensitive structures. The Project does not require these types of construction activities.

Vibration amplitude and impact decreases with distance and perceptible ground-borne vibration is generally limited to areas within one to two hundred feet of the construction activity.

The City does not have a vibration standard the Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, construction and vibration damage criteria for non-engineered timber and masonry building/structural category was used which sets the vibration threshold at 0.2 PPV, in/sec.

**Table 4-6 Vibration Source Levels for Construction Equipment**

Equipment	PPV (in/sec) at 25 feet
Small bulldozer	0.003
Jackhammer	0.035
Loaded Trucks	0.076
Large bulldozer	0.089

Source: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, September 2018.

<sup>5</sup> USEPA "EPA Identifies Noise Levels Affecting Health and Welfare" <https://archive.epa.gov/epa/aboutepa/epa-identifies-noise-levels-affecting-health-and-welfare.html> accessed August 31, 2023.

<sup>6</sup> <https://www.transit.dot.gov/research-innovation/transit-noise-and-vibration-impact-assessment-manual-report-0123>

The closest sensitive receptor to the Project property line is minimally 525 feet from the property line. The closest structure to the Project site is the Desert Star Limousine business adjacent to the north property line. However, this structure is a fabricated steel building and according to the construction and vibration damage criteria for steel the threshold would be 0.5 PPV, in/sec. The estimated construction vibration level from a large bulldozer (worst case scenario) measured at 15-feet would create a vibration level of 0.191 in/sec which does not exceed the 0.2 PPV in/sec or 0.5 PPV in/sec thresholds. Therefore, the vibrations at the nearest receptor and structures will remain well below the strongly perceptible annoyance criteria and potential vibration damage criteria threshold. This threshold requires that no vibration greater than 0.2 PPV be felt at or beyond the lot line. The proposed Project therefore is not considered to result in exposure of people to excessive ground vibration.

During operations of the Project following construction the primary source of vibration would be from vehicle traffic, primarily truck traffic. Truck vibration levels are dependent on vehicle characteristics, load, speed, and pavement conditions. Typical vibration levels from heavy truck activity at normal traffic speeds are in the order of 0.004 in/sec PPV at 25 feet based on the FTA's Transit Noise Impact and Vibration Assessment (2018). Trucks once on site will be travelling at very low speeds and it is expected that truck vibration impacts off site would not exceed the 0.2 in/sec PPV threshold.

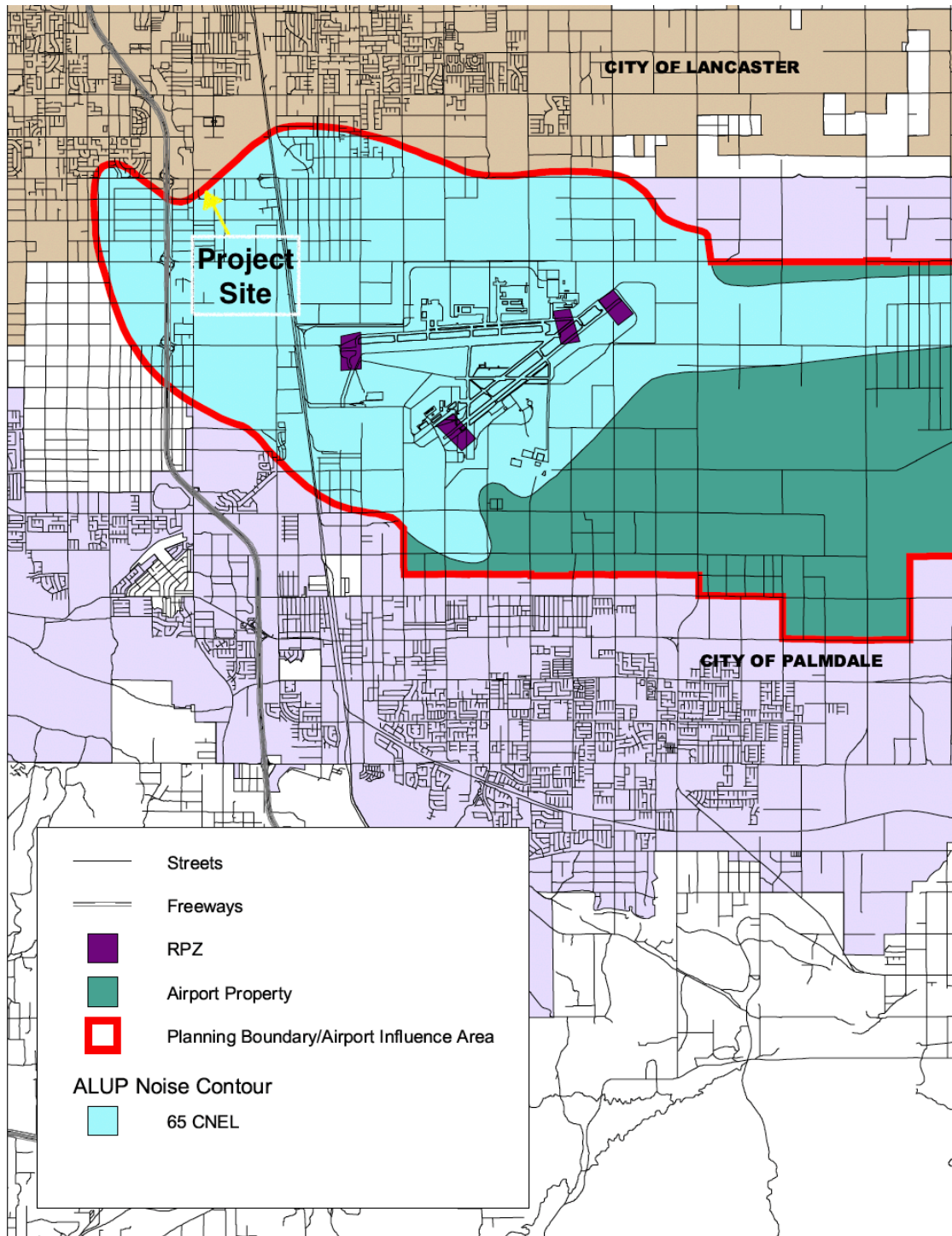
Ground-borne vibration levels from automobile traffic are generally overshadowed by vibration generated by heavy trucks that roll over the same uneven roadway surfaces. However, due to the rapid drop-off rate of ground-borne vibration and the short duration of the associated events, vehicular traffic-induced ground-borne vibration is rarely perceptible beyond the roadway right-of-way, and rarely results in vibration levels that would cause annoyance to people or damage to buildings in the vicinity.

#### **4.6 Airport Noise**

The Project site is located approximately 2.4 miles northwest of the Palmdale Regional Airport and United States Air Force Plant 42. As shown in Exhibit 4-C Palmdale Regional Airport Influence Area and Noise Contour Map, the site is outside the influence area and 65 CNEL noise contour. As such impacts would be less than significant.

*Exhibit 4-C on following page.*

**Exhibit 4-C Palmdale Regional Airport Influence Area and Noise Contour Map**



## **5.0 Conclusion**

Based on the assessment in Section 4.0, through compliance with mandatory City requirements and ordinances to reduce noise during construction, the Project's construction noise impacts will not result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project. In addition, the Project's construction and operations vibration impacts as well as operational noise for mobile and stationary operational noise impacts to the environment are less than significant.



## **APPENDIX – A**

### **Noise Measurements**

# Session Report

Location #1

## Information Panel

Name	S054_BIJ050019_28062023_123604
Start Time	6/27/2023 10:38:01 AM
Stop Time	6/27/2023 10:53:01 AM
Device Name	BIJ050019
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	

## Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	47.8 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	5 dB	Weighting	2	A
Response	2	FAST			

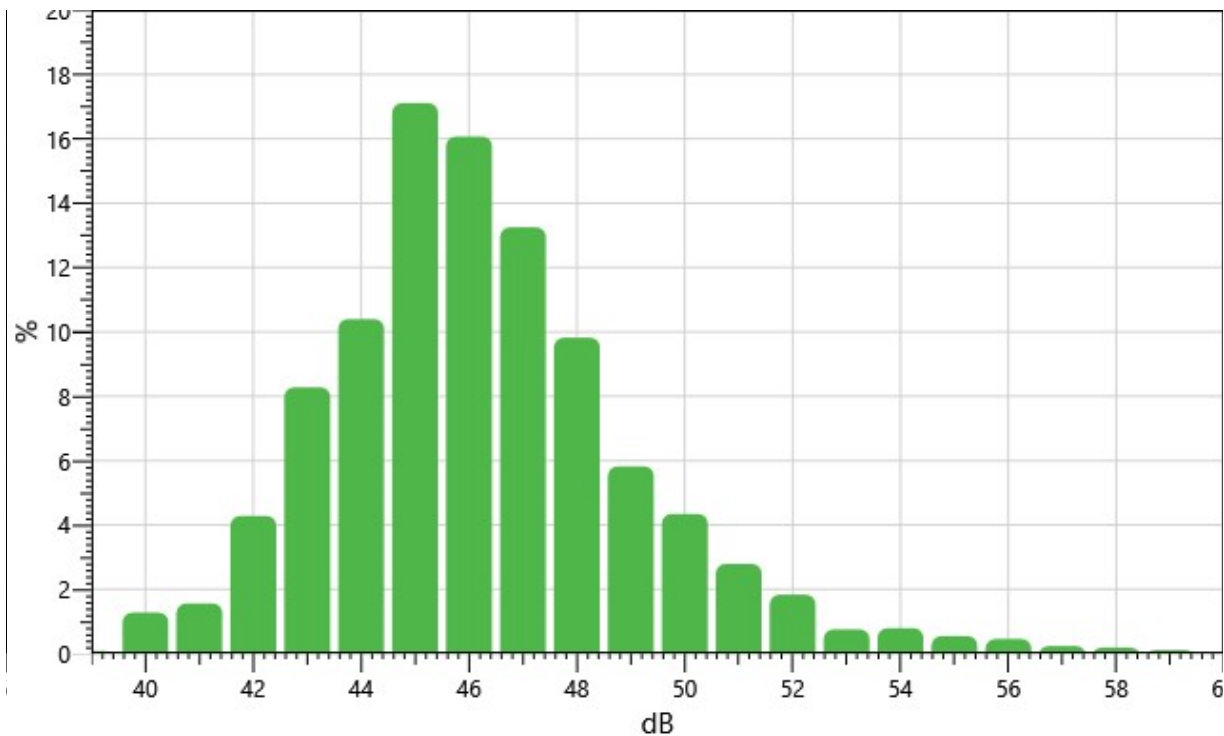
## Statistics Table

dB:	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	%
39:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.07	0.08
40:	0.07	0.05	0.03	0.13	0.28	0.16	0.19	0.13	0.13	0.11	1.28
41:	0.14	0.10	0.09	0.15	0.16	0.16	0.20	0.21	0.10	0.24	1.56
42:	0.39	0.28	0.38	0.45	0.46	0.32	0.45	0.67	0.48	0.40	4.28
43:	0.71	0.89	0.81	0.90	0.86	0.74	0.75	0.93	0.83	0.84	8.28
44:	0.68	0.98	1.01	1.17	0.81	0.87	0.97	1.01	1.27	1.62	10.40
45:	1.84	1.51	1.49	1.41	1.54	1.61	1.77	2.08	2.05	1.80	17.11
46:	1.71	1.93	1.68	1.52	1.49	1.48	1.39	1.73	1.61	1.54	16.07
47:	1.65	1.40	1.34	1.55	1.36	1.25	1.05	1.07	1.21	1.36	13.25
48:	1.37	1.16	0.72	0.97	1.08	0.91	0.83	1.06	0.99	0.73	9.82
49:	0.56	0.72	0.79	0.63	0.56	0.62	0.55	0.51	0.45	0.44	5.82
50:	0.44	0.45	0.48	0.61	0.41	0.33	0.38	0.38	0.38	0.48	4.34
51:	0.37	0.37	0.24	0.34	0.25	0.26	0.23	0.23	0.26	0.25	2.79
52:	0.35	0.25	0.20	0.22	0.13	0.16	0.15	0.13	0.13	0.12	1.83

53:	0.10	0.09	0.08	0.11	0.10	0.05	0.05	0.05	0.06	0.08	0.76
54:	0.08	0.10	0.05	0.07	0.10	0.09	0.10	0.07	0.06	0.07	0.79
55:	0.05	0.05	0.12	0.09	0.05	0.03	0.04	0.03	0.04	0.05	0.55
56:	0.05	0.04	0.06	0.07	0.06	0.03	0.03	0.04	0.05	0.04	0.46
57:	0.03	0.04	0.02	0.02	0.01	0.01	0.01	0.05	0.03	0.02	0.24
58:	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.01	0.01	0.01	0.19
59:	0.01	0.01	0.01	0.02	0.01	0.01	0.03	0.01	0.01	0.00	0.11

## Statistics Chart

S054\_BIJ050019\_28062023\_123604: Statistics Chart



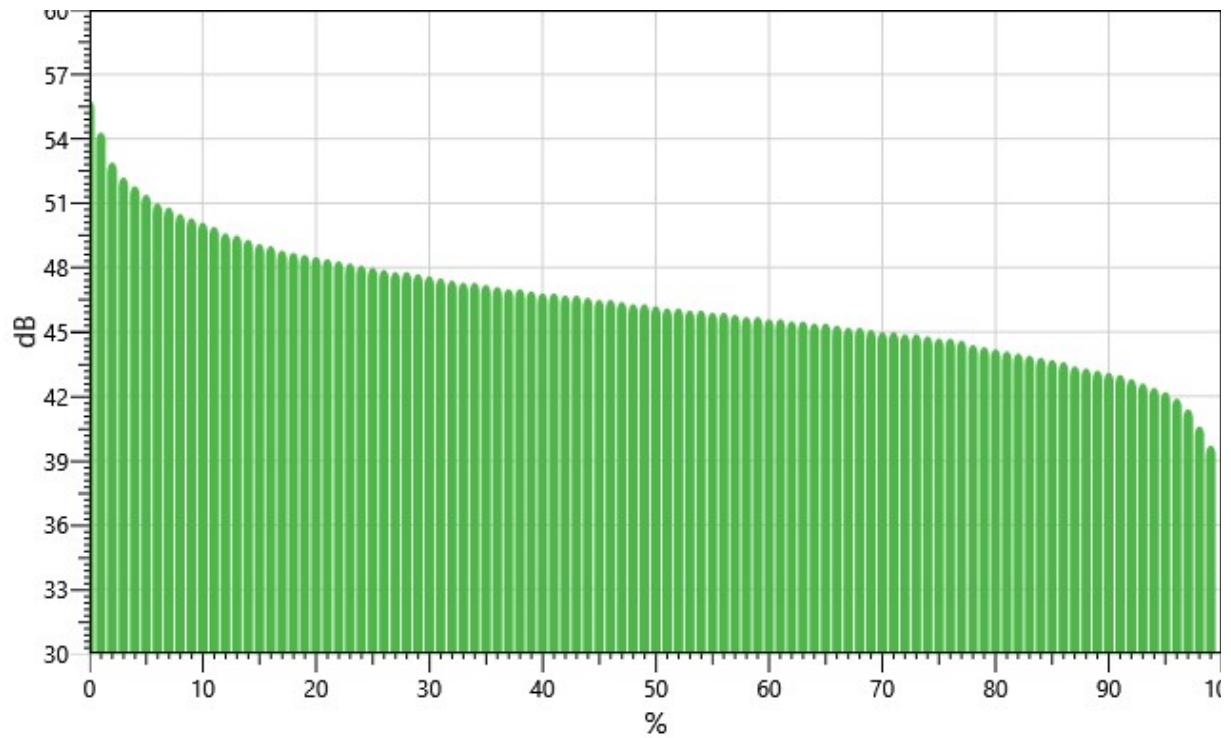
## Exceedance Table

.	0%	1%	2%	3%	4%	5%	6%	%7	%8	%9
0%:		55.8	54.3	52.9	52.2	51.8	51.4	51.0	50.8	50.5
10%:	50.3	50.1	49.9	49.6	49.5	49.3	49.1	49.0	48.8	48.7
20%:	48.6	48.5	48.4	48.3	48.2	48.1	48.0	47.9	47.8	47.8
30%:	47.7	47.6	47.5	47.4	47.3	47.3	47.2	47.1	47.0	47.0
40%:	46.9	46.8	46.8	46.7	46.7	46.6	46.5	46.5	46.4	46.3
50%:	46.3	46.2	46.1	46.1	46.0	46.0	45.9	45.9	45.8	45.7
60%:	45.7	45.6	45.6	45.5	45.5	45.4	45.4	45.3	45.2	45.2
70%:	45.1	45.0	45.0	44.9	44.9	44.8	44.7	44.7	44.6	44.4

80%:	44.3	44.2	44.1	44.0	43.9	43.8	43.7	43.6	43.4	43.3
90%:	43.2	43.1	43.0	42.8	42.6	42.4	42.2	41.9	41.4	40.6
100%:	39.7									

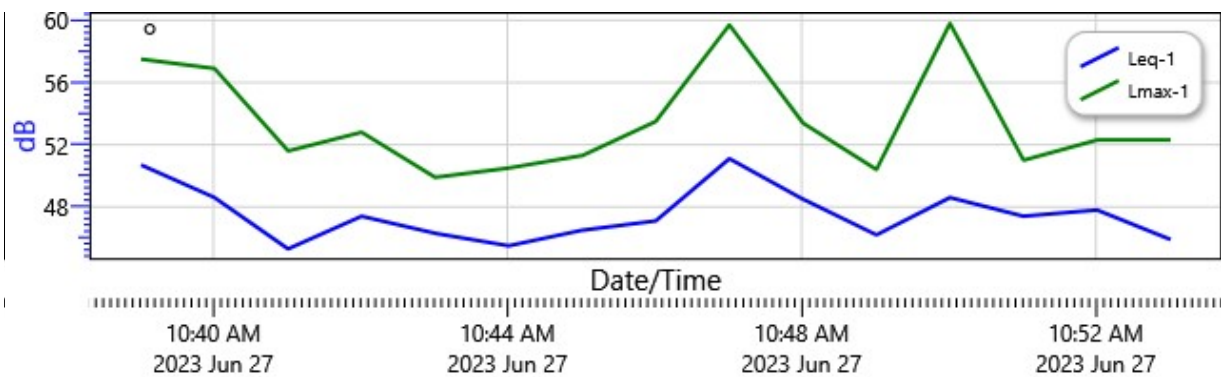
## Exceedance Chart

S054\_BIJ050019\_28062023\_123604: Exceedance Chart



## Logged Data Chart

S054\_BIJ050019\_28062023\_123604: Logged Data Chart



# Session Report

Location #2

## Information Panel

Name	S053_BIJ050019_28062023_123601
Start Time	6/27/2023 10:14:54 AM
Stop Time	6/27/2023 10:29:54 AM
Device Name	BIJ050019
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	

## Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	57 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	5 dB	Weighting	2	A
Response	2	FAST			

## Statistics Table

dB:	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	%
39:	0.00	0.00	0.02	0.10	0.05	0.05	0.10	0.02	0.02	0.01	0.36
40:	0.07	0.18	0.20	0.06	0.08	0.22	0.22	0.18	0.43	0.52	2.17
41:	0.49	0.55	0.47	0.39	0.33	0.42	0.44	0.47	0.62	0.55	4.73
42:	0.62	0.30	0.45	0.55	0.55	0.51	0.50	0.38	0.32	0.37	4.54
43:	0.36	0.31	0.33	0.39	0.32	0.33	0.47	0.37	0.35	0.32	3.56
44:	0.35	0.42	0.61	0.50	0.29	0.31	0.49	0.48	0.47	0.50	4.42
45:	0.69	0.53	0.37	0.54	0.48	0.52	0.42	0.34	0.38	0.45	4.70
46:	0.48	0.42	0.55	0.60	0.55	0.54	0.52	0.52	0.54	0.57	5.29
47:	0.56	0.51	0.52	0.53	0.53	0.43	0.62	0.53	0.38	0.44	5.03
48:	0.50	0.60	0.36	0.42	0.49	0.59	0.53	0.56	0.65	0.58	5.27
49:	0.47	0.52	0.38	0.42	0.38	0.32	0.29	0.31	0.35	0.40	3.83
50:	0.46	0.38	0.42	0.42	0.34	0.35	0.39	0.54	0.55	0.62	4.47
51:	0.56	0.56	0.43	0.58	0.50	0.38	0.39	0.47	0.43	0.47	4.78
52:	0.35	0.34	0.39	0.32	0.28	0.36	0.43	0.50	0.53	0.66	4.16

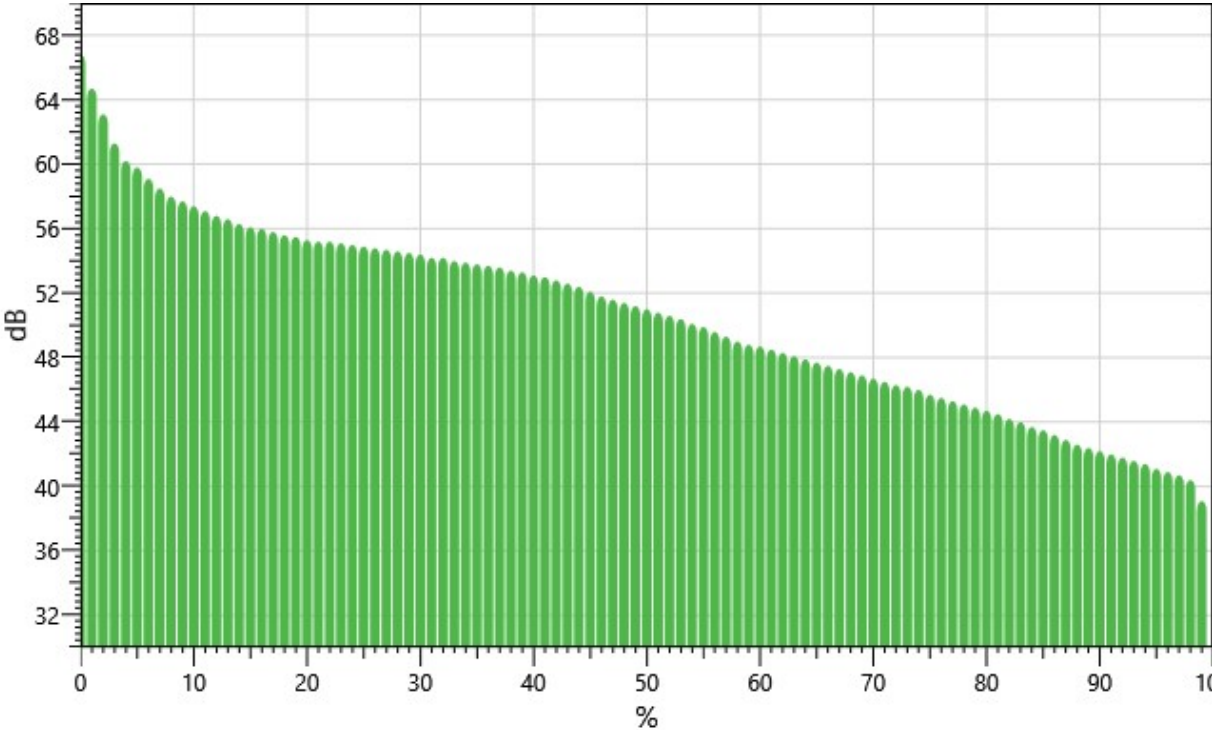


[illegible]



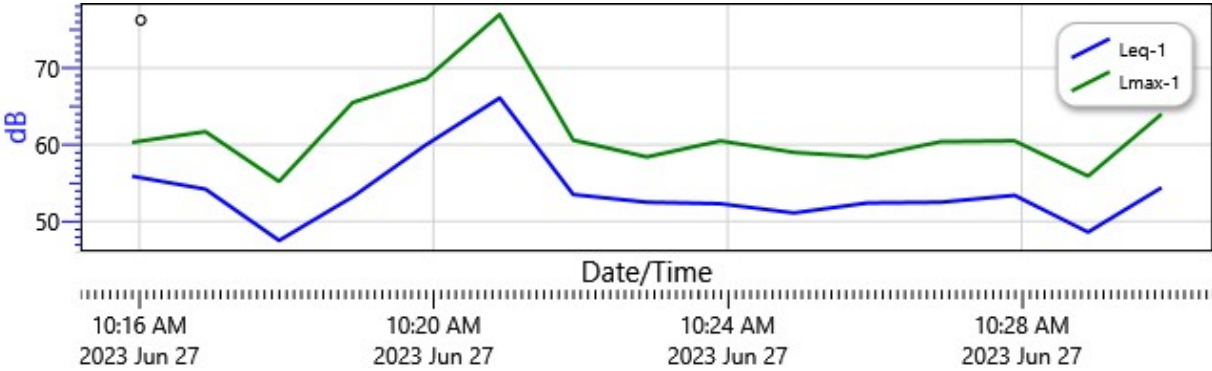
Exceedance Chart

S053\_BIJ050019\_28062023\_123601: Exceedance Chart



Logged Data Chart

S053\_BIJ050019\_28062023\_123601: Logged Data Chart



# Session Report

Location #3

## Information Panel

Name	S052_BIJ050019_28062023_123559
Start Time	6/27/2023 9:55:00 AM
Stop Time	6/27/2023 10:10:00 AM
Device Name	BIJ050019
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	

## Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	58.2 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	5 dB	Weighting	2	A
Response	2	FAST			

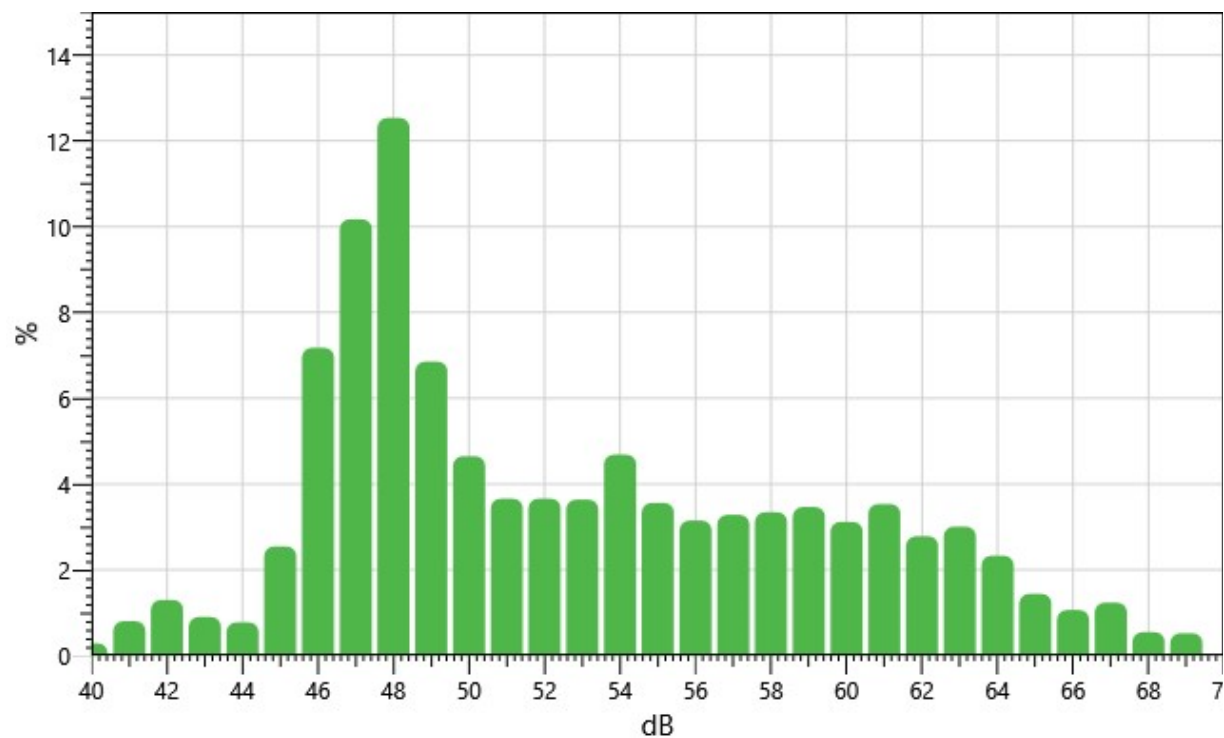
## Statistics Table

dB:	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	%
40:	0.00	0.00	0.00	0.04	0.10	0.04	0.03	0.03	0.02	0.03	0.29
41:	0.02	0.01	0.01	0.01	0.01	0.03	0.09	0.27	0.21	0.16	0.80
42:	0.17	0.20	0.09	0.06	0.09	0.13	0.19	0.12	0.13	0.12	1.30
43:	0.05	0.08	0.09	0.15	0.10	0.08	0.07	0.13	0.10	0.06	0.90
44:	0.05	0.03	0.06	0.08	0.06	0.12	0.09	0.07	0.07	0.15	0.77
45:	0.19	0.23	0.15	0.24	0.30	0.20	0.27	0.21	0.42	0.33	2.54
46:	0.39	0.43	0.54	0.71	0.63	0.62	0.84	1.03	1.18	0.82	7.17
47:	0.69	0.46	0.49	0.56	0.83	1.51	1.27	1.64	1.47	1.25	10.17
48:	1.05	1.16	0.91	1.61	1.23	1.24	1.16	1.26	1.36	1.54	12.53
49:	1.21	0.86	0.93	0.77	0.64	0.42	0.41	0.46	0.49	0.67	6.85
50:	0.49	0.55	0.52	0.42	0.51	0.46	0.47	0.42	0.39	0.42	4.65
51:	0.37	0.40	0.21	0.35	0.42	0.36	0.40	0.38	0.38	0.38	3.66
52:	0.52	0.38	0.50	0.43	0.37	0.32	0.27	0.29	0.28	0.30	3.66
53:	0.31	0.28	0.28	0.37	0.37	0.39	0.39	0.41	0.44	0.39	3.64

54:	0.51	0.53	0.34	0.52	0.47	0.43	0.47	0.44	0.52	0.45	4.69
55:	0.35	0.43	0.41	0.35	0.37	0.39	0.36	0.29	0.31	0.30	3.56
56:	0.28	0.27	0.30	0.29	0.33	0.36	0.30	0.32	0.30	0.40	3.15
57:	0.40	0.38	0.27	0.31	0.29	0.28	0.33	0.31	0.37	0.35	3.28
58:	0.30	0.40	0.34	0.32	0.30	0.32	0.35	0.31	0.34	0.38	3.34
59:	0.37	0.41	0.36	0.31	0.37	0.33	0.30	0.36	0.33	0.32	3.46
60:	0.34	0.37	0.20	0.28	0.29	0.34	0.30	0.30	0.38	0.34	3.12
61:	0.36	0.38	0.33	0.33	0.36	0.35	0.40	0.37	0.35	0.29	3.53
62:	0.32	0.31	0.24	0.25	0.26	0.29	0.28	0.27	0.27	0.28	2.78
63:	0.29	0.33	0.23	0.28	0.25	0.22	0.33	0.40	0.42	0.25	3.01
64:	0.24	0.28	0.19	0.21	0.24	0.28	0.22	0.16	0.29	0.22	2.33
65:	0.11	0.12	0.11	0.24	0.21	0.21	0.15	0.08	0.10	0.11	1.44
66:	0.10	0.12	0.10	0.09	0.06	0.06	0.11	0.15	0.14	0.13	1.06
67:	0.11	0.13	0.14	0.13	0.13	0.15	0.15	0.13	0.09	0.07	1.24
68:	0.05	0.04	0.04	0.06	0.05	0.05	0.03	0.05	0.09	0.07	0.55
69:	0.10	0.09	0.06	0.06	0.09	0.04	0.04	0.02	0.01	0.01	0.52

## Statistics Chart

S052\_BIU050019\_28062023\_123559: Statistics Chart



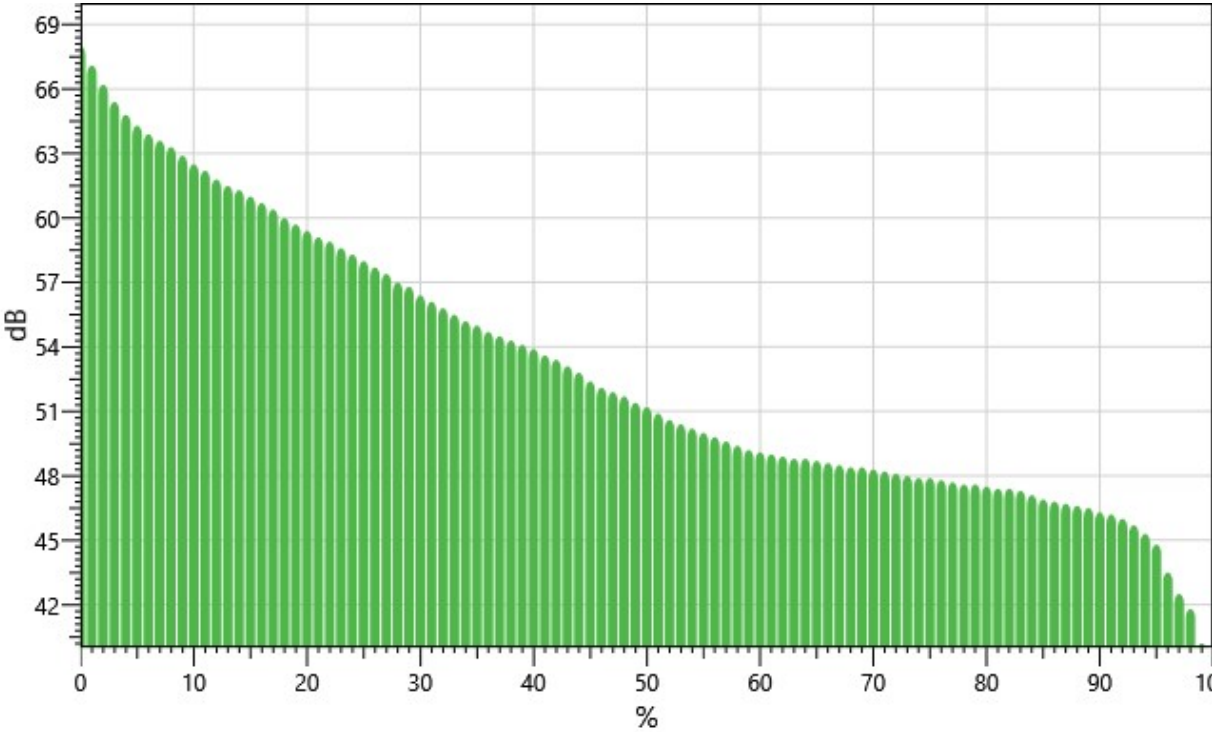


Exceedance Table

.	0%	1%	2%	3%	4%	5%	6%	%7	%8	%9
0%:		68.0	67.1	66.2	65.4	64.8	64.3	63.9	63.6	63.3
10%:	62.9	62.5	62.2	61.8	61.5	61.3	61.0	60.7	60.4	60.0
20%:	59.7	59.4	59.1	58.9	58.6	58.3	58.0	57.7	57.4	57.0
30%:	56.8	56.4	56.1	55.8	55.5	55.2	55.0	54.7	54.5	54.3
40%:	54.1	53.9	53.6	53.4	53.1	52.8	52.4	52.1	51.9	51.7
50%:	51.4	51.2	50.9	50.6	50.4	50.2	50.0	49.8	49.6	49.4
60%:	49.2	49.1	49.0	48.9	48.8	48.8	48.7	48.6	48.5	48.4
70%:	48.4	48.3	48.2	48.1	48.0	47.9	47.9	47.8	47.7	47.6
80%:	47.6	47.5	47.4	47.4	47.3	47.1	46.9	46.8	46.7	46.6
90%:	46.5	46.3	46.2	46.0	45.7	45.3	44.8	43.5	42.5	41.8
100%:	40.2									

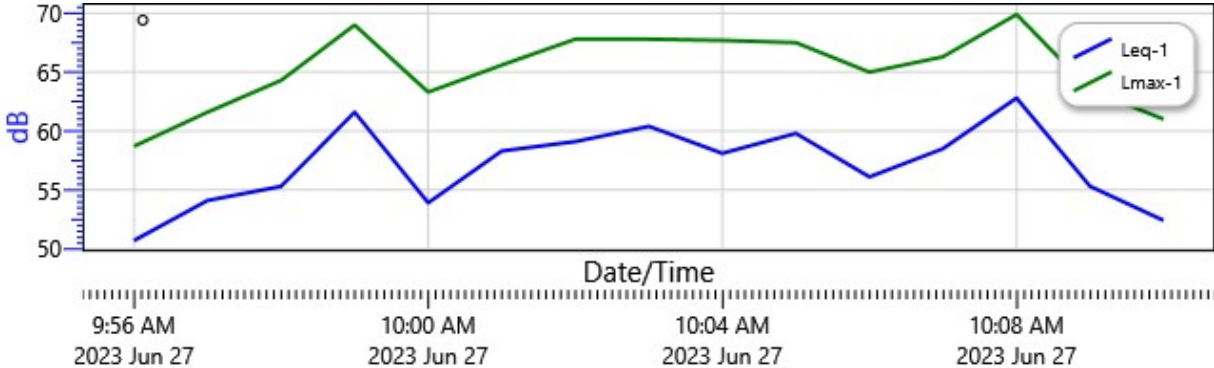
Exceedance Chart

S052\_BIU050019\_28062023\_123559: Exceedance Chart



Logged Data Chart

S052\_BIJ050019\_28062023\_123559: Logged Data Chart



# Session Report

Location #4

## Information Panel

Name	S055_BIJ050019_28062023_123607
Start Time	6/27/2023 11:00:13 AM
Stop Time	6/27/2023 11:16:50 AM
Device Name	BIJ050019
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	

## Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	63.4 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	5 dB	Weighting	2	A
Response	2	FAST			

## Statistics Table

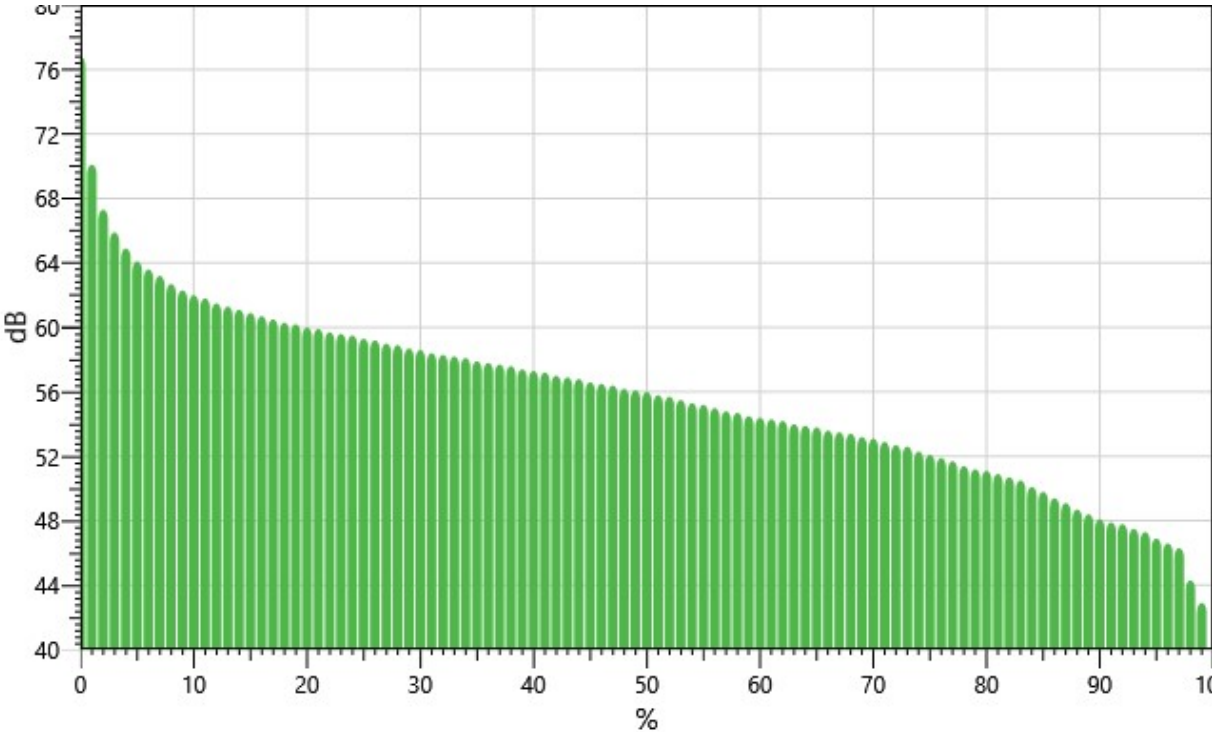
dB:	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	%
43:	0.06	0.10	0.08	0.09	0.06	0.04	0.11	0.06	0.06	0.04	0.70
44:	0.05	0.04	0.05	0.10	0.08	0.03	0.03	0.02	0.02	0.02	0.43
45:	0.01	0.01	0.01	0.02	0.03	0.01	0.02	0.04	0.06	0.05	0.27
46:	0.06	0.12	0.16	0.23	0.25	0.24	0.37	0.42	0.32	0.27	2.46
47:	0.19	0.18	0.17	0.29	0.44	0.52	0.37	0.38	0.40	0.65	3.59
48:	0.63	0.58	0.36	0.52	0.39	0.33	0.33	0.34	0.26	0.27	4.03
49:	0.27	0.26	0.32	0.29	0.21	0.20	0.36	0.29	0.27	0.31	2.79
50:	0.27	0.27	0.29	0.26	0.26	0.32	0.36	0.38	0.47	0.46	3.34
51:	0.63	0.74	0.52	0.59	0.51	0.44	0.45	0.48	0.47	0.54	5.37
52:	0.54	0.39	0.37	0.37	0.48	0.45	0.40	0.57	0.49	0.63	4.70
53:	0.72	0.62	0.51	0.61	0.88	0.80	0.61	0.62	0.73	0.71	6.81
54:	0.80	0.89	0.54	0.90	0.83	0.79	0.81	0.86	0.64	0.56	7.62
55:	0.52	0.59	0.58	0.60	0.70	0.60	0.54	0.58	0.64	0.64	5.99
56:	0.64	0.73	0.83	0.86	0.76	0.84	0.66	0.70	0.67	0.75	7.44

57:	0.83	0.76	0.53	0.82	0.81	0.80	0.77	0.72	0.73	0.82	7.59
58:	0.97	0.88	0.90	0.81	0.73	0.70	0.66	0.66	0.66	0.61	7.58
59:	0.73	0.67	0.71	0.61	0.80	0.70	0.72	0.66	0.77	0.83	7.19
60:	0.81	0.76	0.45	0.61	0.52	0.50	0.55	0.49	0.49	0.48	5.66
61:	0.52	0.55	0.50	0.65	0.52	0.42	0.43	0.38	0.38	0.52	4.87
62:	0.36	0.32	0.35	0.35	0.26	0.25	0.27	0.27	0.24	0.30	2.96
63:	0.25	0.23	0.12	0.15	0.27	0.29	0.20	0.26	0.16	0.19	2.12
64:	0.21	0.21	0.14	0.12	0.12	0.14	0.11	0.12	0.12	0.12	1.43
65:	0.10	0.10	0.10	0.09	0.09	0.11	0.10	0.18	0.13	0.07	1.06
66:	0.07	0.08	0.05	0.09	0.11	0.09	0.06	0.07	0.05	0.05	0.72
67:	0.06	0.07	0.05	0.07	0.08	0.09	0.07	0.04	0.03	0.04	0.61
68:	0.04	0.03	0.04	0.03	0.04	0.06	0.03	0.04	0.05	0.04	0.39
69:	0.06	0.05	0.01	0.03	0.03	0.01	0.01	0.01	0.02	0.02	0.24
70:	0.02	0.03	0.04	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.15
71:	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.14
72:	0.01	0.02	0.02	0.02	0.02	0.04	0.03	0.03	0.03	0.02	0.24
73:	0.03	0.02	0.01	0.02	0.03	0.04	0.02	0.02	0.03	0.03	0.25
74:	0.02	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.15
75:	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.05
76:	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.02	0.09
77:	0.02	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.13
78:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.05
79:	0.03	0.02	0.04	0.03	0.02	0.03	0.03	0.06	0.03	0.01	0.30
80:	0.01	0.01	0.01	0.01	0.02	0.01	0.00	0.00	0.00	0.02	0.10
81:	0.01	0.01	0.01	0.00	0.02	0.03	0.03	0.01	0.01	0.00	0.13
82:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.12
83:	0.01	0.01	0.01	0.02	0.00	0.00	0.00	0.01	0.01	0.03	0.11
84:	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.06



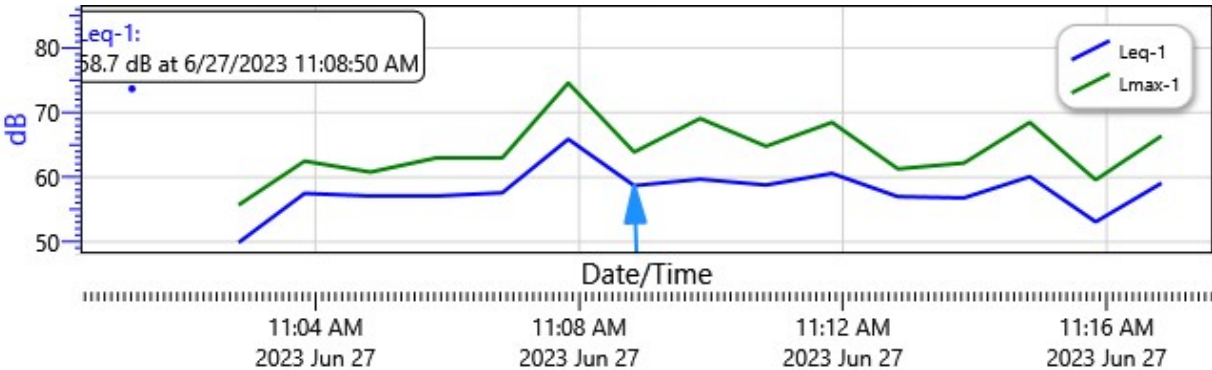
Exceedance Chart

S055\_BIJ050019\_28062023\_123607: Exceedance Chart



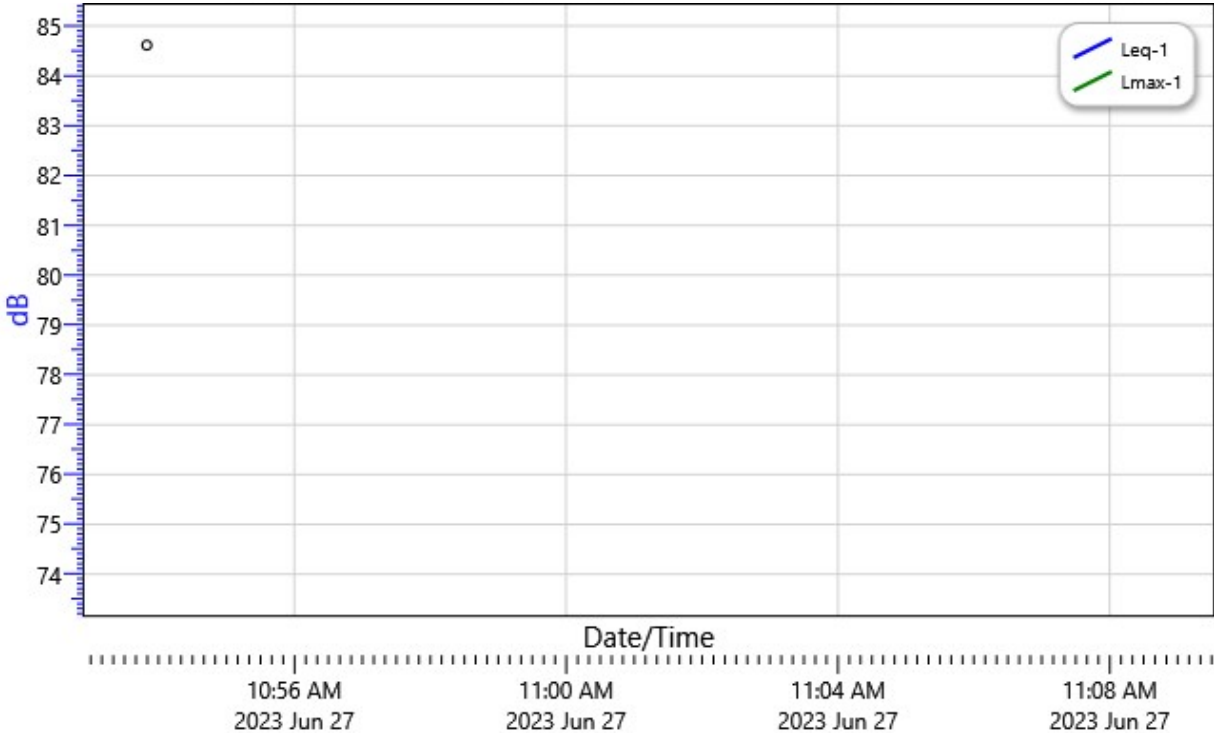
Logged Data Chart

S055\_BIJ050019\_28062023\_123607: Logged Data Chart



# Logged Data Chart

Study 1: Logged Data Chart



## Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Dose	1	0 %	Lpk	1	101.7 dB
Lmax	1	84.9 dB			
Weighting	1	A	Response	1	SLOW
Bandwidth	1	OFF	Exchange Rate	1	3 dB
Integrating Threshold	1	100 dB	Log Rate	1	60 s
Exchange Rate	2	5 dB	Integrating Threshold	2	100 dB
Weighting	2	A	Response	2	FAST

## **APPENDIX – B**

### **RCNM Datasheets**



[illegible]