KPC EHS Consultants

Technical Memorandum

To: EPC Environmental, Inc. Ernest Perea

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

Date: December 23, 2022

Re: Sangha Trucking Development Project, Hesperia – Noise Assessment

---

1.0 Purpose

The purpose of this memorandum is to document the impacts of construction, mobile, and operational noise as it relates to the potential environmental impacts associated with the construction and operation of the proposed office, truck freight, and storage facility project on approximately 4.37 acres.

2.0 Project Location & Description

2.1 Project Location: The proposed project site is located in the City of Hesperia, San Bernardino, California on the north side of Avenal Street, on the northwest corner of State 395 and Avenal Street, also referred to as APN: 3064-371-12. (Exhibit 2-1)

2.2 Description: The Applicant is proposing to develop a 13,500 square foot (sf) industrial structure consisting of 12,000 sf storage area and 1,500 sf office space, automobile parking spaces, and truck/trailer stalls on an approximately 4.37 - acre vacant parcel.

Exhibit 2-1 Project Location

3.0 Noise Impacts

3.1 Ambient Noise: The primary source for existing ambient noise in the Project area is from traffic on US-395. US-395 is adjacent to the east of the proposed Project site. Commercial and Industrial uses surrounding the Project area are listed in Table 1 below with approximate distance(s) to the site.

Business	Location	Distance
El Rancho Animal Feed Store	Adjacent property to the north	Approximately 15 feet from north boundary.
Sunset Stone	Adjacent property to the north.	Approximately 200 feet north from north boundary.
Trailer Yard (Parking/storage).	Southwest at Avenal and Los Altos	Approximately 130 feet southwest from southwest corner boundary
Industrial Fabricators	Northeast	Approximately 1,100 feet northeast from northeastern boundary.
Previous SFR sold for Future Commercial Development	South across Avenal	Approximately 60 feet south from south boundary.
Five Rivers Fleet Services	South on Yucca Terrace Dr.	Approximately 1,000 feet south from southern boundary.

3.1.1 Existing Ambient Noise Level Measurements: To assess the existing noise level environment short-term noise measurements were obtained from 4 locations in the Project study area. Exhibit 3-A Noise Monitoring Map, provides the boundaries of the Project site, a 5,000-foot radius from the center of the site, and the locations of the noise level measurements. Table 3.1 Ambient Noise Level Measurements, provides the noise measurements, which would be typical of current daytime non-peak hour traffic conditions.

Exhibit 3-A Noise Monitoring Map

3.1.2 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 proposed Project site is a single-family residential use, currently vacant located at 10449 Caliente Road, approximately 1,000 feet to the northeast from the center of the project site.

Table 3.1 Ambient Noise Level Measurements

Location	Distance to Project Boundary	Description	Average Noise Level dBA (Leq)
#1	0	Project Site (395 and Avenal St.)	47.3
#2	3,950 feet	US-395 and Main Street	55.1
#3	4,760	Main Street and Mesa Linda Street	44.6
#4	1 mile	Main Street and Key Pointe Ave.	52.5

3.2 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 receptors to the Project site are single family residences, located 1,050 feet north of the property's northern boundary. The Property adjacent to the north is a commercial Feed Store and the residential property to the south was recently sold in July 2022 for future commercial development. To estimate the potential impact of construction noise at the nearest sensitive receptors, 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 3.2, *Construction Equipment Noise Levels at the Nearest Receptor,* identifies the level of noise generated by construction equipment.

Table 3.2 Construction Equipment Noise Levels at the Nearest Receptor

Source	Approximate Distance to Nearest Receptor [1] (Property Line of Construction Site) (feet)	Sound Level at Nearest Receptor		
		Lmax	Acoustical Use Factor (%)	Leq
Backhoe	1,000	51.5	40	47.6
Compactor (ground)	1,000	57.2	20	50.2
Compressor (air)	1,000	51.6	40	47.7
Crane	1,000	54.5	16	46.6
Concrete Mixer Truck	1,000	52.8	40	48.8
Dozer	1,000	55.6	40	51.7
Dump Truck	1,000	50.4	40	46.5
Excavator	1,000	54.7	40	50.7
Front End Loader	1,000	53.1	40	49.1
Generator	1,000	54.6	50	51.6
Grader	1,000	59.0	40	55.0
Offroad Forklift	1,000	57.4	40	53.4
Paver	1,000	51.2	50	48.2
Pickup Truck	1,000	49.0	40	45.0
Roller	1,000	54.0	20	47.0
Scraper	1,000	57.6	40	53.6
Welder / Torch	1,000	48.0	40	44.0

1. Nearest Receptor – residential property to the northeast.
Source: FHWA – RCNM Version 1.1

The properties immediately adjacent and surrounding the Project site are commercial and industrial uses or vacant undeveloped parcels (zoned CIBP – Commercial Industrial Business Park) additionally, the nearest receptors are located over 1,000 feet to the northeast. Additionally, the Project would be compatible with surrounding land uses and would not adversely impact sensitive receptors.

The City of Hesperia set restrictions to control noise impacts from construction activities. Section 16.20.125.E.3 , Noise of the Hesperia Municipal Code restricts construction activities between the hours of 7:00 AM and 7:00 PM on weekdays, and construction will not occur on Sundays or Federal holidays.

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 (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 3.3, Worse Case Construction Noise Levels (Site Preparation & Grading)

Table 3.3 Worse Case Construction Noise Levels (Site Preparation & Grading)

Phase	Equipment Type	Number of Units	Leq dBA/unit	Leq dBA Total
Site Preparation	Tractor/Loader/Backhoe	4	58	
Site Preparation	Rubber Tired Dozer	3	62.1	
Site Preparation	**Total Noise Level**			**68.7**
Grading	Grader	1	65.5	
Grading	Tractor/Loader/Backhoe	3	58	
Grading	Rubber Tired Dozer	1	62.1	
Grading	Excavator	1	61.2	
Grading	**Total Noise Level**			**69.2**

The highest equipment noise level at the nearest sensitive receptor as indicated in Table 3.2 will be at 59.0 dBA (Lmax) and 55.0 dBA (LEQ). 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 and varying speeds and power levels and as a result not operating at the maximum noise level for the entire work day.

The levels of noise at the nearest receptor as indicated in Table 3.2 and 3.3 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.

3.3 Operational Noise:

3.3.1 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: (l) 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*

Upon buildout, the proposed Project is expected to generate approximately 31 average daily vehicle trips, from both passenger cars and trucks, of which 12 (39%) will be from trucks. The morning and afternoon peak hour truck traffic is calculated to be 5 ADT and 7 ADT respectively, which will increase the ambient traffic noise levels in the vicinity of the Project site in comparison to the existing site conditions (commercial, industrial, and vacant land).

The current average daily vehicle trips along US-395 north of Phelan Road/Main Street is approximately 24,100 average daily vehicle trips (ADT) and south of Phelan Road/Main Street is approximately 27,300 ADT, assuming all the Project traffic 31 ADT take US-395, the results would not be a doubling of traffic volume.

According to Caltrans, the human ear is able to begin to detect sound level increases of 3 decibels (dB) in typical noisy environments.[1] 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 Inland Center Drive and Hillcrest Avenue 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*

In the area of the proposed Project site, US-395 is a 2 lane is classified as a Special Street and has a speed limit of 55 mph.

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

The Project is a warehouse development in a commercial and industrial area and although it will generate noise from large trucks, the site is located in an area with similar truck and traffic uses. The total number of daily trips from both passenger cars and trucks is calculated to be 31 ADT, of which 12 (39 %) will be from trucks. The morning and afternoon peak hour truck traffic is calculated to be 5 ADT and 7 ADT respectively.

Truck traffic will also be required to use the City's designated truck routes which include Highway 395 for North/South traffic and Phelan/Main Street (Major Arterial) for East/West traffic with on/off ramps to Interstate 15. The use of the truck routes will also decrease the impacts on sensitive receptors such as residential uses.

3.3.2 Facility Operations (Stationary Noise).

The on-site Project-related noise sources are expected to include: roof-top heating ventilation and air conditioning units (HVAC), 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 proposed Project site. The closest receptor to the site is the commercial use (El Rancho Animal Feed Store) on the adjacent parcel to the

[1] Caltrans, Traffic Noise Analysis Protocol, April 2020, p.7-1.

north. The distance for noise impacts was calculated from the center of the proposed structure to the north property boundary.

Table 3.4 Reference Noise Level Measurements

Noise Source	Reference Distance (feet)	Reference Noise Level (dBA)	Distance to Receptor (feet)	Noise Level (dBA)
Rooftop HVAC [1]	1 ‘	88	142‘	44.95
Truck Loading Dock Activity [2]	50 ‘	63.6	142 ‘	54.53
Truck Backup Alarm [2]	50 ‘	75.0	142 ‘	65.93
Parking Lot Activity [2]	25 ‘	54.4	142 ‘	39.31

[1] Reference Level Lennox 10-ton air handler unit (AHU) manufacturer specifications.

[2] Reference Level collected at Amazon Fulfillment Center ONT-6 (24208 San Michele Rd., Moreno Valley)

The proposed warehouse structure would include dock doors on the north and south side of the structure for truck loading and unloading. To determine a worse-case scenario the noise level impacts of the Project short-term reference noise level measurements were collect 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 proposed Project includes 28 trailer parking spaces and 23 docks and will include forklift use for loading and unloading trailers.

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 142- foot distance at 54.53 dBA L_{eq}. No attenuation for shielding from buildings or walls was calculated, however a 6-foot block walls with stucco will be located on the proposed Project’s boundaries which will provide some noise attenuation.

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[2] at 142 feet with no sound barriers (walls or buildings) the noise level would be between 43.95 to 68.95 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 65.93 dBA noise level at 142 feet with no perimeter walls or buildings as shielding. Additionally, truck backup alarms are temporary, short duration events and would not result in significant off-site noise impacts.

[2] ECCO Backup alarm manufacturer resources: https://www.eccoesg.com/us/en/SearchResults?searchText=backup+alarm+noise+levels accessed December 20, 2022.

Parking lot areas for passenger vehicles are located on the west and east sides of the proposed structure, whereas all trailer parking stalls are located on the west side. 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 28 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.

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.[3] 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 area with primarily vacant land with scattered commercial, industrial, and rural residential areas that is zoned and planned for future commercial and industrial development, the nearest existing receptors are the commercial business adjacent to the north and rural residential recently sold for future commercial site across Avenal Street to the south. Due to the current and future proposed uses in the area of the proposed Project no significant noise impacts are expected.

3.4 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[37], 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 vibration standard used for the City is that no ground vibration shall be allowed that can be felt without the aid of instruments at or beyond the subject property line, nor will any vibration

[3] 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 December 21, 2022.

[4] https://www.transit.dot.gov/research-innovation/transit-noise-and-vibration-impact-assessment-manual-report-0123.

be permitted that produces a particle velocity greater than or equal to two-tenths of an inch per second measured at or beyond the lot line.

Table 3.6 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.

The closest receptor/structure to the Project property line is minimally 142 feet from the center property and approximately 15 feet from the northern property line. 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 in/sec threshold. Therefore, the vibrations at the nearest sensitive receptor will remain well below the strongly perceptible annoyance criteria and potential residential vibration damage criteria thresholds listed in the City of Hesperia Development Code Section 16.20.130 (Vibration). This threshold requires that no vibration greater than 0.2 PPV be felt at or beyond the lot line. Temporary construction, maintenance, or demolition activities between the hours of 7:00 AM and 7:00 PM on weekdays and Saturdays are exempt. 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.

4.0 Conclusion

Based on the assessment in Section 3.0 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 operational noise would be less than significant for mobile and operational noise and as such impacts to the environment for Noise are less than significant.

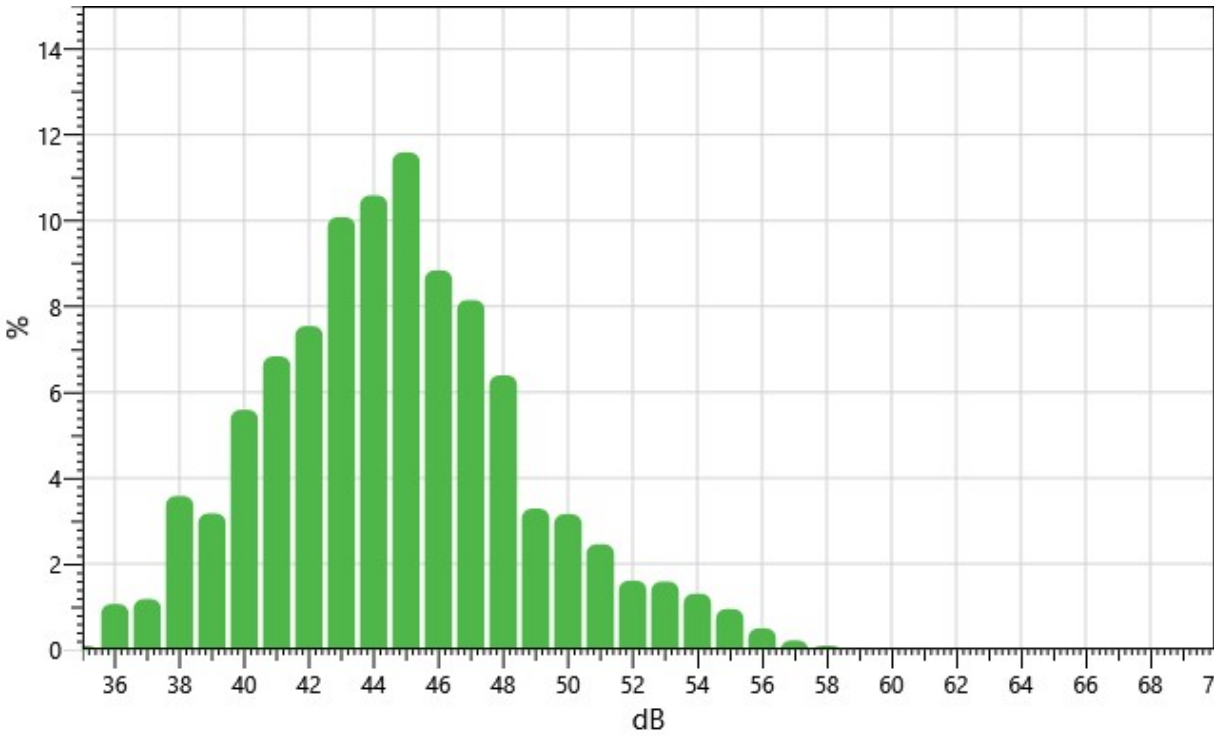
APPENDIX – A
Noise Measurements

SHANGHA TRUCKING #1

Information Panel

Start Time	11/29/2022 11:16:29 AM
Stop Time	11/29/2022 11:31:29 AM
Device Name	BIJ050019
Model Type	SoundPro DL
Device Firmware Rev	R.13H

Statistics Chart

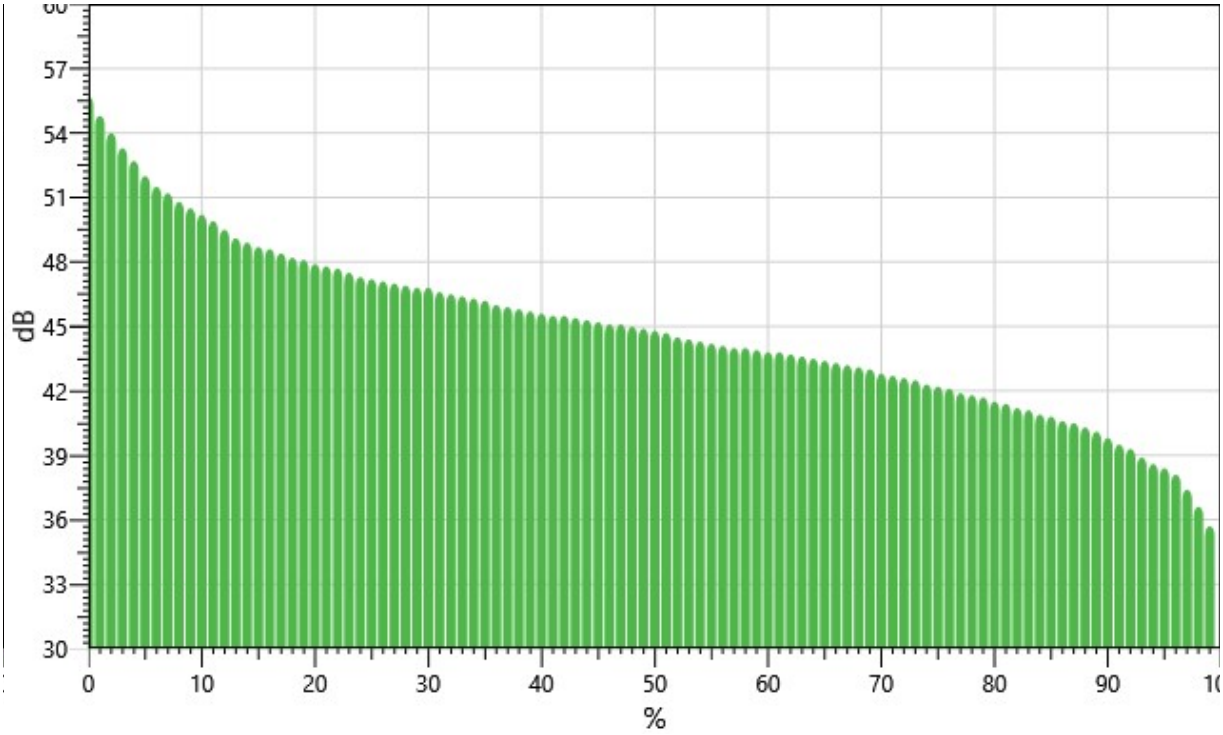


Statistics Table

dB:	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	%
35:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.06	0.09
36:	0.09	0.14	0.22	0.12	0.13	0.12	0.07	0.07	0.06	0.05	1.06
37:	0.06	0.07	0.16	0.14	0.25	0.16	0.09	0.09	0.08	0.07	1.18
38:	0.19	0.34	0.21	0.36	0.38	0.45	0.48	0.51	0.47	0.19	3.58
39:	0.21	0.16	0.28	0.36	0.40	0.31	0.36	0.24	0.45	0.39	3.18
40:	0.25	0.36	0.41	0.52	0.53	0.54	0.80	0.67	0.80	0.70	5.59

41:	0.57	0.56	0.59	0.77	0.77	0.54	0.69	0.76	0.82	0.75	6.84
42:	0.72	0.73	0.73	0.83	0.66	0.80	0.70	0.80	0.79	0.78	7.54
43:	0.77	0.98	1.01	1.01	1.09	0.92	0.93	1.06	1.14	1.18	10.08
44:	1.52	1.38	1.34	1.17	0.89	0.88	0.81	0.76	0.90	0.94	10.59
45:	1.17	1.02	1.15	1.19	1.11	1.24	1.40	1.15	1.22	0.93	11.59
46:	0.91	0.90	0.78	0.86	0.80	0.86	0.89	0.73	0.88	1.24	8.84
47:	1.13	0.88	1.00	1.05	0.85	0.54	0.53	0.64	0.76	0.76	8.15
48:	0.80	0.79	0.52	0.66	0.71	0.53	0.55	0.76	0.61	0.47	6.40
49:	0.34	0.57	0.46	0.23	0.29	0.33	0.26	0.29	0.26	0.27	3.29
50:	0.30	0.34	0.30	0.30	0.31	0.32	0.34	0.39	0.31	0.25	3.16
51:	0.33	0.24	0.20	0.28	0.29	0.32	0.24	0.16	0.19	0.20	2.46
52:	0.22	0.18	0.16	0.14	0.12	0.14	0.16	0.18	0.16	0.15	1.61
53:	0.15	0.20	0.16	0.19	0.15	0.17	0.12	0.15	0.16	0.14	1.59
54:	0.12	0.15	0.10	0.12	0.11	0.16	0.15	0.14	0.13	0.14	1.31
55:	0.16	0.16	0.12	0.08	0.08	0.09	0.06	0.07	0.07	0.06	0.95
56:	0.06	0.06	0.07	0.06	0.07	0.05	0.03	0.03	0.03	0.03	0.50
57:	0.04	0.03	0.02	0.03	0.03	0.03	0.01	0.01	0.01	0.01	0.22
58:	0.01	0.02	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.09
59:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
60:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
61:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
62:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
63:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

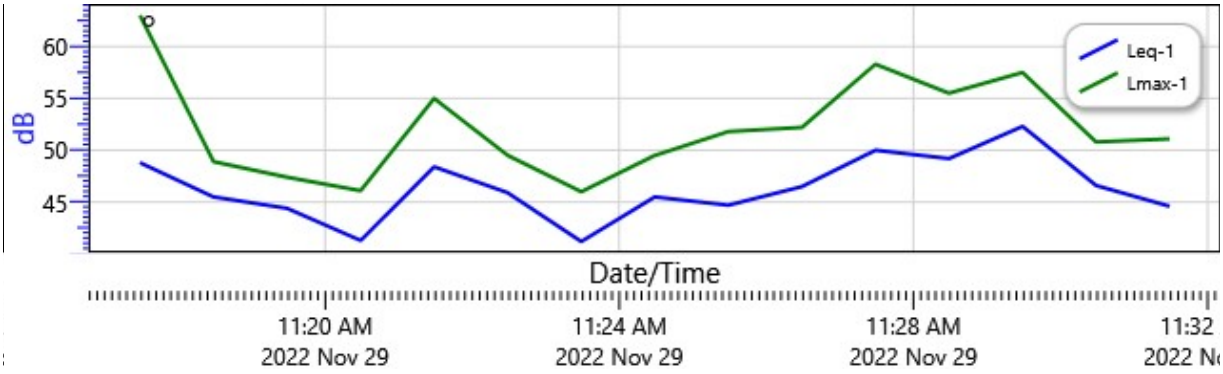
Exceedance Chart



Exceedance Table

.	0%	1%	2%	3%	4%	5%	6%	%7	%8	%9
0%:		55.7	54.8	54.0	53.3	52.7	52.0	51.5	51.2	50.8
10%:	50.5	50.2	49.9	49.5	49.1	48.9	48.7	48.6	48.4	48.2
20%:	48.1	47.9	47.8	47.7	47.5	47.3	47.2	47.1	47.0	46.9
30%:	46.8	46.8	46.6	46.5	46.4	46.3	46.2	46.0	45.9	45.8
40%:	45.7	45.6	45.5	45.5	45.4	45.3	45.2	45.1	45.1	45.0
50%:	44.9	44.8	44.7	44.5	44.4	44.3	44.2	44.1	44.0	44.0
60%:	43.9	43.8	43.8	43.7	43.6	43.5	43.4	43.3	43.2	43.1
70%:	43.0	42.8	42.7	42.6	42.5	42.3	42.2	42.1	41.9	41.8
80%:	41.7	41.5	41.4	41.2	41.1	40.9	40.8	40.6	40.5	40.3
90%:	40.1	39.8	39.5	39.3	38.9	38.6	38.4	38.1	37.4	36.6
100%:	35.7									

Logged Data Chart



Summary Data Panel

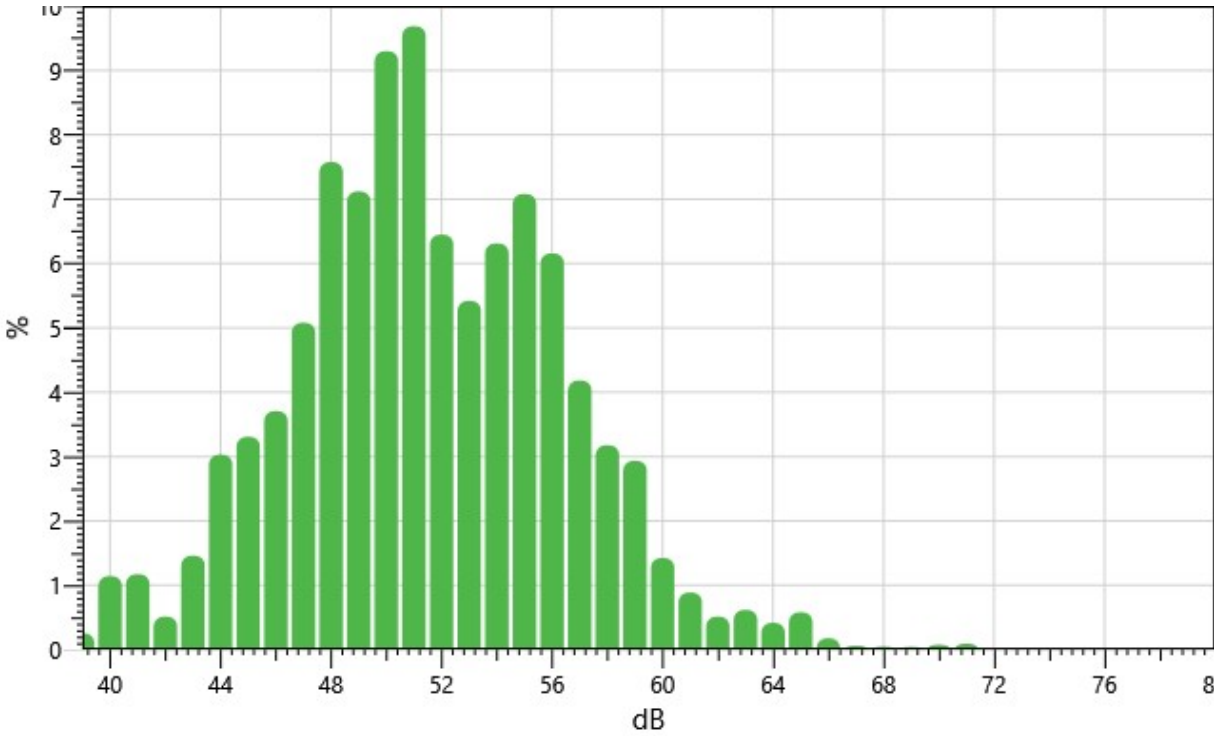
Description	Meter	Value	Description	Meter	Value
Leq	1	47.3 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	5 dB	Weighting	2	A
Response	2	FAST			

SHANGHA TRUCKING #2

Information Panel

Start Time	11/29/2022 11:40:09 AM
Stop Time	11/29/2022 11:55:09 AM
Device Name	BIJ050019
Model Type	SoundPro DL
Device Firmware Rev	R.13H

Statistics Chart

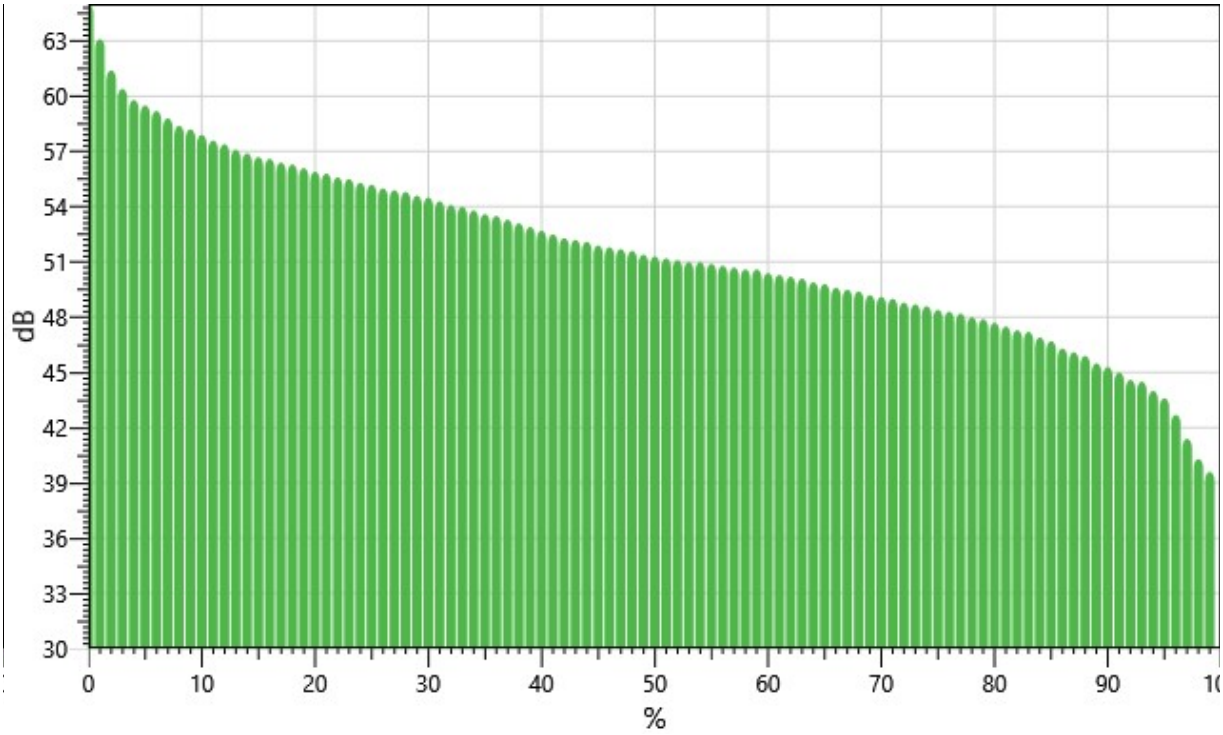


Statistics Table

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	0.02	0.03	0.20	0.26
40:	0.22	0.20	0.13	0.11	0.16	0.10	0.08	0.06	0.03	0.03	1.14
41:	0.03	0.09	0.15	0.16	0.08	0.13	0.20	0.13	0.11	0.09	1.17
42:	0.05	0.03	0.08	0.08	0.05	0.07	0.03	0.04	0.05	0.04	0.51
43:	0.05	0.06	0.10	0.20	0.15	0.12	0.14	0.22	0.20	0.22	1.46
44:	0.21	0.26	0.19	0.19	0.19	0.32	0.49	0.62	0.36	0.20	3.03

45:	0.34	0.39	0.32	0.36	0.36	0.38	0.37	0.26	0.28	0.25	3.31
46:	0.36	0.37	0.44	0.51	0.54	0.33	0.30	0.22	0.24	0.39	3.71
47:	0.55	0.37	0.39	0.59	0.55	0.49	0.52	0.60	0.50	0.52	5.08
48:	0.80	0.84	0.58	0.72	0.73	0.71	0.87	0.79	0.66	0.88	7.58
49:	0.64	0.65	0.76	0.82	0.75	0.64	0.75	0.80	0.68	0.62	7.12
50:	0.68	0.79	0.91	0.93	0.72	0.70	0.84	1.12	1.43	1.18	9.30
51:	1.22	1.31	0.88	1.16	0.96	1.05	0.77	0.83	0.77	0.75	9.69
52:	0.74	0.80	0.76	0.78	0.73	0.51	0.43	0.49	0.60	0.61	6.45
53:	0.53	0.53	0.44	0.57	0.49	0.52	0.65	0.59	0.56	0.55	5.42
54:	0.78	0.72	0.40	0.65	0.57	0.65	0.76	0.59	0.56	0.64	6.31
55:	0.78	0.81	0.69	0.60	0.72	0.74	0.71	0.73	0.55	0.74	7.08
56:	0.69	0.64	0.51	0.44	0.49	0.63	0.72	0.76	0.70	0.58	6.16
57:	0.54	0.51	0.28	0.45	0.32	0.40	0.30	0.47	0.51	0.40	4.18
58:	0.32	0.35	0.37	0.35	0.41	0.36	0.24	0.25	0.27	0.27	3.18
59:	0.21	0.19	0.25	0.35	0.41	0.33	0.34	0.27	0.31	0.28	2.93
60:	0.30	0.23	0.12	0.11	0.14	0.15	0.12	0.10	0.07	0.08	1.42
61:	0.11	0.11	0.12	0.08	0.07	0.06	0.09	0.08	0.08	0.09	0.89
62:	0.11	0.07	0.04	0.04	0.05	0.07	0.04	0.03	0.03	0.04	0.51
63:	0.04	0.06	0.06	0.07	0.10	0.06	0.06	0.07	0.05	0.06	0.62
64:	0.03	0.05	0.04	0.04	0.03	0.04	0.04	0.06	0.03	0.06	0.42
65:	0.07	0.04	0.05	0.06	0.10	0.14	0.05	0.03	0.02	0.02	0.58
66:	0.02	0.02	0.02	0.03	0.03	0.02	0.01	0.01	0.01	0.01	0.18
67:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.06
68:	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.05
69:	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.04
70:	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.02	0.08
71:	0.04	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09

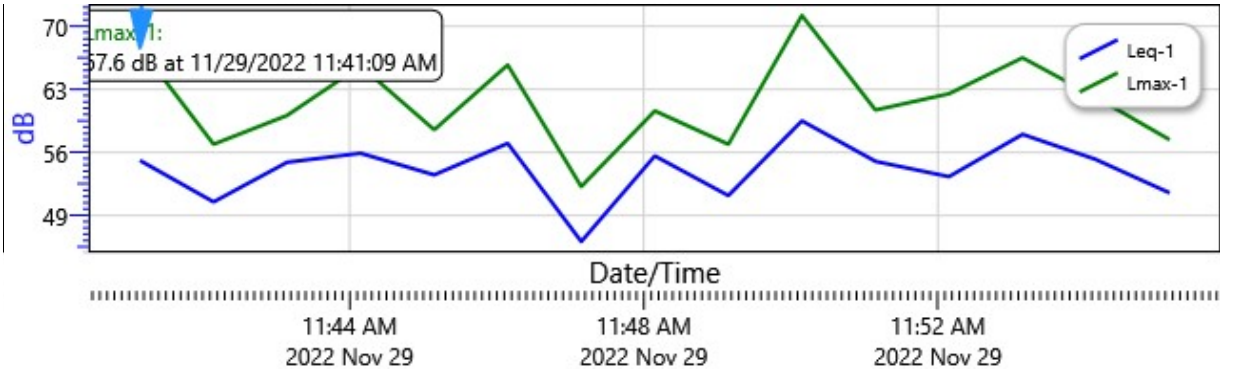
Exceedance Chart



Exceedance Table

.	0%	1%	2%	3%	4%	5%	6%	%7	%8	%9
0%:		65.0	63.1	61.4	60.4	59.8	59.5	59.2	58.8	58.4
10%:	58.2	57.9	57.6	57.4	57.1	56.9	56.7	56.6	56.4	56.3
20%:	56.1	55.9	55.8	55.6	55.5	55.3	55.2	55.0	54.9	54.8
30%:	54.6	54.5	54.3	54.1	54.0	53.8	53.6	53.5	53.3	53.1
40%:	52.9	52.7	52.5	52.3	52.2	52.1	51.9	51.8	51.7	51.6
50%:	51.4	51.3	51.2	51.1	51.0	51.0	50.9	50.8	50.7	50.6
60%:	50.6	50.4	50.3	50.2	50.1	49.9	49.8	49.6	49.5	49.4
70%:	49.2	49.1	49.0	48.8	48.7	48.6	48.4	48.3	48.2	48.0
80%:	47.9	47.7	47.5	47.3	47.2	46.9	46.7	46.3	46.1	45.9
90%:	45.5	45.3	45.0	44.6	44.5	44.0	43.6	42.7	41.4	40.3
100%:	39.6									

Logged Data Chart



Summary Data Panel

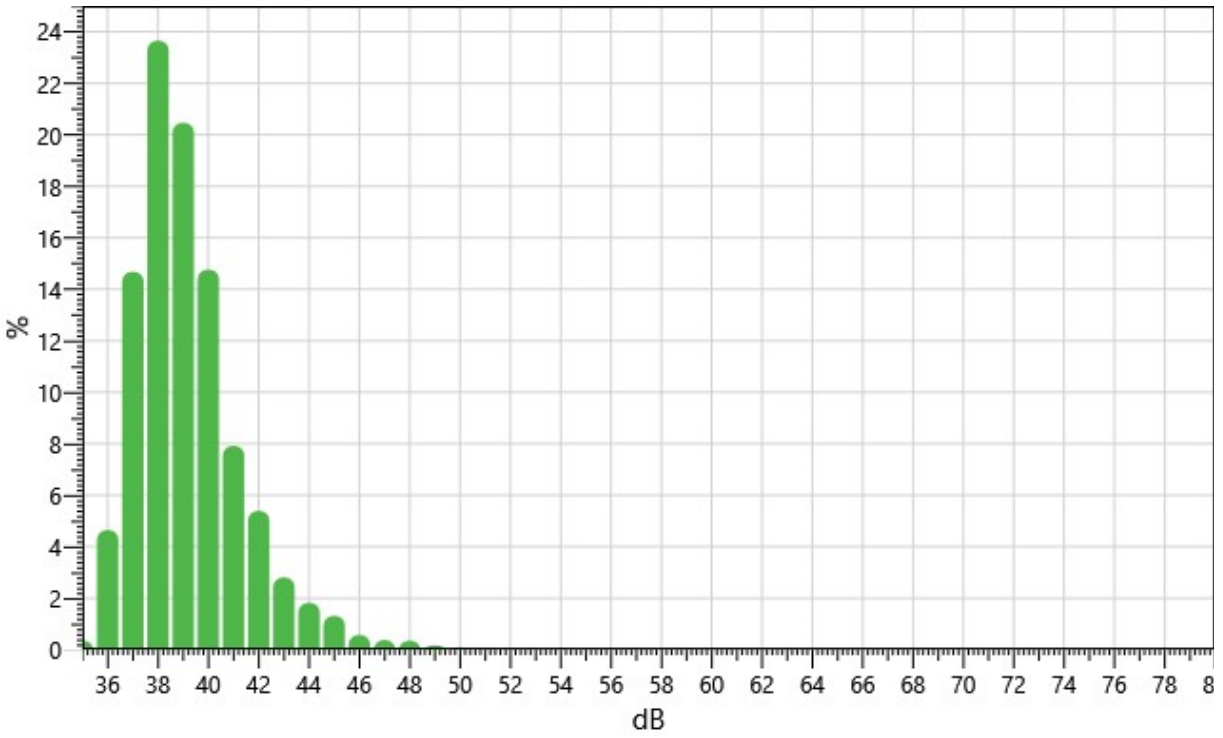
Description	Meter	Value	Description	Meter	Value
Leq	1	55.1 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	5 dB	Weighting	2	A
Response	2	FAST			

SHANGHA TRUCKING #3

Information Panel

Start Time	11/29/2022 1:03:04 PM
Stop Time	11/29/2022 1:18:04 PM
Device Name	BIJ050019
Model Type	SoundPro DL
Device Firmware Rev	R.13H

Statistics Chart

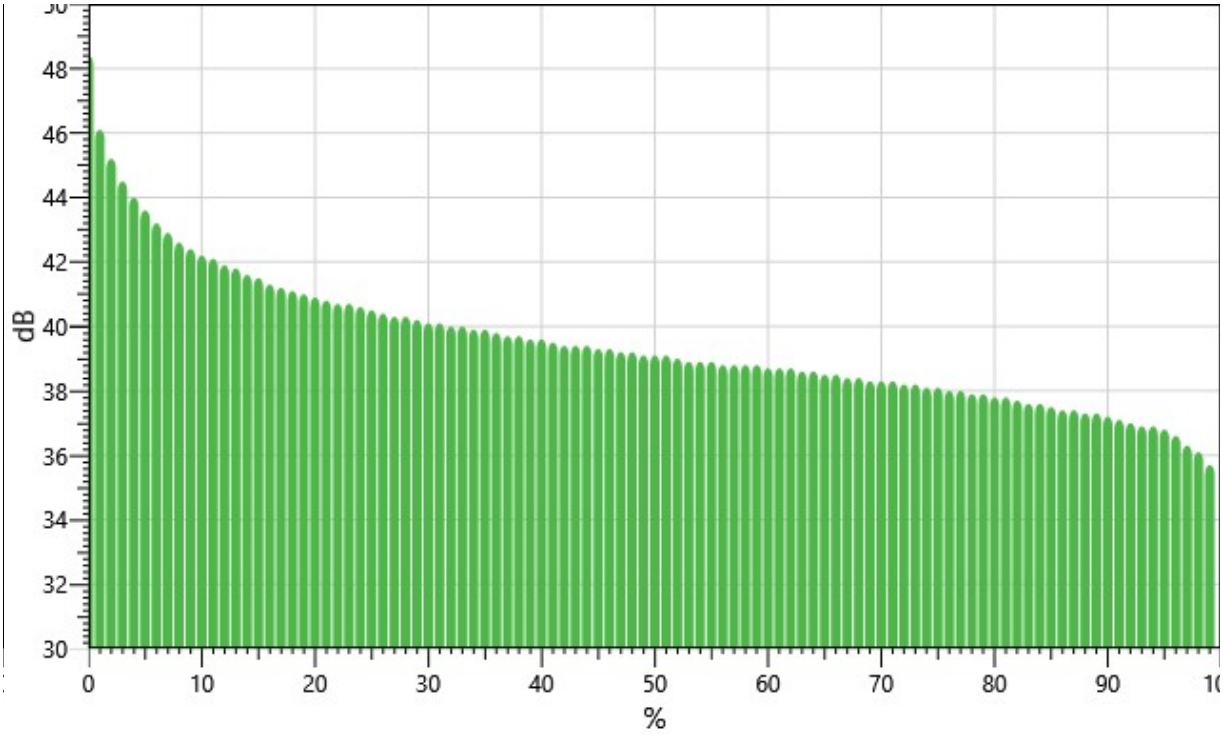


Statistics Table

dB:	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	%
35:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.25	0.35
36:	0.33	0.18	0.19	0.38	0.62	0.43	0.29	0.55	0.67	1.00	4.65
37:	1.05	1.01	1.30	1.51	1.82	1.46	1.53	1.44	1.63	1.92	14.68
38:	2.06	2.24	1.83	2.05	2.25	2.04	2.20	2.56	3.06	3.36	23.66
39:	3.04	1.60	2.07	2.05	2.28	2.67	1.82	1.63	1.58	1.73	20.47
40:	1.82	1.66	1.91	1.74	1.40	1.20	1.11	1.14	1.45	1.33	14.76

41:	1.09	1.10	0.80	0.93	0.79	0.71	0.67	0.59	0.61	0.63	7.92
42:	0.73	0.63	0.58	0.67	0.54	0.61	0.45	0.43	0.36	0.38	5.39
43:	0.37	0.29	0.33	0.31	0.31	0.24	0.27	0.24	0.24	0.20	2.81
44:	0.24	0.21	0.20	0.20	0.19	0.16	0.16	0.17	0.14	0.14	1.82
45:	0.19	0.14	0.15	0.16	0.10	0.15	0.14	0.09	0.09	0.11	1.31
46:	0.13	0.05	0.08	0.04	0.05	0.05	0.05	0.06	0.03	0.04	0.57
47:	0.03	0.03	0.06	0.08	0.02	0.03	0.03	0.02	0.03	0.05	0.38
48:	0.03	0.04	0.04	0.04	0.06	0.06	0.03	0.02	0.02	0.02	0.35
49:	0.01	0.02	0.02	0.01	0.02	0.02	0.02	0.01	0.01	0.02	0.17
50:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.09
51:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.07
52:	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.05
53:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
54:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
55:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
56:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
57:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
58:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
59:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
60:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
61:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
62:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
63:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
64:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
65:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
66:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
67:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
68:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
69:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
70:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
71:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03

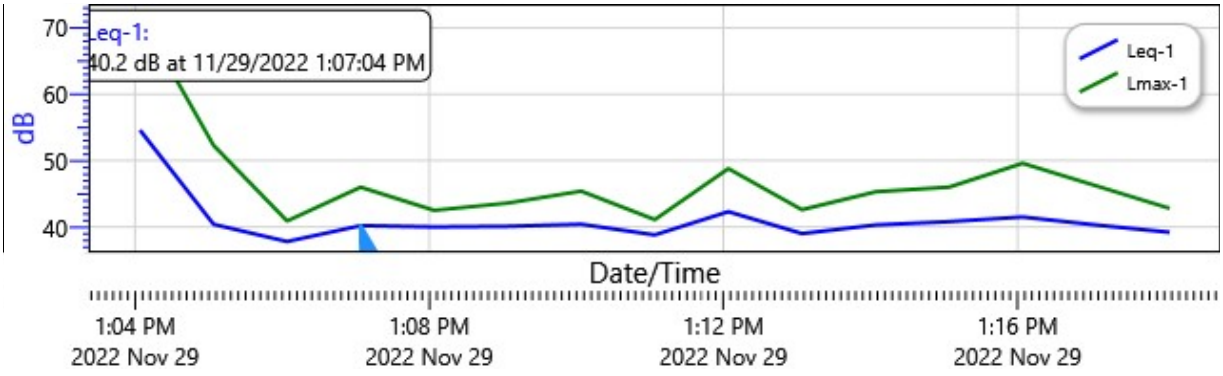
Exceedance Chart



Exceedance Table

.	0%	1%	2%	3%	4%	5%	6%	%7	%8	%9
0%:		48.4	46.1	45.2	44.5	44.0	43.6	43.2	42.9	42.6
10%:	42.4	42.2	42.1	41.9	41.8	41.6	41.5	41.3	41.2	41.1
20%:	41.0	40.9	40.8	40.7	40.7	40.6	40.5	40.4	40.3	40.3
30%:	40.2	40.1	40.1	40.0	40.0	39.9	39.9	39.8	39.7	39.7
40%:	39.6	39.6	39.5	39.4	39.4	39.4	39.3	39.3	39.2	39.2
50%:	39.1	39.1	39.1	39.0	38.9	38.9	38.9	38.8	38.8	38.8
60%:	38.8	38.7	38.7	38.7	38.6	38.6	38.5	38.5	38.4	38.4
70%:	38.3	38.3	38.3	38.2	38.2	38.1	38.1	38.0	38.0	37.9
80%:	37.9	37.8	37.8	37.7	37.6	37.6	37.5	37.4	37.4	37.3
90%:	37.3	37.2	37.1	37.0	36.9	36.9	36.8	36.6	36.3	36.1
100%:	35.7									

Logged Data Chart



Summary Data Panel

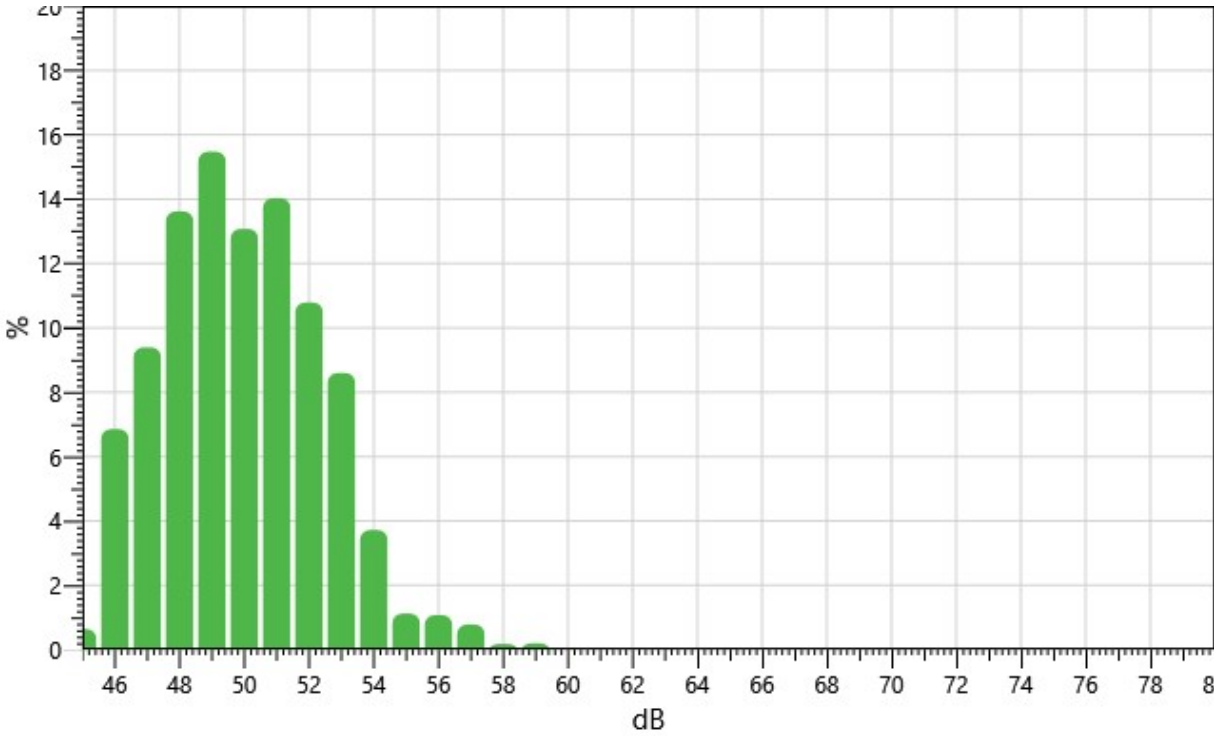
Description	Meter	Value	Description	Meter	Value
Leq	1	44.6 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	5 dB	Weighting	2	A
Response	2	FAST			

SHANGHA #4

Information Panel

Start Time	11/29/2022 1:33:58 PM
Stop Time	11/29/2022 1:48:58 PM
Device Name	BIJ050019
Model Type	SoundPro DL
Device Firmware Rev	R.13H

Statistics Chart

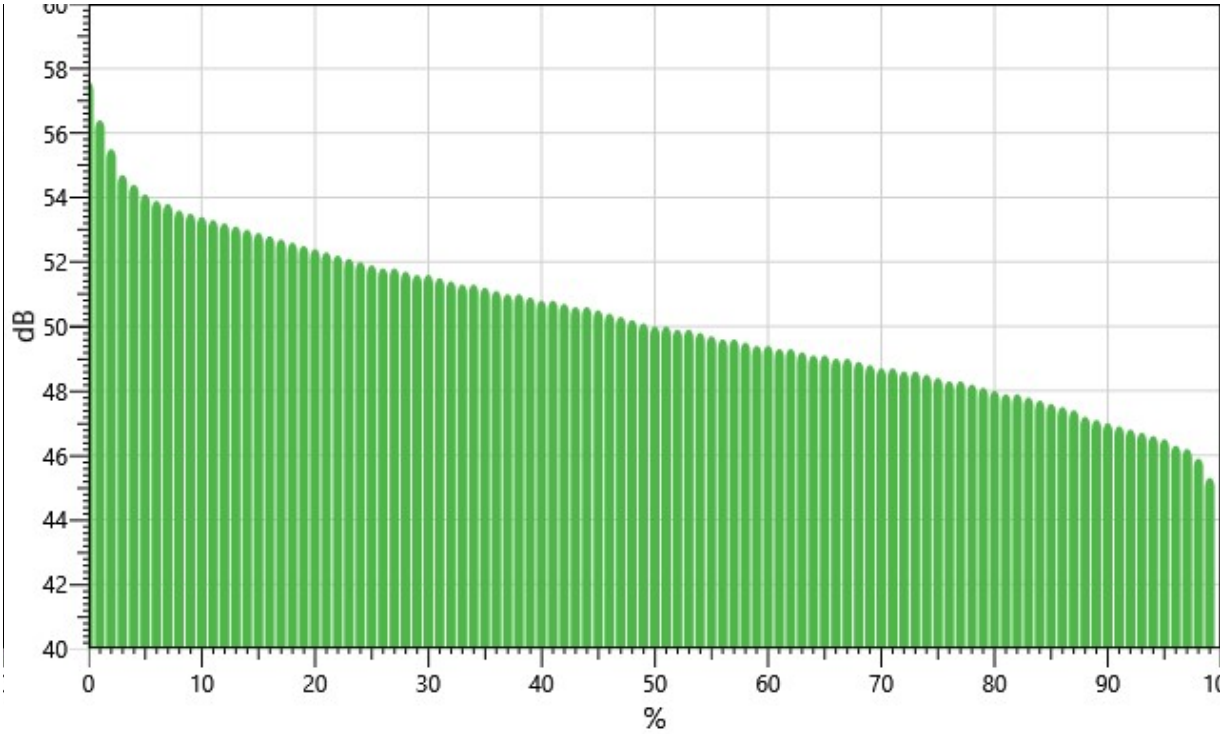


Statistics Table

dB:	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	%
45:	0.00	0.00	0.00	0.00	0.01	0.17	0.11	0.03	0.04	0.28	0.64
46:	0.44	0.34	0.55	0.47	0.66	0.70	0.88	0.77	0.96	1.10	6.85
47:	1.02	0.88	0.97	0.66	0.77	1.01	0.79	1.00	0.95	1.34	9.39
48:	1.31	1.41	1.06	1.33	1.13	1.20	1.29	1.84	1.63	1.43	13.62
49:	1.47	1.90	1.65	1.45	1.62	1.57	1.45	1.57	1.57	1.22	15.47
50:	1.35	1.70	1.27	1.10	1.24	1.02	1.13	1.32	1.45	1.50	13.08

51:	1.78	1.58	0.92	1.39	1.38	1.31	1.48	1.54	1.34	1.32	14.03
52:	1.36	1.34	0.97	1.18	0.97	0.95	0.94	1.10	0.99	0.99	10.79
53:	0.98	0.95	0.77	0.78	0.92	0.93	1.00	0.88	0.66	0.71	8.60
54:	0.66	0.59	0.29	0.52	0.37	0.34	0.30	0.30	0.23	0.12	3.72
55:	0.13	0.13	0.14	0.11	0.12	0.11	0.11	0.09	0.10	0.10	1.12
56:	0.12	0.10	0.13	0.11	0.12	0.14	0.14	0.10	0.05	0.07	1.07
57:	0.06	0.09	0.09	0.10	0.09	0.06	0.09	0.08	0.08	0.05	0.78
58:	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.02	0.18
59:	0.01	0.02	0.02	0.02	0.02	0.01	0.02	0.03	0.01	0.03	0.20
60:	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
61:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
62:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
63:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
64:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
65:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
66:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
67:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
68:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
69:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
70:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
71:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
72:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
73:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
74:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
75:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
76:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01

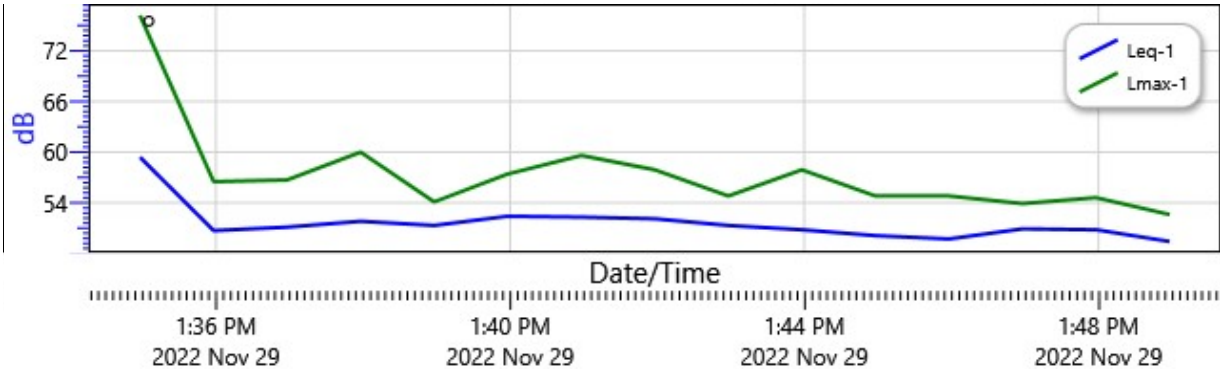
Exceedance Chart



Exceedance Table

.	0%	1%	2%	3%	4%	5%	6%	%7	%8	%9
0%:		57.6	56.4	55.5	54.7	54.4	54.1	53.9	53.8	53.6
10%:	53.5	53.4	53.3	53.2	53.1	53.0	52.9	52.8	52.7	52.6
20%:	52.5	52.4	52.3	52.2	52.1	52.0	51.9	51.8	51.8	51.7
30%:	51.6	51.6	51.5	51.4	51.3	51.3	51.2	51.1	51.0	51.0
40%:	50.9	50.8	50.8	50.7	50.6	50.6	50.5	50.4	50.3	50.2
50%:	50.1	50.0	50.0	49.9	49.9	49.8	49.7	49.6	49.6	49.5
60%:	49.4	49.4	49.3	49.3	49.2	49.1	49.1	49.0	49.0	48.9
70%:	48.8	48.7	48.7	48.6	48.6	48.5	48.4	48.3	48.3	48.2
80%:	48.1	48.0	47.9	47.9	47.8	47.7	47.6	47.5	47.4	47.2
90%:	47.1	47.0	46.9	46.8	46.7	46.6	46.5	46.3	46.2	45.9
100%:	45.3									

Logged Data Chart



Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	52.5 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			

APPENDIX – B
RCNM
Construction Equipment Noise Calculations

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/22/2022
Case Description: Sangha Trucking - Hesperia

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
SFR	Residential	47.3	60.0	50.0

Equipment Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	1000.0	0.0
Dozer	No	40		81.7	1000.0	0.0
Scraper	No	40		83.6	1000.0	0.0
Excavator	No	40		80.7	1000.0	0.0
Grader	No	40	85.0		1000.0	0.0
Scraper	No	40		83.6	1000.0	0.0
Crane	No	16		80.6	1000.0	0.0
Gradall	No	40		83.4	1000.0	0.0
Generator	No	50		80.6	1000.0	0.0
Welder / Torch	No	40		74.0	1000.0	0.0
Compressor (air)	No	40		77.7	1000.0	0.0
Paver	No	50		77.2	1000.0	0.0
Roller	No	20		80.0	1000.0	0.0
Pickup Truck	No	40		75.0	1000.0	0.0
Compactor (ground)	No	20		83.2	1000.0	0.0
Concrete Mixer Truck	No	40		78.8	1000.0	0.0
Dump Truck	No	40		76.5	1000.0	0.0
Front End Loader	No	40		79.1	1000.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Equipment	Calculated (dBA) Lmax	Calculated (dBA) Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Evening Leq	Night Lmax	Night Leq
Backhoe	51.5	47.6	N/A	65.0	N/A	65.0	N/A	N/A	N/A	None	N/A	None
Dozer	55.6	51.7	N/A	65.0	N/A	65.0	N/A	N/A	N/A	None	N/A	None
Scraper	57.6	53.6	N/A	65.0	N/A	65.0	N/A	N/A	N/A	None	N/A	None
Excavator	54.7	50.7	N/A	65.0	N/A	65.0	N/A	N/A	N/A	None	N/A	None
Grader	59.0	55.0	N/A	65.0	N/A	65.0	N/A	N/A	N/A	None	N/A	None
Scraper	57.6	53.6	N/A	65.0	N/A	65.0	N/A	N/A	N/A	None	N/A	None
Crane	54.5	46.6	N/A	65.0	N/A	65.0	N/A	N/A	N/A	None	N/A	None
Gradall	57.4	53.4	N/A	65.0	N/A	65.0	N/A	N/A	N/A	None	N/A	None
Generator	54.6	51.6	N/A	65.0	N/A	65.0	N/A	N/A	N/A	None	N/A	None
Welder / Torch	48.0	44.0	N/A	65.0	N/A	65.0	N/A	N/A	N/A	None	N/A	None
Compressor (air)	51.6	47.7	N/A	65.0	N/A	65.0	N/A	N/A	N/A	None	N/A	None
Paver	51.2	48.2	N/A	65.0	N/A	65.0	N/A	N/A	N/A	None	N/A	None

Roller			54.0	47.0	N/A	65.0	N/A	65.0	N/A	N/A	N/A
None	N/A	None	N/A	N/A							
Pickup Truck			49.0	45.0	N/A	65.0	N/A	65.0	N/A	N/A	N/A
None	N/A	None	N/A	N/A							
Compactor (ground)			57.2	50.2	N/A	65.0	N/A	65.0	N/A	N/A	N/A
None	N/A	None	N/A	N/A							
Concrete Mixer Truck			52.8	48.8	N/A	65.0	N/A	65.0	N/A	N/A	N/A
None	N/A	None	N/A	N/A							
Dump Truck			50.4	46.5	N/A	65.0	N/A	65.0	N/A	N/A	N/A
None	N/A	None	N/A	N/A							
Front End Loader			53.1	49.1	N/A	65.0	N/A	65.0	N/A	N/A	N/A
None	N/A	None	N/A	N/A							
		Total	59.0	63.1	N/A	65.0	N/A	65.0	N/A	N/A	N/A
None	N/A	None	N/A	N/A							